TEST REPORT

No.I22N01654-RF-LTE

for

Hisense International Co., Ltd.

Mobile phone

Model Name: HLTE239E

FCC ID: 2ADOBHLTE239E

with

Hardware Version: FS301-MB-V1.0

Software Version: Hisense_HLTE239E_01_S01_01_05_MX05

Issued Date: 2022-09-23

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 SAICT.

Test Laboratory:

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22N01654-RF-LTE	Rev.0	1st edition	2022-09-23

CONTENTS

1. SUMMARY OF TEST REPORT

1.1. Test Items

Description	Mobile phone
Model Name	HLTE239E
Brand Name	Hisense
Applicant's name	Hisense International Co., Ltd.
Manufacturer's Name	Hisense Communications Co., Ltd.

1.2. Test Standards

FCC Part 2/22/24/27/90	10-1-20 Edition
ANSI C63.26	2015
KDB971168 D01	v03r01

1.3. Test Result

All test items are passed. Please refer to "6 Summary of Test Results" for detail.

1.4. Testing Location

Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China 518000

1.5. Project Data

Testing Start Date:2022-09-01 Testing End Date:2022-09-12

1.6. Signature

Wang Ping
(Prepared this test report)

Huang Qiuqin
(Reviewed this test report)

Zhang Hao
(Approved this test report)

2. CLIENT INFORMATION

2.1. Applicant Information

Company Name:	Hisense International Co., Ltd.
Address /Post:	Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China
Contact Person:	Yu Jingchao
Contact Email	yujingchao@hisense.com
Telephone:	15311226475
Fax:	/

2.2. Manufacturer Information

Company Name:	Hisense Communications Co., Ltd.
Address /Post:	No.218, Qianwangang Road, Economic and Technological Development Zone, Qingdao, Shandong Province,China
Contact Person:	Yu Jingchao
Contact Email	yujingchao@hisense.com
Telephone:	15311226475
Fax:	/

3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)

3.1. About EUT

Description	Mobile phone
Model Name	HLTE239E
FCC ID	2ADOBHLTE239E
Frequency Bands	LTE Bands 2,4,5,7,12,26
Antenna	Integrated
Antenna Gain	B2:-0.63dBi, B4:-1.15dBi, B5:-1.43dBi, B7:-0.46dBi, B12:-1.58dBi, B26:-1.43dBi
Extreme vol. Limits	3.40V to 4.35V (nominal: 3.85V)
Extreme temp. Tolerance	-10°C to +55°C
Condition of EUT as received	No abnormality in appearance

Note1: Components list, please refer to documents of the manufacturer; it is also included in the original test record of SAICT.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
UT02aa	865269060000135	FS301-MB-V1.0	Hisense_HLTE239E_01_S01_01_05_MX05	2022-08-04
UT03aa	865269060000093	FS301-MB-V1.0	Hisense_HLTE239E_01_S01_01_05_MX05	2022-08-04

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

UT03aa is used for conduction test, UT28aa is used for radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Description
AE ID*	Description
AE1	Battery

AE1

Model	LPN385400B
Manufacturer	ShenzhenAerospaceElectronicCo.,Ltd.
4850	4000mAh
Nominal Voltage	3.85v

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

3.4. General Description

The Equipment Under Test (EUT) is a model Mobile Phone with integrated antenna. It consists of normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the Client.

4. REFERENCE DOCUMENTS

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

Reference	Title	Version
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-20 Edition
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-20 Edition
FCC Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS	10-1-20 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-20 Edition
FCC Part 90	PRIVATE LAND MOBILE RADIO SERVICES	10-1-20 Edition
ANSI C63.26	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
KDB971168 D01	Power Meas License Digital Systems	v03r01

5. LABORATORY ENVIRONMENT

Shielded room did not exceed following limits along the RF testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz>60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	>2 MΩ
Ground system resistance	< 4 Ω

Fully-anechoic chamber did not exceed following limits along the EMC testing

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Voltage Standing Wave Ratio （VSWR）	≤ 6 dB, from 1 to 18 GHz， 3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	F	Fail
	NA	Not applicable
	NM	Not measured
Location Column	A/B/C/D	The test is performed in test location A, B, C or D which are described in section 1.4 of this report

LTE Band 2

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/24.232	A.1	P
2	Field Strength of Spurious Radiation	2.1053/24.238	A.2	P
3	Frequency Stability	2.1055/24.235	A.3	P
4	Occupied Bandwidth	2.1049/24.238	A.4	P
5	Emission Bandwidth	2.1049/24.238	A.5	P
6	Band Edge Compliance	2.1051/24.238	A.6	P
7	Conducted Spurious Emission	2.1051/24.238	A.7	P
8	Peak-to-Average Power Ratio	24.232/ KDB971168 D01	A.8	P

LTE Band 4

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/27.50(d)	A.1	P
2	Field Strength of Spurious Radiation	2.1053/27.53(h)	A.2	P
3	Frequency Stability	2.1055/27.54	A.3	P
4	Occupied Bandwidth	2.1049/27.53(g)	A.4	P
5	Emission Bandwidth	2.1049/27.53(g)	A.5	P
6	Band Edge Compliance	2.1051/27.53(h)	A.6	P
7	Conducted Spurious Emission	2.1051/27.53(h)	A.7	P
8	Peak-to-Average Power Ratio	27.50(d)/ KDB971168 D01	A.8	P

LTE band 5

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/22.913	A.1	P
2	Field Strength of Spurious Radiation	2.1053/22.917	A.2	P
3	Frequency Stability	2.1055/22.355	A.3	P
4	Occupied Bandwidth	2.1049/22.917	A.4	P
5	Emission Bandwidth	2.1049/22.917	A.5	P
6	Band Edge Compliance	2.1051/22.917	A.6	P
7	Conducted Spurious Emission	2.1051/22.917	A.7	P
8	Peak-to-Average Power Ratio	KDB971168 D01	A.8	P

LTE Band 7

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/27.50(h)	A.1	P
2	Field Strength of Spurious Radiation	2.1053/27.53(m)	A.2	P
3	Frequency Stability	2.1055/27.54	A.3	P
4	Occupied Bandwidth	2.1049/27.53(m)	A.4	P
5	Emission Bandwidth	2.1049/27.53(m)	A.5	P
6	Band Edge Compliance	2.1051/27.53(m)	A.6	P
7	Conducted Spurious Emission	2.1051/27.53(m)	A.7	P
8	Peak-to-Average Power Ratio	27.50(a)/ KDB971168 D01	A.8	P

LTE Band 12

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/27.50(c)	A.1	P
2	Field Strength of Spurious Radiation	2.1053/27.53(g)	A.2	P
3	Frequency Stability	2.1055/27.54	A.3	P
4	Occupied Bandwidth	2.1049/27.53(g)	A.4	P
5	Emission Bandwidth	2.1049/27.53(g)	A.5	P
6	Band Edge Compliance	2.1051/27.53(g)	A.6	P
7	Conducted Spurious Emission	2.1051/27.53(g)	A.7	P
8	Peak-to-Average Power Ratio	27.50(a)/ KDB971168 D01	A.8	P

LTE Band 26(814MHz-824MHz)

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/90.635	A.1	P
2	Field Strength of Spurious Radiation	2.1053/90.691	A.2	P
3	Frequency Stability	2.1055/90.213	A.3	P
4	Occupied Bandwidth	2.1049/90.1215	A.4	P
5	Emission Bandwidth	2.1049/90.1215	A.5	P
6	Band Edge Compliance	2.1051/90.691	A.6	P
7	Conducted Spurious Emission	2.1051/90.691	A.7	P
8	Peak-to-Average Power Ratio	KDB971168 D01	A.8	P

LTE band 26(824MHz-849MHz)

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/22.913	A.1	P
2	Field Strength of Spurious Radiation	2.1053/22.917	A.2	P
3	Frequency Stability	2.1055/22.355	A.3	P
4	Occupied Bandwidth	2.1049/22.917	A.4	P
5	Emission Bandwidth	2.1049/22.917	A.5	P
6	Band Edge Compliance	2.1051/22.917	A.6	P
7	Conducted Spurious Emission	2.1051/22.917	A.7	P
8	Peak-to-Average Power Ratio	KDB971168 D01	A.8	P

7. STATEMENT

Since the information of samples in this report is provided by the client, the laboratory is not responsible for the authenticity of sample information.

This report takes measured values as criterion of test conclusion. The test conlusion meets the limit requirements.

8. TEST EQUIPMENTS UTILIZED

NO.	Description	TYPE	Manufacture	series number	CAL DUE DATE
1	Test Receiver	ESR7	R&S	101676	2022-11-24
2	BiLog Antenna	3142E	ETS-Lindgren	0224831	2024-05-27
3	Horn Antenna	3117	ETS-Lindgren	00066577	2025-03-15
4	Horn Antenna	QSH-SL-18 -26-S-20	Q-par	17013	2023-01-06
5	Antenna	BBHA 9120D	Schwarzbeck	1593	2022-12-05
6	Antenna	VUBA 9117	Schwarzbeck	207	2023-07-15
7	Antenna	QWH-SL-18 -40-K-SG	Q-par	15979	2023-01-06
8	preamplifier	83017A	Agilent	MY39501110	/
9	Signal Generator	SMB100A	R&S	179725	2022-11-24
10	Fully Anechoic Chamber	FACT3-2.0	ETS-Lindgren	1285	2023-05-29
11	Spectrum Analyzer	FSV40	R&S	101192	2023-01-12
12	Universal Radio Communication Tester	CMU200	R&S	114545	2023-01-12
13	Universal Radio Communication Tester	CMW500	R&S	152499	2023-07-14
14	Temperature Chamber	SH-241	ESPEC	92007516	2022-10-15
15	DC Power Supply	U3606A	Agilent Technologies	MY50450012	2022-11-13
16	Spectrum Analyzer	FSW26	R&S	101967	2023-05-07
17	Universal Radio Communication Tester	CMW500	R&S	129146	2023-04-23

Test software

Item	Name	Vesion
Radiated	EMC32	V10.50.40

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

Reference

FCC: CFR Part 2.1046, 22.913, 24.232, 27.50,90.635.

A.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation.

This result contains peak output power and ERP/EIRP measurements for the EUT.

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

A.1.2 Conducted

A.1.2.1 Method of Measurements

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

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

A.1.2.2 Measurement result

LTE band 2

BANDWIDTH	Number of RBs	Frequency(MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1RB-High (5)	1909.3 (19193)	22.72	22.92
		1880 (18900)	22.80	22.41
		1850.7 (18607)	22.70	22.88
	1RB-Middle (3)	1909.3 (19193)	22.63	22.86
		1880 (18900)	22.94	22.54
		1850.7 (18607)	22.67	22.87
	1RB-Low (0)	1909.3 (19193)	22.67	22.85
		1880 (18900)	22.91	22.46
		1850.7 (18607)	22.70	22.96
	3RB-High (3)	1909.3 (19193)	22.86	22.65
		1880 (18900)	22.94	22.51
		1850.7 (18607)	22.83	22.68
	3RB-Middle (1)	1909.3 (19193)	22.95	22.67
		1880 (18900)	22.84	22.33
		1850.7 (18607)	22.89	22.61
	3RB-Low (0)	1909.3 (19193)	22.93	22.65
		1880 (18900)	22.95	22.29
		1850.7 (18607)	22.82	22.66
	6RB (0)	1909.3 (19193)	22.28	21.10
		1880 (18900)	22.30	21.41
		1850.7 (18607)	22.28	21.26
3MHz	1RB-High (14)	1908.5 (19185)	22.71	22.35
		1880 (18900)	22.81	22.37

BANDWIDTH	Number of RBs	Frequency(MHz)	Power(dBm)	
			QPSK	16QAM
		1851.5 (18615)	22.74	22.85
	1RB-Middle (7)	1908.5 (19185)	22.72	22.37
		1880 (18900)	22.84	22.44
		1851.5 (18615)	22.69	22.82
	1RB-Low (0)	1908.5 (19185)	22.77	22.35
		1880 (18900)	22.93	22.40
		1851.5 (18615)	22.70	22.81
	8RB-High (7)	1908.5 (19185)	22.43	21.59
		1880 (18900)	22.41	21.58
		1851.5 (18615)	22.31	21.52
	8RB-Middle (4)	1908.5 (19185)	22.36	21.61
		1880 (18900)	22.35	21.53
		1851.5 (18615)	22.34	21.50
	8RB-Low (0)	1908.5 (19185)	22.43	21.57
		1880 (18900)	22.31	21.56
		1851.5 (18615)	22.30	21.46
	15RB (0)	1908.5 (19185)	22.43	21.55
		1880 (18900)	22.31	21.46
		1851.5 (18615)	22.19	21.38
5MHz	1RB-High (24)	1907.5 (19175)	22.66	22.98
		1880 (18900)	22.71	22.96
		1852.5 (18625)	22.76	22.93
	1RB-Middle (12)	1907.5 (19175)	22.74	22.38
		1880 (18900)	22.73	23.03
		1852.5 (18625)	22.73	22.91
	1RB-Low (0)	1907.5 (19175)	22.76	22.39
		1880 (18900)	22.69	22.91
		1852.5 (18625)	22.76	22.91
	12RB-High (13)	1907.5 (19175)	22.35	21.52
		1880 (18900)	22.35	21.50
		1852.5 (18625)	22.19	21.47
	12RB-Middle (6)	1907.5 (19175)	22.28	21.51
		1880 (18900)	22.39	21.55
		1852.5 (18625)	22.27	21.48
	12RB-Low (0)	1907.5 (19175)	22.25	21.50
		1880 (18900)	22.27	21.50
		1852.5 (18625)	22.23	21.49
	25RB (0)	1907.5 (19175)	22.31	21.67
		1880 (18900)	22.38	21.41
		1852.5 (18625)	22.16	21.57

BANDWIDTH	Number of RBs	Frequency(MHz)	Power(dBm)	
			QPSK	16QAM
10MHz	1RB-High (49)	1905 (19150)	22.75	22.90
		1880 (18900)	22.82	23.04
		1855 (18650)	22.58	22.91
	1RB-Middle (24)	1905 (19150)	22.83	22.93
		1880 (18900)	22.83	22.95
		1855 (18650)	22.62	22.83
	1RB-Low (0)	1905 (19150)	22.70	22.94
		1880 (18900)	22.76	23.00
		1855 (18650)	22.61	22.30
	25RB-High (25)	1905 (19150)	22.40	21.45
		1880 (18900)	22.27	21.39
		1855 (18650)	22.31	21.32
	25RB-Middle (12)	1905 (19150)	22.28	21.39
		1880 (18900)	22.40	21.39
		1855 (18650)	22.28	21.38
	25RB-Low (0)	1905 (19150)	22.35	21.68
		1880 (18900)	22.34	21.46
		1855 (18650)	22.25	21.38
	50RB (0)	1905 (19150)	22.40	21.45
		1880 (18900)	22.42	21.40
		1855 (18650)	22.16	21.47
15MHz	1RB-High (74)	1902.5 (19125)	22.70	22.96
		1880 (18900)	22.70	22.34
		1857.5 (18675)	22.63	23.00
	1RB-Middle (37)	1902.5 (19125)	22.70	22.89
		1880 (18900)	22.74	22.36
		1857.5 (18675)	22.56	22.93
	1RB-Low (0)	1902.5 (19125)	22.74	22.93
		1880 (18900)	22.75	22.37
		1857.5 (18675)	22.64	23.06
	36RB-High (38)	1902.5 (19125)	22.35	21.44
		1880 (18900)	22.23	21.52
		1857.5 (18675)	22.26	21.39
	36RB-Middle (19)	1902.5 (19125)	22.37	21.46
		1880 (18900)	22.39	21.57
		1857.5 (18675)	22.27	21.46
	36RB-Low (0)	1902.5 (19125)	22.34	21.42
		1880 (18900)	22.41	21.61
		1857.5 (18675)	22.27	21.48
	75RB (0)	1902.5 (19125)	22.42	21.41

BANDWIDTH	Number of RBs	Frequency(MHz)	Power(dBm)	
			QPSK	16QAM
		1880 (18900)	22.37	21.57
		1857.5 (18675)	22.32	21.33
20MHz	1RB-High (99)	1900 (19100)	**22.88**	22.84
		1880 (18900)	**22.94**	22.49
		1860 (18700)	**22.80**	22.96
	1RB-Middle (50)	1900 (19100)	22.85	22.31
		1880 (18900)	22.81	22.34
		1860 (18700)	22.69	22.87
	1RB-Low (0)	1900 (19100)	22.78	22.24
		1880 (18900)	22.90	22.48
		1860 (18700)	22.78	22.96
	50RB-High (50)	1900 (19100)	22.34	21.41
		1880 (18900)	22.29	21.52
		1860 (18700)	22.26	21.33
	50RB-Middle (25)	1900 (19100)	**22.39**	21.53
		1880 (18900)	**22.42**	21.49
		1860 (18700)	**22.29**	21.45
	50RB-Low (0)	1900 (19100)	22.26	21.45
		1880 (18900)	22.22	21.44
		1860 (18700)	22.26	21.40
	100RB (0)	1900 (19100)	22.29	21.46
		1880 (18900)	22.27	21.55
		1860 (18700)	22.20	21.40

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

LTE band 4

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1RB-High (5)	1754.3 (20393)	22.78	23.03
		1732.5 (20175)	22.66	22.96
		1710.7 (19957)	22.69	22.28
	1RB-Middle (3)	1754.3 (20393)	22.68	23.03
		1732.5 (20175)	22.69	22.36
		1710.7 (19957)	22.62	22.28
	1RB-Low (0)	1754.3 (20393)	22.67	22.99
		1732.5 (20175)	22.66	22.36
		1710.7 (19957)	22.63	22.56
	3RB-High (3)	1754.3 (20393)	23.03	22.68
		1732.5 (20175)	22.92	22.70
		1710.7 (19957)	22.91	22.66
	3RB-Middle (1)	1754.3 (20393)	23.01	22.72
		1732.5 (20175)	22.86	22.71
		1710.7 (19957)	22.84	22.70
	3RB-Low (0)	1754.3 (20393)	22.97	22.63
		1732.5 (20175)	22.93	22.66
		1710.7 (19957)	22.89	22.64
	6RB (0)	1754.3 (20393)	22.38	21.25
		1732.5 (20175)	22.36	21.37
		1710.7 (19957)	22.30	21.33
3MHz	1RB-High (14)	1753.5 (20385)	22.78	23.02
		1732.5 (20175)	22.72	22.98
		1711.5 (19965)	22.68	22.42
	1RB-Middle (7)	1753.5 (20385)	22.72	23.07
		1732.5 (20175)	22.67	23.06
		1711.5 (19965)	22.70	22.40
	1RB-Low (0)	1753.5 (20385)	22.66	23.01
		1732.5 (20175)	22.67	23.05
		1711.5 (19965)	22.63	22.42
	8RB-High (7)	1753.5 (20385)	22.38	21.59
		1732.5 (20175)	22.33	21.65
		1711.5 (19965)	22.33	21.54
	8RB-Middle (4)	1753.5 (20385)	22.28	21.56
		1732.5 (20175)	22.40	21.59
		1711.5 (19965)	22.35	21.55
	8RB-Low (0)	1753.5 (20385)	22.32	21.61
		1732.5 (20175)	22.38	21.57
		1711.5 (19965)	22.27	21.62

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
	15RB (0)	1753.5 (20385)	22.38	21.65
		1732.5 (20175)	22.36	21.56
		1711.5 (19965)	22.31	21.51
5MHz	1RB-High (24)	1752.5 (20375)	22.72	22.94
		1732.5 (20175)	22.69	22.93
		1712.5 (19975)	22.66	22.90
	1RB-Middle (12)	1752.5 (20375)	22.74	22.96
		1732.5 (20175)	22.83	23.04
		1712.5 (19975)	22.62	23.02
	1RB-Low (0)	1752.5 (20375)	22.75	22.99
		1732.5 (20175)	22.80	23.00
		1712.5 (19975)	22.69	22.92
	12RB-High (13)	1752.5 (20375)	22.33	21.52
		1732.5 (20175)	22.32	21.58
		1712.5 (19975)	22.26	21.49
	12RB-Middle (6)	1752.5 (20375)	22.24	21.47
		1732.5 (20175)	22.44	21.55
		1712.5 (19975)	22.21	21.49
	12RB-Low (0)	1752.5 (20375)	22.39	21.55
		1732.5 (20175)	22.33	21.51
		1712.5 (19975)	22.34	21.46
	25RB (0)	1752.5 (20375)	22.26	21.68
		1732.5 (20175)	22.32	21.78
		1712.5 (19975)	22.26	21.30
10MHz	1RB-High (49)	1750 (20350)	22.66	23.19
		1732.5 (20175)	22.76	22.41
		1715 (20000)	22.80	22.92
	1RB-Middle (24)	1750 (20350)	22.77	23.20
		1732.5 (20175)	22.82	22.51
		1715 (20000)	22.81	22.89
	1RB-Low (0)	1750 (20350)	22.79	23.21
		1732.5 (20175)	22.83	22.39
		1715 (20000)	22.79	22.88
	25RB-High (25)	1750 (20350)	22.29	21.48
		1732.5 (20175)	22.39	21.70
		1715 (20000)	22.32	21.39
	25RB-Middle (12)	1750 (20350)	22.25	21.49
		1732.5 (20175)	22.30	21.72
		1715 (20000)	22.29	21.40
	25RB-Low (0)	1750 (20350)	22.31	21.53

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
		1732.5 (20175)	22.26	21.69
		1715 (20000)	22.36	21.70
	50RB (0)	1750 (20350)	22.29	21.53
		1732.5 (20175)	22.31	21.47
		1715 (20000)	22.35	21.45
15MHz	1RB-High (74)	1747.5 (20325)	22.67	23.17
		1732.5 (20175)	22.76	22.95
		1717.5 (20025)	22.72	22.31
	1RB-Middle (37)	1747.5 (20325)	22.70	23.26
		1732.5 (20175)	22.83	23.04
		1717.5 (20025)	22.83	22.41
	1RB-Low (0)	1747.5 (20325)	22.69	22.46
		1732.5 (20175)	22.70	23.05
		1717.5 (20025)	22.81	22.33
	36RB-High (38)	1747.5 (20325)	22.34	21.53
		1732.5 (20175)	22.41	21.39
		1717.5 (20025)	22.39	21.40
	36RB-Middle (19)	1747.5 (20325)	22.38	21.61
		1732.5 (20175)	22.39	21.49
		1717.5 (20025)	22.28	21.39
	36RB-Low (0)	1747.5 (20325)	22.44	21.57
		1732.5 (20175)	22.48	21.48
		1717.5 (20025)	22.29	21.41
	75RB (0)	1747.5 (20325)	22.37	21.40
		1732.5 (20175)	22.44	21.44
		1717.5 (20025)	22.40	21.44
20MHz	1RB-High (99)	1745 (20300)	22.66	23.09
		1732.5 (20175)	22.75	22.36
		1720 (20050)	22.62	22.42
	1RB-Middle (50)	1745 (20300)	22.68	23.07
		1732.5 (20175)	22.84	22.40
		1720 (20050)	22.64	22.36
	1RB-Low (0)	1745 (20300)	**22.79**	23.17
		1732.5 (20175)	**22.91**	22.34
		1720 (20050)	**22.65**	22.34
	50RB-High (50)	1745 (20300)	22.35	21.52
		1732.5 (20175)	22.31	21.52
		1720 (20050)	22.29	21.47
	50RB-Middle (25)	1745 (20300)	**22.38**	21.52
		1732.5 (20175)	**22.40**	21.46

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
		1720 (20050)	**22.38**	21.42
	50RB-Low (0)	1745 (20300)	22.32	21.57
		1732.5 (20175)	22.34	21.52
		1720 (20050)	22.28	21.53
	100RB (0)	1745 (20300)	22.40	21.56
		1732.5 (20175)	22.27	21.57
		1720 (20050)	22.23	21.53

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

LTE band 5

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1RB-High (5)	848.3 (20643)	22.54	22.05
		836.5 (20525)	22.39	22.52
		824.7 (20407)	22.42	22.36
	1RB-Middle (3)	848.3 (20643)	22.48	22.04
		836.5 (20525)	22.49	22.10
		824.7 (20407)	22.45	22.40
	1RB-Low (0)	848.3 (20643)	22.46	22.02
		836.5 (20525)	22.35	22.08
		824.7 (20407)	22.43	22.35
	3RB-High (3)	848.3 (20643)	22.64	22.32
		836.5 (20525)	22.54	22.32
		824.7 (20407)	22.54	22.28
	3RB-Middle (1)	848.3 (20643)	22.59	22.31
		836.5 (20525)	22.51	22.37
		824.7 (20407)	22.45	22.28
	3RB-Low (0)	848.3 (20643)	22.55	22.32
		836.5 (20525)	22.57	22.32
		824.7 (20407)	22.55	22.25
	6RB (0)	848.3 (20643)	22.14	20.88
		836.5 (20525)	22.04	20.77
		824.7 (20407)	21.96	20.70
3MHz	1RB-High (14)	847.5 (20635)	22.58	22.08
		836.5 (20525)	22.41	22.50
		825.5 (20415)	22.42	22.41
	1RB-Middle (7)	847.5 (20635)	22.33	22.07
		836.5 (20525)	22.42	22.57
		825.5 (20415)	22.32	22.45
	1RB-Low (0)	847.5 (20635)	22.48	22.06
		836.5 (20525)	22.43	22.41
		825.5 (20415)	22.44	22.41
	8RB-High (7)	847.5 (20635)	22.12	21.20
		836.5 (20525)	22.05	21.05
		825.5 (20415)	21.95	21.08
	8RB-Middle (4)	847.5 (20635)	22.14	21.21
		836.5 (20525)	22.11	21.17
		825.5 (20415)	22.00	21.04
	8RB-Low (0)	847.5 (20635)	22.09	21.19
		836.5 (20525)	21.97	21.44
		825.5 (20415)	21.97	21.05

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
	15RB (0)	847.5 (20635)	21.98	21.20
		836.5 (20525)	21.94	21.16
		825.5 (20415)	21.97	21.01
5MHz	1RB-High (24)	846.5 (20625)	22.58	22.08
		836.5 (20525)	22.33	21.88
		826.5 (20425)	22.37	22.44
	1RB-Middle (12)	846.5 (20625)	22.62	22.08
		836.5 (20525)	22.40	22.00
		826.5 (20425)	22.27	22.35
	1RB-Low (0)	846.5 (20625)	22.50	21.98
		836.5 (20525)	22.26	21.98
		826.5 (20425)	22.33	22.40
	12RB-High (13)	846.5 (20625)	22.11	21.18
		836.5 (20525)	21.91	21.07
		826.5 (20425)	21.94	20.98
	12RB-Middle (6)	846.5 (20625)	22.14	21.17
		836.5 (20525)	22.13	21.00
		826.5 (20425)	21.99	20.98
	12RB-Low (0)	846.5 (20625)	21.94	21.52
		836.5 (20525)	22.05	21.37
		826.5 (20425)	21.99	21.01
	25RB (0)	846.5 (20625)	22.06	21.35
		836.5 (20525)	22.11	21.21
		826.5 (20425)	21.98	21.00
10MHz	1RB-High (49)	844 (20600)	**22.62**	22.17
		836.5 (20525)	**22.55**	22.66
		829 (20450)	**22.37**	22.44
	1RB-Middle (24)	844 (20600)	22.60	22.15
		836.5 (20525)	22.39	22.55
		829 (20450)	22.31	22.47
	1RB-Low (0)	844 (20600)	22.55	22.02
		836.5 (20525)	22.32	22.54
		829 (20450)	22.30	22.41
	25RB-High (25)	844 (20600)	22.05	21.07
		836.5 (20525)	21.98	21.01
		829 (20450)	22.04	21.52
	25RB-Middle (12)	844 (20600)	**22.17**	21.09
		836.5 (20525)	**22.08**	21.05
		829 (20450)	**22.05**	21.23
	25RB-Low (0)	844 (20600)	21.94	21.40

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
		836.5 (20525)	22.03	21.41
		829 (20450)	21.89	21.18
	50RB (0)	844 (20600)	22.14	21.13
		836.5 (20525)	22.16	21.05
		829 (20450)	22.09	21.10

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

LTE band 7

BANDWIDTH	Number of RBs	Frequency(MHz)	Power(dBm)	
			QPSK	16QAM
5MHz	1RB-High (24)	2567.5 (21425)	22.89	22.53
		2535 (21100)	22.80	23.00
		2502.5 (20775)	22.79	23.11
	1RB-Middle (12)	2567.5 (21425)	22.77	22.45
		2535 (21100)	22.75	23.03
		2502.5 (20775)	22.83	23.11
	1RB-Low (0)	2567.5 (21425)	22.76	22.50
		2535 (21100)	22.79	23.06
		2502.5 (20775)	22.81	23.11
	12RB-High (13)	2567.5 (21425)	21.96	21.58
		2535 (21100)	21.86	21.52
		2502.5 (20775)	21.79	21.48
	12RB-Middle (6)	2567.5 (21425)	21.83	21.52
		2535 (21100)	21.79	21.52
		2502.5 (20775)	21.79	21.50
	12RB-Low (0)	2567.5 (21425)	21.83	21.56
		2535 (21100)	21.79	21.51
		2502.5 (20775)	21.84	21.50
	25RB (0)	2567.5 (21425)	21.85	21.41
		2535 (21100)	21.90	21.66
		2502.5 (20775)	21.91	21.49
10MHz	1RB-High (49)	2565 (21400)	22.80	22.53
		2535 (21100)	22.73	23.06
		2505 (20800)	22.75	23.10
	1RB-Middle (24)	2565 (21400)	22.82	22.97
		2535 (21100)	22.76	23.01
		2505 (20800)	22.85	23.11
	1RB-Low (0)	2565 (21400)	22.75	22.98
		2535 (21100)	22.65	22.97
		2505 (20800)	22.75	22.45
	25RB-High (25)	2565 (21400)	21.80	21.51
		2535 (21100)	21.84	21.46
		2505 (20800)	21.92	21.46
	25RB-Middle (12)	2565 (21400)	21.86	21.45
		2535 (21100)	21.83	21.36
		2505 (20800)	21.97	21.54
	25RB-Low (0)	2565 (21400)	21.90	21.50
		2535 (21100)	21.83	21.34
		2505 (20800)	21.91	21.49

BANDWIDTH	Number of RBs	Frequency(MHz)	Power(dBm)	
			QPSK	16QAM
	50RB (0)	2565 (21400)	21.80	21.58
		2535 (21100)	21.91	21.43
		2505 (20800)	22.05	21.62
15MHz	1RB-High (74)	2562.5 (21375)	22.77	23.22
		2535 (21100)	22.76	22.52
		2507.5 (20825)	22.66	23.27
	1RB-Middle (37)	2562.5 (21375)	22.74	23.11
		2535 (21100)	22.68	22.45
		2507.5 (20825)	22.63	23.18
	1RB-Low (0)	2562.5 (21375)	22.59	23.06
		2535 (21100)	22.55	22.41
		2507.5 (20825)	22.72	23.17
	36RB-High (38)	2562.5 (21375)	21.99	21.55
		2535 (21100)	21.88	21.34
		2507.5 (20825)	21.84	21.69
	36RB-Middle (19)	2562.5 (21375)	21.94	21.69
		2535 (21100)	21.81	21.64
		2507.5 (20825)	21.93	21.64
	36RB-Low (0)	2562.5 (21375)	21.80	21.48
		2535 (21100)	21.87	21.62
		2507.5 (20825)	21.94	21.72
	75RB (0)	2562.5 (21375)	21.86	21.56
		2535 (21100)	21.89	21.42
		2507.5 (20825)	21.79	21.50
20MHz	1RB-High (99)	2560 (21350)	**22.80**	23.31
		2535 (21100)	**22.77**	22.61
		2510 (20850)	**22.81**	23.24
	1RB-Middle (50)	2560 (21350)	22.75	23.07
		2535 (21100)	22.76	22.52
		2510 (20850)	22.65	23.10
	1RB-Low (0)	2560 (21350)	22.73	23.12
		2535 (21100)	22.62	22.74
		2510 (20850)	22.68	23.03
	50RB-High (50)	2560 (21350)	**22.02**	21.62
		2535 (21100)	**21.85**	21.48
		2510 (20850)	**22.03**	21.54
	50RB-Middle (25)	2560 (21350)	21.83	21.43
		2535 (21100)	21.84	21.44
		2510 (20850)	21.83	21.53
	50RB-Low (0)	2560 (21350)	21.87	21.49

BANDWIDTH	Number of RBs	Frequency(MHz)	Power(dBm)	
			QPSK	16QAM
		2535 (21100)	21.76	21.47
		2510 (20850)	21.92	21.53
	100RB (0)	2560 (21350)	21.84	21.49
		2535 (21100)	21.89	21.47
		2510 (20850)	21.87	21.55

Note: Expanded measurement uncertainty is U = 0.49 dB, k = 1.96

LTE band 12

BANDWIDTH	Number of RBs	Frequency(MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1RB-High (5)	715.3	22.62	22.73
		707.5	22.58	22.17
		699.7	22.40	21.97
	1RB-Middle (3)	715.3	22.55	22.78
		707.5	22.58	22.10
		699.7	22.48	22.01
	1RB-Low (0)	715.3	22.58	22.66
		707.5	22.46	22.10
		699.7	22.45	22.00
	3RB-High (3)	715.3	22.73	22.43
		707.5	22.69	22.46
		699.7	22.64	22.33
	3RB-Middle (1)	715.3	22.79	22.43
		707.5	22.79	22.45
		699.7	22.59	22.41
	3RB-Low (0)	715.3	22.76	22.36
		707.5	22.75	22.37
		699.7	22.62	22.37
	6RB (0)	715.3	22.11	21.43
		707.5	22.10	21.02
		699.7	22.13	21.33
3MHz	1RB-High (14)	714.5	22.67	22.20
		707.5	22.66	22.49
		700.5	22.41	22.55
	1RB-Middle (7)	714.5	22.75	22.07
		707.5	22.63	22.54
		700.5	22.46	22.11
	1RB-Low (0)	714.5	22.65	22.07
		707.5	22.53	22.06
		700.5	22.36	22.00
	8RB-High (7)	714.5	22.22	21.68
		707.5	22.18	21.35
		700.5	22.60	21.69
	8RB-Middle (4)	714.5	22.13	21.79
		707.5	22.15	21.31
		700.5	22.03	21.62
	8RB-Low (0)	714.5	22.19	21.70
		707.5	22.17	21.66
		700.5	21.94	21.70

BANDWIDTH	Number of RBs	Frequency(MHz)	Power(dBm)	
			QPSK	16QAM
	15RB (0)	714.5	22.12	21.72
		707.5	22.11	21.24
		700.5	22.08	21.65
5MHz	1RB-High (24)	713.5	22.58	22.67
		707.5	22.66	22.62
		701.5	22.57	23.10
	1RB-Middle (12)	713.5	22.59	22.62
		707.5	22.63	22.59
		701.5	22.58	23.00
	1RB-Low (0)	713.5	22.43	22.54
		707.5	22.50	22.52
		701.5	22.55	22.55
	12RB-High (13)	713.5	22.13	21.73
		707.5	22.18	21.32
		701.5	22.49	21.63
	12RB-Middle (6)	713.5	22.23	21.71
		707.5	22.19	21.28
		701.5	22.60	21.62
	12RB-Low (0)	713.5	22.29	21.12
		707.5	22.11	21.67
		701.5	22.10	21.60
	25RB (0)	713.5	22.15	21.76
		707.5	22.16	21.14
		701.5	22.57	21.75
10MHz	1RB-High (49)	711	**22.72**	22.19
		707.5	**22.77**	22.14
		704	**22.78**	22.14
	1RB-Middle (24)	711	22.58	22.10
		707.5	22.64	22.00
		704	22.64	22.52
	1RB-Low (0)	711	22.53	21.87
		707.5	22.47	22.36
		704	22.44	21.99
	25RB-High (25)	711	22.22	21.65
		707.5	22.30	21.67
		704	22.22	21.59
	25RB-Middle (12)	711	22.22	21.56
		707.5	22.09	21.23
		704	22.63	21.51
	25RB-Low (0)	711	**22.24**	21.12

BANDWIDTH	Number of RBs	Frequency(MHz)	Power(dBm)	
			QPSK	16QAM
		707.5	**22.33**	21.49
		704	**22.65**	21.51
	50RB (0)	711	22.18	21.56
		707.5	22.08	21.21
		704	22.66	21.62

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

LTE band 26(814MHz-824MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1RB-High (5)	814.7 (26697)	22.59	22.05
		819(26740)	22.50	22.43
		823.3(26783)	22.49	22.34
	1RB-Middle (3)	814.7 (26697)	22.59	22.14
		819(26740)	22.55	22.01
		823.3(26783)	22.33	22.27
	1RB-Low (0)	814.7 (26697)	22.34	22.05
		819(26740)	22.32	22.18
		823.3(26783)	22.49	22.38
	3RB-High (3)	814.7 (26697)	22.68	22.30
		819(26740)	22.62	22.42
		823.3(26783)	22.58	22.25
	3RB-Middle (1)	814.7 (26697)	22.71	22.27
		819(26740)	22.36	22.23
		823.3(26783)	22.51	22.26
	3RB-Low (0)	814.7 (26697)	22.57	22.25
		819(26740)	22.59	22.22
		823.3(26783)	22.44	22.14
	6RB (0)	814.7 (26697)	22.15	20.81
		819(26740)	21.92	20.70
		823.3(26783)	21.86	20.79
3MHz	1RB-High (14)	815.5 (26705)	22.50	22.07
		819(26740)	22.48	22.39
		822.5(26775)	22.50	22.46
	1RB-Middle (7)	815.5 (26705)	22.21	21.93
		819(26740)	22.31	22.61
		822.5(26775)	22.26	22.30
	1RB-Low (0)	815.5 (26705)	22.55	21.92
		819(26740)	22.29	22.28
		822.5(26775)	22.48	22.54
	8RB-High (7)	815.5 (26705)	22.18	21.16
		819(26740)	22.19	21.13
		822.5(26775)	21.91	21.02
	8RB-Middle (4)	815.5 (26705)	21.99	21.31
		819(26740)	22.14	21.07
		822.5(26775)	21.97	21.14
	8RB-Low (0)	815.5 (26705)	22.03	21.16
		819(26740)	21.84	21.48
		822.5(26775)	21.90	20.93

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
	15RB (0)	815.5 (26705)	21.92	21.34
		819(26740)	21.96	21.04
		822.5(26775)	21.93	21.10
5MHz	1RB-High (24)	816.5 (26715)	22.71	22.22
		819(26740)	22.35	21.84
		821.5(26765)	22.22	22.41
	1RB-Middle (12)	816.5 (26715)	22.47	22.19
		819(26740)	22.26	22.08
		821.5(26765)	22.33	22.34
	1RB-Low (0)	816.5 (26715)	22.37	22.05
		819(26740)	22.32	21.97
		821.5(26765)	22.46	22.29
	12RB-High (13)	816.5 (26715)	22.10	21.22
		819(26740)	21.87	21.09
		821.5(26765)	21.96	20.94
	12RB-Middle (6)	816.5 (26715)	22.11	21.23
		819(26740)	22.27	20.97
		821.5(26765)	22.05	20.94
	12RB-Low (0)	816.5 (26715)	22.00	21.48
		819(26740)	22.11	21.25
		821.5(26765)	22.06	21.00
	25RB (0)	816.5 (26715)	22.03	21.44
		819(26740)	22.26	21.36
		821.5(26765)	21.90	21.06
10MHz	1RB-High (49)	819(26740)	22.73	22.24
	1RB-Middle (24)	819(26740)	22.50	22.80
	1RB-Low (0)	819(26740)	22.42	22.42
	25RB-High (25)	819(26740)	22.74	22.03
	25RB-Middle (12)	819(26740)	22.45	22.45
	25RB-Low (0)	819(26740)	22.24	22.52
	50RB (0)	819(26740)	22.40	21.95

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

LTE band 26(824MHz-849MHz)

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
1.4MHz	1RB-High (5)	848.3 (20643)	22.56	22.42
		836.5 (20525)	22.41	22.09
		824.7 (20407)	22.27	22.41
	1RB-Middle (3)	848.3 (20643)	22.73	22.45
		836.5 (20525)	22.38	22.00
		824.7 (20407)	22.42	21.82
	1RB-Low (0)	848.3 (20643)	22.61	22.49
		836.5 (20525)	22.37	22.06
		824.7 (20407)	22.35	21.84
	3RB-High (3)	848.3 (20643)	22.63	22.25
		836.5 (20525)	22.48	22.31
		824.7 (20407)	22.54	22.23
	3RB-Middle (1)	848.3 (20643)	22.69	22.34
		836.5 (20525)	22.55	22.33
		824.7 (20407)	22.42	22.23
	3RB-Low (0)	848.3 (20643)	22.66	22.34
		836.5 (20525)	22.50	22.32
		824.7 (20407)	22.50	22.15
	6RB (0)	848.3 (20643)	22.06	21.29
		836.5 (20525)	22.04	20.91
		824.7 (20407)	21.92	21.11
3MHz	1RB-High (14)	847.5 (20635)	22.58	22.62
		836.5 (20525)	22.55	22.02
		825.5 (20415)	22.41	22.01
	1RB-Middle (7)	847.5 (20635)	22.58	22.77
		836.5 (20525)	22.46	22.01
		825.5 (20415)	22.40	22.05
	1RB-Low (0)	847.5 (20635)	22.61	22.64
		836.5 (20525)	22.47	22.10
		825.5 (20415)	22.36	21.87
	8RB-High (7)	847.5 (20635)	22.15	21.64
		836.5 (20525)	22.08	21.23
		825.5 (20415)	22.01	21.49
	8RB-Middle (4)	847.5 (20635)	22.20	21.27
		836.5 (20525)	22.14	21.18
		825.5 (20415)	22.06	21.52
	8RB-Low (0)	847.5 (20635)	22.09	21.24
		836.5 (20525)	22.13	21.17
		825.5 (20415)	22.02	21.50

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
	15RB (0)	847.5 (20635)	22.06	21.35
		836.5 (20525)	22.11	21.17
		825.5 (20415)	22.02	21.43
5MHz	1RB-High (24)	846.5 (20625)	22.31	22.55
		836.5 (20525)	22.52	22.52
		826.5 (20425)	22.34	21.90
	1RB-Middle (12)	846.5 (20625)	22.46	22.65
		836.5 (20525)	22.44	22.45
		826.5 (20425)	22.26	21.85
	1RB-Low (0)	846.5 (20625)	22.35	22.52
		836.5 (20525)	22.53	22.66
		826.5 (20425)	22.26	21.85
	12RB-High (13)	846.5 (20625)	22.02	21.07
		836.5 (20525)	21.97	20.99
		826.5 (20425)	21.84	21.32
	12RB-Middle (6)	846.5 (20625)	22.06	21.08
		836.5 (20525)	22.01	20.99
		826.5 (20425)	21.83	21.25
	12RB-Low (0)	846.5 (20625)	21.98	21.38
		836.5 (20525)	22.04	20.92
		826.5 (20425)	21.91	21.28
	25RB (0)	846.5 (20625)	22.17	21.27
		836.5 (20525)	22.01	21.26
		826.5 (20425)	21.82	21.50
10MHz	1RB-High (49)	844 (20600)	22.43	22.61
		836.5 (20525)	22.51	22.52
		829 (20450)	22.49	22.39
	1RB-Middle (24)	844 (20600)	22.32	22.52
		836.5 (20525)	22.46	22.54
		829 (20450)	22.29	22.28
	1RB-Low (0)	844 (20600)	22.36	22.82
		836.5 (20525)	22.41	22.35
		829 (20450)	22.33	22.27
	25RB-High (25)	844 (20600)	22.12	21.10
		836.5 (20525)	22.11	20.94
		829 (20450)	21.87	20.87
	25RB-Middle (12)	844 (20600)	22.06	20.99
		836.5 (20525)	21.93	20.90
		829 (20450)	21.91	21.23
	25RB-Low (0)	844 (20600)	21.95	21.30

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)	
			QPSK	16QAM
		836.5 (20525)	22.00	21.05
		829 (20450)	21.74	21.19
	50RB (0)	844 (20600)	22.14	21.09
		836.5 (20525)	22.06	20.91
		829 (20450)	21.93	21.26
15MHz	1RB-High (74)	831.5(20525)	**22.58**	22.52
		836.5 (20525)	**22.37**	22.92
		841.5 (26965)	**22.57**	22.49
	1RB-Middle (37)	831.5(20525)	22.31	22.43
		836.5 (20525)	22.30	22.49
		841.5 (26965)	22.33	22.28
	1RB-Low (0)	831.5(20525)	22.20	22.35
		836.5 (20525)	22.26	22.36
		841.5 (26965)	22.28	22.27
	36RB-High (38)	831.5(20525)	21.99	21.47
		836.5 (20525)	22.09	21.40
		841.5 (26965)	21.95	21.42
	36RB-Middle (19)	831.5(20525)	21.94	21.40
		836.5 (20525)	22.01	21.01
		841.5 (26965)	21.91	21.03
	36RB-Low (0)	831.5(20525)	**22.34**	21.38
		836.5 (20525)	**22.10**	21.00
		841.5 (26965)	**21.97**	21.31
	75RB (0)	831.5(20525)	21.98	21.39
		836.5 (20525)	22.05	21.02
		841.5 (26965)	21.93	20.92

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96

A.1.3 Radiated

A.1.3.1 Description

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

Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 27.50(d) specifies “Fixed, mobile, and portable (handheld) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP”.

Rule Part 27.50(h)(2) specifies “Mobile stations are limited to 2.0 watts EIRP.”.

Rule Part 27.50(c) specifies “Portable stations (hand-held de-vices) are limited to 3 watts ERP.”.

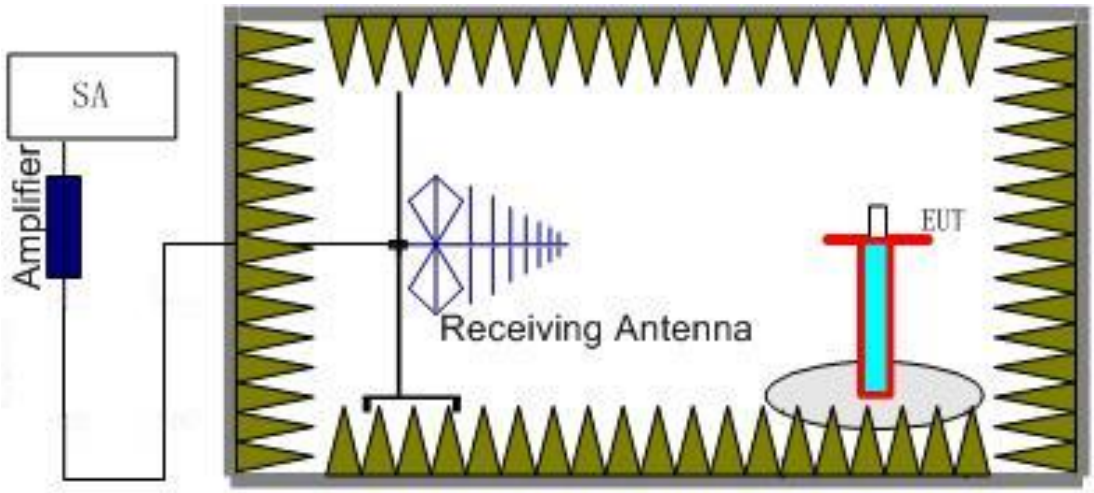
Rule Part 27.50(a)(3) specifies “For mobile and portable stations transmitting in the 2305–2315 MHz band or the 2350–2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth.”

Rule Part 22.913(a) specifies "The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

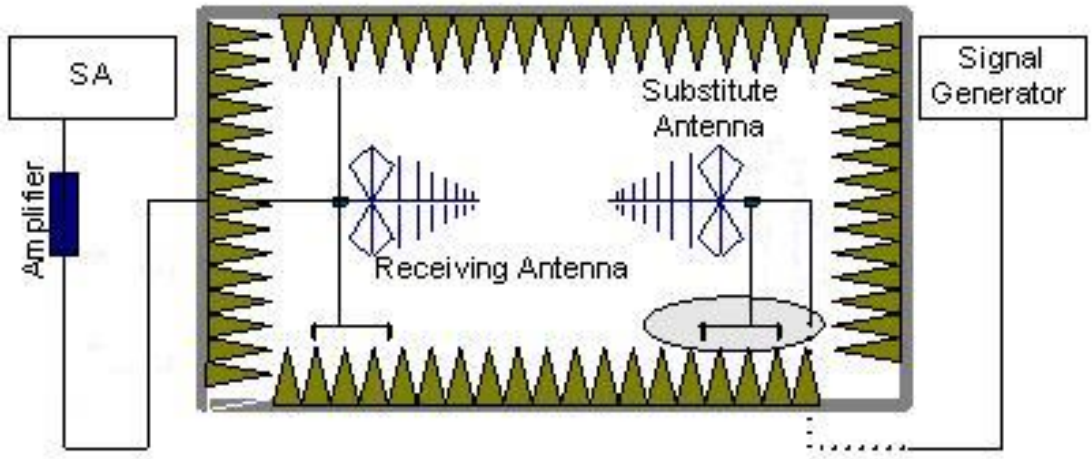
Rule Part 90.542 specifies "Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP."

A.1.3.2 Method of Measurement

1. For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, EUT was placed on a 80 cm high non-conductive stand at a 3 meter test distance from the receive antenna. For radiated measurements performed at frequencies above 1 GHz, EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. Receiving antenna was placed on the antenna mast 3 meters from the EUT. For emission measurements. The receiving antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level. 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 transmit frequencies in three channels (High, Middle, Low) 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 and adjusts 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. An amplifier should be connected to the Signal Source output port. And the cable should be connected between the amplifier and the substitution antenna.
   The cable loss (P_{cl}), the substitution Antenna Gain(dBi) (G_a) and the amplifier Gain (P_{Ag}) should be recorded after test.
   The measurement results are obtained as described below:
   Power (EIRP) = $P_{Mea} - P_{Ag} - P_{cl} + G_a$

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.1.3.3 Measurement result

LTE Band 2- EIRP Part 24. 232(b)

Limits: ≤33dBm (2W)

LTE Band 2_1.4MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1850.70	-14.30	-29.30	8.10	23.10	33.00	H
1880.00	-14.25	-29.40	8.10	23.25	33.00	H
1909.30	-14.21	-29.30	8.10	23.19	33.00	H

LTE Band 2_3MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1851.50	-14.40	-29.30	8.10	23.00	33.00	H
1880.00	-14.31	-29.40	8.10	23.19	33.00	H
1908.50	-14.26	-29.30	8.10	23.14	33.00	H

LTE Band 2_5MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1852.50	-14.45	-29.30	8.10	22.95	33.00	H
1880.00	-14.36	-29.40	8.10	23.14	33.00	H
1907.50	-14.35	-29.30	8.10	23.05	33.00	H

LTE Band 2_10MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1855.00	-14.47	-29.30	8.10	22.93	33.00	H
1880.00	-14.40	-29.40	8.10	23.09	33.00	H
1905.00	-14.41	-29.30	8.10	22.99	33.00	H

LTE Band 2_15MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1857.50	-14.54	-29.30	8.10	22.86	33.00	H
1880.00	-14.45	-29.40	8.10	23.05	33.00	H
1902.50	-14.47	-29.30	8.10	22.93	33.00	H

LTE Band 2_20MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1860.00	-14.57	-29.30	8.10	22.83	33.00	H
1880.00	-14.50	-29.40	8.10	23.00	33.00	H
1900.00	-14.54	-29.30	8.10	22.86	33.00	H

LTE Band 2_1.4MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1850.70	-14.34	-29.30	8.10	23.06	33.00	H
1880.00	-14.34	-29.40	8.10	23.16	33.00	H
1909.30	-14.28	-29.30	8.10	23.12	33.00	H

LTE Band 2_3MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1851.50	-14.42	-29.30	8.10	22.98	33.00	H
1880.00	-14.37	-29.40	8.10	23.13	33.00	H
1908.50	-14.34	-29.30	8.10	23.06	33.00	H

LTE Band 2_5MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1852.50	-14.46	-29.30	8.10	22.94	33.00	H
1880.00	-14.41	-29.40	8.10	23.09	33.00	H
1907.50	-14.39	-29.30	8.10	23.01	33.00	H

LTE Band 2_10MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1855.00	-14.54	-29.30	8.10	22.86	33.00	H
1880.00	-14.48	-29.40	8.10	23.02	33.00	H
1905.00	-14.44	-29.30	8.10	22.96	33.00	H

LTE Band 2_15MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1857.50	-14.56	-29.30	8.10	22.84	33.00	H
1880.00	-14.50	-29.40	8.10	23.00	33.00	H
1902.50	-14.48	-29.30	8.10	22.92	33.00	H

LTE Band 2_20MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1860.00	-14.60	-29.30	8.10	22.80	33.00	H
1880.00	-14.53	-29.40	8.10	22.97	33.00	H
1900.00	-14.53	-29.30	8.10	22.87	33.00	H

LTE Band 4- EIRP Part 27.50(d)

Limits: ≤30dBm (1W)

LTE Band 4_1.4MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1710.70	-14.29	-29.60	8.10	23.41	30.00	H
1732.50	-14.59	-29.60	8.10	23.11	30.00	H
1754.30	-14.35	-29.50	8.10	23.25	30.00	H

LTE Band 4_3MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1711.50	-14.45	-29.60	8.10	23.25	30.00	H
1732.50	-14.64	-29.60	8.10	23.06	30.00	H
1753.50	-14.42	-29.50	8.10	23.18	30.00	H

LTE Band 4_5MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1712.50	-14.51	-29.60	8.10	23.19	30.00	H
1732.50	-14.68	-29.60	8.10	23.02	30.00	H
1752.50	-14.46	-29.50	8.10	23.14	30.00	H

LTE Band 4_10MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1715.00	-14.58	-29.60	8.10	23.12	30.00	H
1732.50	-14.72	-29.60	8.10	22.98	30.00	H
1750.00	-14.52	-29.50	8.10	23.08	30.00	H

LTE Band 4_15MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1717.50	-14.61	-29.60	8.10	23.09	30.00	H
1732.50	-14.76	-29.60	8.10	22.94	30.00	H
1747.50	-14.58	-29.50	8.10	23.02	30.00	H

LTE Band 4_20MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1720.00	-14.65	-29.60	8.10	23.05	30.00	H
1732.50	-14.79	-29.60	8.10	22.91	30.00	H
1745.00	-14.63	-29.50	8.10	22.97	30.00	H

LTE Band 4_1.4MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1710.70	-14.40	-29.60	8.10	23.30	30.00	H
1732.50	-14.61	-29.60	8.10	23.09	30.00	H
1754.30	-14.39	-29.50	8.10	23.21	30.00	H

LTE Band 4_3MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1711.50	-14.51	-29.60	8.10	23.19	30.00	H
1732.50	-14.68	-29.60	8.10	23.02	30.00	H
1753.50	-14.50	-29.50	8.10	23.10	30.00	H

LTE Band 4_5MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1712.50	-14.59	-29.60	8.10	23.11	30.00	H
1732.50	-14.74	-29.60	8.10	22.96	30.00	H
1752.50	-14.55	-29.50	8.10	23.05	30.00	H

LTE Band 4_10MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1715.00	-14.62	-29.60	8.10	23.08	30.00	H
1732.50	-14.81	-29.60	8.10	22.89	30.00	H
1750.00	-14.61	-29.50	8.10	22.99	30.00	H

LTE Band 4_15MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1717.50	-14.68	-29.60	8.10	23.02	30.00	H
1732.50	-14.85	-29.60	8.10	22.85	30.00	H
1747.50	-14.64	-29.50	8.10	22.96	30.00	H

LTE Band 4_20MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1720.00	-14.72	-29.60	8.10	22.98	30.00	H
1732.50	-14.87	-29.60	8.10	22.83	30.00	H
1745.00	-14.69	-29.50	8.10	22.91	30.00	H

LTE Band 5- ERP Part 22.913(a)

Limits: ≤38.45dBm (7W)

LTE Band 5_1.4MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
824.70	-9.51	-33.60	-0.79	2.15	21.15	38.45	V
836.50	-9.23	-33.50	-0.74	2.15	21.38	38.45	V
848.30	-9.73	-33.50	-0.73	2.15	20.89	38.45	V

LTE Band 5_3MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
825.50	-9.50	-33.60	-0.84	2.15	21.11	38.45	V
836.50	-9.37	-33.50	-0.74	2.15	21.25	38.45	V
847.50	-9.83	-33.50	-0.73	2.15	20.79	38.45	V

LTE Band 5_5MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
826.50	-9.57	-33.60	-0.84	2.15	21.04	38.45	V
836.50	-9.43	-33.50	-0.74	2.15	21.19	38.45	V
846.50	-9.87	-33.50	-0.73	2.15	20.75	38.45	V

LTE Band 5_10MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
829.00	-9.64	-33.60	-0.84	2.15	20.97	38.45	V
836.50	-9.56	-33.50	-0.74	2.15	21.06	38.45	V
844.00	-9.86	-33.50	-0.78	2.15	20.71	38.45	V

LTE Band 5_1.4MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
824.70	-9.60	-33.60	-0.79	2.15	21.05	38.45	V
836.50	-9.37	-33.50	-0.74	2.15	21.25	38.45	V
848.30	-9.83	-33.50	-0.73	2.15	20.78	38.45	V

LTE Band 5_3MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
825.50	-9.63	-33.60	-0.84	2.15	20.98	38.45	V
836.50	-9.47	-33.50	-0.74	2.15	21.14	38.45	V
847.50	-9.87	-33.50	-0.73	2.15	20.75	38.45	V

LTE Band 5_5MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
826.50	-9.67	-33.60	-0.84	2.15	20.94	38.45	V
836.50	-9.55	-33.50	-0.74	2.15	21.07	38.45	V
846.50	-9.91	-33.50	-0.73	2.15	20.71	38.45	V

LTE Band 5_10MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
829.00	-9.73	-33.60	-0.84	2.15	20.88	38.45	V
836.50	-9.63	-33.50	-0.74	2.15	20.99	38.45	V
844.00	-9.92	-33.50	-0.78	2.15	20.65	38.45	V

LTE Band 7- EIRP Part 27.50(h)(2)

Limits: ≤33 dBm (2W)

LTE Band 7_5MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
2502.50	-18.54	-28.70	10.70	20.86	33.00	H
2535.00	-18.18	-28.60	10.70	21.12	33.00	H
2567.50	-18.52	-28.60	10.70	20.78	33.00	H

LTE Band 7_10MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
2505.00	-18.58	-28.70	10.70	20.82	33.00	H
2535.00	-18.22	-28.60	10.70	21.08	33.00	H
2565.00	-18.58	-28.60	10.70	20.72	33.00	H

LTE Band 7_15MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
2507.50	-18.63	-28.70	10.70	20.77	33.00	H
2535.00	-18.28	-28.60	10.70	21.02	33.00	H
2562.50	-18.61	-28.60	10.70	20.69	33.00	H

LTE Band 7_20MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
2510.00	-18.66	-28.70	10.70	20.74	33.00	H
2535.00	-18.35	-28.60	10.70	20.95	33.00	H
2560.00	-18.64	-28.60	10.70	20.66	33.00	H

LTE Band 7_5MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
2502.50	-18.60	-28.70	10.70	20.80	33.00	H
2535.00	-18.20	-28.60	10.70	21.10	33.00	H
2567.50	-18.56	-28.60	10.70	20.74	33.00	H

LTE Band 7_10MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
2505.00	-18.64	-28.70	10.70	20.76	33.00	H
2535.00	-18.27	-28.60	10.70	21.03	33.00	H
2565.00	-18.61	-28.60	10.70	20.69	33.00	H

LTE Band 7_15MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
2507.50	-18.65	-28.70	10.70	20.75	33.00	H
2535.00	-18.29	-28.60	10.70	21.01	33.00	H
2562.50	-18.64	-28.60	10.70	20.66	33.00	H

LTE Band 7_20MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
2510.00	-18.71	-28.70	10.70	20.69	33.00	H
2535.00	-18.35	-28.60	10.70	20.95	33.00	H
2560.00	-18.66	-28.60	10.70	20.64	33.00	H

LTE Band 12 - ERP Part 27.50(c)(10)

Limits: ≤34.77dBm (3W)

LTE Band 12_1.4MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
699.70	-11.32	-34.80	-0.93	2.15	20.40	34.77	V
707.50	-11.52	-34.70	-0.91	2.15	20.12	34.77	V
715.30	-11.85	-34.70	-0.68	2.15	20.01	34.77	V

LTE Band 12_3MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
700.50	-11.37	-34.80	-0.97	2.15	20.31	34.77	V
707.50	-11.59	-34.70	-0.91	2.15	20.05	34.77	V
714.50	-11.93	-34.70	-0.64	2.15	19.98	34.77	V

LTE Band 12_5MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
701.50	-11.44	-34.80	-0.97	2.15	20.24	34.77	V
707.50	-11.65	-34.70	-0.91	2.15	20.00	34.77	V
713.50	-12.00	-34.70	-0.64	2.15	19.91	34.77	V

LTE Band 12_10MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
704.00	-11.53	-34.80	-0.97	2.15	20.15	34.77	V
707.50	-11.69	-34.70	-0.91	2.15	19.95	34.77	V
711.00	-12.03	-34.70	-0.64	2.15	19.87	34.77	V

LTE Band 12_1.4MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
699.70	-11.38	-34.80	-0.93	2.15	20.34	34.77	V
707.50	-11.50	-34.70	-0.91	2.15	20.14	34.77	V
715.30	-11.85	-34.70	-0.68	2.15	20.01	34.77	V

LTE Band 12_3MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
700.50	-11.47	-34.80	-0.97	2.15	20.21	34.77	V
707.50	-11.58	-34.70	-0.91	2.15	20.07	34.77	V
714.50	-11.95	-34.70	-0.64	2.15	19.96	34.77	V

LTE Band 12_5MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
701.50	-11.54	-34.80	-0.97	2.15	20.14	34.77	V
707.50	-11.73	-34.70	-0.91	2.15	19.91	34.77	V
713.50	-12.03	-34.70	-0.64	2.15	19.87	34.77	V

LTE Band 12_10MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
704.00	-11.62	-34.80	-0.97	2.15	20.07	34.77	V
707.50	-11.80	-34.70	-0.91	2.15	19.84	34.77	V
711.00	-12.10	-34.70	-0.64	2.15	19.80	34.77	V

LTE band 26(824MHz-849MHz)- ERP Part 22.913(a)

Limits: ≤38.45dBm (7W)

LTE Band 26(824MHz-849MHz)_1.4MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
824.70	-10.41	-33.60	-0.79	2.15	20.25	38.45	V
836.50	-10.04	-33.50	-0.74	2.15	20.57	38.45	V
848.30	-10.31	-33.50	-0.73	2.15	20.31	38.45	V

LTE Band 26(824MHz-849MHz)_3MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
825.50	-10.51	-33.60	-0.79	2.15	20.15	38.45	V
836.50	-10.16	-33.50	-0.74	2.15	20.46	38.45	V
847.50	-10.38	-33.50	-0.73	2.15	20.24	38.45	V

LTE Band 26(824MHz-849MHz)_5MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
826.50	-10.53	-33.60	-0.79	2.15	20.12	38.45	V
836.50	-10.21	-33.50	-0.74	2.15	20.40	38.45	V
846.50	-10.39	-33.50	-0.73	2.15	20.23	38.45	V

LTE Band 26(824MHz-849MHz)_10MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
829.00	-10.56	-33.60	-0.79	2.15	20.10	38.45	V
836.50	-10.27	-33.50	-0.74	2.15	20.34	38.45	V
844.00	-10.42	-33.50	-0.73	2.15	20.20	38.45	V

LTE Band 26(824MHz-849MHz)_15MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
831.50	-10.51	-33.60	-0.79	2.15	20.14	38.45	V
836.50	-10.37	-33.50	-0.74	2.15	20.25	38.45	V
841.50	-10.44	-33.50	-0.73	2.15	20.18	38.45	V

LTE Band 26(824MHz-849MHz)_1.4MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
824.70	-10.46	-33.60	-0.79	2.15	20.20	38.45	H
836.50	-10.20	-33.50	-0.74	2.15	20.41	38.45	H
848.30	-10.33	-33.50	-0.73	2.15	20.29	38.45	H

LTE Band 26(824MHz-849MHz)_3MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
825.50	-10.51	-33.60	-0.79	2.15	20.15	38.45	H
836.50	-10.25	-33.50	-0.74	2.15	20.37	38.45	H
847.50	-10.36	-33.50	-0.73	2.15	20.25	38.45	H

LTE Band 26(824MHz-849MHz)_5MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
826.50	-10.51	-33.60	-0.79	2.15	20.14	38.45	H
836.50	-10.30	-33.50	-0.74	2.15	20.31	38.45	H
846.50	-10.43	-33.50	-0.73	2.15	20.19	38.45	H

LTE Band 26(824MHz-849MHz)_10MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
829.00	-10.56	-33.60	-0.79	2.15	20.10	38.45	H
836.50	-10.37	-33.50	-0.74	2.15	20.25	38.45	H
844.00	-10.48	-33.50	-0.73	2.15	20.14	38.45	H

LTE Band 26(824MHz-849MHz)_15MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
831.50	-10.56	-33.60	-0.79	2.15	20.09	38.45	H
836.50	-10.41	-33.50	-0.74	2.15	20.20	38.45	H
841.50	-10.49	-33.50	-0.73	2.15	20.12	38.45	H

LTE band 26(814MHz-824MHz)- ERP Part 90.635(b)

Limits: ≤50.00dBm (100W)

LTE Band 26(814MHz-824MHz)_1.4MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
814.70	-10.60	-33.70	-0.80	2.15	20.15	50.00	V
819.00	-10.06	-33.60	-0.75	2.15	20.64	50.00	V
823.30	-10.31	-33.60	-0.79	2.15	20.35	50.00	V

LTE Band 26(814MHz-824MHz)_3MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
815.50	-10.58	-33.70	-0.80	2.15	20.17	50.00	V
819.00	-10.16	-33.60	-0.75	2.15	20.54	50.00	V
822.50	-10.44	-33.60	-0.79	2.15	20.21	50.00	V

LTE Band 26(814MHz-824MHz)_5MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
816.50	-10.54	-33.70	-0.80	2.15	20.21	50.00	V
819.00	-10.36	-33.60	-0.75	2.15	20.34	50.00	V
821.50	-10.40	-33.60	-0.79	2.15	20.25	50.00	V

LTE Band 26(814MHz-824MHz)_10MHz_QPSK

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
819.00	-10.34	-33.60	-0.80	2.15	20.31	50.00	V
819.00	-10.39	-33.60	-0.75	2.15	20.31	50.00	V
819.00	-10.35	-33.60	-0.79	2.15	20.31	50.00	V

LTE Band 26(814MHz-824MHz)_1.4MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
814.70	-10.64	-33.70	-0.80	2.15	20.11	50.00	V
819.00	-10.25	-33.60	-0.75	2.15	20.45	50.00	V
823.30	-10.41	-33.60	-0.79	2.15	20.25	50.00	V

LTE Band 26(814MHz-824MHz)_3MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
815.50	-10.54	-33.70	-0.80	2.15	20.21	50.00	V
819.00	-10.39	-33.60	-0.75	2.15	20.31	50.00	V
822.50	-10.47	-33.60	-0.79	2.15	20.19	50.00	V

LTE Band 26(814MHz-824MHz)_5MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
816.50	-10.53	-33.70	-0.80	2.15	20.22	50.00	V
819.00	-10.44	-33.60	-0.75	2.15	20.27	50.00	V
821.50	-10.41	-33.60	-0.79	2.15	20.25	50.00	V

LTE Band 26(814MHz-824MHz)_10MHz_16QAM

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)+ P_{Ag}(dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
819.00	-10.42	-33.60	-0.80	2.15	20.23	50.00	V
819.00	-10.47	-33.60	-0.75	2.15	20.23	50.00	V
819.00	-10.43	-33.60	-0.79	2.15	20.23	50.00	V

ANALYZER SETTINGS:
RBW = VBW = 8MHz for occupied bandwidths equal to or less than 5MHz.
RBW = VBW = 20MHz for occupied bandwidths equal to or greater than 10MHz.
Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.87dB(30MHz-3GHz)/3.35dB(3GHz-18GHz), k = 2
Note: Both of Vertical and Horizontal polarizations are evaluated, but only the worst case is recorded in this report.

A.2 FIELD STRENGTH OF SPURIOUS RADIATION

Reference

FCC: CFR 2.1053, 22.917, 24.238, 27.53,90.691.

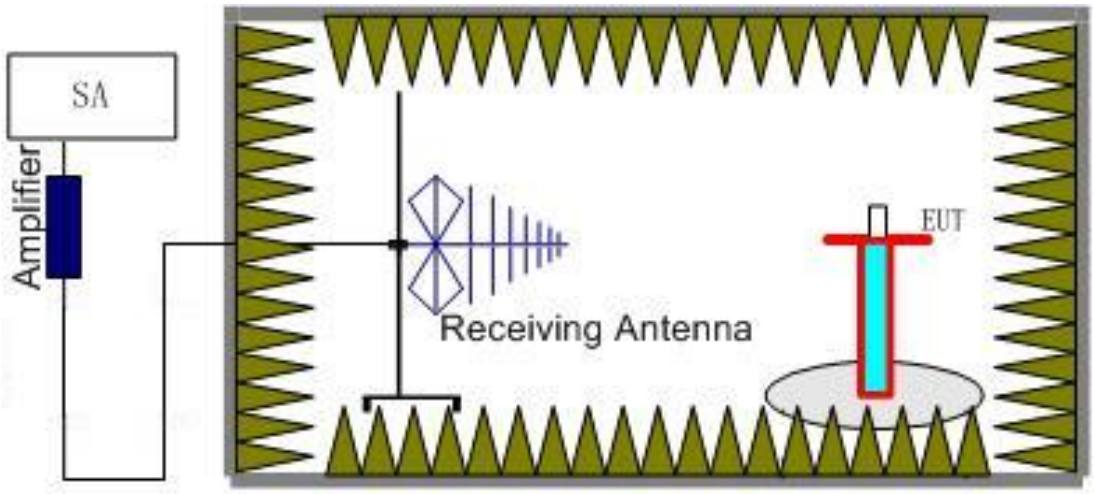
A.2.1 Measurement Method

This measurement is carried out in fully-anechoic chamber FAC-3.

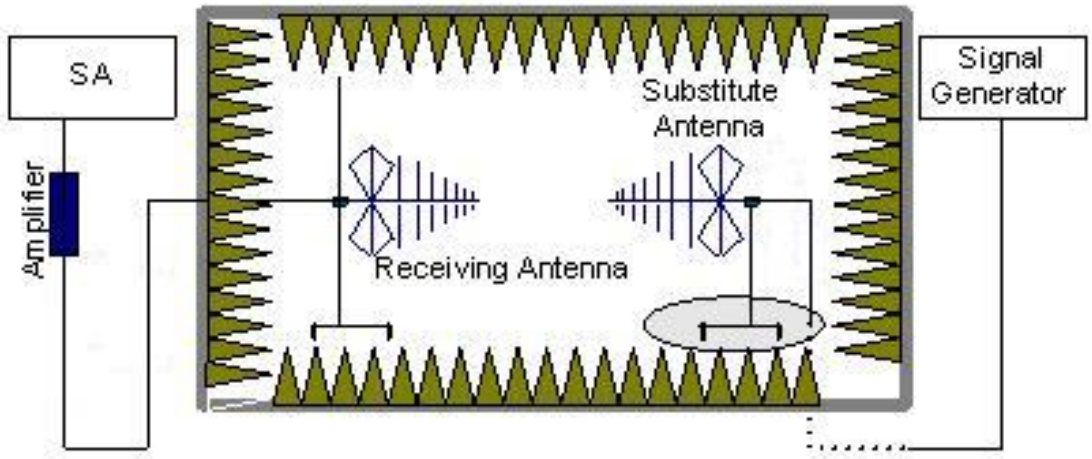
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz as outlined in Part 22.917, 24.238, 27.53(h) and 90.691. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the all LTE Bands

The procedure of radiated spurious emissions is as follows:

1. For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, EUT was placed on a 80 cm high non-conductive stand at a 3 meter test distance from the receive antenna. For radiated measurements performed at frequencies above 1 GHz, EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. Receiving antenna was placed on the antenna mast 3 meters from the EUT. For emission measurements. The receiving antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level. 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 transmit frequencies in three channels (High, Middle, Low) 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, an 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 and adjusts 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(dBi) (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 Results

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

For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

Only worst case result is given below.

LTE Band 2, 1.4MHz, QPSK, Channel 18607

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16980.62	-44.99	2.90	16.50	-31.39	-13.00	H
17185.62	-44.02	2.90	14.50	-32.42	-13.00	H
17345.00	-43.15	3.20	14.50	-31.85	-13.00	H
17520.62	-40.46	2.90	12.80	-30.56	-13.00	H
17526.25	-39.76	2.90	12.80	-29.86	-13.00	H
17810.00	-40.27	3.60	12.80	-31.07	-13.00	H

LTE Band 2, 1.4MHz, QPSK, Channel 18900

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16955.62	-45.52	2.90	16.50	-31.92	-13.00	H
17153.12	-43.33	2.90	14.50	-31.73	-13.00	H
17345.62	-43.68	3.20	14.50	-32.38	-13.00	H
17520.62	-39.46	2.90	12.80	-29.56	-13.00	H
17624.38	-40.03	3.30	12.80	-30.53	-13.00	H
17835.62	-40.17	3.60	12.80	-30.97	-13.00	H

LTE Band 2, 1.4MHz, QPSK, Channel 19193

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16980.62	-44.39	2.90	16.50	-30.79	-13.00	H
17093.12	-44.09	2.90	14.50	-32.49	-13.00	H
17266.25	-43.03	3.20	14.50	-31.73	-13.00	H
17446.88	-42.34	2.90	14.50	-30.74	-13.00	H
17619.38	-39.83	3.30	12.80	-30.33	-13.00	H
17828.12	-40.04	3.60	12.80	-30.84	-13.00	H

LTE Band 2, 1.4MHz, 16QAM, Channel 18607

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16951.88	-45.18	2.90	16.50	-31.58	-13.00	H
17166.25	-43.46	2.90	14.50	-31.86	-13.00	H
17272.50	-42.87	3.20	14.50	-31.57	-13.00	H
17450.62	-42.32	2.90	14.50	-30.72	-13.00	H
17581.25	-39.69	3.30	12.80	-30.19	-13.00	H
17821.88	-40.07	3.60	12.80	-30.87	-13.00	H

LTE Band 2, 1.4MHz, 16QAM, Channel 18900

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16988.75	-45.31	2.90	16.50	-31.71	-13.00	H
17126.88	-43.35	2.90	14.50	-31.75	-13.00	H
17292.50	-43.47	3.20	14.50	-32.17	-13.00	H
17450.00	-41.95	2.90	14.50	-30.35	-13.00	H
17551.25	-40.46	2.90	12.80	-30.56	-13.00	H
17836.88	-40.51	3.60	12.80	-31.31	-13.00	H

LTE Band 2, 1.4MHz, 16QAM, Channel 19193

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16941.88	-45.40	2.90	16.50	-31.80	-13.00	H
17190.62	-44.10	2.90	14.50	-32.50	-13.00	H
17304.38	-43.20	3.20	14.50	-31.90	-13.00	H
17390.62	-42.33	2.90	14.50	-30.73	-13.00	H
17616.25	-39.95	3.30	12.80	-30.45	-13.00	H
17820.62	-40.49	3.60	12.80	-31.29	-13.00	H

LTE Band 4, 1.4MHz, QPSK, Channel 19957

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16936.88	-45.43	2.90	16.50	-31.83	-13.00	H
17203.12	-43.11	2.90	14.50	-31.51	-13.00	H
17219.38	-43.39	3.20	14.50	-32.09	-13.00	H
17436.88	-42.18	2.90	14.50	-30.58	-13.00	H
17615.00	-39.88	3.30	12.80	-30.38	-13.00	H
17822.50	-39.36	3.60	12.80	-30.16	-13.00	H

LTE Band 4, 1.4MHz, QPSK, Channel 20175

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16985.00	-44.89	2.90	16.50	-31.29	-13.00	H
17153.12	-44.15	2.90	14.50	-32.55	-13.00	H
17221.88	-43.31	3.20	14.50	-32.01	-13.00	H
17436.88	-42.08	2.90	14.50	-30.48	-13.00	H
17525.62	-40.39	2.90	12.80	-30.49	-13.00	H
17835.62	-39.53	3.60	12.80	-30.33	-13.00	H

LTE Band 4, 1.4MHz, QPSK, Channel 20393

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16961.88	-45.33	2.90	16.50	-31.73	-13.00	H
17175.00	-43.77	2.90	14.50	-32.17	-13.00	H
17300.00	-43.94	3.20	14.50	-32.64	-13.00	H
17498.12	-41.88	2.90	14.50	-30.28	-13.00	H
17552.50	-40.40	2.90	12.80	-30.50	-13.00	H
17706.25	-40.70	3.30	12.80	-31.20	-13.00	H

LTE Band 4, 1.4MHz, 16QAM, Channel 19957

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16979.38	-45.60	2.90	16.50	-32.00	-13.00	H
17205.00	-43.49	2.90	14.50	-31.89	-13.00	H
17293.75	-43.22	3.20	14.50	-31.92	-13.00	H
17498.12	-41.61	2.90	14.50	-30.01	-13.00	H
17598.75	-39.83	3.30	12.80	-30.33	-13.00	H
17836.25	-39.80	3.60	12.80	-30.60	-13.00	H

LTE Band 4, 1.4MHz, 16QAM, Channel 20175

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16984.38	-45.13	2.90	16.50	-31.53	-13.00	H
17160.62	-43.92	2.90	14.50	-32.32	-13.00	H
17273.12	-43.23	3.20	14.50	-31.93	-13.00	H
17455.62	-41.50	2.90	14.50	-29.90	-13.00	H
17571.25	-40.43	3.30	12.80	-30.93	-13.00	H
17840.00	-39.71	3.60	12.80	-30.51	-13.00	H

LTE Band 4, 1.4MHz, 16QAM, Channel 20393

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16954.38	-44.82	2.90	16.50	-31.22	-13.00	H
17186.88	-43.71	2.90	14.50	-32.11	-13.00	H
17278.75	-42.98	3.20	14.50	-31.68	-13.00	H
17444.38	-42.39	2.90	14.50	-30.79	-13.00	H
17525.62	-40.39	2.90	12.80	-30.49	-13.00	H
17831.25	-40.61	3.60	12.80	-31.41	-13.00	H

LTE Band 5, 1.4MHz, QPSK, Channel 20407

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8417.25	-51.70	1.80	11.30	-42.20	-13.00	V
9102.75	-51.28	2.20	11.60	-41.88	-13.00	H
9300.75	-50.22	2.00	11.60	-40.62	-13.00	H
9474.12	-50.46	2.10	11.60	-40.96	-13.00	V
9744.38	-50.57	2.20	11.20	-41.57	-13.00	H
9800.75	-50.03	2.30	11.20	-41.13	-13.00	H

LTE Band 5, 1.4MHz, QPSK, Channel 20525

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8456.25	-51.75	1.80	11.30	-42.25	-13.00	H
9107.38	-50.78	2.10	11.60	-41.28	-13.00	H
9296.38	-50.13	2.00	11.60	-40.53	-13.00	H
9474.12	-50.83	2.10	11.60	-41.33	-13.00	V
9573.00	-51.05	2.10	11.20	-41.95	-13.00	H
9814.88	-50.09	2.30	11.20	-41.19	-13.00	H

LTE Band 5, 1.4MHz, QPSK, Channel 20643

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8470.88	-51.89	1.80	11.30	-42.39	-13.00	H
9100.00	-51.03	2.20	11.60	-41.63	-13.00	H
9299.50	-49.86	2.00	11.60	-40.26	-13.00	H
9475.00	-50.83	2.10	11.60	-41.33	-13.00	V
9736.12	-50.58	2.20	11.20	-41.58	-13.00	H
9806.62	-50.81	2.30	11.20	-41.91	-13.00	H

LTE Band 5, 1.4MHz, 16QAM, Channel 20407

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8899.88	-52.76	1.90	12.00	-42.66	-13.00	H
9097.12	-51.50	2.20	11.60	-42.10	-13.00	H
9299.75	-49.82	2.00	11.60	-40.22	-13.00	H
9474.50	-50.14	2.10	11.60	-40.64	-13.00	V
9736.38	-51.12	2.20	11.20	-42.12	-13.00	H
9794.50	-51.25	2.30	11.20	-42.35	-13.00	H

LTE Band 5, 1.4MHz, 16QAM, Channel 20525

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
7209.00	-52.90	1.80	12.00	-42.70	-13.00	V
9101.50	-51.64	2.20	11.60	-42.24	-13.00	H
9299.50	-50.90	2.00	11.60	-41.30	-13.00	H
9476.25	-51.19	2.10	11.60	-41.69	-13.00	V
9743.88	-51.29	2.20	11.20	-42.29	-13.00	H
9795.00	-51.22	2.30	11.20	-42.32	-13.00	H

LTE Band 5, 1.4MHz, 16QAM, Channel 20643

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8466.00	-51.66	1.80	11.30	-42.16	-13.00	H
9098.38	-51.09	2.20	11.60	-41.69	-13.00	H
9225.38	-49.78	2.10	11.60	-40.28	-13.00	H
9475.00	-51.42	2.10	11.60	-41.92	-13.00	V
9732.62	-50.90	2.20	11.20	-41.90	-13.00	H
9798.75	-51.37	2.30	11.20	-42.47	-13.00	H

LTE Band 7, 5MHz, QPSK, Channel 20775

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16991.25	-47.73	2.90	16.50	-34.13	-25.00	H
17110.62	-45.60	2.90	14.50	-34.00	-25.00	H
17274.38	-46.49	3.20	14.50	-35.19	-25.00	H
17423.75	-46.42	2.90	14.50	-34.82	-25.00	H
17592.50	-43.92	3.30	12.80	-34.42	-25.00	H
17836.88	-43.32	3.60	12.80	-34.12	-25.00	H

LTE Band 7, 5MHz, QPSK, Channel 21100

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16923.12	-48.39	2.90	16.50	-34.79	-25.00	H
17110.00	-45.51	2.90	14.50	-33.91	-25.00	H
17299.38	-46.09	3.20	14.50	-34.79	-25.00	H
17508.12	-44.58	2.90	12.80	-34.68	-25.00	H
17602.50	-43.79	3.30	12.80	-34.29	-25.00	H
17838.12	-43.93	3.60	12.80	-34.73	-25.00	H

LTE Band 7, 5MHz, QPSK, Channel 21425

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16990.00	-48.02	2.90	16.50	-34.42	-25.00	H
17112.50	-46.31	2.90	14.50	-34.71	-25.00	H
17295.00	-46.88	3.20	14.50	-35.58	-25.00	H
17516.25	-45.52	2.90	12.80	-35.62	-25.00	H
17566.88	-44.77	3.30	12.80	-35.27	-25.00	H
17769.38	-43.24	3.60	12.80	-34.04	-25.00	H

LTE Band 7, 5MHz, 16QAM, Channel 20775

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
17006.88	-46.35	2.90	14.50	-34.75	-25.00	H
17141.25	-46.07	2.90	14.50	-34.47	-25.00	H
17294.38	-46.37	3.20	14.50	-35.07	-25.00	H
17523.12	-44.77	2.90	12.80	-34.87	-25.00	H
17598.75	-43.60	3.30	12.80	-34.10	-25.00	H
17785.62	-43.38	3.60	12.80	-34.18	-25.00	H

LTE Band 7, 5MHz, 16QAM, Channel 21100

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16998.12	-48.55	2.90	16.50	-34.95	-25.00	H
17161.88	-45.47	2.90	14.50	-33.87	-25.00	H
17300.62	-46.02	3.20	14.50	-34.72	-25.00	H
17502.50	-44.38	2.90	12.80	-34.48	-25.00	H
17569.38	-43.89	3.30	12.80	-34.39	-25.00	H
17831.88	-43.42	3.60	12.80	-34.22	-25.00	H

LTE Band 7, 5MHz, 16QAM, Channel 21425

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak EIRP(dBm)	Limit (dBm)	Polarization
16475.62	-49.27	2.70	17.40	-34.57	-25.00	H
16978.75	-48.20	2.90	16.50	-34.60	-25.00	H
17316.25	-46.22	3.20	14.50	-34.92	-25.00	H
17516.88	-44.56	2.90	12.80	-34.66	-25.00	H
17531.25	-44.32	2.90	12.80	-34.42	-25.00	H
17764.38	-43.24	3.60	12.80	-34.04	-25.00	H

LTE Band 12, 1.4MHz, QPSK, Channel 23017

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
2797.00	-47.02	1.00	10.70	-37.32	-13.00	H
3496.12	-40.18	1.10	11.50	-29.78	-13.00	H
4195.12	-41.80	1.20	12.40	-30.60	-13.00	H
4894.88	-50.00	1.40	12.50	-38.90	-13.00	H
9227.00	-49.90	2.10	11.60	-40.40	-13.00	H
9478.12	-51.00	2.10	11.60	-41.50	-13.00	V

LTE Band 12, 1.4MHz, QPSK, Channel 23095

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
2828.50	-50.06	1.00	10.70	-40.36	-13.00	H
3535.12	-46.02	1.10	12.20	-34.92	-13.00	H
4242.00	-39.76	1.20	12.40	-28.56	-13.00	H
4949.25	-51.86	1.30	12.50	-40.66	-13.00	H
9304.00	-50.27	2.00	11.60	-40.67	-13.00	H
9469.88	-50.74	2.10	11.60	-41.24	-13.00	V

LTE Band 12, 1.4MHz, QPSK, Channel 23173

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
2859.50	-46.39	1.00	10.70	-36.69	-13.00	H
3574.12	-45.28	1.10	12.20	-34.18	-13.00	H
4289.25	-39.02	1.20	12.40	-27.82	-13.00	H
5004.38	-51.22	1.30	12.50	-40.02	-13.00	H
9226.00	-50.73	2.10	11.60	-41.23	-13.00	H
9429.62	-51.49	2.10	11.60	-41.99	-13.00	H

LTE Band 12, 1.4MHz, 16QAM, Channel 23017

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
2797.00	-46.89	1.00	10.70	-37.19	-13.00	H
3496.12	-39.56	1.10	11.50	-29.16	-13.00	H
4195.88	-39.96	1.20	12.40	-28.76	-13.00	H
4894.50	-49.10	1.40	12.50	-38.00	-13.00	H
9299.88	-50.89	2.00	11.60	-41.29	-13.00	H
9730.50	-50.35	2.20	11.20	-41.35	-13.00	H

LTE Band 12, 1.4MHz 16QAM, Channel 23095

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
2828.00	-46.47	1.00	10.70	-36.77	-13.00	H
3535.12	-46.54	1.10	12.20	-35.44	-13.00	H
4242.38	-38.92	1.20	12.40	-27.72	-13.00	H
9302.50	-50.82	2.00	11.60	-41.22	-13.00	H
9474.12	-50.94	2.10	11.60	-41.44	-13.00	V
9714.50	-50.26	2.20	11.20	-41.26	-13.00	H

LTE Band 12, 1.4MHz, 16QAM, Channel 23173

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
2859.50	-47.45	1.00	10.70	-37.75	-13.00	H
3574.12	-44.94	1.10	12.20	-33.84	-13.00	H
4288.88	-38.49	1.20	12.40	-27.29	-13.00	H
5004.00	-50.69	1.30	12.50	-39.49	-13.00	H
9223.62	-50.24	2.10	11.60	-40.74	-13.00	H
9722.38	-50.53	2.20	11.20	-41.53	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8373.75	-52.12	1.80	11.30	-42.62	-13.00	H
9102.38	-51.87	2.20	11.60	-42.47	-13.00	H
9299.88	-50.19	2.00	11.60	-40.59	-13.00	H
9364.62	-51.64	2.00	11.60	-42.04	-13.00	V
9735.38	-51.29	2.20	11.20	-42.29	-13.00	H
9785.88	-50.50	2.30	11.20	-41.60	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8430.38	-52.45	1.80	11.30	-42.95	-13.00	H
9099.25	-51.20	2.20	11.60	-41.80	-13.00	H
9297.25	-50.39	2.00	11.60	-40.79	-13.00	H
9349.62	-50.86	2.00	11.60	-41.26	-13.00	V
9724.88	-51.29	2.20	11.20	-42.29	-13.00	H
9783.75	-51.59	2.30	11.20	-42.69	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8381.62	-52.05	1.80	11.30	-42.55	-13.00	H
9102.38	-51.92	2.20	11.60	-42.52	-13.00	H
9298.88	-50.04	2.00	11.60	-40.44	-13.00	H
9473.50	-51.13	2.10	11.60	-41.63	-13.00	V
9729.75	-51.30	2.20	11.20	-42.30	-13.00	H
9794.62	-51.33	2.30	11.20	-42.43	-13.00	H

LTE Band 26(824MHz-849MHz), 1.4MHz, 16QAM, Channel 26797

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
7385.25	-53.20	1.70	12.00	-42.90	-13.00	H
9102.12	-51.59	2.20	11.60	-42.19	-13.00	H
9305.00	-50.73	2.00	11.60	-41.13	-13.00	H
9473.50	-51.22	2.10	11.60	-41.72	-13.00	V
9739.88	-51.27	2.20	11.20	-42.27	-13.00	H
9818.38	-51.80	2.30	11.20	-42.90	-13.00	H

LTE Band 26(824MHz-849MHz), 1.4MHz, 16QAM, Channel 26915

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8429.25	-51.36	1.80	11.30	-41.86	-13.00	H
9098.00	-51.23	2.20	11.60	-41.83	-13.00	H
9300.88	-50.70	2.00	11.60	-41.10	-13.00	H
9476.88	-51.29	2.10	11.60	-41.79	-13.00	V
9720.75	-51.08	2.20	11.20	-42.08	-13.00	H
9786.50	-50.77	2.30	11.20	-41.87	-13.00	H

LTE Band 26(824MHz-849MHz), 1.4MHz, 16QAM, Channel 27033

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8472.75	-52.48	1.80	11.30	-42.98	-13.00	H
9102.62	-51.99	2.20	11.60	-42.59	-13.00	H
9222.75	-50.48	2.10	11.60	-40.98	-13.00	H
9477.88	-51.35	2.10	11.60	-41.85	-13.00	V
9765.38	-51.08	2.30	11.20	-42.18	-13.00	H
9793.00	-51.64	2.30	11.20	-42.74	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
7206.75	-52.60	1.80	12.00	-42.40	-13.00	V
9100.25	-51.05	2.20	11.60	-41.65	-13.00	H
9298.50	-50.72	2.00	11.60	-41.12	-13.00	H
9471.50	-51.02	2.10	11.60	-41.52	-13.00	V
9733.62	-51.11	2.20	11.20	-42.11	-13.00	H
9797.88	-51.56	2.30	11.20	-42.66	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
7199.62	-52.93	1.80	12.00	-42.73	-13.00	V
8373.00	-51.99	1.80	11.30	-42.49	-13.00	H
9101.38	-51.71	2.20	11.60	-42.31	-13.00	H
9219.50	-50.86	2.10	11.60	-41.36	-13.00	H
9472.00	-51.00	2.10	11.60	-41.50	-13.00	V
9738.88	-50.68	2.20	11.20	-41.68	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
7205.25	-53.17	1.80	12.00	-42.97	-13.00	H
9102.50	-51.92	2.20	11.60	-42.52	-13.00	H
9300.38	-51.01	2.00	11.60	-41.41	-13.00	H
9476.12	-50.75	2.10	11.60	-41.25	-13.00	V
9734.00	-51.32	2.20	11.20	-42.32	-13.00	H
9788.88	-50.84	2.30	11.20	-41.94	-13.00	H

LTE Band 26(814MHz-824MHz), 1.4MHz, 16QAM, Channel 26697

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
7322.25	-52.94	1.70	12.00	-42.64	-13.00	V
9096.88	-51.82	2.20	11.60	-42.42	-13.00	H
9296.75	-50.53	2.00	11.60	-40.93	-13.00	H
9474.38	-51.05	2.10	11.60	-41.55	-13.00	V
9747.62	-51.31	2.20	11.20	-42.31	-13.00	H
9774.75	-51.35	2.30	11.20	-42.45	-13.00	H

LTE Band 26(814MHz-824MHz), 1.4MHz, 16QAM, Channel 26740

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8724.75	-52.59	2.00	12.00	-42.59	-13.00	H
9098.88	-51.50	2.20	11.60	-42.10	-13.00	H
9301.25	-50.21	2.00	11.60	-40.61	-13.00	H
9476.88	-50.44	2.10	11.60	-40.94	-13.00	V
9722.88	-50.40	2.20	11.20	-41.40	-13.00	H
9794.25	-50.81	2.30	11.20	-41.91	-13.00	H

LTE Band 26(814MHz-824MHz), 1.4MHz, 16QAM, Channel 26783

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain	Peak ERP(dBm)	Limit (dBm)	Polarization
8478.38	-51.91	1.80	11.30	-42.41	-13.00	H
9104.38	-51.03	2.20	11.60	-41.63	-13.00	H
9299.50	-50.51	2.00	11.60	-40.91	-13.00	H
9474.25	-51.29	2.10	11.60	-41.79	-13.00	V
9724.88	-49.94	2.20	11.20	-40.94	-13.00	H
9812.12	-51.20	2.30	11.20	-42.30	-13.00	H

Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.87dB(30MHz-3GHz)/3.35dB(3GHz-18GHz)/2.68dB(18GHz-40GHz), k = 2

A.3 FREQUENCY STABILITY

Reference

FCC: CFR Part 2.1055, 22.355, 24.235, 27.54, 90.213.

A.3.1 Method of Measurement

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 R&S CMW500.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30℃.
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on mid channel of all bands, 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℃ increments from -30℃ to +50℃. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring 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℃.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre 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℃ increments from -30℃ to +50℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

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

A.3.2 Measurement results

LTE Band 2, 20MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	1850.570	1909.460		
50				22.55	0.0120
40				15.52	0.0083
30				-3.26	0.0017
10				31.00	0.0165
0				6.87	0.0037
-10				22.75	0.0121
-20				1.45	0.0008
-30				31.90	0.0170

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.40	20	1850.570	1909.460	30.61	0.0163
4.35				14.08	0.0075

Expanded measurement uncertainty is 10 Hz, *k* = 2

LTE Band 4, 20MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.85	1710.280	1754.720		
40				-2.06	0.0012
30				-2.32	0.0013
20				-2.60	0.0015
10				-2.93	0.0017
0				-5.47	0.0032
-10				-6.78	0.0039
-20				-7.24	0.0042
-30				-7.93	0.0046

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.40	20	1710.280	1754.720	-7.04	0.0041
4.35				-6.34	0.0037

panded measurement uncertainty is 10Hz, *k* = 2

LTE Band 5, 10MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
50	3.85	824.460	848.580		
40				-1.36	0.0016
30				-3.52	0.0042
20				-6.15	0.0074
10				-7.68	0.0092
0				-9.50	0.0114
-10				-9.03	0.0108
-20				-9.39	0.0112
-30				-9.47	0.0113

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.40	20	824.460	848.580	-9.27	0.0111
4.35				-9.79	0.0117

Expanded measurement uncertainty is 10 Hz, k = 2

LTE Band 7, 20MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	2500.680	2569.360		
50				-21.93	0.0087
40				-37.77	0.0149
30				-36.62	0.0144
10				-49.70	0.0196
0				-37.22	0.0147
-10				-34.90	0.0138
-20				-50.85	0.0201
-30				-45.26	0.0179

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.40	20	2500.680	2569.360	-24.98	0.0099
4.35				-24.33	0.0096

Expanded measurement uncertainty is 10 Hz, k = 2

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

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	699.690	715.240		
50				6.54	0.0092
40				11.10	0.0157
30				17.01	0.0240
10				22.44	0.0317
0				26.82	0.0379
-10				32.42	0.0458
-20				37.28	0.0527
-30				3.59	0.0051

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.40	20	699.690	715.240	-4.24	0.0060
4.35				-0.27	0.0004

Expanded measurement uncertainty is 10Hz, k = 2

LTE Band 26(814MHz-824MHz), 10MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	814.350	823.580		
50				-0.99	0.0012
40				-3.10	0.0038
30				-4.94	0.0060
10				-5.51	0.0067
0				-7.61	0.0093
-10				-8.37	0.0102
-20				-9.56	0.0117
-30				-11.03	0.0135

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.40	20	814.350	823.580	-11.53	0.0141
4.35				-12.36	0.0151

Expanded measurement uncertainty is 10Hz, k = 2

LTE band 26(824MHz-849MHz), 15MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20	3.85	824.480	848.570		
50				-2.20	0.0026
40				-4.71	0.0056
30				-6.94	0.0083
10				-7.47	0.0089
0				-8.57	0.0102
-10				-8.50	0.0102
-20				-8.97	0.0107
-30				-8.25	0.0099

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.40	20	824.480	848.570	-9.01	0.0108
4.35				-8.00	0.0096

Expanded measurement uncertainty is 10Hz, k = 2

A.4 OCCUPIED BANDWIDTH

Reference

FCC: CFR Part 2.1049, 22.917, 24.238, 27.53, 90.1215.

A.4.1 Occupied Bandwidth Results

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

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 (i.e., two to five times the OBW).

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.

c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.

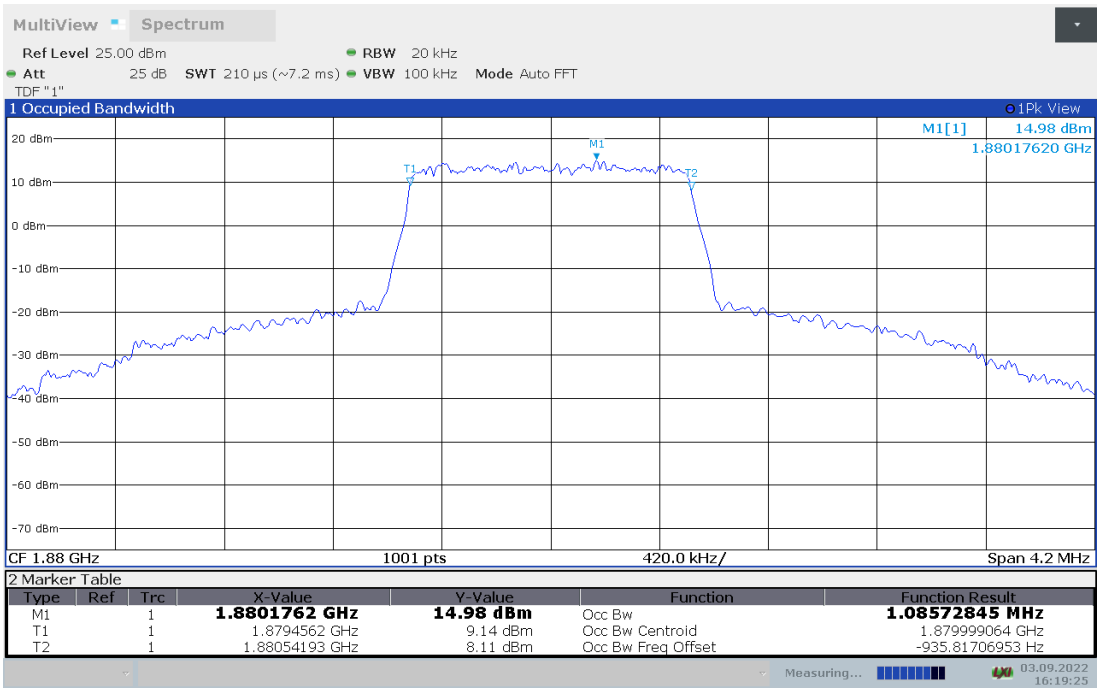
d) Set the detection mode to peak, and the trace mode to max hold.

e) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

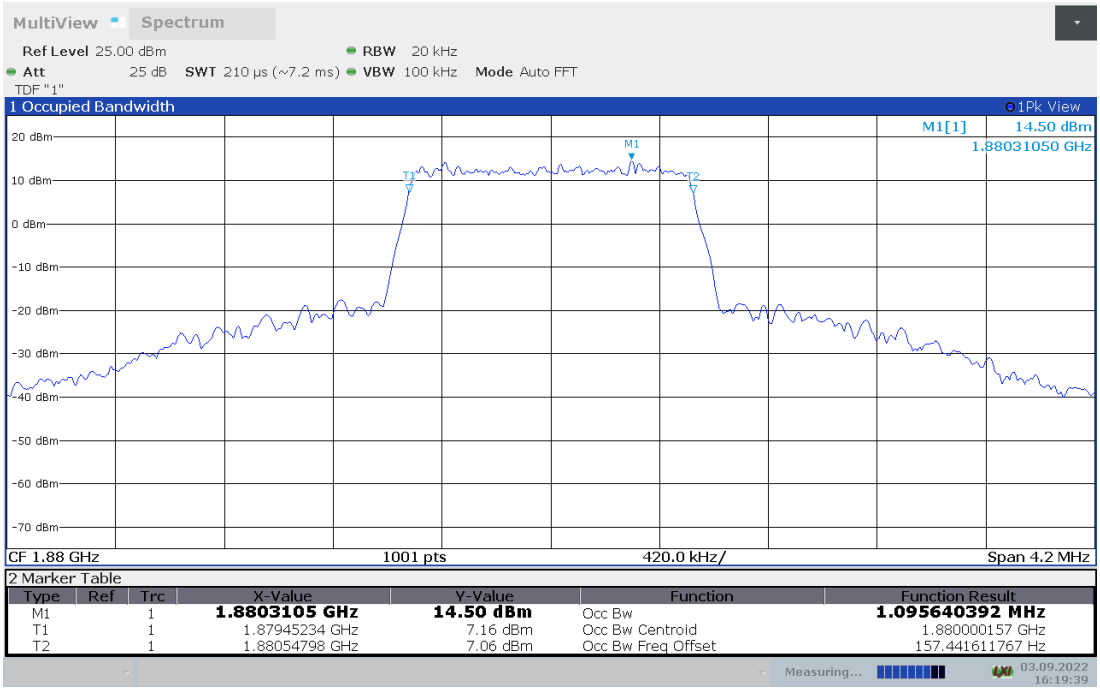
LTE band 2,1.4MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1880	1.086	1.096

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



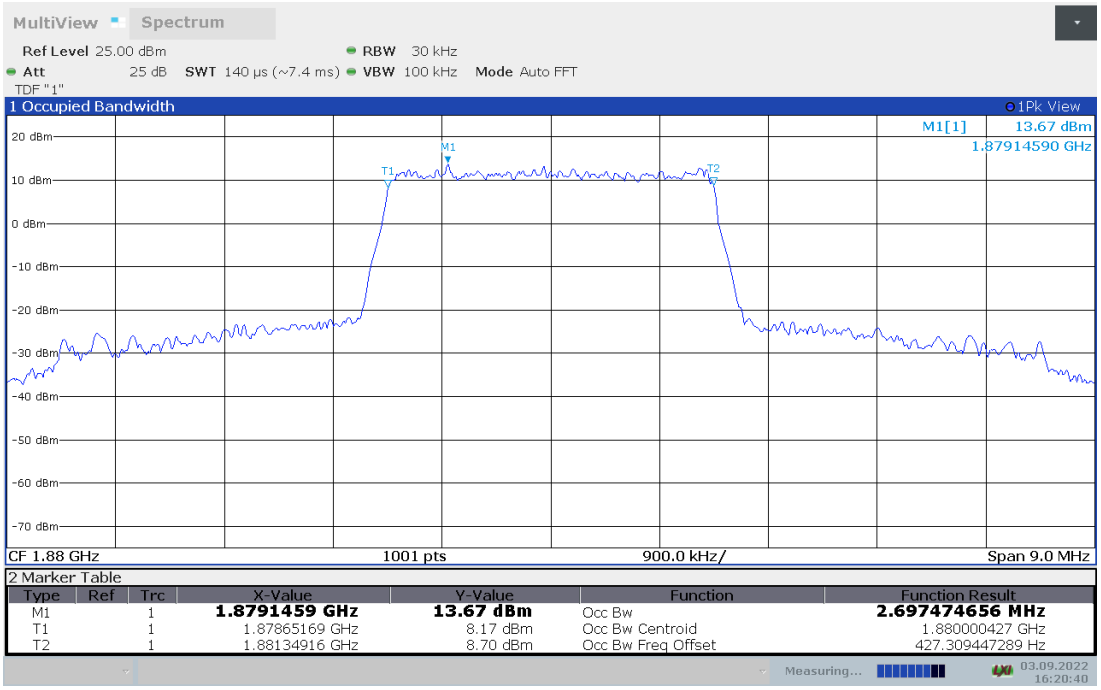
LTE band 2 , 1.4MHz Bandwidth,16QAM (99% BW)



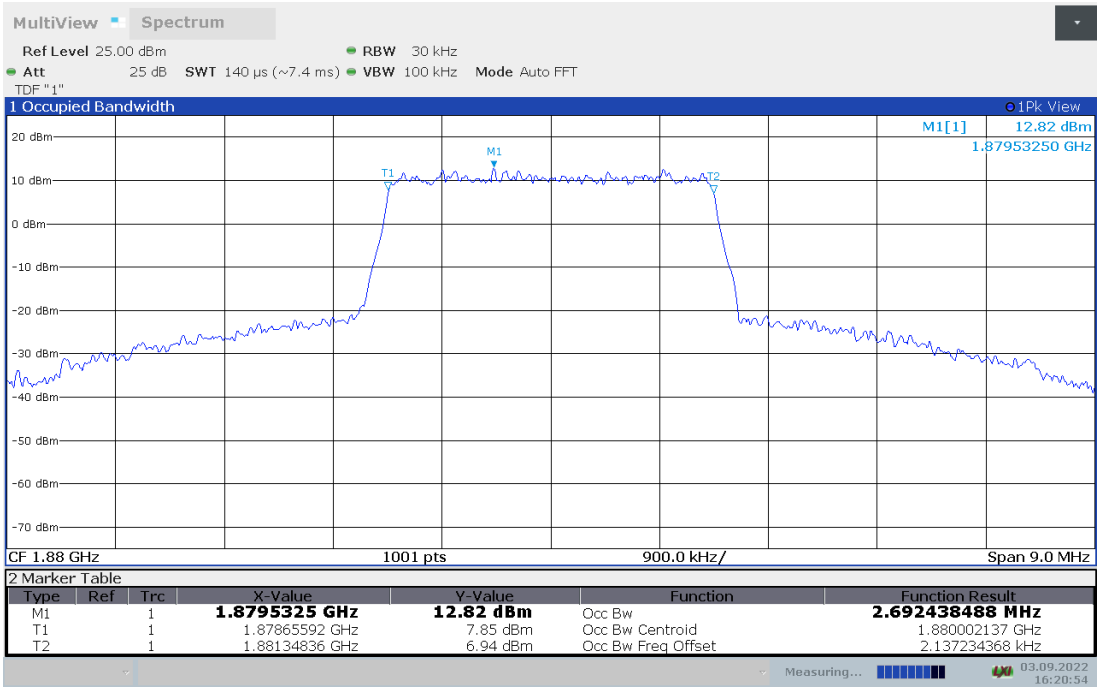
LTE band 2,3MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1880	2.697	2.692

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



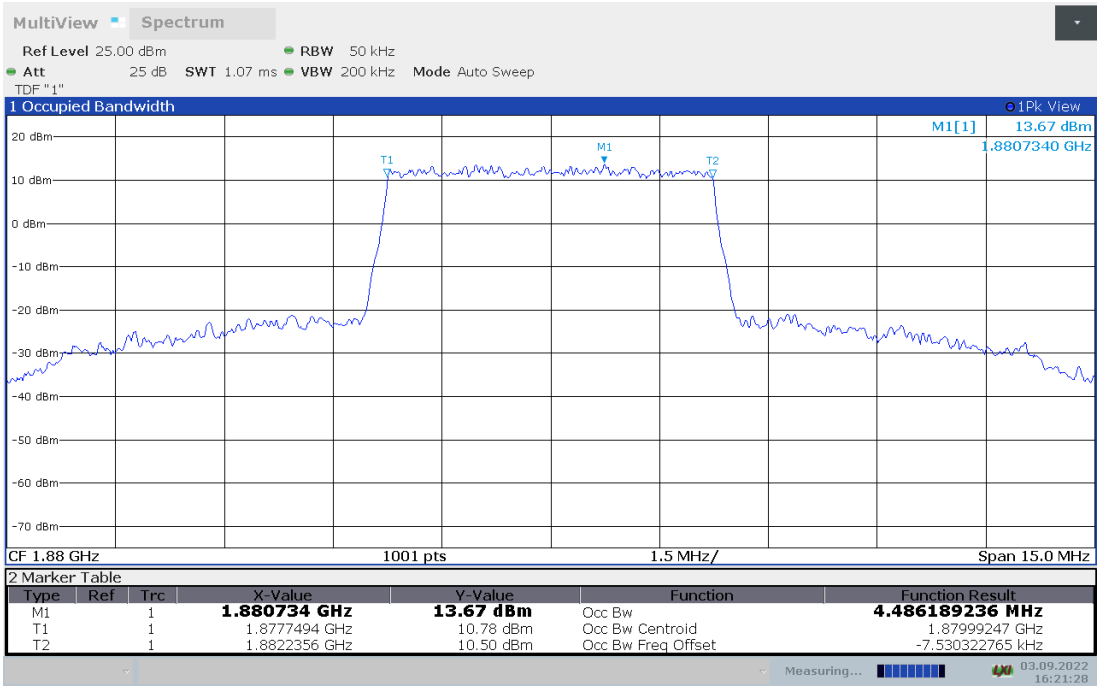
LTE band 2 , 3MHz Bandwidth,16QAM (99% BW)



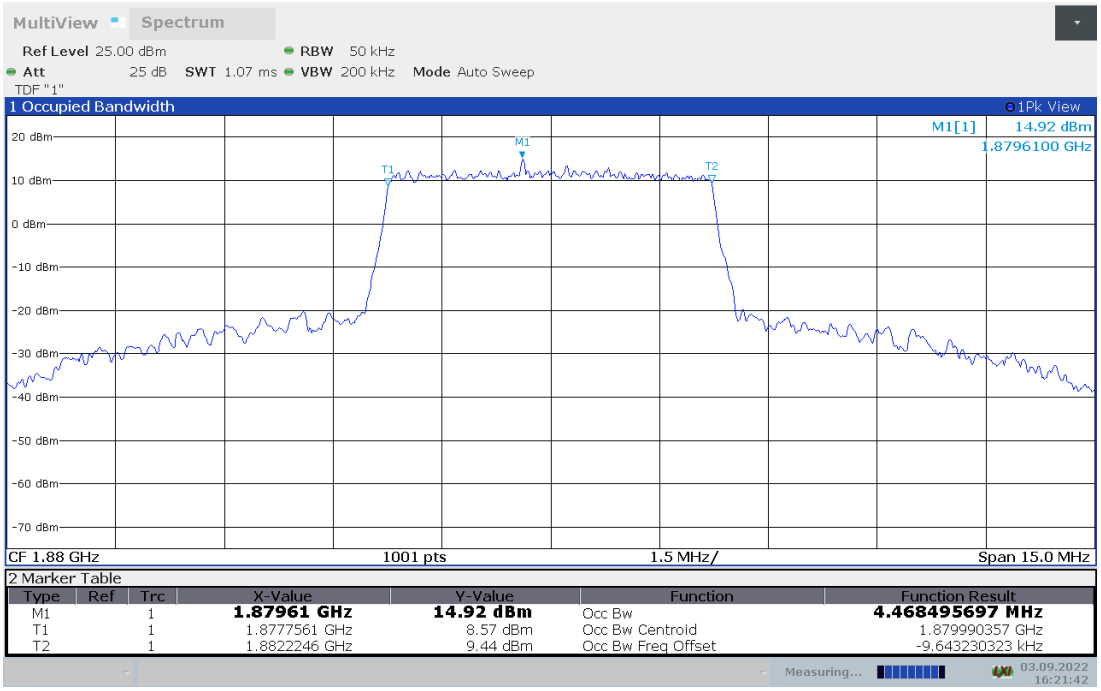
LTE band 2,5MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1880	4.486	4.468

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



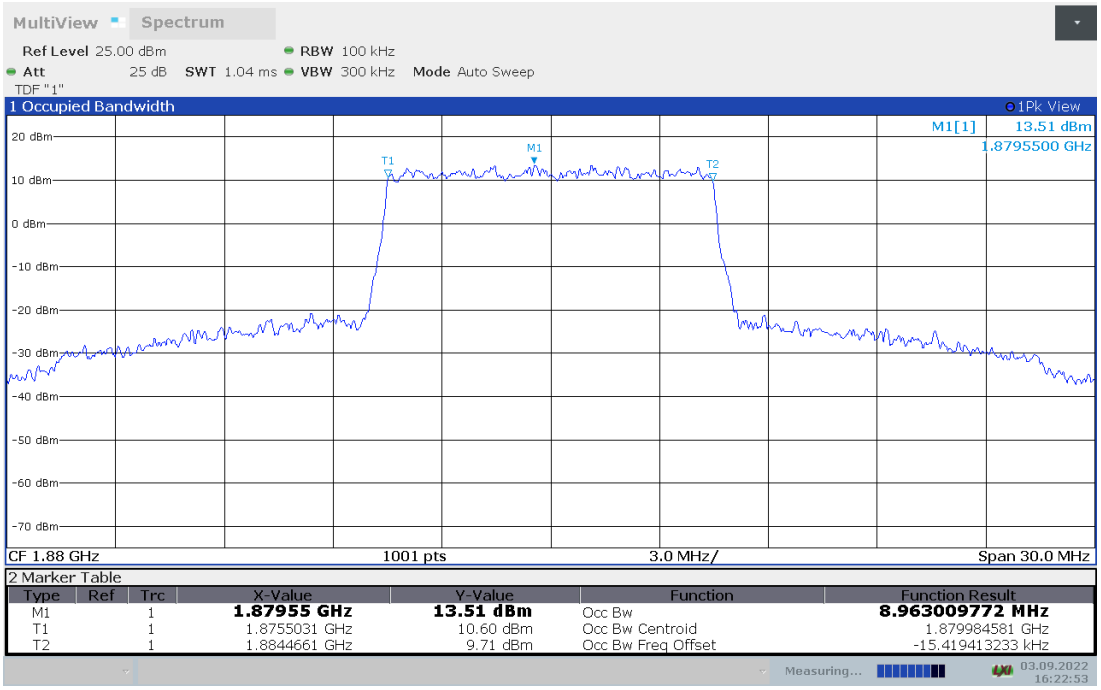
LTE band 2 , 5MHz Bandwidth,16QAM (99% BW)



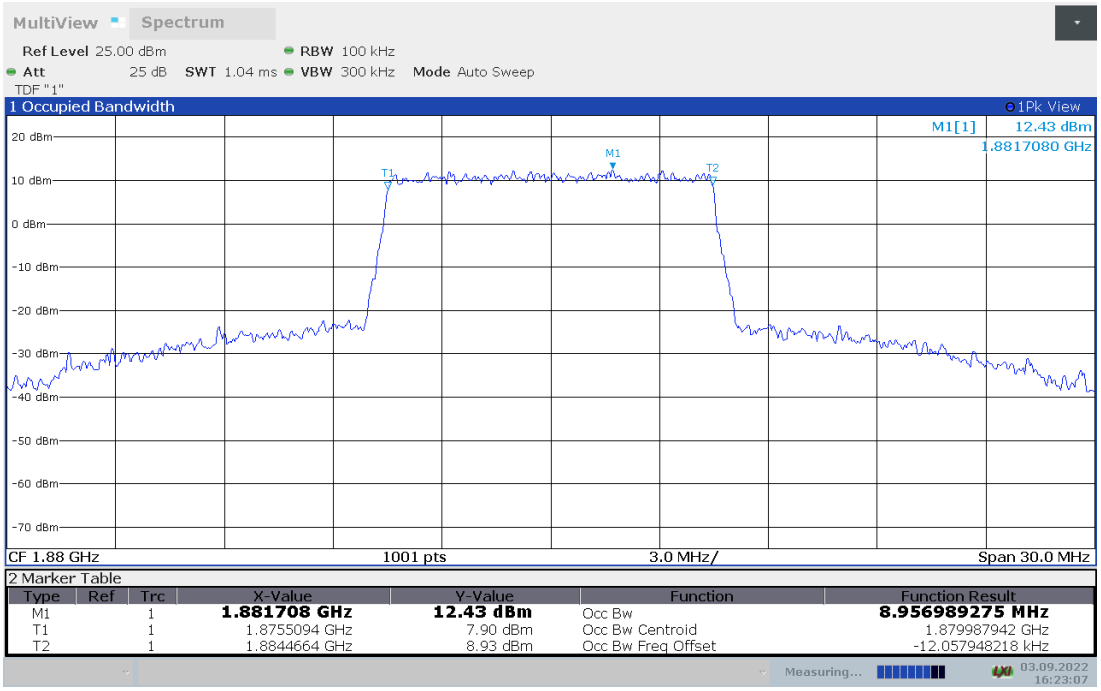
LTE band 2,10MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1880	8.963	8.957

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



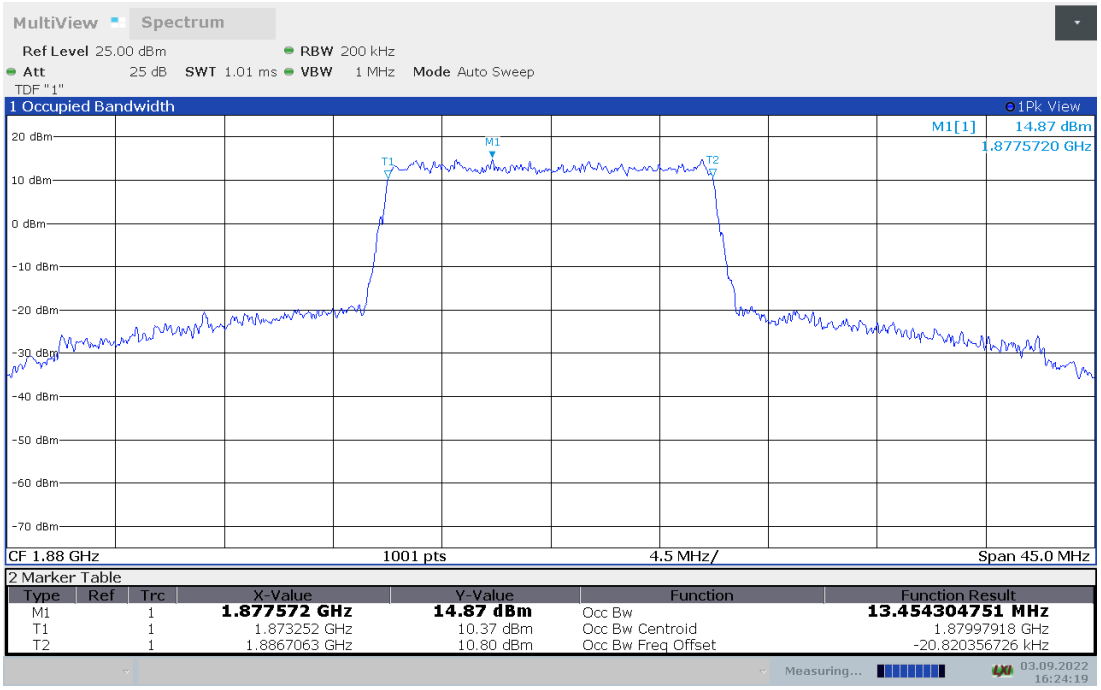
LTE band 2 , 10MHz Bandwidth,16QAM (99% BW)



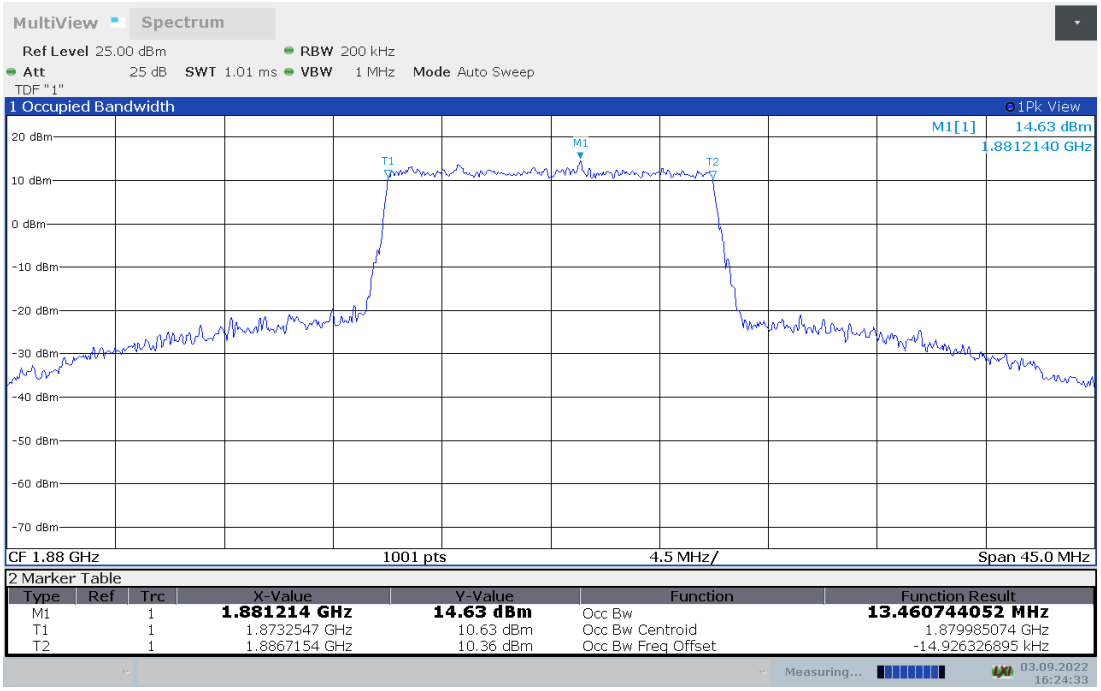
LTE band 2,15MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1880	13.454	13.461

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



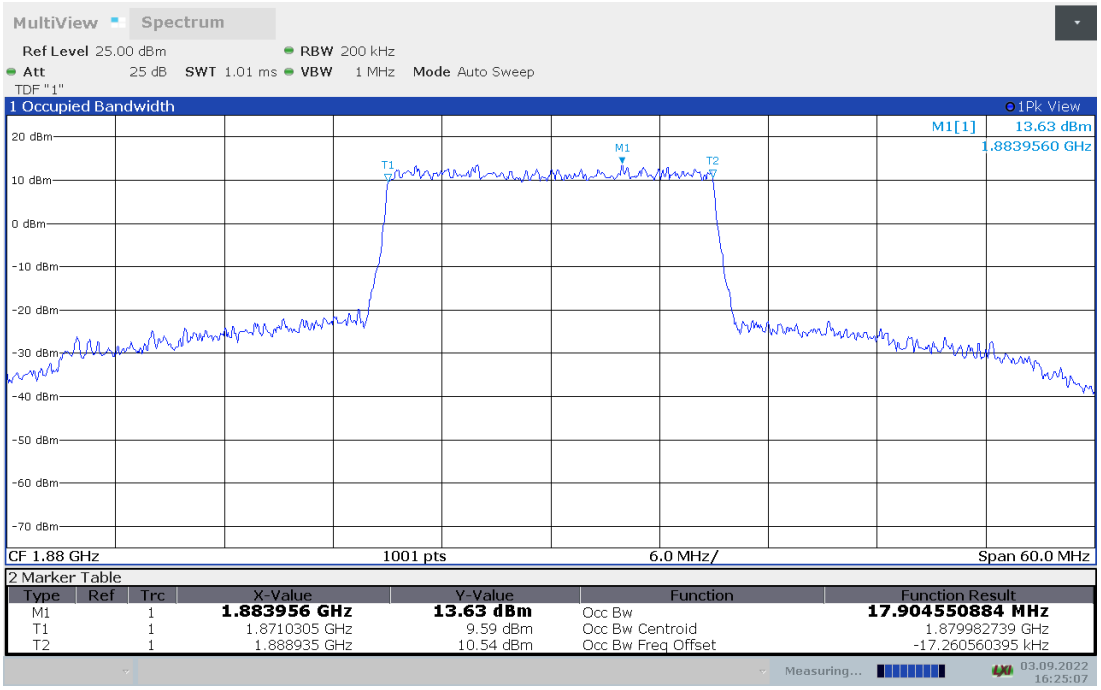
LTE band 2 , 15MHz Bandwidth,16QAM (99% BW)



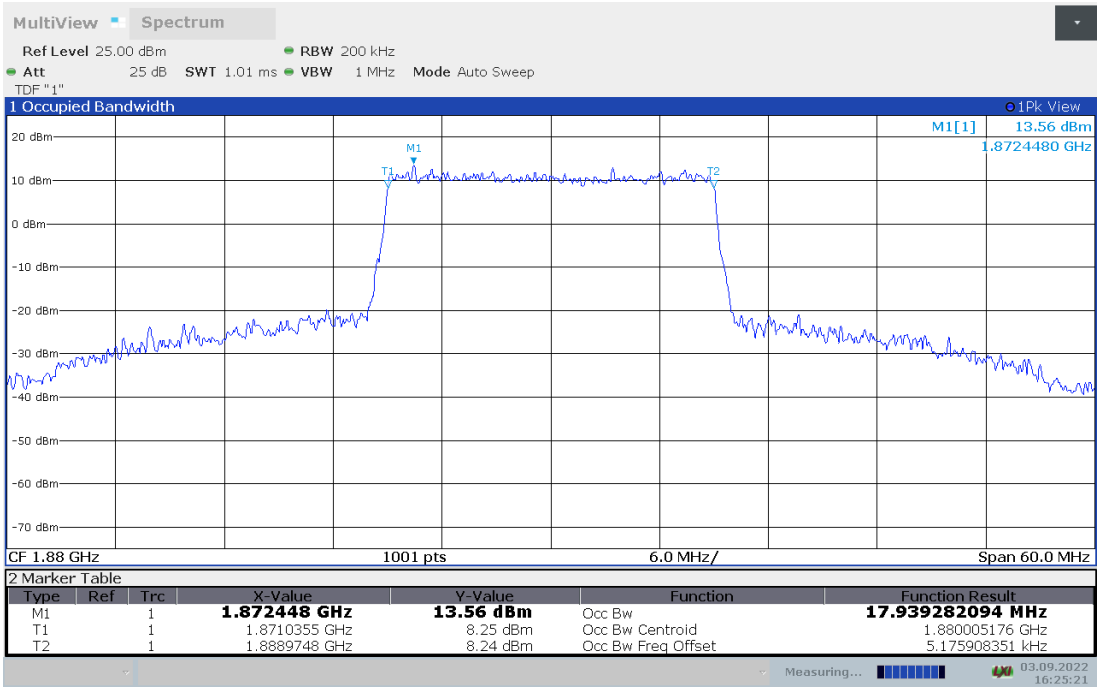
LTE band 2,20MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1880	17.905	17.939

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



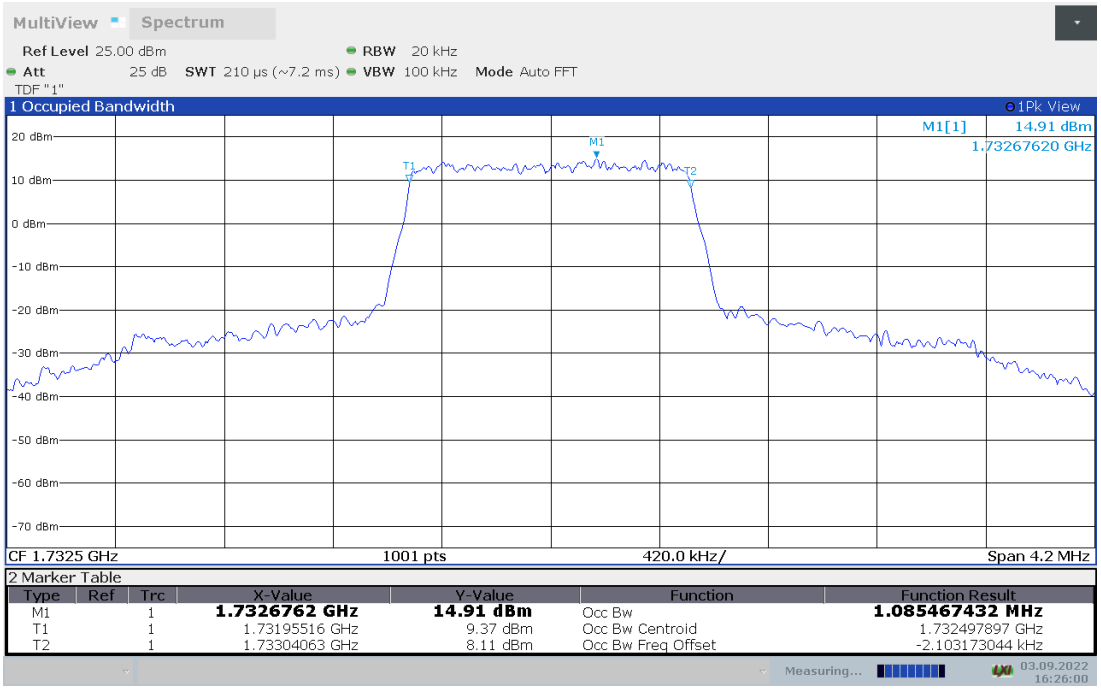
LTE band 2 , 20MHz Bandwidth,16QAM (99% BW)



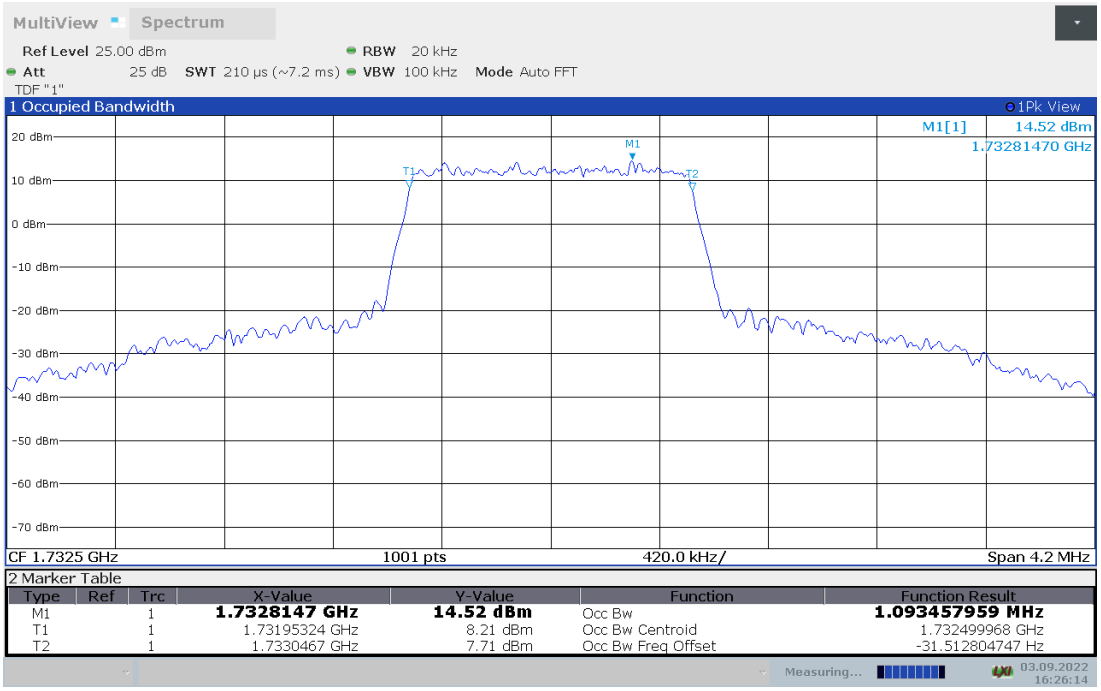
LTE band 4,1.4MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1732.5	1.085	1.093

LTE band 4 , 1.4MHz Bandwidth,QPSK (99% BW)



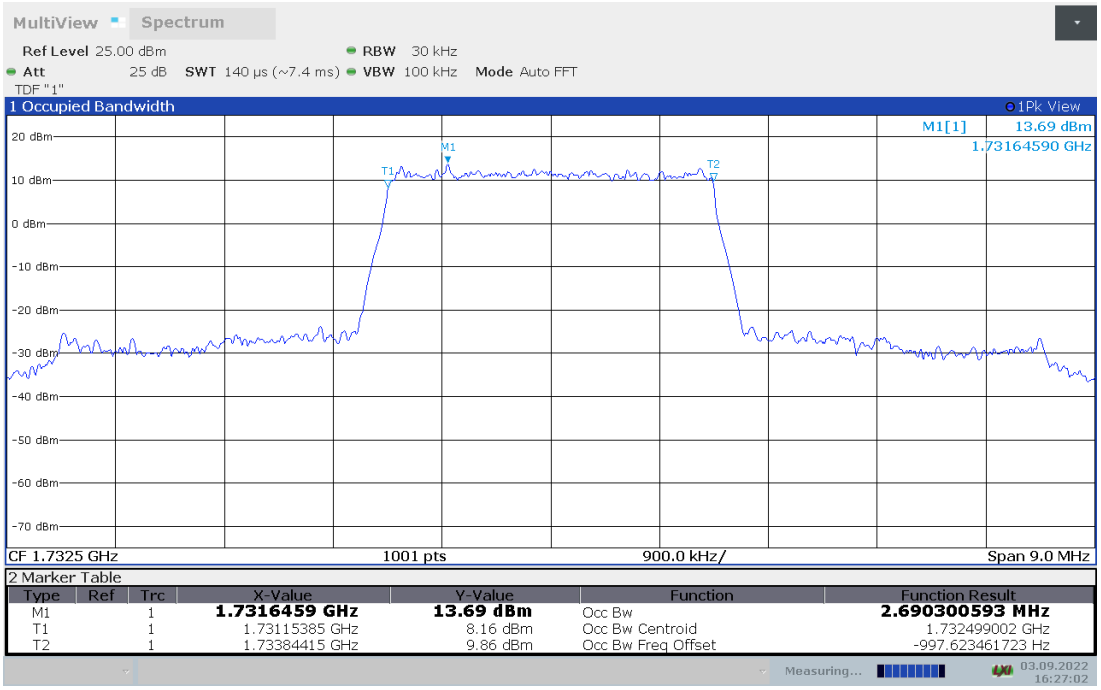
LTE band 4 , 1.4MHz Bandwidth,16QAM (99% BW)



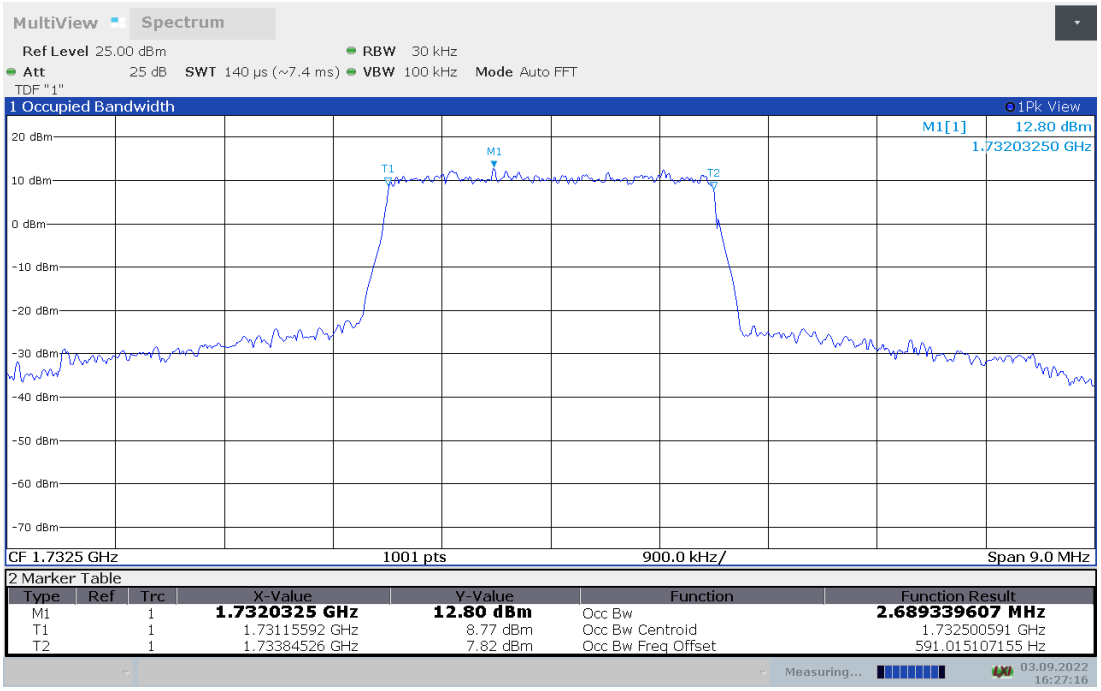
LTE band 4,3MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1732.5	2.690	2.689

LTE band 4 , 3MHz Bandwidth,QPSK (99% BW)



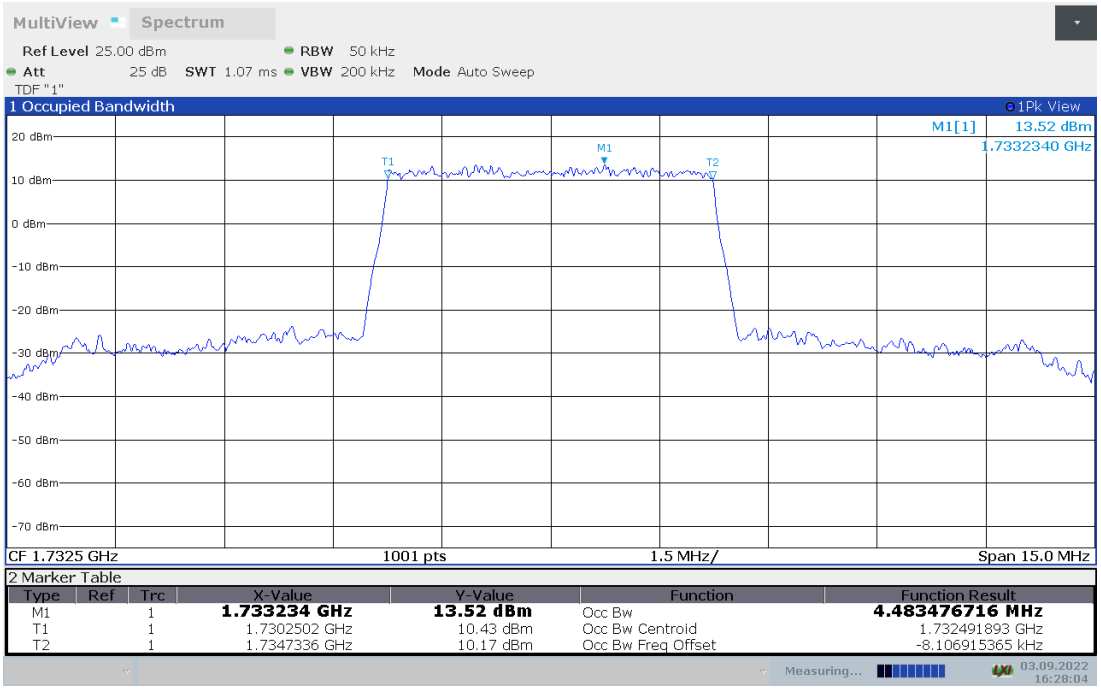
LTE band 4 , 3MHz Bandwidth,16QAM (99% BW)



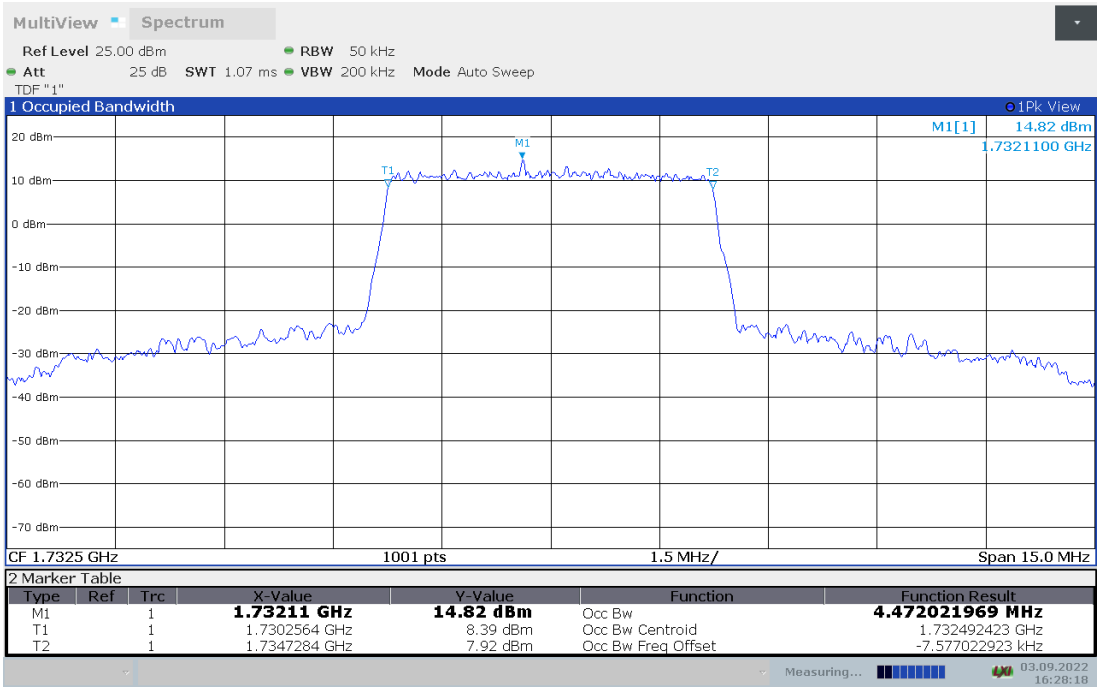
LTE band 4,5MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1732.5	4.483	4.472

LTE band 4 , 5MHz Bandwidth,QPSK (99% BW)



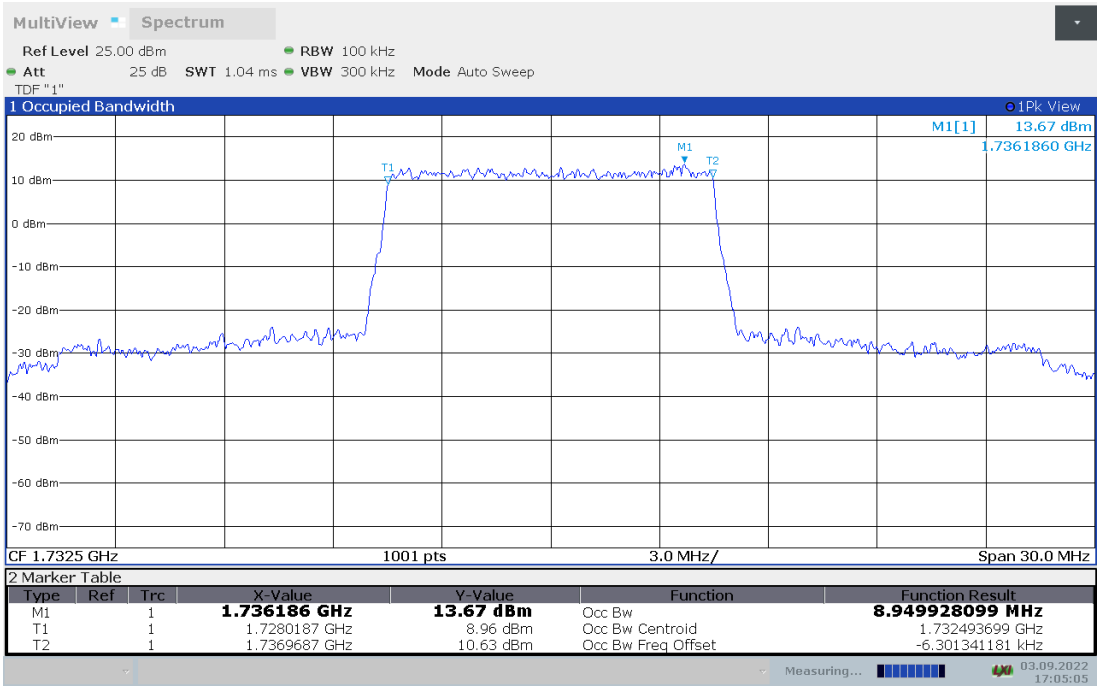
LTE band 4 , 5MHz Bandwidth,16QAM (99% BW)



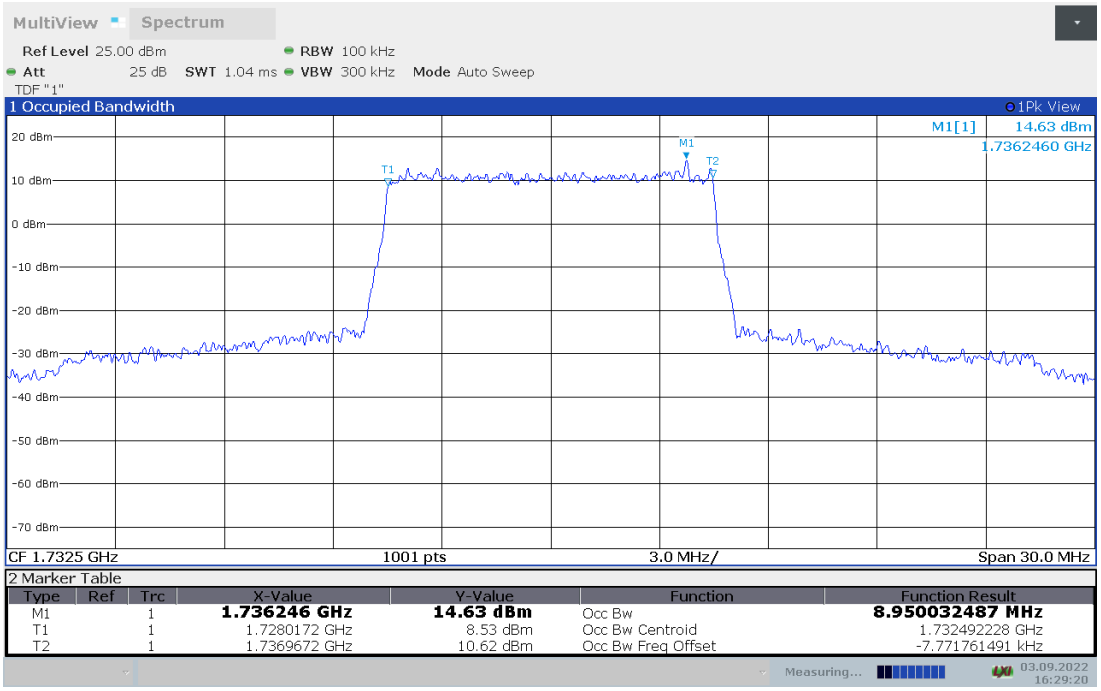
LTE band 4,10MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1732.5	8.950	8.950

LTE band 4 , 10MHz Bandwidth,QPSK (99% BW)



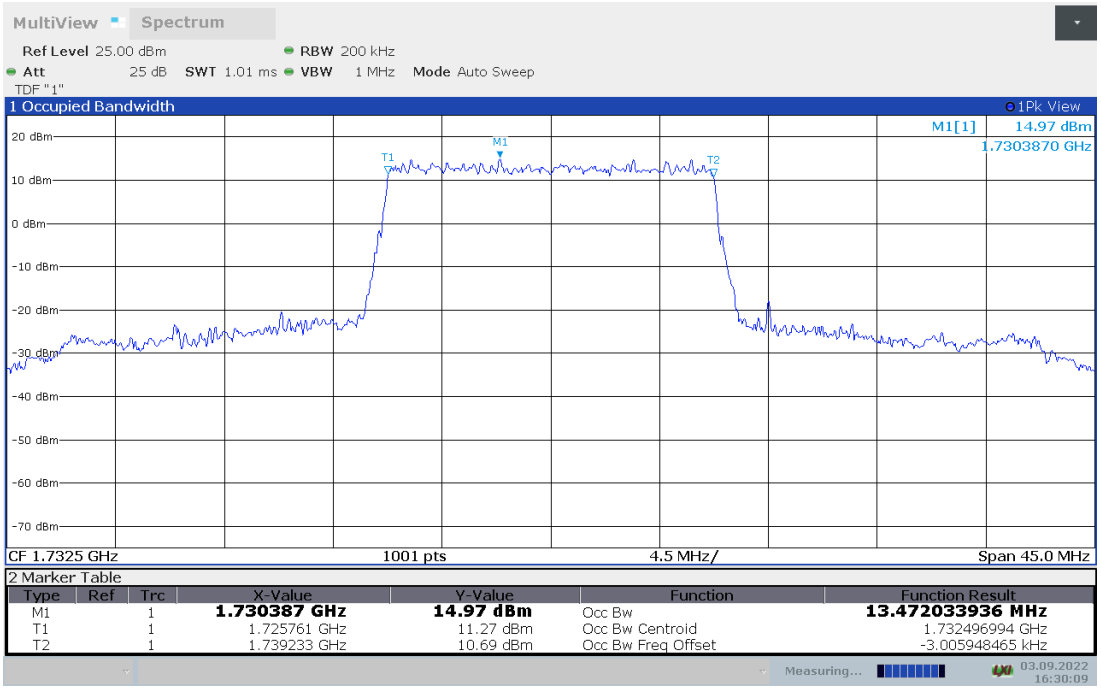
LTE band 4 , 10MHz Bandwidth,16QAM (99% BW)



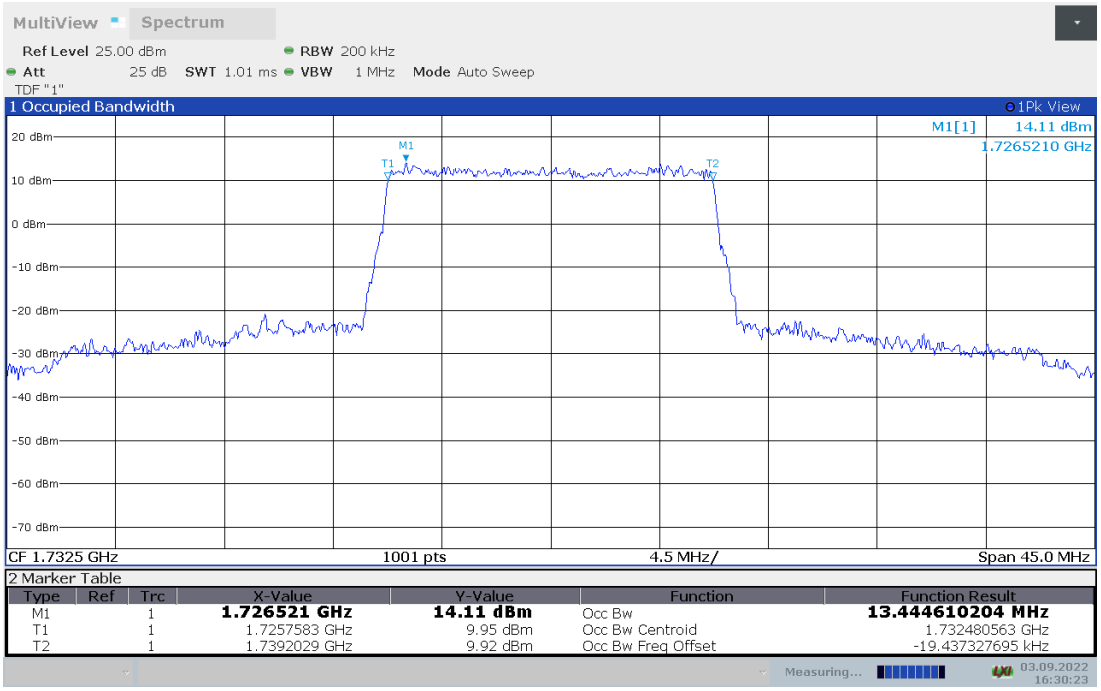
LTE band 4,15MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1732.5	13.472	13.445

LTE band 4 , 15MHz Bandwidth,QPSK (99% BW)



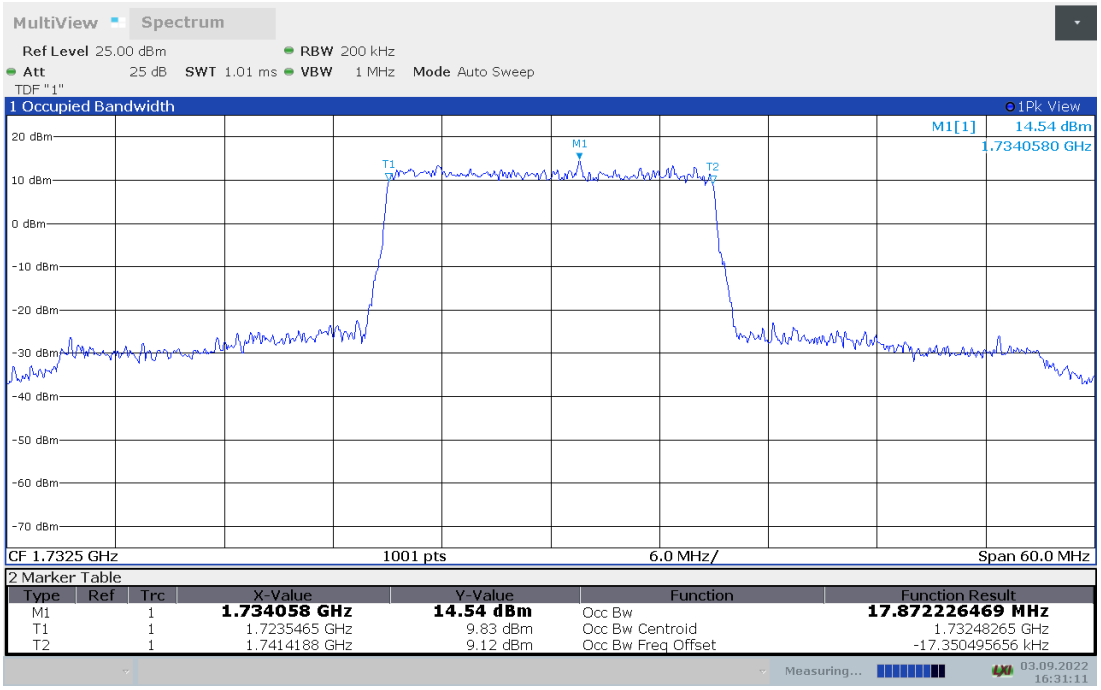
LTE band 4 , 15MHz Bandwidth,16QAM (99% BW)



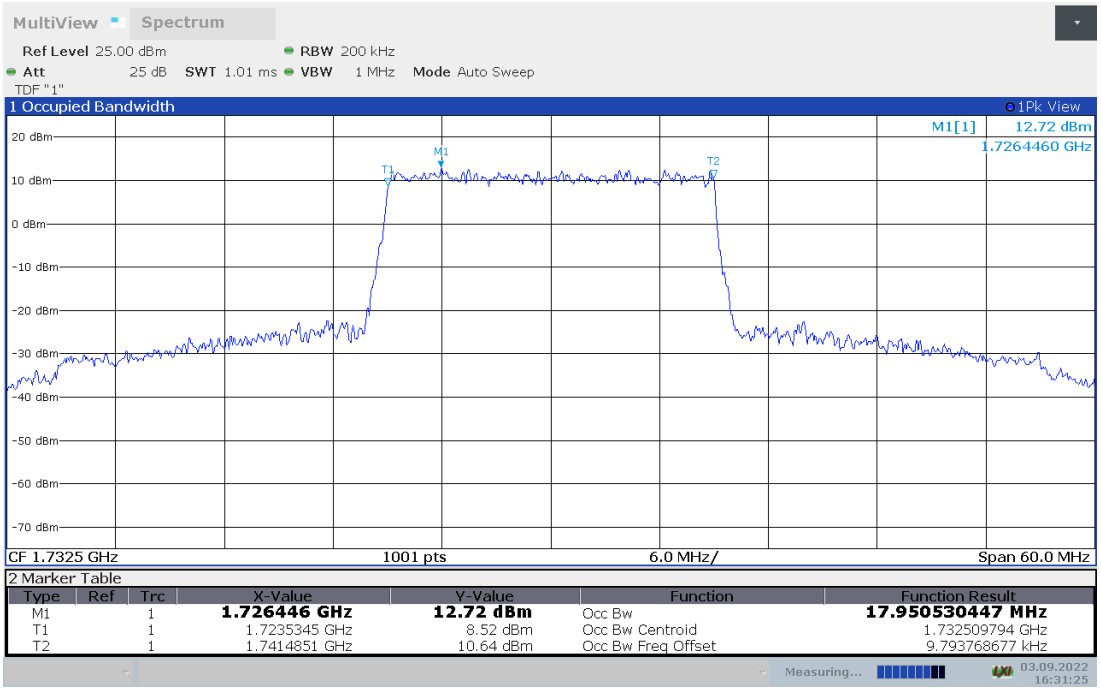
LTE band 4,20MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
1732.5	17.872	17.951

LTE band 4 , 20MHz Bandwidth,QPSK (99% BW)



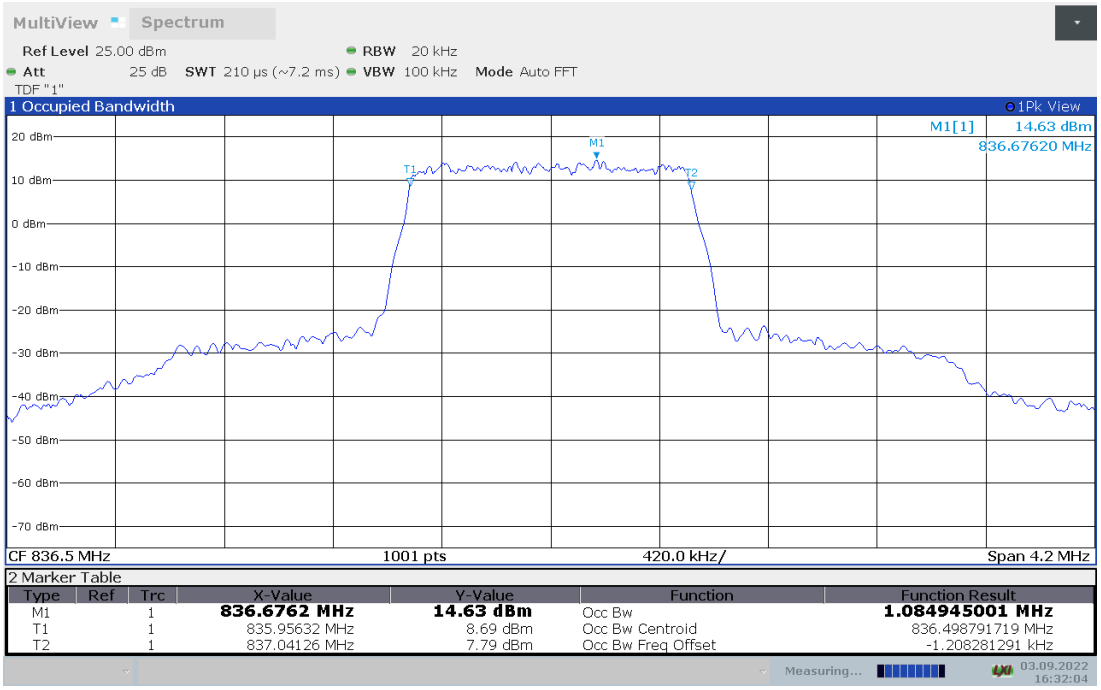
LTE band 4 , 20MHz Bandwidth,16QAM (99% BW)



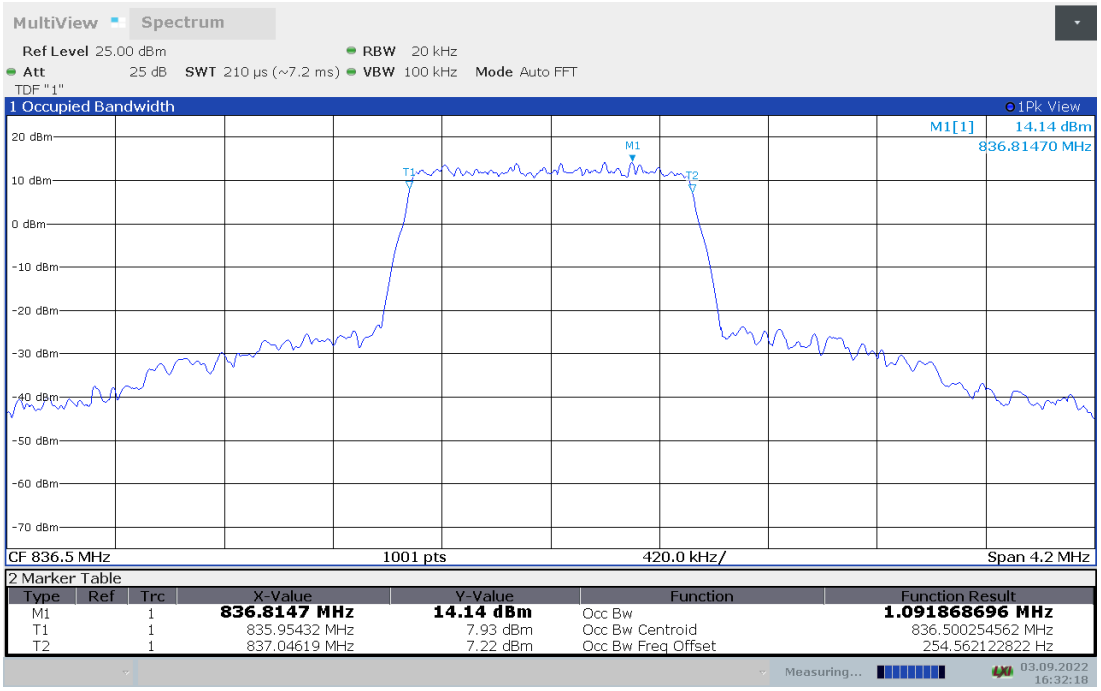
LTE band 5,1.4MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
836.5	1.085	1.092

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



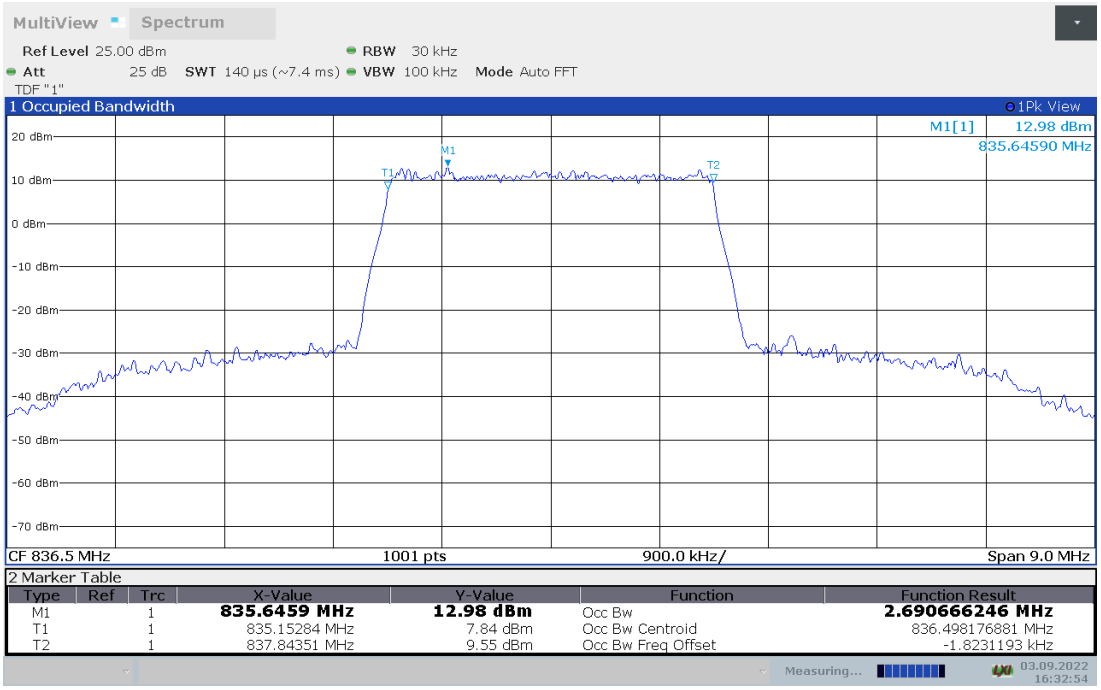
LTE band 5 , 1.4MHz Bandwidth,16QAM (99% BW)



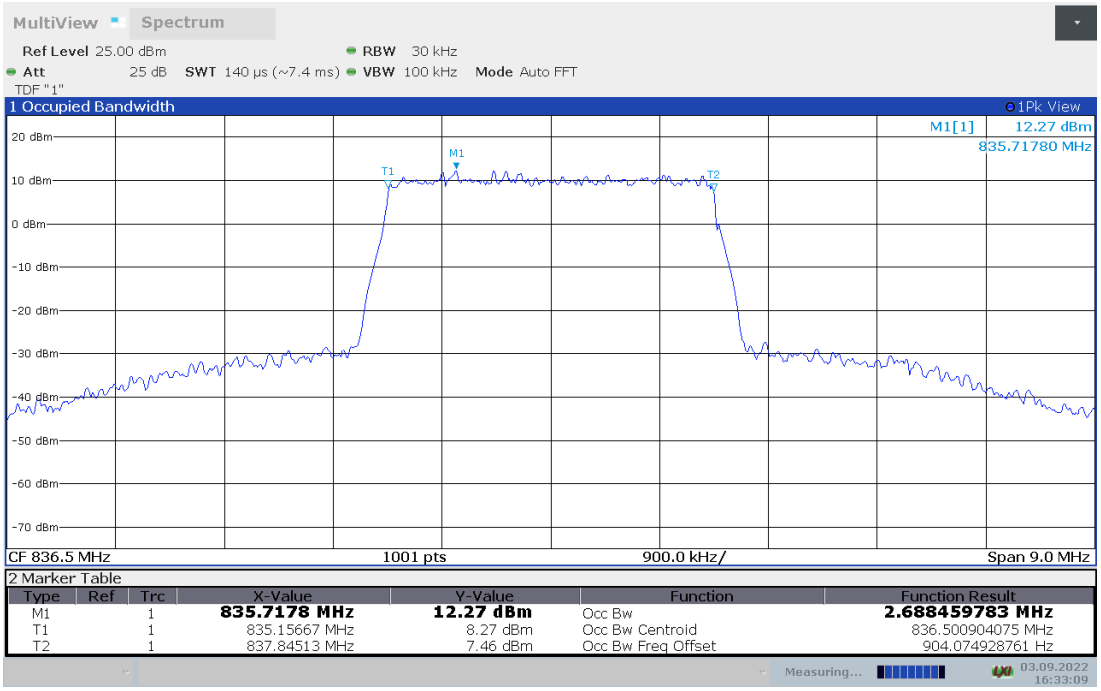
LTE band 5,3MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
836.5	2.691	2.688

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



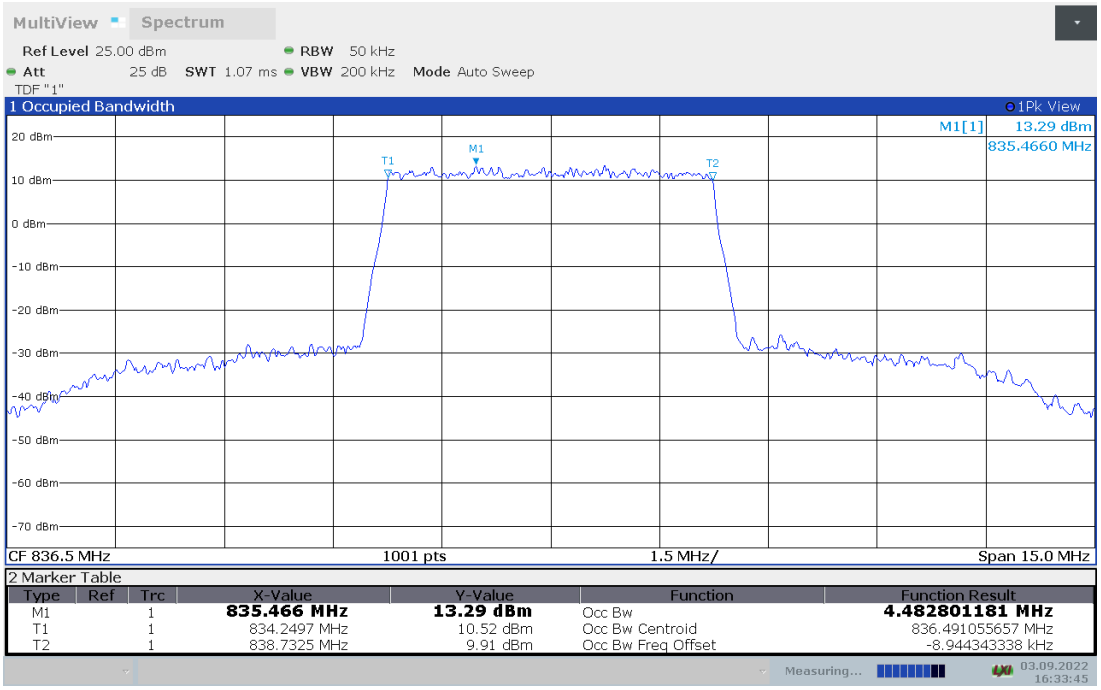
LTE band 5 , 3MHz Bandwidth,16QAM (99% BW)



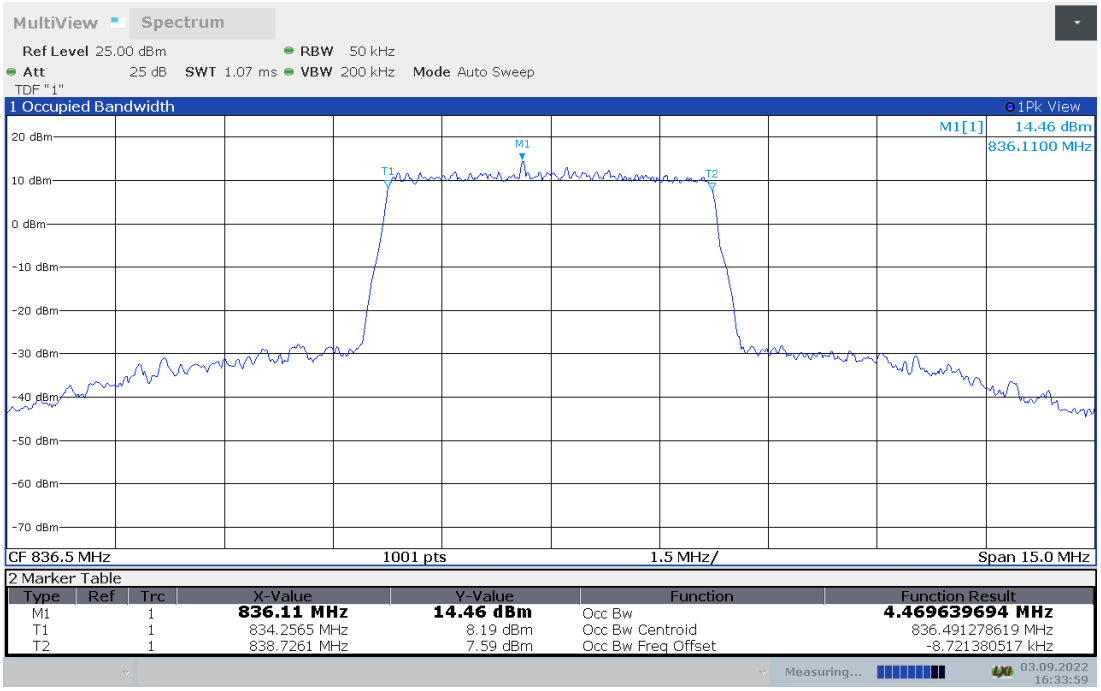
LTE band 5,5MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
836.5	4.483	4.470

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



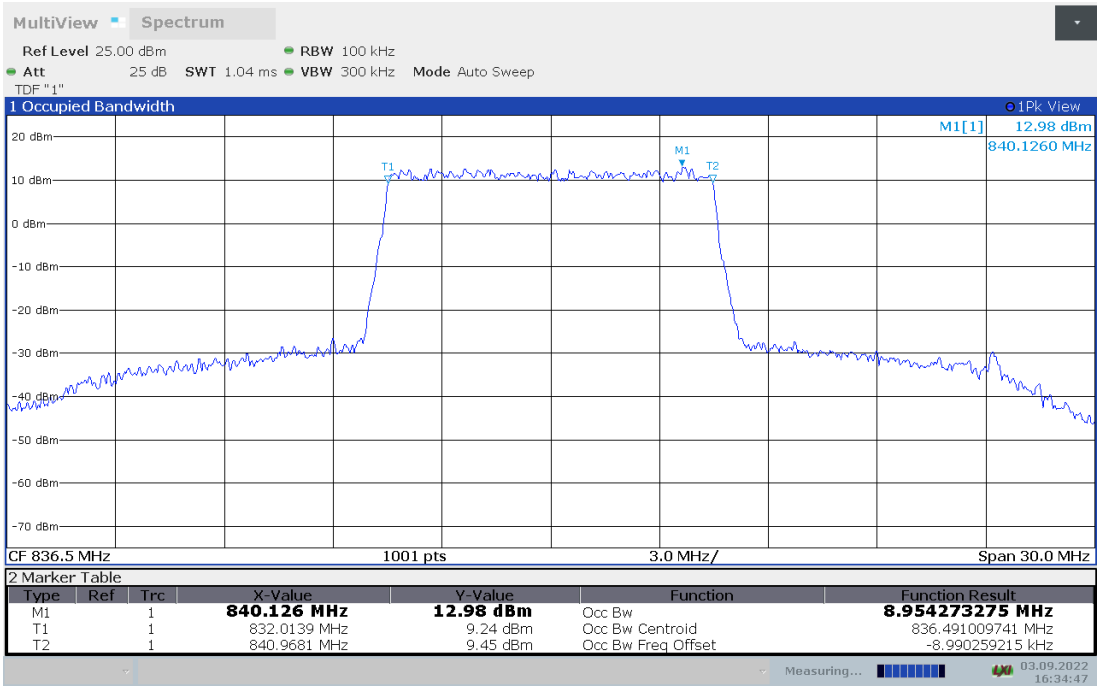
LTE band 5 , 5MHz Bandwidth,16QAM (99% BW)



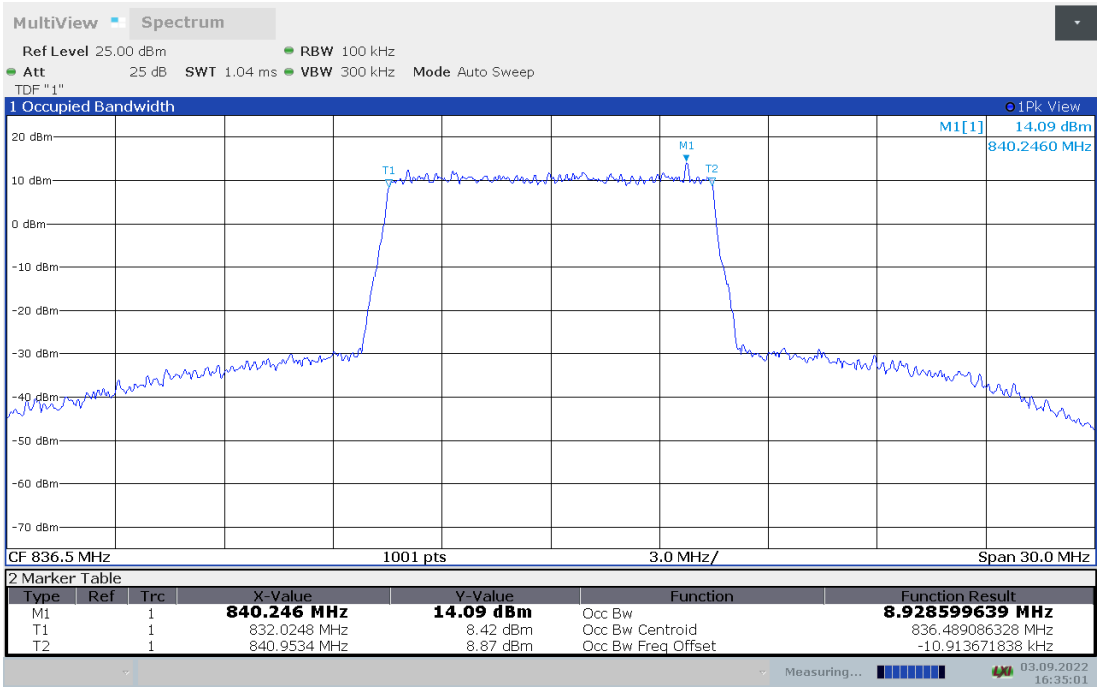
LTE band 5,10MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
836.5	8.954	8.929

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



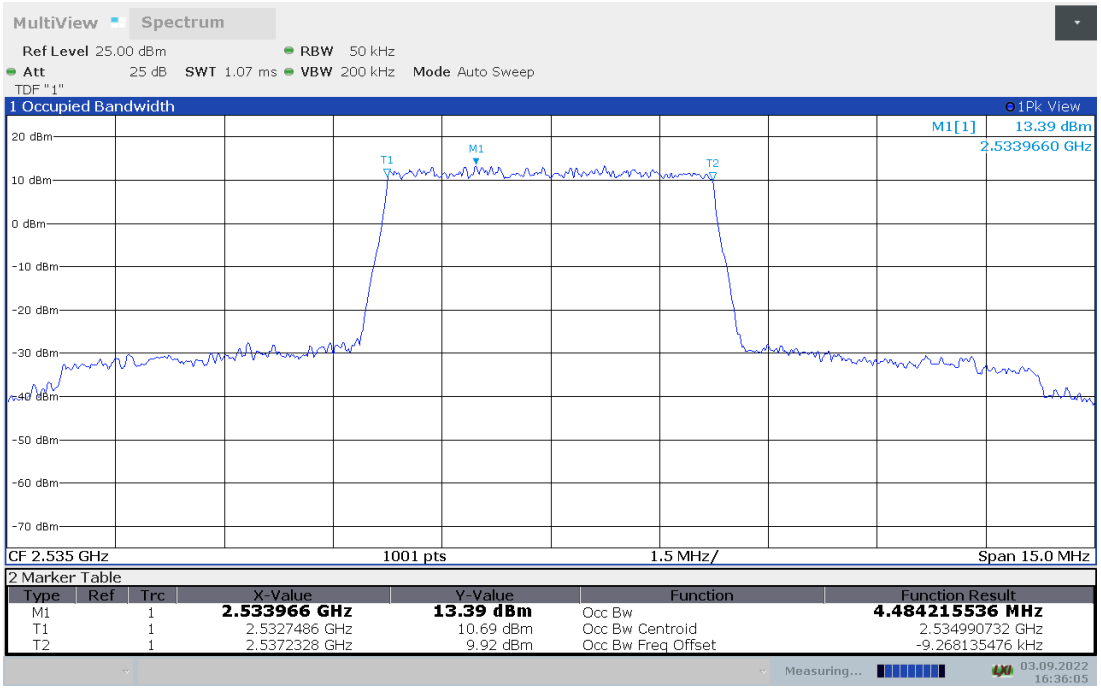
LTE band 5 , 10MHz Bandwidth,16QAM (99% BW)



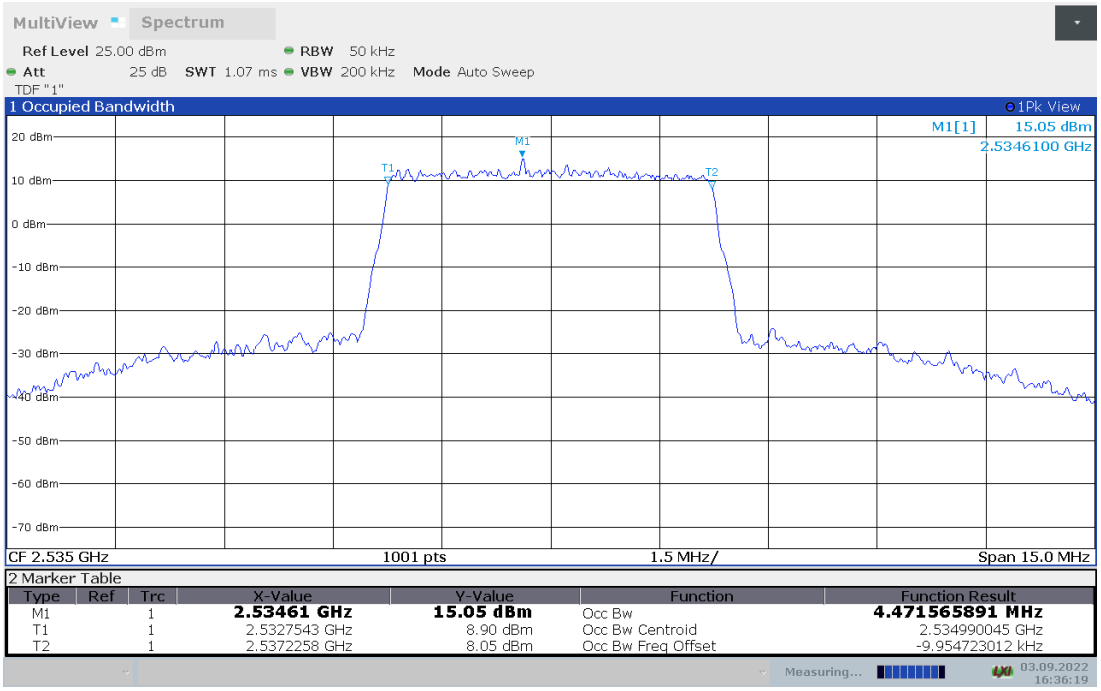
LTE band 7,5MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
2535	4.484	4.472

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



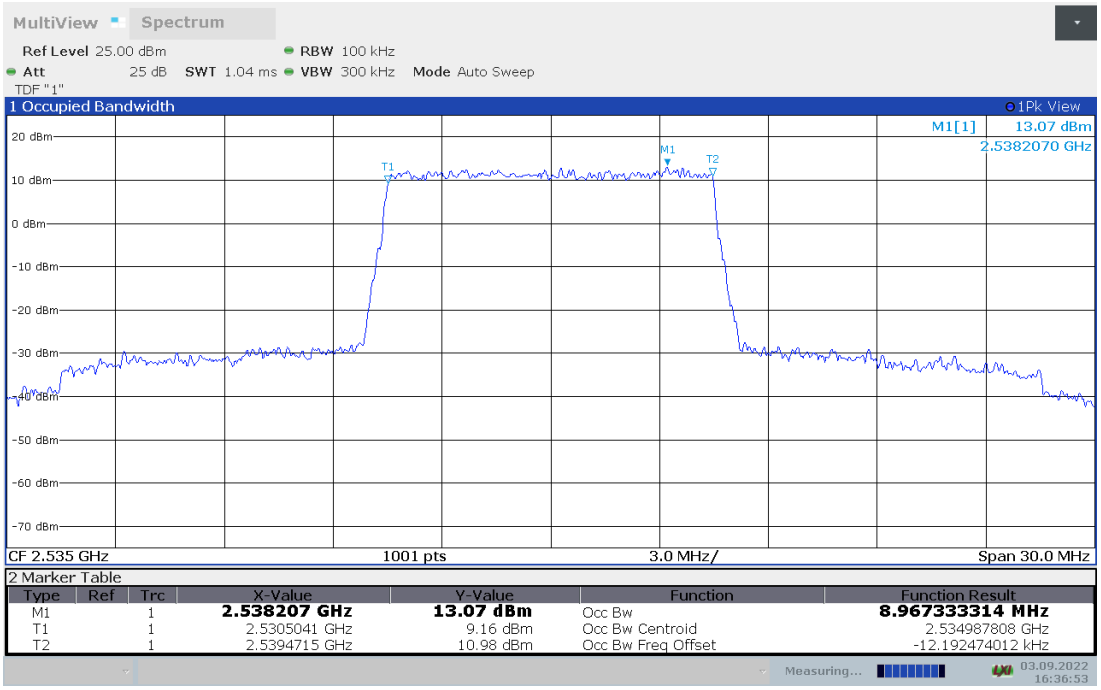
LTE band 7 , 5MHz Bandwidth,16QAM (99% BW)



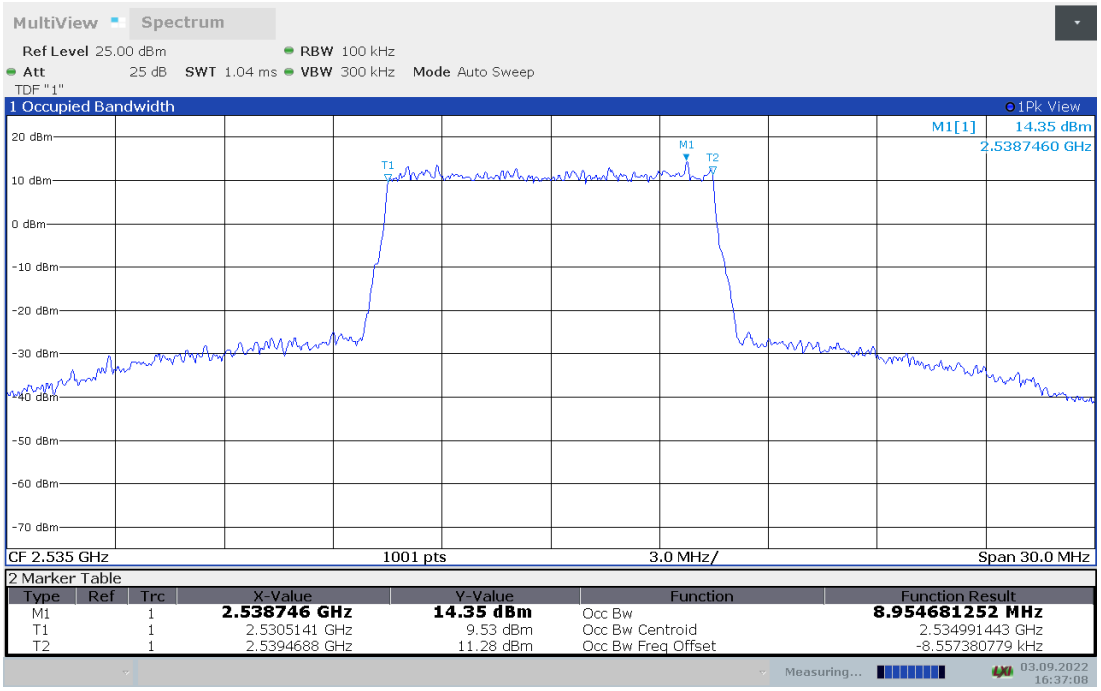
LTE band 7,10MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
2535	8.967	8.955

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



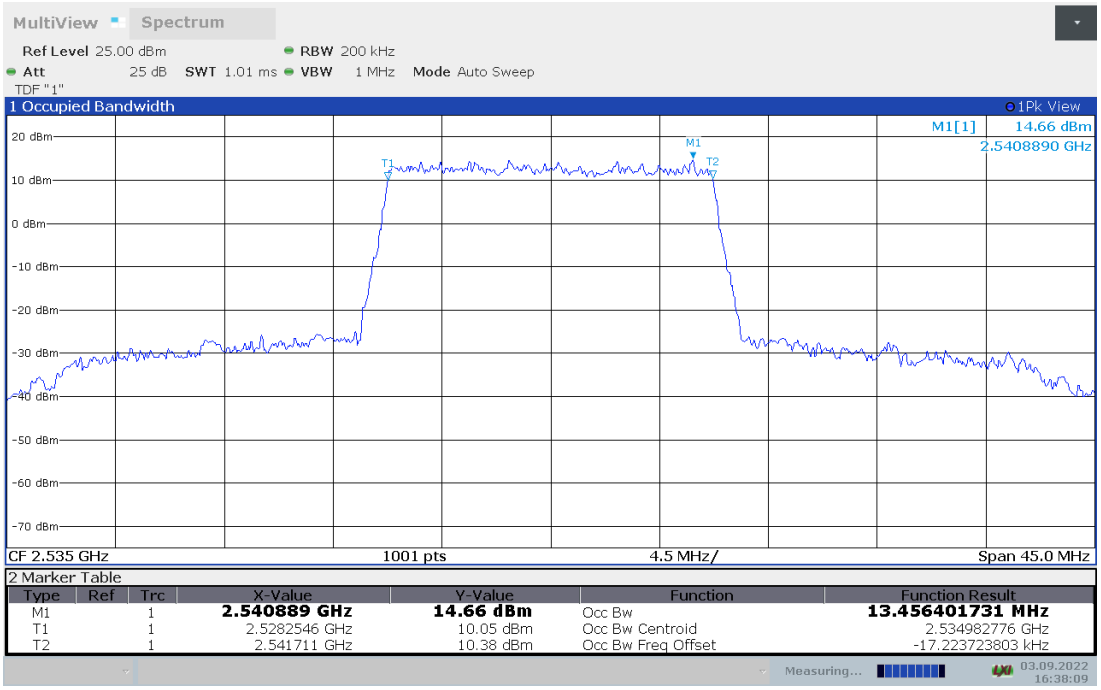
LTE band 7 , 10MHz Bandwidth,16QAM (99% BW)



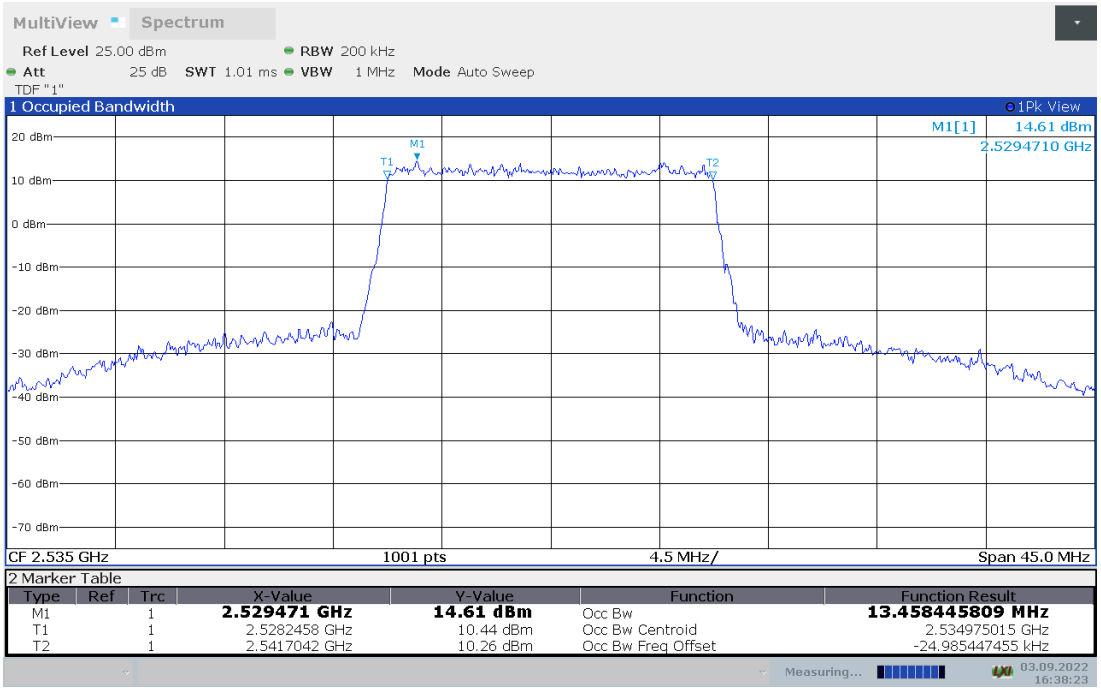
LTE band 7,15MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
2535	13.456	13.458

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



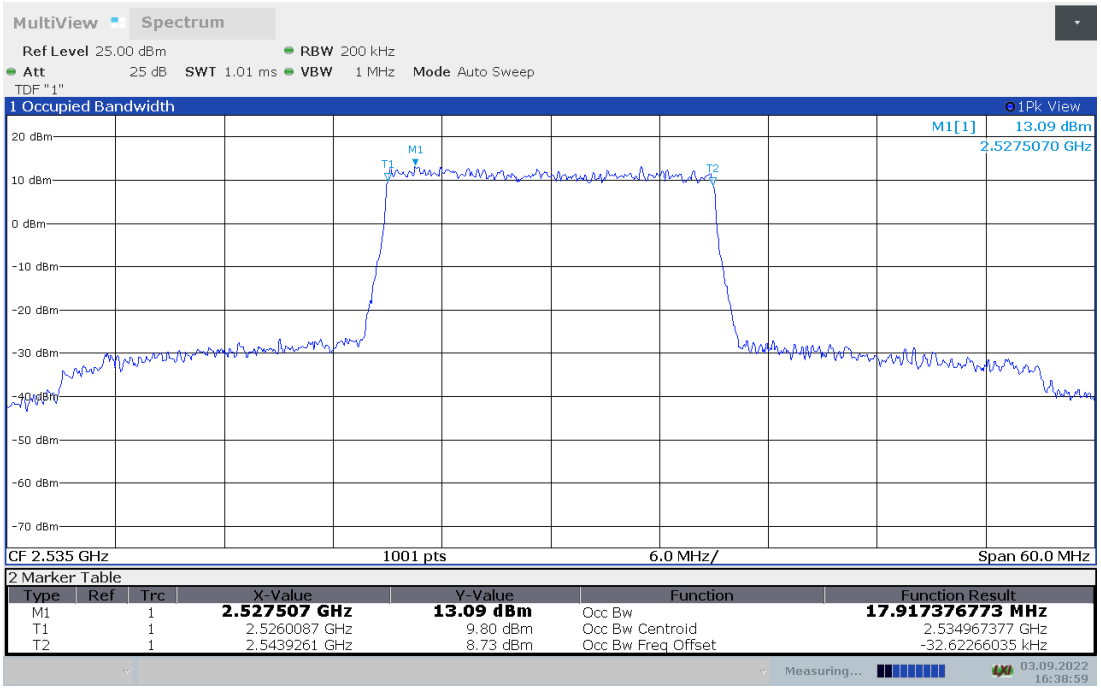
LTE band 7 , 15MHz Bandwidth,16QAM (99% BW)



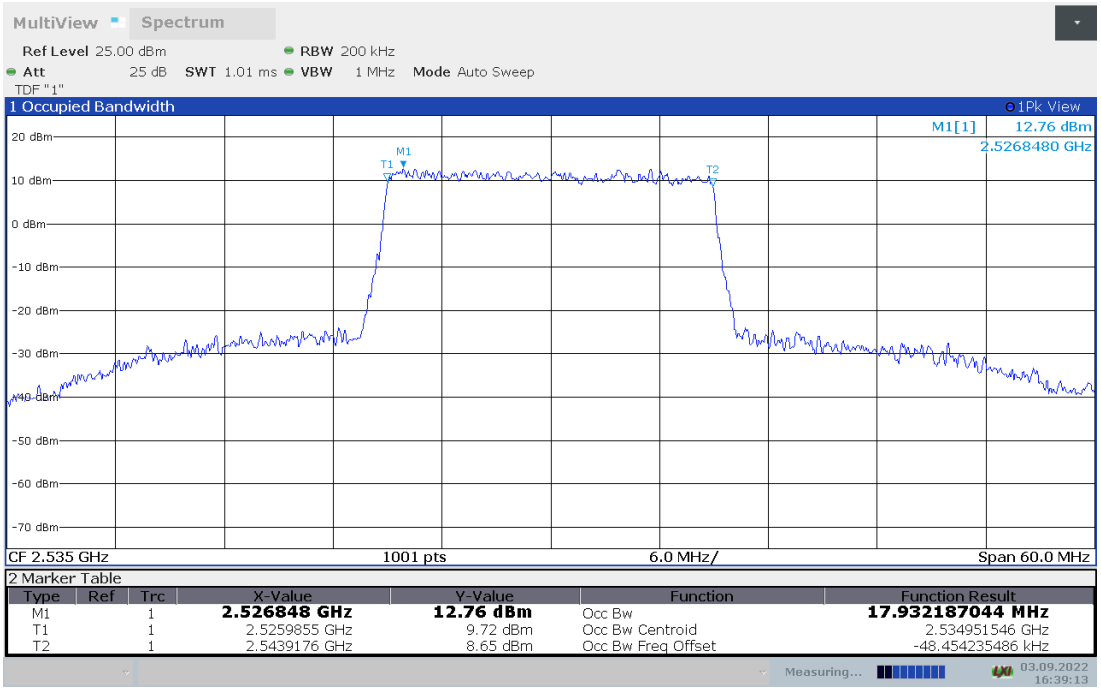
LTE band 7,20MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
2535	17.917	17.932

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



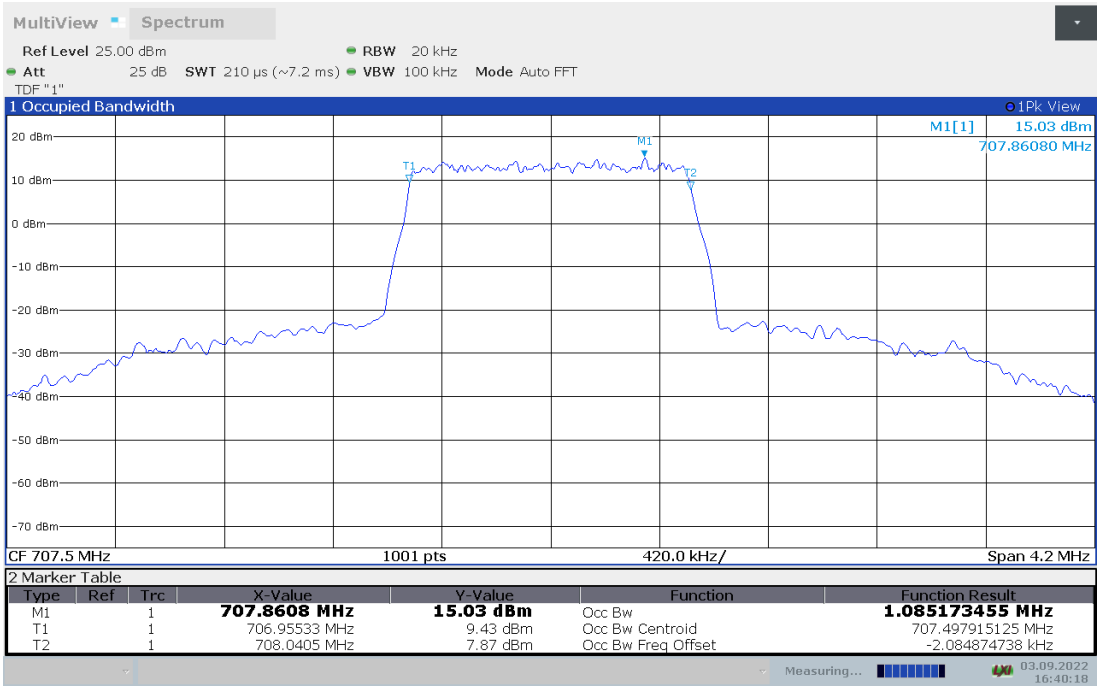
LTE band 7 , 20MHz Bandwidth,16QAM (99% BW)



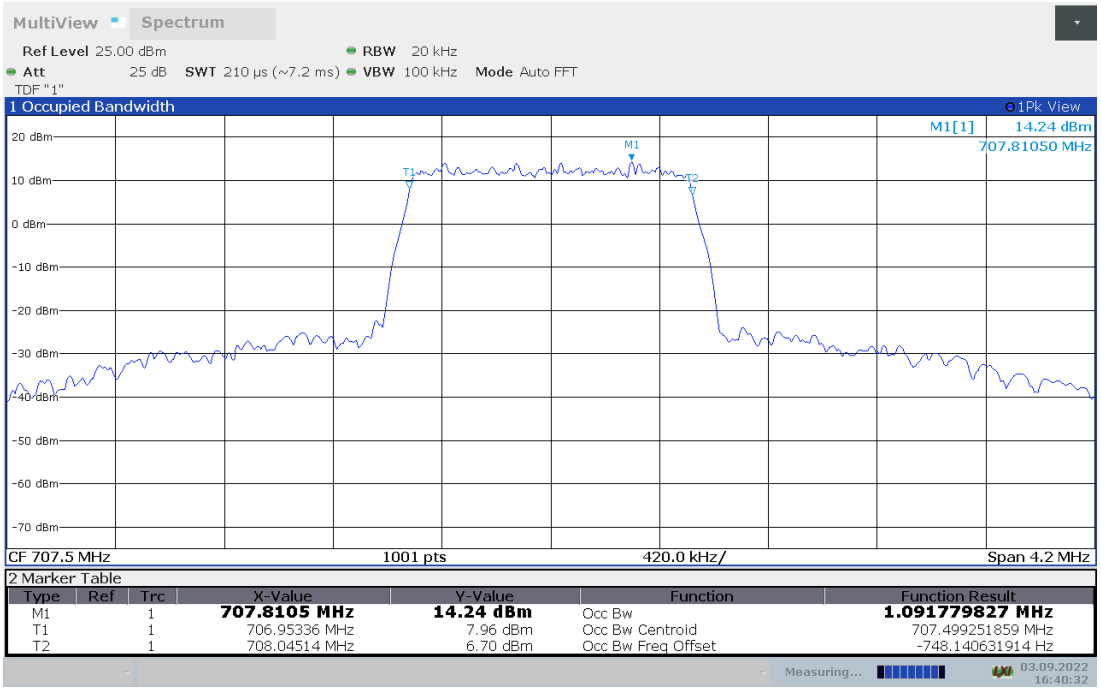
LTE band 12,1.4MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
707.5	1.085	1.092

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



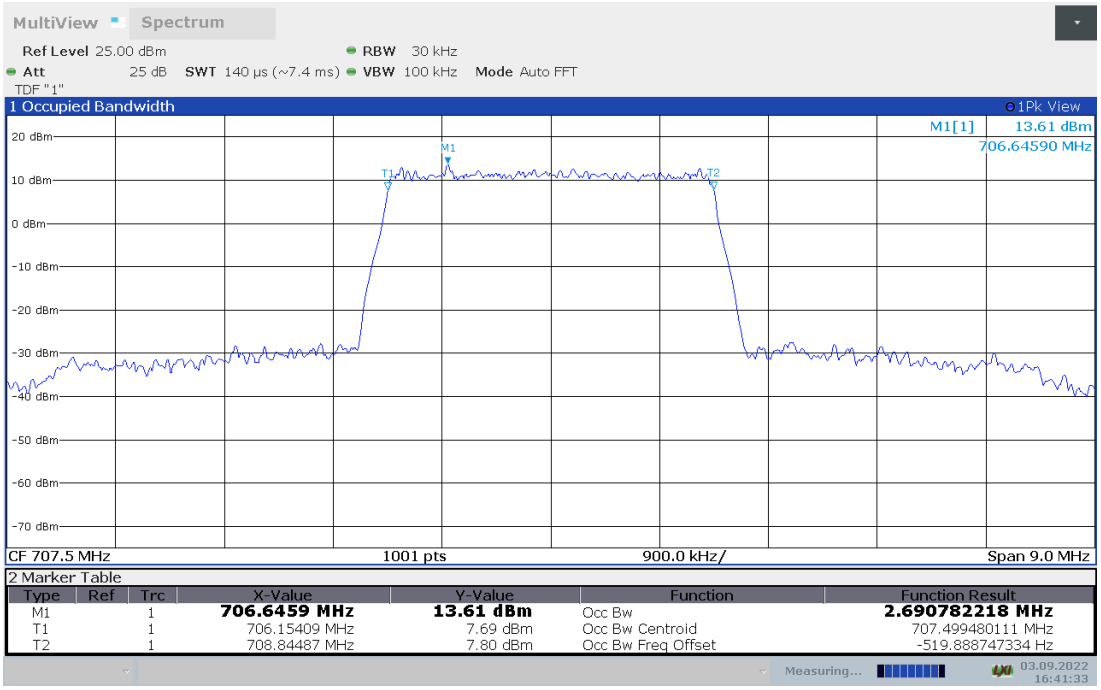
LTE band 12 , 1.4MHz Bandwidth,16QAM (99% BW)



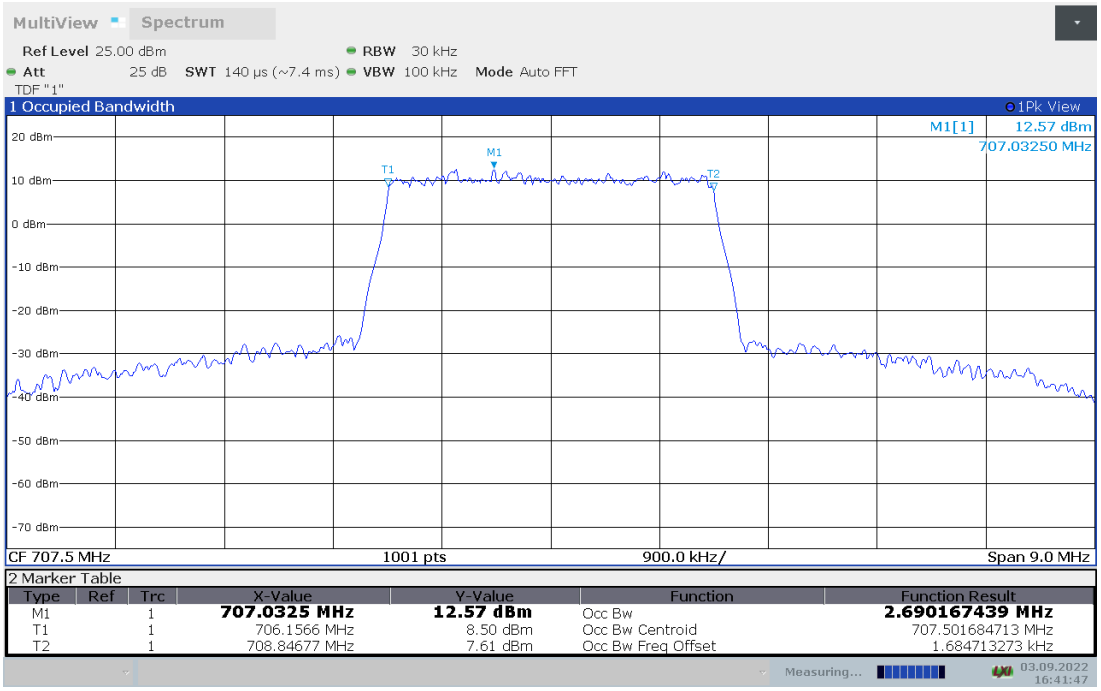
LTE band 12,3MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
707.5	2.691	2.690

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



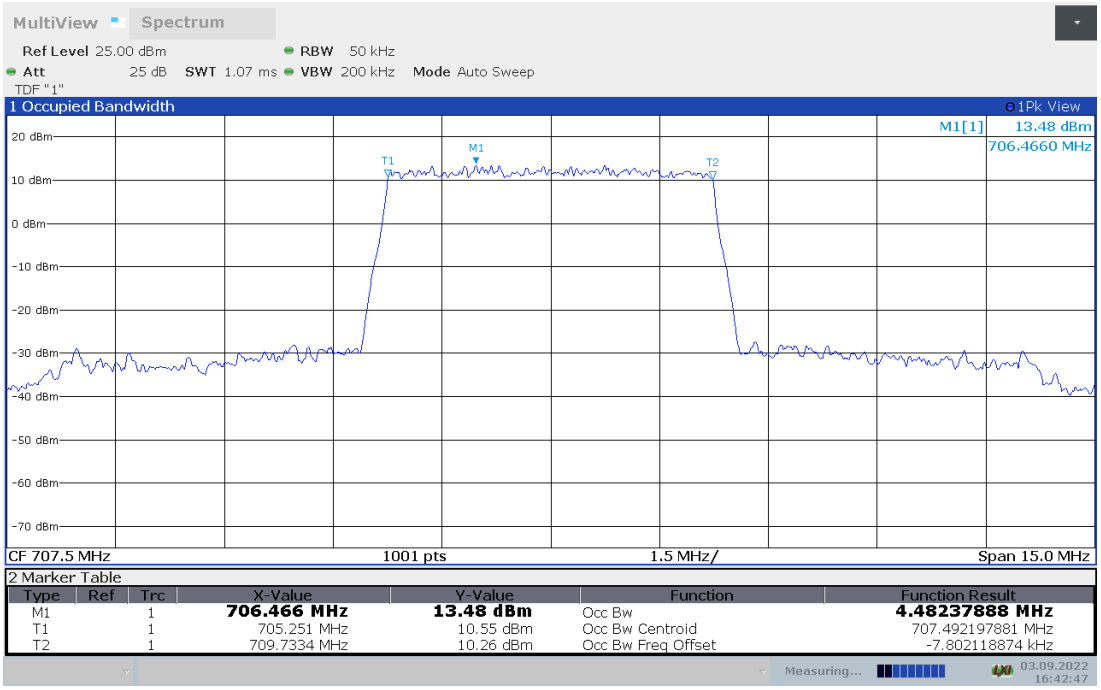
LTE band 12 , 3MHz Bandwidth,16QAM (99% BW)



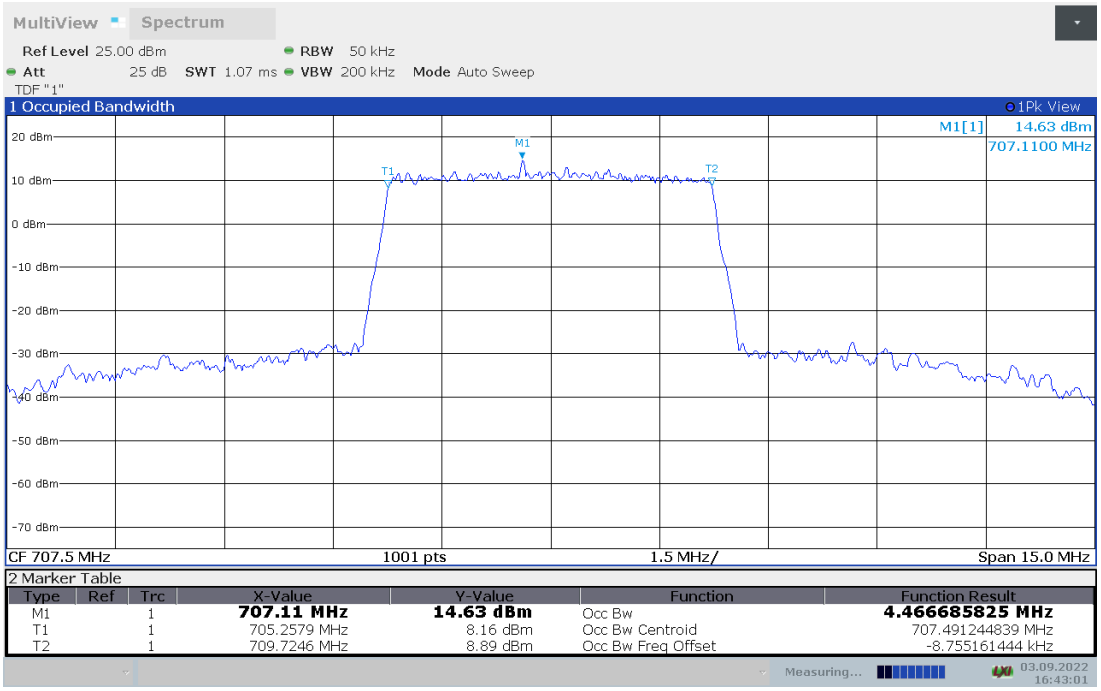
LTE band 12,5MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
707.5	4.482	4.467

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



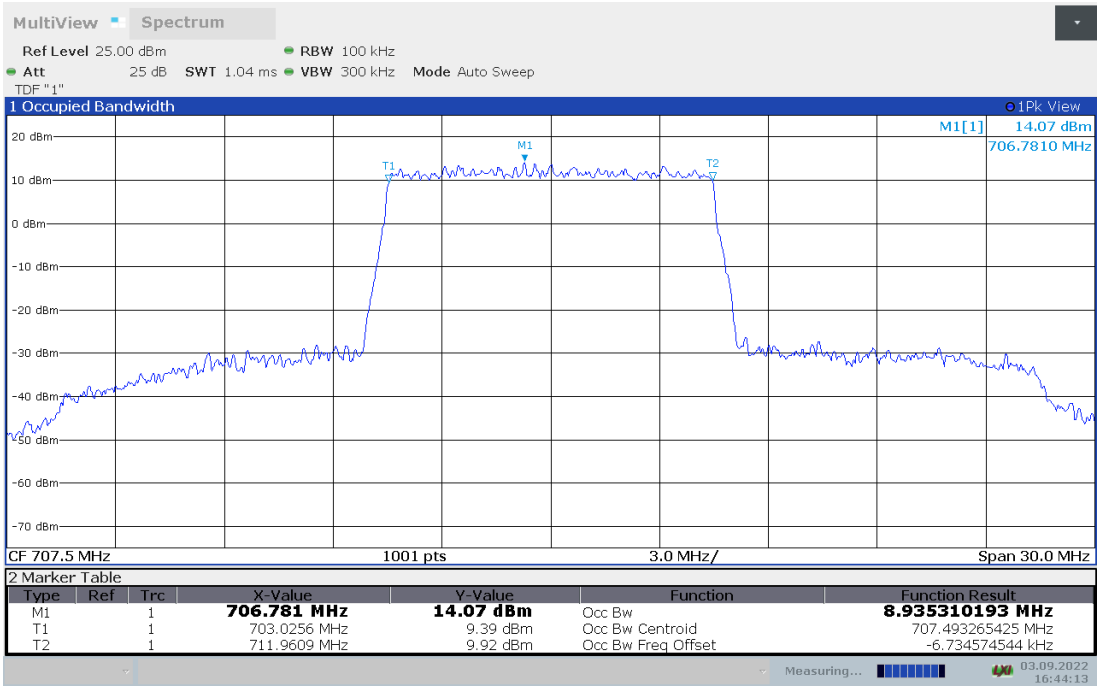
LTE band 12 , 5MHz Bandwidth,16QAM (99% BW)



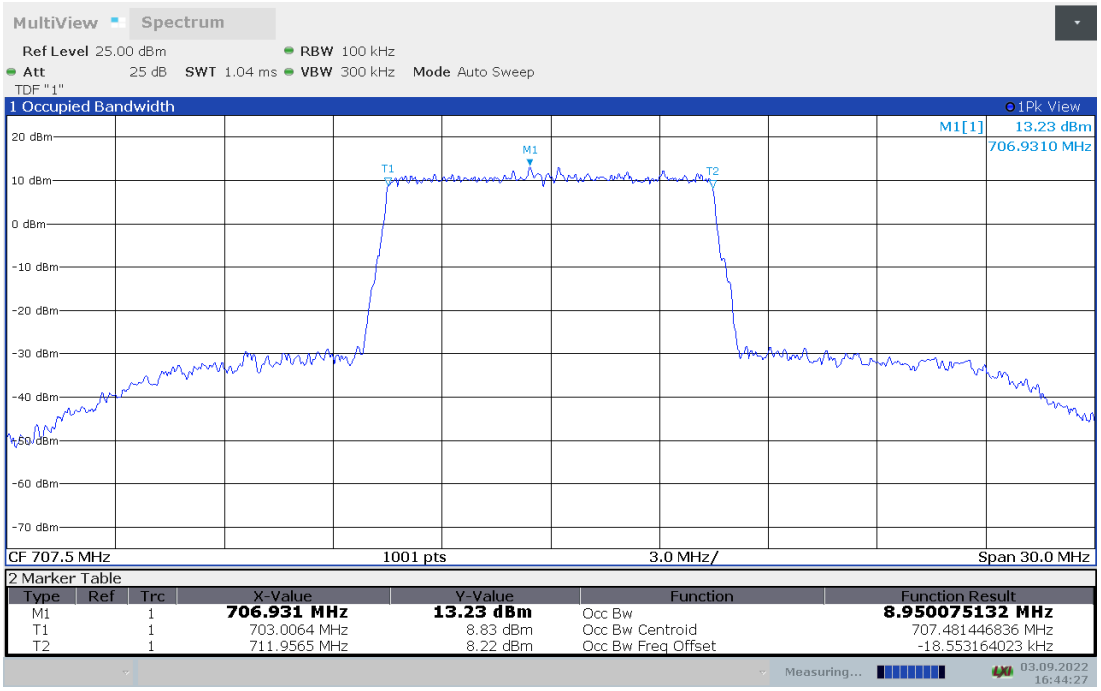
LTE band 12,10MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
707.5	8.935	8.950

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



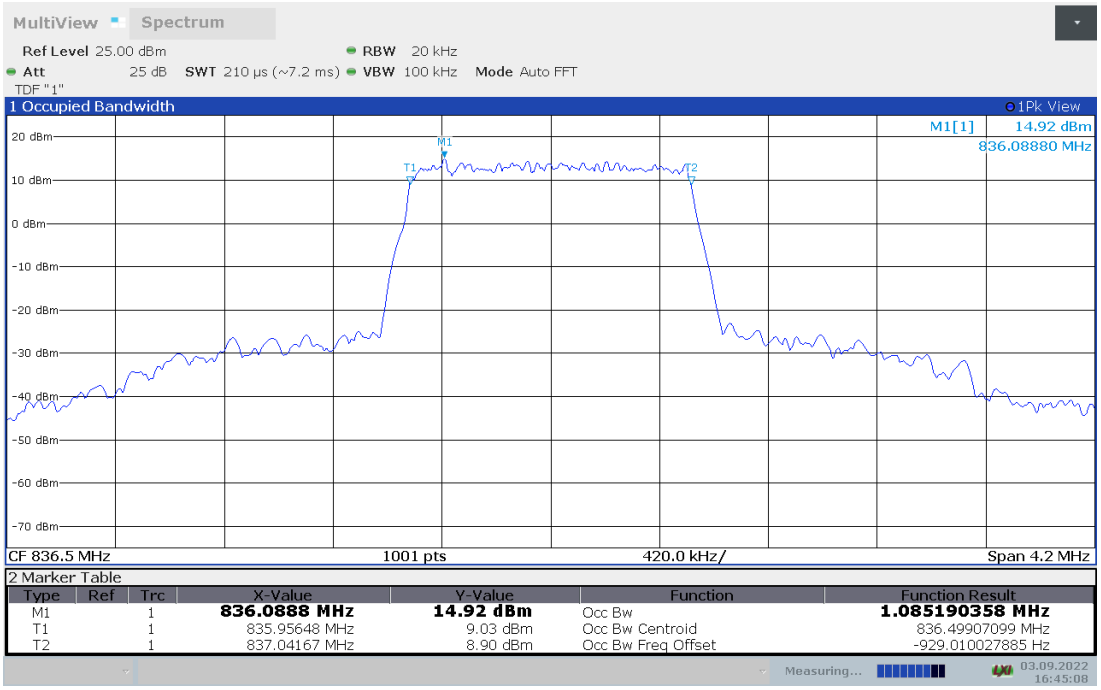
LTE band 12 , 10MHz Bandwidth,16QAM (99% BW)



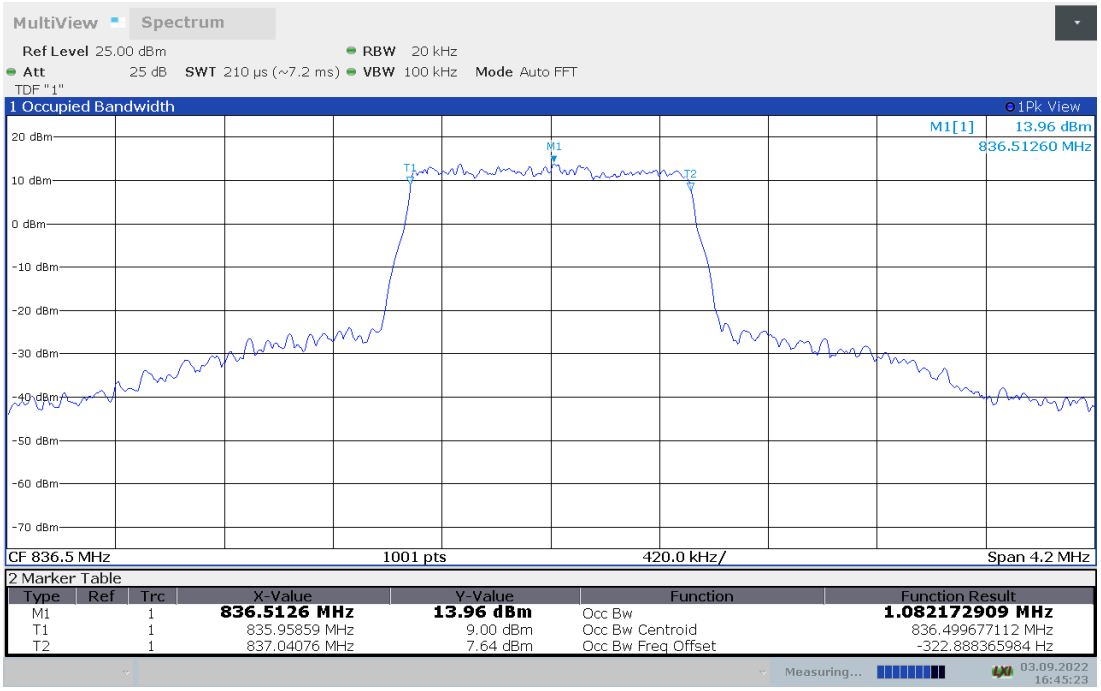
LTE band 26(824MHz-849MHz),1.4MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
836.5	1.085	1.082

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



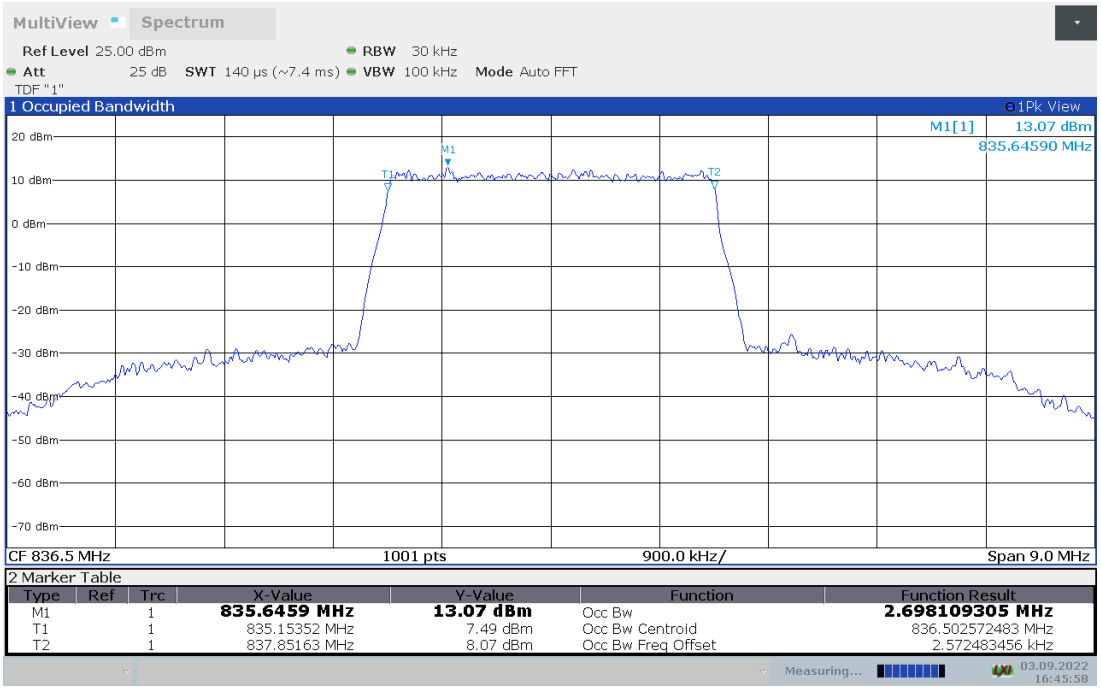
LTE band 26 , 1.4MHz Bandwidth,16QAM (99% BW)



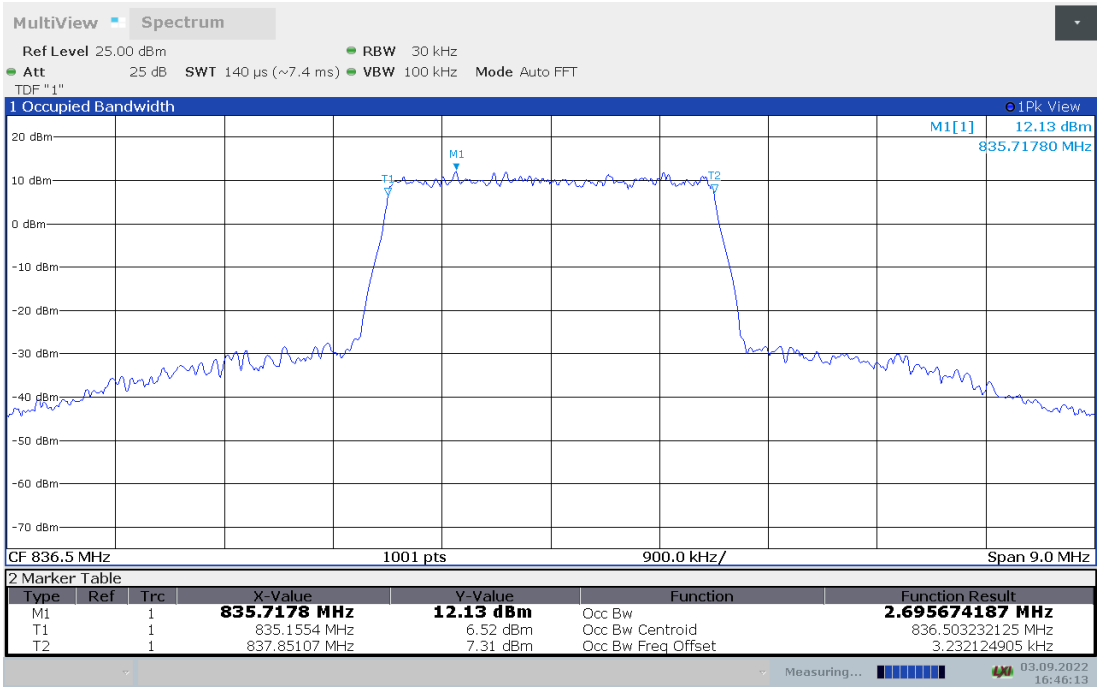
LTE band 26(824MHz-849MHz),3MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
836.5	2.698	2.696

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



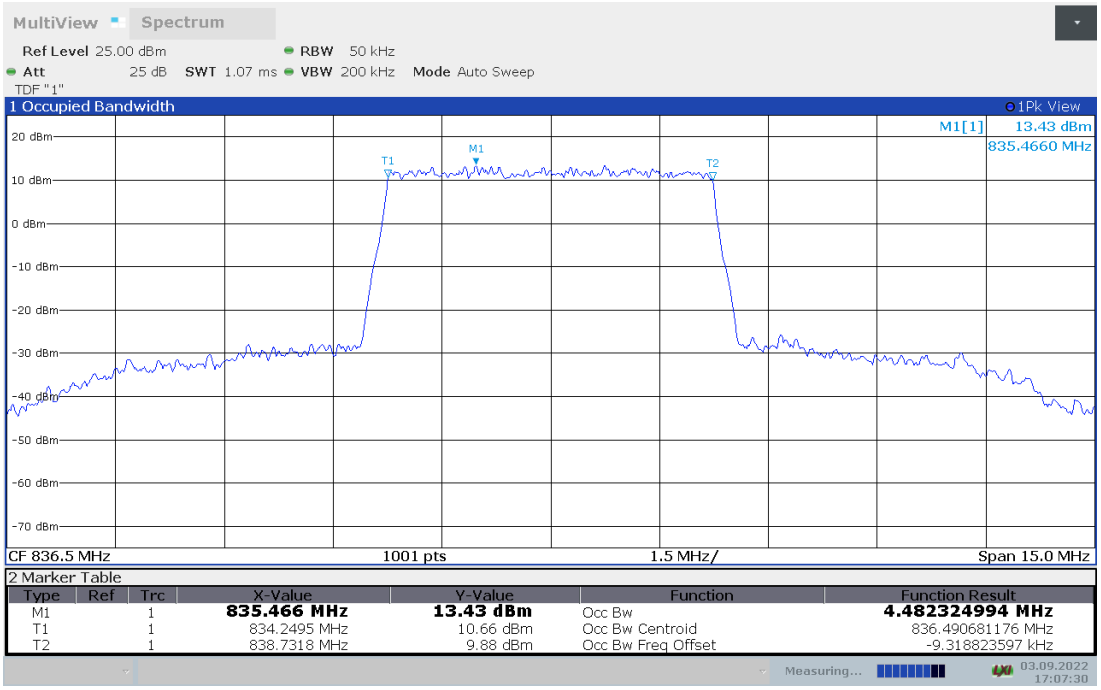
LTE band 26 , 3MHz Bandwidth,16QAM (99% BW)



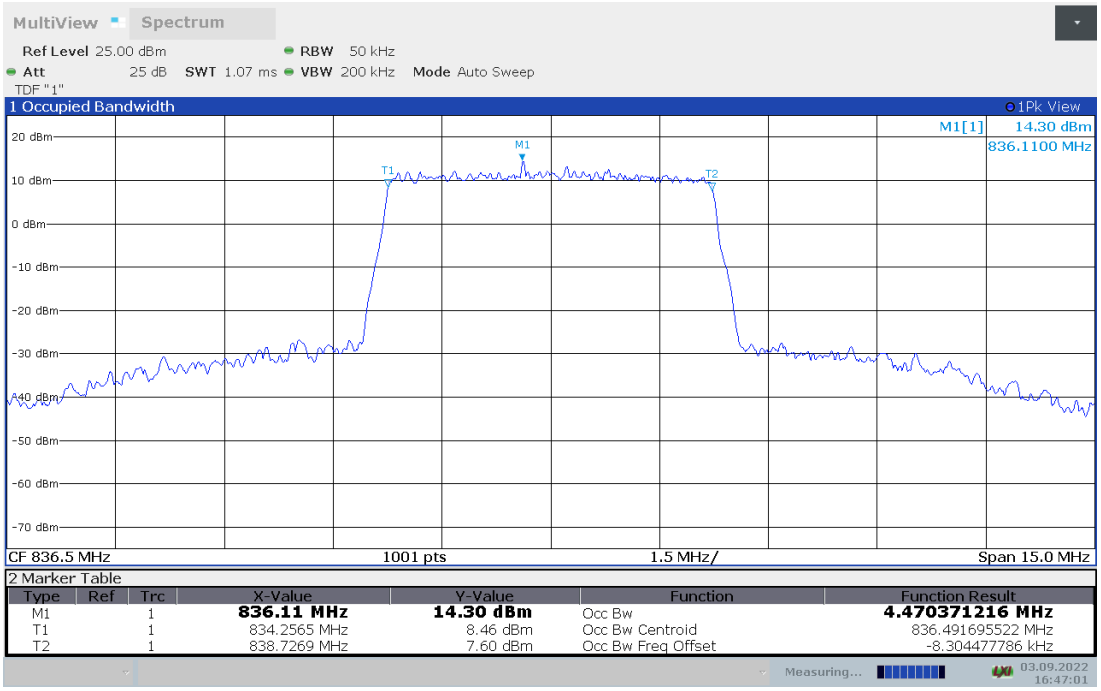
LTE band 26(824MHz-849MHz),5MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
836.5	4.482	4.470

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



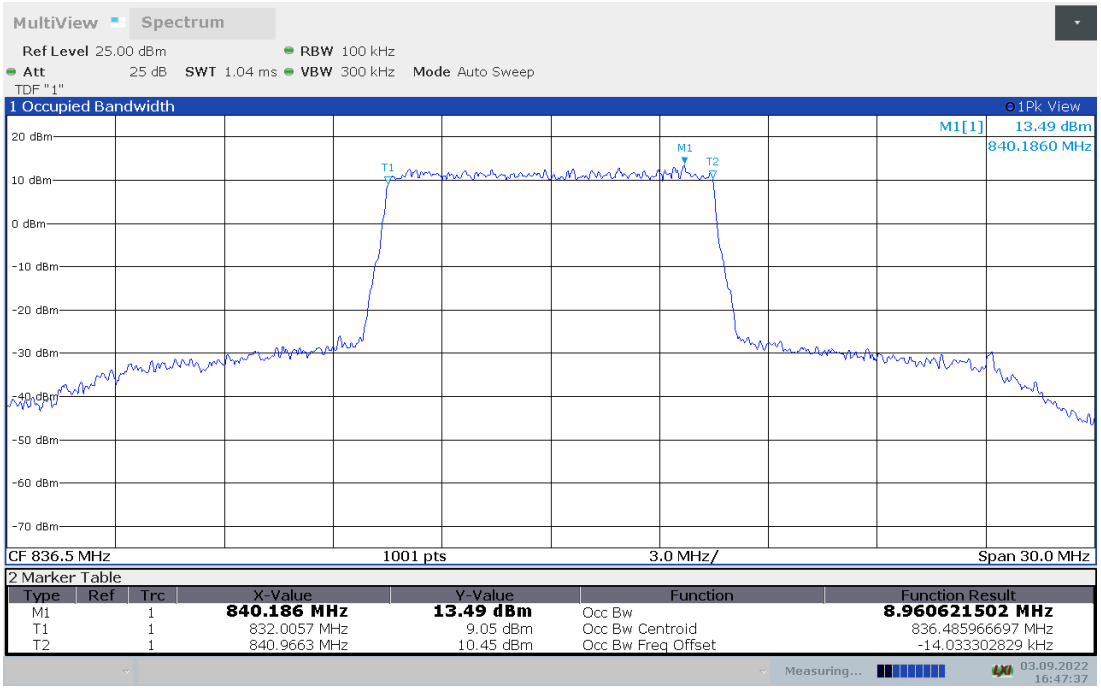
LTE band 26 , 5MHz Bandwidth,16QAM (99% BW)



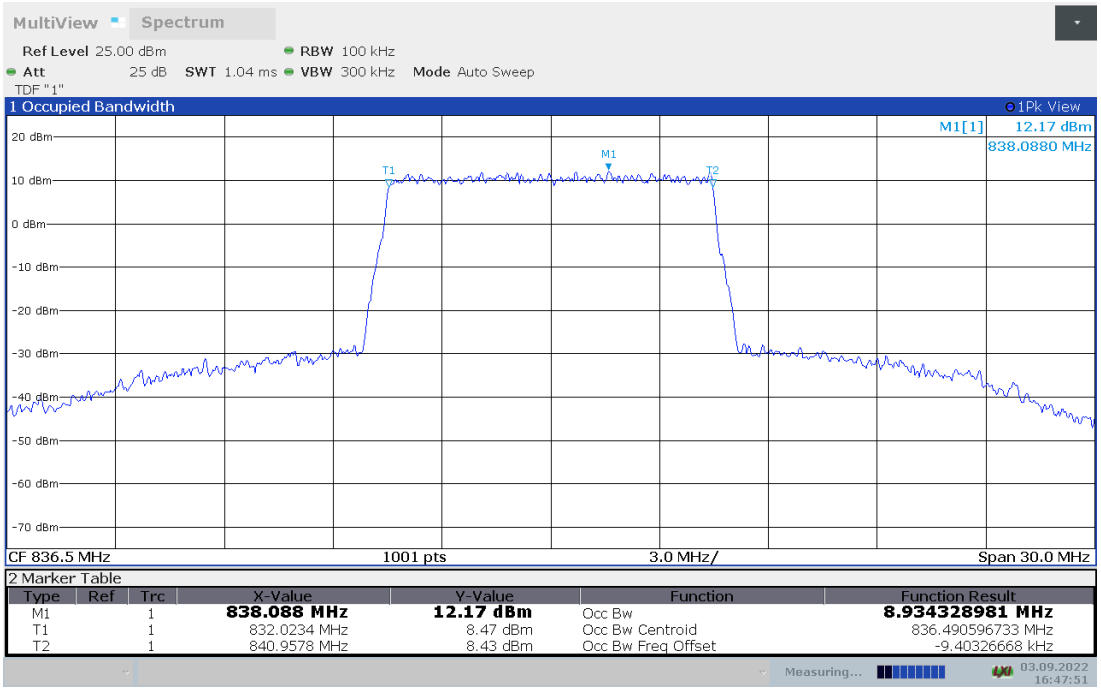
LTE band 26(824MHz-849MHz),10MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
836.5	8.961	8.934

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



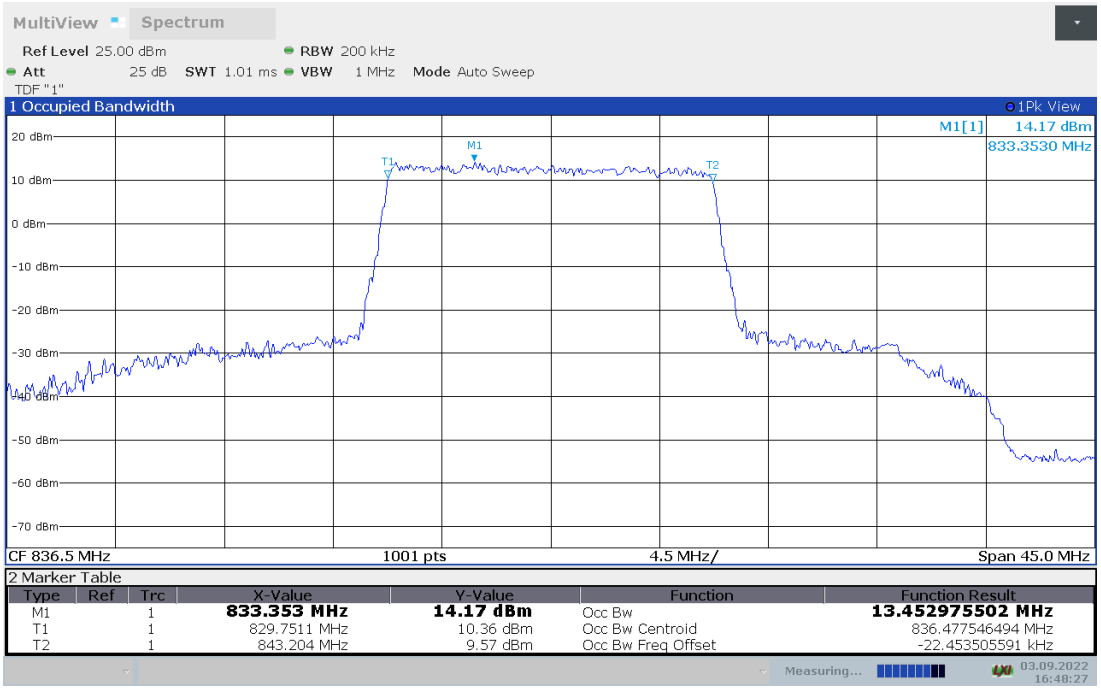
LTE band 26 , 10MHz Bandwidth,16QAM (99% BW)



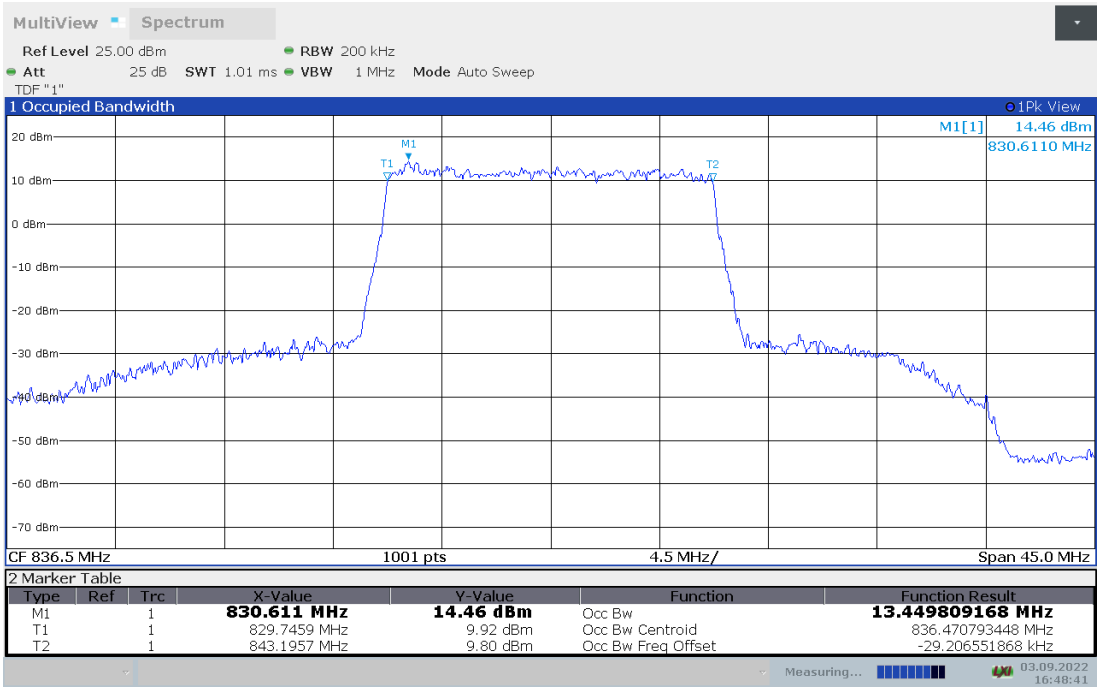
LTE band 26(824MHz-849MHz),15MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
836.5	13.453	13.450

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



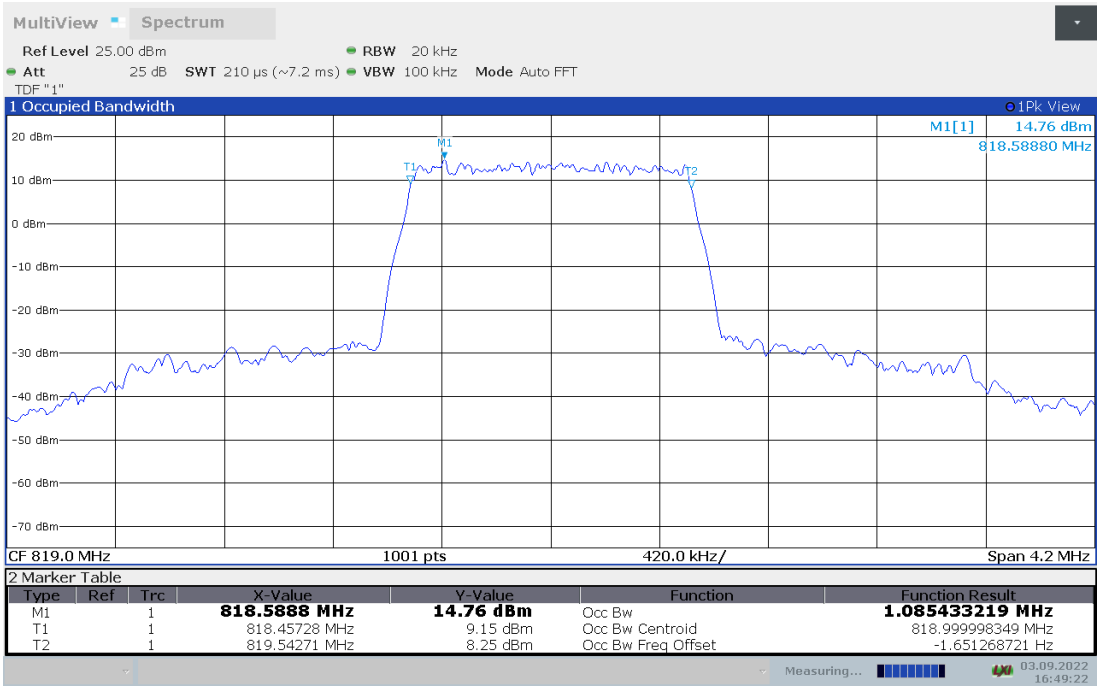
LTE band 26 , 15MHz Bandwidth,16QAM (99% BW)



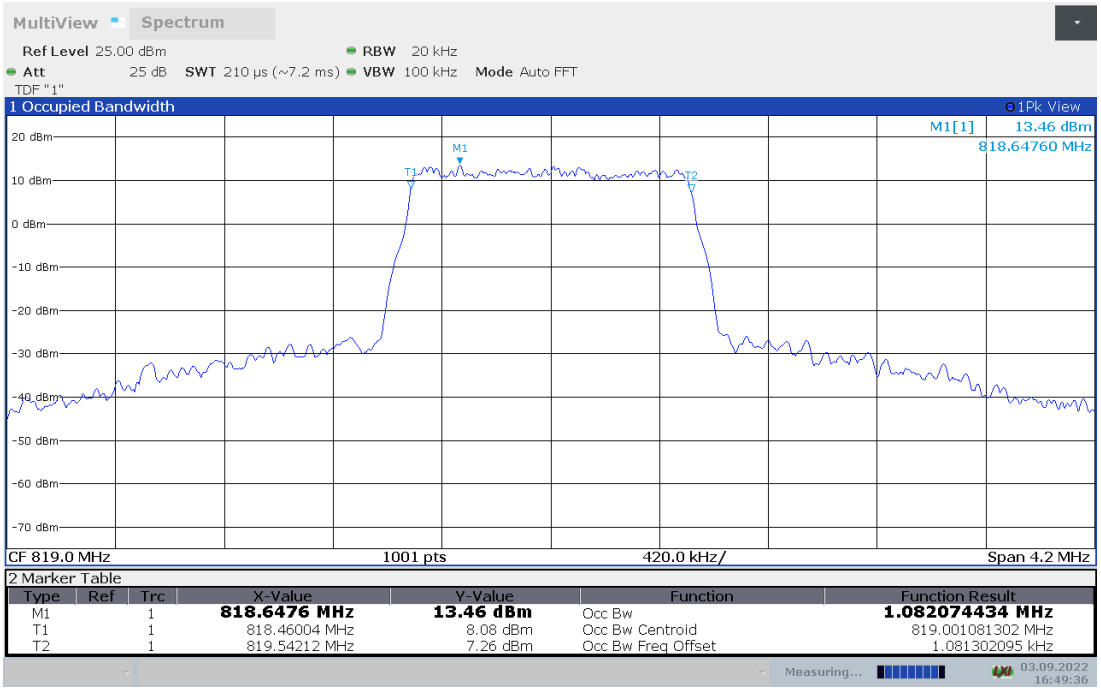
LTE band 26(814MHz-824MHz),1.4MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
819	1.085	1.082

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



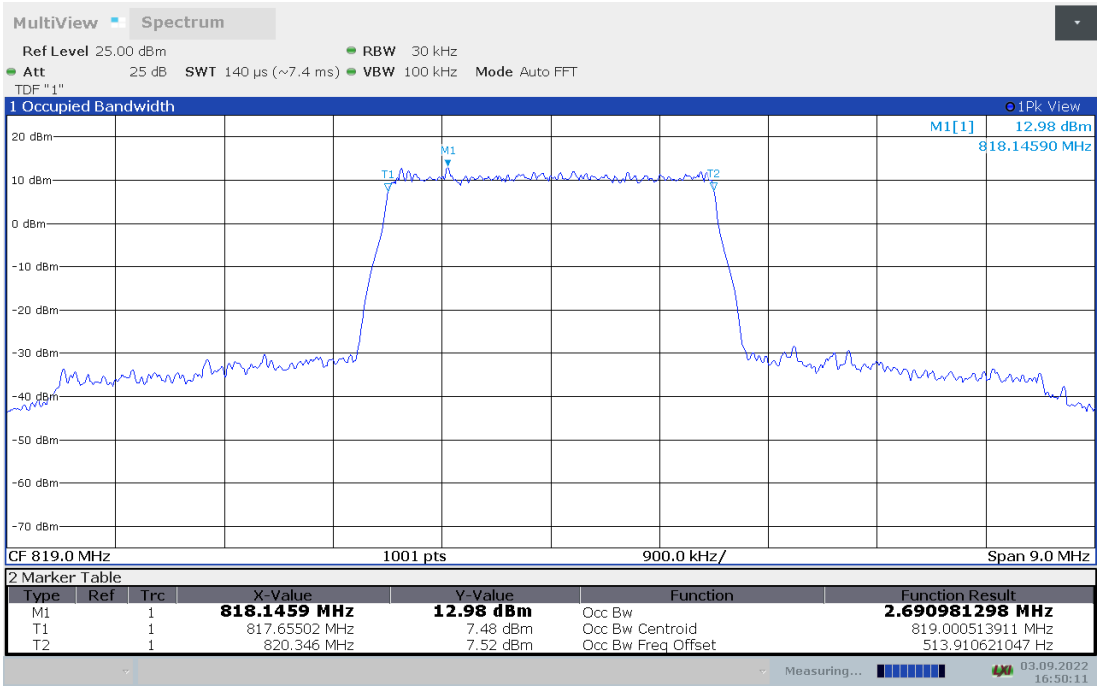
LTE band 26 , 1.4MHz Bandwidth,16QAM (99% BW)



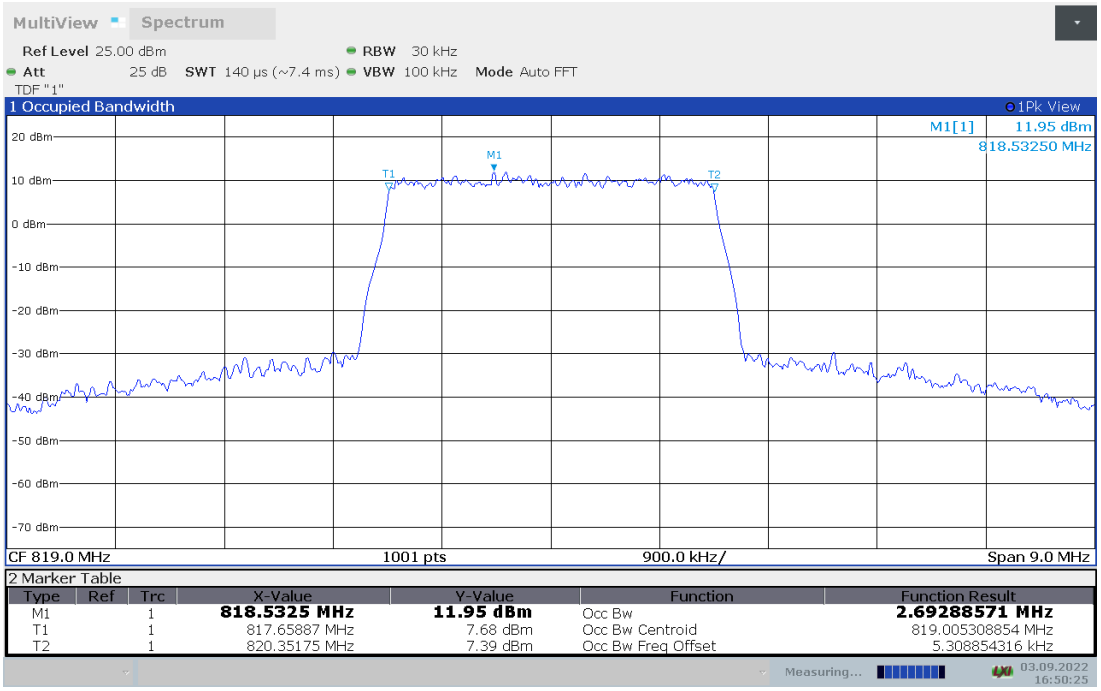
LTE band 26(814MHz-824MHz),3MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
819	2.691	2.693

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



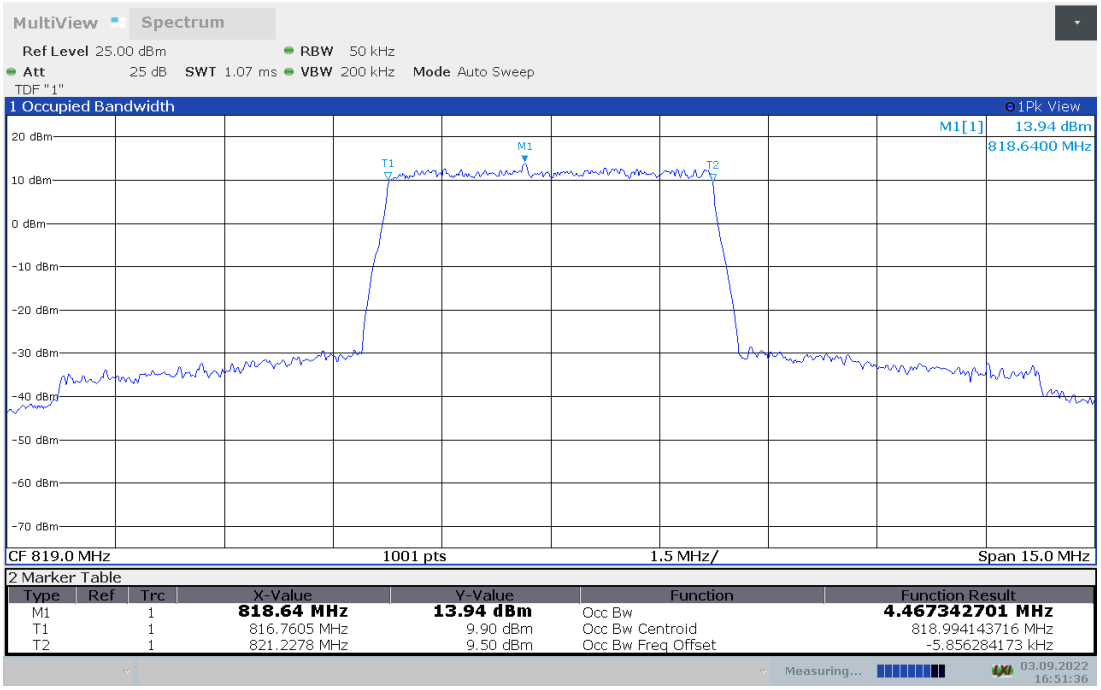
LTE band 26 , 3MHz Bandwidth,16QAM (99% BW)



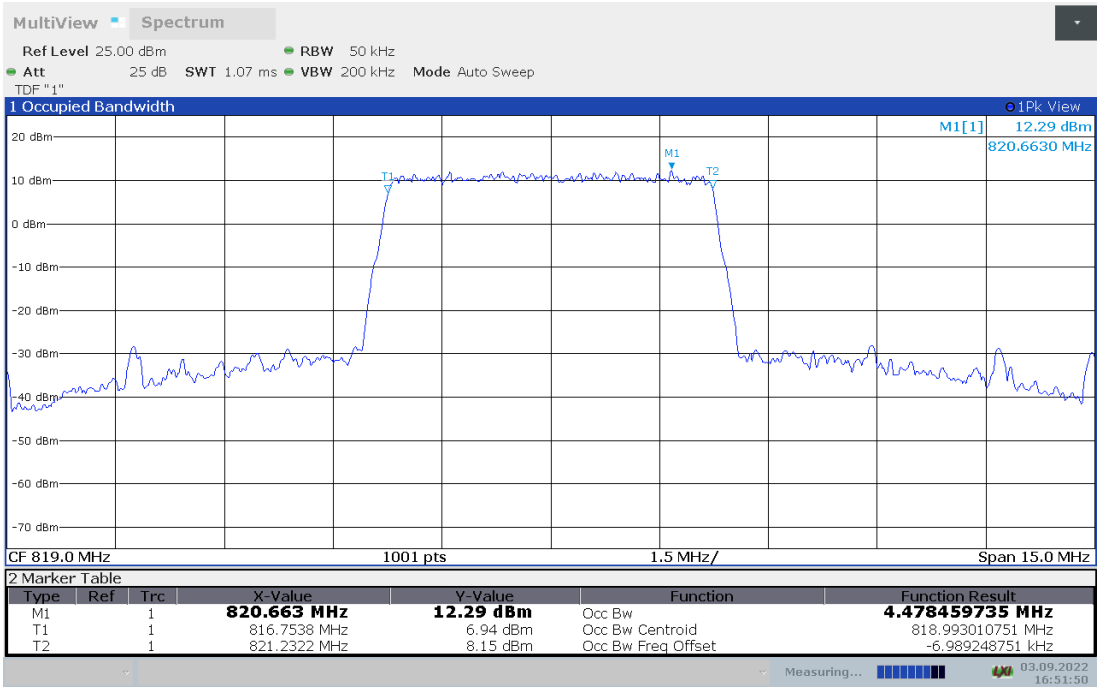
LTE band 26(814MHz-824MHz),5MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
819	4.467	4.478

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



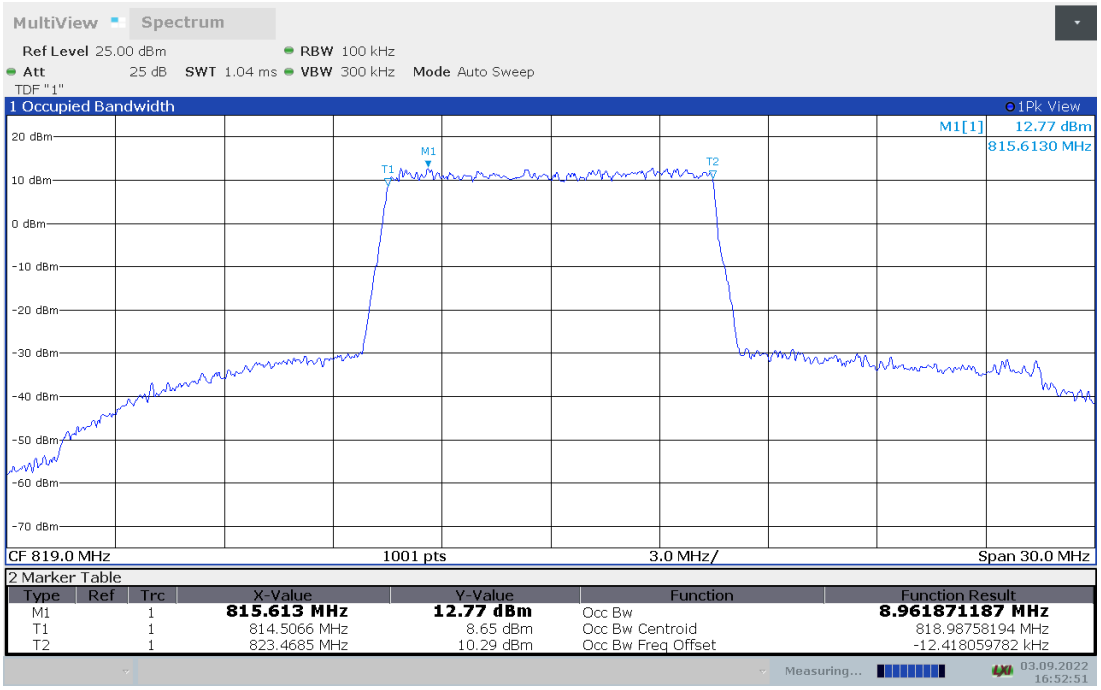
LTE band 26 , 5MHz Bandwidth,16QAM (99% BW)



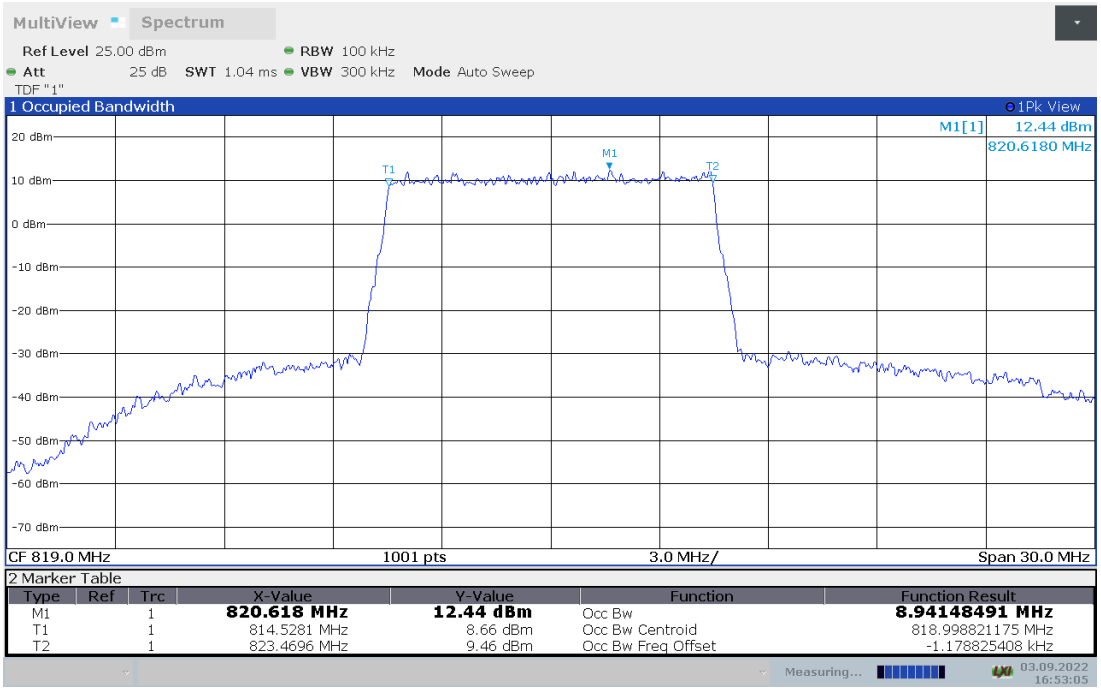
LTE band 26(814MHz-824MHz),10MHz (99% BW)

Frequency (MHz)	Occupied Bandwidth (99% BW)(MHz)	
	QPSK	16QAM
819	8.962	8.941

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



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



A.5 EMISSION BANDWIDTH

Reference

FCC: CFR Part 2.1049, 22.917, 24.238, 27.53, 90.1215.

A.5.1 Measurement Procedure

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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 (i.e., two to five times the OBW).

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.

c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.

d) Set the detection mode to peak, and the trace mode to max hold.

e) Use the 26dB bandwidth function of the spectrum analyzer and report the measured bandwidth.

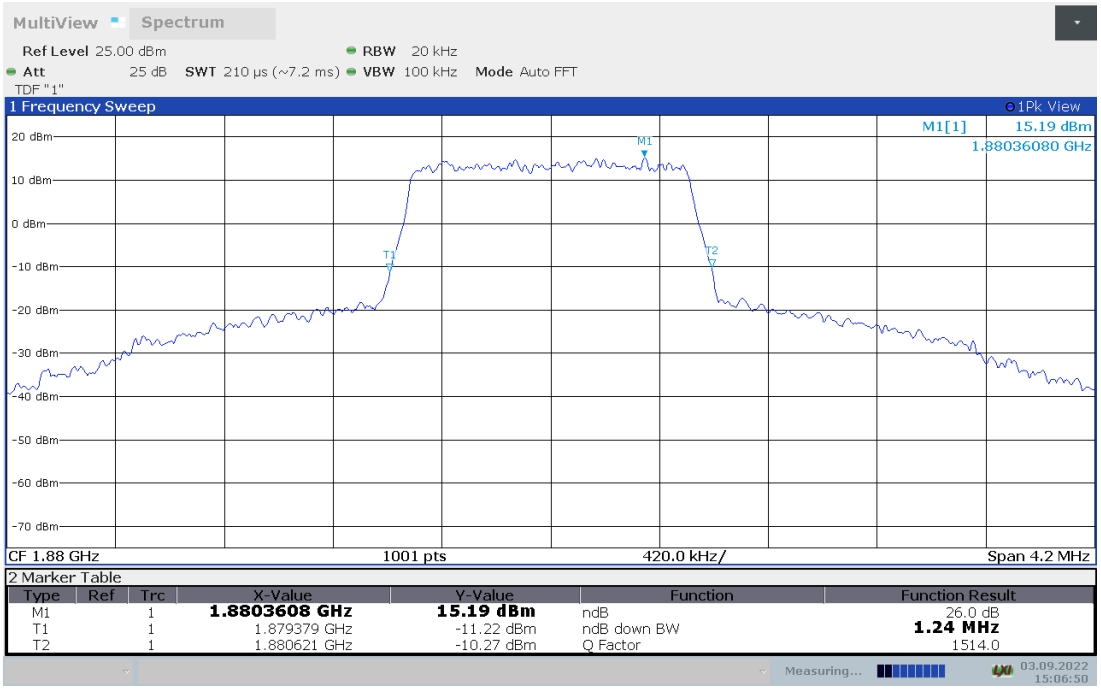
A.5.2Emission Bandwidth Results

Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

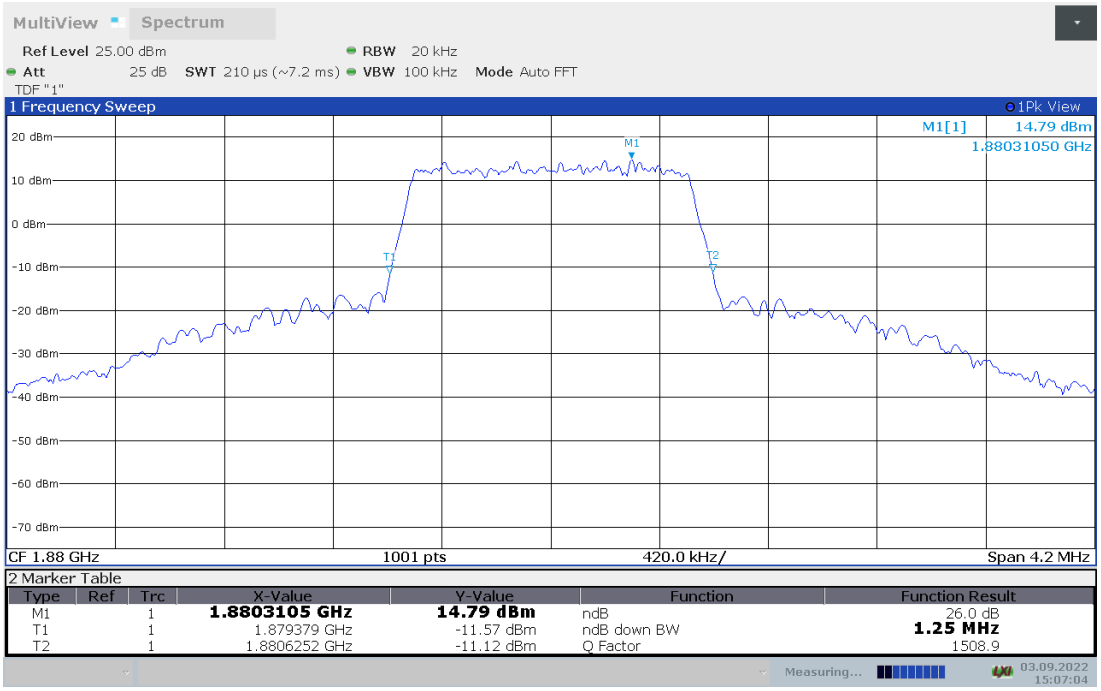
LTE band 2,1.4MHz(-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	1.24	1.25

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



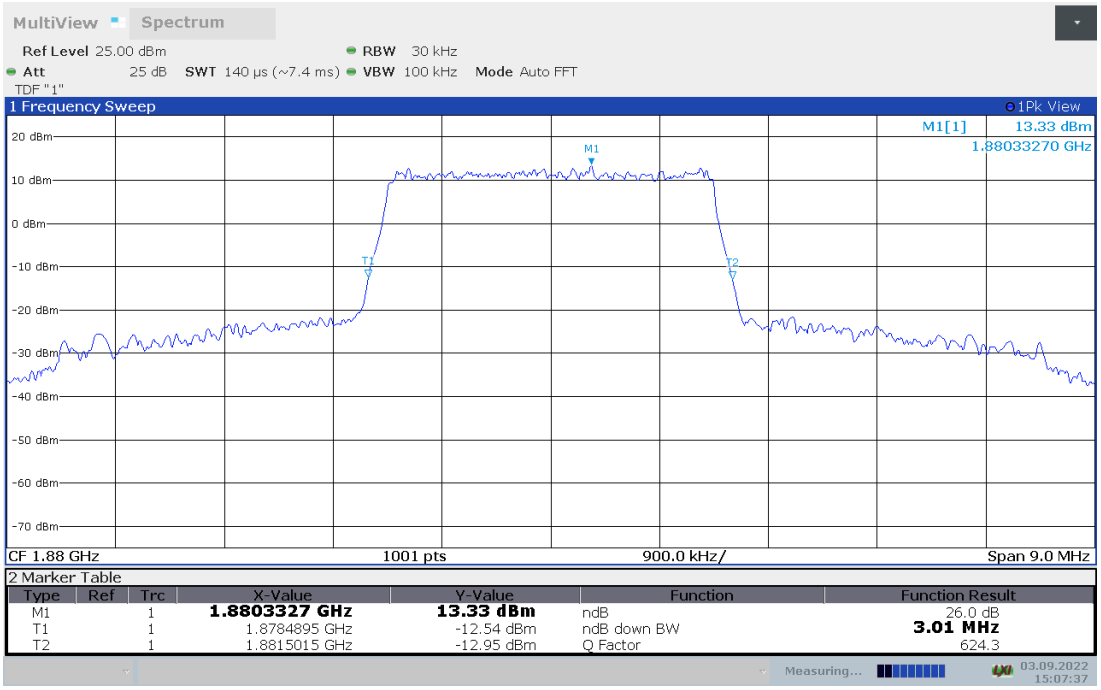
LTE band 2 , 1.4MHz Bandwidth,16QAM (-26dBc BW)



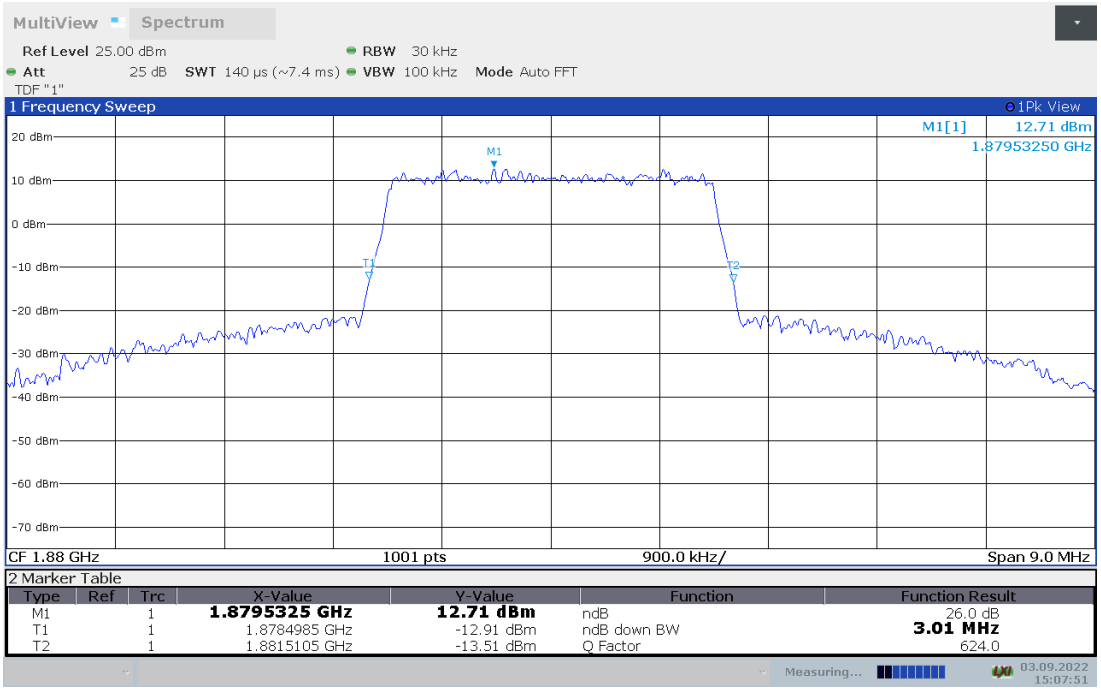
LTE band 2,3MHz(-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	3.01	3.01

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



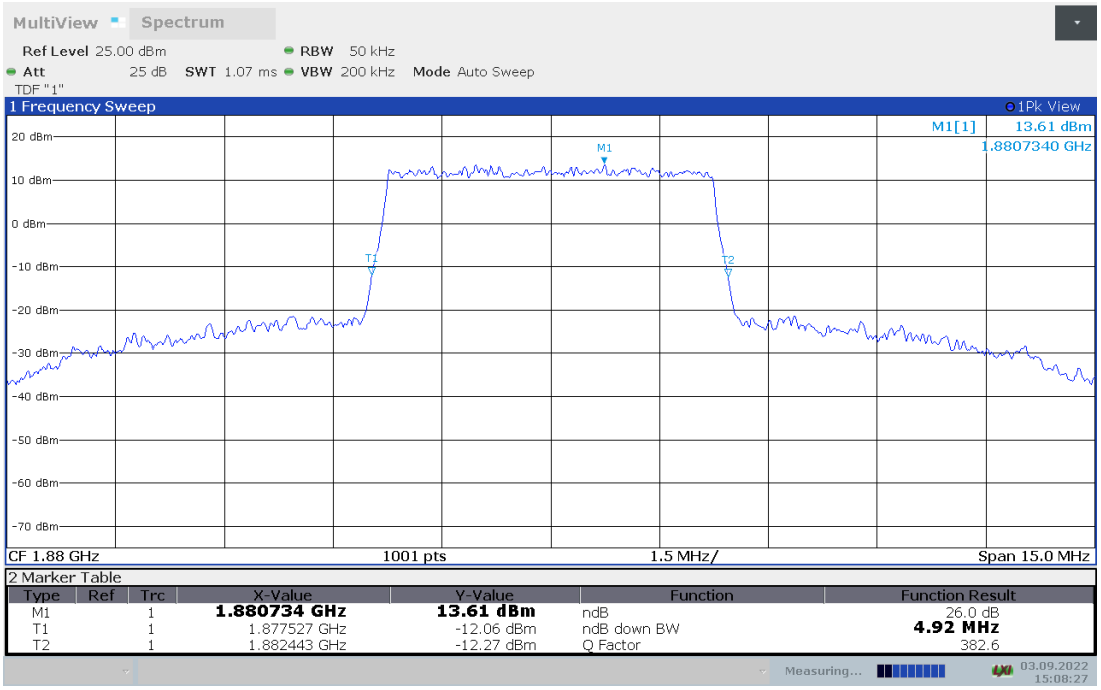
LTE band 2 , 3MHz Bandwidth,16QAM (-26dBc BW)



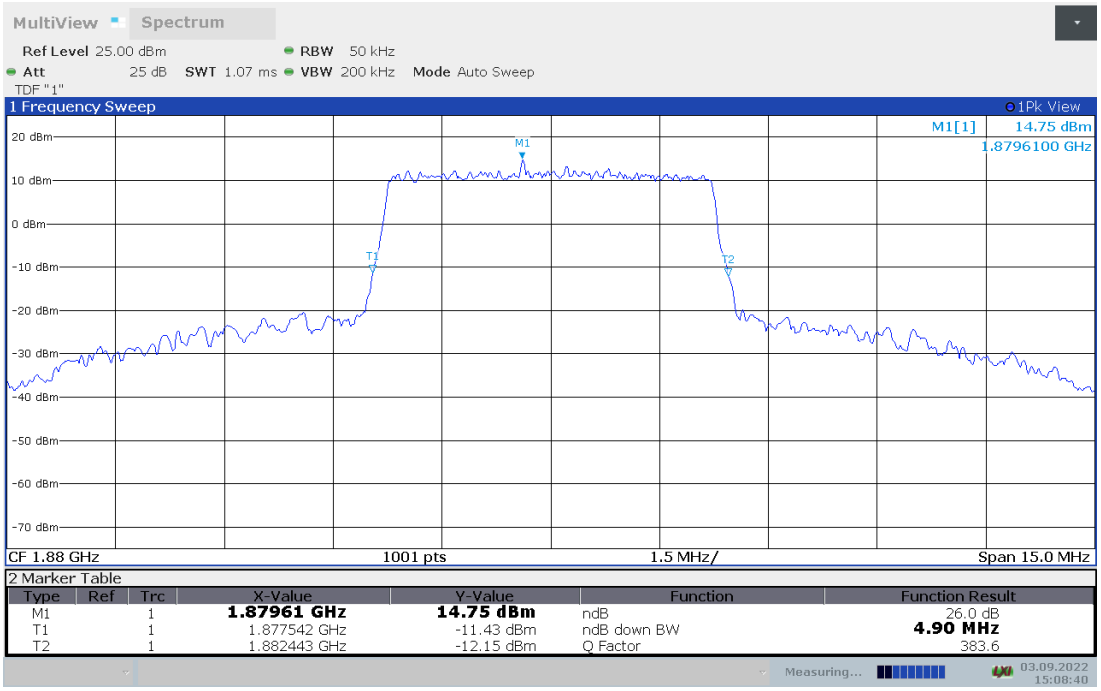
LTE band 2,5MHz(-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	4.92	4.90

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



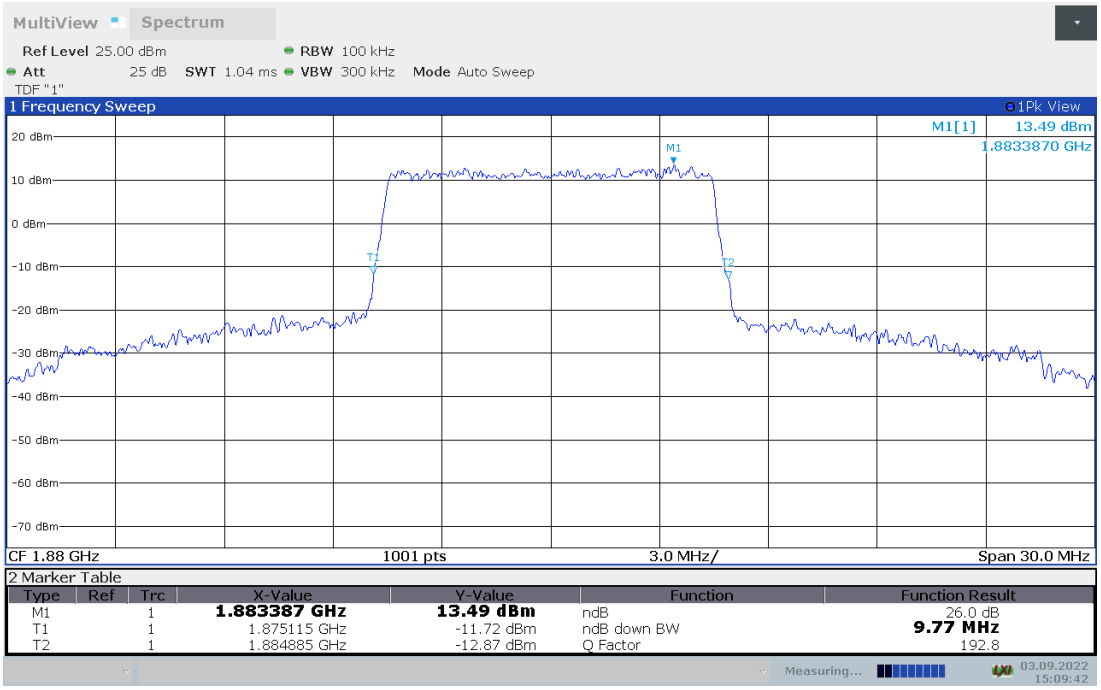
LTE band 2 , 5MHz Bandwidth,16QAM (-26dBc BW)



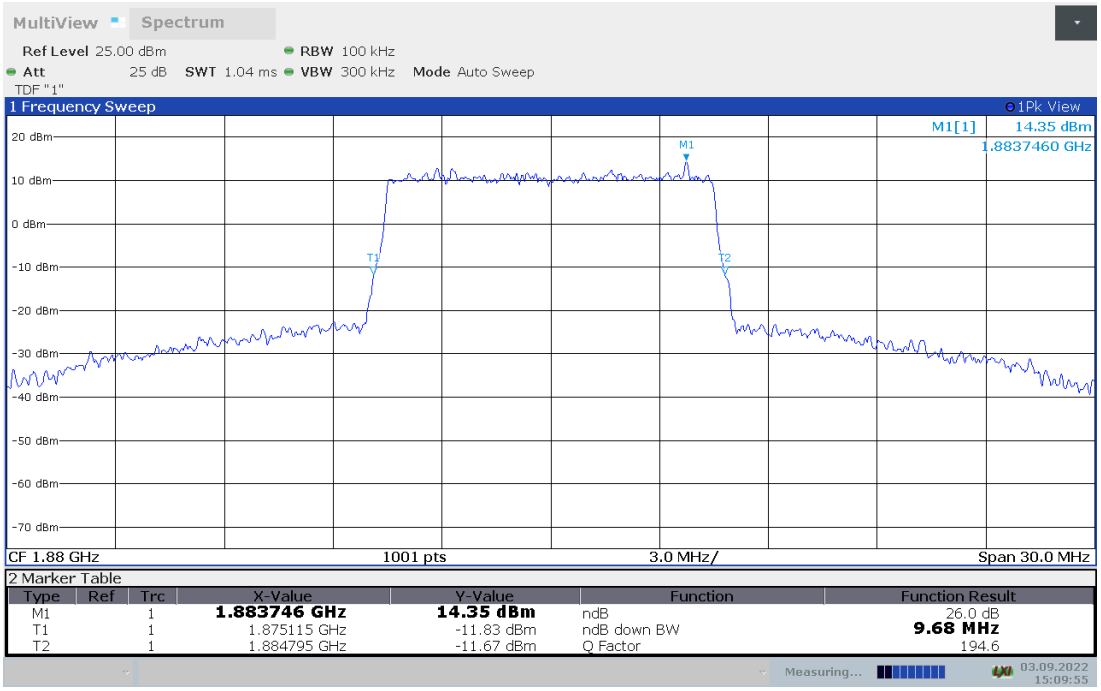
LTE band 2,10MHz(-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	9.77	9.68

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



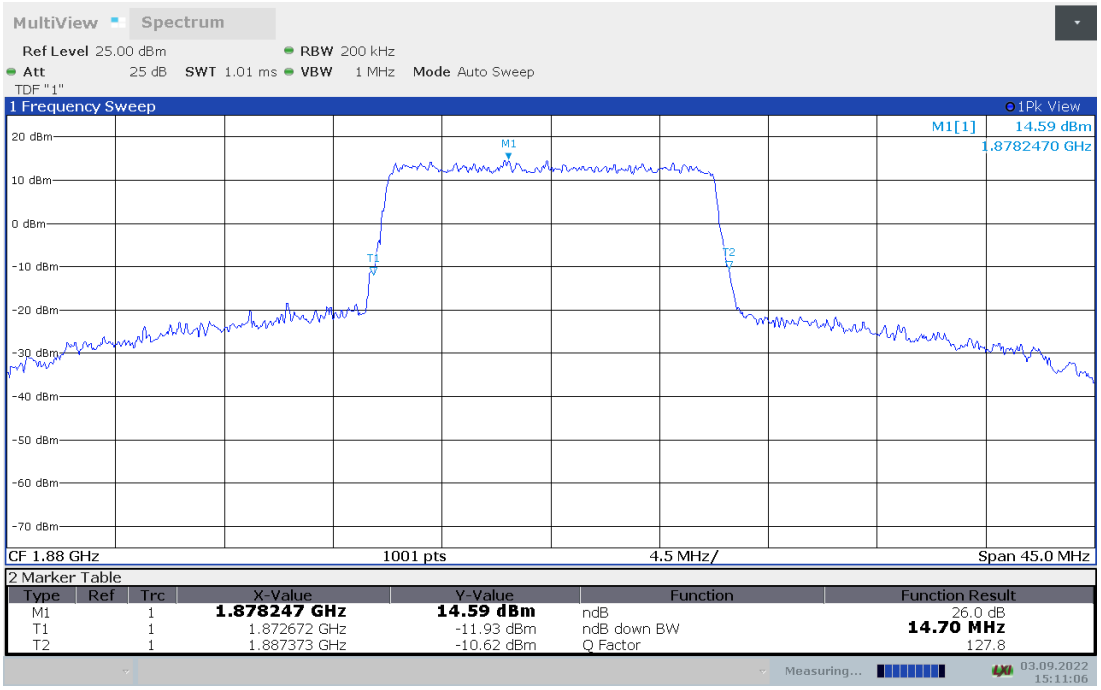
LTE band 2 , 10MHz Bandwidth,16QAM (-26dBc BW)



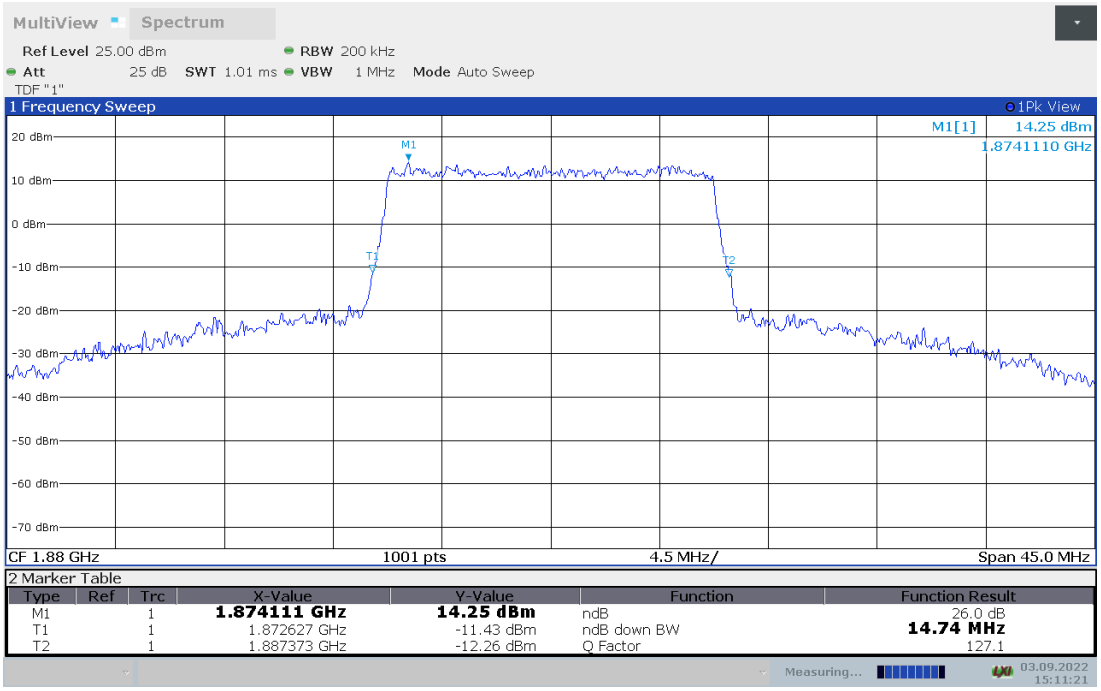
LTE band 2,15MHz(-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	14.70	14.74

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



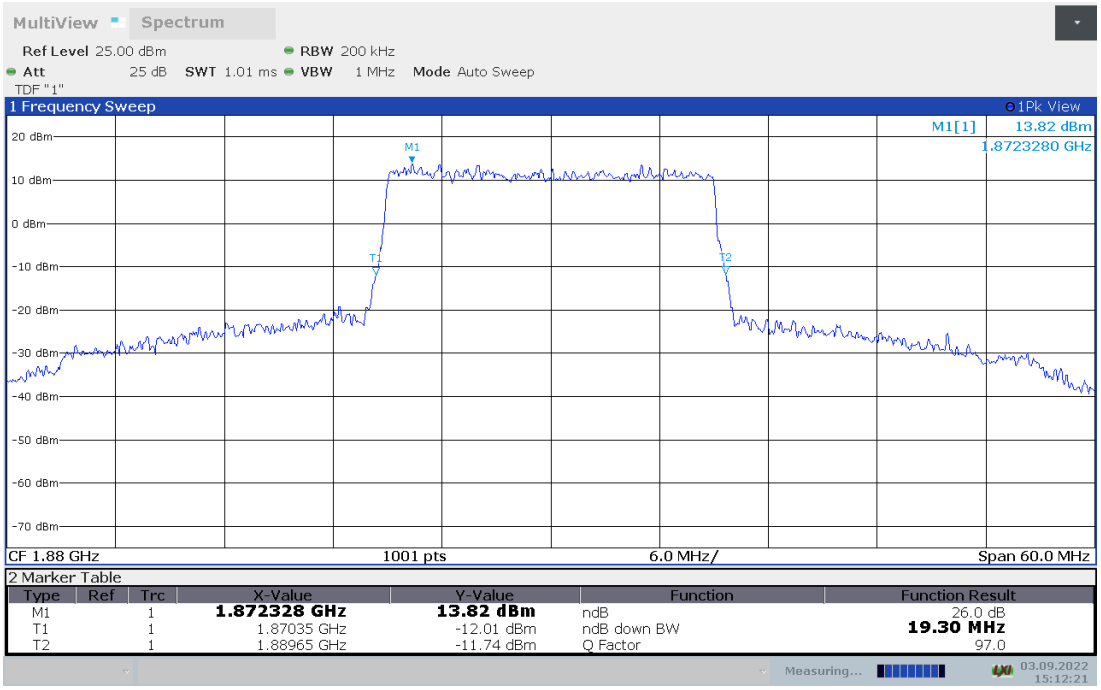
LTE band 2 , 15MHz Bandwidth,16QAM (-26dBc BW)



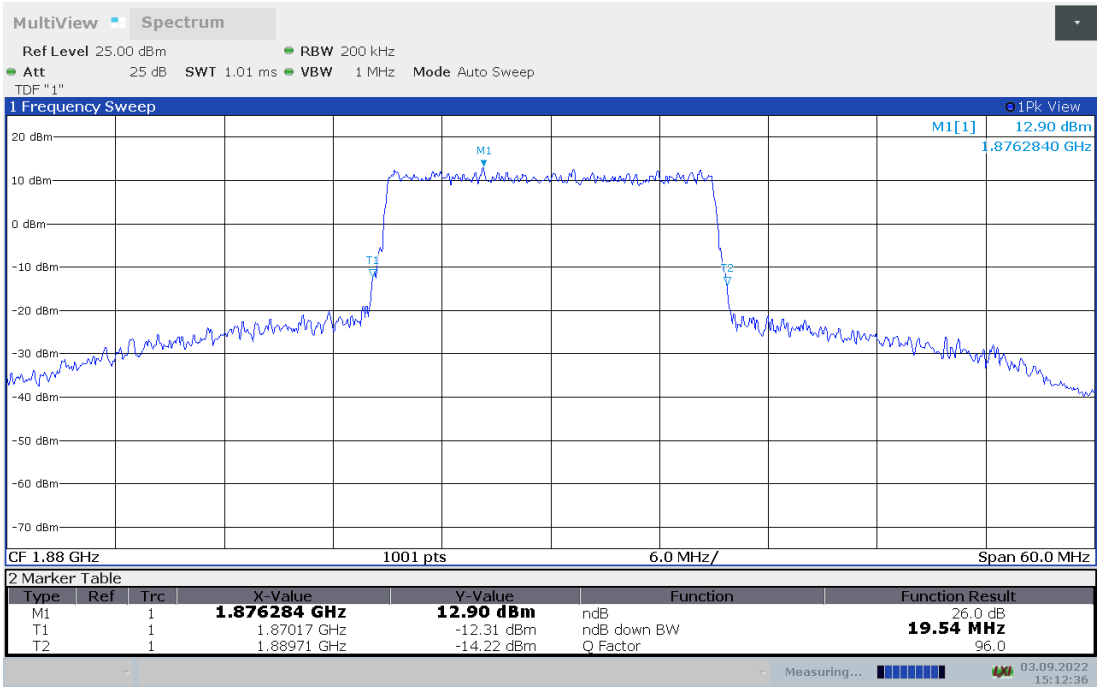
LTE band 2,20MHz(-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1880	19.30	19.54

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



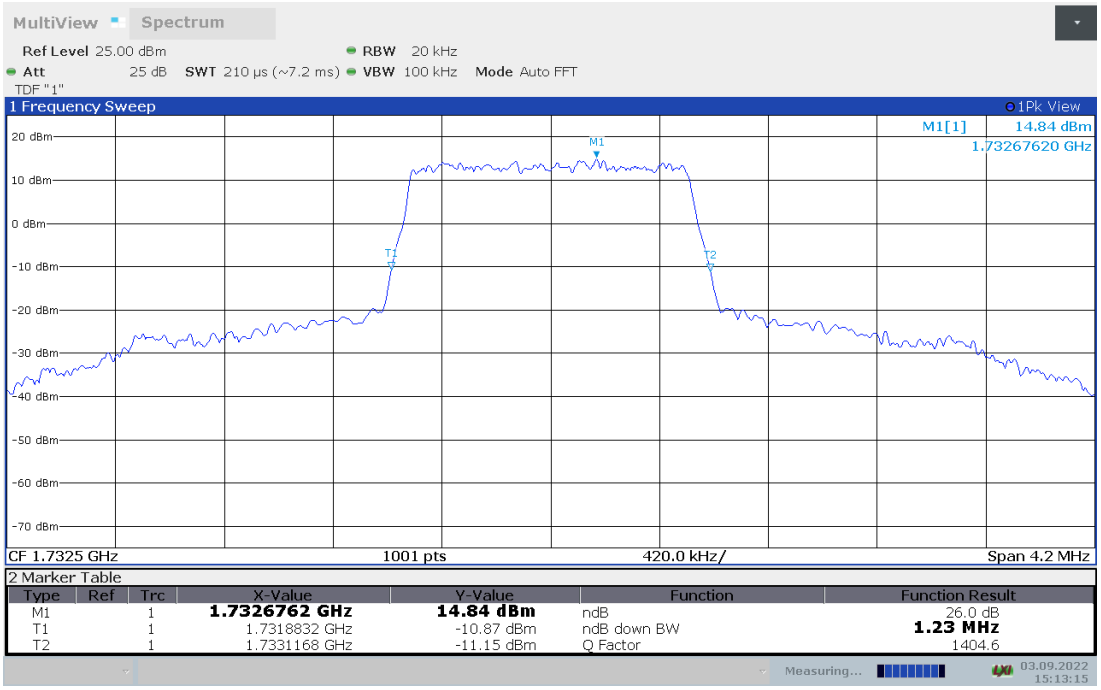
LTE band 2 , 20MHz Bandwidth,16QAM (-26dBc BW)



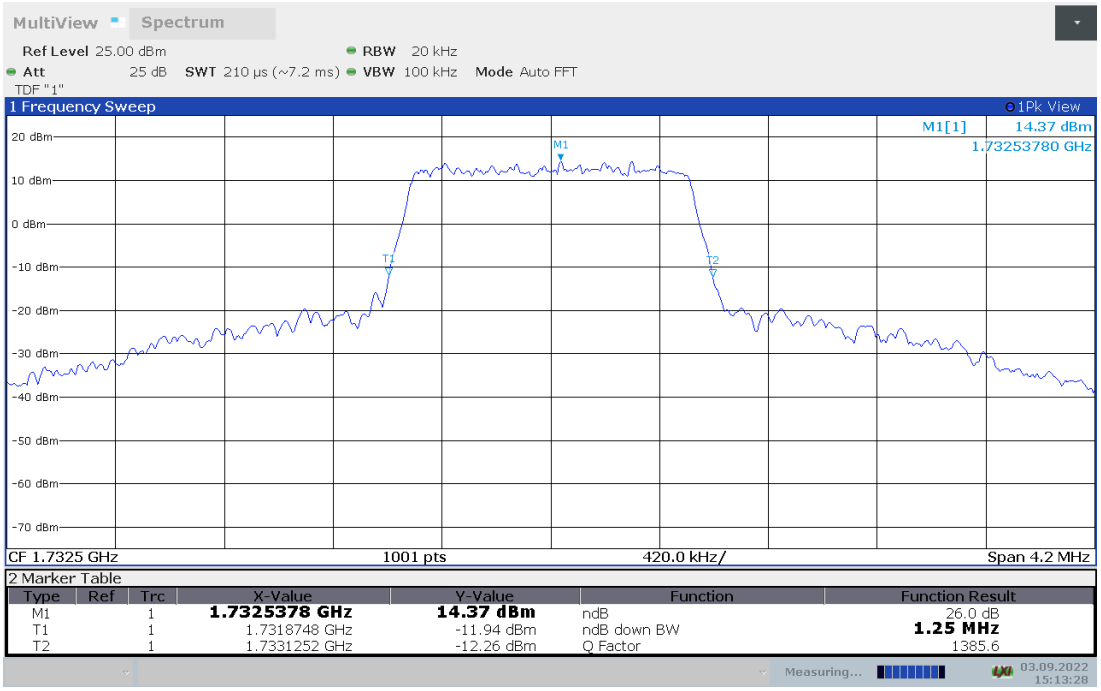
LTE band 4,1.4MHz(-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	1.23	1.25

LTE band 4 , 1.4MHz Bandwidth,QPSK (-26dBc BW)



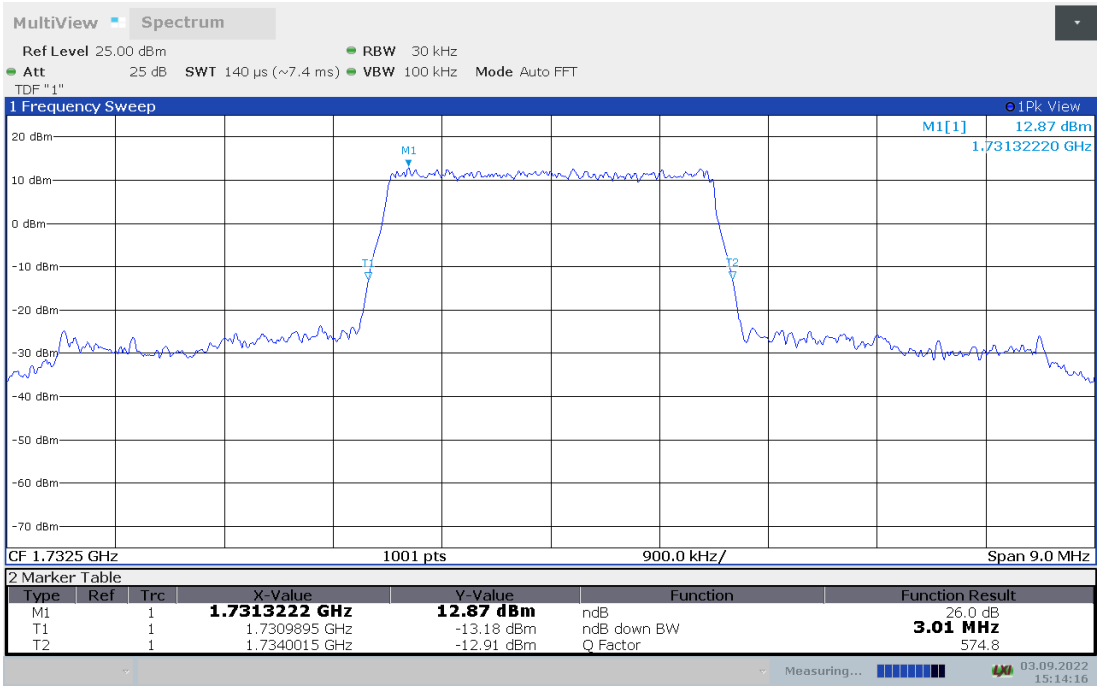
LTE band 4 , 1.4MHz Bandwidth,16QAM (-26dBc BW)



LTE band 4,3MHz(-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc)(MHz)	
	QPSK	16QAM
1732.5	3.01	3.01

LTE band 4 , 3MHz Bandwidth,QPSK (-26dBc BW)



LTE band 4 , 3MHz Bandwidth,16QAM (-26dBc BW)