

# **FCC REPORT**

## **(LTE)**

**Applicant:** Smartech, C.A.

**Address of Applicant:** Manongo Avenue with Palma Real Street, C.C. Via Veneto, Milan Level, M32 Local, Manongo Valencia Venezuela

**Equipment Under Test (EUT)**

Product Name: Smart phone

Model No.: M3

Trade mark: Win

**FCC ID:** 2ATS6M3

**Applicable standards:** FCC CFR Title 47 Part 2  
FCC CFR Title 47 Part 27 Subpart L  
FCC CFR Title 47 Part 27 Subpart M

**Date of sample receipt:** 03 Apr., 2020

**Date of Test:** 04 Apr., to 26 Apr., 2020

**Date of report issued:** 13 May, 2020

**Test Result:** PASS\*

\*In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang  
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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## 2. Version

| Version No. | Date          | Description       |
|-------------|---------------|-------------------|
| 00          | 29 Apr., 2020 | Original          |
| 01          | 13 May, 2020  | Update page 64,65 |
|             |               |                   |
|             |               |                   |
|             |               |                   |

Tested by:

*Yaro Wu*

Test Engineer

Date:

13 May, 2020

Reviewed by:

*Winner Zhang*

Project Engineer

Date:

13 May, 2020

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#### 4. Test Summary

| Test Items                                                                                                                                                                                                                        | Section in CFR 47                                                                                  | Result                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------|
| RF Exposure (SAR)                                                                                                                                                                                                                 | Part 1.1307<br>Part 2.1093                                                                         | Passed<br>(Please refer to SAR Report) |
| RF Output Power                                                                                                                                                                                                                   | Part 2.1046<br>Part 27.50 (d)(4)<br>Part 27.50 (h)(2)                                              | Pass                                   |
| Peak-to-Average Ratio                                                                                                                                                                                                             | Part 27.50(d)(5)                                                                                   | Pass                                   |
| Modulation Characteristics                                                                                                                                                                                                        | Part 2.1047                                                                                        | Pass                                   |
| 99% & -26 dB Occupied Bandwidth                                                                                                                                                                                                   | Part 2.1049<br>Part 22.917(b)<br>Part 24.238(b)<br>Part 27.53(g)<br>Part 27.53(h)<br>Part 27.53(m) | Pass                                   |
| Out of band emission at antenna terminals                                                                                                                                                                                         | Part 27.53 (h)<br>Part 27.53(m)                                                                    | Pass                                   |
| Field strength of spurious radiation                                                                                                                                                                                              | Part 2.1053<br>Part 27.53 (h)<br>Part 27.53(m)                                                     | Pass                                   |
| Frequency stability vs. temperature                                                                                                                                                                                               | Part 22.355<br>Part 24.235<br>Part 27.54<br>Part 2.1055(a)(1)(b)                                   | Pass                                   |
| Frequency stability vs. voltage                                                                                                                                                                                                   | Part 22.355<br>Part 24.235<br>Part 27.54<br>Part 2.1055(d)(2)                                      | Pass                                   |
| <b>Remark:</b><br>1. Pass: The EUT complies with the essential requirements in the standard.<br>2. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer). |                                                                                                    |                                        |
| <b>Test Method:</b>                                                                                                                                                                                                               | ANSI/TIA-603-E-2016<br>ANSI C63.26-2015                                                            |                                        |

## 5. General Information

### 5.1 Client Information

|                        |                                                                                                                        |
|------------------------|------------------------------------------------------------------------------------------------------------------------|
| Applicant:             | Smartech, C.A.                                                                                                         |
| Address:               | Manongo Avenue with Palma Real Street, C.C. Via Veneto, Milan Level, M32 Local, Manongo Valencia Venezuela             |
| Manufacturer/ Factory: | United Creation Technology Corp., Ltd                                                                                  |
| Address:               | Room 201, Block A, Science and technology buliding phase-2, Nanhai Road 1057, Shekou, Nanshan district, Shenzhen China |

### 5.2 General Description of E.U.T.

|                            |                                                                                                              |
|----------------------------|--------------------------------------------------------------------------------------------------------------|
| Product Name:              | Smart phone                                                                                                  |
| Model No.:                 | M3                                                                                                           |
| Operation Frequency range: | LTE Band 4: TX: 1710MHz-1755MHz, RX: 2110MHz-2155MHz<br>LTE Band 7: TX: 2500MHz-2570MHz, RX: 2620MHz-2690MHz |
| Modulation type:           | QPSK, 16QAM                                                                                                  |
| Antenna type:              | Internal Antenna                                                                                             |
| Antenna gain:              | LTE Band 4: -3.1dBi<br>LTE Band 7: -3.5dBi                                                                   |
| Power supply:              | Rechargeable Li-ion Battery DC3.8V-2300mAh                                                                   |
| AC adapter:                | Model: M3<br>Input: AC100-240V, 50/60Hz, 0.2A<br>Output: DC 5.0V, 1.0A                                       |
| Test Sample Condition:     | The applicant provided engineering samples for staying in continuously transmitting for testing.             |

## Operation Frequency List:

| LTE Band 4 (1.4MHz) |                 | LTE Band 4 (3MHz)  |                 |
|---------------------|-----------------|--------------------|-----------------|
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 19957               | 1710.70         | 19965              | 1711.50         |
| 19958               | 1710.80         | 19966              | 1711.60         |
| ....                | ....            | ....               | ....            |
| 20174               | 1732.40         | 20174              | 1732.40         |
| 20175               | 1732.50         | 20175              | 1732.50         |
| 20176               | 1732.60         | 20176              | 1732.60         |
| ...                 | ...             | ...                | ...             |
| 20392               | 1754.20         | 20384              | 1753.40         |
| 20393               | 1754.30         | 20385              | 1753.50         |
| LTE Band 4 (5MHz)   |                 | LTE Band 4 (10MHz) |                 |
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 19975               | 1712.50         | 20000              | 1715.00         |
| 19976               | 1712.60         | 20001              | 1715.10         |
| ....                | ....            | ....               | ....            |
| 20174               | 1732.40         | 20174              | 1732.40         |
| 20175               | 1732.50         | 20175              | 1732.50         |
| 20176               | 1732.60         | 20176              | 1732.60         |
| ...                 | ...             | ...                | ...             |
| 20374               | 1752.40         | 20349              | 1749.90         |
| 20375               | 1752.50         | 20350              | 1750.00         |
| LTE Band 4 (15MHz)  |                 | LTE Band 4 (20MHz) |                 |
| Channel             | Frequency (MHz) | Channel            | Frequency (MHz) |
| 20025               | 1717.50         | 20050              | 1720.00         |
| 20026               | 1717.60         | 20051              | 1720.10         |
| ....                | ....            | ....               | ....            |
| 20174               | 1732.40         | 20174              | 1732.40         |
| 20175               | 1732.50         | 20175              | 1732.50         |
| 20176               | 1732.60         | 20176              | 1732.60         |
| ...                 | ...             | ...                | ...             |
| 20324               | 1747.40         | 20299              | 1744.90         |
| 20325               | 1747.50         | 20300              | 1745.00         |

| LTE Band 7 (5MHz)  |                 | LTE Band 7 (10MHz) |                 |
|--------------------|-----------------|--------------------|-----------------|
| Channel            | Frequency (MHz) | Channel            | Frequency (MHz) |
| 20775              | 2502.50         | 20800              | 2505.00         |
| 20776              | 2502.60         | 20801              | 2502.10         |
| ....               | ....            | ....               | ....            |
| 21099              | 2534.90         | 21099              | 2534.90         |
| 21100              | 2535.00         | 21100              | 2535.00         |
| 21101              | 2535.20         | 21101              | 2535.20         |
| ...                | ...             | ...                | ...             |
| 21424              | 2567.40         | 21399              | 2564.90         |
| 21425              | 2567.50         | 21400              | 2565.00         |
| LTE Band 7 (15MHz) |                 | LTE Band 7 (20MHz) |                 |
| Channel            | Frequency (MHz) | Channel            | Frequency (MHz) |
| 20825              | 2507.50         | 20850              | 2510.00         |
| 20826              | 2507.60         | 20851              | 2510.10         |
| ....               | ....            | ....               | ....            |
| 21099              | 2534.90         | 21099              | 2534.90         |
| 21100              | 2535.00         | 21100              | 2535.00         |
| 21101              | 2535.20         | 21101              | 2535.20         |
| ...                | ...             | ...                | ...             |
| 21374              | 2562.40         | 21349              | 2559.90         |
| 21375              | 2562.50         | 21350              | 2560.00         |

Regards to the operating frequency range, the lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channels as below:

| LTE Band 4 (1.4MHz) |       |                 | LTE Band 4 (3MHz)  |       |                 |
|---------------------|-------|-----------------|--------------------|-------|-----------------|
| Channel:            |       | Frequency (MHz) | Channel            |       | Frequency (MHz) |
| Lowest channel      | 19957 | 1710.70         | Lowest channel     | 19965 | 1711.50         |
| Middle channel      | 20175 | 1732.50         | Middle channel     | 20175 | 1732.50         |
| Highest channel     | 20393 | 1754.30         | Highest channel    | 20385 | 1753.50         |
| LTE Band 4 (5MHz)   |       |                 | LTE Band 4 (10MHz) |       |                 |
| Channel             |       | Frequency (MHz) | Channel            |       | Frequency (MHz) |
| Lowest channel      | 19975 | 1712.50         | Lowest channel     | 20000 | 1715.00         |
| Middle channel      | 20175 | 1732.50         | Middle channel     | 20175 | 1732.50         |
| Highest channel     | 20375 | 1752.50         | Highest channel    | 20350 | 1750.00         |
| LTE Band 4 (15MHz)  |       |                 | LTE Band 4 (20MHz) |       |                 |
| Channel             |       | Frequency (MHz) | Channel            |       | Frequency (MHz) |
| Lowest channel      | 20025 | 1717.50         | Lowest channel     | 20050 | 1720.00         |
| Middle channel      | 20175 | 1732.50         | Middle channel     | 20175 | 1732.50         |
| Highest channel     | 20325 | 1747.50         | Highest channel    | 20300 | 1745.00         |

| LTE Band 7 (5MHz)  |       |                 | LTE Band 7 (10MHz) |       |                 |
|--------------------|-------|-----------------|--------------------|-------|-----------------|
| Channel            |       | Frequency (MHz) | Channel            |       | Frequency (MHz) |
| Lowest channel     | 20775 | 2502.50         | Lowest channel     | 20800 | 2505.00         |
| Middle channel     | 21100 | 2535.00         | Middle channel     | 21100 | 2535.00         |
| Highest channel    | 21425 | 2567.50         | Highest channel    | 21400 | 2565.00         |
| LTE Band 7 (15MHz) |       |                 | LTE Band 7 (20MHz) |       |                 |
| Channel            |       | Frequency (MHz) | Channel            |       | Frequency (MHz) |
| Lowest channel     | 20825 | 2507.50         | Lowest channel     | 20850 | 2510.00         |
| Middle channel     | 21100 | 2535.00         | Middle channel     | 21100 | 2535.00         |
| Highest channel    | 21375 | 2562.50         | Highest channel    | 21350 | 2560.00         |

### 5.3 Test environment and mode

| Operating Environment:                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Temperature:                                                                                                                                                                                                                                                                                                                                                                                                                 | Normal: 15°C ~ 35°C, Extreme: -30°C ~ +50°C                      |
| Humidity:                                                                                                                                                                                                                                                                                                                                                                                                                    | 20 % ~ 75 % RH                                                   |
| Atmospheric Pressure:                                                                                                                                                                                                                                                                                                                                                                                                        | 1008 mbar                                                        |
| Voltage:                                                                                                                                                                                                                                                                                                                                                                                                                     | Nominal: 3.8Vdc, Extreme: Low 3.5Vdc, High 4.35Vdc               |
| Test mode:                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                  |
| LTE QPSK mode                                                                                                                                                                                                                                                                                                                                                                                                                | Keep the EUT communication with simulated station in QPSK mode   |
| LTE 16-QAM mode                                                                                                                                                                                                                                                                                                                                                                                                              | Keep the EUT communication with simulated station in 16-QAM mode |
| Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes with power adaptor, earphone and Data cable. Just the worst case position (H mode) shown in report. |                                                                  |

### 5.4 Description of Support Units

| Test Equipment    | Manufacturer | Model No. | Serial No. |
|-------------------|--------------|-----------|------------|
| Simulated Station | Anritsu      | MT8820C   | 6201026545 |

### 5.5 Measurement Uncertainty

| Parameters                          | Expanded Uncertainty |
|-------------------------------------|----------------------|
| Radiated Emission (9kHz ~ 30MHz)    | ±3.12 dB (k=2)       |
| Radiated Emission (30MHz ~ 1000MHz) | ±4.32 dB (k=2)       |
| Radiated Emission (1GHz ~ 18GHz)    | ±5.38 dB (k=2)       |
| Radiated Emission (18GHz ~ 40GHz)   | ±3.36 dB (k=2)       |

### 5.6 Related Submittal(s) / Grant (s)

|                                                              |
|--------------------------------------------------------------|
| This is an original grant, no related submittals and grants. |
|--------------------------------------------------------------|

### 5.7 Additions to, deviations, or exclusions from the method

|    |
|----|
| No |
|----|

### 5.8 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Designation No.: CN1211**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

## 5.9 Laboratory Location

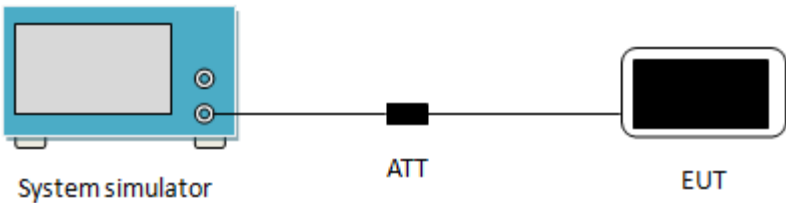
Shenzhen Zhongjian Nanfang Testing Co., Ltd.  
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 Shenzhen, Guangdong, China  
 Tel: +86-755-23118282, Fax: +86-755-23116366  
 Email: info@ccis-cb.com, Website: <http://www.ccis-cb.com>

## 5.10 Test Instruments list

| Test Equipment                  | Manufacturer    | Model No.     | Serial No.         | Cal. Date<br>(mm-dd-yy) | Cal. Due date<br>(mm-dd-yy) |
|---------------------------------|-----------------|---------------|--------------------|-------------------------|-----------------------------|
| 3m SAC                          | SAEMC           | 9m*6m*6m      | 966                | 07-22-2017              | 07-21-2020                  |
| BiConiLog Antenna               | SCHWARZBECK     | VULB9163      | 497                | 03-18-2019              | 03-17-2020                  |
|                                 |                 |               |                    | 03-18-2020              | 03-17-2021                  |
| Biconical Antenna               | SCHWARZBECK     | VUBA9117      | 359                | 06-22-2017              | 06-21-2020                  |
| Horn Antenna                    | SCHWARZBECK     | BBHA9120D     | 916                | 03-07-2020              | 03-06-2021                  |
| Horn Antenna                    | SCHWARZBECK     | BBHA9120D     | 1805               | 06-22-2017              | 06-21-2020                  |
| Horn Antenna                    | SCHWARZBECK     | BBHA 9170     | BBHA9170582        | 11-18-2019              | 11-17-2020                  |
| EMI Test Software               | AUDIX           | E3            | Version: 6.110919b |                         |                             |
| Pre-amplifier                   | HP              | 8447D         | 2944A09358         | 03-07-2020              | 03-06-2021                  |
| Pre-amplifier                   | CD              | PAP-1G18      | 11804              | 03-07-2020              | 03-06-2021                  |
| Spectrum analyzer               | Rohde & Schwarz | FSP30         | 101454             | 03-05-2020              | 03-04-2021                  |
| Spectrum analyzer               | Rohde & Schwarz | FSP40         | 100363             | 11-18-2019              | 11-17-2020                  |
| EMI Test Receiver               | Rohde & Schwarz | ESRP7         | 101070             | 03-05-2020              | 03-04-2021                  |
| Spectrum Analyzer               | Agilent         | N9020A        | MY50510123         | 11-18-2019              | 11-17-2020                  |
| Signal Generator                | Rohde & Schwarz | SMX           | 835454/016         | 03-05-2020              | 03-04-2021                  |
| Signal Generator                | R&S             | SMR20         | 1008100050         | 03-05-2020              | 03-04-2021                  |
| RF Switch Unit                  | MWRFTTEST       | MW200         | N/A                | N/A                     | N/A                         |
| Test Software                   | MWRFTTEST       | MTS8200       | Version: 2.0.0.0   |                         |                             |
| Cable                           | ZDECL           | Z108-NJ-NJ-81 | 1608458            | 03-07-2020              | 03-06-2021                  |
| Cable                           | MICRO-COAX      | MFR64639      | K10742-5           | 03-07-2020              | 03-06-2021                  |
| Cable                           | SUHNER          | SUCOFLEX100   | 58193/4PE          | 03-07-2020              | 03-06-2021                  |
| DC Power Supply                 | XinNuoEr        | WYK-10020K    | 1409050110020      | 09-25-2019              | 09-24-2020                  |
| Temperature<br>Humidity Chamber | HengPu          | HPGDS-500     | 20140828008        | 11-01-2019              | 11-31-2020                  |
| Simulated Station               | Rohde & Schwarz | CMW500        | 140493             | 07-22-2019              | 07-21-2020                  |

## 6. Test results

### 6.1 Conducted Output Power, ERP and EIRP

|                   |                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 27.50(d)(4), Part 27.50 (h)(2)                                                                                                                                                                                                                                                                                                                                                                |
| Limit:            | LTE Band 4: 1W, LTE Band 7: 2W                                                                                                                                                                                                                                                                                                                                                                     |
| Test Setup:       |  <p>The diagram illustrates the test setup. On the left is a blue 'System simulator' with a screen and two ports. A red line connects one of its ports to a black rectangular 'ATT' (attenuator). Another red line connects the other side of the 'ATT' to a black rectangular 'EUT' (Equipment Under Test).</p> |
| Test Procedure:   | The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the CMW500. Transmitter output power was read off in dBm.                                                                                                                                                                                                                                 |
| Test Instruments: | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                  |
| Test mode:        | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                   |
| Test results:     | Passed                                                                                                                                                                                                                                                                                                                                                                                             |

## Measurement Data:

| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |
|--------------------------------------------------------------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|
|                                                              |                 |                     |         |           | 19957               | 20175     | 20393     |
|                                                              |                 |                     |         |           | 1710.7MHz           | 1732.5MHz | 1754.3MHz |
| 4                                                            | 1.4             | QPSK                | 1       | 0         | 23.25               | 23.27     | 23.29     |
|                                                              |                 |                     | 1       | 2         | 23.26               | 23.32     | 23.26     |
|                                                              |                 |                     | 1       | 5         | 23.30               | 23.29     | 23.36     |
|                                                              |                 |                     | 3       | 0         | 22.28               | 22.38     | 22.56     |
|                                                              |                 |                     | 3       | 1         | 22.35               | 22.46     | 22.41     |
|                                                              |                 |                     | 3       | 2         | 22.29               | 22.40     | 22.45     |
|                                                              |                 |                     | 6       | 0         | 22.36               | 22.28     | 22.38     |
|                                                              |                 | Antenna Gain (dBi): |         |           | -3.1                |           |           |
|                                                              |                 | Max. EIRP (dBm):    |         |           | 20.26               |           |           |
|                                                              |                 | EIRP Limit (dBm):   |         |           | 30.00               |           |           |
|                                                              |                 | 16QAM               | 1       | 0         | 22.67               | 22.86     | 22.90     |
|                                                              |                 |                     | 1       | 2         | 22.86               | 22.62     | 22.73     |
|                                                              |                 |                     | 1       | 5         | 22.79               | 22.56     | 22.40     |
|                                                              |                 |                     | 3       | 0         | 21.47               | 21.52     | 21.68     |
|                                                              |                 |                     | 3       | 1         | 21.56               | 21.60     | 21.73     |
|                                                              |                 |                     | 3       | 2         | 21.50               | 21.55     | 21.74     |
|                                                              |                 |                     | 6       | 0         | 21.56               | 21.64     | 21.38     |
|                                                              |                 | Antenna Gain (dBi): |         |           | -3.1                |           |           |
| Max. EIRP (dBm):                                             |                 |                     | 19.80   |           |                     |           |           |
| EIRP Limit (dBm):                                            |                 |                     | 30.00   |           |                     |           |           |
|                                                              |                 |                     |         |           |                     |           |           |
| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |
|                                                              |                 |                     |         |           | 19965               | 20175     | 20385     |
|                                                              |                 |                     |         |           | 1711.5MHz           | 1732.5MHz | 1753.5MHz |
| 4                                                            | 3               | QPSK                | 1       | 0         | 23.29               | 23.36     | 23.22     |
|                                                              |                 |                     | 1       | 7         | 23.28               | 23.29     | 23.28     |
|                                                              |                 |                     | 1       | 14        | 23.31               | 23.44     | 23.23     |
|                                                              |                 |                     | 8       | 0         | 22.45               | 22.51     | 22.33     |
|                                                              |                 |                     | 8       | 4         | 22.38               | 22.47     | 22.35     |
|                                                              |                 |                     | 8       | 7         | 22.35               | 22.44     | 22.39     |
|                                                              |                 |                     | 15      | 0         | 22.36               | 22.29     | 22.44     |
|                                                              |                 | Antenna Gain (dBi): |         |           | -3.1                |           |           |
|                                                              |                 | Max. EIRP (dBm):    |         |           | 20.34               |           |           |
|                                                              |                 | EIRP Limit (dBm):   |         |           | 30.00               |           |           |
|                                                              |                 | 16QAM               | 1       | 0         | 22.50               | 22.59     | 23.09     |
|                                                              |                 |                     | 1       | 7         | 22.68               | 22.54     | 23.22     |
|                                                              |                 |                     | 1       | 14        | 22.46               | 22.63     | 23.11     |
|                                                              |                 |                     | 8       | 0         | 21.25               | 21.41     | 21.29     |
|                                                              |                 |                     | 8       | 4         | 21.34               | 21.61     | 21.45     |
|                                                              |                 |                     | 8       | 7         | 21.31               | 21.48     | 21.38     |
|                                                              |                 |                     | 15      | 0         | 21.53               | 21.46     | 21.66     |
|                                                              |                 | Antenna Gain (dBi): |         |           | -3.1                |           |           |
| Max. EIRP (dBm):                                             |                 |                     | 20.12   |           |                     |           |           |
| EIRP Limit (dBm):                                            |                 |                     | 30.00   |           |                     |           |           |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). |                 |                     |         |           |                     |           |           |

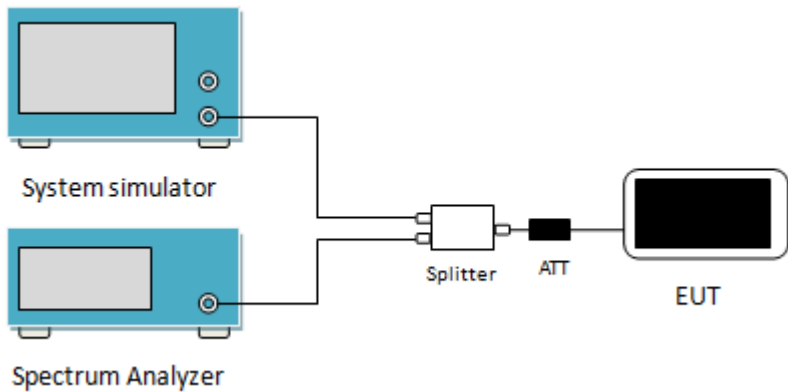
| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |
|--------------------------------------------------------------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|--|
|                                                              |                 |                     |         |           | 19975               | 20175     | 20375     |  |
|                                                              |                 |                     |         |           | 1712.5MHz           | 1732.5MHz | 1752.5MHz |  |
| 4                                                            | 5               | QPSK                | 1       | 0         | 23.24               | 23.31     | 23.33     |  |
|                                                              |                 |                     | 1       | 12        | 23.37               | 23.27     | 23.17     |  |
|                                                              |                 |                     | 1       | 24        | 23.23               | 23.29     | 23.29     |  |
|                                                              |                 |                     | 12      | 0         | 22.53               | 22.21     | 22.20     |  |
|                                                              |                 |                     | 12      | 6         | 22.46               | 22.26     | 22.43     |  |
|                                                              |                 |                     | 12      | 11        | 22.43               | 22.43     | 22.22     |  |
|                                                              |                 |                     | 25      | 0         | 22.41               | 22.29     | 22.37     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | -3.1      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 20.27     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 30.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 22.67               | 22.44     | 22.38     |  |
|                                                              |                 |                     | 1       | 12        | 22.85               | 22.76     | 22.56     |  |
|                                                              |                 |                     | 1       | 24        | 22.54               | 22.27     | 22.71     |  |
|                                                              |                 |                     | 12      | 0         | 21.61               | 21.43     | 21.05     |  |
|                                                              |                 |                     | 12      | 6         | 21.46               | 21.32.    | 21.39     |  |
|                                                              |                 |                     | 12      | 11        | 21.68               | 21.39     | 21.29     |  |
|                                                              |                 |                     | 25      | 0         | 21.60               | 21.41     | 21.46     |  |
| Antenna Gain (dBi):                                          |                 |                     |         | -3.1      |                     |           |           |  |
| Max. EIRP (dBm):                                             |                 |                     |         | 19.75     |                     |           |           |  |
| EIRP Limit (dBm):                                            |                 |                     |         | 30.00     |                     |           |           |  |
|                                                              |                 |                     |         |           |                     |           |           |  |
| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |
|                                                              |                 |                     |         |           | 20000               | 20175     | 20350     |  |
|                                                              |                 |                     |         |           | 1715.0MHz           | 1732.5MHz | 1750.0MHz |  |
| 4                                                            | 10              | QPSK                | 1       | 0         | 23.31               | 23.23     | 23.39     |  |
|                                                              |                 |                     | 1       | 24        | 23.23               | 23.26     | 23.43     |  |
|                                                              |                 |                     | 1       | 49        | 23.21               | 23.25     | 23.30     |  |
|                                                              |                 |                     | 25      | 0         | 22.29               | 22.26     | 22.29     |  |
|                                                              |                 |                     | 25      | 12        | 22.21               | 22.21     | 22.50     |  |
|                                                              |                 |                     | 25      | 24        | 22.27               | 22.46     | 22.36     |  |
|                                                              |                 |                     | 50      | 0         | 22.48               | 22.21     | 22.32     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | -3.1      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 20.33     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 30.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 22.56               | 22.34     | 22.53     |  |
|                                                              |                 |                     | 1       | 24        | 22.54               | 22.72     | 22.68     |  |
|                                                              |                 |                     | 1       | 49        | 22.95               | 22.41     | 22.32     |  |
|                                                              |                 |                     | 25      | 0         | 21.63               | 21.54     | 21.66     |  |
|                                                              |                 |                     | 25      | 12        | 21.58               | 21.56     | 21.29     |  |
|                                                              |                 |                     | 25      | 24        | 21.45               | 21.44     | 21.41     |  |
|                                                              |                 |                     | 50      | 0         | 21.43               | 21.40     | 21.70     |  |
| Antenna Gain (dBi):                                          |                 |                     |         | -3.1      |                     |           |           |  |
| Max. EIRP (dBm):                                             |                 |                     |         | 19.85     |                     |           |           |  |
| EIRP Limit (dBm):                                            |                 |                     |         | 30.00     |                     |           |           |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). |                 |                     |         |           |                     |           |           |  |

| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |
|--------------------------------------------------------------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|
|                                                              |                 |                     |         |           | 20025               | 20175     | 20325     |
|                                                              |                 |                     |         |           | 1717.5MHz           | 1732.5MHz | 1747.5MHz |
| 4                                                            | 15              | QPSK                | 1       | 0         | 23.26               | 23.32     | 23.45     |
|                                                              |                 |                     | 1       | 37        | 23.20               | 23.30     | 23.40     |
|                                                              |                 |                     | 1       | 74        | 23.19               | 23.24     | 23.34     |
|                                                              |                 |                     | 36      | 0         | 22.35               | 22.52     | 22.53     |
|                                                              |                 |                     | 36      | 16        | 22.27               | 22.30     | 22.28     |
|                                                              |                 |                     | 36      | 35        | 22.16               | 22.43     | 22.38     |
|                                                              |                 |                     | 75      | 0         | 22.22               | 22.27     | 22.50     |
|                                                              |                 | Antenna Gain (dBi): |         |           | -3.1                |           |           |
|                                                              |                 | Max. EIRP (dBm):    |         |           | 20.35               |           |           |
|                                                              |                 | EIRP Limit (dBm):   |         |           | 30.00               |           |           |
|                                                              |                 | 16QAM               | 1       | 0         | 22.77               | 22.72     | 22.93     |
|                                                              |                 |                     | 1       | 37        | 22.38               | 22.46     | 22.87     |
|                                                              |                 |                     | 1       | 74        | 22.33               | 22.84     | 22.82     |
|                                                              |                 |                     | 36      | 0         | 21.40               | 21.26     | 21.48     |
|                                                              |                 |                     | 36      | 16        | 21.39               | 21.40     | 21.53     |
|                                                              |                 |                     | 36      | 35        | 21.44               | 21.43     | 21.36     |
|                                                              |                 |                     | 75      | 0         | 21.56               | 21.58     | 21.70     |
|                                                              |                 | Antenna Gain (dBi): |         |           | -3.1                |           |           |
|                                                              |                 | Max. EIRP (dBm):    |         |           | 19.83               |           |           |
|                                                              |                 | EIRP Limit (dBm):   |         |           | 30.00               |           |           |
|                                                              |                 |                     |         |           |                     |           |           |
| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |
|                                                              |                 |                     |         |           | 20050               | 20175     | 20300     |
|                                                              |                 |                     |         |           | 1720.0MHz           | 1732.5MHz | 1745.0MHz |
| 4                                                            | 20              | QPSK                | 1       | 0         | 23.32               | 23.40     | 23.42     |
|                                                              |                 |                     | 1       | 49        | 23.41               | 23.37     | 23.36     |
|                                                              |                 |                     | 1       | 99        | 23.30               | 23.20     | 23.15     |
|                                                              |                 |                     | 50      | 0         | 22.53               | 22.24     | 22.34     |
|                                                              |                 |                     | 50      | 24        | 22.49               | 22.23     | 22.51     |
|                                                              |                 |                     | 50      | 49        | 22.25               | 22.34     | 22.32     |
|                                                              |                 |                     | 100     | 0         | 22.44               | 22.47     | 22.46     |
|                                                              |                 | Antenna Gain (dBi): |         |           | -3.1                |           |           |
|                                                              |                 | Max. EIRP (dBm):    |         |           | 20.32               |           |           |
|                                                              |                 | EIRP Limit (dBm):   |         |           | 30.00               |           |           |
|                                                              |                 | 16QAM               | 1       | 0         | 22.07               | 22.88     | 22.45     |
|                                                              |                 |                     | 1       | 49        | 22.53               | 22.36     | 22.49     |
|                                                              |                 |                     | 1       | 99        | 22.16               | 22.93     | 22.62     |
|                                                              |                 |                     | 50      | 0         | 21.47               | 21.34     | 21.65     |
|                                                              |                 |                     | 50      | 24        | 21.57               | 21.78     | 21.43     |
|                                                              |                 |                     | 50      | 49        | 21.71               | 21.66     | 21.58     |
|                                                              |                 |                     | 100     | 0         | 21.53               | 21.54     | 21.56     |
|                                                              |                 | Antenna Gain (dBi): |         |           | -3.1                |           |           |
|                                                              |                 | Max. EIRP (dBm):    |         |           | 19.83               |           |           |
|                                                              |                 | EIRP Limit (dBm):   |         |           | 30.00               |           |           |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). |                 |                     |         |           |                     |           |           |

| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |
|--------------------------------------------------------------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|--|
|                                                              |                 |                     |         |           | 20775               | 21100     | 21425     |  |
|                                                              |                 |                     |         |           | 2502.5MHz           | 2535.0MHz | 2567.5MHz |  |
| 7                                                            | 5               | QPSK                | 1       | 0         | 22.91               | 22.94     | 22.94     |  |
|                                                              |                 |                     | 1       | 12        | 23.01               | 22.93     | 22.95     |  |
|                                                              |                 |                     | 1       | 24        | 22.93               | 22.97     | 23.02     |  |
|                                                              |                 |                     | 12      | 0         | 22.38               | 22.11     | 22.21     |  |
|                                                              |                 |                     | 12      | 6         | 22.19               | 22.02     | 22.16     |  |
|                                                              |                 |                     | 12      | 11        | 22.23               | 22.25     | 22.49     |  |
|                                                              |                 |                     | 25      | 0         | 22.01               | 22.11     | 22.19     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | -3.5      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 19.52     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 22.08               | 22.19     | 22.70     |  |
|                                                              |                 |                     | 1       | 12        | 22.48               | 22.34     | 22.26     |  |
|                                                              |                 |                     | 1       | 24        | 22.15               | 22.19     | 22.40     |  |
|                                                              |                 |                     | 12      | 0         | 21.14               | 21.08     | 21.59     |  |
|                                                              |                 |                     | 12      | 6         | 21.09               | 21.06     | 21.49     |  |
|                                                              |                 |                     | 12      | 11        | 21.01               | 21.20     | 21.48     |  |
|                                                              |                 |                     | 25      | 0         | 21.19               | 21.12     | 21.62     |  |
| Antenna Gain (dBi):                                          |                 |                     |         | -3.5      |                     |           |           |  |
| Max. EIRP (dBm):                                             |                 |                     |         | 19.20     |                     |           |           |  |
| EIRP Limit (dBm):                                            |                 |                     |         | 33.00     |                     |           |           |  |
|                                                              |                 |                     |         |           |                     |           |           |  |
| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |
|                                                              |                 |                     |         |           | 20800               | 21100     | 21400     |  |
|                                                              |                 |                     |         |           | 2505.0MHz           | 2535.0MHz | 2565.0MHz |  |
| 7                                                            | 10              | QPSK                | 1       | 0         | 22.90               | 22.90     | 22.99     |  |
|                                                              |                 |                     | 1       | 24        | 22.88               | 22.98     | 22.96     |  |
|                                                              |                 |                     | 1       | 49        | 22.92               | 22.97     | 23.03     |  |
|                                                              |                 |                     | 25      | 0         | 22.00               | 22.23     | 22.19     |  |
|                                                              |                 |                     | 25      | 12        | 22.03               | 22.03     | 22.25     |  |
|                                                              |                 |                     | 25      | 24        | 22.07               | 22.17     | 22.17     |  |
|                                                              |                 |                     | 50      | 0         | 22.03               | 22.03     | 22.20     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | -3.5      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 19.53     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 22.12               | 22.08     | 22.41     |  |
|                                                              |                 |                     | 1       | 24        | 22.44               | 22.05     | 22.28     |  |
|                                                              |                 |                     | 1       | 49        | 22.34               | 22.29     | 22.16     |  |
|                                                              |                 |                     | 25      | 0         | 21.30               | 21.32     | 21.47     |  |
|                                                              |                 |                     | 25      | 12        | 21.40               | 21.21     | 21.52     |  |
|                                                              |                 |                     | 25      | 24        | 21.25               | 21.19     | 21.46     |  |
|                                                              |                 |                     | 50      | 0         | 21.45               | 21.56     | 21.53     |  |
| Antenna Gain (dBi):                                          |                 |                     |         | -3.5      |                     |           |           |  |
| Max. EIRP (dBm):                                             |                 |                     |         | 18.94     |                     |           |           |  |
| EIRP Limit (dBm):                                            |                 |                     |         | 33.00     |                     |           |           |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). |                 |                     |         |           |                     |           |           |  |

| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |
|--------------------------------------------------------------|-----------------|---------------------|---------|-----------|---------------------|-----------|-----------|--|
|                                                              |                 |                     |         |           | 20825               | 21100     | 21375     |  |
|                                                              |                 |                     |         |           | 2507.5MHz           | 2535.0MHz | 2562.5MHz |  |
| 7                                                            | 15              | QPSK                | 1       | 0         | 22.98               | 23.10     | 23.14     |  |
|                                                              |                 |                     | 1       | 37        | 23.02               | 23.06     | 23.12     |  |
|                                                              |                 |                     | 1       | 74        | 23.00               | 23.09     | 23.11     |  |
|                                                              |                 |                     | 36      | 0         | 22.22               | 22.20     | 22.09     |  |
|                                                              |                 |                     | 36      | 16        | 22.14               | 22.11     | 22.23     |  |
|                                                              |                 |                     | 36      | 35        | 22.15               | 22.09     | 22.11     |  |
|                                                              |                 |                     | 75      | 0         | 22.02               | 22.08     | 22.20     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | -3.5      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 19.64     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 22.21               | 22.41     | 22.69     |  |
|                                                              |                 |                     | 1       | 37        | 22.40               | 22.78     | 22.72     |  |
|                                                              |                 |                     | 1       | 74        | 22.04               | 22.74     | 22.82     |  |
|                                                              |                 |                     | 36      | 0         | 21.34               | 21.01     | 21.97     |  |
|                                                              |                 |                     | 36      | 16        | 21.37               | 21.32     | 21.00     |  |
|                                                              |                 |                     | 36      | 35        | 21.38               | 21.27     | 21.35     |  |
|                                                              |                 |                     | 75      | 0         | 21.34               | 21.29     | 21.28     |  |
| Antenna Gain (dBi):                                          |                 |                     |         | -3.5      |                     |           |           |  |
| Max. EIRP (dBm):                                             |                 |                     |         | 19.32     |                     |           |           |  |
| EIRP Limit (dBm):                                            |                 |                     |         | 33.00     |                     |           |           |  |
|                                                              |                 |                     |         |           |                     |           |           |  |
| LTE Band                                                     | Bandwidth (MHz) | Modulation          | RB Size | RB Offset | Average Power (dBm) |           |           |  |
|                                                              |                 |                     |         |           | 20850               | 21100     | 21350     |  |
|                                                              |                 |                     |         |           | 2510.0MHz           | 2535.0MHz | 2560.0MHz |  |
| 7                                                            | 20              | QPSK                | 1       | 0         | 23.24               | 23.10     | 23.17     |  |
|                                                              |                 |                     | 1       | 49        | 23.17               | 23.15     | 23.07     |  |
|                                                              |                 |                     | 1       | 99        | 23.13               | 23.19     | 23.14     |  |
|                                                              |                 |                     | 50      | 0         | 22.22               | 22.17     | 22.14     |  |
|                                                              |                 |                     | 50      | 24        | 22.44               | 22.14     | 22.12     |  |
|                                                              |                 |                     | 50      | 49        | 22.28               | 22.05     | 22.40     |  |
|                                                              |                 |                     | 100     | 0         | 22.20               | 22.08     | 22.18     |  |
|                                                              |                 | Antenna Gain (dBi): |         |           |                     | -3.5      |           |  |
|                                                              |                 | Max. EIRP (dBm):    |         |           |                     | 19.74     |           |  |
|                                                              |                 | EIRP Limit (dBm):   |         |           |                     | 33.00     |           |  |
|                                                              |                 | 16QAM               | 1       | 0         | 22.47               | 22.34     | 22.41     |  |
|                                                              |                 |                     | 1       | 49        | 22.62               | 22.49     | 22.24     |  |
|                                                              |                 |                     | 1       | 99        | 22.31               | 22.48     | 22.27     |  |
|                                                              |                 |                     | 50      | 0         | 21.62               | 21.33     | 22.05     |  |
|                                                              |                 |                     | 50      | 24        | 21.97               | 21.51     | 22.00     |  |
|                                                              |                 |                     | 50      | 49        | 22.25               | 21.70     | 21.79     |  |
|                                                              |                 |                     | 100     | 0         | 21.94               | 21.56     | 21.92     |  |
| Antenna Gain (dBi):                                          |                 |                     |         | -3.5      |                     |           |           |  |
| Max. EIRP (dBm):                                             |                 |                     |         | 19.12     |                     |           |           |  |
| EIRP Limit (dBm):                                            |                 |                     |         | 33.00     |                     |           |           |  |
| Note: EIRP (dBm) = Average power (dBm) + Antenna Gain (dBi). |                 |                     |         |           |                     |           |           |  |

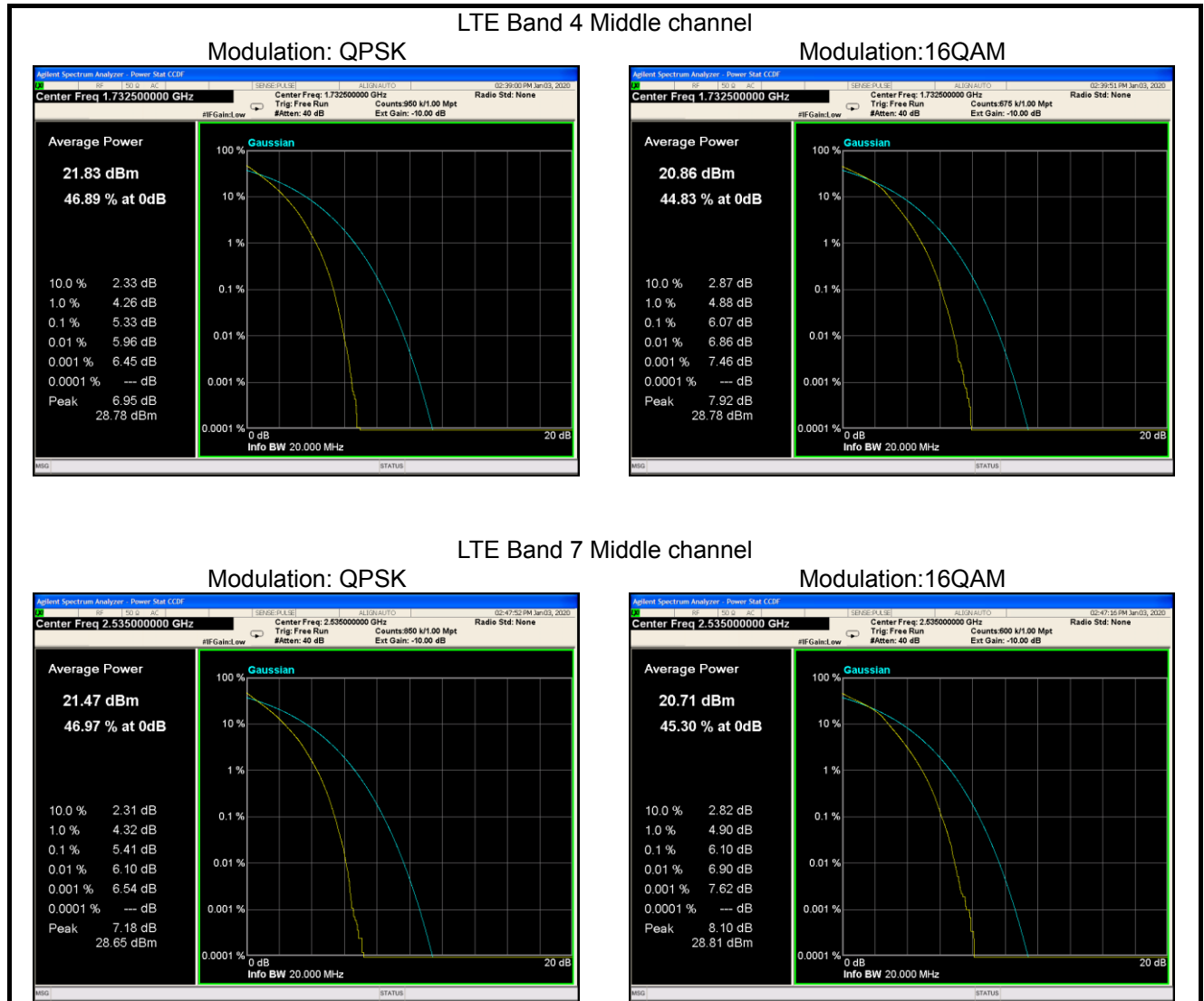
## 6.2 Peak-to-Average Ratio

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 27.50(d)(5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Limit:            | The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test Setup:       |  <p>The diagram illustrates the test setup. On the left, there are two blue rectangular units: the top one is labeled 'System simulator' and the bottom one is labeled 'Spectrum Analyzer'. Both have a single output port. These two ports are connected to a single input port of a white rectangular unit labeled 'Splitter'. The 'Splitter' has two output ports. One output port is connected to a black rectangular unit labeled 'ATT' (Attenuator). The other output port is connected to a black rectangular unit labeled 'EUT' (Equipment Under Test).</p> |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.</li> <li>2 Set the CCDF option in spectrum analyzer, <math>RBW \geq OBW</math>,</li> <li>3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level.</li> <li>4 Repeat step 1~3 at other frequency and modulations.</li> </ol>                                                                                                                                                                                                                                        |
| Test Instruments: | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test mode:        | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Test results:     | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

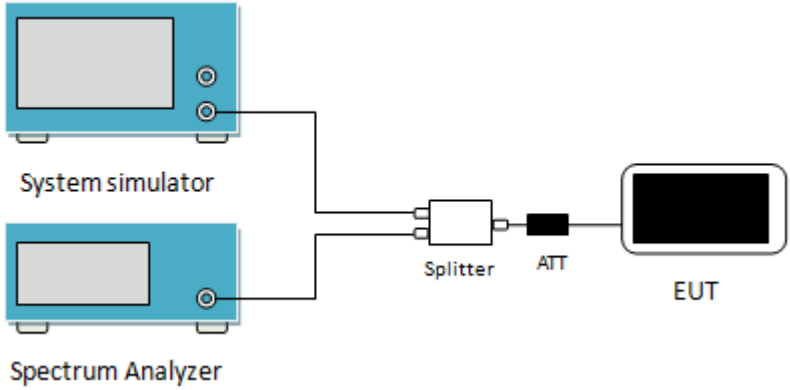
## Measurement Data (Worst case):

| Bandwidth                   | Modulation | RB Size | RB Offset | PAPR |
|-----------------------------|------------|---------|-----------|------|
| LTE Band 4 (Middle Channel) |            |         |           |      |
| 20MHz                       | QPSK       | 100     | 0         | 5.33 |
|                             | 16QAM      | 100     | 0         | 6.07 |
| LTE Band 7 (Middle Channel) |            |         |           |      |
| 20MHz                       | QPSK       | 100     | 0         | 5.41 |
|                             | 16QAM      | 100     | 0         | 6.10 |

Test plots as below:



### 6.3 Occupy Bandwidth

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 27.53(h), Part 27.53(m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Setup:       |  <p>The diagram illustrates the test setup. On the left, there are two blue rectangular units: the top one is labeled 'System simulator' and the bottom one is labeled 'Spectrum Analyzer'. Both have a single output port on their right side. These two ports are connected to a single input port of a white rectangular unit labeled 'Splitter'. The 'Splitter' has two output ports on its right side. One output port is connected to a black rectangular unit labeled 'ATT' (Attenuator). The other output port is connected to a white rectangular unit with a black screen, labeled 'EUT' (Equipment Under Test).</p> |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer</li> <li>2. RBW was set to about 1% ~ 5% of emission BW, VBW= 3 times RBW.</li> <li>3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.</li> </ol>                                                                                                                                                                                                                                                                                    |
| Test Instruments: | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Test mode:        | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Test results:     | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

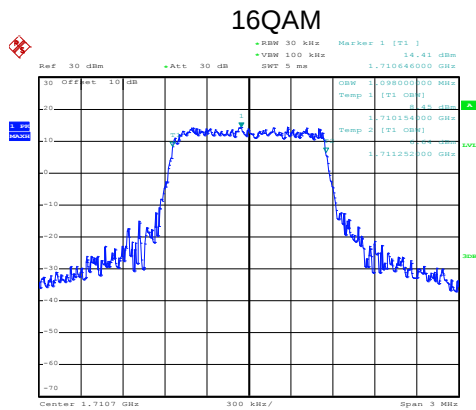
## Measurement Data

| LTE Band 4 |         |                 |            |               |                 |
|------------|---------|-----------------|------------|---------------|-----------------|
| Bandwidth  | Channel | Frequency (MHz) | Modulation | 99% OBW (kHz) | -26dBcEBW (kHz) |
| 1.4MHz     | 19957   | 1710.7          | 16QAM      | 1098          | 1254            |
|            |         |                 | QPSK       | 1104          | 1266            |
|            | 20175   | 1732.5          | 16QAM      | 1092          | 1272            |
|            |         |                 | QPSK       | 1098          | 1266            |
|            | 20393   | 1754.3          | 16QAM      | 1098          | 1254            |
|            |         |                 | QPSK       | 1104          | 1242            |
| 3MHz       | 19965   | 1711.5          | 16QAM      | 2748          | 3072            |
|            |         |                 | QPSK       | 2760          | 3132            |
|            | 20175   | 1732.5          | 16QAM      | 2736          | 3036            |
|            |         |                 | QPSK       | 2760          | 3096            |
|            | 20385   | 1750.5          | 16QAM      | 2736          | 3072            |
|            |         |                 | QPSK       | 2760          | 3120            |
| 5MHz       | 19975   | 1712.5          | 16QAM      | 4500          | 4860            |
|            |         |                 | QPSK       | 4520          | 4980            |
|            | 20175   | 1732.5          | 16QAM      | 4500          | 4900            |
|            |         |                 | QPSK       | 4520          | 4960            |
|            | 20375   | 1752.5          | 16QAM      | 4500          | 5000            |
|            |         |                 | QPSK       | 4540          | 5020            |
| 10MHz      | 20000   | 1715.0          | 16QAM      | 9080          | 10040           |
|            |         |                 | QPSK       | 9160          | 10280           |
|            | 20175   | 1732.5          | 16QAM      | 9120          | 10120           |
|            |         |                 | QPSK       | 9080          | 10600           |
|            | 20350   | 1750.0          | 16QAM      | 9080          | 10000           |
|            |         |                 | QPSK       | 9120          | 10840           |
| 15MHz      | 20025   | 1717.5          | 16QAM      | 13500         | 14880           |
|            |         |                 | QPSK       | 13560         | 15120           |
|            | 20175   | 1732.5          | 16QAM      | 13560         | 14760           |
|            |         |                 | QPSK       | 13500         | 15060           |
|            | 20325   | 1747.5          | 16QAM      | 13500         | 14820           |
|            |         |                 | QPSK       | 13560         | 14820           |
| 20MHz      | 20050   | 1720.0          | 16QAM      | 18000         | 19680           |
|            |         |                 | QPSK       | 18080         | 19600           |
|            | 20175   | 1732.5          | 16QAM      | 17920         | 19760           |
|            |         |                 | QPSK       | 18000         | 19520           |
|            | 20300   | 1745.0          | 16QAM      | 18000         | 19840           |
|            |         |                 | QPSK       | 18000         | 19440           |

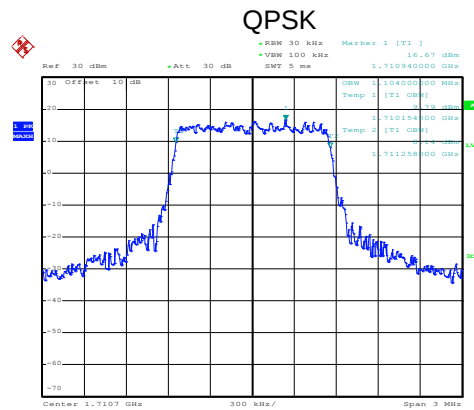
| LTE Band 7 |         |                 |            |               |                 |
|------------|---------|-----------------|------------|---------------|-----------------|
| Bandwidth  | Channel | Frequency (MHz) | Modulation | 99% OBW (kHz) | -26dBcEBW (kHz) |
| 5MHz       | 20775   | 2502.5          | 16QAM      | 4500          | 4940            |
|            |         |                 | QPSK       | 4520          | 4960            |
|            | 21100   | 2535.0          | 16QAM      | 4520          | 4860            |
|            |         |                 | QPSK       | 4500          | 4920            |
|            | 21425   | 2567.5          | 16QAM      | 4480          | 4980            |
|            |         |                 | QPSK       | 4520          | 4960            |
| 10MHz      | 20800   | 2505.0          | 16QAM      | 9120          | 9960            |
|            |         |                 | QPSK       | 9080          | 10240           |
|            | 21100   | 2535.0          | 16QAM      | 9120          | 10120           |
|            |         |                 | QPSK       | 9120          | 10200           |
|            | 21400   | 2565.0          | 16QAM      | 9080          | 10080           |
|            |         |                 | QPSK       | 9160          | 10080           |
| 15MHz      | 20825   | 2507.5          | 16QAM      | 13560         | 14700           |
|            |         |                 | QPSK       | 13500         | 15120           |
|            | 21100   | 2535.0          | 16QAM      | 13500         | 14700           |
|            |         |                 | QPSK       | 13500         | 14880           |
|            | 21375   | 2562.5          | 16QAM      | 13440         | 14700           |
|            |         |                 | QPSK       | 13560         | 15000           |
| 20MHz      | 20850   | 2510.0          | 16QAM      | 18000         | 19360           |
|            |         |                 | QPSK       | 18080         | 20080           |
|            | 21100   | 2535.0          | 16QAM      | 17920         | 19520           |
|            |         |                 | QPSK       | 18000         | 19760           |
|            | 21350   | 2560.0          | 16QAM      | 17920         | 19440           |
|            |         |                 | QPSK       | 18160         | 19760           |

Test plot as follows:  
LTE Band 4 part:

LTE Band 4: 99% Occupy bandwidth  
BW: 1.4MHz

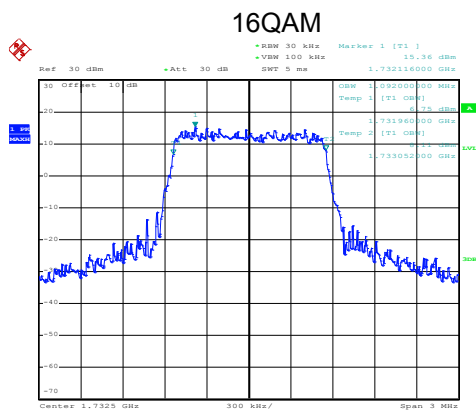


Date: 20.APR.2020 11:51:10

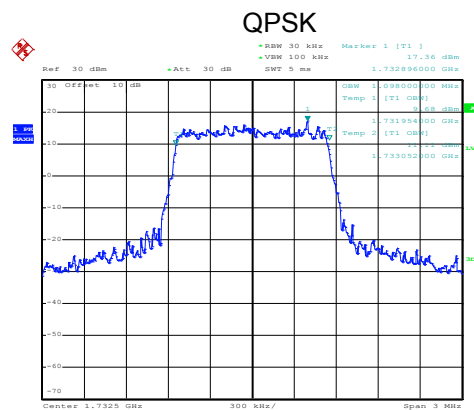


Date: 20.APR.2020 11:51:05

Lowest channel

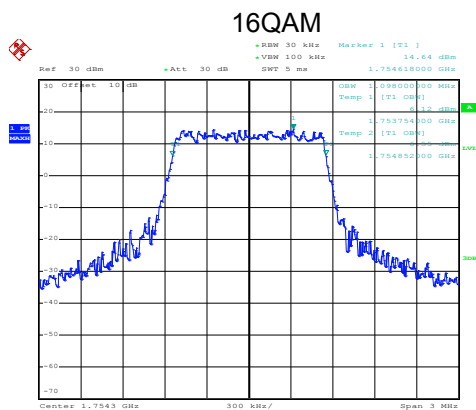


Date: 20.APR.2020 11:51:25

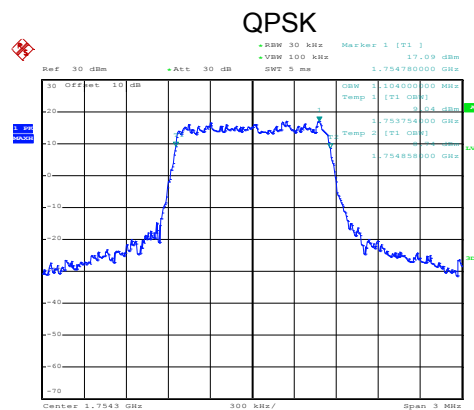


Date: 20.APR.2020 11:51:20

Middle channel



Date: 20.APR.2020 11:52:20



Date: 20.APR.2020 11:52:15

Highest channel

16QAM



## Date: 20.APR.2020 11:48:34

16QAM



Date: 20.APR.2020 11:49:13

## 16QAM

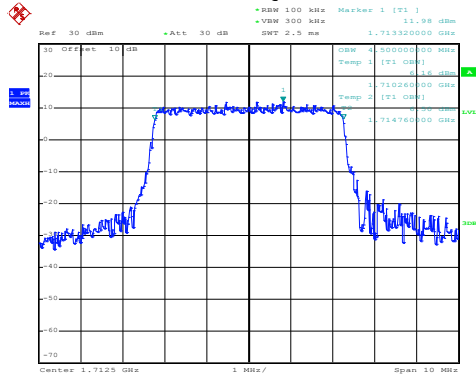


Date: 20.APR.2020 11:49:35

## Page 24 of 72

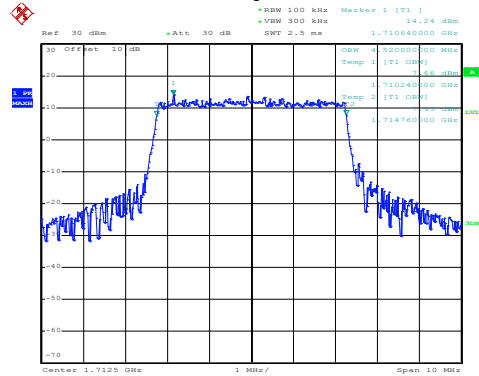
LTE Band 4: 99% Occupancy bandwidth  
BW: 5MHz

## 16QAM



Date: 20.APR.2020 11:45:17

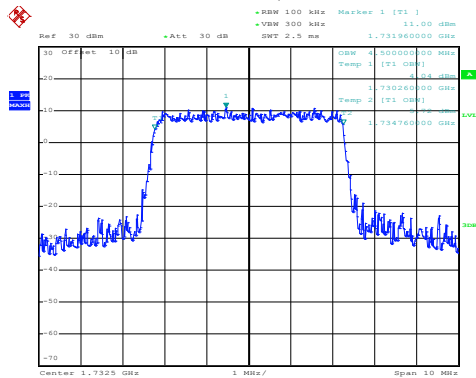
## QPSK



Date: 20.APR.2020 11:45:36

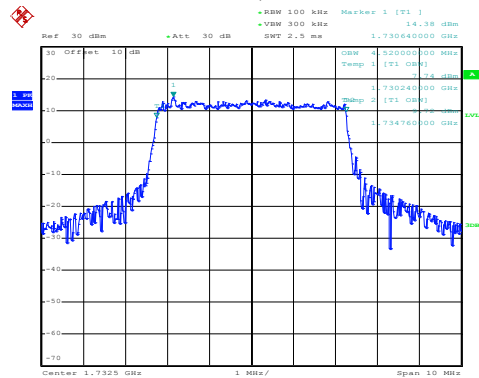
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:46:05

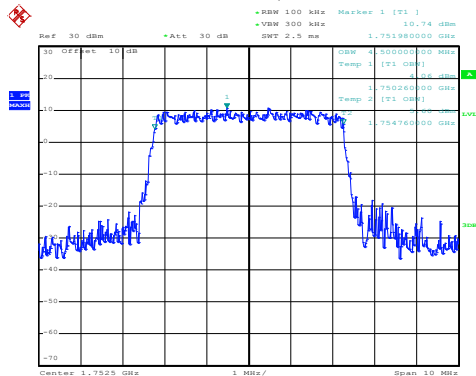
## QPSK



Date: 20.APR.2020 11:46:00

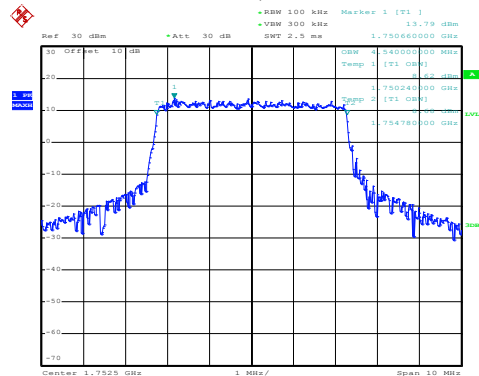
## Middle channel

## 16QAM



Date: 20.APR.2020 11:47:48

## QPSK

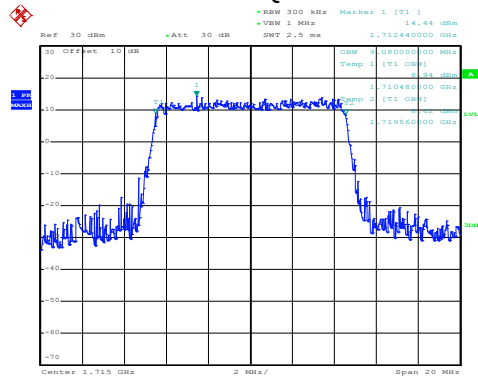


Date: 20.APR.2020 11:47:43

## Highest channel

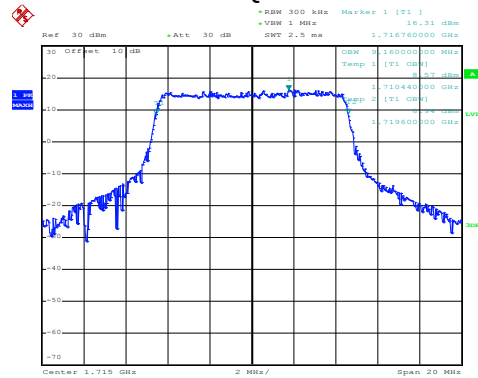
LTE Band 4: 99% Occupancy bandwidth  
BW: 10MHz

## 16QAM



Date: 20.APR.2020 11:41:30

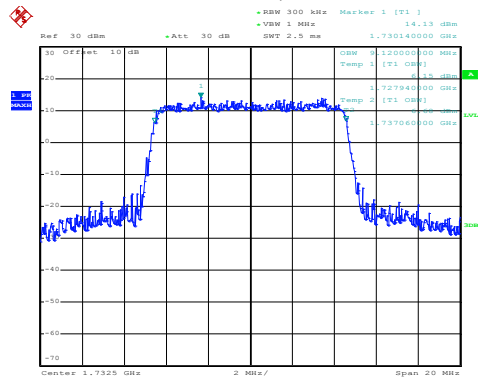
## QPSK



Date: 20.APR.2020 11:41:24

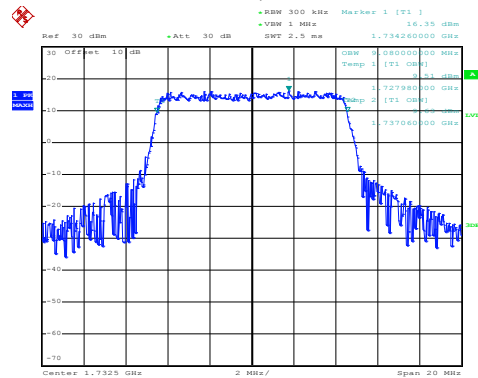
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:42:30

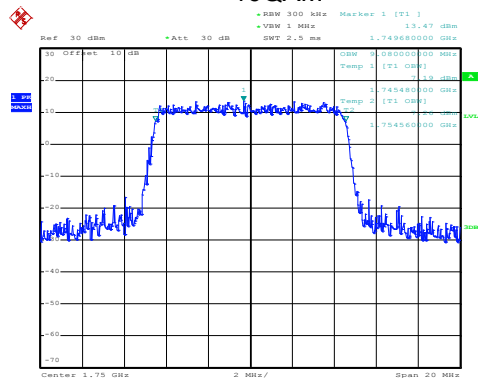
## QPSK



Date: 20.APR.2020 11:42:25

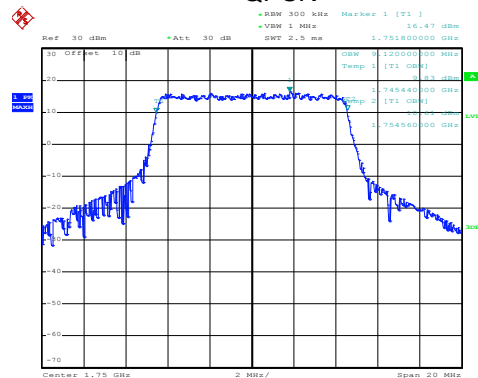
## Middle channel

## 16QAM



Date: 20.APR.2020 11:43:07

## QPSK

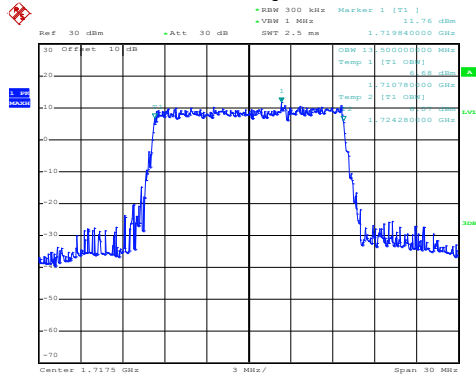


Date: 20.APR.2020 11:43:03

## Highest channel

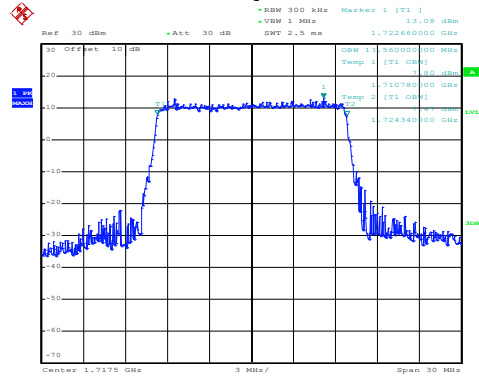
LTE Band 4: 99% Occupancy bandwidth  
BW: 15MHz

## 16QAM



Date: 20.APR.2020 11:39:46

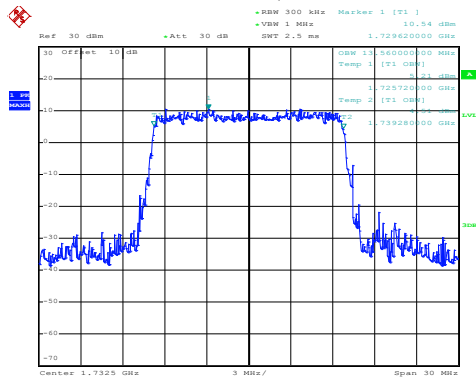
## QPSK



Date: 20.APR.2020 11:39:42

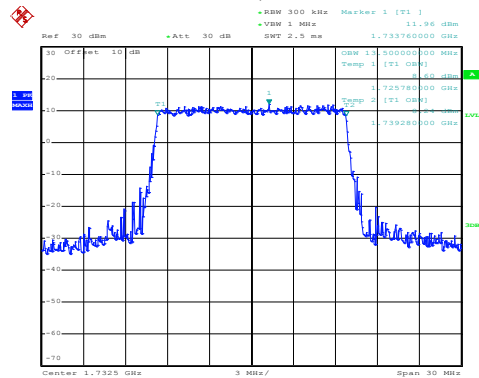
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:39:58

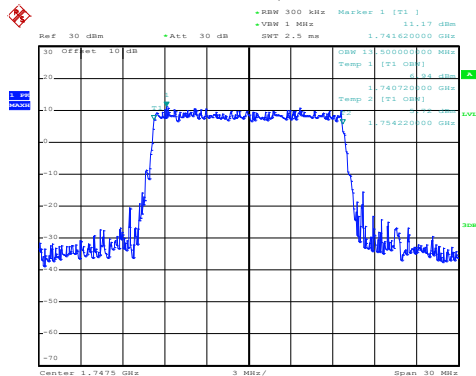
## QPSK



Date: 20.APR.2020 11:39:54

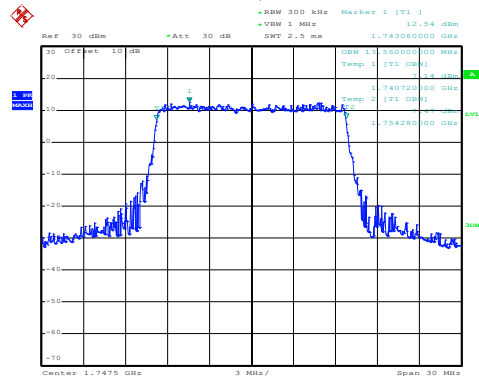
## Middle channel

## 16QAM



Date: 20.APR.2020 11:40:39

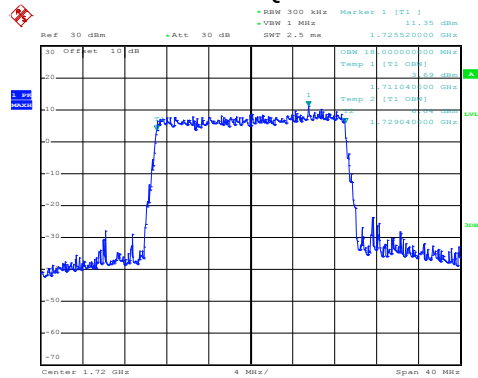
## QPSK



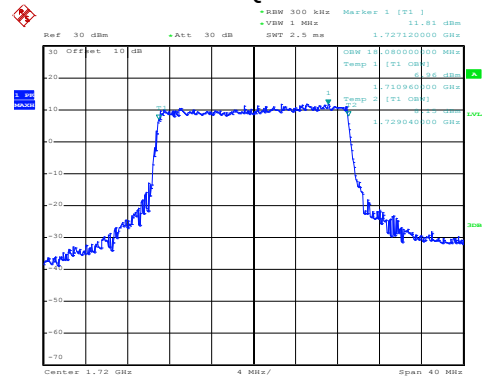
Date: 20.APR.2020 11:40:33

## Highest channel

QPSK

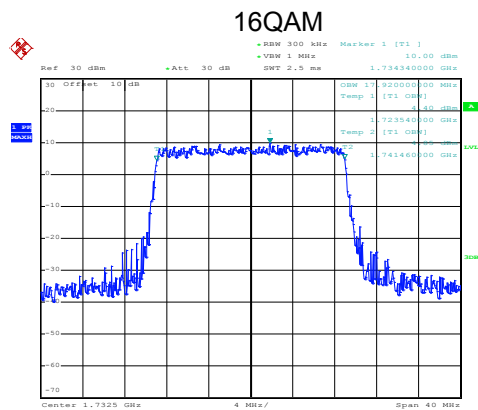


Date: 20.APR.2020 11:35:52

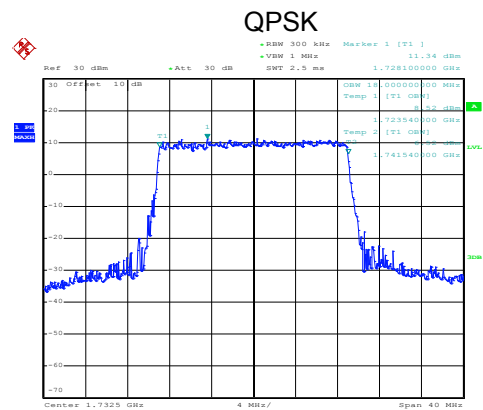


Date: 20.APR.2020 11:35:47

Lowest channel

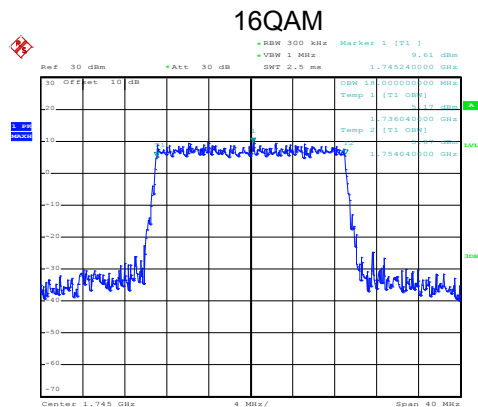


Date: 20.APR.2020 11:38:16

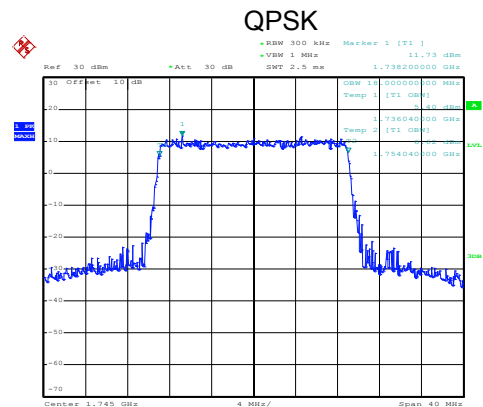


Date: 20.APR.2020 11:38:11

Middle channel



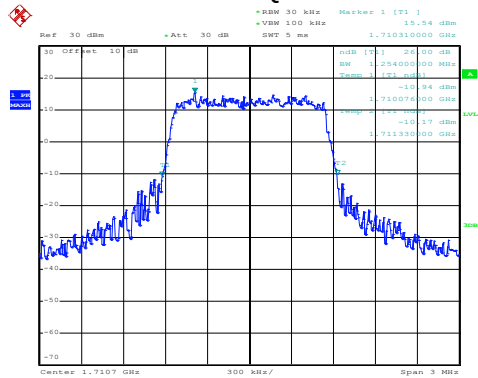
Date: 20.APR.2020 11:38:34



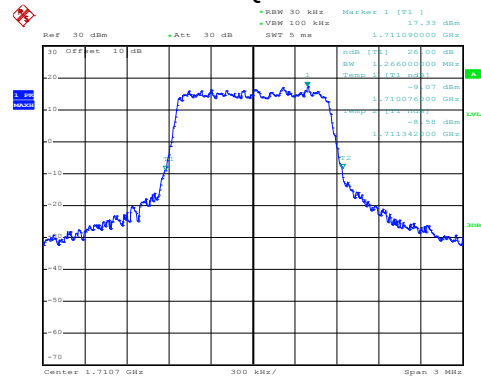
Date: 20.APR.2020 11:38:30

Highest channel

QPSK

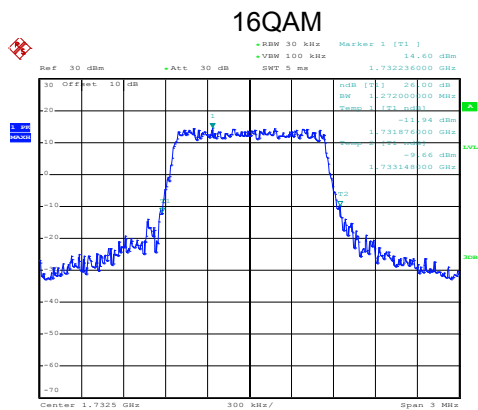


Date: 20.APR.2020 11:50:57

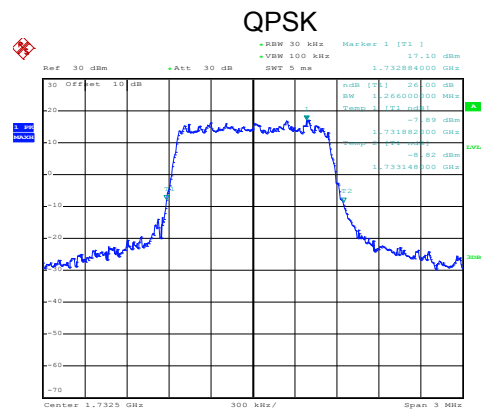


Date: 20.APR.2020 11:50:52

Lowest channel

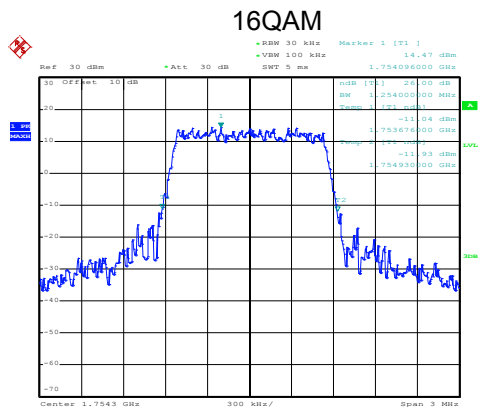


Date: 20.APR.2020 11:51:39

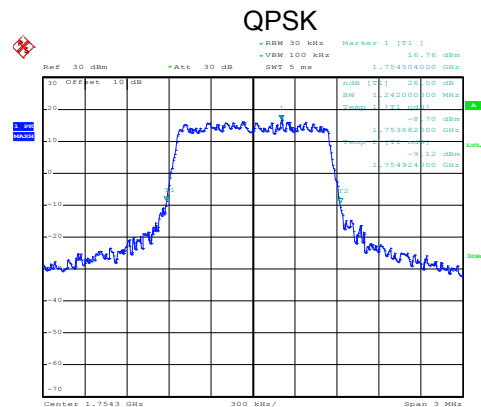


Date: 20.APR.2020 11:51:34

Middle channel



Date: 20.APR.2020 11:52:06



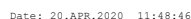
Date: 20.APR.2020 11:52:02

## Highest channel

16QAM



QPSK



Lowest channel

16QAM



QPSK



Middle channel

## 16QAM



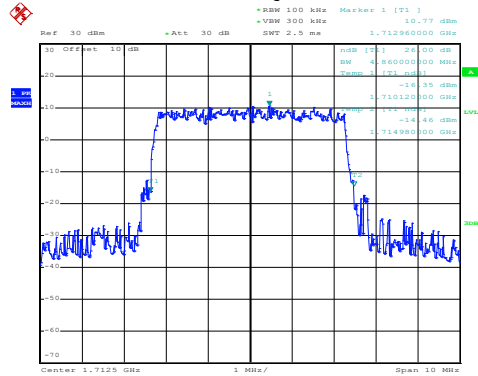
QPSK



## Highest channel

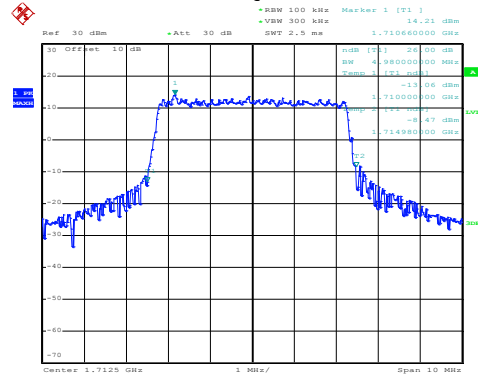
LTE Band 4: -26dBc bandwidth  
BW: 5MHz

## 16QAM



Date: 20.APR.2020 11:45:05

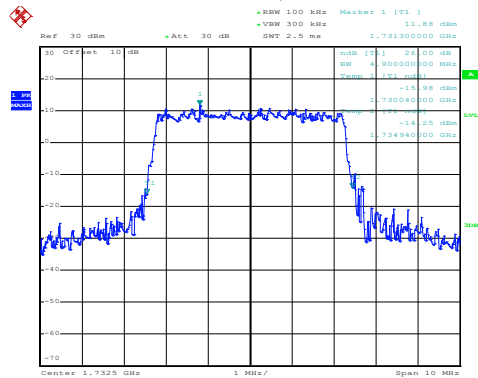
## QPSK



Date: 20.APR.2020 11:44:59

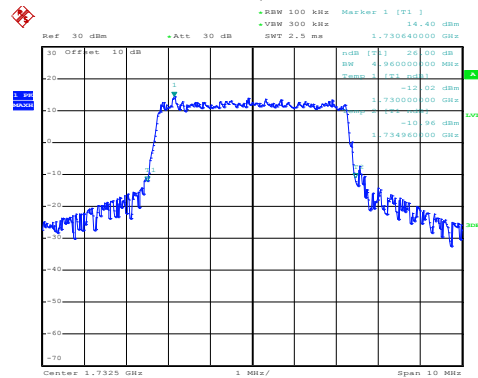
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:46:27

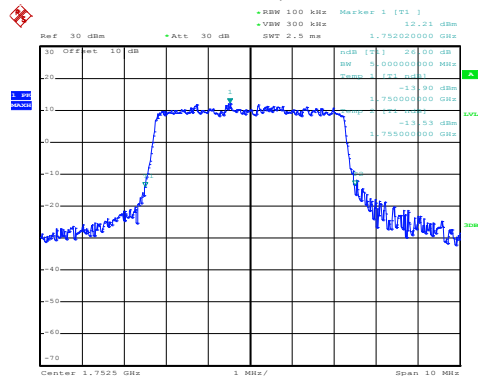
## QPSK



Date: 20.APR.2020 11:46:23

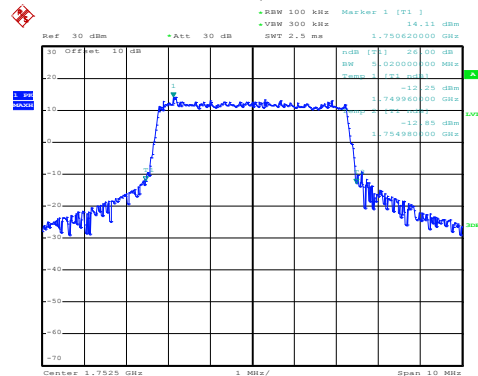
## Middle channel

## 16QAM



Date: 20.APR.2020 11:47:15

## QPSK

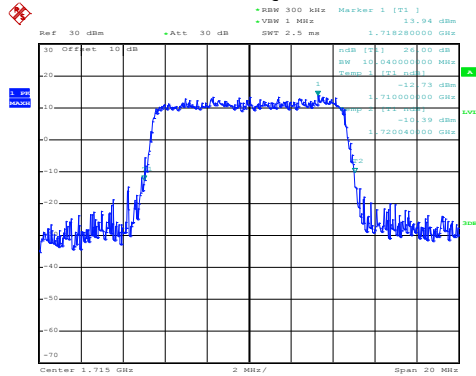


Date: 20.APR.2020 11:46:59

## Highest channel

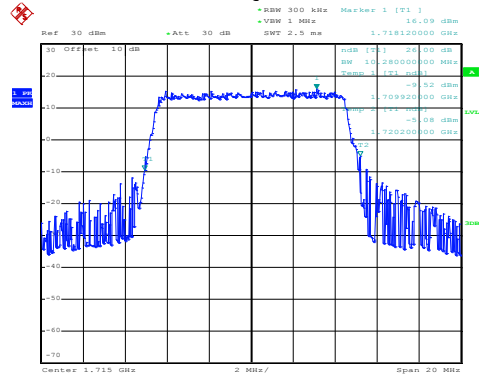
LTE Band 4: -26dBc bandwidth  
BW: 10MHz

## 16QAM



Date: 20.APR.2020 11:41:43

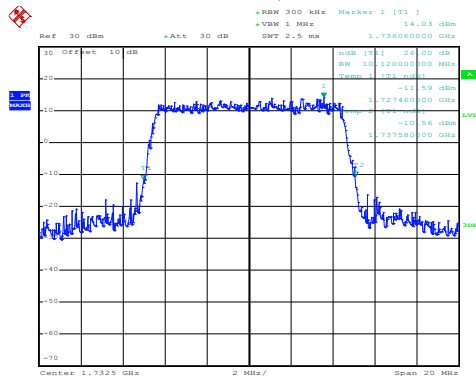
## QPSK



Date: 20.APR.2020 11:41:39

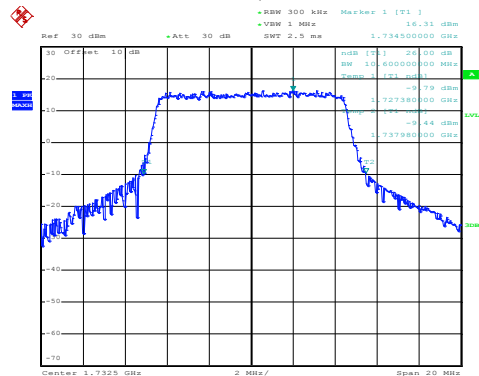
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:42:14

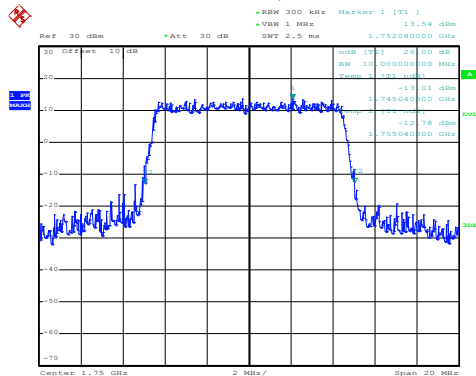
## QPSK



Date: 20.APR.2020 11:42:10

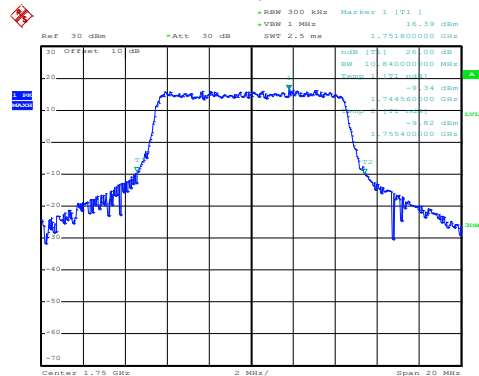
## Middle channel

## 16QAM



Date: 20.APR.2020 11:43:40

## QPSK

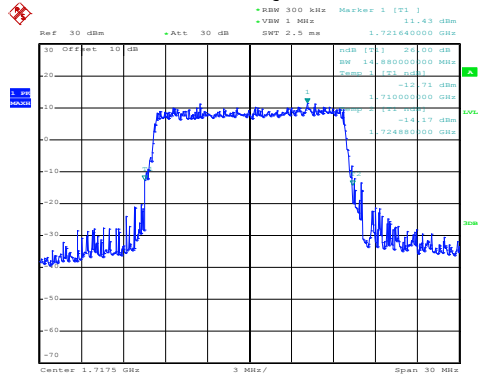


Date: 20.APR.2020 11:43:36

## Highest channel

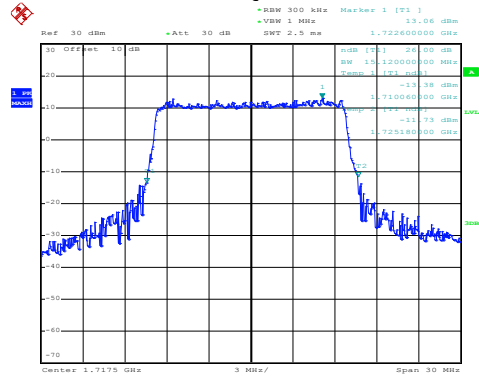
LTE Band 4: -26dBc bandwidth  
BW: 15MHz

## 16QAM



Date: 20.APR.2020 11:39:34

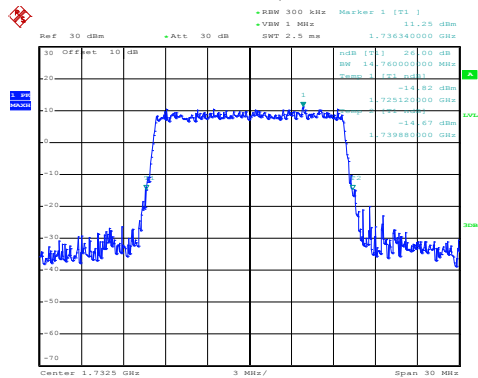
## QPSK



Date: 20.APR.2020 11:39:29

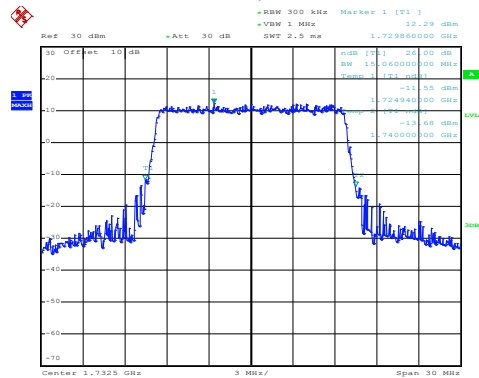
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:40:09

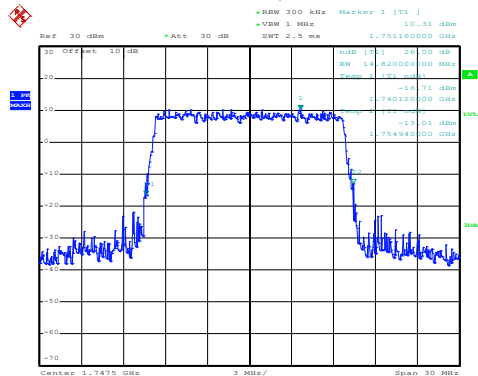
## QPSK



Date: 20.APR.2020 11:40:05

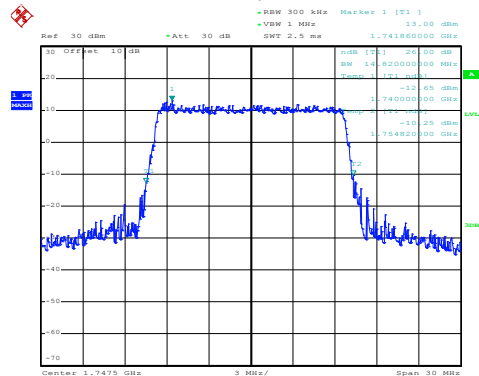
## Middle channel

## 16QAM



Date: 20.APR.2020 11:40:23

## QPSK

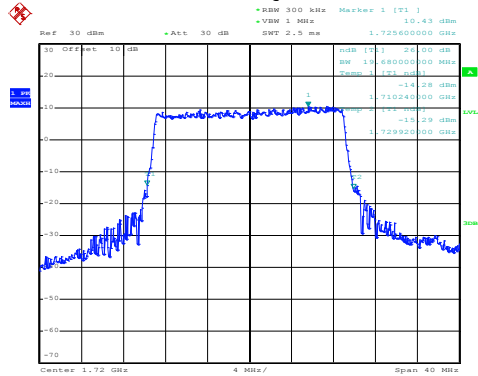


Date: 20.APR.2020 11:40:20

## Highest channel

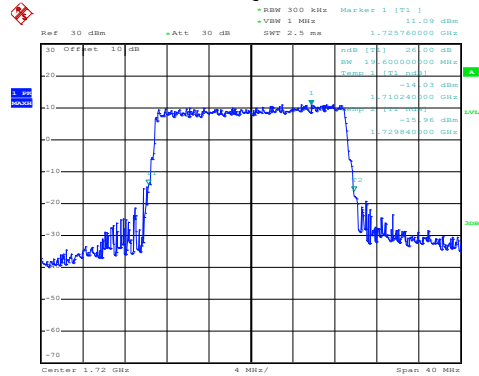
LTE Band 4: -26dBc bandwidth  
BW: 20MHz

## 16QAM



Date: 20.APR.2020 11:36:13

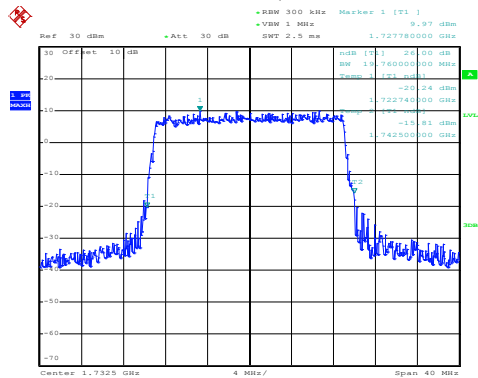
## QPSK



Date: 20.APR.2020 11:36:20

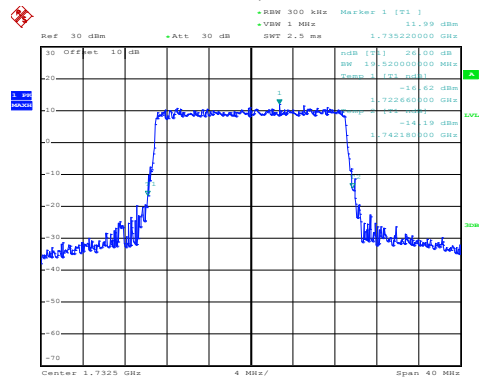
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:38:01

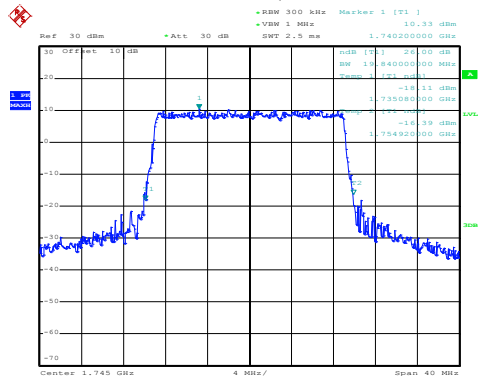
## QPSK



Date: 20.APR.2020 11:37:55

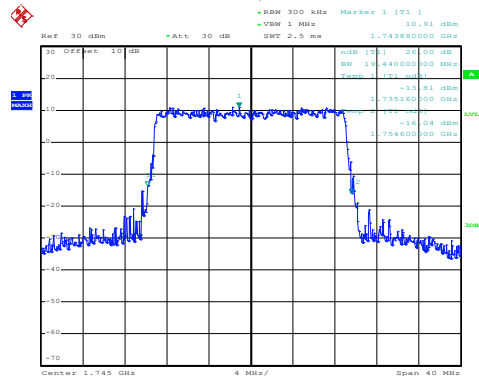
## Middle channel

## 16QAM



Date: 20.APR.2020 11:38:46

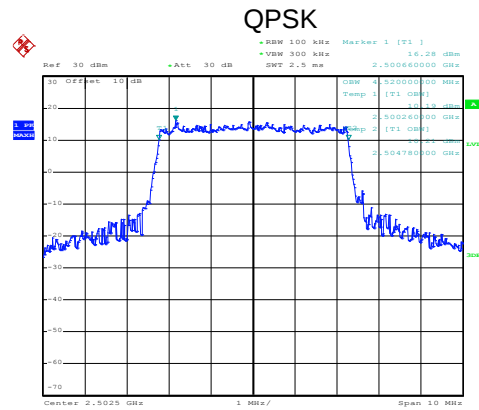
## QPSK



Date: 20.APR.2020 11:38:53

## Highest channel

LTE Band 7: 99% Occupy bandwidth  
BW: 5MHz



Date: 20.APR.2020 11:53:15

QPSK

• RBW 100 kHz Marker 1 [T1]  
 • VBW 300 kHz 19.11 dBm  
 SMT 2.5 ms 2.53550000 GHz

Ref 30 dBm Acc 30 dB

30 Offset 10 dB

100

0

-10

-20

-30

-40

-50

-60

-70

Center 2.535 GHz 1 MHz / Span 1.0 MHz

GBW 4.500000000 MHz  
 Temp 1 [T1 GBW]  
 1.25 dB

2.532760000 GHz  
 dBmp 2 [T1 GBW]  
 2.537260000 GHz

100

0

-10

-20

-30

-40

-50

-60

-70

Center 2.535 GHz 1 MHz / Span 1.0 MHz

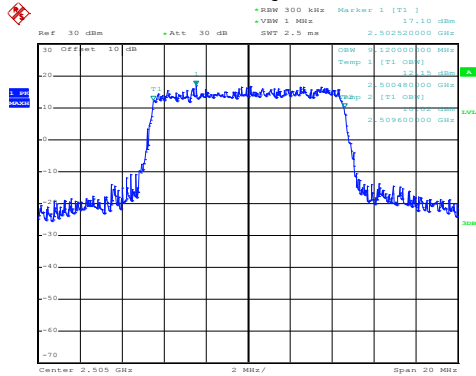
Date: 20.APR.2020 11:53:56

[illegible]

Date: 20.APR.2020 11:54:14

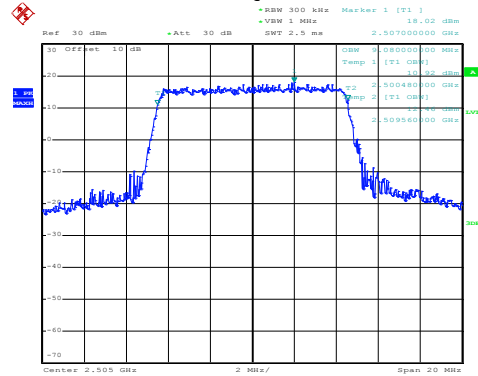
LTE Band 7: 99% Occupancy bandwidth  
BW: 10MHz

## 16QAM



Date: 20.APR.2020 11:55:17

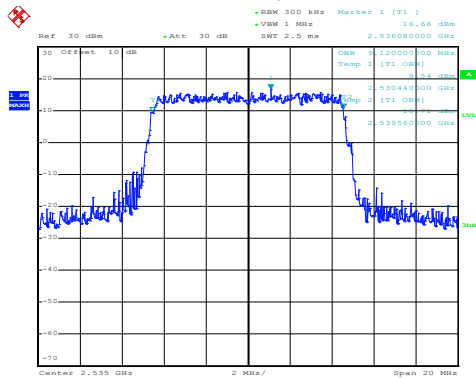
## QPSK



Date: 20.APR.2020 11:55:12

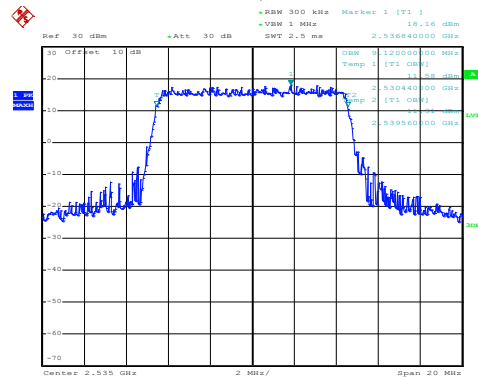
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:55:36

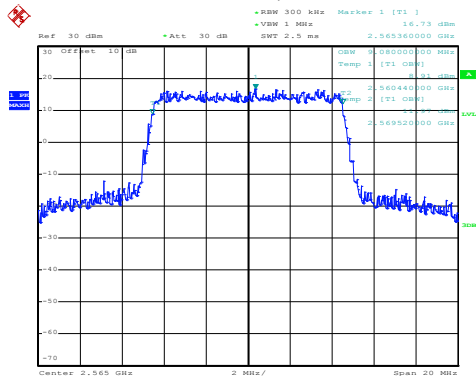
## QPSK



Date: 20.APR.2020 11:55:31

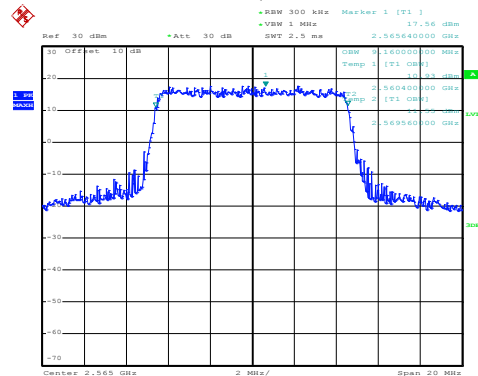
## Middle channel

## 16QAM



Date: 20.APR.2020 11:56:23

## QPSK

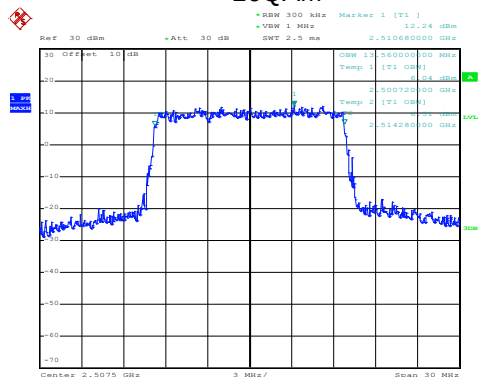


Date: 20.APR.2020 11:56:19

## Highest channel

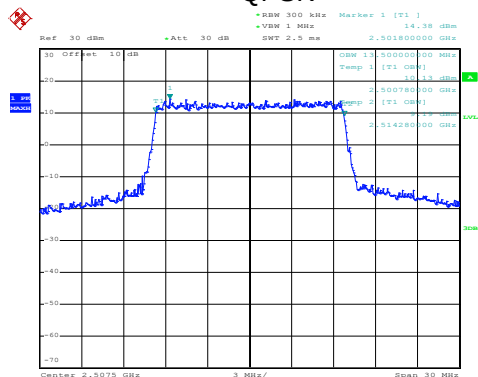
LTE Band 7: 99% Occupancy bandwidth  
BW: 15MHz

## 16QAM



Date: 20.APR.2020 11:56:54

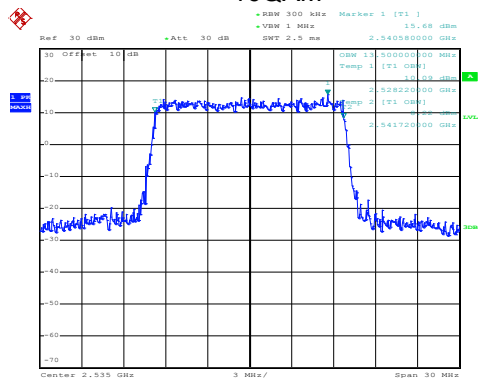
## QPSK



Date: 20.APR.2020 11:56:50

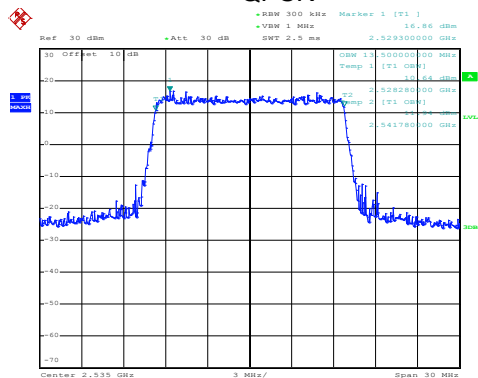
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:57:33

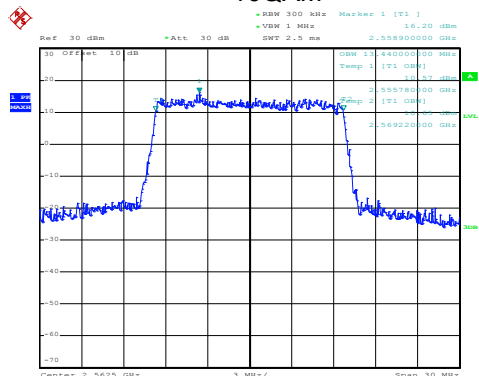
## QPSK



Date: 20.APR.2020 11:57:28

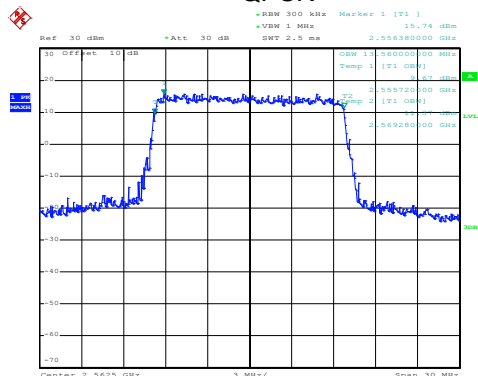
## Middle channel

## 16QAM



Date: 20.APR.2020 11:57:49

## QPSK

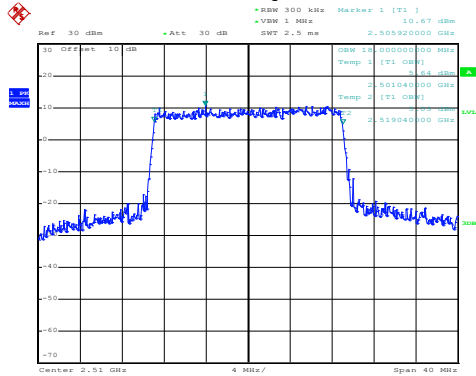


Date: 20.APR.2020 11:57:44

## Highest channel

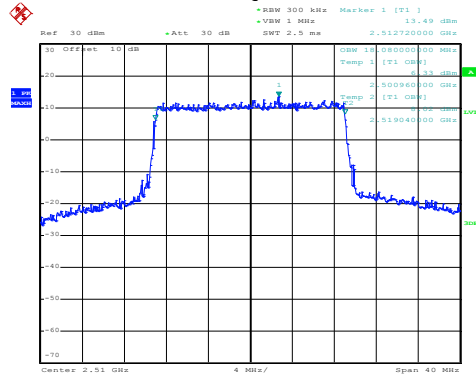
LTE Band 7: 99% Occupancy bandwidth  
BW: 20MHz

## 16QAM



Date: 20.APR.2020 11:59:06

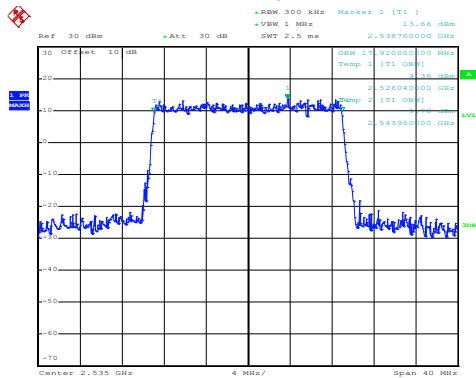
## QPSK



Date: 20.APR.2020 11:59:02

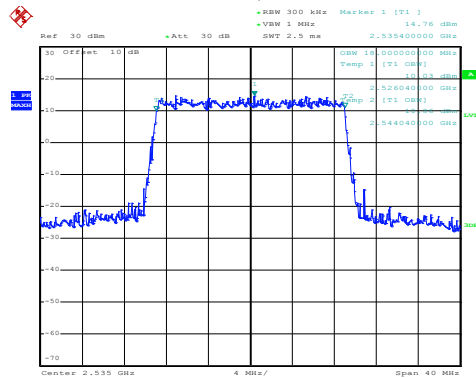
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:59:21

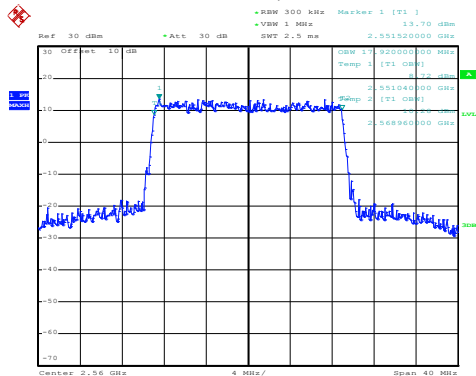
## QPSK



Date: 20.APR.2020 11:59:16

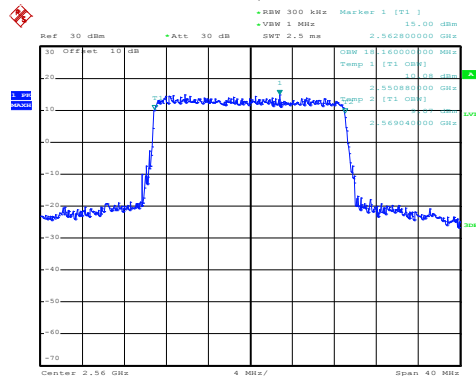
## Middle channel

## 16QAM



Date: 20.APR.2020 12:00:02

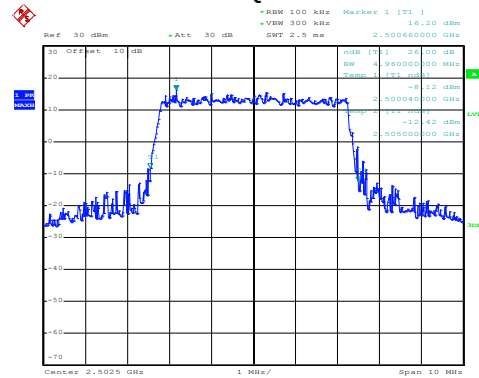
## QPSK



Date: 20.APR.2020 11:59:57

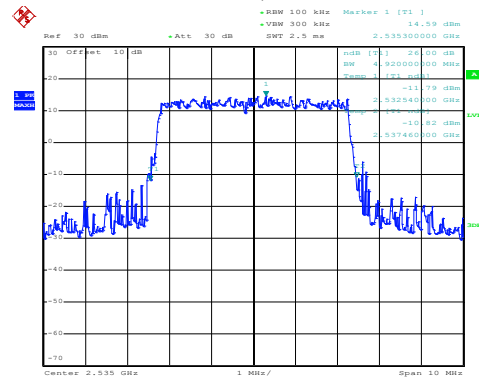
## Highest channel

QPSK



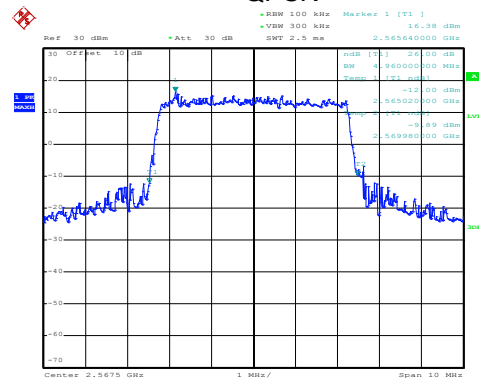
Date: 20.APR.2020 11:53:27

QPSK



Date: 20.APR.2020 11:53:44

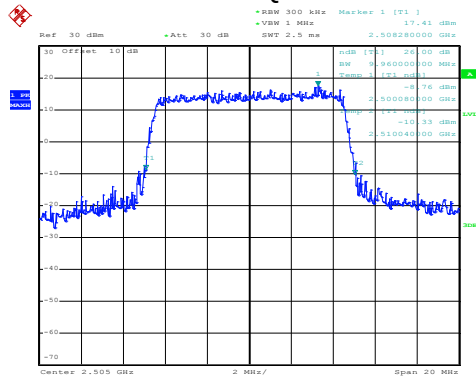
QPSK



Date: 20.APR.2020 11:54:27

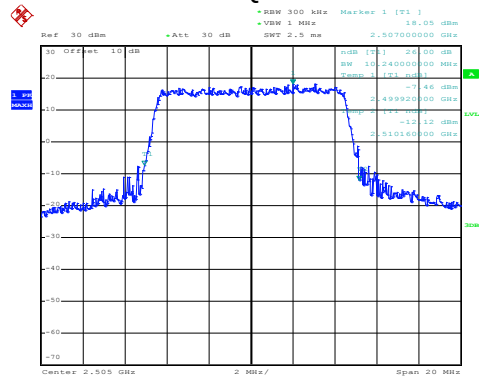
LTE Band 7: -26dBc bandwidth  
BW: 10MHz

## 16QAM



Date: 20.APR.2020 11:55:05

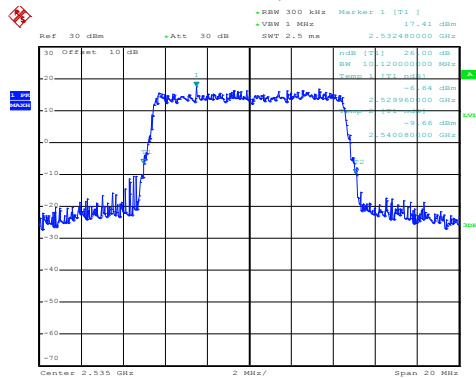
## QPSK



Date: 20.APR.2020 11:55:01

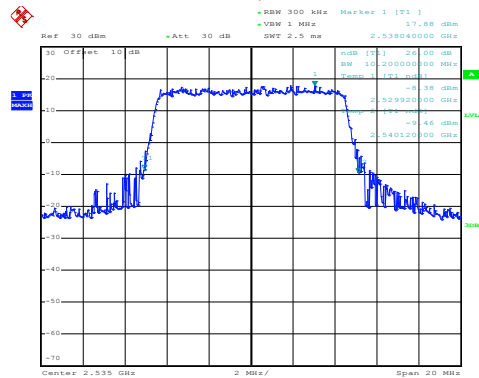
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:55:51

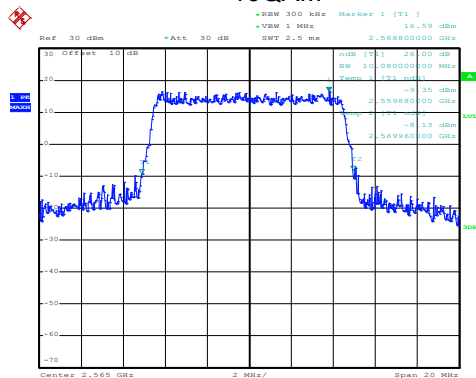
## QPSK



Date: 20.APR.2020 11:55:46

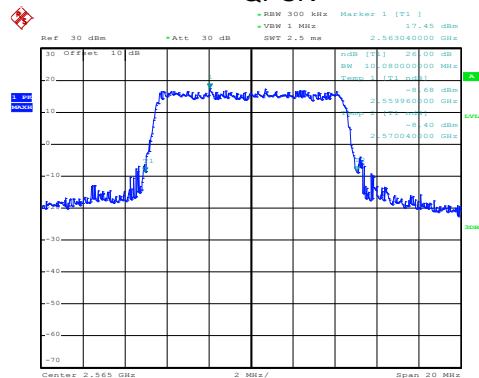
## Middle channel

## 16QAM



Date: 20.APR.2020 11:56:13

## QPSK

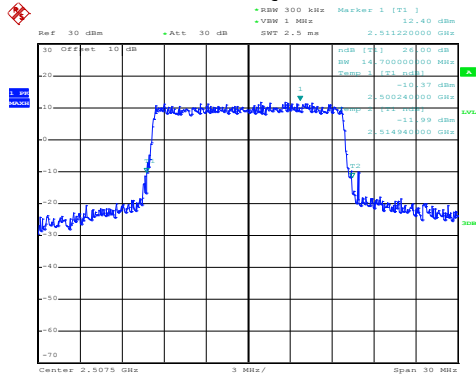


Date: 20.APR.2020 11:56:09

## Highest channel

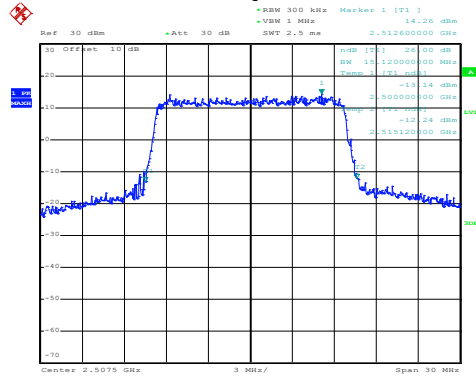
LTE Band 7: -26dBc bandwidth  
BW: 15MHz

## 16QAM



Date: 20.APR.2020 11:57:05

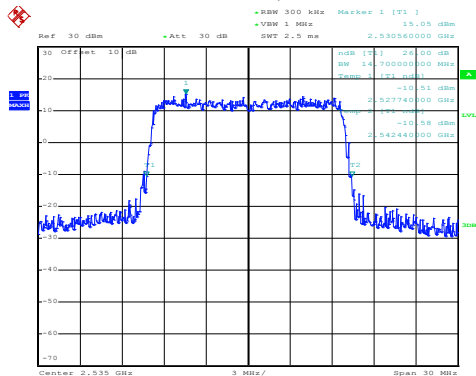
## QPSK



Date: 20.APR.2020 11:57:00

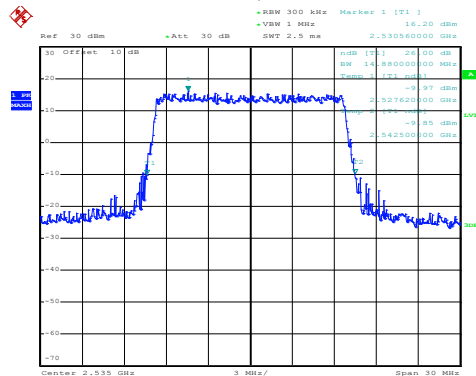
## Lowest channel

## 16QAM



Date: 20.APR.2020 11:57:21

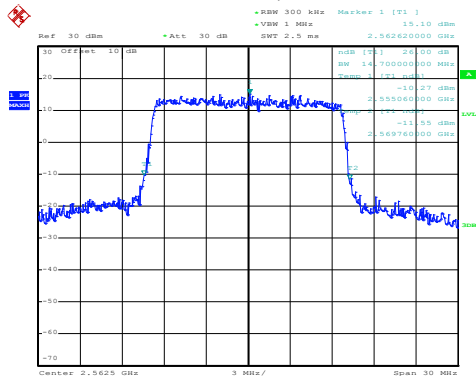
## QPSK



Date: 20.APR.2020 11:57:16

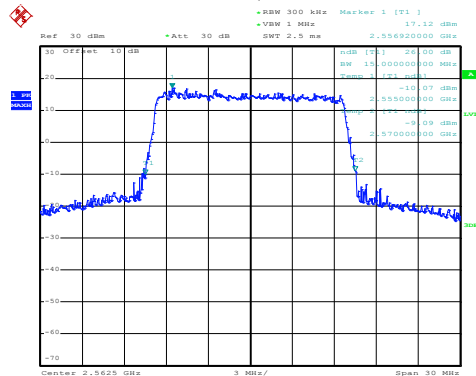
## Middle channel

## 16QAM



Date: 20.APR.2020 11:58:04

## QPSK



Date: 20.APR.2020 11:57:59

## Highest channel

16QAM



Date: 20.APR.2020 11:58:49

16QAM



Date: 20.APR.2020 11:59:29

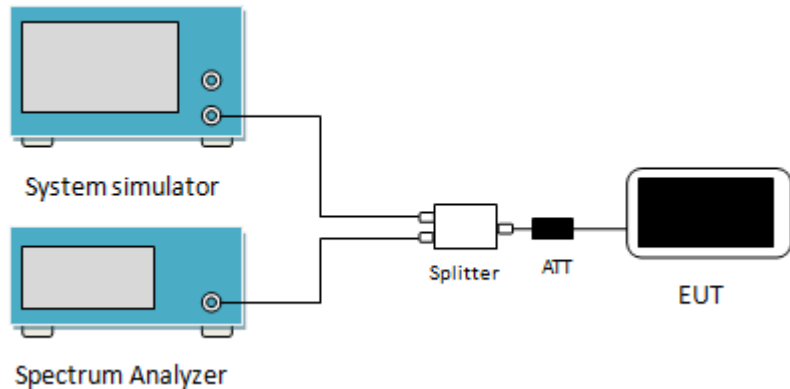
## 16QAM



Date: 20.APR.2020 11:59:47

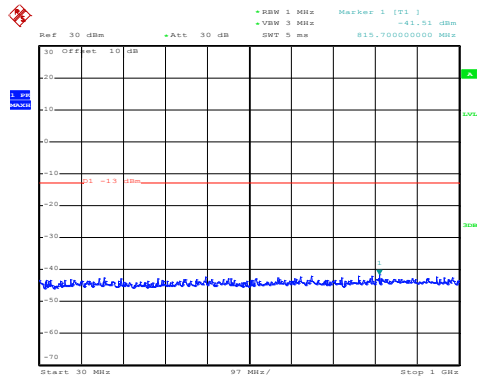
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## 6.4 Out of band emission at antenna terminals

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 27.53(h), Part 27.53(m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Limit:            | <p>LTE Band 4:<br/>The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least <math>43 + 10 \log_{10}(P)</math> dB (-13 dBm).</p> <p>LTE Band 7:<br/>For mobile digital stations, the attenuation factor shall be not less than <math>40 + 10 \log(P)</math> dB on all frequencies between the channel edge and 5 megahertz from the channel edge, <math>43 + 10 \log(P)</math> dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and <math>55 + 10 \log(P)</math> 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 <math>43 + 10 \log(P)</math> dB on all frequencies between 2490.5 MHz and 2496 MHz and <math>55 + 10 \log(P)</math> dB at or below 2490.5 MHz.</p> |
| Test Setup:       |  <p>The diagram illustrates the test setup. On the left, there are two blue rectangular units: the top one is labeled 'System simulator' and the bottom one is labeled 'Spectrum Analyzer'. Both have a single output port. These two ports are connected to a central 'Splitter' unit, which is a small white rectangle with two input ports and one output port. The output of the Splitter is connected to a black rectangular unit labeled 'ATT' (Attenuator). Finally, the output of the ATT is connected to a black rectangular unit labeled 'EUT' (Equipment Under Test).</p>                                                                                                                                                                                                                                                                                                                |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.</li> <li>2 The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.</li> <li>3 For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic.</li> <li>4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.</li> </ol>                                                                                                                                                   |
| Test Instruments: | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Test mode:        | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Test results:     | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Remark:           | Pre-scan all RB Size and offset, and found the RB Size and offset of worst case, so the report shows only the worst case test data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

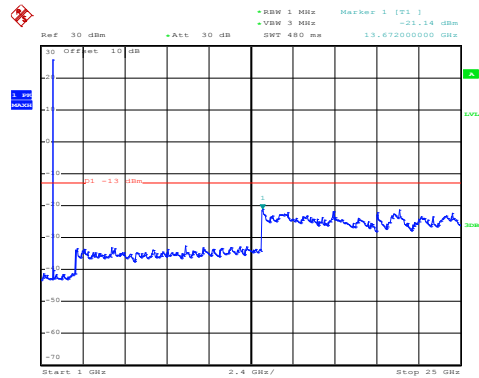
Test plots as follows (Conducted spurious emission) (worst case):  
LTE Band 4 part:

LTE Band 4: 16 QAM & RB Size 1  
BW: 1.4MHz  
Lowest channel



Date: 20.APR.2020 11:32:23

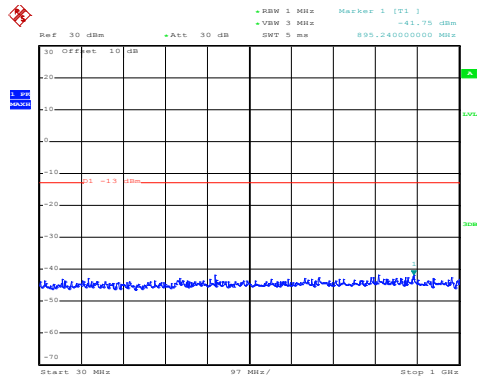
30MHz~1GHz



Date: 20.APR.2020 11:30:01

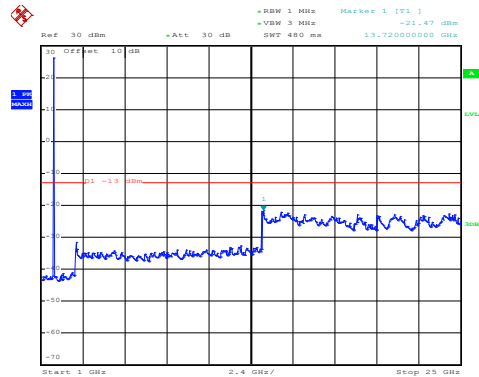
1GHz~25GHz

Middle channel



Date: 20.APR.2020 11:31:59

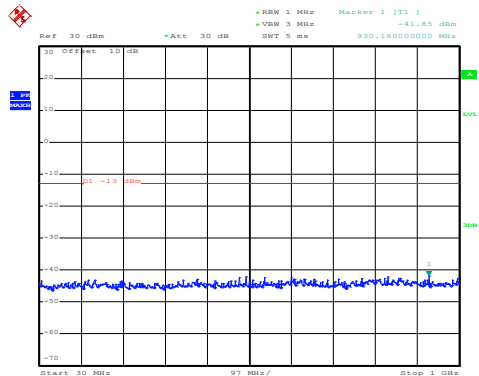
30MHz~1GHz



Date: 20.APR.2020 11:30:19

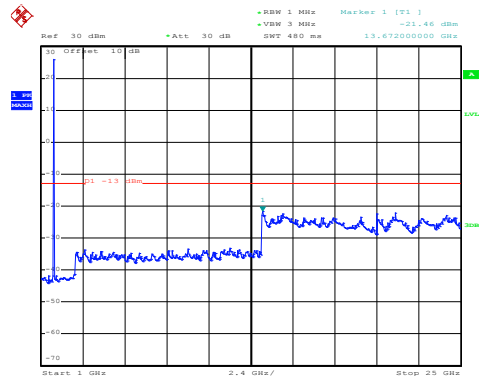
1GHz~25GHz

High channel



Date: 20.APR.2020 11:31:40

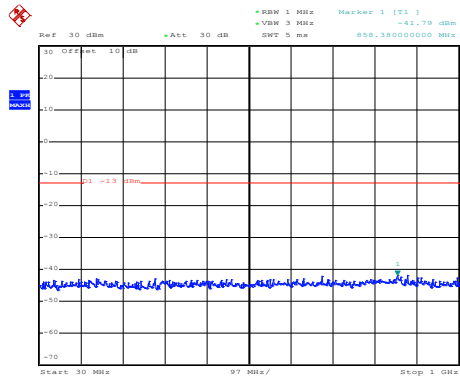
30MHz~1GHz



Date: 20.APR.2020 11:30:44

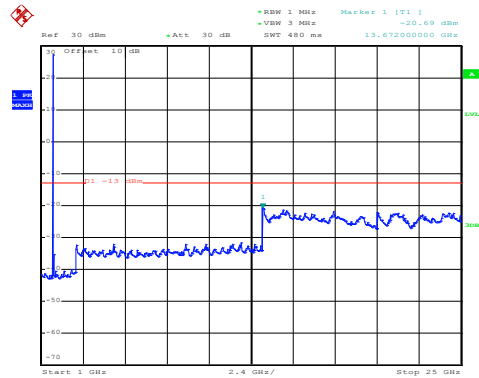
1GHz~25GHz

LTE Band 4: QPSK & RB Size 1  
BW: 1.4MHz  
Lowest channel



Date: 20.APR.2020 11:32:13

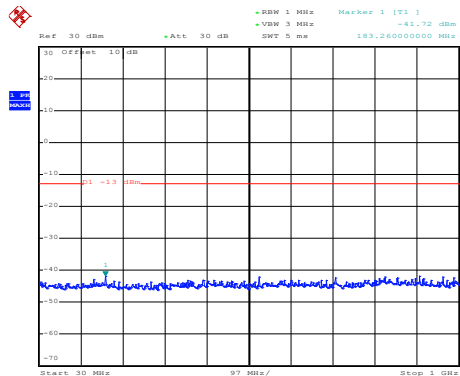
30MHz~1GHz



Date: 20.APR.2020 11:29:43

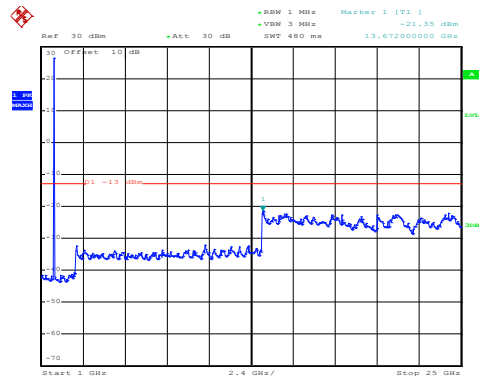
1GHz~25GHz

Middle channel



Date: 20.APR.2020 11:31:52

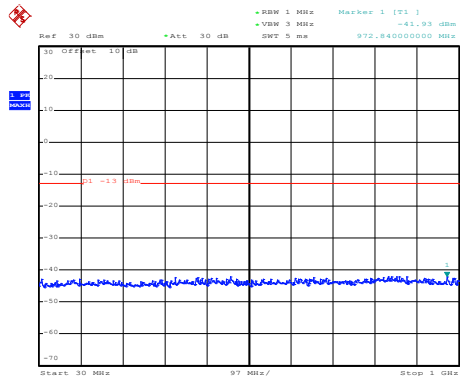
30MHz~1GHz



Date: 20.APR.2020 11:30:12

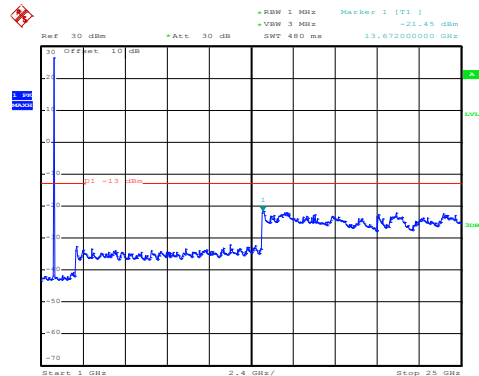
1GHz~25GHz

High channel



Date: 20.APR.2020 11:31:30

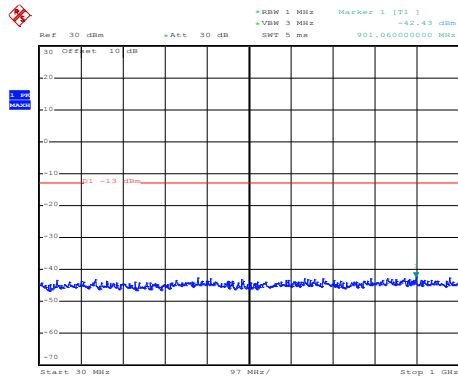
30MHz~1GHz



Date: 20.APR.2020 11:30:36

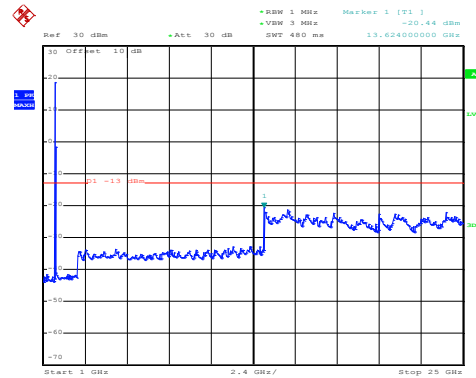
1GHz~25GHz

LTE Band 4: 16 QAM & RB Size 1  
BW: 20MHz  
Lowest channel



Date: 20.APR.2020 11:32:57

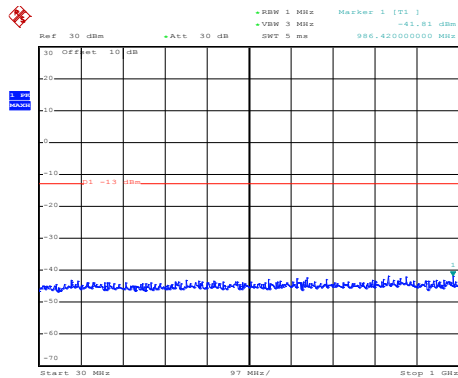
30MHz~1GHz



Date: 20.APR.2020 11:34:42

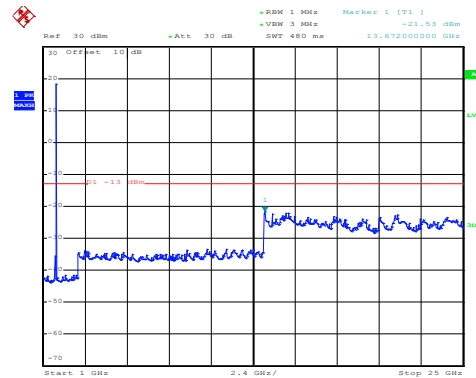
1GHz~25GHz

Middle channel



Date: 20.APR.2020 11:33:12

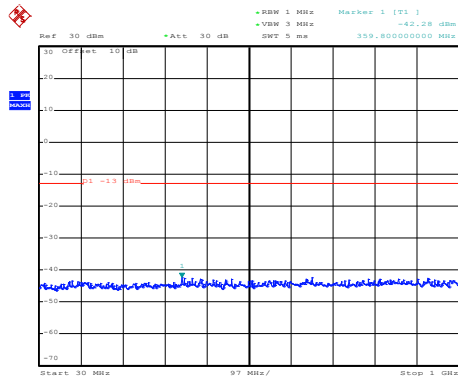
30MHz~1GHz



Date: 20.APR.2020 11:34:19

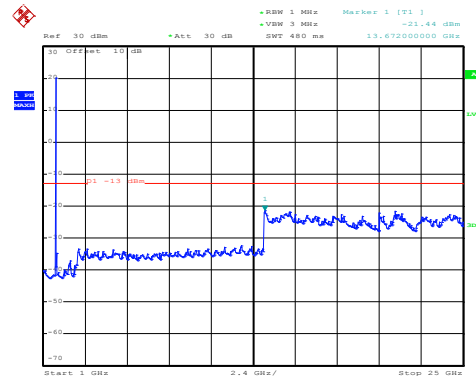
1GHz~25GHz

High channel



Date: 20.APR.2020 11:33:31

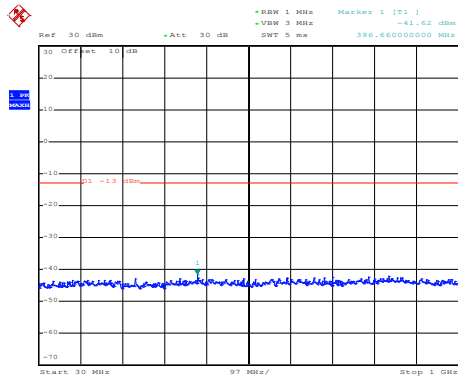
30MHz~1GHz



Date: 20.APR.2020 11:34:04

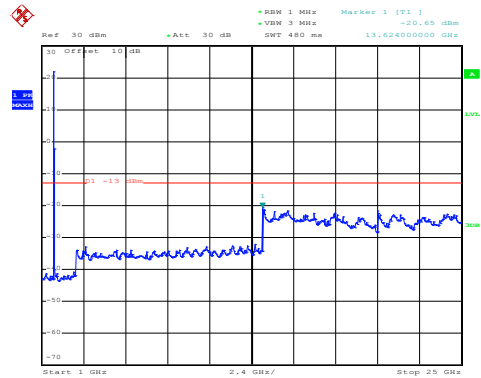
1GHz~25GHz

LTE Band 4: QPSK & RB Size 1  
BW: 20MHz  
Lowest channel



Date: 20.APR.2020 11:32:51

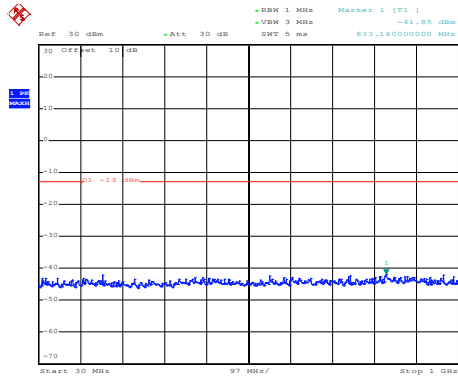
30MHz~1GHz



Date: 20.APR.2020 11:34:34

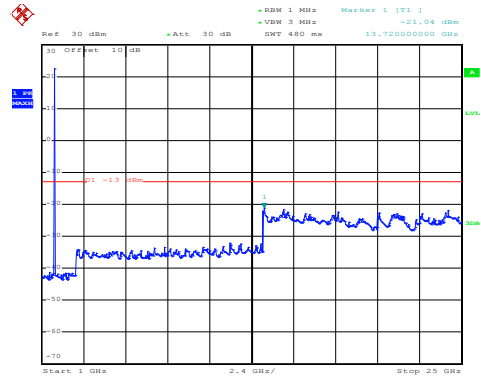
1GHz~25GHz

Middle channel



Date: 20.APR.2020 11:33:07

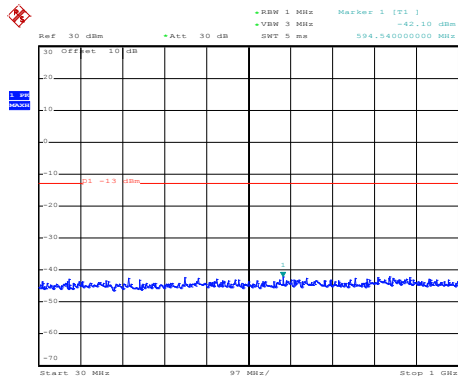
30MHz~1GHz



Date: 20.APR.2020 11:34:13

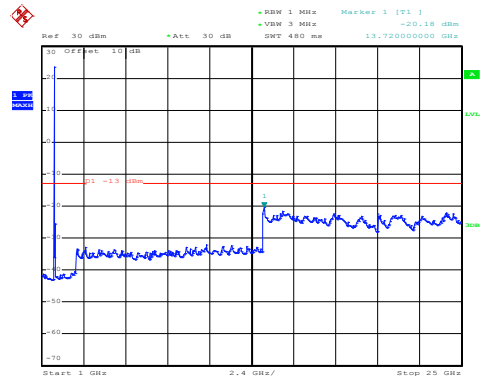
1GHz~25GHz

High channel



Date: 20.APR.2020 11:33:24

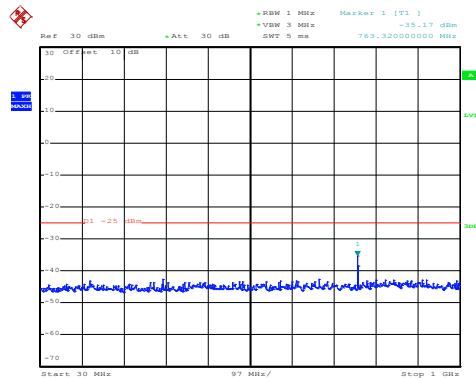
30MHz~1GHz



Date: 20.APR.2020 11:33:52

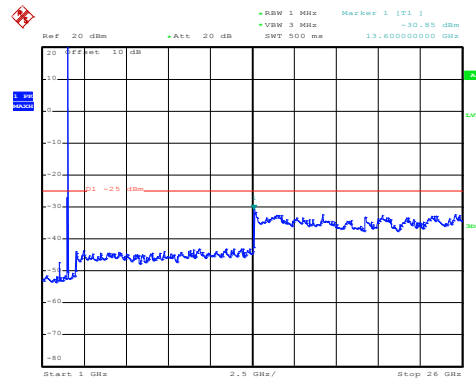
1GHz~25GHz

## LTE Band 7 part:

LTE Band 7: 16 QAM & RB Size 1  
BW: 5MHz  
Lowest channel

Date: 20.APR.2020 11:26:03

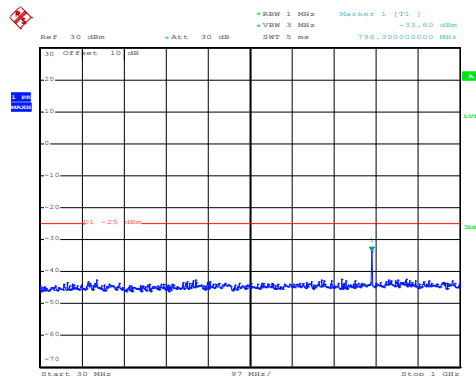
30MHz~1GHz



Date: 20.APR.2020 11:28:19

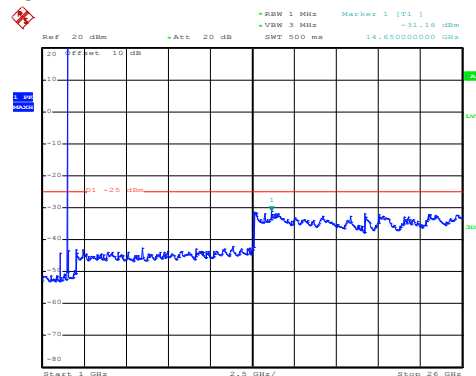
1GHz~25GHz

## Middle channel



Date: 20.APR.2020 11:26:19

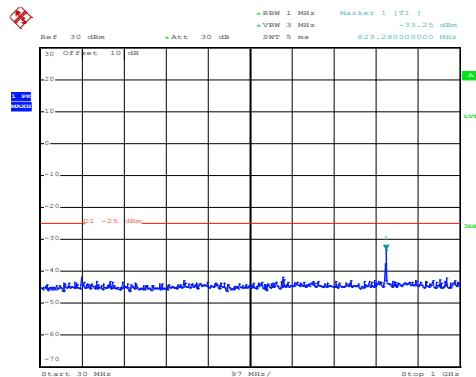
30MHz~1GHz



Date: 20.APR.2020 11:27:58

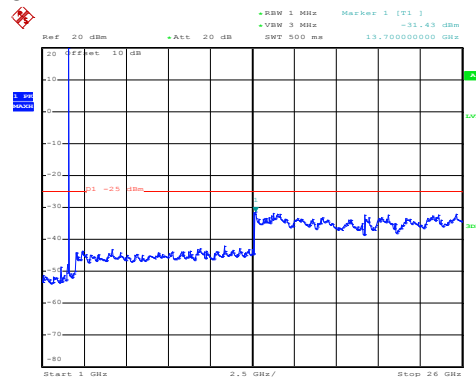
1GHz~25GHz

## High channel



Date: 20.APR.2020 11:26:42

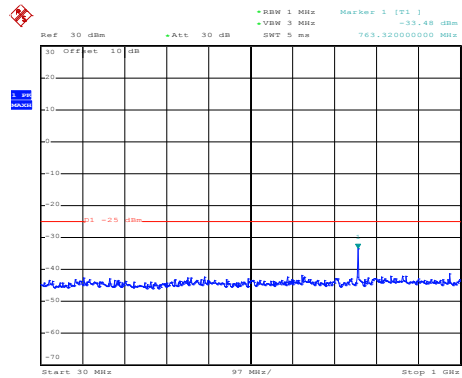
30MHz~1GHz



Date: 20.APR.2020 11:27:29

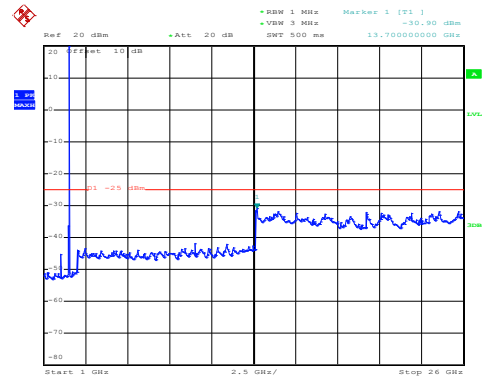
1GHz~25GHz

LTE Band 7: QPSK & RB Size 1  
BW: 5MHz  
Lowest channel



Date: 20.APR.2020 11:25:57

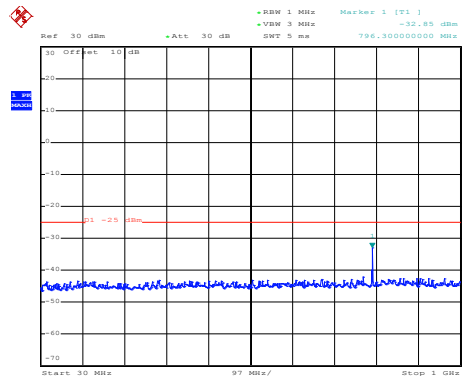
30MHz~1GHz



Date: 20.APR.2020 11:28:13

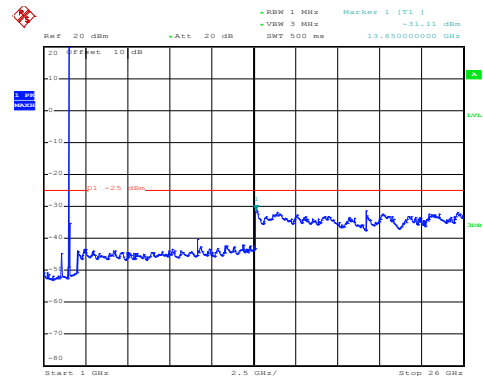
1GHz~25GHz

Middle channel



Date: 20.APR.2020 11:26:11

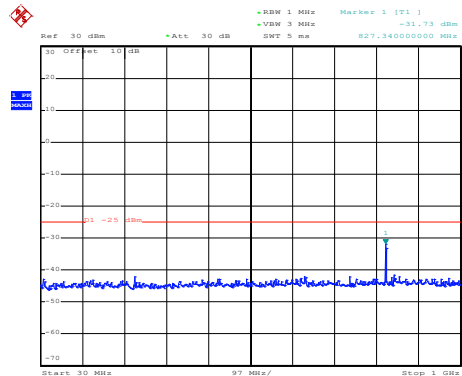
30MHz~1GHz



Date: 20.APR.2020 11:27:46

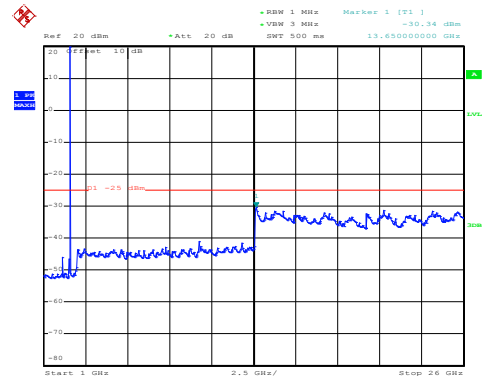
1GHz~25GHz

High channel



Date: 20.APR.2020 11:26:33

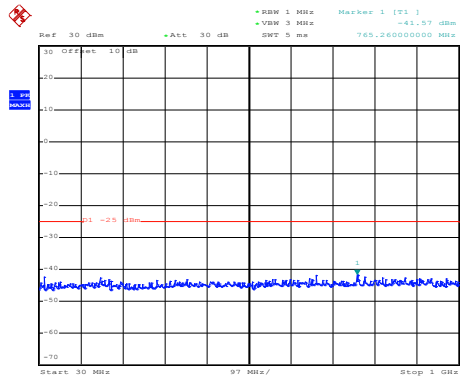
30MHz~1GHz



Date: 20.APR.2020 11:27:20

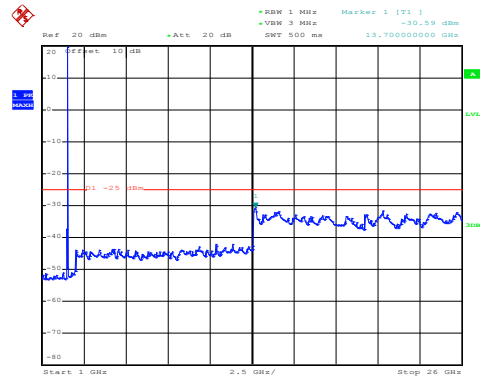
1GHz~25GHz

LTE Band 7: 16 QAM & RB Size 1  
BW: 20MHz  
Lowest channel



Date: 20.APR.2020 11:25:32

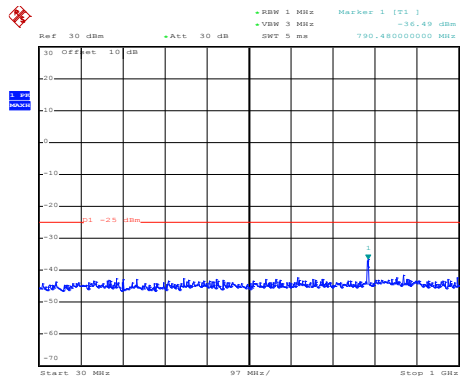
30MHz~1GHz



Date: 20.APR.2020 11:22:49

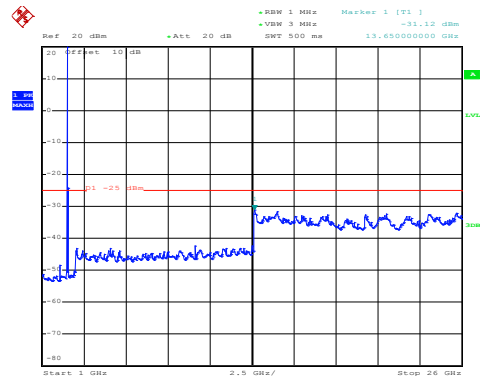
1GHz~25GHz

Middle channel



Date: 20.APR.2020 11:25:15

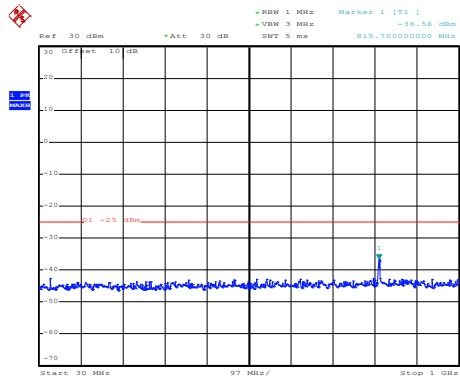
30MHz~1GHz



Date: 20.APR.2020 11:23:17

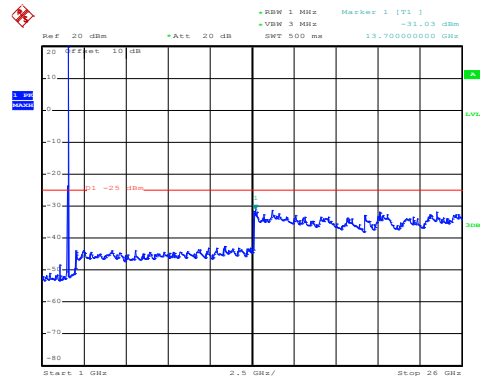
1GHz~25GHz

High channel



Date: 20.APR.2020 11:24:56

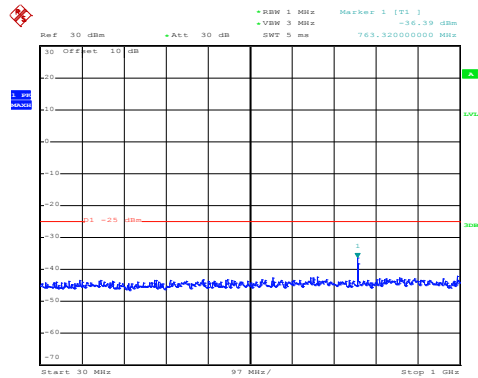
30MHz~1GHz



Date: 20.APR.2020 11:23:42

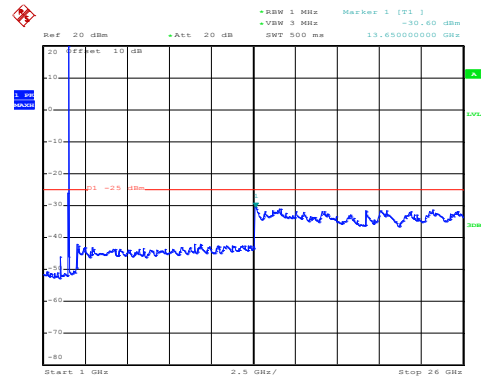
1GHz~25GHz

LTE Band 7: QPSK & RB Size 1  
BW: 20MHz  
Lowest channel



Date: 20.APR.2020 11:25:25

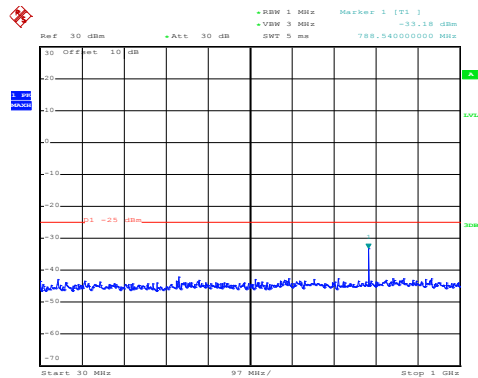
30MHz~1GHz



Date: 20.APR.2020 11:22:39

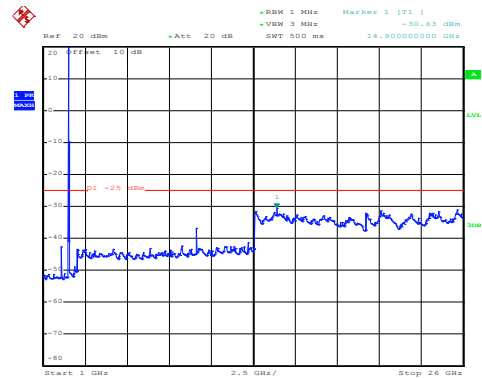
1GHz~25GHz

Middle channel



Date: 20.APR.2020 11:25:09

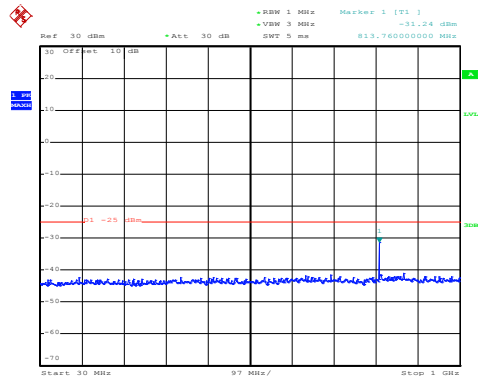
30MHz~1GHz



Date: 20.APR.2020 11:23:10

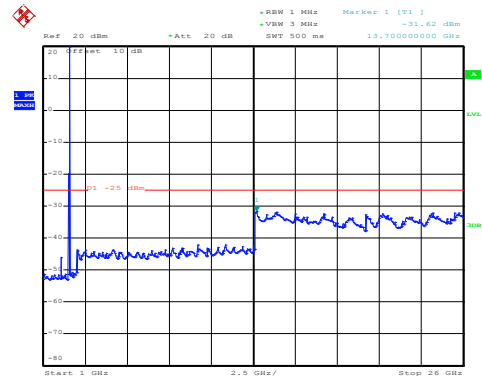
1GHz~25GHz

High channel



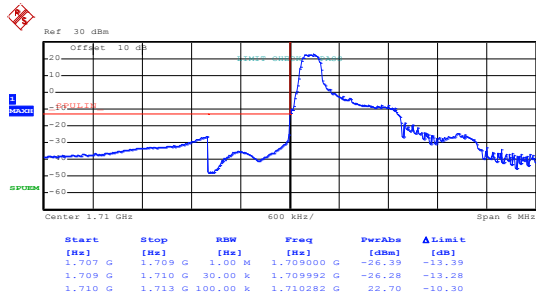
Date: 20.APR.2020 11:24:50

30MHz~1GHz



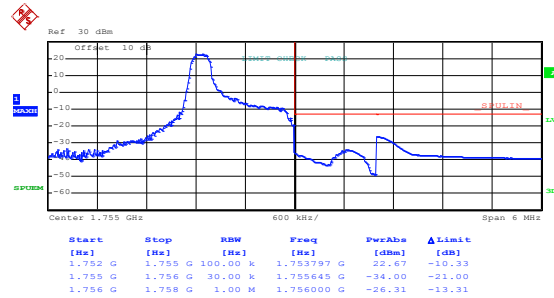
Date: 20.APR.2020 11:23:34

1GHz~25GHz

**Band edge emission:****LTE Band 4 part:****LTE Band 4, BW: 1.4MHz  
16QAM & RB Size 1**

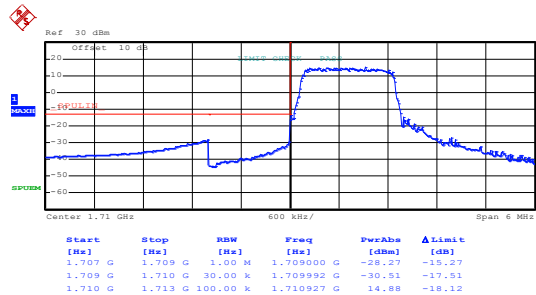
Date: 20.APR.2020 11:06:01

Lowest channel



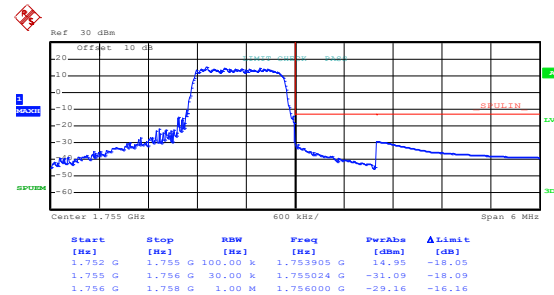
Date: 20.APR.2020 11:08:13

Highest channel

**16QAM & RB Size 6**

Date: 20.APR.2020 11:06:23

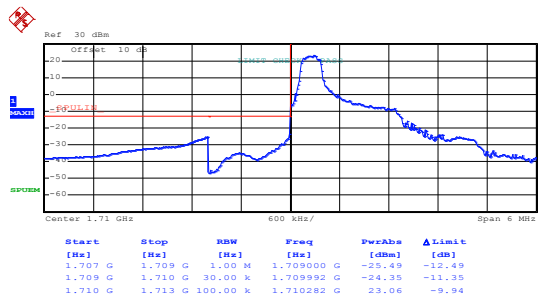
Lowest channel



Date: 20.APR.2020 11:06:58

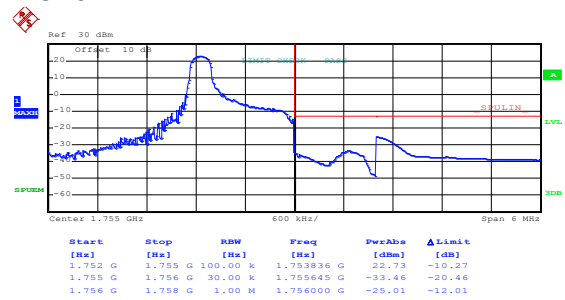
Highest channel

## LTE Band 4, BW: 1.4MHz QPSK & RB Size 1



Date: 20.APR.2020 11:05:38

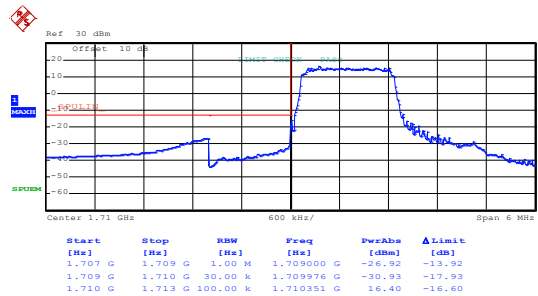
Lowest channel



Date: 20.APR.2020 11:07:38

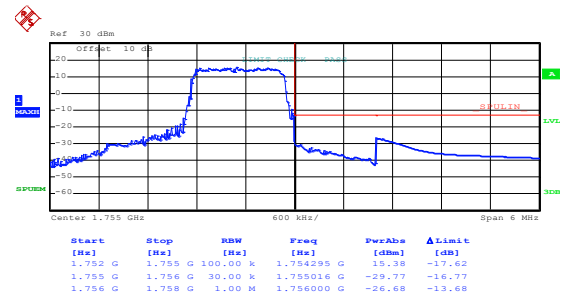
Highest channel

## QPSK & RB Size 6



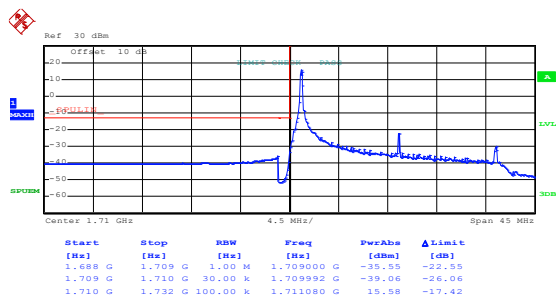
Date: 20.APR.2020 11:06:12

Lowest channel



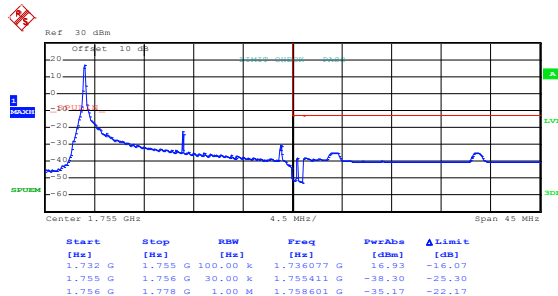
Date: 20.APR.2020 11:06:48

Highest channel

LTE Band 4, BW: 20MHz  
16QAM & RB Size 1

Date: 20.APR.2020 11:10:52

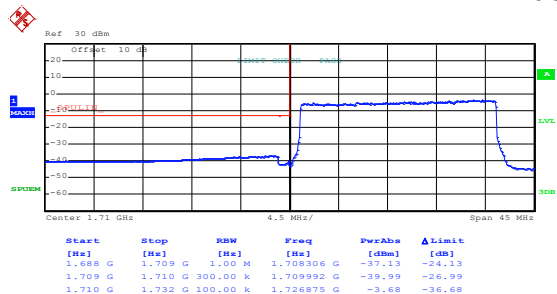
Lowest channel



Date: 20.APR.2020 11:09:42

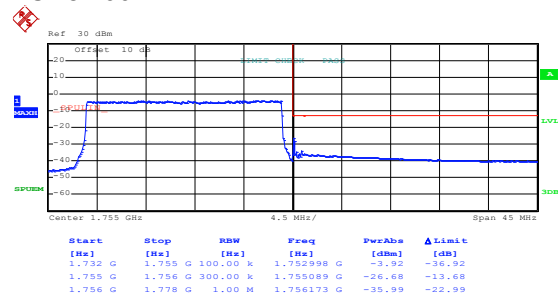
Highest channel

## 16QAM &amp; RB Size 100



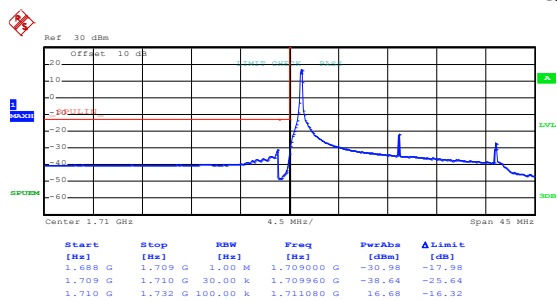
Date: 20.APR.2020 11:10:32

Lowest channel



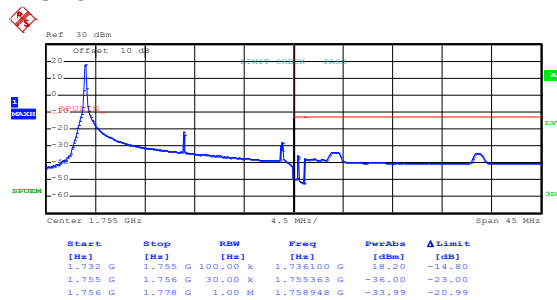
Date: 20.APR.2020 11:10:02

Highest channel

LTE Band 4, BW: 20MHz  
QPSK & RB Size 1

Date: 20.APR.2020 11:10:45

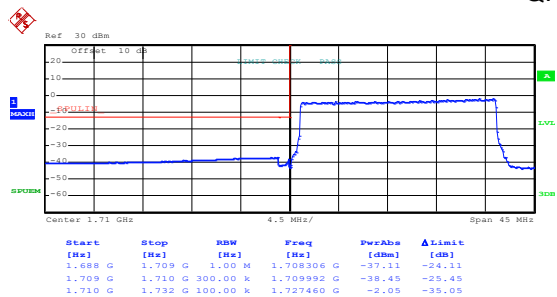
Lowest channel



Date: 20.APR.2020 11:09:28

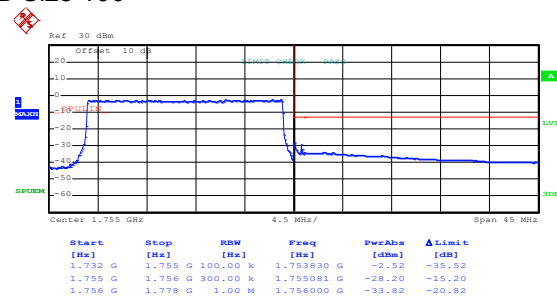
Highest channel

## QPSK &amp; RB Size 100



Date: 20.APR.2020 11:10:26

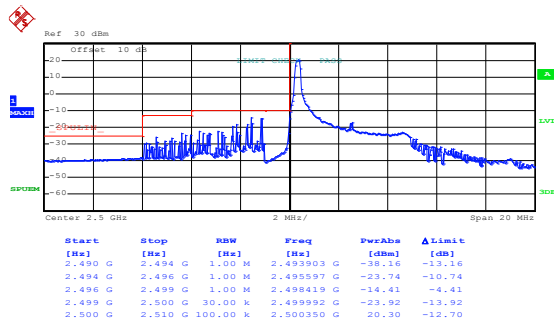
Lowest channel



Date: 20.APR.2020 11:09:56

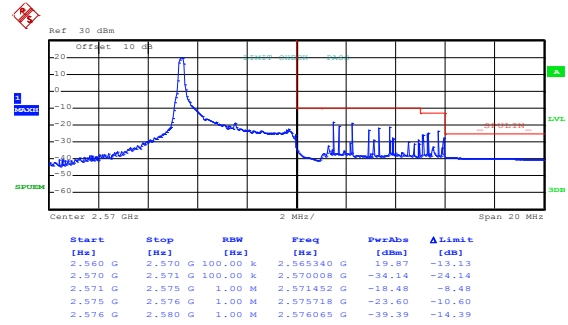
Highest channel

## LTE Band 7 part:

LTE Band 7, BW: 5MHz  
16QAM & RB Size 1

Date: 20.APR.2020 11:13:58

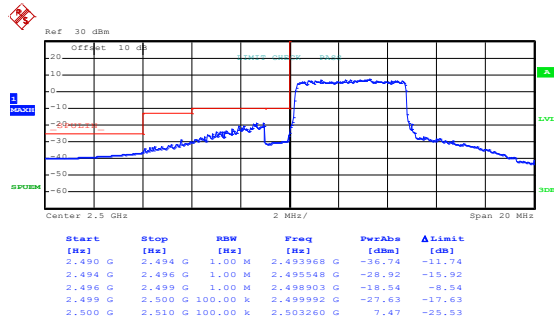
Lowest channel



Date: 20.APR.2020 11:16:17

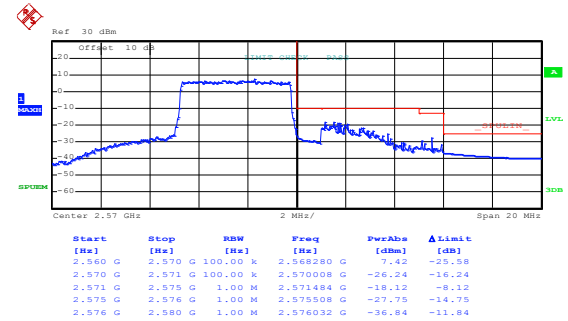
Highest channel

## 16QAM &amp; RB Size 25



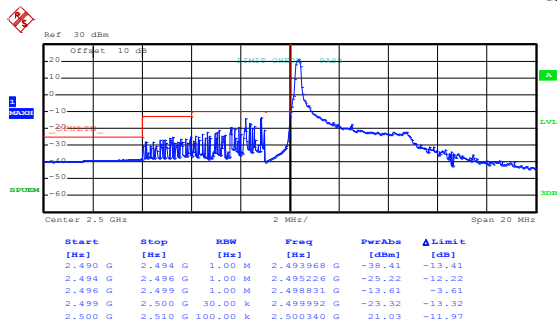
Date: 20.APR.2020 11:14:23

Lowest channel



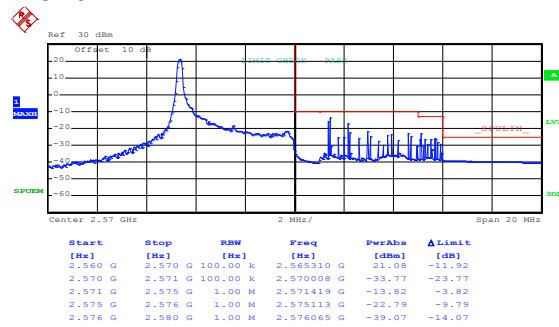
Date: 20.APR.2020 11:15:22

Highest channel

LTE Band 7, BW: 5MHz  
QPSK & RB Size 1

Date: 20.APR.2020 11:13:40

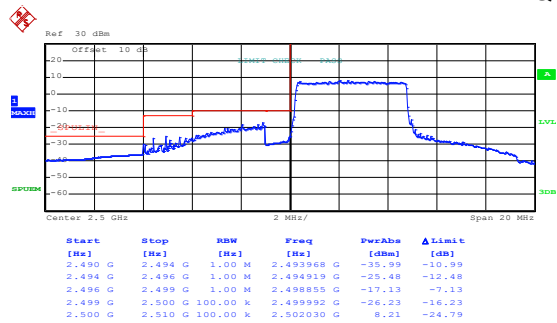
Lowest channel



Date: 20.APR.2020 11:15:53

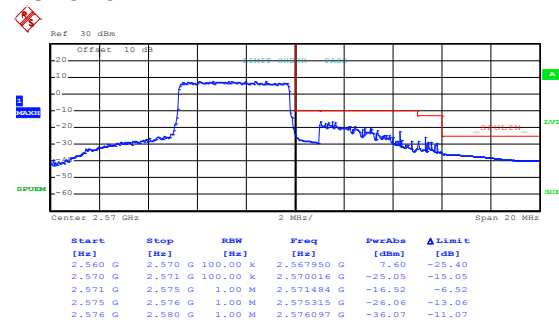
Highest channel

## QPSK &amp; RB Size 25



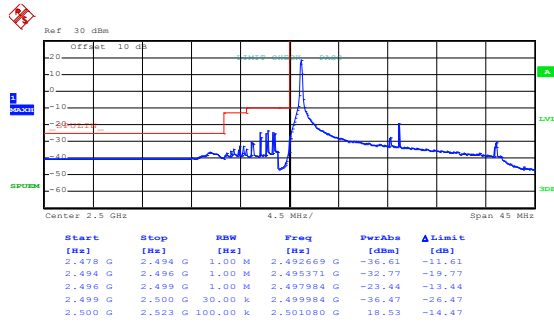
Date: 20.APR.2020 11:14:15

Lowest channel



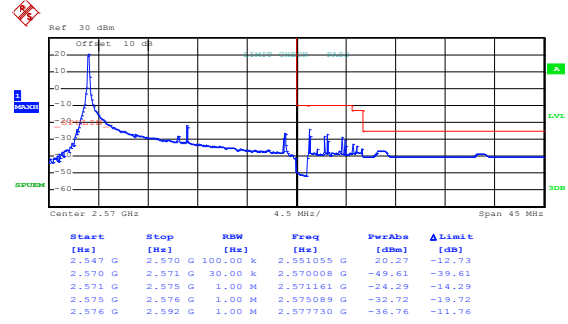
Date: 20.APR.2020 11:15:32

Highest channel

LTE Band 7, BW: 20MHz  
16QAM & RB Size 1

Date: 20.APR.2020 11:18:50

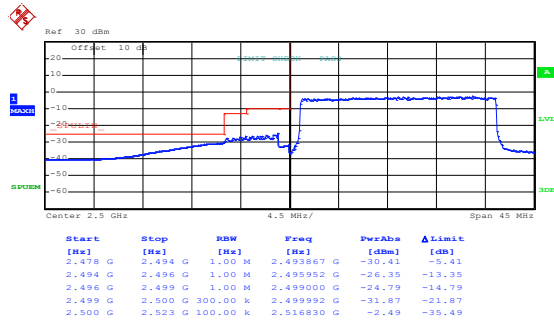
Lowest channel



Date: 20.APR.2020 11:17:28

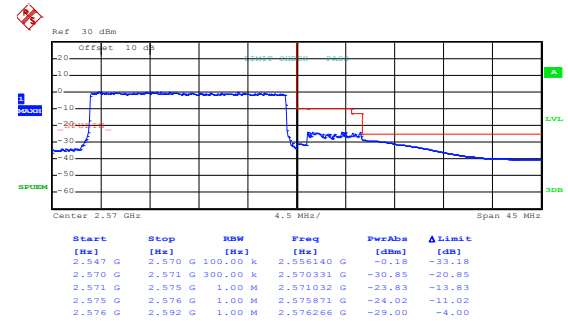
Highest channel

## 16QAM &amp; RB Size 100



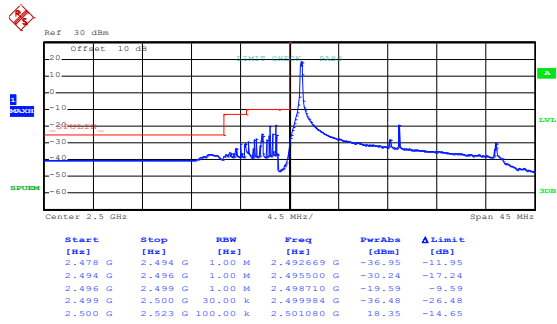
Date: 20.APR.2020 11:18:30

Lowest channel



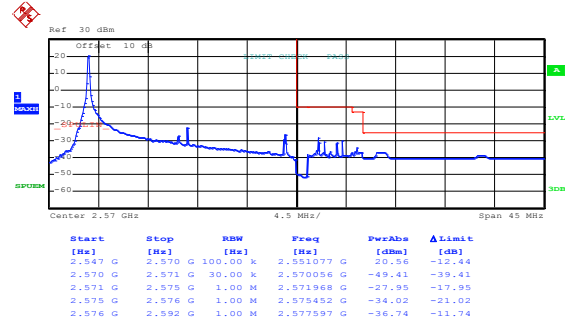
Date: 20.APR.2020 11:17:52

Highest channel

LTE Band 7, BW: 20MHz  
QPSK & RB Size 1

Date: 20.APR.2020 11:18:43

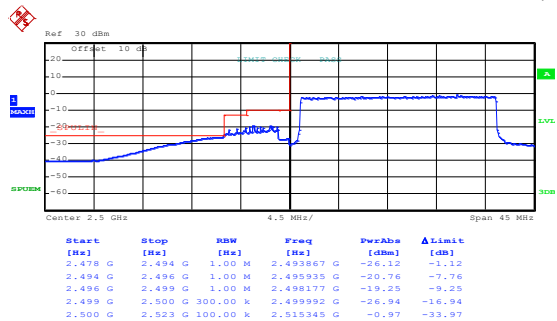
Lowest channel



Date: 20.APR.2020 11:17:17

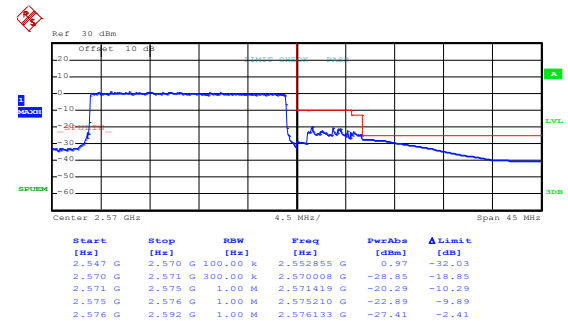
Highest channel

## QPSK &amp; RB Size 100



Date: 20.APR.2020 11:18:23

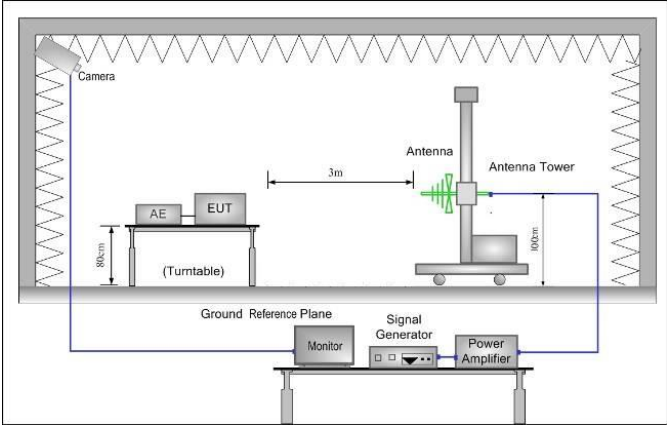
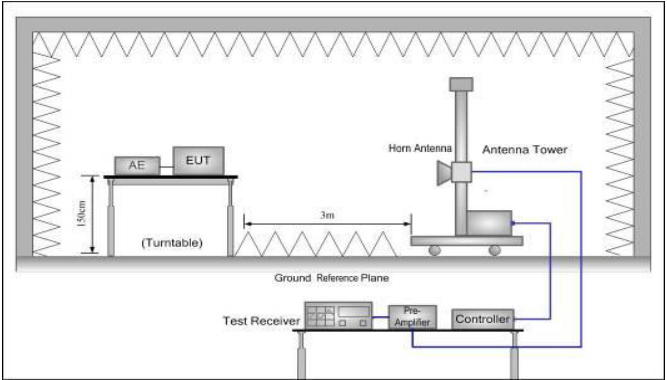
Lowest channel



Date: 20.APR.2020 11:17:42

Highest channel

## 6.5 Field strength of spurious radiation measurement

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 27.53(m), Part 27.53(h)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Limit:            | <p>LTE Band 2 &amp; 4 &amp; 5 &amp; 12 &amp; 17:<br/>The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least <math>43 + 10 \log_{10}(P)</math> dB (-13 dBm).</p> <p>LTE Band 7:<br/>For mobile digital stations, the attenuation factor shall be not less than <math>40 + 10 \log(P)</math> dB on all frequencies between the channel edge and 5 megahertz from the channel edge, <math>43 + 10 \log(P)</math> dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and <math>55 + 10 \log(P)</math> 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 <math>43 + 10 \log(P)</math> dB on all frequencies between 2490.5 MHz and 2496 MHz and <math>55 + 10 \log(P)</math> dB at or below 2490.5 MHz.</p> |
| Test setup:       | <p>Below 1GHz</p>  <p>Above 1GHz</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Test Procedure:   | <ol style="list-style-type: none"> <li>1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.</li> <li>2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.</li> <li>3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.</li> </ol>                                                                                                                                                                                                                               |

|                   |                                                                                                                                                                                                                                                                           |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.<br>$\text{ERP / EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$ |
| Test Instruments: | Refer to section 5.10 for details                                                                                                                                                                                                                                         |
| Test mode:        | Refer to section 5.3 for details.                                                                                                                                                                                                                                         |
| Test results:     | Passed                                                                                                                                                                                                                                                                    |

## Measurement Data:

## LTE Band 4 part:

| Band 4 (1.4MHz)                                                                                  |                                  |                               |                  |                               |                  |                  |              |
|--------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------|------------------|-------------------------------|------------------|------------------|--------------|
| Lowest channel                                                                                   |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                  | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3421.40                                                                                          | -60.83                           | 12.30                         | 0.70             | -49.23                        | -13.00           | -36.23           | Vertical     |
| 5132.10                                                                                          | -41.45                           | 12.69                         | 1.01             | -29.77                        | -13.00           | -16.77           | Vertical     |
| 6842.80                                                                                          | -37.19                           | 11.56                         | 1.53             | -27.16                        | -13.00           | 13.00            | Vertical     |
| 3421.40                                                                                          | -60.14                           | 12.30                         | 0.70             | -48.54                        | -13.00           | -35.54           | Horizontal   |
| 5132.10                                                                                          | -44.10                           | 12.69                         | 1.01             | -32.42                        | -13.00           | -19.42           | Horizontal   |
| 6842.80                                                                                          | -40.95                           | 11.56                         | 1.53             | -30.92                        | -13.00           | 13.00            | Horizontal   |
| Middle channel                                                                                   |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                  | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3465.00                                                                                          | -60.85                           | 12.41                         | 0.72             | -49.16                        | -13.00           | -36.16           | Vertical     |
| 5197.50                                                                                          | -41.15                           | 12.64                         | 1.04             | -29.55                        | -13.00           | -16.55           | Vertical     |
| 6930.00                                                                                          | -37.38                           | 11.53                         | 1.56             | -27.41                        | -13.00           | 13.00            | Vertical     |
| 3465.00                                                                                          | -59.86                           | 12.41                         | 0.72             | -48.17                        | -13.00           | -35.17           | Horizontal   |
| 5197.50                                                                                          | -44.12                           | 12.64                         | 1.04             | -32.52                        | -13.00           | -19.52           | Horizontal   |
| 6930.00                                                                                          | -40.82                           | 11.53                         | 1.56             | -30.85                        | -13.00           | 13.00            | Horizontal   |
| Highest channel                                                                                  |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                  | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3508.60                                                                                          | -61.62                           | 12.49                         | 0.74             | -49.87                        | -13.00           | -36.87           | Vertical     |
| 5262.90                                                                                          | -40.87                           | 12.59                         | 1.07             | -29.35                        | -13.00           | -16.35           | Vertical     |
| 7017.20                                                                                          | -37.55                           | 11.49                         | 1.58             | -27.64                        | -13.00           | 13.00            | Vertical     |
| 3508.60                                                                                          | -60.58                           | 12.49                         | 0.74             | -48.83                        | -13.00           | -35.83           | Horizontal   |
| 5262.90                                                                                          | -43.71                           | 12.59                         | 1.07             | -32.19                        | -13.00           | -19.19           | Horizontal   |
| 7017.20                                                                                          | -40.10                           | 11.49                         | 1.58             | -30.19                        | -13.00           | 13.00            | Horizontal   |
| Remark:                                                                                          |                                  |                               |                  |                               |                  |                  |              |
| 1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report. |                                  |                               |                  |                               |                  |                  |              |

| Band 4 (20MHz)                                                                                   |                                  |                               |                  |                               |                  |                  |              |
|--------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------|------------------|-------------------------------|------------------|------------------|--------------|
| Lowest channel                                                                                   |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                  | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3440.00                                                                                          | -61.34                           | 12.34                         | 0.71             | -49.71                        | -13.00           | -36.71           | Vertical     |
| 5160.00                                                                                          | -41.12                           | 12.67                         | 1.03             | -29.48                        | -13.00           | -16.48           | Vertical     |
| 6880.00                                                                                          | -37.49                           | 11.55                         | 1.54             | -27.48                        | -13.00           | -14.48           | Vertical     |
| 3440.00                                                                                          | -59.80                           | 12.34                         | 0.71             | -48.17                        | -13.00           | -35.17           | Horizontal   |
| 5160.00                                                                                          | -43.93                           | 12.67                         | 1.03             | -32.29                        | -13.00           | -19.29           | Horizontal   |
| 6880.00                                                                                          | -40.55                           | 11.55                         | 1.54             | -30.54                        | -13.00           | -17.54           | Horizontal   |
| Middle channel                                                                                   |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                  | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3465.00                                                                                          | -61.52                           | 12.41                         | 0.72             | -49.83                        | -13.00           | -36.83           | Vertical     |
| 5197.50                                                                                          | -41.34                           | 12.64                         | 1.04             | -29.74                        | -13.00           | -16.74           | Vertical     |
| 6930.00                                                                                          | -37.81                           | 11.53                         | 1.56             | -27.84                        | -13.00           | -14.84           | Vertical     |
| 3465.00                                                                                          | -60.21                           | 12.41                         | 0.72             | -48.52                        | -13.00           | -35.52           | Horizontal   |
| 5197.50                                                                                          | -43.79                           | 12.64                         | 1.04             | -32.19                        | -13.00           | -19.19           | Horizontal   |
| 6930.00                                                                                          | -40.08                           | 11.53                         | 1.56             | -30.11                        | -13.00           | -17.11           | Horizontal   |
| Highest channel                                                                                  |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                  | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3490.00                                                                                          | -61.03                           | 12.49                         | 0.73             | -49.27                        | -13.00           | -36.27           | Vertical     |
| 5235.00                                                                                          | -40.96                           | 12.61                         | 1.06             | -29.41                        | -13.00           | -16.41           | Vertical     |
| 6980.00                                                                                          | -37.41                           | 11.51                         | 1.57             | -27.47                        | -13.00           | -14.47           | Vertical     |
| 3490.00                                                                                          | -59.91                           | 12.49                         | 0.73             | -48.15                        | -13.00           | -35.15           | Horizontal   |
| 5235.00                                                                                          | -44.38                           | 12.61                         | 1.06             | -32.83                        | -13.00           | -19.83           | Horizontal   |
| 6980.00                                                                                          | -40.18                           | 11.51                         | 1.57             | -30.24                        | -13.00           | -17.24           | Horizontal   |
| Remark:                                                                                          |                                  |                               |                  |                               |                  |                  |              |
| 1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report. |                                  |                               |                  |                               |                  |                  |              |

## LTE Band 7 part:

| Band 7 (5MHz)                                                                                               |                                  |                               |                  |                               |                  |                  |              |
|-------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------|------------------|-------------------------------|------------------|------------------|--------------|
| Lowest channel                                                                                              |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                             | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3700.40                                                                                                     | -62.67                           | 12.58                         | 0.48             | -50.57                        | -25.00           | -37.57           | Vertical     |
| 5550.60                                                                                                     | -56.67                           | 12.37                         | 0.75             | -45.05                        | -25.00           | -32.05           | Vertical     |
| 3700.40                                                                                                     | -61.87                           | 12.58                         | 0.48             | -49.77                        | -25.00           | -36.77           | Horizontal   |
| 5550.60                                                                                                     | -55.03                           | 12.37                         | 0.75             | -43.41                        | -25.00           | -30.41           | Horizontal   |
| Middle channel                                                                                              |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                             | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3760.00                                                                                                     | -62.80                           | 12.60                         | 0.51             | -50.71                        | -25.00           | -37.71           | Vertical     |
| 5640.00                                                                                                     | -56.99                           | 12.50                         | 0.78             | -45.27                        | -25.00           | -32.27           | Vertical     |
| 3760.00                                                                                                     | -62.28                           | 12.60                         | 0.51             | -50.19                        | -25.00           | -37.19           | Horizontal   |
| 5640.00                                                                                                     | -55.15                           | 12.50                         | 0.78             | -43.43                        | -25.00           | -30.43           | Horizontal   |
| Highest channel                                                                                             |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                             | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3819.60                                                                                                     | -62.44                           | 12.63                         | 0.54             | -50.35                        | -25.00           | -37.35           | Vertical     |
| 5729.40                                                                                                     | -56.90                           | 12.62                         | 0.81             | -45.09                        | -25.00           | -32.09           | Vertical     |
| 3819.60                                                                                                     | -62.62                           | 12.63                         | 0.54             | -50.53                        | -25.00           | -37.53           | Horizontal   |
| 5729.40                                                                                                     | -55.38                           | 12.62                         | 0.81             | -43.57                        | -25.00           | -30.57           | Horizontal   |
| Remark:<br>1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report. |                                  |                               |                  |                               |                  |                  |              |

| Band 7 (20MHz)                                                                                                     |                                  |                               |                  |                               |                  |                  |              |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------|------------------|-------------------------------|------------------|------------------|--------------|
| Lowest channel                                                                                                     |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                                    | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3700.40                                                                                                            | -62.67                           | 12.58                         | 0.48             | -50.57                        | -25.00           | -37.57           | Vertical     |
| 5550.60                                                                                                            | -56.67                           | 12.37                         | 0.75             | -45.05                        | -25.00           | -32.05           | Vertical     |
| 3700.40                                                                                                            | -61.87                           | 12.58                         | 0.48             | -49.77                        | -25.00           | -36.77           | Horizontal   |
| 5550.60                                                                                                            | -55.03                           | 12.37                         | 0.75             | -43.41                        | -25.00           | -30.41           | Horizontal   |
| Middle channel                                                                                                     |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                                    | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3760.00                                                                                                            | -62.80                           | 12.60                         | 0.51             | -50.71                        | -25.00           | -37.71           | Vertical     |
| 5640.00                                                                                                            | -56.99                           | 12.50                         | 0.78             | -45.27                        | -25.00           | -32.27           | Vertical     |
| 3760.00                                                                                                            | -62.28                           | 12.60                         | 0.51             | -50.19                        | -25.00           | -37.19           | Horizontal   |
| 5640.00                                                                                                            | -55.15                           | 12.50                         | 0.78             | -43.43                        | -25.00           | -30.43           | Horizontal   |
| Highest channel                                                                                                    |                                  |                               |                  |                               |                  |                  |              |
| Frequency (MHz)                                                                                                    | Level at antenna terminals (dBm) | Substitute antenna gain (dBi) | Cable Loss (dBi) | Spurious Emission level (dBm) | Limit Line (dBm) | Over Limit (dBm) | Polarization |
| 3819.60                                                                                                            | -62.44                           | 12.63                         | 0.54             | -50.35                        | -25.00           | -37.35           | Vertical     |
| 5729.40                                                                                                            | -56.90                           | 12.62                         | 0.81             | -45.09                        | -25.00           | -32.09           | Vertical     |
| 3819.60                                                                                                            | -62.62                           | 12.63                         | 0.54             | -50.53                        | -25.00           | -37.53           | Horizontal   |
| 5729.40                                                                                                            | -55.38                           | 12.62                         | 0.81             | -43.57                        | -25.00           | -30.57           | Horizontal   |
| <b>Remark:</b><br>1. The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report. |                                  |                               |                  |                               |                  |                  |              |

## 6.6 Frequency stability V.S. Temperature measurement

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 22.355, Part 24.235, Part 27.54, Part 2.1055(a)(1)(b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Limit:            | $\pm 2.5\text{ppm}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Test setup:       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Test procedure:   | <ol style="list-style-type: none"> <li>1. The equipment under test was connected to an external DC power supply and input rated voltage.</li> <li>2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.</li> <li>3. The EUT was placed inside the temperature chamber.</li> <li>4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency.</li> <li>5. Turn EUT off and set the chamber temperature to <math>-30^{\circ}\text{C}</math>. After the temperature stabilized for approximately 30 minutes recorded the frequency.</li> <li>6. Repeat step measure with <math>10^{\circ}\text{C}</math> increased per stage until the highest temperature of <math>+50^{\circ}\text{C}</math> reached</li> </ol> |
| Test Instruments: | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Test mode:        | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test results:     | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## Measurement Data (worst case):

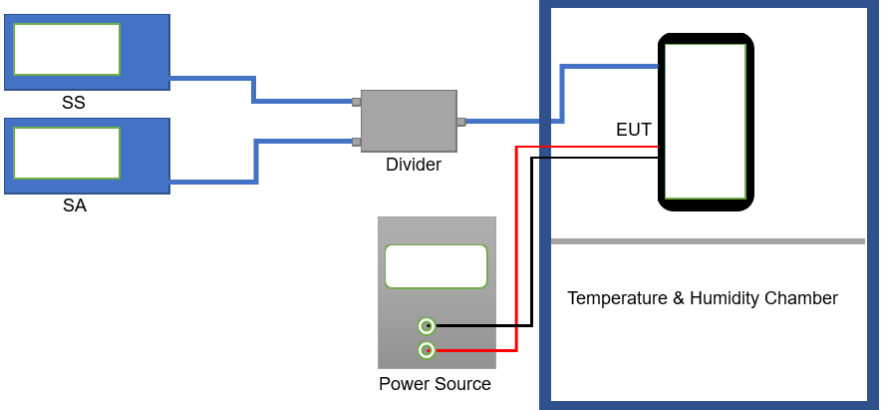
## LTE Band 4 part:

| Reference Frequency: LTE Band 4 (10MHz) Middle channel=20175 channel=1732.50MHz |                  |                 |          |             |        |
|---------------------------------------------------------------------------------|------------------|-----------------|----------|-------------|--------|
| Power supplied (Vdc)                                                            | Temperature (°C) | Frequency error |          | Limit (ppm) | Result |
|                                                                                 |                  | Hz              | ppm      |             |        |
| QPSK                                                                            |                  |                 |          |             |        |
| 3.80                                                                            | -30              | 180             | 0.103896 | ±2.5        | Pass   |
|                                                                                 | -20              | 175             | 0.101010 |             |        |
|                                                                                 | -10              | 168             | 0.096970 |             |        |
|                                                                                 | 0                | 160             | 0.092352 |             |        |
|                                                                                 | 10               | 154             | 0.088889 |             |        |
|                                                                                 | 20               | 146             | 0.084271 |             |        |
|                                                                                 | 30               | 140             | 0.080808 |             |        |
|                                                                                 | 40               | 132             | 0.076190 |             |        |
|                                                                                 | 50               | 121             | 0.069841 |             |        |
| 16QAM                                                                           |                  |                 |          |             |        |
| 3.80                                                                            | -30              | 177             | 0.102165 | ±2.5        | Pass   |
|                                                                                 | -20              | 169             | 0.097547 |             |        |
|                                                                                 | -10              | 162             | 0.093506 |             |        |
|                                                                                 | 0                | 152             | 0.087734 |             |        |
|                                                                                 | 10               | 143             | 0.082540 |             |        |
|                                                                                 | 20               | 137             | 0.079076 |             |        |
|                                                                                 | 30               | 131             | 0.075613 |             |        |
|                                                                                 | 40               | 120             | 0.069264 |             |        |
|                                                                                 | 50               | 115             | 0.066378 |             |        |
| Note: Only the worst case shown in the report.                                  |                  |                 |          |             |        |

## LTE Band 7 part:

| Reference Frequency: LTE Band 7 (10MHz) Middle channel=21100 Frequency=2535.00MHz |                  |                 |          |             |        |
|-----------------------------------------------------------------------------------|------------------|-----------------|----------|-------------|--------|
| Power supplied<br>(Vdc)                                                           | Temperature (°C) | Frequency error |          | Limit (ppm) | Result |
|                                                                                   |                  | Hz              | ppm      |             |        |
| QPSK                                                                              |                  |                 |          |             |        |
| 3.80                                                                              | -30              | 176             | 0.069428 | ±2.5        | Pass   |
|                                                                                   | -20              | 164             | 0.064694 |             |        |
|                                                                                   | -10              | 156             | 0.061538 |             |        |
|                                                                                   | 0                | 150             | 0.059172 |             |        |
|                                                                                   | 10               | 143             | 0.056410 |             |        |
|                                                                                   | 20               | 133             | 0.052465 |             |        |
|                                                                                   | 30               | 127             | 0.050099 |             |        |
|                                                                                   | 40               | 122             | 0.048126 |             |        |
|                                                                                   | 50               | 113             | 0.044576 |             |        |
| 16QAM                                                                             |                  |                 |          |             |        |
| 3.80                                                                              | -30              | 170             | 0.067061 | ±2.5        | Pass   |
|                                                                                   | -20              | 163             | 0.064300 |             |        |
|                                                                                   | -10              | 156             | 0.061538 |             |        |
|                                                                                   | 0                | 149             | 0.058777 |             |        |
|                                                                                   | 10               | 142             | 0.056016 |             |        |
|                                                                                   | 20               | 134             | 0.052860 |             |        |
|                                                                                   | 30               | 127             | 0.050099 |             |        |
|                                                                                   | 40               | 119             | 0.046943 |             |        |
|                                                                                   | 50               | 110             | 0.043393 |             |        |
| Note: Only the worst case shown in the report.                                    |                  |                 |          |             |        |

## 6.7 Frequency stability V.S. Voltage measurement

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement: | Part 22.355, Part 24.235, Part 27.54, Part 2.1055(d)(2)                                                                                                                                                                                                                                                                                                                                                                                        |
| Limit:            | $\pm 2.5\text{ppm}$                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer (SA) and a Signal Source (SS) are connected to a Divider. The Divider is connected to the EUT (Equipment Under Test) inside a Temperature &amp; Humidity Chamber. A Power Source is also connected to the EUT.</p>                                                                           |
| Test procedure:   | <ol style="list-style-type: none"> <li>1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage.</li> <li>2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.</li> <li>3. Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.</li> </ol> |
| Test Instruments: | Refer to section 5.10 for details                                                                                                                                                                                                                                                                                                                                                                                                              |
| Test mode:        | Refer to section 5.3 for details                                                                                                                                                                                                                                                                                                                                                                                                               |
| Test results:     | Passed                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Measurement Data (worst case):

## LTE Band 4 part:

| Reference Frequency: LTE Band 4(10MHz) Middle channel=20175 channel=1732.50MHz |                      |                 |          |             |        |
|--------------------------------------------------------------------------------|----------------------|-----------------|----------|-------------|--------|
| Temperature (°C)                                                               | Power supplied (Vdc) | Frequency error |          | Limit (ppm) | Result |
|                                                                                |                      | Hz              | ppm      |             |        |
| QPSK                                                                           |                      |                 |          |             |        |
| 25                                                                             | 4.35                 | 88              | 0.050794 | ±2.5        | Pass   |
|                                                                                | 3.80                 | 73              | 0.042136 |             |        |
|                                                                                | 3.50                 | 54              | 0.031169 |             |        |
| 16QAM                                                                          |                      |                 |          |             |        |
| 25                                                                             | 4.35                 | 79              | 0.045599 | ±2.5        | Pass   |
|                                                                                | 3.80                 | 67              | 0.038672 |             |        |
|                                                                                | 3.50                 | 56              | 0.032323 |             |        |
| Note: Only the worst case shown in the report.                                 |                      |                 |          |             |        |

## LTE Band 7 part:

| Reference Frequency: LTE Band 7(10MHz) Middle channel=21100 Frequency=2535.00MHz |                      |                 |          |             |        |
|----------------------------------------------------------------------------------|----------------------|-----------------|----------|-------------|--------|
| Temperature (°C)                                                                 | Power supplied (Vdc) | Frequency error |          | Limit (ppm) | Result |
|                                                                                  |                      | Hz              | ppm      |             |        |
| QPSK                                                                             |                      |                 |          |             |        |
| 25                                                                               | 4.35                 | 80              | 0.031558 | ±2.5        | Pass   |
|                                                                                  | 3.80                 | 72              | 0.028402 |             |        |
|                                                                                  | 3.50                 | 50              | 0.019724 |             |        |
| 16QAM                                                                            |                      |                 |          |             |        |
| 25                                                                               | 4.35                 | 77              | 0.030375 | ±2.5        | Pass   |
|                                                                                  | 3.80                 | 66              | 0.026036 |             |        |
|                                                                                  | 3.50                 | 55              | 0.021696 |             |        |
| Note: Only the worst case shown in the report.                                   |                      |                 |          |             |        |