



TEST REPORT

No.23T04Z80611-04

for

TCL Communication Ltd.

GSM/UMTS/LTE Mobile phone

Model Name: T611B

FCC ID: 2ACCJH176

with

Hardware Version: 05

Software Version: 3FS2

Issued Date: 2023-12-01

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.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
23T04Z80611-04	Rev.0	1 st edition	2023-12-01

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

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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

1.2. Testing Location

Location 1: CTTL (huayuan North Road)

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

Location 2: CTTL (BDA)

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

1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project Data

Testing Start Date: 2023-11-27

Testing End Date: 2023-11-30

1.5. Signature



Wang Xing

(Prepared this test report)



Zhou Yu

(Reviewed this test report)



Zhao Hui Lin

(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: TCL Communication Ltd.
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2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
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Contact: Annie Jiang
Email: nianxiang.jiang@tcl.com
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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM/UMTS/LTE Mobile phone
Model Name	T611B
FCC ID	2ACCJH176
Antenna	Embedded
<u>Output power</u>	16.56dBm maximum ERP measured for LTE Band 26
Extreme Voltage	3.6VDC to 4.45VDC (nominal: 3.87VDC)
Extreme Temperature	-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	358464410203877/	05	3FS2	2023-11-27
	358464410203885			
UT03a	358464410203935/	05	3FS2	2023-11-27
	358464410203943			

*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	CAC4900009CA
Manufacturer	TIANMAO
Capacitance	4900 mAh, typ 5010mAh

AE2

Model	CAC4900007C7
Manufacturer	VEKEN
Capacitance	4900 mAh, Typ 5010mAh

*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 22	PUBLIC MOBILE SERVICES	10-1-22 Edition
FCC Part 90	PRIVATE LAND MOBILE RADIO SERVICES	10-1-22 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 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)

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

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.

Measurement uncertainty is not taken into account when stating conformity with a specified requirement.

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.



The Equipment Under Test (EUT) is a Class 2 Permissive Change to T612B (FCC ID: 2ACCJH176). Band 26(814MHz~824MHz) and Band 26(824MHz~849MHz) were tested on this device.

For detail differences between two models please refer the Declaration of Changes document.

6. Test Equipment Utilized

Description	Type	Series Number	Manufacture	Cal Due Date	Calibration Interval
Wideband Radio Communication Tester	CMW500	159082	R&S	2024-02-10	13 months
Spectrum Analyzer	FSU	200030	R&S	2024-06-25	13 months
Climate chamber	SH-241	92004642	ESPEC	2024-11-16	13 months
Test Receiver	FSV30	101525	R&S	2024-02-21	13 months
EMI Antenna	VULB 9163	9163-235	Schwarzbeck	2024-06-10	13 months
EMI Antenna	9117	167	Schwarzbeck	2025-08-03	13 months
EMI Antenna	LB-7180-NF	J203001300005	A-INFO	2024-05-25	13 months
EMI Antenna	3115	00167252	ETS-Lindgren	2024-02-28	13 months
Signal Generator	SMF100A	104940	R&S	2024-01-14	13 months
Universal Radio Communication Tester	CMW500	143008	R&S	2024-02-03	13 months

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 26(814MHz~824MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	823.3	23.52	22.54	21.35
		819.0	23.54	22.50	21.58
		814.7	23.56	22.57	21.93
	1 RB low	823.3	23.52	22.55	21.33
		819.0	23.53	22.48	21.63
		814.7	23.57	22.56	21.92
	50% RB mid	823.3	23.49	22.61	21.59
		819.0	23.55	22.71	21.67
		814.7	23.62	22.76	21.56
	100% RB	823.3	22.58	21.63	20.87
		819.0	22.60	21.51	20.88
		814.7	22.63	21.53	20.75
3MHz	1 RB high	822.5	23.56	22.43	21.30
		819.0	23.58	22.47	21.37
		815.5	23.63	22.57	21.43
	1 RB low	822.5	23.60	22.53	21.42
		819.0	23.58	22.56	21.44
		815.5	23.67	22.63	21.51
	50% RB mid	822.5	22.55	21.54	20.52
		819.0	22.52	21.60	20.55
		815.5	22.55	21.59	20.58

	100% RB	822.5	22.49	21.42	20.57
		819.0	22.49	21.44	20.62
		815.5	22.54	21.51	20.64
5MHz	1 RB high	821.5	23.47	22.48	21.56
		819.0	23.51	22.52	21.60
		816.5	23.52	22.56	21.63
	1 RB low	821.5	23.48	22.54	21.59
		819.0	23.51	22.56	21.65
		816.5	23.57	22.62	21.70
	50% RB mid	821.5	22.53	21.57	20.62
		819.0	22.57	21.59	20.69
		816.5	22.59	21.62	20.72
	100% RB	821.5	22.54	21.44	20.61
		819.0	22.57	21.49	20.64
		816.5	22.60	21.55	20.67
10MHz	1 RB high	819.0	23.61	22.49	21.38
	1 RB low	819.0	23.60	22.56	21.47
	50% RB mid	819.0	22.58	21.66	20.69
	100% RB	819.0	22.61	21.59	20.67

LTE band 26(824MHz~849MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	23.80	22.76	21.67
		836.5	23.60	22.70	21.48
		824.7	23.59	22.49	21.53
	1 RB low	848.3	23.68	22.70	21.67
		836.5	23.55	22.69	21.46
		824.7	23.57	22.46	21.56
	50% RB mid	848.3	23.62	22.67	21.67
		836.5	23.61	22.77	21.57
		824.7	23.53	22.63	21.65
	100% RB	848.3	22.81	21.59	20.94
		836.5	22.67	21.54	20.78
		824.7	22.62	21.45	20.89
3MHz	1 RB high	847.5	23.91	22.66	21.51
		836.5	23.57	22.50	21.38
		825.5	23.57	22.46	21.32
	1 RB low	847.5	23.54	22.50	21.41
		836.5	23.56	22.56	21.46
		825.5	23.62	22.52	21.42
	50% RB mid	847.5	22.72	21.65	20.61
		836.5	22.61	21.62	20.59
		825.5	22.50	21.52	20.45
	100% RB	847.5	22.61	21.52	20.62
		836.5	22.56	21.51	20.68
		825.5	22.46	21.38	20.52
5MHz	1 RB high	846.5	23.74	22.66	21.67
		836.5	23.48	22.52	21.62
		826.5	23.43	22.45	21.52
	1 RB low	846.5	23.41	22.44	21.54
		836.5	23.40	22.44	21.52
		826.5	23.50	22.47	21.53
	50% RB mid	846.5	22.64	21.57	20.70
		836.5	22.61	21.64	20.72
		826.5	22.46	21.49	20.58
	100% RB	846.5	22.57	21.50	20.65
		836.5	22.58	21.50	20.64
		826.5	22.43	21.35	20.51
10MHz	1 RB high	844.0	23.84	22.66	21.51
		836.5	23.57	22.51	21.37
		829.0	23.45	22.40	21.28
	1 RB low	844.0	23.57	22.48	21.35

		836.5	23.45	22.40	21.29
		829.0	23.56	22.45	21.30
	50% RB mid	844.0	22.55	21.62	20.67
		836.5	22.62	21.73	20.78
		829.0	22.47	21.57	20.59
	100% RB	844.0	22.60	21.62	20.65
		836.5	22.60	21.62	20.66
829.0		22.50	21.50	20.56	
15MHz	1 RB high	841.5	23.72	22.81	21.85
		836.5	23.46	22.76	21.75
		831.5	23.52	22.79	21.79
	1 RB low	841.5	23.45	22.79	21.76
		836.5	23.43	22.70	21.70
		831.5	23.49	22.69	21.72
	50% RB mid	841.5	22.58	21.52	20.55
		836.5	22.65	21.59	20.65
		831.5	22.63	21.49	20.61
	100% RB	841.5	22.62	21.55	20.67
		836.5	22.62	21.56	20.66
		831.5	22.62	21.54	20.66

A.1.3 Radiated

A.1.3.1 Description

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

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

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

A.1.3.2 Method of Measurement

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

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

where;

- **ERP or EIRP** = effective radiated power or equivalent isotropically radiated power(expressed in the same units as P_T).
- P_T = transmitter output power, in this report the unit express as dBm;
- G_T = gain of the transmitting antenna, in dBd(ERP) or dBi(EIRP);
- L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

Alternatively, the EIRP can be determined from Equation above and then converted to ERP based on the maximum antenna gain relationship by applying the following equation:

$$\text{ERP} = \text{EIRP} - 2.15\text{dB}$$

Note: The antenna gain information was provided by the client. The laboratory is not responsible for identifying its authenticity during the test.

A.1.3.3 Limits and Measurement Results
LTE Band 26(814MHz~824MHz)-ERP
Limits: ≤50dBm(100W)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			ERP (dBm)(Gt-Lc=-5.2)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	823.3	23.52	22.54	21.35	16.17	15.19	14.00
		819	23.54	22.50	21.58	16.19	15.15	14.23
		814.7	23.56	22.57	21.93	16.21	15.22	14.58
	1 RB low	823.3	23.52	22.55	21.33	16.17	15.20	13.98
		819	23.53	22.48	21.63	16.18	15.13	14.28
		814.7	23.57	22.56	21.92	16.22	15.21	14.57
	50% RB mid	823.3	23.49	22.61	21.59	16.14	15.26	14.24
		819	23.55	22.71	21.67	16.20	15.36	14.32
		814.7	23.62	22.76	21.56	16.27	15.41	14.21
	100% RB	823.3	22.58	21.63	20.87	15.23	14.28	13.52
		819	22.60	21.51	20.88	15.25	14.16	13.53
		814.7	22.63	21.53	20.75	15.28	14.18	13.40
3MHz	1 RB high	822.5	23.56	22.43	21.30	16.21	15.08	13.95
		819	23.58	22.47	21.37	16.23	15.12	14.02
		815.5	23.63	22.57	21.43	16.28	15.22	14.08
	1 RB low	822.5	23.60	22.53	21.42	16.25	15.18	14.07
		819	23.58	22.56	21.44	16.23	15.21	14.09
		815.5	23.67	22.63	21.51	16.32	15.28	14.16
	50% RB mid	822.5	22.55	21.54	20.52	15.20	14.19	13.17
		819	22.52	21.60	20.55	15.17	14.25	13.20
		815.5	22.55	21.59	20.58	15.20	14.24	13.23
	100% RB	822.5	22.49	21.42	20.57	15.14	14.07	13.22
		819	22.49	21.44	20.62	15.14	14.09	13.27
		815.5	22.54	21.51	20.64	15.19	14.16	13.29
5MHz	1 RB high	821.5	23.47	22.48	21.56	16.12	15.13	14.21
		819	23.51	22.52	21.60	16.16	15.17	14.25
		816.5	23.52	22.56	21.63	16.17	15.21	14.28
	1 RB low	821.5	23.48	22.54	21.59	16.13	15.19	14.24
		819	23.51	22.56	21.65	16.16	15.21	14.30
		816.5	23.57	22.62	21.70	16.22	15.27	14.35
	50% RB mid	821.5	22.53	21.57	20.62	15.18	14.22	13.27
		819	22.57	21.59	20.69	15.22	14.24	13.34
		816.5	22.59	21.62	20.72	15.24	14.27	13.37
	100% RB	821.5	22.54	21.44	20.61	15.19	14.09	13.26
		819	22.57	21.49	20.64	15.22	14.14	13.29
		816.5	22.60	21.55	20.67	15.25	14.20	13.32



10MHz	1 RB high	819	23.61	22.49	21.38	16.26	15.14	14.03
	1 RB low	819	23.60	22.56	21.47	16.25	15.21	14.12
	50% RB mid	819	22.58	21.66	20.69	15.23	14.31	13.34
	100% RB	819	22.61	21.59	20.67	15.26	14.24	13.32

LTE Band 26(824MHz-849MHz-ERP)
Limits: $\leq 38.45\text{dBm}(7\text{W})$

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			ERP (dBm)(Gt-Lc=-5.2)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	23.80	22.76	21.67	16.45	15.41	14.32
		836.5	23.60	22.70	21.48	16.25	15.35	14.13
		824.7	23.59	22.49	21.53	16.24	15.14	14.18
	1 RB low	848.3	23.68	22.70	21.67	16.33	15.35	14.32
		836.5	23.55	22.69	21.46	16.20	15.34	14.11
		824.7	23.57	22.46	21.56	16.22	15.11	14.21
	50% RB mid	848.3	23.62	22.67	21.67	16.27	15.32	14.32
		836.5	23.61	22.77	21.57	16.26	15.42	14.22
		824.7	23.53	22.63	21.65	16.18	15.28	14.30
	100% RB	848.3	22.81	21.59	20.94	15.46	14.24	13.59
		836.5	22.67	21.54	20.78	15.32	14.19	13.43
		824.7	22.62	21.45	20.89	15.27	14.10	13.54
3MHz	1 RB high	847.5	23.91	22.66	21.51	16.56	15.31	14.16
		836.5	23.57	22.50	21.38	16.22	15.15	14.03
		825.5	23.57	22.46	21.32	16.22	15.11	13.97
	1 RB low	847.5	23.54	22.50	21.41	16.19	15.15	14.06
		836.5	23.56	22.56	21.46	16.21	15.21	14.11
		825.5	23.62	22.52	21.42	16.27	15.17	14.07
	50% RB mid	847.5	22.72	21.65	20.61	15.37	14.30	13.26
		836.5	22.61	21.62	20.59	15.26	14.27	13.24
		825.5	22.50	21.52	20.45	15.15	14.17	13.10
	100% RB	847.5	22.61	21.52	20.62	15.26	14.17	13.27
		836.5	22.56	21.51	20.68	15.21	14.16	13.33
		825.5	22.46	21.38	20.52	15.11	14.03	13.17
5MHz	1 RB high	846.5	23.74	22.66	21.67	16.39	15.31	14.32
		836.5	23.48	22.52	21.62	16.13	15.17	14.27
		826.5	23.43	22.45	21.52	16.08	15.10	14.17
	1 RB low	846.5	23.41	22.44	21.54	16.06	15.09	14.19
		836.5	23.40	22.44	21.52	16.05	15.09	14.17
		826.5	23.50	22.47	21.53	16.15	15.12	14.18
	50% RB mid	846.5	22.64	21.57	20.70	15.29	14.22	13.35
		836.5	22.61	21.64	20.72	15.26	14.29	13.37
		826.5	22.46	21.49	20.58	15.11	14.14	13.23
	100% RB	846.5	22.57	21.50	20.65	15.22	14.15	13.30
		836.5	22.58	21.50	20.64	15.23	14.15	13.29
		826.5	22.43	21.35	20.51	15.08	14.00	13.16
10MHz	1 RB high	844	23.84	22.66	21.51	16.49	15.31	14.16

	1 RB low	836.5	23.57	22.51	21.37	16.22	15.16	14.02	
		829	23.45	22.40	21.28	16.10	15.05	13.93	
		844	23.57	22.48	21.35	16.22	15.13	14.00	
	50% RB mid	836.5	23.45	22.40	21.29	16.10	15.05	13.94	
		829	23.56	22.45	21.30	16.21	15.10	13.95	
		844	22.55	21.62	20.67	15.20	14.27	13.32	
	100% RB	836.5	22.62	21.73	20.78	15.27	14.38	13.43	
		829	22.47	21.57	20.59	15.12	14.22	13.24	
		844	22.60	21.62	20.65	15.25	14.27	13.30	
	15MHz	1 RB high	836.5	22.60	21.62	20.66	15.25	14.27	13.31
			829	22.50	21.50	20.56	15.15	14.15	13.21
			841.5	23.72	22.81	21.85	16.37	15.46	14.50
1 RB low		836.5	23.46	22.76	21.75	16.11	15.41	14.40	
		831.5	23.52	22.79	21.79	16.17	15.44	14.44	
		841.5	23.45	22.79	21.76	16.10	15.44	14.41	
50% RB mid		836.5	23.43	22.70	21.70	16.08	15.35	14.35	
		831.5	23.49	22.69	21.72	16.14	15.34	14.37	
		841.5	22.58	21.52	20.55	15.23	14.17	13.20	
100% RB		836.5	22.65	21.59	20.65	15.30	14.24	13.30	
		831.5	22.63	21.49	20.61	15.28	14.14	13.26	
		841.5	22.62	21.55	20.67	15.27	14.20	13.32	
		836.5	22.62	21.56	20.66	15.27	14.21	13.31	
		831.5	22.62	21.54	20.66	15.27	14.19	13.31	

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

A.2 Emission Limit

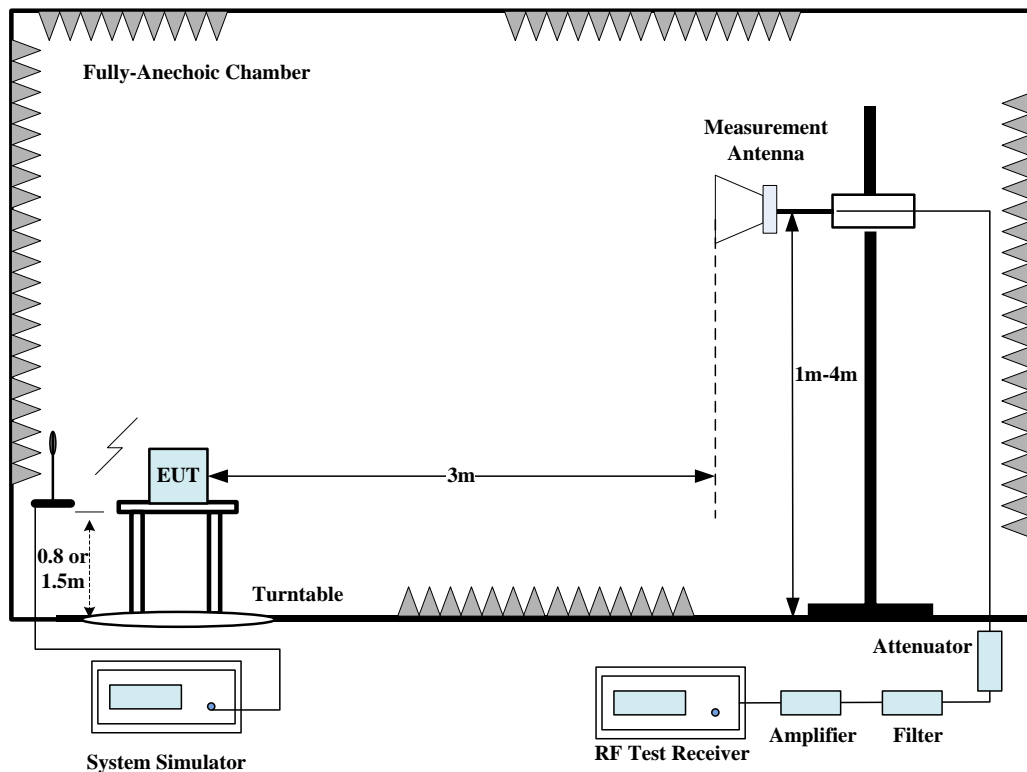
A.2.1 Measurement Method

The measurement procedures in TIA-603E-2016 are used.

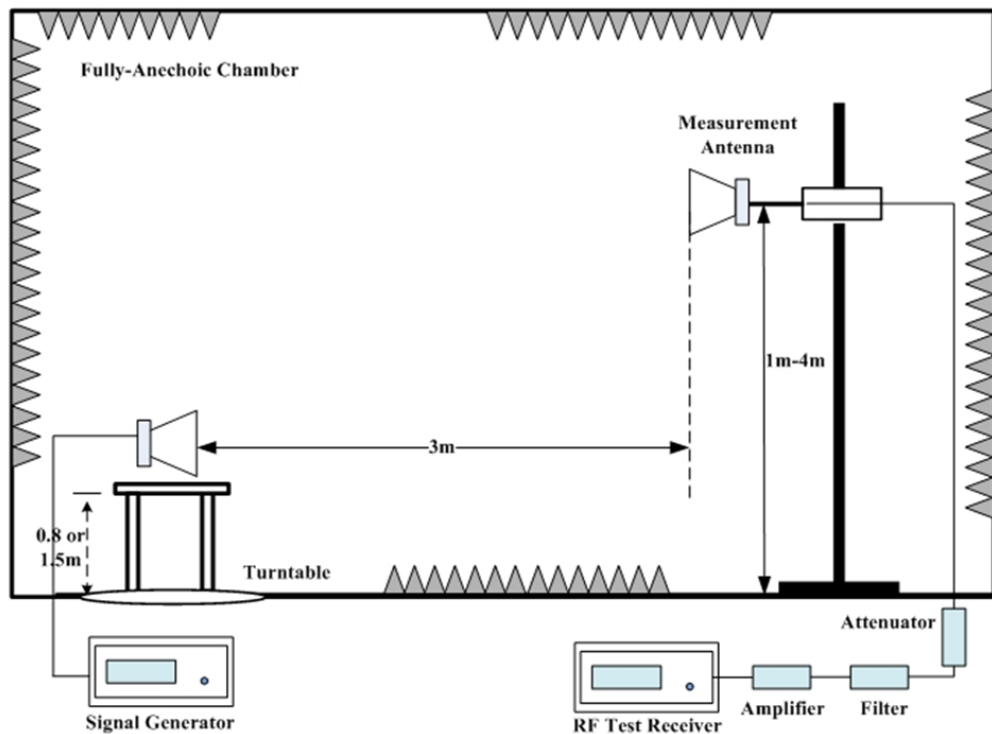
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and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

The procedure of radiated spurious emissions is as follows:

For measurements performed at frequencies less than or equal to 1 GHz, the EUT was placed on a 80cm-high non-conductive support; For measurements performed at frequencies above 1GHz,EUT was placed on a 1.5-meter-high non-conductive support. A measurement antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. In the initial test, the height of the measurement antenna was varied from 1 m to 4 m for the relative positioning that produces the maximum radiated signal level. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



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



In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. The height of measurement antenna varied between 1 m to 4 m to maximize the received signal amplitude for each emission that was detected and measured in the initial test. A power (P_{Mea}) is applied to the input of the substitution antenna and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test was performed with the measurement antenna in both vertical and horizontal polarization.

3. The Path loss (P_{pl}) between the Signal Source and the Substitution Antenna and the Substitution Antenna Gain (G_a) were recorded after test. A amplifier was connected in for the test. The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.
4. The measurement results are obtained as described below:

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

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

A.2.2 Measurement Limit

LTE Band 26(814MHz~824MHz): 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 $116\text{Log}_{10}(f/6.1)$ decibels or $50 + 10\text{Log}_{10}(P)$ 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 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 $43 + 10\text{Log}_{10}(P)$ 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.

FDD Band 26(824MHz~849MHz): Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

A.2.3 Measurement Results

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

Note 1: Both of Vertical and Horizontal polarizations are evaluated, but only the worst case is recorded in this report.

A.2.4 Measurement Results Table

Frequency	Channel	Frequency Range	Result
LTE Bands	Low	9kHz-26GHz	Pass
	Middle	9kHz-26GHz	Pass
	High	9kHz-26GHz	Pass

A.2.5 Sweep Table

Subrange	RBW	VBW
9~150 kHz	0.2kHz	0.6kHz
150kHz~30MHz	9kHz	27kHz
30MHz~1 GHz	100KHz	300KHz
1~20 GHz	1 MHz	3 MHz

A.2.6 Measurement Result

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1653.50	-46.54	2.56	6.35	2.15	-44.90	-13.00	31.90	V
2474.50	-36.03	4.33	5.83	2.15	-36.68	-13.00	23.68	H
3299.00	-47.65	3.56	7.70	2.15	-45.66	-13.00	32.66	H
4124.00	-48.45	4.72	9.32	2.15	-46.00	-13.00	33.00	H
4948.50	-39.33	4.91	10.30	2.15	-36.09	-13.00	23.09	H
5773.50	-37.91	5.68	10.90	2.15	-34.84	-13.00	21.84	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673.50	-45.00	2.66	6.33	2.15	-43.48	-13.00	30.48	H
2510.00	-35.47	4.42	5.80	2.15	-36.24	-13.00	23.24	H
3346.50	-50.26	3.46	7.89	2.15	-47.98	-13.00	34.98	H
4182.50	-46.17	4.07	9.32	2.15	-43.07	-13.00	30.07	H
5019.50	-37.05	5.10	10.54	2.15	-33.76	-13.00	20.76	H
5856.00	-38.76	5.60	10.84	2.15	-35.67	-13.00	22.67	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1694.00	-45.63	2.94	6.31	2.15	-44.41	-13.00	31.41	V
2545.00	-33.59	4.61	5.80	2.15	-34.55	-13.00	21.55	H
3393.50	-45.22	3.53	8.18	2.15	-42.72	-13.00	29.72	H
4241.50	-44.20	4.44	9.39	2.15	-41.40	-13.00	28.40	H
5090.00	-38.25	5.30	10.51	2.15	-35.19	-13.00	22.19	H
5938.00	-39.20	6.00	10.98	2.15	-36.37	-13.00	23.37	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1629.50	-44.81	2.39	6.28	2.15	-43.07	-13.00	30.07	H
2444.50	-37.93	4.55	5.91	2.15	-38.72	-13.00	25.72	V
3259.00	-51.92	2.98	7.70	2.15	-49.35	-13.00	36.35	V
4074.00	-51.31	4.34	9.13	2.15	-48.67	-13.00	35.67	H
4888.50	-39.26	4.81	10.11	2.15	-36.11	-13.00	23.11	H
5703.50	-39.00	5.67	10.99	2.15	-35.83	-13.00	22.83	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1638.00	-46.63	2.40	6.33	2.15	-44.85	-13.00	31.85	H
2451.50	-37.75	4.48	5.85	2.15	-38.53	-13.00	25.53	V
3275.50	-52.91	3.06	7.70	2.15	-50.42	-13.00	37.42	H
4095.50	-48.44	3.93	9.10	2.15	-45.42	-13.00	32.42	H
4914.50	-38.10	4.95	10.23	2.15	-34.97	-13.00	21.97	H
5733.50	-39.19	5.88	10.93	2.15	-36.29	-13.00	23.29	H

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

Frequency (MHz)	SG (dBm)	CableLoss (dB)	AntennaGain (dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1647.00	-47.27	2.62	6.38	2.15	-45.66	-13.00	32.66	H
2470.00	-36.96	4.32	5.83	2.15	-37.60	-13.00	24.60	H
3293.50	-47.25	3.61	7.70	2.15	-45.31	-13.00	32.31	H
4117.00	-47.29	4.06	9.30	2.15	-44.20	-13.00	31.20	H
4940.50	-38.02	4.90	10.28	2.15	-34.79	-13.00	21.79	H
5763.50	-37.10	5.81	10.90	2.15	-34.16	-13.00	21.16	H

Note: Expanded measurement uncertainty is $U = 5.62 \text{ dB}$, $k = 2$.

A.3 Frequency Stability

A.3.1 Method of Measurement

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

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

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500, and in a simulated call on middle channel for each LTE band, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the center channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C 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 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	3.87	814.380	823.620		
50				2.13	0.0026
40				-0.44	0.0005
30				-0.72	0.0009
10				-0.97	0.0012
0				-1.14	0.0014
-10				-0.20	0.0002
-20				-3.33	0.0041
-30				-2.35	0.0029

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	814.380	823.620	-0.62	0.0008
4.45				0.79	0.0010

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	3.87	824.553	848.471		
50				-36.33	0.0434
40				-3.78	0.0045
30				-4.78	0.0057
10				-0.40	0.0005
0				-4.81	0.0058
-10				-2.19	0.0026
-20				-6.07	0.0073
-30				-8.05	0.0096

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	-0.87	0.0010
4.45				-2.83	0.0034

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.

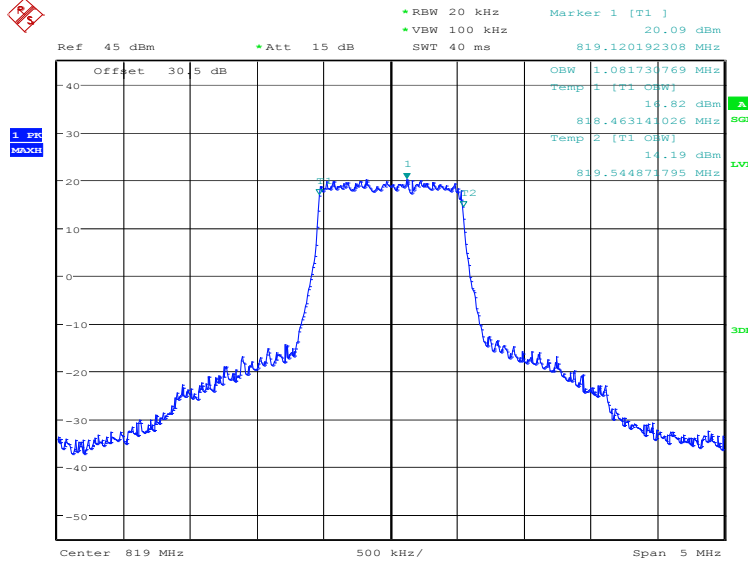
The measurement method is from ANSI C63.26:

- 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 26(814MHz~824MHz), 1.4MHz (99%)

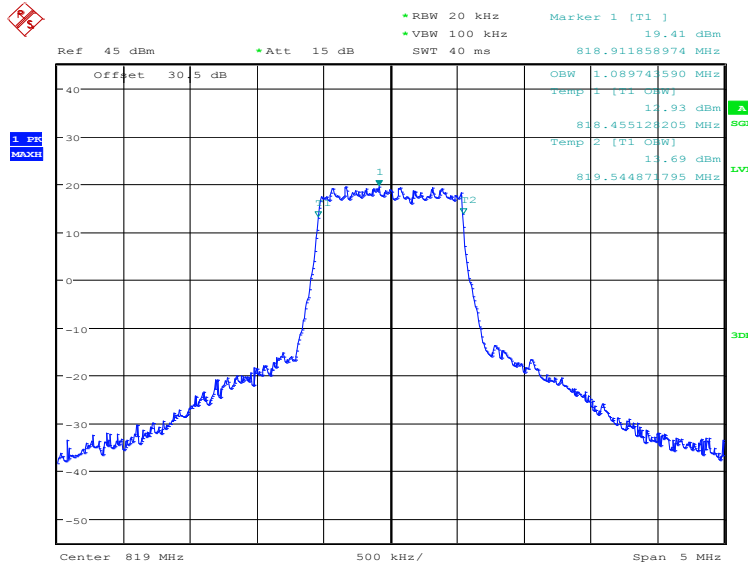
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	1081.73	1089.74

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



Date: 28.NOV.2023 13:30:19

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

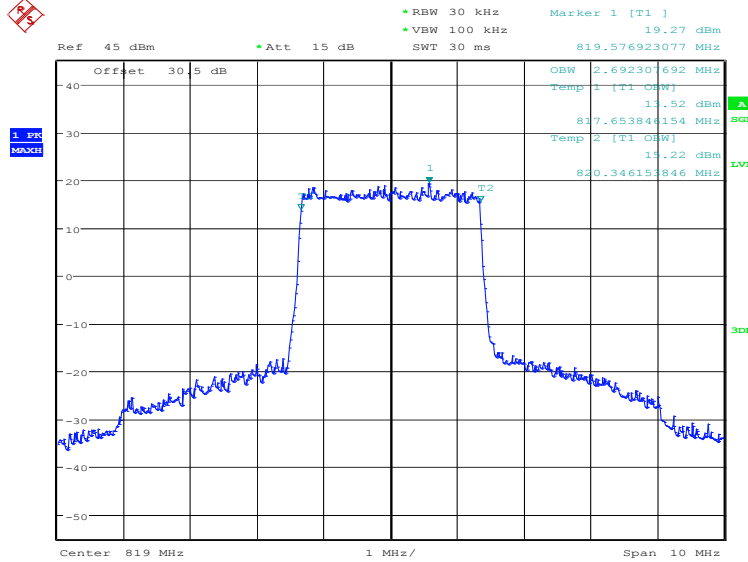


Date: 28.NOV.2023 13:30:59

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

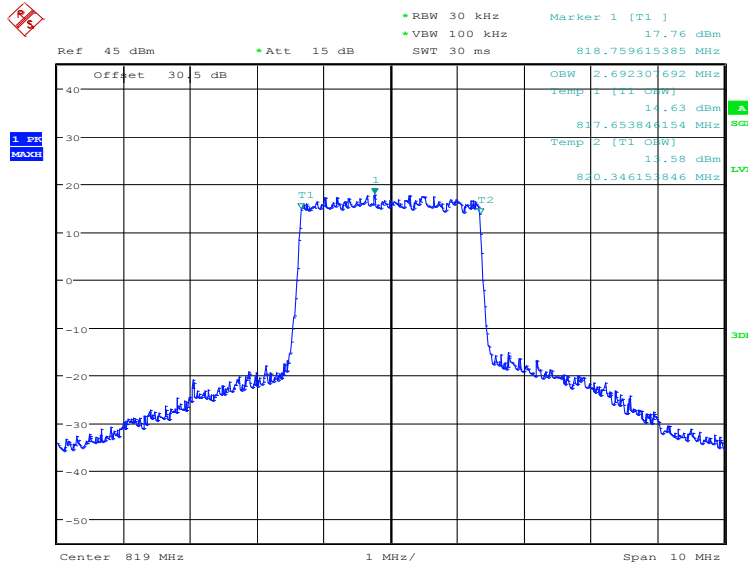
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	2692.31	2692.31

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



Date: 28.NOV.2023 13:31:42

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

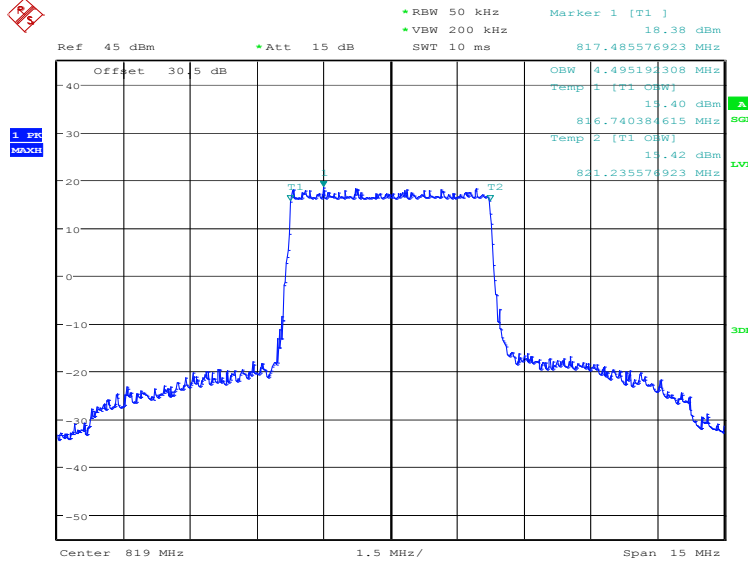


Date: 28.NOV.2023 13:32:22

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

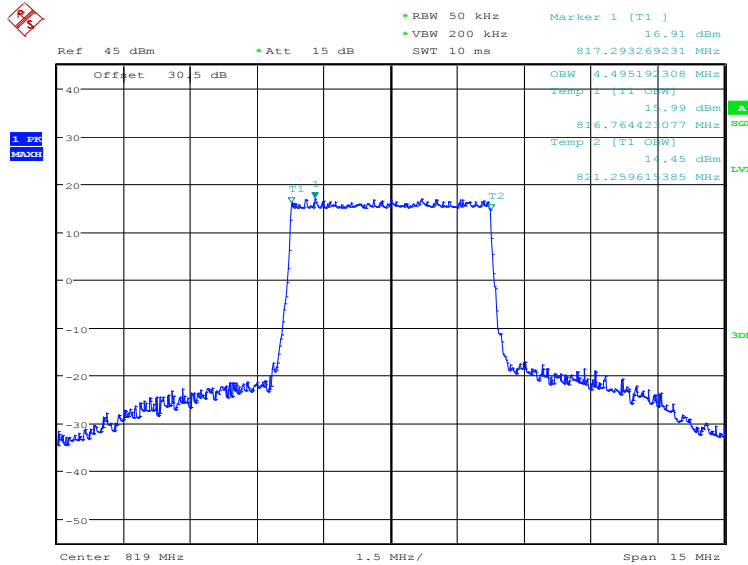
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	4495.19	4495.19

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



Date: 28.NOV.2023 13:33:04

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

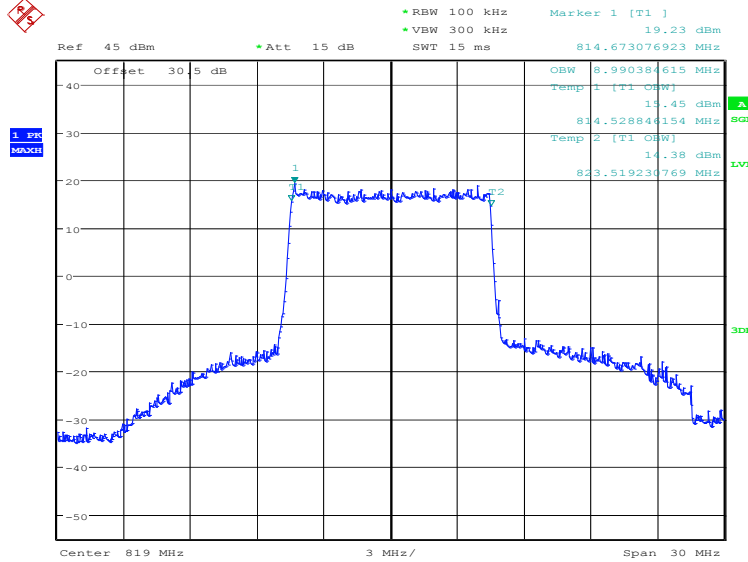


Date: 28.NOV.2023 13:33:44

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

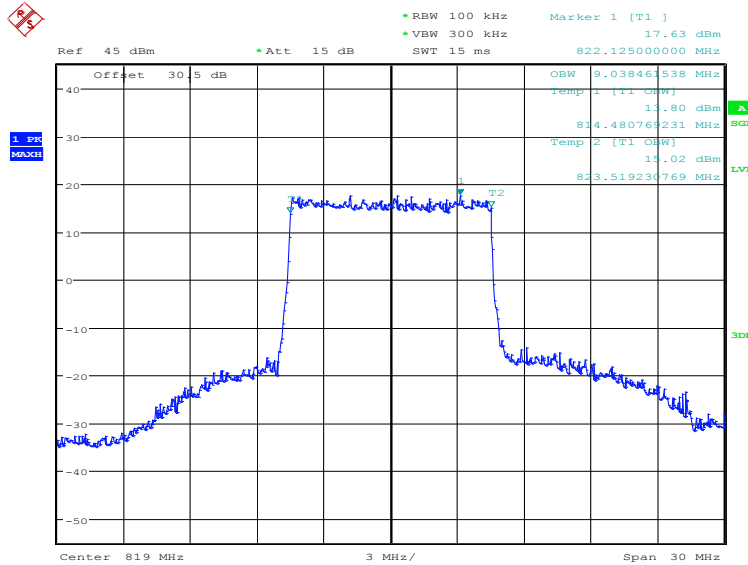
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
819.0	QPSK	16QAM
	8990.38	9038.46

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



Date: 28.NOV.2023 13:34:26

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

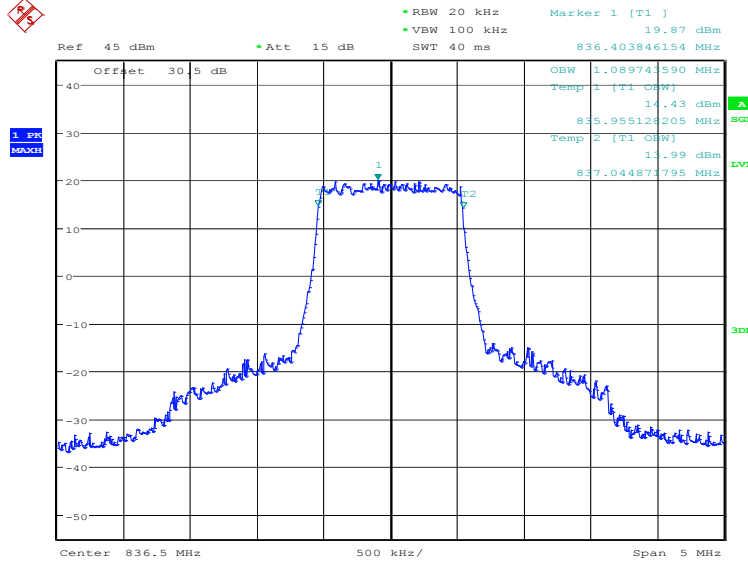


Date: 28.NOV.2023 13:35:06

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

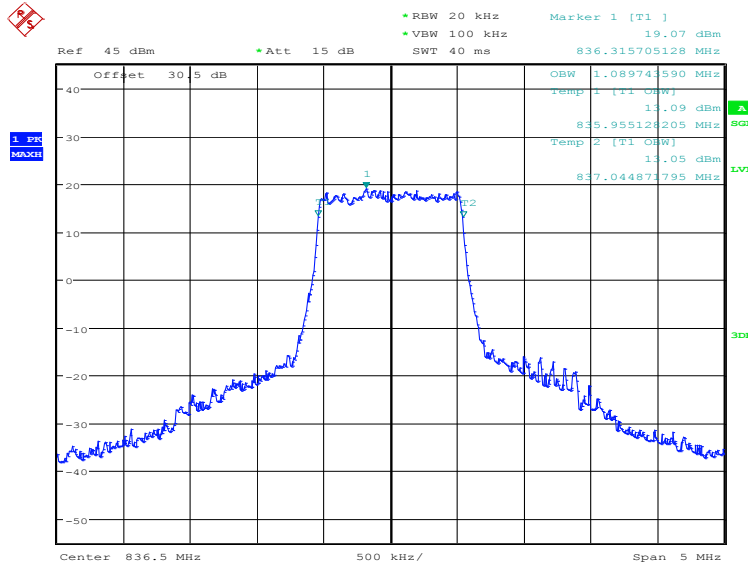
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	1089.74	1089.74

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



Date: 28.NOV.2023 13:22:38

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

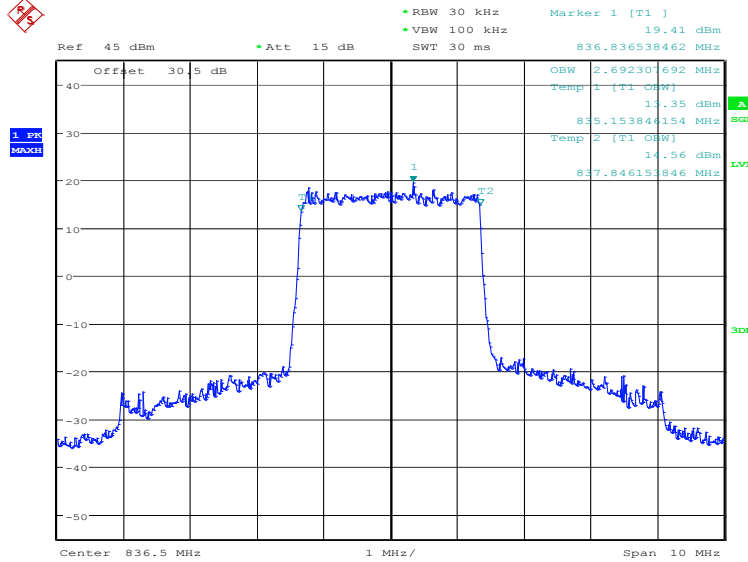


Date: 28.NOV.2023 13:23:18

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

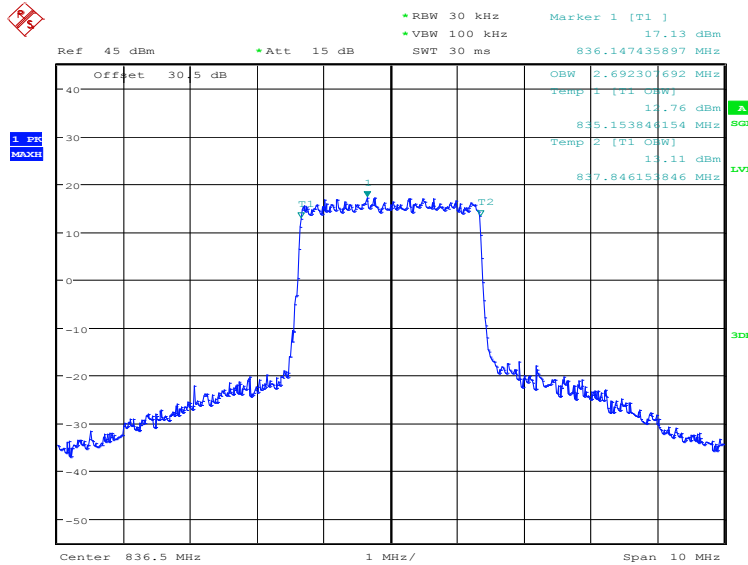
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 28.NOV.2023 13:24:00

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

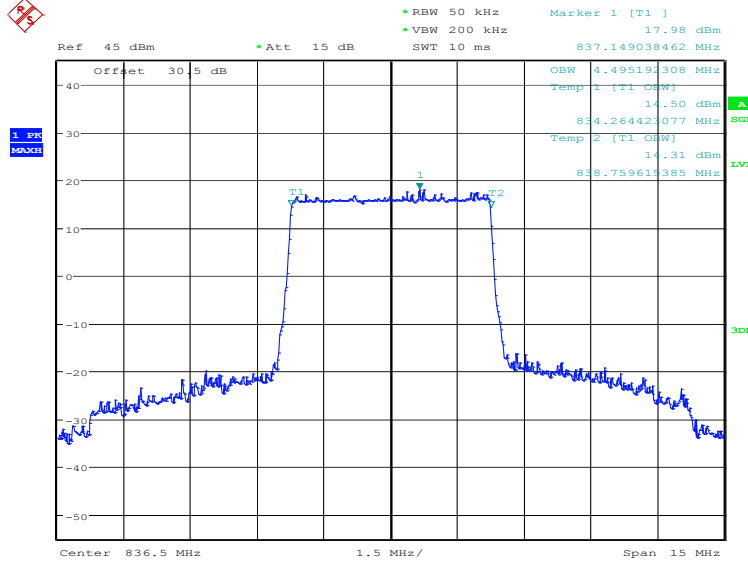


Date: 28.NOV.2023 13:24:39

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

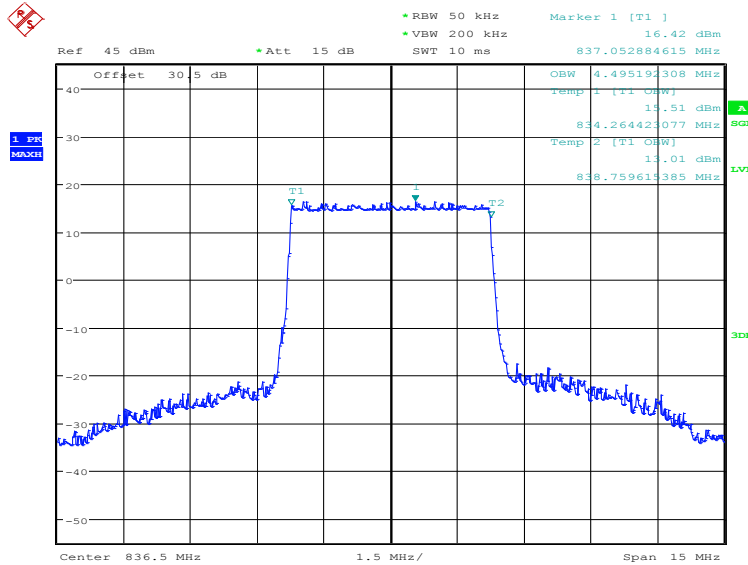
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	4495.19	4495.19

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



Date: 28.NOV.2023 13:25:21

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

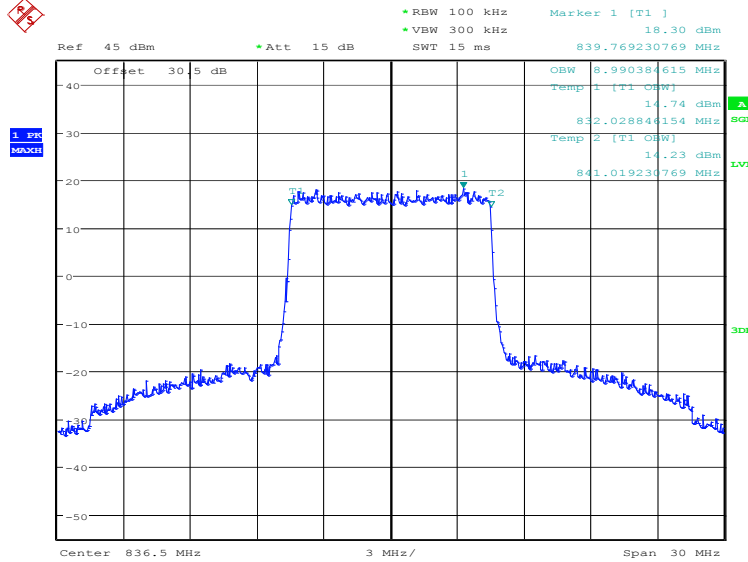


Date: 28.NOV.2023 13:26:01

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

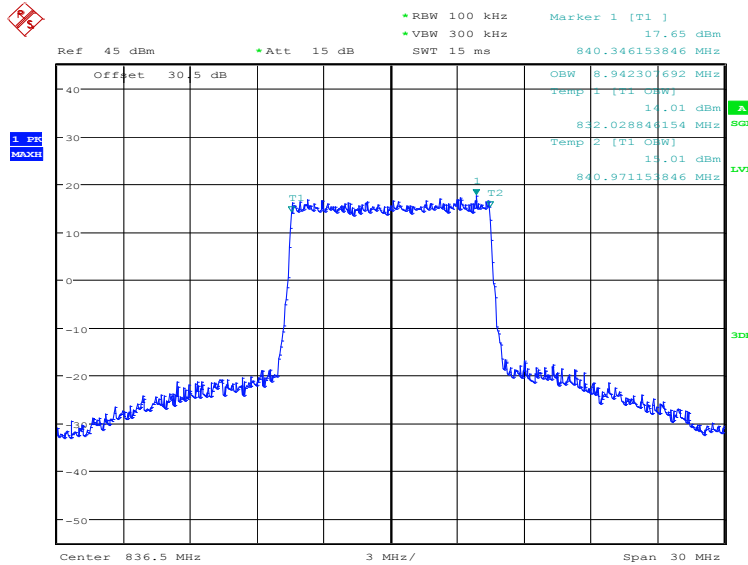
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	8990.38	8942.31

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



Date: 28.NOV.2023 13:26:42

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

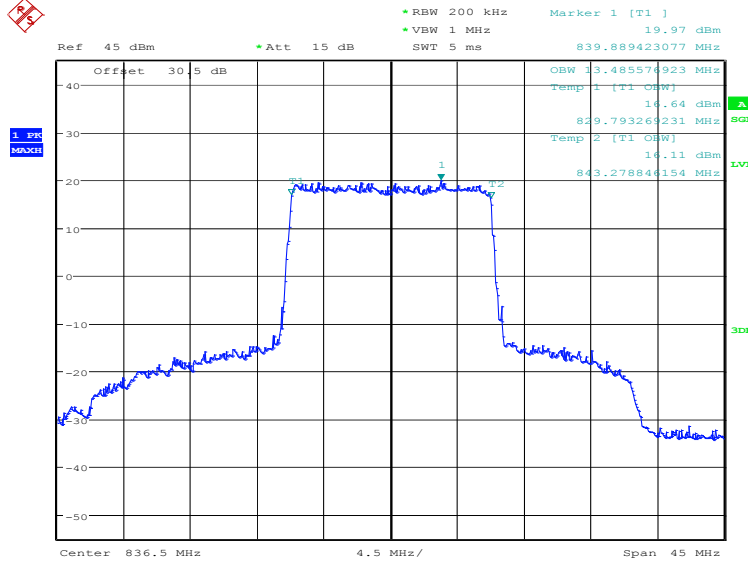


Date: 28.NOV.2023 13:27:22

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

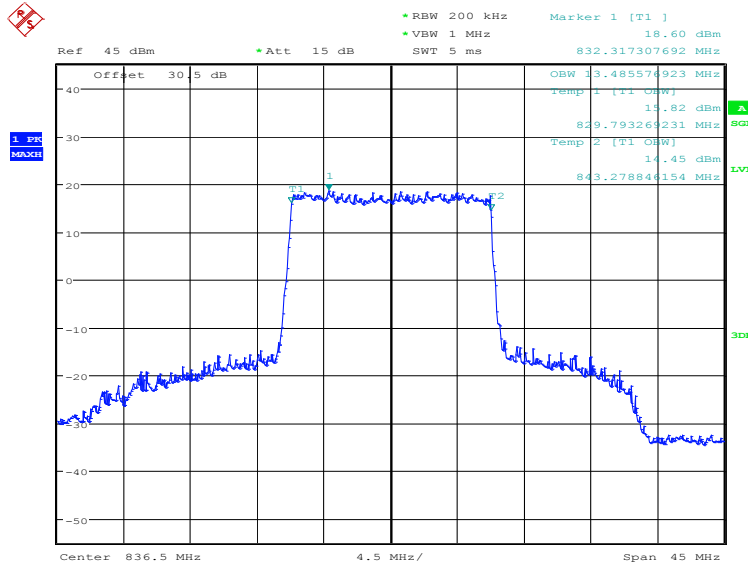
Frequency(MHz)	Occupied Bandwidth (99%)(kHz)	
836.5	QPSK	16QAM
	13485.58	13485.58

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



Date: 28.NOV.2023 13:28:03

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



Date: 28.NOV.2023 13:28:43

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.

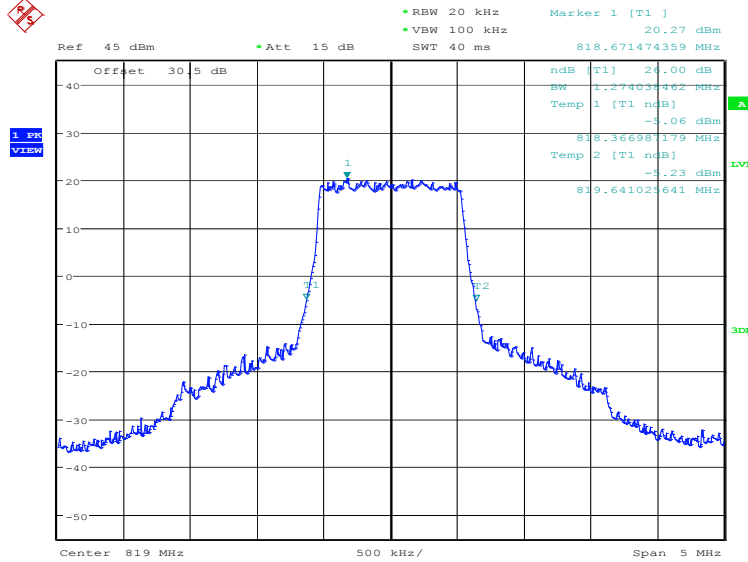
The measurement method is from ANSI C63.26:

- 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 $\geq 3 \times$ 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 26(814MHz~824MHz), 1.4MHz (-26dBc)

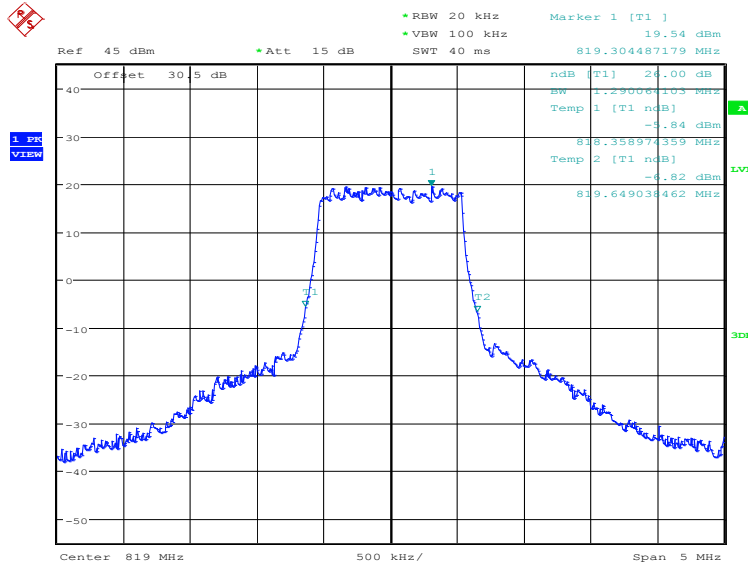
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
819.0	QPSK	16QAM
	1274.04	1290.06

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



Date: 28.NOV.2023 13:44:00

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

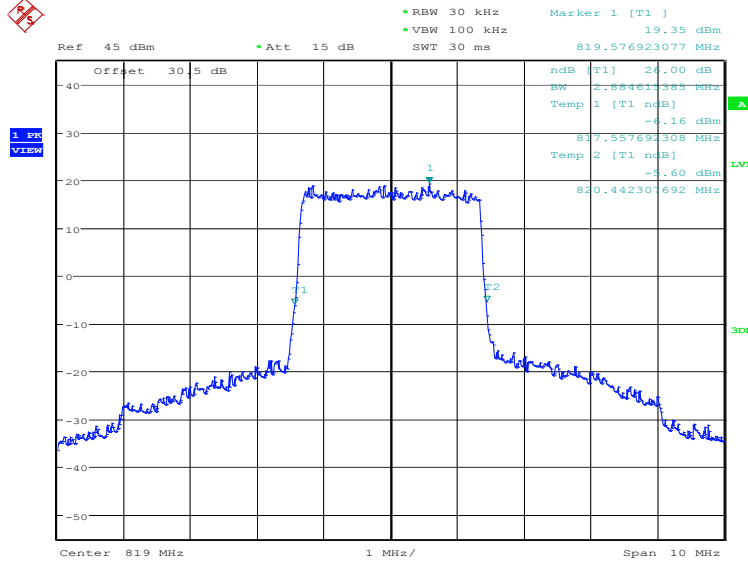


Date: 28.NOV.2023 13:44:40

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

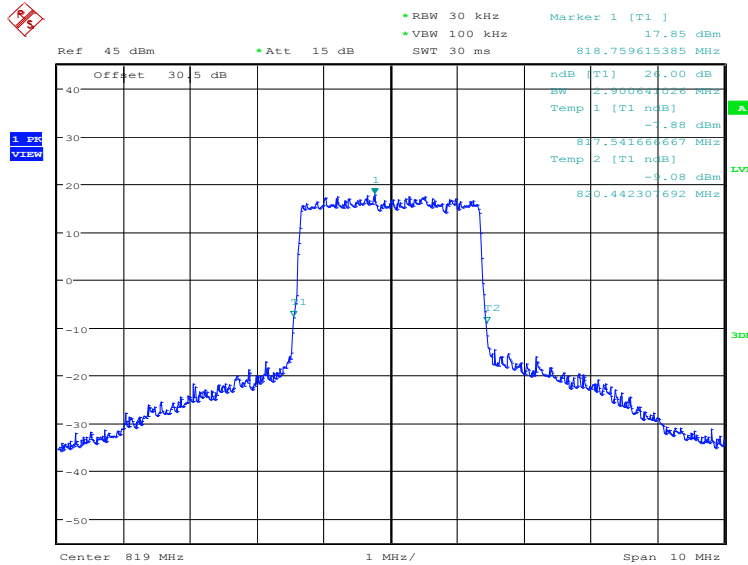
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
819.0	QPSK	16QAM
	2884.62	2900.64

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



Date: 28.NOV.2023 13:45:22

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

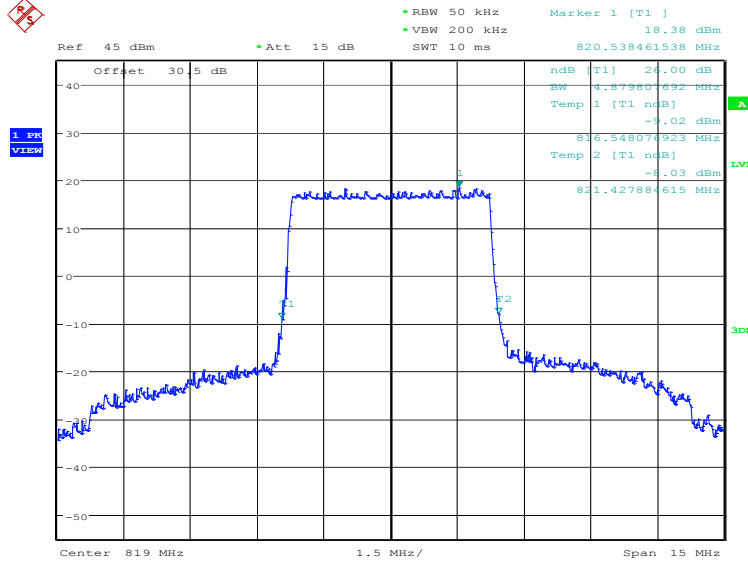


Date: 28.NOV.2023 13:46:03

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

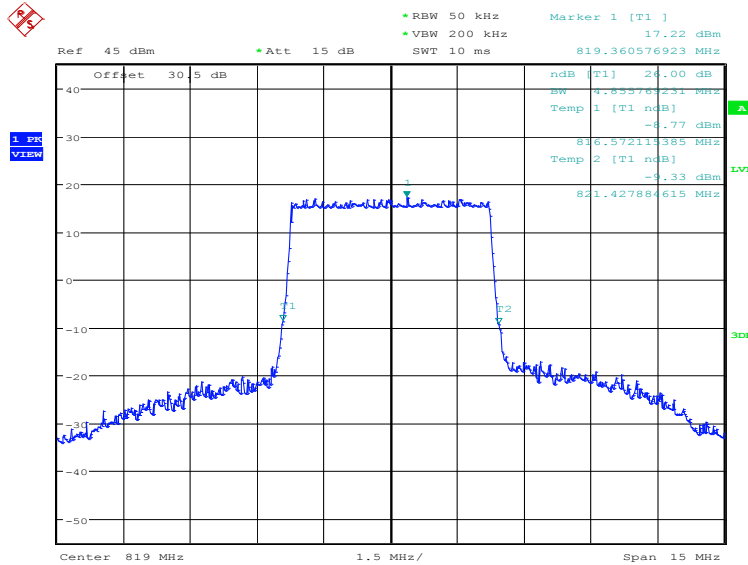
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
819.0	QPSK	16QAM
	4879.81	4855.77

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



Date: 28.NOV.2023 13:46:45

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

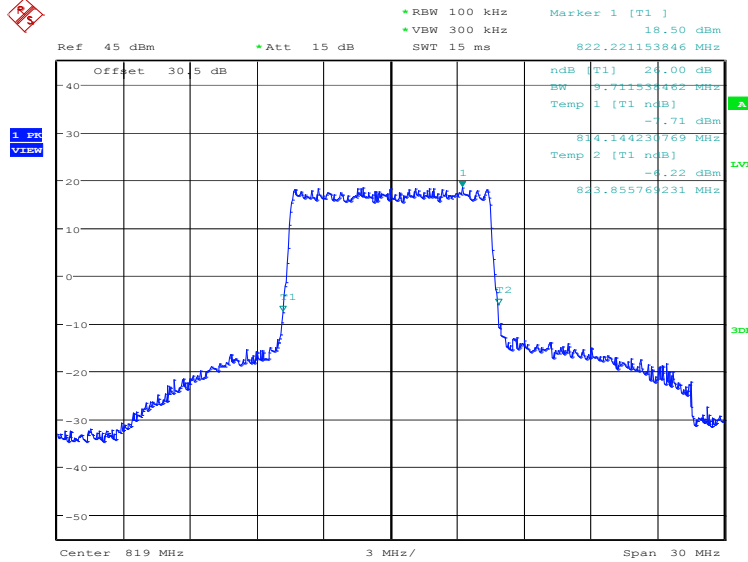


Date: 28.NOV.2023 13:47:25

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

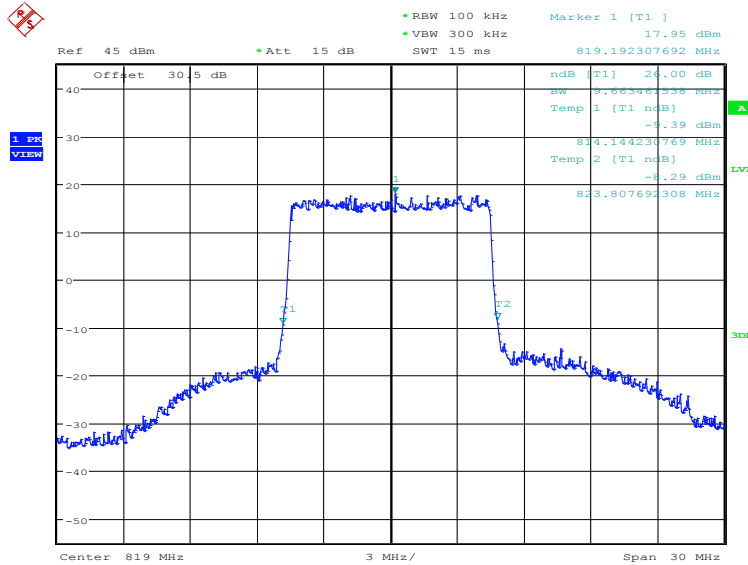
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
819.0	QPSK	16QAM
	9711.54	9663.46

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



Date: 28.NOV.2023 13:48:07

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

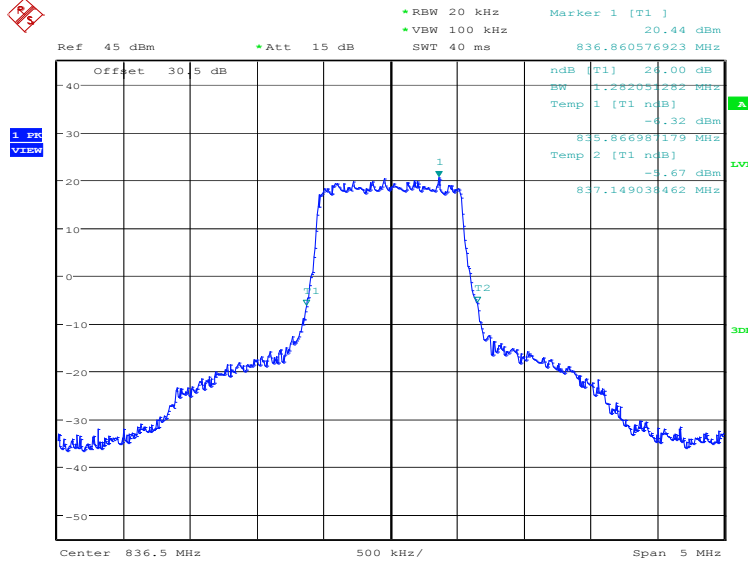


Date: 28.NOV.2023 13:48:48

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

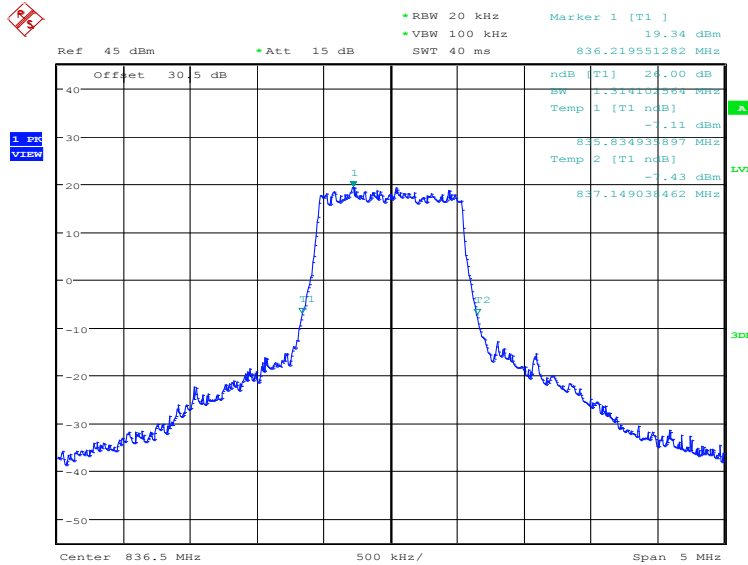
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	1282.05	1314.10

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



Date: 28.NOV.2023 13:36:25

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

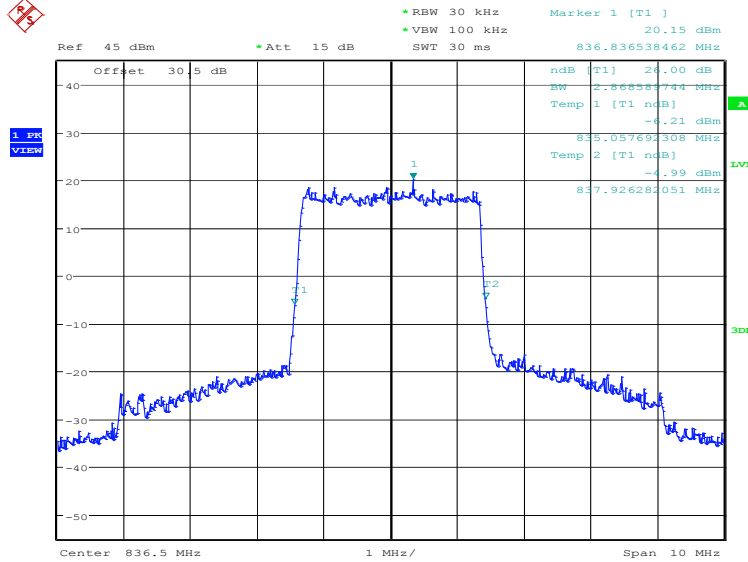


Date: 28.NOV.2023 13:37:06

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

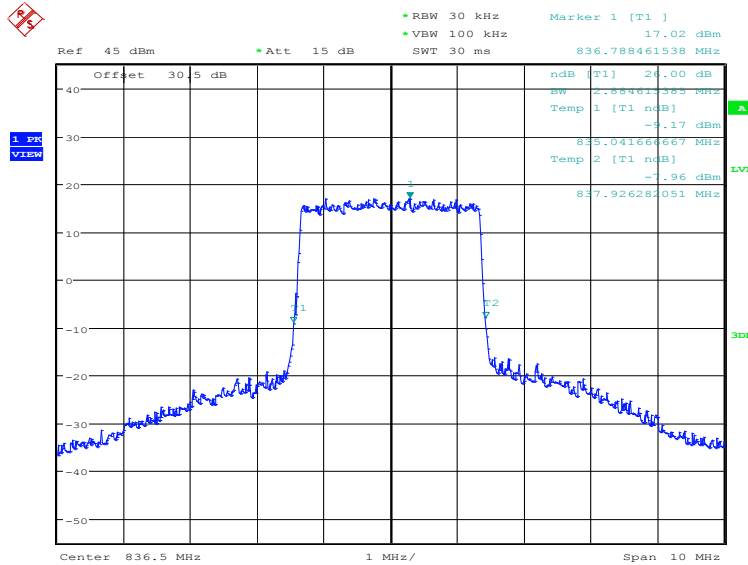
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	2868.59	2884.62

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



Date: 28.NOV.2023 13:37:47

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

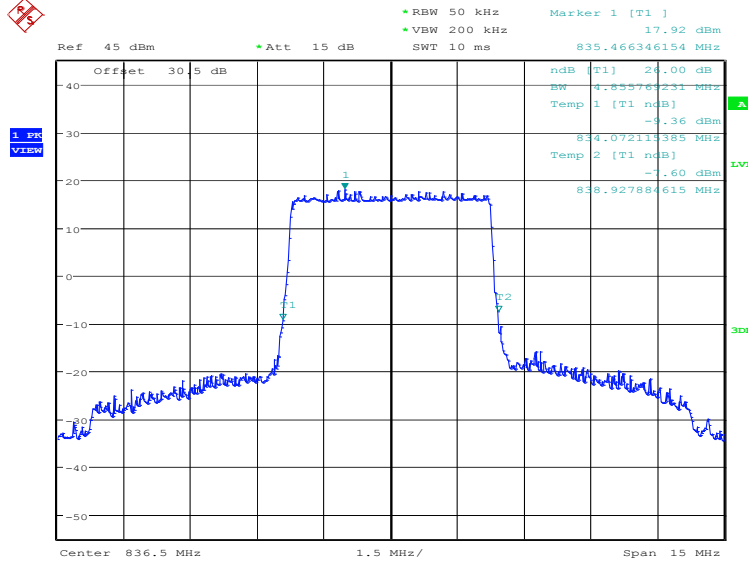


Date: 28.NOV.2023 13:38:28

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

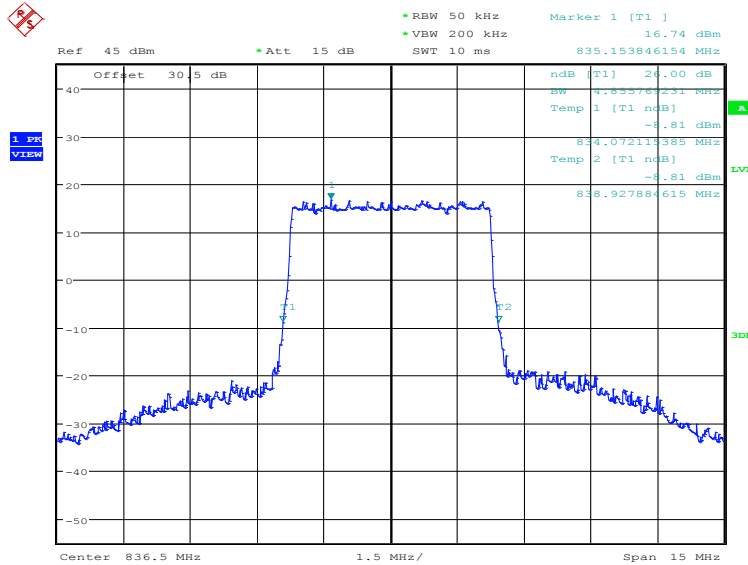
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	4855.77	4855.77

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



Date: 28.NOV.2023 13:39:10

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

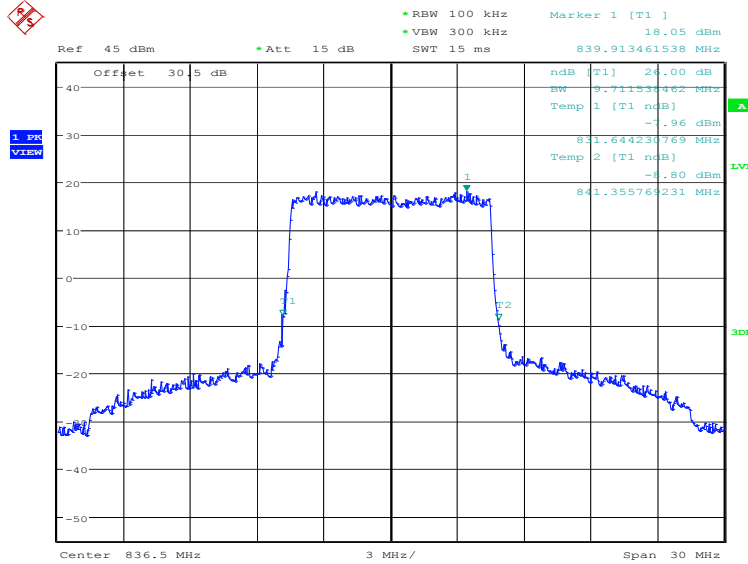


Date: 28.NOV.2023 13:39:50

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

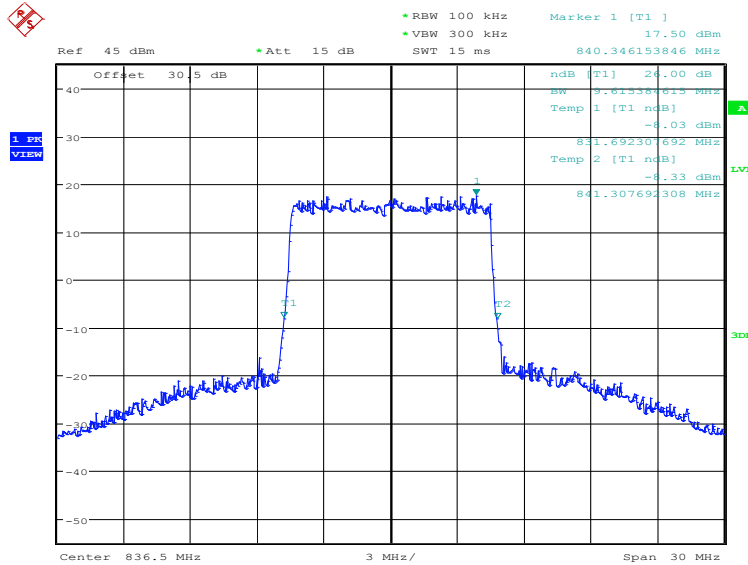
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	9711.54	9615.38

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



Date: 28.NOV.2023 13:40:33

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

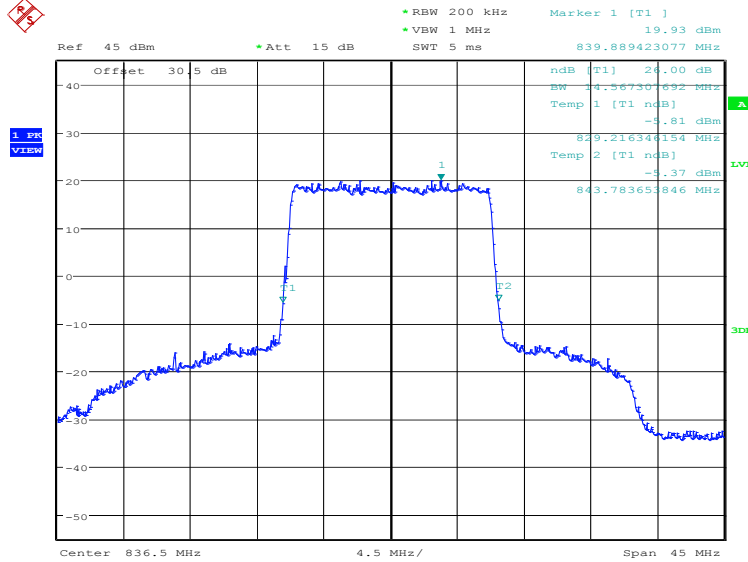


Date: 28.NOV.2023 13:41:14

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

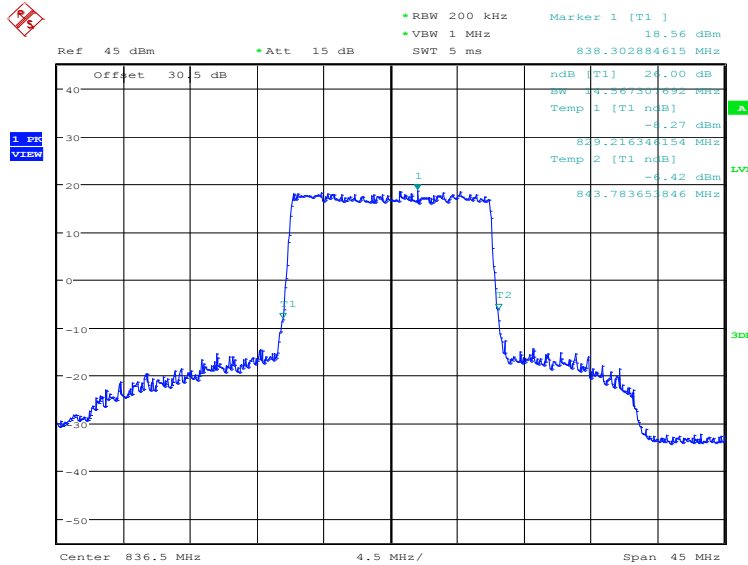
Frequency(MHz)	Emission Bandwidth (-26dBc)(kHz)	
836.5	QPSK	16QAM
	14567.31	14567.31

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



Date: 28.NOV.2023 13:41:56

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



Date: 28.NOV.2023 13:42:36

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

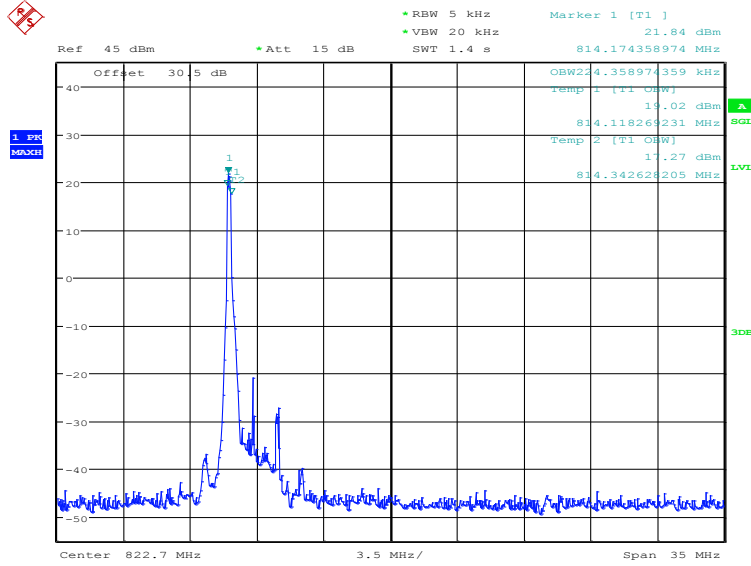
A.6 Band Edge Compliance

A.6.1 Measurement limit

Part 22.917 specifies 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.

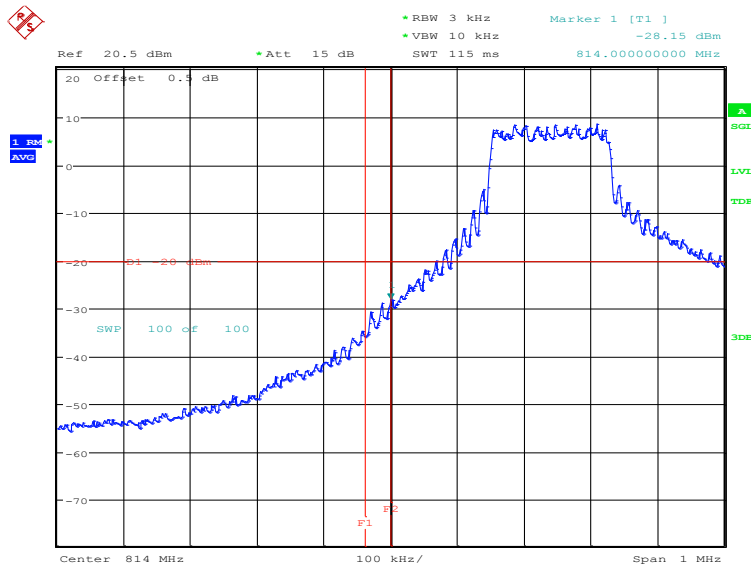
Part 90.691 states that out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows: For any frequency removed from the EA licensee’s frequency block by 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.

A.6.2 Measurement result
Only the worst case result is given below
LTE band 26(814MHz~824MHz)
OBW: 1RB-low_offset



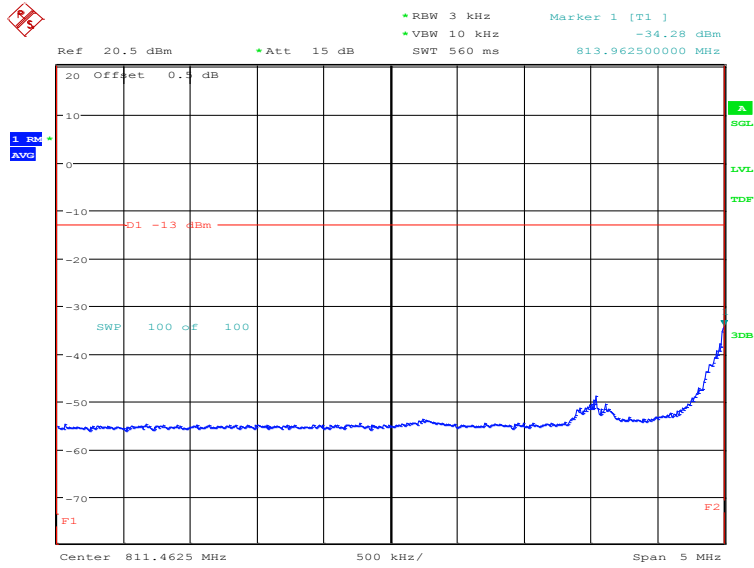
Date: 30.NOV.2023 12:11:16

LOW BAND EDGE BLOCK-1RB-low_offset



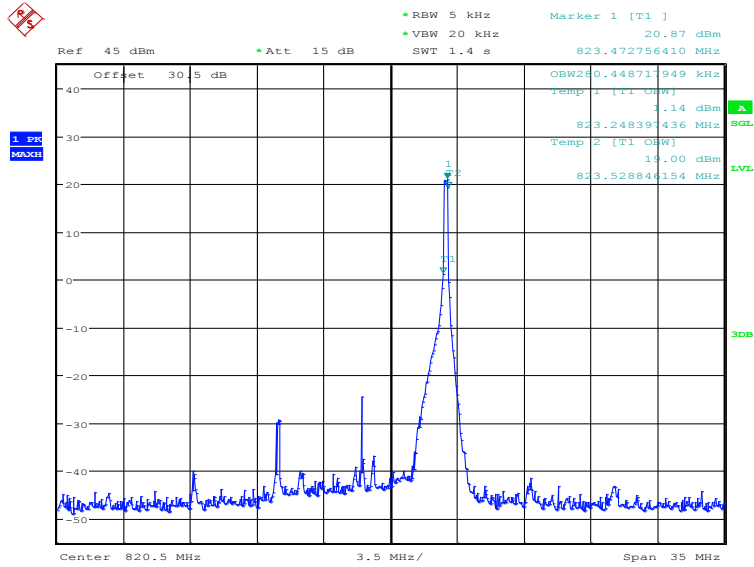
Date: 30.NOV.2023 12:12:48

LOW Emission Mask -1RB-low_offset



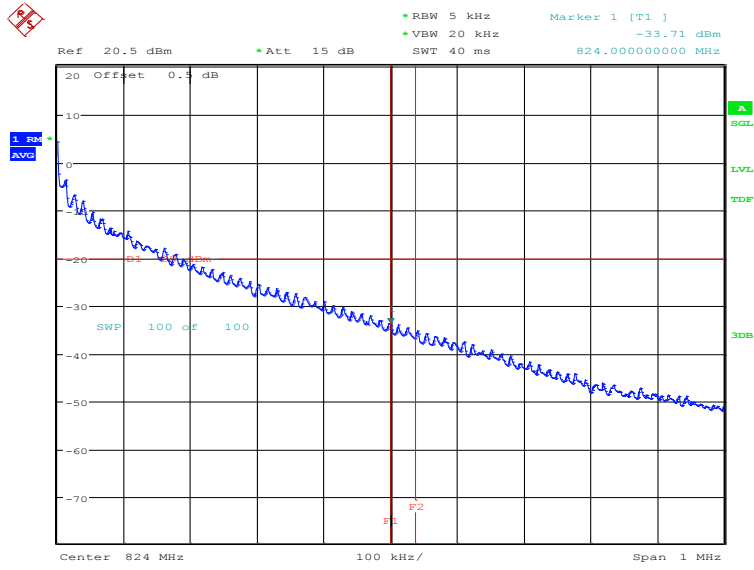
Date: 30.NOV.2023 12:15:05

OBW: 1RB-high_offset



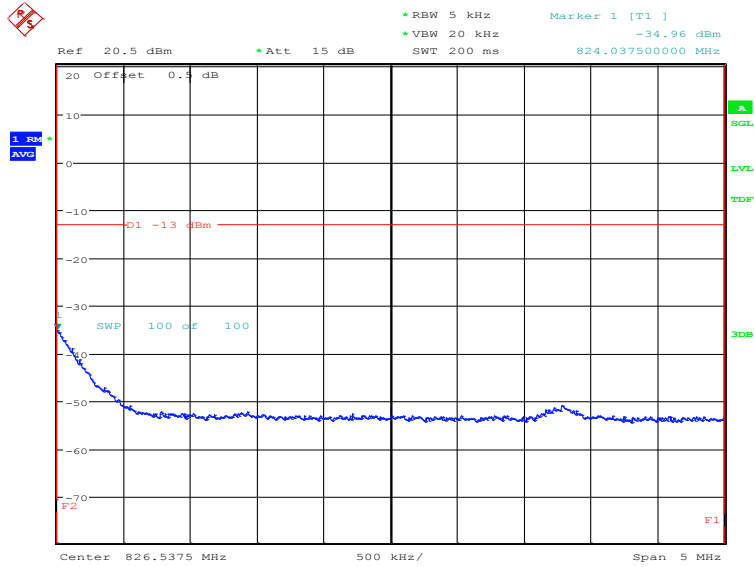
Date: 30.NOV.2023 12:15:44

HIGH BAND EDGE BLOCK-1RB-high_offset



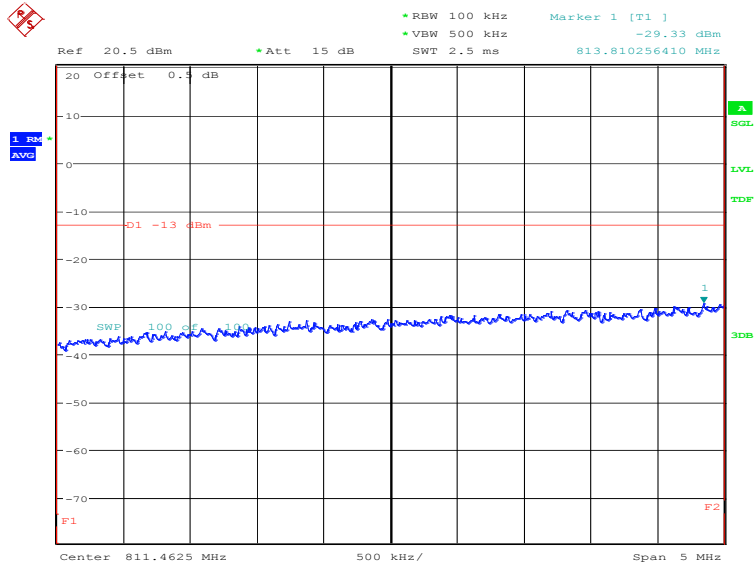
Date: 30.NOV.2023 12:17:08

HIGH Emission Mask -1RB-high_offset



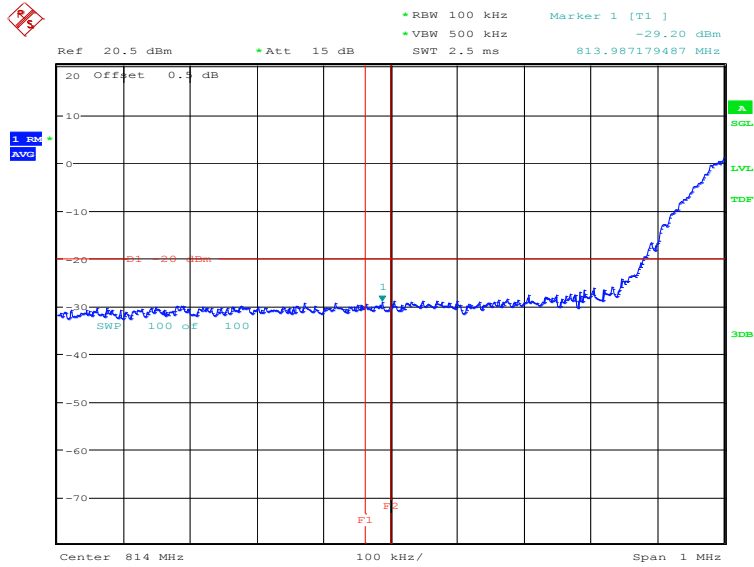
Date: 30.NOV.2023 12:18:49

LOW Emission Mask -10MHz-100%RB



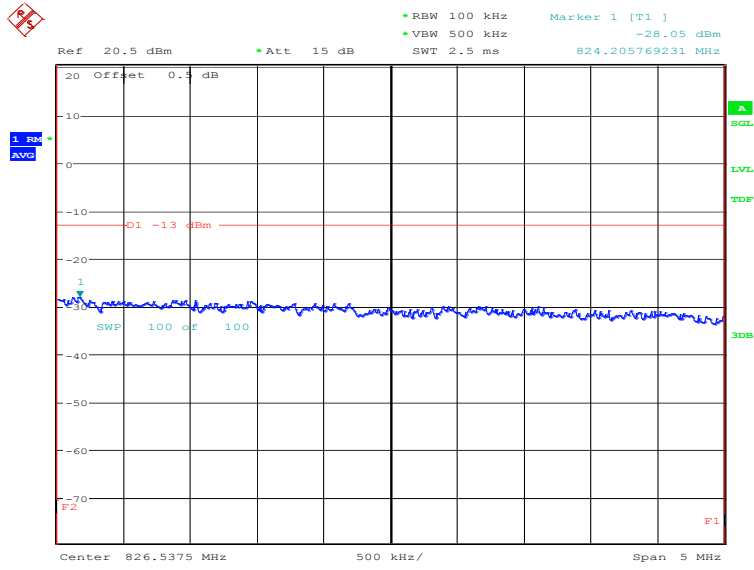
Date: 28.NOV.2023 14:11:50

LOW BAND EDGE BLOCK-10MHz-100%RB



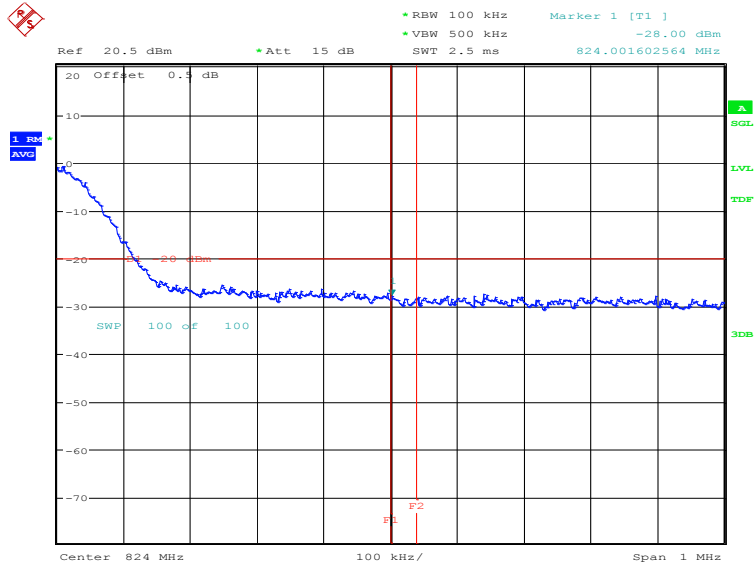
Date: 28.NOV.2023 14:11:27

HIGH Emission Mask -10MHz-100%RB



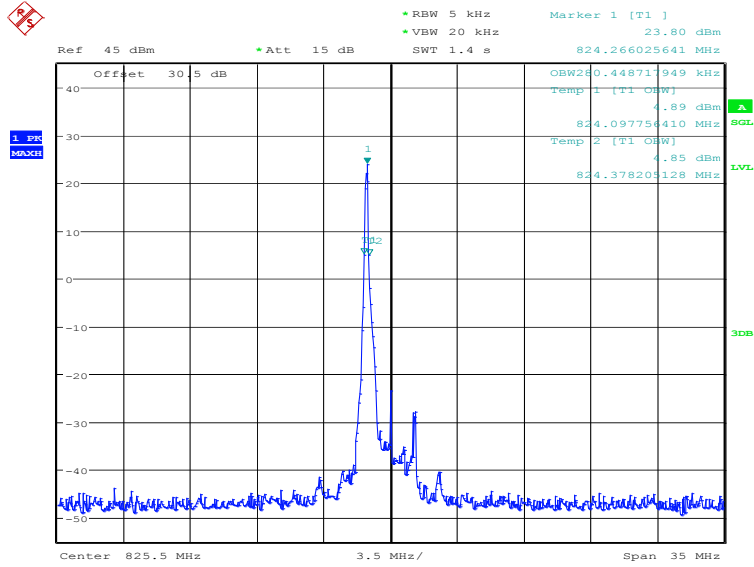
Date: 28.NOV.2023 14:13:53

HIGH BAND EDGE BLOCK-10MHz-100%RB



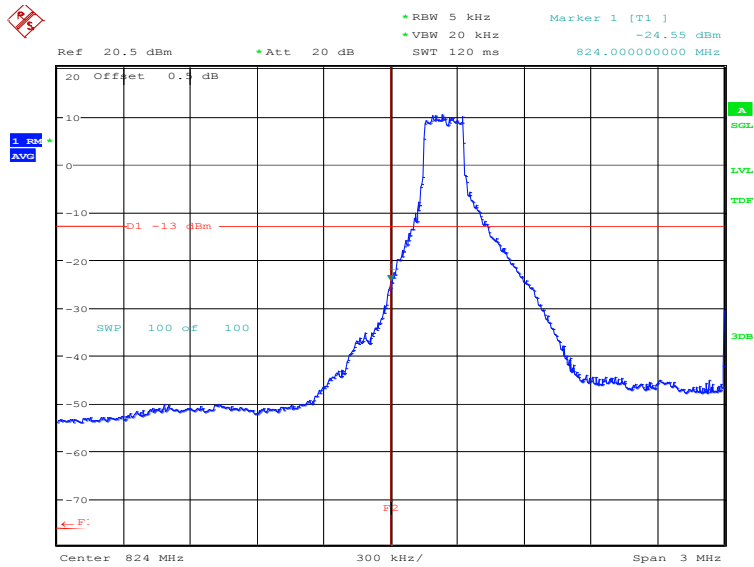
Date: 28.NOV.2023 14:13:31

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



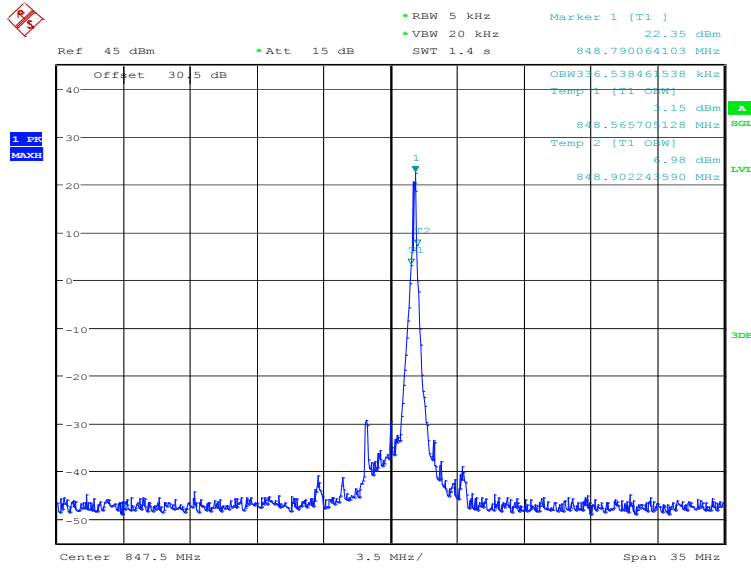
Date: 28.NOV.2023 14:21:48

LOW BAND EDGE BLOCK-1RB-low_offset



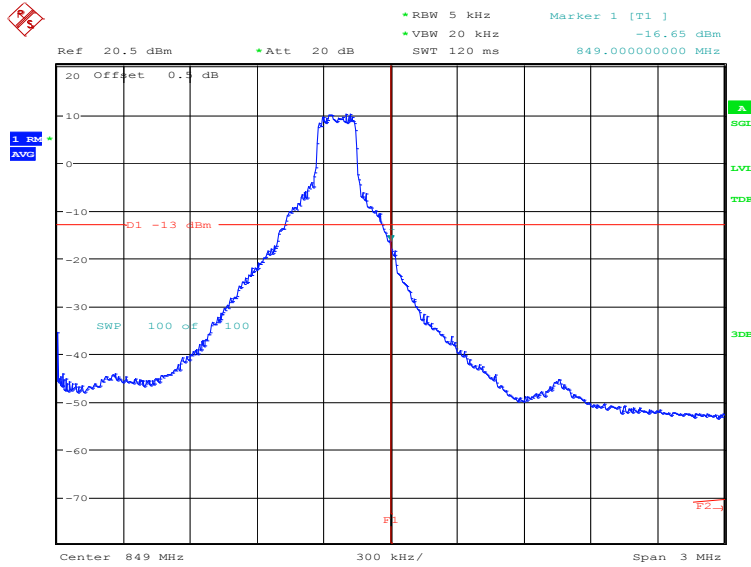
Date: 28.NOV.2023 14:23:03

OBW: 1RB-high_offset



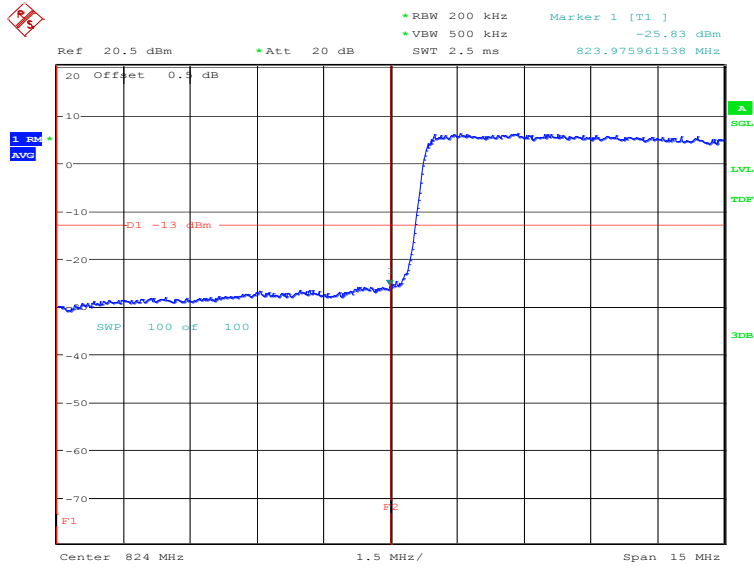
Date: 28.NOV.2023 14:23:39

HIGH BAND EDGE BLOCK-1RB-high_offset



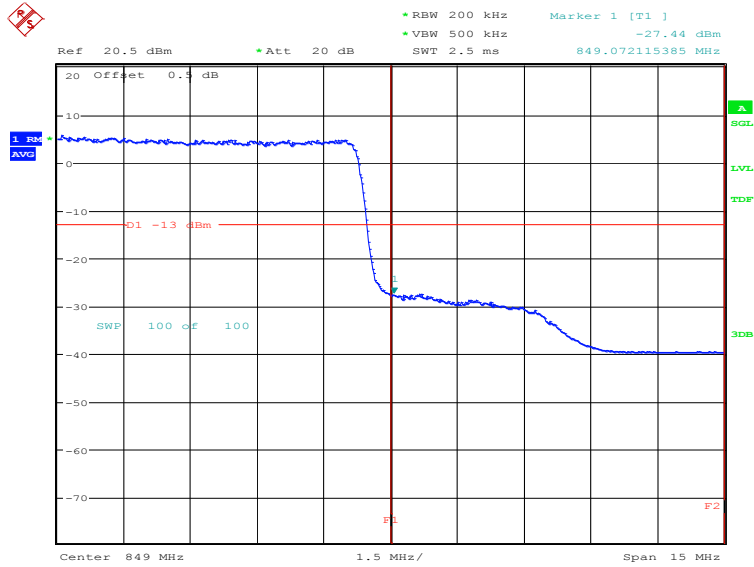
Date: 28.NOV.2023 14:24:53

LOW BAND EDGE BLOCK-15MHz-100%RB



Date: 28.NOV.2023 13:50:39

HIGH BAND EDGE BLOCK-15MHz-100%RB



Date: 28.NOV.2023 13:52:17

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 specifies 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.

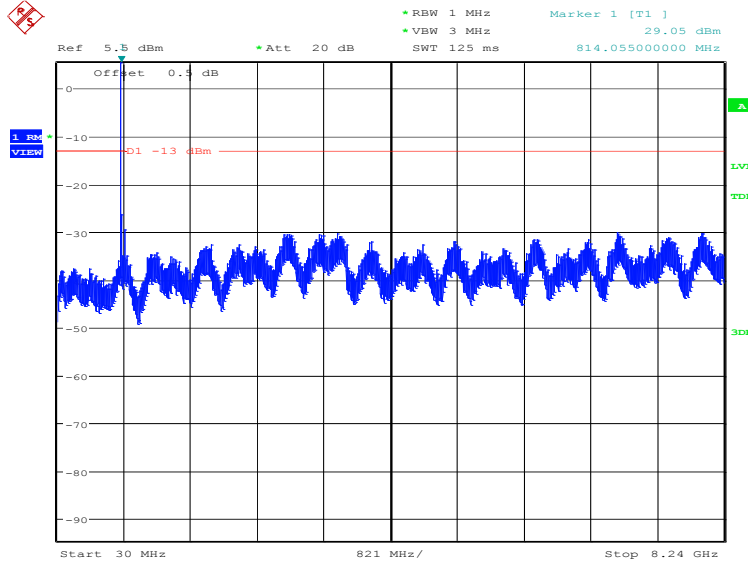
Part 90.691 states that out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows: For any frequency removed from the EA licensee's frequency block by 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.

A. 7.3 Measurement result

Only the worst case result is given below

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

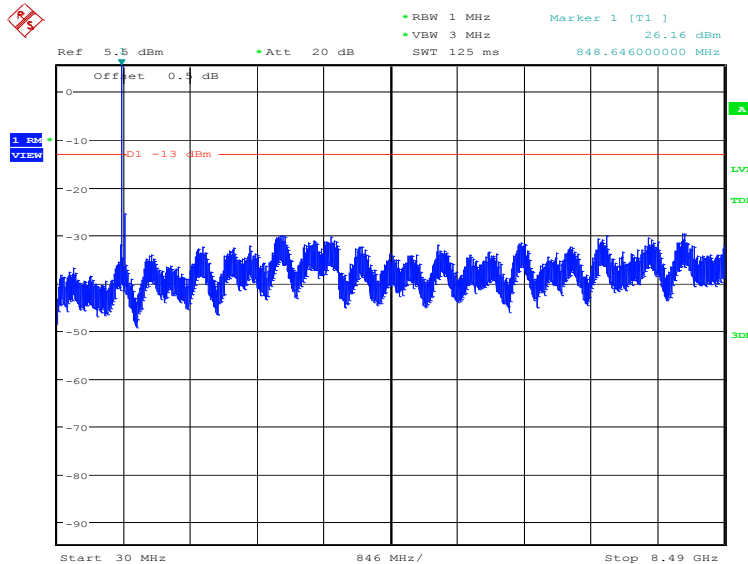
NOTE: peak above the limit line is the carrier frequency.



Date: 28.NOV.2023 14:26:56

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

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



Date: 28.NOV.2023 14:26:14

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

Annex B: Accreditation Certificate



Accredited Laboratory

A2LA has accredited

TELECOMMUNICATION TECHNOLOGY LABS, CAICT

Beijing, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 26th day of June 2023.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 7049.01
Valid to July 31, 2024

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

END OF REPORT