



# TEST REPORT

## No. I22Z62189-WMD03

for

**HMD Global Oy**

**Smart Phone**

**Model Name: N156DL**

**FCC ID: 2AJOTTA-1560**

with

**Hardware Version: V1.0**

**Software Version: 02US\_0\_043**

**Issued Date: 2023-01-17**

**Note:**

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I22Z62189-WMD03	Rev.0	1 <sup>st</sup> edition	2023-01-17

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

## **CONTENTS**

<b>1.</b>	<b>TEST LABORATORY .....</b>	<b>4</b>
<b>1.1.</b>	<b>INTRODUCTION &amp; ACCREDITATION.....</b>	<b>4</b>
<b>1.2.</b>	<b>TESTING LOCATION .....</b>	<b>4</b>
<b>1.3.</b>	<b>TESTING ENVIRONMENT .....</b>	<b>5</b>
<b>1.4.</b>	<b>PROJECT DATA .....</b>	<b>5</b>
<b>1.5.</b>	<b>SIGNATURE.....</b>	<b>5</b>
<b>2.</b>	<b>CLIENT INFORMATION.....</b>	<b>6</b>
<b>2.1.</b>	<b>APPLICANT INFORMATION.....</b>	<b>6</b>
<b>2.2.</b>	<b>MANUFACTURER INFORMATION .....</b>	<b>6</b>
<b>3.</b>	<b>EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) .....</b>	<b>7</b>
<b>3.1.</b>	<b>ABOUT EUT .....</b>	<b>7</b>
<b>3.2.</b>	<b>INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST .....</b>	<b>7</b>
<b>3.3.</b>	<b>INTERNAL IDENTIFICATION OF AE USED DURING THE TEST .....</b>	<b>7</b>
<b>4.</b>	<b>REFERENCE DOCUMENTS .....</b>	<b>8</b>
<b>4.1.</b>	<b>DOCUMENTS SUPPLIED BY APPLICANT .....</b>	<b>8</b>
<b>4.2.</b>	<b>REFERENCE DOCUMENTS FOR TESTING .....</b>	<b>8</b>
<b>5.</b>	<b>LABORATORY ENVIRONMENT.....</b>	<b>9</b>
<b>6.</b>	<b>SUMMARY OF TEST RESULT .....</b>	<b>10</b>
<b>7.</b>	<b>TEST EQUIPMENTS UTILIZED .....</b>	<b>13</b>
	<b>ANNEX A: MEASUREMENT RESULTS.....</b>	<b>14</b>
	<b>A.1 OUTPUT POWER .....</b>	<b>14</b>
	<b>A.2 EMISSION LIMIT .....</b>	<b>51</b>
	<b>A.3 FREQUENCY STABILITY .....</b>	<b>64</b>
	<b>A.4 OCCUPIED BANDWIDTH.....</b>	<b>70</b>
	<b>A.5 EMISSION BANDWIDTH.....</b>	<b>122</b>
	<b>A.6 BAND EDGE COMPLIANCE .....</b>	<b>174</b>
	<b>A.7 CONDUCTED SPURIOUS EMISSION .....</b>	<b>214</b>
	<b>A.8 PEAK-TO-AVERAGE POWER RATIO .....</b>	<b>222</b>
	<b>ANNEX B: ACCREDITATION CERTIFICATE.....</b>	<b>224</b>



## **1. Test Laboratory**

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

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0 and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

### **1.2. Testing Location**

Location 1: CTTL (huayuan North Road)

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

Location 2: CTTL (BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology Development  
Area, Beijing, P. R. China 100176

### 1.3. Testing Environment

Normal Temperature: 15-35°C  
Relative Humidity: 20-75%

### 1.4. Project Data

Testing Start Date: 2022-11-14  
Testing End Date: 2023-01-16

### 1.5. Signature



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Dong Yuan  
(Prepared this test report)



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Zhou Yu  
(Reviewed this test report)



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Zhao Hui Lin  
Deputy Director of the laboratory  
(Approved this test report)



## **2. Client Information**

### **2.1. Applicant Information**

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

### **2.2. Manufacturer Information**

Company Name: HMD Global Oy  
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Telephone: +491735287964

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

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

Description	Smart Phone
Model Name	N156DL
FCC ID	2AJOTTA-1560
Antenna	Embedded
Output power	27.82dBm maximum EIRP measured for LTE Band 41
Extreme vol. Limits	3.6VDC to 4.4VDC (nominal: 3.85VDC)
Extreme temp. Tolerance	-10°C to +55°C

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

#### **3.2. Internal Identification of EUT used during the test**

<b>EUT ID*</b>	<b>IMEI</b>	<b>HW Version</b>	<b>SW Version</b>	<b>Date of receipt</b>
UT24a	350817210014885	V1.0	02US_0_043	2022-11-14
UT44a	350817210018100	V1.0	02US_0_043	2022-12-16

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

#### **3.3. Internal Identification of AE used during the test**

<b>AE ID*</b>	<b>Description</b>
AE1	Battery
AE2	Battery

AE1

Model	TN-BP3000N1
Manufacturer	Guangdong Fenghua new energy co.,ltd.
Capacitance	3000mAh

AE2

Model	TN-BP3000N1
Manufacturer	Dongguan Ganfeng Electronics Co., Ltd
Capacitance	3000mAh

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



## **4. Reference Documents**

### **4.1. Documents supplied by applicant**

EUT parameters are supplied by the customer, which are the bases of testing. CAICT is not responsible for the accuracy of customer supplied technical information that may affect the test results (for example, antenna gain and loss of customer supplied cable).

### **4.2. Reference Documents for testing**

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

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-21 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-21 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-21 Edition
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
ANSI C63.26	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
KDB 971168 D01	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS	v03r01



## 5. Laboratory Environment

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

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	>2 MΩ
Ground system resistance	< 0.5Ω

**Fully-anechoic chamber 2** (8.6 meters×6.1 meters×3.85 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	>2 MΩ
Ground system resistance	< 1Ω
Site voltage standing-wave ratio ( $S_{VSWR}$ )	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

**Semi-anechoic chamber 2 / Fully-anechoic chamber 3** (10 meters×6.7 meters×6.15 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 100 dB
Electrical insulation	>2 MΩ
Ground system resistance	< 0.5Ω
Normalised site attenuation (NSA)	<±3.5 dB, 3 m distance
Site voltage standing-wave ratio ( $S_{VSWR}$ )	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

## 6. Summary Of Test Result

### LTE Band 2

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	24.232	P
2	Emission Limit	2.1051/24.238	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	24.238	P
6	Band Edge Compliance	24.238	P
7	Conducted Spurious Emission	24.238	P
8	Peak-to-Average Power Ratio	24.232	P

### LTE Band 5

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	22.913	P
2	Emission Limit	2.1051/22.917	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	22.917	P
6	Band Edge Compliance	22.917	P
7	Conducted Spurious Emission	22.917	P

### LTE Band 12

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	27.50	P
2	Emission Limit	2.1051/27.53	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	27.53	P
6	Band Edge Compliance	27.53	P
7	Conducted Spurious Emission	27.53	P
8	Peak-to-Average Power Ratio	27.50	P

**LTE Band 13**

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	27.50	P
2	Emission Limit	2.1051/27.53	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	27.53	P
6	Band Edge Compliance	27.53	P
7	Conducted Spurious Emission	27.53	P
8	Peak-to-Average Power Ratio	27.50	P

**LTE Band 41**

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	27.50	P
2	Emission Limit	2.1051/27.53	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	27.53	P
6	Band Edge Compliance	27.53	P
7	Conducted Spurious Emission	27.53	P
8	Peak-to-Average Power Ratio	27.50	P

**LTE Band 66 (4)**

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	27.50	P
2	Emission Limit	2.1051/27.53	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	27.53	P
6	Band Edge Compliance	27.53	P
7	Conducted Spurious Emission	27.53	P
8	Peak-to-Average Power Ratio	27.50	P

**LTE Band 71**

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	27.50	P
2	Emission Limit	2.1051/27.53	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	27.53	P
6	Band Edge Compliance	27.53	P
7	Conducted Spurious Emission	27.53	P
8	Peak-to-Average Power Ratio	27.50	P

Terms used in Verdict column

P	Pass. The EUT complies with the essential requirements in the standard.
NP	Not Performed. The test was not performed by CTTL.
NA	Not Applicable. The test was not applicable.
BR	Re-use test data from basic model report.
F	Fail. The EUT does not comply with the essential requirements in the standard.

All the test results are based on normal power.

LTE Band 66 overlaps the entire frequency range of LTE Band 4. Therefore, test data provided in this report covers Band 4 as well as Band 66.

LTE Band 41 is tested by power class 2.

#### Explanation of worst-case configuration

The worst-case scenario for all measurements is based on the conducted output power measurement investigation results. Output power was measured on QPSK, 16QAM and 64QAM modulations. It was found that QPSK was the worst case. All testing was performed using QPSK modulations to represent the worst case unless otherwise stated. The test results shown in the following sections represent the worst case emission.

## 7. Test Equipments Utilized

Description	Type	Series Number	Manufacture	Cal Due Date	Calibration Interval
Wideband Radio Communication Tester	CMW500	159082	R&S	2023-01-17	25 months
Spectrum Analyzer	FSU	200030	R&S	2023-05-25	1 year
Climate Chamber	SH-242	93008556	ESPEC	2023-12-23	3 years
Test Receiver	E4440A	MY48250642	Agilent	2023-03-10	1 year
EMI Antenna	VULB9163	9163-235	Schwarzbeck	2023-04-19	1 year
EMI Antenna	LB-7180-NF	J203001300005	A-INFO	2023-02-23	1 year
EMI Antenna	3115	00146404	ETS-Lindgren	2023-02-23	1 year
Signal Generator	N5183A	MY49060052	Agilent	2023-07-19	1 year
Universal Radio Communication Tester	CMW500	159408	R&S	2023-04-01	1 year

## Annex A: Measurement Results

### A.1 Output Power

#### A.1.1 Summary

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

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

#### A.1.2 Conducted

##### A.1.2.1 Method of Measurements

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

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

The results below include a correction factor for cable loss that is provided by the customer.

##### A.1.2.2 Measurement Result

#### LTE band 2

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1909.3	23.45	22.81	21.71
		1880.0	23.36	22.69	21.60
		1850.7	23.52	22.81	21.73
	1 RB low	1909.3	23.44	22.72	21.75
		1880.0	23.37	22.68	21.56
		1850.7	23.50	22.96	21.81
	50% RB mid	1909.3	23.56	22.51	21.68
		1880.0	23.53	22.46	21.62
		1850.7	23.65	22.65	21.76
	100% RB	1909.3	22.53	21.65	20.56
		1880.0	22.40	21.61	20.50
		1850.7	22.54	21.75	20.62
3MHz	1 RB high	1908.5	23.46	22.73	21.75
		1880.0	23.41	22.70	21.60
		1851.5	23.52	22.93	21.81
	1 RB low	1908.5	23.44	22.88	21.75
		1880.0	23.41	22.79	21.61
		1851.5	23.54	22.92	21.75
	50% RB mid	1908.5	22.47	21.57	20.58
		1880.0	22.39	21.56	20.46
		1851.5	22.48	21.62	20.57
	100% RB	1908.5	22.44	21.51	20.50

		1880.0	22.34	21.46	20.41
		1851.5	22.43	21.54	20.47
5MHz	1 RB high	1907.5	23.40	22.76	21.61
		1880.0	23.34	22.77	21.57
		1852.5	23.44	22.89	21.73
	1 RB low	1907.5	23.38	22.70	21.58
		1880.0	23.36	22.72	21.60
		1852.5	23.50	22.97	21.77
	50% RB mid	1907.5	22.47	21.54	20.52
		1880.0	22.45	21.49	20.49
		1852.5	22.51	21.53	20.56
	100% RB	1907.5	22.42	21.51	20.46
		1880.0	22.41	21.47	20.48
		1852.5	22.49	21.53	20.54
10MHz	1 RB high	1905.0	23.45	22.85	21.63
		1880.0	23.34	22.72	21.57
		1855.0	23.39	22.79	21.65
	1 RB low	1905.0	23.41	22.76	21.60
		1880.0	23.37	22.82	21.61
		1855.0	23.52	23.01	21.81
	50% RB mid	1905.0	22.46	21.52	20.48
		1880.0	22.43	21.49	20.47
		1855.0	22.44	21.54	20.50
	100% RB	1905.0	22.46	21.54	20.47
		1880.0	22.42	21.48	20.48
		1855.0	22.47	21.52	20.50
15MHz	1 RB high	1902.5	23.45	22.78	21.70
		1880.0	23.34	22.66	21.59
		1857.5	23.37	22.63	21.59
	1 RB low	1902.5	23.39	22.75	21.57
		1880.0	23.40	22.72	21.63
		1857.5	23.54	22.98	21.83
	50% RB mid	1902.5	22.49	21.51	20.51
		1880.0	22.44	21.46	20.48
		1857.5	22.48	21.50	20.52
	100% RB	1902.5	22.48	21.53	20.49
		1880.0	22.43	21.50	20.48
		1857.5	22.45	21.49	20.48
20MHz	1 RB high	1900.0	23.46	22.85	21.67
		1880.0	23.36	22.69	21.65
		1860.0	23.38	22.77	21.59
	1 RB low	1900.0	23.41	22.81	21.66



		1880.0	23.42	22.75	21.60
		1860.0	23.54	23.02	21.82
	50% RB mid	1900.0	22.52	21.59	20.52
		1880.0	22.45	21.50	20.49
		1860.0	22.50	21.53	20.54
	100% RB	1900.0	22.49	21.54	20.47
		1880.0	22.41	21.46	20.46
		1860.0	22.44	21.47	20.44



**LTE band 5**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	23.83	23.02	21.94
		836.5	23.79	23.01	21.93
		824.7	23.79	22.90	21.95
	1 RB low	848.3	23.84	23.07	22.00
		836.5	23.80	22.97	21.99
		824.7	23.75	22.94	21.90
	50% RB mid	848.3	23.97	22.86	22.06
		836.5	23.88	22.85	22.05
		824.7	23.91	22.85	22.00
	100% RB	848.3	22.88	22.03	20.85
		836.5	22.85	22.04	20.87
		824.7	22.85	21.99	20.83
3MHz	1 RB high	847.5	23.93	23.11	22.03
		836.5	23.87	23.08	21.99
		825.5	23.86	23.01	21.95
	1 RB low	847.5	23.91	23.08	21.99
		836.5	23.89	23.07	22.00
		825.5	23.88	22.97	21.95
	50% RB mid	847.5	22.93	22.02	20.93
		836.5	22.88	22.01	20.88
		825.5	22.87	21.98	20.89
	100% RB	847.5	22.90	21.95	20.87
		836.5	22.87	21.92	20.87
		825.5	22.83	21.88	20.80
5MHz	1 RB high	846.5	23.97	23.10	22.07
		836.5	23.95	23.08	22.07
		826.5	23.92	23.08	22.02
	1 RB low	846.5	23.96	23.21	22.02
		836.5	23.92	23.10	22.07
		826.5	23.90	23.01	22.01
	50% RB mid	846.5	23.02	22.01	20.97
		836.5	22.99	22.01	20.97
		826.5	22.98	21.99	20.94
	100% RB	846.5	22.98	22.00	20.93
		836.5	22.96	22.00	20.93
		826.5	22.96	22.00	20.93
10MHz	1 RB high	844.0	24.10	23.18	22.17
		836.5	24.05	23.30	22.08
		829.0	24.05	23.17	22.13



	1 RB low	844.0	24.10	23.36	22.12
		836.5	24.06	23.29	22.11
		829.0	24.03	23.12	22.08
	50% RB mid	844.0	23.16	22.15	21.08
		836.5	23.10	22.11	21.06
		829.0	23.06	22.07	21.01
	100% RB	844.0	23.10	22.10	21.05
		836.5	23.11	22.13	21.07
		829.0	23.07	22.05	21.01

**LTE band 12**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	715.3	23.84	23.21	22.00
		707.5	23.85	23.14	21.93
		699.7	23.85	23.09	21.98
	1 RB low	715.3	23.81	23.23	22.07
		707.5	23.89	23.24	22.04
		699.7	23.84	23.13	21.99
	50% RB mid	715.3	23.96	22.95	22.11
		707.5	23.96	22.91	22.05
		699.7	23.96	22.94	22.00
	100% RB	715.3	22.96	22.03	20.86
		707.5	22.91	21.99	20.91
		699.7	22.88	21.96	20.88
3MHz	1 RB high	714.5	23.90	23.30	22.04
		707.5	23.89	23.11	22.03
		700.5	23.93	23.23	21.99
	1 RB low	714.5	23.91	23.29	22.07
		707.5	23.96	23.29	22.05
		700.5	23.91	23.29	22.07
	50% RB mid	714.5	22.99	22.02	20.93
		707.5	22.93	21.97	20.93
		700.5	22.92	21.98	20.93
	100% RB	714.5	22.92	21.91	20.83
		707.5	22.88	21.88	20.87
		700.5	22.89	21.88	20.87
5MHz	1 RB high	713.5	23.81	23.13	22.05
		707.5	23.85	23.17	21.95
		701.5	23.92	23.28	22.07
	1 RB low	713.5	23.84	23.22	22.02
		707.5	23.94	23.25	22.05
		701.5	23.84	23.13	22.07
	50% RB mid	713.5	22.97	21.95	20.92
		707.5	22.96	21.94	20.94
		701.5	22.97	21.94	20.95
	100% RB	713.5	22.96	21.99	20.90
		707.5	22.85	21.87	20.87
		701.5	22.90	21.92	20.90
10MHz	1 RB high	711.0	23.81	23.27	22.08
		707.5	23.81	23.08	21.94
		704.0	23.89	23.11	22.01



	1 RB low	711.0	23.93	23.26	22.08
		707.5	23.94	23.25	22.06
		704.0	23.88	23.16	22.04
	50% RB mid	711.0	22.92	21.91	20.88
		707.5	22.92	21.94	20.93
		704.0	22.96	21.94	20.96
	100% RB	711.0	22.91	21.92	20.92
		707.5	22.86	21.89	20.92
		704.0	23.02	22.00	21.01

**LTE band 13**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	784.5	23.81	23.10	21.91
		782.0	23.76	22.91	21.87
		779.5	23.80	23.03	21.81
	1 RB low	784.5	23.83	23.11	21.93
		782.0	23.83	23.09	21.94
		779.5	23.85	22.95	21.82
	50% RB mid	784.5	22.94	21.91	20.90
		782.0	22.95	21.89	20.90
		779.5	22.97	21.90	20.85
	100% RB	784.5	22.93	21.94	20.88
		782.0	22.92	21.86	20.84
		779.5	22.83	21.75	20.74
10MHz	1 RB high	782.0	23.83	23.15	21.92
	1 RB low	782.0	23.93	23.05	21.89
	50% RB mid	782.0	22.97	21.94	20.88
	100% RB	782.0	22.80	21.75	20.72

**LTE band 41**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2687.5	26.35	25.56	24.42
		2593.0	26.23	25.52	24.28
		2498.5	26.18	25.34	24.13
	1 RB low	2687.5	26.40	25.61	24.42
		2593.0	26.28	25.48	24.32
		2498.5	26.21	25.36	24.15
	50% RB mid	2687.5	25.44	24.47	23.49
		2593.0	25.37	24.36	23.39
		2498.5	25.24	24.25	23.30
	100% RB	2687.5	25.42	24.45	23.49
		2593.0	25.35	24.35	23.39
		2498.5	25.23	24.26	23.27
10MHz	1 RB high	2685.0	26.33	25.66	24.42
		2593.0	26.26	25.49	24.27
		2501.0	26.19	25.35	24.13
	1 RB low	2685.0	26.42	25.71	24.48
		2593.0	26.36	25.61	24.37
		2501.0	26.24	25.41	24.17
	50% RB mid	2685.0	25.49	24.50	23.54
		2593.0	25.36	24.40	23.45
		2501.0	25.23	24.25	23.28
	100% RB	2685.0	25.46	24.52	23.49
		2593.0	25.35	24.38	23.36
		2501.0	25.24	24.26	23.24
15MHz	1 RB high	2682.5	26.32	25.63	24.38
		2593.0	26.20	25.44	24.21
		2503.5	26.12	25.29	24.04
	1 RB low	2682.5	26.31	25.68	24.45
		2593.0	26.37	25.55	24.34
		2503.5	26.18	25.36	24.13
	50% RB mid	2682.5	25.47	24.43	23.44
		2593.0	25.38	24.33	23.32
		2503.5	25.22	24.16	23.17
	100% RB	2682.5	25.44	24.44	23.44
		2593.0	25.35	24.37	23.34
		2503.5	25.19	24.20	23.18
20MHz	1 RB high	2680.0	26.33	25.61	24.37
		2593.0	26.22	25.46	24.22
		2506.0	26.09	25.24	24.03



	1 RB low	2680.0	26.39	25.70	24.45
		2593.0	26.32	25.63	24.34
		2506.0	26.21	25.36	24.14
	50% RB mid	2680.0	25.46	24.48	23.45
		2593.0	25.38	24.42	23.38
		2506.0	25.21	24.25	23.19
	100% RB	2680.0	25.48	24.50	23.45
		2593.0	25.37	24.38	23.36
		2506.0	25.19	24.20	23.16

**LTE band 66**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1779.3	23.43	22.72	21.68
		1745.0	23.43	22.85	21.56
		1710.7	23.49	22.82	21.73
	1 RB low	1779.3	23.43	22.80	21.72
		1745.0	23.44	22.74	21.68
		1710.7	23.52	22.87	21.73
	50% RB mid	1779.3	23.57	22.60	21.69
		1745.0	23.59	22.65	21.66
		1710.7	23.63	22.67	21.79
	100% RB	1779.3	22.56	21.70	20.56
		1745.0	22.55	21.68	20.52
		1710.7	22.64	21.72	20.61
3MHz	1 RB high	1778.5	23.55	22.87	21.79
		1745.0	23.53	22.87	21.77
		1711.5	23.54	22.91	21.75
	1 RB low	1778.5	23.53	22.90	21.74
		1745.0	23.53	22.83	21.74
		1711.5	23.60	22.97	21.77
	50% RB mid	1778.5	22.60	21.63	20.61
		1745.0	22.60	21.63	20.61
		1711.5	22.64	21.69	20.65
	100% RB	1778.5	22.56	21.57	20.54
		1745.0	22.58	21.56	20.53
		1711.5	22.60	21.58	20.56
5MHz	1 RB high	1777.5	23.48	22.85	21.73
		1745.0	23.47	22.82	21.67
		1712.5	23.49	22.85	21.68
	1 RB low	1777.5	23.48	22.90	21.69
		1745.0	23.49	22.89	21.67
		1712.5	23.55	22.94	21.77
	50% RB mid	1777.5	22.65	21.64	20.62
		1745.0	22.62	21.62	20.61
		1712.5	22.64	21.62	20.62
	100% RB	1777.5	22.60	21.61	20.61
		1745.0	22.60	21.60	20.58
		1712.5	22.61	21.60	20.55
10MHz	1 RB high	1775.0	23.47	22.86	21.72
		1745.0	23.51	22.86	21.75
		1715.0	23.48	22.79	21.64



	1 RB low	1775.0	23.50	22.91	21.72
		1745.0	23.55	22.82	21.69
		1715.0	23.58	22.90	21.80
	50% RB mid	1775.0	22.63	21.63	20.63
		1745.0	22.66	21.65	20.62
		1715.0	22.66	21.65	20.63
	100% RB	1775.0	22.62	21.63	20.60
		1745.0	22.68	21.69	20.67
		1715.0	22.64	21.66	20.63
15MHz	1 RB high	1772.5	23.49	22.85	21.71
		1745.0	23.53	22.90	21.73
		1717.5	23.55	22.77	21.65
	1 RB low	1772.5	23.53	22.95	21.74
		1745.0	23.54	22.92	21.71
		1717.5	23.59	22.86	21.81
	50% RB mid	1772.5	22.67	21.61	20.63
		1745.0	22.69	21.63	20.65
		1717.5	22.63	21.60	20.59
	100% RB	1772.5	22.62	21.62	20.60
		1745.0	22.68	21.68	20.65
		1717.5	22.64	21.61	20.61
20MHz	1 RB high	1770.0	23.48	22.79	21.80
		1745.0	23.47	22.76	21.66
		1720.0	23.51	22.71	21.68
	1 RB low	1770.0	23.52	22.88	21.75
		1745.0	23.52	22.84	21.71
		1720.0	23.56	22.97	21.80
	50% RB mid	1770.0	22.64	21.64	20.63
		1745.0	22.68	21.69	20.66
		1720.0	22.65	21.62	20.63
	100% RB	1770.0	22.60	21.59	20.58
		1745.0	22.65	21.64	20.64
		1720.0	22.57	21.57	20.58

**LTE band 71**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	695.5	23.76	22.92	21.88
		680.5	23.74	23.04	21.90
		665.5	23.78	23.06	22.01
	1 RB low	695.5	23.76	23.07	21.87
		680.5	23.77	22.94	21.97
		665.5	23.86	23.12	21.99
	50% RB mid	695.5	22.83	21.82	20.82
		680.5	22.85	21.79	20.87
		665.5	22.87	21.87	20.90
	100% RB	695.5	22.86	21.85	20.92
		680.5	22.83	21.78	20.82
		665.5	22.87	21.87	20.85
10MHz	1 RB high	693.0	23.81	23.01	21.85
		680.5	23.73	23.05	21.83
		668.0	23.78	23.07	21.94
	1 RB low	693.0	23.79	23.05	21.86
		680.5	23.79	23.05	21.96
		668.0	23.89	23.04	21.94
	50% RB mid	693.0	22.84	21.84	20.84
		680.5	22.82	21.82	20.85
		668.0	22.86	21.87	20.87
	100% RB	693.0	22.94	21.91	20.91
		680.5	22.90	21.88	20.91
		668.0	22.94	21.90	20.92
15MHz	1 RB high	690.5	23.77	23.07	21.96
		680.5	23.73	23.08	21.90
		670.5	23.74	23.07	21.82
	1 RB low	690.5	23.78	23.07	21.91
		680.5	23.86	23.14	22.03
		670.5	23.90	23.13	22.00
	50% RB mid	690.5	22.85	21.80	20.84
		680.5	22.86	21.78	20.84
		670.5	22.90	21.83	20.92
	100% RB	690.5	22.88	21.86	20.86
		680.5	22.89	21.86	20.90
		670.5	22.83	21.82	20.84
20MHz	1 RB high	688.0	23.73	22.98	21.82
		680.5	23.72	22.88	21.82
		673.0	23.70	22.94	21.76



	1 RB low	688.0	23.82	22.99	21.95
		680.5	23.83	23.13	21.92
		673.0	23.90	23.03	22.00
	50% RB mid	688.0	22.84	21.85	20.89
		680.5	22.84	21.84	20.86
		673.0	22.84	21.88	20.85
	100% RB	688.0	22.81	21.82	20.81
		680.5	22.83	21.79	20.82
		673.0	22.73	21.76	20.76

**LTE CA Band 5B**

Bandwidth	Frequency (MHz)	Frequency (MHz)	Modulation	PCC RB		SCC RB		Conducted Power(dBm)
				Size	Offset	Size	Offset	
3MHz/ 5MHz	834.1	838	QPSK	15	0	25	0	23.43
				1	14	1	0	23.81
			16QAM	15	0	25	0	23.77
				1	14	1	0	23.78
			64QAM	15	0	25	0	23.78
				1	14	1	0	23.57
5MHz/ 3MHz	835	838.9	QPSK	25	0	15	0	23.75
				1	24	1	0	23.84
			16QAM	25	0	15	0	23.69
				1	24	1	0	23.84
			64QAM	25	0	15	0	23.72
				1	24	1	0	23.71
5MHz/ 10MHz	831.8	839	QPSK	25	0	50	0	21.83
				1	24	1	0	23.79
			16QAM	25	0	50	0	20.80
				1	24	1	0	22.85
			64QAM	25	0	50	0	20.76
				1	24	1	0	20.73
10MHz/ 5MHz	834	841.2	QPSK	50	0	25	0	23.74
				1	49	1	0	23.79
			16QAM	50	0	25	0	23.72
				1	49	1	0	23.80
			64QAM	50	0	25	0	23.72
				1	49	1	0	23.57
10MHz/ 10MHz	831.6	841.5	QPSK	50	0	50	0	21.80
				1	49	1	0	23.89
			16QAM	50	0	50	0	20.81
				1	49	1	0	22.51
			64QAM	50	0	50	0	20.81
				1	49	1	0	20.64

**LTE CA Band 66B**

Bandwidth	Frequency (MHz)	Frequency (MHz)	Modulation	PCC RB		SCC RB		Conducted Power(dBm)
				Size	Offset	Size	Offset	
5MHz/ 5MHz	1752.6	1757.4	QPSK	25	0	25	0	23.56
				1	24	1	0	23.64
			16QAM	25	0	25	0	23.56
				1	24	1	0	23.65
			64QAM	25	0	25	0	23.55
				1	24	1	0	23.50
5MHz/ 10MHz	1750.3	1757.5	QPSK	25	0	50	0	21.69
				1	24	1	0	23.65
			16QAM	25	0	50	0	20.65
				1	24	1	0	22.75
			64QAM	25	0	50	0	20.62
				1	24	1	0	20.58
5MHz/ 15MHz	1748.1	1757.4	QPSK	25	0	75	0	23.59
				1	24	1	0	23.67
			16QAM	25	0	75	0	23.55
				1	24	1	0	23.51
			64QAM	25	0	75	0	23.54
				1	24	1	0	23.71
10MHz/ 5MHz	1752.5	1759.7	QPSK	50	0	25	0	23.62
				1	49	1	0	23.58
			16QAM	50	0	25	0	23.58
				1	49	1	0	23.61
			64QAM	50	0	25	0	23.64
				1	49	1	0	23.37
10MHz/ 10MHz	1750.1	1760	QPSK	50	0	50	0	21.72
				1	49	1	0	23.68
			16QAM	50	0	50	0	20.69
				1	49	1	0	22.79
			64QAM	50	0	50	0	20.67
				1	49	1	0	20.50
15MHz/ 5MHz	1752.6	1761.9	QPSK	75	0	25	0	23.61
				1	74	1	0	23.53
			16QAM	75	0	25	0	23.65
				1	74	1	0	23.54
			64QAM	75	0	25	0	23.62
				1	74	1	0	23.50

**LTE CA Band 66C**

Bandwidth	Frequency (MHz)	Frequency (MHz)	Modulation	PCC RB		SCC RB		Conducted Power(dBm)
				Size	Offset	Size	Offset	
5MHz/ 20MHz	1745.8	1757.5	QPSK	25	0	100	0	21.62
				1	24	1	0	23.63
			16QAM	25	0	100	0	20.60
				1	24	1	0	22.71
			64QAM	25	0	100	0	20.60
				1	24	1	0	20.52
10MHz/ 15MHz	1747.9	1757.9	QPSK	50	0	75	0	23.62
				1	49	1	0	23.70
			16QAM	50	0	75	0	23.60
				1	49	1	0	23.39
			64QAM	50	0	75	0	23.57
				1	49	1	0	23.71
10MHz/ 20MHz	1745.6	1760.0	QPSK	50	0	100	0	21.66
				1	49	1	0	23.70
			16QAM	50	0	100	0	20.61
				1	49	1	0	22.74
			64QAM	50	0	100	0	20.60
				1	49	1	0	20.42
15MHz/ 10MHz	1750.1	1762.1	QPSK	75	0	50	0	23.58
				1	74	1	0	23.57
			16QAM	75	0	50	0	23.58
				1	74	1	0	23.59
			64QAM	75	0	50	0	23.59
				1	74	1	0	23.68
15MHz/ 15MHz	1747.5	1762.5	QPSK	75	0	75	0	21.70
				1	74	1	0	23.63
			16QAM	75	0	75	0	20.64
				1	74	1	0	22.74
			64QAM	75	0	75	0	20.62
				1	74	1	0	20.40
15MHz/ 20MHz	1745.3	1762.4	QPSK	75	0	100	0	21.71
				1	74	1	0	23.59
			16QAM	75	0	100	0	20.61
				1	74	1	0	22.69
			64QAM	75	0	100	0	20.68
				1	74	1	0	20.71
20MHz/ 5MHz	1752.5	1764.2	QPSK	100	0	25	0	21.59
				1	99	1	0	23.54
			16QAM	100	0	25	0	20.58

				1	99	1	0	22.49
			64QAM	100	0	25	0	20.61
				1	99	1	0	20.36
20MHz/ 10MHz	1750.1	1764.5	QPSK	100	0	50	0	21.61
				1	99	1	0	23.58
			16QAM	100	0	50	0	20.59
				1	99	1	0	22.66
			64QAM	100	0	50	0	20.55
				1	99	1	0	20.71
20MHz/ 15MHz	1747.6	1764.7	QPSK	100	0	75	0	21.66
				1	99	1	0	23.62
			16QAM	100	0	75	0	20.60
				1	99	1	0	22.59
			64QAM	100	0	75	0	20.63
				1	99	1	0	20.41
20MHz/ 20MHz	1745.1	1764.9	QPSK	100	0	100	0	21.68
				1	99	1	0	23.58
			16QAM	100	0	100	0	20.64
				1	99	1	0	22.58
			64QAM	100	0	100	0	20.67
				1	99	1	0	20.41





### A.1.3.3 Measurement result

#### LTE Band 2-EIRP

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

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			EIRP(dBm)(Gt-Lc =2.0)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	1909.3	23.45	22.81	21.71	25.45	24.81	23.71
		1880.0	23.36	22.69	21.60	25.36	24.69	23.60
		1850.7	23.52	22.81	21.73	25.52	24.81	23.73
	1 RB low	1909.3	23.44	22.72	21.75	25.44	24.72	23.75
		1880.0	23.37	22.68	21.56	25.37	24.68	23.56
		1850.7	23.50	22.96	21.81	25.50	24.96	23.81
	50% RB mid	1909.3	23.56	22.51	21.68	25.56	24.51	23.68
		1880.0	23.53	22.46	21.62	25.53	24.46	23.62
		1850.7	23.65	22.65	21.76	25.65	24.65	23.76
	100% RB	1909.3	22.53	21.65	20.56	24.53	23.65	22.56
		1880.0	22.40	21.61	20.50	24.40	23.61	22.50
		1850.7	22.54	21.75	20.62	24.54	23.75	22.62
3MHz	1 RB high	1908.5	23.46	22.73	21.75	25.46	24.73	23.75
		1880.0	23.41	22.70	21.60	25.41	24.70	23.60
		1851.5	23.52	22.93	21.81	25.52	24.93	23.81
	1 RB low	1908.5	23.44	22.88	21.75	25.44	24.88	23.75
		1880.0	23.41	22.79	21.61	25.41	24.79	23.61
		1851.5	23.54	22.92	21.75	25.54	24.92	23.75
	50% RB mid	1908.5	22.47	21.57	20.58	24.47	23.57	22.58
		1880.0	22.39	21.56	20.46	24.39	23.56	22.46
		1851.5	22.48	21.62	20.57	24.48	23.62	22.57
	100% RB	1908.5	22.44	21.51	20.50	24.44	23.51	22.50
		1880.0	22.34	21.46	20.41	24.34	23.46	22.41
		1851.5	22.43	21.54	20.47	24.43	23.54	22.47
5MHz	1 RB high	1907.5	23.40	22.76	21.61	25.40	24.76	23.61
		1880.0	23.34	22.77	21.57	25.34	24.77	23.57
		1852.5	23.44	22.89	21.73	25.44	24.89	23.73
	1 RB low	1907.5	23.38	22.70	21.58	25.38	24.70	23.58
		1880.0	23.36	22.72	21.60	25.36	24.72	23.60
		1852.5	23.50	22.97	21.77	25.50	24.97	23.77
	50% RB mid	1907.5	22.47	21.54	20.52	24.47	23.54	22.52
		1880.0	22.45	21.49	20.49	24.45	23.49	22.49
		1852.5	22.51	21.53	20.56	24.51	23.53	22.56
	100% RB	1907.5	22.42	21.51	20.46	24.42	23.51	22.46
		1880.0	22.41	21.47	20.48	24.41	23.47	22.48
		1852.5	22.49	21.53	20.54	24.49	23.53	22.54

10MHz	1 RB high	1905.0	23.45	22.85	21.63	25.45	24.85	23.63
		1880.0	23.34	22.72	21.57	25.34	24.72	23.57
		1855.0	23.39	22.79	21.65	25.39	24.79	23.65
	1 RB low	1905.0	23.41	22.76	21.60	25.41	24.76	23.60
		1880.0	23.37	22.82	21.61	25.37	24.82	23.61
		1855.0	23.52	23.01	21.81	25.52	25.01	23.81
	50% RB mid	1905.0	22.46	21.52	20.48	24.46	23.52	22.48
		1880.0	22.43	21.49	20.47	24.43	23.49	22.47
		1855.0	22.44	21.54	20.50	24.44	23.54	22.50
	100% RB	1905.0	22.46	21.54	20.47	24.46	23.54	22.47
		1880.0	22.42	21.48	20.48	24.42	23.48	22.48
		1855.0	22.47	21.52	20.50	24.47	23.52	22.50
15MHz	1 RB high	1902.5	23.45	22.78	21.70	25.45	24.78	23.70
		1880.0	23.34	22.66	21.59	25.34	24.66	23.59
		1857.5	23.37	22.63	21.59	25.37	24.63	23.59
	1 RB low	1902.5	23.39	22.75	21.57	25.39	24.75	23.57
		1880.0	23.40	22.72	21.63	25.40	24.72	23.63
		1857.5	23.54	22.98	21.83	25.54	24.98	23.83
	50% RB mid	1902.5	22.49	21.51	20.51	24.49	23.51	22.51
		1880.0	22.44	21.46	20.48	24.44	23.46	22.48
		1857.5	22.48	21.50	20.52	24.48	23.50	22.52
	100% RB	1902.5	22.48	21.53	20.49	24.48	23.53	22.49
		1880.0	22.43	21.50	20.48	24.43	23.50	22.48
		1857.5	22.45	21.49	20.48	24.45	23.49	22.48
20MHz	1 RB high	1900.0	23.46	22.85	21.67	25.46	24.85	23.67
		1880.0	23.36	22.69	21.65	25.36	24.69	23.65
		1860.0	23.38	22.77	21.59	25.38	24.77	23.59
	1 RB low	1900.0	23.41	22.81	21.66	25.41	24.81	23.66
		1880.0	23.42	22.75	21.60	25.42	24.75	23.60
		1860.0	23.54	23.02	21.82	25.54	25.02	23.82
	50% RB mid	1900.0	22.52	21.59	20.52	24.52	23.59	22.52
		1880.0	22.45	21.50	20.49	24.45	23.50	22.49
		1860.0	22.50	21.53	20.54	24.50	23.53	22.54
	100% RB	1900.0	22.49	21.54	20.47	24.49	23.54	22.47
		1880.0	22.41	21.46	20.46	24.41	23.46	22.46
		1860.0	22.44	21.47	20.44	24.44	23.47	22.44

**LTE Band 5-ERP**
**Limits:  $\leq 38.45\text{dBm}(7\text{W})$** 

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			ERP(dBm)(Gt-Lc =-2.3)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	23.83	23.02	21.94	19.38	18.57	17.49
		836.5	23.79	23.01	21.93	19.34	18.56	17.48
		824.7	23.79	22.90	21.95	19.34	18.45	17.50
	1 RB low	848.3	23.84	23.07	22.00	19.39	18.62	17.55
		836.5	23.80	22.97	21.99	19.35	18.52	17.54
		824.7	23.75	22.94	21.90	19.30	18.49	17.45
	50% RB mid	848.3	23.97	22.86	22.06	19.52	18.41	17.61
		836.5	23.88	22.85	22.05	19.43	18.40	17.60
		824.7	23.91	22.85	22.00	19.46	18.40	17.55
	100% RB	848.3	22.88	22.03	20.85	18.43	17.58	16.40
		836.5	22.85	22.04	20.87	18.40	17.59	16.42
		824.7	22.85	21.99	20.83	18.40	17.54	16.38
3MHz	1 RB high	847.5	23.93	23.11	22.03	19.48	18.66	17.58
		836.5	23.87	23.08	21.99	19.42	18.63	17.54
		825.5	23.86	23.01	21.95	19.41	18.56	17.50
	1 RB low	847.5	23.91	23.08	21.99	19.46	18.63	17.54
		836.5	23.89	23.07	22.00	19.44	18.62	17.55
		825.5	23.88	22.97	21.95	19.43	18.52	17.50
	50% RB mid	847.5	22.93	22.02	20.93	18.48	17.57	16.48
		836.5	22.88	22.01	20.88	18.43	17.56	16.43
		825.5	22.87	21.98	20.89	18.42	17.53	16.44
	100% RB	847.5	22.90	21.95	20.87	18.45	17.50	16.42
		836.5	22.87	21.92	20.87	18.42	17.47	16.42
		825.5	22.83	21.88	20.80	18.38	17.43	16.35
5MHz	1 RB high	846.5	23.97	23.10	22.07	19.52	18.65	17.62
		836.5	23.95	23.08	22.07	19.50	18.63	17.62
		826.5	23.92	23.08	22.02	19.47	18.63	17.57
	1 RB low	846.5	23.96	23.21	22.02	19.51	18.76	17.57
		836.5	23.92	23.10	22.07	19.47	18.65	17.62
		826.5	23.90	23.01	22.01	19.45	18.56	17.56
	50% RB mid	846.5	23.02	22.01	20.97	18.57	17.56	16.52
		836.5	22.99	22.01	20.97	18.54	17.56	16.52
		826.5	22.98	21.99	20.94	18.53	17.54	16.49
	100% RB	846.5	22.98	22.00	20.93	18.53	17.55	16.48
		836.5	22.96	22.00	20.93	18.51	17.55	16.48
		826.5	22.96	22.00	20.93	18.51	17.55	16.48
10MHz	1 RB high	844.0	24.10	23.18	22.17	19.65	18.73	17.72



		836.5	24.05	23.30	22.08	19.60	18.85	17.63
		829.0	24.05	23.17	22.13	19.60	18.72	17.68
	1 RB low	844.0	24.10	23.36	22.12	19.65	18.91	17.67
		836.5	24.06	23.29	22.11	19.61	18.84	17.66
		829.0	24.03	23.12	22.08	19.58	18.67	17.63
	50% RB mid	844.0	23.16	22.15	21.08	18.71	17.70	16.63
		836.5	23.10	22.11	21.06	18.65	17.66	16.61
		829.0	23.06	22.07	21.01	18.61	17.62	16.56
	100% RB	844.0	23.10	22.10	21.05	18.65	17.65	16.60
		836.5	23.11	22.13	21.07	18.66	17.68	16.62
		829.0	23.07	22.05	21.01	18.62	17.60	16.56

**LTE Band 12-ERP**
**Limits:  $\leq 34.77\text{dBm}(3\text{W})$** 

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			ERP(dBm)(Gt-Lc =-2.1)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	715.3	23.84	23.21	22.00	19.59	18.96	17.75
		707.5	23.85	23.14	21.93	19.60	18.89	17.68
		699.7	23.85	23.09	21.98	19.60	18.84	17.73
	1 RB low	715.3	23.81	23.23	22.07	19.56	18.98	17.82
		707.5	23.89	23.24	22.04	19.64	18.99	17.79
		699.7	23.84	23.13	21.99	19.59	18.88	17.74
	50% RB mid	715.3	23.96	22.95	22.11	19.71	18.70	17.86
		707.5	23.96	22.91	22.05	19.71	18.66	17.80
		699.7	23.96	22.94	22.00	19.71	18.69	17.75
	100% RB	715.3	22.96	22.03	20.86	18.71	17.78	16.61
		707.5	22.91	21.99	20.91	18.66	17.74	16.66
		699.7	22.88	21.96	20.88	18.63	17.71	16.63
3MHz	1 RB high	714.5	23.90	23.30	22.04	19.65	19.05	17.79
		707.5	23.89	23.11	22.03	19.64	18.86	17.78
		700.5	23.93	23.23	21.99	19.68	18.98	17.74
	1 RB low	714.5	23.91	23.29	22.07	19.66	19.04	17.82
		707.5	23.96	23.29	22.05	19.71	19.04	17.80
		700.5	23.91	23.29	22.07	19.66	19.04	17.82
	50% RB mid	714.5	22.99	22.02	20.93	18.74	17.77	16.68
		707.5	22.93	21.97	20.93	18.68	17.72	16.68
		700.5	22.92	21.98	20.93	18.67	17.73	16.68
	100% RB	714.5	22.92	21.91	20.83	18.67	17.66	16.58
		707.5	22.88	21.88	20.87	18.63	17.63	16.62
		700.5	22.89	21.88	20.87	18.64	17.63	16.62
5MHz	1 RB high	713.5	23.81	23.13	22.05	19.56	18.88	17.80
		707.5	23.85	23.17	21.95	19.60	18.92	17.70
		701.5	23.92	23.28	22.07	19.67	19.03	17.82
	1 RB low	713.5	23.84	23.22	22.02	19.59	18.97	17.77
		707.5	23.94	23.25	22.05	19.69	19.00	17.80
		701.5	23.84	23.13	22.07	19.59	18.88	17.82
	50% RB mid	713.5	22.97	21.95	20.92	18.72	17.70	16.67
		707.5	22.96	21.94	20.94	18.71	17.69	16.69
		701.5	22.97	21.94	20.95	18.72	17.69	16.70
	100% RB	713.5	22.96	21.99	20.90	18.71	17.74	16.65
		707.5	22.85	21.87	20.87	18.60	17.62	16.62
		701.5	22.90	21.92	20.90	18.65	17.67	16.65
10MHz	1 RB high	711.0	23.81	23.27	22.08	19.56	19.02	17.83



		707.5	23.81	23.08	21.94	19.56	18.83	17.69
		704.0	23.89	23.11	22.01	19.64	18.86	17.76
	1 RB low	711.0	23.93	23.26	22.08	19.68	19.01	17.83
		707.5	23.94	23.25	22.06	19.69	19.00	17.81
		704.0	23.88	23.16	22.04	19.63	18.91	17.79
	50% RB mid	711.0	22.92	21.91	20.88	18.67	17.66	16.63
		707.5	22.92	21.94	20.93	18.67	17.69	16.68
		704.0	22.96	21.94	20.96	18.71	17.69	16.71
	100% RB	711.0	22.91	21.92	20.92	18.66	17.67	16.67
		707.5	22.86	21.89	20.92	18.61	17.64	16.67
		704.0	23.02	22.00	21.01	18.77	17.75	16.76

**LTE Band 13-ERP**
**Limits:  $\leq 34.77\text{dBm}(3\text{W})$** 

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			ERP(dBm)(Gt-Lc =-2.9)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	784.5	23.81	23.10	21.91	18.76	18.05	16.86
		782.0	23.76	22.91	21.87	18.71	17.86	16.82
		779.5	23.80	23.03	21.81	18.75	17.98	16.76
	1 RB low	784.5	23.83	23.11	21.93	18.78	18.06	16.88
		782.0	23.83	23.09	21.94	18.78	18.04	16.89
		779.5	23.85	22.95	21.82	18.80	17.90	16.77
	50% RB mid	784.5	22.94	21.91	20.90	17.89	16.86	15.85
		782.0	22.95	21.89	20.90	17.90	16.84	15.85
		779.5	22.97	21.90	20.85	17.92	16.85	15.80
	100% RB	784.5	22.93	21.94	20.88	17.88	16.89	15.83
		782.0	22.92	21.86	20.84	17.87	16.81	15.79
		779.5	22.83	21.75	20.74	17.78	16.70	15.69
10MHz	1 RB high	782.0	23.83	23.15	21.92	18.78	18.10	16.87
	1 RB low	782.0	23.93	23.05	21.89	18.88	18.00	16.84
	50% RB mid	782.0	22.97	21.94	20.88	17.92	16.89	15.83
	100% RB	782.0	22.80	21.75	20.72	17.75	16.70	15.67

**LTE Band 41-EIRP**  
**Limits: ≤33dBm(2W)**

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			EIRP(dBm)(Gt-Lc =1.4)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	2687.5	26.35	25.56	24.42	27.75	26.96	25.82
		2593.0	26.23	25.52	24.28	27.63	26.92	25.68
		2498.5	26.18	25.34	24.13	27.58	26.74	25.53
	1 RB low	2687.5	26.40	25.61	24.42	27.80	27.01	25.82
		2593.0	26.28	25.48	24.32	27.68	26.88	25.72
		2498.5	26.21	25.36	24.15	27.61	26.76	25.55
	50% RB mid	2687.5	25.44	24.47	23.49	26.84	25.87	24.89
		2593.0	25.37	24.36	23.39	26.77	25.76	24.79
		2498.5	25.24	24.25	23.30	26.64	25.65	24.70
	100% RB	2687.5	25.42	24.45	23.49	26.82	25.85	24.89
		2593.0	25.35	24.35	23.39	26.75	25.75	24.79
		2498.5	25.23	24.26	23.27	26.63	25.66	24.67
10MHz	1 RB high	2685.0	26.33	25.66	24.42	27.73	27.06	25.82
		2593.0	26.26	25.49	24.27	27.66	26.89	25.67
		2501.0	26.19	25.35	24.13	27.59	26.75	25.53
	1 RB low	2685.0	26.42	25.71	24.48	27.82	27.11	25.88
		2593.0	26.36	25.61	24.37	27.76	27.01	25.77
		2501.0	26.24	25.41	24.17	27.64	26.81	25.57
	50% RB mid	2685.0	25.49	24.50	23.54	26.89	25.90	24.94
		2593.0	25.36	24.40	23.45	26.76	25.80	24.85
		2501.0	25.23	24.25	23.28	26.63	25.65	24.68
	100% RB	2685.0	25.46	24.52	23.49	26.86	25.92	24.89
		2593.0	25.35	24.38	23.36	26.75	25.78	24.76
		2501.0	25.24	24.26	23.24	26.64	25.66	24.64
15MHz	1 RB high	2682.5	26.32	25.63	24.38	27.72	27.03	25.78
		2593.0	26.20	25.44	24.21	27.60	26.84	25.61
		2503.5	26.12	25.29	24.04	27.52	26.69	25.44
	1 RB low	2682.5	26.31	25.68	24.45	27.71	27.08	25.85
		2593.0	26.37	25.55	24.34	27.77	26.95	25.74
		2503.5	26.18	25.36	24.13	27.58	26.76	25.53
	50% RB mid	2682.5	25.47	24.43	23.44	26.87	25.83	24.84
		2593.0	25.38	24.33	23.32	26.78	25.73	24.72
		2503.5	25.22	24.16	23.17	26.62	25.56	24.57
	100% RB	2682.5	25.44	24.44	23.44	26.84	25.84	24.84
		2593.0	25.35	24.37	23.34	26.75	25.77	24.74
		2503.5	25.19	24.20	23.18	26.59	25.60	24.58
	1 RB high	2680.0	26.33	25.61	24.37	27.73	27.01	25.77





20MHz		2593.0	26.22	25.46	24.22	27.62	26.86	25.62
		2506.0	26.09	25.24	24.03	27.49	26.64	25.43
	1 RB low	2680.0	26.39	25.70	24.45	27.79	27.10	25.85
		2593.0	26.32	25.63	24.34	27.72	27.03	25.74
		2506.0	26.21	25.36	24.14	27.61	26.76	25.54
	50% RB mid	2680.0	25.46	24.48	23.45	26.86	25.88	24.85
		2593.0	25.38	24.42	23.38	26.78	25.82	24.78
		2506.0	25.21	24.25	23.19	26.61	25.65	24.59
	100% RB	2680.0	25.48	24.50	23.45	26.88	25.90	24.85
		2593.0	25.37	24.38	23.36	26.77	25.78	24.76
		2506.0	25.19	24.20	23.16	26.59	25.60	24.56

**LTE Band 66-EIRP**  
**Limits: ≤30dBm(1W)**

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			EIRP(dBm)(Gt-Lc =2.1)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	1779.3	23.43	22.72	21.68	25.53	24.82	23.78
		1745.0	23.43	22.85	21.56	25.53	24.95	23.66
		1710.7	23.49	22.82	21.73	25.59	24.92	23.83
	1 RB low	1779.3	23.43	22.80	21.72	25.53	24.90	23.82
		1745.0	23.44	22.74	21.68	25.54	24.84	23.78
		1710.7	23.52	22.87	21.73	25.62	24.97	23.83
	50% RB mid	1779.3	23.57	22.60	21.69	25.67	24.70	23.79
		1745.0	23.59	22.65	21.66	25.69	24.75	23.76
		1710.7	23.63	22.67	21.79	25.73	24.77	23.89
	100% RB	1779.3	22.56	21.70	20.56	24.66	23.80	22.66
		1745.0	22.55	21.68	20.52	24.65	23.78	22.62
		1710.7	22.64	21.72	20.61	24.74	23.82	22.71
3MHz	1 RB high	1778.5	23.55	22.87	21.79	25.65	24.97	23.89
		1745.0	23.53	22.87	21.77	25.63	24.97	23.87
		1711.5	23.54	22.91	21.75	25.64	25.01	23.85
	1 RB low	1778.5	23.53	22.90	21.74	25.63	25.00	23.84
		1745.0	23.53	22.83	21.74	25.63	24.93	23.84
		1711.5	23.60	22.97	21.77	25.70	25.07	23.87
	50% RB mid	1778.5	22.60	21.63	20.61	24.70	23.73	22.71
		1745.0	22.60	21.63	20.61	24.70	23.73	22.71
		1711.5	22.64	21.69	20.65	24.74	23.79	22.75
	100% RB	1778.5	22.56	21.57	20.54	24.66	23.67	22.64
		1745.0	22.58	21.56	20.53	24.68	23.66	22.63
		1711.5	22.60	21.58	20.56	24.70	23.68	22.66
5MHz	1 RB high	1777.5	23.48	22.85	21.73	25.58	24.95	23.83
		1745.0	23.47	22.82	21.67	25.57	24.92	23.77
		1712.5	23.49	22.85	21.68	25.59	24.95	23.78
	1 RB low	1777.5	23.48	22.90	21.69	25.58	25.00	23.79
		1745.0	23.49	22.89	21.67	25.59	24.99	23.77
		1712.5	23.55	22.94	21.77	25.65	25.04	23.87
	50% RB mid	1777.5	22.65	21.64	20.62	24.75	23.74	22.72
		1745.0	22.62	21.62	20.61	24.72	23.72	22.71
		1712.5	22.64	21.62	20.62	24.74	23.72	22.72
	100% RB	1777.5	22.60	21.61	20.61	24.70	23.71	22.71
		1745.0	22.60	21.60	20.58	24.70	23.70	22.68
		1712.5	22.61	21.60	20.55	24.71	23.70	22.65
	1 RB high	1775.0	23.47	22.86	21.72	25.57	24.96	23.82

10MHz		1745.0	23.51	22.86	21.75	25.61	24.96	23.85
		1715.0	23.48	22.79	21.64	25.58	24.89	23.74
	1 RB low	1775.0	23.50	22.91	21.72	25.60	25.01	23.82
		1745.0	23.55	22.82	21.69	25.65	24.92	23.79
		1715.0	23.58	22.90	21.80	25.68	25.00	23.90
	50% RB mid	1775.0	22.63	21.63	20.63	24.73	23.73	22.73
		1745.0	22.66	21.65	20.62	24.76	23.75	22.72
		1715.0	22.66	21.65	20.63	24.76	23.75	22.73
	100% RB	1775.0	22.62	21.63	20.60	24.72	23.73	22.70
		1745.0	22.68	21.69	20.67	24.78	23.79	22.77
		1715.0	22.64	21.66	20.63	24.74	23.76	22.73
	15MHz	1 RB high	1772.5	23.49	22.85	21.71	25.59	24.95
1745.0			23.53	22.90	21.73	25.63	25.00	23.83
1717.5			23.55	22.77	21.65	25.65	24.87	23.75
1 RB low		1772.5	23.53	22.95	21.74	25.63	25.05	23.84
		1745.0	23.54	22.92	21.71	25.64	25.02	23.81
		1717.5	23.59	22.86	21.81	25.69	24.96	23.91
50% RB mid		1772.5	22.67	21.61	20.63	24.77	23.71	22.73
		1745.0	22.69	21.63	20.65	24.79	23.73	22.75
		1717.5	22.63	21.60	20.59	24.73	23.70	22.69
100% RB		1772.5	22.62	21.62	20.60	24.72	23.72	22.70
		1745.0	22.68	21.68	20.65	24.78	23.78	22.75
		1717.5	22.64	21.61	20.61	24.74	23.71	22.71
20MHz	1 RB high	1770.0	23.48	22.79	21.80	25.58	24.89	23.90
		1745.0	23.47	22.76	21.66	25.57	24.86	23.76
		1720.0	23.51	22.71	21.68	25.61	24.81	23.78
	1 RB low	1770.0	23.52	22.88	21.75	25.62	24.98	23.85
		1745.0	23.52	22.84	21.71	25.62	24.94	23.81
		1720.0	23.56	22.97	21.80	25.66	25.07	23.90
	50% RB mid	1770.0	22.64	21.64	20.63	24.74	23.74	22.73
		1745.0	22.68	21.69	20.66	24.78	23.79	22.76
		1720.0	22.65	21.62	20.63	24.75	23.72	22.73
	100% RB	1770.0	22.60	21.59	20.58	24.70	23.69	22.68
		1745.0	22.65	21.64	20.64	24.75	23.74	22.74
		1720.0	22.57	21.57	20.58	24.67	23.67	22.68

**LTE Band 71-ERP**
**Limits:  $\leq 34.77\text{dBm}(3\text{W})$** 

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			ERP(dBm)(Gt-Lc =-2.5)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	695.5	23.76	22.92	21.88	19.11	18.27	17.23
		680.5	23.74	23.04	21.90	19.09	18.39	17.25
		665.5	23.78	23.06	22.01	19.13	18.41	17.36
	1 RB low	695.5	23.76	23.07	21.87	19.11	18.42	17.22
		680.5	23.77	22.94	21.97	19.12	18.29	17.32
		665.5	23.86	23.12	21.99	19.21	18.47	17.34
	50% RB mid	695.5	22.83	21.82	20.82	18.18	17.17	16.17
		680.5	22.85	21.79	20.87	18.20	17.14	16.22
		665.5	22.87	21.87	20.90	18.22	17.22	16.25
	100% RB	695.5	22.86	21.85	20.92	18.21	17.20	16.27
		680.5	22.83	21.78	20.82	18.18	17.13	16.17
		665.5	22.87	21.87	20.85	18.22	17.22	16.20
10MHz	1 RB high	693.0	23.81	23.01	21.85	19.16	18.36	17.20
		680.5	23.73	23.05	21.83	19.08	18.40	17.18
		668.0	23.78	23.07	21.94	19.13	18.42	17.29
	1 RB low	693.0	23.79	23.05	21.86	19.14	18.40	17.21
		680.5	23.79	23.05	21.96	19.14	18.40	17.31
		668.0	23.89	23.04	21.94	19.24	18.39	17.29
	50% RB mid	693.0	22.84	21.84	20.84	18.19	17.19	16.19
		680.5	22.82	21.82	20.85	18.17	17.17	16.20
		668.0	22.86	21.87	20.87	18.21	17.22	16.22
	100% RB	693.0	22.94	21.91	20.91	18.29	17.26	16.26
		680.5	22.90	21.88	20.91	18.25	17.23	16.26
		668.0	22.94	21.90	20.92	18.29	17.25	16.27
15MHz	1 RB high	690.5	23.77	23.07	21.96	19.12	18.42	17.31
		680.5	23.73	23.08	21.90	19.08	18.43	17.25
		670.5	23.74	23.07	21.82	19.09	18.42	17.17
	1 RB low	690.5	23.78	23.07	21.91	19.13	18.42	17.26
		680.5	23.86	23.14	22.03	19.21	18.49	17.38
		670.5	23.90	23.13	22.00	19.25	18.48	17.35
	50% RB mid	690.5	22.85	21.80	20.84	18.20	17.15	16.19
		680.5	22.86	21.78	20.84	18.21	17.13	16.19
		670.5	22.90	21.83	20.92	18.25	17.18	16.27
	100% RB	690.5	22.88	21.86	20.86	18.23	17.21	16.21
		680.5	22.89	21.86	20.90	18.24	17.21	16.25
		670.5	22.83	21.82	20.84	18.18	17.17	16.19
20MHz	1 RB high	688.0	23.73	22.98	21.82	19.08	18.33	17.17



		680.5	23.72	22.88	21.82	19.07	18.23	17.17
		673.0	23.70	22.94	21.76	19.05	18.29	17.11
	1 RB low	688.0	23.82	22.99	21.95	19.17	18.34	17.30
		680.5	23.83	23.13	21.92	19.18	18.48	17.27
		673.0	23.90	23.03	22.00	19.25	18.38	17.35
	50% RB mid	688.0	22.84	21.85	20.89	18.19	17.20	16.24
		680.5	22.84	21.84	20.86	18.19	17.19	16.21
		673.0	22.84	21.88	20.85	18.19	17.23	16.20
	100% RB	688.0	22.81	21.82	20.81	18.16	17.17	16.16
		680.5	22.83	21.79	20.82	18.18	17.14	16.17
		673.0	22.73	21.76	20.76	18.08	17.11	16.11

**LTE Band CA 5B**
**Limits:  $\leq 38.45\text{dBm}(7\text{W})$** 

Bandwidth	Frequency (MHz)	Frequency (MHz)	Modulation	PCC RB		SCC RB		Conducted Power(dBm)	ERP(dBm)(Gt -Lc =-2.3)
				Size	Offset	Size	Offset		
3MHz/ 5MHz	834.1	838	QPSK	15	0	25	0	23.43	18.98
				1	14	1	0	23.81	19.36
			16QAM	15	0	25	0	23.77	19.32
				1	14	1	0	23.78	19.33
			64QAM	15	0	25	0	23.78	19.33
				1	14	1	0	23.57	19.12
5MHz/ 3MHz	835	838.9	QPSK	25	0	15	0	23.75	19.30
				1	24	1	0	23.84	19.39
			16QAM	25	0	15	0	23.69	19.24
				1	24	1	0	23.84	19.39
			64QAM	25	0	15	0	23.72	19.27
				1	24	1	0	23.71	19.26
5MHz/ 10MHz	831.8	839	QPSK	25	0	50	0	21.83	17.38
				1	24	1	0	23.79	19.34
			16QAM	25	0	50	0	20.80	16.35
				1	24	1	0	22.85	18.40
			64QAM	25	0	50	0	20.76	16.31
				1	24	1	0	20.73	16.28
10MHz/ 5MHz	834	841.2	QPSK	50	0	25	0	23.74	19.29
				1	49	1	0	23.79	19.34
			16QAM	50	0	25	0	23.72	19.27
				1	49	1	0	23.80	19.35
			64QAM	50	0	25	0	23.72	19.27
				1	49	1	0	23.57	19.12
10MHz/ 10MHz	831.6	841.5	QPSK	50	0	50	0	21.80	17.35
				1	49	1	0	23.89	19.44
			16QAM	50	0	50	0	20.81	16.36
				1	49	1	0	22.51	18.06
			64QAM	50	0	50	0	20.81	16.36
				1	49	1	0	20.64	16.19

**LTE Band CA 66B**
**Limits: ≤30dBm(1W)**

Bandwidth	Frequency (MHz)	Frequency (MHz)	Modulation	PCC RB		SCC RB		Conducted Power(dBm)	ERP(dBm)(Gt -Lc =2.1)
				Size	Offset	Size	Offset		
5MHz/ 5MHz	1752.6	1757.4	QPSK	25	0	25	0	23.56	25.66
				1	24	1	0	23.64	25.74
			16QAM	25	0	25	0	23.56	25.66
				1	24	1	0	23.65	25.75
			64QAM	25	0	25	0	23.55	25.65
				1	24	1	0	23.5	25.60
5MHz/ 10MHz	1750.3	1757.5	QPSK	25	0	50	0	21.69	23.79
				1	24	1	0	23.65	25.75
			16QAM	25	0	50	0	20.65	22.75
				1	24	1	0	22.75	24.85
			64QAM	25	0	50	0	20.62	22.72
				1	24	1	0	20.58	22.68
5MHz/ 15MHz	1748.1	1757.4	QPSK	25	0	75	0	23.59	25.69
				1	24	1	0	23.67	25.77
			16QAM	25	0	75	0	23.55	25.65
				1	24	1	0	23.51	25.61
			64QAM	25	0	75	0	23.54	25.64
				1	24	1	0	23.71	25.81
10MHz/ 5MHz	1752.5	1759.7	QPSK	50	0	25	0	23.62	25.72
				1	49	1	0	23.58	25.68
			16QAM	50	0	25	0	23.58	25.68
				1	49	1	0	23.61	25.71
			64QAM	50	0	25	0	23.64	25.74
				1	49	1	0	23.37	25.47
10MHz/ 10MHz	1750.1	1760	QPSK	50	0	50	0	21.72	23.82
				1	49	1	0	23.68	25.78
			16QAM	50	0	50	0	20.69	22.79
				1	49	1	0	22.79	24.89
			64QAM	50	0	50	0	20.67	22.77
				1	49	1	0	20.5	22.60
15MHz/ 5MHz	1752.6	1761.9	QPSK	75	0	25	0	23.61	25.71
				1	74	1	0	23.53	25.63
			16QAM	75	0	25	0	23.65	25.75
				1	74	1	0	23.54	25.64



I22Z62189-WMD03

			64QAM	75	0	25	0	23.62	25.72
				1	74	1	0	23.5	25.60



**LTE Band 66C**
**Limits: ≤30dBm(1W)**

Bandwidth	Frequency (MHz)	Frequency (MHz)	Modulation	PCC RB		SCC RB		Conducted Power(dBm)	ERP(dBm) (Gt-Lc =2.1)
				Size	Offset	Size	Offset		
5MHz/ 20MHz	1745.8	1757.5	QPSK	25	0	100	0	21.62	23.72
				1	24	1	0	23.63	25.73
			16QAM	25	0	100	0	20.60	22.70
				1	24	1	0	22.71	24.81
			64QAM	25	0	100	0	20.60	22.70
				1	24	1	0	20.52	22.62
10MHz/ 15MHz	1747.9	1757.9	QPSK	50	0	75	0	23.62	25.72
				1	49	1	0	23.70	25.80
			16QAM	50	0	75	0	23.60	25.70
				1	49	1	0	23.39	25.49
			64QAM	50	0	75	0	23.57	25.67
				1	49	1	0	23.71	25.81
10MHz/ 20MHz	1745.6	1760	QPSK	50	0	100	0	21.66	23.76
				1	49	1	0	23.70	25.80
			16QAM	50	0	100	0	20.61	22.71
				1	49	1	0	22.74	24.84
			64QAM	50	0	100	0	20.60	22.70
				1	49	1	0	20.42	22.52
15MHz/ 10MHz	1750.1	1762.1	QPSK	75	0	50	0	23.58	25.68
				1	74	1	0	23.57	25.67
			16QAM	75	0	50	0	23.58	25.68
				1	74	1	0	23.59	25.69
			64QAM	75	0	50	0	23.59	25.69
				1	74	1	0	23.68	25.78
15MHz/ 15MHz	1747.5	1762.5	QPSK	75	0	75	0	21.70	23.80
				1	74	1	0	23.63	25.73
			16QAM	75	0	75	0	20.64	22.74
				1	74	1	0	22.74	24.84
			64QAM	75	0	75	0	20.62	22.72
				1	74	1	0	20.40	22.50
15MHz/ 20MHz	1745.3	1762.4	QPSK	75	0	100	0	21.71	23.81
				1	74	1	0	23.59	25.69
			16QAM	75	0	100	0	20.61	22.71
				1	74	1	0	22.69	24.79

			64QAM	75	0	100	0	20.68	22.78
				1	74	1	0	20.71	22.81
20MHz/ 5MHz	1752.5	1764.2	QPSK	100	0	25	0	21.59	23.69
				1	99	1	0	23.54	25.64
			16QAM	100	0	25	0	20.58	22.68
				1	99	1	0	22.49	24.59
64QAM	100	0	25	0	20.61	22.71			
	1	99	1	0	20.36	22.46			
20MHz/ 10MHz	1750.1	1764.5	QPSK	100	0	50	0	21.61	23.71
				1	99	1	0	23.58	25.68
			16QAM	100	0	50	0	20.59	22.69
				1	99	1	0	22.66	24.76
64QAM	100	0	50	0	20.55	22.65			
	1	99	1	0	20.71	22.81			
20MHz/ 15MHz	1747.6	1764.7	QPSK	100	0	75	0	21.66	23.76
				1	99	1	0	23.62	25.72
			16QAM	100	0	75	0	20.60	22.70
				1	99	1	0	22.59	24.69
64QAM	100	0	75	0	20.63	22.73			
	1	99	1	0	20.41	22.51			
20MHz/ 20MHz	1745.1	1764.9	QPSK	100	0	100	0	21.68	23.78
				1	99	1	0	23.58	25.68
			16QAM	100	0	100	0	20.64	22.74
				1	99	1	0	22.58	24.68
64QAM	100	0	100	0	20.67	22.77			
	1	99	1	0	20.41	22.51			

Note: Expanded measurement uncertainty is  $U = 0.578$  dB,  $k = 2$ .

## A.2 Emission Limit

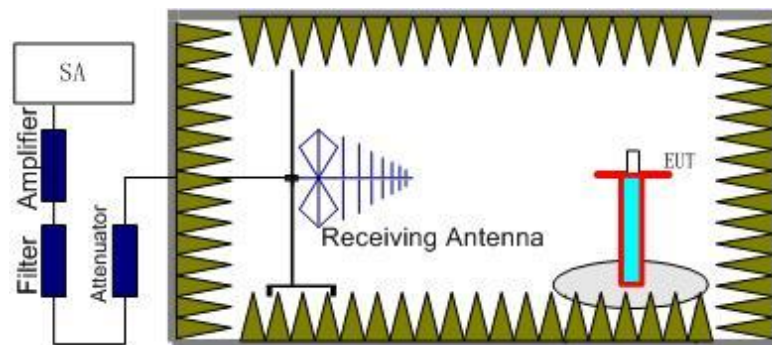
### A.2.1 Measurement Method

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

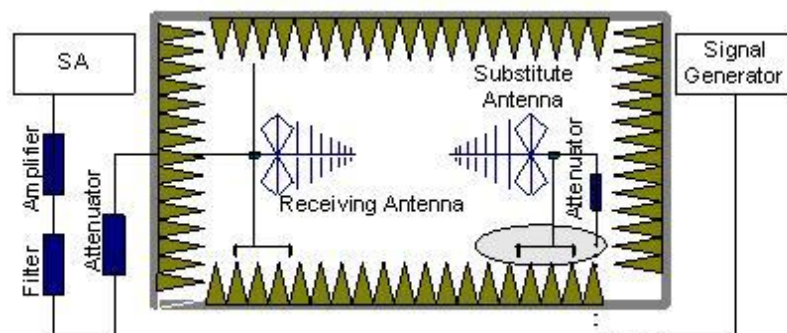
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of each LTE Band.

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

1. EUT was placed on a 1.5-meter-high non-conductive stand at a 3-meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360 and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



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



In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power ( $P_{Mea}$ ) is applied to the input of the

substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded ( $P_r$ ). The power of signal source ( $P_{Mea}$ ) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

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

An amplifier should be connected in for the test.

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

The measurement results are obtained as described below:

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

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

### A.2.2 Measurement Limit

FDD Band 2: Part 24.238 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power ( $P$ ) by a factor of at least  $43 + 10 \log(P)$  dB.

FDD Band 5: Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power ( $P$ ) by a factor of at least  $43 + 10 \log(P)$  dB.

FDD Band 12/71: Part 27.53(g) states for operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power ( $P$ ) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log(P)$  dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

TDD Band 41: Part 27.53(m) specifies for mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log(P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log(P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log(P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log(P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log(P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

FDD Band 4/66: Part 27.53(h) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power ( $P$ ) by a factor of at least  $43 + 10 \log(P)$  dB.



### **A.2.3 Measurement Results**

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of each LTE Band. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of each LTE Band into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this. The range of evaluated frequency is from 30MHz to 26GHz.

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3702.02	-53.13	6.42	8.48	-51.07	-13.00	38.07	H
5553.02	-45.27	7.18	10.59	-41.86	-13.00	28.86	H
7405.01	-39.89	8.13	12.09	-35.93	-13.00	22.93	H
9253.01	-37.52	9.05	13.25	-33.32	-13.00	20.32	V
11106.01	-50.20	9.81	13.18	-46.83	-13.00	33.83	H
13001.01	-45.85	10.47	13.50	-42.82	-13.00	29.82	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3760.02	-55.50	6.26	8.56	-53.20	-13.00	40.20	H
5641.02	-48.58	7.27	10.57	-45.28	-13.00	32.28	H
7521.01	-41.55	8.31	12.22	-37.64	-13.00	24.64	H
9403.01	-38.38	9.05	13.34	-34.09	-13.00	21.09	H
11285.01	-45.72	9.91	13.14	-42.49	-13.00	29.49	H
13166.01	-43.29	10.65	13.73	-40.21	-13.00	27.21	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3819.02	-52.93	6.08	8.65	-50.36	-13.00	37.36	H
5728.02	-47.60	7.30	10.55	-44.35	-13.00	31.35	H
7639.01	-46.43	8.15	12.31	-42.27	-13.00	29.27	V
9549.01	-40.49	9.36	13.35	-36.50	-13.00	23.50	V
11412.01	-48.35	10.03	13.12	-45.26	-13.00	32.26	V
13370.01	-41.64	10.57	14.02	-38.19	-13.00	25.19	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1649.01	-36.60	3.56	5.23	2.15	-37.08	-13.00	24.08	H
2465.00	-37.32	4.59	6.00	2.15	-38.06	-13.00	25.06	V
3299.02	-53.70	5.29	7.72	2.15	-53.42	-13.00	40.42	H
4125.02	-54.71	6.04	9.03	2.15	-53.87	-13.00	40.87	V
4946.01	-56.73	6.70	9.85	2.15	-55.73	-13.00	42.73	H
5767.01	-56.25	7.24	10.55	2.15	-55.09	-13.00	42.09	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1673.01	-39.46	3.58	5.19	2.15	-40.00	-13.00	27.00	H
2510.00	-43.37	4.63	6.12	2.15	-44.03	-13.00	31.03	V
3346.02	-49.19	5.31	7.83	2.15	-48.82	-13.00	35.82	V
4182.02	-55.90	6.17	9.08	2.15	-55.14	-13.00	42.14	V
5021.01	-54.22	6.57	9.93	2.15	-53.01	-13.00	40.01	H
5863.01	-55.70	7.28	10.53	2.15	-54.60	-13.00	41.60	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1697.01	-41.68	3.60	5.15	2.15	-42.28	-13.00	29.28	H
2545.00	-42.94	4.66	6.18	2.15	-43.57	-13.00	30.57	H
3394.02	-46.07	5.36	7.95	2.15	-45.63	-13.00	32.63	V
4244.02	-56.43	6.25	9.14	2.15	-55.69	-13.00	42.69	H
5091.01	-50.25	6.75	10.03	2.15	-49.12	-13.00	36.12	V
5949.01	-55.93	7.47	10.51	2.15	-55.04	-13.00	42.04	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1325.01	-55.25	3.14	4.59	2.15	-55.95	-13.00	42.95	H
1995.01	-48.87	4.04	4.61	2.15	-50.45	-13.00	37.45	H
2688.00	-44.54	4.78	6.44	2.15	-45.03	-13.00	32.03	H
3360.02	-60.46	5.33	7.86	2.15	-60.08	-13.00	47.08	V
4030.02	-58.28	6.05	8.93	2.15	-57.55	-13.00	44.55	H
4696.02	-57.33	6.50	9.60	2.15	-56.38	-13.00	43.38	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1415.01	-49.75	3.25	5.06	2.15	-50.09	-13.00	37.09	H
2134.00	-48.82	4.23	5.00	2.15	-50.20	-13.00	37.20	H
2828.00	-44.35	4.95	6.69	2.15	-44.76	-13.00	31.76	H
3544.02	-57.43	5.76	8.26	2.15	-57.08	-13.00	44.08	H
4242.02	-57.48	6.25	9.14	2.15	-56.74	-13.00	43.74	V
4944.01	-56.75	6.70	9.84	2.15	-55.76	-13.00	42.76	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1431.01	-47.69	3.28	5.14	2.15	-47.98	-13.00	34.98	H
2144.00	-48.26	4.24	5.03	2.15	-49.62	-13.00	36.62	H
2873.00	-43.83	4.97	6.77	2.15	-44.18	-13.00	31.18	H
3564.02	-57.80	5.97	8.29	2.15	-57.63	-13.00	44.63	V
4299.02	-57.52	6.19	9.20	2.15	-56.66	-13.00	43.66	V
5021.01	-57.16	6.57	9.93	2.15	-55.95	-13.00	42.95	H



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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1561.56	-66.57	3.48	5.39	0.00	-66.81	-40.00	26.81	H
2338.29	-48.08	4.44	5.61	2.15	-49.06	-13.00	36.06	H
3121.52	-58.39	5.39	7.29	2.15	-58.64	-13.00	45.64	V
3892.52	-58.57	6.10	8.75	2.15	-58.07	-13.00	45.07	H
4677.02	-57.67	6.49	9.58	2.15	-56.73	-13.00	43.73	V
5455.01	-57.49	6.89	10.54	2.15	-55.99	-13.00	42.99	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1564.25	-66.26	3.48	5.38	0.00	-66.51	-40.00	26.51	H
2346.70	-48.00	4.45	5.64	2.15	-48.96	-13.00	35.96	H
3130.02	-57.47	5.40	7.31	2.15	-57.71	-13.00	44.71	V
3912.52	-58.78	6.12	8.78	2.15	-58.27	-13.00	45.27	V
4692.02	-58.21	6.50	9.59	2.15	-57.27	-13.00	44.27	V
5478.51	-57.12	6.98	10.57	2.15	-55.68	-13.00	42.68	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1569.47	-66.41	3.48	5.37	0.00	-66.67	-40.00	26.67	H
2351.40	-47.30	4.46	5.65	2.15	-48.26	-13.00	35.26	H
3129.02	-58.80	5.40	7.31	2.15	-59.04	-13.00	46.04	V
3923.02	-58.03	6.12	8.79	2.15	-57.51	-13.00	44.51	H
4693.02	-57.82	6.50	9.59	2.15	-56.88	-13.00	43.88	V
5500.51	-56.68	7.06	10.60	2.15	-55.29	-13.00	42.29	H

**LTE Band 41, 5MHz, QPSK, Channel 39675**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
4999.02	-37.82	6.60	9.90	-34.52	-25.00	9.52	H
7497.01	-50.34	8.39	12.20	-46.53	-25.00	21.53	H
9998.01	-53.38	9.18	12.90	-49.66	-25.00	24.66	H
12494.01	-48.61	10.19	13.20	-45.60	-25.00	20.60	V
14987.00	-43.88	11.21	14.01	-41.08	-25.00	16.08	H
17488.00	-39.73	12.70	14.87	-37.56	-25.00	12.56	H

**LTE Band 41, 5MHz, QPSK, Channel 40620**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5186.02	-40.36	6.94	10.16	-37.14	-25.00	12.14	H
7782.01	-52.78	8.31	12.43	-48.66	-25.00	23.66	H
10350.01	-50.75	9.72	13.04	-47.43	-25.00	22.43	V
12975.01	-45.50	10.48	13.49	-42.49	-25.00	17.49	H
15570.00	-42.21	11.50	13.70	-40.01	-25.00	15.01	H
16844.00	-39.91	12.06	13.74	-38.23	-25.00	13.23	H

**LTE Band 41, 5MHz, QPSK, Channel 41565**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5377.02	-32.91	6.88	10.43	-29.36	-25.00	4.36	H
8065.01	-50.81	8.32	12.65	-46.48	-25.00	21.48	H
10756.01	-45.02	9.44	13.15	-41.31	-25.00	16.31	H
13424.01	-43.77	10.59	14.09	-40.27	-25.00	15.27	H
16138.00	-40.34	11.81	13.67	-38.48	-25.00	13.48	H
17452.00	-38.69	12.62	14.79	-36.52	-25.00	11.52	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3422.02	-68.47	5.38	8.01	-65.84	-13.00	52.84	H
5134.02	-60.86	6.86	10.09	-57.63	-13.00	44.63	H
6845.01	-59.13	7.83	11.41	-55.55	-13.00	42.55	H
8556.01	-61.12	8.57	13.01	-56.68	-13.00	43.68	H
10271.01	-56.96	9.54	13.01	-53.49	-13.00	40.49	H
12000.01	-58.08	10.05	13.00	-55.13	-13.00	42.13	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3490.02	-64.45	5.50	8.18	-61.77	-13.00	48.77	H
5236.02	-64.00	7.00	10.23	-60.77	-13.00	47.77	H
6982.01	-59.37	8.16	11.58	-55.95	-13.00	42.95	H
8727.01	-61.73	8.44	13.05	-57.12	-13.00	44.12	H
10475.01	-58.59	9.69	13.09	-55.19	-13.00	42.19	H
12253.01	-58.26	10.03	13.10	-55.19	-13.00	42.19	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3559.02	-62.76	5.92	8.28	-60.40	-13.00	47.40	H
5340.02	-62.51	6.96	10.38	-59.09	-13.00	46.09	H
7120.01	-59.72	8.16	11.74	-56.14	-13.00	43.14	H
8897.01	-53.64	8.84	13.08	-49.40	-13.00	36.40	V
10677.01	-60.40	9.30	13.14	-56.56	-13.00	43.56	V
12462.01	-58.22	10.27	13.18	-55.31	-13.00	42.31	V

**LTE Band 71, 5MHz, QPSK, Channel 133147**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1301.01	-54.04	3.12	4.47	2.15	-54.84	-13.00	41.84	H
1997.01	-47.53	4.04	4.61	2.15	-49.11	-13.00	36.11	H
2674.00	-44.87	4.76	6.41	2.15	-45.37	-13.00	32.37	H
3357.02	-61.38	5.32	7.86	2.15	-60.99	-13.00	47.99	V
3979.02	-57.88	6.08	8.87	2.15	-57.24	-13.00	44.24	H
4683.02	-57.99	6.49	9.58	2.15	-57.05	-13.00	44.05	V

**LTE Band 71, 5MHz, QPSK, Channel 133297**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1350.01	-56.01	3.17	4.72	2.15	-56.61	-13.00	43.61	H
2028.00	-49.43	4.13	4.68	2.15	-51.03	-13.00	38.03	H
2713.00	-44.97	4.80	6.48	2.15	-45.44	-13.00	32.44	H
3403.02	-60.33	5.36	7.97	2.15	-59.87	-13.00	46.87	V
4071.02	-57.45	6.04	8.97	2.15	-56.67	-13.00	43.67	H
4763.01	-57.57	6.60	9.66	2.15	-56.66	-13.00	43.66	V

**LTE Band 71, 5MHz, QPSK, Channel 133447**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1415.01	-55.75	3.25	5.06	2.15	-56.09	-13.00	43.09	H
2095.00	-49.96	4.19	4.89	2.15	-51.41	-13.00	38.41	V
2793.00	-45.33	4.90	6.63	2.15	-45.75	-13.00	32.75	V
3473.02	-58.89	5.47	8.14	2.15	-58.37	-13.00	45.37	H
4184.02	-56.31	6.17	9.08	2.15	-55.55	-13.00	42.55	H
4841.01	-56.70	6.72	9.74	2.15	-55.83	-13.00	42.83	V

**LTE CA Band 5B, RB 50+50, QPSK, Channel 20450+20549**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1637.01	-53.35	3.56	5.25	2.15	-53.81	-13.00	40.81	H
2486.00	-47.22	4.61	6.06	2.15	-47.92	-13.00	34.92	H
3304.02	-61.82	5.29	7.73	2.15	-61.53	-13.00	48.53	V
4133.02	-56.49	6.05	9.03	2.15	-55.66	-13.00	42.66	V
4956.01	-56.73	6.68	9.86	2.15	-55.70	-13.00	42.70	H
5781.01	-56.36	7.22	10.54	2.15	-55.19	-13.00	42.19	V

**LTE CA Band 5B, RB 50+50, QPSK, Channel 20476+20575**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1673.01	-50.71	3.58	5.19	2.15	-51.25	-13.00	38.25	V
2521.00	-46.51	4.65	6.14	2.15	-47.17	-13.00	34.17	H
3347.02	-60.24	5.32	7.83	2.15	-59.88	-13.00	46.88	V
4185.02	-56.43	6.17	9.09	2.15	-55.66	-13.00	42.66	V
5032.01	-56.90	6.58	9.94	2.15	-55.69	-13.00	42.69	H
5865.01	-56.71	7.28	10.53	2.15	-55.61	-13.00	42.61	H

**LTE CA Band 5B, RB 50+50, QPSK, Channel 20501+20600**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1699.01	-54.78	3.60	5.14	2.15	-55.39	-13.00	42.39	V
2549.00	-46.00	4.67	6.19	2.15	-46.63	-13.00	33.63	H
3400.02	-60.58	5.36	7.96	2.15	-60.13	-13.00	47.13	V
4243.02	-57.26	6.25	9.14	2.15	-56.52	-13.00	43.52	H
5085.01	-56.75	6.73	10.02	2.15	-55.61	-13.00	42.61	H
5942.01	-56.33	7.47	10.51	2.15	-55.44	-13.00	42.44	V

**LTE CA Band 66B, RB 50+50, QPSK, Channel 132022+132121**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3475.02	-72.07	5.47	8.14	-69.40	-13.00	56.40	H
5104.02	-69.01	6.78	10.05	-65.74	-13.00	52.74	V
6851.01	-64.26	7.82	11.42	-60.66	-13.00	47.66	V
8604.01	-63.78	8.49	13.02	-59.25	-13.00	46.25	V
10305.01	-61.07	9.65	13.02	-57.70	-13.00	44.70	V
12005.01	-58.28	10.07	13.00	-55.35	-13.00	42.35	V

**LTE CA Band 66B, RB 50+50, QPSK, Channel 132373+132472**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3543.02	-70.67	5.75	8.26	-68.16	-13.00	55.16	V
5184.02	-70.00	6.94	10.16	-66.78	-13.00	53.78	H
6999.01	-64.07	8.29	11.60	-60.76	-13.00	47.76	V
8751.01	-63.73	8.51	13.05	-59.19	-13.00	46.19	V
10451.01	-60.57	9.72	13.08	-57.21	-13.00	44.21	V
12246.01	-58.52	10.03	13.10	-55.45	-13.00	42.45	V

**LTE CA Band 66B, RB 50+50, QPSK, Channel 132523+132622**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3553.02	-70.27	5.85	8.27	-67.85	-13.00	54.85	V
5284.02	-70.20	6.99	10.30	-66.89	-13.00	53.89	V
7159.01	-65.12	8.18	11.79	-61.51	-13.00	48.51	V
8947.01	-63.14	9.01	13.09	-59.06	-13.00	46.06	V
10728.01	-61.08	9.37	13.15	-57.30	-13.00	44.30	V
12404.01	-58.24	10.43	13.16	-55.51	-13.00	42.51	V

**LTE CA Band 66C, RB 50+100, QPSK, Channel 132027+132171**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3474.02	-71.93	5.47	8.14	-69.26	-13.00	56.26	H
5100.02	-68.95	6.77	10.04	-65.68	-13.00	52.68	V
6849.01	-64.19	7.83	11.42	-60.60	-13.00	47.60	V
8585.01	-63.91	8.52	13.02	-59.41	-13.00	46.41	V
10304.01	-61.15	9.65	13.02	-57.78	-13.00	44.78	V
11997.01	-58.33	10.07	13.00	-55.40	-13.00	42.40	V

**LTE CA Band 66C, RB 50+100, QPSK, Channel 132328+132472**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3544.02	-70.50	5.76	8.26	-68.00	-13.00	55.00	V
5201.02	-69.97	6.96	10.18	-66.75	-13.00	53.75	H
7004.01	-64.10	8.29	11.60	-60.79	-13.00	47.79	V
8745.01	-63.75	8.49	13.05	-59.19	-13.00	46.19	V
10460.01	-60.55	9.71	13.08	-57.18	-13.00	44.18	V
12256.01	-58.55	10.02	13.10	-55.47	-13.00	42.47	V

**LTE CA Band 66C, RB 50+100, QPSK, Channel 132428+132572**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3551.02	-70.28	5.83	8.27	-67.84	-13.00	54.84	V
5290.02	-70.24	6.99	10.31	-66.92	-13.00	53.92	V
7162.01	-65.05	8.18	11.79	-61.44	-13.00	48.44	V
8951.01	-63.14	9.03	13.09	-59.08	-13.00	46.08	V
10725.01	-61.10	9.37	13.15	-57.32	-13.00	44.32	V
12408.01	-58.30	10.42	13.16	-55.56	-13.00	42.56	V

Note: The maximum value of expanded measurement uncertainty for this test item is  $U = 4.69$  dB,  $k = 2$ .

## **A.3 Frequency Stability**

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

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

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

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

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



### A.3.2 Measurement results

#### LTE Band 2, 20MHz bandwidth QPSK (worst case of all bandwidths)

##### Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1850.833	1909.199	5.34	0.0028
50					
40					
30					
10					
0					
-10					
-20					
-30					

##### Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1850.833	1909.199	-0.16	0.0001
4.4				7.11	0.0038

#### LTE Band 5, 10MHz bandwidth QPSK (worst case of all bandwidths)

##### Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	824.417	848.583	-0.94	0.0011
50					
40					
30					
10					
0					
-10					
-20					
-30					

##### Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	824.417	848.583	2.25	0.0027
4.4				-1.66	0.0020

**LTE Band 12, 10MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	699.481	715.519		
50				0.53	0.0007
40				-1.59	0.0022
30				-1.26	0.0018
10				1.65	0.0023
0				1.06	0.0015
-10				-1.23	0.0017
-20				-4.52	0.0064
-30				3.32	0.0047

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	699.481	715.519	-1.69	0.0024
4.4				2.29	0.0032

**LTE Band 13, 10MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	777.465	786.519		
50				3.56	0.0046
40				-1.29	0.0016
30				1.60	0.0020
10				-2.96	0.0038
0				5.42	0.0069
-10				0.51	0.0007
-20				-2.53	0.0032
-30				4.71	0.0060

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	777.465	786.519	1.75	0.0022
4.4				-2.59	0.0033

**LTE Band 41, 20MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	2496.385	2689.551		
50				0.49	0.0002
40				-5.94	0.0023
30				2.75	0.0011
10				0.20	0.0001
0				-4.99	0.0019
-10				-3.32	0.0013
-20				-4.51	0.0017
-30				6.09	0.0023

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	2496.385	2689.551	-1.59	0.0006
4.4				-2.57	0.0010

**LTE Band 66, 20MHz bandwidth QPSK (worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1710.833	1779.199		
50				1.19	0.0007
40				-2.40	0.0014
30				0.67	0.0004
10				-0.79	0.0005
0				-0.11	0.0001
-10				1.20	0.0007
-20				-1.27	0.0007
-30				0.26	0.0001

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1710.833	1779.199	-0.23	0.0001
4.4				-1.13	0.0006

**LTE Band 71, 20MHz bandwidth QPSK (worst case of all bandwidths)**

**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	663.994	697.006		
50				-1.19	0.0017
40				1.46	0.0021
30				1.13	0.0017
10				5.36	0.0079
0				3.20	0.0047
-10				-0.30	0.0004
-20				2.72	0.0040
-30				2.06	0.0030

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	663.994	697.006	4.53	0.0067
4.4				0.76	0.0011

**LTE CA Band 5B, 10MHz+10MHz bandwidth QPSK (worst case of all bandwidths)**

**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	824.300	848.700		
50				-0.53	0.0006
40				-1.07	0.0013
30				0.64	0.0008
10				1.16	0.0014
0				0.69	0.0008
-10				2.33	0.0028
-20				1.75	0.0021
-30				0.97	0.0012

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	824.300	848.700	1.29	0.0015
4.4				1.32	0.0016

**LTE CA Band 66B, 10MHz+10MHz bandwidth QPSK(worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1710.300	1779.700		
50				-0.39	0.0002
40				-0.72	0.0004
30				-2.93	0.0017
10				-0.43	0.0002
0				0.40	0.0002
-10				1.50	0.0009
-20				0.44	0.0003
-30				0.03	0.0000

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1710.300	1779.700	1.50	0.0009
4.4				-0.14	0.0001

**LTE CA Band 66C, 20MHz+20MHz bandwidth QPSK(worst case of all bandwidths)**
**Frequency Error vs Temperature**

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1710.440	1779.520		
50				-1.90	0.0011
40				-3.20	0.0018
30				-2.09	0.0012
10				-2.86	0.0016
0				-2.47	0.0014
-10				-0.83	0.0005
-20				-1.02	0.0006
-30				-0.57	0.0003

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1710.440	1779.520	0.69	0.0004
4.4				1.13	0.0006

Note: Expanded measurement uncertainty is  $U = 0.01 \text{ PPM}$ ,  $k = 2$ .

#### **A.4 Occupied Bandwidth**

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

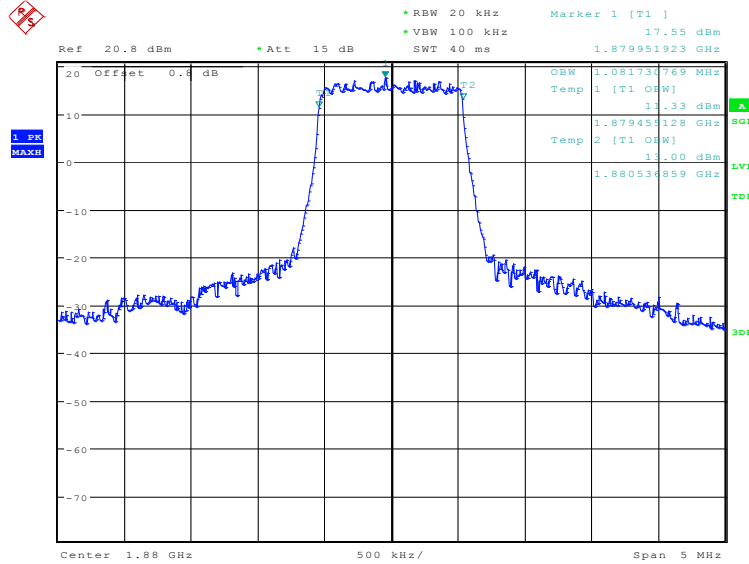
The measurement method is from ANSI C63.26:

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

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

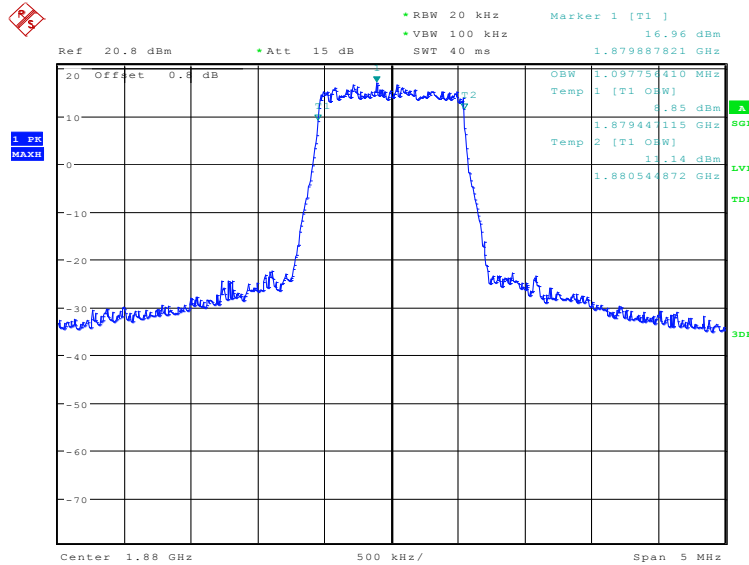
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	1081.73	1097.76

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



Date: 17.NOV.2022 13:06:00

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

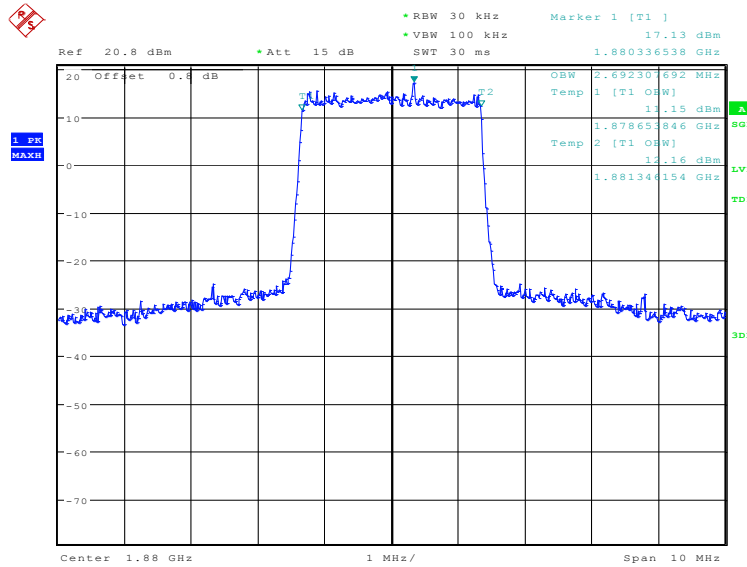


Date: 17.NOV.2022 13:06:40

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

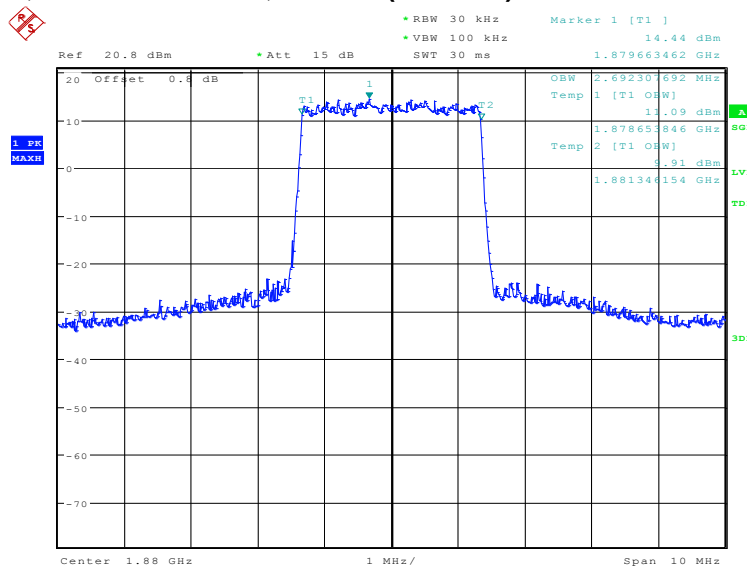
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	2692.31	2692.31

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



Date: 17.NOV.2022 13:07:21

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



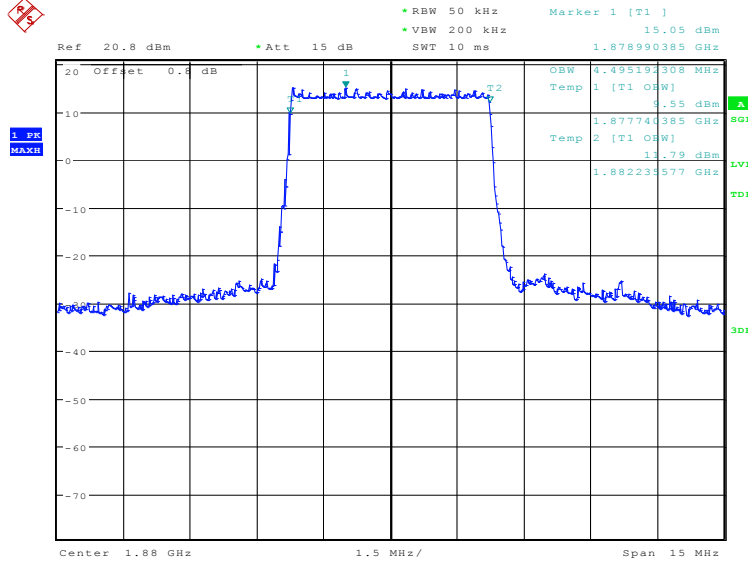
Date: 17.NOV.2022 13:08:01



**LTE band 2, 5MHz (99%)**

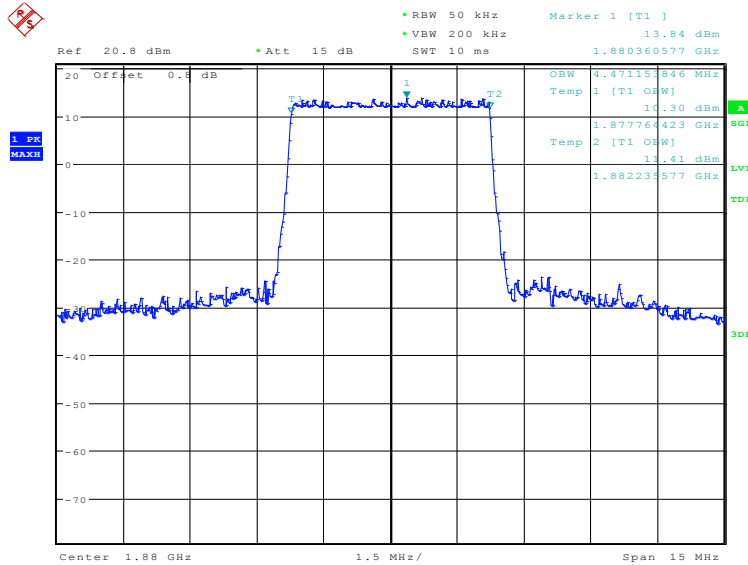
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	4495.19	4471.15

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



Date: 17.NOV.2022 13:08:43

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

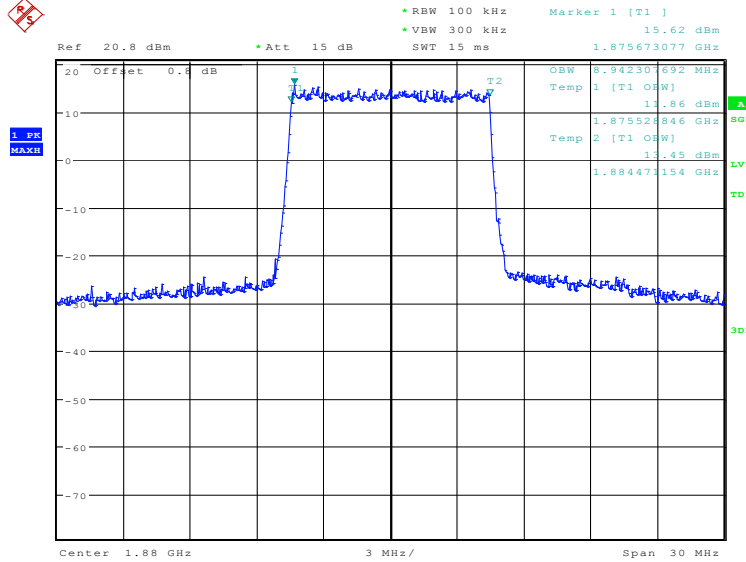


Date: 17.NOV.2022 13:09:23

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

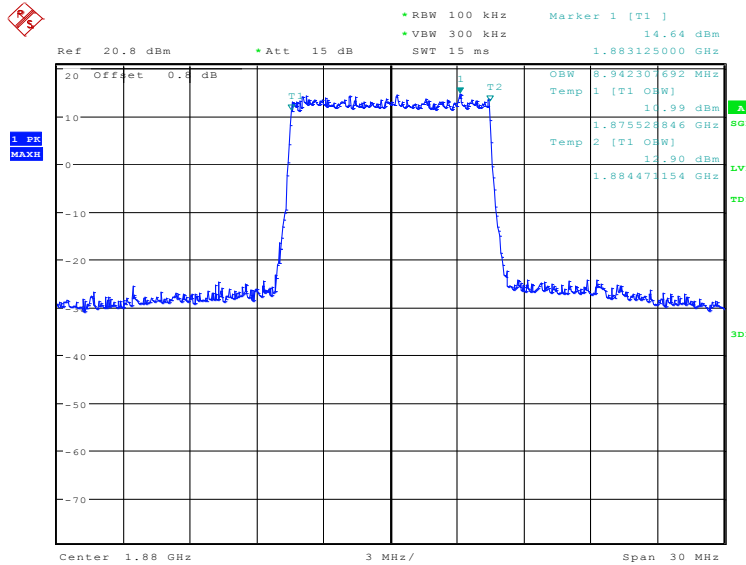
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	8942.31	8942.31

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



Date: 17.NOV.2022 13:10:04

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

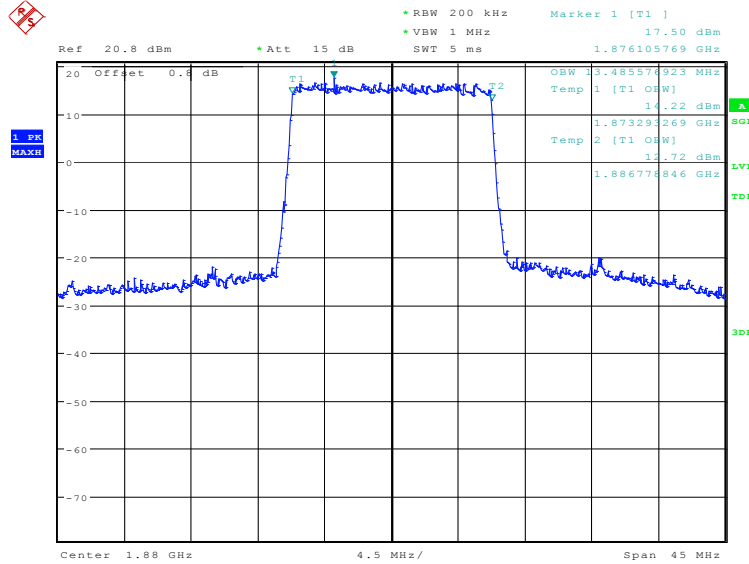


Date: 17.NOV.2022 13:10:44

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

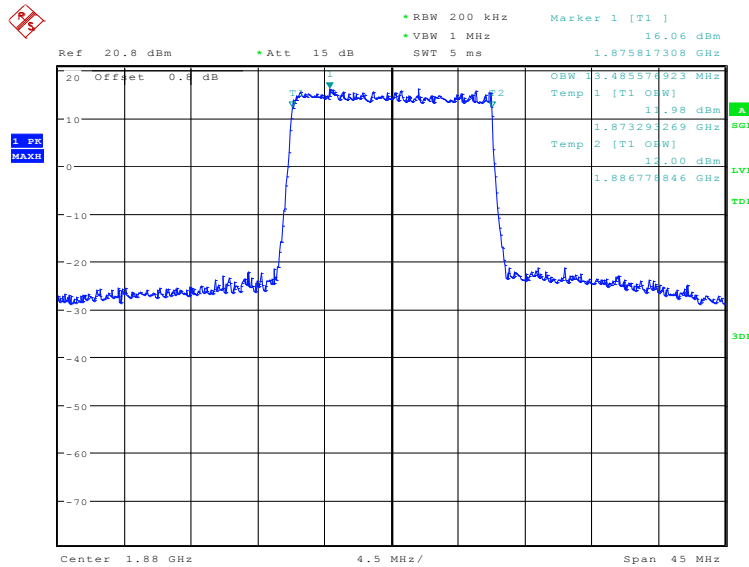
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 17.NOV.2022 13:11:26

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

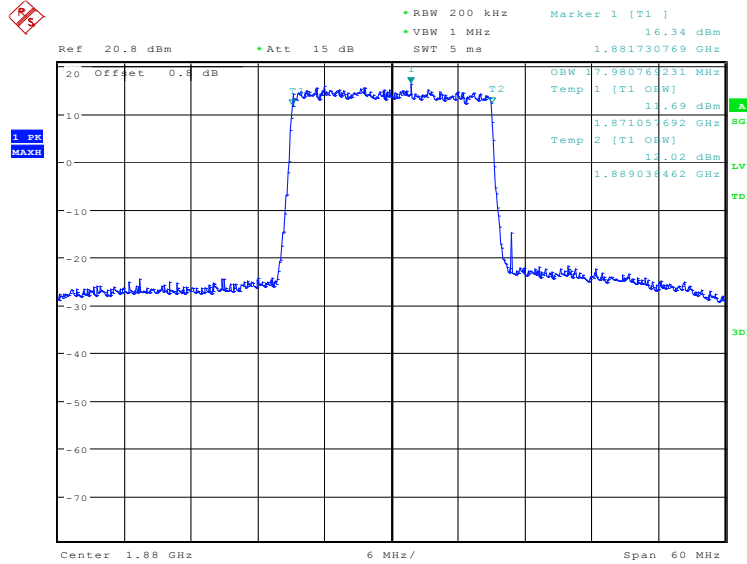


Date: 17.NOV.2022 13:12:06

**LTE band 2, 20MHz (99%)**

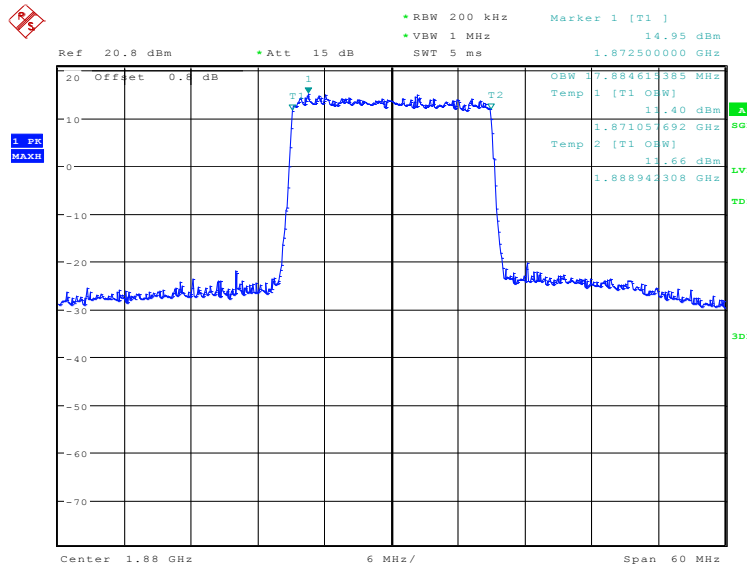
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	17980.77	17884.62

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



Date: 17.NOV.2022 13:12:47

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

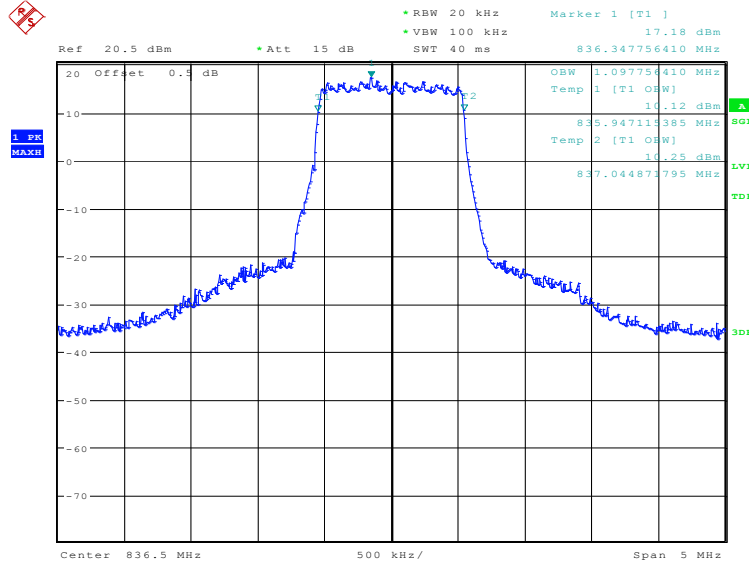


Date: 17.NOV.2022 13:13:27

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

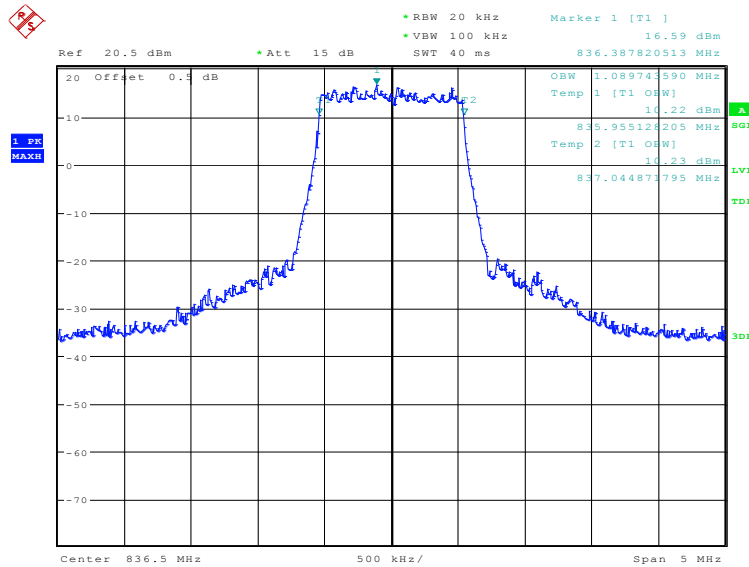
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1097.76	1089.74

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



Date: 17.NOV.2022 13:14:10

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

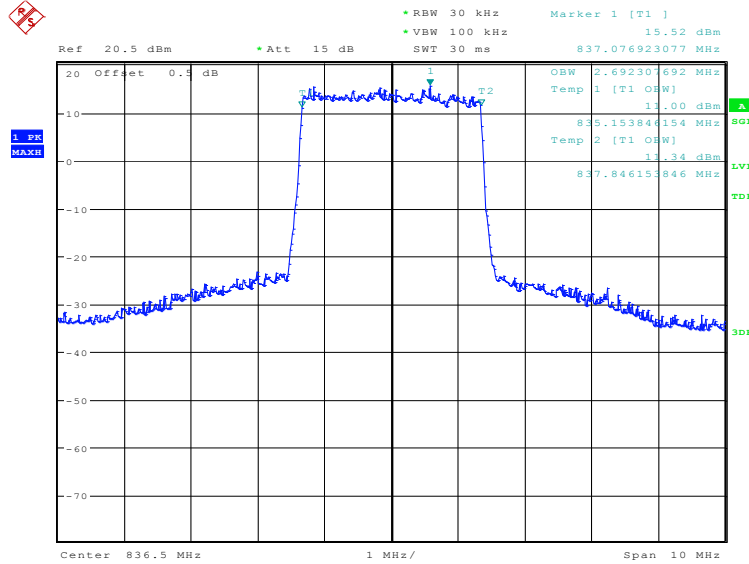


Date: 17.NOV.2022 13:14:50

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

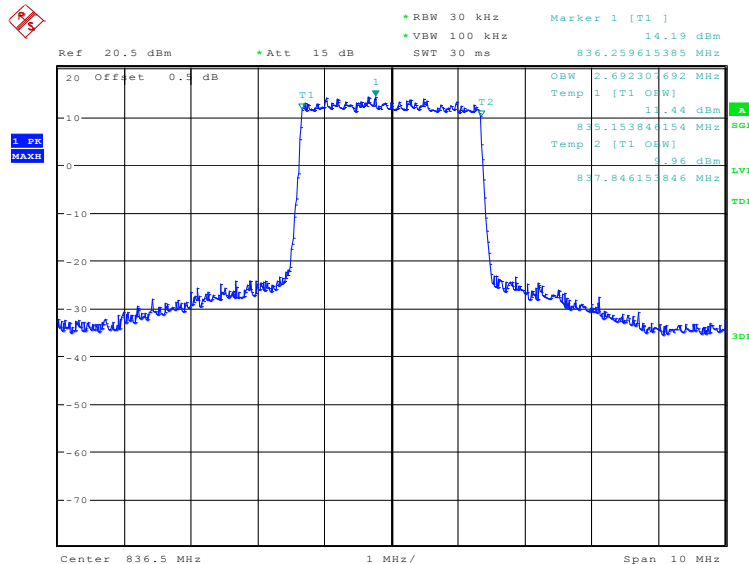
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 17.NOV.2022 13:15:31

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

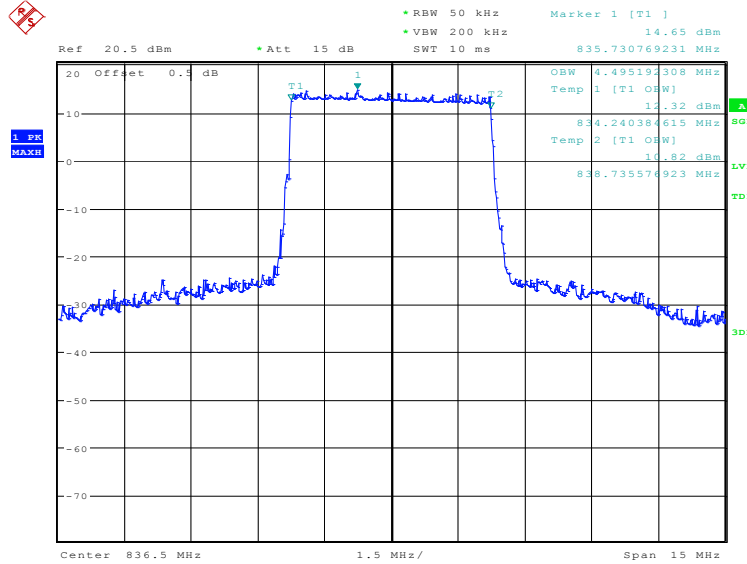


Date: 17.NOV.2022 13:16:11

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

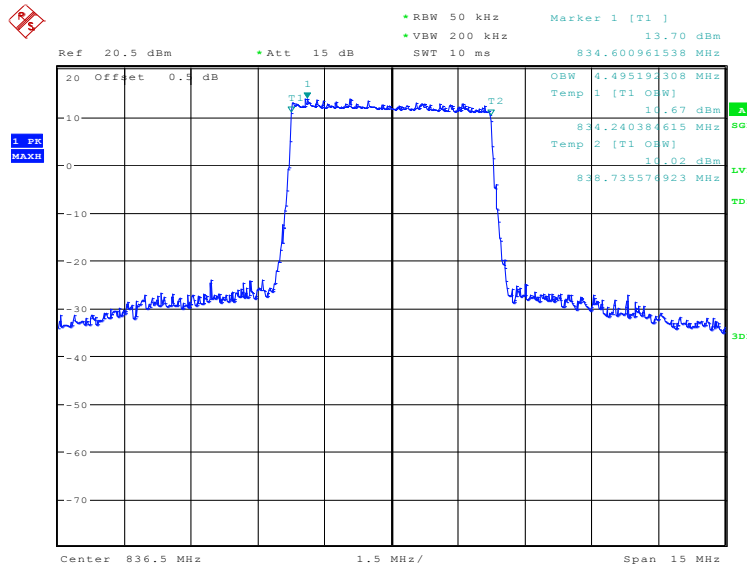
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	4495.19	4495.19

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



Date: 17.NOV.2022 13:16:53

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

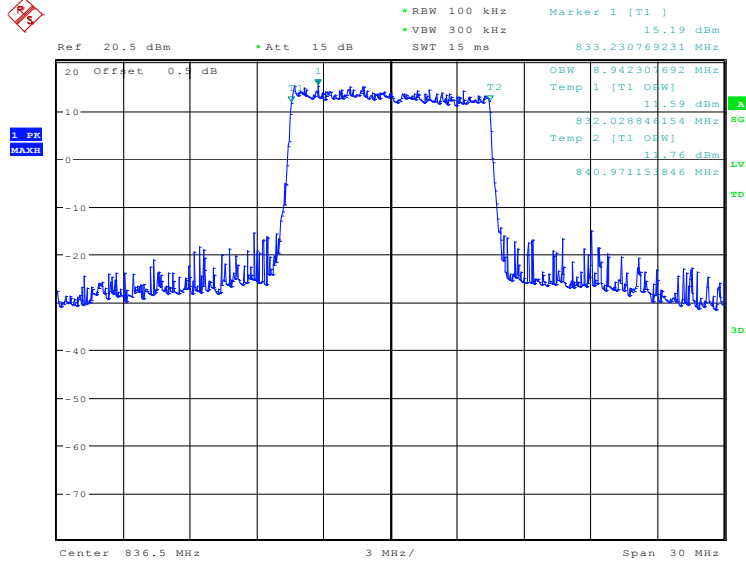


Date: 17.NOV.2022 13:17:34

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

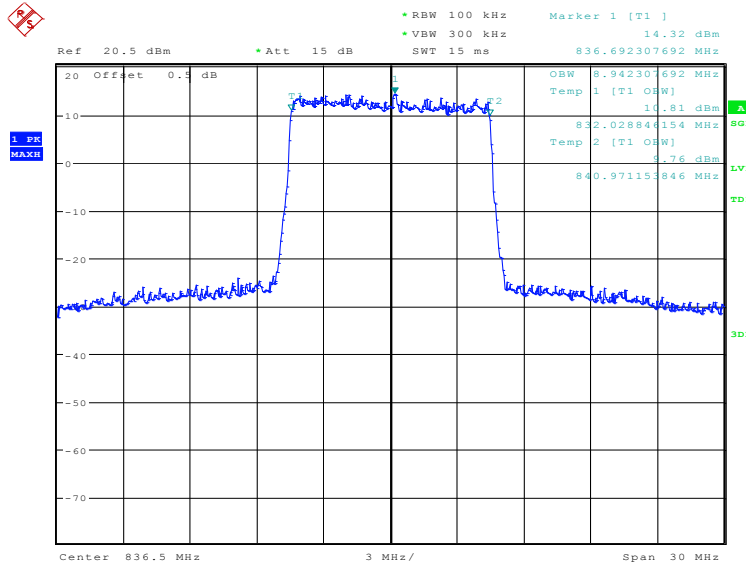
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	8942.31	8942.31

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



Date: 17.NOV.2022 13:18:15

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



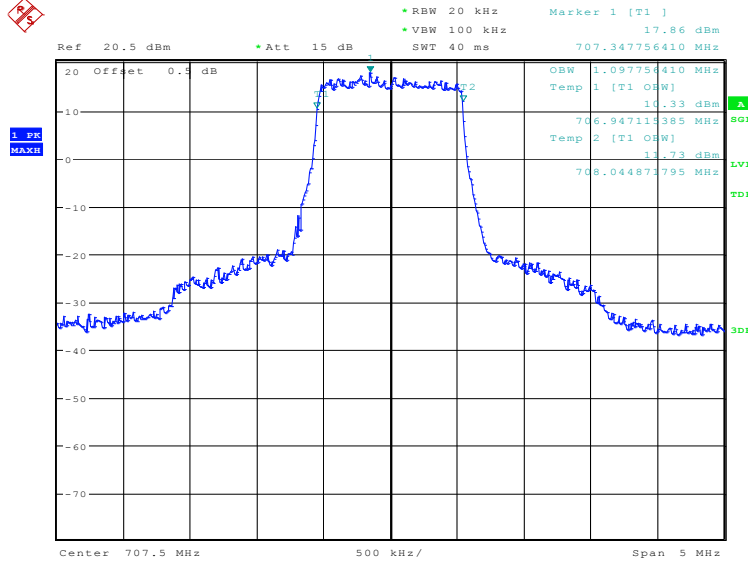
Date: 17.NOV.2022 13:18:55



**LTE band 12, 1.4MHz (99%)**

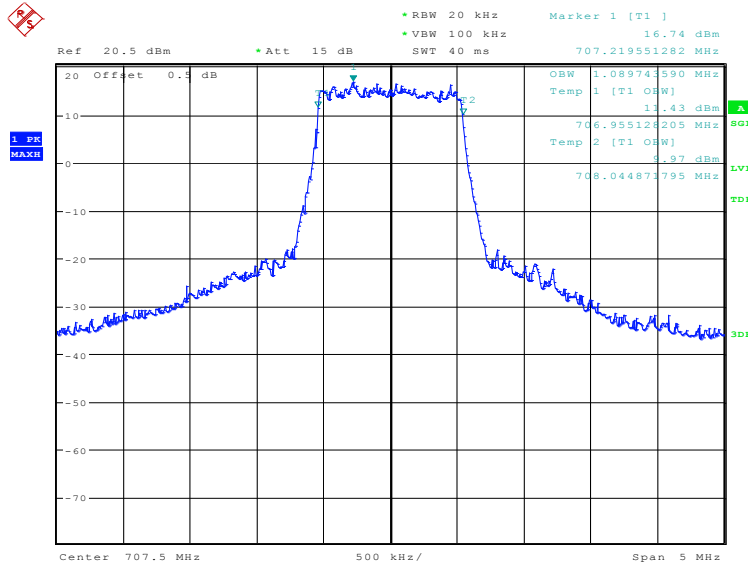
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	1097.76	1089.74

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



Date: 17.NOV.2022 13:19:38

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

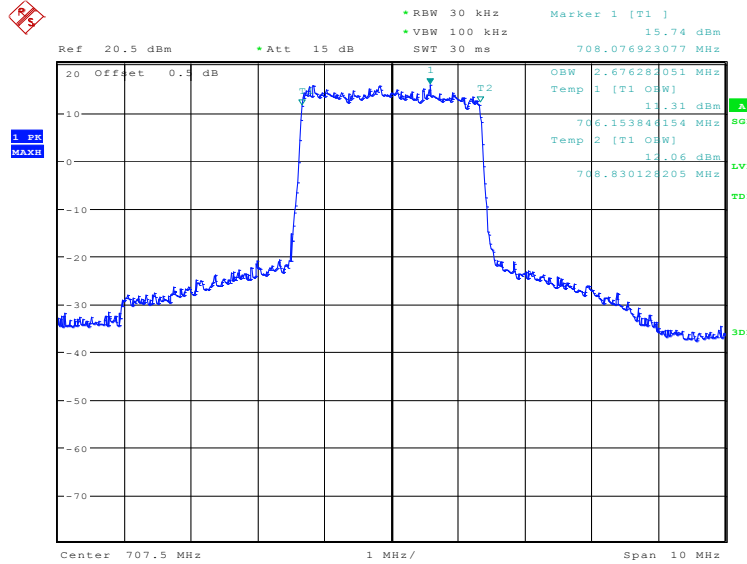


Date: 17.NOV.2022 13:20:18

### LTE band 12, 3MHz (99%)

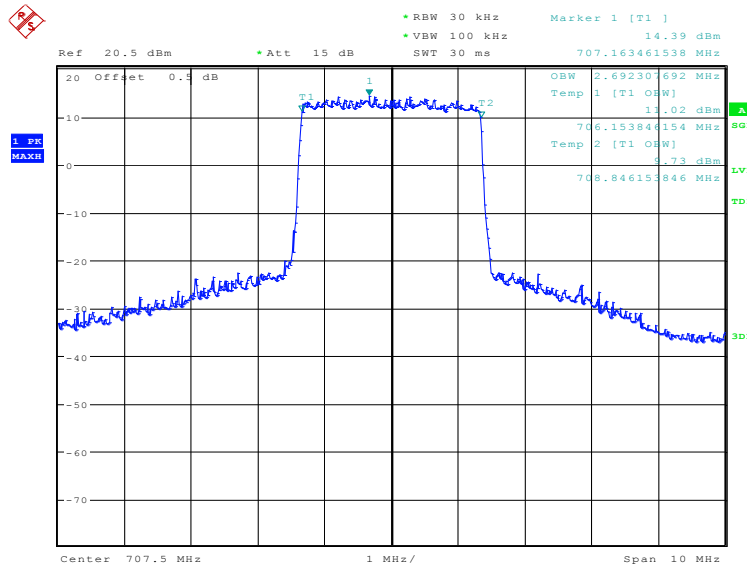
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	2676.28	2692.31

### LTE band 12, 3MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:21:00

### LTE band 12, 3MHz Bandwidth, 16QAM (99% BW)

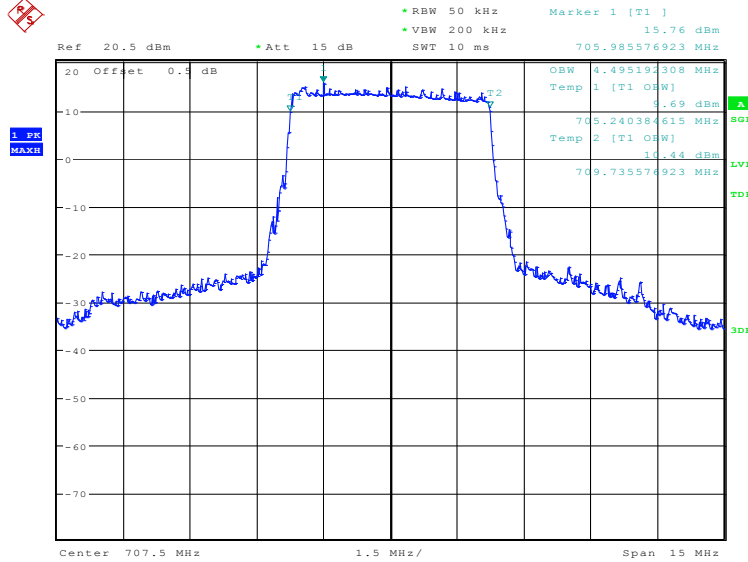


Date: 17.NOV.2022 13:21:40

**LTE band 12, 5MHz (99%)**

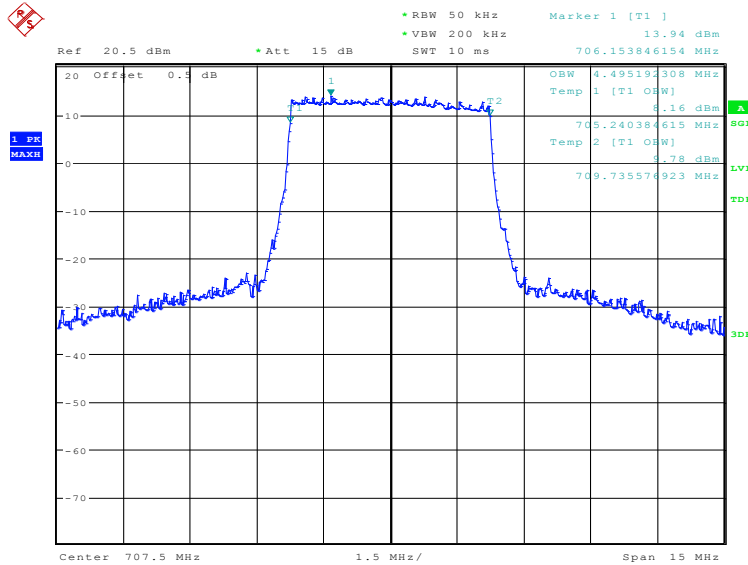
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	4495.19	4495.19

**LTE band 12, 5MHz Bandwidth, QPSK (99% BW)**



Date: 17.NOV.2022 13:22:22

**LTE band 12, 5MHz Bandwidth, 16QAM (99% BW)**

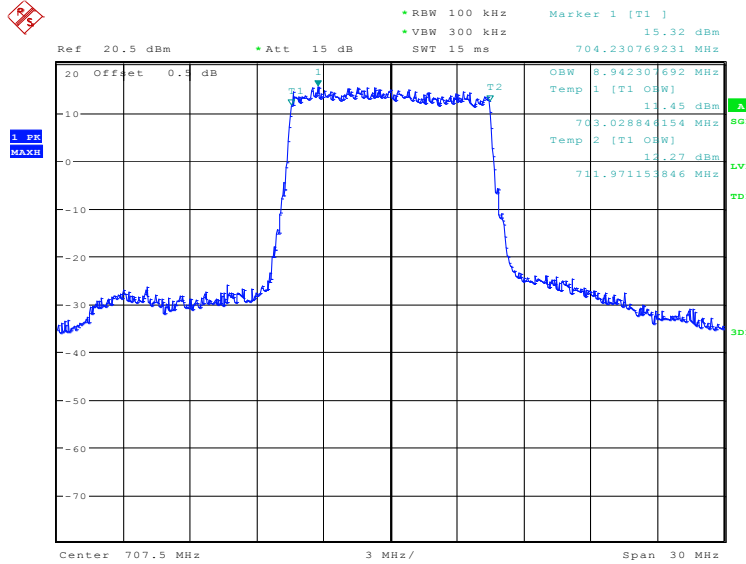


Date: 17.NOV.2022 13:23:02

### LTE band 12, 10MHz (99%)

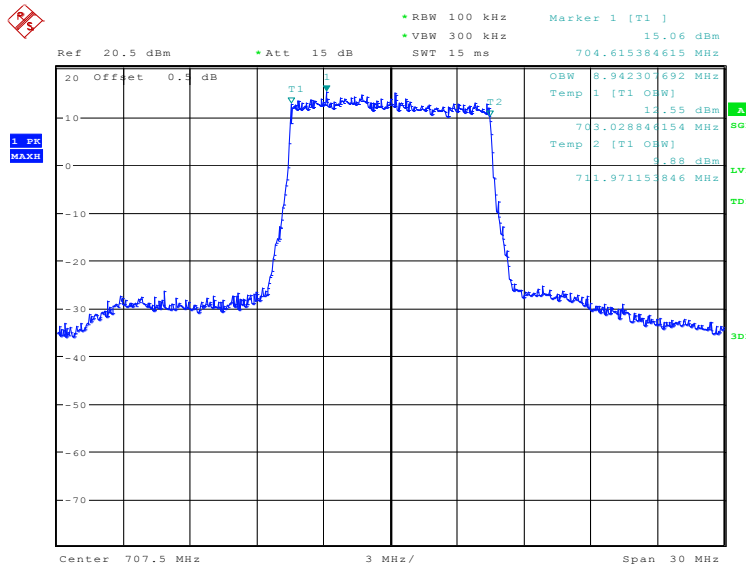
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	8942.31	8942.31

### LTE band 12, 10MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:23:44

### LTE band 12, 10MHz Bandwidth, 16QAM (99% BW)

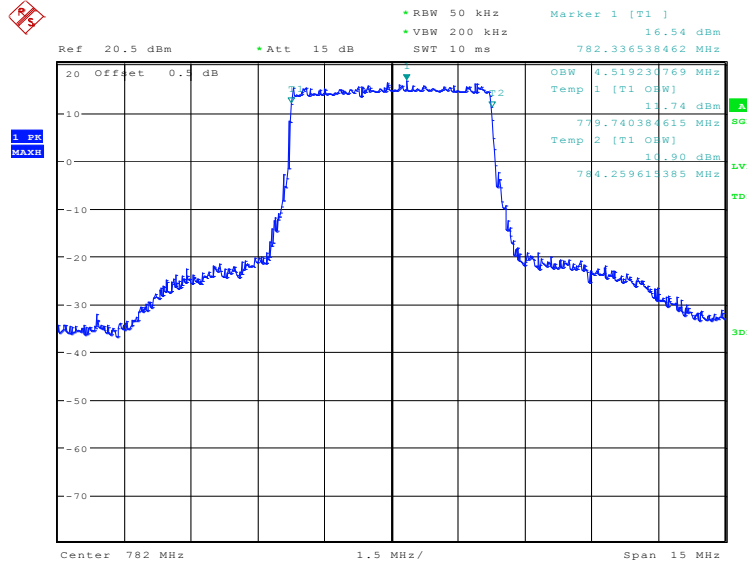


Date: 17.NOV.2022 13:24:24

### LTE band 13, 5MHz (99%)

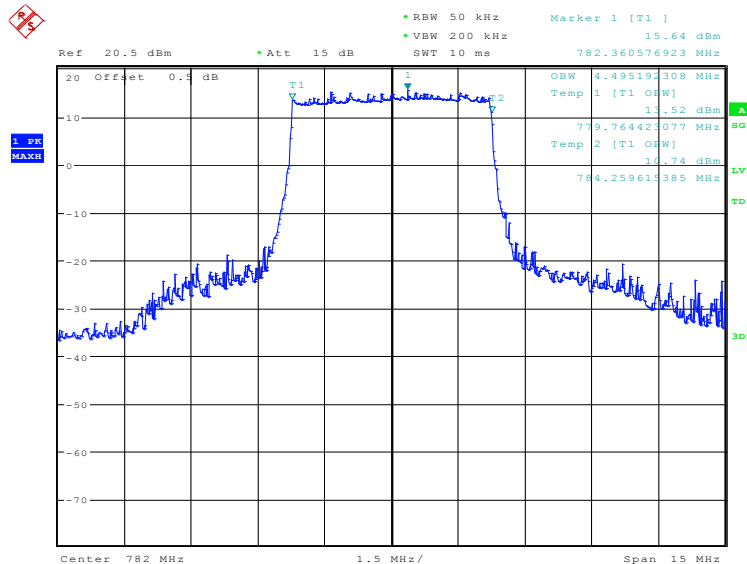
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
782.0	QPSK	16QAM
	4519.23	4495.19

### LTE band 13, 5MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:25:06

### LTE band 13, 5MHz Bandwidth, 16QAM (99% BW)

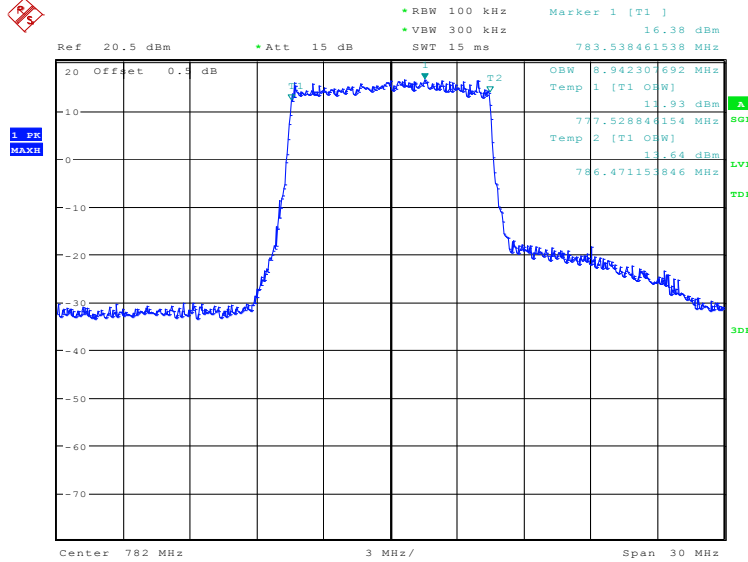


Date: 17.NOV.2022 13:25:47

**LTE band 13, 10MHz (99%)**

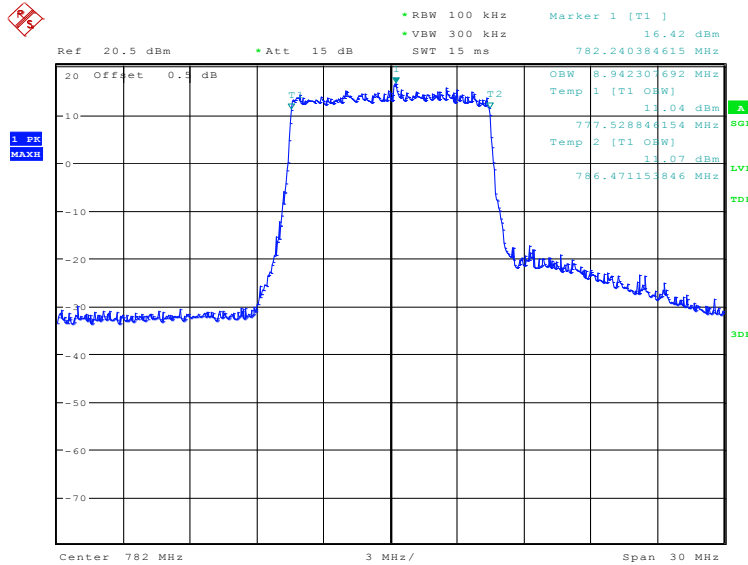
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
782.0	QPSK	16QAM
	8942.31	8942.31

**LTE band 13, 10MHz Bandwidth, QPSK (99% BW)**



Date: 17.NOV.2022 13:26:28

**LTE band 13, 10MHz Bandwidth,16QAM (99% BW)**

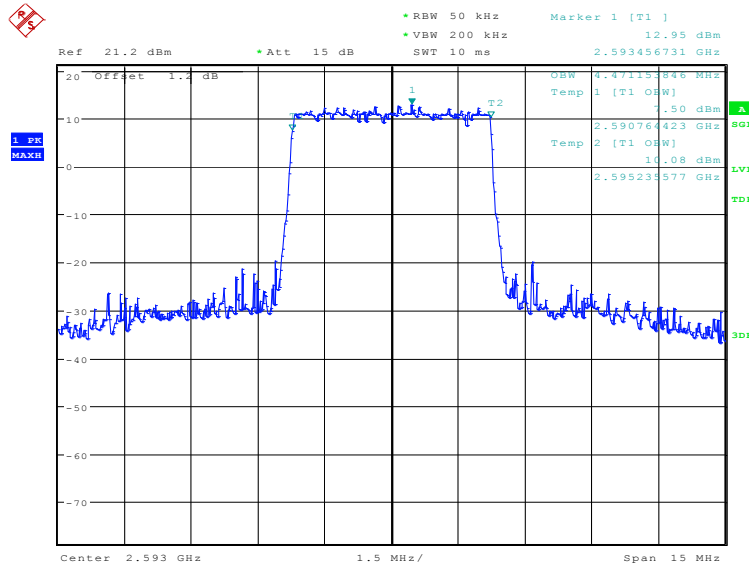


Date: 17.NOV.2022 13:27:08

### LTE band 41, 5MHz (99%)

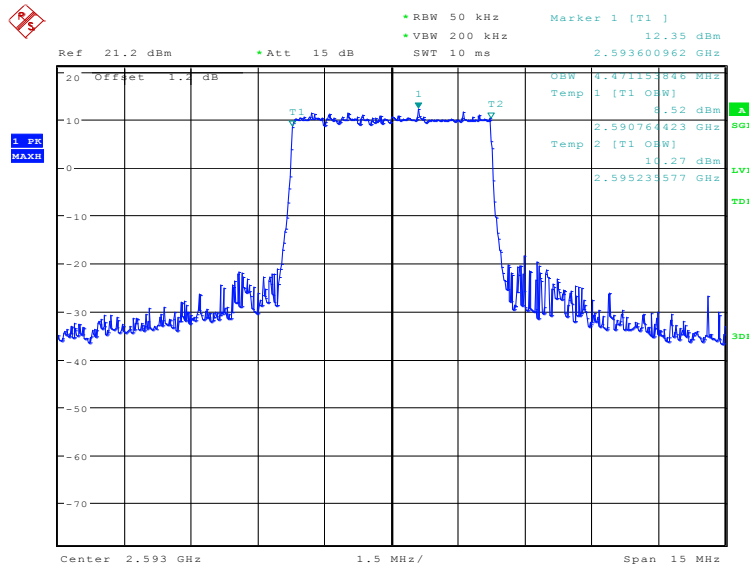
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	4471.15	4471.15

### LTE band 41, 5MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:36:48

### LTE band 41, 5MHz Bandwidth, 16QAM (99% BW)

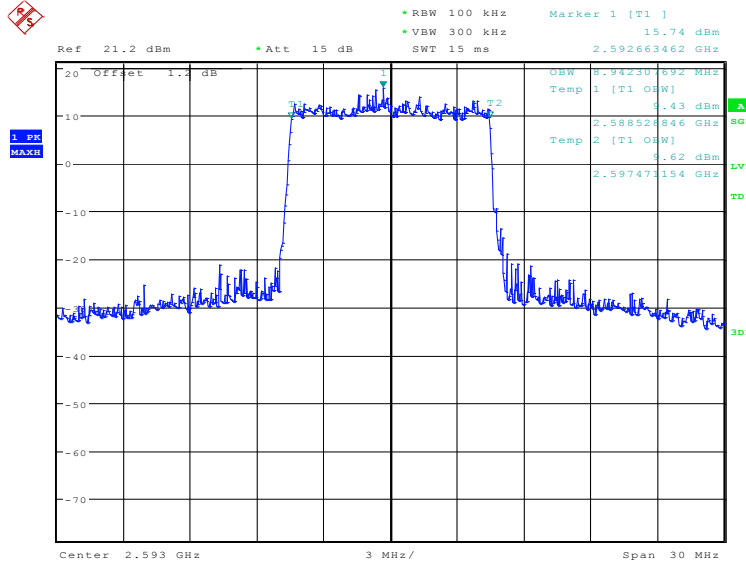


Date: 17.NOV.2022 13:37:28

### LTE band 41, 10MHz (99%)

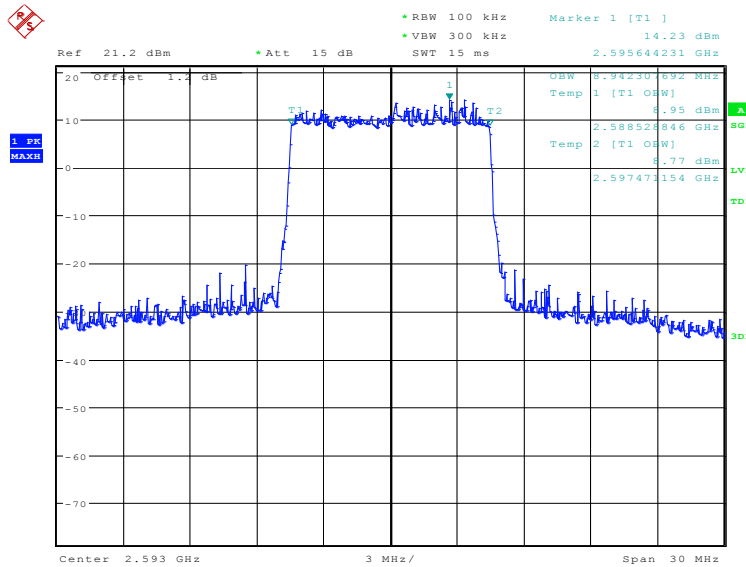
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	8942.31	8942.31

### LTE band 41, 10MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:38:09

### LTE band 41, 10MHz Bandwidth, 16QAM (99% BW)



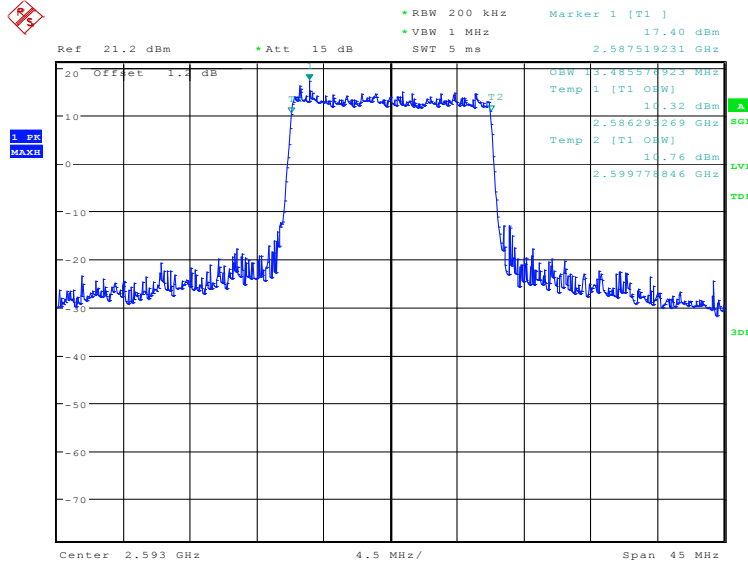
Date: 17.NOV.2022 13:38:49



### LTE band 41, 15MHz (99%)

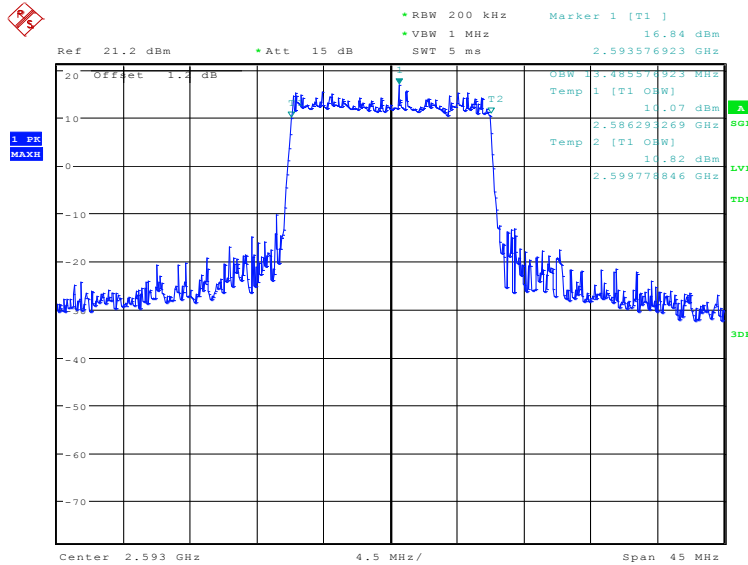
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	13485.58	13485.58

### LTE band 41, 15MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:39:31

### LTE band 41, 15MHz Bandwidth, 16QAM (99% BW)

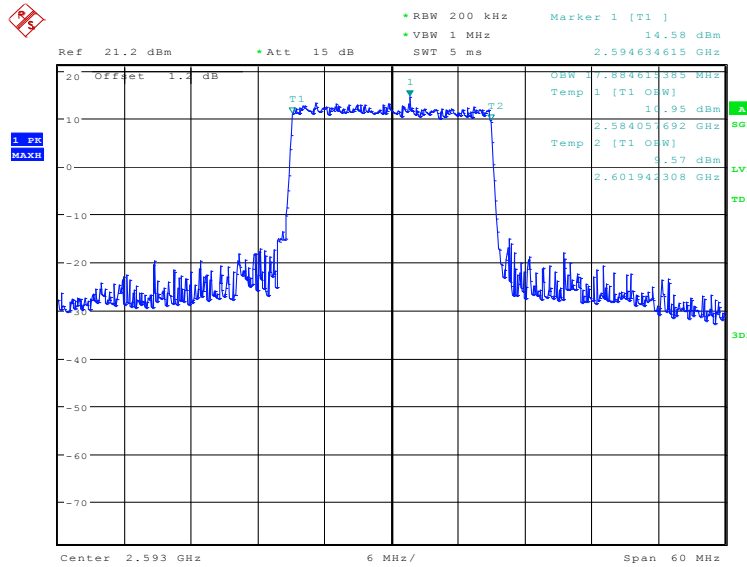


Date: 17.NOV.2022 13:40:11

### LTE band 41, 20MHz (99%)

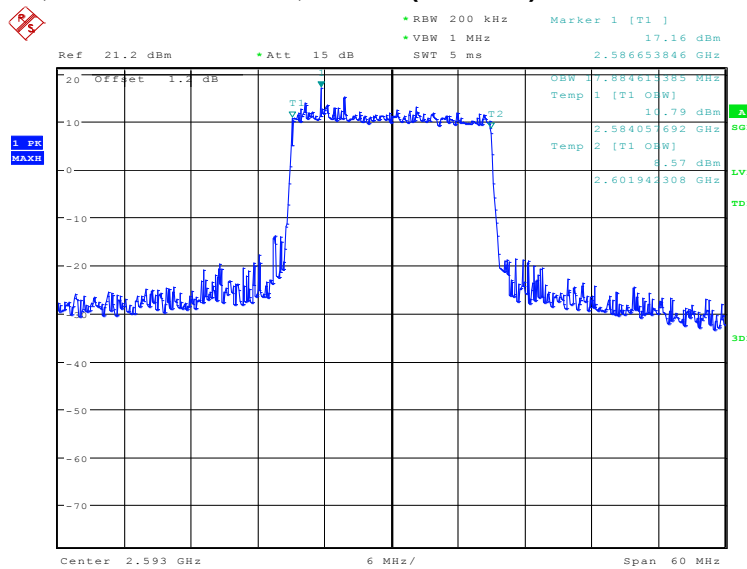
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	17884.62	17884.62

### LTE band 41, 20MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:40:52

### LTE band 41, 20MHz Bandwidth, 16QAM (99% BW)

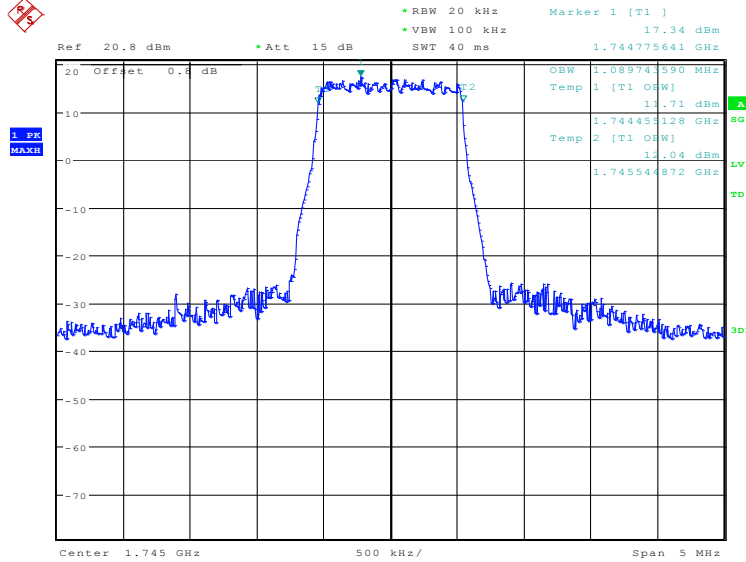


Date: 17.NOV.2022 13:41:32

### LTE band 66, 1.4MHz (99%)

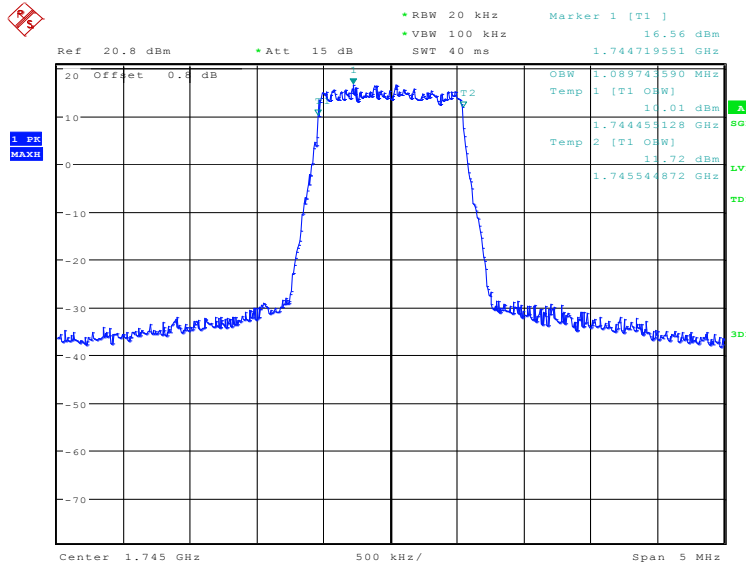
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	1089.74	1089.74

### LTE band 66, 1.4MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:27:51

### LTE band 66, 1.4MHz Bandwidth, 16QAM (99% BW)

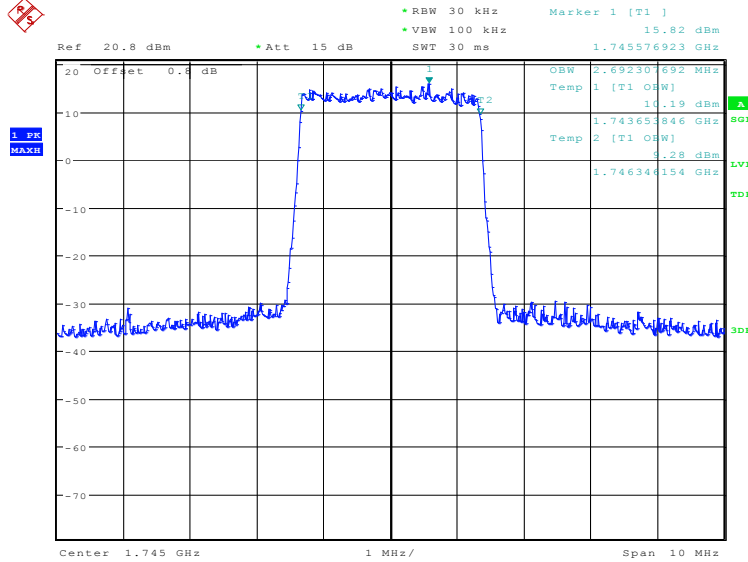


Date: 17.NOV.2022 13:28:31

**LTE band 66, 3MHz (99%)**

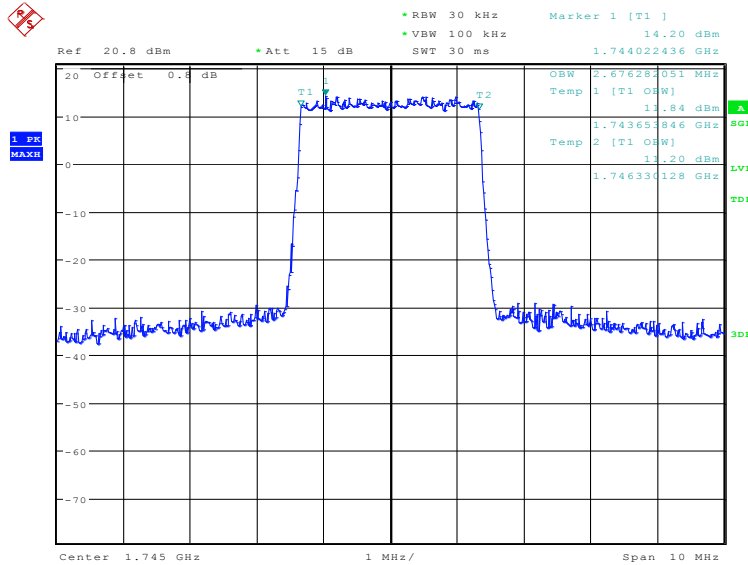
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	2692.31	2676.28

**LTE band 66, 3MHz Bandwidth, QPSK (99% BW)**



Date: 17.NOV.2022 13:29:13

**LTE band 66, 3MHz Bandwidth, 16QAM (99% BW)**

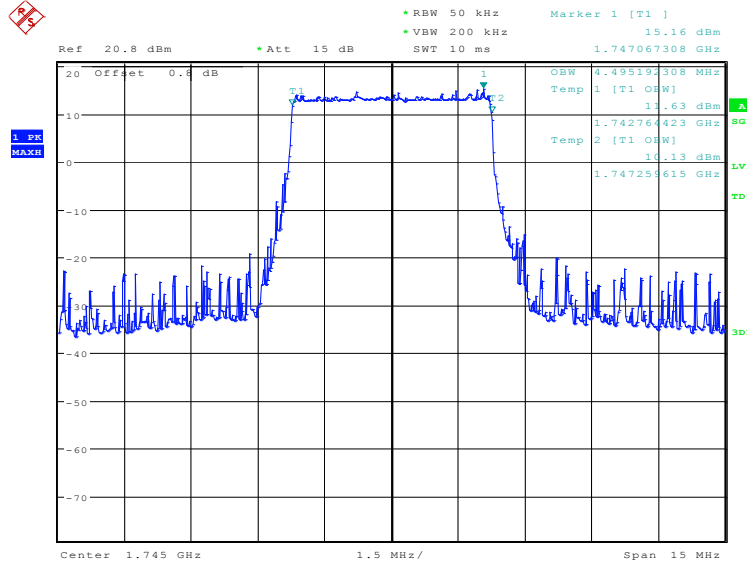


Date: 17.NOV.2022 13:29:53

### LTE band 66, 5MHz (99%)

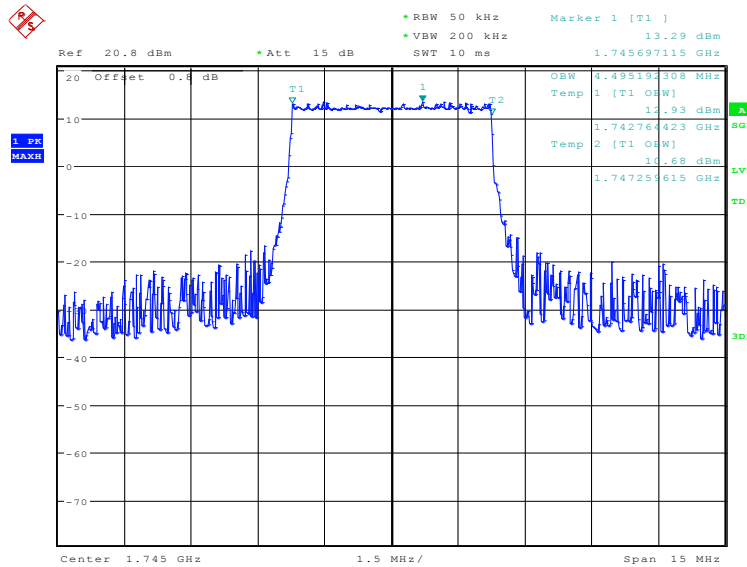
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	4495.19	4495.19

### LTE band 66, 5MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:30:35

### LTE band 66, 5MHz Bandwidth, 16QAM (99% BW)

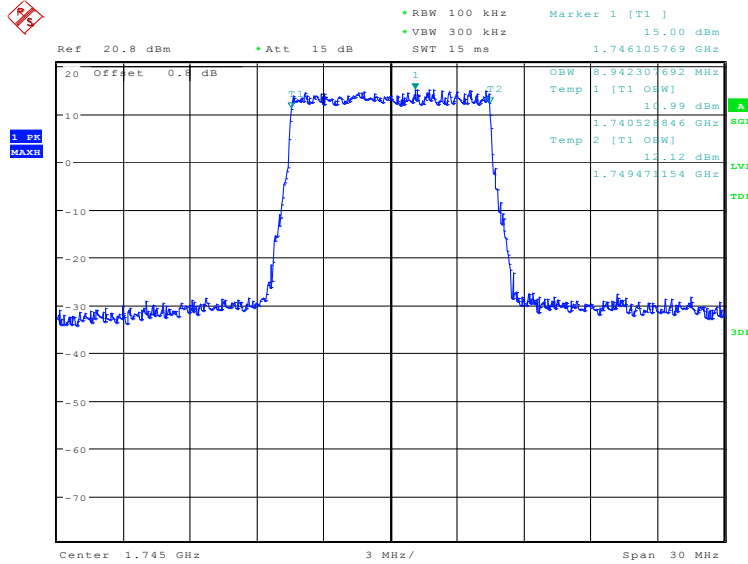


Date: 17.NOV.2022 13:31:15

**LTE band 66, 10MHz (99%)**

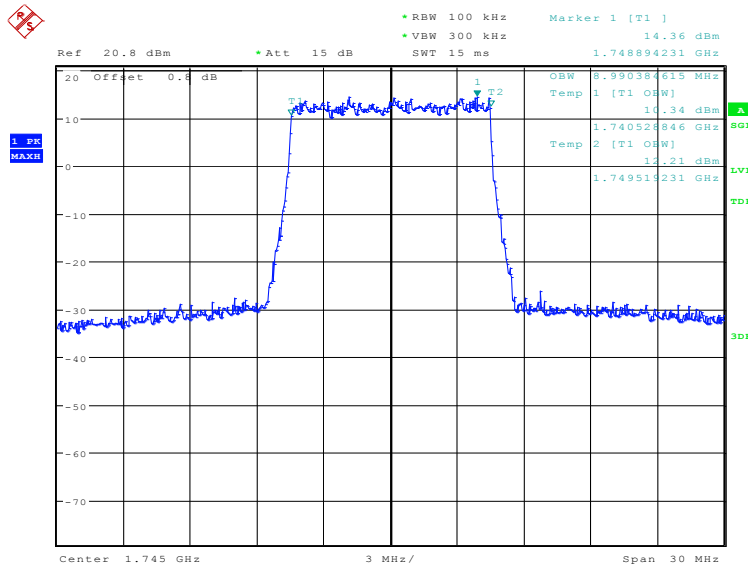
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	8942.31	8990.38

**LTE band 66, 10MHz Bandwidth, QPSK (99% BW)**



Date: 17.NOV.2022 13:31:57

**LTE band 66, 10MHz Bandwidth, 16QAM (99% BW)**

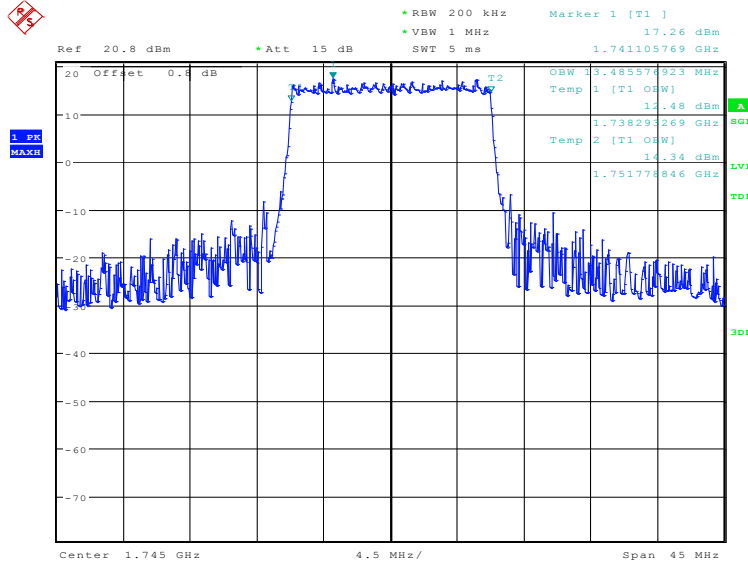


Date: 17.NOV.2022 13:32:37

**LTE band 66, 15MHz (99%)**

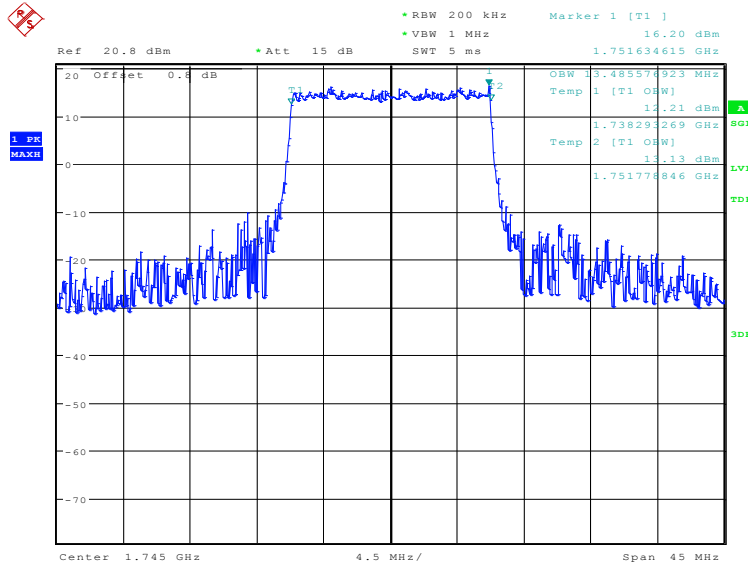
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	13485.58	13485.58

**LTE band 66, 15MHz Bandwidth, QPSK (99% BW)**



Date: 17.NOV.2022 13:33:19

**LTE band 66, 15MHz Bandwidth, 16QAM (99% BW)**

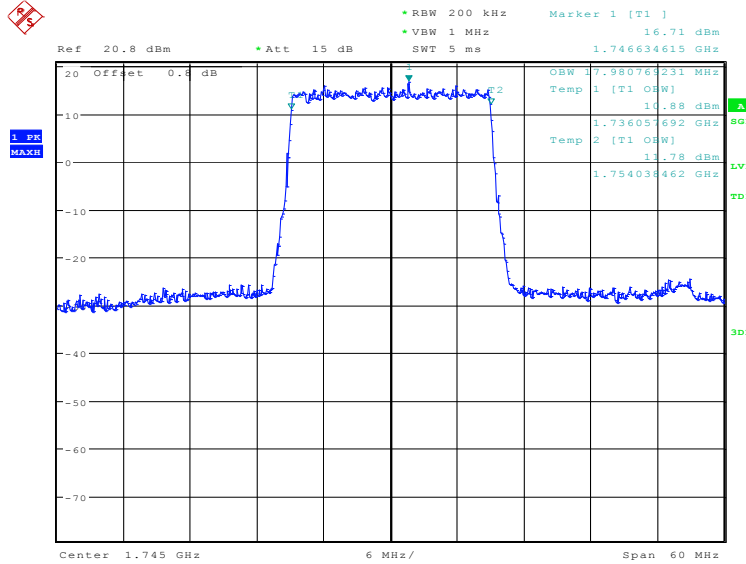


Date: 17.NOV.2022 13:33:59

### LTE band 66, 20MHz (99%)

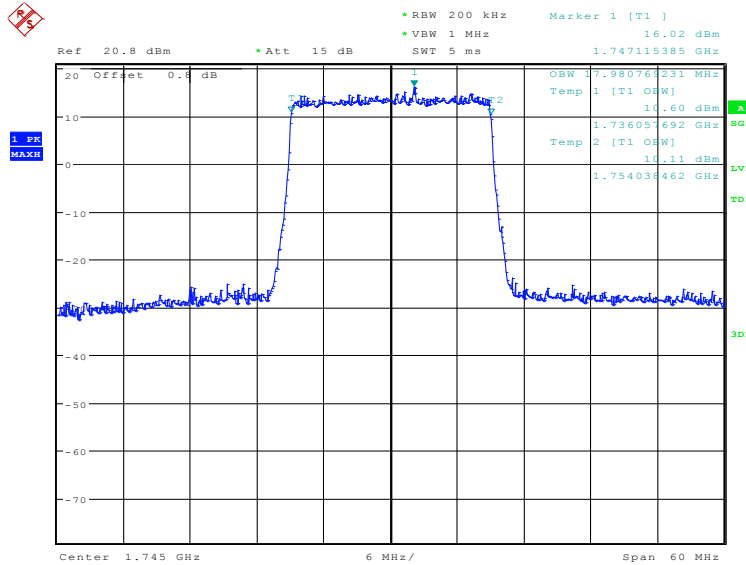
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	17980.77	17980.77

### LTE band 66, 20MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:34:41

### LTE band 66, 20MHz Bandwidth, 16QAM (99% BW)



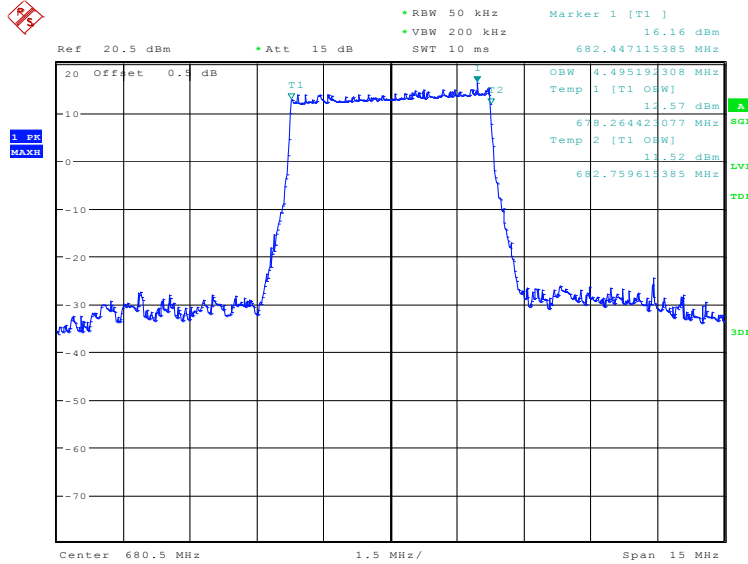
Date: 17.NOV.2022 13:35:21



**LTE band 71, 5MHz (99%)**

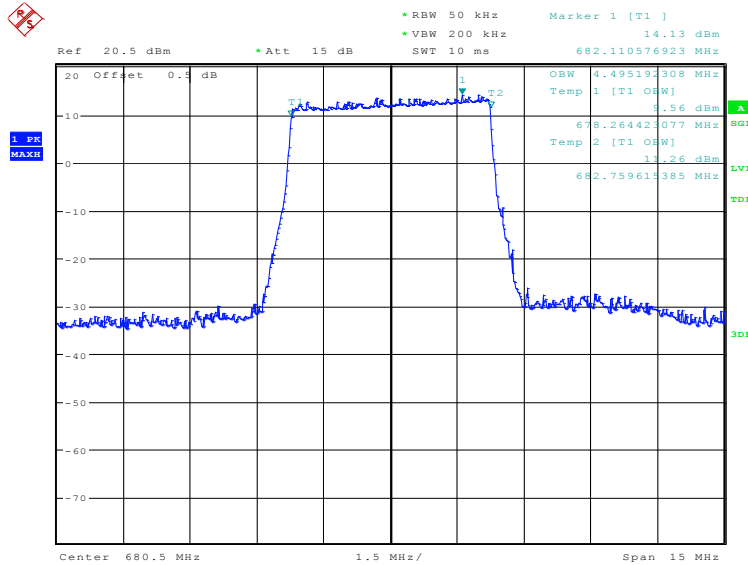
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	4495.19	4495.19

**LTE band 71, 5MHz Bandwidth, QPSK (99% BW)**



Date: 17.NOV.2022 12:59:48

**LTE band 71, 5MHz Bandwidth, 16QAM (99% BW)**

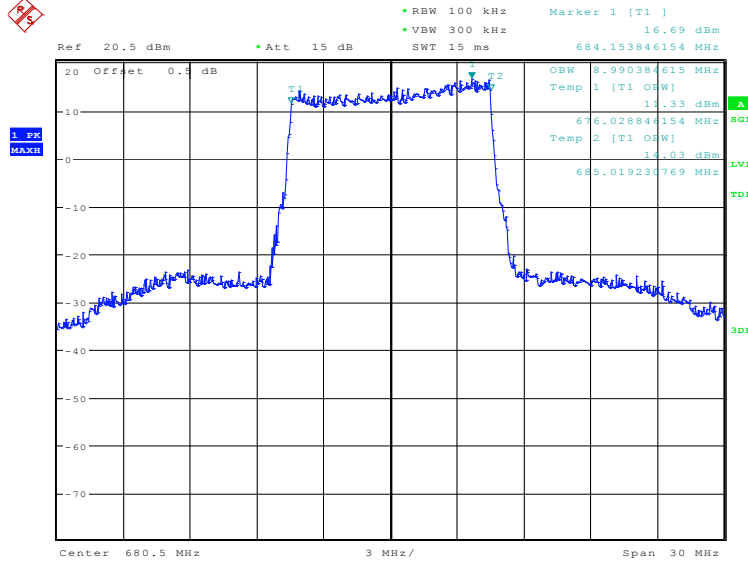


Date: 17.NOV.2022 13:00:28

**LTE band 71, 10MHz (99%)**

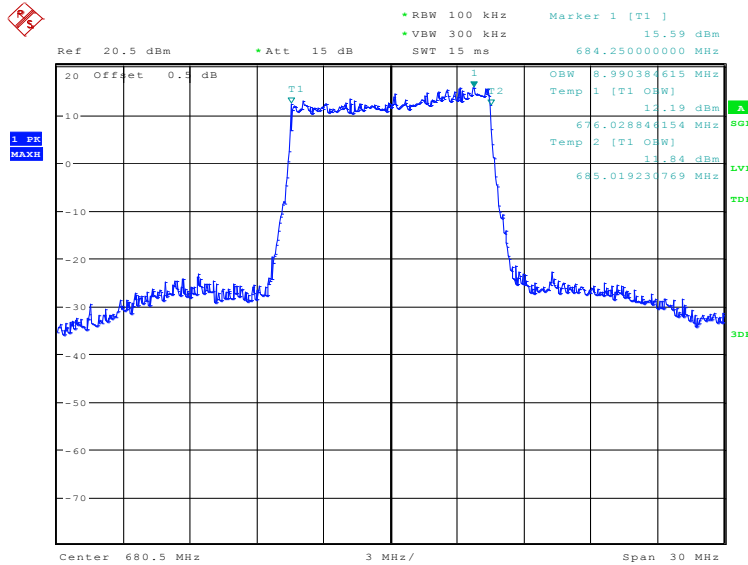
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	8990.38	8990.38

**LTE band 71, 10MHz Bandwidth, QPSK (99% BW)**



Date: 17.NOV.2022 13:01:10

**LTE band 71, 10MHz Bandwidth, 16QAM (99% BW)**

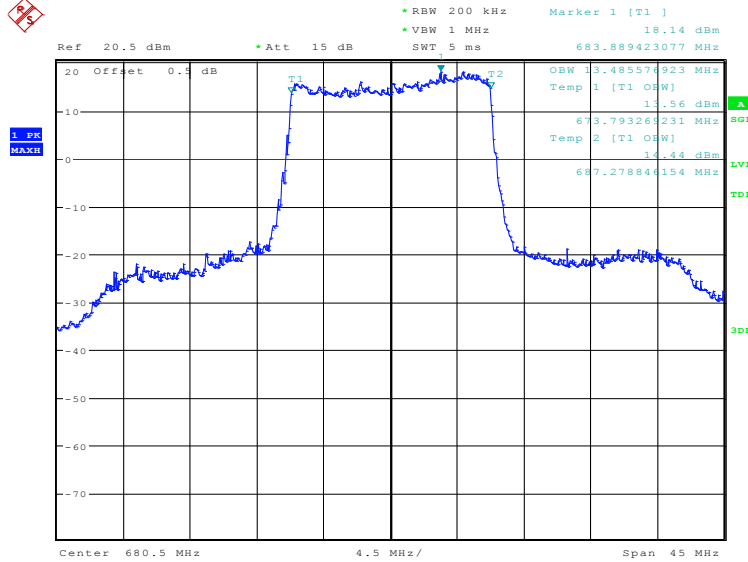


Date: 17.NOV.2022 13:01:49

### LTE band 71, 15MHz (99%)

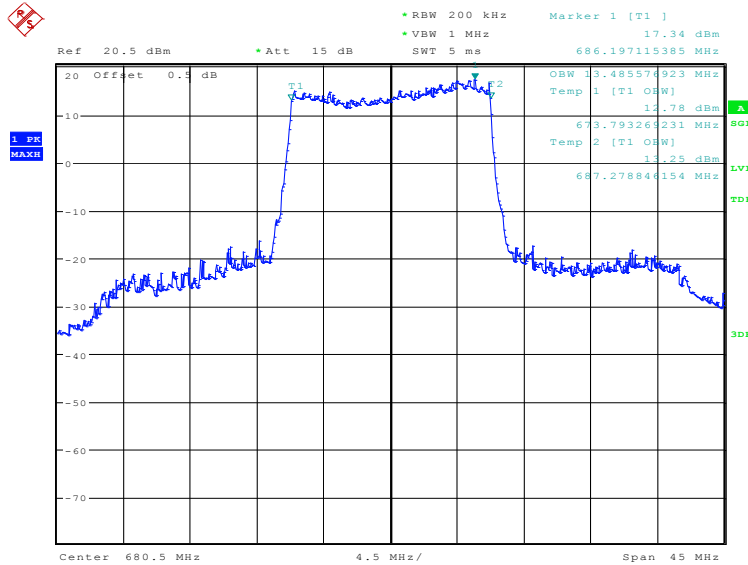
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	13485.58	13485.58

### LTE band 71, 15MHz Bandwidth, QPSK (99% BW)



Date: 17.NOV.2022 13:02:31

### LTE band 71, 15MHz Bandwidth, 16QAM (99% BW)

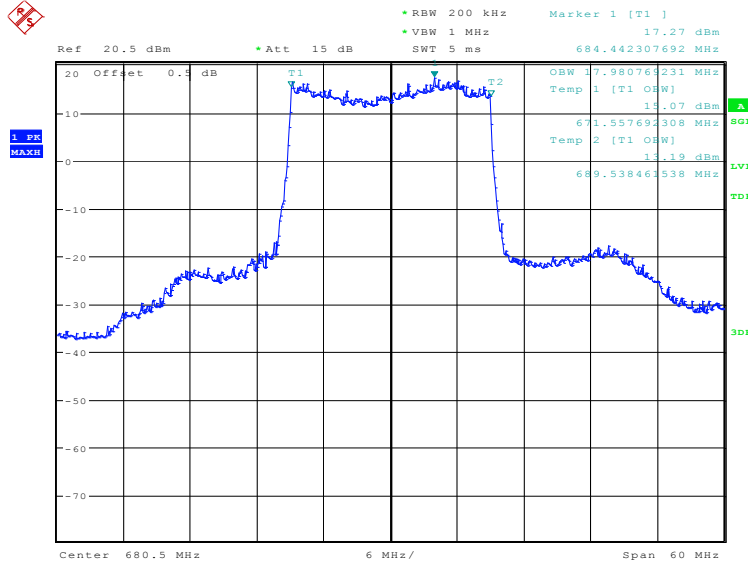


Date: 17.NOV.2022 13:03:11

**LTE band 71, 20MHz (99%)**

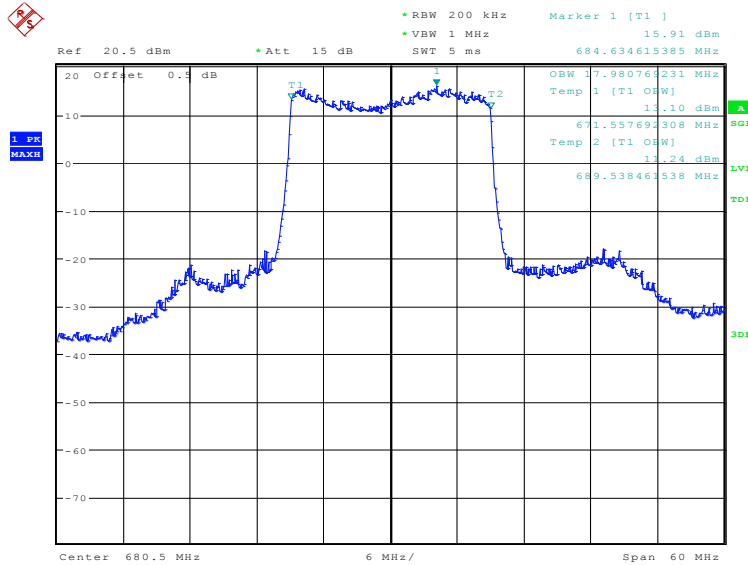
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	17980.77	17980.77

**LTE band 71, 20MHz Bandwidth, QPSK (99% BW)**



Date: 17.NOV.2022 13:03:52

**LTE band 71, 20MHz Bandwidth, 16QAM (99% BW)**

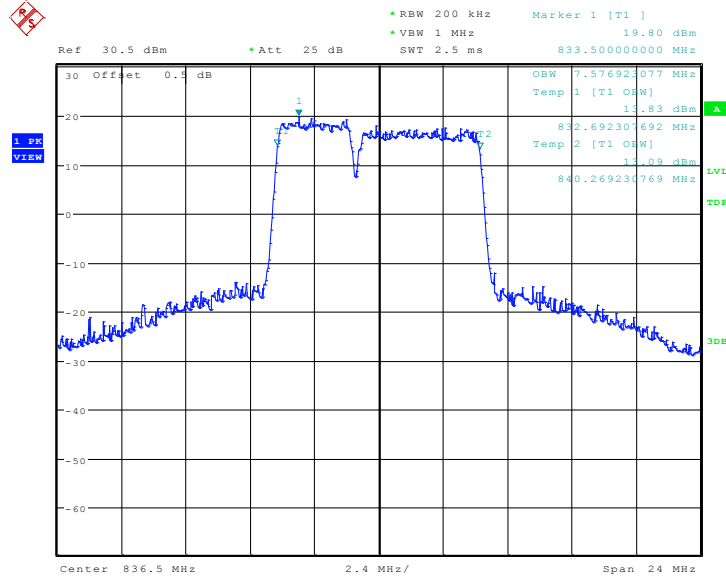


Date: 17.NOV.2022 13:04:32

**LTE CA Band 5B, 3MHz+5MHz (99%)**

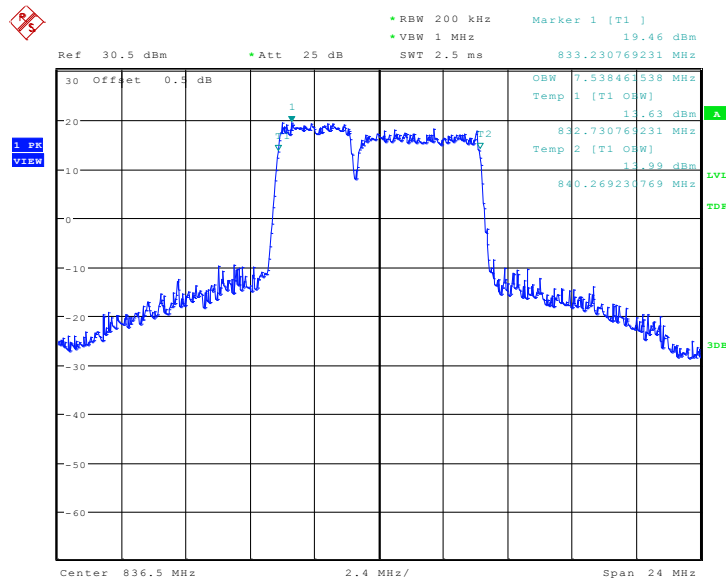
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
836.5	7.577	7.538

**LTE CA Band 5B, 3MHz+5MHz Bandwidth, QPSK (99% BW)**



Date: 16.NOV.2022 17:19:16

**LTE CA Band 5B, 3MHz+5MHz Bandwidth, 16QAM (99% BW)**

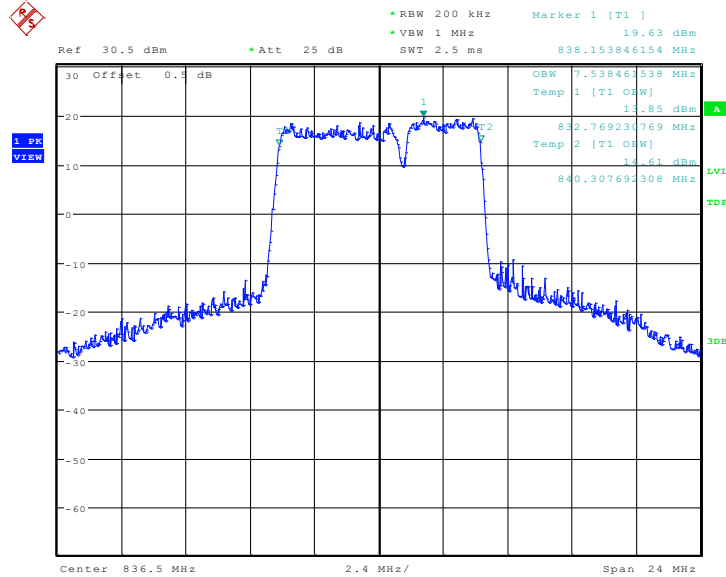


Date: 16.NOV.2022 17:19:38

### LTE CA Band 5B, 5MHz+3MHz (99%)

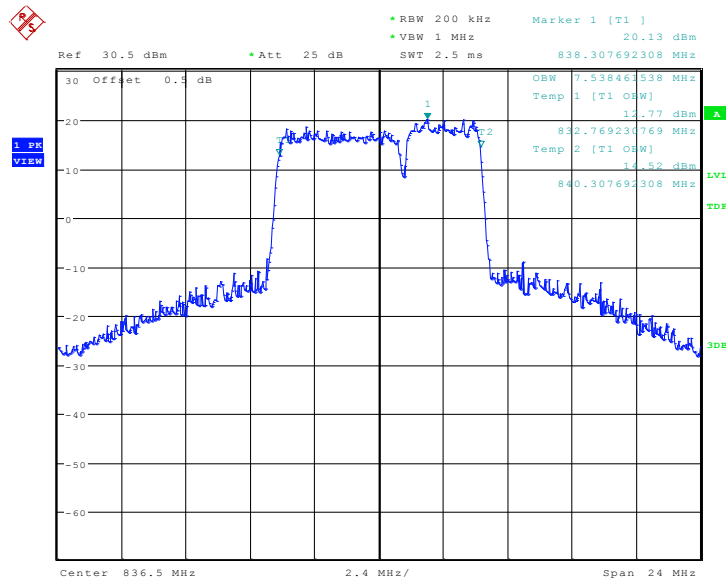
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
836.5	7.538	7.538

### LTE CA Band 5B, 5MHz+3MHz Bandwidth, QPSK (99% BW)



Date: 16.NOV.2022 17:21:05

### LTE CA Band 5B, 5MHz+3MHz Bandwidth, 16QAM (99% BW)

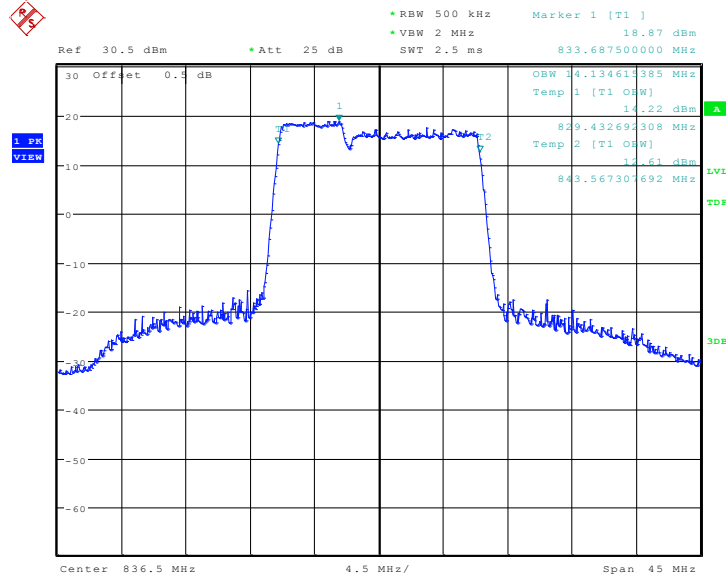


Date: 16.NOV.2022 17:21:27

**LTE CA Band 5B, 5MHz+10MHz (99%)**

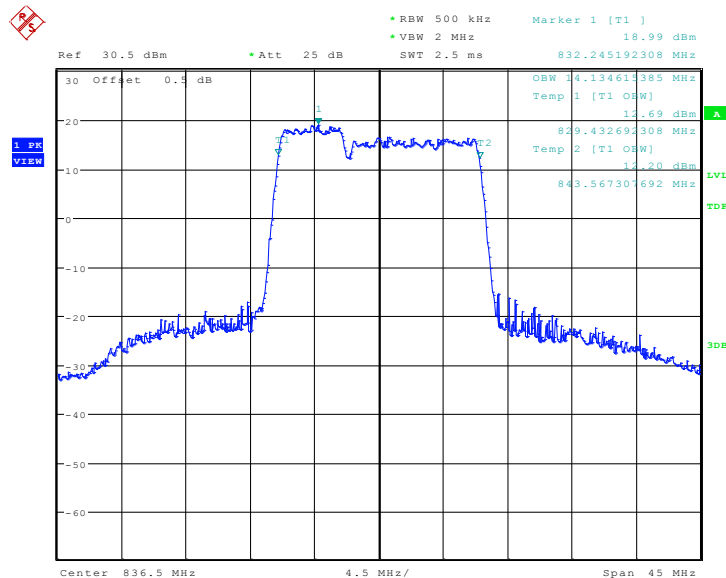
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
836.5	14.135	14.135

**LTE CA Band 5B, 5MHz+10MHz Bandwidth, QPSK (99% BW)**



Date: 16.NOV.2022 17:22:19

**LTE CA Band 5B, 5MHz+10MHz Bandwidth, 16QAM (99% BW)**

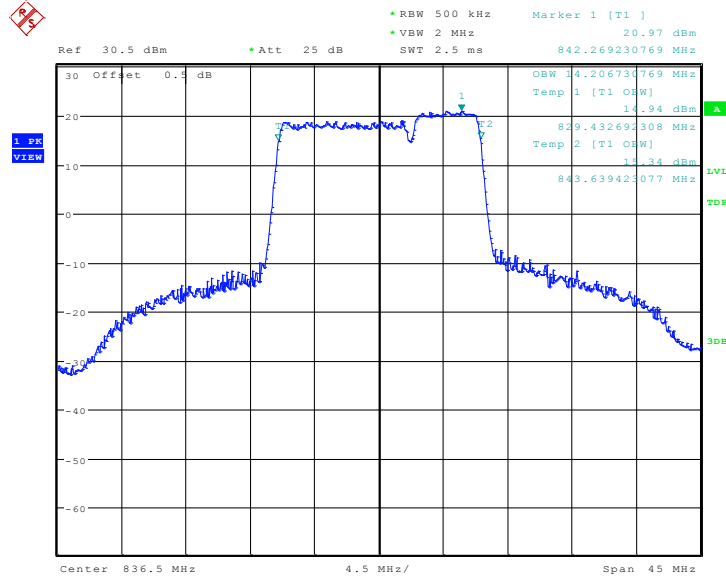


Date: 16.NOV.2022 17:22:42

**LTE CA Band 5B, 10MHz+5MHz (99%)**

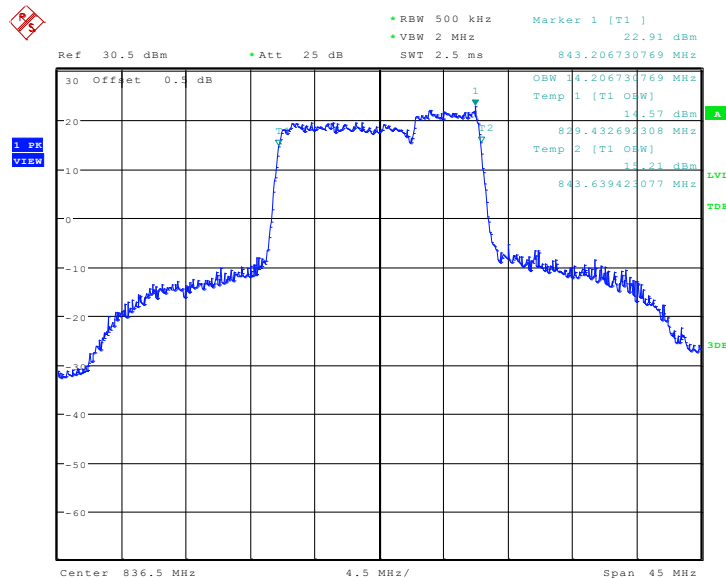
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
836.5	14.207	14.207

**LTE CA Band 5B, 10MHz+5MHz Bandwidth, QPSK (99% BW)**



Date: 16.NOV.2022 17:24:09

**LTE CA Band 5B, 10MHz+5MHz Bandwidth, 16QAM (99% BW)**



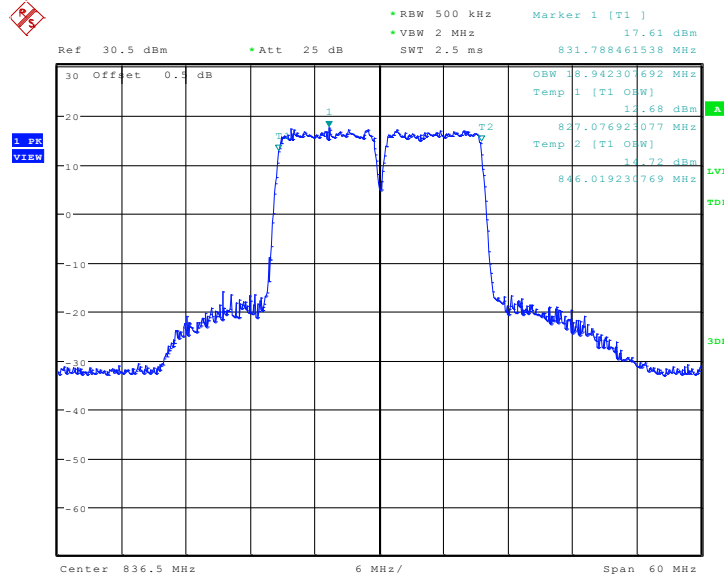
Date: 16.NOV.2022 17:24:31



### LTE CA Band 5B, 10MHz+10MHz (99%)

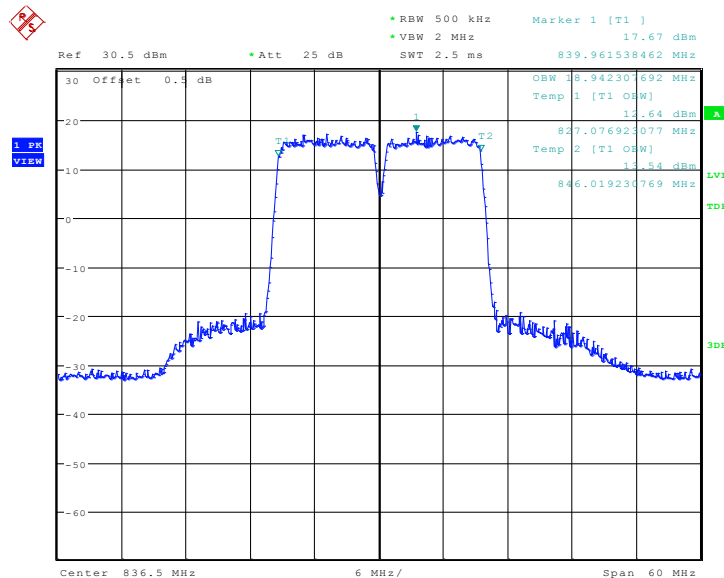
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
836.5	18.942	18.942

### LTE CA Band 5B, 10MHz+10MHz Bandwidth, QPSK (99% BW)



Date: 16.NOV.2022 17:25:23

### LTE CA Band 5B, 10MHz+10MHz Bandwidth, 16QAM (99% BW)

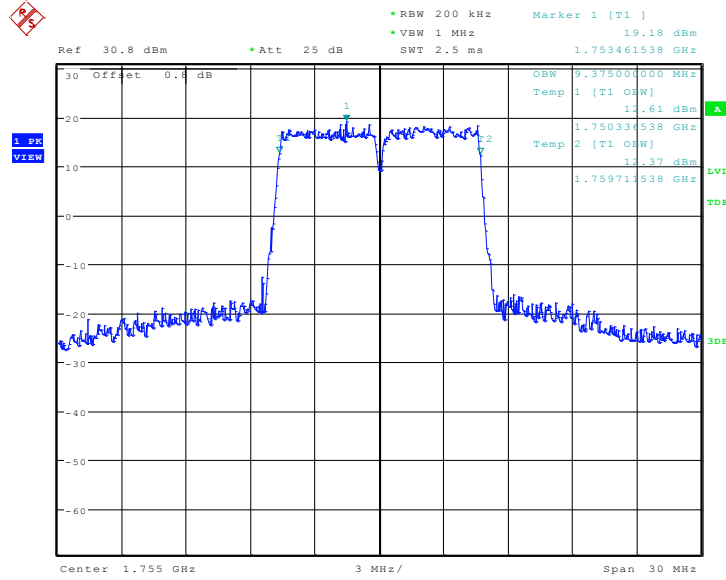


Date: 16.NOV.2022 17:25:46

### LTE CA Band 66B, 5MHz+5MHz (99%)

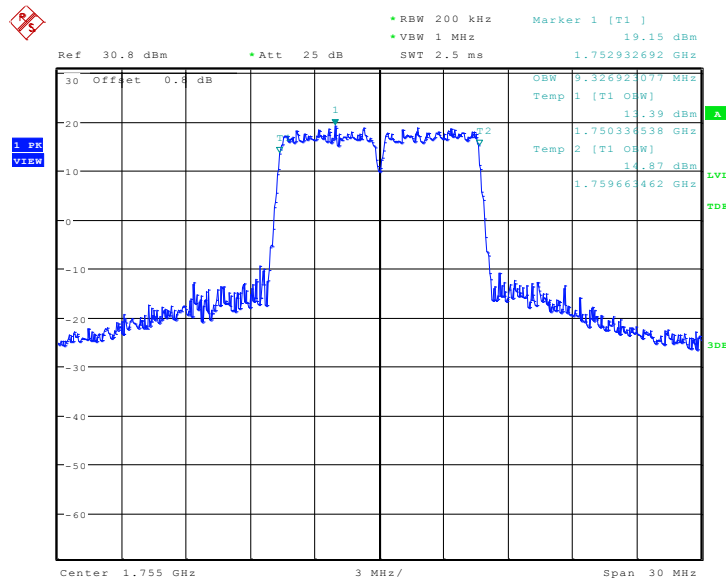
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	9.375	9.327

### LTE CA Band 66B, 5MHz+5MHz Bandwidth, QPSK (99% BW)



Date: 16.NOV.2022 17:26:53

### LTE CA Band 66B, 5MHz+5MHz Bandwidth, 16QAM (99% BW)

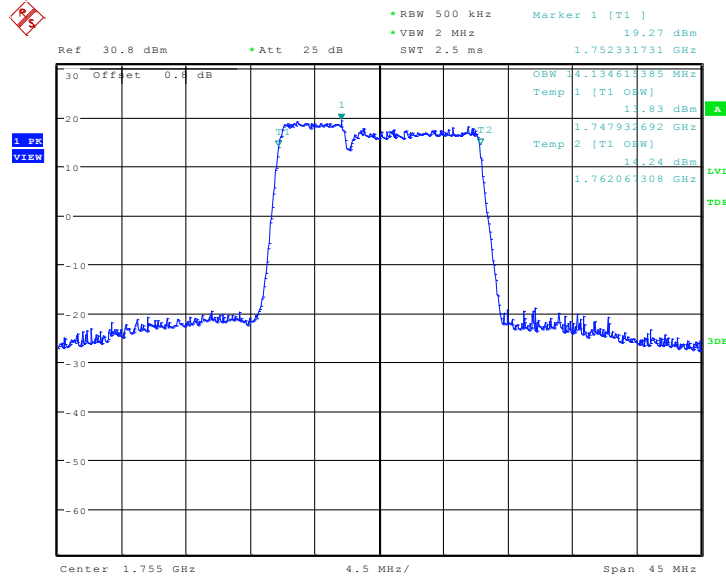


Date: 16.NOV.2022 17:27:16

### LTE CA Band 66B, 5MHz+10MHz (99%)

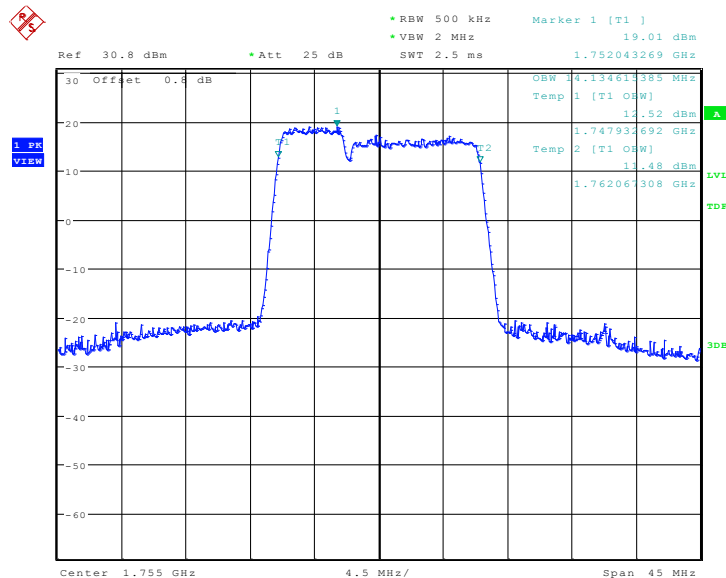
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	14.135	14.135

### LTE CA Band 66B, 5MHz+10MHz Bandwidth, QPSK (99% BW)



Date: 16.NOV.2022 17:28:08

### LTE CA Band 66B, 5MHz+10MHz Bandwidth, 16QAM (99% BW)

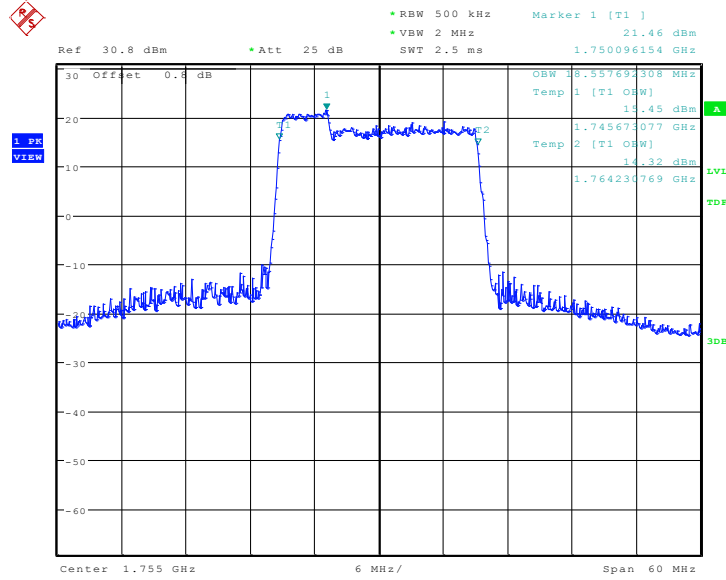


Date: 16.NOV.2022 17:28:30

**LTE CA Band 66B, 5MHz+15MHz (99%)**

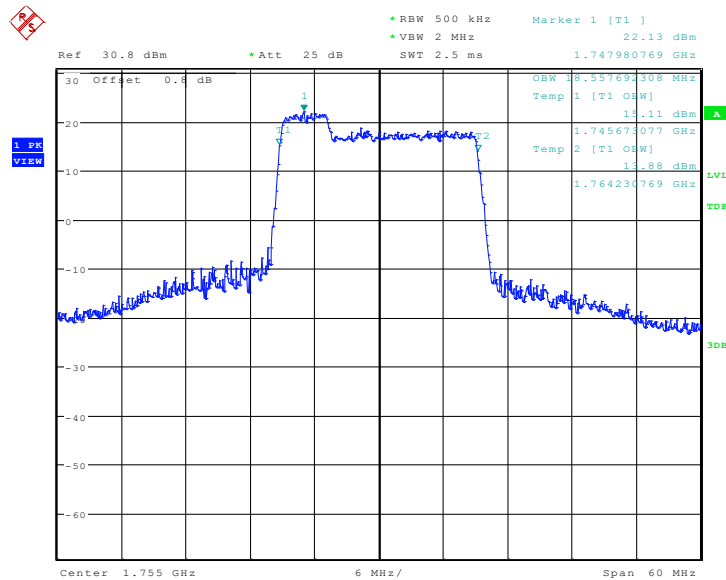
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	18.558	18.558

**LTE CA Band 66B, 5MHz+15MHz Bandwidth, QPSK (99% BW)**



Date: 16.NOV.2022 17:29:22

**LTE CA Band 66B, 5MHz+15MHz Bandwidth, 16QAM (99% BW)**

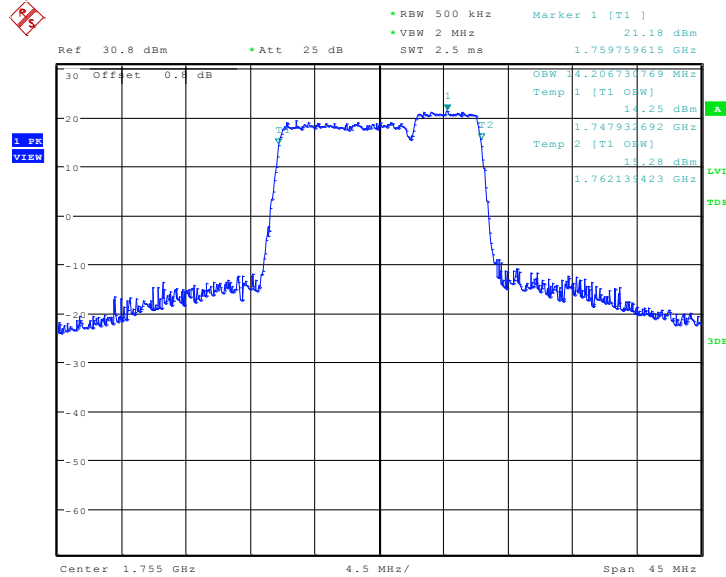


Date: 16.NOV.2022 17:29:45

**LTE CA Band 66B, 10MHz+5MHz (99%)**

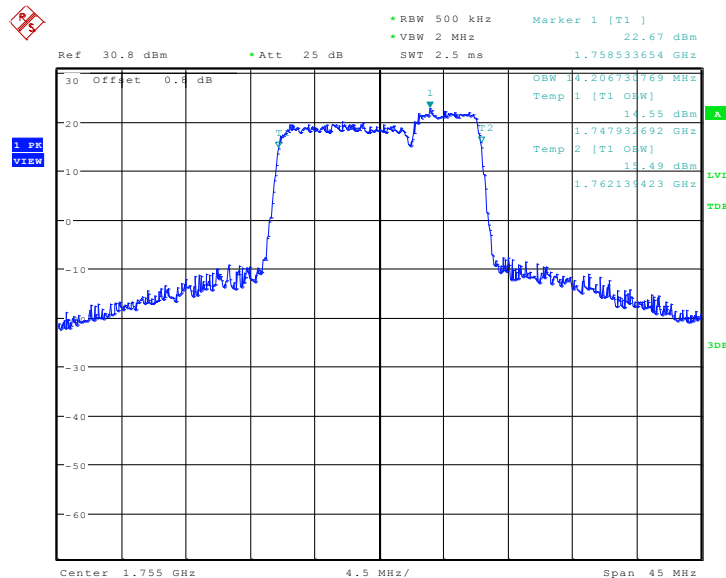
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	14.207	14.207

**LTE CA Band 66B, 10MHz+5MHz Bandwidth, QPSK (99% BW)**



Date: 16.NOV.2022 17:30:49

**LTE CA Band 66B, 10MHz+5MHz Bandwidth, 16QAM (99% BW)**

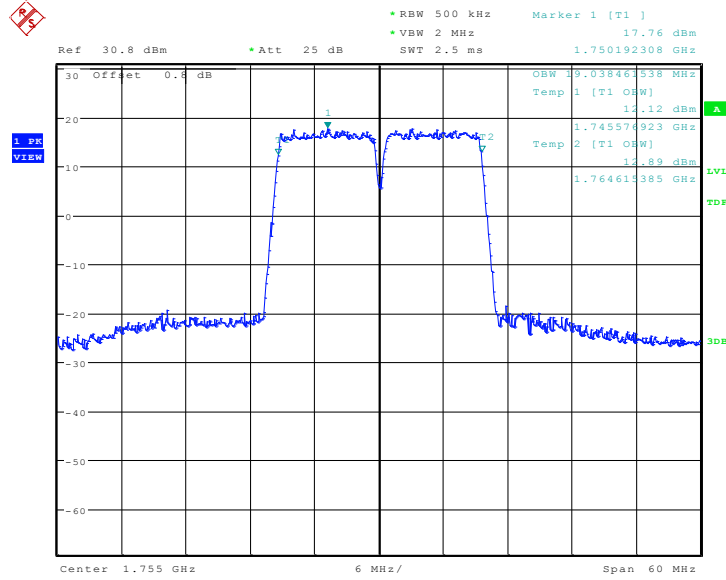


Date: 16.NOV.2022 17:31:12

**LTE CA Band 66B, 10MHz+10MHz (99%)**

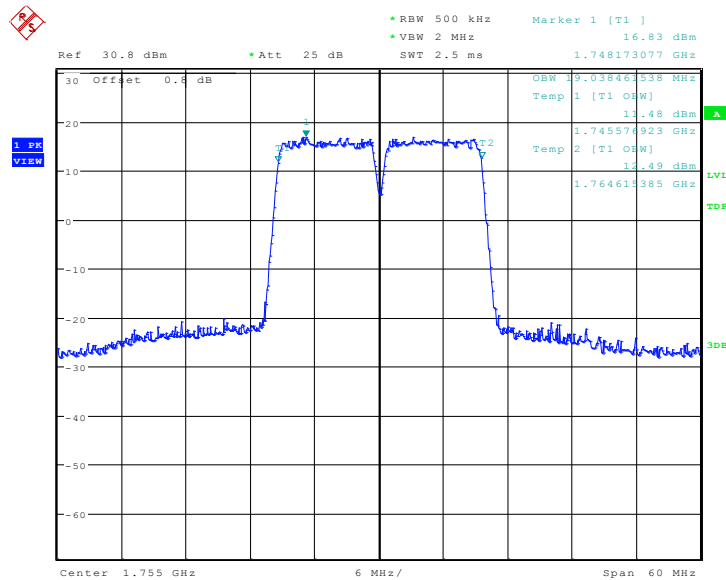
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	19.038	19.038

**LTE CA Band 66B, 10MHz+10MHz Bandwidth, QPSK (99% BW)**



Date: 16.NOV.2022 17:32:04

**LTE CA Band 66B, 10MHz+10MHz Bandwidth, 16QAM (99% BW)**

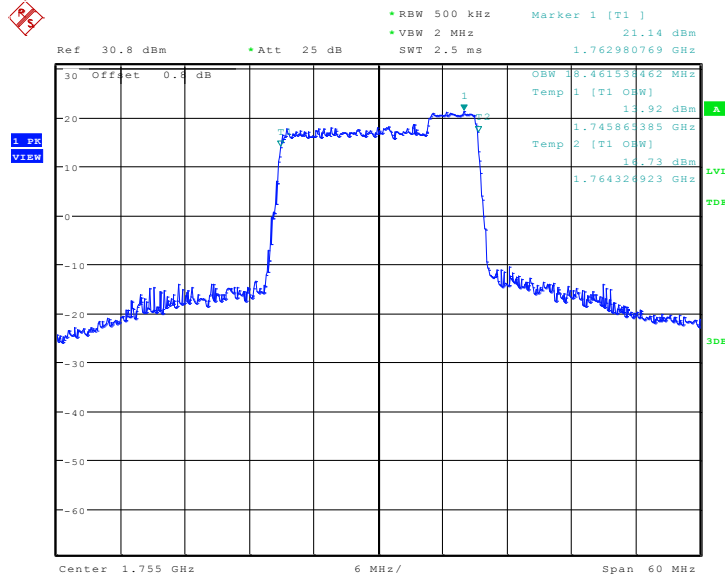


Date: 16.NOV.2022 17:32:27

**LTE CA Band 66B, 15MHz+5MHz (99%)**

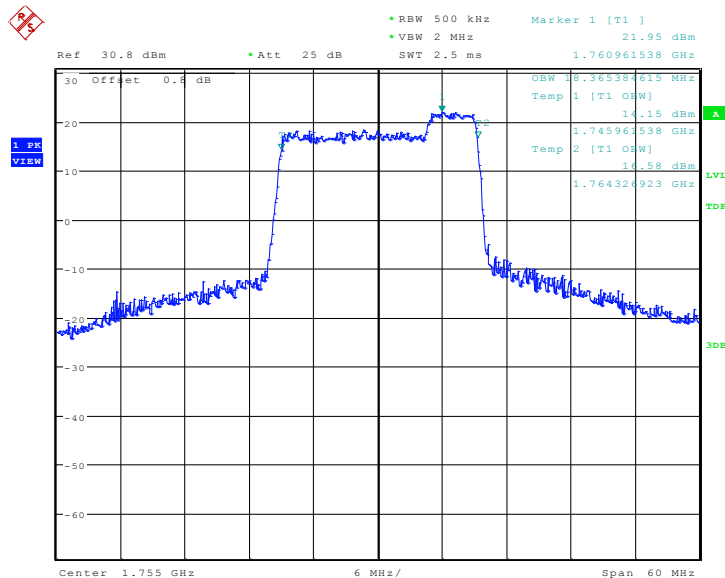
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	18.462	18.365

**LTE CA Band 66B, 15MHz+5MHz Bandwidth, QPSK (99% BW)**



Date: 16.NOV.2022 17:33:53

**LTE CA Band 66B, 15MHz+5MHz Bandwidth, 16QAM (99% BW)**

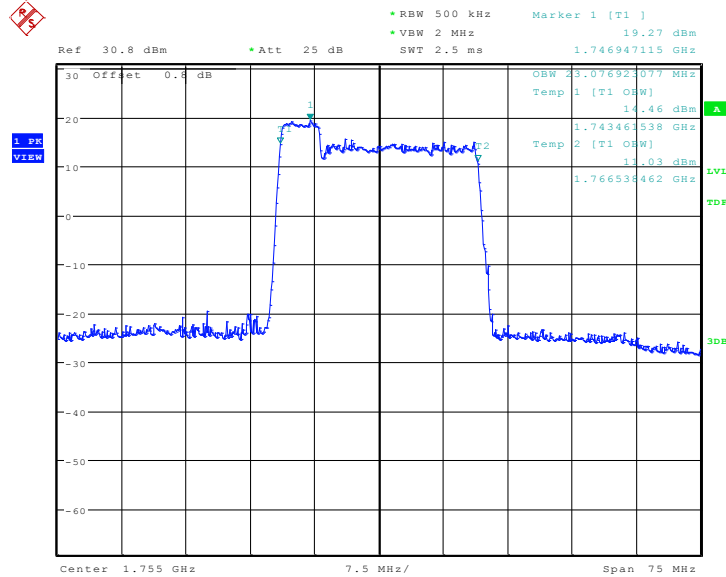


Date: 16.NOV.2022 17:34:16

### LTE CA Band 66C, 5MHz+20MHz (99%)

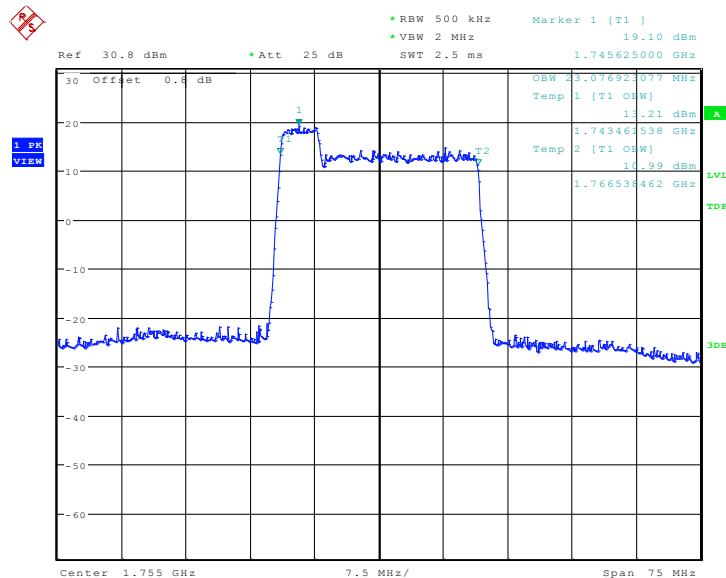
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	23.077	23.077

### LTE CA Band 66C, 5MHz+20MHz Bandwidth, QPSK (99% BW)



Date: 16.NOV.2022 17:35:10

### LTE CA Band 66C, 5MHz+20MHz Bandwidth, 16QAM (99% BW)



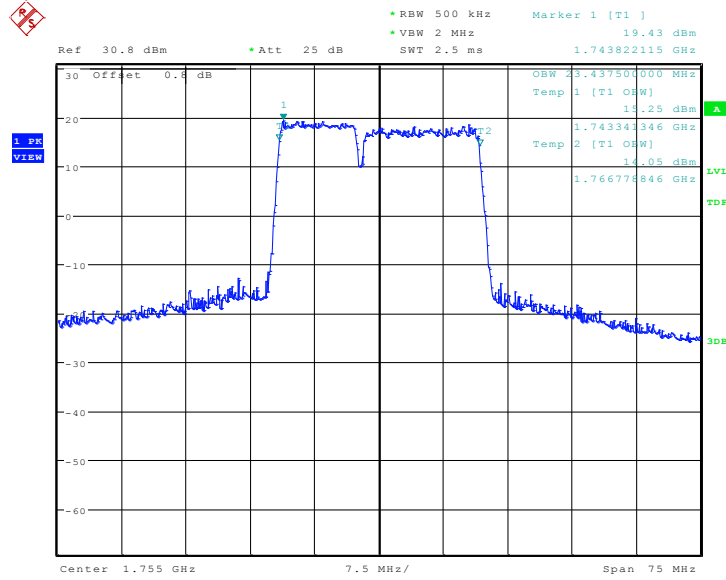
Date: 16.NOV.2022 17:35:36



### LTE CA Band 66C, 10MHz+15MHz (99%)

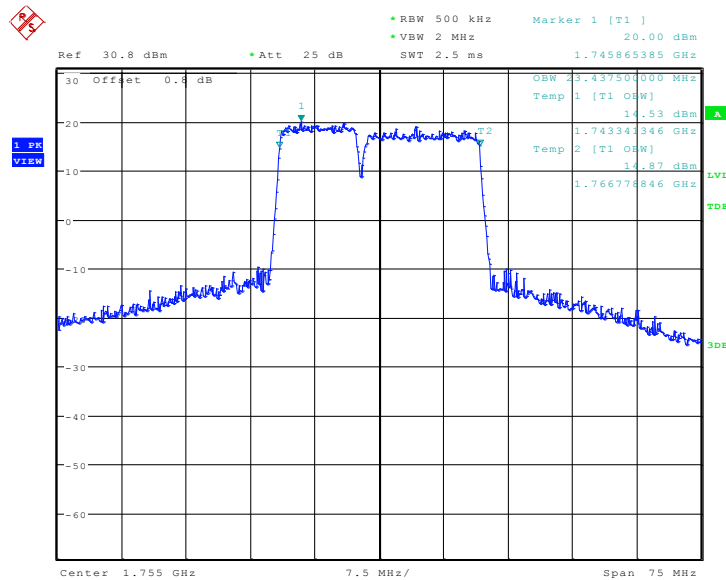
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	23.438	23.438

### LTE CA Band 66C, 10MHz+15MHz Bandwidth, QPSK (99% BW)



Date: 16.NOV.2022 17:36:29

### LTE CA Band 66C, 10MHz+15MHz Bandwidth, 16QAM (99% BW)

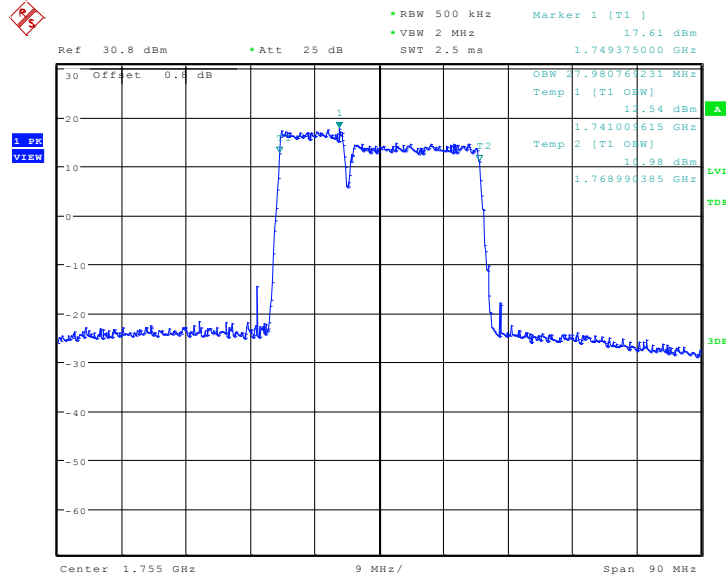


Date: 16.NOV.2022 17:36:52

**LTE CA Band 66C, 10MHz+20MHz (99%)**

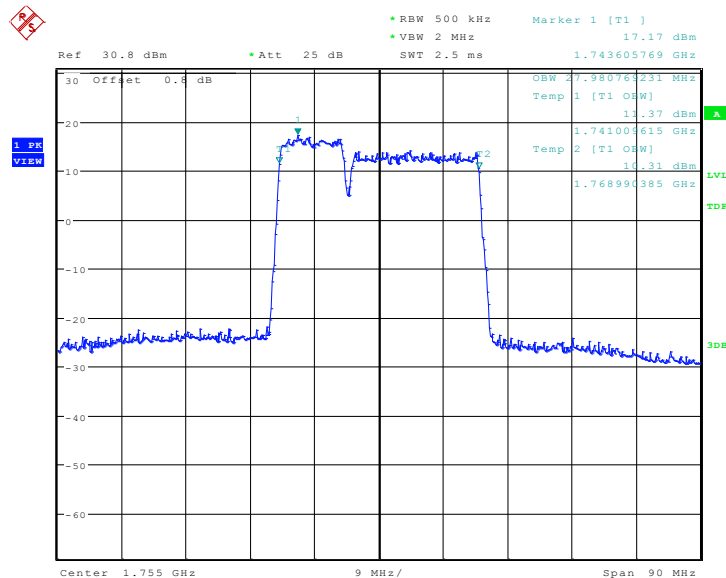
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	27.981	27.981

**LTE CA Band 66C, 10MHz+20MHz Bandwidth, QPSK (99% BW)**



Date: 16.NOV.2022 17:37:44

**LTE CA Band 66C, 10MHz+20MHz Bandwidth, 16QAM (99% BW)**

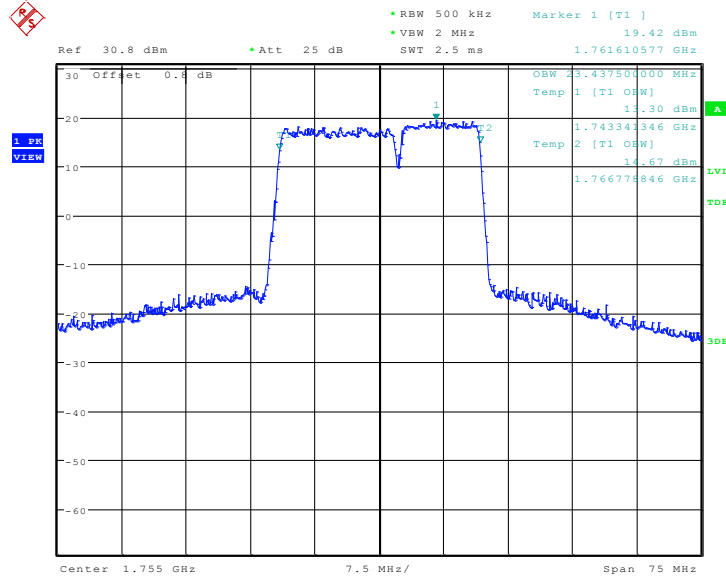


Date: 16.NOV.2022 17:38:07

### LTE CA Band 66C, 15MHz+10MHz (99%)

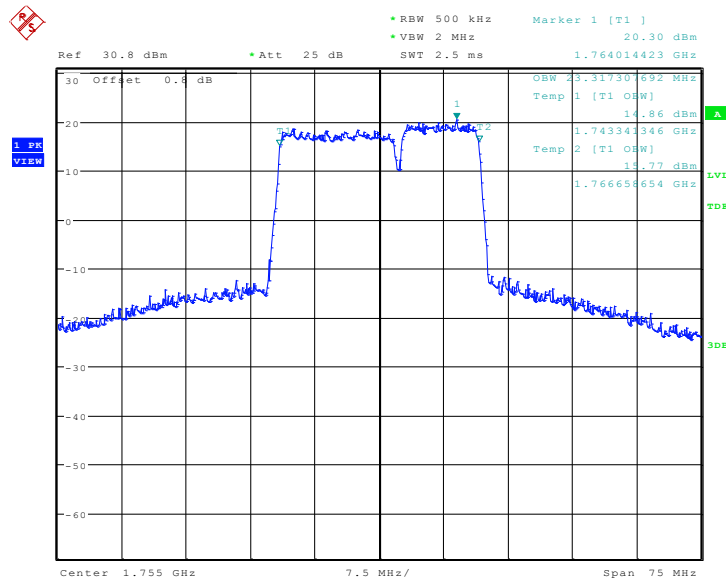
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	23.438	23.317

### LTE CA Band 66C, 15MHz+10MHz Bandwidth, QPSK (99% BW)



Date: 16.NOV.2022 17:39:33

### LTE CA Band 66C, 15MHz+10MHz Bandwidth, 16QAM (99% BW)

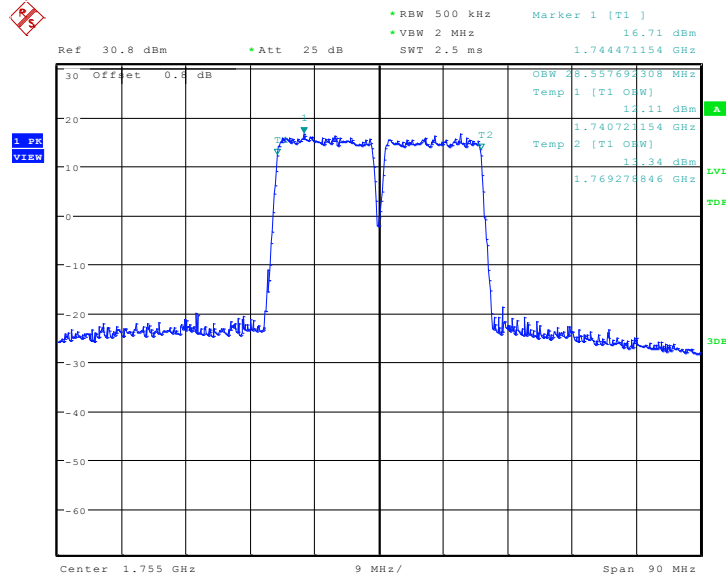


Date: 16.NOV.2022 17:39:56

**LTE CA Band 66C, 15MHz+15MHz (99%)**

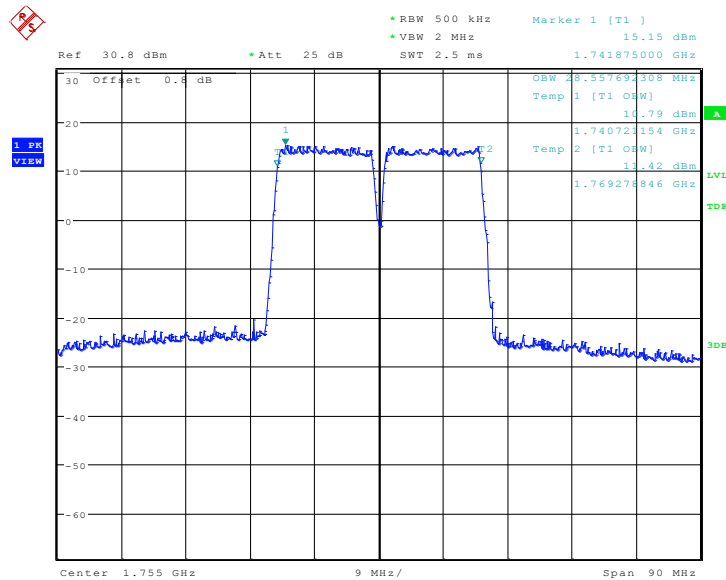
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	28.558	28.558

**LTE CA Band 66C, 15MHz+15MHz Bandwidth, QPSK (99% BW)**



Date: 16.NOV.2022 17:40:48

**LTE CA Band 66C, 15MHz+15MHz Bandwidth, 16QAM (99% BW)**

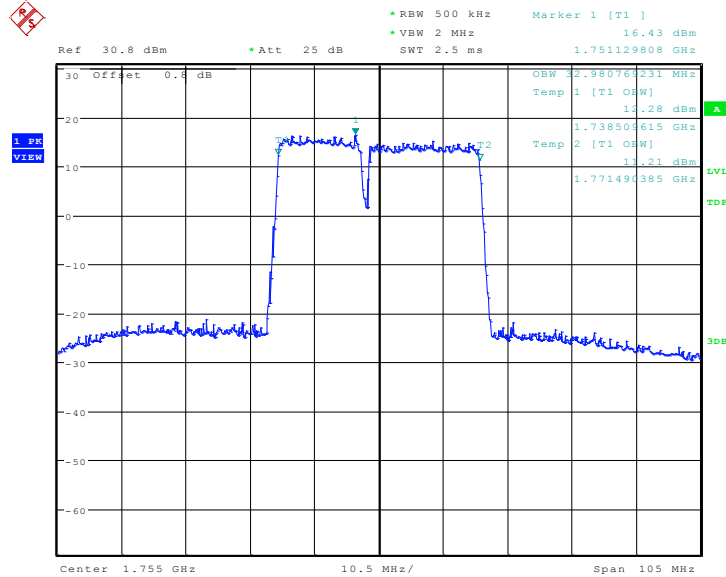


Date: 16.NOV.2022 17:41:11

**LTE CA Band 66C, 15MHz+20MHz (99%)**

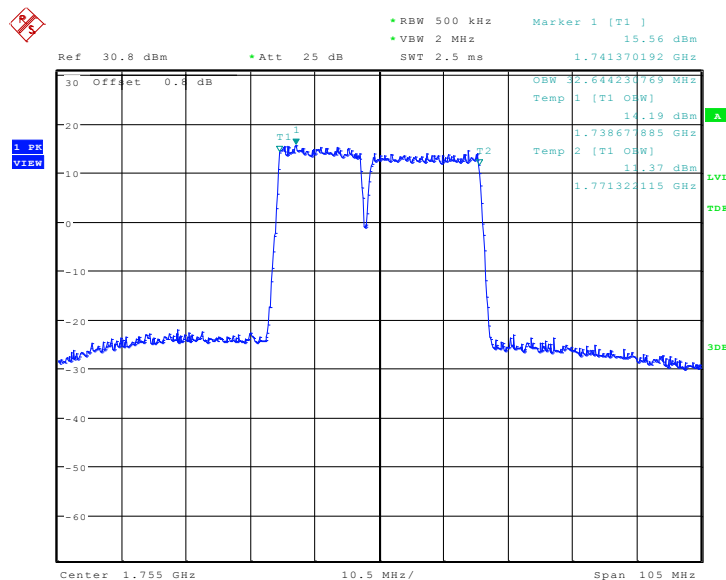
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	32.981	32.644

**LTE CA Band 66C, 15MHz+20MHz Bandwidth, QPSK (99% BW)**



Date: 16.NOV.2022 17:42:02

**LTE CA Band 66C, 15MHz+20MHz Bandwidth, 16QAM (99% BW)**

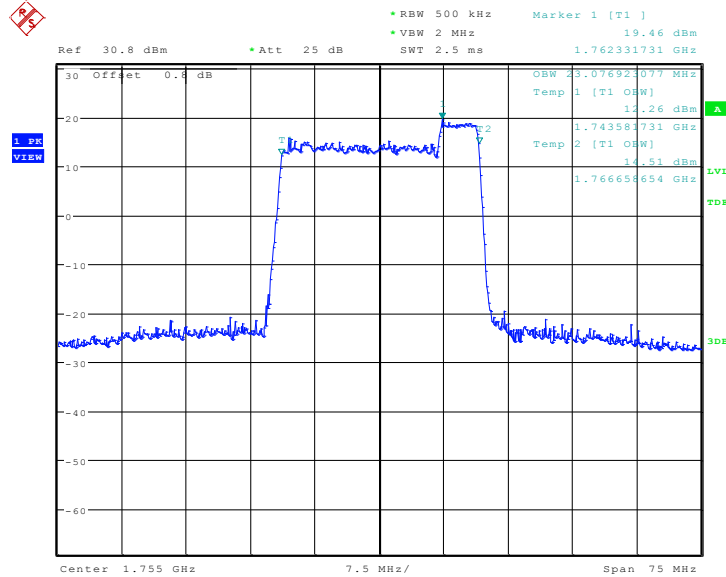


Date: 16.NOV.2022 17:42:28

### LTE CA Band 66C, 20MHz+5MHz (99%)

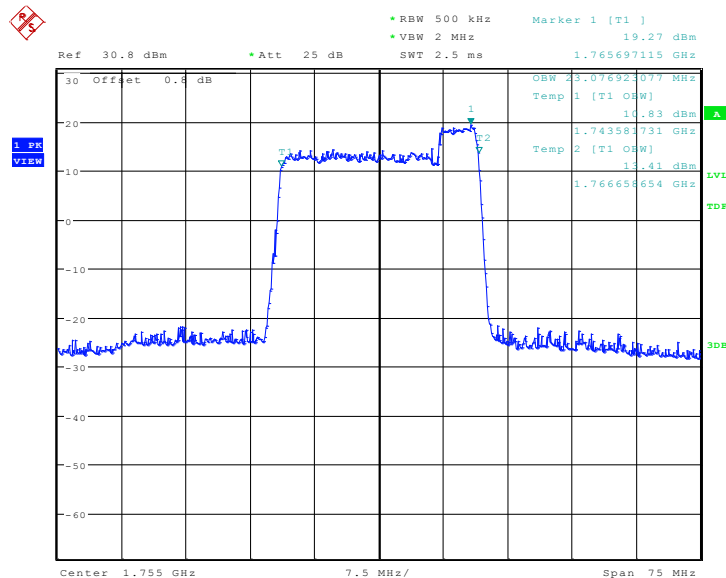
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	23.077	23.077

### LTE CA Band 66C, 20MHz+5MHz Bandwidth, QPSK (99% BW)



Date: 16.NOV.2022 17:43:55

### LTE CA Band 66C, 20MHz+5MHz Bandwidth, 16QAM (99% BW)

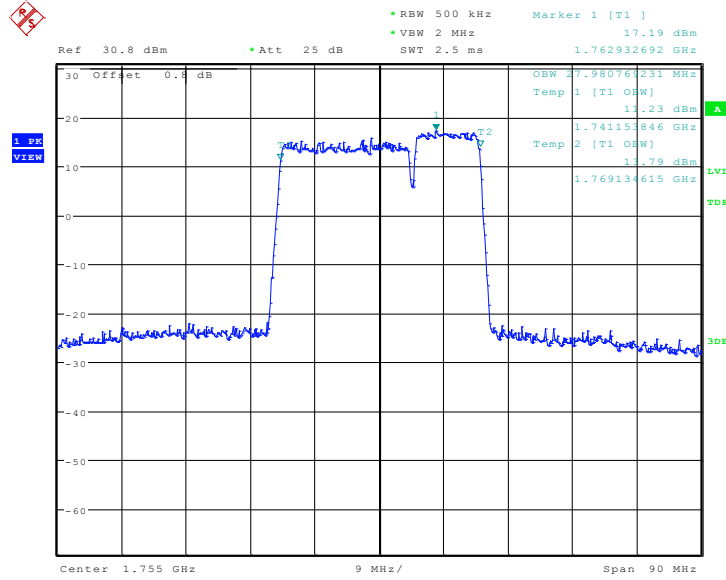


Date: 16.NOV.2022 17:44:18

### LTE CA Band 66C, 20MHz+10MHz (99%)

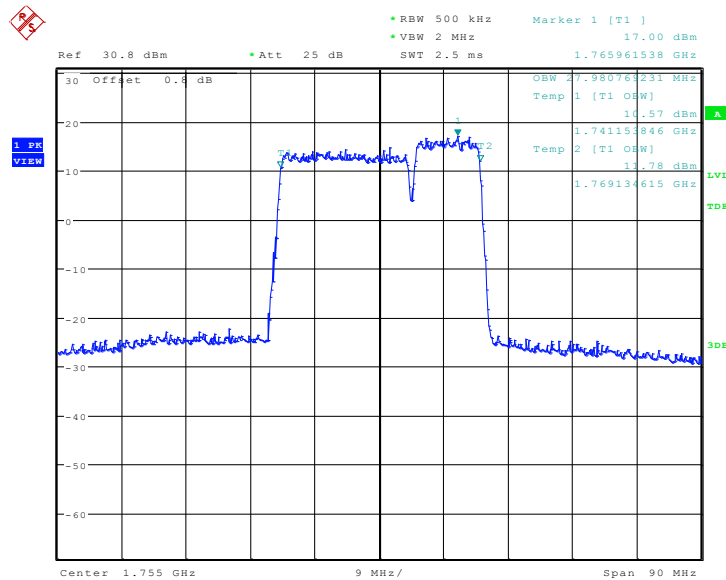
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	27.981	27.981

### LTE CA Band 66C, 20MHz+10MHz Bandwidth, QPSK (99% BW)



Date: 16.NOV.2022 17:45:09

### LTE CA Band 66C, 20MHz+10MHz Bandwidth, 16QAM (99% BW)

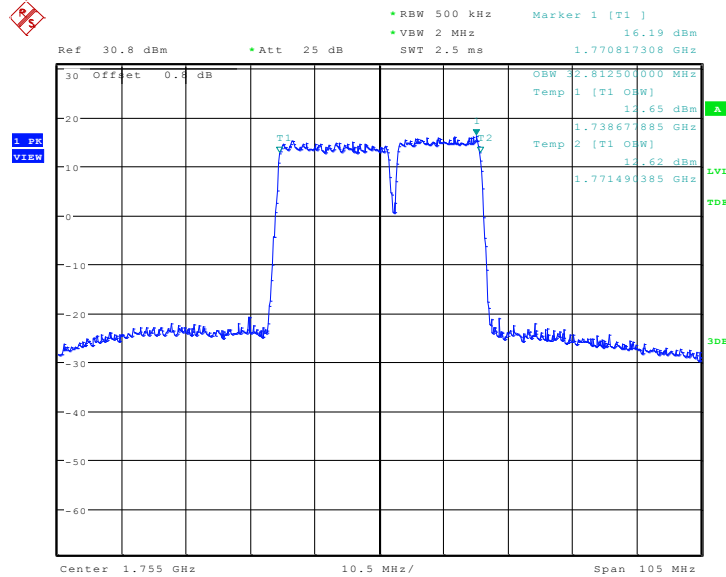


Date: 16.NOV.2022 17:45:32

### LTE CA Band 66C, 20MHz+15MHz (99%)

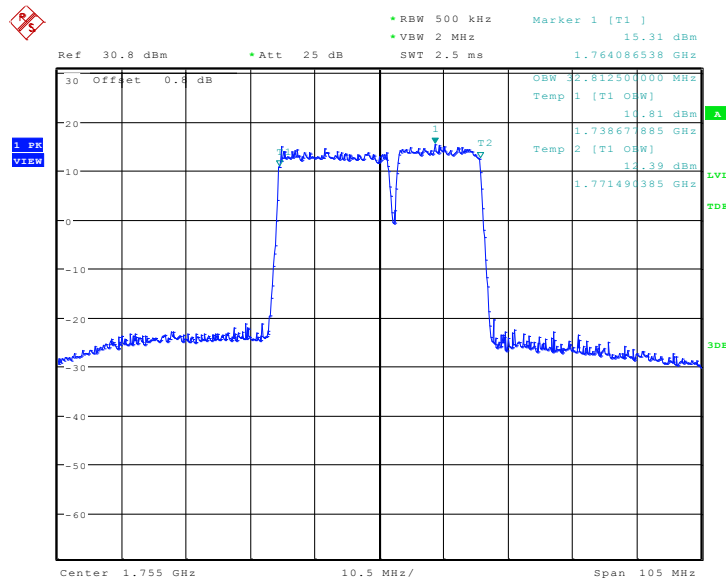
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
1755	32.812	32.812

### LTE CA Band 66C, 20MHz+15MHz Bandwidth, QPSK (99% BW)



Date: 16.NOV.2022 17:46:24

### LTE CA Band 66C, 20MHz+15MHz Bandwidth, 16QAM (99% BW)



Date: 16.NOV.2022 17:46:47