



TEST REPORT

No.I23Z60906-WMD03

for

TCL Communication Ltd.

GSM/UMTS/LTE Mobile phone

Model Name: T432W

FCC ID: 2ACCJH175

with

Hardware Version: 03

Software Version: LXS4

Issued Date: 2023-07-03

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: ctl_terminals@caict.ac.cn, website: www.caict.ac.cn



No. I23Z60906-WMD03

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I23Z60906-WMD03	Rev.0	1 st edition	2023-07-03

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

CONTENTS

1. TEST LABORATORY	4
1.1. INTRODUCTION & ACCREDITATION.....	4
1.2. TESTING LOCATION	4
1.3. TESTING ENVIRONMENT	5
1.4. PROJECT DATA	5
1.5. SIGNATURE	5
2. CLIENT INFORMATION.....	6
2.1. APPLICANT INFORMATION	6
2.2. MANUFACTURER INFORMATION.....	6
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	7
3.1. ABOUT EUT	7
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	7
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	7
4. REFERENCE DOCUMENTS.....	8
4.1. DOCUMENTS SUPPLIED BY APPLICANT	8
4.2. REFERENCE DOCUMENTS FOR TESTING.....	8
5. SUMMARY OF TEST RESULT	9
6. TEST EQUIPMENT UTILIZED	12
ANNEX A: MEASUREMENT RESULTS.....	13
A.1 OUTPUT POWER	13
A.2 EMISSION LIMIT	41
A.3 FREQUENCY STABILITY	52
A.4 OCCUPIED BANDWIDTH.....	57
A.5 EMISSION BANDWIDTH.....	91
A.6 BAND EDGE COMPLIANCE	125
A.7 CONDUCTED SPURIOUS EMISSION	162
A.8 PEAK-TO-AVERAGE POWER RATIO.....	168
ANNEX B: ACCREDITATION CERTIFICATE.....	169



No.I23Z60906-WMD03

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 (ISED#: 24849). 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℃
Relative Humidity: 20-75%

1.4. Project Data

Testing Start Date: 2023-06-01
Testing End Date: 2023-06-29

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: TCL Communication Ltd.
Address /Post: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact: Annie Jiang
Email: nianxiang.jiang@tcl.com
Telephone: +86 755 3661 1621
Fax: +86 755 3661 2000-81722

2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
Address /Post: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact: Annie Jiang
Email: nianxiang.jiang@tcl.com
Telephone: +86 755 3661 1621
Fax: +86 755 3661 2000-81722

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

3.1. About EUT

Description	GSM/UMTS/LTE Mobile phone
Model Name	T432W
FCC ID	2ACCJH175
Antenna	Embedded
Output power	24.70dBm maximum EIRP measured for LTE Band 41
Extreme vol. Limits	3.6VDC to 4.4VDC (nominal: 3.85VDC)
Extreme temp. Tolerance	-10°C to +55°C

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

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version	Date of receipt
UT01a	016441002208298	03	LXS4	2023-05-29
UT27a	016441000001550	03	LXS4	2023-06-05

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

3.3. Internal Identification of AE used during the test

AE ID*	Description
AE1	Battery
AE2	Battery

AE1

Model	TLi028C7
Manufacturer	NINGBO VEKEN BATTERY CO.,LTD
Capacitance	3000mAh

AE2

Model	TLi028CA
Manufacturer	ZHONGSHAN TIANMAOBATTERY CO.,LTD
Capacitance	3000mAh

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

4. Reference Documents

4.1. Documents supplied by applicant

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

4.2. Reference Documents for testing

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

Reference	Title	Version
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-21 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-21 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-21 Edition
FCC Part 90	PRIVATE LAND MOBILE RADIO SERVICES	10-1-21 Edition
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
ANSI C63.26	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
KDB 971168 D01	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS	v03r01

5. Summary Of Test Result

LTE Band 12

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

LTE Band 25 (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 26(814MHz~824MHz)

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	90.635	P
2	Emission Limit	2.1051/90.691	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	2.1049	P
6	Band Edge Compliance	90.691	P
7	Conducted Spurious Emission	90.691	P

LTE Band 26(824MHz~849MHz) (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 41

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

LTE Band 66

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

LTE Band 71

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

Terms used in Verdict column

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

All the test results are based on normal power.

LTE Band 25, Band 66 and Band 26 overlaps the entire frequency range of LTE Band 2, Band 4, and Band 5. Therefore, test data provided in this report covers Band 2, Band 4, Band 5 as well as Band 25, Band 66, Band 26.

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.

6. Test Equipment Utilized

Description	Type	Series Number	Manufacture	Cal Due Date	Calibration Interval
Wideband Radio Communication Tester	CMW500	159082	R&S	2024-01-09	1 year
Spectrum Analyzer	FSU	200030	R&S	2024-05-25	1 year
Climate Chamber	SH-242	93008556	ESPEC	2023-12-23	3 years
EMI Antenna	VULB9163	9163-482	Schwarzbeck	2024-01-03	1 year
EMI Antenna	3116	2663	ETS-Lindgren	2023-11-22	1 year
EMI Antenna	LB-7180-NF	J203001300005	A-INFO	2024-05-07	1 year
Signal Generator	LB-180400-25-C-KF	J211060826	A-INFO	2024-05-11	1 year
Test Receiver	FSV40	101047	R&S	2023-07-09	1 year
Universal Radio Communication Tester	CMW500	143008	R&S	2025-01-03	1 year

Annex A: Measurement Results

A.1 Output Power

A.1.1 Summary

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

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

A.1.2 Conducted

A.1.2.1 Method of Measurements

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

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

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

A.1.2.2 Measurement Result

LTE band 12

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	715.3	23.52	22.32	21.46
		707.5	23.93	22.51	21.81
		699.7	23.66	23.41	22.34
	1 RB low	715.3	24.18	23.24	22.39
		707.5	23.38	22.57	21.32
		699.7	23.42	22.32	21.80
	50% RB mid	715.3	23.47	22.66	21.32
		707.5	24.32	22.62	21.53
		699.7	24.24	22.38	22.34
	100% RB	715.3	23.94	22.76	21.71
		707.5	23.42	22.81	21.83
		699.7	23.77	22.58	21.98
3MHz	1 RB high	714.5	23.79	22.47	21.90
		707.5	24.04	22.30	22.04
		700.5	23.35	22.42	22.07
	1 RB low	714.5	23.55	23.02	21.67
		707.5	23.48	22.58	21.62
		700.5	23.91	22.48	21.72
	50% RB mid	714.5	23.78	22.46	21.94
		707.5	23.99	22.08	21.18
		700.5	23.94	23.00	21.11
	100% RB	714.5	23.46	22.88	21.95

		707.5	23.34	23.00	21.74
		700.5	23.74	22.82	21.53
5MHz	1 RB high	713.5	24.04	23.35	22.37
		707.5	24.11	22.41	21.47
		701.5	23.58	23.41	22.27
	1 RB low	713.5	24.13	22.57	22.28
		707.5	24.33	23.43	21.84
		701.5	23.39	22.57	22.35
	50% RB mid	713.5	23.71	22.98	21.63
		707.5	23.43	22.43	21.70
		701.5	23.57	22.38	21.74
	100% RB	713.5	23.31	22.84	21.36
		707.5	23.57	22.36	21.66
		701.5	23.81	22.88	21.71
10MHz	1 RB high	711.0	24.16	23.34	22.29
		707.5	24.15	23.35	22.31
		704.0	24.16	23.41	22.29
	1 RB low	711.0	24.19	23.45	22.42
		707.5	24.23	23.39	22.38
		704.0	24.20	23.37	22.36
	50% RB mid	711.0	23.30	22.31	21.27
		707.5	23.31	22.30	21.31
		704.0	23.31	22.29	21.29
	100% RB	711.0	23.31	22.31	21.31
		707.5	23.33	22.34	21.33
		704.0	23.33	22.32	21.30

LTE band 25

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1914.3	23.94	22.28	21.06
		1882.5	23.05	22.80	21.28
		1850.7	23.44	22.70	21.11
	1 RB low	1914.3	23.27	22.39	21.44
		1882.5	23.27	22.56	21.71
		1850.7	23.91	23.03	21.12
	50% RB mid	1914.3	23.40	22.58	21.84
		1882.5	23.43	22.07	21.16
		1850.7	23.00	22.87	21.33
	100% RB	1914.3	23.86	22.81	21.27
		1882.5	23.04	22.38	21.97
		1850.7	23.39	22.79	21.61
3MHz	1 RB high	1913.5	23.53	22.58	21.98
		1882.5	23.71	22.48	21.56
		1851.5	23.58	22.82	22.14
	1 RB low	1913.5	23.68	22.31	21.14
		1882.5	23.14	22.99	22.05
		1851.5	23.57	22.26	21.30
	50% RB mid	1913.5	23.54	22.36	21.26
		1882.5	23.09	22.08	20.92
		1851.5	23.90	22.16	20.94
	100% RB	1913.5	23.41	22.19	21.75
		1882.5	23.67	22.50	21.93
		1851.5	23.24	22.40	21.41
5MHz	1 RB high	1912.5	23.85	22.42	21.26
		1882.5	23.63	22.18	22.12
		1852.5	23.62	23.10	21.17
	1 RB low	1912.5	23.81	22.98	22.08
		1882.5	23.07	23.17	21.22
		1852.5	23.87	22.68	21.37
	50% RB mid	1912.5	23.78	22.86	21.53
		1882.5	23.28	22.95	21.40
		1852.5	23.83	22.45	21.98
	100% RB	1912.5	23.71	22.58	20.95
		1882.5	23.21	22.88	21.51
		1852.5	22.96	22.14	21.15
10MHz	1 RB high	1910.0	23.68	22.39	21.92
		1882.5	23.55	23.11	21.84
		1855.0	23.81	22.30	21.19
	1 RB low	1910.0	23.81	22.19	22.03

		1882.5	23.59	22.79	21.91
		1855.0	23.50	22.74	22.07
	50% RB mid	1910.0	23.18	22.25	21.62
		1882.5	23.49	22.85	21.88
		1855.0	23.77	22.98	21.05
	100% RB	1910.0	23.02	22.89	21.68
		1882.5	23.29	22.89	21.43
1855.0		23.84	22.85	21.01	
15MHz	1 RB high	1907.5	23.39	22.74	21.88
		1882.5	23.19	22.39	21.05
		1857.5	23.67	22.94	21.81
	1 RB low	1907.5	23.12	22.54	21.28
		1882.5	23.41	22.21	21.14
		1857.5	23.94	22.77	21.46
	50% RB mid	1907.5	23.68	22.87	21.66
		1882.5	23.10	22.25	21.91
		1857.5	23.10	21.94	21.86
	100% RB	1907.5	23.90	21.94	21.61
		1882.5	23.60	21.94	21.00
		1857.5	23.39	21.88	21.95
20MHz	1 RB high	1905.0	23.58	22.81	21.70
		1882.5	23.57	22.85	21.79
		1860.0	23.60	22.96	21.83
	1 RB low	1905.0	23.62	22.83	21.72
		1882.5	23.67	22.95	21.84
		1860.0	23.70	22.92	21.85
	50% RB mid	1905.0	23.01	21.97	20.96
		1882.5	22.98	21.96	20.93
		1860.0	22.98	21.96	20.95
	100% RB	1905.0	23.00	21.98	20.97
		1882.5	22.96	21.94	20.93
		1860.0	22.94	21.95	20.92

LTE band 26(814MHz~824MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	823.3	24.25	23.19	22.11
		819.0	24.18	23.28	22.22
		814.7	24.18	23.12	22.00
	1 RB low	823.3	24.21	23.07	22.04
		819.0	24.18	23.28	22.25
		814.7	24.22	23.09	21.96
	50% RB mid	823.3	24.26	23.39	22.33
		819.0	24.26	23.42	22.18
		814.7	24.18	23.31	22.14
	100% RB	823.3	23.26	22.38	21.32
		819.0	23.22	22.14	21.53
		814.7	23.25	22.31	21.18
3MHz	1 RB high	822.5	24.25	23.18	22.03
		819.0	24.19	23.17	21.98
		815.5	24.20	23.14	21.98
	1 RB low	822.5	24.20	23.21	22.08
		819.0	24.18	23.21	22.09
		815.5	24.30	23.16	22.04
	50% RB mid	822.5	23.18	22.24	21.14
		819.0	23.17	22.24	21.15
		815.5	23.16	22.20	21.12
	100% RB	822.5	23.22	22.18	21.25
		819.0	23.19	22.13	21.26
		815.5	23.19	22.14	21.24
5MHz	1 RB high	821.5	24.15	23.18	22.26
		819.0	24.13	23.19	22.23
		816.5	24.12	23.19	22.26
	1 RB low	821.5	24.06	23.15	22.21
		819.0	24.06	23.12	22.19
		816.5	24.14	23.10	22.18
	50% RB mid	821.5	23.19	22.26	21.24
		819.0	23.24	22.25	21.32
		816.5	23.25	22.26	21.32
	100% RB	821.5	23.15	22.12	21.20
		819.0	23.19	22.16	21.26
		816.5	23.25	22.23	21.28
10MHz	1 RB high	819.0	24.30	23.19	22.05
	1 RB low	819.0	24.29	23.19	22.06
	50% RB mid	819.0	24.30	23.18	22.06
	100% RB	819.0	24.26	23.11	22.01

LTE band 26(824MHz~849MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	24.39	23.35	22.21
		836.5	24.41	23.33	22.21
		824.7	24.40	23.36	22.66
	1 RB low	848.3	24.37	23.31	22.21
		836.5	24.35	23.30	22.17
		824.7	24.36	23.33	22.62
	50% RB mid	848.3	24.35	23.51	22.33
		836.5	24.34	23.45	22.25
		824.7	24.37	23.50	22.33
	100% RB	848.3	23.31	22.20	21.56
		836.5	23.26	22.15	21.55
		824.7	23.30	22.39	21.35
3MHz	1 RB high	847.5	24.34	23.27	22.11
		836.5	24.34	23.19	22.03
		825.5	24.32	23.24	22.13
	1 RB low	847.5	24.33	23.28	22.19
		836.5	24.29	23.25	22.14
		825.5	24.38	23.33	22.19
	50% RB mid	847.5	23.25	22.36	21.23
		836.5	23.24	22.34	21.19
		825.5	23.21	22.32	21.20
	100% RB	847.5	23.24	22.20	21.30
		836.5	23.20	22.14	21.25
		825.5	23.22	22.18	21.29
5MHz	1 RB high	846.5	24.19	23.21	22.32
		836.5	24.20	23.17	22.25
		826.5	24.17	23.23	22.34
	1 RB low	846.5	24.16	23.21	22.28
		836.5	24.14	23.22	22.29
		826.5	24.18	23.19	22.27
	50% RB mid	846.5	23.23	22.31	21.30
		836.5	23.16	22.32	21.24
		826.5	23.19	22.30	21.27
	100% RB	846.5	23.19	22.15	21.21
		836.5	23.17	22.12	21.19
		826.5	23.22	22.22	21.29
10MHz	1 RB high	844.0	24.34	23.25	22.14
		836.5	24.34	23.22	22.09
		829.0	24.27	23.23	22.11
	1 RB low	844.0	24.31	23.19	22.05

		836.5	24.24	23.21	22.08
		829.0	24.27	23.19	22.04
	50% RB mid	844.0	23.32	22.42	21.43
		836.5	23.09	22.33	21.22
		829.0	23.44	22.39	21.54
	100% RB	844.0	23.32	22.35	21.38
		836.5	23.08	22.14	21.15
829.0		23.43	22.45	21.47	
15MHz	1 RB high	841.5	24.25	23.47	22.49
		836.5	24.22	23.50	22.50
		831.5	24.25	23.38	22.39
	1 RB low	841.5	24.18	23.48	22.49
		836.5	24.16	23.53	22.50
		831.5	24.19	23.43	22.42
	50% RB mid	841.5	23.43	22.29	21.38
		836.5	23.29	22.22	21.16
		831.5	23.38	22.26	21.34
	100% RB	841.5	23.45	22.36	21.43
		836.5	23.19	22.11	21.20
		831.5	23.36	22.32	21.35

LTE band 41

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2687.5	25.47	24.62	23.46
		2593.0	25.37	24.50	23.32
		2498.5	25.75	24.89	23.70
	1 RB low	2687.5	25.45	24.60	23.41
		2593.0	25.37	24.52	23.31
		2498.5	25.74	24.86	23.66
	50% RB mid	2687.5	24.70	23.65	22.74
		2593.0	24.55	23.52	22.58
		2498.5	24.93	23.88	22.98
	100% RB	2687.5	24.62	23.64	22.72
		2593.0	24.51	23.49	22.56
		2498.5	24.86	23.86	22.93
10MHz	1 RB high	2685.0	25.59	24.74	23.55
		2593.0	25.50	24.66	23.43
		2501.0	25.90	25.05	23.82
	1 RB low	2685.0	25.57	24.71	23.54
		2593.0	25.51	24.66	23.43
		2501.0	25.88	24.97	23.77
	50% RB mid	2685.0	24.68	23.71	22.76
		2593.0	24.59	23.60	22.65
		2501.0	24.91	23.93	23.01
	100% RB	2685.0	24.76	23.77	22.76
		2593.0	24.64	23.65	22.63
		2501.0	24.97	23.98	22.99
15MHz	1 RB high	2682.5	25.42	24.61	23.45
		2593.0	25.38	24.55	23.36
		2503.5	25.77	24.94	23.75
	1 RB low	2682.5	25.37	24.55	23.38
		2593.0	25.39	24.55	23.35
		2503.5	25.73	24.89	23.71
	50% RB mid	2682.5	24.61	23.57	22.62
		2593.0	24.55	23.52	22.56
		2503.5	24.92	23.85	22.92
	100% RB	2682.5	24.58	23.61	22.63
		2593.0	24.53	23.56	22.58
		2503.5	24.89	23.91	22.95
20MHz	1 RB high	2680.0	25.25	24.39	23.22
		2593.0	25.18	24.34	23.14
		2506.0	25.52	24.70	23.51
	1 RB low	2680.0	25.17	24.34	23.16



		2593.0	25.18	24.34	23.14
		2506.0	25.53	24.70	23.50
	50% RB mid	2680.0	24.59	23.59	22.60
		2593.0	24.50	23.55	22.57
		2506.0	24.89	23.90	22.94
	100% RB	2680.0	24.57	23.56	22.56
		2593.0	24.54	23.52	22.52
		2506.0	24.91	23.90	22.92

LTE band 66

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1779.3	23.91	23.06	22.05
		1745.0	23.94	23.16	21.99
		1710.7	23.91	23.09	22.02
	1 RB low	1779.3	23.91	23.03	22.09
		1745.0	23.93	23.17	22.06
		1710.7	23.92	23.10	22.00
	50% RB mid	1779.3	24.07	23.02	22.17
		1745.0	24.15	22.99	22.14
		1710.7	24.07	22.94	22.08
	100% RB	1779.3	23.03	22.13	20.98
		1745.0	23.06	22.11	21.06
		1710.7	23.02	22.07	20.94
3MHz	1 RB high	1778.5	24.01	23.23	22.14
		1745.0	24.02	23.24	22.14
		1711.5	23.97	23.22	22.12
	1 RB low	1778.5	23.99	23.14	22.14
		1745.0	23.99	23.17	22.09
		1711.5	23.97	23.06	22.10
	50% RB mid	1778.5	23.08	22.10	21.11
		1745.0	23.07	22.09	21.10
		1711.5	23.04	22.04	21.10
	100% RB	1778.5	23.06	22.03	21.03
		1745.0	23.06	22.03	21.03
		1711.5	23.02	21.98	20.98
5MHz	1 RB high	1777.5	23.85	23.12	22.05
		1745.0	23.89	23.20	21.98
		1712.5	23.87	23.00	21.98
	1 RB low	1777.5	23.90	23.14	22.04
		1745.0	23.92	23.16	21.98
		1712.5	23.88	23.03	21.99
	50% RB mid	1777.5	23.11	22.08	21.09
		1745.0	23.10	22.06	21.13
		1712.5	23.08	22.00	21.06
	100% RB	1777.5	23.09	22.07	21.08
		1745.0	23.06	22.03	21.04
		1712.5	23.03	22.01	21.02
10MHz	1 RB high	1775.0	23.98	23.10	22.08
		1745.0	23.95	23.15	22.12
		1715.0	23.91	23.05	22.12
	1 RB low	1775.0	23.98	23.21	22.12

		1745.0	23.99	23.16	22.13	
		1715.0	23.93	23.07	22.07	
	50% RB mid	1775.0	23.12	22.10	21.11	
		1745.0	23.12	22.09	21.10	
		1715.0	23.08	22.03	21.05	
	100% RB	1775.0	23.12	22.05	21.08	
		1745.0	23.08	22.05	21.07	
1715.0		23.08	21.99	21.03		
15MHz	1 RB high	1772.5	23.88	23.17	22.04	
		1745.0	23.92	23.08	22.03	
		1717.5	23.89	23.14	22.05	
	1 RB low	1772.5	23.94	23.07	22.08	
		1745.0	23.92	23.01	22.06	
		1717.5	23.90	23.10	22.04	
	50% RB mid	1772.5	23.13	22.08	21.09	
		1745.0	23.12	22.05	21.10	
		1717.5	23.07	22.02	21.07	
	100% RB	1772.5	23.09	22.04	21.07	
		1745.0	23.09	22.05	21.07	
		1717.5	23.02	21.98	20.99	
	20MHz	1 RB high	1770.0	23.62	22.88	21.74
			1745.0	23.72	22.99	21.90
			1720.0	23.69	22.82	21.87
1 RB low		1770.0	23.68	22.86	21.82	
		1745.0	23.74	23.01	21.78	
		1720.0	23.71	22.94	21.88	
50% RB mid		1770.0	23.08	22.03	21.07	
		1745.0	23.09	22.06	21.11	
		1720.0	23.05	22.00	21.02	
100% RB		1770.0	23.12	21.98	20.99	
		1745.0	23.10	22.05	21.05	
		1720.0	22.98	21.92	20.97	

LTE band 71

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	695.5	23.15	21.99	20.54
		680.5	22.65	21.68	20.65
		665.5	23.16	21.80	21.01
	1 RB low	695.5	23.08	21.99	21.46
		680.5	23.12	22.00	20.83
		665.5	23.10	21.92	20.96
	50% RB mid	695.5	22.86	22.11	20.92
		680.5	23.07	21.19	21.45
		665.5	22.46	22.00	21.47
	100% RB	695.5	22.80	21.93	20.80
		680.5	22.31	22.37	20.53
		665.5	23.06	22.19	21.32
10MHz	1 RB high	693.0	23.11	21.96	21.13
		680.5	23.24	22.36	21.08
		668.0	23.08	22.30	21.25
	1 RB low	693.0	23.16	21.76	20.70
		680.5	22.97	21.82	21.44
		668.0	22.92	21.63	20.59
	50% RB mid	693.0	22.93	21.50	20.17
		680.5	22.21	21.57	20.24
		668.0	22.58	21.18	20.24
	100% RB	693.0	22.53	21.39	20.49
		680.5	23.31	21.57	21.29
		668.0	22.78	22.12	20.37
15MHz	1 RB high	690.5	22.97	21.83	21.11
		680.5	22.92	21.64	20.55
		670.5	22.91	21.81	20.98
	1 RB low	690.5	23.22	21.82	21.18
		680.5	22.89	22.33	21.47
		670.5	23.26	21.84	20.62
	50% RB mid	690.5	22.22	22.29	21.36
		680.5	22.98	22.47	20.89
		670.5	22.24	22.23	20.87
	100% RB	690.5	23.18	21.35	20.33
		680.5	22.58	21.51	20.79
		670.5	23.11	21.43	21.06
20MHz	1 RB high	688.0	22.91	22.13	21.11
		680.5	22.88	22.15	21.07
		673.0	22.95	22.10	21.07
	1 RB low	688.0	22.96	22.23	21.06



		680.5	23.01	22.26	21.17
		673.0	23.03	22.23	21.20
	50% RB mid	688.0	22.34	21.32	20.30
		680.5	22.30	21.31	20.33
		673.0	22.35	21.35	20.39
	100% RB	688.0	22.68	21.65	20.63
		680.5	22.10	21.09	20.11
		673.0	22.64	21.62	20.71

A.1.3 Radiated

A.1.3.1 Description

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

LTE Band 25/2: 24.232(c) specifies "Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications."

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

LTE Band 26(814MHz~824MHz): 90.635(b) specifies " The maximum output power of the transmitter for mobile stations is 100 watts".

LTE Band 12: Rule Part 27.50(c)(10) specifies, " The following power and antenna height requirements apply to stations transmitting in the 600 MHz band and the 698-746 MHz band:

(10) 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 41: 27.50(h)(2) specifies " *Mobile and other user stations.* Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power".

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

LTE Band 71: Rule 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 ".

A.1.3.2 Method of Measurement

ANSI C63.26 chapter 5.2.5.5: when working in decibels (i.e., logarithmic scale), the ERP and EIRP represent the sum of the transmit antenna gain (in dBd or dBi, respectively) and the conducted RF output power (expressed in dB relative to watts or milliwatts).

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation (1) as follows:

$$\text{ERP or EIRP} = P_{\text{Mea}} + G_{\text{T}}$$

Where

ERP 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_{Mea} measured transmitter output power or PSD, in dBm or dBW

G_{T} gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

The antenna gain provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

LTE band 12-ERP
Limits: ≤34.77dBm (3W)

Max ERP: 19.78dBm

Band width	RB size/offset	Frequency (MHz)	Conducted Power (dBm)				Radiated Power (dBm) GT = -2.4dBi			
			QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
1.4M Hz	1 RB high	715.3	23.52	22.32	21.46	/	18.97	17.77	16.91	/
		707.5	23.93	22.51	21.81	/	19.38	17.96	17.26	/
		699.7	23.66	23.41	22.34	/	19.11	18.86	17.79	/
	1 RB low	715.3	24.18	23.24	22.39	/	19.63	18.69	17.84	/
		707.5	23.38	22.57	21.32	/	18.83	18.02	16.77	/
		699.7	23.42	22.32	21.8	/	18.87	17.77	17.25	/
	50% RB mid	715.3	23.47	22.66	21.32	/	18.92	18.11	16.77	/
		707.5	24.32	22.62	21.53	/	19.77	18.07	16.98	/
		699.7	24.24	22.38	22.34	/	19.69	17.83	17.79	/
	100% RB	715.3	23.94	22.76	21.71	/	19.39	18.21	17.16	/
		707.5	23.42	22.81	21.83	/	18.87	18.26	17.28	/
		699.7	23.77	22.58	21.98	/	19.22	18.03	17.43	/
3MHz	1 RB high	714.5	23.79	22.47	21.9	/	19.24	17.92	17.35	/
		707.5	24.04	22.3	22.04	/	19.49	17.75	17.49	/
		700.5	23.35	22.42	22.07	/	18.80	17.87	17.52	/
	1 RB low	714.5	23.55	23.02	21.67	/	19.00	18.47	17.12	/
		707.5	23.48	22.58	21.62	/	18.93	18.03	17.07	/
		700.5	23.91	22.48	21.72	/	19.36	17.93	17.17	/
	50% RB mid	714.5	23.78	22.46	21.94	/	19.23	17.91	17.39	/
		707.5	23.99	22.08	21.18	/	19.44	17.53	16.63	/
		700.5	23.94	23	21.11	/	19.39	18.45	16.56	/
	100% RB	714.5	23.46	22.88	21.95	/	18.91	18.33	17.40	/
		707.5	23.34	23	21.74	/	18.79	18.45	17.19	/
		700.5	23.74	22.82	21.53	/	19.19	18.27	16.98	/
5MHz	1 RB high	713.5	24.04	23.35	22.37	/	19.49	18.80	17.82	/
		707.5	24.11	22.41	21.47	/	19.56	17.86	16.92	/
		701.5	23.58	23.41	22.27	/	19.03	18.86	17.72	/
	1 RB low	713.5	24.13	22.57	22.28	/	19.58	18.02	17.73	/
		707.5	24.33	23.43	21.84	/	19.78	18.88	17.29	/
		701.5	23.39	22.57	22.35	/	18.84	18.02	17.80	/
	50% RB mid	713.5	23.71	22.98	21.63	/	19.16	18.43	17.08	/
		707.5	23.43	22.43	21.7	/	18.88	17.88	17.15	/
		701.5	23.57	22.38	21.74	/	19.02	17.83	17.19	/
	100% RB	713.5	23.31	22.84	21.36	/	18.76	18.29	16.81	/
		707.5	23.57	22.36	21.66	/	19.02	17.81	17.11	/
		701.5	23.81	22.88	21.71	/	19.26	18.33	17.16	/

10MH z	1 RB high	711	24.16	23.34	22.29	/	19.61	18.79	17.74	/
		707.5	24.15	23.35	22.31	/	19.60	18.80	17.76	/
		704	24.16	23.41	22.29	/	19.61	18.86	17.74	/
	1 RB low	711	24.19	23.45	22.42	/	19.64	18.90	17.87	/
		707.5	24.23	23.39	22.38	/	19.68	18.84	17.83	/
		704	24.2	23.37	22.36	/	19.65	18.82	17.81	/
	50% RB mid	711	23.3	22.31	21.27	/	18.75	17.76	16.72	/
		707.5	23.31	22.3	21.31	/	18.76	17.75	16.76	/
		704	23.31	22.29	21.29	/	18.76	17.74	16.74	/
	100% RB	711	23.31	22.31	21.31	/	18.76	17.76	16.76	/
		707.5	23.33	22.34	21.33	/	18.78	17.79	16.78	/
		704	23.33	22.32	21.3	/	18.78	17.77	16.75	/

LTE band 25- EIRP
Limits: ≤33dBm (2W)

Max ERP: 22.18dBm

Band width	RB size/offset	Frequency (MHz)	Conducted Power (dBm)				Radiated Power (dBm) GT = -1.76dBi			
			QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
1.4MHz	1 RB high	1914.3	23.94	22.28	21.06	/	22.18	20.52	19.30	/
		1882.5	23.05	22.8	21.28	/	21.29	21.04	19.52	/
		1850.7	23.44	22.7	21.11	/	21.68	20.94	19.35	/
	1 RB low	1914.3	23.27	22.39	21.44	/	21.51	20.63	19.68	/
		1882.5	23.27	22.56	21.71	/	21.51	20.80	19.95	/
		1850.7	23.91	23.03	21.12	/	22.15	21.27	19.36	/
	50% RB mid	1914.3	23.4	22.58	21.84	/	21.64	20.82	20.08	/
		1882.5	23.43	22.07	21.16	/	21.67	20.31	19.40	/
		1850.7	23	22.87	21.33	/	21.24	21.11	19.57	/
	100% RB	1914.3	23.86	22.81	21.27	/	22.10	21.05	19.51	/
		1882.5	23.04	22.38	21.97	/	21.28	20.62	20.21	/
		1850.7	23.39	22.79	21.61	/	21.63	21.03	19.85	/
3MHz	1 RB high	1913.5	23.53	22.58	21.98	/	21.77	20.82	20.22	/
		1882.5	23.71	22.48	21.56	/	21.95	20.72	19.80	/
		1851.5	23.58	22.82	22.14	/	21.82	21.06	20.38	/
	1 RB low	1913.5	23.68	22.31	21.14	/	21.92	20.55	19.38	/
		1882.5	23.14	22.99	22.05	/	21.38	21.23	20.29	/
		1851.5	23.57	22.26	21.3	/	21.81	20.50	19.54	/
	50% RB mid	1913.5	23.54	22.36	21.26	/	21.78	20.60	19.50	/
		1882.5	23.09	22.08	20.92	/	21.33	20.32	19.16	/
		1851.5	23.9	22.16	20.94	/	22.14	20.40	19.18	/
	100% RB	1913.5	23.41	22.19	21.75	/	21.65	20.43	19.99	/
		1882.5	23.67	22.5	21.93	/	21.91	20.74	20.17	/
		1851.5	23.24	22.4	21.41	/	21.48	20.64	19.65	/
5MHz	1 RB high	1912.5	23.85	22.42	21.26	/	22.09	20.66	19.50	/
		1882.5	23.63	22.18	22.12	/	21.87	20.42	20.36	/
		1852.5	23.62	23.1	21.17	/	21.86	21.34	19.41	/
	1 RB low	1912.5	23.81	22.98	22.08	/	22.05	21.22	20.32	/
		1882.5	23.07	23.17	21.22	/	21.31	21.41	19.46	/
		1852.5	23.87	22.68	21.37	/	22.11	20.92	19.61	/
	50% RB mid	1912.5	23.78	22.86	21.53	/	22.02	21.10	19.77	/
		1882.5	23.28	22.95	21.4	/	21.52	21.19	19.64	/
		1852.5	23.83	22.45	21.98	/	22.07	20.69	20.22	/
	100% RB	1912.5	23.71	22.58	20.95	/	21.95	20.82	19.19	/
		1882.5	23.21	22.88	21.51	/	21.45	21.12	19.75	/
		1852.5	22.96	22.14	21.15	/	21.20	20.38	19.39	/

10MH z	1 RB high	1910	23.68	22.39	21.92	/	21.92	20.63	20.16	/
		1882.5	23.55	23.11	21.84	/	21.79	21.35	20.08	/
		1855	23.81	22.3	21.19	/	22.05	20.54	19.43	/
	1 RB low	1910	23.81	22.19	22.03	/	22.05	20.43	20.27	/
		1882.5	23.59	22.79	21.91	/	21.83	21.03	20.15	/
		1855	23.5	22.74	22.07	/	21.74	20.98	20.31	/
	50% RB mid	1910	23.18	22.25	21.62	/	21.42	20.49	19.86	/
		1882.5	23.49	22.85	21.88	/	21.73	21.09	20.12	/
		1855	23.77	22.98	21.05	/	22.01	21.22	19.29	/
	100 % RB	1910	23.02	22.89	21.68	/	21.26	21.13	19.92	/
		1882.5	23.29	22.89	21.43	/	21.53	21.13	19.67	/
		1855	23.84	22.85	21.01	/	22.08	21.09	19.25	/
15MH z	1 RB high	1907.5	23.39	22.74	21.88	/	21.63	20.98	20.12	/
		1882.5	23.19	22.39	21.05	/	21.43	20.63	19.29	/
		1857.5	23.67	22.94	21.81	/	21.91	21.18	20.05	/
	1 RB low	1907.5	23.12	22.54	21.28	/	21.36	20.78	19.52	/
		1882.5	23.41	22.21	21.14	/	21.65	20.45	19.38	/
		1857.5	23.94	22.77	21.46	/	22.18	21.01	19.70	/
	50% RB mid	1907.5	23.68	22.87	21.66	/	21.92	21.11	19.90	/
		1882.5	23.1	22.25	21.91	/	21.34	20.49	20.15	/
		1857.5	23.1	21.94	21.86	/	21.34	20.18	20.10	/
	100 % RB	1907.5	23.9	21.94	21.61	/	22.14	20.18	19.85	/
		1882.5	23.6	21.94	21	/	21.84	20.18	19.24	/
		1857.5	23.39	21.88	21.95	/	21.63	20.12	20.19	/
20MH z	1 RB high	1905	23.58	22.81	21.7	/	21.82	21.05	19.94	/
		1882.5	23.57	22.85	21.79	/	21.81	21.09	20.03	/
		1860	23.6	22.96	21.83	/	21.84	21.20	20.07	/
	1 RB low	1905	23.62	22.83	21.72	/	21.86	21.07	19.96	/
		1882.5	23.67	22.95	21.84	/	21.91	21.19	20.08	/
		1860	23.7	22.92	21.85	/	21.94	21.16	20.09	/
	50% RB mid	1905	23.01	21.97	20.96	/	21.25	20.21	19.20	/
		1882.5	22.98	21.96	20.93	/	21.22	20.20	19.17	/
		1860	22.98	21.96	20.95	/	21.22	20.20	19.19	/
	100 % RB	1905	23	21.98	20.97	/	21.24	20.22	19.21	/
		1882.5	22.96	21.94	20.93	/	21.20	20.18	19.17	/
		1860	22.94	21.95	20.92	/	21.18	20.19	19.16	/

LTE Band 26(814MHz~824MHz)-ERP
Limits: ≤50dBm (100W)

Max ERP: 18.66dBm

Band width	RB size/offset	Frequency (MHz)	Conducted Power (dBm)				Radiated Power (dBm) GT = -3.49dBi			
			QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
1.4M Hz	1 RB high	823.3	24.25	23.19	22.11	/	18.61	17.55	16.47	/
		819	24.18	23.28	22.22	/	18.54	17.64	16.58	/
		814.7	24.18	23.12	22	/	18.54	17.48	16.36	/
	1 RB low	823.3	24.21	23.07	22.04	/	18.57	17.43	16.40	/
		819	24.18	23.28	22.25	/	18.54	17.64	16.61	/
		814.7	24.22	23.09	21.96	/	18.58	17.45	16.32	/
	50% RB mid	823.3	24.26	23.39	22.33	/	18.62	17.75	16.69	/
		819	24.26	23.42	22.18	/	18.62	17.78	16.54	/
		814.7	24.18	23.31	22.14	/	18.54	17.67	16.50	/
	100% RB	823.3	23.26	22.38	21.32	/	17.62	16.74	15.68	/
		819	23.22	22.14	21.53	/	17.58	16.50	15.89	/
		814.7	23.25	22.31	21.18	/	17.61	16.67	15.54	/
3MHz	1 RB high	822.5	24.25	23.18	22.03	/	18.61	17.54	16.39	/
		819	24.19	23.17	21.98	/	18.55	17.53	16.34	/
		815.5	24.2	23.14	21.98	/	18.56	17.50	16.34	/
	1 RB low	822.5	24.2	23.21	22.08	/	18.56	17.57	16.44	/
		819	24.18	23.21	22.09	/	18.54	17.57	16.45	/
		815.5	24.3	23.16	22.04	/	18.66	17.52	16.40	/
	50% RB mid	822.5	23.18	22.24	21.14	/	17.54	16.60	15.50	/
		819	23.17	22.24	21.15	/	17.53	16.60	15.51	/
		815.5	23.16	22.2	21.12	/	17.52	16.56	15.48	/
	100% RB	822.5	23.22	22.18	21.25	/	17.58	16.54	15.61	/
		819	23.19	22.13	21.26	/	17.55	16.49	15.62	/
		815.5	23.19	22.14	21.24	/	17.55	16.50	15.60	/
5MHz	1 RB high	821.5	24.15	23.18	22.26	/	18.51	17.54	16.62	/
		819	24.13	23.19	22.23	/	18.49	17.55	16.59	/
		816.5	24.12	23.19	22.26	/	18.48	17.55	16.62	/
	1 RB low	821.5	24.06	23.15	22.21	/	18.42	17.51	16.57	/
		819	24.06	23.12	22.19	/	18.42	17.48	16.55	/
		816.5	24.14	23.1	22.18	/	18.50	17.46	16.54	/
	50% RB mid	821.5	23.19	22.26	21.24	/	17.55	16.62	15.60	/
		819	23.24	22.25	21.32	/	17.60	16.61	15.68	/
		816.5	23.25	22.26	21.32	/	17.61	16.62	15.68	/
	100% RB	821.5	23.15	22.12	21.2	/	17.51	16.48	15.56	/
		819	23.19	22.16	21.26	/	17.55	16.52	15.62	/
		816.5	23.25	22.23	21.28	/	17.61	16.59	15.64	/

10MH z	1 RB high	819	24.3	23.19	22.05	/	18.66	17.55	16.41	/
	1 RB low	819	24.29	23.19	22.06	/	18.65	17.55	16.42	/
	50% RB mid	819	24.3	23.18	22.06	/	18.66	17.54	16.42	/
	100% RB	819	24.26	23.11	22.01	/	18.62	17.47	16.37	/

LTE band 26(824MHz~849MHz)- ERP
Limits: ≤38.45dBm (7W)

Max ERP: 18.77dBm

Band width	RB size/offset	Frequency (MHz)	Conducted Power (dBm)				Radiated Power (dBm) GT = -3.49dBi			
			QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
1.4M Hz	1 RB high	848.3	24.39	23.35	22.21	/	18.75	17.71	16.57	/
		836.5	24.41	23.33	22.21	/	18.77	17.69	16.57	/
		824.7	24.4	23.36	22.66	/	18.76	17.72	17.02	/
	1 RB low	848.3	24.37	23.31	22.21	/	18.73	17.67	16.57	/
		836.5	24.35	23.3	22.17	/	18.71	17.66	16.53	/
		824.7	24.36	23.33	22.62	/	18.72	17.69	16.98	/
	50% RB mid	848.3	24.35	23.51	22.33	/	18.71	17.87	16.69	/
		836.5	24.34	23.45	22.25	/	18.70	17.81	16.61	/
		824.7	24.37	23.5	22.33	/	18.73	17.86	16.69	/
	100% RB	848.3	23.31	22.2	21.56	/	17.67	16.56	15.92	/
		836.5	23.26	22.15	21.55	/	17.62	16.51	15.91	/
		824.7	23.3	22.39	21.35	/	17.66	16.75	15.71	/
3MHz	1 RB high	847.5	24.34	23.27	22.11	/	18.70	17.63	16.47	/
		836.5	24.34	23.19	22.03	/	18.70	17.55	16.39	/
		825.5	24.32	23.24	22.13	/	18.68	17.60	16.49	/
	1 RB low	847.5	24.33	23.28	22.19	/	18.69	17.64	16.55	/
		836.5	24.29	23.25	22.14	/	18.65	17.61	16.50	/
		825.5	24.38	23.33	22.19	/	18.74	17.69	16.55	/
	50% RB mid	847.5	23.25	22.36	21.23	/	17.61	16.72	15.59	/
		836.5	23.24	22.34	21.19	/	17.60	16.70	15.55	/
		825.5	23.21	22.32	21.2	/	17.57	16.68	15.56	/
	100% RB	847.5	23.24	22.2	21.3	/	17.60	16.56	15.66	/
		836.5	23.2	22.14	21.25	/	17.56	16.50	15.61	/
		825.5	23.22	22.18	21.29	/	17.58	16.54	15.65	/
5MHz	1 RB high	846.5	24.19	23.21	22.32	/	18.55	17.57	16.68	/
		836.5	24.2	23.17	22.25	/	18.56	17.53	16.61	/
		826.5	24.17	23.23	22.34	/	18.53	17.59	16.70	/
	1 RB low	846.5	24.16	23.21	22.28	/	18.52	17.57	16.64	/
		836.5	24.14	23.22	22.29	/	18.50	17.58	16.65	/
		826.5	24.18	23.19	22.27	/	18.54	17.55	16.63	/
	50% RB mid	846.5	23.23	22.31	21.3	/	17.59	16.67	15.66	/
		836.5	23.16	22.32	21.24	/	17.52	16.68	15.60	/
		826.5	23.19	22.3	21.27	/	17.55	16.66	15.63	/
	100% RB	846.5	23.19	22.15	21.21	/	17.55	16.51	15.57	/
		836.5	23.17	22.12	21.19	/	17.53	16.48	15.55	/
		826.5	23.22	22.22	21.29	/	17.58	16.58	15.65	/

10MH z	1 RB high	844.0	24.34	23.25	22.14	/	18.70	17.61	16.50	/
		836.5	24.34	23.22	22.09	/	18.70	17.58	16.45	/
		829.0	24.27	23.23	22.11	/	18.63	17.59	16.47	/
	1 RB low	844.0	24.31	23.19	22.05	/	18.67	17.55	16.41	/
		836.5	24.24	23.21	22.08	/	18.60	17.57	16.44	/
		829.0	24.27	23.19	22.04	/	18.63	17.55	16.40	/
	50% RB mid	844.0	23.32	22.42	21.43	/	17.68	16.78	15.79	/
		836.5	23.09	22.33	21.22	/	17.45	16.69	15.58	/
		829.0	23.44	22.39	21.54	/	17.80	16.75	15.90	/
	100% RB	844.0	23.32	22.35	21.38	/	17.68	16.71	15.74	/
		836.5	23.08	22.14	21.15	/	17.44	16.50	15.51	/
		829.0	23.43	22.45	21.47	/	17.79	16.81	15.83	/
15MH z	1 RB high	841.5	24.25	23.47	22.49	/	18.61	17.83	16.85	/
		836.5	24.22	23.50	22.50	/	18.58	17.86	16.86	/
		831.5	24.25	23.38	22.39	/	18.61	17.74	16.75	/
	1 RB low	841.5	24.18	23.48	22.49	/	18.54	17.84	16.85	/
		836.5	24.16	23.53	22.50	/	18.52	17.89	16.86	/
		831.5	24.19	23.43	22.42	/	18.55	17.79	16.78	/
	50% RB mid	841.5	23.43	22.29	21.38	/	17.79	16.65	15.74	/
		836.5	23.29	22.22	21.16	/	17.65	16.58	15.52	/
		831.5	23.38	22.26	21.34	/	17.74	16.62	15.70	/
	100% RB	841.5	23.45	22.36	21.43	/	17.81	16.72	15.79	/
		836.5	23.19	22.11	21.20	/	17.55	16.47	15.56	/
		831.5	23.36	22.32	21.35	/	17.72	16.68	15.71	/

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

Max EIRP: 24.70dBm

Band width	RB size/offset	Frequency (MHz)	Conducted Power (dBm)				Radiated Power (dBm) GT = -1.2dBi			
			QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
5MHz	1 RB high	2687.5	25.47	24.62	23.46	/	24.27	23.42	22.26	/
		2593	25.37	24.5	23.32	/	24.17	23.30	22.12	/
		2498.5	25.75	24.89	23.7	/	24.55	23.69	22.50	/
	1 RB low	2687.5	25.45	24.6	23.41	/	24.25	23.40	22.21	/
		2593	25.37	24.52	23.31	/	24.17	23.32	22.11	/
		2498.5	25.74	24.86	23.66	/	24.54	23.66	22.46	/
	50% RB mid	2687.5	24.7	23.65	22.74	/	23.50	22.45	21.54	/
		2593	24.55	23.52	22.58	/	23.35	22.32	21.38	/
		2498.5	24.93	23.88	22.98	/	23.73	22.68	21.78	/
	100% RB	2687.5	24.62	23.64	22.72	/	23.42	22.44	21.52	/
		2593	24.51	23.49	22.56	/	23.31	22.29	21.36	/
		2498.5	24.86	23.86	22.93	/	23.66	22.66	21.73	/
10MHz	1 RB high	2685	25.59	24.74	23.55	/	24.39	23.54	22.35	/
		2593	25.5	24.66	23.43	/	24.30	23.46	22.23	/
		2501	25.9	25.05	23.82	/	24.70	23.85	22.62	/
	1 RB low	2685	25.57	24.71	23.54	/	24.37	23.51	22.34	/
		2593	25.51	24.66	23.43	/	24.31	23.46	22.23	/
		2501	25.88	24.97	23.77	/	24.68	23.77	22.57	/
	50% RB mid	2685	24.68	23.71	22.76	/	23.48	22.51	21.56	/
		2593	24.59	23.6	22.65	/	23.39	22.40	21.45	/
		2501	24.91	23.93	23.01	/	23.71	22.73	21.81	/
	100% RB	2685	24.76	23.77	22.76	/	23.56	22.57	21.56	/
		2593	24.64	23.65	22.63	/	23.44	22.45	21.43	/
		2501	24.97	23.98	22.99	/	23.77	22.78	21.79	/
15MHz	1 RB high	2682.5	25.42	24.61	23.45	/	24.22	23.41	22.25	/
		2593	25.38	24.55	23.36	/	24.18	23.35	22.16	/
		2503.5	25.77	24.94	23.75	/	24.57	23.74	22.55	/
	1 RB low	2682.5	25.37	24.55	23.38	/	24.17	23.35	22.18	/
		2593	25.39	24.55	23.35	/	24.19	23.35	22.15	/
		2503.5	25.73	24.89	23.71	/	24.53	23.69	22.51	/
	50% RB mid	2682.5	24.61	23.57	22.62	/	23.41	22.37	21.42	/
		2593	24.55	23.52	22.56	/	23.35	22.32	21.36	/
		2503.5	24.92	23.85	22.92	/	23.72	22.65	21.72	/
	100% RB	2682.5	24.58	23.61	22.63	/	23.38	22.41	21.43	/
		2593	24.53	23.56	22.58	/	23.33	22.36	21.38	/
		2503.5	24.89	23.91	22.95	/	23.69	22.71	21.75	/

20MHz z	1 RB high	2680	25.25	24.39	23.22	/	24.05	23.19	22.02	/
		2593	25.18	24.34	23.14	/	23.98	23.14	21.94	/
		2506	25.52	24.7	23.51	/	24.32	23.50	22.31	/
	1 RB low	2680	25.17	24.34	23.16	/	23.97	23.14	21.96	/
		2593	25.18	24.34	23.14	/	23.98	23.14	21.94	/
		2506	25.53	24.7	23.5	/	24.33	23.50	22.30	/
	50% RB mid	2680	24.59	23.59	22.6	/	23.39	22.39	21.40	/
		2593	24.5	23.55	22.57	/	23.30	22.35	21.37	/
		2506	24.89	23.9	22.94	/	23.69	22.70	21.74	/
	100% RB	2680	24.57	23.56	22.56	/	23.37	22.36	21.36	/
		2593	24.54	23.52	22.52	/	23.34	22.32	21.32	/
		2506	24.91	23.9	22.92	/	23.71	22.70	21.72	/

LTE band 66- EIRP
Limits: ≤30dBm (1W)

Max EIRP: 21.89dBm

Band width	RB size/offset	Frequency (MHz)	Conducted Power (dBm)				Radiated Power (dBm) GT = -2.26dBi			
			QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
1.4M Hz	1 RB high	1779.3	23.91	23.06	22.05	/	21.65	20.80	19.79	/
		1745	23.94	23.16	21.99	/	21.68	20.90	19.73	/
		1710.7	23.91	23.09	22.02	/	21.65	20.83	19.76	/
	1 RB low	1779.3	23.91	23.03	22.09	/	21.65	20.77	19.83	/
		1745	23.93	23.17	22.06	/	21.67	20.91	19.80	/
		1710.7	23.92	23.1	22	/	21.66	20.84	19.74	/
	50% RB mid	1779.3	24.07	23.02	22.17	/	21.81	20.76	19.91	/
		1745	24.15	22.99	22.14	/	21.89	20.73	19.88	/
		1710.7	24.07	22.94	22.08	/	21.81	20.68	19.82	/
	100% RB	1779.3	23.03	22.13	20.98	/	20.77	19.87	18.72	/
		1745	23.06	22.11	21.06	/	20.80	19.85	18.80	/
		1710.7	23.02	22.07	20.94	/	20.76	19.81	18.68	/
3MHz	1 RB high	1778.5	24.01	23.23	22.14	/	21.75	20.97	19.88	/
		1745	24.02	23.24	22.14	/	21.76	20.98	19.88	/
		1711.5	23.97	23.22	22.12	/	21.71	20.96	19.86	/
	1 RB low	1778.5	23.99	23.14	22.14	/	21.73	20.88	19.88	/
		1745	23.99	23.17	22.09	/	21.73	20.91	19.83	/
		1711.5	23.97	23.06	22.1	/	21.71	20.80	19.84	/
	50% RB mid	1778.5	23.08	22.1	21.11	/	20.82	19.84	18.85	/
		1745	23.07	22.09	21.1	/	20.81	19.83	18.84	/
		1711.5	23.04	22.04	21.1	/	20.78	19.78	18.84	/
	100% RB	1778.5	23.06	22.03	21.03	/	20.80	19.77	18.77	/
		1745	23.06	22.03	21.03	/	20.80	19.77	18.77	/
		1711.5	23.02	21.98	20.98	/	20.76	19.72	18.72	/
5MHz	1 RB high	1777.5	23.85	23.12	22.05	/	21.59	20.86	19.79	/
		1745	23.89	23.2	21.98	/	21.63	20.94	19.72	/
		1712.5	23.87	23	21.98	/	21.61	20.74	19.72	/
	1 RB low	1777.5	23.9	23.14	22.04	/	21.64	20.88	19.78	/
		1745	23.92	23.16	21.98	/	21.66	20.90	19.72	/
		1712.5	23.88	23.03	21.99	/	21.62	20.77	19.73	/
	50% RB mid	1777.5	23.11	22.08	21.09	/	20.85	19.82	18.83	/
		1745	23.1	22.06	21.13	/	20.84	19.80	18.87	/
		1712.5	23.08	22	21.06	/	20.82	19.74	18.80	/
	100% RB	1777.5	23.09	22.07	21.08	/	20.83	19.81	18.82	/
		1745	23.06	22.03	21.04	/	20.80	19.77	18.78	/
		1712.5	23.03	22.01	21.02	/	20.77	19.75	18.76	/

10MH z	1 RB high	1775	23.98	23.1	22.08	/	21.72	20.84	19.82	/
		1745	23.95	23.15	22.12	/	21.69	20.89	19.86	/
		1715	23.91	23.05	22.12	/	21.65	20.79	19.86	/
	1 RB low	1775	23.98	23.21	22.12	/	21.72	20.95	19.86	/
		1745	23.99	23.16	22.13	/	21.73	20.90	19.87	/
		1715	23.93	23.07	22.07	/	21.67	20.81	19.81	/
	50% RB mid	1775	23.12	22.1	21.11	/	20.86	19.84	18.85	/
		1745	23.12	22.09	21.1	/	20.86	19.83	18.84	/
		1715	23.08	22.03	21.05	/	20.82	19.77	18.79	/
	100% RB	1775	23.12	22.05	21.08	/	20.86	19.79	18.82	/
		1745	23.08	22.05	21.07	/	20.82	19.79	18.81	/
		1715	23.08	21.99	21.03	/	20.82	19.73	18.77	/
15MH z	1 RB high	1772.5	23.88	23.17	22.04	/	21.62	20.91	19.78	/
		1745	23.92	23.08	22.03	/	21.66	20.82	19.77	/
		1717.5	23.89	23.14	22.05	/	21.63	20.88	19.79	/
	1 RB low	1772.5	23.94	23.07	22.08	/	21.68	20.81	19.82	/
		1745	23.92	23.01	22.06	/	21.66	20.75	19.80	/
		1717.5	23.9	23.1	22.04	/	21.64	20.84	19.78	/
	50% RB mid	1772.5	23.13	22.08	21.09	/	20.87	19.82	18.83	/
		1745	23.12	22.05	21.1	/	20.86	19.79	18.84	/
		1717.5	23.07	22.02	21.07	/	20.81	19.76	18.81	/
	100% RB	1772.5	23.09	22.04	21.07	/	20.83	19.78	18.81	/
		1745	23.09	22.05	21.07	/	20.83	19.79	18.81	/
		1717.5	23.02	21.98	20.99	/	20.76	19.72	18.73	/
20MH z	1 RB high	1770	23.62	22.88	21.74	/	21.36	20.62	19.48	/
		1745	23.72	22.99	21.9	/	21.46	20.73	19.64	/
		1720	23.69	22.82	21.87	/	21.43	20.56	19.61	/
	1 RB low	1770	23.68	22.86	21.82	/	21.42	20.60	19.56	/
		1745	23.74	23.01	21.78	/	21.48	20.75	19.52	/
		1720	23.71	22.94	21.88	/	21.45	20.68	19.62	/
	50% RB mid	1770	23.08	22.03	21.07	/	20.82	19.77	18.81	/
		1745	23.09	22.06	21.11	/	20.83	19.80	18.85	/
		1720	23.05	22	21.02	/	20.79	19.74	18.76	/
	100% RB	1770	23.12	21.98	20.99	/	20.86	19.72	18.73	/
		1745	23.1	22.05	21.05	/	20.84	19.79	18.79	/
		1720	22.98	21.92	20.97	/	20.72	19.66	18.71	/

LTE band 71- ERP
Limits: ≤34.77dBm (3W)

Max EIRP: 16.36dBm

Band width	RB size/offset	Frequency (MHz)	Conducted Power (dBm)				Radiated Power (dBm) GT = -4.8dBi			
			QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
5MHz	1 RB high	695.5	23.15	21.99	20.54	/	16.20	15.04	13.59	/
		680.5	22.65	21.68	20.65	/	15.70	14.73	13.70	/
		665.5	23.16	21.8	21.01	/	16.21	14.85	14.06	/
	1 RB low	695.5	23.08	21.99	21.46	/	16.13	15.04	14.51	/
		680.5	23.12	22	20.83	/	16.17	15.05	13.88	/
		665.5	23.1	21.92	20.96	/	16.15	14.97	14.01	/
	50% RB mid	695.5	22.86	22.11	20.92	/	15.91	15.16	13.97	/
		680.5	23.07	21.19	21.45	/	16.12	14.24	14.50	/
		665.5	22.46	22	21.47	/	15.51	15.05	14.52	/
	100% RB	695.5	22.8	21.93	20.8	/	15.85	14.98	13.85	/
		680.5	22.31	22.37	20.53	/	15.36	15.42	13.58	/
		665.5	23.06	22.19	21.32	/	16.11	15.24	14.37	/
10MHz	1 RB high	693	23.11	21.96	21.13	/	16.16	15.01	14.18	/
		680.5	23.24	22.36	21.08	/	16.29	15.41	14.13	/
		668	23.08	22.3	21.25	/	16.13	15.35	14.30	/
	1 RB low	693	23.16	21.76	20.7	/	16.21	14.81	13.75	/
		680.5	22.97	21.82	21.44	/	16.02	14.87	14.49	/
		668	22.92	21.63	20.59	/	15.97	14.68	13.64	/
	50% RB mid	693	22.93	21.5	20.17	/	15.98	14.55	13.22	/
		680.5	22.21	21.57	20.24	/	15.26	14.62	13.29	/
		668	22.58	21.18	20.24	/	15.63	14.23	13.29	/
	100% RB	693	22.53	21.39	20.49	/	15.58	14.44	13.54	/
		680.5	23.31	21.57	21.29	/	16.36	14.62	14.34	/
		668	22.78	22.12	20.37	/	15.83	15.17	13.42	/
15MHz	1 RB high	690.5	22.97	21.83	21.11	/	16.02	14.88	14.16	/
		680.5	22.92	21.64	20.55	/	15.97	14.69	13.60	/
		670.5	22.91	21.81	20.98	/	15.96	14.86	14.03	/
	1 RB low	690.5	23.22	21.82	21.18	/	16.27	14.87	14.23	/
		680.5	22.89	22.33	21.47	/	15.94	15.38	14.52	/
		670.5	23.26	21.84	20.62	/	16.31	14.89	13.67	/
	50% RB mid	690.5	22.22	22.29	21.36	/	15.27	15.34	14.41	/
		680.5	22.98	22.47	20.89	/	16.03	15.52	13.94	/
		670.5	22.24	22.23	20.87	/	15.29	15.28	13.92	/
	100% RB	690.5	23.18	21.35	20.33	/	16.23	14.40	13.38	/
		680.5	22.58	21.51	20.79	/	15.63	14.56	13.84	/
		670.5	23.11	21.43	21.06	/	16.16	14.48	14.11	/

20MHz z	1 RB high	688	22.91	22.13	21.11	/	15.96	15.18	14.16	/
		680.5	22.88	22.15	21.07	/	15.93	15.20	14.12	/
		673	22.95	22.1	21.07	/	16.00	15.15	14.12	/
	1 RB low	688	22.96	22.23	21.06	/	16.01	15.28	14.11	/
		680.5	23.01	22.26	21.17	/	16.06	15.31	14.22	/
		673	23.03	22.23	21.2	/	16.08	15.28	14.25	/
	50% RB mid	688	22.34	21.32	20.3	/	15.39	14.37	13.35	/
		680.5	22.3	21.31	20.33	/	15.35	14.36	13.38	/
		673	22.35	21.35	20.39	/	15.40	14.40	13.44	/
	100% RB	688	22.68	21.65	20.63	/	15.73	14.70	13.68	/
		680.5	22.1	21.09	20.11	/	15.15	14.14	13.16	/
		673	22.64	21.62	20.71	/	15.69	14.67	13.76	/

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

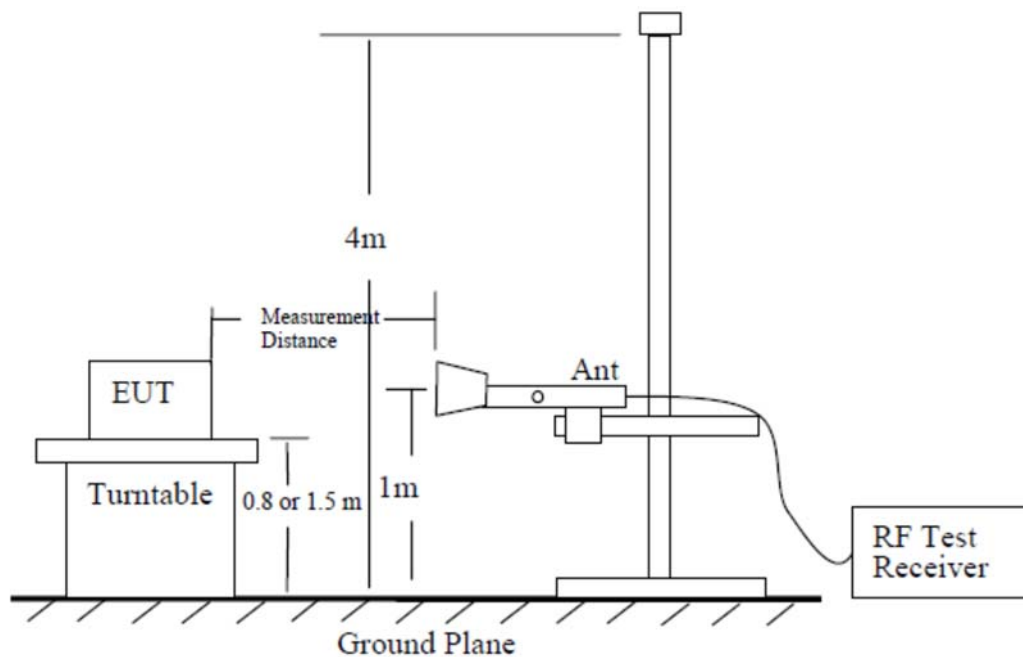
A.2 Emission Limit

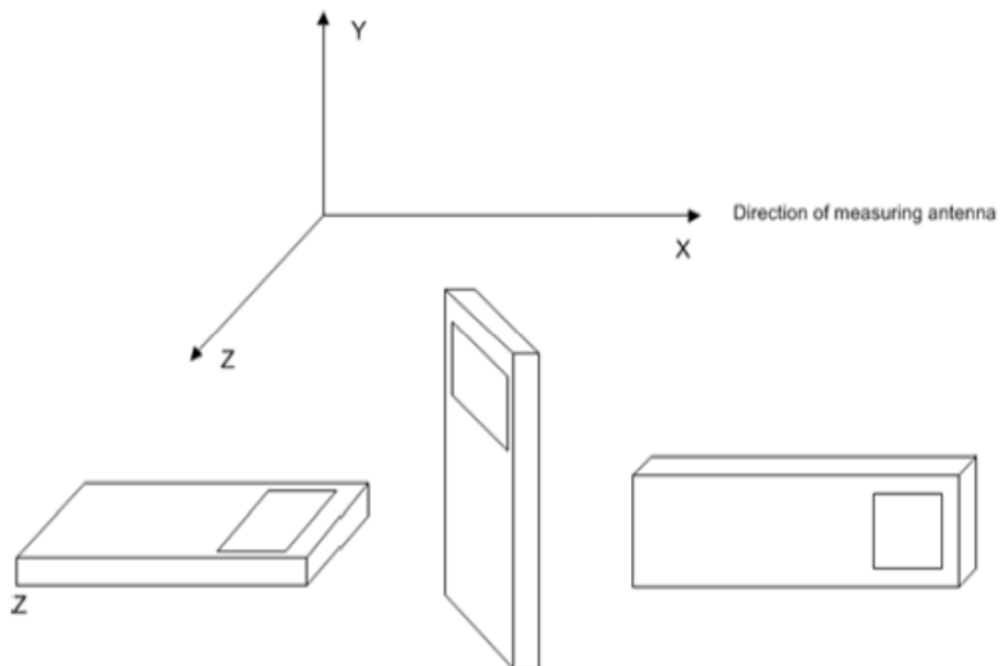
The measurements procedures in C63.26 are used.

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 the LTE Bands 12/25/26/41/66/71.

The procedure of radiated spurious emissions is as follows:

Using the test configuration as follow, measure the radiated emissions directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits.





The emission characteristics of the EUT can be identified from the pre-scan measurement information.

Exploratory radiated measurements (pre-scans) may be performed to determine the general EUT radiated emissions characteristics and, when necessary, the EUT-to-measurement antenna orientation that produces the maximum emission amplitude. Pre-scans shall only be used to determine the emission frequencies (i.e., not amplitude levels). The information garnered from a pre-scan can then be used to perform final compliance measurements using either the substitution or direct field strength method.

For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80 cm above the reference ground plane. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e., field strength or received power). When orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25 cm.

The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.

For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table or support at a nominal height of 1.5 m above the ground plane. When maximizing the emissions from the EUT for measurement, the EUT and its transmitting antenna(s) shall be rotated through 360°. For each mode of operation to be tested, the frequency spectrum (based on findings from exploratory measurements) shall be monitored. Final measurements shall be performed for the worst case combination(s) of variable technical parameters that result in the maximum measured emission amplitude, record the frequency and amplitude of the highest fundamental emission (if applicable), and the frequency and amplitude data for the six highest-amplitude spurious emissions.

A.2.2 Measurement Limit

FDD Band 12: 27.53(g) specifies " 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 25/2: 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 26(824MHz-849MHz)/5 Part 22.917 specifies " Out of band emissions. 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."

LTE Band 26(814MHz~824MHz): Part 90.691 specifies "For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz. For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz."

FDD Band 66/4: 27.53(h) specifies "AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB"

FDD Band 41: 27.53(m) specifies " For BRS and EBS stations, the power of any emissions outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below. If a licensee has multiple contiguous channels, out-of-band emissions shall be measured from the upper and lower edges of the contiguous channels.

(4) 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 71: 27.53(g) specifies “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 band-width of 100 kilohertz or greater. How-ever, 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.”

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the LTE Bands. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the LTE Bands 12/25/26/41/66/71 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.

Measurement Results:
LTE Band 12, 1.4MHz, QPSK, Channel 23017

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1351.01	-58.44	3.18	7.31	2.15	-56.46	-13.00	43.46	H
2000.01	-52.50	4.05	7.60	2.15	-51.10	-13.00	38.10	H
2690.00	-48.49	4.78	9.80	2.15	-45.62	-13.00	32.62	H
3360.02	-64.73	5.33	10.50	2.15	-61.71	-13.00	48.71	H
4007.02	-60.93	6.06	10.40	2.15	-58.74	-13.00	45.74	V
4699.02	-60.93	6.50	11.20	2.15	-58.38	-13.00	45.38	H

LTE Band 12, 1.4MHz, QPSK, Channel 23095

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1415.01	-52.64	3.25	7.83	2.15	-50.21	-13.00	37.21	V
2123.00	-51.54	4.21	8.22	2.15	-49.68	-13.00	36.68	H
2823.00	-49.47	4.95	10.59	2.15	-45.98	-13.00	32.98	H
3525.02	-63.14	5.57	10.60	2.15	-60.26	-13.00	47.26	V
4247.02	-60.29	6.24	10.59	2.15	-58.09	-13.00	45.09	V
4954.01	-51.64	6.68	11.21	2.15	-49.26	-13.00	36.26	V

LTE Band 12, 1.4MHz, QPSK, Channel 23173

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1431.01	-48.71	3.28	7.86	2.15	-46.28	-13.00	33.28	V
2146.00	-49.75	4.24	8.54	2.15	-47.60	-13.00	34.60	H
2872.00	-48.69	4.97	10.74	2.15	-45.07	-13.00	32.07	H
3577.02	-63.45	6.10	10.60	2.15	-61.10	-13.00	48.10	H
4293.02	-58.41	6.20	10.77	2.15	-55.99	-13.00	42.99	H
5007.01	-49.07	6.59	11.31	2.15	-46.50	-13.00	33.50	H

LTE Band 25, 1.4MHz, QPSK, Channel 26047

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
7403.01	-51.60	8.13	10.11	-49.62	-13.00	36.62	H
9255.01	-44.96	9.05	11.69	-42.32	-13.00	29.32	H
11152.01	-52.29	9.61	12.75	-49.15	-13.00	36.15	H
13569.01	-49.98	10.78	12.50	-48.26	-13.00	35.26	H
14892.00	-51.40	11.18	14.07	-48.51	-13.00	35.51	H
17299.00	-47.45	12.37	13.80	-46.02	-13.00	33.02	H

LTE Band 25, 1.4MHz, QPSK, Channel 26365

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
7530.01	-50.13	8.27	10.30	-48.10	-13.00	35.10	H
9429.01	-53.24	9.18	11.66	-50.76	-13.00	37.76	H
11333.01	-52.22	10.02	12.77	-49.47	-13.00	36.47	V
13183.01	-49.21	10.57	12.62	-47.16	-13.00	34.16	V
15025.00	-52.78	11.25	14.53	-49.50	-13.00	36.50	H
16973.00	-50.57	12.27	13.95	-48.89	-13.00	35.89	H

LTE Band 25, 1.4MHz, QPSK, Channel 26683

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
7657.01	-44.90	8.23	10.53	-42.60	-13.00	29.60	H
9575.01	-50.40	9.27	11.90	-47.77	-13.00	34.77	H
11454.01	-52.50	9.93	12.70	-49.73	-13.00	36.73	H
13409.01	-51.40	10.57	12.41	-49.56	-13.00	36.56	V
15302.00	-53.80	11.28	15.00	-50.08	-13.00	37.08	V
17247.00	-47.61	12.36	13.69	-46.28	-13.00	33.28	H

LTE Band 26(824MHz~849MHz), 1.4MHz, QPSK, Channel 26797

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1650.01	-48.69	3.57	9.50	2.15	-44.91	-13.00	31.91	V
2474.00	-41.11	4.60	10.30	2.15	-37.56	-13.00	24.56	V
3299.02	-62.78	5.29	10.40	2.15	-59.82	-13.00	46.82	V
4125.02	-60.90	6.04	10.40	2.15	-58.69	-13.00	45.69	V
4944.01	-59.56	6.70	11.22	2.15	-57.19	-13.00	44.19	V
5754.01	-57.96	7.26	11.09	2.15	-56.28	-13.00	43.28	H

LTE Band 26(824MHz~849MHz), 1.4MHz, QPSK, Channel 26915

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673.01	-50.33	3.58	9.55	2.15	-46.51	-13.00	33.51	V
2510.00	-41.89	4.63	10.18	2.15	-38.49	-13.00	25.49	H
3346.02	-63.38	5.31	10.49	2.15	-60.35	-13.00	47.35	V
4183.02	-59.10	6.17	10.47	2.15	-56.95	-13.00	43.95	H
5007.01	-59.50	6.59	11.31	2.15	-56.93	-13.00	43.93	H
5840.01	-59.45	7.20	10.84	2.15	-57.96	-13.00	44.96	H

LTE Band 26(824MHz~849MHz), 1.4MHz, QPSK, Channel 27033

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1697.01	-52.16	3.60	9.59	2.15	-48.32	-13.00	35.32	V
2545.00	-44.05	4.66	10.11	2.15	-40.75	-13.00	27.75	V
3408.02	-63.75	5.37	10.48	2.15	-60.79	-13.00	47.79	H
4244.02	-54.89	6.25	10.59	2.15	-52.70	-13.00	39.70	V
5087.01	-60.11	6.74	11.47	2.15	-57.53	-13.00	44.53	H
5926.01	-57.96	7.47	10.50	2.15	-57.08	-13.00	44.08	V

LTE Band 26(814MHz~824MHz), 1.4MHz, QPSK, Channel 26697

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1629.01	-49.57	3.55	9.50	2.15	-45.77	-13.00	32.77	V
2444.00	-48.27	4.57	10.40	2.15	-44.59	-13.00	31.59	V
7351.01	-53.43	8.11	10.00	2.15	-53.69	-13.00	40.69	H
8143.01	-52.34	8.40	11.29	2.15	-51.60	-13.00	38.60	V
8950.00	-52.17	9.02	11.60	2.15	-51.74	-13.00	38.74	V
9773.00	-52.50	8.97	12.00	2.15	-51.62	-13.00	38.62	H

LTE Band 26(814MHz~824MHz), 1.4MHz, QPSK, Channel 26740

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1638.01	-45.60	3.56	9.50	2.15	-41.81	-13.00	28.81	V
2457.00	-44.24	4.58	10.37	2.15	-40.60	-13.00	27.60	V
3276.02	-59.70	5.28	10.35	2.15	-56.78	-13.00	43.78	H
4096.02	-58.46	6.04	10.40	2.15	-56.25	-13.00	43.25	V
4912.01	-59.92	6.73	11.35	2.15	-57.45	-13.00	44.45	V
5747.01	-57.83	7.27	11.11	2.15	-56.14	-13.00	43.14	H

LTE Band 26(814MHz~824MHz), 1.4MHz, QPSK, Channel 26783

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1647.01	-48.22	3.56	9.50	2.15	-44.43	-13.00	31.43	V
2470.00	-42.95	4.59	10.32	2.15	-39.37	-13.00	26.37	V
7534.01	-52.95	8.25	10.30	2.15	-53.05	-13.00	40.05	H
8050.01	-52.34	8.32	11.30	2.15	-51.51	-13.00	38.51	H
9103.00	-51.79	8.93	11.80	2.15	-51.07	-13.00	38.07	V
9999.00	-52.00	9.18	11.90	2.15	-51.43	-13.00	38.43	V

LTE Band 41, 5MHz, QPSK, Channel 39675

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4998.02	-52.25	6.61	11.30	-47.56	-25.00	22.56	H
7497.01	-42.06	8.39	10.29	-40.16	-25.00	15.16	H
9994.01	-47.85	9.18	11.91	-45.12	-25.00	20.12	H
12496.01	-50.87	10.18	13.30	-47.75	-25.00	22.75	H
14994.00	-53.90	11.21	14.48	-50.63	-25.00	25.63	H
17487.00	-45.20	12.69	13.05	-44.84	-25.00	19.84	H

LTE Band 41, 5MHz, QPSK, Channel 40620

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2593.00	14.33	4.70	9.84	19.47	-25.00	-44.47	H
3874.02	-64.44	6.09	10.40	-60.13	-25.00	35.13	H
5187.02	-54.52	6.94	11.67	-49.79	-25.00	24.79	H
6467.02	-58.62	7.54	10.77	-55.39	-25.00	30.39	H
7781.01	-45.36	8.31	10.82	-42.85	-25.00	17.85	H
9062.01	-54.69	9.04	11.80	-51.93	-25.00	26.93	H

LTE Band 41, 5MHz, QPSK, Channel 41565

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2688.00	18.73	4.78	9.80	23.75	-25.00	-48.75	H
4045.02	-62.44	6.05	10.40	-58.09	-25.00	33.09	V
5375.02	-54.81	6.88	11.45	-50.24	-25.00	25.24	H
6708.02	-56.89	7.98	10.32	-54.55	-25.00	29.55	V
8064.01	-28.24	8.32	11.27	-25.29	-25.00	0.29	H
9427.01	-54.14	9.17	11.65	-51.66	-25.00	26.66	V

LTE Band 66, 1.4MHz, QPSK, Channel 131979

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3422.02	-74.05	5.38	10.46	-68.97	-13.00	55.97	H
5130.02	-72.13	6.85	11.56	-67.42	-13.00	54.42	H
6845.01	-67.17	7.83	10.40	-64.60	-13.00	51.60	H
8596.01	-65.57	8.50	11.39	-62.68	-13.00	49.68	H
10241.01	-64.14	9.44	12.00	-61.58	-13.00	48.58	H
11921.01	-63.78	10.42	13.12	-61.08	-13.00	48.08	H

LTE Band 66, 1.4MHz, QPSK, Channel 132322

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3490.02	-73.89	5.50	10.56	-68.83	-13.00	55.83	H
5236.02	-72.00	7.00	11.70	-67.30	-13.00	54.30	H
6981.01	-65.73	8.15	10.40	-63.48	-13.00	50.48	V
8727.01	-64.74	8.44	11.30	-61.88	-13.00	48.88	H
10472.01	-63.13	9.69	12.17	-60.65	-13.00	47.65	H
12160.01	-63.58	10.17	13.28	-60.47	-13.00	47.47	H

LTE Band 66, 1.4MHz, QPSK, Channel 132665

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3559.02	-74.53	5.92	10.60	-69.85	-13.00	56.85	H
5340.02	-72.78	6.96	11.52	-68.22	-13.00	55.22	V
7120.01	-65.41	8.16	10.50	-63.07	-13.00	50.07	H
8899.01	-62.36	8.84	11.50	-59.70	-13.00	46.70	V
10719.01	-63.76	9.35	12.12	-60.99	-13.00	47.99	H
12460.01	-63.72	10.28	13.34	-60.66	-13.00	47.66	V

LTE Band 71, 5MHz, QPSK, Channel 133147

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1331.01	-53.05	3.15	7.19	2.15	-51.16	-13.00	38.16	V
1997.01	-45.05	4.04	7.64	2.15	-43.60	-13.00	30.60	H
2662.00	-48.49	4.75	9.80	2.15	-45.59	-13.00	32.59	H
3328.02	-62.07	5.30	10.46	2.15	-59.06	-13.00	46.06	H
4018.02	-60.36	6.05	10.40	2.15	-58.16	-13.00	45.16	V
4688.02	-61.94	6.50	11.18	2.15	-59.41	-13.00	46.41	H

LTE Band 71, 5MHz, QPSK, Channel 133297

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1361.01	-56.74	3.19	7.41	2.15	-54.67	-13.00	41.67	V
2042.00	-47.66	4.14	7.35	2.15	-46.60	-13.00	33.60	H
2735.00	-48.87	4.82	10.01	2.15	-45.83	-13.00	32.83	H
3414.02	-62.60	5.37	10.47	2.15	-59.65	-13.00	46.65	H
4080.02	-60.99	6.04	10.40	2.15	-58.78	-13.00	45.78	H
4752.01	-60.88	6.58	11.40	2.15	-58.21	-13.00	45.21	H

LTE Band 71, 5MHz, QPSK, Channel 133447

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1391.01	-54.54	3.22	7.71	2.15	-52.20	-13.00	39.20	V
2087.00	-48.47	4.18	7.74	2.15	-47.06	-13.00	34.06	H
2754.00	-49.69	4.85	10.13	2.15	-46.56	-13.00	33.56	H
3499.02	-62.82	5.52	10.60	2.15	-59.89	-13.00	46.89	V
4188.02	-59.95	6.18	10.48	2.15	-57.80	-13.00	44.80	H
4853.01	-60.29	6.72	11.40	2.15	-57.76	-13.00	44.76	H

Sample: 1391.01MHz

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

Power (-52.20dBm) = P_{Mea} (-54.54dBm) - P_{pl} (3.22dB) + G_a (7.71dBi)

Note: Expanded measurement uncertainty

Frequency range	Expanded measurement uncertainty
30MHz-1GHz	5.76dB, k=2
1GHz-18GHz	4.69dB, k=2
18GHz-40GHz	3.37dB, k=2

Note: The measurement results showed here are worst cases

A.3 Frequency Stability

A.3.1 Method of Measurement

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

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

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

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

A.3.2 Measurement results

LTE Band 12, 10MHz bandwidth QPSK (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	699.465	715.519		
50				2.98	0.0042
40				1.39	0.0020
30				2.59	0.0037
10				2.79	0.0039
0				2.50	0.0035
-10				1.65	0.0023
-20				2.36	0.0033
-30				4.73	0.0067

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	699.465	715.519	4.26	0.0060
4.4				4.99	0.0071

LTE Band 25, 20MHz bandwidth QPSK (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1850.833	1914.199		
50				-2.39	0.0013
40				-1.62	0.0009
30				-3.18	0.0017
10				-1.30	0.0007
0				-3.46	0.0018
-10				-2.37	0.0013
-20				-3.56	0.0019
-30				0.79	0.0004

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1850.833	1914.199	-4.94	0.0026
4.4				-0.73	0.0004

LTE Band 26(814MHz~824MHz), 10MHz bandwidth QPSK (worst case of all bandwidths)
Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	814.385	823.611		
50				3.40	0.0042
40				2.02	0.0025
30				3.43	0.0042
10				1.16	0.0014
0				4.92	0.0060
-10				3.91	0.0048
-20				7.01	0.0086
-30				6.88	0.0084

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	814.385	823.611	-0.43	0.0005
4.4				4.94	0.0060

LTE Band 26(824MHz~849MHz), 15MHz bandwidth QPSK (worst case of all bandwidths)
Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	824.553	848.471		
50				-0.21	0.0003
40				3.32	0.0040
30				0.93	0.0011
10				-1.03	0.0012
0				-1.34	0.0016
-10				-0.56	0.0007
-20				-1.52	0.0018
-30				2.13	0.0025

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	824.553	848.471	-0.53	0.0006
4.4				2.88	0.0034

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

Temperature(°C)	Voltage(V)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	2496.385	2689.487		
50				0.07	0.0000
40				-0.82	0.0003
30				2.86	0.0011
10				-1.44	0.0006
0				6.39	0.0025
-10				0.77	0.0003
-20				-2.92	0.0011
-30				-1.44	0.0006

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	2496.385	2689.487	2.12	0.0008
4.4				-0.30	0.0001

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

Temperature(°C)	Voltage(V)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1710.833	1779.199		
50				0.17	0.0001
40				-2.29	0.0013
30				-1.13	0.0006
10				-0.66	0.0004
0				0.59	0.0003
-10				0.17	0.0001
-20				0.70	0.0004
-30				-0.20	0.0001

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1710.833	1779.199	0.03	0.0000
4.4				1.82	0.0010

LTE Band 71, 20MHz bandwidth QPSK (worst case of all bandwidths)
Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	663.994	697.006		
50				-2.80	0.0041
40				-4.18	0.0061
30				-2.05	0.0030
10				-3.76	0.0055
0				-6.17	0.0091
-10				-6.22	0.0091
-20				-1.73	0.0025
-30				-5.18	0.0076

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	663.994	697.006	-2.65	0.0039
4.4				-3.72	0.0055

Note: Expanded measurement uncertainty is $U = 0.01$ PPM, $k = 2$.

A.4 Occupied Bandwidth

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

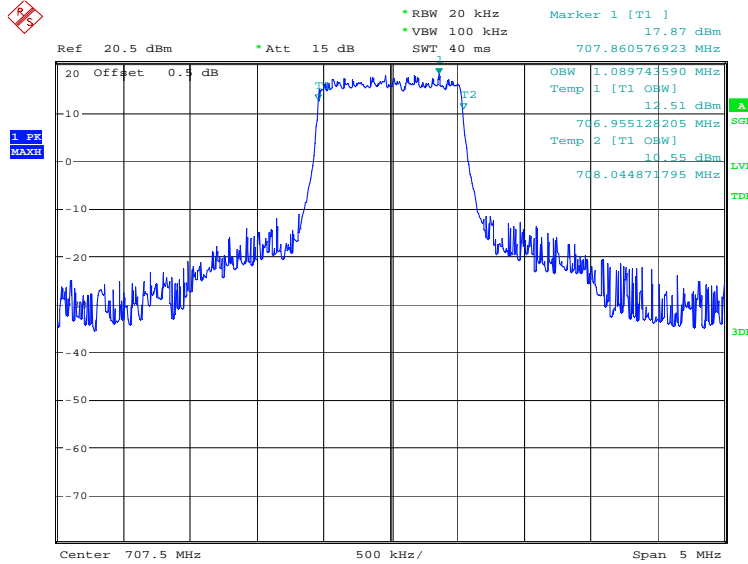
The measurement method is from ANSI C63.26:

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

LTE band 12, 1.4MHz (99%)

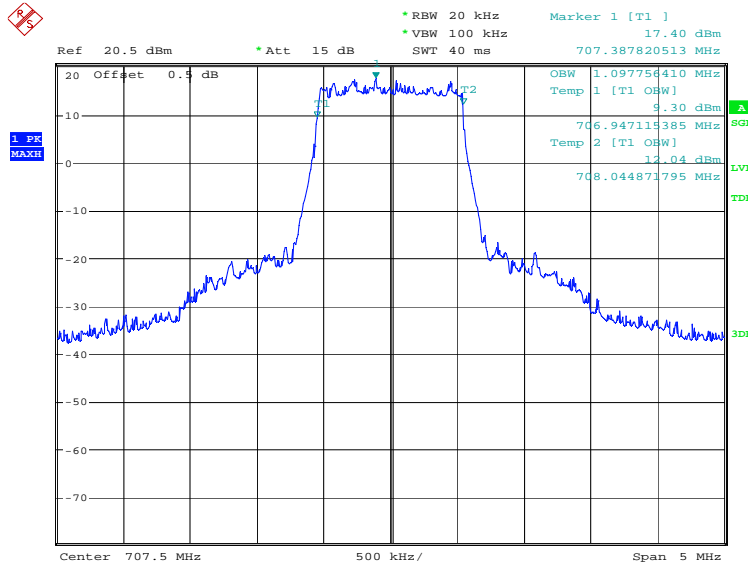
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	1089.74	1097.76

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



Date: 7.JUL.2023 09:19:35

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

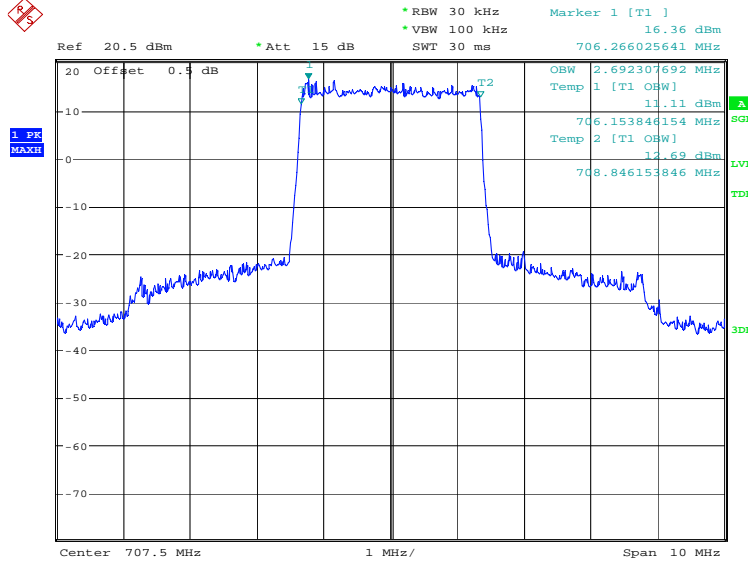


Date: 7.JUL.2023 09:20:15

LTE band 12, 3MHz (99%)

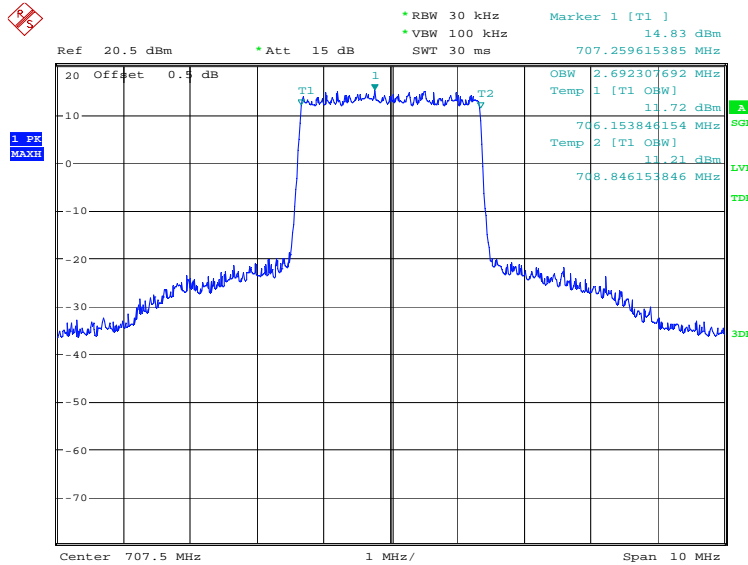
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 7.JUL.2023 09:20:57

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

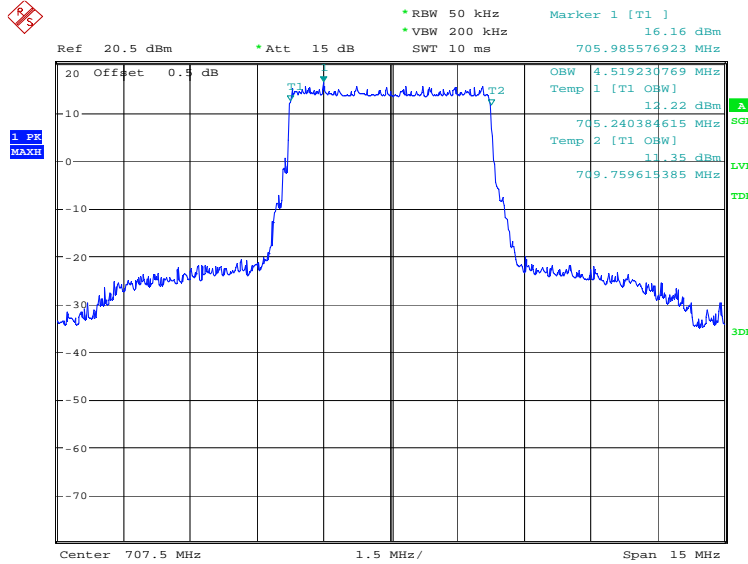


Date: 7.JUL.2023 09:21:37

LTE band 12, 5MHz (99%)

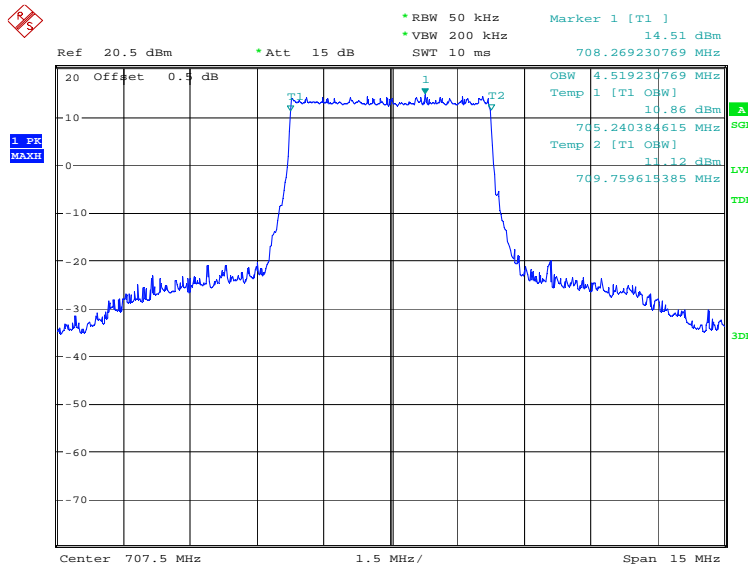
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	4519.23	4519.23

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



Date: 7.JUL.2023 09:22:19

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

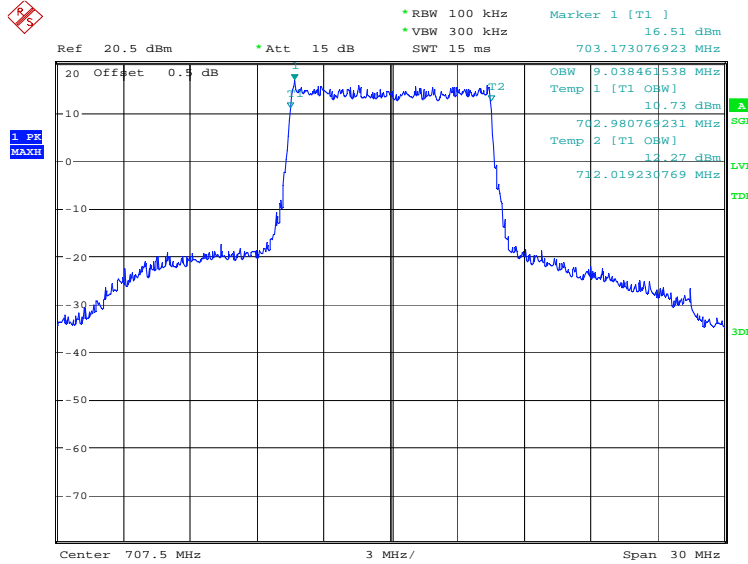


Date: 7.JUL.2023 09:22:59

LTE band 12, 10MHz (99%)

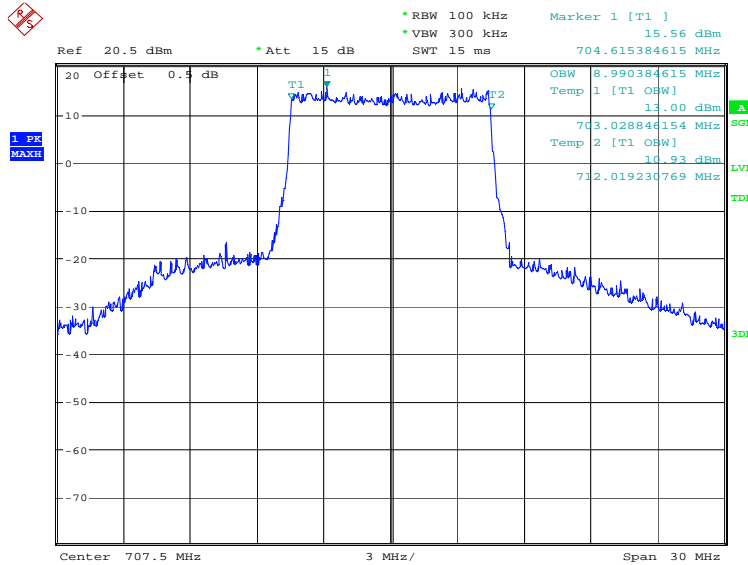
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	9038.46	8990.38

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



Date: 7.JUL.2023 09:23:41

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

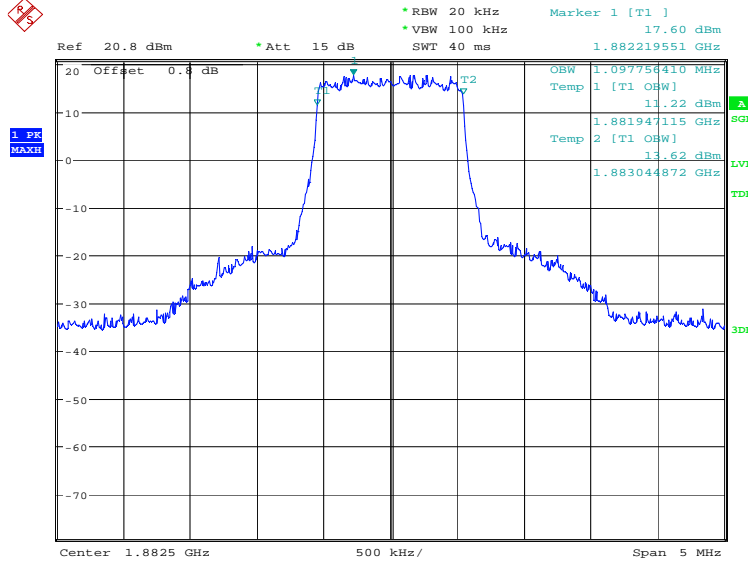


Date: 7.JUL.2023 09:24:21

LTE band 25, 1.4MHz (99%)

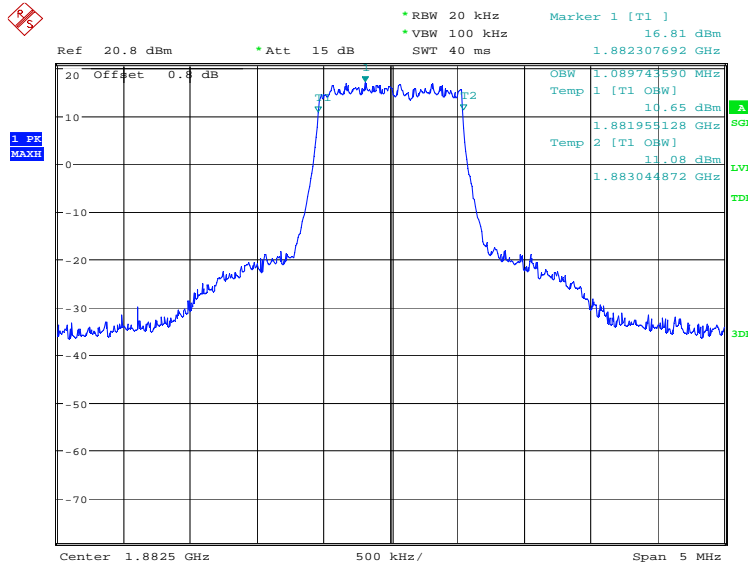
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	1097.76	1089.74

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



Date: 6.JUL.2023 18:34:49

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

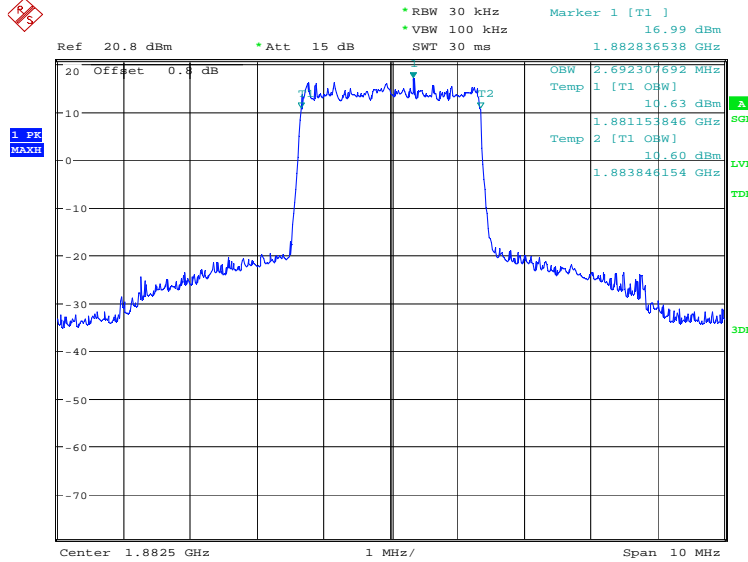


Date: 6.JUL.2023 18:35:30

LTE band 25, 3MHz (99%)

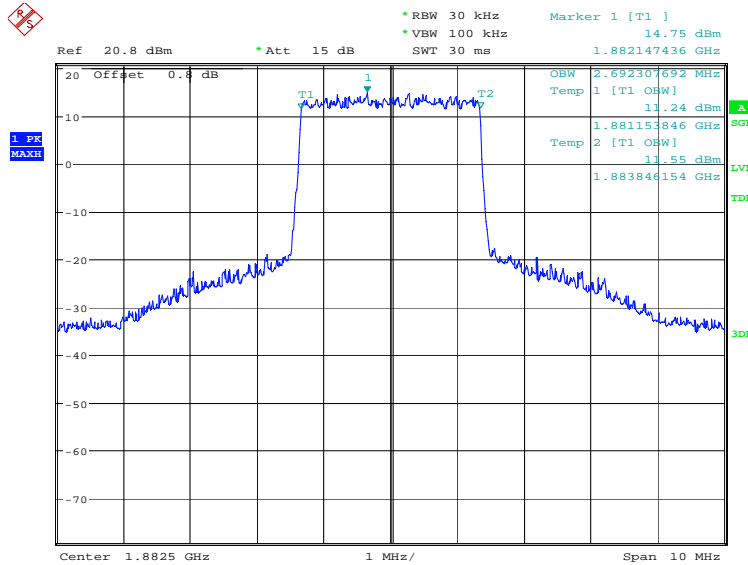
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 6.JUL.2023 18:36:12

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

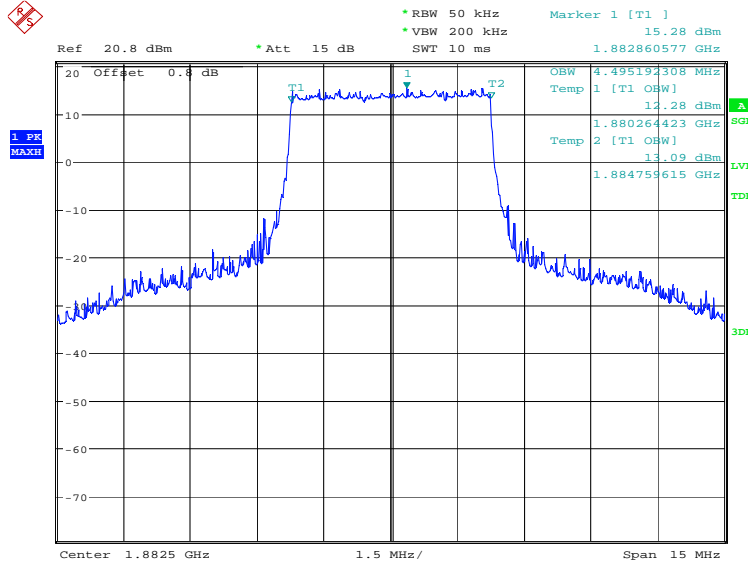


Date: 6.JUL.2023 18:36:52

LTE band 25, 5MHz (99%)

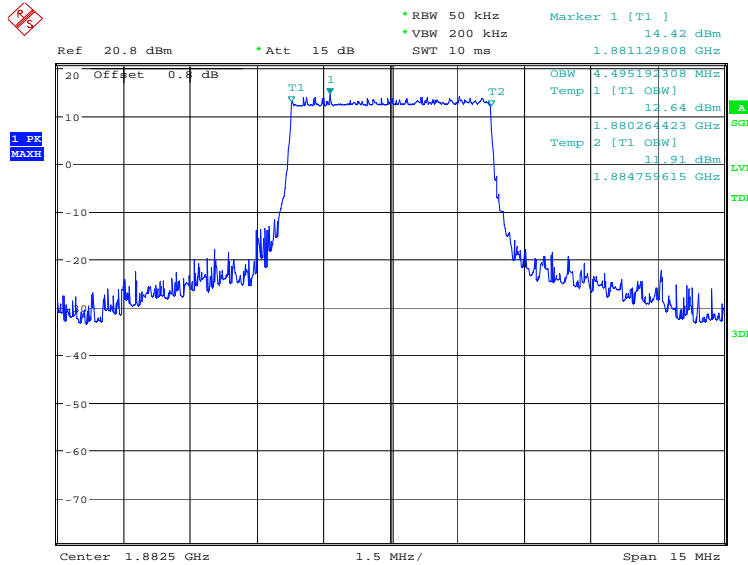
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	4495.19	4495.19

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



Date: 6.JUL.2023 18:37:34

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

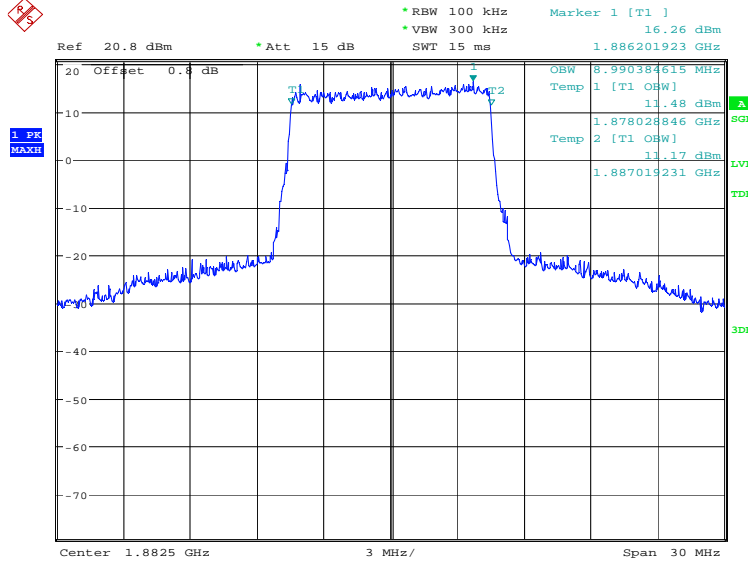


Date: 6.JUL.2023 18:38:14

LTE band 25, 10MHz (99%)

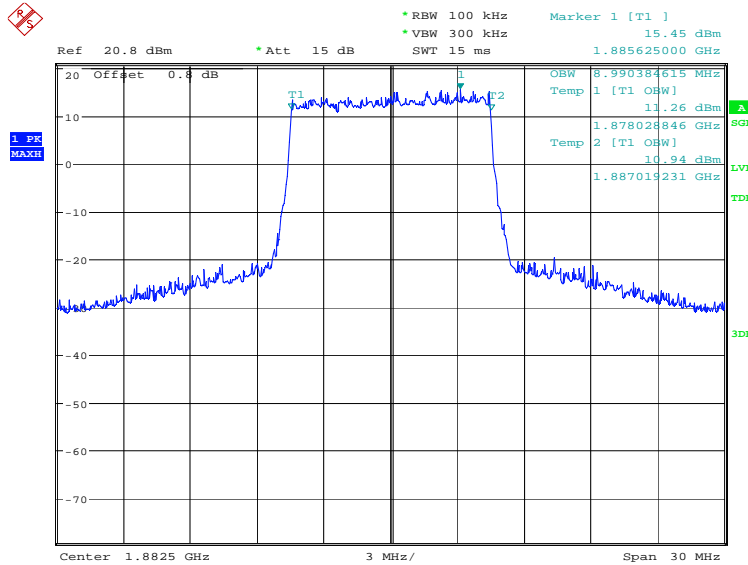
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	8990.38	8990.38

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



Date: 6.JUL.2023 18:38:56

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

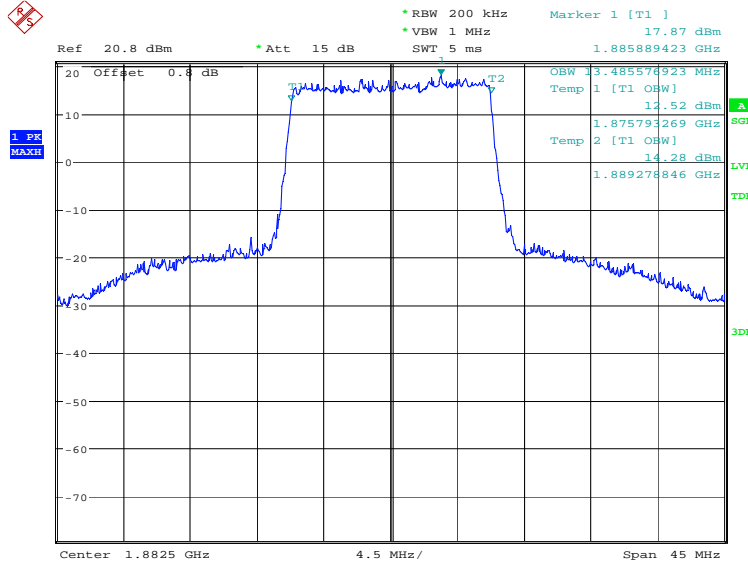


Date: 6.JUL.2023 18:39:37

LTE band 25, 15MHz (99%)

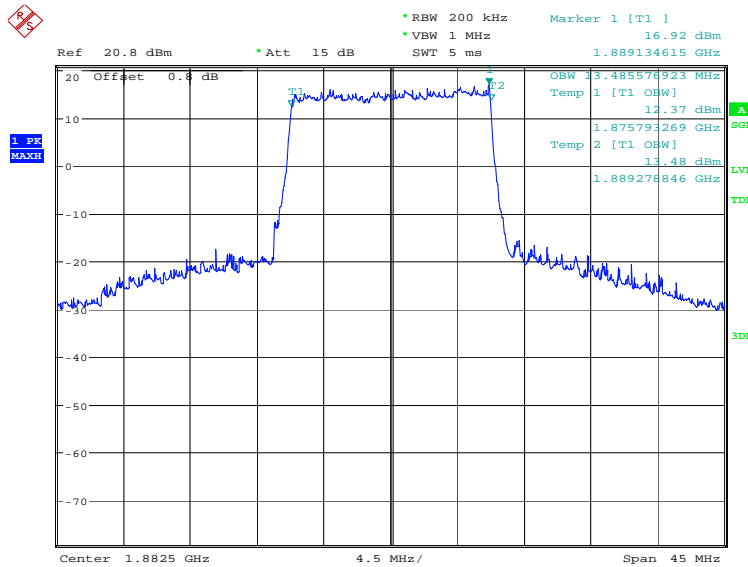
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	13485.58	13485.58

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



Date: 6.JUL.2023 18:40:19

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

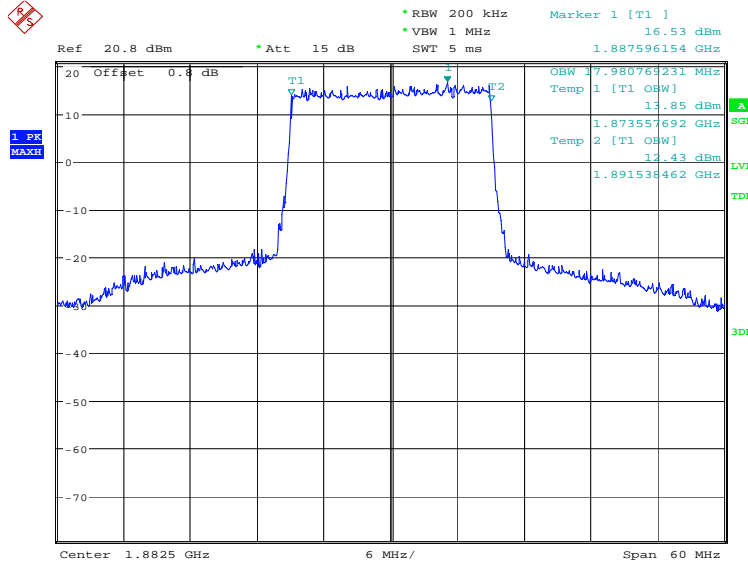


Date: 6.JUL.2023 18:40:59

LTE band 25, 20MHz (99%)

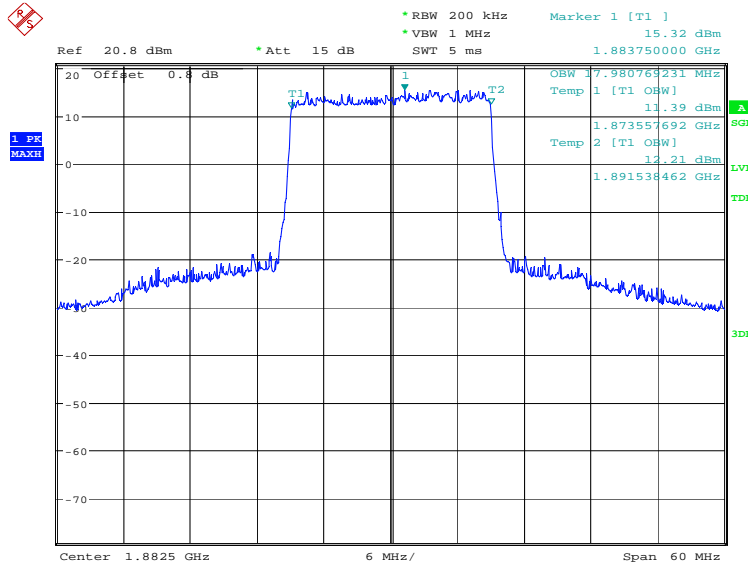
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	17980.77	17980.77

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



Date: 6.JUL.2023 18:41:41

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

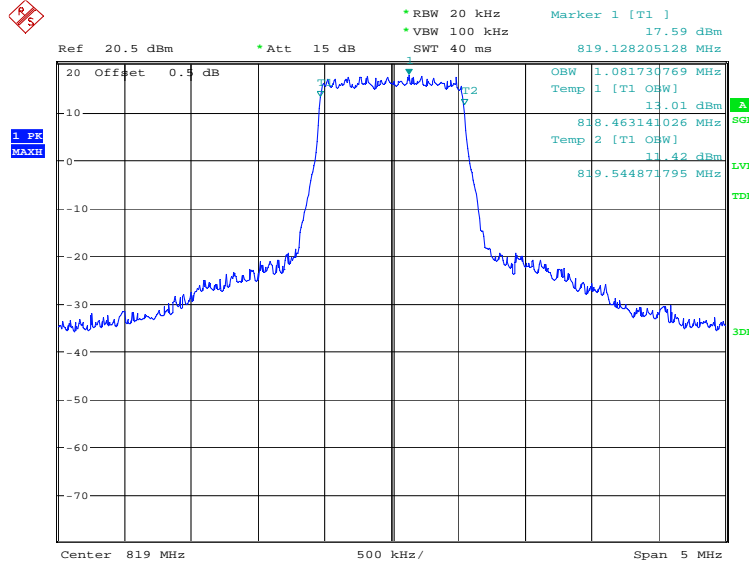


Date: 6.JUL.2023 18:42:21

LTE band 26(814MHz~824MHz), 1.4MHz (99%)

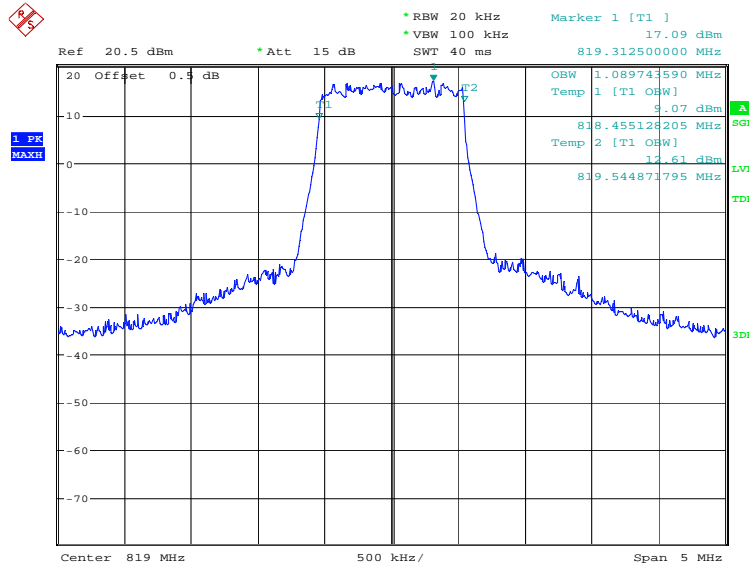
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	1081.73	1089.74

LTE band 26(814MHz~824MHz), 1.4MHz Bandwidth, QPSK (99% BW)



Date: 7.JUL.2023 09:32:36

LTE band 26(814MHz~824MHz), 1.4MHz Bandwidth, 16QAM (99% BW)

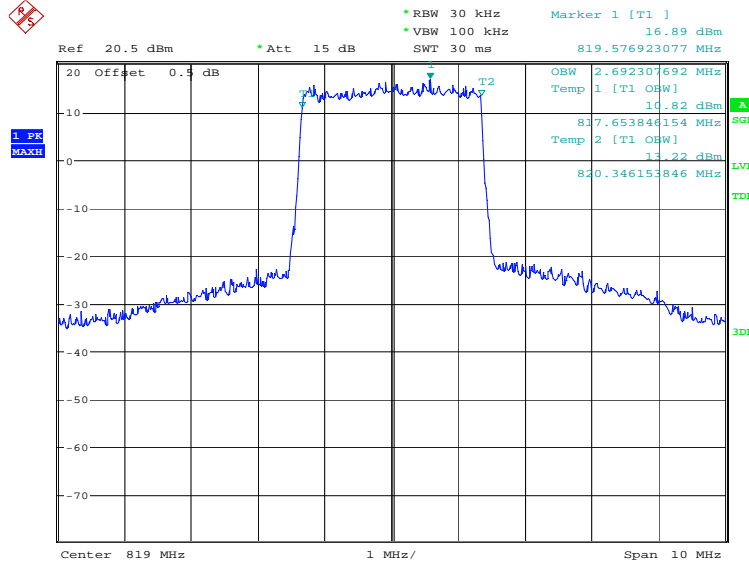


Date: 7.JUL.2023 09:33:16

LTE band 26(814MHz~824MHz), 3MHz (99%)

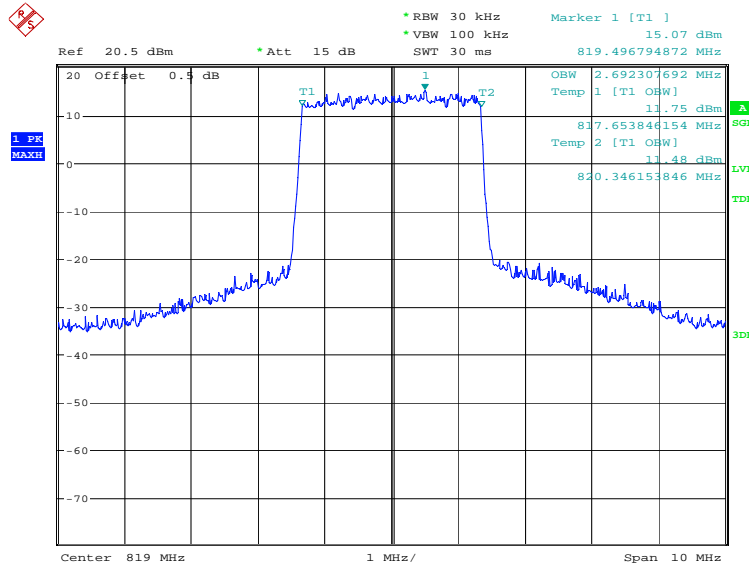
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	2692.31	2692.31

LTE band 26(814MHz~824MHz), 3MHz Bandwidth, QPSK (99% BW)



Date: 7.JUL.2023 09:33:58

LTE band 26(814MHz~824MHz), 3MHz Bandwidth, 16QAM (99% BW)

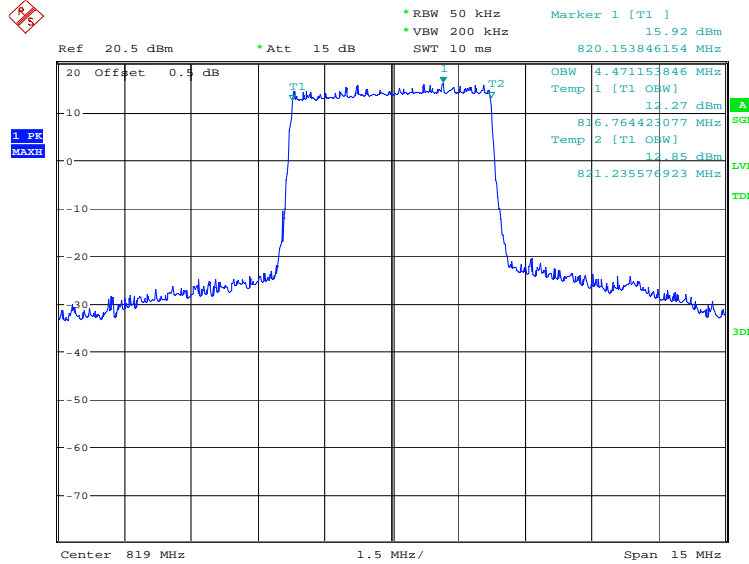


Date: 7.JUL.2023 09:34:38

LTE band 26(814MHz~824MHz), 5MHz (99%)

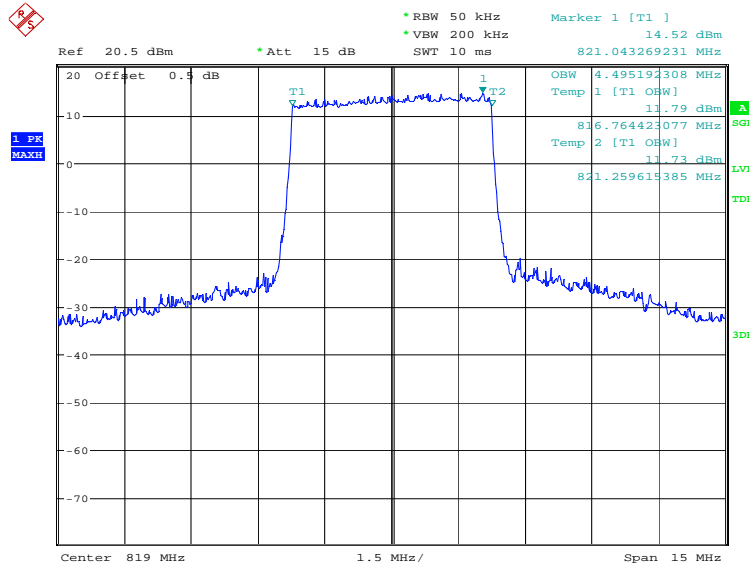
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	4471.15	4495.19

LTE band 26(814MHz~824MHz), 5MHz Bandwidth, QPSK (99% BW)



Date: 7.JUL.2023 09:35:20

LTE band 26(814MHz~824MHz), 5MHz Bandwidth, 16QAM (99% BW)

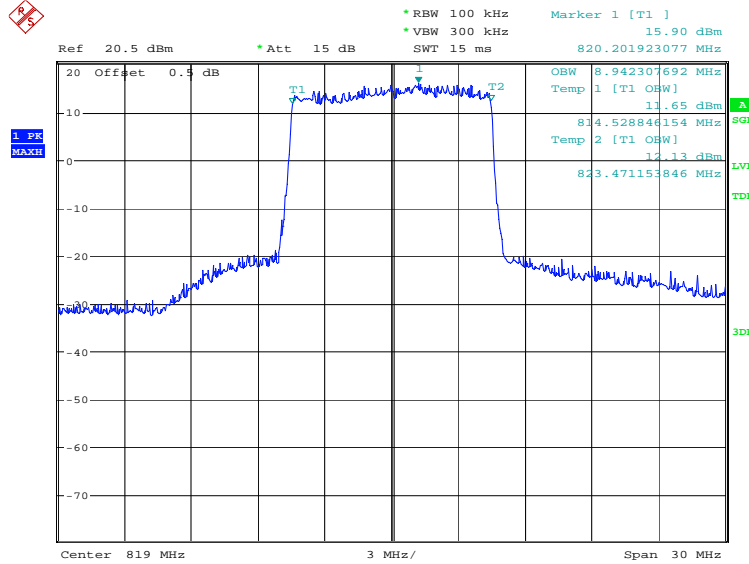


Date: 7.JUL.2023 09:36:00

LTE band 26(814MHz~824MHz), 10MHz (99%)

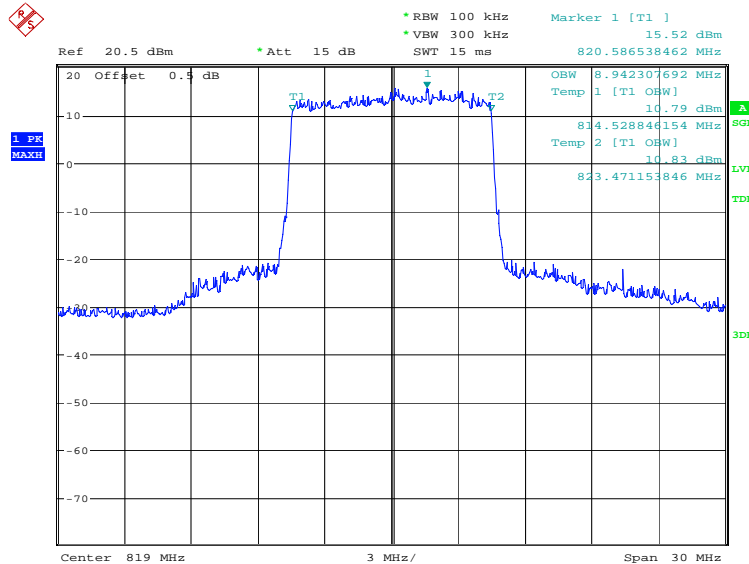
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	8942.31	8942.31

LTE band 26(814MHz~824MHz), 10MHz Bandwidth, QPSK (99% BW)



Date: 7.JUL.2023 09:36:42

LTE band 26(814MHz~824MHz), 10MHz Bandwidth, 16QAM (99% BW)

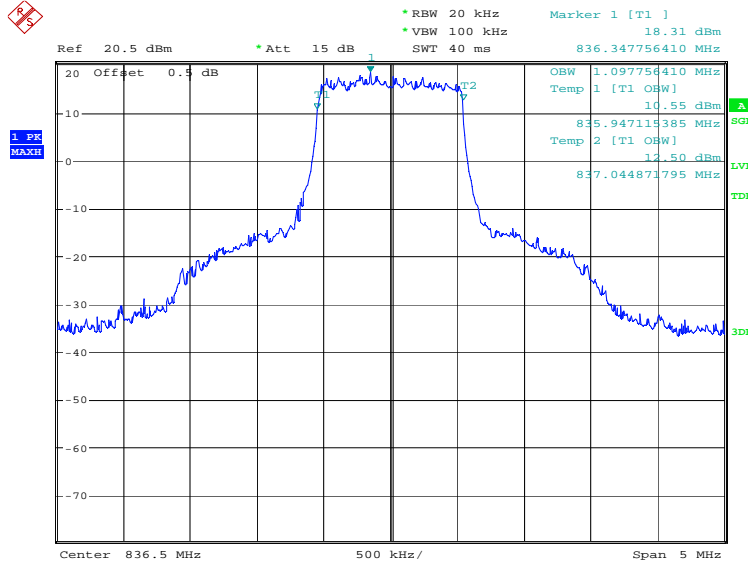


Date: 7.JUL.2023 09:37:22

LTE band 26(824MHz~849MHz), 1.4MHz (99%)

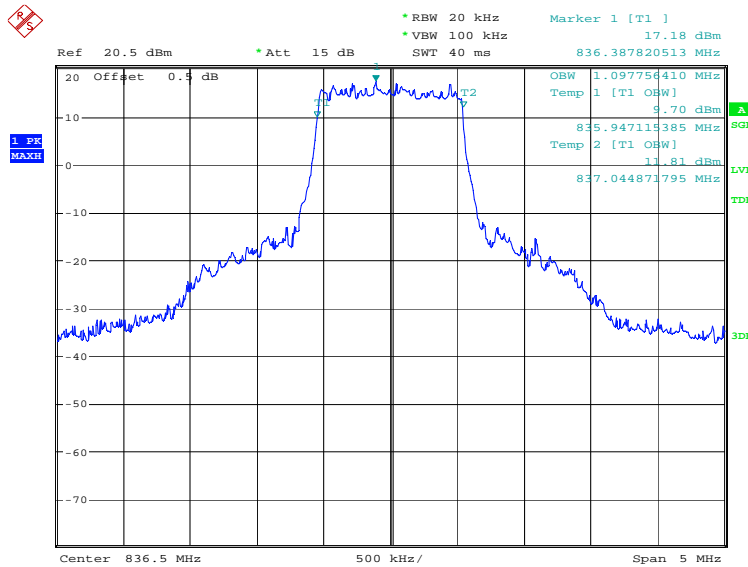
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1097.76	1097.76

LTE band 26(824MHz~849MHz), 1.4MHz Bandwidth, QPSK (99% BW)



Date: 7.JUL.2023 09:25:04

LTE band 26(824MHz~849MHz), 1.4MHz Bandwidth, 16QAM (99% BW)

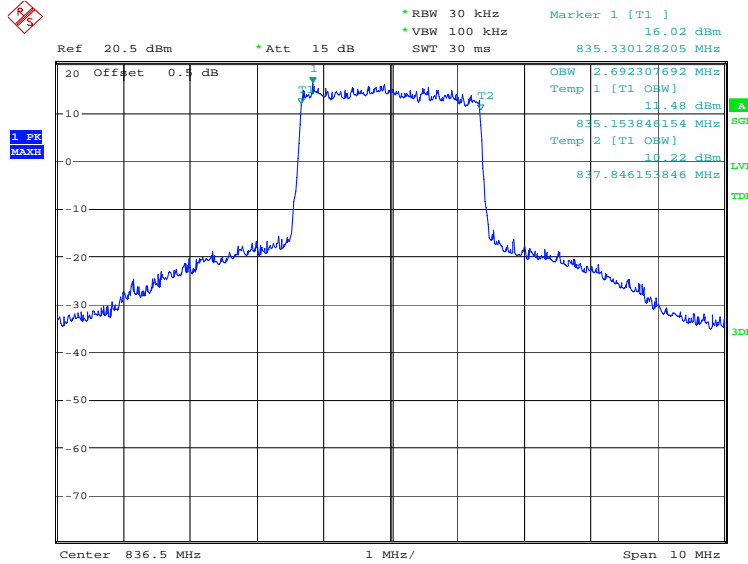


Date: 7.JUL.2023 09:25:45

LTE band 26(824MHz~849MHz), 3MHz (99%)

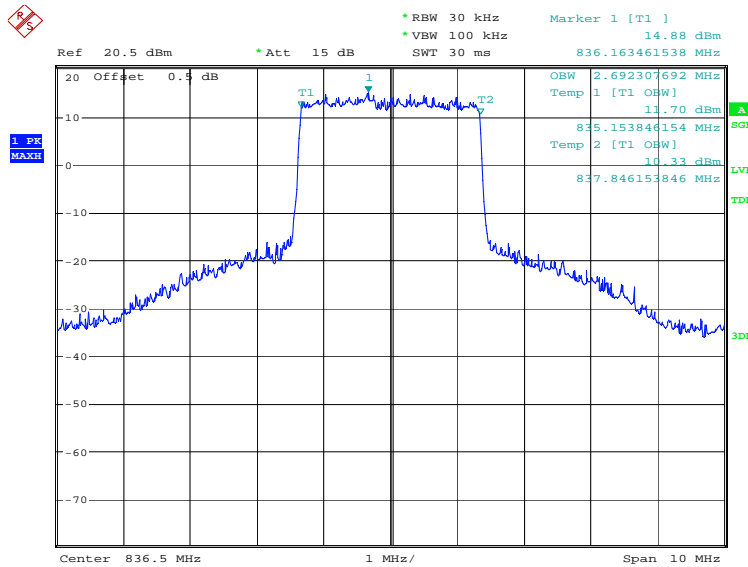
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2692.31	2692.31

LTE band 26(824MHz~849MHz), 3MHz Bandwidth, QPSK (99% BW)



Date: 7.JUL.2023 09:26:26

LTE band 26(824MHz~849MHz), 3MHz Bandwidth, 16QAM (99% BW)

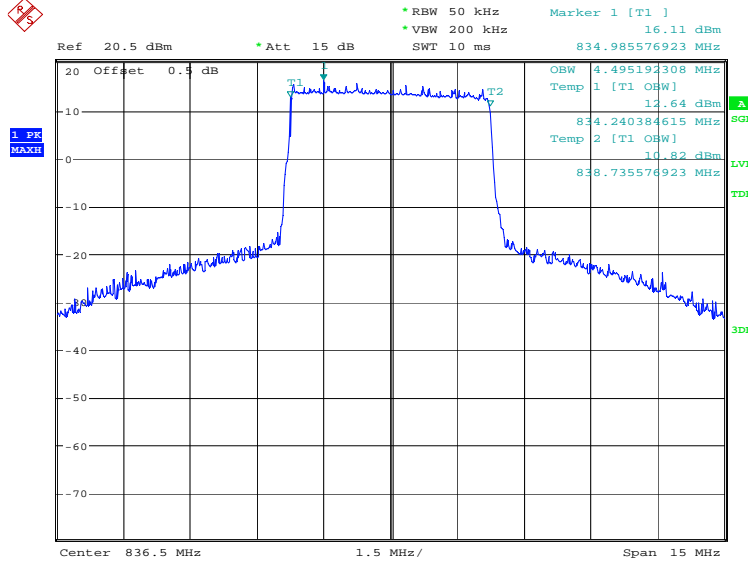


Date: 7.JUL.2023 09:27:07

LTE band 26(824MHz~849MHz), 5MHz (99%)

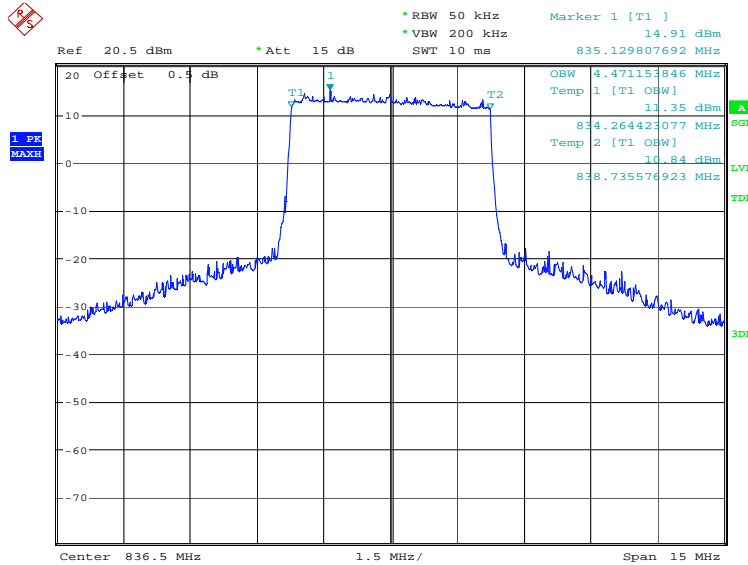
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	4495.19	4471.15

LTE band 26(824MHz~849MHz), 5MHz Bandwidth, QPSK (99% BW)



Date: 7.JUL.2023 09:27:48

LTE band 26(824MHz~849MHz), 5MHz Bandwidth, 16QAM (99% BW)

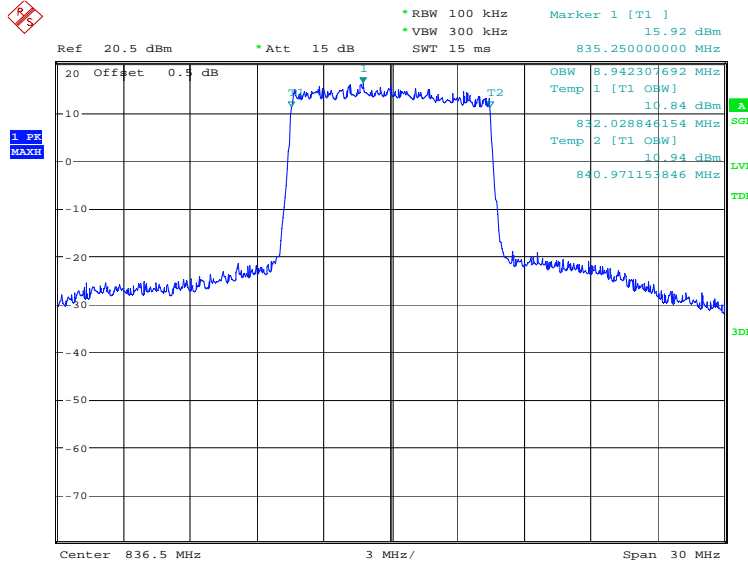


Date: 7.JUL.2023 09:28:28

LTE band 26(824MHz~849MHz), 10MHz (99%)

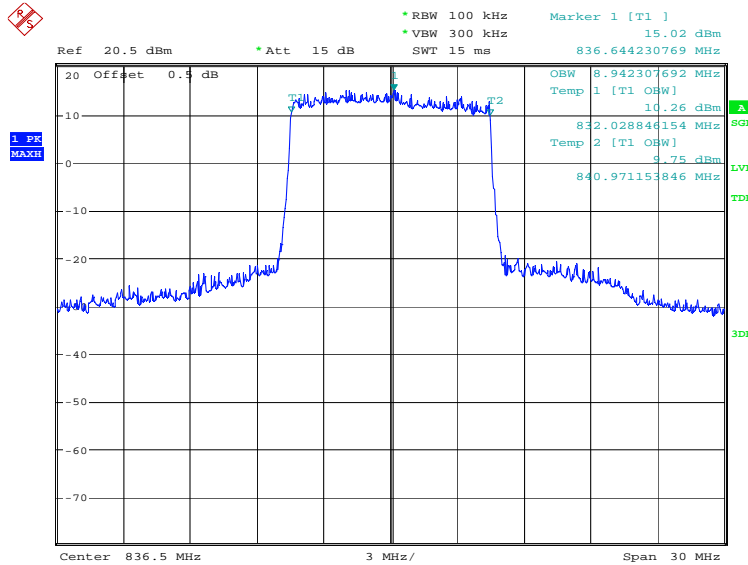
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	8942.31	8942.31

LTE band 26(824MHz~849MHz), 10MHz Bandwidth, QPSK (99% BW)



Date: 7.JUL.2023 09:29:10

LTE band 26(824MHz~849MHz), 10MHz Bandwidth, 16QAM (99% BW)

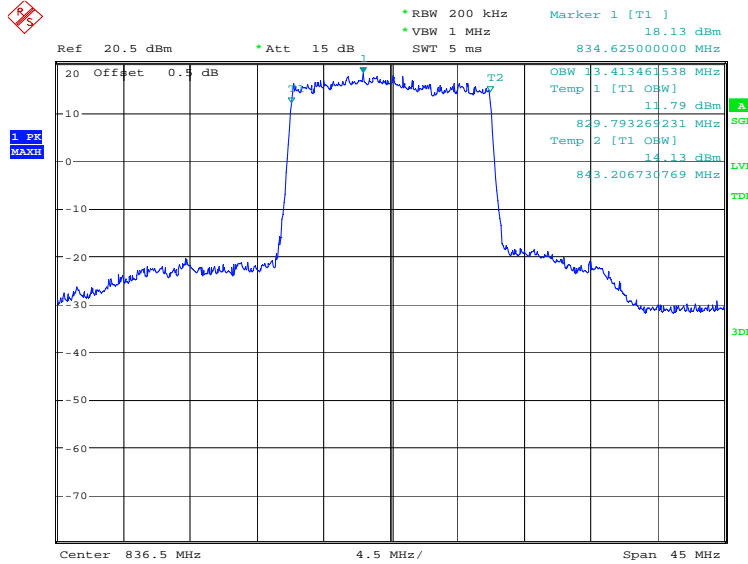


Date: 7.JUL.2023 09:29:50

LTE band 26(824MHz~849MHz), 15MHz (99%)

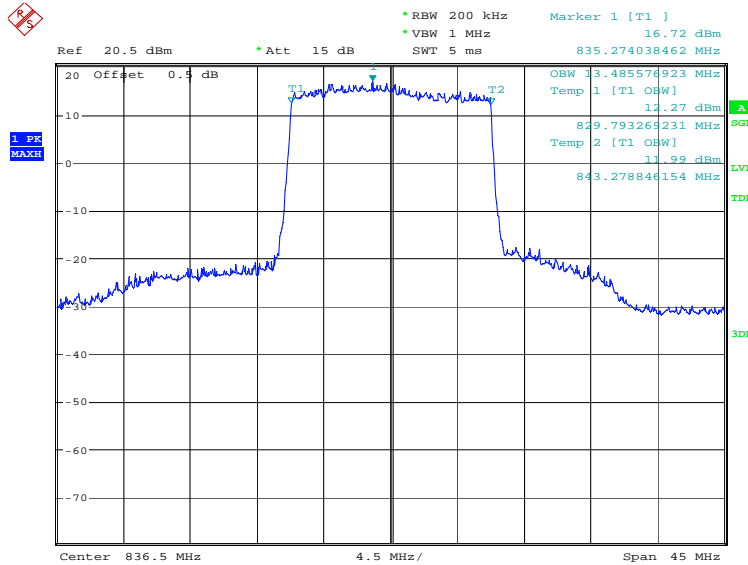
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	13413.46	13485.58

LTE band 26(824MHz~849MHz), 15MHz Bandwidth, QPSK (99% BW)



Date: 7.JUL.2023 09:30:32

LTE band 26(824MHz~849MHz), 15MHz Bandwidth, 16QAM (99% BW)

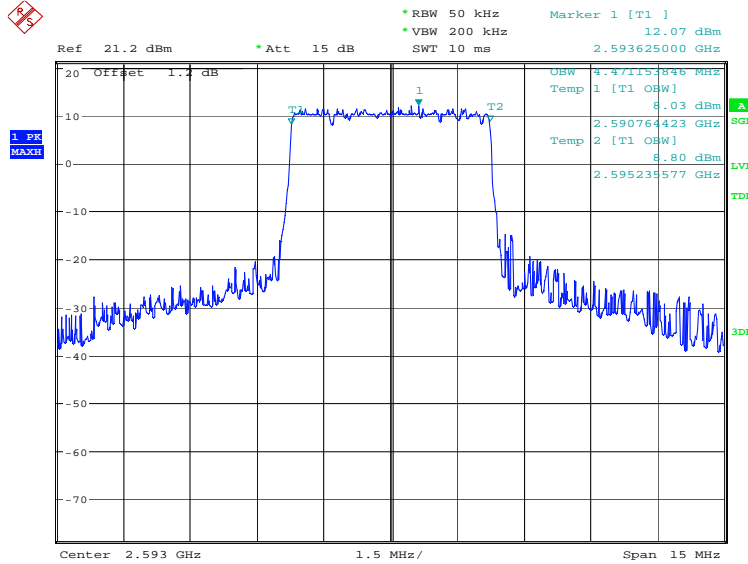


Date: 7.JUL.2023 09:31:13

LTE band 41, 5MHz (99%)

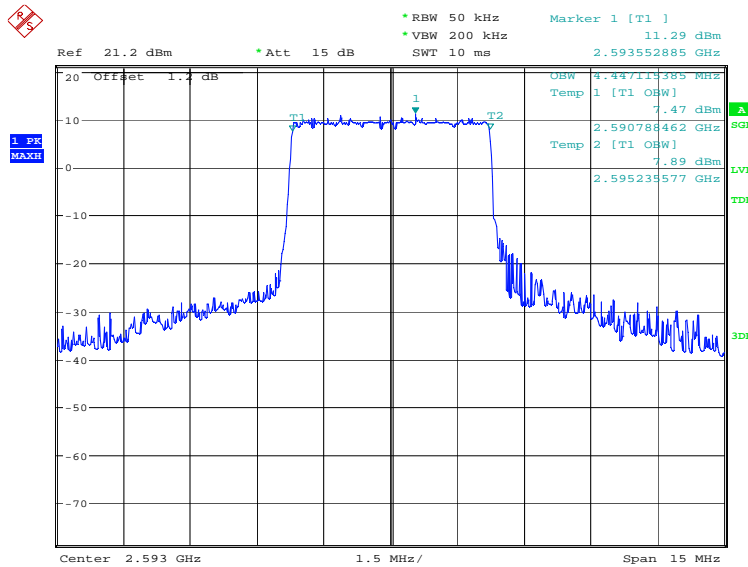
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	4471.15	4447.12

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



Date: 6.JUL.2023 18:52:05

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

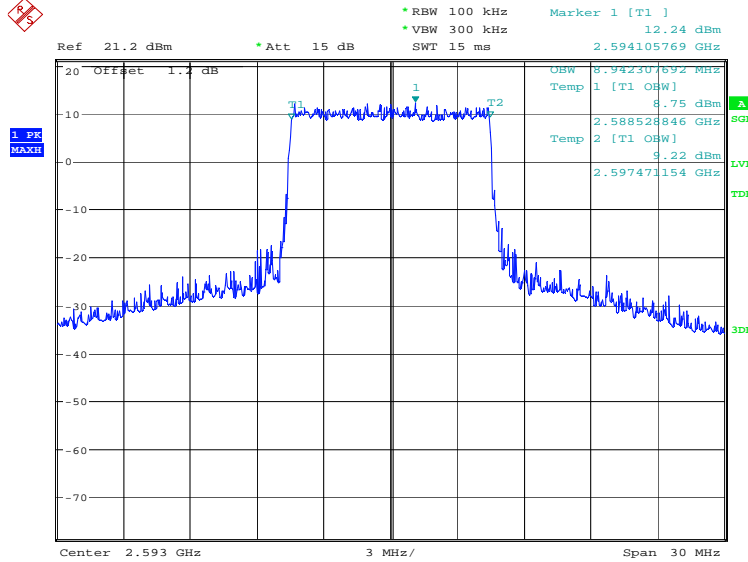


Date: 6.JUL.2023 18:52:46

LTE band 41, 10MHz (99%)

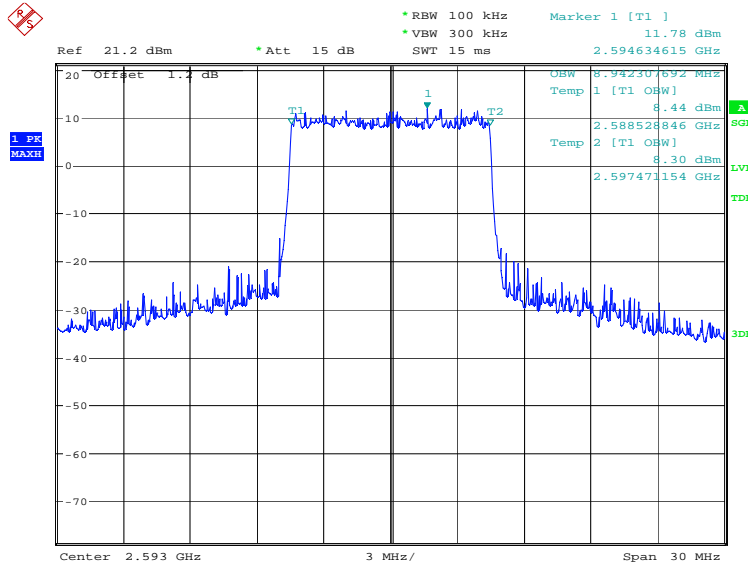
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	8942.31	8942.31

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



Date: 6.JUL.2023 18:53:28

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

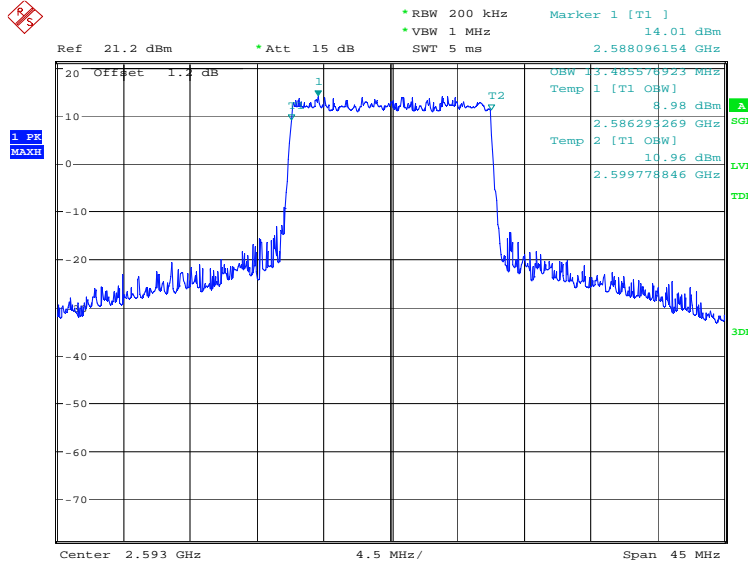


Date: 6.JUL.2023 18:54:09

LTE band 41, 15MHz (99%)

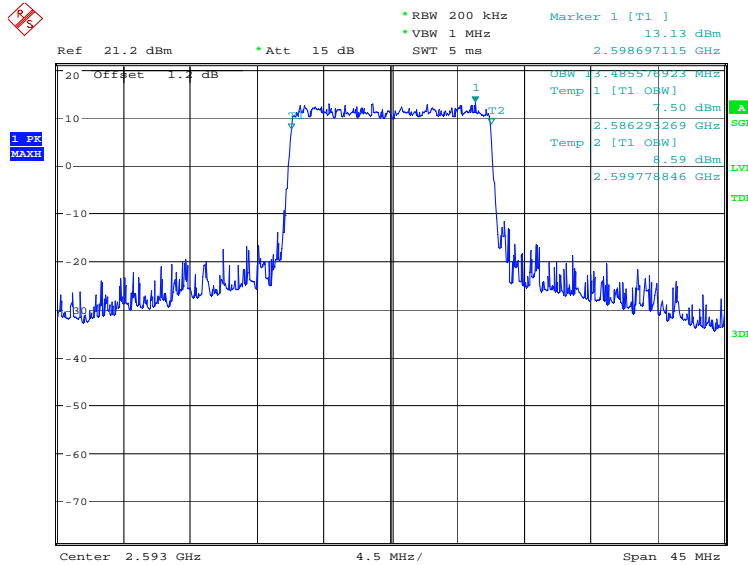
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 6.JUL.2023 18:54:51

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

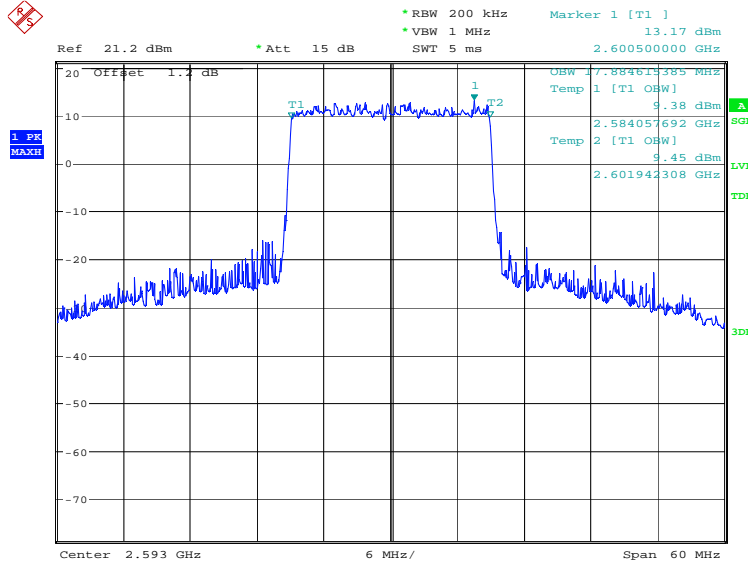


Date: 6.JUL.2023 18:55:32

LTE band 41, 20MHz (99%)

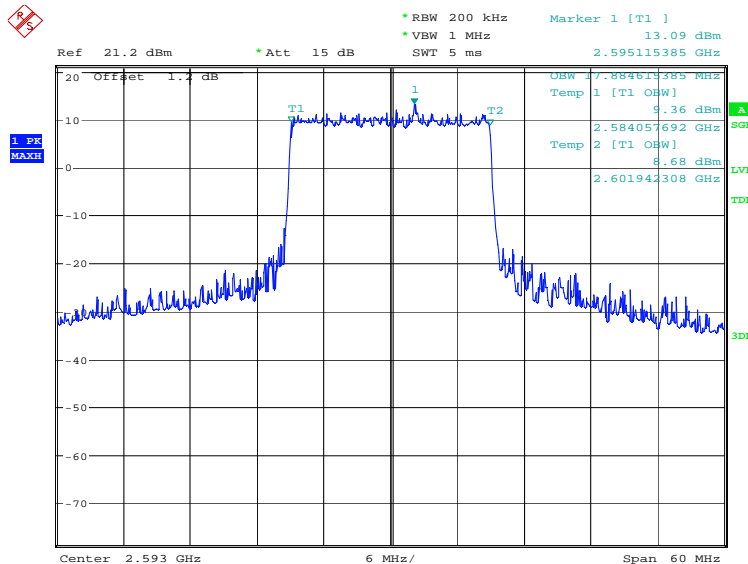
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	17884.62	17884.62

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



Date: 6.JUL.2023 18:56:14

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

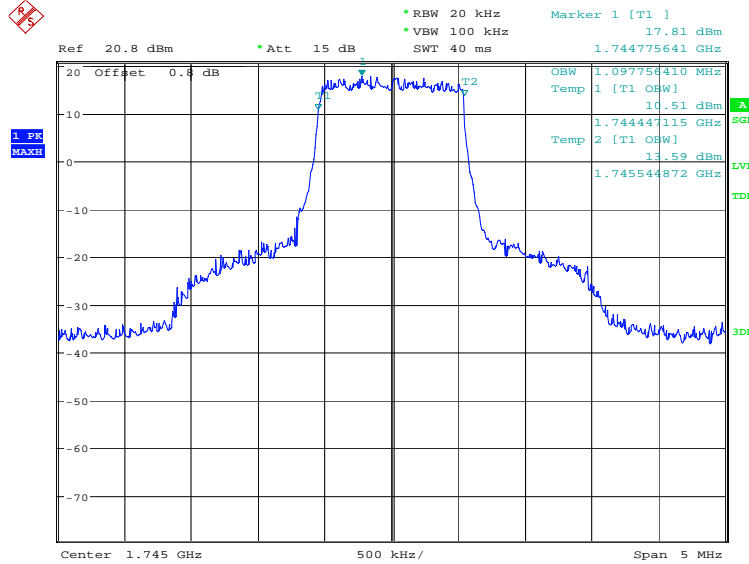


Date: 6.JUL.2023 18:56:55

LTE band 66, 1.4MHz (99%)

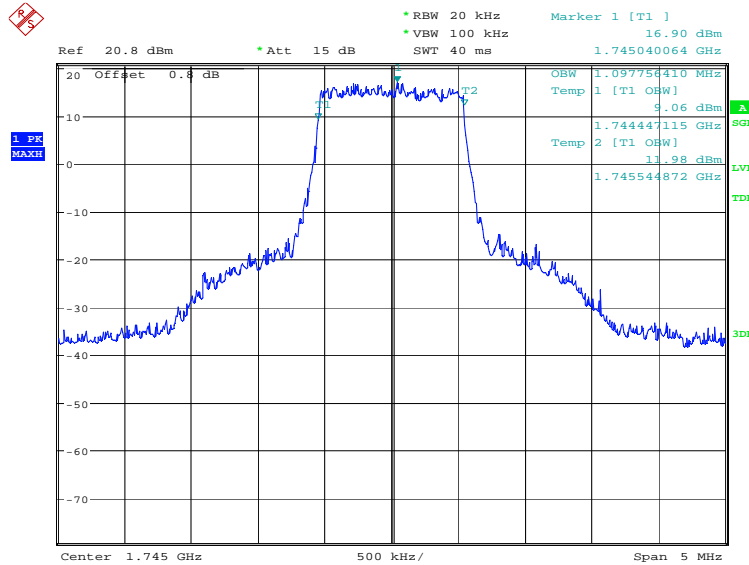
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	1097.76	1097.76

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



Date: 6.JUL.2023 18:43:05

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

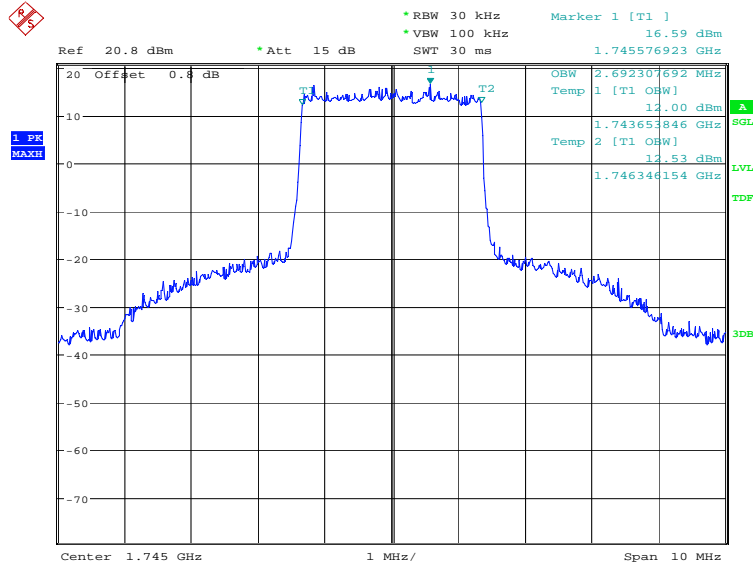


Date: 6.JUL.2023 18:43:45

LTE band 66, 3MHz (99%)

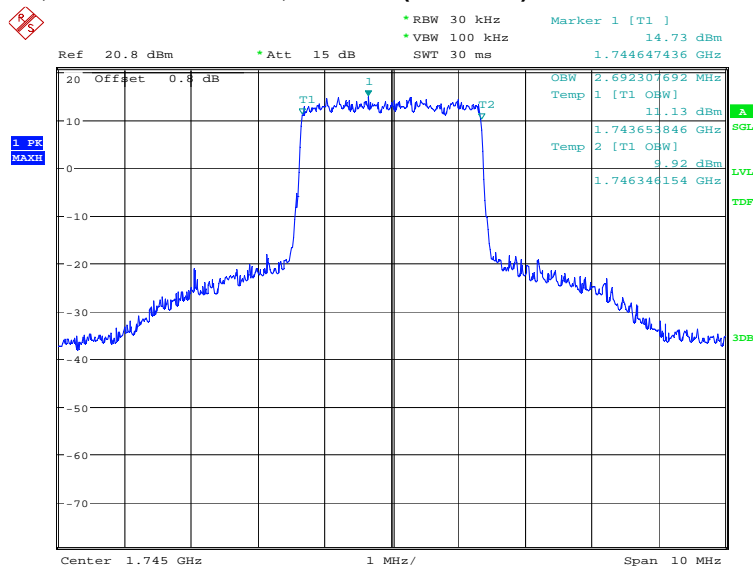
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	2692.31	2692.31

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



Date: 6.JUL.2023 18:44:27

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

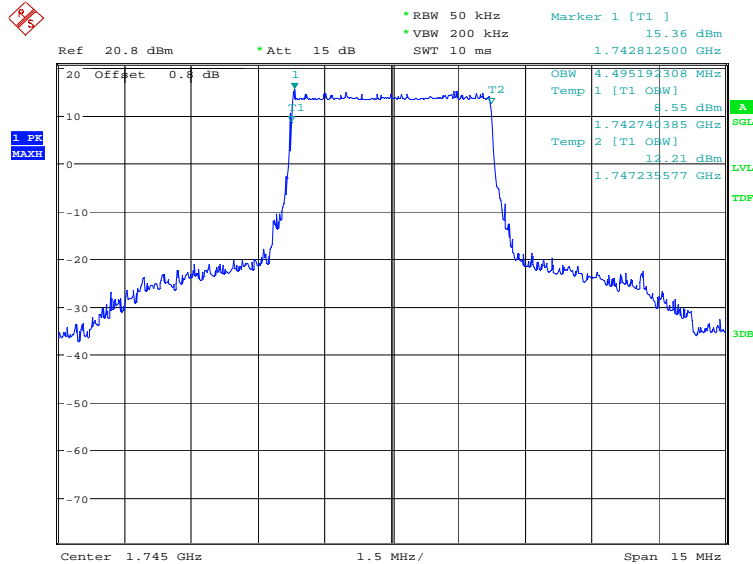


Date: 6.JUL.2023 18:45:08

LTE band 66, 5MHz (99%)

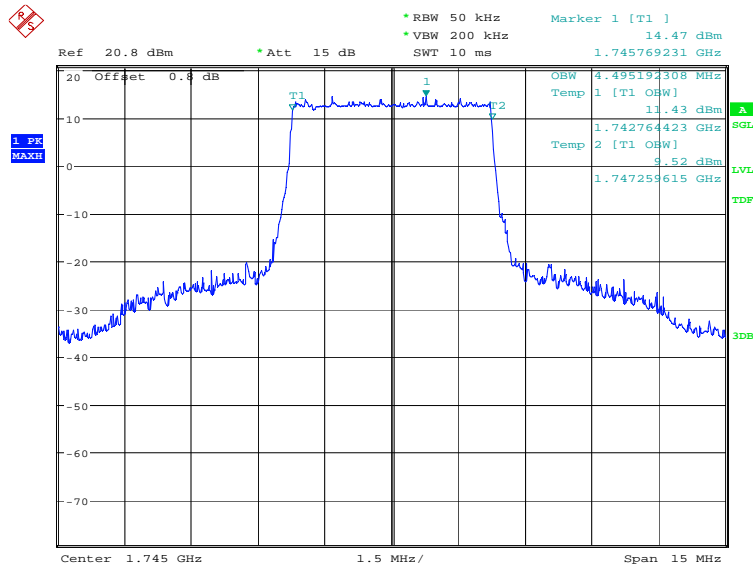
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	4495.19	4495.19

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



Date: 6.JUL.2023 18:45:49

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

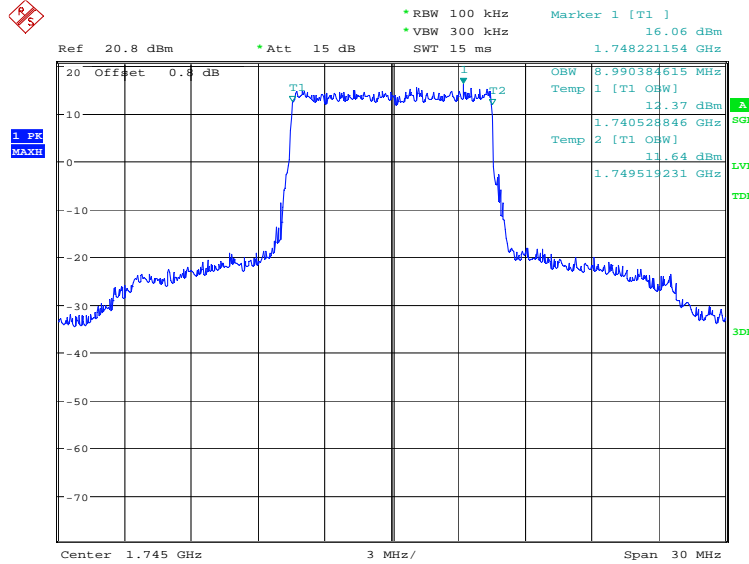


Date: 6.JUL.2023 18:46:30

LTE band 66, 10MHz (99%)

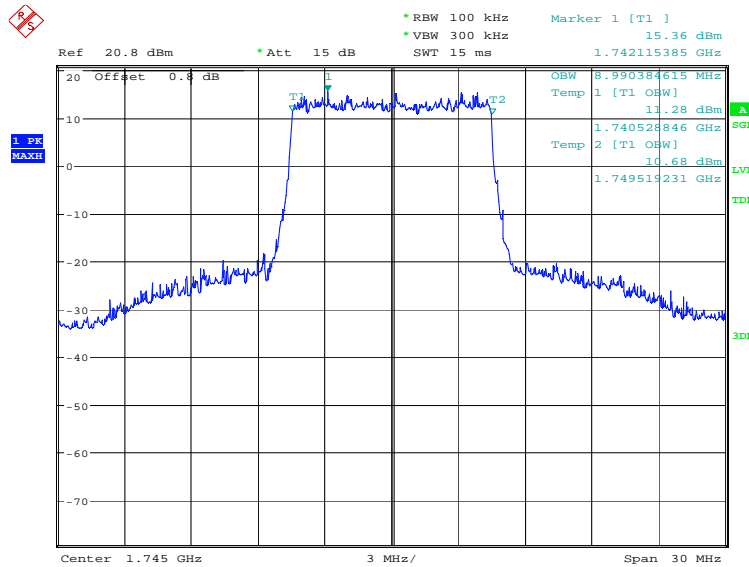
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	8990.38	8990.38

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



Date: 6.JUL.2023 18:47:12

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

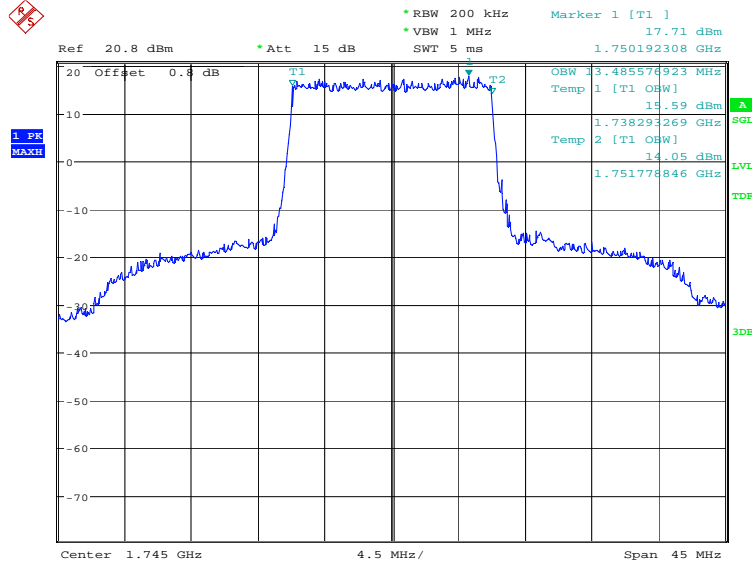


Date: 6.JUL.2023 18:47:52

LTE band 66, 15MHz (99%)

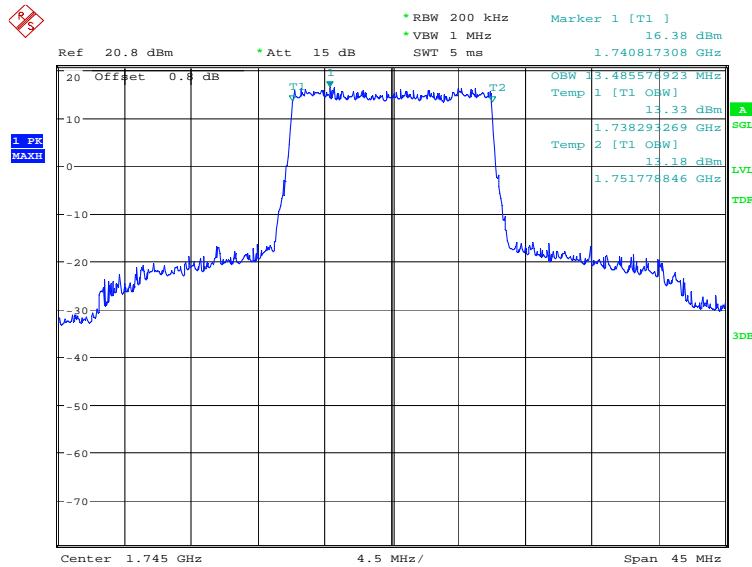
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 6.JUL.2023 18:48:34

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

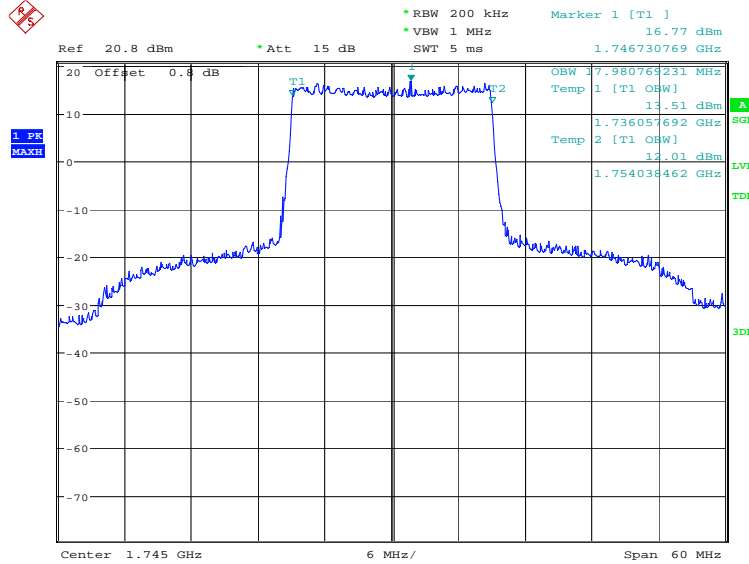


Date: 6.JUL.2023 18:49:15

LTE band 66, 20MHz (99%)

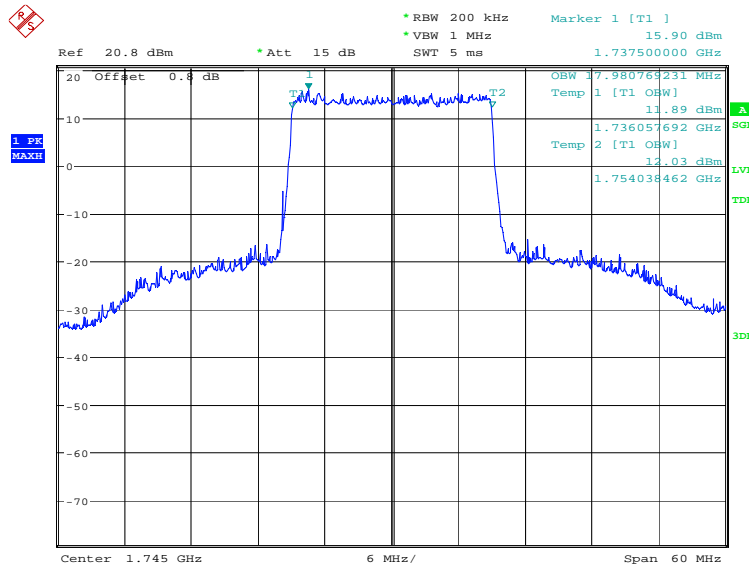
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	17980.77	17980.77

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



Date: 6.JUL.2023 18:49:57

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

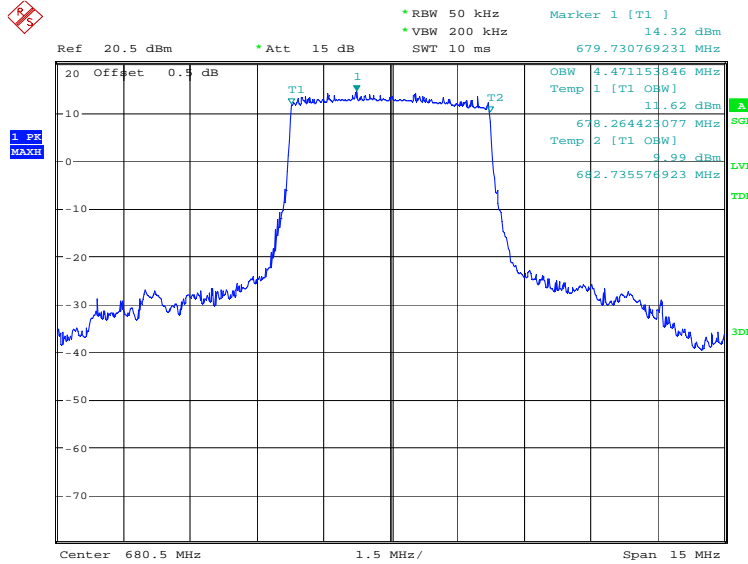


Date: 6.JUL.2023 18:50:37

LTE band 71, 5MHz (99%)

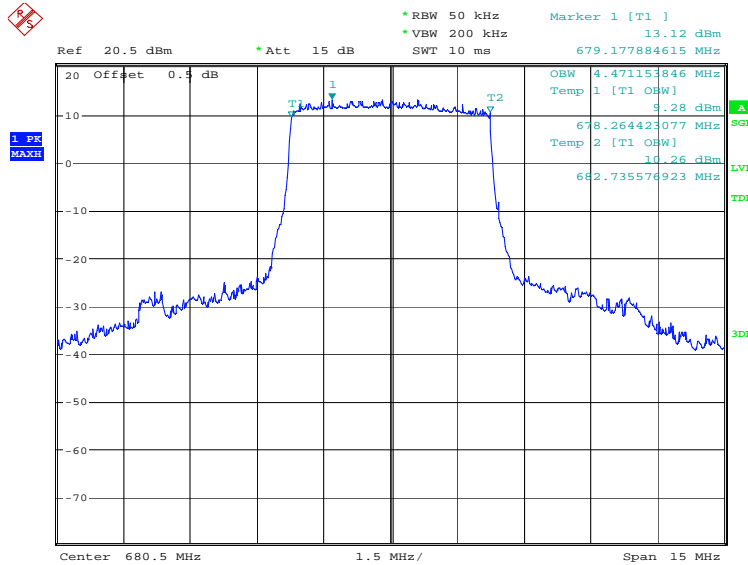
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	4471.15	4471.15

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



Date: 7.JUL.2023 09:13:01

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

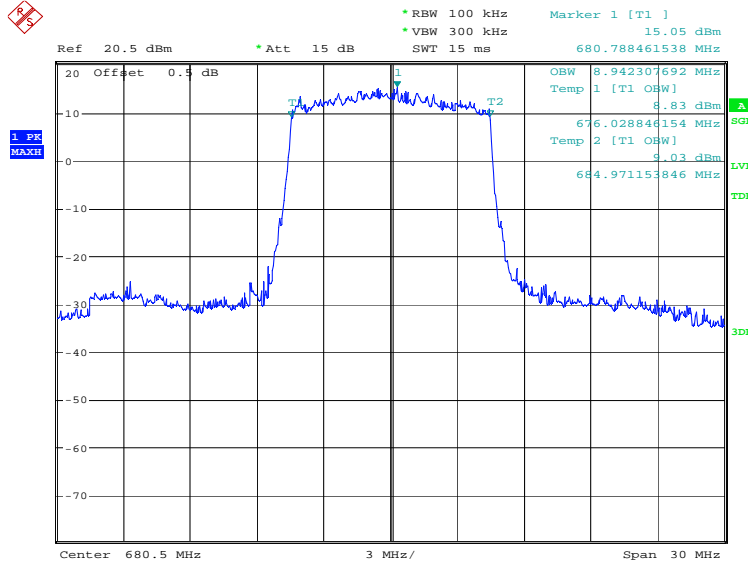


Date: 7.JUL.2023 09:13:41

LTE band 71, 10MHz (99%)

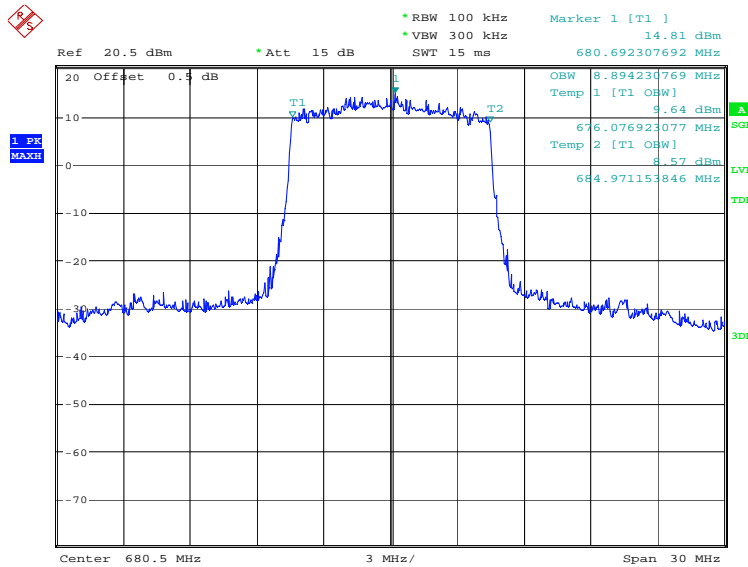
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	8942.31	8894.23

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



Date: 7.JUL.2023 09:14:23

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

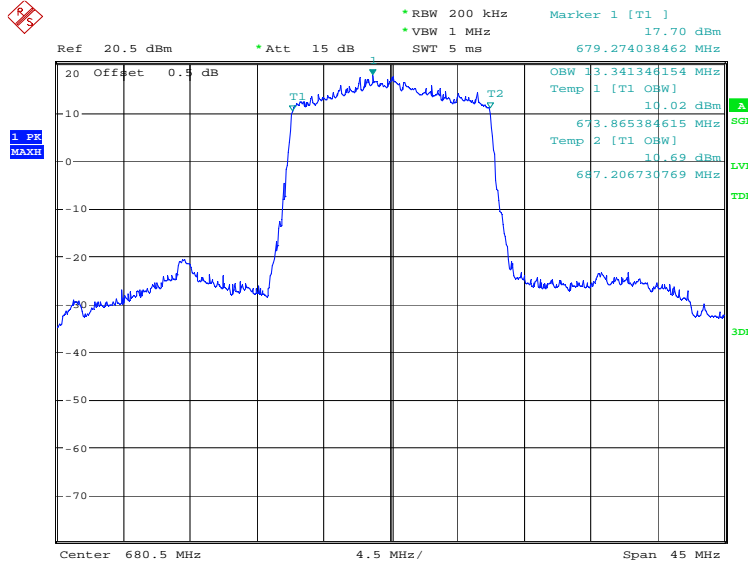


Date: 7.JUL.2023 09:15:03

LTE band 71, 15MHz (99%)

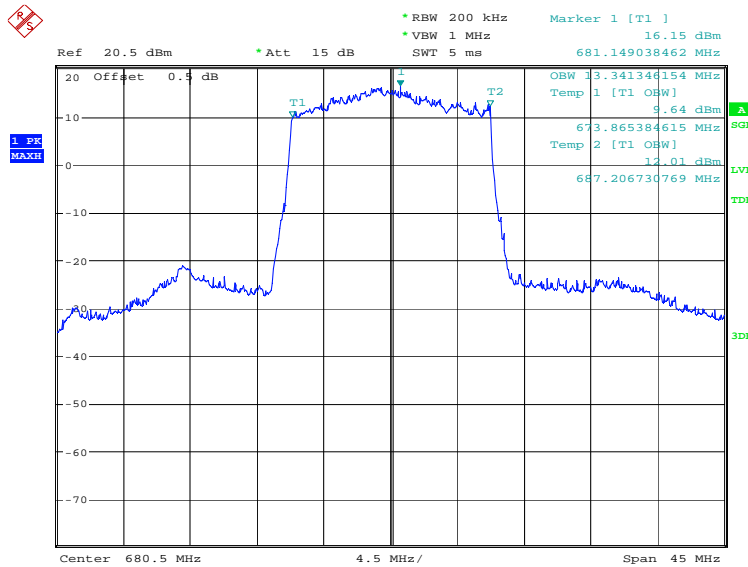
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	13341.35	13341.35

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



Date: 7.JUL.2023 09:15:45

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

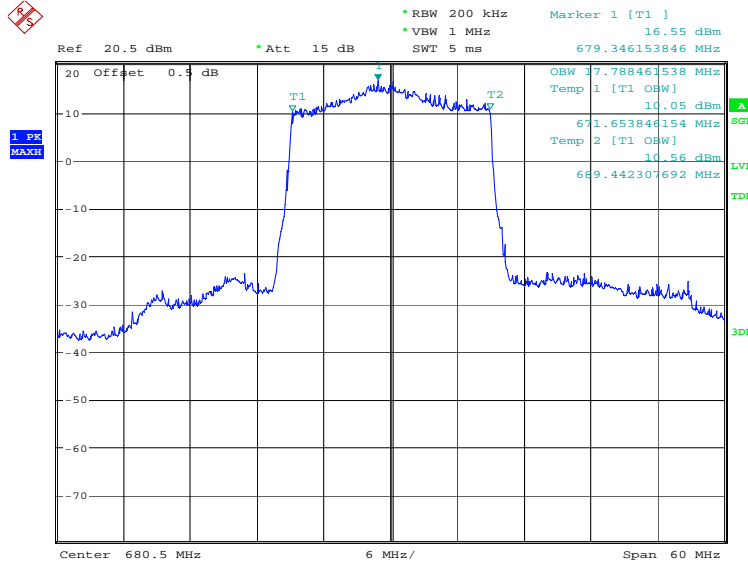


Date: 7.JUL.2023 09:16:25

LTE band 71, 20MHz (99%)

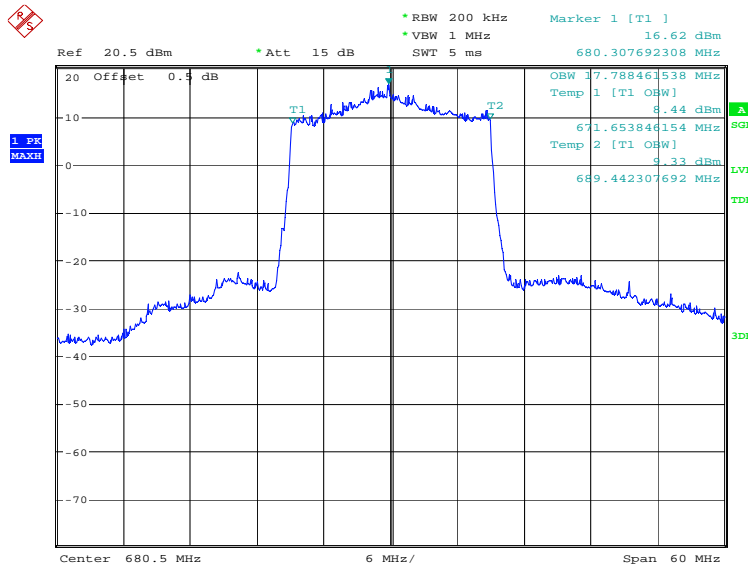
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	17788.46	17788.46

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



Date: 7.JUL.2023 09:17:07

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



Date: 7.JUL.2023 09:17:47

Note: Expanded measurement uncertainty is $U = 3428 \text{ Hz}$, $k = 2$.

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.

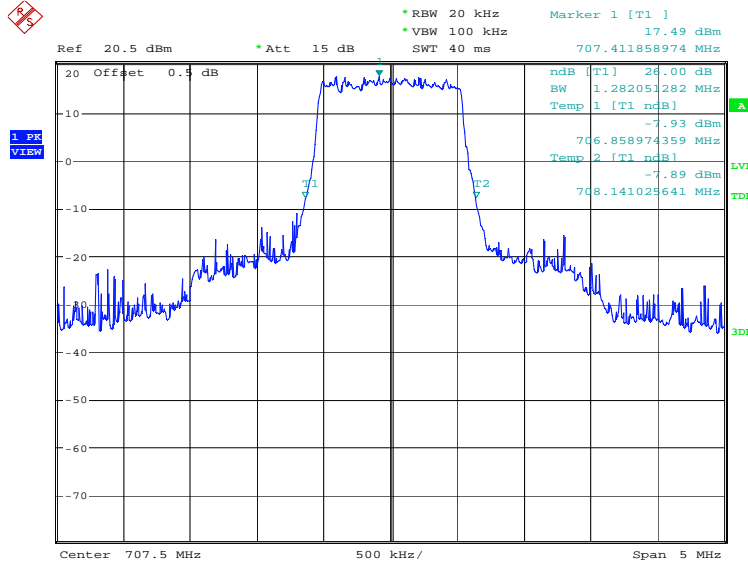
The measurement method is from ANSI C63.26:

- 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 $\geq 3 \times \text{RBW}$.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.
- 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 12, 1.4MHz (-26dBc)

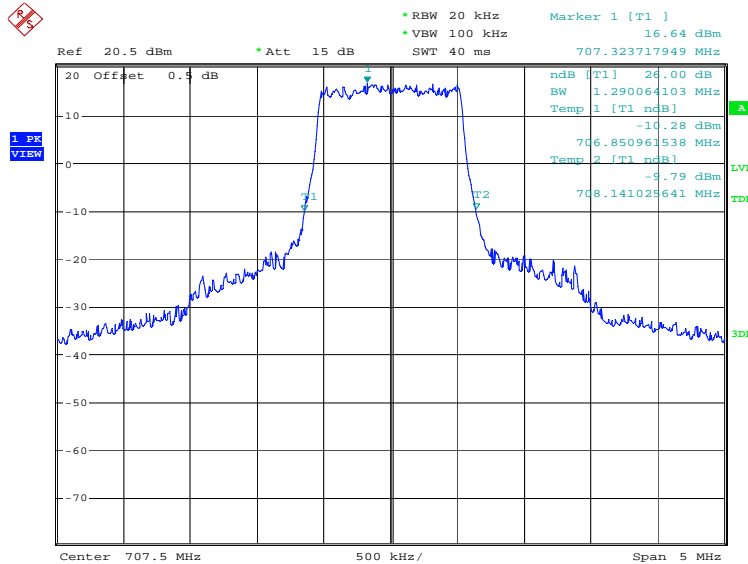
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	1282.05	1290.06

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



Date: 7.JUL.2023 09:45:36

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

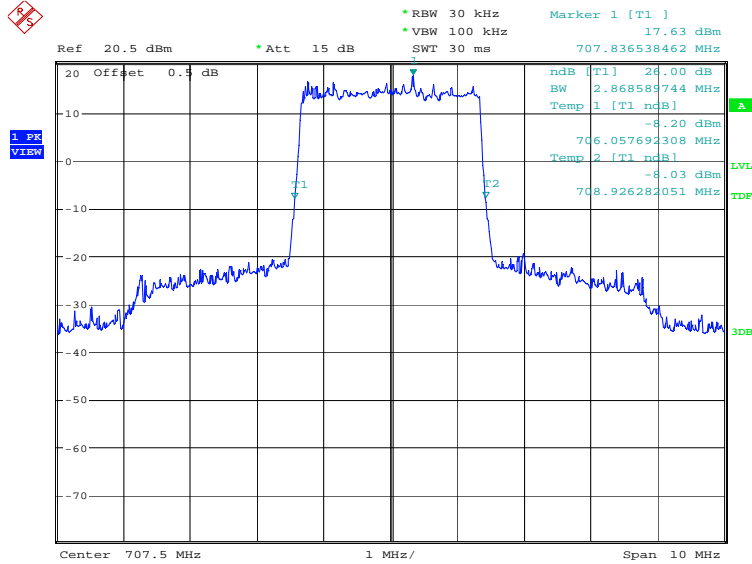


Date: 7.JUL.2023 09:46:16

LTE band 12, 3MHz (-26dBc)

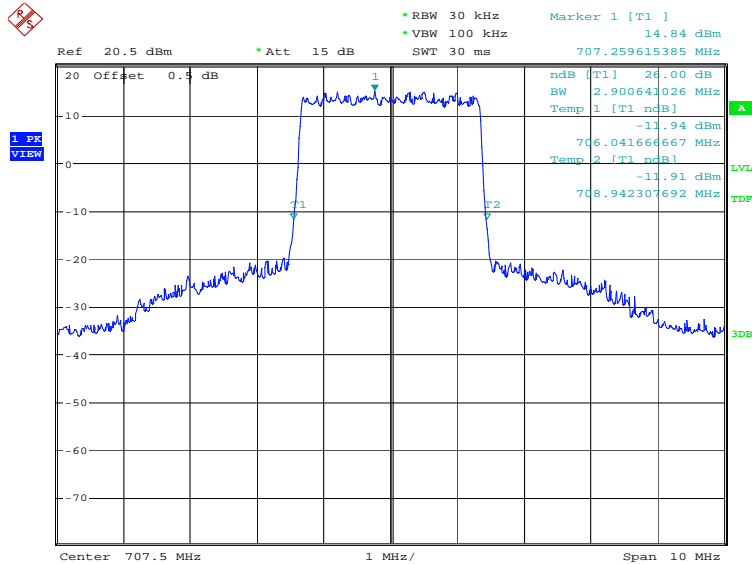
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	2868.59	2900.64

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



Date: 7.JUL.2023 09:46:58

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

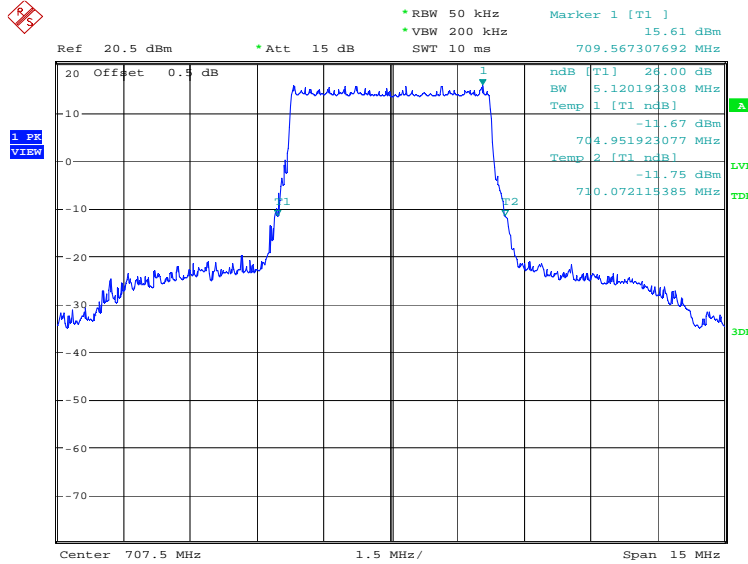


Date: 7.JUL.2023 09:47:39

LTE band 12, 5MHz (-26dBc)

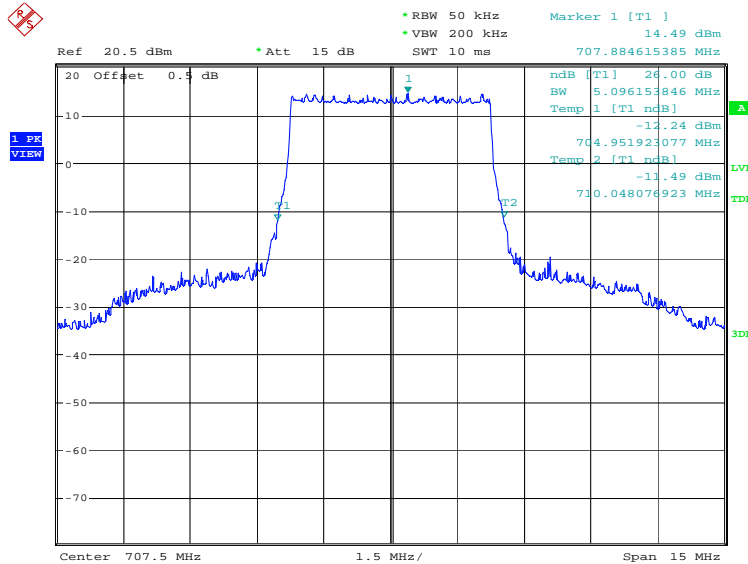
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	5120.19	5096.15

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



Date: 7.JUL.2023 09:48:21

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

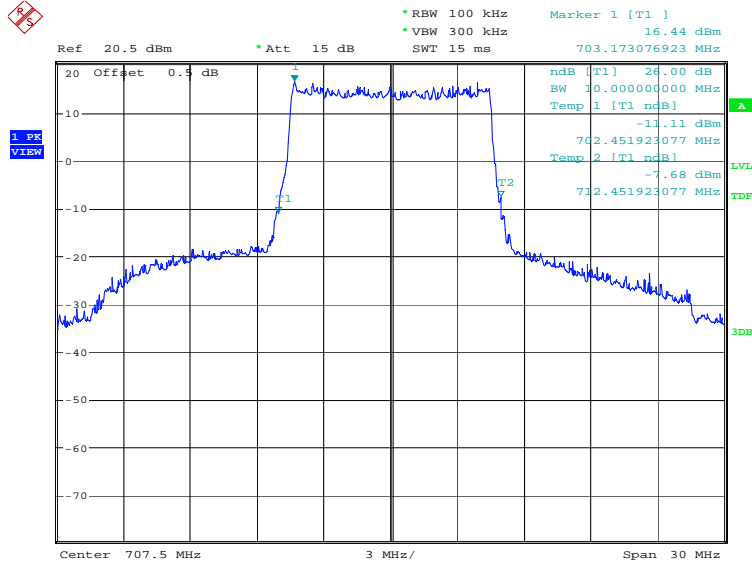


Date: 7.JUL.2023 09:49:01

LTE band 12, 10MHz (-26dBc)

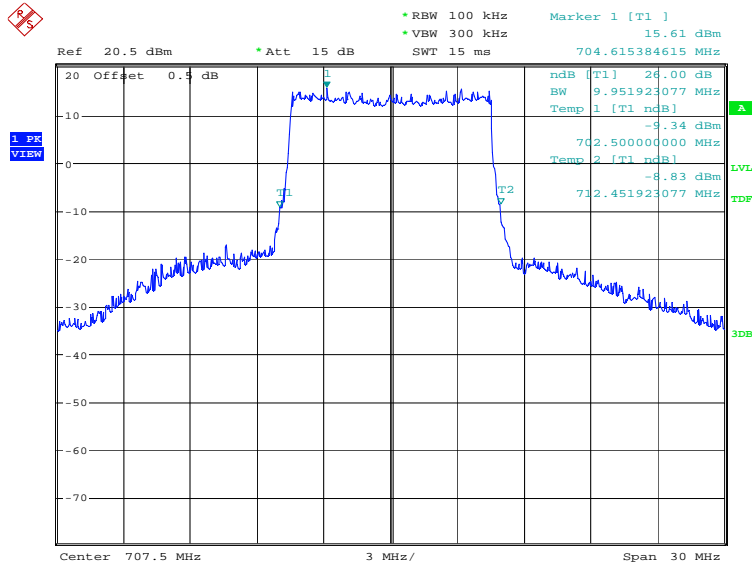
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	10000.00	9951.92

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



Date: 7.JUL.2023 09:49:43

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

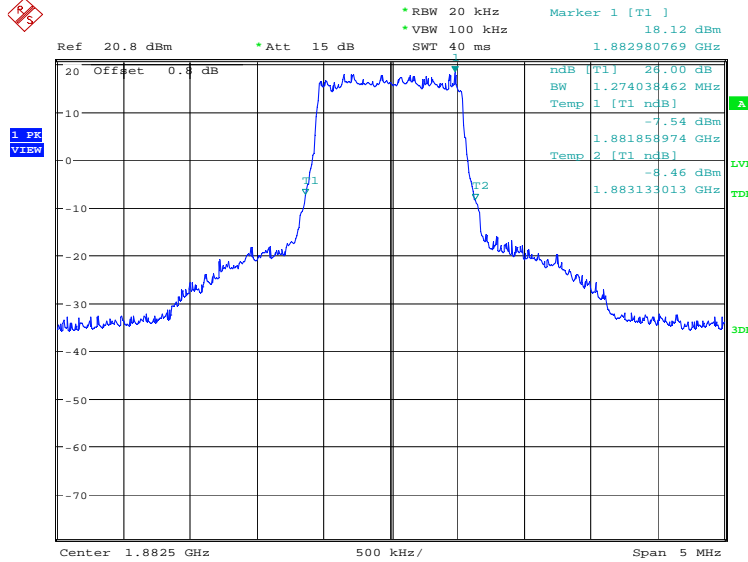


Date: 7.JUL.2023 09:50:24

LTE band 25, 1.4MHz (-26dBc)

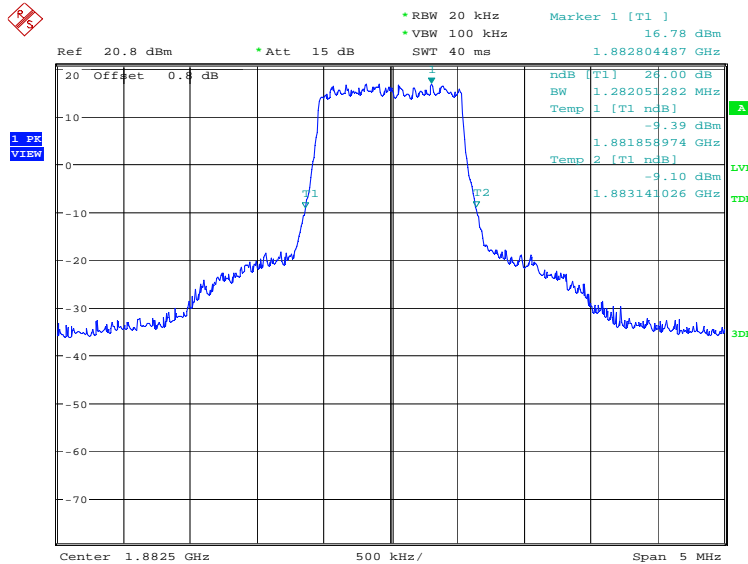
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	1274.04	1282.05

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



Date: 6.JUL.2023 18:58:14

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

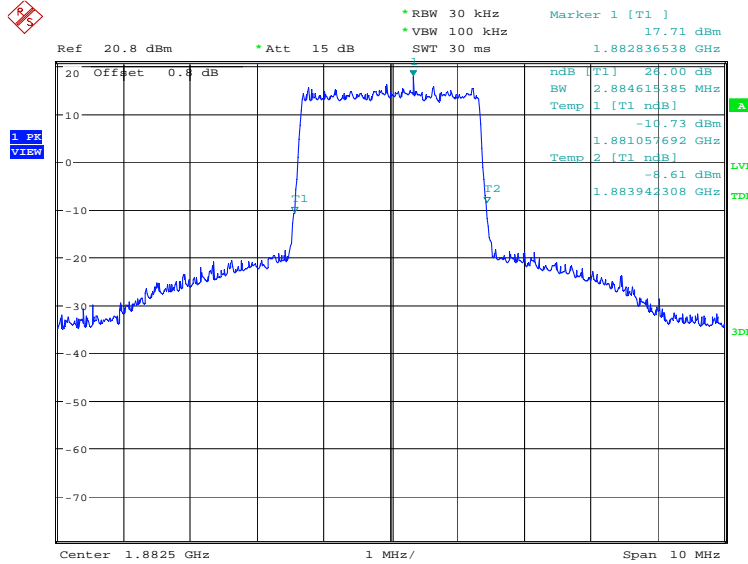


Date: 6.JUL.2023 18:58:55

LTE band 25, 3MHz (-26dBc)

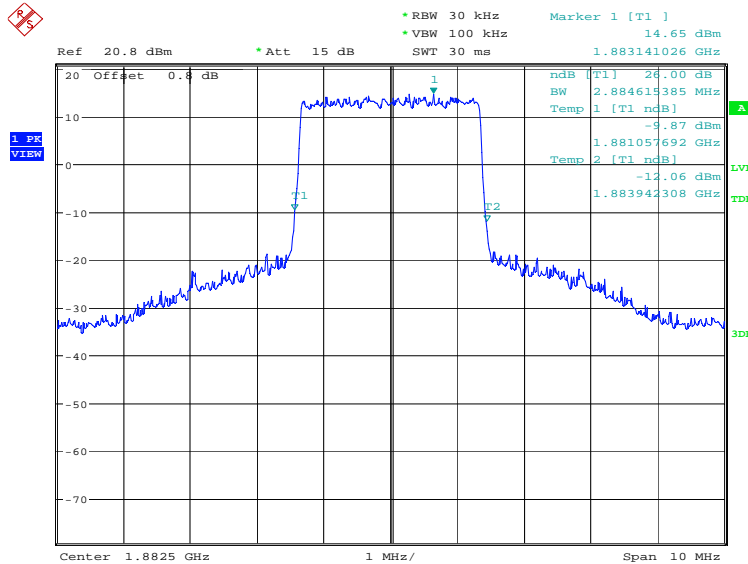
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	2884.62	2884.62

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



Date: 6.JUL.2023 18:59:37

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

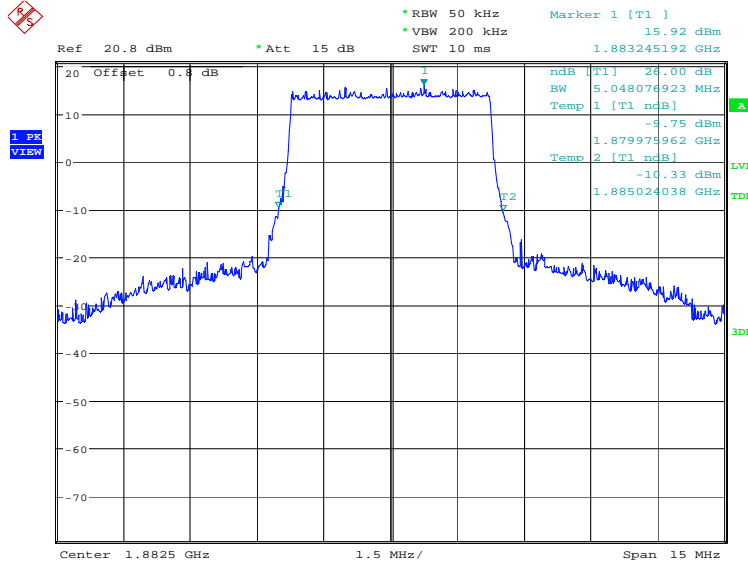


Date: 6.JUL.2023 19:00:18

LTE band 25, 5MHz (-26dBc)

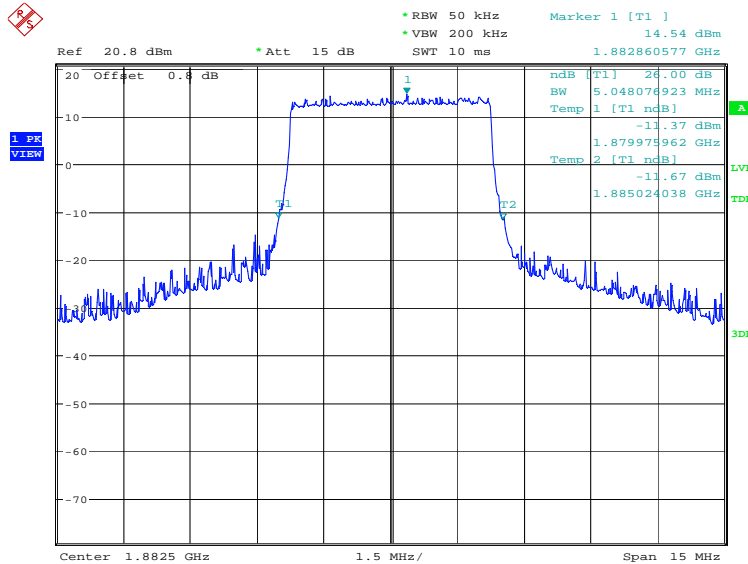
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	5048.08	5048.08

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



Date: 6.JUL.2023 19:01:01

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

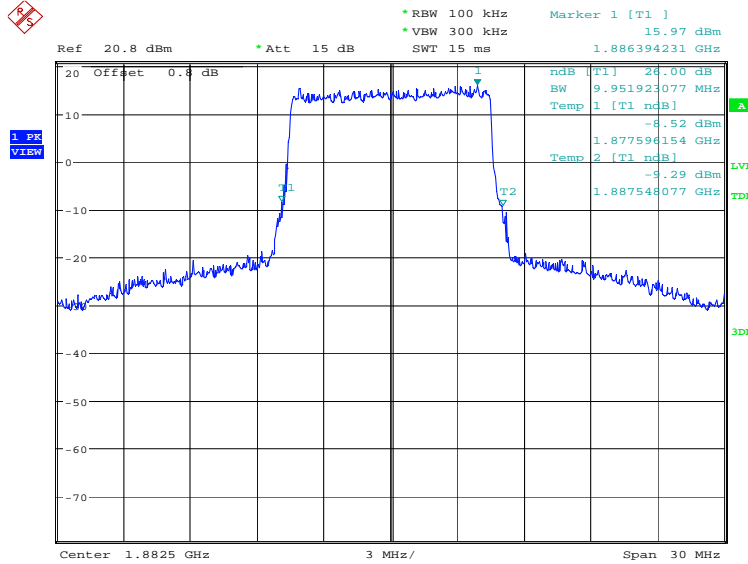


Date: 6.JUL.2023 19:01:42

LTE band 25, 10MHz (-26dBc)

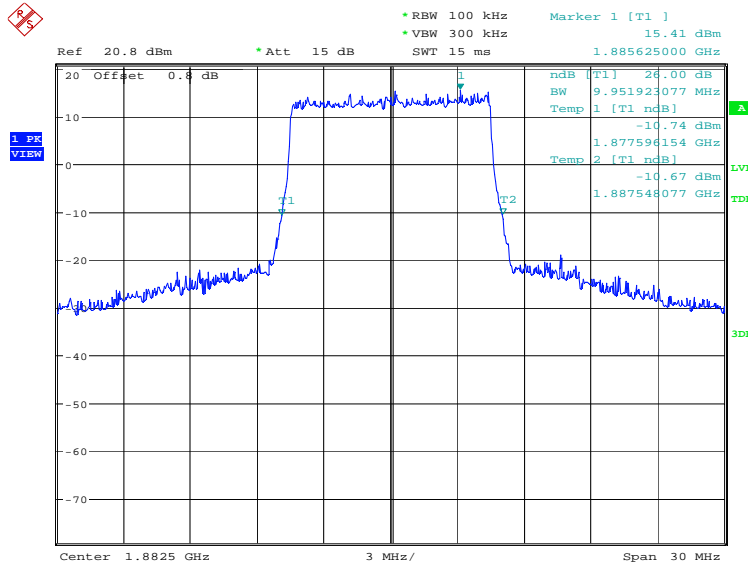
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	9951.92	9951.92

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



Date: 6.JUL.2023 19:02:24

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

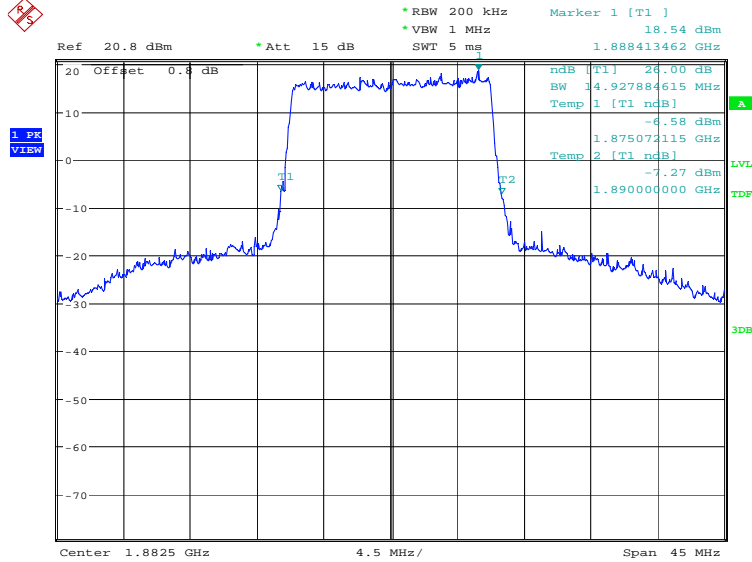


Date: 6.JUL.2023 19:03:05

LTE band 25, 15MHz (-26dBc)

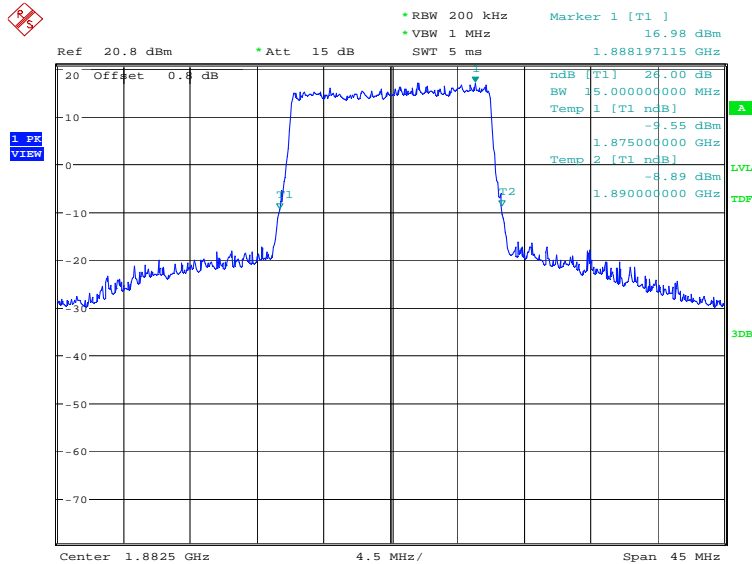
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	14927.88	15000.00

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



Date: 6.JUL.2023 19:03:47

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

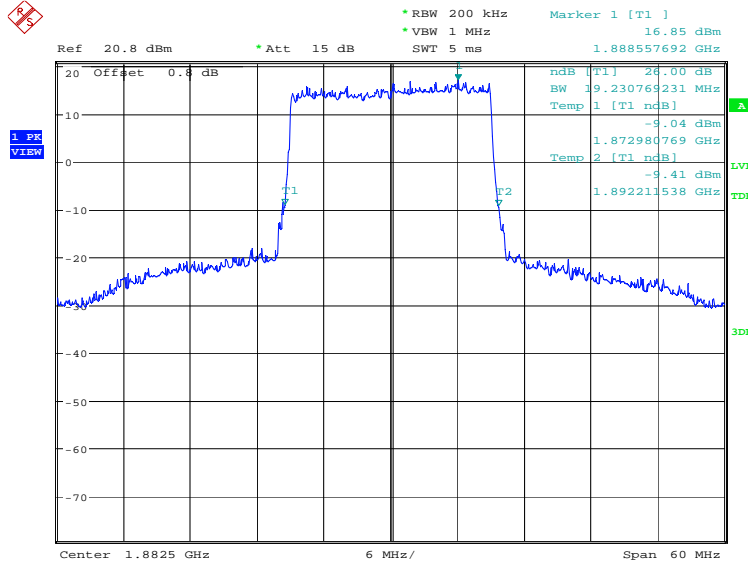


Date: 6.JUL.2023 19:04:28

LTE band 25, 20MHz (-26dBc)

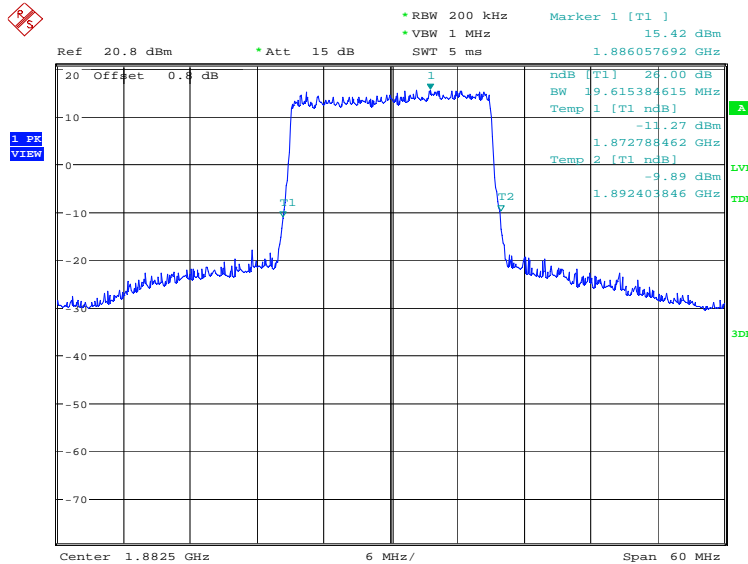
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1882.5	QPSK	16QAM
	19230.77	19615.38

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



Date: 6.JUL.2023 19:05:10

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

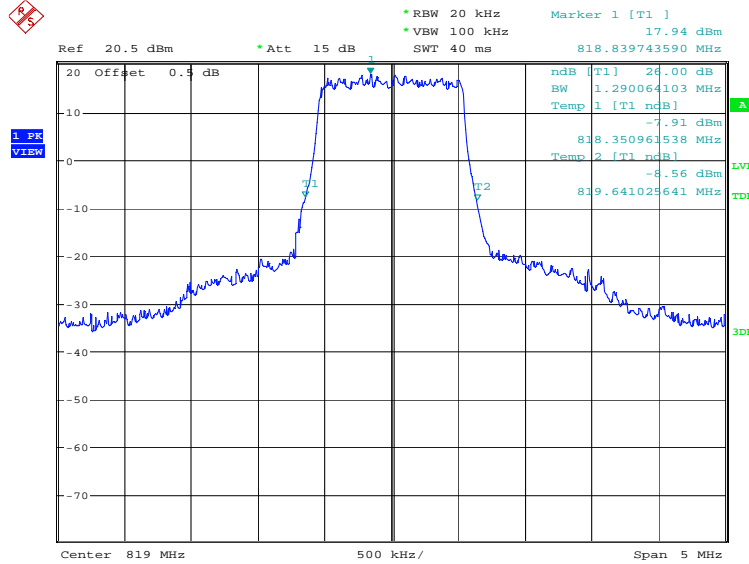


Date: 6.JUL.2023 19:05:51

LTE band 26(814MHz~824MHz), 1.4MHz (-26dBc)

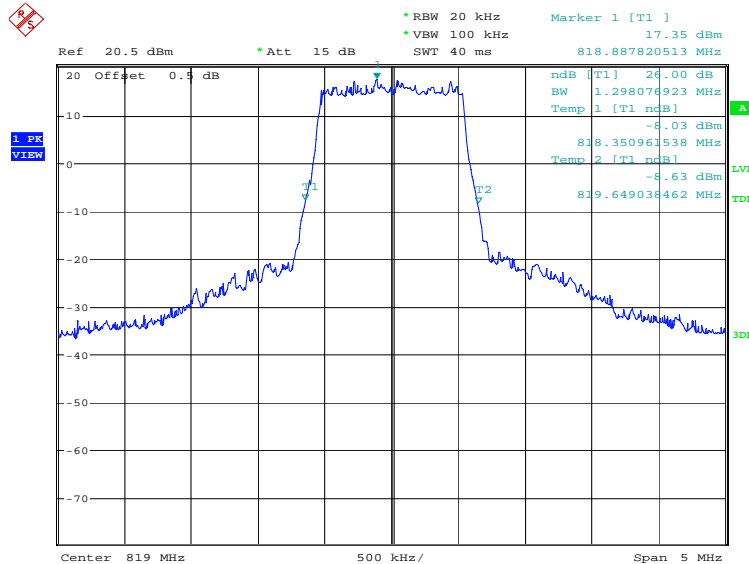
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
819.0	QPSK	16QAM
	1290.06	1298.08

LTE band 26(814MHz~824MHz), 1.4MHz Bandwidth, QPSK (-26dBc BW)



Date: 7.JUL.2023 09:58:44

LTE band 26(814MHz~824MHz), 1.4MHz Bandwidth, 16QAM (-26dBc BW)

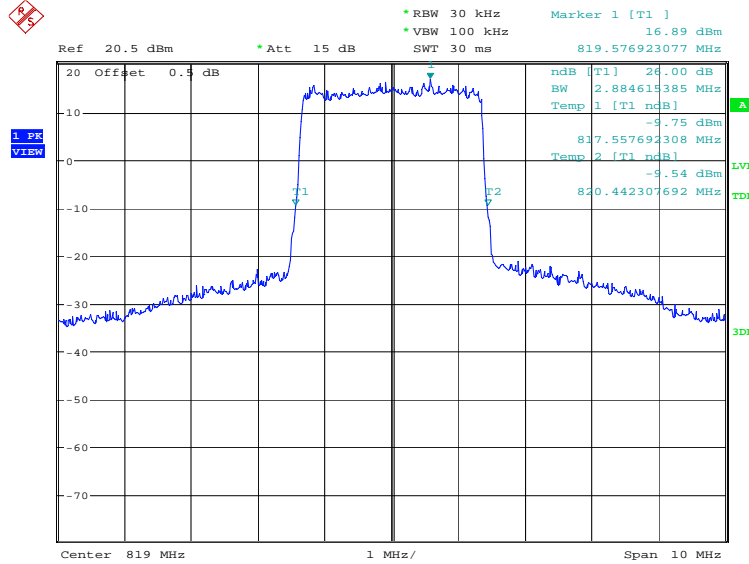


Date: 7.JUL.2023 09:59:25

LTE band 26(814MHz~824MHz), 3MHz (-26dBc)

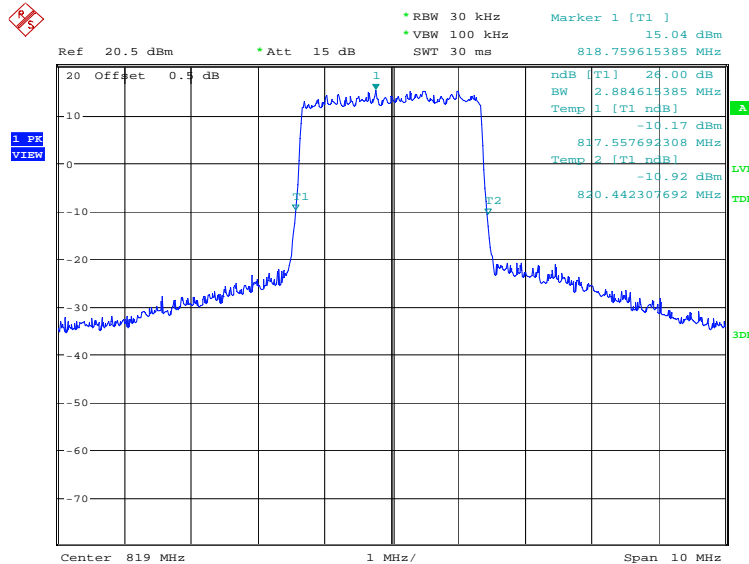
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
819.0	QPSK	16QAM
	2884.62	2884.62

LTE band 26(814MHz~824MHz), 3MHz Bandwidth, QPSK (-26dBc BW)



Date: 7.JUL.2023 10:00:07

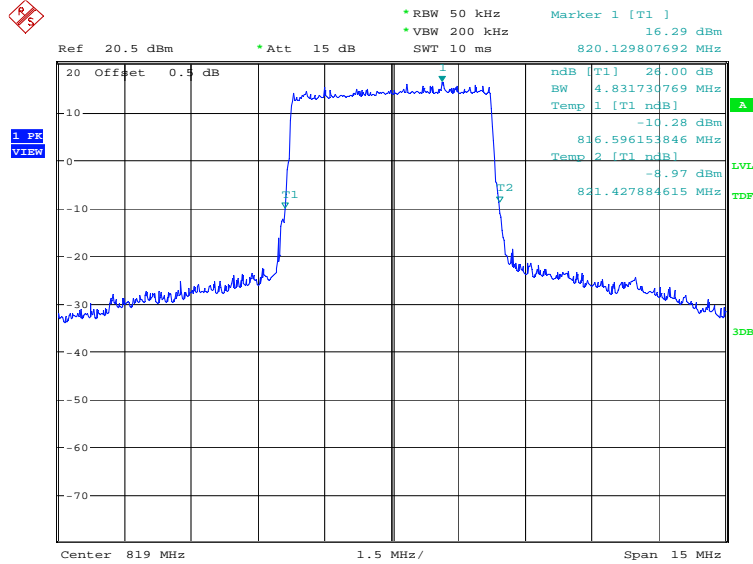
LTE band 26(814MHz~824MHz), 3MHz Bandwidth, 16QAM (-26dBc BW)



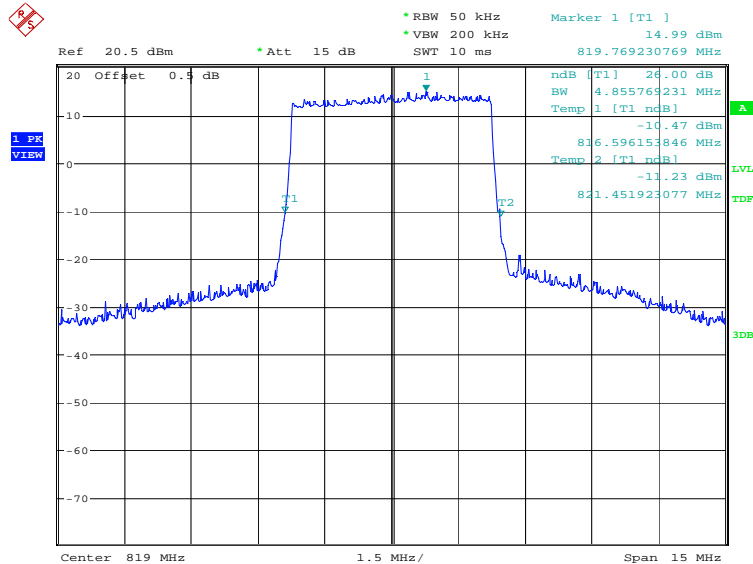
Date: 7.JUL.2023 10:00:47

LTE band 26(814MHz~824MHz), 5MHz (-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
819.0	QPSK	16QAM
	4831.73	4855.77

LTE band 26(814MHz~824MHz), 5MHz Bandwidth, QPSK (-26dBc BW)


Date: 7.JUL.2023 10:01:30

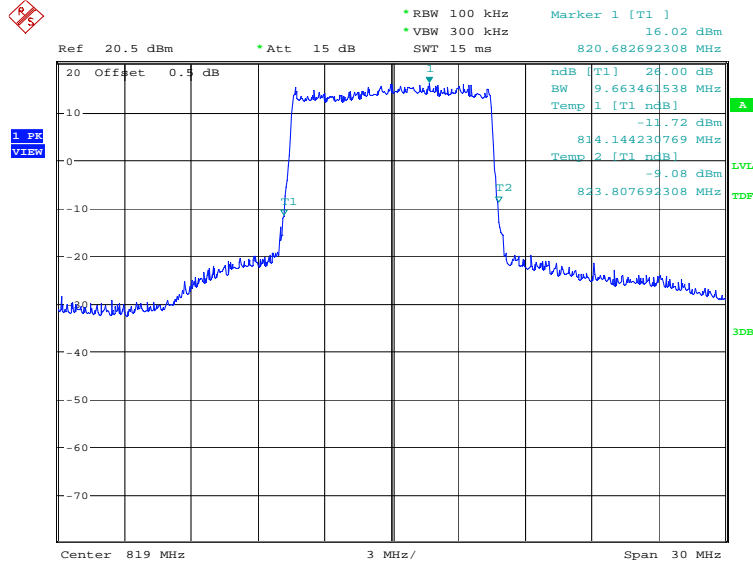
LTE band 26(814MHz~824MHz), 5MHz Bandwidth, 16QAM (-26dBc BW)


Date: 7.JUL.2023 10:02:10

LTE band 26(814MHz~824MHz), 10MHz (-26dBc)

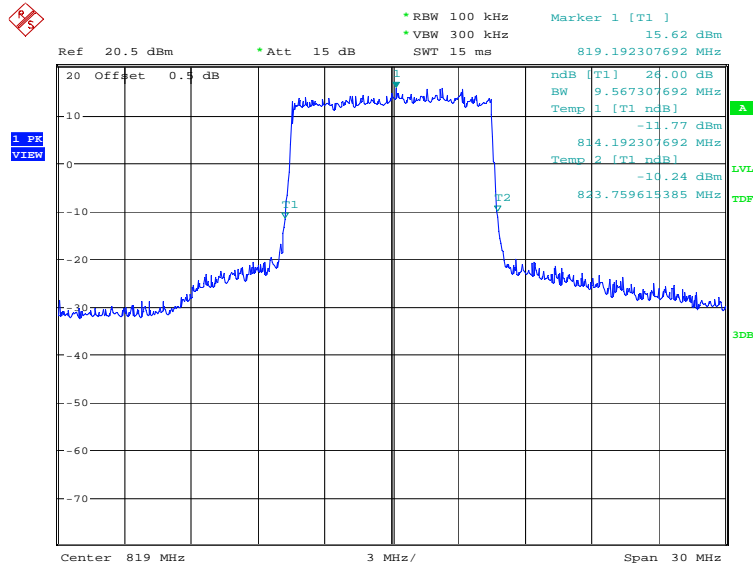
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
819.0	QPSK	16QAM
	9663.46	9567.31

LTE band 26(814MHz~824MHz), 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 7.JUL.2023 10:02:52

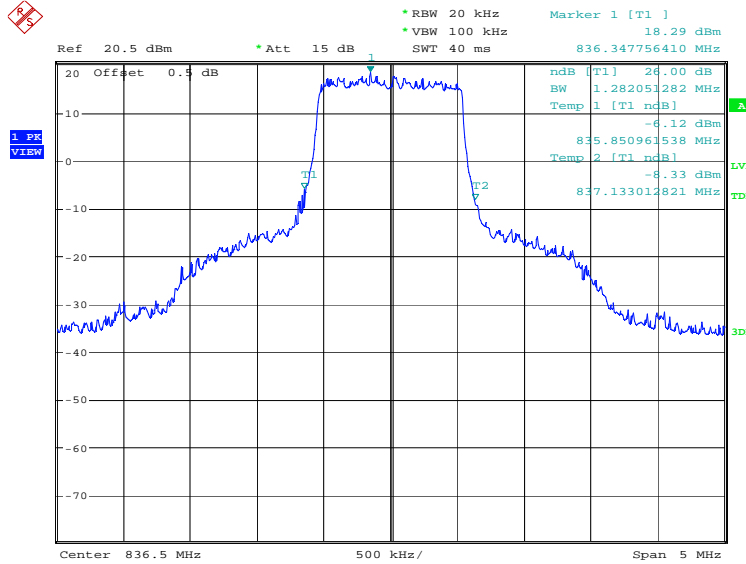
LTE band 26(814MHz~824MHz), 10MHz Bandwidth, 16QAM (-26dBc BW)



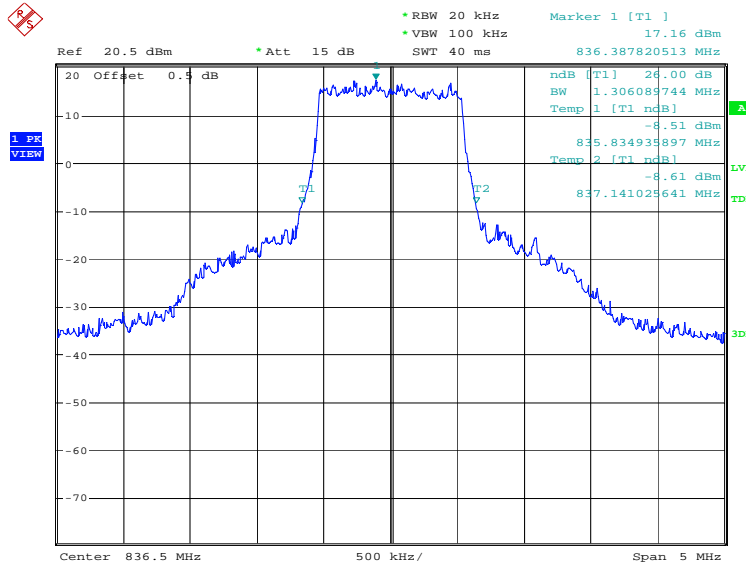
Date: 7.JUL.2023 10:03:33

LTE band 26(824MHz~849MHz), 1.4MHz (-26dBc)

Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	1282.05	1306.09

LTE band 26(824MHz~849MHz), 1.4MHz Bandwidth, QPSK (-26dBc BW)


Date: 7.JUL.2023 09:51:08

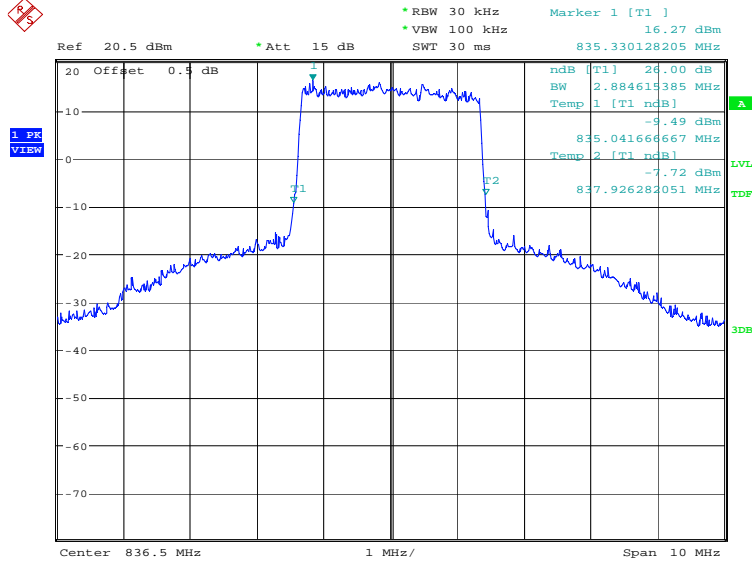
LTE band 26(824MHz~849MHz), 1.4MHz Bandwidth, 16QAM (-26dBc BW)


Date: 7.JUL.2023 09:51:49

LTE band 26(824MHz~849MHz), 3MHz (-26dBc)

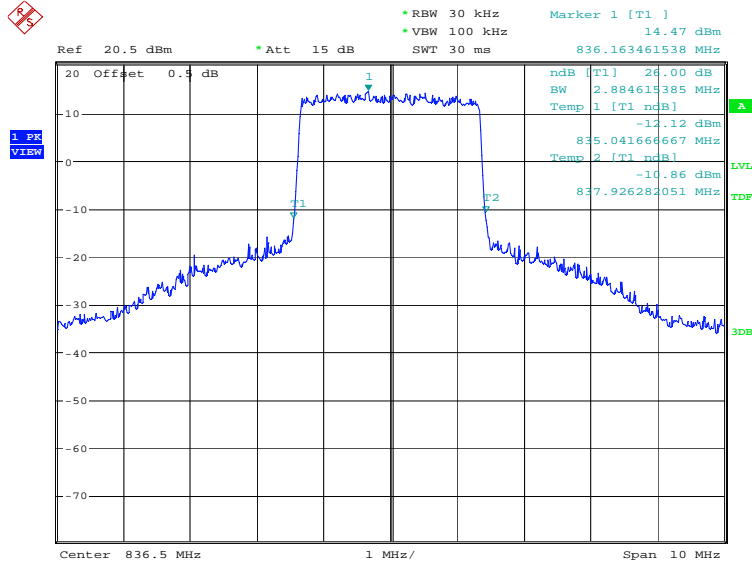
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	2884.62	2884.62

LTE band 26(824MHz~849MHz), 3MHz Bandwidth, QPSK (-26dBc BW)



Date: 7.JUL.2023 09:52:31

LTE band 26(824MHz~849MHz), 3MHz Bandwidth, 16QAM (-26dBc BW)

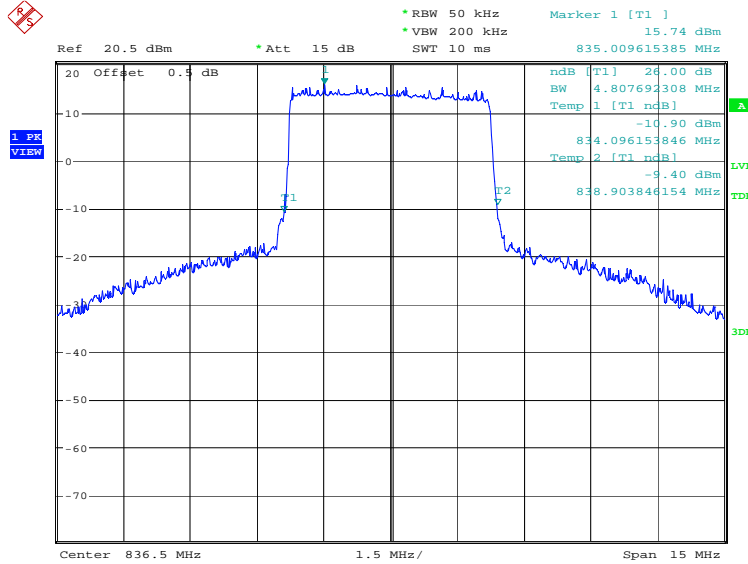


Date: 7.JUL.2023 09:53:11

LTE band 26(824MHz~849MHz), 5MHz (-26dBc)

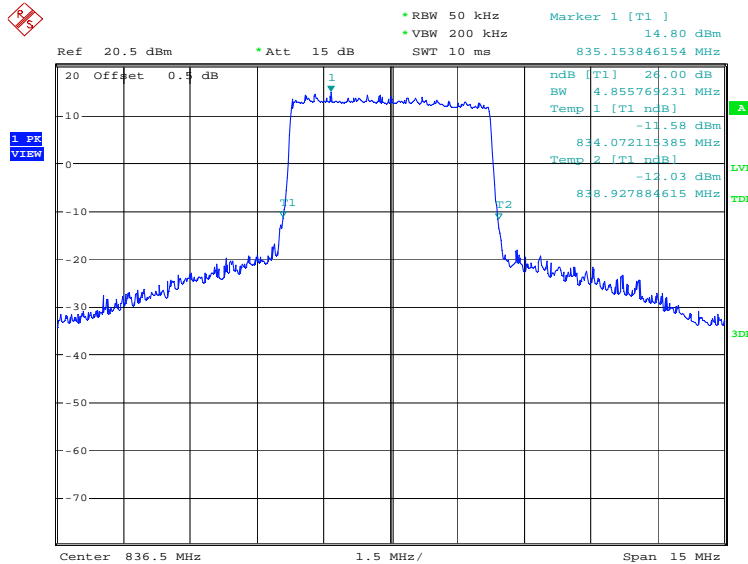
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	4807.69	4855.77

LTE band 26(824MHz~849MHz), 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 7.JUL.2023 09:53:53

LTE band 26(824MHz~849MHz), 5MHz Bandwidth, 16QAM (-26dBc BW)

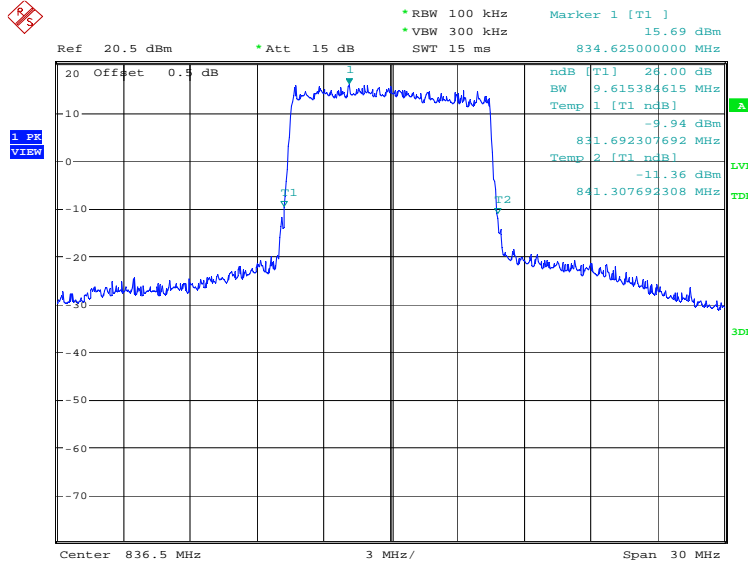


Date: 7.JUL.2023 09:54:34

LTE band 26(824MHz~849MHz), 10MHz (-26dBc)

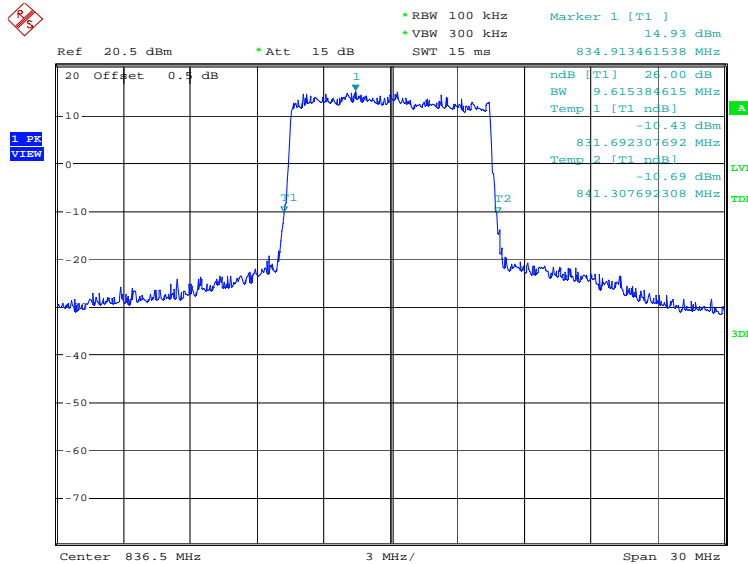
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	9615.38	9615.38

LTE band 26(824MHz~849MHz), 10MHz Bandwidth, QPSK (-26dBc BW)



Date: 7.JUL.2023 09:55:16

LTE band 26(824MHz~849MHz), 10MHz Bandwidth, 16QAM (-26dBc BW)

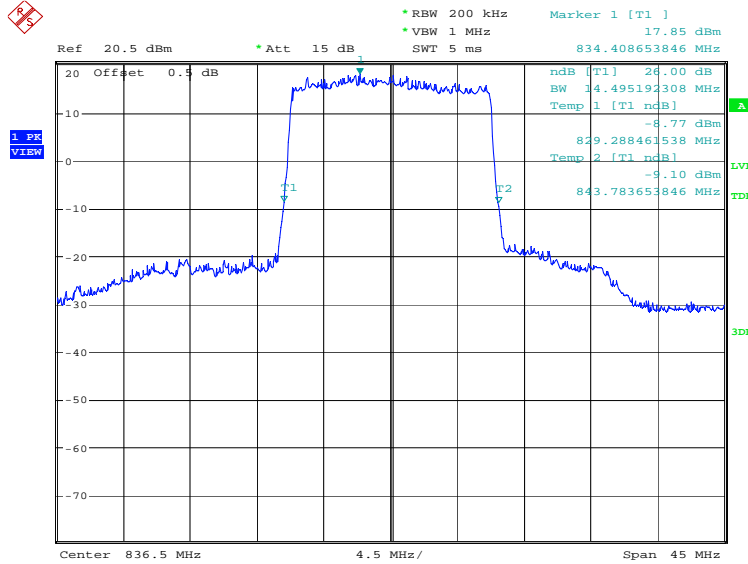


Date: 7.JUL.2023 09:55:57

LTE band 26(824MHz~849MHz), 15MHz (-26dBc)

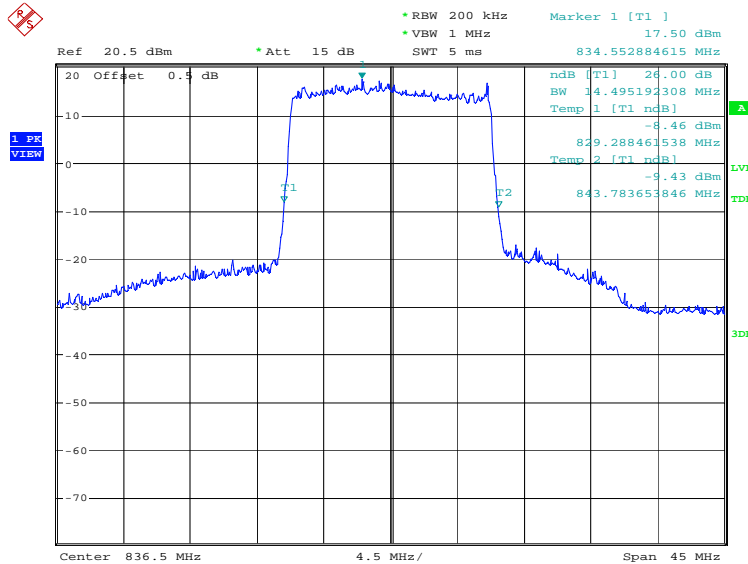
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	14495.19	14495.19

LTE band 26(824MHz~849MHz), 15MHz Bandwidth, QPSK (-26dBc BW)



Date: 7.JUL.2023 09:56:40

LTE band 26(824MHz~849MHz), 15MHz Bandwidth, 16QAM (-26dBc BW)

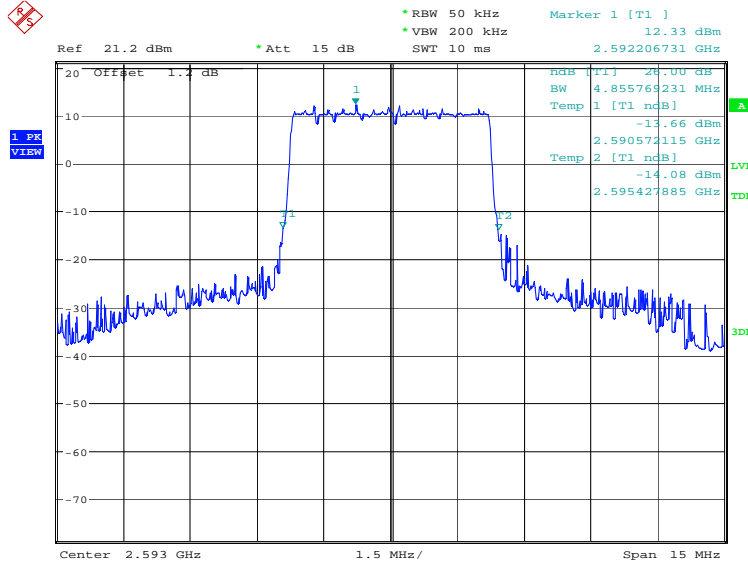


Date: 7.JUL.2023 09:57:20

LTE band 41, 5MHz (-26dBc)

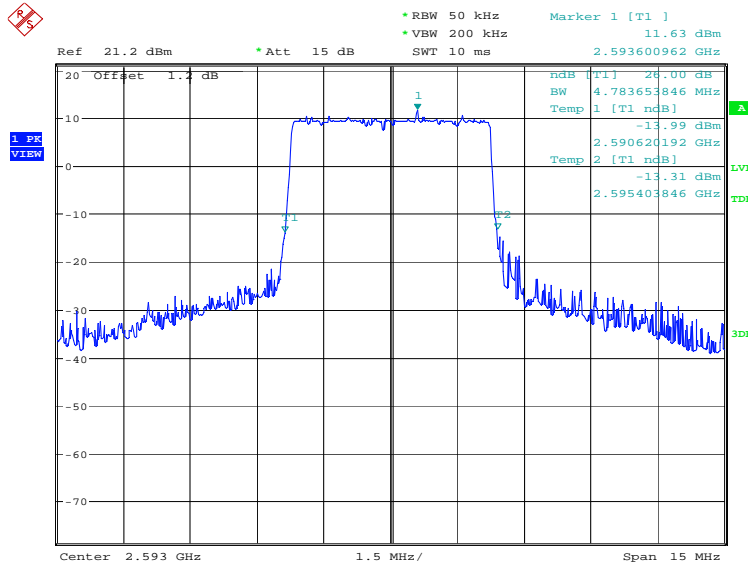
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	4855.77	4783.65

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



Date: 6.JUL.2023 19:15:41

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

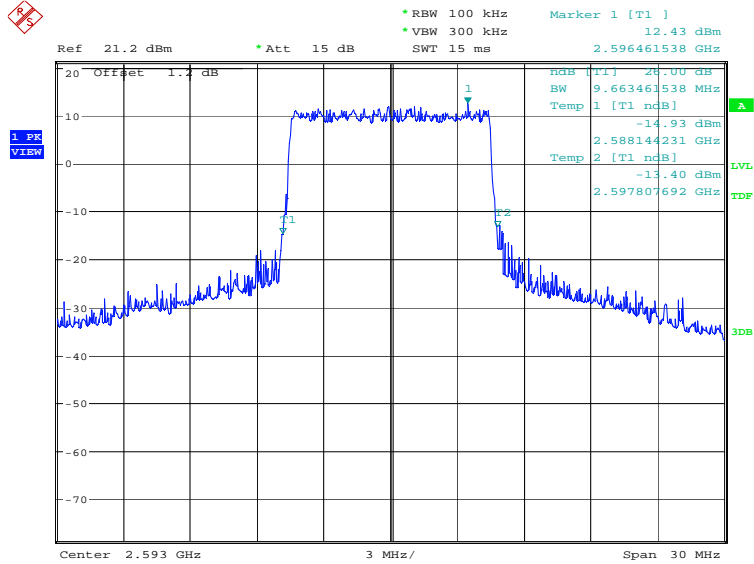


Date: 6.JUL.2023 19:16:22

LTE band 41, 10MHz (-26dBc)

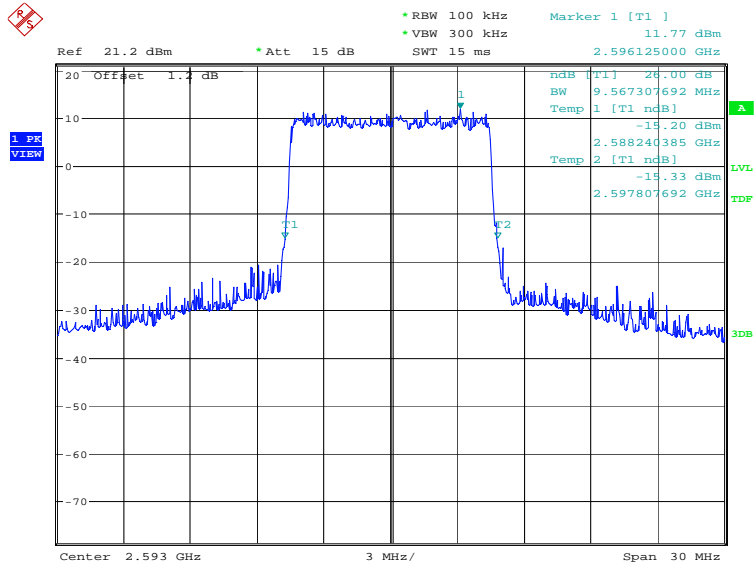
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	9663.46	9567.31

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



Date: 6.JUL.2023 19:17:04

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

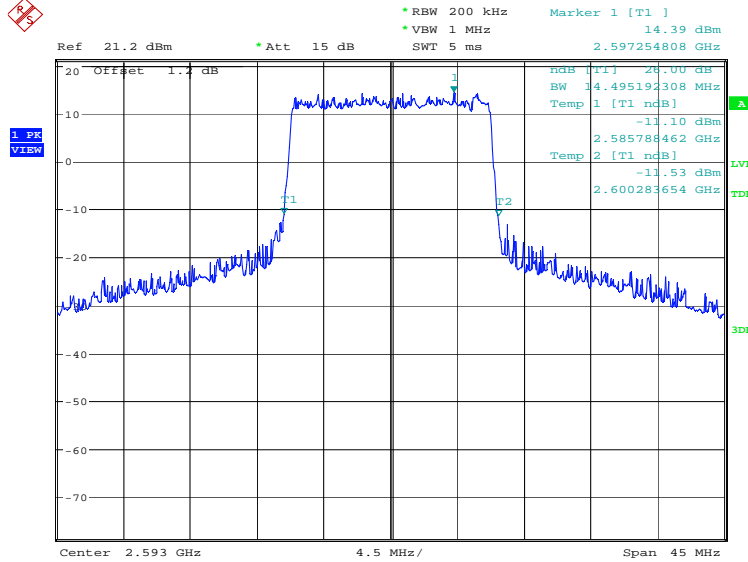


Date: 6.JUL.2023 19:17:46

LTE band 41, 15MHz (-26dBc)

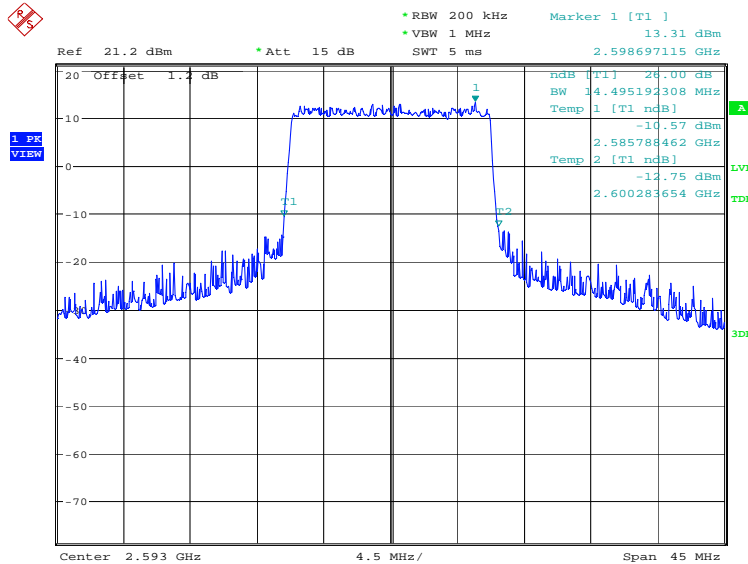
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	14495.19	14495.19

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



Date: 6.JUL.2023 19:18:28

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

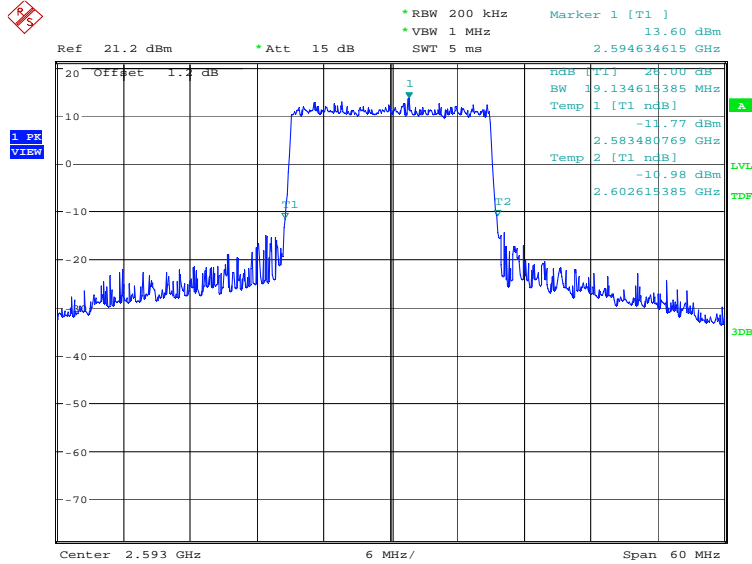


Date: 6.JUL.2023 19:19:09

LTE band 41, 20MHz (-26dBc)

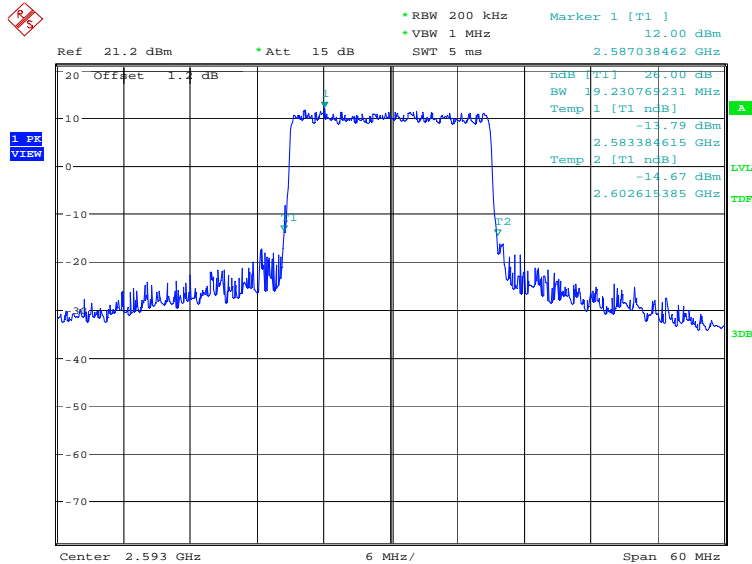
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2593.0	QPSK	16QAM
	19134.62	19230.77

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



Date: 6.JUL.2023 19:19:52

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

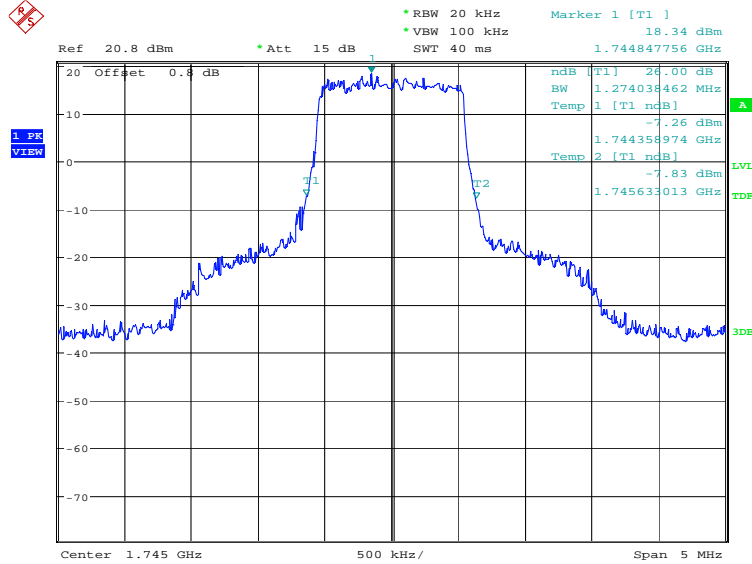


Date: 6.JUL.2023 19:20:33

LTE band 66, 1.4MHz (-26dBc)

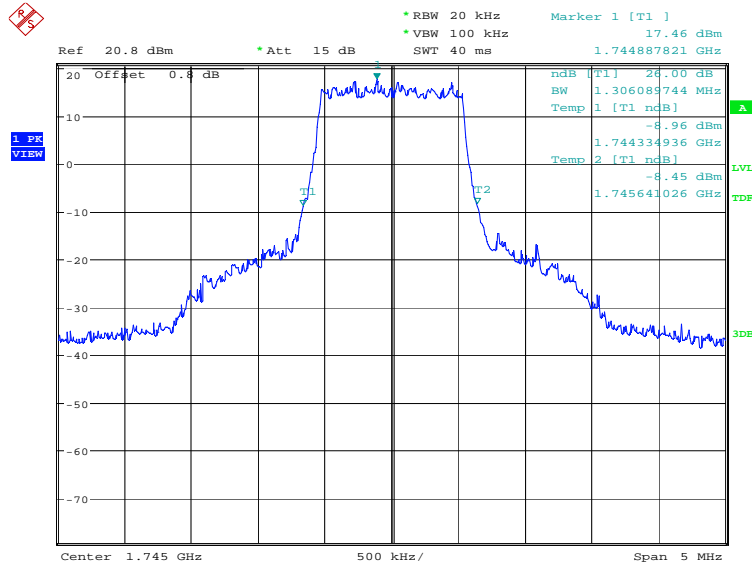
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1745.0	QPSK
	1274.04	1306.09

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



Date: 6.JUL.2023 19:06:35

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

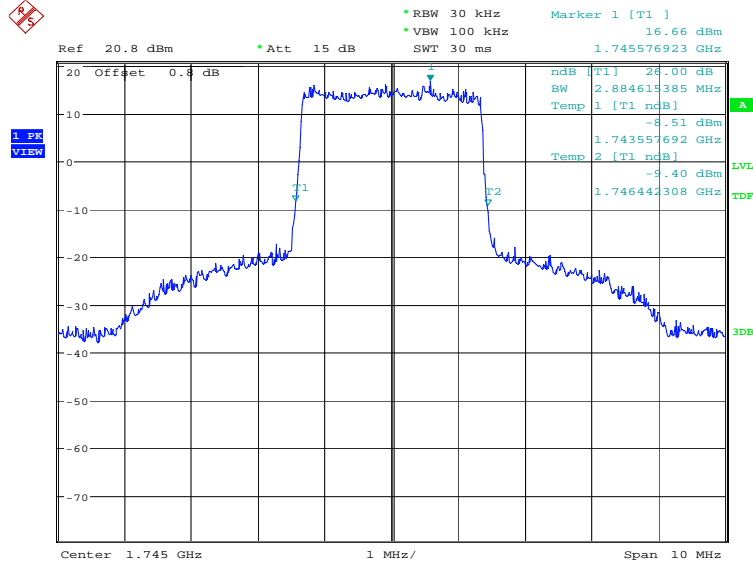


Date: 6.JUL.2023 19:07:16

LTE band 66, 3MHz (-26dBc)

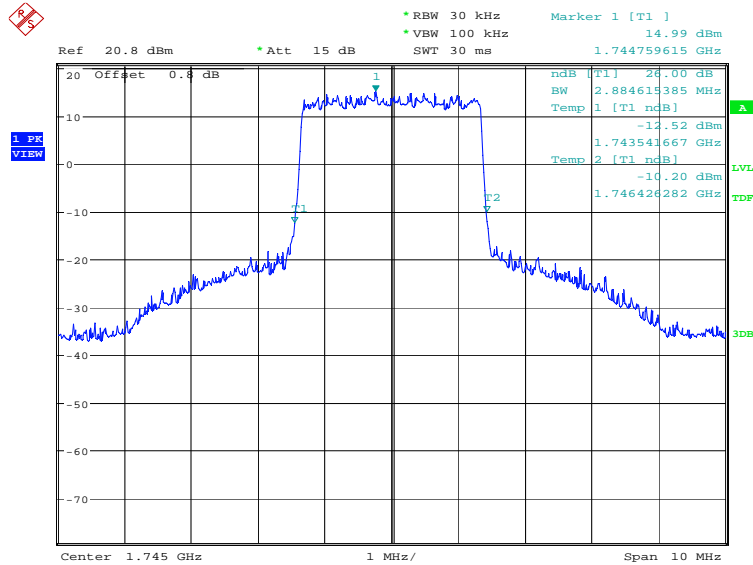
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1745.0	QPSK
2884.62		2884.62

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



Date: 6.JUL.2023 19:07:58

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

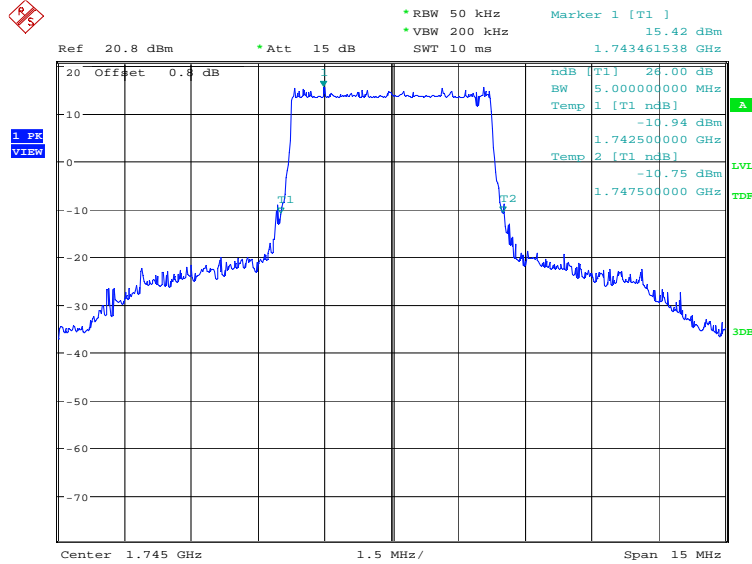


Date: 6.JUL.2023 19:08:39

LTE band 66, 5MHz (-26dBc)

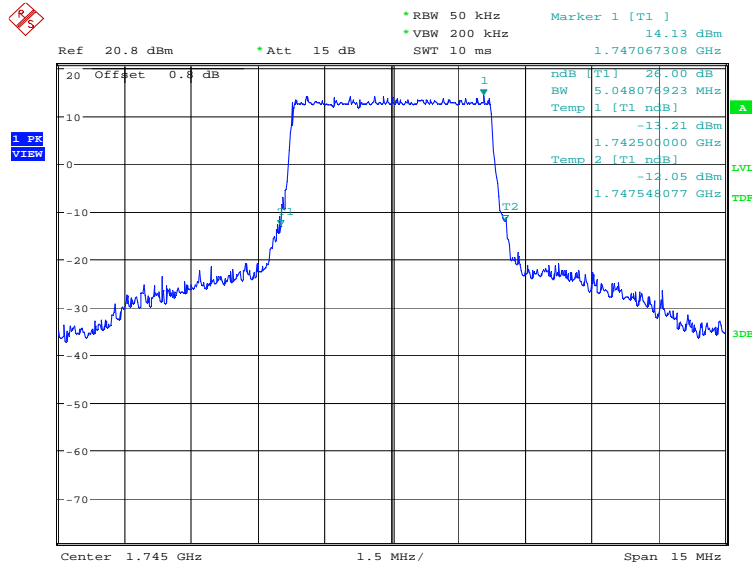
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	5000.00	5048.08

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



Date: 6.JUL.2023 19:09:21

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

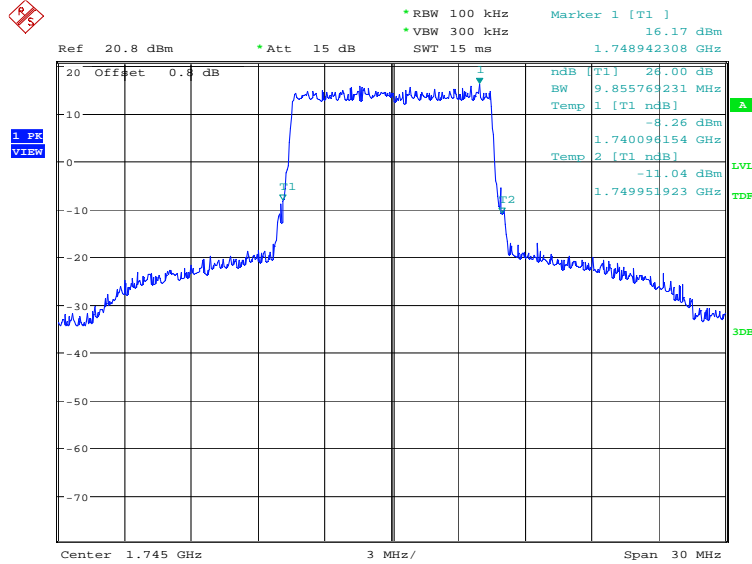


Date: 6.JUL.2023 19:10:02

LTE band 66, 10MHz (-26dBc)

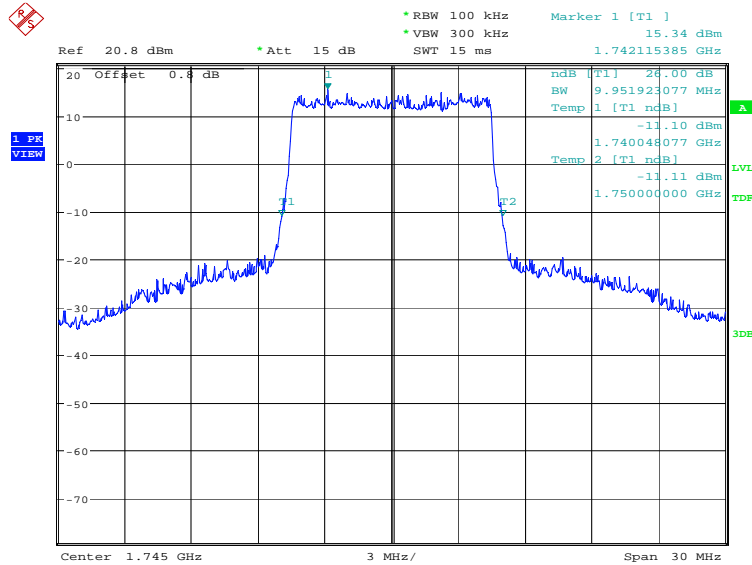
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1745.0	QPSK	16QAM
	9855.77	9951.92

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



Date: 6.JUL.2023 19:10:45

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

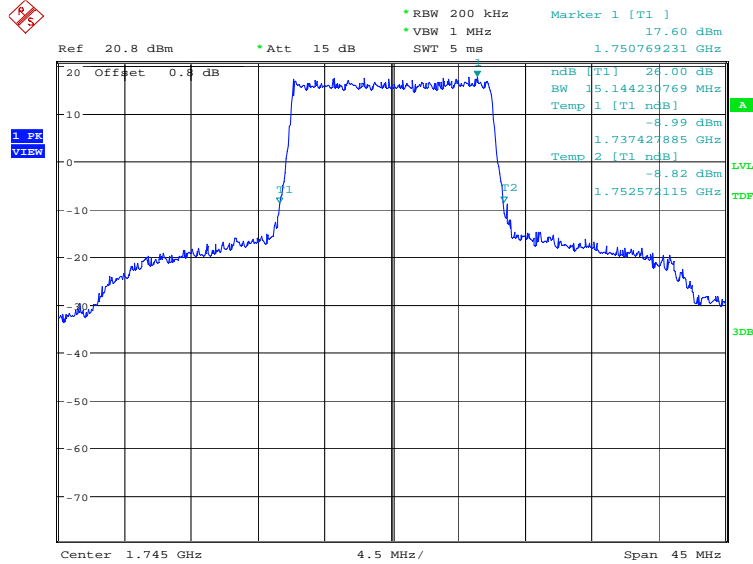


Date: 6.JUL.2023 19:11:26

LTE band 66, 15MHz (-26dBc)

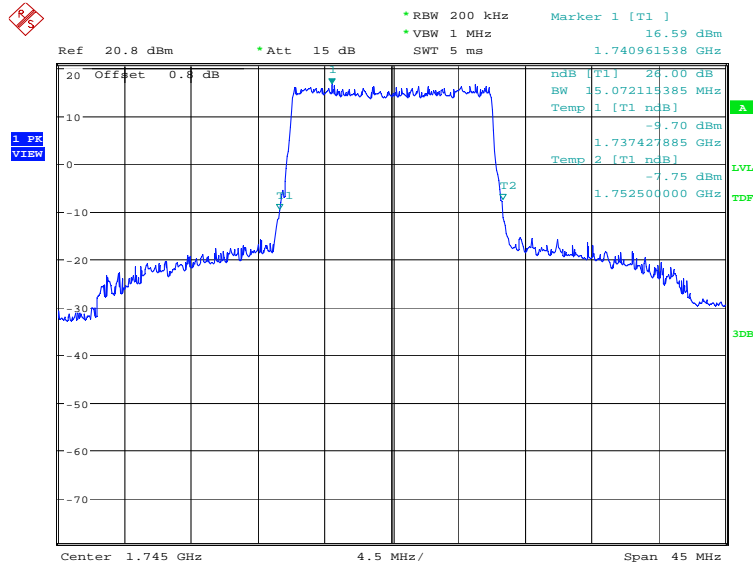
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1745.0	QPSK
	15144.23	15072.12

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



Date: 6.JUL.2023 19:12:08

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

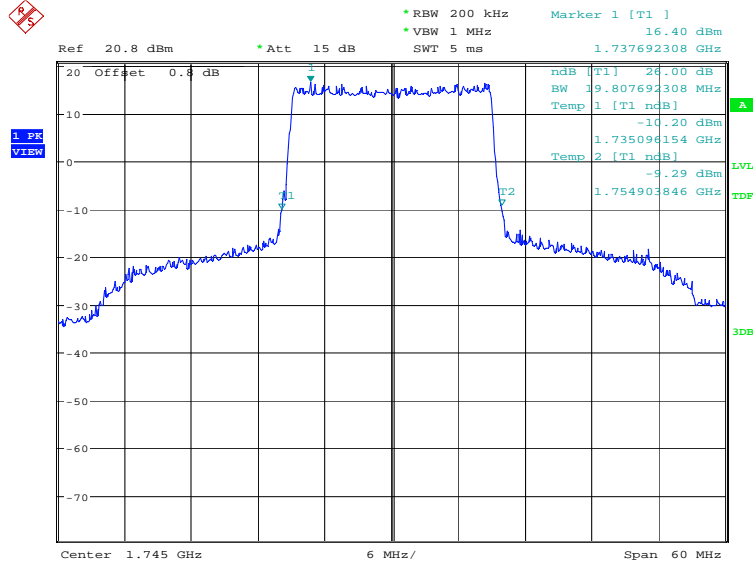


Date: 6.JUL.2023 19:12:49

LTE band 66, 20MHz (-26dBc)

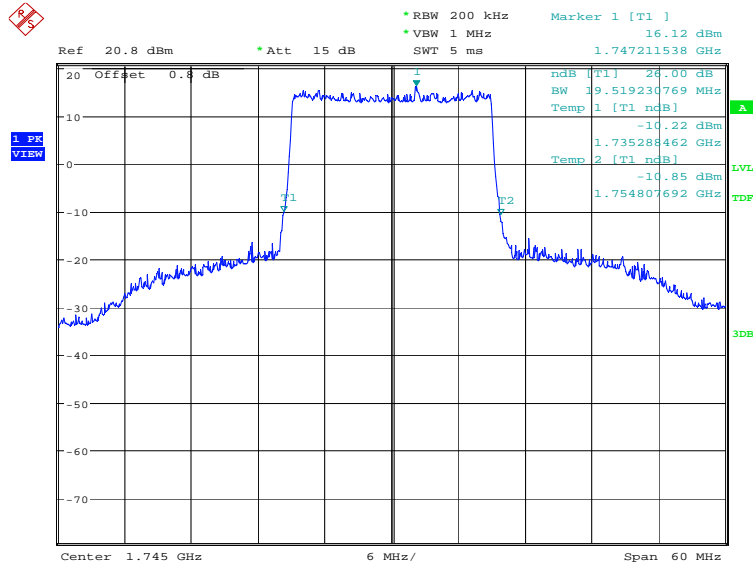
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	1745.0	QPSK
	19807.69	19519.23

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



Date: 6.JUL.2023 19:13:32

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

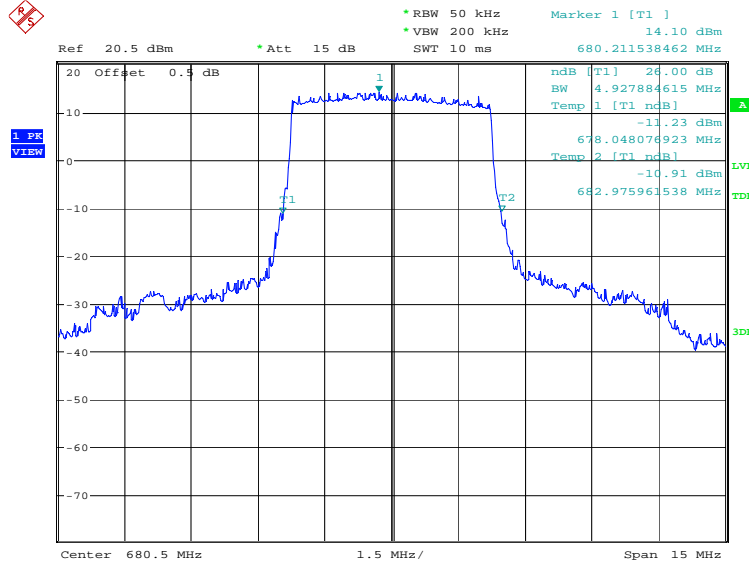


Date: 6.JUL.2023 19:14:13

LTE band 71, 5MHz (-26dBc)

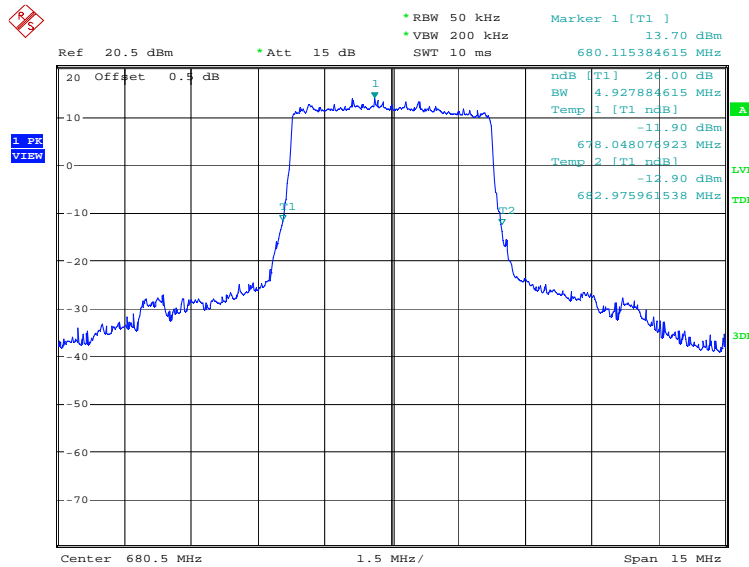
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
680.5	QPSK	16QAM
	4927.88	4927.88

LTE band 71, 5MHz Bandwidth, QPSK (-26dBc BW)



Date: 7.JUL.2023 09:38:59

LTE band 71, 5MHz Bandwidth, 16QAM (-26dBc BW)

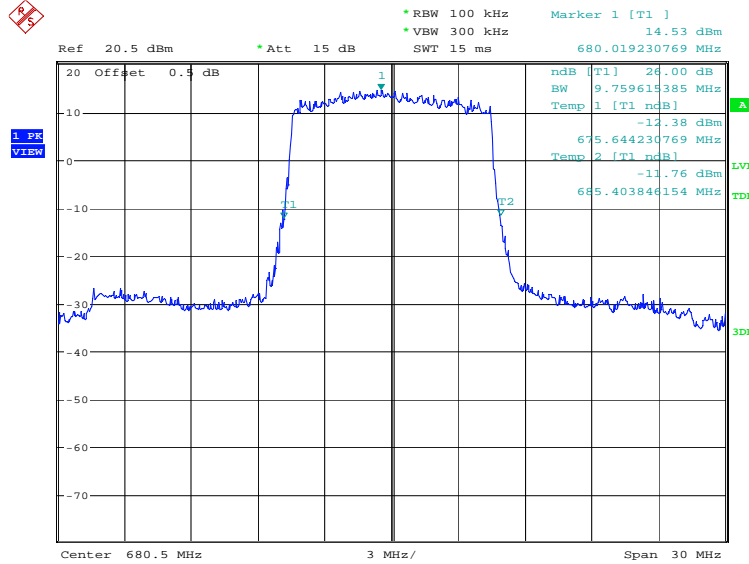


Date: 7.JUL.2023 09:39:39

LTE band 71, 10MHz (-26dBc)

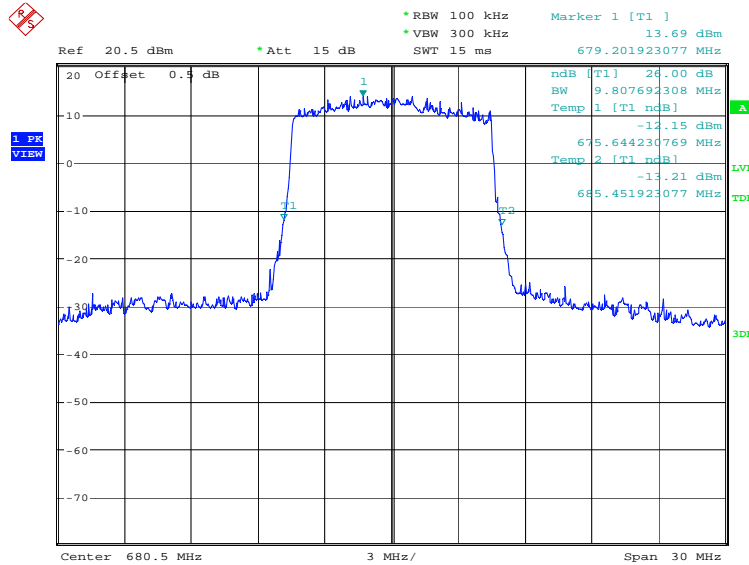
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	680.5	QPSK
	9759.62	9807.69

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



Date: 7.JUL.2023 09:40:21

LTE band 71, 10MHz Bandwidth, 16QAM (-26dBc BW)

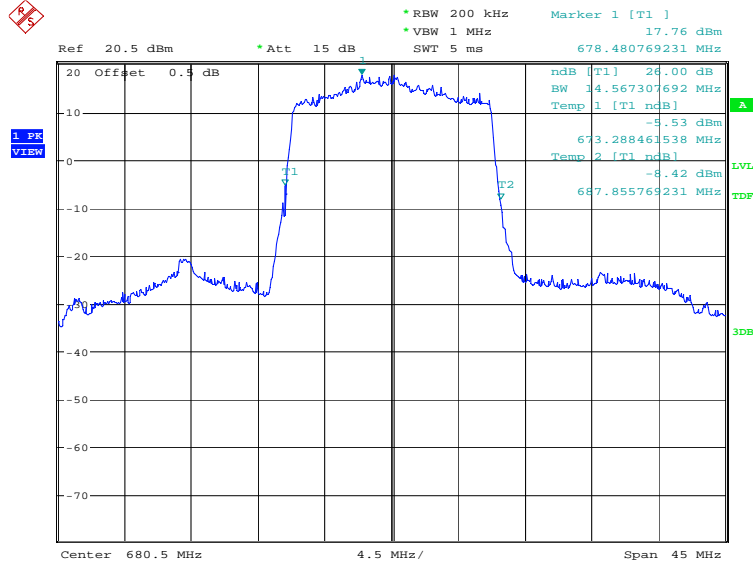


Date: 7.JUL.2023 09:41:02

LTE band 71, 15MHz (-26dBc)

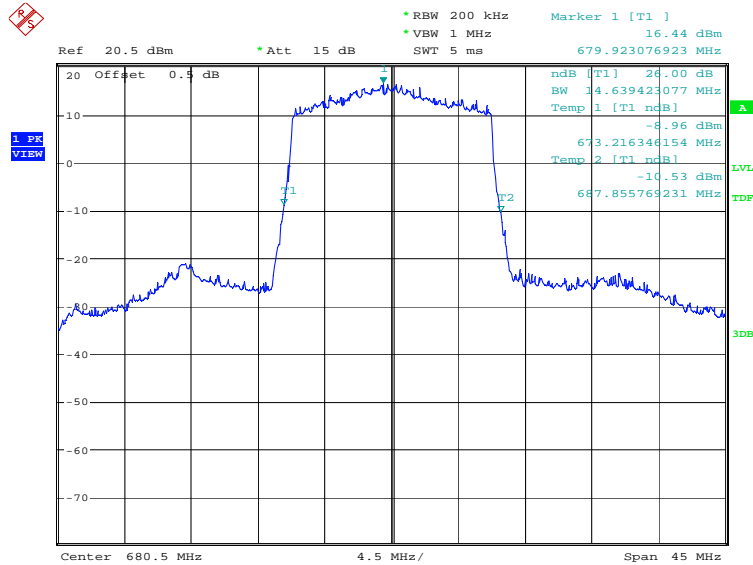
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	680.5	QPSK
	14567.31	14639.42

LTE band 71, 15MHz Bandwidth, QPSK (-26dBc BW)



Date: 7.JUL.2023 09:41:44

LTE band 71, 15MHz Bandwidth, 16QAM (-26dBc BW)

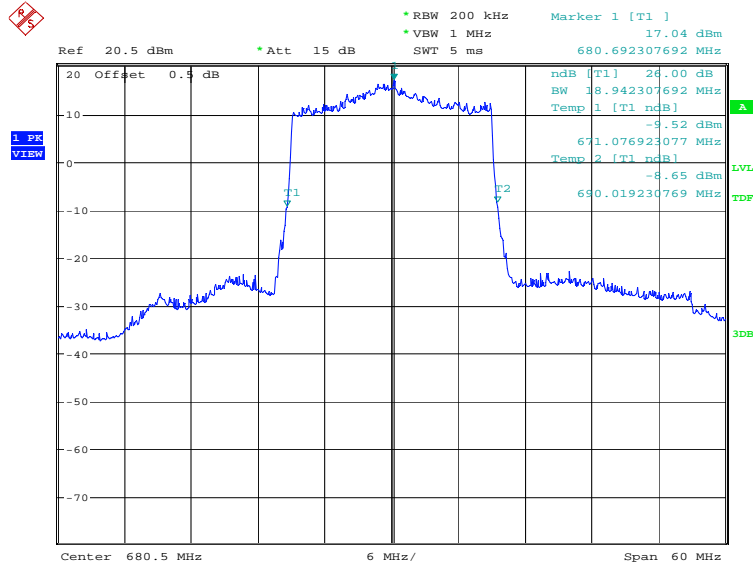


Date: 7.JUL.2023 09:42:25

LTE band 71, 20MHz (-26dBc)

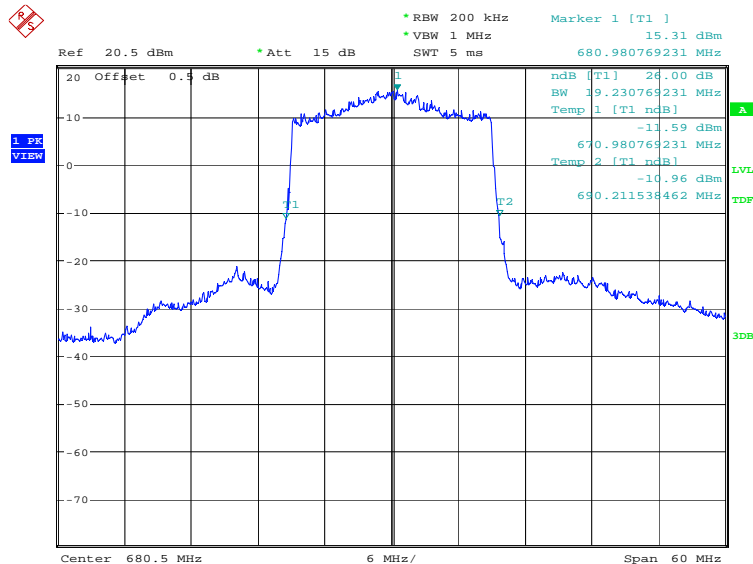
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
	680.5	QPSK
	18942.31	19230.77

LTE band 71, 20MHz Bandwidth, QPSK (-26dBc BW)



Date: 7.JUL.2023 09:43:07

LTE band 71, 20MHz Bandwidth, 16QAM (-26dBc BW)



Date: 7.JUL.2023 09:43:48

Note: Expanded measurement uncertainty is $U = 3428 \text{ Hz}$, $k = 2$.

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(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.

Part 90.691 states that out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows: For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz. For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

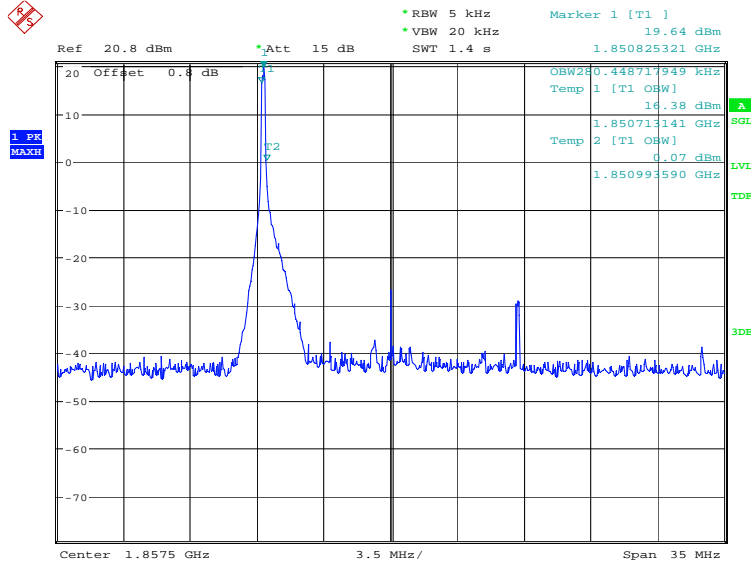
The spectrum analyzer readings are corrected by $[10 \log(1/\text{duty cycle})]$ for the non-continuous transmitting scenario.

A.6.2 Measurement result

Only the worst case result is given below

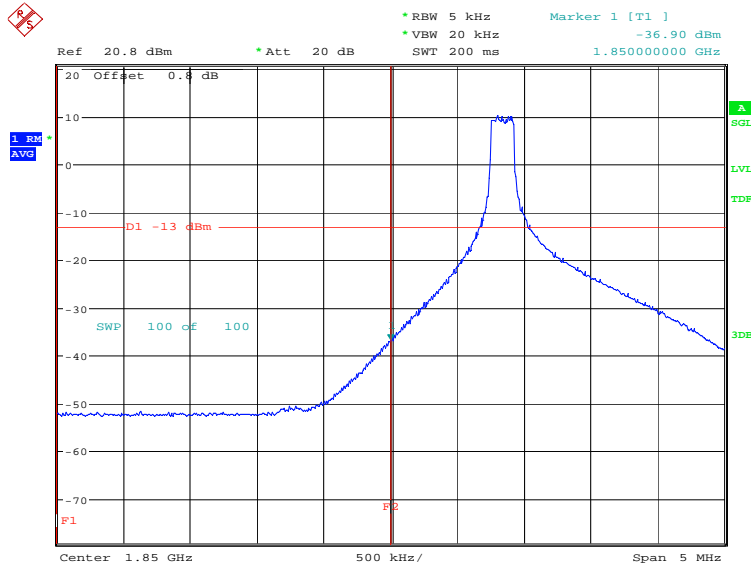
LTE band 2

OBW: 1RB-low_offset



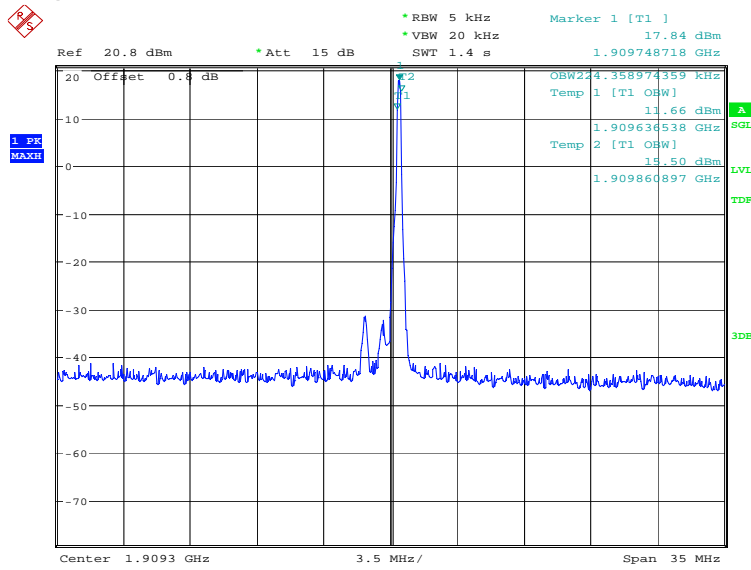
Date: 26.JUL.2023 09:35:32

LOW BAND EDGE BLOCK-1RB-low_offset



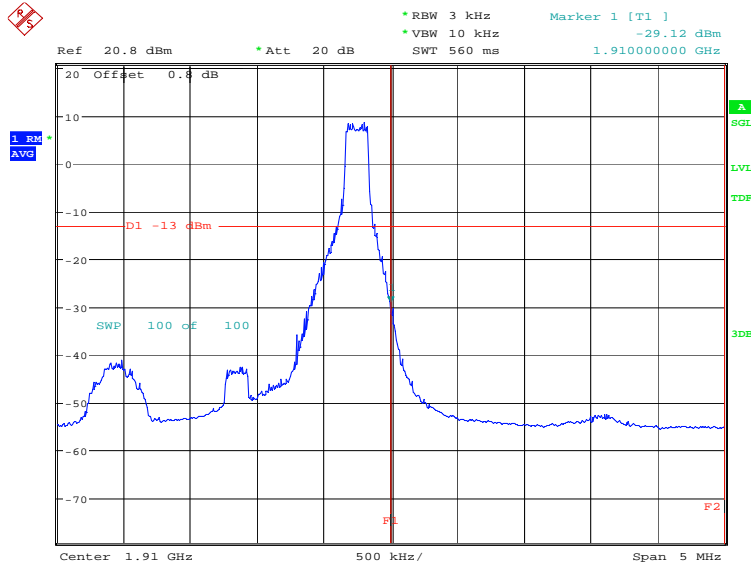
Date: 26.JUL.2023 09:36:46

OBW: 1RB-high_offset



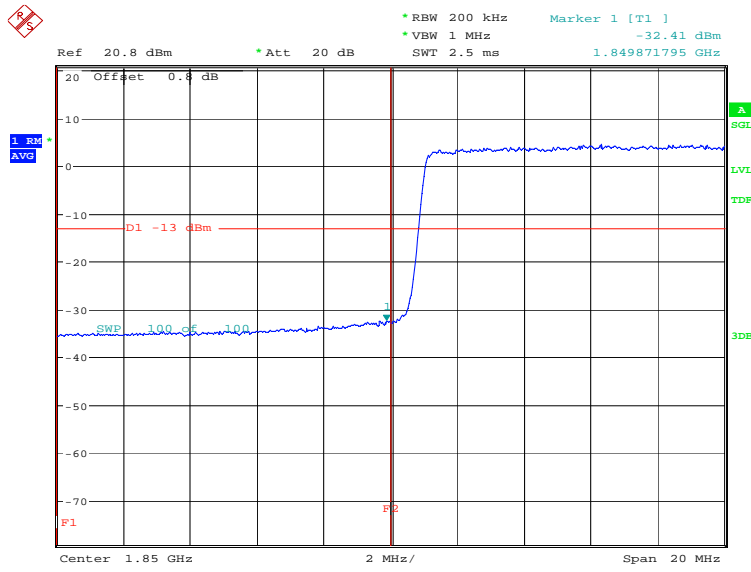
Date: 26.JUL.2023 09:39:38

HIGH BAND EDGE BLOCK-1RB-high_offset



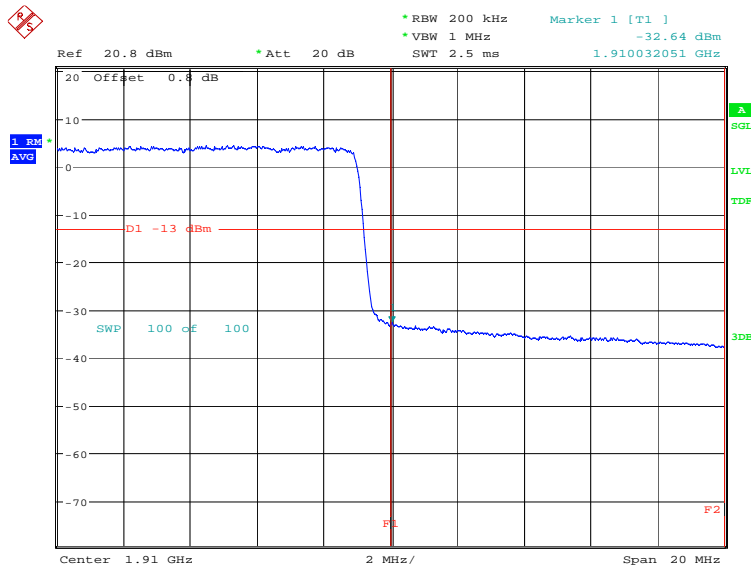
Date: 26.JUL.2023 09:40:53

LOW BAND EDGE BLOCK-20MHz-100%RB



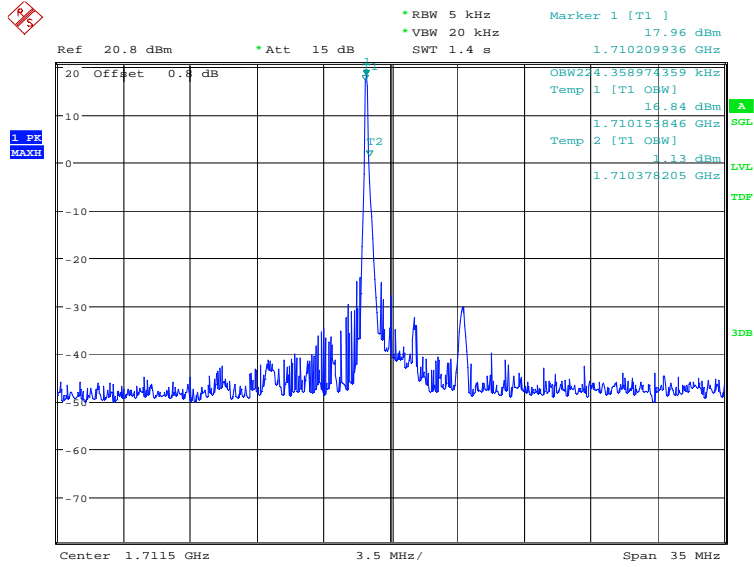
Date: 26.JUL.2023 09:37:22

HIGH BAND EDGE BLOCK-20MHz-100%RB



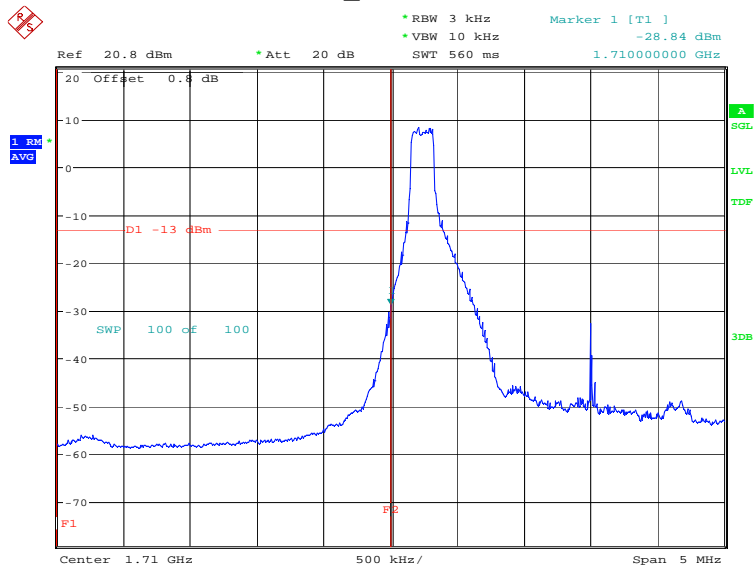
Date: 26.JUL.2023 09:41:28

LTE band 4
OBW: 1RB-low_offset



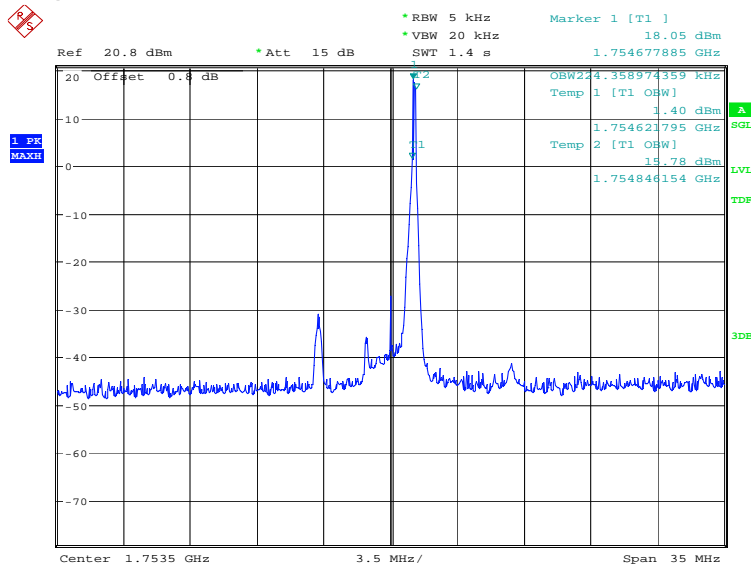
Date: 26.JUL.2023 09:45:28

LOW BAND EDGE BLOCK-1RB-low_offset



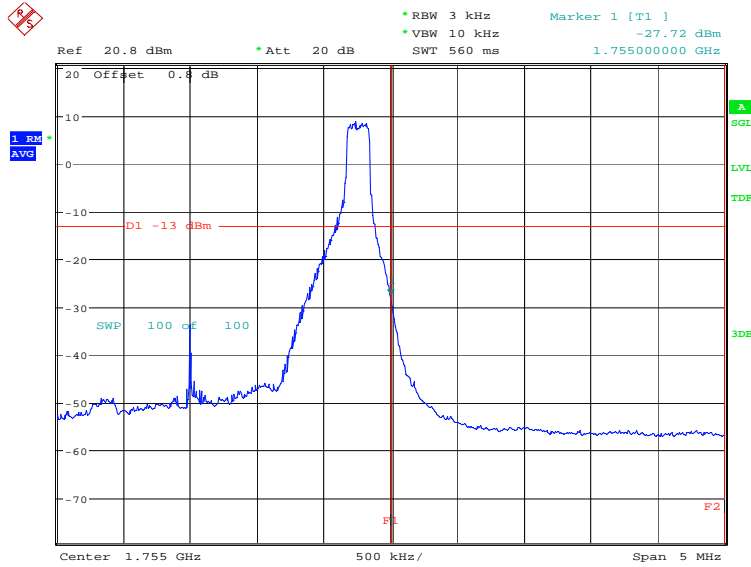
Date: 26.JUL.2023 09:46:43

OBW: 1RB-high_offset



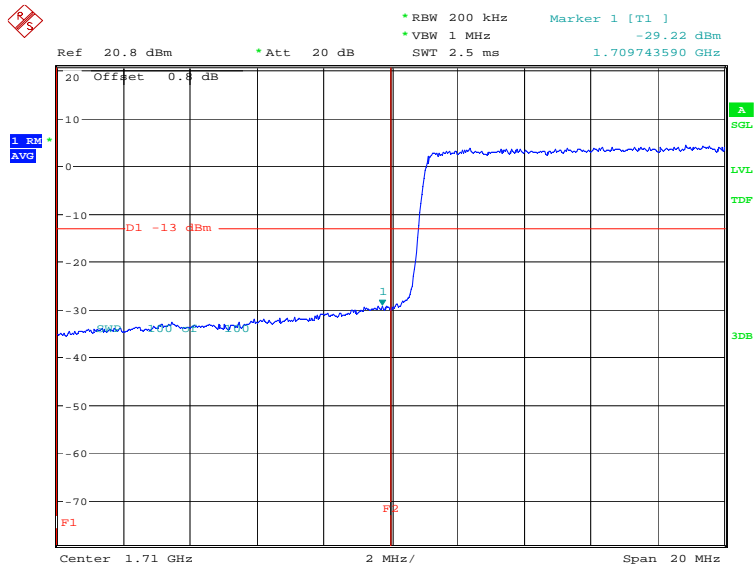
Date: 26.JUL.2023 09:49:40

HIGH BAND EDGE BLOCK-1RB-high_offset



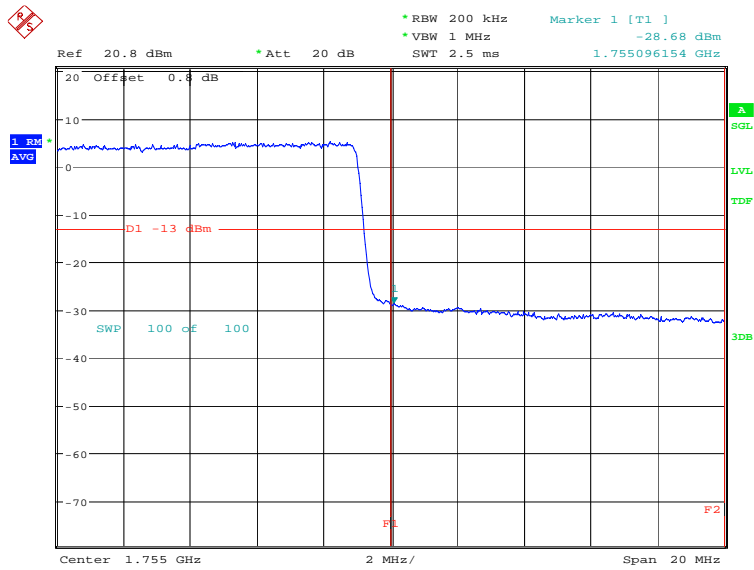
Date: 26.JUL.2023 09:50:54

LOW BAND EDGE BLOCK-20MHz-100%RB



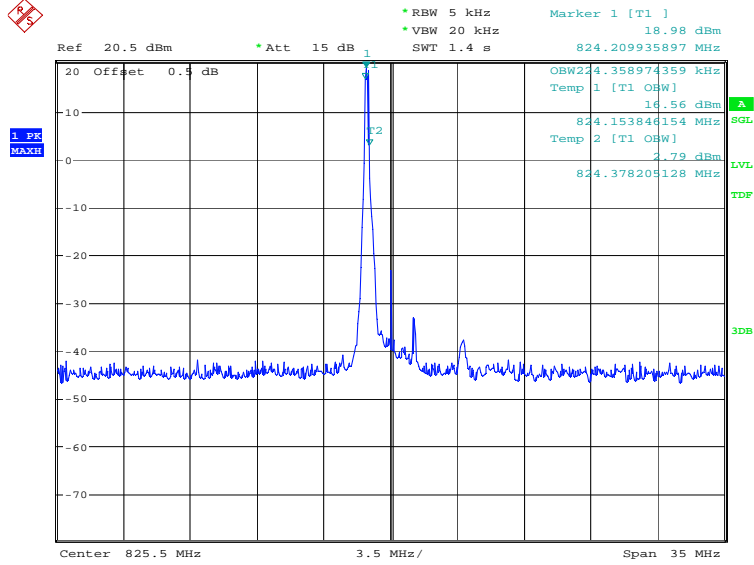
Date: 26.JUL.2023 09:47:19

HIGH BAND EDGE BLOCK-20MHz-100%RB



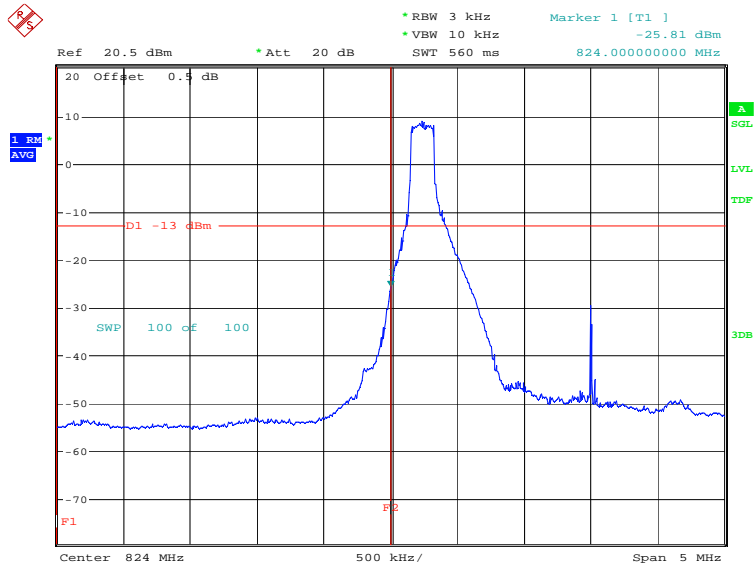
Date: 26.JUL.2023 09:51:30

LTE band 5
OBW: 1RB-low_offset



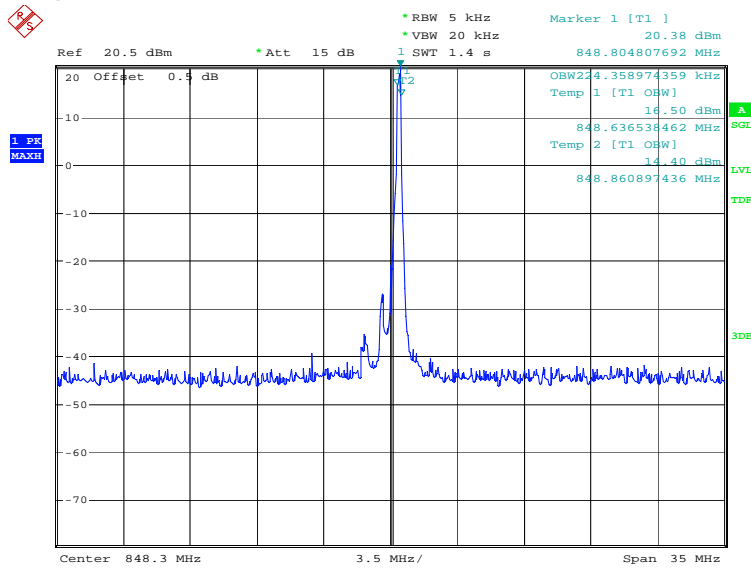
Date: 26.JUL.2023 08:53:33

LOW BAND EDGE BLOCK-1RB-low_offset



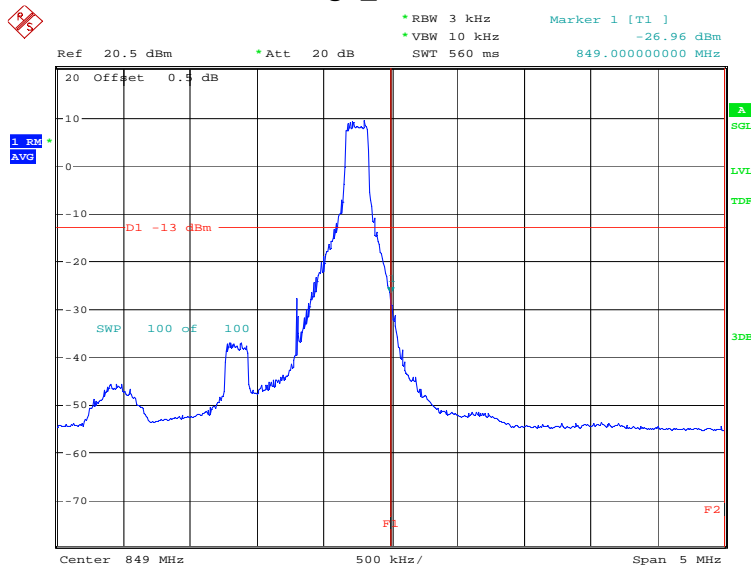
Date: 26.JUL.2023 08:54:47

OBW: 1RB-high_offset



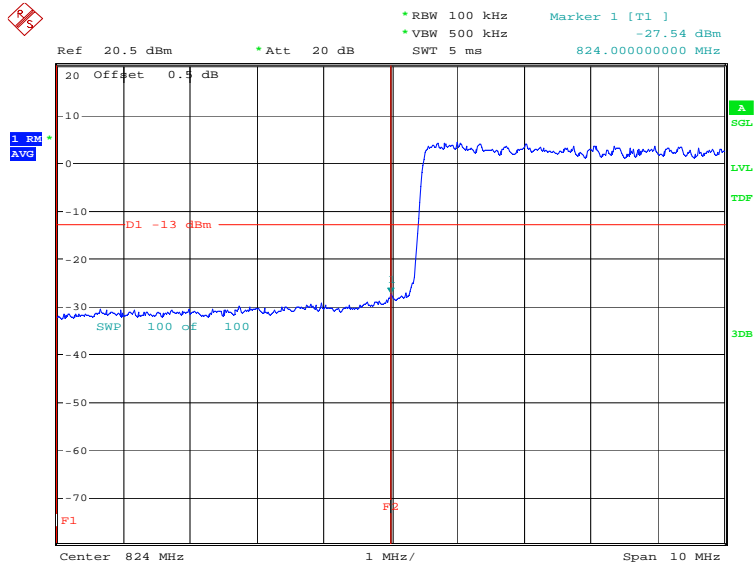
Date: 26.JUL.2023 08:59:21

HIGH BAND EDGE BLOCK-1RB-high_offset



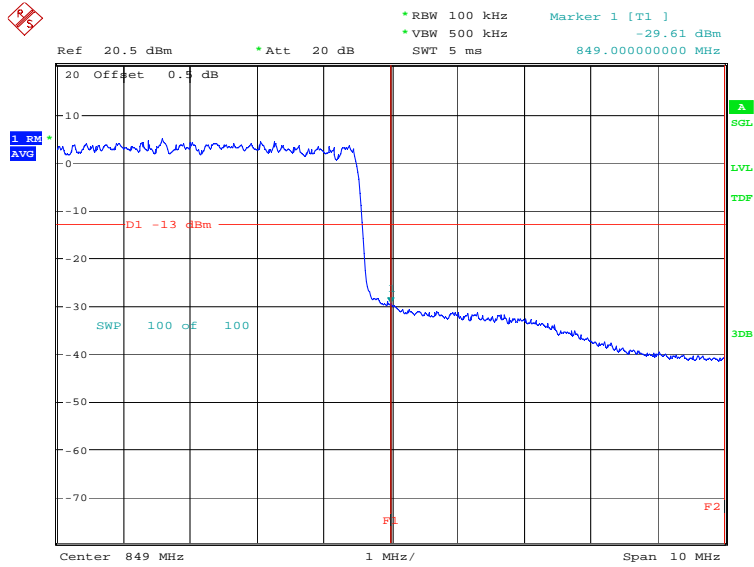
Date: 26.JUL.2023 09:00:35

LOW BAND EDGE BLOCK-10MHz-100%RB



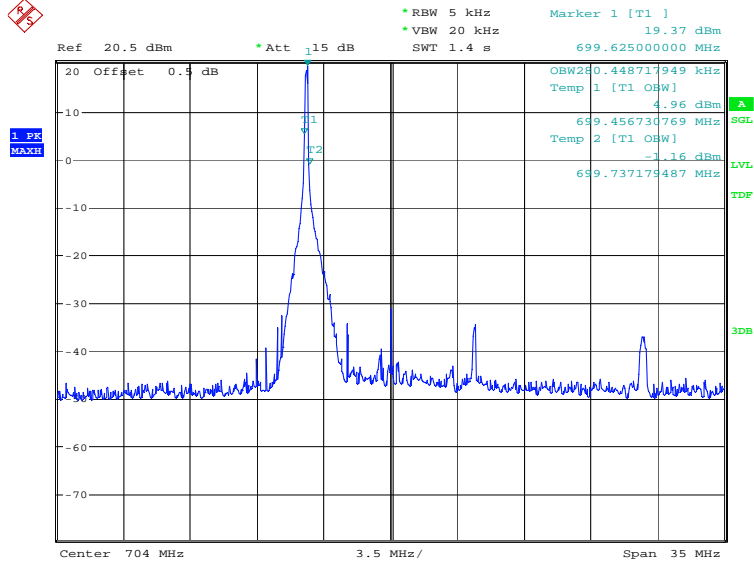
Date: 26.JUL.2023 08:55:23

HIGH BAND EDGE BLOCK-10MHz-100%RB



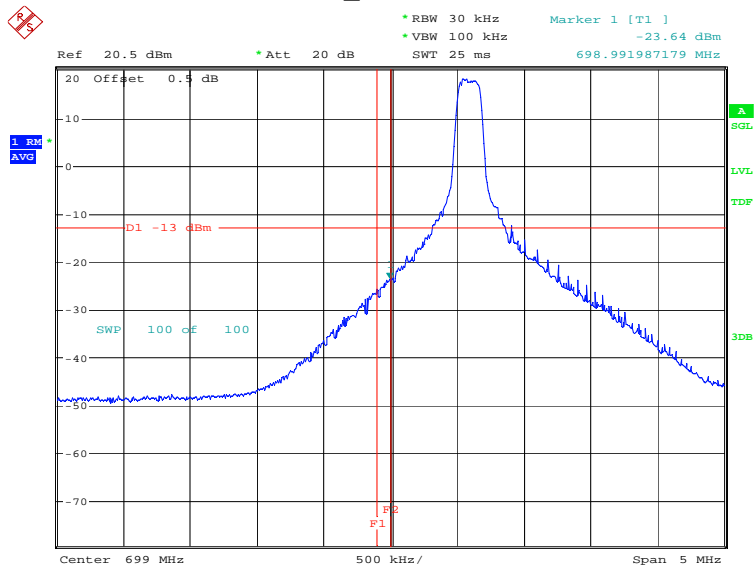
Date: 26.JUL.2023 09:01:11

LTE band 12
OBW: 1RB-low_offset



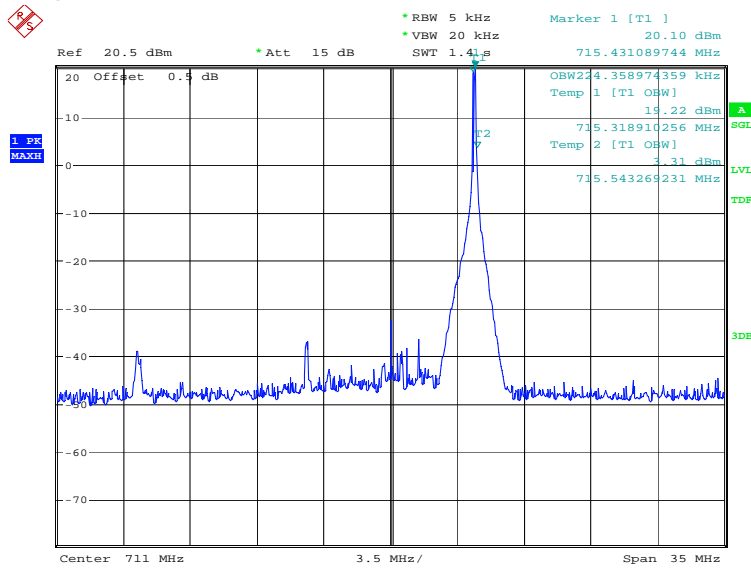
Date: 26.JUL.2023 09:02:46

LOW BAND EDGE BLOCK-1RB-low_offset



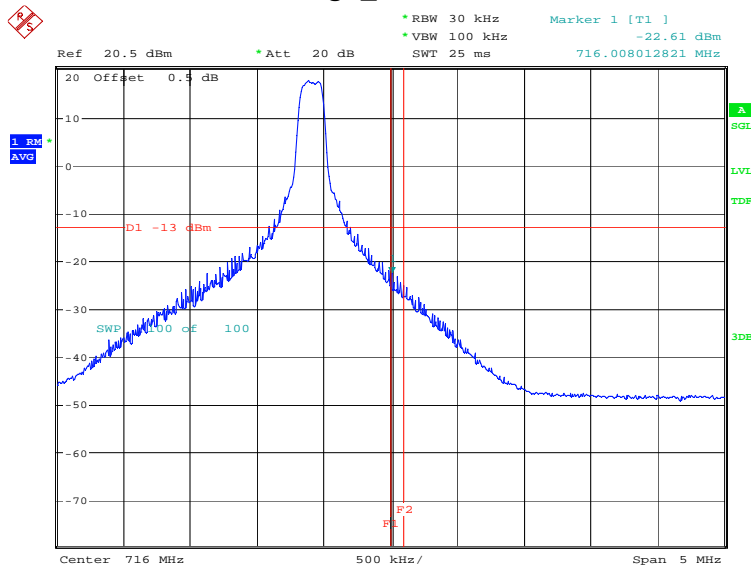
Date: 26.JUL.2023 09:03:06

OBW: 1RB-high_offset



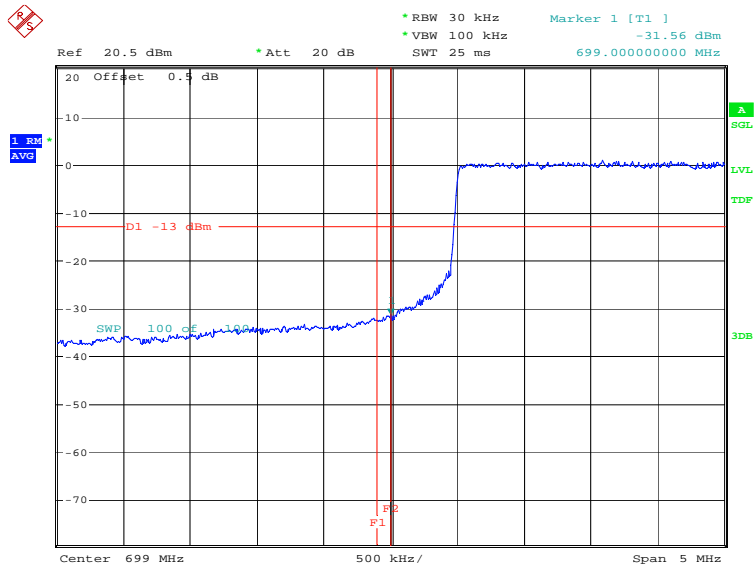
Date: 26.JUL.2023 09:03:42

HIGH BAND EDGE BLOCK-1RB-high_offset



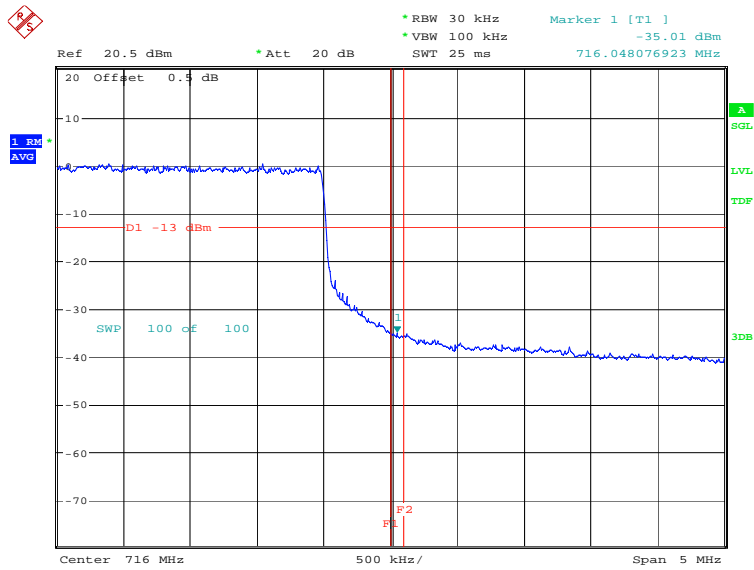
Date: 26.JUL.2023 09:04:01

LOW BAND EDGE BLOCK-10MHz-100%RB



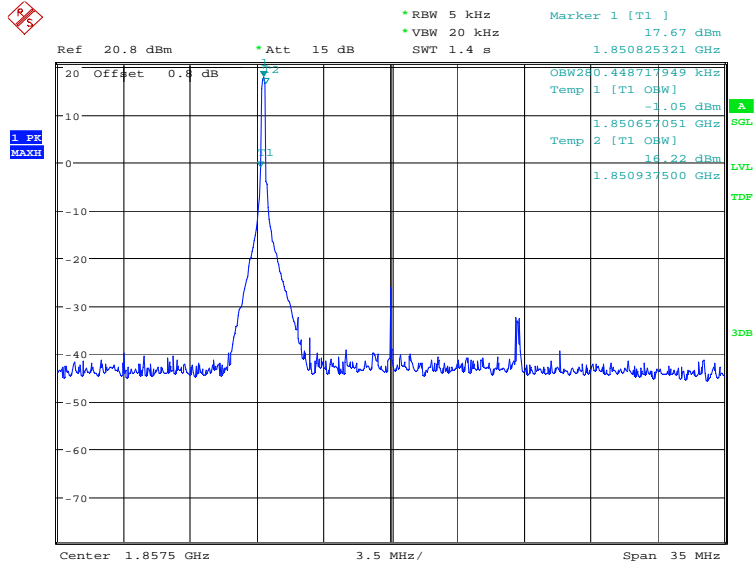
Date: 7.JUL.2023 10:09:31

HIGH BAND EDGE BLOCK-10MHz-100%RB



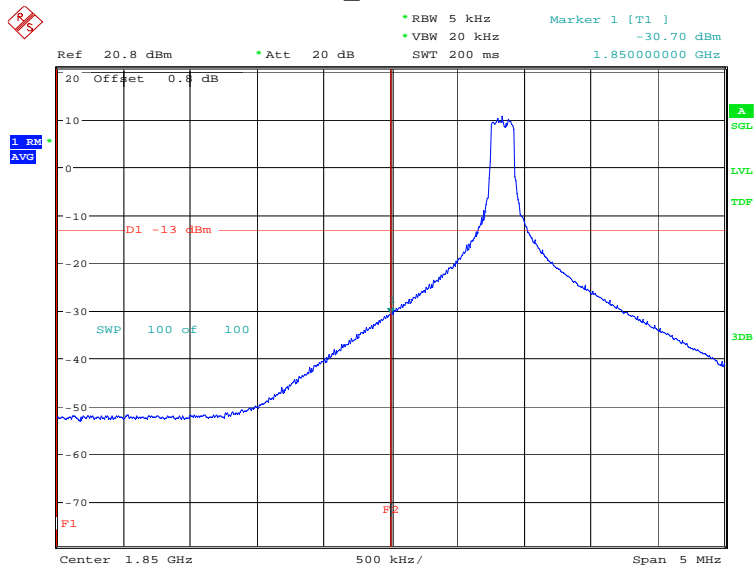
Date: 7.JUL.2023 10:11:03

LTE band 25
OBW: 1RB-low_offset



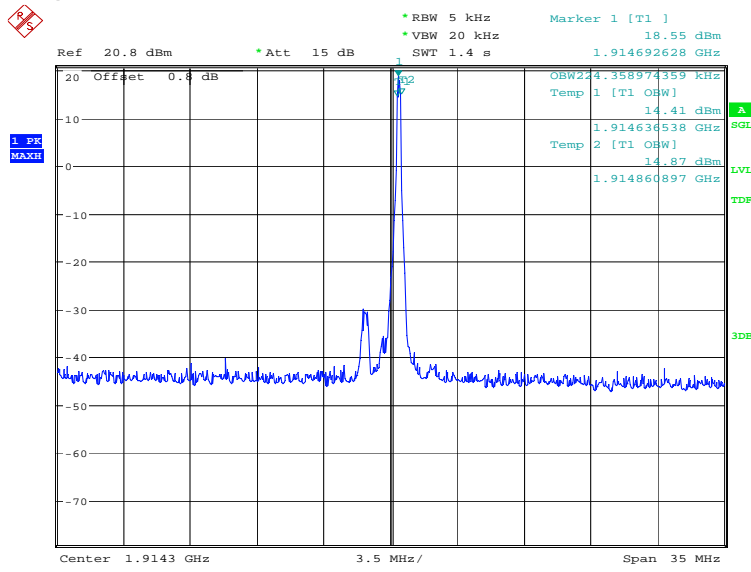
Date: 26.JUL.2023 09:53:48

LOW BAND EDGE BLOCK-1RB-low_offset



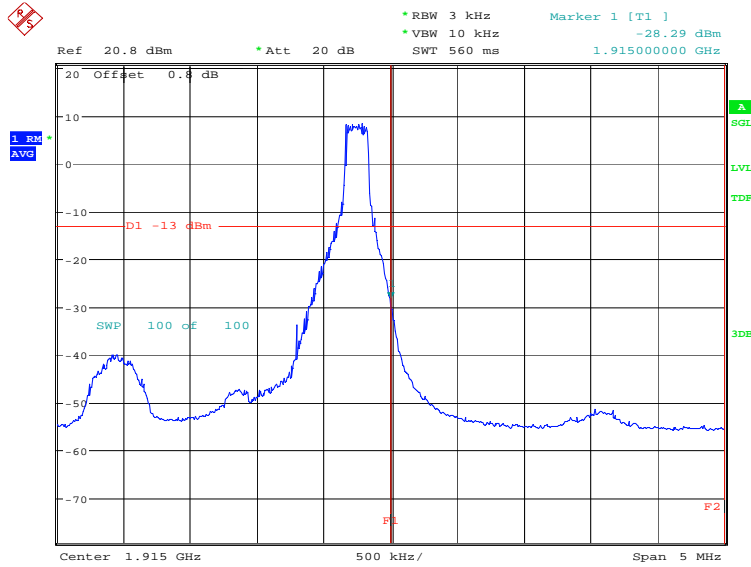
Date: 26.JUL.2023 09:55:02

OBW: 1RB-high_offset



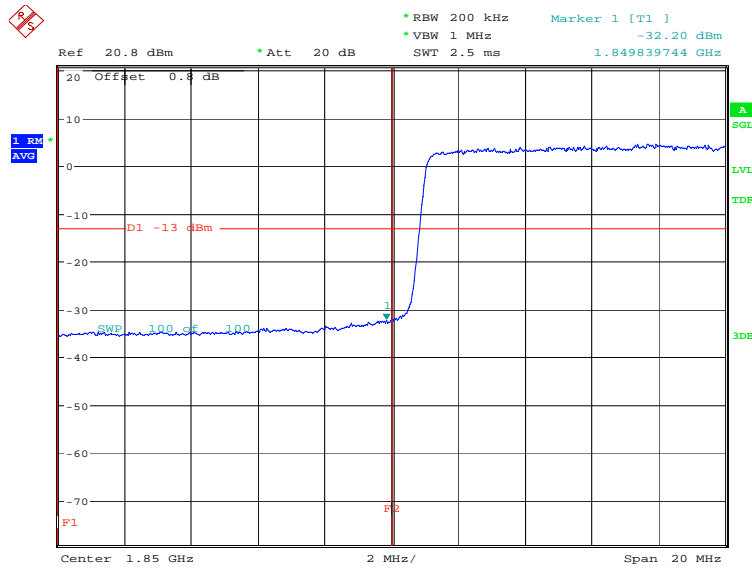
Date: 26.JUL.2023 09:56:20

HIGH BAND EDGE BLOCK-1RB-high_offset



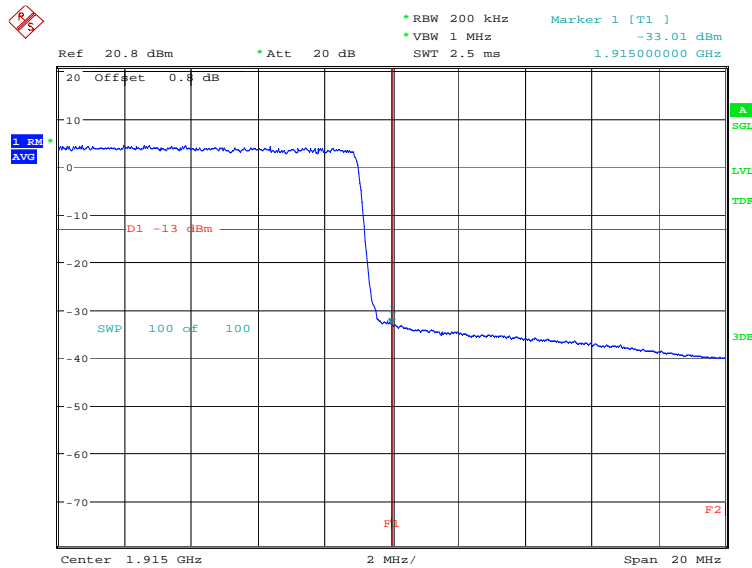
Date: 26.JUL.2023 09:57:34

LOW BAND EDGE BLOCK-20MHz-100%RB



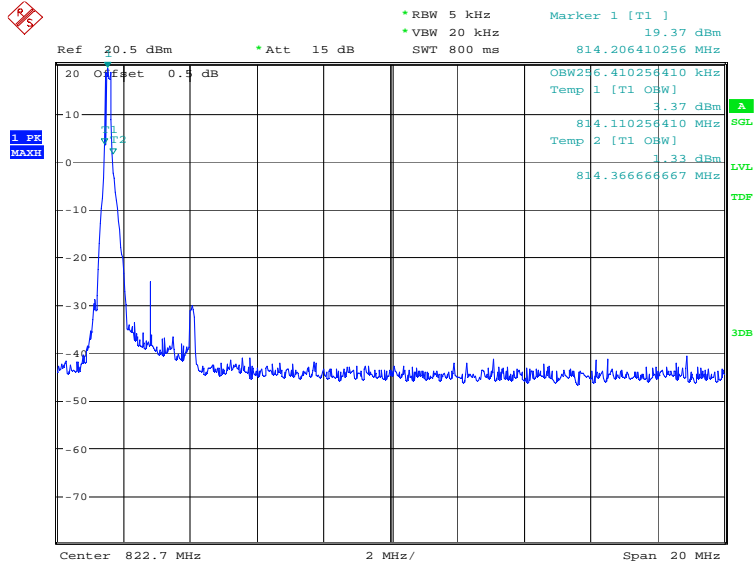
Date: 6.JUL.2023 19:22:03

HIGH BAND EDGE BLOCK-20MHz-100%RB



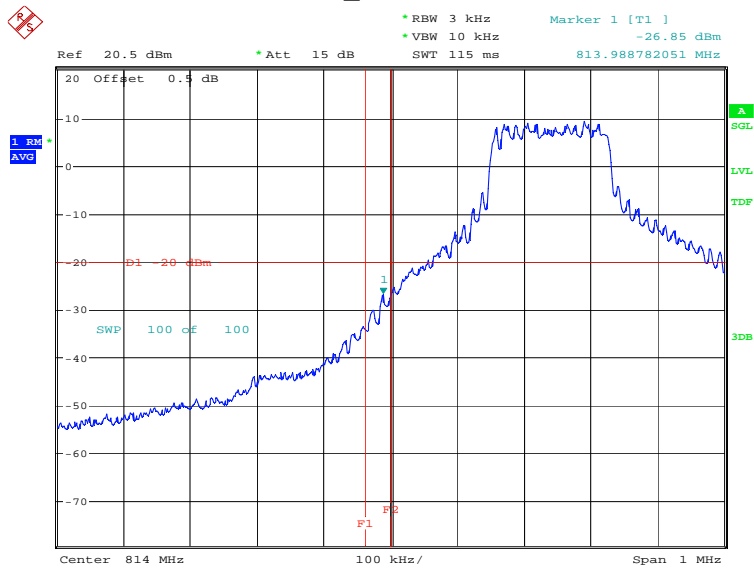
Date: 6.JUL.2023 19:23:36

LTE band 26(814MHz~824MHz)
OBW: 1RB-low_offset



Date: 26.JUL.2023 09:13:17

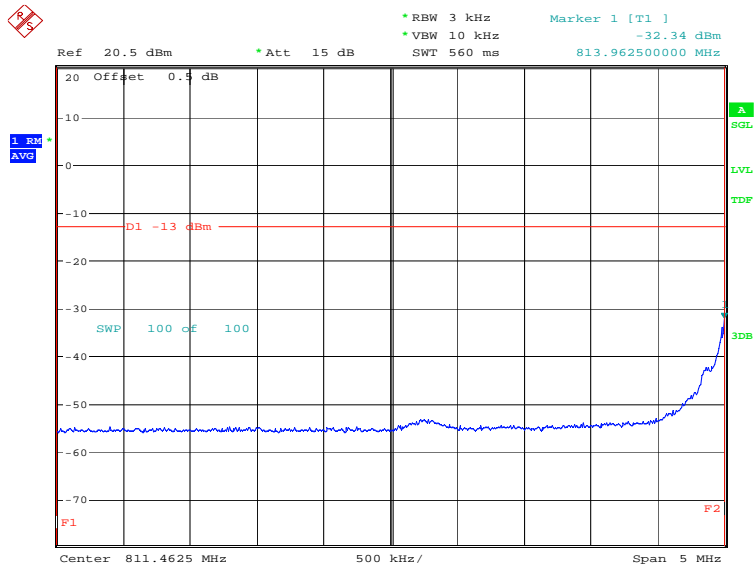
LOW BAND EDGE BLOCK-1RB-low_offset



Date: 26.JUL.2023 09:14:49

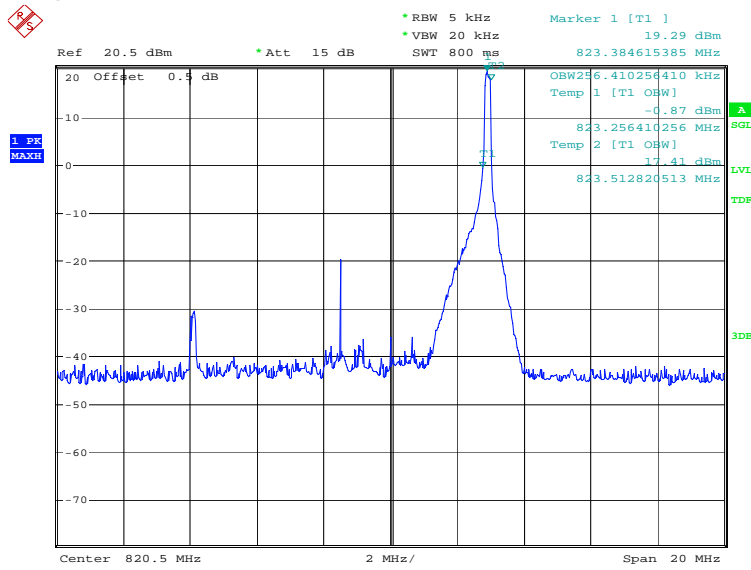


LOW Emission Mask -1RB-low_offset



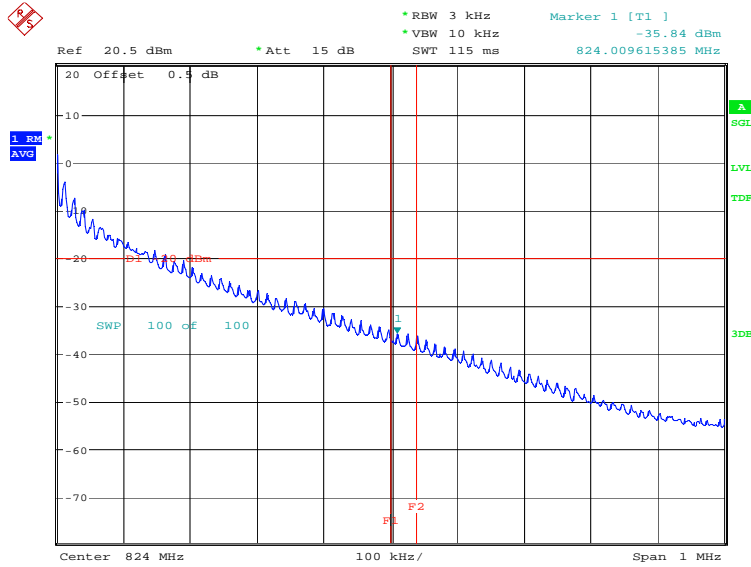
Date: 26.JUL.2023 09:17:07

OBW: 1RB-high_offset



Date: 26.JUL.2023 09:17:46

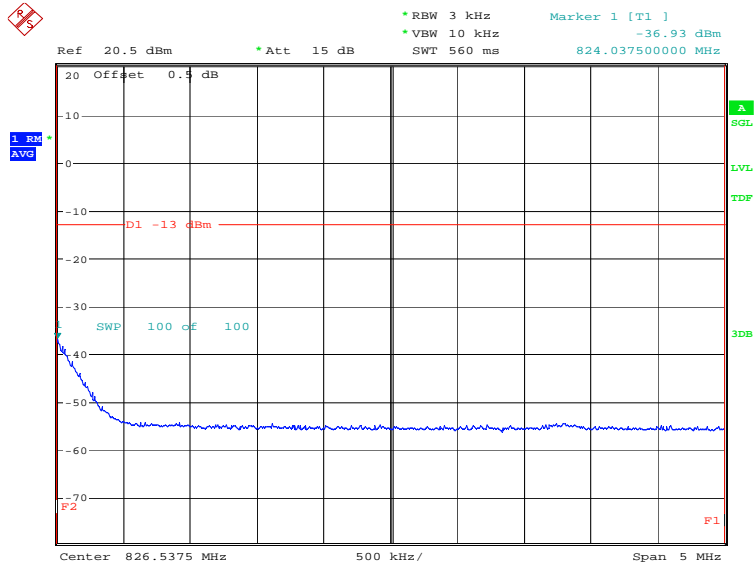
HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 26.JUL.2023 09:19:18

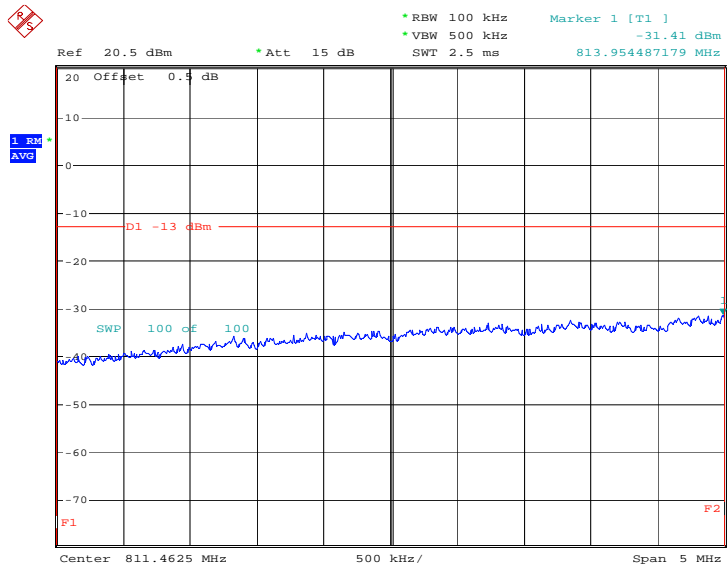


HIGH Emission Mask -1RB-high_offset



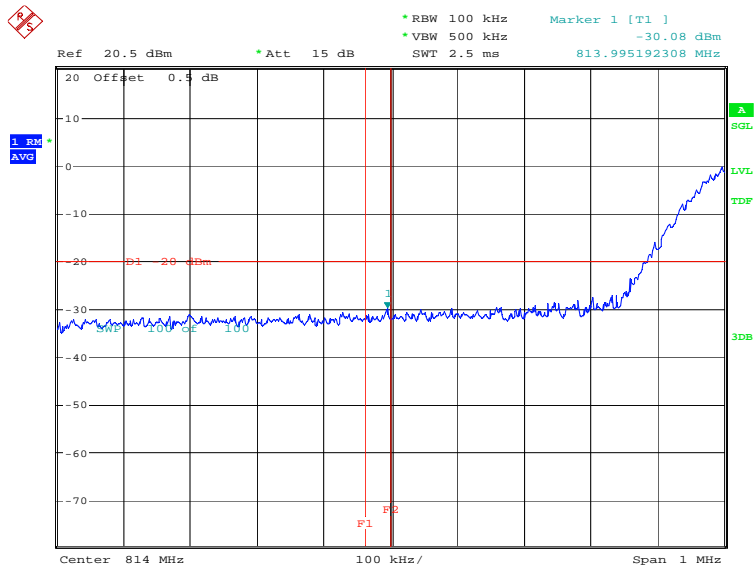
Date: 26.JUL.2023 09:21:35

LOW Emission Mask -10MHz-100%RB



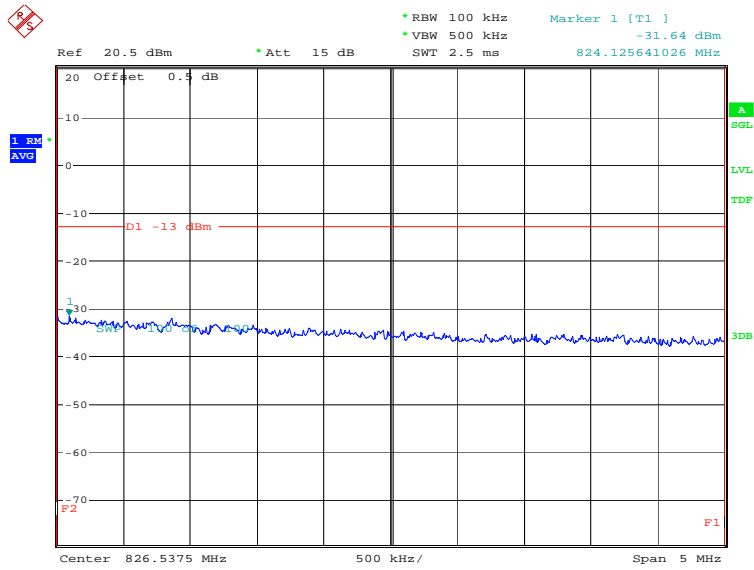
Date: 7.JUL.2023 10:26:29

LOW BAND EDGE BLOCK-10MHz-100%RB



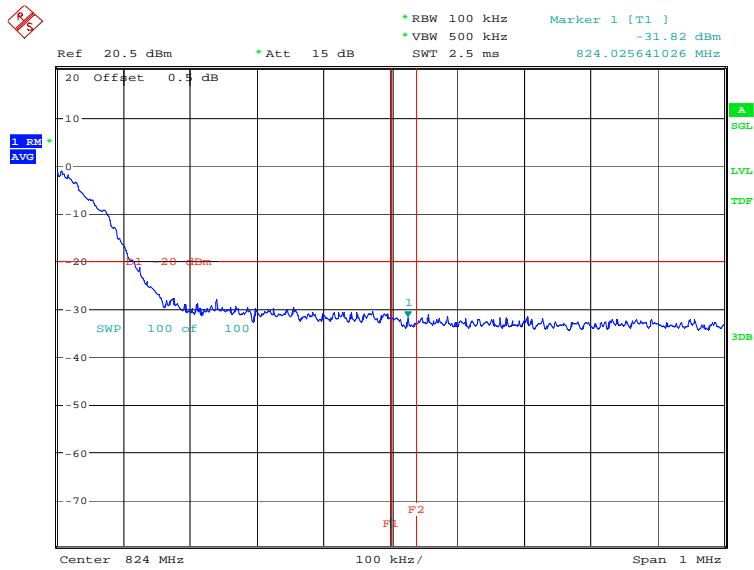
Date: 7.JUL.2023 10:26:07

HIGH Emission Mask -10MHz-100%RB



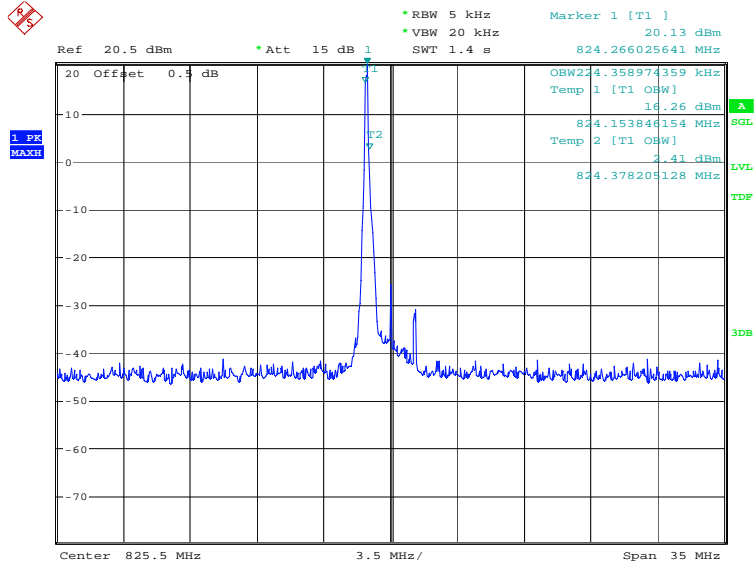
Date: 7.JUL.2023 10:28:26

HIGH BAND EDGE BLOCK-10MHz-100%RB



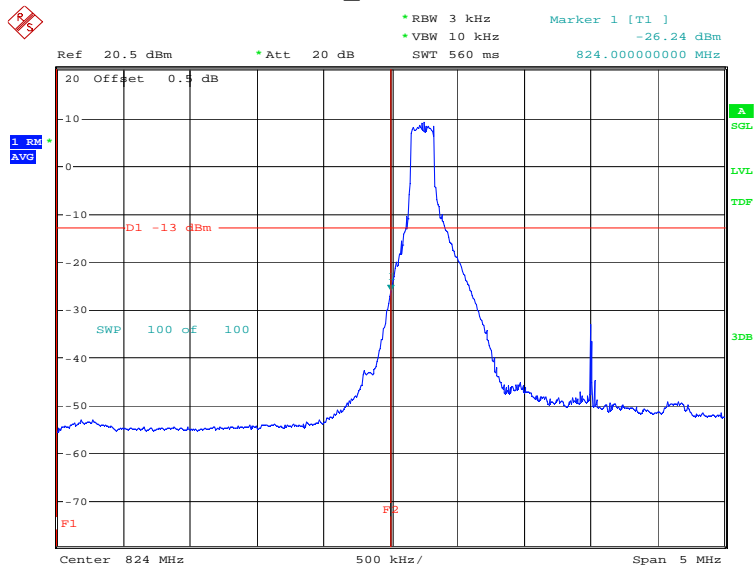
Date: 7.JUL.2023 10:28:04

LTE band 26(824MHz~849MHz)
OBW: 1RB-low_offset



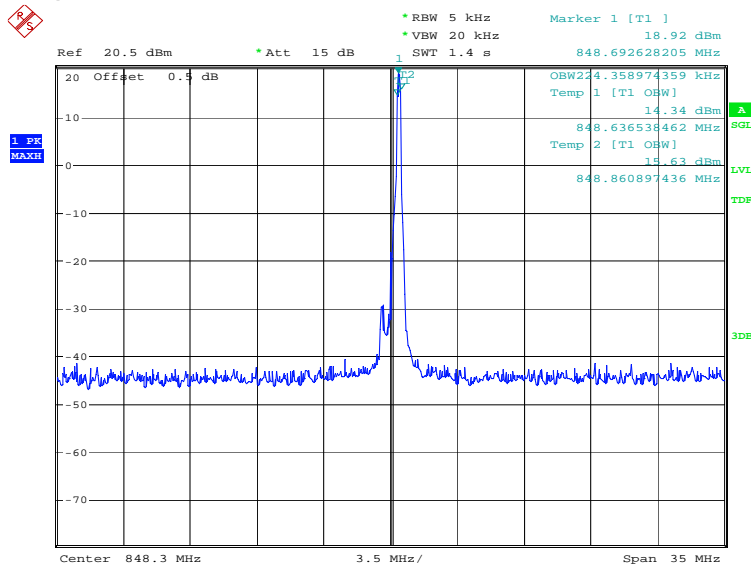
Date: 26.JUL.2023 09:05:15

LOW BAND EDGE BLOCK-1RB-low_offset



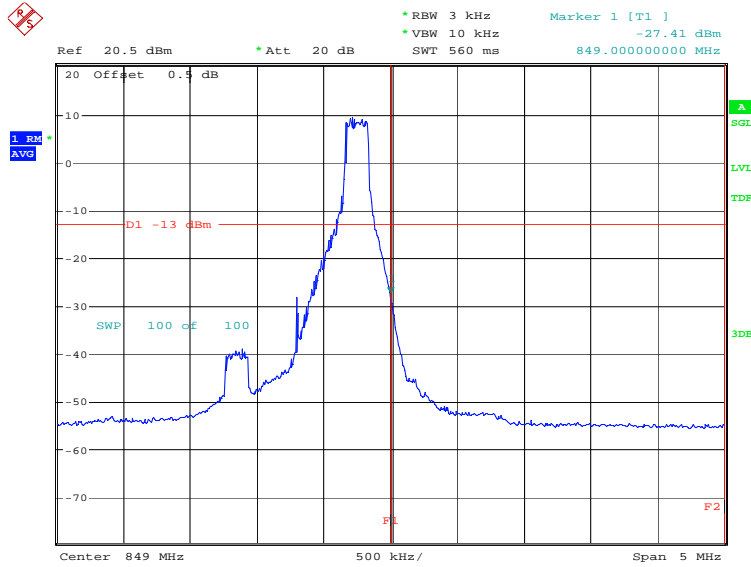
Date: 26.JUL.2023 09:06:30

OBW: 1RB-high_offset



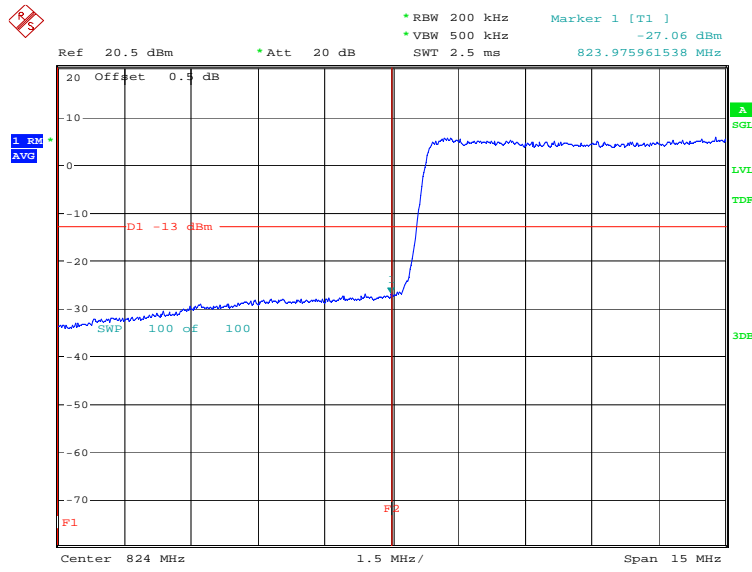
Date: 26.JUL.2023 09:08:02

HIGH BAND EDGE BLOCK-1RB-high_offset



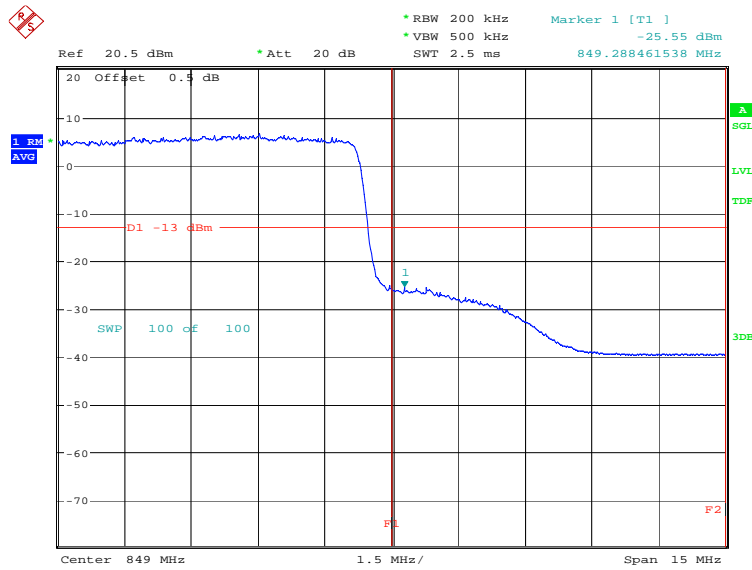
Date: 26.JUL.2023 09:09:16

LOW BAND EDGE BLOCK-15MHz-100%RB



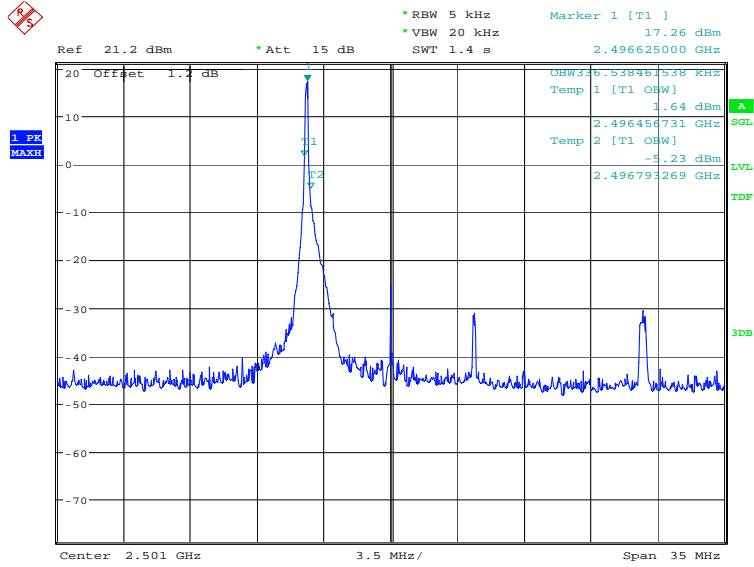
Date: 7.JUL.2023 10:12:37

HIGH BAND EDGE BLOCK-15MHz-100%RB



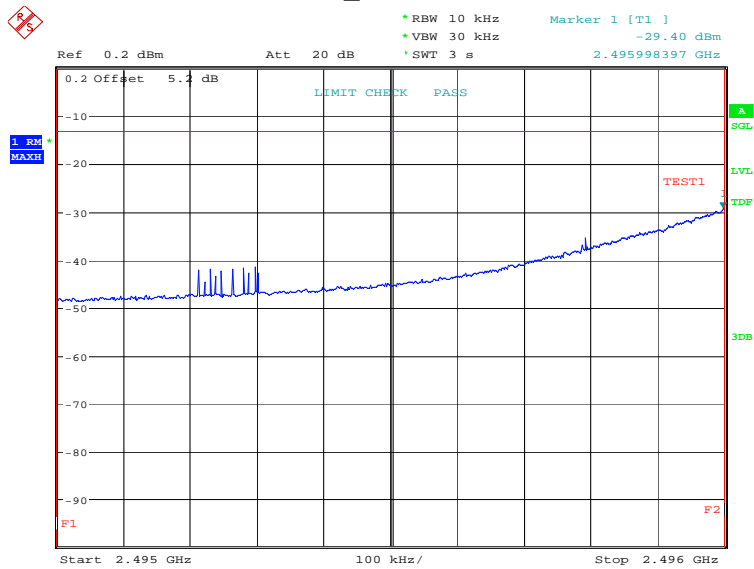
Date: 7.JUL.2023 10:14:10

LTE band 41
OBW: 1RB-low_offset

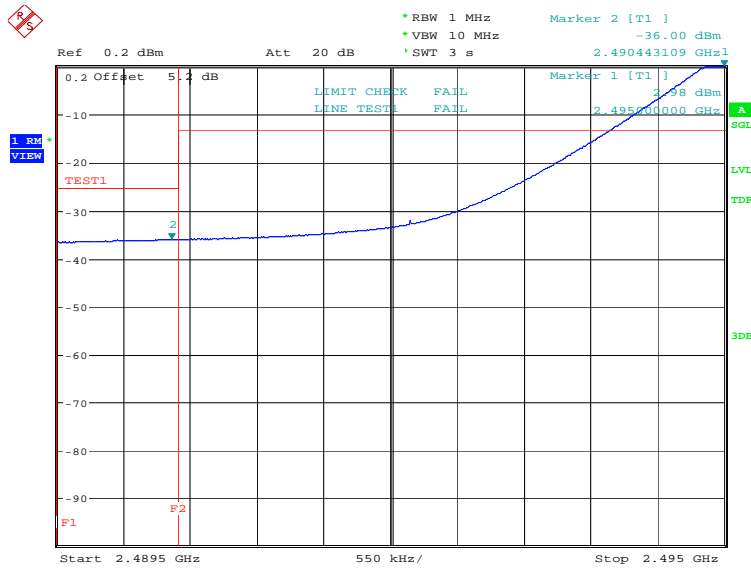


Date: 26.JUL.2023 10:02:42

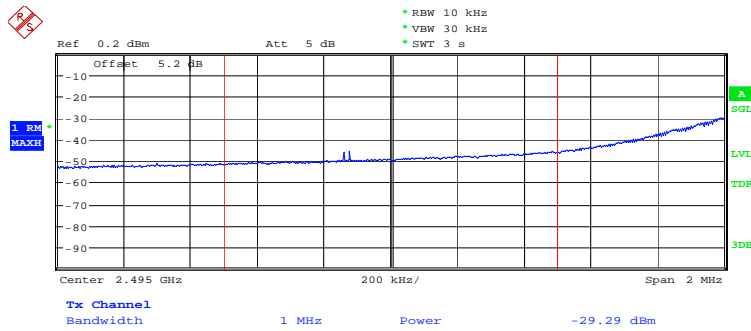
LOW BAND EDGE BLOCK-1RB-low_offset



Date: 26.JUL.2023 10:03:24

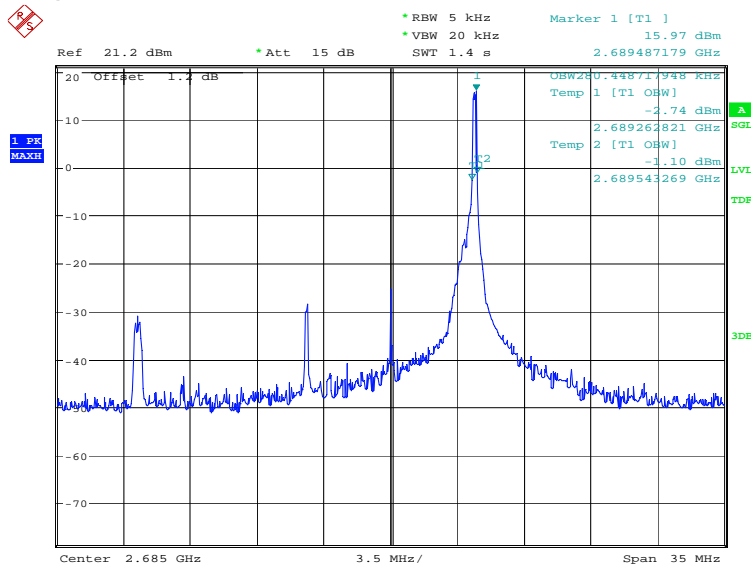


Date: 26.JUL.2023 10:04:08



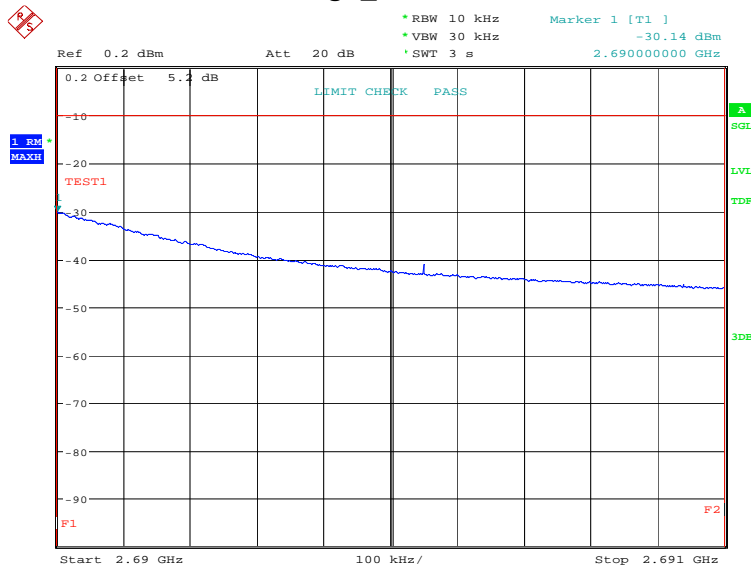
Date: 26.JUL.2023 10:04:26

OBW: 1RB-high_offset

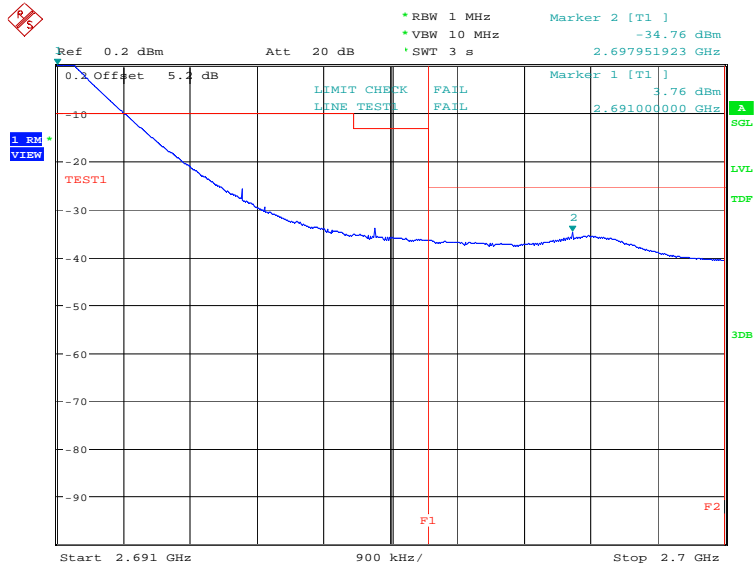


Date: 26.JUL.2023 10:05:02

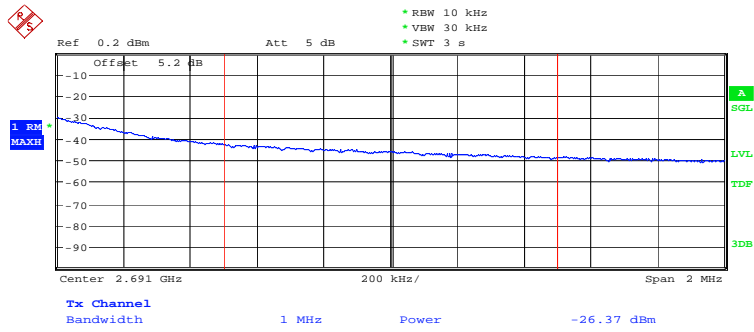
HIGH BAND EDGE BLOCK-1RB-high_offset



Date: 26.JUL.2023 10:05:43

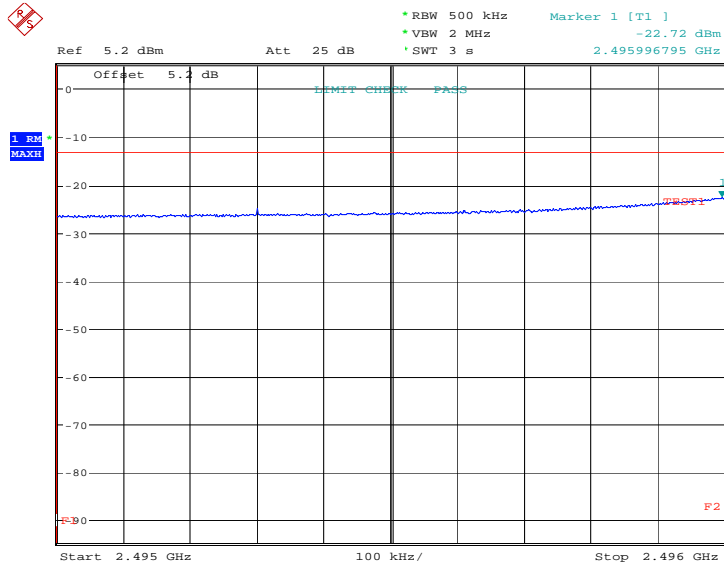


Date: 26.JUL.2023 10:06:30

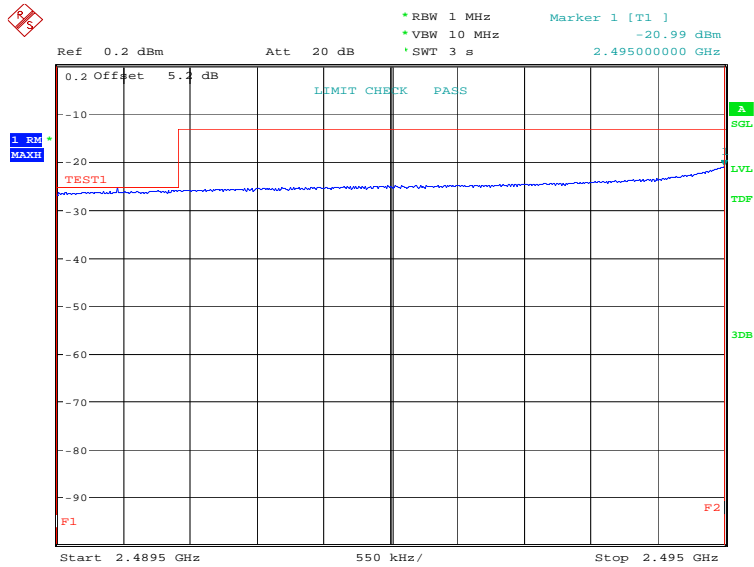


Date: 26.JUL.2023 10:06:48

LOW BAND EDGE BLOCK-20MHz-100%RB

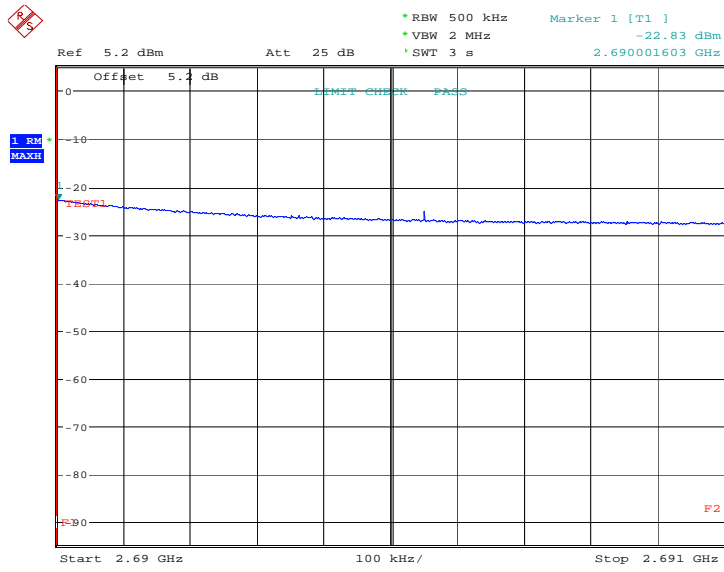


Date: 6.JUL.2023 19:29:24

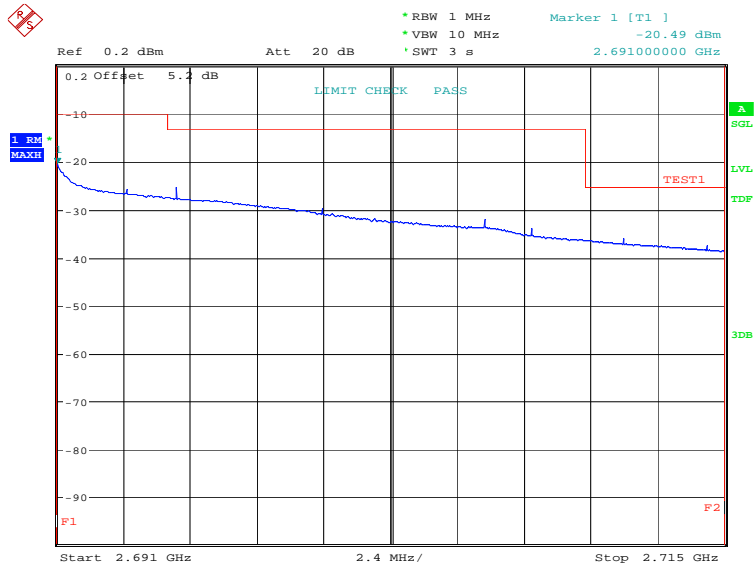


Date: 6.JUL.2023 19:30:04

HIGH BAND EDGE BLOCK-20MHz-100%RB

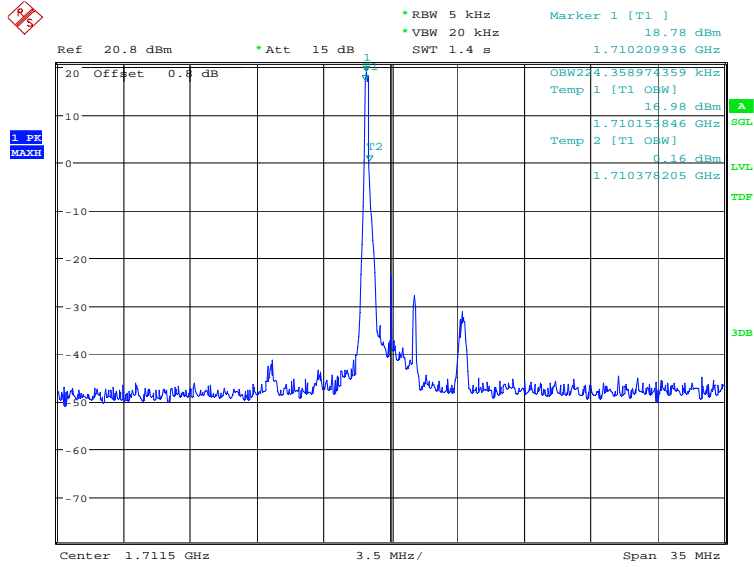


Date: 6.JUL.2023 19:32:01



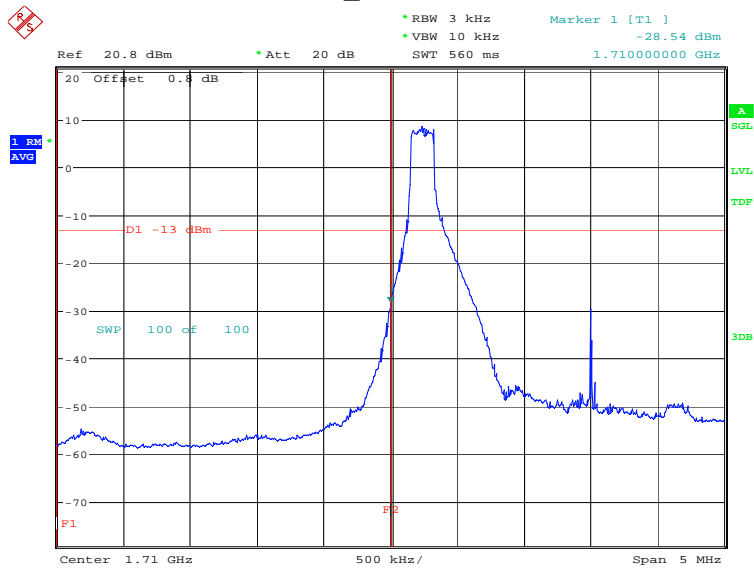
Date: 6.JUL.2023 19:32:41

LTE band 66
OBW: 1RB-low_offset



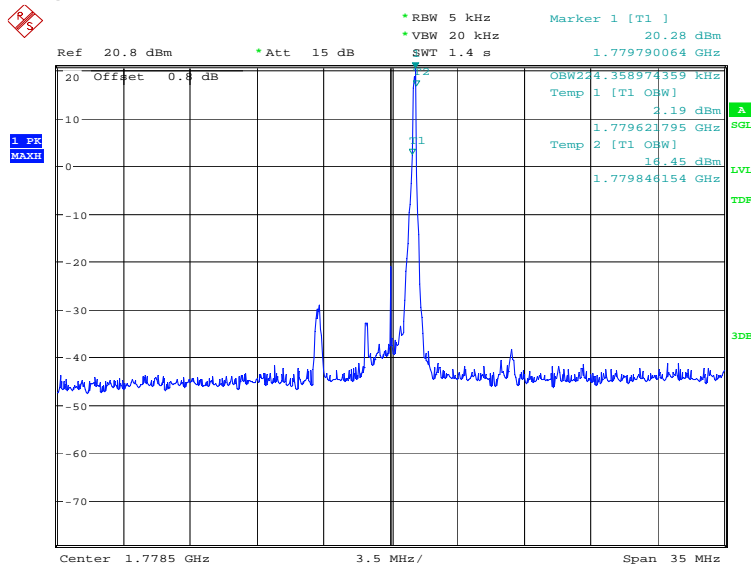
Date: 26.JUL.2023 09:58:14

LOW BAND EDGE BLOCK-1RB-low_offset



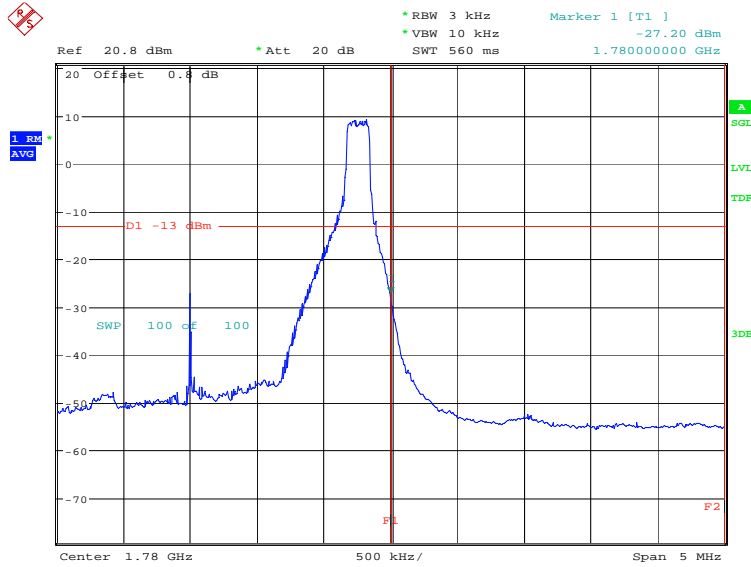
Date: 26.JUL.2023 09:59:28

OBW: 1RB-high_offset



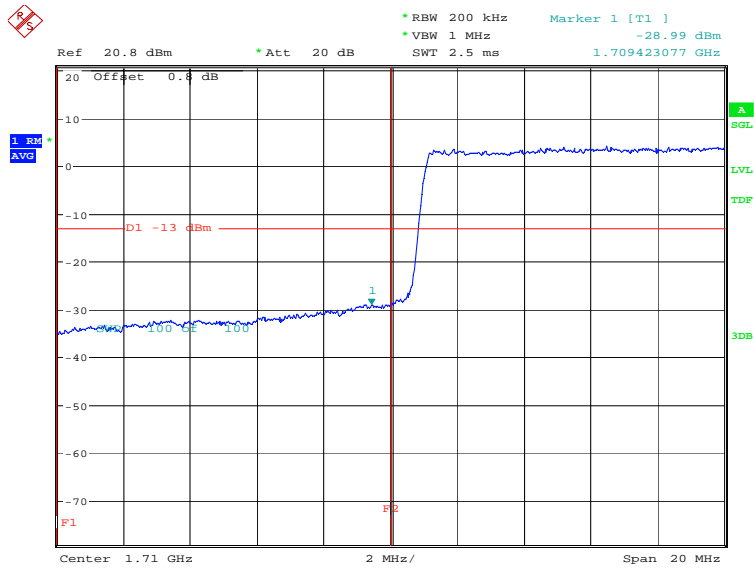
Date: 26.JUL.2023 10:00:04

HIGH BAND EDGE BLOCK-1RB-high_offset



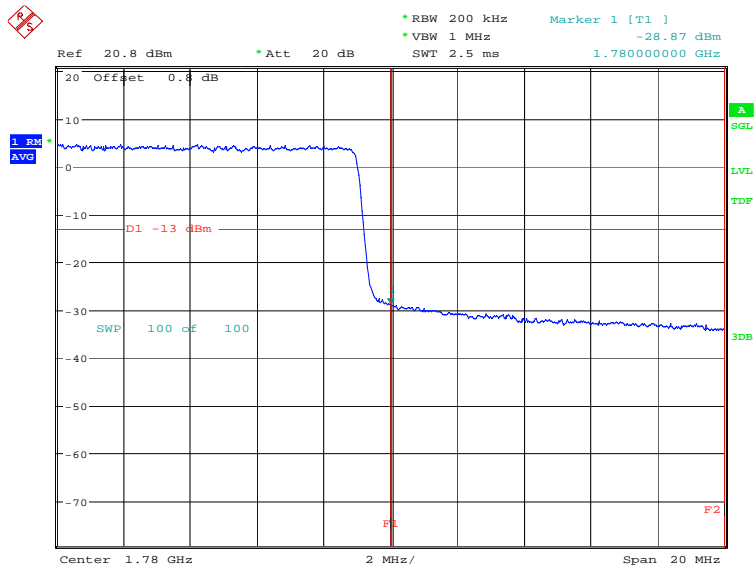
Date: 26.JUL.2023 10:01:19

LOW BAND EDGE BLOCK-20MHz-100%RB



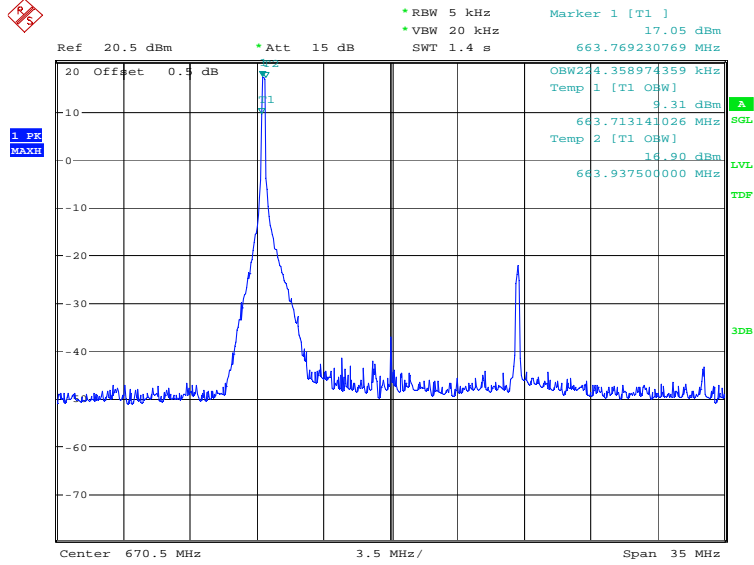
Date: 6.JUL.2023 19:25:11

HIGH BAND EDGE BLOCK-20MHz-100%RB



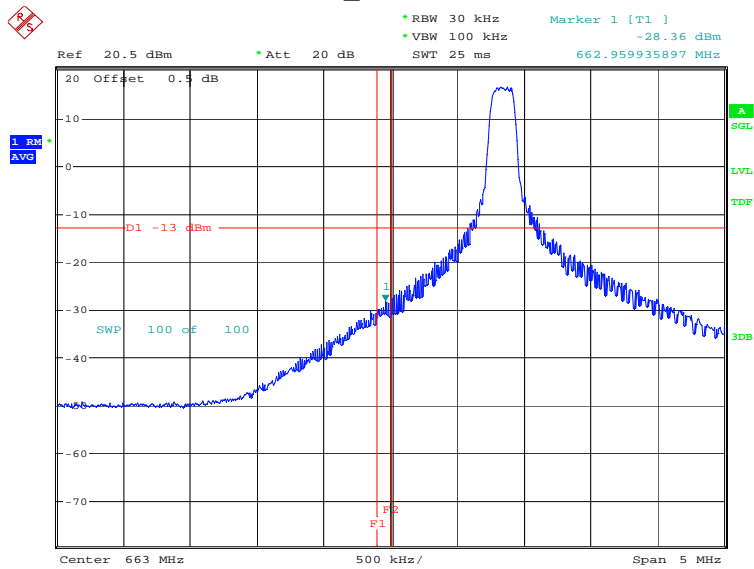
Date: 6.JUL.2023 19:26:44

LTE band 71
OBW: 1RB-low_offset



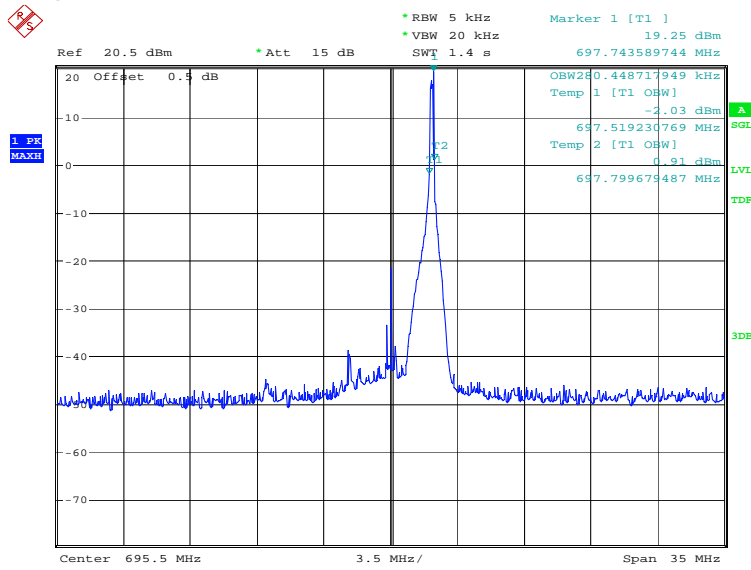
Date: 26.JUL.2023 08:50:06

LOW BAND EDGE BLOCK-1RB-low_offset



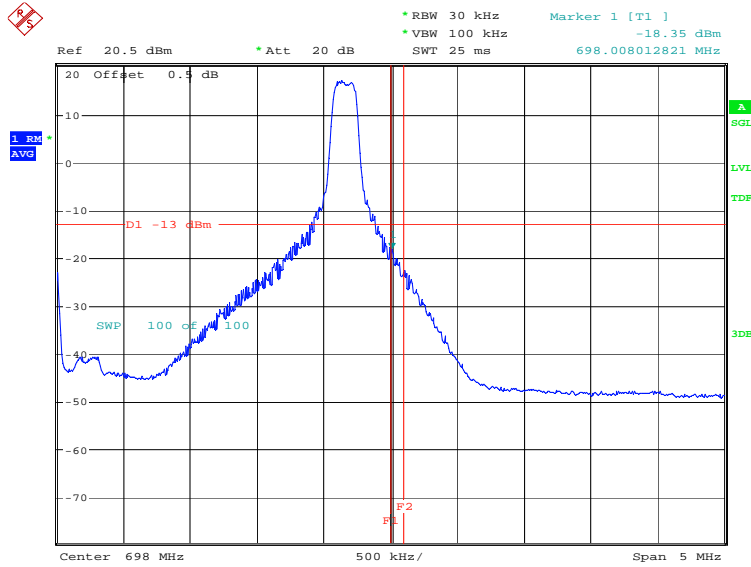
Date: 26.JUL.2023 08:50:25

OBW: 1RB-high_offset



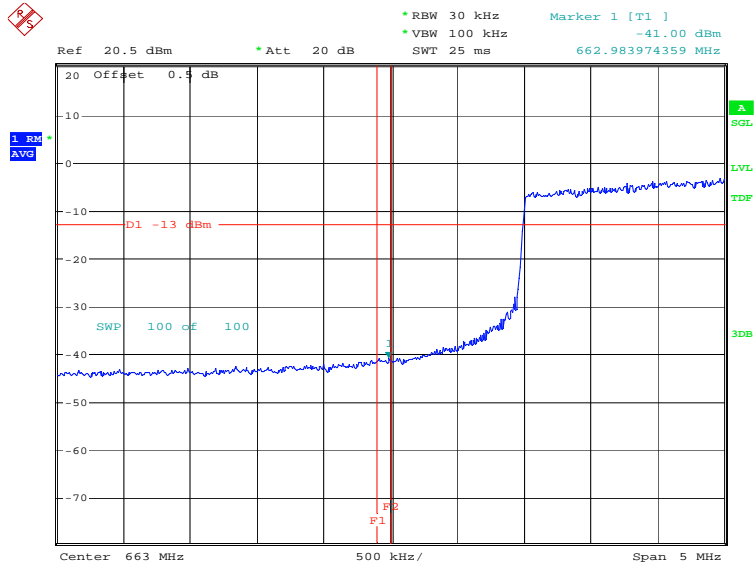
Date: 26.JUL.2023 08:51:44

HIGH BAND EDGE BLOCK-1RB-high_offset



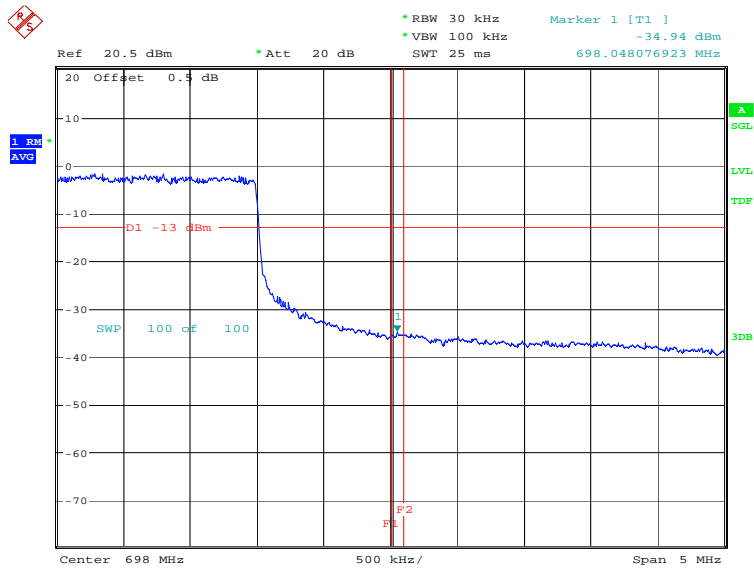
Date: 26.JUL.2023 08:52:03

LOW BAND EDGE BLOCK-20MHz-100%RB



Date: 7.JUL.2023 10:05:19

HIGH BAND EDGE BLOCK-20MHz-100%RB



Date: 7.JUL.2023 10:06:51

Note: Expanded measurement uncertainty is $U = 0.622$ dB, $k = 2$.

A.7 Conducted Spurious Emission

A.7.1 Measurement Method

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

1. In measuring unwanted emissions, the spectrum shall be investigated from 30 MHz or the lowest radio frequency signal generated in the equipment, whichever is lower, without going below 9 kHz, up to at least the frequency given below:
 - (a) If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
 - (b) If the equipment operates at or above 10 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.
3. The number of sweep points of spectrum analyzer is greater than $2 \times \text{span/RBW}$.

A. 7.2 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(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.

Part 90.691 states that out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows: For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.



No. I23Z60906-WMD03

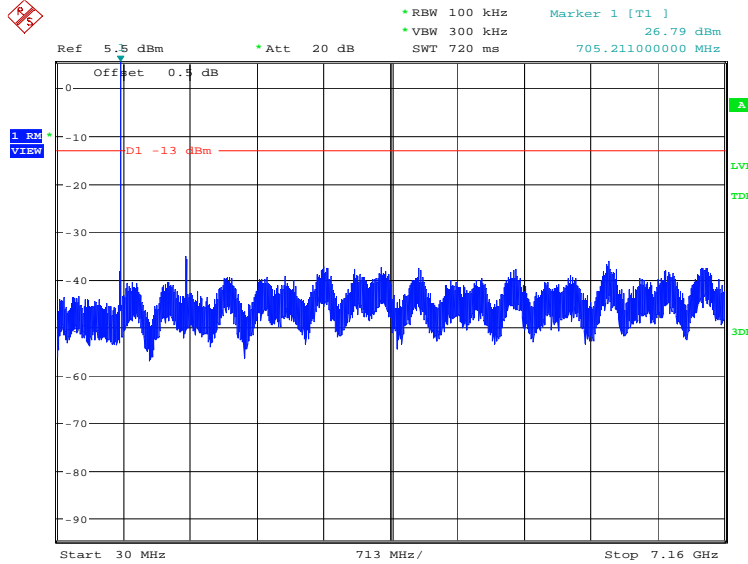
For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10\text{Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

A. 7.3 Measurement result

Only the worst case result is given below

LTE band 12: 30MHz – 7.16GHz

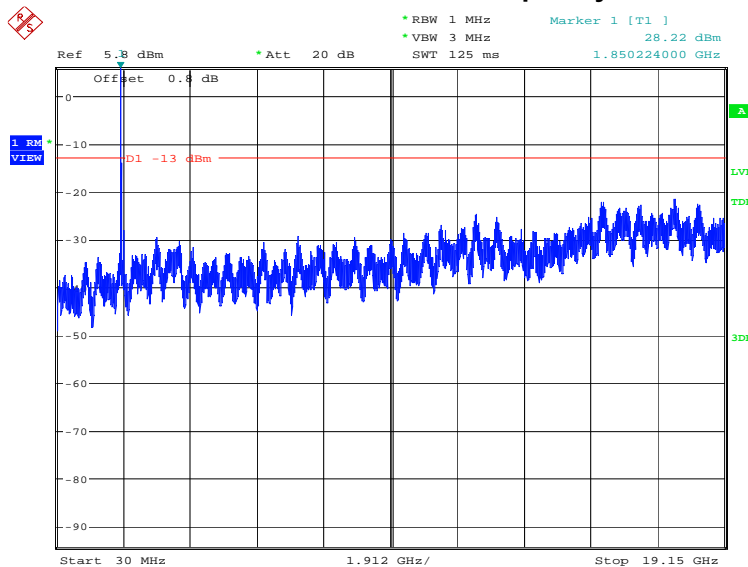
NOTE: peak above the limit line is the carrier frequency.



Date: 26.JUL.2023 09:10:36

LTE band 25: 30MHz – 19.15GHz

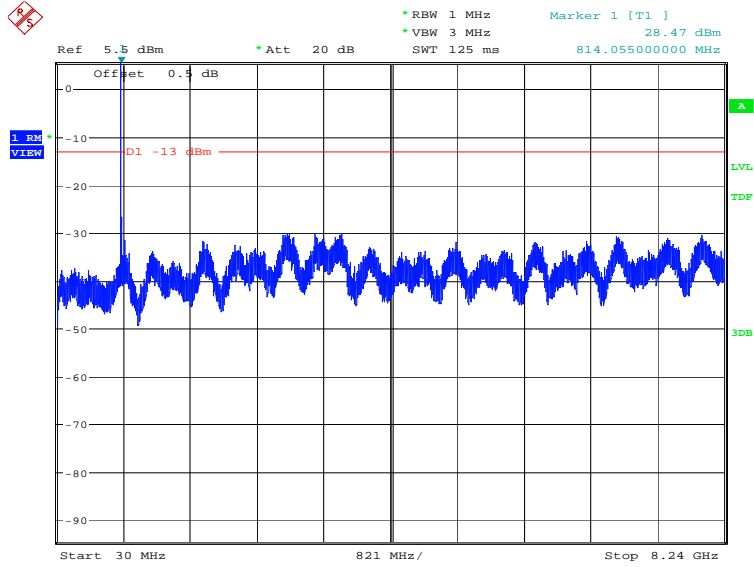
NOTE: peak above the limit line is the carrier frequency.



Date: 26.JUL.2023 10:08:07

LTE band 26(814MHz~824MHz): 30MHz – 8.24GHz

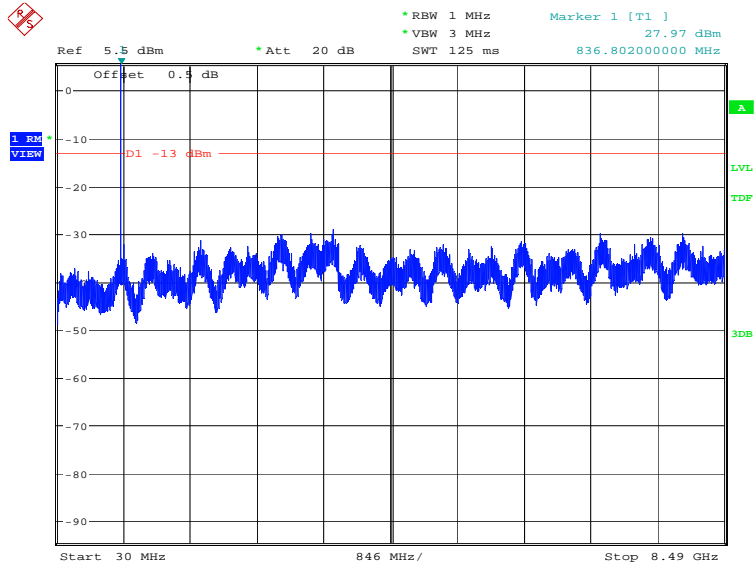
NOTE: peak above the limit line is the carrier frequency.



Date: 26.JUL.2023 09:12:03

LTE band 26(824MHz~849MHz): 30MHz – 8.49GHz

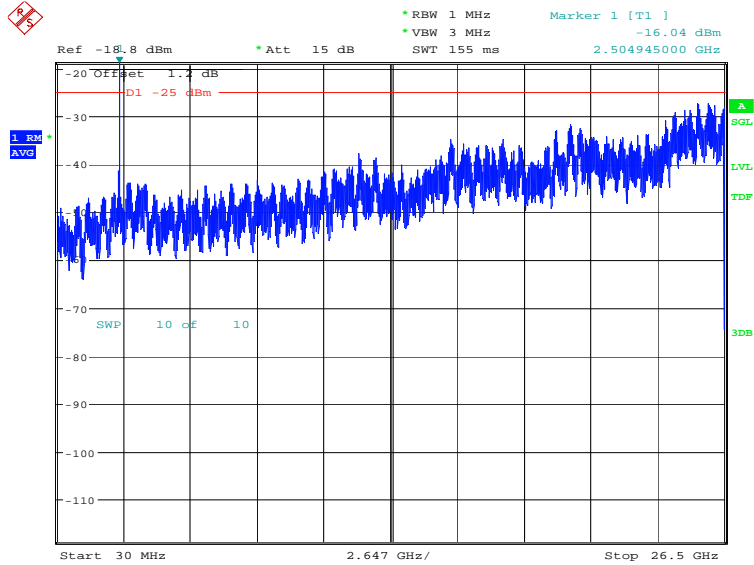
NOTE: peak above the limit line is the carrier frequency.



Date: 26.JUL.2023 09:11:21

LTE band 41: 30MHz – 26.5GHz

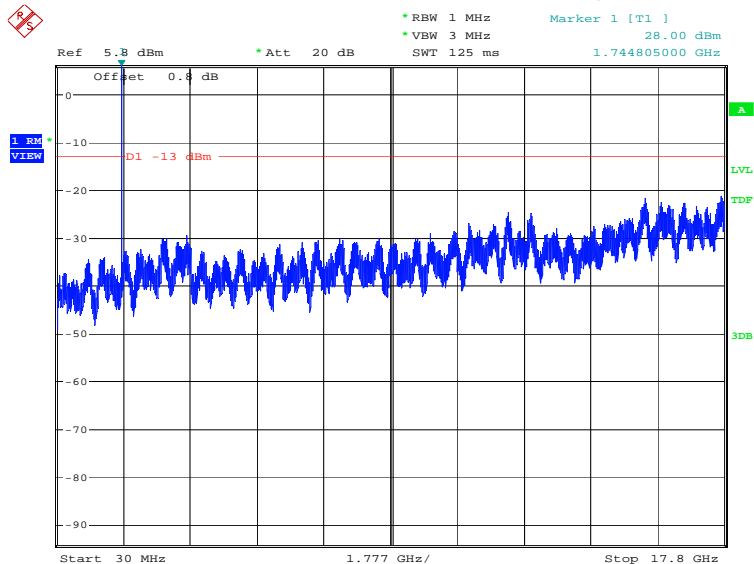
NOTE: peak above the limit line is the carrier frequency.



Date: 26.JUL.2023 10:13:13

LTE band 66: 30MHz – 17.8GHz

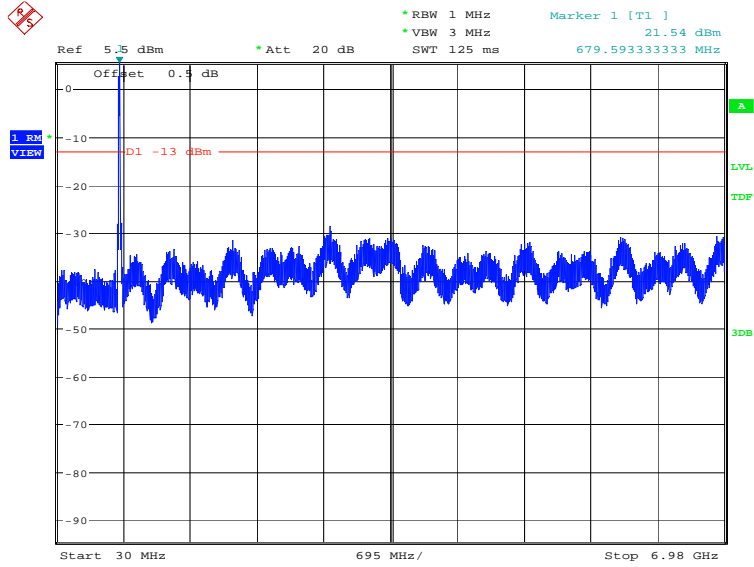
NOTE: peak above the limit line is the carrier frequency.



Date: 26.JUL.2023 10:08:50

LTE band 71: 30MHz – 6.98GHz

NOTE: peak above the limit line is the carrier frequency.



Date: 26.JUL.2023 09:23:28

Note: Expanded measurement uncertainty is $U = 0.622$ dB, $k = 2$.

A.8 Peak-to-Average Power Ratio

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB

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

LTE band 12, 10MHz

Frequency(MHz)	PAPR(dB)		
707.5	QPSK	16QAM	64QAM
	5.58	6.38	6.57

LTE band 25, 20MHz

Frequency(MHz)	PAPR(dB)		
1882.5	QPSK	16QAM	64QAM
	6.73	7.34	7.50

LTE band 41, 20MHz

Frequency (MHz)	PAPR (dB)		
2593.0	QPSK	16QAM	64QAM
	8.21	8.85	9.10

LTE band 66, 20MHz

Frequency(MHz)	PAPR(dB)		
1745.0	QPSK	16QAM	64QAM
	6.51	7.21	7.18

LTE band 71, 20MHz

Frequency(MHz)	PAPR(dB)		
680.5	QPSK	16QAM	64QAM
	6.25	6.89	7.15

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

Annex B: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p> <div style="display: flex; justify-content: space-around; align-items: center;"><div style="font-size: 2em; font-weight: bold; letter-spacing: 0.5em;">NVLAP[®]</div><div style="text-align: center;"> ilac-MRA</div></div> <hr/> <p style="text-align: center;">Certificate of Accreditation to ISO/IEC 17025:2017</p> <hr/> <p style="text-align: center;">NVLAP LAB CODE: 600118-0</p> <p style="text-align: center;">Telecommunication Technology Labs, CAICT Beijing China</p> <p style="text-align: center;"><i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i></p> <p style="text-align: center;">Electromagnetic Compatibility & Telecommunications</p> <p style="text-align: center;"><i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).</i></p> <div style="display: flex; justify-content: space-between; align-items: center;"><div style="text-align: center;"><hr/><p>2022-10-01 through 2023-09-30 <i>Effective Dates</i></p></div><div style="text-align: center;"> DEPARTMENT OF COMMERCE UNITED STATES OF AMERICA</div><div style="text-align: center;"> <hr/><p><i>For the National Voluntary Laboratory Accreditation Program</i></p></div></div>	
---	--

END OF REPORT