



TEST REPORT

No. I18D00226-SRD05

For

Client : Advanced Mobile Payment Inc.

Production : AMP 6500

Model Name : AMP 6500

Brand Name : AMP POS

FCC ID: 2AKJB-AMP6500-1

Hardware Version: AMP 6500-CD

Software Version: V1.0.11

Issued date: 2019-02-18

NOTE

1. The test results in this test report relate only to the devices specified in this report.
2. This report shall not be reproduced except in full without the written approval of East China Institute of Telecommunications.
3. ANSI/TIA-603-E and KDB 971168 D01 has not been approved by A2LA.
4. For the test results, the uncertainty of measurement is not taken into account when judging the compliance with specification, and the results of measurement or the average value of measurement results are taken as the criterion of the compliance with specification directly.

Test Laboratory:

East China Institute of Telecommunications

Add: 7-8F, G Area, No.668, Beijing East Road, Huangpu District, Shanghai, P. R. China

Tel: +86 21 63843300

FAX: +86 21 63843301

E-Mail: welcome@ecit.org.cn

Revision Version

| Report Number | Revision | Date | Memo |
|----------------------|-----------------|-------------|---------------------------------|
| I18D00226-SRD05 | 00 | 2019-01-04 | Initial creation of test report |
| I18D00226-SRD05 | 01 | 2019-02-18 | Second creation of test report |

CONTENTS

| | | |
|------------|---|----|
| 1. | TEST LABORATORY | 6 |
| 1.1. | TESTING LOCATION | 6 |
| 1.2. | TESTING ENVIRONMENT | 6 |
| 1.3. | PROJECT DATA | 6 |
| 1.4. | SIGNATURE | 6 |
| 2. | CLIENT INFORMATION | 7 |
| 2.1. | APPLICANT INFORMATION | 7 |
| 2.2. | MANUFACTURER INFORMATION | 7 |
| 3. | EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) | 8 |
| 3.1. | ABOUT EUT | 8 |
| 3.2. | INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST | 8 |
| 3.3. | INTERNAL IDENTIFICATION OF AE USED DURING THE TEST | 8 |
| 4. | REFERENCE DOCUMENTS..... | 9 |
| 4.1. | REFERENCE DOCUMENTS FOR TESTING | 9 |
| 5. | TEST RESULTS..... | 10 |
| 5.1. | SUMMARY OF TEST RESULTS..... | 10 |
| 5.2. | STATEMENTS..... | 12 |
| 6. | TEST EQUIPMENT UTILIZED | 13 |
| 7. | TEST ENVIRONMENT | 15 |
| 8. | MEASUREMENT UNCERTAINTY | 16 |
| ANNEX A. | MEASUREMENT RESULTS..... | 17 |
| ANNEX A.1. | OUTPUT POWER | 17 |
| ANNEX A.2. | EMISSION LIMIT..... | 44 |

| | | |
|-------------------|---|------------|
| ANNEX A.3. | FREQUENCY STABILITY | 53 |
| ANNEX A.4. | OCCUPIED BANDWIDTH | 57 |
| ANNEX A.5. | EMISSION BANDWIDTH..... | 90 |
| ANNEX A.6. | BAND EDGE COMPLIANCE..... | 123 |
| ANNEX A.7. | CONDUCTED SPURIOUS EMISSION..... | 138 |
| ANNEX A.8. | PEAK-TO-AVERAGE POWER RATIO | 142 |
| ANNEX B. | DEVIATIONS FROM PRESCRIBED TEST METHODS..... | 147 |
| ANNEX C. | DETAILED TEST RESULTS | 148 |
| ANNEX C.1. | MAIN TERMS | 148 |
| ANNEX C.2. | TERMS USED IN CONDITION COLUMN | 148 |
| ANNEX C.3. | TERMS USED IN VERDICT COLUMN..... | 148 |
| ANNEX C.4. | TERMS USED IN NOTE COLUMN | 148 |
| ANNEX D. | ACCREDITATION CERTIFICATE..... | 149 |

1. Test Laboratory

1.1. Testing Location

| | |
|---------------------|---|
| Company Name: | ECIT Shanghai, East China Institute of Telecommunications |
| Address: | 7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China |
| Postal Code: | 200001 |
| Telephone: | (+86)-021-63843300 |
| Fax: | (+86)-021-63843301 |
| FCC registration No | 958356 |

1.2. Testing Environment

| | |
|---------------------|-----------|
| Normal Temperature: | 15°C-35°C |
| Relative Humidity: | 25%-75% |

1.3. Project data

| | |
|--------------------|------------|
| Project Leader | Yu Anlu |
| Testing Start Date | 2018-12-03 |
| Testing End Date | 2019-02-14 |


1.4. Signature



Tang Tao
(Prepared this test report)



Shi Hongqi
(Reviewed this test report)



Zheng Zhongbin
(Approved this test report)

2. Client Information

2.1. Applicant Information

| | |
|--------------|---|
| Company Name | Advanced Mobile Payment Inc. |
| Address | Units 401-403, 15 Wertheim Court. Richmond Hill, Ontario L4B 3H7 CAN ADA |
| Telephone | 1 (905) 597 2333 |
| Postcode | L4B 3H7 |

2.2. Manufacturer Information

| | |
|--------------|---|
| Company Name | NEW POS TECHNOLOGY LIMITED |
| Address | Floor, Block A, Financial Technology Building, No.11 Keyuan Rd, Nanshan District, Shenzhen |
| Telephone | / |
| Postcode | / |

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

| | |
|-----------------------------------|--------------------------------------|
| Production | AMP 6500 |
| Model name | AMP 6500 |
| FCC ID | 2AKJB-AMP6500-1 |
| GSM Frequency Band | GSM1900 |
| UMTS Frequency Band | Band II |
| CDMA Frequency Band | NA |
| LTE Frequency Band | LTE 2/4/5/7/25/26 |
| Additional Communication Function | BT4.2, BLE, WiFi 802.11a,b,g,n20,n40 |
| Extreme Temperature | -20/+60°C |
| Nominal Voltage | 12V |
| Extreme High Voltage | 15V |
| Extreme Low Voltage | 10V |

Note: Photographs of EUT are shown in ANNEX A of this test report.

3.2. Internal Identification of EUT used during the test

| EUT ID* | Model Name | SN or IMEI | HW Version | SW Version | Date of receipt |
|---------|------------|------------|-------------|------------|-----------------|
| N01 | AMP 6500 | / | AMP 6500-CD | V1.0.11 | 2018-11-26 |
| N03 | AMP 6500 | / | AMP 6500-CD | V1.0.11 | 2018-11-26 |
| N05 | AMP 6500 | / | AMP 6500-CD | V1.0.11 | 2018-11-26 |

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

3.3. Internal Identification of AE used during the test

| AE ID* | Description | SN |
|--------|-------------|-----|
| AE1 | RF cable | --- |

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

4. Reference Documents

4.1. Reference Documents for testing

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

| Reference | Title | Version |
|----------------|---|-----------|
| FCC Part 2 | FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS | 2018/10/1 |
| FCC Part 22 | PUBLIC MOBILE SERVICES | 2018/10/1 |
| FCC Part 24 | PERSONAL COMMUNICATIONS SERVICES | 2018/10/1 |
| FCC Part 27 | MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES | 2018/10/1 |
| FCC Part 90 | PRIVATE LAND MOBILE RADIO SERVICES | 2017/10/1 |
| ANSI/TIA-603-E | Land Mobile FM or PM Communications Equipment Measurement and Performance Standards | 2016 |
| ANSI C63.26 | American National Standard of Procedures for Compliance Testing of Licensed Transmitters Used in Licensed Radio | 2015 |
| KDB 971168 D01 | Measurement Guidance for Certification of Licensed Digital Transmitters | v03r01 |

5. Test Results

5.1. Summary of Test Results

LTE Band 2

| Items | Test Name | Clause in FCC rules | Section in this report | Verdict |
|-------|-----------------------------|----------------------|------------------------|---------|
| 1 | Output Power | 24.232(c) | A.1 | P |
| 2 | Emission Limit | 24.238(a), 2.1051 | A.2 | P |
| 3 | Frequency Stability | 24.235, 2.1055 | A.3 | P |
| 4 | Occupied Bandwidth | 2.1049(h)(i) | A.4 | P |
| 5 | Emission Bandwidth | 24.238(a) | A.5 | P |
| 6 | Band Edge Compliance | 24.238(a) | A.6 | P |
| 7 | Conducted Spurious Emission | 24.238, 2.1057 | A.7 | P |
| 8 | Peak to Average Power Ratio | 24.232 (d) | A.8 | P |

LTE Band 4

| Items | Test Name | Clause in FCC rules | Section in this report | Verdict |
|-------|-----------------------------|---------------------|------------------------|---------|
| 1 | Output Power | 27.50(d)(4) | A.1 | P |
| 2 | Emission Limit | 27.53(h), 2.1051 | A.2 | P |
| 3 | Frequency Stability | 27.54, 2.1055 | A.3 | P |
| 4 | Occupied Bandwidth | 2.1049(h)(i) | A.4 | P |
| 5 | Emission Bandwidth | 27.53(h) | A.5 | P |
| 6 | Band Edge Compliance | 27.53(h) | A.6 | P |
| 7 | Conducted Spurious Emission | 27.53(h), 2.1057 | A.7 | P |
| 8 | Peak to Average Power Ratio | 27.50(a) | A.8 | P |

LTE Band 5

Note: LTE Band 5 subset of band 26(Part22), So we only tested 26 band 26(Part22).

LTE Band 7

| Items | Test Name | Clause in FCC rules | Section in this report | Verdict |
|-------|-----------------------------|---------------------|------------------------|---------|
| 1 | Output Power | 27.50(h)(2) | A.1 | P |
| 2 | Emission Limit | 27.53(m), 2.1051 | A.2 | P |
| 3 | Frequency Stability | 27.54, 2.1055 | A.3 | P |
| 4 | Occupied Bandwidth | 2.1049(h)(i) | A.4 | P |
| 5 | Emission Bandwidth | 27.53(m) | A.5 | P |
| 6 | Band Edge Compliance | 27.53(m) | A.6 | P |
| 7 | Conducted Spurious Emission | 27.53(m), 2.1057 | A.7 | P |

| | | | | |
|---|-----------------------------|----------|-----|---|
| 8 | Peak to Average Power Ratio | 27.50(a) | A.8 | P |
|---|-----------------------------|----------|-----|---|

LTE Band 25

| Items | Test Name | Clause in FCC rules | Section in this report | Verdict |
|-------|-----------------------------|---------------------|------------------------|---------|
| 1 | Output Power | 2.1046/24.232 | A.1 | P |
| 2 | Emission Limit | 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 | 2.1049/24.238 | A.6 | P |
| 7 | Conducted Spurious Emission | 2.1049/24.238 | A.7 | P |
| 8 | Peak to Average Power Ratio | 2.1049/24.238 | A.8 | P |

LTE Band 26 (Part 22)

| Items | Test Name | Clause in FCC rules | Section in this report | Verdict |
|-------|-----------------------------|---------------------|------------------------|---------|
| 1 | Output Power | 2.1046/22.913 | A.1 | P |
| 2 | Emission Limit | 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 | 2.1046/22.913 | A.7 | P |

LTE Band 26 (Part 90)

| Items | Test Name | Clause in FCC rules | Section in this report | Verdict |
|-------|---------------------|---------------------|------------------------|---------|
| 1 | Output Power | 2.1046/90.635 | A.1 | P |
| 2 | Emission Limit | 2.1053/90.691 | A.2 | P |
| 3 | Frequency Stability | 2.1055/90.213 | A.3 | P |
| 4 | Occupied Bandwidth | 2.1049/90.121 5 | A.4 | P |
| 5 | Emission Bandwidth | 2.1049/90.121 | A.5 | P |

| | | | | |
|---|-----------------------------|---------------|-----|---|
| | | 5 | | |
| 6 | Band Edge Compliance | 2.1051/90.691 | A.6 | P |
| 7 | Conducted Spurious Emission | 2.1051/90.691 | A.7 | P |

Note: please refer to Annex C in this test report for the detailed test results.

The following terms are used in the above table.

| | |
|----|--|
| P | Pass, the EUT complies with the essential requirements in the standard. |
| NM | Not measure, the test was not measured by ECIT. |
| NA | Not applicable, the test was not applicable. |
| F | Fail, the EUT does not comply with the essential requirements in the standard. |

5.2. Statements

The AMP 6500, support GSM/GPRS/EDGE/WCDMA/LTE/BT/BLE/WLAN, manufactured by NEW POS TECHNOLOGY LIMITED, which is a new product for testing.

ECIT only performed test cases which identified with P/NM/NA/F results in Annex C.

ECIT has verified that the compliance of the tested device specified in section 5 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 5 of this test report.

6. Test Equipment Utilized

Climate chamber

| No. | Equipment | Model | Serial Number | Manufacturer | Calibration date | Cal.interval |
|-----|-----------------|--------|---------------|--------------|------------------|--------------|
| 1 | Climate chamber | SH-641 | 92012011 | ESPEC | 2017-12-25 | 2 Years |

Radiated emission test system

The test equipment and ancillaries used are as follows.

| No. | Equipment | Model | Serial Number | Manufacturer | Calibration date | Cal.interval |
|-----|--------------------------------------|----------|---------------|--------------|------------------|--------------|
| 1 | Universal Radio Communication Tester | CMW500 | 104178 | R&S | 2018-05-11 | 1 Year |
| 2 | Test Receiver | ESU40 | 100307 | R&S | 2018-05-11 | 1 Year |
| 3 | TRILOG Broadband Antenna | VULB9163 | VULB9163-515 | Schwarzbeck | 2017-02-25 | 3 Years |
| 4 | Double Ridged Guide Antenna | ETS-3117 | 135890 | ETS | 2017-01-11 | 3 Years |
| 5 | 2-Line V-Network | ENV216 | 101380 | R&S | 2018-05-11 | 1 Year |
| 6 | Substitution Antenna | ETS-3117 | 00135890 | ETS | 2017-01-11 | 3 Year |
| 7 | RF Signal Generator | SMF100A | 102314 | R&S | 2018-05-11 | 1 Year |
| 8 | Substitution Antenna | VUBA9117 | 9117-266 | Schwarzbeck | 2017-11-18 | 3 Years |
| 9 | Amplifier | SCU08 | 10146 | R&S | 2018-05-11 | 1 Year |

Conducted test system

| No. | Name | Type | SN | Manufacture | Calibration date | Cal.interval |
|-----|---|----------|--------------------------|---------------|------------------|--------------|
| 1 | Vector Signal Analyser | FSQ40 | 200063 | Rohde&Schwarz | 2018-12-17 | 1 Year |
| 2 | Wireless communication comprehensive tester | CMW500 | 148904 | Rohde&Schwarz | 2018-08-21 | 1 Year |
| 3 | DC Power Supply | ZUP60-14 | LOC-220Z 006 -0007 | TDL-Lambda | 2018-05-11 | 1 Year |

Software

| Name | Version |
|--------------------------------|---------|
| Eagle FCC LTE auto test system | V3.0 |
| EMC32 | V9.15 |

7. Test Environment

Shielding Room1 (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

| | |
|--------------------------|----------------------------|
| Temperature | Min. = 15 °C, Max. = 35 °C |
| Relative humidity | Min. = 20%, Max. = 75 % |
| Shielding effectiveness | > 100 dB |
| Ground system resistance | < 0.5 Ω |

Control room did not exceed following limits along the EMC testing:

| | |
|--------------------------|----------------------------|
| Temperature | Min. = 15 °C, Max. = 35 °C |
| Relative humidity | Min. =25 %, Max. =75 % |
| Shielding effectiveness | > 100 dB |
| Electrical insulation | > 10 kΩ |
| Ground system resistance | < 0.5 Ω |

Fully-anechoic chamber1 (6.9 meters×10.9 meters×5.4 meters) did not exceed following limits along the EMC testing:

| | |
|------------------------------|--|
| Temperature | Min. = 15 °C, Max. = 35 °C |
| Relative humidity | Min. = 25 %, Max. = 75 % |
| Shielding effectiveness | > 100 dB |
| Electrical insulation | > 10 kΩ |
| Ground system resistance | < 0.5 Ω |
| VSWR | Between 0 and 6 dB, from 1GHz to 18GHz |
| Site Attenuation Deviation | Between -4 and 4 dB,30MHz to 1GHz |
| Uniformity of field strength | Between 0 and 6 dB, from 80MHz to 3000 MHz |

8. Measurement Uncertainty

Measurement uncertainty for all the testing in this report are within the limit specified in ECIT documents. The detailed measurement uncertainty to see the column, k=2

| Measurement Items | Range | Confidence Level | Calculated Uncertainty |
|---|--------------------|------------------|------------------------|
| Maximum Peak Output Power | 30MHz-3600MHz | 95% | $\pm 0.544\text{dB}$ |
| EBW and VBW | 30MHz-3600MHz | 95% | $\pm 62.04\text{Hz}$ |
| Transmitter Spurious Emission-Conducted | 30MHz-2GHz | 95% | $\pm 0.90\text{dB}$ |
| Transmitter Spurious Emission-Conducted | 2GHz-3.6GHz | 95% | $\pm 0.88\text{dB}$ |
| Transmitter Spurious Emission-Conducted | 3.6GHz-8GHz | 95% | $\pm 0.96\text{dB}$ |
| Transmitter Spurious Emission-Conducted | 8GHz-20GHz | 95% | $\pm 0.94\text{dB}$ |
| Transmitter Spurious Emission-Radiated | 9KHz-30MHz | 95% | $\pm 5.66\text{dB}$ |
| Transmitter Spurious Emission-Radiated | 30MHz-1000MHz | 95% | $\pm 4.98\text{dB}$ |
| Transmitter Spurious Emission-Radiated | 1000MHz -18000MHz | 95% | $\pm 5.06\text{dB}$ |
| Transmitter Spurious Emission-Radiated | 18000MHz -40000MHz | 95% | $\pm 5.20\text{dB}$ |
| Frequency stability | 1MHz-16GHz | 95% | $\pm 62.04\text{Hz}$ |

ANNEX A. MEASUREMENT RESULTS

ANNEX A.1. OUTPUT POWER

A.1.1. Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation. In all cases, output power is within the specified limits.

CMW500 setting:

- 1: CMW500 is connected to the DUT
- 2; Set RX Expected PEP to 30 dbm

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 | 1850.7 | 23.05 | 21.93 |
| | | 1880.0 | 23.51 | 22.71 |
| | | 1909.3 | 23.33 | 22.98 |
| | 1 RB low | 1850.7 | 22.99 | 21.82 |
| | | 1880.0 | 23.75 | 22.84 |
| | | 1909.3 | 23.5 | 22.49 |
| | 50% RB mid | 1850.7 | 23.14 | 21.95 |
| | | 1880.0 | 23.59 | 22.43 |
| | | 1909.3 | 23.66 | 22.48 |
| | 100% RB | 1850.7 | 22.3 | 21.39 |
| | | 1880.0 | 22.48 | 21.48 |
| | | 1909.3 | 22.53 | 21.67 |
| 3MHz | 1 RB high | 1851.5 | 23.36 | 22.3 |
| | | 1880.0 | 23.52 | 22.87 |
| | | 1908.5 | 23.53 | 22.84 |
| | 1 RB low | 1851.5 | 23.31 | 22.26 |
| | | 1880.0 | 23.44 | 22.75 |
| | | 1908.5 | 23.8 | 23.2 |

| | | | | |
|-------|------------|--------|-------|-------|
| | 50% RB mid | 1851.5 | 22.33 | 21.53 |
| | | 1880.0 | 22.56 | 21.81 |
| | | 1908.5 | 22.62 | 21.7 |
| | 100% RB | 1851.5 | 22.43 | 21.27 |
| | | 1880.0 | 22.53 | 21.58 |
| | | 1908.5 | 22.57 | 21.6 |
| 5MHz | 1 RB high | 1852.5 | 23.69 | 22.64 |
| | | 1880.0 | 23.43 | 22.23 |
| | | 1907.5 | 23.59 | 22.76 |
| | 1 RB low | 1852.5 | 23.23 | 22.63 |
| | | 1880.0 | 23.13 | 22.1 |
| | | 1907.5 | 23.94 | 22.63 |
| | 50% RB mid | 1852.5 | 22.38 | 21.49 |
| | | 1880.0 | 22.54 | 21.46 |
| | | 1907.5 | 22.73 | 21.73 |
| | 100% RB | 1852.5 | 22.48 | 21.39 |
| | | 1880.0 | 22.51 | 21.74 |
| | | 1907.5 | 22.68 | 21.65 |
| 10MHz | 1 RB high | 1855.0 | 23.66 | 22.88 |
| | | 1880.0 | 23.82 | 22.84 |
| | | 1905.0 | 23.65 | 22.75 |
| | 1 RB low | 1855.0 | 23.38 | 23.29 |
| | | 1880.0 | 23.6 | 22.79 |
| | | 1905.0 | 23.61 | 23.1 |
| | 50% RB mid | 1855.0 | 22.5 | 21.53 |
| | | 1880.0 | 22.61 | 21.54 |
| | | 1905.0 | 22.78 | 21.52 |
| | 100% RB | 1855.0 | 22.65 | 21.72 |
| | | 1880.0 | 22.58 | 21.63 |
| | | 1905.0 | 22.66 | 21.65 |
| 15MHz | 1 RB high | 1857.5 | 23.52 | 22.9 |
| | | 1880.0 | 23.79 | 22.74 |
| | | 1902.5 | 23.57 | 23.38 |
| | 1 RB low | 1857.5 | 23.59 | 22.51 |
| | | 1880.0 | 23.49 | 22.8 |
| | | 1902.5 | 23.7 | 23.47 |
| | 50% RB mid | 1857.5 | 22.47 | 22.46 |
| | | 1880.0 | 22.79 | 22.79 |
| | | 1902.5 | 23.47 | 23.47 |

| | | | | |
|-------|------------|--------|-------|-------|
| | 100% RB | 1857.5 | 22.65 | 21.69 |
| | | 1880.0 | 22.65 | 21.66 |
| | | 1902.5 | 22.57 | 21.6 |
| 20MHz | 1 RB high | 1860.0 | 23.54 | 22.77 |
| | | 1880.0 | 23.86 | 23.07 |
| | | 1900.0 | 23.68 | 23.01 |
| | 1 RB low | 1860.0 | 23.45 | 22.81 |
| | | 1880.0 | 23.62 | 23.04 |
| | | 1900.0 | 23.87 | 23.23 |
| | 50% RB mid | 1860.0 | 22.77 | 21.63 |
| | | 1880.0 | 22.73 | 21.71 |
| | | 1900.0 | 22.6 | 21.61 |
| | 100% RB | 1860.0 | 22.72 | 21.6 |
| | | 1880.0 | 22.7 | 21.55 |
| | | 1900.0 | 22.53 | 21.52 |

LTE band 4

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) | |
|-----------|----------------|-----------------|------------|-------|
| | | | QPSK | 16QAM |
| 1.4MHz | 1 RB high | 1710.7 | 22.9 | 22.03 |
| | | 1732.5 | 23.05 | 22.21 |
| | | 1754.3 | 22.86 | 22.03 |
| | 1 RB low | 1710.7 | 22.96 | 21.6 |
| | | 1732.5 | 23.21 | 22.36 |
| | | 1754.3 | 22.85 | 22.23 |
| | 50% RB mid | 1710.7 | 22.95 | 21.81 |
| | | 1732.5 | 23.17 | 22.06 |
| | | 1754.3 | 22.94 | 21.91 |
| | 100% RB | 1710.7 | 22.06 | 21.13 |
| | | 1732.5 | 22.09 | 21.19 |
| | | 1754.3 | 22.15 | 21.18 |
| 3MHz | 1 RB high | 1711.5 | 23.04 | 22.2 |
| | | 1732.5 | 22.99 | 22.7 |
| | | 1753.5 | 23.2 | 22.33 |
| | 1 RB low | 1711.5 | 23.01 | 22.07 |
| | | 1732.5 | 23.23 | 22.21 |
| | | 1753.5 | 23.04 | 22.46 |
| | 50% RB mid | 1711.5 | 22.03 | 21.17 |
| | | 1732.5 | 22.21 | 21.45 |
| | | 1753.5 | 22.08 | 21.12 |
| | 100% RB | 1711.5 | 22.14 | 20.97 |
| | | 1732.5 | 22.17 | 21.09 |
| | | 1753.5 | 22.06 | 21.21 |
| 5MHz | 1 RB high | 1712.5 | 23.21 | 22.23 |
| | | 1732.5 | 22.71 | 21.74 |
| | | 1752.5 | 23.15 | 22.27 |
| | 1 RB low | 1712.5 | 23.18 | 22.38 |
| | | 1732.5 | 22.79 | 21.75 |
| | | 1752.5 | 22.63 | 22.32 |
| | 50% RB mid | 1712.5 | 22.1 | 20.93 |
| | | 1732.5 | 22.11 | 21.26 |
| | | 1752.5 | 22.08 | 21.08 |
| | 100% RB | 1712.5 | 22.14 | 20.91 |
| | | 1732.5 | 22.1 | 21.29 |
| | | 1752.5 | 22.08 | 20.98 |
| 10MHz | 1 RB high | 1715 | 23.12 | 22.45 |

| | | | | |
|------------|------------|-----------|--------|-------|
| | | 1732.5 | 22.99 | 22.8 |
| | | 1750 | 23.14 | 22.08 |
| | 1 RB low | 1715 | 23.05 | 22.2 |
| | | 1732.5 | 23.32 | 22.43 |
| | | 1750 | 22.95 | 22.13 |
| | 50% RB mid | 1715 | 22.15 | 21.15 |
| | | 1732.5 | 22.27 | 21.21 |
| | | 1750 | 22.03 | 21.11 |
| | 100% RB | 1715 | 22.11 | 21.16 |
| | | 1732.5 | 22.06 | 21.13 |
| | | 1750 | 22.04 | 20.89 |
| | 15MHz | 1 RB high | 1717.5 | 23.12 |
| 1732.5 | | | 23.02 | 22.24 |
| 1747.5 | | | 23.19 | 22.97 |
| 1 RB low | | 1717.5 | 23.29 | 22.7 |
| | | 1732.5 | 23.31 | 22.35 |
| | | 1747.5 | 23.11 | 22.22 |
| 50% RB mid | | 1717.5 | 22.72 | 22.7 |
| | | 1732.5 | 22.36 | 22.26 |
| | | 1747.5 | 22.22 | 22.4 |
| 100% RB | | 1717.5 | 22.27 | 21.19 |
| | | 1732.5 | 22.19 | 21.27 |
| | | 1747.5 | 22.05 | 21.1 |
| 20MHz | 1 RB high | 1720 | 23.16 | 22.3 |
| | | 1732.5 | 23.01 | 22.53 |
| | | 1745 | 23.36 | 22.45 |
| | 1 RB low | 1720 | 23.26 | 22.39 |
| | | 1732.5 | 23.47 | 22.79 |
| | | 1745 | 23.25 | 22.72 |
| | 50% RB mid | 1720 | 22.14 | 21.21 |
| | | 1732.5 | 22.27 | 21.31 |
| | | 1745 | 22.12 | 21.1 |
| | 100% RB | 1720 | 22.22 | 21.16 |
| | | 1732.5 | 22.12 | 21.2 |
| | | 1745 | 22.14 | 21.05 |

LTE band 7

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) | |
|-----------|----------------|-----------------|------------|-------|
| | | | QPSK | 16QAM |
| 5MHz | 1 RB high | 2502.5 | 23.16 | 22.44 |
| | | 2535 | 23.13 | 21.47 |
| | | 2567.5 | 23.27 | 22.43 |
| | 1 RB low | 2502.5 | 23.28 | 22.13 |
| | | 2535 | 23.14 | 21.86 |
| | | 2567.5 | 23.47 | 22.45 |
| | 50% RB mid | 2502.5 | 22.41 | 21.38 |
| | | 2535 | 22.33 | 21.45 |
| | | 2567.5 | 22.28 | 21.42 |
| | 100% RB | 2502.5 | 22.32 | 21.35 |
| | | 2535 | 22.38 | 21.37 |
| | | 2567.5 | 22.29 | 21.29 |
| 10MHz | 1 RB high | 2505 | 23.47 | 22.41 |
| | | 2535 | 23.37 | 22.57 |
| | | 2565 | 23.21 | 22.22 |
| | 1 RB low | 2505 | 23.5 | 22.69 |
| | | 2535 | 23.32 | 23.07 |
| | | 2565 | 23.16 | 22.5 |
| | 50% RB mid | 2505 | 22.24 | 21.38 |
| | | 2535 | 22.37 | 21.3 |
| | | 2565 | 22.35 | 21.48 |
| | 100% RB | 2505 | 22.36 | 21.3 |
| | | 2535 | 22.36 | 21.35 |
| | | 2565 | 22.3 | 21.49 |
| 15MHz | 1 RB high | 2507.5 | 23.03 | 22.2 |
| | | 2535 | 23.19 | 22.94 |
| | | 2562.5 | 23.55 | 22.72 |
| | 1 RB low | 2507.5 | 23.24 | 22.55 |
| | | 2535 | 23.17 | 22.57 |
| | | 2562.5 | 23.48 | 22.78 |
| | 50% RB mid | 2507.5 | 22.53 | 22.54 |
| | | 2535 | 22.46 | 22.31 |
| | | 2562.5 | 22.85 | 22.86 |
| | 100% RB | 2507.5 | 22.21 | 21.29 |
| | | 2535 | 22.28 | 21.33 |
| | | 2562.5 | 22.43 | 21.45 |

| | | | | |
|-------|------------|------|-------|-------|
| 20MHz | 1 RB high | 2510 | 23.11 | 22.57 |
| | | 2535 | 23.14 | 22.53 |
| | | 2560 | 23.35 | 22.81 |
| | 1 RB low | 2510 | 23.47 | 22.68 |
| | | 2535 | 23.38 | 22.72 |
| | | 2560 | 23.43 | 22.68 |
| | 50% RB mid | 2510 | 22.18 | 21.29 |
| | | 2535 | 22.38 | 21.24 |
| | | 2560 | 22.56 | 21.51 |
| | 100% RB | 2510 | 22.16 | 21.17 |
| | | 2535 | 22.25 | 21.25 |
| | | 2560 | 22.51 | 21.48 |

LTE band 25

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) | |
|-----------|----------------|-----------------|------------|-------|
| | | | QPSK | 16QAM |
| 1.4MHz | 1 RB high | 1850.7 | 23.59 | 22.46 |
| | | 1882.5 | 23.34 | 22.72 |
| | | 1914.3 | 22.77 | 21.97 |
| | 1 RB low | 1850.7 | 23.47 | 22.31 |
| | | 1882.5 | 23.45 | 22.72 |
| | | 1914.3 | 22.94 | 22.17 |
| | 50% RB mid | 1850.7 | 23.5 | 22.46 |
| | | 1882.5 | 23.32 | 22.65 |
| | | 1914.3 | 22.91 | 21.96 |
| | 100% RB | 1850.7 | 22.55 | 21.47 |
| | | 1882.5 | 22.4 | 21.42 |
| | | 1914.3 | 22.56 | 21.45 |
| 3MHz | 1 RB high | 1851.5 | 23.84 | 22.99 |
| | | 1882.5 | 23.38 | 22.64 |
| | | 1913.5 | 22.88 | 22.06 |
| | 1 RB low | 1851.5 | 23.34 | 22.71 |
| | | 1882.5 | 23.22 | 22.53 |
| | | 1913.5 | 23.51 | 22.76 |
| | 50% RB mid | 1851.5 | 22.52 | 21.58 |
| | | 1882.5 | 22.38 | 21.64 |
| | | 1913.5 | 22.37 | 21.37 |
| | 100% RB | 1851.5 | 22.49 | 21.5 |
| | | 1882.5 | 22.41 | 21.63 |
| | | 1913.5 | 22.43 | 21.34 |
| 5MHz | 1 RB high | 1852.5 | 23.71 | 22.35 |
| | | 1882.5 | 23.22 | 22.3 |
| | | 1912.5 | 23.08 | 22.39 |
| | 1 RB low | 1852.5 | 23.55 | 22.75 |
| | | 1882.5 | 23.04 | 21.39 |
| | | 1912.5 | 23.58 | 22.72 |
| | 50% RB mid | 1852.5 | 22.52 | 21.38 |
| | | 1882.5 | 22.44 | 21.31 |
| | | 1912.5 | 22.42 | 21.66 |
| | 100% RB | 1852.5 | 22.49 | 21.43 |
| | | 1882.5 | 22.47 | 21.37 |
| | | 1912.5 | 22.52 | 21.49 |
| 10MHz | 1 RB high | 1855 | 23.86 | 23.13 |

| | | | | |
|------------|------------|-----------|--------|-------|
| | | 1882.5 | 23.67 | 22.64 |
| | | 1910 | 22.58 | 21.77 |
| | 1 RB low | 1855 | 23.64 | 23.14 |
| | | 1882.5 | 23.64 | 22.9 |
| | | 1910 | 23.69 | 23 |
| | 50% RB mid | 1855 | 22.65 | 21.67 |
| | | 1882.5 | 22.4 | 21.34 |
| | | 1910 | 22.58 | 21.58 |
| | 100% RB | 1855 | 22.59 | 21.67 |
| | | 1882.5 | 22.47 | 21.35 |
| | | 1910 | 22.6 | 21.59 |
| | 15MHz | 1 RB high | 1857.5 | 23.64 |
| 1882.5 | | | 23.48 | 22.47 |
| 1907.5 | | | 23.06 | 22.28 |
| 1 RB low | | 1857.5 | 23.44 | 23.1 |
| | | 1882.5 | 23.57 | 22.6 |
| | | 1907.5 | 23.46 | 22.48 |
| 50% RB mid | | 1857.5 | 23.12 | 23.11 |
| | | 1882.5 | 22.71 | 22.71 |
| | | 1907.5 | 22.49 | 22.5 |
| 100% RB | | 1857.5 | 22.5 | 21.51 |
| | | 1882.5 | 22.35 | 21.36 |
| | | 1907.5 | 22.43 | 21.44 |
| 20MHz | 1 RB high | 1860 | 23.56 | 22.67 |
| | | 1882.5 | 23.65 | 22.7 |
| | | 1905 | 22.8 | 22.02 |
| | 1 RB low | 1860 | 23.5 | 22.74 |
| | | 1882.5 | 23.67 | 22.79 |
| | | 1905 | 23.78 | 22.67 |
| | 50% RB mid | 1860 | 22.46 | 21.53 |
| | | 1882.5 | 22.39 | 21.56 |
| | | 1905 | 22.42 | 21.47 |
| | 100% RB | 1860 | 22.51 | 21.45 |
| | | 1882.5 | 22.36 | 21.38 |
| | | 1905 | 22.38 | 21.36 |

LTE band 26 (Part 22)

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) | |
|-----------|----------------|-----------------|------------|-------|
| | | | QPSK | 16QAM |
| 1.4MHz | 1 RB high | 824.7 | 23.06 | 22.36 |
| | | 836.5 | 22.99 | 22.28 |
| | | 848.3 | 23.1 | 21.88 |
| | 1 RB low | 824.7 | 22.97 | 22.26 |
| | | 836.5 | 23.13 | 22.33 |
| | | 848.3 | 23.01 | 22.34 |
| | 50% RB mid | 824.7 | 23.1 | 22.27 |
| | | 836.5 | 23.13 | 22.36 |
| | | 848.3 | 23.06 | 21.9 |
| | 100% RB | 824.7 | 21.96 | 21.44 |
| | | 836.5 | 22.15 | 21.18 |
| | | 848.3 | 22.09 | 21.32 |
| 3MHz | 1 RB high | 825.5 | 23.21 | 23.14 |
| | | 836.5 | 23.28 | 22.12 |
| | | 847.5 | 23.12 | 22.16 |
| | 1 RB low | 825.5 | 23.22 | 22.39 |
| | | 836.5 | 23.25 | 22.55 |
| | | 847.5 | 23.29 | 22.86 |
| | 50% RB mid | 825.5 | 22.07 | 21.08 |
| | | 836.5 | 22.19 | 21.53 |
| | | 847.5 | 22.3 | 21.33 |
| | 100% RB | 825.5 | 22.14 | 21.34 |
| | | 836.5 | 22.36 | 21.5 |
| | | 847.5 | 22.18 | 21.25 |
| 5MHz | 1 RB high | 826.5 | 23.07 | 22.41 |
| | | 836.5 | 22.79 | 21.82 |
| | | 846.5 | 23.12 | 22.46 |
| | 1 RB low | 826.5 | 23.19 | 22.14 |
| | | 836.5 | 23.06 | 22.3 |
| | | 846.5 | 23.5 | 22.52 |
| | 50% RB mid | 826.5 | 21.98 | 21.12 |
| | | 836.5 | 22.36 | 21.28 |
| | | 846.5 | 22.27 | 21.4 |
| | 100% RB | 826.5 | 22.22 | 21.22 |
| | | 836.5 | 22.2 | 21.44 |
| | | 846.5 | 22.26 | 21.11 |
| 10MHz | 1 RB high | 829 | 23.1 | 22.78 |

| | | | | |
|------------|------------|-----------|-------|-------|
| | | 836.5 | 23.28 | 23.17 |
| | | 844 | 23 | 22.32 |
| | 1 RB low | 829 | 23.33 | 22.42 |
| | | 836.5 | 23.48 | 22.47 |
| | | 844 | 23.43 | 22.58 |
| | 50% RB mid | 829 | 22.12 | 21.35 |
| | | 836.5 | 22.33 | 21.39 |
| | | 844 | 22.31 | 21.34 |
| | 100% RB | 829 | 22.36 | 21.18 |
| | | 836.5 | 22.34 | 21.35 |
| | | 844 | 22.21 | 21.3 |
| | 15MHz | 1 RB high | 831.5 | 23.15 |
| 836.5 | | | 23.22 | 22.64 |
| 841.5 | | | 23.26 | 22.51 |
| 1 RB low | | 831.5 | 22.91 | 22.55 |
| | | 836.5 | 23.46 | 22.41 |
| | | 841.5 | 23.36 | 22.94 |
| 50% RB mid | | 831.5 | 22.74 | 22.84 |
| | | 836.5 | 22.32 | 22.32 |
| | | 841.5 | 22.94 | 22.94 |
| 100% RB | | 831.5 | 22.13 | 21.09 |
| | | 836.5 | 22.2 | 21.31 |
| | | 841.5 | 22.17 | 21.4 |

LTE band 26(Part 90)

| Bandwidth | RB size/offset | Frequency (MHz) | Power(dBm) | |
|-----------|----------------|-----------------|------------|-------|
| | | | QPSK | 16QAM |
| 1.4MHz | 1 RB high | 814.7 | 22.94 | 22.14 |
| | | 819.0 | 23.1 | 22.24 |
| | | 823.3 | 23.2 | 21.93 |
| | 1 RB low | 814.7 | 23.13 | 22.25 |
| | | 819.0 | 23.25 | 22.18 |
| | | 823.3 | 23.25 | 22.01 |
| | 50% RB mid | 814.7 | 23.21 | 22.31 |
| | | 819.0 | 23.24 | 22.39 |
| | | 823.3 | 23.31 | 22.33 |
| | 100% RB | 814.7 | 22.18 | 21.28 |
| | | 819.0 | 22.25 | 21.38 |
| | | 823.3 | 22.28 | 21.38 |
| 3MHz | 1 RB high | 815.5 | 23.16 | 22.55 |
| | | 819.0 | 23.28 | 22.45 |
| | | 822.5 | 23.44 | 22.75 |
| | 1 RB low | 815.5 | 23.4 | 22.92 |
| | | 819.0 | 23.29 | 22.71 |
| | | 822.5 | 23.4 | 23.07 |
| | 50% RB mid | 815.5 | 22.26 | 21.4 |
| | | 819.0 | 22.46 | 21.7 |
| | | 822.5 | 22.42 | 21.5 |
| | 100% RB | 815.5 | 22.23 | 21.17 |
| | | 819.0 | 22.38 | 21.42 |
| | | 822.5 | 22.38 | 21.52 |
| 5MHz | 1 RB high | 816.5 | 23.24 | 22.48 |
| | | 819.0 | 23.1 | 22.19 |
| | | 821.5 | 23.37 | 22.45 |
| | 1 RB low | 816.5 | 23.36 | 22.38 |
| | | 819.0 | 23.06 | 22.13 |
| | | 821.5 | 23.5 | 22.59 |
| | 50% RB mid | 816.5 | 22.19 | 21.38 |
| | | 819.0 | 22.39 | 21.48 |
| | | 821.5 | 22.5 | 21.52 |
| | 100% RB | 816.5 | 22.25 | 21.22 |
| | | 819.0 | 22.38 | 21.51 |
| | | 821.5 | 22.32 | 21.4 |
| | | / | / | / |

| | | | | |
|------------|------------|-----------|-------|-------|
| 10MHz | 1 RB high | 819.0 | 23.17 | 22.29 |
| | | / | / | / |
| | 1 RB low | / | / | / |
| | | 819.0 | 23.52 | 22.6 |
| | | / | / | / |
| | 50% RB mid | / | / | / |
| | | 819.0 | 22.36 | 21.28 |
| | | / | / | / |
| | 100% RB | / | / | / |
| | | 819.0 | 22.29 | 21.26 |
| | | / | / | / |
| | 15MHz z | 1 RB high | 821.5 | 23.4 |
| / | | | / | / |
| / | | | / | / |
| 1 RB low | | 821.5 | 23.43 | 22.6 |
| | | / | / | / |
| | | / | / | / |
| 50% RB mid | | 821.5 | 22.59 | 22.58 |
| | | / | / | / |
| | | / | / | / |
| 100% RB | | 821.5 | 22.36 | 21.44 |
| | | / | / | / |
| | | / | / | / |

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".

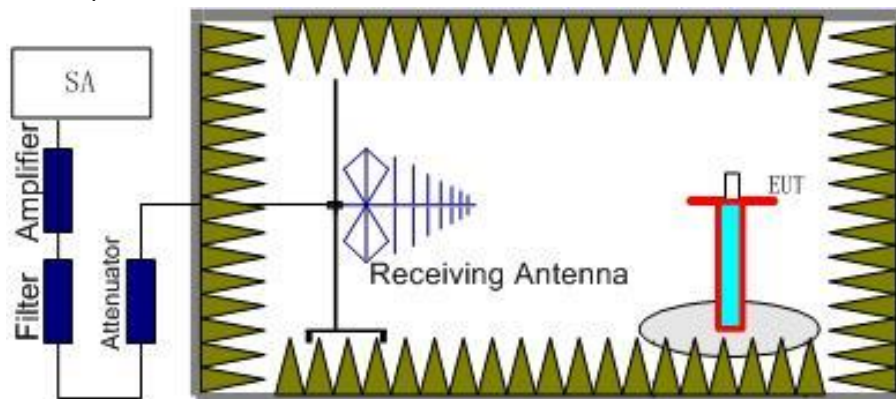
Rule Part 27.50(c) specifies "Portable stations (hand-held de-vices) are limited to 3 watts ERP".

Rule Part 90.637(c)(2) specifies "The output power at the remote site must not exceed 30 watts."

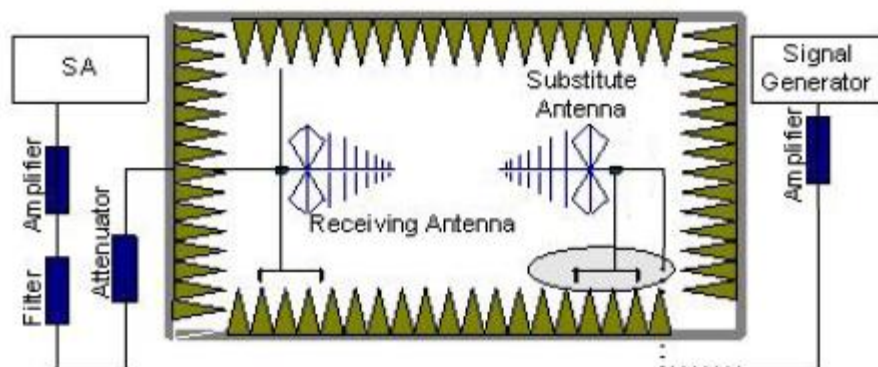
A.1.3.2 Method of Measurement

The measurements procedures in TIA-603E-2016 are used.

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. 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 (P_r).
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. Adjust 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 (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, $ERP = EIRP - 2.15$.

A.1.3.3 Measurement result

LTE Band 2- EIRP 24. 232(b)

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

LTE Band 2_1.4MHz_QPSK

| Frequency(MHz) | P_{Mea} (dBm) | P_{cl} (dB) | P_{Ag} (dB) | G_a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|-----------------|---------------|---------------|-------------------------|-----------|------------|------------|--------------|
| 1850.70 | -10.55 | 4.6 | 36.0 | 2.8 | 23.65 | 33.00 | 9.35 | H |
| 1880.00 | -9.68 | 4.6 | 35.6 | 2.8 | 24.12 | 33.00 | 8.88 | H |
| 1909.30 | -10.39 | 4.7 | 35.9 | 2.8 | 23.61 | 33.00 | 9.39 | H |

LTE Band 2_3MHz_QPSK

| Frequency(MHz) | P_{Mea} (dBm) | P_{cl} (dB) | P_{Ag} (dB) | G_a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|-----------------|---------------|---------------|-------------------------|-----------|------------|------------|--------------|
| 1851.50 | -10.38 | 4.6 | 36.0 | 2.8 | 23.82 | 33.00 | 9.18 | H |
| 1880.00 | -9.16 | 4.6 | 35.6 | 2.8 | 24.64 | 33.00 | 8.36 | H |
| 1908.50 | -10.11 | 4.7 | 35.9 | 2.8 | 23.89 | 33.00 | 9.11 | H |

LTE Band 2_5MHz_QPSK

| Frequency(MHz) | P_{Mea} (dBm) | P_{cl} (dB) | P_{Ag} (dB) | G_a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|-----------------|---------------|---------------|-------------------------|-----------|------------|------------|--------------|
| 1852.50 | -10.62 | 4.6 | 36.0 | 2.8 | 23.58 | 33.00 | 9.42 | H |
| 1880.00 | -9.36 | 4.6 | 35.6 | 2.8 | 24.44 | 33.00 | 8.56 | H |
| 1907.50 | -10.07 | 4.7 | 35.9 | 2.8 | 23.93 | 33.00 | 9.07 | H |

LTE Band 2_10MHz_QPSK

| Frequency(MHz) | P_{Mea} (dBm) | P_{cl} (dB) | P_{Ag} (dB) | G_a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|-----------------|---------------|---------------|-------------------------|-----------|------------|------------|--------------|
| 1855.00 | -10.22 | 4.6 | 36.0 | 2.8 | 23.98 | 33.00 | 9.02 | H |

| | | | | | | | | |
|---------|-------|-----|------|-----|-------|-------|------|---|
| 1880.00 | -9.31 | 4.6 | 35.6 | 2.8 | 24.49 | 33.00 | 8.51 | H |
| 1905.00 | -9.99 | 4.7 | 35.9 | 2.8 | 24.01 | 33.00 | 8.99 | H |

LTE Band 2_15MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1857.50 | -10.05 | 4.6 | 36.0 | 2.8 | 24.15 | 33.00 | 8.85 | H |
| 1880.00 | -9.24 | 4.6 | 35.6 | 2.8 | 24.56 | 33.00 | 8.44 | H |
| 1902.50 | -9.91 | 4.7 | 36.0 | 2.8 | 24.19 | 33.00 | 8.81 | H |

LTE Band 2_20 MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1860.00 | -10.14 | 4.6 | 36.0 | 2.8 | 24.06 | 33.00 | 8.94 | H |
| 1880.00 | -9.21 | 4.6 | 35.6 | 2.8 | 24.59 | 33.00 | 8.41 | H |
| 1900.00 | -10.25 | 4.7 | 36.4 | 2.8 | 24.25 | 33.00 | 8.75 | H |

LTE Band 2_1.4MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1850.70 | -10.23 | 4.6 | 36.0 | 2.8 | 23.97 | 33.00 | 9.03 | H |
| 1880.00 | -9.42 | 4.6 | 35.6 | 2.8 | 24.38 | 33.00 | 8.62 | H |
| 1909.30 | -10.18 | 4.7 | 35.9 | 2.8 | 23.82 | 33.00 | 9.18 | H |

LTE Band 2_3MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1851.50 | -10.1 | 4.6 | 36.0 | 2.8 | 24.1 | 33.00 | 8.9 | H |
| 1880.00 | -9.37 | 4.6 | 35.6 | 2.8 | 24.43 | 33.00 | 8.57 | H |
| 1908.50 | -10.11 | 4.7 | 35.9 | 2.8 | 23.89 | 33.00 | 9.11 | H |

LTE Band 2_5MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1852.50 | -10.31 | 4.6 | 36.0 | 2.8 | 23.89 | 33.00 | 9.11 | H |
| 1880.00 | -9.34 | 4.6 | 35.6 | 2.8 | 24.46 | 33.00 | 8.54 | H |
| 1907.50 | -10.03 | 4.7 | 35.9 | 2.8 | 23.97 | 33.00 | 9.03 | H |

LTE Band 2_10MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1855.00 | -9.91 | 4.6 | 36.0 | 2.8 | 24.29 | 33.00 | 8.71 | H |
| 1880.00 | -9.46 | 4.6 | 35.6 | 2.8 | 24.34 | 33.00 | 8.66 | H |
| 1905.00 | -9.89 | 4.7 | 35.9 | 2.8 | 24.11 | 33.00 | 8.89 | H |

LTE Band 2_15MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1857.50 | -10.02 | 4.6 | 36.0 | 2.8 | 24.18 | 33.00 | 8.82 | H |
| 1880.00 | -9.47 | 4.6 | 35.6 | 2.8 | 24.33 | 33.00 | 8.67 | H |
| 1902.50 | -10.27 | 4.7 | 36.0 | 2.8 | 23.83 | 33.00 | 9.17 | H |

LTE Band 2_20 MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1860.00 | -10.19 | 4.6 | 36.0 | 2.8 | 24.01 | 33.00 | 8.99 | H |
| 1880.00 | -9.61 | 4.6 | 35.6 | 2.8 | 24.19 | 33.00 | 8.81 | H |
| 1900.00 | -10.18 | 4.7 | 36.4 | 2.8 | 23.92 | 33.00 | 9.08 | H |

Peak EIRP(dBm) = P_{Mea}(-10.18dBm) + G_a (2.8dBi) + P_{Ag} (36.4dB) - P_{cl} (4.7dB) = 23.92dBm

LTE Band 4- EIRP 27.50(d)
Limits: ≤30dBm (1W)

LTE Band 4_1.4MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1710.70 | -10.83 | 4.4 | 36.2 | 3 | 23.97 | 30.00 | 6.03 | H |
| 1732.50 | -10.63 | 4.4 | 36.1 | 3 | 24.07 | 30.00 | 5.93 | H |
| 1754.30 | -10.86 | 4.5 | 36.4 | 2.9 | 23.94 | 30.00 | 6.06 | H |

LTE Band 4_3MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1711.50 | -10.77 | 4.4 | 36.2 | 3 | 24.03 | 30.00 | 5.97 | H |
| 1732.50 | -10.46 | 4.4 | 36.1 | 3 | 24.24 | 30.00 | 5.76 | H |
| 1753.50 | -10.78 | 4.5 | 36.4 | 2.9 | 24.02 | 30.00 | 5.98 | H |

LTE Band 4_5MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1712.50 | -11.12 | 4.4 | 36.2 | 3 | 23.68 | 30.00 | 6.32 | H |
| 1732.50 | -10.68 | 4.4 | 36.1 | 3 | 24.02 | 30.00 | 5.98 | H |
| 1752.50 | -10.94 | 4.5 | 36.5 | 2.9 | 23.96 | 30.00 | 6.04 | H |

LTE Band 4_10MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1715.00 | -10.83 | 4.4 | 36.2 | 3 | 23.97 | 30.00 | 6.03 | H |
| 1732.50 | -10.82 | 4.4 | 36.1 | 3 | 23.88 | 30.00 | 6.12 | H |
| 1750.50 | -10.43 | 4.5 | 36.1 | 2.9 | 24.07 | 30.00 | 5.93 | H |

LTE Band 4_15MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1717.50 | -10.65 | 4.4 | 36.2 | 3 | 24.15 | 30.00 | 5.85 | H |
| 1732.50 | -10.8 | 4.4 | 36.1 | 3 | 23.9 | 30.00 | 6.1 | H |
| 1747.50 | -10.57 | 4.5 | 36.5 | 2.9 | 24.33 | 30.00 | 5.67 | H |

LTE Band 4_20MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1720.00 | -10.52 | 4.4 | 36.2 | 3 | 24.28 | 30.00 | 5.72 | H |
| 1732.50 | -10.85 | 4.4 | 36.1 | 3 | 23.85 | 30.00 | 6.15 | H |
| 1745.00 | -9.6 | 4.5 | 35.8 | 2.9 | 24.6 | 30.00 | 5.4 | H |

LTE Band 4_1.4MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1710.70 | -10.42 | 4.4 | 36.2 | 3 | 24.38 | 30.00 | 5.62 | H |
| 1732.50 | -10.85 | 4.4 | 36.1 | 3 | 23.85 | 30.00 | 6.15 | H |
| 1754.30 | -10.47 | 4.5 | 36.4 | 2.9 | 24.33 | 30.00 | 5.67 | H |

LTE Band 4_3MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1711.50 | -10.56 | 4.4 | 36.2 | 3 | 24.24 | 30.00 | 5.76 | H |
| 1732.50 | -10.88 | 4.4 | 36.1 | 3 | 23.82 | 30.00 | 6.18 | H |
| 1753.50 | -10.35 | 4.5 | 36.4 | 2.9 | 24.45 | 30.00 | 5.55 | H |

LTE Band 4_5MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1712.50 | -10.77 | 4.4 | 36.2 | 3 | 24.03 | 30.00 | 5.97 | H |
| 1732.50 | -10.74 | 4.4 | 36.1 | 3 | 23.96 | 30.00 | 6.04 | H |
| 1752.50 | -10.58 | 4.5 | 36.5 | 2.9 | 24.32 | 30.00 | 5.68 | H |

LTE Band 4_10MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1715.00 | -10.91 | 4.4 | 36.2 | 3 | 23.89 | 30.00 | 6.11 | H |
| 1732.50 | -10.68 | 4.4 | 36.1 | 3 | 24.02 | 30.00 | 5.98 | H |
| 1750.50 | -10.01 | 4.5 | 36.1 | 2.9 | 24.49 | 30.00 | 5.51 | H |

LTE Band 4_15MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1717.50 | -10.69 | 4.4 | 36.2 | 3 | 24.11 | 30.00 | 5.89 | H |
| 1732.50 | -10.98 | 4.4 | 36.1 | 3 | 23.72 | 30.00 | 6.28 | H |
| 1747.50 | -10.39 | 4.5 | 36.5 | 2.9 | 24.51 | 30.00 | 5.49 | H |

LTE Band 4_20MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1720.00 | -10.6 | 4.4 | 36.2 | 3 | 24.2 | 30.00 | 5.8 | H |
| 1732.50 | -11.08 | 4.4 | 36.1 | 3 | 23.62 | 30.00 | 6.38 | H |
| 1745.00 | -9.82 | 4.5 | 35.8 | 2.9 | 24.38 | 30.00 | 5.62 | H |

$$\text{Peak EIRP(dBm)} = P_{\text{Mea}}(-9.82\text{dBm}) + G_a (2.9\text{dBi}) + P_{\text{Ag}} (35.8\text{dB}) - P_{\text{cl}} (4.5\text{dB}) = 24.38\text{dBm}$$

LTE Band 7- EIRP 27.50(h)(2)
Limits: ≤33 dBm (2W)

LTE Band 7_5MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 2502.50 | -8.63 | 5.4 | 34.7 | 3.7 | 24.37 | 33.00 | 8.63 | H |
| 2535.00 | -9.16 | 5.4 | 35.1 | 3.8 | 24.34 | 33.00 | 8.66 | H |
| 2567.50 | -7.37 | 5.4 | 34.8 | 3.8 | 25.83 | 33.00 | 7.17 | H |

LTE Band 7_10MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 2505.00 | -8.78 | 5.4 | 34.7 | 3.7 | 24.22 | 33.00 | 8.78 | H |
| 2535.00 | -8.75 | 5.4 | 35.1 | 3.8 | 24.75 | 33.00 | 8.25 | H |
| 2565.00 | -8.24 | 5.4 | 34.8 | 3.8 | 24.96 | 33.00 | 8.04 | H |

LTE Band 7_15MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 2507.50 | -8.26 | 5.4 | 34.7 | 3.7 | 24.74 | 33.00 | 8.26 | H |
| 2535.00 | -8.43 | 5.4 | 35.1 | 3.8 | 25.07 | 33.00 | 7.93 | H |
| 2562.50 | -7.11 | 5.4 | 34.8 | 3.8 | 26.09 | 33.00 | 6.91 | H |

LTE Band 7_20MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _c (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|---------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 2510.00 | -7.92 | 5.4 | 34.7 | 3.7 | 25.08 | 33.00 | 7.92 | H |
| 2535.00 | -8.49 | 5.4 | 35.1 | 3.8 | 25.01 | 33.00 | 7.99 | H |
| 2560.00 | -7.12 | 5.4 | 34.8 | 3.8 | 26.08 | 33.00 | 6.92 | H |

LTE Band 7_5MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 2502.50 | -8.66 | 5.4 | 34.7 | 3.7 | 24.34 | 33.00 | 8.66 | H |
| 2535.00 | -9.08 | 5.4 | 35.1 | 3.8 | 24.42 | 33.00 | 8.58 | H |
| 2567.50 | -7.27 | 5.4 | 34.8 | 3.8 | 25.93 | 33.00 | 7.07 | H |

LTE Band 7_10MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 2505.00 | -8.76 | 5.4 | 34.7 | 3.7 | 24.24 | 33.00 | 8.76 | H |
| 2535.00 | -8.81 | 5.4 | 35.1 | 3.8 | 24.69 | 33.00 | 8.31 | H |
| 2565.00 | -8.35 | 5.4 | 34.8 | 3.8 | 24.85 | 33.00 | 8.15 | H |

LTE Band 7_15MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 2507.50 | -8.41 | 5.4 | 34.7 | 3.7 | 24.59 | 33.00 | 8.41 | H |
| 2535.00 | -8.9 | 5.4 | 35.1 | 3.8 | 24.6 | 33.00 | 8.4 | H |
| 2562.50 | -7.65 | 5.4 | 34.8 | 3.8 | 25.55 | 33.00 | 7.45 | H |

LTE Band 7_20MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 2510.00 | -8.46 | 5.4 | 34.7 | 3.7 | 24.54 | 33.00 | 8.46 | H |
| 2535.00 | -9.25 | 5.4 | 35.1 | 3.8 | 24.25 | 33.00 | 8.75 | H |
| 2560.00 | -7.82 | 5.4 | 34.8 | 3.8 | 25.38 | 33.00 | 7.62 | H |

$$\text{Peak EIRP(dBm)} = P_{\text{Mea}}(-7.82\text{dBm}) + G_a (3.8\text{dBi}) + P_{\text{Ag}} (34.8\text{dB}) - P_{\text{cl}} (5.4\text{dB}) = 25.38\text{dBm}$$

LTE Band 25 - ERP 27.50(c)(10)
Limits: ≤34.77dBm (3W)

LTE Band 25_1.4MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1850.7 | -10.61 | 4.6 | 36.0 | 2.8 | 23.59 | 34.77 | 11.18 | H |
| 1882.5 | -9.95 | 4.6 | 36.1 | 2.8 | 24.35 | 34.77 | 10.42 | H |
| 1914.3 | -10.2 | 4.7 | 35.9 | 2.8 | 23.8 | 34.77 | 10.97 | H |

LTE Band 25_3MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1851.5 | -10.26 | 4.6 | 36.0 | 2.8 | 23.94 | 34.77 | 10.83 | H |
| 1882.5 | -10.1 | 4.6 | 36.1 | 2.8 | 24.2 | 34.77 | 10.57 | H |
| 1913.5 | -10.18 | 4.7 | 35.9 | 2.8 | 23.82 | 34.77 | 10.95 | H |

LTE Band 25_5MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1852.5 | -10.93 | 4.6 | 36 | 2.8 | 23.27 | 34.77 | 11.5 | H |
| 1882.5 | -10.05 | 4.6 | 36.1 | 2.8 | 24.25 | 34.77 | 10.52 | H |
| 1912.5 | -10.36 | 4.7 | 35.9 | 2.8 | 23.64 | 34.77 | 11.13 | H |

LTE Band 25_10MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1855 | -10.33 | 4.6 | 36 | 2.8 | 23.87 | 34.77 | 10.9 | H |
| 1882.5 | -9.97 | 4.6 | 36.1 | 2.8 | 24.33 | 34.77 | 10.44 | H |
| 1910 | -10.35 | 4.7 | 35.9 | 2.8 | 23.65 | 34.77 | 11.12 | H |

LTE Band 25_15MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1857.5 | -10.03 | 4.6 | 36 | 2.8 | 24.17 | 34.77 | 10.6 | H |
| 1882.5 | -9.92 | 4.6 | 36.1 | 2.8 | 24.38 | 34.77 | 10.39 | H |
| 1907.5 | -10.18 | 4.7 | 35.9 | 2.8 | 23.82 | 34.77 | 10.95 | H |

LTE Band 25_20MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1860 | -9.97 | 4.6 | 36 | 2.8 | 24.23 | 34.77 | 10.54 | H |
| 1882.5 | -10.1 | 4.6 | 36.1 | 2.8 | 24.2 | 34.77 | 10.57 | H |
| 1905 | -10.18 | 4.7 | 35.9 | 2.8 | 23.82 | 34.77 | 10.95 | H |

LTE Band 25_1.4MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1850.7 | -10.19 | 4.6 | 36.0 | 2.8 | 24.01 | 34.77 | 10.76 | H |
| 1882.5 | -9.83 | 4.6 | 36.1 | 2.8 | 24.47 | 34.77 | 10.3 | H |
| 1914.3 | -9.78 | 4.7 | 35.9 | 2.8 | 24.22 | 34.77 | 10.55 | H |

LTE Band 25_3MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1851.5 | -10.33 | 4.6 | 36.0 | 2.8 | 23.87 | 34.77 | 10.9 | H |
| 1882.5 | -9.9 | 4.6 | 36.1 | 2.8 | 24.4 | 34.77 | 10.37 | H |
| 1913.5 | -9.92 | 4.7 | 35.9 | 2.8 | 24.08 | 34.77 | 10.69 | H |

LTE Band 25_5MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1852.5 | -10.56 | 4.6 | 36.0 | 2.8 | 23.64 | 34.77 | 11.13 | H |
| 1882.5 | -9.8 | 4.6 | 36.1 | 2.8 | 24.5 | 34.77 | 10.27 | H |
| 1912.5 | -10.29 | 4.7 | 35.9 | 2.8 | 23.71 | 34.77 | 11.06 | H |

LTE Band 25_10MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1855 | -10.04 | 4.6 | 36.0 | 2.8 | 24.16 | 34.77 | 10.61 | H |
| 1882.5 | -9.71 | 4.6 | 36.1 | 2.8 | 24.59 | 34.77 | 10.18 | H |
| 1910 | -10.18 | 4.7 | 35.9 | 2.8 | 23.82 | 34.77 | 10.95 | H |

LTE Band 25_15MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1857.5 | -10.12 | 4.6 | 36.0 | 2.8 | 24.08 | 34.77 | 10.69 | H |
| 1882.5 | -10.08 | 4.6 | 36.1 | 2.8 | 24.22 | 34.77 | 10.55 | H |
| 1907.5 | -10.36 | 4.7 | 35.9 | 2.8 | 23.64 | 34.77 | 11.13 | H |

LTE Band 25_20MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBi) | EIRP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|-----------|------------|------------|--------------|
| 1860 | -10.4 | 4.6 | 36.0 | 2.8 | 23.8 | 34.77 | 10.97 | H |
| 1882.5 | -10.4 | 4.6 | 36.1 | 2.8 | 23.9 | 34.77 | 10.87 | H |
| 1905 | -10.5 | 4.7 | 35.9 | 2.8 | 23.5 | 34.77 | 11.27 | H |

Peak ERP(dBm)=P_{Mea}(-10.5dBm)+G_a(2.8dBi)+P_{Ag}(35.9dB)-P_{cl}(4.7dB) = 23.5dBm

LTE Band 26(Part 22)- ERP 22.913(a)
Limits: $\leq 38.45\text{dBm}$ (7W)
LTE Band 26(Part 22)_1.4MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBd) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|----------|------------|------------|--------------|
| 824.70 | -20.31 | 3.0 | 37.0 | 4.7 | 18.39 | 38.45 | 20.06 | H |
| 836.50 | -20.96 | 3.1 | 36.8 | 4.7 | 17.44 | 38.45 | 21.01 | H |
| 848.3 | -21.12 | 3.1 | 36.9 | 4.5 | 17.18 | 38.45 | 21.27 | H |

LTE Band 26(Part 22)_3MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBd) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|----------|------------|------------|--------------|
| 825.50 | -20.41 | 3.0 | 36.9 | 4.7 | 18.19 | 38.45 | 20.26 | H |
| 836.50 | -20.83 | 3.1 | 36.8 | 4.7 | 17.57 | 38.45 | 20.88 | H |
| 847.50 | -21.12 | 3.1 | 37.0 | 4.5 | 17.28 | 38.45 | 21.17 | H |

LTE Band 26(Part 22)_5MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBd) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|----------|------------|------------|--------------|
| 826.50 | -20.33 | 3.0 | 36.9 | 4.7 | 18.27 | 38.45 | 20.18 | H |
| 836.50 | -20.86 | 3.1 | 36.8 | 4.7 | 17.54 | 38.45 | 20.91 | H |
| 846.50 | -20.16 | 3.1 | 36.0 | 4.5 | 17.24 | 38.45 | 21.21 | H |

LTE Band 26(Part 22)_10MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBd) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|----------|------------|------------|--------------|
| 829.00 | -20.65 | 3.0 | 37.0 | 4.7 | 18.05 | 38.45 | 20.4 | H |
| 836.50 | -21 | 3.1 | 36.8 | 4.7 | 17.4 | 38.45 | 21.05 | H |
| 844.00 | -21.19 | 3.1 | 36.9 | 4.5 | 17.11 | 38.45 | 21.34 | H |

LTE Band 26(Part 22)_15MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBd) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|----------|------------|------------|--------------|
| 831.50 | -20.69 | 3.0 | 36.9 | 4.7 | 17.91 | 38.45 | 20.54 | H |
| 836.50 | -21.35 | 3.1 | 36.8 | 4.7 | 17.05 | 38.45 | 21.4 | H |
| 841.50 | -21.42 | 3.1 | 36.9 | 4.5 | 16.88 | 38.45 | 21.57 | H |

LTE Band 26(Part 22)_1.4MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBd) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|----------|------------|------------|--------------|
| 824.70 | -20.57 | 3.0 | 37.0 | 4.7 | 18.13 | 38.45 | 20.32 | H |
| 836.50 | -20.98 | 3.1 | 36.8 | 4.7 | 17.42 | 38.45 | 21.03 | H |
| 848.30 | -21.05 | 3.1 | 36.9 | 4.5 | 17.25 | 38.45 | 21.2 | H |

LTE Band 26(Part 22)_3MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBd) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|----------|------------|------------|--------------|
| 825.50 | -20.08 | 3.0 | 36.9 | 4.7 | 18.52 | 38.45 | 19.93 | H |
| 836.50 | -20.86 | 3.1 | 36.8 | 4.7 | 17.54 | 38.45 | 20.91 | H |
| 847.50 | -20.89 | 3.1 | 37.0 | 4.5 | 17.51 | 38.45 | 20.94 | H |

LTE Band 26(Part 22)_5MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBd) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|----------|------------|------------|--------------|
| 826.50 | -20.42 | 3.0 | 36.9 | 4.7 | 18.18 | 38.45 | 20.27 | H |
| 836.50 | -20.72 | 3.1 | 36.8 | 4.7 | 17.68 | 38.45 | 20.77 | H |
| 846.50 | -20.01 | 3.1 | 36.0 | 4.5 | 17.39 | 38.45 | 21.06 | H |

LTE Band 26(Part 22)_10MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBd) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|----------|------------|------------|--------------|
| 829.00 | -20.56 | 3.0 | 37.0 | 4.7 | 18.14 | 38.45 | 20.31 | H |
| 836.50 | -20.84 | 3.1 | 36.8 | 4.7 | 17.56 | 38.45 | 20.89 | H |
| 844.00 | -20.9 | 3.1 | 36.9 | 4.5 | 17.4 | 38.45 | 21.05 | H |

LTE Band 26(Part 22)_15MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{cl} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dBd) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|----------------------------------|----------|------------|------------|--------------|
| 831.50 | -20.27 | 3.0 | 36.9 | 4.7 | 18.33 | 38.45 | 20.12 | H |
| 836.50 | -20.91 | 3.1 | 36.8 | 4.7 | 17.49 | 38.45 | 20.96 | H |
| 841.50 | -21.2 | 3.1 | 36.9 | 4.5 | 17.1 | 38.45 | 21.35 | H |

$$\text{Peak ERP(dBm)} = P_{\text{Mea}}(-21.2\text{dBm}) + G_a(4.5\text{dBi}) + P_{\text{Ag}}(36.9\text{dB}) - P_{\text{cl}}(3.1\text{dB}) = 17.1\text{dBm}$$

LTE Band 26(Part 90)- ERP 90.637(c)(2)
Limits: ≤ 44.77 dBm (30W)
LTE Band 26(Part 90) _1.4MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dB) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|---------------------------------|----------|------------|------------|--------------|
| 814.70 | -20.31 | 3.0 | 37.0 | 4.7 | 18.39 | 44.77 | 26.38 | H |
| 819.00 | -20.55 | 3.1 | 36.8 | 4.7 | 17.85 | 44.77 | 26.92 | H |
| 823.30 | -20.32 | 3.1 | 36.9 | 4.5 | 17.98 | 44.77 | 26.79 | H |

LTE Band 26(Part 90) _3MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dB) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|---------------------------------|----------|------------|------------|--------------|
| 815.50 | -19.8 | 3.0 | 36.9 | 4.7 | 18.8 | 44.77 | 25.97 | H |
| 819.00 | -20.5 | 3.1 | 36.8 | 4.7 | 17.9 | 44.77 | 26.87 | H |
| 822.50 | -20.56 | 3.1 | 37.0 | 4.5 | 17.84 | 44.77 | 26.93 | H |

LTE Band 26(Part 90) _5MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dB) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|---------------------------------|----------|------------|------------|--------------|
| 816.50 | -20.24 | 3.0 | 36.9 | 4.7 | 18.36 | 44.77 | 26.41 | H |
| 819.00 | -20.53 | 3.1 | 36.8 | 4.7 | 17.87 | 44.77 | 26.9 | H |
| 821.50 | -19.52 | 3.1 | 36.0 | 4.5 | 17.88 | 44.77 | 26.89 | H |

LTE Band 26(Part 90) _10MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dB) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|---------------------------------|----------|------------|------------|--------------|
| 819.00 | -20.29 | 3.0 | 37.0 | 4.7 | 18.41 | 44.77 | 26.36 | H |
| 819.00 | -20.36 | 3.1 | 36.8 | 4.7 | 18.04 | 44.77 | 26.73 | H |
| 819.00 | -20.11 | 3.1 | 36.9 | 4.5 | 18.19 | 44.77 | 26.58 | H |

LTE Band 26(Part 90) _15MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dB) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|---------------------------------|----------|------------|------------|--------------|
| 821.5 | -21.43 | 3.0 | 37.0 | 4.7 | 17.27 | 44.77 | 27.5 | H |

LTE Band 26(Part 90) _1.4MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dB) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|---------------------------------|----------|------------|------------|--------------|
| 814.70 | -20.05 | 3.0 | 37.0 | 4.7 | 18.65 | 44.77 | 26.12 | H |
| 819.00 | -20.58 | 3.1 | 36.8 | 4.7 | 17.82 | 44.77 | 26.95 | H |
| 823.30 | -20.15 | 3.1 | 36.9 | 4.5 | 18.15 | 44.77 | 26.62 | H |

LTE Band 26(Part 90) _3MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dB) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|---------------------------------|----------|------------|------------|--------------|
| 815.50 | -19.73 | 3.0 | 36.9 | 4.7 | 18.87 | 44.77 | 25.9 | H |
| 819.00 | -20.22 | 3.1 | 36.8 | 4.7 | 18.18 | 44.77 | 26.59 | H |
| 822.50 | -20.14 | 3.1 | 37.0 | 4.5 | 18.26 | 44.77 | 26.51 | H |

LTE Band 26(Part 90) _5MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dB) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|---------------------------------|----------|------------|------------|--------------|
| 816.50 | -20.15 | 3.0 | 36.9 | 4.7 | 18.45 | 44.77 | 26.32 | H |
| 819.00 | -20.26 | 3.1 | 36.8 | 4.7 | 18.14 | 44.77 | 26.63 | H |
| 821.50 | -19.35 | 3.1 | 36.0 | 4.5 | 18.05 | 44.77 | 26.72 | H |

LTE Band 26(Part 90) _10MHz_16QAM

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dB) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|---------------------------------|----------|------------|------------|--------------|
| 819.00 | -20.2 | 3.0 | 37.0 | 4.7 | 18.5 | 44.77 | 26.27 | H |
| 819.00 | -20.45 | 3.1 | 36.8 | 4.7 | 17.95 | 44.77 | 26.82 | H |
| 819.00 | -20.07 | 3.1 | 36.9 | 4.5 | 18.23 | 44.77 | 26.54 | H |

LTE Band 26(Part 90) _15MHz_QPSK

| Frequency(MHz) | P _{Mea} (dBm) | P _{ci} (dB) | P _{Ag} (dB) | G _a Antenna Gain(dB) | ERP(dBm) | Limit(dBm) | Margin(dB) | Polarization |
|----------------|------------------------|----------------------|----------------------|---------------------------------|----------|------------|------------|--------------|
| 821.5 | -21.57 | 3.0 | 37.0 | 4.7 | 17.13 | 44.77 | 27.64 | H |

$$\text{Peak ERP(dBm)} = P_{\text{Mea}}(-21.57\text{dBm}) + G_a(4.7\text{dBi}) + P_{\text{Ag}}(37.0\text{dB}) - P_{\text{ci}}(3.0\text{dB}) = 17.13\text{dBm}$$

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.

ANNEX A.2. EMISSION LIMIT

Reference

FCC: CFR 2.1051, 22.917,24.238(a), 27.53(g), 27.53(h) , 27.53(m), 90.691.

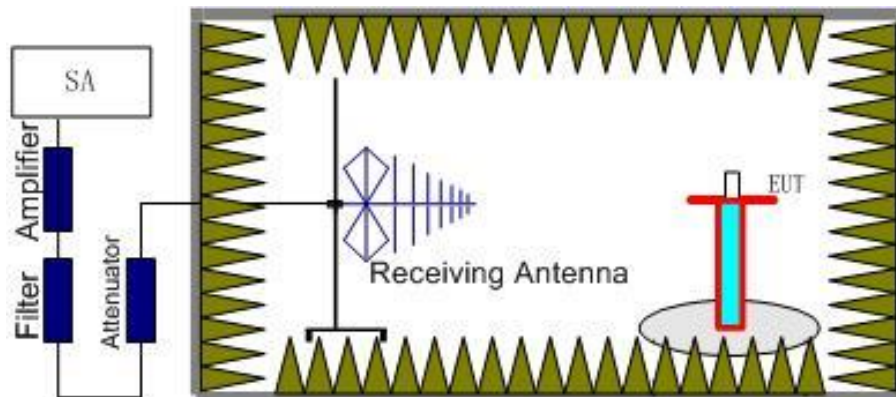
A.2.1 Measurement Method

The measurements procedures in TIA-603E-2016 are used. This measurement is carried out in fully-anechoic chamber FAC-3.

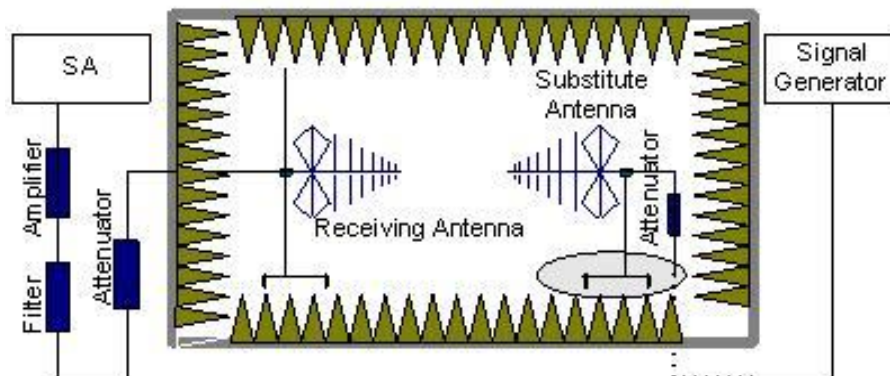
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz as outlined in Part 22.917,Part 24.238(a), Part 27.53(g), Part 27.53(h), Part 27.53(m), 90.691. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the LTE Bands 2,4,7,25,26.

The procedure of radiated spurious emissions is as follows:

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. 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 non-harmonic and harmonics of the transmit frequency through the 10th harmonic 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. Adjust 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.

- The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (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:

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

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

A.2.2 Measurement Limit

Part 22.917, Part 24.238(a), Part 27.53(g), Part 27.53(h), Part 27.53(m), 90.691 all specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A.2.3 Measurement Results

- Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the LTE Bands 2,4,7,25,26. 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 LTE Bands 2,4,7,25,26. 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. The evaluated frequency range is from 30MHz to 26GHz.

LTE Band 2, 1.4MHz, QPSK, Channel 18607

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3700.8 | -47.32 | 6.6 | 7.7 | -46.22 | -13 | V |

| | | | | | | |
|---------|--------|------|------|--------|-----|---|
| 5551.2 | -39.82 | 8.2 | 9.5 | -38.52 | -13 | V |
| 7514.0 | -52.95 | 9.7 | 14.6 | -48.05 | -13 | V |
| 9445.2 | -54.8 | 10.7 | 18.6 | -46.9 | -13 | V |
| 11358.4 | -50.83 | 12.1 | 18.5 | -44.43 | -13 | V |
| 13276.4 | -48.66 | 13.6 | 21.8 | -40.46 | -13 | H |

LTE Band 2, 1.4MHz, QPSK, Channel 18900

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3755.6 | -48.96 | 6.6 | 7.7 | -47.86 | -13 | V |
| 5633.6 | -41.58 | 8.3 | 10.5 | -39.38 | -13 | V |
| 7511.2 | -52.69 | 9.7 | 14.6 | -47.79 | -13 | V |
| 9484.4 | -54.87 | 10.7 | 18.6 | -46.97 | -13 | H |
| 11312.2 | -50.37 | 12.1 | 18.5 | -43.97 | -13 | H |
| 13283.4 | -48.05 | 13.6 | 21.8 | -39.85 | -13 | H |

LTE Band 2, 1.4MHz, QPSK, Channel 19193

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3810.4 | -49.33 | 6.7 | 7.7 | -48.33 | -13 | V |
| 5716.8 | -48.27 | 8.5 | 10.5 | -46.27 | -13 | H |
| 7446.8 | -52.58 | 9.7 | 14.6 | -47.68 | -13 | H |
| 9412.4 | -54.4 | 10.7 | 18.6 | -46.5 | -13 | V |
| 11364.0 | -49.64 | 12.1 | 18.5 | -43.24 | -13 | H |
| 13238.6 | -49.87 | 13.0 | 21.8 | -41.07 | -13 | H |

LTE Band 4, 1.4MHz QPSK, Channel 19957

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3420.4 | -46.46 | 6.3 | 4.7 | -48.06 | -13 | V |
| 5131.2 | -42.93 | 7.9 | 8.7 | -42.13 | -13 | V |
| 6892.8 | -53.99 | 9.3 | 12.9 | -50.39 | -13 | V |
| 8549.2 | -55.82 | 10.3 | 18.1 | -48.02 | -13 | V |
| 10321.2 | -51.24 | 11.5 | 17.4 | -45.34 | -13 | H |
| 12150.8 | -47.21 | 12.6 | 17.5 | -42.31 | -13 | V |

LTE Band 4, 1.4MHz, QPSK, Channel 20175

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3460.4 | -45.99 | 6.4 | 4.7 | -47.69 | -13 | V |
| 5190.8 | -44.16 | 8.0 | 8.7 | -43.46 | -13 | V |
| 6888.4 | -52.79 | 9.3 | 12.9 | -49.19 | -13 | V |
| 8662.8 | -56.06 | 10.3 | 18.5 | -47.86 | -13 | V |
| 10346.8 | -50.94 | 11.5 | 17.4 | -45.04 | -13 | H |
| 11995.4 | -47.52 | 12.6 | 17.1 | -43.02 | -13 | V |

LTE Band 4, 1.4MHz, QPSK, Channel 20393

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3500.4 | -46.18 | 6.4 | 4.7 | -47.88 | -13 | V |
| 5250.8 | -43.25 | 8.0 | 8.7 | -42.55 | -13 | V |
| 7000.8 | -49.23 | 9.3 | 12.9 | -45.63 | -13 | V |
| 8818.4 | -55.56 | 10.4 | 18.5 | -47.46 | -13 | H |
| 10338.4 | -50.66 | 11.5 | 17.4 | -44.76 | -13 | H |
| 12135.4 | -47.26 | 12.6 | 17.5 | -42.36 | -13 | H |

LTE Band 7, 5 MHz, QPSK, Channel 20775

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3986.8 | -49.87 | 6.9 | 7.7 | -49.07 | -13 | H |
| 5000.8 | -47.08 | 7.8 | 9.0 | -45.88 | -13 | V |
| 7500.8 | -43.73 | 9.7 | 14.6 | -38.83 | -13 | V |
| 10032.8 | -47.03 | 11.2 | 17.6 | -40.63 | -13 | V |
| 12627.5 | -39.65 | 12.8 | 19.2 | -33.25 | -13 | V |
| 15446.8 | -38.7 | 14.4 | 24.2 | -28.9 | -13 | H |

LTE Band 7, 5 MHz, QPSK, Channel 21100

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3970.8 | -50.05 | 6.8 | 7.7 | -49.15 | -13 | H |
| 4951.2 | -47.79 | 7.7 | 9.0 | -46.49 | -13 | H |
| 5970.0 | -49.28 | 8.5 | 10.4 | -47.38 | -13 | V |
| 7598.4 | -41.57 | 9.7 | 14.6 | -36.67 | -13 | V |
| 10059.2 | -45.85 | 11.3 | 17.6 | -39.55 | -13 | V |
| 12463.0 | -42.63 | 12.7 | 18.7 | -36.63 | -13 | V |

LTE Band 7, 5 MHz, QPSK, Channel 21425

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 4053.6 | -49.43 | 6.9 | 7.7 | -48.63 | -13 | V |
| 4979.2 | -48.06 | 7.8 | 9.0 | -46.86 | -13 | V |
| 6042.4 | -48.69 | 8.6 | 10.4 | -46.89 | -13 | V |
| 7695.6 | -42.22 | 9.8 | 15.3 | -36.72 | -13 | V |
| 10095.6 | -46.46 | 11.3 | 17.6 | -40.16 | -13 | H |
| 12519.0 | -41.6 | 12.7 | 18.7 | -35.6 | -13 | V |

LTE Band 25, 1.4MHz, QPSK, Channel 26047

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3700.4 | -49.28 | 6.6 | 7.7 | -48.18 | -13 | V |
| 5550.8 | -42.77 | 8.2 | 9.5 | -41.47 | -13 | V |
| 7555.2 | -52.85 | 9.7 | 14.6 | -47.95 | -13 | V |
| 9337.6 | -54.7 | 10.7 | 18.5 | -46.9 | -13 | V |
| 11334.6 | -51.76 | 12.1 | 18.5 | -45.36 | -13 | H |
| 13179.8 | -50.46 | 13.0 | 21.8 | -41.66 | -13 | H |

LTE Band 25, 1.4MHz, QPSK, Channel 26365

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3760.4 | -48.34 | 6.6 | 7.7 | -47.24 | -13 | V |
| 5641.2 | -42.27 | 8.3 | 10.5 | -40.07 | -13 | V |
| 7521.6 | -52.87 | 9.7 | 14.6 | -47.97 | -13 | V |
| 9461.6 | -53.62 | 10.7 | 18.6 | -45.72 | -13 | V |
| 11326.2 | -48.9 | 12.1 | 18.5 | -42.5 | -13 | H |
| 13256.8 | -49.41 | 13.0 | 21.8 | -40.61 | -13 | H |

LTE Band 25, 1.4MHz, QPSK, Channel 26683

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 3820.4 | -49.79 | 6.7 | 7.7 | -48.79 | -13 | V |
| 5731.2 | -43.07 | 8.5 | 10.5 | -41.07 | -13 | V |
| 7641.2 | -53.18 | 9.7 | 15.3 | -47.58 | -13 | V |
| 9517.6 | -53.88 | 10.7 | 18.6 | -45.98 | -13 | H |
| 11372.4 | -50.91 | 12.1 | 18.5 | -44.51 | -13 | H |
| 13279.2 | -50.01 | 13.6 | 21.8 | -41.81 | -13 | H |

LTE Band 26(Part 22), 1.4MHz, QPSK, Channel 27033

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 1628.6 | -47.19 | 4.3 | 2.9 | -48.59 | -13 | H |
| 2388.8 | -39.49 | 5.2 | 3.7 | -40.99 | -13 | H |
| 3313.2 | -51.59 | 6.2 | 4.7 | -53.09 | -13 | V |
| 3988.0 | -53.78 | 6.9 | 7.7 | -52.98 | -13 | H |
| 4841.2 | -51.09 | 7.6 | 7.9 | -50.79 | -13 | V |
| 5588.4 | -52.68 | 8.3 | 9.5 | -51.48 | -13 | V |

LTE Band 26(Part 22), 1.4MHz, QPSK, Channel 26915

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 1659.0 | -45.21 | 4.3 | 2.9 | -46.61 | -13 | H |
| 2749.2 | -38.22 | 5.7 | 4.1 | -39.82 | -13 | V |
| 3259.6 | -51.75 | 6.1 | 4.7 | -53.15 | -13 | H |
| 4055.2 | -53.97 | 6.9 | 7.7 | -53.17 | -13 | V |
| 4918.4 | -54.28 | 7.7 | 9.0 | -52.98 | -13 | H |
| 5628.0 | -55.16 | 8.3 | 10.5 | -52.96 | -13 | H |

LTE Band 26(Part 22), 1.4MHz, QPSK, Channel 26797

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBi) | Peak EIRP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|-----------------|-------------|--------------|
| 1688.5 | -45.11 | 4.4 | 2.9 | -46.61 | -13 | H |
| 2750.8 | -36.83 | 5.7 | 4.1 | -38.43 | -13 | V |
| 3270.8 | -52.37 | 6.1 | 4.7 | -53.77 | -13 | H |
| 4049.2 | -53.29 | 6.9 | 7.7 | -52.49 | -13 | V |
| 4930.4 | -51.78 | 7.7 | 9.0 | -50.48 | -13 | V |
| 5637.6 | -53.34 | 8.3 | 10.5 | -51.14 | -13 | V |

LTE Band 26(Part 90), 1.4MHz, QPSK, Channel 26783

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBd) | Peak ERP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|----------------|-------------|--------------|
| 1642.1 | -48.13 | 4.3 | 2.9 | -49.53 | -13 | H |
| 2421.5 | -39.74 | 5.3 | 3.7 | -41.34 | -13 | V |
| 3274.4 | -52.37 | 6.1 | 4.7 | -53.77 | -13 | H |
| 4010.8 | -53.62 | 6.9 | 7.7 | -52.82 | -13 | V |
| 4814.4 | -51.22 | 7.6 | 7.9 | -50.92 | -13 | V |
| 5460.8 | -52.08 | 8.1 | 9.5 | -50.68 | -13 | H |

LTE Band 26(Part 90), 1.4MHz, QPSK, Channel 26740

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBd) | Peak ERP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|----------------|-------------|--------------|
| 1633.8 | -45.99 | 4.3 | 2.9 | -47.39 | -13 | H |
| 2455.0 | -39.03 | 5.3 | 3.7 | -40.63 | -13 | V |
| 3304.0 | -52.74 | 6.2 | 4.7 | -54.24 | -13 | H |
| 3985.6 | -54.39 | 6.9 | 7.7 | -53.59 | -13 | H |
| 4830.4 | -51.4 | 7.6 | 7.9 | -51.1 | -13 | V |
| 5636.0 | -53.44 | 8.3 | 10.5 | -51.24 | -13 | H |

LTE Band 26(Part 90), 1.4MHz, QPSK, Channel 26697

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBd) | Peak ERP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|----------------|-------------|--------------|
| 1638.6 | -48.22 | 4.3 | 2.9 | -49.62 | -13 | H |
| 2734.2 | -37.26 | 5.7 | 4.1 | -38.86 | -13 | V |
| 3276.4 | -51.91 | 6.2 | 4.7 | -53.41 | -13 | H |
| 4025.2 | -54.32 | 6.9 | 7.7 | -53.52 | -13 | V |
| 4855.2 | -50.9 | 7.6 | 7.9 | -50.6 | -13 | V |
| 5604.4 | -52.73 | 8.3 | 9.5 | -51.53 | -13 | H |

LTE Band 26(Part 90), 15MHz, QPSK, Channel 26765

| Frequency (MHz) | PMea (dBm) | Pcl (dBm) | Ga (dBd) | Peak ERP (dBm) | Limit (dBm) | Polarization |
|-----------------|------------|-----------|----------|----------------|-------------|--------------|
| 1527.8 | -47.81 | 4.2 | 3.4 | -48.61 | -13 | V |

| | | | | | | |
|--------|--------|-----|------|--------|-----|---|
| 2306.5 | -39.63 | 5.1 | 3.3 | -41.43 | -13 | V |
| 3575.2 | -50.11 | 6.5 | 4.7 | -51.91 | -13 | H |
| 4488.8 | -50.77 | 7.3 | 7.3 | -50.77 | -13 | H |
| 5226.0 | -52.15 | 8.0 | 8.7 | -51.45 | -13 | H |
| 6396.0 | -52.82 | 8.9 | 11.5 | -50.22 | -13 | H |

ANNEX A.3. FREQUENCY STABILITY

Reference

FCC: CFR Part 2.1055, 22.235,24.235, 27.54, 90.213.

A.3.1 Method of Measurement

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 R&S CMW500 DIGITAL RADIO COMMUNICATION TESTER.

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 middle channel for LTE band 2,4,7,25,26 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 re-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 centre 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 decrements 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.

A.3.2 Measurement Limit

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. 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 between 10VDC and 15VDC, with a nominal voltage of 12VDC. 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. For the purposes of measuring frequency stability these voltage limits are to be used.

A.3.3 Measurement results

LTE Band 2, 1.4MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

| Voltage (V) | Frequency error (Hz) | | Frequency error (ppm) | |
|----------------|----------------------|-------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 10 | -6.924 | 7.739 | 0.004 | 0.004 |
| 12 | -4.435 | 7.353 | 0.002 | 0.004 |
| 15 | -5.865 | 8.426 | 0.003 | 0.004 |

Frequency Error vs Temperature

| Temperature (°C) | Frequency error (Hz) | | Frequency error (ppm) | |
|---------------------|----------------------|--------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 50° | -5.107 | -6.28 | 0.003 | 0.003 |
| 40° | -9.542 | 7.467 | 0.005 | 0.004 |
| 30° | -4.992 | 6.766 | 0.003 | 0.004 |
| 20° | -5.736 | 7.482 | 0.003 | 0.004 |
| 10° | -5.98 | -6.809 | 0.003 | 0.004 |
| 0° | -6.137 | 7.753 | 0.003 | 0.004 |
| - 10° | -5.98 | 9.527 | 0.003 | 0.005 |
| - 20° | -9.913 | -7.782 | 0.005 | 0.004 |

LTE Band 4, 1.4MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

| Voltage (V) | Frequency error (Hz) | | Frequency error (ppm) | |
|----------------|----------------------|---------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 10 | 8.512 | -13.647 | 0.005 | 0.008 |
| 12 | 2.446 | -13.704 | 0.001 | 0.008 |
| 15 | 4.978 | -14.319 | 0.003 | 0.008 |

Frequency Error vs Temperature

| Temperature (°C) | Frequency error (Hz) | | Frequency error (ppm) | |
|---------------------|----------------------|---------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 50° | 3.133 | -13.39 | 0.002 | 0.008 |
| 40° | 3.333 | -14.291 | 0.002 | 0.008 |
| 30° | 4.535 | -14.048 | 0.003 | 0.008 |
| 20° | -8.397 | -13.804 | 0.005 | 0.008 |
| 10° | 4.148 | -16.365 | 0.002 | 0.009 |
| 0° | 2.818 | -13.161 | 0.002 | 0.008 |
| - 10° | 3.304 | -13.118 | 0.002 | 0.008 |
| - 20° | -2.317 | -15.707 | 0.001 | 0.009 |

LTE Band 7, 5MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

| Voltage (V) | Frequency error (Hz) | | Frequency error (ppm) | |
|----------------|----------------------|-------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 10 | -8.554 | 9.656 | 0.003 | 0.004 |
| 12 | -8.483 | 6.995 | 0.003 | 0.003 |
| 15 | -11.773 | 10.2 | 0.005 | 0.004 |

Frequency Error vs Temperature

| Temperature (°C) | Frequency error (Hz) | | Frequency error (ppm) | |
|---------------------|----------------------|--------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 50° | -9.699 | 9.198 | 0.004 | 0.004 |
| 40° | -8.998 | 9.313 | 0.004 | 0.004 |
| 30° | -7.181 | 7.353 | 0.003 | 0.003 |
| 20° | -6.709 | 9.413 | 0.003 | 0.004 |
| 10° | -7.539 | 11.644 | 0.003 | 0.005 |
| 0° | -8.068 | 7.682 | 0.003 | 0.003 |
| - 10° | -7.51 | 10.3 | 0.003 | 0.004 |
| - 20° | -6.351 | 7.267 | 0.003 | 0.003 |

LTE Band 25, 10MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

| Voltage (V) | Frequency error (Hz) | | Frequency error (ppm) | |
|----------------|----------------------|---------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 10 | 2.875 | -16.508 | 0.002 | 0.009 |
| 12 | -2.36 | -16.394 | 0.001 | 0.009 |
| 15 | 3.662 | -17.037 | 0.002 | 0.009 |

Frequency Error vs Temperature

| Temperature (°C) | Frequency error (Hz) | | Frequency error (ppm) | |
|---------------------|----------------------|---------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 50° | 3.076 | -17.009 | 0.002 | 0.009 |
| 40° | 4.163 | -16.937 | 0.002 | 0.009 |
| 30° | 3.104 | -16.294 | 0.002 | 0.009 |
| 20° | -2.804 | -17.395 | 0.001 | 0.009 |
| 10° | 2.861 | -18.539 | 0.002 | 0.01 |
| 0° | 1.888 | -16.437 | 0.001 | 0.009 |
| - 10° | -2.646 | -16.851 | 0.001 | 0.009 |
| - 20° | -3.004 | -17.195 | 0.002 | 0.009 |

LTE Band 26(Part 22), 1.4MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

| Voltage (V) | Frequency error (Hz) | | Frequency error (ppm) | |
|----------------|----------------------|---------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 10 | 2.503 | -13.733 | 0.003 | 0.016 |
| 12 | 2.975 | -12.932 | 0.004 | 0.015 |
| 15 | 2.747 | -13.204 | 0.003 | 0.016 |

Frequency Error vs Temperature

| Temperature (°C) | Frequency error (Hz) | | Frequency error (ppm) | |
|---------------------|----------------------|---------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 50° | -2.332 | -12.36 | 0.003 | 0.015 |
| 40° | 2.804 | -13.618 | 0.003 | 0.016 |
| 30° | 3.004 | -12.617 | 0.004 | 0.015 |
| 20° | -1.96 | -13.533 | 0.002 | 0.016 |
| 10° | 1.831 | -12.231 | 0.002 | 0.015 |
| 0° | 2.589 | -13.361 | 0.003 | 0.016 |
| - 10° | -2.561 | -12.76 | 0.003 | 0.015 |
| - 20° | 2.174 | -13.189 | 0.003 | 0.016 |

LTE Band 26 (Part 90), 1.4MHz bandwidth (worst case of all bandwidths)
Frequency Error vs Voltage

| Voltage (V) | Frequency error (Hz) | | Frequency error (ppm) | |
|----------------|----------------------|---------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 10 | -5.908 | -15.049 | 0.007 | 0.018 |
| 12 | -4.635 | -15.478 | 0.006 | 0.019 |
| 15 | -6.08 | -15.006 | 0.007 | 0.018 |

Frequency Error vs Temperature

| Temperature (°C) | Frequency error (Hz) | | Frequency error (ppm) | |
|---------------------|----------------------|---------|-----------------------|-------|
| | QPSK | 16QAM | QPSK | 16QAM |
| 50° | -3.262 | -15.092 | 0.004 | 0.018 |
| 40° | -2.275 | -15.607 | 0.003 | 0.019 |
| 30° | -3.033 | -14.663 | 0.004 | 0.018 |
| 20° | -2.332 | -14.305 | 0.003 | 0.017 |
| 10° | -4.063 | -14.234 | 0.005 | 0.017 |
| 0° | -2.818 | -14.834 | 0.003 | 0.018 |
| - 10° | -3.762 | -14.491 | 0.005 | 0.018 |
| - 20° | -3.505 | -14.019 | 0.004 | 0.017 |

ANNEX A.4. OCCUPIED BANDWIDTH

Reference

FCC: CFR Part 2.1049(h)(i)

A.4.1 Occupied Bandwidth Results

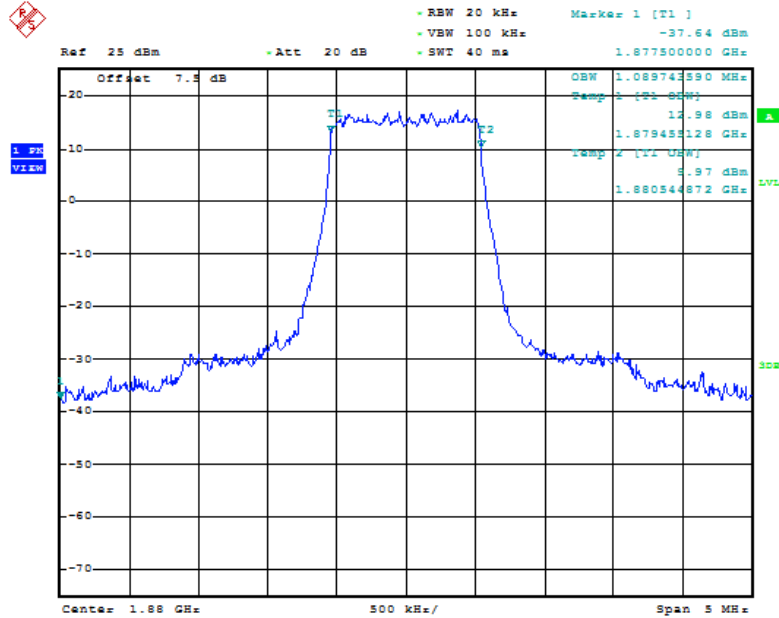
Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the US Cellular/PCS frequency bands. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the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

The measurement method is from KDB 971168 4:

- 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 (i.e., two to five times the OBW).
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least $10\log(OBW / RBW)$ below the reference level.
- d) Set the detection mode to peak, and the trace mode to max hold.
- e) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

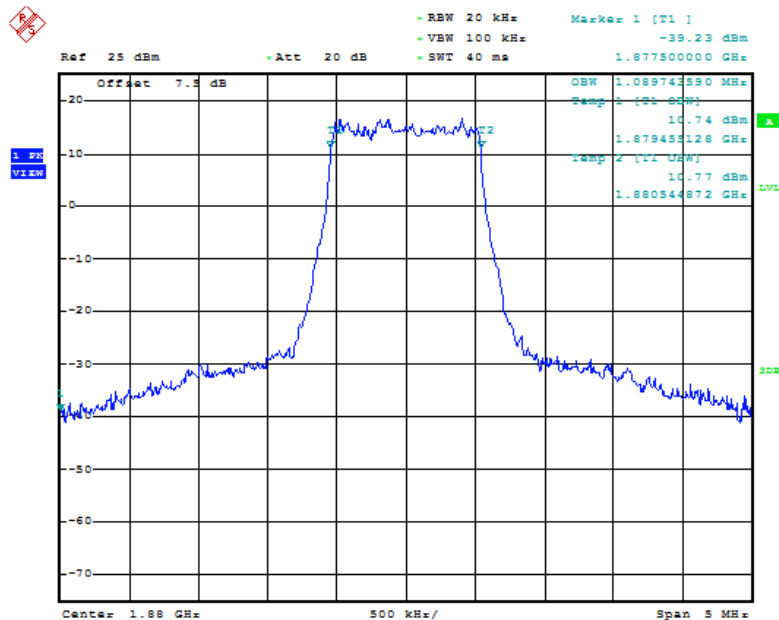
LTE band 2, 1.4MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|------|
| | 1880.0 | QPSK |
| | 1.09 | 1.09 |



Date: 30.JAN.2019 11:19:58

Fig.1 LTE band 2, 1.4MHz Bandwidth, QPSK (99% BW)

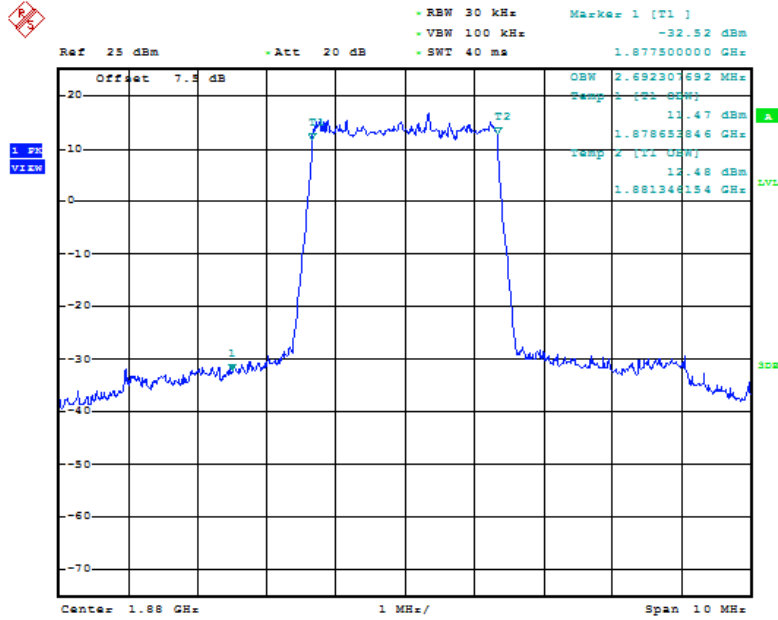


Date: 30.JAN.2019 12:26:12

Fig.2 LTE band 2, 1.4MHz Bandwidth, 16QAM (99% BW)

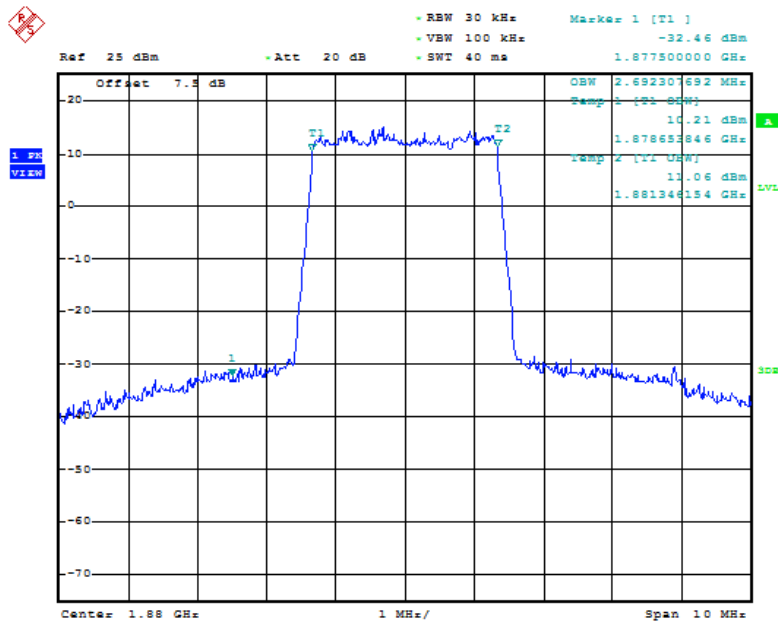
LTE band 2, 3MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 1880.0 | QPSK |
| | 2.692 | 2.692 |



Date: 30. JAN. 2019 11:20:42

Fig.3 LTE band 2, 3MHz Bandwidth, QPSK (99% BW)

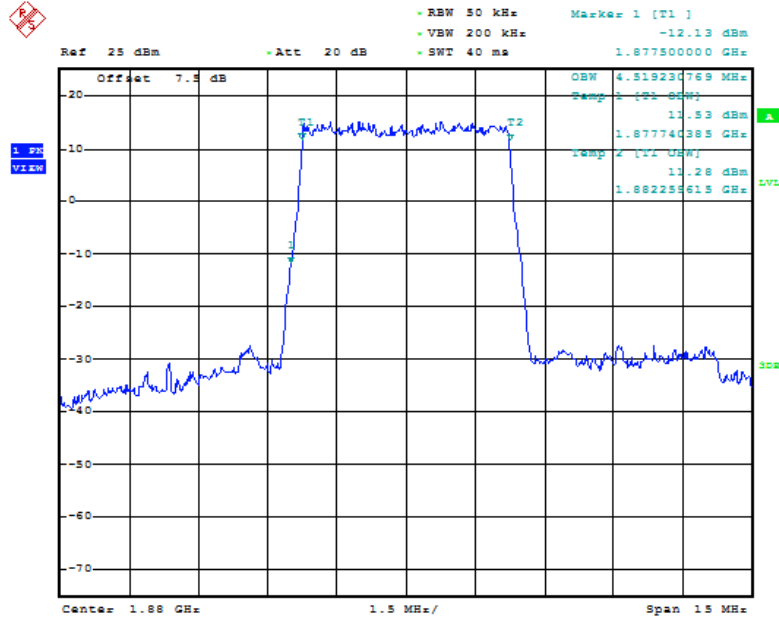


Date: 30. JAN. 2019 12:26:56

Fig.4 LTE band 2, 3MHz Bandwidth, 16QAM (99% BW)

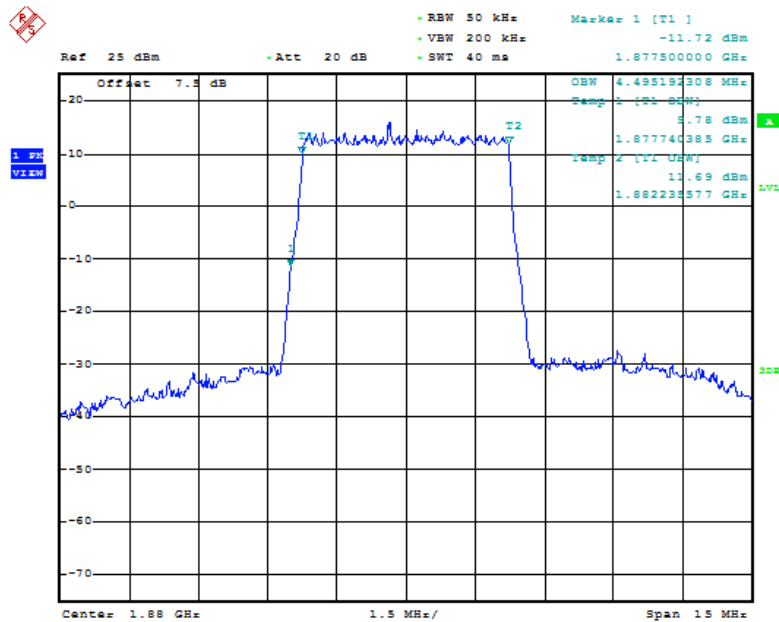
LTE band 2, 5MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 1880.0 | QPSK |
| | 4.519 | 4.495 |



Date: 30. JAN. 2019 11:21:26

Fig.5 LTE band 2, 5MHz Bandwidth, QPSK (99% BW)

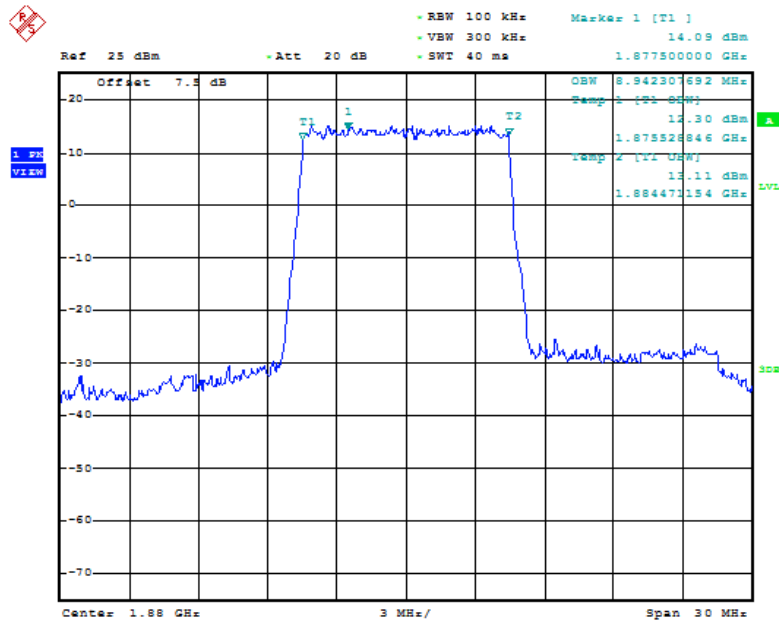


Date: 30. JAN. 2019 12:27:41

Fig.6 LTE band 2, 5MHz Bandwidth,16QAM (99% BW)

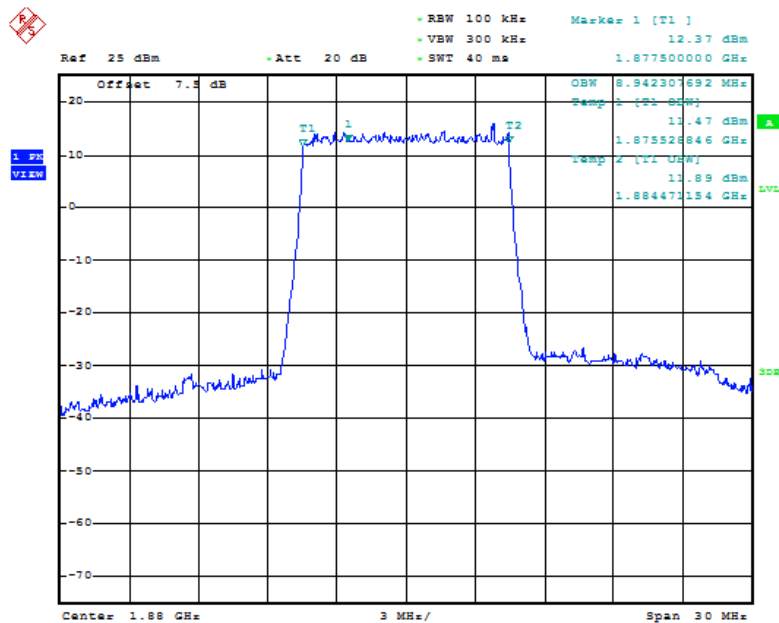
LTE band 2, 10MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| 1880.0 | QPSK | 16QAM |
| | 8.942 | 8.942 |



Date: 30.JAN.2019 11:22:11

Fig.7 LTE band 2, 10MHz Bandwidth, QPSK (99% BW)

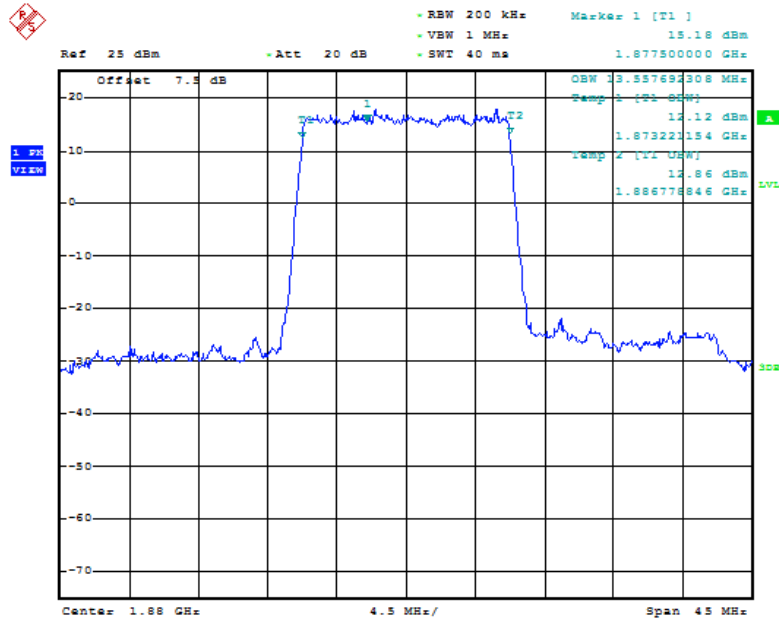


Date: 30.JAN.2019 12:28:26

Fig.8 LTE band 2, 10MHz Bandwidth, 16QAM (99% BW)

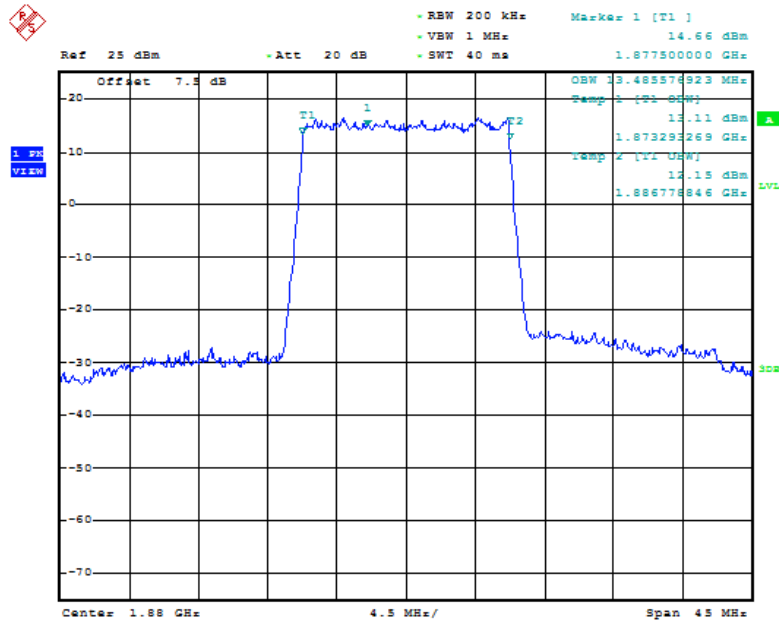
LTE band 2, 15MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|--------|
| | 1880.0 | QPSK |
| 13.558 | | 13.486 |



Date: 30.JAN.2019 11:22:56

Fig.9 LTE band 2, 15MHz Bandwidth, QPSK (99% BW)

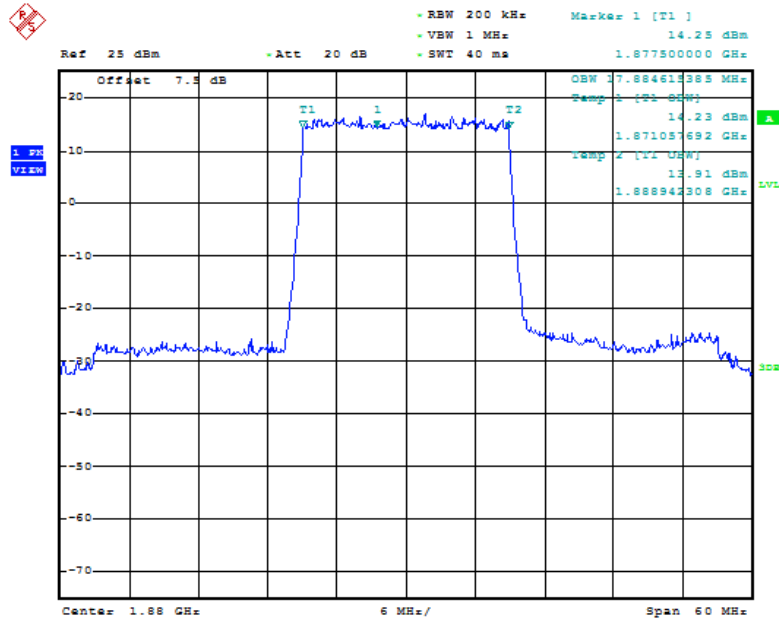


Date: 30.JAN.2019 12:29:11

Fig.10 LTE band 2, 15MHz Bandwidth, 16QAM (99% BW)

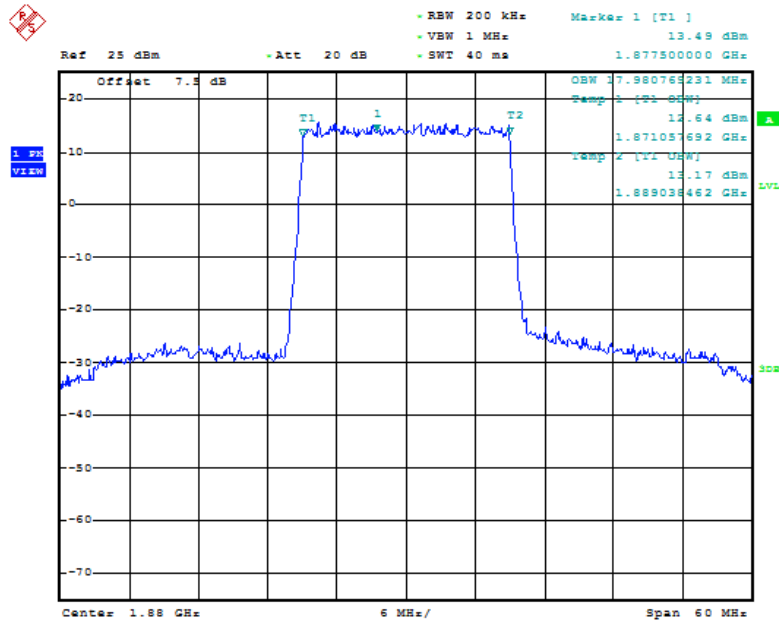
LTE band 2, 20MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|--------|
| | 1880.0 | QPSK |
| | 17.885 | 17.981 |



Date: 30.JAN.2019 11:23:42

Fig.11 LTE band 2, 20MHz Bandwidth, QPSK (99% BW)

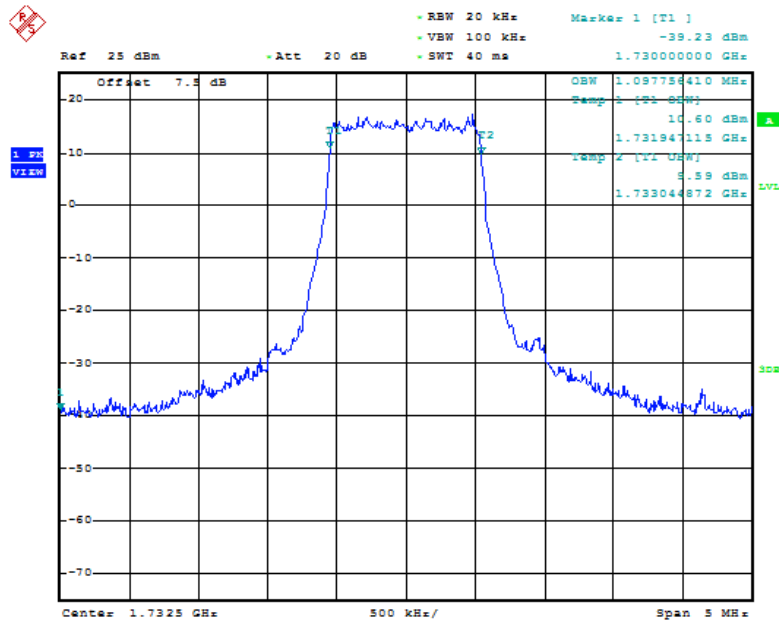


Date: 30.JAN.2019 12:29:56

Fig.12 LTE band 2, 20MHz Bandwidth, 16QAM (99% BW)

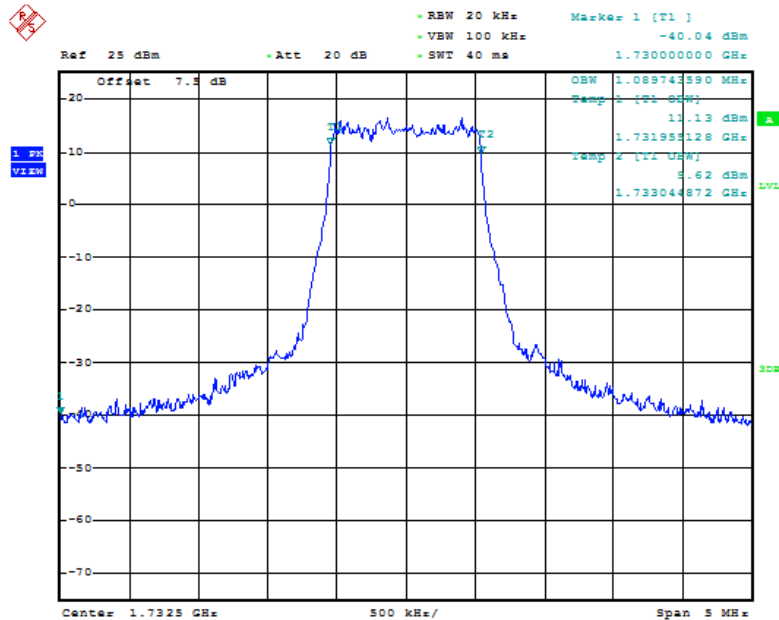
LTE band 4, 1.4MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|------|
| | 1732.5 | QPSK |
| | 1.098 | 1.09 |



Date: 30.JAN.2019 11:27:44

Fig.13 LTE band 4, 1.4MHz Bandwidth, QPSK (99% BW)

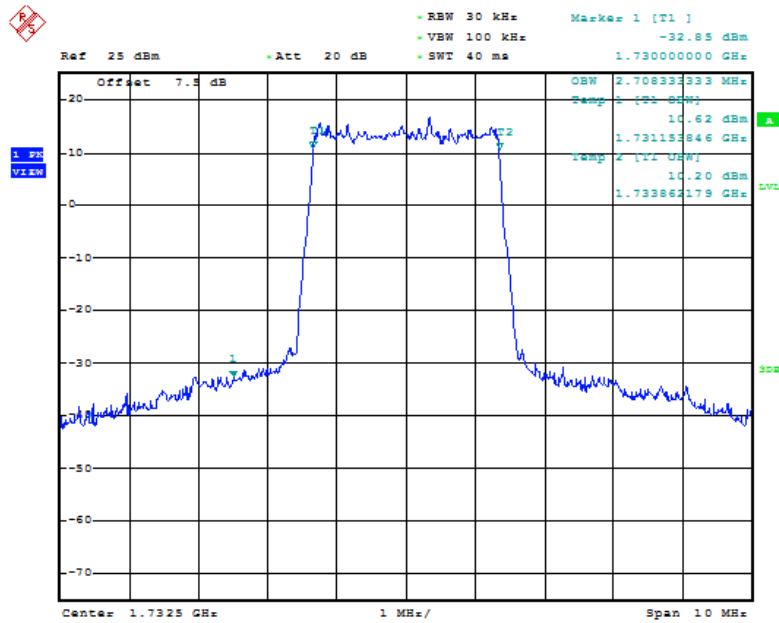


Date: 30.JAN.2019 12:21:11

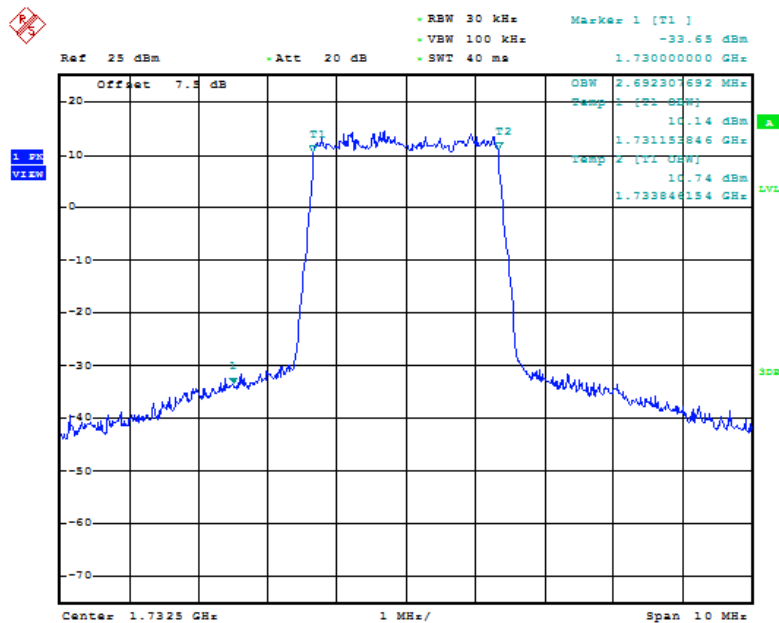
Fig.14 LTE band 4, 1.4MHz Bandwidth, 16QAM (99% BW)

LTE band 4, 3MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 1732.5 | QPSK |
| | 2.708 | 2.692 |



Date: 30.JAN.2019 11:28:29

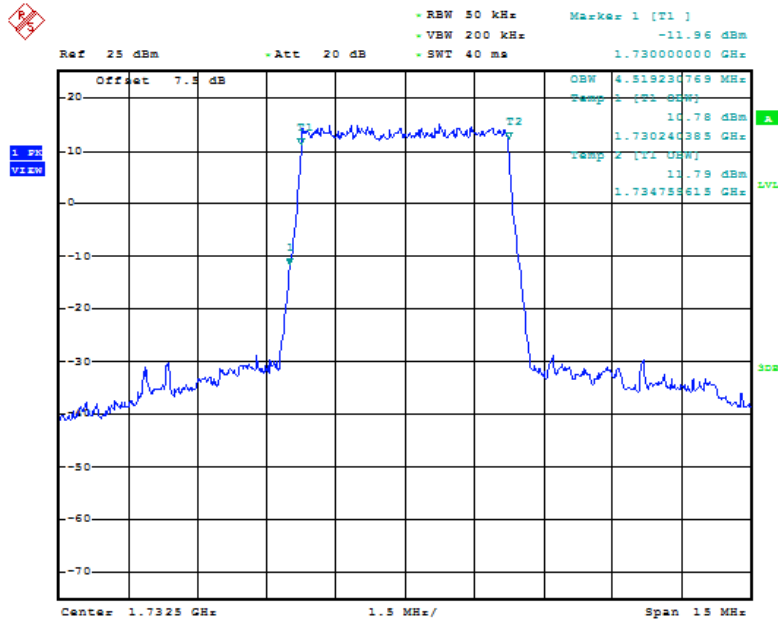
Fig.15 LTE band 4, 3MHz Bandwidth, QPSK (99% BW)


Date: 30.JAN.2019 12:21:55

Fig.16 LTE band 4, 3MHz Bandwidth, 16QAM (99% BW)

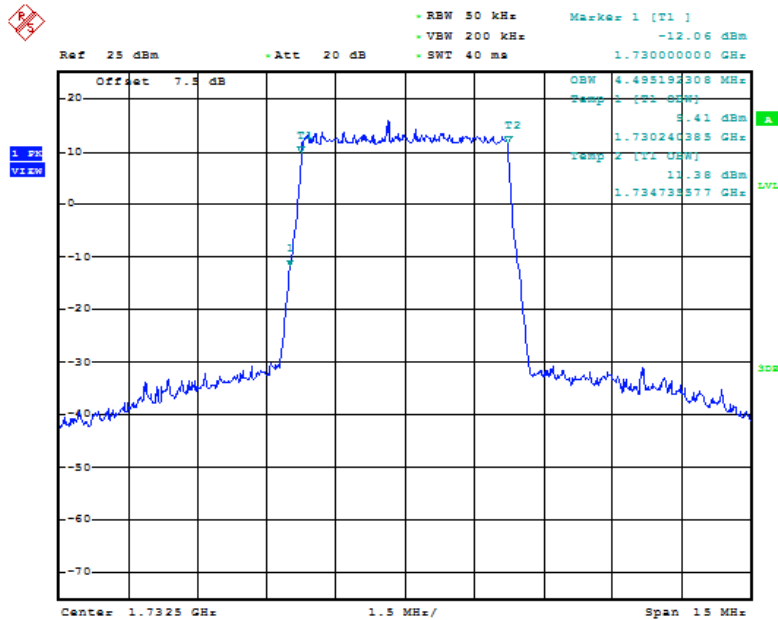
LTE band 4, 5MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 1732.5 | QPSK |
| | 4.519 | 4.495 |



Date: 30.JAN.2019 11:29:13

Fig.17 LTE band 4, 5MHz Bandwidth, QPSK (99% BW)

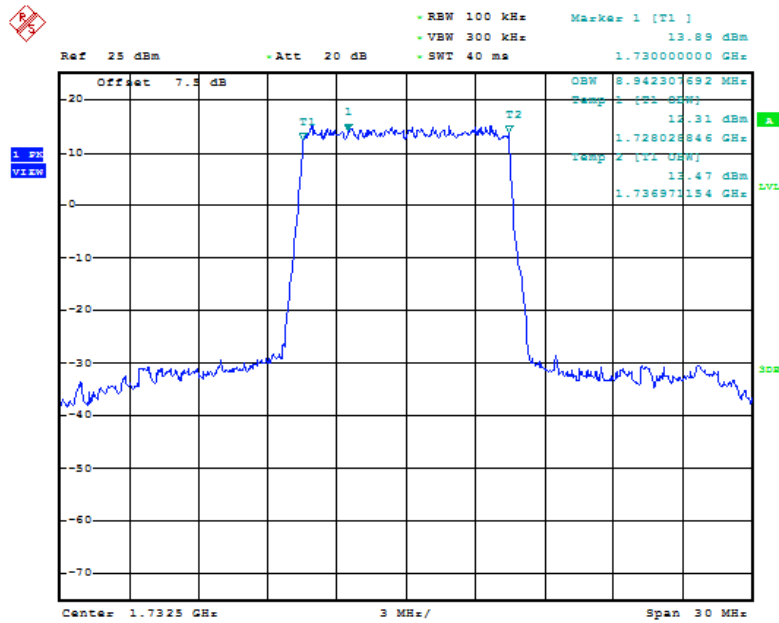


Date: 30.JAN.2019 12:22:40

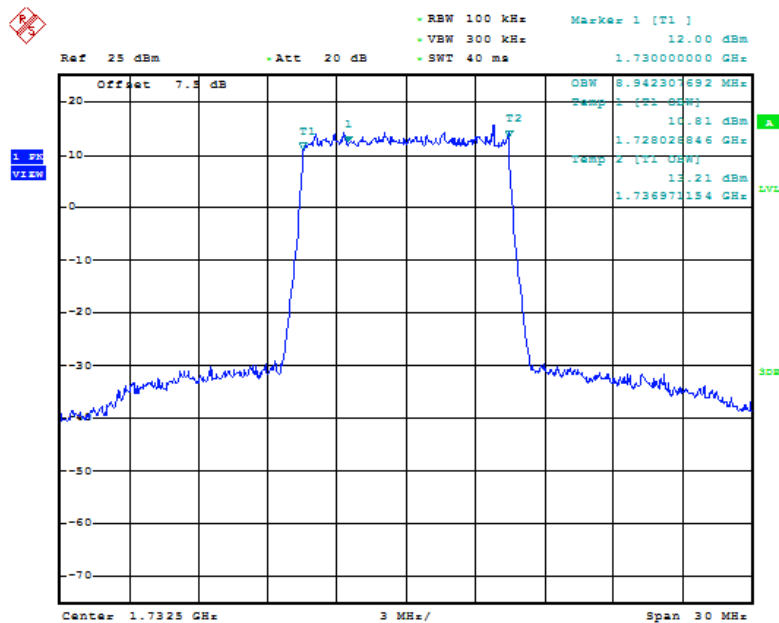
Fig.18 LTE band 4, 5MHz Bandwidth, 16QAM (99% BW)

LTE band 4, 10MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 1732.5 | QPSK |
| 8.942 | | 8.942 |



Date: 30.JAN.2019 11:29:58

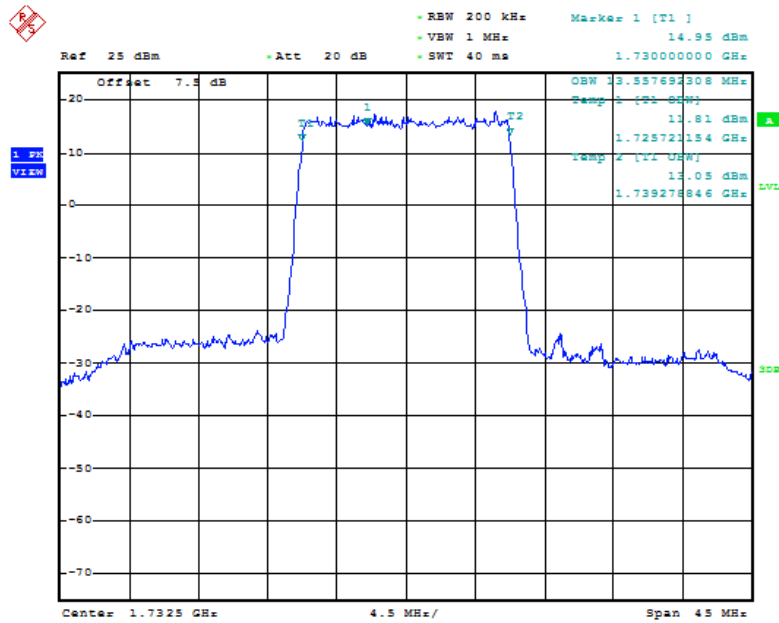
Fig.19 LTE band 4, 10MHz Bandwidth, QPSK (99% BW)


Date: 30.JAN.2019 12:23:24

Fig.20 LTE band 4, 10MHz Bandwidth, 16QAM (99% BW)

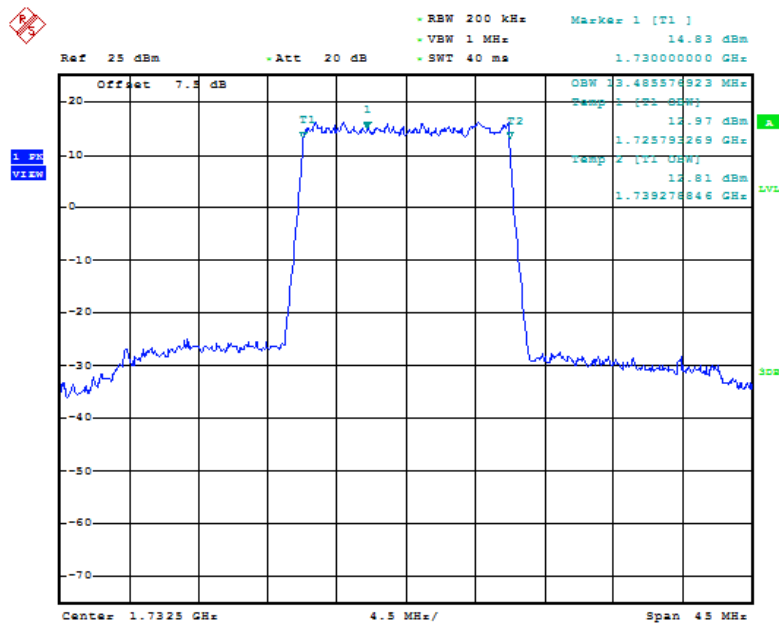
LTE band 4, 15MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|--------|
| | 1732.5 | QPSK |
| | 13.558 | 13.486 |



Date: 30.JAN.2019 11:30:43

Fig.21 LTE band 4, 15MHz Bandwidth, QPSK (99% BW)

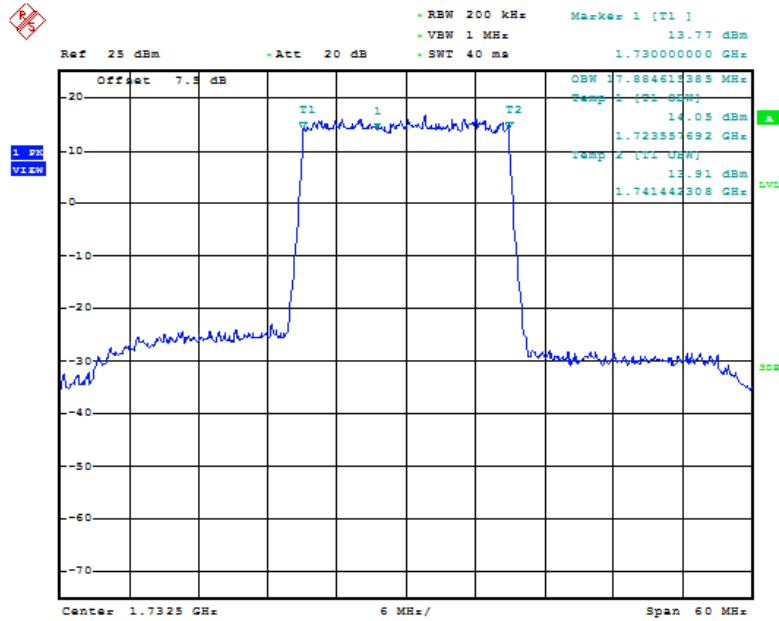


Date: 30.JAN.2019 12:24:09

Fig.22 LTE band 4, 15MHz Bandwidth, 16QAM (99% BW)

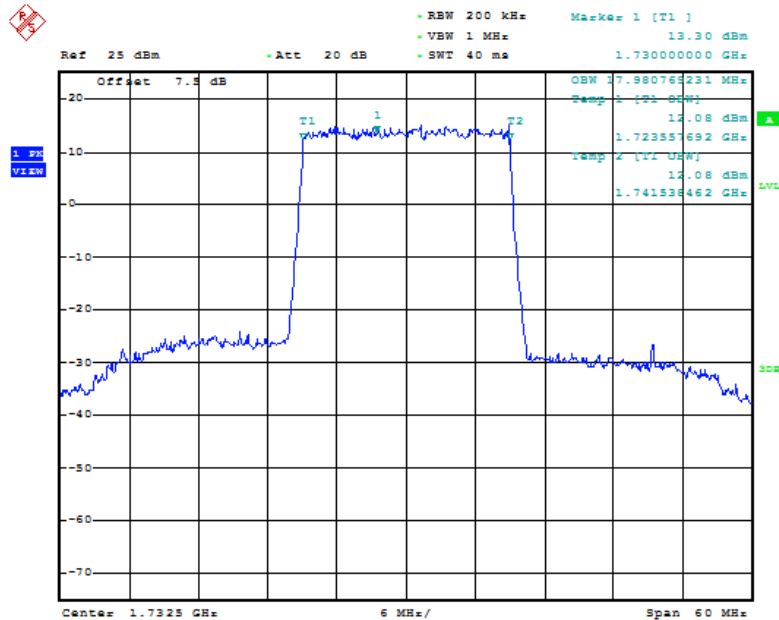
LTE band 4, 20MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|--------|
| | 1732.5 | QPSK |
| | 17.885 | 17.981 |



Date: 30. JAN. 2019 11:31:28

Fig.23 LTE band 4, 20MHz Bandwidth, QPSK (99% BW)

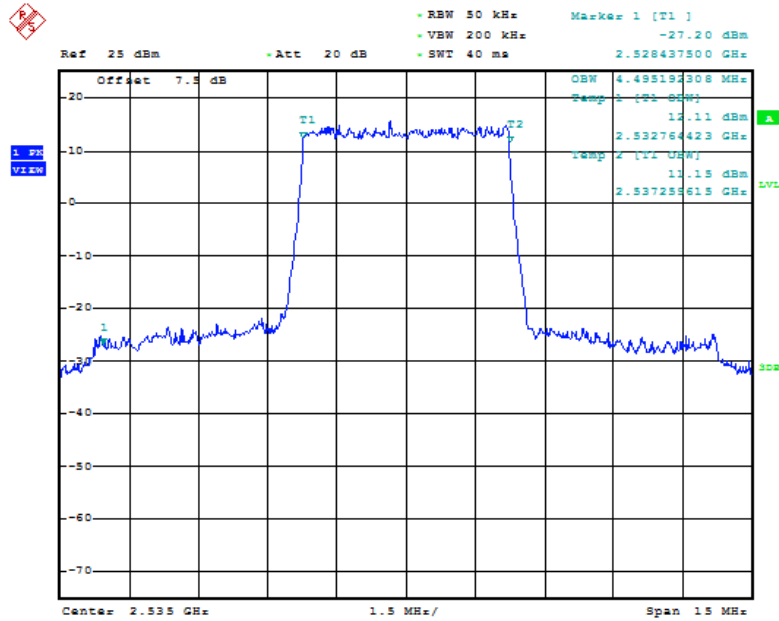


Date: 30. JAN. 2019 12:24:54

Fig.24 LTE band 4, 20MHz Bandwidth, 16QAM (99% BW)

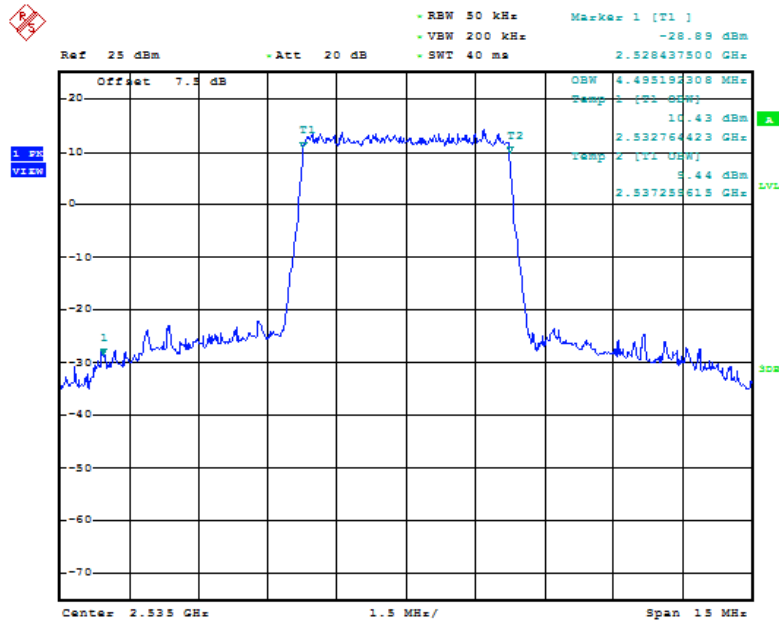
LTE band 7, 5MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 2535.0 | QPSK |
| 4.495 | | 4.495 |



Date: 30.JAN.2019 13:10:41

Fig.25 LTE band 7, 5MHz Bandwidth, QPSK (99% BW)

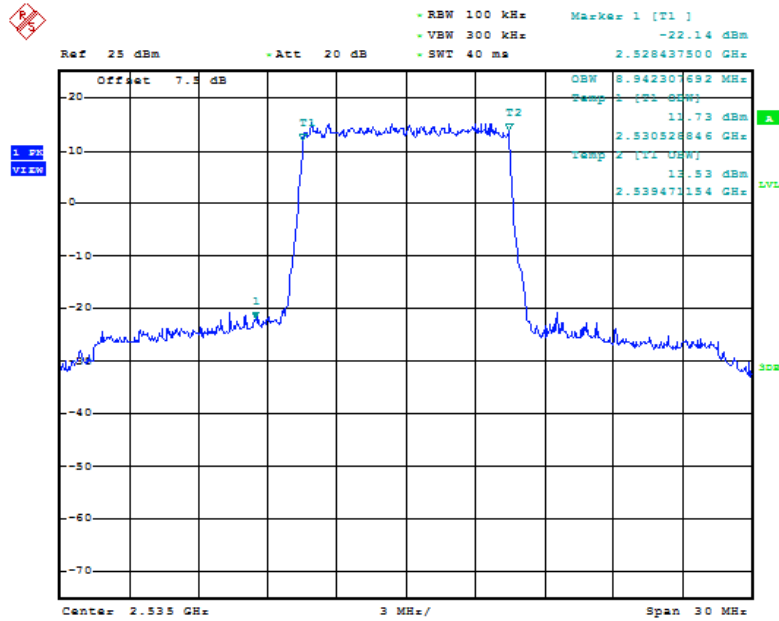


Date: 30.JAN.2019 13:11:19

Fig.26 LTE band 7, 5MHz Bandwidth, 16QAM (99% BW)

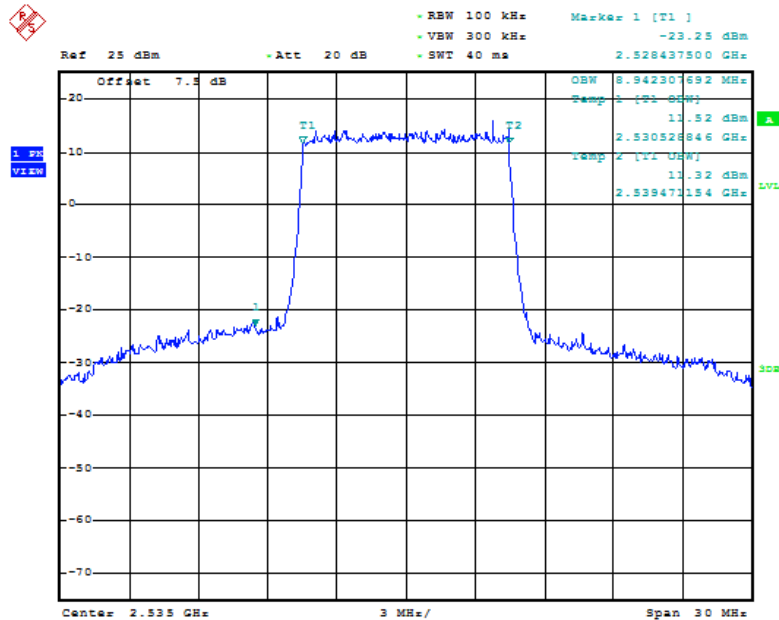
LTE band 7, 10MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 2535.0 | QPSK |
| 8.942 | | 8.942 |



Date: 30.JAN.2019 13:12:04

Fig.27 LTE band 7, 10MHz Bandwidth, QPSK (99% BW)

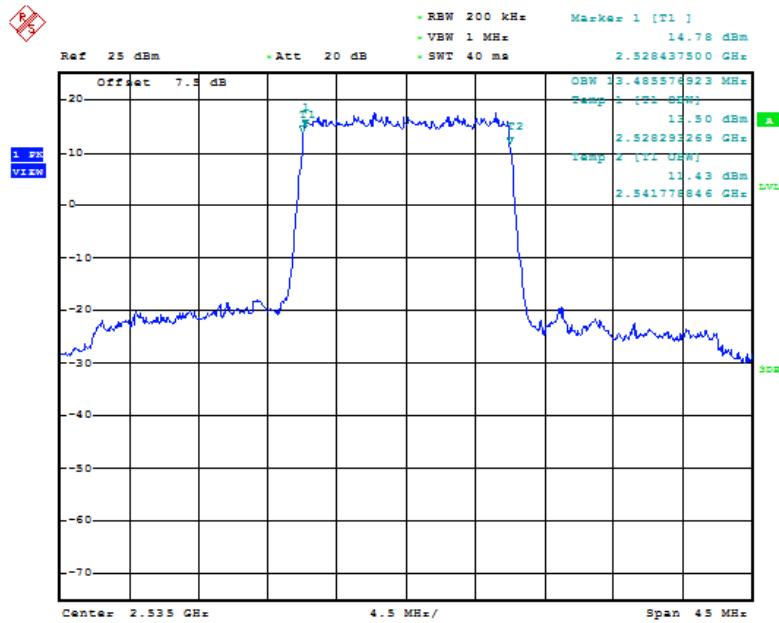


Date: 30.JAN.2019 13:12:42

Fig.28 LTE band 7, 10MHz Bandwidth, 16QAM (99% BW)

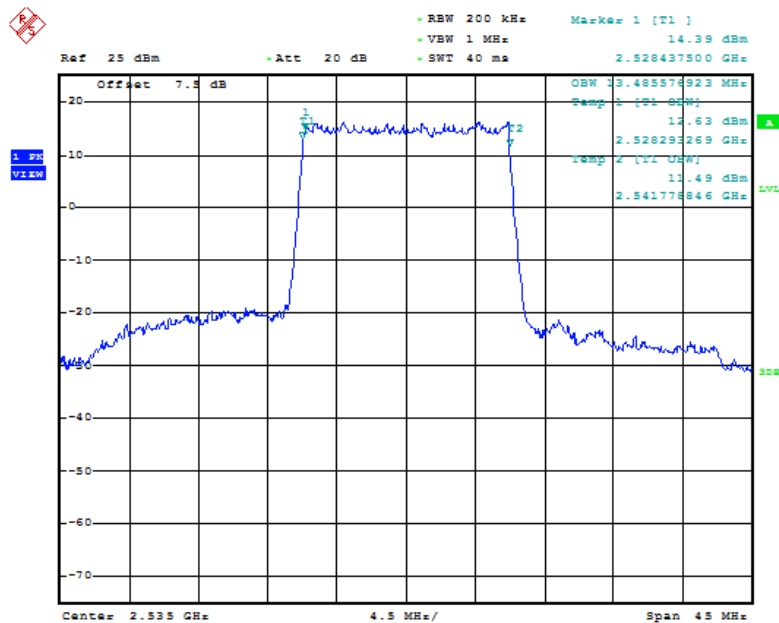
LTE band 7, 15MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|--------|
| | 2535.0 | QPSK |
| | 13.486 | 13.486 |



Date: 30. JAN. 2019 13:13:27

Fig.29 LTE band 7, 15MHz Bandwidth, QPSK (99% BW)

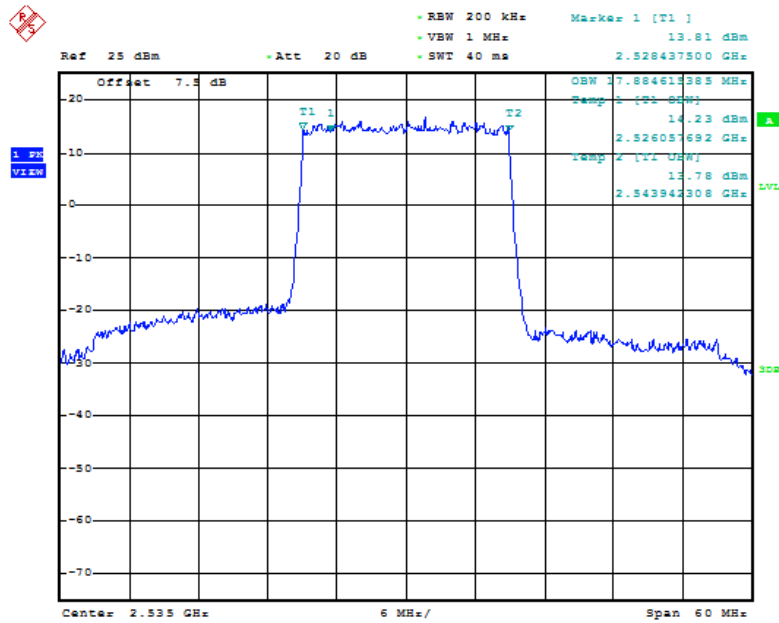


Date: 30. JAN. 2019 13:14:05

Fig.30 LTE band 7, 15MHz Bandwidth, 16QAM (99% BW)

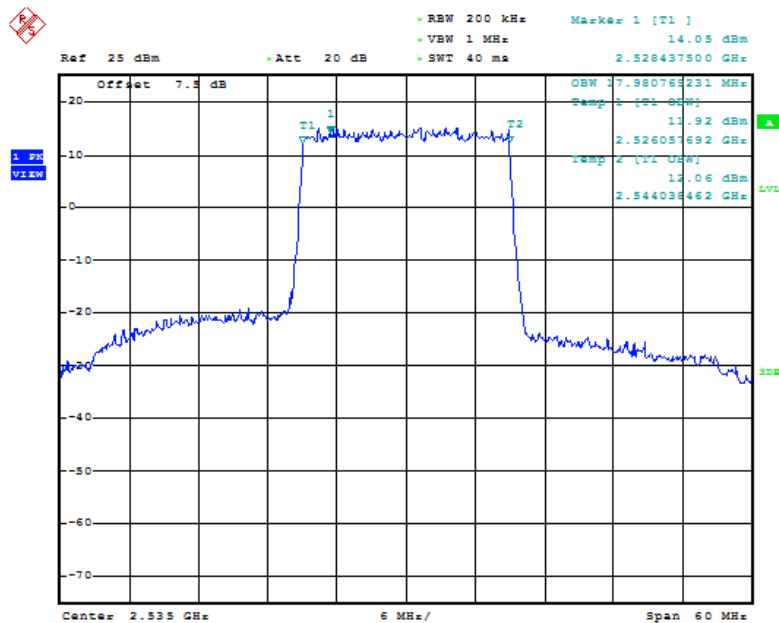
LTE band 7, 20MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|--------|
| | 2535.0 | QPSK |
| | 17.885 | 17.981 |



Date: 30.JAN.2019 13:14:50

Fig.31 LTE band 7, 20MHz Bandwidth, QPSK (99% BW)

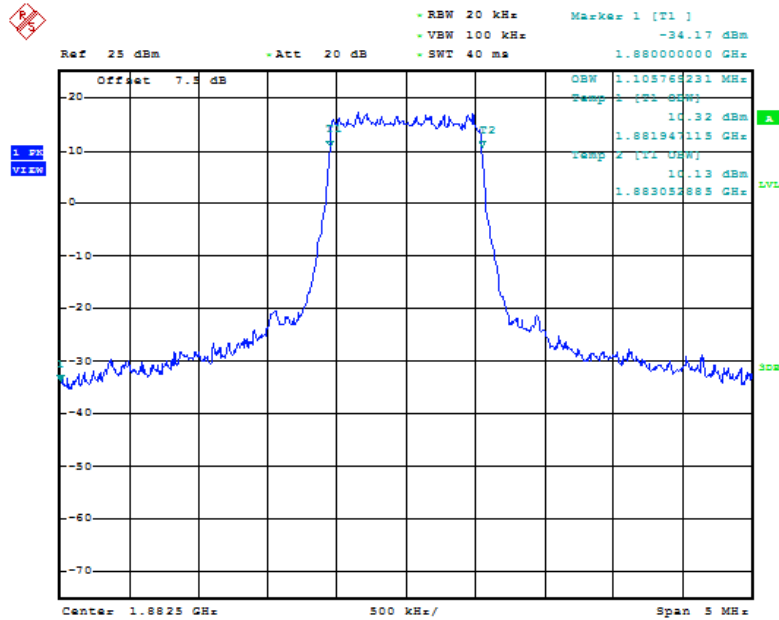


Date: 30.JAN.2019 13:15:28

Fig.32 LTE band 7, 20MHz Bandwidth, 16QAM (99% BW)

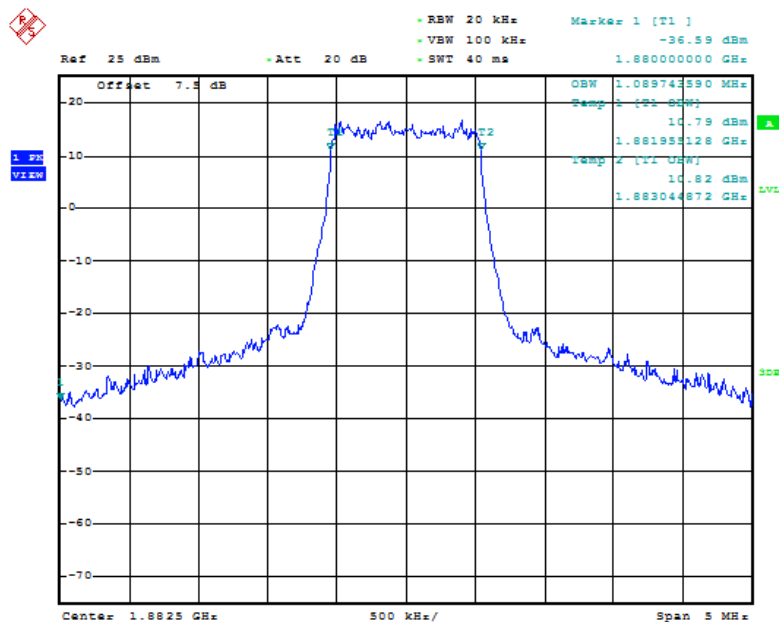
LTE band 25, 1.4MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|------|
| | 1882.5 | QPSK |
| | 1.106 | 1.09 |



Date: 30. JAN. 2019 11:11:28

Fig.33 LTE band 25, 1.4MHz Bandwidth, QPSK (99% BW)

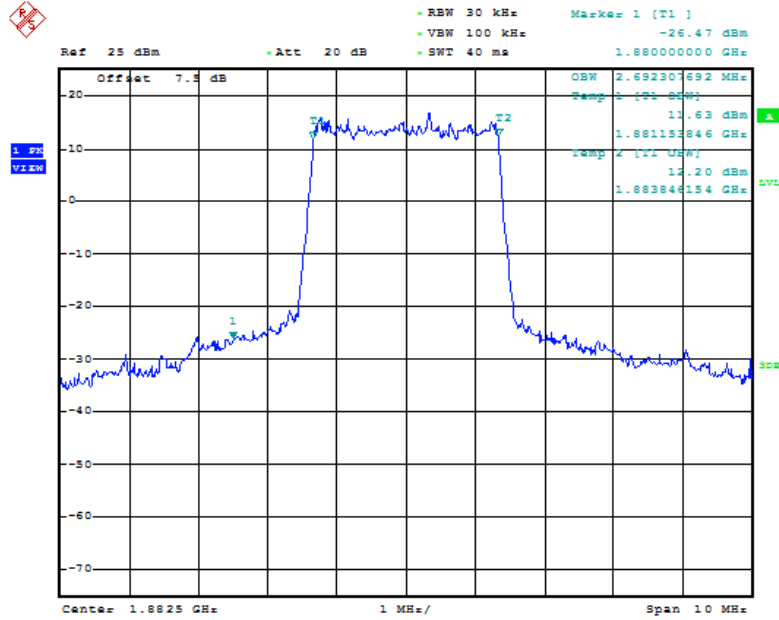


Date: 30. JAN. 2019 12:35:44

Fig.34 LTE band 25, 1.4MHz Bandwidth, 16QAM (99% BW)

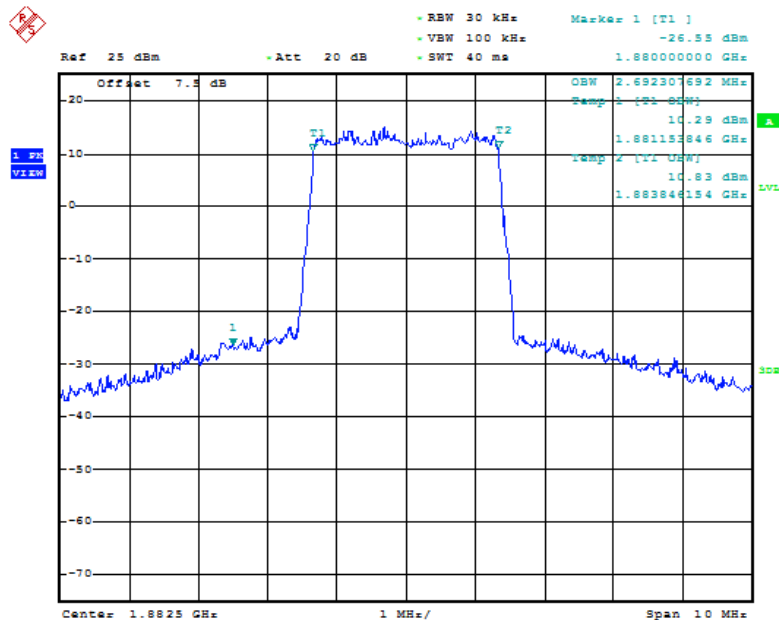
LTE band 25, 3MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 1882.5 | QPSK |
| | 2.692 | 2.692 |



Date: 30.JAN.2019 11:12:12

Fig.35 LTE band 25, 3MHz Bandwidth, QPSK (99% BW)

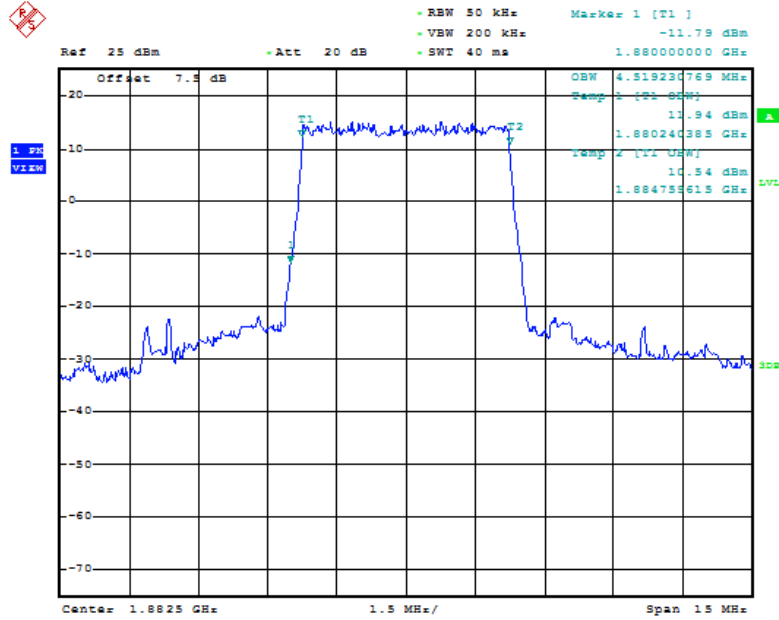


Date: 30.JAN.2019 12:36:28

Fig.36 LTE band 25, 3MHz Bandwidth, 16QAM (99% BW)

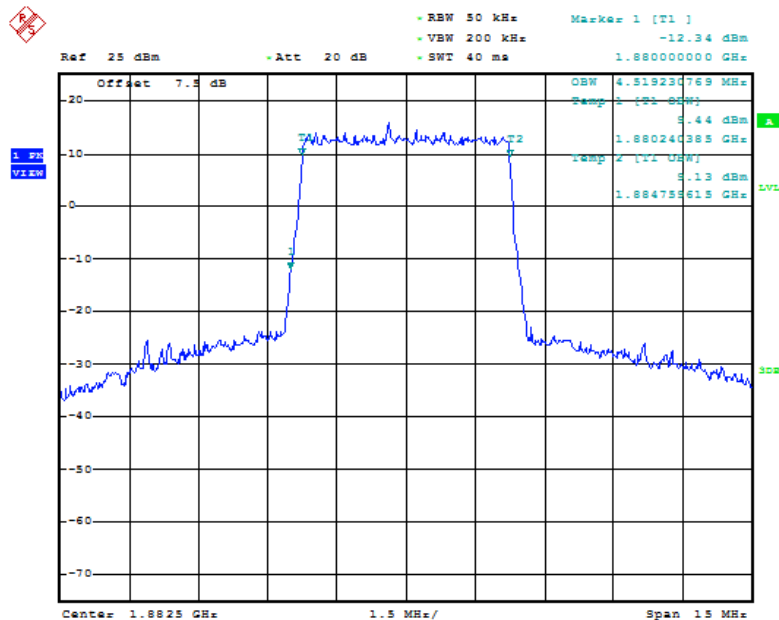
LTE band 25, 5MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 1882.5 | QPSK |
| | 4.519 | 4.519 |



Date: 30. JAN. 2019 11:12:57

Fig.37 LTE band 25, 5MHz Bandwidth, QPSK (99% BW)

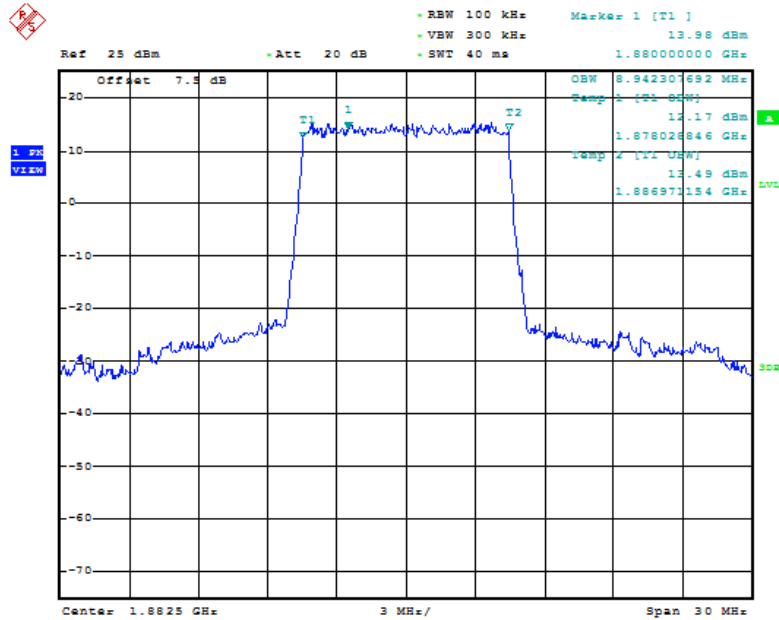


Date: 30. JAN. 2019 12:37:13

Fig.38 LTE band 25, 5MHz Bandwidth, 16QAM (99% BW)

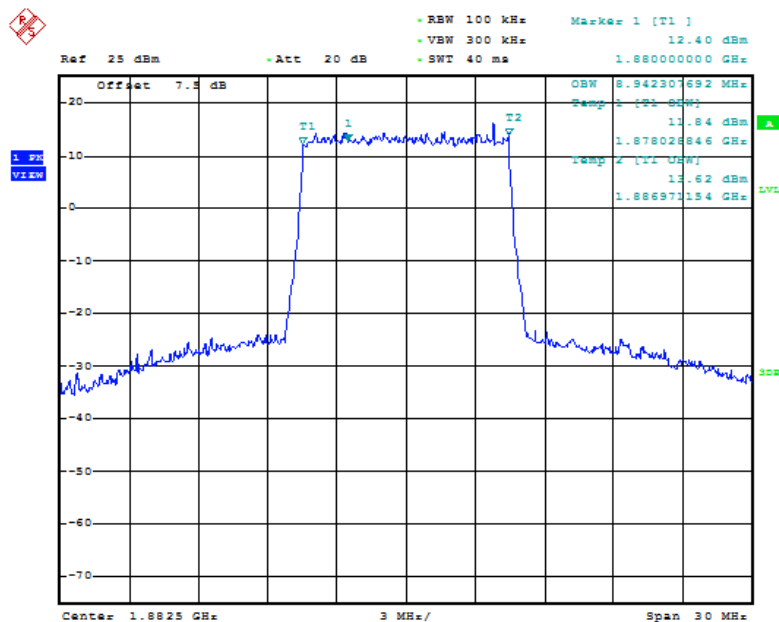
LTE band 25, 10MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 1882.5 | QPSK |
| | 8.942 | 8.942 |



Date: 30. JAN. 2019 11:13:41

Fig.39 LTE band 25, 10MHz Bandwidth, QPSK (99% BW)

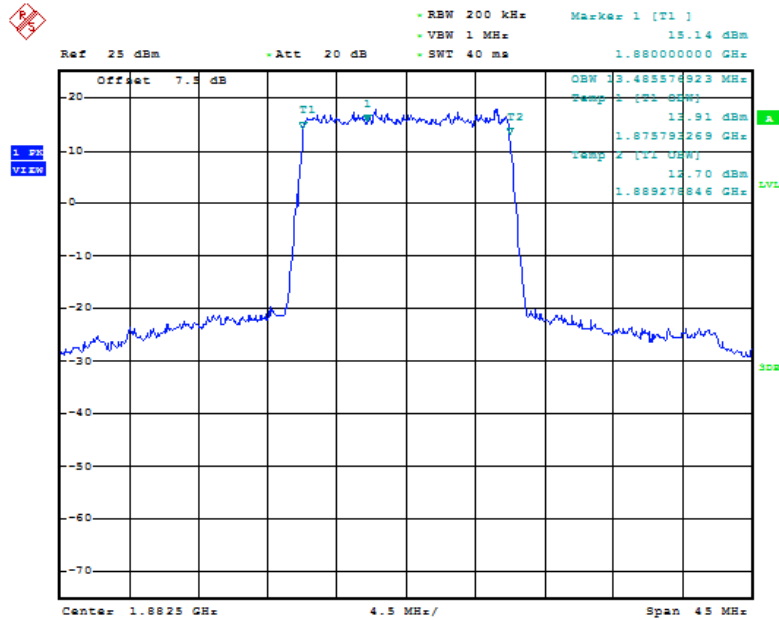


Date: 30. JAN. 2019 12:37:58

Fig.40 LTE band 25, 10MHz Bandwidth, 16QAM (99% BW)

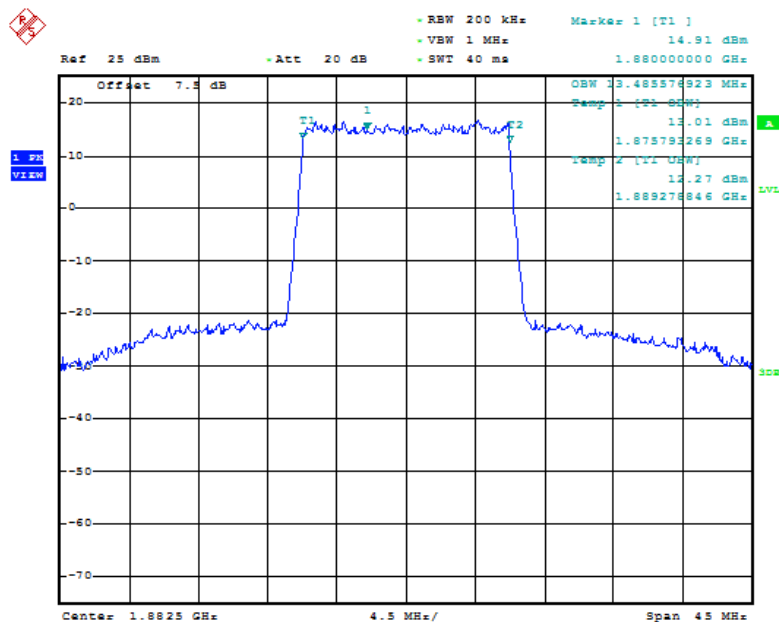
LTE band 25, 15MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|--------|
| | 1882.5 | QPSK |
| | 13.486 | 13.486 |



Date: 30. JAN. 2019 11:14:27

Fig.41 LTE band 25, 15MHz Bandwidth, QPSK (99% BW)

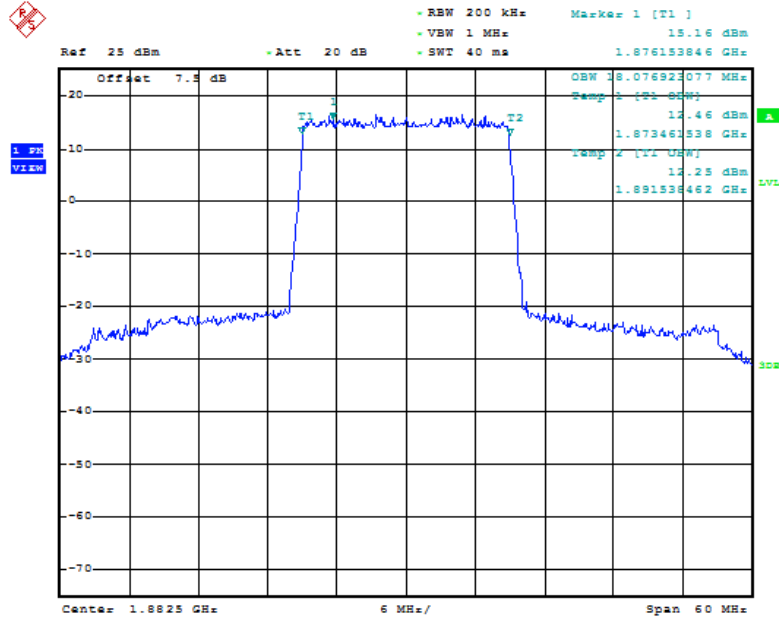


Date: 30. JAN. 2019 12:36:43

Fig.42 LTE band 25, 15MHz Bandwidth, 16QAM (99% BW)

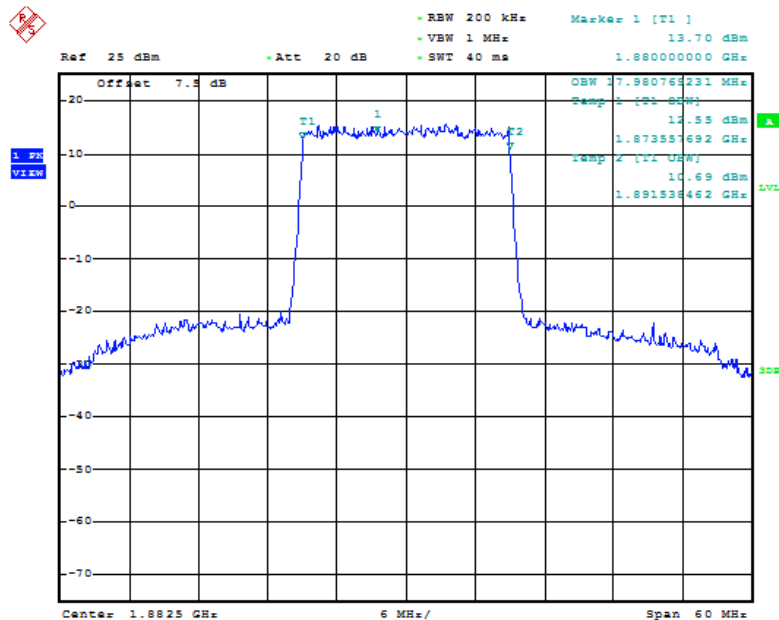
LTE band 25, 20MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|--------|
| | 1882.5 | QPSK |
| | 18.077 | 17.981 |



Date: 30. JAN. 2019 11:16:20

Fig.43 LTE band 25, 20MHz Bandwidth, QPSK (99% BW)

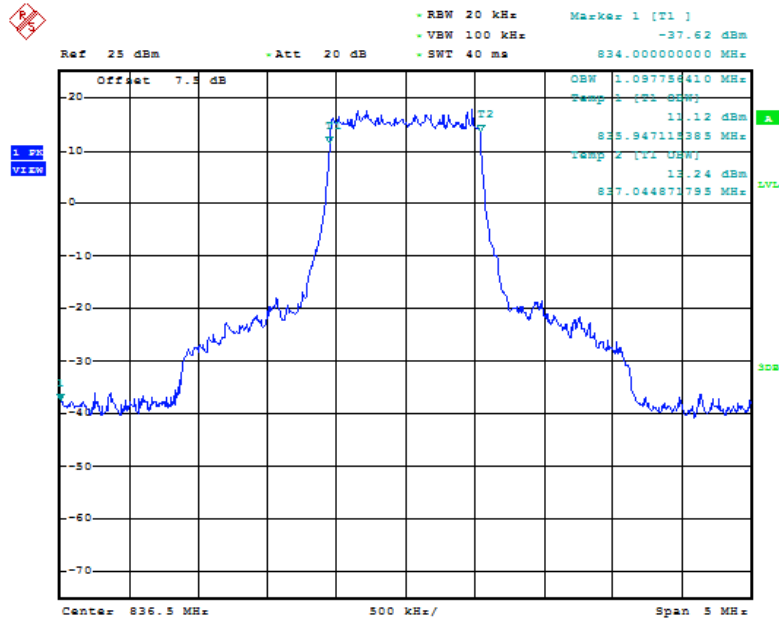


Date: 30. JAN. 2019 12:39:27

Fig.44 LTE band 25, 20MHz Bandwidth, 16QAM (99% BW)

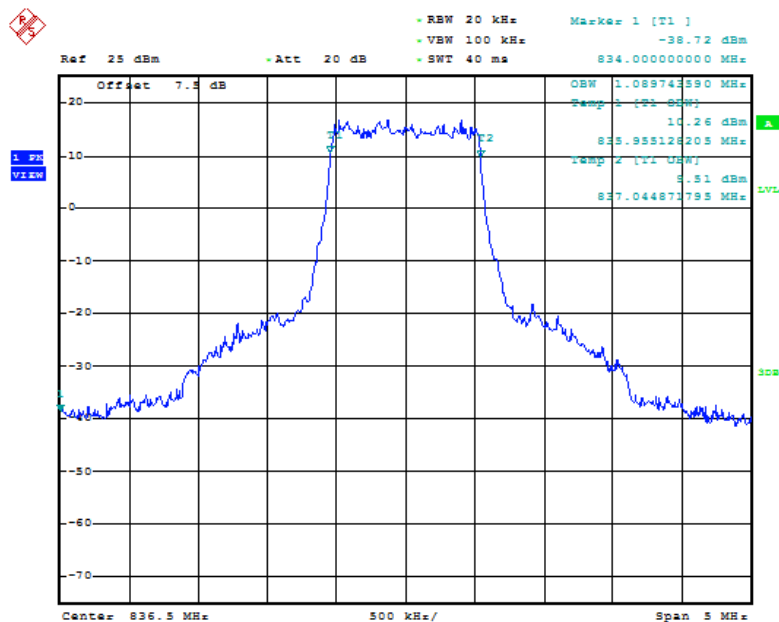
LTE band 26 (Part 22), 1.4MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|------|
| | 836.5 | QPSK |
| | 1.098 | 1.09 |



Date: 30. JAN. 2019 11:06:11

Fig.45 LTE band 26(Part22), 1.4MHz Bandwidth, QPSK (99% BW)

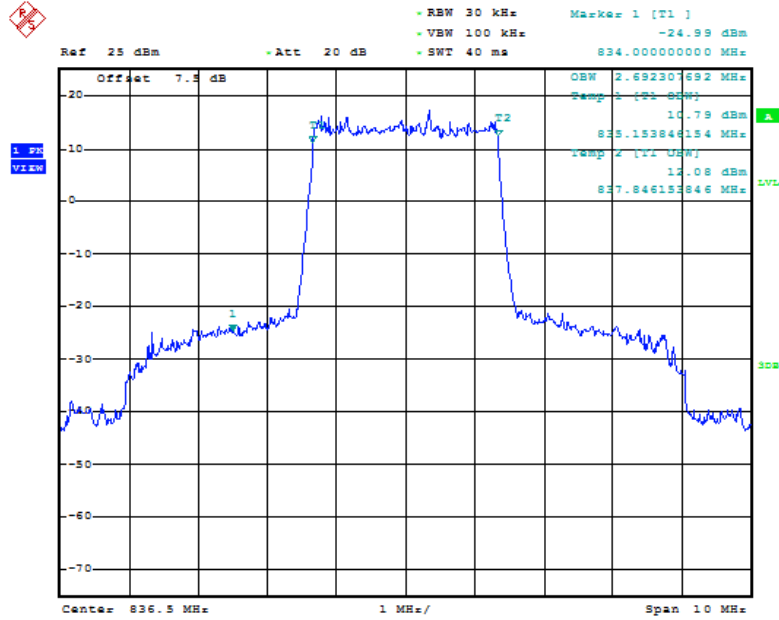


Date: 30. JAN. 2019 12:42:59

Fig.46 LTE band 26(Part22), 1.4MHz Bandwidth, 16QAM (99% BW)

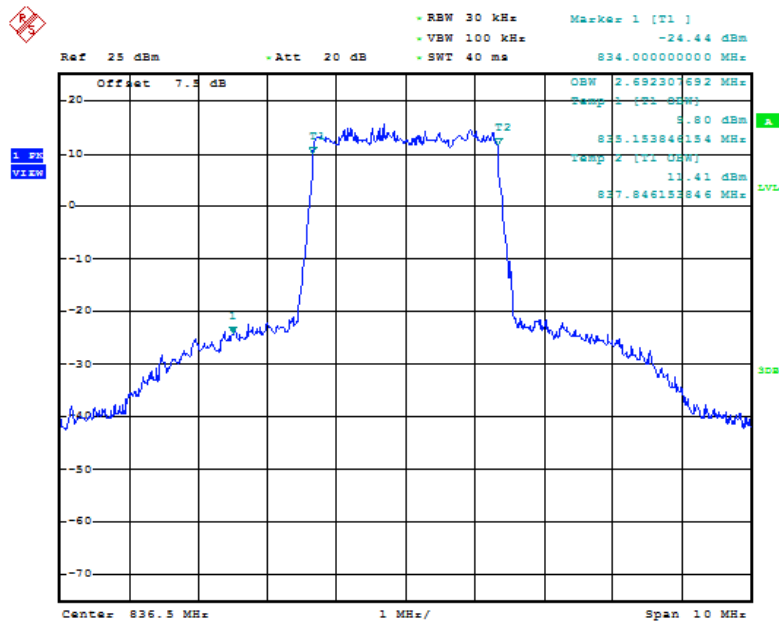
LTE band 26 (Part 22), 3MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 836.5 | QPSK |
| | 2.692 | 2.692 |



Date: 30. JAN. 2019 11:06:56

Fig.47 LTE band 26(Part22), 3MHz Bandwidth, QPSK (99% BW)

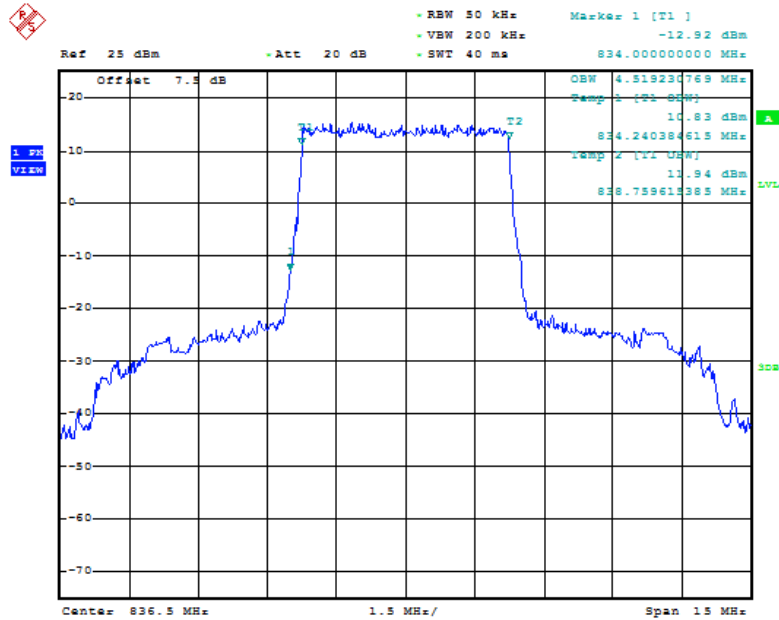


Date: 30. JAN. 2019 12:43:44

Fig.48 LTE band 26(Part22), 3MHz Bandwidth, 16QAM (99% BW)

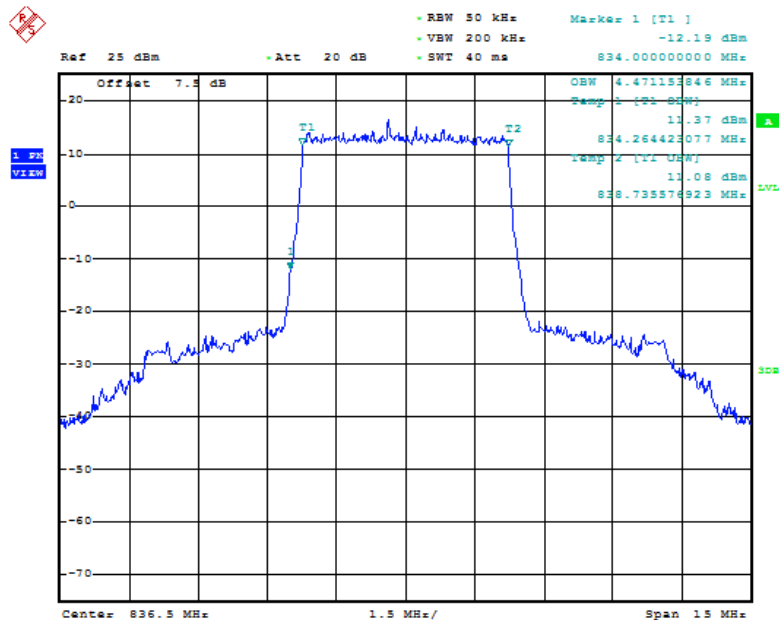
LTE band 26 (Part 22), 5MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 836.5 | QPSK |
| | 4.519 | 4.471 |



Date: 30. JAN. 2019 11:07:40

Fig.49 LTE band 26(Part22), 5MHz Bandwidth, QPSK (99% BW)

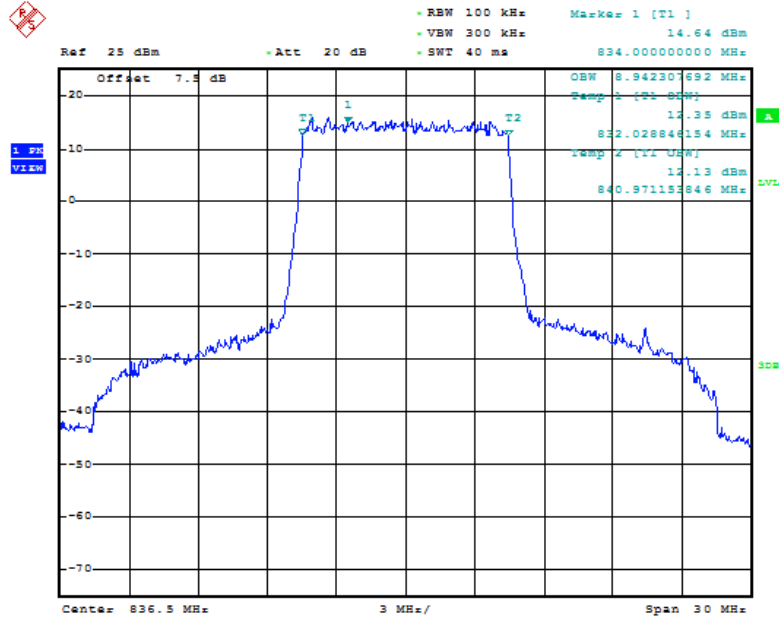


Date: 30. JAN. 2019 12:44:28

Fig.50 LTE band 26(Part22), 5MHz Bandwidth, 16QAM (99% BW)

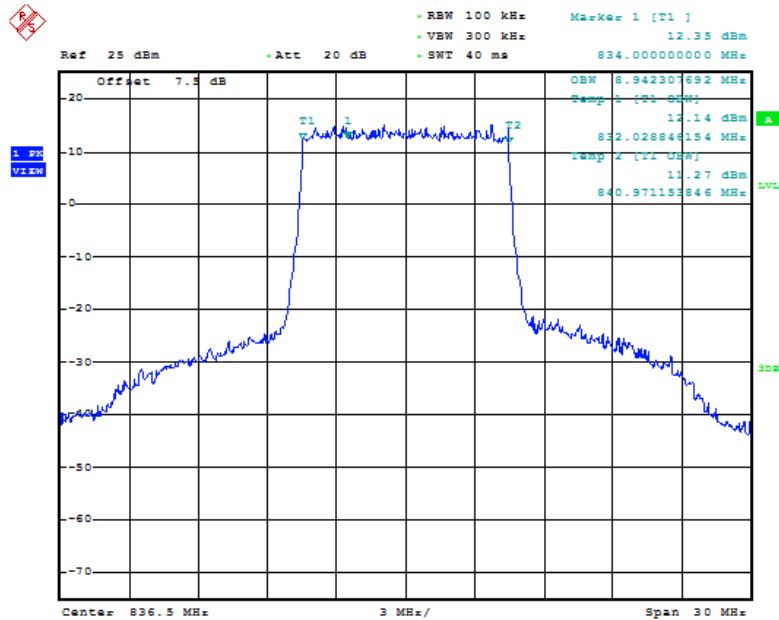
LTE band 26 (Part 22), 10MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 836.5 | QPSK |
| | 8.942 | 8.942 |



Date: 30. JAN. 2019 11:08:24

Fig.51 LTE band 26(Part22), 10MHz Bandwidth, QPSK (99% BW)

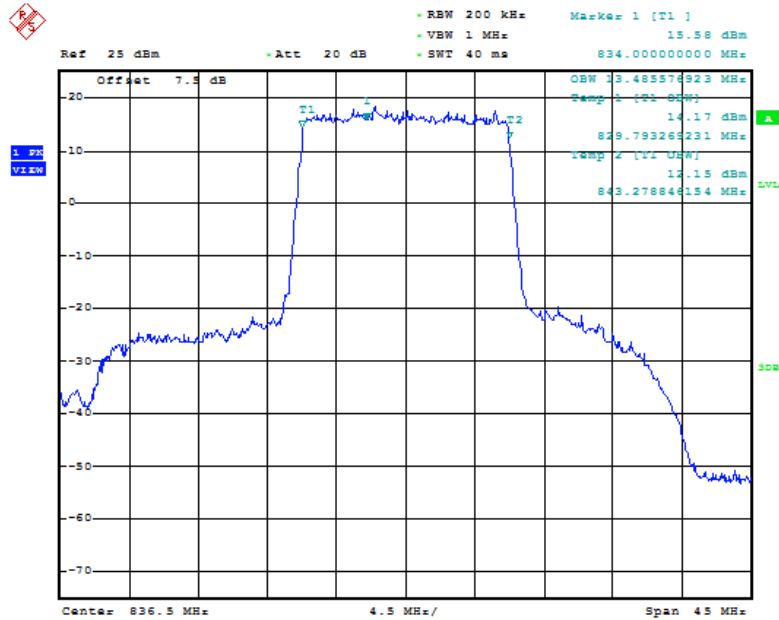


Date: 30. JAN. 2019 12:45:13

Fig.52 LTE band 26(Part22), 10MHz Bandwidth, 16QAM (99% BW)

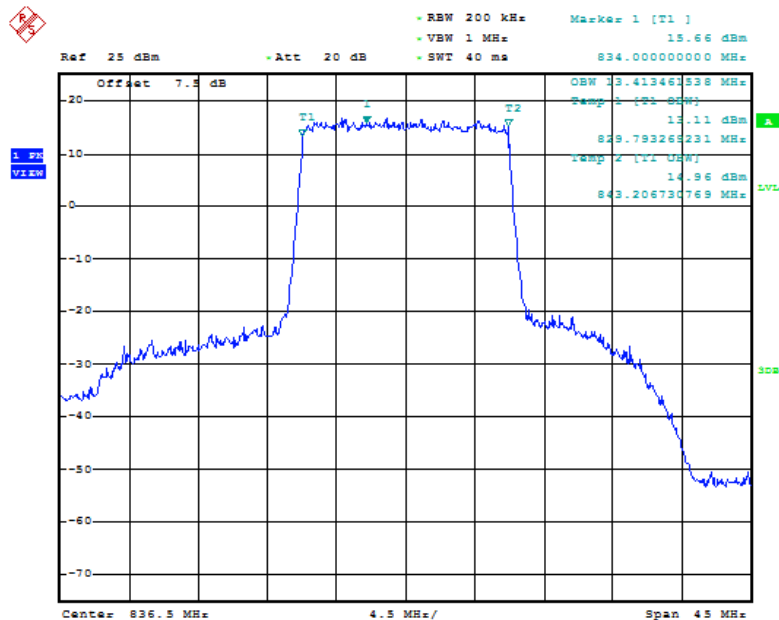
LTE band 26 (Part 22), 15MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|--------|
| | 836.5 | QPSK |
| | 13.486 | 13.413 |



Date: 30. JAN. 2019 11:09:09

Fig.53 LTE band 26(Part22), 15MHz Bandwidth, QPSK (99% BW)

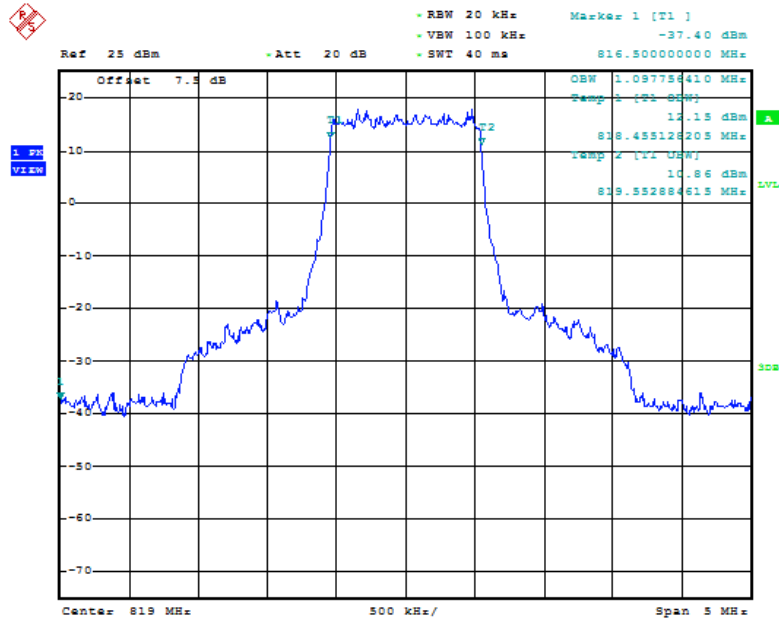


Date: 30. JAN. 2019 12:45:58

Fig.54 LTE band 26(Part22), 15MHz Bandwidth, 16QAM (99% BW)

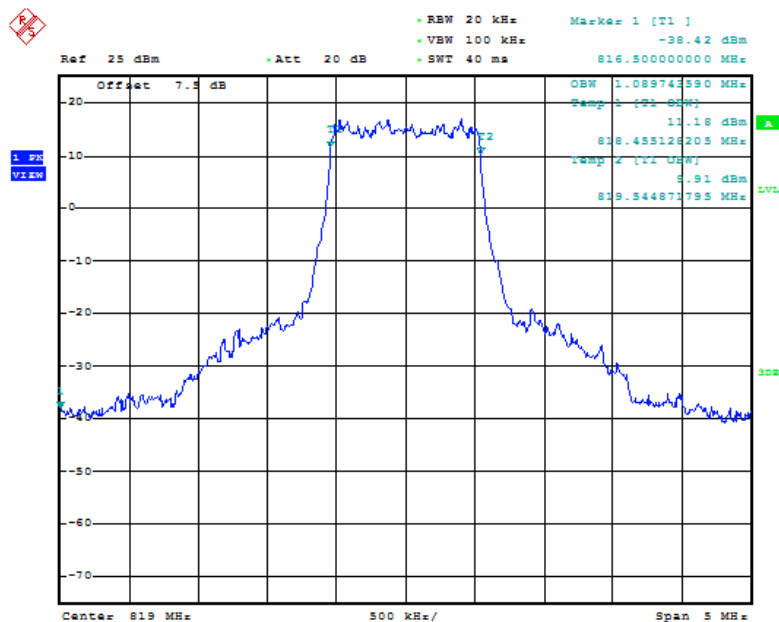
LTE band 26 (Part 90), 1.4MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|------|
| | 819 | QPSK |
| | 1.098 | 1.09 |



Date: 31. JAN. 2019 10:47:59

Fig.55 LTE band 26(Part90), 1.4MHz Bandwidth, QPSK (99% BW)

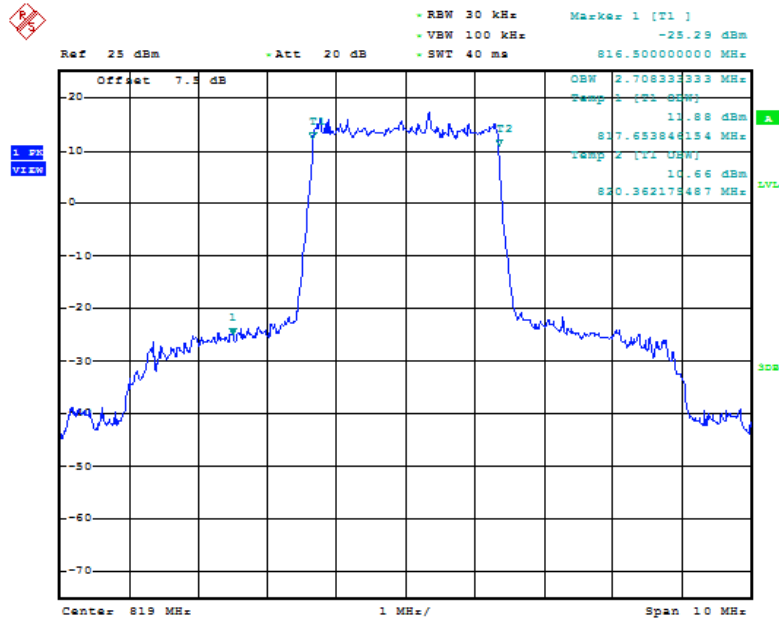


Date: 31. JAN. 2019 10:48:38

Fig.56 LTE band 26(Part90), 1.4MHz Bandwidth, 16QAM (99% BW)

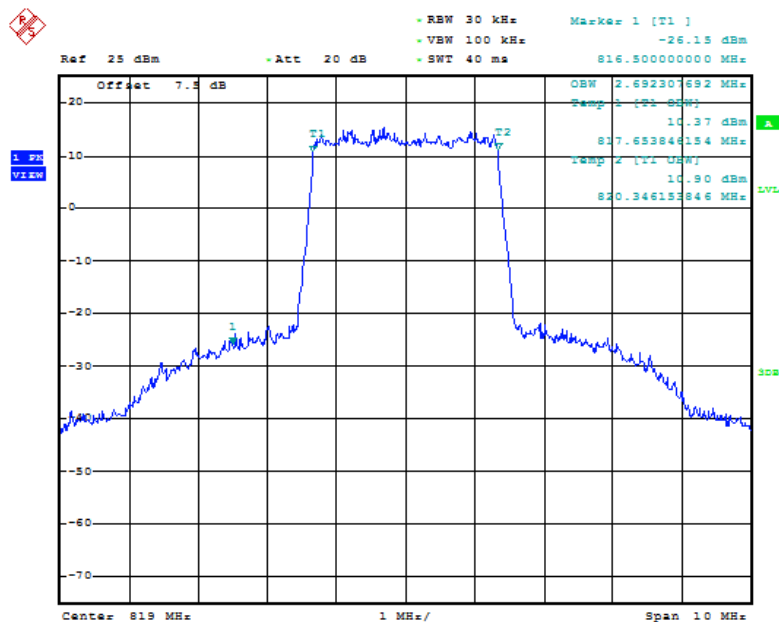
LTE band 26 (Part 90), 3MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 819 | QPSK |
| | 2.708 | 2.692 |



Date: 31. JAN. 2019 10:49:24

Fig.57 LTE band 26(Part90), 3MHz Bandwidth, QPSK (99% BW)

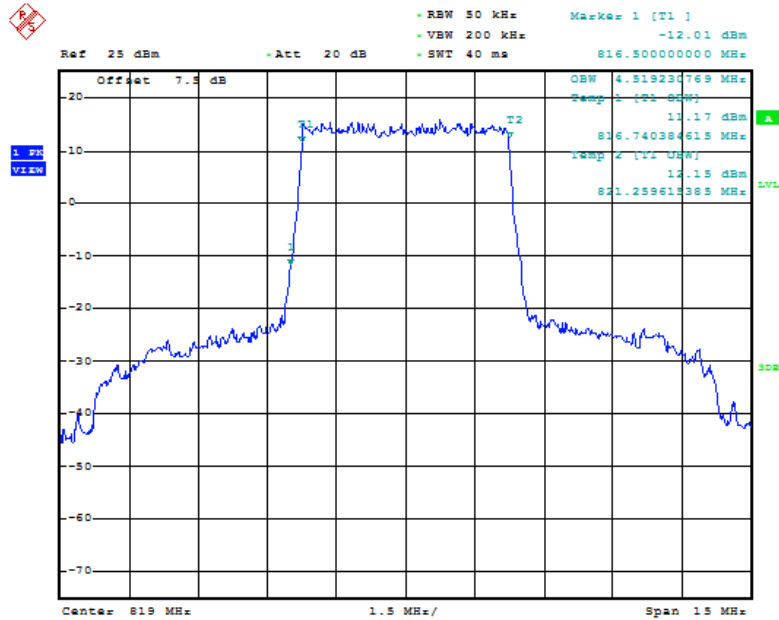


Date: 31. JAN. 2019 10:50:02

Fig.58 LTE band 26(Part90), 3MHz Bandwidth, 16QAM (99% BW)

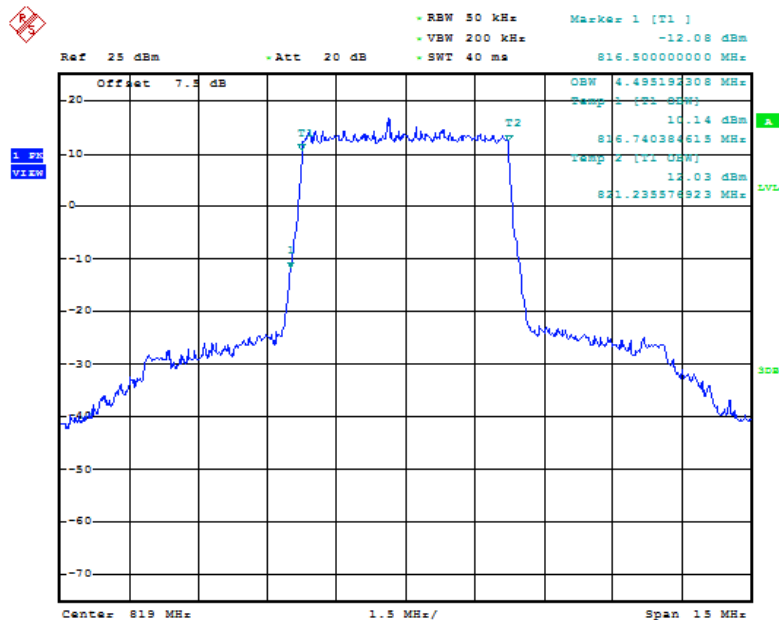
LTE band 26 (Part 90), 5MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 819 | QPSK |
| | 4.519 | 4.495 |



Date: 31. JAN. 2019 10:50:48

Fig.59 LTE band 26(Part90), 5MHz Bandwidth, QPSK (99% BW)

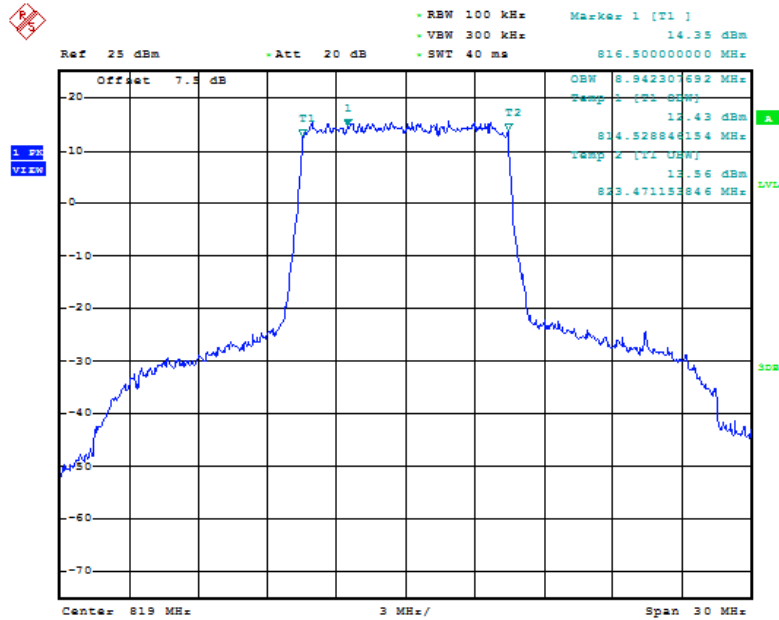


Date: 31. JAN. 2019 10:51:27

Fig.60 LTE band 26(Part90), 5MHz Bandwidth, 16QAM (99% BW)

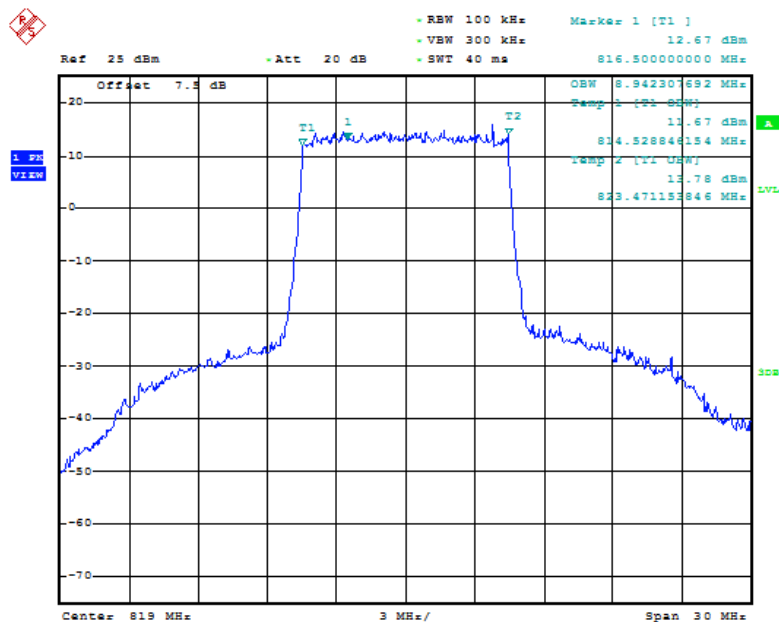
LTE band 26 (Part 90), 10MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|-------|
| | 819 | QPSK |
| | 8.942 | 8.942 |



Date: 31. JAN. 2019 10:52:13

Fig.61 LTE band 26(Part90), 10MHz Bandwidth, QPSK (99% BW)

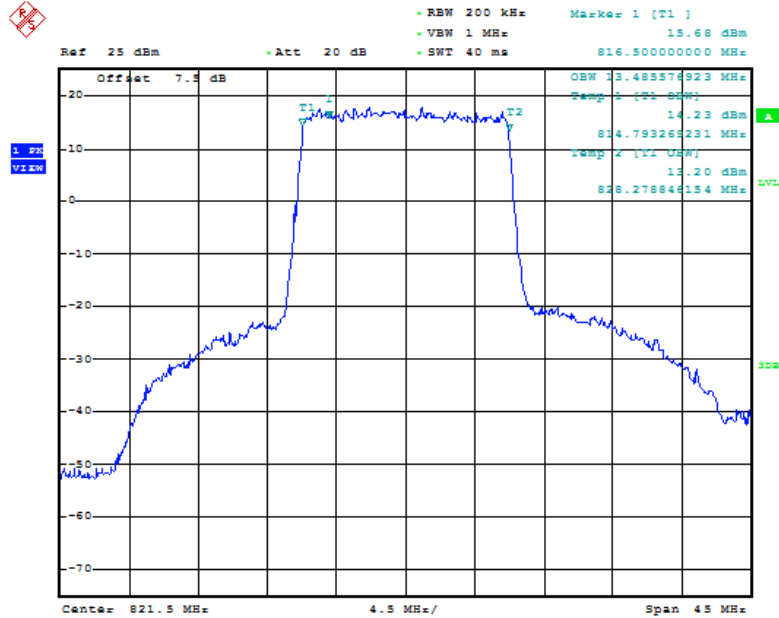


Date: 31. JAN. 2019 10:52:52

Fig.62 LTE band 26(Part90), 10MHz Bandwidth, 16QAM (99% BW)

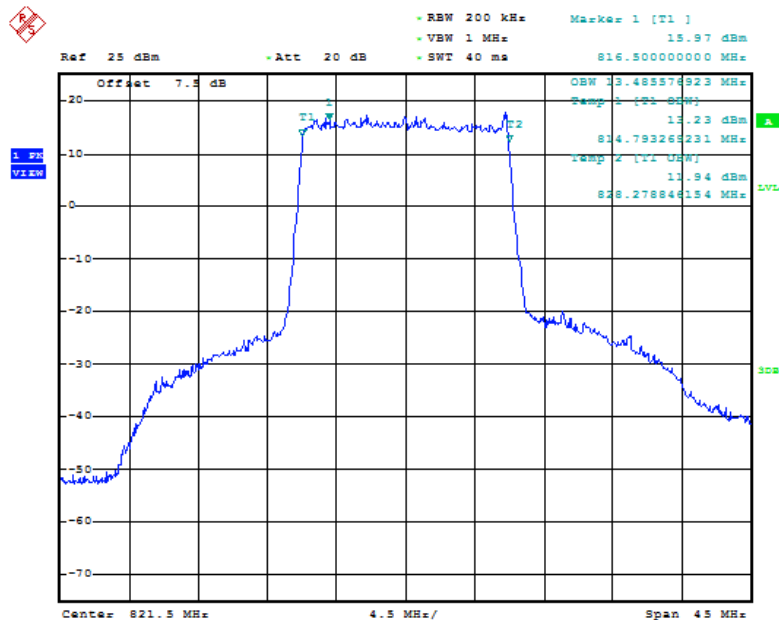
LTE band 26 (Part 90), 15MHz (99%)

| Frequency(MHz) | Occupied Bandwidth (99%)(MHz) | |
|----------------|--------------------------------|--------|
| | 821.5 | QPSK |
| | 13.486 | 13.486 |



Date: 31. JAN. 2019 10:54:52

Fig.63 LTE band 26(Part90), 1.4MHz Bandwidth, QPSK (99% BW)



Date: 31. JAN. 2019 10:55:30

Fig.64 LTE band 26(Part90), 1.4MHz Bandwidth, 16QAM (99% BW)

ANNEX A.5. EMISSION BANDWIDTH

Reference

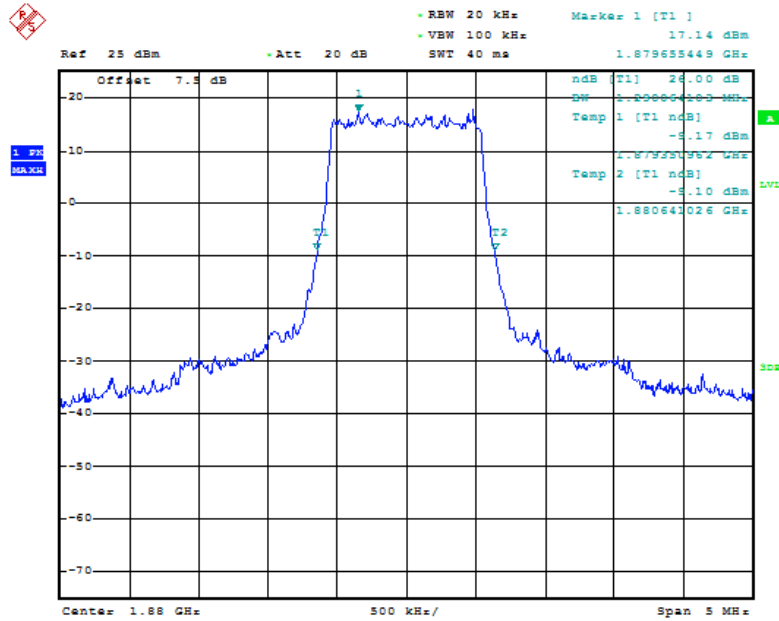
FCC: CFR Part 22.917(b),24.238(a), 27.53(g),27.53(h), 27.53(m), 90.1215.

A.5.1 Emission Bandwidth Results

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

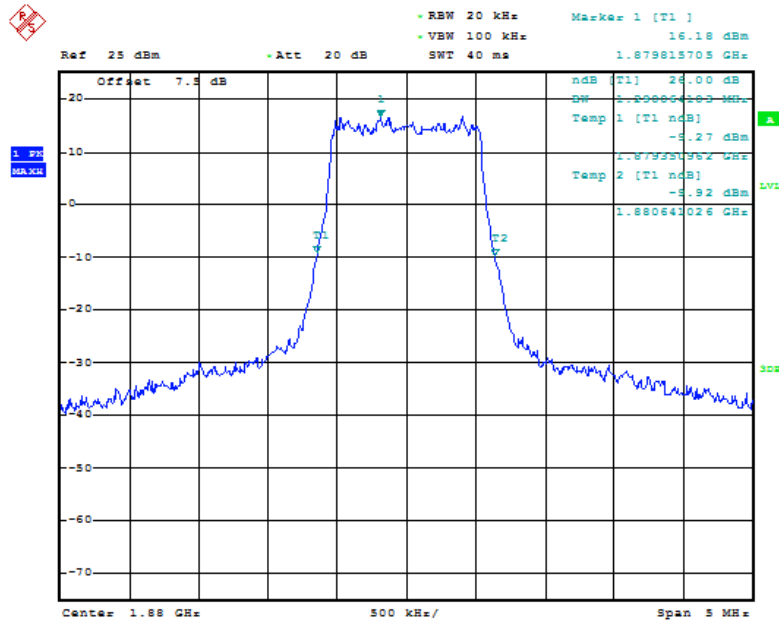
LTE band 2, 1.4MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|----------|
| | 1880.0 | QPSK |
| 1.290064 | | 1.290064 |



Date: 30.JAN.2019 09:49:16

Fig.65 LTE band 2, 1.4MHz Bandwidth, QPSK (-26dBc BW)

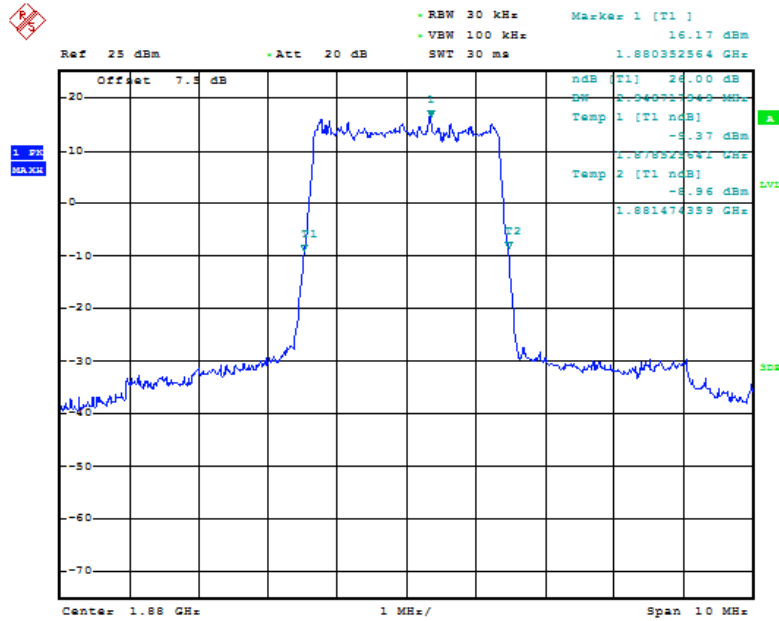


Date: 30.JAN.2019 09:50:20

Fig.66 LTE band 2, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

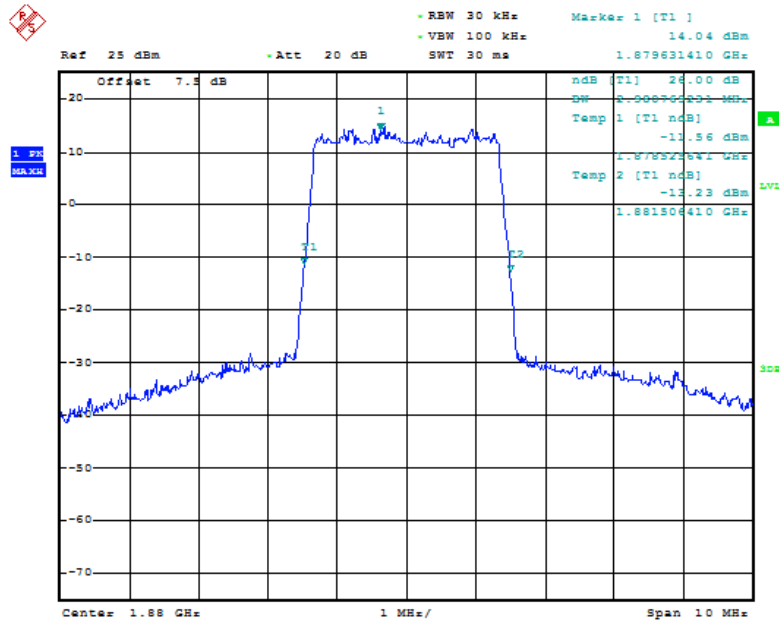
LTE band 2, 3MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|----------|
| | 1880.0 | QPSK |
| 2.948717949 | | 2.980769 |



Date: 30.JAN.2019 09:51:32

Fig.67 LTE band 2, 3MHz Bandwidth, QPSK (-26dBc BW)

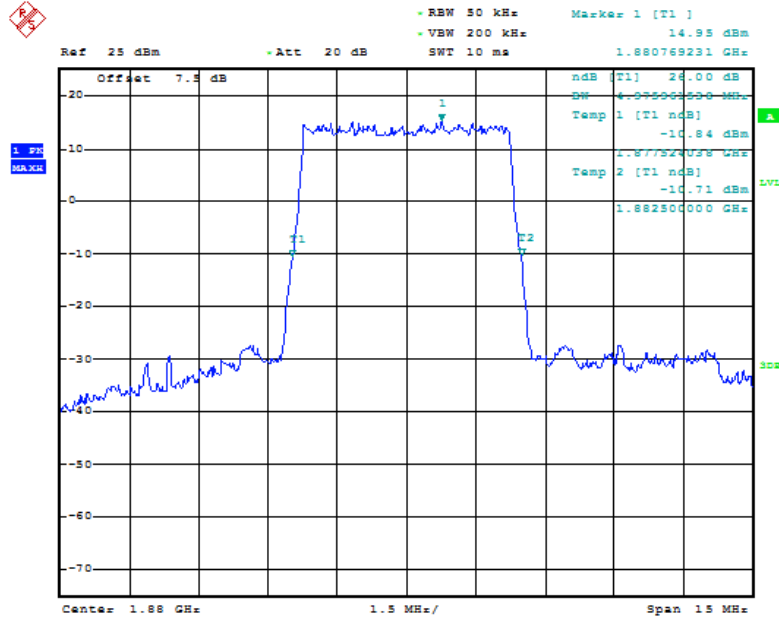


Date: 30.JAN.2019 09:52:36

Fig.68 LTE band 2, 3MHz Bandwidth, 16QAM (-26dBc BW)

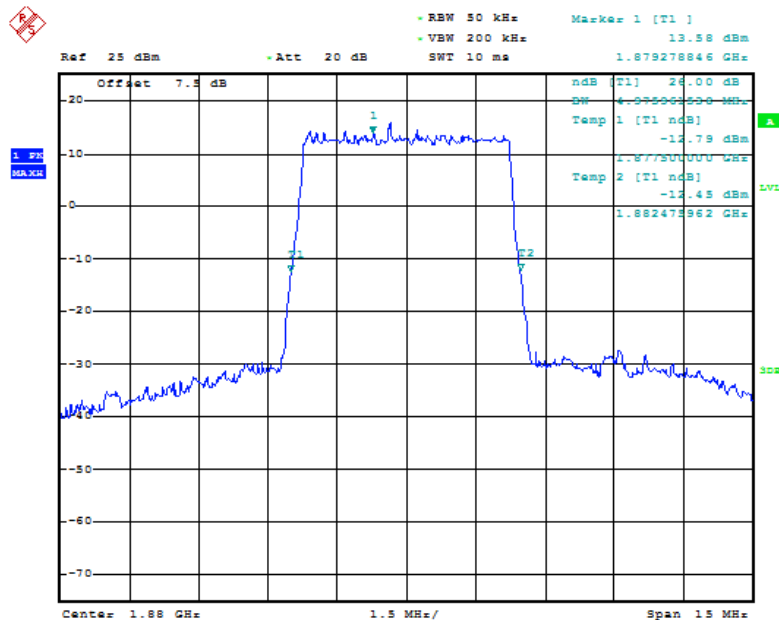
LTE band 2, 5MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|----------|
| | 1880.0 | QPSK |
| 4.975961538 | | 4.975962 |



Date: 30. JAN. 2019 09:53:48

Fig.69 LTE band 2, 5MHz Bandwidth, QPSK (-26dBc BW)

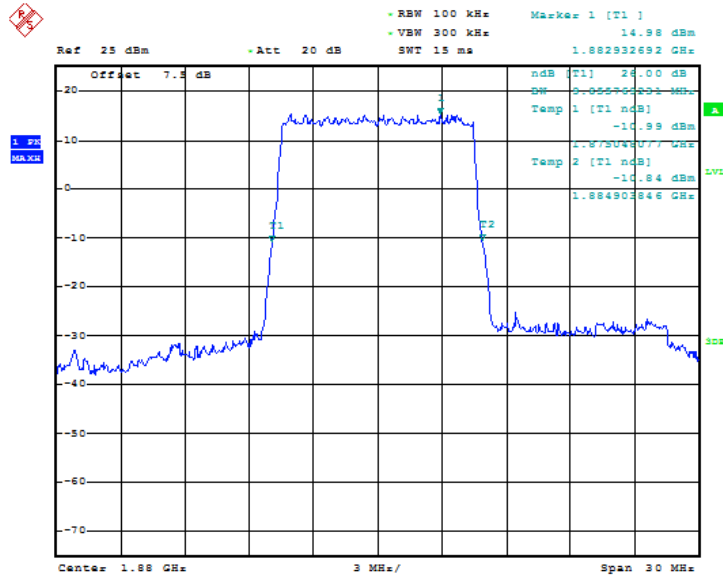


Date: 30. JAN. 2019 09:54:52

Fig.70 LTE band 2, 5MHz Bandwidth, 16QAM (-26dBc BW)

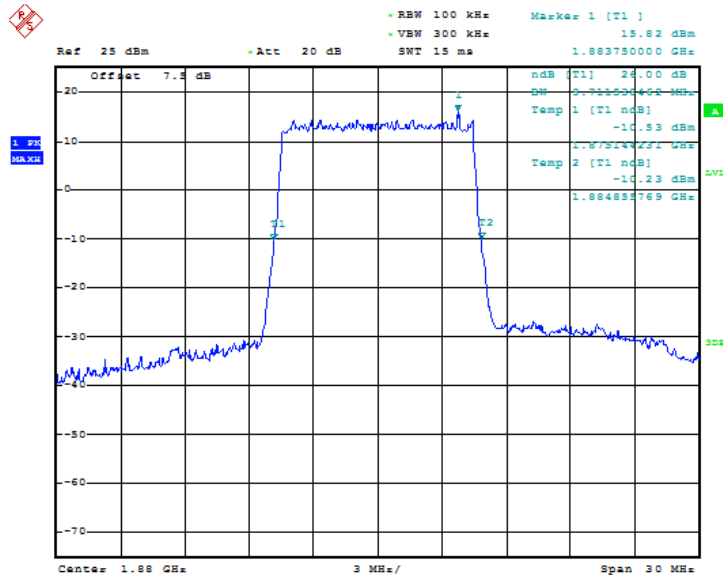
LTE band 2, 10MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 1880.0 | QPSK |
| | 9.855769231 | 9.711538462 |



Date: 30.JAN.2019 09:56:04

Fig.71 LTE band 2, 10MHz Bandwidth, QPSK (-26dBc BW)

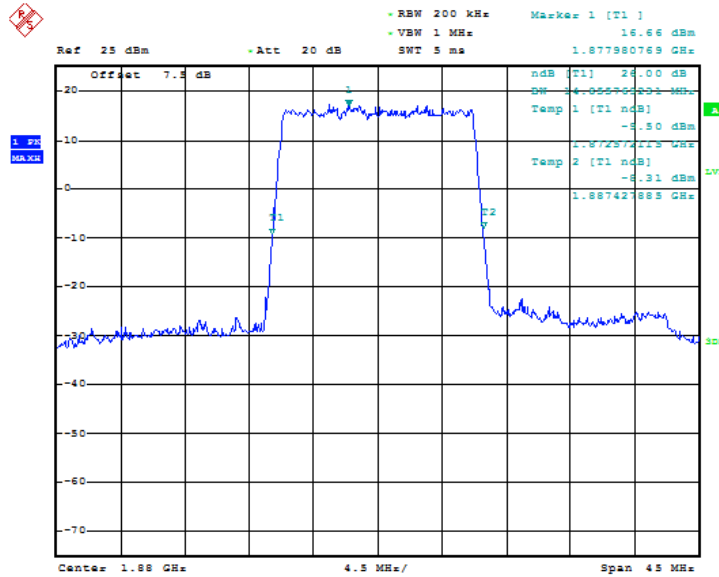


Date: 30.JAN.2019 09:57:08

Fig.72 LTE band 2, 10MHz Bandwidth, 16QAM (-26dBc BW)

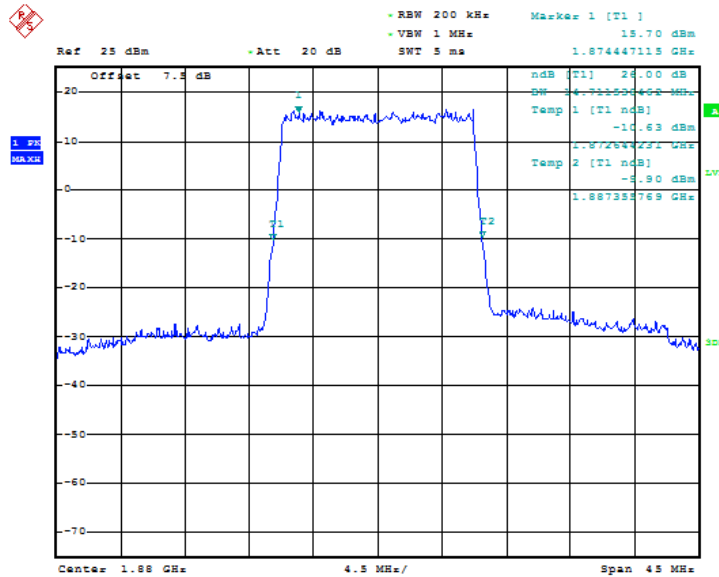
LTE band 2, 15MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 1880.0 | QPSK |
| | 14.85576923 | 14.71153846 |



Date: 30.JAN.2019 09:58:20

Fig.73 LTE band 2, 15MHz Bandwidth, QPSK (-26dBc BW)

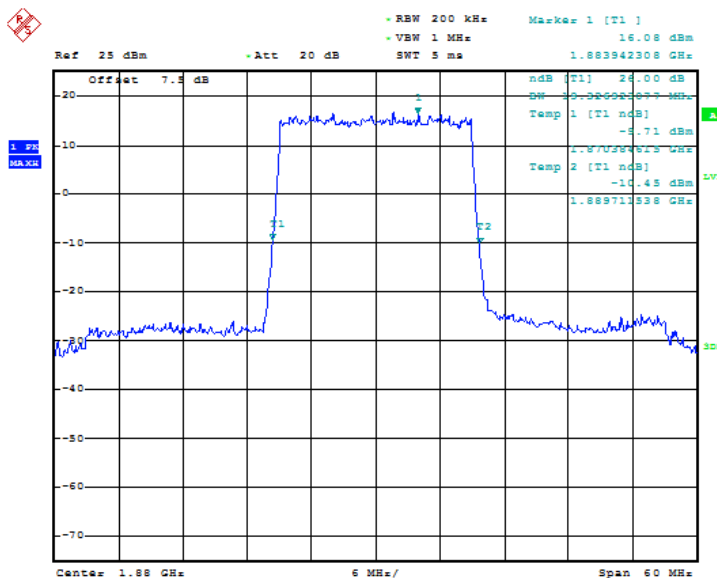


Date: 30.JAN.2019 09:59:24

Fig.74 LTE band 2, 15MHz Bandwidth, 16QAM (-26dBc BW)

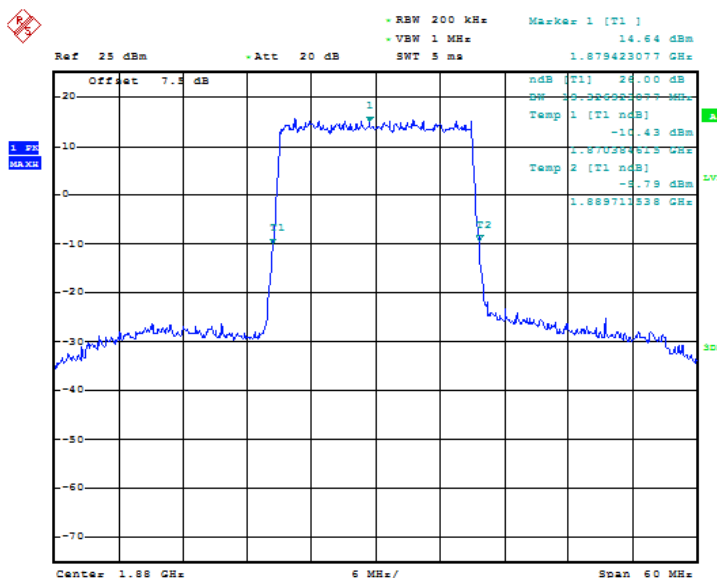
LTE band 2, 20MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 1880.0 | QPSK |
| 19.32692308 | | 19.32692308 |



Date: 30.JAN.2019 10:00:36

Fig.75 LTE band 2, 20MHz Bandwidth, QPSK (-26dBc BW)

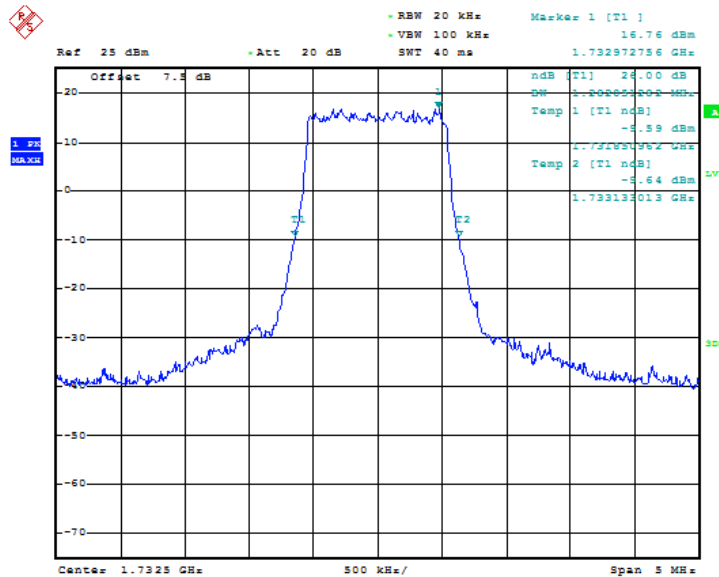


Date: 30.JAN.2019 10:01:41

Fig.76 LTE band 2, 20MHz Bandwidth, 16QAM (-26dBc BW)

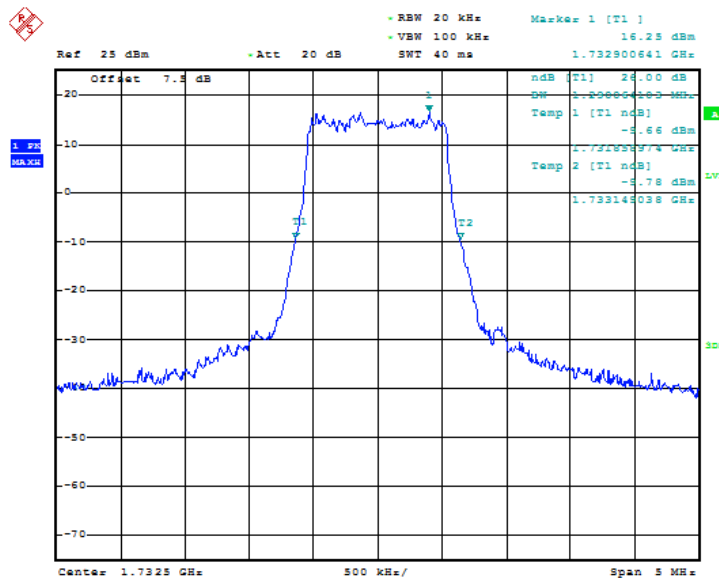
LTE band 4, 1.4MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 1732.5 | QPSK |
| 1.282051282 | | 1.282051282 |



Date: 30.JAN.2019 10:04:27

Fig.77 LTE band 4, 1.4MHz Bandwidth, QPSK (-26dBc BW)

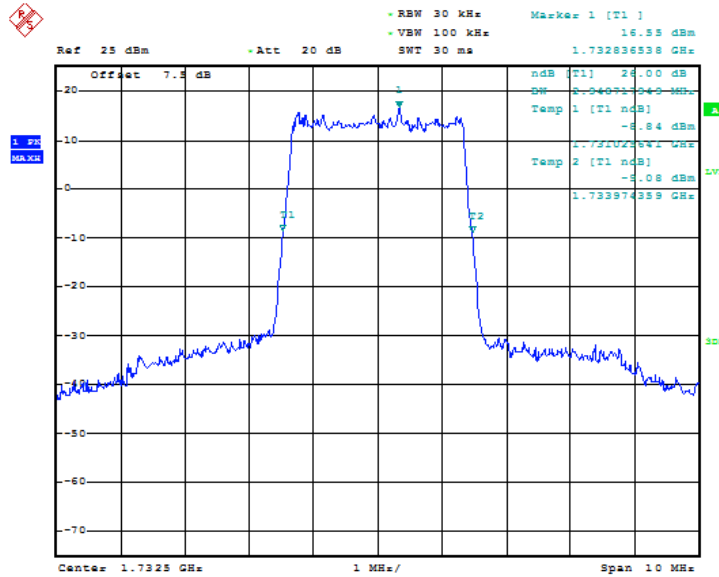


Date: 30.JAN.2019 10:05:31

Fig.78 LTE band 4, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

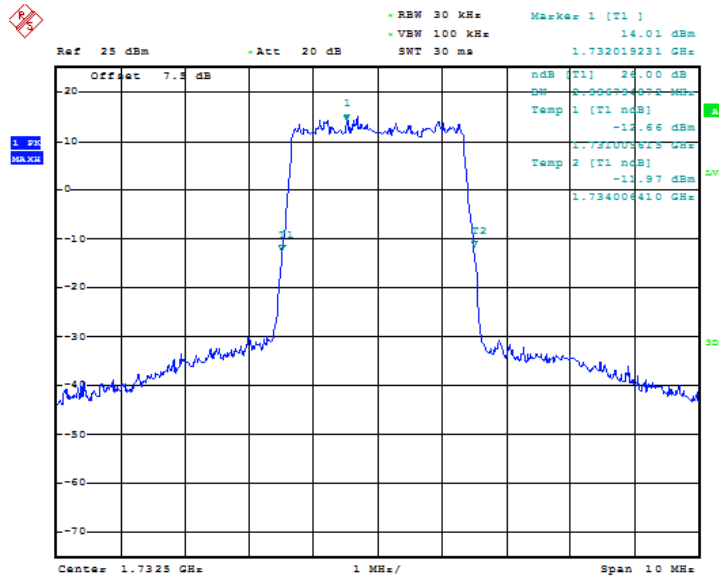
LTE band 4, 3MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 1732.5 | QPSK |
| 2.948717949 | | 2.996794872 |



Date: 30.JAN.2019 10:06:41

Fig.79 LTE band 4, 3MHz Bandwidth, QPSK (-26dBc BW)

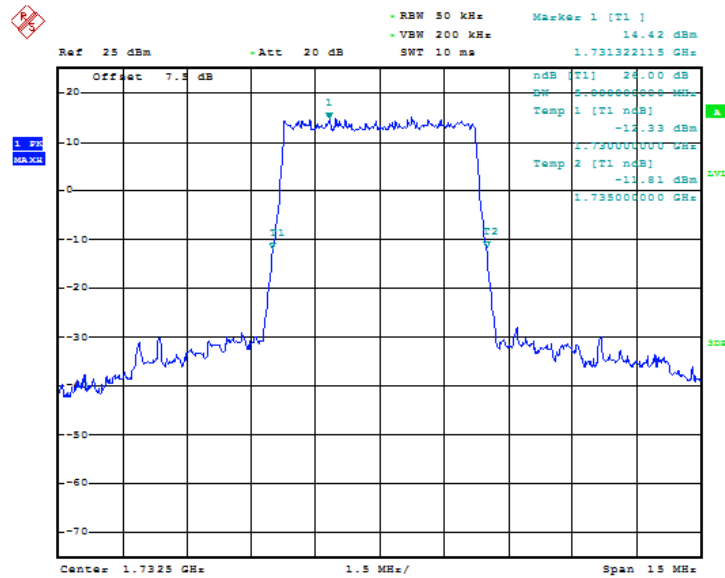


Date: 30.JAN.2019 10:07:45

Fig.80 LTE band 4, 3MHz Bandwidth, 16QAM (-26dBc BW)

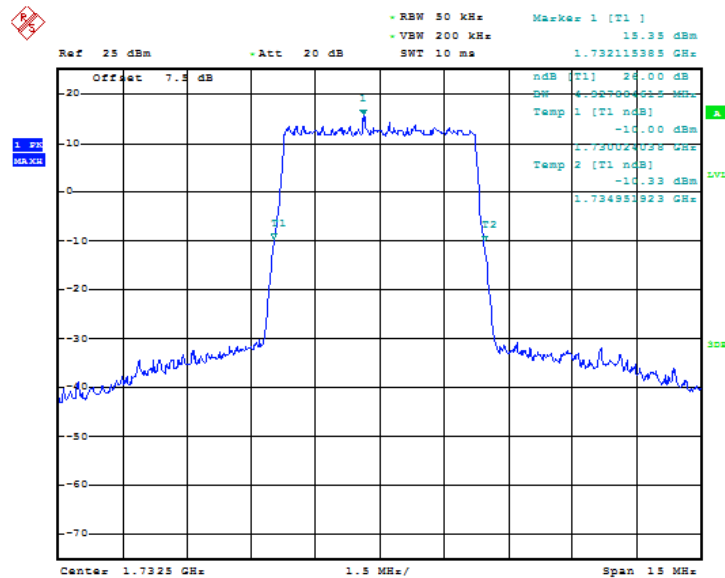
LTE band 4, 5MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| 1732.5 | QPSK | 16QAM |
| | 5 | 4.927884615 |



Date: 30.JAN.2019 10:08:55

Fig.81 LTE band 4, 5MHz Bandwidth, QPSK (-26dBc BW)

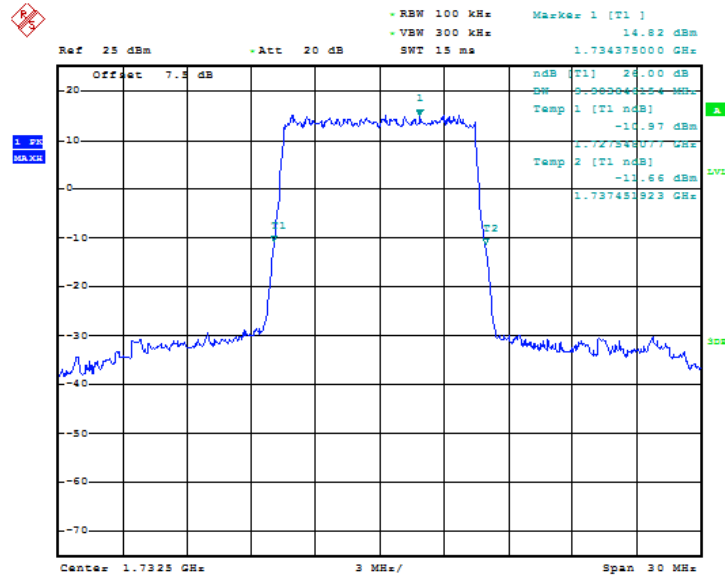


Date: 30.JAN.2019 10:09:59

Fig.82 LTE band 4, 5MHz Bandwidth, 16QAM (-26dBc BW)

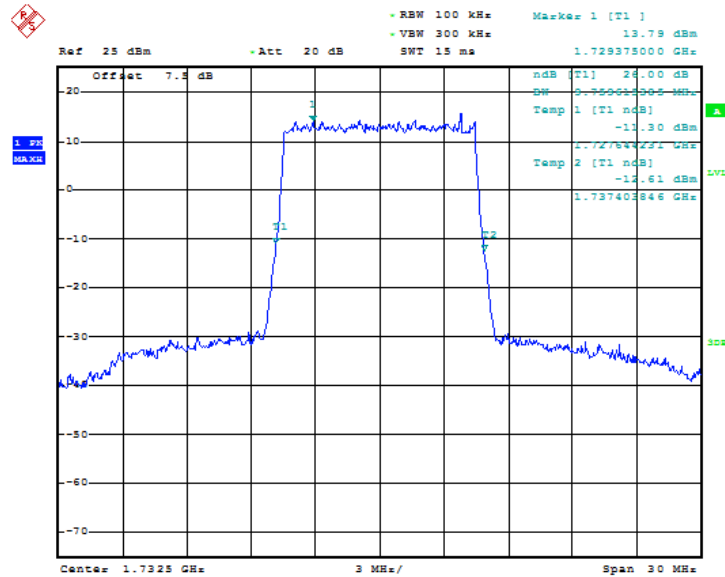
LTE band 4, 10MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 1732.5 | QPSK |
| 9.903846154 | | 9.759615385 |



Date: 30.JAN.2019 10:11:09

Fig.83 LTE band 4, 10MHz Bandwidth, QPSK (-26dBc BW)

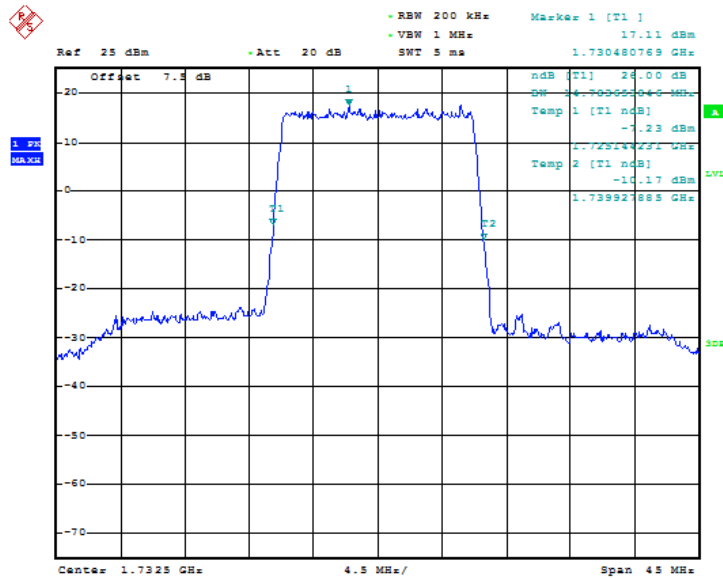


Date: 30.JAN.2019 10:12:13

Fig.84 LTE band 4, 10MHz Bandwidth, 16QAM (-26dBc BW)

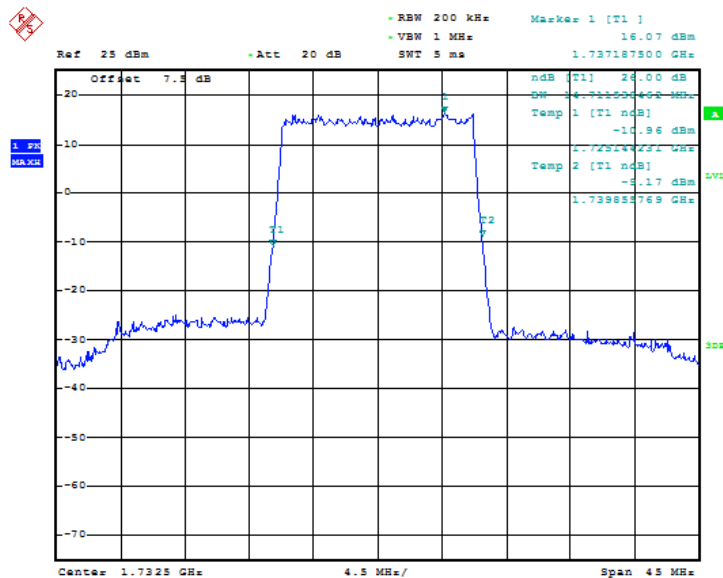
LTE band 4, 15MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 1732.5 | QPSK |
| | 14.78365385 | 14.71153846 |



Date: 30.JAN.2019 10:13:24

Fig.85 LTE band 4, 15MHz Bandwidth, QPSK (-26dBc BW)

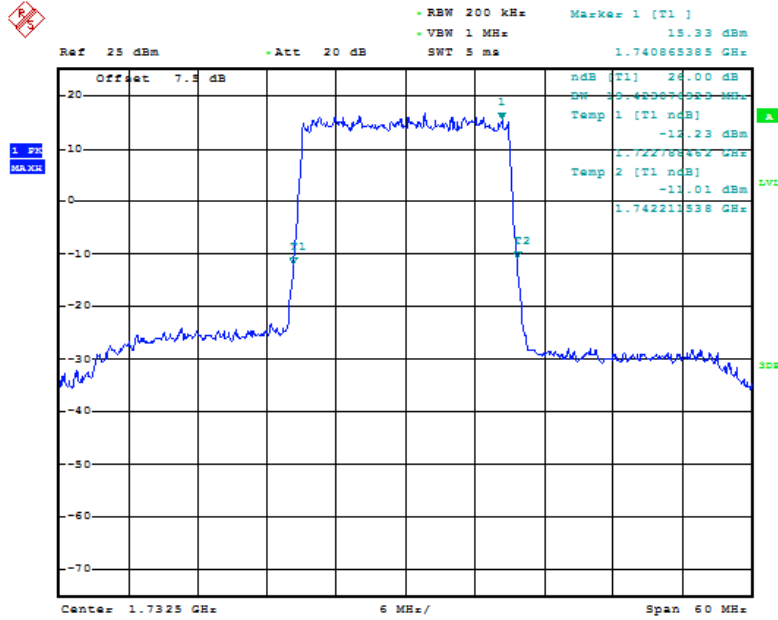


Date: 30.JAN.2019 10:14:27

Fig.86 LTE band 4, 15MHz Bandwidth, 16QAM (-26dBc BW)

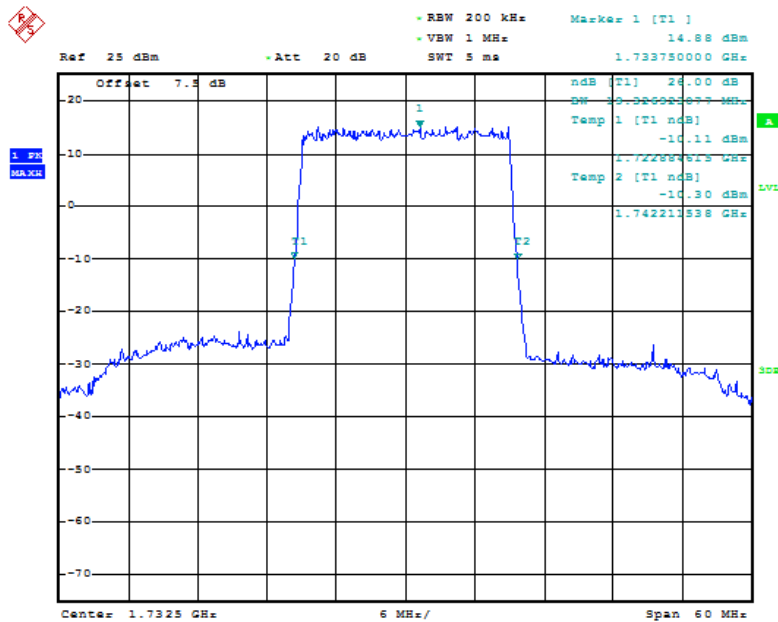
LTE band 4, 20MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | QPSK | 16QAM |
| 1732.5 | 19.42307692 | 19.32692308 |



Date: 30. JAN. 2019 10:15:38

Fig.87 LTE band 4, 20MHz Bandwidth, QPSK (-26dBc BW)

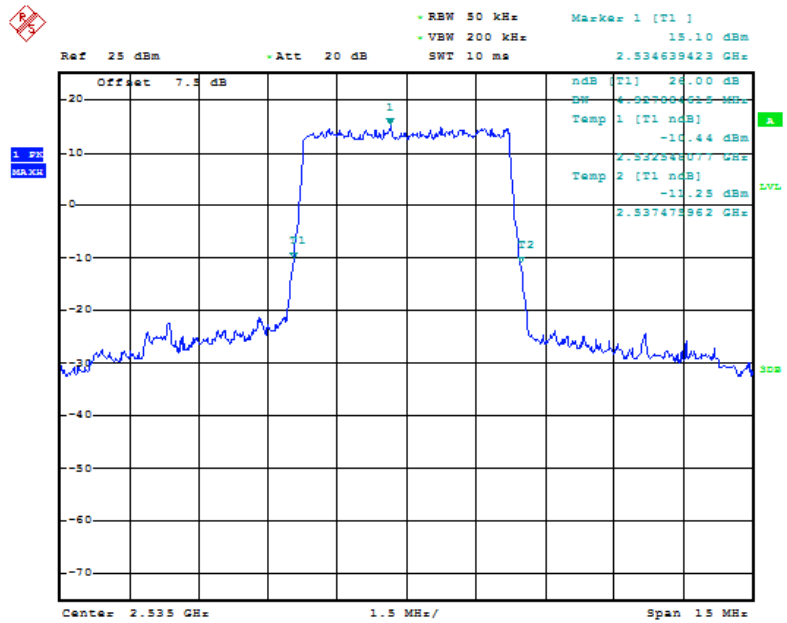


Date: 30. JAN. 2019 10:16:42

Fig.88 LTE band 4, 20MHz Bandwidth, 16QAM (-26dBc BW)

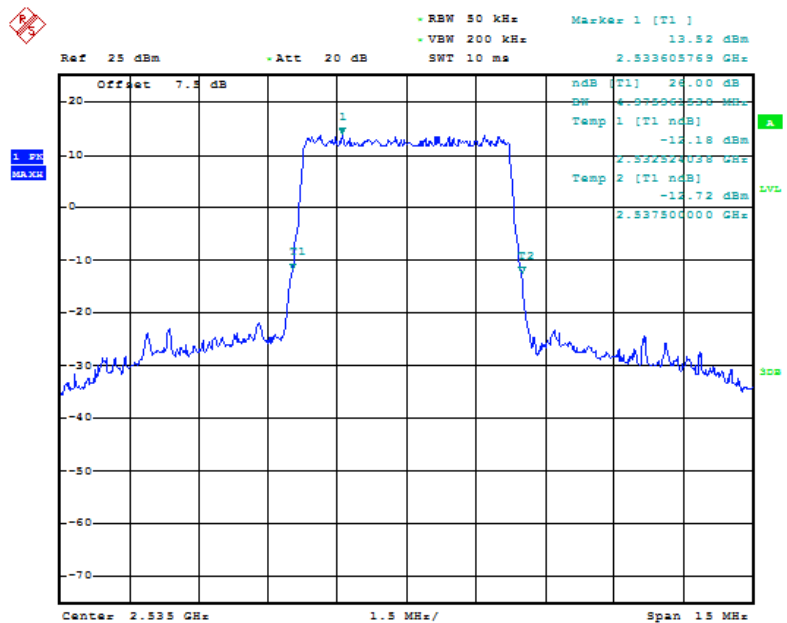
LTE band 7, 5MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | QPSK | 16QAM |
| 2535.0 | 4.927884615 | 4.975961538 |



Date: 30. JAN. 2019 10:27:55

Fig.89 LTE band 7, 5MHz Bandwidth, QPSK (-26dBc BW)

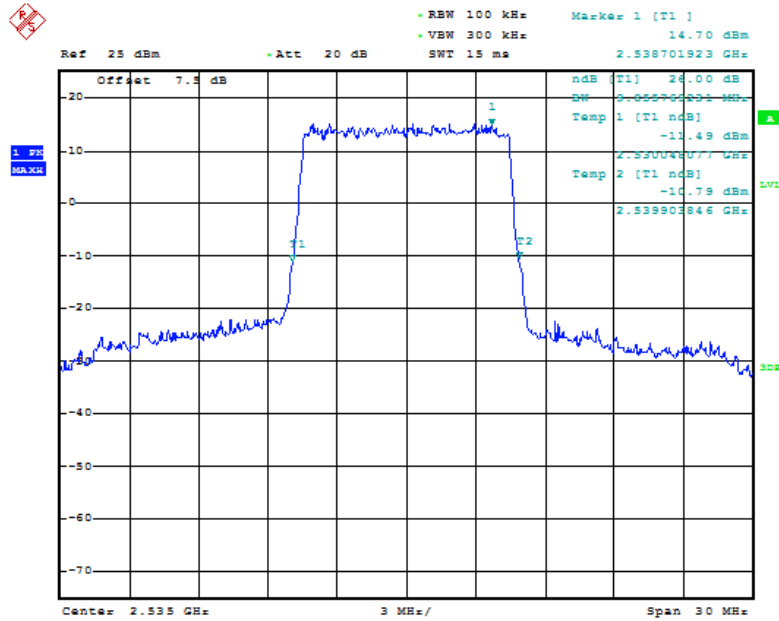


Date: 30. JAN. 2019 10:28:59

Fig.90 LTE band 7, 5MHz Bandwidth, 16QAM (-26dBc BW)

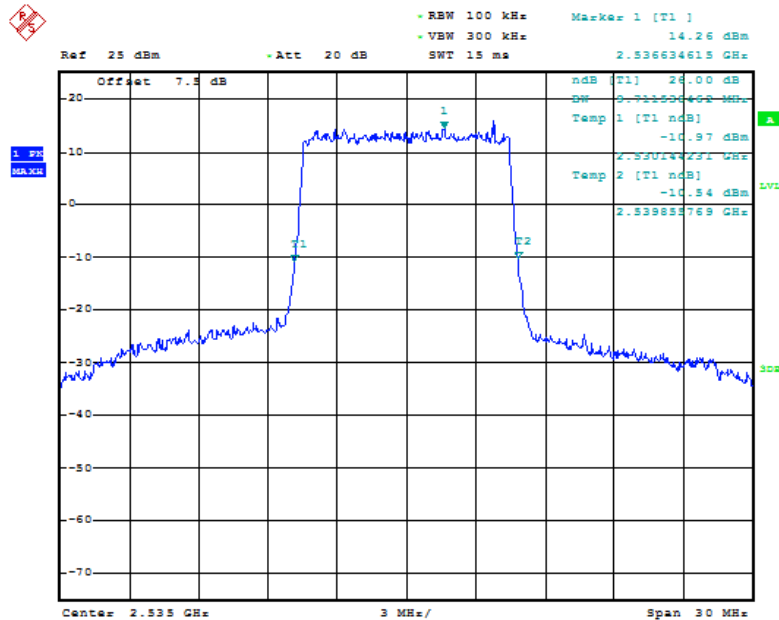
LTE band 7, 10MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(kHz) | |
|----------------|-----------------------------------|-------------|
| | QPSK | 16QAM |
| 2535.0 | 9.855769231 | 9.711538462 |



Date: 30.JAN.2019 10:30:10

Fig.91 LTE band 7, 10MHz Bandwidth, QPSK (-26dBc BW)

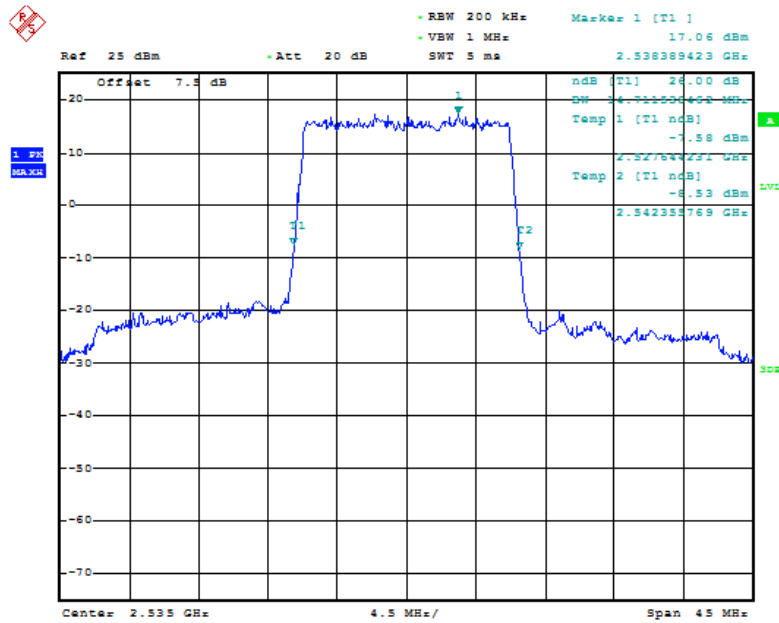


Date: 30.JAN.2019 10:31:13

Fig.92 LTE band 7, 10MHz Bandwidth, 16QAM (-26dBc BW)

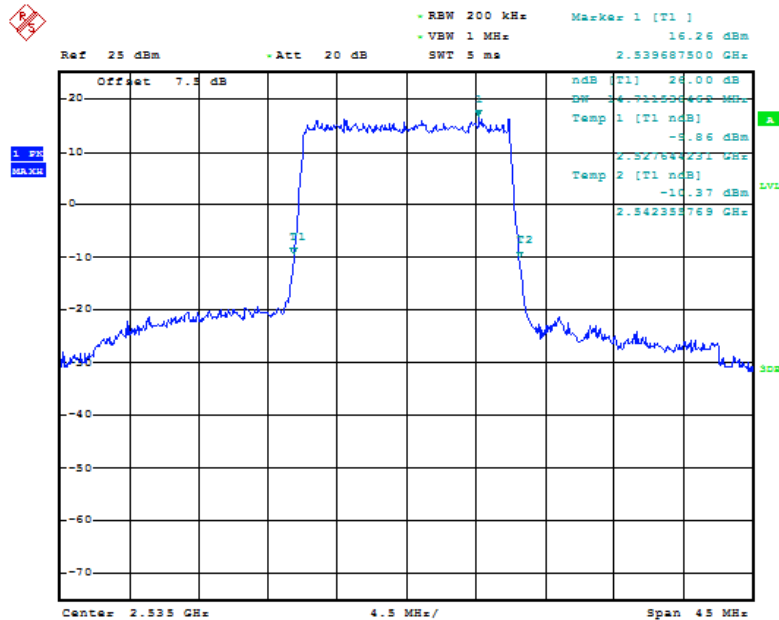
LTE band 7, 15MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 2535.0 | QPSK |
| | 14.71153846 | 14.71153846 |



Date: 30.JAN.2019 10:32:24

Fig.93 LTE band 7, 15MHz Bandwidth, QPSK (-26dBc BW)

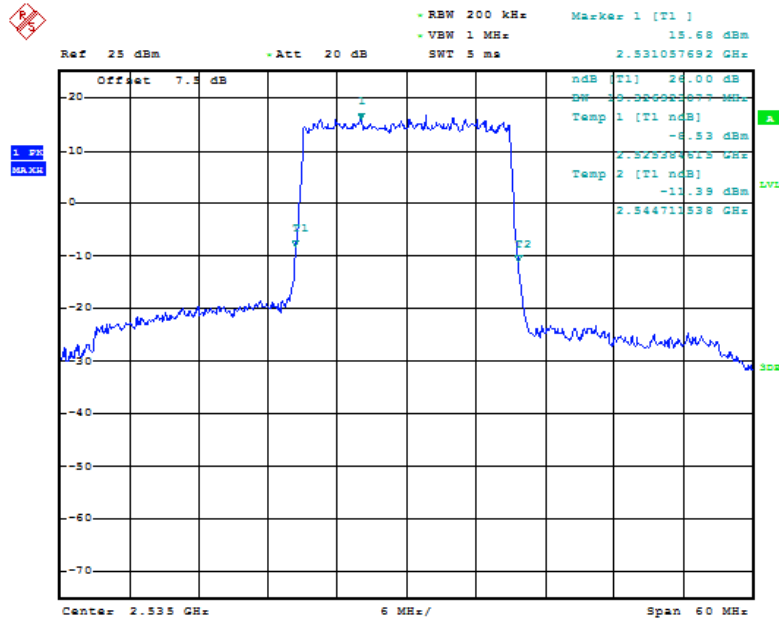


Date: 30.JAN.2019 10:33:28

Fig.94 LTE band 7, 15MHz Bandwidth, 16QAM (-26dBc BW)

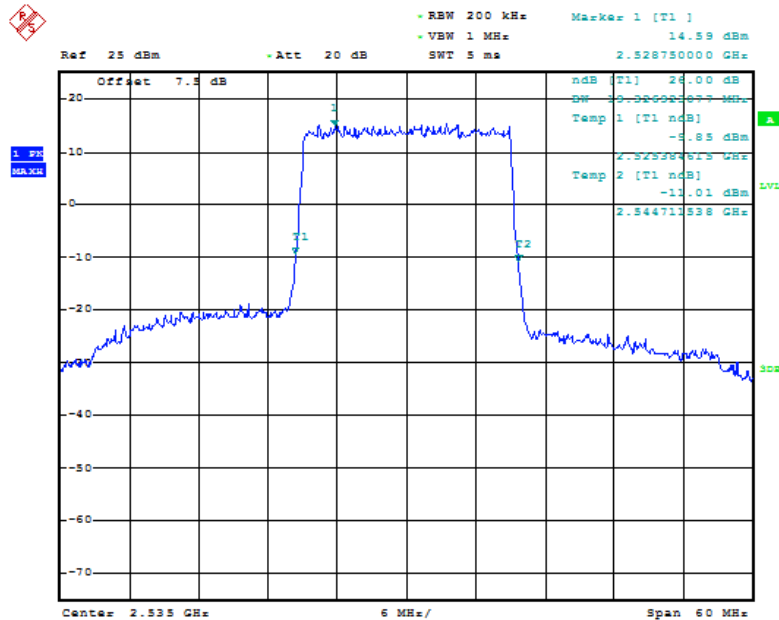
LTE band 7, 20MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 2535.0 | QPSK |
| 19.32692308 | | 19.32692308 |



Date: 30.JAN.2019 10:34:38

Fig.95 LTE band 7, 20MHz Bandwidth, QPSK (-26dBc BW)

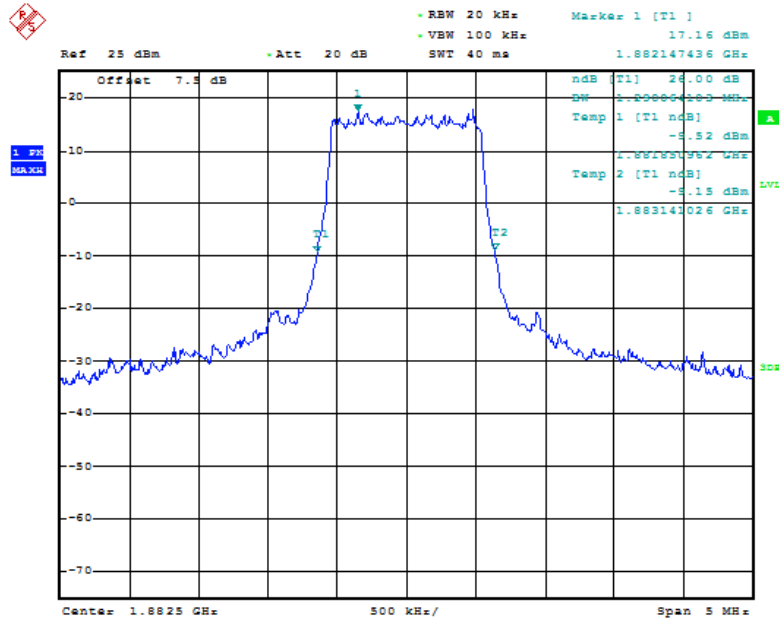


Date: 30.JAN.2019 10:35:42

Fig.96 LTE band 7, 20MHz Bandwidth, 16QAM (-26dBc BW)

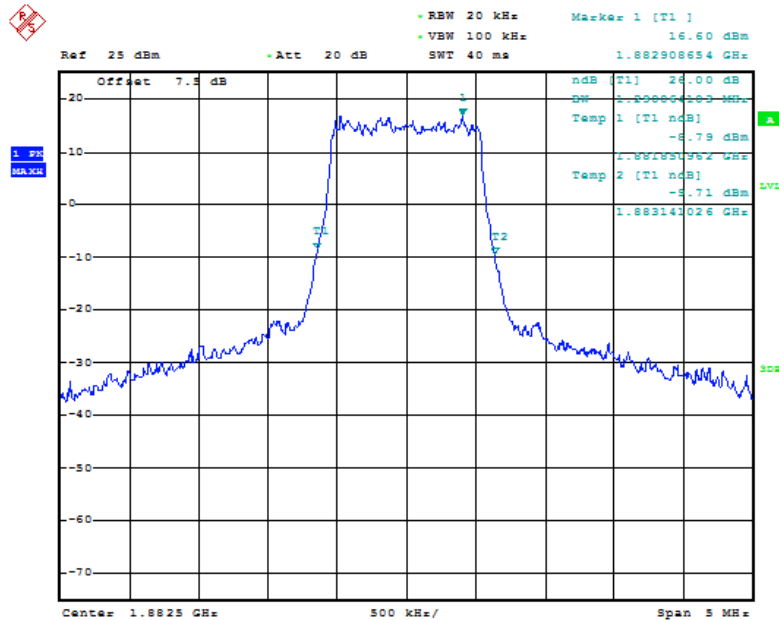
LTE band 25, 1.4MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | QPSK | 16QAM |
| 1882.5 | 1.290064103 | 1.290064103 |



Date: 30.JAN.2019 10:38:18

Fig.97 LTE band 25, 1.4MHz Bandwidth, QPSK (-26dBc BW)

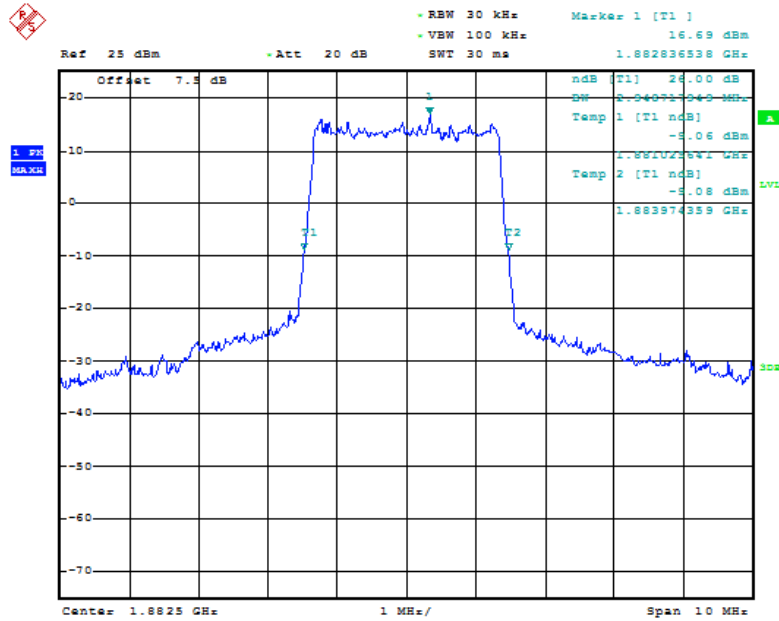


Date: 30.JAN.2019 10:39:22

Fig.98 LTE band 25, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

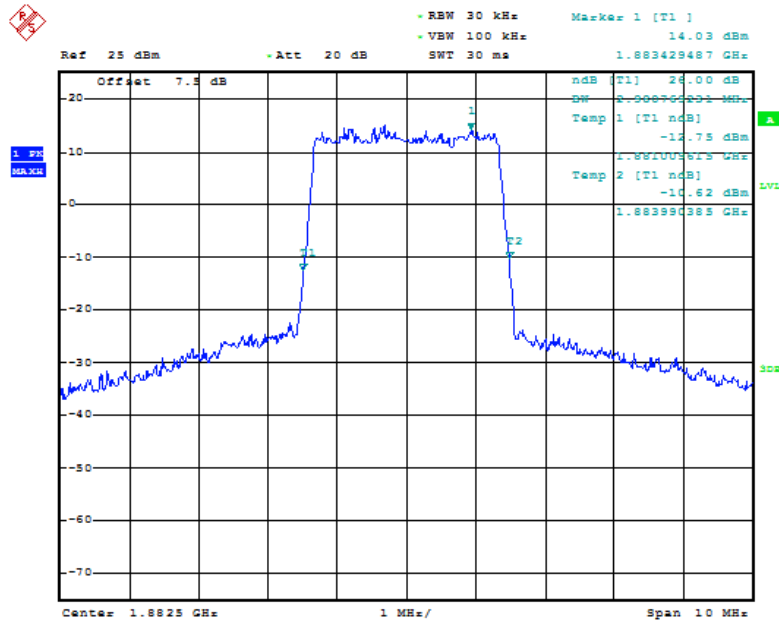
LTE band 25, 3MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 1882.5 | QPSK |
| 2.948717949 | | 2.980769231 |



Date: 30.JAN.2019 10:40:32

Fig.99 LTE band 25, 3MHz Bandwidth, QPSK (-26dBc BW)

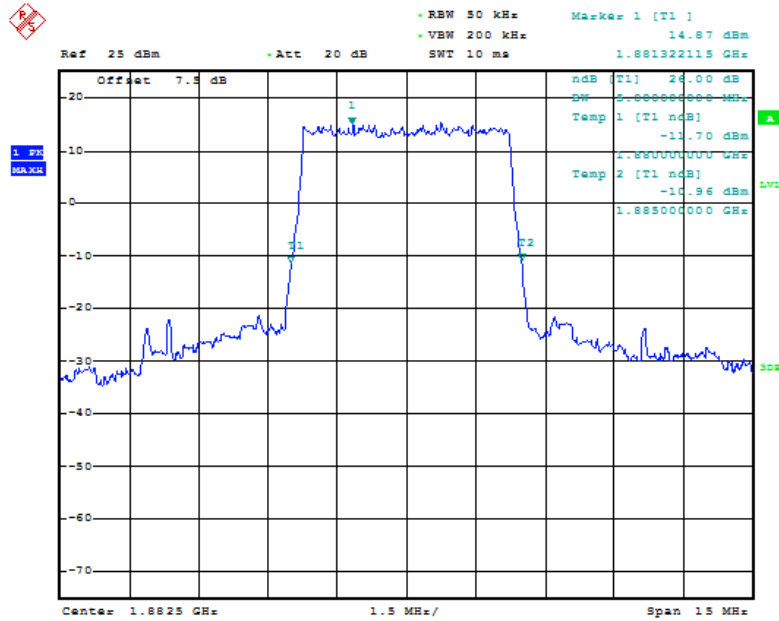


Date: 30.JAN.2019 10:41:36

Fig.100 LTE band 25, 3MHz Bandwidth, 16QAM (-26dBc BW)

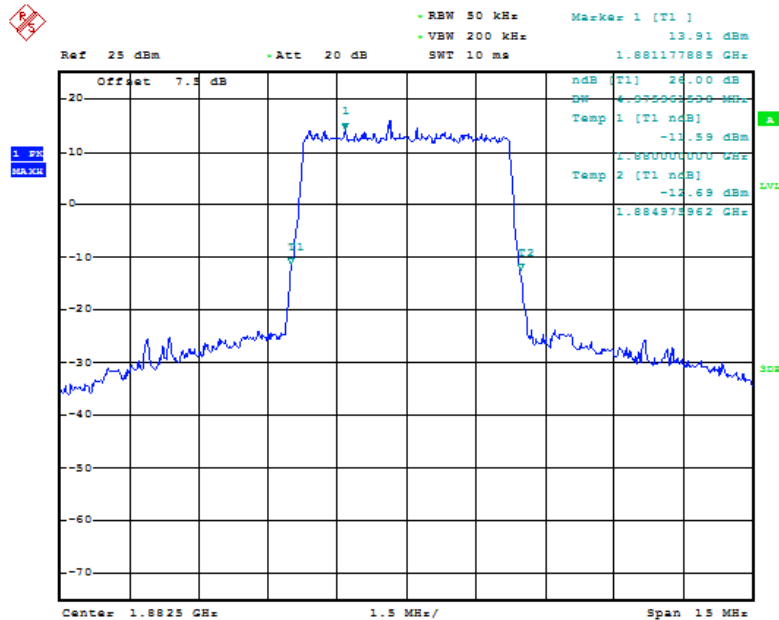
LTE band 25, 5MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 1882.5 | QPSK |
| 5 | | 4.975961538 |



Date: 30.JAN.2019 10:42:46

Fig.101 LTE band 25, 5MHz Bandwidth, QPSK (-26dBc BW)

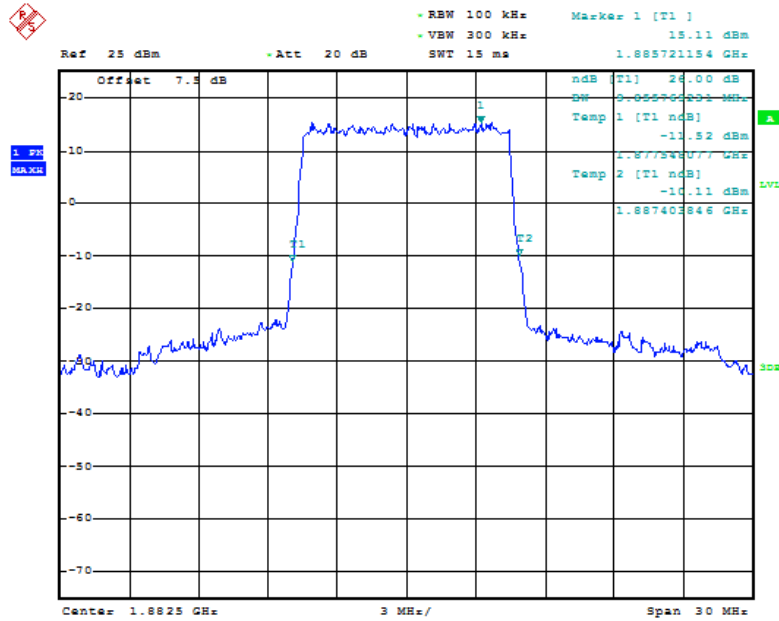


Date: 30.JAN.2019 10:43:50

Fig.102 LTE band 25, 5MHz Bandwidth, 16QAM (-26dBc BW)

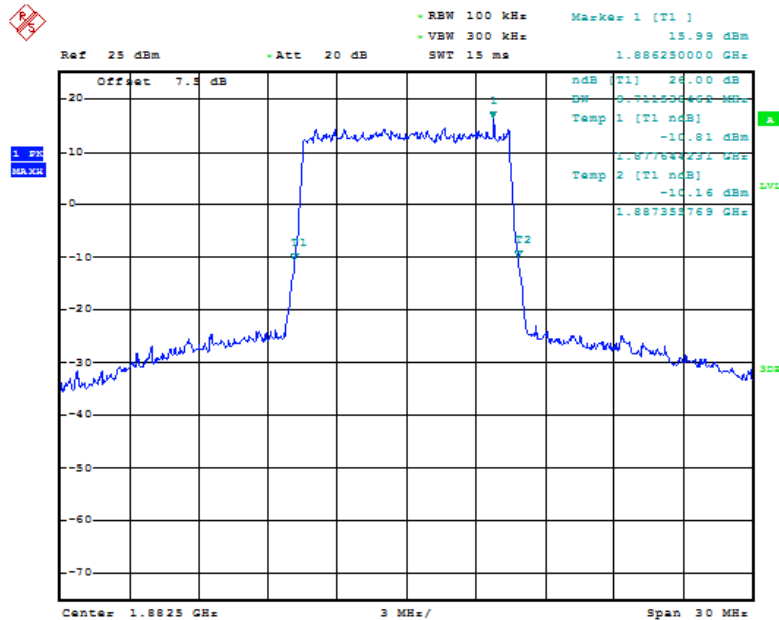
LTE band 25, 10MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | QPSK | 16QAM |
| 1882.5 | 9.855769231 | 9.711538462 |



Date: 30.JAN.2019 10:45:00

Fig.103 LTE band 25, 10MHz Bandwidth, QPSK (-26dBc BW)

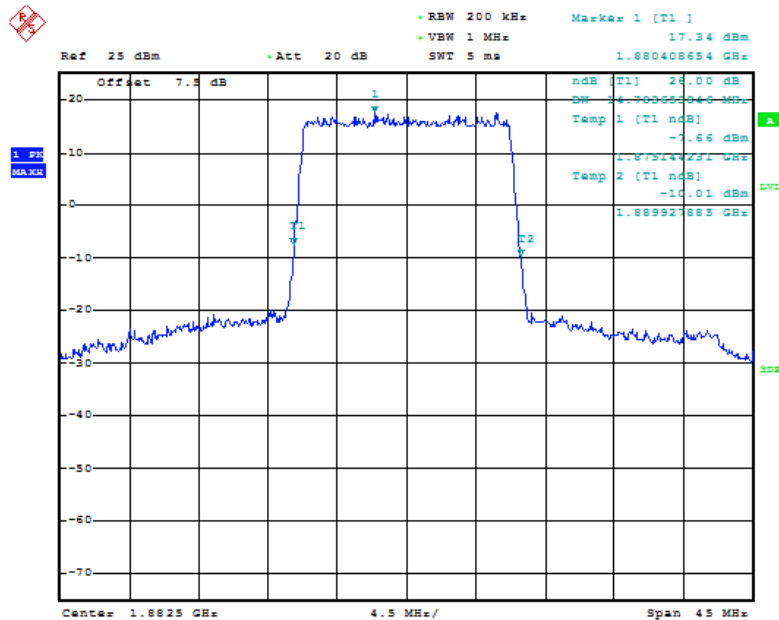


Date: 30.JAN.2019 10:46:04

Fig.104 LTE band 25, 10MHz Bandwidth, 16QAM (-26dBc BW)

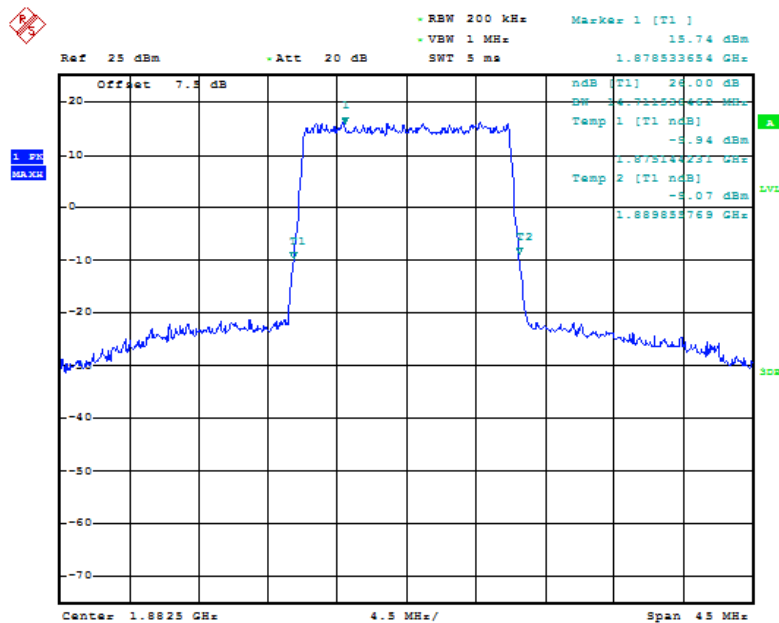
LTE band 25, 15MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | QPSK | 16QAM |
| 1882.5 | 14.78365385 | 14.71153846 |



Date: 30.JAN.2019 10:47:14

Fig.105 LTE band 25, 15MHz Bandwidth, QPSK (-26dBc BW)

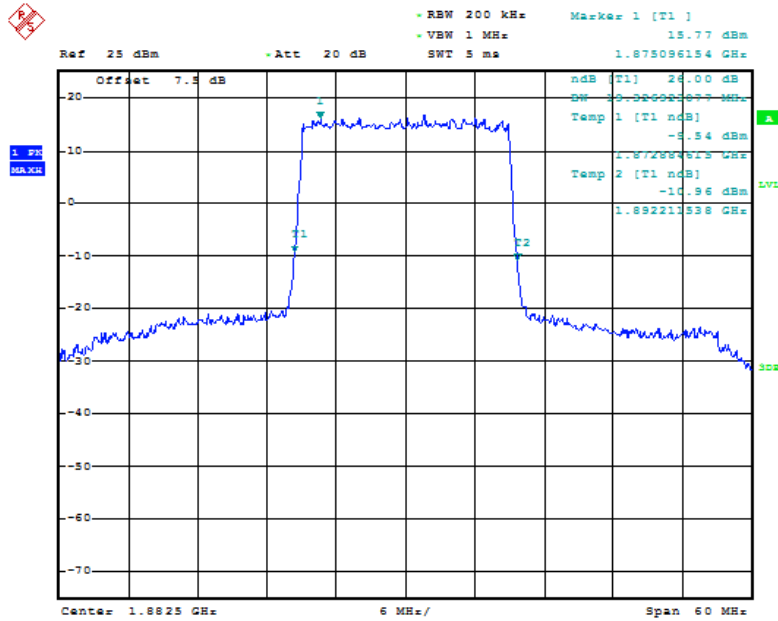


Date: 30.JAN.2019 10:48:18

Fig.106 LTE band 25, 15MHz Bandwidth, 16QAM (-26dBc BW)

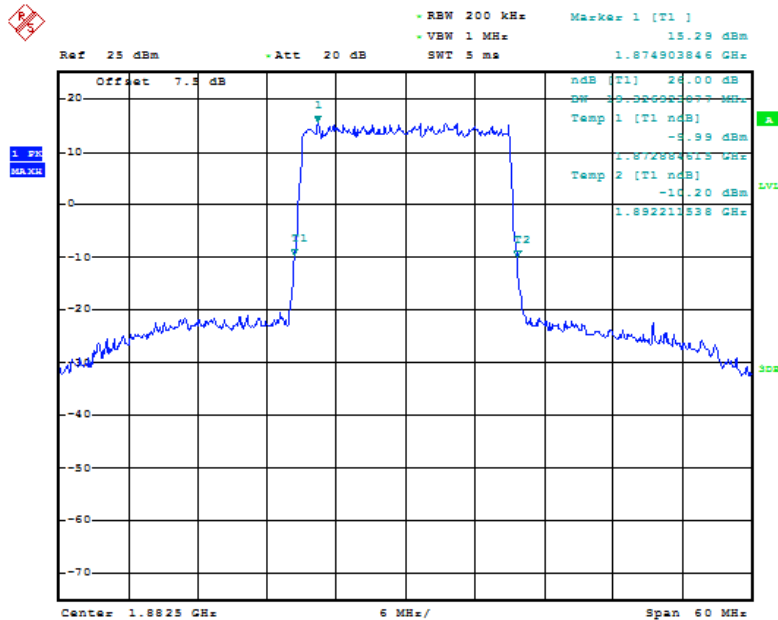
LTE band 25, 20MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | QPSK | 16QAM |
| 1882.5 | 19.32692308 | 19.32692308 |



Date: 30.JAN.2019 10:49:29

Fig.107 LTE band 25, 20MHz Bandwidth, QPSK (-26dBc BW)

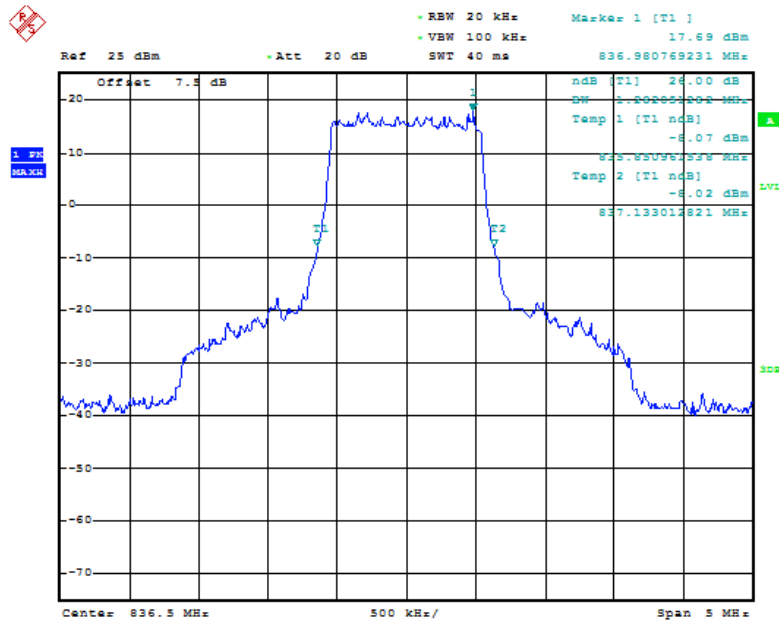


Date: 30.JAN.2019 10:50:33

Fig.108 LTE band 25, 20MHz Bandwidth, 16QAM (-26dBc BW)

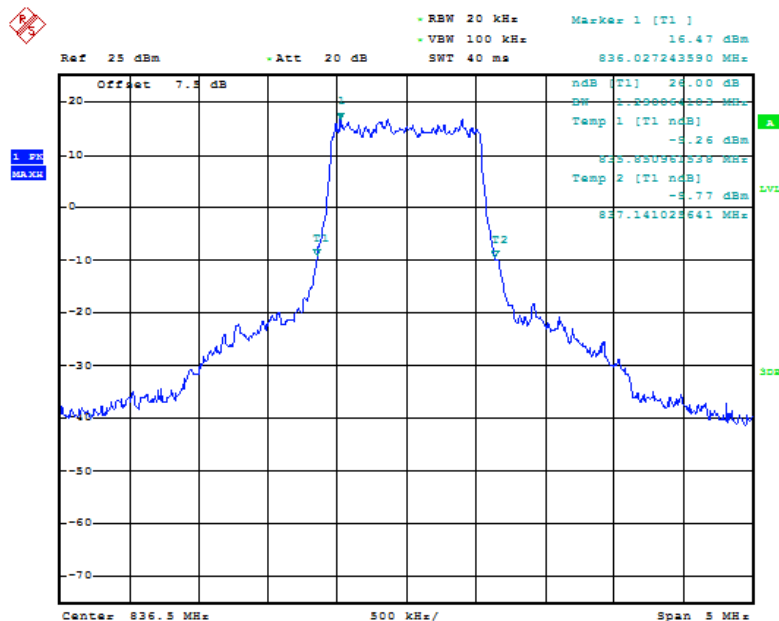
LTE band 26(Part 22), 1.4MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | QPSK | 16QAM |
| 836.5 | 1.282051282 | 1.290064103 |



Date: 30.JAN.2019 10:52:58

Fig.109 LTE band 26, 1.4MHz Bandwidth, QPSK (-26dBc BW)

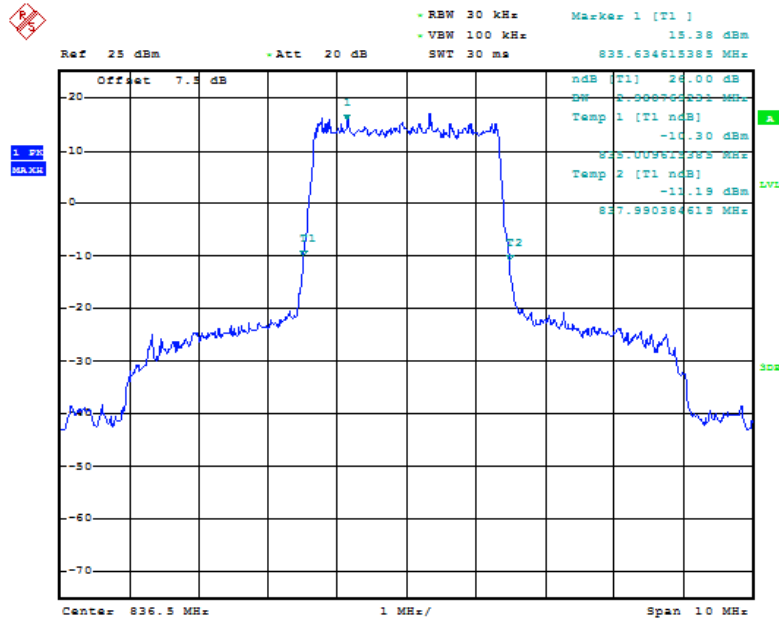


Date: 30.JAN.2019 10:54:02

Fig.110 LTE band 26, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

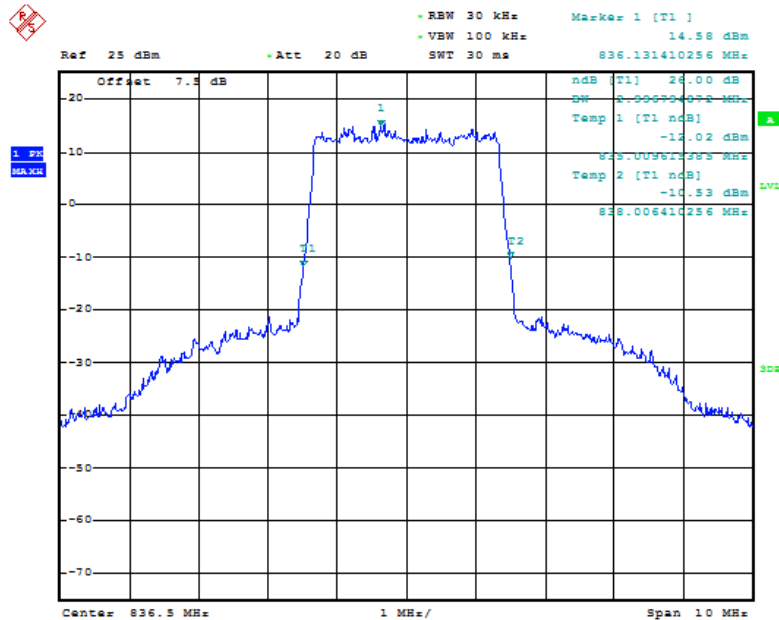
LTE band 26(Part 22), 3MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | QPSK | 16QAM |
| 836.5 | 2.980769231 | 2.996794872 |



Date: 30.JAN.2019 10:55:12

Fig.111 LTE band 26, 3MHz Bandwidth, QPSK (-26dBc BW)

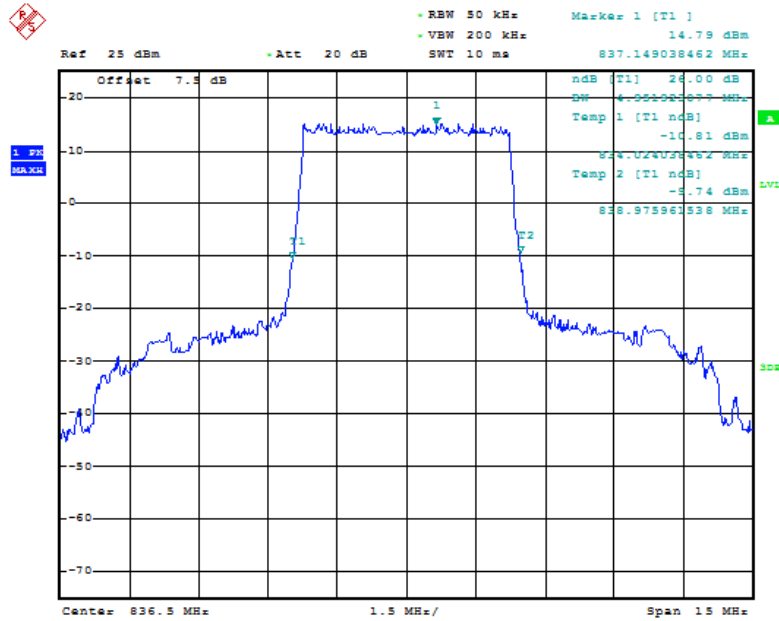


Date: 30.JAN.2019 10:56:16

Fig.112 LTE band 26, 3MHz Bandwidth, 16QAM (-26dBc BW)

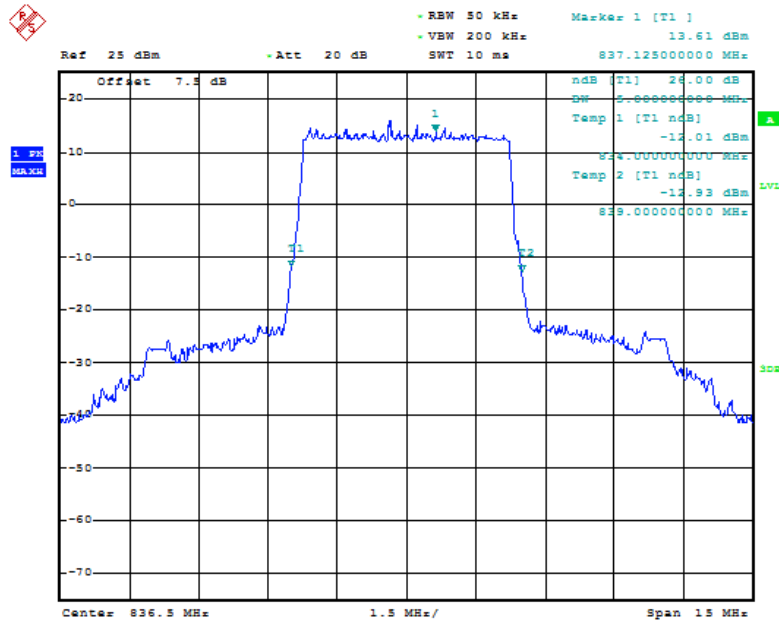
LTE band 26(Part 22), 5MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|------|
| | 836.5 | QPSK |
| 4.951923077 | | 5 |



Date: 30.JAN.2019 10:57:26

Fig.113 LTE band 26, 5MHz Bandwidth, QPSK (-26dBc BW)

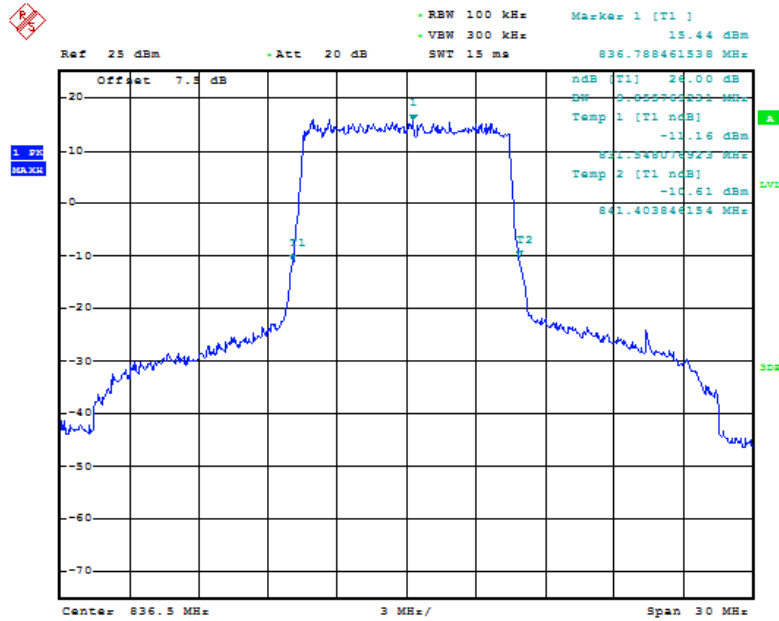


Date: 30.JAN.2019 10:58:30

Fig.114 LTE band 26, 5MHz Bandwidth, 16QAM (-26dBc BW)

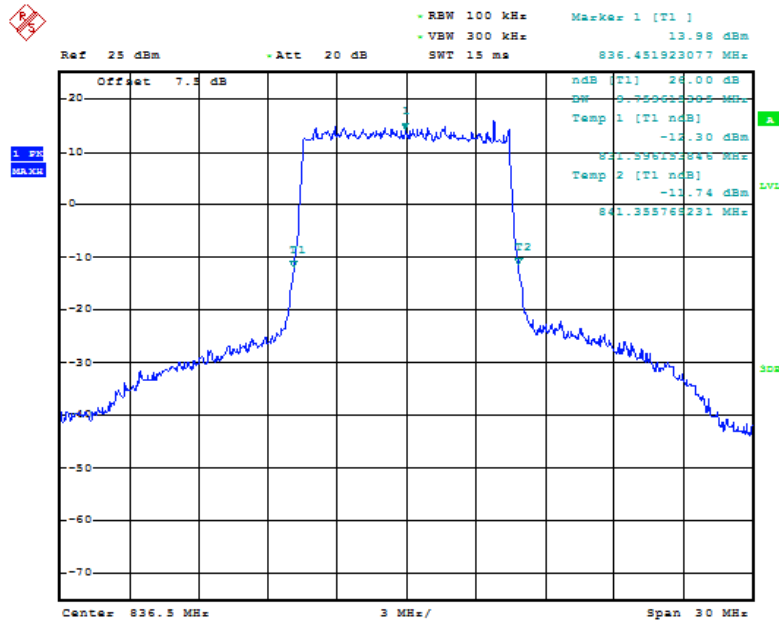
LTE band 26(Part 22), 10MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 836.5 | QPSK |
| 9.855769231 | | 9.759615385 |



Date: 30.JAN.2019 10:59:41

Fig.115 LTE band 26, 10MHz Bandwidth, QPSK (-26dBc BW)

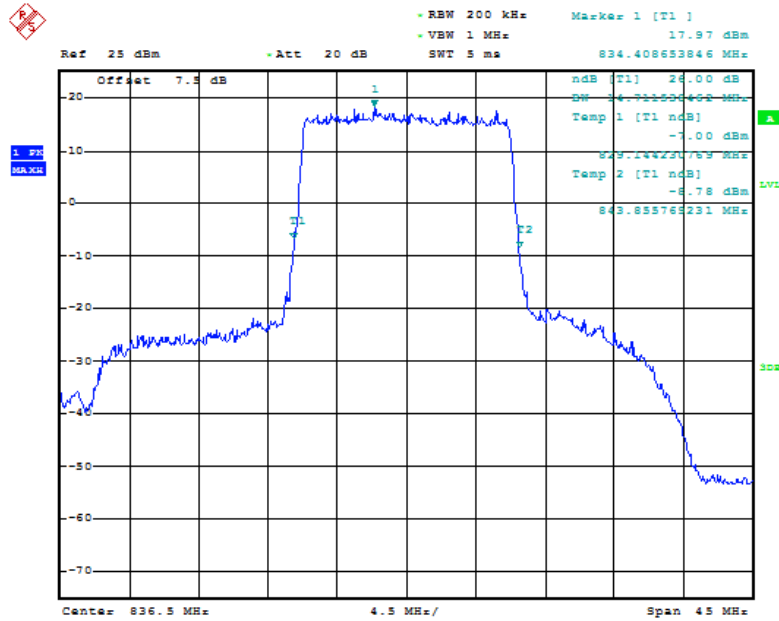


Date: 30.JAN.2019 11:00:45

Fig.116 LTE band 26, 10MHz Bandwidth, 16QAM (-26dBc BW)

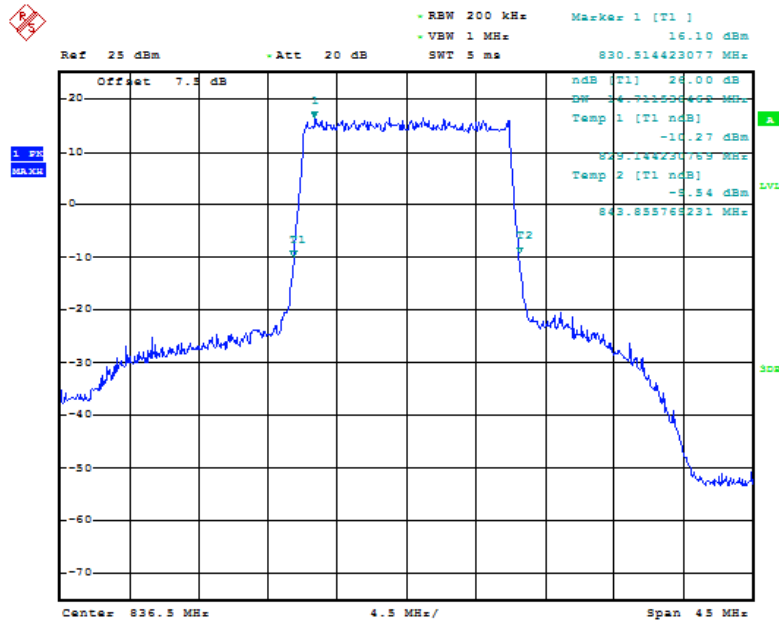
LTE band 26 (Part 22), 15MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 836.5 | QPSK |
| 14.71153846 | | 14.71153846 |



Date: 30.JAN.2019 11:01:55

Fig.117 LTE band 26, 15MHz Bandwidth, QPSK (-26dBc BW)

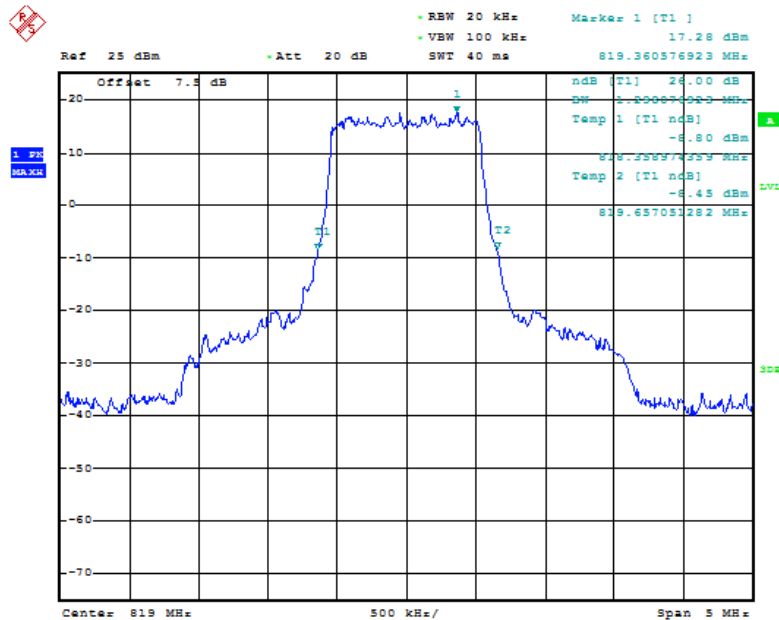


Date: 30.JAN.2019 11:02:59

Fig.118 LTE band 26, 15MHz Bandwidth, 16QAM (-26dBc BW)

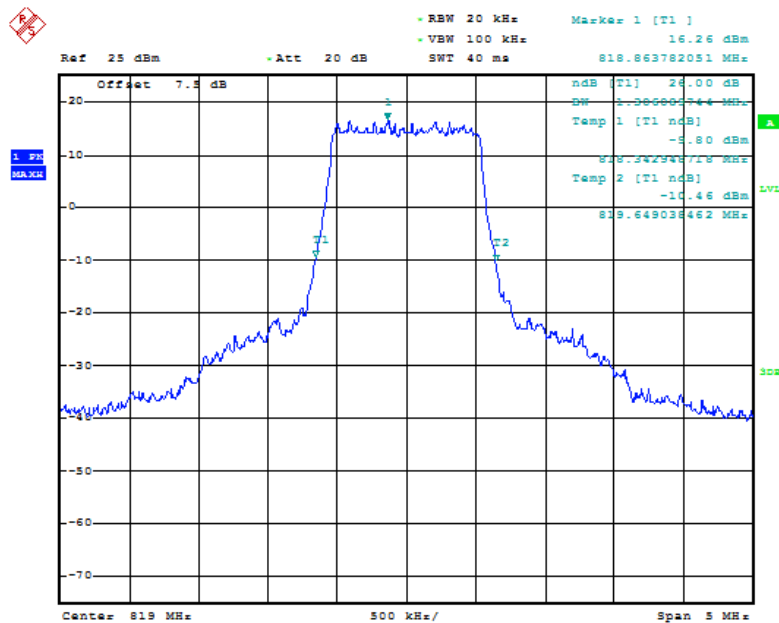
LTE band 26 (Part 90), 1.4MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 819 | QPSK |
| 1.298076923 | | 1.306089744 |



Date: 31.JAN.2019 10:22:42

Fig.119 LTE band 26, 1.4MHz Bandwidth, QPSK (-26dBc BW)

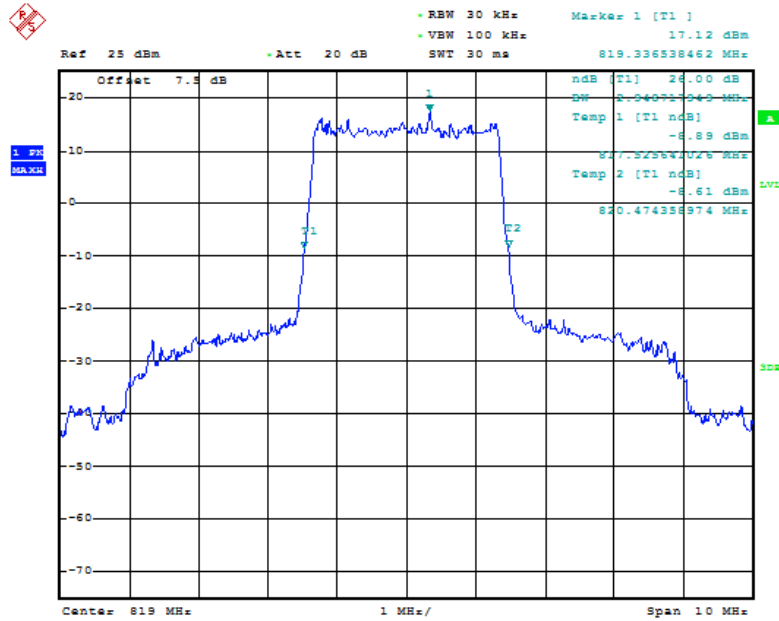


Date: 31.JAN.2019 10:23:47

Fig.120 LTE band 26, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

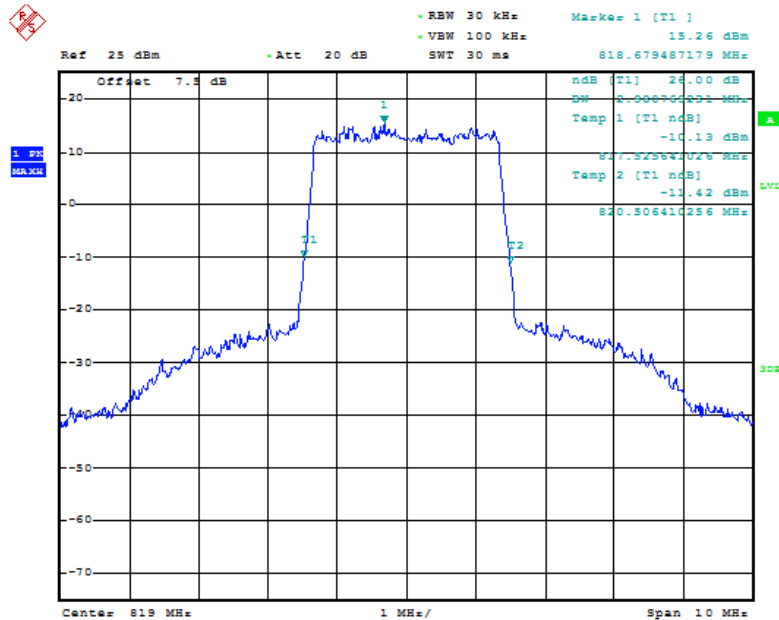
LTE band 26 (Part 90), 3MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 819 | QPSK |
| 2.948717949 | | 2.980769231 |



Date: 31.JAN.2019 10:24:59

Fig.121 LTE band 26, 3MHz Bandwidth, QPSK (-26dBc BW)

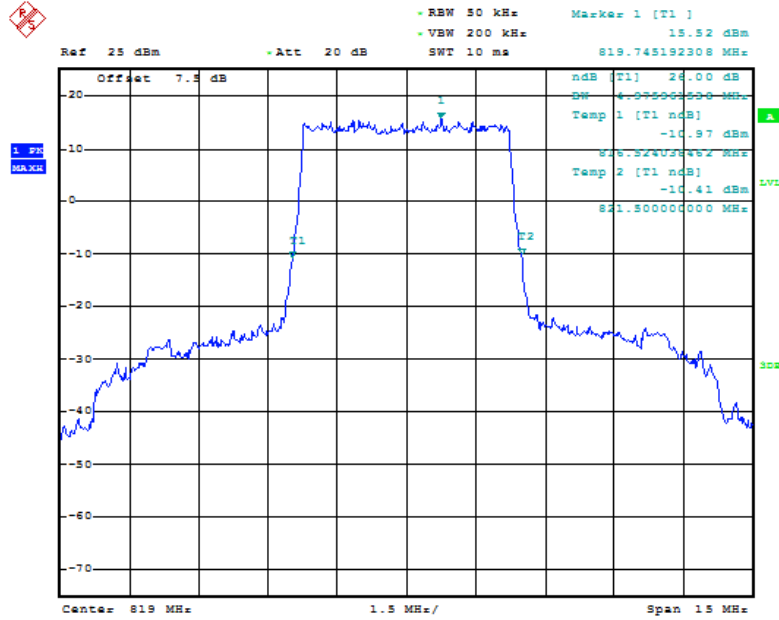


Date: 31.JAN.2019 10:26:03

Fig.122 LTE band 26, 3MHz Bandwidth, 16QAM (-26dBc BW)

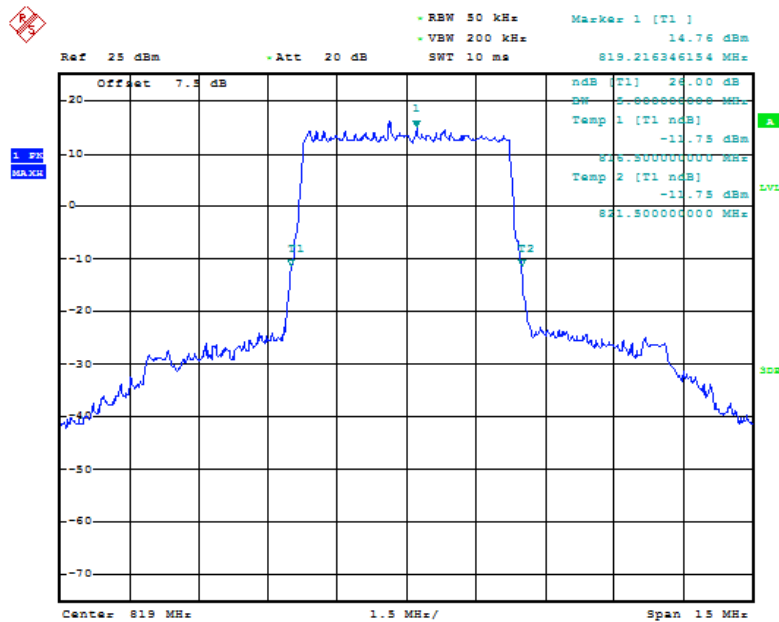
LTE band 26 (Part 90), 5MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------|
| | QPSK | 16QAM |
| 819 | 4.975961538 | 5 |



Date: 31. JAN. 2019 10:27:15

Fig.123 LTE band 26, 5MHz Bandwidth, QPSK (-26dBc BW)

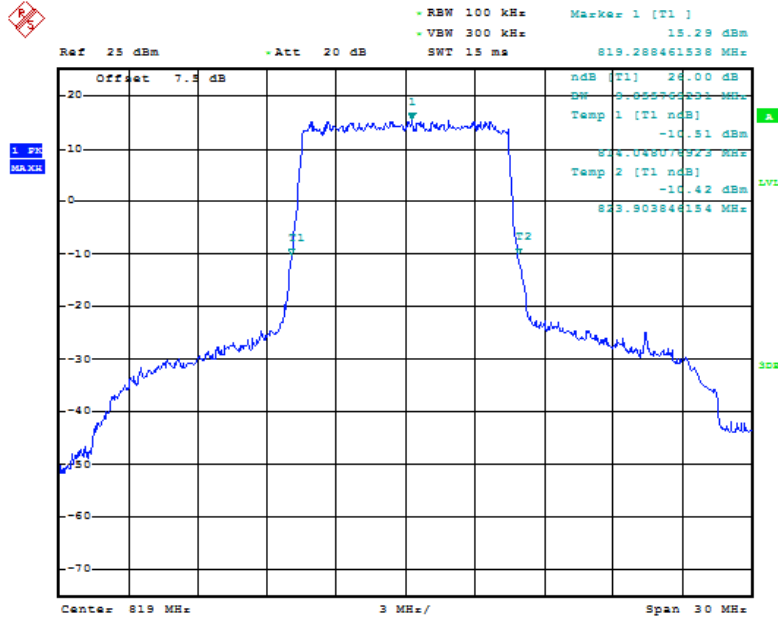


Date: 31. JAN. 2019 10:28:19

Fig.124 LTE band 26, 5MHz Bandwidth, 16QAM (-26dBc BW)

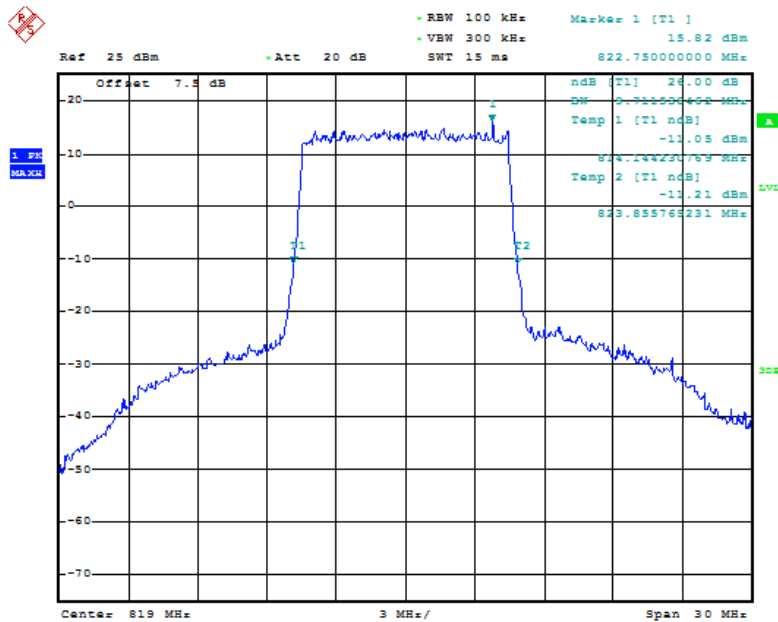
LTE band 26 (Part 90), 10MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 819 | QPSK |
| 9.855769231 | | 9.711538462 |



Date: 31.JAN.2019 10:29:31

Fig.125 LTE band 26, 10MHz Bandwidth, QPSK (-26dBc BW)

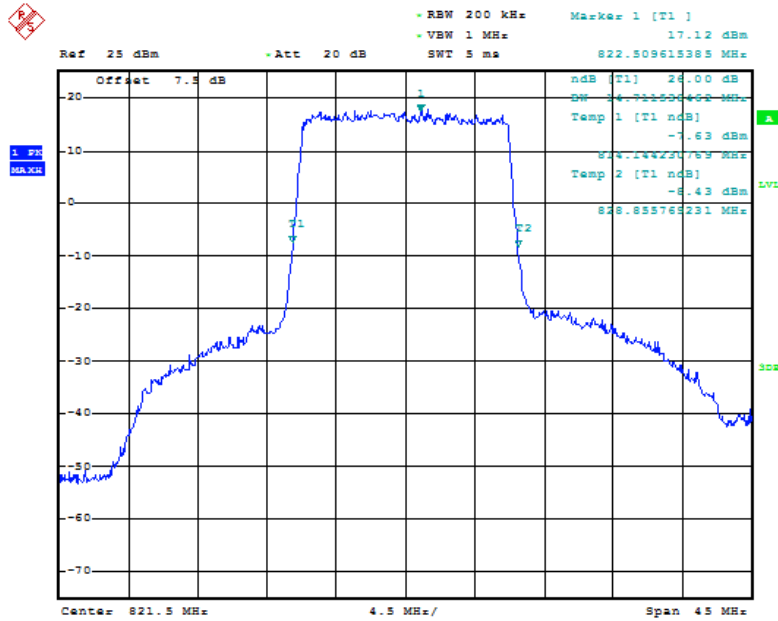


Date: 31.JAN.2019 10:30:36

Fig.126 LTE band 26, 10MHz Bandwidth, 16QAM (-26dBc BW)

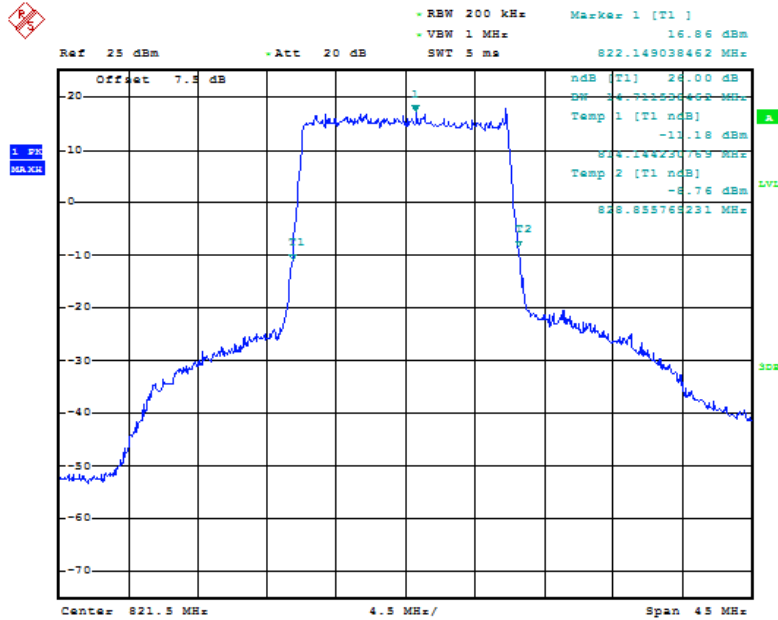
LTE band 26 (Part 90), 15MHz (-26dBc)

| Frequency(MHz) | Occupied Bandwidth (-26dBc)(MHz) | |
|----------------|-----------------------------------|-------------|
| | 821.5 | QPSK |
| 14.71153846 | | 14.71153846 |



Date: 31.JAN.2019 10:33:42

Fig.127 LTE band 26, 15MHz Bandwidth, QPSK (-26dBc BW)



Date: 31.JAN.2019 10:34:46

Fig.128 LTE band 26, 15MHz Bandwidth, 16QAM (-26dBc BW)

ANNEX A.6. BAND EDGE COMPLIANCE

Reference

FCC: CFR Part 22.917(b),24.238(a), 27.53(g),27.53(h), 27.53(m), 90.691.

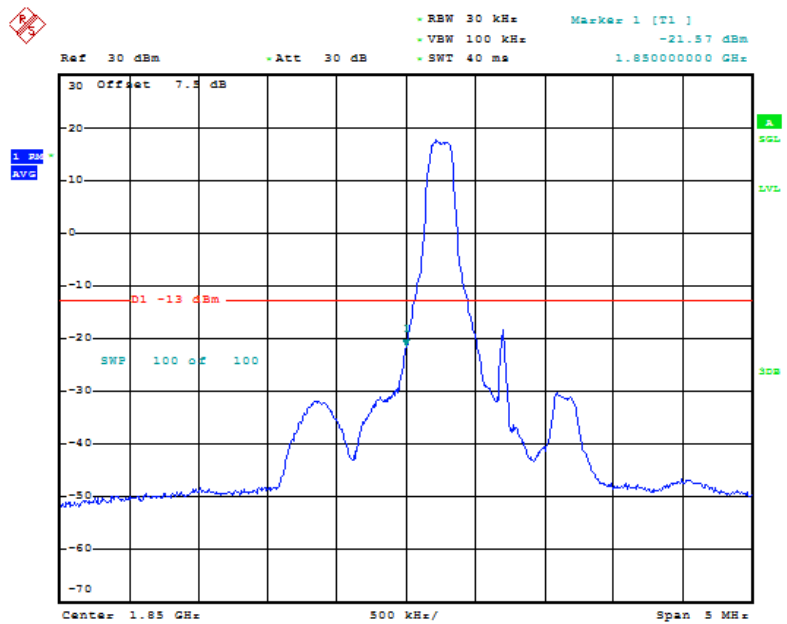
A.6.1 Measurement limit

Part 22.917(b),24.238(a), 27.53(g),27.53(h), 27.53(m), 90.691 state that on any frequency outside frequency band of the US Cellular/PCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least $43+10\log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

According to KDB 971168 6, a relaxation of the reference bandwidth is often provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is often implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

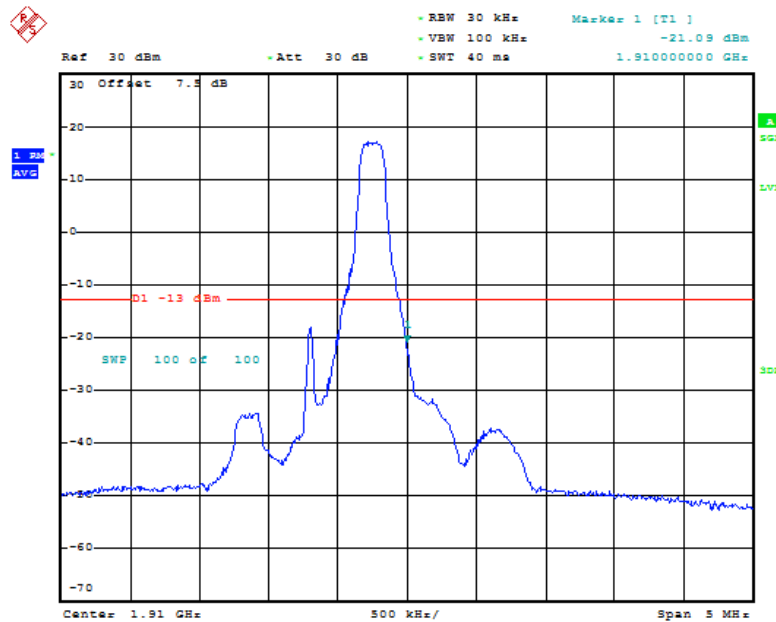
Part 27.53(m) states that for mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

A.6.2 Measurement result
Only worst case result is given below
LTE band 2



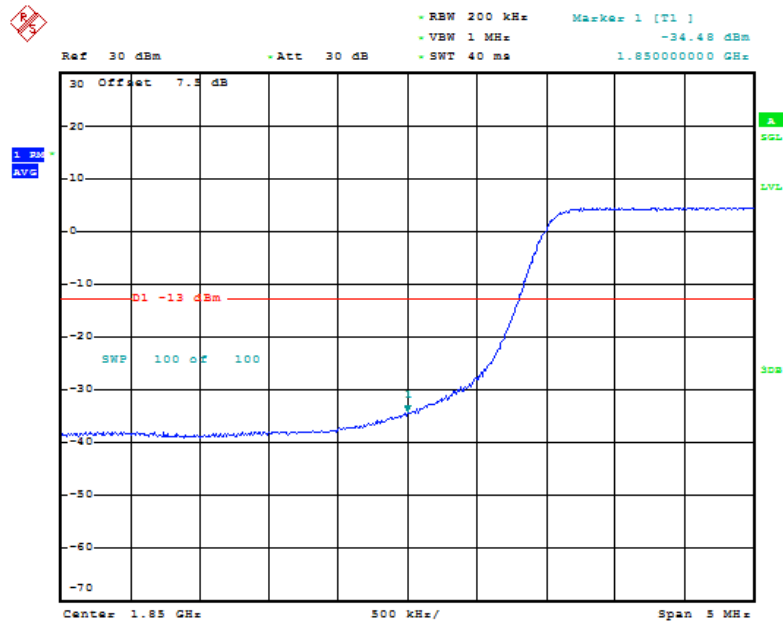
Date: 30.JAN.2019 13:46:19

Fig.129 LOW BAND EDGE BLOCK-1RB-low_offset



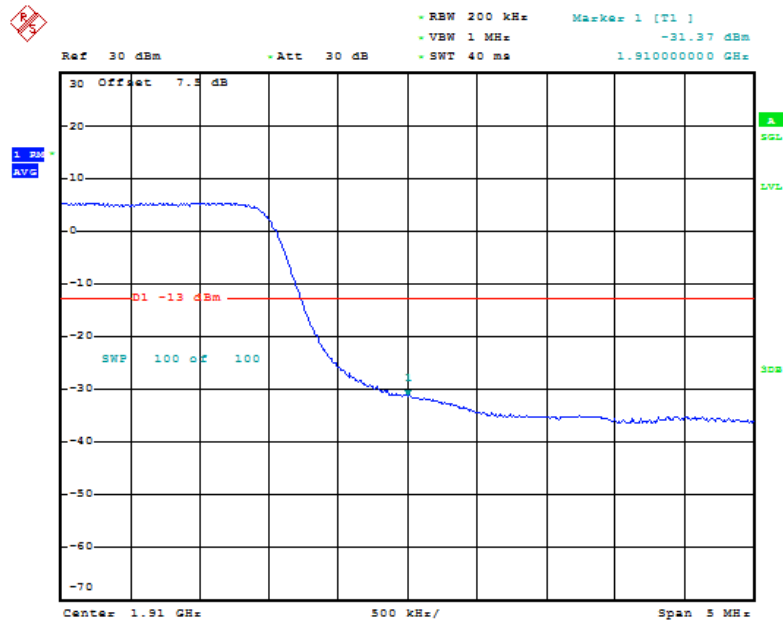
Date: 30.JAN.2019 13:46:53

Fig.130 HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 30.JAN.2019 13:57:02

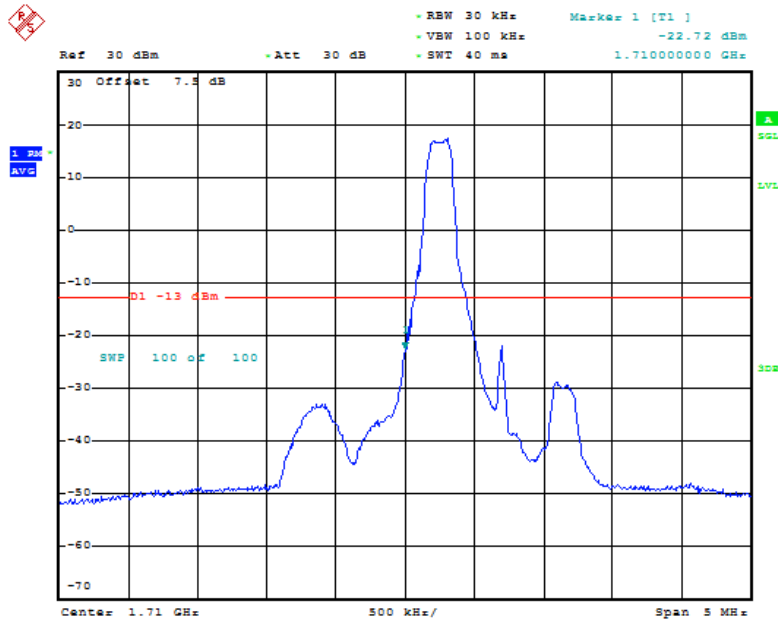
Fig.131 LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 30.JAN.2019 13:57:36

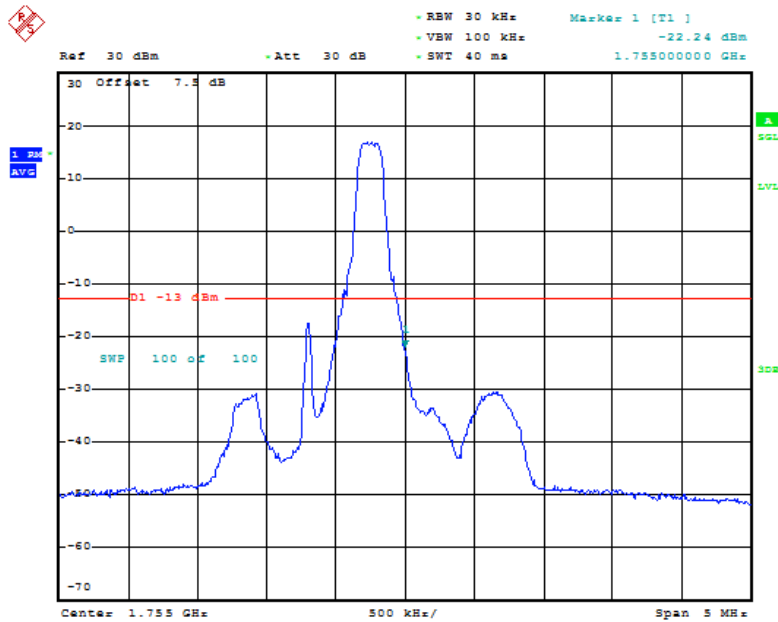
Fig.132 HIGH BAND EDGE BLOCK-20MHz-100%RB

LTE band 4



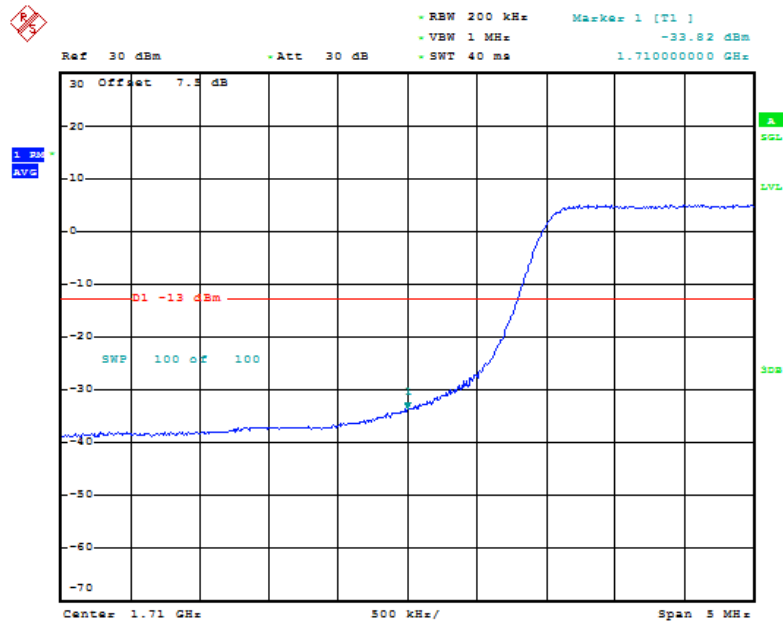
Date: 30.JAN.2019 13:49:14

Fig.133 LOW BAND EDGE BLOCK-1RB-low_offset



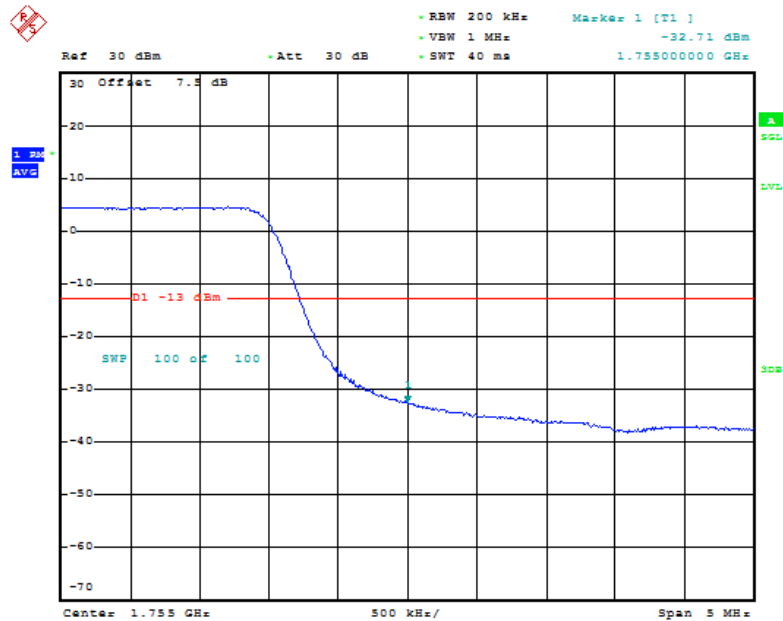
Date: 30.JAN.2019 13:49:48

Fig.134 HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 30.JAN.2019 13:59:39

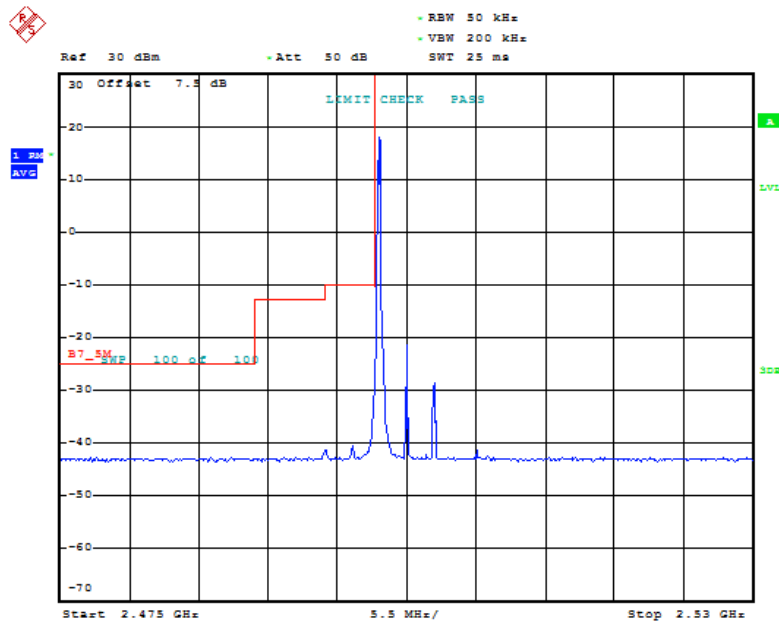
Fig.135 LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 30.JAN.2019 14:00:13

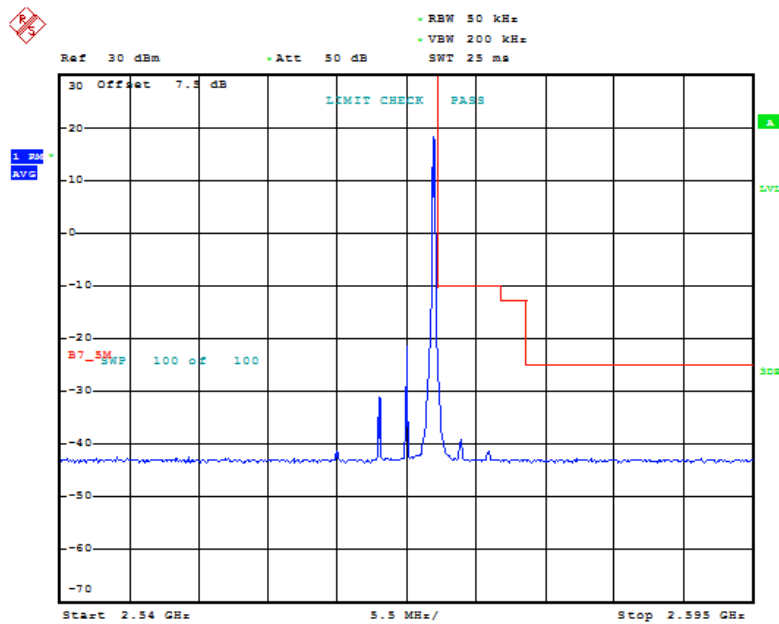
Fig.136 HIGH BAND EDGE BLOCK-20MHz-100%RB

LTE band 7



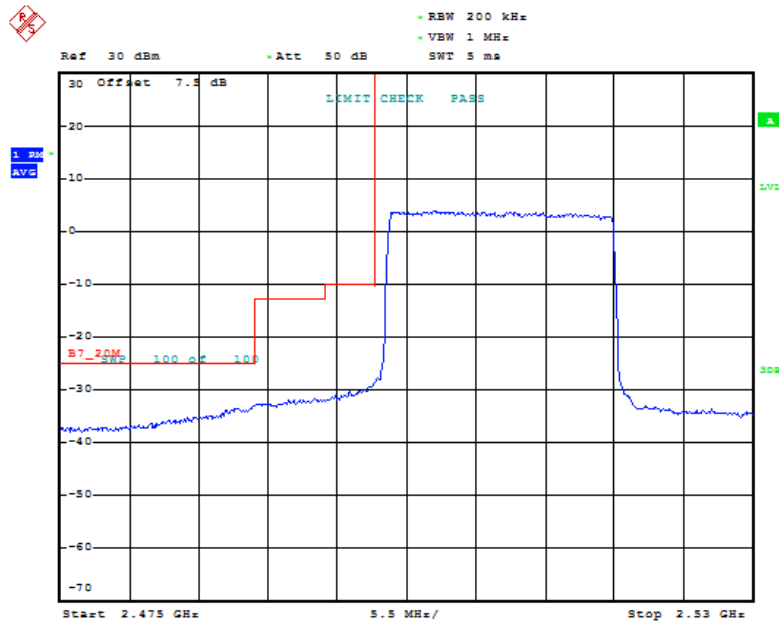
Date: 30.JAN.2019 14:39:47

Fig.137 LOW BAND EDGE BLOCK-1RB-low_offset



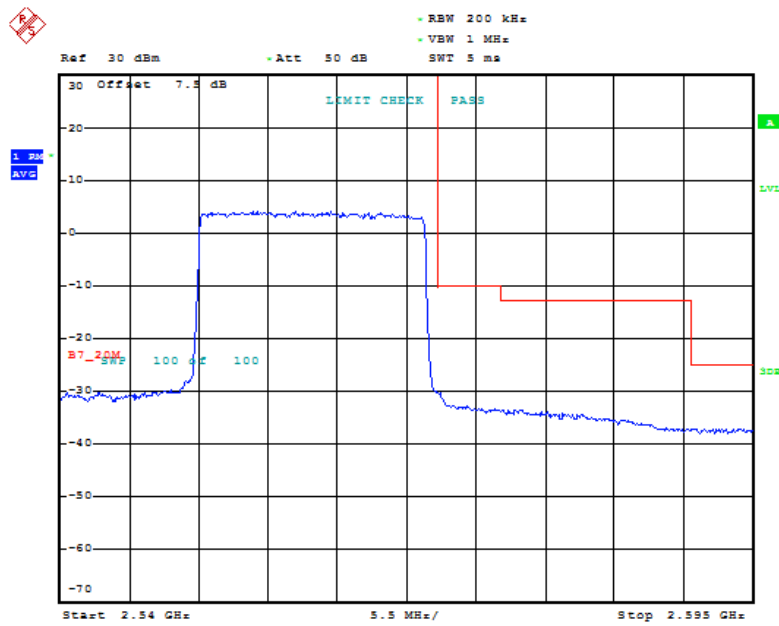
Date: 30.JAN.2019 14:41:22

Fig.138 HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 30.JAN.2019 15:24:28

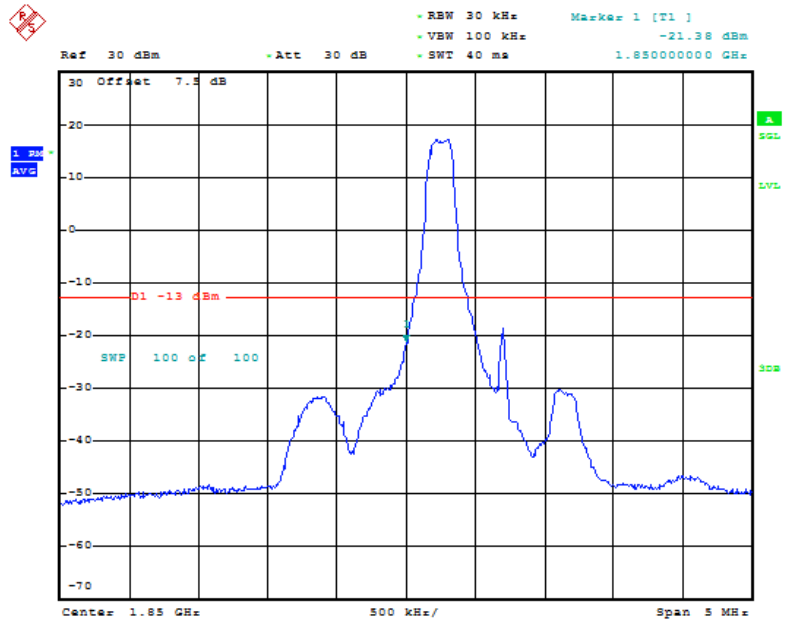
Fig.139 LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 30.JAN.2019 15:27:45

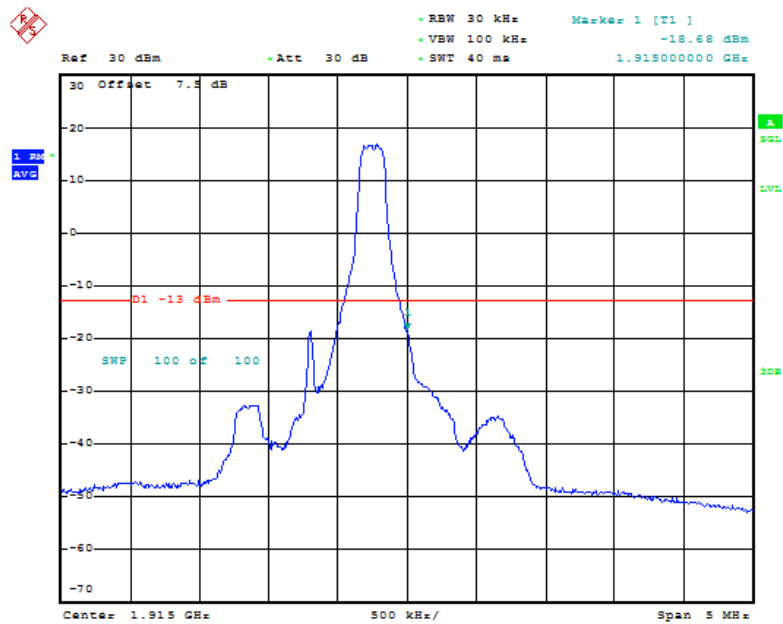
Fig.140 HIGH BAND EDGE BLOCK-20MHz-100%RB

LTE band 25



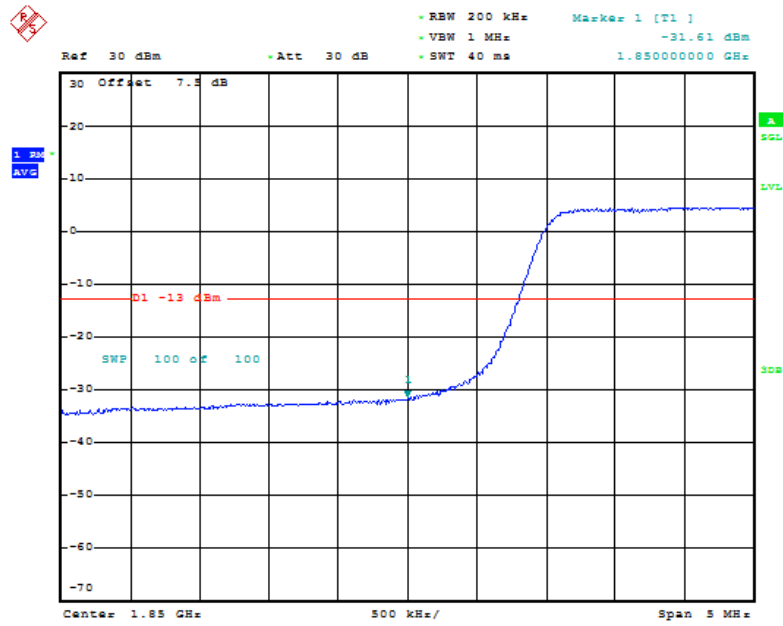
Date: 30.JAN.2019 13:52:55

Fig.141 LOW BAND EDGE BLOCK-1RB-low_offset



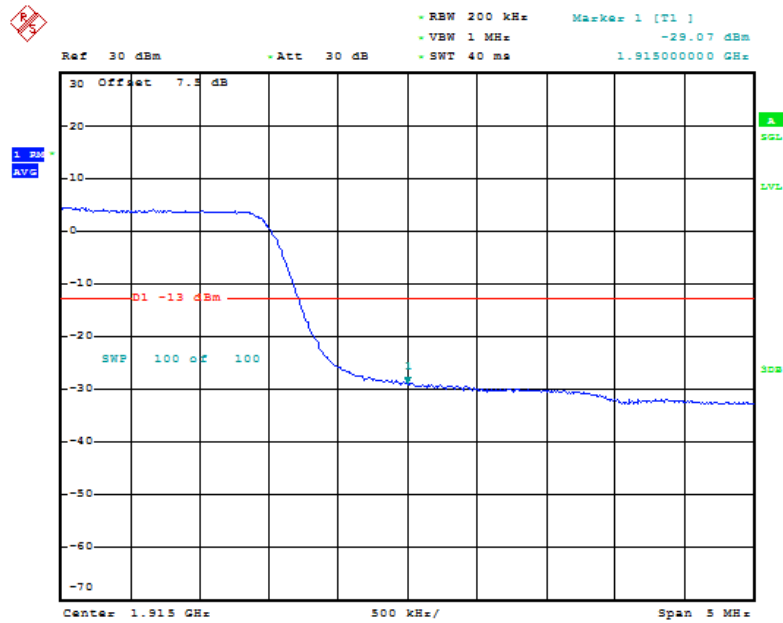
Date: 30.JAN.2019 13:53:29

Fig.142 HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 30.JAN.2019 14:02:17

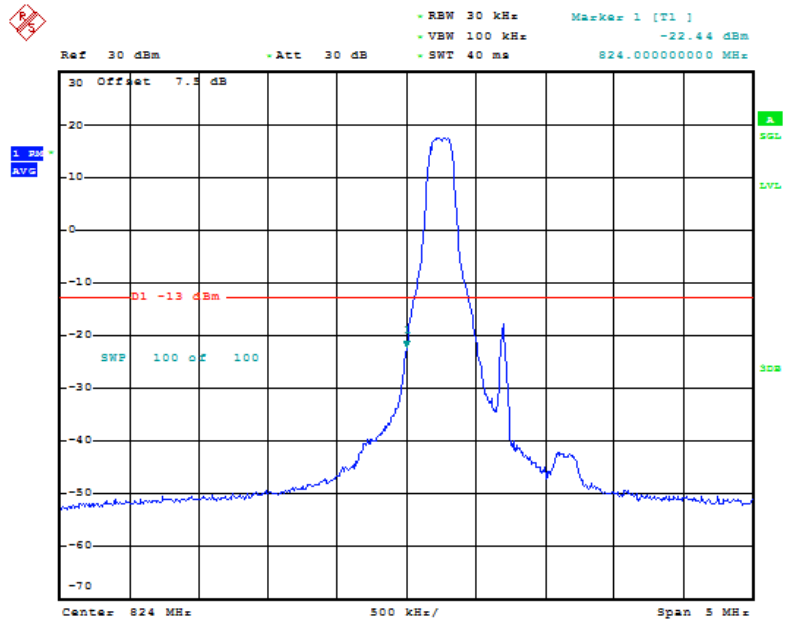
Fig.143 LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 30.JAN.2019 14:02:51

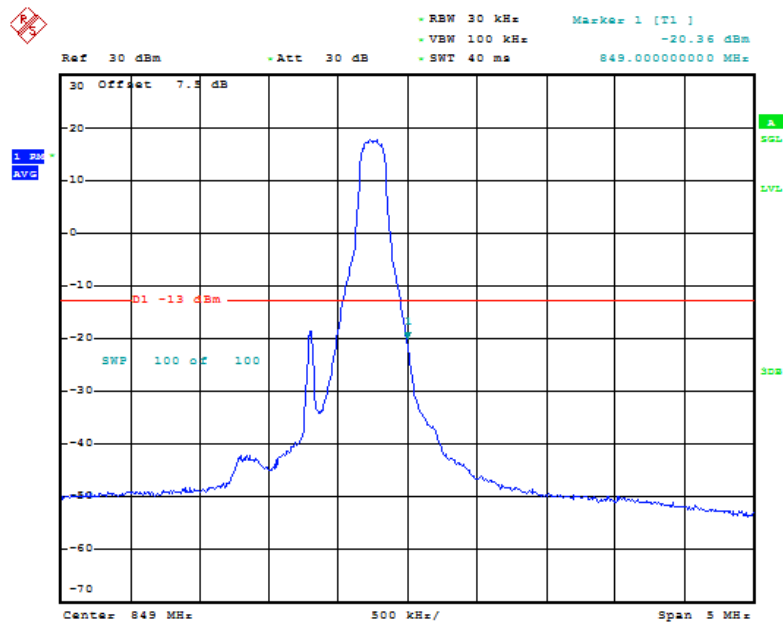
Fig.144 HIGH BAND EDGE BLOCK-20MHz-100%RB

LTE band 26 (Part 22)



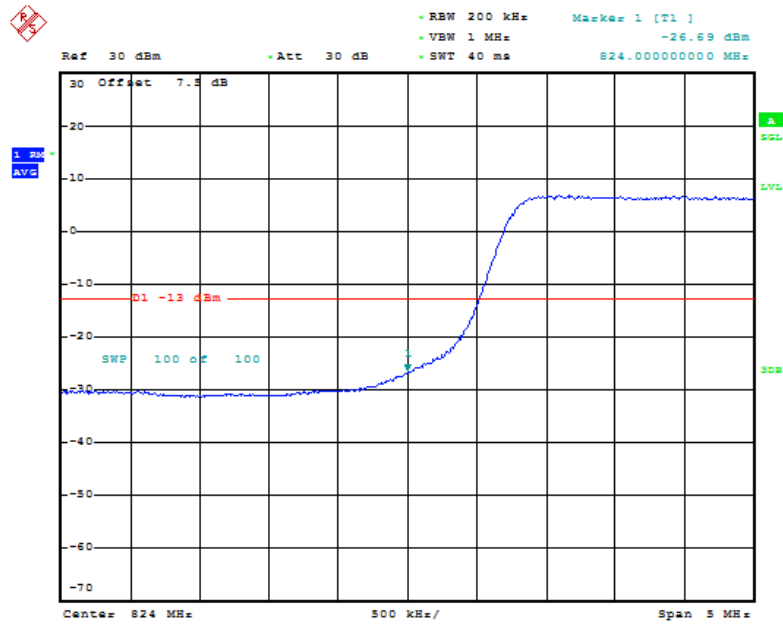
Date: 30.JAN.2019 14:30:56

Fig.145 LOW BAND EDGE BLOCK-1RB-low_offset



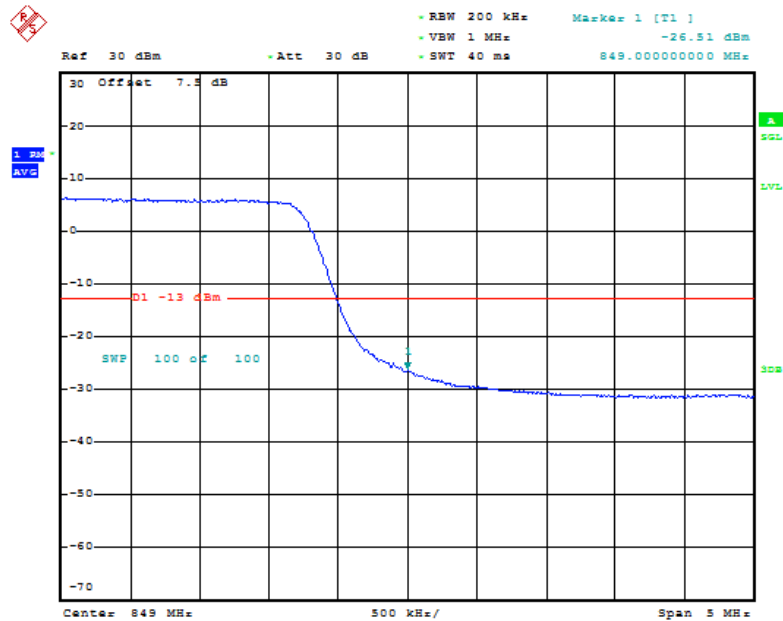
Date: 30.JAN.2019 14:31:30

Fig.146 HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 30. JAN. 2019 14:25:58

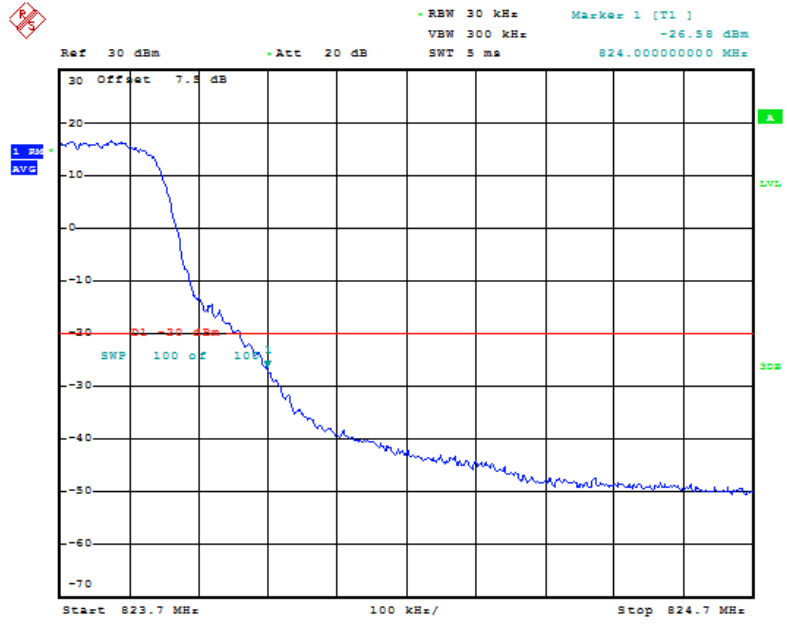
Fig.147 LOW BAND EDGE BLOCK-20MHz-100%RB



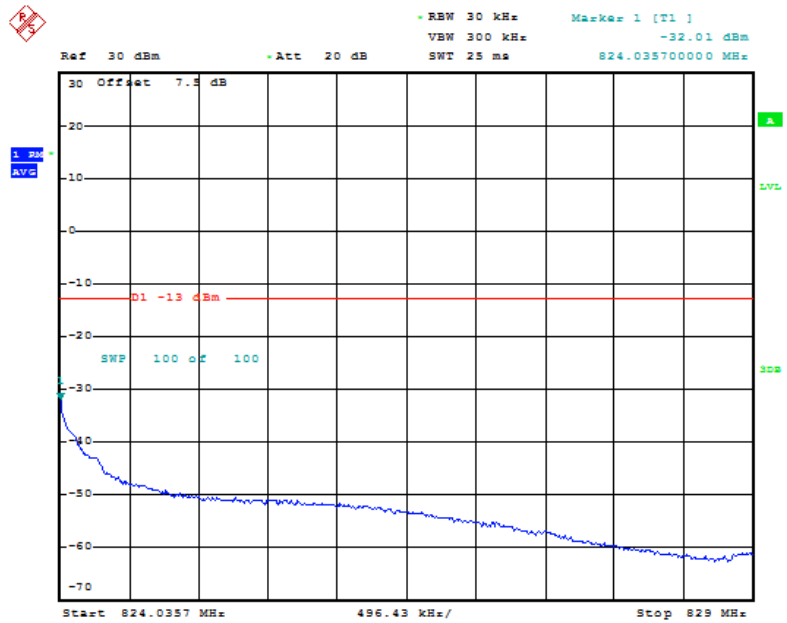
Date: 30. JAN. 2019 14:26:31

Fig.148 HIGH BAND EDGE BLOCK-20MHz-100%RB

LTE band 26 (Part 90)

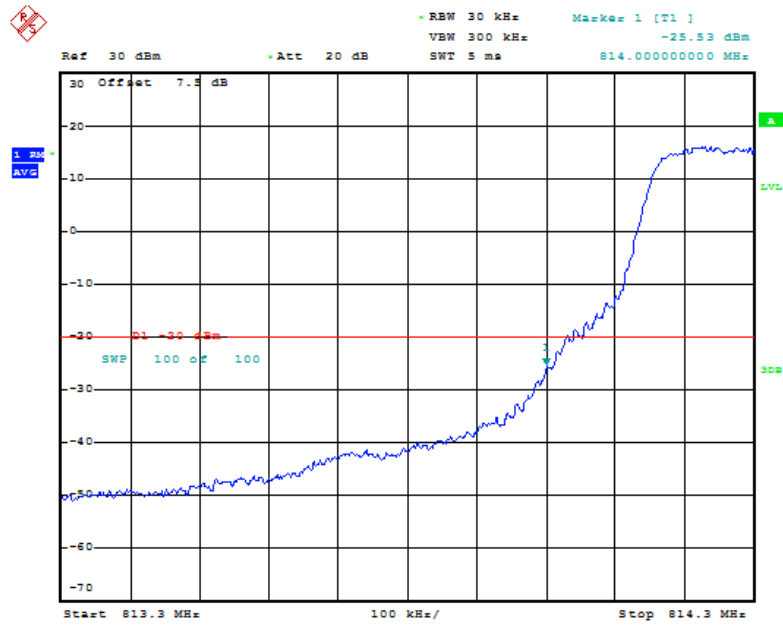


Date: 31.JAN.2019 11:25:27

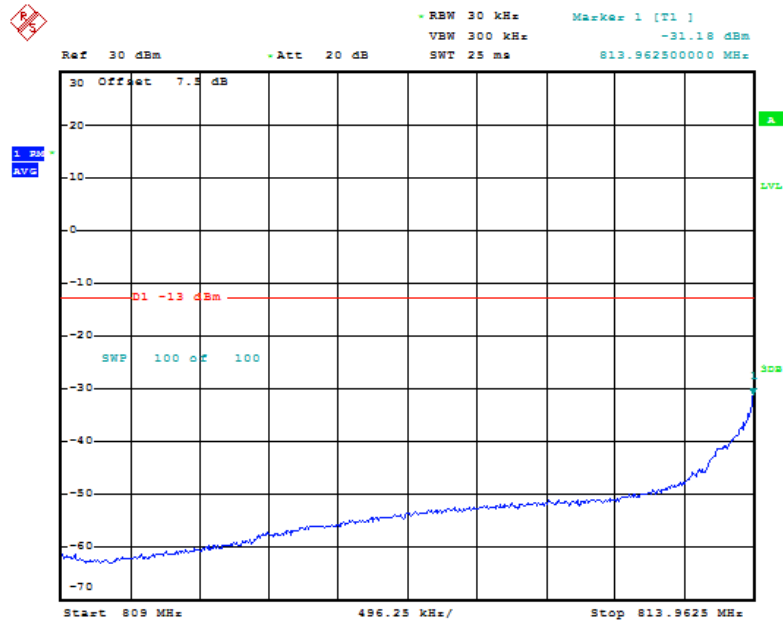


Date: 31.JAN.2019 13:14:40

Fig.149 LOW BAND EDGE BLOCK-1RB-low_offset

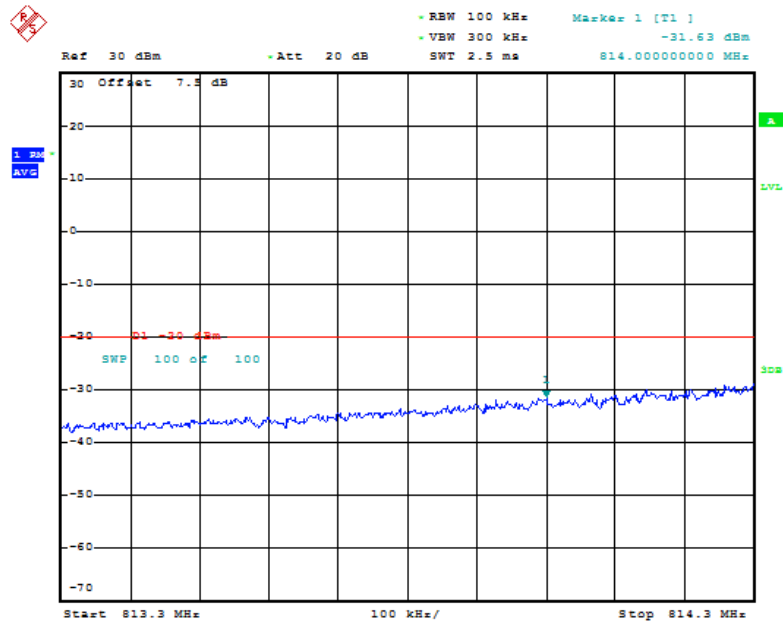


Date: 31.JAN.2019 13:18:39

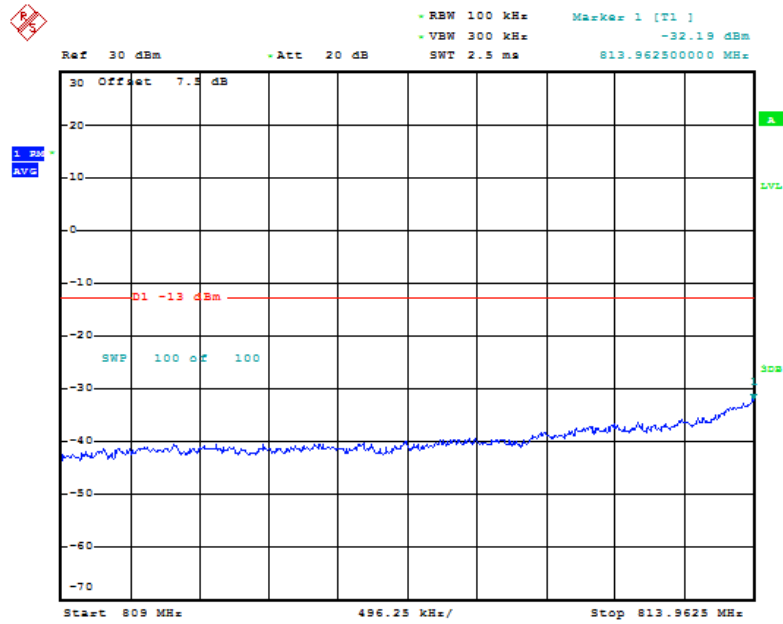


Date: 31.JAN.2019 13:17:12

Fig.150 HIGH BAND EDGE BLOCK-1RB-high_offset

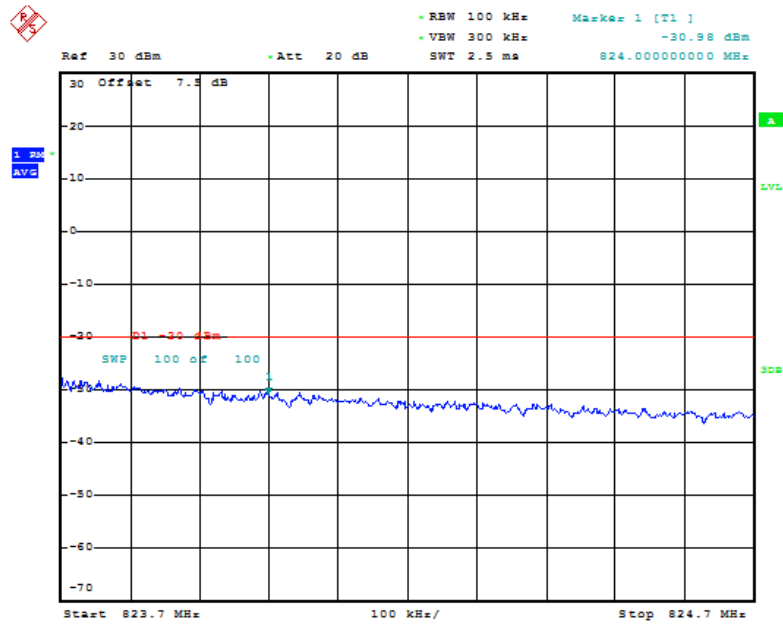


Date: 31.JAN.2019 13:25:18

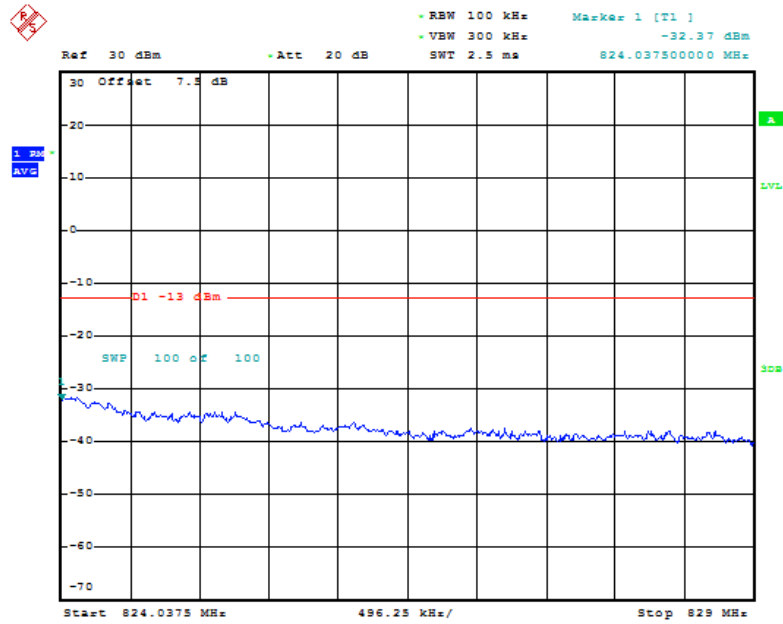


Date: 31.JAN.2019 13:26:00

Fig.151 LOW BAND EDGE BLOCK-10MHz-100%RB



Date: 31.JAN.2019 13:28:39



Date: 31.JAN.2019 13:27:02

Fig.152 HIGH BAND EDGE BLOCK-20MHz-100%RB

ANNEX A.7. CONDUCTED SPURIOUS EMISSION

Reference

FCC: CFR Part 22.917(b),24.238(a), 27.53(g),27.53(h), 27.53(m), 90.691.

A.7.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the mobile station equipment tested, this equates to a frequency range of 13 MHz to 9 GHz, data taken from 10 MHz to 25 GHz.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.
3. The number of sweep points of spectrum analyzer is set to 30001 which is greater than span/RBW.

A. 7.2 Measurement Limit

Part 22.917(b),24.238(a), 27.53(g),27.53(h), 27.53(m), 90.691 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

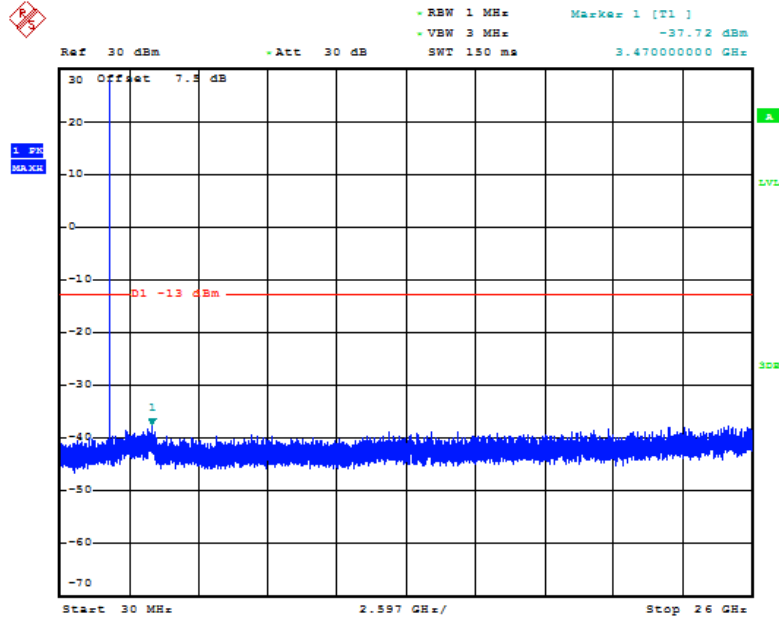
The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Part 27.53(m)(4) specifies for mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

A. 7.3 Measurement result

Only worst case result is given below

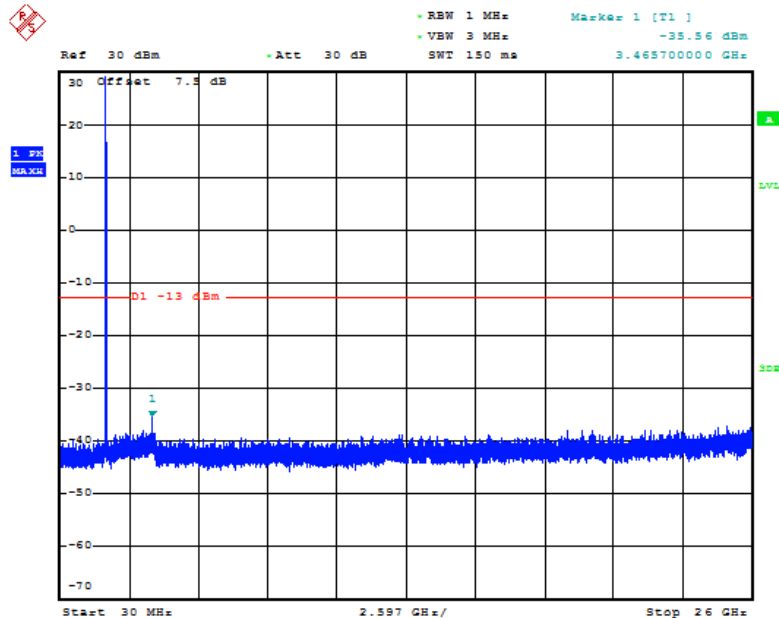
LTE band 2: Spurious emission limit -13dBm.



Date: 30.JAN.2019 15:35:47

Fig.153 LTE band 2: 30MHz – 26GHz

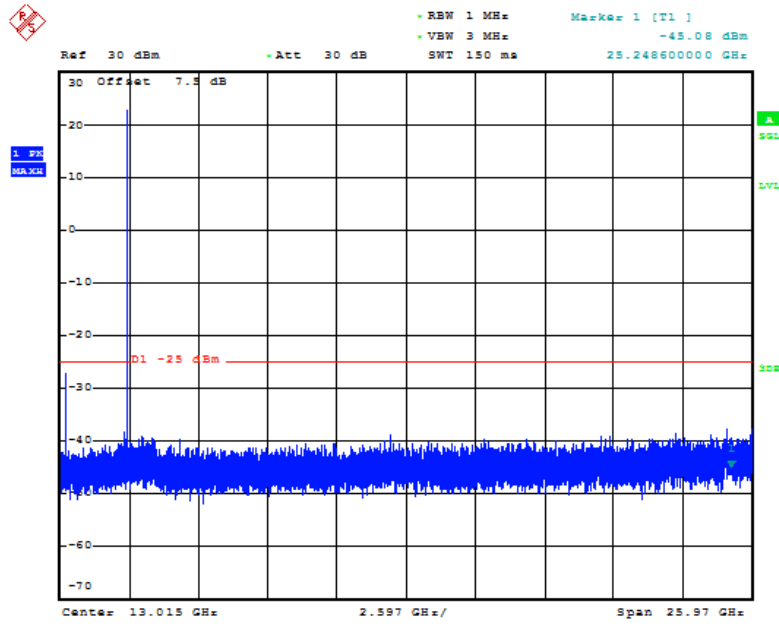
LTE band 4: Spurious emission limit -13dBm.



Date: 30.JAN.2019 15:36:24

Fig.154 LTE band 4: 30MHz – 26GHz

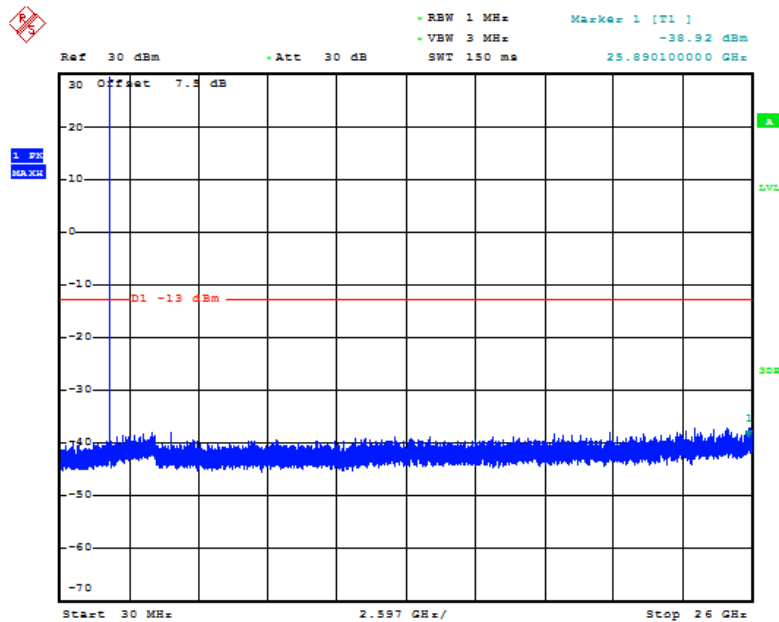
LTE band 7: Spurious emission limit -25dBm.



Date: 30.JAN.2019 15:48:10

Fig.155 LTE band 7: 30MHz – 26GHz

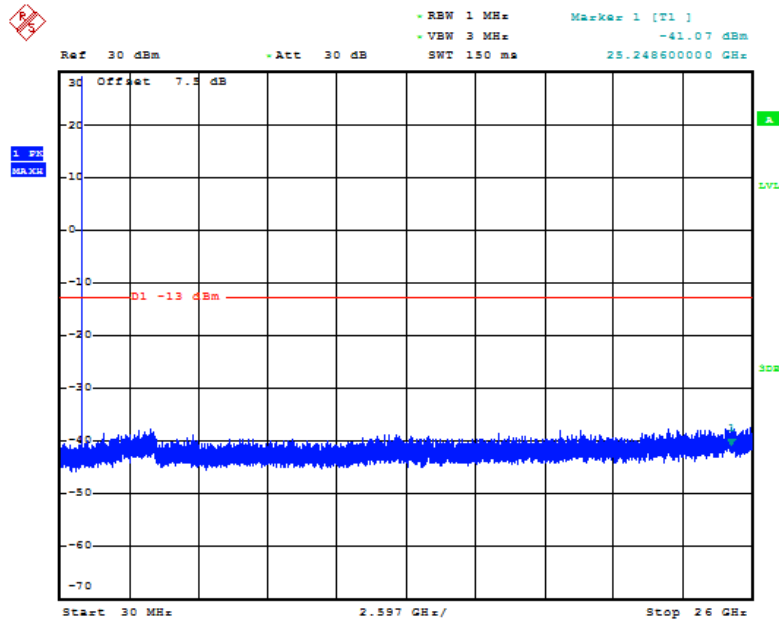
LTE band 25: Spurious emission limit -13dBm.



Date: 30.JAN.2019 15:37:02

Fig.156 LTE band 25: 30MHz – 26GHz

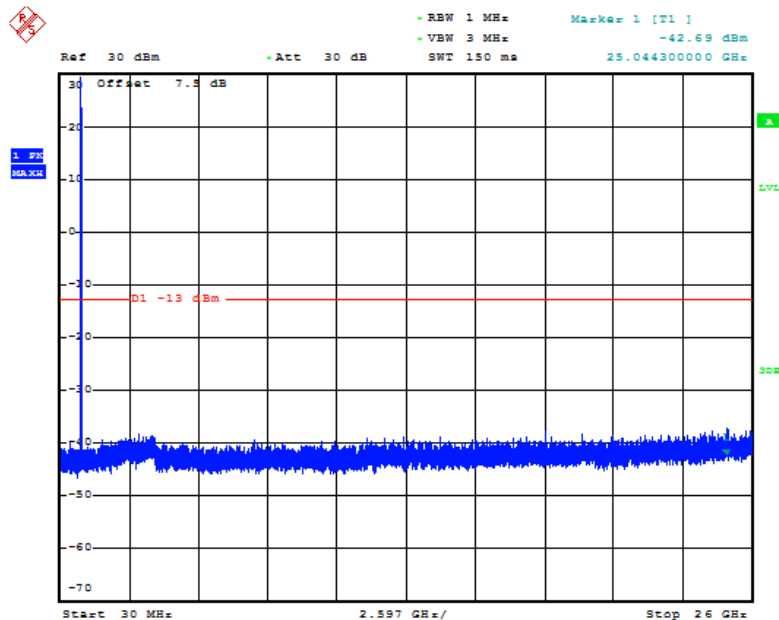
LTE band 26(Part 22): Spurious emission limit -13dBm.



Date: 30.JAN.2019 15:38:19

Fig.157 LTE band 26(Part 22): 30MHz – 26GHz

LTE band 26(Part 90): Spurious emission limit -13dBm.



Date: 31.JAN.2019 10:40:29

Fig.158 LTE band 26(Part 90): 30MHz – 26GHz

ANNEX A.8. PEAK-TO-AVERAGE POWER RATIO

Reference

FCC: CFR Part 24.232 (d), 27.50(a)

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

According to KDB 971168 5.7:

- a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
- b) Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
- c) Set the number of counts to a value that stabilizes the measured CCDF curve;
- d) Set the measurement interval to 1 ms
- e) Record the maximum PAPR level associated with a probability of 0.1%

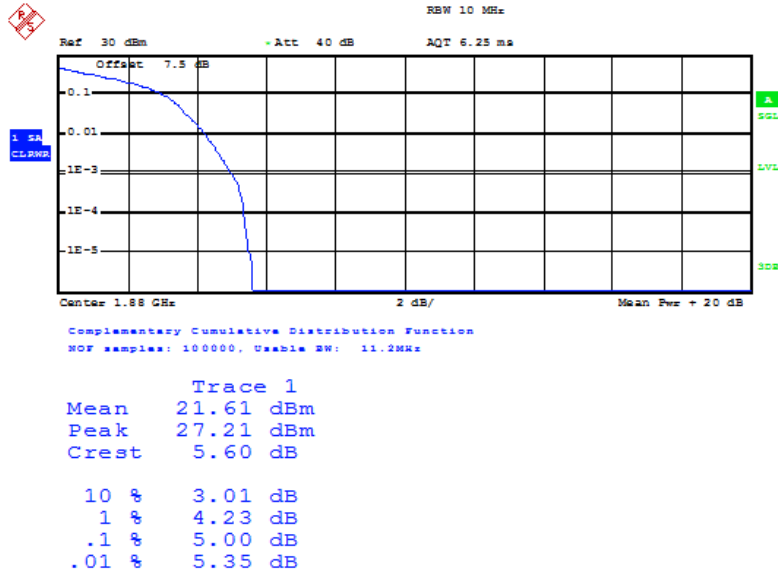
A.8.1 Measurement limit

not exceed 13 dB

A.8.2 Measurement results

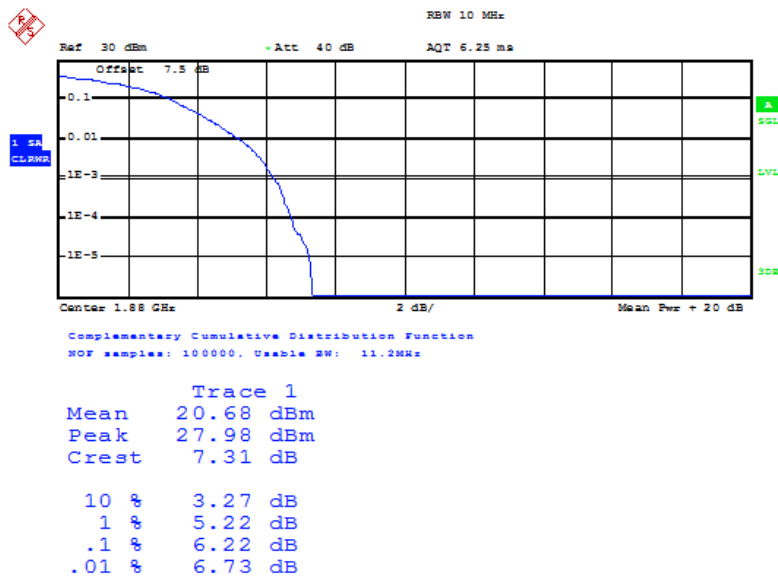
LTE band 2, 20MHz

| Frequency(MHz) | PAPR(dB) | |
|----------------|----------|------|
| | 1880.0 | QPSK |
| | 5 | 6.22 |



Date: 30. JAN. 2019 13:21:54

Fig.159 LTE band 2: QPSK

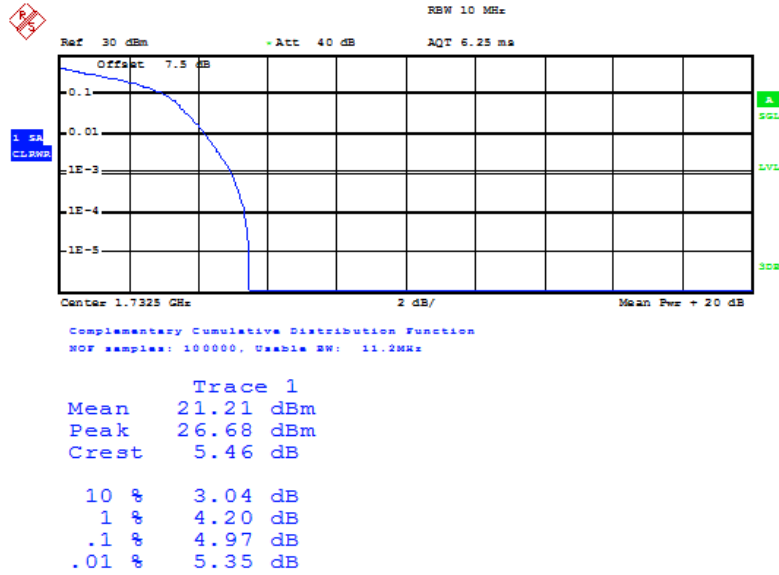


Date: 30. JAN. 2019 13:22:19

Fig.160 LTE band 2: 16QAM

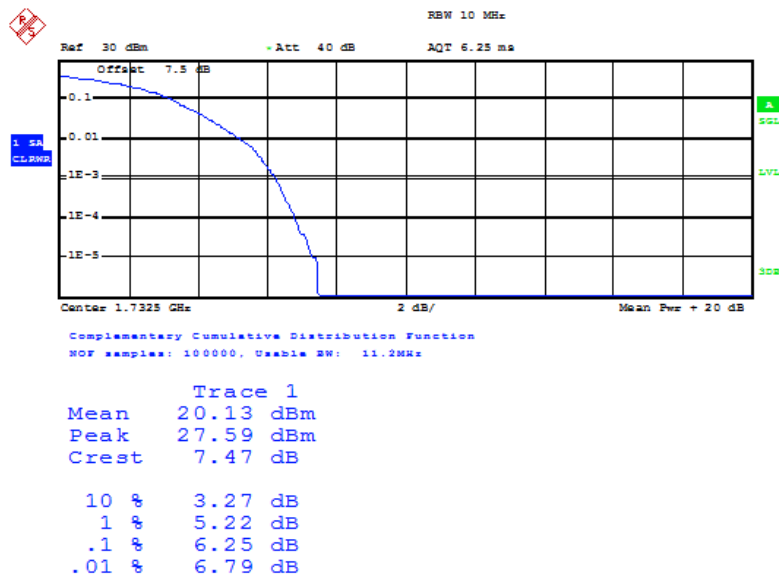
LTE band 4, 20MHz

| Frequency(MHz) | PAPR(dB) | |
|----------------|----------|------|
| | 1732.5 | QPSK |
| | 4.97 | 6.25 |



Date: 30. JAN. 2019 13:23:08

Fig.161 LTE band 4: QPSK

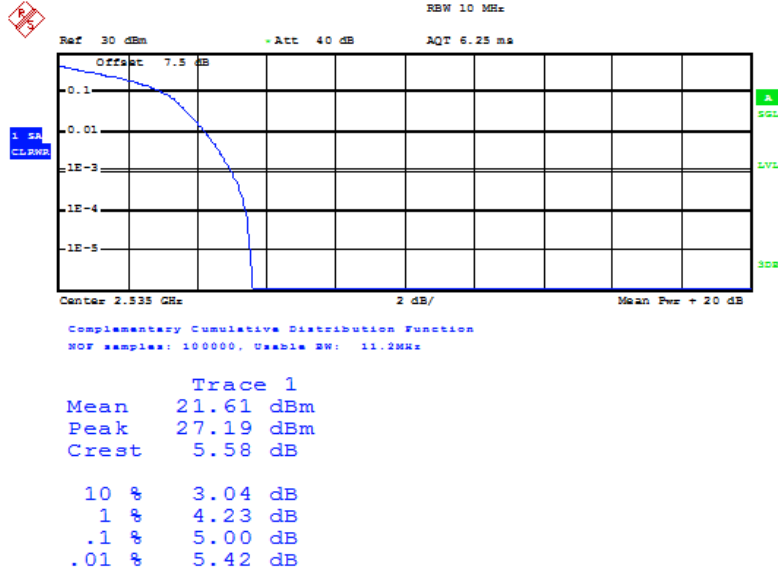


Date: 30. JAN. 2019 13:23:33

Fig.162 LTE band 4: 16QAM

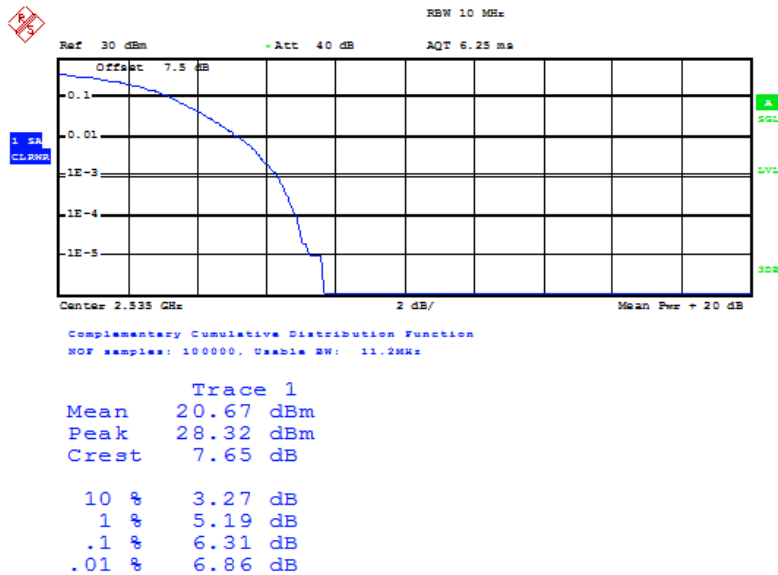
LTE band 7, 20MHz

| Frequency(MHz) | PAPR(dB) | |
|----------------|----------|------|
| | 2535.0 | QPSK |
| | 5 | 6.31 |



Date: 30. JAN. 2019 13:29:51

Fig.163 LTE band 7: QPSK

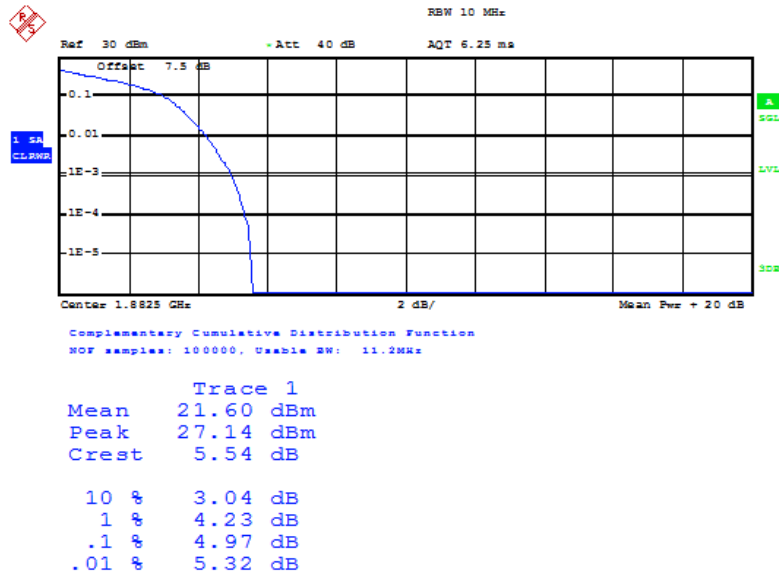


Date: 30. JAN. 2019 13:30:17

Fig.164 LTE band 7: 16QAM

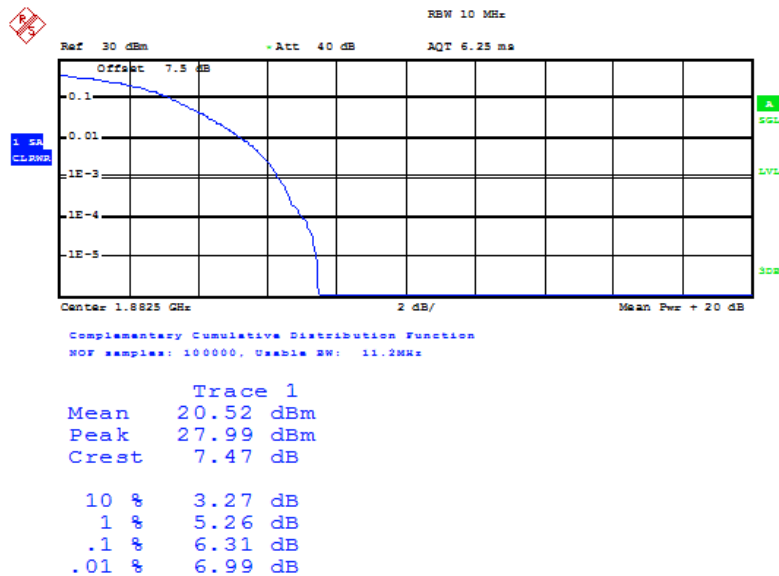
LTE band 25, 20MHz

| Frequency(MHz) | PAPR(dB) | |
|----------------|----------|------|
| | 1882.5 | QPSK |
| | 4.97 | 6.31 |



Date: 30.JAN.2019 13:24:22

Fig.165 LTE band 25: QPSK



Date: 30.JAN.2019 13:24:47

Fig.166 LTE band 25: 16QAM

ANNEX B. Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

ANNEX C. Detailed Test Results

Annex C.1. Main Terms

| | |
|------------|--|
| Verdict | Verdict of each test cases. |
| Test cases | Test cases identification number and description in ETSI EN 300 328 test specification and ETSI specification. |

Annex C.2. Terms used in Condition column

| | |
|------|--------------------|
| Tnom | Normal temperature |
| Tmin | Low temperature |
| Tmax | High temperature |
| Vnom | Normal voltage |

Annex C.3. Terms used in Verdict column

| | |
|----|--|
| P | Pass, the EUT complies with the essential requirements in the standard. |
| NM | Not measure, the test was not measured by ECIT. |
| NA | Not applicable, the test was not applicable. |
| F | Fail, the EUT does not comply with the essential requirements in the standard. |

Annex C.4. Terms used in Note column

| | |
|----------|---|
| EUT ID | EUT ID (e.g N01, N02.....) is used to identify the EUT tested used for each test cases as specified in section 3 of this test report. |
| Lab Code | Lab code is used to identify the subcontracted lab if this test cases is performed in the subcontracted lab. |

Subcontracted test lab code: N/A

ANNEX D. Accreditation Certificate

*****END OF REPORT*****