



TEST REPORT

No. I22Z61606-WMD03

for

TCL Communication Ltd.

GSM/UMTS/LTE /NR Mobile phone

Model Name: T609DL

FCC ID: 2ACCJH168

with

Hardware Version: 04

Software Version: JSS8

Issued Date: 2022-12-27

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

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22Z61606-WMD03	Rev.0	1 st edition	2022-12-12
I22Z61606-WMD03	Rev.1	2 nd edition Applicant Information and manufacturer Information updated	2022-12-27

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	14
ANNEX A: MEASUREMENT RESULTS	15
A.1 OUTPUT POWER	15
A.2 FREQUENCY STABILITY	38
A.3 OCCUPIED BANDWIDTH	45
A.4 EMISSION BANDWIDTH	99
A.5 BAND EDGE COMPLIANCE	153
A.6 CONDUCTED SPURIOUS EMISSION	216
A.7 PEAK-TO-AVERAGE POWER RATIO	225
A.8 END USER DEVICE ADDITIONAL REQUIREMENT (CBSD PROTOCOL)	227
ANNEX B: ACCREDITATION CERTIFICATE	230

1. Test Laboratory

1.1. Introduction & Accreditation

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

1.2. Testing Location

Location 1: CTTL (huayuan North Road)

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

1.3. Testing Environment

Normal Temperature: 15-35℃
Relative Humidity: 20-75%

1.4. Project Data

Testing Start Date: 2022-09-16
Testing End Date: 2022-12-08

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 /NR Mobile phone
Model Name	T609DL
FCC ID	2ACCJH168
Antenna	Embedded
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
UT34a	016320000011894/01	04	JSS8	2022-09-16

*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
AE1	
Model	TLp048D7
Manufacturer	VEKEN
Capacitance	5000mAh

*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
FCC Part 96	CITIZENS BROADBAND RADIO SERVICE	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
KDB 940660 D01	CERTIFICATION AND TEST PROCEDURES FOR CITIZENS BROADBAND RADIO SERVICE DEVICES AUTHORIZED UNDER PART 96	v03

5. Summary Of Test Result

LTE Band 2

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

LTE Band 5

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

LTE Band 7

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

LTE Band 12

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

LTE Band 13

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

LTE Band 25

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	24.232	P
2	Frequency Stability	2.1055	P
3	Occupied Bandwidth	2.1049	P
4	Emission Bandwidth	24.238	P
5	Band Edge Compliance	24.238	P
6	Conducted Spurious Emission	24.238	P
7	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	Frequency Stability	2.1055	P
3	Occupied Bandwidth	2.1049	P
4	Emission Bandwidth	2.1049	P
5	Band Edge Compliance	90.691	P
6	Conducted Spurious Emission	90.691	P

LTE Band 26(824MHz~849MHz)

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

LTE Band 41

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

LTE Band 48

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	96.41	P
2	Frequency Stability	2.1055	P
3	Occupied Bandwidth	2.1049	P
4	Emission Bandwidth	96.41	P
5	Band Edge Compliance	96.41	P
6	Conducted Spurious Emission	96.41	P
7	Peak-to-Average Power Ratio	96.41	P
8	End User Device Additional Requirements (CBSD Protocol)	96.47	P

LTE Band 66 (4)

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	27.50	P
2	Frequency Stability	2.1055	P
3	Occupied Bandwidth	2.1049	P
4	Emission Bandwidth	27.53	P
5	Band Edge Compliance	27.53	P
6	Conducted Spurious Emission	27.53	P
7	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	Frequency Stability	2.1055	P
3	Occupied Bandwidth	2.1049	P
4	Emission Bandwidth	27.53	P
5	Band Edge Compliance	27.53	P
6	Conducted Spurious Emission	27.53	P
7	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.

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

LTE Band 41 is tested by power class 2.

Explanation of worst-case configuration

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

6. Test Equipment Utilized

Description	Type	Series Number	Manufacture	Cal Due Date	Calibration Interval
Wideband Radio Communication Tester	CMW500	159082	R&S	2023-01-17	25 months
Spectrum Analyzer	FSU	200030	R&S	2023-05-25	1 year
Signal&Spectrum Analyzer	FSW	104038	R&S	2023-06-20	1 year
Radio Communication Analyzer	MT8821C	6201763159	Anritsu	2023-08-02	1 year
Climate Chamber	SH-242	93008556	ESPEC	2023-12-23	3 years

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 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.1.3 Measurement Result

LTE band 2

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1909.3	23.69	22.83	22.06
		1880.0	23.71	22.83	21.67
		1850.7	23.56	22.70	21.84
	1 RB low	1909.3	23.70	22.82	22.07
		1880.0	23.72	22.82	21.61
		1850.7	23.55	22.69	21.85
	50% RB mid	1909.3	23.83	22.96	21.79
		1880.0	23.77	22.90	21.74
		1850.7	23.72	22.79	21.63
	100% RB	1909.3	22.83	21.96	20.90
		1880.0	22.77	21.92	20.84
		1850.7	22.67	21.83	20.72
3MHz	1 RB high	1908.5	23.78	22.85	21.63
		1880.0	23.73	22.83	21.64
		1851.5	23.63	22.69	21.54
	1 RB low	1908.5	23.74	22.85	21.66
		1880.0	23.70	22.80	21.64
		1851.5	23.60	22.68	21.61
	50% RB mid	1908.5	22.81	21.88	20.75
		1880.0	22.74	21.83	20.70
		1851.5	22.65	21.73	20.60
	100% RB	1908.5	22.86	21.82	20.85
		1880.0	22.82	21.78	20.82

		1851.5	22.67	21.64	20.68
5MHz	1 RB high	1907.5	23.89	22.92	22.06
		1880.0	23.87	22.90	22.03
		1852.5	23.79	22.81	21.98
	1 RB low	1907.5	23.86	22.89	22.04
		1880.0	23.82	22.86	22.02
		1852.5	23.75	22.78	21.92
	50% RB mid	1907.5	22.80	21.90	20.84
		1880.0	22.77	21.84	20.84
		1852.5	22.66	21.72	20.71
	100% RB	1907.5	22.86	21.81	20.87
		1880.0	22.82	21.78	20.81
		1852.5	22.69	21.64	20.68
10MHz	1 RB high	1905.0	23.79	22.78	21.64
		1880.0	23.81	22.82	21.69
		1855.0	23.68	22.71	21.55
	1 RB low	1905.0	23.73	22.76	21.57
		1880.0	23.75	22.79	21.67
		1855.0	23.64	22.64	21.49
	50% RB mid	1905.0	22.80	21.96	20.87
		1880.0	22.81	21.93	20.86
		1855.0	22.72	21.82	20.78
	100% RB	1905.0	22.86	21.87	20.85
		1880.0	22.82	21.83	20.78
		1855.0	22.76	21.76	20.74
15MHz	1 RB high	1902.5	23.69	23.12	22.15
		1880.0	23.66	23.08	22.11
		1857.5	23.55	22.98	21.86
	1 RB low	1902.5	23.68	23.12	22.15
		1880.0	23.64	23.06	22.11
		1857.5	23.54	22.98	21.95
	50% RB mid	1902.5	22.71	21.79	20.73
		1880.0	22.74	21.79	20.75
		1857.5	22.68	21.68	20.67
	100% RB	1902.5	22.77	21.77	20.84
		1880.0	22.79	21.78	20.83
		1857.5	22.71	21.71	20.72
20MHz	1 RB high	1900.0	23.71	23.39	21.66
		1880.0	23.69	23.35	21.58
		1860.0	23.61	23.30	21.53
	1 RB low	1900.0	23.67	23.33	21.60
		1880.0	23.65	23.34	21.56
		1860.0	23.55	23.23	21.45

	50% RB mid	1900.0	22.67	21.79	20.66
		1880.0	22.76	21.76	20.74
		1860.0	22.72	21.71	20.69
	100% RB	1900.0	22.70	21.72	20.71
		1880.0	22.75	21.75	20.73
		1860.0	22.73	21.70	20.71

LTE band 5

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	23.03	22.26	21.17
		836.5	23.34	22.55	21.47
		824.7	23.50	22.61	21.49
	1 RB low	848.3	23.02	22.26	21.20
		836.5	23.37	22.63	21.54
		824.7	23.47	22.56	21.43
	50% RB mid	848.3	23.15	22.30	21.10
		836.5	23.39	22.66	21.38
		824.7	23.59	22.70	21.50
	100% RB	848.3	22.17	21.31	20.23
		836.5	22.46	21.60	20.51
		824.7	22.56	21.72	20.60
3MHz	1 RB high	847.5	23.06	22.14	21.00
		836.5	23.31	22.38	21.21
		825.5	23.58	22.65	21.47
	1 RB low	847.5	23.05	22.14	20.98
		836.5	23.47	22.52	21.40
		825.5	23.51	22.59	21.47
	50% RB mid	847.5	22.09	21.17	20.05
		836.5	22.38	21.47	20.33
		825.5	22.50	21.57	20.49
	100% RB	847.5	22.14	21.10	20.14
		836.5	22.42	21.40	20.44
		825.5	22.51	21.48	20.52
5MHz	1 RB high	846.5	23.20	22.20	21.35
		836.5	23.40	22.48	21.60
		826.5	23.74	22.79	21.90
	1 RB low	846.5	23.20	22.24	21.33
		836.5	23.62	22.71	21.82
		826.5	23.66	22.72	21.86
	50% RB mid	846.5	22.16	21.22	20.18
		836.5	22.40	21.51	20.45
		826.5	22.54	21.65	20.57
	100% RB	846.5	22.20	21.15	20.21
		836.5	22.42	21.40	20.43
		826.5	22.60	21.54	20.60
10MHz	1 RB high	844.0	23.19	22.24	21.08
		836.5	23.28	22.31	21.19
		829.0	23.57	22.61	21.50
	1 RB low	844.0	23.31	22.34	21.26

		836.5	23.65	22.64	21.55
		829.0	23.58	22.65	21.52
	50% RB mid	844.0	22.13	21.33	20.16
		836.5	22.41	21.58	20.43
		829.0	22.63	21.76	20.70
	100% RB	844.0	22.28	21.28	20.25
		836.5	22.46	21.47	20.44
		829.0	22.71	21.74	20.70

LTE band 7

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2567.5	22.75	22.02	21.12
		2535.0	22.74	21.77	21.10
		2502.5	22.71	21.55	20.78
	1 RB low	2567.5	22.71	22.00	21.12
		2535.0	22.73	21.76	21.08
		2502.5	22.73	21.54	20.79
	50% RB mid	2567.5	21.92	20.95	19.98
		2535.0	21.74	20.92	19.91
		2502.5	21.68	20.90	19.91
	100% RB	2567.5	21.95	20.91	19.95
		2535.0	21.74	20.85	19.89
		2502.5	21.72	20.81	19.88
10MHz	1 RB high	2565.0	22.70	21.95	20.84
		2535.0	22.77	21.77	20.82
		2505.0	22.72	21.67	20.78
	1 RB low	2565.0	22.65	21.88	20.77
		2535.0	22.71	21.70	20.80
		2505.0	22.64	21.67	20.72
	50% RB mid	2565.0	21.92	21.06	20.00
		2535.0	21.82	21.03	20.03
		2505.0	21.79	20.99	20.02
	100% RB	2565.0	21.97	21.00	19.96
		2535.0	21.85	21.00	19.95
		2505.0	21.80	20.96	19.95
15MHz	1 RB high	2562.5	22.66	22.31	21.29
		2535.0	22.69	22.13	21.30
		2507.5	22.66	22.06	21.23
	1 RB low	2562.5	22.66	22.09	21.29
		2535.0	22.66	22.13	21.30
		2507.5	22.59	22.04	21.21
	50% RB mid	2562.5	21.90	20.93	19.92
		2535.0	21.78	20.95	19.93
		2507.5	21.77	20.92	19.92
	100% RB	2562.5	21.96	20.94	20.00
		2535.0	21.82	20.96	19.99
		2507.5	21.82	20.96	19.99
20MHz	1 RB high	2560.0	22.65	22.54	20.80
		2535.0	22.66	22.29	20.78
		2510.0	22.62	22.16	20.71
	1 RB low	2560.0	22.63	22.25	20.74

		2535.0	22.67	22.18	20.72
		2510.0	22.55	22.16	20.64
	50% RB mid	2560.0	21.96	20.96	19.98
		2535.0	21.83	20.98	19.97
		2510.0	21.84	20.95	19.97
	100% RB	2560.0	22.00	20.99	20.00
		2535.0	21.81	20.96	19.95
		2510.0	21.80	20.92	19.92

LTE band 12

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	715.3	23.87	23.00	21.80
		707.5	23.75	23.01	21.86
		699.7	23.73	22.89	22.11
	1 RB low	715.3	23.81	22.90	21.72
		707.5	23.77	23.03	21.86
		699.7	23.70	22.88	22.25
	50% RB mid	715.3	23.90	23.03	21.84
		707.5	23.83	23.06	22.00
		699.7	23.89	22.97	21.80
	100% RB	715.3	22.91	22.05	21.13
		707.5	22.88	21.77	21.26
		699.7	22.83	22.13	21.05
3MHz	1 RB high	714.5	23.96	23.39	22.20
		707.5	23.85	22.94	21.69
		700.5	23.84	22.91	21.69
	1 RB low	714.5	23.94	23.32	22.10
		707.5	23.82	22.90	21.72
		700.5	23.77	22.88	21.87
	50% RB mid	714.5	22.86	21.91	20.98
		707.5	22.84	21.95	20.97
		700.5	22.83	21.94	20.95
	100% RB	714.5	22.89	21.87	21.06
		707.5	22.87	21.86	21.03
		700.5	22.90	21.87	21.08
5MHz	1 RB high	713.5	24.05	23.08	22.11
		707.5	23.97	23.03	22.12
		701.5	23.92	22.96	22.08
	1 RB low	713.5	23.93	22.98	22.08
		707.5	23.94	23.00	22.12
		701.5	23.89	22.94	22.21
	50% RB mid	713.5	22.83	21.95	21.05
		707.5	22.91	21.96	21.15
		701.5	22.94	22.00	21.12
	100% RB	713.5	22.88	21.84	21.05
		707.5	22.92	21.88	21.08
		701.5	22.95	21.95	21.13
10MHz	1 RB high	711.0	23.95	23.00	21.83
		707.5	23.85	22.86	21.69
		704.0	23.89	22.93	21.81
	1 RB low	711.0	23.86	22.93	21.79

		707.5	23.86	22.87	21.68
		704.0	23.91	22.88	21.70
	50% RB mid	711.0	22.86	22.03	21.07
		707.5	23.01	22.02	21.20
		704.0	22.98	22.02	21.17
	100% RB	711.0	22.87	21.88	21.00
		707.5	22.96	21.96	21.10
		704.0	22.97	22.00	21.12

LTE band 13

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	784.5	23.13	22.18	21.25
		782.0	23.12	22.15	21.23
		779.5	23.27	22.03	21.03
	1 RB low	784.5	23.13	22.19	21.25
		782.0	23.09	22.13	21.18
		779.5	23.23	21.94	20.99
	50% RB mid	784.5	22.08	21.09	20.26
		782.0	22.04	21.10	20.23
		779.5	22.00	21.07	20.18
	100% RB	784.5	22.09	21.06	20.25
		782.0	22.10	21.04	20.26
		779.5	22.05	20.98	20.21
10MHz	1 RB high	782.0	23.08	22.10	21.56
	1 RB low	782.0	22.99	22.02	21.58
	50% RB mid	782.0	22.18	21.22	20.60
	100% RB	782.0	22.20	21.19	20.52

LTE band 25

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1914.3	23.65	22.80	21.60
		1882.5	23.69	22.77	21.63
		1850.7	23.48	22.72	21.61
	1 RB low	1914.3	23.66	22.78	21.53
		1882.5	23.68	22.76	21.60
		1850.7	23.50	22.73	21.65
	50% RB mid	1914.3	23.68	22.97	21.92
		1882.5	23.73	22.90	21.70
		1850.7	23.56	22.76	21.73
	100% RB	1914.3	22.77	21.62	21.02
		1882.5	22.78	21.93	20.83
		1850.7	22.60	21.47	20.85
3MHz	1 RB high	1913.5	23.73	22.82	21.60
		1882.5	23.78	22.81	21.64
		1851.5	23.63	22.69	21.52
	1 RB low	1913.5	23.74	22.82	21.66
		1882.5	23.76	22.85	21.71
		1851.5	23.60	22.66	21.54
	50% RB mid	1913.5	22.75	21.86	20.70
		1882.5	22.75	21.83	20.71
		1851.5	22.63	21.66	20.59
	100% RB	1913.5	22.83	21.79	20.81
		1882.5	22.78	21.76	20.80
		1851.5	22.64	21.60	20.65
5MHz	1 RB high	1912.5	23.83	22.86	21.99
		1882.5	23.83	22.86	21.99
		1852.5	23.79	22.82	21.95
	1 RB low	1912.5	23.83	22.89	21.98
		1882.5	23.87	22.90	22.03
		1852.5	23.70	22.75	21.89
	50% RB mid	1912.5	22.73	21.85	20.77
		1882.5	22.75	21.85	20.78
		1852.5	22.64	21.72	20.67
	100% RB	1912.5	22.79	21.74	20.80
		1882.5	22.80	21.78	20.82
		1852.5	22.67	21.64	20.69
10MHz	1 RB high	1910.0	23.78	22.84	21.65
		1882.5	23.78	22.78	21.61
		1855.0	23.73	22.74	21.58
	1 RB low	1910.0	23.76	22.80	21.67

		1882.5	23.79	22.83	21.66
		1855.0	23.61	22.64	21.49
	50% RB mid	1910.0	22.83	21.93	20.90
		1882.5	22.83	21.94	20.89
		1855.0	22.72	21.81	20.79
	100% RB	1910.0	22.89	21.90	20.86
		1882.5	22.87	21.89	20.84
		1855.0	22.75	21.76	20.71
15MHz	1 RB high	1907.5	23.65	23.08	22.13
		1882.5	23.69	23.10	22.10
		1857.5	23.59	23.01	22.01
	1 RB low	1907.5	23.75	23.13	22.17
		1882.5	23.66	23.07	22.10
		1857.5	23.53	22.97	21.98
	50% RB mid	1907.5	22.82	21.82	20.83
		1882.5	22.77	21.75	20.76
		1857.5	22.67	21.69	20.67
	100% RB	1907.5	22.84	21.82	20.90
		1882.5	22.81	21.81	20.85
		1857.5	22.69	21.70	20.73
20MHz	1 RB high	1905.0	23.66	23.37	21.57
		1882.5	23.69	23.33	21.58
		1860.0	23.65	23.31	21.56
	1 RB low	1905.0	23.68	23.29	21.56
		1882.5	23.61	23.27	21.50
		1860.0	23.55	23.21	21.44
	50% RB mid	1905.0	22.78	21.83	20.76
		1882.5	22.79	21.84	20.80
		1860.0	22.76	21.72	20.74
	100% RB	1905.0	22.82	21.85	20.83
		1882.5	22.84	21.84	20.83
		1860.0	22.73	21.73	20.72

LTE band 26(814MHz~824MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	823.3	23.40	22.52	21.36
		819.0	23.35	22.45	21.35
		814.7	23.25	22.38	21.69
	1 RB low	823.3	23.38	22.45	21.36
		819.0	23.38	22.46	21.36
		814.7	23.27	22.36	21.66
	50% RB mid	823.3	23.46	22.66	21.59
		819.0	23.44	22.63	21.41
		814.7	23.40	22.50	21.34
	100% RB	823.3	22.50	21.39	20.75
		819.0	22.46	21.62	20.51
		814.7	22.38	21.55	20.45
3MHz	1 RB high	822.5	23.42	22.57	21.54
		819.0	23.41	22.46	21.31
		815.5	23.40	22.45	21.34
	1 RB low	822.5	23.41	22.61	21.50
		819.0	23.39	22.48	21.39
		815.5	23.33	22.39	21.29
	50% RB mid	822.5	22.40	21.47	20.40
		819.0	22.41	21.48	20.36
		815.5	22.38	21.45	20.34
	100% RB	822.5	22.43	21.39	20.45
		819.0	22.42	21.40	20.44
		815.5	22.37	21.35	20.38
5MHz	1 RB high	821.5	23.62	22.66	21.84
		819.0	23.62	22.66	21.79
		816.5	23.61	22.67	21.82
	1 RB low	821.5	23.56	22.65	21.74
		819.0	23.56	22.63	21.81
		816.5	23.49	22.56	21.66
	50% RB mid	821.5	22.50	21.53	20.53
		819.0	22.50	21.53	20.53
		816.5	22.49	21.54	20.52
	100% RB	821.5	22.50	21.47	20.49
		819.0	22.51	21.48	20.50
		816.5	22.48	21.46	20.48
10MHz	1 RB high	819.0	23.64	22.68	21.58
	1 RB low	819.0	23.51	22.55	21.52
	50% RB mid	819.0	22.59	21.62	20.66
	100% RB	819.0	22.59	21.60	20.56

LTE band 26(824MHz~849MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	22.79	21.88	20.76
		836.5	23.12	22.16	21.49
		824.7	23.38	22.47	21.35
	1 RB low	848.3	22.81	21.87	20.77
		836.5	23.22	22.29	21.57
		824.7	23.39	22.45	21.34
	50% RB mid	848.3	22.82	22.07	20.98
		836.5	23.16	22.40	21.12
		824.7	23.40	22.64	21.59
	100% RB	848.3	21.89	20.75	20.12
		836.5	22.22	21.35	20.27
		824.7	22.48	21.36	20.74
3MHz	1 RB high	847.5	22.79	21.87	20.72
		836.5	23.10	22.17	21.01
		825.5	23.50	22.55	21.40
	1 RB low	847.5	22.82	21.92	20.76
		836.5	23.27	22.33	21.22
		825.5	23.45	22.56	21.42
	50% RB mid	847.5	21.81	20.90	19.77
		836.5	22.16	21.21	20.12
		825.5	22.47	21.49	20.42
	100% RB	847.5	21.87	20.82	19.89
		836.5	22.21	21.17	20.23
		825.5	22.43	21.42	20.49
5MHz	1 RB high	846.5	22.94	22.01	21.13
		836.5	23.20	22.25	21.43
		826.5	23.66	22.70	21.87
	1 RB low	846.5	22.98	22.04	21.19
		836.5	23.44	22.54	21.66
		826.5	23.59	22.67	21.81
	50% RB mid	846.5	21.85	20.96	19.90
		836.5	22.22	21.30	20.26
		826.5	22.50	21.56	20.52
	100% RB	846.5	21.94	20.89	19.96
		836.5	22.29	21.23	20.29
		826.5	22.54	21.49	20.55
10MHz	1 RB high	844.0	23.01	22.06	21.01
		836.5	23.15	22.16	21.08
		829.0	23.52	22.52	21.46
	1 RB low	844.0	23.11	22.19	21.12

		836.5	23.57	22.61	21.57
		829.0	23.58	22.60	21.52
	50% RB mid	844.0	21.87	21.06	19.92
		836.5	22.23	21.38	20.29
		829.0	22.54	21.65	20.63
	100% RB	844.0	21.99	20.98	19.97
		836.5	22.35	21.37	20.34
		829.0	22.60	21.61	20.59
15MHz	1 RB high	841.5	22.80	22.28	21.29
		836.5	22.88	22.33	21.32
		831.5	23.05	22.54	21.48
	1 RB low	841.5	23.30	22.74	21.75
		836.5	23.47	22.92	21.90
		831.5	23.39	22.84	21.84
	50% RB mid	841.5	21.86	20.98	19.85
		836.5	22.12	21.22	20.11
		831.5	22.40	21.49	20.39
	100% RB	841.5	21.99	20.99	20.02
		836.5	22.28	21.28	20.28
		831.5	22.51	21.49	20.54

LTE band 41

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2687.5	25.50	24.69	23.99
		2593.0	25.64	24.86	24.12
		2498.5	25.61	24.52	23.48
	1 RB low	2687.5	25.47	24.65	23.98
		2593.0	25.66	24.81	24.17
		2498.5	25.65	24.56	23.48
	50% RB mid	2687.5	24.45	23.51	22.34
		2593.0	24.57	23.69	22.47
		2498.5	24.60	23.70	22.50
	100% RB	2687.5	24.47	23.47	22.37
		2593.0	24.58	23.61	22.50
		2498.5	24.60	23.64	22.53
10MHz	1 RB high	2685.0	25.46	24.56	23.29
		2593.0	25.63	24.70	23.45
		2501.0	25.60	24.68	23.50
	1 RB low	2685.0	25.46	24.56	23.25
		2593.0	25.58	24.68	23.46
		2501.0	25.58	24.68	23.45
	50% RB mid	2685.0	24.45	23.49	22.38
		2593.0	24.56	23.60	22.49
		2501.0	24.63	23.61	22.53
	100% RB	2685.0	24.45	23.52	22.41
		2593.0	24.62	23.66	22.59
		2501.0	24.65	23.68	22.58
15MHz	1 RB high	2682.5	25.42	24.62	23.69
		2593.0	25.59	24.78	23.84
		2503.5	25.57	24.78	23.84
	1 RB low	2682.5	25.42	24.59	23.64
		2593.0	25.61	24.77	23.85
		2503.5	25.58	24.75	23.84
	50% RB mid	2682.5	24.41	23.44	22.39
		2593.0	24.53	23.59	22.50
		2503.5	24.59	23.61	22.53
	100% RB	2682.5	24.40	23.43	22.41
		2593.0	24.57	23.58	22.55
		2503.5	24.57	23.57	22.57
20MHz	1 RB high	2680.0	25.46	24.72	23.62
		2593.0	25.60	24.81	23.77
		2506.0	25.60	24.86	23.80
	1 RB low	2680.0	25.43	24.66	23.63

		2593.0	25.56	24.80	23.78
		2506.0	25.57	24.83	23.75
	50% RB mid	2680.0	24.42	23.48	22.44
		2593.0	24.57	23.64	22.57
		2506.0	24.59	23.67	22.59
	100% RB	2680.0	24.38	23.38	22.41
		2593.0	24.59	23.59	22.63
		2506.0	24.57	23.55	22.60

LTE band 48

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	3697.5	21.29	20.58	19.89
		3625.0	21.77	21.03	20.35
		3552.5	21.64	20.86	20.32
	1 RB low	3697.5	21.33	20.55	19.94
		3625.0	21.80	21.05	20.41
		3552.5	21.64	20.82	20.34
	50% RB mid	3697.5	20.16	19.42	18.24
		3625.0	20.68	19.92	18.76
		3552.5	20.55	19.77	18.64
	100% RB	3697.5	20.19	19.38	18.28
		3625.0	20.70	19.87	18.75
		3552.5	20.56	19.73	18.61
10MHz	1 RB high	3695.0	21.24	20.31	19.24
		3625.0	21.79	20.94	19.83
		3555.0	21.59	20.66	19.68
	1 RB low	3695.0	21.31	20.40	19.33
		3625.0	21.76	20.90	19.83
		3555.0	21.56	20.62	19.66
	50% RB mid	3695.0	20.16	19.37	18.25
		3625.0	20.69	19.87	18.78
		3555.0	20.58	19.74	18.66
	100% RB	3695.0	20.20	19.38	18.28
		3625.0	20.68	19.87	18.80
		3555.0	20.57	19.78	18.69
15MHz	1 RB high	3692.5	21.15	20.39	19.51
		3625.0	21.71	20.92	20.06
		3557.5	21.57	20.78	19.96
	1 RB low	3692.5	21.19	20.41	19.55
		3625.0	21.66	20.90	20.03
		3557.5	21.46	20.66	19.85
	50% RB mid	3692.5	20.12	19.35	18.27
		3625.0	20.67	19.85	18.78
		3557.5	20.57	19.74	18.70
	100% RB	3692.5	20.17	19.30	18.31
		3625.0	20.64	19.78	18.78
		3557.5	20.57	19.70	18.70
20MHz	1 RB high	3690.0	21.20	20.39	19.51
		3625.0	21.74	20.99	20.06

	1 RB low	3560.0	21.66	20.87	20.04
		3690.0	21.33	20.52	19.66
		3625.0	21.76	20.99	20.06
		3560.0	21.53	20.69	19.90
	50% RB mid	3690.0	20.18	19.40	18.34
		3625.0	20.67	19.88	18.83
		3560.0	20.61	19.76	18.80
	100% RB	3690.0	20.15	19.31	18.33
		3625.0	20.63	19.76	18.81
		3560.0	20.58	19.72	18.76

LTE band 66

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1779.3	23.06	22.13	21.43
		1745.0	22.84	21.91	21.13
		1710.7	23.06	22.16	21.41
	1 RB low	1779.3	23.04	22.09	21.45
		1745.0	22.85	21.89	21.09
		1710.7	23.07	22.15	21.36
	50% RB mid	1779.3	23.10	22.24	21.44
		1745.0	22.89	22.07	21.27
		1710.7	23.19	22.31	21.58
	100% RB	1779.3	22.08	21.26	20.46
		1745.0	21.91	21.07	20.00
		1710.7	22.17	21.33	20.26
3MHz	1 RB high	1778.5	23.06	22.16	21.30
		1745.0	22.91	21.94	21.15
		1711.5	23.20	22.25	21.45
	1 RB low	1778.5	23.06	22.09	21.32
		1745.0	22.92	21.96	21.16
		1711.5	23.16	22.24	21.43
	50% RB mid	1778.5	22.05	21.10	20.30
		1745.0	21.86	20.91	20.11
		1711.5	22.21	21.24	20.46
	100% RB	1778.5	22.07	21.04	20.25
		1745.0	21.88	20.83	20.03
		1711.5	22.24	21.18	20.40
5MHz	1 RB high	1777.5	23.18	22.20	21.38
		1745.0	22.96	21.98	21.19
		1712.5	23.30	22.31	21.48
	1 RB low	1777.5	23.12	22.15	21.33
		1745.0	22.96	22.01	21.19
		1712.5	23.27	22.29	21.50
	50% RB mid	1777.5	22.04	21.12	20.27
		1745.0	21.85	20.97	20.08
		1712.5	22.20	21.28	20.42
	100% RB	1777.5	22.09	21.06	20.25
		1745.0	21.90	20.83	20.03
		1712.5	22.22	21.19	20.38
10MHz	1 RB high	1775.0	23.18	22.21	21.38
		1745.0	22.92	21.94	21.12
		1715.0	23.11	22.15	21.36
	1 RB low	1775.0	23.04	22.08	21.26

		1745.0	22.92	21.94	21.13
		1715.0	23.20	22.20	21.41
	50% RB mid	1775.0	22.06	21.20	20.35
		1745.0	21.93	21.05	20.21
		1715.0	22.18	21.34	20.44
	100% RB	1775.0	22.15	21.16	20.37
		1745.0	21.97	20.99	20.16
		1715.0	22.19	21.21	20.42
15MHz	1 RB high	1772.5	22.99	22.45	21.65
		1745.0	22.81	22.27	21.43
		1717.5	22.97	22.44	21.61
	1 RB low	1772.5	22.86	22.33	21.53
		1745.0	22.83	22.31	21.49
		1717.5	23.12	22.57	21.76
	50% RB mid	1772.5	22.04	21.02	20.23
		1745.0	21.88	20.89	20.03
		1717.5	22.09	21.12	20.25
	100% RB	1772.5	22.04	21.00	20.21
		1745.0	21.91	20.90	20.07
		1717.5	22.15	21.14	20.32
20MHz	1 RB high	1770.0	22.98	22.66	21.86
		1745.0	22.83	22.45	21.61
		1720.0	23.03	22.69	21.86
	1 RB low	1770.0	22.83	22.46	21.63
		1745.0	22.85	22.46	21.65
		1720.0	23.13	22.81	21.99
	50% RB mid	1770.0	21.91	21.08	20.09
		1745.0	21.91	20.95	20.02
		1720.0	22.11	21.14	20.24
	100% RB	1770.0	21.97	21.00	20.17
		1745.0	21.91	20.89	20.07
		1720.0	22.16	21.14	20.32

LTE band 71

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	695.5	23.86	22.89	22.15
		680.5	23.86	22.93	22.17
		665.5	23.89	22.68	21.88
	1 RB low	695.5	23.90	22.92	22.19
		680.5	23.90	22.93	22.24
		665.5	23.92	22.71	21.94
	50% RB mid	695.5	22.94	22.08	21.11
		680.5	22.85	22.05	21.04
		665.5	22.79	21.99	20.98
	100% RB	695.5	22.91	22.04	21.08
		680.5	22.86	21.97	21.02
		665.5	22.74	21.87	20.90
10MHz	1 RB high	693.0	23.80	22.84	21.82
		680.5	23.81	22.80	21.81
		668.0	23.75	22.76	21.75
	1 RB low	693.0	23.82	22.76	21.82
		680.5	23.79	22.77	21.81
		668.0	23.77	22.83	21.74
	50% RB mid	693.0	22.96	22.15	21.19
		680.5	22.84	22.09	21.03
		668.0	22.79	22.03	21.01
	100% RB	693.0	23.01	22.17	21.13
		680.5	22.85	22.01	20.96
		668.0	22.77	21.92	20.89
15MHz	1 RB high	690.5	23.68	23.18	22.30
		680.5	23.70	23.15	22.30
		670.5	23.68	23.12	22.28
	1 RB low	690.5	23.70	23.15	22.27
		680.5	23.70	23.16	22.29
		670.5	23.62	23.12	22.25
	50% RB mid	690.5	22.92	22.00	21.08
		680.5	22.79	21.97	20.93
		670.5	22.81	21.93	20.99
	100% RB	690.5	22.96	22.05	21.11
		680.5	22.79	21.95	20.95
		670.5	22.79	21.92	20.96
20MHz	1 RB high	688.0	23.76	23.38	21.84
		680.5	23.82	23.36	21.84
		673.0	23.75	23.35	21.79
	1 RB low	688.0	23.75	23.29	21.80

		680.5	23.68	23.34	21.76
		673.0	23.65	23.30	21.70
	50% RB mid	688.0	22.90	22.01	21.05
		680.5	22.78	22.01	20.90
		673.0	23.01	22.00	21.09
	100% RB	688.0	22.88	22.03	21.01
		680.5	22.76	21.89	20.90
		673.0	22.91	22.02	21.04

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

A.2 Frequency Stability

A.2.1 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 0.1V 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.2.2 Measurement results

LTE Band 2, 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	1909.199		
50				-0.26	0.0001
40				-3.36	0.0018
30				-2.52	0.0013
10				0.30	0.0002
0				17.62	0.0094
-10				-1.24	0.0007
-20				-0.36	0.0002
-30				-0.49	0.0003

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1850.833	1909.199	19.20	0.0102
4.4				17.75	0.0094

LTE Band 5, 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	824.417	848.583		
50				-0.89	0.0011
40				1.34	0.0016
30				-9.33	0.0112
10				-2.19	0.0026
0				-2.45	0.0029
-10				-0.90	0.0011
-20				-0.66	0.0008
-30				-5.41	0.0065

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	824.417	848.583	-56.92	0.0680
4.4				0.59	0.0007

LTE Band 7, 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	2500.609	2569.391		
50				30.61	0.0121
40				-6.52	0.0026
30				27.97	0.0110
10				-9.74	0.0038
0				-0.29	0.0001
-10				-2.06	0.0008
-20				-3.85	0.0015
-30				-2.49	0.0010

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	2500.609	2569.391	-1.73	0.0007
4.4				-2.65	0.0010

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	699.481	715.519		
50				-0.01	0.0000
40				-0.62	0.0009
30				-0.93	0.0013
10				0.10	0.0001
0				-1.65	0.0023
-10				-0.14	0.0002
-20				0.62	0.0009
-30				1.30	0.0018

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	699.481	715.519	0.30	0.0004
4.4				-0.23	0.0003

LTE Band 13, 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	777.465	786.519		
50				2.36	0.0030
40				2.06	0.0026
30				2.35	0.0030
10				16.81	0.0215
0				16.52	0.0211
-10				15.01	0.0192
-20				0.10	0.0001
-30				0.79	0.0010

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	777.465	786.519	15.26	0.0195
4.4				15.08	0.0193

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				-0.17	0.0001
40				1.46	0.0008
30				2.17	0.0012
10				28.27	0.0150
0				3.40	0.0018
-10				0.43	0.0002
-20				3.30	0.0018
-30				3.73	0.0020

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	-0.27	0.0001
4.4				0.79	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				-3.18	0.0039
40				-0.84	0.0010
30				-1.06	0.0013
10				-3.46	0.0042
0				-0.04	0.0000
-10				0.57	0.0007
-20				-0.96	0.0012
-30				-0.11	0.0001

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	-3.29	0.0040
4.4				0.53	0.0006

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	848.447		
50				-0.40	0.0005
40				-1.65	0.0020
30				-3.63	0.0043
10				-2.10	0.0025
0				-1.73	0.0021
-10				0.14	0.0002
-20				-1.33	0.0016
-30				0.34	0.0004

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	824.553	848.447	-2.62	0.0031
4.4				-4.13	0.0049

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	2496.417	2689.551		
50				-29.78	0.0115
40				-23.85	0.0092
30				-25.66	0.0099
10				-25.13	0.0097
0				-26.45	0.0102
-10				-30.86	0.0119
-20				-30.23	0.0117
-30				-28.92	0.0112

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	2496.417	2689.551	1.37	0.0005
4.4				-24.78	0.0096

LTE Band 48, 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	3550.801	3699.199		
50				-11.10	0.0031
40				-15.65	0.0043
30				-3.71	0.0010
10				-5.46	0.0015
0				-10.76	0.0030
-10				3.12	0.0009
-20				-2.65	0.0007
-30				-4.95	0.0014

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	3550.801	3699.199	-11.49	0.0032
4.4				-8.30	0.0023

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	1710.801	1779.199		
50				-3.38	0.0019
40				30.37	0.0174
30				-1.52	0.0009
10				1.56	0.0009
0				24.68	0.0141
-10				27.21	0.0156
-20				0.29	0.0002
-30				25.46	0.0146

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1710.801	1779.199	23.86	0.0137
4.4				-0.13	0.0001

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				0.89	0.0013
40				0.46	0.0007
30				1.86	0.0027
10				3.65	0.0054
0				0.57	0.0008
-10				1.37	0.0020
-20				1.07	0.0016
-30				0.30	0.0004

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	2.16	0.0032
4.4				3.02	0.0044

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

A.3 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.

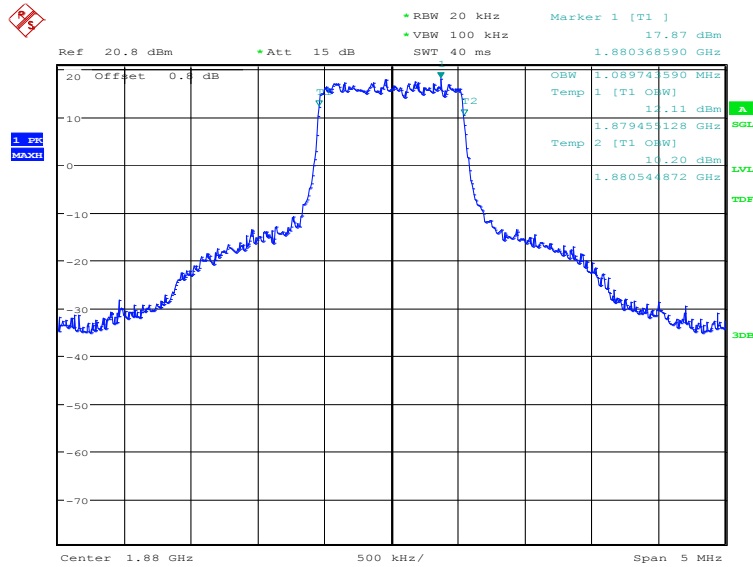
The measurement method is from ANSI C63.26:

- 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 $\geq 3 \times \text{RBW}$.
- 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) Set the detection mode to peak, and the trace mode to max-hold.

LTE band 2, 1.4MHz (99%)

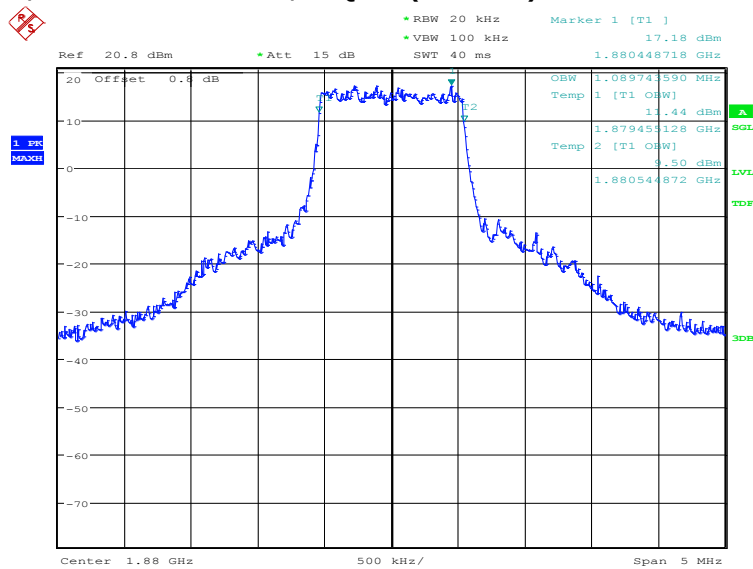
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	1089.74	1089.74

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



Date: 27.SEP.2022 09:26:46

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

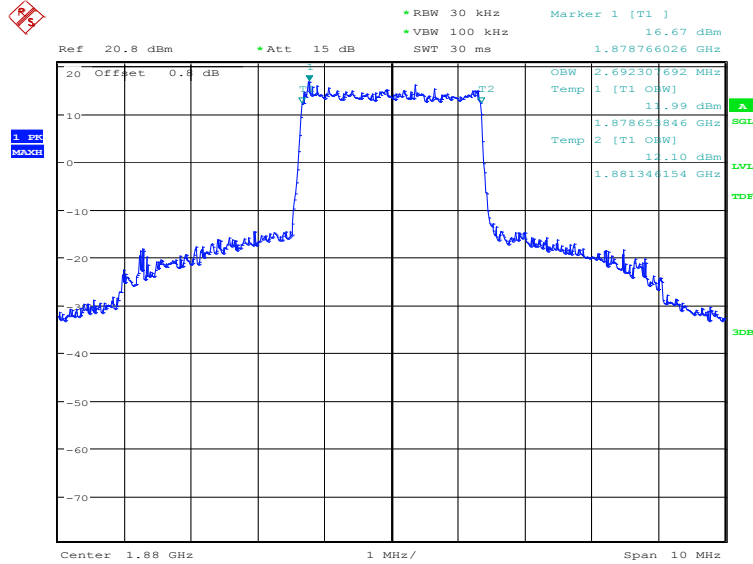


Date: 27.SEP.2022 09:27:26

LTE band 2, 3MHz (99%)

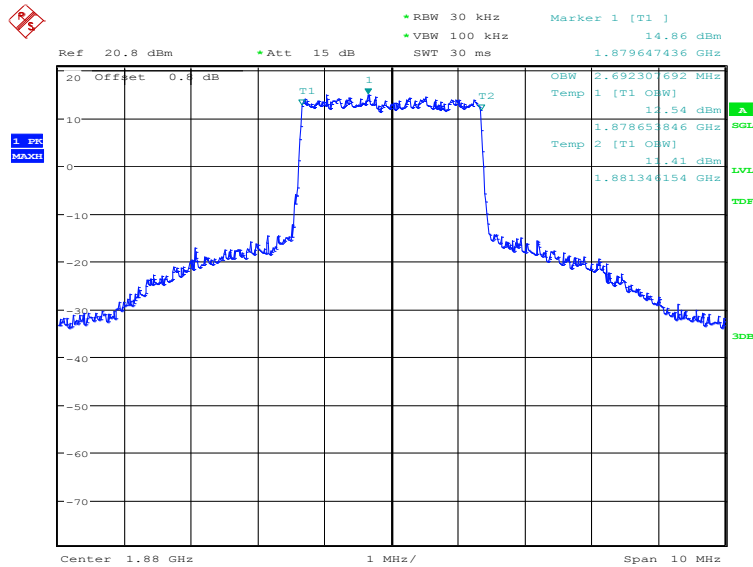
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	2692.31	2692.31

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



Date: 27.SEP.2022 09:28:07

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

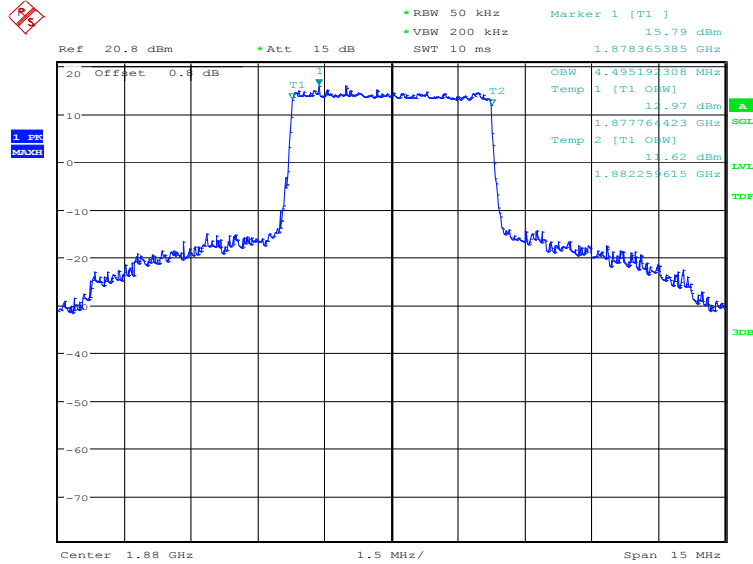


Date: 27.SEP.2022 09:28:47

LTE band 2, 5MHz (99%)

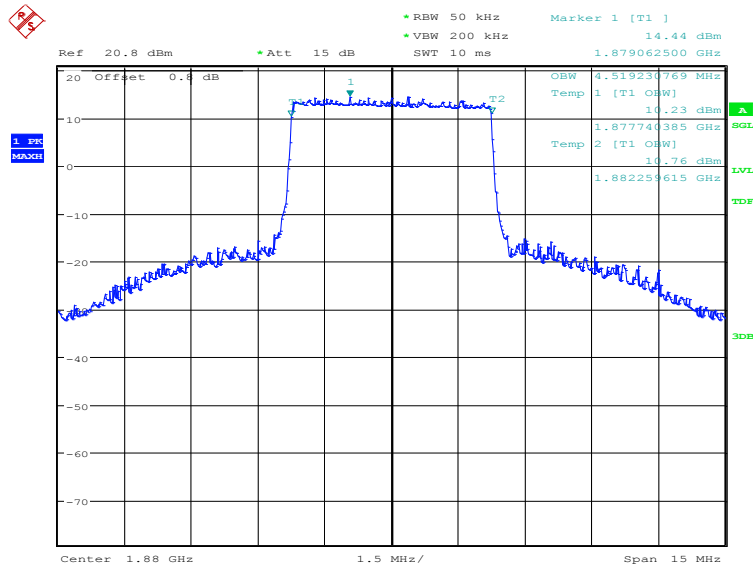
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	4495.19	4519.23

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



Date: 27.SEP.2022 09:29:29

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

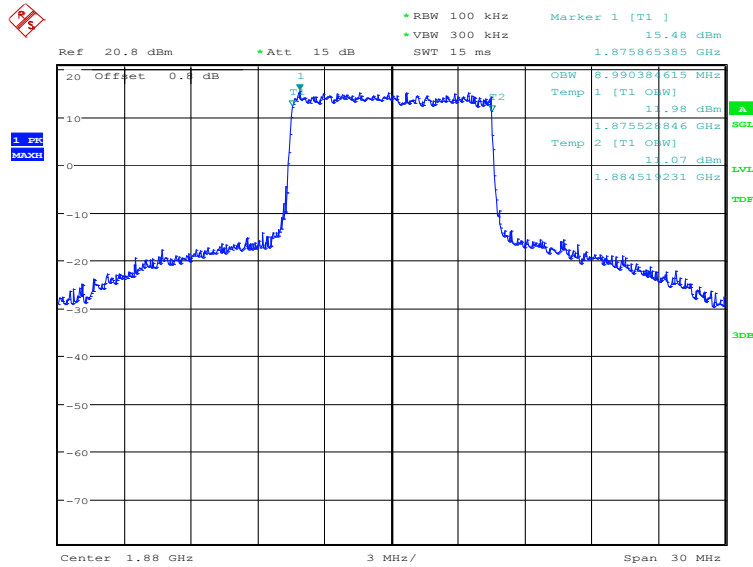


Date: 27.SEP.2022 09:30:09

LTE band 2, 10MHz (99%)

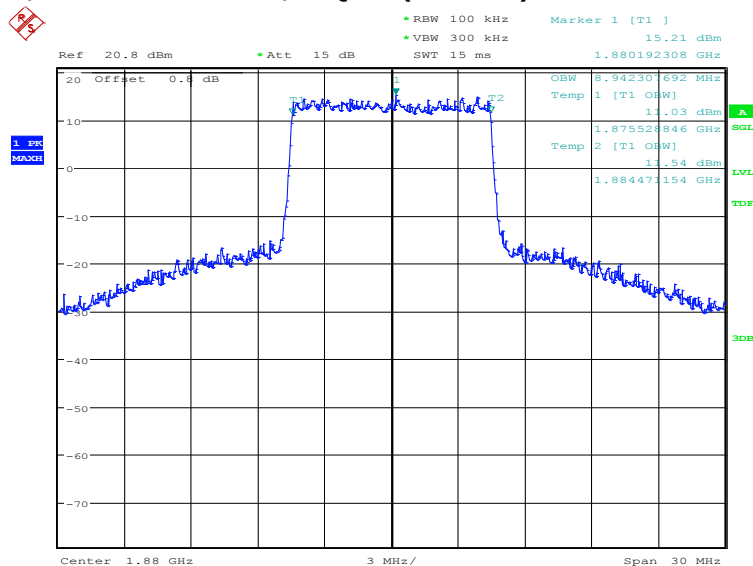
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	8990.38	8942.31

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



Date: 27.SEP.2022 09:30:51

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

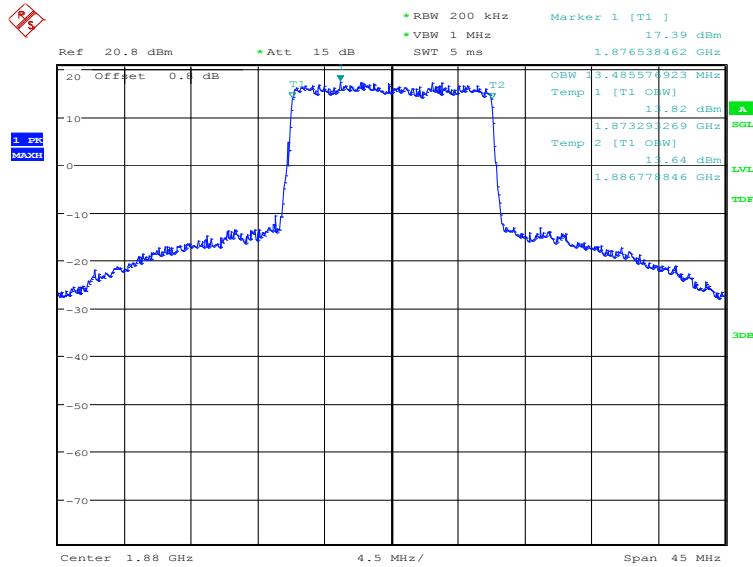


Date: 27.SEP.2022 09:31:31

LTE band 2, 15MHz (99%)

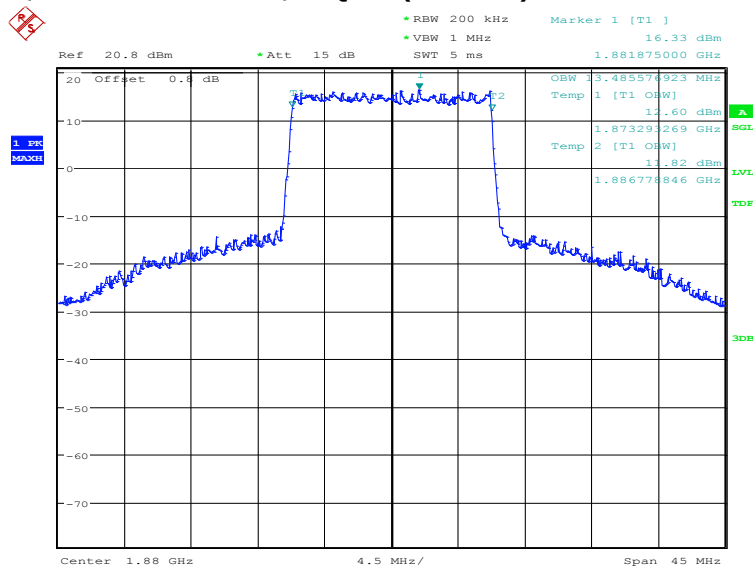
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 27.SEP.2022 09:32:12

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

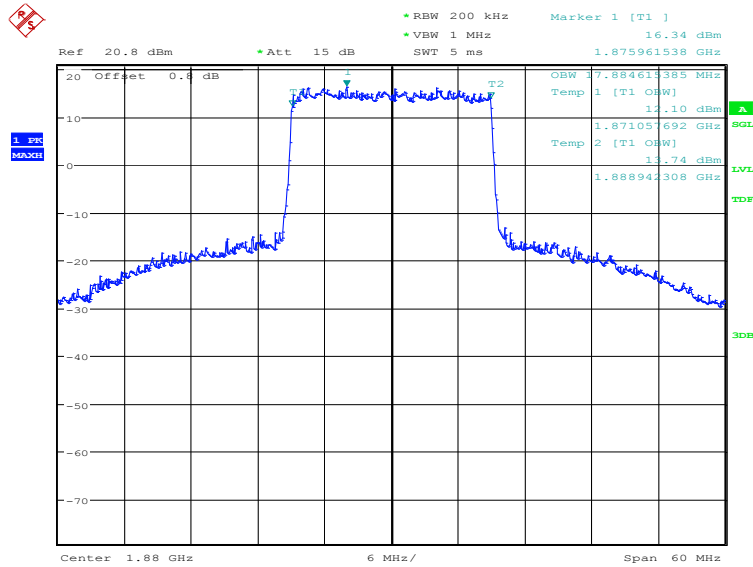


Date: 27.SEP.2022 09:32:52

LTE band 2, 20MHz (99%)

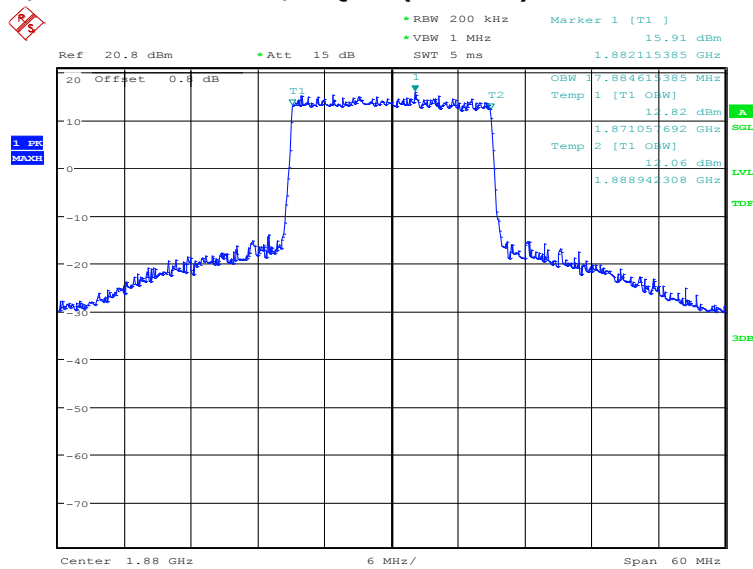
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1880.0	QPSK	16QAM
	17884.62	17884.62

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



Date: 27.SEP.2022 09:33:34

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

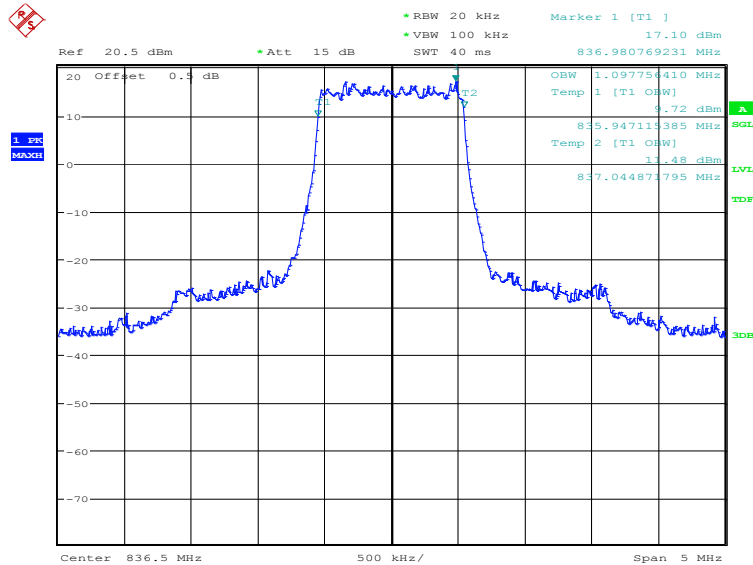


Date: 27.SEP.2022 09:34:14

LTE band 5, 1.4MHz (99%)

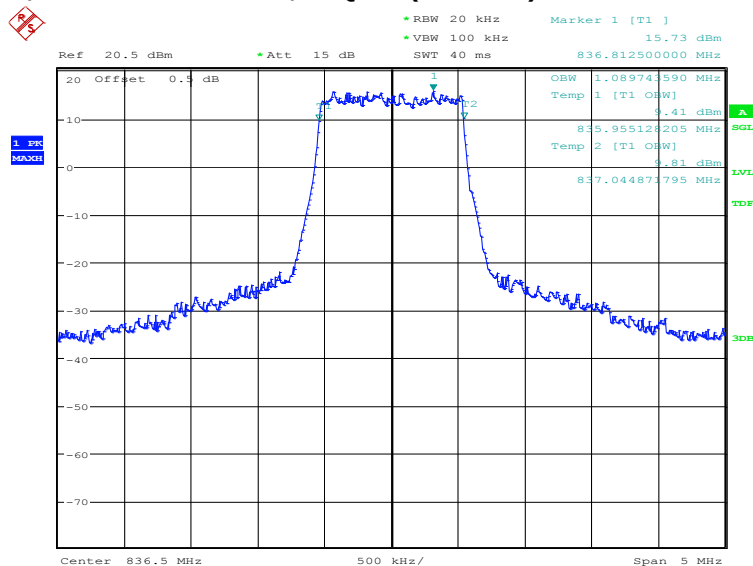
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1097.76	1089.74

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



Date: 27.SEP.2022 09:03:55

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

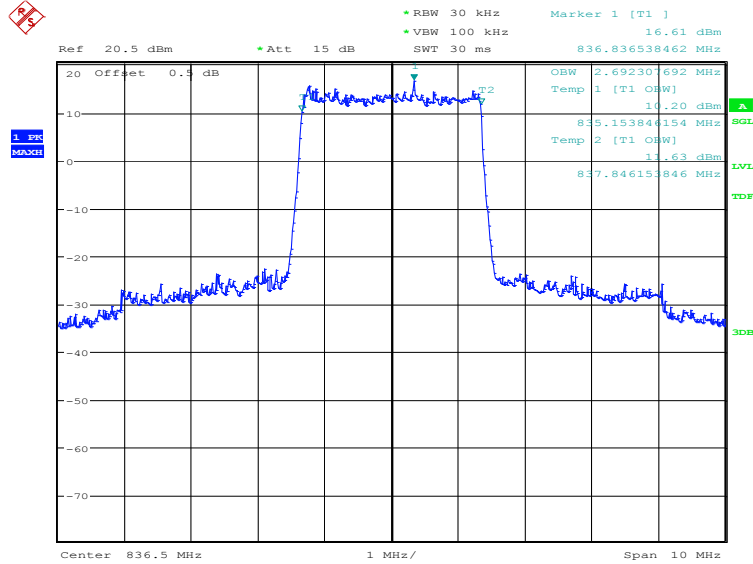


Date: 27.SEP.2022 09:04:35

LTE band 5, 3MHz (99%)

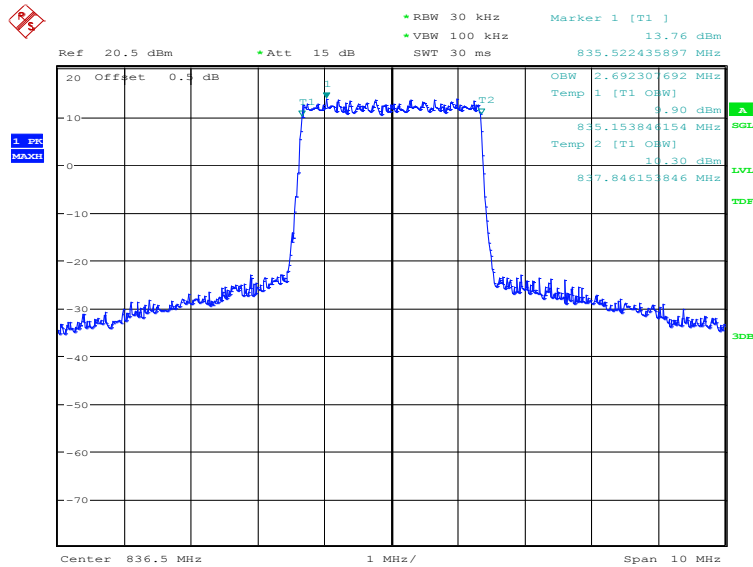
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 27.SEP.2022 09:05:17

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

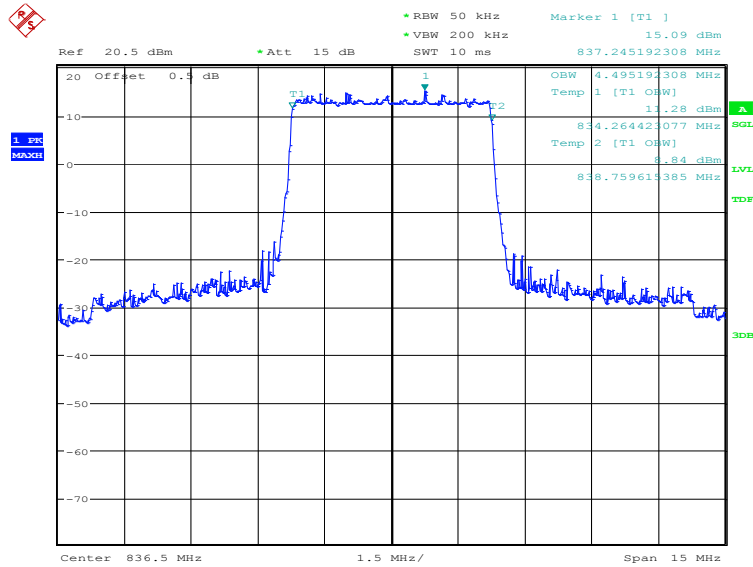


Date: 27.SEP.2022 09:05:57

LTE band 5, 5MHz (99%)

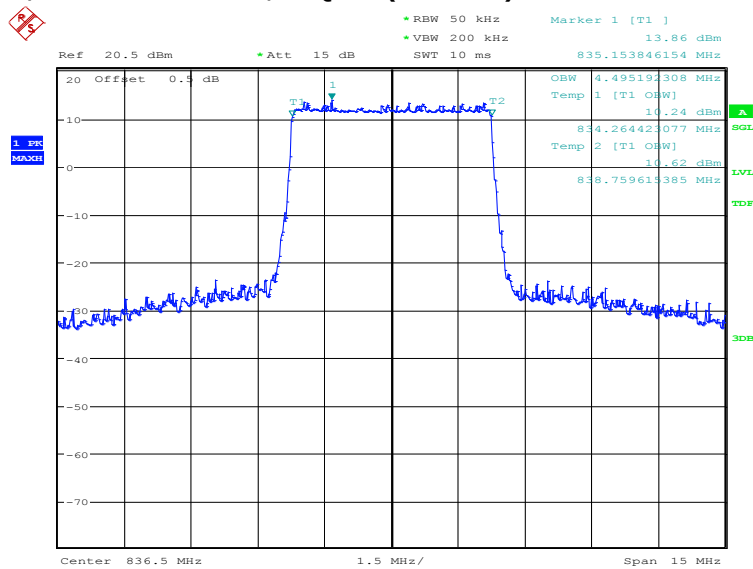
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	4495.19	4495.19

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



Date: 27.SEP.2022 09:06:38

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

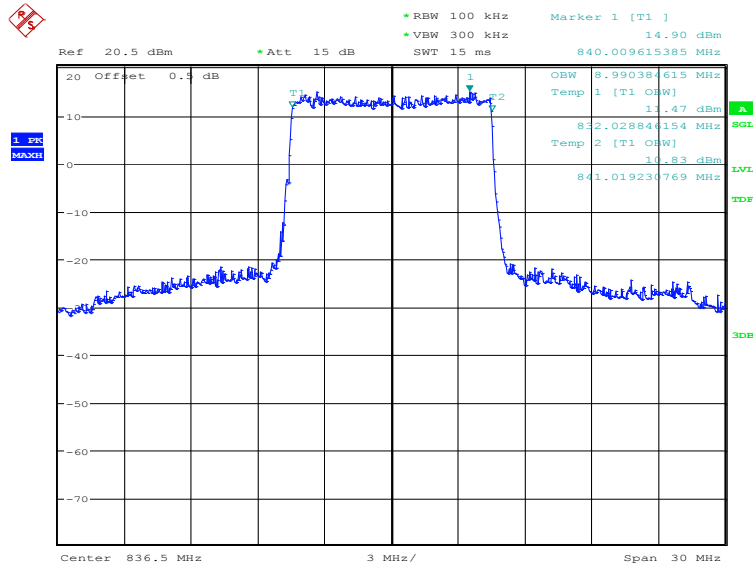


Date: 27.SEP.2022 09:07:18

LTE band 5, 10MHz (99%)

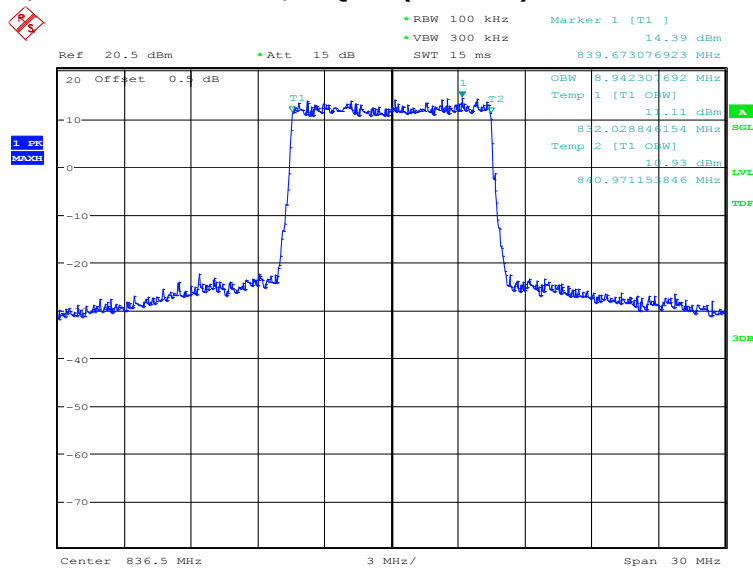
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	8990.38	8942.31

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



Date: 27.SEP.2022 09:08:00

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

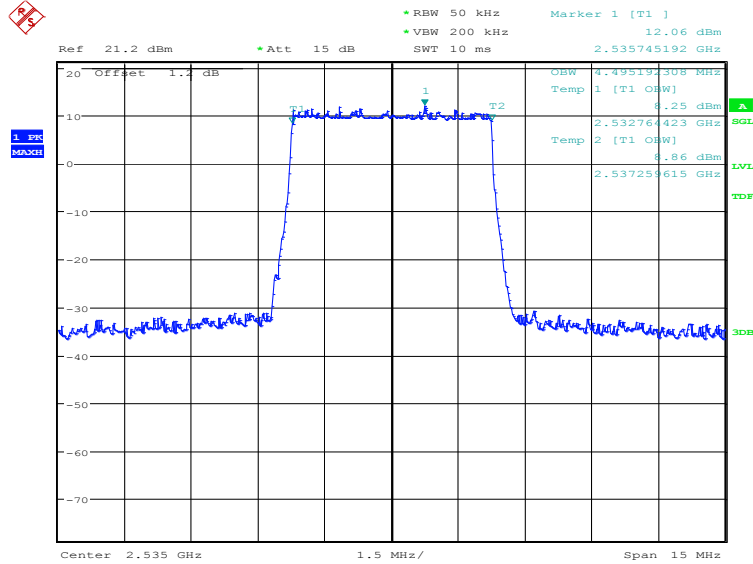


Date: 27.SEP.2022 09:08:40

LTE band 7, 5MHz (99%)

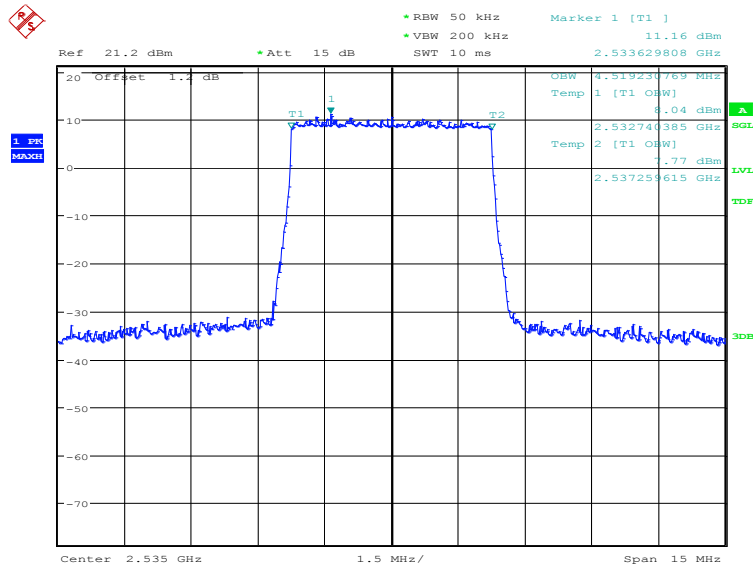
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	4495.19	4519.23

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



Date: 21.SEP.2022 11:58:04

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

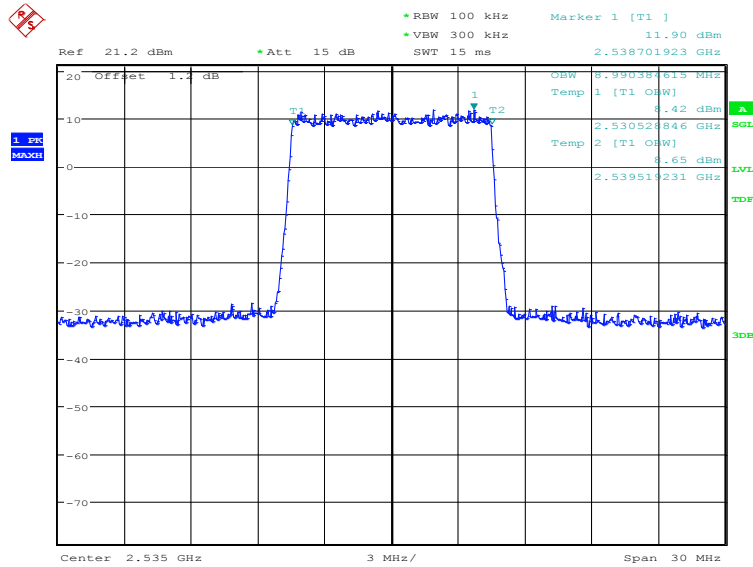


Date: 21.SEP.2022 11:58:44

LTE band 7, 10MHz (99%)

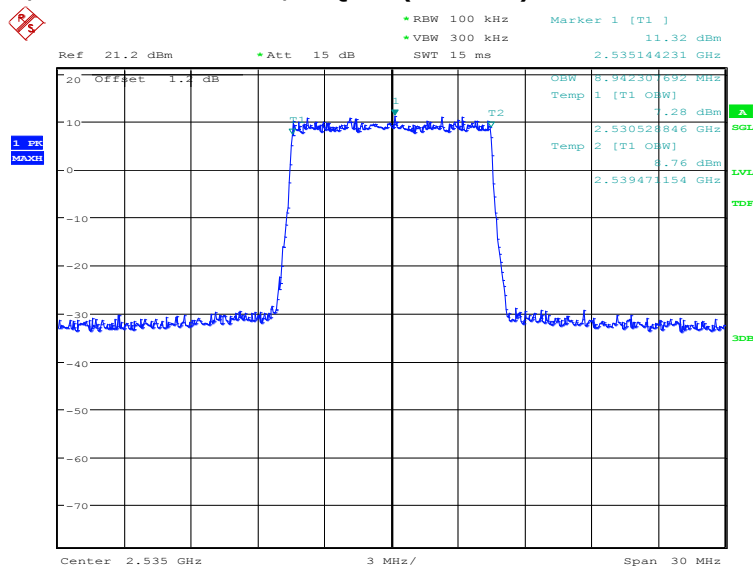
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	8990.38	8942.31

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



Date: 21.SEP.2022 11:59:25

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

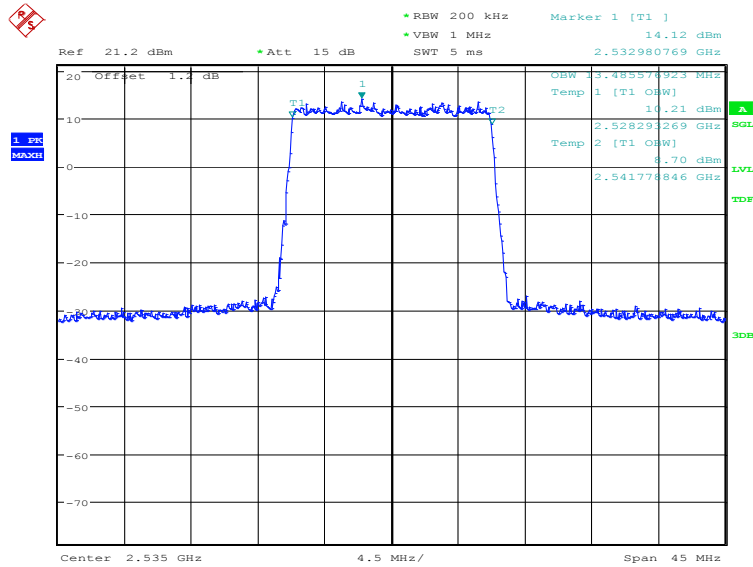


Date: 21.SEP.2022 12:00:05

LTE band 7, 15MHz (99%)

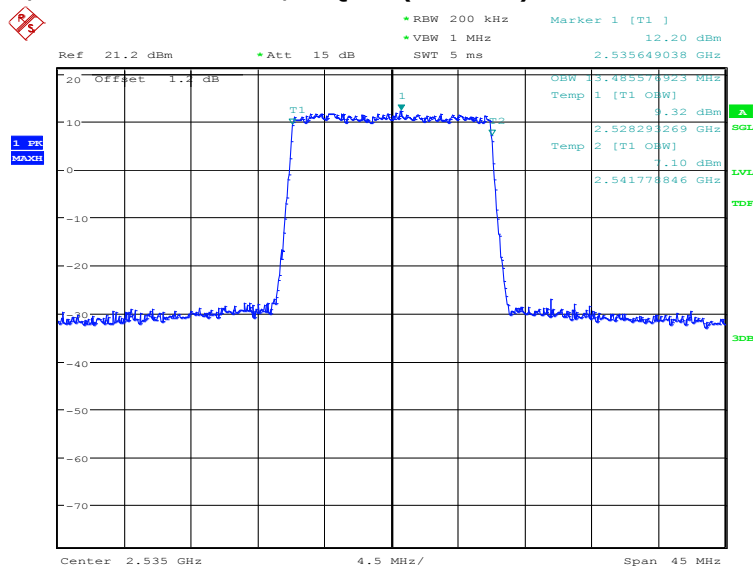
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 21.SEP.2022 12:00:46

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

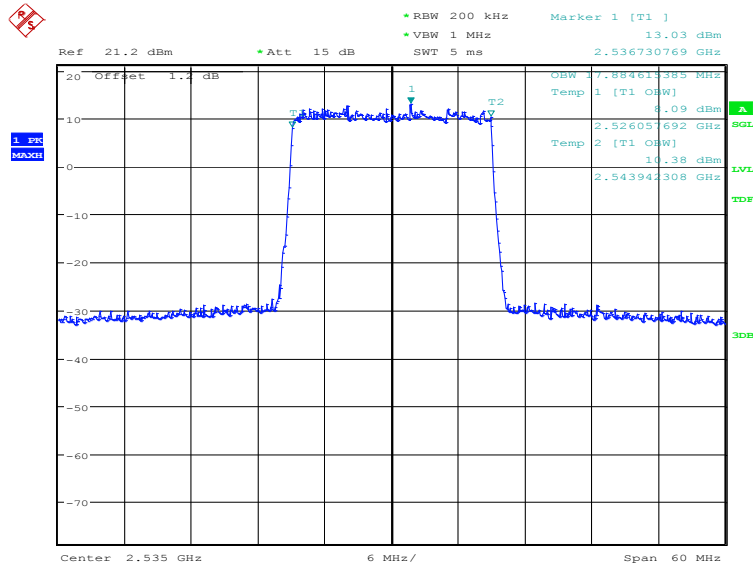


Date: 21.SEP.2022 12:01:26

LTE band 7, 20MHz (99%)

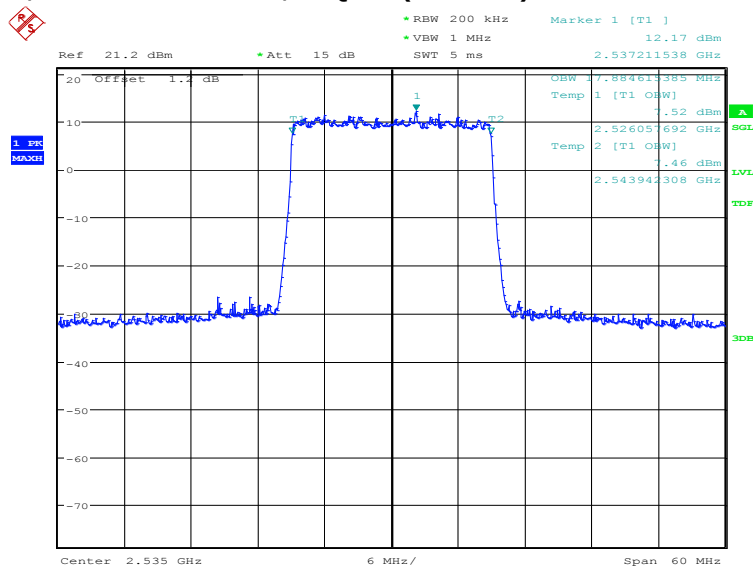
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2535.0	QPSK	16QAM
	17884.62	17884.62

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



Date: 21.SEP.2022 12:02:08

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

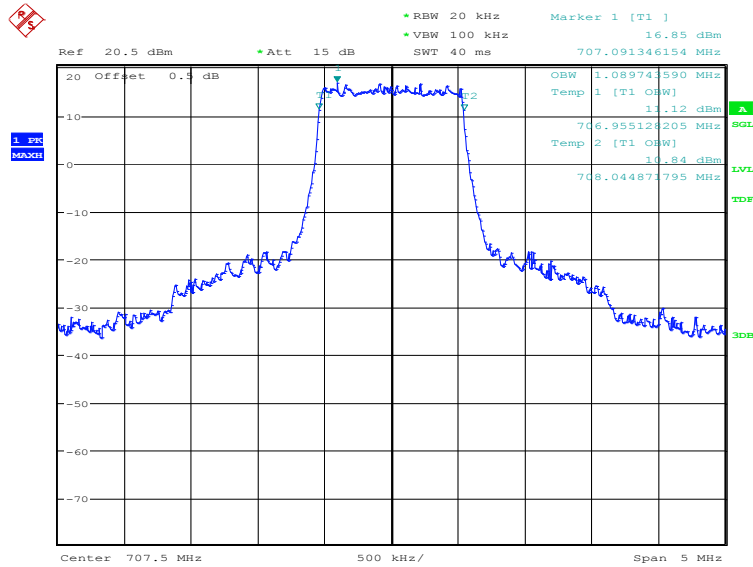


Date: 21.SEP.2022 12:02:48

LTE band 12, 1.4MHz (99%)

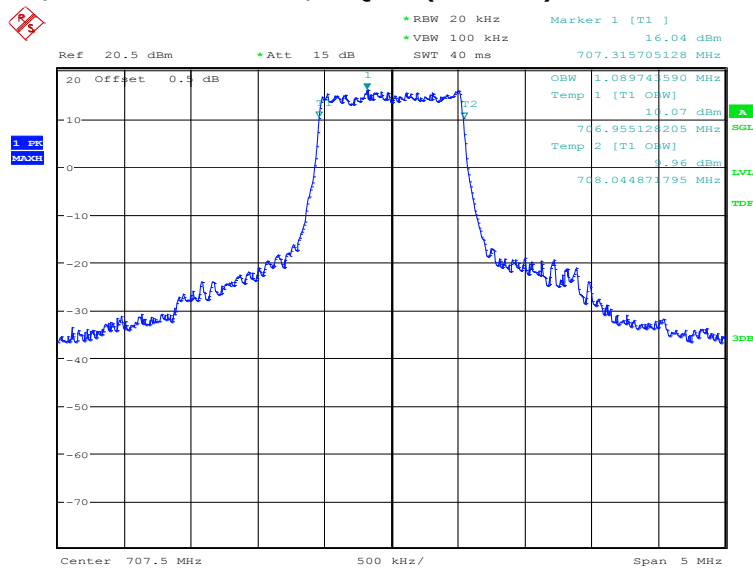
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	1089.74	1089.74

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



Date: 21.SEP.2022 10:25:15

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

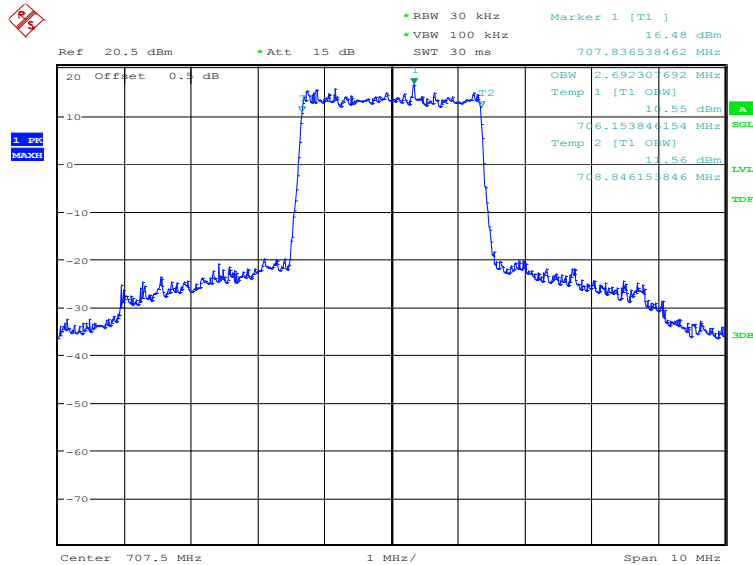


Date: 21.SEP.2022 10:25:54

LTE band 12, 3MHz (99%)

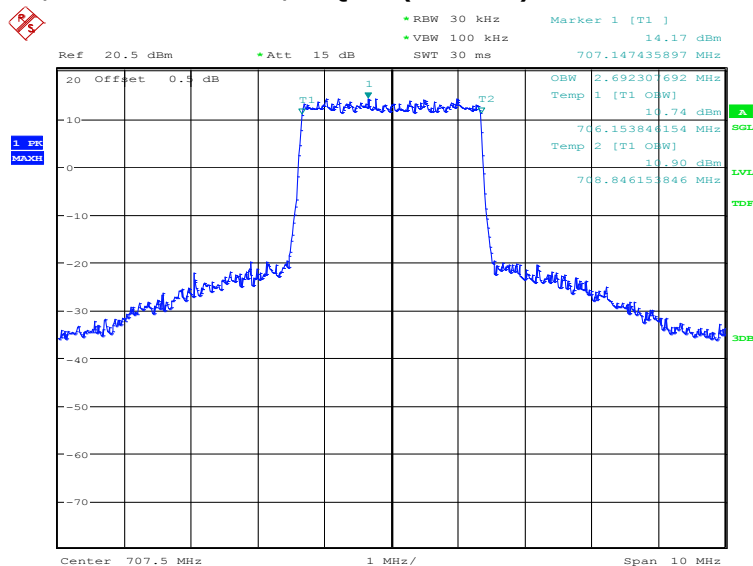
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 21.SEP.2022 10:26:36

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

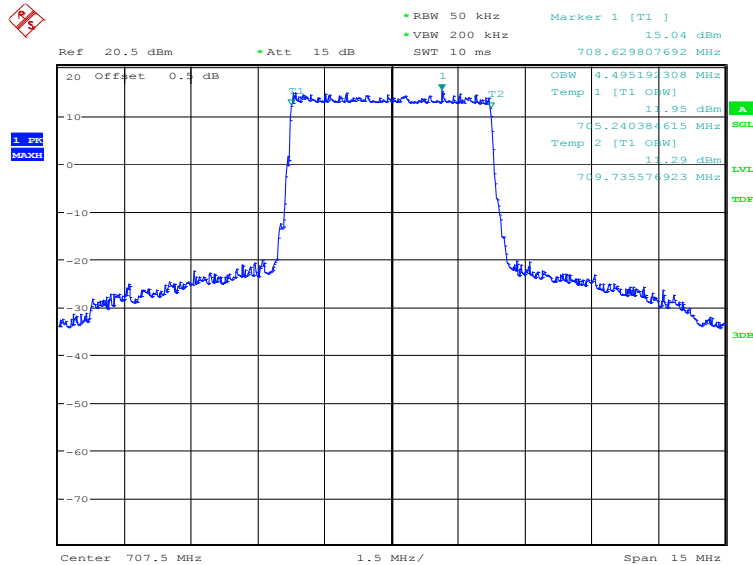


Date: 21.SEP.2022 10:27:16

LTE band 12, 5MHz (99%)

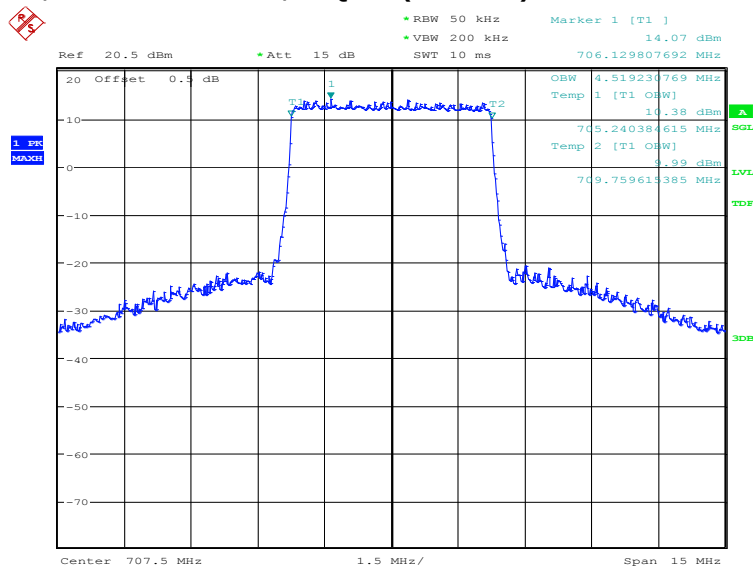
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	4495.19	4519.23

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



Date: 21.SEP.2022 10:27:57

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

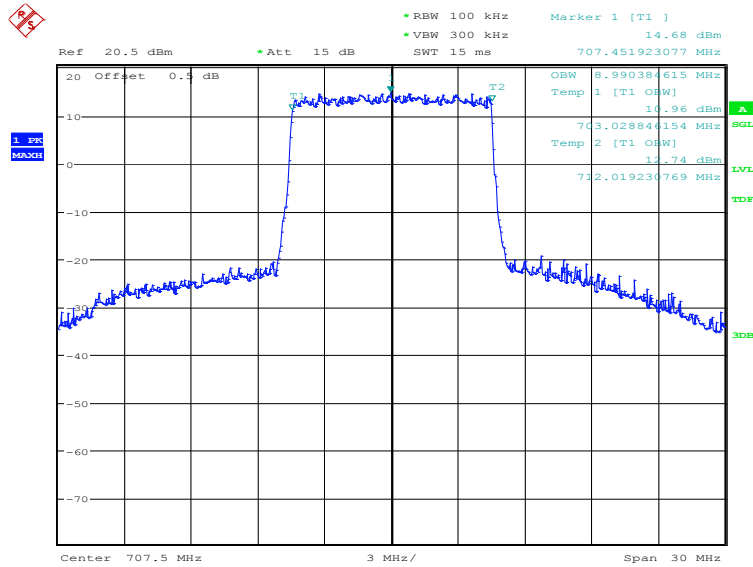


Date: 21.SEP.2022 10:28:37

LTE band 12, 10MHz (99%)

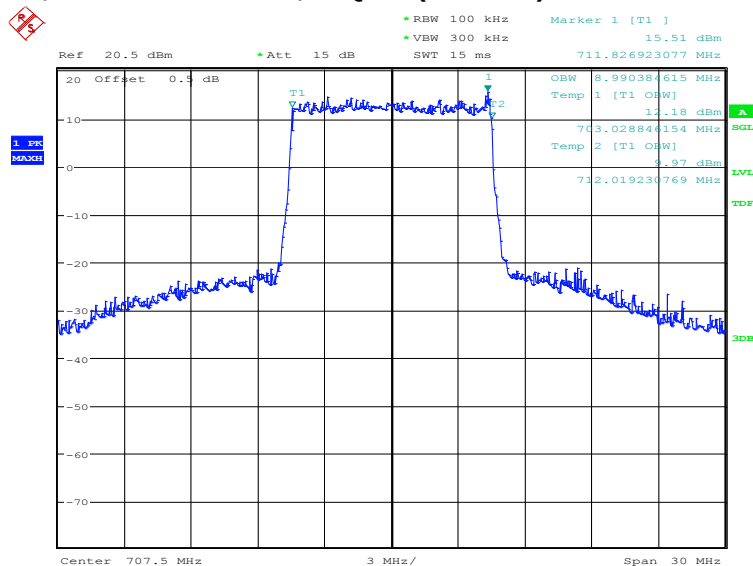
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
707.5	QPSK	16QAM
	8990.38	8990.38

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



Date: 21.SEP.2022 10:29:19

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

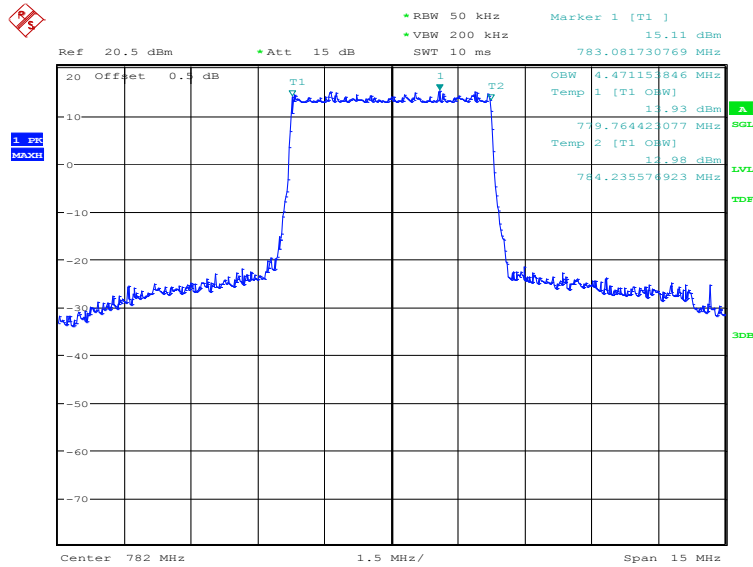


Date: 21.SEP.2022 10:29:59

LTE band 13, 5MHz (99%)

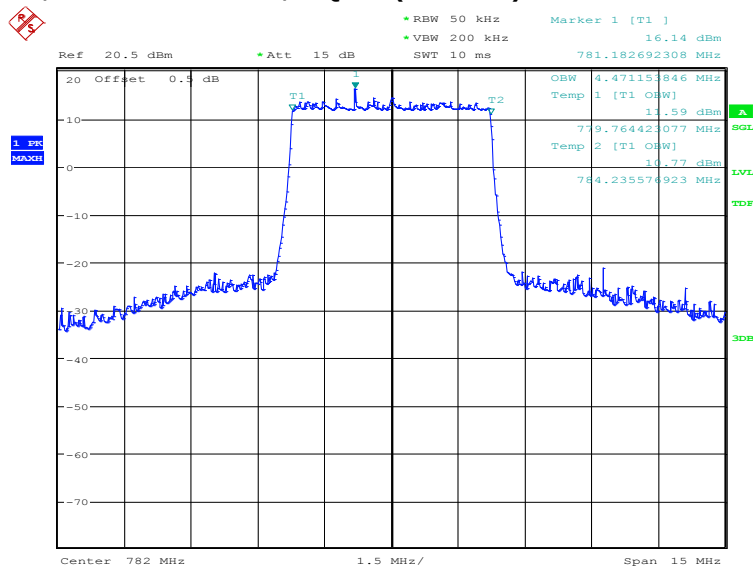
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
782.0	QPSK	16QAM
	4471.15	4471.15

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



Date: 21.SEP.2022 10:31:37

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

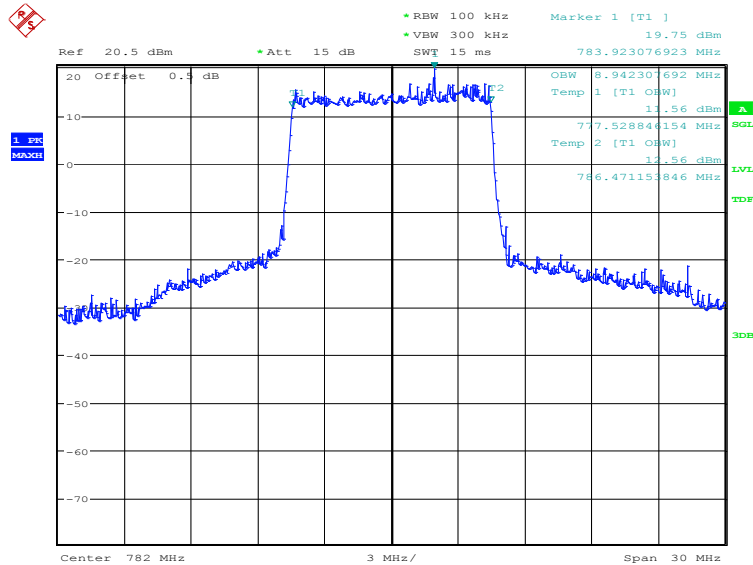


Date: 21.SEP.2022 10:32:17

LTE band 13, 10MHz (99%)

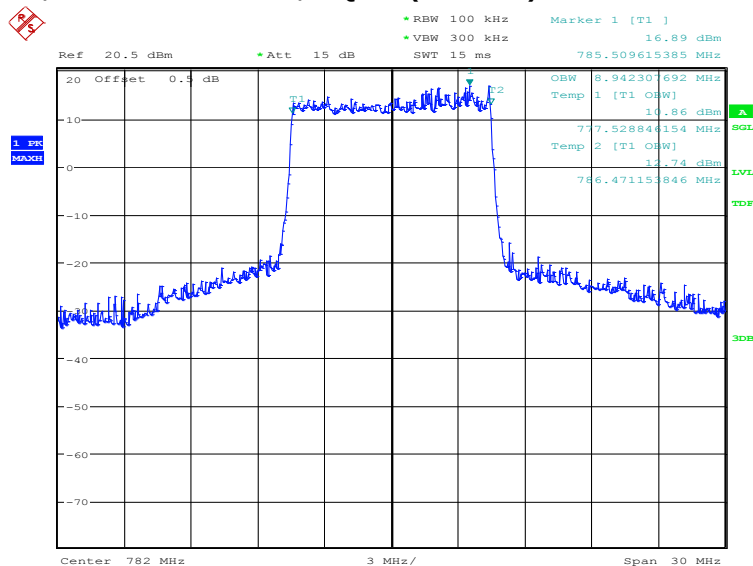
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
782.0	QPSK	16QAM
	8942.31	8942.31

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



Date: 21.SEP.2022 10:32:58

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

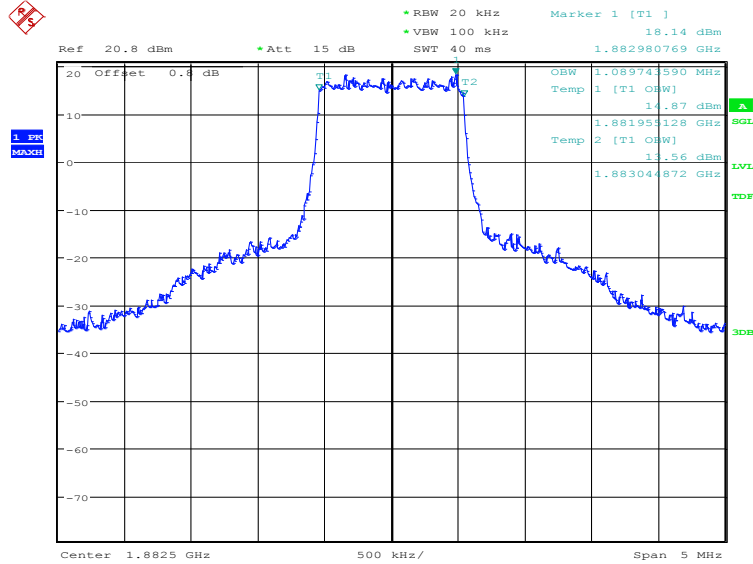


Date: 21.SEP.2022 10:33:38

LTE band 25, 1.4MHz (99%)

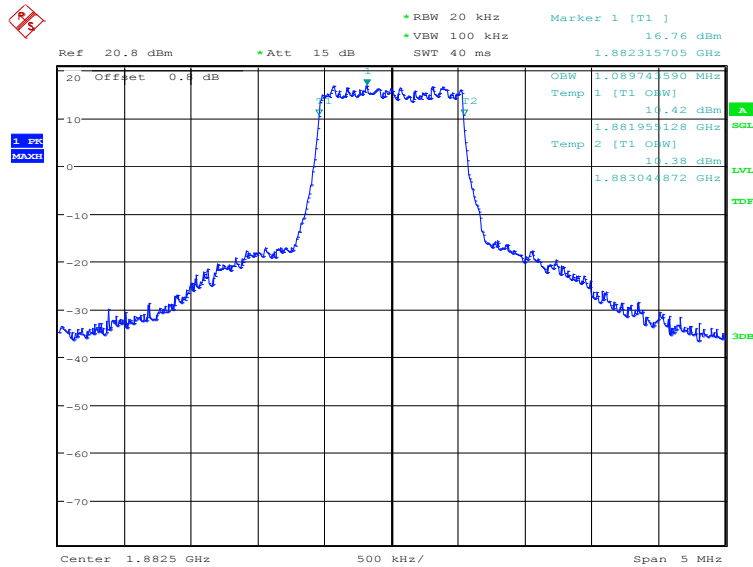
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	1089.74	1089.74

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



Date: 20.SEP.2022 18:45:11

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

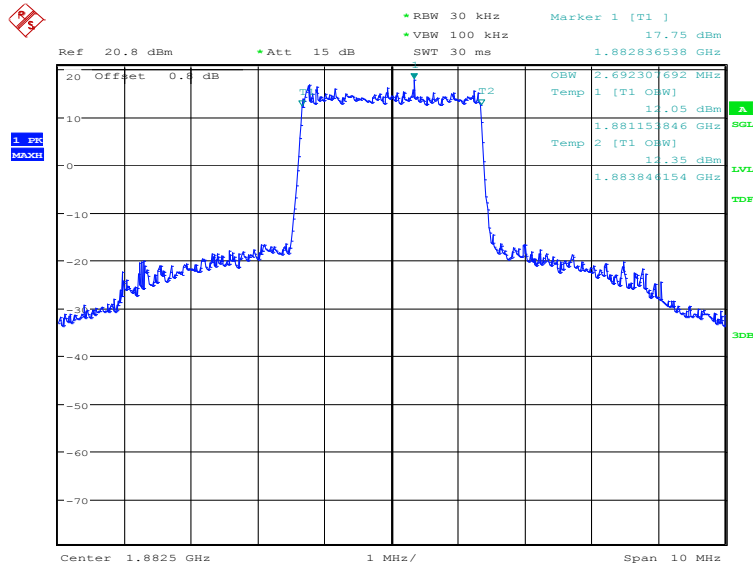


Date: 20.SEP.2022 18:45:51

LTE band 25, 3MHz (99%)

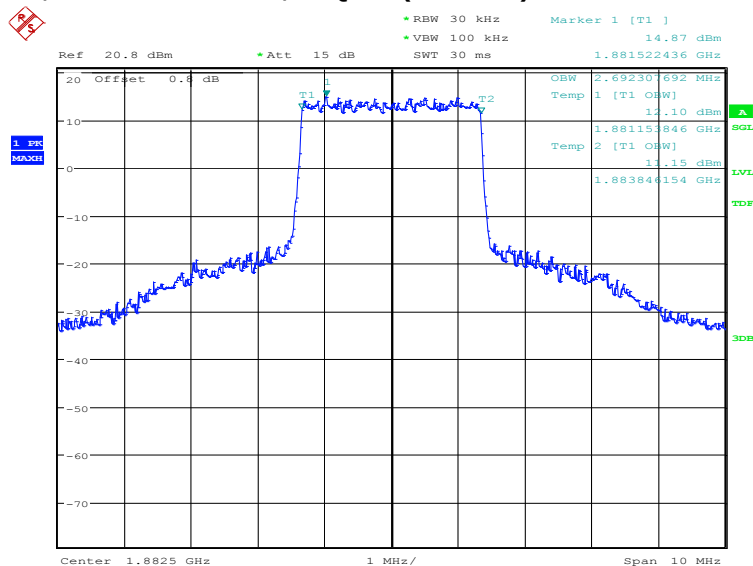
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 20.SEP.2022 18:46:34

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

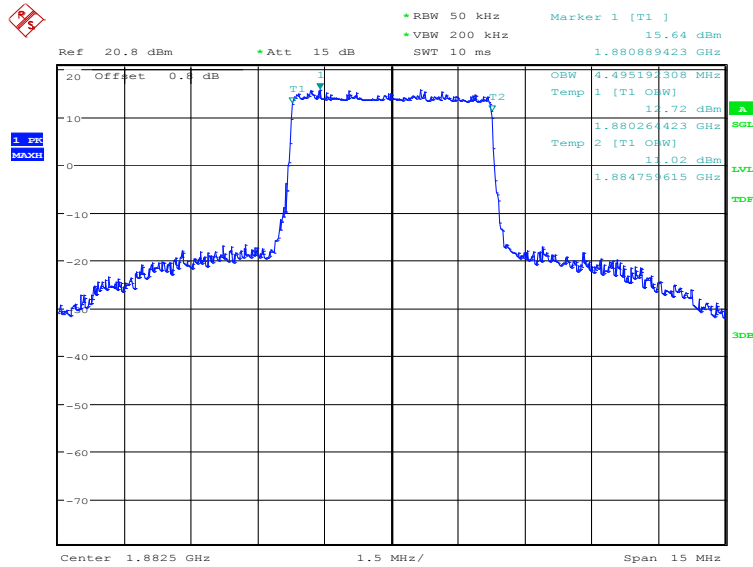


Date: 20.SEP.2022 18:47:15

LTE band 25, 5MHz (99%)

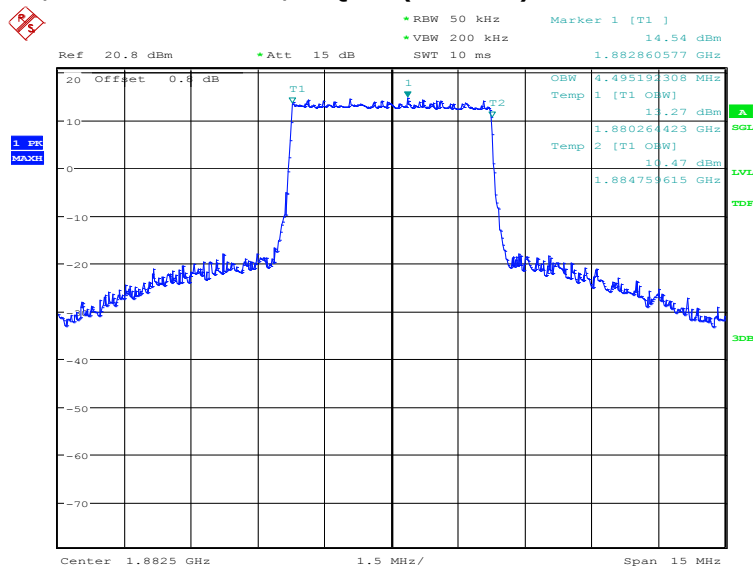
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	4495.19	4495.19

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



Date: 20.SEP.2022 18:47:57

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

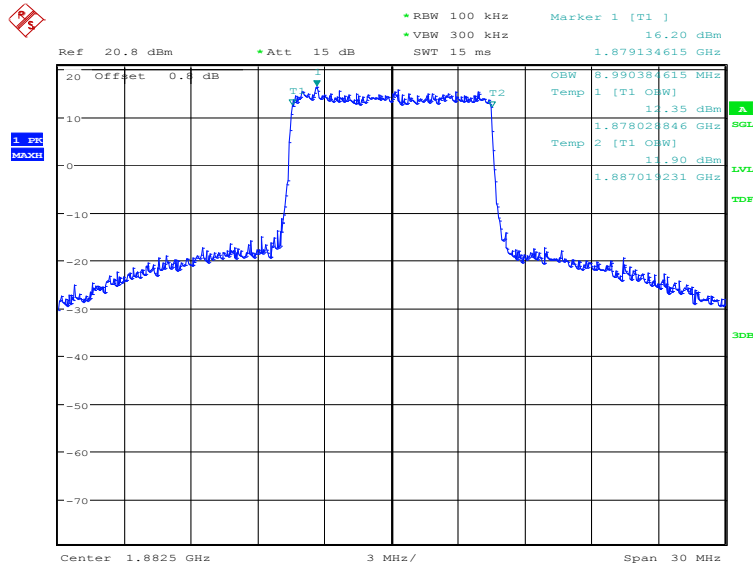


Date: 20.SEP.2022 18:48:38

LTE band 25, 10MHz (99%)

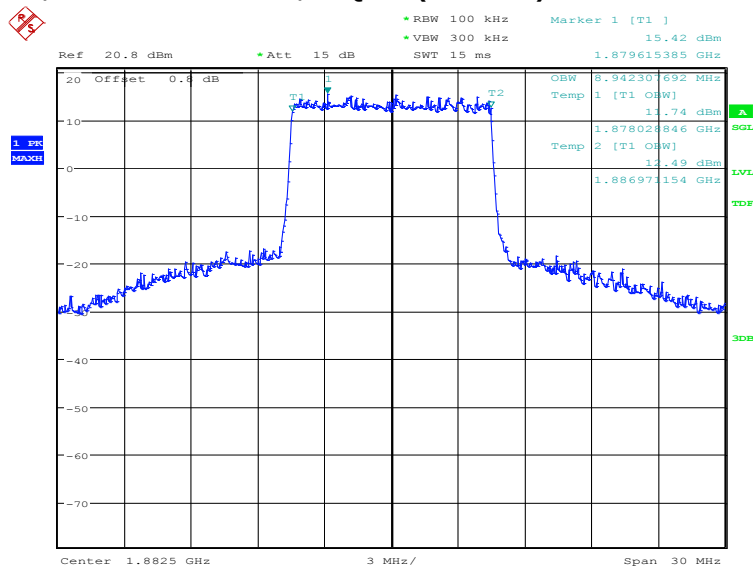
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	8990.38	8942.31

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



Date: 20.SEP.2022 18:49:20

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

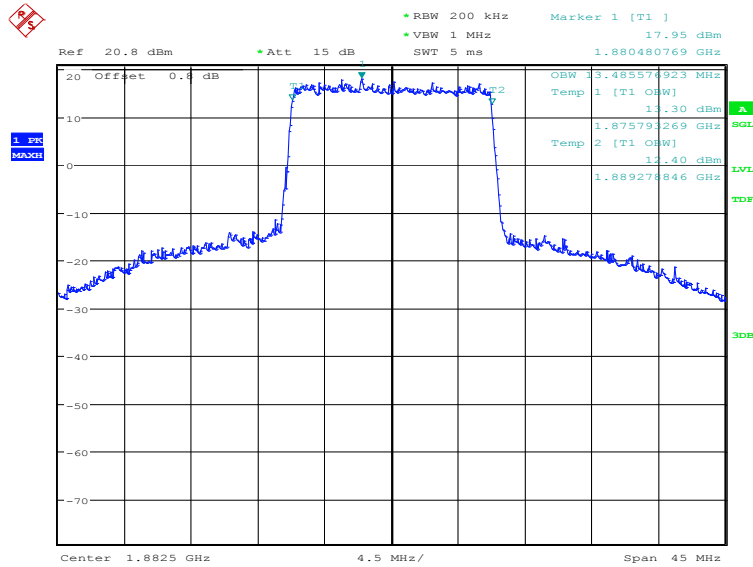


Date: 20.SEP.2022 18:50:01

LTE band 25, 15MHz (99%)

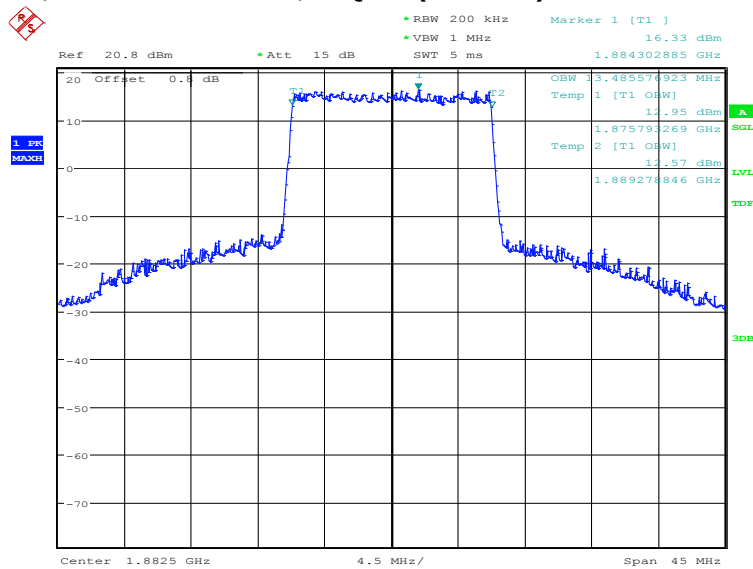
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	13485.58	13485.58

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



Date: 20.SEP.2022 18:50:43

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

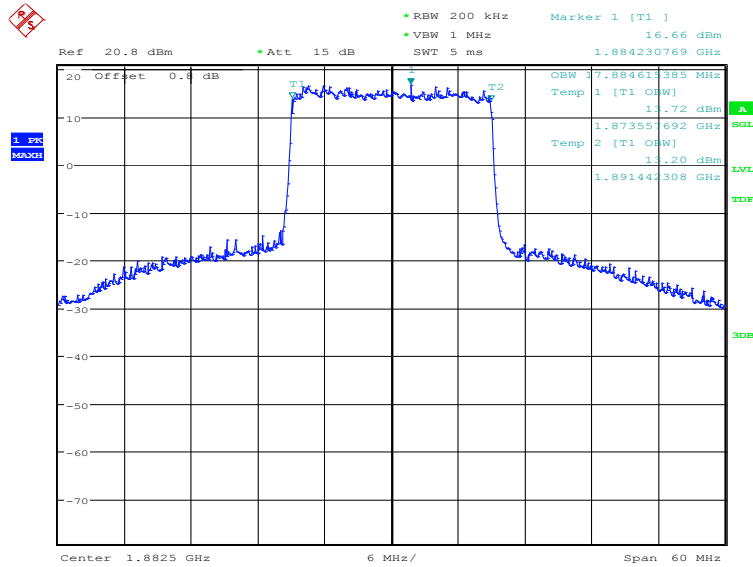


Date: 20.SEP.2022 18:51:24

LTE band 25, 20MHz (99%)

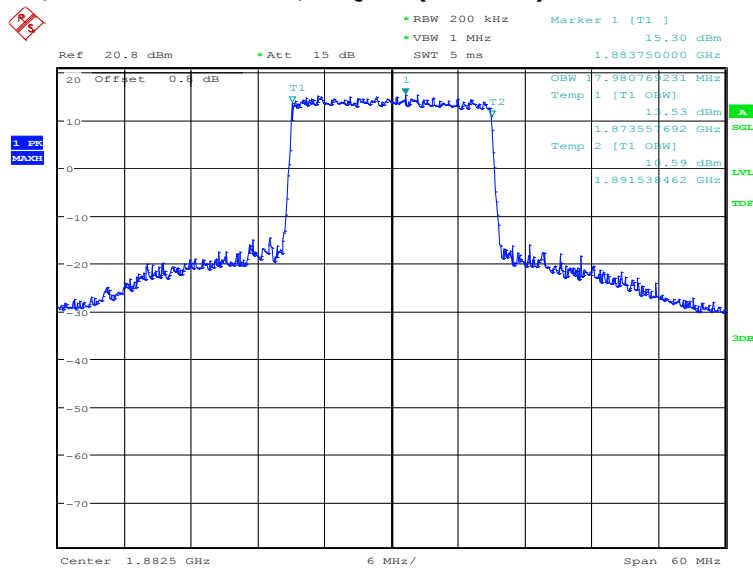
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1882.5	QPSK	16QAM
	17884.62	17980.77

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



Date: 20.SEP.2022 18:52:06

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

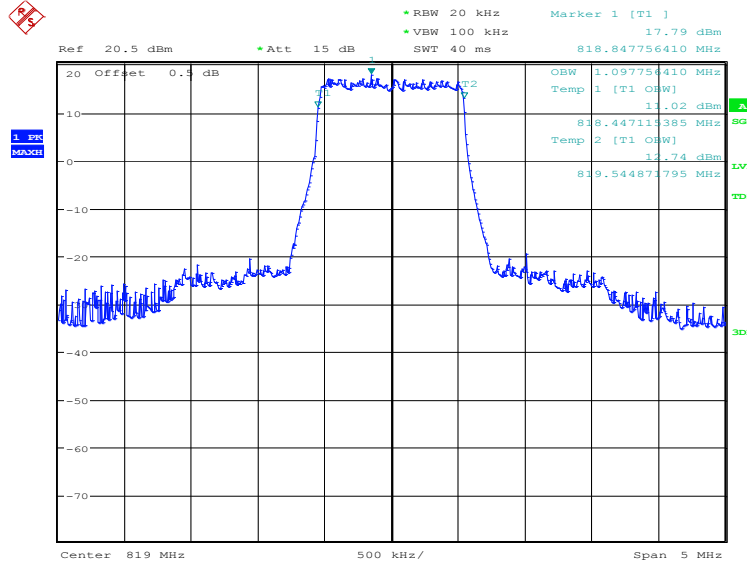


Date: 20.SEP.2022 18:52:47

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

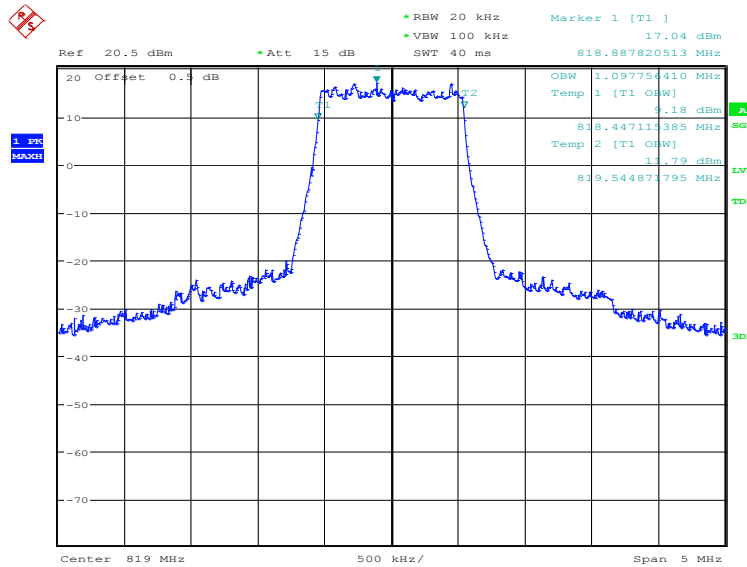
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	1097.76	1097.76

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



Date: 21.SEP.2022 10:42:04

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

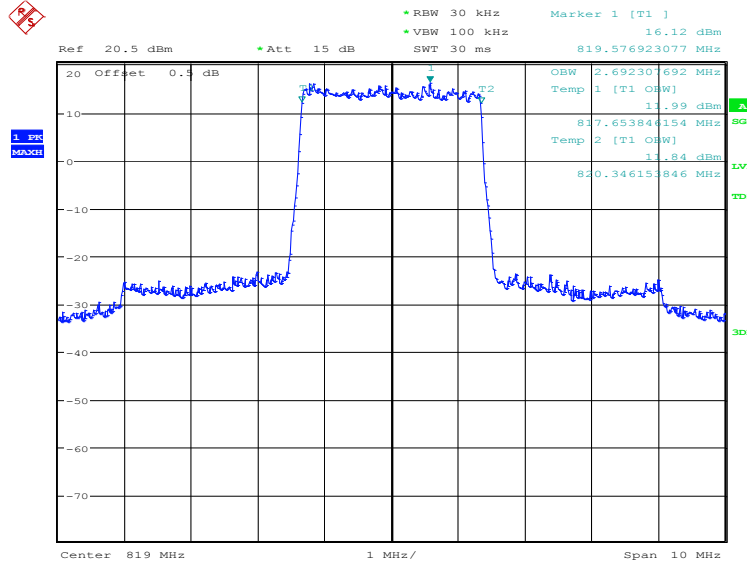


Date: 21.SEP.2022 10:42:44

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

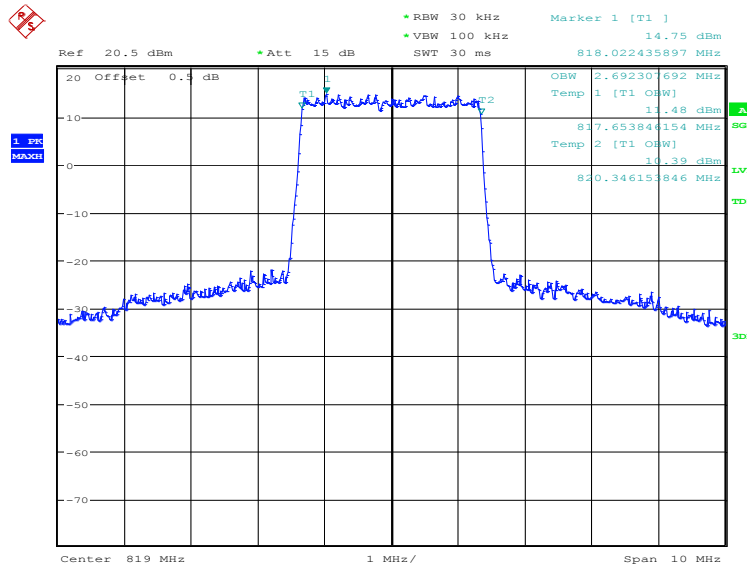
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	2692.31	2692.31

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



Date: 21.SEP.2022 10:43:25

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

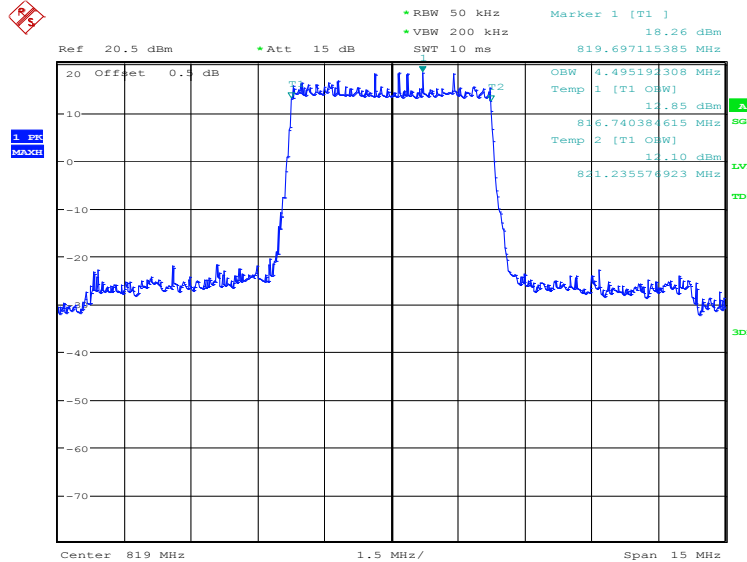


Date: 21.SEP.2022 10:44:05

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

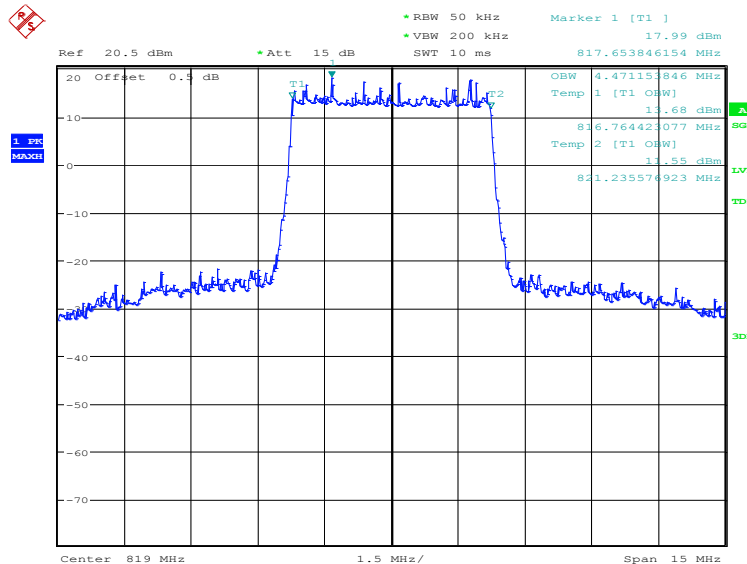
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	4495.19	4471.15

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



Date: 21.SEP.2022 10:44:47

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

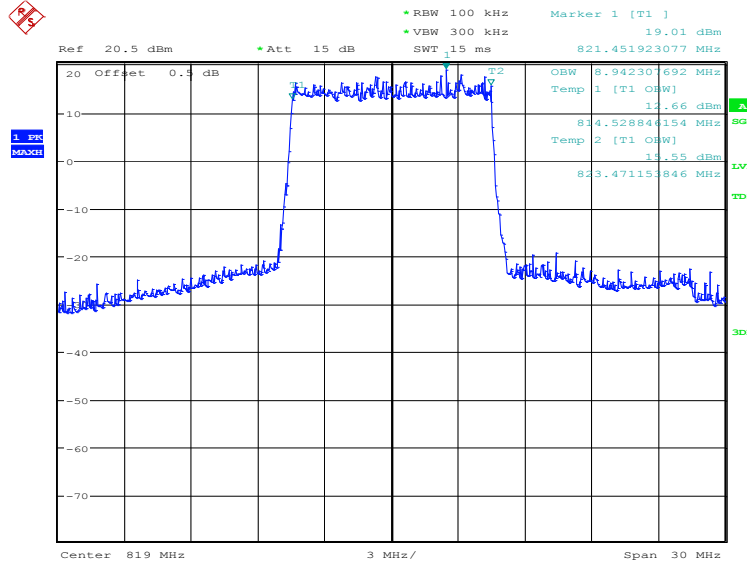


Date: 21.SEP.2022 10:45:27

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

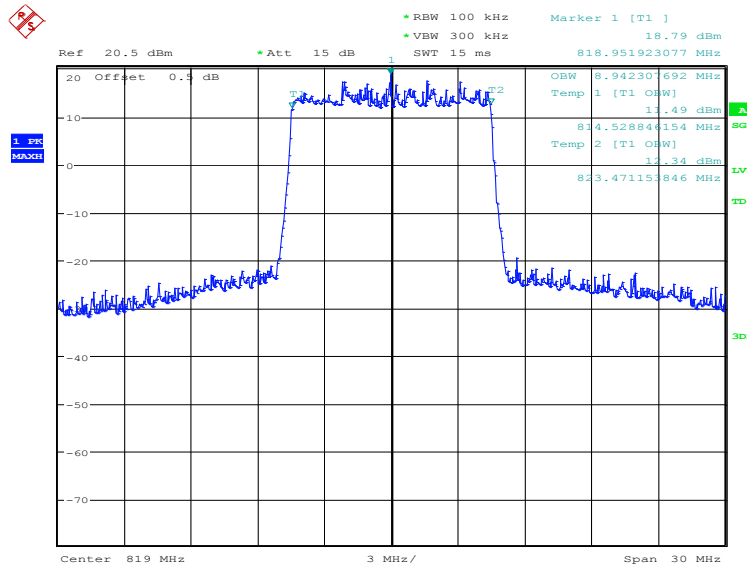
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	8942.31	8942.31

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



Date: 21.SEP.2022 10:46:09

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

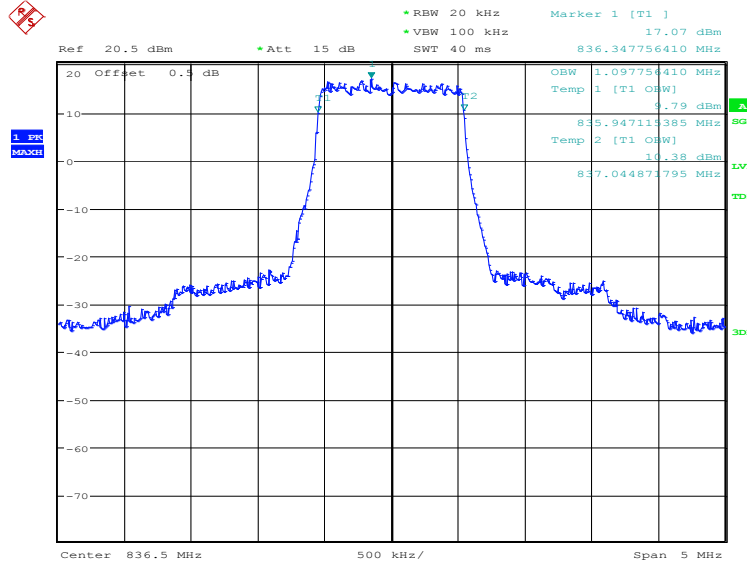


Date: 21.SEP.2022 10:46:48

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

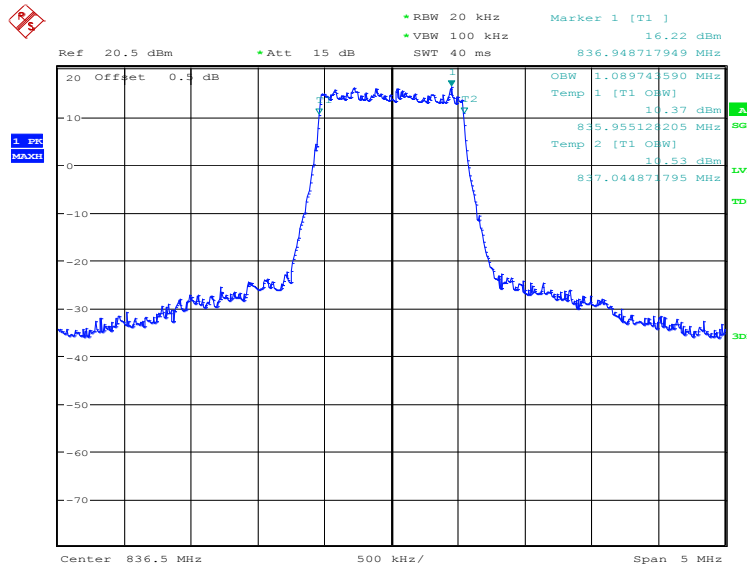
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1097.76	1089.74

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



Date: 21.SEP.2022 10:34:22

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

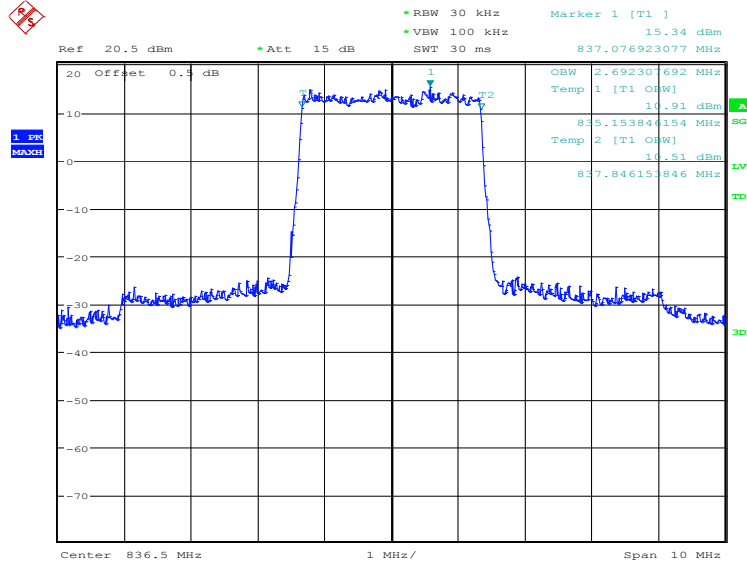


Date: 21.SEP.2022 10:35:01

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

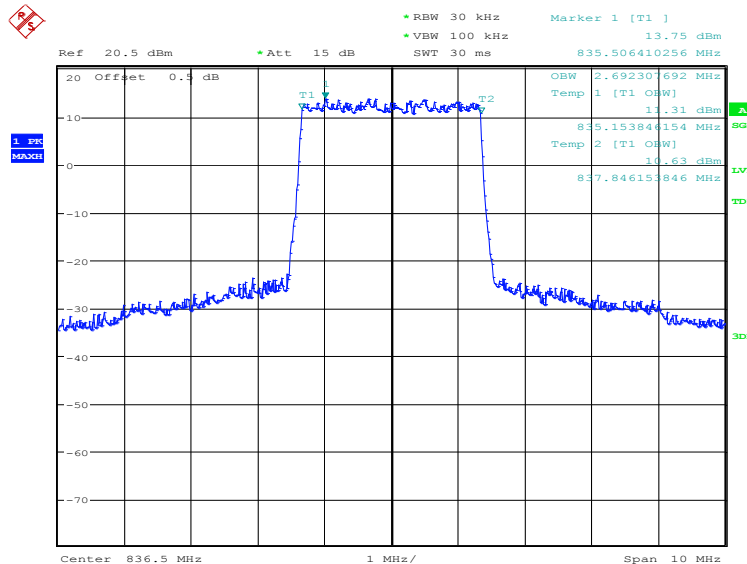
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 21.SEP.2022 10:35:43

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

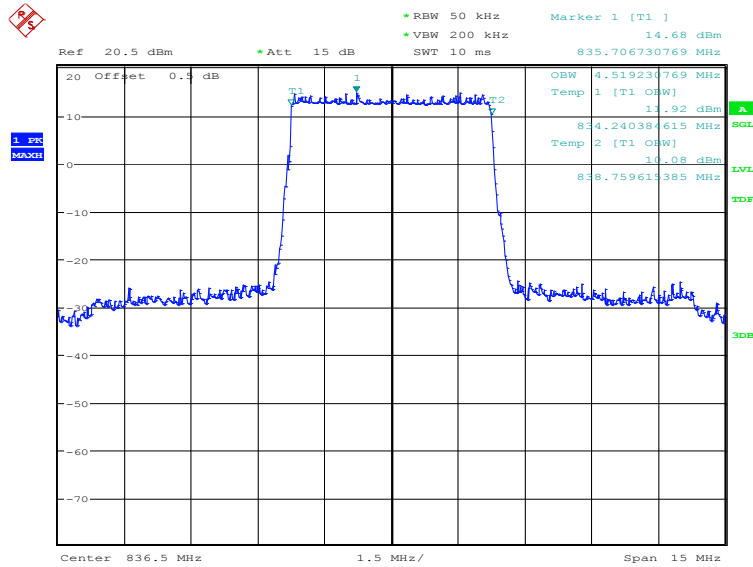


Date: 21.SEP.2022 10:36:23

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

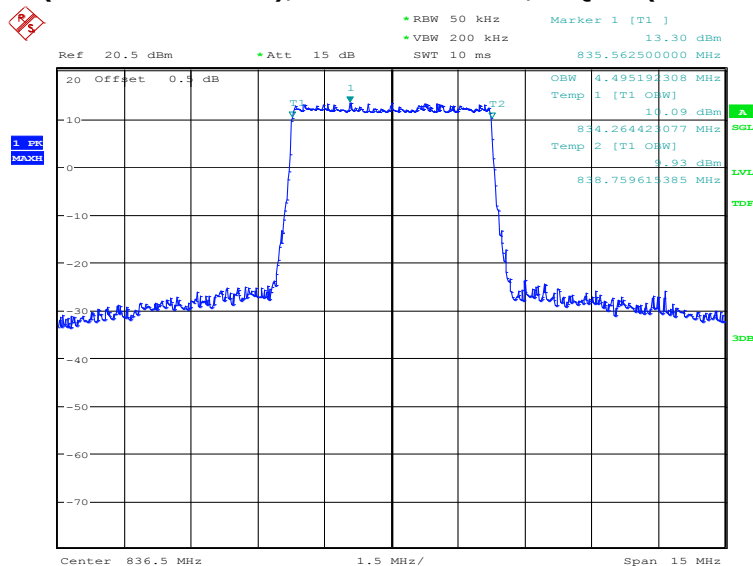
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	4519.23	4495.19

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



Date: 21.SEP.2022 10:37:04

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

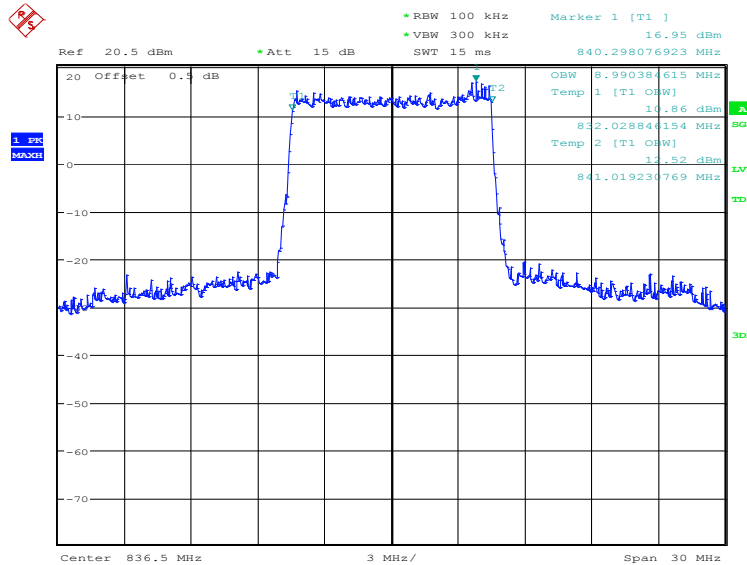


Date: 21.SEP.2022 10:37:44

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

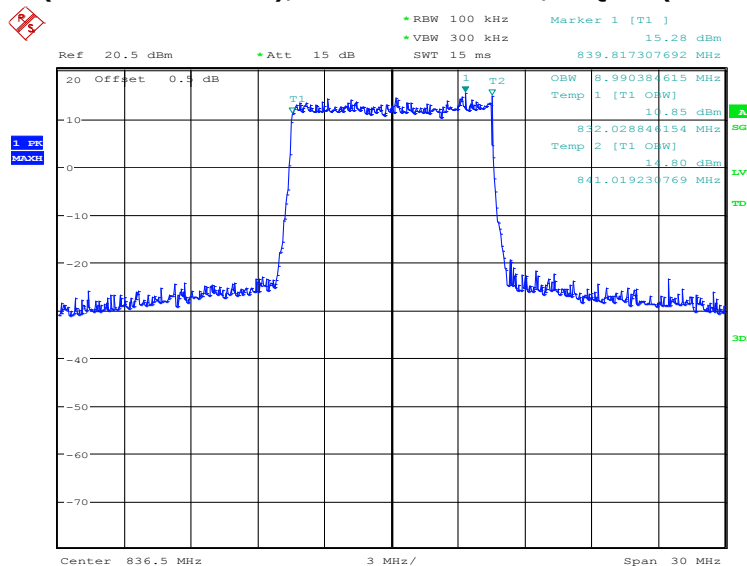
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	8990.38	8990.38

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



Date: 21.SEP.2022 10:38:26

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

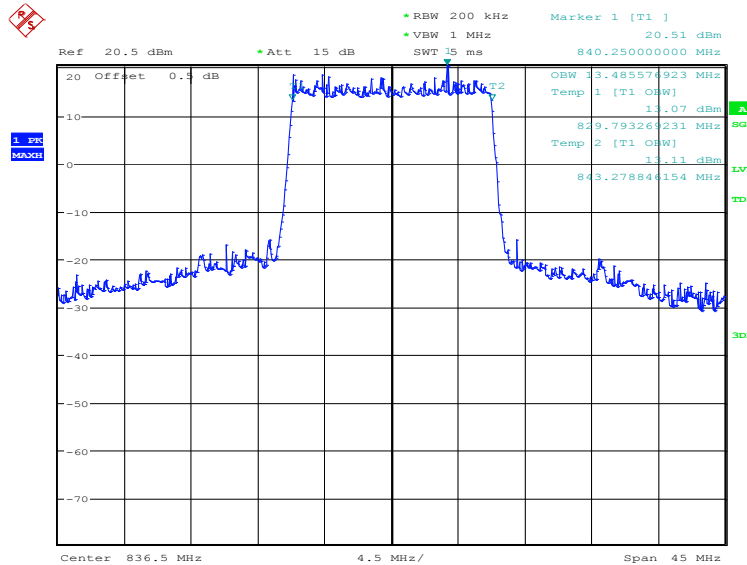


Date: 21.SEP.2022 10:39:06

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

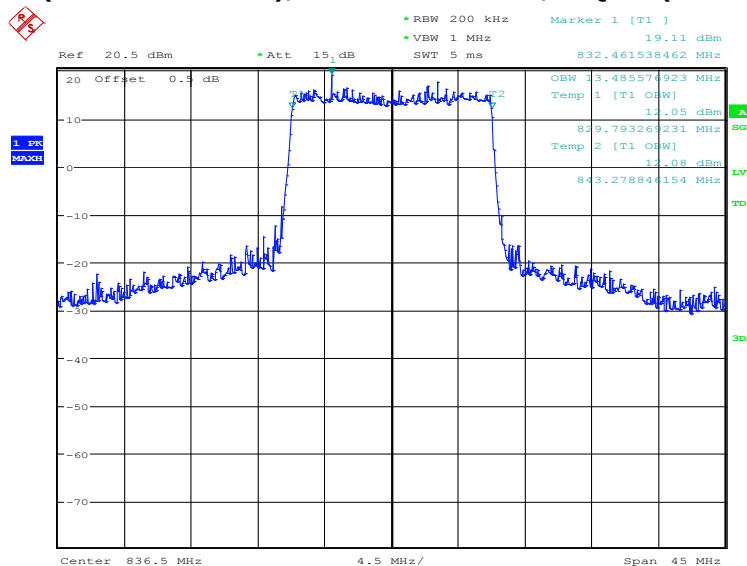
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	13485.58	13485.58

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



Date: 21.SEP.2022 10:39:48

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

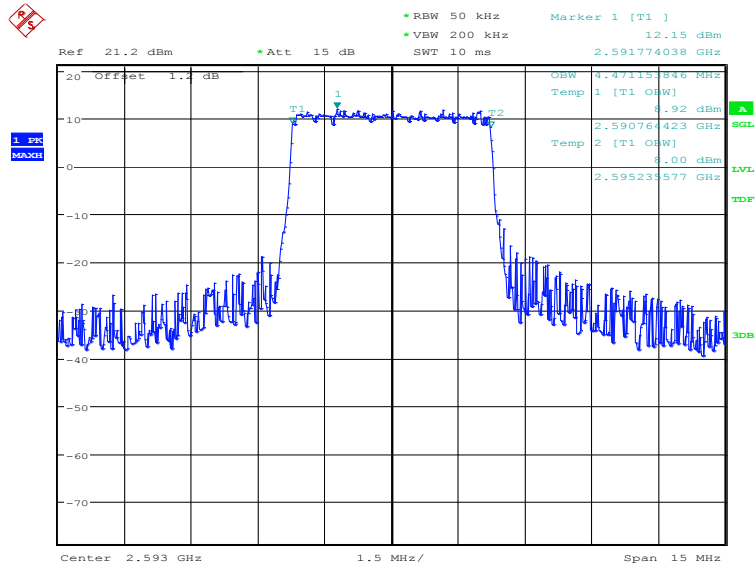


Date: 21.SEP.2022 10:40:28

LTE band 41, 5MHz (99%)

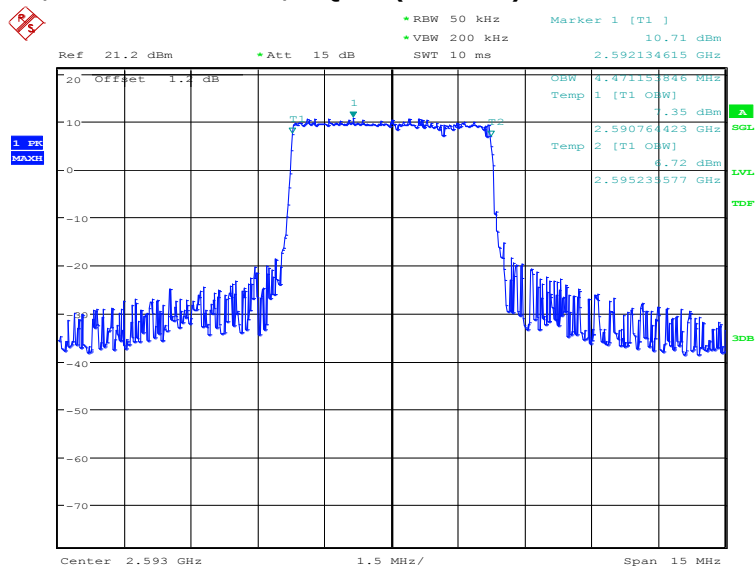
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	4471.15	4471.15

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



Date: 21.SEP.2022 12:04:14

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

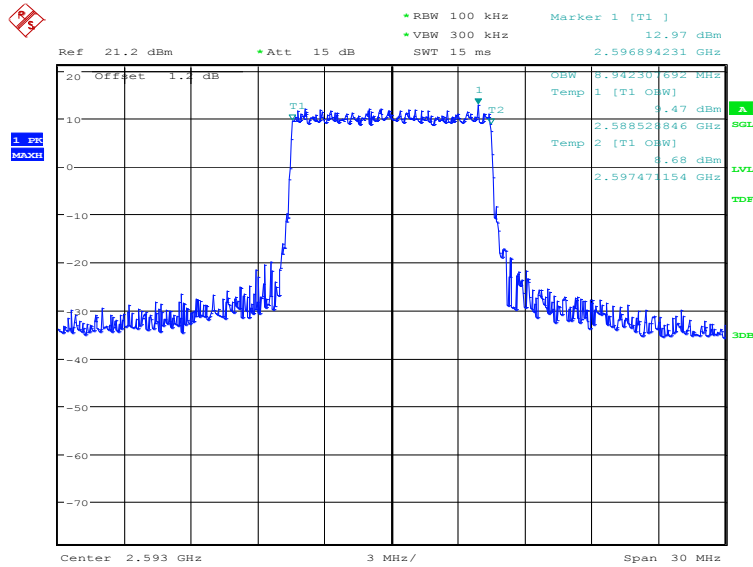


Date: 21.SEP.2022 12:04:54

LTE band 41, 10MHz (99%)

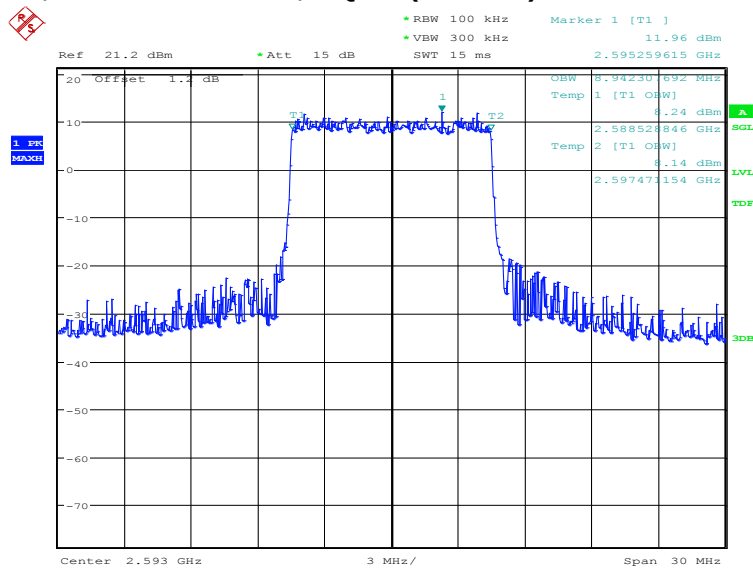
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	8942.31	8942.31

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



Date: 21.SEP.2022 12:05:35

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

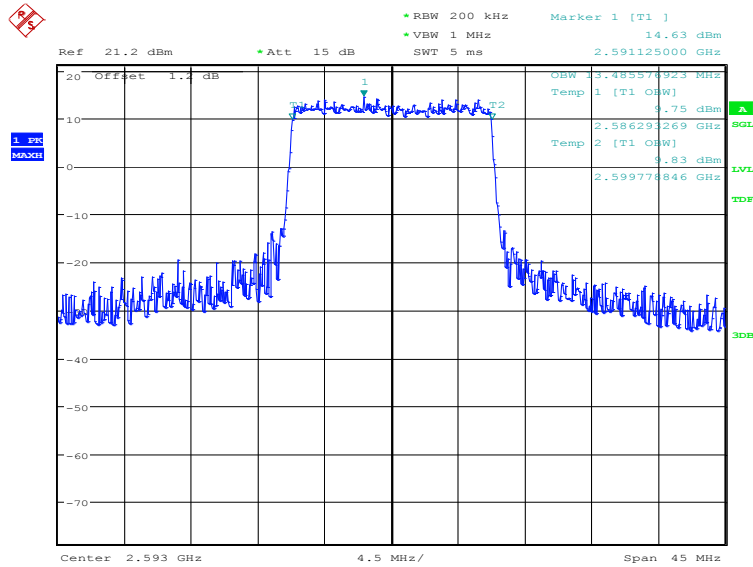


Date: 21.SEP.2022 12:06:15

LTE band 41, 15MHz (99%)

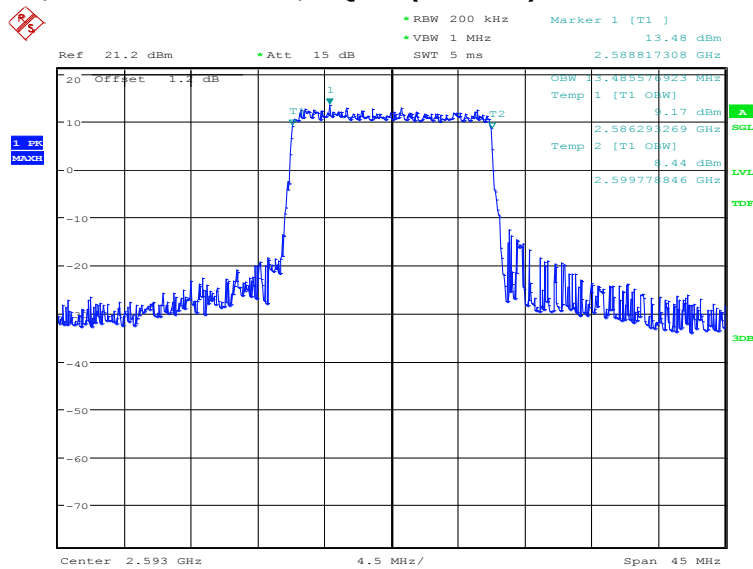
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 21.SEP.2022 12:06:57

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

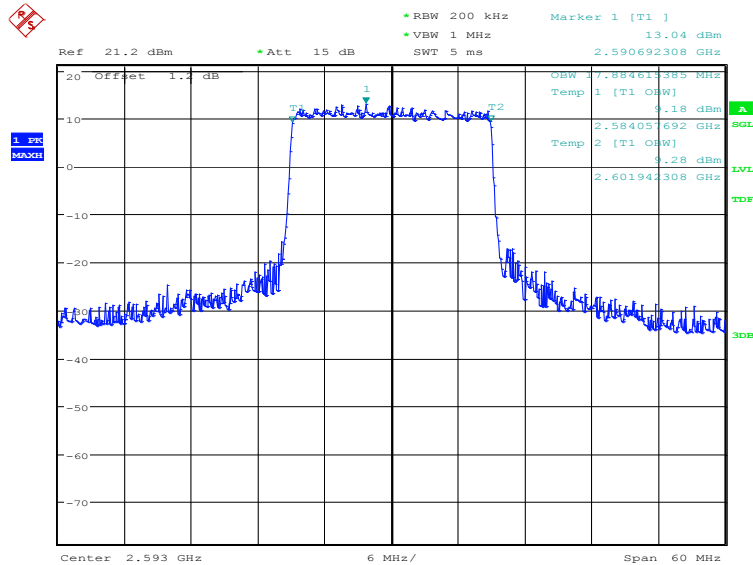


Date: 21.SEP.2022 12:07:37

LTE band 41, 20MHz (99%)

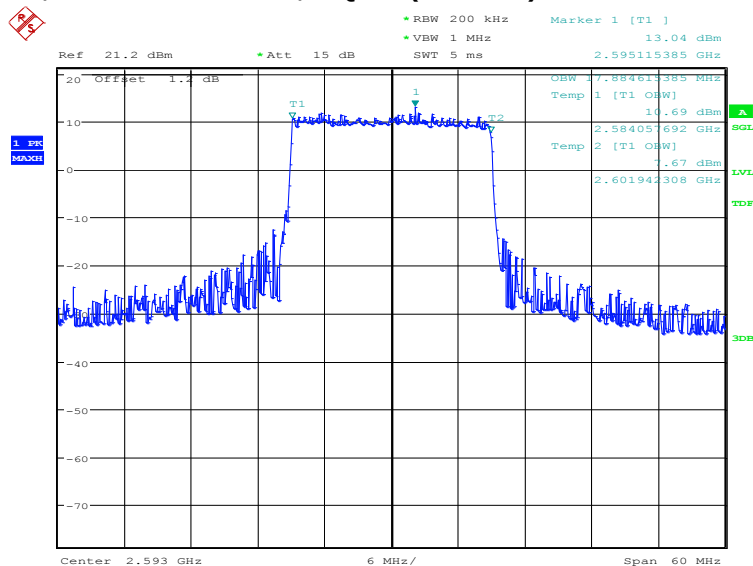
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
2593.0	QPSK	16QAM
	17884.62	17884.62

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



Date: 21.SEP.2022 12:08:18

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

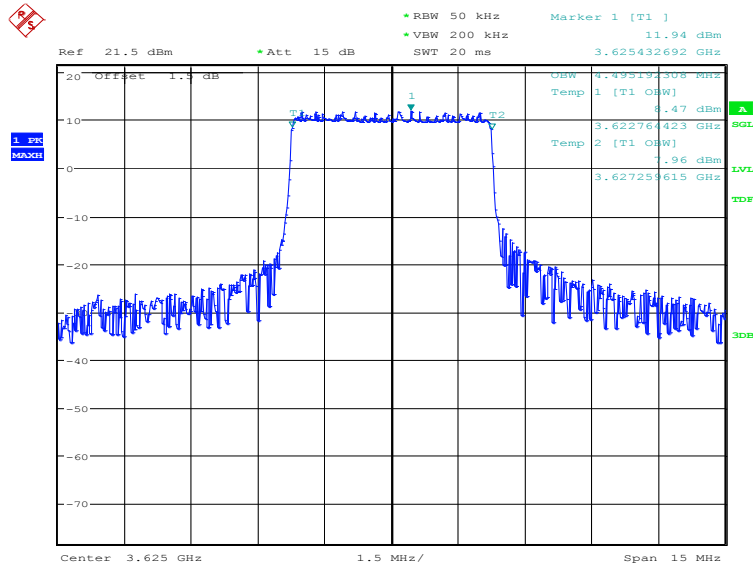


Date: 21.SEP.2022 12:08:58

LTE band 48, 5MHz (99%)

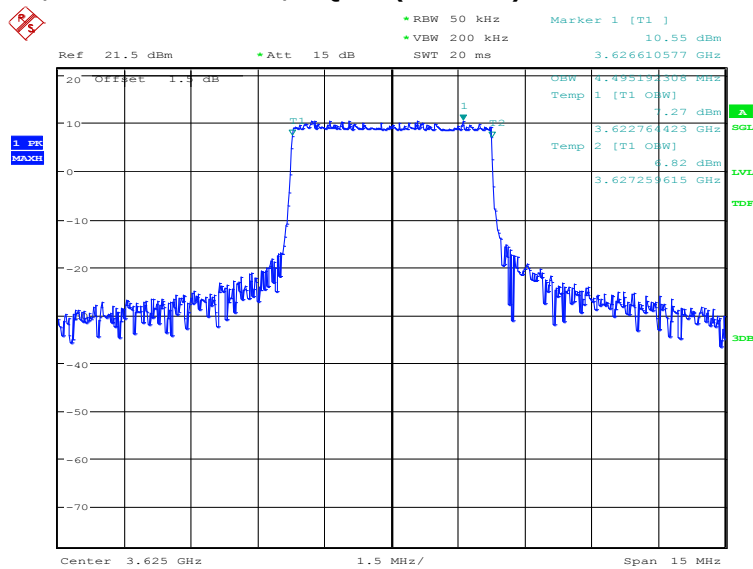
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
3625.0	QPSK	16QAM
	4495.19	4495.19

LTE band 48, 5MHz Bandwidth, QPSK (99% BW)



Date: 20.SEP.2022 19:02:34

LTE band 48, 5MHz Bandwidth, 16QAM (99% BW)

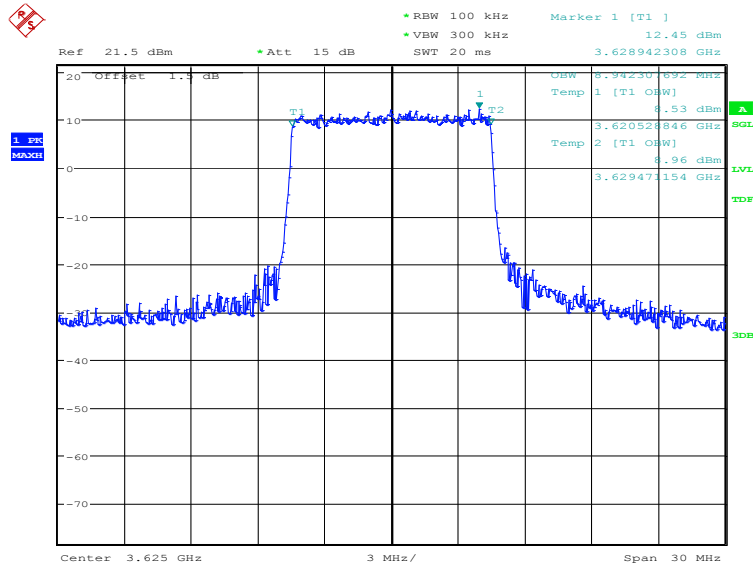


Date: 20.SEP.2022 19:03:15

LTE band 48, 10MHz (99%)

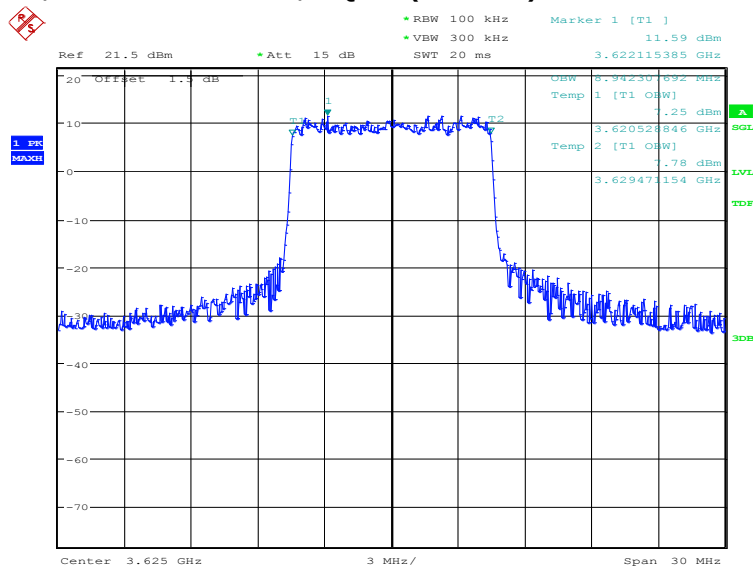
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
3625.0	QPSK	16QAM
	8942.31	8942.31

LTE band 48, 10MHz Bandwidth, QPSK (99% BW)



Date: 20.SEP.2022 19:03:57

LTE band 48, 10MHz Bandwidth,16QAM (99% BW)

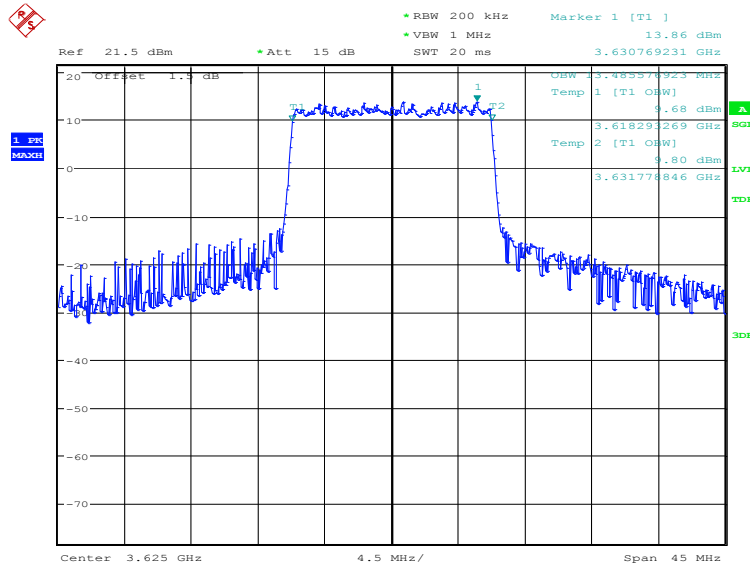


Date: 20.SEP.2022 19:04:38

LTE band 48, 15MHz (99%)

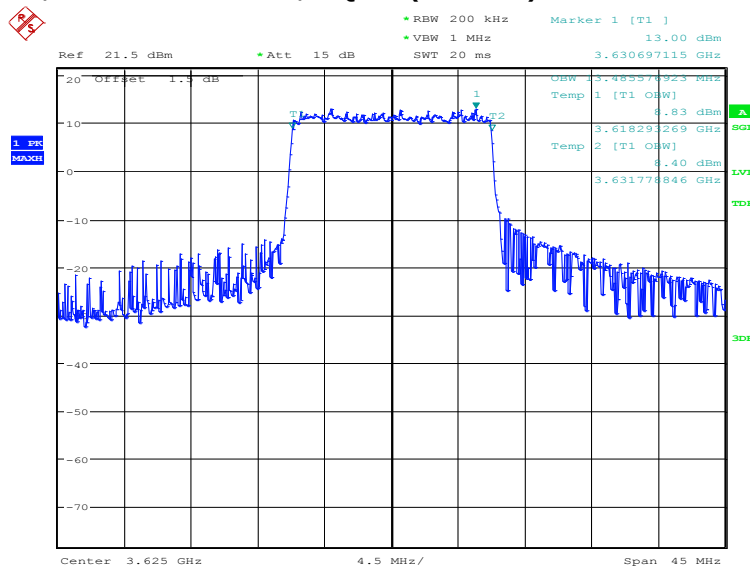
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
3625.0	QPSK	16QAM
	13485.58	13485.58

LTE band 48, 15MHz Bandwidth, QPSK (99% BW)



Date: 20.SEP.2022 19:05:20

LTE band 48, 15MHz Bandwidth,16QAM (99% BW)

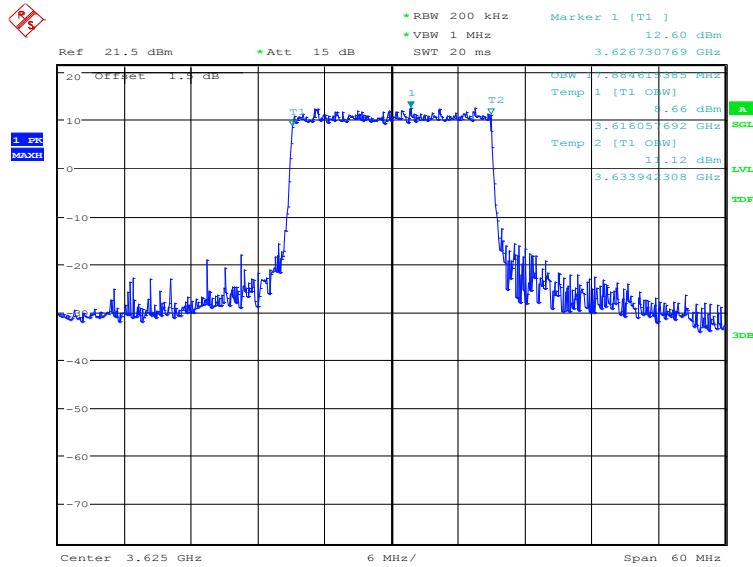


Date: 20.SEP.2022 19:06:01

LTE band 48, 20MHz (99%)

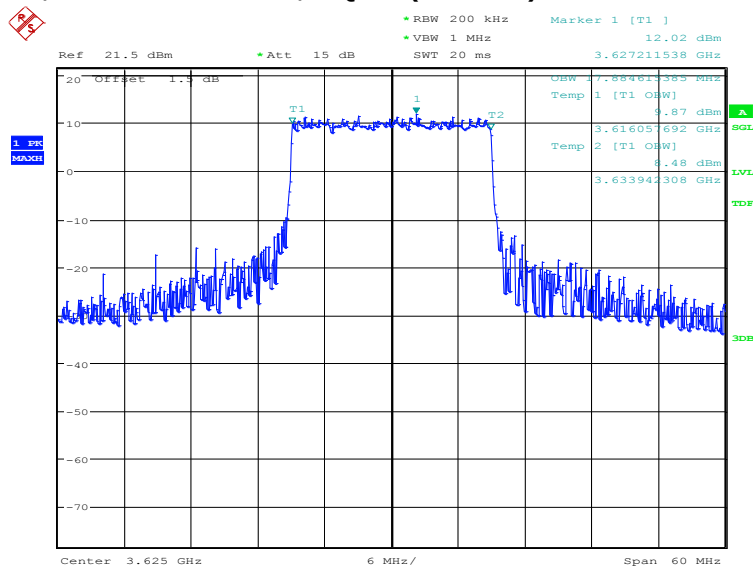
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
3625.0	QPSK	16QAM
	17884.62	17884.62

LTE band 48, 20MHz Bandwidth, QPSK (99% BW)



Date: 20.SEP.2022 19:06:43

LTE band 48, 20MHz Bandwidth, 16QAM (99% BW)

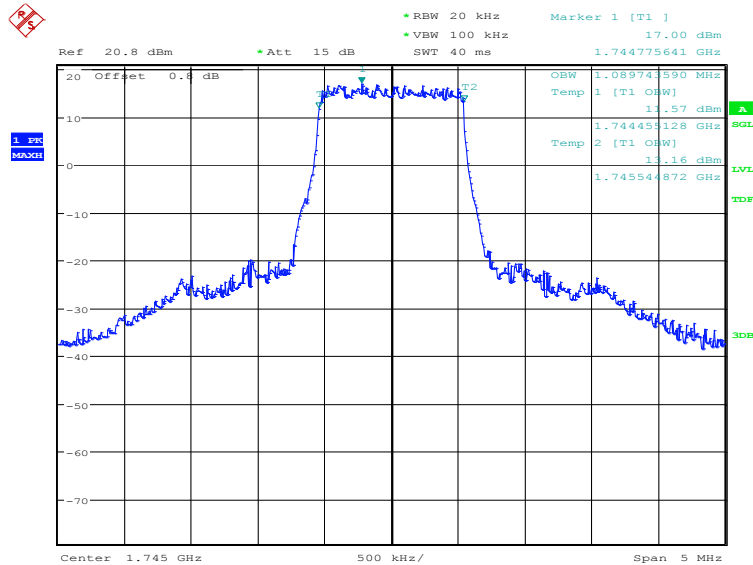


Date: 20.SEP.2022 19:07:24

LTE band 66, 1.4MHz (99%)

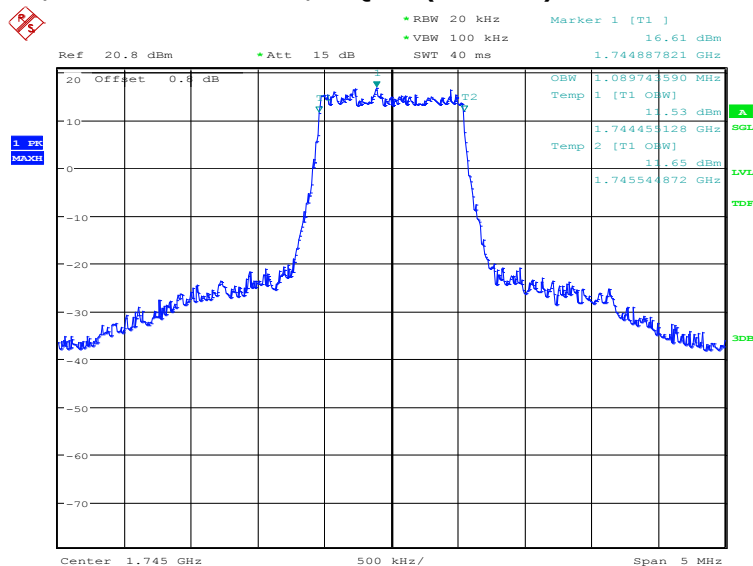
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	1089.74	1089.74

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



Date: 20.SEP.2022 18:53:30

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

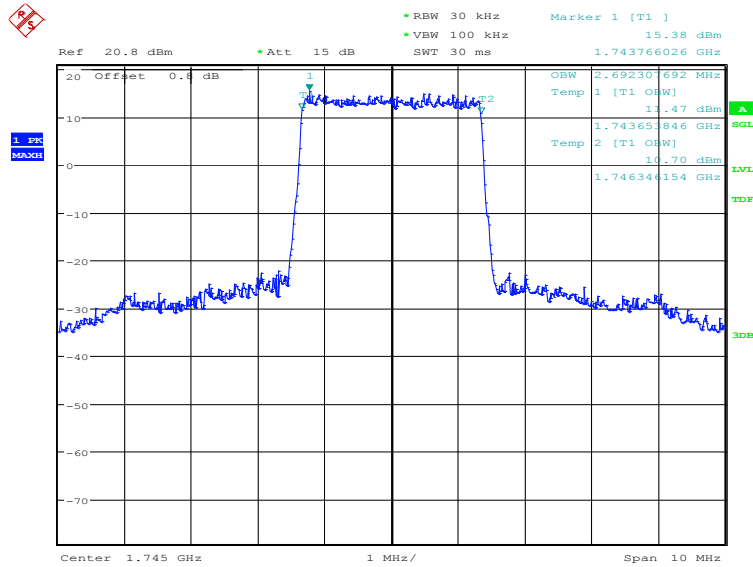


Date: 20.SEP.2022 18:54:11

LTE band 66, 3MHz (99%)

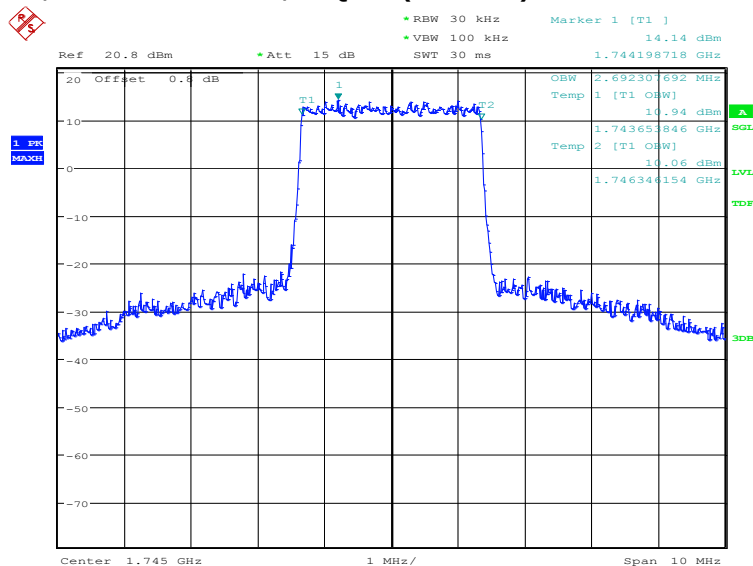
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	2692.31	2692.31

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



Date: 20.SEP.2022 18:54:54

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

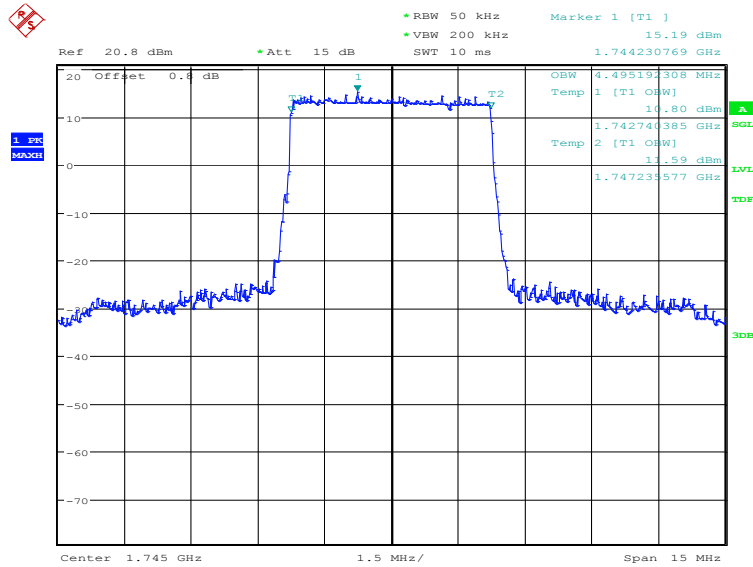


Date: 20.SEP.2022 18:55:34

LTE band 66, 5MHz (99%)

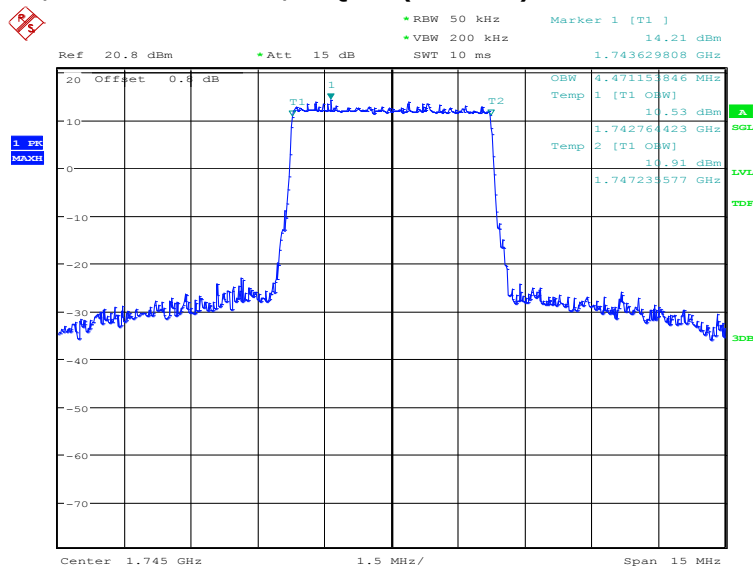
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	4495.19	4471.15

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



Date: 20.SEP.2022 18:56:16

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

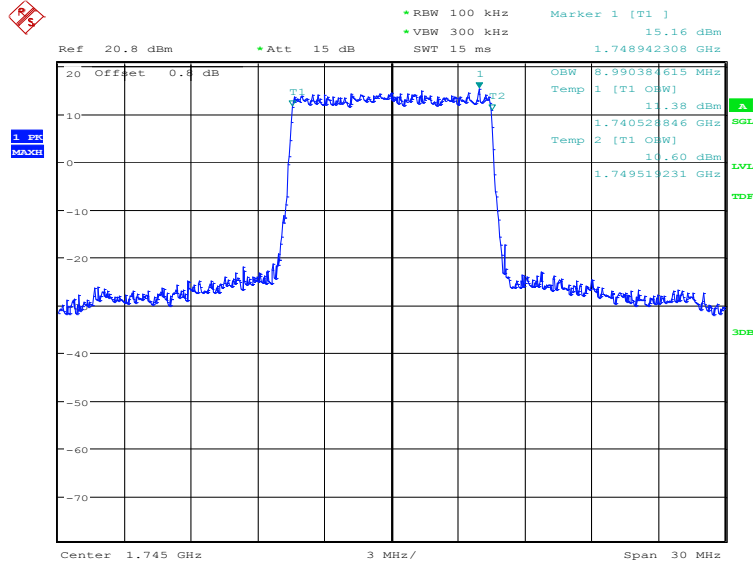


Date: 20.SEP.2022 18:56:57

LTE band 66, 10MHz (99%)

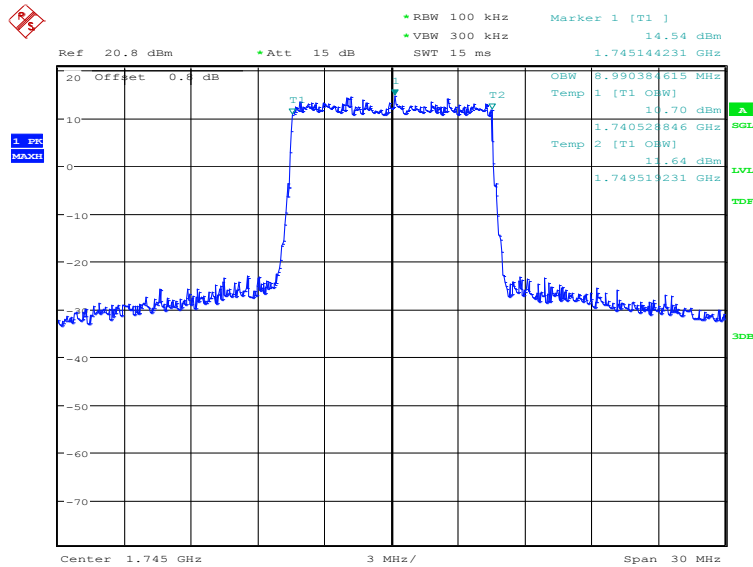
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	8990.38	8990.38

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



Date: 20.SEP.2022 18:57:39

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

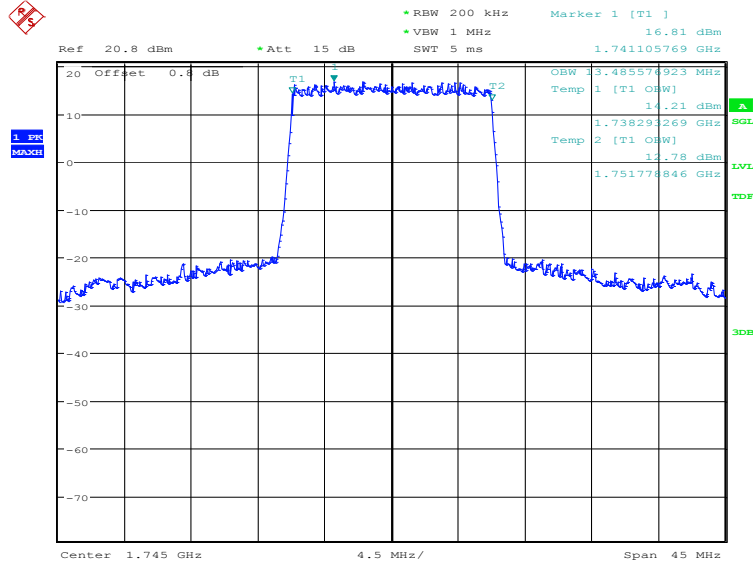


Date: 20.SEP.2022 18:58:19

LTE band 66, 15MHz (99%)

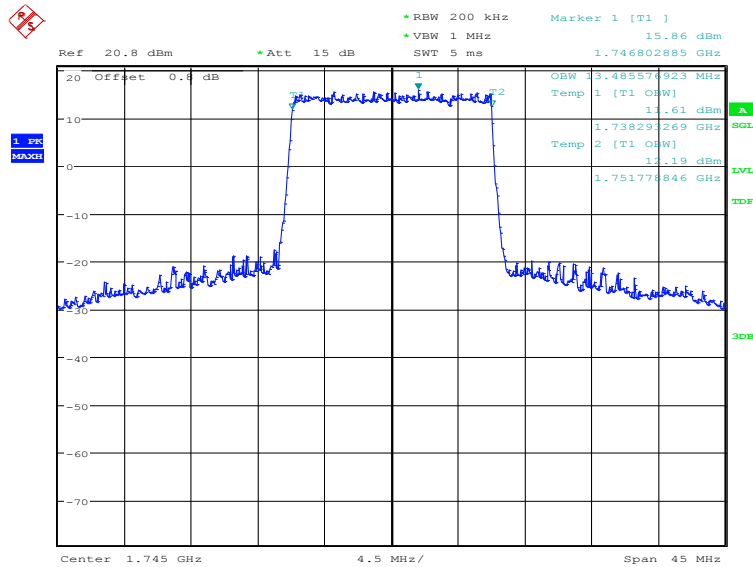
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 20.SEP.2022 18:59:01

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

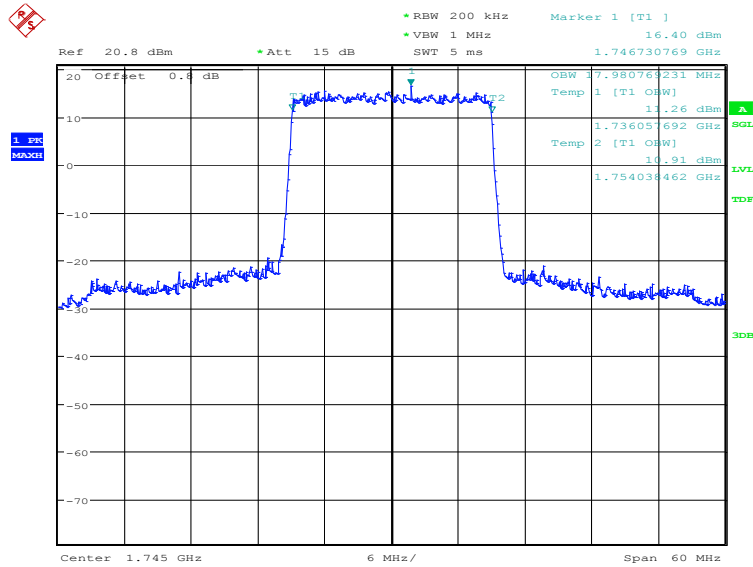


Date: 20.SEP.2022 18:59:42

LTE band 66, 20MHz (99%)

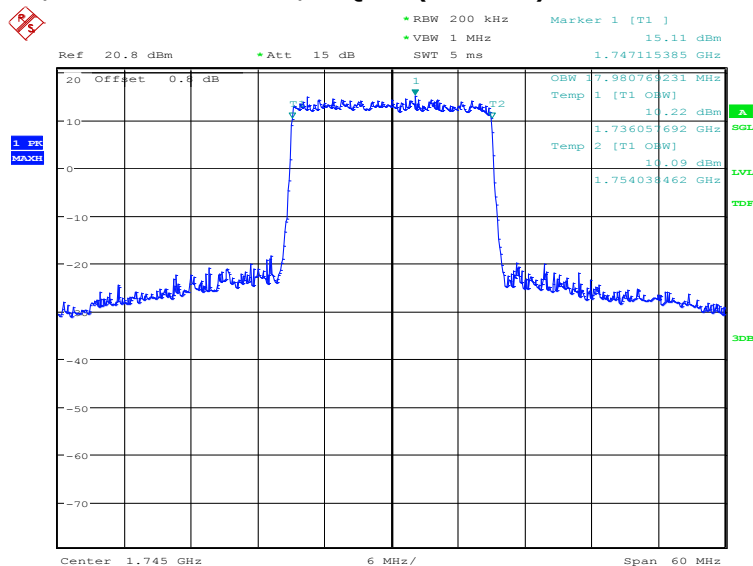
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
1745.0	QPSK	16QAM
	17980.77	17980.77

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



Date: 20.SEP.2022 19:00:25

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

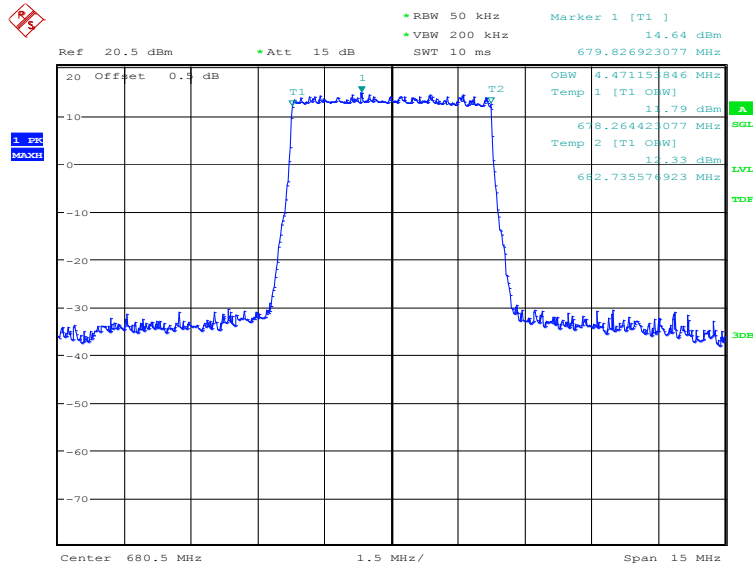


Date: 20.SEP.2022 19:01:06

LTE band 71, 5MHz (99%)

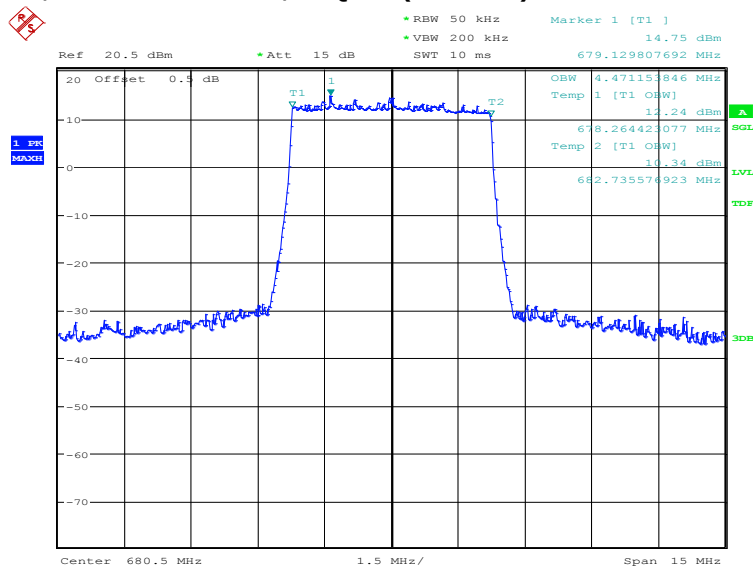
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	4471.15	4471.15

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



Date: 21.SEP.2022 10:18:43

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

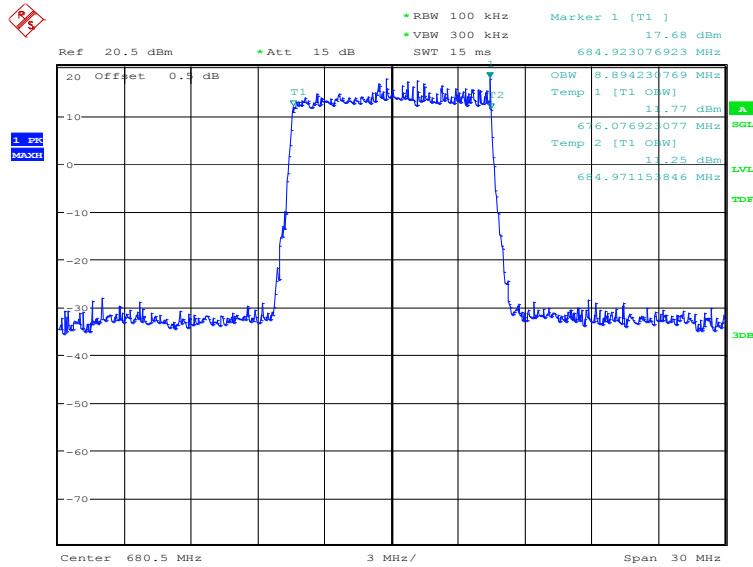


Date: 21.SEP.2022 10:19:23

LTE band 71, 10MHz (99%)

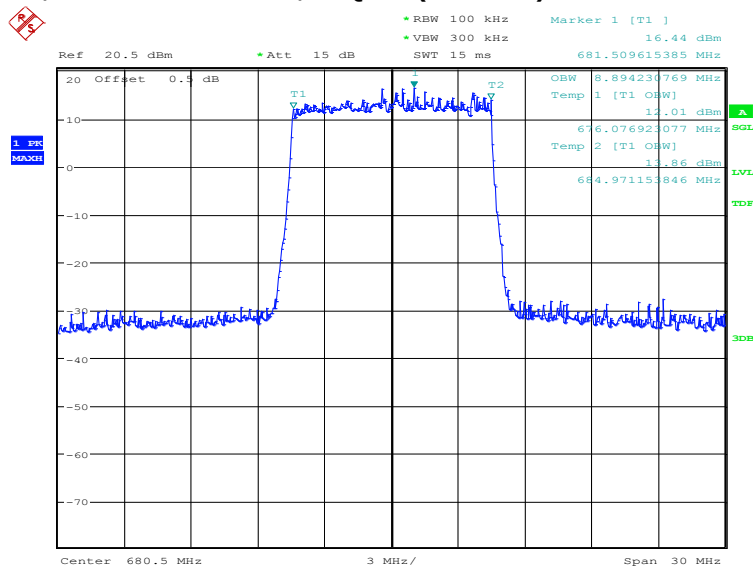
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	8894.23	8894.23

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



Date: 21.SEP.2022 10:20:04

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

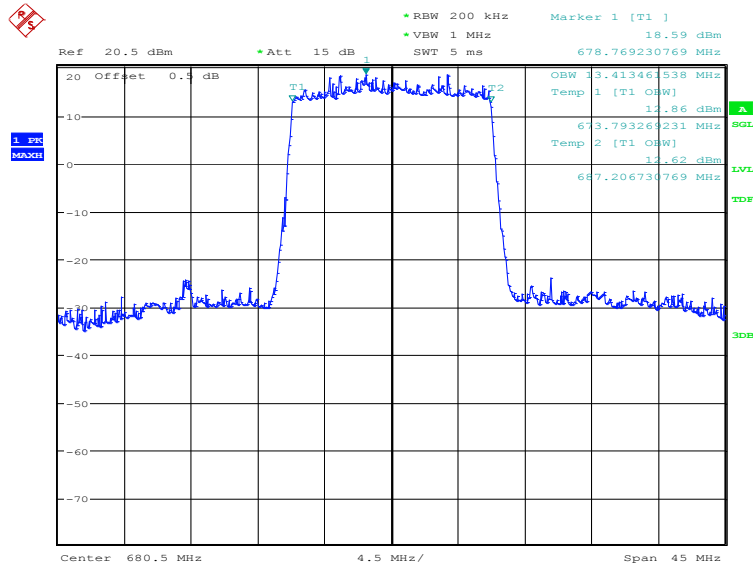


Date: 21.SEP.2022 10:20:44

LTE band 71, 15MHz (99%)

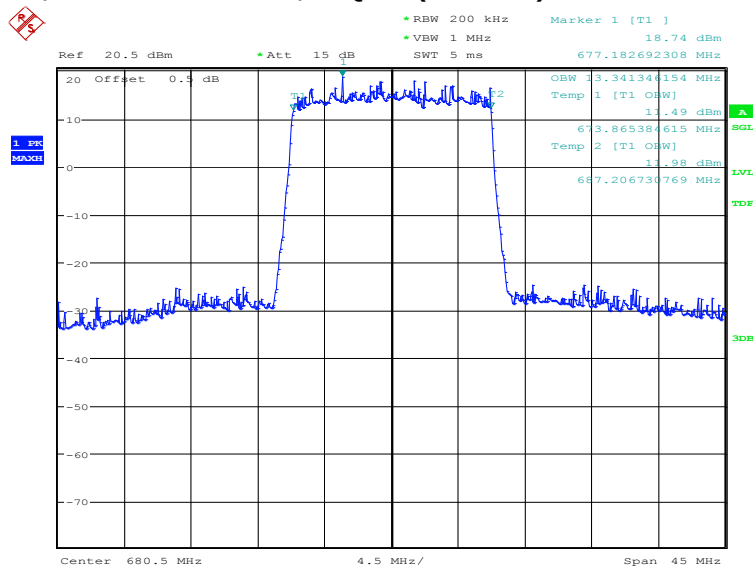
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	13413.46	13341.35

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



Date: 21.SEP.2022 10:21:26

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

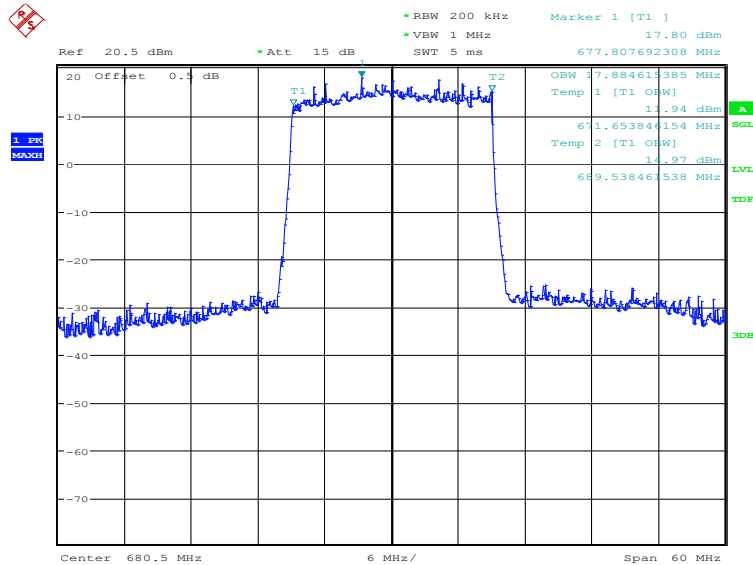


Date: 21.SEP.2022 10:22:06

LTE band 71, 20MHz (99%)

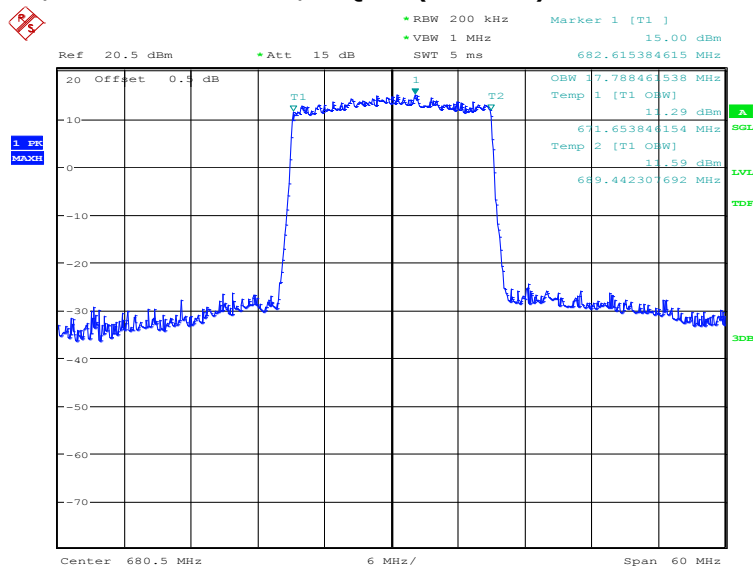
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
680.5	QPSK	16QAM
	17884.62	17788.46

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



Date: 21.SEP.2022 10:22:47

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



Date: 21.SEP.2022 10:23:27

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

A.4 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.

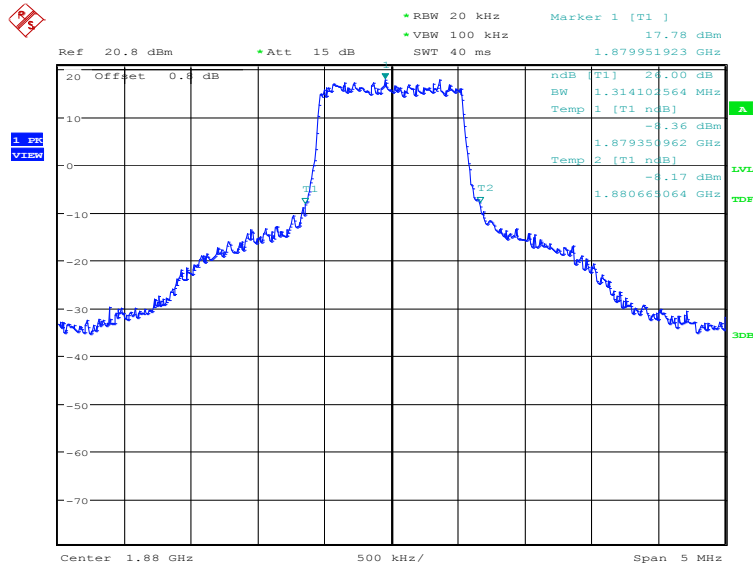
The measurement method is from ANSI C63.26:

- 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 2, 1.4MHz (-26dBc)

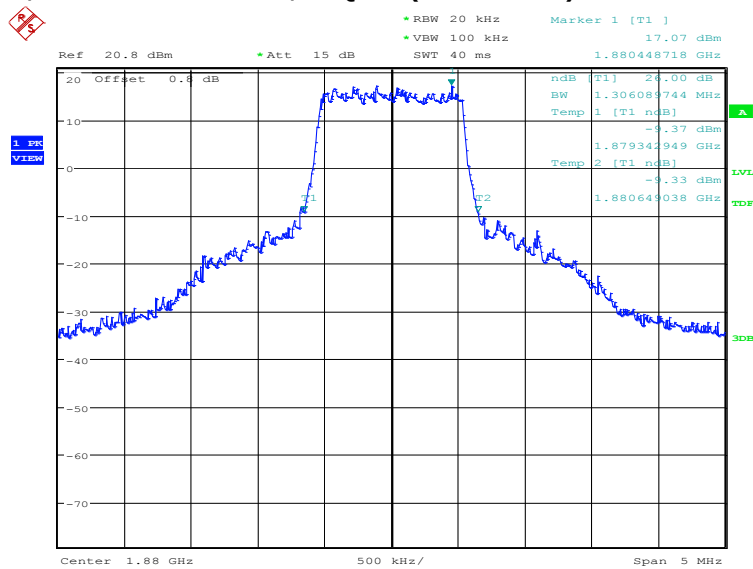
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	1314.10	1306.09

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



Date: 27.SEP.2022 09:35:33

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

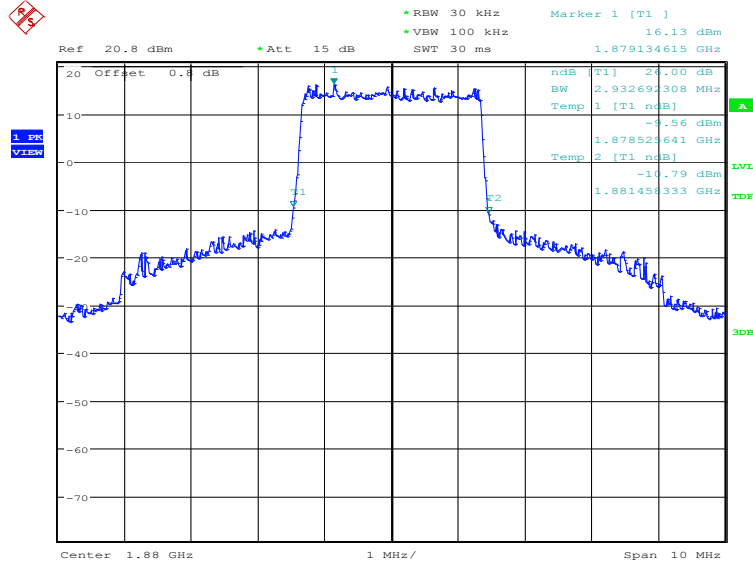


Date: 27.SEP.2022 09:36:13

LTE band 2, 3MHz (-26dBc)

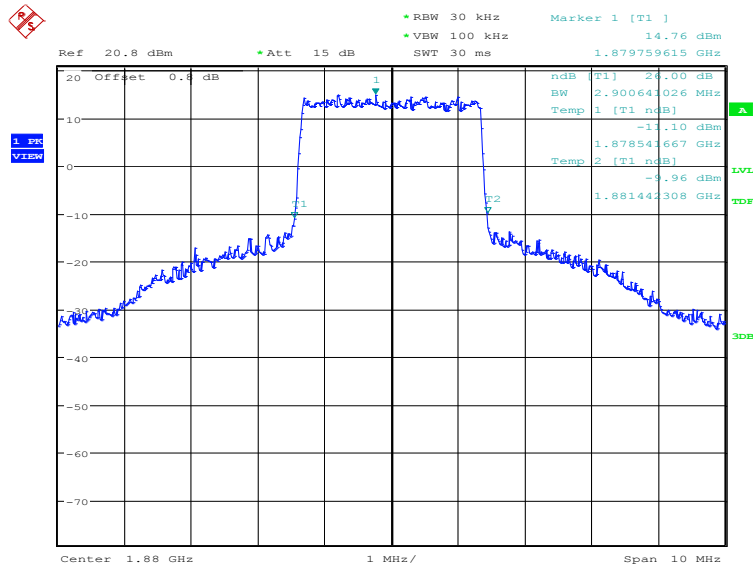
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	2932.69	2900.64

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



Date: 27.SEP.2022 09:36:55

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

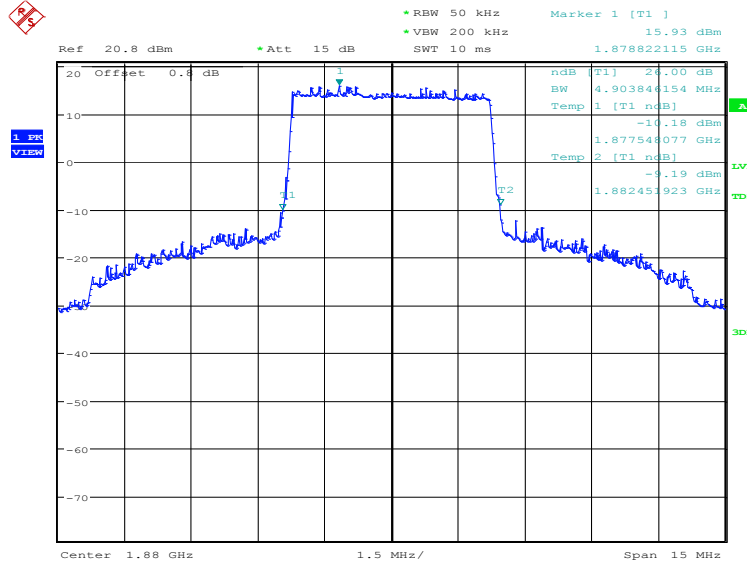


Date: 27.SEP.2022 09:37:35

LTE band 2, 5MHz (-26dBc)

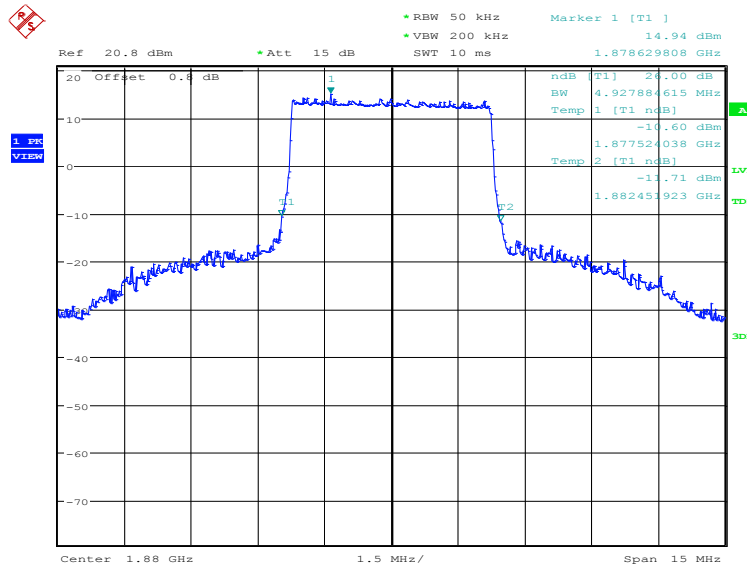
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	4903.85	4927.88

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



Date: 27.SEP.2022 09:38:17

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

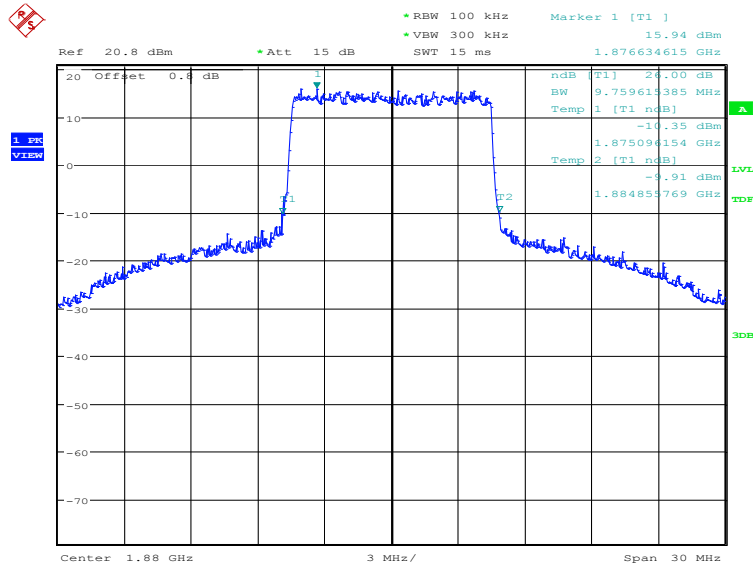


Date: 27.SEP.2022 09:38:58

LTE band 2, 10MHz (-26dBc)

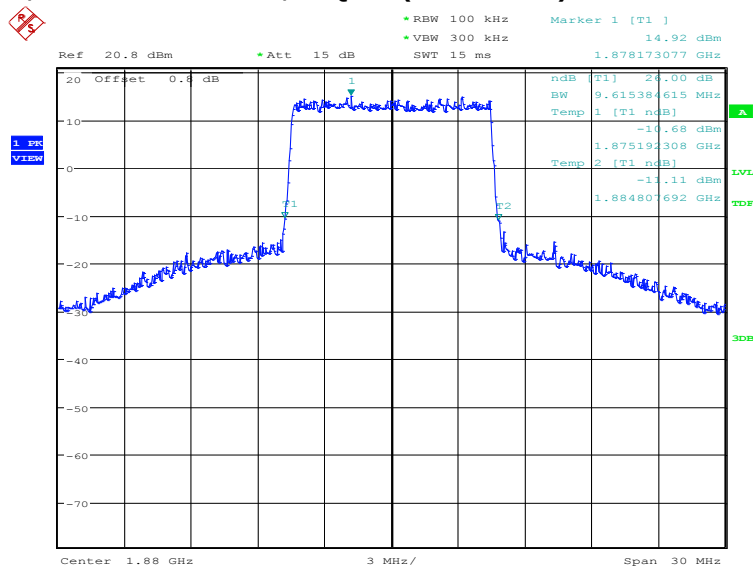
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	9759.62	9615.38

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



Date: 27.SEP.2022 09:39:40

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

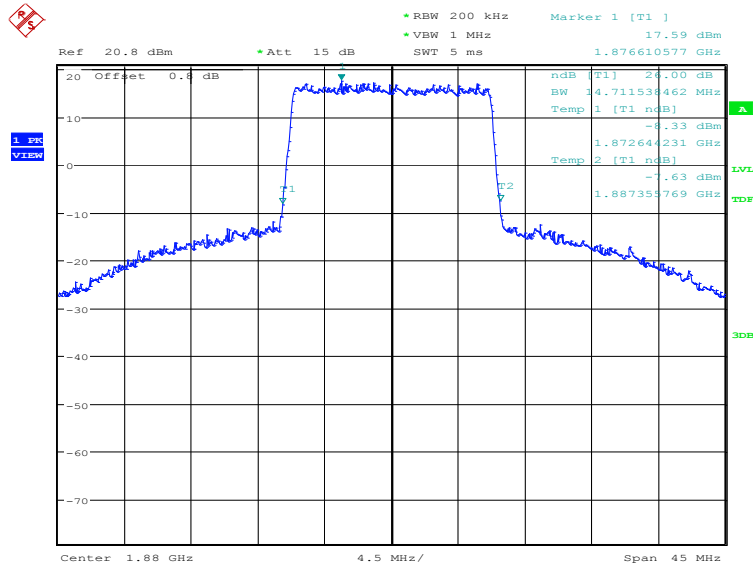


Date: 27.SEP.2022 09:40:20

LTE band 2, 15MHz (-26dBc)

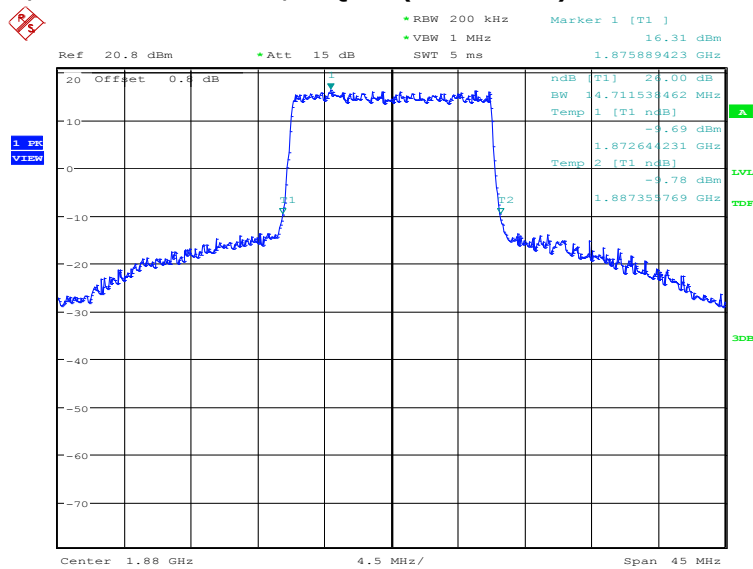
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	14711.54	14711.54

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



Date: 27.SEP.2022 09:41:02

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

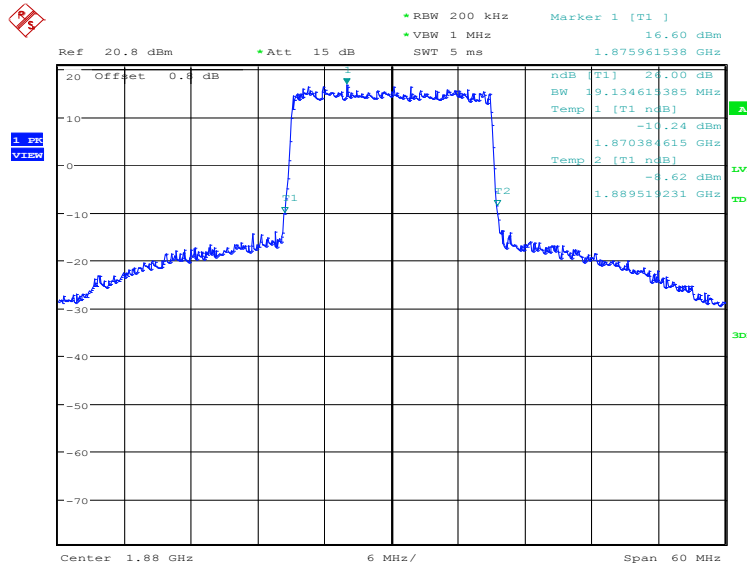


Date: 27.SEP.2022 09:41:42

LTE band 2, 20MHz (-26dBc)

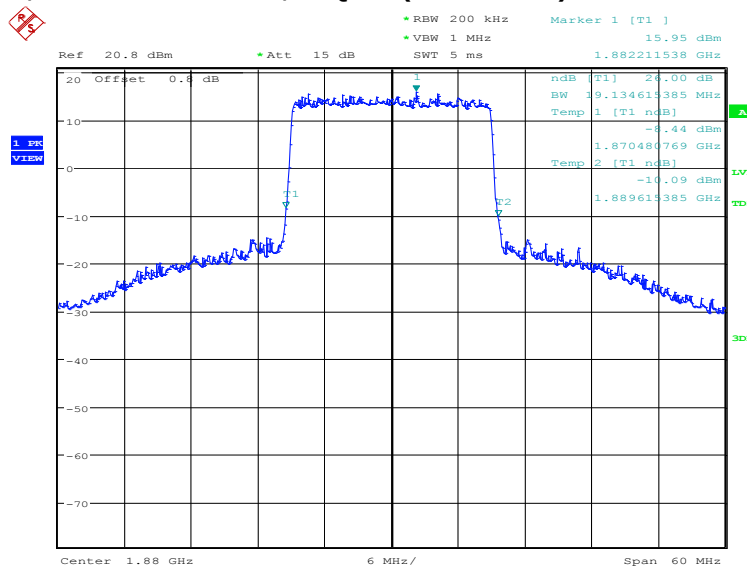
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
1880.0	QPSK	16QAM
	19134.62	19134.62

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



Date: 27.SEP.2022 09:42:24

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

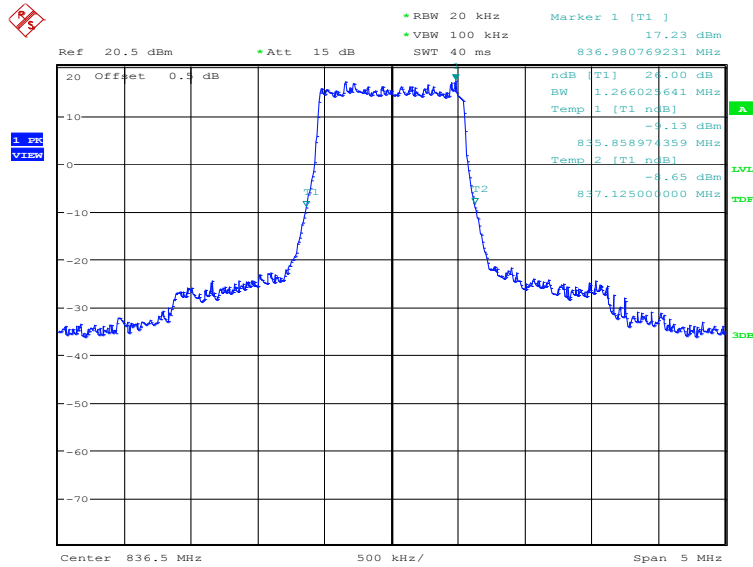


Date: 27.SEP.2022 09:43:04

LTE band 5, 1.4MHz (-26dBc)

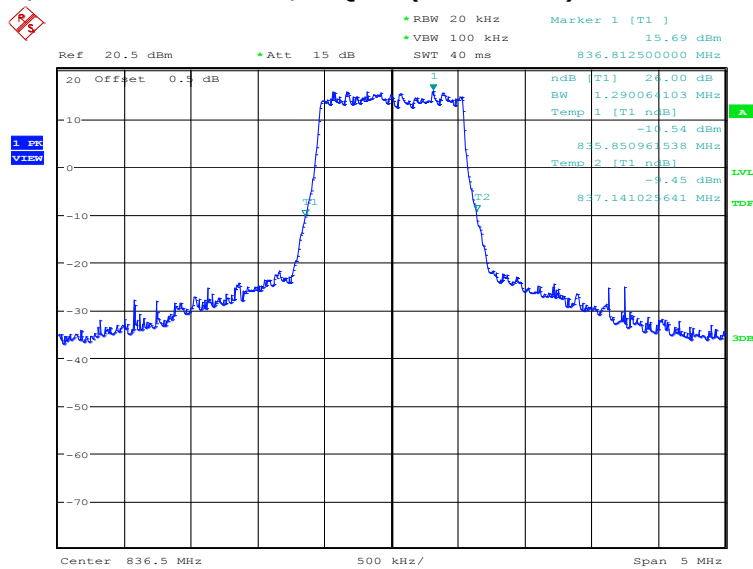
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	1266.03	1290.06

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



Date: 27.SEP.2022 09:09:59

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

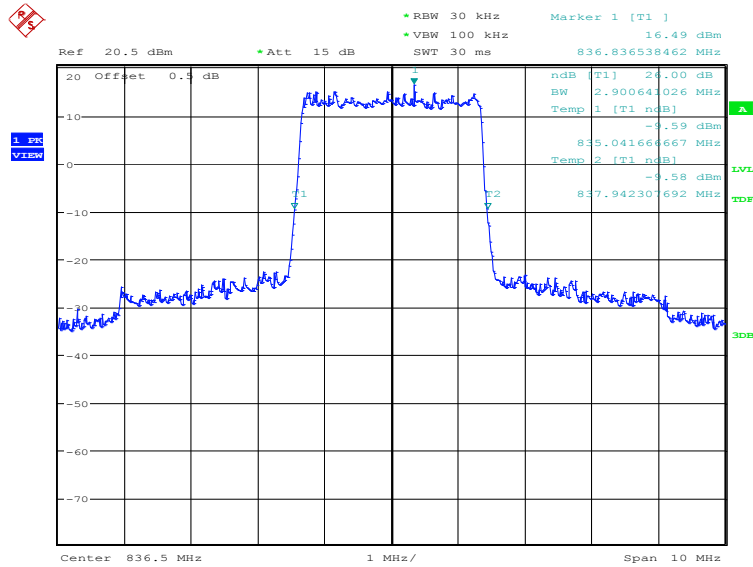


Date: 27.SEP.2022 09:10:39

LTE band 5, 3MHz (-26dBc)

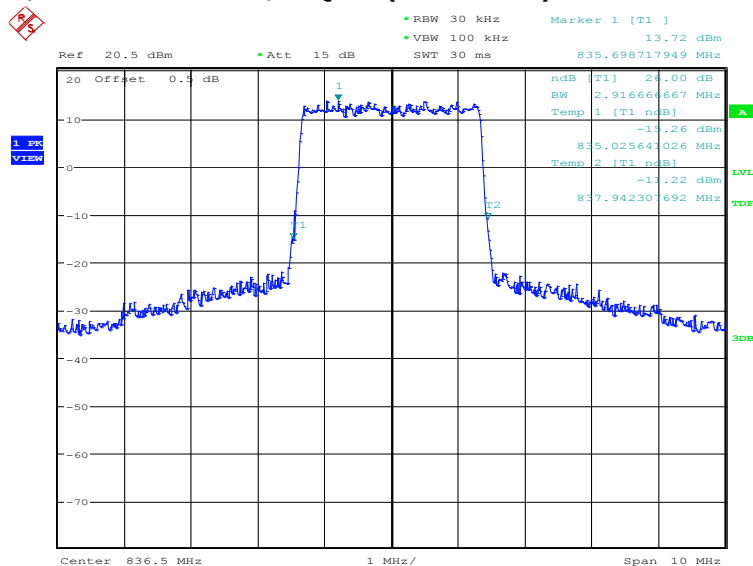
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	2900.64	2916.67

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



Date: 27.SEP.2022 09:11:21

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

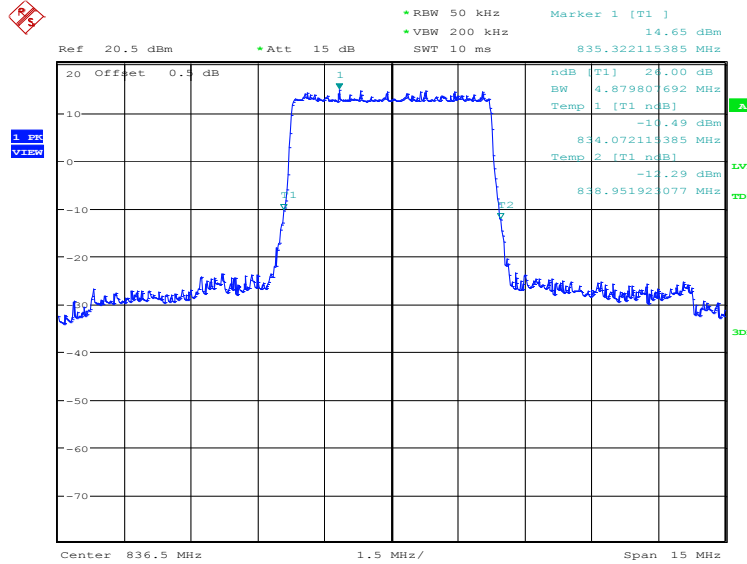


Date: 27.SEP.2022 09:12:02

LTE band 5, 5MHz (-26dBc)

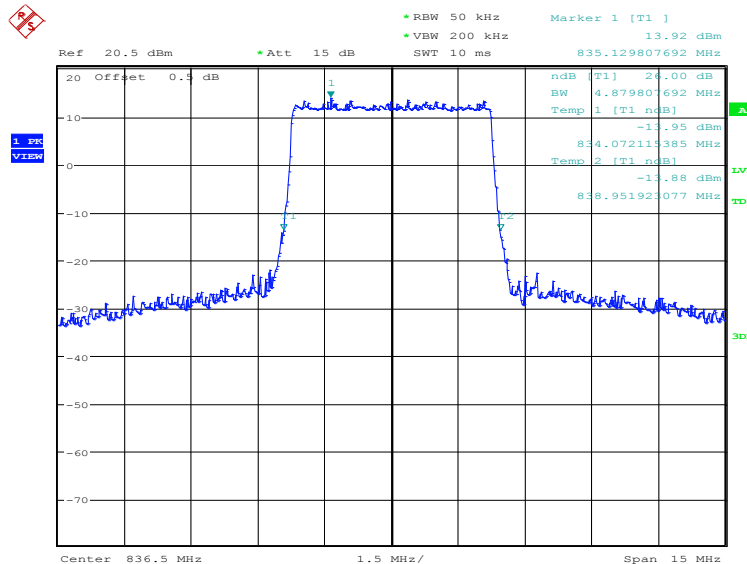
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	4879.81	4879.81

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



Date: 27.SEP.2022 09:12:44

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

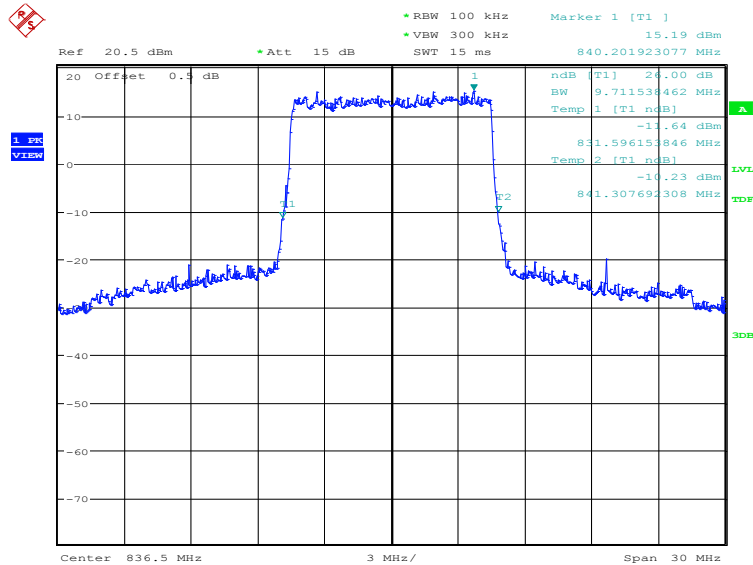


Date: 27.SEP.2022 09:13:24

LTE band 5, 10MHz (-26dBc)

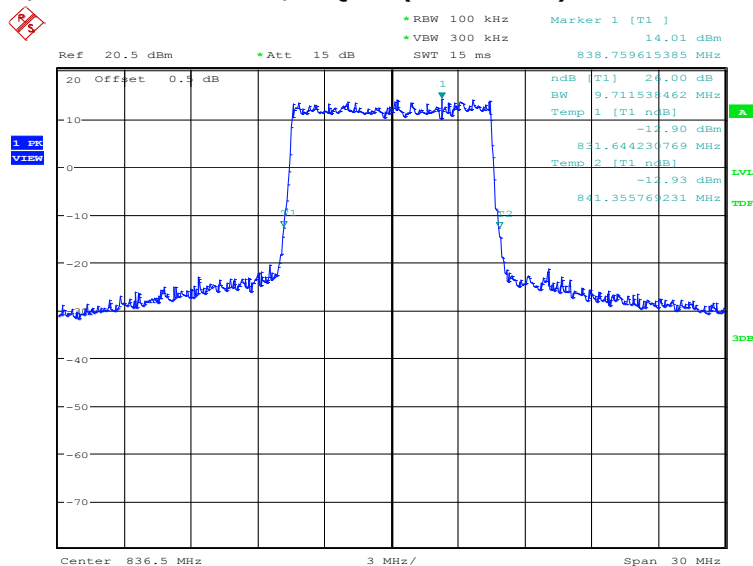
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	9711.54	9711.54

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



Date: 27.SEP.2022 09:14:06

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

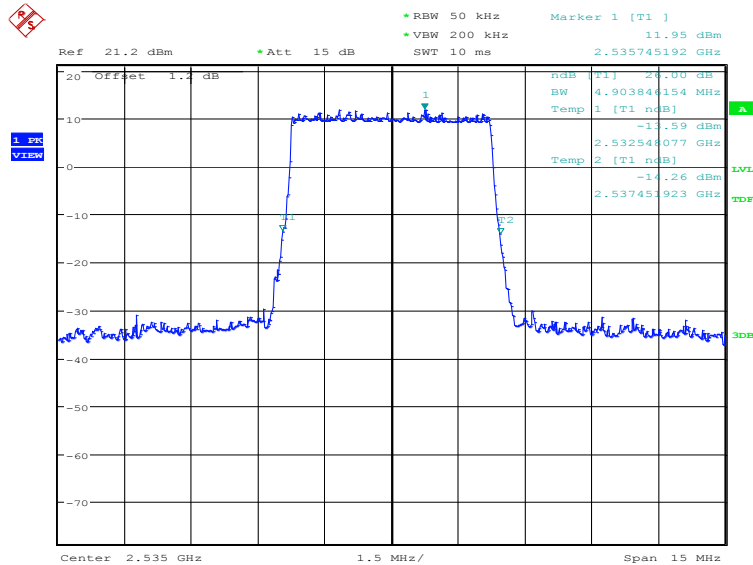


Date: 27.SEP.2022 09:14:46

LTE band 7, 5MHz (-26dBc)

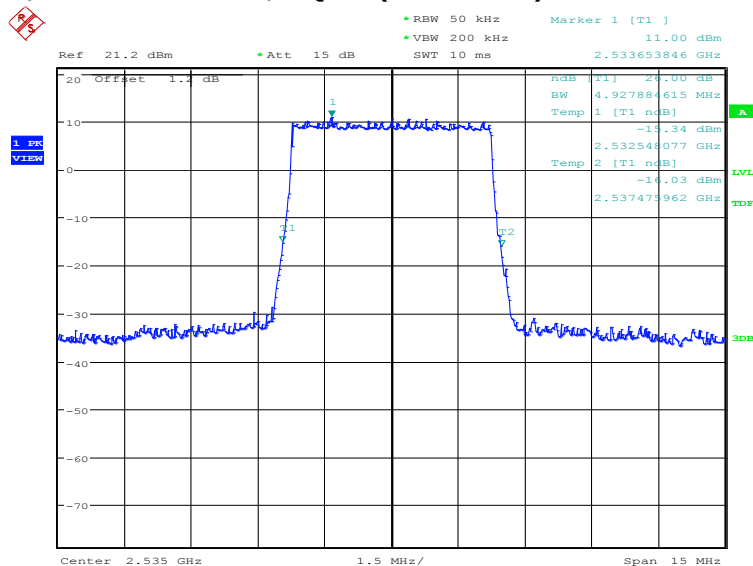
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2535.0	QPSK	16QAM
	4903.85	4927.88

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



Date: 21.SEP.2022 12:10:18

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

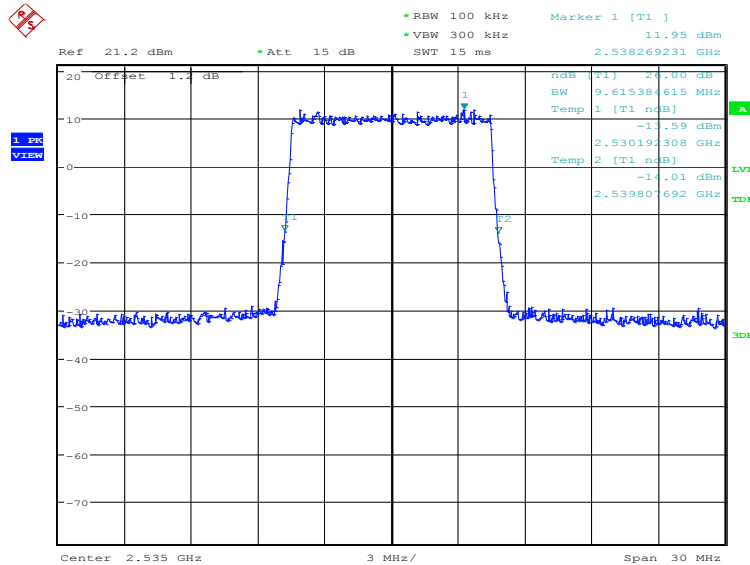


Date: 21.SEP.2022 12:10:58

LTE band 7, 10MHz (-26dBc)

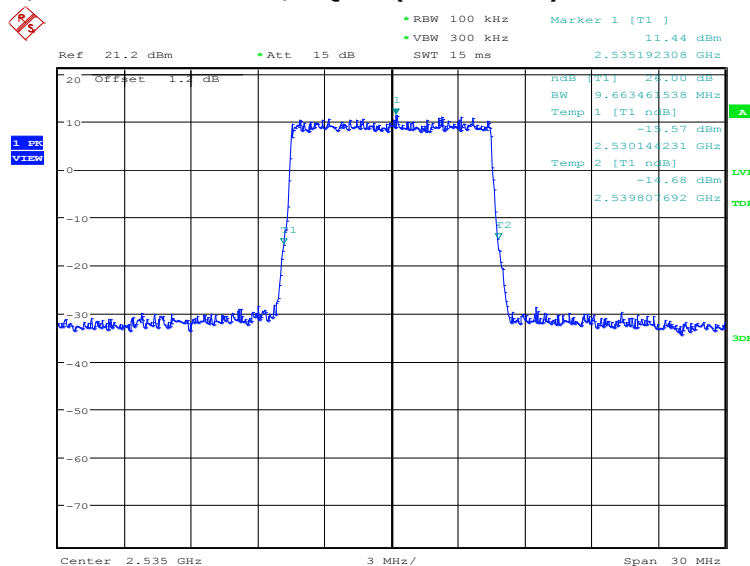
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2535.0	QPSK	16QAM
	9615.38	9663.46

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



Date: 21.SEP.2022 12:11:39

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

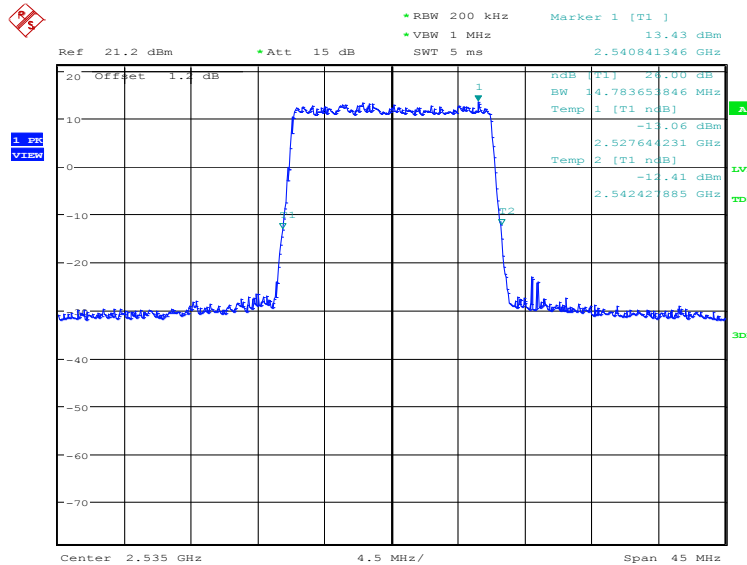


Date: 21.SEP.2022 12:12:20

LTE band 7, 15MHz (-26dBc)

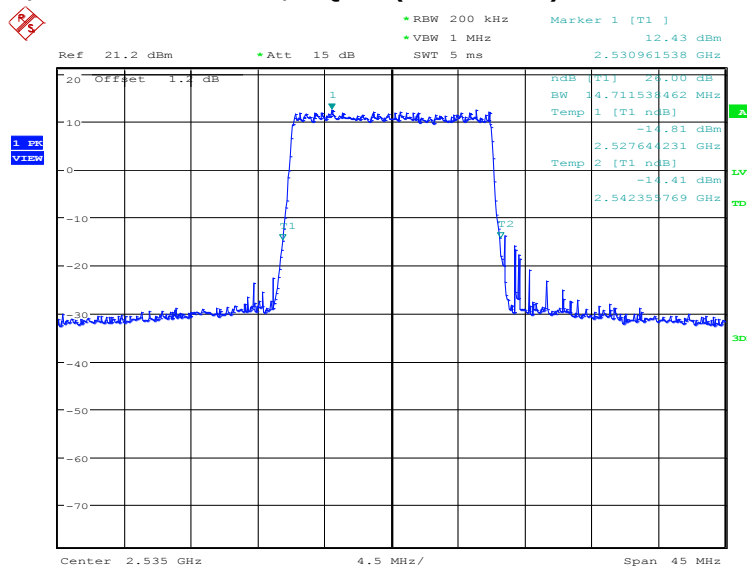
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2535.0	QPSK	16QAM
	14783.65	14711.54

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



Date: 21.SEP.2022 12:13:01

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

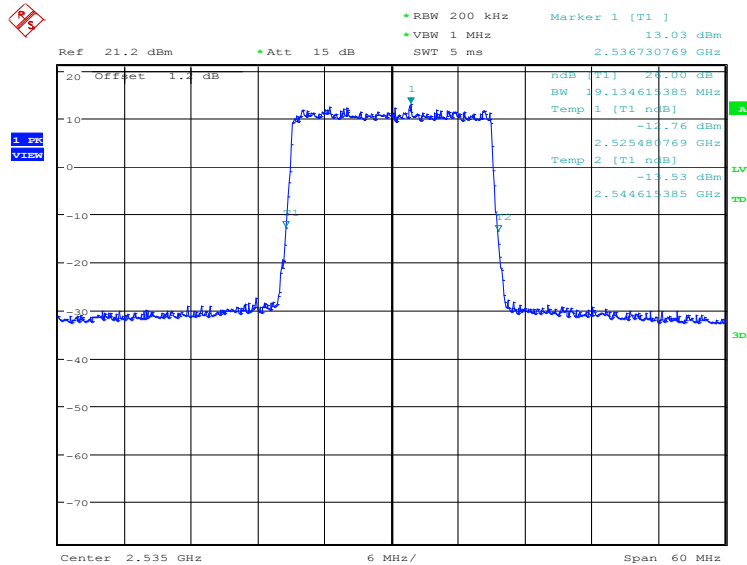


Date: 21.SEP.2022 12:13:41

LTE band 7, 20MHz (-26dBc)

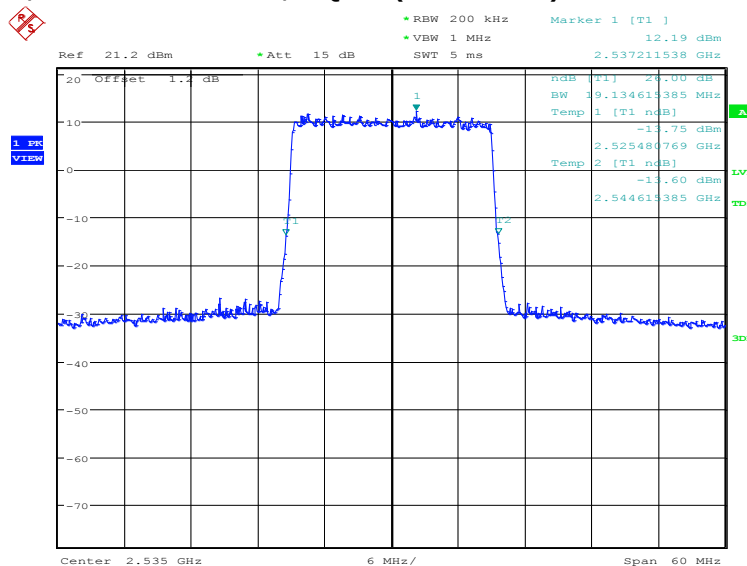
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
2535.0	QPSK	16QAM
	19134.62	19134.62

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



Date: 21.SEP.2022 12:14:23

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

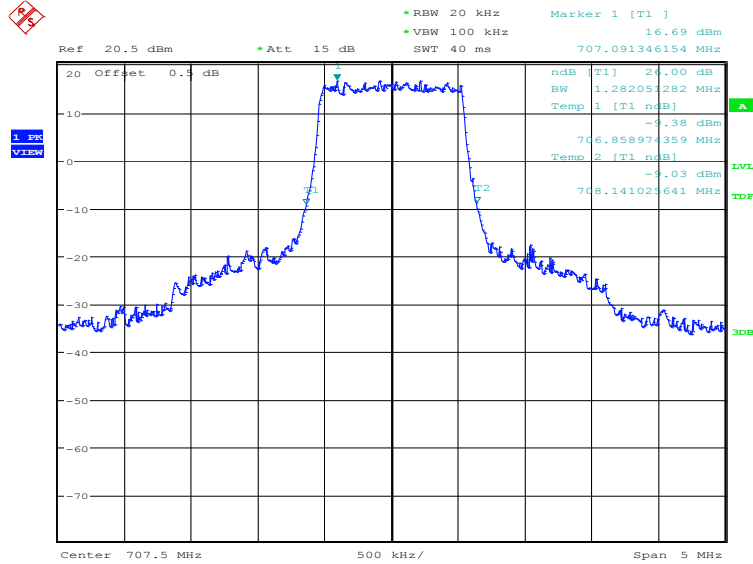


Date: 21.SEP.2022 12:15:03

LTE band 12, 1.4MHz (-26dBc)

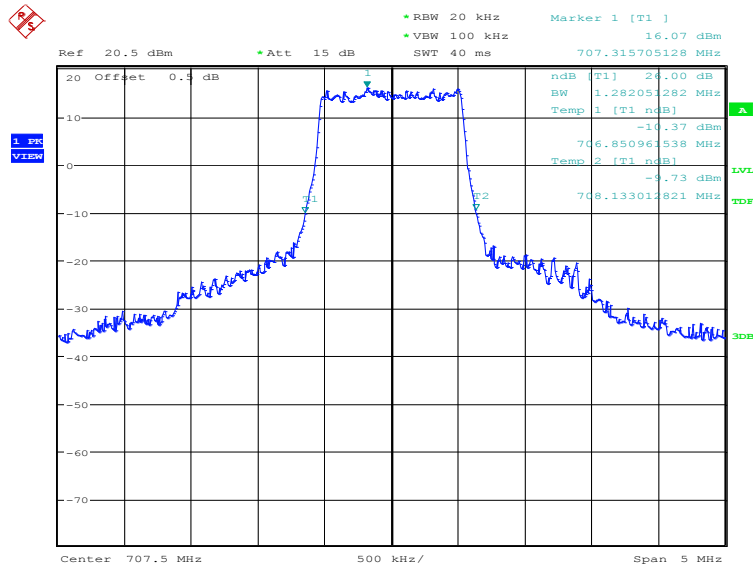
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	1282.05	1282.05

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



Date: 21.SEP.2022 10:54:58

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

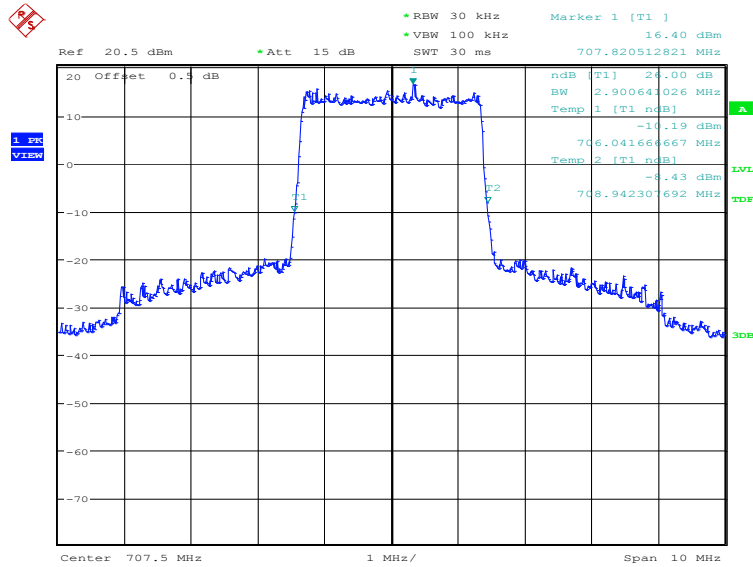


Date: 21.SEP.2022 10:55:38

LTE band 12, 3MHz (-26dBc)

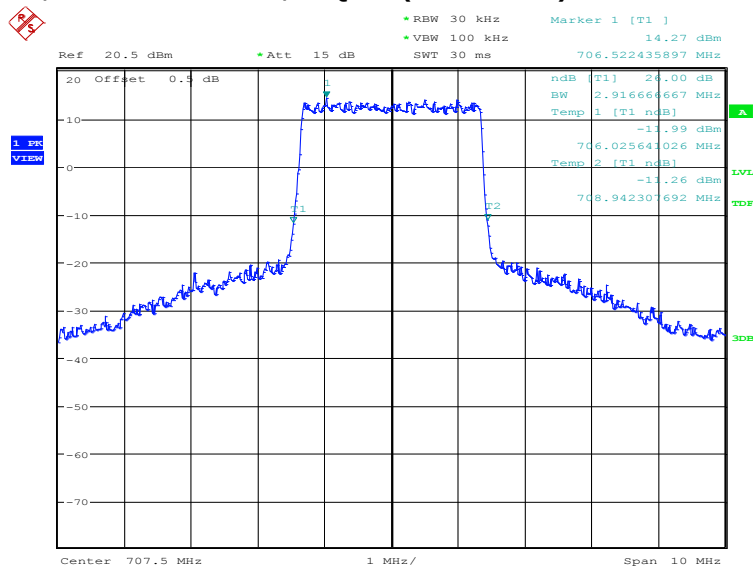
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	2900.64	2916.67

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



Date: 21.SEP.2022 10:56:20

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

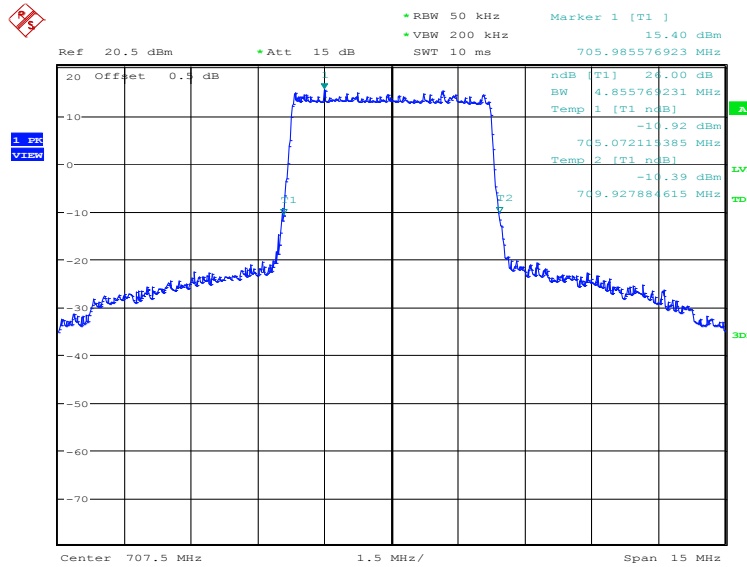


Date: 21.SEP.2022 10:57:01

LTE band 12, 5MHz (-26dBc)

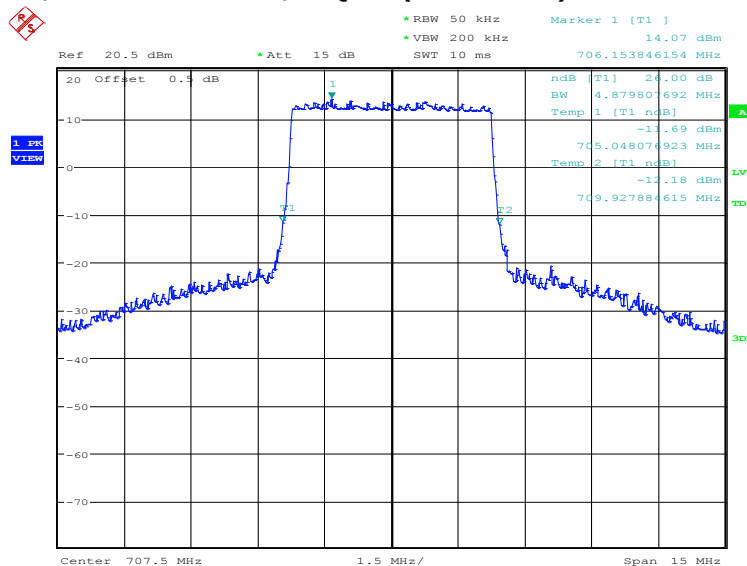
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
707.5	QPSK	16QAM
	4855.77	4879.81

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



Date: 21.SEP.2022 10:57:43

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



Date: 21.SEP.2022 10:58:23