



# TEST REPORT

## No. I22Z60845-WMD03

for

**HMD Global Oy**

**Smart Phone**

**Model Name: TA-1481**

**FCC ID: 2AJOTTA-1481**

with

**Hardware Version: V1.0**

**Software Version: 00WW\_0\_043**

**Issued Date: 2022-07-22**

**Note:**

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

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

**Test Laboratory:**

**CTTL, Telecommunication Technology Labs, CAICT**

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

Tel: +86(0)10-62304633-2512, Fax: +86(0)10-62304633-2504

Email: [cttl\\_terminals@caict.ac.cn](mailto:cttl_terminals@caict.ac.cn), website: [www.caict.ac.cn](http://www.caict.ac.cn)



## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I22Z60845-WMD03	Rev.0	1 <sup>st</sup> edition	2022-07-22

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

## **CONTENTS**

<b>1. TEST LABORATORY</b> .....	<b>4</b>
<b>1.1. INTRODUCTION &amp; ACCREDITATION</b> .....	<b>4</b>
<b>1.2. TESTING LOCATION</b> .....	<b>4</b>
<b>1.3. TESTING ENVIRONMENT</b> .....	<b>5</b>
<b>1.4. PROJECT DATA</b> .....	<b>5</b>
<b>1.5. SIGNATURE</b> .....	<b>5</b>
<b>2. CLIENT INFORMATION</b> .....	<b>6</b>
<b>2.1. APPLICANT INFORMATION</b> .....	<b>6</b>
<b>2.2. MANUFACTURER INFORMATION</b> .....	<b>6</b>
<b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)</b> .....	<b>7</b>
<b>3.1. ABOUT EUT</b> .....	<b>7</b>
<b>3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST</b> .....	<b>7</b>
<b>3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST</b> .....	<b>7</b>
<b>4. REFERENCE DOCUMENTS</b> .....	<b>8</b>
<b>4.1. DOCUMENTS SUPPLIED BY APPLICANT</b> .....	<b>8</b>
<b>4.2. REFERENCE DOCUMENTS FOR TESTING</b> .....	<b>8</b>
<b>5. LABORATORY ENVIRONMENT</b> .....	<b>9</b>
<b>6. SUMMARY OF TEST RESULT</b> .....	<b>10</b>
<b>7. TEST EQUIPMENT 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>54</b>
<b>A.3 FREQUENCY STABILITY</b> .....	<b>68</b>
<b>A.4 OCCUPIED BANDWIDTH</b> .....	<b>74</b>
<b>A.5 EMISSION BANDWIDTH</b> .....	<b>122</b>
<b>A.6 BAND EDGE COMPLIANCE</b> .....	<b>170</b>
<b>A.7 CONDUCTED SPURIOUS EMISSION</b> .....	<b>293</b>
<b>A.8 PEAK-TO-AVERAGE POWER RATIO</b> .....	<b>300</b>
<b>ANNEX B: ACCREDITATION CERTIFICATE</b> .....	<b>302</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: 2022-04-24  
Testing End Date: 2022-07-13

### 1.5. Signature



---

**Dong Yuan**  
**(Prepared this test report)**



---

**Zhou Yu**  
**(Reviewed this test report)**



---

**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, Fin  
Contact: Eric Su  
Email: Eric Su eric.su@hmdglobal.com  
Telephone: +886931279274

### **2.2. Manufacturer Information**

Company Name: HMD Global Oy  
Address /Post: Bertel Jungin aukio 9, 02600 Espoo, Fin  
Contact: Eric Su  
Email: Eric Su eric.su@hmdglobal.com  
Telephone: +886931279274

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

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

Description	Smart Phone
Model Name	TA-1481
FCC ID	2AJOTTA-1481
Antenna	Embedded
Output power	25.76dBm maximum EIRP measured for LTE Band 41
Extreme vol. Limits	3.7VDC to 4.2VDC (nominal: 3.9VDC)
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>
UT15a	351816950001291/	V1.0	00WW_0_043	2022-04-24
	351816950026280			
UT31a	351816950004105/	V1.0	00WW_0_043	2022-06-22
	351816950029094			

\*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

AE1

Model	CN450
Manufacturer	HUNAN GAOYUAN BATTERY Co., Ltd.
Capacity	4500mAh

\*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 client or manufacturer, which are the bases of testing.

### **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	10-1-20 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-20 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-20 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 M
Ground system resistance	< 0.5

**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 M
Ground system resistance	< 1
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 M
Ground system resistance	< 0.5
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 7

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 12 (17)**

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 (38)**

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

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, Band 12, Band 41 and CA Band 41C overlaps the entire frequency range of LTE Band 4, Band 17, Band 38 and CA Band 38C. Therefore, test data provided in this report covers Band 4, Band 17, Band 38, CA Band 38C as well as Band 66, Band 12, Band 41, CA Band 41C.

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 Equipment 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	2022-06-02	1 year
Spectrum Analyzer	FSU	200030	R&S	2023-05-25	1 year
Radio Communication Analyzer	MT8821C	6201763159	Anritsu	2022-08-09	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	9163-482	Schwarzbeck	2022-11-16	1 year
EMI Antenna	LB-7180-NF	J203001300005	A-INFO	2023-02-23	1 year
EMI Antenna	3117	00058889	ETS-Lindgren	2022-11-07	1 year
Signal Generator	N5183A	MY49060052	Agilent	2022-07-11	1 year
Universal Radio Communication Tester	CMW500	143008	R&S	2022-12-11	1 year
Universal Radio Communication Tester	MT8821C	6262257899	Anritsu	2023-05-15	1 year

※ Note: The Signal Generator with series number of MY49060052 did not exceed the CAL.DUE.DATE when used.

## **Annex A: Measurement Results**

### **A.1 Output Power**

#### **A.1.1 Summary**

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

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

#### **A.1.2 Conducted**

##### **A.1.2.1 Method of Measurements**

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

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

##### **A.1.2.2 Measurement Result**

#### **LTE band 2**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1909.3	22.58	21.88	21.80
		1880.0	22.63	22.04	21.75
		1850.7	22.65	21.91	21.79
	1 RB low	1909.3	22.67	22.06	21.91
		1880.0	22.63	22.09	21.79
		1850.7	22.71	22.02	22.01
	50% RB mid	1909.3	21.81	20.81	20.85
		1880.0	21.89	20.91	20.80
		1850.7	21.78	20.86	20.78
	100% RB	1909.3	21.83	20.78	20.77
		1880.0	21.75	20.82	20.73
		1850.7	21.77	20.79	20.69
3MHz	1 RB high	1908.5	22.64	21.87	21.81
		1880.0	22.67	21.99	21.73
		1851.5	22.64	21.92	21.81
	1 RB low	1908.5	22.62	22.05	21.90
		1880.0	22.67	22.04	21.82
		1851.5	22.72	21.93	21.97
	50% RB mid	1908.5	21.83	20.77	20.86
		1880.0	21.82	20.85	20.80
		1851.5	21.82	20.85	20.79
	100% RB	1908.5	21.82	20.80	20.78
		1880.0	21.81	20.85	20.81

		1851.5	21.75	20.78	20.76
5MHz	1 RB high	1907.5	22.66	21.87	21.78
		1880.0	22.68	21.99	21.71
		1852.5	22.59	21.93	21.84
	1 RB low	1907.5	22.67	22.08	21.87
		1880.0	22.67	22.05	21.76
		1852.5	22.64	21.98	21.93
	50% RB mid	1907.5	21.83	20.86	20.86
		1880.0	21.84	20.87	20.81
		1852.5	21.81	20.85	20.80
	100% RB	1907.5	21.79	20.73	20.71
		1880.0	21.72	20.80	20.76
		1852.5	21.77	20.71	20.70
10MHz	1 RB high	1905.0	22.65	21.91	21.79
		1880.0	22.64	22.06	21.79
		1855.0	22.61	21.87	21.89
	1 RB low	1905.0	22.63	22.11	21.91
		1880.0	22.60	22.10	21.84
		1855.0	22.68	21.96	21.93
	50% RB mid	1905.0	21.79	20.84	20.83
		1880.0	21.90	20.90	20.88
		1855.0	21.76	20.86	20.83
	100% RB	1905.0	21.81	20.79	20.70
		1880.0	21.80	20.82	20.82
		1855.0	21.68	20.72	20.77
15MHz	1 RB high	1902.5	22.60	21.89	21.87
		1880.0	22.62	22.01	21.79
		1857.5	22.66	21.95	21.80
	1 RB low	1902.5	22.63	22.06	21.93
		1880.0	22.60	22.08	21.76
		1857.5	22.68	21.98	21.99
	50% RB mid	1902.5	21.79	20.84	20.81
		1880.0	21.83	20.94	20.80
		1857.5	21.80	20.88	20.81
	100% RB	1902.5	21.75	20.80	20.68
		1880.0	21.80	20.85	20.79
		1857.5	21.71	20.76	20.74
20MHz	1 RB high	1900.0	22.76	22.07	21.97
		1880.0	22.81	22.18	21.90
		1860.0	22.76	22.06	21.99
	1 RB low	1900.0	22.77	22.21	22.06
		1880.0	22.78	22.22	21.96



I22Z60845-WMD03

	50% RB mid	1860.0	22.83	22.12	22.12
		1900.0	21.94	20.96	20.97
		1880.0	22.00	21.04	20.99
		1860.0	21.93	20.99	20.93
	100% RB	1900.0	21.93	20.93	20.88
		1880.0	21.92	20.95	20.92
		1860.0	21.88	20.91	20.88



**LTE band 4**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1754.3	22.89	22.06	20.91
		1732.5	22.86	21.94	20.86
		1710.7	22.92	22.09	20.96
	1 RB low	1754.3	22.90	22.03	20.85
		1732.5	22.82	21.90	20.80
		1710.7	22.91	22.03	20.90
	50% RB mid	1754.3	22.83	22.16	21.07
		1732.5	22.74	22.04	20.81
		1710.7	22.86	22.12	20.89
	100% RB	1754.3	21.93	20.81	20.22
		1732.5	21.85	20.96	19.88
		1710.7	21.94	21.10	19.96
3MHz	1 RB high	1753.5	22.91	21.98	20.89
		1732.5	22.81	21.87	20.81
		1711.5	22.89	21.97	20.85
	1 RB low	1753.5	22.92	22.01	20.92
		1732.5	22.78	21.87	20.75
		1711.5	22.96	22.04	20.93
	50% RB mid	1753.5	21.91	20.98	19.90
		1732.5	21.81	20.90	19.81
		1711.5	21.92	21.01	19.89
	100% RB	1753.5	21.95	20.91	20.00
		1732.5	21.76	20.68	19.83
		1711.5	21.93	20.90	20.01
5MHz	1 RB high	1752.5	22.88	21.98	21.08
		1732.5	22.79	21.94	20.99
		1712.5	22.85	21.97	21.04
	1 RB low	1752.5	22.87	22.06	21.10
		1732.5	22.77	21.92	20.92
		1712.5	22.87	21.99	21.10
	50% RB mid	1752.5	21.93	21.00	20.01
		1732.5	21.81	20.88	19.89
		1712.5	21.84	20.99	19.95
	100% RB	1752.5	21.89	20.90	19.94
		1732.5	21.74	20.71	19.72
		1712.5	21.84	20.84	19.91
10MHz	1 RB high	1750.0	22.81	21.94	20.82
		1732.5	22.74	21.79	20.66
		1715.0	22.71	21.75	20.69

	1 RB low	1750.0	22.74	21.93	20.76
		1732.5	22.73	21.75	20.62
		1715.0	22.80	21.88	20.86
	50% RB mid	1750.0	21.92	20.97	20.01
		1732.5	21.87	20.88	19.99
		1715.0	21.85	21.00	19.96
	100% RB	1750.0	21.86	20.90	19.88
		1732.5	21.78	20.83	19.79
		1715.0	21.86	20.93	19.90
15MHz	1 RB high	1747.5	22.76	22.21	21.24
		1732.5	22.67	22.15	21.15
		1717.5	22.61	22.07	21.10
	1 RB low	1747.5	22.69	22.17	21.13
		1732.5	22.66	22.13	21.08
		1717.5	22.77	22.22	21.15
	50% RB mid	1747.5	21.80	20.83	19.84
		1732.5	21.75	20.64	19.79
		1717.5	21.70	20.71	19.74
	100% RB	1747.5	21.80	20.81	19.87
		1732.5	21.60	20.63	19.75
		1717.5	21.74	20.75	19.79
20MHz	1 RB high	1745.0	22.77	22.40	20.80
		1732.5	22.68	22.30	20.72
		1720.0	22.62	22.26	20.64
	1 RB low	1745.0	22.66	22.31	20.63
		1732.5	22.63	22.28	20.61
		1720.0	22.68	22.30	20.70
	50% RB mid	1745.0	21.83	20.77	19.88
		1732.5	21.78	20.71	19.78
		1720.0	21.68	20.77	19.71
	100% RB	1745.0	21.74	20.78	19.80
		1732.5	21.72	20.70	19.72
		1720.0	21.75	20.75	19.82

**LTE band 5**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	23.32	22.83	21.53
		836.5	23.33	22.67	21.69
		824.7	23.45	22.90	21.59
	1 RB low	848.3	23.57	22.97	21.35
		836.5	23.43	22.56	21.46
		824.7	23.54	22.99	21.76
	50% RB mid	848.3	22.58	21.53	20.51
		836.5	22.57	21.56	20.56
		824.7	22.59	21.67	20.65
	100% RB	848.3	22.39	21.53	20.44
		836.5	22.42	21.51	20.54
		824.7	22.63	21.66	20.60
3MHz	1 RB high	847.5	23.39	22.80	21.46
		836.5	23.41	22.72	21.62
		825.5	23.39	22.92	21.66
	1 RB low	847.5	23.58	22.94	21.38
		836.5	23.36	22.59	21.48
		825.5	23.60	22.99	21.72
	50% RB mid	847.5	22.50	21.52	20.53
		836.5	22.57	21.48	20.52
		825.5	22.63	21.62	20.63
	100% RB	847.5	22.42	21.48	20.47
		836.5	22.47	21.54	20.58
		825.5	22.62	21.63	20.68
5MHz	1 RB high	846.5	23.32	22.83	21.44
		836.5	23.36	22.67	21.67
		826.5	23.45	22.94	21.69
	1 RB low	846.5	23.49	22.94	21.36
		836.5	23.38	22.56	21.44
		826.5	23.56	22.97	21.77
	50% RB mid	846.5	22.57	21.56	20.57
		836.5	22.49	21.48	20.48
		826.5	22.62	21.71	20.73
	100% RB	846.5	22.43	21.47	20.41
		836.5	22.39	21.55	20.53
		826.5	22.61	21.63	20.58
10MHz	1 RB high	844.0	23.50	22.94	21.64
		836.5	23.51	22.85	21.79
		829.0	23.56	23.06	21.79



I22Z60845-WMD03

	1 RB low	844.0	23.69	23.10	21.54
		836.5	23.53	22.72	21.60
		829.0	23.73	23.17	21.87
	50% RB mid	844.0	22.70	21.66	20.68
		836.5	22.69	21.66	20.68
		829.0	22.73	21.82	20.83
	100% RB	844.0	22.57	21.63	20.58
		836.5	22.59	21.67	20.69
		829.0	22.73	21.77	20.78

**LTE band 7**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2567.5	23.07	22.62	22.58
		2535.0	23.26	22.65	22.46
		2502.5	23.09	22.54	22.59
	1 RB low	2567.5	23.08	22.52	22.53
		2535.0	23.16	22.48	22.44
		2502.5	23.01	22.38	22.45
	50% RB mid	2567.5	22.30	21.43	21.35
		2535.0	22.26	21.20	21.33
		2502.5	22.32	21.22	21.24
	100% RB	2567.5	22.36	21.39	21.45
		2535.0	22.31	21.30	21.36
		2502.5	22.22	21.29	21.23
10MHz	1 RB high	2565.0	23.10	22.61	22.49
		2535.0	23.19	22.59	22.48
		2505.0	23.01	22.48	22.55
	1 RB low	2565.0	23.09	22.57	22.56
		2535.0	23.15	22.44	22.44
		2505.0	23.05	22.37	22.42
	50% RB mid	2565.0	22.25	21.40	21.35
		2535.0	22.25	21.25	21.33
		2505.0	22.27	21.29	21.17
	100% RB	2565.0	22.35	21.39	21.46
		2535.0	22.32	21.31	21.34
		2505.0	22.23	21.32	21.27
15MHz	1 RB high	2562.5	23.09	22.58	22.53
		2535.0	23.24	22.58	22.51
		2507.5	23.02	22.44	22.57
	1 RB low	2562.5	23.08	22.52	22.49
		2535.0	23.07	22.41	22.46
		2507.5	23.04	22.38	22.38
	50% RB mid	2562.5	22.30	21.35	21.33
		2535.0	22.27	21.24	21.31
		2507.5	22.30	21.25	21.22
	100% RB	2562.5	22.38	21.38	21.38
		2535.0	22.31	21.38	21.36
		2507.5	22.19	21.33	21.21
20MHz	1 RB high	2560.0	23.26	22.72	22.69
		2535.0	23.36	22.77	22.66
		2510.0	23.20	22.64	22.69



	1 RB low	2560.0	23.23	22.69	22.67
		2535.0	23.26	22.61	22.59
		2510.0	23.15	22.56	22.58
	50% RB mid	2560.0	22.45	21.53	21.50
		2535.0	22.38	21.40	21.44
		2510.0	22.43	21.41	21.35
	100% RB	2560.0	22.55	21.49	21.57
		2535.0	22.45	21.49	21.50
		2510.0	22.36	21.44	21.40

**LTE band 12**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	715.3	23.33	22.68	21.39
		707.5	23.26	22.96	21.60
		699.7	23.41	23.00	21.46
	1 RB low	715.3	23.48	23.06	21.75
		707.5	23.47	22.82	21.74
		699.7	23.54	23.13	21.72
	50% RB mid	715.3	22.46	21.54	20.44
		707.5	22.51	21.51	20.57
		699.7	22.66	21.65	20.64
	100% RB	715.3	22.48	21.49	20.56
		707.5	22.51	21.53	20.54
		699.7	22.53	21.59	20.54
3MHz	1 RB high	714.5	23.26	22.63	21.36
		707.5	23.29	22.94	21.61
		700.5	23.39	23.07	21.53
	1 RB low	714.5	23.50	23.06	21.76
		707.5	23.40	22.81	21.66
		700.5	23.54	23.19	21.74
	50% RB mid	714.5	22.53	21.56	20.48
		707.5	22.48	21.56	20.59
		700.5	22.65	21.63	20.62
	100% RB	714.5	22.49	21.47	20.58
		707.5	22.56	21.50	20.55
		700.5	22.57	21.64	20.63
5MHz	1 RB high	713.5	23.26	22.71	21.41
		707.5	23.33	23.00	21.57
		701.5	23.44	22.99	21.54
	1 RB low	713.5	23.47	23.01	21.75
		707.5	23.40	22.77	21.68
		701.5	23.56	23.16	21.74
	50% RB mid	713.5	22.47	21.55	20.49
		707.5	22.49	21.60	20.58
		701.5	22.64	21.63	20.71
	100% RB	713.5	22.47	21.46	20.56
		707.5	22.55	21.55	20.54
		701.5	22.54	21.61	20.60
10MHz	1 RB high	711.0	23.43	22.81	21.51
		707.5	23.45	23.10	21.74
		704.0	23.54	23.18	21.64



	1 RB low	711.0	23.60	23.19	21.94
		707.5	23.57	22.95	21.85
		704.0	23.66	23.31	21.87
	50% RB mid	711.0	22.63	21.71	20.63
		707.5	22.65	21.70	20.69
		704.0	22.76	21.75	20.81
	100% RB	711.0	22.63	21.64	20.70
		707.5	22.70	21.67	20.66
		704.0	22.72	21.76	20.73



**LTE band 13**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	784.5	23.67	23.16	21.98
		782.0	23.62	22.89	21.87
		779.5	23.59	23.02	21.84
	1 RB low	784.5	22.77	21.75	20.81
		782.0	23.63	23.15	21.95
		779.5	23.65	22.90	21.88
	50% RB mid	784.5	22.46	21.51	20.50
		782.0	22.44	21.53	20.60
		779.5	22.48	21.48	20.40
	100% RB	784.5	22.50	21.48	20.50
		782.0	22.44	21.47	20.49
		779.5	22.56	21.53	20.58
10MHz	1 RB high	782.0	23.54	23.02	21.86
	1 RB low	782.0	23.49	22.88	21.79
	50% RB mid	782.0	22.65	21.68	20.60
	100% RB	782.0	22.66	21.67	20.70

**LTE band 41**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2687.5	25.83	24.99	25.24
		2593.0	26.65	25.43	26.03
		2498.5	26.37	25.41	25.80
	1 RB low	2687.5	25.78	25.04	25.15
		2593.0	26.59	25.38	25.99
		2498.5	26.34	25.39	25.80
	50% RB mid	2687.5	24.94	24.00	23.98
		2593.0	25.45	24.50	24.55
		2498.5	25.37	24.33	24.39
	100% RB	2687.5	24.90	23.94	23.91
		2593.0	25.40	24.49	24.45
		2498.5	25.31	24.34	24.30
10MHz	1 RB high	2685.0	25.92	25.11	24.99
		2593.0	26.34	25.61	25.75
		2501.0	26.27	25.58	25.59
	1 RB low	2685.0	25.91	25.21	25.08
		2593.0	26.35	25.78	25.80
		2501.0	26.20	25.55	25.54
	50% RB mid	2685.0	24.95	24.02	24.00
		2593.0	25.45	24.57	24.51
		2501.0	25.27	24.36	24.28
	100% RB	2685.0	24.92	24.03	23.94
		2593.0	25.45	24.54	24.42
		2501.0	25.30	24.30	24.25
15MHz	1 RB high	2682.5	25.62	24.99	24.98
		2593.0	26.20	25.77	26.12
		2503.5	25.98	25.50	25.57
	1 RB low	2682.5	25.73	25.17	25.13
		2593.0	26.22	25.82	26.02
		2503.5	25.94	25.46	25.54
	50% RB mid	2682.5	24.86	23.91	23.92
		2593.0	25.38	24.39	24.37
		2503.5	25.23	24.24	24.22
	100% RB	2682.5	24.82	23.94	23.95
		2593.0	25.31	24.39	24.40
		2503.5	25.12	24.16	24.18
20MHz	1 RB high	2680.0	25.96	25.20	25.14
		2593.0	26.24	25.86	26.10
		2506.0	26.06	25.50	25.52



	1 RB low	2680.0	26.04	25.38	25.33
		2593.0	26.34	25.90	25.95
		2506.0	25.97	25.42	25.44
	50% RB mid	2680.0	25.12	24.11	24.06
		2593.0	25.45	24.45	24.40
		2506.0	25.31	24.35	24.21
	100% RB	2680.0	25.10	24.15	24.14
		2593.0	25.44	24.48	24.51
		2506.0	25.19	24.20	24.27

**LTE band 66**

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1779.3	22.62	21.88	20.87
		1745.0	22.64	22.02	20.93
		1710.7	22.71	22.12	21.00
	1 RB low	1779.3	22.79	21.99	20.97
		1745.0	22.76	22.13	20.98
		1710.7	22.82	22.36	21.08
	50% RB mid	1779.3	21.82	20.85	19.88
		1745.0	21.82	20.88	19.90
		1710.7	21.91	20.81	19.93
	100% RB	1779.3	21.76	20.80	19.92
		1745.0	21.80	20.80	19.87
		1710.7	21.86	20.89	19.88
3MHz	1 RB high	1778.5	22.68	21.87	20.90
		1745.0	22.68	22.00	20.89
		1711.5	22.75	22.10	20.98
	1 RB low	1778.5	22.81	21.96	21.03
		1745.0	22.69	22.08	20.91
		1711.5	22.90	22.39	21.16
	50% RB mid	1778.5	21.81	20.84	19.86
		1745.0	21.82	20.88	19.85
		1711.5	21.87	20.79	19.98
	100% RB	1778.5	21.79	20.80	19.88
		1745.0	21.75	20.78	19.80
		1711.5	21.85	20.93	19.86
5MHz	1 RB high	1777.5	22.59	21.93	20.87
		1745.0	22.65	21.99	20.91
		1712.5	22.67	22.05	20.96
	1 RB low	1777.5	22.76	22.01	20.95
		1745.0	22.75	22.07	20.97
		1712.5	22.88	22.42	21.15
	50% RB mid	1777.5	21.85	20.79	19.94
		1745.0	21.80	20.81	19.90
		1712.5	21.94	20.81	19.97
	100% RB	1777.5	21.78	20.80	19.92
		1745.0	21.76	20.71	19.87
		1712.5	21.89	20.91	19.87
10MHz	1 RB high	1775.0	22.59	21.92	20.87
		1745.0	22.68	21.97	20.92
		1715.0	22.72	22.08	20.99

	1 RB low	1775.0	22.77	22.05	21.01
		1745.0	22.78	22.12	20.90
		1715.0	22.81	22.34	21.09
	50% RB mid	1775.0	21.80	20.81	19.91
		1745.0	21.79	20.83	19.87
		1715.0	21.86	20.81	19.94
	100% RB	1775.0	21.75	20.73	19.92
		1745.0	21.81	20.74	19.89
		1715.0	21.82	20.86	19.94
15MHz	1 RB high	1772.5	22.61	21.87	20.85
		1745.0	22.70	21.97	20.89
		1717.5	22.72	22.06	21.00
	1 RB low	1772.5	22.73	21.96	21.02
		1745.0	22.73	22.04	20.98
		1717.5	22.87	22.36	21.15
	50% RB mid	1772.5	21.89	20.80	19.89
		1745.0	21.84	20.88	19.82
		1717.5	21.87	20.87	19.95
	100% RB	1772.5	21.74	20.74	19.85
		1745.0	21.82	20.71	19.80
		1717.5	21.89	20.93	19.90
20MHz	1 RB high	1770.0	22.78	22.06	21.02
		1745.0	22.83	22.14	21.08
		1720.0	22.85	22.23	21.11
	1 RB low	1770.0	22.91	22.15	21.13
		1745.0	22.88	22.23	21.09
		1720.0	23.00	22.52	21.27
	50% RB mid	1770.0	21.99	20.95	20.05
		1745.0	21.98	21.00	20.00
		1720.0	22.04	20.97	20.09
	100% RB	1770.0	21.92	20.90	20.02
		1745.0	21.92	20.90	19.99
		1720.0	22.01	21.03	20.05

**LTE CA Band 7C**

Bandwidth	Frequency (MHz)	Frequency (MHz)	Modulation	PCC RB		SCC RB		Conducted Power(dBm)
				Size	Offset	Size	Offset	
10MHz/20 MHz	2525.6	2540	QPSK	1	49	1	0	23.73
				50	0	100	0	21.95
			16QAM	1	49	1	0	22.94
				50	0	100	0	20.96
			64QAM	1	49	1	0	21.73
				50	0	100	0	20.97
15MHz/10 MHz	2530.1	2542.1	QPSK	1	74	1	0	23.83
				75	0	50	0	21.92
			16QAM	1	74	1	0	22.99
				75	0	50	0	20.93
			64QAM	1	74	1	0	21.78
				75	0	50	0	20.97
15MHz/15 MHz	2527.5	2542.5	QPSK	1	74	1	0	23.76
				75	0	75	0	21.90
			16QAM	1	74	1	0	22.93
				75	0	75	0	20.94
			64QAM	1	74	1	0	21.77
				75	0	75	0	21.00
15MHz/20 MHz	2525.3	2542.4	QPSK	1	74	1	0	23.71
				75	0	100	0	21.94
			16QAM	1	74	1	0	22.90
				75	0	100	0	20.94
			64QAM	1	74	1	0	21.68
				75	0	100	0	20.96
20MHz/10 MHz	2530.1	2544.5	QPSK	1	99	1	0	23.92
				100	0	50	0	21.93
			16QAM	1	99	1	0	22.77
				100	0	50	0	20.98
			64QAM	1	99	1	0	22.11
				100	0	50	0	21.00
20MHz/15 MHz	2527.6	2544.7	QPSK	1	99	1	0	23.89
				100	0	75	0	21.99
			16QAM	1	99	1	0	22.80
				100	0	75	0	20.96
			64QAM	1	99	1	0	22.07
				100	0	75	0	20.98
20MHz/20 MHz	2525.1	2544.9	QPSK	1	99	1	0	23.86
				100	0	100	0	22.00



I22Z60845-WMD03

			16QAM	1	99	1	0	22.80
				100	0	100	0	21.01
			64QAM	1	99	1	0	22.00
				100	0	100	0	21.01

**LTE CA Band 41C**

Bandwidth	Frequency (MHz)	Frequency (MHz)	Modulation	PCC RB		SCC RB		Conducted Power(dBm)
				Size	Offset	Size	Offset	
5MHz/ 20MHz	2583.8	2595.5	QPSK	1	24	1	0	24.00
				25	0	100	0	21.96
			16QAM	1	24	1	0	23.22
				25	0	100	0	21.03
			64QAM	1	24	1	0	21.89
				25	0	100	0	20.99
10MHz/ 15MHz	2585.9	2597.9	QPSK	1	49	1	0	23.88
				50	0	75	0	21.99
			16QAM	1	49	1	0	23.01
				50	0	75	0	21.03
			64QAM	1	49	1	0	21.79
				50	0	75	0	21.09
10MHz/ 20MHz	2583.6	2598.0	QPSK	1	49	1	0	23.86
				50	0	100	0	22.01
			16QAM	1	49	1	0	22.94
				50	0	100	0	21.06
			64QAM	1	49	1	0	21.84
				50	0	100	0	21.08
15MHz/ 10MHz	2588.1	2600.1	QPSK	1	74	1	0	23.90
				75	0	50	0	22.00
			16QAM	1	74	1	0	23.00
				75	0	50	0	20.99
			64QAM	1	74	1	0	21.78
				75	0	50	0	21.14
15MHz/ 15MHz	2585.5	2600.5	QPSK	1	74	1	0	23.79
				75	0	75	0	22.08
			16QAM	1	74	1	0	22.87
				75	0	75	0	21.03
			64QAM	1	74	1	0	21.84
				75	0	75	0	21.15
15MHz/ 20MHz	2583.3	2600.4	QPSK	1	74	1	0	23.80
				75	0	100	0	21.97
			16QAM	1	74	1	0	22.88
				75	0	100	0	21.06
			64QAM	1	74	1	0	21.80
				75	0	100	0	21.17
20MHz/ 5MHz	2590.5	2602.2	QPSK	1	99	1	0	23.96
				100	0	25	0	22.09
			16QAM	1	99	1	0	22.91



				100	0	25	0	21.02
			64QAM	1	99	1	0	22.29
				100	0	25	0	21.16
20MHz/ 10MHz	2588.1	2602.5	QPSK	1	99	1	0	23.96
				100	0	50	0	22.03
			16QAM	1	99	1	0	22.94
				100	0	50	0	21.05
			64QAM	1	99	1	0	22.25
				100	0	50	0	21.15
20MHz/ 15MHz	2585.6	2602.7	QPSK	1	99	1	0	23.95
				100	0	75	0	22.10
			16QAM	1	99	1	0	22.86
				100	0	75	0	21.05
			64QAM	1	99	1	0	22.17
				100	0	75	0	21.02
20MHz/ 20MHz	2583.1	2602.9	QPSK	1	99	1	0	23.87
				100	0	100	0	22.15
			16QAM	1	99	1	0	22.82
				100	0	100	0	21.10
			64QAM	1	99	1	0	22.03
				100	0	100	0	21.12

### A.1.3 Radiated

#### A.1.3.1 Description

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

FDD Band 2/25: Part 24.232(c) specifies "Mobile and portable stations are limited to 2 watts EIRP".

FDD Band 5/26(824MHz~849MHz): Part 22.913(a) specifies "The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts".

FDD Band 7/TDD Band 38/41: Part 27.50(h)(2) specifies "Mobile stations are limited to 2.0 watts EIRP".

FDD Band 12/71: Part 27.50(c)(10) specifies "Portable stations(hand-held devices) in the 600 MHz uplink band and the 698–746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP".

FDD Band 13: Part 27.50(b) specifies "Portable stations(hand-held devices) transmitting in the 746–757 MHz, 776–788 MHz, and 805–806 MHz bands are limited to 3 watts ERP".

FDD Band 4/66: Part 27.50(d)(4) specifies "Fixed, mobile, and portable(handheld) stations operating in the 1710–1755 MHz band and mobile and portable stations operating in the 1695–1710 MHz and 1755–1780 MHz bands are limited to 1 watt EIRP".

#### A.1.3.2 Method of Measurement

According to KDB 412172 D01 and ANSI C63.26 the relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

$ERP \text{ or EIRP} = P_T + G_T - L_C$ ,  $ERP = EIRP - 2.15$ , where

$ERP \text{ or EIRP}$                       effective radiated power or equivalent isotropically radiated power,  
respectively

(expressed in the same units as  $P_{Mea}$ , e.g., dBm or dBW)

$P_T$  = transmitter output power in dBm;

$G_T$  = gain of the transmitting antenna, in dBd(ERP) or dBi(EIRP);

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

### 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 =-0.76)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	1909.3	22.58	21.88	21.80	21.82	21.12	21.04
		1880.0	22.63	22.04	21.75	21.87	21.28	20.99
		1850.7	22.65	21.91	21.79	21.89	21.15	21.03
	1 RB low	1909.3	22.67	22.06	21.91	21.91	21.30	21.15
		1880.0	22.63	22.09	21.79	21.87	21.33	21.03
		1850.7	22.71	22.02	22.01	21.95	21.26	21.25
	50% RB mid	1909.3	21.81	20.81	20.85	21.05	20.05	20.09
		1880.0	21.89	20.91	20.80	21.13	20.15	20.04
		1850.7	21.78	20.86	20.78	21.02	20.10	20.02
	100% RB	1909.3	21.83	20.78	20.77	21.07	20.02	20.01
		1880.0	21.75	20.82	20.73	20.99	20.06	19.97
		1850.7	21.77	20.79	20.69	21.01	20.03	19.93
3MHz	1 RB high	1908.5	22.64	21.87	21.81	21.88	21.11	21.05
		1880.0	22.67	21.99	21.73	21.91	21.23	20.97
		1851.5	22.64	21.92	21.81	21.88	21.16	21.05
	1 RB low	1908.5	22.62	22.05	21.90	21.86	21.29	21.14
		1880.0	22.67	22.04	21.82	21.91	21.28	21.06
		1851.5	22.72	21.93	21.97	21.96	21.17	21.21
	50% RB mid	1908.5	21.83	20.77	20.86	21.07	20.01	20.10
		1880.0	21.82	20.85	20.80	21.06	20.09	20.04
		1851.5	21.82	20.85	20.79	21.06	20.09	20.03
	100% RB	1908.5	21.82	20.80	20.78	21.06	20.04	20.02
		1880.0	21.81	20.85	20.81	21.05	20.09	20.05
		1851.5	21.75	20.78	20.76	20.99	20.02	20.00
5MHz	1 RB high	1907.5	22.66	21.87	21.78	21.90	21.11	21.02
		1880.0	22.68	21.99	21.71	21.92	21.23	20.95
		1852.5	22.59	21.93	21.84	21.83	21.17	21.08
	1 RB low	1907.5	22.67	22.08	21.87	21.91	21.32	21.11
		1880.0	22.67	22.05	21.76	21.91	21.29	21.00
		1852.5	22.64	21.98	21.93	21.88	21.22	21.17
	50% RB mid	1907.5	21.83	20.86	20.86	21.07	20.10	20.10
		1880.0	21.84	20.87	20.81	21.08	20.11	20.05
		1852.5	21.81	20.85	20.80	21.05	20.09	20.04
	100% RB	1907.5	21.79	20.73	20.71	21.03	19.97	19.95
		1880.0	21.72	20.80	20.76	20.96	20.04	20.00
		1852.5	21.77	20.71	20.70	21.01	19.95	19.94

10MHz	1 RB high	1905.0	22.65	21.91	21.79	21.89	21.15	21.03
		1880.0	22.64	22.06	21.79	21.88	21.30	21.03
		1855.0	22.61	21.87	21.89	21.85	21.11	21.13
	1 RB low	1905.0	22.63	22.11	21.91	21.87	21.35	21.15
		1880.0	22.60	22.10	21.84	21.84	21.34	21.08
		1855.0	22.68	21.96	21.93	21.92	21.20	21.17
	50% RB mid	1905.0	21.79	20.84	20.83	21.03	20.08	20.07
		1880.0	21.90	20.90	20.88	21.14	20.14	20.12
		1855.0	21.76	20.86	20.83	21.00	20.10	20.07
100% RB	1905.0	21.81	20.79	20.70	21.05	20.03	19.94	
	1880.0	21.80	20.82	20.82	21.04	20.06	20.06	
	1855.0	21.68	20.72	20.77	20.92	19.96	20.01	
15MHz	1 RB high	1902.5	22.60	21.89	21.87	21.84	21.13	21.11
		1880.0	22.62	22.01	21.79	21.86	21.25	21.03
		1857.5	22.66	21.95	21.80	21.90	21.19	21.04
	1 RB low	1902.5	22.63	22.06	21.93	21.87	21.30	21.17
		1880.0	22.60	22.08	21.76	21.84	21.32	21.00
		1857.5	22.68	21.98	21.99	21.92	21.22	21.23
	50% RB mid	1902.5	21.79	20.84	20.81	21.03	20.08	20.05
		1880.0	21.83	20.94	20.80	21.07	20.18	20.04
		1857.5	21.80	20.88	20.81	21.04	20.12	20.05
100% RB	1902.5	21.75	20.80	20.68	20.99	20.04	19.92	
	1880.0	21.80	20.85	20.79	21.04	20.09	20.03	
	1857.5	21.71	20.76	20.74	20.95	20.00	19.98	
20MHz	1 RB high	1900.0	22.76	22.07	21.97	22.00	21.31	21.21
		1880.0	22.81	22.18	21.90	22.05	21.42	21.14
		1860.0	22.76	22.06	21.99	22.00	21.30	21.23
	1 RB low	1900.0	22.77	22.21	22.06	22.01	21.45	21.30
		1880.0	22.78	22.22	21.96	22.02	21.46	21.20
		1860.0	22.83	22.12	22.12	22.07	21.36	21.36
	50% RB mid	1900.0	21.94	20.96	20.97	21.18	20.20	20.21
		1880.0	22.00	21.04	20.99	21.24	20.28	20.23
		1860.0	21.93	20.99	20.93	21.17	20.23	20.17
100% RB	1900.0	21.93	20.93	20.88	21.17	20.17	20.12	
	1880.0	21.92	20.95	20.92	21.16	20.19	20.16	
	1860.0	21.88	20.91	20.88	21.12	20.15	20.12	

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

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			EIRP(dBm)(Gt-Lc =-1.43)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	1754.3	22.89	22.06	20.91	21.46	20.63	19.48
		1732.5	22.86	21.94	20.86	21.43	20.51	19.43
		1710.7	22.92	22.09	20.96	21.49	20.66	19.53
	1 RB low	1754.3	22.90	22.03	20.85	21.47	20.60	19.42
		1732.5	22.82	21.90	20.80	21.39	20.47	19.37
		1710.7	22.91	22.03	20.90	21.48	20.60	19.47
	50% RB mid	1754.3	22.83	22.16	21.07	21.40	20.73	19.64
		1732.5	22.74	22.04	20.81	21.31	20.61	19.38
		1710.7	22.86	22.12	20.89	21.43	20.69	19.46
	100% RB	1754.3	21.93	20.81	20.22	20.50	19.38	18.79
		1732.5	21.85	20.96	19.88	20.42	19.53	18.45
		1710.7	21.94	21.10	19.96	20.51	19.67	18.53
3MHz	1 RB high	1753.5	22.91	21.98	20.89	21.48	20.55	19.46
		1732.5	22.81	21.87	20.81	21.38	20.44	19.38
		1711.5	22.89	21.97	20.85	21.46	20.54	19.42
	1 RB low	1753.5	22.92	22.01	20.92	21.49	20.58	19.49
		1732.5	22.78	21.87	20.75	21.35	20.44	19.32
		1711.5	22.96	22.04	20.93	21.53	20.61	19.50
	50% RB mid	1753.5	21.91	20.98	19.90	20.48	19.55	18.47
		1732.5	21.81	20.90	19.81	20.38	19.47	18.38
		1711.5	21.92	21.01	19.89	20.49	19.58	18.46
	100% RB	1753.5	21.95	20.91	20.00	20.52	19.48	18.57
		1732.5	21.76	20.68	19.83	20.33	19.25	18.40
		1711.5	21.93	20.90	20.01	20.50	19.47	18.58
5MHz	1 RB high	1752.5	22.88	21.98	21.08	21.45	20.55	19.65
		1732.5	22.79	21.94	20.99	21.36	20.51	19.56
		1712.5	22.85	21.97	21.04	21.42	20.54	19.61
	1 RB low	1752.5	22.87	22.06	21.10	21.44	20.63	19.67
		1732.5	22.77	21.92	20.92	21.34	20.49	19.49
		1712.5	22.87	21.99	21.10	21.44	20.56	19.67
	50% RB mid	1752.5	21.93	21.00	20.01	20.50	19.57	18.58
		1732.5	21.81	20.88	19.89	20.38	19.45	18.46
		1712.5	21.84	20.99	19.95	20.41	19.56	18.52
	100% RB	1752.5	21.89	20.90	19.94	20.46	19.47	18.51
		1732.5	21.74	20.71	19.72	20.31	19.28	18.29
		1712.5	21.84	20.84	19.91	20.41	19.41	18.48
10MHz	1 RB high	1750.0	22.81	21.94	20.82	21.38	20.51	19.39
		1732.5	22.74	21.79	20.66	21.31	20.36	19.23

	1 RB low	1715.0	22.71	21.75	20.69	21.28	20.32	19.26	
		1750.0	22.74	21.93	20.76	21.31	20.50	19.33	
		1732.5	22.73	21.75	20.62	21.30	20.32	19.19	
	50% RB mid	1715.0	22.80	21.88	20.86	21.37	20.45	19.43	
		1750.0	21.92	20.97	20.01	20.49	19.54	18.58	
		1732.5	21.87	20.88	19.99	20.44	19.45	18.56	
	100% RB	1715.0	21.85	21.00	19.96	20.42	19.57	18.53	
		1750.0	21.86	20.90	19.88	20.43	19.47	18.45	
		1732.5	21.78	20.83	19.79	20.35	19.40	18.36	
15MHz	1 RB high	1715.0	21.86	20.93	19.90	20.43	19.50	18.47	
		1747.5	22.76	22.21	21.24	21.33	20.78	19.81	
		1732.5	22.67	22.15	21.15	21.24	20.72	19.72	
	1 RB low	1717.5	22.61	22.07	21.10	21.18	20.64	19.67	
		1747.5	22.69	22.17	21.13	21.26	20.74	19.70	
		1732.5	22.66	22.13	21.08	21.23	20.70	19.65	
	50% RB mid	1717.5	22.77	22.22	21.15	21.34	20.79	19.72	
		1747.5	21.80	20.83	19.84	20.37	19.40	18.41	
		1732.5	21.75	20.64	19.79	20.32	19.21	18.36	
	100% RB	1717.5	21.70	20.71	19.74	20.27	19.28	18.31	
		1747.5	21.80	20.81	19.87	20.37	19.38	18.44	
		1732.5	21.60	20.63	19.75	20.17	19.20	18.32	
	20MHz	1 RB high	1717.5	21.74	20.75	19.79	20.31	19.32	18.36
			1745.0	22.77	22.40	20.80	21.34	20.97	19.37
			1732.5	22.68	22.30	20.72	21.25	20.87	19.29
1 RB low		1720.0	22.62	22.26	20.64	21.19	20.83	19.21	
		1745.0	22.66	22.31	20.63	21.23	20.88	19.20	
		1732.5	22.63	22.28	20.61	21.20	20.85	19.18	
50% RB mid		1720.0	22.68	22.30	20.70	21.25	20.87	19.27	
		1745.0	21.83	20.77	19.88	20.40	19.34	18.45	
		1732.5	21.78	20.71	19.78	20.35	19.28	18.35	
100% RB		1720.0	21.68	20.77	19.71	20.25	19.34	18.28	
		1745.0	21.74	20.78	19.80	20.31	19.35	18.37	
		1732.5	21.72	20.70	19.72	20.29	19.27	18.29	
			1720.0	21.75	20.75	19.82	20.32	19.32	18.39

**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 =-5.47)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	23.32	22.83	21.53	15.70	15.21	13.91
		836.5	23.33	22.67	21.69	15.71	15.05	14.07
		824.7	23.45	22.90	21.59	15.83	15.28	13.97
	1 RB low	848.3	23.57	22.97	21.35	15.95	15.35	13.73
		836.5	23.43	22.56	21.46	15.81	14.94	13.84
		824.7	23.54	22.99	21.76	15.92	15.37	14.14
	50% RB mid	848.3	22.58	21.53	20.51	14.96	13.91	12.89
		836.5	22.57	21.56	20.56	14.95	13.94	12.94
		824.7	22.59	21.67	20.65	14.97	14.05	13.03
	100% RB	848.3	22.39	21.53	20.44	14.77	13.91	12.82
		836.5	22.42	21.51	20.54	14.80	13.89	12.92
		824.7	22.63	21.66	20.60	15.01	14.04	12.98
3MHz	1 RB high	847.5	23.39	22.80	21.46	15.77	15.18	13.84
		836.5	23.41	22.72	21.62	15.79	15.10	14.00
		825.5	23.39	22.92	21.66	15.77	15.30	14.04
	1 RB low	847.5	23.58	22.94	21.38	15.96	15.32	13.76
		836.5	23.36	22.59	21.48	15.74	14.97	13.86
		825.5	23.60	22.99	21.72	15.98	15.37	14.10
	50% RB mid	847.5	22.50	21.52	20.53	14.88	13.90	12.91
		836.5	22.57	21.48	20.52	14.95	13.86	12.90
		825.5	22.63	21.62	20.63	15.01	14.00	13.01
	100% RB	847.5	22.42	21.48	20.47	14.80	13.86	12.85
		836.5	22.47	21.54	20.58	14.85	13.92	12.96
		825.5	22.62	21.63	20.68	15.00	14.01	13.06
5MHz	1 RB high	846.5	23.32	22.83	21.44	15.70	15.21	13.82
		836.5	23.36	22.67	21.67	15.74	15.05	14.05
		826.5	23.45	22.94	21.69	15.83	15.32	14.07
	1 RB low	846.5	23.49	22.94	21.36	15.87	15.32	13.74
		836.5	23.38	22.56	21.44	15.76	14.94	13.82
		826.5	23.56	22.97	21.77	15.94	15.35	14.15
	50% RB mid	846.5	22.57	21.56	20.57	14.95	13.94	12.95
		836.5	22.49	21.48	20.48	14.87	13.86	12.86
		826.5	22.62	21.71	20.73	15.00	14.09	13.11
	100% RB	846.5	22.43	21.47	20.41	14.81	13.85	12.79
		836.5	22.39	21.55	20.53	14.77	13.93	12.91
		826.5	22.61	21.63	20.58	14.99	14.01	12.96
10MHz	1 RB high	844.0	23.50	22.94	21.64	15.88	15.32	14.02



		836.5	23.51	22.85	21.79	15.89	15.23	14.17
		829.0	23.56	23.06	21.79	15.94	15.44	14.17
	1 RB low	844.0	23.69	23.10	21.54	16.07	15.48	13.92
		836.5	23.53	22.72	21.60	15.91	15.10	13.98
		829.0	23.73	23.17	21.87	16.11	15.55	14.25
	50% RB mid	844.0	22.70	21.66	20.68	15.08	14.04	13.06
		836.5	22.69	21.66	20.68	15.07	14.04	13.06
		829.0	22.73	21.82	20.83	15.11	14.20	13.21
	100% RB	844.0	22.57	21.63	20.58	14.95	14.01	12.96
		836.5	22.59	21.67	20.69	14.97	14.05	13.07
		829.0	22.73	21.77	20.78	15.11	14.15	13.16



**LTE Band 7-EIRP**
**Limits:  $\leq 33\text{dBm}(2\text{W})$** 

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			EIRP(dBm)(Gt-Lc =-0.87)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	2567.5	23.07	22.62	22.58	22.20	21.75	21.71
		2535.0	23.26	22.65	22.46	22.39	21.78	21.59
		2502.5	23.09	22.54	22.59	22.22	21.67	21.72
	1 RB low	2567.5	23.08	22.52	22.53	22.21	21.65	21.66
		2535.0	23.16	22.48	22.44	22.29	21.61	21.57
		2502.5	23.01	22.38	22.45	22.14	21.51	21.58
	50% RB mid	2567.5	22.30	21.43	21.35	21.43	20.56	20.48
		2535.0	22.26	21.20	21.33	21.39	20.33	20.46
		2502.5	22.32	21.22	21.24	21.45	20.35	20.37
	100% RB	2567.5	22.36	21.39	21.45	21.49	20.52	20.58
		2535.0	22.31	21.30	21.36	21.44	20.43	20.49
		2502.5	22.22	21.29	21.23	21.35	20.42	20.36
10MHz	1 RB high	2565.0	23.10	22.61	22.49	22.23	21.74	21.62
		2535.0	23.19	22.59	22.48	22.32	21.72	21.61
		2505.0	23.01	22.48	22.55	22.14	21.61	21.68
	1 RB low	2565.0	23.09	22.57	22.56	22.22	21.70	21.69
		2535.0	23.15	22.44	22.44	22.28	21.57	21.57
		2505.0	23.05	22.37	22.42	22.18	21.50	21.55
	50% RB mid	2565.0	22.25	21.40	21.35	21.38	20.53	20.48
		2535.0	22.25	21.25	21.33	21.38	20.38	20.46
		2505.0	22.27	21.29	21.17	21.40	20.42	20.30
	100% RB	2565.0	22.35	21.39	21.46	21.48	20.52	20.59
		2535.0	22.32	21.31	21.34	21.45	20.44	20.47
		2505.0	22.23	21.32	21.27	21.36	20.45	20.40
15MHz	1 RB high	2562.5	23.09	22.58	22.53	22.22	21.71	21.66
		2535.0	23.24	22.58	22.51	22.37	21.71	21.64
		2507.5	23.02	22.44	22.57	22.15	21.57	21.70
	1 RB low	2562.5	23.08	22.52	22.49	22.21	21.65	21.62
		2535.0	23.07	22.41	22.46	22.20	21.54	21.59
		2507.5	23.04	22.38	22.38	22.17	21.51	21.51
	50% RB mid	2562.5	22.30	21.35	21.33	21.43	20.48	20.46
		2535.0	22.27	21.24	21.31	21.40	20.37	20.44
		2507.5	22.30	21.25	21.22	21.43	20.38	20.35
	100% RB	2562.5	22.38	21.38	21.38	21.51	20.51	20.51
		2535.0	22.31	21.38	21.36	21.44	20.51	20.49
		2507.5	22.19	21.33	21.21	21.32	20.46	20.34
20MHz	1 RB high	2560.0	23.26	22.72	22.69	22.39	21.85	21.82
		2535.0	23.36	22.77	22.66	22.49	21.90	21.79



		2510.0	23.20	22.64	22.69	22.33	21.77	21.82
1 RB low		2560.0	23.23	22.69	22.67	22.36	21.82	21.80
		2535.0	23.26	22.61	22.59	22.39	21.74	21.72
		2510.0	23.15	22.56	22.58	22.28	21.69	21.71
50% RB mid		2560.0	22.45	21.53	21.50	21.58	20.66	20.63
		2535.0	22.38	21.40	21.44	21.51	20.53	20.57
		2510.0	22.43	21.41	21.35	21.56	20.54	20.48
100% RB		2560.0	22.55	21.49	21.57	21.68	20.62	20.70
		2535.0	22.45	21.49	21.50	21.58	20.62	20.63
		2510.0	22.36	21.44	21.40	21.49	20.57	20.53

**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 =-6.11)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	715.3	23.33	22.68	21.39	15.07	14.42	13.13
		707.5	23.26	22.96	21.60	15.00	14.70	13.34
		699.7	23.41	23.00	21.46	15.15	14.74	13.20
	1 RB low	715.3	23.48	23.06	21.75	15.22	14.80	13.49
		707.5	23.47	22.82	21.74	15.21	14.56	13.48
		699.7	23.54	23.13	21.72	15.28	14.87	13.46
	50% RB mid	715.3	22.46	21.54	20.44	14.20	13.28	12.18
		707.5	22.51	21.51	20.57	14.25	13.25	12.31
		699.7	22.66	21.65	20.64	14.40	13.39	12.38
	100% RB	715.3	22.48	21.49	20.56	14.22	13.23	12.30
		707.5	22.51	21.53	20.54	14.25	13.27	12.28
		699.7	22.53	21.59	20.54	14.27	13.33	12.28
3MHz	1 RB high	714.5	23.26	22.63	21.36	15.00	14.37	13.10
		707.5	23.29	22.94	21.61	15.03	14.68	13.35
		700.5	23.39	23.07	21.53	15.13	14.81	13.27
	1 RB low	714.5	23.50	23.06	21.76	15.24	14.80	13.50
		707.5	23.40	22.81	21.66	15.14	14.55	13.40
		700.5	23.54	23.19	21.74	15.28	14.93	13.48
	50% RB mid	714.5	22.53	21.56	20.48	14.27	13.30	12.22
		707.5	22.48	21.56	20.59	14.22	13.30	12.33
		700.5	22.65	21.63	20.62	14.39	13.37	12.36
	100% RB	714.5	22.49	21.47	20.58	14.23	13.21	12.32
		707.5	22.56	21.50	20.55	14.30	13.24	12.29
		700.5	22.57	21.64	20.63	14.31	13.38	12.37
5MHz	1 RB high	713.5	23.26	22.71	21.41	15.00	14.45	13.15
		707.5	23.33	23.00	21.57	15.07	14.74	13.31
		701.5	23.44	22.99	21.54	15.18	14.73	13.28
	1 RB low	713.5	23.47	23.01	21.75	15.21	14.75	13.49
		707.5	23.40	22.77	21.68	15.14	14.51	13.42
		701.5	23.56	23.16	21.74	15.30	14.90	13.48
	50% RB mid	713.5	22.47	21.55	20.49	14.21	13.29	12.23
		707.5	22.49	21.60	20.58	14.23	13.34	12.32
		701.5	22.64	21.63	20.71	14.38	13.37	12.45
	100% RB	713.5	22.47	21.46	20.56	14.21	13.20	12.30
		707.5	22.55	21.55	20.54	14.29	13.29	12.28
		701.5	22.54	21.61	20.60	14.28	13.35	12.34
10MHz	1 RB high	711.0	23.43	22.81	21.51	15.17	14.55	13.25



		707.5	23.45	23.10	21.74	15.19	14.84	13.48
		704.0	23.54	23.18	21.64	15.28	14.92	13.38
	1 RB low	711.0	23.60	23.19	21.94	15.34	14.93	13.68
		707.5	23.57	22.95	21.85	15.31	14.69	13.59
		704.0	23.66	23.31	21.87	15.40	15.05	13.61
	50% RB mid	711.0	22.63	21.71	20.63	14.37	13.45	12.37
		707.5	22.65	21.70	20.69	14.39	13.44	12.43
		704.0	22.76	21.75	20.81	14.50	13.49	12.55
	100% RB	711.0	22.63	21.64	20.70	14.37	13.38	12.44
		707.5	22.70	21.67	20.66	14.44	13.41	12.40
		704.0	22.72	21.76	20.73	14.46	13.50	12.47

**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 =-5.34)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	784.5	23.67	23.16	21.98	16.18	15.67	14.49
		782.0	23.62	22.89	21.87	16.13	15.40	14.38
		779.5	23.59	23.02	21.84	16.10	15.53	14.35
	1 RB low	784.5	22.77	21.75	20.81	15.28	14.26	13.32
		782.0	23.63	23.15	21.95	16.14	15.66	14.46
		779.5	23.65	22.90	21.88	16.16	15.41	14.39
	50% RB mid	784.5	22.46	21.51	20.50	14.97	14.02	13.01
		782.0	22.44	21.53	20.60	14.95	14.04	13.11
		779.5	22.48	21.48	20.40	14.99	13.99	12.91
	100% RB	784.5	22.50	21.48	20.50	15.01	13.99	13.01
		782.0	22.44	21.47	20.49	14.95	13.98	13.00
		779.5	22.56	21.53	20.58	15.07	14.04	13.09
10MHz	1 RB high	782.0	23.54	23.02	21.86	16.05	15.53	14.37
	1 RB low	782.0	23.49	22.88	21.79	16.00	15.39	14.30
	50% RB mid	782.0	22.65	21.68	20.60	15.16	14.19	13.11
	100% RB	782.0	22.66	21.67	20.70	15.17	14.18	13.21

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

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			EIRP(dBm)(Gt-Lc =-0.89)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	2687.5	25.83	24.99	25.24	24.94	24.10	24.35
		2593.0	26.65	25.43	26.03	25.76	24.54	25.14
		2498.5	26.37	25.41	25.80	25.48	24.52	24.91
	1 RB low	2687.5	25.78	25.04	25.15	24.89	24.15	24.26
		2593.0	26.59	25.38	25.99	25.70	24.49	25.10
		2498.5	26.34	25.39	25.80	25.45	24.50	24.91
	50% RB mid	2687.5	24.94	24.00	23.98	24.05	23.11	23.09
		2593.0	25.45	24.50	24.55	24.56	23.61	23.66
		2498.5	25.37	24.33	24.39	24.48	23.44	23.50
	100% RB	2687.5	24.90	23.94	23.91	24.01	23.05	23.02
		2593.0	25.40	24.49	24.45	24.51	23.60	23.56
		2498.5	25.31	24.34	24.30	24.42	23.45	23.41
10MHz	1 RB high	2685.0	25.92	25.11	24.99	25.03	24.22	24.10
		2593.0	26.34	25.61	25.75	25.45	24.72	24.86
		2501.0	26.27	25.58	25.59	25.38	24.69	24.70
	1 RB low	2685.0	25.91	25.21	25.08	25.02	24.32	24.19
		2593.0	26.35	25.78	25.80	25.46	24.89	24.91
		2501.0	26.20	25.55	25.54	25.31	24.66	24.65
	50% RB mid	2685.0	24.95	24.02	24.00	24.06	23.13	23.11
		2593.0	25.45	24.57	24.51	24.56	23.68	23.62
		2501.0	25.27	24.36	24.28	24.38	23.47	23.39
	100% RB	2685.0	24.92	24.03	23.94	24.03	23.14	23.05
		2593.0	25.45	24.54	24.42	24.56	23.65	23.53
		2501.0	25.30	24.30	24.25	24.41	23.41	23.36
15MHz	1 RB high	2682.5	25.62	24.99	24.98	24.73	24.10	24.09
		2593.0	26.20	25.77	26.12	25.31	24.88	25.23
		2503.5	25.98	25.50	25.57	25.09	24.61	24.68
	1 RB low	2682.5	25.73	25.17	25.13	24.84	24.28	24.24
		2593.0	26.22	25.82	26.02	25.33	24.93	25.13
		2503.5	25.94	25.46	25.54	25.05	24.57	24.65
	50% RB mid	2682.5	24.86	23.91	23.92	23.97	23.02	23.03
		2593.0	25.38	24.39	24.37	24.49	23.50	23.48
		2503.5	25.23	24.24	24.22	24.34	23.35	23.33
	100% RB	2682.5	24.82	23.94	23.95	23.93	23.05	23.06
		2593.0	25.31	24.39	24.40	24.42	23.50	23.51
		2503.5	25.12	24.16	24.18	24.23	23.27	23.29
20MHz	1 RB high	2680.0	25.96	25.20	25.14	25.07	24.31	24.25
		2593.0	26.24	25.86	26.10	25.35	24.97	25.21



		2506.0	26.06	25.50	25.52	25.17	24.61	24.63
	1 RB low	2680.0	26.04	25.38	25.33	25.15	24.49	24.44
		2593.0	26.34	25.90	25.95	25.45	25.01	25.06
		2506.0	25.97	25.42	25.44	25.08	24.53	24.55
	50% RB mid	2680.0	25.12	24.11	24.06	24.23	23.22	23.17
		2593.0	25.45	24.45	24.40	24.56	23.56	23.51
		2506.0	25.31	24.35	24.21	24.42	23.46	23.32
	100% RB	2680.0	25.10	24.15	24.14	24.21	23.26	23.25
		2593.0	25.44	24.48	24.51	24.55	23.59	23.62
		2506.0	25.19	24.20	24.27	24.30	23.31	23.38

**LTE Band 66-EIRP**
**Limits:  $\leq 30\text{dBm}(1\text{W})$** 

Bandwidth	RB size/offset	Frequency (MHz)	Conducted Power(dBm)			EIRP(dBm)(Gt-Lc =-1.43)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	1779.3	22.62	21.88	20.87	21.19	20.45	19.44
		1745.0	22.64	22.02	20.93	21.21	20.59	19.50
		1710.7	22.71	22.12	21.00	21.28	20.69	19.57
	1 RB low	1779.3	22.79	21.99	20.97	21.36	20.56	19.54
		1745.0	22.76	22.13	20.98	21.33	20.70	19.55
		1710.7	22.82	22.36	21.08	21.39	20.93	19.65
	50% RB mid	1779.3	21.82	20.85	19.88	20.39	19.42	18.45
		1745.0	21.82	20.88	19.90	20.39	19.45	18.47
		1710.7	21.91	20.81	19.93	20.48	19.38	18.50
	100% RB	1779.3	21.76	20.80	19.92	20.33	19.37	18.49
		1745.0	21.80	20.80	19.87	20.37	19.37	18.44
		1710.7	21.86	20.89	19.88	20.43	19.46	18.45
3MHz	1 RB high	1778.5	22.68	21.87	20.90	21.25	20.44	19.47
		1745.0	22.68	22.00	20.89	21.25	20.57	19.46
		1711.5	22.75	22.10	20.98	21.32	20.67	19.55
	1 RB low	1778.5	22.81	21.96	21.03	21.38	20.53	19.60
		1745.0	22.69	22.08	20.91	21.26	20.65	19.48
		1711.5	22.90	22.39	21.16	21.47	20.96	19.73
	50% RB mid	1778.5	21.81	20.84	19.86	20.38	19.41	18.43
		1745.0	21.82	20.88	19.85	20.39	19.45	18.42
		1711.5	21.87	20.79	19.98	20.44	19.36	18.55
	100% RB	1778.5	21.79	20.80	19.88	20.36	19.37	18.45
		1745.0	21.75	20.78	19.80	20.32	19.35	18.37
		1711.5	21.85	20.93	19.86	20.42	19.50	18.43
5MHz	1 RB high	1777.5	22.59	21.93	20.87	21.16	20.50	19.44
		1745.0	22.65	21.99	20.91	21.22	20.56	19.48
		1712.5	22.67	22.05	20.96	21.24	20.62	19.53
	1 RB low	1777.5	22.76	22.01	20.95	21.33	20.58	19.52
		1745.0	22.75	22.07	20.97	21.32	20.64	19.54
		1712.5	22.88	22.42	21.15	21.45	20.99	19.72
	50% RB mid	1777.5	21.85	20.79	19.94	20.42	19.36	18.51
		1745.0	21.80	20.81	19.90	20.37	19.38	18.47
		1712.5	21.94	20.81	19.97	20.51	19.38	18.54
	100% RB	1777.5	21.78	20.80	19.92	20.35	19.37	18.49
		1745.0	21.76	20.71	19.87	20.33	19.28	18.44
		1712.5	21.89	20.91	19.87	20.46	19.48	18.44
10MHz	1 RB high	1775.0	22.59	21.92	20.87	21.16	20.49	19.44
		1745.0	22.68	21.97	20.92	21.25	20.54	19.49



	1 RB low	1715.0	22.72	22.08	20.99	21.29	20.65	19.56
		1775.0	22.77	22.05	21.01	21.34	20.62	19.58
		1745.0	22.78	22.12	20.90	21.35	20.69	19.47
	50% RB mid	1715.0	22.81	22.34	21.09	21.38	20.91	19.66
		1775.0	21.80	20.81	19.91	20.37	19.38	18.48
		1745.0	21.79	20.83	19.87	20.36	19.40	18.44
	100% RB	1715.0	21.86	20.81	19.94	20.43	19.38	18.51
		1775.0	21.75	20.73	19.92	20.32	19.30	18.49
		1745.0	21.81	20.74	19.89	20.38	19.31	18.46
15MHz	1 RB high	1772.5	22.61	21.87	20.85	21.18	20.44	19.42
		1745.0	22.70	21.97	20.89	21.27	20.54	19.46
		1717.5	22.72	22.06	21.00	21.29	20.63	19.57
	1 RB low	1772.5	22.73	21.96	21.02	21.30	20.53	19.59
		1745.0	22.73	22.04	20.98	21.30	20.61	19.55
		1717.5	22.87	22.36	21.15	21.44	20.93	19.72
	50% RB mid	1772.5	21.89	20.80	19.89	20.46	19.37	18.46
		1745.0	21.84	20.88	19.82	20.41	19.45	18.39
		1717.5	21.87	20.87	19.95	20.44	19.44	18.52
	100% RB	1772.5	21.74	20.74	19.85	20.31	19.31	18.42
		1745.0	21.82	20.71	19.80	20.39	19.28	18.37
		1717.5	21.89	20.93	19.90	20.46	19.50	18.47
20MHz	1 RB high	1770.0	22.78	22.06	21.02	21.35	20.63	19.59
		1745.0	22.83	22.14	21.08	21.40	20.71	19.65
		1720.0	22.85	22.23	21.11	21.42	20.80	19.68
	1 RB low	1770.0	22.91	22.15	21.13	21.48	20.72	19.70
		1745.0	22.88	22.23	21.09	21.45	20.80	19.66
		1720.0	23.00	22.52	21.27	21.57	21.09	19.84
	50% RB mid	1770.0	21.99	20.95	20.05	20.56	19.52	18.62
		1745.0	21.98	21.00	20.00	20.55	19.57	18.57
		1720.0	22.04	20.97	20.09	20.61	19.54	18.66
	100% RB	1770.0	21.92	20.90	20.02	20.49	19.47	18.59
		1745.0	21.92	20.90	19.99	20.49	19.47	18.56
		1720.0	22.01	21.03	20.05	20.58	19.60	18.62

**LTE Band 7C**
**Limits:  $\leq 33\text{dBm}(2\text{W})$** 

Bandwidth	Frequency (MHz)	Frequency (MHz)	Modulation	PCC RB		SCC RB		Conducted Power(dBm)	EIRP(dBm) (Gt-Lc = -0.87)
				Size	Offset	Size	Offset		
10MHz/ 20MHz	2525.6	2540	QPSK	1	49	1	0	23.73	22.86
				50	0	100	0	21.95	21.08
			16QAM	1	49	1	0	22.94	22.07
				50	0	100	0	20.96	20.09
			64QAM	1	49	1	0	21.73	20.86
				50	0	100	0	20.97	20.10
15MHz/ 10MHz	2530.1	2542.1	QPSK	1	74	1	0	23.83	22.96
				75	0	50	0	21.92	21.05
			16QAM	1	74	1	0	22.99	22.12
				75	0	50	0	20.93	20.06
			64QAM	1	74	1	0	21.78	20.91
				75	0	50	0	20.97	20.10
15MHz/ 15MHz	2527.5	2542.5	QPSK	1	74	1	0	23.76	22.89
				75	0	75	0	21.90	21.03
			16QAM	1	74	1	0	22.93	22.06
				75	0	75	0	20.94	20.07
			64QAM	1	74	1	0	21.77	20.90
				75	0	75	0	21.00	20.13
15MHz/ 20MHz	2525.3	2542.4	QPSK	1	74	1	0	23.71	22.84
				75	0	100	0	21.94	21.07
			16QAM	1	74	1	0	22.90	22.03
				75	0	100	0	20.94	20.07
			64QAM	1	74	1	0	21.68	20.81
				75	0	100	0	20.96	20.09
20MHz/ 10MHz	2530.1	2544.5	QPSK	1	99	1	0	23.92	23.05
				100	0	50	0	21.93	21.06
			16QAM	1	99	1	0	22.77	21.90
				100	0	50	0	20.98	20.11
			64QAM	1	99	1	0	22.11	21.24
				100	0	50	0	21.00	20.13
20MHz/ 15MHz	2527.6	2544.7	QPSK	1	99	1	0	23.89	23.02
				100	0	75	0	21.99	21.12
			16QAM	1	99	1	0	22.80	21.93
				100	0	75	0	20.96	20.09



20MHz/ 20MHz	2525.1	2544.9	64QAM	1	99	1	0	22.07	21.20
				100	0	75	0	20.98	20.11
			QPSK	1	99	1	0	23.86	22.99
				100	0	100	0	22.00	21.13
			16QAM	1	99	1	0	22.80	21.93
				100	0	100	0	21.01	20.14
			64QAM	1	99	1	0	22.00	21.13
				100	0	100	0	21.01	20.14

**LTE Band 41C**
**Limits:  $\leq 33\text{dBm}(2\text{W})$** 

Bandwidth	Frequency (MHz)	Frequency (MHz)	Modulation	PCC RB		SCC RB		Conducted Power(dBm)	EIRP(dBm) (Gt-Lc =-0.89)
				Size	Offset	Size	Offset		
5MHz/ 20MHz	2583.8	2595.5	QPSK	1	24	1	0	24.00	23.11
				25	0	100	0	21.96	21.07
			16QAM	1	24	1	0	23.22	22.33
				25	0	100	0	21.03	20.14
			64QAM	1	24	1	0	21.89	21.00
				25	0	100	0	20.99	20.10
10MHz/ 15MHz	2585.9	2597.9	QPSK	1	49	1	0	23.88	22.99
				50	0	75	0	21.99	21.10
			16QAM	1	49	1	0	23.01	22.12
				50	0	75	0	21.03	20.14
			64QAM	1	49	1	0	21.79	20.90
				50	0	75	0	21.09	20.20
10MHz/ 20MHz	2583.6	2598	QPSK	1	49	1	0	23.86	22.97
				50	0	100	0	22.01	21.12
			16QAM	1	49	1	0	22.94	22.05
				50	0	100	0	21.06	20.17
			64QAM	1	49	1	0	21.84	20.95
				50	0	100	0	21.08	20.19
15MHz/ 10MHz	2588.1	2600.1	QPSK	1	74	1	0	23.90	23.01
				75	0	50	0	22.00	21.11
			16QAM	1	74	1	0	23.00	22.11
				75	0	50	0	20.99	20.10
			64QAM	1	74	1	0	21.78	20.89
				75	0	50	0	21.14	20.25
15MHz/ 15MHz	2585.5	2600.5	QPSK	1	74	1	0	23.79	22.90
				75	0	75	0	22.08	21.19
			16QAM	1	74	1	0	22.87	21.98
				75	0	75	0	21.03	20.14
			64QAM	1	74	1	0	21.84	20.95
				75	0	75	0	21.15	20.26
15MHz/ 20MHz	2583.3	2600.4	QPSK	1	74	1	0	23.80	22.91
				75	0	100	0	21.97	21.08
			16QAM	1	74	1	0	22.88	21.99
				75	0	100	0	21.06	20.17

			64QAM	1	74	1	0	21.80	20.91
				75	0	100	0	21.17	20.28
20MHz/ 5MHz	2590.5	2602.2	QPSK	1	99	1	0	23.96	23.07
				100	0	25	0	22.09	21.20
			16QAM	1	99	1	0	22.91	22.02
				100	0	25	0	21.02	20.13
			64QAM	1	99	1	0	22.29	21.40
				100	0	25	0	21.16	20.27
20MHz/ 10MHz	2588.1	2602.5	QPSK	1	99	1	0	23.96	23.07
				100	0	50	0	22.03	21.14
			16QAM	1	99	1	0	22.94	22.05
				100	0	50	0	21.05	20.16
			64QAM	1	99	1	0	22.25	21.36
				100	0	50	0	21.15	20.26
20MHz/ 15MHz	2585.6	2602.7	QPSK	1	99	1	0	23.95	23.06
				100	0	75	0	22.10	21.21
			16QAM	1	99	1	0	22.86	21.97
				100	0	75	0	21.05	20.16
			64QAM	1	99	1	0	22.17	21.28
				100	0	75	0	21.02	20.13
20MHz/ 20MHz	2583.1	2602.9	QPSK	1	99	1	0	23.87	22.98
				100	0	100	0	22.15	21.26
			16QAM	1	99	1	0	22.82	21.93
				100	0	100	0	21.10	20.21
			64QAM	1	99	1	0	22.03	21.14
				100	0	100	0	21.12	20.23

## A.2 Emission Limit

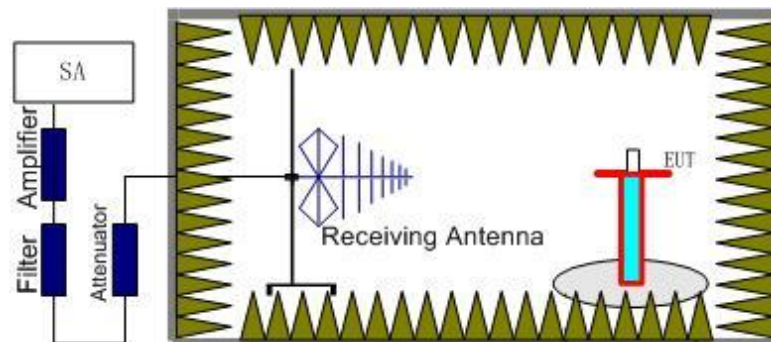
### A.2.1 Measurement Method

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

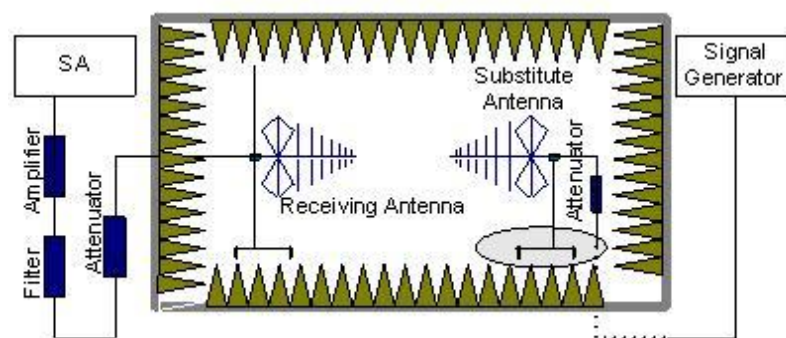
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and 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 (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere

with the radiation pattern of the antenna. A power ( $P_{Mea}$ ) is applied to the input of the substitution antenna. 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 2/25: 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 5/26(824MHz~849MHz): 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 7/TDD Band 38/41: 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 that  $43 + 10 \log(P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log(P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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.

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.

All CA combinations have been tested, only the worst cases are reported.



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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3661.02	-59.59	6.51	8.43	-57.67	-13.00	44.67	H
5535.02	-58.31	7.17	10.59	-54.89	-13.00	41.89	V
7450.01	-53.47	8.26	12.14	-49.59	-13.00	36.59	V
9218.01	-52.75	8.97	13.23	-48.49	-13.00	35.49	V
11099.01	-50.52	9.84	13.18	-47.18	-13.00	34.18	V
13000.01	-47.71	10.47	13.50	-44.68	-13.00	31.68	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3747.02	-59.69	6.30	8.55	-57.44	-13.00	44.44	V
5624.02	-58.19	7.26	10.58	-54.87	-13.00	41.87	H
7522.01	-54.20	8.30	12.22	-50.28	-13.00	37.28	V
9368.01	-53.12	9.07	13.32	-48.87	-13.00	35.87	V
11245.01	-49.31	9.67	13.15	-45.83	-13.00	32.83	V
13163.01	-44.10	10.66	13.73	-41.03	-13.00	28.03	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3788.02	-61.33	6.18	8.60	-58.91	-13.00	45.91	V
5750.02	-57.55	7.26	10.55	-54.26	-13.00	41.26	V
7590.01	-54.55	8.02	12.27	-50.30	-13.00	37.30	V
9561.01	-53.49	9.32	13.34	-49.47	-13.00	36.47	H
11464.01	-49.22	9.90	13.11	-46.01	-13.00	33.01	V
13398.01	-44.23	10.57	14.06	-40.74	-13.00	27.74	V

**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
1640.01	-54.26	3.56	5.25	2.15	-54.72	-13.00	41.72	H
2469.00	-45.51	4.59	6.01	2.15	-46.24	-13.00	33.24	H
3301.02	-61.67	5.29	7.72	2.15	-61.39	-13.00	48.39	V
4128.02	-57.35	6.04	9.03	2.15	-56.51	-13.00	43.51	V
4960.01	-57.58	6.67	9.86	2.15	-56.54	-13.00	43.54	V
5767.01	-57.31	7.24	10.55	2.15	-56.15	-13.00	43.15	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
1668.01	-55.00	3.58	5.20	2.15	-55.53	-13.00	42.53	H
2513.00	-45.80	4.64	6.12	2.15	-46.47	-13.00	33.47	H
3356.02	-60.57	5.32	7.85	2.15	-60.19	-13.00	47.19	V
4173.02	-57.86	6.14	9.07	2.15	-57.08	-13.00	44.08	H
5027.01	-57.44	6.57	9.94	2.15	-56.22	-13.00	43.22	V
5869.01	-56.79	7.30	10.53	2.15	-55.71	-13.00	42.71	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
1694.01	-55.63	3.60	5.15	2.15	-56.23	-13.00	43.23	V
2553.00	-46.38	4.67	6.20	2.15	-47.00	-13.00	34.00	H
3402.02	-60.86	5.36	7.96	2.15	-60.41	-13.00	47.41	V
4248.02	-57.55	6.24	9.15	2.15	-56.79	-13.00	43.79	H
5094.01	-56.98	6.76	10.03	2.15	-55.86	-13.00	42.86	V
5930.01	-56.48	7.47	10.51	2.15	-55.59	-13.00	42.59	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5004.02	-56.39	6.60	9.91	-53.08	-25.00	28.08	V
7488.01	-54.63	8.36	12.19	-50.80	-25.00	25.80	V
10007.01	-53.27	9.20	12.90	-49.57	-25.00	24.57	H
12524.01	-48.71	10.24	13.21	-45.74	-25.00	20.74	V
14998.00	-43.92	11.21	14.00	-41.13	-25.00	16.13	H
17525.00	-40.40	12.82	14.94	-38.28	-25.00	13.28	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5072.02	-55.50	6.69	10.00	-52.19	-25.00	27.19	V
7608.01	-54.47	8.01	12.29	-50.19	-25.00	25.19	V
10141.01	-52.23	9.40	12.96	-48.67	-25.00	23.67	V
12661.01	-47.22	10.36	13.30	-44.28	-25.00	19.28	H
15229.00	-43.96	11.36	13.86	-41.46	-25.00	16.46	H
17728.00	-41.36	12.34	15.22	-38.48	-25.00	13.48	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5136.02	-55.45	6.86	10.09	-52.22	-25.00	27.22	V
7691.01	-55.15	8.39	12.35	-51.19	-25.00	26.19	V
10271.01	-51.28	9.54	13.01	-47.81	-25.00	22.81	V
12823.01	-48.19	10.71	13.39	-45.51	-25.00	20.51	H
15418.00	-43.99	11.42	13.75	-41.66	-25.00	16.66	H
17969.00	-41.55	12.89	15.56	-38.88	-25.00	13.88	H

**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
1331.01	-56.85	3.15	4.62	2.15	-57.53	-13.00	44.53	H
2008.00	-49.63	4.08	4.62	2.15	-51.24	-13.00	38.24	H
2685.00	-45.02	4.77	6.43	2.15	-45.51	-13.00	32.51	H
3352.02	-61.28	5.32	7.84	2.15	-60.91	-13.00	47.91	V
4020.02	-58.38	6.05	8.92	2.15	-57.66	-13.00	44.66	H
4678.02	-58.52	6.49	9.58	2.15	-57.58	-13.00	44.58	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
1415.0	-42.5	3.25	5.06	2.15	-42.87	-13	29.9	V
2123.0	-47.1	4.21	4.97	2.15	-48.5	-13	35.5	V
2830.0	-42.6	4.95	6.69	2.15	-43.05	-13	30.1	H
3538.02	-54.78	5.7	8.25	2.15	-54.38	-13	41.38	V
4247.0	-54.4	6.24	9.15	2.15	-53.66	-13	40.7	V
4954.0	-52.3	6.68	9.85	2.15	-51.29	-13	38.3	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	-45.80	3.28	5.14	2.15	-46.09	-13.00	33.09	V
2150.00	-49.02	4.25	5.05	2.15	-50.37	-13.00	37.37	H
2862.00	-43.24	4.96	6.75	2.15	-43.60	-13.00	30.60	H
3577.02	-55.06	6.10	8.31	2.15	-55.00	-13.00	42.00	V
4293.02	-55.34	6.20	9.19	2.15	-54.50	-13.00	41.50	V
5010.01	-54.87	6.59	9.91	2.15	-53.70	-13.00	40.70	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
1563.59	-67.07	3.48	5.39	0.00	-67.31	-40.00	27.31	H
2335.53	-48.51	4.44	5.61	2.15	-49.49	-13.00	36.49	H
3121.52	-58.47	5.39	7.29	2.15	-58.72	-13.00	45.72	H
3902.02	-58.88	6.11	8.76	2.15	-58.38	-13.00	45.38	V
4675.52	-58.94	6.48	9.58	2.15	-57.99	-13.00	44.99	V
5453.01	-58.44	6.88	10.53	2.15	-56.94	-13.00	43.94	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1559.00	-67.29	3.47	5.39	0.00	-67.52	-40.00	27.52	H
2342.53	-48.69	4.45	5.63	2.15	-49.66	-13.00	36.66	H
3124.02	-59.91	5.40	7.30	2.15	-60.16	-13.00	47.16	V
3906.02	-59.21	6.11	8.77	2.15	-58.70	-13.00	45.70	V
4693.52	-59.20	6.50	9.59	2.15	-58.26	-13.00	45.26	V
5476.01	-58.39	6.97	10.57	2.15	-56.94	-13.00	43.94	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
1582.84	-66.89	3.50	5.35	0.00	-67.19	-40.00	27.19	H
2351.40	-48.87	4.46	5.65	2.15	-49.83	-13.00	36.83	H
3139.52	-59.37	5.38	7.33	2.15	-59.57	-13.00	46.57	V
3916.02	-58.01	6.12	8.78	2.15	-57.50	-13.00	44.50	V
4702.02	-58.32	6.51	9.60	2.15	-57.38	-13.00	44.38	V
5487.01	-57.75	7.01	10.58	2.15	-56.33	-13.00	43.33	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5001.02	-60.37	6.60	9.90	-57.07	-25.00	32.07	H
7492.01	-53.73	8.37	12.19	-49.91	-25.00	24.91	V
9995.01	-52.94	9.18	12.90	-49.22	-25.00	24.22	V
12497.01	-49.54	10.18	13.20	-46.52	-25.00	21.52	H
14992.00	-44.57	11.21	14.01	-41.77	-25.00	16.77	H
17492.00	-40.54	12.71	14.88	-38.37	-25.00	13.37	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5187.02	-54.96	6.94	10.16	-51.74	-25.00	26.74	V
7793.01	-54.36	8.30	12.43	-50.23	-25.00	25.23	H
10374.01	-50.62	9.76	13.05	-47.33	-25.00	22.33	V
12965.01	-47.73	10.48	13.48	-44.73	-25.00	19.73	H
15584.00	-43.71	11.49	13.70	-41.50	-25.00	16.50	H
16848.00	-40.02	12.06	13.74	-38.34	-25.00	13.34	V

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5376.02	-56.29	6.88	10.43	-52.74	-25.00	27.74	H
8052.01	-53.66	8.32	12.64	-49.34	-25.00	24.34	V
10754.01	-50.45	9.44	13.15	-46.74	-25.00	21.74	V
12117.01	-48.92	10.30	13.05	-46.17	-25.00	21.17	V
14797.00	-44.59	11.13	14.16	-41.56	-25.00	16.56	H
16104.00	-43.18	11.85	13.68	-41.35	-25.00	16.35	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
3472.02	-72.32	5.47	8.13	-69.66	-13.00	56.66	H
5091.02	-69.50	6.75	10.03	-66.22	-13.00	53.22	V
6850.01	-64.65	7.82	11.42	-61.05	-13.00	48.05	V
8598.01	-64.06	8.50	13.02	-59.54	-13.00	46.54	V
10318.01	-61.10	9.67	13.03	-57.74	-13.00	44.74	V
11994.01	-58.61	10.08	13.00	-55.69	-13.00	42.69	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
3543.02	-71.03	5.75	8.26	-68.52	-13.00	55.52	V
5197.02	-70.37	6.96	10.18	-67.15	-13.00	54.15	H
6993.01	-64.67	8.24	11.59	-61.32	-13.00	48.32	V
8748.01	-63.68	8.50	13.05	-59.13	-13.00	46.13	V
10451.01	-60.53	9.72	13.08	-57.17	-13.00	44.17	V
12249.01	-58.86	10.03	13.10	-55.79	-13.00	42.79	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
3555.02	-70.62	5.87	8.28	-68.21	-13.00	55.21	V
5303.02	-70.58	6.99	10.32	-67.25	-13.00	54.25	V
7170.01	-65.46	8.18	11.80	-61.84	-13.00	48.84	V
8951.01	-63.10	9.03	13.09	-59.04	-13.00	46.04	V
10730.01	-60.97	9.38	13.15	-57.20	-13.00	44.20	V
12412.01	-58.69	10.41	13.16	-55.94	-13.00	42.94	V

**CA 2A\_5A, 5MHz+5MHz, CH18625+20425**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3705.01	-51.62	6.42	8.49	-49.55	-13.00	36.55	V
5558.01	-52.03	7.19	10.59	-48.63	-13.00	35.63	H
7439.01	-53.59	8.23	12.13	-49.69	-13.00	36.69	H
9285.01	-52.55	9.12	13.27	-48.40	-13.00	35.40	V
11096.00	-50.53	9.84	13.18	-47.19	-13.00	34.19	V
12993.00	-47.67	10.47	13.50	-44.64	-13.00	31.64	H

**CA 2A\_5A, 5MHz+5MHz, CH18900+20525**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3760.01	-53.33	6.26	8.56	-51.03	-13.00	38.03	V
5641.01	-49.24	7.27	10.57	-45.94	-13.00	32.94	V
7501.01	-53.92	8.39	12.20	-50.11	-13.00	37.11	V
9370.01	-53.24	9.07	13.32	-48.99	-13.00	35.99	V
11275.00	-49.53	9.85	13.14	-46.24	-13.00	33.24	V
13151.00	-44.04	10.71	13.71	-41.04	-13.00	28.04	V

**CA 2A\_5A, 5MHz+5MHz, CH19175+20625**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3815.01	-53.30	6.09	8.64	-50.75	-13.00	37.75	H
5723.01	-48.60	7.30	10.56	-45.34	-13.00	32.34	V
7605.01	-54.65	8.00	12.28	-50.37	-13.00	37.37	V
9520.01	-53.87	9.47	13.38	-49.96	-13.00	36.96	H
11454.00	-49.42	9.93	13.11	-46.24	-13.00	33.24	V
13376.00	-44.55	10.57	14.03	-41.09	-13.00	28.09	V



**CA 5A\_66A, 5MHz+10MHz, CH20425+132022**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
1643.01	-53.91	3.56	5.24	2.15	-54.38	-13.00	41.38	H
2492.50	-47.49	4.62	6.08	2.15	-48.18	-13.00	35.18	V
3316.89	-62.16	5.29	7.76	2.15	-61.84	-13.00	48.84	V
4120.57	-57.14	6.04	9.02	2.15	-56.31	-13.00	43.31	V
4965.34	-55.90	6.66	9.87	2.15	-54.84	-13.00	41.84	H
5789.21	-57.36	7.21	10.54	2.15	-56.18	-13.00	43.18	H

**CA 5A\_66A, 5MHz+10MHz, CH20525+132322**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3490.30	-54.15	5.50	8.18	2.15	-53.62	-13.00	40.62	V
5234.85	-51.24	7.00	10.23	2.15	-50.16	-13.00	37.16	V
6975.92	-53.16	8.11	11.57	2.15	-51.85	-13.00	38.85	V
8737.19	-51.32	8.47	13.05	2.15	-48.89	-13.00	35.89	V
10477.56	-47.91	9.69	13.09	2.15	-46.66	-13.00	33.66	V
12219.32	-47.11	10.05	13.09	2.15	-46.22	-13.00	33.22	V

**CA 5A\_66A, 5MHz+10MHz, CH20625+132622\_VD\_HV\_1P**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3550.20	-54.17	5.82	8.27	2.15	-53.87	-13.00	40.87	V
5324.69	-48.97	6.99	10.35	2.15	-47.76	-13.00	34.76	V
7108.24	-54.30	8.16	11.73	2.15	-52.88	-13.00	39.88	V
8894.58	-52.15	8.84	13.08	2.15	-50.06	-13.00	37.06	V
10653.06	-49.15	9.29	13.13	2.15	-47.46	-13.00	34.46	V
12447.75	-46.59	10.31	13.18	2.15	-45.87	-13.00	32.87	V

**CA5A\_66A, 5MHz+10MHz, CH20425+132022**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3433.89	-60.85	5.40	8.04	2.15	-60.36	-13.00	47.36	H
5145.02	-54.44	6.87	10.10	2.15	-53.36	-13.00	40.36	H
6858.23	-52.87	7.81	11.43	2.15	-51.40	-13.00	38.40	V
8586.76	-51.37	8.52	13.02	2.15	-49.02	-13.00	36.02	V
10315.99	-48.97	9.67	13.03	2.15	-47.76	-13.00	34.76	V
12026.41	-46.56	10.13	13.01	2.15	-45.83	-13.00	32.83	V

**CA5A\_66A, 5MHz+10MHz, CH20525+132322**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3490.30	-59.31	5.50	8.18	2.15	-58.78	-13.00	45.78	H
5234.85	-51.55	7.00	10.23	2.15	-50.47	-13.00	37.47	V
6992.64	-52.86	8.24	11.59	2.15	-51.66	-13.00	38.66	V
8716.29	-52.41	8.41	13.04	2.15	-49.93	-13.00	36.93	V
10458.06	-48.74	9.71	13.08	2.15	-47.52	-13.00	34.52	V
12200.52	-46.82	10.06	13.08	2.15	-45.95	-13.00	32.95	V

**CA5A\_66A, 5MHz+10MHz, CH20625+132622**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polorization
3550.20	-53.34	5.82	8.27	2.15	-53.04	-13.00	40.04	V
5325.39	-56.08	6.99	10.36	2.15	-54.86	-13.00	41.86	H
7100.58	-53.25	8.16	11.72	2.15	-51.84	-13.00	38.84	V
8885.53	-52.66	8.82	13.08	2.15	-50.55	-13.00	37.55	V
10664.20	-49.48	9.30	13.13	2.15	-47.80	-13.00	34.80	V
12444.96	-46.76	10.32	13.18	2.15	-46.05	-13.00	33.05	V

**CA 41C, 5MHz+20MHz, CH39683+39800**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
4992.02	-60.42	6.62	9.89	-57.15	-25.00	32.15	H
7491.01	-54.48	8.37	12.19	-50.66	-25.00	25.66	V
9996.01	-53.64	9.18	12.90	-49.92	-25.00	24.92	H
12496.01	-49.64	10.18	13.20	-46.62	-25.00	21.62	H
14989.00	-43.93	11.21	14.01	-41.13	-25.00	16.13	H
17490.00	-40.65	12.70	14.88	-38.47	-25.00	13.47	V

**CA 41C, 5MHz+20MHz, CH40528+CH40645**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5177.02	-59.26	6.92	10.15	-56.03	-25.00	31.03	H
7787.01	-55.78	8.31	12.43	-51.66	-25.00	26.66	V
10352.01	-50.35	9.73	13.04	-47.04	-25.00	22.04	V
12969.01	-48.28	10.48	13.48	-45.28	-25.00	20.28	H
15541.00	-44.42	11.51	13.70	-42.23	-25.00	17.23	H
16878.00	-40.18	12.02	13.75	-38.45	-25.00	13.45	H

**CA 41C, 5MHz+20MHz, CH41373+CH41490**

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polorization
5366.02	-61.13	6.90	10.41	-57.62	-25.00	32.62	H
8068.01	-54.22	8.32	12.65	-49.89	-25.00	24.89	V
10728.01	-51.18	9.37	13.15	-47.40	-25.00	22.40	V
13415.01	-44.70	10.58	14.08	-41.20	-25.00	16.20	H
16116.00	-42.55	11.83	13.68	-40.70	-25.00	15.70	V
17459.00	-40.21	12.63	14.81	-38.03	-25.00	13.03	H

Note: The maximum value of expanded measurement uncertainty for this test item is  $U = 5.16 \text{ dB}$ ,  $k = 2$ .

## **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 increments from +50°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

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

### A.3.2 Measurement results

#### LTE Band 2, 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	3.9	1850.833	1909.199	0.17	0.0001		
50						2.07	0.0011
40						1.49	0.0008
30						2.13	0.0011
10						0.17	0.0001
0						0.92	0.0005
-10						1.46	0.0008
-20						0.69	0.0004
-30						0.51	0.0003

##### Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.7	20	1850.833	1909.199	0.87	0.0005
4.2				1.06	0.0006

#### 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	3.9	824.417	848.583	-0.64	0.0008		
50						-1.33	0.0016
40						-5.88	0.0070
30						-5.81	0.0069
10						-0.64	0.0008
0						-0.87	0.0010
-10						-5.62	0.0067
-20						-0.16	0.0002
-30						-7.28	0.0087

##### Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.7	20	824.417	848.583	-0.24	0.0003
4.2				0.29	0.0003

**LTE Band 7, 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	3.9	2500.929	2569.135		
50				1.02	0.0004
40				1.47	0.0006
30				0.80	0.0003
10				2.55	0.0010
0				-9.76	0.0039
-10				0.96	0.0004
-20				1.82	0.0007
-30				2.07	0.0008

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.7	20	2500.929	2569.135	1.80	0.0007
4.2				1.59	0.0006

**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	3.9	699.481	715.519		
50				4.09	0.0058
40				0.11	0.0002
30				0.21	0.0003
10				0.01	0.0000
0				-0.21	0.0003
-10				-0.34	0.0005
-20				-0.70	0.0010
-30				0.31	0.0004

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.7	20	699.481	715.519	-0.01	0.0000
4.2				-0.27	0.0004

**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	3.9	777.465	786.519		
50				-0.80	0.0010
40				1.87	0.0024
30				-0.77	0.0010
10				-0.59	0.0008
0				-0.43	0.0005
-10				-0.79	0.0010
-20				-5.42	0.0069
-30				-0.84	0.0011

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.7	20	777.465	786.519	0.74	0.0009
4.2				0.86	0.0011

**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	3.9	2496.385	2689.583		
50				-1.52	0.0006
40				-1.37	0.0005
30				0.74	0.0003
10				-0.67	0.0003
0				-0.57	0.0002
-10				-1.99	0.0008
-20				-1.33	0.0005
-30				-0.49	0.0002

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	Offset(Hz)	Frequency error(ppm)
3.7	20	2496.385	2689.583	-1.93	0.0007
4.2				-1.95	0.0008

**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	3.9	1710.833	1779.199		
50				0.04	0.0000
40				-1.66	0.0010
30				0.10	0.0001
10				7.60	0.0044
0				-1.30	0.0007
-10				-1.03	0.0006
-20				-0.90	0.0005
-30				-0.19	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)
3.7	20	1710.833	1779.199	7.60	0.0044
4.2				0.43	0.0002

**LTE CA Band 7C, 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	3.9	2500.600	2569.420		
50				-2.75	0.0011
40				-2.43	0.0010
30				-1.59	0.0006
10				-1.04	0.0004
0				-0.60	0.0002
-10				0.27	0.0001
-20				-0.19	0.0001
-30				0.66	0.0003

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.7	20	2500.600	2569.420	0.84	0.0003
4.2				1.76	0.0007



**LTE CA Band 41C, 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	3.9	2496.880	2689.100		
50				-2.38	0.0009
40				-2.20	0.0008
30				-2.70	0.0010
10				-1.82	0.0007
0				-2.56	0.0010
-10				-0.99	0.0004
-20				-1.87	0.0007
-30				-1.95	0.0008

**Frequency Error vs Voltage**

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.7	20	2496.880	2689.100	-1.93	0.0007
4.2				-2.22	0.0009

#### **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.

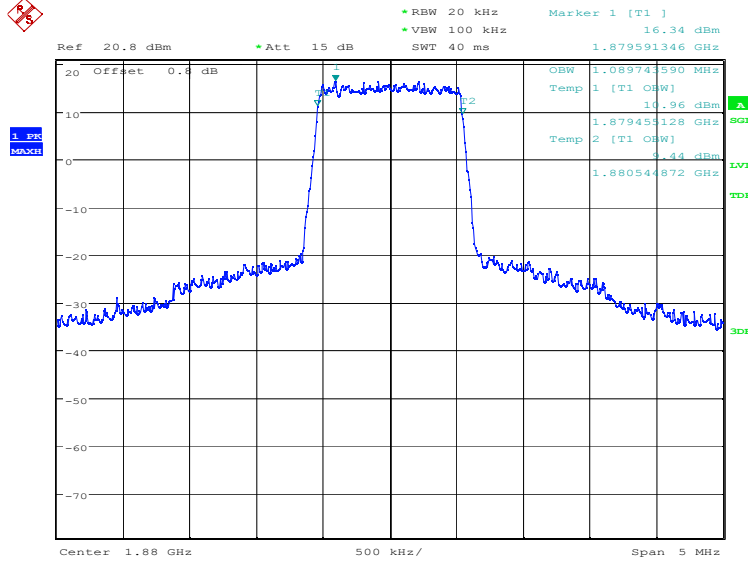
The measurement method is from ANSI C63.26:

- 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%)

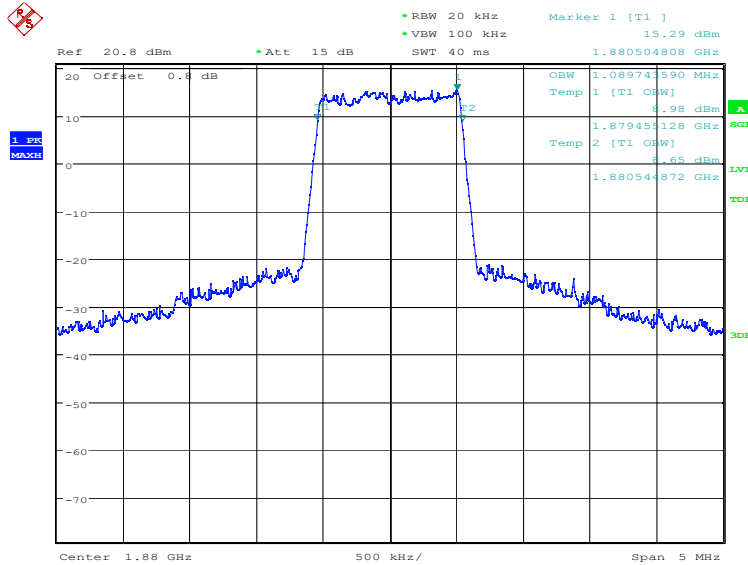
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	1089.74	1089.74

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



Date: 1.MAY.2022 15:59:21

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

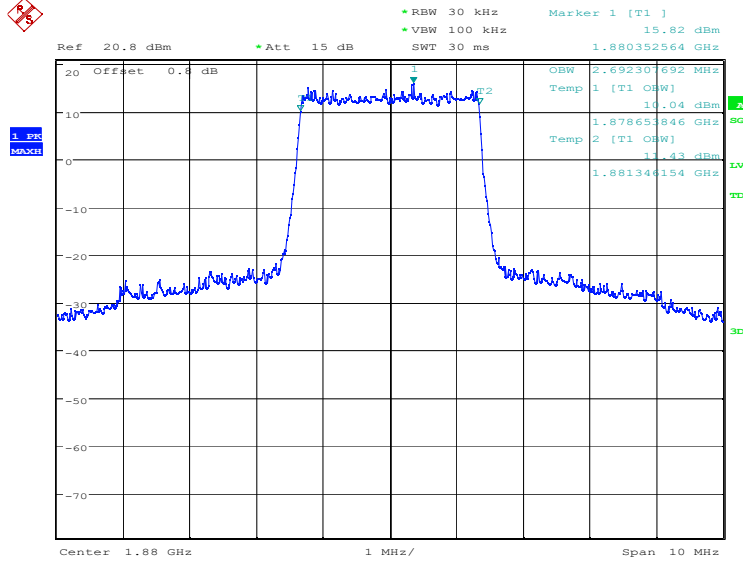


Date: 1.MAY.2022 16:00:01

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

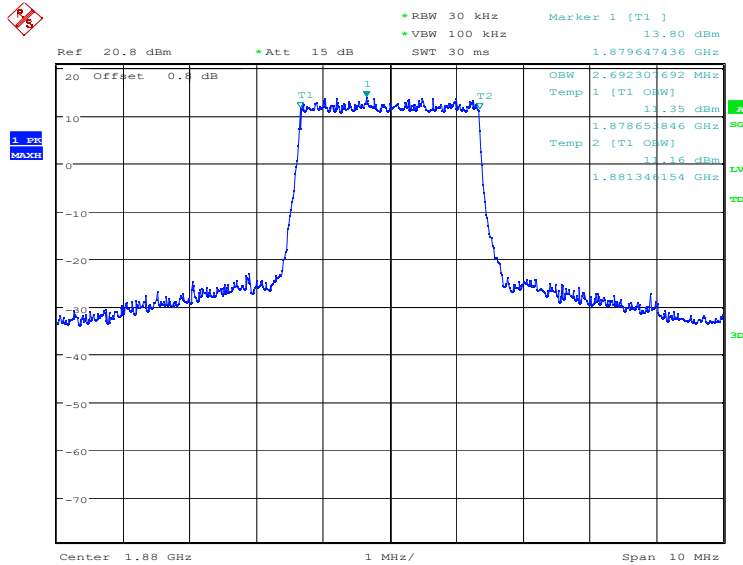
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	2692.31	2692.31

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



Date: 1.MAY.2022 16:00:44

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

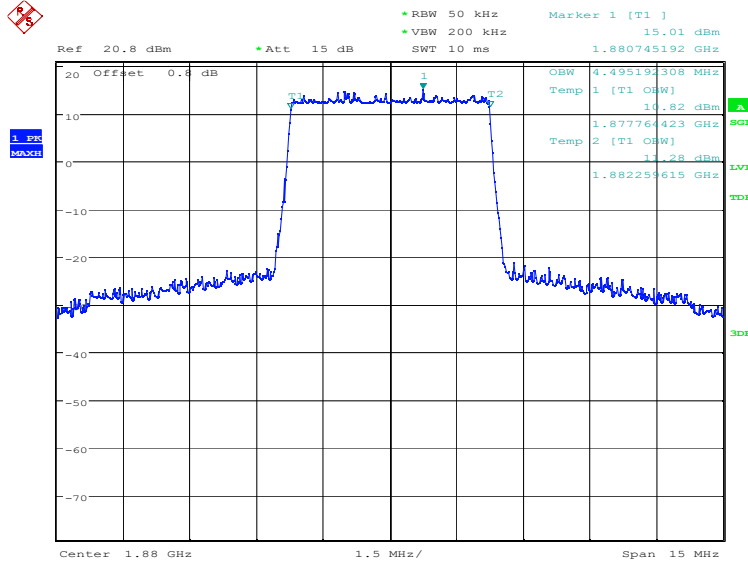


Date: 1.MAY.2022 16:01:24

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

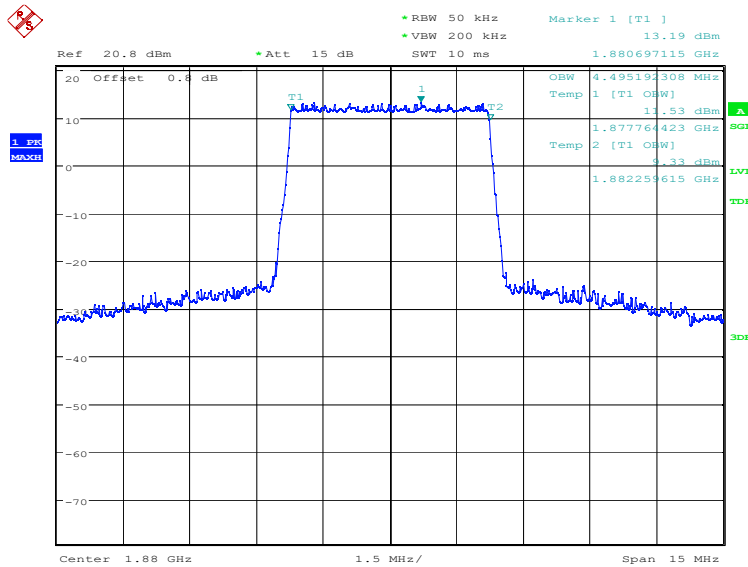
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	4495.19	4495.19

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



Date: 1.MAY.2022 16:02:08

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

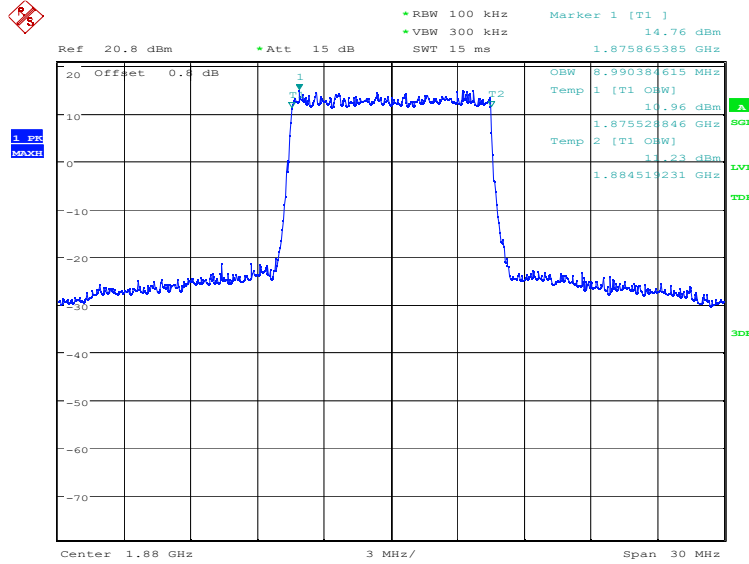


Date: 1.MAY.2022 16:02:47

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

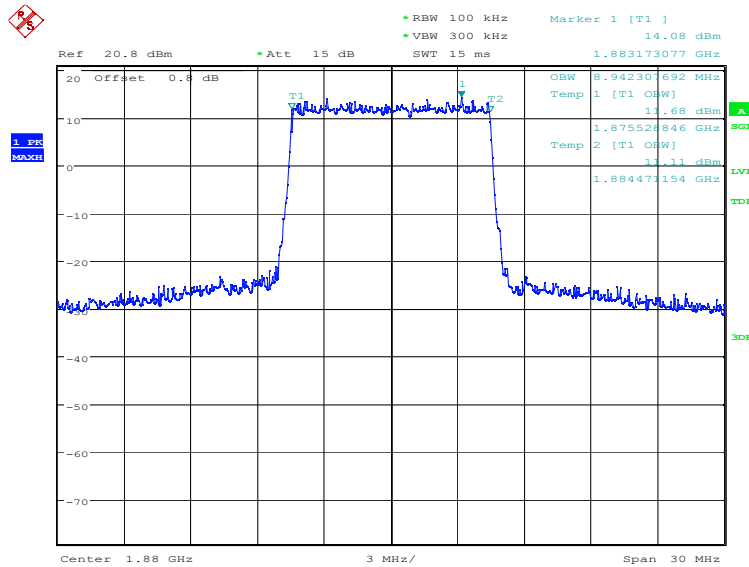
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	8990.38	8942.31

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



Date: 1.MAY.2022 16:03:31

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

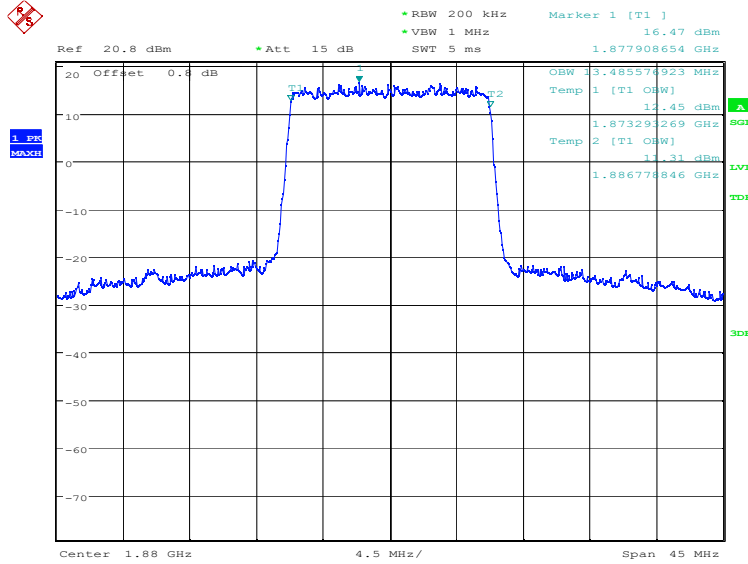


Date: 1.MAY.2022 16:04:11

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

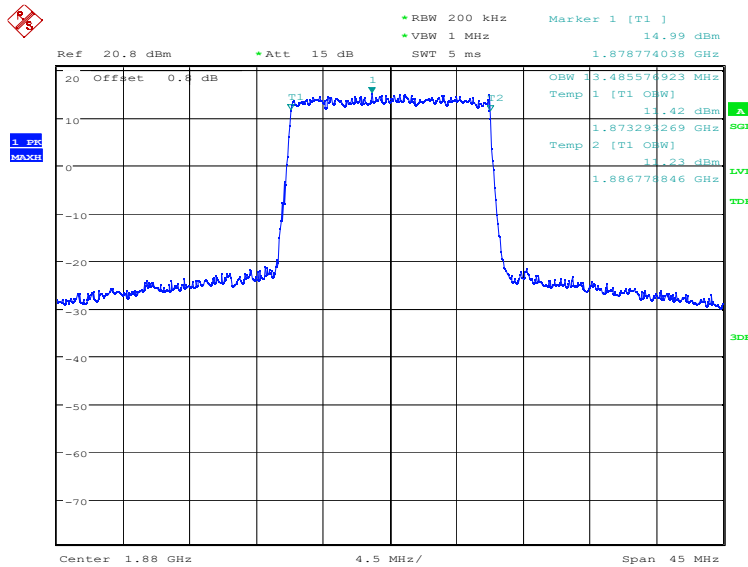
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 1.MAY.2022 16:04:55

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

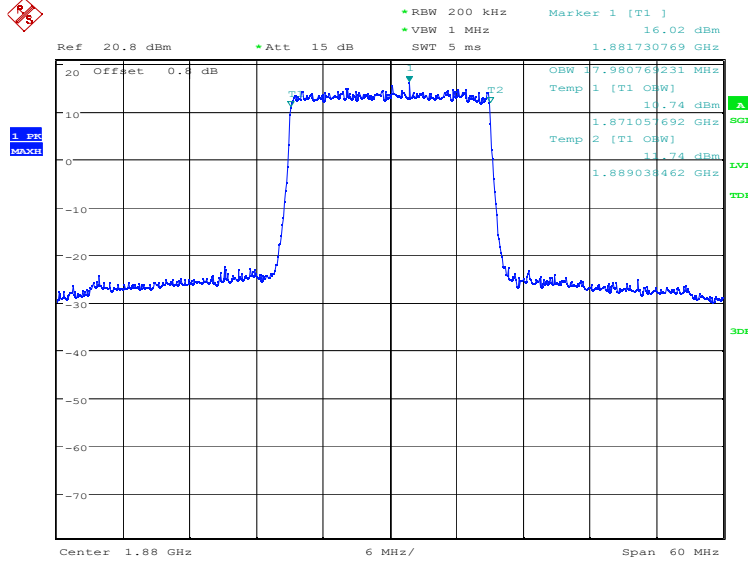


Date: 1.MAY.2022 16:05:35

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

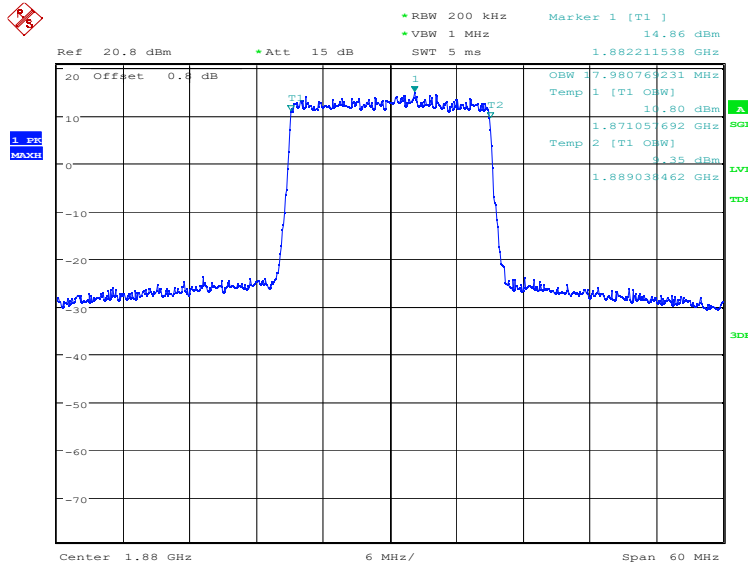
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	17980.77	17980.77

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



Date: 1.MAY.2022 16:06:18

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



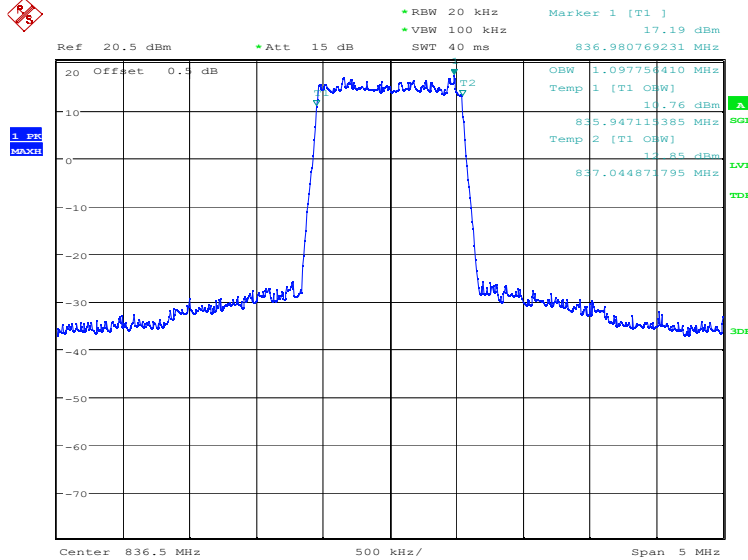
Date: 1.MAY.2022 16:06:58



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

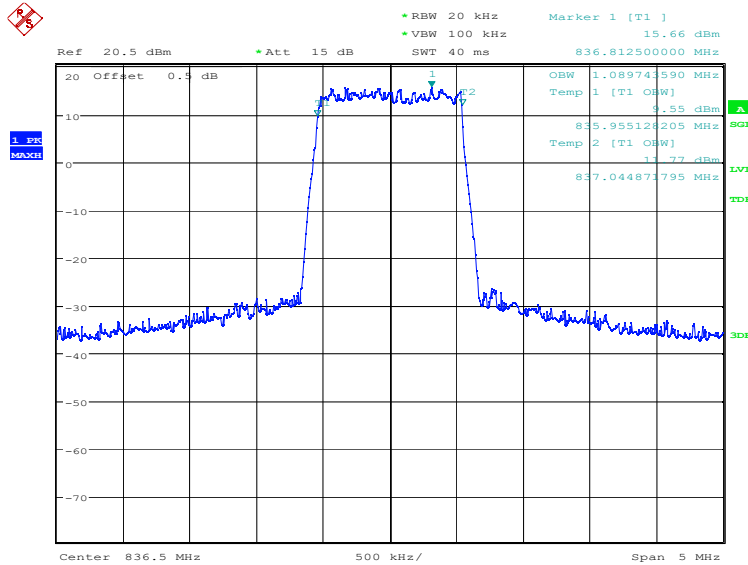
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1097.76	1089.74

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



Date: 1.MAY.2022 14:54:39

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

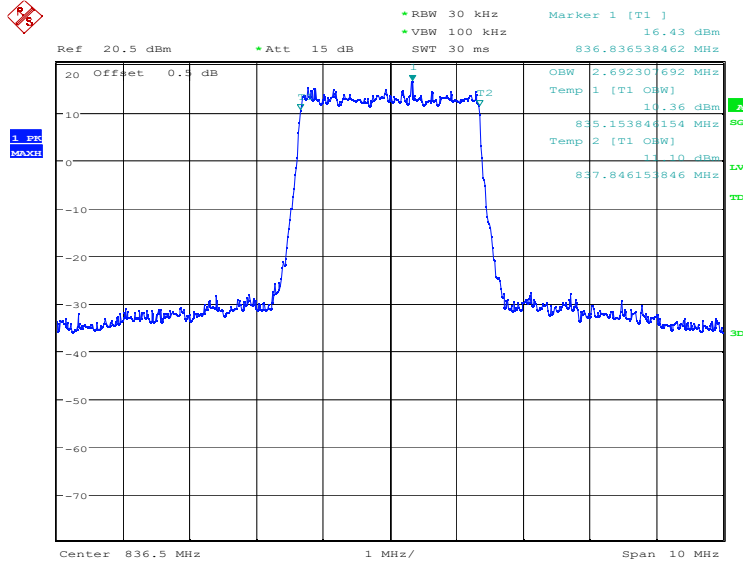


Date: 1.MAY.2022 14:55:18

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

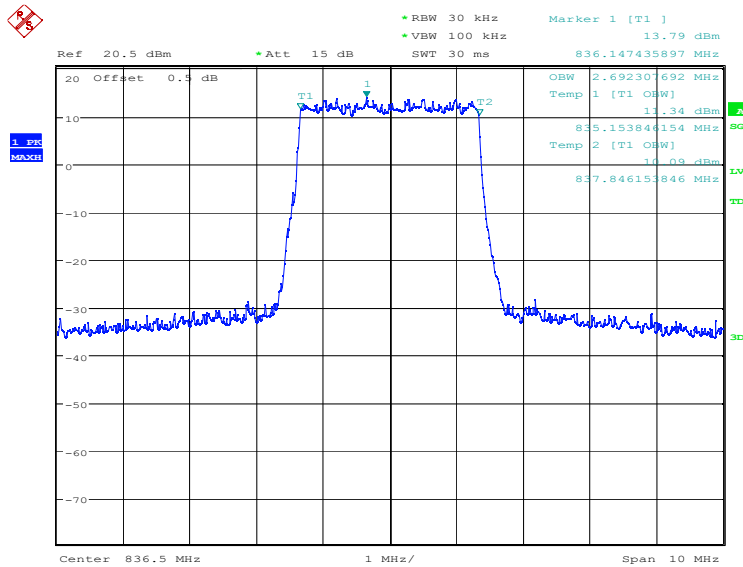
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 1.MAY.2022 14:56:02

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

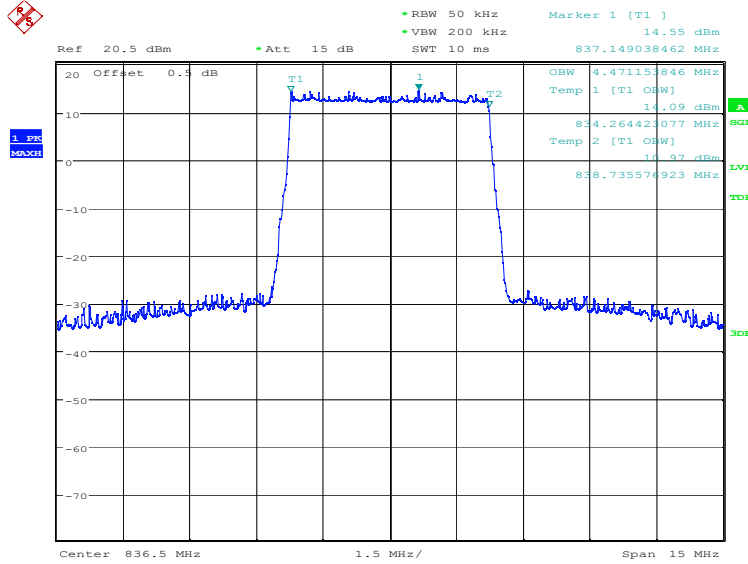


Date: 1.MAY.2022 14:56:41

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

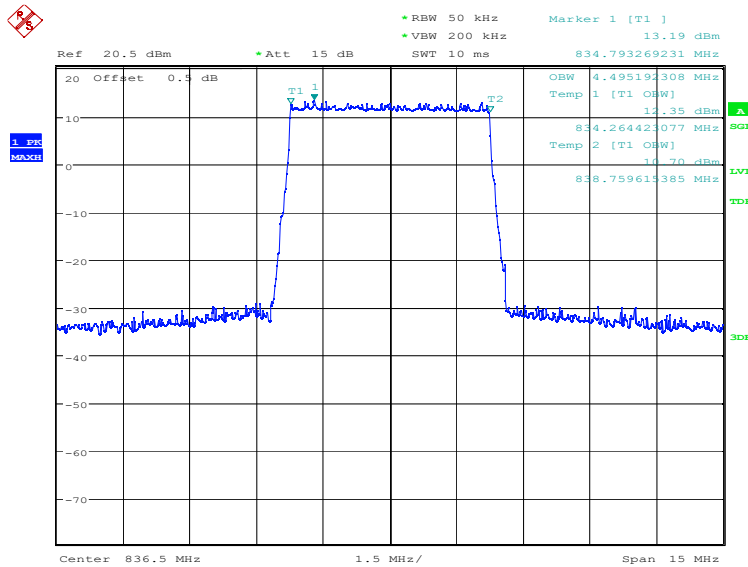
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	4471.15	4495.19

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



Date: 1.MAY.2022 14:57:25

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

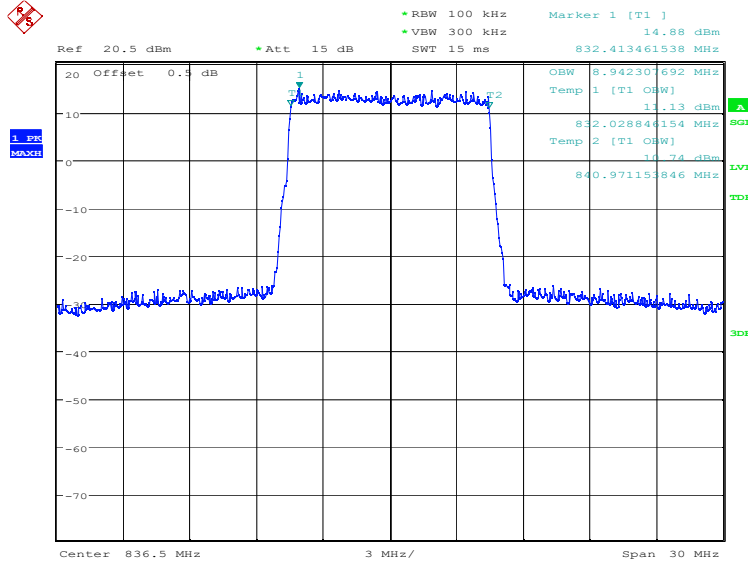


Date: 1.MAY.2022 14:58:05

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

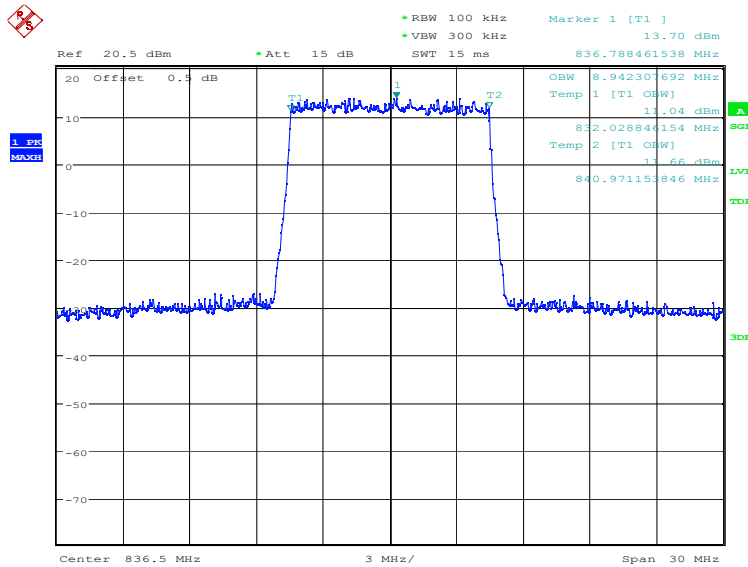
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	8942.31	8942.31

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



Date: 1.MAY.2022 14:58:48

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

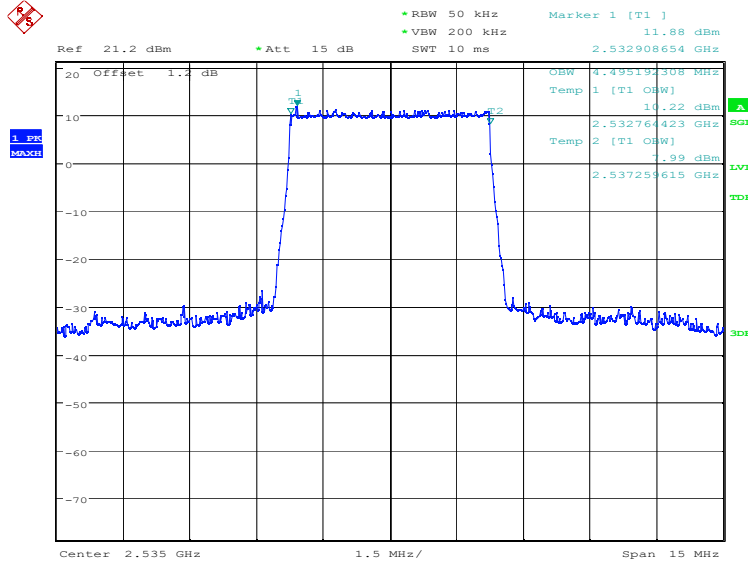


Date: 1.MAY.2022 14:59:27

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

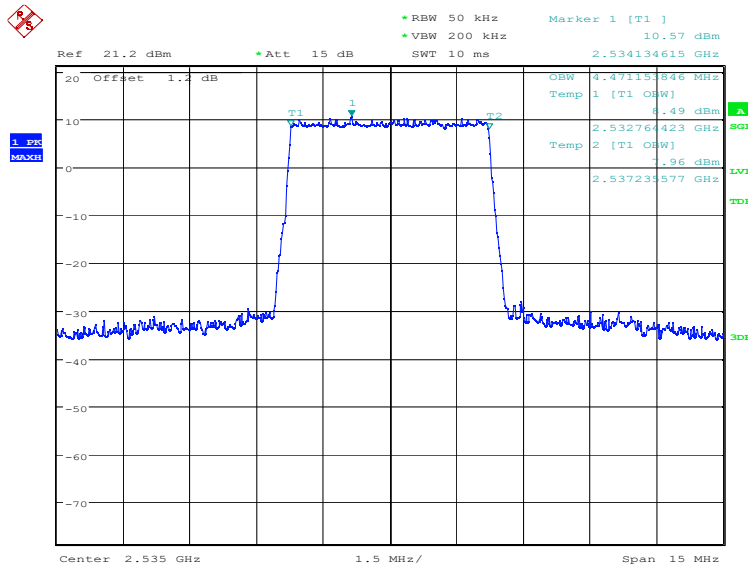
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	4495.19	4471.15

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



Date: 5.MAY.2022 08:43:26

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

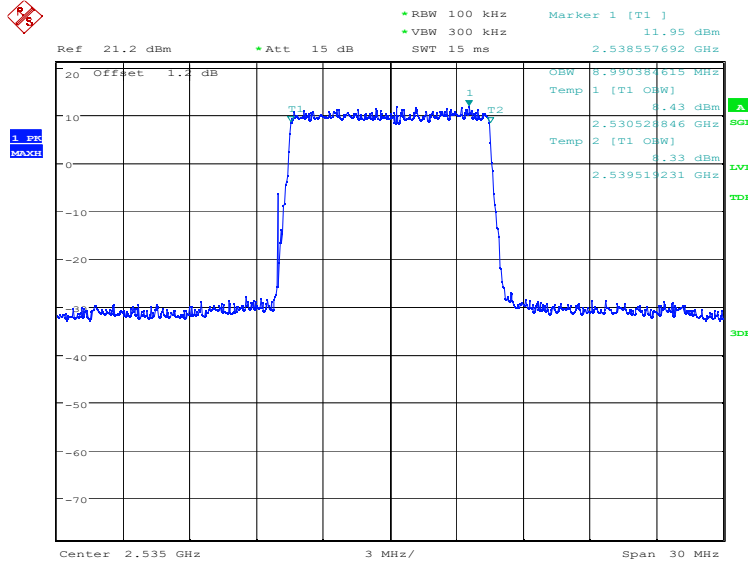


Date: 5.MAY.2022 08:44:06

**LTE band 7, 10MHz (99%)**

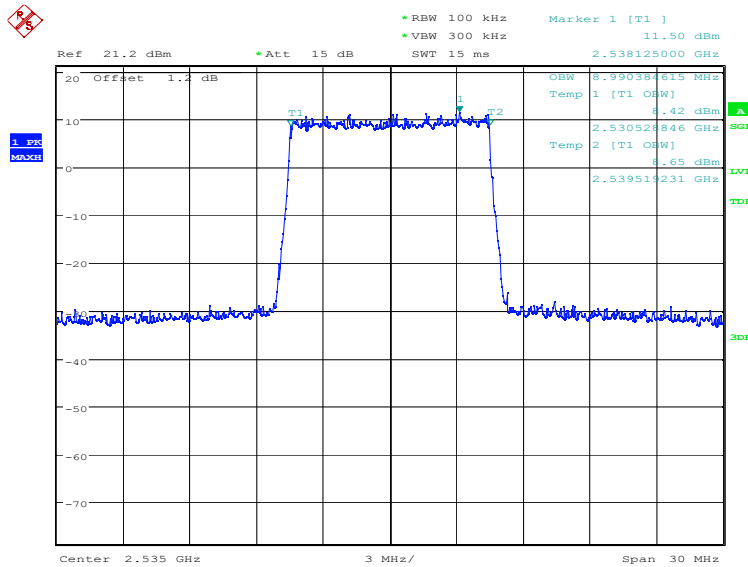
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	8990.38	8990.38

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



Date: 5.MAY.2022 08:44:51

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

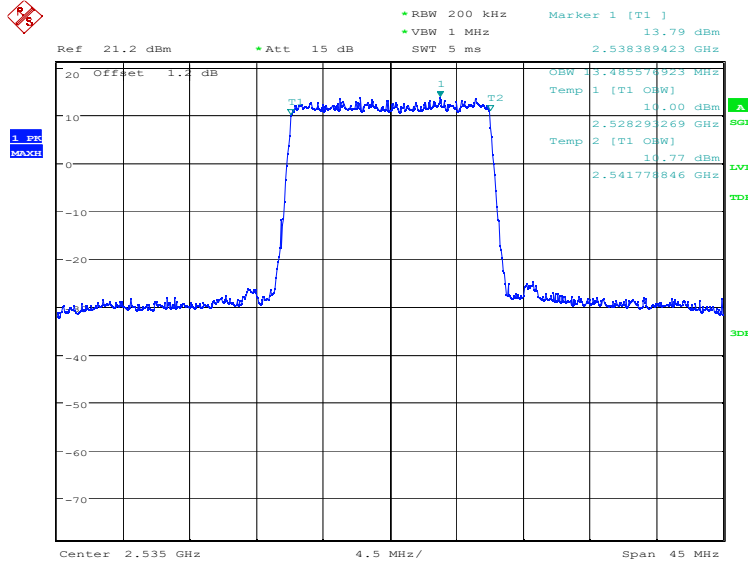


Date: 5.MAY.2022 08:45:31

**LTE band 7, 15MHz (99%)**

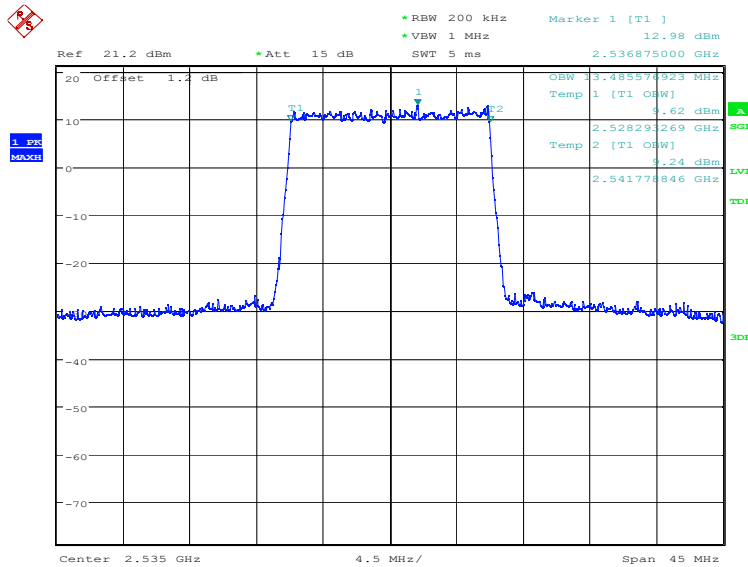
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 5.MAY.2022 08:46:16

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

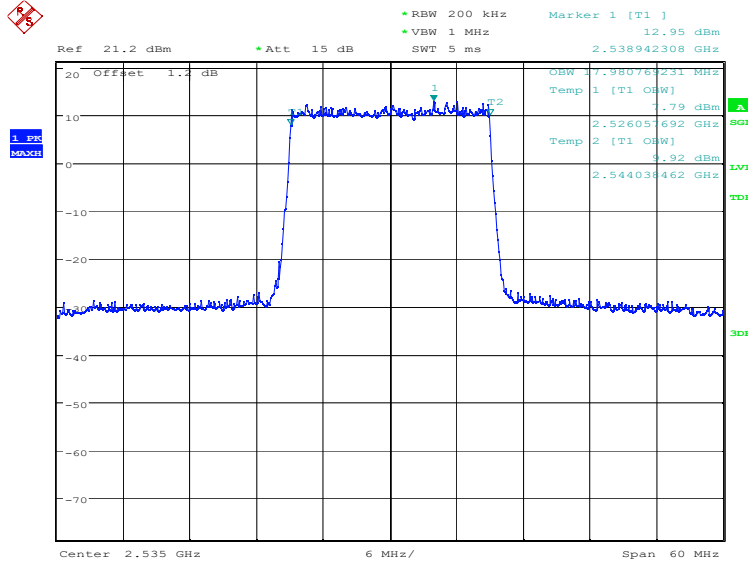


Date: 5.MAY.2022 08:46:56

**LTE band 7, 20MHz (99%)**

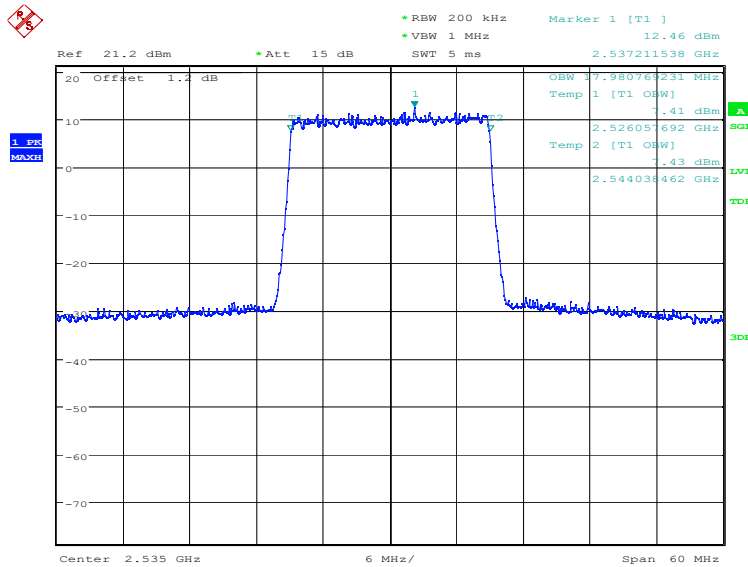
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	17980.77	17980.77

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



Date: 5.MAY.2022 08:47:39

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



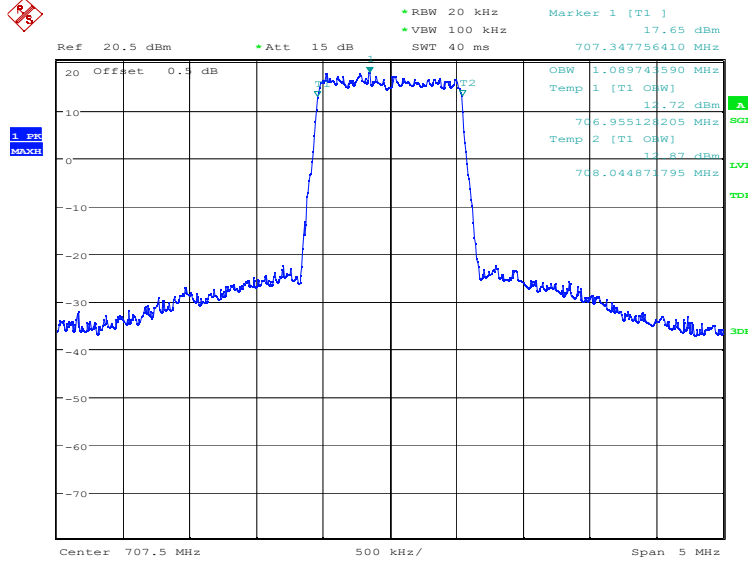
Date: 5.MAY.2022 08:48:19



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

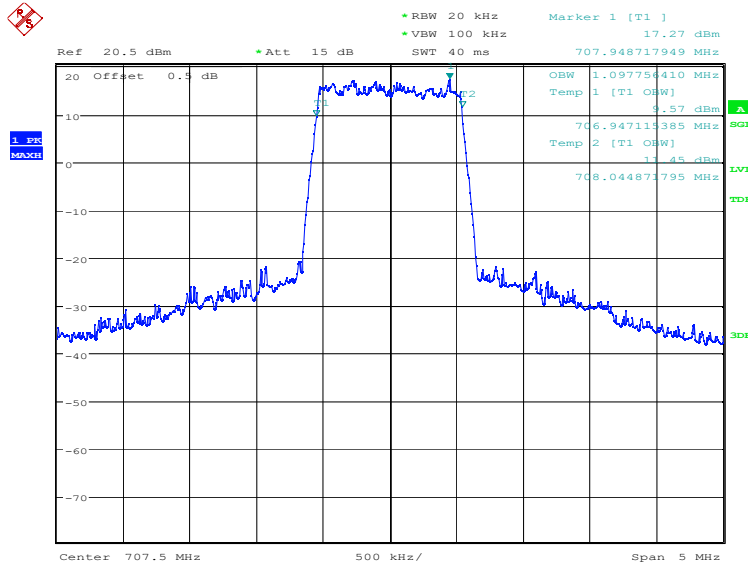
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	1089.74	1097.76

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



Date: 1.MAY.2022 15:00:15

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

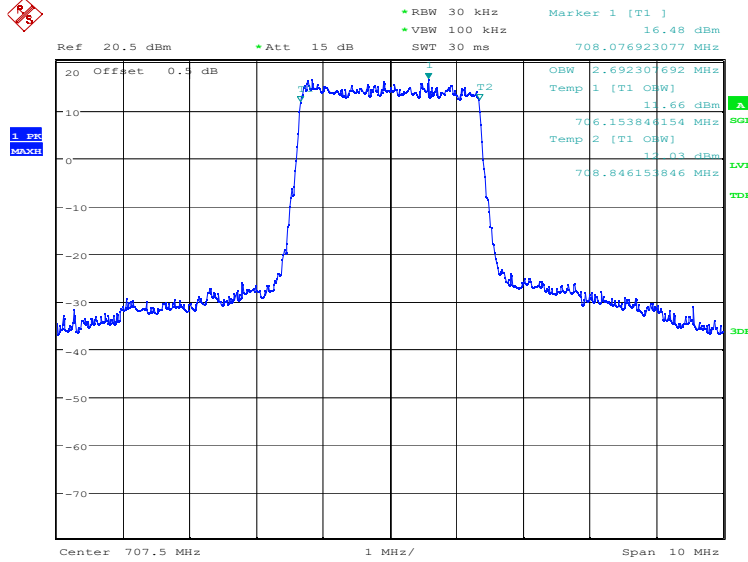


Date: 1.MAY.2022 15:00:54

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

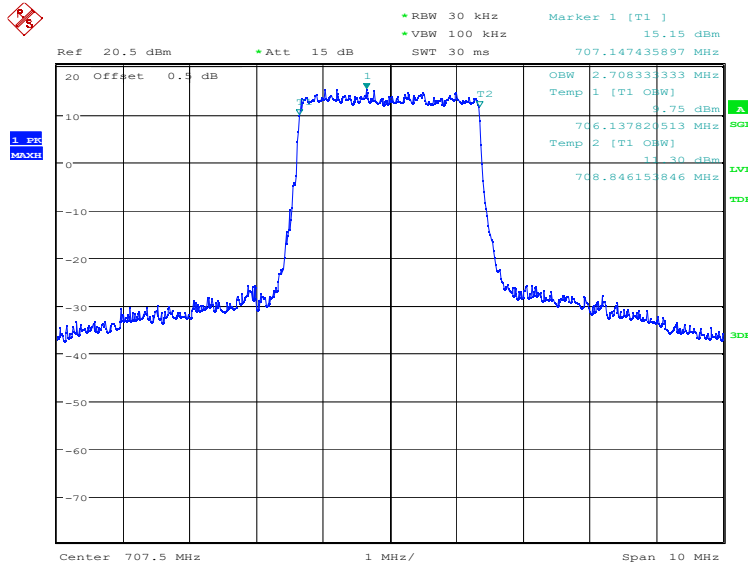
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	2692.31	2708.33

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



Date: 1.MAY.2022 15:01:38

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

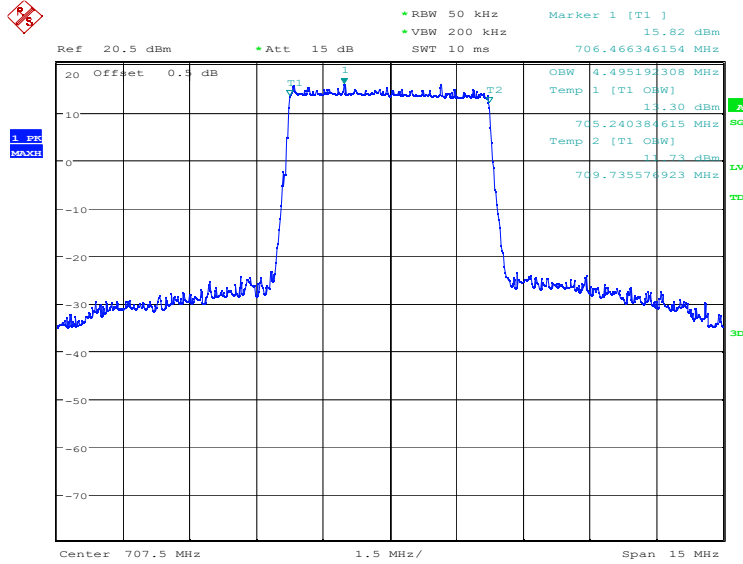


Date: 1.MAY.2022 15:02:17

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

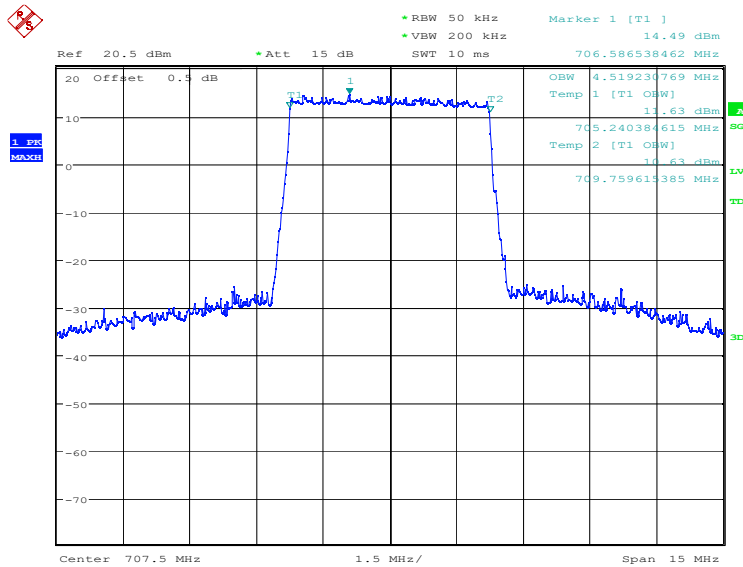
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	4495.19	4519.23

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



Date: 1.MAY.2022 15:03:01

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

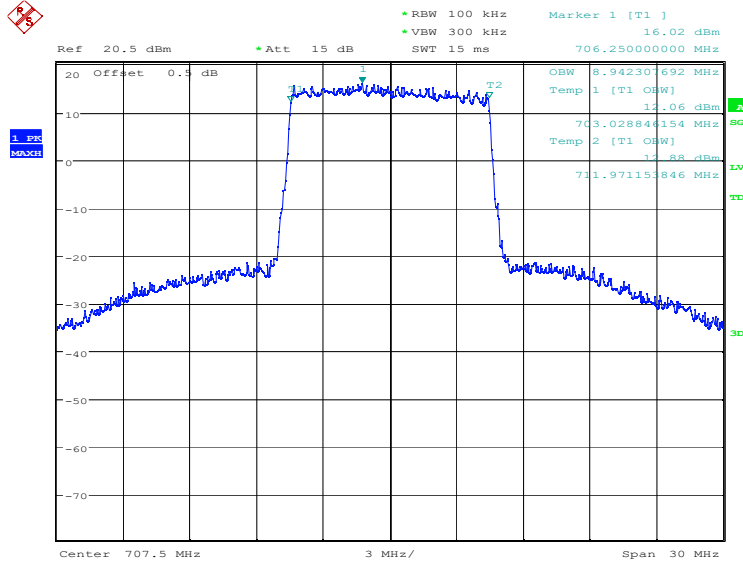


Date: 1.MAY.2022 15:03:40

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

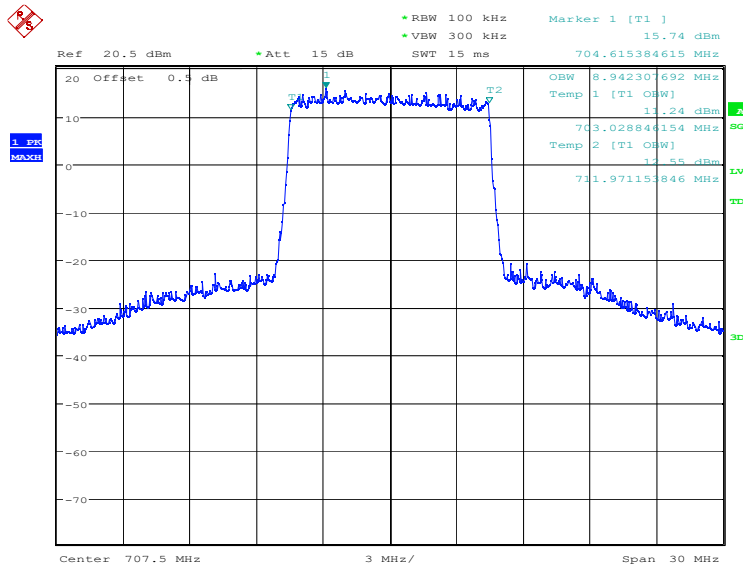
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	8942.31	8942.31

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



Date: 1.MAY.2022 15:04:24

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

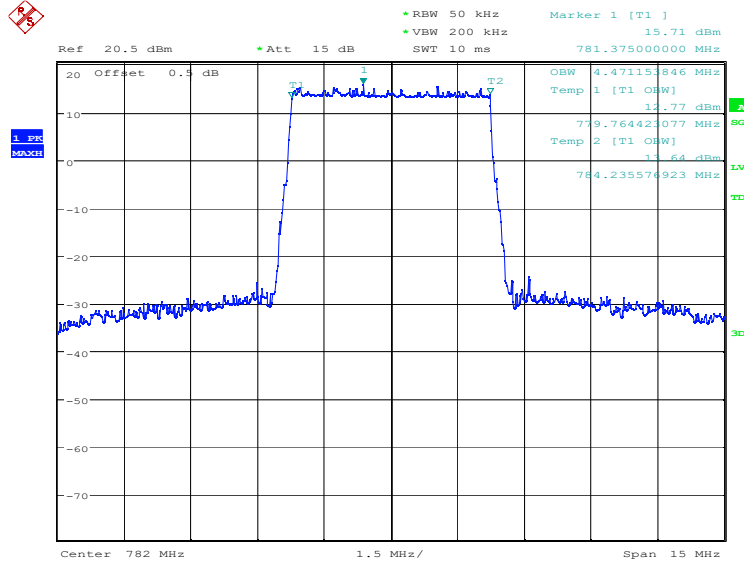


Date: 1.MAY.2022 15:05:04

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

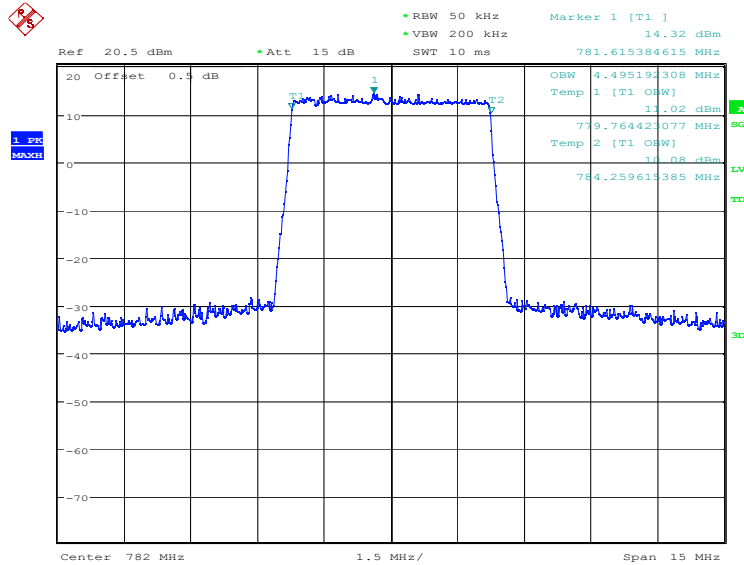
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
782.0	QPSK	16QAM
	4471.15	4495.19

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



Date: 1.MAY.2022 15:05:51

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

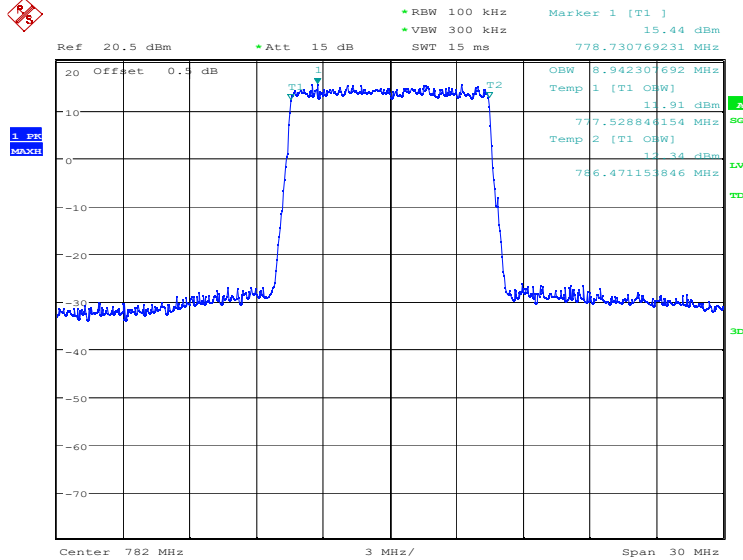


Date: 1.MAY.2022 15:06:31

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

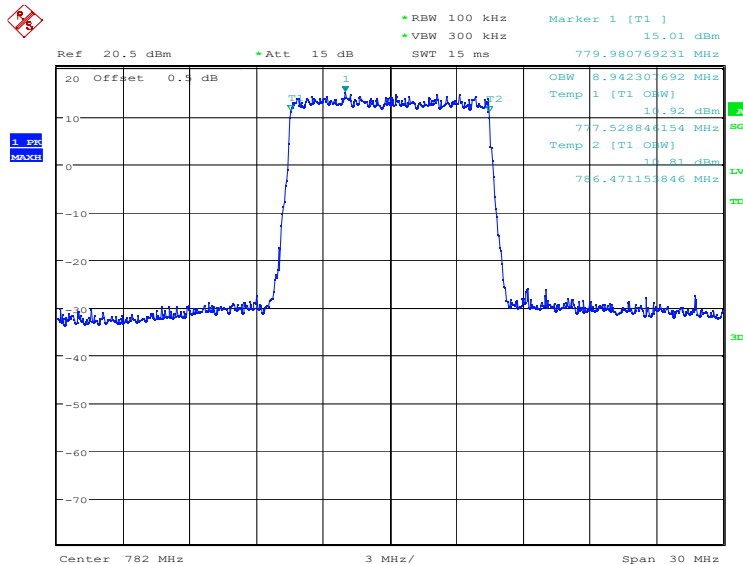
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
782.0	QPSK	16QAM
	8942.31	8942.31

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



Date: 1.MAY.2022 15:07:14

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

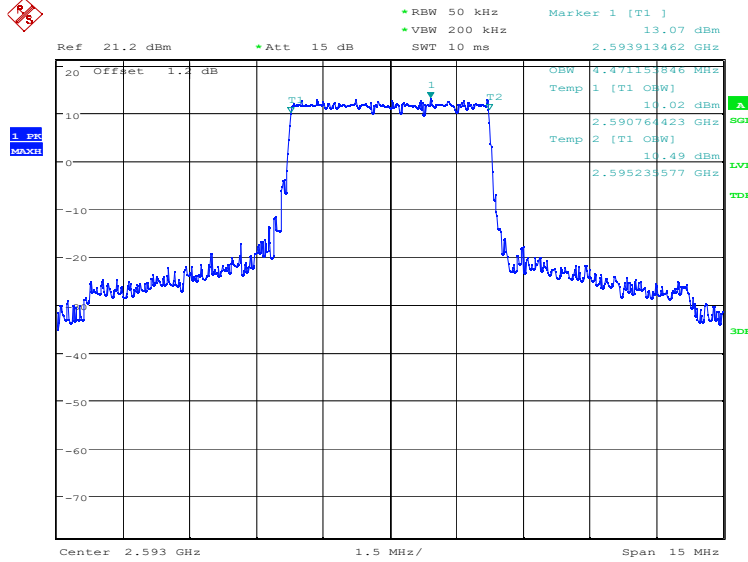


Date: 1.MAY.2022 15:07:54

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

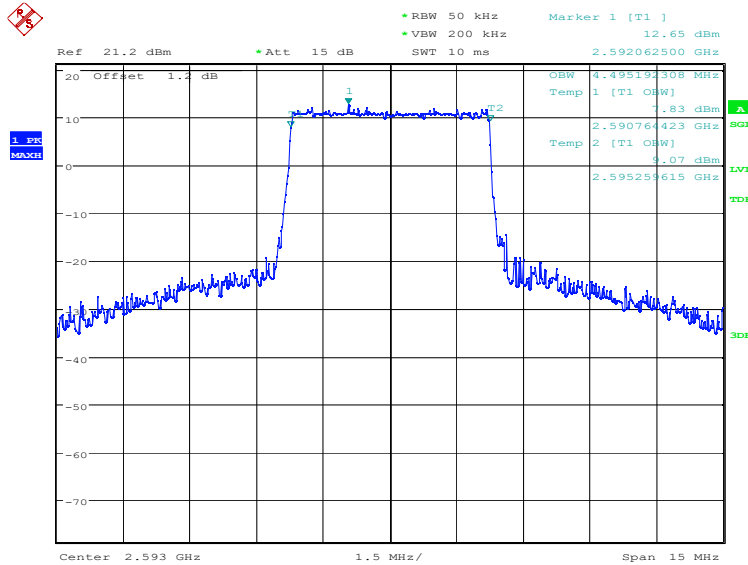
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	4471.15	4495.19

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



Date: 5.MAY.2022 08:49:49

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

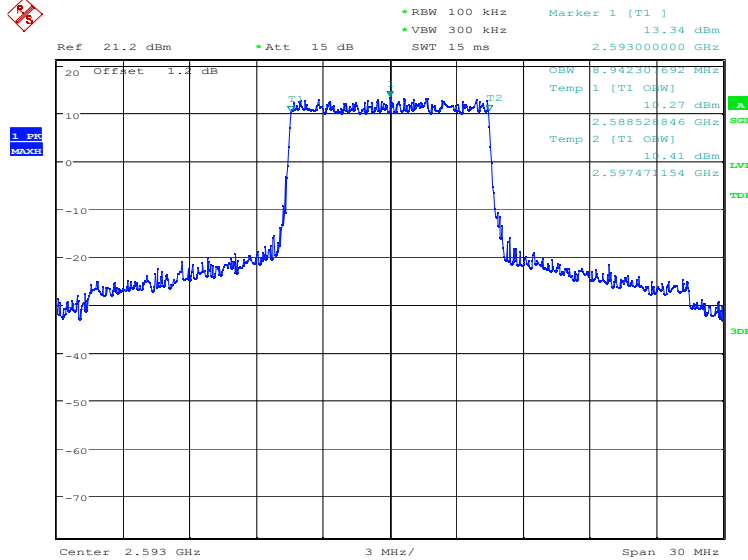


Date: 5.MAY.2022 08:50:29

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

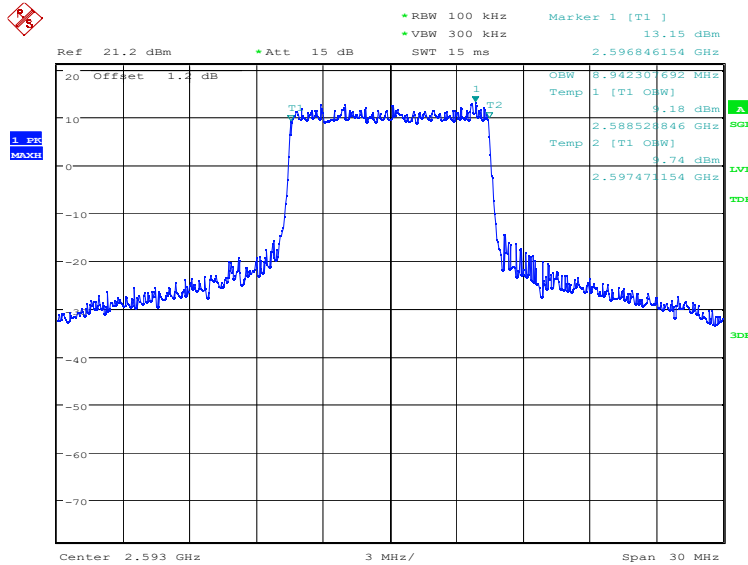
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
	2593.0	QPSK
	8942.31	8942.31

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



Date: 5.MAY.2022 08:51:13

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



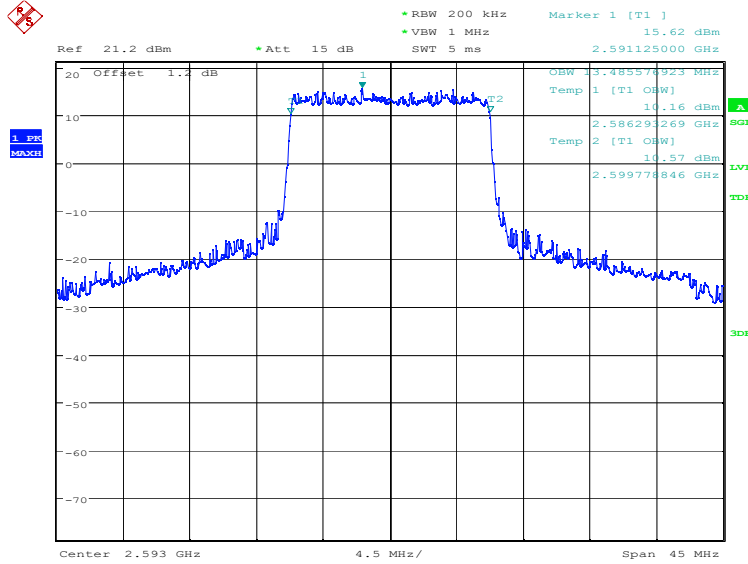
Date: 5.MAY.2022 08:51:52



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

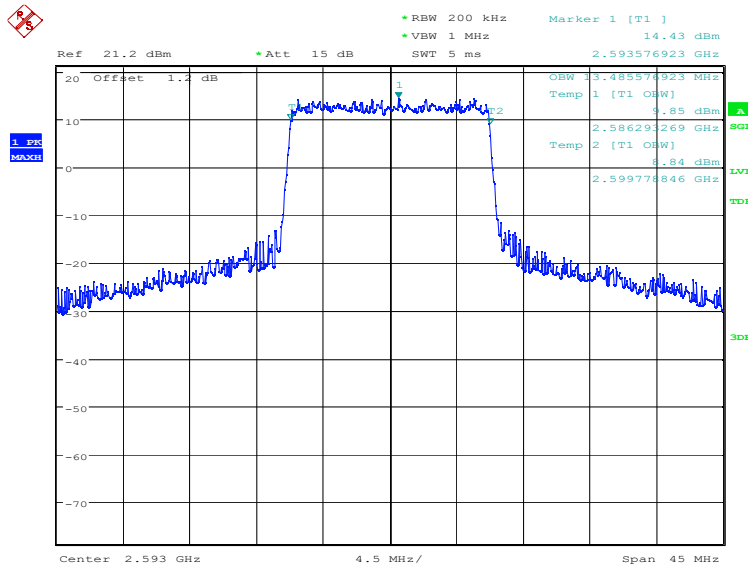
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 5.MAY.2022 08:52:36

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

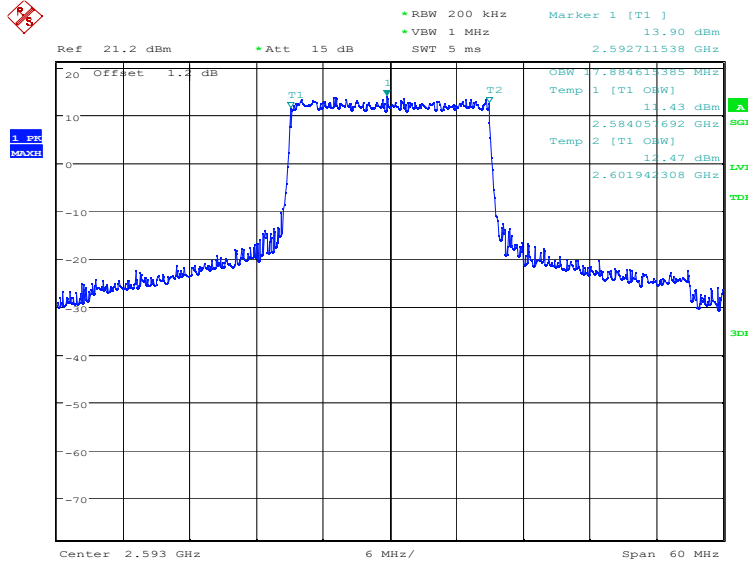


Date: 5.MAY.2022 08:53:15

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

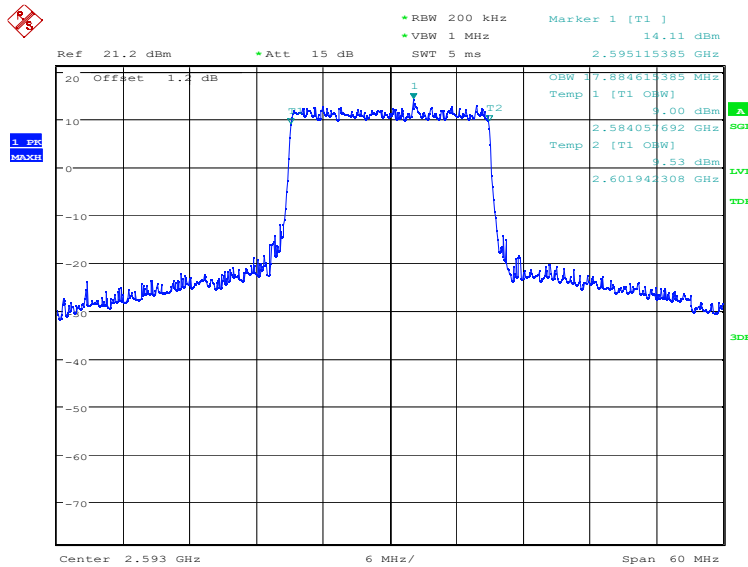
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	17884.62	17884.62

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



Date: 5.MAY.2022 08:53:59

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

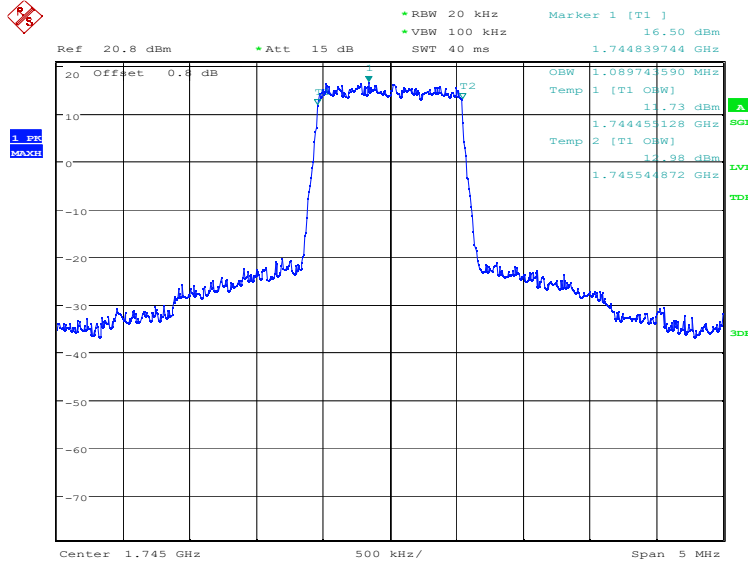


Date: 5.MAY.2022 08:54:39

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

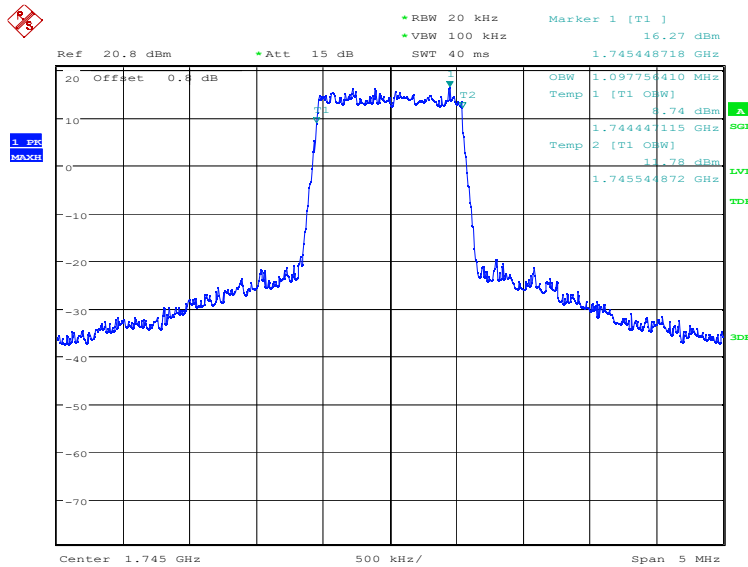
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	1089.74	1097.76

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



Date: 1.MAY.2022 16:16:07

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

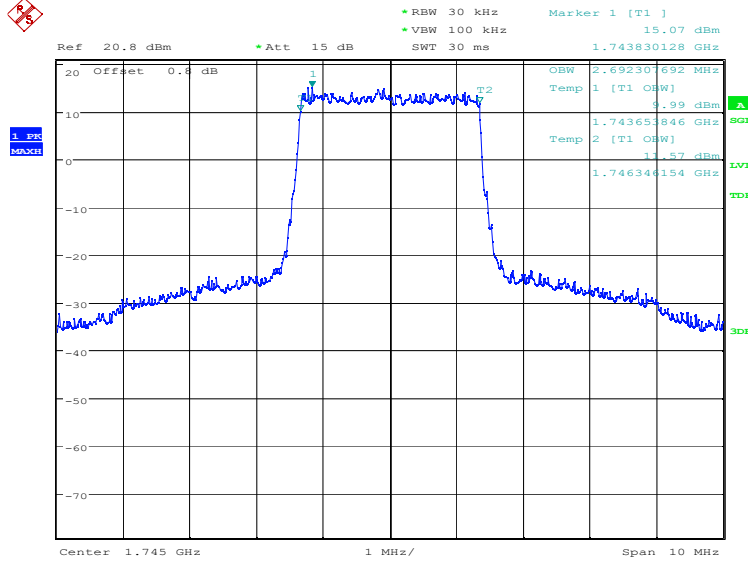


Date: 1.MAY.2022 16:16:46

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

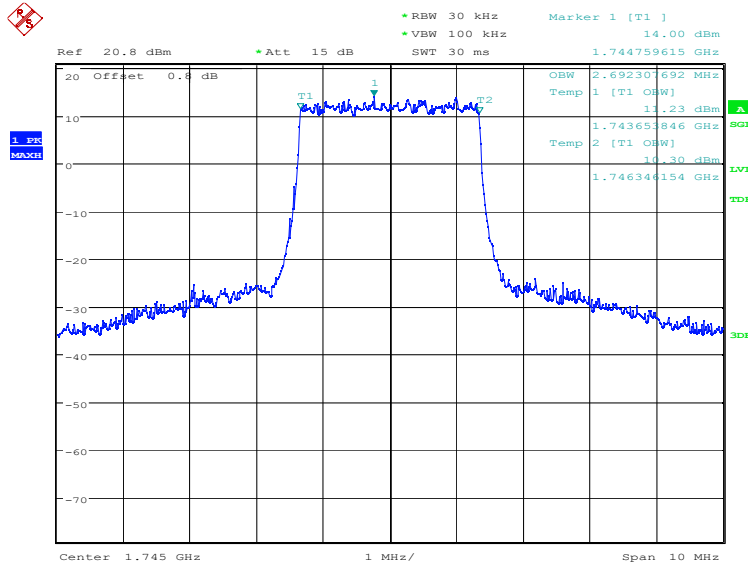
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	2692.31	2692.31

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



Date: 1.MAY.2022 16:17:29

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

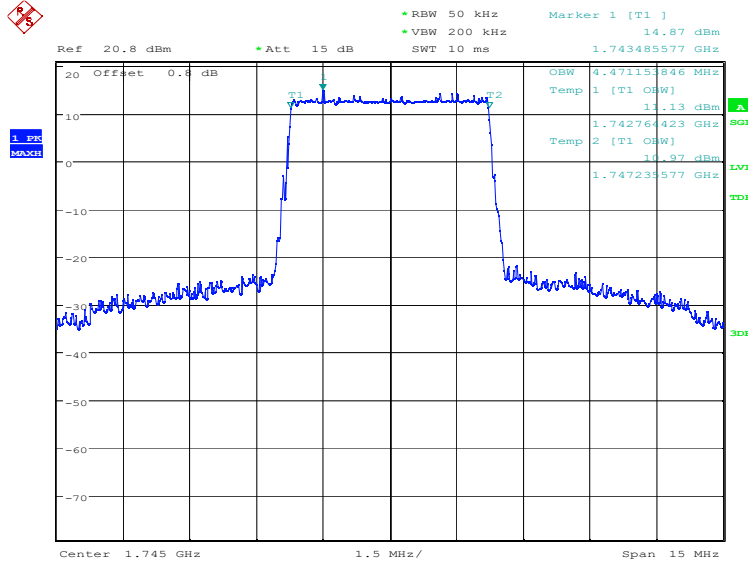


Date: 1.MAY.2022 16:18:09

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

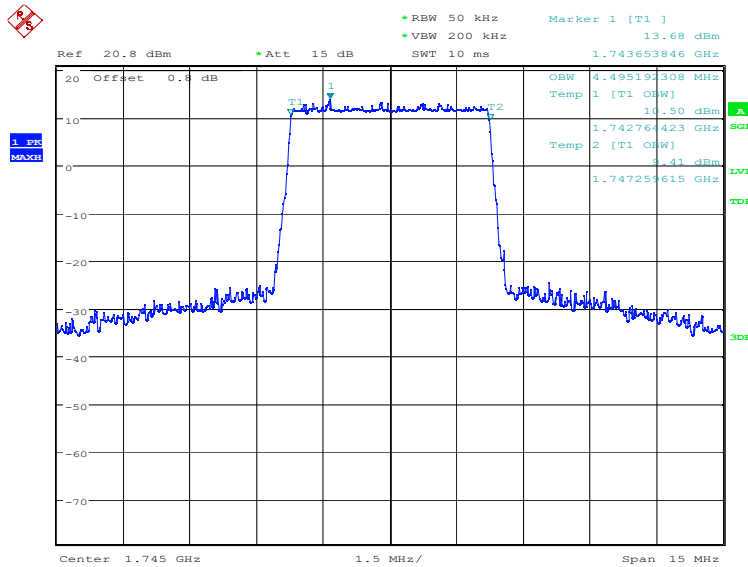
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	4471.15	4495.19

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



Date: 1.MAY.2022 16:18:52

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

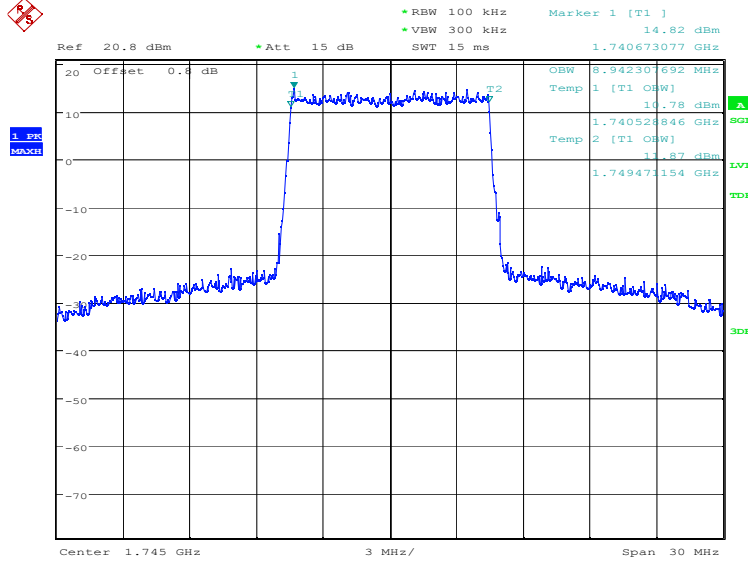


Date: 1.MAY.2022 16:19:31

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

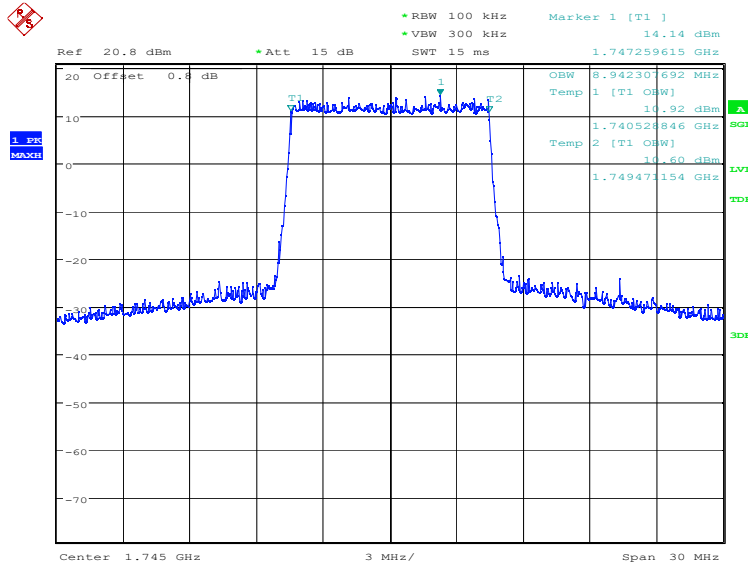
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	8942.31	8942.31

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



Date: 1.MAY.2022 16:20:14

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

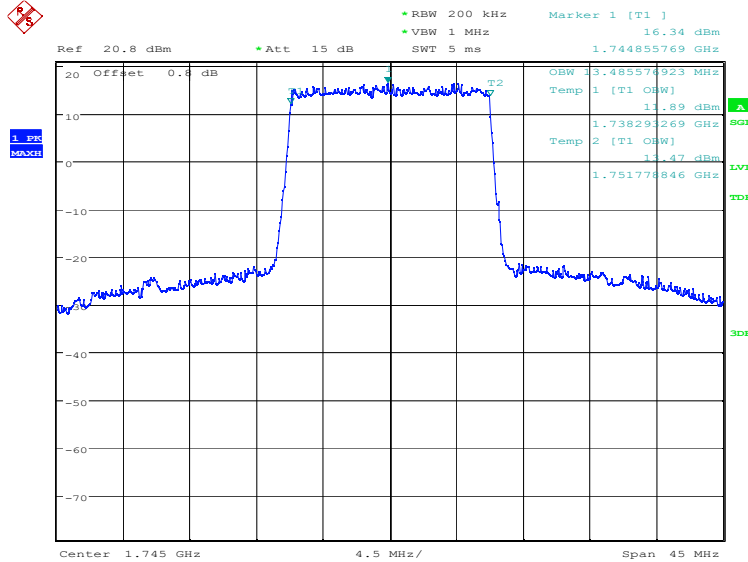


Date: 1.MAY.2022 16:20:54

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

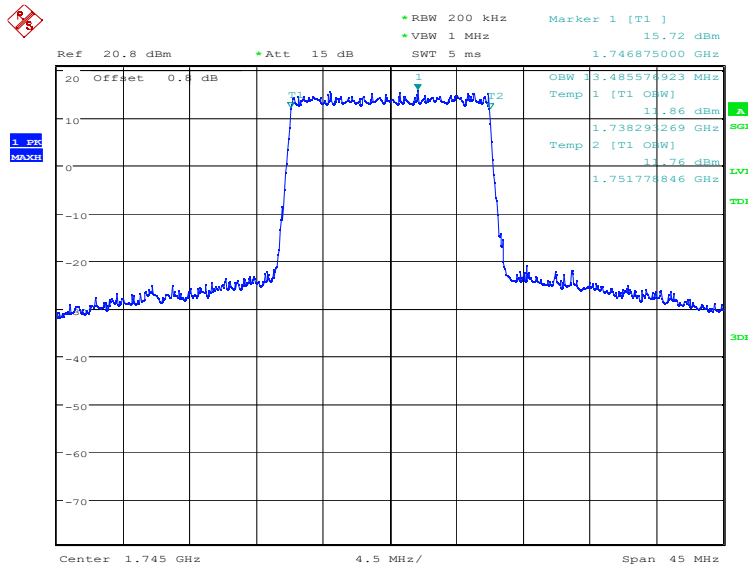
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 1.MAY.2022 16:21:37

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

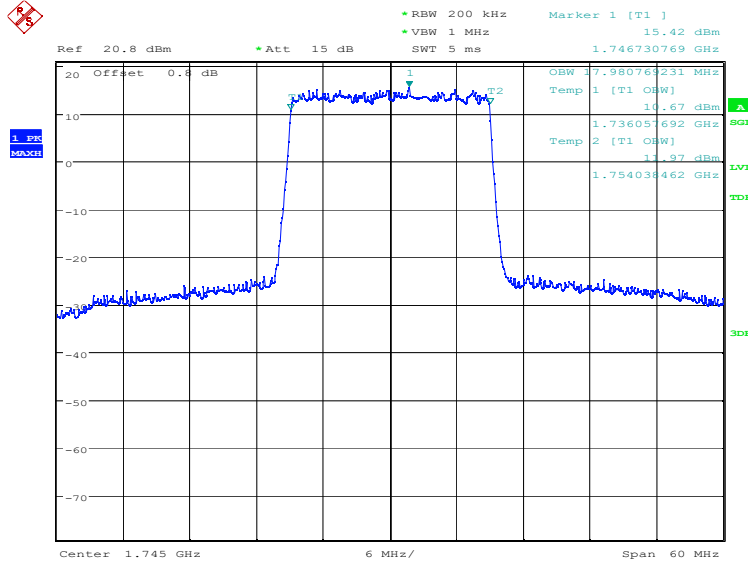


Date: 1.MAY.2022 16:22:16

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

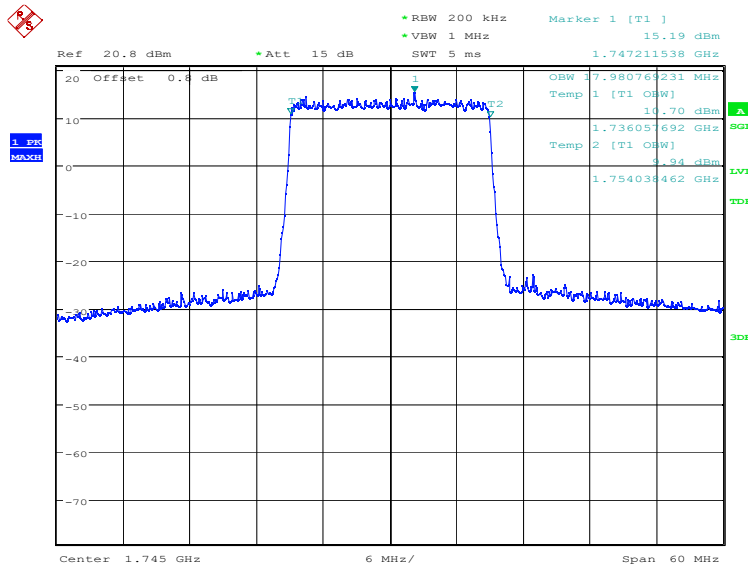
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	17980.77	17980.77

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



Date: 1.MAY.2022 16:22:59

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



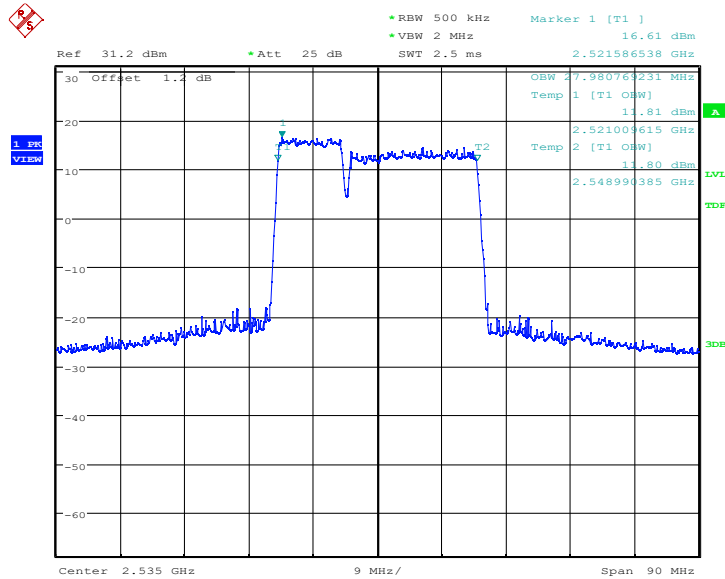
Date: 1.MAY.2022 16:23:39



**LTE CA Band 7C , 10MHz+20MHz (99%)**

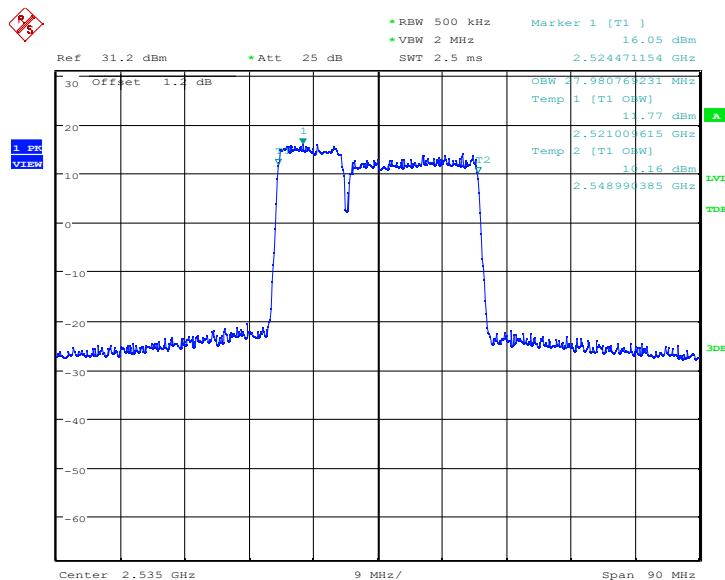
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2535	27.981	27.981

**LTE CA Band 7C , 10MHz+20MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:28:27

**LTE CA Band 7C , 10MHz+20MHz Bandwidth, 16QAM (99% BW)**

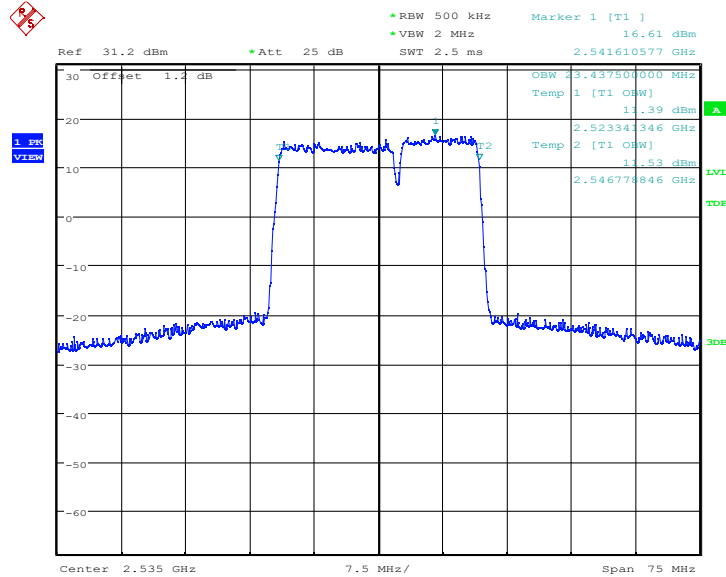


Date: 1.MAY.2022 09:28:49

**LTE CA Band 7C , 15MHz+10MHz (99%)**

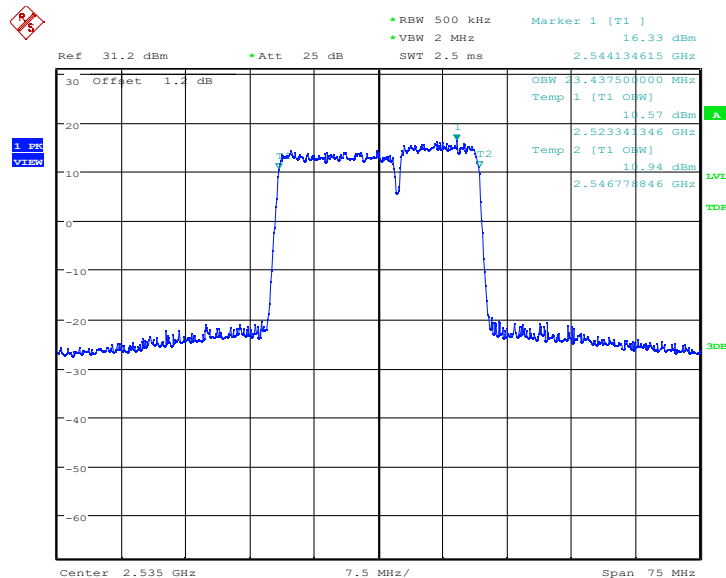
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2535	23.438	23.438

**LTE CA Band 7C , 15MHz+10MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:29:53

**LTE CA Band 7C , 15MHz+10MHz Bandwidth, 16QAM (99% BW)**

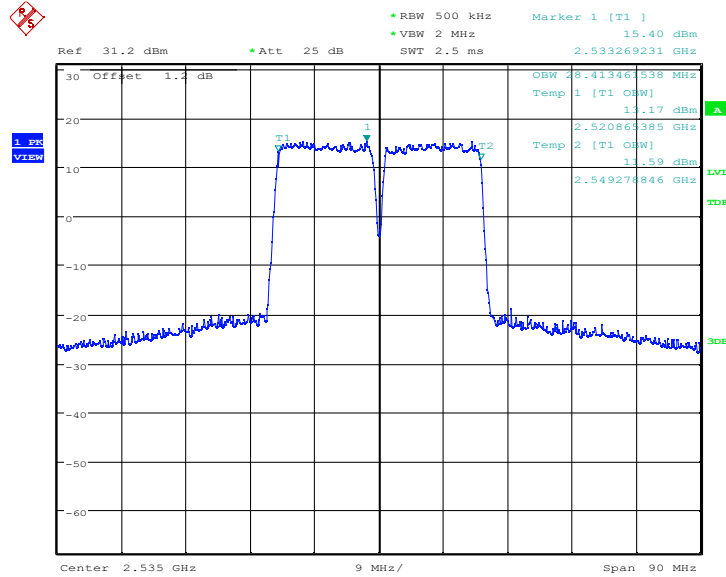


Date: 1.MAY.2022 09:30:15

### LTE CA Band 7C , 15MHz+15MHz (99%)

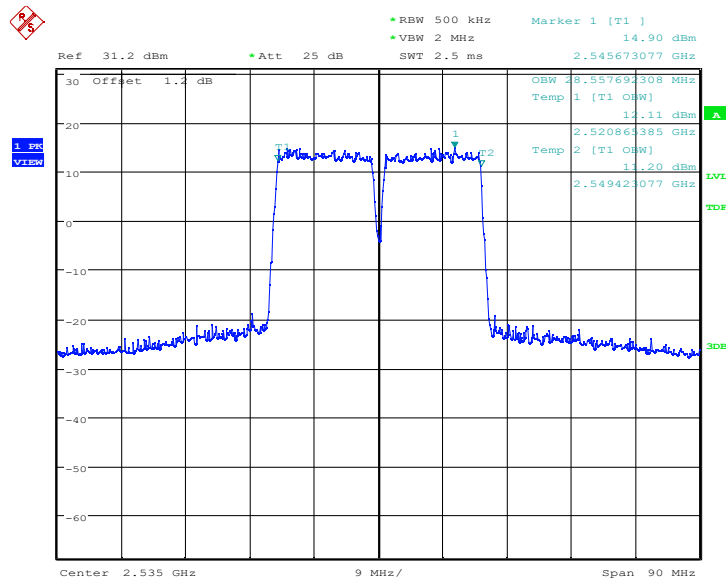
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2535	28.413	28.558

### LTE CA Band 7C , 15MHz+15MHz Bandwidth, QPSK (99% BW)



Date: 1.MAY.2022 09:31:19

### LTE CA Band 7C , 15MHz+15MHz Bandwidth, 16QAM (99% BW)

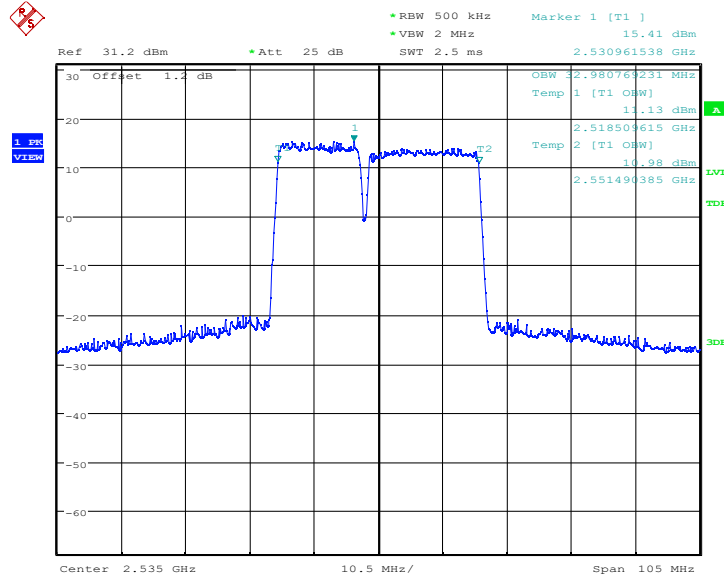


Date: 1.MAY.2022 09:31:41

### LTE CA Band 7C , 15MHz+20MHz (99%)

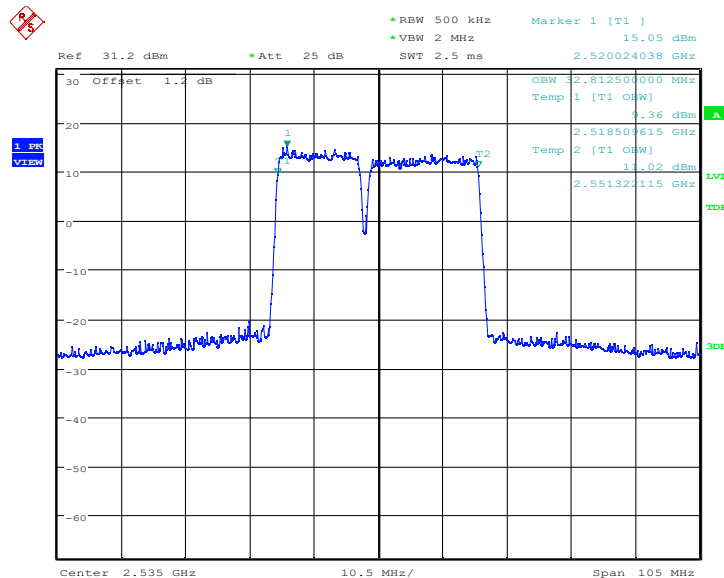
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2535	32.981	32.812

### LTE CA Band 7C , 15MHz+20MHz Bandwidth, QPSK (99% BW)



Date: 1.MAY.2022 09:32:44

### LTE CA Band 7C , 15MHz+20MHz Bandwidth, 16QAM (99% BW)

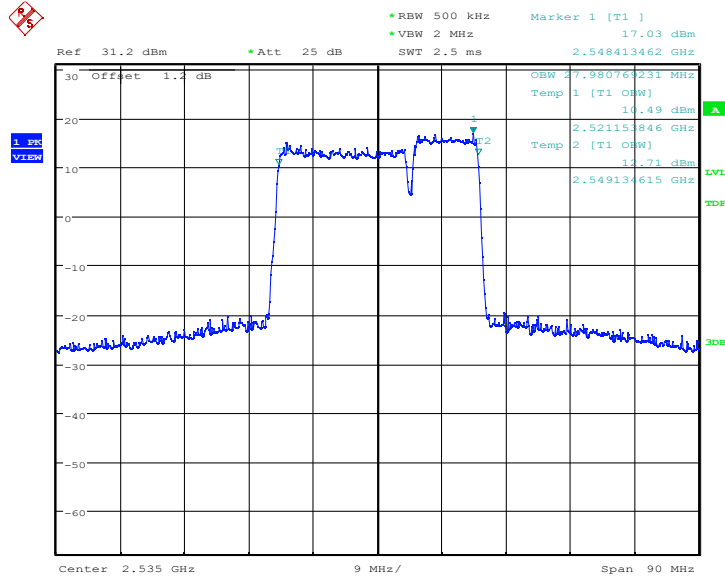


Date: 1.MAY.2022 09:33:06

### LTE CA Band 7C , 20MHz+10MHz (99%)

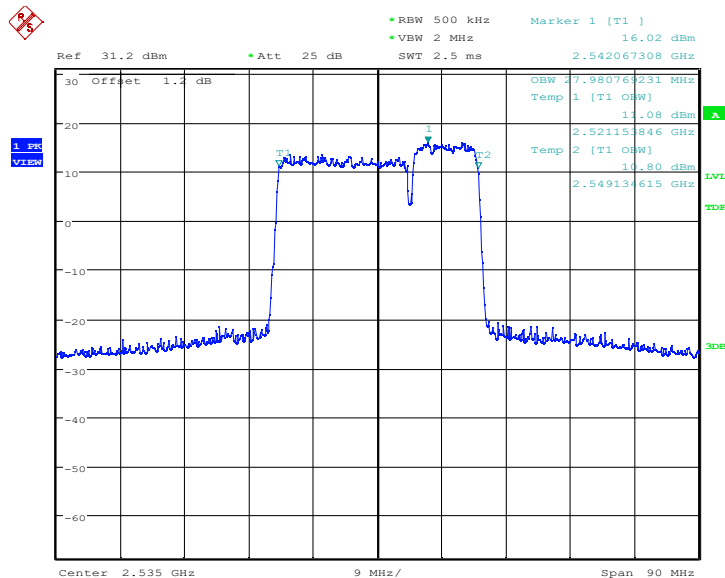
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2535	27.981	27.981

### LTE CA Band 7C , 20MHz+10MHz Bandwidth, QPSK (99% BW)



Date: 1.MAY.2022 09:34:04

### LTE CA Band 7C , 20MHz+10MHz Bandwidth, 16QAM (99% BW)

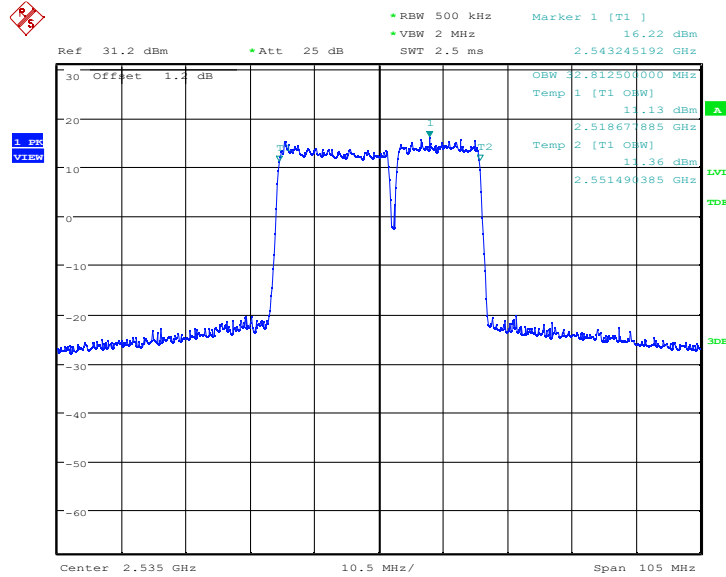


Date: 1.MAY.2022 09:34:26

**LTE CA Band 7C , 20MHz+15MHz (99%)**

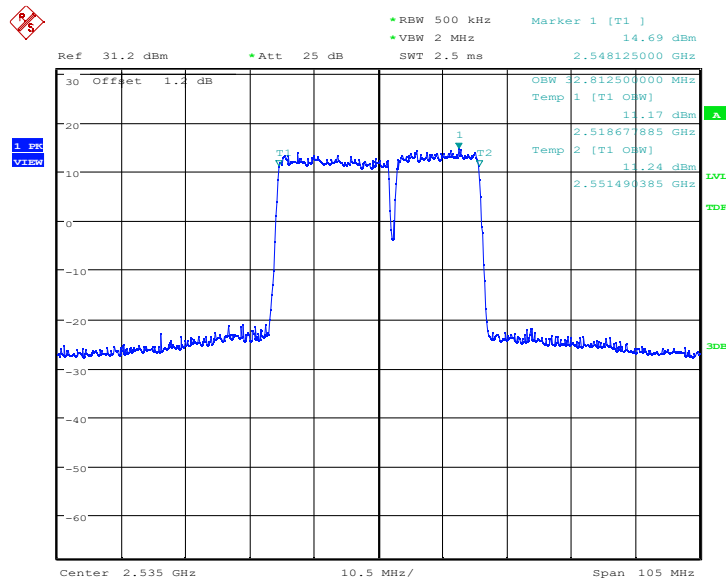
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2535	32.812	32.812

**LTE CA Band 7C , 20MHz+15MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:35:30

**LTE CA Band 7C , 20MHz+15MHz Bandwidth, 16QAM (99% BW)**

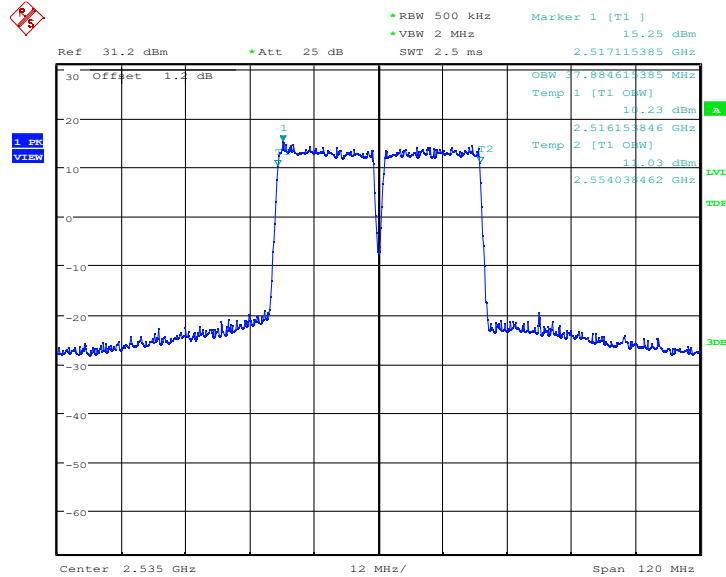


Date: 1.MAY.2022 09:35:52

**LTE CA Band 7C , 20MHz+20MHz (99%)**

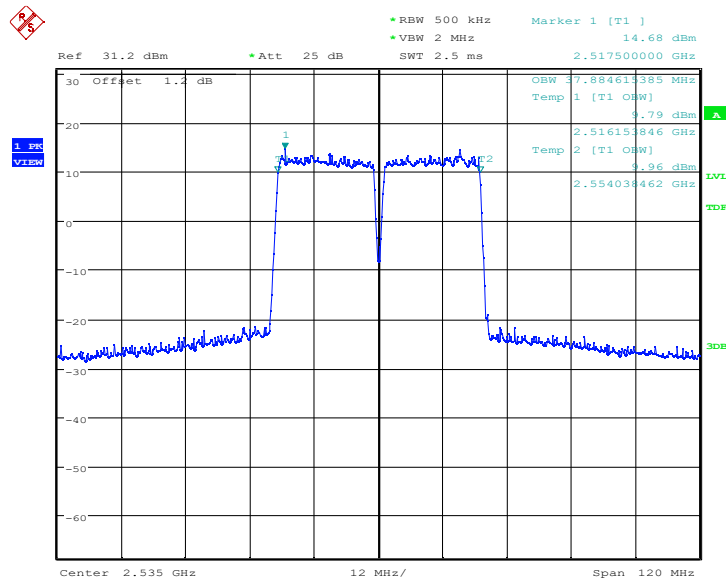
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2535	37.885	37.885

**LTE CA Band 7C , 20MHz+20MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:36:56

**LTE CA Band 7C , 20MHz+20MHz Bandwidth, 16QAM (99% BW)**

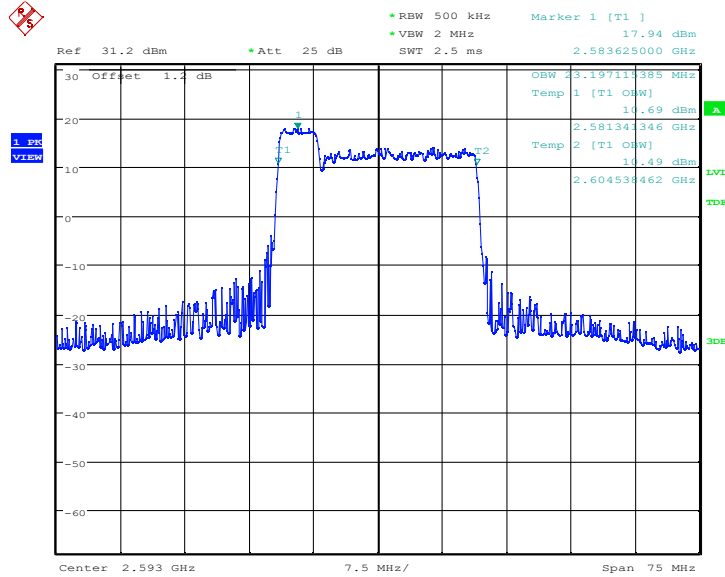


Date: 1.MAY.2022 09:37:18

**LTE CA Band 41C , 5MHz+20MHz (99%)**

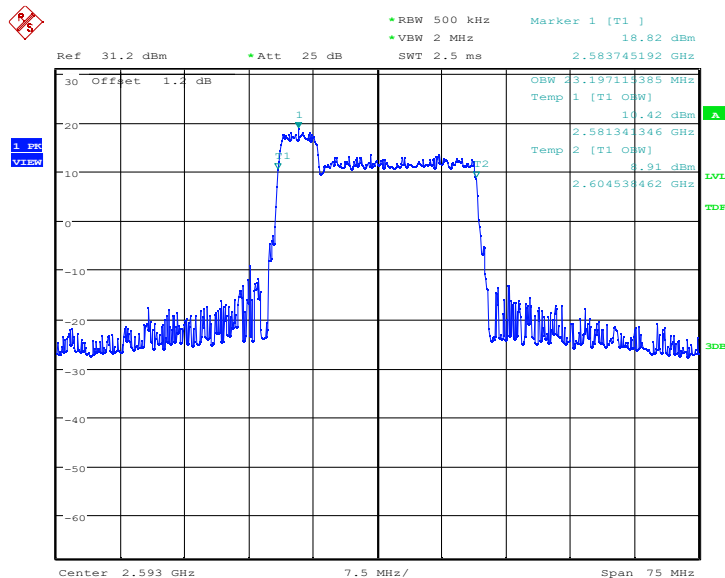
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2593	23.197	23.197

**LTE CA Band 41C , 5MHz+20MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:38:20

**LTE CA Band 41C , 5MHz+20MHz Bandwidth, 16QAM (99% BW)**



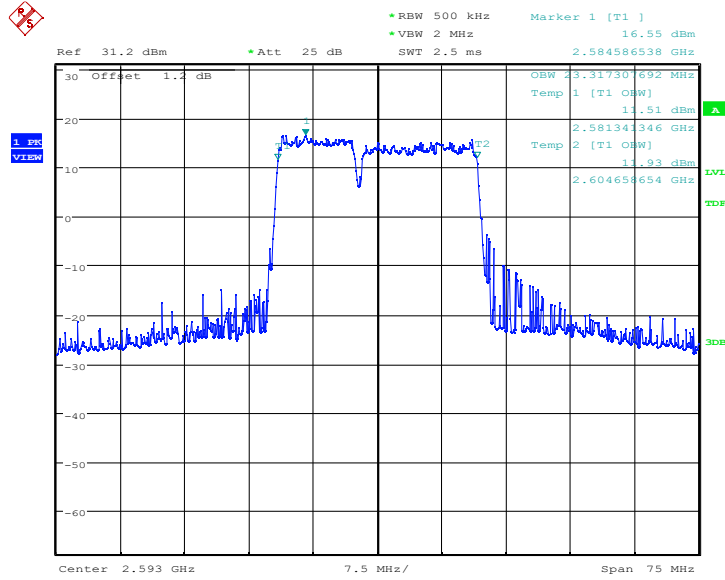
Date: 1.MAY.2022 09:38:42



**LTE CA Band 41C , 10MHz+15MHz (99%)**

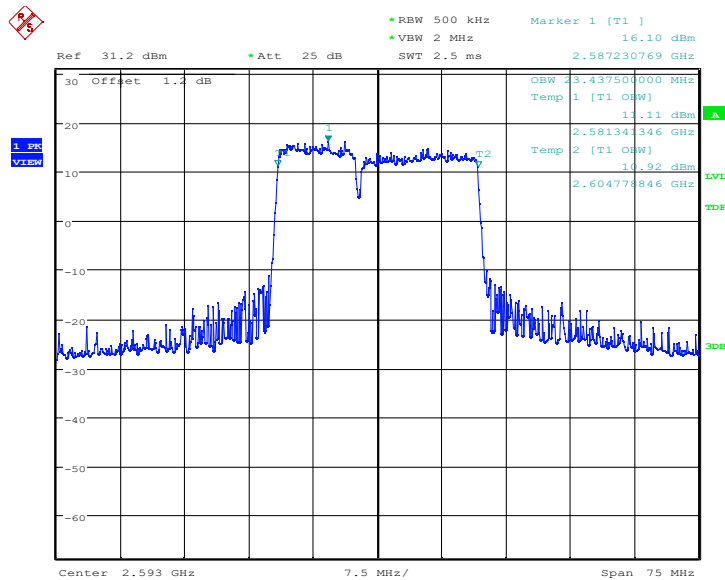
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2593	23.317	23.438

**LTE CA Band 41C , 10MHz+15MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:39:47

**LTE CA Band 41C , 10MHz+15MHz Bandwidth, 16QAM (99% BW)**

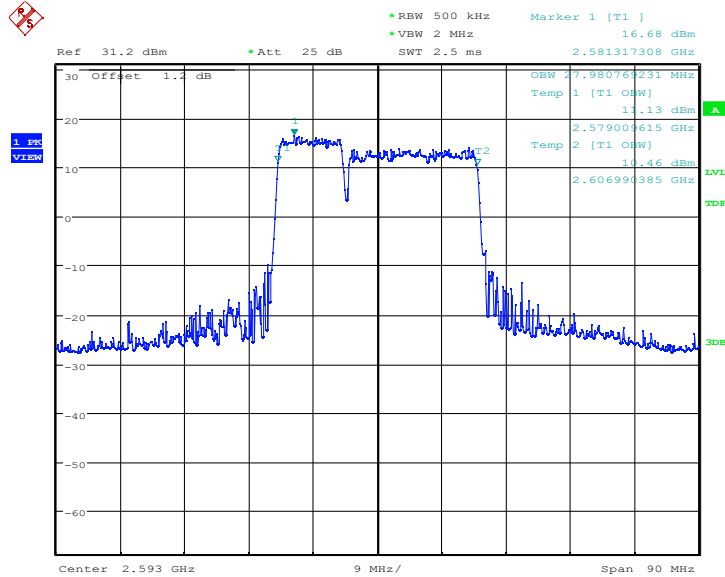


Date: 1.MAY.2022 09:40:09

**LTE CA Band 41C , 10MHz+20MHz (99%)**

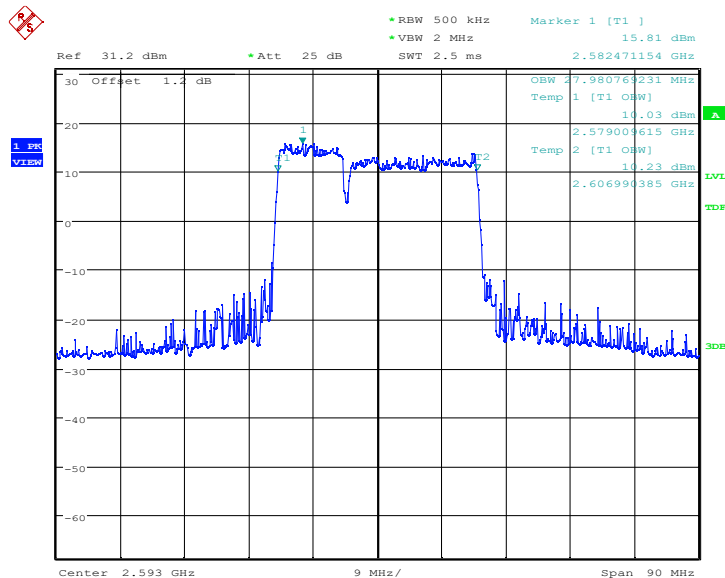
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2593	27.981	27.981

**LTE CA Band 41C , 10MHz+20MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:41:12

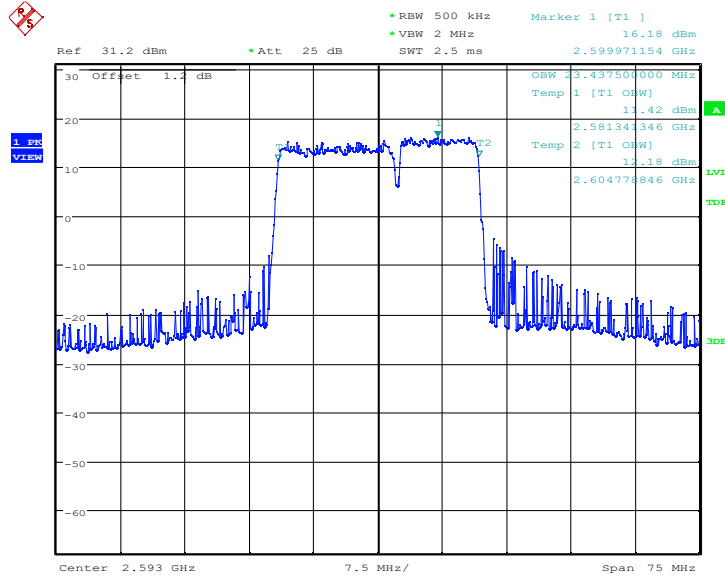
**LTE CA Band 41C , 10MHz+20MHz Bandwidth, 16QAM (99% BW)**



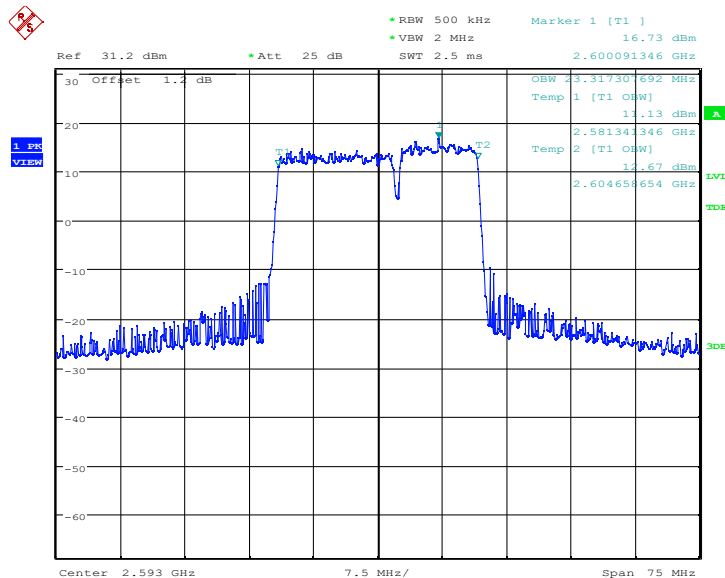
Date: 1.MAY.2022 09:41:34

**LTE CA Band 41C , 15MHz+10MHz (99%)**

Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2593	23.438	23.317

**LTE CA Band 41C , 15MHz+10MHz Bandwidth, QPSK (99% BW)**


Date: 1.MAY.2022 09:42:38

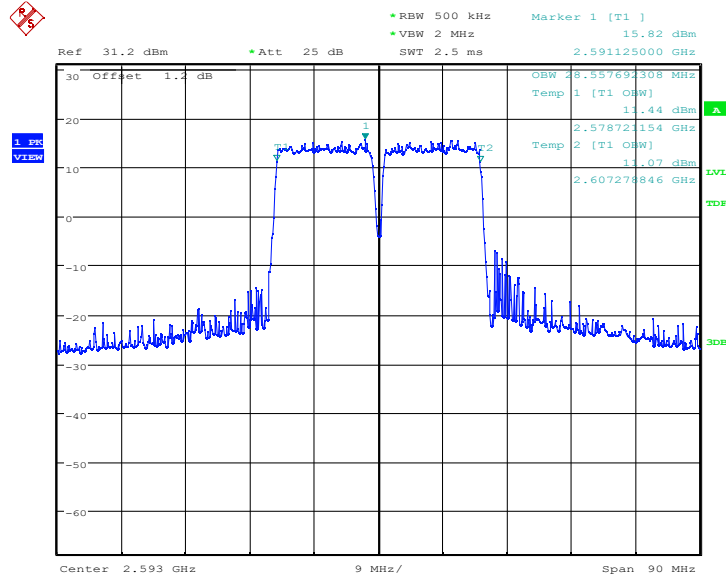
**LTE CA Band 41C , 15MHz+10MHz Bandwidth, 16QAM (99% BW)**


Date: 1.MAY.2022 09:43:01

### LTE CA Band 41C , 15MHz+15MHz (99%)

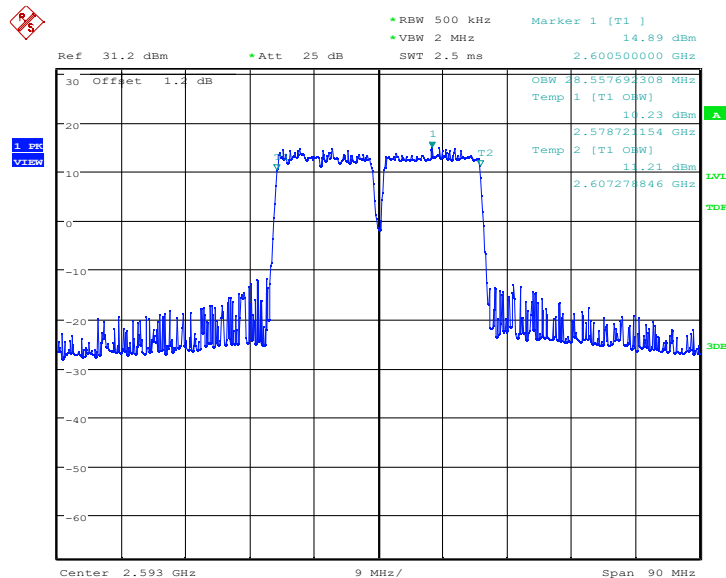
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2593	28.558	28.558

### LTE CA Band 41C , 15MHz+15MHz Bandwidth, QPSK (99% BW)



Date: 1.MAY.2022 09:44:04

### LTE CA Band 41C , 15MHz+15MHz Bandwidth, 16QAM (99% BW)

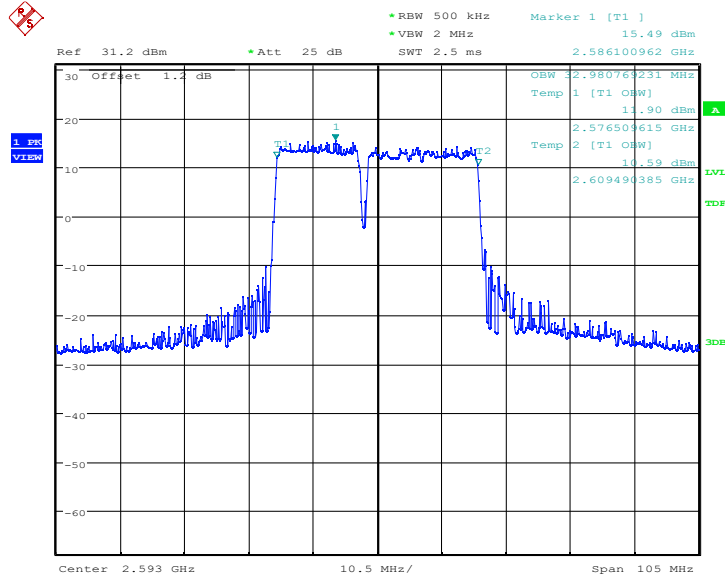


Date: 1.MAY.2022 09:44:27

**LTE CA Band 41C , 15MHz+20MHz (99%)**

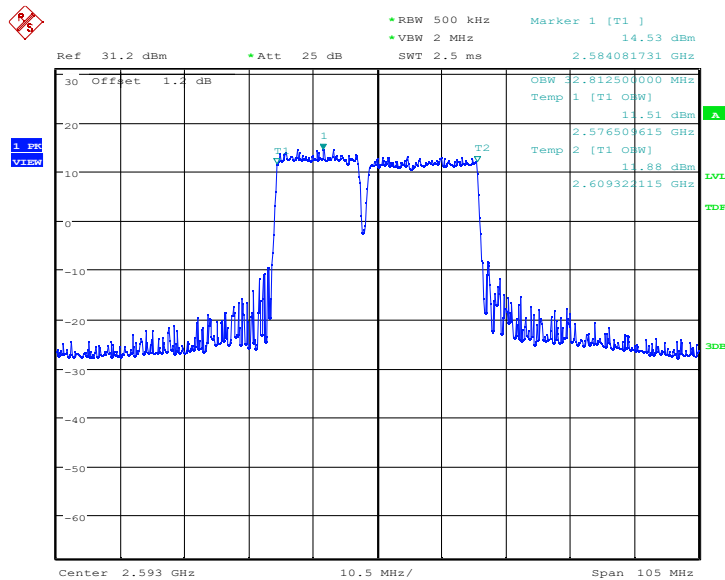
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2593	32.981	32.812

**LTE CA Band 41C , 15MHz+20MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:45:31

**LTE CA Band 41C , 15MHz+20MHz Bandwidth, 16QAM (99% BW)**

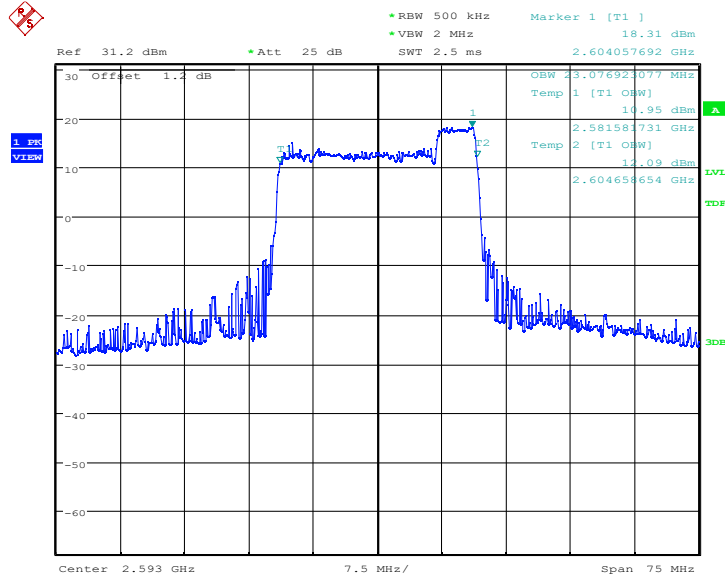


Date: 1.MAY.2022 09:45:53

**LTE CA Band 41C , 20MHz+5MHz (99%)**

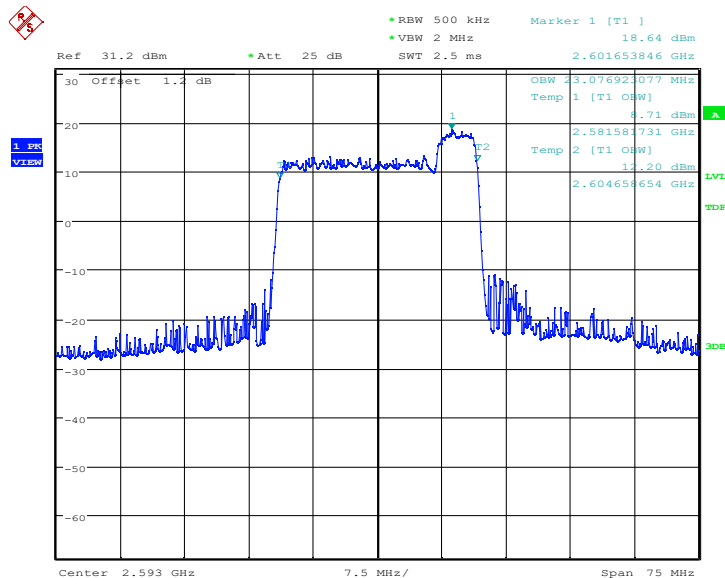
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2593	23.077	23.077

**LTE CA Band 41C , 20MHz+5MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:46:57

**LTE CA Band 41C , 20MHz+5MHz Bandwidth, 16QAM (99% BW)**

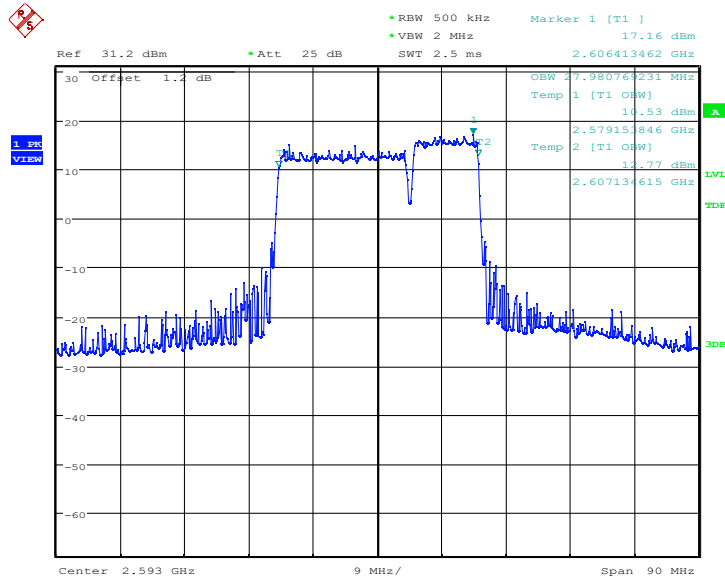


Date: 1.MAY.2022 09:47:19

**LTE CA Band 41C , 20MHz+10MHz (99%)**

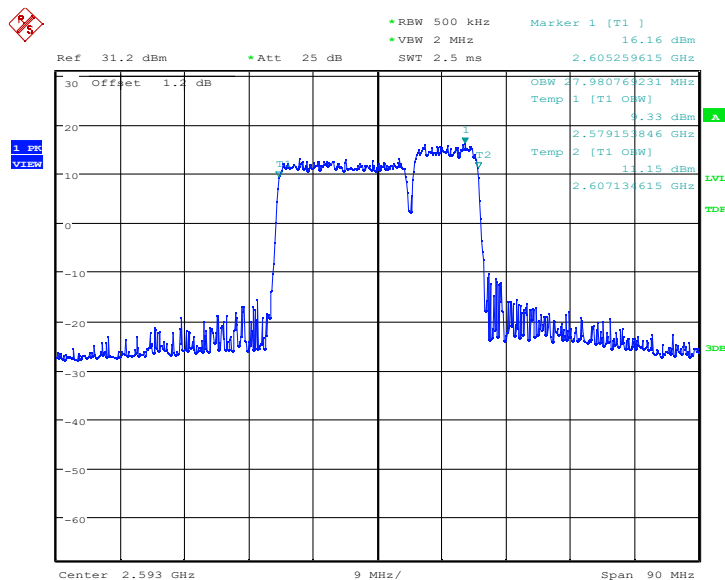
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2593	27.981	27.981

**LTE CA Band 41C , 20MHz+10MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:48:23

**LTE CA Band 41C , 20MHz+10MHz Bandwidth, 16QAM (99% BW)**

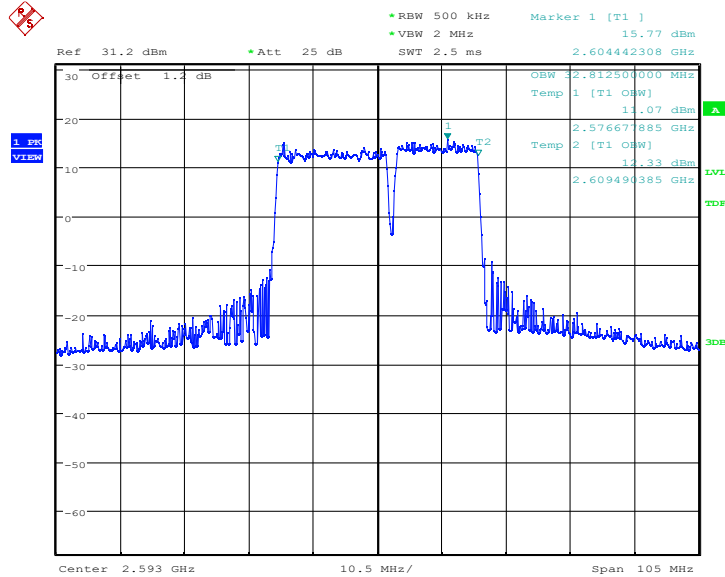


Date: 1.MAY.2022 09:48:45

**LTE CA Band 41C , 20MHz+15MHz (99%)**

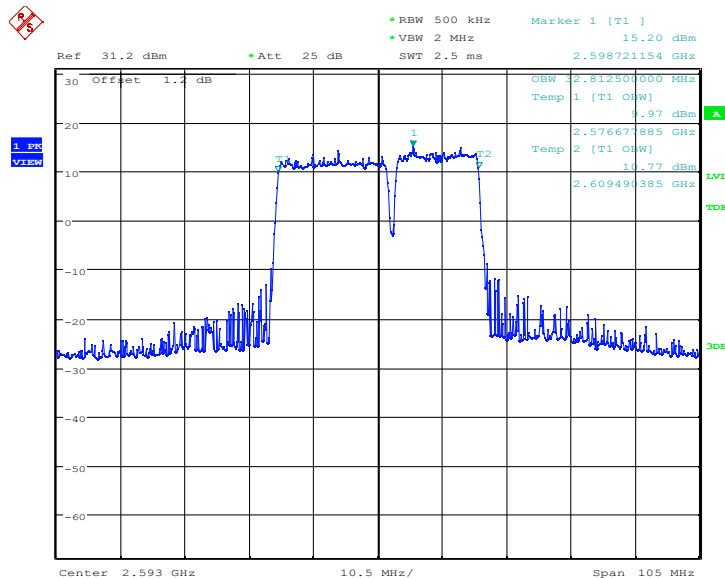
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2593	32.812	32.812

**LTE CA Band 41C , 20MHz+15MHz Bandwidth, QPSK (99% BW)**



Date: 1.MAY.2022 09:49:50

**LTE CA Band 41C , 20MHz+15MHz Bandwidth, 16QAM (99% BW)**



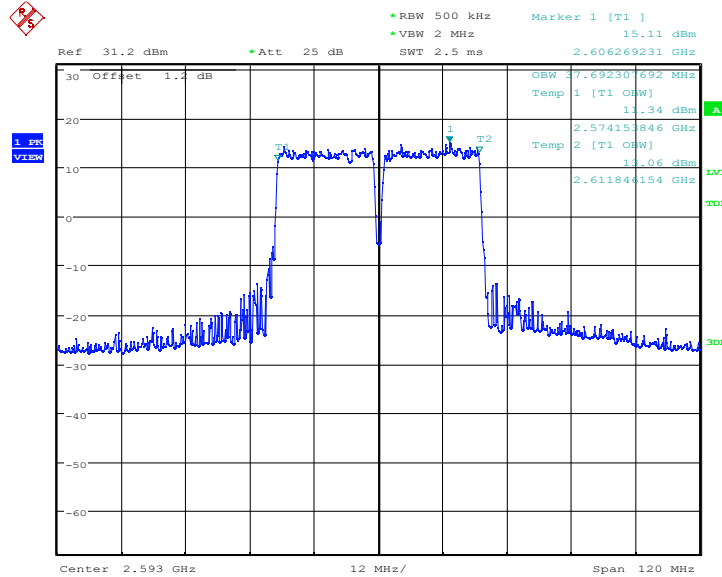
Date: 1.MAY.2022 09:50:12



### LTE CA Band 41C , 20MHz+20MHz (99%)

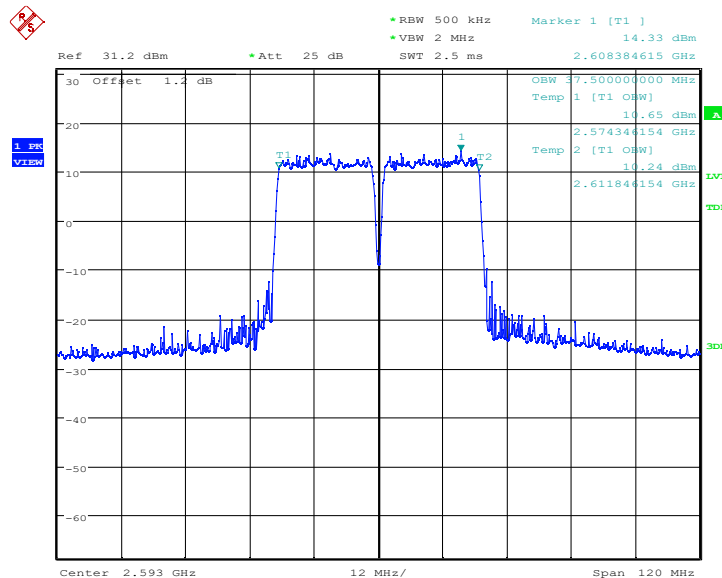
Frequency (MHz)	Occupied Bandwidth (99%) (MHz)	
	QPSK	16QAM
2593	37.692	37.500

### LTE CA Band 41C , 20MHz+20MHz Bandwidth, QPSK (99% BW)



Date: 1.MAY.2022 09:51:16

### LTE CA Band 41C , 20MHz+20MHz Bandwidth, 16QAM (99% BW)



Date: 1.MAY.2022 09:51:39

## **A.5 Emission Bandwidth**

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

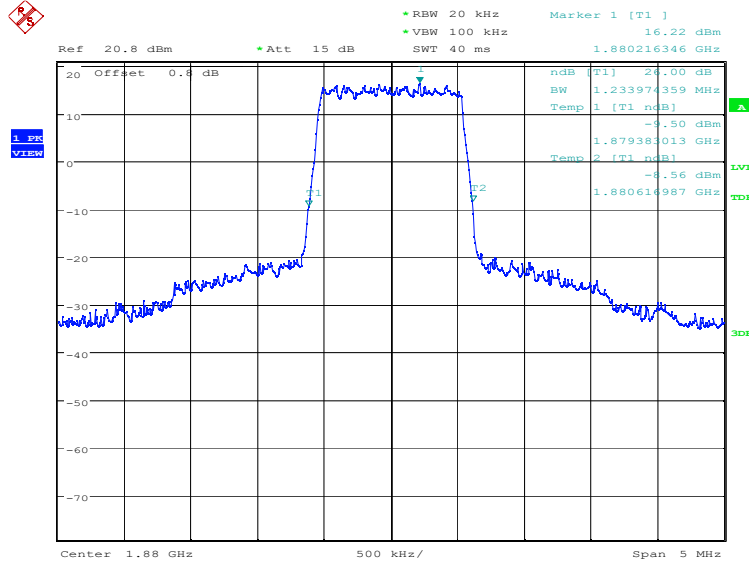
The measurement method is from ANSI C63.26:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
- b) The nominal 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) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “-X dB” requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.
- e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.

### LTE band 2, 1.4MHz (-26dBc)

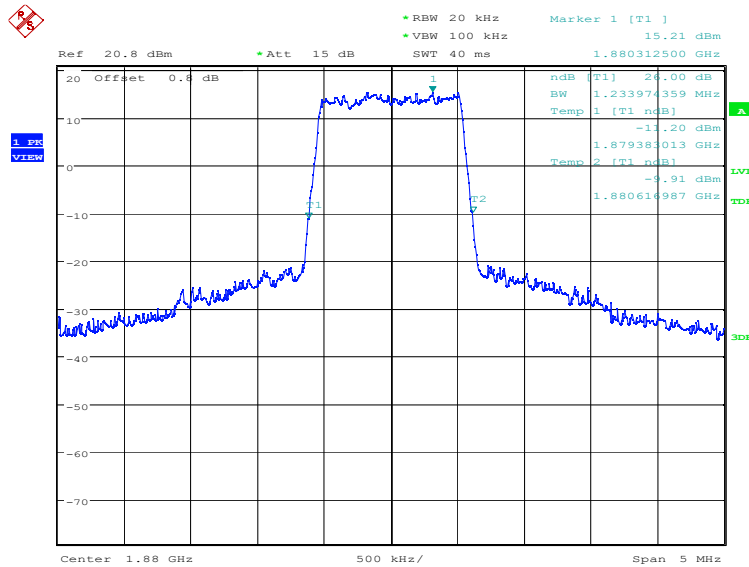
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1880.0	QPSK
	1233.97	1233.97

### LTE band 2, 1.4MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 16:24:58

### LTE band 2, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

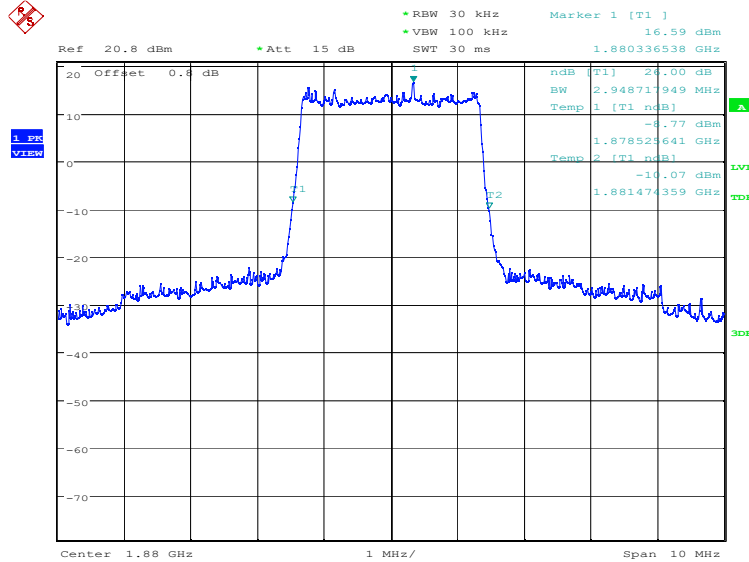


Date: 1.MAY.2022 16:25:38

### LTE band 2, 3MHz (-26dBc)

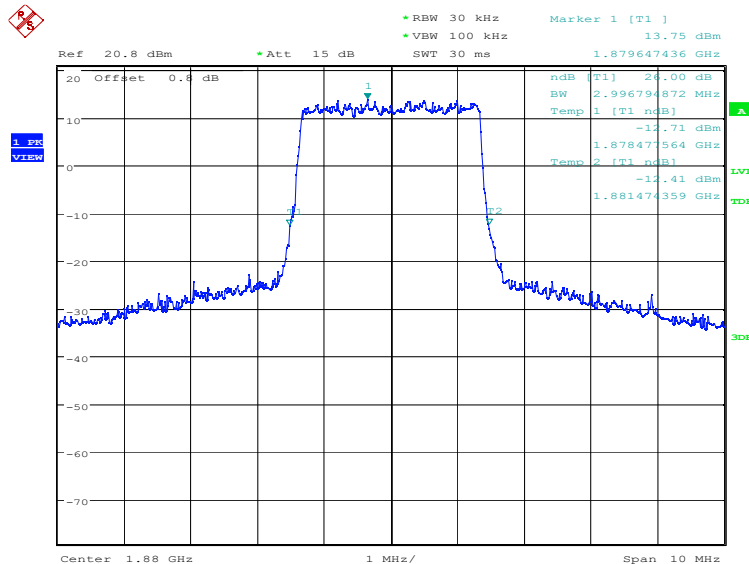
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1880.0	QPSK
	2948.72	2996.79

### LTE band 2, 3MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 16:26:22

### LTE band 2, 3MHz Bandwidth, 16QAM (-26dBc BW)

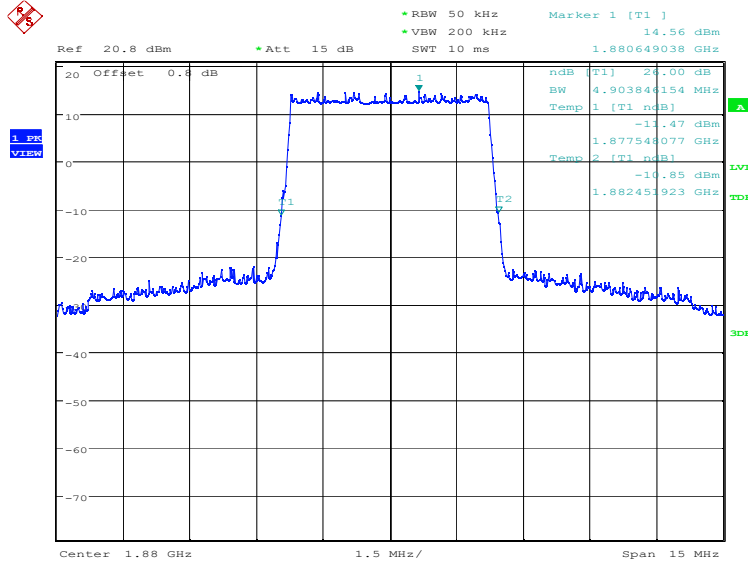


Date: 1.MAY.2022 16:27:02

### LTE band 2, 5MHz (-26dBc)

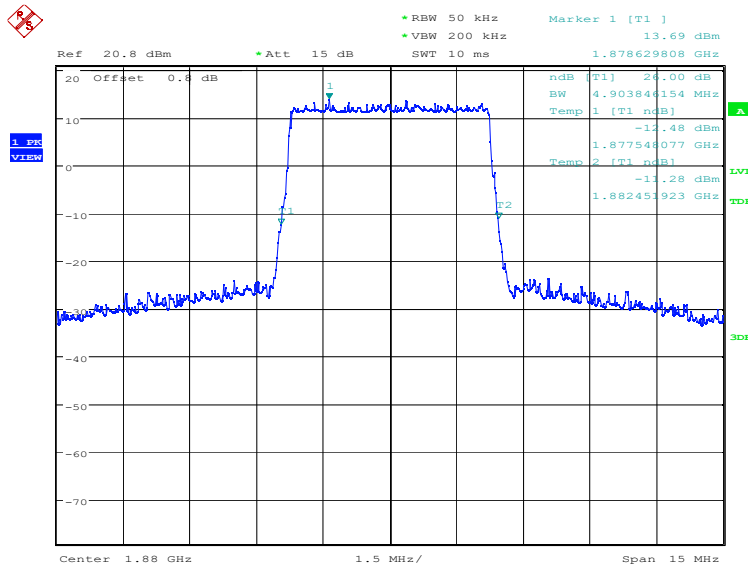
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	4903.85	4903.85

### LTE band 2, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 16:27:46

### LTE band 2, 5MHz Bandwidth, 16QAM (-26dBc BW)

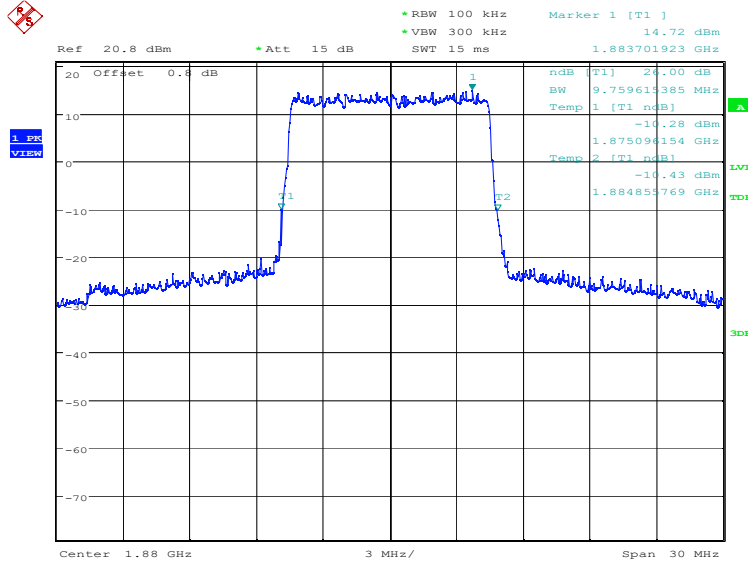


Date: 1.MAY.2022 16:28:26

**LTE band 2, 10MHz (-26dBc)**

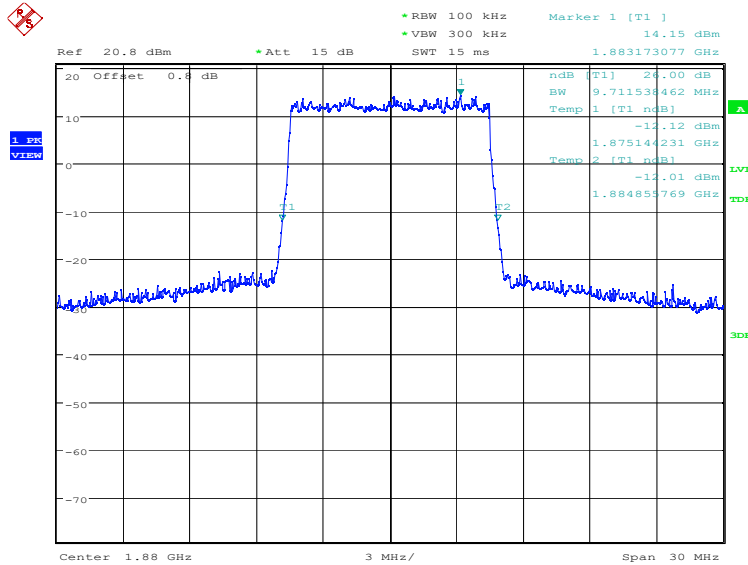
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	9759.62	9711.54

**LTE band 2, 10MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 16:29:10

**LTE band 2, 10MHz Bandwidth, 16QAM (-26dBc BW)**

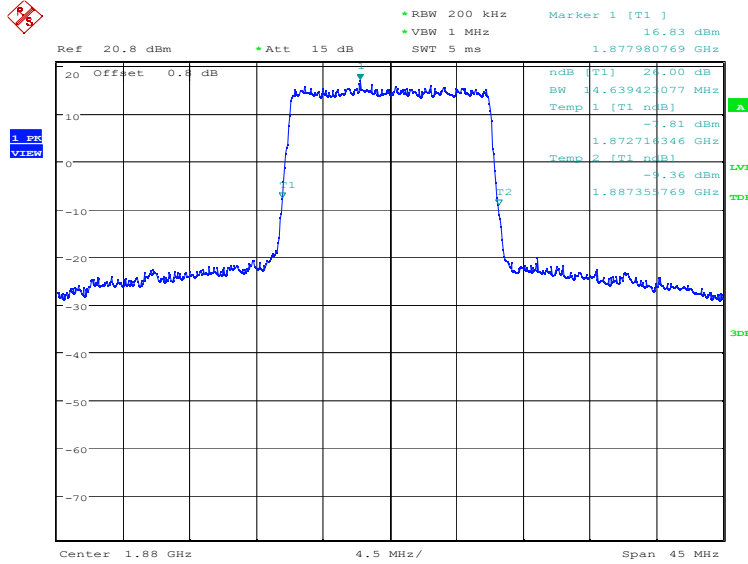


Date: 1.MAY.2022 16:29:50

### LTE band 2, 15MHz (-26dBc)

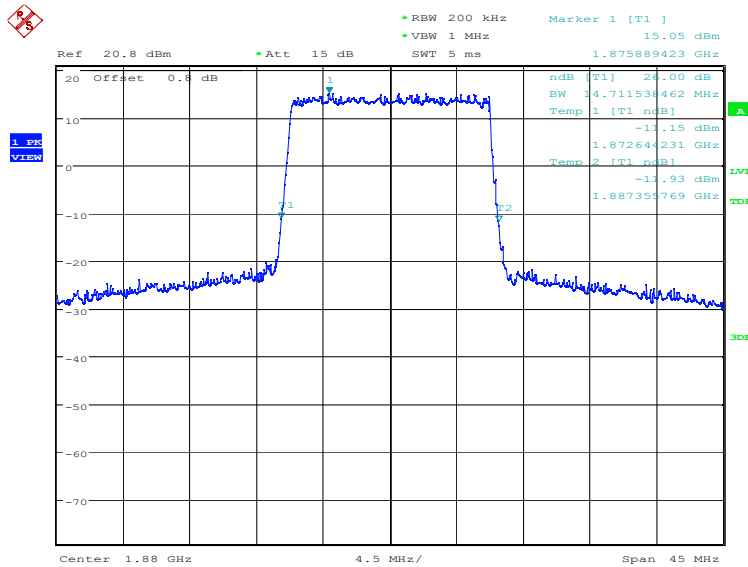
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1880.0	QPSK
	14639.42	14711.54

### LTE band 2, 15MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 16:30:34

### LTE band 2, 15MHz Bandwidth, 16QAM (-26dBc BW)

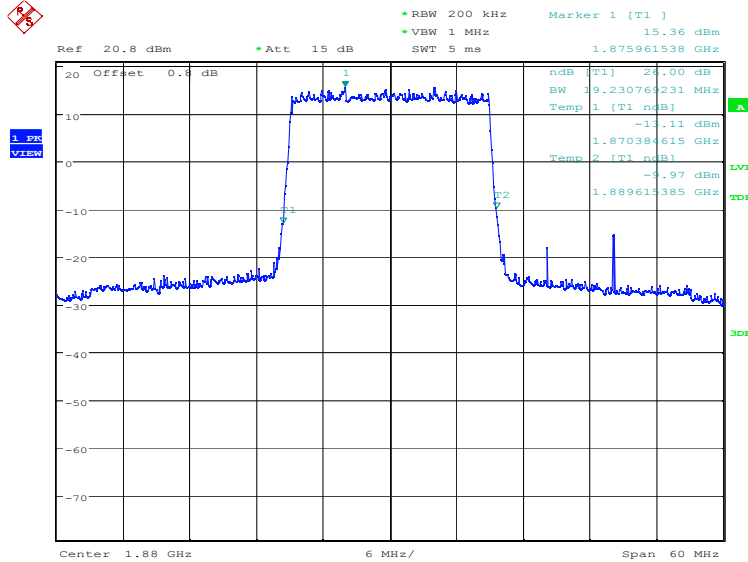


Date: 1.MAY.2022 16:31:14

**LTE band 2, 20MHz (-26dBc)**

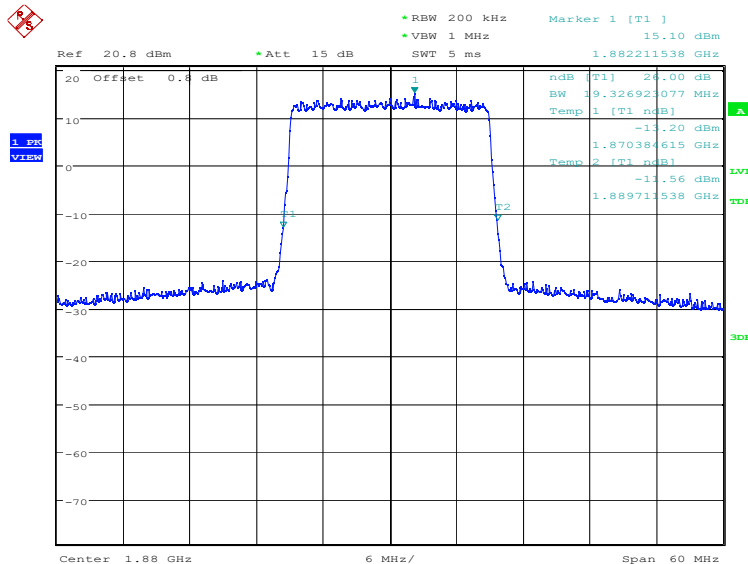
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1880.0	QPSK
	19230.77	19326.92

**LTE band 2, 20MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 16:31:59

**LTE band 2, 20MHz Bandwidth, 16QAM (-26dBc BW)**



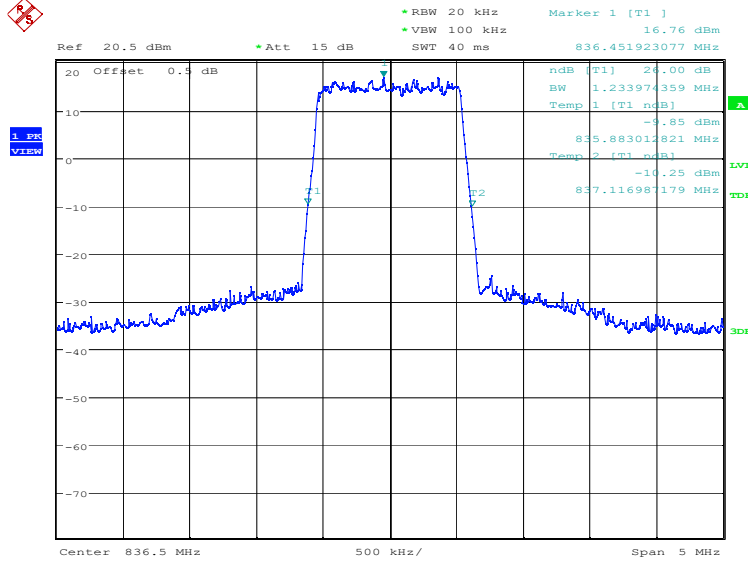
Date: 1.MAY.2022 16:32:38



### LTE band 5, 1.4MHz (-26dBc)

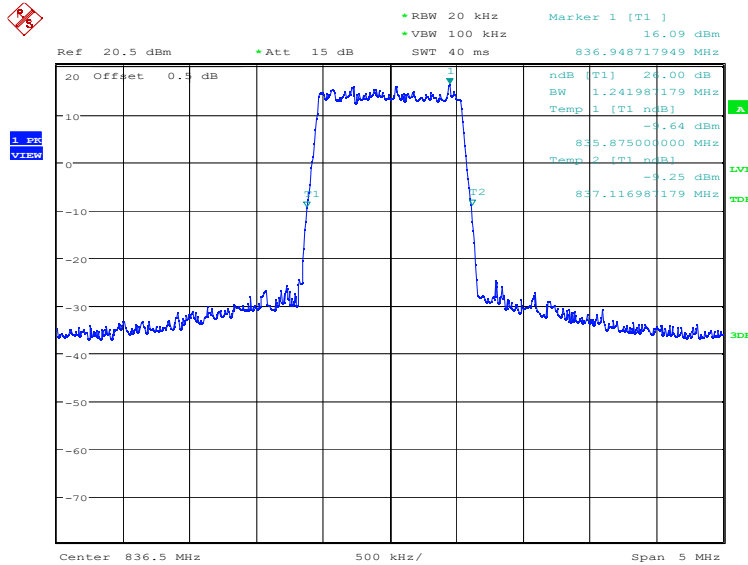
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	836.5	QPSK
	1233.97	1241.99

### LTE band 5, 1.4MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 15:09:12

### LTE band 5, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

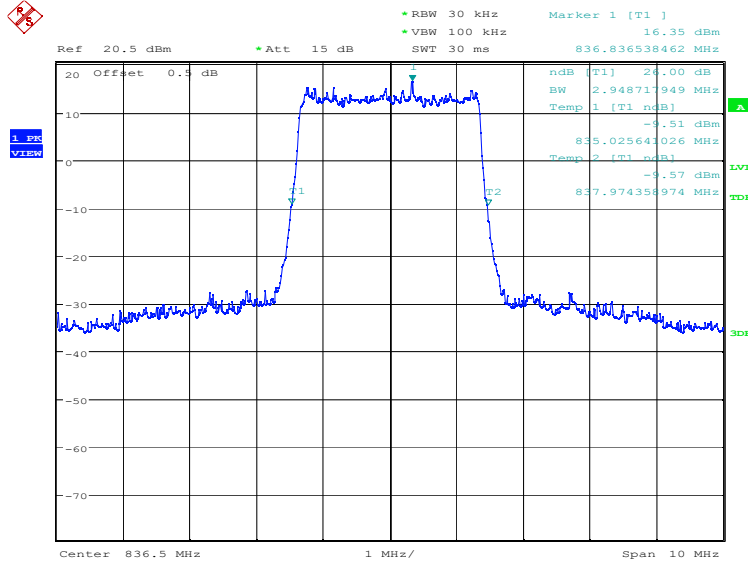


Date: 1.MAY.2022 15:09:52

### LTE band 5, 3MHz (-26dBc)

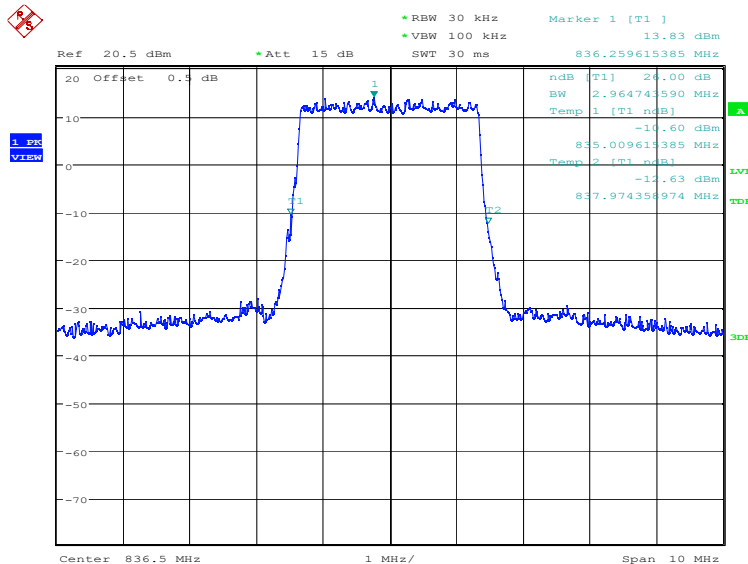
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	836.5	QPSK
	2948.72	2964.74

### LTE band 5, 3MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 15:10:36

### LTE band 5, 3MHz Bandwidth, 16QAM (-26dBc BW)

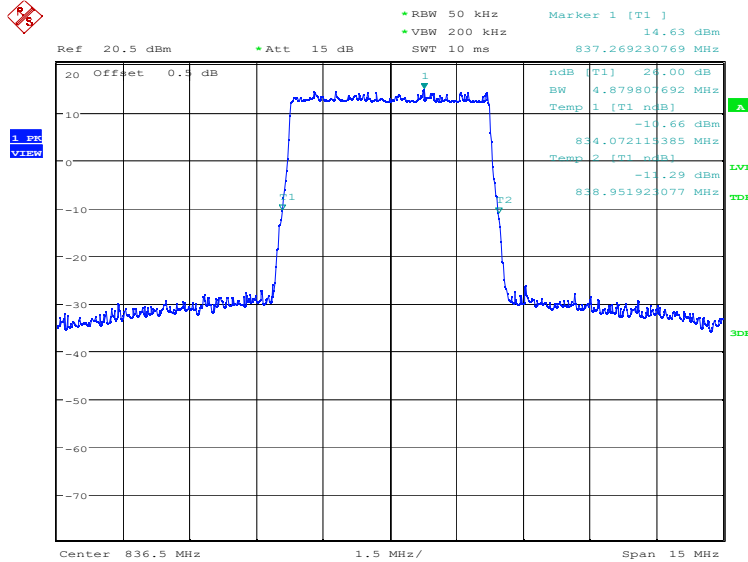


Date: 1.MAY.2022 15:11:16

**LTE band 5, 5MHz (-26dBc)**

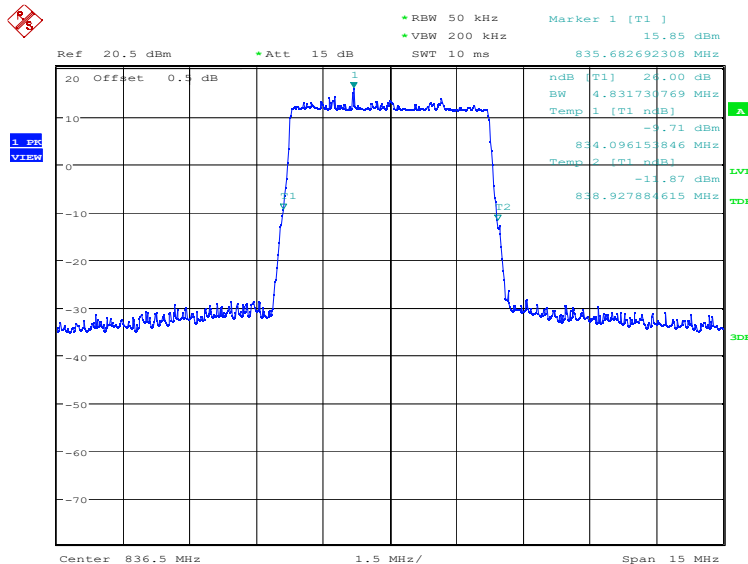
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	4879.81	4831.73

**LTE band 5, 5MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 15:12:00

**LTE band 5, 5MHz Bandwidth, 16QAM (-26dBc BW)**

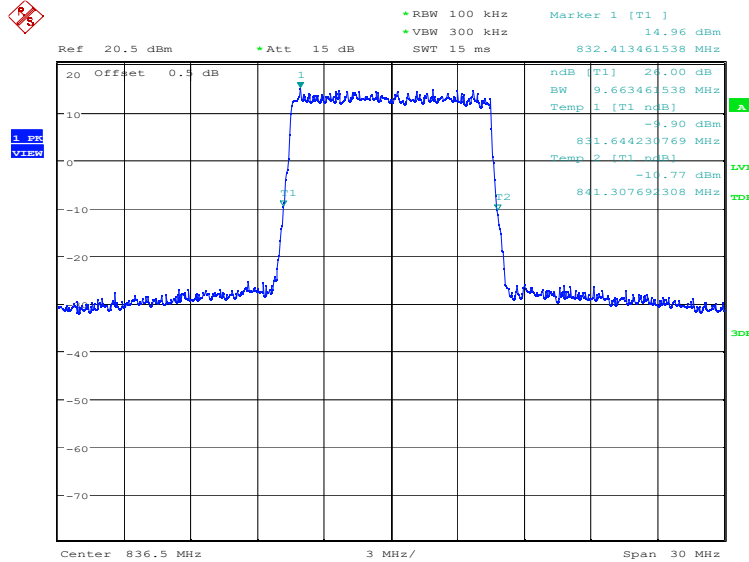


Date: 1.MAY.2022 15:12:40

**LTE band 5, 10MHz (-26dBc)**

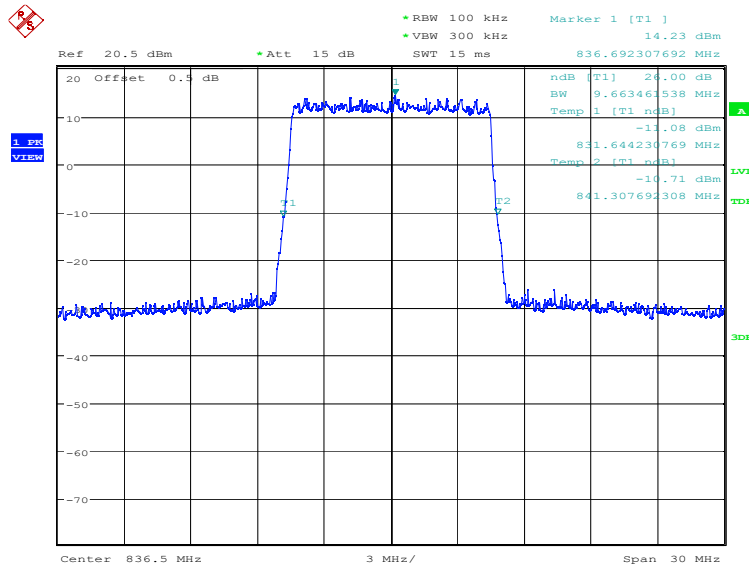
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	836.5	QPSK
9663.46		9663.46

**LTE band 5, 10MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 15:13:23

**LTE band 5, 10MHz Bandwidth, 16QAM (-26dBc BW)**

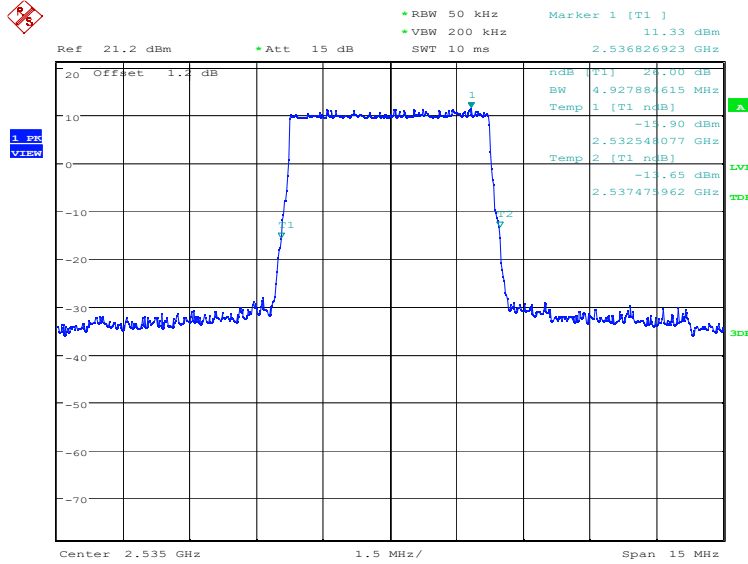


Date: 1.MAY.2022 15:14:03

### LTE band 7, 5MHz (-26dBc)

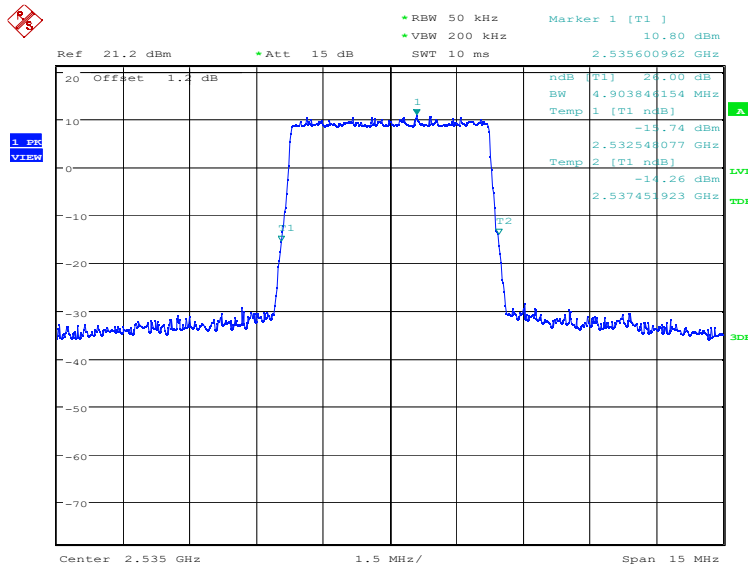
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2535.0	QPSK	16QAM
	4927.88	4903.85

### LTE band 7, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 5.MAY.2022 08:55:58

### LTE band 7, 5MHz Bandwidth,16QAM (-26dBc BW)

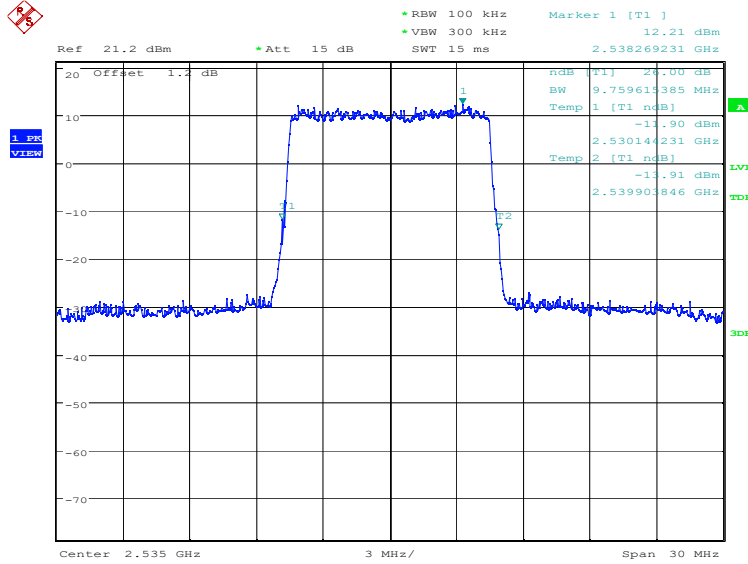


Date: 5.MAY.2022 08:56:38

**LTE band 7, 10MHz (-26dBc)**

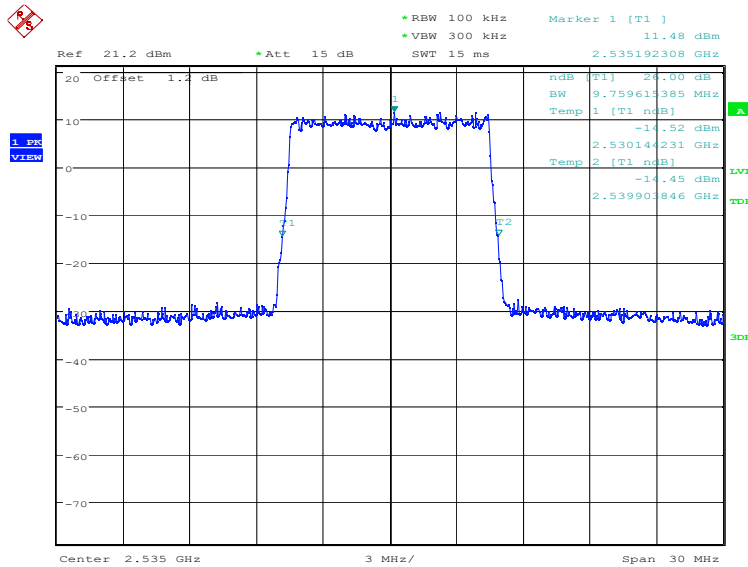
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2535.0	QPSK	16QAM
	9759.62	9759.62

**LTE band 7, 10MHz Bandwidth, QPSK (-26dBc BW)**



Date: 5.MAY.2022 08:57:24

**LTE band 7, 10MHz Bandwidth, 16QAM (-26dBc BW)**

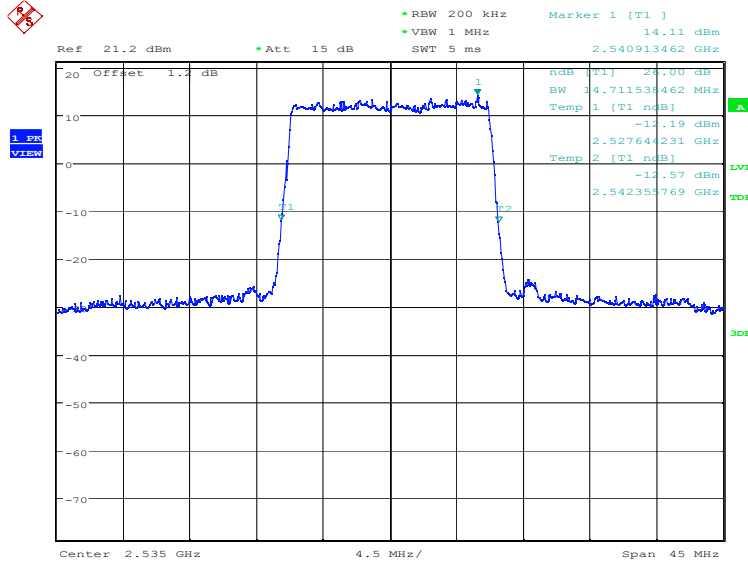


Date: 5.MAY.2022 08:58:03

**LTE band 7, 15MHz (-26dBc)**

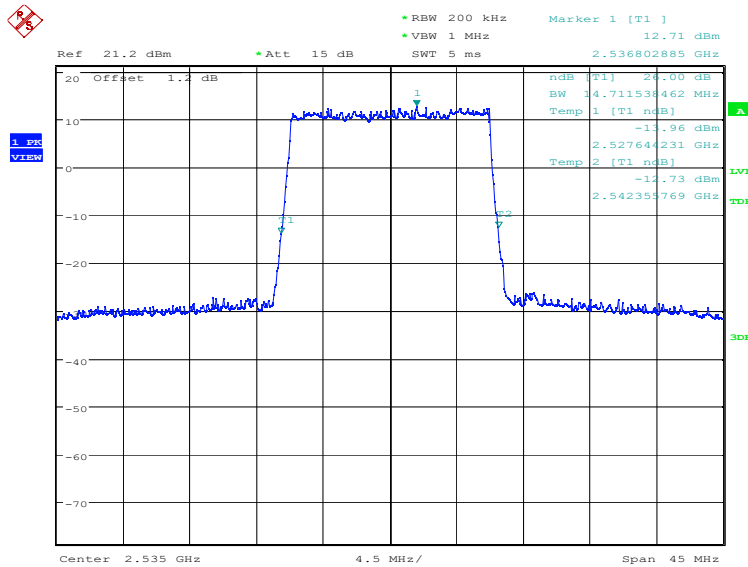
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2535.0	QPSK	16QAM
	14711.54	14711.54

**LTE band 7, 15MHz Bandwidth, QPSK (-26dBc BW)**



Date: 5.MAY.2022 08:58:49

**LTE band 7, 15MHz Bandwidth, 16QAM (-26dBc BW)**

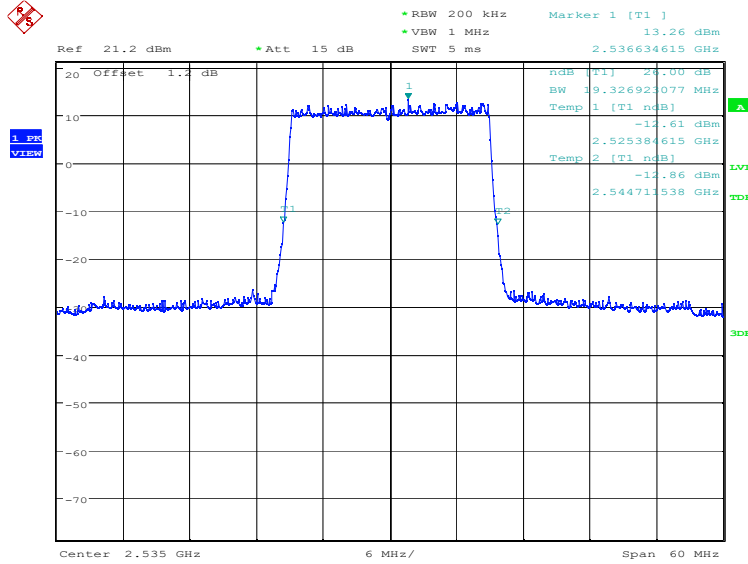


Date: 5.MAY.2022 08:59:29

**LTE band 7, 20MHz (-26dBc)**

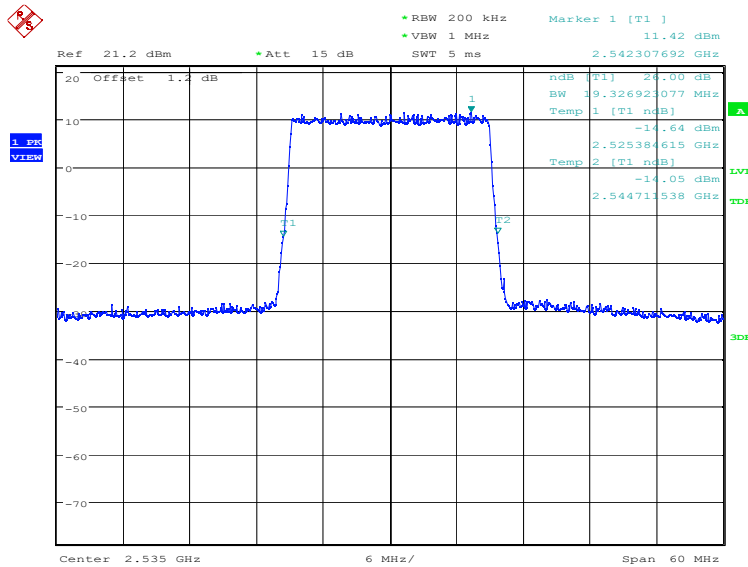
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2535.0	QPSK	16QAM
	19326.92	19326.92

**LTE band 7, 20MHz Bandwidth, QPSK (-26dBc BW)**



Date: 5.MAY.2022 09:00:13

**LTE band 7, 20MHz Bandwidth, 16QAM (-26dBc BW)**



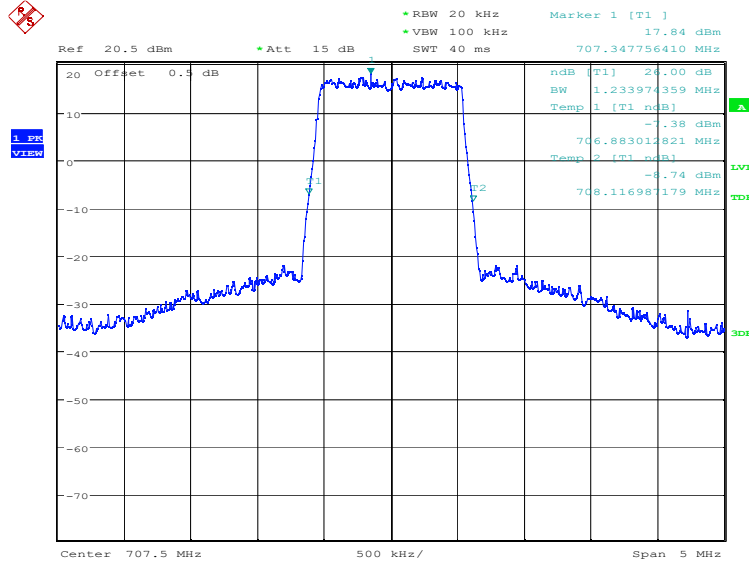
Date: 5.MAY.2022 09:00:53



### LTE band 12, 1.4MHz (-26dBc)

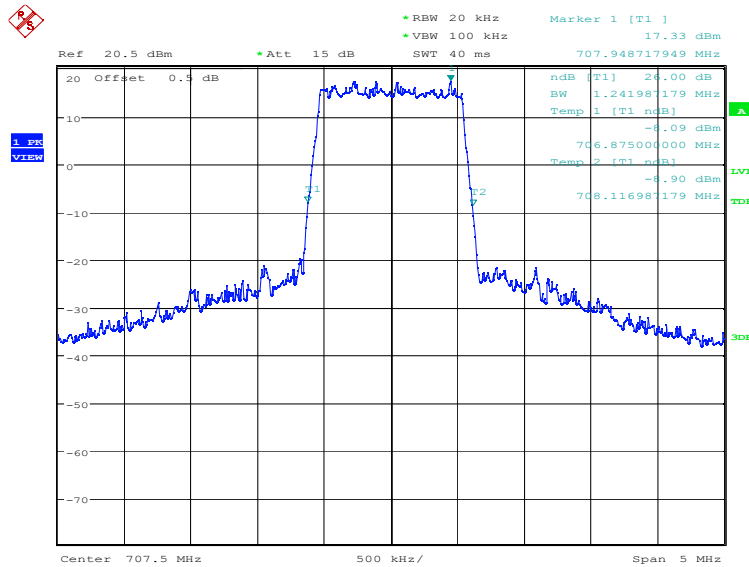
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	1233.97	1241.99

### LTE band 12, 1.4MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 15:14:51

### LTE band 12, 1.4MHz Bandwidth, 16QAM (-26dBc BW)

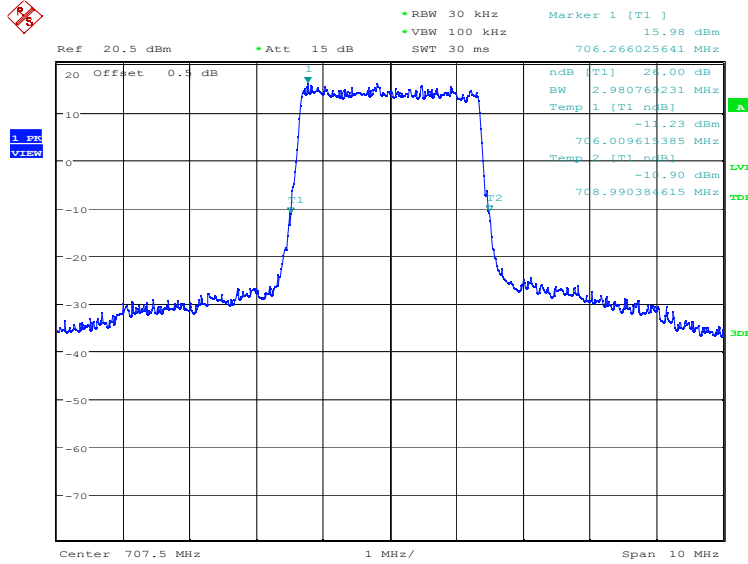


Date: 1.MAY.2022 15:15:30

**LTE band 12, 3MHz (-26dBc)**

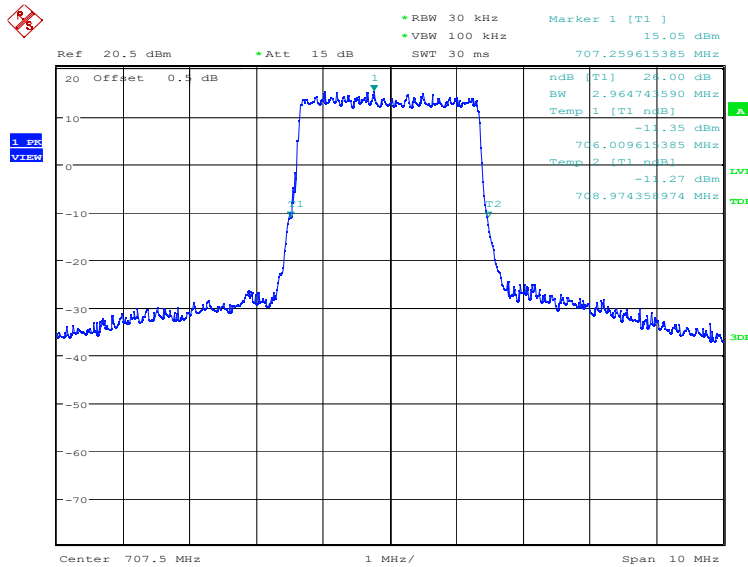
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	707.5	QPSK
	2980.77	2964.74

**LTE band 12, 3MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 15:16:15

**LTE band 12, 3MHz Bandwidth, 16QAM (-26dBc BW)**

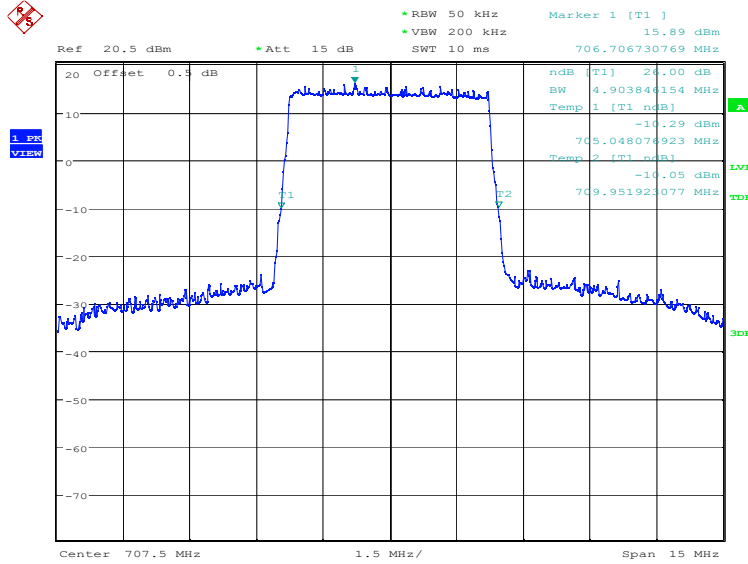


Date: 1.MAY.2022 15:16:54

**LTE band 12, 5MHz (-26dBc)**

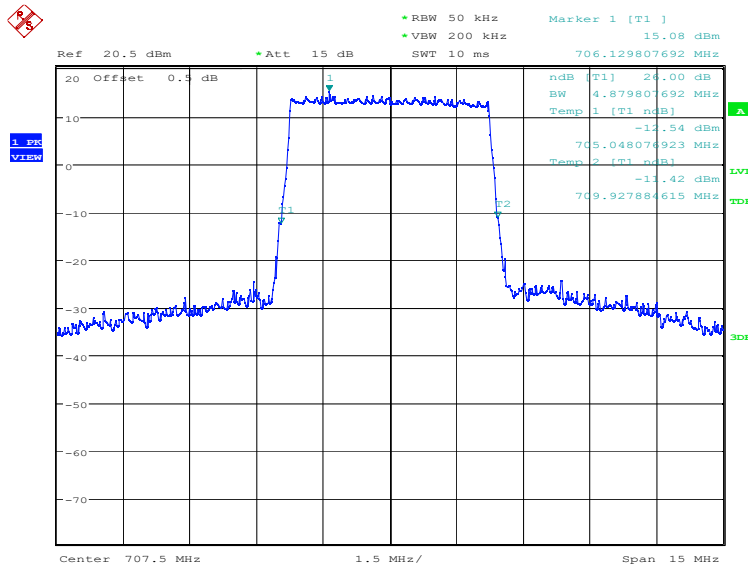
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	4903.85	4879.81

**LTE band 12, 5MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 15:17:38

**LTE band 12, 5MHz Bandwidth, 16QAM (-26dBc BW)**

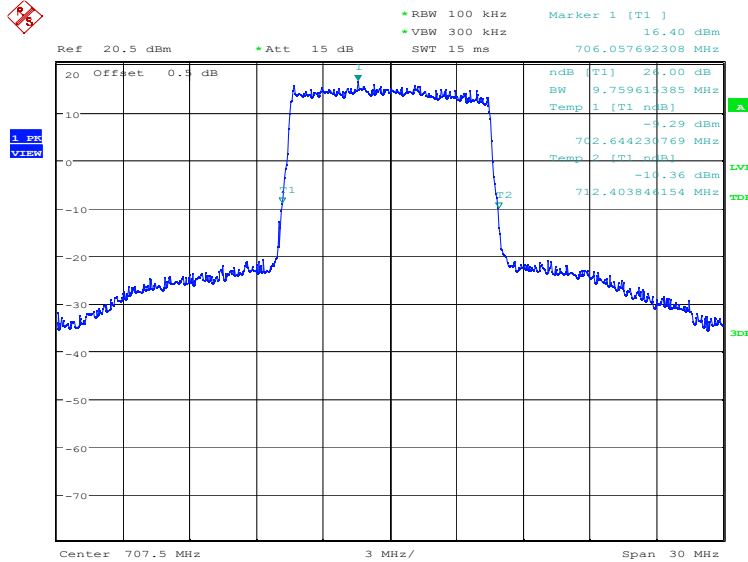


Date: 1.MAY.2022 15:18:18

**LTE band 12, 10MHz (-26dBc)**

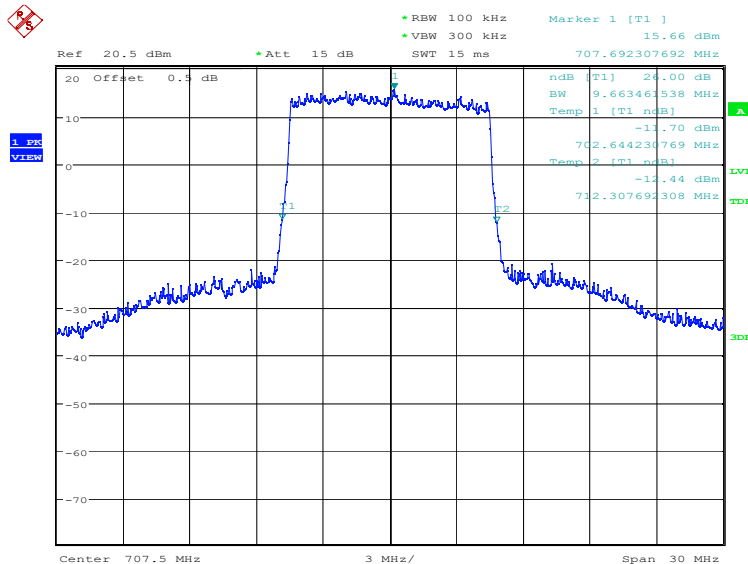
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	9759.62	9663.46

**LTE band 12, 10MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 15:19:02

**LTE band 12, 10MHz Bandwidth, 16QAM (-26dBc BW)**

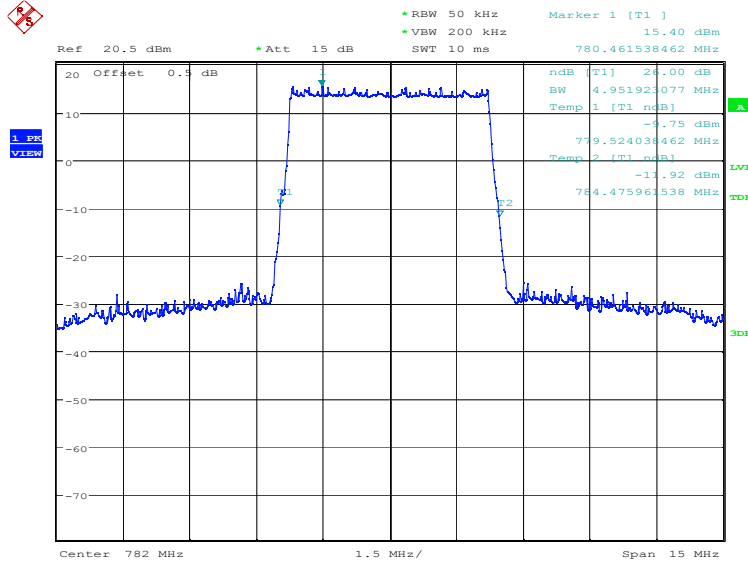


Date: 1.MAY.2022 15:19:42

**LTE band 13, 5MHz (-26dBc)**

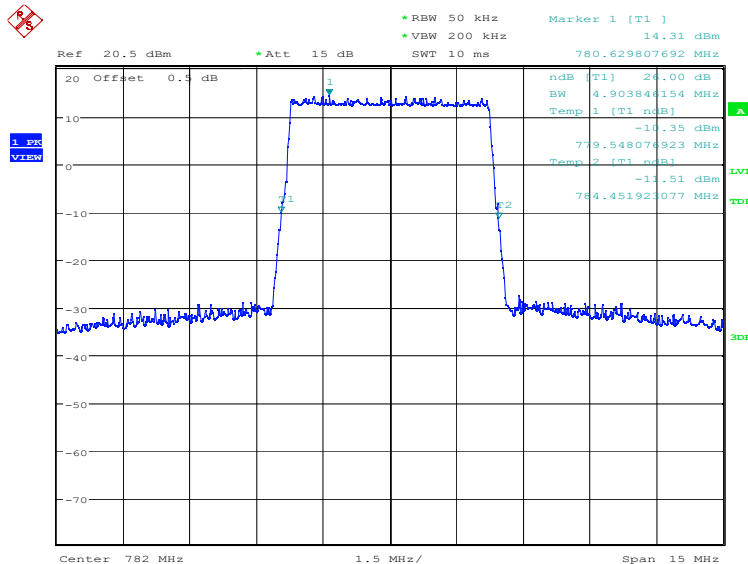
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
782.0	QPSK	16QAM
	4951.92	4903.85

**LTE band 13, 5MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 15:20:30

**LTE band 13, 5MHz Bandwidth, 16QAM (-26dBc BW)**

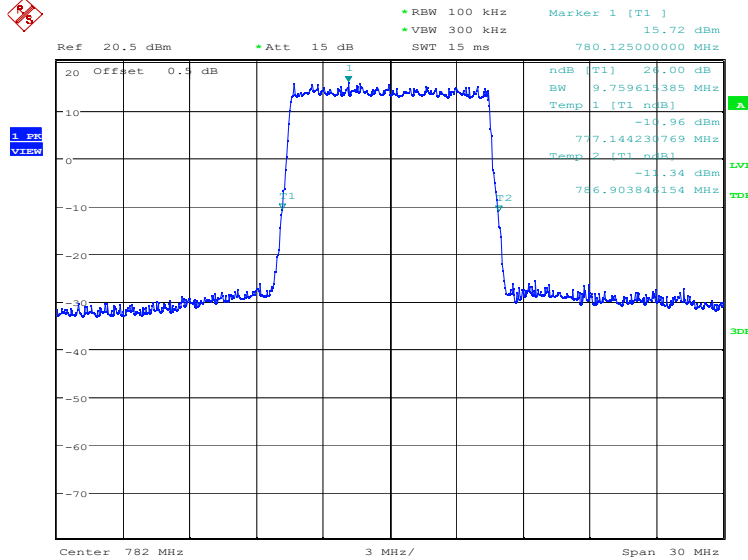


Date: 1.MAY.2022 15:21:09

### LTE band 13, 10MHz (-26dBc)

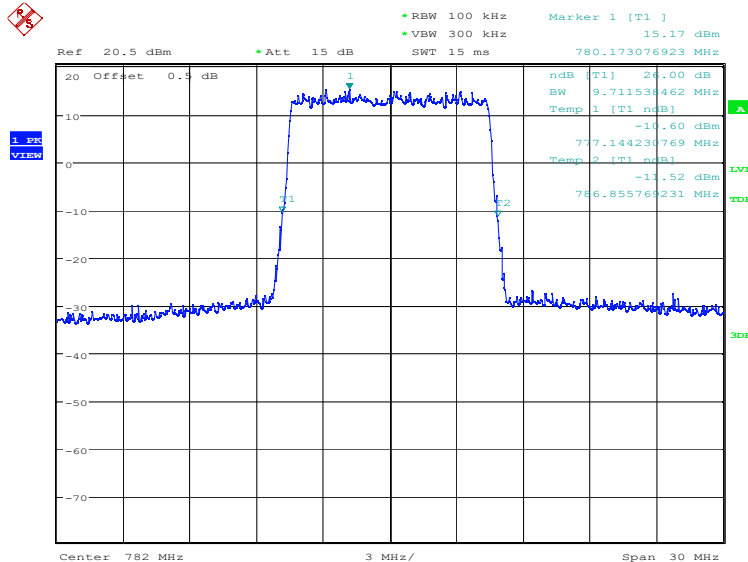
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
782.0	QPSK	16QAM
	9759.62	9711.54

### LTE band 13, 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 15:21:53

### LTE band 13, 10MHz Bandwidth,16QAM (-26dBc BW)

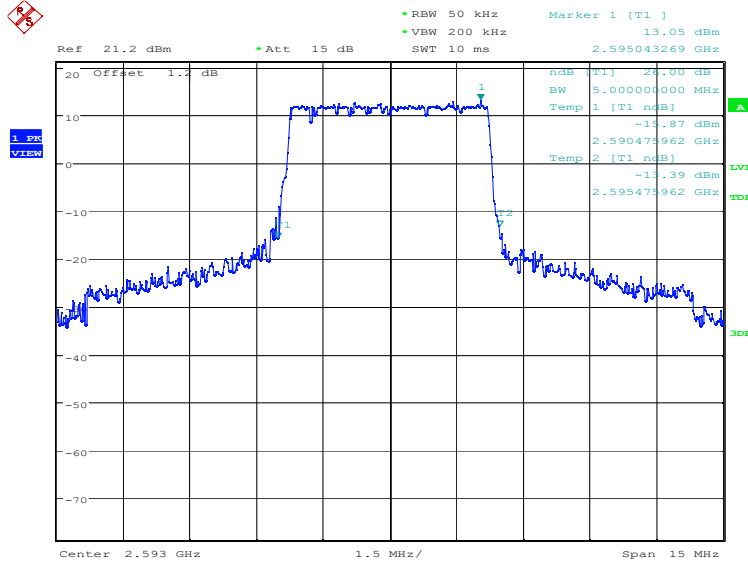


Date: 1.MAY.2022 15:22:33

**LTE band 41, 5MHz (-26dBc)**

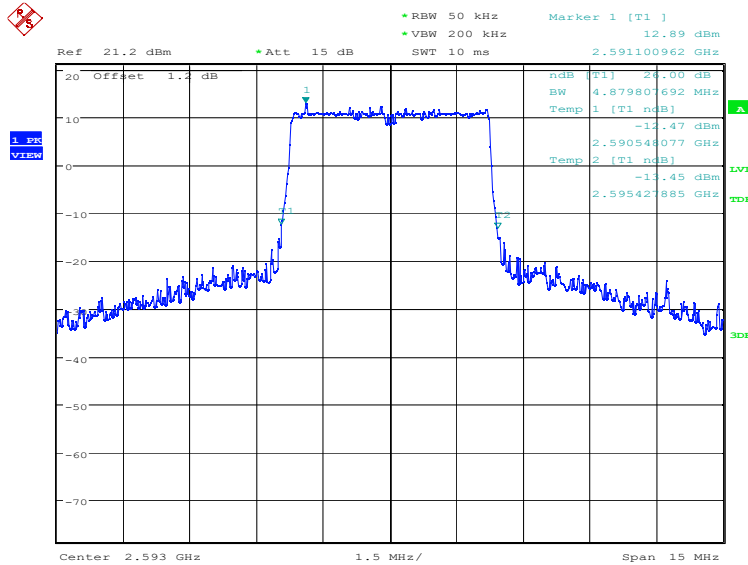
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	5000.00	4879.81

**LTE band 41, 5MHz Bandwidth, QPSK (-26dBc BW)**



Date: 5.MAY.2022 09:02:25

**LTE band 41, 5MHz Bandwidth, 16QAM (-26dBc BW)**

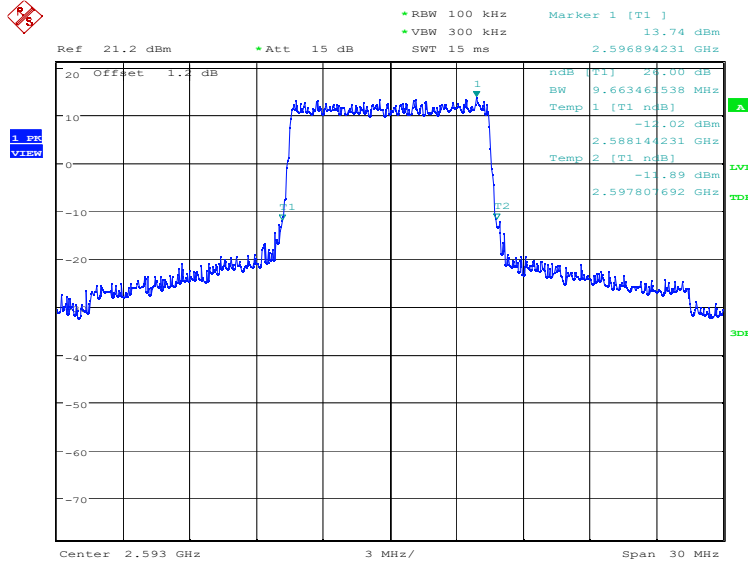


Date: 5.MAY.2022 09:03:04

**LTE band 41, 10MHz (-26dBc)**

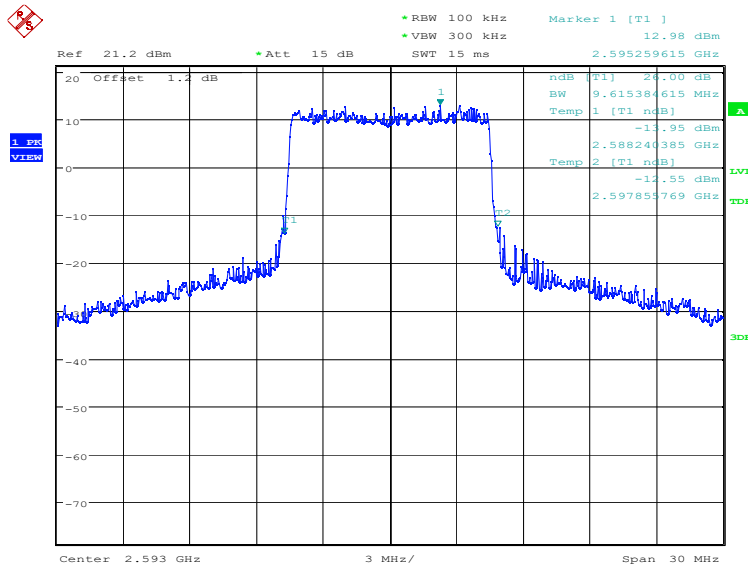
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	9663.46	9615.38

**LTE band 41, 10MHz Bandwidth, QPSK (-26dBc BW)**



Date: 5.MAY.2022 09:03:48

**LTE band 41, 10MHz Bandwidth,16QAM (-26dBc BW)**



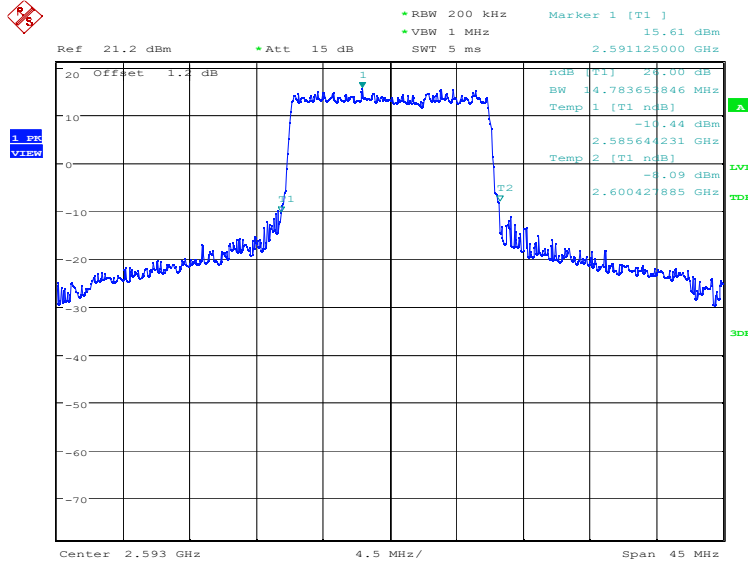
Date: 5.MAY.2022 09:04:28



**LTE band 41, 15MHz (-26dBc)**

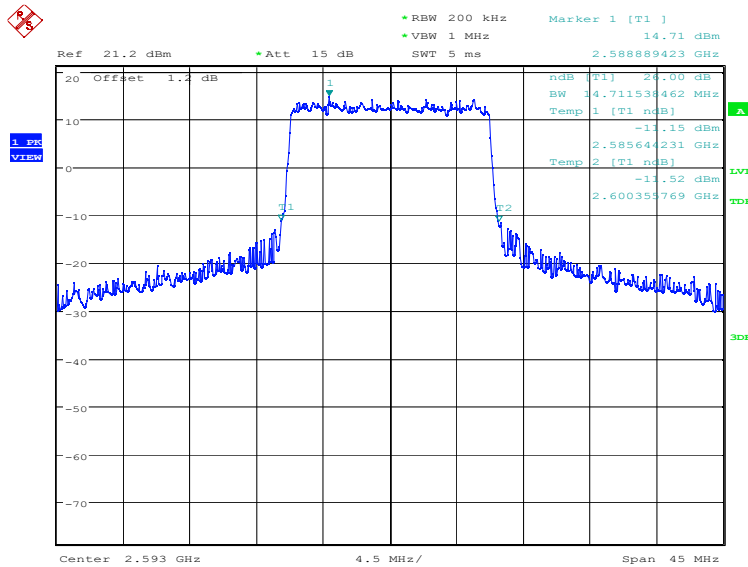
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	14783.65	14711.54

**LTE band 41, 15MHz Bandwidth, QPSK (-26dBc BW)**



Date: 5.MAY.2022 09:05:12

**LTE band 41, 15MHz Bandwidth,16QAM (-26dBc BW)**

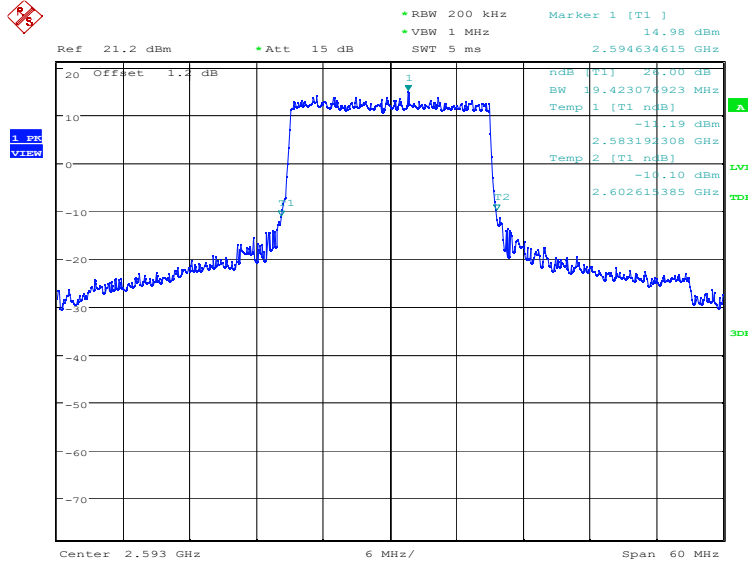


Date: 5.MAY.2022 09:05:51

**LTE band 41, 20MHz (-26dBc)**

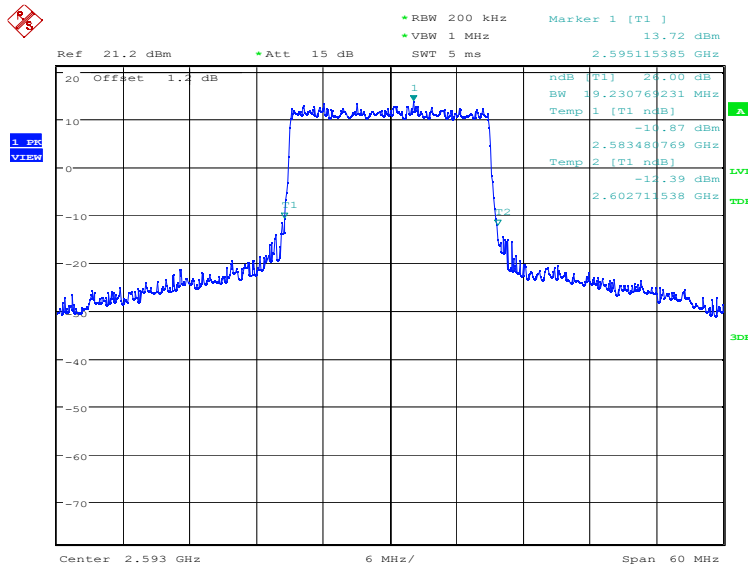
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	19423.08	19230.77

**LTE band 41, 20MHz Bandwidth, QPSK (-26dBc BW)**



Date: 5.MAY.2022 09:06:35

**LTE band 41, 20MHz Bandwidth,16QAM (-26dBc BW)**

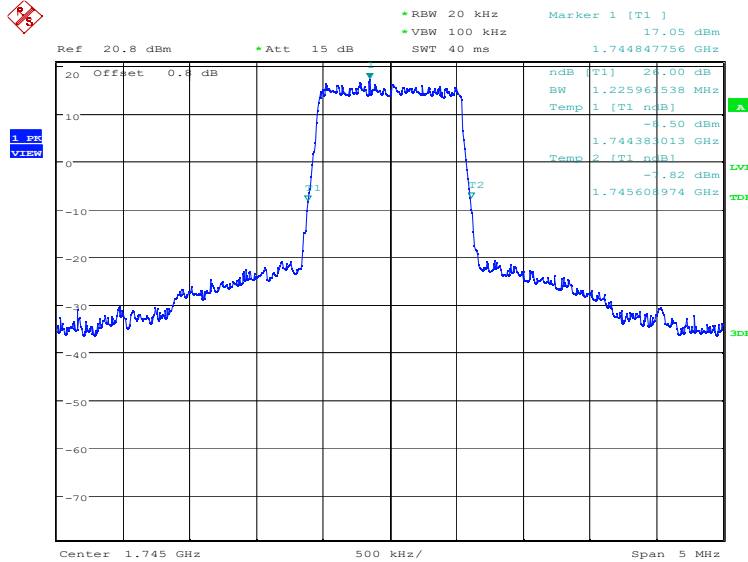


Date: 5.MAY.2022 09:07:15

**LTE band 66, 1.4MHz (-26dBc)**

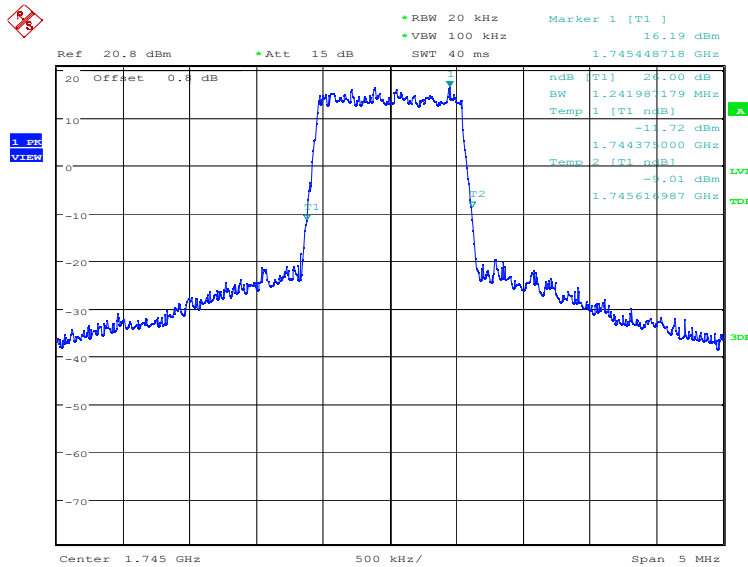
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1745.0	QPSK
	1225.96	1241.99

**LTE band 66, 1.4MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 16:41:52

**LTE band 66, 1.4MHz Bandwidth, 16QAM (-26dBc BW)**

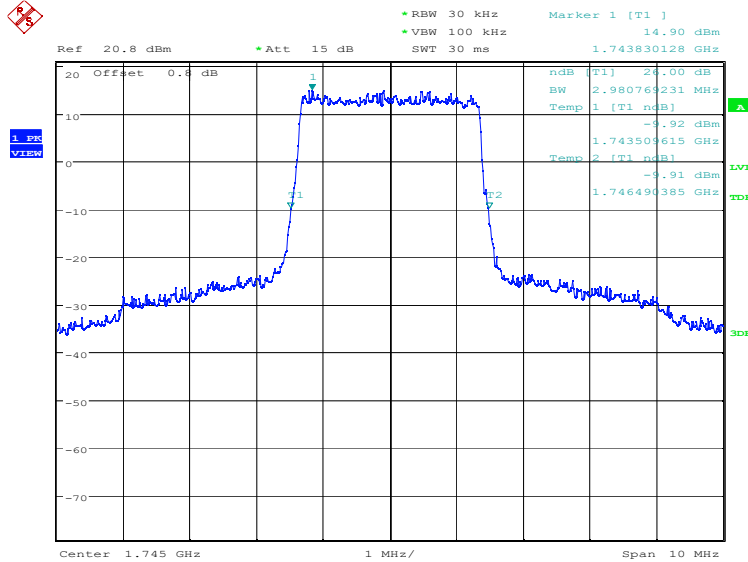


Date: 1.MAY.2022 16:42:32

**LTE band 66, 3MHz (-26dBc)**

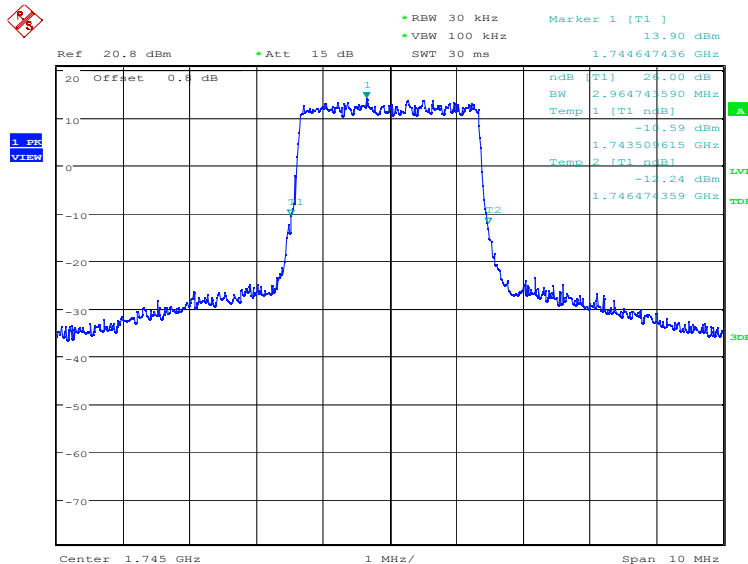
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1745.0	QPSK
	2980.77	2964.74

**LTE band 66, 3MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 16:43:16

**LTE band 66, 3MHz Bandwidth, 16QAM (-26dBc BW)**

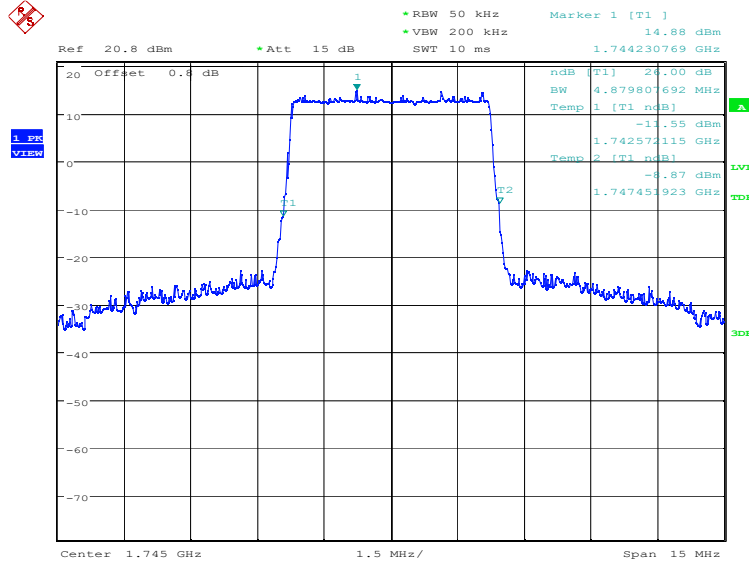


Date: 1.MAY.2022 16:43:56

**LTE band 66, 5MHz (-26dBc)**

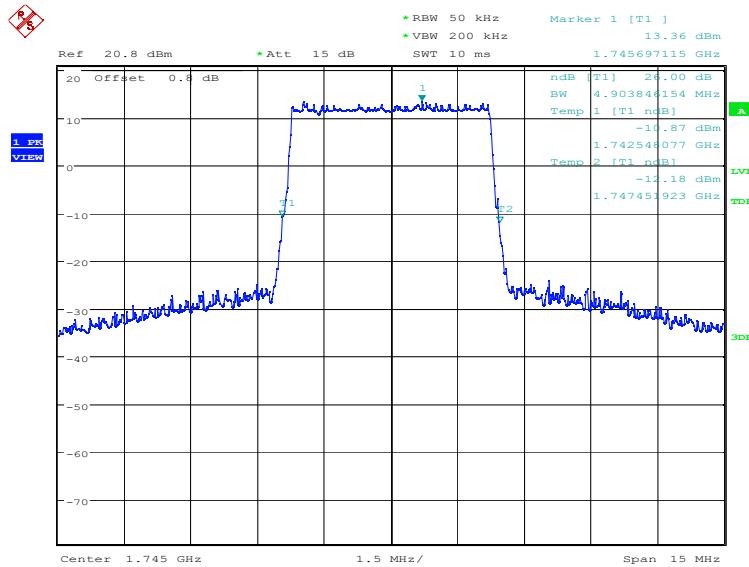
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	4879.81	4903.85

**LTE band 66, 5MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 16:44:39

**LTE band 66, 5MHz Bandwidth, 16QAM (-26dBc BW)**

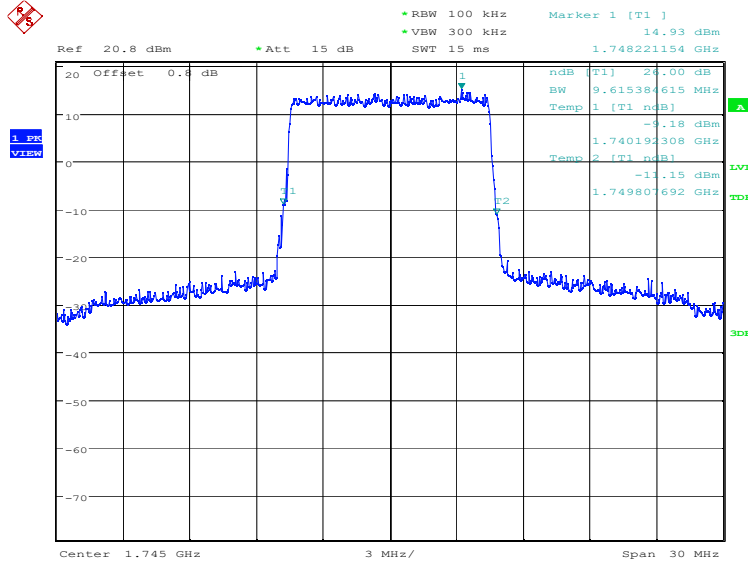


Date: 1.MAY.2022 16:45:19

**LTE band 66, 10MHz (-26dBc)**

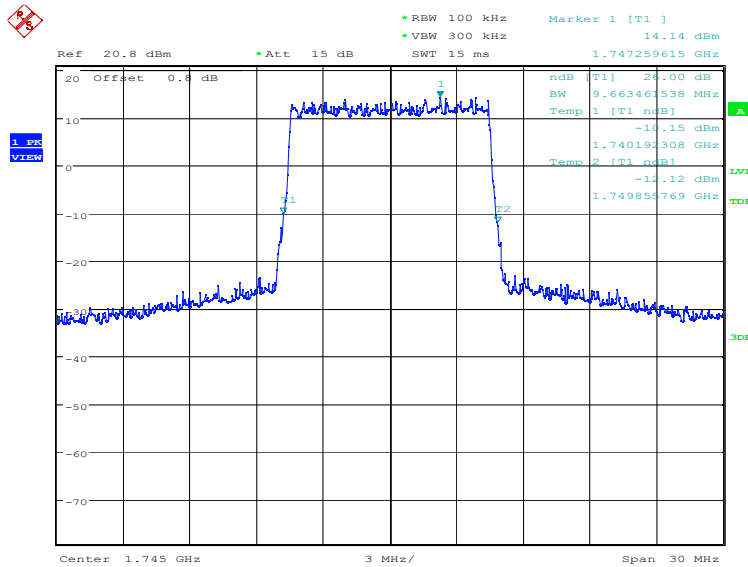
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1745.0	QPSK
	9615.38	9663.46

**LTE band 66, 10MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 16:46:03

**LTE band 66, 10MHz Bandwidth, 16QAM (-26dBc BW)**

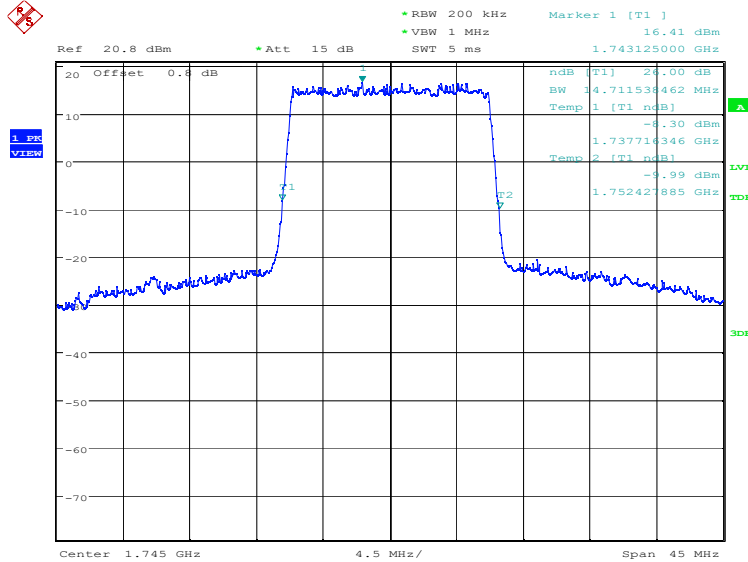


Date: 1.MAY.2022 16:46:43

**LTE band 66, 15MHz (-26dBc)**

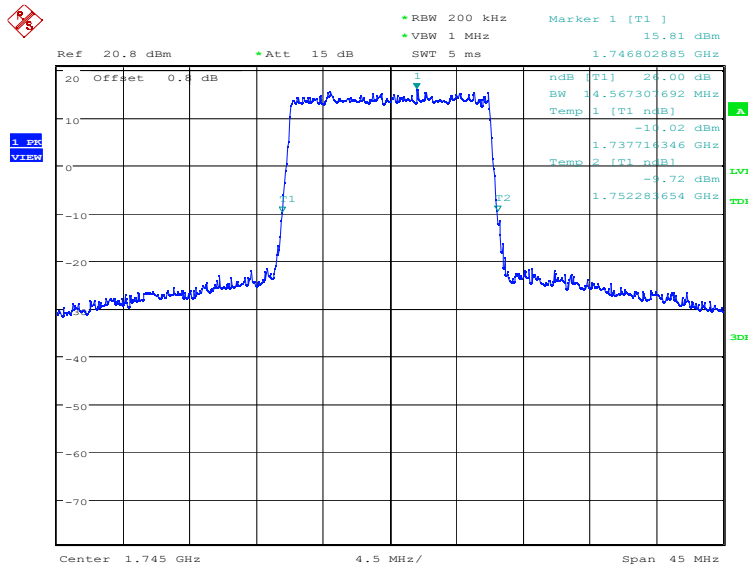
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	14711.54	14567.31

**LTE band 66, 15MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 16:47:26

**LTE band 66, 15MHz Bandwidth, 16QAM (-26dBc BW)**

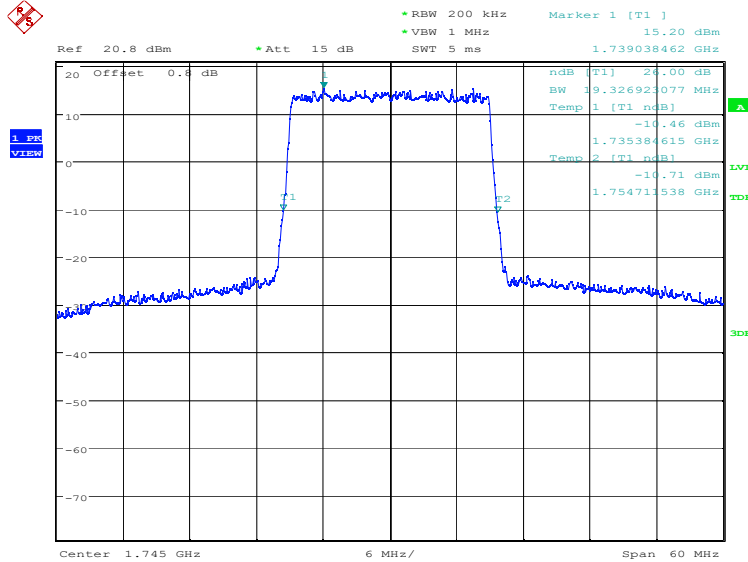


Date: 1.MAY.2022 16:48:06

**LTE band 66, 20MHz (-26dBc)**

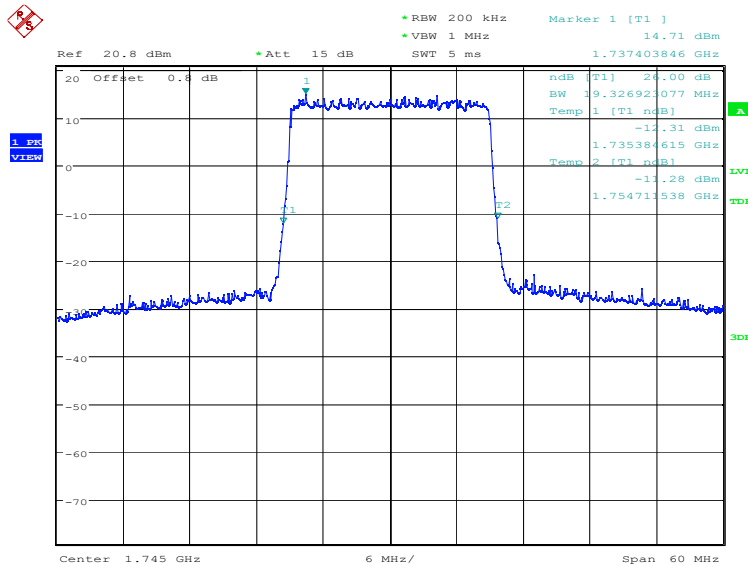
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	19326.92	19326.92

**LTE band 66, 20MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 16:48:50

**LTE band 66, 20MHz Bandwidth, 16QAM (-26dBc BW)**



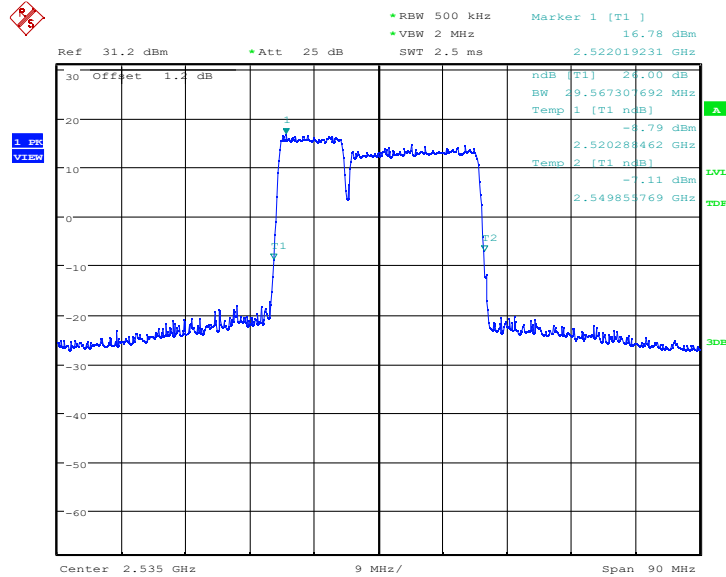
Date: 1.MAY.2022 16:49:30



### LTE CA Band 7C , 10MHz+20MHz (-26dBc)

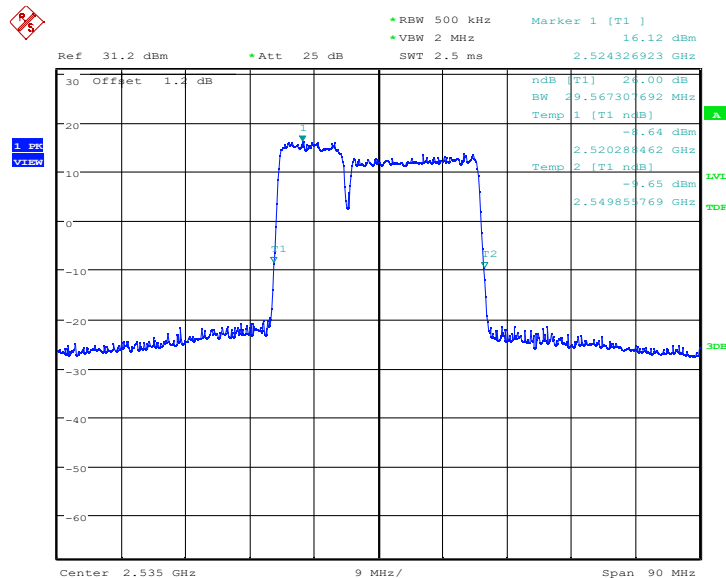
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2535	29.567	29.567

### LTE CA Band 7C , 10MHz+20MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 09:53:14

### LTE CA Band 7C , 10MHz+20MHz Bandwidth, 16QAM (-26dBc BW)

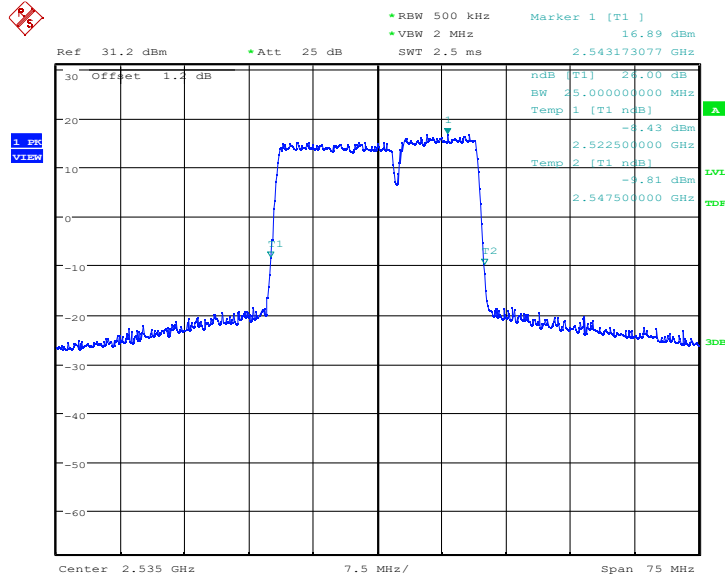


Date: 1.MAY.2022 09:53:35

**LTE CA Band 7C , 15MHz+10MHz (-26dBc)**

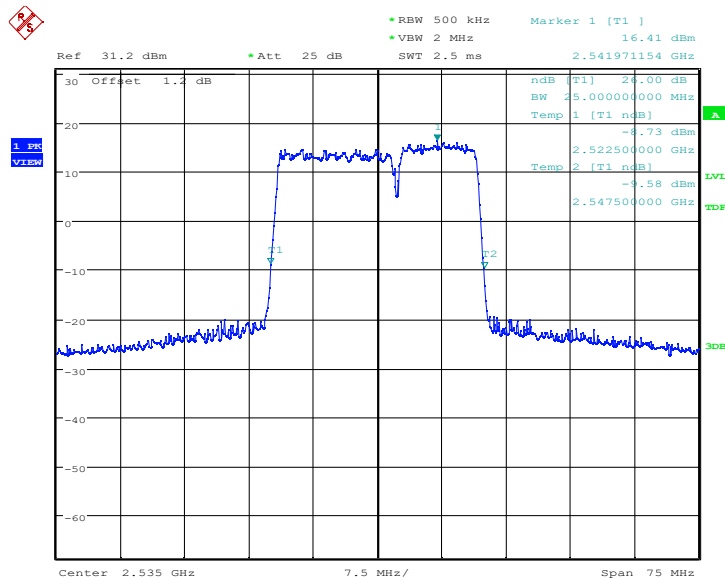
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2535	25.000	25.000

**LTE CA Band 7C , 15MHz+10MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 09:54:40

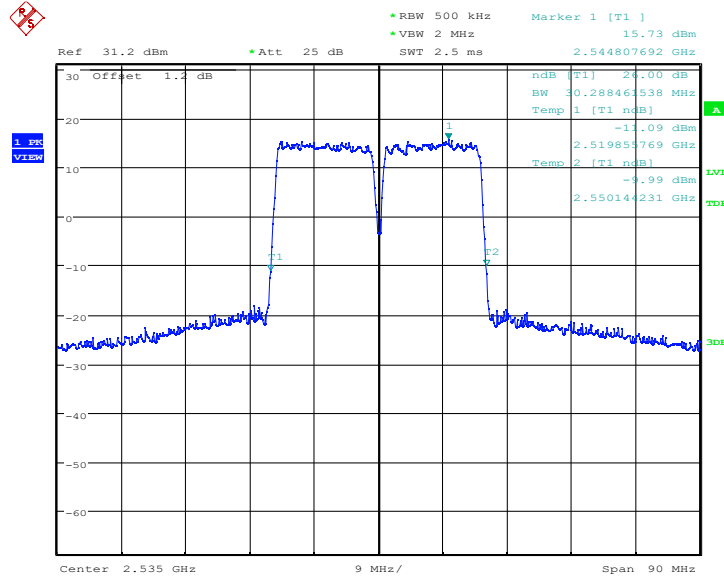
**LTE CA Band 7C , 15MHz+10MHz Bandwidth, 16QAM (-26dBc BW)**



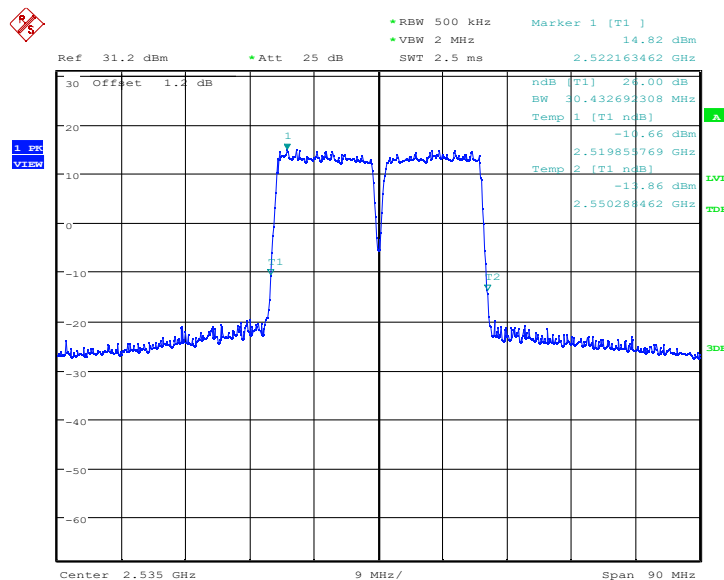
Date: 1.MAY.2022 09:55:01

**LTE CA Band 7C , 15MHz+15MHz (-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2535	30.288	30.433

**LTE CA Band 7C , 15MHz+15MHz Bandwidth, QPSK (-26dBc BW)**


Date: 1.MAY.2022 09:56:05

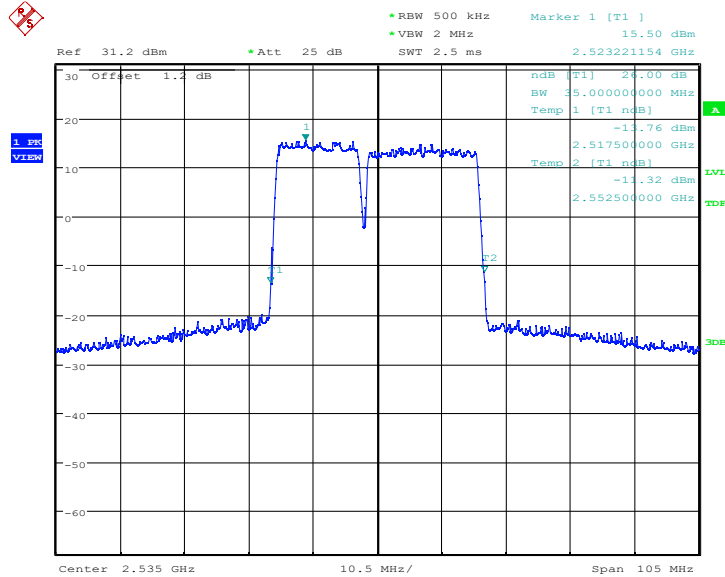
**LTE CA Band 7C , 15MHz+15MHz Bandwidth, 16QAM (-26dBc BW)**


Date: 1.MAY.2022 09:56:27

**LTE CA Band 7C , 15MHz+20MHz (-26dBc)**

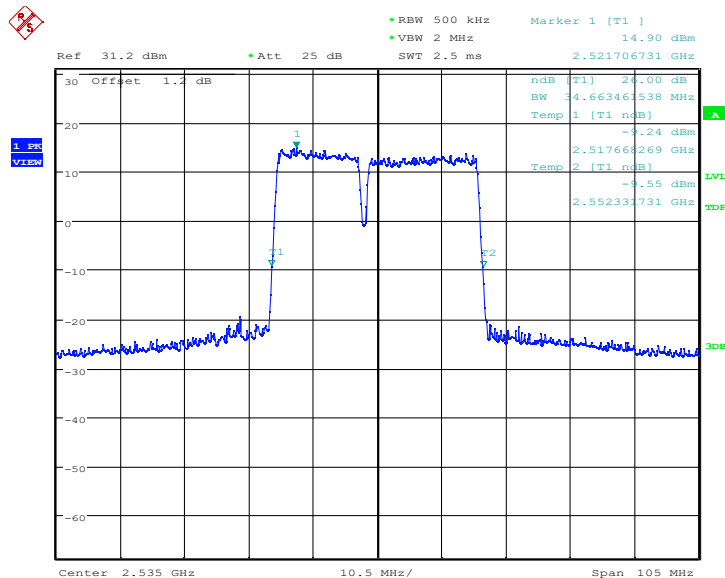
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2535	35.000	34.663

**LTE CA Band 7C , 15MHz+20MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 09:57:31

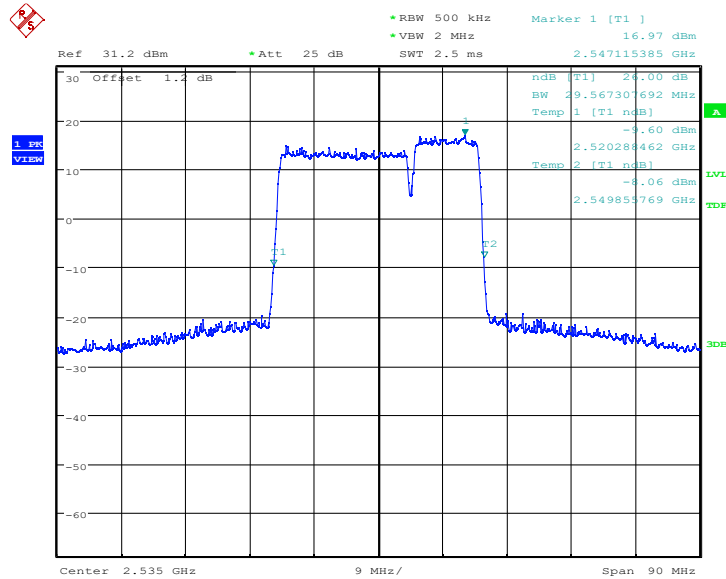
**LTE CA Band 7C , 15MHz+20MHz Bandwidth, 16QAM (-26dBc BW)**



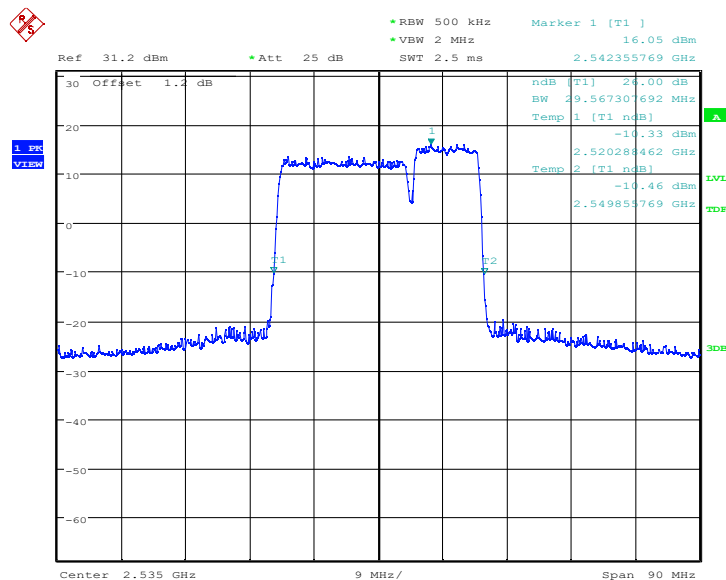
Date: 1.MAY.2022 09:57:53

**LTE CA Band 7C , 20MHz+10MHz (-26dBc)**

Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2535	29.567	29.567

**LTE CA Band 7C , 20MHz+10MHz Bandwidth, QPSK (-26dBc BW)**


Date: 1.MAY.2022 09:58:57

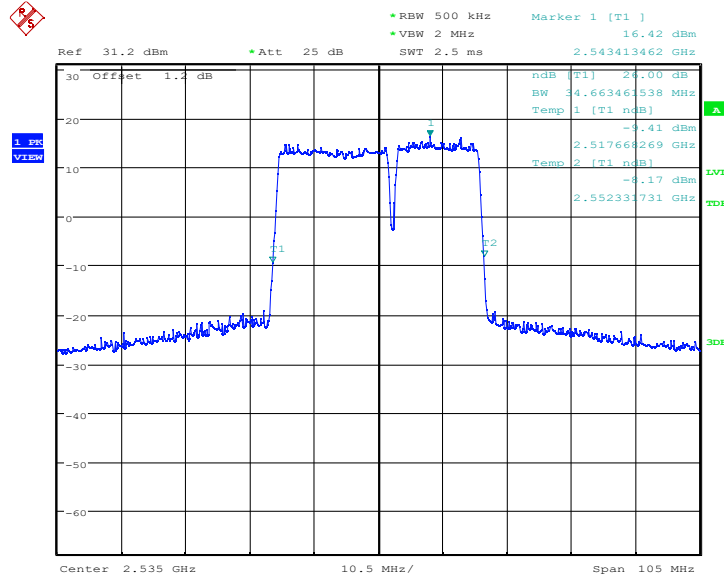
**LTE CA Band 7C , 20MHz+10MHz Bandwidth, 16QAM (-26dBc BW)**


Date: 1.MAY.2022 09:59:19

### LTE CA Band 7C , 20MHz+15MHz (-26dBc)

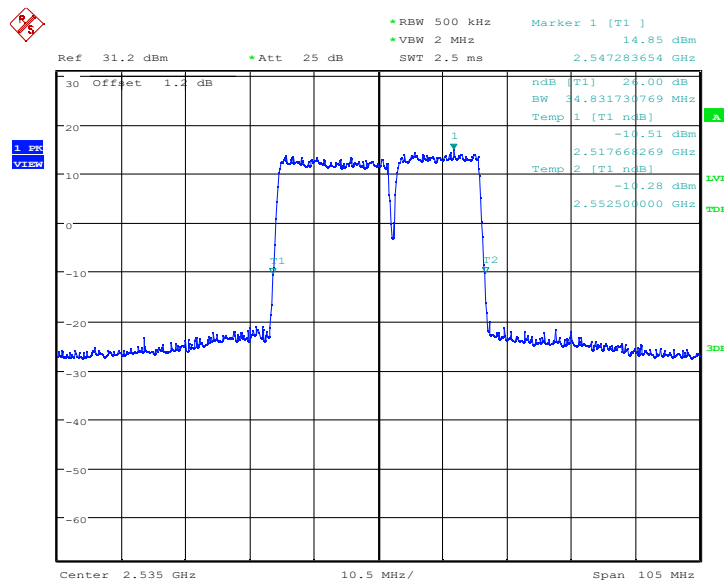
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2535	34.663	34.832

### LTE CA Band 7C , 20MHz+15MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 10:00:23

### LTE CA Band 7C , 20MHz+15MHz Bandwidth, 16QAM (-26dBc BW)

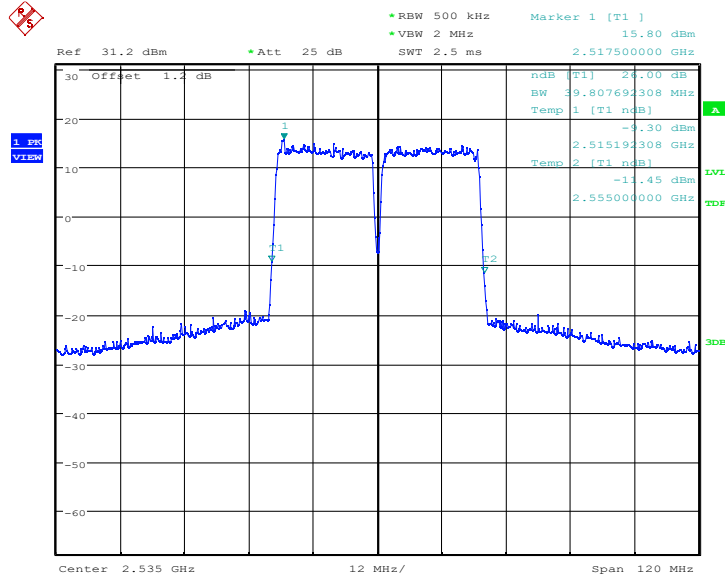


Date: 1.MAY.2022 10:00:45

**LTE CA Band 7C , 20MHz+20MHz (-26dBc)**

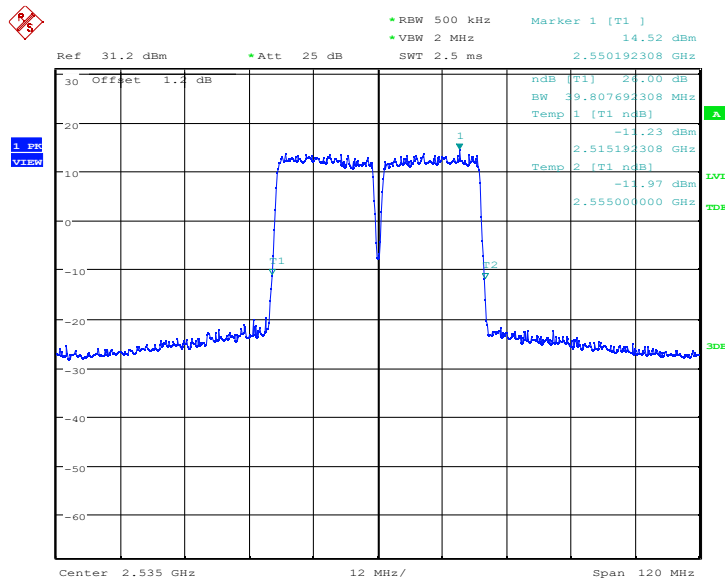
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2535	39.808	39.808

**LTE CA Band 7C , 20MHz+20MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 10:01:48

**LTE CA Band 7C , 20MHz+20MHz Bandwidth, 16QAM (-26dBc BW)**

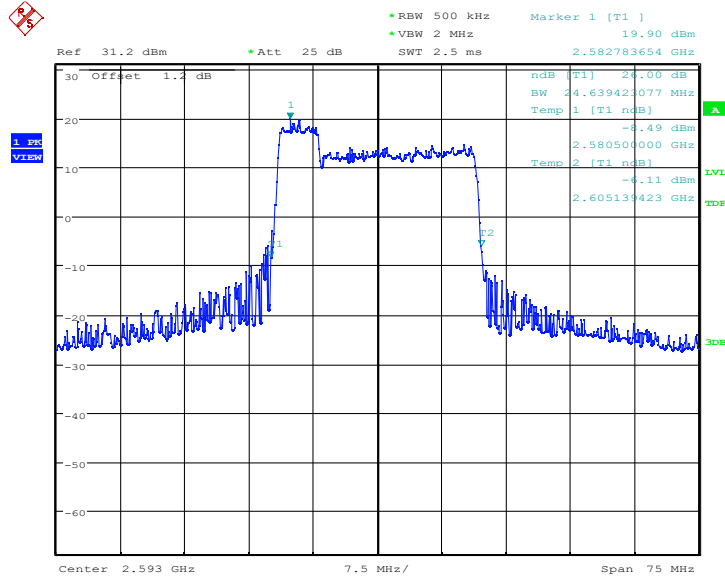


Date: 1.MAY.2022 10:02:10

**LTE CA Band 41C , 5MHz+20MHz (-26dBc)**

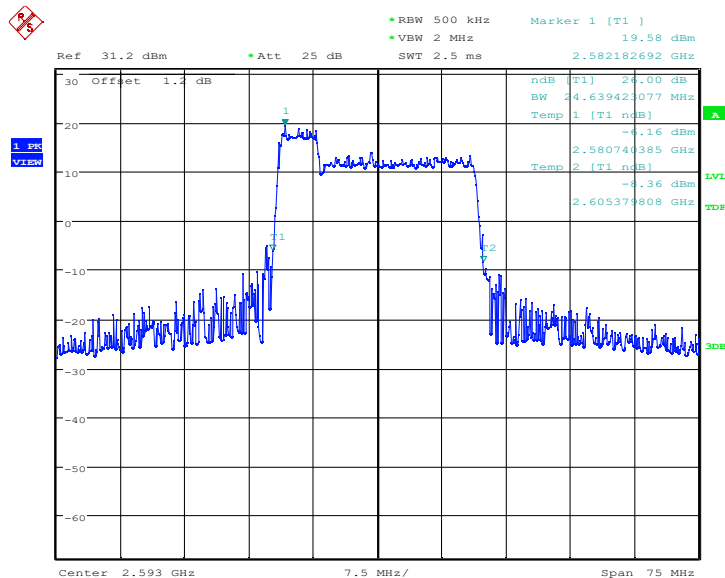
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2593	24.639	24.639

**LTE CA Band 41C , 5MHz+20MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 10:03:12

**LTE CA Band 41C , 5MHz+20MHz Bandwidth, 16QAM (-26dBc BW)**



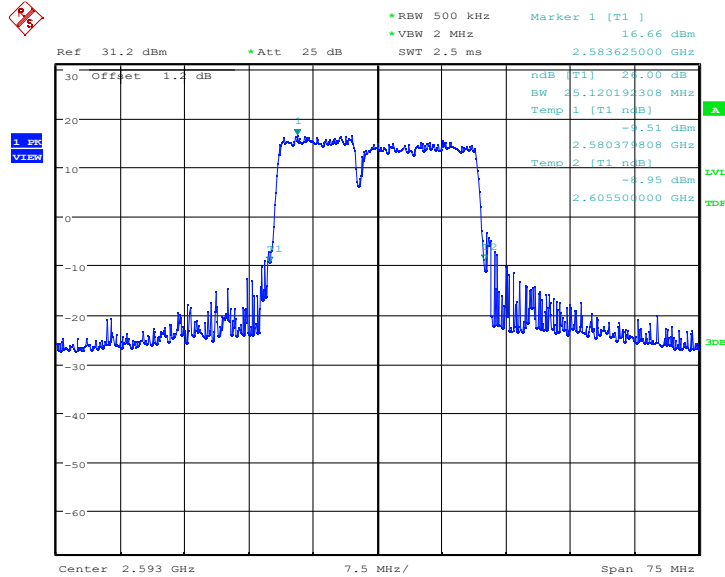
Date: 1.MAY.2022 10:03:34



### LTE CA Band 41C , 10MHz+15MHz (-26dBc)

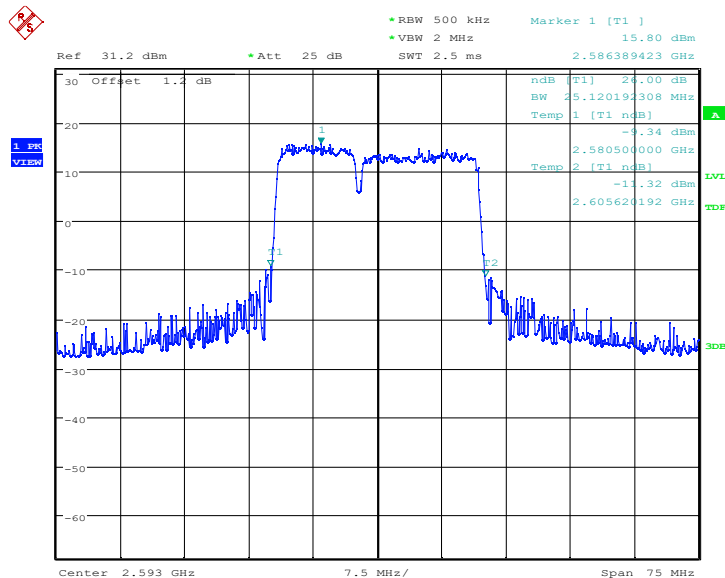
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2593	25.120	25.120

### LTE CA Band 41C , 10MHz+15MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 10:04:38

### LTE CA Band 41C , 10MHz+15MHz Bandwidth, 16QAM (-26dBc BW)

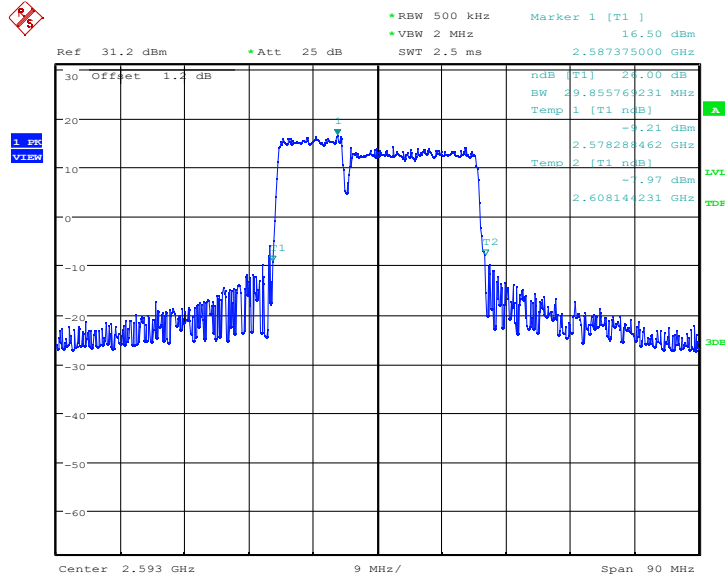


Date: 1.MAY.2022 10:05:00

**LTE CA Band 41C , 10MHz+20MHz (-26dBc)**

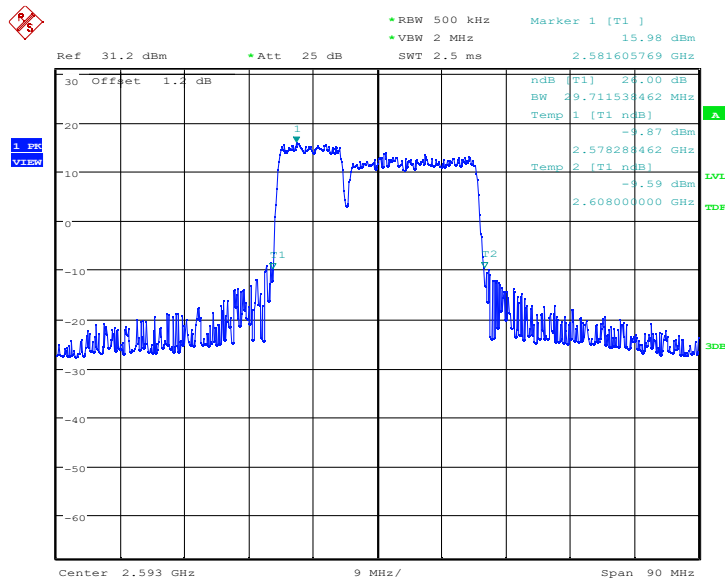
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2593	29.856	29.712

**LTE CA Band 41C , 10MHz+20MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 10:06:04

**LTE CA Band 41C , 10MHz+20MHz Bandwidth, 16QAM (-26dBc BW)**

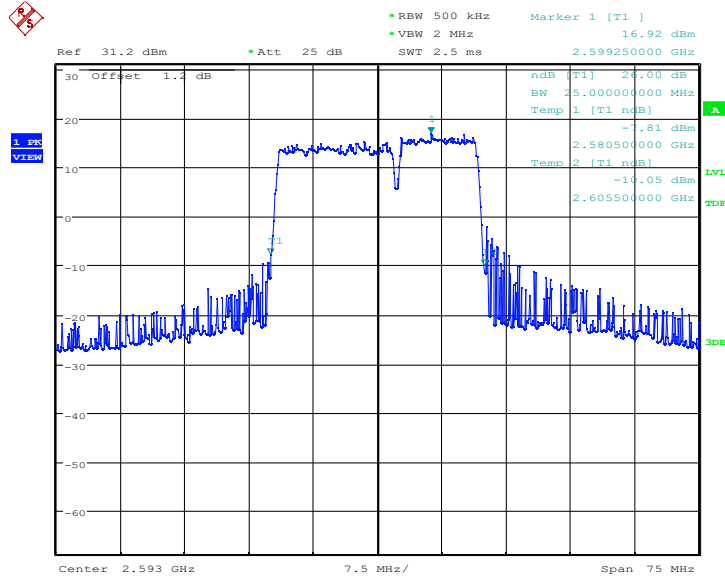


Date: 1.MAY.2022 10:06:26

**LTE CA Band 41C , 15MHz+10MHz (-26dBc)**

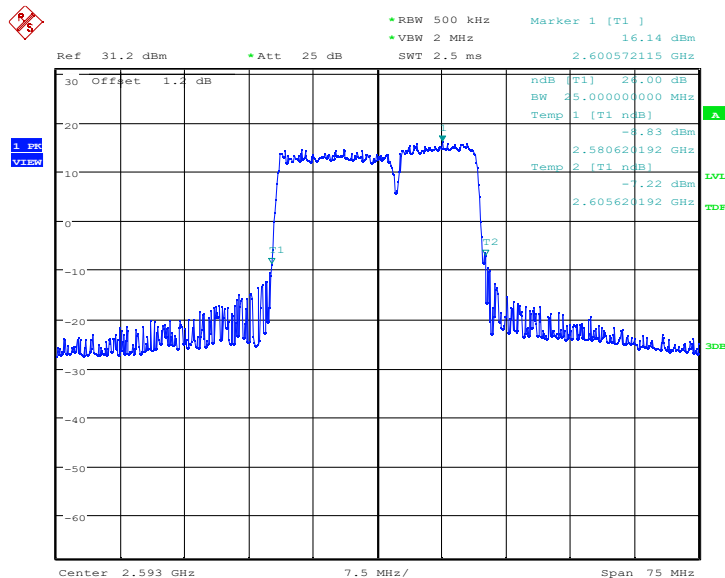
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2593	25.000	25.000

**LTE CA Band 41C , 15MHz+10MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 10:07:30

**LTE CA Band 41C , 15MHz+10MHz Bandwidth, 16QAM (-26dBc BW)**

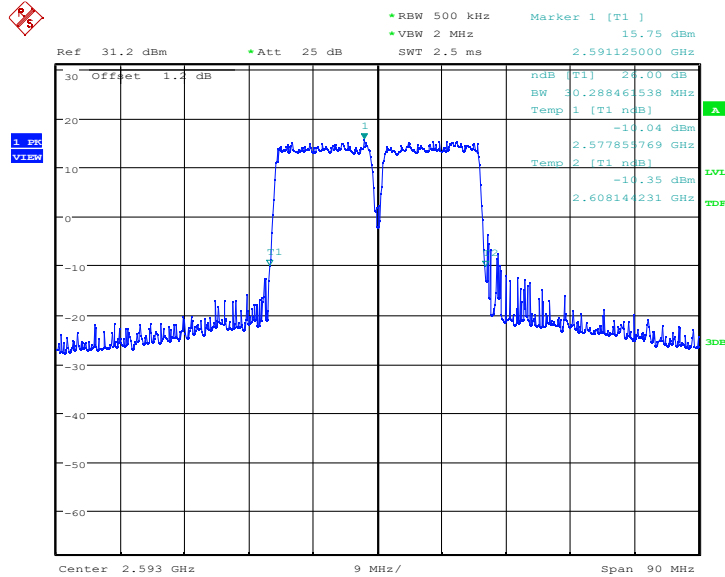


Date: 1.MAY.2022 10:07:52

**LTE CA Band 41C , 15MHz+15MHz (-26dBc)**

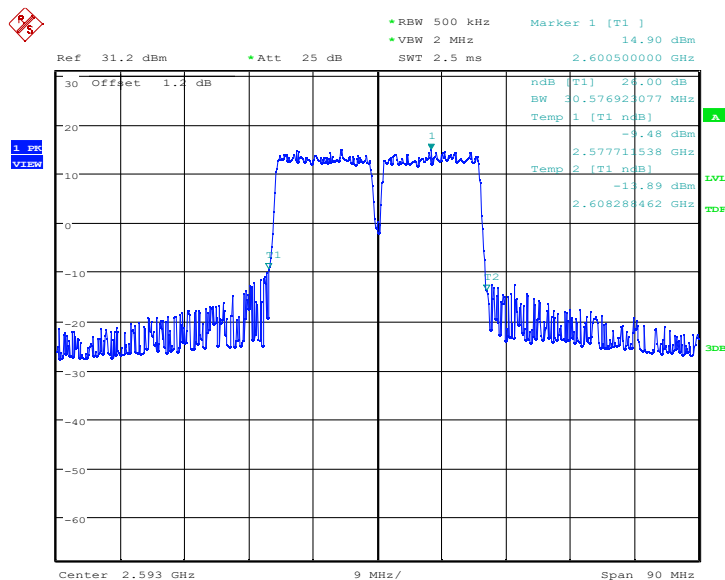
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2593	30.288	30.577

**LTE CA Band 41C , 15MHz+15MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 10:08:55

**LTE CA Band 41C , 15MHz+15MHz Bandwidth, 16QAM (-26dBc BW)**

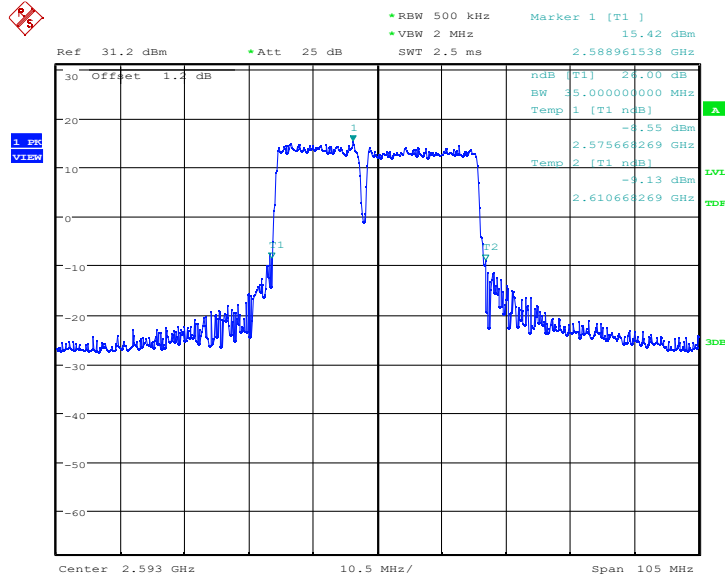


Date: 1.MAY.2022 10:09:17

**LTE CA Band 41C , 15MHz+20MHz (-26dBc)**

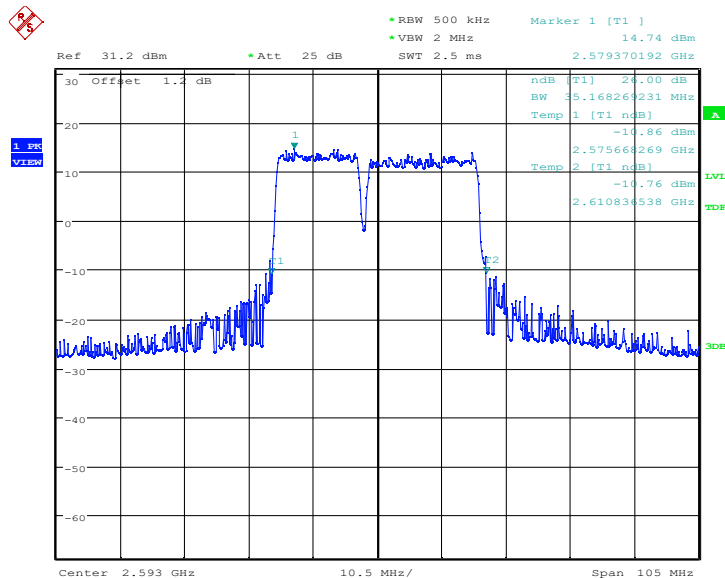
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2593	35.000	35.168

**LTE CA Band 41C , 15MHz+20MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 10:10:20

**LTE CA Band 41C , 15MHz+20MHz Bandwidth, 16QAM (-26dBc BW)**

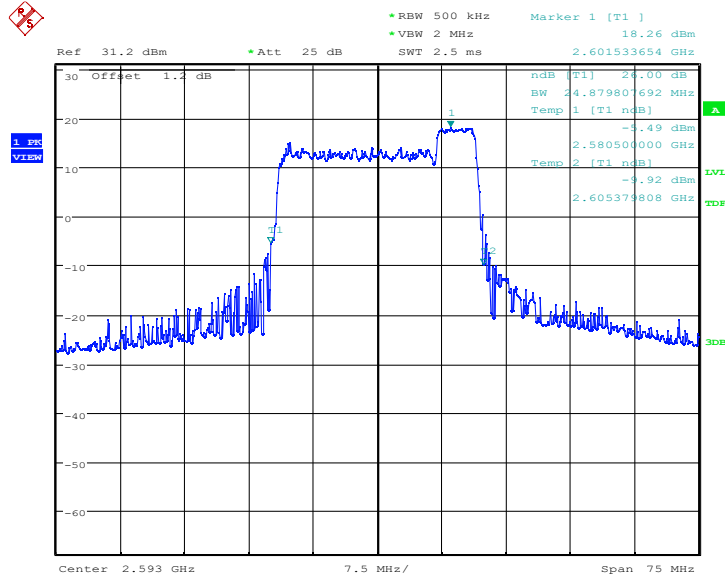


Date: 1.MAY.2022 10:10:42

### LTE CA Band 41C , 20MHz+5MHz (-26dBc)

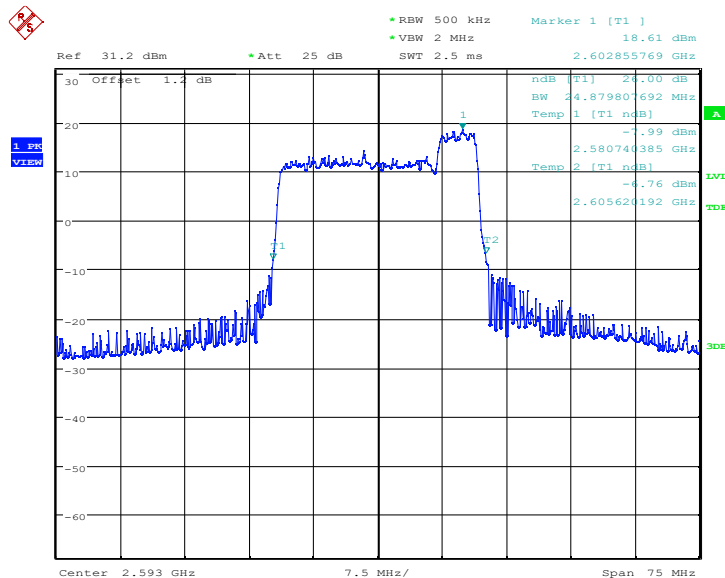
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2593	24.880	24.880

### LTE CA Band 41C , 20MHz+5MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 10:11:46

### LTE CA Band 41C , 20MHz+5MHz Bandwidth, 16QAM (-26dBc BW)

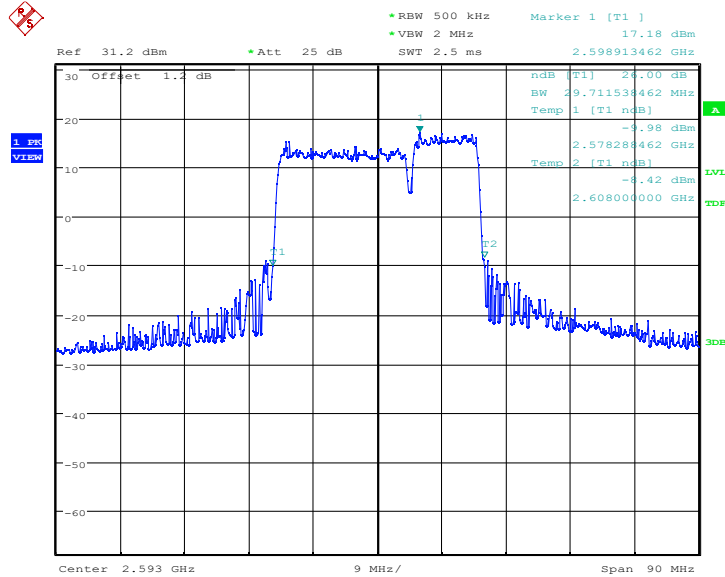


Date: 1.MAY.2022 10:12:08

### LTE CA Band 41C , 20MHz+10MHz (-26dBc)

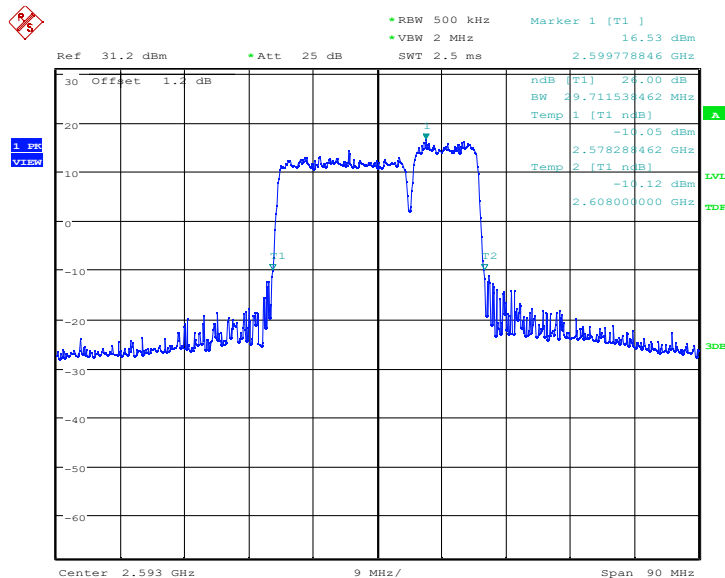
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2593	29.712	29.712

### LTE CA Band 41C , 20MHz+10MHz Bandwidth, QPSK (-26dBc BW)



Date: 1.MAY.2022 10:13:33

### LTE CA Band 41C , 20MHz+10MHz Bandwidth, 16QAM (-26dBc BW)

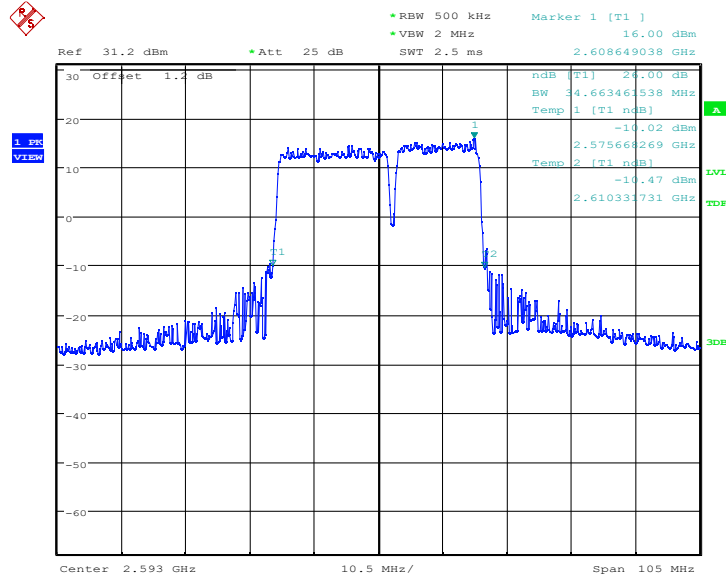


Date: 1.MAY.2022 10:13:55

**LTE CA Band 41C , 20MHz+15MHz (-26dBc)**

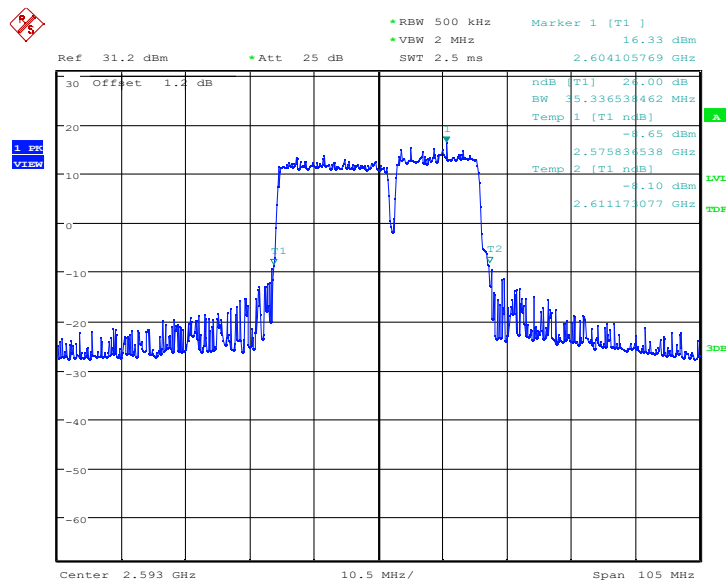
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2593	34.663	35.337

**LTE CA Band 41C , 20MHz+15MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 10:14:58

**LTE CA Band 41C , 20MHz+15MHz Bandwidth, 16QAM (-26dBc BW)**



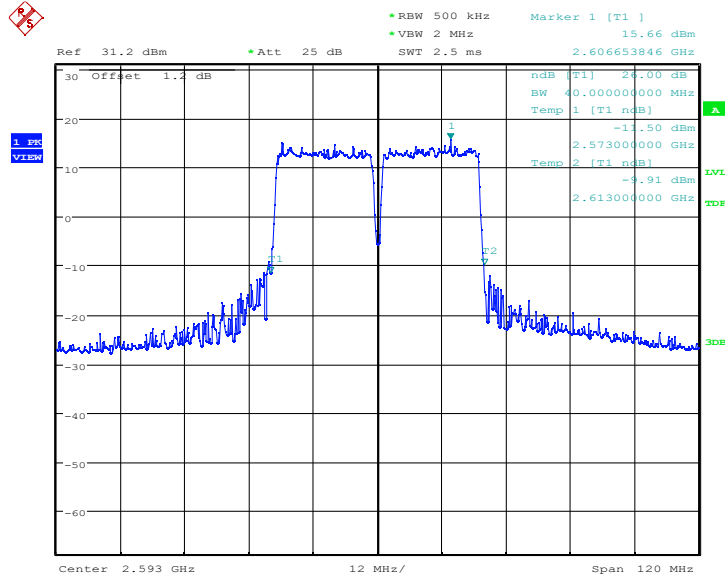
Date: 1.MAY.2022 10:15:20



**LTE CA Band 41C , 20MHz+20MHz (-26dBc)**

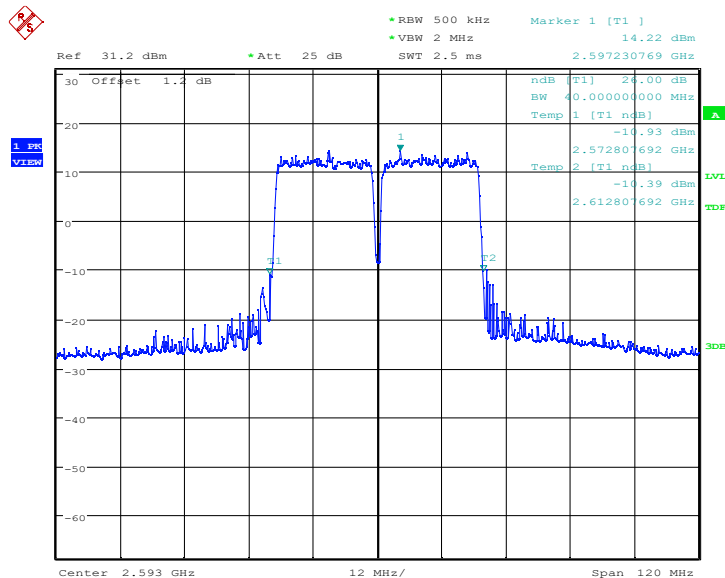
Frequency (MHz)	Emission Bandwidth (-26dBc) (MHz)	
	QPSK	16QAM
2593	40.000	40.000

**LTE CA Band 41C , 20MHz+20MHz Bandwidth, QPSK (-26dBc BW)**



Date: 1.MAY.2022 10:16:46

**LTE CA Band 41C , 20MHz+20MHz Bandwidth, 16QAM (-26dBc BW)**



Date: 1.MAY.2022 10:17:07

## **A.6 Band Edge Compliance**

### **A.6.1 Measurement limit**

Part 22.917, Part 24.238 and 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.

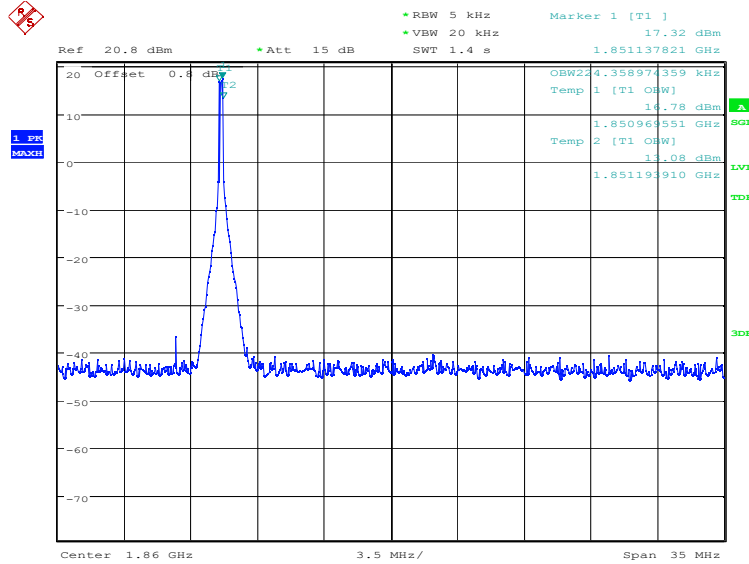
Part 27.53(m) specifies for mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log(P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log(P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, 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.

Part 27.53(c) states for operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the 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, in accordance with the following: (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB; (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB; (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than  $65 + 10 \log(P)$  dB in a 6.25 kHz band segment, for mobile and portable stations.

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.

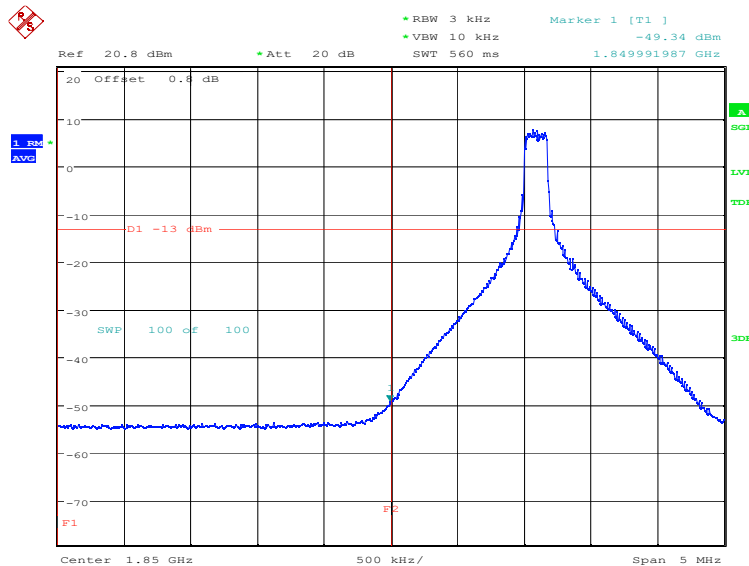
The spectrum analyzer readings are corrected by  $[10 \log(1/\text{duty cycle})]$  for the non-continuous transmitting scenario.

**A.6.2 Measurement result**  
**Only the worst case result is given below**  
**LTE band 2**  
**OBW: 1RB-low\_offset**



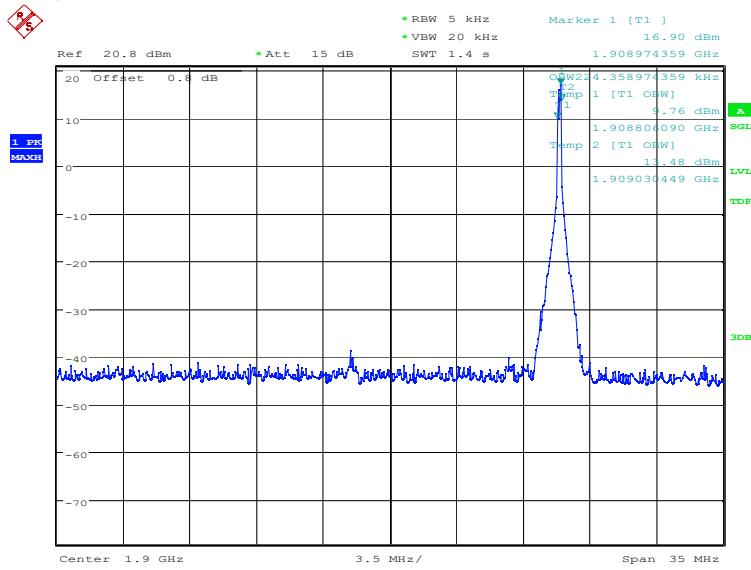
Date: 8.JUL.2022 14:02:43

**LOW BAND EDGE BLOCK-1RB-low\_offset**



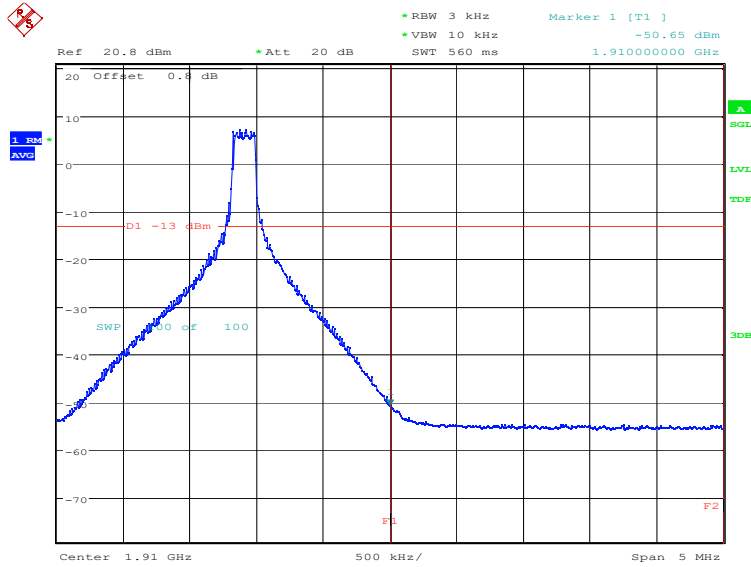
Date: 8.JUL.2022 14:03:56

### OBW: 1RB-high\_offset



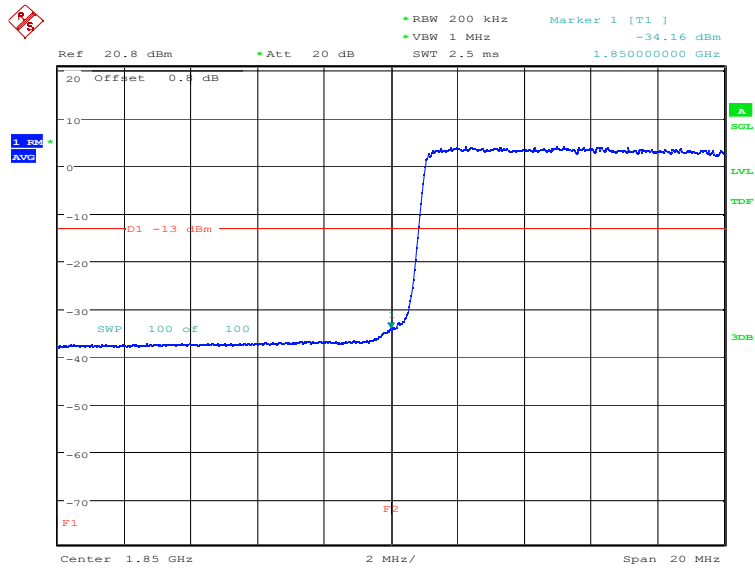
Date: 8.JUL.2022 14:04:32

### HIGH BAND EDGE BLOCK-1RB-high\_offset



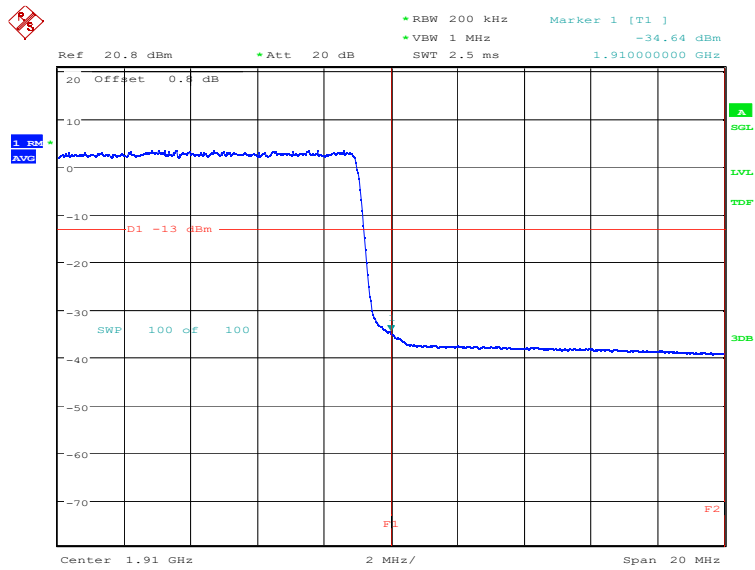
Date: 8.JUL.2022 14:05:46

### LOW BAND EDGE BLOCK-20MHz-100%RB



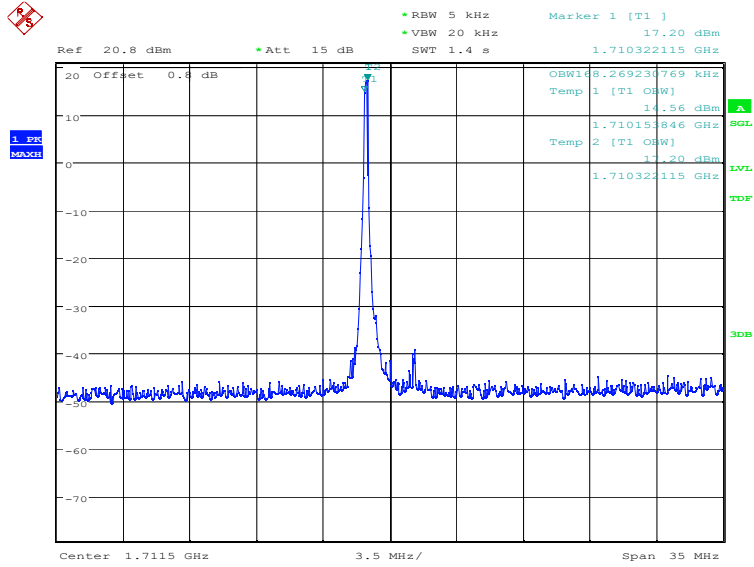
Date: 1.MAY.2022 16:50:42

### HIGH BAND EDGE BLOCK-20MHz-100%RB



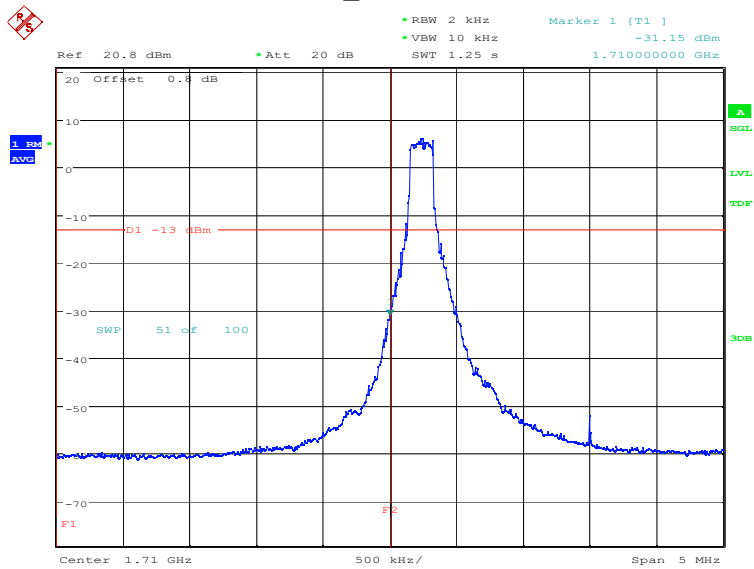
Date: 1.MAY.2022 16:52:12

**LTE band 4**  
**OBW: 1RB-low\_offset**



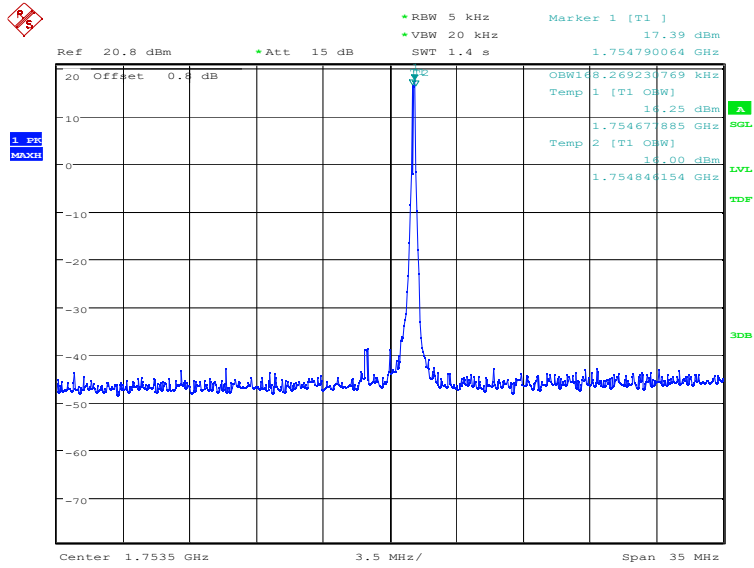
Date: 12.JUL.2022 09:00:29

**LOW BAND EDGE BLOCK-1RB-low\_offset**



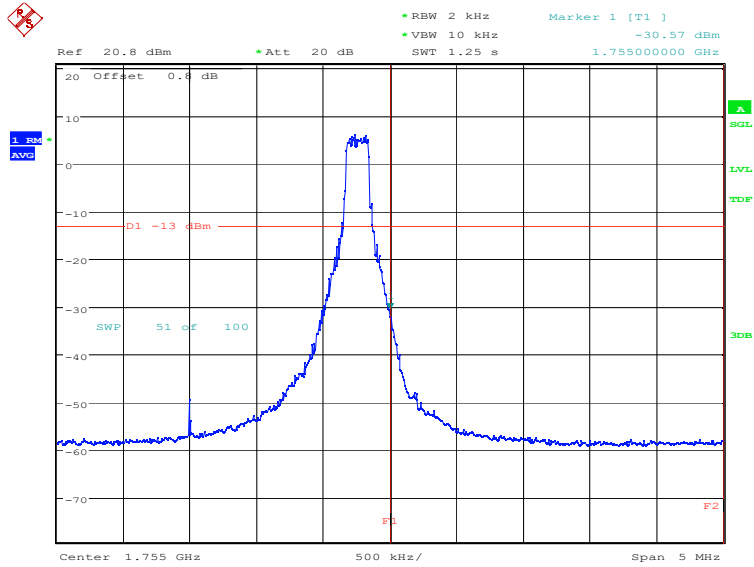
Date: 12.JUL.2022 09:01:43

### OBW: 1RB-high\_offset



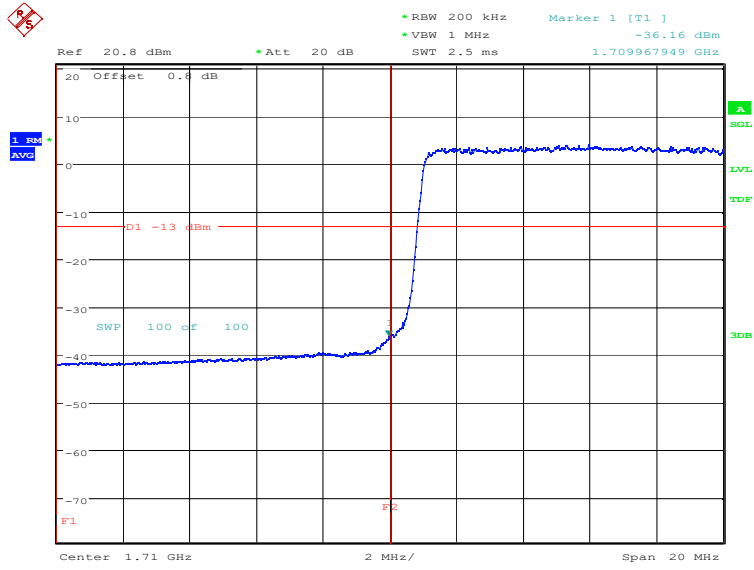
Date: 12.JUL.2022 09:02:19

### HIGH BAND EDGE BLOCK-1RB-high\_offset



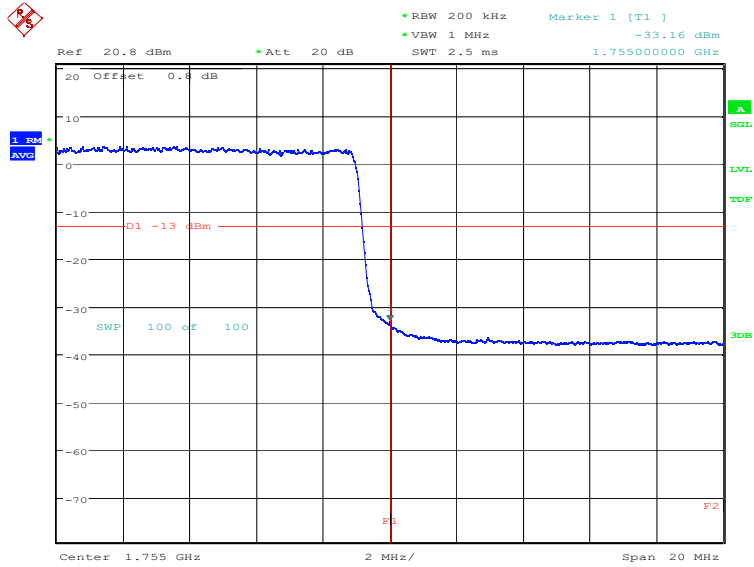
Date: 12.JUL.2022 09:03:32

### LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 12.JUL.2022 08:49:42

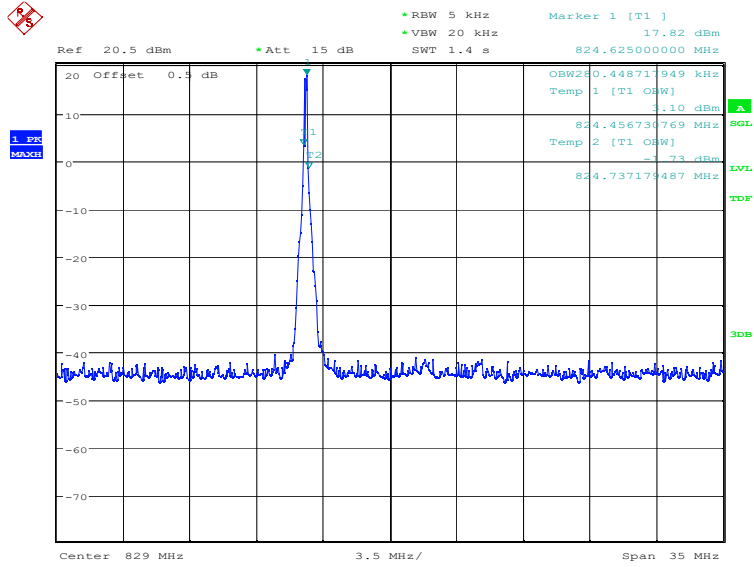
### HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 12.JUL.2022 08:51:12

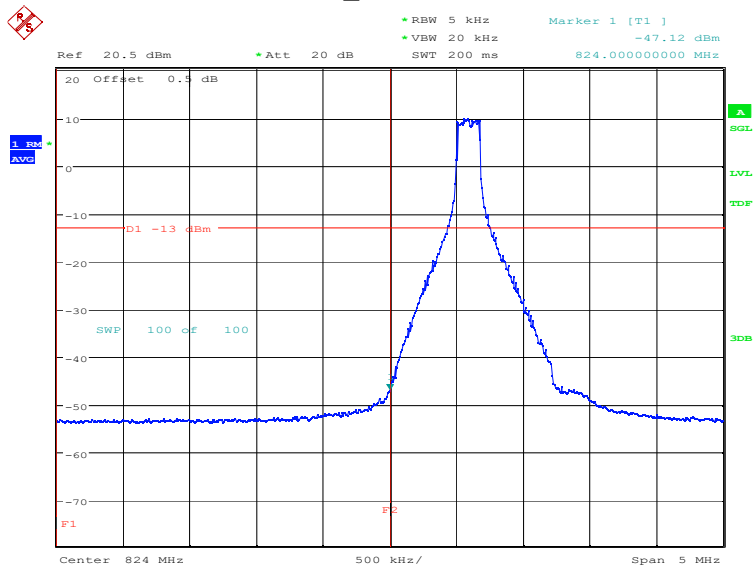


**LTE band 5**  
**OBW: 1RB-low\_offset**



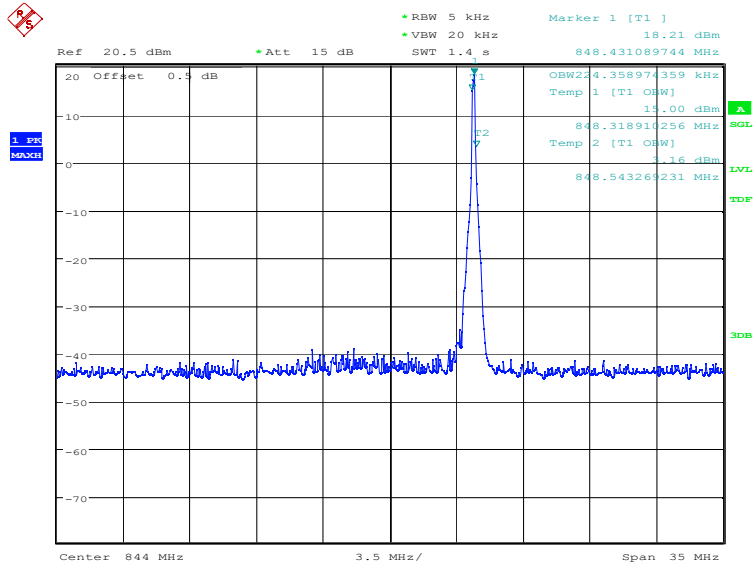
Date: 8.JUL.2022 13:40:50

**LOW BAND EDGE BLOCK-1RB-low\_offset**



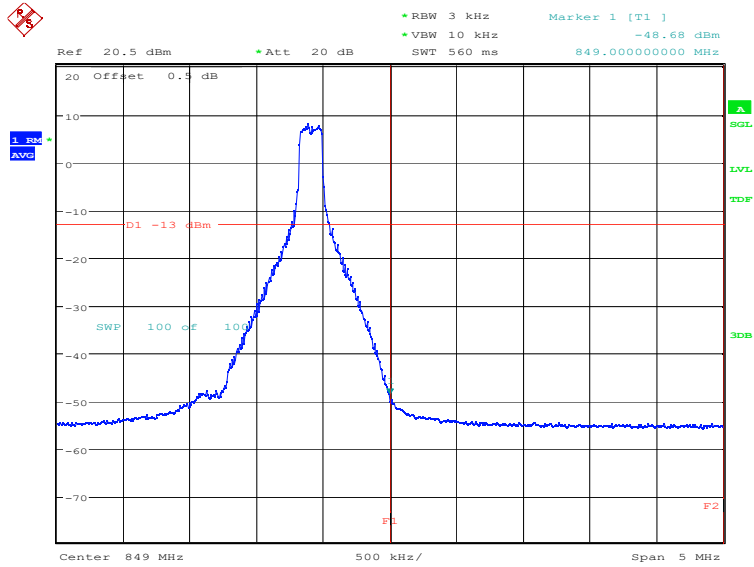
Date: 8.JUL.2022 13:42:03

### OBW: 1RB-high\_offset



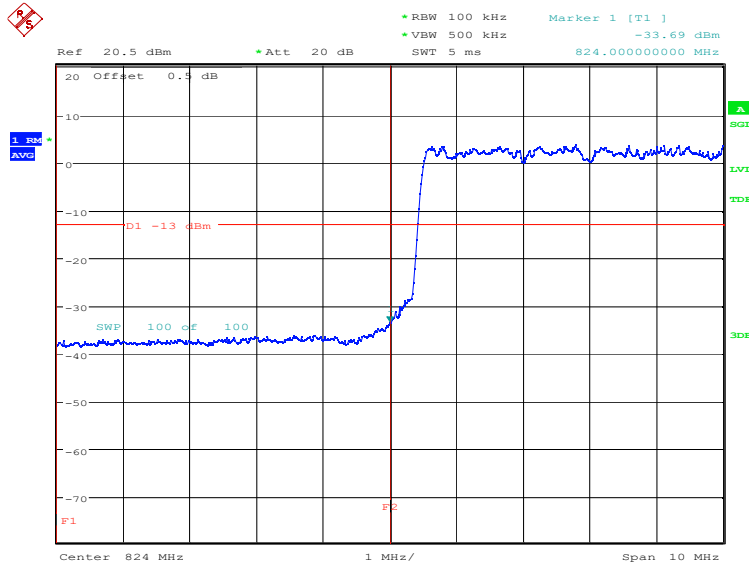
Date: 8.JUL.2022 13:43:00

### HIGH BAND EDGE BLOCK-1RB-high\_offset



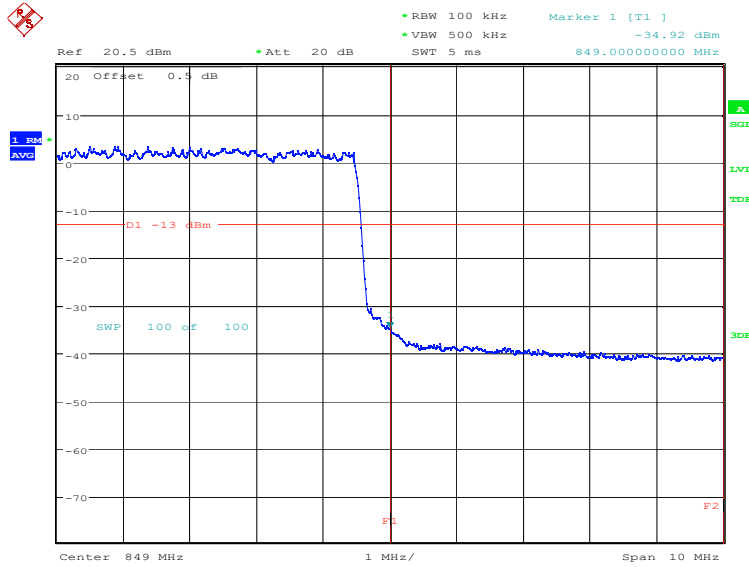
Date: 8.JUL.2022 13:44:14

### LOW BAND EDGE BLOCK-10MHz-100%RB



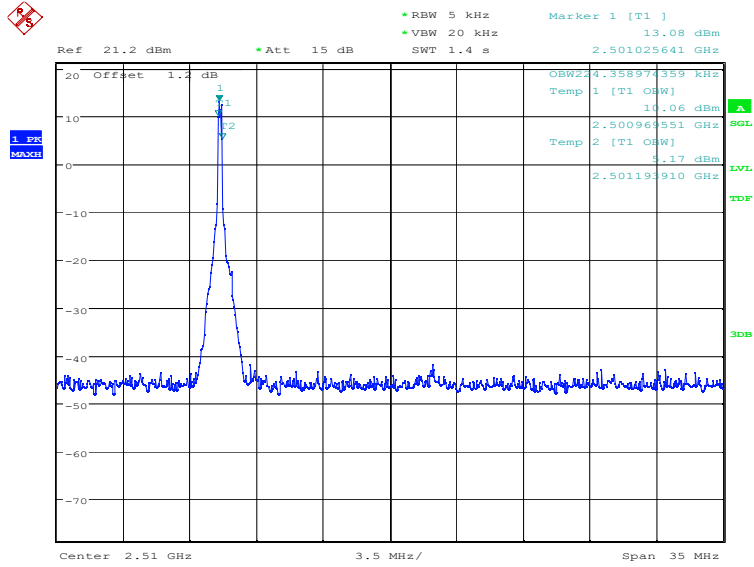
Date: 12.JUL.2022 16:12:24

### HIGH BAND EDGE BLOCK-10MHz-100%RB



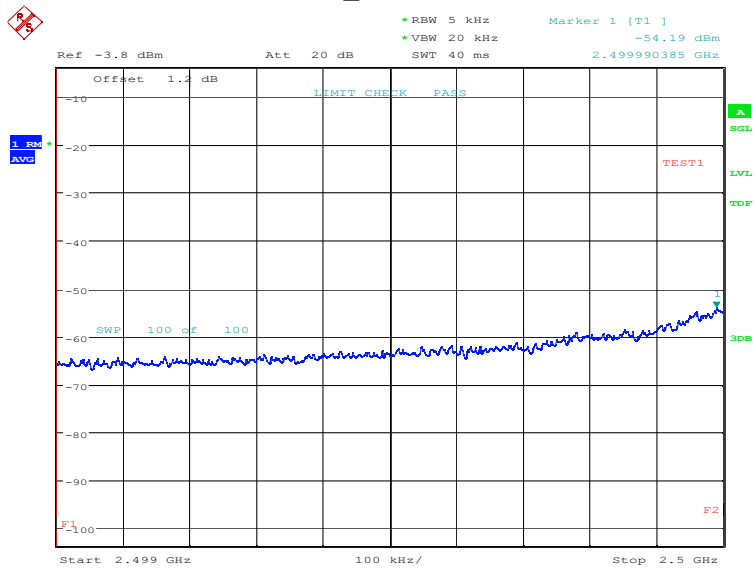
Date: 12.JUL.2022 16:13:54

**LTE band 7**  
**OBW: 1RB-low\_offset**

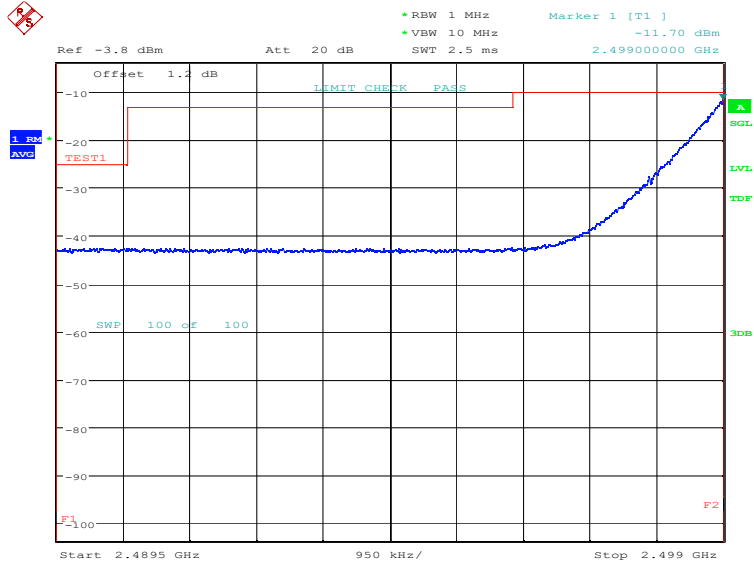


Date: 8.JUL.2022 14:15:19

**LOW BAND EDGE BLOCK-1RB-low\_offset**

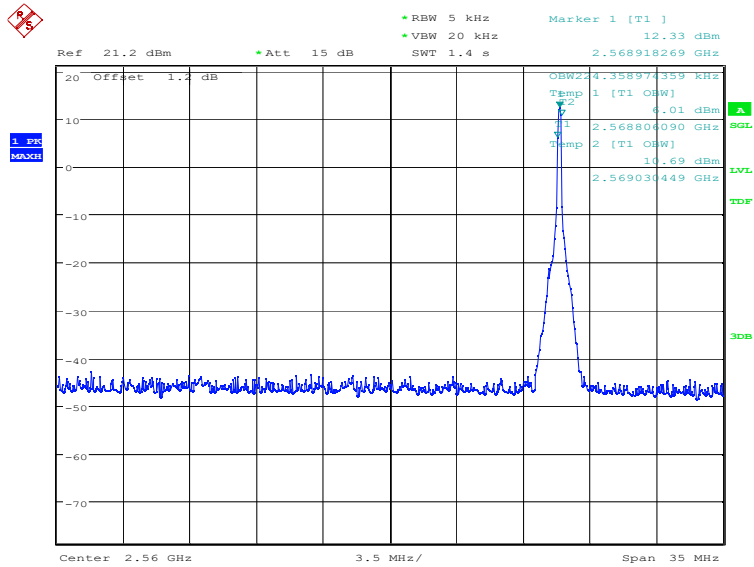


Date: 8.JUL.2022 14:16:39



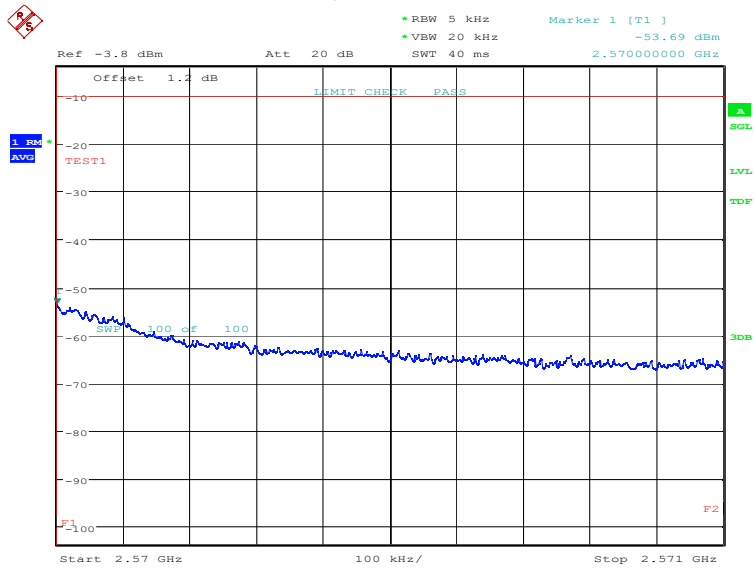
Date: 8.JUL.2022 14:18:20

### OBW: 1RB-high\_offset

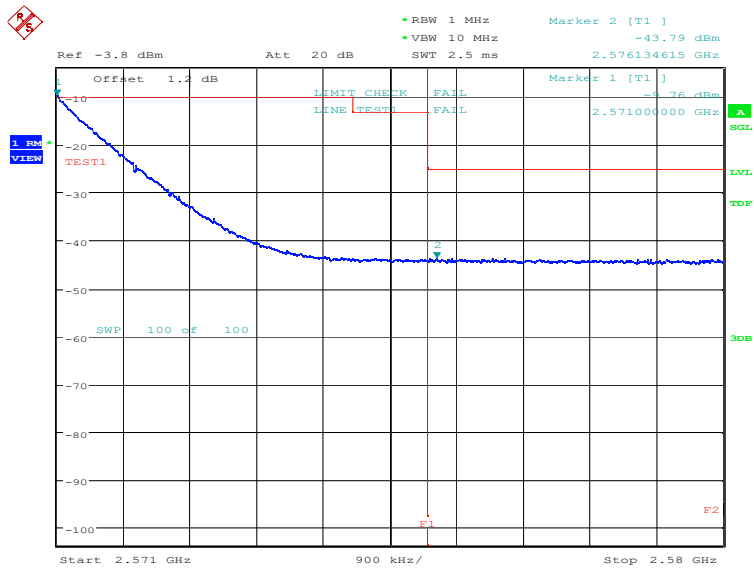


Date: 8.JUL.2022 14:18:57

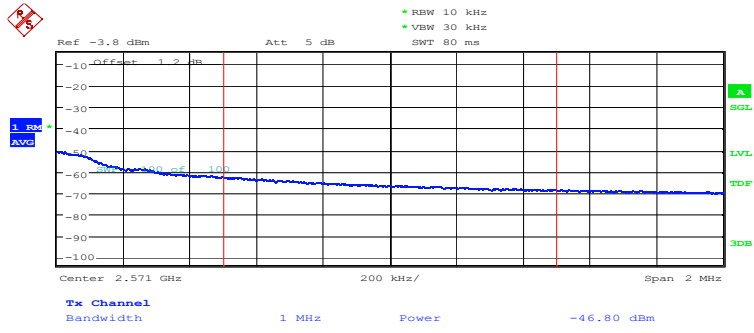
### HIGH BAND EDGE BLOCK-1RB-high\_offset



Date: 8.JUL.2022 14:20:17

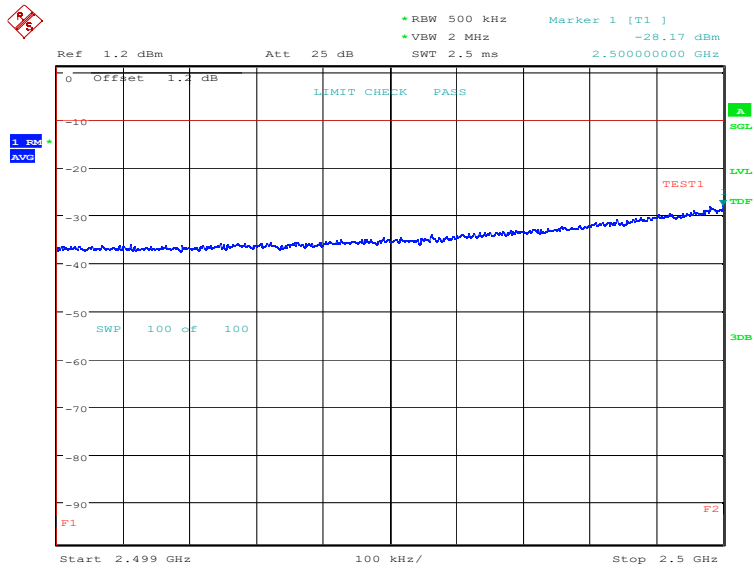


Date: 8.JUL.2022 14:22:06

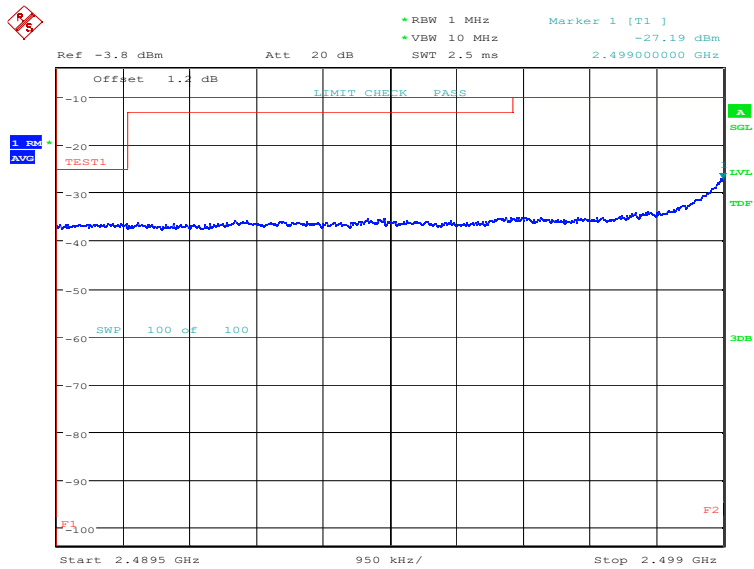


Date: 8.JUL.2022 14:22:32

### LOW BAND EDGE BLOCK-20MHz-100%RB



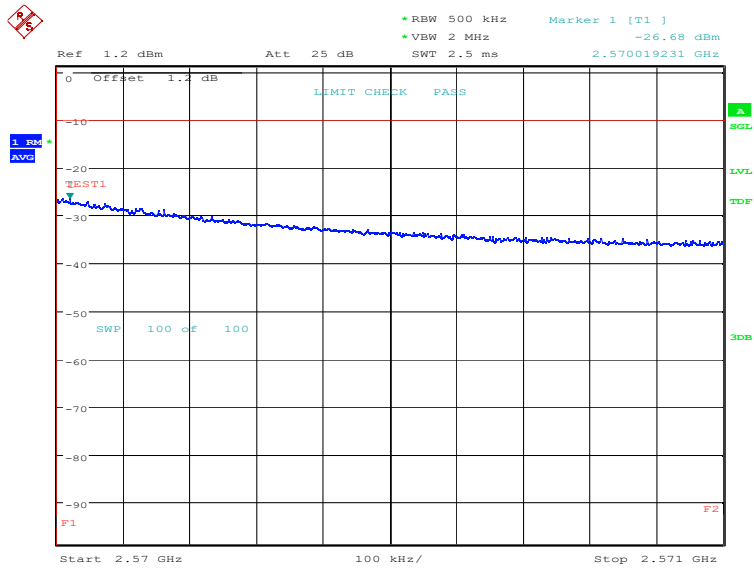
Date: 5.MAY.2022 09:09:51



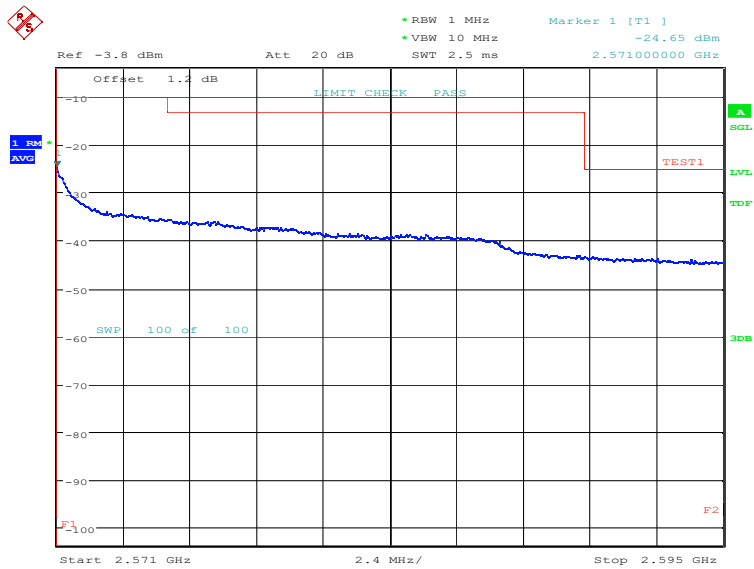
Date: 5.MAY.2022 09:11:31



### HIGH BAND EDGE BLOCK-20MHz-100%RB

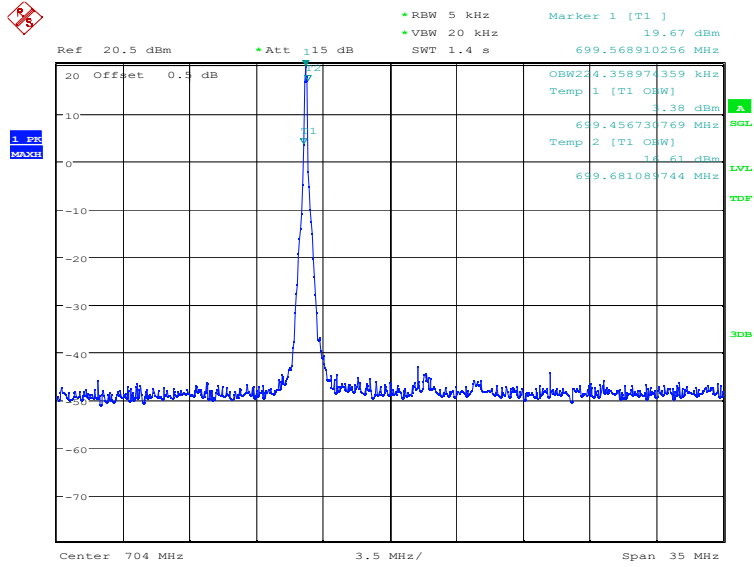


Date: 5.MAY.2022 09:14:28



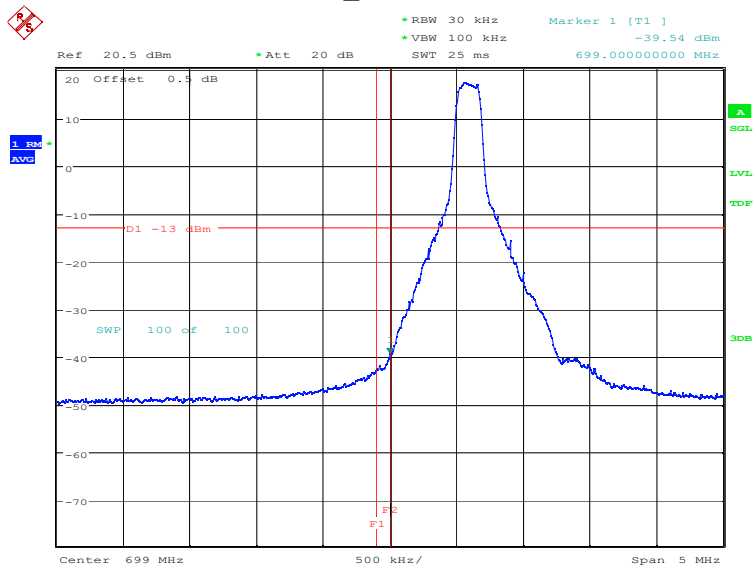
Date: 5.MAY.2022 09:16:08

**LTE band 12**  
**OBW: 1RB-low\_offset**



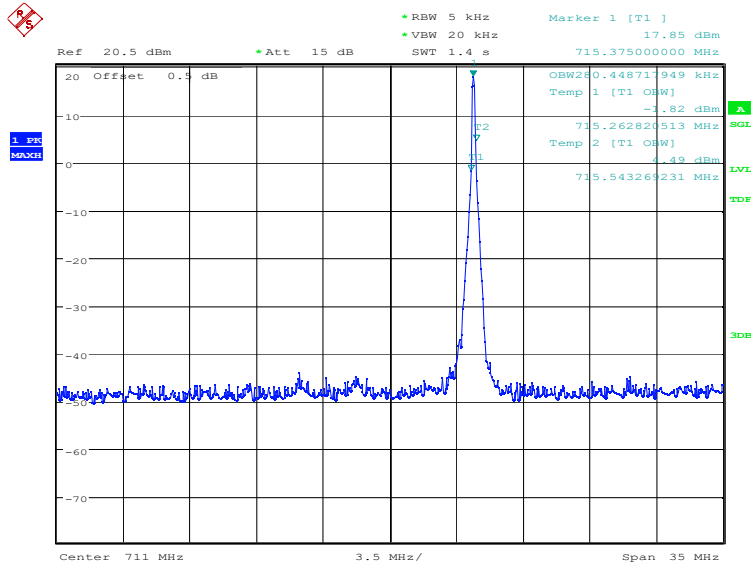
Date: 8.JUL.2022 13:20:16

**LOW BAND EDGE BLOCK-1RB-low\_offset**



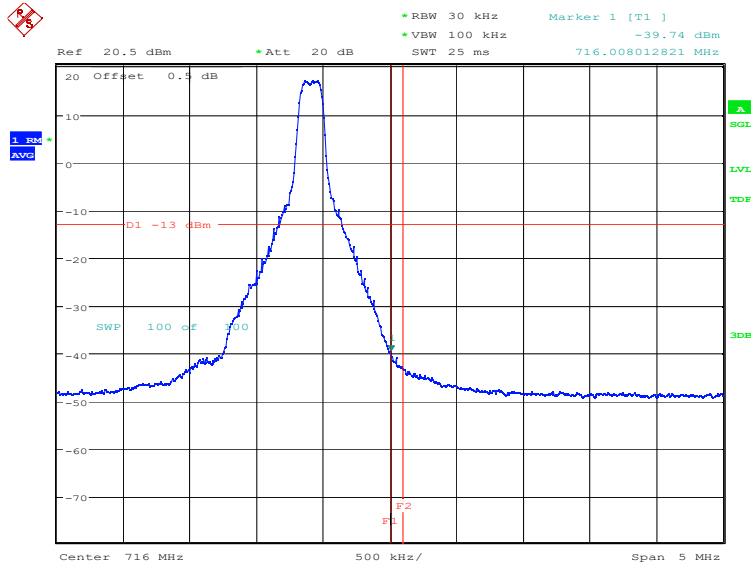
Date: 8.JUL.2022 13:20:35

### OBW: 1RB-high\_offset



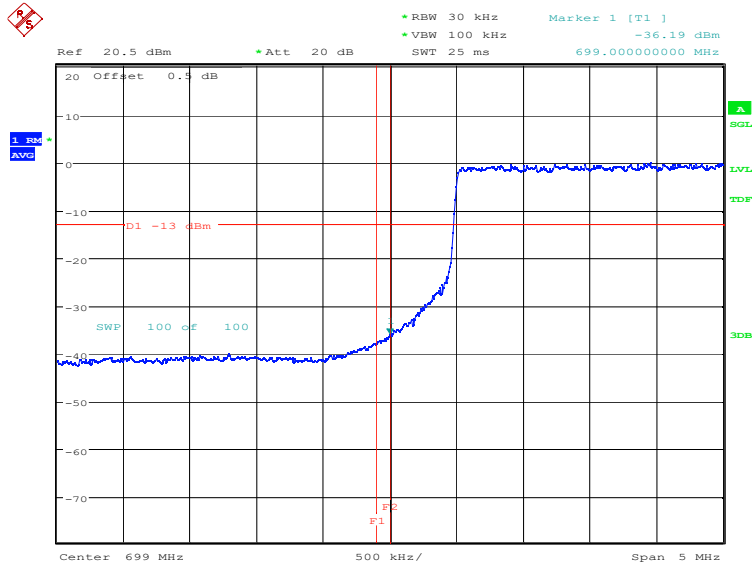
Date: 8.JUL.2022 13:21:11

### HIGH BAND EDGE BLOCK-1RB-high\_offset



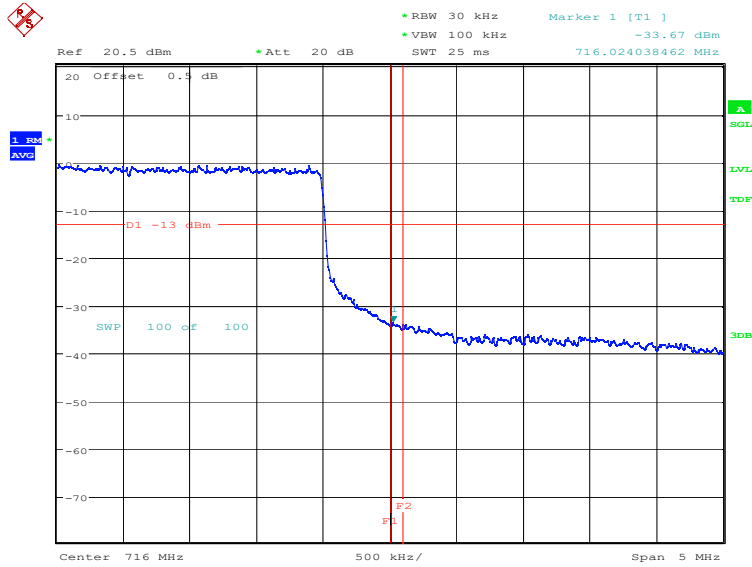
Date: 8.JUL.2022 13:21:29

### LOW BAND EDGE BLOCK-10MHz-100%RB



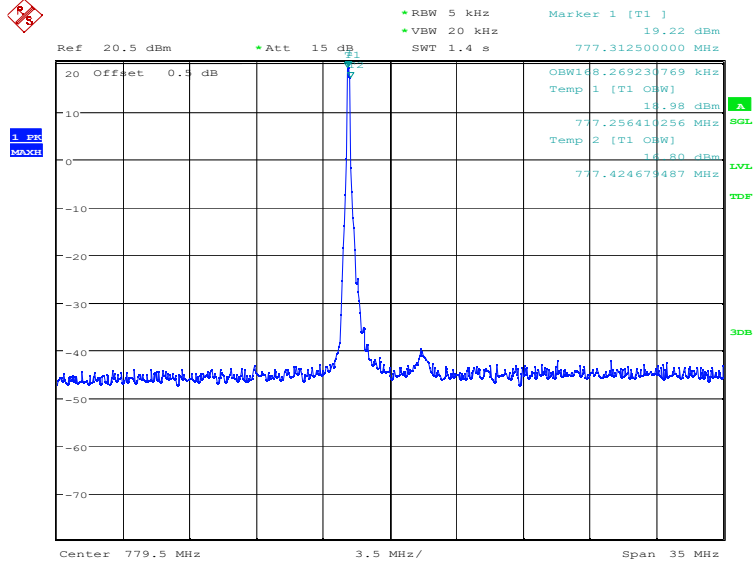
Date: 1.MAY.2022 15:29:06

### HIGH BAND EDGE BLOCK-10MHz-100%RB



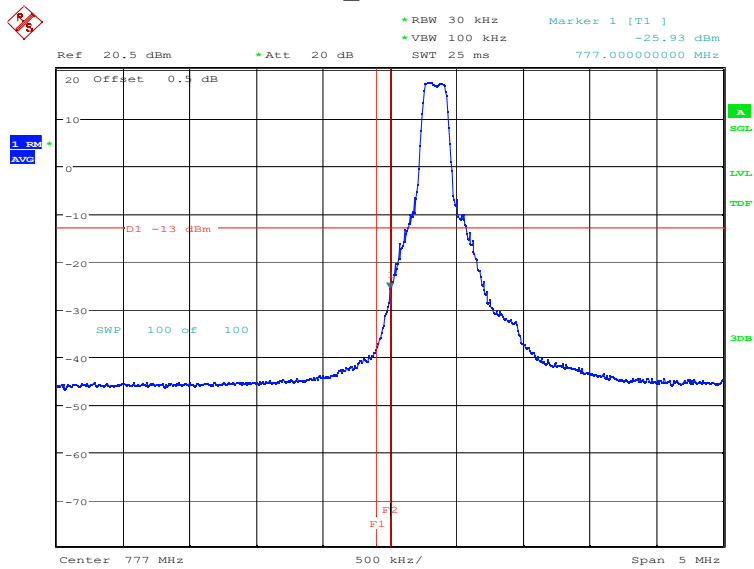
Date: 1.MAY.2022 15:30:35

**LTE band 13**  
**OBW: 1RB-low\_offset**

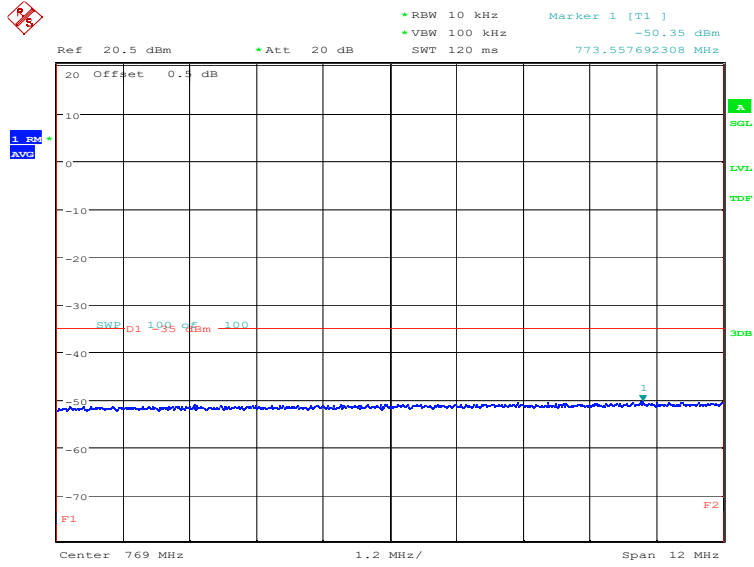


Date: 8.JUL.2022 13:23:40

**LOW BAND EDGE BLOCK-1RB-low\_offset**

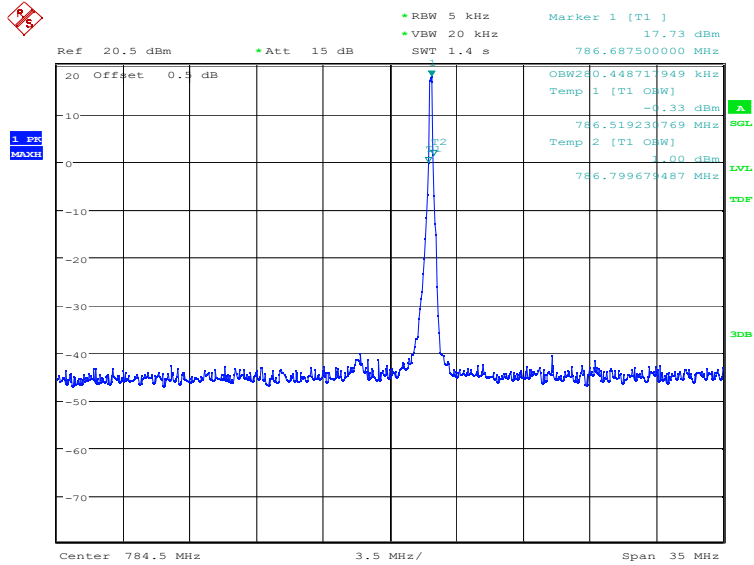


Date: 8.JUL.2022 13:23:59



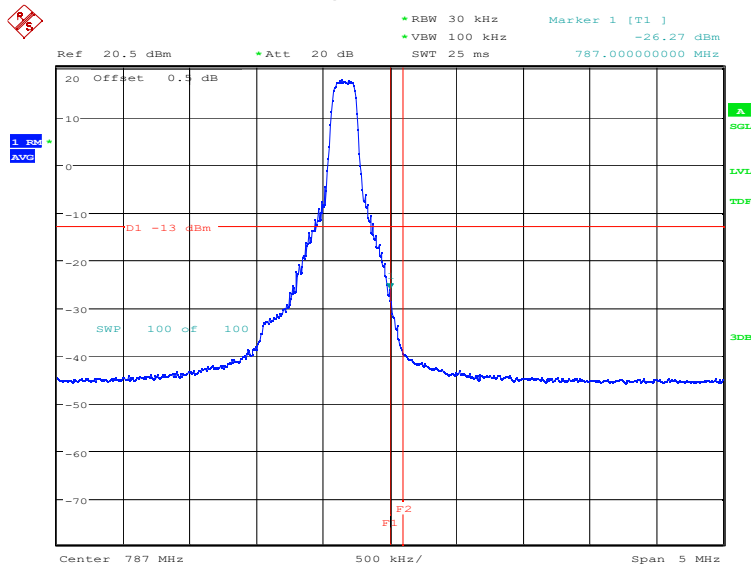
Date: 8.JUL.2022 13:24:38

### OBW: 1RB-high\_offset

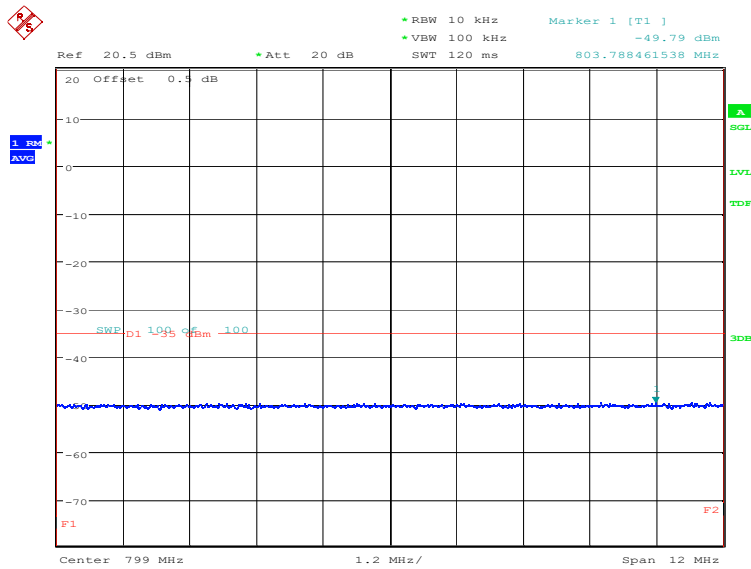


Date: 8.JUL.2022 13:25:13

### HIGH BAND EDGE BLOCK-1RB-high\_offset

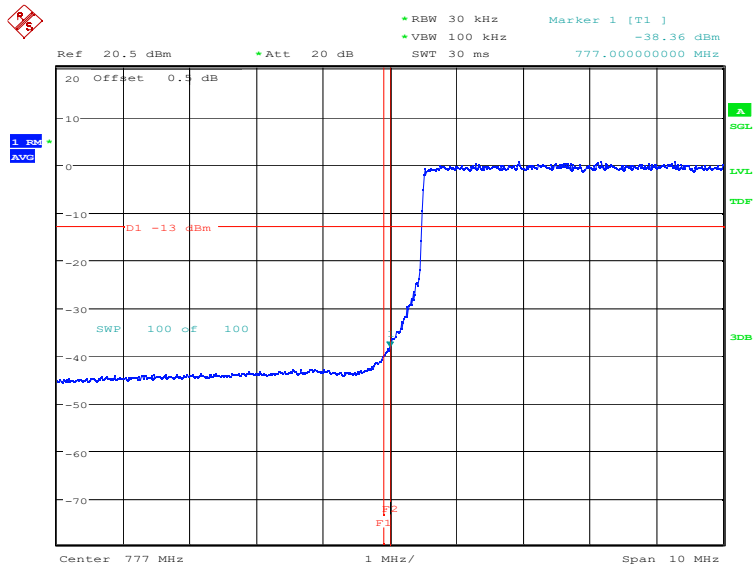


Date: 8.JUL.2022 13:25:31

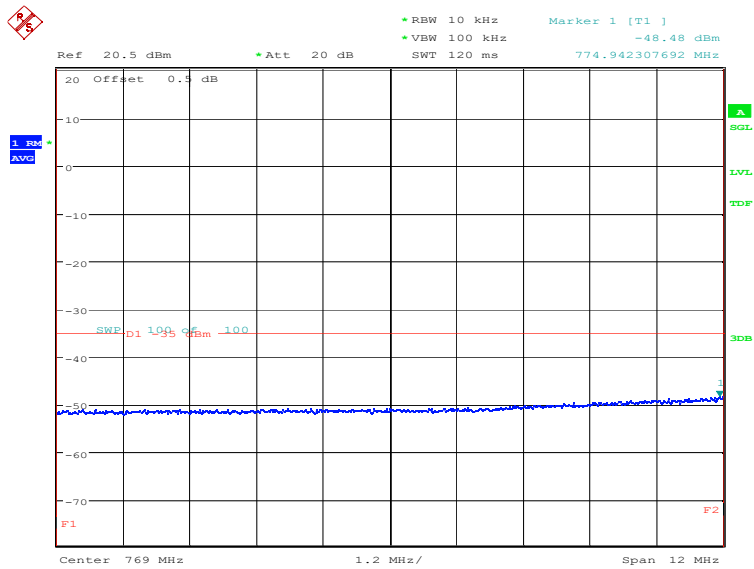


Date: 8.JUL.2022 13:26:10

### LOW BAND EDGE BLOCK-10MHz-100%RB



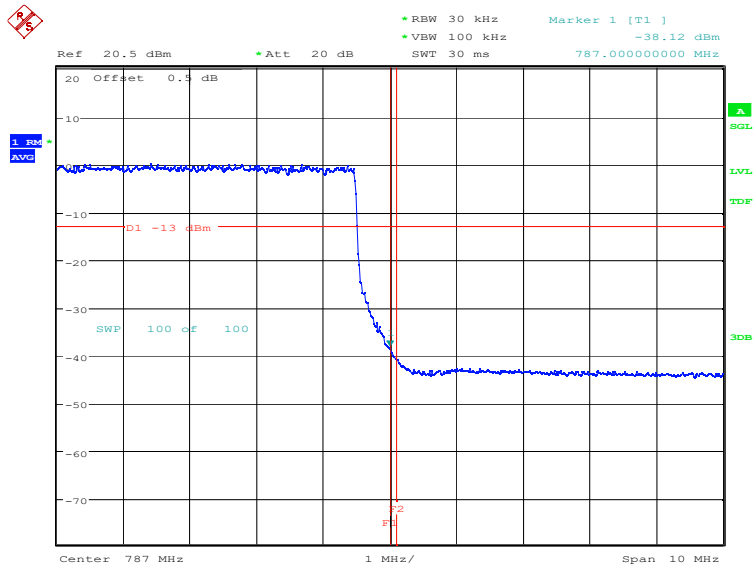
Date: 1.MAY.2022 15:40:15



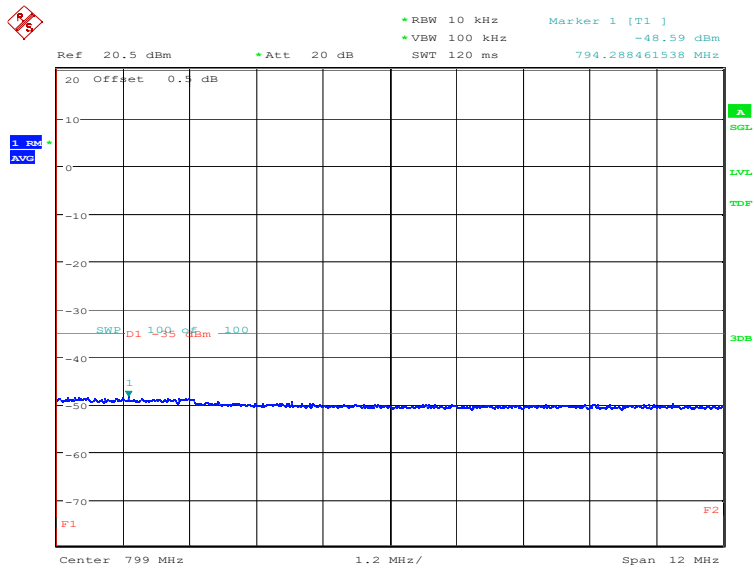
Date: 1.MAY.2022 15:40:57



### HIGH BAND EDGE BLOCK-10MHz-100%RB

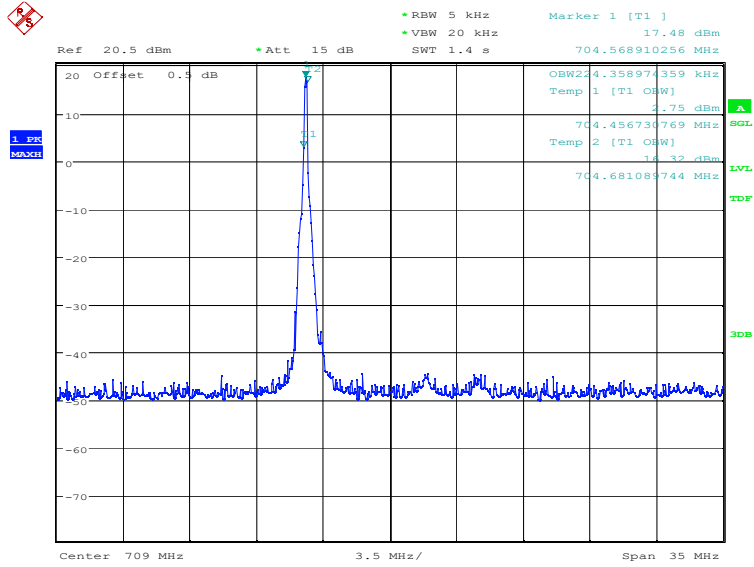


Date: 1.MAY.2022 15:42:26



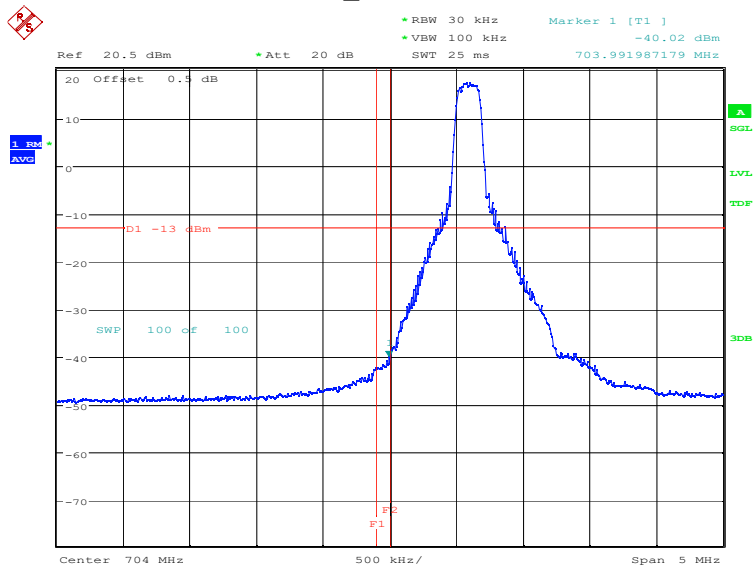
Date: 1.MAY.2022 15:43:09

**LTE band 17**  
**OBW: 1RB-low\_offset**



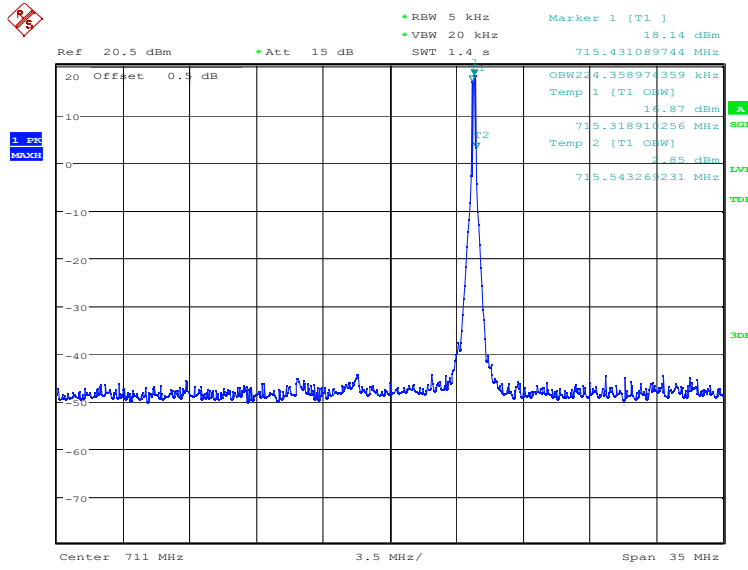
Date: 8.JUL.2022 13:27:03

**LOW BAND EDGE BLOCK-1RB-low\_offset**



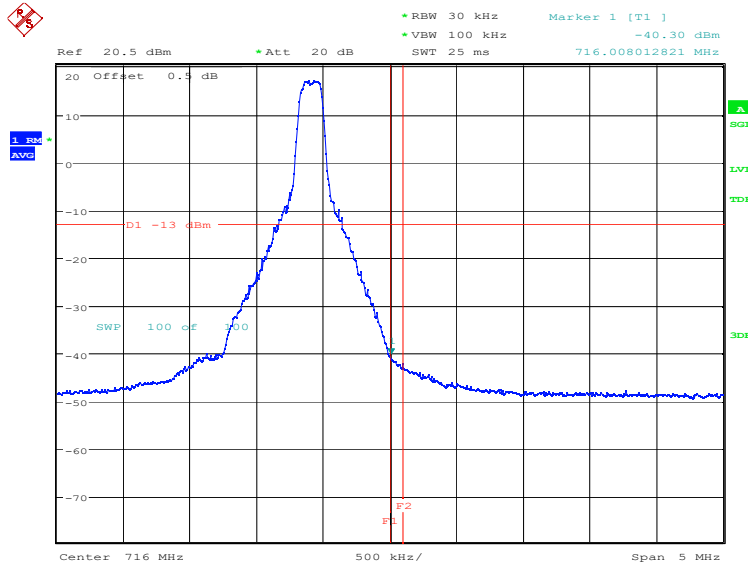
Date: 8.JUL.2022 13:27:22

### OBW: 1RB-high\_offset



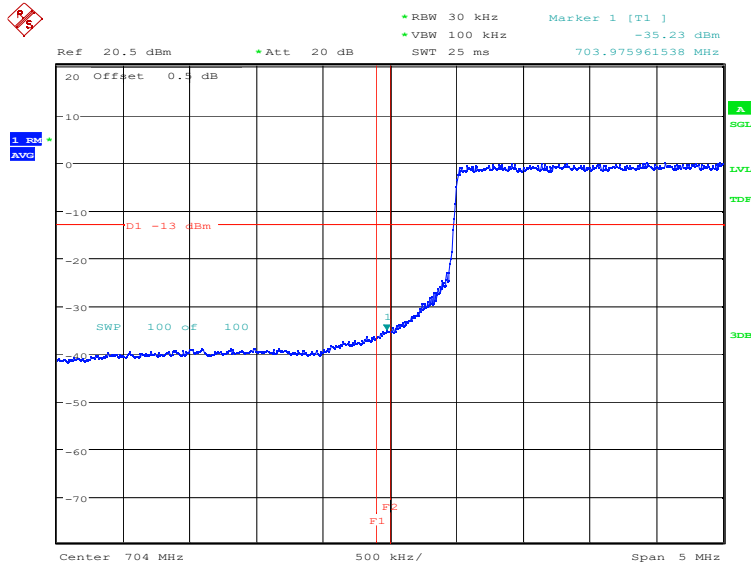
Date: 8.JUL.2022 13:29:28

### HIGH BAND EDGE BLOCK-1RB-high\_offset



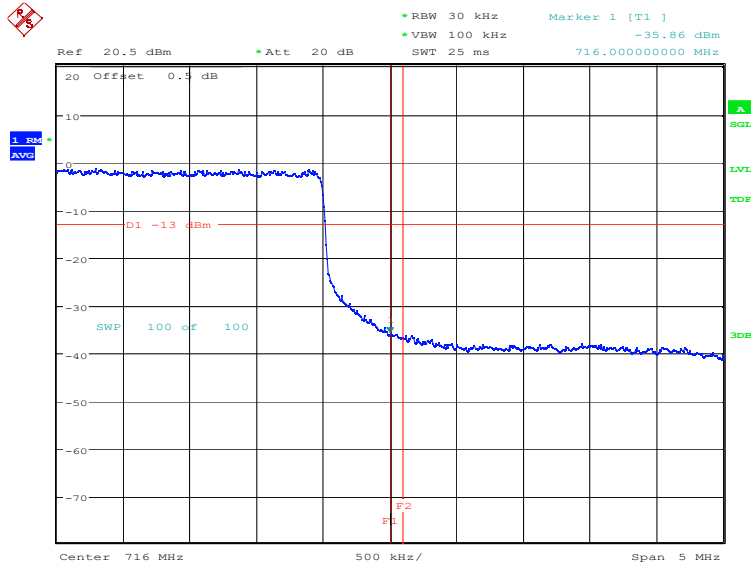
Date: 8.JUL.2022 13:29:47

### LOW BAND EDGE BLOCK-10MHz-100%RB



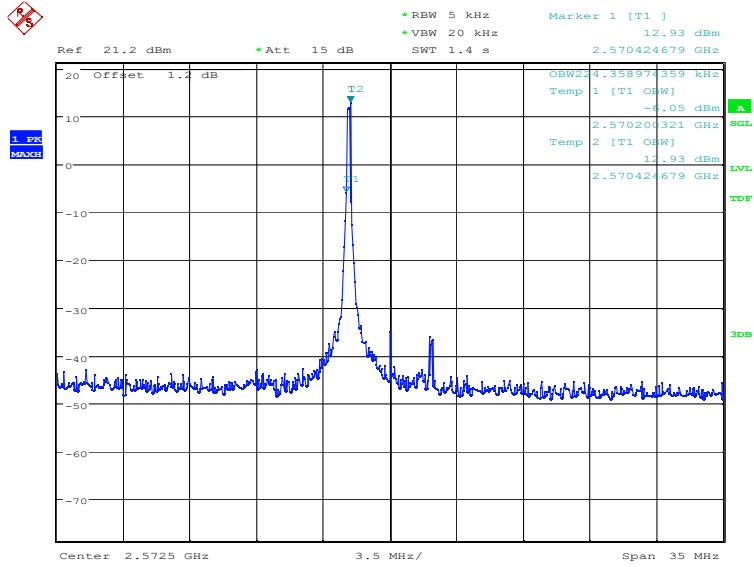
Date: 8.JUL.2022 13:27:55

### HIGH BAND EDGE BLOCK-10MHz-100%RB



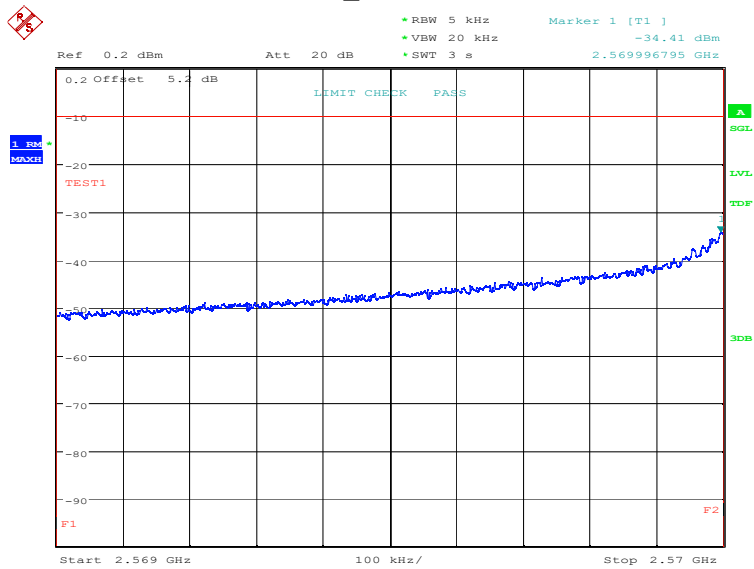
Date: 8.JUL.2022 13:30:20

**LTE band 38**  
**OBW: 1RB-low\_offset**

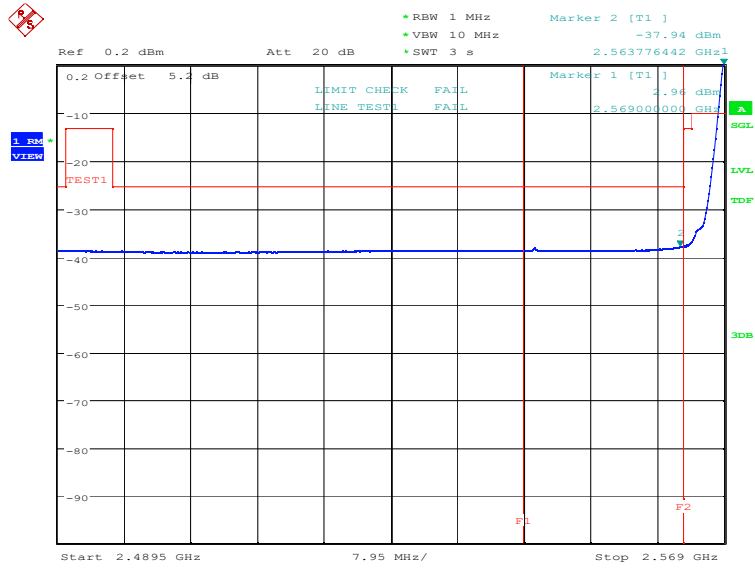


Date: 8.JUL.2022 14:24:53

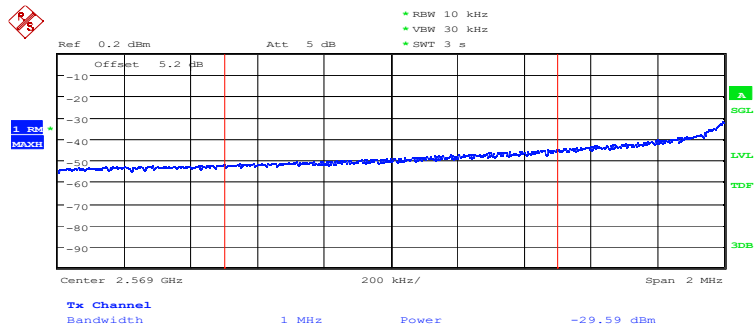
**LOW BAND EDGE BLOCK-1RB-low\_offset**



Date: 8.JUL.2022 14:25:34

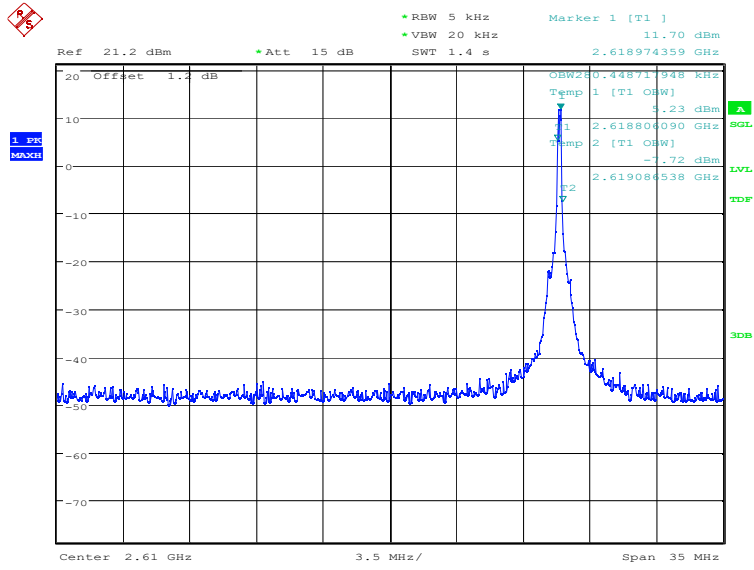


Date: 8.JUL.2022 14:26:20



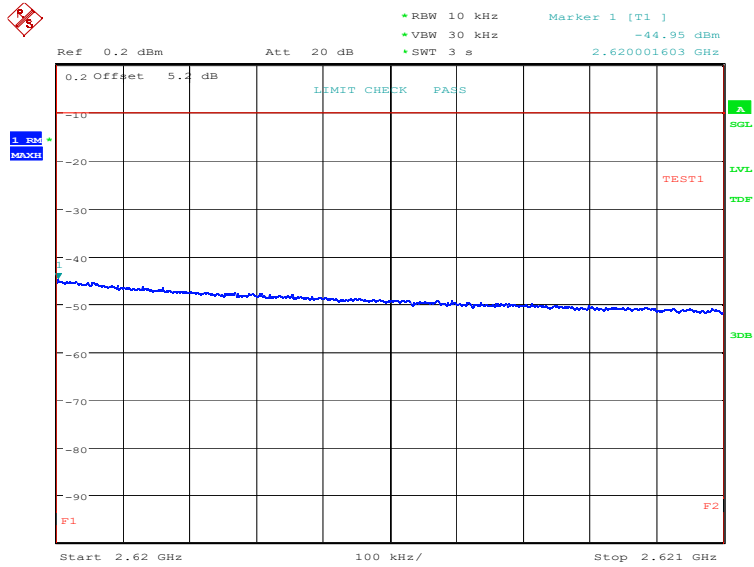
Date: 8.JUL.2022 14:26:37

### OBW: 1RB-high\_offset

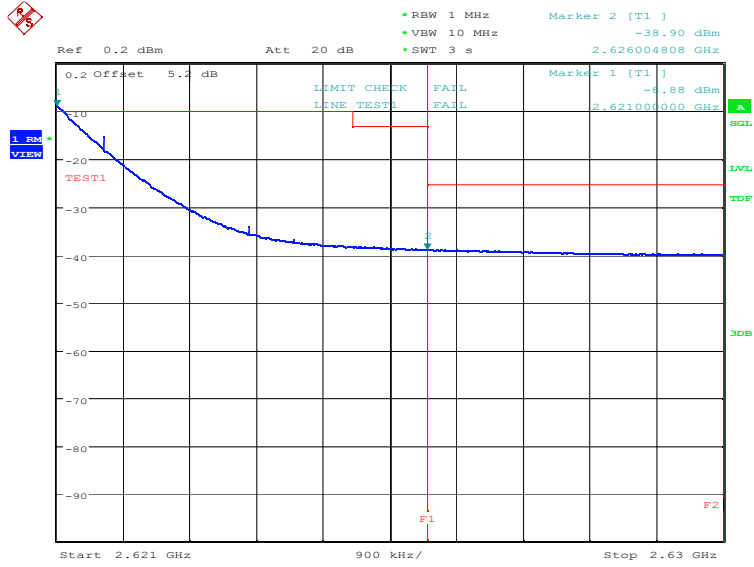


Date: 8.JUL.2022 14:29:48

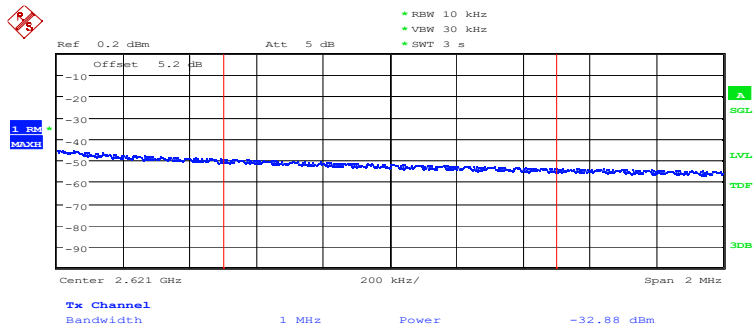
### HIGH BAND EDGE BLOCK-1RB-high\_offset



Date: 8.JUL.2022 14:30:29



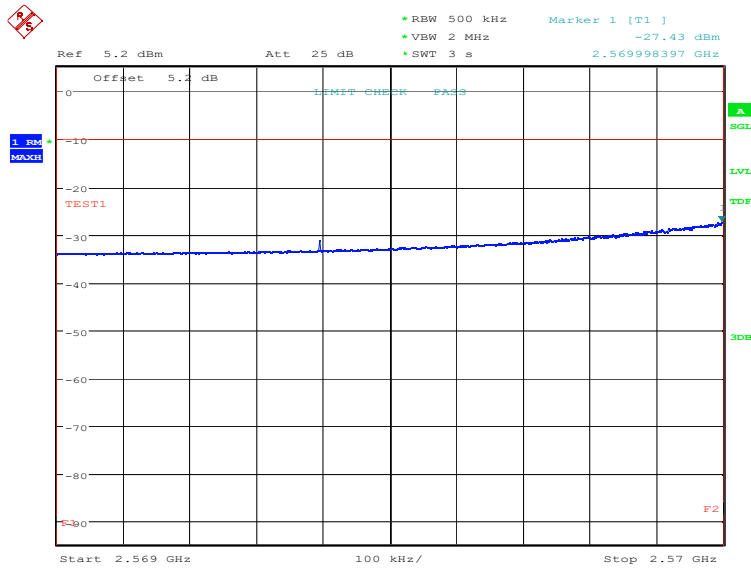
Date: 8.JUL.2022 14:31:15



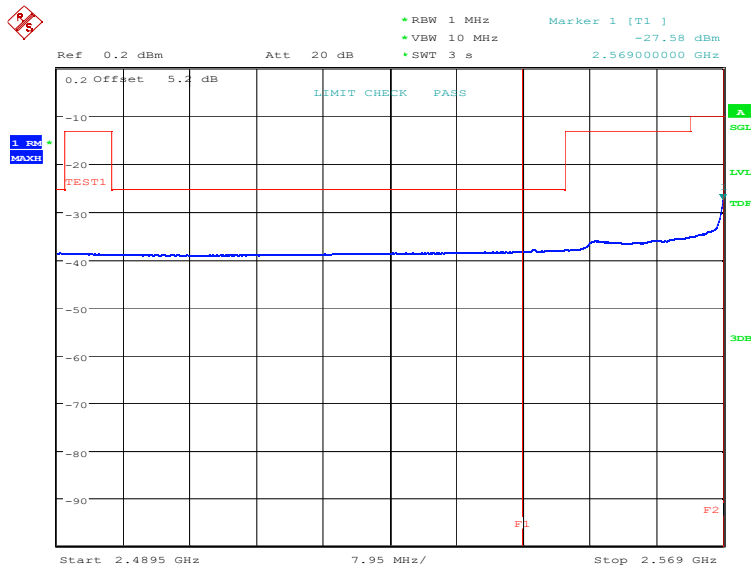
Date: 8.JUL.2022 14:31:32



### LOW BAND EDGE BLOCK-20MHz-100%RB

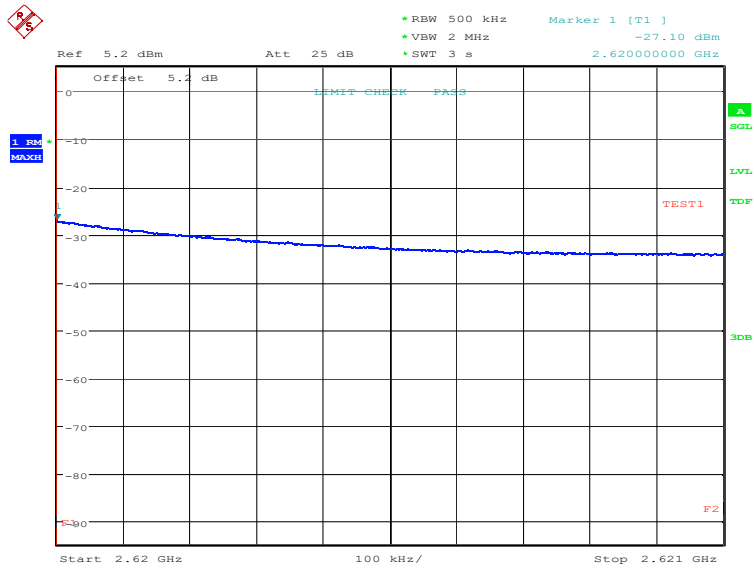


Date: 8.JUL.2022 14:27:36

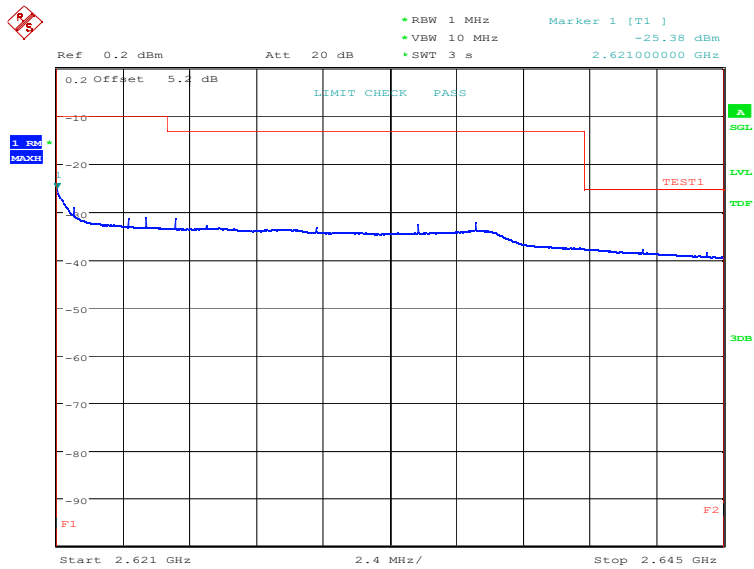


Date: 8.JUL.2022 14:28:14

### HIGH BAND EDGE BLOCK-20MHz-100%RB



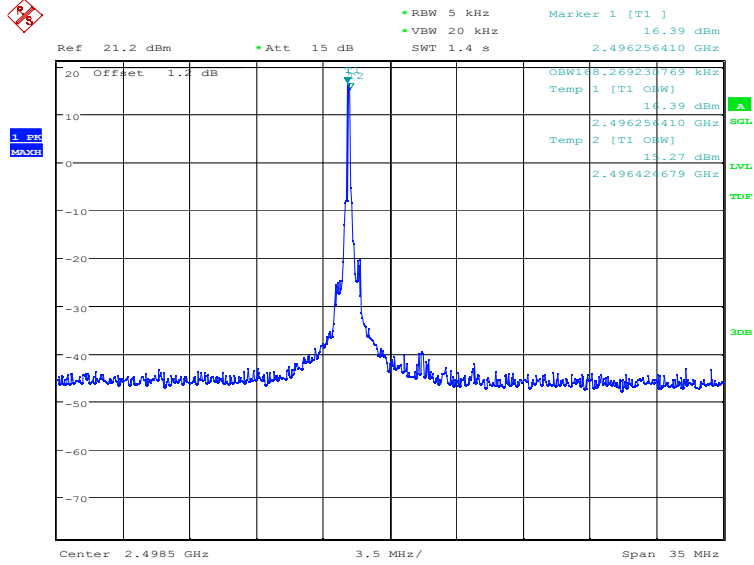
Date: 8.JUL.2022 14:32:26



Date: 8.JUL.2022 14:33:04

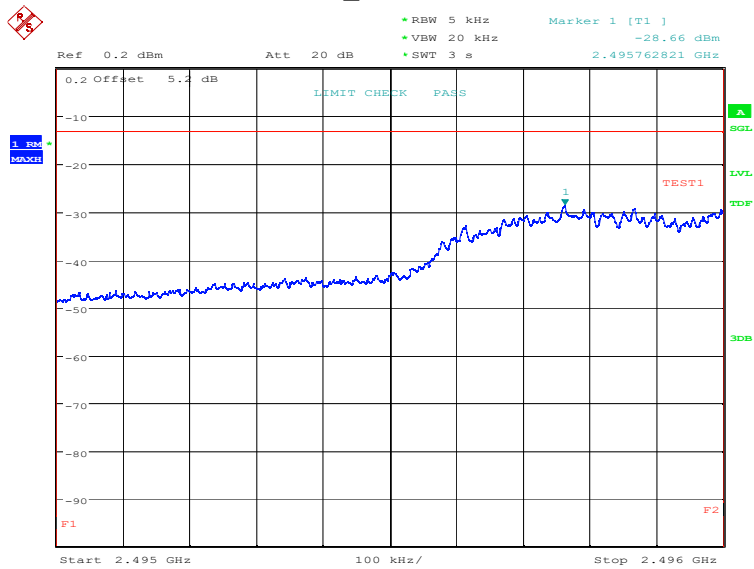


### LTE band 41 OBW: 1RB-low\_offset

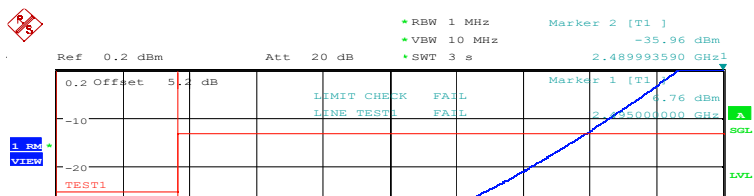


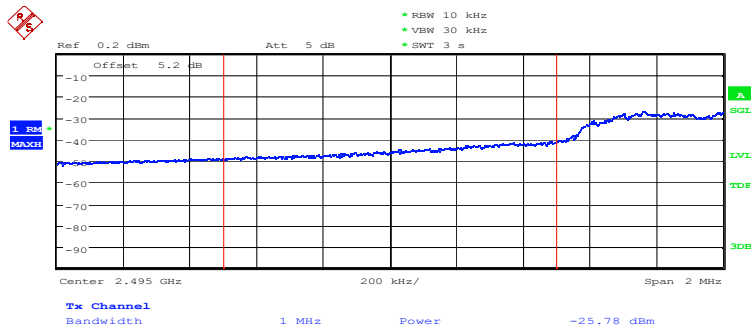
Date: 8.JUL.2022 14:36:11

### LOW BAND EDGE BLOCK-1RB-low\_offset



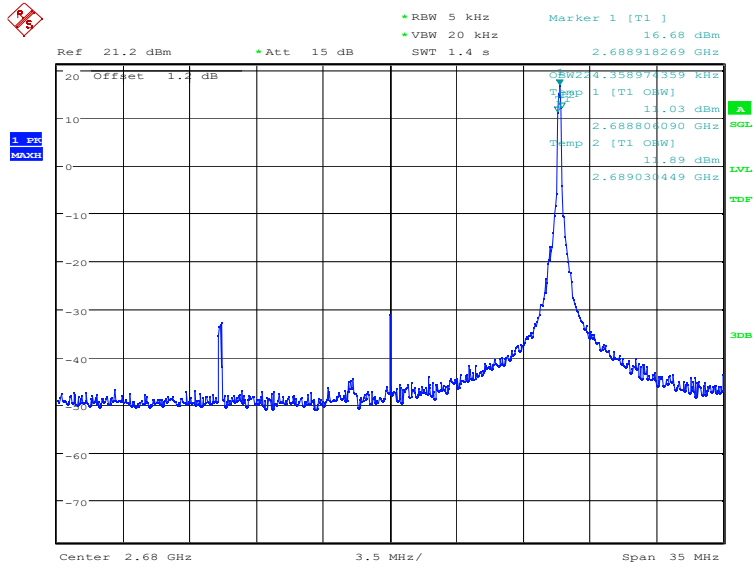
Date: 8.JUL.2022 14:36:52





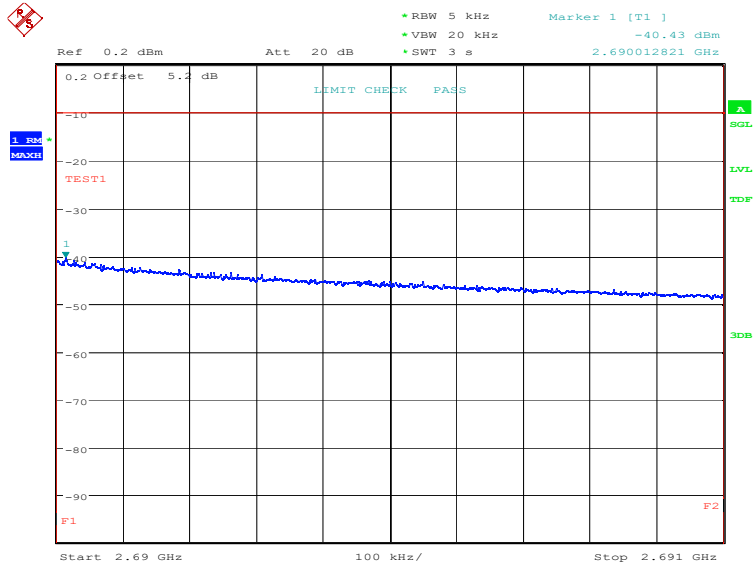
Date: 8.JUL.2022 14:37:52

### OBW: 1RB-high\_offset

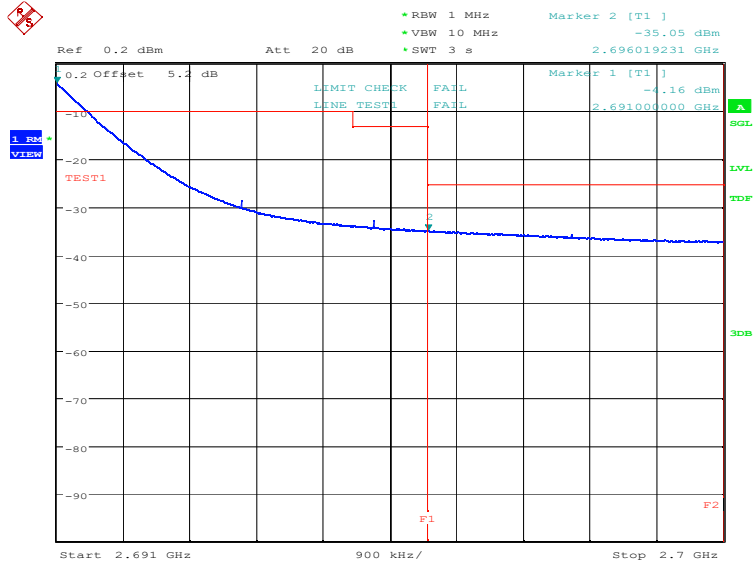


Date: 8.JUL.2022 14:38:31

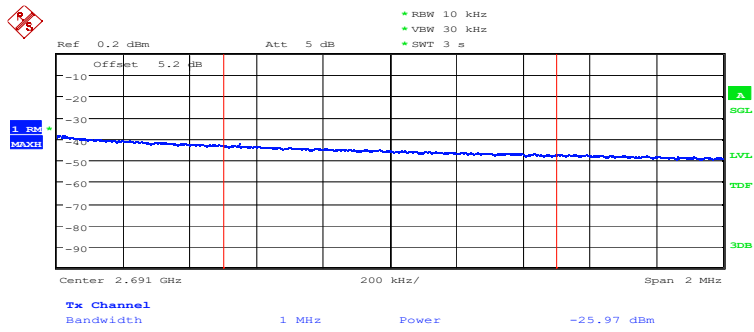
### HIGH BAND EDGE BLOCK-1RB-high\_offset



Date: 8.JUL.2022 14:39:12

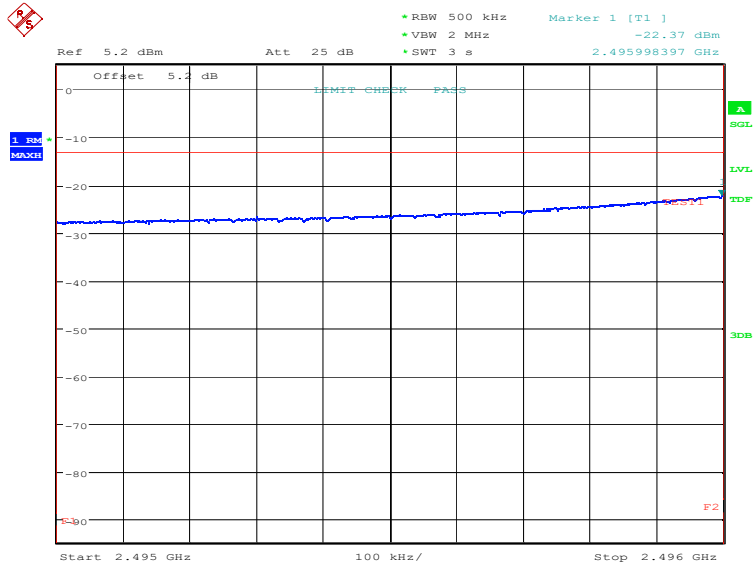


Date: 8.JUL.2022 14:39:58

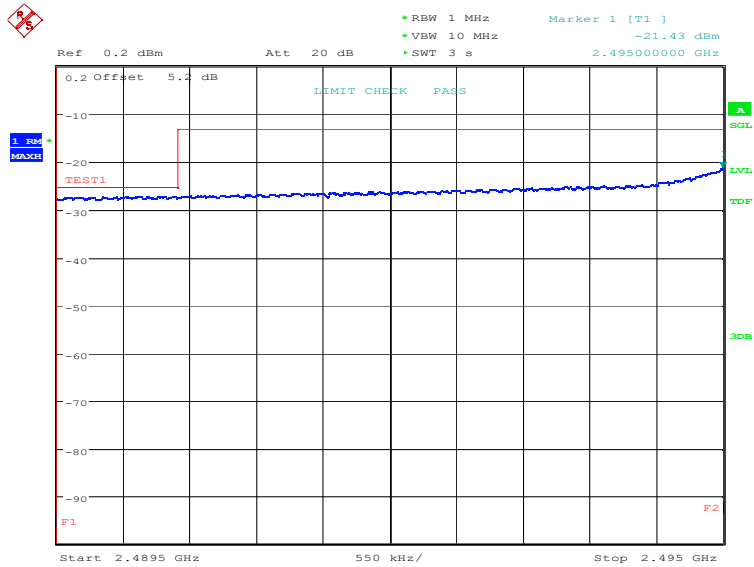


Date: 8.JUL.2022 14:40:15

### LOW BAND EDGE BLOCK-20MHz-100%RB

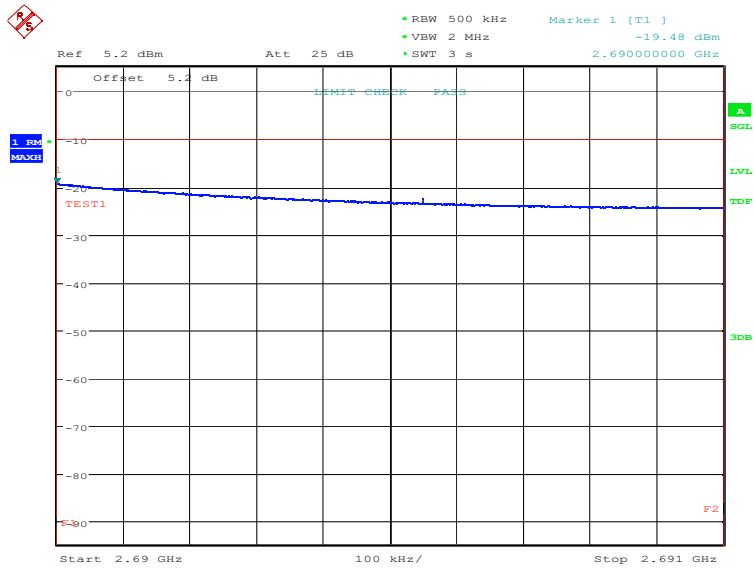


Date: 5.MAY.2022 09:18:51

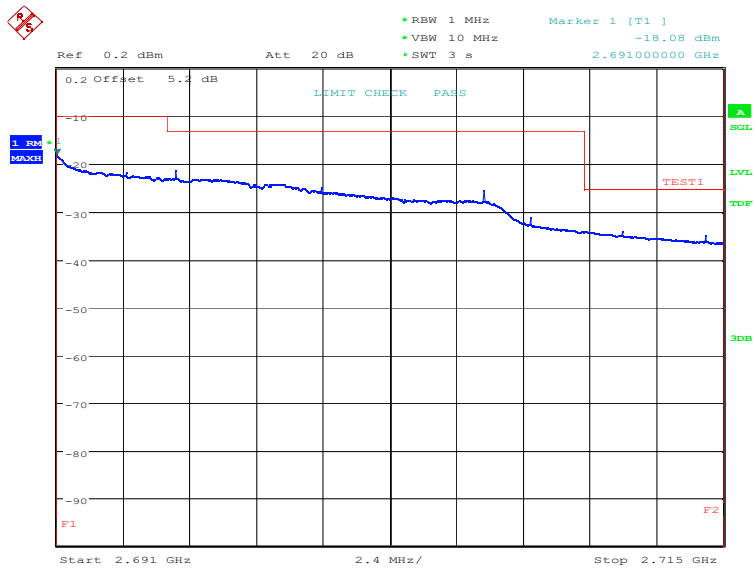


Date: 5.MAY.2022 09:19:29

### HIGH BAND EDGE BLOCK-20MHz-100%RB



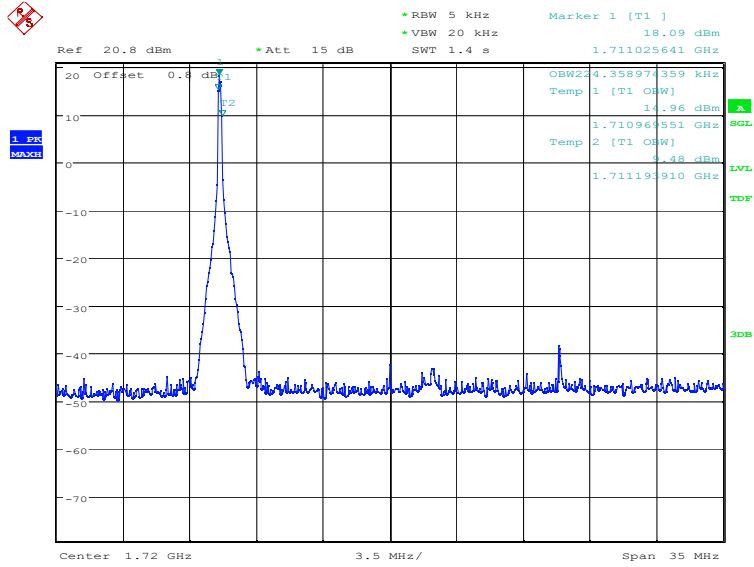
Date: 5.MAY.2022 09:21:24



Date: 5.MAY.2022 09:22:02

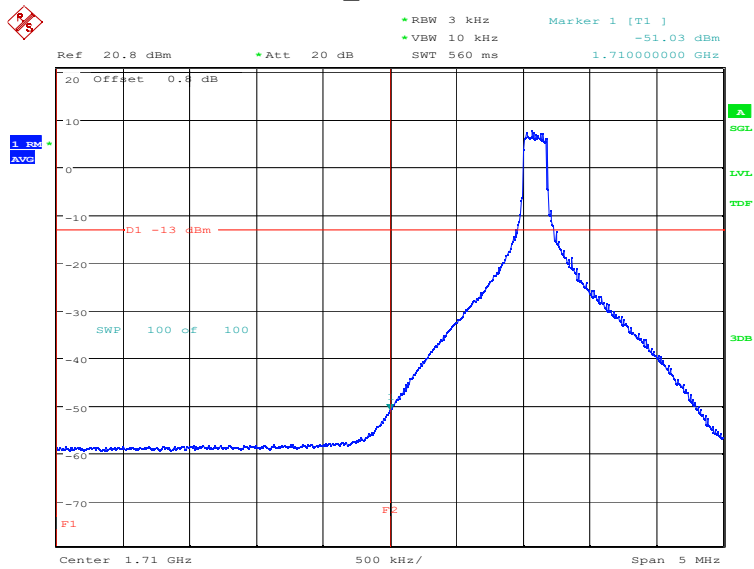


**LTE band 66**  
**OBW: 1RB-low\_offset**



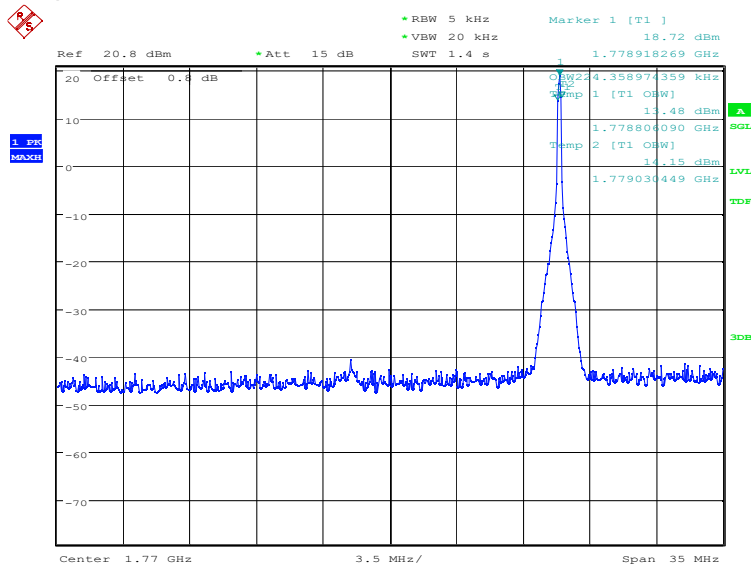
Date: 8.JUL.2022 14:06:24

**LOW BAND EDGE BLOCK-1RB-low\_offset**



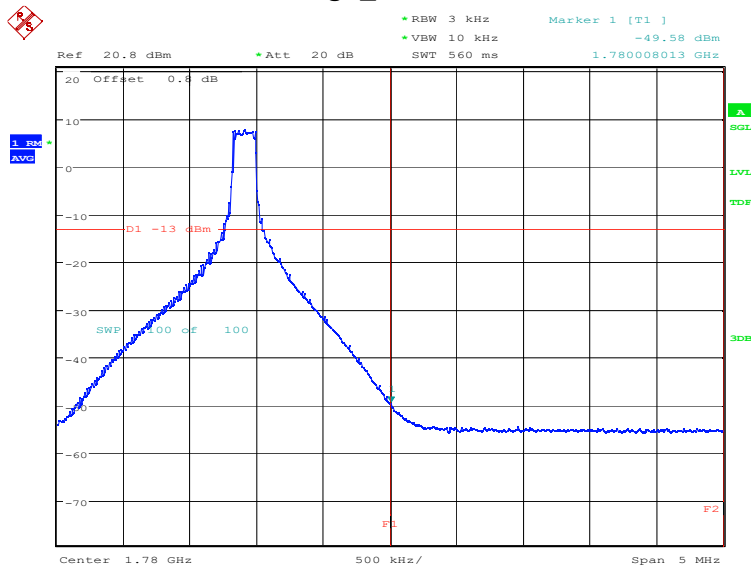
Date: 8.JUL.2022 14:07:38

### OBW: 1RB-high\_offset



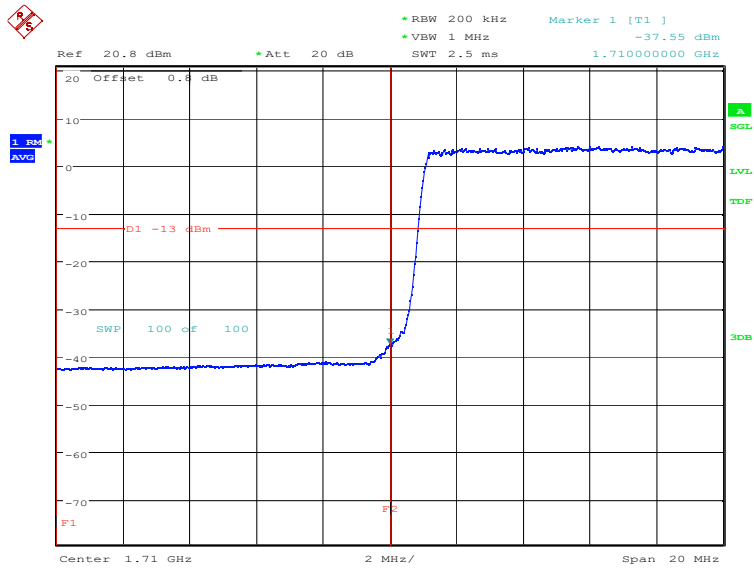
Date: 8.JUL.2022 14:08:14

### HIGH BAND EDGE BLOCK-1RB-high\_offset



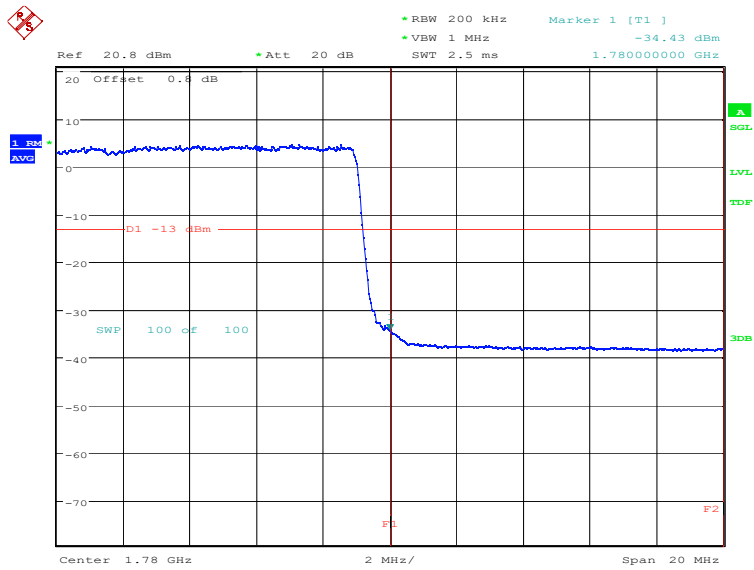
Date: 8.JUL.2022 14:09:27

### LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 1.MAY.2022 16:56:50

### HIGH BAND EDGE BLOCK-20MHz-100%RB

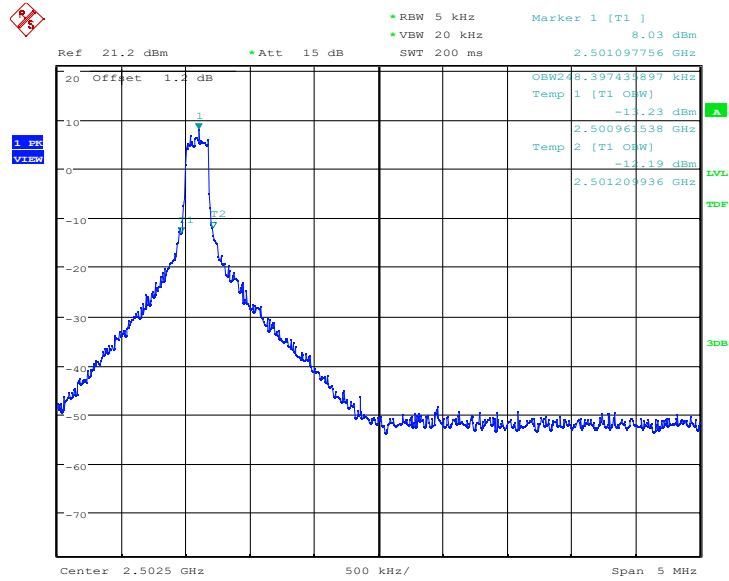


Date: 1.MAY.2022 16:58:20

**LTE CA Band 7C**

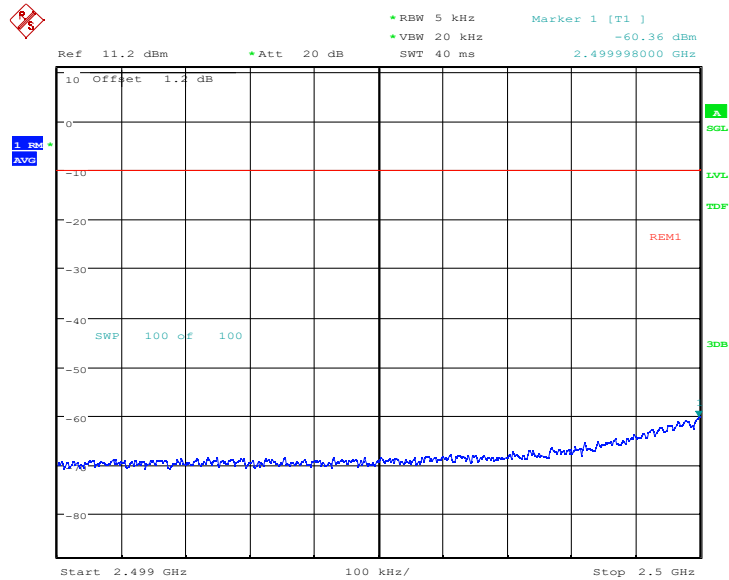
Only the worst case result is given below

OBW: 1RB-low\_offset

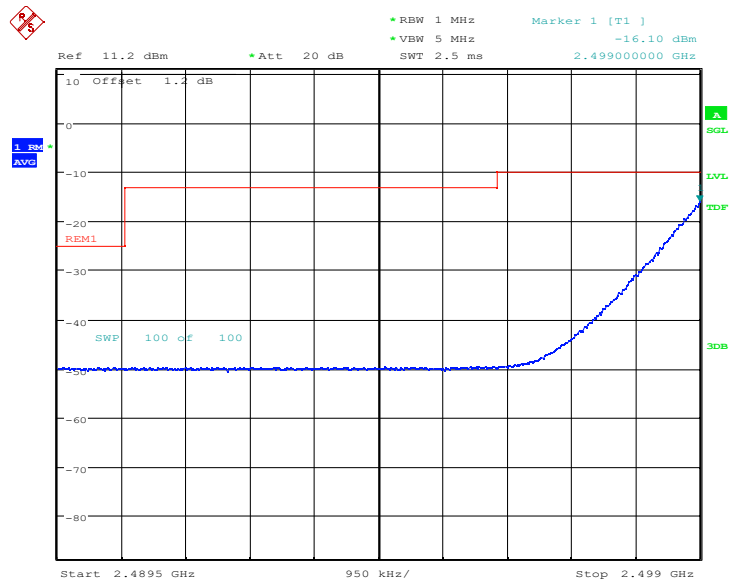


Date: 22.MAY.2022 09:42:13

**LOW BAND EDGE BLOCK-20MHz+10MHz-1RB**

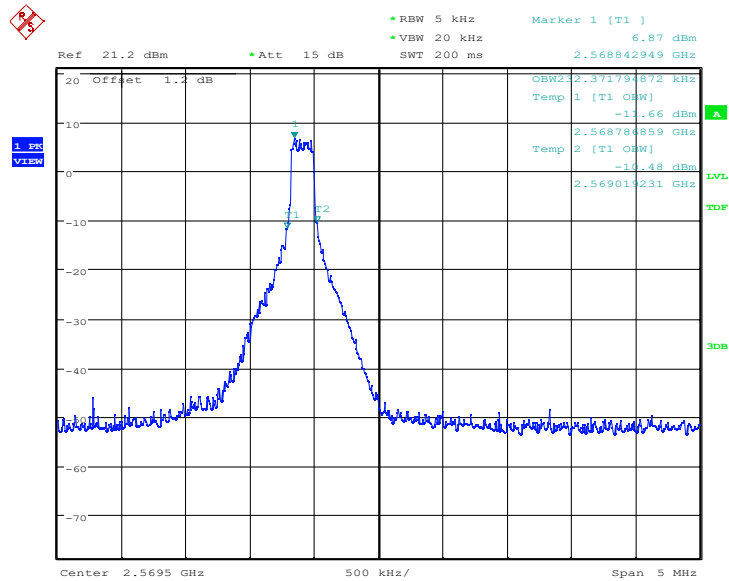


Date: 22.MAY.2022 09:43:01



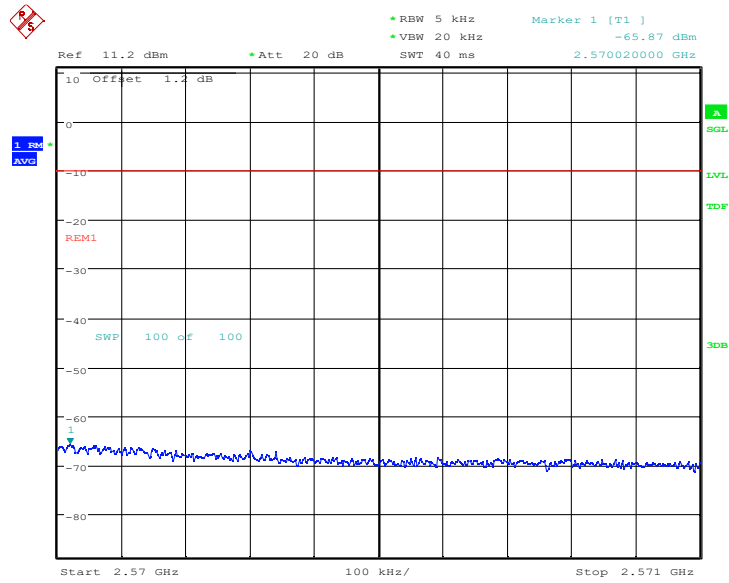
Date: 22.MAY.2022 09:43:45

**OBW: 1RB-high\_offset**

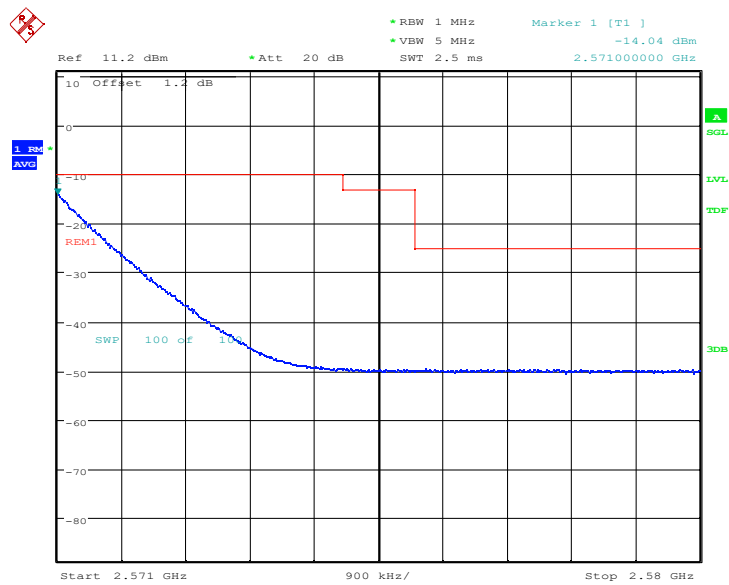


Date: 22.MAY.2022 09:44:46

### HIGH BAND EDGE BLOCK-20MHz+10MHz-1RB

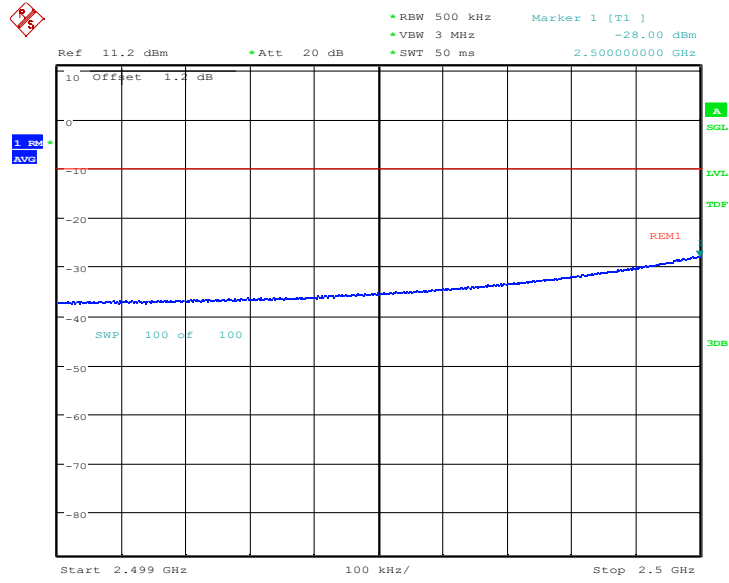


Date: 22.MAY.2022 09:45:33

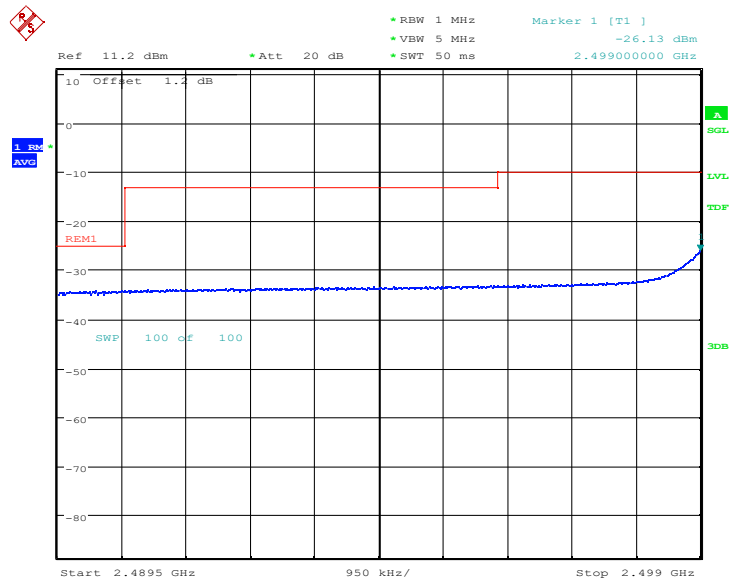


Date: 22.MAY.2022 09:46:17

### LOW BAND EDGE BLOCK-20MHz-100%RB

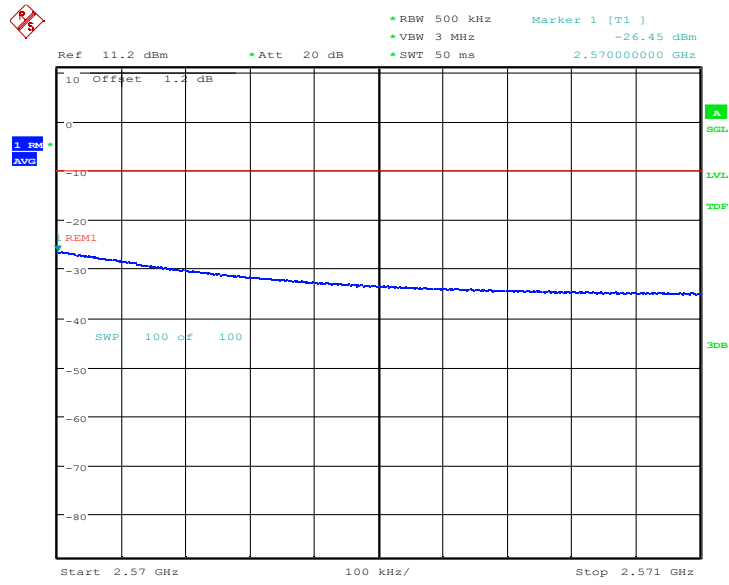


Date: 1.MAY.2022 10:19:16

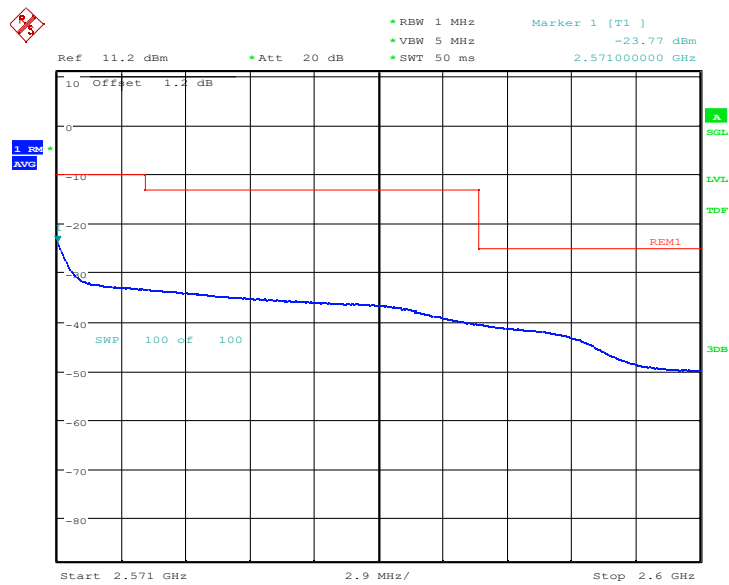


Date: 1.MAY.2022 10:20:04

### HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 1.MAY.2022 10:21:33



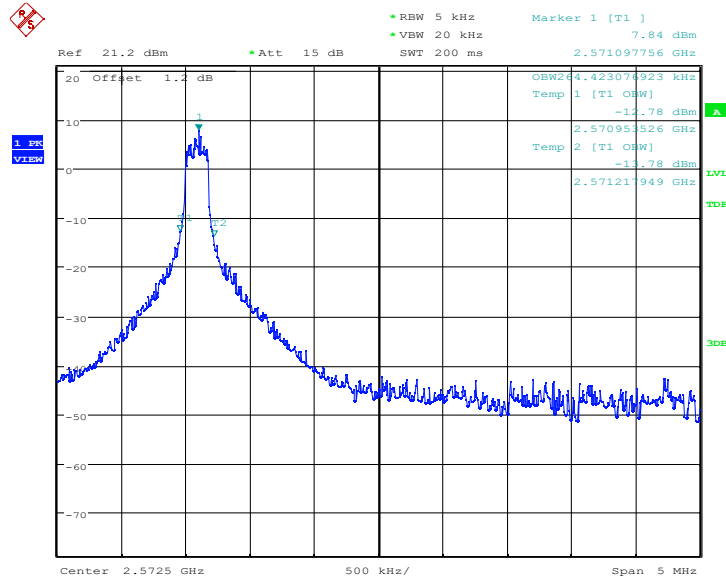
Date: 1.MAY.2022 10:22:21



**LTE CA Band 38C**

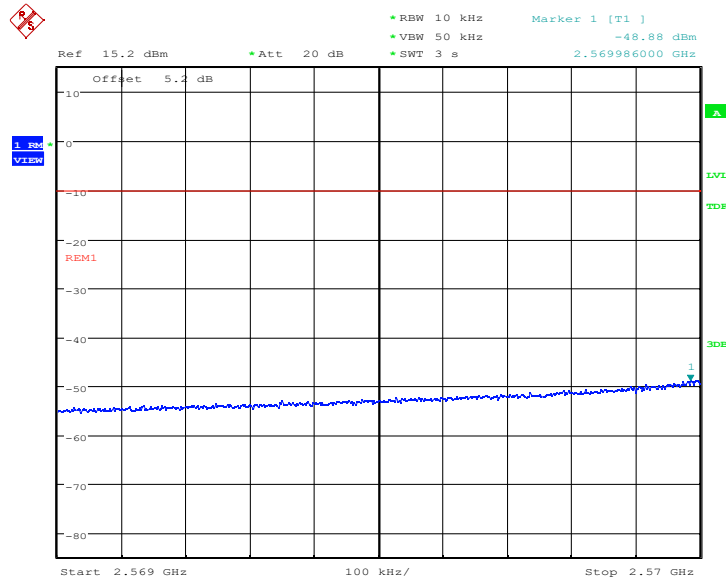
Only the worst case result is given below

OBW: 1RB-low\_offset

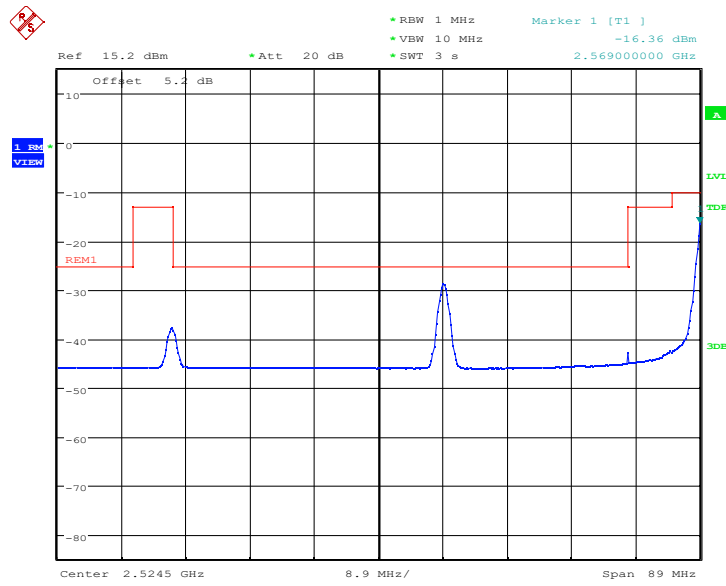


Date: 22.MAY.2022 11:22:21

**LOW BAND EDGE BLOCK-20MHz+20MHz-1RB**

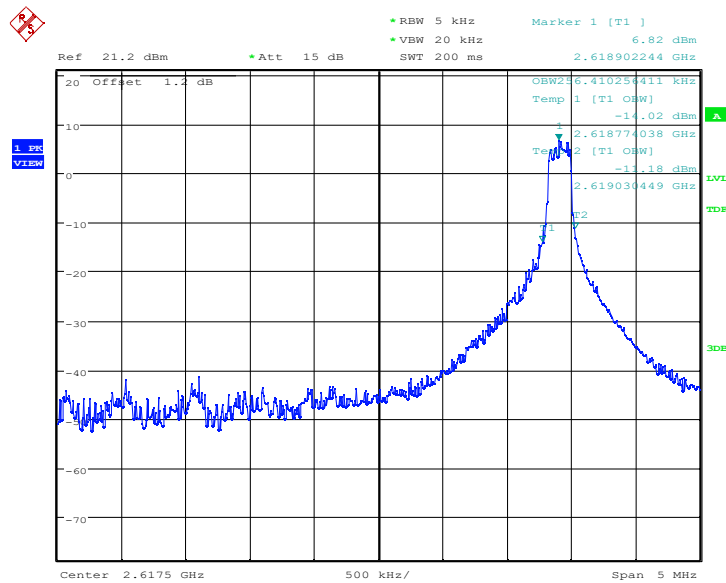


Date: 22.MAY.2022 11:23:04



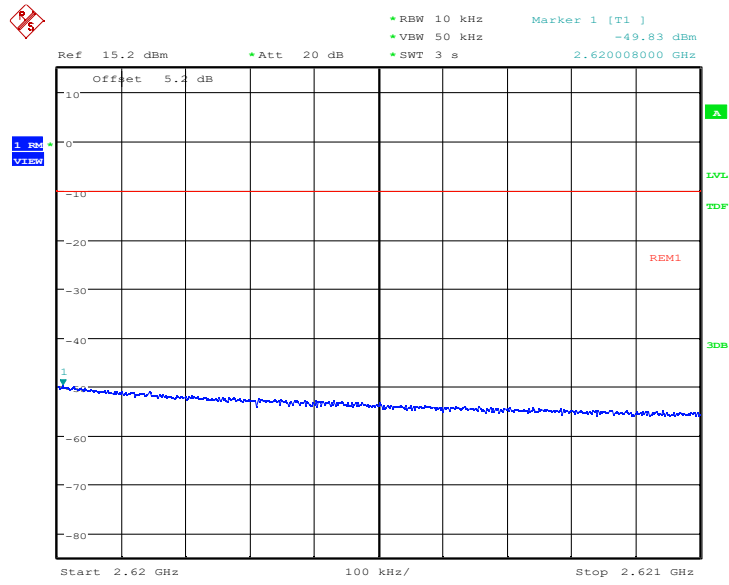
Date: 22.MAY.2022 11:24:19

**OBW: 1RB-high\_offset**

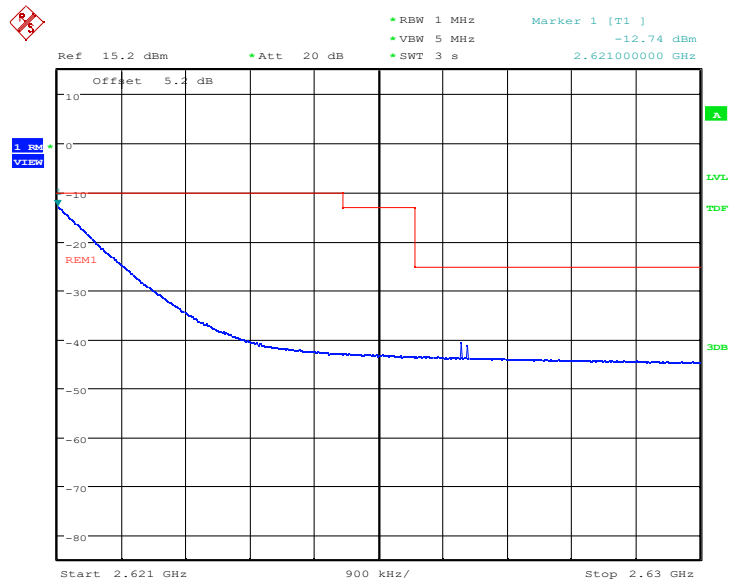


Date: 22.MAY.2022 11:19:06

### HIGH BAND EDGE BLOCK- 20MHz+20MHz-1RB

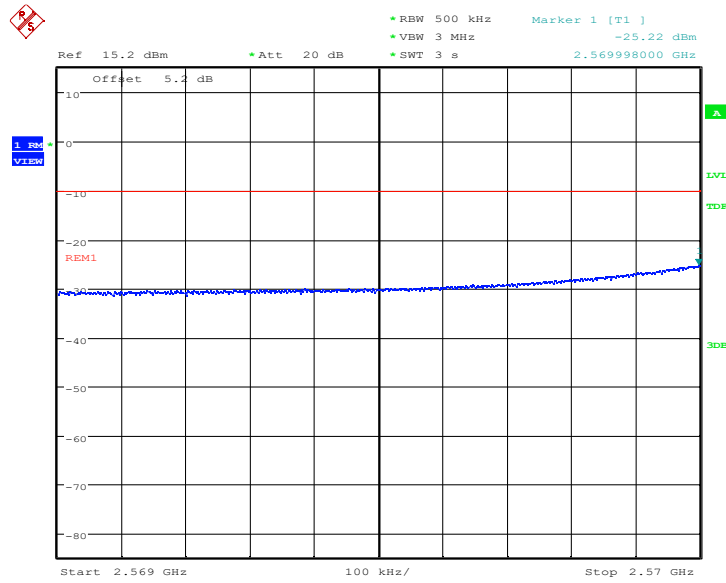


Date: 22.MAY.2022 11:19:49

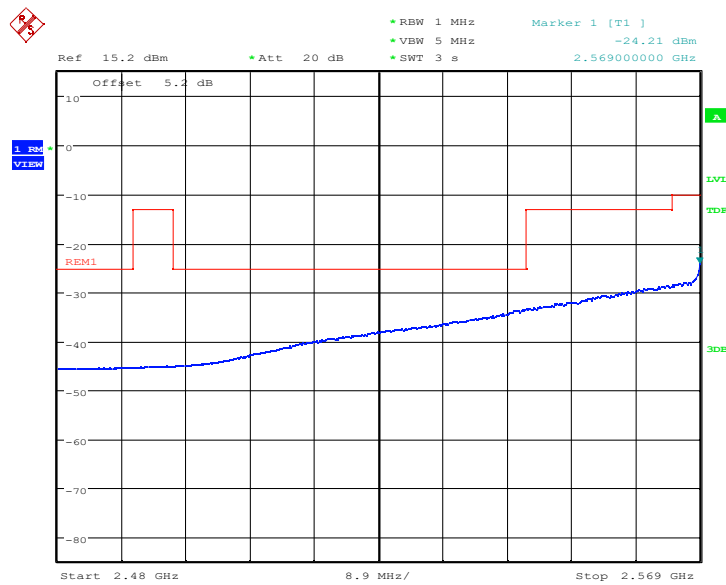


Date: 22.MAY.2022 11:20:31

### LOW BAND EDGE BLOCK-20MHz-100%RB

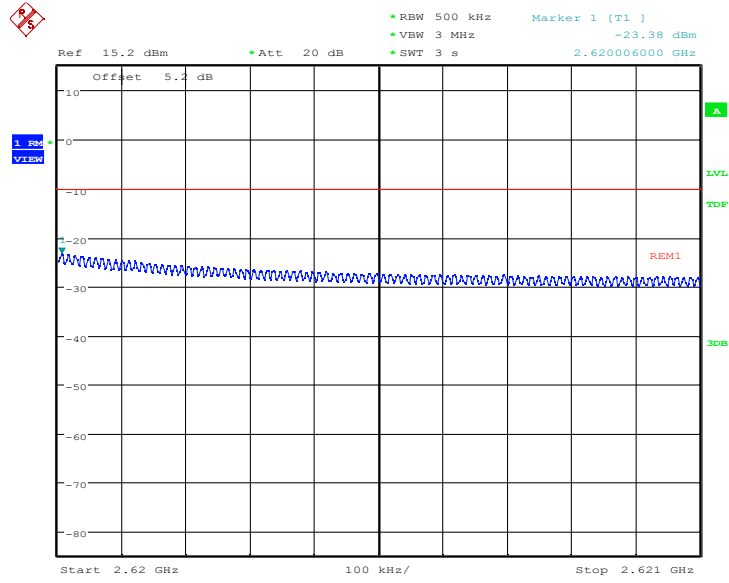


Date: 22.MAY.2022 10:49:08

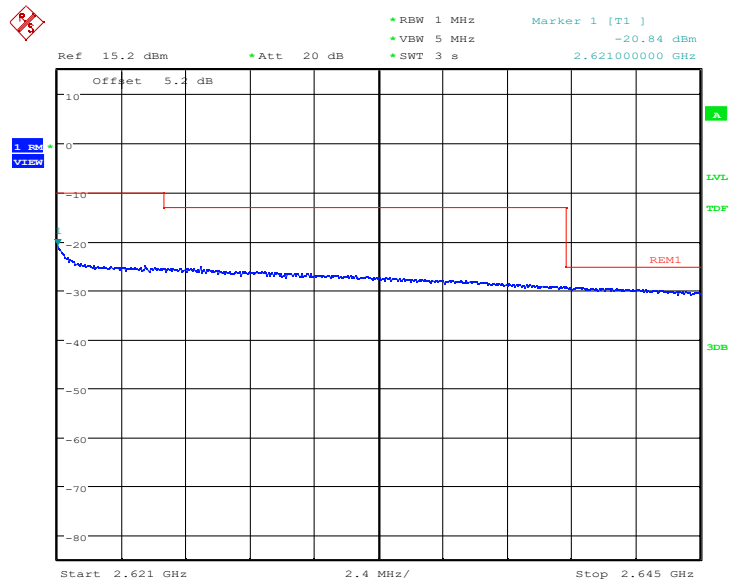


Date: 22.MAY.2022 10:49:50

### HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 22.MAY.2022 10:51:36

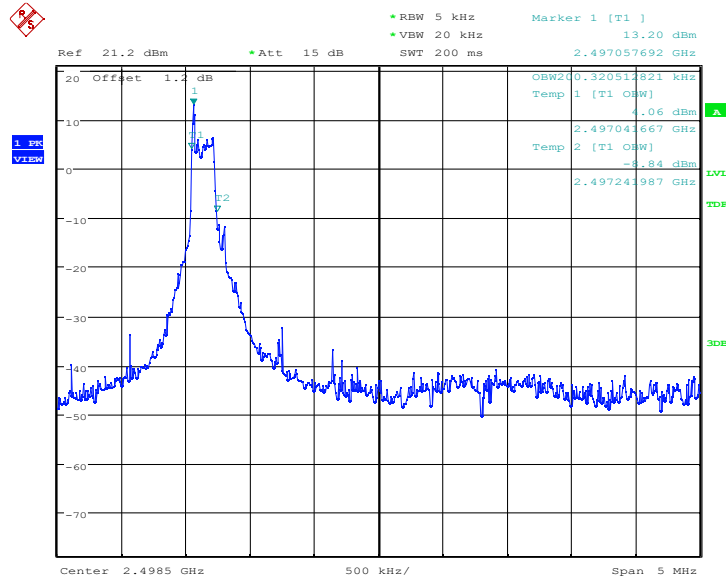


Date: 22.MAY.2022 10:52:18

**LTE CA Band 41C**

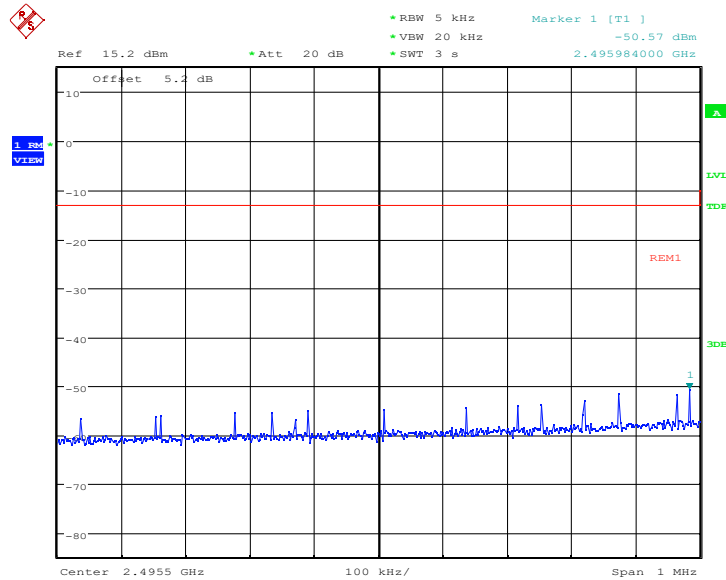
Only the worst case result is given below

OBW: 1RB-low\_offset

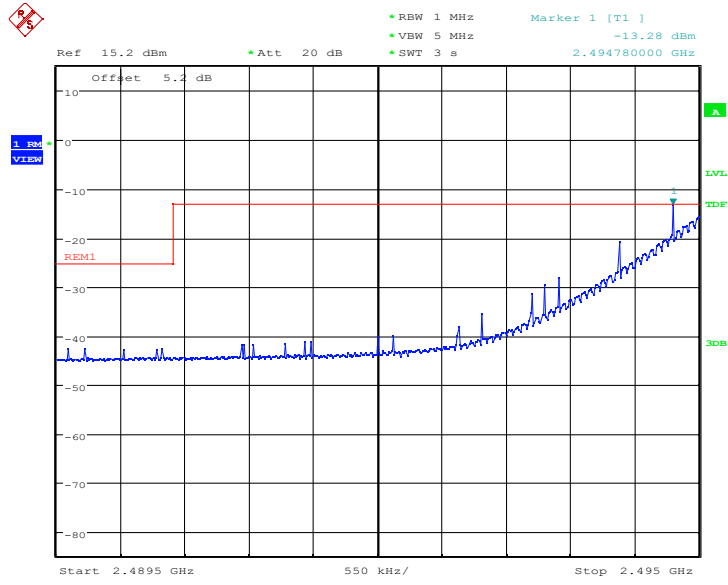


Date: 22.MAY.2022 09:47:34

**LOW BAND EDGE BLOCK- 5MHz+20MHz-1RB**

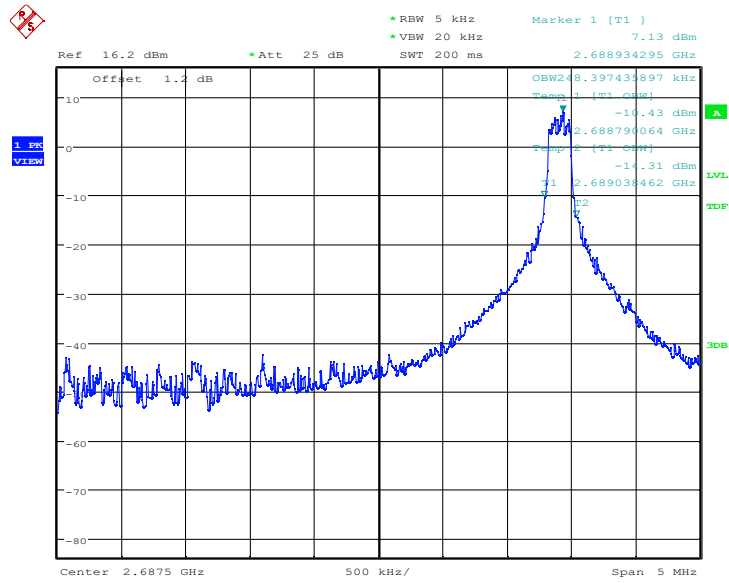


Date: 22.MAY.2022 09:48:22



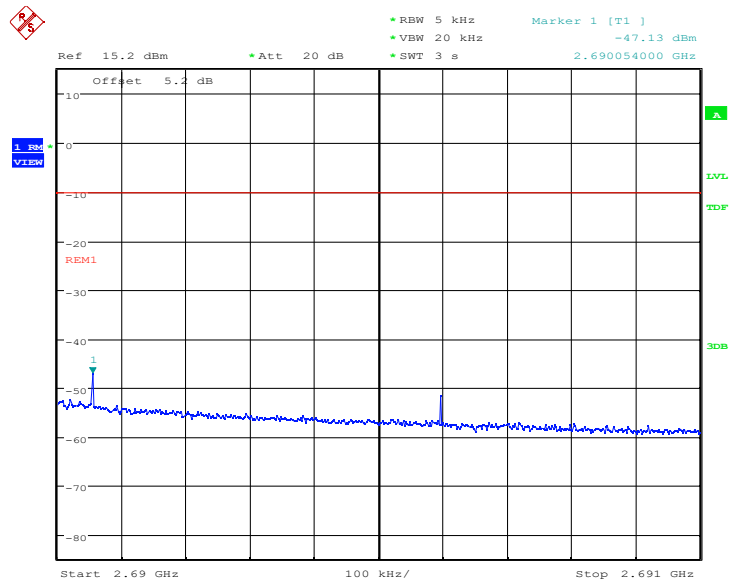
Date: 22.MAY.2022 09:49:04

### OBW: 1RB-high\_offset



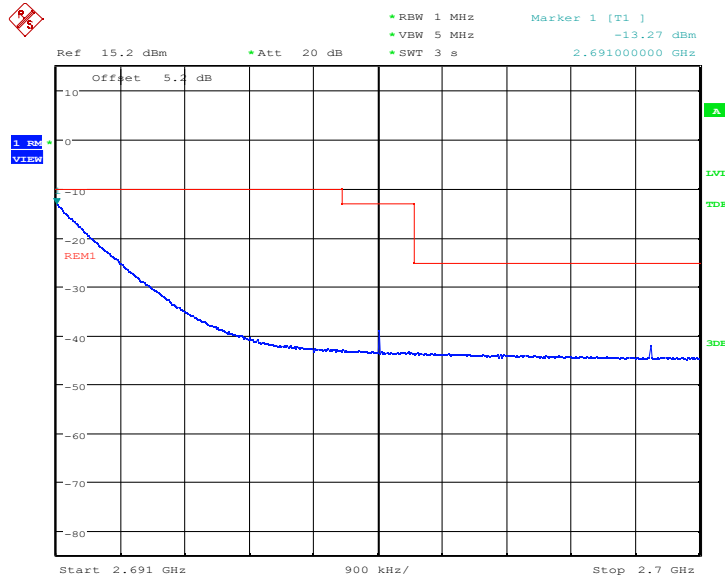
Date: 22.MAY.2022 09:50:05

### HIGH BAND EDGE BLOCK5MHz+10MHz-1RB



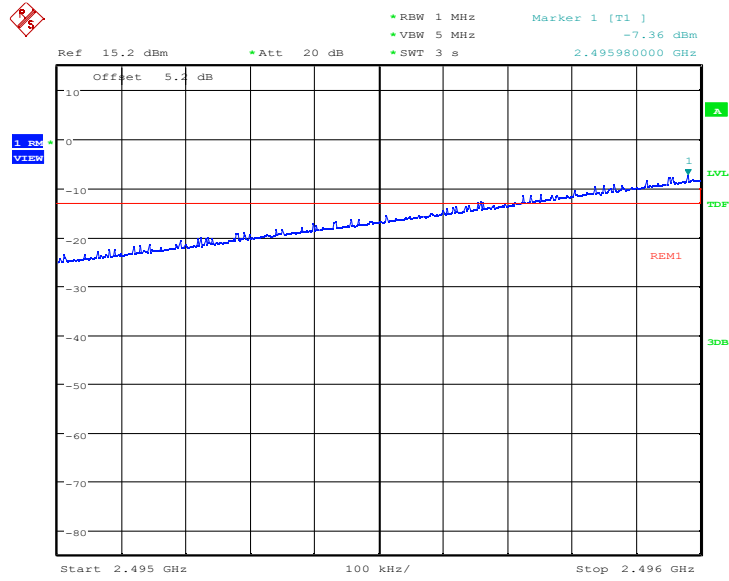
Date: 22.MAY.2022 09:50:48



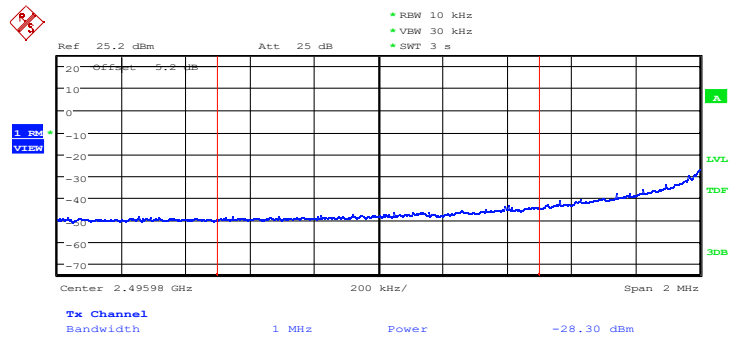


Date: 22.MAY.2022 09:51:30

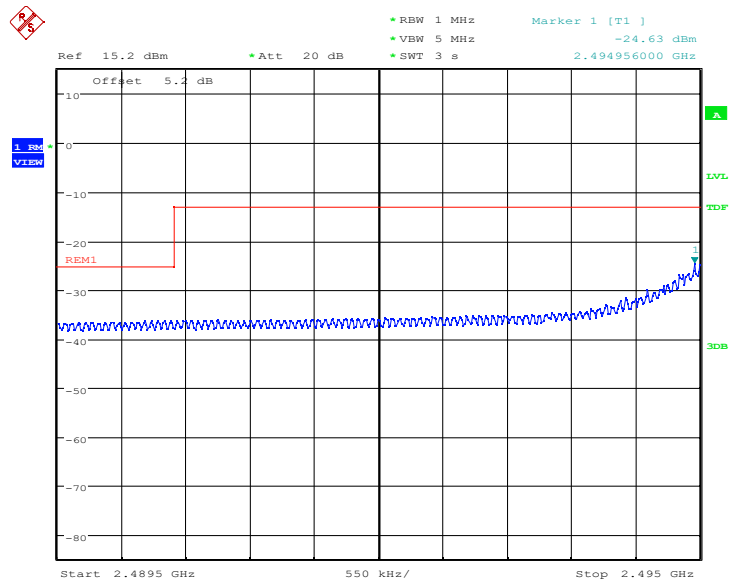
### LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 1.MAY.2022 10:23:44

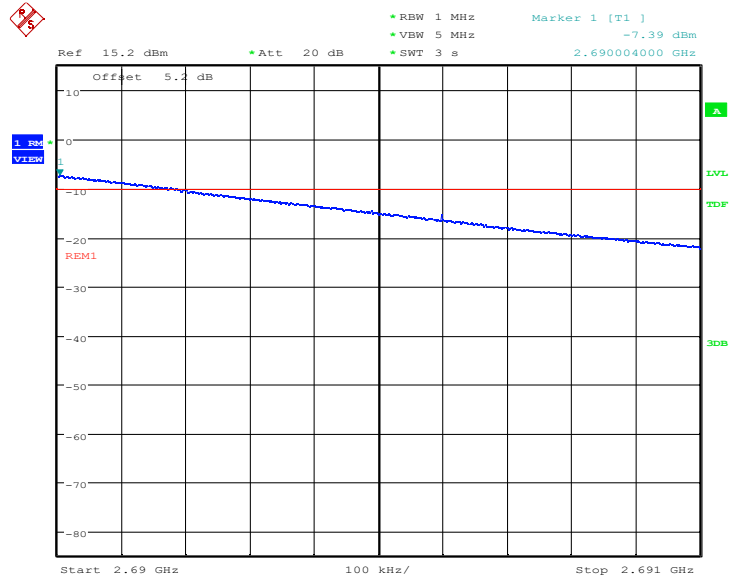


Date: 1.MAY.2022 10:24:07

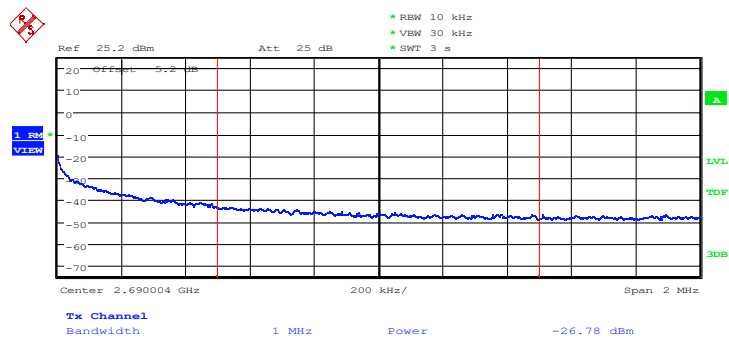


Date: 1.MAY.2022 10:24:50

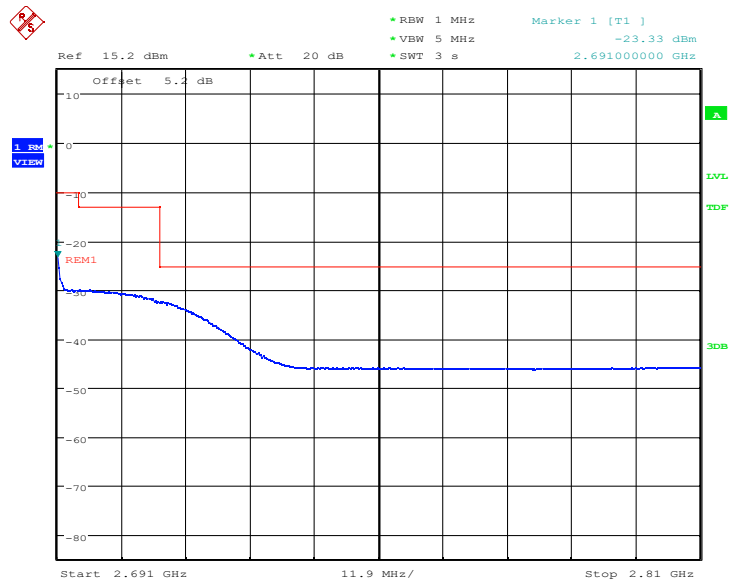
### HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 1.MAY.2022 10:26:13

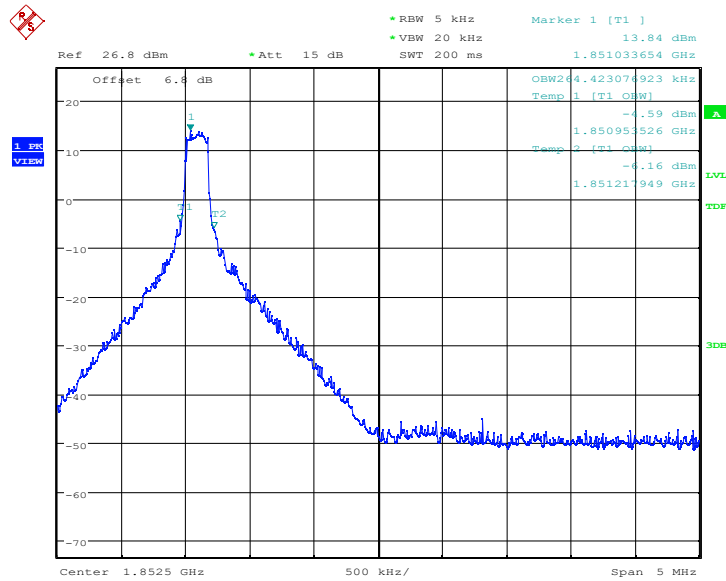


Date: 1.MAY.2022 10:26:37



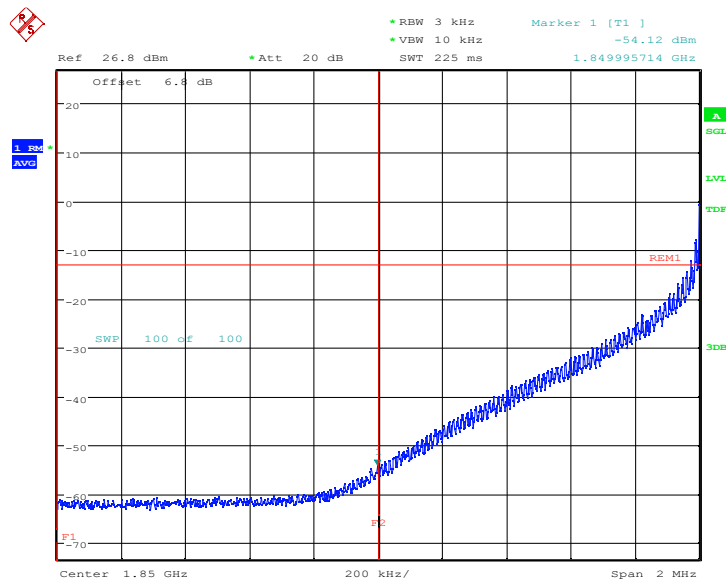
Date: 1.MAY.2022 10:27:19

**LTE band 2@CA\_2A-4A**  
**OBW: 1RB-LOW\_offset**



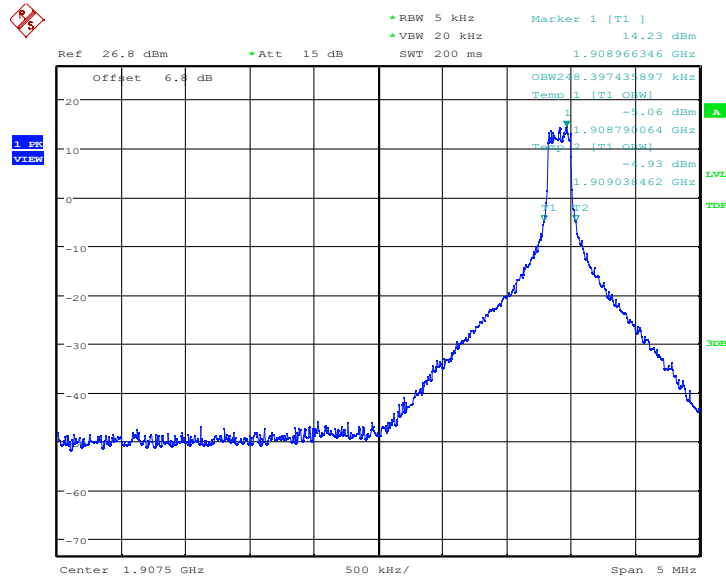
Date: 12.JUL.2022 13:12:37

**LOW BAND EDGE BLOCK-1RB-LOW\_offset**



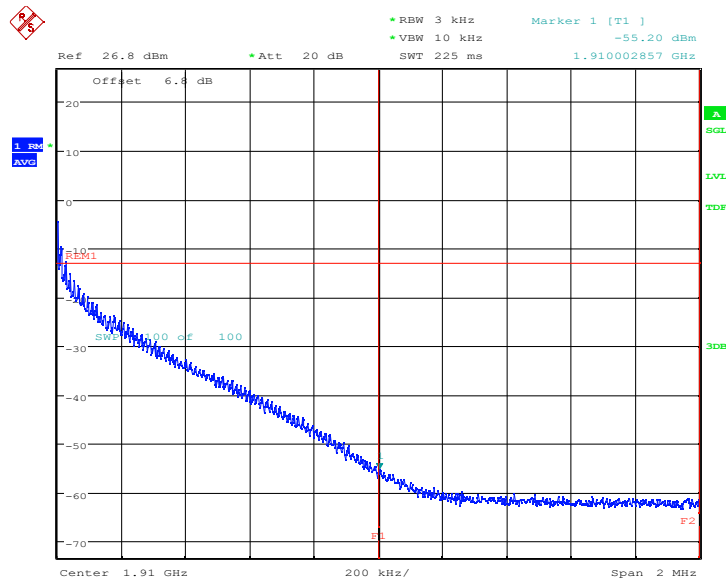
Date: 12.JUL.2022 13:13:39

**OBW: 1RB-HIGH\_offset**



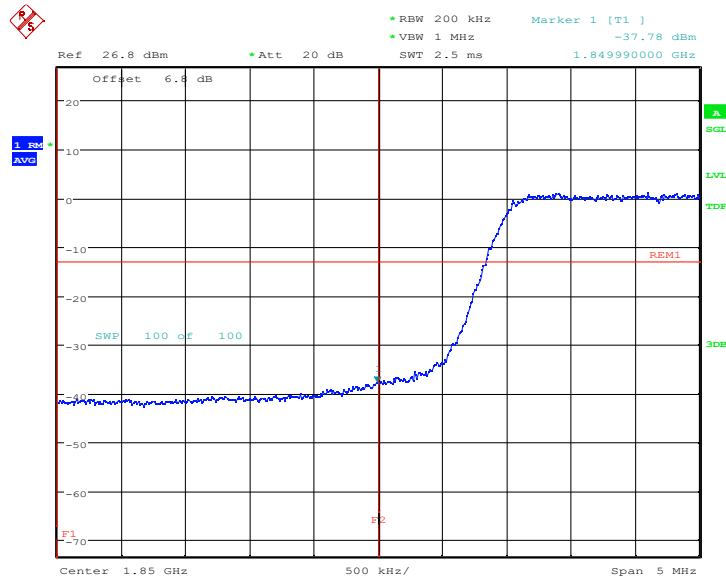
Date: 12.JUL.2022 13:15:57

**HIGH BAND EDGE BLOCK-1RB-HIGH\_offset**



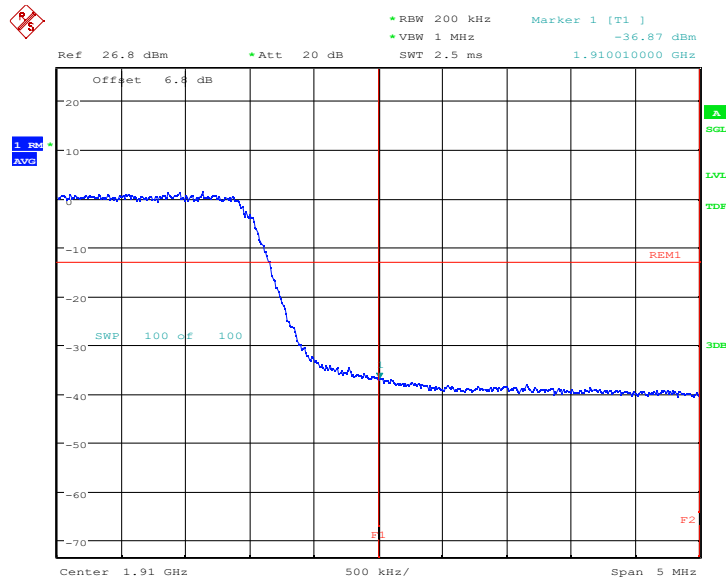
Date: 12.JUL.2022 13:16:59

### LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 12.JUL.2022 11:15:47

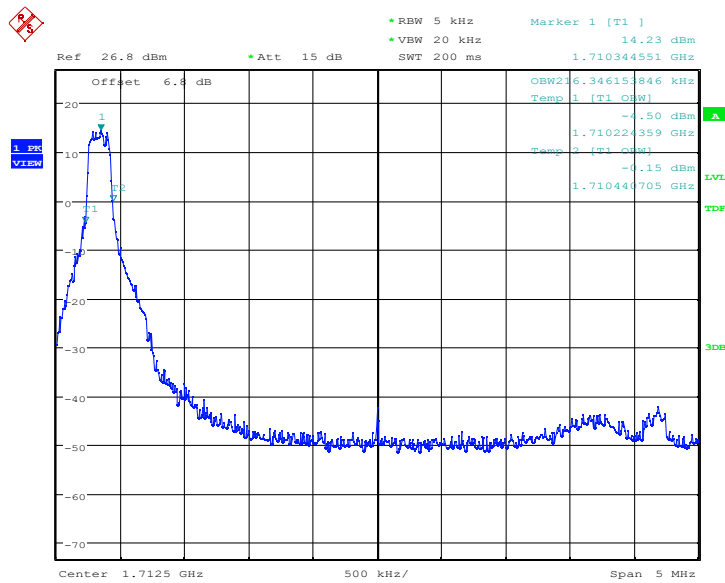
### HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 12.JUL.2022 11:17:46

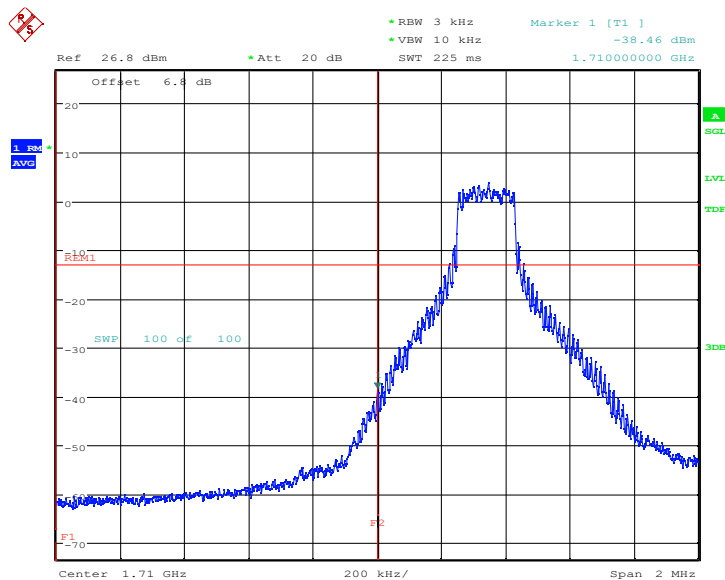


LTE band 4@CA\_2A-4A  
 OBW: 1RB-LOW\_offset



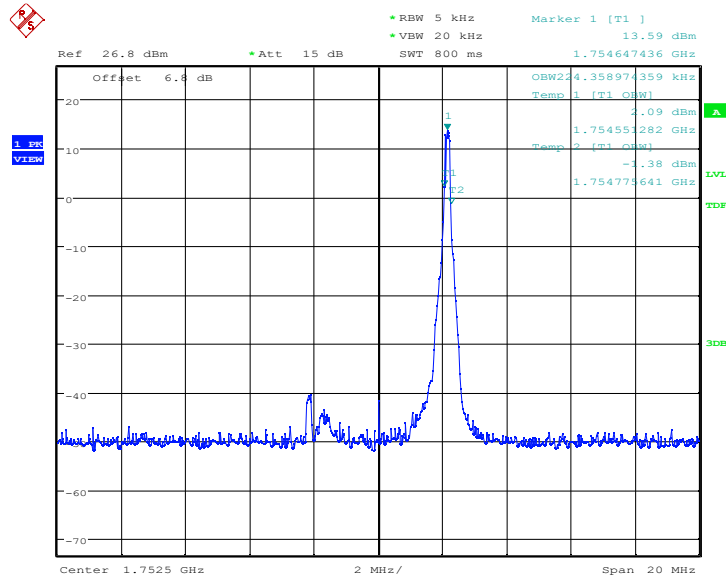
Date: 12.JUL.2022 13:14:00

LOW BAND EDGE BLOCK-1RB-LOW\_offset



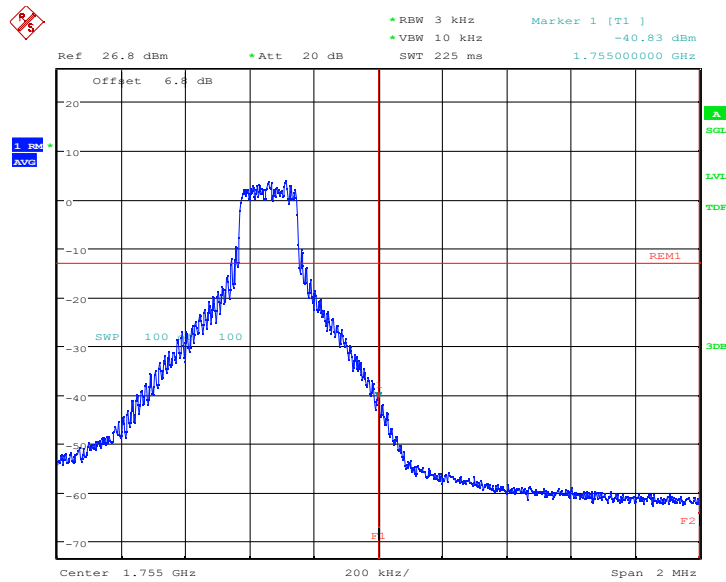
Date: 12.JUL.2022 13:15:04

**OBW: 1RB-HIGH\_offset**



Date: 12.JUL.2022 13:17:20

**HIGH BAND EDGE BLOCK-1RB-HIGH\_offset**



Date: 12.JUL.2022 13:18:22