



# TEST REPORT

No.24T04N001218-006-RF LTE

for

**HMD Global Oy**

**Mobile Phone**

**Model Name: TA-1686**

**FCC ID: 2AJOTTA-1686**

with

**Hardware Version: FF638-MB-V0.2**

**Software Version: 0.2420.17.00**

**Issued Date: 2024-07-15**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of SAICT.

**Test Laboratory:**

**SAICT, Shenzhen Academy of Information and Communications Technology**

Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China 518000.

Tel:+86(0)755-33322000, Fax:+86(0)755-33322001

Email: yewu@saict.ac.cn. www.saict.ac.cn



## **REPORT HISTORY**

| Report Number           | Revision | Description | Issue Date |
|-------------------------|----------|-------------|------------|
| 24T04N001218-006-RF LTE | Rev.0    | 1st edition | 2024-07-15 |

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## 1. SUMMARY OF TEST REPORT

### 1.1. Test Items

|                     |               |
|---------------------|---------------|
| Description         | Mobile Phone  |
| Model Name          | TA-1686       |
| Brand Name          | NOKIA         |
| Applicant's name    | HMD Global Oy |
| Manufacturer's Name | HMD Global Oy |

### 1.2. Test Standards

|                     |                 |
|---------------------|-----------------|
| FCC Part 2/22/24/27 | 10-1-23 Edition |
| ANSI C63.26         | 2015            |
| KDB971168 D01       | v03r01          |

### 1.3. Test Result

All test items are passed. Please refer to "6 Summary of Test Results" for detail.

### 1.4. Testing Location

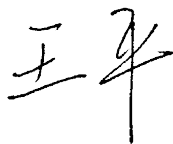
Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China 518000

### 1.5. Project Data

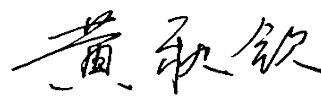
Testing Start Date: 2024-06-04

Testing End Date: 2024-07-09

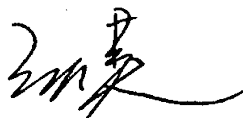
### 1.6. Signature



Wang Ping  
(Prepared this test report)



Huang Qiuqin  
(Reviewed this test report)



Zhang Hao  
(Approved this test report)

## **2. CLIENT INFORMATION**

### **2.1. Applicant Information**

Company Name: HMD Global Oy  
Address /Post: Bertel Jungin aukio 9,02600 Espoo,Finland  
Contact: reza.serafat  
Email: reza.serafat@hmdglobal.com  
Telephone: +491735287964  
Fax: /

### **2.2. Manufacturer Information**

Company Name: HMD Global Oy  
Address /Post: Bertel Jungin aukio 9,02600 Espoo,Finland  
Contact: reza.serafat  
Email: reza.serafat@hmdglobal.com  
Telephone: +491735287964  
Fax: /

### **3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT**

#### **(AE)**

#### **3.1. About EUT**

|                              |                                 |
|------------------------------|---------------------------------|
| Description                  | Mobile Phone                    |
| Model Name                   | TA-1686                         |
| FCC ID                       | 2AJOTTA-1686                    |
| Frequency Bands              | LTE Bands 2/4/5/7/12/13/17/66   |
| Antenna                      | Integrated                      |
| Extreme vol. Limits          | 3.60V to 4.20V (nominal: 3.80V) |
| Condition of EUT as received | No abnormality in appearance    |

Note1: Components list, please refer to documents of the manufacturer; it is also included in the original test record of SAICT.

#### **3.2. Internal Identification of EUT**

| <b>EUT ID*</b> | <b>SN or IMEI</b> | <b>HW Version</b> | <b>SW Version</b> | <b>Date of receipt</b> |
|----------------|-------------------|-------------------|-------------------|------------------------|
| UT14aa         | 352178850000892   | FF638-MB-V0.2     | 0.2420.17.00      | 2024-06-06             |
| UT22aa         | 352178850003078   | FF638-MB-V0.2     | 0.2420.17.00      | 2024-06-04             |

\*EUT ID: is used to identify the test sample in the lab internally.

UT14aa is used for conduction test, UT22aa is used for radiation test.

#### **3.3. Internal Identification of AE**

| <b>AE ID*</b>   | <b>Description</b>               |
|-----------------|----------------------------------|
| AE1             | Battery                          |
| AE1             |                                  |
| Model           | BA-L4M                           |
| Manufacturer    | SHENZHEN UTILITY ENERGY CO.,LTD. |
| Capacity        | 1450mAh                          |
| Nominal Voltage | 3.8V                             |

\*AE ID: is used to identify the test sample in the lab internally.

AE: ancillary equipment

#### **3.4. General Description**

The Equipment Under Test (EUT) is a model Mobile Phone with integrated antenna. It consists of normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the Client.

#### **4. REFERENCE DOCUMENTS**

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

| <b>Reference</b> | <b>Title</b>                                                                                         | <b>Version</b>     |
|------------------|------------------------------------------------------------------------------------------------------|--------------------|
| FCC Part 22      | PUBLIC MOBILE SERVICES                                                                               | 10-1-23<br>Edition |
| FCC Part 24      | PERSONAL COMMUNICATIONS SERVICES                                                                     | 10-1-23<br>Edition |
| FCC Part 2       | FREQUENCY ALLOCATIONS AND RADIO TREATY<br>MATTERS; GENERAL RULES AND REGULATIONS                     | 10-1-23<br>Edition |
| FCC Part 27      | MISCELLANEOUS WIRELESS COMMUNICATIONS<br>SERVICES                                                    | 10-1-23<br>Edition |
| ANSI C63.26      | American National Standard for Compliance Testing of<br>Transmitters Used in Licensed Radio Services | 2015               |
| KDB971168 D01    | Power Meas License Digital Systems                                                                   | v03r01             |

## 5. LABORATORY ENVIRONMENT

**Shielded room** did not exceed following limits along the RF testing:

|                          |                                          |
|--------------------------|------------------------------------------|
| Temperature              | Min. = 15 °C, Max. = 35 °C               |
| Relative humidity        | Min. = 20 %, Max. = 75 %                 |
| Shielding effectiveness  | 0.014MHz-1MHz>60 dB; 1MHz-18000MHz>90 dB |
| Electrical insulation    | >2 MΩ                                    |
| Ground system resistance | < 4 Ω                                    |

**Fully-anechoic chamber** did not exceed following limits along the EMC testing

|                                    |                                           |
|------------------------------------|-------------------------------------------|
| Temperature                        | Min. = 15 °C, Max. = 35 °C                |
| Relative humidity                  | Min. = 20 %, Max. = 75 %                  |
| Shielding effectiveness            | 0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB |
| Electrical insulation              | > 2MΩ                                     |
| Ground system resistance           | < 4 Ω                                     |
| Voltage Standing Wave Ratio (VSWR) | ≤ 6 dB, from 1 to 18 GHz, 3 m distance    |
| Uniformity of field strength       | Between 0 and 6 dB, from 80 to 6000 MHz   |

## 6. SUMMARY OF TEST RESULTS

| Abbreviations used in this clause: |    |                |
|------------------------------------|----|----------------|
| Verdict Column                     | P  | Pass           |
|                                    | F  | Fail           |
|                                    | NA | Not applicable |
|                                    | NM | Not measured   |

### LTE Band 2

| Items | Test Name                            | Clause in FCC rules  | Section in this report | Verdict |
|-------|--------------------------------------|----------------------|------------------------|---------|
| 1     | Output Power                         | 2.1046/24.232        | A.1                    | P       |
| 2     | Field Strength of Spurious Radiation | 2.1053/24.238        | A.2                    | P       |
| 3     | Frequency Stability                  | 2.1055/24.235        | A.3                    | P       |
| 4     | Occupied Bandwidth                   | 2.1049/24.238        | A.4                    | P       |
| 5     | Emission Bandwidth                   | 2.1049/24.238        | A.5                    | P       |
| 6     | Band Edge Compliance                 | 2.1051/24.238        | A.6                    | P       |
| 7     | Conducted Spurious Emission          | 2.1051/24.238        | A.7                    | P       |
| 8     | Peak-to-Average Power Ratio          | 24.232/KDB971168 D01 | A.8                    | P       |

### LTE Band 4

| Items | Test Name                            | Clause in FCC rules     | Section in this report | Verdict |
|-------|--------------------------------------|-------------------------|------------------------|---------|
| 1     | Output Power                         | 2.1046/27.50(d)         | A.1                    | P       |
| 2     | Field Strength of Spurious Radiation | 2.1053/27.53(h)         | A.2                    | P       |
| 3     | Frequency Stability                  | 2.1055/27.54            | A.3                    | P       |
| 4     | Occupied Bandwidth                   | 2.1049/27.53(g)         | A.4                    | P       |
| 5     | Emission Bandwidth                   | 2.1049/27.53(g)         | A.5                    | P       |
| 6     | Band Edge Compliance                 | 2.1051/27.53(h)         | A.6                    | P       |
| 7     | Conducted Spurious Emission          | 2.1051/27.53(h)         | A.7                    | P       |
| 8     | Peak-to-Average Power Ratio          | 27.50(d)/ KDB971168 D01 | A.8                    | P       |

**LTE band 5**

| Items | Test Name                            | Clause in FCC rules | Section in this report | Verdict |
|-------|--------------------------------------|---------------------|------------------------|---------|
| 1     | Output Power                         | 2.1046/22.913       | A.1                    | P       |
| 2     | Field Strength of Spurious Radiation | 2.1053/22.917       | A.2                    | P       |
| 3     | Frequency Stability                  | 2.1055/22.355       | A.3                    | P       |
| 4     | Occupied Bandwidth                   | 2.1049/22.917       | A.4                    | P       |
| 5     | Emission Bandwidth                   | 2.1049/22.917       | A.5                    | P       |
| 6     | Band Edge Compliance                 | 2.1051/22.917       | A.6                    | P       |
| 7     | Conducted Spurious Emission          | 2.1051/22.917       | A.7                    | P       |
| 8     | Peak-to-Average Power Ratio          | KDB971168 D01       | A.8                    | P       |

**LTE Band 7**

| Items | Test Name                            | Clause in FCC rules     | Section in this report | Verdict |
|-------|--------------------------------------|-------------------------|------------------------|---------|
| 1     | Output Power                         | 2.1046/27.50(h)         | A.1                    | P       |
| 2     | Field Strength of Spurious Radiation | 2.1053/27.53(m)         | A.2                    | P       |
| 3     | Frequency Stability                  | 2.1055/27.54            | A.3                    | P       |
| 4     | Occupied Bandwidth                   | 2.1049/27.53(m)         | A.4                    | P       |
| 5     | Emission Bandwidth                   | 2.1049/27.53(m)         | A.5                    | P       |
| 6     | Band Edge Compliance                 | 2.1051/27.53(m)         | A.6                    | P       |
| 7     | Conducted Spurious Emission          | 2.1051/27.53(m)         | A.7                    | P       |
| 8     | Peak-to-Average Power Ratio          | 27.50(a)/ KDB971168 D01 | A.8                    | P       |

**LTE Band 12**

| Items | Test Name                            | Clause in FCC rules     | Section in this report | Verdict |
|-------|--------------------------------------|-------------------------|------------------------|---------|
| 1     | Output Power                         | 2.1046/27.50(c)         | A.1                    | P       |
| 2     | Field Strength of Spurious Radiation | 2.1053/27.53(g)         | A.2                    | P       |
| 3     | Frequency Stability                  | 2.1055/27.54            | A.3                    | P       |
| 4     | Occupied Bandwidth                   | 2.1049/27.53(g)         | A.4                    | P       |
| 5     | Emission Bandwidth                   | 2.1049/27.53(g)         | A.5                    | P       |
| 6     | Band Edge Compliance                 | 2.1051/27.53(g)         | A.6                    | P       |
| 7     | Conducted Spurious Emission          | 2.1051/27.53(g)         | A.7                    | P       |
| 8     | Peak-to-Average Power Ratio          | 27.50(a)/ KDB971168 D01 | A.8                    | P       |

**LTE Band 13**

| Items | Test Name                            | Clause in FCC rules     | Section in this report | Verdict |
|-------|--------------------------------------|-------------------------|------------------------|---------|
| 1     | Output Power                         | 2.1046/27.50(b)         | A.1                    | P       |
| 2     | Field Strength of Spurious Radiation | 2.1053/27.53(c)         | A.2                    | P       |
| 3     | Frequency Stability                  | 2.1055/27.54            | A.3                    | P       |
| 4     | Occupied Bandwidth                   | 2.1049/27.53(c)         | A.4                    | P       |
| 5     | Emission Bandwidth                   | 2.1049/27.53(c)         | A.5                    | P       |
| 6     | Band Edge Compliance                 | 2.1051/27.53(c)         | A.6                    | P       |
| 7     | Conducted Spurious Emission          | 2.1051/27.53(c)         | A.7                    | P       |
| 8     | Peak-to-Average Power Ratio          | 27.50(a)/ KDB971168 D01 | A.8                    | P       |

**LTE Band 17**

| Items | Test Name                            | Clause in FCC rules     | Section in this report | Verdict |
|-------|--------------------------------------|-------------------------|------------------------|---------|
| 1     | Output Power                         | 2.1046/27.50(c)         | A.1                    | P       |
| 2     | Field Strength of Spurious Radiation | 2.1053/27.53(g)         | A.2                    | P       |
| 3     | Frequency Stability                  | 2.1055/27.54            | A.3                    | P       |
| 4     | Occupied Bandwidth                   | 2.1049/27.53(g)         | A.4                    | P       |
| 5     | Emission Bandwidth                   | 2.1049/27.53(g)         | A.5                    | P       |
| 6     | Band Edge Compliance                 | 2.1051/27.53(g)         | A.6                    | P       |
| 7     | Conducted Spurious Emission          | 2.1051/27.53(g)         | A.7                    | P       |
| 8     | Peak-to-Average Power Ratio          | 27.50(a)/ KDB971168 D01 | A.8                    | P       |

**LTE Band 66**

| Items | Test Name                            | Clause in FCC rules    | Section in this report | Verdict |
|-------|--------------------------------------|------------------------|------------------------|---------|
| 1     | Output Power                         | 2.1046/27.50(d)        | A.1                    | P       |
| 2     | Field Strength of Spurious Radiation | 2.1053/27.53(h)        | A.2                    | P       |
| 3     | Frequency Stability                  | 2.1055/27.54           | A.3                    | P       |
| 4     | Occupied Bandwidth                   | 2.1049/27.53(h)        | A.4                    | P       |
| 5     | Emission Bandwidth                   | 2.1049/27.53(h)        | A.5                    | P       |
| 6     | Band Edge Compliance                 | 2.1051/27.53(h)        | A.6                    | P       |
| 7     | Conducted Spurious Emission          | 2.1051/27.53(h)        | A.7                    | P       |
| 8     | Peak-to-Average Power Ratio          | 27.50(a)/KDB971168 D01 | A.8                    | P       |

## **7. STATEMENT**

Since the information of samples in this report is provided by the client, the laboratory is not responsible for the authenticity of sample information.

This report takes measured values as criterion of test conclusion. The test conclusion meets the limit requirements.

**8. TEST EQUIPMENTS UTILIZED**

| No. | Description                          | Type                  | Manufacture  | Series Number | Cal Due Date |
|-----|--------------------------------------|-----------------------|--------------|---------------|--------------|
| 1   | Test Receiver                        | ESR7                  | R&S          | 101676        | 2024-11-22   |
| 2   | Hybrid antenna                       | VULB 9163             | Schwarzbeck  | 330           | 2027.04.21   |
| 3   | Horn Antenna                         | 3117                  | ETS-Lindgren | 00066577      | 2025-04-17   |
| 4   | Horn Antenna                         | QSH-SL-18-2<br>6-S-20 | Q-par        | 17013         | 2026-02-01   |
| 5   | Antenna                              | BBHA 9120D            | Schwarzbeck  | 1593          | 2025-10-24   |
| 6   | Antenna                              | QWH-SL-18-4<br>0-K-SG | Q-par        | 15979         | 2026-01-30   |
| 7   | preamplifier                         | 83017A                | Agilent      | MY39501110    | /            |
| 8   | Signal Generator                     | SMB100A               | R&S          | 179725        | 2024-11-22   |
| 9   | Fully Anechoic Chamber               | FACT3-2.0             | ETS-Lindgren | 1285          | 2025-05-28   |
| 10  | Spectrum Analyzer                    | FSV40                 | R&S          | 101192        | 2025-01-10   |
| 11  | Universal Radio Communication Tester | CMU200                | R&S          | 114545        | 2025-01-10   |
| 12  | Universal Radio Communication Tester | CMW500                | R&S          | 152499        | 2024-07-13   |
| 13  | Power Supply                         | HMC8042               | 103284       | R&S           | 2025-05-07   |
| 14  | Universal Radio Communication Tester | CMW500                | R&S          | 129146        | 2025-04-10   |
| 15  | Spectrum Analyzer                    | FSW26                 | R&S          | 102197        | 2025-05-07   |
| 16  | Temperature Chamber                  | SH-241                | ESPEC        | 92007516      | 2024-10-15   |

**Test software**

| Item     | Name  | Version   |
|----------|-------|-----------|
| Radiated | EMC32 | V10.50.40 |

## ANNEX A: MEASUREMENT RESULTS

### A.1 OUTPUT POWER

#### A.1.1 Summary

During the process of testing, the EUT was controlled via Communication tester to ensure max power transmission and proper modulation.

In all cases, output power is within the specified limits.

#### A.1.2 Conducted

##### A.1.2.1 Method of Measurements

The EUT was set up for the max output power with pseudo random data modulation.

These measurements were done at 3 frequencies (bottom, middle and top of operational frequency range) for each bandwidth.

##### A.1.2.2 Measurement result

##### LTE band 2

| Bandwidth | RB size/offset | Frequency(MHz) | Power(dBm) |       |
|-----------|----------------|----------------|------------|-------|
|           |                |                | QPSK       | 16QAM |
| 1.4MHz    | 1 RB high      | 1909.3         | 22.51      | 22.77 |
|           |                | 1880.0         | 22.56      | 22.17 |
|           |                | 1850.7         | 22.44      | 22.03 |
|           | 1 RB low       | 1909.3         | 22.40      | 22.84 |
|           |                | 1880.0         | 22.39      | 22.18 |
|           |                | 1850.7         | 22.43      | 22.05 |
|           | 50% RB mid     | 1909.3         | 22.60      | 22.40 |
|           |                | 1880.0         | 22.58      | 22.19 |
|           |                | 1850.7         | 22.51      | 22.42 |
|           | 100% RB        | 1909.3         | 22.05      | 21.12 |
|           |                | 1880.0         | 21.98      | 20.99 |
|           |                | 1850.7         | 22.15      | 20.93 |
| 3MHz      | 1 RB high      | 1908.5         | 22.46      | 22.62 |
|           |                | 1880.0         | 22.42      | 22.22 |
|           |                | 1851.5         | 22.51      | 22.69 |
|           | 1 RB low       | 1908.5         | 22.41      | 22.73 |
|           |                | 1880.0         | 22.49      | 22.14 |
|           |                | 1851.5         | 22.52      | 22.73 |
|           | 50% RB mid     | 1908.5         | 22.10      | 21.34 |
|           |                | 1880.0         | 21.96      | 21.17 |
|           |                | 1851.5         | 22.02      | 21.32 |
|           | 100% RB        | 1908.5         | 22.12      | 21.33 |
|           |                | 1880.0         | 22.06      | 21.12 |
|           |                | 1851.5         | 22.10      | 21.25 |
| 5MHz      | 1 RB high      | 1907.5         | 22.54      | 22.68 |

| Bandwidth | RB size/offset | Frequency(MHz) | Power(dBm) |       |
|-----------|----------------|----------------|------------|-------|
|           |                |                | QPSK       | 16QAM |
|           |                | 1880.0         | 22.34      | 22.66 |
|           |                | 1852.5         | 22.49      | 22.58 |
|           |                | 1907.5         | 22.50      | 22.75 |
|           | 1 RB low       | 1880.0         | 22.40      | 22.70 |
|           |                | 1852.5         | 22.52      | 22.70 |
|           |                | 1907.5         | 22.03      | 21.17 |
|           | 50% RB mid     | 1880.0         | 22.03      | 21.14 |
|           |                | 1852.5         | 22.07      | 21.24 |
|           |                | 1907.5         | 22.05      | 21.40 |
|           | 100% RB        | 1880.0         | 22.03      | 21.32 |
|           |                | 1852.5         | 21.94      | 21.28 |
|           |                | 1905.0         | 22.53      | 22.13 |
| 10MHz     | 1 RB high      | 1880.0         | 22.48      | 22.61 |
|           |                | 1855.0         | 22.49      | 22.61 |
|           |                | 1905.0         | 22.36      | 22.04 |
|           | 1 RB low       | 1880.0         | 22.49      | 22.71 |
|           |                | 1855.0         | 22.50      | 22.73 |
|           |                | 1905.0         | 22.09      | 21.36 |
|           | 50% RB mid     | 1880.0         | 22.01      | 21.04 |
|           |                | 1855.0         | 22.09      | 21.11 |
|           |                | 1905.0         | 22.03      | 21.23 |
|           | 100% RB        | 1880.0         | 21.95      | 21.11 |
|           |                | 1855.0         | 22.07      | 21.10 |
|           |                | 1902.5         | 22.43      | 22.63 |
| 15MHz     | 1 RB high      | 1880.0         | 22.33      | 22.68 |
|           |                | 1857.5         | 22.40      | 22.55 |
|           |                | 1902.5         | 22.29      | 22.58 |
|           | 1 RB low       | 1880.0         | 22.40      | 22.67 |
|           |                | 1857.5         | 22.53      | 22.68 |
|           |                | 1902.5         | 21.98      | 21.07 |
|           | 50% RB mid     | 1880.0         | 21.89      | 21.07 |
|           |                | 1857.5         | 22.06      | 21.19 |
|           |                | 1902.5         | 22.05      | 21.12 |
|           | 100% RB        | 1880.0         | 22.04      | 21.10 |
|           |                | 1857.5         | 21.86      | 21.06 |
|           |                | 1900.0         | 22.55      | 22.66 |
| 20MHz     | 1 RB high      | 1880.0         | 22.51      | 22.11 |

| Bandwidth | RB size/offset | Frequency(MHz) | Power(dBm) |       |
|-----------|----------------|----------------|------------|-------|
|           |                |                | QPSK       | 16QAM |
|           | 1 RB low       | 1860.0         | 22.41      | 22.64 |
|           |                | 1900.0         | 22.37      | 22.64 |
|           |                | 1880.0         | 22.49      | 22.21 |
|           | 50% RB mid     | 1860.0         | 22.40      | 22.64 |
|           |                | 1900.0         | 22.00      | 21.09 |
|           |                | 1880.0         | 21.95      | 21.08 |
|           | 100% RB        | 1860.0         | 21.93      | 21.06 |
|           |                | 1900.0         | 21.99      | 21.08 |
|           |                | 1880.0         | 21.96      | 21.14 |
|           |                | 1860.0         | 22.01      | 21.03 |
|           |                |                |            |       |
|           |                |                |            |       |

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

**LTE band 4**

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
| 1.4MHz    | 1 RB high      | 1754.3          | 22.22      | 22.45 |
|           |                | 1732.5          | 22.20      | 22.44 |
|           |                | 1710.7          | 22.33      | 21.97 |
|           | 1 RB low       | 1754.3          | 22.22      | 22.54 |
|           |                | 1732.5          | 22.12      | 22.48 |
|           |                | 1710.7          | 22.26      | 21.98 |
|           | 50% RB mid     | 1754.3          | 22.34      | 22.09 |
|           |                | 1732.5          | 22.27      | 22.08 |
|           |                | 1710.7          | 22.47      | 22.26 |
|           | 100% RB        | 1754.3          | 21.75      | 20.71 |
|           |                | 1732.5          | 21.85      | 20.76 |
|           |                | 1710.7          | 21.93      | 20.93 |
| 3MHz      | 1 RB high      | 1753.5          | 22.24      | 22.44 |
|           |                | 1732.5          | 22.29      | 22.41 |
|           |                | 1711.5          | 22.39      | 22.39 |
|           | 1 RB low       | 1753.5          | 22.19      | 22.58 |
|           |                | 1732.5          | 22.39      | 22.51 |
|           |                | 1711.5          | 22.39      | 22.55 |
|           | 50% RB mid     | 1753.5          | 21.83      | 20.99 |
|           |                | 1732.5          | 21.90      | 20.98 |
|           |                | 1711.5          | 21.84      | 21.03 |
|           | 100% RB        | 1753.5          | 21.78      | 21.09 |
|           |                | 1732.5          | 21.86      | 20.99 |
|           |                | 1711.5          | 22.00      | 21.10 |
| 5MHz      | 1 RB high      | 1752.5          | 22.16      | 22.48 |
|           |                | 1732.5          | 22.17      | 21.89 |
|           |                | 1712.5          | 22.32      | 21.89 |
|           | 1 RB low       | 1752.5          | 22.20      | 22.49 |
|           |                | 1732.5          | 22.21      | 21.96 |
|           |                | 1712.5          | 22.41      | 21.93 |
|           | 50% RB mid     | 1752.5          | 21.95      | 20.90 |
|           |                | 1732.5          | 21.87      | 20.91 |
|           |                | 1712.5          | 21.85      | 21.01 |
|           | 100% RB        | 1752.5          | 21.85      | 21.11 |
|           |                | 1732.5          | 21.75      | 21.14 |
|           |                | 1712.5          | 21.77      | 21.14 |
| 10MHz     | 1 RB high      | 1750.0          | 22.31      | 21.82 |
|           |                | 1732.5          | 22.03      | 22.43 |
|           |                | 1715.0          | 22.18      | 22.08 |

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
|           | 1 RB low       | 1750.0          | 22.31      | 21.85 |
|           |                | 1732.5          | 22.35      | 22.62 |
|           |                | 1715.0          | 22.29      | 21.95 |
|           | 50% RB mid     | 1750.0          | 21.73      | 21.09 |
|           |                | 1732.5          | 21.87      | 21.17 |
|           |                | 1715.0          | 21.76      | 21.13 |
|           | 100% RB        | 1750.0          | 21.94      | 20.99 |
|           |                | 1732.5          | 21.79      | 20.96 |
|           |                | 1715.0          | 21.86      | 20.89 |
| 15MHz     | 1 RB high      | 1747.5          | 22.22      | 22.51 |
|           |                | 1732.5          | 22.15      | 22.44 |
|           |                | 1717.5          | 22.22      | 22.52 |
|           | 1 RB low       | 1747.5          | 22.35      | 22.64 |
|           |                | 1732.5          | 22.28      | 22.52 |
|           |                | 1717.5          | 22.20      | 22.62 |
|           | 50% RB mid     | 1747.5          | 21.95      | 20.89 |
|           |                | 1732.5          | 21.81      | 20.91 |
|           |                | 1717.5          | 21.93      | 20.97 |
|           | 100% RB        | 1747.5          | 21.93      | 21.07 |
|           |                | 1732.5          | 21.75      | 20.99 |
|           |                | 1717.5          | 21.87      | 21.02 |
| 20MHz     | 1 RB high      | 1745.0          | 22.13      | 22.10 |
|           |                | 1732.5          | 22.33      | 22.38 |
|           |                | 1720.0          | 22.23      | 21.79 |
|           | 1 RB low       | 1745.0          | 22.34      | 22.09 |
|           |                | 1732.5          | 22.41      | 22.56 |
|           |                | 1720.0          | 22.28      | 21.94 |
|           | 50% RB mid     | 1745.0          | 21.89      | 21.06 |
|           |                | 1732.5          | 21.86      | 20.94 |
|           |                | 1720.0          | 21.79      | 20.93 |
|           | 100% RB        | 1745.0          | 21.93      | 21.04 |
|           |                | 1732.5          | 21.82      | 20.94 |
|           |                | 1720.0          | 21.88      | 20.90 |

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

**LTE band 5**

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
| 1.4MHz    | 1 RB high      | 848.3           | 22.17      | 22.11 |
|           |                | 836.5           | 22.01      | 21.61 |
|           |                | 824.7           | 22.03      | 22.19 |
|           | 1 RB low       | 848.3           | 22.15      | 22.20 |
|           |                | 836.5           | 22.03      | 21.59 |
|           |                | 824.7           | 22.03      | 22.05 |
|           | 50% RB mid     | 848.3           | 22.31      | 21.92 |
|           |                | 836.5           | 22.12      | 22.07 |
|           |                | 824.7           | 22.20      | 22.02 |
|           | 100% RB        | 848.3           | 21.66      | 20.49 |
|           |                | 836.5           | 21.60      | 20.56 |
|           |                | 824.7           | 21.69      | 20.53 |
| 3MHz      | 1 RB high      | 847.5           | 22.12      | 22.42 |
|           |                | 836.5           | 22.01      | 22.21 |
|           |                | 825.5           | 22.09      | 22.12 |
|           | 1 RB low       | 847.5           | 22.15      | 22.43 |
|           |                | 836.5           | 22.02      | 22.23 |
|           |                | 825.5           | 22.06      | 22.12 |
|           | 50% RB mid     | 847.5           | 21.84      | 20.88 |
|           |                | 836.5           | 21.67      | 20.81 |
|           |                | 825.5           | 21.71      | 20.85 |
|           | 100% RB        | 847.5           | 21.74      | 20.82 |
|           |                | 836.5           | 21.71      | 20.90 |
|           |                | 825.5           | 21.67      | 20.77 |
| 5MHz      | 1 RB high      | 846.5           | 22.11      | 21.79 |
|           |                | 836.5           | 22.20      | 22.16 |
|           |                | 826.5           | 22.06      | 21.74 |
|           | 1 RB low       | 846.5           | 22.07      | 21.84 |
|           |                | 836.5           | 22.13      | 22.25 |
|           |                | 826.5           | 21.98      | 21.74 |
|           | 50% RB mid     | 846.5           | 21.74      | 20.84 |
|           |                | 836.5           | 21.77      | 20.71 |
|           |                | 826.5           | 21.59      | 20.73 |
|           | 100% RB        | 846.5           | 21.80      | 20.99 |
|           |                | 836.5           | 21.60      | 20.99 |
|           |                | 826.5           | 21.67      | 20.98 |
| 10MHz     | 1 RB high      | 844.0           | 22.12      | 22.39 |
|           |                | 836.5           | 22.15      | 21.74 |
|           |                | 829.0           | 22.10      | 22.29 |

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
|           | 1 RB low       | 844.0           | 22.05      | 22.22 |
|           |                | 836.5           | 21.99      | 21.72 |
|           |                | 829.0           | 22.03      | 22.25 |
|           | 50% RB mid     | 844.0           | 21.58      | 20.76 |
|           |                | 836.5           | 21.71      | 20.97 |
|           |                | 829.0           | 21.64      | 20.76 |
|           | 100% RB        | 844.0           | 21.76      | 20.76 |
|           |                | 836.5           | 21.61      | 20.67 |
|           |                | 829.0           | 21.63      | 20.76 |

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

## LTE band 7

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
| 5MHz      | 1 RB high      | 2567.5          | 22.79      | 22.92 |
|           |                | 2535.0          | 22.60      | 22.80 |
|           |                | 2502.5          | 22.58      | 22.70 |
|           | 1 RB low       | 2567.5          | 22.77      | 22.85 |
|           |                | 2535.0          | 22.53      | 22.73 |
|           |                | 2502.5          | 22.51      | 22.68 |
|           | 50% RB mid     | 2567.5          | 22.27      | 21.37 |
|           |                | 2535.0          | 22.20      | 21.26 |
|           |                | 2502.5          | 22.20      | 21.14 |
|           | 100% RB        | 2567.5          | 22.26      | 21.62 |
|           |                | 2535.0          | 22.10      | 21.38 |
|           |                | 2502.5          | 22.23      | 21.27 |
| 10MHz     | 1 RB high      | 2565.0          | 22.76      | 23.04 |
|           |                | 2535.0          | 22.62      | 22.17 |
|           |                | 2505.0          | 22.53      | 22.18 |
|           | 1 RB low       | 2565.0          | 22.77      | 22.95 |
|           |                | 2535.0          | 22.52      | 22.04 |
|           |                | 2505.0          | 22.54      | 22.13 |
|           | 50% RB mid     | 2565.0          | 22.41      | 21.21 |
|           |                | 2535.0          | 22.21      | 21.46 |
|           |                | 2505.0          | 22.19      | 21.37 |
|           | 100% RB        | 2565.0          | 22.37      | 21.63 |
|           |                | 2535.0          | 22.26      | 21.13 |
|           |                | 2505.0          | 22.18      | 21.32 |
| 15MHz     | 1 RB high      | 2562.5          | 22.80      | 23.18 |
|           |                | 2535.0          | 22.59      | 22.96 |
|           |                | 2507.5          | 22.54      | 23.01 |
|           | 1 RB low       | 2562.5          | 22.54      | 23.01 |
|           |                | 2535.0          | 22.37      | 22.69 |
|           |                | 2507.5          | 22.48      | 22.86 |
|           | 50% RB mid     | 2562.5          | 22.42      | 21.48 |
|           |                | 2535.0          | 22.20      | 21.08 |
|           |                | 2507.5          | 22.08      | 21.14 |
|           | 100% RB        | 2562.5          | 22.42      | 21.31 |
|           |                | 2535.0          | 22.14      | 21.28 |
|           |                | 2507.5          | 22.01      | 21.23 |
| 20MHz     | 1 RB high      | 2560.0          | 22.91      | 23.09 |

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
|           |                | 2535.0          | 22.79      | 22.42 |
|           |                | 2510.0          | 22.67      | 22.06 |
|           |                |                 |            |       |
|           | 1 RB low       | 2560.0          | 22.60      | 22.94 |
|           |                | 2535.0          | 22.59      | 22.24 |
|           |                | 2510.0          | 22.49      | 22.07 |
|           | 50% RB mid     | 2560.0          | 22.29      | 21.49 |
|           |                | 2535.0          | 22.25      | 21.22 |
|           |                | 2510.0          | 22.10      | 21.18 |
|           | 100% RB        | 2560.0          | 22.31      | 21.41 |
|           |                | 2535.0          | 22.03      | 21.18 |
|           |                | 2510.0          | 22.02      | 21.18 |

Note: Expanded measurement uncertainty is U = 0.49 dB, k = 1.96

**LTE band 12**

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
| 1.4MHz    | 1 RB high      | 715.3           | 22.18      | 21.68 |
|           |                | 707.5           | 22.07      | 22.18 |
|           |                | 699.7           | 21.98      | 21.64 |
|           | 1 RB low       | 715.3           | 22.17      | 21.60 |
|           |                | 707.5           | 21.96      | 22.04 |
|           |                | 699.7           | 21.91      | 21.63 |
|           | 50% RB mid     | 715.3           | 22.29      | 22.00 |
|           |                | 707.5           | 22.16      | 21.89 |
|           |                | 699.7           | 22.13      | 21.94 |
|           | 100% RB        | 715.3           | 21.79      | 20.55 |
|           |                | 707.5           | 21.58      | 20.96 |
|           |                | 699.7           | 21.57      | 20.37 |
| 3MHz      | 1 RB high      | 714.5           | 22.22      | 22.33 |
|           |                | 707.5           | 22.01      | 22.09 |
|           |                | 700.5           | 22.04      | 21.71 |
|           | 1 RB low       | 714.5           | 22.26      | 22.39 |
|           |                | 707.5           | 22.00      | 22.00 |
|           |                | 700.5           | 22.02      | 21.71 |
|           | 50% RB mid     | 714.5           | 21.71      | 21.34 |
|           |                | 707.5           | 21.66      | 21.23 |
|           |                | 700.5           | 21.69      | 20.71 |
|           | 100% RB        | 714.5           | 21.67      | 21.38 |
|           |                | 707.5           | 21.60      | 21.21 |
|           |                | 700.5           | 21.66      | 20.73 |
| 5MHz      | 1 RB high      | 713.5           | 22.16      | 22.21 |
|           |                | 707.5           | 22.20      | 22.20 |
|           |                | 701.5           | 22.04      | 22.23 |
|           | 1 RB low       | 713.5           | 22.13      | 22.34 |
|           |                | 707.5           | 22.04      | 22.11 |
|           |                | 701.5           | 21.93      | 22.03 |
|           | 50% RB mid     | 713.5           | 21.70      | 21.36 |
|           |                | 707.5           | 21.67      | 21.15 |
|           |                | 701.5           | 21.76      | 21.14 |
|           | 100% RB        | 713.5           | 21.77      | 21.50 |
|           |                | 707.5           | 21.74      | 21.18 |
|           |                | 701.5           | 21.58      | 21.14 |
| 10MHz     | 1 RB high      | 711.0           | 22.31      | 21.75 |

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
|           |                | 707.5           | 22.18      | 22.29 |
|           |                | 704.0           | 22.20      | 22.15 |
|           |                |                 |            |       |
|           | 1 RB low       | 711.0           | 22.07      | 21.56 |
|           |                | 707.5           | 21.97      | 22.09 |
|           |                | 704.0           | 21.96      | 21.99 |
|           | 50% RB mid     | 711.0           | 21.71      | 20.75 |
|           |                | 707.5           | 21.75      | 21.25 |
|           |                | 704.0           | 21.79      | 21.15 |
|           | 100% RB        | 711.0           | 21.72      | 20.72 |
|           |                | 707.5           | 21.66      | 21.19 |
|           |                | 704.0           | 21.66      | 21.18 |

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

**LTE band 13**

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
| 5MHz      | 1 RB high      | 784.5           | 22.24      | 21.85 |
|           |                | 782.0           | 22.25      | 21.79 |
|           |                | 779.5           | 22.23      | 22.23 |
|           | 1 RB low       | 784.5           | 22.19      | 21.80 |
|           |                | 782.0           | 22.17      | 21.72 |
|           |                | 779.5           | 22.20      | 22.32 |
|           | 50% RB mid     | 784.5           | 21.82      | 20.81 |
|           |                | 782.0           | 21.80      | 21.03 |
|           |                | 779.5           | 21.77      | 20.97 |
|           | 100% RB        | 784.5           | 21.67      | 20.89 |
|           |                | 782.0           | 21.71      | 21.23 |
|           |                | 779.5           | 21.82      | 20.97 |
| 10MHz     | 1 RB high      | 782.0           | 22.17      | 22.21 |
|           | 1 RB low       | 782.0           | 22.28      | 22.11 |
|           | 50% RB mid     | 782.0           | 21.72      | 21.03 |
|           | 100% RB        | 782.0           | 21.89      | 21.12 |

Note: Expanded measurement uncertainty is U = 0.49 dB, k = 1.96

**LTE band 17**

| Bandwidth | RB size/offset   | Frequency (MHz) | Power(dBm) |       |
|-----------|------------------|-----------------|------------|-------|
|           |                  |                 | QPSK       | 16QAM |
| 5MHz      | 1RB-High (24)    | 713.5           | 22.12      | 22.24 |
|           |                  | 710.0           | 22.17      | 21.66 |
|           |                  | 706.5           | 22.13      | 21.99 |
|           | 1RB-Low (0)      | 713.5           | 22.11      | 22.28 |
|           |                  | 710.0           | 22.11      | 21.65 |
|           |                  | 706.5           | 22.08      | 22.18 |
|           | 12RB-Middle (6)  | 713.5           | 21.73      | 21.27 |
|           |                  | 710.0           | 21.75      | 20.75 |
|           |                  | 706.5           | 21.73      | 20.66 |
|           | 25RB (0)         | 713.5           | 21.64      | 21.49 |
|           |                  | 710.0           | 21.76      | 20.92 |
|           |                  | 706.5           | 21.61      | 20.85 |
| 10MHz     | 1RB-High (49)    | 711.0           | 22.23      | 22.27 |
|           |                  | 710.0           | 22.22      | 22.19 |
|           |                  | 709.0           | 22.19      | 21.73 |
|           | 1RB-Low (0)      | 711.0           | 22.00      | 22.09 |
|           |                  | 710.0           | 22.03      | 21.97 |
|           |                  | 709.0           | 22.04      | 21.62 |
|           | 25RB-Middle (12) | 711.0           | 21.77      | 20.73 |
|           |                  | 710.0           | 21.74      | 20.77 |
|           |                  | 709.0           | 21.62      | 21.31 |
|           | 50RB (0)         | 711.0           | 21.74      | 20.73 |
|           |                  | 710.0           | 21.77      | 20.83 |
|           |                  | 709.0           | 21.62      | 21.21 |

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

**LTE band 66**

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
| 1.4MHz    | 1 RB high      | 1779.3          | 22.28      | 22.03 |
|           |                | 1745.0          | 22.28      | 22.53 |
|           |                | 1710.7          | 22.31      | 22.56 |
|           | 1 RB low       | 1779.3          | 22.23      | 22.10 |
|           |                | 1745.0          | 22.30      | 22.40 |
|           |                | 1710.7          | 22.35      | 22.50 |
|           | 50% RB mid     | 1779.3          | 22.48      | 22.31 |
|           |                | 1745.0          | 22.37      | 22.14 |
|           |                | 1710.7          | 22.29      | 22.23 |
|           | 100% RB        | 1779.3          | 21.88      | 20.77 |
|           |                | 1745.0          | 21.89      | 20.88 |
|           |                | 1710.7          | 21.88      | 20.81 |
| 3MHz      | 1 RB high      | 1778.5          | 22.20      | 22.55 |
|           |                | 1745.0          | 22.31      | 22.14 |
|           |                | 1711.5          | 22.38      | 22.42 |
|           | 1 RB low       | 1778.5          | 22.26      | 22.58 |
|           |                | 1745.0          | 22.32      | 22.07 |
|           |                | 1711.5          | 22.41      | 22.49 |
|           | 50% RB mid     | 1778.5          | 21.88      | 21.13 |
|           |                | 1745.0          | 21.95      | 21.08 |
|           |                | 1711.5          | 21.83      | 21.12 |
|           | 100% RB        | 1778.5          | 21.98      | 21.09 |
|           |                | 1745.0          | 21.78      | 21.19 |
|           |                | 1711.5          | 21.78      | 21.09 |
| 5MHz      | 1 RB high      | 1777.5          | 22.26      | 22.50 |
|           |                | 1745.0          | 22.22      | 22.61 |
|           |                | 1712.5          | 22.21      | 22.47 |
|           | 1 RB low       | 1777.5          | 22.28      | 22.45 |
|           |                | 1745.0          | 22.22      | 22.52 |
|           |                | 1712.5          | 22.19      | 22.46 |
|           | 50% RB mid     | 1777.5          | 21.99      | 21.06 |
|           |                | 1745.0          | 21.73      | 20.95 |
|           |                | 1712.5          | 21.78      | 20.98 |
|           | 100% RB        | 1777.5          | 21.85      | 20.93 |
|           |                | 1745.0          | 21.95      | 21.17 |
|           |                | 1712.5          | 21.95      | 20.86 |
| 10MHz     | 1 RB high      | 1775.0          | 22.40      | 22.02 |

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) |       |
|-----------|----------------|-----------------|------------|-------|
|           |                |                 | QPSK       | 16QAM |
|           |                | 1745.0          | 22.35      | 22.44 |
|           |                | 1715.0          | 22.30      | 22.56 |
|           |                | 1775.0          | 22.37      | 21.99 |
|           | 1 RB low       | 1745.0          | 22.42      | 22.43 |
|           |                | 1715.0          | 22.36      | 22.44 |
|           |                | 1775.0          | 21.89      | 20.91 |
|           | 50% RB mid     | 1745.0          | 21.76      | 20.97 |
|           |                | 1715.0          | 21.90      | 21.15 |
|           |                | 1775.0          | 21.92      | 21.07 |
|           | 100% RB        | 1745.0          | 21.74      | 20.99 |
|           |                | 1715.0          | 21.78      | 20.90 |
|           |                | 1772.5          | 22.32      | 22.63 |
| 15MHz     | 1 RB high      | 1745.0          | 22.39      | 22.42 |
|           |                | 1717.5          | 22.23      | 22.41 |
|           |                | 1772.5          | 22.42      | 22.54 |
|           | 1 RB low       | 1745.0          | 22.38      | 22.42 |
|           |                | 1717.5          | 22.23      | 22.41 |
|           |                | 1772.5          | 21.93      | 21.09 |
|           | 50% RB mid     | 1745.0          | 21.90      | 20.89 |
|           |                | 1717.5          | 21.84      | 20.91 |
|           |                | 1772.5          | 21.83      | 21.14 |
|           | 100% RB        | 1745.0          | 21.81      | 21.06 |
|           |                | 1717.5          | 21.92      | 20.93 |
|           |                | 1770.0          | 22.20      | 22.50 |
| 20MHz     | 1 RB high      | 1745.0          | 22.15      | 22.44 |
|           |                | 1720.0          | 22.20      | 22.48 |
|           |                | 1770.0          | 22.24      | 22.35 |
|           | 1 RB low       | 1745.0          | 22.23      | 22.37 |
|           |                | 1720.0          | 22.22      | 22.54 |
|           |                | 1770.0          | 21.76      | 20.95 |
|           | 50% RB mid     | 1745.0          | 21.71      | 20.97 |
|           |                | 1720.0          | 21.79      | 20.85 |
|           |                | 1770.0          | 21.89      | 20.98 |
|           | 100% RB        | 1745.0          | 21.80      | 21.03 |
|           |                | 1720.0          | 21.75      | 20.92 |

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

### A.1.3 Radiated

#### A.1.3.1 Description

This is the test for the maximum radiated power from the EUT.

Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 27.50(d) specifies "Fixed, mobile, and portable (handheld) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP".

Rule Part 27.50(h)(2) specifies "Mobile stations are limited to 2.0 watts EIRP".

Rule Part 27.50(c) specifies "Portable stations (hand-held de-vices) are limited to 3 watts ERP".

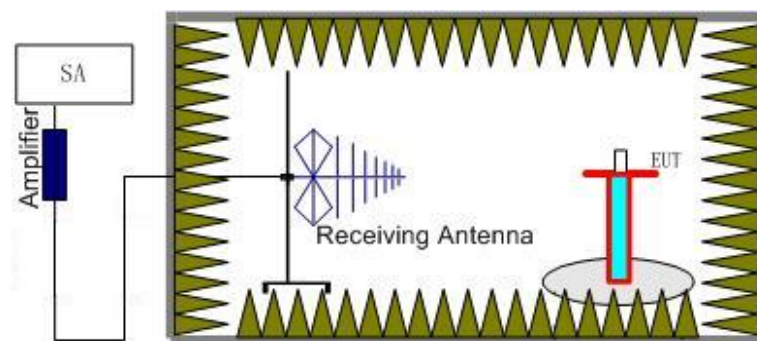
Rule Part 27.50(a)(3) specifies "For mobile and portable stations transmitting in the 2305–2315 MHz band or the 2350–2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth."

Rule Part 22.913(a) specifies "The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

Rule Part 90.542 specifies "Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP."

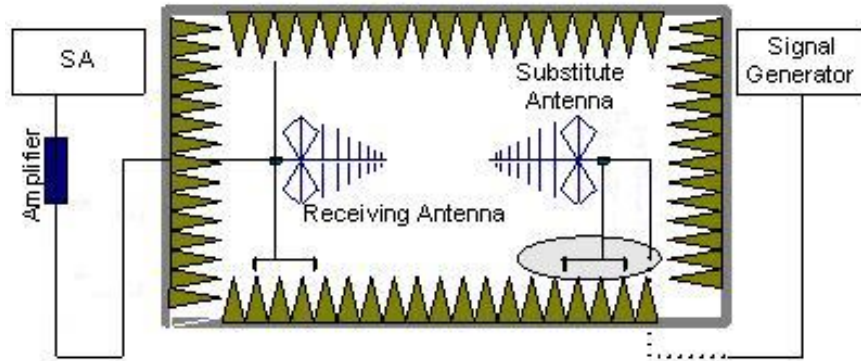
#### A.1.3.2 Method of Measurement

1. For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, EUT was placed on a 80 cm high non-conductive stand at a 3 meter test distance from the receive antenna. For radiated measurements performed at frequencies above 1 GHz, EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. Receiving antenna was placed on the antenna mast 3 meters from the EUT. For emission measurements. The receiving antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).

3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power ( $P_{Mea}$ ) is applied to the input of the substitution antenna and adjusts the level of the signal generator output until the value of the receiver reaches the previously recorded ( $P_r$ ). The power of signal source ( $P_{Mea}$ ) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. An amplifier should be connected to the Signal Source output port. And the cable should be connected between the amplifier and the substitution antenna.

The cable loss ( $P_{cl}$ ), the substitution Antenna Gain(dBi) ( $G_a$ ) and the amplifier Gain ( $P_{Ag}$ ) should be recorded after test.

The measurement results are obtained as described below:

$$\text{Power (EIRP)} = P_{Mea} - P_{Ag} - P_{cl} + G_a$$

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole,  $ERP = EIRP - 2.15dB$ .

### A.1.3.3 Measurement result

#### LTE Band 2- EIRP Part 24. 232(c)

Limits:  $\leq 33\text{dBm}$  (2W)

#### LTE Band 2\_1.4MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1850.70        | -15.20                 | -29.30                                     | 8.10                 | 22.20     | 33.00      | H            |
| 1880.00        | -15.14                 | -29.40                                     | 8.10                 | 22.36     | 33.00      | H            |
| 1909.30        | -14.91                 | -29.30                                     | 8.10                 | 22.49     | 33.00      | H            |

#### LTE Band 2\_3MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1851.50        | -15.41                 | -29.30                                     | 8.10                 | 21.99     | 33.00      | H            |
| 1880.00        | -15.32                 | -29.40                                     | 8.10                 | 22.18     | 33.00      | H            |
| 1908.50        | -15.16                 | -29.30                                     | 8.10                 | 22.24     | 33.00      | H            |

#### LTE Band 2\_5MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1852.50        | -15.55                 | -29.30                                     | 8.10                 | 21.85     | 33.00      | H            |
| 1880.00        | -15.44                 | -29.40                                     | 8.10                 | 22.06     | 33.00      | H            |
| 1907.50        | -15.32                 | -29.30                                     | 8.10                 | 22.08     | 33.00      | H            |

#### LTE Band 2\_10MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1855.00        | -15.43                 | -29.30                                     | 8.10                 | 21.97     | 33.00      | H            |
| 1880.00        | -15.40                 | -29.40                                     | 8.10                 | 22.10     | 33.00      | H            |
| 1905.00        | -15.12                 | -29.30                                     | 8.10                 | 22.28     | 33.00      | H            |

#### LTE Band 2\_15MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1857.50        | -15.44                 | -29.30                                     | 8.10                 | 21.96     | 33.00      | H            |
| 1880.00        | -15.45                 | -29.40                                     | 8.10                 | 22.05     | 33.00      | H            |
| 1902.50        | -15.30                 | -29.30                                     | 8.10                 | 22.10     | 33.00      | H            |

#### LTE Band 2\_20MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1860.00        | -15.50                 | -29.30                                     | 8.10                 | 21.90     | 33.00      | H            |
| 1880.00        | -15.55                 | -29.40                                     | 8.10                 | 21.95     | 33.00      | H            |
| 1900.00        | -15.26                 | -29.30                                     | 8.10                 | 22.14     | 33.00      | H            |

**LTE Band 2\_1.4MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1850.70        | -16.32                 | -29.30                                     | 8.10                 | 21.08     | 33.00      | H            |
| 1880.00        | -16.23                 | -29.40                                     | 8.10                 | 21.27     | 33.00      | H            |
| 1909.30        | -16.16                 | -29.30                                     | 8.10                 | 21.24     | 33.00      | H            |

**LTE Band 2\_3MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1851.50        | -16.40                 | -29.30                                     | 8.10                 | 21.00     | 33.00      | H            |
| 1880.00        | -16.44                 | -29.40                                     | 8.10                 | 21.06     | 33.00      | H            |
| 1908.50        | -16.34                 | -29.30                                     | 8.10                 | 21.06     | 33.00      | H            |

**LTE Band 2\_5MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1852.50        | -16.70                 | -29.30                                     | 8.10                 | 20.70     | 33.00      | H            |
| 1880.00        | -16.61                 | -29.40                                     | 8.10                 | 20.89     | 33.00      | H            |
| 1907.50        | -16.61                 | -29.30                                     | 8.10                 | 20.79     | 33.00      | H            |

**LTE Band 2\_10MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1855.00        | -16.57                 | -29.30                                     | 8.10                 | 20.83     | 33.00      | H            |
| 1880.00        | -16.53                 | -29.40                                     | 8.10                 | 20.97     | 33.00      | H            |
| 1905.00        | -16.26                 | -29.30                                     | 8.10                 | 21.14     | 33.00      | H            |

**LTE Band 2\_15MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1857.50        | -16.65                 | -29.30                                     | 8.10                 | 20.75     | 33.00      | H            |
| 1880.00        | -16.66                 | -29.40                                     | 8.10                 | 20.84     | 33.00      | H            |
| 1902.50        | -16.51                 | -29.30                                     | 8.10                 | 20.89     | 33.00      | H            |

**LTE Band 2\_20MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1860.00        | -16.69                 | -29.30                                     | 8.10                 | 20.71     | 33.00      | H            |
| 1880.00        | -16.80                 | -29.40                                     | 8.10                 | 20.70     | 33.00      | H            |
| 1900.00        | -16.46                 | -29.30                                     | 8.10                 | 20.94     | 33.00      | H            |

### LTE Band 4- EIRP Part 27.50(d)(4)

Limits: ≤30dBm (1W)

#### LTE Band 4\_1.4MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1710.70        | -16.10                 | -29.60                                     | 8.10                 | 21.60     | 30.00      | H            |
| 1732.50        | -15.66                 | -29.60                                     | 8.10                 | 22.04     | 30.00      | H            |
| 1754.30        | -16.18                 | -29.50                                     | 8.10                 | 21.42     | 30.00      | H            |

#### LTE Band 4\_3MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1711.50        | -16.31                 | -29.60                                     | 8.10                 | 21.39     | 30.00      | H            |
| 1732.50        | -15.84                 | -29.60                                     | 8.10                 | 21.86     | 30.00      | H            |
| 1753.50        | -16.43                 | -29.50                                     | 8.10                 | 21.17     | 30.00      | H            |

#### LTE Band 4\_5MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1712.50        | -16.45                 | -29.60                                     | 8.10                 | 21.25     | 30.00      | H            |
| 1732.50        | -15.96                 | -29.60                                     | 8.10                 | 21.74     | 30.00      | H            |
| 1752.50        | -16.59                 | -29.50                                     | 8.10                 | 21.01     | 30.00      | H            |

#### LTE Band 4\_10MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1715.00        | -16.53                 | -29.60                                     | 8.10                 | 21.17     | 30.00      | H            |
| 1732.50        | -16.12                 | -29.60                                     | 8.10                 | 21.58     | 30.00      | H            |
| 1750.00        | -16.69                 | -29.50                                     | 8.10                 | 20.91     | 30.00      | H            |

#### LTE Band 4\_15MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1717.50        | -16.64                 | -29.60                                     | 8.10                 | 21.06     | 30.00      | H            |
| 1732.50        | -16.27                 | -29.60                                     | 8.10                 | 21.43     | 30.00      | H            |
| 1747.50        | -16.77                 | -29.50                                     | 8.10                 | 20.83     | 30.00      | H            |

#### LTE Band 4\_20MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1720.00        | -16.80                 | -29.60                                     | 8.10                 | 20.90     | 30.00      | H            |
| 1732.50        | -16.37                 | -29.60                                     | 8.10                 | 21.33     | 30.00      | H            |
| 1745.00        | -16.93                 | -29.50                                     | 8.10                 | 20.67     | 30.00      | H            |

**LTE Band 4\_1.4MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1710.70        | -17.22                 | -29.60                                     | 8.10                 | 20.48     | 30.00      | H            |
| 1732.50        | -16.75                 | -29.60                                     | 8.10                 | 20.95     | 30.00      | H            |
| 1754.30        | -17.43                 | -29.50                                     | 8.10                 | 20.17     | 30.00      | H            |

**LTE Band 4\_3MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1711.50        | -17.30                 | -29.60                                     | 8.10                 | 20.40     | 30.00      | H            |
| 1732.50        | -16.96                 | -29.60                                     | 8.10                 | 20.74     | 30.00      | H            |
| 1753.50        | -17.61                 | -29.50                                     | 8.10                 | 19.99     | 30.00      | H            |

**LTE Band 4\_5MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1712.50        | -17.59                 | -29.60                                     | 8.10                 | 20.11     | 30.00      | H            |
| 1732.50        | -17.13                 | -29.60                                     | 8.10                 | 20.57     | 30.00      | H            |
| 1752.50        | -17.88                 | -29.50                                     | 8.10                 | 19.72     | 30.00      | H            |

**LTE Band 4\_10MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1715.00        | -17.66                 | -29.60                                     | 8.10                 | 20.04     | 30.00      | H            |
| 1732.50        | -17.25                 | -29.60                                     | 8.10                 | 20.45     | 30.00      | H            |
| 1750.00        | -17.83                 | -29.50                                     | 8.10                 | 19.77     | 30.00      | H            |

**LTE Band 4\_15MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1717.50        | -17.85                 | -29.60                                     | 8.10                 | 19.85     | 30.00      | H            |
| 1732.50        | -17.49                 | -29.60                                     | 8.10                 | 20.21     | 30.00      | H            |
| 1747.50        | -17.98                 | -29.50                                     | 8.10                 | 19.62     | 30.00      | H            |

**LTE Band 4\_20MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1720.00        | -17.99                 | -29.60                                     | 8.10                 | 19.71     | 30.00      | H            |
| 1732.50        | -17.63                 | -29.60                                     | 8.10                 | 20.07     | 30.00      | H            |
| 1745.00        | -18.13                 | -29.50                                     | 8.10                 | 19.47     | 30.00      | H            |

**LTE Band 5- ERP Part 22.913(a)**
**Limits:** ≤38.45dBm (7W)

**LTE Band 5\_1.4MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 824.70         | -8.91                  | -33.60                                        | -0.79                   | 2.15               | 21.74    | 38.45      | V            |
| 836.50         | -9.39                  | -33.50                                        | -0.74                   | 2.15               | 21.22    | 38.45      | V            |
| 848.30         | -8.76                  | -33.50                                        | -0.73                   | 2.15               | 21.86    | 38.45      | V            |

**LTE Band 5\_3MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 825.50         | -9.04                  | -33.60                                        | -0.84                   | 2.15               | 21.57    | 38.45      | V            |
| 836.50         | -9.57                  | -33.50                                        | -0.74                   | 2.15               | 21.04    | 38.45      | V            |
| 847.50         | -8.97                  | -33.50                                        | -0.73                   | 2.15               | 21.65    | 38.45      | V            |

**LTE Band 5\_5MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 826.50         | -9.12                  | -33.60                                        | -0.84                   | 2.15               | 21.49    | 38.45      | V            |
| 836.50         | -9.68                  | -33.50                                        | -0.74                   | 2.15               | 20.93    | 38.45      | V            |
| 846.50         | -9.07                  | -33.50                                        | -0.73                   | 2.15               | 21.55    | 38.45      | V            |

**LTE Band 5\_10MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 829.00         | -9.20                  | -33.60                                        | -0.84                   | 2.15               | 21.41    | 38.45      | V            |
| 836.50         | -9.75                  | -33.50                                        | -0.74                   | 2.15               | 20.86    | 38.45      | V            |
| 844.00         | -9.12                  | -33.50                                        | -0.78                   | 2.15               | 21.44    | 38.45      | V            |

**LTE Band 5\_1.4MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>ci</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 824.70         | -9.93                  | -33.60                                        | -0.79                   | 2.15               | 20.72    | 38.45      | V            |
| 836.50         | -10.41                 | -33.50                                        | -0.74                   | 2.15               | 20.21    | 38.45      | V            |
| 848.30         | -9.92                  | -33.50                                        | -0.73                   | 2.15               | 20.70    | 38.45      | V            |

**LTE Band 5\_3MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>ci</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 825.50         | -10.03                 | -33.60                                        | -0.84                   | 2.15               | 20.58    | 38.45      | V            |
| 836.50         | -10.59                 | -33.50                                        | -0.74                   | 2.15               | 20.02    | 38.45      | V            |
| 847.50         | -10.05                 | -33.50                                        | -0.73                   | 2.15               | 20.57    | 38.45      | V            |

**LTE Band 5\_5MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>ci</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 826.50         | -10.16                 | -33.60                                        | -0.84                   | 2.15               | 20.45    | 38.45      | V            |
| 836.50         | -10.76                 | -33.50                                        | -0.74                   | 2.15               | 19.86    | 38.45      | V            |
| 846.50         | -10.08                 | -33.50                                        | -0.73                   | 2.15               | 20.54    | 38.45      | V            |

**LTE Band 5\_10MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>ci</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 829.00         | -10.23                 | -33.60                                        | -0.84                   | 2.15               | 20.38    | 38.45      | V            |
| 836.50         | -10.79                 | -33.50                                        | -0.74                   | 2.15               | 19.83    | 38.45      | V            |
| 844.00         | -10.16                 | -33.50                                        | -0.78                   | 2.15               | 20.41    | 38.45      | V            |

### LTE Band 7- EIRP Part 27.50(h)(2)

Limits: ≤33 dBm (2W)

#### LTE Band 7\_5MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 2502.50        | -17.50                 | -28.70                                     | 10.70                | 21.90     | 33.00      | H            |
| 2535.00        | -17.26                 | -28.60                                     | 10.70                | 22.04     | 33.00      | H            |
| 2567.50        | -17.10                 | -28.60                                     | 10.70                | 22.20     | 33.00      | H            |

#### LTE Band 7\_10MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 2505.00        | -17.81                 | -28.70                                     | 10.70                | 21.59     | 33.00      | H            |
| 2535.00        | -17.48                 | -28.60                                     | 10.70                | 21.82     | 33.00      | H            |
| 2565.00        | -17.40                 | -28.60                                     | 10.70                | 21.90     | 33.00      | H            |

#### LTE Band 7\_15MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 2507.50        | -17.89                 | -28.70                                     | 10.70                | 21.51     | 33.00      | H            |
| 2535.00        | -17.67                 | -28.60                                     | 10.70                | 21.63     | 33.00      | H            |
| 2562.50        | -17.42                 | -28.60                                     | 10.70                | 21.88     | 33.00      | H            |

#### LTE Band 7\_20MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 2510.00        | -18.19                 | -28.70                                     | 10.70                | 21.21     | 33.00      | H            |
| 2535.00        | -17.82                 | -28.60                                     | 10.70                | 21.48     | 33.00      | H            |
| 2560.00        | -17.76                 | -28.60                                     | 10.70                | 21.54     | 33.00      | H            |

**LTE Band 7\_5MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>Cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 2502.50        | -18.57                 | -28.70                                     | 10.70                | 20.83     | 33.00      | H            |
| 2535.00        | -18.40                 | -28.60                                     | 10.70                | 20.90     | 33.00      | H            |
| 2567.50        | -18.01                 | -28.60                                     | 10.70                | 21.29     | 33.00      | H            |

**LTE Band 7\_10MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>Cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 2505.00        | -18.98                 | -28.70                                     | 10.70                | 20.42     | 33.00      | H            |
| 2535.00        | -18.71                 | -28.60                                     | 10.70                | 20.59     | 33.00      | H            |
| 2565.00        | -18.68                 | -28.60                                     | 10.70                | 20.62     | 33.00      | H            |

**LTE Band 7\_15MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>Cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 2507.50        | -18.63                 | -28.70                                     | 10.70                | 20.77     | 33.00      | H            |
| 2535.00        | -18.56                 | -28.60                                     | 10.70                | 20.74     | 33.00      | H            |
| 2562.50        | -18.40                 | -28.60                                     | 10.70                | 20.90     | 33.00      | H            |

**LTE Band 7\_20MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>Cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 2510.00        | -19.16                 | -28.70                                     | 10.70                | 20.24     | 33.00      | H            |
| 2535.00        | -18.87                 | -28.60                                     | 10.70                | 20.43     | 33.00      | H            |
| 2560.00        | -18.73                 | -28.60                                     | 10.70                | 20.57     | 33.00      | H            |

**LTE Band 12 - ERP Part 27.50(c)(10)**
**Limits:** ≤34.77dBm (3W)

**LTE Band 12\_1.4MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 699.70         | -10.98                 | -34.80                                        | -0.93                   | 2.15               | 20.74    | 34.77      | V            |
| 707.50         | -10.71                 | -34.70                                        | -0.91                   | 2.15               | 20.93    | 34.77      | V            |
| 715.30         | -11.17                 | -34.70                                        | -0.68                   | 2.15               | 20.69    | 34.77      | V            |

**LTE Band 12\_3MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 700.50         | -11.11                 | -34.80                                        | -0.97                   | 2.15               | 20.57    | 34.77      | V            |
| 707.50         | -10.89                 | -34.70                                        | -0.91                   | 2.15               | 20.76    | 34.77      | V            |
| 714.50         | -11.42                 | -34.70                                        | -0.64                   | 2.15               | 20.48    | 34.77      | V            |

**LTE Band 12\_5MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 701.50         | -11.19                 | -34.80                                        | -0.97                   | 2.15               | 20.49    | 34.77      | V            |
| 707.50         | -11.00                 | -34.70                                        | -0.91                   | 2.15               | 20.64    | 34.77      | V            |
| 713.50         | -11.52                 | -34.70                                        | -0.64                   | 2.15               | 20.38    | 34.77      | V            |

**LTE Band 12\_10MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 704.00         | -11.27                 | -34.80                                        | -0.97                   | 2.15               | 20.41    | 34.77      | V            |
| 707.50         | -11.07                 | -34.70                                        | -0.91                   | 2.15               | 20.57    | 34.77      | V            |
| 711.00         | -11.62                 | -34.70                                        | -0.64                   | 2.15               | 20.28    | 34.77      | V            |

**LTE Band 12\_1.4MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>ci</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 699.70         | -12.00                 | -34.80                                        | -0.93                   | 2.15               | 19.72    | 34.77      | V            |
| 707.50         | -11.72                 | -34.70                                        | -0.91                   | 2.15               | 19.92    | 34.77      | V            |
| 715.30         | -12.33                 | -34.70                                        | -0.68                   | 2.15               | 19.54    | 34.77      | V            |

**LTE Band 12\_3MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>ci</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 700.50         | -12.10                 | -34.80                                        | -0.97                   | 2.15               | 19.58    | 34.77      | V            |
| 707.50         | -11.91                 | -34.70                                        | -0.91                   | 2.15               | 19.73    | 34.77      | V            |
| 714.50         | -12.50                 | -34.70                                        | -0.64                   | 2.15               | 19.41    | 34.77      | V            |

**LTE Band 12\_5MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>ci</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 701.50         | -12.24                 | -34.80                                        | -0.97                   | 2.15               | 19.45    | 34.77      | V            |
| 707.50         | -12.07                 | -34.70                                        | -0.91                   | 2.15               | 19.57    | 34.77      | V            |
| 713.50         | -12.53                 | -34.70                                        | -0.64                   | 2.15               | 19.38    | 34.77      | V            |

**LTE Band 12\_10MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>ci</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 704.00         | -12.31                 | -34.80                                        | -0.97                   | 2.15               | 19.38    | 34.77      | V            |
| 707.50         | -12.10                 | -34.70                                        | -0.91                   | 2.15               | 19.54    | 34.77      | V            |
| 711.00         | -12.66                 | -34.70                                        | -0.64                   | 2.15               | 19.25    | 34.77      | V            |

**LTE Band 13- ERP Part 27.50(b)(10)**
**Limits:** ≤34.77dBm (3W)

**LTE Band 13\_5MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 779.50         | -10.19                 | -34.00                                        | -0.08                   | 2.15               | 21.58    | 34.77      | V            |
| 782.00         | -10.53                 | -34.00                                        | -0.13                   | 2.15               | 21.19    | 34.77      | V            |
| 784.50         | -10.75                 | -34.00                                        | -0.13                   | 2.15               | 20.97    | 34.77      | V            |

**LTE Band 13\_10MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 782.00         | -10.94                 | -34.00                                        | -0.13                   | 2.15               | 20.78    | 34.77      | V            |

**LTE Band 13\_5MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 779.50         | -11.28                 | -34.00                                        | -0.08                   | 2.15               | 20.49    | 34.77      | V            |
| 782.00         | -11.72                 | -34.00                                        | -0.13                   | 2.15               | 20.00    | 34.77      | V            |
| 784.50         | -11.89                 | -34.00                                        | -0.13                   | 2.15               | 19.83    | 34.77      | V            |

**LTE Band 13\_10MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 782.00         | -11.81                 | -34.00                                        | -0.13                   | 2.15               | 19.91    | 34.77      | V            |

**LTE Band 17- ERP 27.50(c)(10)**
**Limits:** ≤34.77dBm (3W)

**LTE Band 17\_5MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 706.50         | -10.47                 | -34.70                                        | -0.91                   | 2.15               | 21.17    | 34.77      | V            |
| 710.00         | -10.47                 | -34.70                                        | -0.64                   | 2.15               | 21.44    | 34.77      | V            |
| 713.50         | -10.69                 | -34.70                                        | -0.64                   | 2.15               | 21.22    | 34.77      | V            |

**LTE Band 17\_10MHz\_QPSK**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 709.00         | -10.64                 | -34.70                                        | -0.91                   | 2.15               | 21.00    | 34.77      | V            |
| 710.00         | -10.64                 | -34.70                                        | -0.64                   | 2.15               | 21.26    | 34.77      | V            |
| 711.00         | -10.89                 | -34.70                                        | -0.64                   | 2.15               | 21.01    | 34.77      | V            |

**LTE Band 17\_5MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 706.50         | -11.49                 | -34.70                                        | -0.91                   | 2.15               | 20.15    | 34.77      | V            |
| 710.00         | -11.48                 | -34.70                                        | -0.64                   | 2.15               | 20.43    | 34.77      | V            |
| 713.50         | -11.84                 | -34.70                                        | -0.64                   | 2.15               | 20.07    | 34.77      | V            |

**LTE Band 17\_10MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+<br>P <sub>Ag</sub> (dB) | Ga Antenna<br>Gain(dBi) | Correction<br>(dB) | ERP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|-----------------------------------------------|-------------------------|--------------------|----------|------------|--------------|
| 709.00         | -11.63                 | -34.70                                        | -0.91                   | 2.15               | 20.01    | 34.77      | V            |
| 710.00         | -11.67                 | -34.70                                        | -0.64                   | 2.15               | 20.24    | 34.77      | V            |
| 711.00         | -11.97                 | -34.70                                        | -0.64                   | 2.15               | 19.93    | 34.77      | V            |

### LTE Band 66- EIRP Part 27.50(d)(4)

Limits: ≤30dBm (1W)

#### LTE Band 66\_1.4MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1710.70        | -16.40                 | -29.60                                     | 8.10                 | 21.30     | 30.00      | H            |
| 1745.00        | -15.86                 | -29.50                                     | 8.10                 | 21.74     | 30.00      | H            |
| 1779.30        | -15.64                 | -29.50                                     | 8.10                 | 21.96     | 30.00      | H            |

#### LTE Band 66\_3MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1711.50        | -16.62                 | -29.60                                     | 8.10                 | 21.08     | 30.00      | H            |
| 1745.00        | -16.04                 | -29.50                                     | 8.10                 | 21.56     | 30.00      | H            |
| 1778.50        | -15.88                 | -29.50                                     | 8.10                 | 21.71     | 30.00      | H            |

#### LTE Band 66\_5MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1712.50        | -16.75                 | -29.60                                     | 8.10                 | 20.95     | 30.00      | H            |
| 1745.00        | -16.16                 | -29.50                                     | 8.10                 | 21.44     | 30.00      | H            |
| 1777.50        | -16.05                 | -29.50                                     | 8.10                 | 21.55     | 30.00      | H            |

#### LTE Band 66\_10MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1715.00        | -16.84                 | -29.60                                     | 8.10                 | 20.86     | 30.00      | H            |
| 1745.00        | -16.32                 | -29.50                                     | 8.10                 | 21.28     | 30.00      | H            |
| 1775.00        | -16.15                 | -29.50                                     | 8.10                 | 21.45     | 30.00      | H            |

#### LTE Band 66\_15MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1717.50        | -16.94                 | -29.60                                     | 8.10                 | 20.76     | 30.00      | H            |
| 1745.00        | -16.48                 | -29.50                                     | 8.10                 | 21.12     | 30.00      | H            |
| 1772.53        | -16.22                 | -29.50                                     | 8.10                 | 21.38     | 30.00      | H            |

#### LTE Band 66\_20MHz\_QPSK

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1720.00        | -17.10                 | -29.60                                     | 8.10                 | 20.60     | 30.00      | H            |
| 1745.00        | -16.58                 | -29.50                                     | 8.10                 | 21.02     | 30.00      | H            |
| 1770.00        | -16.39                 | -29.50                                     | 8.10                 | 21.21     | 30.00      | H            |

**LTE Band 66\_1.4MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>Cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1710.70        | -17.42                 | -29.60                                     | 8.10                 | 20.28     | 30.00      | H            |
| 1745.00        | -16.96                 | -29.50                                     | 8.10                 | 20.64     | 30.00      | H            |
| 1779.30        | -16.69                 | -29.50                                     | 8.10                 | 20.91     | 30.00      | H            |

**LTE Band 66\_3MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>Cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1711.50        | -17.50                 | -29.60                                     | 8.10                 | 20.20     | 30.00      | H            |
| 1745.00        | -17.06                 | -29.50                                     | 8.10                 | 20.54     | 30.00      | H            |
| 1778.50        | -16.96                 | -29.50                                     | 8.10                 | 20.64     | 30.00      | H            |

**LTE Band 66\_5MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>Cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1712.50        | -17.80                 | -29.60                                     | 8.10                 | 19.90     | 30.00      | H            |
| 1745.00        | -17.24                 | -29.50                                     | 8.10                 | 20.36     | 30.00      | H            |
| 1777.50        | -17.13                 | -29.50                                     | 8.10                 | 20.47     | 30.00      | H            |

**LTE Band 66\_10MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>Cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1715.00        | -17.87                 | -29.60                                     | 8.10                 | 19.83     | 30.00      | H            |
| 1745.00        | -17.36                 | -29.50                                     | 8.10                 | 20.24     | 30.00      | H            |
| 1775.00        | -17.18                 | -29.50                                     | 8.10                 | 20.42     | 30.00      | H            |

**LTE Band 66\_15MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>Cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1717.50        | -17.95                 | -29.60                                     | 8.10                 | 19.75     | 30.00      | H            |
| 1745.00        | -17.49                 | -29.50                                     | 8.10                 | 20.11     | 30.00      | H            |
| 1772.53        | -17.24                 | -29.50                                     | 8.10                 | 20.36     | 30.00      | H            |

**LTE Band 66\_20MHz\_16QAM**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | P <sub>Cl</sub> (dB)+ P <sub>Ag</sub> (dB) | Ga Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Polarization |
|----------------|------------------------|--------------------------------------------|----------------------|-----------|------------|--------------|
| 1720.00        | -18.19                 | -29.60                                     | 8.10                 | 19.51     | 30.00      | H            |
| 1745.00        | -17.63                 | -29.50                                     | 8.10                 | 19.97     | 30.00      | H            |
| 1770.00        | -17.48                 | -29.50                                     | 8.10                 | 20.12     | 30.00      | H            |

**ANALYZER SETTINGS:**

RBW = VBW = 8MHz for occupied bandwidths equal to or less than 5MHz.

RBW = VBW = 20MHz for occupied bandwidths equal to or greater than 10MHz.

Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.82dB(30MHz-3GHz)/3.06dB(3GHz-18GHz)/2.40dB(18GHz-40GHz), k = 2

**Note: Both of Vertical and Horizontal polarizations are evaluated, but only the worst case is recorded in this report.**

## A.2 FIELD STRENGTH OF SPURIOUS RADIATION

### Reference

FCC: CFR 2.1053, 22.917, 24.238, 27.53.

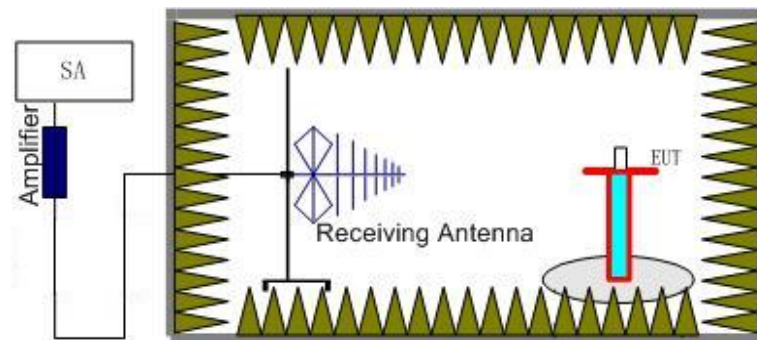
#### A.2.1 Measurement Method

This measurement is carried out in fully-anechoic chamber FAC-3.

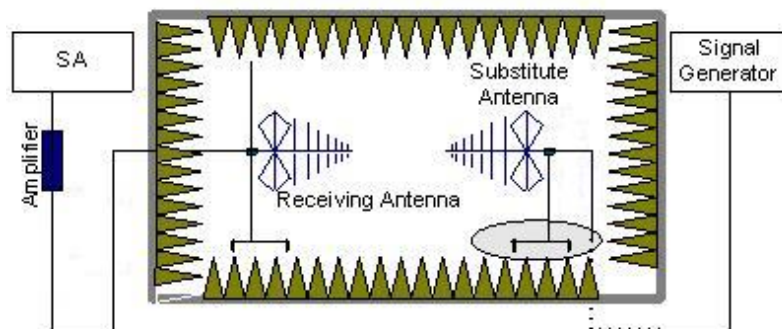
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz as outlined in Part 22.917, 24.238 and 27.53(h). The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the all LTE Bands

**The procedure of radiated spurious emissions is as follows:**

1. For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, EUT was placed on a 80 cm high non-conductive stand at a 3 meter test distance from the receive antenna. For radiated measurements performed at frequencies above 1 GHz, EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. Receiving antenna was placed on the antenna mast 3 meters from the EUT. For emission measurements. The receiving antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, an substitution antenna for the frequency band of interest is placed at the

reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power ( $P_{Mea}$ ) is applied to the input of the substitution antenna and adjusts the level of the signal generator output until the value of the receiver reaches the previously recorded ( $P_r$ ). The power of signal source ( $P_{Mea}$ ) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss ( $P_{pl}$ ) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain(dBi) ( $G_a$ ) should be recorded after test.

An amplifier should be connected in for the test.

The Path loss ( $P_{pl}$ ) is the summation of the cable loss and the gain of the amplifier.

The measurement results are obtained as described below:

$$\text{Power (EIRP)} = P_{Mea} - P_{pl} + G_a$$

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit: dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole,  $ERP = EIRP - 2.15\text{dB}$ .

#### **A.2.2 Measurement Results**

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the test LTE Bands. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the test LTE Bands. into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

Only worst case result is given below.

**LTE Band 2, 1.4MHz, QPSK, Channel 18607**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16972.50       | -45.04                 | 2.90      | 16.50        | -31.44         | -13.00      | H            |
| 17132.50       | -43.18                 | 2.90      | 14.50        | -31.58         | -13.00      | H            |
| 17268.50       | -41.83                 | 3.20      | 14.50        | -30.53         | -13.00      | H            |
| 17517.50       | -39.15                 | 2.90      | 12.80        | -29.25         | -13.00      | H            |
| 17593.00       | -39.36                 | 3.30      | 12.80        | -29.86         | -13.00      | H            |
| 17752.50       | -39.64                 | 3.60      | 12.80        | -30.44         | -13.00      | H            |

**LTE Band 2, 1.4MHz, QPSK, Channel 18900**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16991.00       | -44.76                 | 2.90      | 16.50        | -31.16         | -13.00      | H            |
| 17141.50       | -42.54                 | 2.90      | 14.50        | -30.94         | -13.00      | H            |
| 17345.00       | -42.62                 | 3.20      | 14.50        | -31.32         | -13.00      | H            |
| 17522.50       | -38.83                 | 2.90      | 12.80        | -28.93         | -13.00      | H            |
| 17526.50       | -38.88                 | 2.90      | 12.80        | -28.98         | -13.00      | H            |
| 17823.50       | -39.04                 | 3.60      | 12.80        | -29.84         | -13.00      | H            |

**LTE Band 2, 1.4MHz, QPSK, Channel 19193**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16939.50       | -44.47                 | 2.90      | 16.50        | -30.87         | -13.00      | H            |
| 17201.50       | -43.68                 | 2.90      | 14.50        | -32.08         | -13.00      | H            |
| 17243.00       | -43.42                 | 3.20      | 14.50        | -32.12         | -13.00      | H            |
| 17524.00       | -40.12                 | 2.90      | 12.80        | -30.22         | -13.00      | H            |
| 17589.50       | -39.23                 | 3.30      | 12.80        | -29.73         | -13.00      | H            |
| 17784.00       | -39.54                 | 3.60      | 12.80        | -30.34         | -13.00      | H            |

**LTE Band 2, 1.4MHz, 16QAM, Channel 18607**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16979.00       | -44.62                 | 2.90      | 16.50        | -31.02         | -13.00      | H            |
| 17102.00       | -43.00                 | 2.90      | 14.50        | -31.40         | -13.00      | H            |
| 17304.00       | -42.03                 | 3.20      | 14.50        | -30.73         | -13.00      | H            |
| 17461.50       | -41.66                 | 2.90      | 14.50        | -30.06         | -13.00      | H            |
| 17582.00       | -39.33                 | 3.30      | 12.80        | -29.83         | -13.00      | H            |
| 17761.00       | -39.62                 | 3.60      | 12.80        | -30.42         | -13.00      | H            |

**LTE Band 2, 1.4MHz, 16QAM, Channel 18900**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16985.00       | -44.32                 | 2.90      | 16.50        | -30.72         | -13.00      | H            |
| 17172.00       | -43.07                 | 2.90      | 14.50        | -31.47         | -13.00      | H            |
| 17254.00       | -42.62                 | 3.20      | 14.50        | -31.32         | -13.00      | H            |
| 17477.00       | -41.26                 | 2.90      | 14.50        | -29.66         | -13.00      | H            |
| 17566.50       | -39.49                 | 3.30      | 12.80        | -29.99         | -13.00      | H            |
| 17832.50       | -39.74                 | 3.60      | 12.80        | -30.54         | -13.00      | H            |

**LTE Band 2, 1.4MHz, 16QAM, Channel 19193**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 17006.50       | -42.22                 | 2.90      | 14.50        | -30.62         | -13.00      | H            |
| 17205.00       | -42.74                 | 2.90      | 14.50        | -31.14         | -13.00      | H            |
| 17369.00       | -42.69                 | 3.20      | 14.50        | -31.39         | -13.00      | H            |
| 17504.50       | -39.87                 | 2.90      | 12.80        | -29.97         | -13.00      | H            |
| 17585.00       | -39.20                 | 3.30      | 12.80        | -29.70         | -13.00      | H            |
| 17836.00       | -39.35                 | 3.60      | 12.80        | -30.15         | -13.00      | H            |

**LTE Band 4, 1.4MHz, QPSK, Channel 19957**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16992.00       | -44.21                 | 2.90      | 16.50        | -30.61         | -13.00      | H            |
| 17197.00       | -43.25                 | 2.90      | 14.50        | -31.65         | -13.00      | H            |
| 17261.50       | -42.54                 | 3.20      | 14.50        | -31.24         | -13.00      | H            |
| 17454.00       | -41.06                 | 2.90      | 14.50        | -29.46         | -13.00      | H            |
| 17597.50       | -38.92                 | 3.30      | 12.80        | -29.42         | -13.00      | H            |
| 17823.50       | -39.16                 | 3.60      | 12.80        | -29.96         | -13.00      | H            |

**LTE Band 4, 1.4MHz, QPSK, Channel 20175**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16935.50       | -45.02                 | 2.90      | 16.50        | -31.42         | -13.00      | H            |
| 17159.50       | -43.36                 | 2.90      | 14.50        | -31.76         | -13.00      | H            |
| 17287.00       | -42.55                 | 3.20      | 14.50        | -31.25         | -13.00      | H            |
| 17447.50       | -41.55                 | 2.90      | 14.50        | -29.95         | -13.00      | H            |
| 17619.00       | -38.99                 | 3.30      | 12.80        | -29.49         | -13.00      | H            |
| 17768.50       | -39.70                 | 3.60      | 12.80        | -30.50         | -13.00      | H            |

**LTE Band 4, 1.4MHz, QPSK, Channel 20393**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16991.00       | -43.55                 | 2.90      | 16.50        | -29.95         | -13.00      | H            |
| 17134.00       | -43.01                 | 2.90      | 14.50        | -31.41         | -13.00      | H            |
| 17329.00       | -42.04                 | 3.20      | 14.50        | -30.74         | -13.00      | H            |
| 17510.00       | -39.99                 | 2.90      | 12.80        | -30.09         | -13.00      | H            |
| 17620.00       | -38.84                 | 3.30      | 12.80        | -29.34         | -13.00      | H            |
| 17820.00       | -39.30                 | 3.60      | 12.80        | -30.10         | -13.00      | H            |

**LTE Band 4, 1.4MHz, 16QAM, Channel 19957**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16963.50       | -44.70                 | 2.90      | 16.50        | -31.10         | -13.00      | H            |
| 17123.00       | -42.56                 | 2.90      | 14.50        | -30.96         | -13.00      | H            |
| 17282.50       | -41.77                 | 3.20      | 14.50        | -30.47         | -13.00      | H            |
| 17521.50       | -39.15                 | 2.90      | 12.80        | -29.25         | -13.00      | H            |
| 17599.50       | -38.63                 | 3.30      | 12.80        | -29.13         | -13.00      | H            |
| 17772.50       | -39.80                 | 3.60      | 12.80        | -30.60         | -13.00      | H            |

**LTE Band 4, 1.4MHz, 16QAM, Channel 20175**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16877.00       | -45.12                 | 2.90      | 16.50        | -31.52         | -13.00      | H            |
| 16991.00       | -44.10                 | 2.90      | 16.50        | -30.50         | -13.00      | H            |
| 17271.00       | -42.96                 | 3.20      | 14.50        | -31.66         | -13.00      | H            |
| 17434.50       | -40.94                 | 2.90      | 14.50        | -29.34         | -13.00      | H            |
| 17578.00       | -39.47                 | 3.30      | 12.80        | -29.97         | -13.00      | H            |
| 17838.50       | -39.58                 | 3.60      | 12.80        | -30.38         | -13.00      | H            |

**LTE Band 4, 1.4MHz, 16QAM, Channel 20393**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16939.00       | -44.07                 | 2.90      | 16.50        | -30.47         | -13.00      | H            |
| 17180.50       | -43.71                 | 2.90      | 14.50        | -32.11         | -13.00      | H            |
| 17247.00       | -42.53                 | 3.20      | 14.50        | -31.23         | -13.00      | H            |
| 17486.00       | -41.22                 | 2.90      | 14.50        | -29.62         | -13.00      | H            |
| 17572.00       | -38.10                 | 3.30      | 12.80        | -28.60         | -13.00      | H            |
| 17778.00       | -40.07                 | 3.60      | 12.80        | -30.87         | -13.00      | H            |

**LTE Band 5, 1.4MHz, QPSK, Channel 20407**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 8742.75        | -52.46                 | 2.00      | 12.00        | -44.61        | -13.00      | H            |
| 9148.00        | -51.82                 | 2.10      | 11.60        | -44.47        | -13.00      | H            |
| 9225.00        | -51.52                 | 2.10      | 11.60        | -44.17        | -13.00      | H            |
| 9296.50        | -51.00                 | 2.00      | 11.60        | -43.55        | -13.00      | H            |
| 9418.75        | -51.72                 | 2.10      | 11.60        | -44.37        | -13.00      | H            |
| 9473.00        | -50.87                 | 2.10      | 11.60        | -43.52        | -13.00      | V            |

**LTE Band 5, 1.4MHz, QPSK, Channel 20525**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 9091.25        | -51.63                 | 2.20      | 11.60        | -44.38        | -13.00      | H            |
| 9104.75        | -51.31                 | 2.20      | 11.60        | -44.06        | -13.00      | H            |
| 9223.50        | -51.49                 | 2.10      | 11.60        | -44.14        | -13.00      | H            |
| 9296.00        | -50.28                 | 2.00      | 11.60        | -42.83        | -13.00      | H            |
| 9426.25        | -51.85                 | 2.10      | 11.60        | -44.50        | -13.00      | H            |
| 9477.75        | -51.85                 | 2.10      | 11.60        | -44.50        | -13.00      | V            |

**LTE Band 5, 1.4MHz, QPSK, Channel 20643**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 1695.42        | -46.31                 | 0.80      | 8.10         | -41.16        | -13.00      | H            |
| 1695.83        | -47.90                 | 0.80      | 8.10         | -42.75        | -13.00      | H            |
| 9098.50        | -51.65                 | 2.20      | 11.60        | -44.40        | -13.00      | H            |
| 9146.25        | -51.71                 | 2.10      | 11.60        | -44.36        | -13.00      | H            |
| 9224.50        | -50.33                 | 2.10      | 11.60        | -42.98        | -13.00      | H            |
| 9302.25        | -51.01                 | 2.00      | 11.60        | -43.56        | -13.00      | H            |

**LTE Band 5, 1.4MHz, 16QAM, Channel 20407**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 9089.25        | -51.99                 | 2.20      | 11.60        | -44.74        | -13.00      | H            |
| 9100.75        | -51.59                 | 2.20      | 11.60        | -44.34        | -13.00      | H            |
| 9223.00        | -51.00                 | 2.10      | 11.60        | -43.65        | -13.00      | H            |
| 9299.25        | -50.40                 | 2.00      | 11.60        | -42.95        | -13.00      | H            |
| 9422.75        | -51.09                 | 2.10      | 11.60        | -43.74        | -13.00      | H            |
| 9476.25        | -50.78                 | 2.10      | 11.60        | -43.43        | -13.00      | V            |

**LTE Band 5, 1.4MHz, 16QAM, Channel 20525**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 9098.25        | -51.85                 | 2.20      | 11.60        | -44.60        | -13.00      | H            |
| 9103.50        | -51.76                 | 2.20      | 11.60        | -44.51        | -13.00      | H            |
| 9226.25        | -51.32                 | 2.10      | 11.60        | -43.97        | -13.00      | H            |
| 9298.25        | -51.35                 | 2.00      | 11.60        | -43.90        | -13.00      | H            |
| 9415.25        | -52.00                 | 2.10      | 11.60        | -44.65        | -13.00      | H            |
| 9471.75        | -51.20                 | 2.10      | 11.60        | -43.85        | -13.00      | V            |

**LTE Band 5, 1.4MHz, 16QAM, Channel 20643**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 1695.00        | -48.14                 | 0.80      | 8.10         | -42.99        | -13.00      | H            |
| 1695.83        | -47.02                 | 0.80      | 8.10         | -41.87        | -13.00      | H            |
| 9104.75        | -51.42                 | 2.20      | 11.60        | -44.17        | -13.00      | H            |
| 9221.00        | -51.52                 | 2.10      | 11.60        | -44.17        | -13.00      | H            |
| 9289.75        | -50.66                 | 2.00      | 11.60        | -43.21        | -13.00      | H            |
| 9474.00        | -51.18                 | 2.10      | 11.60        | -43.83        | -13.00      | V            |

**LTE Band 7, 5MHz, QPSK, Channel 20775**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16978.50       | -54.70                 | 2.90      | 16.50        | -41.10         | -25.00      | H            |
| 17112.50       | -53.46                 | 2.90      | 14.50        | -41.86         | -25.00      | H            |
| 17279.50       | -52.68                 | 3.20      | 14.50        | -41.38         | -25.00      | H            |
| 17519.50       | -49.07                 | 2.90      | 12.80        | -39.17         | -25.00      | H            |
| 17593.50       | -49.06                 | 3.30      | 12.80        | -39.56         | -25.00      | H            |
| 17832.50       | -49.24                 | 3.60      | 12.80        | -40.04         | -25.00      | H            |

**LTE Band 7, 5MHz, QPSK, Channel 21100**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16982.00       | -54.54                 | 2.90      | 16.50        | -40.94         | -25.00      | H            |
| 17185.50       | -53.57                 | 2.90      | 14.50        | -41.97         | -25.00      | H            |
| 17366.00       | -52.66                 | 3.20      | 14.50        | -41.36         | -25.00      | H            |
| 17519.50       | -49.54                 | 2.90      | 12.80        | -39.64         | -25.00      | H            |
| 17624.50       | -49.25                 | 3.30      | 12.80        | -39.75         | -25.00      | H            |
| 17838.50       | -49.50                 | 3.60      | 12.80        | -40.30         | -25.00      | H            |

**LTE Band 7, 5MHz, QPSK, Channel 21425**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16987.00       | -54.72                 | 2.90      | 16.50        | -41.12         | -25.00      | H            |
| 17214.00       | -53.15                 | 2.90      | 14.50        | -41.55         | -25.00      | H            |
| 17273.00       | -52.32                 | 3.20      | 14.50        | -41.02         | -25.00      | H            |
| 17450.00       | -51.45                 | 2.90      | 14.50        | -39.85         | -25.00      | H            |
| 17526.00       | -49.72                 | 2.90      | 12.80        | -39.82         | -25.00      | H            |
| 17837.00       | -49.48                 | 3.60      | 12.80        | -40.28         | -25.00      | H            |

**LTE Band 7, 5MHz, 16QAM, Channel 20775**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16995.50       | -54.68                 | 2.90      | 16.50        | -41.08         | -25.00      | H            |
| 17214.00       | -53.42                 | 2.90      | 14.50        | -41.82         | -25.00      | H            |
| 17368.00       | -52.42                 | 3.20      | 14.50        | -41.12         | -25.00      | H            |
| 17515.50       | -49.67                 | 2.90      | 12.80        | -39.77         | -25.00      | H            |
| 17573.00       | -49.16                 | 3.30      | 12.80        | -39.66         | -25.00      | H            |
| 17835.50       | -49.30                 | 3.60      | 12.80        | -40.10         | -25.00      | H            |

**LTE Band 7, 5MHz, 16QAM, Channel 21100**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16962.00       | -54.61                 | 2.90      | 16.50        | -41.01         | -25.00      | H            |
| 17183.00       | -52.86                 | 2.90      | 14.50        | -41.26         | -25.00      | H            |
| 17366.50       | -52.63                 | 3.20      | 14.50        | -41.33         | -25.00      | H            |
| 17525.00       | -49.61                 | 2.90      | 12.80        | -39.71         | -25.00      | H            |
| 17619.50       | -49.16                 | 3.30      | 12.80        | -39.66         | -25.00      | H            |
| 17827.50       | -49.07                 | 3.60      | 12.80        | -39.87         | -25.00      | H            |

**LTE Band 7, 5MHz, 16QAM, Channel 21425**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16955.50       | -54.38                 | 2.90      | 16.50        | -40.78         | -25.00      | H            |
| 17120.00       | -53.34                 | 2.90      | 14.50        | -41.74         | -25.00      | H            |
| 17361.00       | -52.77                 | 3.20      | 14.50        | -41.47         | -25.00      | H            |
| 17453.00       | -51.45                 | 2.90      | 14.50        | -39.85         | -25.00      | H            |
| 17573.00       | -49.02                 | 3.30      | 12.80        | -39.52         | -25.00      | H            |
| 17777.00       | -49.44                 | 3.60      | 12.80        | -40.24         | -25.00      | H            |

**LTE Band 12, 1.4MHz, QPSK, Channel 23017**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 8470.25        | -52.25                 | 1.80      | 11.30        | -44.90        | -13.00      | H            |
| 9121.00        | -51.62                 | 2.10      | 11.60        | -44.27        | -13.00      | V            |
| 9223.25        | -51.23                 | 2.10      | 11.60        | -43.88        | -13.00      | H            |
| 9292.75        | -50.62                 | 2.00      | 11.60        | -43.17        | -13.00      | H            |
| 9374.25        | -51.63                 | 2.00      | 11.60        | -44.18        | -13.00      | V            |
| 9475.25        | -51.93                 | 2.10      | 11.60        | -44.58        | -13.00      | V            |

**LTE Band 12, 1.4MHz, QPSK, Channel 23095**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 1414.25        | -47.61                 | 0.70      | 6.00         | -44.46        | -13.00      | H            |
| 9102.75        | -50.64                 | 2.20      | 11.60        | -43.39        | -13.00      | H            |
| 9218.50        | -51.33                 | 2.10      | 11.60        | -43.98        | -13.00      | H            |
| 9300.50        | -51.26                 | 2.00      | 11.60        | -43.81        | -13.00      | H            |
| 9424.75        | -51.80                 | 2.10      | 11.60        | -44.45        | -13.00      | H            |
| 9476.00        | -51.39                 | 2.10      | 11.60        | -44.04        | -13.00      | V            |

**LTE Band 12, 1.4MHz, QPSK, Channel 23173**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 9094.25        | -51.56                 | 2.20      | 11.60        | -44.31        | -13.00      | H            |
| 9222.75        | -51.09                 | 2.10      | 11.60        | -43.74        | -13.00      | H            |
| 9299.50        | -50.90                 | 2.00      | 11.60        | -43.45        | -13.00      | H            |
| 9416.00        | -51.88                 | 2.10      | 11.60        | -44.53        | -13.00      | H            |
| 9480.25        | -51.39                 | 2.10      | 11.60        | -44.04        | -13.00      | V            |
| 9746.00        | -50.94                 | 2.20      | 11.20        | -44.09        | -13.00      | H            |

**LTE Band 12, 1.4MHz, 16QAM, Channel 23017**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 8977.75        | -52.35                 | 2.00      | 12.00        | -44.50        | -13.00      | H            |
| 9223.75        | -51.22                 | 2.10      | 11.60        | -43.87        | -13.00      | H            |
| 9299.25        | -51.33                 | 2.00      | 11.60        | -43.88        | -13.00      | H            |
| 9419.00        | -51.88                 | 2.10      | 11.60        | -44.53        | -13.00      | H            |
| 9474.75        | -51.30                 | 2.10      | 11.60        | -43.95        | -13.00      | V            |
| 9730.75        | -49.92                 | 2.20      | 11.20        | -43.07        | -13.00      | H            |

**LTE Band 12, 1.4MHz, 16QAM, Channel 23095**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 8414.50        | -52.29                 | 1.80      | 11.30        | -44.94        | -13.00      | H            |
| 9225.25        | -50.08                 | 2.10      | 11.60        | -42.73        | -13.00      | H            |
| 9301.25        | -50.53                 | 2.00      | 11.60        | -43.08        | -13.00      | H            |
| 9422.75        | -51.91                 | 2.10      | 11.60        | -44.56        | -13.00      | H            |
| 9473.00        | -51.27                 | 2.10      | 11.60        | -43.92        | -13.00      | V            |
| 9718.00        | -51.17                 | 2.20      | 11.20        | -44.32        | -13.00      | H            |

**LTE Band 12, 1.4MHz, 16QAM, Channel 23173**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 8431.50        | -52.31                 | 1.80      | 11.30        | -44.96        | -13.00      | H            |
| 9101.50        | -51.79                 | 2.20      | 11.60        | -44.54        | -13.00      | H            |
| 9224.25        | -51.23                 | 2.10      | 11.60        | -43.88        | -13.00      | H            |
| 9306.50        | -50.57                 | 2.00      | 11.60        | -43.12        | -13.00      | H            |
| 9424.00        | -51.11                 | 2.10      | 11.60        | -43.76        | -13.00      | H            |
| 9473.00        | -50.92                 | 2.10      | 11.60        | -43.57        | -13.00      | V            |

**LTE Band 13, 5MHz, QPSK, Channel 23205**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 1561.00        | -59.90                 | 0.70      | 8.10         | -54.65        | -40.00      | V            |
| 8411.25        | -51.84                 | 1.80      | 11.30        | -44.49        | -13.00      | H            |
| 9102.62        | -50.98                 | 2.20      | 11.60        | -43.73        | -13.00      | H            |
| 9227.25        | -49.79                 | 2.10      | 11.60        | -42.44        | -13.00      | H            |
| 9473.62        | -51.02                 | 2.10      | 11.60        | -43.67        | -13.00      | V            |
| 9741.62        | -50.51                 | 2.20      | 11.20        | -43.66        | -13.00      | H            |

**LTE Band 13, 5MHz, QPSK, Channel 23230**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 1572.00        | -60.01                 | 0.70      | 8.10         | -54.76        | -40.00      | V            |
| 9097.50        | -51.69                 | 2.20      | 11.60        | -44.44        | -13.00      | H            |
| 9301.62        | -50.87                 | 2.00      | 11.60        | -43.42        | -13.00      | H            |
| 9476.00        | -49.76                 | 2.10      | 11.60        | -42.41        | -13.00      | V            |
| 9740.62        | -50.96                 | 2.20      | 11.20        | -44.11        | -13.00      | H            |
| 9801.25        | -50.93                 | 2.30      | 11.20        | -44.18        | -13.00      | H            |

**LTE Band 13, 5MHz, QPSK, Channel 23255**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 1565.00        | -59.71                 | 0.70      | 8.10         | -54.46        | -40.00      | V            |
| 9010.00        | -50.24                 | 2.00      | 11.60        | -42.79        | -13.00      | V            |
| 9101.62        | -50.91                 | 2.20      | 11.60        | -43.66        | -13.00      | H            |
| 9225.12        | -50.48                 | 2.10      | 11.60        | -43.13        | -13.00      | H            |
| 9364.62        | -51.69                 | 2.00      | 11.60        | -44.24        | -13.00      | V            |
| 9747.25        | -50.77                 | 2.20      | 11.20        | -43.92        | -13.00      | H            |

**LTE Band 13, 5MHz, 16QAM, Channel 23205**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 1564.50        | -59.69                 | 0.70      | 8.10         | -54.44        | -40.00      | V            |
| 9092.25        | -51.80                 | 2.20      | 11.60        | -44.55        | -13.00      | H            |
| 9216.62        | -50.49                 | 2.10      | 11.60        | -43.14        | -13.00      | H            |
| 9474.88        | -51.60                 | 2.10      | 11.60        | -44.25        | -13.00      | V            |
| 9754.25        | -50.84                 | 2.20      | 11.20        | -43.99        | -13.00      | H            |
| 9800.62        | -50.44                 | 2.30      | 11.20        | -43.69        | -13.00      | H            |

**LTE Band 13, 5MHz, 16QAM, Channel 23230**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 1568.00        | -60.46                 | 0.70      | 8.10         | -55.21        | -40.00      | V            |
| 8455.88        | -51.99                 | 1.80      | 11.30        | -44.64        | -13.00      | H            |
| 9101.88        | -51.66                 | 2.20      | 11.60        | -44.41        | -13.00      | H            |
| 9300.38        | -50.48                 | 2.00      | 11.60        | -43.03        | -13.00      | H            |
| 9475.88        | -50.57                 | 2.10      | 11.60        | -43.22        | -13.00      | V            |
| 9738.12        | -50.19                 | 2.20      | 11.20        | -43.34        | -13.00      | H            |

**LTE Band 13, 5MHz, 16QAM, Channel 23255**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 1565.00        | -59.30                 | 0.70      | 8.10         | -54.05        | -40.00      | V            |
| 9040.00        | -51.42                 | 2.20      | 11.60        | -44.17        | -13.00      | H            |
| 9223.12        | -50.61                 | 2.10      | 11.60        | -43.26        | -13.00      | H            |
| 9476.12        | -51.01                 | 2.10      | 11.60        | -43.66        | -13.00      | V            |
| 9723.88        | -50.96                 | 2.20      | 11.20        | -44.11        | -13.00      | H            |
| 9924.88        | -51.49                 | 2.20      | 11.20        | -44.64        | -13.00      | H            |

**LTE Band 17, 1.4MHz, QPSK, Channel 23755**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 9094.75        | -51.63                 | 2.20      | 11.60        | -44.38        | -13.00      | H            |
| 9155.75        | -51.84                 | 2.10      | 11.60        | -44.49        | -13.00      | H            |
| 9219.75        | -51.28                 | 2.10      | 11.60        | -43.93        | -13.00      | H            |
| 9299.50        | -51.37                 | 2.00      | 11.60        | -43.92        | -13.00      | H            |
| 9418.75        | -51.30                 | 2.10      | 11.60        | -43.95        | -13.00      | H            |
| 9469.25        | -50.94                 | 2.10      | 11.60        | -43.59        | -13.00      | V            |

**LTE Band 17, 1.4MHz, QPSK, Channel 23790**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 9101.75        | -51.78                 | 2.20      | 11.60        | -44.53        | -13.00      | H            |
| 9226.50        | -51.16                 | 2.10      | 11.60        | -43.81        | -13.00      | H            |
| 9300.00        | -51.11                 | 2.00      | 11.60        | -43.66        | -13.00      | H            |
| 9419.75        | -51.47                 | 2.10      | 11.60        | -44.12        | -13.00      | H            |
| 9474.00        | -50.87                 | 2.10      | 11.60        | -43.52        | -13.00      | V            |
| 9704.50        | -51.89                 | 2.20      | 11.20        | -45.04        | -13.00      | H            |

**LTE Band 17, 1.4MHz, QPSK, Channel 23825**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 8461.25        | -51.90                 | 1.80      | 11.30        | -44.55        | -13.00      | H            |
| 9106.00        | -51.94                 | 2.20      | 11.60        | -44.69        | -13.00      | H            |
| 9229.50        | -51.44                 | 2.10      | 11.60        | -44.09        | -13.00      | H            |
| 9305.00        | -51.23                 | 2.00      | 11.60        | -43.78        | -13.00      | H            |
| 9420.50        | -51.50                 | 2.10      | 11.60        | -44.15        | -13.00      | H            |
| 9470.75        | -51.46                 | 2.10      | 11.60        | -44.11        | -13.00      | V            |

**LTE Band 17, 1.4MHz, 16QAM, Channel 23755**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 8462.00        | -51.99                 | 1.80      | 11.30        | -44.64        | -13.00      | V            |
| 9148.25        | -51.96                 | 2.10      | 11.60        | -44.61        | -13.00      | H            |
| 9223.00        | -50.49                 | 2.10      | 11.60        | -43.14        | -13.00      | H            |
| 9305.00        | -51.07                 | 2.00      | 11.60        | -43.62        | -13.00      | H            |
| 9427.75        | -51.61                 | 2.10      | 11.60        | -44.26        | -13.00      | H            |
| 9464.75        | -51.71                 | 2.10      | 11.60        | -44.36        | -13.00      | V            |

**LTE Band 17, 1.4MHz, 16QAM, Channel 23790**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 9096.75        | -51.71                 | 2.20      | 11.60        | -44.46        | -13.00      | H            |
| 9110.25        | -51.48                 | 2.10      | 11.60        | -44.13        | -13.00      | H            |
| 9226.00        | -50.82                 | 2.10      | 11.60        | -43.47        | -13.00      | H            |
| 9294.25        | -51.10                 | 2.00      | 11.60        | -43.65        | -13.00      | H            |
| 9421.50        | -51.97                 | 2.10      | 11.60        | -44.62        | -13.00      | H            |
| 9473.75        | -51.06                 | 2.10      | 11.60        | -43.71        | -13.00      | V            |

**LTE Band 17, 1.4MHz, 16QAM, Channel 23825**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak ERP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|---------------|-------------|--------------|
| 9153.00        | -51.94                 | 2.10      | 11.60        | -44.59        | -13.00      | H            |
| 9221.00        | -50.44                 | 2.10      | 11.60        | -43.09        | -13.00      | H            |
| 9298.25        | -50.42                 | 2.00      | 11.60        | -42.97        | -13.00      | H            |
| 9426.50        | -50.87                 | 2.10      | 11.60        | -43.52        | -13.00      | H            |
| 9471.00        | -51.05                 | 2.10      | 11.60        | -43.70        | -13.00      | V            |
| 9685.00        | -51.46                 | 2.20      | 11.20        | -44.61        | -13.00      | H            |

**LTE Band 66, 1.4MHz, QPSK, Channel 131979**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16971.50       | -44.64                 | 2.90      | 16.50        | -31.04         | -13.00      | H            |
| 17089.00       | -43.39                 | 2.90      | 14.50        | -31.79         | -13.00      | H            |
| 17363.50       | -42.26                 | 3.20      | 14.50        | -30.96         | -13.00      | H            |
| 17513.00       | -39.81                 | 2.90      | 12.80        | -29.91         | -13.00      | H            |
| 17525.50       | -38.74                 | 2.90      | 12.80        | -28.84         | -13.00      | H            |
| 17826.00       | -39.54                 | 3.60      | 12.80        | -30.34         | -13.00      | H            |

**LTE Band 66, 1.4MHz, QPSK, Channel 132322**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16987.50       | -44.74                 | 2.90      | 16.50        | -31.14         | -13.00      | H            |
| 17200.50       | -42.79                 | 2.90      | 14.50        | -31.19         | -13.00      | H            |
| 17218.00       | -42.53                 | 3.20      | 14.50        | -31.23         | -13.00      | H            |
| 17523.50       | -39.90                 | 2.90      | 12.80        | -30.00         | -13.00      | H            |
| 17583.00       | -38.66                 | 3.30      | 12.80        | -29.16         | -13.00      | H            |
| 17818.50       | -39.27                 | 3.60      | 12.80        | -30.07         | -13.00      | H            |

**LTE Band 66, 1.4MHz, QPSK, Channel 132665**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16967.00       | -44.11                 | 2.90      | 16.50        | -30.51         | -13.00      | H            |
| 17201.50       | -42.93                 | 2.90      | 14.50        | -31.33         | -13.00      | H            |
| 17266.00       | -41.92                 | 3.20      | 14.50        | -30.62         | -13.00      | H            |
| 17504.50       | -38.95                 | 2.90      | 12.80        | -29.05         | -13.00      | H            |
| 17589.00       | -39.34                 | 3.30      | 12.80        | -29.84         | -13.00      | H            |
| 17771.00       | -39.02                 | 3.60      | 12.80        | -29.82         | -13.00      | H            |

**LTE Band 66, 1.4MHz, 16QAM, Channel 131979**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16967.50       | -44.39                 | 2.90      | 16.50        | -30.79         | -13.00      | H            |
| 17168.50       | -43.26                 | 2.90      | 14.50        | -31.66         | -13.00      | H            |
| 17298.00       | -42.05                 | 3.20      | 14.50        | -30.75         | -13.00      | H            |
| 17514.50       | -39.29                 | 2.90      | 12.80        | -29.39         | -13.00      | H            |
| 17592.00       | -38.85                 | 3.30      | 12.80        | -29.35         | -13.00      | H            |
| 17836.50       | -39.39                 | 3.60      | 12.80        | -30.19         | -13.00      | H            |

**LTE Band 66, 1.4MHz, 16QAM, Channel 132322**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16982.00       | -44.32                 | 2.90      | 16.50        | -30.72         | -13.00      | H            |
| 17115.00       | -43.06                 | 2.90      | 14.50        | -31.46         | -13.00      | H            |
| 17275.50       | -42.70                 | 3.20      | 14.50        | -31.40         | -13.00      | H            |
| 17504.00       | -39.28                 | 2.90      | 12.80        | -29.38         | -13.00      | H            |
| 17572.00       | -39.06                 | 3.30      | 12.80        | -29.56         | -13.00      | H            |
| 17816.50       | -39.78                 | 3.60      | 12.80        | -30.58         | -13.00      | H            |

**LTE Band 66, 1.4MHz, 16QAM, Channel 132665**

| Frequency(MHz) | P <sub>Mea</sub> (dBm) | Path Loss | Antenna Gain | Peak EIRP(dBm) | Limit (dBm) | Polarization |
|----------------|------------------------|-----------|--------------|----------------|-------------|--------------|
| 16945.00       | -44.49                 | 2.90      | 16.50        | -30.89         | -13.00      | H            |
| 17193.00       | -42.94                 | 2.90      | 14.50        | -31.34         | -13.00      | H            |
| 17360.50       | -42.02                 | 3.20      | 14.50        | -30.72         | -13.00      | H            |
| 17482.50       | -41.71                 | 2.90      | 14.50        | -30.11         | -13.00      | H            |
| 17583.50       | -39.09                 | 3.30      | 12.80        | -29.59         | -13.00      | H            |
| 17782.00       | -39.52                 | 3.60      | 12.80        | -30.32         | -13.00      | H            |

Note: The maximum value of expanded measurement uncertainty for this test item is  $U = 2.82\text{dB}(30\text{MHz}-3\text{GHz})/3.06\text{dB}(3\text{GHz}-18\text{GHz})/2.40\text{dB}(18\text{GHz}-40\text{GHz})$ ,  $k = 2$

### **A.3 FREQUENCY STABILITY**

#### **A.3.1 Method of Measurement**

Frequency stability is a measure of the frequency drift due to temperature and supply voltage variations, with reference to the frequency measured at +20 °C and rated supply voltage. Two reference points are established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as  $F_L$  and  $F_H$  respectively.

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of CMW500

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on mid channel of each band, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments e-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the center channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10°C increments from +50°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of the lower, higher and nominal voltage. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress.

### A.3.2 Measurement results

#### LTE Band 2, 5MHz bandwidth (worst case of all bandwidths)

##### Frequency Error vs Temperature

| Temperature(°C) | Voltage(V) | FL(MHz)  | FH(MHz)  | Offset(Hz) | Frequency error(ppm) |
|-----------------|------------|----------|----------|------------|----------------------|
| 20              | 3.80       | 1850.730 | 1909.320 |            |                      |
| 50              |            |          |          | -4.59      | 0.0024               |
| 40              |            |          |          | -3.22      | 0.0017               |
| 30              |            |          |          | 0.09       | 0.0000               |
| 10              |            |          |          | 0.76       | 0.0004               |
| 0               |            |          |          | -1.36      | 0.0007               |
| -10             |            |          |          | -1.82      | 0.0010               |
| -20             |            |          |          | -2.35      | 0.0012               |
| -30             |            |          |          | -2.29      | 0.0012               |

##### Frequency Error vs Voltage

| Voltage(V) | Temperature(°C) | FL(MHz)  | FH(MHz)  | Offset(Hz) | Frequency error(ppm) |
|------------|-----------------|----------|----------|------------|----------------------|
| 3.60       | 20              | 1850.730 | 1909.320 | -0.72      | 0.0004               |
| 4.20       |                 |          |          | 4.45       | 0.0024               |

Expanded measurement uncertainty is 10 Hz,  $k = 2$

#### LTE Band 4, 10MHz bandwidth (worst case of all bandwidths)

##### Frequency Error vs Temperature

| Temperature(°C) | Voltage(V) | FL(MHz)  | FH(MHz)  | Offset(Hz) | Frequency error(ppm) |
|-----------------|------------|----------|----------|------------|----------------------|
| 50              | 3.80       | 1710.760 | 1754.330 |            |                      |
| 40              |            |          |          | 10.66      | 0.0062               |
| 30              |            |          |          | 8.10       | 0.0047               |
| 20              |            |          |          | 9.33       | 0.0054               |
| 10              |            |          |          | 1.70       | 0.0010               |
| 0               |            |          |          | -5.11      | 0.0029               |
| -10             |            |          |          | -9.47      | 0.0055               |
| -20             |            |          |          | 8.61       | 0.0050               |
| -30             |            |          |          | 2.78       | 0.0016               |

##### Frequency Error vs Voltage

| Voltage(V) | Temperature(°C) | FL(MHz)  | FH(MHz)  | Offset(Hz) | Frequency error(ppm) |
|------------|-----------------|----------|----------|------------|----------------------|
| 3.60       | 20              | 1710.760 | 1754.330 | -0.67      | 0.0004               |
| 4.20       |                 |          |          | 5.47       | 0.0032               |

Expanded measurement uncertainty is 10Hz,  $k = 2$

**LTE Band 5, 5MHz bandwidth (worst case of all bandwidths)**
**Frequency Error vs Temperature**

| Temperature(°C) | Voltage(V) | FL(MHz) | FH(MHz) | Offset(Hz) | Frequency error(ppm) |
|-----------------|------------|---------|---------|------------|----------------------|
| 50              | 3.80       | 824.210 | 848.800 |            |                      |
| 40              |            |         |         | 9.47       | 0.0113               |
| 30              |            |         |         | -6.41      | 0.0077               |
| 20              |            |         |         | 9.81       | 0.0117               |
| 10              |            |         |         | 6.50       | 0.0078               |
| 0               |            |         |         | 9.16       | 0.0109               |
| -10             |            |         |         | -5.61      | 0.0067               |
| -20             |            |         |         | 6.37       | 0.0076               |
| -30             |            |         |         | -14.16     | 0.0169               |

**Frequency Error vs Voltage**

| Voltage(V) | Temperature(°C) | FL(MHz) | FH(MHz) | Offset(Hz) | Frequency error(ppm) |
|------------|-----------------|---------|---------|------------|----------------------|
| 3.60       | 20              | 824.210 | 848.800 | 16.54      | 0.0198               |
| 4.20       |                 |         |         | 3.49       | 0.0042               |

Expanded measurement uncertainty is 10 Hz,  $k = 2$ 
**LTE Band 7, 5MHz bandwidth (worst case of all bandwidths)**
**Frequency Error vs Temperature**

| Temperature(°C) | Voltage(V) | FL(MHz)  | FH(MHz)  | Offset(Hz) | Frequency error(ppm) |
|-----------------|------------|----------|----------|------------|----------------------|
| 20              | 3.80       | 2500.460 | 2569.640 |            |                      |
| 50              |            |          |          | 2.43       | 0.0010               |
| 40              |            |          |          | -1.99      | 0.0008               |
| 30              |            |          |          | 5.79       | 0.0023               |
| 10              |            |          |          | -2.27      | 0.0009               |
| 0               |            |          |          | 5.85       | 0.0023               |
| -10             |            |          |          | 8.51       | 0.0034               |
| -20             |            |          |          | -0.87      | 0.0003               |
| -30             |            |          |          | 1.77       | 0.0007               |

**Frequency Error vs Voltage**

| Voltage(V) | Temperature(°C) | FL(MHz)  | FH(MHz)  | Offset(Hz) | Frequency error(ppm) |
|------------|-----------------|----------|----------|------------|----------------------|
| 3.60       | 20              | 2500.460 | 2569.640 | 2.13       | 0.0008               |
| 4.20       |                 |          |          | -0.57      | 0.0002               |

Expanded measurement uncertainty is 10 Hz,  $k = 2$

**LTE Band 12, 1.4MHz bandwidth (worst case of all bandwidths)**
**Frequency Error vs Temperature**

| Temperature(°C) | Voltage(V) | FL(MHz) | FH(MHz) | Offset(Hz) | Frequency error(ppm) |
|-----------------|------------|---------|---------|------------|----------------------|
| 20              | 3.80       | 699.430 | 715.550 |            |                      |
| 50              |            |         |         | -9.83      | 0.0139               |
| 40              |            |         |         | -19.31     | 0.0273               |
| 30              |            |         |         | 10.10      | 0.0143               |
| 10              |            |         |         | 9.81       | 0.0139               |
| 0               |            |         |         | 3.00       | 0.0042               |
| -10             |            |         |         | -3.82      | 0.0054               |
| -20             |            |         |         | -10.04     | 0.0142               |
| -30             |            |         |         | -17.42     | 0.0246               |

**Frequency Error vs Voltage**

| Voltage(V) | Temperature(°C) | FL(MHz) | FH(MHz) | Offset(Hz) | Frequency error(ppm) |
|------------|-----------------|---------|---------|------------|----------------------|
| 3.60       | 20              | 699.430 | 715.550 | -21.90     | 0.0310               |
| 4.20       |                 |         |         | 2.78       | 0.0039               |

Expanded measurement uncertainty is 10Hz, k = 2

**LTE Band 13, 5MHz bandwidth (worst case of all bandwidths)**
**Frequency Error vs Temperature**

| Temperature(°C) | Voltage(V) | FL(MHz) | FH(MHz) | Offset(Hz) | Frequency error(ppm) |
|-----------------|------------|---------|---------|------------|----------------------|
| 20              | 3.80       | 777.355 | 786.556 |            |                      |
| 50              |            |         |         | -9.86      | 0.0126               |
| 40              |            |         |         | 30.57      | 0.0391               |
| 30              |            |         |         | 22.72      | 0.0290               |
| 10              |            |         |         | 12.59      | 0.0161               |
| 0               |            |         |         | 5.34       | 0.0068               |
| -10             |            |         |         | -3.83      | 0.0049               |
| -20             |            |         |         | -2.29      | 0.0029               |
| -30             |            |         |         | 33.53      | 0.0429               |

**Frequency Error vs Voltage**

| Voltage(V) | Temperature(°C) | FL(MHz) | FH(MHz) | Offset(Hz) | Frequency error(ppm) |
|------------|-----------------|---------|---------|------------|----------------------|
| 3.60       | 20              | 777.355 | 786.556 | 26.04      | 0.0333               |
| 4.20       |                 |         |         | 18.34      | 0.0235               |

Expanded measurement uncertainty is 10Hz, k = 2

**LTE Band 17, 10MHz bandwidth (worst case of all bandwidths)**
**Frequency Error vs Temperature**

| Temperature(°C) | Voltage(V) | FL(MHz) | FH(MHz) | Offset(Hz) | Frequency error(ppm) |
|-----------------|------------|---------|---------|------------|----------------------|
| 50              | 3.80       | 704.110 | 715.810 |            |                      |
| 40              |            |         |         | -4.19      | 0.0059               |
| 30              |            |         |         | -10.36     | 0.0146               |
| 20              |            |         |         | -15.46     | 0.0218               |
| 10              |            |         |         | -21.64     | 0.0305               |
| 0               |            |         |         | -27.62     | 0.0389               |
| -10             |            |         |         | -32.49     | 0.0458               |
| -20             |            |         |         | -38.71     | 0.0545               |
| -30             |            |         |         | -43.26     | 0.0609               |

**Frequency Error vs Voltage**

| Voltage(V) | Temperature(°C) | FL(MHz) | FH(MHz) | Offset(Hz) | Frequency error(ppm) |
|------------|-----------------|---------|---------|------------|----------------------|
| 3.60       | 20              | 704.110 | 715.810 | 5.97       | 0.0084               |
| 4.20       |                 |         |         | 0.44       | 0.0006               |

Expanded measurement uncertainty is 10Hz, k = 2

**LTE Band 66, 1.4MHz bandwidth (worst case of all bandwidths)**
**Frequency Error vs Temperature**

| Temperature(°C) | Voltage(V) | FL(MHz)  | FH(MHz)  | Offset(Hz) | Frequency error(ppm) |
|-----------------|------------|----------|----------|------------|----------------------|
| 20              | 3.80       | 1710.520 | 1779.500 |            |                      |
| 50              |            |          |          | -6.47      | 0.0037               |
| 40              |            |          |          | 2.23       | 0.0013               |
| 30              |            |          |          | -7.58      | 0.0043               |
| 10              |            |          |          | 8.70       | 0.0050               |
| 0               |            |          |          | 9.79       | 0.0056               |
| -10             |            |          |          | 0.23       | 0.0001               |
| -20             |            |          |          | -8.44      | 0.0048               |
| -30             |            |          |          | 13.82      | 0.0079               |

**Frequency Error vs Voltage**

| Voltage(V) | Temperature(°C) | FL(MHz)  | FH(MHz)  | Offset(Hz) | Frequency error(ppm) |
|------------|-----------------|----------|----------|------------|----------------------|
| 3.60       | 20              | 1710.520 | 1779.500 | 35.39      | 0.0203               |
| 4.20       |                 |          |          | 29.78      | 0.0171               |

Expanded measurement uncertainty is 10Hz, k = 2

#### **A.4 OCCUPIED BANDWIDTH**

Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequency. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

The measurement method is from ANSI C63.26:

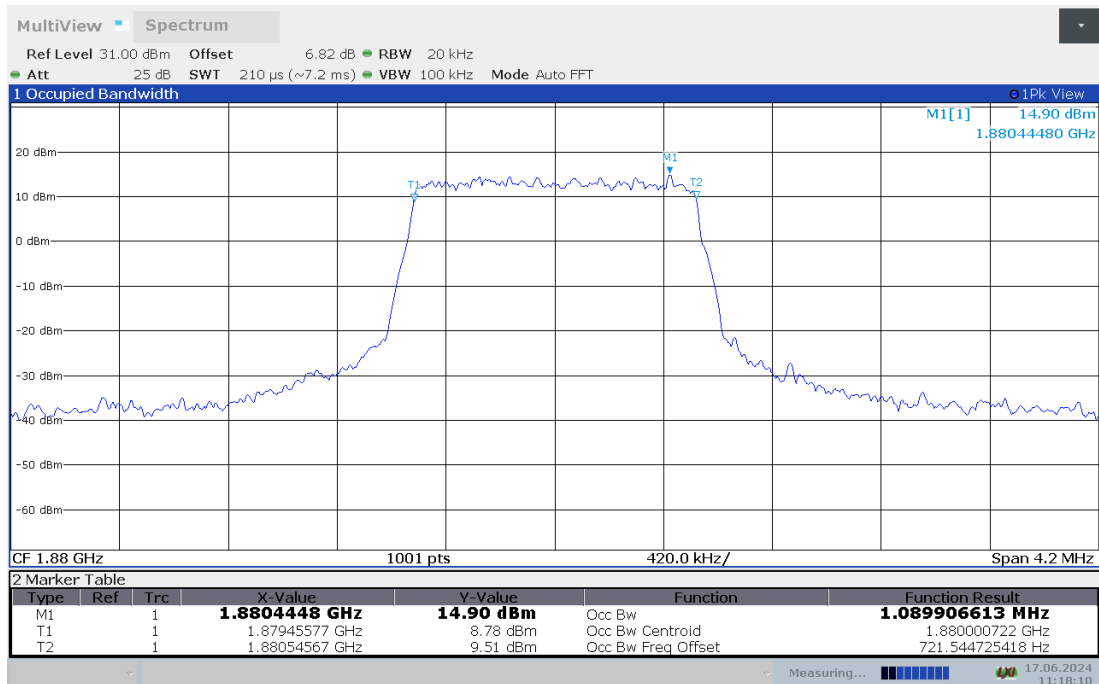
- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.  
The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts.
- b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set  $\geq 3 \times \text{RBW}$ .
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.

Set the detection mode to peak, and the trace mode to max-hold.

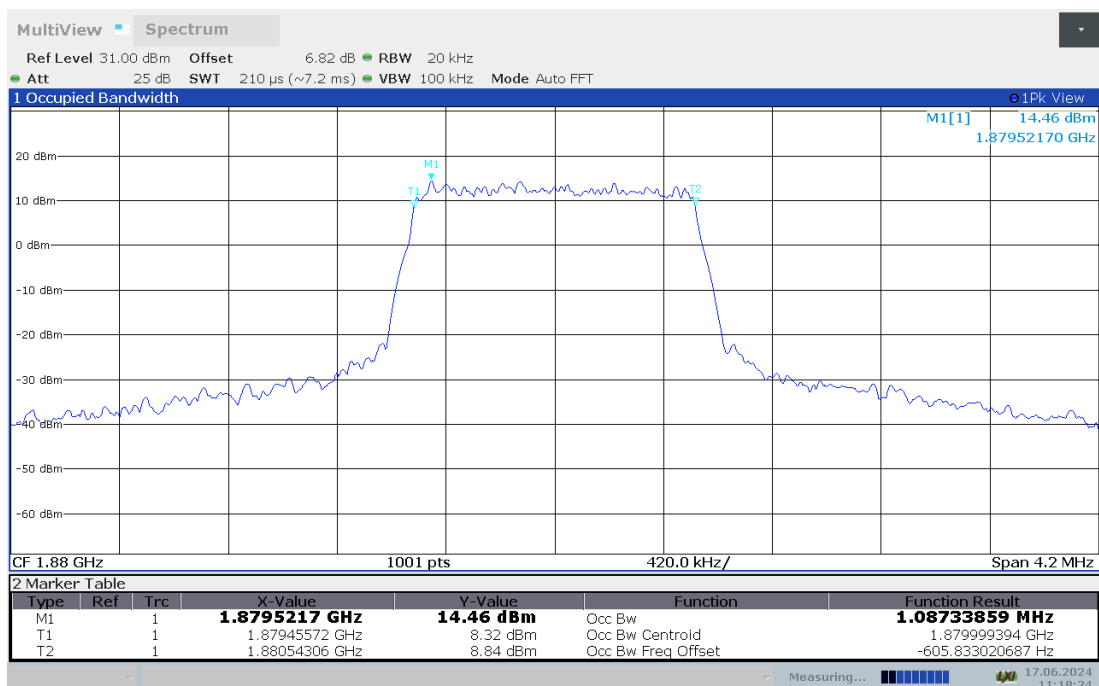
### LTE band 2,1.4MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 1880            | 1.090                            | 1.087 |
| 1850.7          | 1.090                            | 1.089 |
| 1909.3          | 1.086                            | 1.094 |

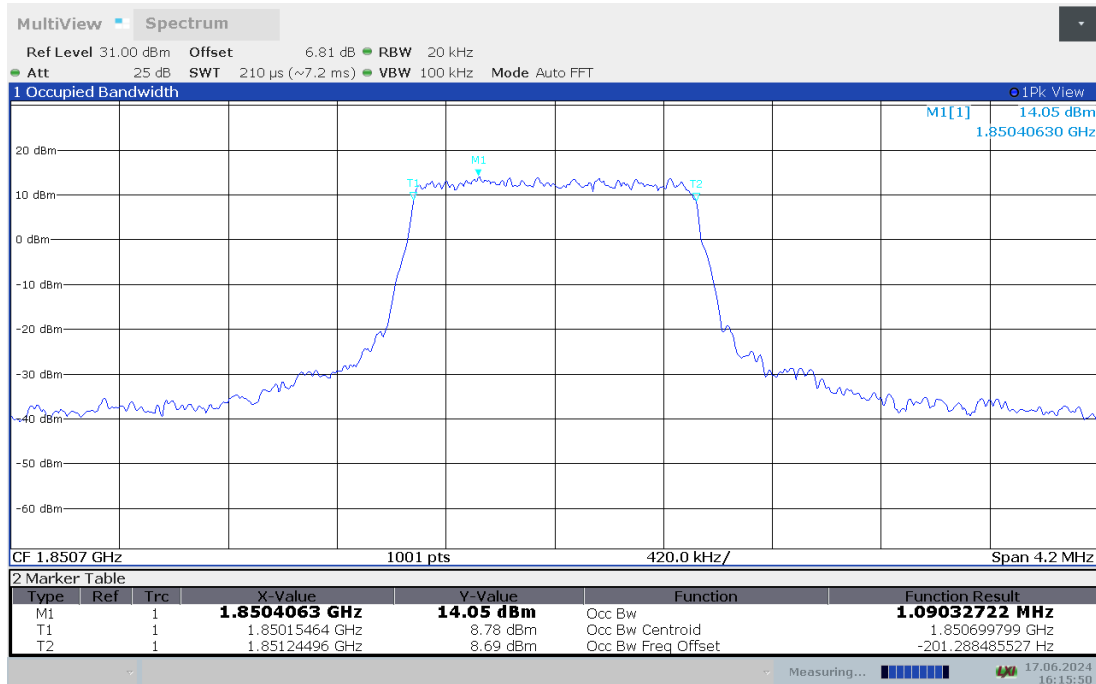
### LTE band 2 , 1.4MHz Bandwidth,MID,QPSK (99% BW)



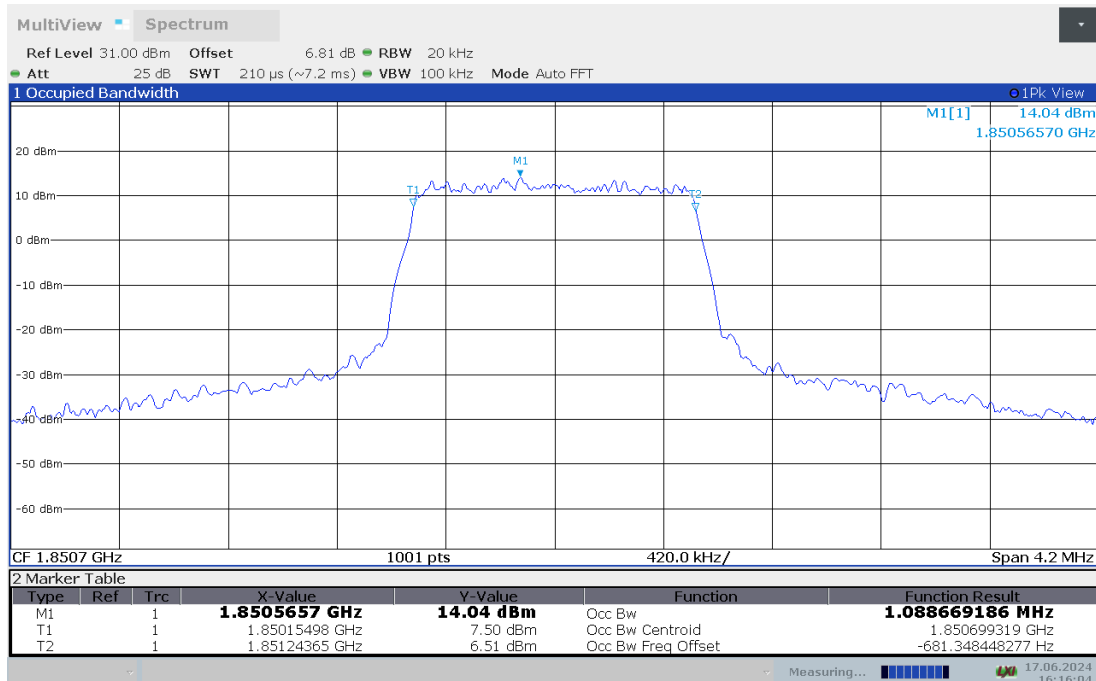
### LTE band 2 , 1.4MHz Bandwidth,MID,16QAM (99% BW)



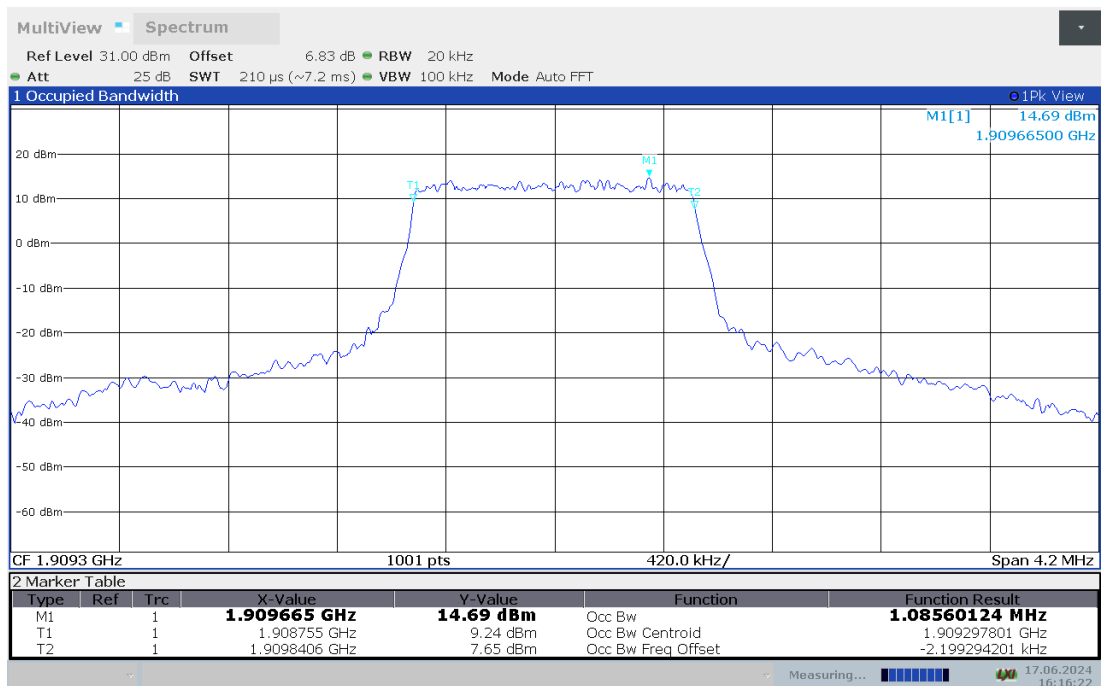
### LTE band 2 , 1.4MHz Bandwidth,LOW,QPSK (99% BW)



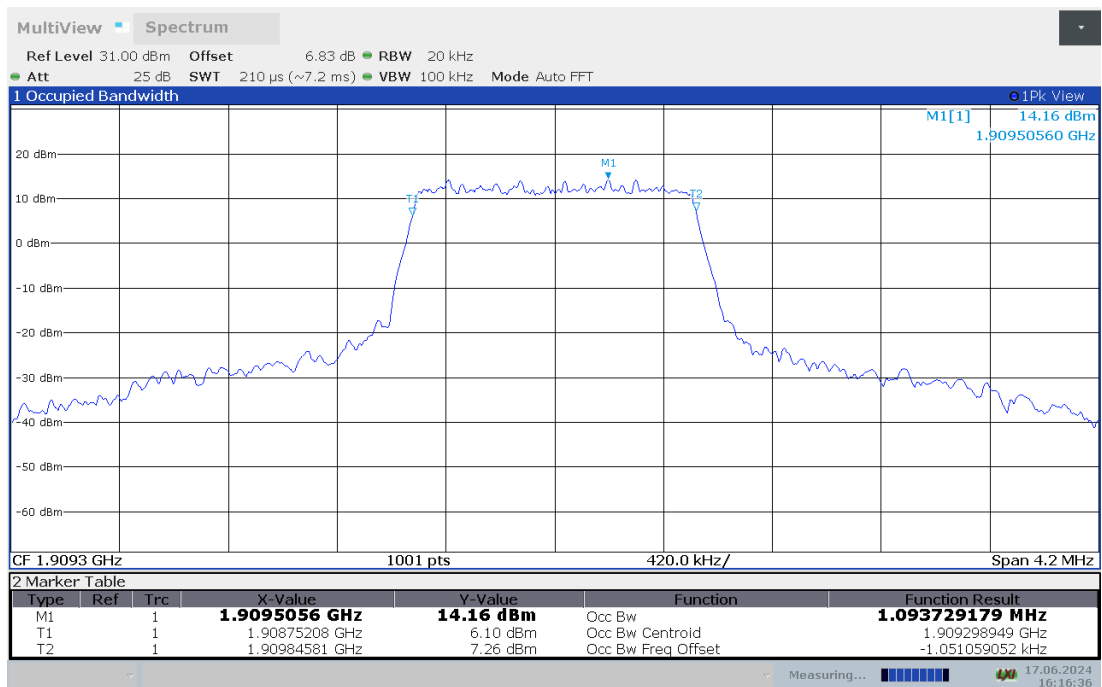
### LTE band 2 , 1.4MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 2 , 1.4MHz Bandwidth,HIGH,QPSK (99% BW)



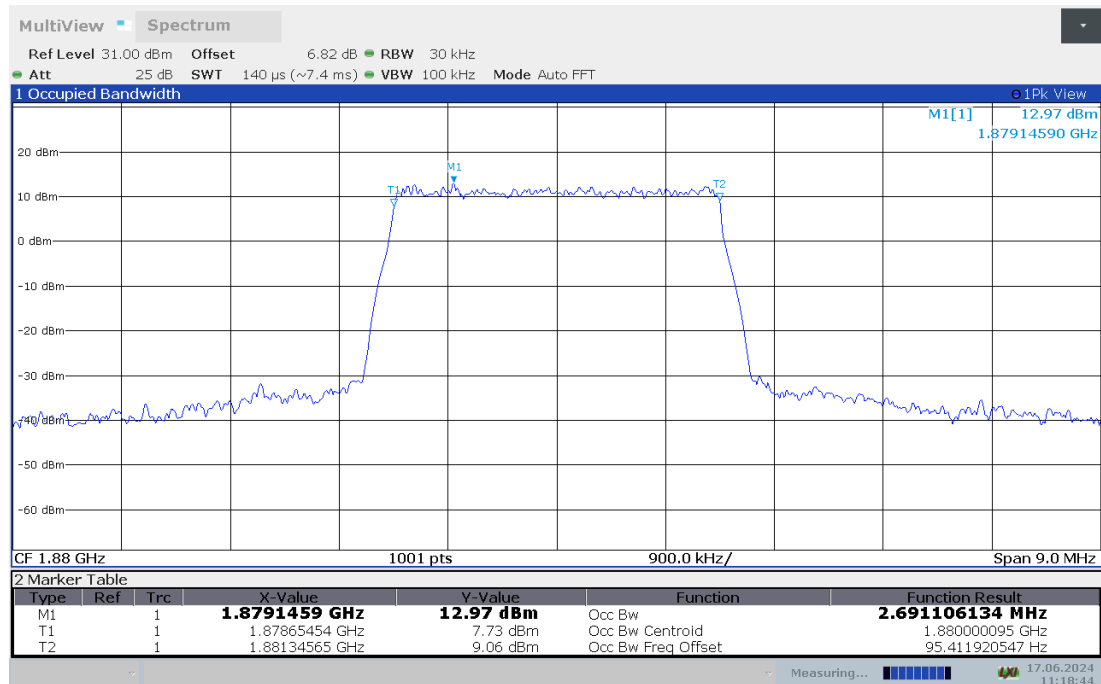
### LTE band 2 , 1.4MHz Bandwidth,HIGH,16QAM (99% BW)



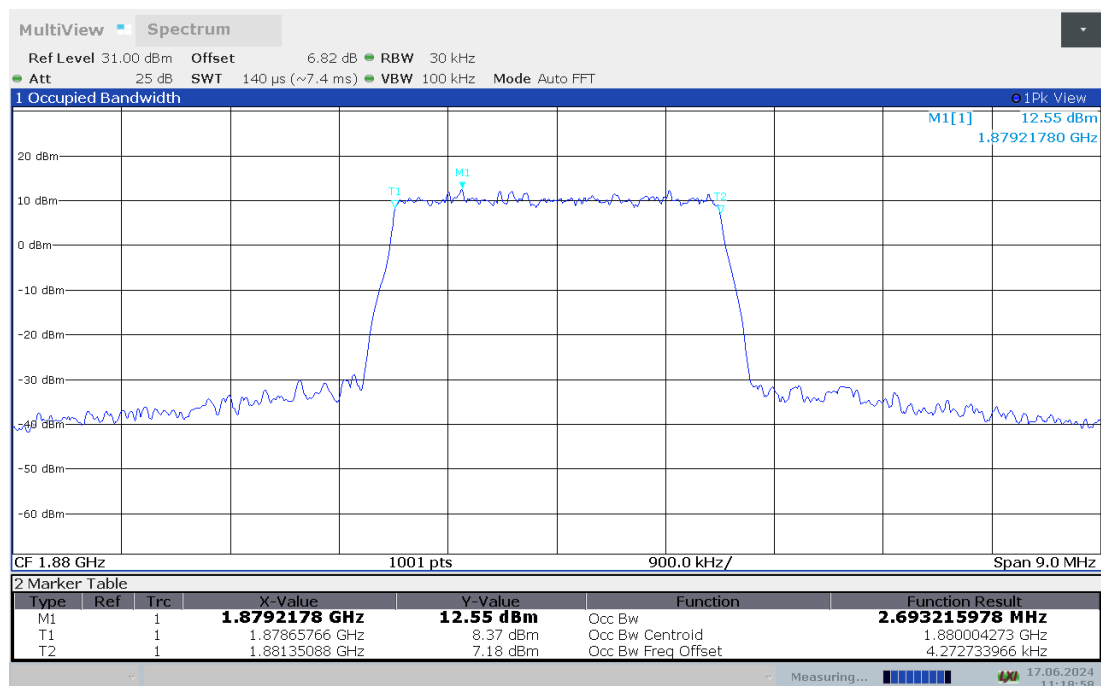
### LTE band 2,3MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 1880            | 2.691                            | 2.693 |
| 1851.5          | 2.697                            | 2.690 |
| 1908.5          | 2.700                            | 2.693 |

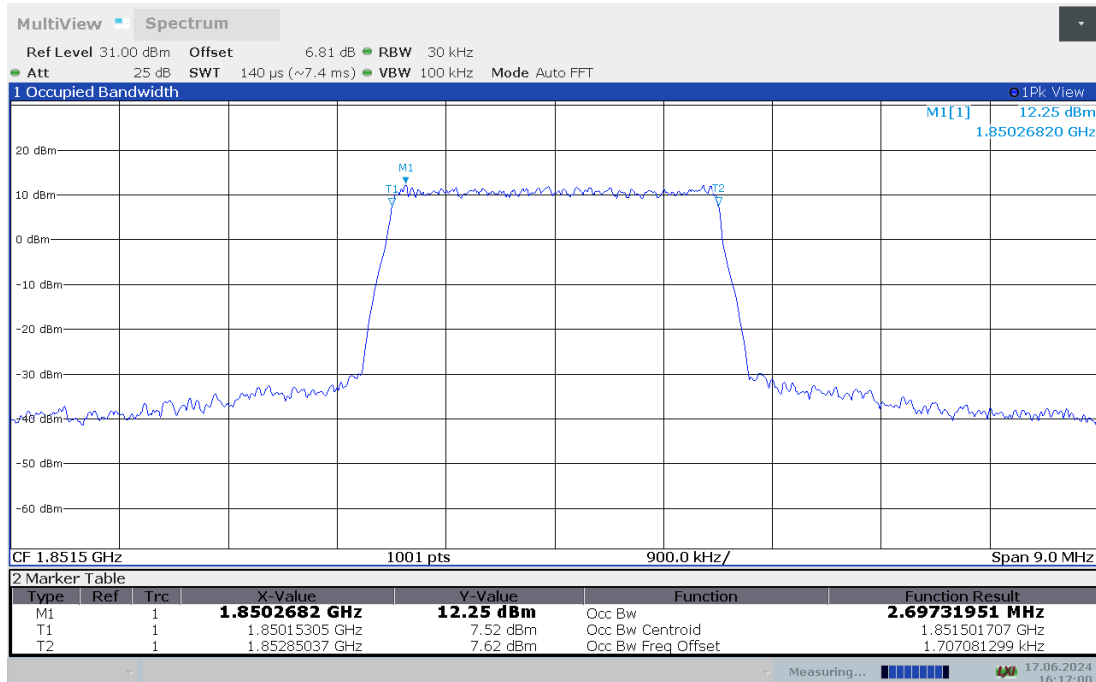
### LTE band 2 , 3MHz Bandwidth,MID,QPSK (99% BW)



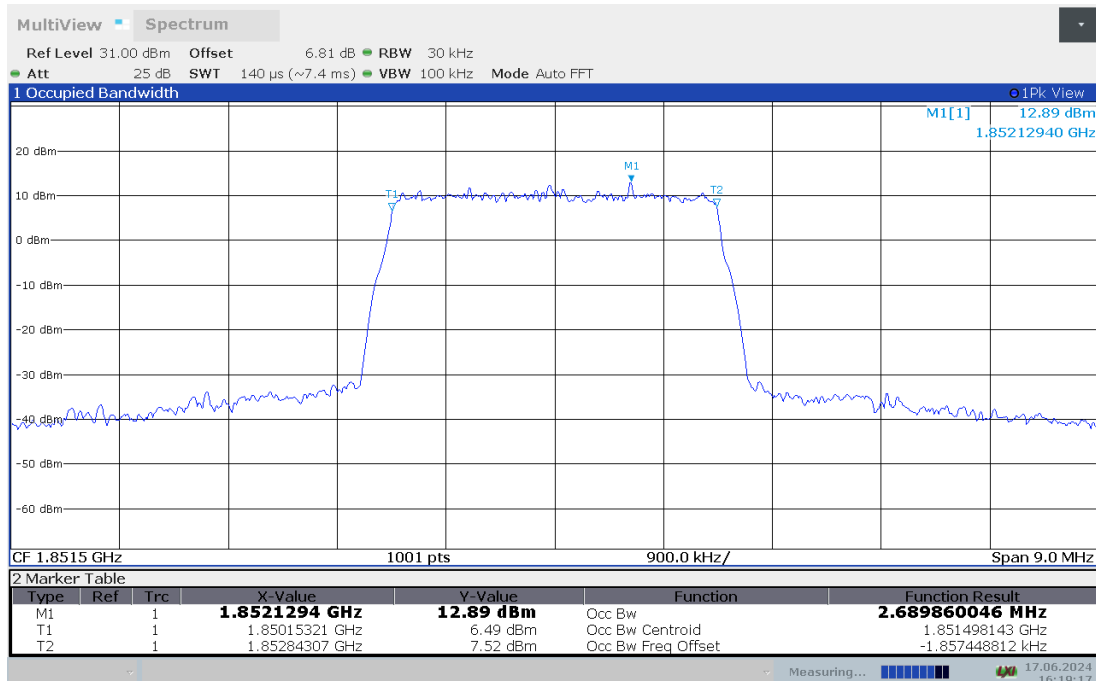
### LTE band 2 , 3MHz Bandwidth,MID,16QAM (99% BW)



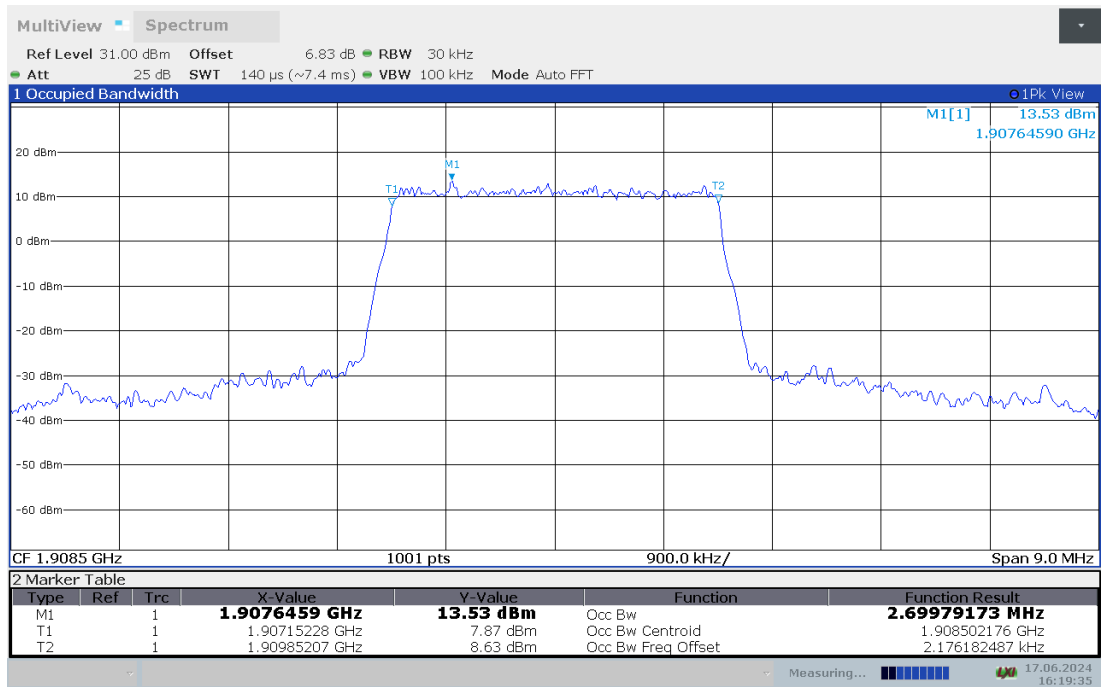
### LTE band 2 , 3MHz Bandwidth,LOW,QPSK (99% BW)



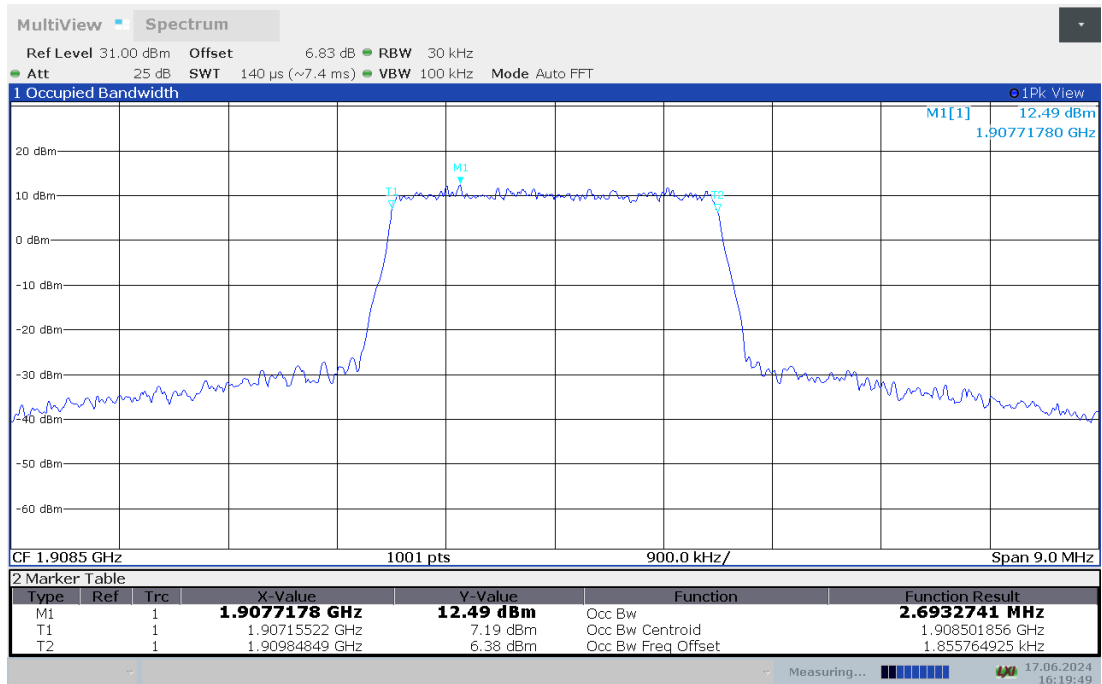
### LTE band 2 , 3MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 2 , 3MHz Bandwidth,HIGH,QPSK (99% BW)



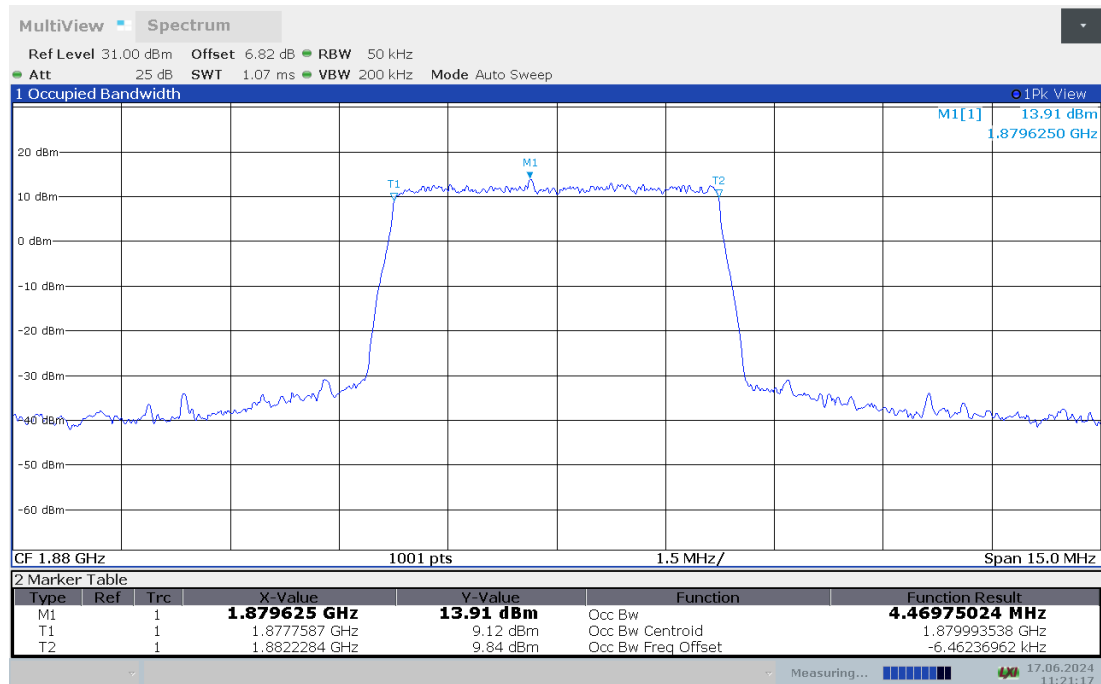
### LTE band 2 , 3MHz Bandwidth,HIGH,16QAM (99% BW)



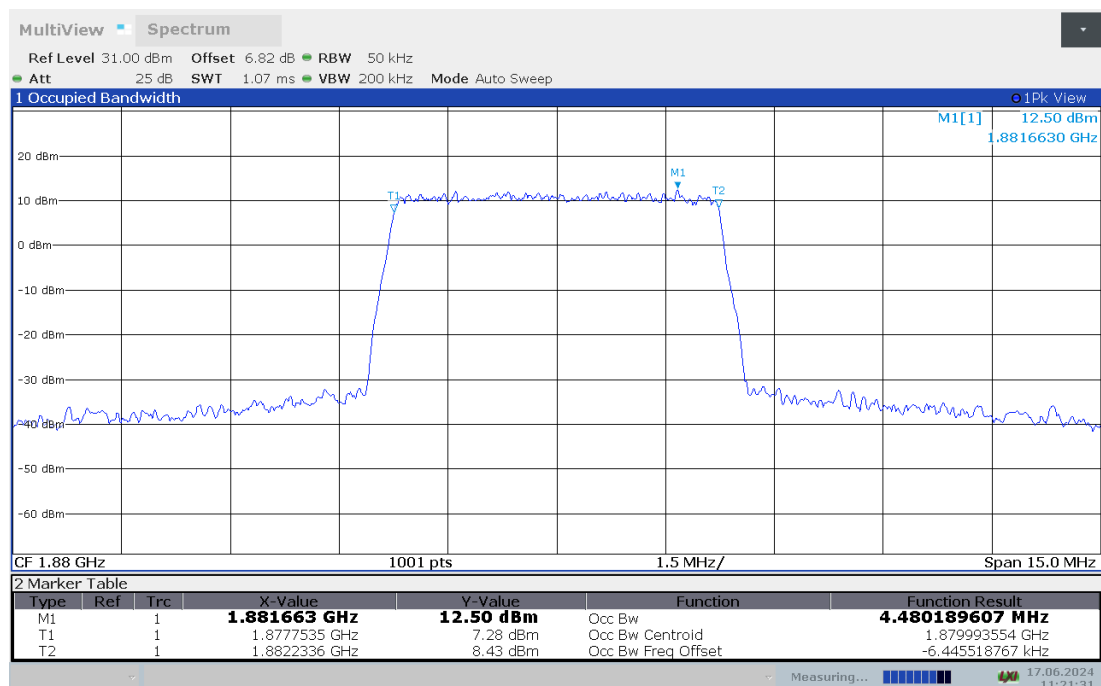
### LTE band 2,5MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 1880            | 4.470                            | 4.480 |
| 1852.5          | 4.469                            | 4.478 |
| 1907.5          | 4.484                            | 4.469 |

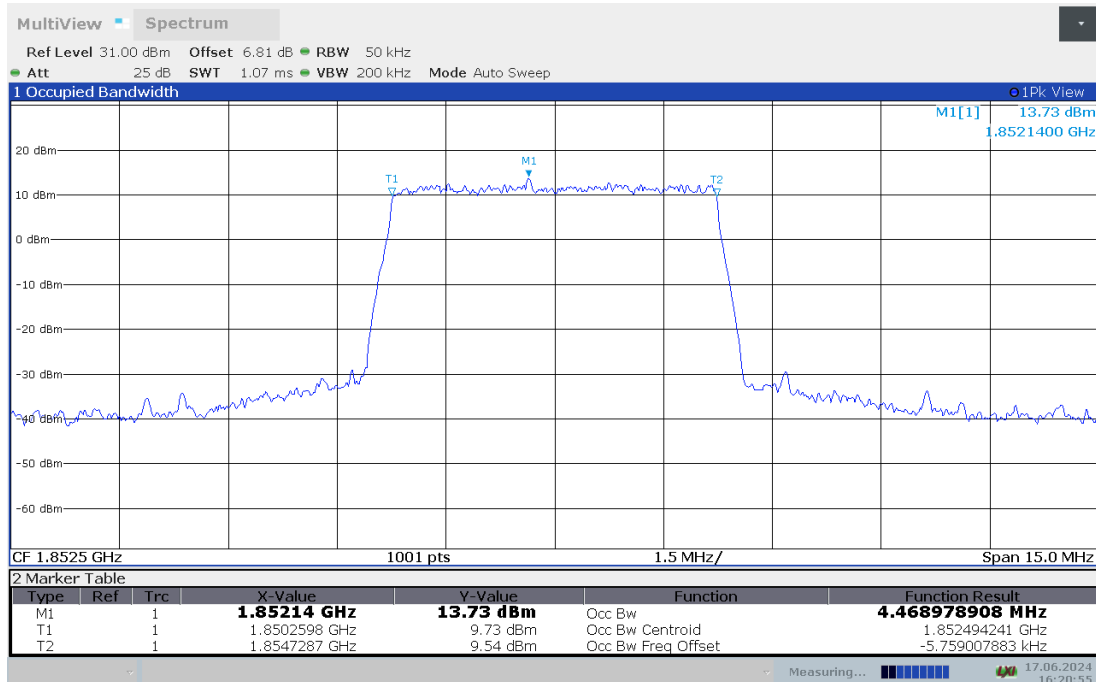
### LTE band 2 , 5MHz Bandwidth,MID,QPSK (99% BW)



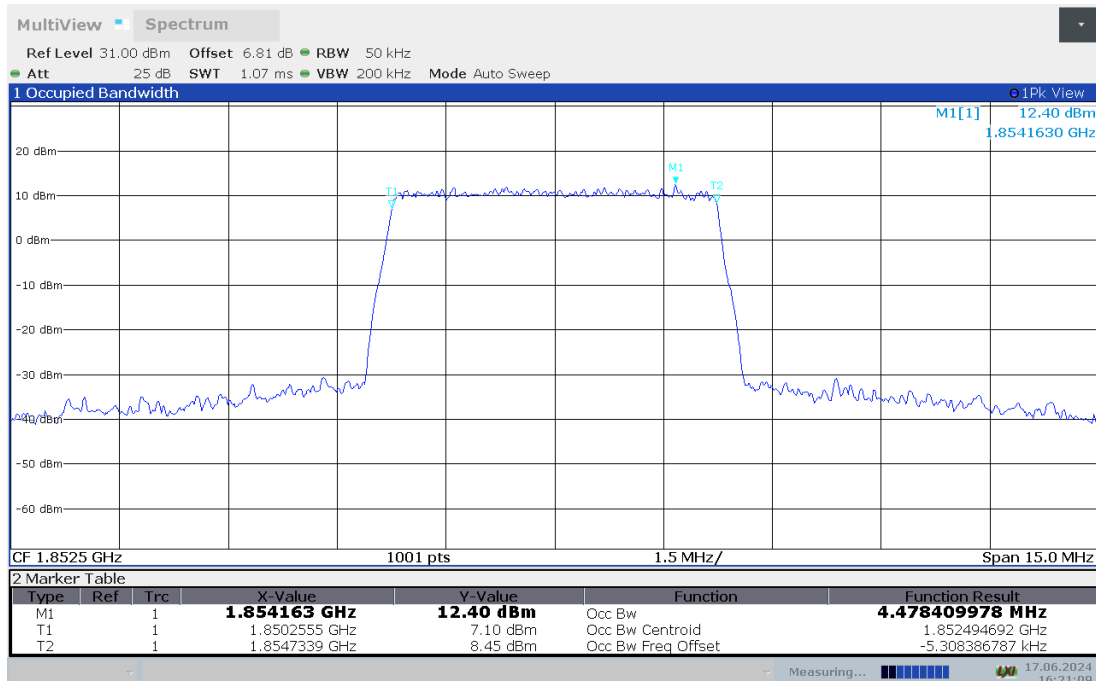
### LTE band 2 , 5MHz Bandwidth,MID,16QAM (99% BW)



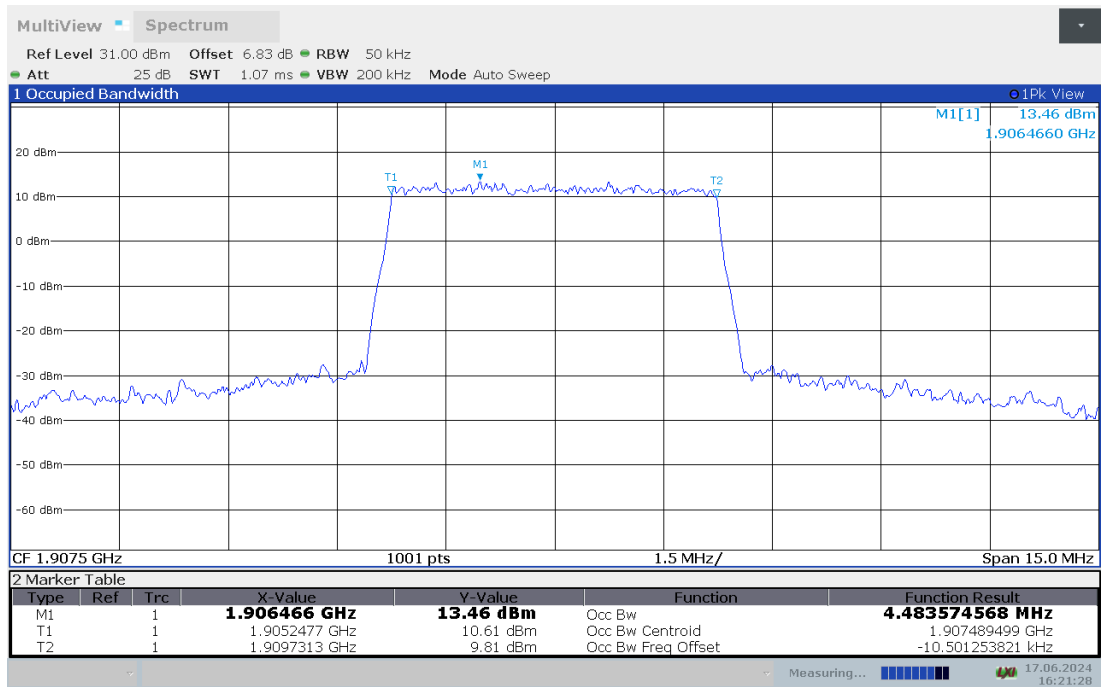
### LTE band 2 , 5MHz Bandwidth,LOW,QPSK (99% BW)



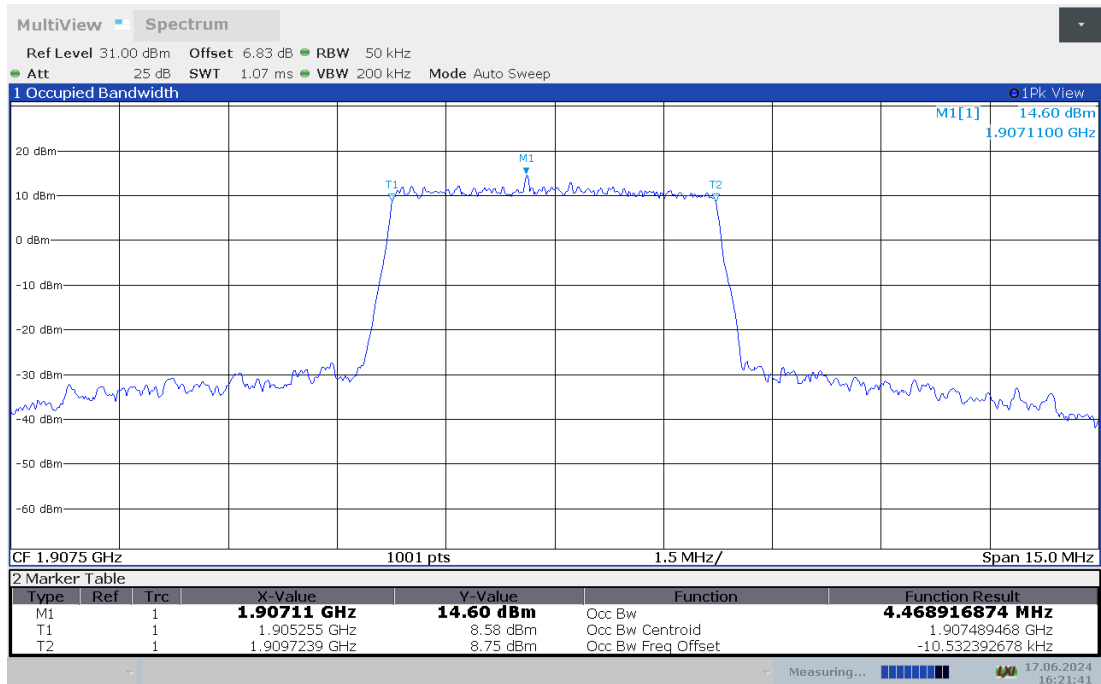
### LTE band 2 , 5MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 2 , 5MHz Bandwidth,HIGH,QPSK (99% BW)



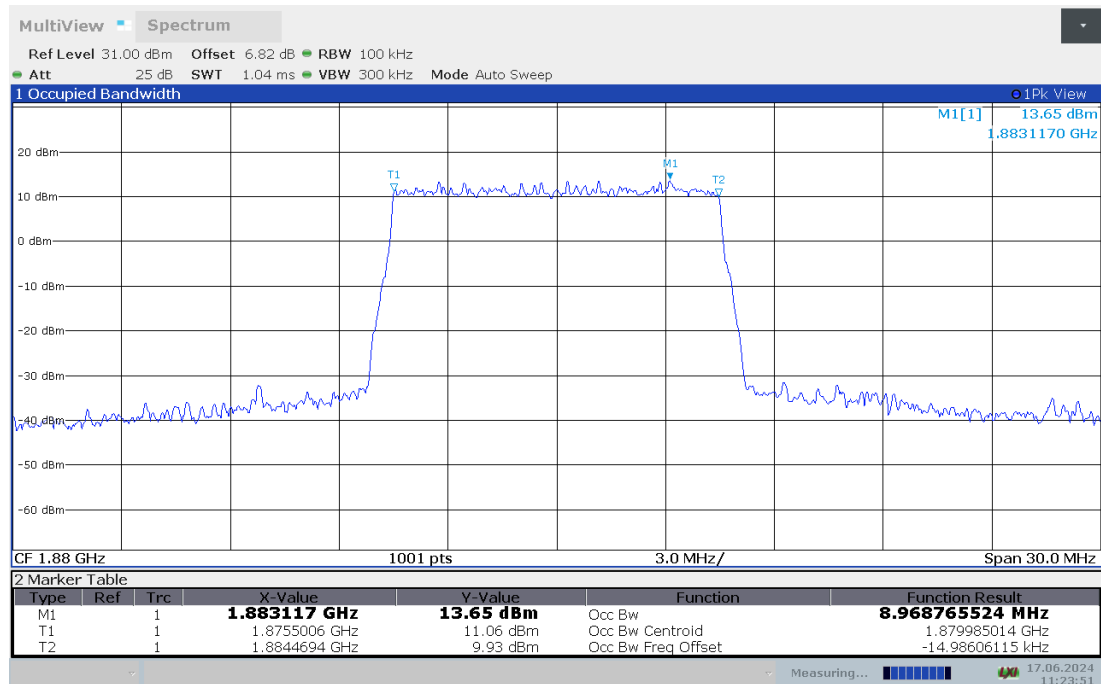
### LTE band 2 , 5MHz Bandwidth,HIGH,16QAM (99% BW)



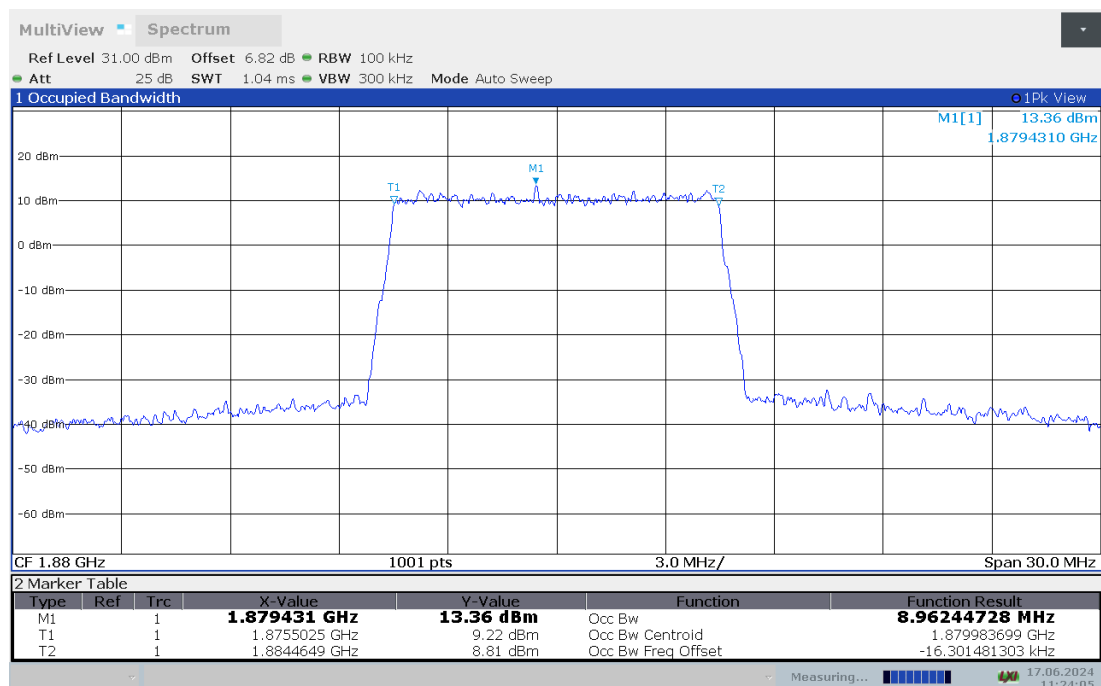
### LTE band 2,10MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 1880            | 8.969                            | 8.962 |
| 1855            | 8.963                            | 8.959 |
| 1905            | 8.969                            | 8.959 |

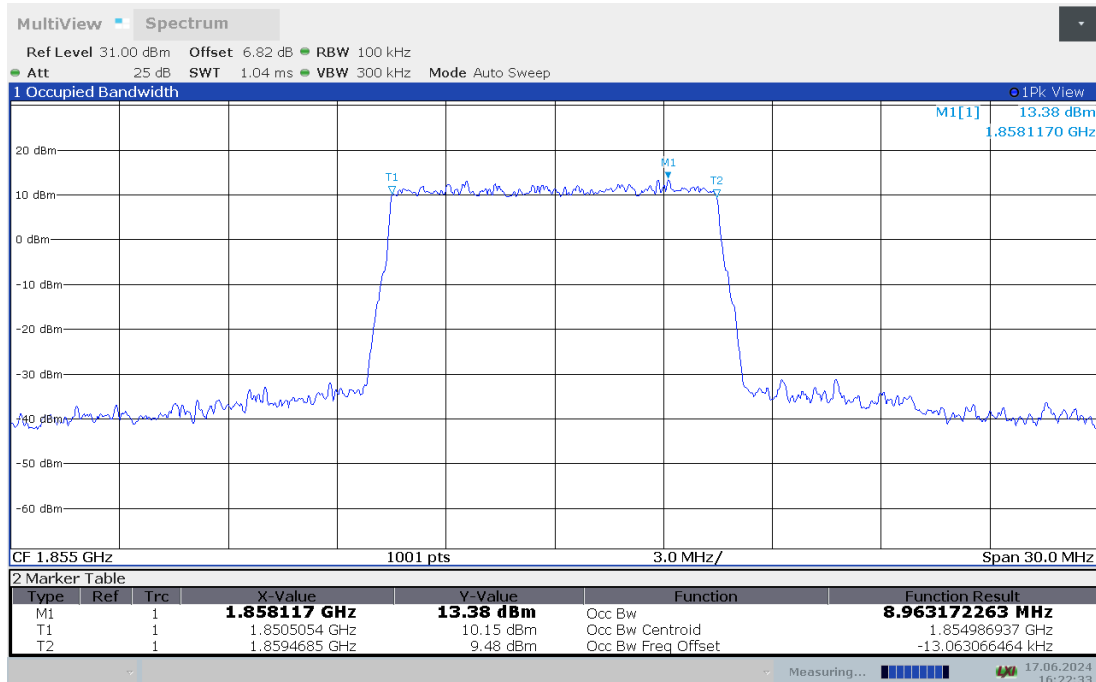
### LTE band 2 , 10MHz Bandwidth,MID,QPSK (99% BW)



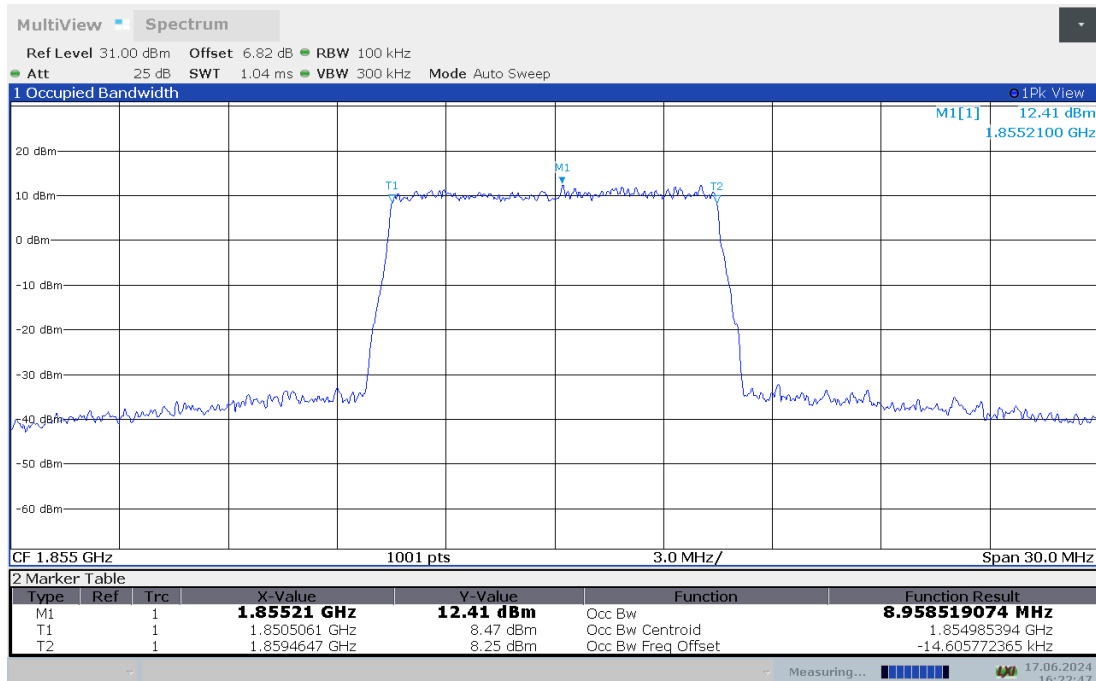
### LTE band 2 , 10MHz Bandwidth,MID,16QAM (99% BW)



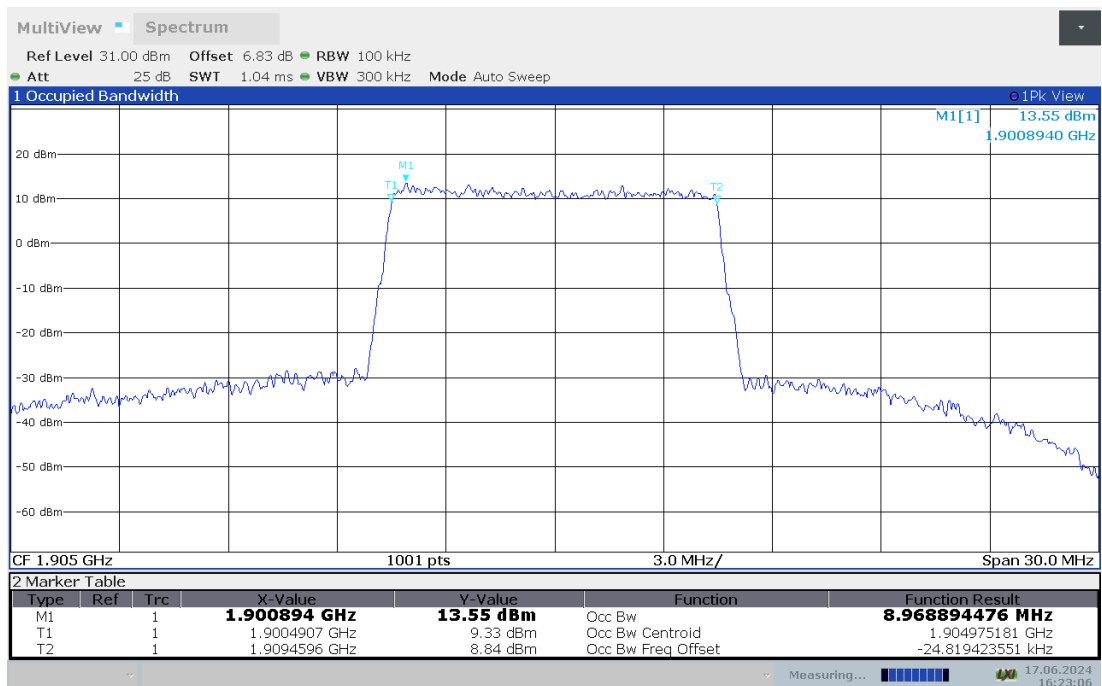
### LTE band 2 , 10MHz Bandwidth,LOW,QPSK (99% BW)



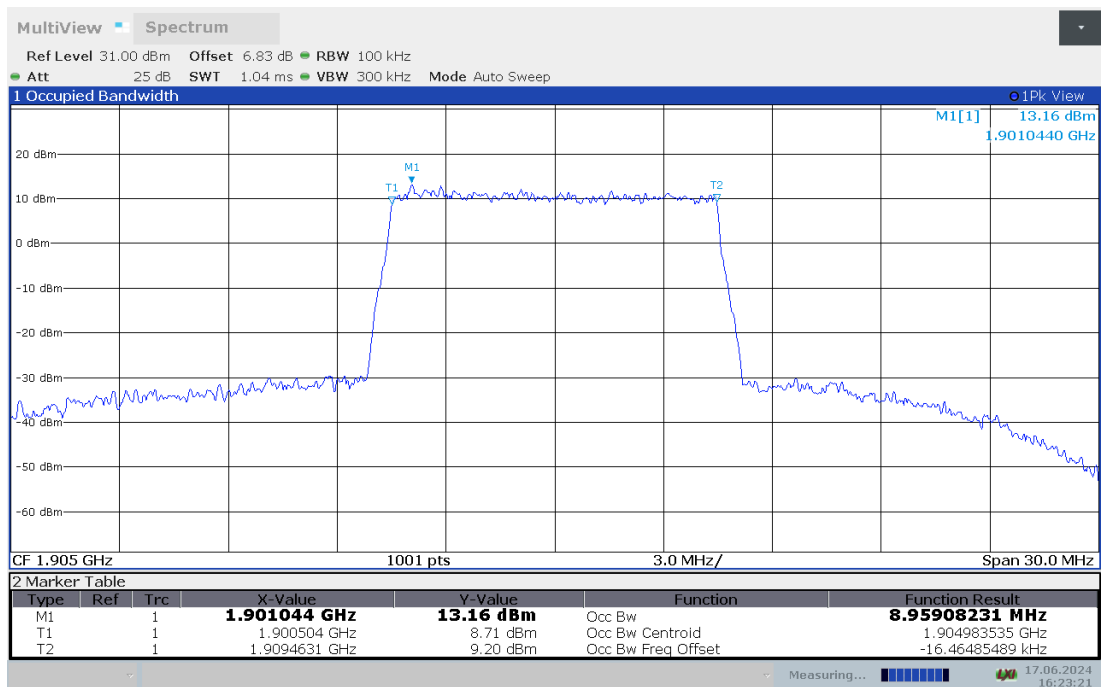
### LTE band 2 , 10MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 2 , 10MHz Bandwidth,HIGH,QPSK (99% BW)



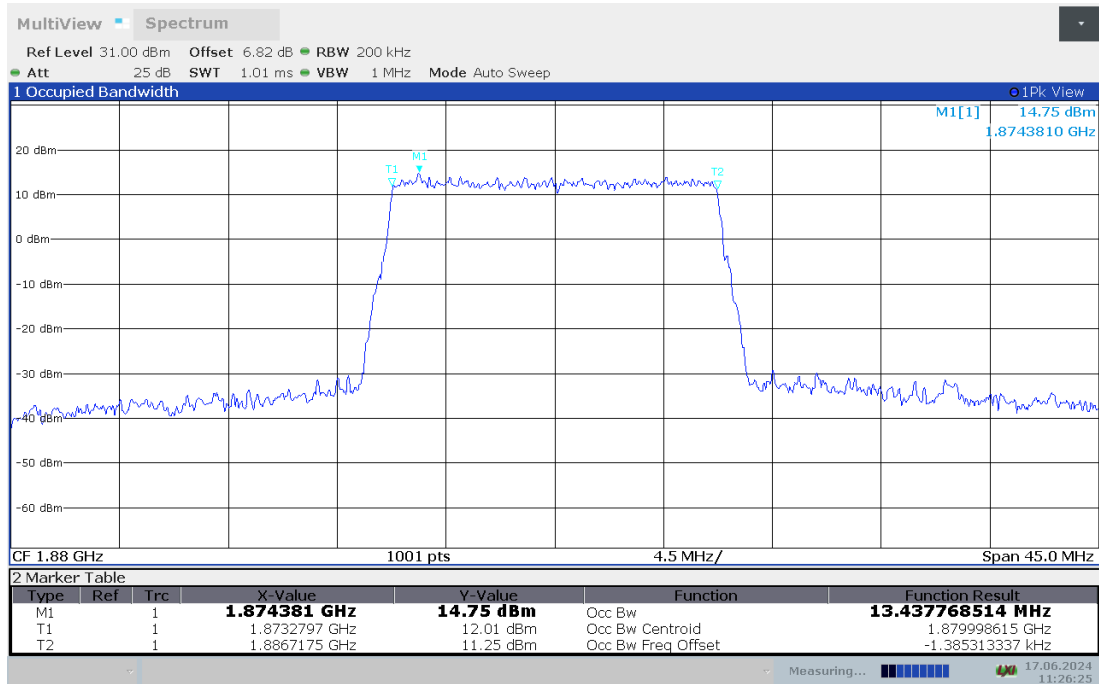
### LTE band 2 , 10MHz Bandwidth,HIGH,16QAM (99% BW)



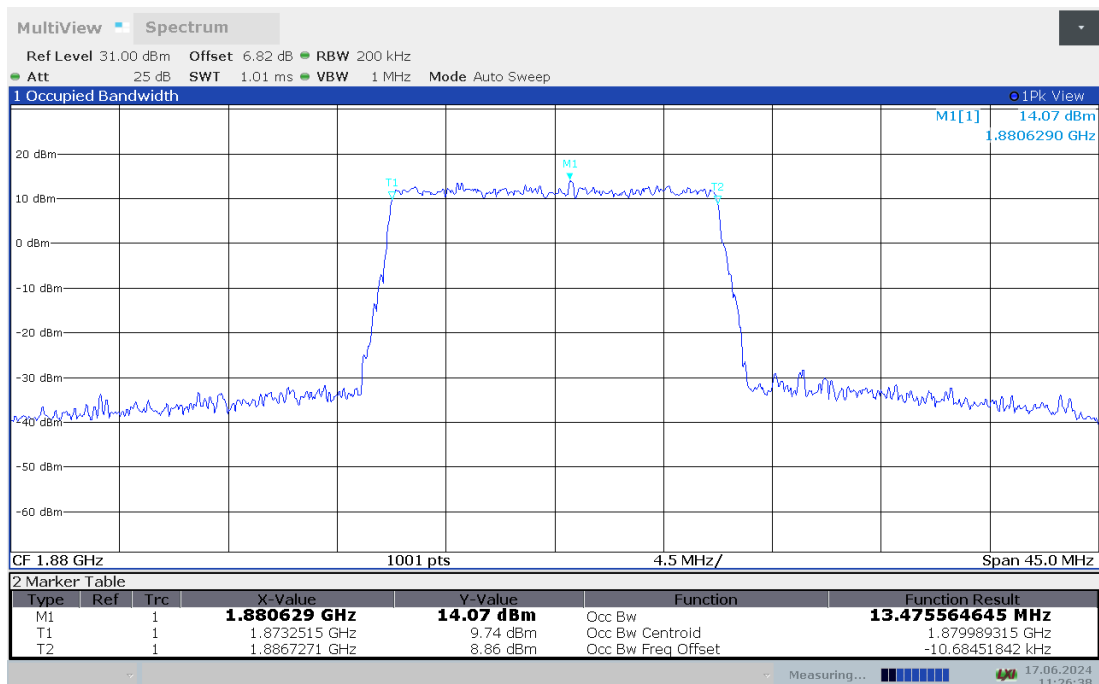
### LTE band 2,15MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |        |
|-----------------|----------------------------------|--------|
|                 | QPSK                             | 16QAM  |
| 1880            | 13.438                           | 13.476 |
| 1857.5          | 13.441                           | 13.440 |
| 1902.5          | 13.428                           | 13.458 |

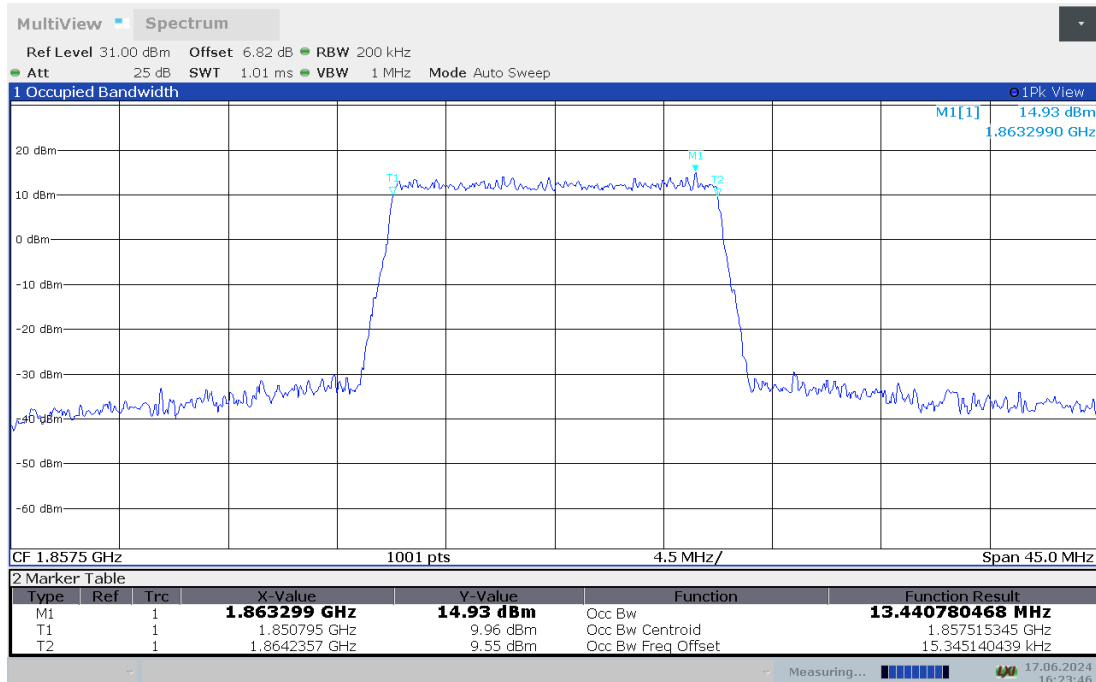
### LTE band 2 , 15MHz Bandwidth,MID,QPSK (99% BW)



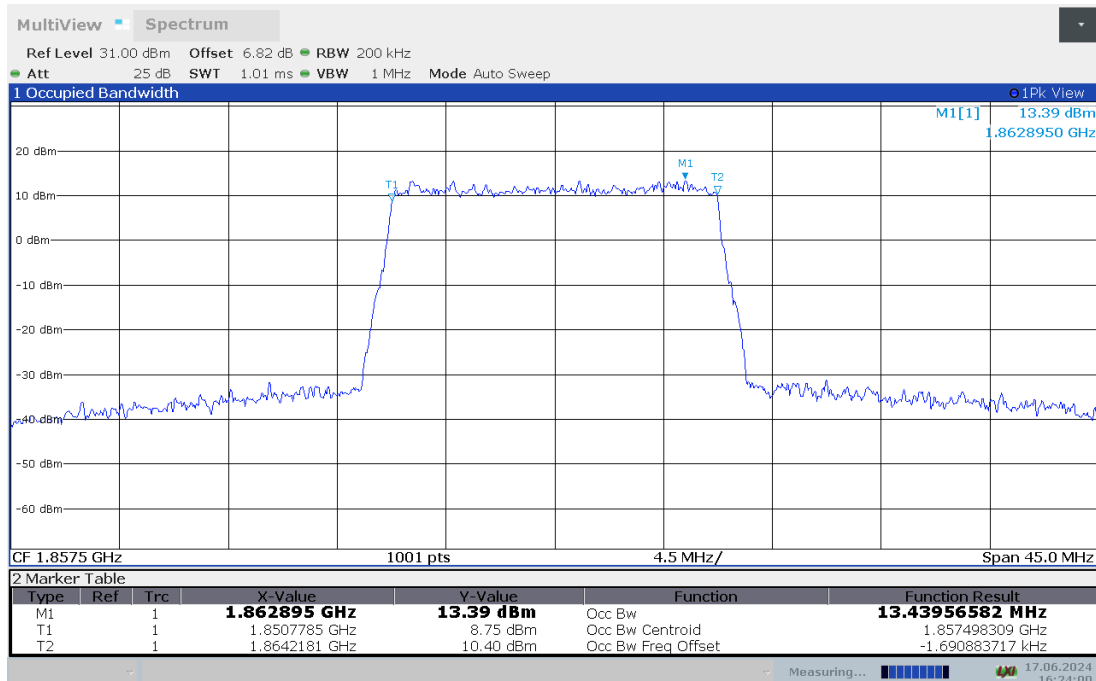
### LTE band 2 , 15MHz Bandwidth,MID,16QAM (99% BW)



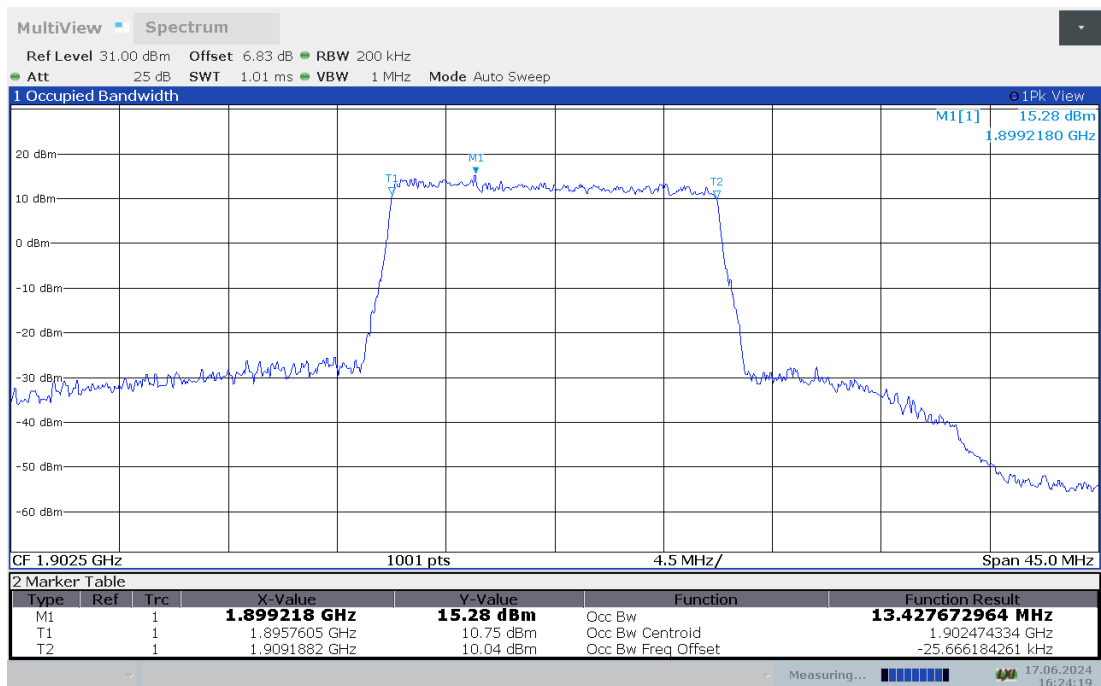
### LTE band 2 , 15MHz Bandwidth,LOW,QPSK (99% BW)



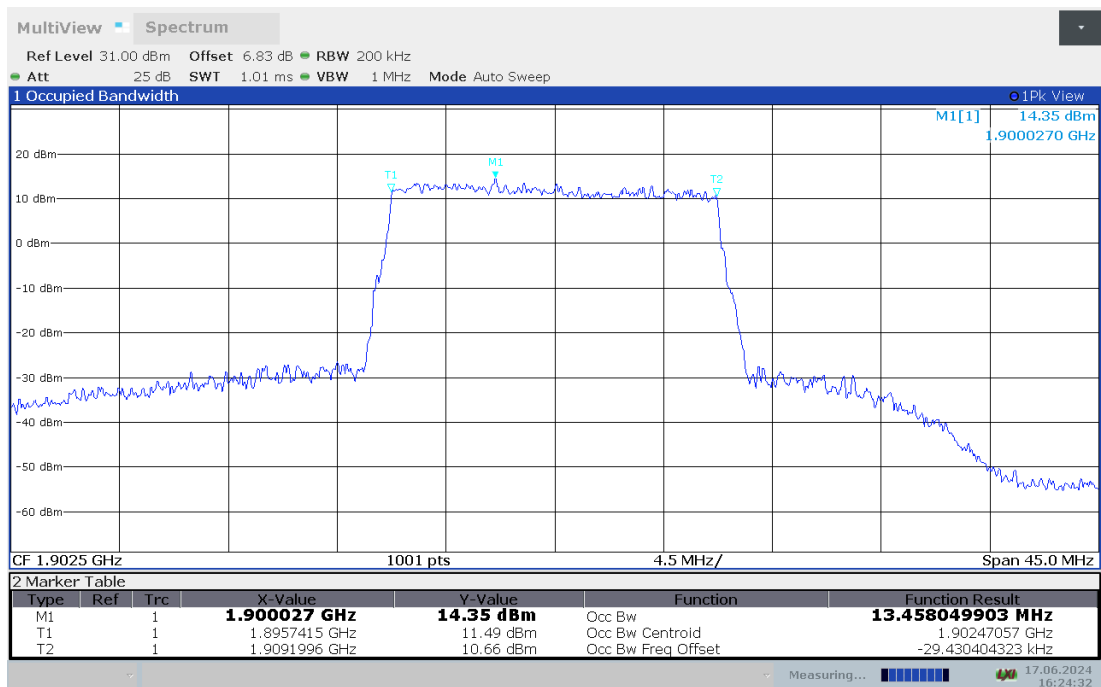
### LTE band 2 , 15MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 2 , 15MHz Bandwidth,HIGH,QPSK (99% BW)



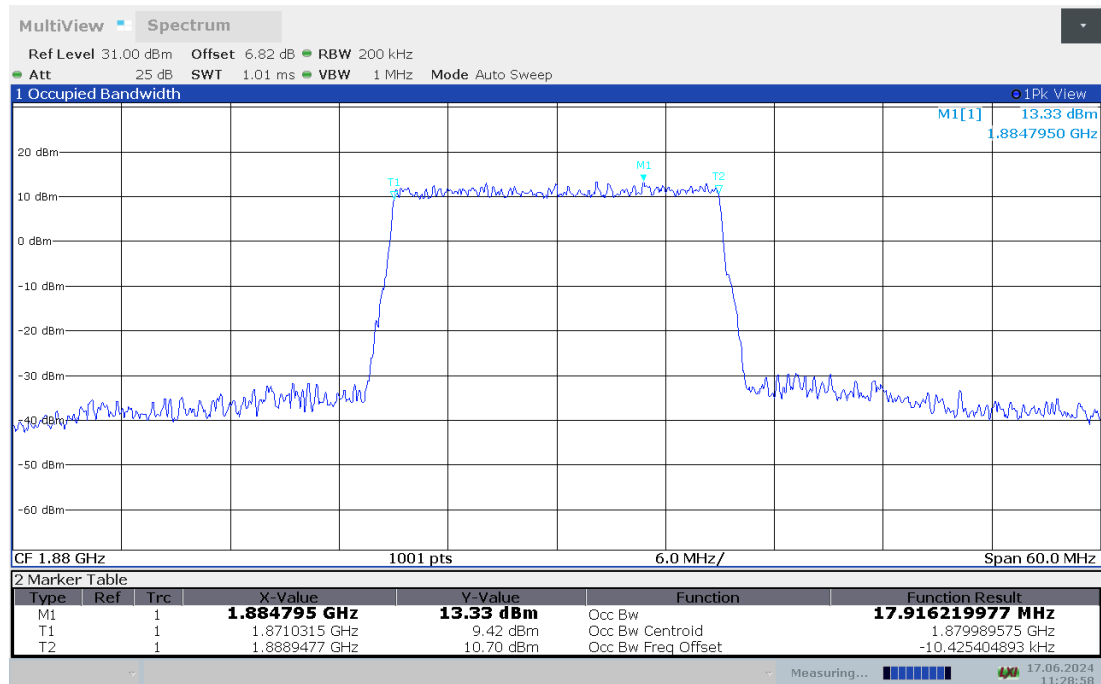
### LTE band 2 , 15MHz Bandwidth,HIGH,16QAM (99% BW)



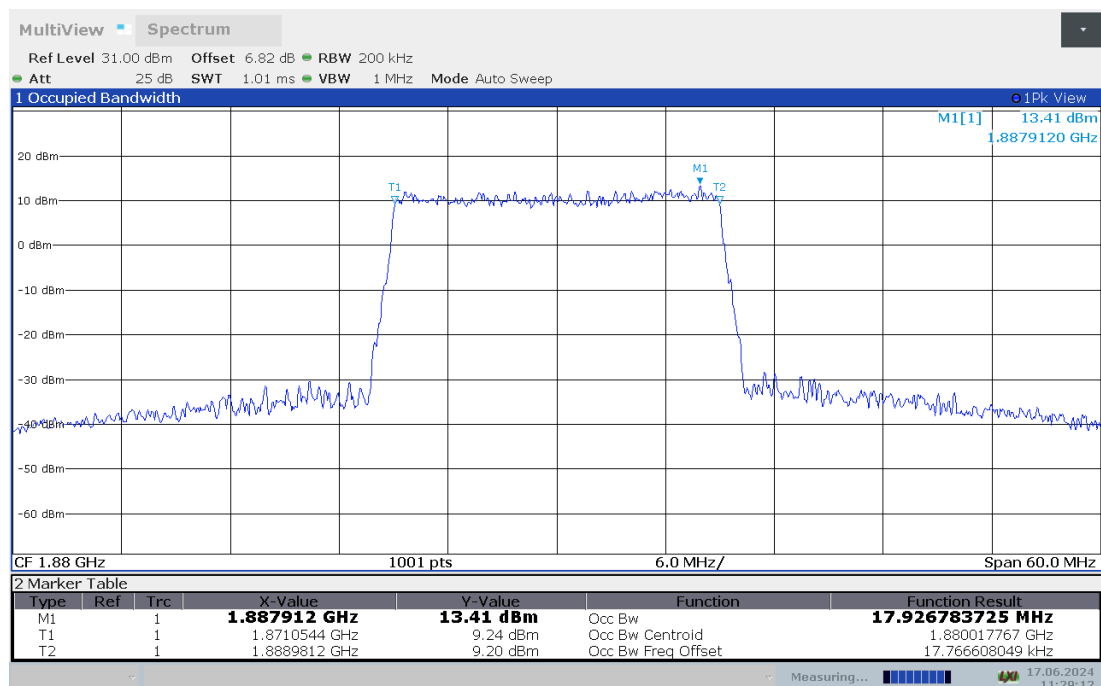
### LTE band 2,20MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |        |
|-----------------|----------------------------------|--------|
|                 | QPSK                             | 16QAM  |
| 1880            | 17.916                           | 17.927 |
| 1860            | 17.922                           | 17.953 |
| 1900            | 17.914                           | 17.888 |

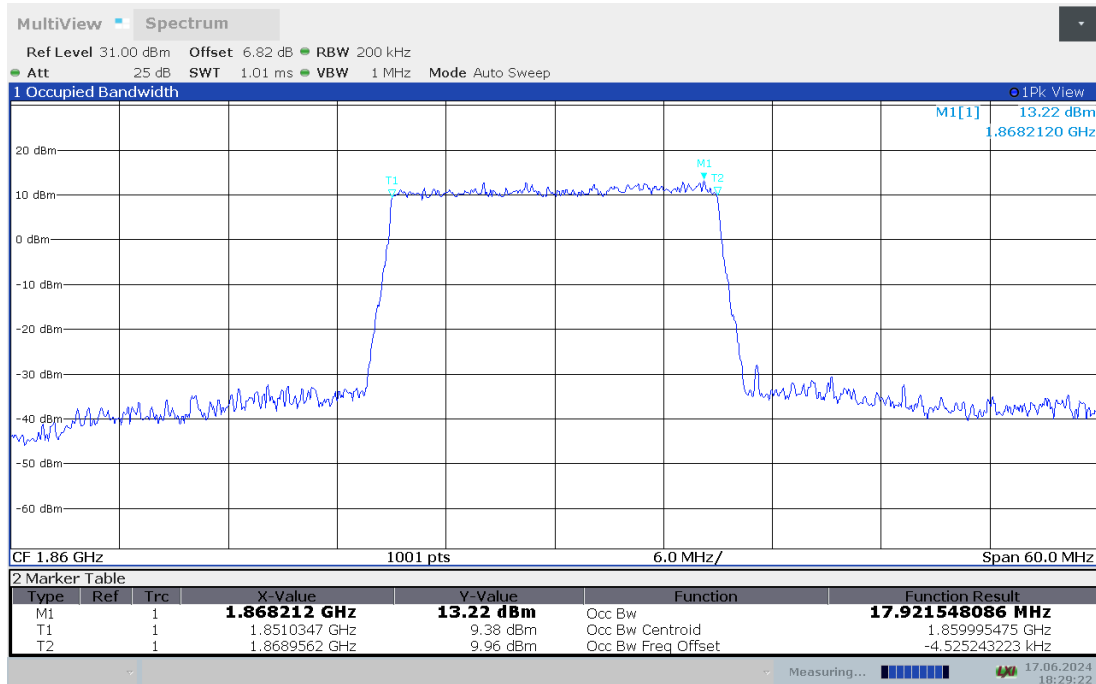
### LTE band 2 , 20MHz Bandwidth,MID,QPSK (99% BW)



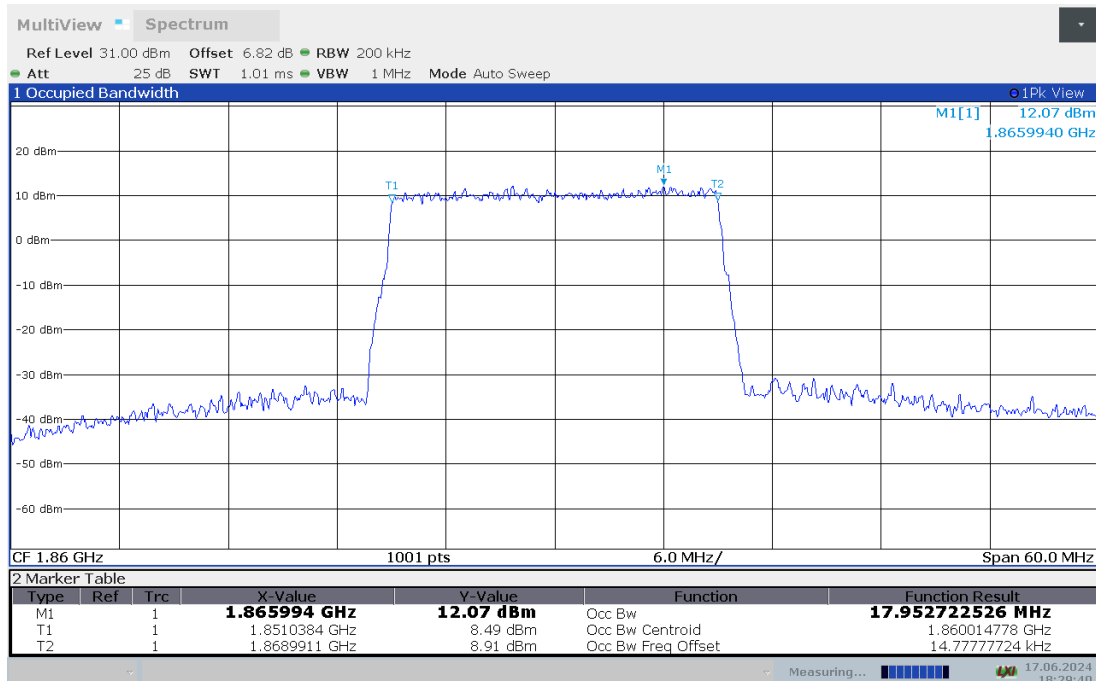
### LTE band 2 , 20MHz Bandwidth,MID,16QAM (99% BW)



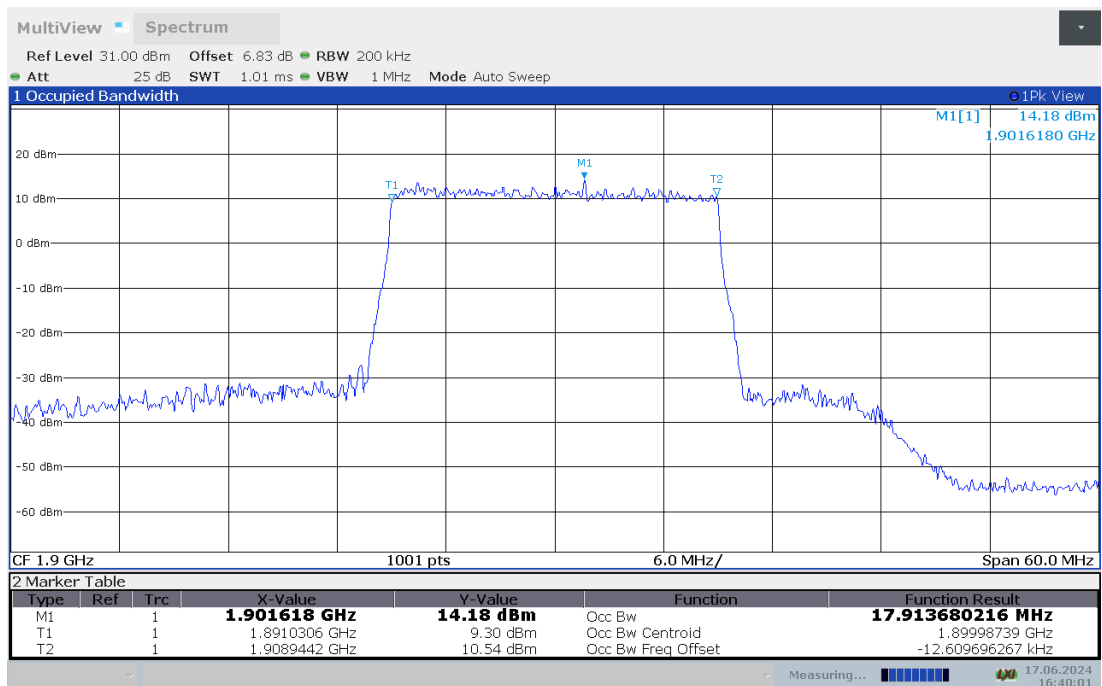
### LTE band 2 , 20MHz Bandwidth,LOW,QPSK (99% BW)



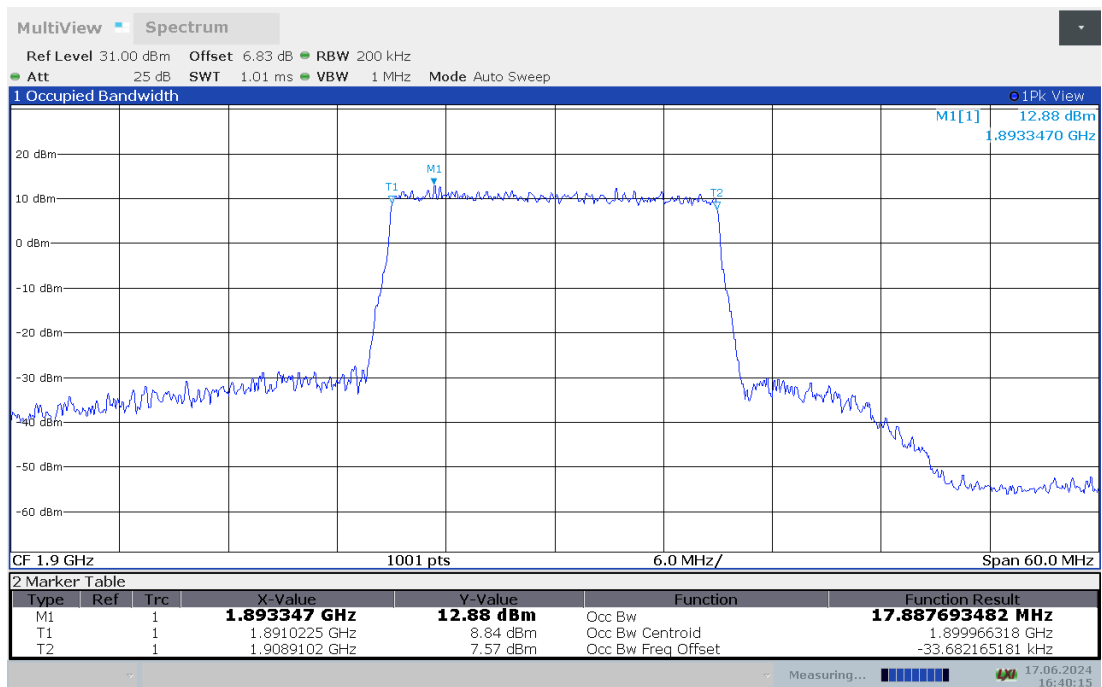
### LTE band 2 , 20MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 2 , 20MHz Bandwidth,HIGH,QPSK (99% BW)



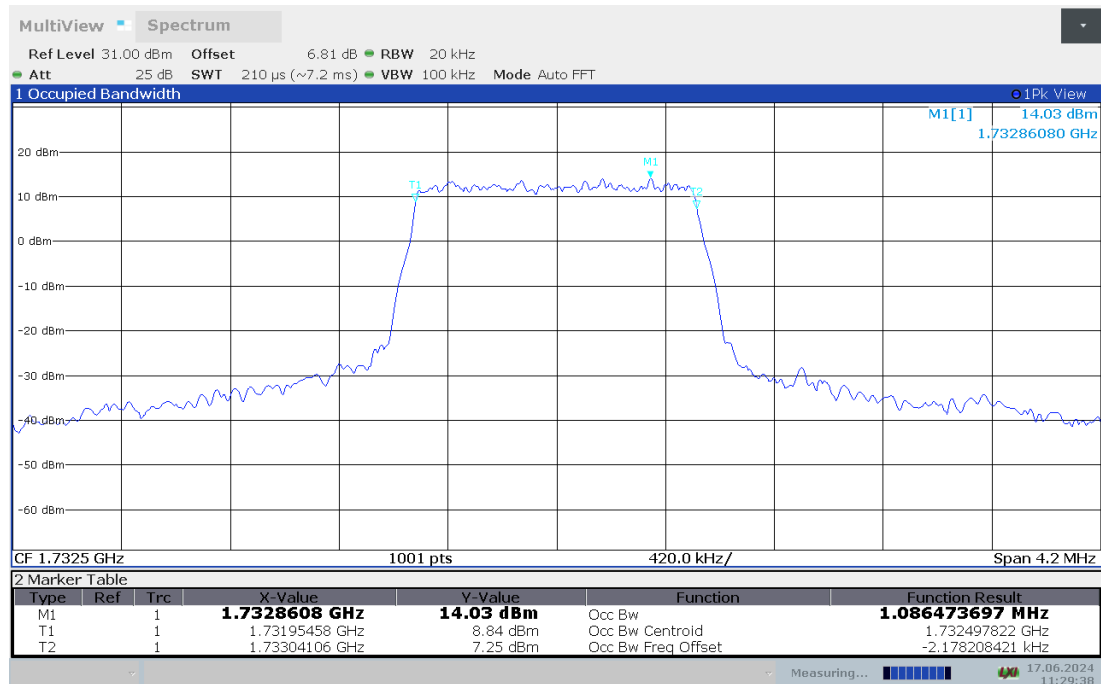
### LTE band 2 , 20MHz Bandwidth,HIGH,16QAM (99% BW)



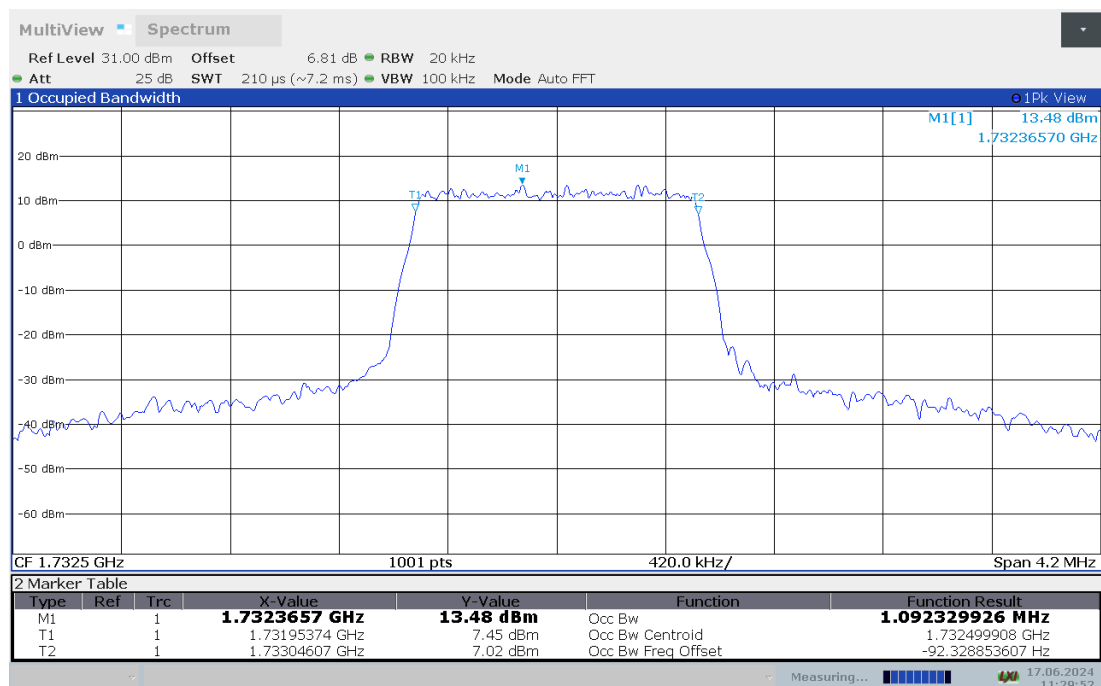
### LTE band 4,1.4MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 1732.5          | 1.086                            | 1.092 |
| 1710.7          | 1.084                            | 1.092 |
| 1754.3          | 1.086                            | 1.082 |

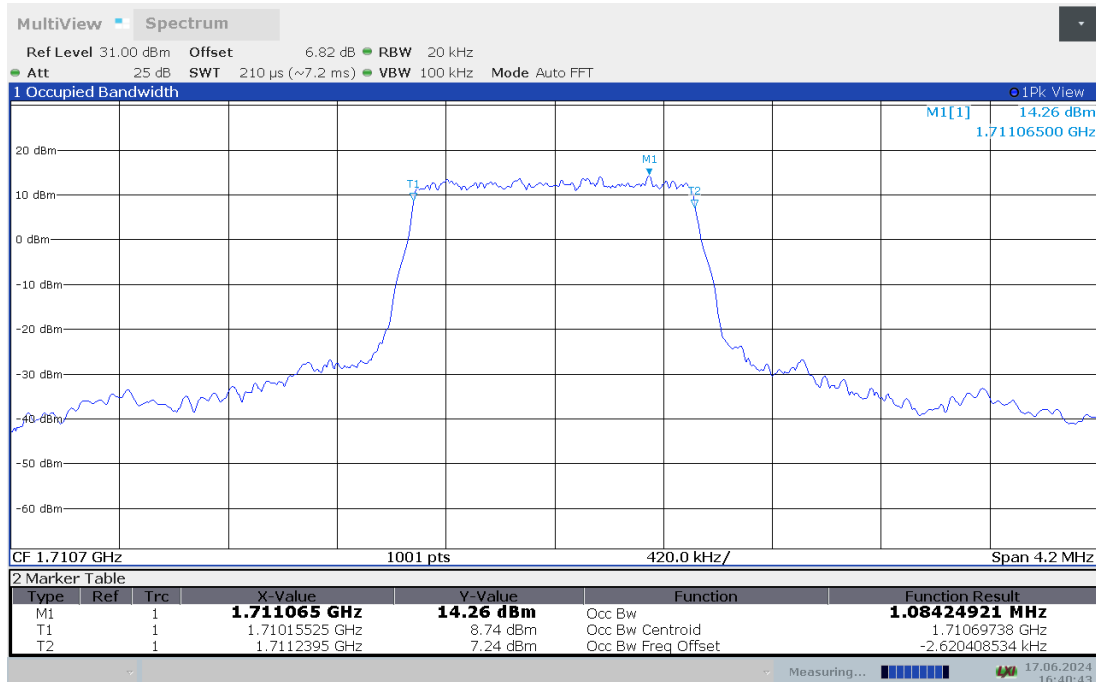
### LTE band 4 , 1.4MHz Bandwidth,MID,QPSK (99% BW)



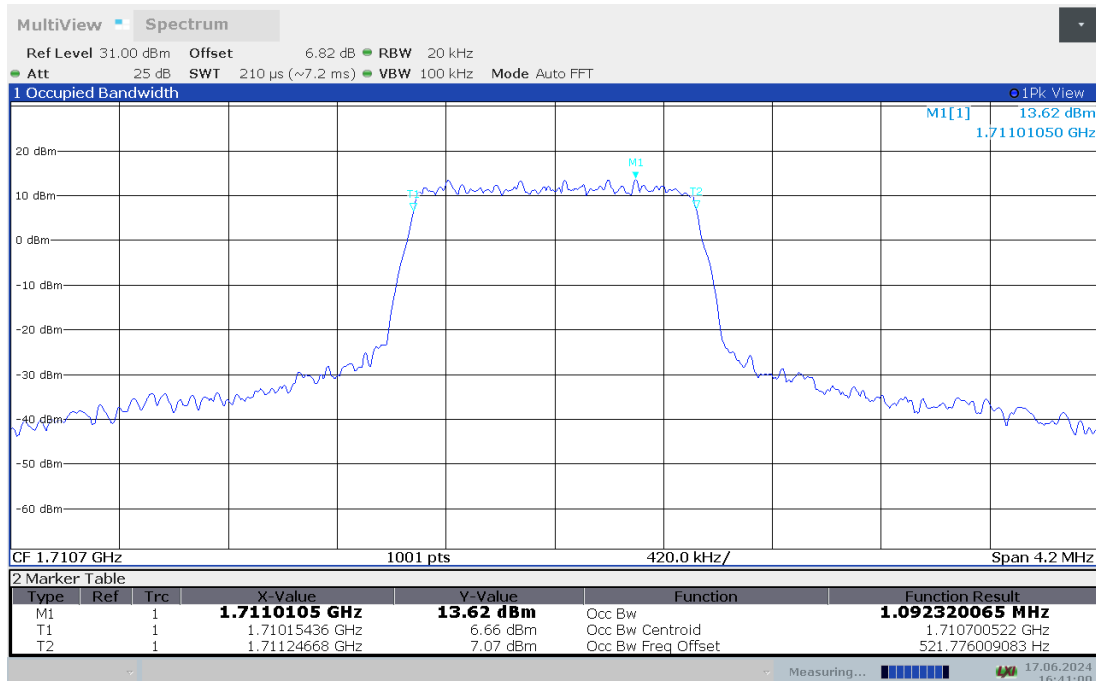
### LTE band 4 , 1.4MHz Bandwidth,MID,16QAM (99% BW)



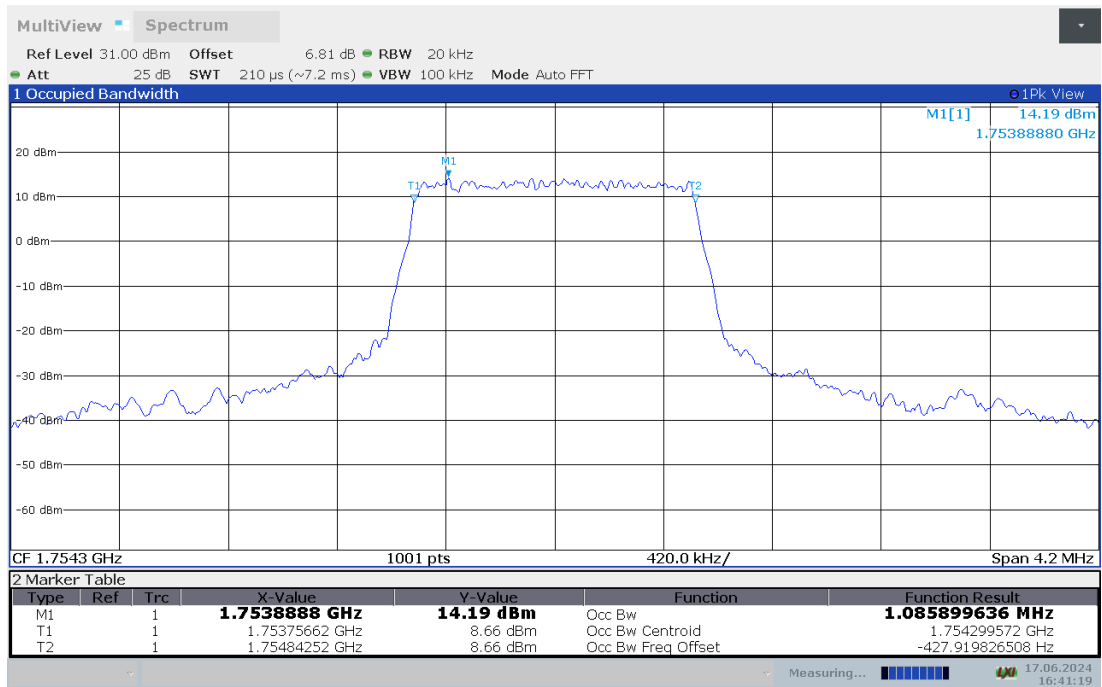
### LTE band 4 , 1.4MHz Bandwidth,LOW,QPSK (99% BW)



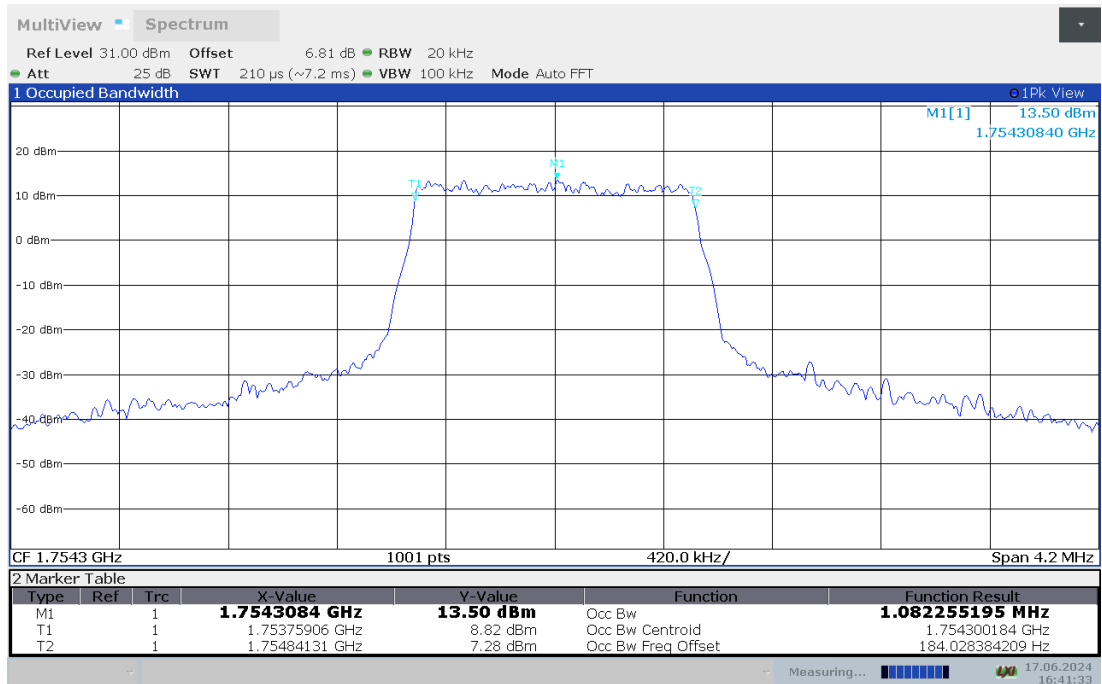
### LTE band 4 , 1.4MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 4 , 1.4MHz Bandwidth,HIGH,QPSK (99% BW)



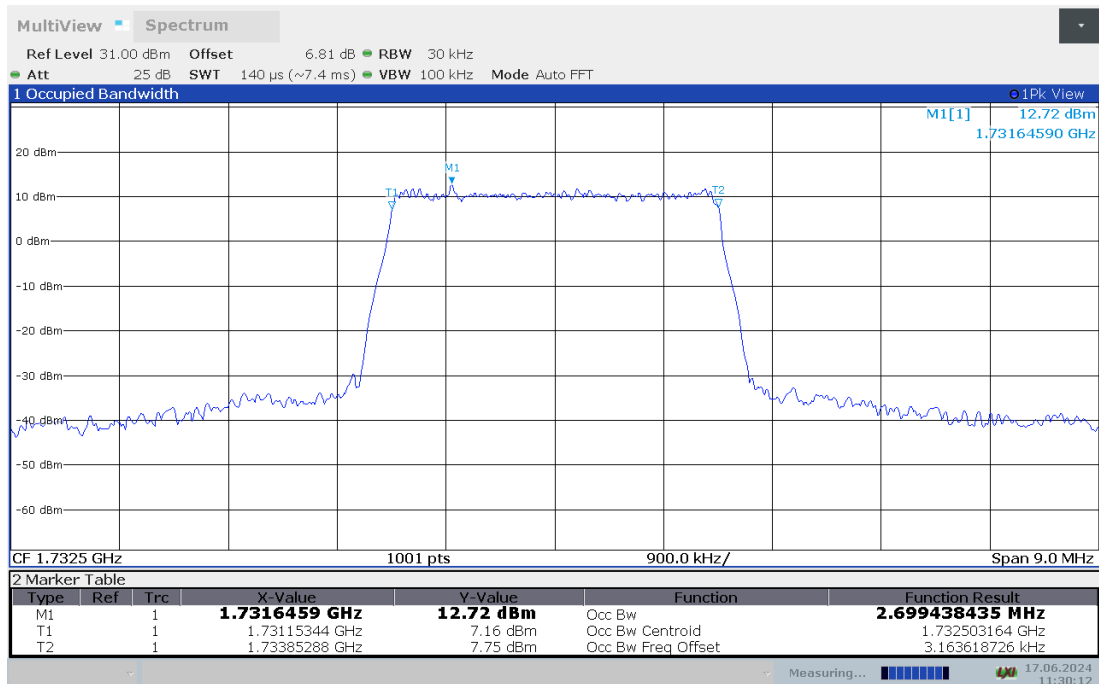
### LTE band 4 , 1.4MHz Bandwidth,HIGH,16QAM (99% BW)



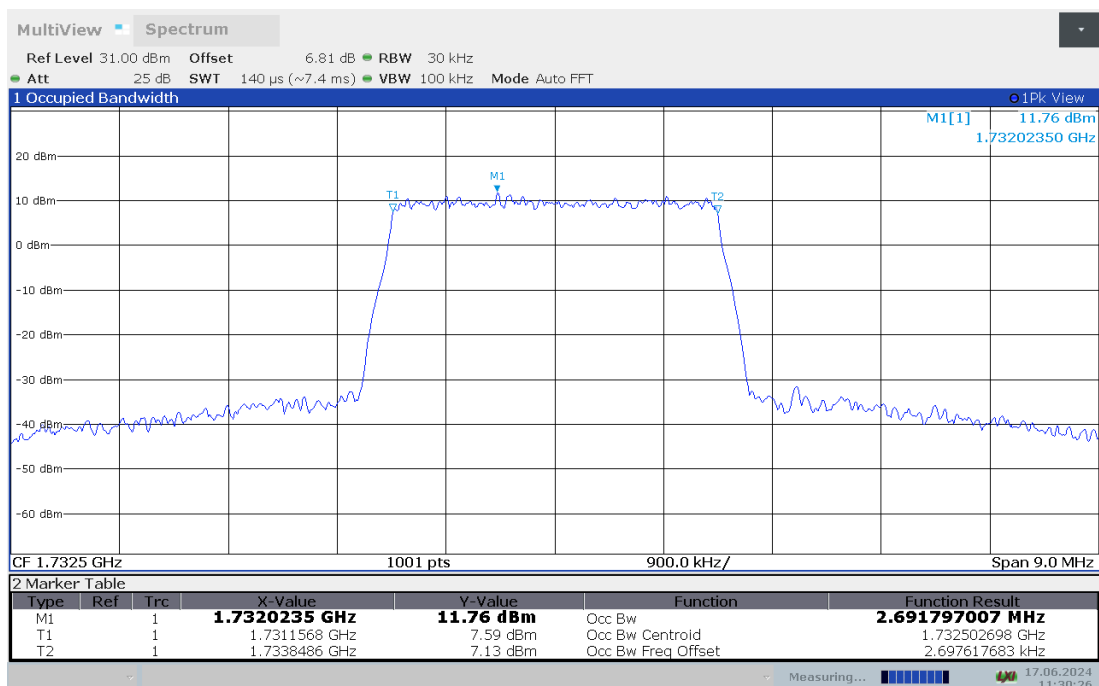
### LTE band 4,3MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 1732.5          | 2.699                            | 2.692 |
| 1711.5          | 2.696                            | 2.692 |
| 1753.5          | 2.695                            | 2.689 |

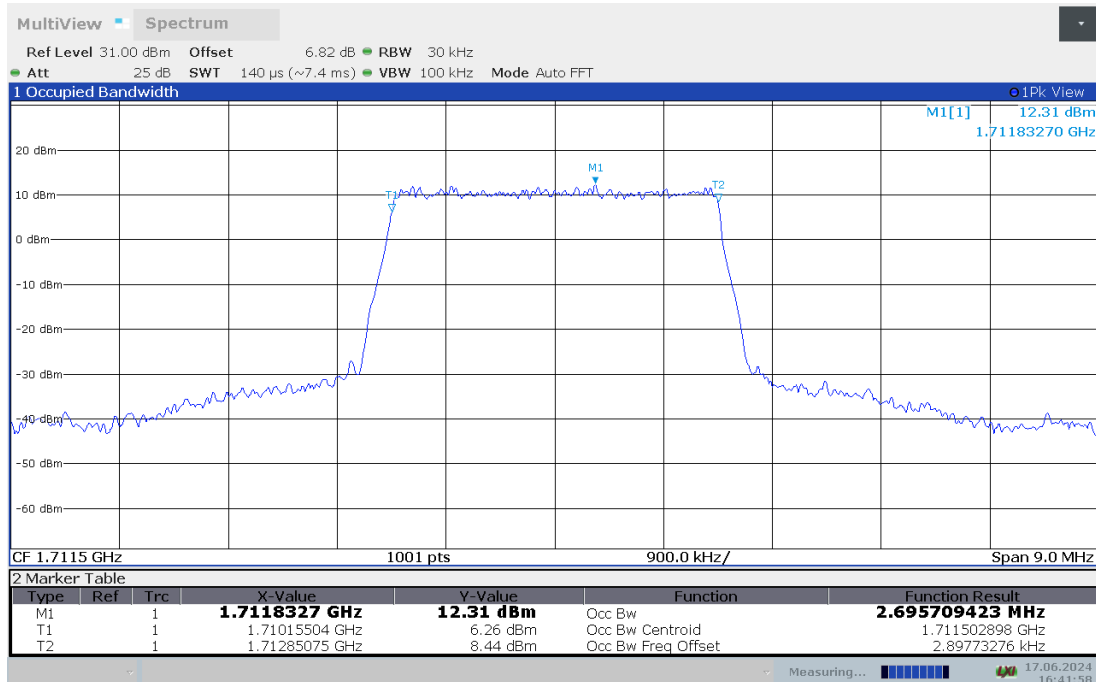
### LTE band 4 , 3MHz Bandwidth,MID,QPSK (99% BW)



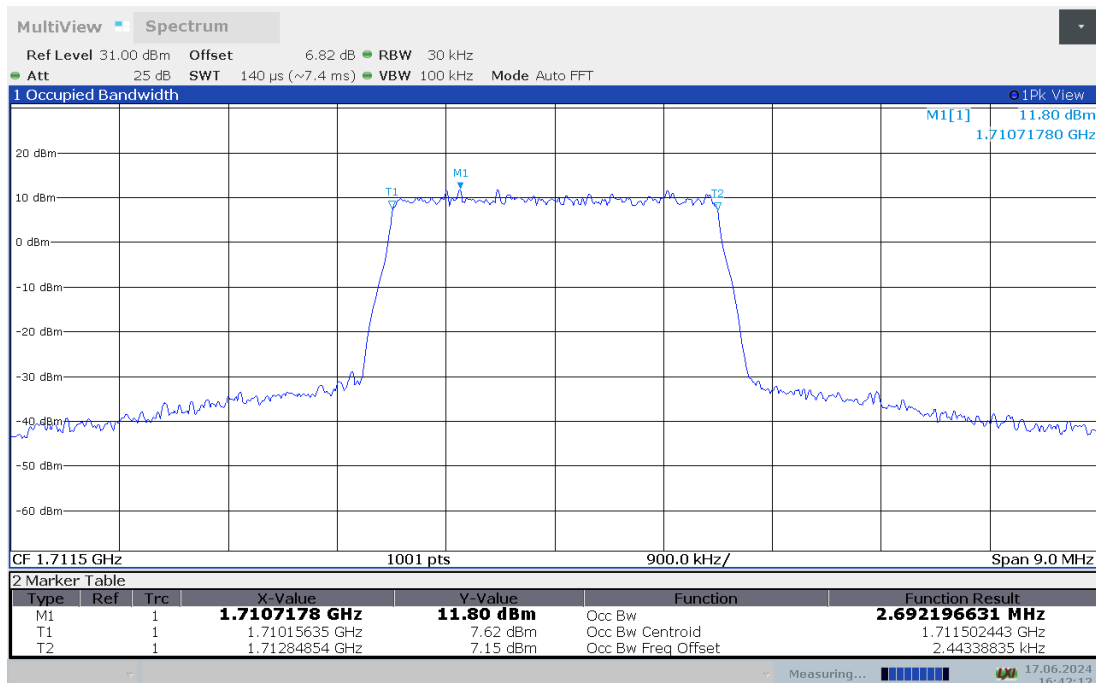
### LTE band 4 , 3MHz Bandwidth,MID,16QAM (99% BW)



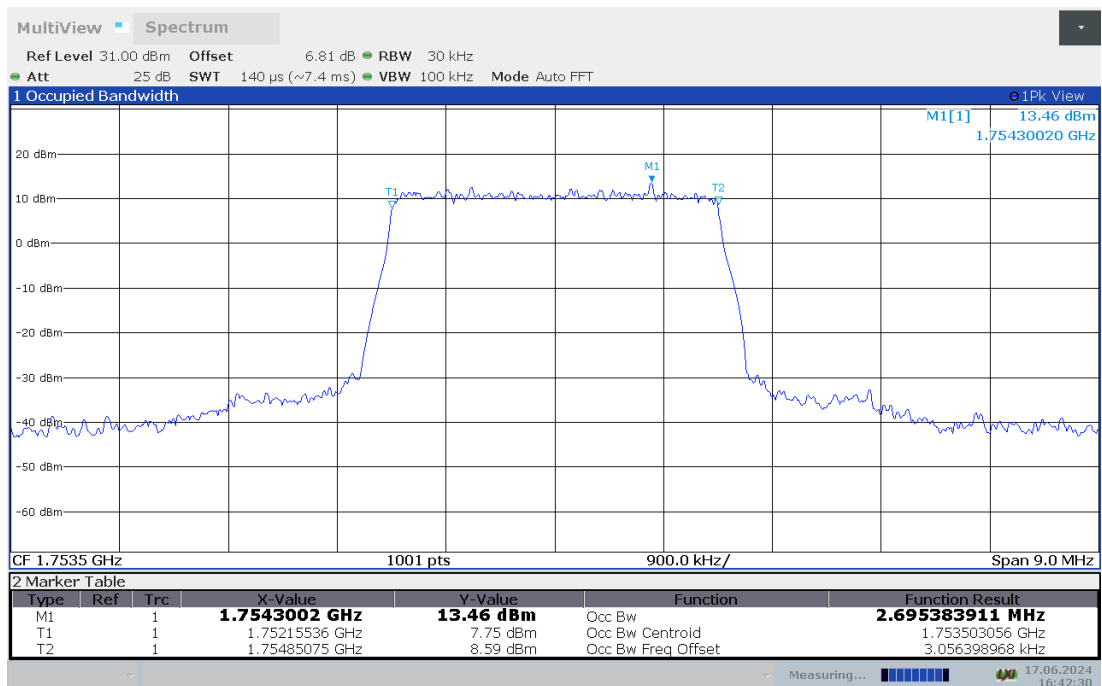
### LTE band 4 , 3MHz Bandwidth,LOW,QPSK (99% BW)



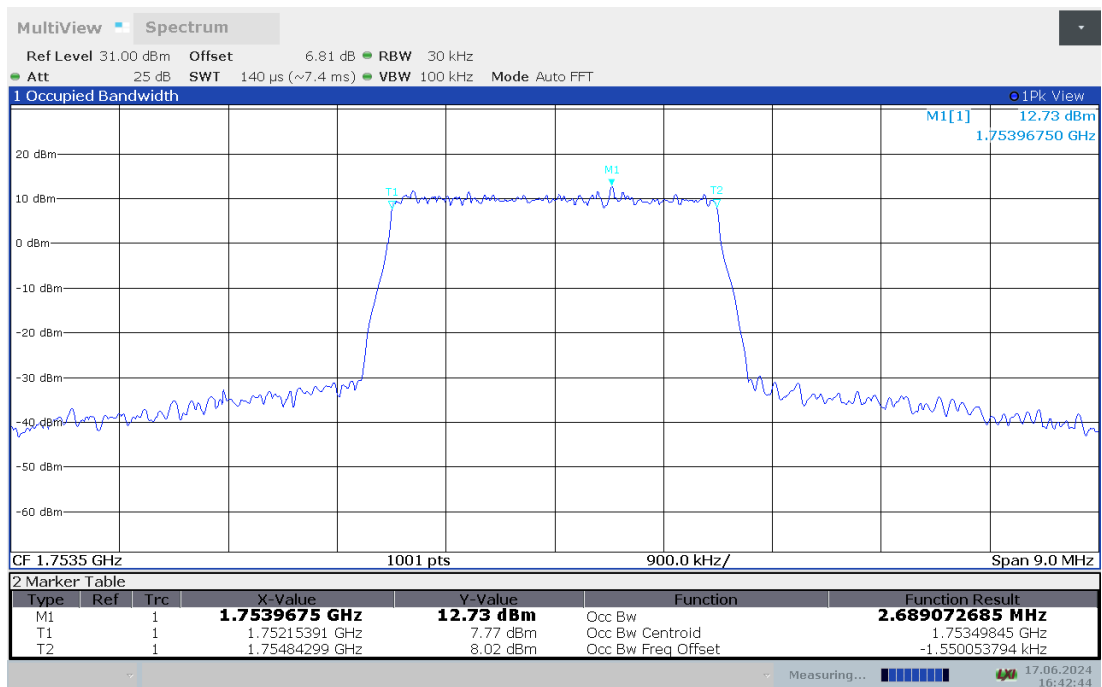
### LTE band 4 , 3MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 4 , 3MHz Bandwidth,HIGH,QPSK (99% BW)



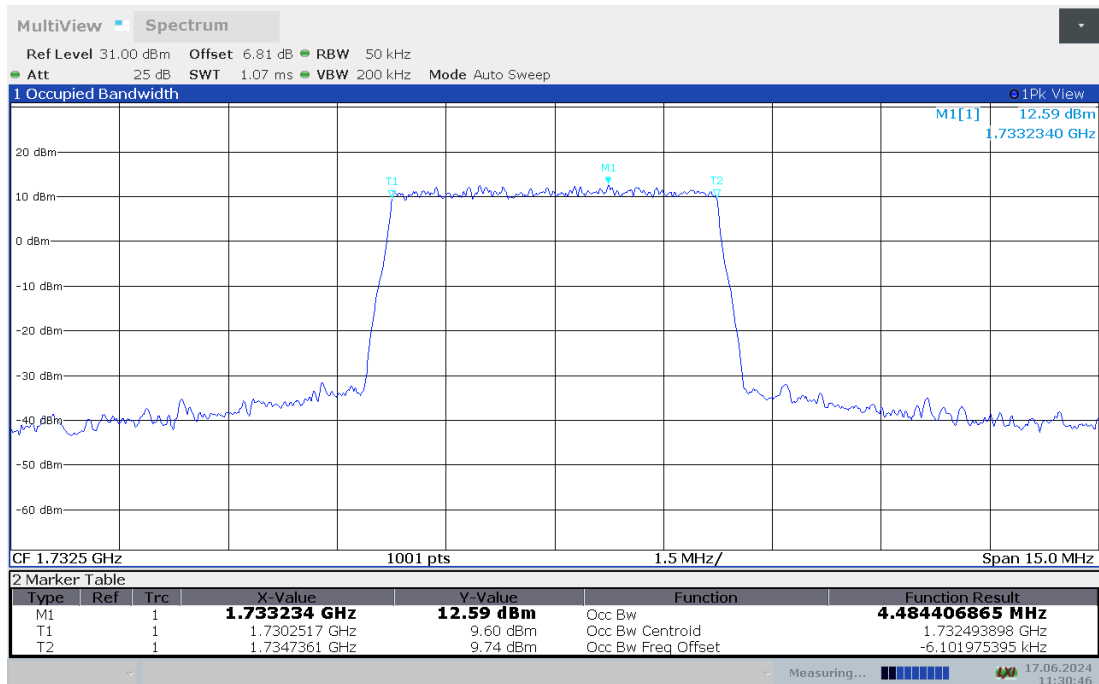
### LTE band 4 , 3MHz Bandwidth,HIGH,16QAM (99% BW)



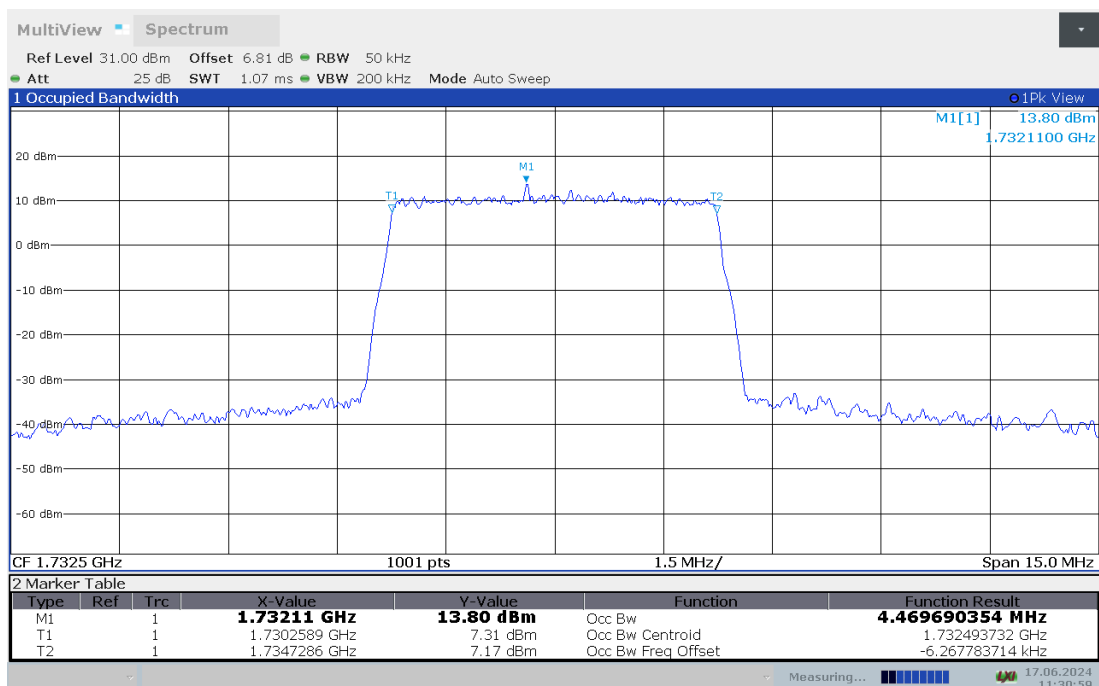
### LTE band 4,5MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 1732.5          | 4.484                            | 4.470 |
| 1712.5          | 4.485                            | 4.469 |
| 1752.5          | 4.483                            | 4.487 |

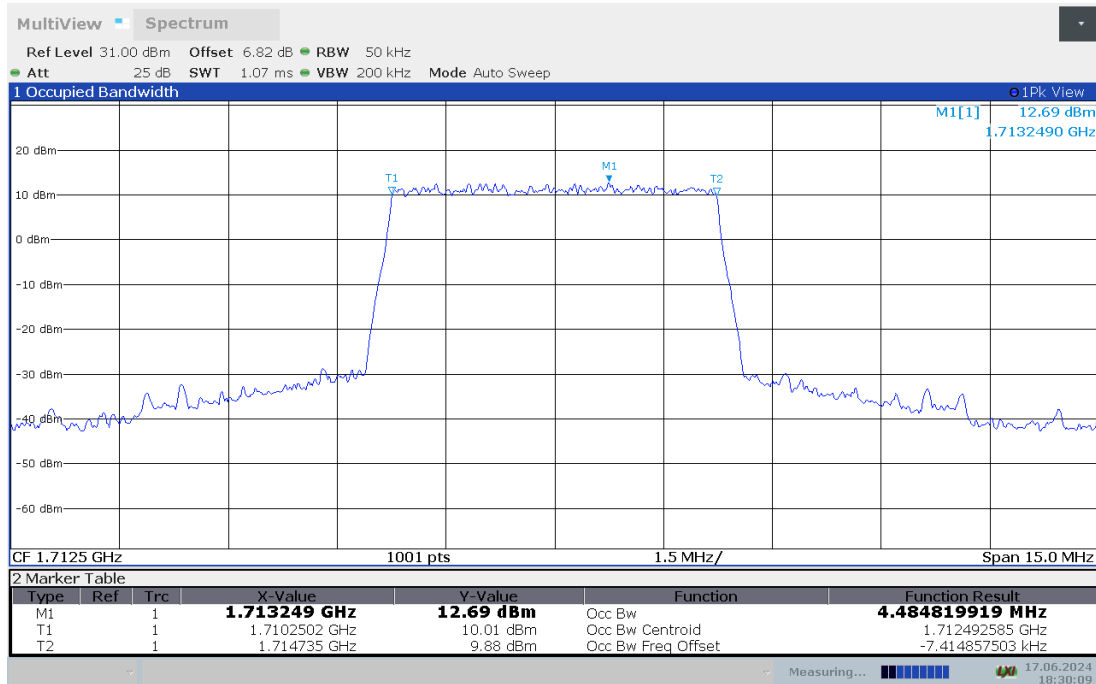
### LTE band 4 , 5MHz Bandwidth,MID,QPSK (99% BW)



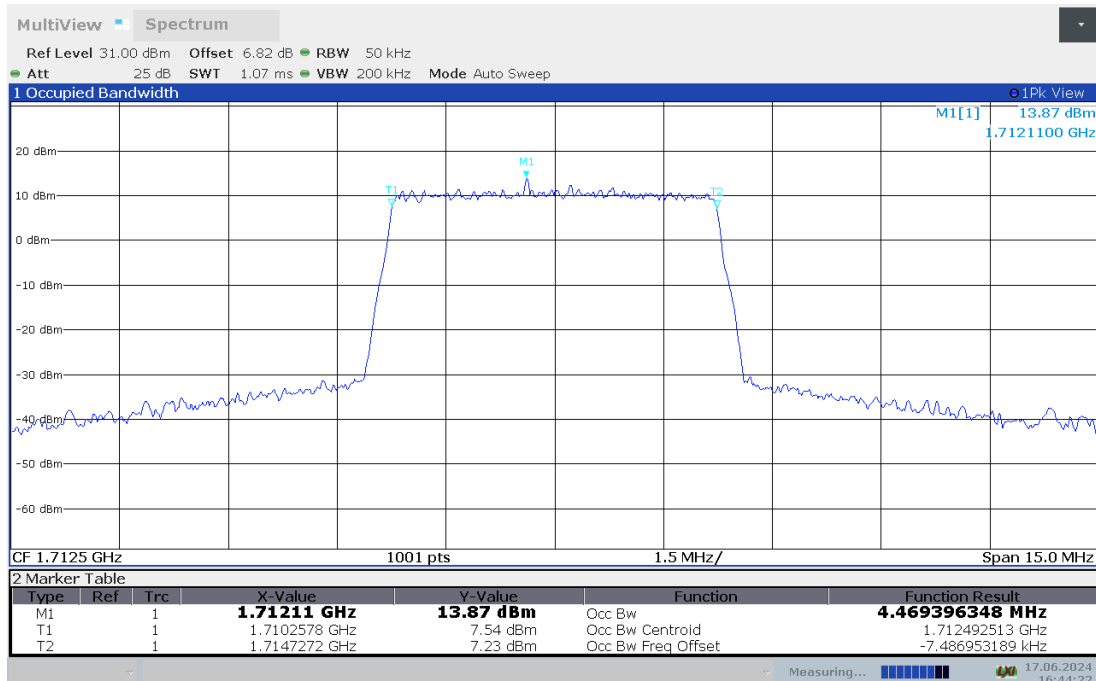
### LTE band 4 , 5MHz Bandwidth,MID,16QAM (99% BW)



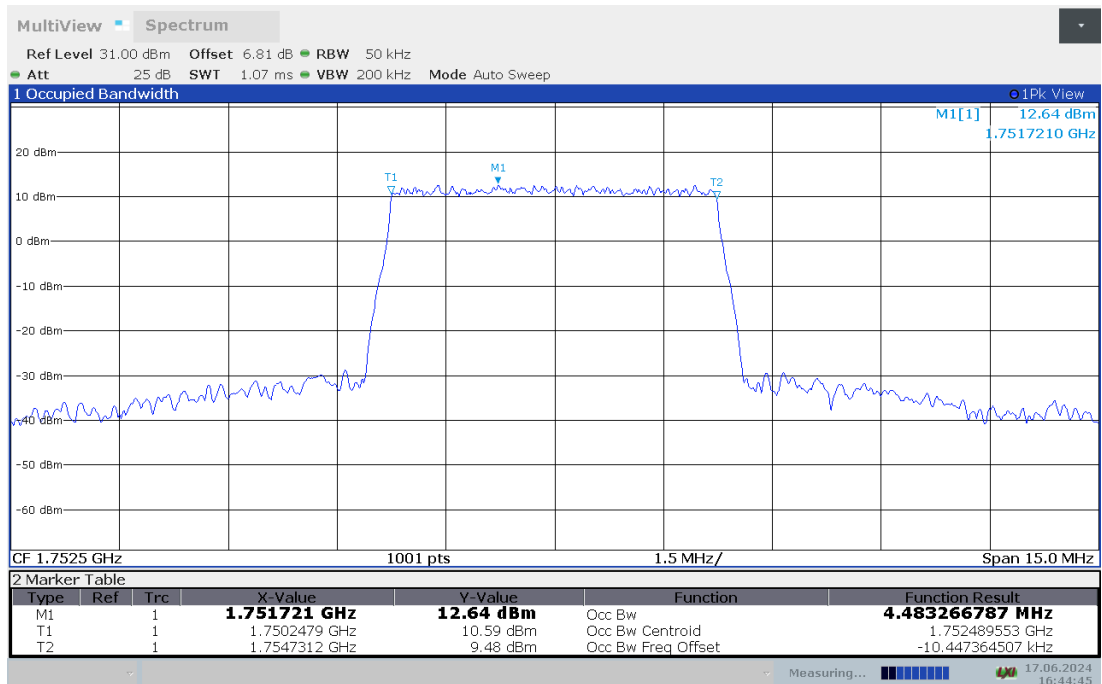
### LTE band 4 , 5MHz Bandwidth,LOW,QPSK (99% BW)



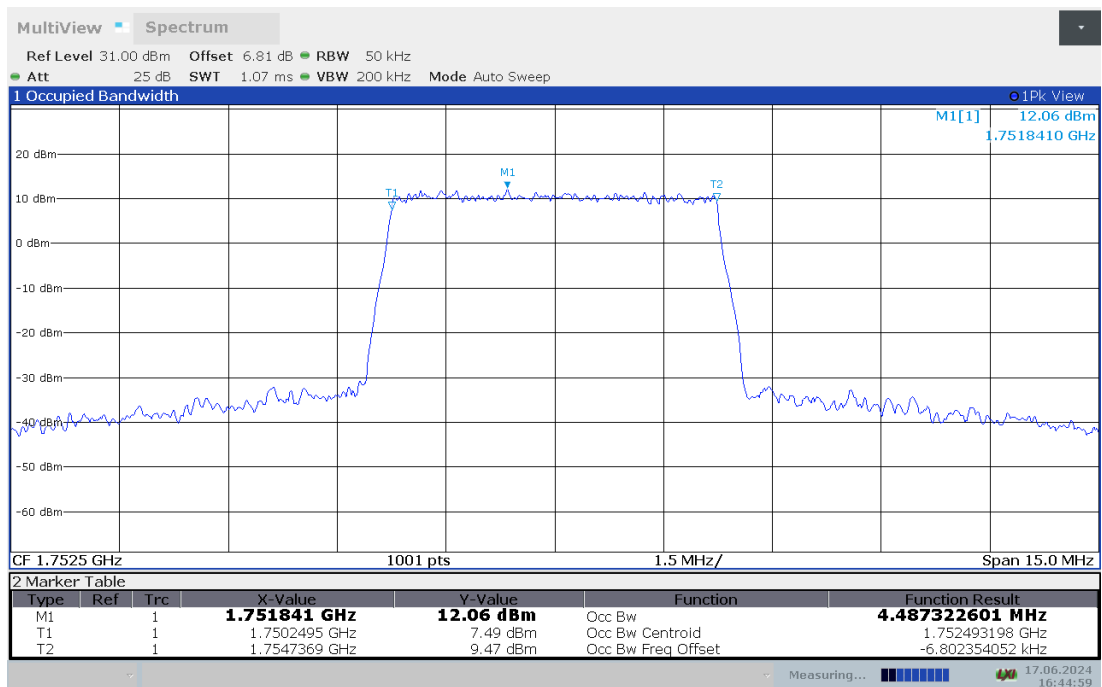
### LTE band 4 , 5MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 4 , 5MHz Bandwidth,HIGH,QPSK (99% BW)



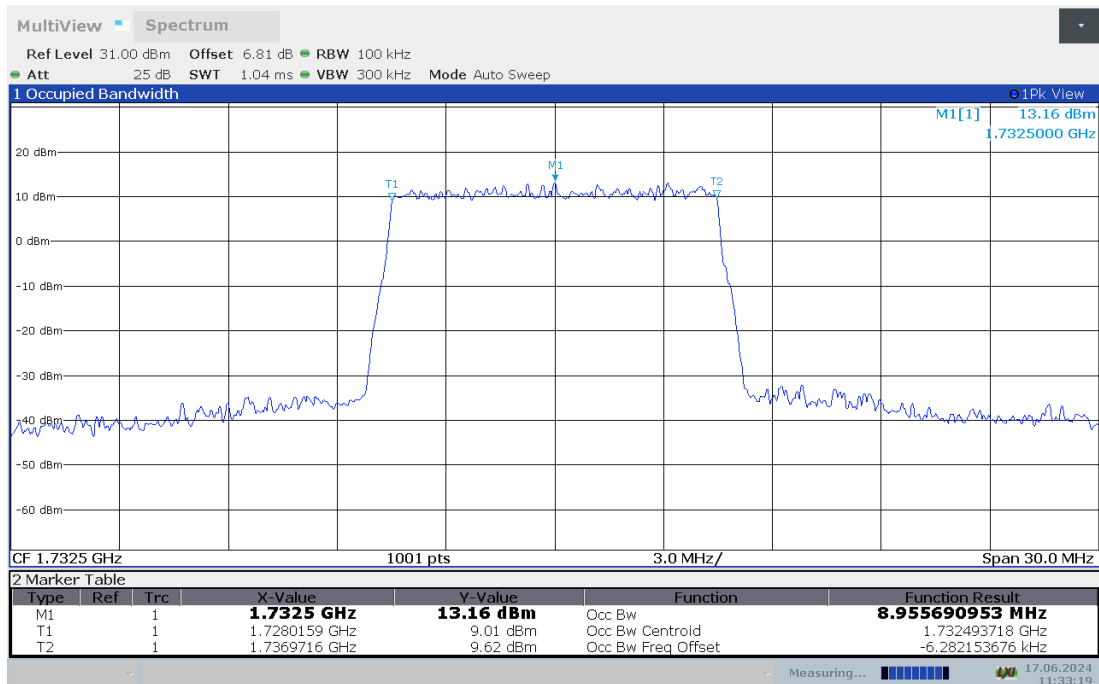
### LTE band 4 , 5MHz Bandwidth,HIGH,16QAM (99% BW)



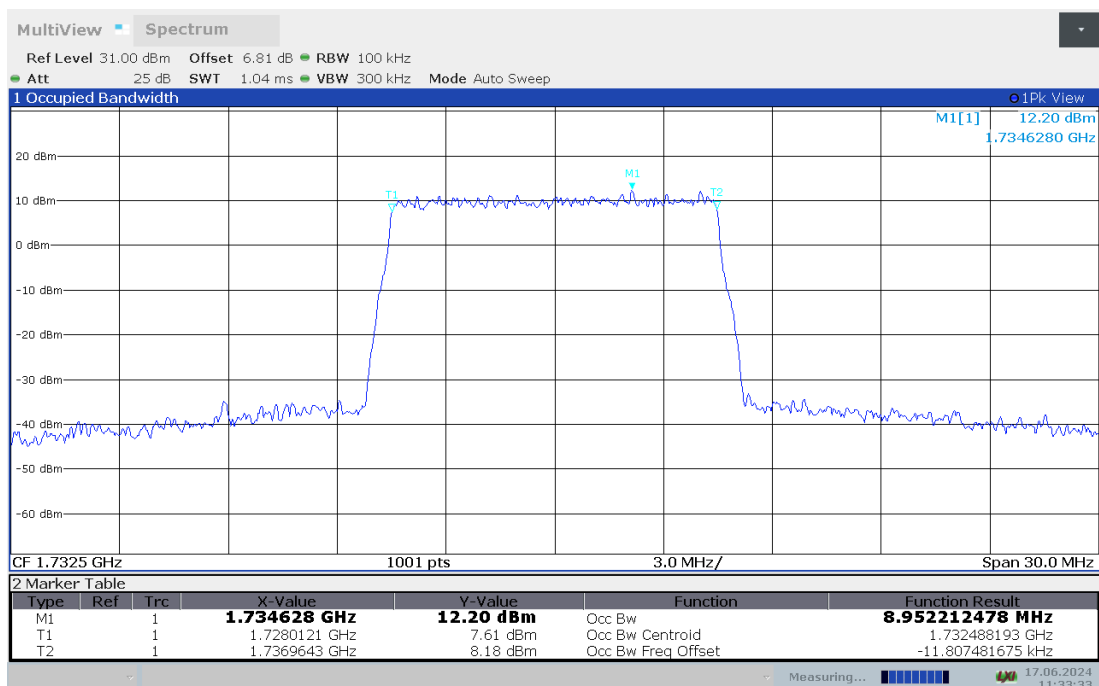
### LTE band 4,10MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 1732.5          | 8.956                            | 8.952 |
| 1715            | 8.962                            | 8.944 |
| 1750            | 8.960                            | 8.958 |

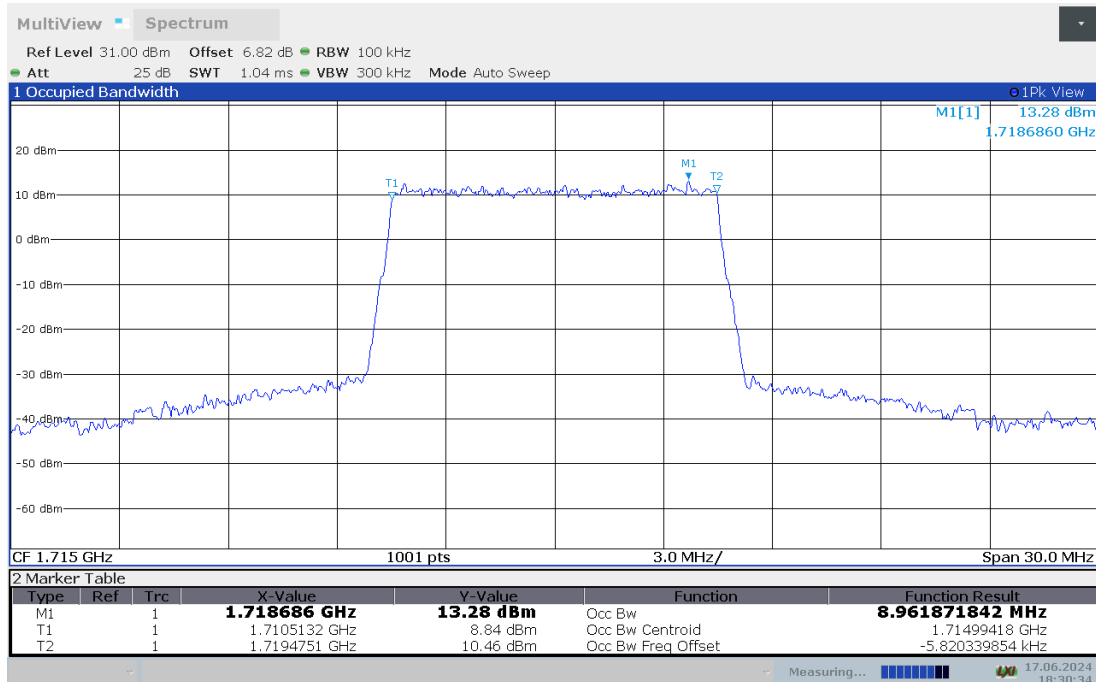
### LTE band 4 , 10MHz Bandwidth,MID,QPSK (99% BW)



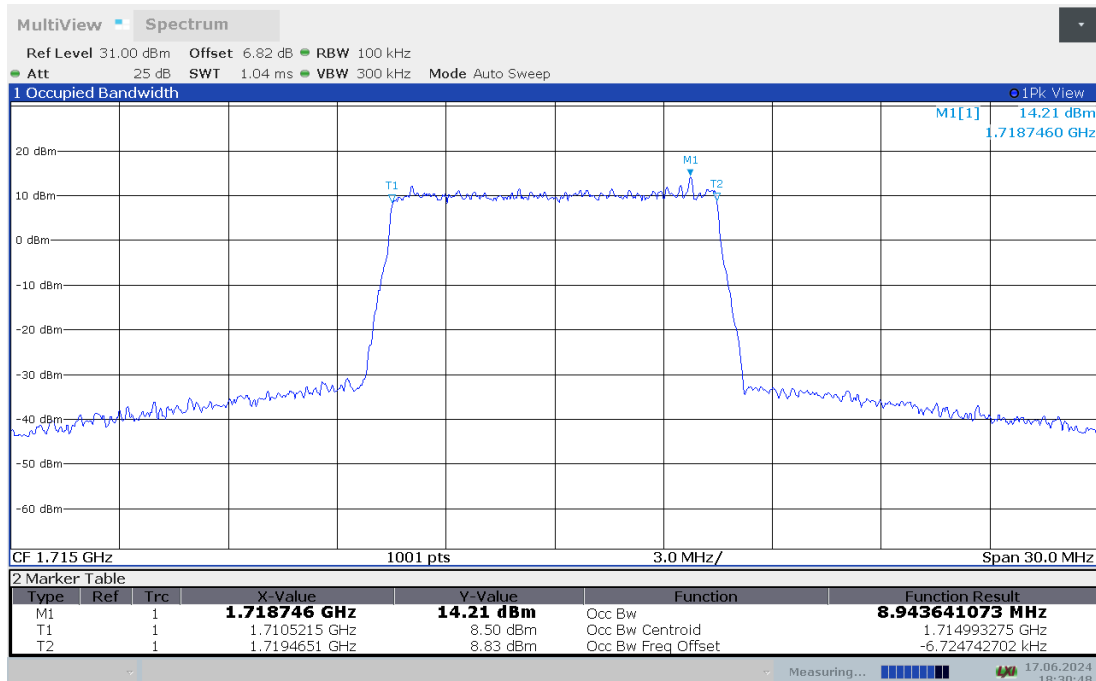
### LTE band 4 , 10MHz Bandwidth,MID,16QAM (99% BW)



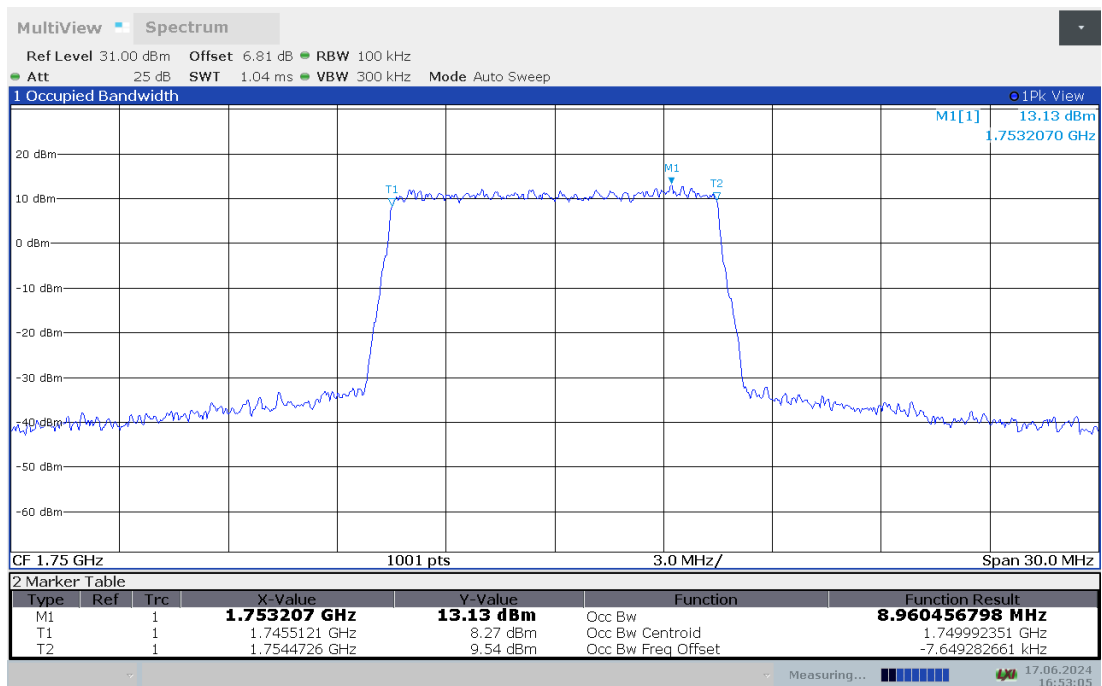
### LTE band 4 , 10MHz Bandwidth,LOW,QPSK (99% BW)



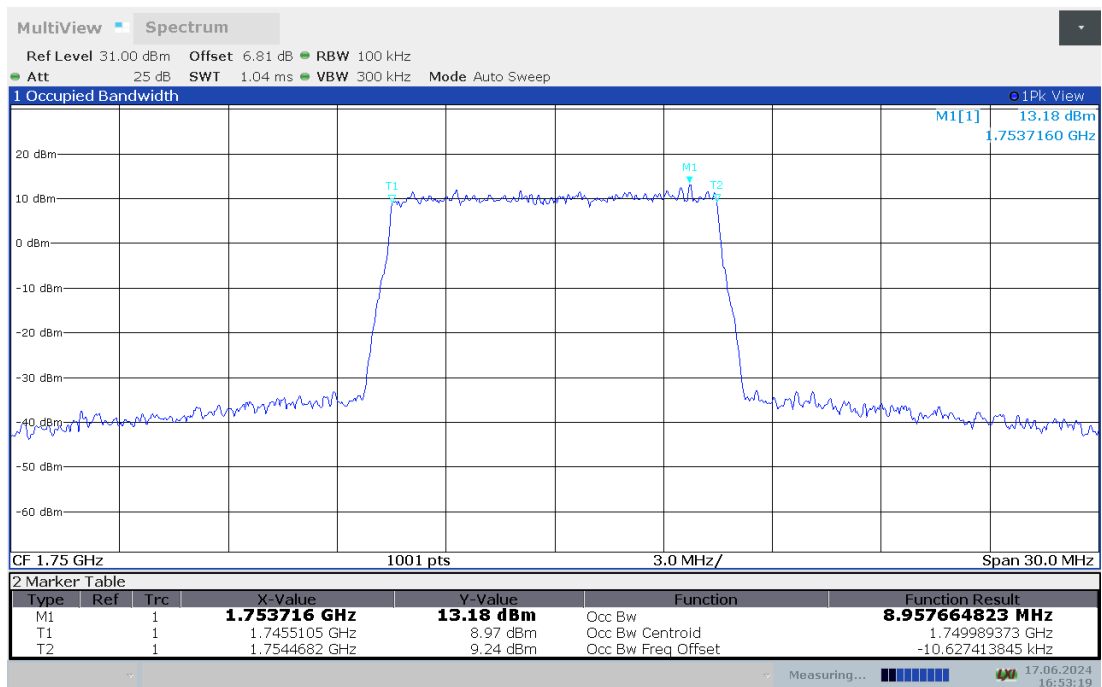
### LTE band 4 , 10MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 4 , 10MHz Bandwidth,HIGH,QPSK (99% BW)



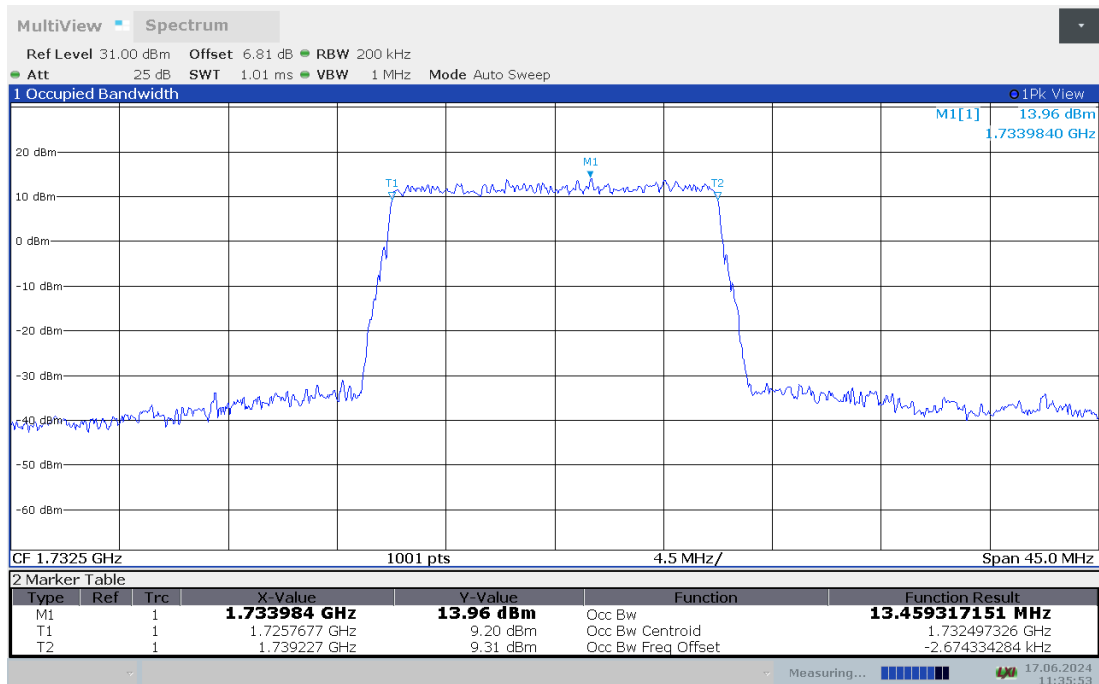
### LTE band 4 , 10MHz Bandwidth,HIGH,16QAM (99% BW)



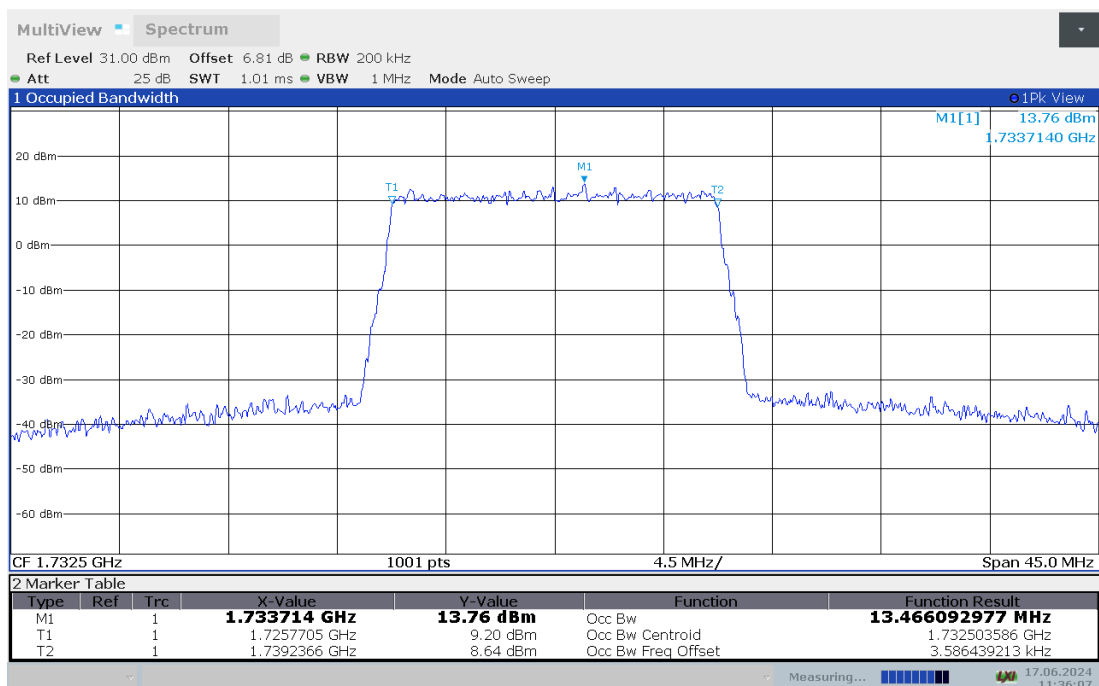
### LTE band 4,15MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |        |
|-----------------|----------------------------------|--------|
|                 | QPSK                             | 16QAM  |
| 1732.5          | 13.459                           | 13.466 |
| 1717.5          | 13.467                           | 13.451 |
| 1747.5          | 13.409                           | 13.426 |

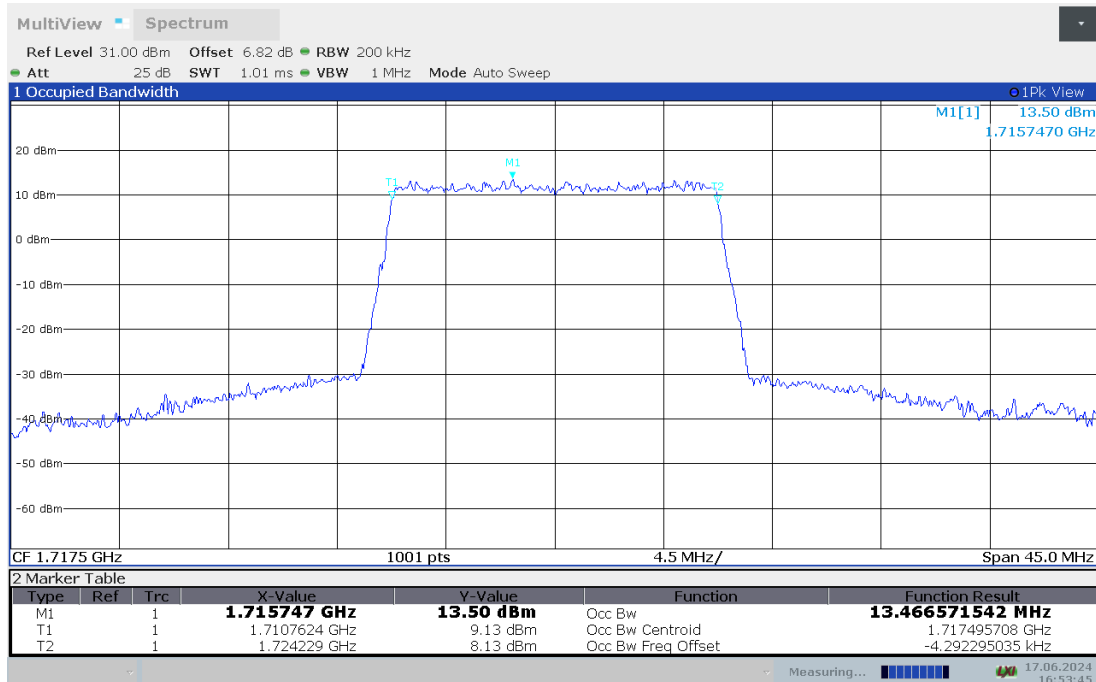
### LTE band 4 , 15MHz Bandwidth,MID,QPSK (99% BW)



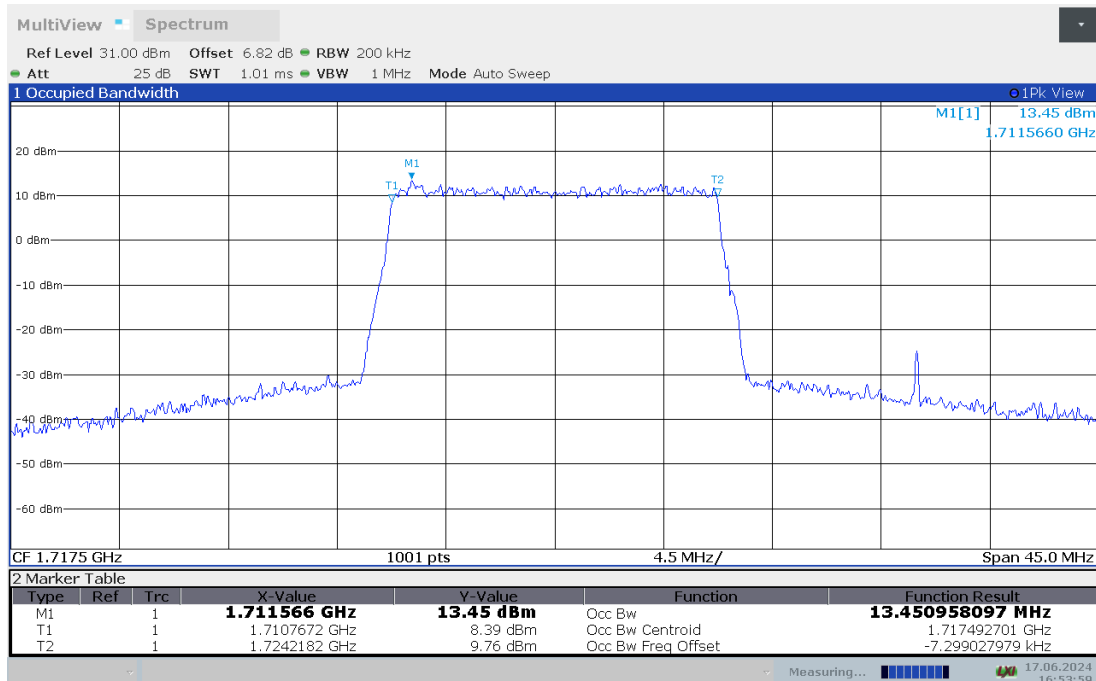
### LTE band 4 , 15MHz Bandwidth,MID,16QAM (99% BW)



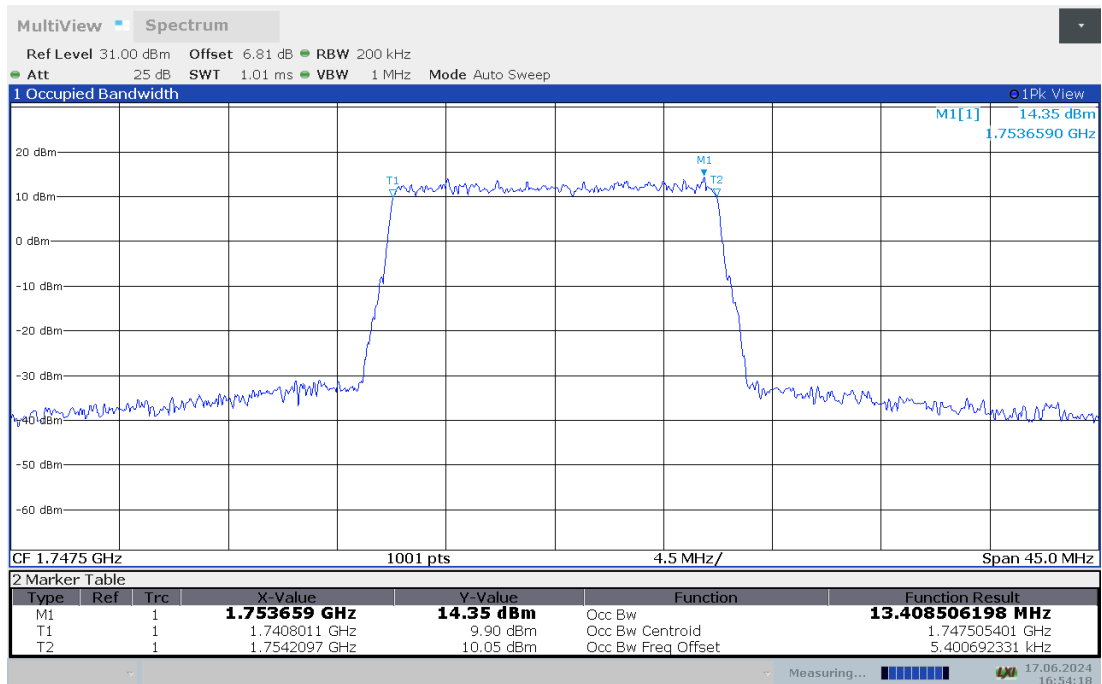
### LTE band 4 , 15MHz Bandwidth,LOW,QPSK (99% BW)



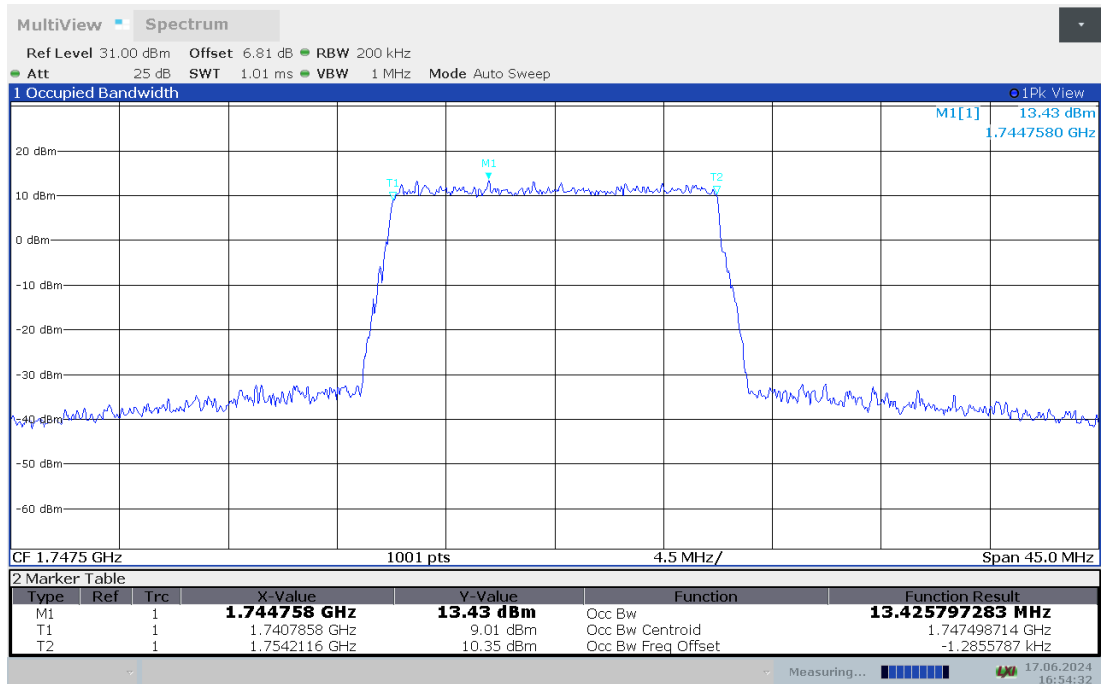
### LTE band 4 , 15MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 4 , 15MHz Bandwidth,HIGH,QPSK (99% BW)



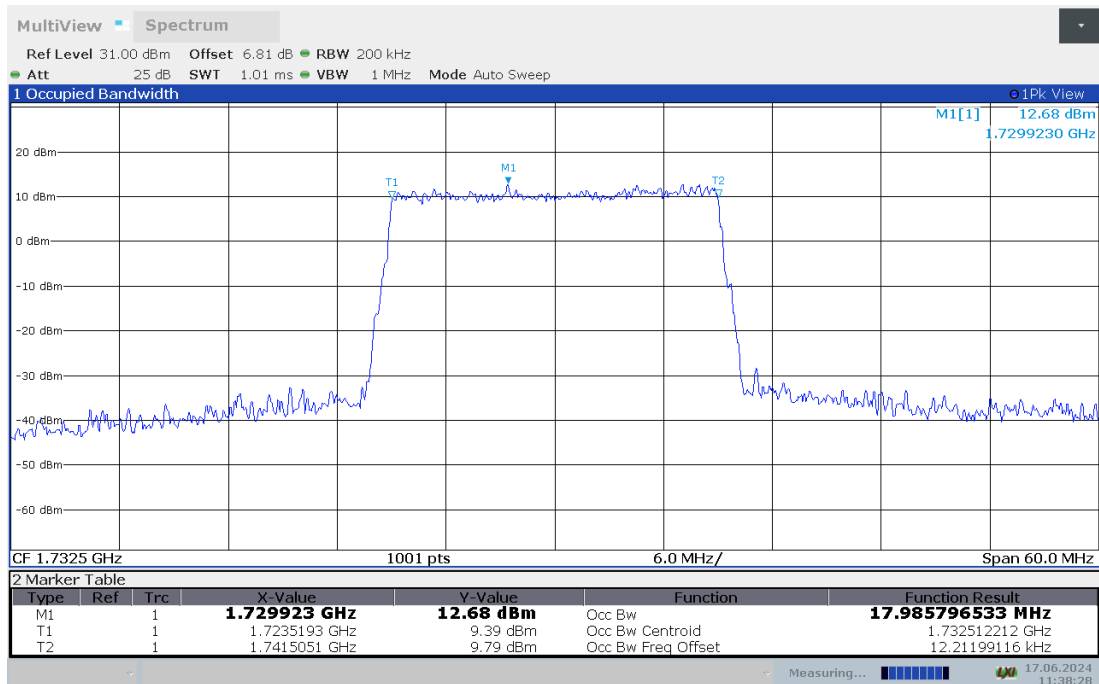
### LTE band 4 , 15MHz Bandwidth,HIGH,16QAM (99% BW)



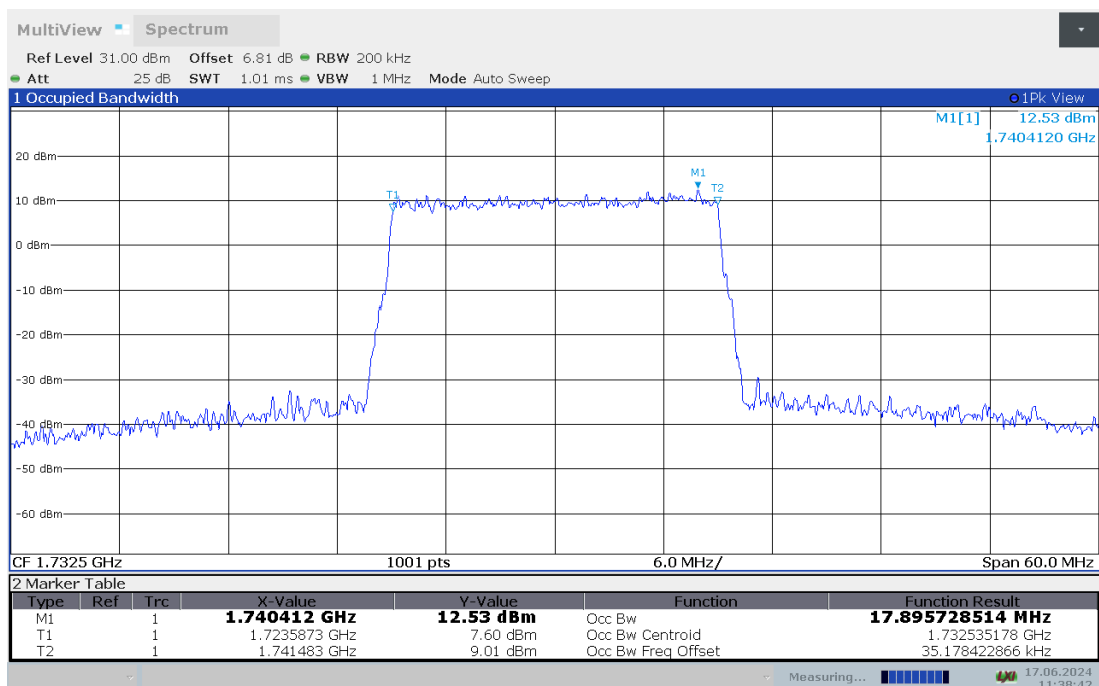
### LTE band 4,20MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |        |
|-----------------|----------------------------------|--------|
|                 | QPSK                             | 16QAM  |
| 1732.5          | 17.986                           | 17.896 |
| 1720            | 17.908                           | 17.958 |
| 1745            | 17.906                           | 17.901 |

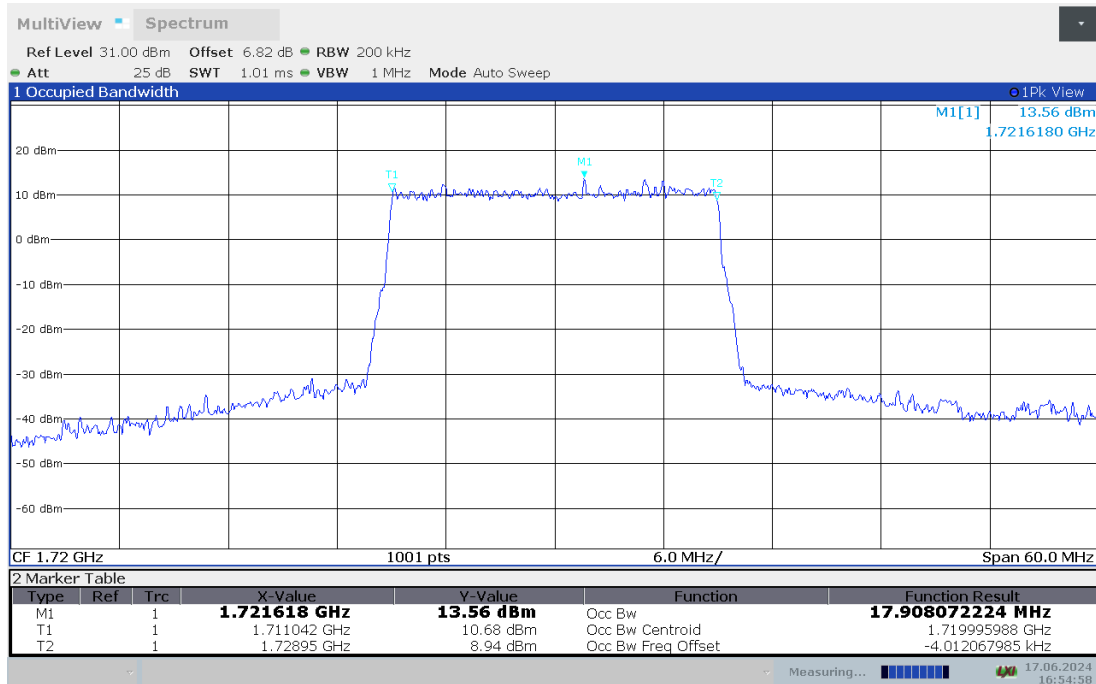
### LTE band 4 , 20MHz Bandwidth,MID,QPSK (99% BW)



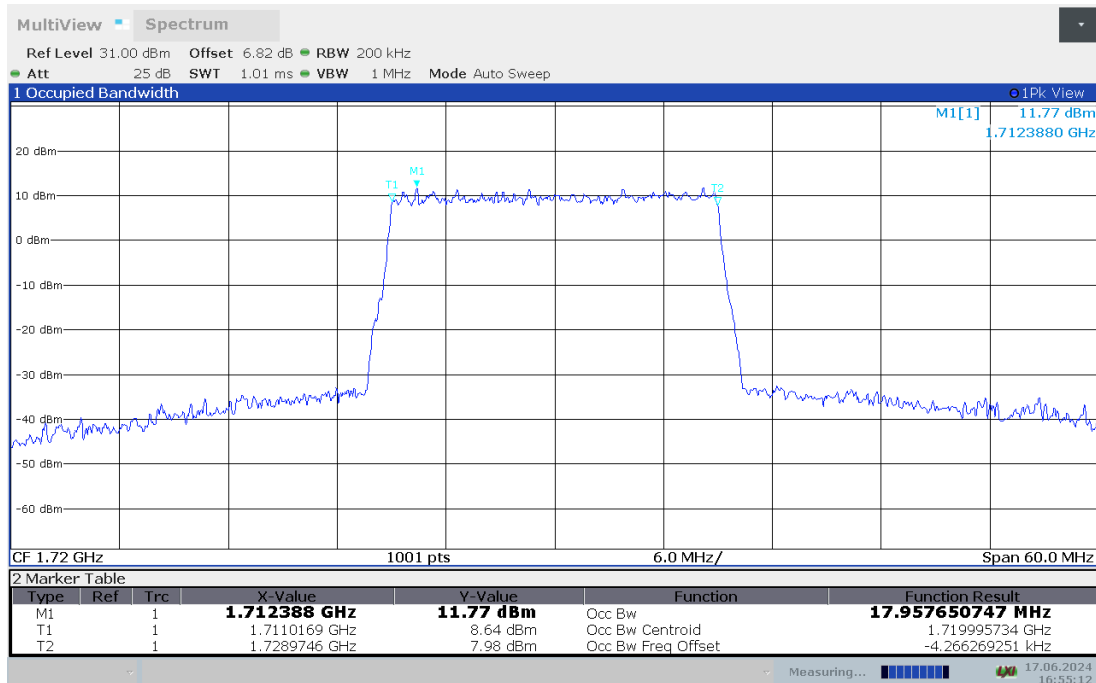
### LTE band 4 , 20MHz Bandwidth,MID,16QAM (99% BW)



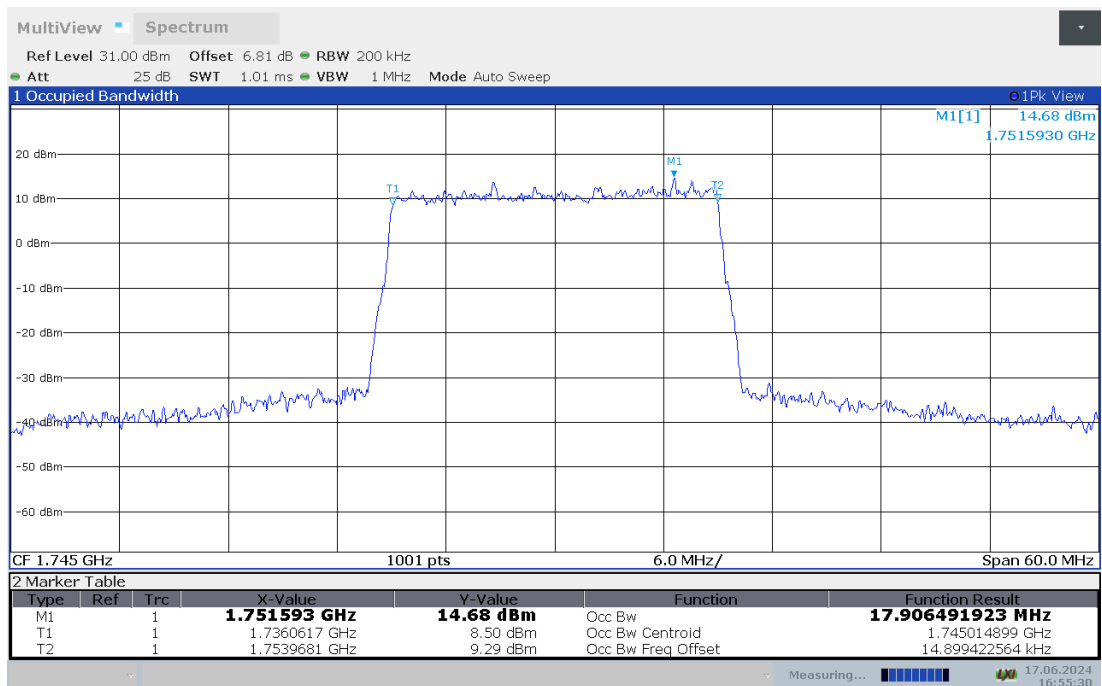
### LTE band 4 , 20MHz Bandwidth,LOW,QPSK (99% BW)



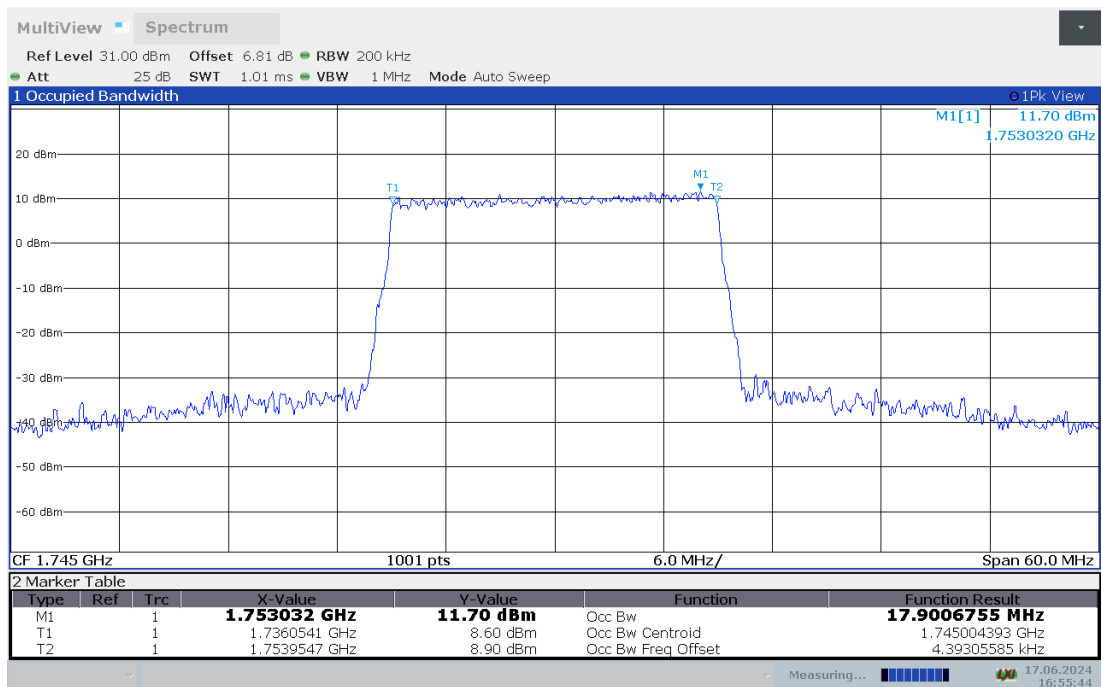
### LTE band 4 , 20MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 4 , 20MHz Bandwidth,HIGH,QPSK (99% BW)



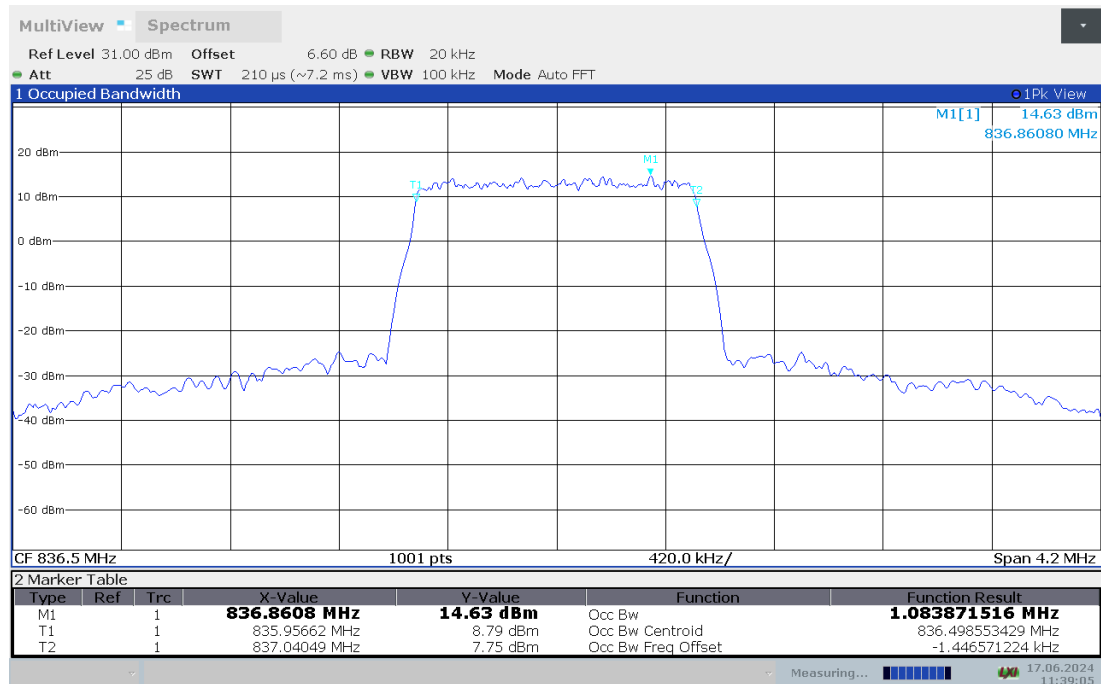
### LTE band 4 , 20MHz Bandwidth,HIGH,16QAM (99% BW)



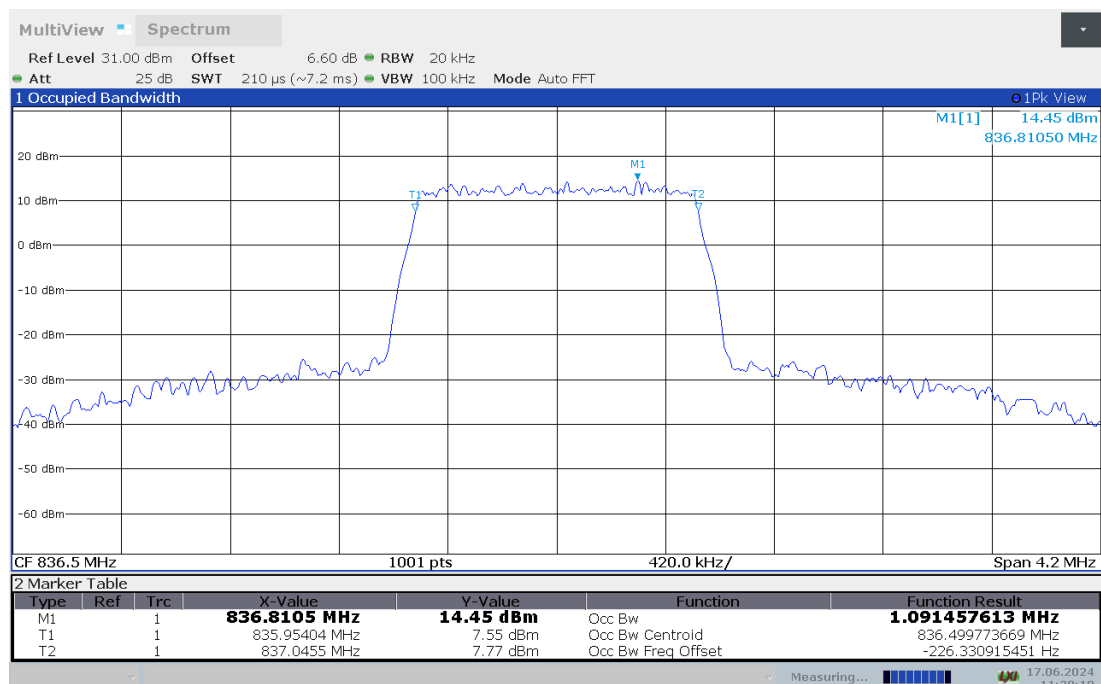
### LTE band 5,1.4MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 836.5           | 1.084                            | 1.091 |
| 824.7           | 1.085                            | 1.092 |
| 848.3           | 1.087                            | 1.082 |

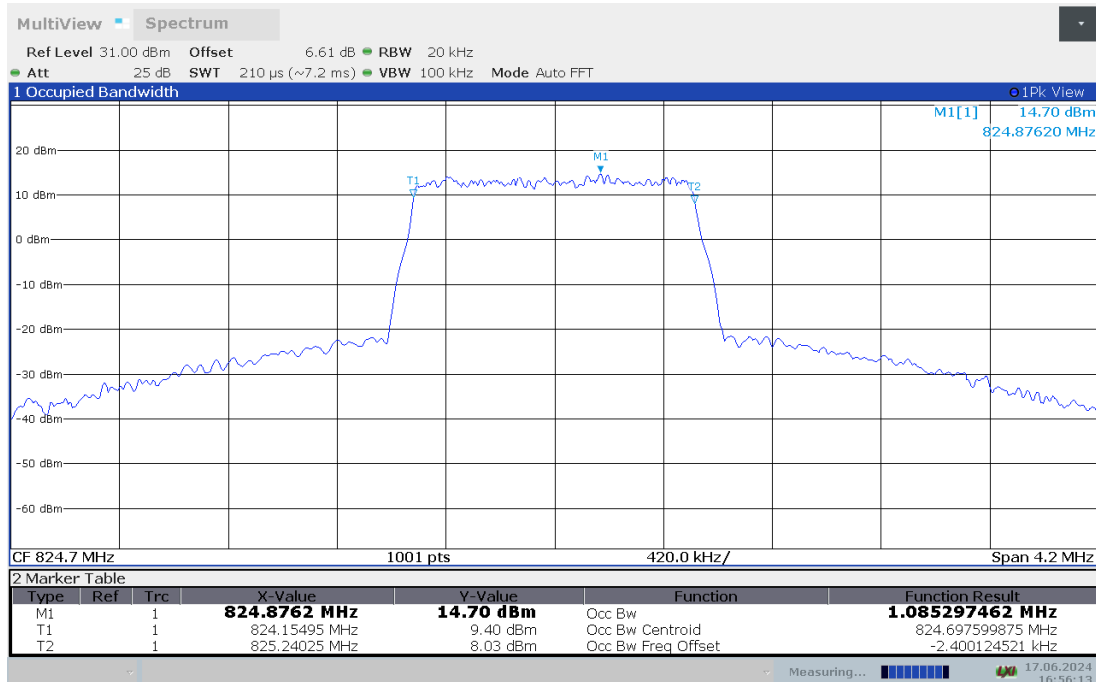
### LTE band 5 , 1.4MHz Bandwidth,MID,QPSK (99% BW)



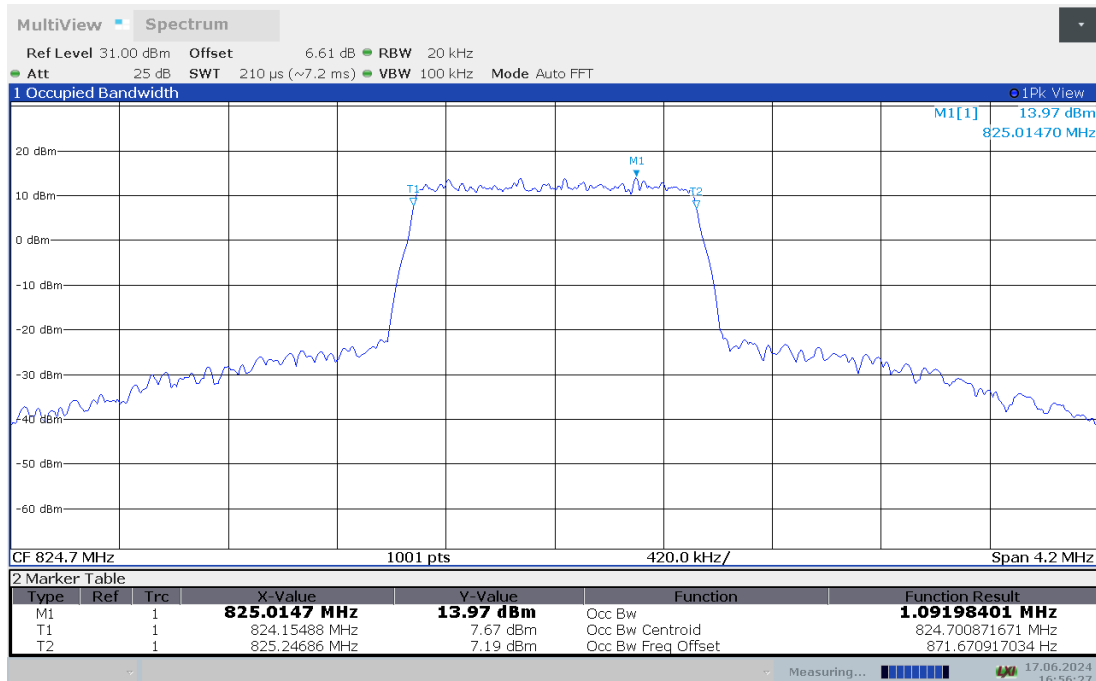
### LTE band 5 , 1.4MHz Bandwidth,MID,16QAM (99% BW)



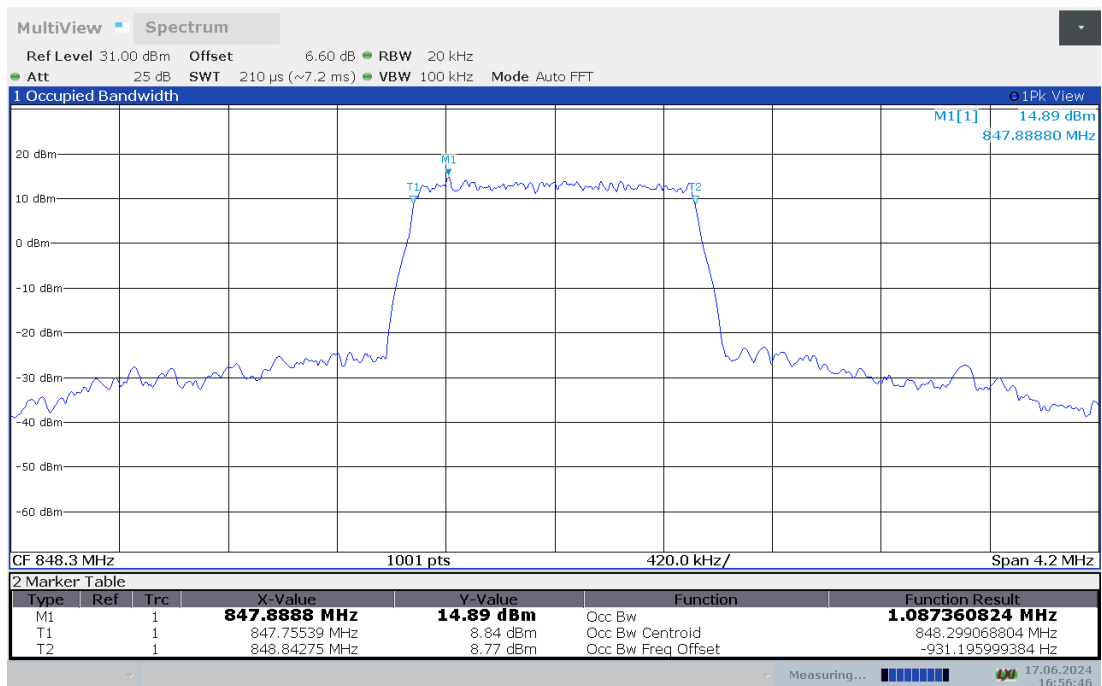
### LTE band 5 , 1.4MHz Bandwidth,LOW,QPSK (99% BW)



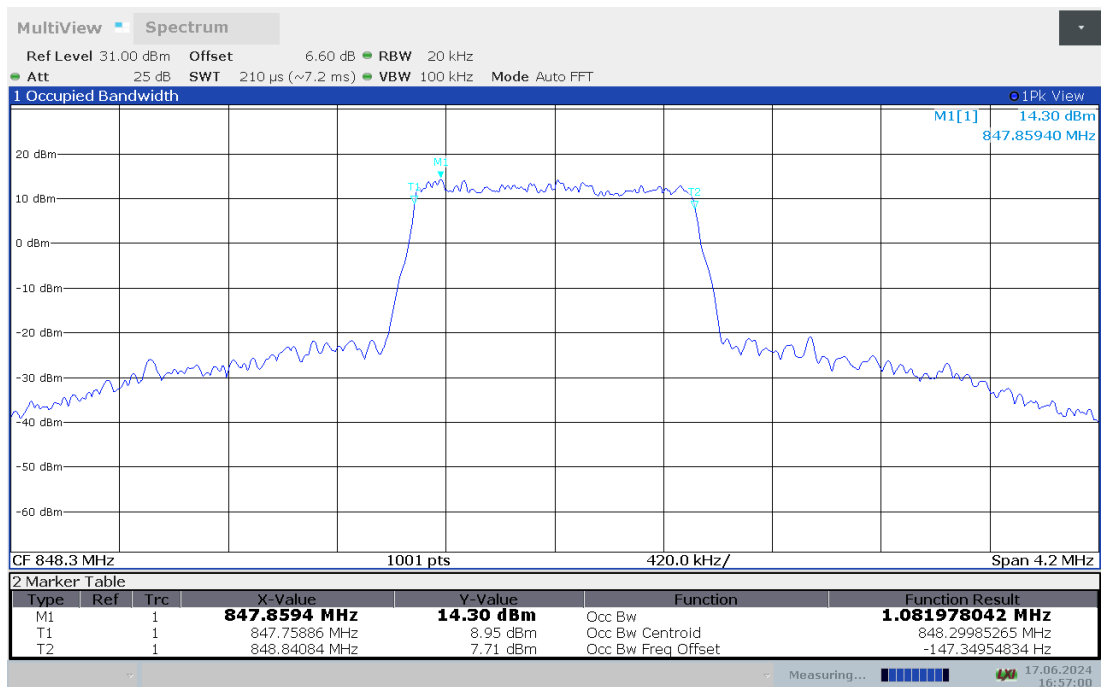
### LTE band 5 , 1.4MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 5 , 1.4MHz Bandwidth,HIGH,QPSK (99% BW)



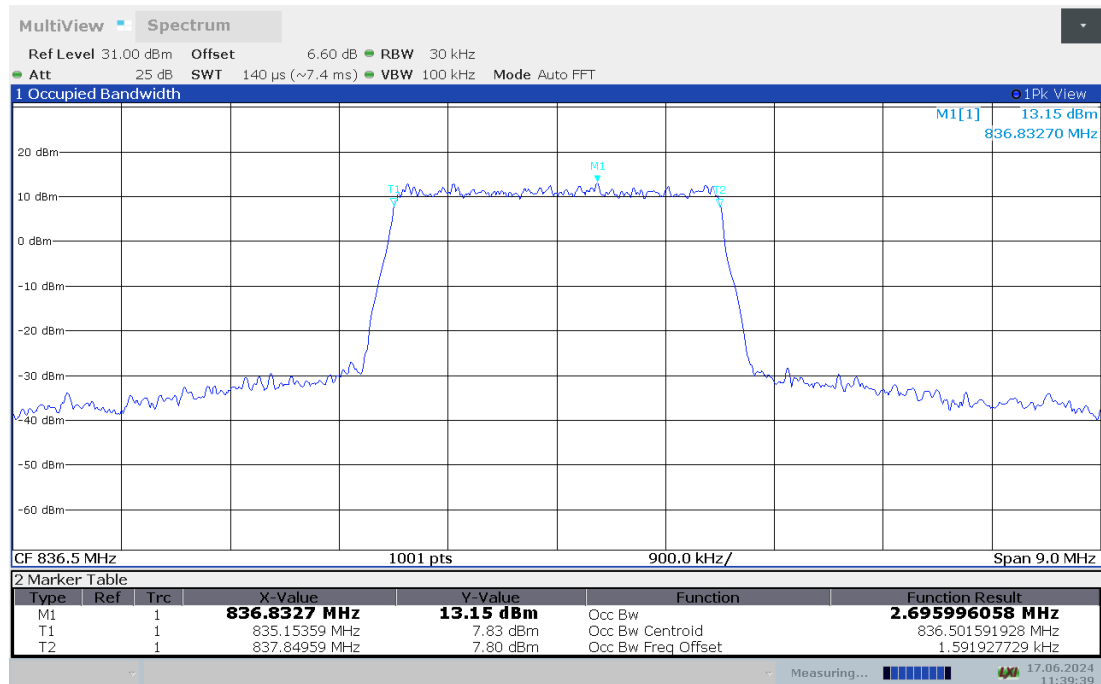
### LTE band 5 , 1.4MHz Bandwidth,HIGH,16QAM (99% BW)



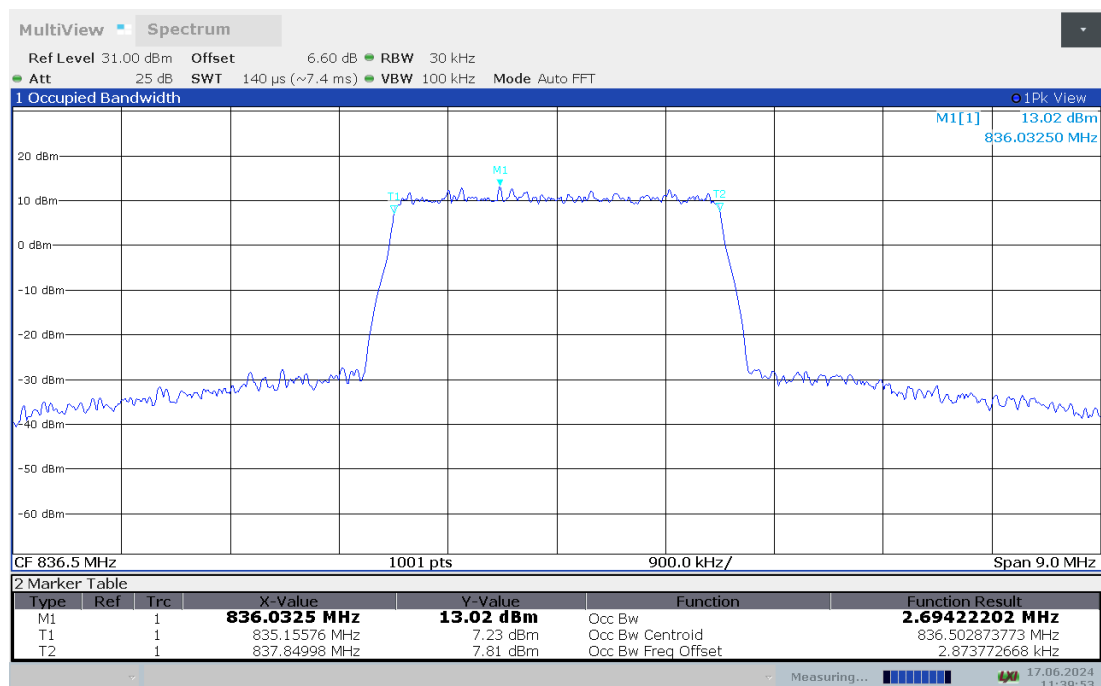
### LTE band 5,3MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 836.5           | 2.696                            | 2.694 |
| 825.5           | 2.690                            | 2.694 |
| 847.5           | 2.694                            | 2.689 |

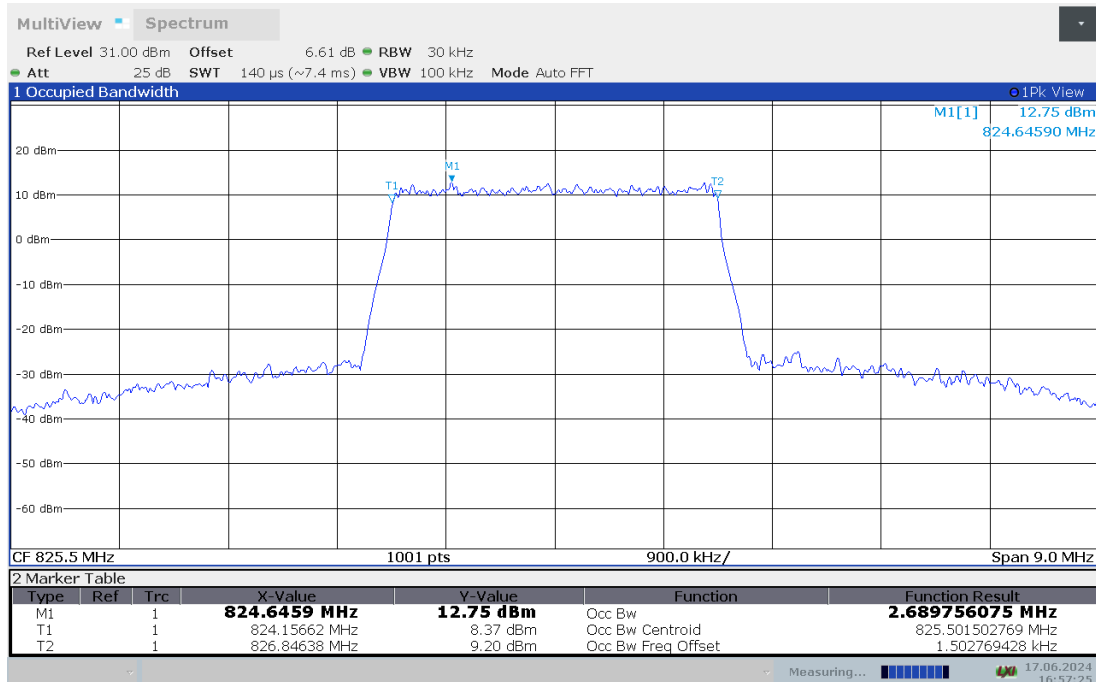
### LTE band 5 , 3MHz Bandwidth,MID,QPSK (99% BW)



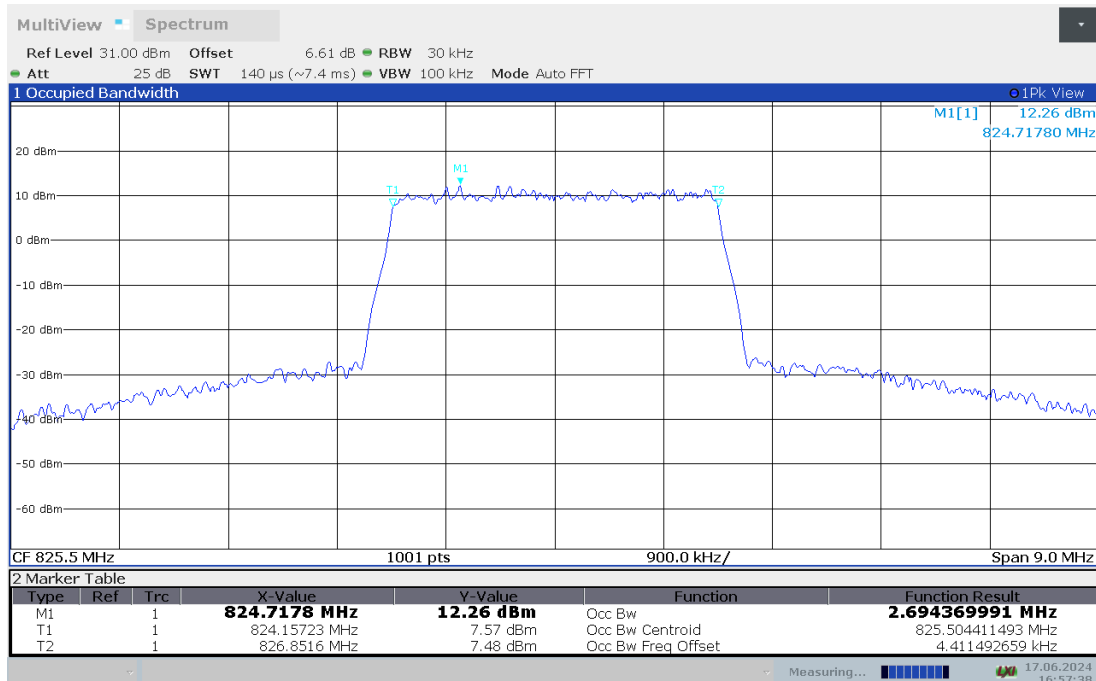
### LTE band 5 , 3MHz Bandwidth,MID,16QAM (99% BW)



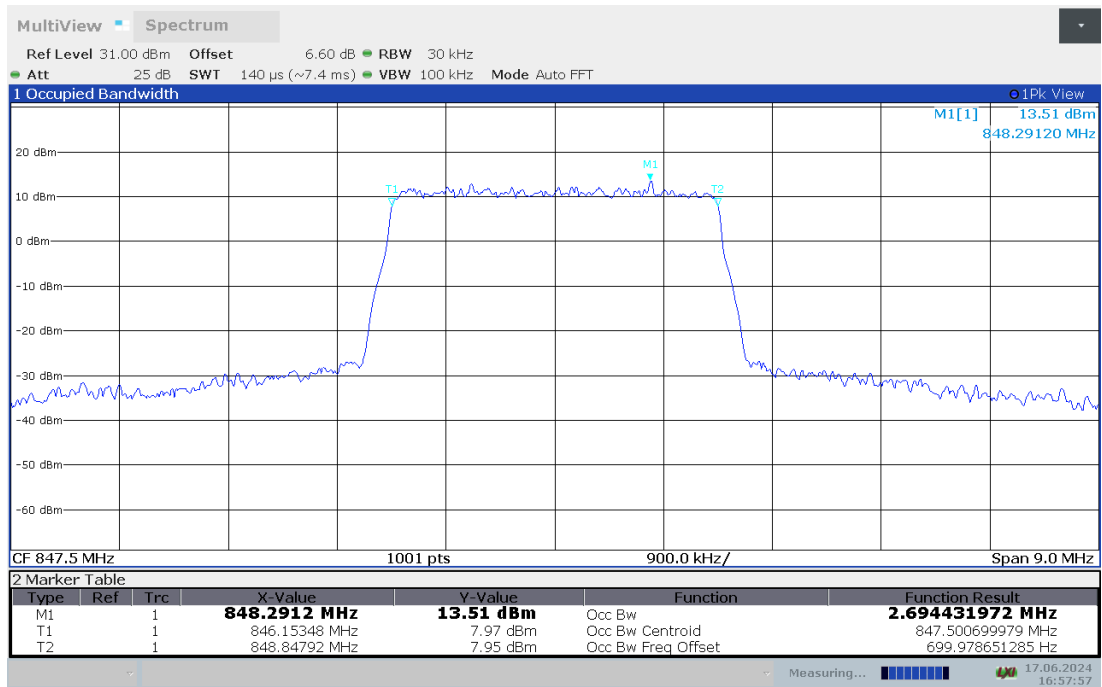
### LTE band 5 , 3MHz Bandwidth,LOW,QPSK (99% BW)



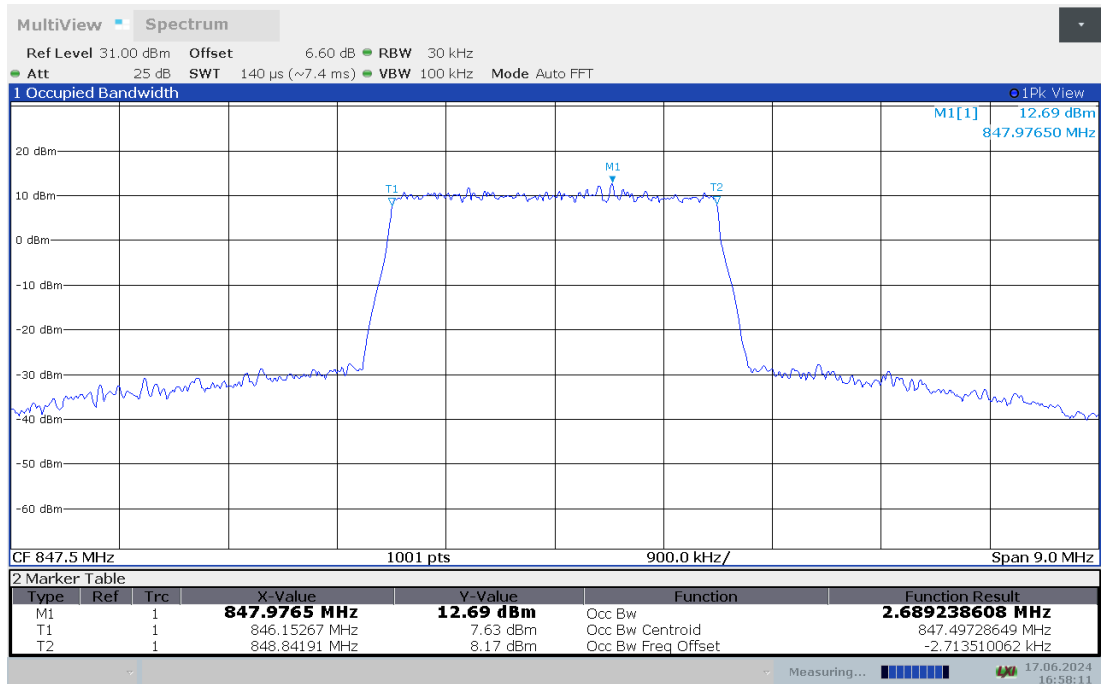
### LTE band 5 , 3MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 5 , 3MHz Bandwidth,HIGH,QPSK (99% BW)



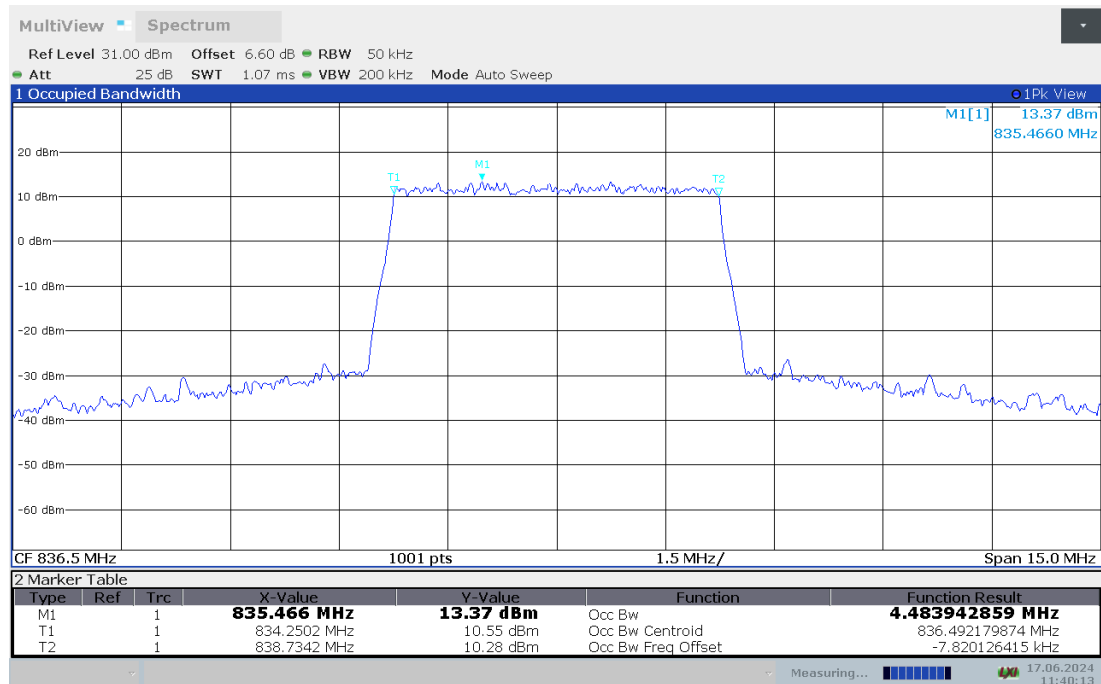
### LTE band 5 , 3MHz Bandwidth,HIGH,16QAM (99% BW)



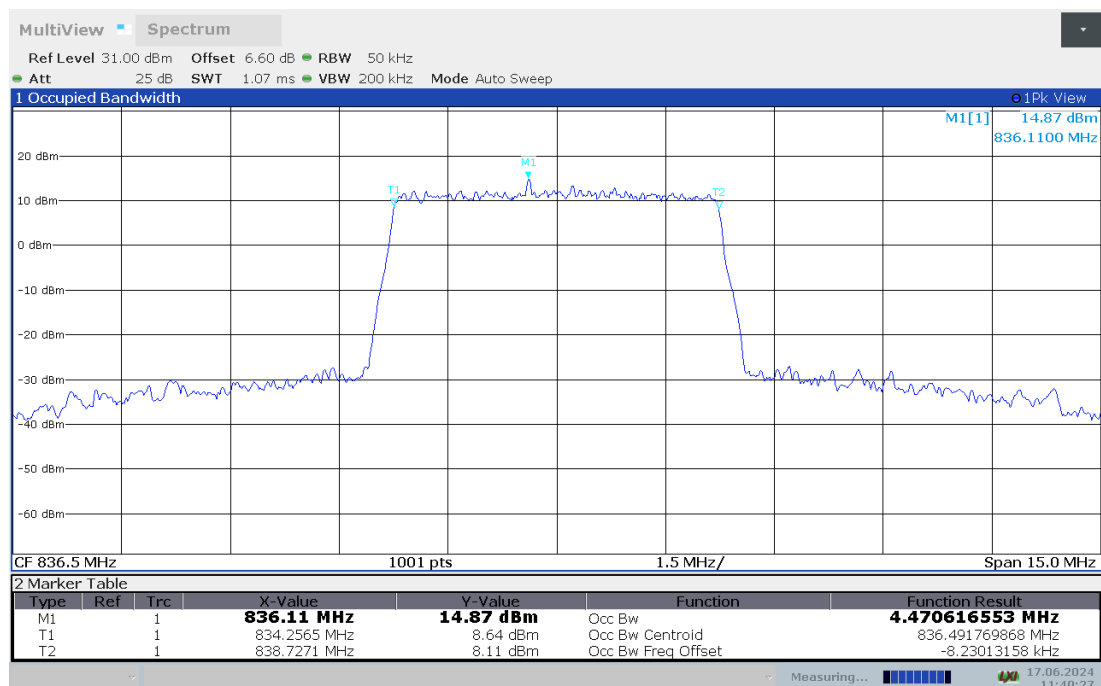
### LTE band 5,5MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 836.5           | 4.484                            | 4.471 |
| 826.5           | 4.484                            | 4.470 |
| 846.5           | 4.483                            | 4.487 |

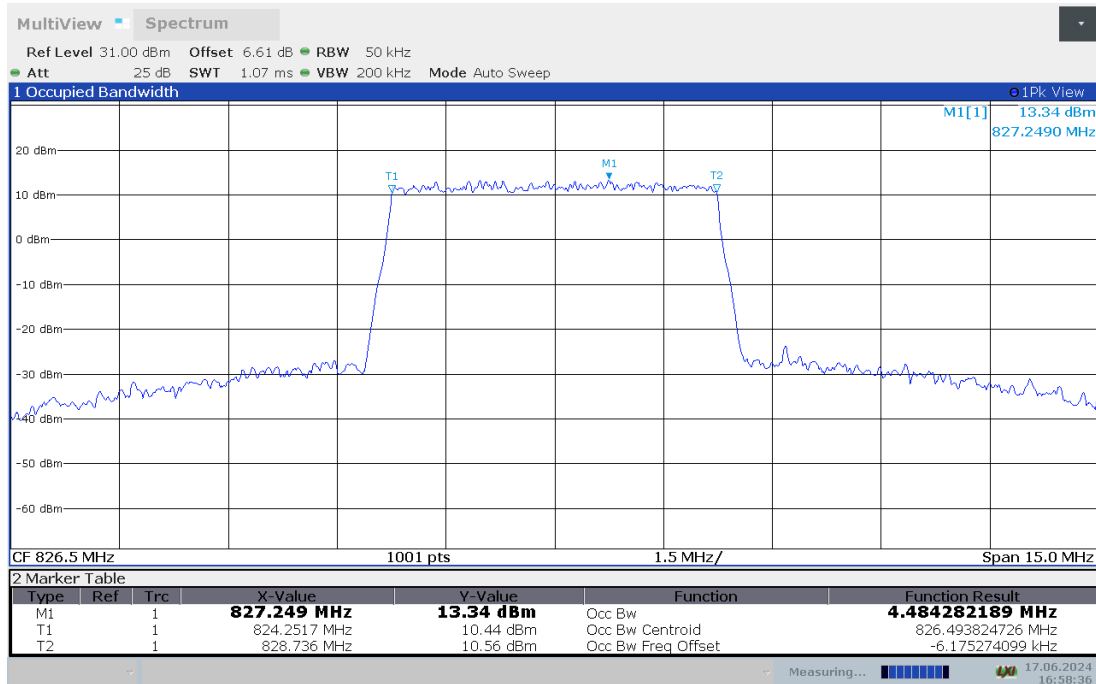
### LTE band 5 , 5MHz Bandwidth,MID,QPSK (99% BW)



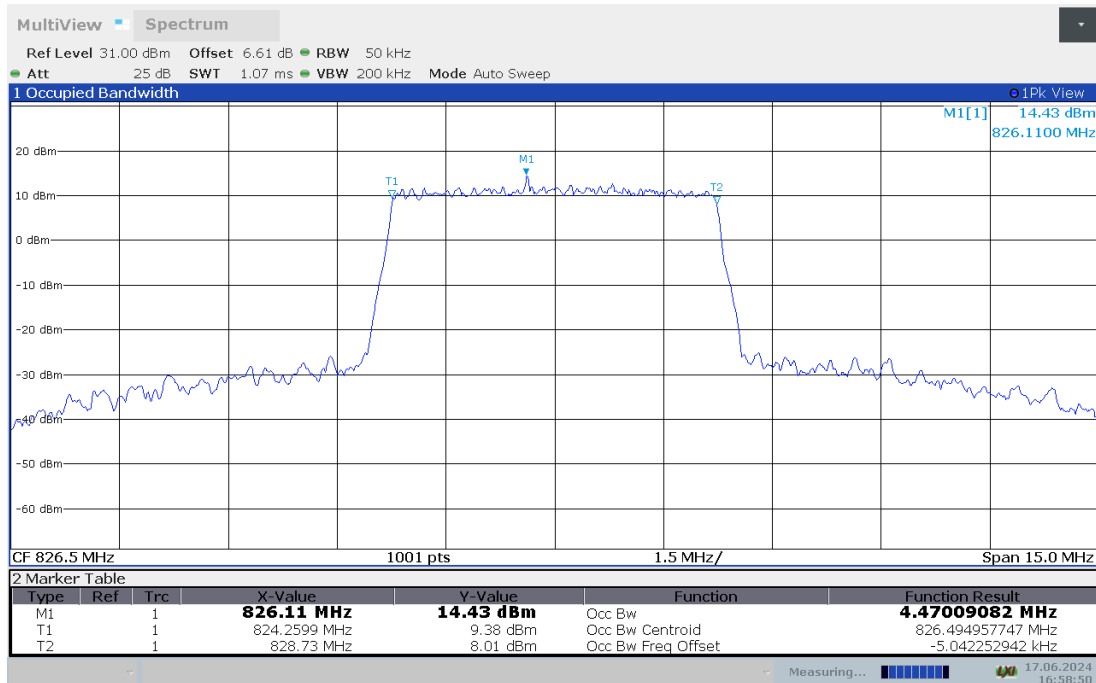
### LTE band 5 , 5MHz Bandwidth,MID,16QAM (99% BW)



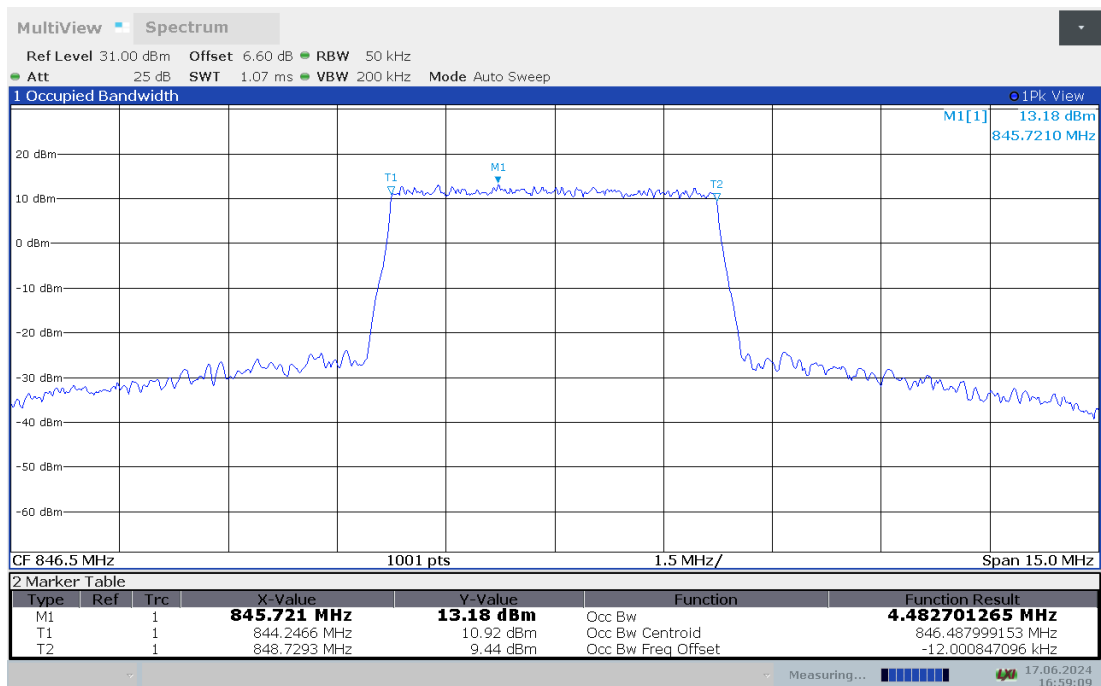
### LTE band 5 , 5MHz Bandwidth,LOW,QPSK (99% BW)



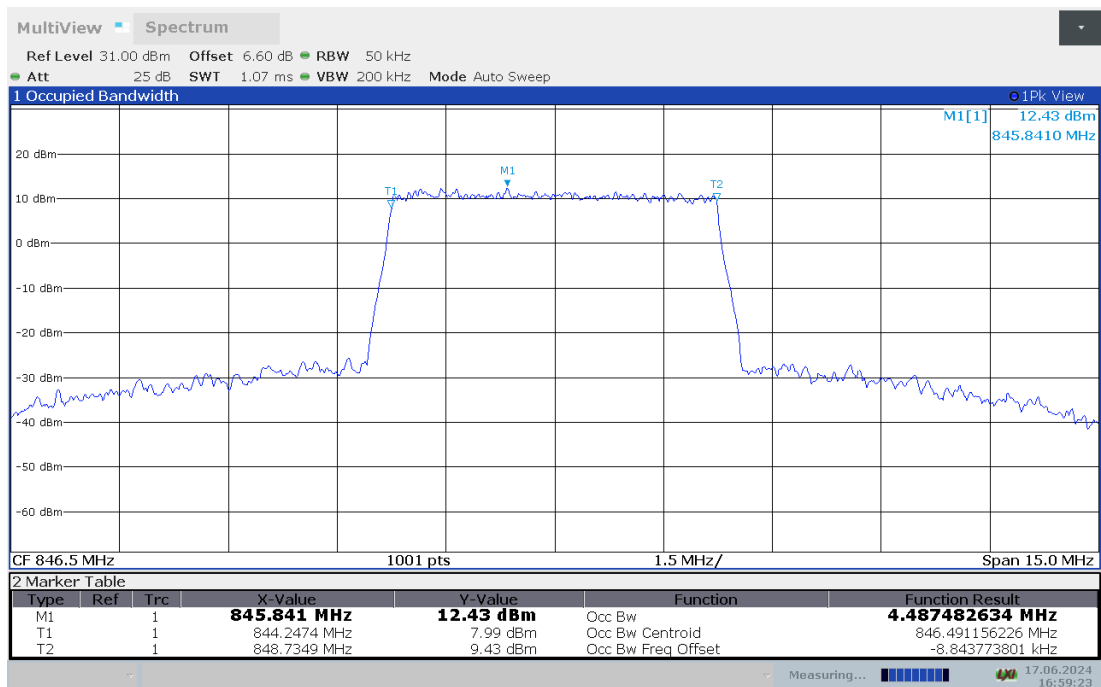
### LTE band 5 , 5MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 5 , 5MHz Bandwidth,HIGH,QPSK (99% BW)



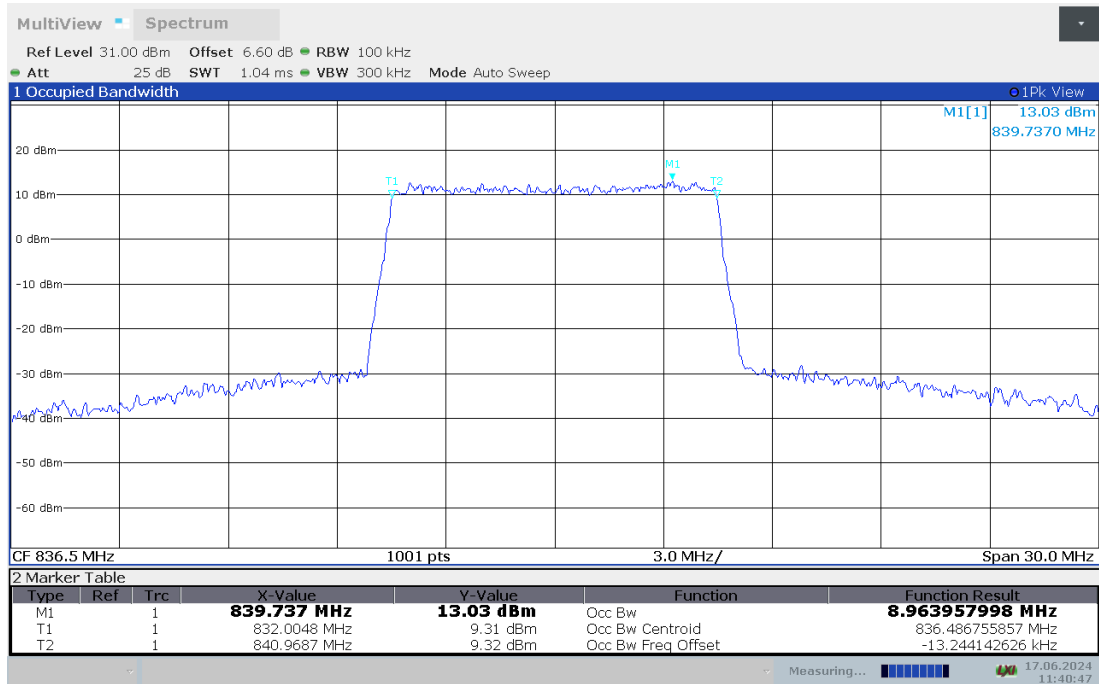
### LTE band 5 , 5MHz Bandwidth,HIGH,16QAM (99% BW)



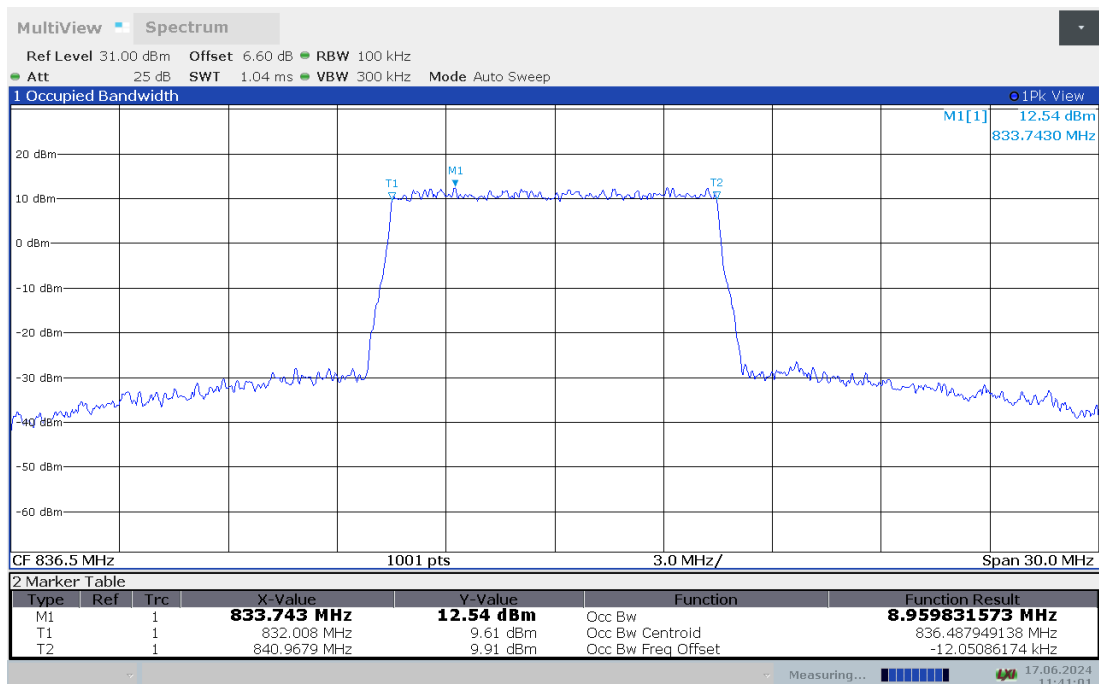
### LTE band 5,10MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 836.5           | 8.964                            | 8.960 |
| 829             | 8.949                            | 8.957 |
| 844             | 8.955                            | 8.962 |

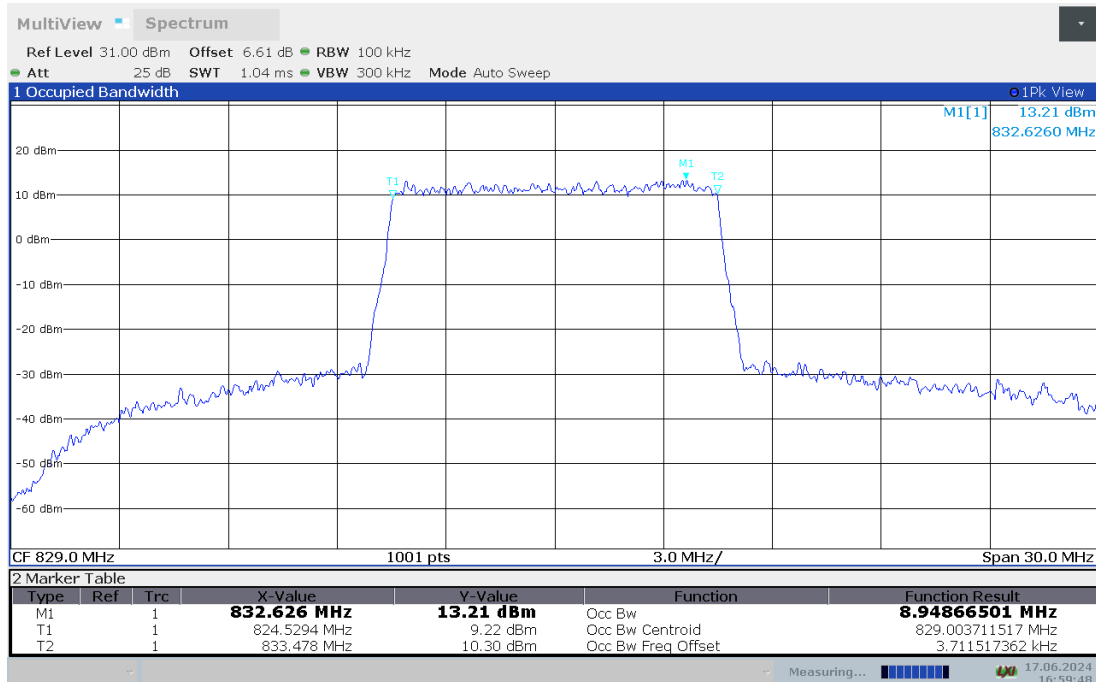
### LTE band 5 , 10MHz Bandwidth,MID,QPSK (99% BW)



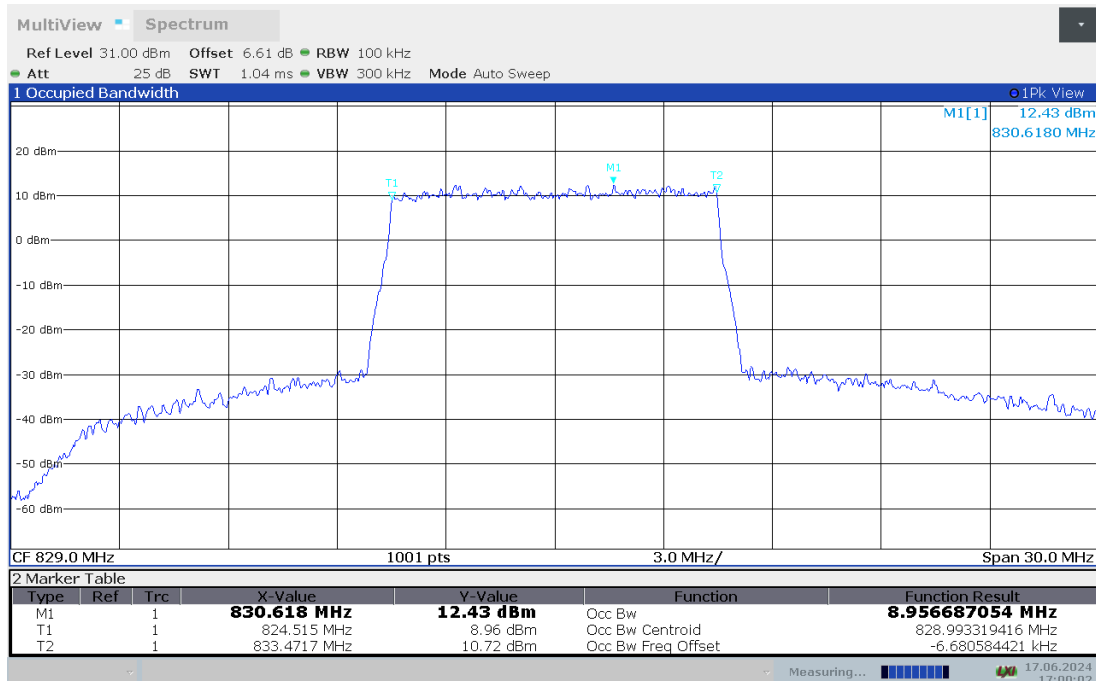
### LTE band 5 , 10MHz Bandwidth,MID,16QAM (99% BW)



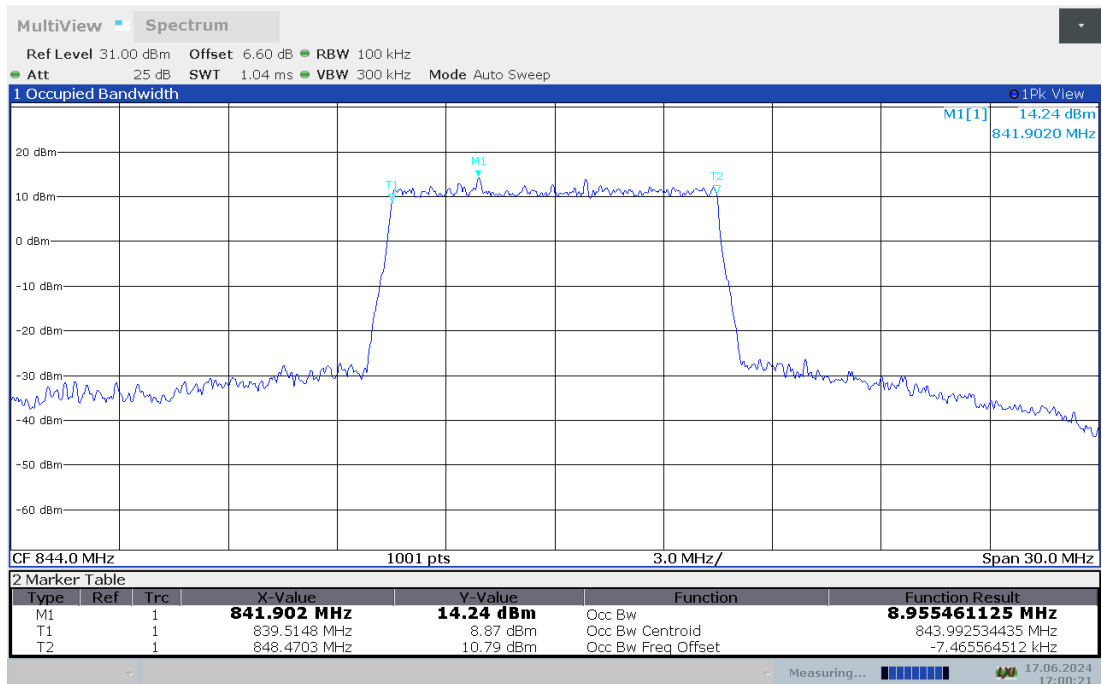
### LTE band 5 , 10MHz Bandwidth,LOW,QPSK (99% BW)



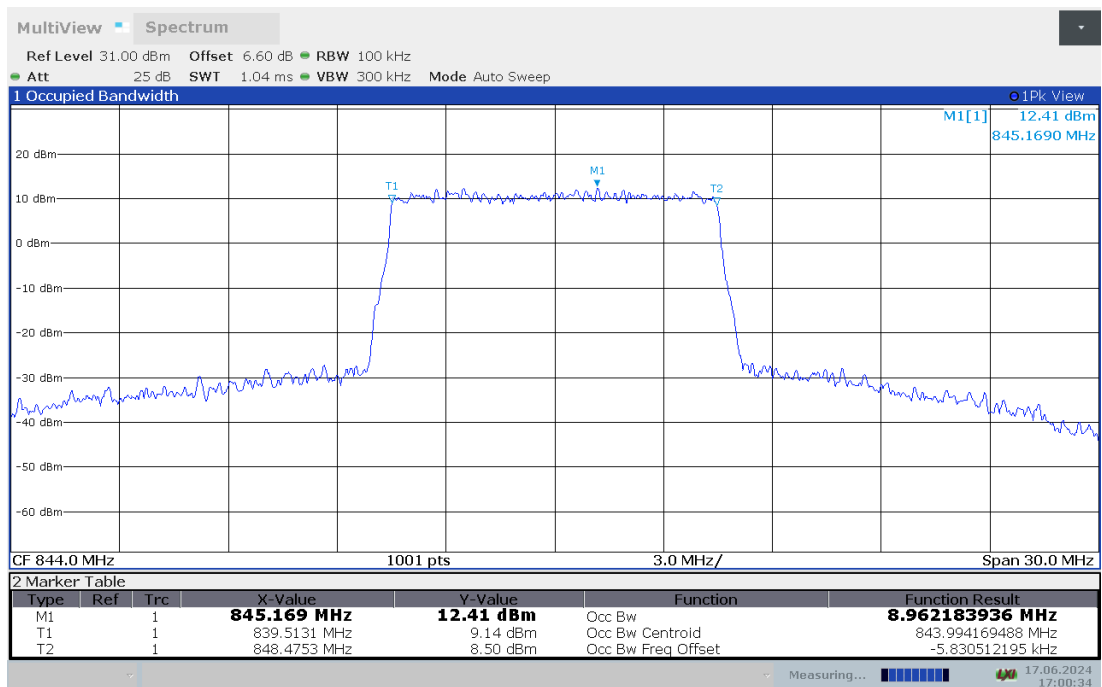
### LTE band 5 , 10MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 5 , 10MHz Bandwidth,HIGH,QPSK (99% BW)



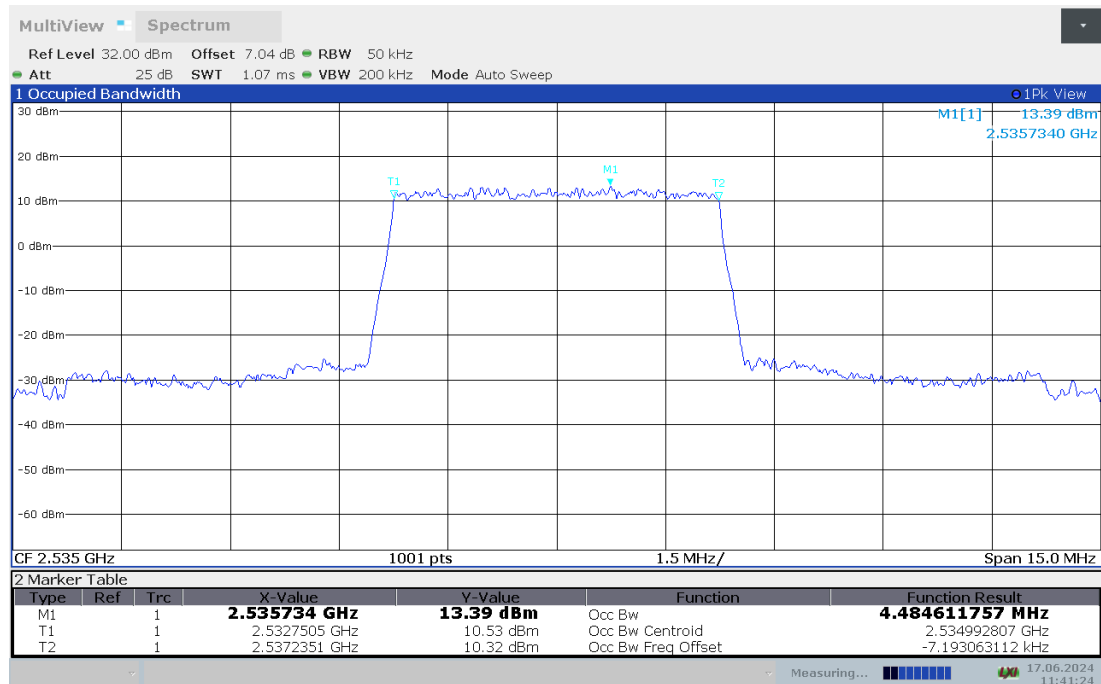
### LTE band 5 , 10MHz Bandwidth,HIGH,16QAM (99% BW)



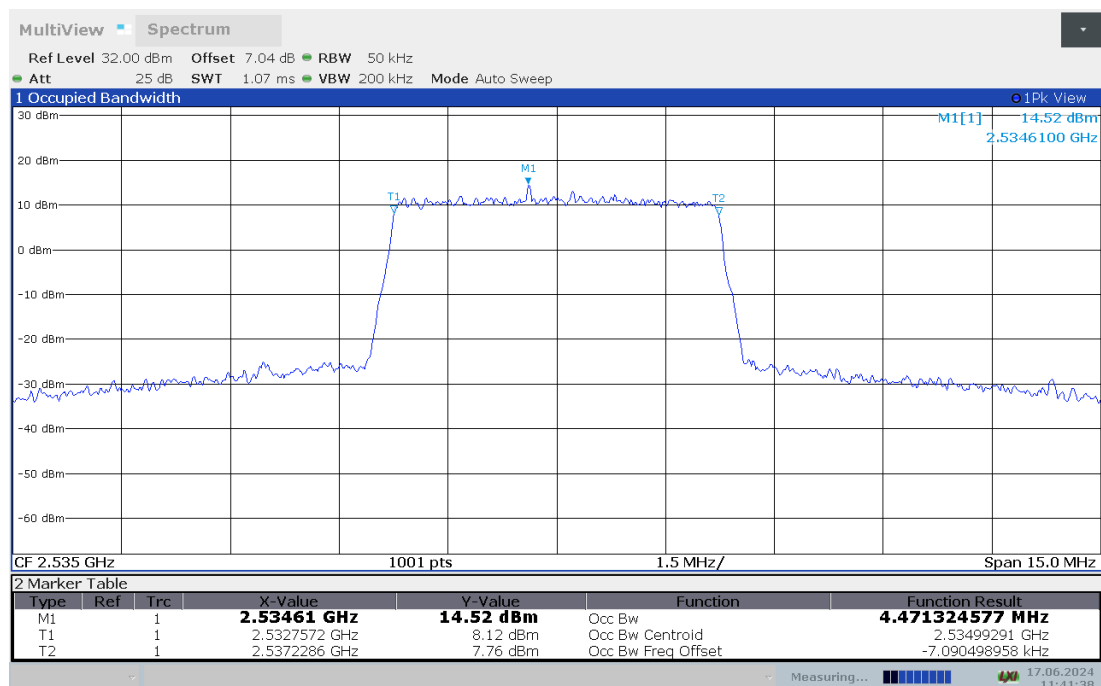
### LTE band 7,5MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 2535            | 4.485                            | 4.471 |
| 2502.5          | 4.485                            | 4.473 |
| 2567.5          | 4.482                            | 4.488 |

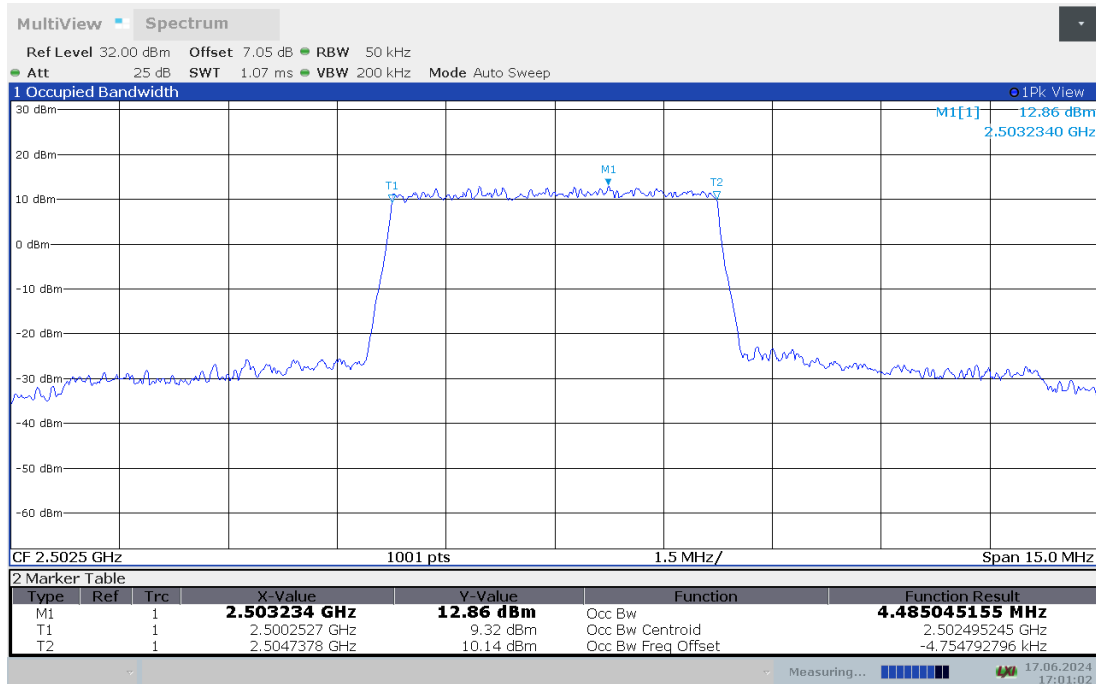
### LTE band 7 , 5MHz Bandwidth,MID,QPSK (99% BW)



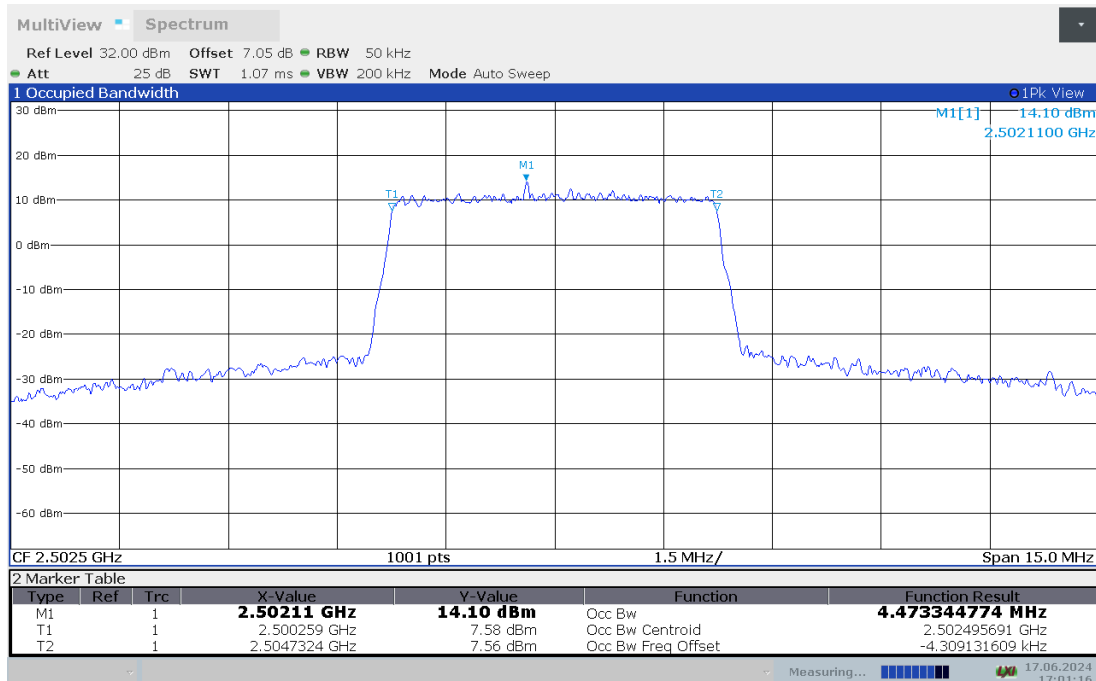
### LTE band 7 , 5MHz Bandwidth,MID,16QAM (99% BW)



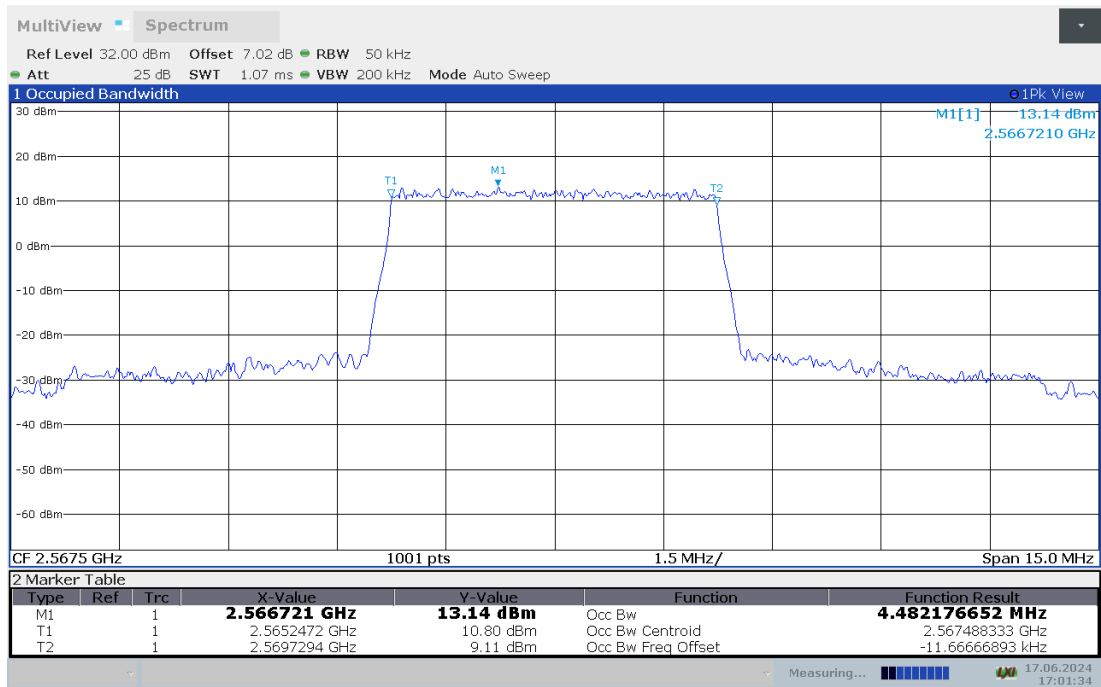
### LTE band 7 , 5MHz Bandwidth,LOW,QPSK (99% BW)



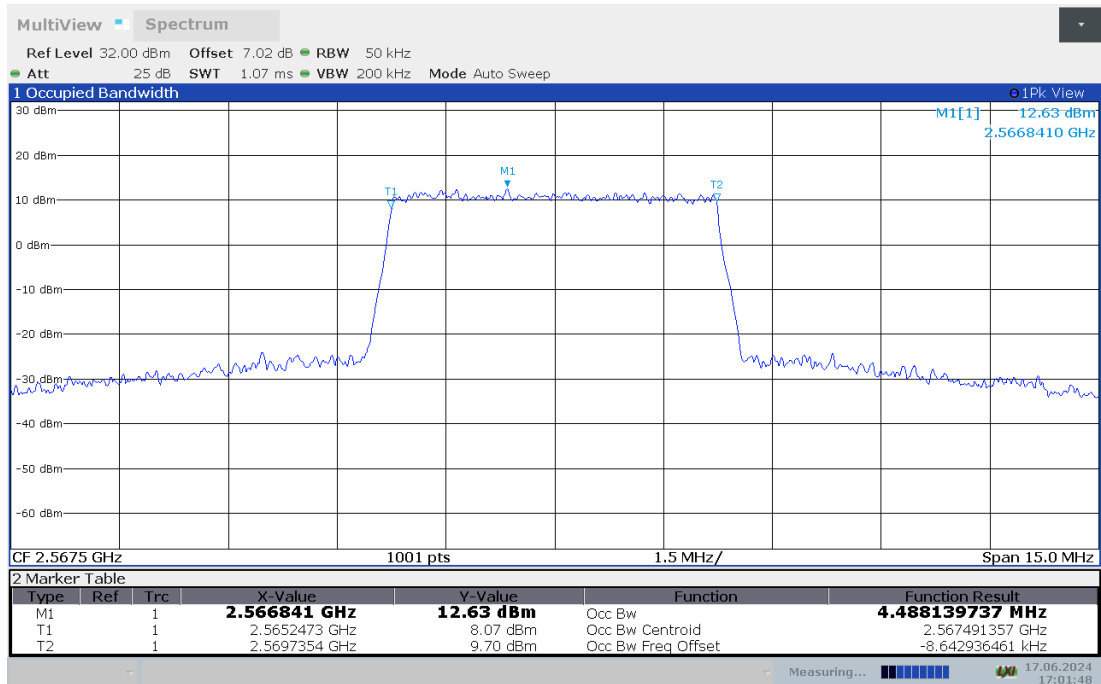
### LTE band 7 , 5MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 7 , 5MHz Bandwidth,HIGH,QPSK (99% BW)



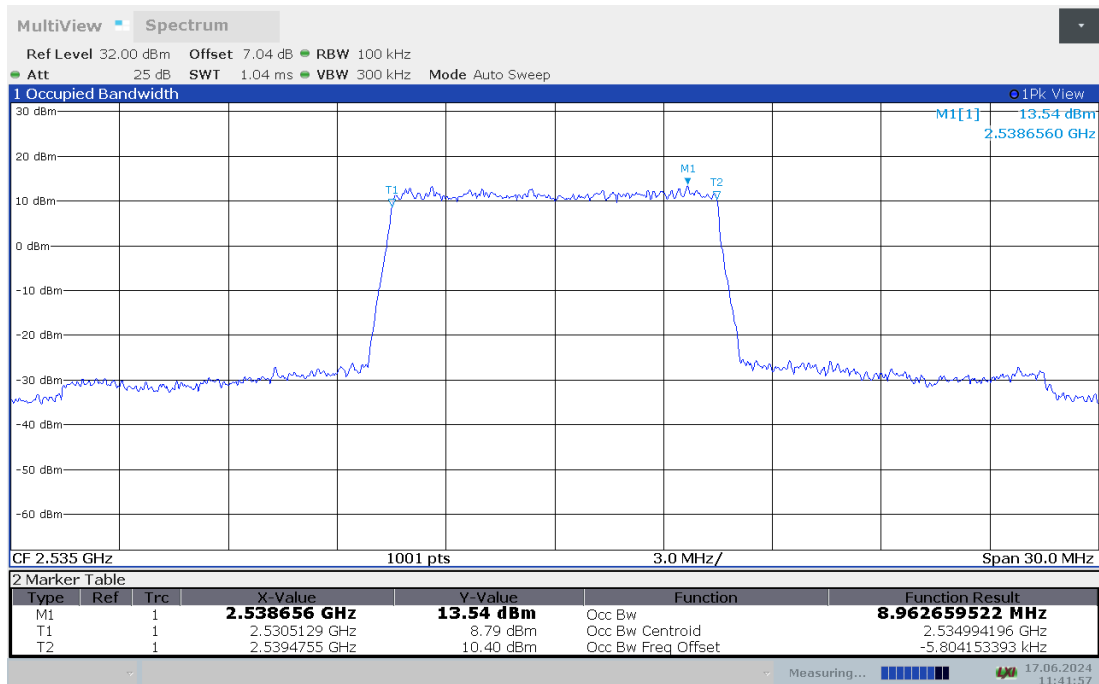
### LTE band 7 , 5MHz Bandwidth,HIGH,16QAM (99% BW)



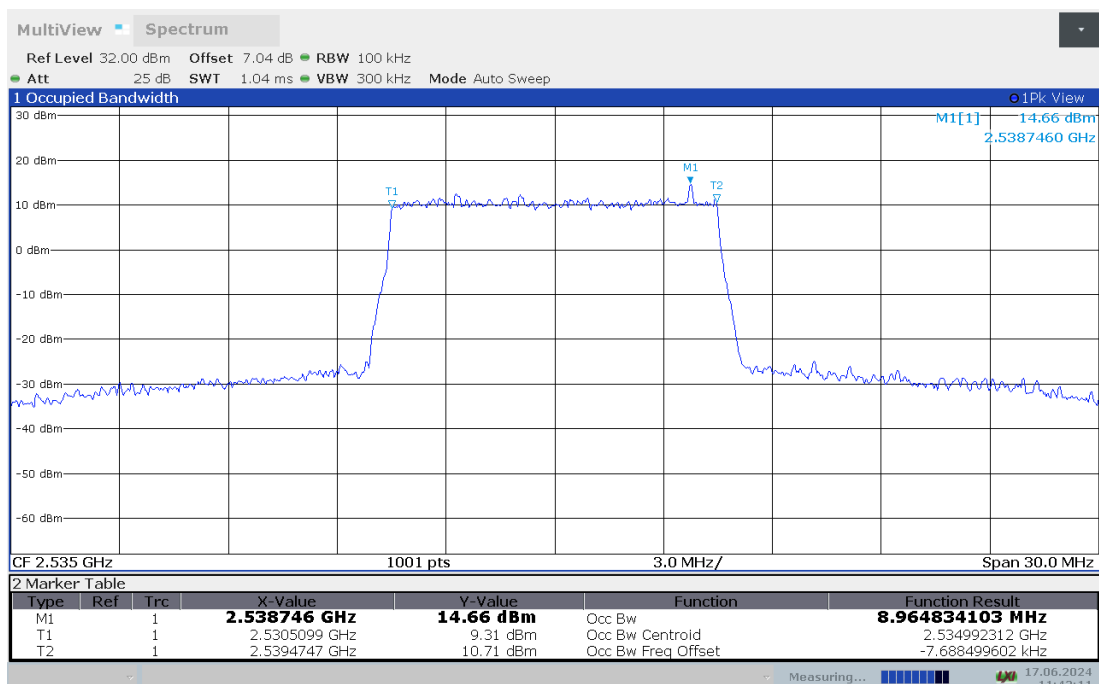
### LTE band 7,10MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 2535            | 8.963                            | 8.965 |
| 2505            | 8.975                            | 8.948 |
| 2565            | 8.952                            | 8.959 |

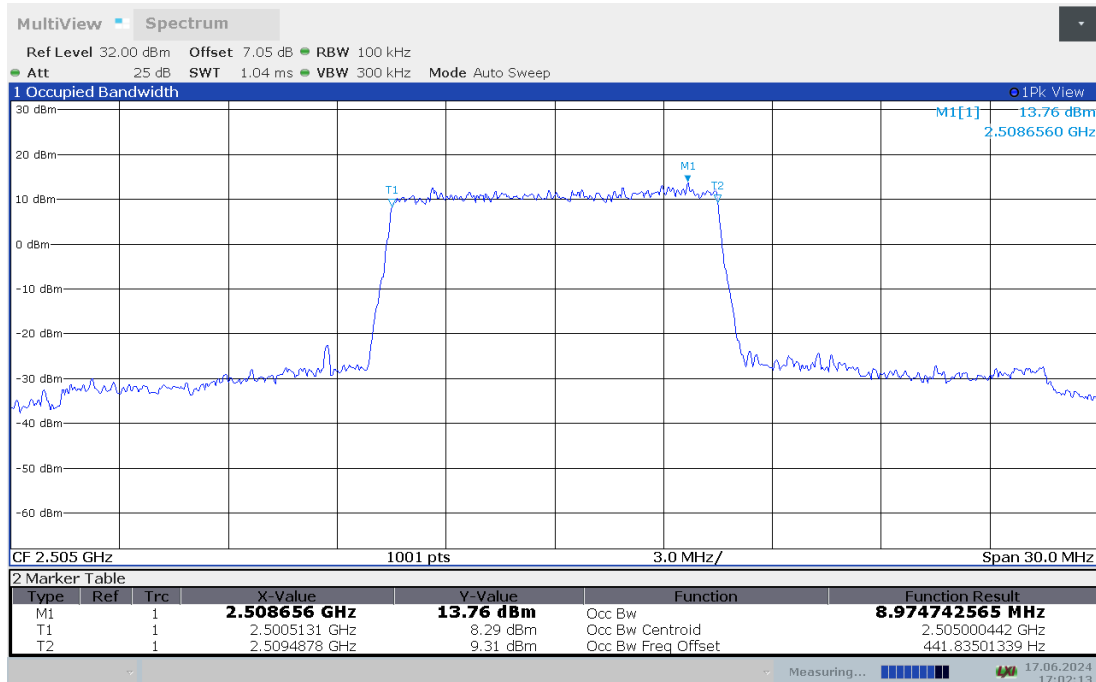
### LTE band 7 , 10MHz Bandwidth,MID,QPSK (99% BW)



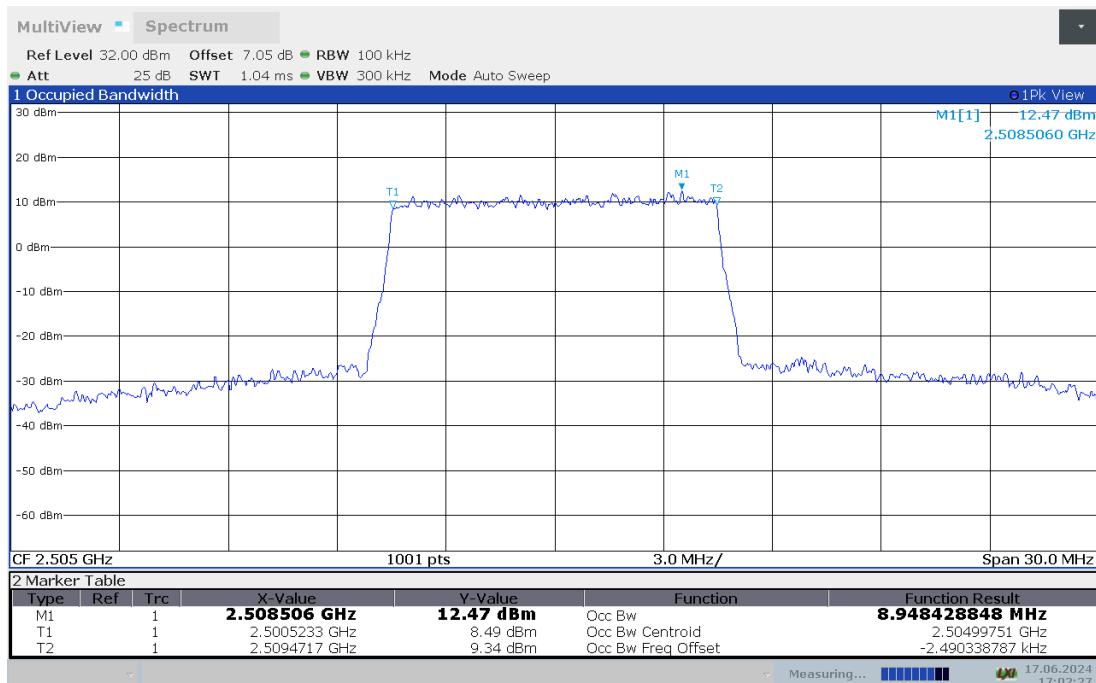
### LTE band 7 , 10MHz Bandwidth,MID,16QAM (99% BW)



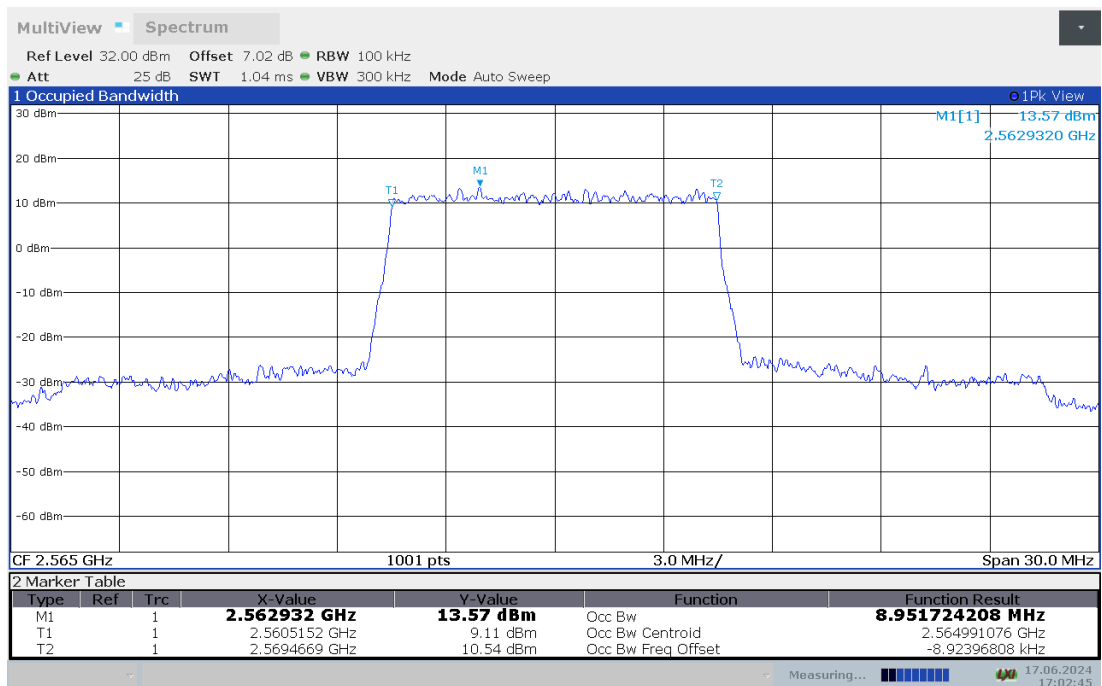
### LTE band 7 , 10MHz Bandwidth,LOW,QPSK (99% BW)



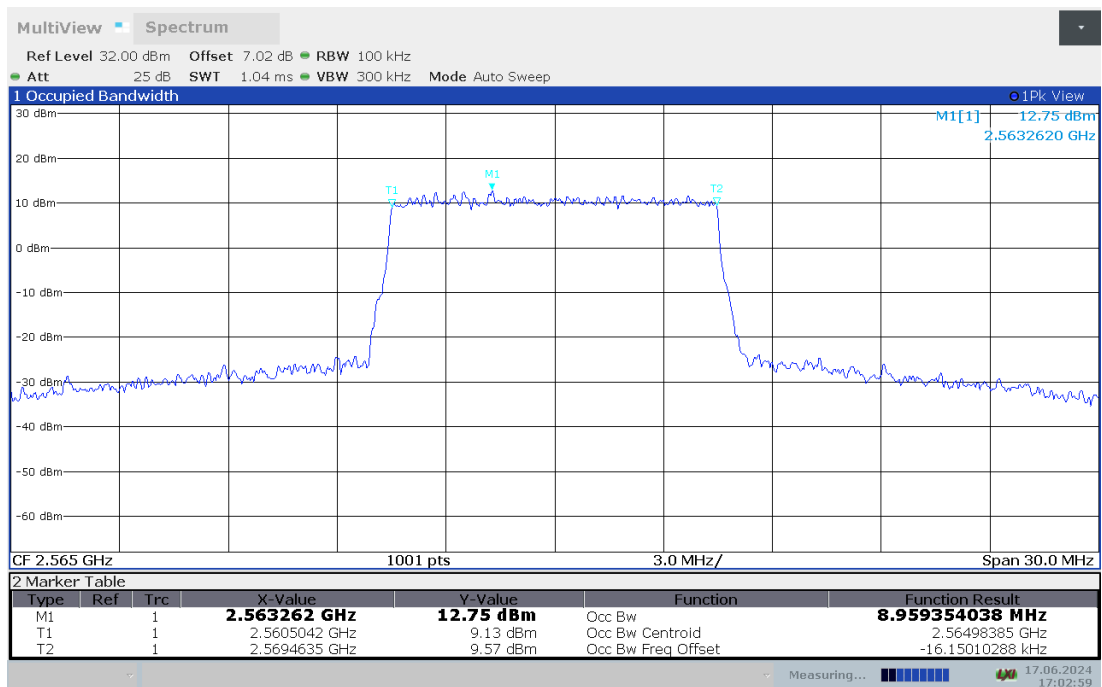
### LTE band 7 , 10MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 7 , 10MHz Bandwidth,HIGH,QPSK (99% BW)



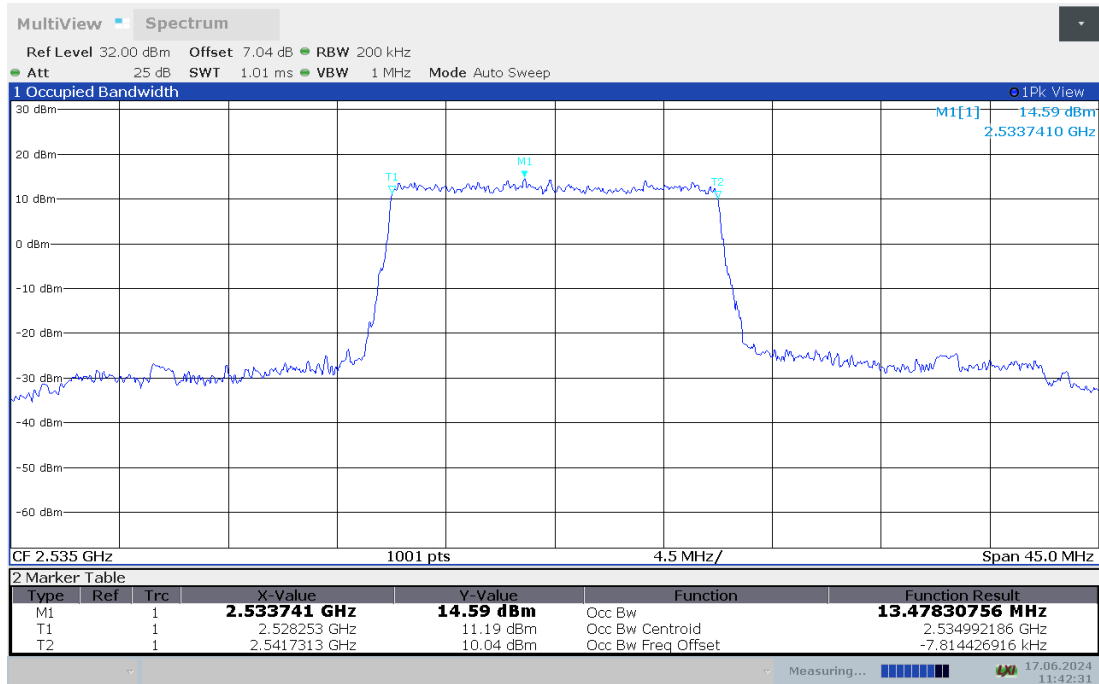
### LTE band 7 , 10MHz Bandwidth,HIGH,16QAM (99% BW)



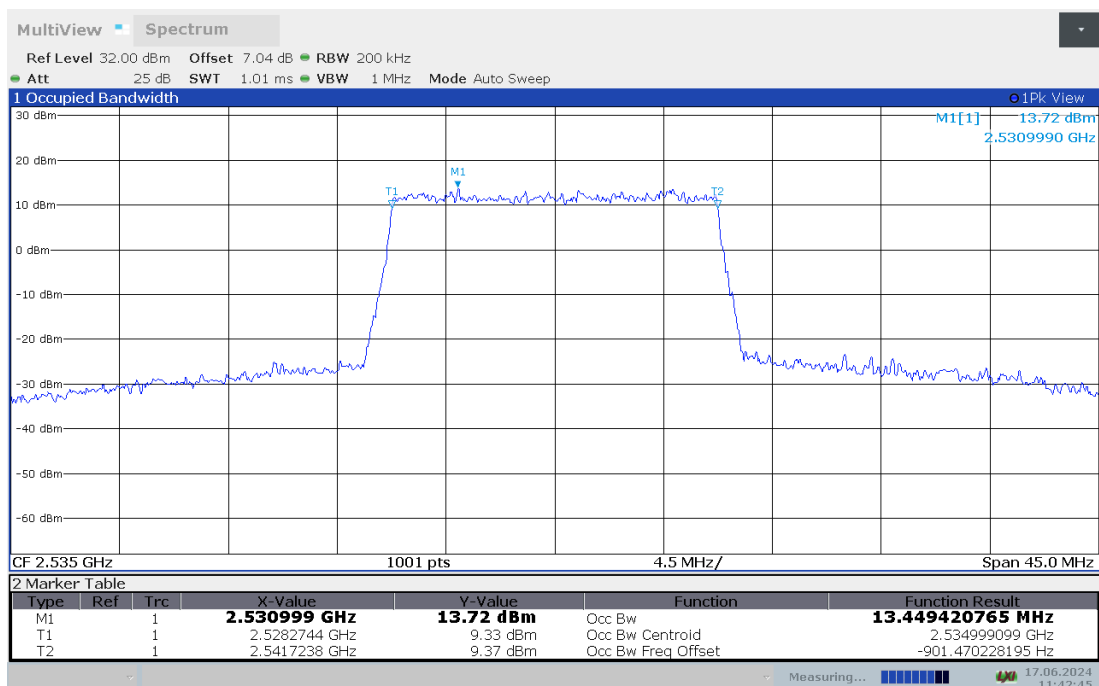
### LTE band 7,15MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |        |
|-----------------|----------------------------------|--------|
|                 | QPSK                             | 16QAM  |
| 2535            | 13.478                           | 13.449 |
| 2507.5          | 13.452                           | 13.454 |
| 2562.5          | 13.435                           | 13.469 |

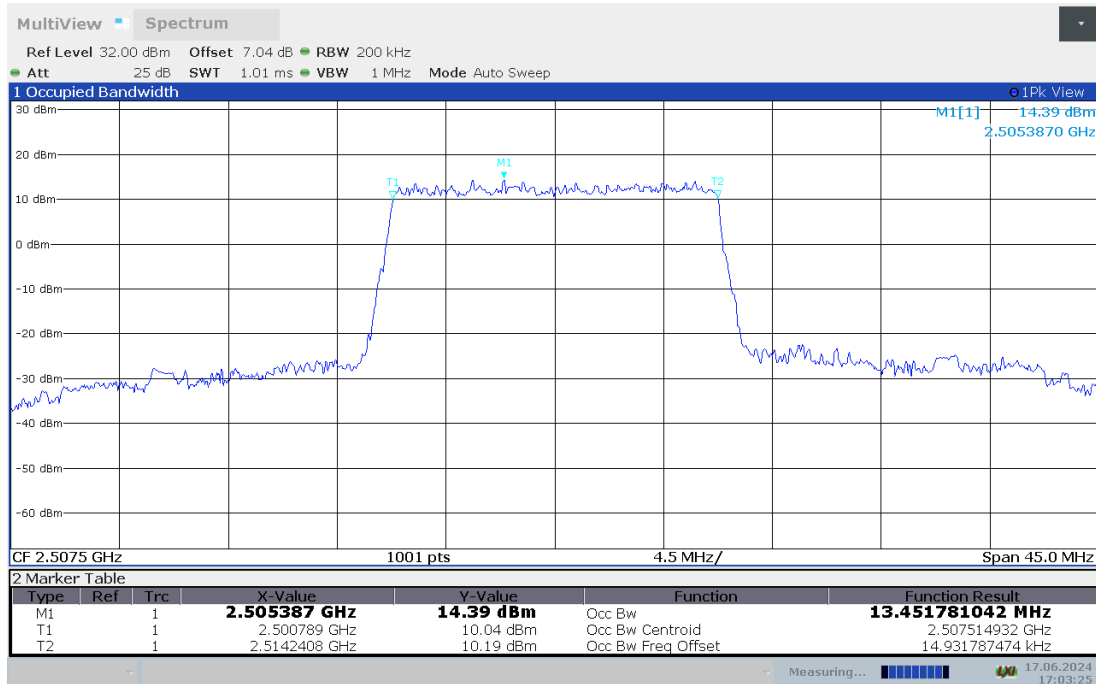
### LTE band 7 , 15MHz Bandwidth,MID,QPSK (99% BW)



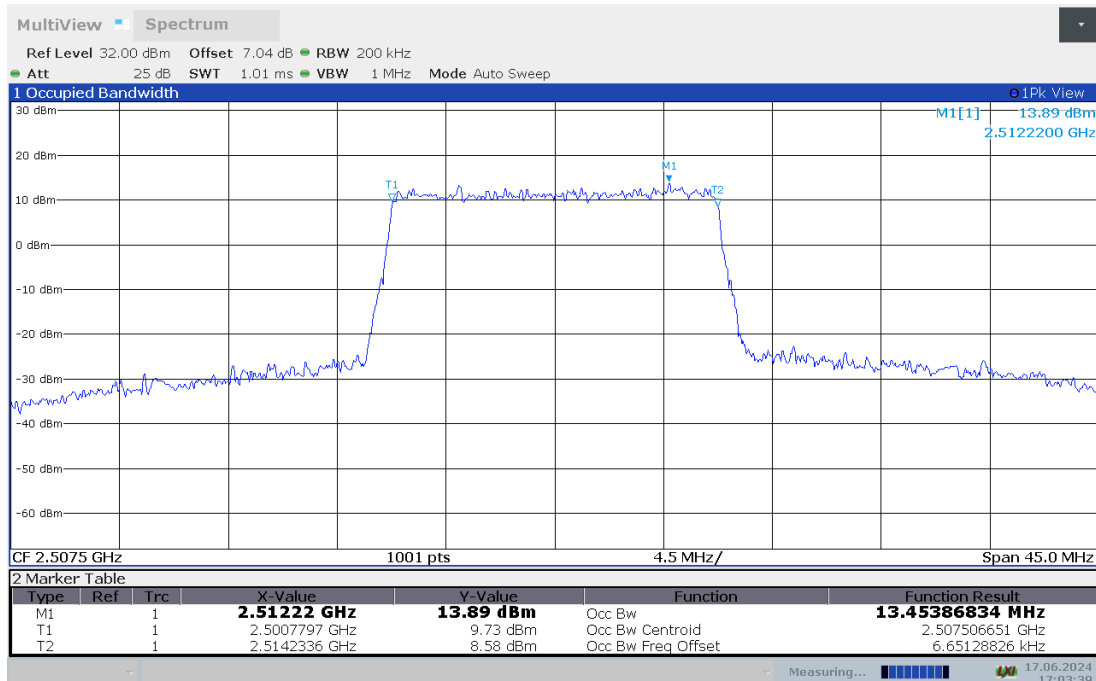
### LTE band 7 , 15MHz Bandwidth,MID,16QAM (99% BW)



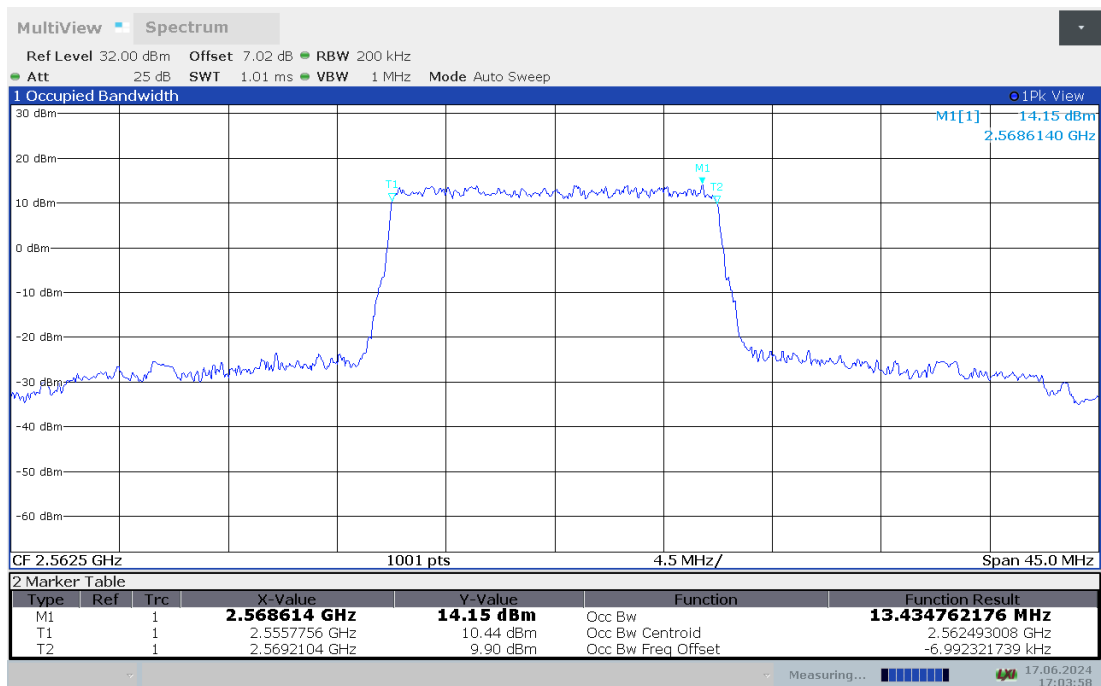
### LTE band 7 , 15MHz Bandwidth,LOW,QPSK (99% BW)



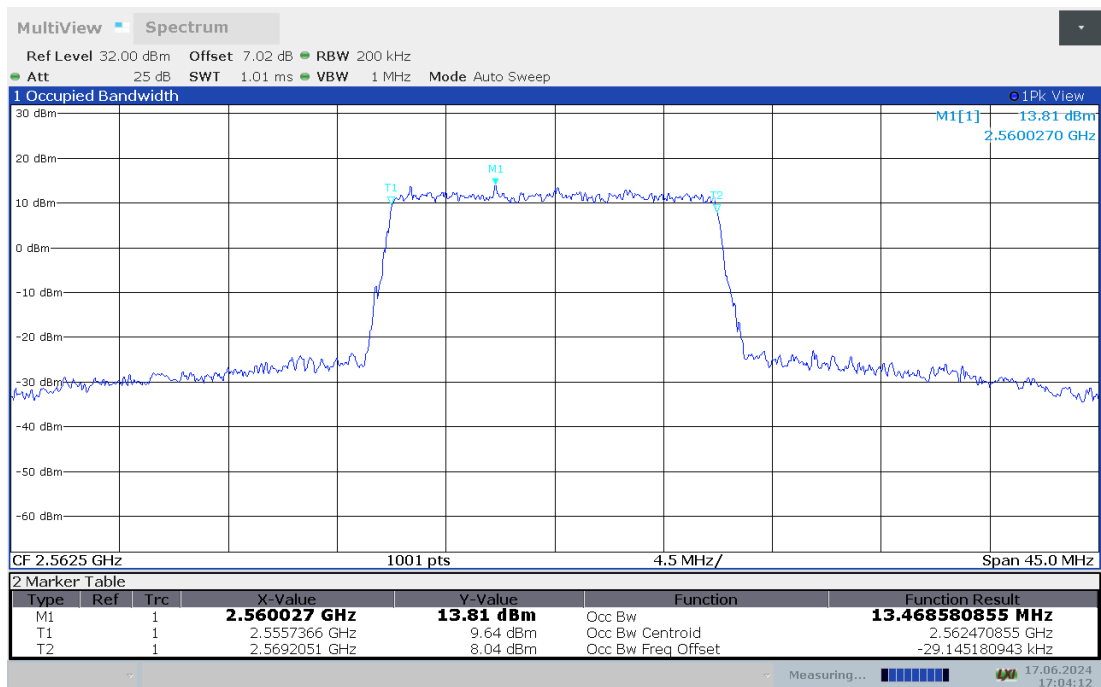
### LTE band 7 , 15MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 7 , 15MHz Bandwidth,HIGH,QPSK (99% BW)



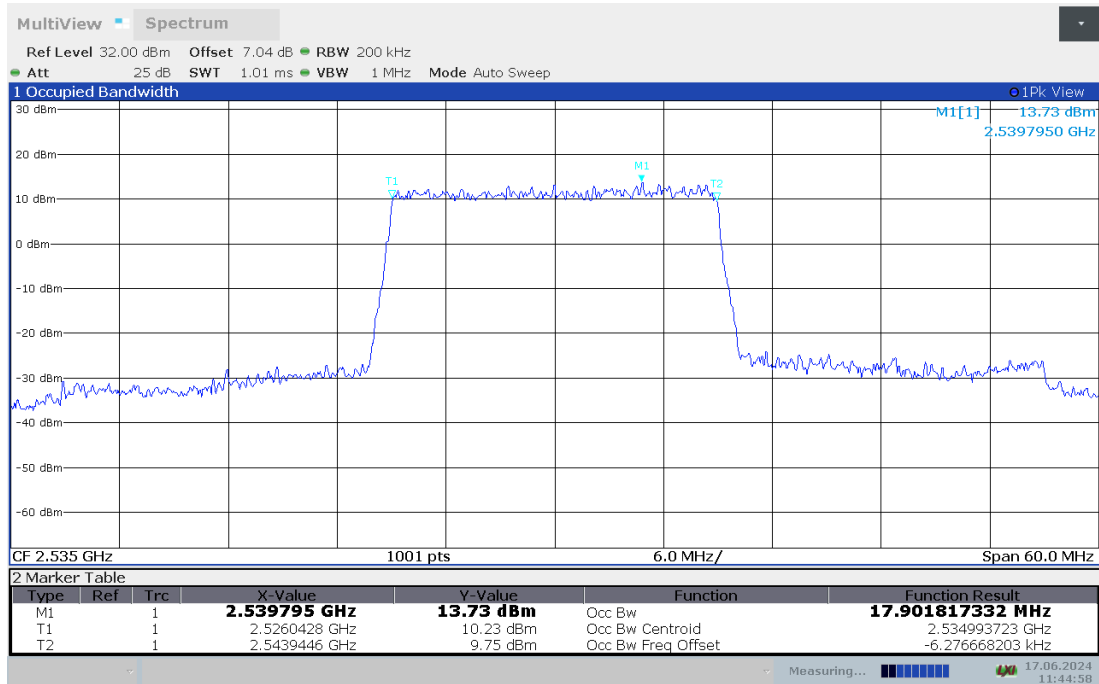
### LTE band 7 , 15MHz Bandwidth,HIGH,16QAM (99% BW)



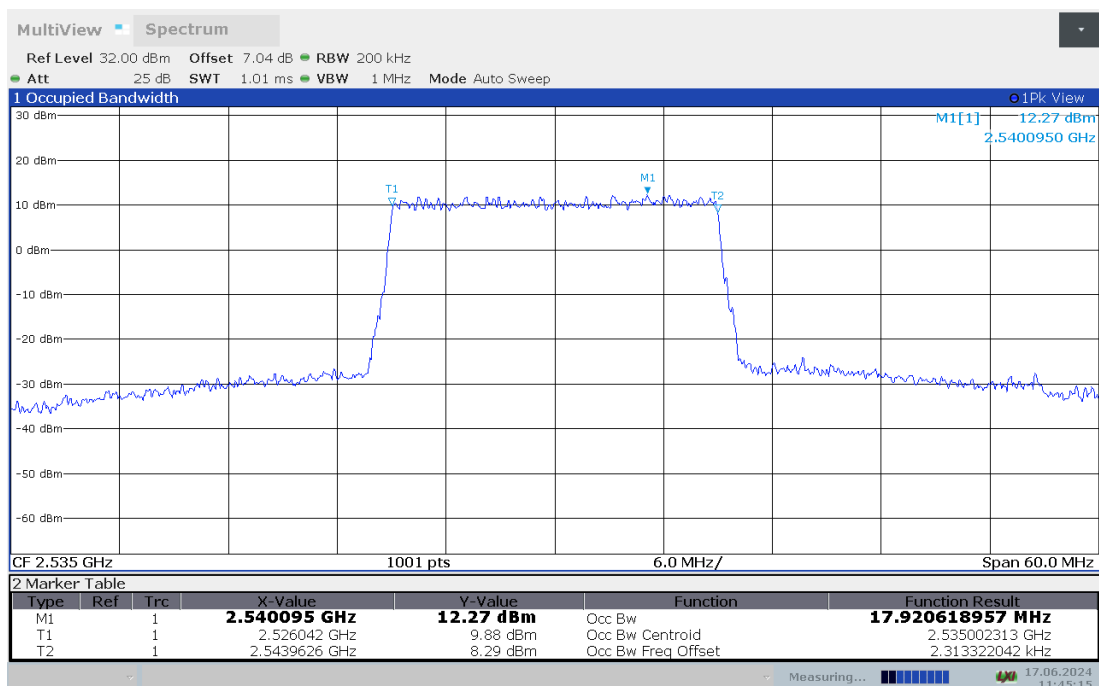
### LTE band 7,20MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |        |
|-----------------|----------------------------------|--------|
|                 | QPSK                             | 16QAM  |
| 2535            | 17.902                           | 17.921 |
| 2510            | 17.900                           | 17.903 |
| 2560            | 17.920                           | 17.915 |

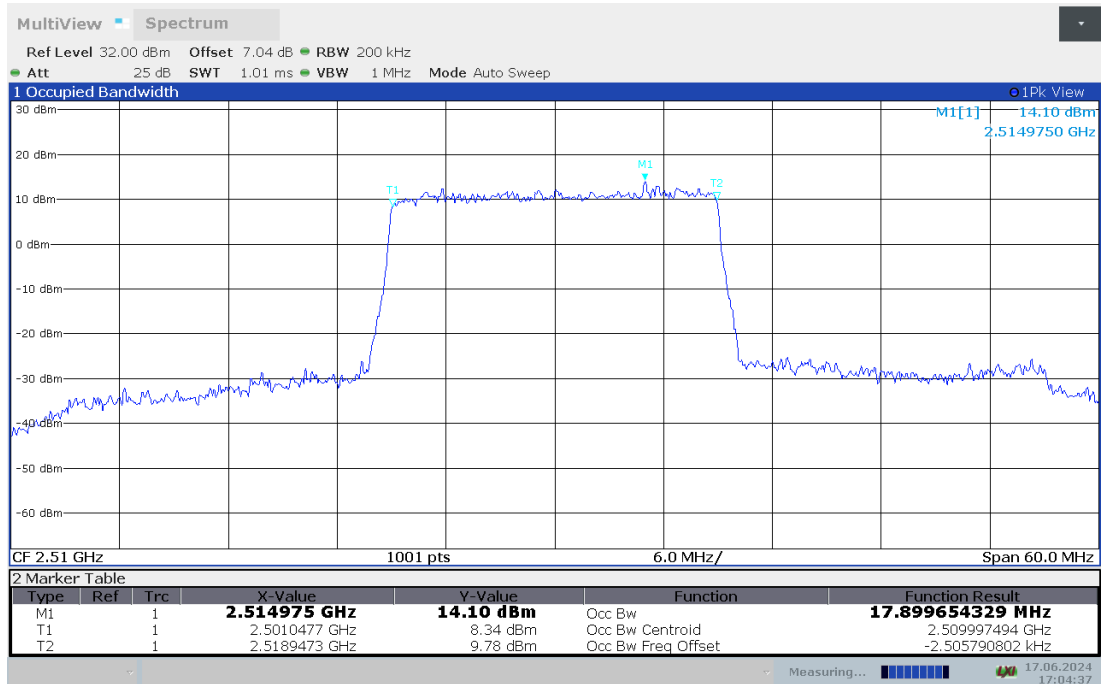
### LTE band 7 , 20MHz Bandwidth,MID,QPSK (99% BW)



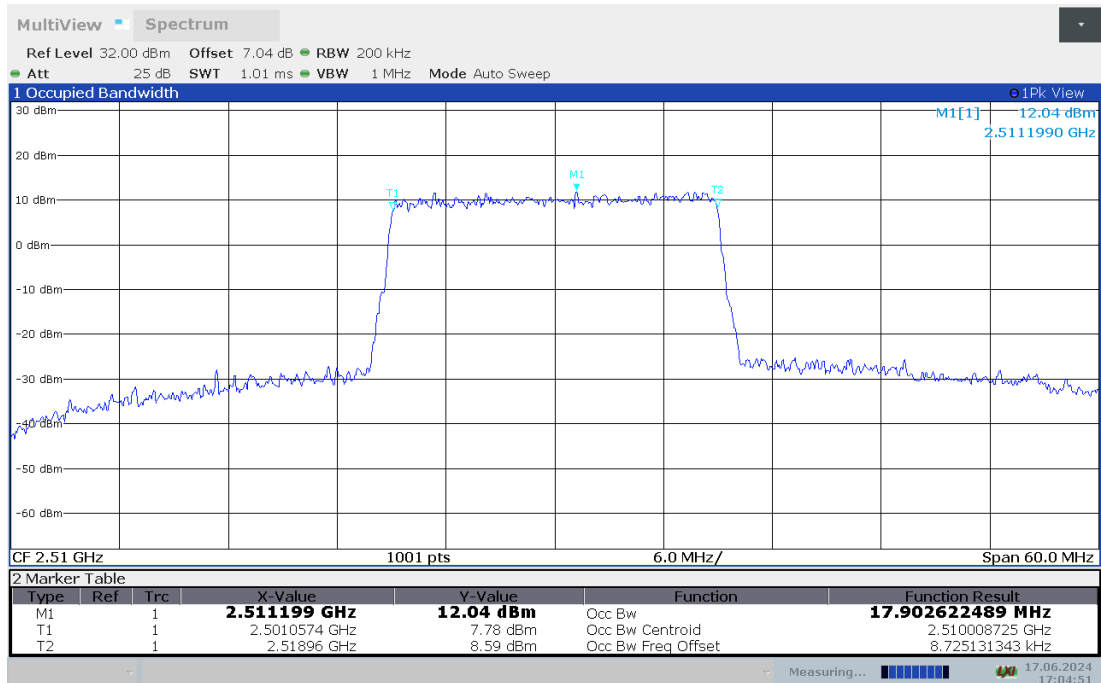
### LTE band 7 , 20MHz Bandwidth,MID,16QAM (99% BW)



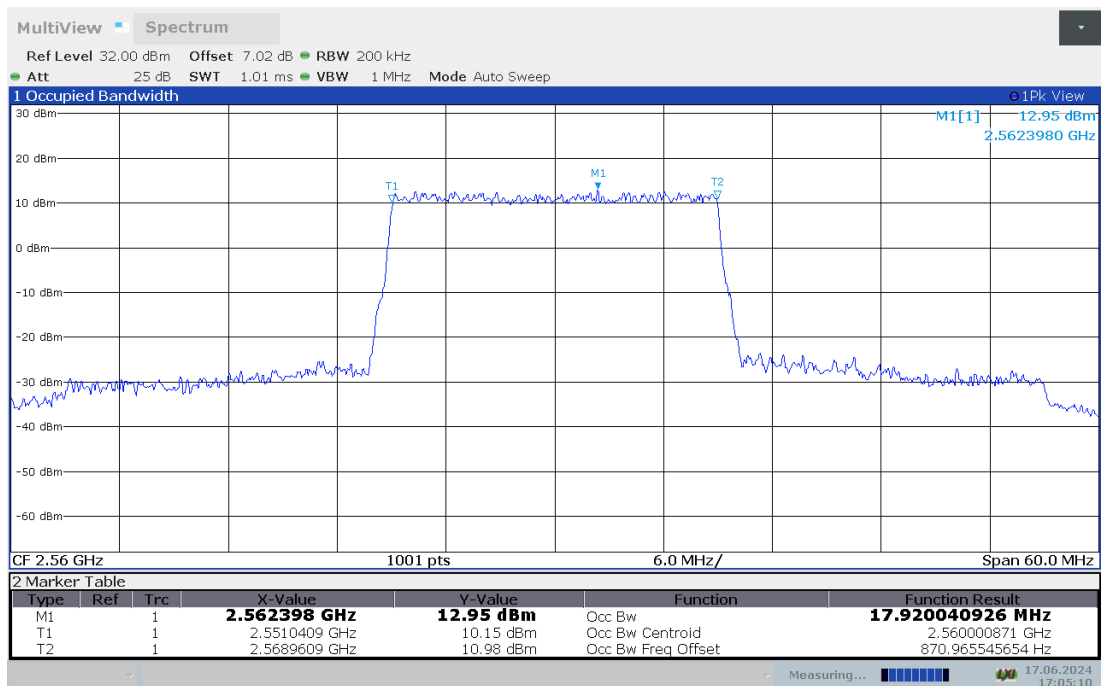
### LTE band 7 , 20MHz Bandwidth,LOW,QPSK (99% BW)



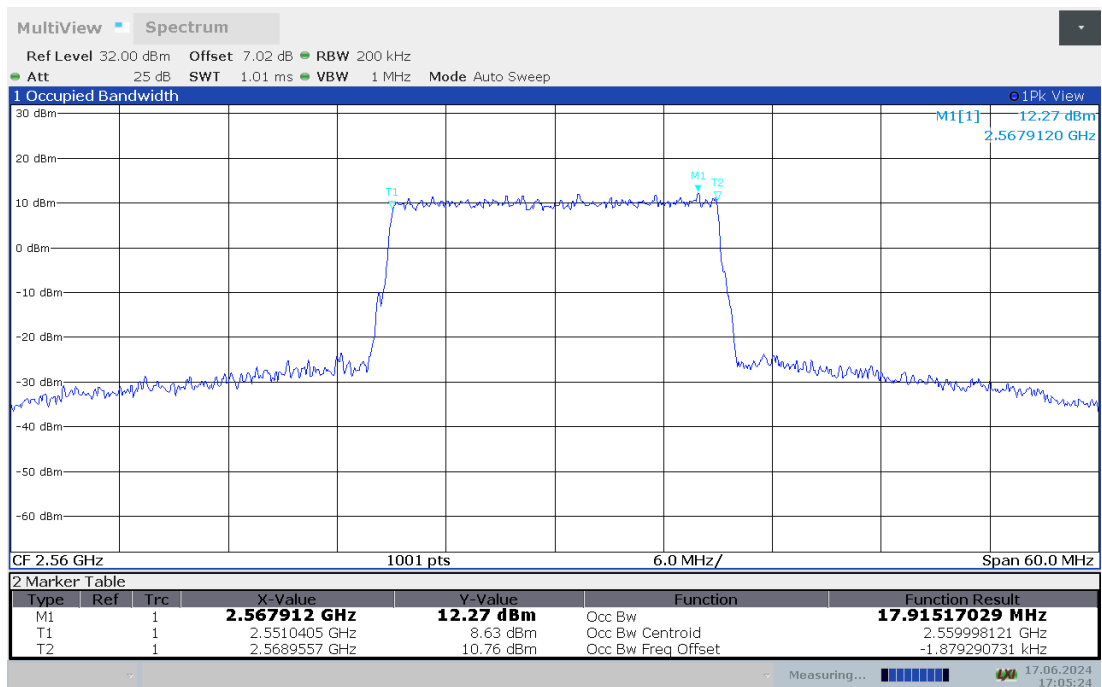
### LTE band 7 , 20MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 7 , 20MHz Bandwidth,HIGH,QPSK (99% BW)



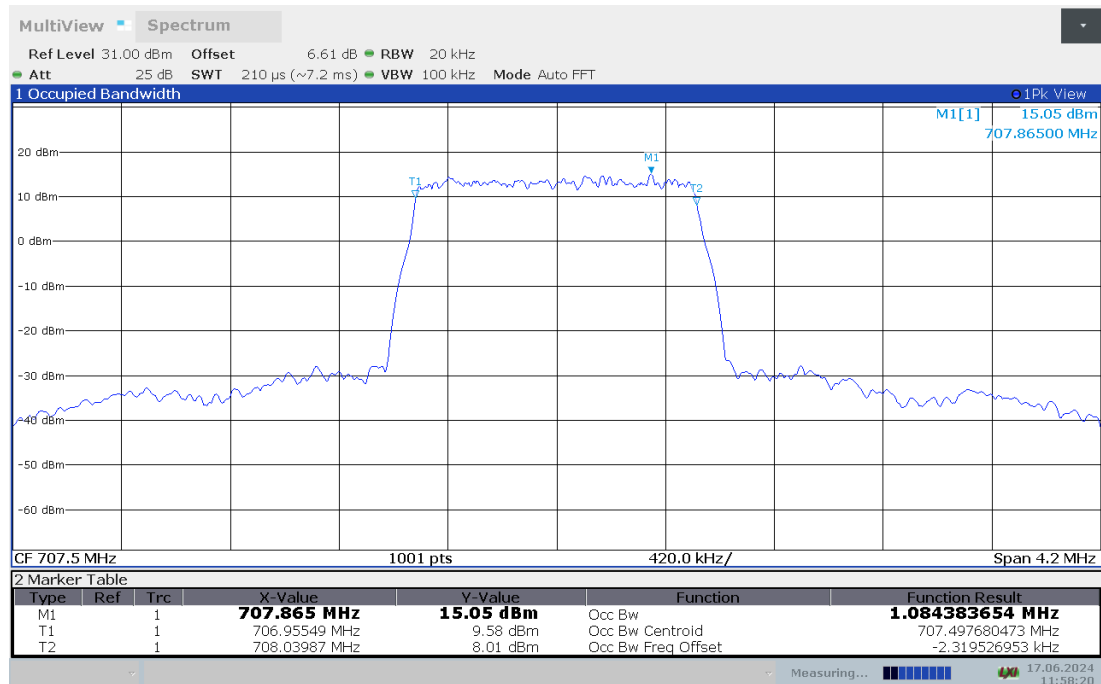
### LTE band 7 , 20MHz Bandwidth,HIGH,16QAM (99% BW)



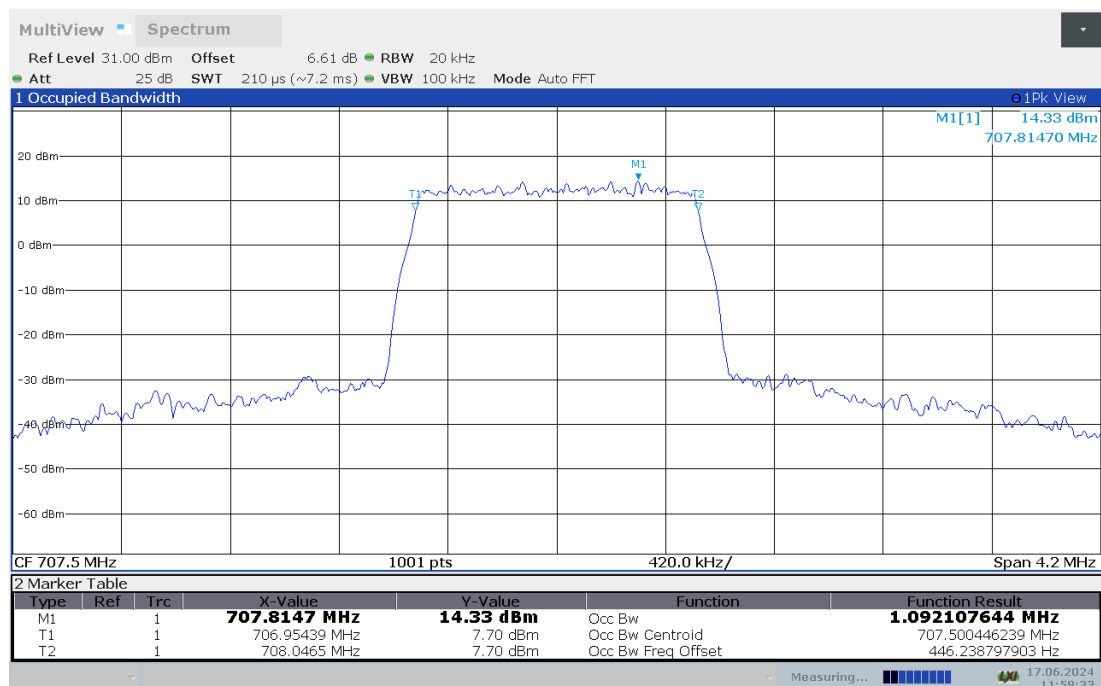
### LTE band 12,1.4MHz (99% BW)

| Frequency (MHz) | Occupied Bandwidth (99% BW)(MHz) |       |
|-----------------|----------------------------------|-------|
|                 | QPSK                             | 16QAM |
| 707.5           | 1.084                            | 1.092 |
| 699.7           | 1.090                            | 1.088 |
| 715.3           | 1.083                            | 1.092 |

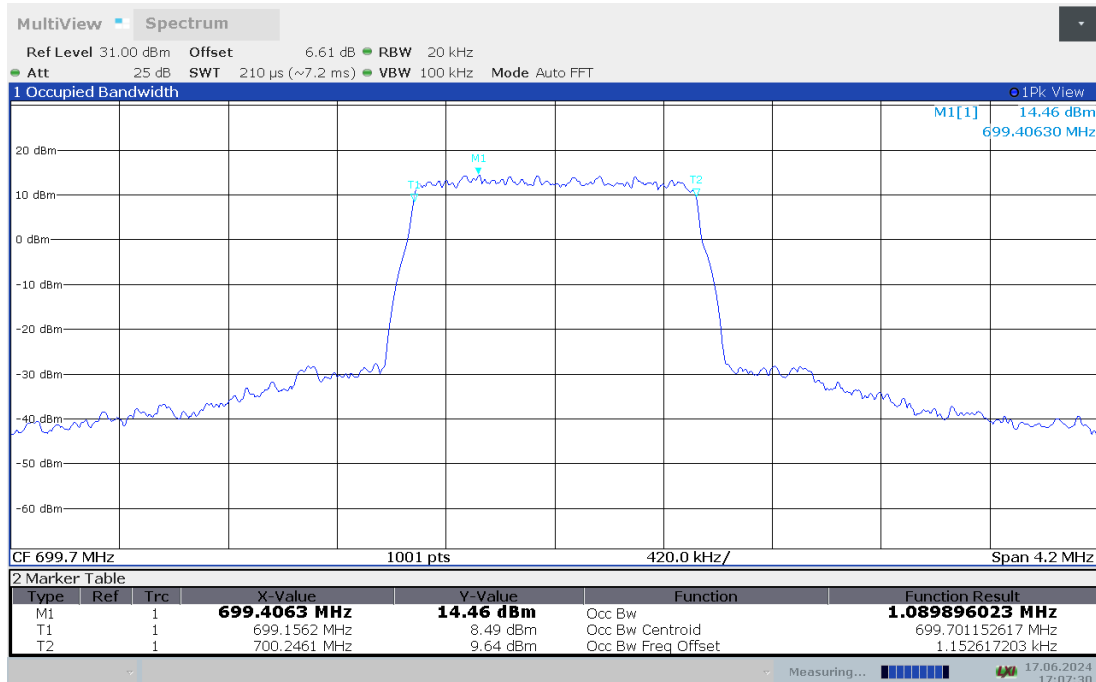
### LTE band 12 , 1.4MHz Bandwidth,MID,QPSK (99% BW)



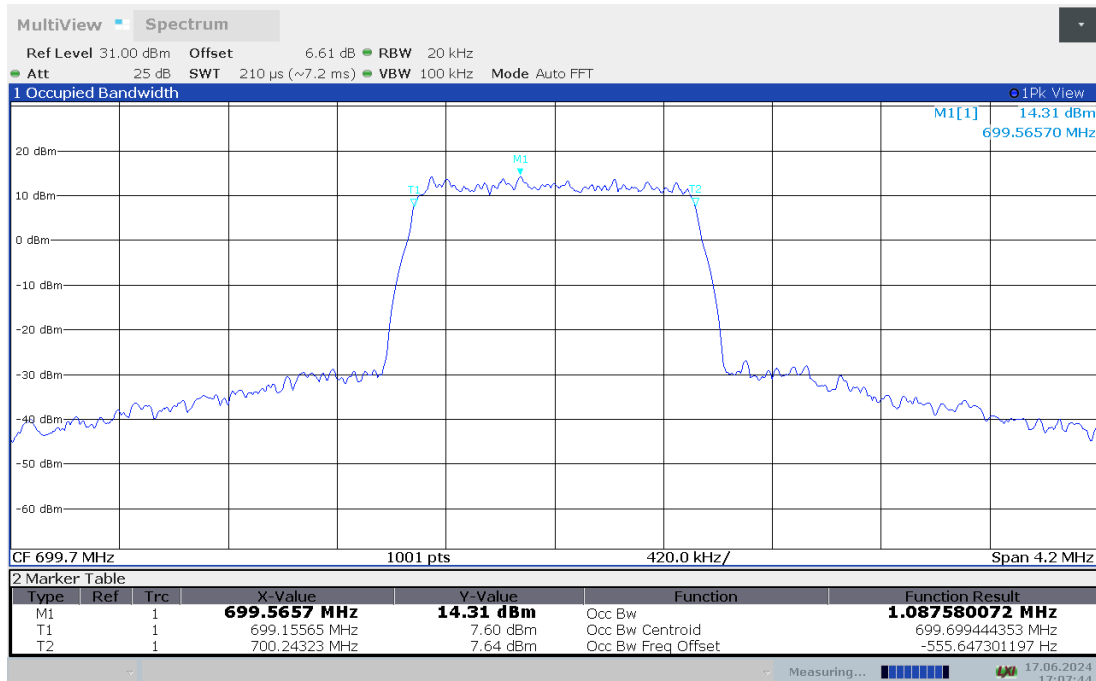
### LTE band 12 , 1.4MHz Bandwidth,MID,16QAM (99% BW)



### LTE band 12 , 1.4MHz Bandwidth,LOW,QPSK (99% BW)



### LTE band 12 , 1.4MHz Bandwidth,LOW,16QAM (99% BW)



### LTE band 12 , 1.4MHz Bandwidth,HIGH,QPSK (99% BW)