



TEST REPORT

No. I20Z62335-WMD03

TCL Communication Ltd.

5G NR/LTE/WCDMA/GSM mobile phone

Model Name: T810S

FCC ID: 2ACCJN050

with

Hardware Version: 03

Software Version: v3.0.3CD0

Issued Date: 2021-02-23

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:

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I20Z62335-WMD03	Rev.0	1 st edition	2021-02-07
I20Z62335-WMD03	Rev.1	2 nd edition Update the results of ERP for LTE Band 13	2021-02-23

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 NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0 and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: CTTL (huayuan North Road)

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

Location 2: CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,
Haidian District, Beijing, P. R. China 100191

Location 3: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: 2020-12-26
Testing End Date: 2021-01-28

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
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Email: zhizhou.gong@tcl.com
Telephone: 0086-755-36611722
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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: Gong Zhizhou
Email: zhizhou.gong@tcl.com
Telephone: 0086-755-36611722
Fax: 0086-755-36612000-81722

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

3.1. About EUT

Description	5G NR/LTE/WCDMA/GSM mobile phone
Model Name	T810S
FCC ID	2ACCJN050
Antenna	Embedded
Output power	22.4dBm maximum EIRP measured for LTE Band 48
Extreme vol. Limits	3.5VDC 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
UT22a	015920000201253	03	v3.0.3CD0	2020-12-25
UT21a	015920000201154	03	v3.0.3CD0	2020-12-28
UT25a	015920000201147	03	v3.0.3CD0	2020-12-28

*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	TLp043D1
Manufacturer	BYD
Capacitance	4360mAh
AE2	
Model	TLp043D7
Manufacturer	VEKEN
Capacitance	4360mAh

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

4. Reference Documents

4.1. Documents supplied by applicant

EUT parameters, referring to Annex A for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

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	10-1-19 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-19 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-19 Edition
FCC Part 90	PRIVATE LAND MOBILE RADIO SERVICES	10-1-19 Edition
FCC Part 96	CITIZENS BROADBAND RADIO SERVICE	10-1-19 Edition
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
ANSI C63.26	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
KDB 971168 D01	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS	v03r01

5. Laboratory Environment

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

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

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

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

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

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

6. Summary Of Test Result

LTE Band 7

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

LTE Band 12

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

LTE Band 13

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

LTE Band 14

Items	Test Name	Clause in FCC rules	Verdict
1	Output Power	90.542	P
2	Emission Limit	2.1051/90.543	P
3	Frequency Stability	2.1055	P
4	Occupied Bandwidth	2.1049	P
5	Emission Bandwidth	2.1049	P
6	Band Edge Compliance	90.543	P
7	Conducted Spurious Emission	90.543	P

LTE Band 25

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

LTE Band 26(814MHz~824MHz)

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

LTE Band 26(824MHz~849MHz)

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

LTE Band 30

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

LTE Band 41

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

LTE Band 48

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

LTE Band 66

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

LTE Band 71

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

Terms used in Verdict column

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

LTE Band 25, Band 66, Band 26, Band12 and Band 41 overlaps the entire frequency range of LTE Band 2, Band 4, Band 5, Band 17 and Band 38. Therefore, test data provided in this report covers Band 2, Band 4, Band 5, Band 17, Band 38, as well as Band 25, Band 66, Band 26, Band 12, Band41.

LTE Band 41 is tested by power class 3.

Explanation of worst-case configuration

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

7. Test Equipment Utilized

Description	Type	Series Number	Manufacture	Cal Due Date	Calibration Interval
Wideband Radio Communication Tester	CMW500	159082	R&S	2021-12-17	1 year
Spectrum Analyzer	FSU	200030	R&S	2021-06-01	1 year
Radio Communication Analyzer	MT8821C	6201763159	Anritsu	2021-08-12	1 year
Signal&Spectrum Analyzer	FSW	104038	R&S	2021-06-30	1 year
Climate Chamber	SH-242	93008556	ESPEC	2023-12-23	3 years
EMI Antenna	9117	167	Schwarzbeck	2021-08-19	1 year
EMI Antenna	3117	00119021	ETS-Lindgren	2021-02-06	1 year
EMI Antenna	3117	00119024	ETS-Lindgren	2021-05-08	1 year
Signal Generator	N5183A	MY49060052	Agilent	2021-07-01	1 year
Test Receiver	E4440A	MY48250642	Agilent	2021-03-12	1 year
Universal Radio Communication Tester	CMW500	143008	R&S	2022-01-01	1 year
EMI Antenna	VULB9163	9163-301	Schwarzbeck	2021-08-04	1 year
Power Amplifier	5S1G4	0341863	AR	/	
EMI Antenna	3117	00139065	ETS-Lindgren	2021-10-11	1 year
Test Receiver	ESU26	100376	R&S	2021-09-04	1 year
Universal Radio Communication Tester	CMW500	167943	R&S	2021-04-09	1 year

Annex A: Measurement Results

A.1 Output Power

A.1.1 Summary

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

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

A.1.2 Conducted

A.1.2.1 Method of Measurements

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

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

A.1.2.2 Measurement Result
LTE band 7

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2567.5	24.10	23.27	22.72
		2535.0	24.17	23.26	22.73
		2502.5	24.03	23.28	22.53
	1 RB low	2567.5	24.05	23.30	22.54
		2535.0	24.20	23.32	22.83
		2502.5	23.95	23.41	22.72
	50% RB mid	2567.5	23.18	22.19	21.59
		2535.0	23.11	22.24	21.66
		2502.5	23.09	22.23	21.62
	100% RB	2567.5	23.15	22.13	21.56
		2535.0	23.09	22.12	21.70
		2502.5	23.12	22.15	21.63
10MHz	1 RB high	2565.0	24.06	23.08	22.67
		2535.0	24.11	23.15	22.74
		2505.0	24.08	23.39	22.51
	1 RB low	2565.0	24.01	23.09	22.67
		2535.0	24.05	23.14	22.80
		2505.0	23.98	23.31	22.67
	50% RB mid	2565.0	23.11	22.19	21.61
		2535.0	23.10	22.16	21.63
		2505.0	23.03	22.08	21.56
	100% RB	2565.0	23.14	22.14	21.62
		2535.0	23.09	22.16	21.64
		2505.0	23.00	22.09	21.31
15MHz	1 RB high	2562.5	23.72	23.13	22.26
		2535.0	23.84	23.34	22.53
		2507.5	23.73	22.80	22.38
	1 RB low	2562.5	23.78	23.09	22.38
		2535.0	23.75	23.31	22.49
		2507.5	23.76	22.65	22.53
	50% RB mid	2562.5	22.89	21.96	21.36
		2535.0	22.85	21.87	21.40
		2507.5	22.84	21.83	21.26
	100% RB	2562.5	22.88	21.94	21.37
		2535.0	22.85	21.92	21.39
		2507.5	22.80	21.84	21.27
20MHz	1 RB high	2560.0	23.63	23.24	22.20
		2535.0	23.73	23.24	22.55
		2510.0	23.67	23.23	22.32



	1 RB low	2560.0	23.52	23.07	22.37
		2535.0	23.56	22.99	22.38
		2510.0	23.56	23.10	22.39
	50% RB mid	2560.0	22.83	21.86	21.46
		2535.0	22.78	21.76	21.36
		2510.0	22.79	21.80	21.33
	100% RB	2560.0	22.82	21.81	21.39
		2535.0	22.78	21.78	21.41
		2510.0	22.72	21.71	21.30

LTE band 12

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	715.3	23.72	22.80	22.46
		707.5	23.80	22.97	22.55
		699.7	23.70	23.11	22.43
	1 RB low	715.3	23.79	22.86	22.53
		707.5	23.81	22.97	22.38
		699.7	23.76	23.21	22.44
	50% RB mid	715.3	23.78	23.10	22.54
		707.5	23.73	22.81	22.44
		699.7	23.77	23.00	22.54
	100% RB	715.3	22.82	22.02	21.35
		707.5	22.75	21.92	21.24
		699.7	22.78	21.70	21.31
3MHz	1 RB high	714.5	23.75	22.88	22.53
		707.5	23.77	22.73	22.57
		700.5	23.79	23.19	22.48
	1 RB low	714.5	23.81	22.90	22.55
		707.5	23.72	22.69	22.51
		700.5	23.87	23.29	22.65
	50% RB mid	714.5	22.96	21.98	21.50
		707.5	22.91	21.99	21.42
		700.5	22.85	21.91	21.43
	100% RB	714.5	22.87	21.88	21.35
		707.5	22.85	21.90	21.39
		700.5	22.87	21.90	21.42
5MHz	1 RB high	713.5	23.92	23.04	22.59
		707.5	23.88	23.41	22.56
		701.5	23.85	22.99	22.98
	1 RB low	713.5	23.88	23.00	22.57
		707.5	23.82	23.31	22.64
		701.5	23.77	22.92	22.56
	50% RB mid	713.5	22.85	21.99	21.49
		707.5	22.90	22.00	21.45
		701.5	22.89	21.93	21.42
	100% RB	713.5	22.85	21.89	21.31
		707.5	22.87	21.86	21.35
		701.5	22.84	21.80	21.44
10MHz	1 RB high	711.0	23.69	22.87	22.61
		707.5	23.75	22.98	22.56
		704.0	23.85	22.81	22.51
	1 RB low	711.0	23.68	22.92	22.57



		707.5	23.79	22.95	22.46
		704.0	23.88	22.79	22.64
	50% RB mid	711.0	22.80	21.89	21.38
		707.5	22.79	21.83	21.37
		704.0	22.85	21.98	21.37
	100% RB	711.0	22.78	21.82	21.38
		707.5	22.79	21.82	21.42
		704.0	22.83	21.90	21.36

LTE band 13

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	784.5	23.94	23.13	22.48
		782.0	24.04	23.35	22.55
		779.5	23.94	23.15	22.61
	1 RB low	784.5	23.91	23.09	22.56
		782.0	23.94	23.41	22.48
		779.5	23.88	23.10	22.44
	50% RB mid	784.5	23.01	22.11	21.49
		782.0	22.99	22.13	21.47
		779.5	23.03	22.12	21.46
	100% RB	784.5	22.99	21.99	21.36
		782.0	22.96	22.03	21.39
		779.5	23.00	21.93	21.34
10MHz	1 RB high	782.0	23.73	23.04	22.70
	1 RB low	782.0	23.78	23.08	22.84
	50% RB mid	782.0	22.98	22.07	21.60
	100% RB	782.0	22.96	21.99	21.49

LTE band 14

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	795.5	22.89	22.04	21.50
		793.0	22.87	22.01	21.53
		790.5	23.03	22.49	21.52
	1 RB low	795.5	22.97	22.18	21.49
		793.0	22.97	22.11	21.53
		790.5	22.99	22.46	21.59
	50% RB mid	795.5	22.06	21.11	20.54
		793.0	21.98	21.07	20.52
		790.5	22.09	21.23	20.52
	100% RB	795.5	22.01	20.96	20.47
		793.0	21.98	20.99	20.40
		790.5	22.04	21.08	20.38
10MHz	1 RB high	793.0	22.77	22.00	20.41
	1 RB low	793.0	22.79	22.10	20.50
	50% RB mid	793.0	22.02	21.10	20.29
	100% RB	793.0	21.94	20.94	20.33

LTE band 25

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1914.3	23.40	22.47	22.31
		1882.5	23.39	22.56	22.08
		1850.7	23.30	22.69	22.15
	1 RB low	1914.3	23.44	22.45	22.24
		1882.5	23.42	22.56	22.16
		1850.7	23.33	22.71	22.10
	50% RB mid	1914.3	23.45	22.72	22.29
		1882.5	23.39	22.48	22.14
		1850.7	23.31	22.57	22.19
	100% RB	1914.3	22.46	21.62	21.09
		1882.5	22.40	21.56	21.44
		1850.7	22.31	21.28	20.97
3MHz	1 RB high	1913.5	23.45	22.49	22.37
		1882.5	23.43	22.38	22.25
		1851.5	23.40	22.81	22.31
	1 RB low	1913.5	23.47	22.52	22.32
		1882.5	23.40	22.42	22.30
		1851.5	23.40	22.80	22.21
	50% RB mid	1913.5	22.51	21.64	21.24
		1882.5	22.52	21.62	21.19
		1851.5	22.43	21.53	21.16
	100% RB	1913.5	22.55	21.50	21.12
		1882.5	22.51	21.51	21.03
		1851.5	22.44	21.44	20.88
5MHz	1 RB high	1912.5	23.48	22.67	22.15
		1882.5	23.54	22.68	22.22
		1852.5	23.46	23.00	22.23
	1 RB low	1912.5	23.47	22.64	22.32
		1882.5	23.56	22.69	22.35
		1852.5	23.46	22.98	22.26
	50% RB mid	1912.5	22.59	21.62	21.22
		1882.5	22.47	21.56	21.19
		1852.5	22.45	21.58	21.15
	100% RB	1912.5	22.54	21.51	21.24
		1882.5	22.53	21.56	21.16
		1852.5	22.43	21.51	21.09
10MHz	1 RB high	1910.0	23.34	22.59	22.18
		1882.5	23.42	22.82	22.20
		1855.0	23.30	22.32	22.04
	1 RB low	1910.0	23.37	22.55	22.27

		1882.5	23.43	22.93	22.23	
		1855.0	23.35	22.47	22.15	
		1910.0	22.60	21.63	21.16	
	50% RB mid	1882.5	22.58	21.55	21.13	
		1855.0	22.48	21.58	21.14	
		1910.0	22.58	21.58	21.18	
	100% RB	1882.5	22.51	21.55	20.89	
1855.0		22.47	21.49	21.14		
1910.0		22.58	21.58	21.18		
15MHz	1 RB high	1907.5	23.14	22.33	22.05	
		1882.5	23.29	22.67	22.01	
		1857.5	23.29	22.56	22.19	
	1 RB low	1907.5	23.20	22.23	22.10	
		1882.5	23.24	22.61	21.97	
		1857.5	23.28	22.58	22.09	
	50% RB mid	1907.5	22.34	21.36	20.90	
		1882.5	22.42	21.44	21.03	
		1857.5	22.31	21.30	21.01	
	100% RB	1907.5	22.32	21.33	20.93	
		1882.5	22.35	21.39	20.82	
		1857.5	22.27	21.28	20.93	
	20MHz	1 RB high	1905.0	23.34	22.98	22.13
			1882.5	23.27	22.89	22.02
			1860.0	23.32	22.69	22.07
1 RB low		1905.0	23.33	22.91	22.01	
		1882.5	23.25	22.96	22.02	
		1860.0	23.25	22.64	21.90	
50% RB mid		1905.0	22.45	21.52	21.06	
		1882.5	22.50	21.49	20.98	
		1860.0	22.46	21.40	20.94	
100% RB		1905.0	22.46	21.49	20.58	
		1882.5	22.49	21.45	20.97	
		1860.0	22.42	21.45	20.98	

LTE band 26(814MHz~824MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	823.3	22.44	21.56	20.85
		819.0	22.45	21.59	20.94
		814.7	22.43	21.52	20.87
	1 RB low	823.3	22.40	21.51	20.84
		819.0	22.45	21.55	20.88
		814.7	22.42	21.51	20.86
	50% RB mid	823.3	22.48	21.75	20.88
		819.0	22.49	21.76	20.87
		814.7	22.56	21.83	20.82
	100% RB	823.3	21.52	20.68	19.72
		819.0	21.54	20.72	19.77
		814.7	21.58	20.75	19.78
3MHz	1 RB high	822.5	22.58	21.74	20.98
		819.0	22.54	21.74	21.02
		815.5	22.58	21.78	21.01
	1 RB low	822.5	22.51	21.73	20.94
		819.0	22.58	21.77	20.98
		815.5	22.65	21.80	20.95
	50% RB mid	822.5	21.61	20.69	19.89
		819.0	21.62	20.70	19.88
		815.5	21.65	20.74	19.93
	100% RB	822.5	21.60	20.63	19.89
		819.0	21.61	20.65	19.85
		815.5	21.65	20.73	19.91
5MHz	1 RB high	821.5	22.51	21.68	20.97
		819.0	22.62	21.95	21.01
		816.5	22.55	21.75	21.04
	1 RB low	821.5	22.47	21.66	21.02
		819.0	22.60	21.97	21.03
		816.5	22.58	21.78	21.02
	50% RB mid	821.5	21.63	20.78	19.95
		819.0	21.65	20.78	19.91
		816.5	21.64	20.80	19.93
	100% RB	821.5	21.66	20.70	19.88
		819.0	21.67	20.72	19.86
		816.5	21.66	20.71	19.88
10MHz	1 RB high	819.0	22.51	21.80	20.98
	1 RB low	819.0	22.61	21.88	21.09
	50% RB mid	819.0	21.64	20.72	19.95
	100% RB	819.0	21.66	20.70	19.93

LTE band 26(824MHz~849MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	22.27	21.38	20.76
		836.5	22.38	21.49	20.82
		824.7	22.41	21.48	20.86
	1 RB low	848.3	22.26	21.38	20.79
		836.5	22.38	21.50	20.82
		824.7	22.41	21.47	20.92
	50% RB mid	848.3	22.30	21.59	20.79
		836.5	22.36	21.68	20.83
		824.7	22.51	21.77	20.88
	100% RB	848.3	21.34	20.51	19.61
		836.5	21.42	20.61	19.73
		824.7	21.52	20.45	19.79
3MHz	1 RB high	847.5	22.38	21.50	20.84
		836.5	22.47	21.67	20.95
		825.5	22.55	21.65	21.02
	1 RB low	847.5	22.44	21.51	20.86
		836.5	22.43	21.64	20.89
		825.5	22.51	21.65	20.92
	50% RB mid	847.5	21.47	20.56	19.71
		836.5	21.53	20.62	19.81
		825.5	21.57	20.69	19.78
	100% RB	847.5	21.47	20.50	19.71
		836.5	21.52	20.58	19.73
		825.5	21.58	20.65	19.76
5MHz	1 RB high	846.5	22.38	21.59	20.83
		836.5	22.50	21.87	20.94
		826.5	22.51	21.70	21.04
	1 RB low	846.5	22.43	21.61	20.92
		836.5	22.50	21.83	20.95
		826.5	22.42	21.60	20.97
	50% RB mid	846.5	21.49	20.62	19.81
		836.5	21.55	20.69	19.89
		826.5	21.62	20.76	19.93
	100% RB	846.5	21.49	20.55	19.69
		836.5	21.57	20.62	19.74
		826.5	21.63	20.68	19.86
10MHz	1 RB high	844.0	22.41	21.66	20.84
		836.5	22.43	21.69	20.87
		829.0	22.47	21.57	20.94
	1 RB low	844.0	22.44	21.69	20.94

		836.5	22.48	21.73	20.98
		829.0	22.51	21.57	20.93
	50% RB mid	844.0	21.46	20.43	19.75
		836.5	21.60	20.61	19.93
		829.0	21.64	20.66	19.95
	100% RB	844.0	21.49	20.51	19.78
		836.5	21.59	20.61	19.83
829.0		21.64	20.64	19.85	
15MHz	1 RB high	841.5	22.24	21.67	20.67
		836.5	22.22	21.44	20.63
		831.5	22.29	21.72	20.71
	1 RB low	841.5	22.37	21.83	20.85
		836.5	22.34	21.56	20.73
		831.5	22.39	21.81	20.86
	50% RB mid	841.5	21.38	20.42	19.64
		836.5	21.48	20.54	19.77
		831.5	21.41	20.44	19.72
	100% RB	841.5	21.38	20.44	19.64
		836.5	21.46	20.49	19.69
		831.5	21.40	20.42	19.67

LTE band 30

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2312.5	22.92	22.13	21.50
		2310.0	23.02	22.19	21.57
		2307.5	22.95	22.42	21.63
	1 RB low	2312.5	23.05	22.19	21.81
		2310.0	23.06	22.25	22.00
		2307.5	22.88	22.48	21.74
	50% RB mid	2312.5	22.08	21.11	20.69
		2310.0	22.00	21.13	20.61
		2307.5	22.04	21.18	20.65
	100% RB	2312.5	21.98	20.99	20.58
		2310.0	21.99	20.99	20.61
		2307.5	22.05	21.08	20.58
10MHz	1 RB high	2310.0	22.99	21.92	21.65
	1 RB low	2310.0	22.94	22.02	22.00
	50% RB mid	2310.0	21.98	21.06	20.57
	100% RB	2310.0	21.91	20.96	20.38

LTE band 41

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2687.5	22.91	21.93	21.36
		2593.0	23.09	21.93	21.41
		2498.5	22.83	22.09	21.43
	1 RB low	2687.5	22.84	21.84	21.38
		2593.0	23.02	21.97	21.39
		2498.5	22.76	22.06	21.41
	50% RB mid	2687.5	21.98	20.94	20.48
		2593.0	22.08	21.03	20.48
		2498.5	21.95	21.05	20.52
	100% RB	2687.5	21.96	20.99	20.45
		2593.0	22.01	21.00	20.41
		2498.5	21.92	20.92	20.46
10MHz	1 RB high	2685.0	22.91	21.88	21.36
		2593.0	22.99	22.10	21.33
		2501.0	22.82	21.98	21.37
	1 RB low	2685.0	22.83	21.79	21.24
		2593.0	23.04	22.08	21.53
		2501.0	22.78	22.00	21.71
	50% RB mid	2685.0	21.99	20.91	20.48
		2593.0	21.97	21.01	20.53
		2501.0	21.93	20.91	20.38
	100% RB	2685.0	21.95	20.97	20.35
		2593.0	21.96	20.97	20.42
		2501.0	21.93	20.89	20.38
15MHz	1 RB high	2682.5	22.74	21.82	20.93
		2593.0	22.76	21.79	21.19
		2503.5	22.67	21.62	20.95
	1 RB low	2682.5	22.58	21.72	20.98
		2593.0	22.80	21.88	21.28
		2503.5	22.62	21.62	20.99
	50% RB mid	2682.5	21.77	20.76	20.19
		2593.0	21.75	20.79	20.21
		2503.5	21.78	20.75	20.23
	100% RB	2682.5	21.76	20.74	20.25
		2593.0	21.80	20.77	20.23
		2503.5	21.68	20.71	20.13
20MHz	1 RB high	2680.0	22.69	21.75	21.12
		2593.0	22.88	21.83	21.20
		2506.0	22.72	21.55	21.01
	1 RB low	2680.0	22.58	21.65	21.16



		2593.0	22.82	21.73	21.30
		2506.0	22.60	21.49	20.99
	50% RB mid	2680.0	21.65	20.70	20.28
		2593.0	21.81	20.82	20.25
		2506.0	21.67	20.57	20.23
	100% RB	2680.0	21.68	20.64	20.24
		2593.0	21.77	20.77	20.22
		2506.0	21.64	20.66	20.22

LTE band 48

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	3697.5	24.37	23.49	22.54
		3625	24.07	23.23	22.29
		3552.5	24.16	23.36	22.57
	1 RB low	3697.5	24.35	23.48	22.54
		3625	23.88	23.09	22.14
		3552.5	24.11	23.26	22.46
	50% RB mid	3697.5	23.40	22.48	21.64
		3625	23.05	22.09	21.34
		3552.5	23.18	22.20	21.60
	100% RB	3697.5	23.39	22.44	21.66
		3625	22.96	22.01	21.25
		3552.5	23.17	22.18	21.59
10MHz	1 RB high	3695	24.28	23.40	22.64
		3625	23.98	23.32	22.34
		3555	24.16	23.44	22.66
	1 RB low	3695	24.41	23.48	22.69
		3625	23.93	23.18	22.25
		3555	24.08	23.39	22.63
	50% RB mid	3695	23.34	22.41	21.64
		3625	22.97	22.00	21.31
		3555	23.21	22.23	21.71
	100% RB	3695	23.34	22.39	21.55
		3625	22.98	22.00	21.21
		3555	23.15	22.24	21.60
15MHz	1 RB high	3692.5	24.06	23.50	22.43
		3625	23.79	23.19	22.15
		3557.5	23.99	23.30	22.34
	1 RB low	3692.5	24.21	23.45	22.47
		3625	23.69	23.06	21.92
		3557.5	23.86	23.16	22.26
	50% RB mid	3692.5	23.34	22.32	21.51
		3625	22.87	21.81	21.02
		3557.5	23.13	22.08	21.46
	100% RB	3692.5	23.25	22.23	21.43
		3625	22.88	21.86	21.07
		3557.5	23.08	22.15	21.50
20MHz	1 RB high	3690	23.81	23.42	22.38
		3625	23.98	23.31	22.22
		3560	24.16	23.46	22.43
	1 RB low	3690	23.60	23.43	22.43



		3625	23.78	23.18	22.01
		3560	24.03	23.42	22.30
	50% RB mid	3690	23.41	22.49	21.54
		3625	22.95	21.96	21.10
		3560	23.38	22.37	21.53
	100% RB	3690	23.46	22.48	21.54
		3625	22.97	21.99	21.05
		3560	23.32	22.37	21.45

LTE band 66

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1779.3	23.35	22.45	21.98
		1745.0	23.37	22.55	22.04
		1710.7	23.37	22.79	22.15
	1 RB low	1779.3	23.36	22.42	22.14
		1745.0	23.39	22.56	22.10
		1710.7	23.40	22.82	22.20
	50% RB mid	1779.3	23.38	22.63	22.07
		1745.0	23.40	22.48	22.09
		1710.7	23.41	22.67	22.11
	100% RB	1779.3	22.40	21.61	20.96
		1745.0	22.41	21.59	20.94
		1710.7	22.45	21.40	20.90
3MHz	1 RB high	1778.5	23.35	22.46	22.13
		1745.0	23.37	22.37	22.22
		1711.5	23.46	22.90	22.19
	1 RB low	1778.5	23.31	22.52	22.19
		1745.0	23.36	22.42	22.20
		1711.5	23.46	22.89	22.25
	50% RB mid	1778.5	22.46	21.55	21.07
		1745.0	22.51	21.61	21.15
		1711.5	22.48	21.60	21.18
	100% RB	1778.5	22.45	21.50	21.06
		1745.0	22.50	21.51	21.10
		1711.5	22.48	21.56	21.24
5MHz	1 RB high	1777.5	23.50	22.65	22.16
		1745.0	23.51	22.68	22.18
		1712.5	23.44	22.85	22.49
	1 RB low	1777.5	23.47	22.64	22.21
		1745.0	23.49	22.59	22.25
		1712.5	23.47	22.95	22.20
	50% RB mid	1777.5	22.50	21.61	21.15
		1745.0	22.54	21.63	21.14
		1712.5	22.52	21.67	21.15
	100% RB	1777.5	22.41	21.44	21.01
		1745.0	22.46	21.48	21.03
		1712.5	22.53	21.60	21.04
10MHz	1 RB high	1775.0	23.32	22.36	22.10
		1745.0	23.33	22.44	22.23
		1715.0	23.37	22.91	22.22
	1 RB low	1775.0	23.25	22.55	22.18

		1745.0	23.24	22.42	22.15	
		1715.0	23.38	22.81	22.11	
		1775.0	22.42	21.62	21.13	
	50% RB mid	1745.0	22.40	21.50	21.06	
		1715.0	22.54	21.55	21.04	
		1775.0	22.44	21.59	21.02	
	100% RB	1745.0	22.41	21.44	21.17	
1715.0		22.50	21.55	21.10		
1775.0		22.44	21.59	21.02		
15MHz	1 RB high	1772.5	23.24	22.30	22.00	
		1745.0	23.28	22.59	21.96	
		1717.5	23.25	22.60	21.96	
	1 RB low	1772.5	23.29	22.26	22.01	
		1745.0	23.31	22.64	21.85	
		1717.5	23.31	22.68	21.99	
	50% RB mid	1772.5	22.29	21.30	20.93	
		1745.0	22.31	21.37	20.91	
		1717.5	22.38	21.38	20.93	
	100% RB	1772.5	22.29	21.28	20.82	
		1745.0	22.26	21.30	20.89	
		1717.5	22.35	21.37	20.90	
	20MHz	1 RB high	1770.0	23.32	22.95	22.04
			1745.0	23.33	22.79	21.99
			1720.0	23.34	22.99	21.99
1 RB low		1770.0	23.25	22.86	21.95	
		1745.0	23.28	22.72	21.94	
		1720.0	23.31	22.89	21.92	
50% RB mid		1770.0	22.38	21.41	20.89	
		1745.0	22.39	21.41	20.87	
		1720.0	22.45	21.50	20.95	
100% RB		1770.0	22.37	21.37	20.81	
		1745.0	22.36	21.39	20.94	
		1720.0	22.46	21.49	20.99	

LTE band 71

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	695.5	22.91	22.46	21.49
		680.5	22.88	22.11	21.70
		665.5	23.08	22.21	21.64
	1 RB low	695.5	22.90	22.44	21.57
		680.5	22.90	22.05	21.57
		665.5	23.18	22.30	21.83
	50% RB mid	695.5	21.93	21.10	20.52
		680.5	22.02	21.07	20.54
		665.5	22.14	21.24	20.72
	100% RB	695.5	21.89	20.93	20.45
		680.5	21.97	20.90	20.56
		665.5	22.15	21.14	20.58
10MHz	1 RB high	693.0	22.82	22.41	21.72
		680.5	22.98	21.90	21.62
		668.0	22.95	21.85	21.55
	1 RB low	693.0	22.96	22.23	21.80
		680.5	23.00	22.00	21.56
		668.0	23.06	22.15	21.83
	50% RB mid	693.0	21.91	20.94	20.56
		680.5	21.98	21.10	20.51
		668.0	22.11	21.16	20.61
	100% RB	693.0	21.90	20.93	20.57
		680.5	21.96	21.03	20.54
		668.0	22.05	21.06	20.68
15MHz	1 RB high	690.5	22.68	22.01	21.27
		680.5	22.85	21.90	21.50
		670.5	22.76	21.77	21.54
	1 RB low	690.5	22.83	22.14	21.46
		680.5	22.81	22.09	21.54
		670.5	22.82	21.83	21.68
	50% RB mid	690.5	21.81	20.88	20.39
		680.5	21.80	20.83	20.40
		670.5	21.88	20.92	20.51
	100% RB	690.5	21.81	20.82	20.37
		680.5	21.78	20.80	20.37
		670.5	21.90	20.90	20.49
20MHz	1 RB high	688.0	22.60	22.23	21.43
		680.5	22.57	22.37	21.49
		673.0	22.80	22.19	21.49
	1 RB low	688.0	22.69	22.29	21.67



		680.5	22.63	22.34	21.52
		673.0	22.82	22.22	21.61
	50% RB mid	688.0	21.81	20.85	20.47
		680.5	21.75	20.80	20.36
		673.0	21.85	20.87	20.51
	100% RB	688.0	21.78	20.82	20.44
		680.5	21.70	20.74	20.38
		673.0	21.93	20.94	20.47

A.1.3 Radiated

A.1.3.1 Description

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

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

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

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

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

TDD Band 48: Part 96.41.

A.1.3.2 Method of Measurement

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

ERP or EIRP = $P_T + G_T - L_C$, ERP = EIRP -2.15, where

ERP or EIRP effective radiated power or equivalent isotropically radiated power,
 respectively
 (expressed in the same units as P_{Mea} , e.g., dBm or dBW)

P_T = transmitter output power in dBm;

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

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

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

A.1.3.3 Measurement result

LTE Band 7-EIRP

Limits: ≤30dBm (1W)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			EIRP(dBm) (GT – LC = -2.5)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	2567.5	24.1	23.27	22.72	21.6	20.77	20.22
		2535	24.17	23.26	22.73	21.67	20.76	20.23
		2502.5	24.03	23.28	22.53	21.53	20.78	20.03
	1 RB low	2567.5	24.05	23.3	22.54	21.55	20.8	20.04
		2535	24.2	23.32	22.83	21.7	20.82	20.33
		2502.5	23.95	23.41	22.72	21.45	20.91	20.22
	50% RB mid	2567.5	23.18	22.19	21.59	20.68	19.69	19.09
		2535	23.11	22.24	21.66	20.61	19.74	19.16
		2502.5	23.09	22.23	21.62	20.59	19.73	19.12
	100% RB	2567.5	23.15	22.13	21.56	20.65	19.63	19.06
		2535	23.09	22.12	21.7	20.59	19.62	19.2
		2502.5	23.12	22.15	21.63	20.62	19.65	19.13
10MHz	1 RB high	2565	24.06	23.08	22.67	21.56	20.58	20.17
		2535	24.11	23.15	22.74	21.61	20.65	20.24
		2505	24.08	23.39	22.51	21.58	20.89	20.01
	1 RB low	2565	24.01	23.09	22.67	21.51	20.59	20.17
		2535	24.05	23.14	22.8	21.55	20.64	20.3
		2505	23.98	23.31	22.67	21.48	20.81	20.17
	50% RB mid	2565	23.11	22.19	21.61	20.61	19.69	19.11
		2535	23.1	22.16	21.63	20.6	19.66	19.13
		2505	23.03	22.08	21.56	20.53	19.58	19.06
	100% RB	2565	23.14	22.14	21.62	20.64	19.64	19.12
		2535	23.09	22.16	21.64	20.59	19.66	19.14
		2505	23	22.09	21.31	20.5	19.59	18.81
15MHz	1 RB high	2562.5	23.72	23.13	22.26	21.22	20.63	19.76
		2535	23.84	23.34	22.53	21.34	20.84	20.03
		2507.5	23.73	22.8	22.38	21.23	20.3	19.88
	1 RB low	2562.5	23.78	23.09	22.38	21.28	20.59	19.88
		2535	23.75	23.31	22.49	21.25	20.81	19.99
		2507.5	23.76	22.65	22.53	21.26	20.15	20.03
	50% RB mid	2562.5	22.89	21.96	21.36	20.39	19.46	18.86
		2535	22.85	21.87	21.4	20.35	19.37	18.9
		2507.5	22.84	21.83	21.26	20.34	19.33	18.76
	100% RB	2562.5	22.88	21.94	21.37	20.38	19.44	18.87
		2535	22.85	21.92	21.39	20.35	19.42	18.89
		2507.5	22.8	21.84	21.27	20.3	19.34	18.77

20MHz	1 RB high	2560	23.63	23.24	22.2	21.13	20.74	19.7
		2535	23.73	23.24	22.55	21.23	20.74	20.05
		2510	23.67	23.23	22.32	21.17	20.73	19.82
	1 RB low	2560	23.52	23.07	22.37	21.02	20.57	19.87
		2535	23.56	22.99	22.38	21.06	20.49	19.88
		2510	23.56	23.1	22.39	21.06	20.6	19.89
	50% RB mid	2560	22.83	21.86	21.46	20.33	19.36	18.96
		2535	22.78	21.76	21.36	20.28	19.26	18.86
		2510	22.79	21.8	21.33	20.29	19.3	18.83
	100% RB	2560	22.82	21.81	21.39	20.32	19.31	18.89
		2535	22.78	21.78	21.41	20.28	19.28	18.91
		2510	22.72	21.71	21.3	20.22	19.21	18.8

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

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			ERP(dBm) (GT – LC = -3.5)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	715.3	23.72	22.8	22.46	18.1	17.2	16.8
		707.5	23.8	22.97	22.55	18.2	17.3	16.9
		699.7	23.7	23.11	22.43	18.1	17.5	16.8
	1 RB low	715.3	23.79	22.86	22.53	18.1	17.2	16.9
		707.5	23.81	22.97	22.38	18.2	17.3	16.7
		699.7	23.76	23.21	22.44	18.1	17.6	16.8
	50% RB mid	715.3	23.78	23.1	22.54	18.1	17.5	16.9
		707.5	23.73	22.81	22.44	18.1	17.2	16.8
		699.7	23.77	23	22.54	18.1	17.4	16.9
	100% RB	715.3	22.82	22.02	21.35	17.2	16.4	15.7
		707.5	22.75	21.92	21.24	17.1	16.3	15.6
		699.7	22.78	21.7	21.31	17.1	16.1	15.7
3MHz	1 RB high	714.5	23.75	22.88	22.53	18.1	17.2	16.9
		707.5	23.77	22.73	22.57	18.1	17.1	16.9
		700.5	23.79	23.19	22.48	18.1	17.5	16.8
	1 RB low	714.5	23.81	22.9	22.55	18.2	17.3	16.9
		707.5	23.72	22.69	22.51	18.1	17.0	16.9
		700.5	23.87	23.29	22.65	18.2	17.6	17.0
	50% RB mid	714.5	22.96	21.98	21.5	17.3	16.3	15.9
		707.5	22.91	21.99	21.42	17.3	16.3	15.8
		700.5	22.85	21.91	21.43	17.2	16.3	15.8
	100% RB	714.5	22.87	21.88	21.35	17.2	16.2	15.7
		707.5	22.85	21.9	21.39	17.2	16.3	15.7
		700.5	22.87	21.9	21.42	17.2	16.3	15.8
5MHz	1 RB high	713.5	23.92	23.04	22.59	18.3	17.4	16.9
		707.5	23.88	23.41	22.56	18.2	17.8	16.9
		701.5	23.85	22.99	22.98	18.2	17.3	17.3
	1 RB low	713.5	23.88	23	22.57	18.2	17.4	16.9
		707.5	23.82	23.31	22.64	18.2	17.7	17.0
		701.5	23.77	22.92	22.56	18.1	17.3	16.9
	50% RB mid	713.5	22.85	21.99	21.49	17.2	16.3	15.8
		707.5	22.9	22	21.45	17.3	16.4	15.8
		701.5	22.89	21.93	21.42	17.2	16.3	15.8
	100% RB	713.5	22.85	21.89	21.31	17.2	16.2	15.7
		707.5	22.87	21.86	21.35	17.2	16.2	15.7
		701.5	22.84	21.8	21.44	17.2	16.2	15.8
10MHz	1 RB high	711	23.69	22.87	22.61	18.0	17.2	17.0
		707.5	23.75	22.98	22.56	18.1	17.3	16.9

		704	23.85	22.81	22.51	18.2	17.2	16.9
	1 RB low	711	23.68	22.92	22.57	18.0	17.3	16.9
		707.5	23.79	22.95	22.46	18.1	17.3	16.8
		704	23.88	22.79	22.64	18.2	17.1	17.0
	50% RB mid	711	22.8	21.89	21.38	17.2	16.2	15.7
		707.5	22.79	21.83	21.37	17.1	16.2	15.7
		704	22.85	21.98	21.37	17.2	16.3	15.7
	100% RB	711	22.78	21.82	21.38	17.1	16.2	15.7
		707.5	22.79	21.82	21.42	17.1	16.2	15.8
		704	22.83	21.9	21.36	17.2	16.3	15.7

LTE band 13

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			ERP(dBm) (GT – LC = -3.6)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	784.5	23.94	23.13	22.48	18.2	17.4	16.7
		782	24.04	23.35	22.55	18.3	17.6	16.8
		779.5	23.94	23.15	22.61	18.2	17.4	16.9
	1 RB low	784.5	23.91	23.09	22.56	18.2	17.3	16.8
		782	23.94	23.41	22.48	18.2	17.7	16.7
		779.5	23.88	23.1	22.44	18.1	17.4	16.7
	50% RB mid	784.5	23.01	22.11	21.49	17.3	16.4	15.7
		782	22.99	22.13	21.47	17.2	16.4	15.7
		779.5	23.03	22.12	21.46	17.3	16.4	15.7
	100% RB	784.5	22.99	21.99	21.36	17.2	16.2	15.6
		782	22.96	22.03	21.39	17.2	16.3	15.6
		779.5	23	21.93	21.34	17.3	16.2	15.6
10MHz	1 RB high	782	23.73	23.04	22.7	18.0	17.3	17.0
	1 RB low	782	23.78	23.08	22.84	18.0	17.3	17.1
	50% RB mid	782	22.98	22.07	21.6	17.2	16.3	15.9
	100% RB	782	22.96	21.99	21.49	17.2	16.2	15.7

LTE BAND 14

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			ERP(dBm) (GT – LC = -3.6)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	795.5	22.89	22.04	21.5	17.1	16.3	15.8
		793	22.87	22.01	21.53	17.1	16.3	15.8
		790.5	23.03	22.49	21.52	17.3	16.7	15.8
	1 RB low	795.5	22.97	22.18	21.49	17.2	16.4	15.7
		793	22.97	22.11	21.53	17.2	16.4	15.8
		790.5	22.99	22.46	21.59	17.2	16.7	15.8
	50% RB mid	795.5	22.06	21.11	20.54	16.3	15.4	14.8
		793	21.98	21.07	20.52	16.2	15.3	14.8
		790.5	22.09	21.23	20.52	16.3	15.5	14.8
	100% RB	795.5	22.01	20.96	20.47	16.3	15.2	14.7
		793	21.98	20.99	20.4	16.2	15.2	14.7
		790.5	22.04	21.08	20.38	16.3	15.3	14.6
10MHz	1 RB high	793	22.77	22	20.41	17.0	16.3	14.7
	1 RB low	793	22.79	22.1	20.5	17.0	16.4	14.8
	50% RB mid	793	22.02	21.1	20.29	16.3	15.4	14.5
	100% RB	793	21.94	20.94	20.33	16.2	15.2	14.6

LTE BAND 25

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			EIRP(dBm) (GT – LC = -1.9)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	1914.3	23.4	22.47	22.31	21.5	20.6	20.4
		1882.5	23.39	22.56	22.08	21.5	20.7	20.2
		1850.7	23.3	22.69	22.15	21.4	20.8	20.3
	1 RB low	1914.3	23.44	22.45	22.24	21.5	20.6	20.3
		1882.5	23.42	22.56	22.16	21.5	20.7	20.3
		1850.7	23.33	22.71	22.1	21.4	20.8	20.2
	50% RB mid	1914.3	23.45	22.72	22.29	21.6	20.8	20.4
		1882.5	23.39	22.48	22.14	21.5	20.6	20.2
		1850.7	23.31	22.57	22.19	21.4	20.7	20.3
	100% RB	1914.3	22.46	21.62	21.09	20.6	19.7	19.2
		1882.5	22.4	21.56	21.44	20.5	19.7	19.5
		1850.7	22.31	21.28	20.97	20.4	19.4	19.1
3MHz	1 RB high	1913.5	23.45	22.49	22.37	21.6	20.6	20.5
		1882.5	23.43	22.38	22.25	21.5	20.5	20.4
		1851.5	23.4	22.81	22.31	21.5	20.9	20.4
	1 RB low	1913.5	23.47	22.52	22.32	21.6	20.6	20.4
		1882.5	23.4	22.42	22.3	21.5	20.5	20.4
		1851.5	23.4	22.8	22.21	21.5	20.9	20.3
	50% RB mid	1913.5	22.51	21.64	21.24	20.6	19.7	19.3
		1882.5	22.52	21.62	21.19	20.6	19.7	19.3
		1851.5	22.43	21.53	21.16	20.5	19.6	19.3
	100% RB	1913.5	22.55	21.5	21.12	20.7	19.6	19.2
		1882.5	22.51	21.51	21.03	20.6	19.6	19.1
		1851.5	22.44	21.44	20.88	20.5	19.5	19.0
5MHz	1 RB high	1912.5	23.48	22.67	22.15	21.6	20.8	20.3
		1882.5	23.54	22.68	22.22	21.6	20.8	20.3
		1852.5	23.46	23	22.23	21.6	21.1	20.3
	1 RB low	1912.5	23.47	22.64	22.32	21.6	20.7	20.4
		1882.5	23.56	22.69	22.35	21.7	20.8	20.5
		1852.5	23.46	22.98	22.26	21.6	21.1	20.4
	50% RB mid	1912.5	22.59	21.62	21.22	20.7	19.7	19.3
		1882.5	22.47	21.56	21.19	20.6	19.7	19.3
		1852.5	22.45	21.58	21.15	20.6	19.7	19.3
	100% RB	1912.5	22.54	21.51	21.24	20.6	19.6	19.3
		1882.5	22.53	21.56	21.16	20.6	19.7	19.3
		1852.5	22.43	21.51	21.09	20.5	19.6	19.2
10MHz	1 RB high	1910	23.34	22.59	22.18	21.4	20.7	20.3
		1882.5	23.42	22.82	22.2	21.5	20.9	20.3
		1855	23.3	22.32	22.04	21.4	20.4	20.1

	1 RB low	1910	23.37	22.55	22.27	21.5	20.7	20.4
		1882.5	23.43	22.93	22.23	21.5	21.0	20.3
		1855	23.35	22.47	22.15	21.5	20.6	20.3
	50% RB mid	1910	22.6	21.63	21.16	20.7	19.7	19.3
		1882.5	22.58	21.55	21.13	20.7	19.7	19.2
		1855	22.48	21.58	21.14	20.6	19.7	19.2
	100% RB	1910	22.58	21.58	21.18	20.7	19.7	19.3
		1882.5	22.51	21.55	20.89	20.6	19.7	19.0
		1855	22.47	21.49	21.14	20.6	19.6	19.2
15MHz	1 RB high	1907.5	23.14	22.33	22.05	21.2	20.4	20.2
		1882.5	23.29	22.67	22.01	21.4	20.8	20.1
		1857.5	23.29	22.56	22.19	21.4	20.7	20.3
	1 RB low	1907.5	23.2	22.23	22.1	21.3	20.3	20.2
		1882.5	23.24	22.61	21.97	21.3	20.7	20.1
		1857.5	23.28	22.58	22.09	21.4	20.7	20.2
	50% RB mid	1907.5	22.34	21.36	20.9	20.4	19.5	19.0
		1882.5	22.42	21.44	21.03	20.5	19.5	19.1
		1857.5	22.31	21.3	21.01	20.4	19.4	19.1
	100% RB	1907.5	22.32	21.33	20.93	20.4	19.4	19.0
		1882.5	22.35	21.39	20.82	20.5	19.5	18.9
		1857.5	22.27	21.28	20.93	20.4	19.4	19.0
20MHz	1 RB high	1905	23.34	22.98	22.13	21.4	21.1	20.2
		1882.5	23.27	22.89	22.02	21.4	21.0	20.1
		1860	23.32	22.69	22.07	21.4	20.8	20.2
	1 RB low	1905	23.33	22.91	22.01	21.4	21.0	20.1
		1882.5	23.25	22.96	22.02	21.4	21.1	20.1
		1860	23.25	22.64	21.9	21.4	20.7	20.0
	50% RB mid	1905	22.45	21.52	21.06	20.6	19.6	19.2
		1882.5	22.5	21.49	20.98	20.6	19.6	19.1
		1860	22.46	21.4	20.94	20.6	19.5	19.0
	100% RB	1905	22.46	21.49	20.58	20.6	19.6	18.7
		1882.5	22.49	21.45	20.97	20.6	19.6	19.1
		1860	22.42	21.45	20.98	20.5	19.6	19.1

LTE band 26(814MHz~824MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			ERP(dBm) (GT – LC = -3.7)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	823.3	22.44	21.56	20.85	16.6	15.7	15.0
		819	22.45	21.59	20.94	16.6	15.7	15.1
		814.7	22.43	21.52	20.87	16.6	15.7	15.0
	1 RB low	823.3	22.4	21.51	20.84	16.6	15.7	15.0
		819	22.45	21.55	20.88	16.6	15.7	15.0
		814.7	22.42	21.51	20.86	16.6	15.7	15.0
	50% RB mid	823.3	22.48	21.75	20.88	16.6	15.9	15.0
		819	22.49	21.76	20.87	16.6	15.9	15.0
		814.7	22.56	21.83	20.82	16.7	16.0	15.0
	100% RB	823.3	21.52	20.68	19.72	15.7	14.8	13.9
		819	21.54	20.72	19.77	15.7	14.9	13.9
		814.7	21.58	20.75	19.78	15.7	14.9	13.9
3MHz	1 RB high	822.5	22.58	21.74	20.98	16.7	15.9	15.1
		819	22.54	21.74	21.02	16.7	15.9	15.2
		815.5	22.58	21.78	21.01	16.7	15.9	15.2
	1 RB low	822.5	22.51	21.73	20.94	16.7	15.9	15.1
		819	22.58	21.77	20.98	16.7	15.9	15.1
		815.5	22.65	21.8	20.95	16.8	16.0	15.1
	50% RB mid	822.5	21.61	20.69	19.89	15.8	14.8	14.0
		819	21.62	20.7	19.88	15.8	14.9	14.0
		815.5	21.65	20.74	19.93	15.8	14.9	14.1
	100% RB	822.5	21.6	20.63	19.89	15.8	14.8	14.0
		819	21.61	20.65	19.85	15.8	14.8	14.0
		815.5	21.65	20.73	19.91	15.8	14.9	14.1
5MHz	1 RB high	821.5	22.51	21.68	20.97	16.7	15.8	15.1
		819	22.62	21.95	21.01	16.8	16.1	15.2
		816.5	22.55	21.75	21.04	16.7	15.9	15.2
	1 RB low	821.5	22.47	21.66	21.02	16.6	15.8	15.2
		819	22.6	21.97	21.03	16.8	16.1	15.2
		816.5	22.58	21.78	21.02	16.7	15.9	15.2
	50% RB mid	821.5	21.63	20.78	19.95	15.8	14.9	14.1
		819	21.65	20.78	19.91	15.8	14.9	14.1
		816.5	21.64	20.8	19.93	15.8	15.0	14.1
	100% RB	821.5	21.66	20.7	19.88	15.8	14.9	14.0
		819	21.67	20.72	19.86	15.8	14.9	14.0
		816.5	21.66	20.71	19.88	15.8	14.9	14.0
10MHz	1 RB high	819	22.51	21.8	20.98	16.7	16.0	15.1
	1 RB low	819	22.61	21.88	21.09	16.8	16.0	15.2
	50% RB	819	21.64	20.72	19.95	15.8	14.9	14.1

	mid							
	100% RB	819	21.66	20.7	19.93	15.8	14.9	14.1

LTE band 26(824MHz~849MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			ERP(dBm) (GT – LC = -3.7)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	22.27	21.38	20.76	16.4	15.5	14.9
		836.5	22.38	21.49	20.82	16.5	15.6	15.0
		824.7	22.41	21.48	20.86	16.6	15.6	15.0
	1 RB low	848.3	22.26	21.38	20.79	16.4	15.5	14.9
		836.5	22.38	21.5	20.82	16.5	15.7	15.0
		824.7	22.41	21.47	20.92	16.6	15.6	15.1
	50% RB mid	848.3	22.3	21.59	20.79	16.5	15.7	14.9
		836.5	22.36	21.68	20.83	16.5	15.8	15.0
		824.7	22.51	21.77	20.88	16.7	15.9	15.0
	100% RB	848.3	21.34	20.51	19.61	15.5	14.7	13.8
		836.5	21.42	20.61	19.73	15.6	14.8	13.9
		824.7	21.52	20.45	19.79	15.7	14.6	13.9
3MHz	1 RB high	847.5	22.38	21.5	20.84	16.5	15.7	15.0
		836.5	22.47	21.67	20.95	16.6	15.8	15.1
		825.5	22.55	21.65	21.02	16.7	15.8	15.2
	1 RB low	847.5	22.44	21.51	20.86	16.6	15.7	15.0
		836.5	22.43	21.64	20.89	16.6	15.8	15.0
		825.5	22.51	21.65	20.92	16.7	15.8	15.1
	50% RB mid	847.5	21.47	20.56	19.71	15.6	14.7	13.9
		836.5	21.53	20.62	19.81	15.7	14.8	14.0
		825.5	21.57	20.69	19.78	15.7	14.8	13.9
	100% RB	847.5	21.47	20.5	19.71	15.6	14.7	13.9
		836.5	21.52	20.58	19.73	15.7	14.7	13.9
		825.5	21.58	20.65	19.76	15.7	14.8	13.9
5MHz	1 RB high	846.5	22.38	21.59	20.83	16.5	15.7	15.0
		836.5	22.5	21.87	20.94	16.7	16.0	15.1
		826.5	22.51	21.7	21.04	16.7	15.9	15.2
	1 RB low	846.5	22.43	21.61	20.92	16.6	15.8	15.1
		836.5	22.5	21.83	20.95	16.7	16.0	15.1
		826.5	22.42	21.6	20.97	16.6	15.8	15.1
	50% RB mid	846.5	21.49	20.62	19.81	15.6	14.8	14.0
		836.5	21.55	20.69	19.89	15.7	14.8	14.0
		826.5	21.62	20.76	19.93	15.8	14.9	14.1
	100% RB	846.5	21.49	20.55	19.69	15.6	14.7	13.8
		836.5	21.57	20.62	19.74	15.7	14.8	13.9
		826.5	21.63	20.68	19.86	15.8	14.8	14.0

10MHz	1 RB high	844	22.41	21.66	20.84	16.6	15.8	15.0
		836.5	22.43	21.69	20.87	16.6	15.8	15.0
		829	22.47	21.57	20.94	16.6	15.7	15.1
	1 RB low	844	22.44	21.69	20.94	16.6	15.8	15.1
		836.5	22.48	21.73	20.98	16.6	15.9	15.1
		829	22.51	21.57	20.93	16.7	15.7	15.1
	50% RB mid	844	21.46	20.43	19.75	15.6	14.6	13.9
		836.5	21.6	20.61	19.93	15.8	14.8	14.1
		829	21.64	20.66	19.95	15.8	14.8	14.1
	100% RB	844	21.49	20.51	19.78	15.6	14.7	13.9
		836.5	21.59	20.61	19.83	15.7	14.8	14.0
		829	21.64	20.64	19.85	15.8	14.8	14.0
15MHz	1 RB high	841.5	22.24	21.67	20.67	16.4	15.8	14.8
		836.5	22.22	21.44	20.63	16.4	15.6	14.8
		831.5	22.29	21.72	20.71	16.4	15.9	14.9
	1 RB low	841.5	22.37	21.83	20.85	16.5	16.0	15.0
		836.5	22.34	21.56	20.73	16.5	15.7	14.9
		831.5	22.39	21.81	20.86	16.5	16.0	15.0
	50% RB mid	841.5	21.38	20.42	19.64	15.5	14.6	13.8
		836.5	21.48	20.54	19.77	15.6	14.7	13.9
		831.5	21.41	20.44	19.72	15.6	14.6	13.9
	100% RB	841.5	21.38	20.44	19.64	15.5	14.6	13.8
		836.5	21.46	20.49	19.69	15.6	14.6	13.8
		831.5	21.4	20.42	19.67	15.6	14.6	13.8

LTE Band 30

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			EIRP(dBm) (GT – LC = -4.5)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	2312.5	22.92	22.13	21.5	18.4	17.6	17.0
		2310	23.02	22.19	21.57	18.5	17.7	17.1
		2307.5	22.95	22.42	21.63	18.5	17.9	17.1
	1 RB low	2312.5	23.05	22.19	21.81	18.6	17.7	17.3
		2310	23.06	22.25	22	18.6	17.8	17.5
		2307.5	22.88	22.48	21.74	18.4	18.0	17.2
	50% RB mid	2312.5	22.08	21.11	20.69	17.6	16.6	16.2
		2310	22	21.13	20.61	17.5	16.6	16.1
		2307.5	22.04	21.18	20.65	17.5	16.7	16.2
	100% RB	2312.5	21.98	20.99	20.58	17.5	16.5	16.1
		2310	21.99	20.99	20.61	17.5	16.5	16.1
		2307.5	22.05	21.08	20.58	17.6	16.6	16.1
10MHz	1 RB high	2310	22.99	21.92	21.65	18.5	17.4	17.2
	1 RB low	2310	22.94	22.02	22	18.4	17.5	17.5
	50% RB mid	2310	21.98	21.06	20.57	17.5	16.6	16.1
	100% RB	2310	21.91	20.96	20.38	17.4	16.5	15.9

LTE Band 41

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			EIRP(dBm) (GT – LC = -2.3)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	2687.5	22.91	21.93	21.36	20.6	19.6	19.1
		2593	23.09	21.93	21.41	20.8	19.6	19.1
		2498.5	22.83	22.09	21.43	20.5	19.8	19.1
	1 RB low	2687.5	22.84	21.84	21.38	20.5	19.5	19.1
		2593	23.02	21.97	21.39	20.7	19.7	19.1
		2498.5	22.76	22.06	21.41	20.5	19.8	19.1
	50% RB mid	2687.5	21.98	20.94	20.48	19.7	18.6	18.2
		2593	22.08	21.03	20.48	19.8	18.7	18.2
		2498.5	21.95	21.05	20.52	19.7	18.8	18.2
	100% RB	2687.5	21.96	20.99	20.45	19.7	18.7	18.2
		2593	22.01	21	20.41	19.7	18.7	18.1
		2498.5	21.92	20.92	20.46	19.6	18.6	18.2
10MHz	1 RB high	2685	22.91	21.88	21.36	20.6	19.6	19.1
		2593	22.99	22.1	21.33	20.7	19.8	19.0
		2501	22.82	21.98	21.37	20.5	19.7	19.1
	1 RB low	2685	22.83	21.79	21.24	20.5	19.5	18.9
		2593	23.04	22.08	21.53	20.7	19.8	19.2
		2501	22.78	22	21.71	20.5	19.7	19.4
	50% RB mid	2685	21.99	20.91	20.48	19.7	18.6	18.2
		2593	21.97	21.01	20.53	19.7	18.7	18.2
		2501	21.93	20.91	20.38	19.6	18.6	18.1
	100% RB	2685	21.95	20.97	20.35	19.7	18.7	18.1
		2593	21.96	20.97	20.42	19.7	18.7	18.1
		2501	21.93	20.89	20.38	19.6	18.6	18.1
15MHz	1 RB high	2682.5	22.74	21.82	20.93	20.4	19.5	18.6
		2593	22.76	21.79	21.19	20.5	19.5	18.9
		2503.5	22.67	21.62	20.95	20.4	19.3	18.7
	1 RB low	2682.5	22.58	21.72	20.98	20.3	19.4	18.7
		2593	22.8	21.88	21.28	20.5	19.6	19.0
		2503.5	22.62	21.62	20.99	20.3	19.3	18.7
	50% RB mid	2682.5	21.77	20.76	20.19	19.5	18.5	17.9
		2593	21.75	20.79	20.21	19.5	18.5	17.9
		2503.5	21.78	20.75	20.23	19.5	18.5	17.9
	100% RB	2682.5	21.76	20.74	20.25	19.5	18.4	18.0
		2593	21.8	20.77	20.23	19.5	18.5	17.9
		2503.5	21.68	20.71	20.13	19.4	18.4	17.8
20MHz	1 RB high	2680	22.69	21.75	21.12	20.4	19.5	18.8

		2593	22.88	21.83	21.2	20.6	19.5	18.9
		2506	22.72	21.55	21.01	20.4	19.3	18.7
	1 RB low	2680	22.58	21.65	21.16	20.3	19.4	18.9
		2593	22.82	21.73	21.3	20.5	19.4	19.0
		2506	22.6	21.49	20.99	20.3	19.2	18.7
	50% RB mid	2680	21.65	20.7	20.28	19.4	18.4	18.0
		2593	21.81	20.82	20.25	19.5	18.5	18.0
		2506	21.67	20.57	20.23	19.4	18.3	17.9
	100% RB	2680	21.68	20.64	20.24	19.4	18.3	17.9
		2593	21.77	20.77	20.22	19.5	18.5	17.9
		2506	21.64	20.66	20.22	19.3	18.4	17.9

LTE Band 48

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			EIRP(dBm) (GT – LC = -2)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	3697.5	24.37	23.49	22.54	22.4	21.5	20.5
		3625	24.07	23.23	22.29	22.1	21.2	20.3
		3552.5	24.16	23.36	22.57	22.2	21.4	20.6
	1 RB low	3697.5	24.35	23.48	22.54	22.4	21.5	20.5
		3625	23.88	23.09	22.14	21.9	21.1	20.1
		3552.5	24.11	23.26	22.46	22.1	21.3	20.5
	50% RB mid	3697.5	23.4	22.48	21.64	21.4	20.5	19.6
		3625	23.05	22.09	21.34	21.1	20.1	19.3
		3552.5	23.18	22.2	21.6	21.2	20.2	19.6
	100% RB	3697.5	23.39	22.44	21.66	21.4	20.4	19.7
		3625	22.96	22.01	21.25	21.0	20.0	19.3
		3552.5	23.17	22.18	21.59	21.2	20.2	19.6
10MHz	1 RB high	3695	24.28	23.4	22.64	22.3	21.4	20.6
		3625	23.98	23.32	22.34	22.0	21.3	20.3
		3555	24.16	23.44	22.66	22.2	21.4	20.7
	1 RB low	3695	24.41	23.48	22.69	22.4	21.5	20.7
		3625	23.93	23.18	22.25	21.9	21.2	20.3
		3555	24.08	23.39	22.63	22.1	21.4	20.6
	50% RB mid	3695	23.34	22.41	21.64	21.3	20.4	19.6
		3625	22.97	22	21.31	21.0	20.0	19.3
		3555	23.21	22.23	21.71	21.2	20.2	19.7
	100% RB	3695	23.34	22.39	21.55	21.3	20.4	19.6
		3625	22.98	22	21.21	21.0	20.0	19.2
		3555	23.15	22.24	21.6	21.2	20.2	19.6
15MHz	1 RB high	3692.5	24.06	23.5	22.43	22.1	21.5	20.4
		3625	23.79	23.19	22.15	21.8	21.2	20.2
		3557.5	23.99	23.3	22.34	22.0	21.3	20.3
	1 RB low	3692.5	24.21	23.45	22.47	22.2	21.5	20.5
		3625	23.69	23.06	21.92	21.7	21.1	19.9
		3557.5	23.86	23.16	22.26	21.9	21.2	20.3
	50% RB mid	3692.5	23.34	22.32	21.51	21.3	20.3	19.5
		3625	22.87	21.81	21.02	20.9	19.8	19.0
		3557.5	23.13	22.08	21.46	21.1	20.1	19.5
	100% RB	3692.5	23.25	22.23	21.43	21.3	20.2	19.4
		3625	22.88	21.86	21.07	20.9	19.9	19.1
		3557.5	23.08	22.15	21.5	21.1	20.2	19.5
20MHz	1 RB high	3690	23.81	23.42	22.38	21.8	21.4	20.4
		3625	23.98	23.31	22.22	22.0	21.3	20.2
		3560	24.16	23.46	22.43	22.2	21.5	20.4

	1 RB low	3690	23.6	23.43	22.43	21.6	21.4	20.4
		3625	23.78	23.18	22.01	21.8	21.2	20.0
		3560	24.03	23.42	22.3	22.0	21.4	20.3
	50% RB mid	3690	23.41	22.49	21.54	21.4	20.5	19.5
		3625	22.95	21.96	21.1	21.0	20.0	19.1
		3560	23.38	22.37	21.53	21.4	20.4	19.5
	100% RB	3690	23.46	22.48	21.54	21.5	20.5	19.5
		3625	22.97	21.99	21.05	21.0	20.0	19.1
		3560	23.32	22.37	21.45	21.3	20.4	19.5

LTE Band 66-EIRP
Limits: ≤30dBm (1W)

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			EIRP(dBm) (GT – LC = -1.9)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1.4MHz	1 RB high	1779.3	23.35	22.45	21.98	21.5	20.6	20.1
		1745	23.37	22.55	22.04	21.5	20.7	20.1
		1710.7	23.37	22.79	22.15	21.5	20.9	20.3
	1 RB low	1779.3	23.36	22.42	22.14	21.5	20.5	20.2
		1745	23.39	22.56	22.1	21.5	20.7	20.2
		1710.7	23.4	22.82	22.2	21.5	20.9	20.3
	50% RB mid	1779.3	23.38	22.63	22.07	21.5	20.7	20.2
		1745	23.4	22.48	22.09	21.5	20.6	20.2
		1710.7	23.41	22.67	22.11	21.5	20.8	20.2
	100% RB	1779.3	22.4	21.61	20.96	20.5	19.7	19.1
		1745	22.41	21.59	20.94	20.5	19.7	19.0
		1710.7	22.45	21.4	20.9	20.6	19.5	19.0
3MHz	1 RB high	1778.5	23.35	22.46	22.13	21.5	20.6	20.2
		1745	23.37	22.37	22.22	21.5	20.5	20.3
		1711.5	23.46	22.9	22.19	21.6	21.0	20.3
	1 RB low	1778.5	23.31	22.52	22.19	21.4	20.6	20.3
		1745	23.36	22.42	22.2	21.5	20.5	20.3
		1711.5	23.46	22.89	22.25	21.6	21.0	20.4
	50% RB mid	1778.5	22.46	21.55	21.07	20.6	19.7	19.2
		1745	22.51	21.61	21.15	20.6	19.7	19.3
		1711.5	22.48	21.6	21.18	20.6	19.7	19.3
	100% RB	1778.5	22.45	21.5	21.06	20.6	19.6	19.2
		1745	22.5	21.51	21.1	20.6	19.6	19.2
		1711.5	22.48	21.56	21.24	20.6	19.7	19.3
5MHz	1 RB high	1777.5	23.5	22.65	22.16	21.6	20.8	20.3
		1745	23.51	22.68	22.18	21.6	20.8	20.3
		1712.5	23.44	22.85	22.49	21.5	21.0	20.6
	1 RB low	1777.5	23.47	22.64	22.21	21.6	20.7	20.3
		1745	23.49	22.59	22.25	21.6	20.7	20.4
		1712.5	23.47	22.95	22.2	21.6	21.1	20.3
	50% RB mid	1777.5	22.5	21.61	21.15	20.6	19.7	19.3
		1745	22.54	21.63	21.14	20.6	19.7	19.2
		1712.5	22.52	21.67	21.15	20.6	19.8	19.3
	100% RB	1777.5	22.41	21.44	21.01	20.5	19.5	19.1
		1745	22.46	21.48	21.03	20.6	19.6	19.1
		1712.5	22.53	21.6	21.04	20.6	19.7	19.1
10MHz	1 RB high	1775	23.32	22.36	22.1	21.4	20.5	20.2
		1745	23.33	22.44	22.23	21.4	20.5	20.3

	1 RB low	1715	23.37	22.91	22.22	21.5	21.0	20.3	
		1775	23.25	22.55	22.18	21.4	20.7	20.3	
		1745	23.24	22.42	22.15	21.3	20.5	20.3	
		1715	23.38	22.81	22.11	21.5	20.9	20.2	
	50% RB mid	1775	22.42	21.62	21.13	20.5	19.7	19.2	
		1745	22.4	21.5	21.06	20.5	19.6	19.2	
		1715	22.54	21.55	21.04	20.6	19.7	19.1	
	100% RB	1775	22.44	21.59	21.02	20.5	19.7	19.1	
		1745	22.41	21.44	21.17	20.5	19.5	19.3	
		1715	22.5	21.55	21.1	20.6	19.7	19.2	
	15MHz	1 RB high	1772.5	23.24	22.3	22	21.3	20.4	20.1
			1745	23.28	22.59	21.96	21.4	20.7	20.1
1717.5			23.25	22.6	21.96	21.4	20.7	20.1	
1 RB low		1772.5	23.29	22.26	22.01	21.4	20.4	20.1	
		1745	23.31	22.64	21.85	21.4	20.7	20.0	
		1717.5	23.31	22.68	21.99	21.4	20.8	20.1	
50% RB mid		1772.5	22.29	21.3	20.93	20.4	19.4	19.0	
		1745	22.31	21.37	20.91	20.4	19.5	19.0	
		1717.5	22.38	21.38	20.93	20.5	19.5	19.0	
100% RB		1772.5	22.29	21.28	20.82	20.4	19.4	18.9	
		1745	22.26	21.3	20.89	20.4	19.4	19.0	
		1717.5	22.35	21.37	20.9	20.5	19.5	19.0	
20MHz	1 RB high	1770	23.32	22.95	22.04	21.4	21.1	20.1	
		1745	23.33	22.79	21.99	21.4	20.9	20.1	
		1720	23.34	22.99	21.99	21.4	21.1	20.1	
	1 RB low	1770	23.25	22.86	21.95	21.4	21.0	20.1	
		1745	23.28	22.72	21.94	21.4	20.8	20.0	
		1720	23.31	22.89	21.92	21.4	21.0	20.0	
	50% RB mid	1770	22.38	21.41	20.89	20.5	19.5	19.0	
		1745	22.39	21.41	20.87	20.5	19.5	19.0	
		1720	22.45	21.5	20.95	20.6	19.6	19.1	
	100% RB	1770	22.37	21.37	20.81	20.5	19.5	18.9	
		1745	22.36	21.39	20.94	20.5	19.5	19.0	
		1720	22.46	21.49	20.99	20.6	19.6	19.1	

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

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)			ERP(dBm) (GT – LC = -3.3)		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz	1 RB high	695.5	22.91	22.46	21.49	17.5	17.0	16.0
		680.5	22.88	22.11	21.7	17.4	16.7	16.3
		665.5	23.08	22.21	21.64	17.6	16.8	16.2
	1 RB low	695.5	22.9	22.44	21.57	17.5	17.0	16.1
		680.5	22.9	22.05	21.57	17.5	16.6	16.1
		665.5	23.18	22.3	21.83	17.7	16.9	16.4
	50% RB mid	695.5	21.93	21.1	20.52	16.5	15.7	15.1
		680.5	22.02	21.07	20.54	16.6	15.6	15.1
		665.5	22.14	21.24	20.72	16.7	15.8	15.3
	100% RB	695.5	21.89	20.93	20.45	16.4	15.5	15.0
		680.5	21.97	20.9	20.56	16.5	15.5	15.1
		665.5	22.15	21.14	20.58	16.7	15.7	15.1
10MHz	1 RB high	693	22.82	22.41	21.72	17.4	17.0	16.3
		680.5	22.98	21.9	21.62	17.5	16.5	16.2
		668	22.95	21.85	21.55	17.5	16.4	16.1
	1 RB low	693	22.96	22.23	21.8	17.5	16.8	16.4
		680.5	23	22	21.56	17.6	16.6	16.1
		668	23.06	22.15	21.83	17.6	16.7	16.4
	50% RB mid	693	21.91	20.94	20.56	16.5	15.5	15.1
		680.5	21.98	21.1	20.51	16.5	15.7	15.1
		668	22.11	21.16	20.61	16.7	15.7	15.2
	100% RB	693	21.9	20.93	20.57	16.5	15.5	15.1
		680.5	21.96	21.03	20.54	16.5	15.6	15.1
		668	22.05	21.06	20.68	16.6	15.6	15.2
15MHz	1 RB high	690.5	22.68	22.01	21.27	17.2	16.6	15.8
		680.5	22.85	21.9	21.5	17.4	16.5	16.1
		670.5	22.76	21.77	21.54	17.3	16.3	16.1
	1 RB low	690.5	22.83	22.14	21.46	17.4	16.7	16.0
		680.5	22.81	22.09	21.54	17.4	16.6	16.1
		670.5	22.82	21.83	21.68	17.4	16.4	16.2
	50% RB mid	690.5	21.81	20.88	20.39	16.4	15.4	14.9
		680.5	21.8	20.83	20.4	16.4	15.4	15.0
		670.5	21.88	20.92	20.51	16.4	15.5	15.1
	100% RB	690.5	21.81	20.82	20.37	16.4	15.4	14.9
		680.5	21.78	20.8	20.37	16.3	15.4	14.9
		670.5	21.9	20.9	20.49	16.5	15.5	15.0
20MHz	1 RB high	688	22.6	22.23	21.43	17.2	16.8	16.0
		680.5	22.57	22.37	21.49	17.1	16.9	16.0

		673	22.8	22.19	21.49	17.4	16.7	16.0
	1 RB low	688	22.69	22.29	21.67	17.2	16.8	16.2
		680.5	22.63	22.34	21.52	17.2	16.9	16.1
		673	22.82	22.22	21.61	17.4	16.8	16.2
	50% RB mid	688	21.81	20.85	20.47	16.4	15.4	15.0
		680.5	21.75	20.8	20.36	16.3	15.4	14.9
		673	21.85	20.87	20.51	16.4	15.4	15.1
	100% RB	688	21.78	20.82	20.44	16.3	15.4	15.0
		680.5	21.7	20.74	20.38	16.3	15.3	14.9
		673	21.93	20.94	20.47	16.5	15.5	15.0

Sample:

688MHz

ERP = $P_T + G_T - L_C - 2.15 = 21.78\text{dBm} + (-3.3\text{dBi}) - 2.15 = 16.3\text{dBm}$

A.2 Emission Limit

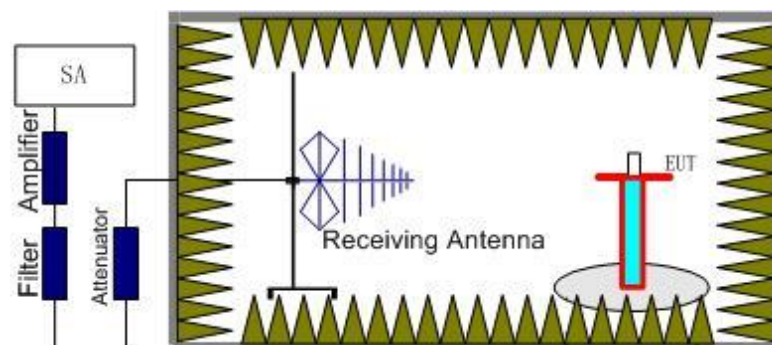
A.2.1 Measurement Method

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

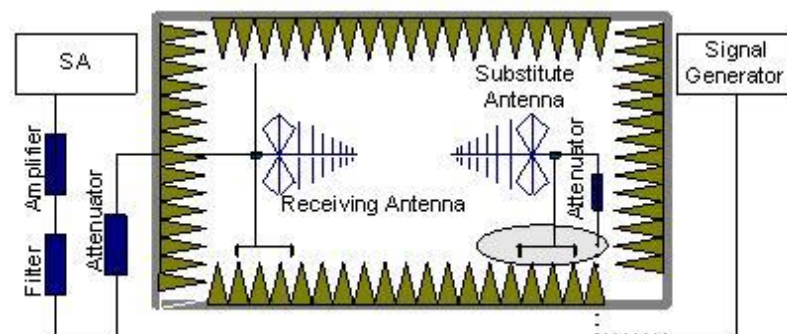
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and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

The procedure of radiated spurious emissions is as follows:

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



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



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

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

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.
An amplifier should be connected in for the test.
The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.
The measurement results are obtained as described below:
Power (EIRP) = $P_{Mea} + P_{pl} + G_a$
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit: dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15dB$.

A.2.2 Measurement Limit

Part 22.917, Part 24.238 and Part 27.53(h) specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

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

A.2.3 Measurement Results

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

LTE Band 7, 5 MHz, QPSK, Channel 20775

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5003.02	-55.82	-6.60	9.90	-52.52	-25.00	27.52	H
7513.01	-53.62	-8.34	12.21	-49.75	-25.00	24.75	H
10013.01	-52.06	-9.22	12.91	-48.37	-25.00	23.37	V
12532.01	-47.94	-10.27	13.22	-44.99	-25.00	19.99	H
14999.00	-45.70	-11.21	14.00	-42.91	-25.00	17.91	V
17535.00	-43.49	-12.86	14.95	-41.40	-25.00	16.40	H

LTE Band 7, 5 MHz, QPSK, Channel 21100

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5072.02	-55.76	-6.69	10.00	-52.45	-25.00	27.45	H
7610.01	-52.93	-8.02	12.29	-48.66	-25.00	23.66	H
10137.01	-52.35	-9.40	12.95	-48.80	-25.00	23.80	V
12684.01	-48.00	-10.33	13.31	-45.02	-25.00	20.02	V
15223.00	-45.09	-11.37	13.87	-42.59	-25.00	17.59	H
17755.00	-44.08	-12.49	15.26	-41.31	-25.00	16.31	H

LTE Band 7, 5 MHz, QPSK, Channel 21425

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5122.02	-54.80	-6.83	10.07	-51.56	-25.00	26.56	V
7705.01	-53.82	-8.42	12.36	-49.88	-25.00	24.88	V
10289.01	-50.77	-9.61	13.02	-47.36	-25.00	22.36	V
12856.01	-47.38	-10.62	13.41	-44.59	-25.00	19.59	H
15416.00	-44.36	-11.42	13.75	-42.03	-25.00	17.03	H
17987.00	-43.00	-12.90	15.58	-40.32	-25.00	15.32	H

LTE Band 12, 1.4MHz, QPSK, Channel 23017

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1408.01	-59.52	-3.25	5.02	2.15	-59.90	-13.00	46.90	H
2099.00	-48.54	-4.19	4.90	2.15	-49.98	-13.00	36.98	H
2797.00	-51.97	-4.91	6.63	2.15	-52.40	-13.00	39.40	H
3484.02	-54.66	-5.49	8.16	2.15	-54.14	-13.00	41.14	V
4194.02	-53.72	-6.19	9.09	2.15	-52.97	-13.00	39.97	V
4901.01	-54.20	-6.73	9.80	2.15	-53.28	-13.00	40.28	V

LTE Band 12, 1.4MHz, QPSK, Channel 23095

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1411.01	-58.03	-3.25	5.04	2.15	-58.39	-13.00	45.39	V
2123.00	-51.77	-4.21	4.97	2.15	-53.16	-13.00	40.16	H
2825.00	-51.87	-4.95	6.69	2.15	-52.28	-13.00	39.28	V
3544.02	-54.65	-5.76	8.26	2.15	-54.30	-13.00	41.30	H
4252.02	-54.60	-6.24	9.15	2.15	-53.84	-13.00	40.84	H
4962.01	-53.03	-6.67	9.86	2.15	-51.99	-13.00	38.99	V

LTE Band 12, 1.4MHz, QPSK, Channel 23173

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1416.01	-59.43	-3.26	5.06	2.15	-59.78	-13.00	46.78	H
2146.00	-48.67	-4.24	5.04	2.15	-50.02	-13.00	37.02	H
2867.00	-52.13	-4.96	6.76	2.15	-52.48	-13.00	39.48	H
3572.02	-54.14	-6.05	8.30	2.15	-54.04	-13.00	41.04	H
4279.02	-54.23	-6.21	9.18	2.15	-53.41	-13.00	40.41	H
5022.01	-53.58	-6.57	9.93	2.15	-52.37	-13.00	39.37	V

LTE Band 13, 5MHz, QPSK, Channel 23205

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1558.01	-58.88	-3.47	5.40	2.15	-59.10	-13.00	46.10	H
2339.00	-52.79	-4.44	5.62	2.15	-53.76	-13.00	40.76	V
3110.02	-52.98	-5.35	7.26	2.15	-53.22	-13.00	40.22	V
3895.02	-54.03	-6.11	8.75	2.15	-53.54	-13.00	40.54	V
4663.02	-53.30	-6.47	9.56	2.15	-52.36	-13.00	39.36	V
5450.01	-54.20	-6.87	10.53	2.15	-52.69	-13.00	39.69	V

LTE Band 13, 5MHz, QPSK, Channel 23230

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1559.01	-59.41	-3.47	5.39	2.15	-59.64	-13.00	46.64	H
2347.00	-53.96	-4.45	5.64	2.15	-54.92	-13.00	41.92	V
3140.02	-53.02	-5.38	7.34	2.15	-53.21	-13.00	40.21	V
3896.02	-54.94	-6.11	8.75	2.15	-54.45	-13.00	41.45	V
4686.02	-54.05	-6.49	9.59	2.15	-53.10	-13.00	40.10	V
5481.01	-53.98	-6.99	10.57	2.15	-52.55	-13.00	39.55	H

LTE Band 13, 5MHz, QPSK, Channel 23255

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1565.01	-55.09	-3.48	5.38	2.15	-55.34	-13.00	42.34	H
2342.00	-53.76	-4.45	5.63	2.15	-54.73	-13.00	41.73	V
3126.02	-52.81	-5.40	7.30	2.15	-53.06	-13.00	40.06	H
3916.02	-54.57	-6.12	8.78	2.15	-54.06	-13.00	41.06	V
4693.02	-53.28	-6.50	9.59	2.15	-52.34	-13.00	39.34	V
5497.01	-54.19	-7.05	10.60	2.15	-52.79	-13.00	39.79	V

LTE Band 14, 5MHz, QPSK, Channel 23305

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1586.01	-59.51	-3.50	5.35	2.15	-59.81	-13.00	46.81	H
2380.00	-53.12	-4.49	5.74	2.15	-54.02	-13.00	41.02	H
3172.02	-53.41	-5.34	7.41	2.15	-53.49	-13.00	40.49	H
3941.02	-54.78	-6.11	8.82	2.15	-54.22	-13.00	41.22	V
4742.02	-53.04	-6.56	9.64	2.15	-52.11	-13.00	39.11	H
5532.01	-53.98	-7.16	10.59	2.15	-52.70	-13.00	39.70	H

LTE Band 14, 5MHz, QPSK, Channel 23330

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1584.01	-59.73	-3.50	5.35	2.15	-60.03	-13.00	47.03	H
2380.00	-52.87	-4.49	5.74	2.15	-53.77	-13.00	40.77	V
3172.02	-53.21	-5.34	7.41	2.15	-53.29	-13.00	40.29	V
3977.02	-54.29	-6.08	8.87	2.15	-53.65	-13.00	40.65	H
4772.01	-53.83	-6.61	9.67	2.15	-52.92	-13.00	39.92	H
5560.01	-53.81	-7.19	10.59	2.15	-52.56	-13.00	39.56	V

LTE Band 14, 5MHz, QPSK, Channel 23355

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1576.01	-59.70	-3.49	5.36	2.15	-59.98	-13.00	46.98	H
2387.00	-53.35	-4.50	5.76	2.15	-54.24	-13.00	41.24	V
3175.02	-53.45	-5.33	7.42	2.15	-53.51	-13.00	40.51	H
3971.02	-54.48	-6.09	8.86	2.15	-53.86	-13.00	40.86	H
4787.01	-54.23	-6.64	9.69	2.15	-53.33	-13.00	40.33	V
5571.01	-52.50	-7.20	10.59	2.15	-51.26	-13.00	38.26	V

LTE Band 25, 1.4MHz, QPSK, Channel 26047

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3702.02	-48.03	-6.42	8.48	-45.97	-13.00	32.97	H
5554.02	-45.38	-7.19	10.59	-41.98	-13.00	28.98	V
11629.01	-49.34	-9.74	13.07	-46.01	-13.00	33.01	V
13620.01	-47.58	-10.80	14.27	-44.11	-13.00	31.11	H
15457.00	-44.05	-11.47	13.73	-41.79	-13.00	28.79	H
16880.00	-41.51	-12.02	13.75	-39.78	-13.00	26.78	H

LTE Band 25, 1.4MHz, QPSK, Channel 26365

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3765.02	-48.78	-6.25	8.57	-46.46	-13.00	33.46	H
5650.02	-42.99	-7.27	10.57	-39.69	-13.00	26.69	V
11343.01	-50.30	-10.03	13.13	-47.20	-13.00	34.20	V
13164.01	-48.08	-10.66	13.73	-45.01	-13.00	32.01	V
15078.00	-45.57	-11.32	13.95	-42.94	-13.00	29.94	H
16935.00	-41.52	-12.13	13.77	-39.88	-13.00	26.88	H

LTE Band 25, 1.4MHz, QPSK, Channel 26683

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5747.02	-48.13	-7.27	10.55	-44.85	-13.00	31.85	V
9568.01	-52.93	-9.30	13.33	-48.90	-13.00	35.90	H
11523.01	-49.91	-9.81	13.10	-46.62	-13.00	33.62	V
13446.01	-48.27	-10.60	14.12	-44.75	-13.00	31.75	V
15328.00	-44.41	-11.31	13.80	-41.92	-13.00	28.92	H
17218.00	-42.71	-12.35	14.28	-40.78	-13.00	27.78	H

LTE Band 26, 1.4MHz, QPSK, Channel 26797

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1647.01	-59.46	-3.56	5.24	2.15	-59.93	-13.00	46.93	H
2458.00	-53.00	-4.58	5.97	2.15	-53.76	-13.00	40.76	V
3318.02	-54.72	-5.29	7.76	2.15	-54.40	-13.00	41.40	H
4108.02	-54.44	-6.04	9.01	2.15	-53.62	-13.00	40.62	H
4943.01	-53.97	-6.70	9.84	2.15	-52.98	-13.00	39.98	H
5782.01	-53.11	-7.22	10.54	2.15	-51.94	-13.00	38.94	V

LTE Band 26, 1.4MHz, QPSK, Channel 26915

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1688.01	-59.00	-3.59	5.16	2.15	-59.58	-13.00	46.58	V
2510.00	-51.12	-4.63	6.12	2.15	-51.78	-13.00	38.78	V
3336.02	-53.89	-5.31	7.81	2.15	-53.54	-13.00	40.54	H
4186.02	-54.32	-6.17	9.09	2.15	-53.55	-13.00	40.55	V
5023.01	-53.37	-6.56	9.93	2.15	-52.15	-13.00	39.15	V
5874.01	-52.31	-7.31	10.53	2.15	-51.24	-13.00	38.24	H

LTE Band 26, 1.4MHz, QPSK, Channel 27033

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1697.01	-56.72	-3.60	5.15	2.15	-57.32	-13.00	44.32	H
2550.00	-51.70	-4.67	6.19	2.15	-52.33	-13.00	39.33	H
3413.02	-54.72	-5.37	7.99	2.15	-54.25	-13.00	41.25	V
4255.02	-54.49	-6.24	9.16	2.15	-53.72	-13.00	40.72	H
5079.01	-53.73	-6.71	10.01	2.15	-52.58	-13.00	39.58	H
5927.01	-52.42	-7.47	10.51	2.15	-51.53	-13.00	38.53	V

LTE Band 30, 5MHz, QPSK, Channel 27685

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4619.02	-65.56	-6.45	9.52	-62.49	-40.00	22.49	H
6926.01	-63.45	-7.73	11.51	-59.67	-40.00	19.67	V
9248.01	-64.24	-9.04	13.25	-60.03	-40.00	20.03	V
11520.01	-60.90	-9.81	13.10	-57.61	-40.00	17.61	V
13861.01	-58.72	-10.73	14.42	-55.03	-40.00	15.03	H
16155.00	-53.54	-11.79	13.67	-51.66	-40.00	11.66	H

LTE Band 30, 5MHz, QPSK, Channel 27710

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4621.02	-65.62	-6.45	9.52	-62.55	-40.00	22.55	V
6935.01	-63.51	-7.80	11.52	-59.79	-40.00	19.79	V
9250.01	-64.18	-9.04	13.25	-59.97	-40.00	19.97	V
11563.01	-60.86	-9.80	13.09	-57.57	-40.00	17.57	V
13871.01	-58.59	-10.75	14.42	-54.92	-40.00	14.92	H
16179.00	-53.56	-11.76	13.66	-51.66	-40.00	11.66	H

LTE Band 30, 5MHz, QPSK, Channel 27735

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4630.02	-65.31	-6.45	9.53	-62.23	-40.00	22.23	H
6941.01	-64.10	-7.84	11.53	-60.41	-40.00	20.41	V
9255.01	-64.10	-9.05	13.25	-59.90	-40.00	19.90	V
11574.01	-60.86	-9.80	13.09	-57.57	-40.00	17.57	V
13867.01	-58.61	-10.74	14.42	-54.93	-40.00	14.93	H
16183.00	-53.62	-11.75	13.66	-51.71	-40.00	11.71	H

LTE Band 41, 5MHz, QPSK, Channel 39675

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4993.02	-55.64	-6.62	9.89	-52.37	-25.00	27.37	V
7500.01	-51.02	-8.39	12.20	-47.21	-25.00	22.21	H
9996.01	-52.68	-9.18	12.90	-48.96	-25.00	23.96	V
12489.01	-49.47	-10.20	13.20	-46.47	-25.00	21.47	V
14994.00	-46.10	-11.21	14.00	-43.31	-25.00	18.31	H
17485.00	-44.18	-12.69	14.87	-42.00	-25.00	17.00	H

LTE Band 41, 5MHz, QPSK, Channel 40620

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
6483.02	-54.34	-7.53	10.98	-50.89	-25.00	25.89	H
7783.01	-52.71	-8.31	12.43	-48.59	-25.00	23.59	H
10359.01	-51.48	-9.74	13.04	-48.18	-25.00	23.18	V
12954.01	-48.99	-10.48	13.47	-46.00	-25.00	21.00	H
15542.00	-44.02	-11.51	13.70	-41.83	-25.00	16.83	H
16829.00	-41.84	-12.08	13.73	-40.19	-25.00	15.19	H

LTE Band 41, 5MHz, QPSK, Channel 41565

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5368.02	-56.41	-6.90	10.42	-52.89	-25.00	27.89	H
8066.01	-54.13	-8.32	12.65	-49.80	-25.00	24.80	V
10740.01	-51.77	-9.40	13.15	-48.02	-25.00	23.02	V
13433.01	-47.36	-10.59	14.11	-43.84	-25.00	18.84	V
16110.00	-42.37	-11.84	13.68	-40.53	-25.00	15.53	H
17463.00	-44.03	-12.64	14.82	-41.85	-25.00	16.85	H

LTE Band 48, 5 MHz, QPSK, Channel 55625

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
7101.2	-80.7	-4.5	10.1	-75.1	-40	35.10	V
10650.8	-83.3	-6.1	11.8	-77.6	-40	37.60	V
14201.6	-84.4	-7.1	12.3	-79.2	-40	39.20	V
17752.8	-82.9	-7.8	12.6	-78.1	-40	38.10	V
21315.5	-71.32	-2.47	10.3	-63.5	-40	23.50	V
24867.5	-74.2	-2.86	11.3	-65.7	-40	25.73	H

LTE Band 48, 5 MHz, QPSK, Channel 55990

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
7250	-81.5	-4.6	10.1	-76.0	-40	36.00	V
10875	-83.8	-6.1	11.8	-78.1	-40	38.10	V
14500	-85.4	-6.8	13.1	-79.1	-40	39.10	V
18125	-83.4	-8	12.7	-78.7	-40	38.70	V
21750.0938	-62.53	-2.69	10.6	-64.1	-40	24.10	H
25375.0781	-72.35	-3.05	11.3	-64.1	-40	24.09	V

LTE Band 48, 5 MHz, QPSK, Channel 56715

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
7395	-78.94	-4.8	10.1	-73.6	-40	33.64	V
11092.5	-83.57	-6.5	12.3	-77.8	-40	37.77	V
14790	-84.7	-7.1	13.1	-78.7	-40	38.70	V
18487.5	-83.21	-8	12.7	-78.5	-40	38.50	V
22185.4	-70.58	-2.76	10.8	-62.5	-40	22.50	H
25882.4	-72.67	-3.11	11.4	-64.4	-40	24.40	V

LTE Band 66, 1.4MHz QPSK, Channel 131979

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Pol.
3422.02	-62.62	-5.38	8.01	-59.99	-13.00	46.99	H
5137.02	-59.03	-6.86	10.09	-55.80	-13.00	42.80	H
6846.01	-59.33	-7.83	11.42	-55.74	-13.00	42.74	V
8570.01	-64.85	-8.55	13.01	-60.39	-13.00	47.39	V
10273.01	-62.20	-9.55	13.01	-58.74	-13.00	45.74	V
12024.01	-60.24	-10.12	13.01	-57.35	-13.00	44.35	V

LTE Band 66, 1.4MHz, QPSK, Channel 132322

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3490.02	-62.17	-5.50	8.18	-59.49	-13.00	46.49	H
5238.02	-50.69	-7.00	10.23	-47.46	-13.00	34.46	V
6983.01	-58.74	-8.17	11.58	-55.33	-13.00	42.33	V
8674.01	-65.09	-8.39	13.03	-60.45	-13.00	47.45	V
10503.01	-61.77	-9.64	13.10	-58.31	-13.00	45.31	V
12175.01	-59.97	-10.13	13.07	-57.03	-13.00	44.03	V

LTE Band 66, 1.4MHz, QPSK, Channel 132665

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3559.02	-58.00	-5.92	8.28	-55.64	-13.00	42.64	H
5341.02	-58.11	-6.95	10.38	-54.68	-13.00	41.68	V
7121.01	-53.42	-8.16	11.75	-49.83	-13.00	36.83	V
8951.01	-64.13	-9.03	13.09	-60.07	-13.00	47.07	V
10695.01	-61.94	-9.30	13.14	-58.10	-13.00	45.10	V
12486.01	-59.71	-10.21	13.19	-56.73	-13.00	43.73	V

LTE Band 71, 5MHz, QPSK, Channel 133147

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1312.01	-51.30	-3.13	4.52	2.15	-52.06	-13.00	39.06	H
1997.01	-49.53	-4.04	4.61	2.15	-51.11	-13.00	38.11	H
2672.00	-49.81	-4.76	6.41	2.15	-50.31	-13.00	37.31	V
3333.02	-53.59	-5.30	7.80	2.15	-53.24	-13.00	40.24	H
3979.02	-54.49	-6.08	8.87	2.15	-53.85	-13.00	40.85	V
4647.02	-53.68	-6.46	9.55	2.15	-52.74	-13.00	39.74	V

LTE Band 71, 5MHz, QPSK, Channel 133297

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1372.01	-49.03	-3.20	4.83	2.15	-49.55	-13.00	36.55	H
2042.00	-52.71	-4.14	4.73	2.15	-54.27	-13.00	41.27	H
2719.00	-52.07	-4.80	6.49	2.15	-52.53	-13.00	39.53	V
3403.02	-55.18	-5.36	7.97	2.15	-54.72	-13.00	41.72	V
4077.02	-54.65	-6.04	8.98	2.15	-53.86	-13.00	40.86	H
4762.01	-53.80	-6.59	9.66	2.15	-52.88	-13.00	39.88	V

LTE Band 71, 5MHz, QPSK, Channel 133447

Frequency (MHz)	P _{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1418.01	-54.73	-3.26	5.07	2.15	-55.07	-13.00	42.07	H
2087.00	-54.99	-4.18	4.86	2.15	-56.46	-13.00	43.46	H
2802.00	-51.95	-4.92	6.64	2.15	-52.38	-13.00	39.38	H
3486.02	-55.12	-5.49	8.17	2.15	-54.59	-13.00	41.59	H
4176.02	-54.16	-6.15	9.08	2.15	-53.38	-13.00	40.38	V
4870.01	-53.79	-6.72	9.77	2.15	-52.89	-13.00	39.89	H

Sample: 1418.01MHz

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

-55.07dBm=-54.73dBm+(-3.26dB)+ 5.07dBi-2.15

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

A.3 Frequency Stability

A.3.1 Method of Measurement

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

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

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500, and in a simulated call on middle channel for each LTE band, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the center channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C increments from -30°C to +50°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 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	2500.929	2569.135		
50				2.07	0.0008
40				1.87	0.0007
30				3.38	0.0013
10				0.44	0.0002
0				0.82	0.0003
-10				-12.36	0.0049
-20				3.65	0.0014
-30				-12.12	0.0048

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	2500.929	2569.135	-11.62	0.0046
4.4				1.09	0.0004

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				5.68	0.0080
40				5.32	0.0075
30				0.59	0.0008
10				6.51	0.0092
0				0.34	0.0005
-10				4.81	0.0068
-20				0.50	0.0007
-30				4.95	0.0070

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	699.481	715.519	0.03	0.0000
4.4				4.98	0.0070

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	777.417	786.551		
50				0.89	0.0011
40				-5.98	0.0076
30				-4.82	0.0062
10				-6.01	0.0077
0				0.07	0.0001
-10				0.14	0.0002
-20				-0.11	0.0001
-30				-4.88	0.0062

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	777.417	786.551	0.57	0.0007
4.4				0.69	0.0009

LTE Band 14, 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	788.476	797.519		
50				-3.62	0.0046
40				0.80	0.0010
30				0.67	0.0008
10				-4.45	0.0056
0				-3.58	0.0045
-10				-4.72	0.0060
-20				0.23	0.0003
-30				-6.04	0.0076

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	788.476	797.519	1.47	0.0019
4.4				0.76	0.0010

LTE Band 25, 20MHz bandwidth QPSK (worst case of all bandwidths)
Frequency Error vs Temperature

Temperature(°C)	Voltage(V)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1850.833	1914.199		
50				-2.40	0.0013
40				0.10	0.0001
30				-2.47	0.0013
10				-0.20	0.0001
0				-10.61	0.0056
-10				-0.73	0.0004
-20				-1.53	0.0008
-30				0.20	0.0001

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	1850.833	1914.199	-10.19	0.0054
4.4				-1.76	0.0009

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	814.389	823.611		
50				1.96	0.0024
40				-5.39	0.0066
30				-4.85	0.0059
10				-5.34	0.0065
0				0.43	0.0005
-10				0.10	0.0001
-20				-5.54	0.0068
-30				0.26	0.0003

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	814.389	823.611	-4.58	0.0056
4.4				0.11	0.0001

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	824.577	848.447		
50				7.58	0.0091
40				0.99	0.0012
30				0.90	0.0011
10				1.33	0.0016
0				0.44	0.0005
-10				6.01	0.0072
-20				-0.21	0.0003
-30				0.27	0.0003

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	824.577	848.447	0.89	0.0011
4.4				1.27	0.0015

LTE Band 30, 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	2305.417	2314.583		
50				-11.70	0.0051
40				-1.23	0.0005
30				-14.48	0.0063
10				-11.62	0.0050
0				-13.90	0.0060
-10				-11.67	0.0051
-20				-10.80	0.0047
-30				-11.26	0.0049

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	2305.417	2314.583	-11.97	0.0052
4.4				-2.85	0.0012

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	2496.321	2689.647		
50				0.50	0.0002
40				-1.12	0.0004
30				1.86	0.0007
10				-0.31	0.0001
0				1.43	0.0006
-10				2.15	0.0008
-20				0.77	0.0003
-30				1.46	0.0006

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	2496.321	2689.647	3.30	0.0013
4.4				0.67	0.0003

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	3550.582	3699.275		
50				-0.80	0.0002
40				-0.60	0.0002
30				-0.10	0.0000
10				0.00	0.0000
0				0.60	0.0002
-10				1.50	0.0004
-20				-2.60	0.0007
-30				0.20	0.0001

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	3550.582	3699.275	-1.10	0.0003
4.4				-2.80	0.0008

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

Temperature(°C)	Voltage(V)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1710.833	1779.231		
50				-0.26	0.0001
40				-0.60	0.0003
30				-0.49	0.0003
10				-1.95	0.0011
0				-0.96	0.0006
-10				-0.70	0.0004
-20				0.56	0.0003
-30				-2.32	0.0013

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	1710.833	1779.231	-0.83	0.0005
4.4				0.34	0.0002

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				-1.07	0.0016
40				4.19	0.0062
30				-1.12	0.0016
10				-0.77	0.0011
0				-1.50	0.0022
-10				-1.24	0.0018
-20				4.13	0.0061
-30				-0.20	0.0003

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	F _L (MHz)	F _H (MHz)	Offset(Hz)	Frequency error(ppm)
3.5	20	663.994	697.006	-0.70	0.0010
4.4				-1.10	0.0016

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.

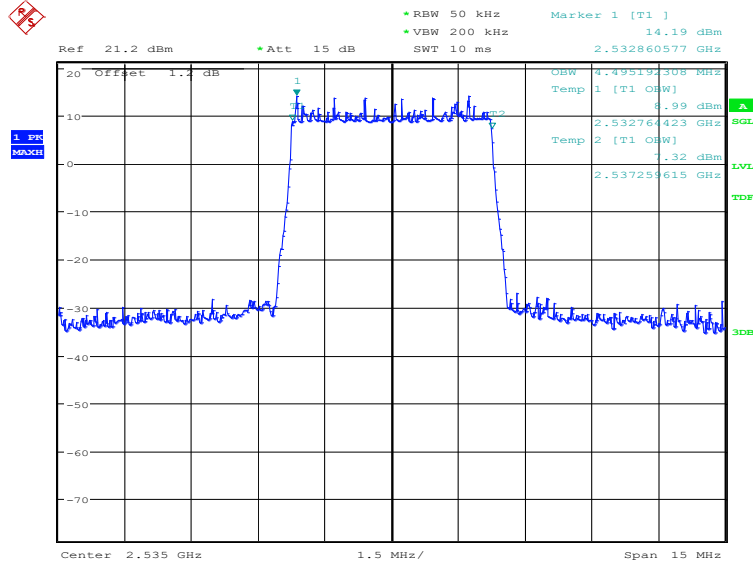
The measurement method is from ANSI C63.26:

- 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 7, 5MHz (99%)

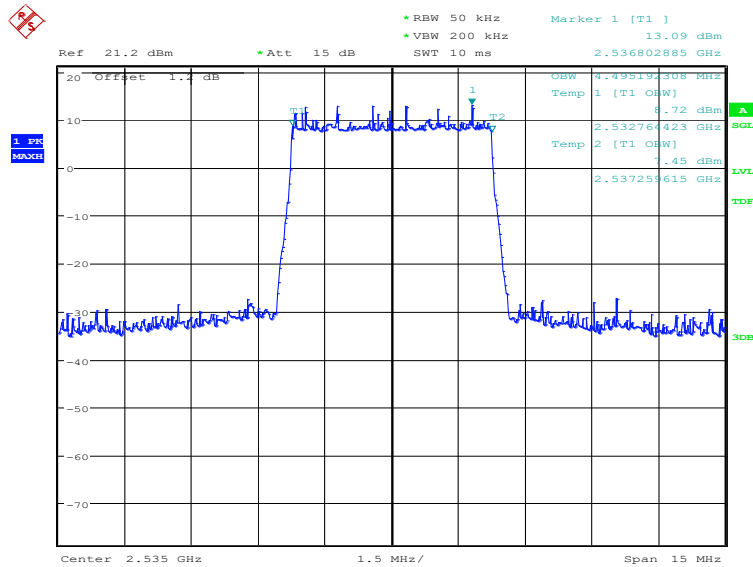
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
2535.0	QPSK	16QAM
	4495.19	4495.19

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



Date: 30.DEC.2020 08:50:10

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

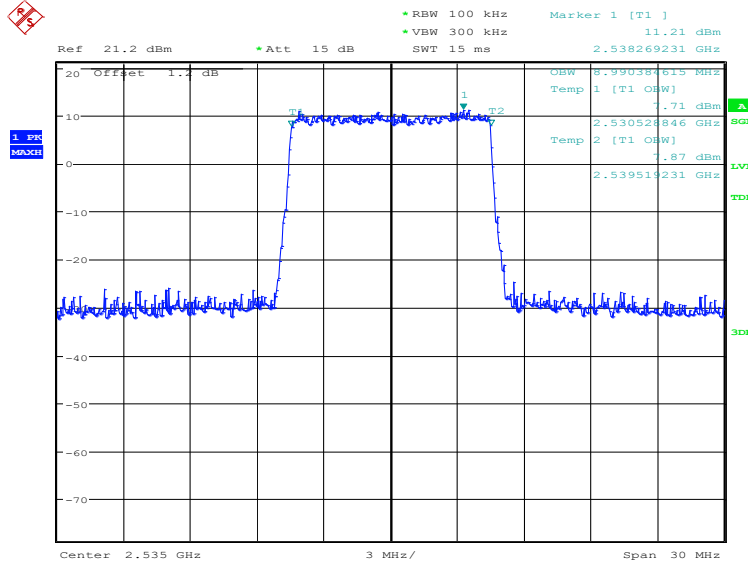


Date: 30.DEC.2020 08:50:49

LTE band 7, 10MHz (99%)

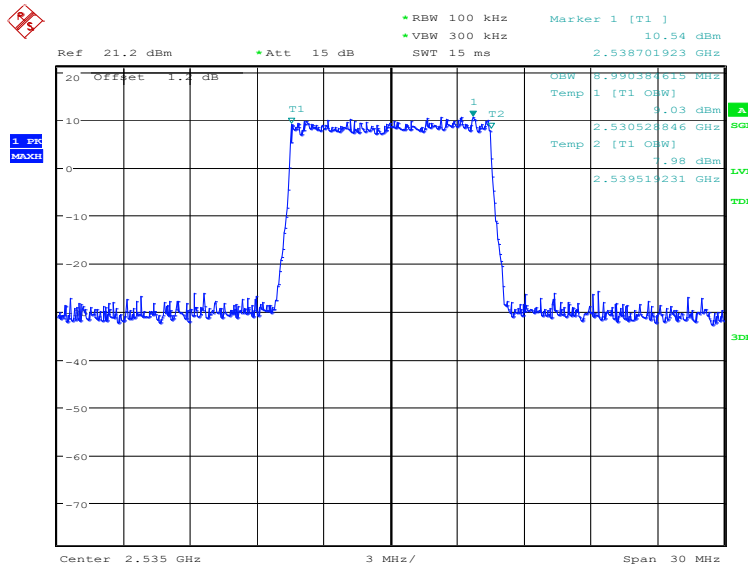
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
2535.0	QPSK	16QAM
	8990.38	8990.38

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



Date: 30.DEC.2020 08:51:30

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

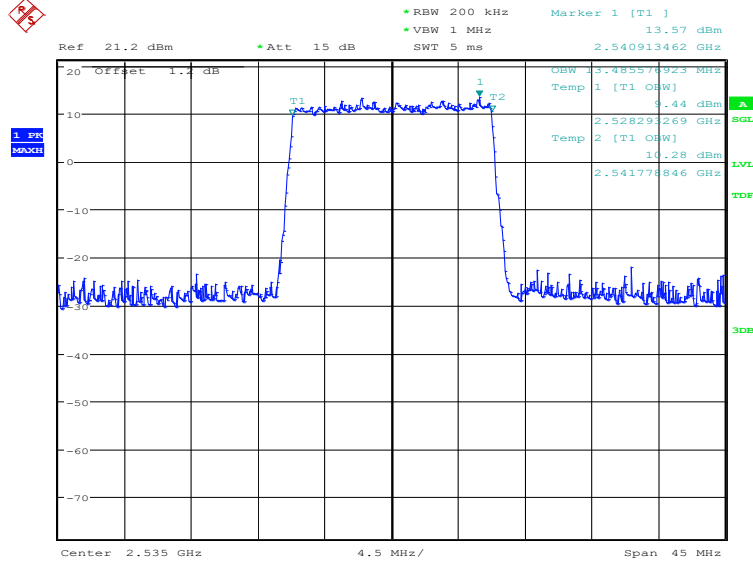


Date: 30.DEC.2020 08:52:08

LTE band 7, 15MHz (99%)

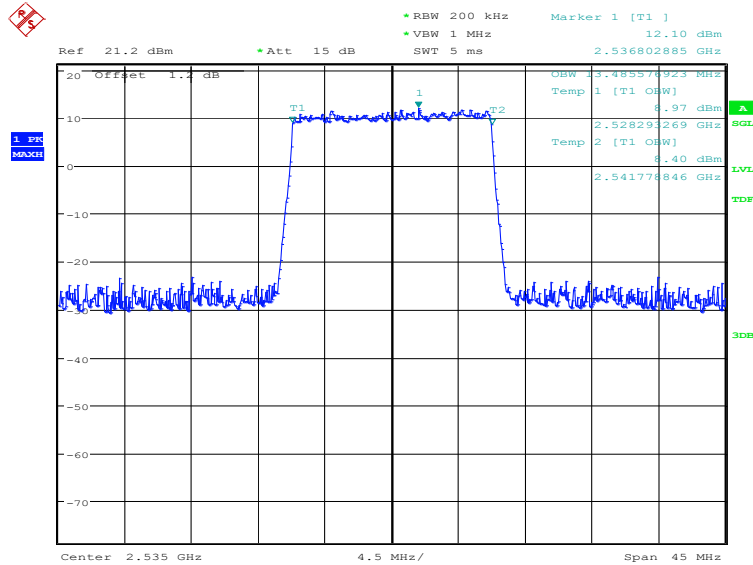
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
2535.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 30.DEC.2020 08:52:49

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

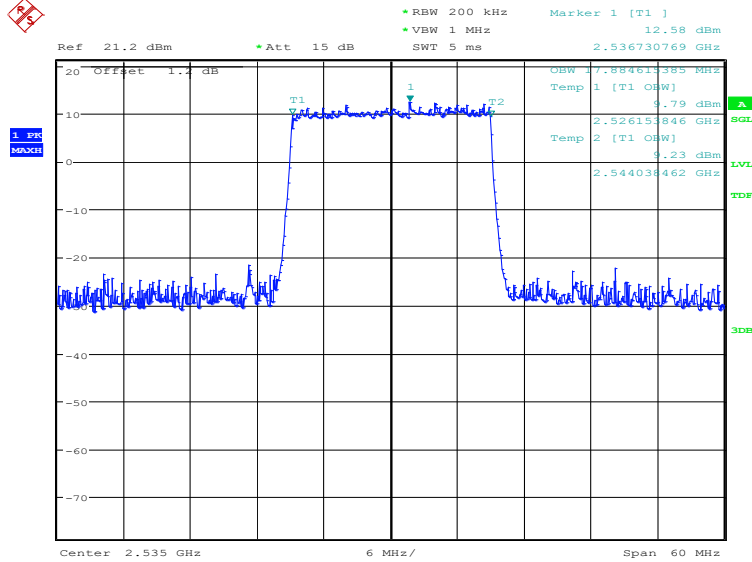


Date: 30.DEC.2020 08:53:27

LTE band 7, 20MHz (99%)

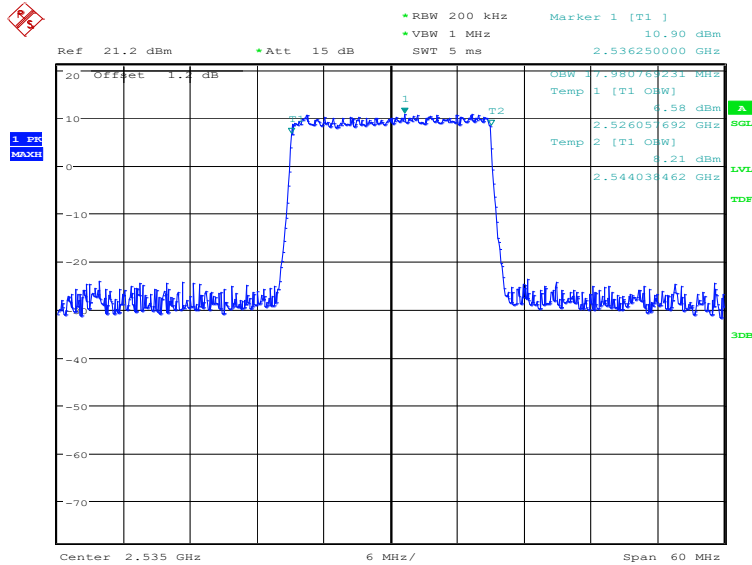
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
2535.0	QPSK	16QAM
	17884.62	17980.77

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



Date: 30.DEC.2020 08:54:08

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

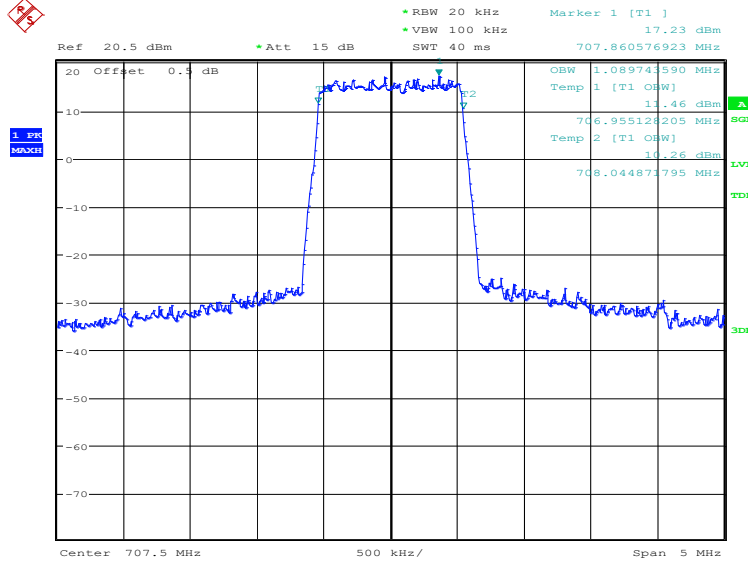


Date: 30.DEC.2020 08:54:46

LTE band 12, 1.4MHz (99%)

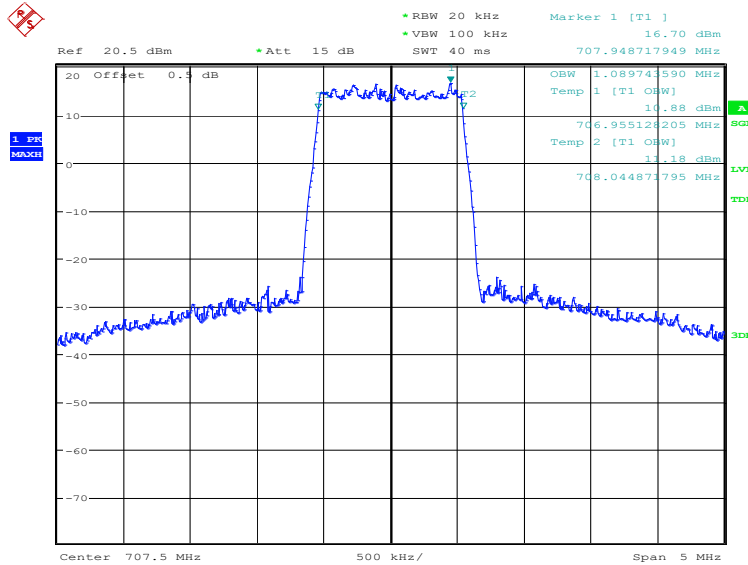
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
707.5	QPSK	16QAM
	1089.74	1089.74

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



Date: 28.DEC.2020 17:57:45

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

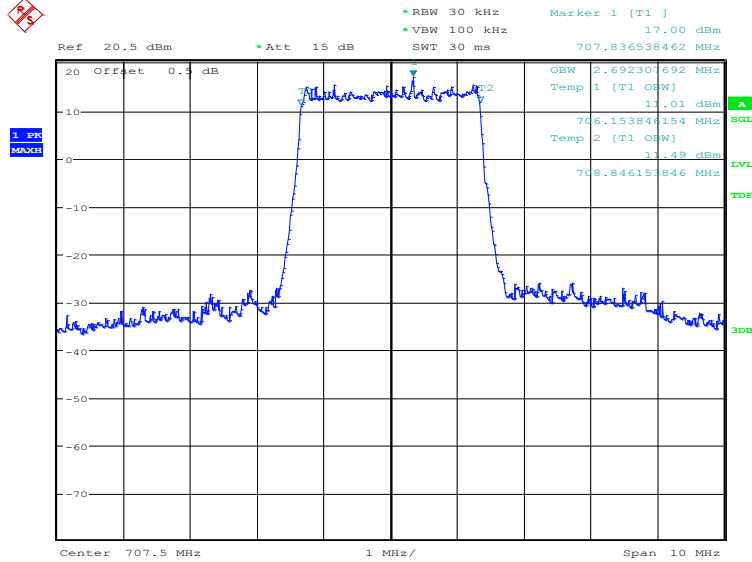


Date: 28.DEC.2020 17:58:23

LTE band 12, 3MHz (99%)

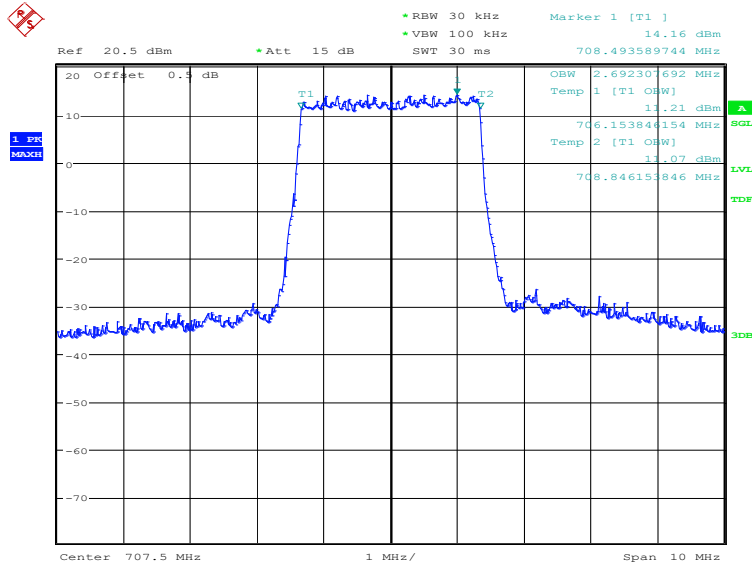
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
707.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 28.DEC.2020 17:59:04

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

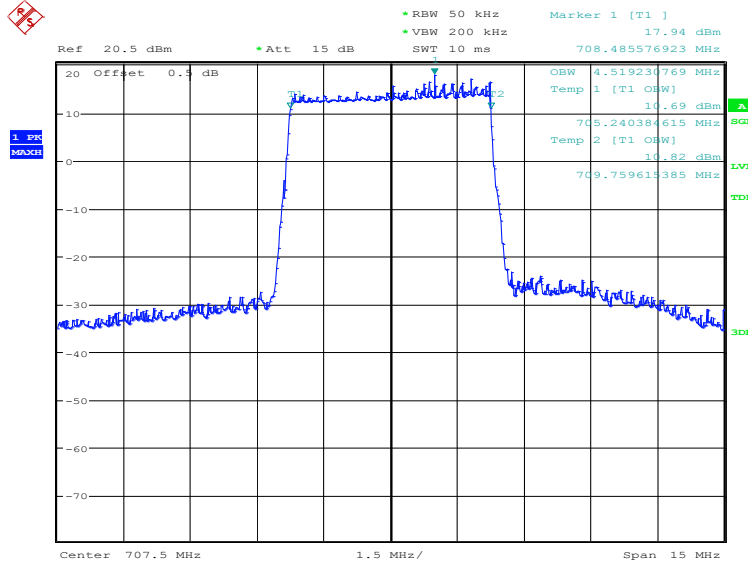


Date: 28.DEC.2020 17:59:42

LTE band 12, 5MHz (99%)

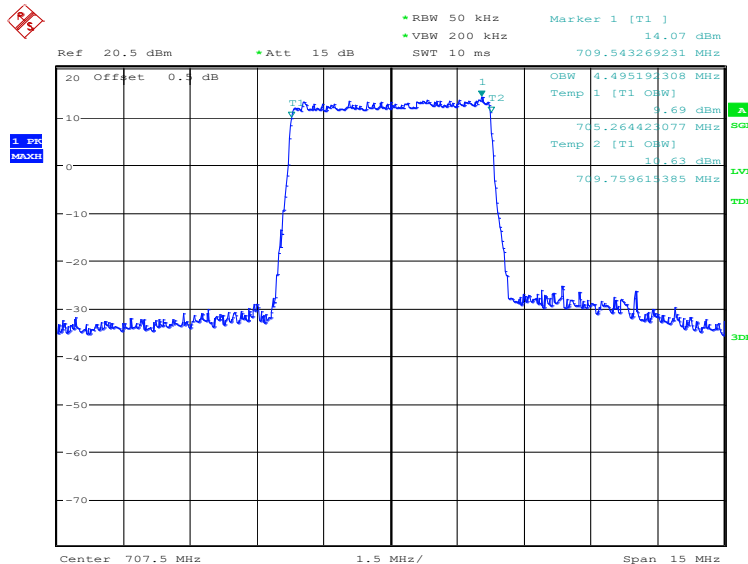
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
707.5	QPSK	16QAM
	4519.23	4495.19

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



Date: 28.DEC.2020 18:00:23

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

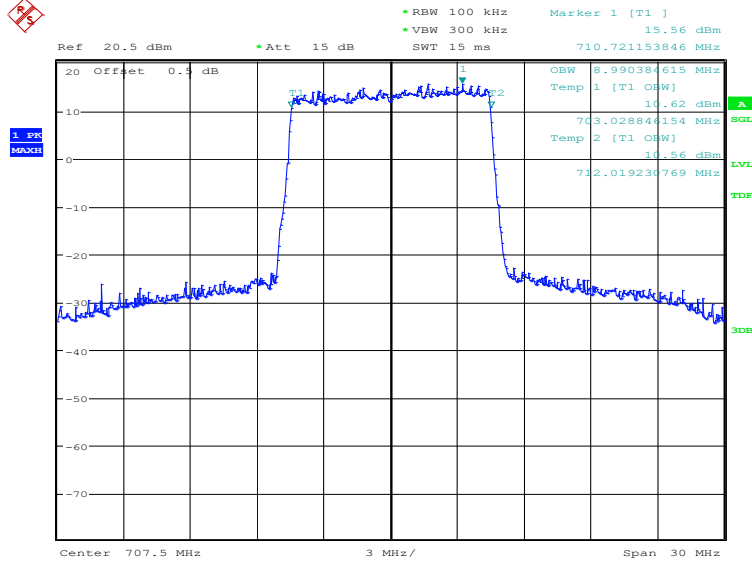


Date: 28.DEC.2020 18:01:01

LTE band 12, 10MHz (99%)

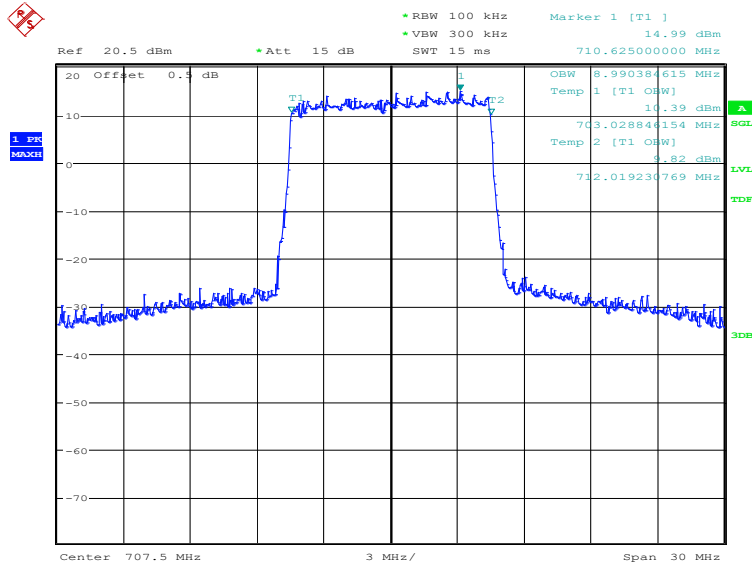
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
707.5	QPSK	16QAM
	8990.38	8990.38

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



Date: 28.DEC.2020 18:01:42

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

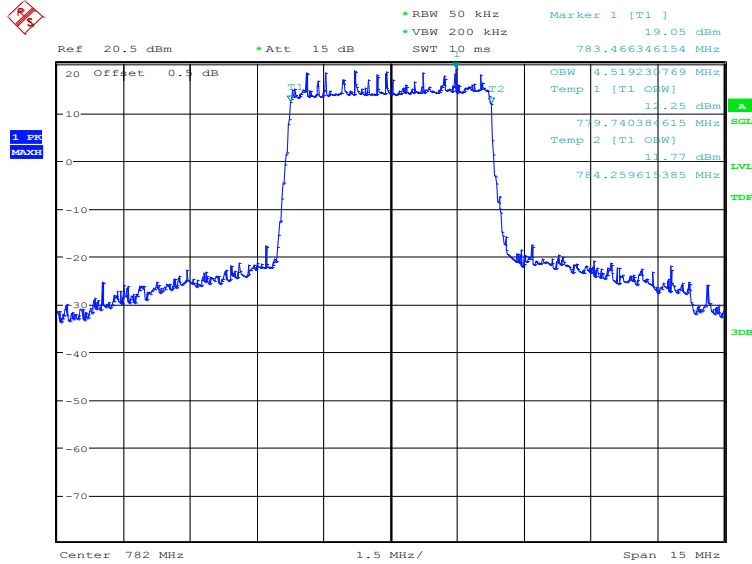


Date: 28.DEC.2020 18:02:21

LTE band 13, 5MHz (99%)

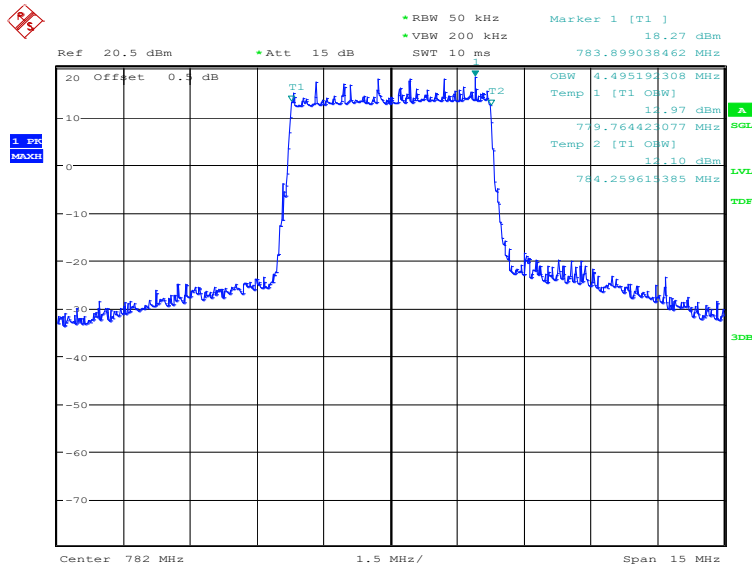
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
782.0	QPSK	16QAM
	4519.23	4495.19

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



Date: 28.DEC.2020 18:03:03

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

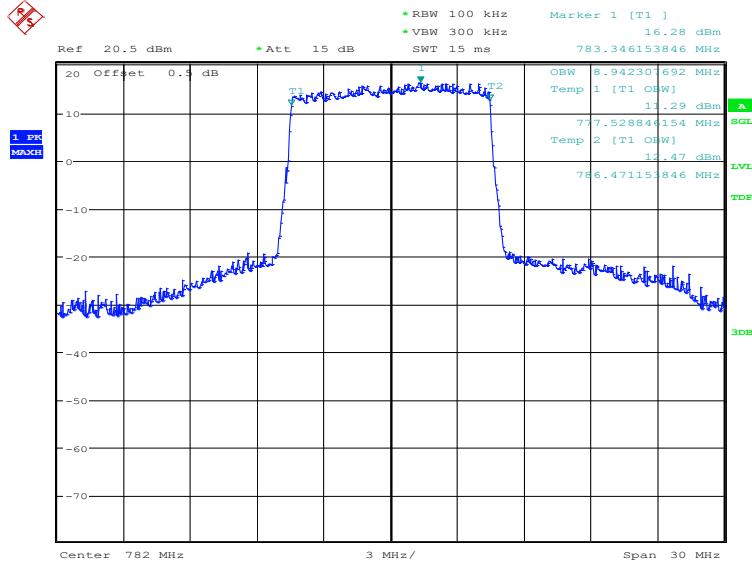


Date: 28.DEC.2020 18:03:42

LTE band 13, 10MHz (99%)

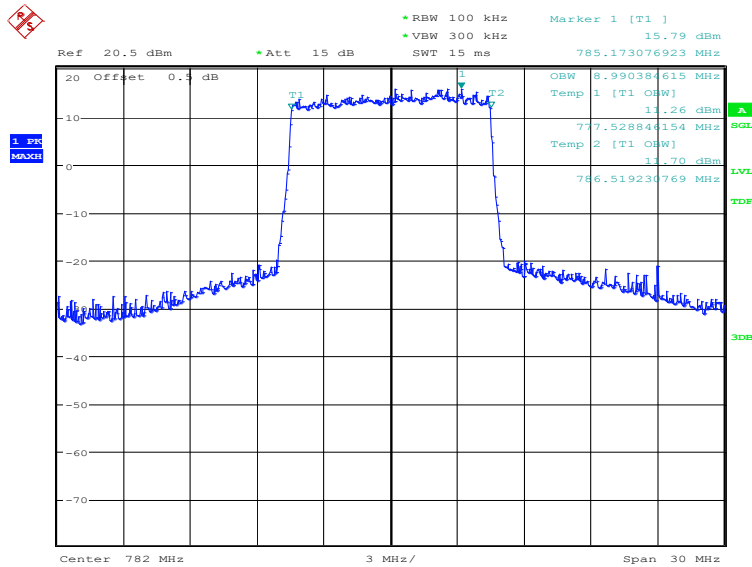
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
782.0	QPSK	16QAM
	8942.31	8990.38

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



Date: 28.DEC.2020 18:04:23

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

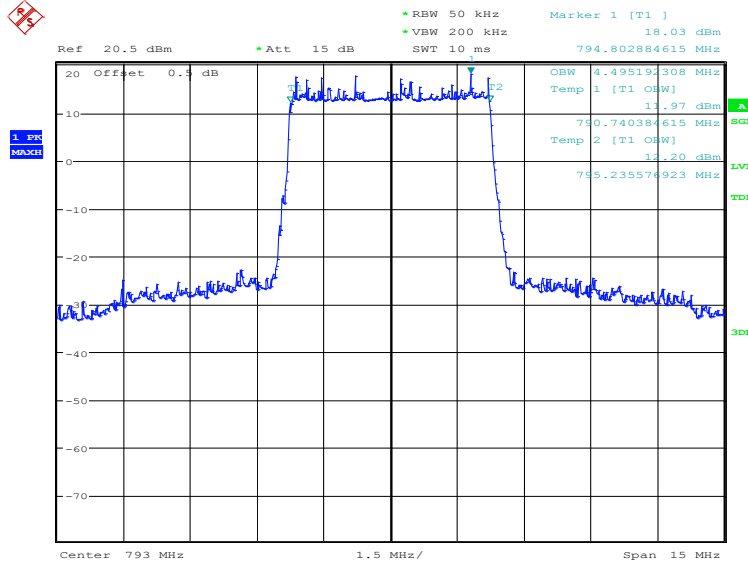


Date: 28.DEC.2020 18:05:01

LTE band 14, 5MHz (99%)

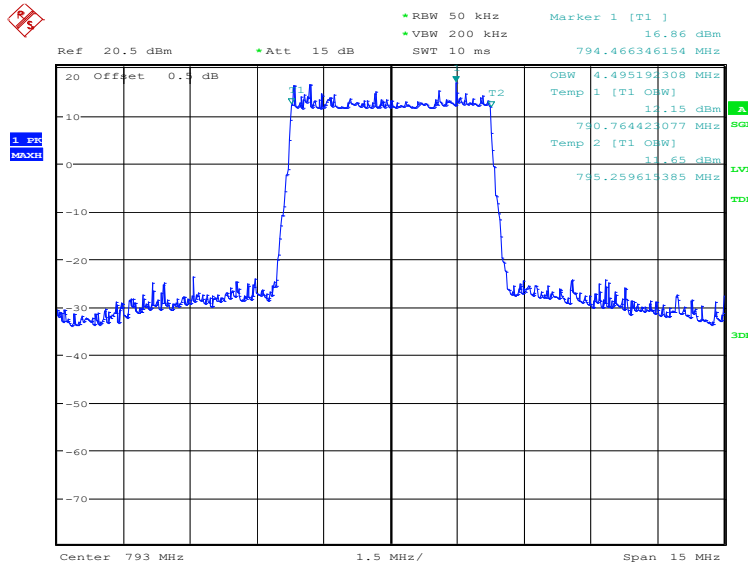
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
793.0	QPSK	16QAM
	4495.19	4495.19

LTE band 14, 5MHz Bandwidth, QPSK (99% BW)



Date: 28.DEC.2020 18:05:43

LTE band 14, 5MHz Bandwidth, 16QAM (99% BW)

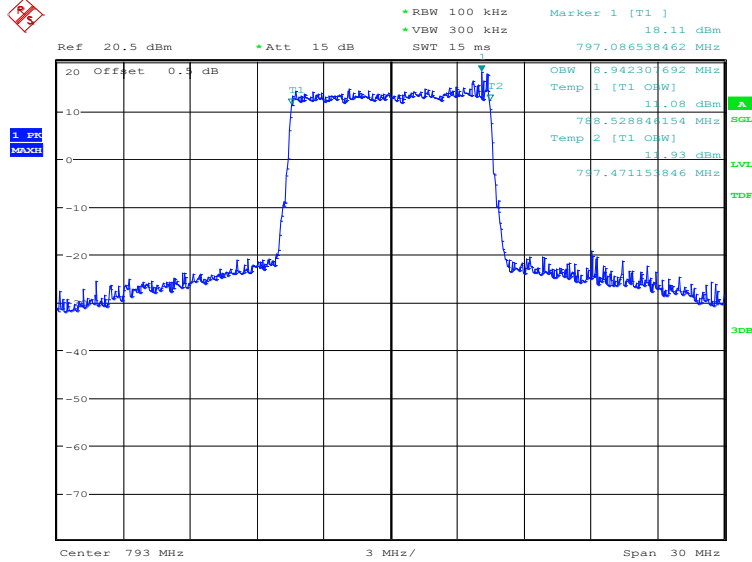


Date: 28.DEC.2020 18:06:22

LTE band 14, 10MHz (99%)

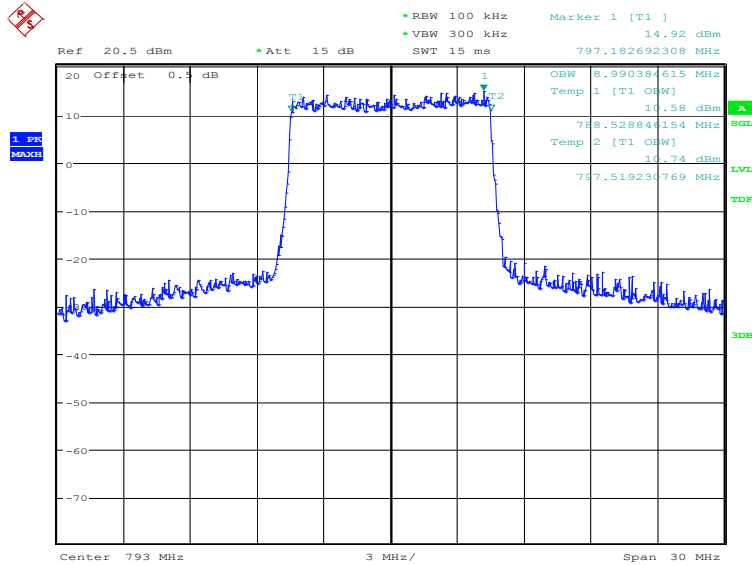
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
793.0	QPSK	16QAM
	8942.31	8990.38

LTE band 14, 10MHz Bandwidth, QPSK (99% BW)



Date: 28.DEC.2020 18:07:03

LTE band 14, 10MHz Bandwidth, 16QAM (99% BW)

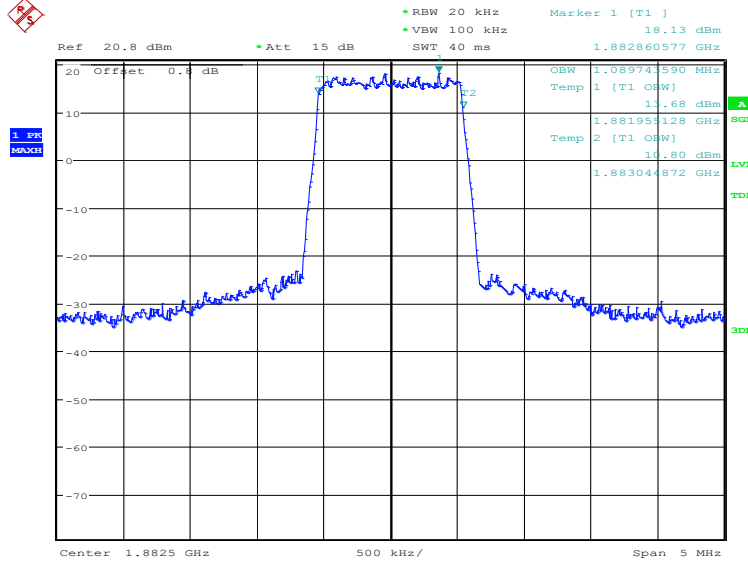


Date: 28.DEC.2020 18:07:42

LTE band 25, 1.4MHz (99%)

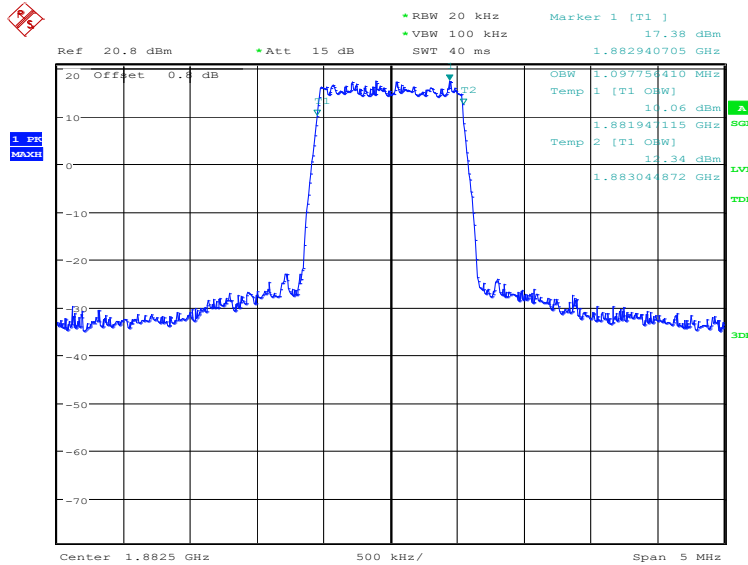
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
1882.5	QPSK	16QAM
	1089.74	1097.76

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



Date: 30.DEC.2020 11:00:37

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

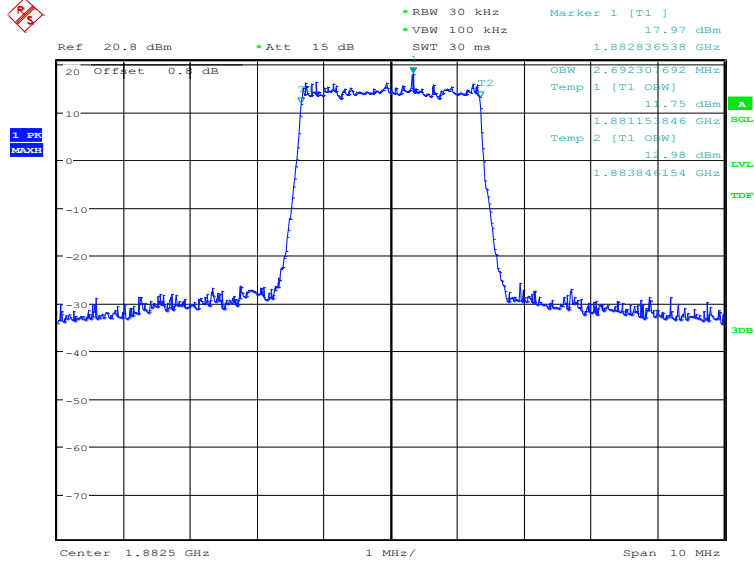


Date: 30.DEC.2020 11:01:16

LTE band 25, 3MHz (99%)

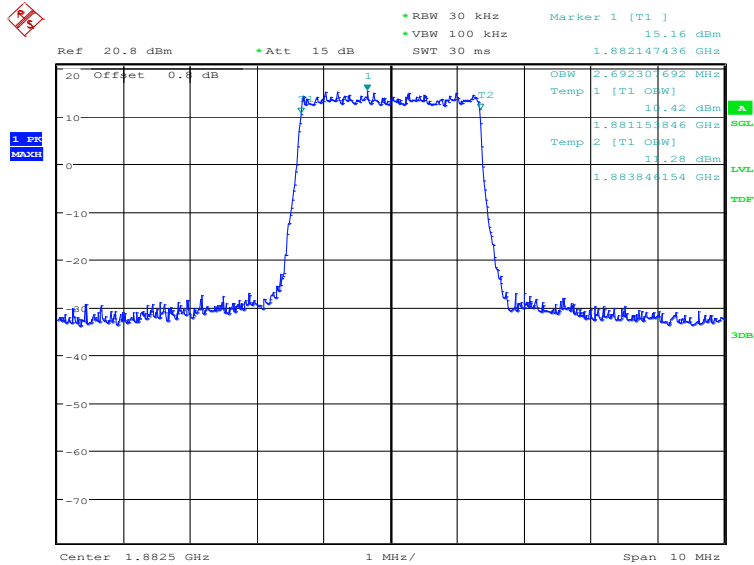
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
1882.5	QPSK	16QAM
	2692.31	2692.31

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



Date: 30.DEC.2020 11:01:56

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

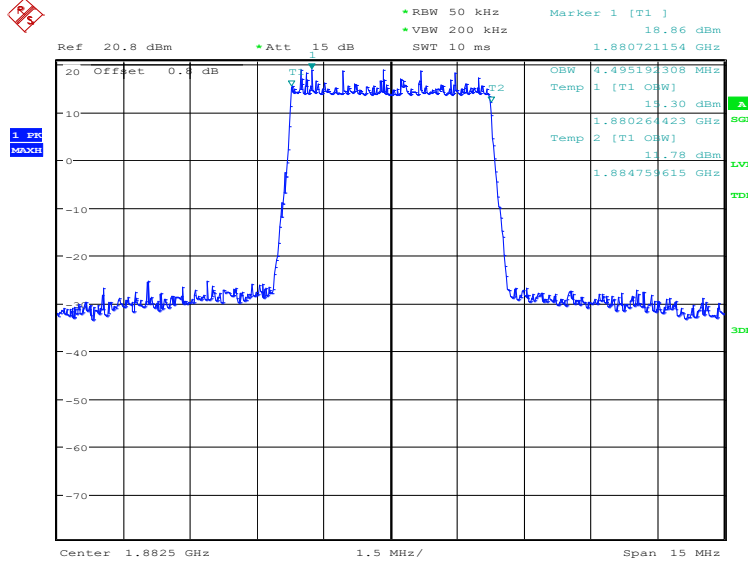


Date: 30.DEC.2020 11:02:35

LTE band 25, 5MHz (99%)

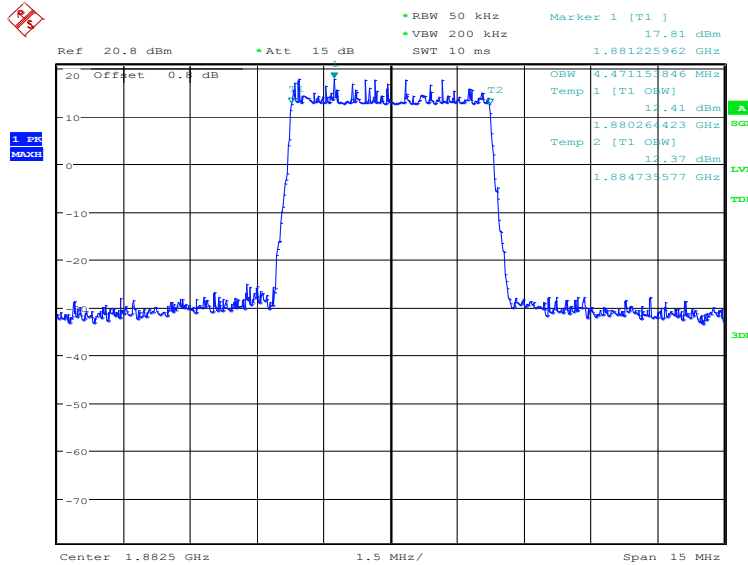
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
1882.5	QPSK	16QAM
	4495.19	4471.15

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



Date: 30.DEC.2020 11:03:15

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

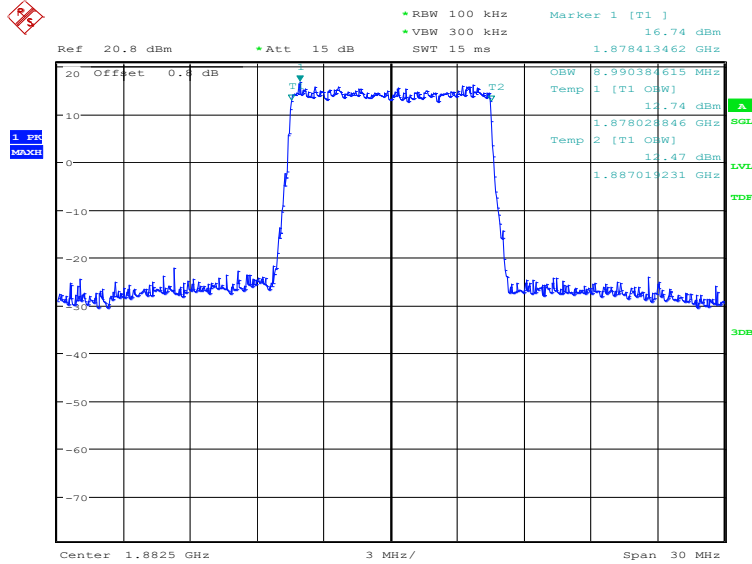


Date: 30.DEC.2020 11:03:54

LTE band 25, 10MHz (99%)

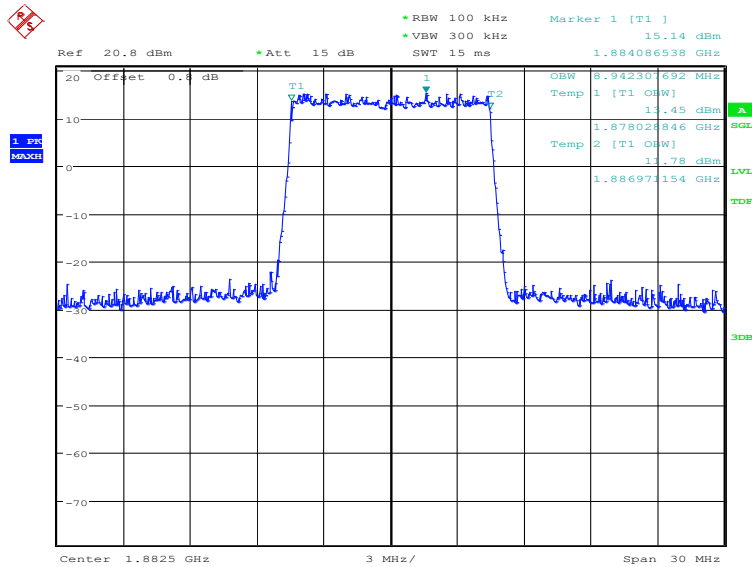
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
1882.5	QPSK	16QAM
	8990.38	8942.31

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



Date: 30.DEC.2020 11:04:35

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

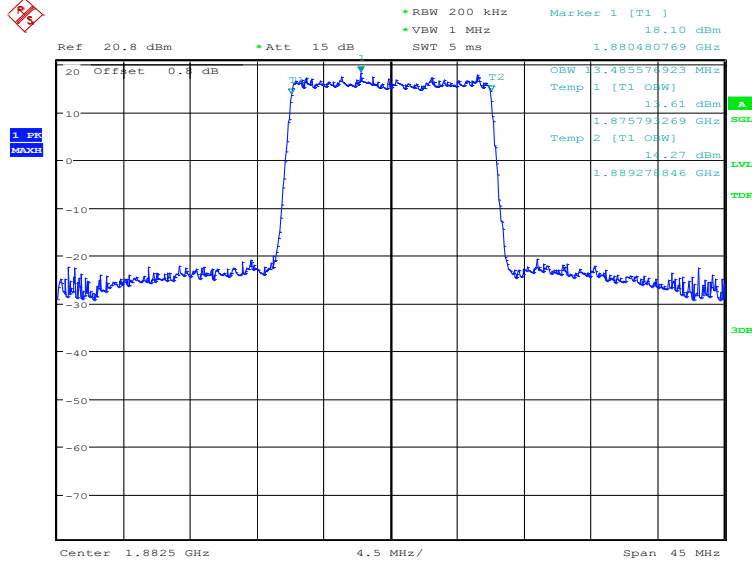


Date: 30.DEC.2020 11:05:13

LTE band 25, 15MHz (99%)

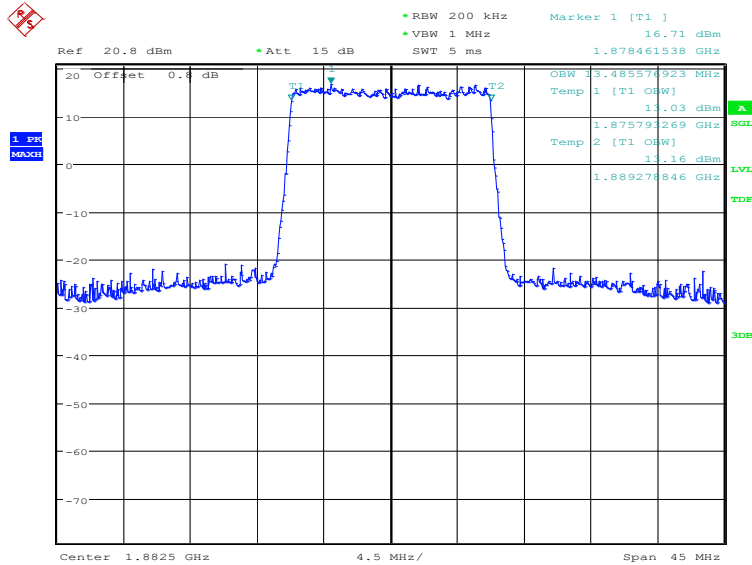
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
1882.5	QPSK	16QAM
	13485.58	13485.58

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



Date: 30.DEC.2020 11:05:54

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

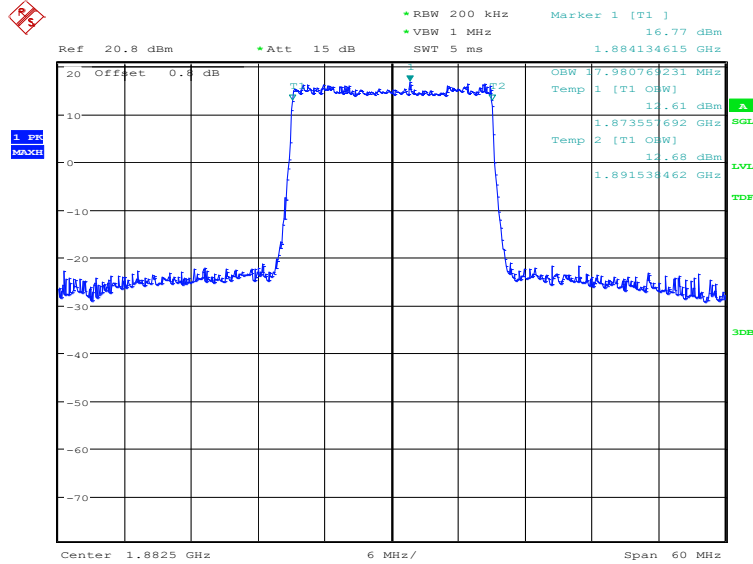


Date: 30.DEC.2020 11:06:33

LTE band 25, 20MHz (99%)

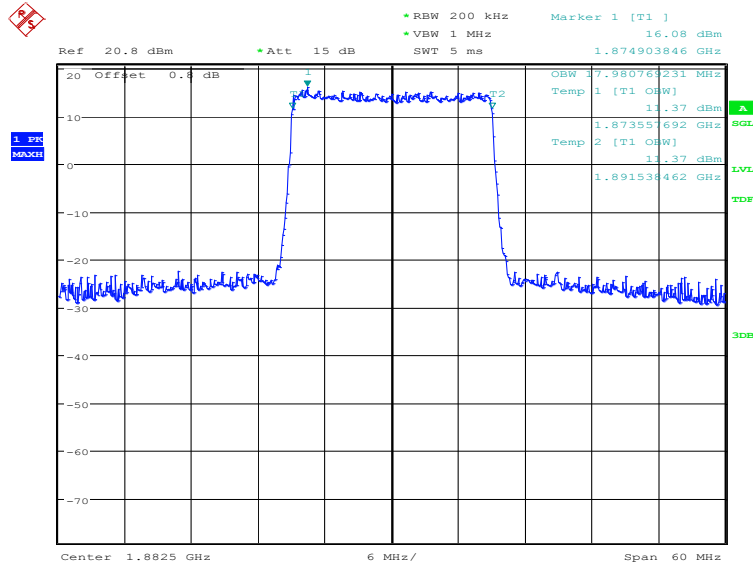
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
1882.5	QPSK	16QAM
	17980.77	17980.77

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



Date: 30.DEC.2020 11:07:13

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

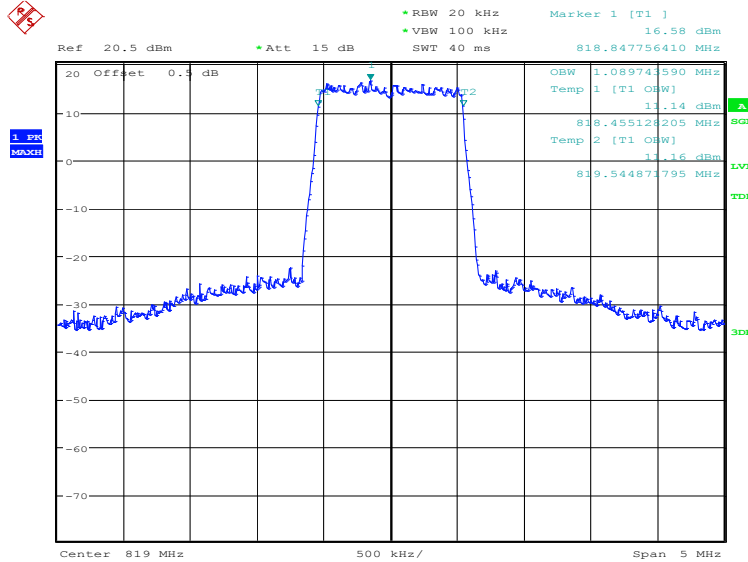


Date: 30.DEC.2020 11:07:52

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

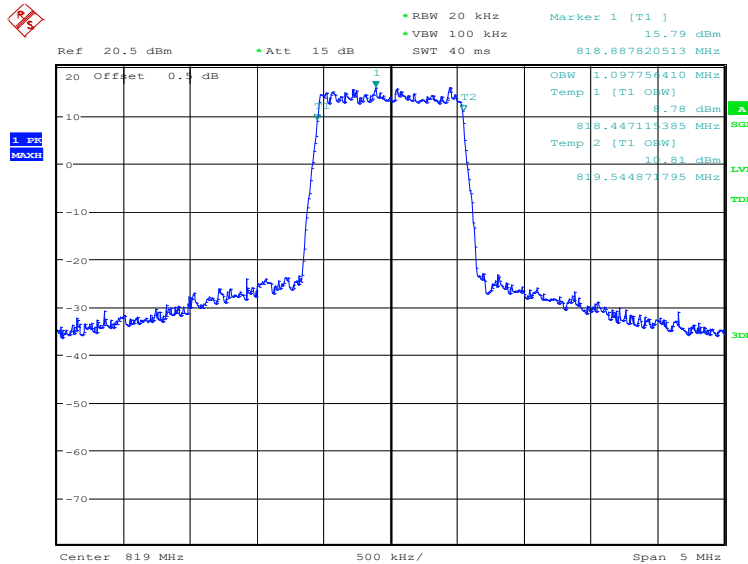
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
819.0	QPSK	16QAM
	1089.74	1097.76

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



Date: 28.DEC.2020 18:15:40

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

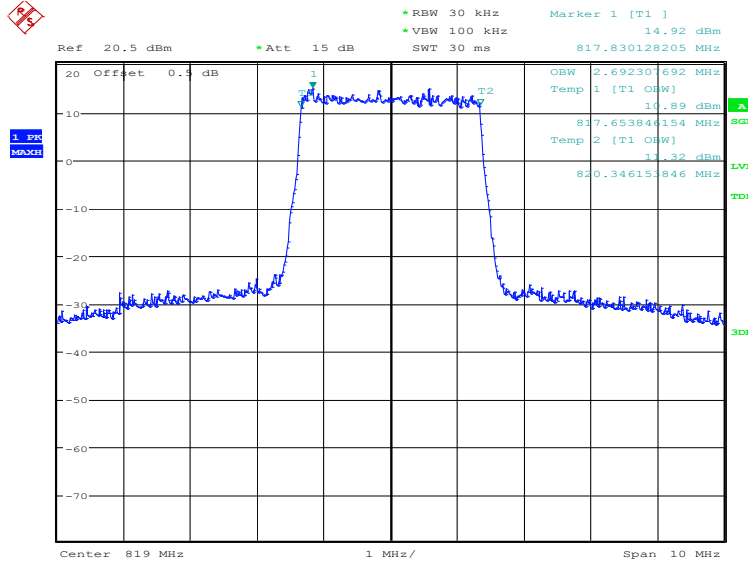


Date: 28.DEC.2020 18:16:19

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

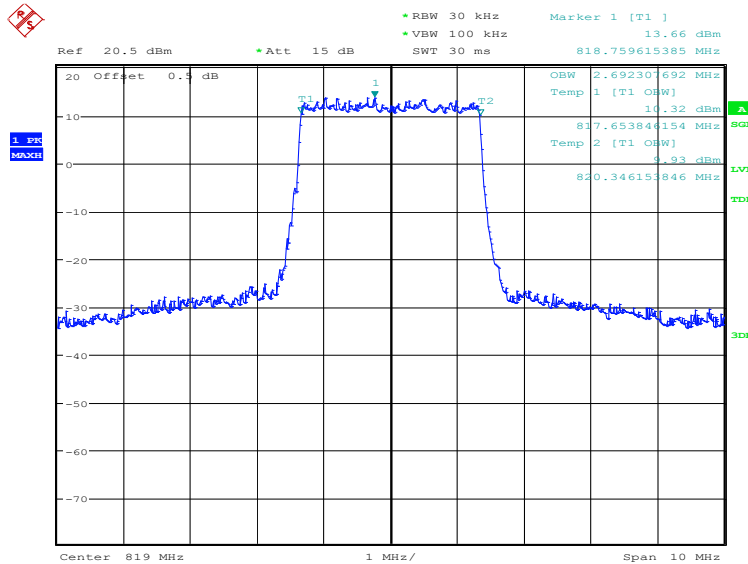
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
819.0	QPSK	16QAM
	2692.31	2692.31

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



Date: 28.DEC.2020 18:16:59

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

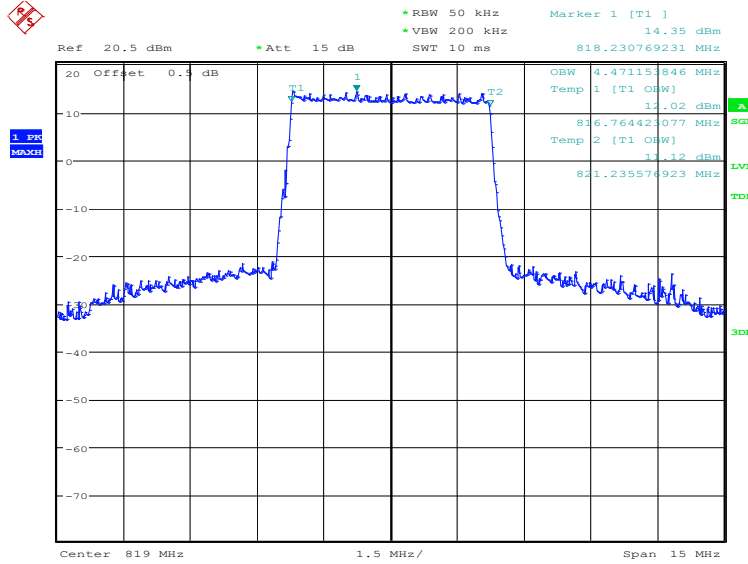


Date: 28.DEC.2020 18:17:38

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

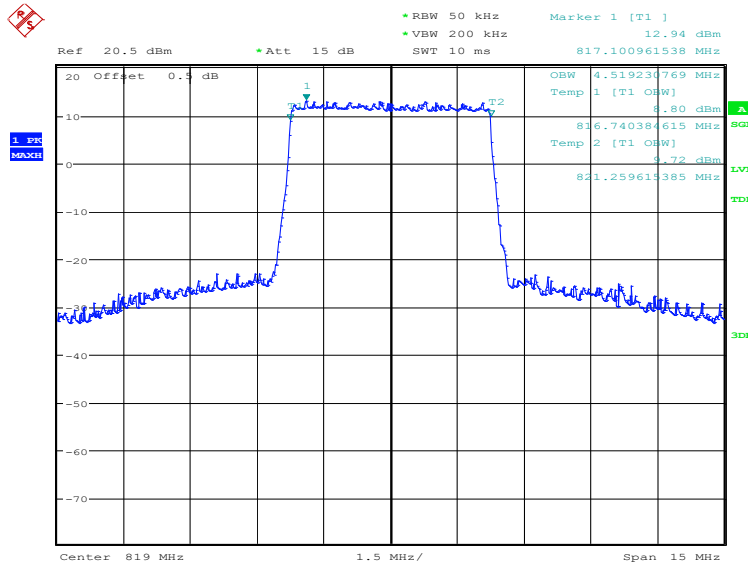
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
819.0	QPSK	16QAM
	4471.15	4519.23

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



Date: 28.DEC.2020 18:18:19

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

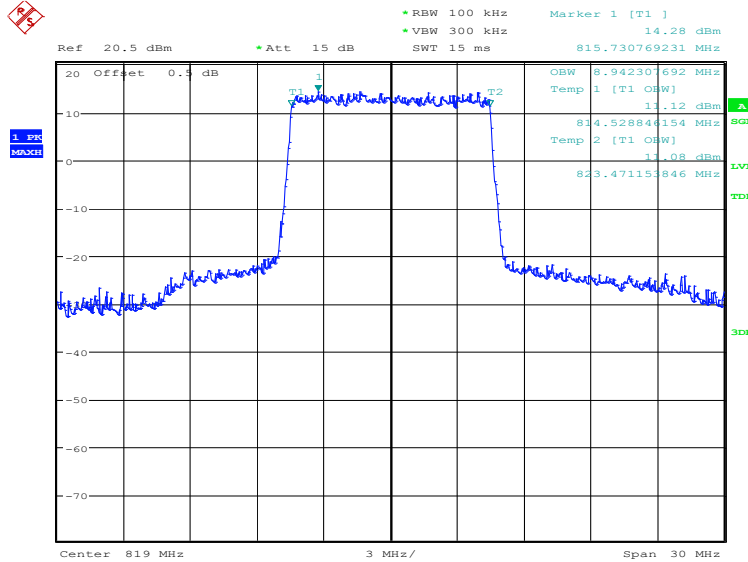


Date: 28.DEC.2020 18:18:57

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

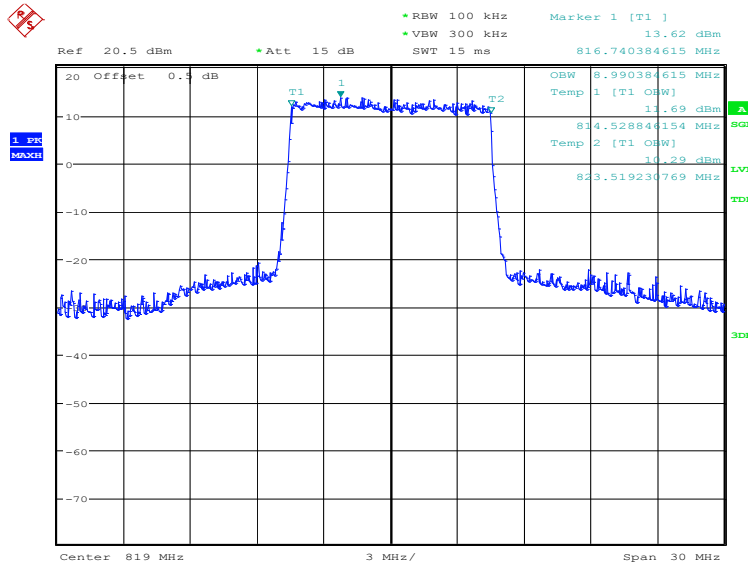
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
819.0	QPSK	16QAM
	8942.31	8990.38

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



Date: 28.DEC.2020 18:19:39

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

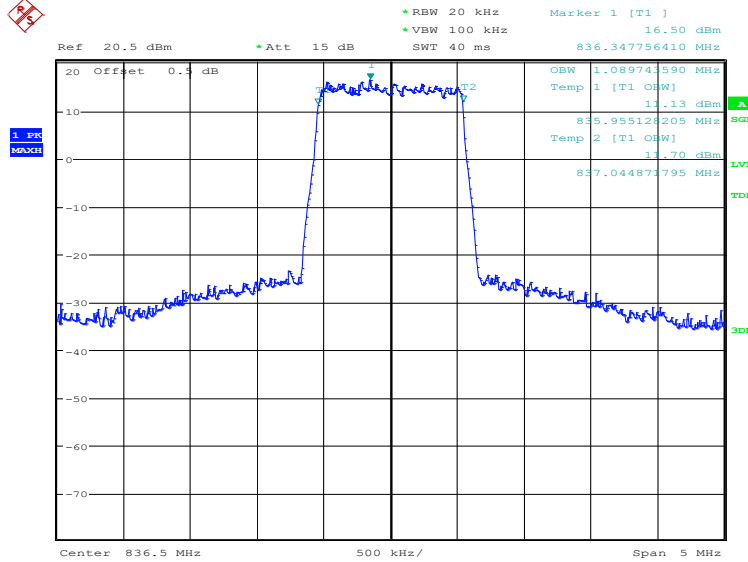


Date: 28.DEC.2020 18:20:17

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

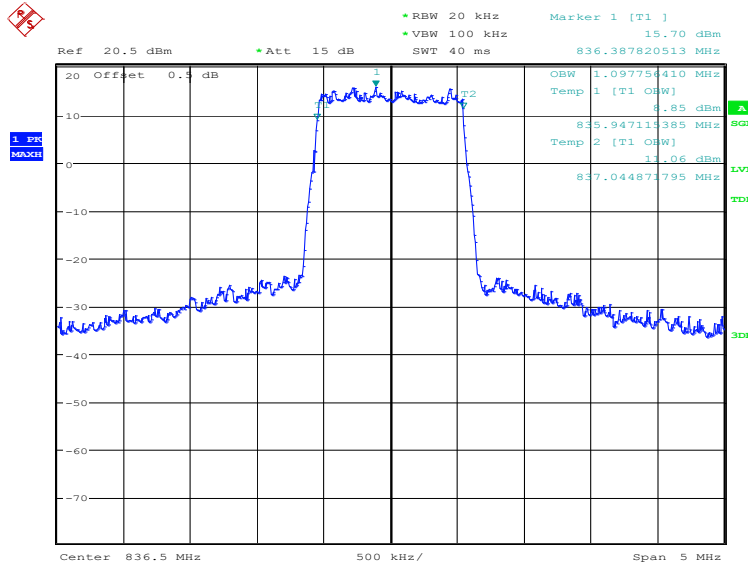
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
836.5	QPSK	16QAM
	1089.74	1097.76

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



Date: 28.DEC.2020 18:08:25

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

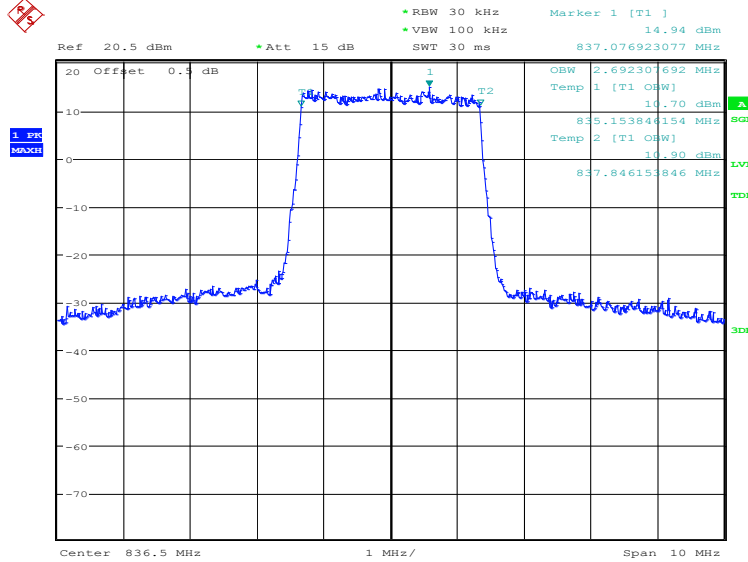


Date: 28.DEC.2020 18:09:04

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

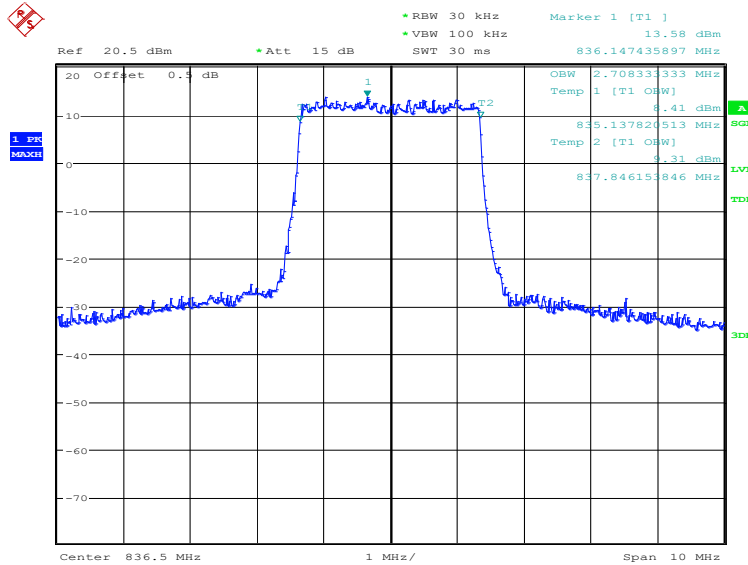
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
836.5	QPSK	16QAM
	2692.31	2708.33

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



Date: 28.DEC.2020 18:09:45

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

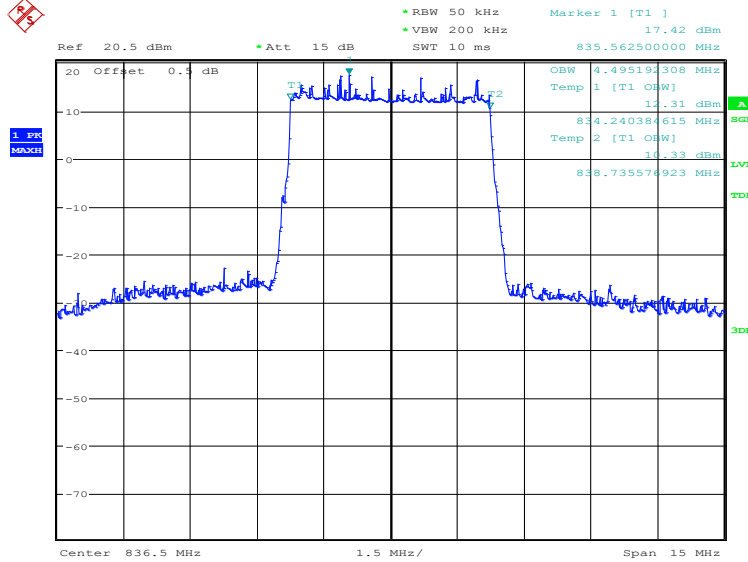


Date: 28.DEC.2020 18:10:23

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

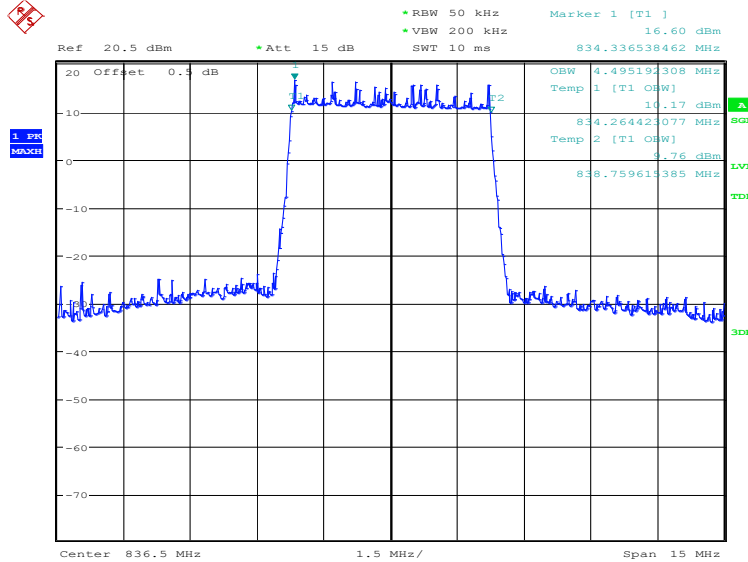
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
836.5	QPSK	16QAM
	4495.19	4495.19

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



Date: 28.DEC.2020 18:11:04

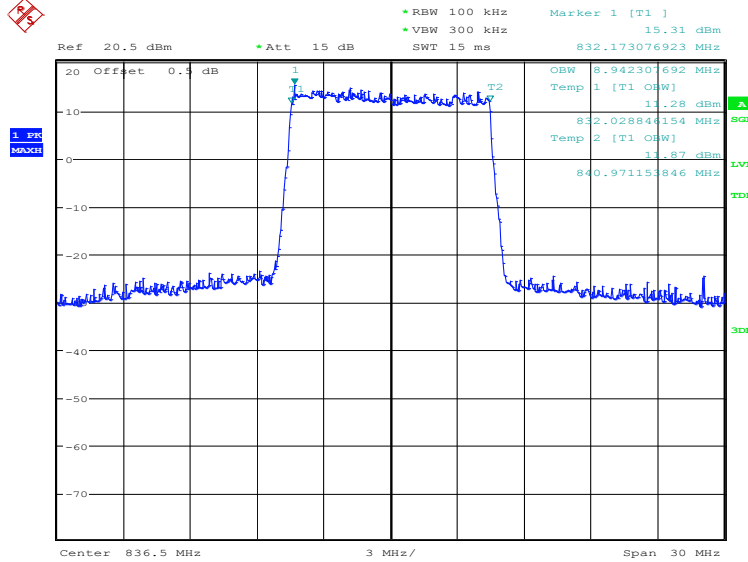
LTE band 26(824MHz~849MHz), 5MHz Bandwidth, 16QAM (99% BW)



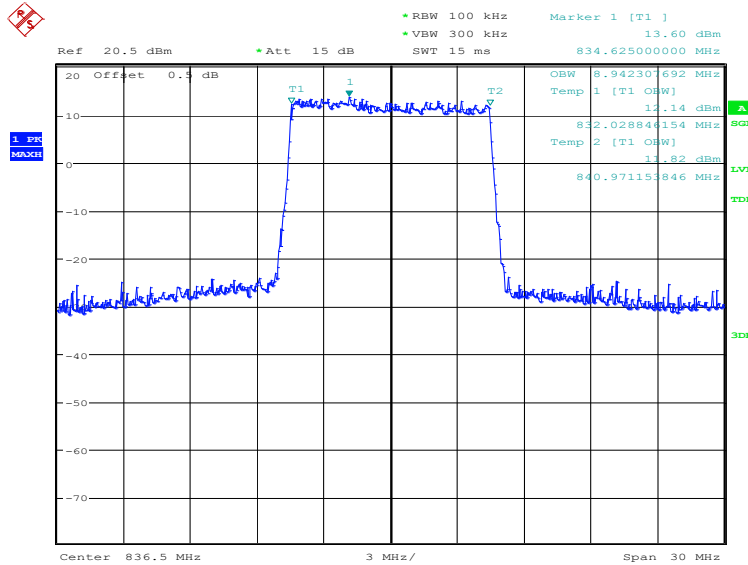
Date: 28.DEC.2020 18:11:43

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

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

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


Date: 28.DEC.2020 18:12:24

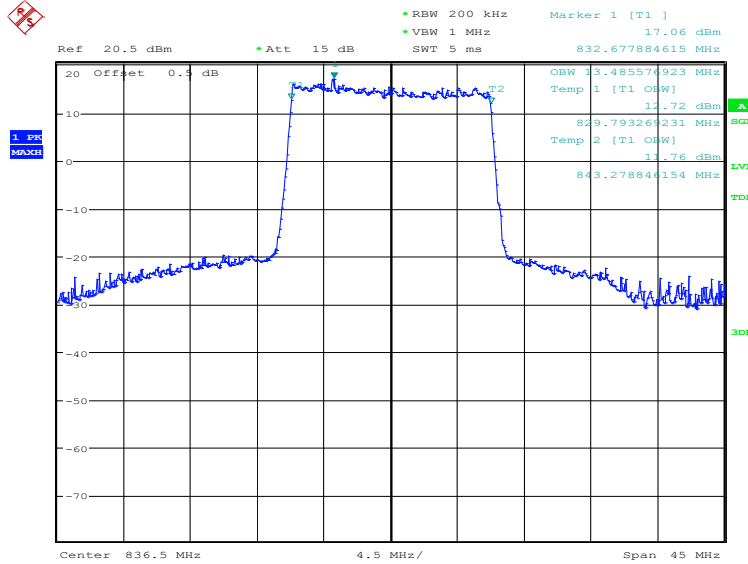
LTE band 26(824MHz~849MHz), 10MHz Bandwidth, 16QAM (99% BW)


Date: 28.DEC.2020 18:13:02

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

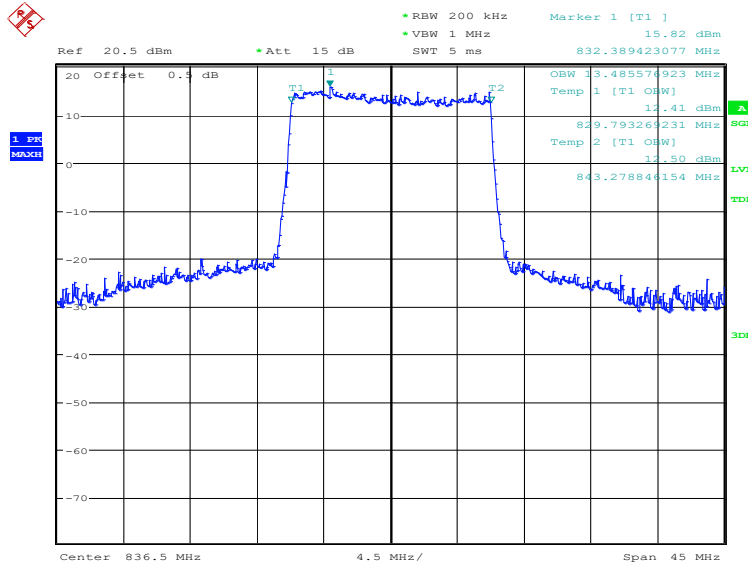
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
836.5	QPSK	16QAM
	13485.58	13485.58

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



Date: 28.DEC.2020 18:13:43

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

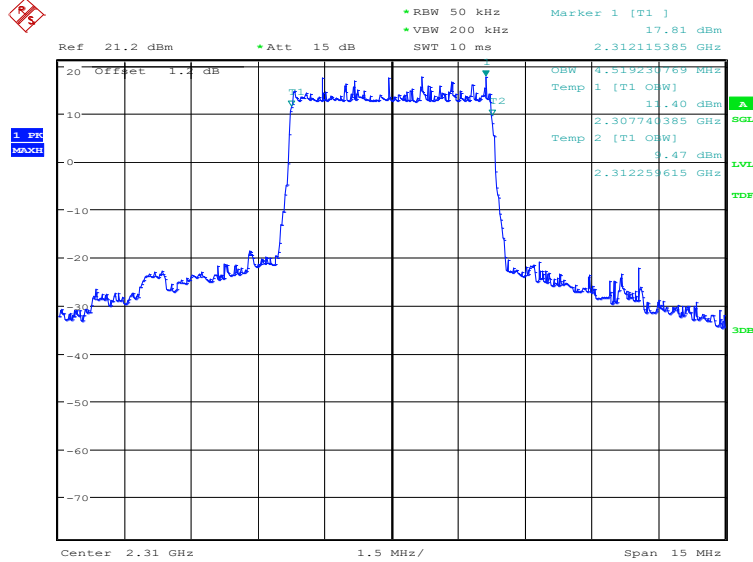


Date: 28.DEC.2020 18:14:22

LTE band 30, 5MHz (99%)

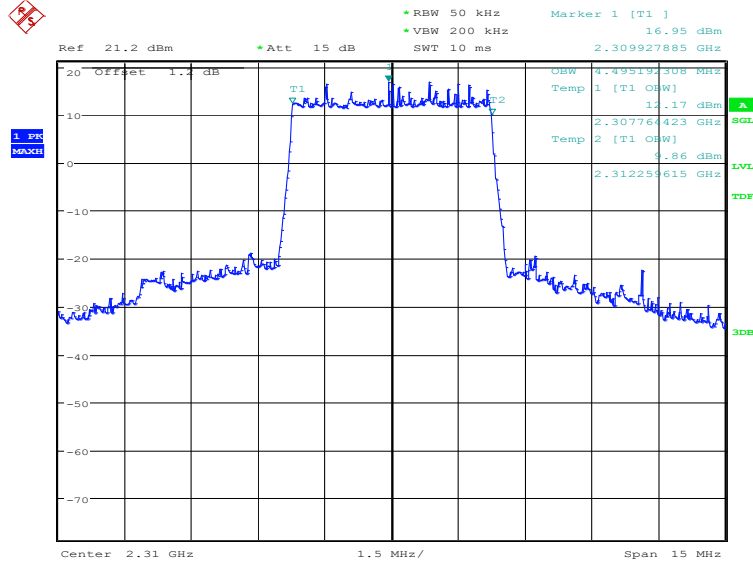
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
2310.0	QPSK	16QAM
	4519.23	4495.19

LTE band 30, 5MHz Bandwidth, QPSK (99% BW)



Date: 30.DEC.2020 08:56:15

LTE band 30, 5MHz Bandwidth, 16QAM (99% BW)

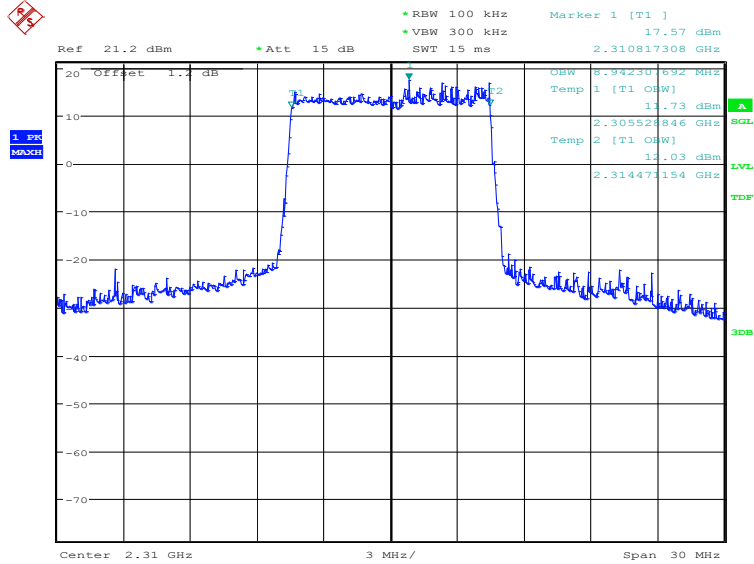


Date: 30.DEC.2020 08:56:53

LTE band 30, 10MHz (99%)

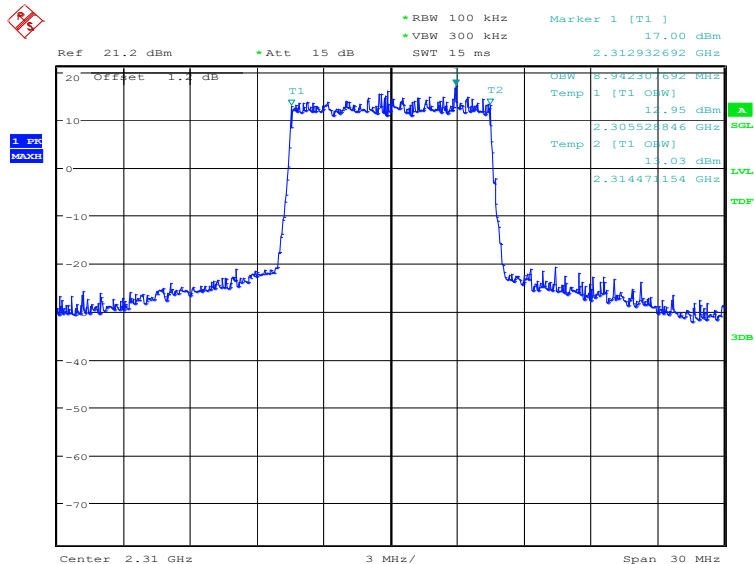
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
2310.0	QPSK	16QAM
	8942.31	8942.31

LTE band 30, 10MHz Bandwidth, QPSK (99% BW)



Date: 30.DEC.2020 08:57:34

LTE band 30, 10MHz Bandwidth, 16QAM (99% BW)

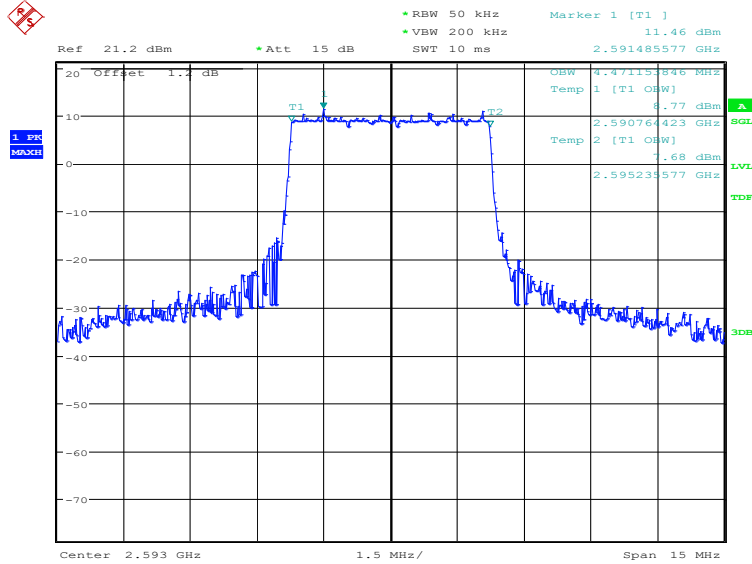


Date: 30.DEC.2020 08:58:13

LTE band 41, 5MHz (99%)

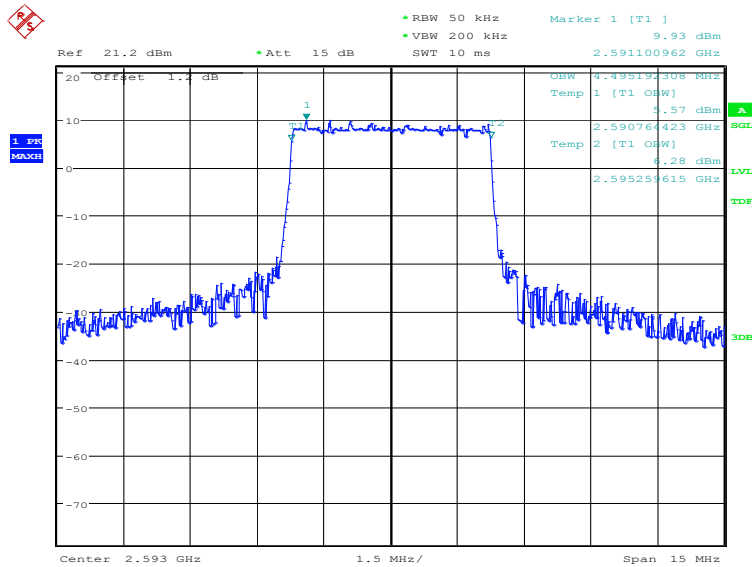
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
2593.0	QPSK	16QAM
	4471.15	4495.19

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



Date: 30.DEC.2020 08:59:35

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

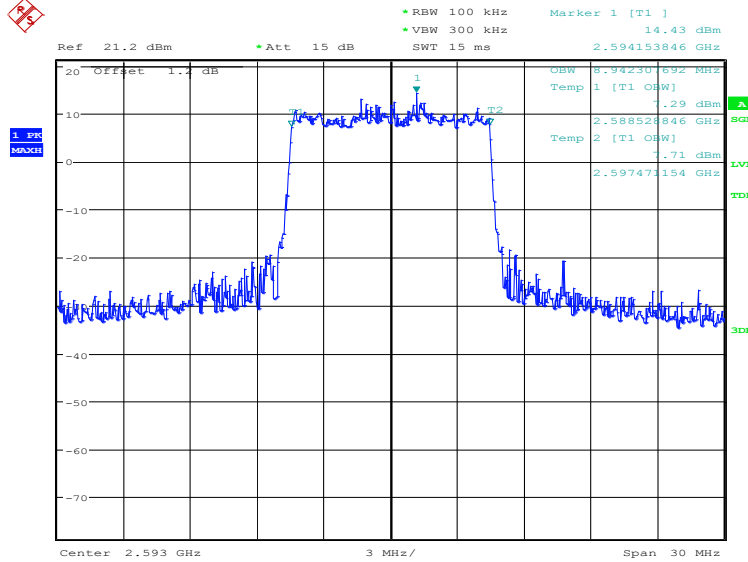


Date: 30.DEC.2020 09:00:13

LTE band 41, 10MHz (99%)

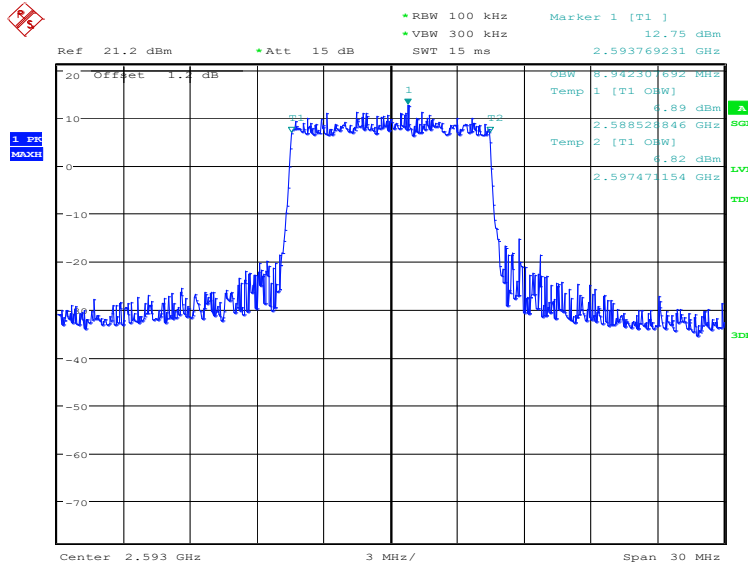
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
2593.0	QPSK	16QAM
	8942.31	8942.31

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



Date: 30.DEC.2020 09:00:54

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

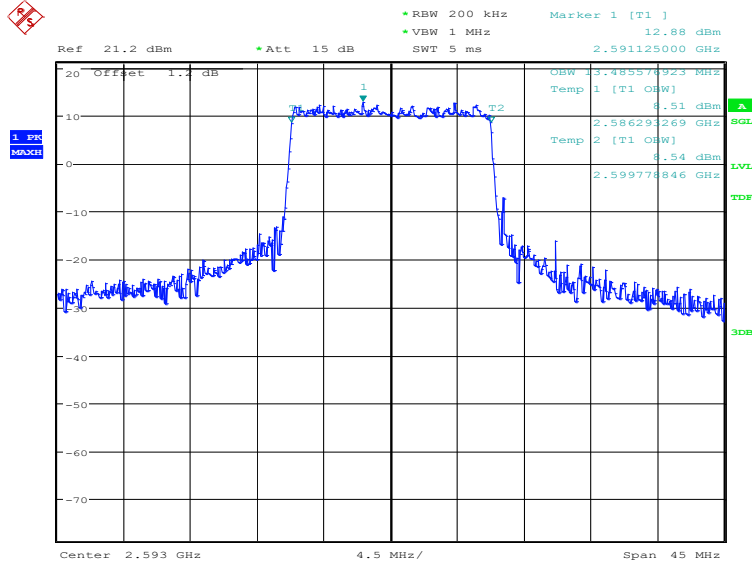


Date: 30.DEC.2020 09:01:33

LTE band 41, 15MHz (99%)

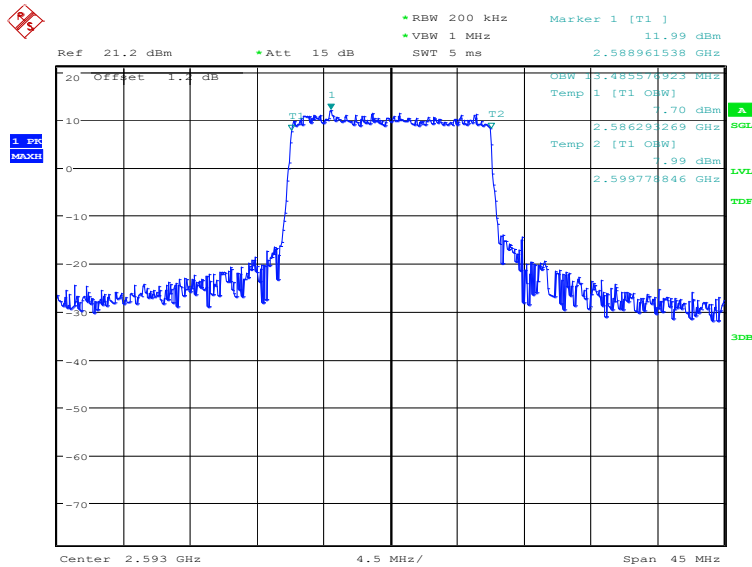
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
2593.0	QPSK	16QAM
	13485.58	13485.58

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



Date: 30.DEC.2020 09:02:13

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

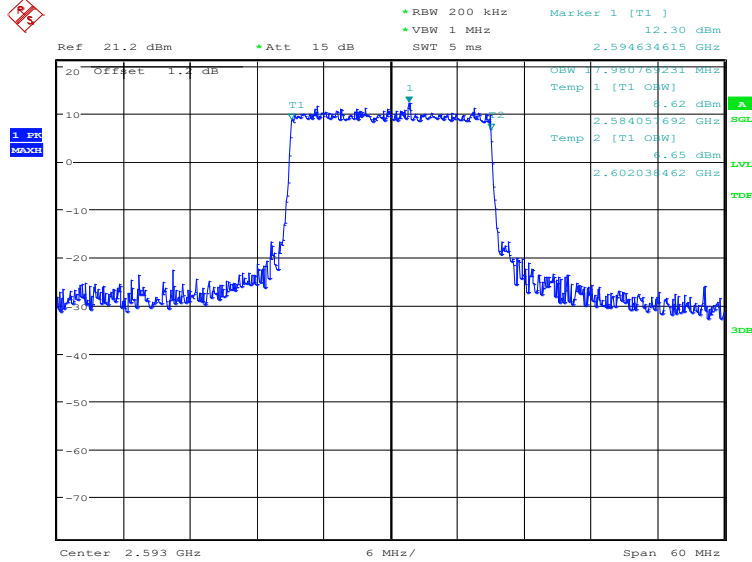


Date: 30.DEC.2020 09:02:52

LTE band 41, 20MHz (99%)

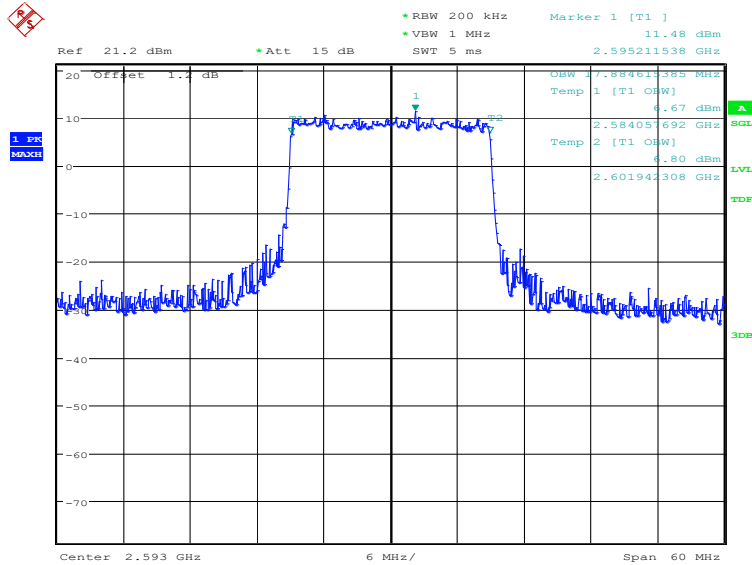
Frequency(MHz)	Occupied Bandwidth (99%) (kHz)	
2593.0	QPSK	16QAM
	17980.77	17884.62

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



Date: 30.DEC.2020 09:03:33

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



Date: 30.DEC.2020 09:04:11