TEST REPORT

No. I22N00887-RF-LTE

for

Shenzhen Tinno Mobile Technology Corp.

Smart Phone

Model Name: U668AA, U668AC

FCC ID: XD6U668AA

with

Hardware Version: V1.0

Software Version:

U668AAV01.11.10 for U668AA

U668ACV01.03.10 for U668AC

Issued Date: 2022-06-08

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.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22N00887-RF-LTE	Rev.0	1st edition	2022-06-08

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1. SUMMARY OF TEST REPORT

1.1. Test Items

Description	Smart Phone
Model Name	U668AA,U668AC
Applicant's name	Shenzhen Tinno Mobile Technology Corp.
Manufacturer's Name	Shenzhen Tinno Mobile Technology Corp.

1.2. Test Standards

FCC Part 2/22/24/27/90	10-1-19 Edition
ANSI C63.26	2015
KDB971168 D01	v03r01

1.3. Test Result

All test items are pass. 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: 2022-04-25 Testing End Date: 2022-06-06

1.6. Signature

Wang Ping

(Prepared this test report)

Huang Qiuqin

(Reviewed this test report)

Zhang Hao

(Approved this test report)

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2. CLIENT INFORMATION

2.1. Applicant Information

Company Name:	Shenzhen Tinno Mobile Technology Corp.
Address /Post:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen ,PRC
Contact Person:	xiaoping.li
Contact Email	xiaoping.li@tinno.com
Telephone:	0755-86095550
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2.2. Manufacturer Information

Company Name:	Shenzhen Tinno Mobile Technology Corp.
Address /Post:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen ,PRC
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3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)

3.1. About EUT

Description	Smart Phone
Model Name	U668AA,U668AC
FCC ID	XD6U668AA
Frequency Bands	LTE Bands 2,4,5,12,14,30,66
Antenna	Integrated
Extreme vol. Limits	3.5V to 4.4V (nominal: 3.85V)
Extreme temp. Tolerance	-30°C to +50°C
Condition of EUT as received	No abnormality in appearance

Note: 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
UT06aa	866415060008714	V1.0	U668AAV01.11.10	2022-04-25
UT10aa	866415060015735	V1.0	U668AAV01.11.10	2022-04-25

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

UT08aa is used for conduction test, UT05aa is used for radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Description
AE1	Battery

AE1

Model	386786
Manufacturer	Guangdong Fenghua New Energy Co., Ltd.
Capacity	3900mAh
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 Smart Phone with integrated antenna. Manual and specifications of the EUT were provided to fulfill the test. Samples undergoing test were selected by the Client.

The test sample in this report is U668AA; U668AC is a variant product of U668AA, for detail information please check the declaration provided by the manufacturer.

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4. REFERENCE DOCUMENTS

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

Reference	Title	Version
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-19 Edition
FCC Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS	10-1-19 Edition
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	10-1-19 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-19 Edition
FCC Part 90	PRIVATE LAND MOBILE RADIO SERVICES	10-1-19 Edition
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

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5. LABORATORY ENVIRONMENT

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

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
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 ˚C, Max. = 35 ˚C
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

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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

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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 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 14

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/90.542	A.1	P
2	Field Strength of Spurious Radiation	2.1053/90.543	A.2	P
3	Frequency Stability	2.1055/90.539	A.3	P
4	Occupied Bandwidth	2.1049/90.535	A.4	P
5	Emission Bandwidth	2.1049/90.535	A.5	P
6	Band Edge Compliance	2.1051/90.535	A.6	P
7	Conducted Spurious Emission	2.1051/90.535	A.7	P
8	Peak-to-Average Power Ratio	KDB971168 D01	A.8	P

LTE Band 30

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/27.50(a)	A.1	P
2	Field Strength of Spurious Radiation	2.1053/27.53(a)	A.2	P

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3	Frequency Stability	2.1055/27.54	A.3	P
4	Occupied Bandwidth	2.1049/27.53(a)	A.4	P
5	Emission Bandwidth	2.1049/27.53(a)	A.5	P
6	Band Edge Compliance	2.1051/27.53(a)	A.6	P
7	Conducted Spurious Emission	2.1051/27.53(a)	A.7	P
8	Peak-to-Average Power Ratio	27.50(a)/ KDB971168 D01	A.8	P

LTE Band 66

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(h)	A.4	P
5	Emission Bandwidth	2.1049/27.53(h)	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(a)/ KDB971168 D01	A.8	P

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7. STATEMENT

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

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

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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	2023-04-02
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	CMW500	R&S	152499	2022-07-15
13	Universal Radio Communication Tester	CMW500	R&S	129146	2023-04-24
14	Spectrum Analyzer	FSW	R&S	102197	2022.11.24
15	Temperature Chamber	SH-241	ESPEC	92007516	2022-10-15
16	DC Power Supply	U3606A	Agilent Technologies	MY50450012	2022-11-13

Test software

Item	Name	Vesion
Radiated	EMC32	V10.50.40

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ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

Reference

FCC: CFR Part 2.1046, 22.913, 24.232, 27.50, 90.542.

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	RB size/offset	Frequency (MHz)	Power(dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1909.3	23.24	21.93	20.88
		1880.0	22.71	21.94	20.94
		1850.7	22.76	22.03	20.90
	1 RB low	1909.3	23.25	21.89	20.82
		1880.0	22.71	21.95	20.93
		1850.7	22.75	22.04	20.96
	50% RB mid	1909.3	22.90	21.88	21.01
		1880.0	22.90	21.83	20.96
		1850.7	22.94	21.94	21.01
	100% RB	1909.3	21.89	20.94	19.88
		1880.0	21.89	20.90	19.81
		1850.7	21.88	20.96	19.87
3MHz	1 RB high	1908.5	23.25	22.10	21.23
		1880.0	23.24	22.37	21.37
		1851.5	23.25	22.50	21.46
	1 RB low	1908.5	23.24	21.93	21.01
		1880.0	23.23	22.42	21.37
		1851.5	22.92	22.24	21.48
	50% RB mid	1908.5	22.33	21.18	20.29
		1880.0	22.27	21.33	20.33
		1851.5	21.95	21.21	20.38

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	100% RB	1908.5	22.20	21.18	20.28
		1880.0	22.25	21.27	20.24
		1851.5	21.90	21.10	20.28
5MHz	1 RB high	1907.5	23.19	22.41	21.33
		1880.0	23.14	22.35	21.37
		1852.5	23.19	22.37	21.35
	1 RB low	1907.5	23.12	22.12	21.26
		1880.0	23.16	22.38	21.34
		1852.5	23.23	22.49	21.40
	50% RB mid	1907.5	22.36	21.33	20.36
		1880.0	22.34	21.35	20.36
		1852.5	22.20	21.35	20.38
	100% RB	1907.5	22.32	21.18	20.30
		1880.0	22.30	21.31	20.27
		1852.5	22.28	21.35	20.32
10MHz	1 RB high	1905.0	23.36	22.49	21.42
		1880.0	23.32	22.54	21.45
		1855.0	23.28	22.48	21.40
	1 RB low	1905.0	23.30	22.47	21.38
		1880.0	23.31	22.52	21.40
		1855.0	23.37	22.64	21.54
	50% RB mid	1905.0	22.42	21.37	20.35
		1880.0	22.44	21.43	20.36
		1855.0	22.46	21.45	20.42
	100% RB	1905.0	22.40	21.35	20.29
		1880.0	22.44	21.42	20.38
		1855.0	22.49	21.46	20.44
15MHz	1 RB high	1902.5	23.38	22.54	21.51
		1880.0	23.36	22.58	21.54
		1857.5	23.34	22.57	21.42
	1 RB low	1902.5	23.37	22.59	21.45
		1880.0	23.41	22.61	21.59
		1857.5	23.43	22.66	21.58
	50% RB mid	1902.5	22.52	21.45	20.44
		1880.0	22.54	21.46	20.44
		1857.5	22.55	21.52	20.49
	100% RB	1902.5	22.47	21.39	20.35
		1880.0	22.50	21.47	20.42
		1857.5	22.54	21.50	20.44

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20MHz	1 RB high	1900.0	23.44	22.62	21.56
		1880.0	23.70	22.74	21.69
		1860.0	23.71	22.81	21.76
	1 RB low	1900.0	23.51	22.65	21.51
		1880.0	23.52	22.65	21.58
		1860.0	23.57	22.79	21.70
	50% RB mid	1900.0	22.68	21.63	20.55
		1880.0	22.70	21.65	20.56
		1860.0	22.68	21.64	20.54
	100% RB	1900.0	22.58	21.51	20.49
		1880.0	22.65	21.58	20.52
		1860.0	22.60	21.55	20.48

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

LTE band 4

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1754.3	23.03	21.76	20.70
		1732.5	22.57	21.79	20.95
		1710.7	22.62	21.79	20.97
	1 RB low	1754.3	22.96	21.79	20.80
		1732.5	22.55	21.76	20.91
		1710.7	22.62	21.82	20.91
	50% RB mid	1754.3	22.91	21.71	20.87
		1732.5	22.72	21.71	21.01
		1710.7	22.74	21.72	20.81
	100% RB	1754.3	21.78	20.72	20.02
		1732.5	21.67	20.75	20.00
		1710.7	21.73	20.83	19.76
3MHz	1 RB high	1753.5	23.12	21.88	20.83
		1732.5	22.66	21.87	21.26
		1711.5	22.63	21.92	21.00
	1 RB low	1753.5	23.02	21.89	20.72
		1732.5	22.66	21.90	21.20
		1711.5	22.67	21.94	21.06
	50% RB mid	1753.5	21.78	20.72	20.16
		1732.5	21.68	20.77	20.06
		1711.5	21.73	20.78	20.05
	100% RB	1753.5	21.81	20.67	20.17
		1732.5	21.67	20.72	19.98

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		1711.5	21.69	20.73	19.95
5MHz	1 RB high	1752.5	22.99	21.74	20.68
		1732.5	22.52	21.77	20.73
		1712.5	22.48	21.71	20.68
	1 RB low	1752.5	22.78	21.78	20.73
		1732.5	22.54	21.83	20.76
		1712.5	22.58	21.80	20.74
	50% RB mid	1752.5	21.83	20.70	19.86
		1732.5	21.73	20.72	19.79
		1712.5	21.75	20.72	19.83
	100% RB	1752.5	21.69	20.64	19.94
		1732.5	21.68	20.70	19.67
		1712.5	21.71	20.68	19.76
10MHz	1 RB high	1750.0	23.08	21.86	20.75
		1732.5	22.59	21.89	20.86
		1715.0	22.65	21.85	20.76
	1 RB low	1750.0	22.71	21.93	20.83
		1732.5	22.66	21.97	20.81
		1715.0	22.70	21.94	20.85
	50% RB mid	1750.0	21.83	20.75	19.78
		1732.5	21.76	20.76	19.85
		1715.0	21.78	20.74	19.79
	100% RB	1750.0	21.76	20.74	19.75
		1732.5	21.78	20.73	19.74
		1715.0	21.76	20.75	19.94
15MHz	1 RB high	1747.5	22.90	21.80	20.70
		1732.5	22.53	21.84	20.68
		1717.5	22.56	21.76	20.70
	1 RB low	1747.5	22.61	21.89	20.80
		1732.5	22.63	21.90	20.78
		1717.5	22.67	21.87	20.82
	50% RB mid	1747.5	21.77	20.74	19.76
		1732.5	21.76	20.73	19.71
		1717.5	21.78	20.73	19.74
	100% RB	1747.5	21.75	20.72	19.75
		1732.5	21.76	20.75	19.73
		1717.5	21.72	20.66	19.68
20MHz	1 RB high	1745.0	22.50	21.76	20.67
		1732.5	22.43	21.78	20.58

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		1720.0	22.44	21.76	20.67
	1 RB low	1745.0	22.62	21.96	20.81
		1732.5	22.60	21.93	20.79
		1720.0	22.60	21.93	20.77
	50% RB mid	1745.0	21.82	20.76	19.76
		1732.5	21.81	20.78	19.73
		1720.0	21.83	20.80	19.76
	100% RB	1745.0	21.76	20.72	19.71
		1732.5	21.79	20.72	19.72
		1720.0	21.71	20.68	19.65

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

LTE band 5

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	23.21	22.33	21.34
		836.5	23.23	22.42	21.35
		824.7	23.28	22.54	21.53
	1 RB low	848.3	23.21	22.38	21.39
		836.5	23.23	22.43	21.37
		824.7	23.24	22.51	21.44
	50% RB mid	848.3	23.41	22.32	21.46
		836.5	23.43	22.37	21.54
		824.7	23.42	22.42	21.55
	100% RB	848.3	22.43	21.42	20.35
		836.5	22.41	21.47	20.36
		824.7	22.44	21.48	20.42
3MHz	1 RB high	847.5	23.27	22.44	21.38
		836.5	23.28	22.57	21.46
		825.5	23.37	22.63	21.54
	1 RB low	847.5	23.28	22.53	21.43
		836.5	23.28	22.47	21.45
		825.5	23.27	22.55	21.44
	50% RB mid	847.5	22.42	21.41	20.38
		836.5	22.41	21.42	20.42
		825.5	22.45	21.44	20.43
	100% RB	847.5	22.42	21.36	20.34
		836.5	22.41	21.37	20.40
		825.5	22.41	21.39	20.36
5MHz	1 RB high	846.5	23.21	22.36	21.30
		836.5	23.21	22.42	21.43

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		826.5	23.28	22.54	21.50
	1 RB low	846.5	23.21	22.47	21.34
		836.5	23.20	22.44	21.36
		826.5	23.18	22.42	21.39
	50% RB mid	846.5	22.43	21.42	20.41
		836.5	22.44	21.42	20.42
		826.5	22.47	21.43	20.46
	100% RB	846.5	22.42	21.37	20.37
		836.5	22.43	21.40	20.35
		826.5	22.44	21.40	20.39
10MHz	1 RB high	844.0	23.12	22.15	21.39
		836.5	23.19	22.59	21.48
		829.0	23.26	22.52	21.51
	1 RB low	844.0	23.08	22.39	21.45
		836.5	23.12	22.50	21.42
		829.0	23.19	22.53	21.46
	50% RB mid	844.0	22.47	21.43	20.44
		836.5	22.51	21.45	20.43
		829.0	22.50	21.49	20.50
	100% RB	844.0	22.46	21.43	20.43
		836.5	22.48	21.46	20.39
		829.0	22.54	21.50	20.49

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

LTE band 12

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	715.3	23.43	22.63	21.57
		707.5	23.44	22.69	21.64
		699.7	23.43	22.62	21.52
	1 RB low	715.3	23.39	22.60	21.59
		707.5	23.45	22.69	21.64
		699.7	23.43	22.58	21.58
	50% RB mid	715.3	23.61	22.51	21.66
		707.5	23.60	22.58	21.72
		699.7	23.59	22.58	21.72
	100% RB	715.3	22.60	21.61	20.59
		707.5	22.57	21.62	20.58
		699.7	22.59	21.68	20.60
3MHz	1 RB high	714.5	23.45	22.60	21.61
		707.5	23.47	22.69	21.73

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		700.5	23.47	22.73	21.69
	1 RB low	714.5	23.43	22.64	21.59
		707.5	23.47	22.74	21.70
		700.5	23.45	22.64	21.66
	50% RB mid	714.5	22.50	21.53	20.56
		707.5	22.55	21.58	20.63
		700.5	22.52	21.57	20.59
	100% RB	714.5	22.47	21.48	20.48
		707.5	22.52	21.47	20.52
		700.5	22.51	21.49	20.52
5MHz	1 RB high	713.5	23.37	22.56	21.45
		707.5	23.38	22.61	21.57
		701.5	23.38	22.63	21.55
	1 RB low	713.5	23.33	22.58	21.46
		707.5	23.36	22.58	21.53
		701.5	23.35	22.53	21.50
	50% RB mid	713.5	22.56	21.52	20.62
		707.5	22.58	21.57	20.64
		701.5	22.54	21.51	20.62
	100% RB	713.5	22.51	21.49	20.51
		707.5	22.52	21.51	20.56
		701.5	22.55	21.51	20.57
10MHz	1 RB high	711.0	23.50	22.71	21.66
		707.5	23.54	22.71	21.66
		704.0	23.49	22.72	21.67
	1 RB low	711.0	23.47	22.66	21.62
		707.5	23.40	22.62	21.54
		704.0	23.40	22.61	21.58
	50% RB mid	711.0	22.55	21.57	20.57
		707.5	22.57	21.58	20.58
		704.0	22.57	21.58	20.60
	100% RB	711.0	22.56	21.52	20.58
		707.5	22.59	21.58	20.60
		704.0	22.58	21.54	20.59

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

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LTE band 14

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	795.5	23.37	22.68	21.56
		793.0	23.40	22.71	21.58
		790.5	23.42	22.69	21.58
	1 RB low	795.5	23.40	22.65	21.63
		793.0	23.42	22.75	21.66
		790.5	23.42	22.68	21.66
	50% RB mid	795.5	22.64	21.60	20.63
		793.0	22.70	21.62	20.68
		790.5	22.73	21.67	20.70
	100% RB	795.5	22.60	21.56	20.59
		793.0	22.64	21.61	20.62
		790.5	22.67	21.64	20.64
10MHz	1 RB high	793.0	23.48	22.68	21.69
	1 RB low	793.0	23.54	22.78	21.77
	50% RB mid	793.0	22.69	21.64	20.64
	100% RB	793.0	22.68	21.64	20.67

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

LTE band 30

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2312.5	22.57	21.81	20.82
		2310.0	22.62	21.88	20.80
		2307.5	22.64	21.91	20.83
	1 RB low	2312.5	22.64	21.87	20.86
		2310.0	22.61	21.90	20.84
		2307.5	22.65	21.93	20.86
	50% RB mid	2312.5	21.86	20.87	19.90
		2310.0	21.85	20.84	19.87
		2307.5	21.87	20.83	19.86
	100% RB	2312.5	21.84	20.81	19.81
		2310.0	21.84	20.80	19.83
		2307.5	21.81	20.78	19.78

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10MHz	1 RB high	2310.0	22.67	21.93	20.88
	1 RB low	2310.0	22.70	21.92	20.90
	50% RB mid	2310.0	21.87	20.85	19.84
	100% RB	2310.0	21.86	20.83	19.83

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

LTE band 66

Bandwidth	RB size/offset	Frequency (MHz)	Power(dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1779.3	23.04	22.22	21.22
		1745.0	23.02	22.23	21.15
		1710.7	23.00	22.16	21.18
	1 RB low	1779.3	23.05	22.22	21.24
		1745.0	23.01	22.24	21.19
		1710.7	23.01	22.18	21.19
	50% RB mid	1779.3	23.19	22.15	21.37
		1745.0	23.17	22.08	21.23
		1710.7	23.16	22.09	21.23
	100% RB	1779.3	22.14	21.27	20.18
		1745.0	22.07	21.20	20.12
		1710.7	22.13	21.17	20.13
3MHz	1 RB high	1778.5	23.09	22.30	21.26
		1745.0	23.03	22.28	21.20
		1711.5	23.05	22.26	21.16
	1 RB low	1778.5	23.09	22.37	21.26
		1745.0	23.06	22.33	21.20
		1711.5	23.09	22.29	21.18
	50% RB mid	1778.5	22.18	21.23	20.23
		1745.0	22.13	21.18	20.17
		1711.5	22.13	21.16	20.18
	100% RB	1778.5	22.16	21.18	20.17
		1745.0	22.07	21.09	20.11
		1711.5	22.12	21.11	20.06
5MHz	1 RB high	1777.5	22.97	22.21	21.19
		1745.0	22.95	22.20	21.10
		1712.5	22.93	22.12	21.06
	1 RB low	1777.5	23.00	22.26	21.17

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		1745.0	22.96	22.20	21.12
		1712.5	22.96	22.17	21.12
	50% RB mid	1777.5	22.19	21.17	20.22
		1745.0	22.16	21.14	20.17
		1712.5	22.13	21.13	20.15
	100% RB	1777.5	22.18	21.19	20.15
		1745.0	22.08	21.11	20.10
		1712.5	22.12	21.10	20.11
10MHz	1 RB high	1775.0	23.06	22.23	21.19
		1745.0	22.97	22.20	21.11
		1715.0	22.96	22.18	21.16
	1 RB low	1775.0	23.12	22.36	21.24
		1745.0	23.07	22.33	21.24
		1715.0	23.04	22.31	21.22
	50% RB mid	1775.0	22.21	21.19	20.17
		1745.0	22.18	21.15	20.19
		1715.0	22.16	21.16	20.16
	100% RB	1775.0	22.21	21.21	20.22
		1745.0	22.20	21.16	20.19
		1715.0	22.14	21.13	20.14
15MHz	1 RB high	1772.5	23.01	22.25	21.11
		1745.0	22.95	22.19	21.15
		1717.5	22.97	22.17	21.16
	1 RB low	1772.5	23.11	22.34	21.32
		1745.0	23.06	22.31	21.29
		1717.5	23.03	22.27	21.24
	50% RB mid	1772.5	22.22	21.19	20.18
		1745.0	22.13	21.15	20.16
		1717.5	22.14	21.11	20.14
	100% RB	1772.5	22.19	21.21	20.19
		1745.0	22.15	21.13	20.10
		1717.5	22.08	21.10	20.08
20MHz	1 RB high	1770.0	22.94	22.15	21.05
		1745.0	22.83	22.10	21.09
		1720.0	22.88	22.10	21.01
	1 RB low	1770.0	22.99	22.23	21.22
		1745.0	23.01	22.20	21.21
		1720.0	22.96	22.19	21.20
	50% RB mid	1770.0	22.18	21.20	20.19

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		1745.0	22.14	21.16	20.17
		1720.0	22.11	21.12	20.13
	100% RB	1770.0	22.16	21.18	20.18
		1745.0	22.09	21.10	20.09
		1720.0	22.02	21.02	20.01

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

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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”.

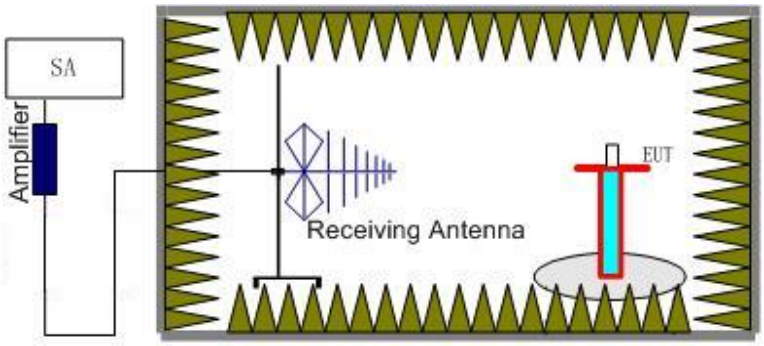
Rule Part 27.50(h)(2) specifies “Mobile stations are limited to 2.0 watts EIRP.”.

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 90.635(b) specifies "The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).”

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.

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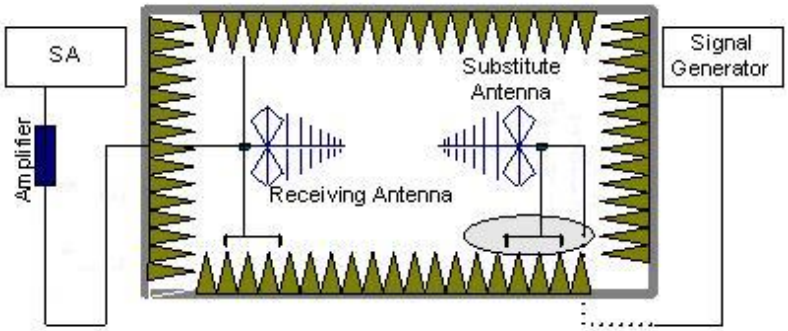

In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern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

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A.1.3.3 Measurement result

LTE Band 2_QPSK

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	1850.7	-14.90	-29.30	8.10	22.50	33.00	H
	1880.0	-15.01	-29.40	8.10	22.49	33.00	H
	1909.3	-15.58	-29.30	8.10	21.82	33.00	H
3	1851.5	-15.06	-29.30	8.10	22.34	33.00	H
	1880.0	-15.11	-29.40	8.10	22.39	33.00	H
	1908.5	-15.63	-29.30	8.10	21.78	33.00	H
5	1852.5	-15.22	-29.30	8.10	22.18	33.00	H
	1880.0	-15.24	-29.40	8.10	22.26	33.00	H
	1907.5	-15.63	-29.30	8.10	21.77	33.00	H
10	1855.0	-15.31	-29.30	8.10	22.09	33.00	H
	1880.0	-15.36	-29.40	8.10	22.14	33.00	H
	1905.0	-15.72	-29.30	8.10	21.68	33.00	H
15	1857.5	-15.42	-29.30	8.10	21.98	33.00	H
	1880.0	-15.42	-29.40	8.10	22.08	33.00	H
	1902.5	-15.75	-29.30	8.10	21.65	33.00	H
20	1860.0	-15.44	-29.30	8.10	21.96	33.00	H
	1880.0	-15.45	-29.40	8.10	22.05	33.00	H
	1900.0	-15.73	-29.30	8.10	21.67	33.00	H

LTE Band 2_16QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	1850.7	-15.18	-29.30	8.10	22.22	33.00	H
	1880.0	-15.20	-29.40	8.10	22.30	33.00	H
	1909.3	-15.66	-29.30	8.10	21.74	33.00	H
3	1851.5	-15.22	-29.30	8.10	22.18	33.00	H
	1880.0	-15.32	-29.40	8.10	22.18	33.00	H
	1908.5	-14.76	-29.30	8.10	22.64	33.00	H
5	1852.5	-15.32	-29.30	8.10	22.08	33.00	H
	1880.0	-15.37	-29.40	8.10	22.13	33.00	H
	1907.5	-15.82	-29.30	8.10	21.58	33.00	H
10	1855.0	-15.40	-29.30	8.10	22.00	33.00	H
	1880.0	-15.41	-29.40	8.10	22.09	33.00	H
	1905.0	-15.85	-29.30	8.10	21.55	33.00	H
15	1857.5	-15.51	-29.30	8.10	21.89	33.00	H
	1880.0	-15.48	-29.40	8.10	22.02	33.00	H
	1902.5	-15.91	-29.30	8.10	21.49	33.00	H
20	1860.0	-15.55	-29.30	8.10	21.85	33.00	H
	1880.0	-15.56	-29.40	8.10	21.94	33.00	H
	1850.7	-15.18	-29.30	8.10	22.22	33.00	H

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LTE Band 2_64QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	1850.7	-15.38	-29.30	8.10	22.02	33.00	H
	1880.0	-15.25	-29.40	8.10	22.26	33.00	H
	1909.3	-15.69	-29.30	8.10	21.71	33.00	H
3	1851.5	-15.54	-29.30	8.10	21.86	33.00	H
	1880.0	-15.31	-29.40	8.10	22.19	33.00	H
	1908.5	-15.80	-29.30	8.10	21.60	33.00	H
5	1852.5	-15.58	-29.30	8.10	21.82	33.00	H
	1880.0	-15.41	-29.40	8.10	22.09	33.00	H
	1907.5	-15.54	-29.30	8.10	21.86	33.00	H
10	1855.0	-15.62	-29.30	8.10	21.78	33.00	H
	1880.0	-15.45	-29.40	8.10	22.05	33.00	H
	1905.0	-15.60	-29.30	8.10	21.80	33.00	H
15	1857.5	-15.72	-29.30	8.10	21.68	33.00	H
	1880.0	-15.54	-29.40	8.10	21.96	33.00	H
	1902.5	-15.68	-29.30	8.10	21.72	33.00	H
20	1860.0	-15.73	-29.30	8.10	21.67	33.00	H
	1880.0	-15.54	-29.40	8.10	21.96	33.00	H
	1900.0	-15.72	-29.30	8.10	21.68	33.00	H

LTE Band 4_QPSK

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	1710.7	-15.32	-29.60	8.10	22.38	30.00	H
	1732.5	-15.12	-29.60	8.10	22.58	30.00	H
	1754.3	-15.03	-29.50	8.10	22.57	30.00	H
3	1711.5	-15.41	-29.60	8.10	22.29	30.00	H
	1732.5	-15.14	-29.60	8.10	22.57	30.00	H
	1753.5	-15.06	-29.50	8.10	22.54	30.00	H
5	1712.5	-15.44	-29.60	8.10	22.26	30.00	H
	1732.5	-15.16	-29.60	8.10	22.55	30.00	H
	1752.5	-15.10	-29.50	8.10	22.50	30.00	H
10	1715.0	-15.42	-29.60	8.10	22.28	30.00	H
	1732.5	-15.24	-29.60	8.10	22.46	30.00	H
	1750.0	-15.14	-29.50	8.10	22.46	30.00	H
15	1717.5	-15.40	-29.60	8.10	22.30	30.00	H
	1732.5	-15.23	-29.60	8.10	22.47	30.00	H
	1747.5	-15.14	-29.50	8.10	22.46	30.00	H
20	1720.0	-15.52	-29.60	8.10	22.18	30.00	H
	1732.5	-15.31	-29.60	8.10	22.39	30.00	H
	1745.0	-15.24	-29.50	8.10	22.36	30.00	H

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LTE Band 4_16QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	1710.7	-15.42	-29.60	8.10	22.28	30.00	H
	1732.5	-15.20	-29.60	8.10	22.50	30.00	H
	1754.3	-15.11	-29.50	8.10	22.49	30.00	H
3	1711.5	-15.51	-29.60	8.10	22.19	30.00	H
	1732.5	-15.25	-29.60	8.10	22.45	30.00	H
	1753.5	-15.22	-29.50	8.10	22.38	30.00	H
5	1712.5	-15.55	-29.60	8.10	22.15	30.00	H
	1732.5	-15.31	-29.60	8.10	22.39	30.00	H
	1752.5	-15.26	-29.50	8.10	22.34	30.00	H
10	1715.0	-15.61	-29.60	8.10	22.09	30.00	H
	1732.5	-15.37	-29.60	8.10	22.33	30.00	H
	1750.0	-15.34	-29.50	8.10	22.26	30.00	H
15	1717.5	-15.66	-29.60	8.10	22.04	30.00	H
	1732.5	-15.46	-29.60	8.10	22.24	30.00	H
	1747.5	-15.42	-29.50	8.10	22.18	30.00	H
20	1720.0	-15.73	-29.60	8.10	21.97	30.00	H
	1732.5	-15.52	-29.60	8.10	22.18	30.00	H
	1745.0	-15.54	-29.50	8.10	22.06	30.00	H

LTE Band 4_64QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	1710.7	-15.43	-29.60	8.10	22.27	30.00	H
	1732.5	-15.25	-29.60	8.10	22.45	30.00	H
	1754.3	-15.16	-29.50	8.10	22.44	30.00	H
3	1711.5	-15.52	-29.60	8.10	22.18	30.00	H
	1732.5	-15.34	-29.60	8.10	22.36	30.00	H
	1753.5	-15.26	-29.50	8.10	22.34	30.00	H
5	1712.5	-15.54	-29.60	8.10	22.16	30.00	H
	1732.5	-15.35	-29.60	8.10	22.35	30.00	H
	1752.5	-15.31	-29.50	8.10	22.29	30.00	H
10	1715.0	-15.62	-29.60	8.10	22.08	30.00	H
	1732.5	-15.44	-29.60	8.10	22.26	30.00	H
	1750.0	-15.36	-29.50	8.10	22.24	30.00	H
15	1717.5	-15.71	-29.60	8.10	21.99	30.00	H
	1732.5	-15.54	-29.60	8.10	22.16	30.00	H
	1747.5	-15.43	-29.50	8.10	22.17	30.00	H
20	1720.0	-15.75	-29.60	8.10	21.95	30.00	H
	1732.5	-15.64	-29.60	8.10	22.06	30.00	H
	1745.0	-15.56	-29.50	8.10	22.04	30.00	H

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LTE Band 5_QPSK

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	Correction (dB)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	824.7	-9.34	-33.60	-0.79	2.15	21.32	38.45	V
	836.5	-9.01	-33.50	-0.74	2.15	21.60	38.45	V
	848.3	-9.28	-33.50	-0.73	2.15	21.33	38.45	V
3	825.5	-9.41	-33.60	-0.84	2.15	21.20	38.45	V
	836.5	-9.18	-33.50	-0.74	2.15	21.43	38.45	V
	847.5	-9.37	-33.50	-0.73	2.15	21.24	38.45	V
5	826.5	-9.59	-33.60	-0.84	2.15	21.02	38.45	V
	836.5	-9.40	-33.50	-0.74	2.15	21.21	38.45	V
	846.5	-9.51	-33.50	-0.73	2.15	21.11	38.45	V
10	829.0	-9.66	-33.60	-0.84	2.15	20.95	38.45	V
	836.5	-9.51	-33.50	-0.74	2.15	21.11	38.45	V
	844.0	-9.55	-33.50	-0.78	2.15	21.01	38.45	V

LTE Band 5_16QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	Correction (dB)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	824.7	-9.61	-33.60	-0.79	2.15	21.05	38.45	V
	836.5	-9.28	-33.50	-0.74	2.15	21.33	38.45	V
	848.3	-9.39	-33.50	-0.73	2.15	21.23	38.45	V
3	825.5	-9.61	-33.60	-0.84	2.15	21.00	38.45	V
	836.5	-9.38	-33.50	-0.74	2.15	21.23	38.45	V
	847.5	-9.51	-33.50	-0.73	2.15	21.11	38.45	V
5	826.5	-9.64	-33.60	-0.84	2.15	20.97	38.45	V
	836.5	-9.49	-33.50	-0.74	2.15	21.12	38.45	V
	846.5	-9.59	-33.50	-0.73	2.15	21.03	38.45	V
10	829.0	-9.73	-33.60	-0.84	2.15	20.88	38.45	V
	836.5	-9.60	-33.50	-0.74	2.15	21.01	38.45	V
	844.0	-9.62	-33.50	-0.78	2.15	20.94	38.45	V

LTE Band 5_64QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	Correction (dB)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	824.7	-9.68	-33.60	-0.79	2.15	20.98	38.45	V
	836.5	-9.40	-33.50	-0.74	2.15	21.22	38.45	V
	848.3	-9.47	-33.50	-0.73	2.15	21.14	38.45	V
3	825.5	-9.74	-33.60	-0.84	2.15	20.87	38.45	V
	836.5	-9.47	-33.50	-0.74	2.15	21.15	38.45	V
	847.5	-9.57	-33.50	-0.73	2.15	21.05	38.45	V
5	826.5	-9.75	-33.60	-0.84	2.15	20.86	38.45	V
	836.5	-9.47	-33.50	-0.74	2.15	21.14	38.45	V
	846.5	-9.64	-33.50	-0.73	2.15	20.98	38.45	V
10	829.0	-9.77	-33.60	-0.84	2.15	20.84	38.45	V

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	836.5	-9.60	-33.50	-0.74	2.15	21.01	38.45	V
	844.0	-9.62	-33.50	-0.78	2.15	20.94	38.45	V

LTE Band 12_QPSK

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	Correction (dB)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	699.7	-10.17	-34.80	-0.93	2.15	21.55	34.77	V
	707.5	-10.06	-34.70	-0.91	2.15	21.59	34.77	V
	715.3	-10.72	-34.70	-0.68	2.15	21.14	34.77	V
3	700.5	-10.28	-34.80	-0.97	2.15	21.41	34.77	V
	707.5	-10.14	-34.70	-0.91	2.15	21.50	34.77	V
	714.5	-10.86	-34.70	-0.64	2.15	21.05	34.77	V
5	701.5	-10.30	-34.80	-0.97	2.15	21.38	34.77	V
	707.5	-10.22	-34.70	-0.91	2.15	21.42	34.77	V
	713.5	-10.85	-34.70	-0.64	2.15	21.05	34.77	V
10	704.0	-10.55	-34.80	-0.97	2.15	21.13	34.77	V
	707.5	-10.32	-34.70	-0.91	2.15	21.32	34.77	V
	711.0	-10.96	-34.70	-0.64	2.15	20.94	34.77	V

LTE Band 12_16QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	Correction (dB)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	699.7	-10.46	-34.80	-0.93	2.15	21.26	34.77	V
	707.5	-10.20	-34.70	-0.91	2.15	21.45	34.77	V
	715.3	-10.84	-34.70	-0.68	2.15	21.03	34.77	V
3	700.5	-10.53	-34.80	-0.97	2.15	21.15	34.77	V
	707.5	-10.32	-34.70	-0.91	2.15	21.33	34.77	V
	714.5	-10.96	-34.70	-0.64	2.15	20.94	34.77	V
5	701.5	-10.60	-34.80	-0.97	2.15	21.08	34.77	V
	707.5	-10.37	-34.70	-0.91	2.15	21.27	34.77	V
	713.5	-11.03	-34.70	-0.64	2.15	20.88	34.77	V
10	704.0	-10.68	-34.80	-0.97	2.15	21.00	34.77	V
	707.5	-10.44	-34.70	-0.91	2.15	21.21	34.77	V
	711.0	-11.06	-34.70	-0.64	2.15	20.85	34.77	V

LTE Band 12_64QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	Correction (dB)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	699.7	-10.48	-34.80	-0.93	2.15	21.24	34.77	V
	707.5	-10.23	-34.70	-0.91	2.15	21.42	34.77	V
	715.3	-10.86	-34.70	-0.68	2.15	21.01	34.77	V
3	700.5	-10.54	-34.80	-0.97	2.15	21.14	34.77	V
	707.5	-10.34	-34.70	-0.91	2.15	21.30	34.77	V
	714.5	-10.97	-34.70	-0.64	2.15	20.93	34.77	V

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5	701.5	-10.65	-34.80	-0.97	2.15	21.03	34.77	V
	707.5	-10.41	-34.70	-0.91	2.15	21.23	34.77	V
	713.5	-11.03	-34.70	-0.64	2.15	20.88	34.77	V
10	704.0	-10.70	-34.80	-0.97	2.15	20.98	34.77	V
	707.5	-10.50	-34.70	-0.91	2.15	21.14	34.77	V
	711.0	-11.10	-34.70	-0.64	2.15	20.81	34.77	V

LTE Band 14_QPSK

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	Correction (dB)	EIRP(dBm)	Limit(dBm)	Polarization
5	790.5	-9.76	-34.00	-0.42	2.15	21.67	34.77	V
	793.0	-9.68	-33.90	-0.42	2.15	21.65	34.77	V
	795.5	-10.06	-33.90	-0.46	2.15	21.23	34.77	V
10	793.0	-9.80	-33.90	-0.42	2.15	21.53	34.77	V

LTE Band 14_16QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	Correction (dB)	EIRP(dBm)	Limit(dBm)	Polarization
5	790.5	-10.00	-34.00	-0.42	2.15	21.43	34.77	V
	793.0	-9.89	-33.90	-0.42	2.15	21.45	34.77	V
	795.5	-10.27	-33.90	-0.46	2.15	21.01	34.77	V
10	793.0	-9.92	-33.90	-0.42	2.15	21.41	34.77	V

LTE Band 14_64QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	Correction (dB)	EIRP(dBm)	Limit(dBm)	Polarization
5	790.5	-10.03	-34.00	-0.42	2.15	21.40	34.77	V
	793.0	-9.94	-33.90	-0.42	2.15	21.39	34.77	V
	795.5	-10.29	-33.90	-0.46	2.15	20.99	34.77	V
10	793.0	-10.03	-33.90	-0.42	2.15	21.30	34.77	V

LTE Band 30_QPSK

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
5	2307.5	-17.25	-28.80	9.80	21.35	23.98	H
	2310.0	-17.14	-28.80	9.80	21.46	23.98	H
	2312.5	-17.43	-28.80	9.80	21.17	23.98	H
10	2310.0	-17.24	-28.80	9.80	21.36	23.98	H

LTE Band 30_16QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
5	2307.5	-17.35	-28.80	9.80	21.25	23.98	-17.35
	2310.0	-17.31	-28.80	9.80	21.29	23.98	-17.31
	2312.5	-16.60	-28.80	9.80	22.00	23.98	-16.60
10	2310.0	-17.41	-28.80	9.80	21.19	23.98	-17.41

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LTE Band 30_64QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
5	2307.5	-17.31	-28.80	9.80	21.29	23.98	H
	2310.0	-17.33	-28.80	9.80	21.27	23.98	H
	2312.5	-17.47	-28.80	9.80	21.14	23.98	H
10	2310.0	-17.44	-28.80	9.80	21.16	23.98	H

LTE Band 66_QPSK

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	1710.7	-15.82	-29.60	8.10	21.88	30.00	H
	1745.0	-15.54	-29.50	8.10	22.06	30.00	H
	1779.3	-16.46	-29.50	8.10	21.15	30.00	H
3	1711.5	-16.31	-29.60	8.10	21.39	30.00	H
	1745.0	-16.02	-29.50	8.10	21.58	30.00	H
	1778.5	-16.61	-29.50	8.10	20.99	30.00	H
5	1712.5	-16.24	-29.60	8.10	21.46	30.00	H
	1745.0	-15.95	-29.50	8.10	21.65	30.00	H
	1777.5	-16.70	-29.50	8.10	20.90	30.00	H
10	1715.0	-16.35	-29.60	8.10	21.35	30.00	H
	1745.0	-16.02	-29.50	8.10	21.58	30.00	H
	1775.0	-16.73	-29.50	8.10	20.87	30.00	H
15	1717.5	-16.44	-29.60	8.10	21.26	30.00	H
	1745.0	-16.07	-29.50	8.10	21.53	30.00	H
	1772.5	-16.75	-29.50	8.10	20.85	30.00	H
20	1720.0	-16.42	-29.60	8.10	21.29	30.00	H
	1745.0	-16.05	-29.50	8.10	21.55	30.00	H
	1770.0	-15.77	-29.50	8.10	21.83	30.00	H

LTE Band 66_16QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	1710.7	-15.86	-29.60	8.10	21.84	30.00	H
	1745.0	-15.64	-29.50	8.10	21.97	30.00	H
	1779.3	-16.73	-29.50	8.10	20.87	30.00	H
3	1711.5	-16.35	-29.60	8.10	21.36	30.00	H
	1745.0	-16.13	-29.50	8.10	21.47	30.00	H
	1778.5	-16.74	-29.50	8.10	20.86	30.00	H
5	1712.5	-16.32	-29.60	8.10	21.39	30.00	H
	1745.0	-16.10	-29.50	8.10	21.50	30.00	H
	1777.5	-16.76	-29.50	8.10	20.84	30.00	H
10	1715.0	-16.41	-29.60	8.10	21.29	30.00	H

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	1745.0	-16.15	-29.50	8.10	21.45	30.00	H
	1775.0	-16.80	-29.50	8.10	20.80	30.00	H
15	1717.5	-16.36	-29.60	8.10	21.34	30.00	H
	1745.0	-16.13	-29.50	8.10	21.47	30.00	H
	1772.5	-16.71	-29.50	8.10	20.89	30.00	H
20	1720.0	-16.43	-29.60	8.10	21.27	30.00	H
	1745.0	-16.06	-29.50	8.10	21.54	30.00	H
	1770.0	-16.85	-29.50	8.10	20.75	30.00	H

LTE Band 66_64QAM

BW(MHz)	frequency(MHz)	PMea(dBm)	Pcl(dB)+PAg(dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1.4	1710.7	-15.94	-29.60	8.10	21.765	30.00	H
	1745.0	-15.64	-29.50	8.10	21.957	30.00	H
	1779.3	-16.64	-29.50	8.10	20.959	30.00	H
3	1711.5	-16.34	-29.60	8.10	21.36	30.00	H
	1745.0	-16.25	-29.50	8.10	21.353	30.00	H
	1778.5	-16.77	-29.50	8.10	20.828	30.00	H
5	1712.5	-16.44	-29.60	8.10	21.259	30.00	H
	1745.0	-16.26	-29.50	8.10	21.343	30.00	H
	1777.5	-16.91	-29.50	8.10	20.694	30.00	H
10	1715.0	-16.42	-29.60	8.10	21.284	30.00	H
	1745.0	-16.30	-29.50	8.10	21.299	30.00	H
	1775.0	-16.85	-29.50	8.10	20.751	30.00	H
15	1717.5	-16.52	-29.60	8.10	21.181	30.00	H
	1745.0	-16.34	-29.50	8.10	21.258	30.00	H
	1772.5	-16.86	-29.50	8.10	20.74	30.00	H
20	1720.0	-16.50	-29.60	8.10	21.205	30.00	H
	1745.0	-16.30	-29.50	8.10	21.297	30.00	H
	1770.0	-16.83	-29.50	8.10	20.771	30.00	H

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)/2.68dB(18GHz-40GHz), k = 2

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

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A.2 FIELD STRENGTH OF SPURIOUS RADIATION

Reference

FCC: CFR 2.1053, 22.917, 24.238, 27.53, 90.543(e).

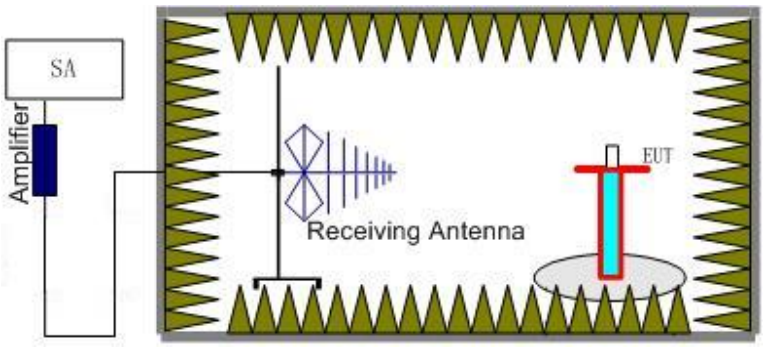
A.2.1 Measurement Method

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 90.543(e). The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the LTE Bands 2,5,12,14,30,66.

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.

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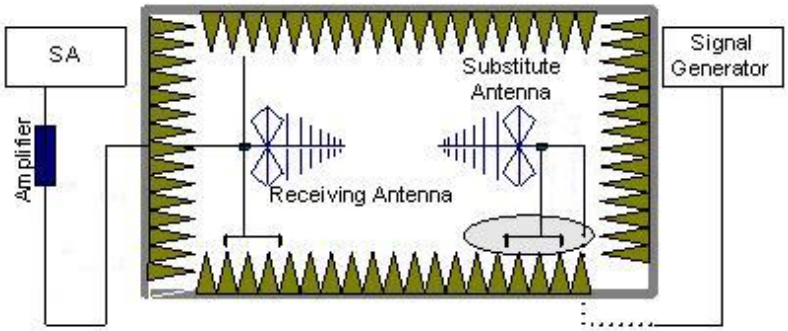

In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern 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 LTE Bands 2,5,12,14,30,66. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the LTE Bands 2,5,12,14,30,66 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.
Only worst case result is given below.

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LTE Band 2, 1.4MHz, QPSK, Channel 18607

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
17112.50	-43.82	2.90	14.50	-32.22	-13.00	H
17346.25	-43.48	3.20	14.50	-32.18	-13.00	H
17435.63	-42.56	2.90	14.50	-30.96	-13.00	H
17621.88	-40.11	3.30	12.80	-30.61	-13.00	H
17775.63	-40.48	3.60	12.80	-31.28	-13.00	H
17943.75	-37.75	3.20	12.80	-28.15	-13.00	H

LTE Band 2, 1.4MHz, QPSK, Channel 18900

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
16988.75	-44.79	2.90	16.50	-31.19	-13.00	H
17196.25	-44.03	2.90	14.50	-32.43	-13.00	H
17520.00	-39.78	2.90	12.80	-29.88	-13.00	H
17635.00	-39.69	3.30	12.80	-30.19	-13.00	H
17840.00	-40.38	3.60	12.80	-31.18	-13.00	H
17963.13	-37.74	3.20	12.80	-28.14	-13.00	H

LTE Band 2, 1.4MHz, QPSK, Channel 19193

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
16983.75	-45.30	2.90	16.50	-31.70	-13.00	H
17176.88	-43.98	2.90	14.50	-32.38	-13.00	H
17470.63	-42.43	2.90	14.50	-30.83	-13.00	H
17536.88	-40.28	2.90	12.80	-30.38	-13.00	H
17796.88	-40.43	3.60	12.80	-31.23	-13.00	H
17897.50	-39.02	3.60	12.80	-29.82	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
16983.13	-44.44	2.90	16.50	-30.84	-13.00	H
17248.13	-43.47	3.20	14.50	-32.17	-13.00	H
17505.63	-40.40	2.90	12.80	-30.50	-13.00	H
17588.75	-40.05	3.30	12.80	-30.55	-13.00	H
17838.75	-40.66	3.60	12.80	-31.46	-13.00	H
17995.00	-38.13	3.20	12.80	-28.53	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
16951.88	-46.08	2.90	16.50	-32.48	-13.00	H
17285.63	-43.30	3.20	14.50	-32.00	-13.00	H
17403.75	-42.45	2.90	14.50	-30.85	-13.00	H
17578.13	-39.80	3.30	12.80	-30.30	-13.00	H
17835.63	-40.17	3.60	12.80	-30.97	-13.00	H
17998.75	-37.86	3.20	12.80	-28.26	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
16983.75	-45.25	2.90	16.50	-31.65	-13.00	H
17252.50	-42.96	3.20	14.50	-31.66	-13.00	H
17428.13	-42.23	2.90	14.50	-30.63	-13.00	H
17575.00	-39.91	3.30	12.80	-30.41	-13.00	H
17837.50	-40.19	3.60	12.80	-30.99	-13.00	H
17948.13	-37.97	3.20	12.80	-28.37	-13.00	H

LTE Band 2, 1.4MHz, 64QAM, Channel 18607

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
16978.75	-45.98	2.90	16.50	-32.38	-13.00	H
17230.00	-43.61	3.20	14.50	-32.31	-13.00	H
17456.25	-42.05	2.90	14.50	-30.45	-13.00	H
17573.13	-38.72	3.30	12.80	-29.22	-13.00	H
17839.38	-40.00	3.60	12.80	-30.80	-13.00	H
17955.63	-38.21	3.20	12.80	-28.61	-13.00	H

LTE Band 2, 1.4MHz, 64QAM, Channel 18900

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
17005.63	-43.50	2.90	14.50	-31.90	-13.00	H
17254.38	-43.08	3.20	14.50	-31.78	-13.00	H
17517.50	-39.87	2.90	12.80	-29.97	-13.00	H
17598.13	-39.31	3.30	12.80	-29.81	-13.00	H
17713.13	-40.59	3.30	12.80	-31.09	-13.00	H
17931.25	-38.19	3.20	12.80	-28.59	-13.00	H

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LTE Band 2, 1.4MHz, 64QAM, Channel 19193

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
16976.25	-44.83	2.90	16.50	-31.23	-13.00	H
17298.13	-43.43	3.20	14.50	-32.13	-13.00	H
17449.38	-42.45	2.90	14.50	-30.85	-13.00	H
17593.13	-38.95	3.30	12.80	-29.45	-13.00	H
17807.50	-40.15	3.60	12.80	-30.95	-13.00	H
17981.25	-38.11	3.20	12.80	-28.51	-13.00	H

Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.90dB(30MHz-3GHz)/3.50dB(3GHz-18GHz)/3.90dB(18GHz-40GHz), k = 2

LTE Band 4, QPSK, Channel 19957

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8551.50	-39.92	2.10	12.00	-30.02	-13.00	H
17226.88	-42.35	3.20	14.50	-31.05	-13.00	H
17515.00	-40.30	2.90	12.80	-30.40	-13.00	H
17581.25	-40.23	3.30	12.80	-30.73	-13.00	H
17839.38	-39.95	3.60	12.80	-30.75	-13.00	H
17931.25	-38.48	3.20	12.80	-28.88	-13.00	H

LTE Band 4, QPSK, Channel 20175

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8660.63	-36.85	2.00	12.00	-26.85	-13.00	H
16973.13	-45.54	2.90	16.50	-31.94	-13.00	H
17502.50	-40.15	2.90	12.80	-30.25	-13.00	H
17589.38	-39.70	3.30	12.80	-30.20	-13.00	H
17760.63	-40.33	3.60	12.80	-31.13	-13.00	H
17969.38	-37.66	3.20	12.80	-28.06	-13.00	H

LTE Band 4, QPSK, Channel 20393

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8769.38	-36.88	1.90	12.00	-26.78	-13.00	H
16936.25	-45.17	2.90	16.50	-31.57	-13.00	H
17471.88	-42.13	2.90	14.50	-30.53	-13.00	H
17553.13	-40.58	2.90	12.80	-30.68	-13.00	H
17748.75	-40.55	3.60	12.80	-31.35	-13.00	H
17957.50	-37.51	3.20	12.80	-27.91	-13.00	H

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LTE Band 4, 16QAM, Channel 19957

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8551.50	-40.29	2.10	12.00	-30.39	-13.00	H
16953.75	-44.57	2.90	16.50	-30.97	-13.00	H
17445.63	-42.31	2.90	14.50	-30.71	-13.00	H
17610.00	-40.07	3.30	12.80	-30.57	-13.00	H
17776.88	-39.96	3.60	12.80	-30.76	-13.00	H
17973.75	-38.12	3.20	12.80	-28.52	-13.00	H

LTE Band 4, 16QAM, Channel 20175

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8660.63	-38.46	2.00	12.00	-28.46	-13.00	H
16938.13	-45.32	2.90	16.50	-31.72	-13.00	H
17500.00	-40.58	2.90	12.80	-30.68	-13.00	H
17594.38	-40.23	3.30	12.80	-30.73	-13.00	H
17829.38	-40.20	3.60	12.80	-31.00	-13.00	H
17964.38	-37.79	3.20	12.80	-28.19	-13.00	H

LTE Band 4, 16QAM, Channel 20393

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8769.38	-38.57	1.90	12.00	-28.47	-13.00	H
17000.00	-43.63	2.90	14.50	-32.03	-13.00	H
17505.00	-40.47	2.90	12.80	-30.57	-13.00	H
17631.88	-39.89	3.30	12.80	-30.39	-13.00	H
17821.88	-40.36	3.60	12.80	-31.16	-13.00	H
17993.13	-38.34	3.20	12.80	-28.74	-13.00	H

LTE Band 4, 64QAM, Channel 19957

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
16984.38	-45.07	2.90	16.50	-31.47	-13.00	H
17269.38	-44.04	3.20	14.50	-32.74	-13.00	H
17520.00	-40.61	2.90	12.80	-30.71	-13.00	H
17564.38	-39.98	3.30	12.80	-30.48	-13.00	H
17823.75	-40.26	3.60	12.80	-31.06	-13.00	H
17950.63	-37.77	3.20	12.80	-28.17	-13.00	H

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LTE Band 4, 64QAM, Channel 20175

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8660.63	-37.94	2.00	12.00	-27.94	-13.00	H
17367.50	-41.90	3.20	14.50	-30.60	-13.00	H
17494.38	-41.41	2.90	14.50	-29.81	-13.00	H
17627.50	-40.30	3.30	12.80	-30.80	-13.00	H
17838.75	-40.23	3.60	12.80	-31.03	-13.00	H
17996.25	-38.33	3.20	12.80	-28.73	-13.00	H

LTE Band 4, 64QAM, Channel 20393

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8769.38	-38.72	1.90	12.00	-28.62	-13.00	H
16953.13	-44.65	2.90	16.50	-31.05	-13.00	H
17511.25	-40.12	2.90	12.80	-30.22	-13.00	H
17573.13	-39.42	3.30	12.80	-29.92	-13.00	H
17838.75	-40.03	3.60	12.80	-30.83	-13.00	H
17918.13	-38.33	3.20	12.80	-28.73	-13.00	H

Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.90dB(30MHz-3GHz)/3.50dB(3GHz-18GHz)/3.90dB(18GHz-40GHz), k = 2

LTE Band 5, 1.4MHz, QPSK, Channel 20407

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8863.50	-52.83	1.90	12.00	-44.88	-13.00	H
9098.63	-52.00	2.20	11.60	-44.75	-13.00	H
9303.25	-50.24	2.00	11.60	-42.79	-13.00	H
9473.00	-50.81	2.10	11.60	-43.46	-13.00	V
9742.38	-51.04	2.20	11.20	-44.19	-13.00	H
9800.63	-50.07	2.30	11.20	-43.32	-13.00	H

LTE Band 5, 1.4MHz, QPSK, Channel 20525

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7183.88	-53.45	1.80	12.00	-45.40	-13.00	H
9100.38	-49.96	2.20	11.60	-42.71	-13.00	H
9226.88	-50.19	2.10	11.60	-42.84	-13.00	H
9474.38	-50.59	2.10	11.60	-43.24	-13.00	V
9754.25	-50.89	2.20	11.20	-44.04	-13.00	H
9803.13	-51.29	2.30	11.20	-44.54	-13.00	H

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LTE Band 5, 1.4MHz, QPSK, Channel 20643

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8515.50	-52.84	2.10	12.00	-45.09	-13.00	V
9104.25	-51.26	2.20	11.60	-44.01	-13.00	H
9221.63	-50.17	2.10	11.60	-42.82	-13.00	H
9476.50	-50.64	2.10	11.60	-43.29	-13.00	V
9716.25	-50.71	2.20	11.20	-43.86	-13.00	H
9784.88	-51.22	2.30	11.20	-44.47	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8445.75	-51.62	1.80	11.30	-44.27	-13.00	H
9099.63	-50.70	2.20	11.60	-43.45	-13.00	H
9298.88	-49.81	2.00	11.60	-42.36	-13.00	H
9474.38	-50.14	2.10	11.60	-42.79	-13.00	V
9730.75	-50.28	2.20	11.20	-43.43	-13.00	H
9786.25	-50.61	2.30	11.20	-43.86	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8425.50	-52.11	1.80	11.30	-44.76	-13.00	H
9100.38	-51.83	2.20	11.60	-44.58	-13.00	H
9298.50	-49.47	2.00	11.60	-42.02	-13.00	H
9478.00	-50.86	2.10	11.60	-43.51	-13.00	V
9735.50	-50.32	2.20	11.20	-43.47	-13.00	H
9806.00	-51.09	2.30	11.20	-44.34	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8478.38	-51.96	1.80	11.30	-44.61	-13.00	H
9088.88	-51.40	2.20	11.60	-44.15	-13.00	H
9299.38	-49.69	2.00	11.60	-42.24	-13.00	H
9476.00	-50.87	2.10	11.60	-43.52	-13.00	V
9737.88	-50.94	2.20	11.20	-44.09	-13.00	H
9790.88	-50.78	2.30	11.20	-44.03	-13.00	H

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LTE Band 5, 1.4MHz, 64QAM, Channel 20407

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7228.13	-52.77	1.80	12.00	-44.72	-13.00	V
8384.25	-51.99	1.80	11.30	-44.64	-13.00	H
9225.75	-50.28	2.10	11.60	-42.93	-13.00	H
9472.88	-49.87	2.10	11.60	-42.52	-13.00	V
9745.38	-50.27	2.20	11.20	-43.42	-13.00	H
9800.50	-51.26	2.30	11.20	-44.51	-13.00	H

LTE Band 5, 1.4MHz, 64QAM, Channel 20525

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7096.13	-52.96	1.80	12.00	-44.91	-13.00	H
9096.63	-52.09	2.20	11.60	-44.84	-13.00	H
9223.25	-50.59	2.10	11.60	-43.24	-13.00	H
9475.25	-51.51	2.10	11.60	-44.16	-13.00	V
9726.63	-51.02	2.20	11.20	-44.17	-13.00	H
9788.25	-51.63	2.30	11.20	-44.88	-13.00	H

LTE Band 5, 1.4MHz, 64QAM, Channel 20643

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7212.00	-52.85	1.80	12.00	-44.80	-13.00	H
9099.25	-51.64	2.20	11.60	-44.39	-13.00	H
9301.00	-50.41	2.00	11.60	-42.96	-13.00	H
9473.25	-50.99	2.10	11.60	-43.64	-13.00	V
9750.75	-50.63	2.20	11.20	-43.78	-13.00	H
9807.25	-51.02	2.30	11.20	-44.27	-13.00	H

Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.90dB(30MHz-3GHz)/3.50dB(3GHz-18GHz)/3.90dB(18GHz-40GHz), k = 2

LTE Band 12, 1.4MHz, QPSK, Channel 23017

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8424.75	-51.75	1.80	11.30	-44.40	-13.00	H
9102.25	-51.69	2.20	11.60	-44.44	-13.00	H
9191.88	-49.60	2.10	11.60	-42.25	-13.00	H
9477.63	-51.02	2.10	11.60	-43.67	-13.00	V
9722.13	-50.77	2.20	11.20	-43.92	-13.00	H
9937.88	-51.85	2.20	11.20	-45.00	-13.00	V

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LTE Band 12, 1.4MHz, QPSK, Channel 23095

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
6680.63	-53.15	1.80	12.40	-44.70	-13.00	V
9096.75	-51.41	2.20	11.60	-44.16	-13.00	H
9303.00	-49.24	2.00	11.60	-41.79	-13.00	H
9470.63	-50.92	2.10	11.60	-43.57	-13.00	V
9727.38	-50.75	2.20	11.20	-43.90	-13.00	H
9798.88	-50.66	2.30	11.20	-43.91	-13.00	H

LTE Band 12, 1.4MHz, QPSK, Channel 23173

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8903.25	-52.93	1.90	12.00	-44.98	-13.00	H
9100.88	-52.11	2.20	11.60	-44.86	-13.00	H
9292.88	-48.70	2.00	11.60	-41.25	-13.00	H
9473.63	-50.80	2.10	11.60	-43.45	-13.00	V
9724.63	-51.19	2.20	11.20	-44.34	-13.00	H
9799.75	-50.93	2.30	11.20	-44.18	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8715.00	-52.81	2.00	12.00	-44.96	-13.00	H
9090.00	-49.96	2.20	11.60	-42.71	-13.00	H
9228.38	-50.86	2.10	11.60	-43.51	-13.00	H
9475.38	-50.80	2.10	11.60	-43.45	-13.00	V
9733.13	-51.13	2.20	11.20	-44.28	-13.00	H
9778.00	-51.21	2.30	11.20	-44.46	-13.00	H

LTE Band 12, 1.4MHz, 16QAM, Channel 23095

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8435.25	-52.21	1.80	11.30	-44.86	-13.00	H
9093.88	-51.50	2.20	11.60	-44.25	-13.00	H
9191.63	-50.31	2.10	11.60	-42.96	-13.00	H
9424.88	-50.74	2.10	11.60	-43.39	-13.00	H
9736.00	-51.21	2.20	11.20	-44.36	-13.00	H
9787.88	-51.33	2.30	11.20	-44.58	-13.00	H

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

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7134.75	-53.04	1.90	12.00	-45.09	-13.00	H
9104.63	-51.27	2.20	11.60	-44.02	-13.00	H
9292.63	-49.55	2.00	11.60	-42.10	-13.00	H
9424.25	-51.06	2.10	11.60	-43.71	-13.00	H
9742.63	-51.37	2.20	11.20	-44.52	-13.00	H
9787.88	-51.25	2.30	11.20	-44.50	-13.00	H

LTE Band 12, 1.4MHz, 64QAM, Channel 23017

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8428.88	-51.44	1.80	11.30	-44.09	-13.00	H
9090.25	-49.33	2.20	11.60	-42.08	-13.00	H
9223.75	-50.13	2.10	11.60	-42.78	-13.00	H
9477.25	-51.29	2.10	11.60	-43.94	-13.00	V
9720.25	-50.61	2.20	11.20	-43.76	-13.00	H
9802.00	-51.32	2.30	11.20	-44.57	-13.00	H

LTE Band 12, 1.4MHz, 64QAM, Channel 23095

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8441.63	-52.27	1.80	11.30	-44.92	-13.00	H
9096.00	-51.75	2.20	11.60	-44.50	-13.00	H
9191.88	-49.82	2.10	11.60	-42.47	-13.00	H
9475.50	-50.64	2.10	11.60	-43.29	-13.00	V
9731.25	-50.74	2.20	11.20	-43.89	-13.00	H
9794.88	-51.01	2.30	11.20	-44.26	-13.00	H

LTE Band 12, 1.4MHz, 64QAM, Channel 23173

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7323.75	-53.08	1.70	12.00	-44.93	-13.00	H
9101.75	-51.44	2.20	11.60	-44.19	-13.00	H
9293.13	-47.83	2.00	11.60	-40.38	-13.00	H
9472.38	-51.27	2.10	11.60	-43.92	-13.00	V
9720.50	-50.87	2.20	11.20	-44.02	-13.00	H
9804.00	-51.29	2.30	11.20	-44.54	-13.00	H

Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.90dB(30MHz-3GHz)/3.50dB(3GHz-18GHz)/3.90dB(18GHz-40GHz), k = 2

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LTE Band 14, 5MHz, QPSK, Channel 23305

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8706.38	-52.74	2.00	12.00	-44.89	-13.00	H
9096.25	-51.10	2.20	11.60	-43.85	-13.00	H
9226.63	-51.11	2.10	11.60	-43.76	-13.00	H
9473.13	-51.04	2.10	11.60	-43.69	-13.00	V
9735.38	-51.13	2.20	11.20	-44.28	-13.00	H
9789.38	-51.01	2.30	11.20	-44.26	-13.00	H

LTE Band 14, 5MHz, QPSK, Channel 23330

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8436.38	-51.15	1.80	11.30	-43.80	-13.00	H
9098.75	-51.71	2.20	11.60	-44.46	-13.00	H
9299.63	-50.97	2.00	11.60	-43.52	-13.00	H
9473.13	-51.00	2.10	11.60	-43.65	-13.00	V
9738.25	-51.03	2.20	11.20	-44.18	-13.00	H
9802.25	-51.38	2.30	11.20	-44.63	-13.00	H

LTE Band 14, 5MHz, QPSK, Channel 23355

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7311.00	-52.97	1.90	12.00	-45.02	-13.00	H
8480.25	-52.36	1.80	11.30	-45.01	-13.00	V
9298.25	-50.84	2.00	11.60	-43.39	-13.00	H
9373.38	-49.65	2.00	11.60	-42.20	-13.00	V
9734.38	-50.86	2.20	11.20	-44.01	-13.00	H
9792.75	-51.57	2.30	11.20	-44.82	-13.00	H

LTE Band 14, 5MHz, 16QAM, Channel 23305

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7217.00	-52.64	1.90	12.00	-43.85	-13.00	V
9098.38	-51.17	2.20	11.60	-43.92	-13.00	H
9302.38	-50.11	2.00	11.60	-42.66	-13.00	H
9469.50	-50.53	2.10	11.60	-43.18	-13.00	V
9733.13	-51.00	2.20	11.20	-44.15	-13.00	H
9790.50	-51.36	2.30	11.20	-44.61	-13.00	H

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LTE Band 14, 5MHz, 16QAM, Channel 23330

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7176.00	-52.25	1.80	12.00	-44.20	-13.00	H
9100.13	-51.62	2.20	11.60	-44.37	-13.00	H
9223.63	-49.78	2.10	11.60	-42.43	-13.00	V
9475.63	-50.51	2.10	11.60	-43.16	-13.00	H
9736.50	-50.45	2.20	11.20	-43.60	-13.00	V
9788.38	-51.00	2.30	11.20	-44.25	-13.00	V

LTE Band 14, 5MHz, 16QAM, Channel 23355

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7433.63	-52.77	1.90	12.00	-44.82	-13.00	H
9049.88	-51.69	2.20	11.60	-44.44	-13.00	V
9224.50	-50.30	2.10	11.60	-42.95	-13.00	H
9425.13	-50.79	2.10	11.60	-43.44	-13.00	H
9711.88	-50.79	2.20	11.20	-43.94	-13.00	H
9789.00	-50.62	2.30	11.20	-43.87	-13.00	H

LTE Band 14, 5MHz, 64QAM, Channel 23305

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8511.00	-51.76	2.10	12.00	-44.01	-13.00	V
9099.38	-51.65	2.20	11.60	-44.40	-13.00	H
9224.00	-50.34	2.10	11.60	-42.99	-13.00	H
9475.00	-50.25	2.10	11.60	-42.90	-13.00	V
9721.25	-51.00	2.20	11.20	-44.15	-13.00	H
9793.63	-50.92	2.30	11.20	-44.17	-13.00	H

LTE Band 14, 5MHz, 64QAM, Channel 23330

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
8431.50	-52.05	1.80	11.30	-44.70	-13.00	H
9100.50	-51.93	2.20	11.60	-44.68	-13.00	H
9219.88	-50.53	2.10	11.60	-43.18	-13.00	H
9473.50	-50.94	2.10	11.60	-43.59	-13.00	V
9722.38	-50.89	2.20	11.20	-44.04	-13.00	H
9792.50	-50.82	2.30	11.20	-44.07	-13.00	H

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LTE Band 14, 5MHz, 64QAM, Channel 23355

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak ERP(dBm)	Limit(dBm)	Polarization
7045.88	-52.51	1.80	12.00	-44.46	-13.00	V
7321.50	-52.58	1.70	12.00	-44.43	-13.00	H
9102.38	-51.88	2.20	11.60	-44.63	-13.00	H
9224.63	-49.26	2.10	11.60	-41.91	-13.00	H
9475.00	-50.64	2.10	11.60	-43.29	-13.00	V
9731.38	-50.81	2.20	11.20	-43.96	-13.00	H

Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.90dB(30MHz-3GHz)/3.50dB(3GHz-18GHz)/3.90dB(18GHz-40GHz), k = 2

LTE Band 30, 5MHz, QPSK, Channel 27685

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
4610.63	-62.51	1.30	12.50	-51.31	-40.00	V
6916.07	-59.08	1.80	12.40	-48.48	-40.00	V
9221.20	-50.40	2.10	11.60	-40.90	-40.00	H
12808.63	-65.61	2.70	13.80	-54.51	-40.00	V
14916.50	-61.56	2.70	11.20	-53.06	-40.00	V
17063.75	-62.46	2.90	14.50	-50.86	-40.00	H

LTE Band 30, 5MHz, QPSK, Channel 27710

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
4615.50	-66.15	1.30	12.50	-54.95	-40.00	H
5223.75	-61.22	1.80	12.50	-50.52	-40.00	H
6923.30	-60.52	1.80	12.40	-49.92	-40.00	H
9231.32	-51.26	2.10	11.60	-41.76	-40.00	H
12908.81	-65.83	2.50	13.80	-54.53	-40.00	V
16553.63	-64.82	2.60	16.50	-50.92	-40.00	V

LTE Band 30, 5MHz, QPSK, Channel 27735

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
4620.75	-65.24	1.30	12.50	-54.04	-40.00	H
5223.38	-61.96	1.80	12.50	-51.26	-40.00	H
6930.54	-60.43	1.80	12.40	-49.83	-40.00	H
9241.45	-50.31	2.10	11.60	-40.81	-40.00	H
12869.44	-65.10	2.70	13.80	-54.00	-40.00	H
16581.19	-64.45	2.60	16.50	-50.55	-40.00	H

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LTE Band 30, 5MHz, 16QAM, Channel 27685

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
4610.63	-66.39	1.30	12.50	-55.19	-40.00	H
5227.13	-62.16	1.80	12.50	-51.46	-40.00	H
6915.59	-57.80	1.80	12.40	-47.20	-40.00	H
9221.68	-50.31	2.10	11.60	-40.81	-40.00	H
12874.25	-65.18	2.70	13.80	-54.08	-40.00	H
16915.88	-64.05	2.90	16.50	-50.45	-40.00	H

LTE Band 30, 5MHz, 16QAM, Channel 27710

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
4615.88	-65.91	1.30	12.50	-54.71	-40.00	H
5215.13	-63.60	1.60	12.50	-52.70	-40.00	H
6923.30	-61.74	1.80	12.40	-51.14	-40.00	H
9231.32	-51.63	2.10	11.60	-42.13	-40.00	H
14857.88	-61.50	2.70	11.20	-53.00	-40.00	H
16926.81	-63.63	2.90	16.50	-50.03	-40.00	H

LTE Band 30, 5MHz, 16QAM, Channel 27735

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
4621.13	-66.24	1.30	12.50	-55.04	-40.00	H
5227.50	-63.62	1.80	12.50	-52.92	-40.00	H
6930.54	-61.88	1.80	12.40	-51.28	-40.00	H
9241.45	-50.31	2.10	11.60	-40.81	-40.00	H
12871.19	-65.39	2.70	13.80	-54.29	-40.00	V
16621.88	-64.99	2.60	16.50	-51.09	-40.00	H

LTE Band 30, 5MHz, 64QAM, Channel 27685

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
4611.00	-65.73	1.30	12.50	-54.53	-40.00	H
5224.50	-65.20	1.80	12.50	-54.50	-40.00	V
6915.59	-62.90	1.80	12.40	-52.30	-40.00	H
9221.68	-50.86	2.10	11.60	-41.36	-40.00	H
12906.63	-65.60	2.50	13.80	-54.30	-40.00	V
16915.44	-63.80	2.90	16.50	-50.20	-40.00	H

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LTE Band 30, 5MHz, 64QAM, Channel 27710

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
5223.75	-61.80	1.80	12.50	-51.10	-40.00	H
6922.82	-62.27	1.80	12.40	-51.67	-40.00	H
9230.84	-53.35	2.10	11.60	-43.85	-40.00	H
12873.38	-65.24	2.70	13.80	-54.14	-40.00	V
15860.19	-65.37	2.40	15.60	-52.17	-40.00	V
17901.13	-58.87	3.60	12.80	-49.67	-40.00	H

LTE Band 30, 5MHz, 64QAM, Channel 27735

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
4570.50	-67.29	1.30	12.50	-56.09	-40.00	V
5227.13	-63.34	1.80	12.50	-52.64	-40.00	H
6930.54	-62.63	1.80	12.40	-52.03	-40.00	H
9241.45	-54.71	2.10	11.60	-45.21	-40.00	H
12905.31	-65.69	2.50	13.80	-54.39	-40.00	H
16890.06	-63.78	2.90	16.50	-50.18	-40.00	H

Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.90dB(30MHz-3GHz)/3.50dB(3GHz-18GHz)/3.90dB(18GHz-40GHz), k = 2

LTE Band 66, 1.4MHz QPSK, Channel 131979

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8551.50	-36.74	2.10	12.00	-26.84	-13.00	H
16963.13	-45.05	2.90	16.50	-31.45	-13.00	H
17506.25	-40.62	2.90	12.80	-30.72	-13.00	H
17589.38	-40.19	3.30	12.80	-30.69	-13.00	H
17706.88	-41.01	3.30	12.80	-31.51	-13.00	H
17941.25	-38.48	3.20	12.80	-28.88	-13.00	H

LTE Band 66, 1.4MHz, QPSK, Channel 132322

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8722.88	-39.99	2.00	12.00	-29.99	-13.00	H
16993.75	-45.79	2.90	16.50	-32.19	-13.00	H
17461.25	-41.82	2.90	14.50	-30.22	-13.00	H
17592.50	-39.75	3.30	12.80	-30.25	-13.00	H
17835.63	-39.96	3.60	12.80	-30.76	-13.00	H
17973.13	-37.74	3.20	12.80	-28.14	-13.00	H

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LTE Band 66, 1.4MHz, QPSK, Channel 132665

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8894.25	-39.61	1.90	12.00	-29.51	-13.00	H
17348.75	-43.01	3.20	14.50	-31.71	-13.00	H
17456.88	-42.07	2.90	14.50	-30.47	-13.00	H
17587.50	-40.38	3.30	12.80	-30.88	-13.00	H
17828.13	-40.91	3.60	12.80	-31.71	-13.00	H
17933.75	-38.37	3.20	12.80	-28.77	-13.00	H

LTE Band 66, 1.4MHz 16QAM, Channel 131979

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8551.50	−41.76	2.10	12.00	**-31.86**	−13.00	**H**
17220.00	-43.11	3.20	14.50	-31.81	-13.00	H
17463.75	-42.27	2.90	14.50	-30.67	-13.00	H
17582.50	-40.10	3.30	12.80	-30.60	-13.00	H
17778.75	-40.65	3.60	12.80	-31.45	-13.00	H
17931.25	-38.10	3.20	12.80	-28.50	-13.00	H

LTE Band 66, 1.4MHz, 16QAM, Channel 132322

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8723.25	-39.98	2.00	12.00	-29.98	-13.00	H
17349.38	-43.34	3.20	14.50	-32.04	-13.00	H
17458.13	-42.09	2.90	14.50	-30.49	-13.00	H
17528.75	-40.59	2.90	12.80	-30.69	-13.00	H
17834.38	-40.61	3.60	12.80	-31.41	-13.00	H
17974.38	-38.60	3.20	12.80	-29.00	-13.00	H

LTE Band 66, 1.4MHz, 16QAM, Channel 132665

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8894.25	-39.44	1.90	12.00	-29.34	-13.00	H
16945.63	-44.96	2.90	16.50	-31.36	-13.00	H
17500.00	-39.98	2.90	12.80	-30.08	-13.00	H
17530.00	-40.10	2.90	12.80	-30.20	-13.00	H
17833.13	-40.42	3.60	12.80	-31.22	-13.00	H
17929.38	-37.82	3.20	12.80	-28.22	-13.00	H

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LTE Band 66, 1.4MHz 64QAM, Channel 131979

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8551.50	-39.24	2.10	12.00	-29.34	-13.00	H
16985.63	-44.50	2.90	16.50	-30.90	-13.00	H
17524.38	-40.41	2.90	12.80	-30.51	-13.00	H
17556.25	-39.83	2.90	12.80	-29.93	-13.00	H
17776.88	-40.23	3.60	12.80	-31.03	-13.00	H
17979.38	-37.46	3.20	12.80	-27.86	-13.00	H

LTE Band 66, 1.4MHz, 64QAM, Channel 132322

Frequency(MHz)	P_{Mea}(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8722.88	-41.30	2.00	12.00	-31.30	-13.00	H
17010.00	-43.24	2.90	14.50	-31.64	-13.00	H
17514.38	-40.35	2.90	12.80	-30.45	-13.00	H
17609.38	-40.40	3.30	12.80	-30.90	-13.00	H
17710.63	-40.50	3.30	12.80	-31.00	-13.00	H
17934.38	-37.74	3.20	12.80	-28.14	-13.00	H

LTE Band 66, 1.4MHz, 64QAM, Channel 132665

Frequency(MHz)	PMea(dBm)	Path Loss	Antenna Gain(dBi)	Peak EIRP(dBm)	Limit(dBm)	Polarization
8894.25	-39.45	1.90	12.00	-29.35	-13.00	H
16941.88	-45.22	2.90	16.50	-31.62	-13.00	H
17507.50	-40.93	2.90	12.80	-31.03	-13.00	H
17593.13	-40.39	3.30	12.80	-30.89	-13.00	H
17815.00	-40.60	3.60	12.80	-31.40	-13.00	H
17933.75	-38.07	3.20	12.80	-28.47	-13.00	H

Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.90dB(30MHz-3GHz)/3.50dB(3GHz-18GHz)/3.90dB(18GHz-40GHz), k = 2

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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 DIGITAL RADIO COMMUNICATION TESTER.

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 middle channel, 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. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50℃.
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 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

A.3.2 Measurement Limit

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. 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 between 3.50V and 4.40V, with a nominal voltage of 3.85V. 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. These voltages represent a tolerance from -9.1% to +14.3%. For the purposes of measuring frequency stability these voltage limits are to be used.

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A.3.3 Measurement results

LTE Band 2, 1.4MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.50	17	-11	20	0.009	0.006	0.011
3.85	15	7	-19	0.008	0.004	0.010
4.40	-6	-2	-13	0.003	0.001	0.007

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-30	19	19	16	0.010	0.010	0.009
-20	-11	-14	2	0.006	0.008	0.001
-10	12	25	25	0.006	0.013	0.013
0	-8	27	-11	0.004	0.014	0.006
10	-4	7	-19	0.002	0.004	0.010
20	18	13	2	0.009	0.007	0.001
30	-6	29	-16	0.003	0.016	0.008
40	-3	-4	8	0.002	0.002	0.004
50	29	5	0	0.016	0.003	0.000

Expanded measurement uncertainty is 10 Hz, k = 2

LTE Band 4, 1.4MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.50	14	23	-3	0.008	0.013	0.002
3.85	22	18	-18	0.013	0.010	0.010
4.40	-17	-14	6	0.010	0.008	0.004

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-30	15	25	-18	0.008	0.014	0.010
-20	17	9	6	0.010	0.005	0.003
-10	15	9	12	0.009	0.005	0.007
0	18	-2	6	0.010	0.001	0.003
10	22	-9	-8	0.013	0.005	0.005
20	18	-9	-16	0.010	0.005	0.009
30	-17	12	1	0.010	0.007	0.000
40	-1	-3	-11	0.001	0.002	0.007
50	-15	27	15	0.009	0.016	0.009

Expanded measurement uncertainty is 10 Hz, k = 2

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LTE Band 5, 1.4MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.50	-7	-8	20	0.008	0.010	0.023
3.85	-11	6	-6	0.014	0.007	0.007
4.40	-8	12	-6	0.009	0.014	0.008

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-30	12	-20	-9	0.014	0.024	0.011
-20	5	22	-7	0.005	0.027	0.009
-10	15	16	-18	0.018	0.019	0.022
0	-4	4	-20	0.005	0.004	0.024
10	26	1	18	0.031	0.001	0.021
20	-8	3	-12	0.010	0.003	0.015
30	29	10	-2	0.035	0.012	0.003
40	13	-20	5	0.015	0.024	0.006
50	-17	-17	0	0.020	0.021	0.001

Expanded measurement uncertainty is 10 Hz, k = 2

LTE Band 12, 5MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.50	-1	27	13	0.001	0.038	0.018
3.85	23	30	24	0.033	0.042	0.034
4.40	20	11	5	0.028	0.015	0.008

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-30	-5	-12	3	0.007	0.018	0.004
-20	23	-15	27	0.033	0.021	0.038
-10	-5	19	9	0.007	0.027	0.013
0	3	9	-10	0.004	0.013	0.014
10	6	-3	24	0.009	0.004	0.034
20	-1	28	-19	0.001	0.039	0.027
30	-18	2	11	0.026	0.003	0.015
40	18	1	8	0.025	0.002	0.012
50	-9	-9	6	0.013	0.013	0.009

Expanded measurement uncertainty is 10 Hz, k = 2

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LTE Band 14, 5MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.50	8	26	7	0.010	0.033	0.008
3.85	1	-7	18	0.001	0.009	0.022
4.40	17	9	-5	0.022	0.012	0.007

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-30	27	21	7	0.034	0.027	0.009
-20	-14	-12	25	0.018	0.015	0.032
-10	20	-11	22	0.025	0.014	0.027
0	8	4	2	0.010	0.005	0.002
10	14	6	25	0.017	0.007	0.032
20	4	25	14	0.005	0.031	0.017
30	-8	-12	-20	0.010	0.015	0.025
40	14	-16	-19	0.018	0.020	0.024
50	-10	24	-1	0.013	0.030	0.002

Expanded measurement uncertainty is 10Hz, k = 2

LTE Band 30, 5MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.50	-15	27	-17	0.007	0.012	0.007
3.85	21	-6	30	0.009	0.003	0.013
4.40	-15	12	23	0.006	0.005	0.010

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-30	17	23	-2	0.007	0.010	0.001
-20	-12	-3	3	0.005	0.001	0.001
-10	12	-10	27	0.005	0.005	0.012
0	28	-14	-4	0.012	0.006	0.002
10	8	25	26	0.003	0.011	0.011
20	30	-15	19	0.013	0.007	0.008
30	-20	5	-6	0.009	0.002	0.003
40	11	27	-9	0.005	0.012	0.004
50	-15	12	-7	0.006	0.005	0.003

Expanded measurement uncertainty is 10Hz, k = 2

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LTE Band 66, 1.4MHz bandwidth (worst case of all bandwidths)

Frequency Error vs Voltage

Voltage (V)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3.50	-9	10	18	0.005	0.006	0.010
3.85	30	23	26	0.017	0.013	0.015
4.40	3	11	-17	0.002	0.006	0.010

Frequency Error vs Temperature

Temperature (℃)	Frequency error (Hz)			Frequency error (ppm)		
	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
-30	22	-11	22	0.013	0.007	0.013
-20	15	16	-13	0.009	0.009	0.007
-10	-4	-18	7	0.002	0.010	0.004
0	0	11	30	0.000	0.006	0.017
10	-1	12	-15	0.001	0.007	0.009
20	-6	12	19	0.003	0.007	0.011
30	10	-10	-11	0.006	0.005	0.006
40	6	18	6	0.004	0.010	0.003
50	26	28	-17	0.015	0.016	0.010

Expanded measurement uncertainty is 10Hz, k = 2

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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.

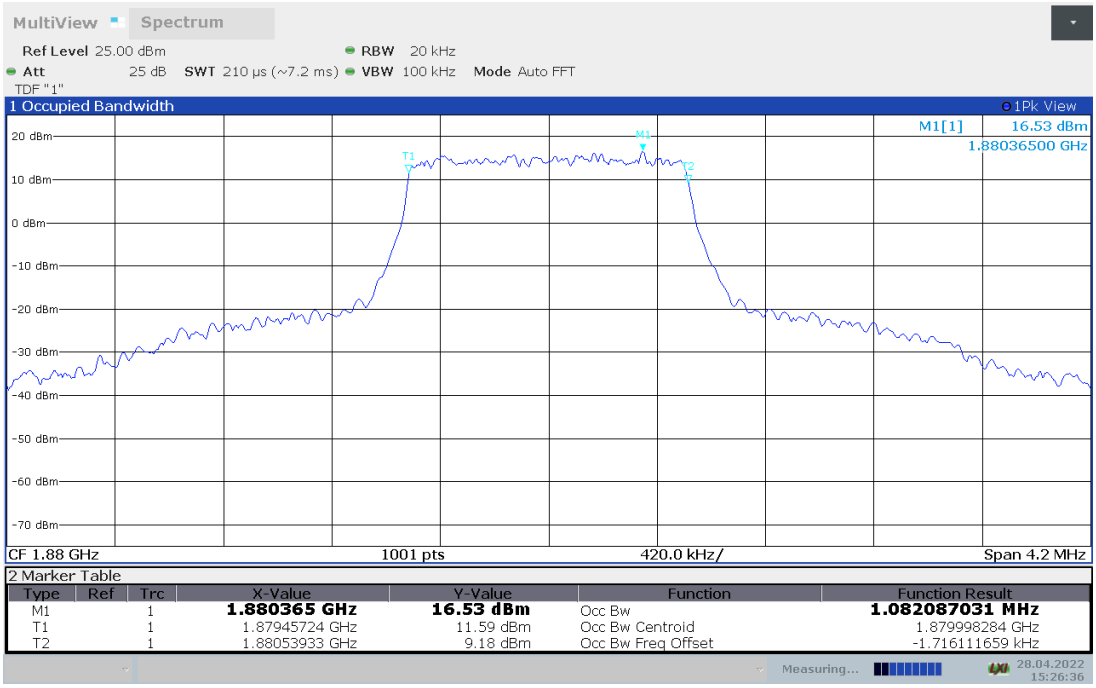
d) Set the detection mode to peak, and the trace mode to max hold.

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)		
1880.0	QPSK	16QAM	64QAM
	1.082	1.087	1.090

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



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

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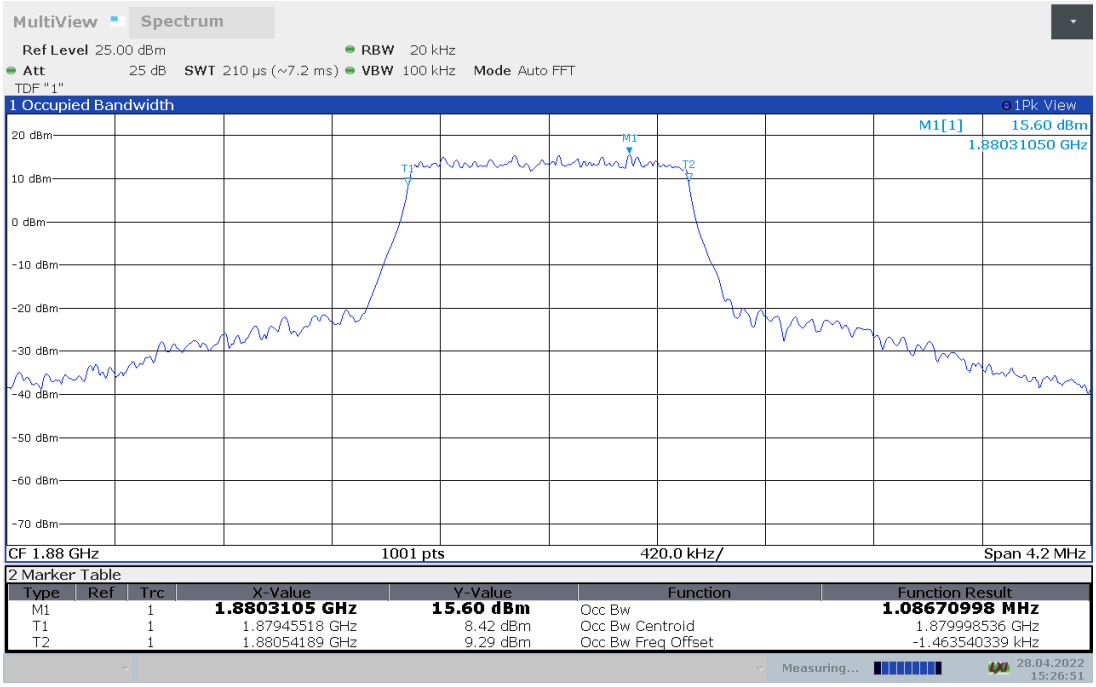
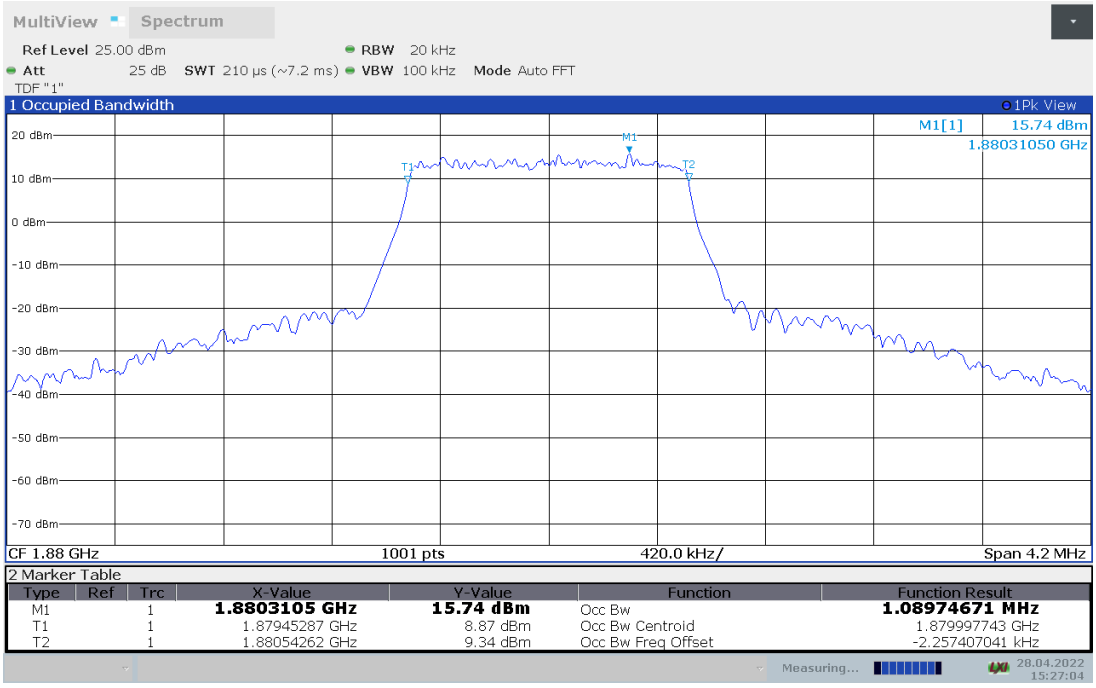


LTE band 2, 1.4MHz Bandwidth, 64QAM (99% BW)



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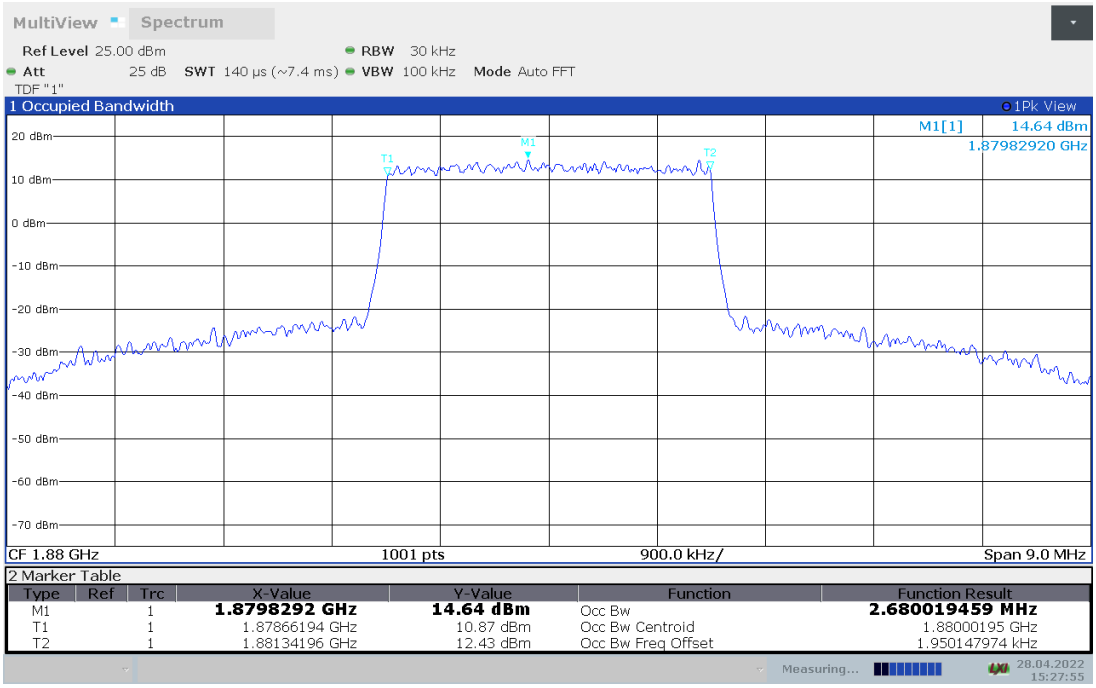
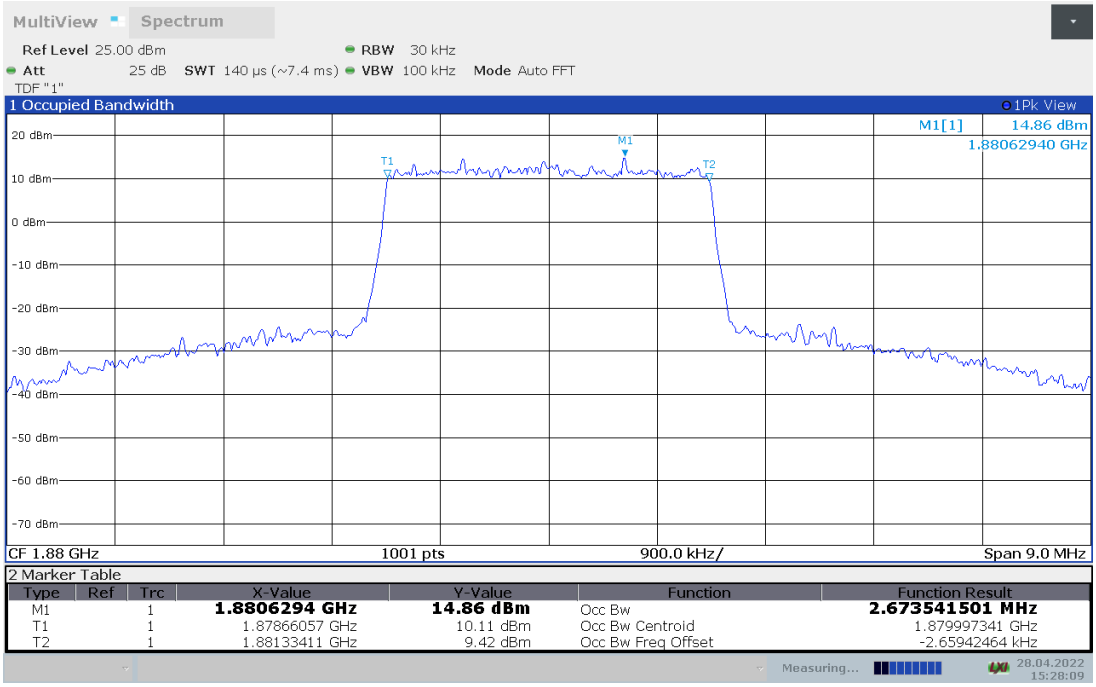
LTE band 2, 3MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1880.0	2.680	2.674	2.676

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



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



LTE band 2, 3MHz Bandwidth, 64QAM (99% BW)

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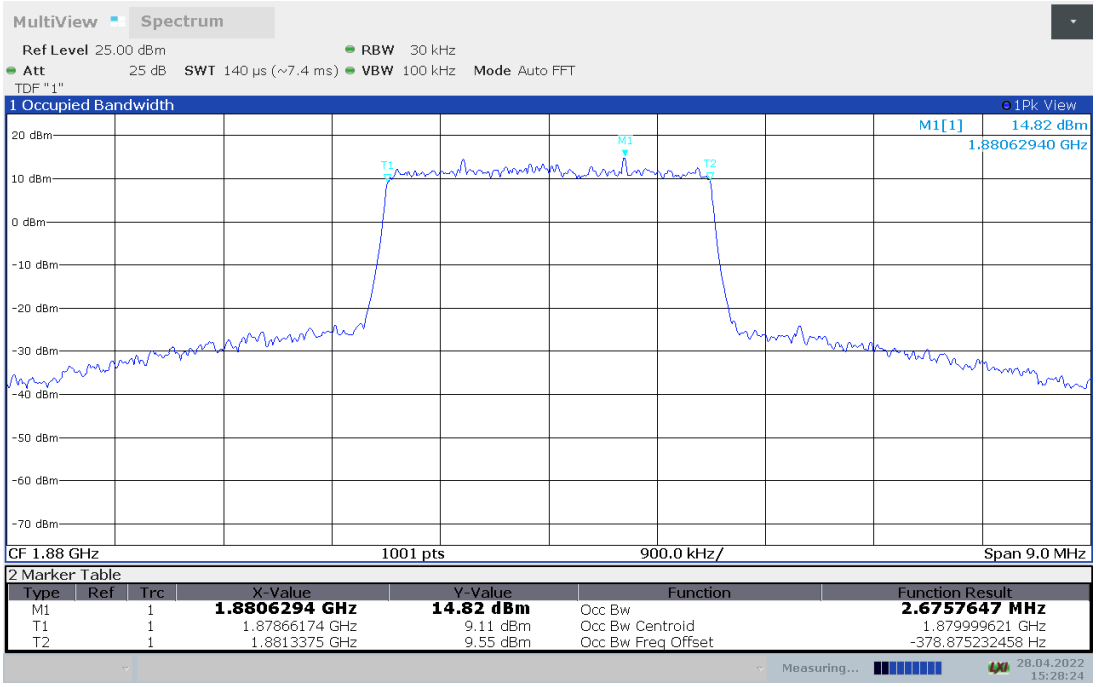

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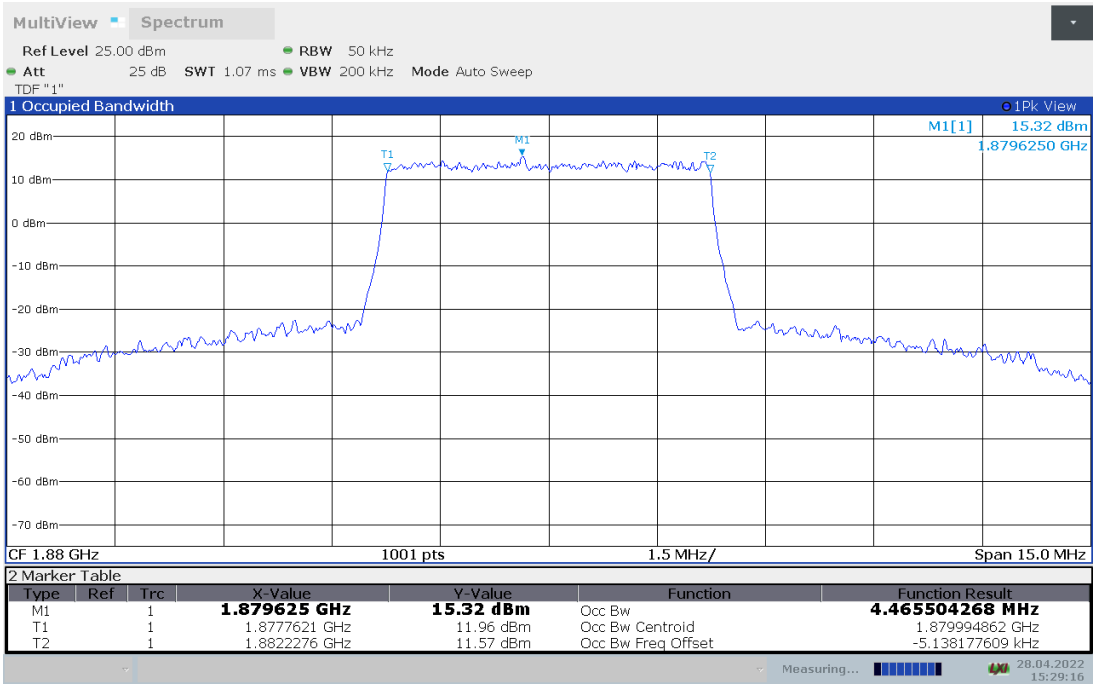
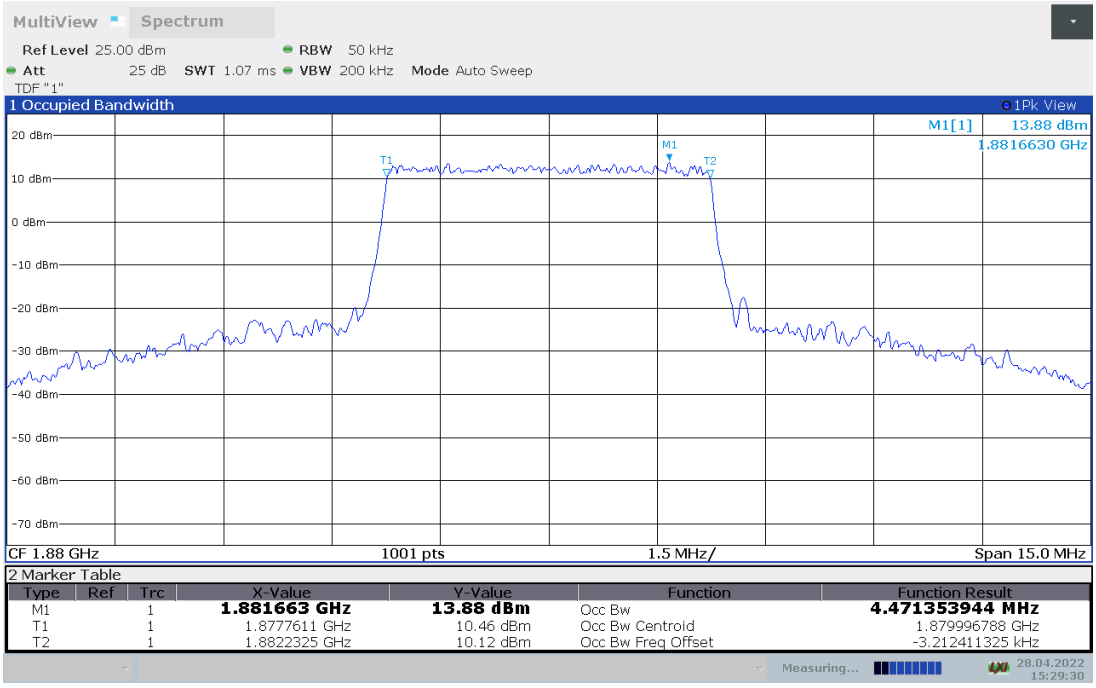
LTE band 2, 5MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1880.0	QPSK	16QAM	64QAM
	4.466	4.471	4.470

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



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



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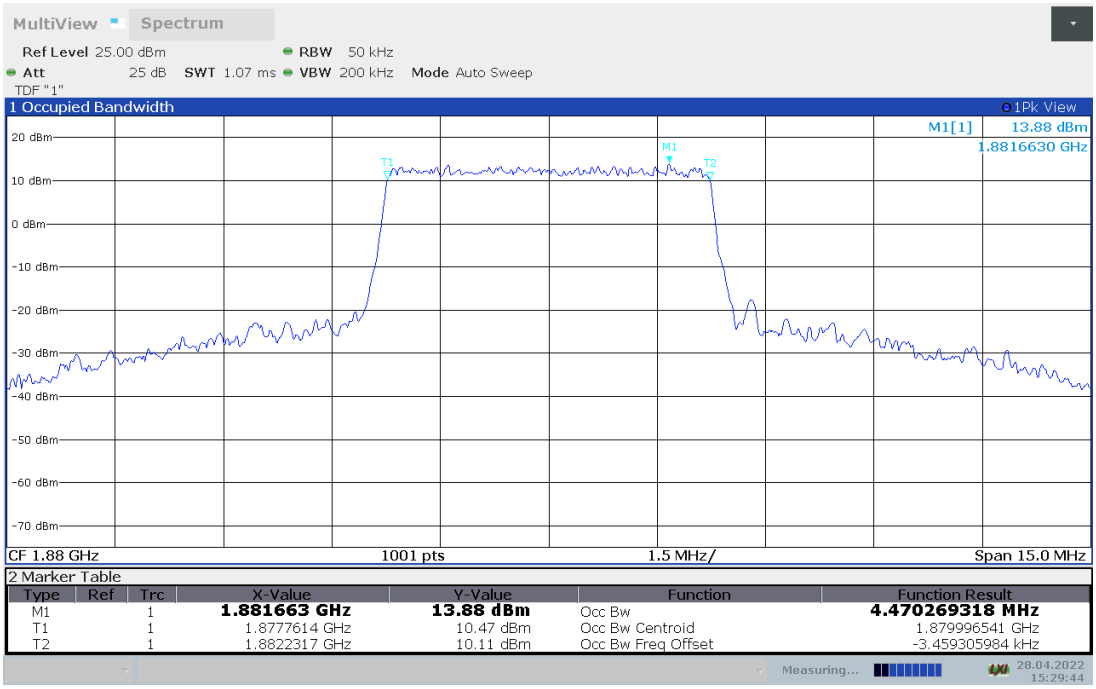
LTE band 2, 5MHz Bandwidth,64QAM (99% BW)



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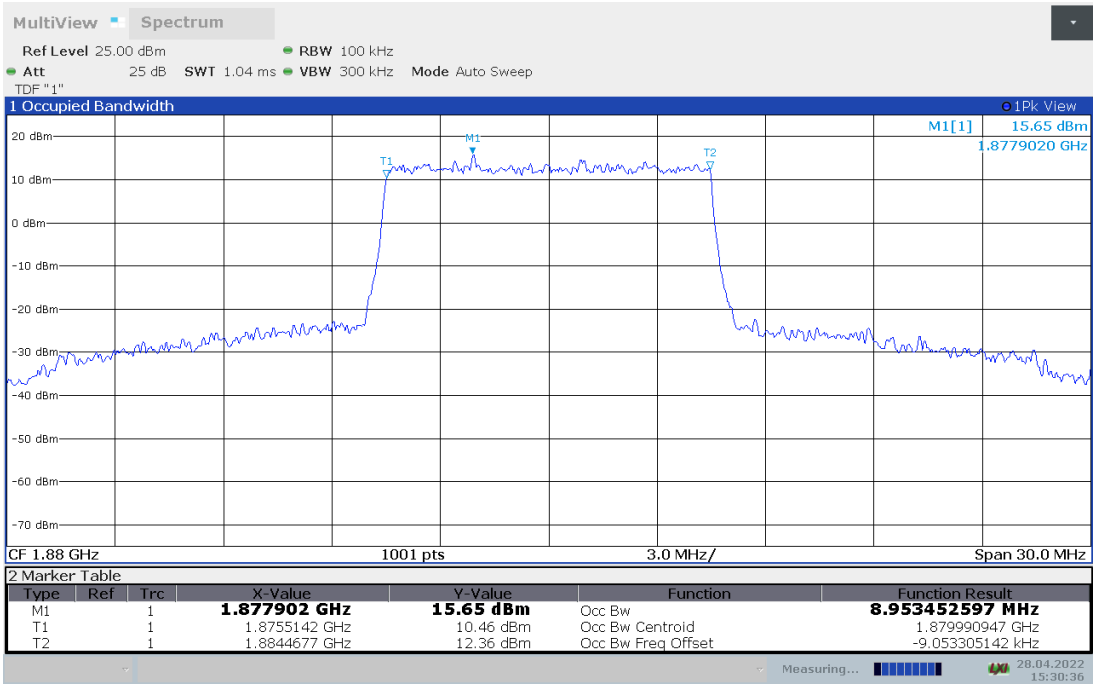
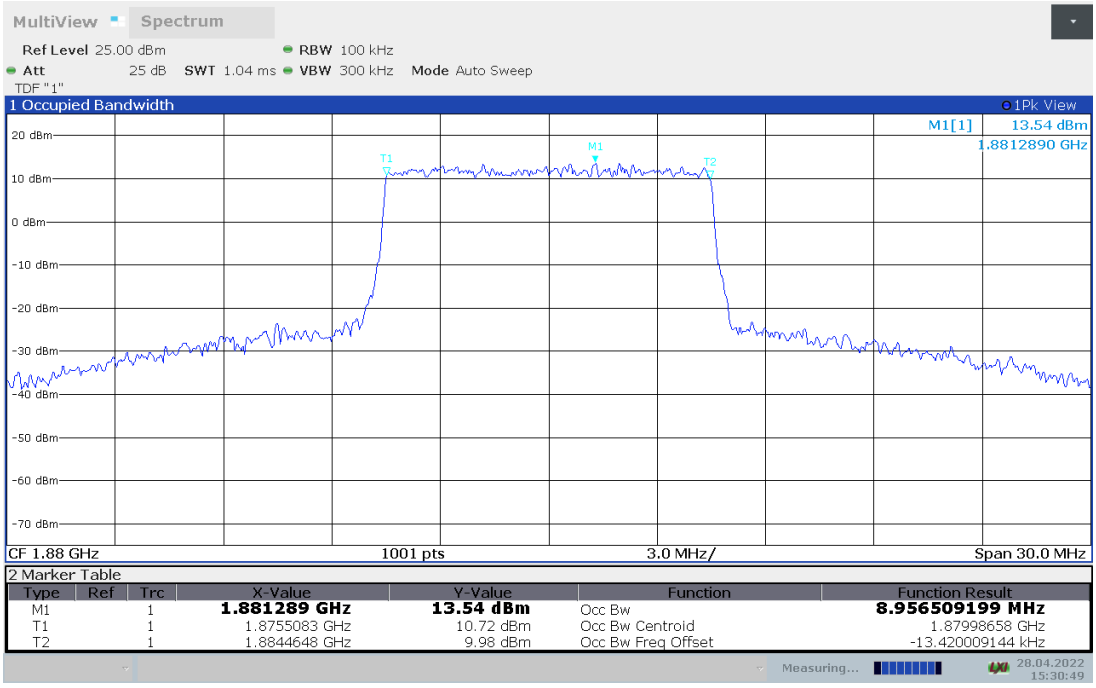
LTE band 2, 10MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1880.0	8.953	8.957	8.947

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



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



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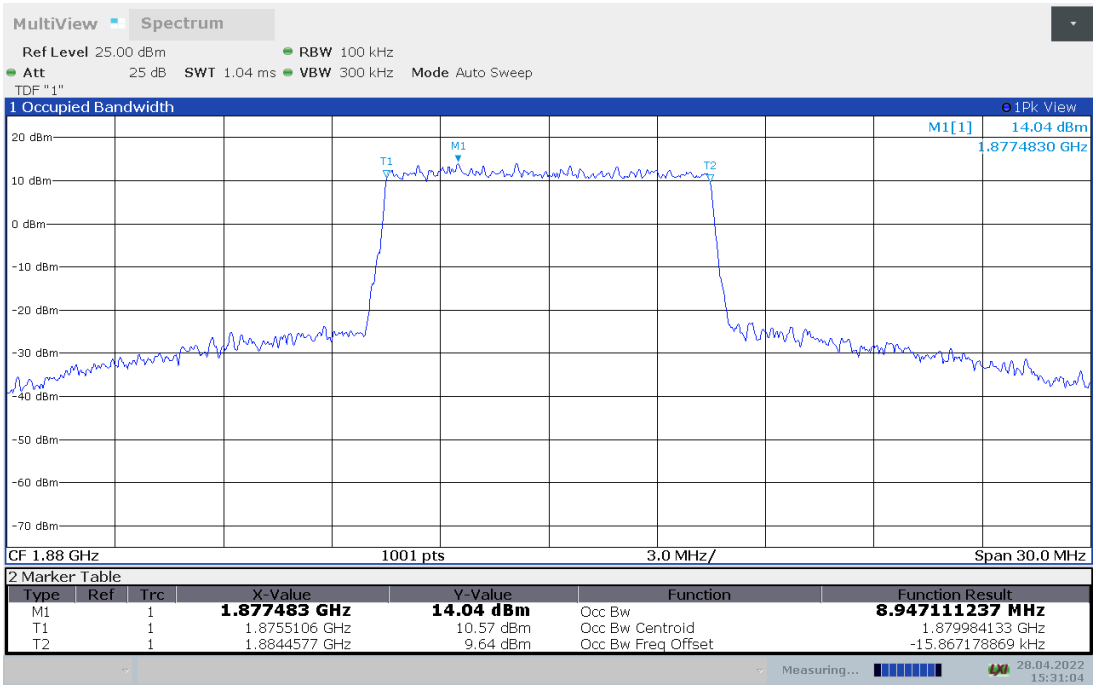
LTE band 2, 10MHz Bandwidth, 64QAM (99% BW)



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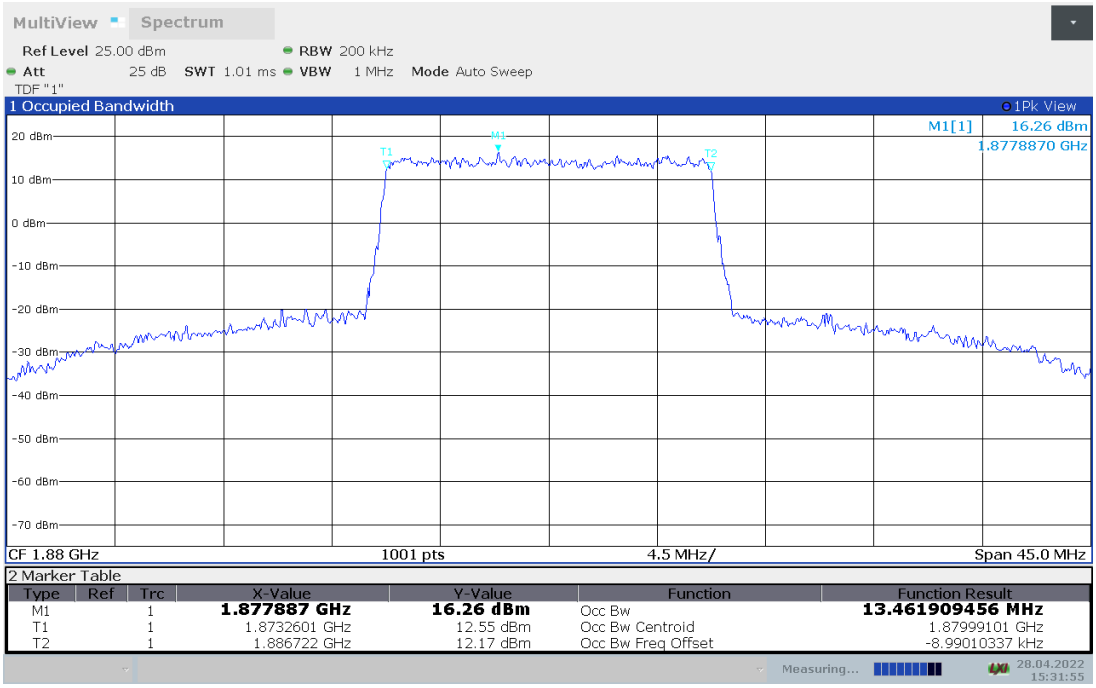
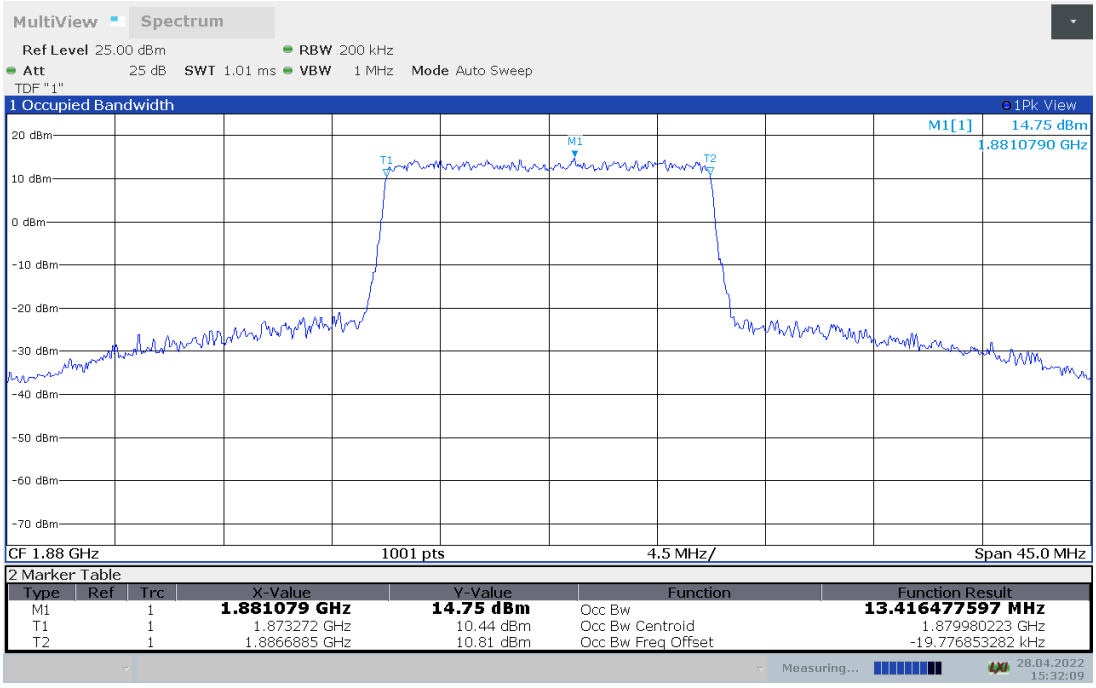
LTE band 2, 15MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1880.0	QPSK	16QAM	64QAM
	13.462	13.416	13.431

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



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



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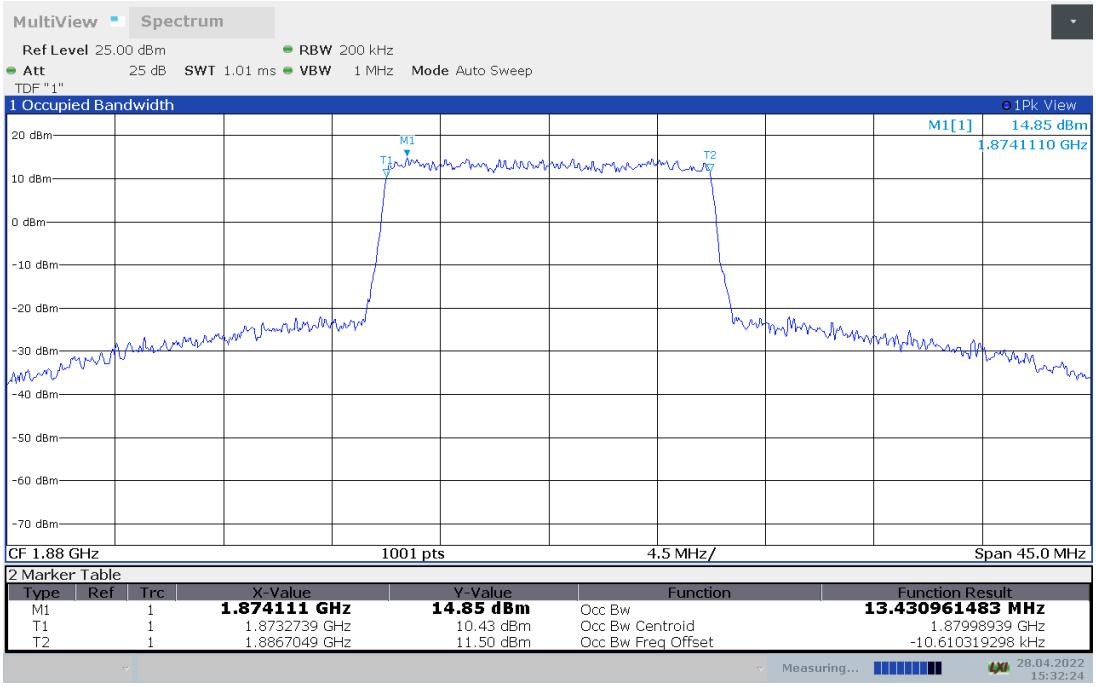
LTE band 2, 15MHz Bandwidth, 64QAM (99% BW)



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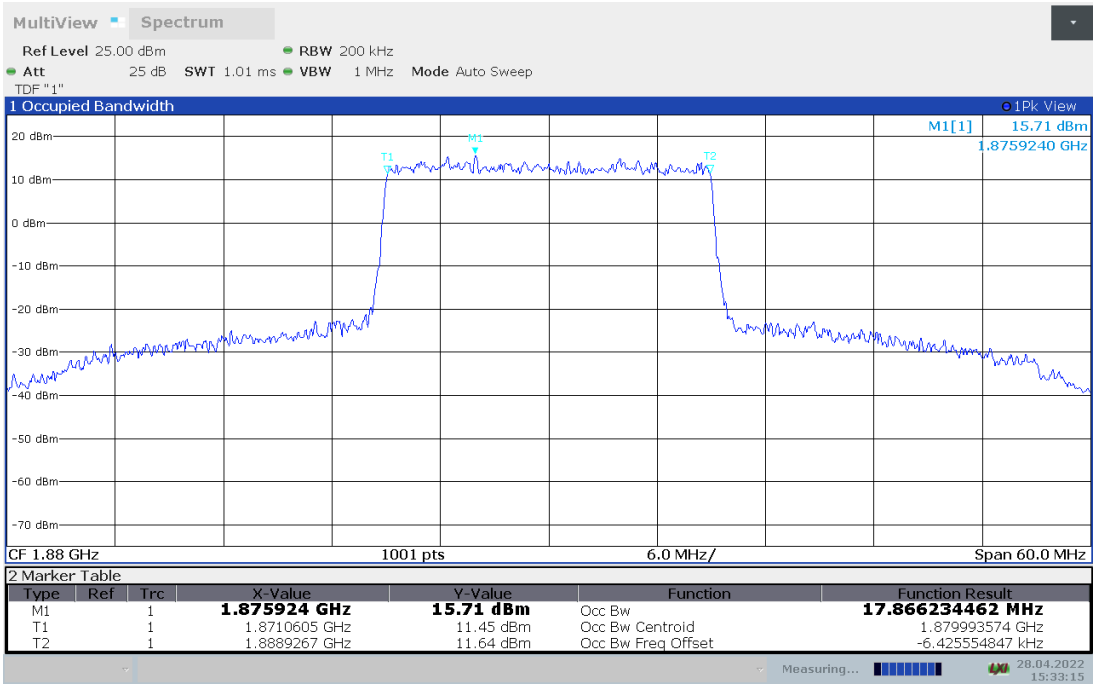
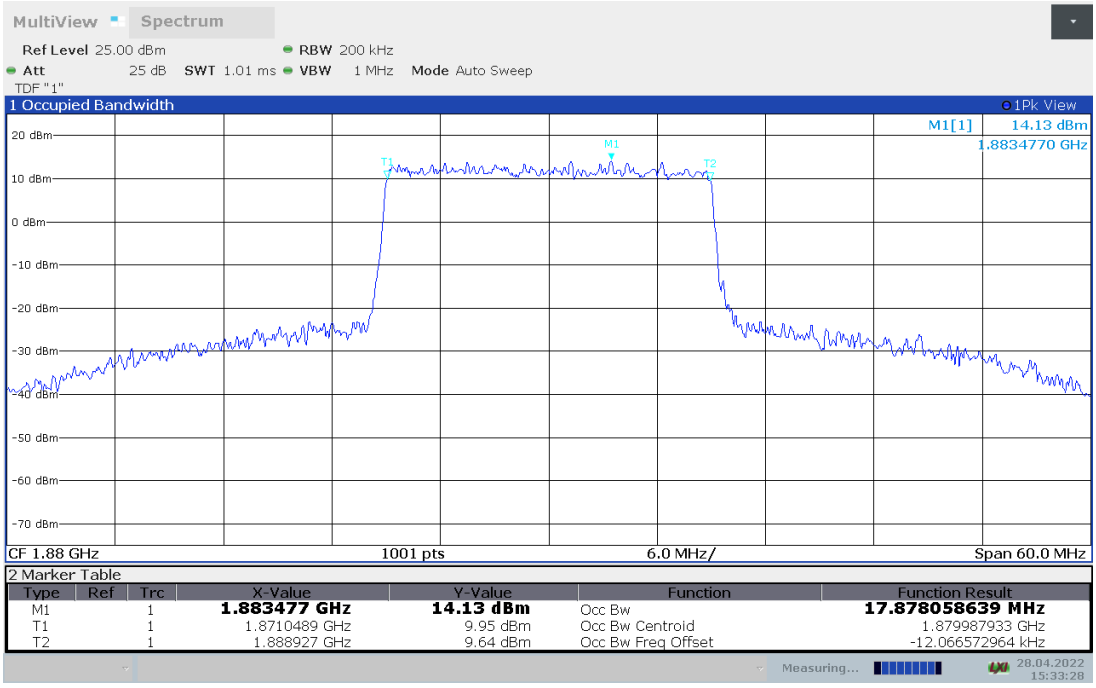
LTE band 2, 20MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1880.0	17.866	17.878	17.893

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



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



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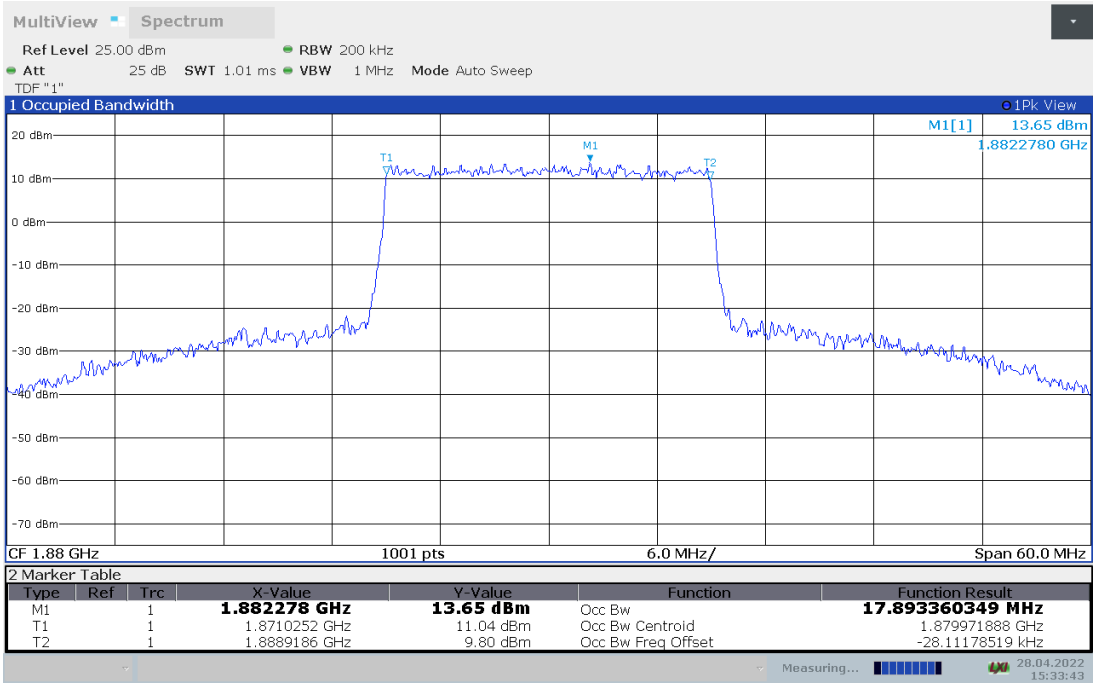
LTE band 2, 20MHz Bandwidth, 64QAM (99% BW)



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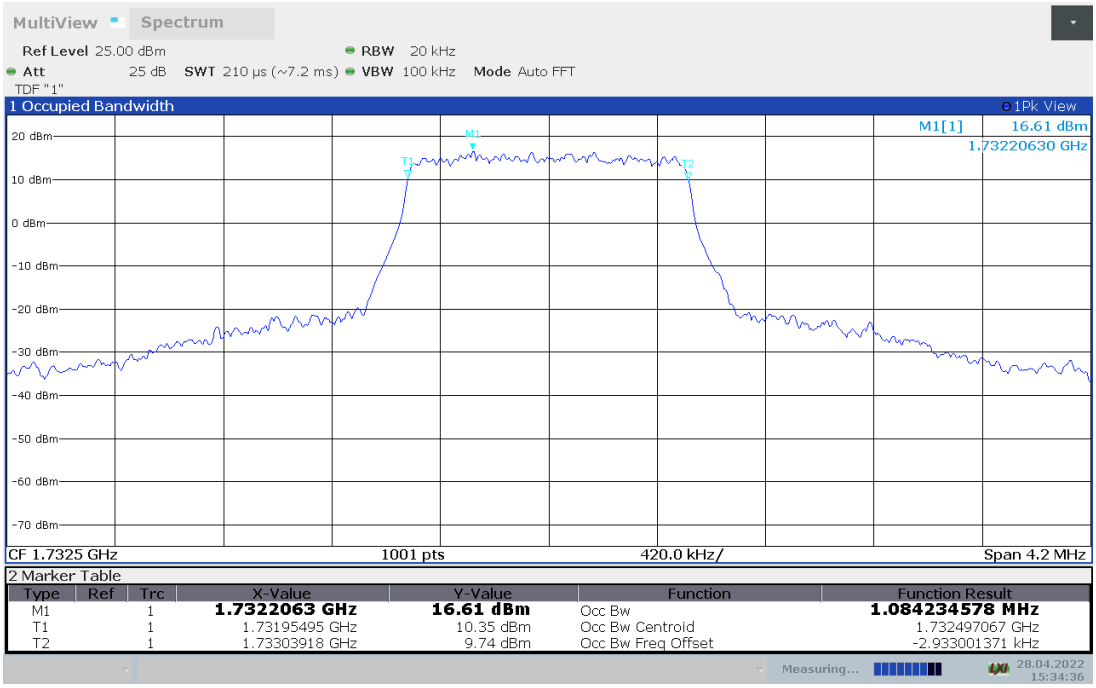
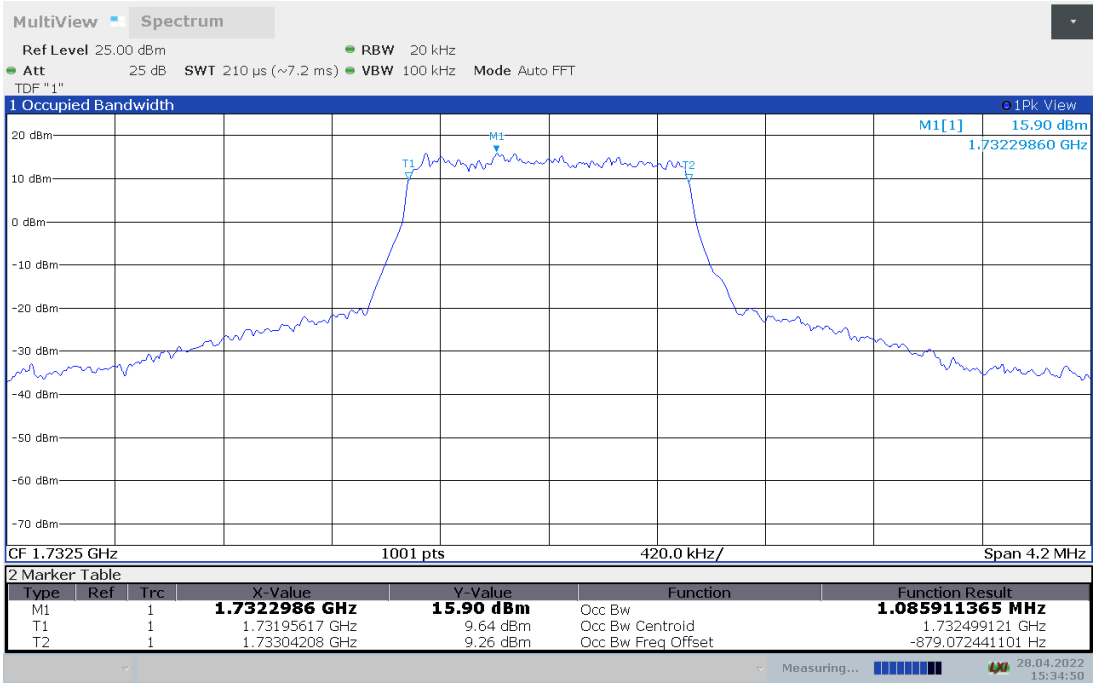
LTE band 4, 1.4MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	1.084	1.086	1.084

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



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



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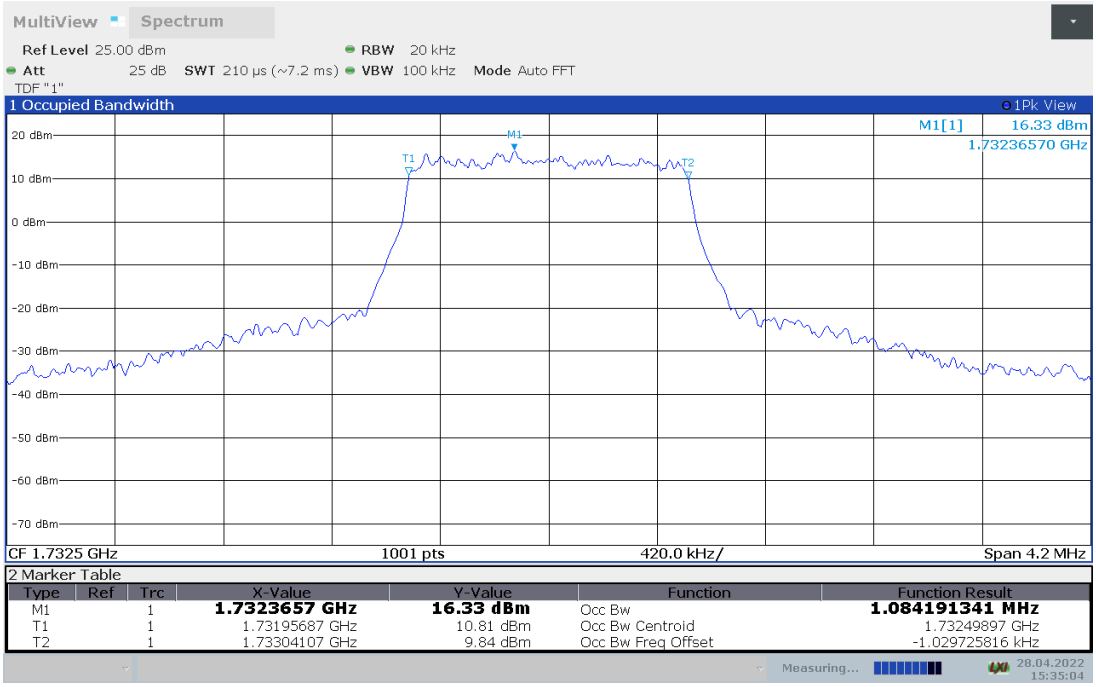
LTE band 4, 1.4MHz Bandwidth, 64QAM (99% BW)



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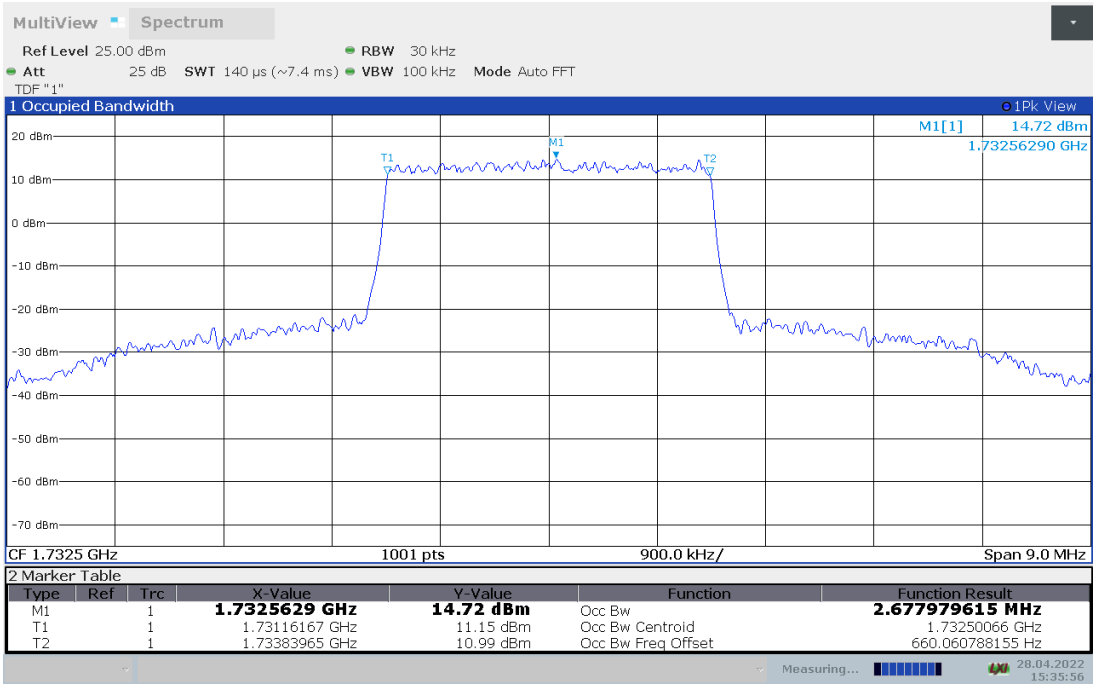
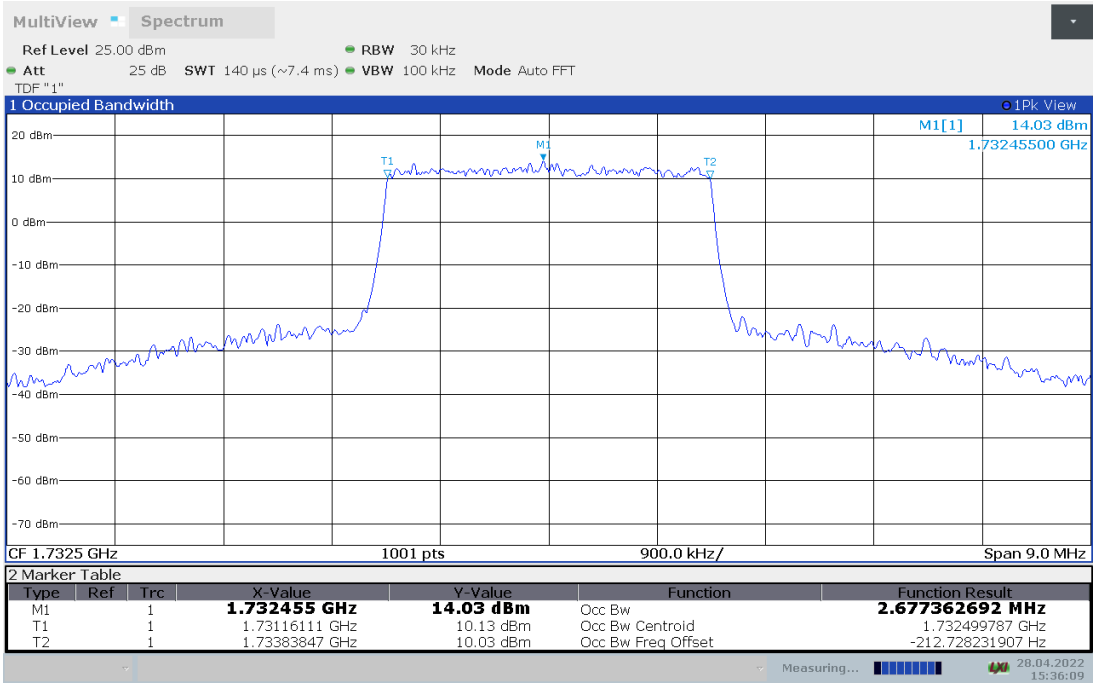
LTE band 4, 3MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1732.5	2.678	2.677	2.671

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



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



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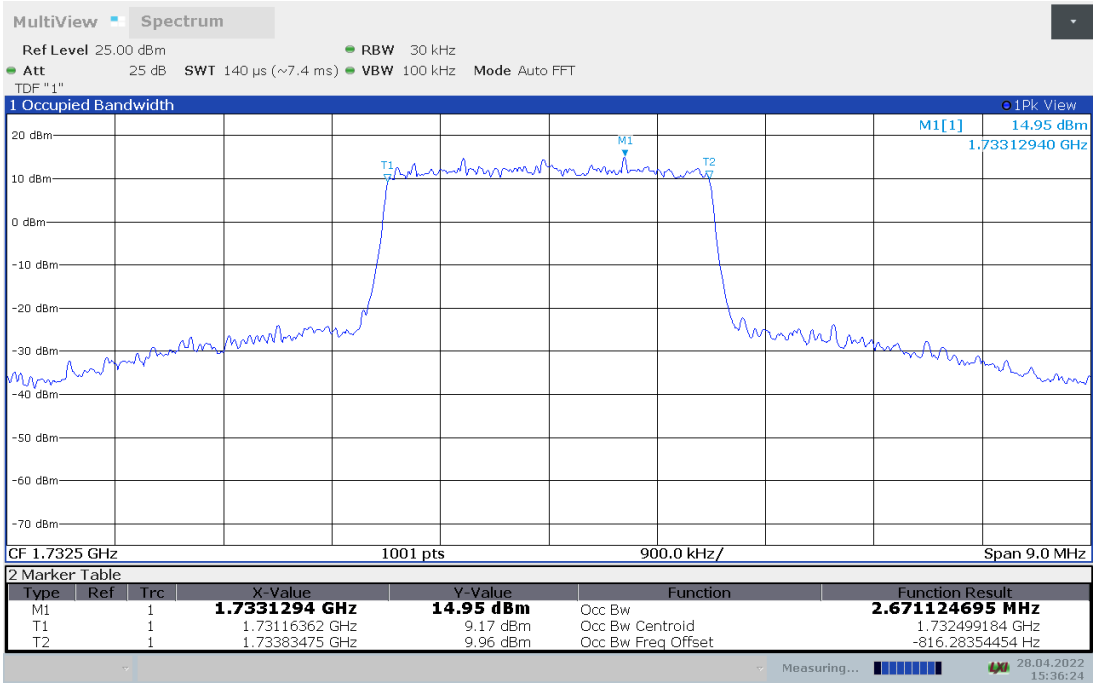
LTE band 4, 3MHz Bandwidth, 64QAM (99% BW)



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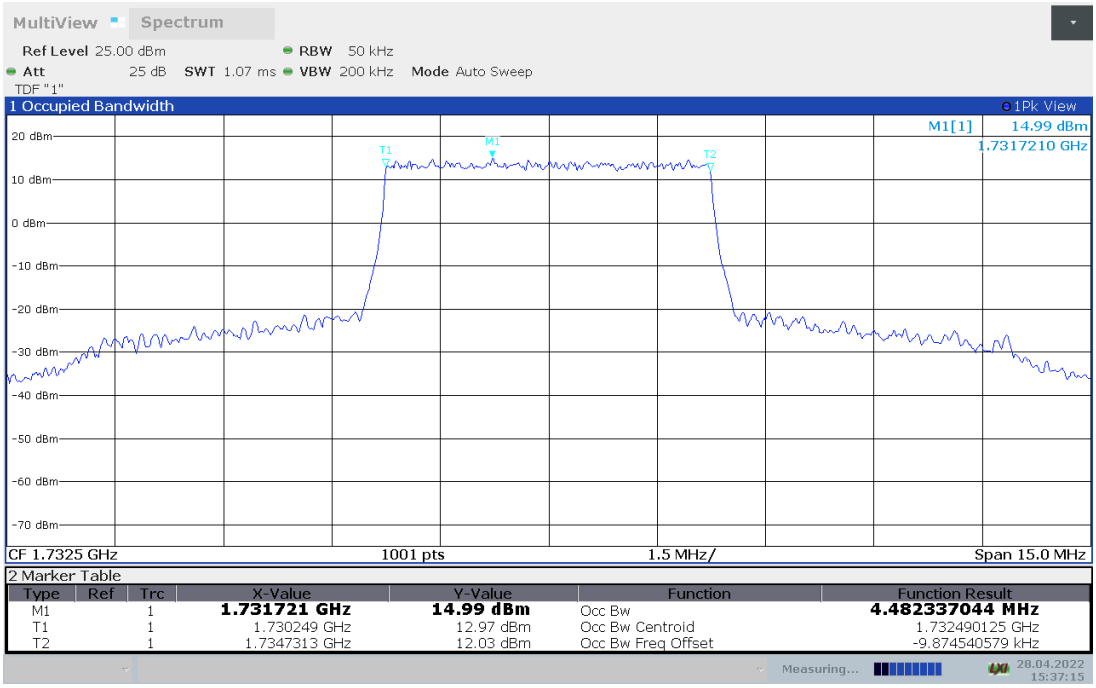
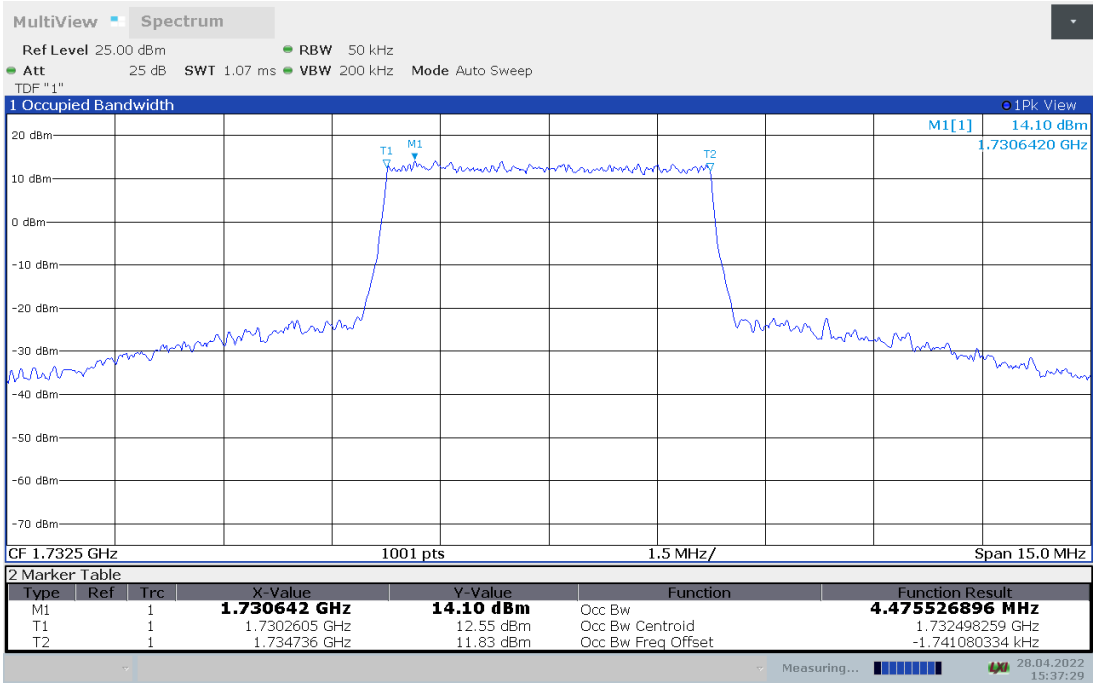
LTE band 4, 5MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	4.482	4.476	4.479

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



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



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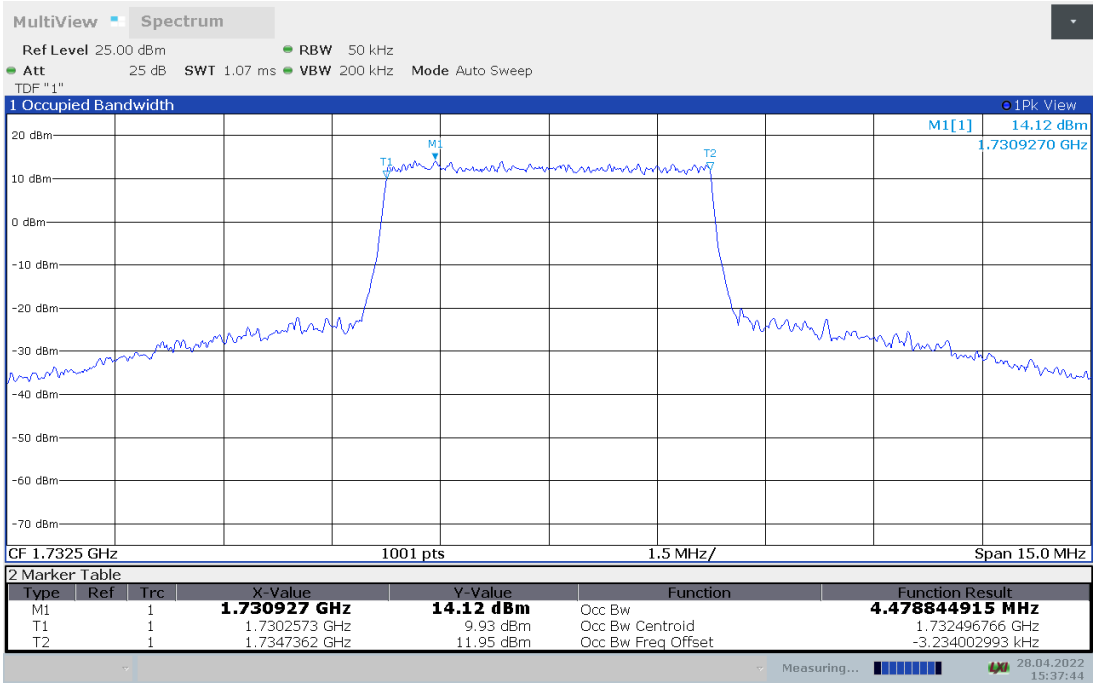
LTE band 4, 5MHz Bandwidth,64QAM (99% BW)



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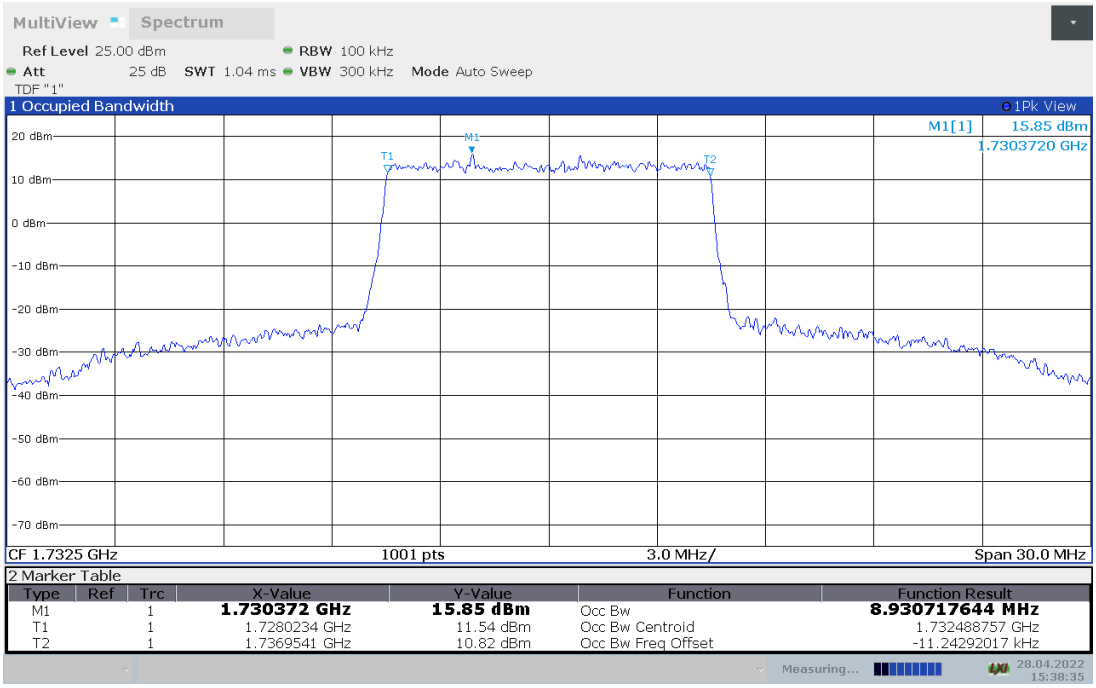
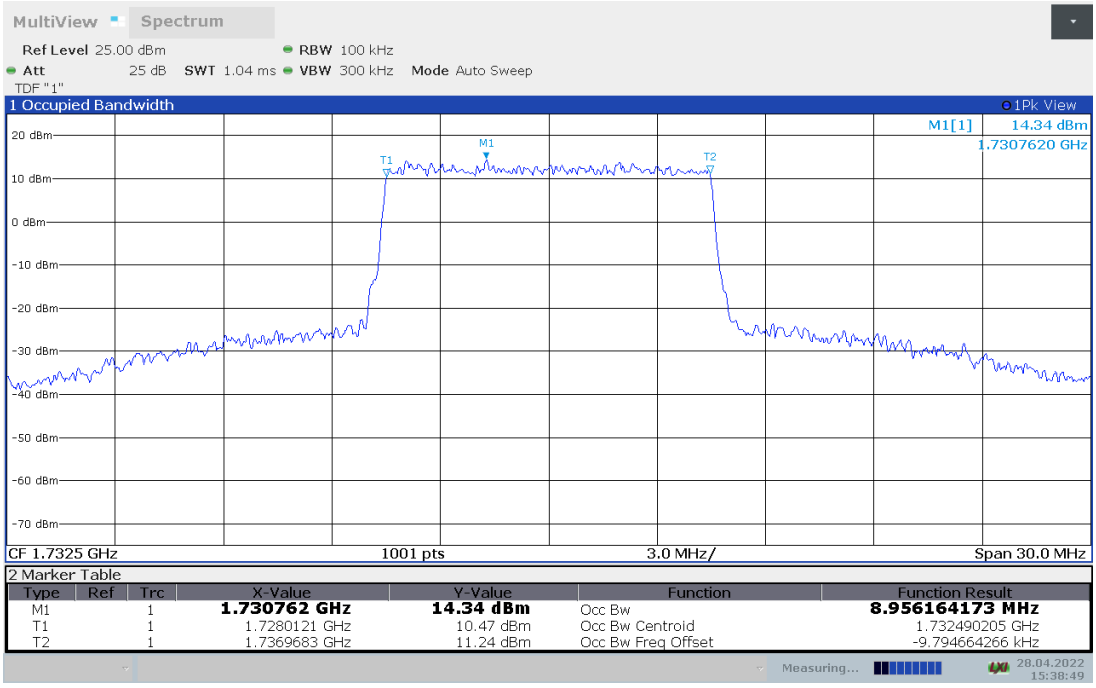
LTE band 4, 10MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1732.5	8.931	8.956	8.942

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



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



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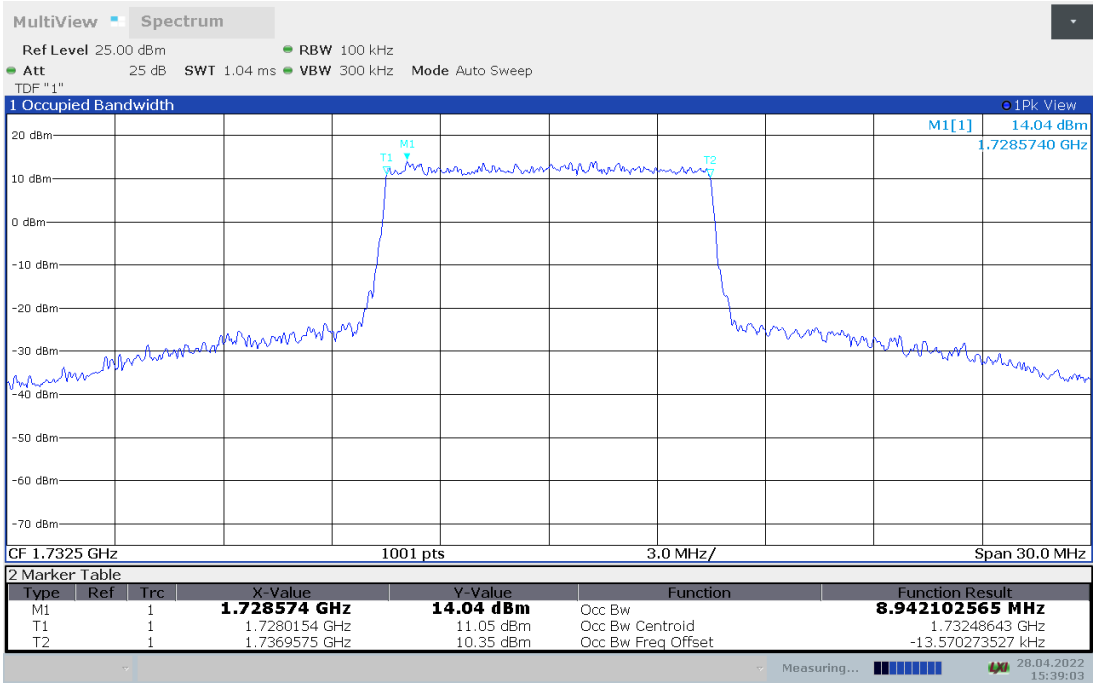
LTE band 4, 10MHz Bandwidth, 64QAM (99% BW)



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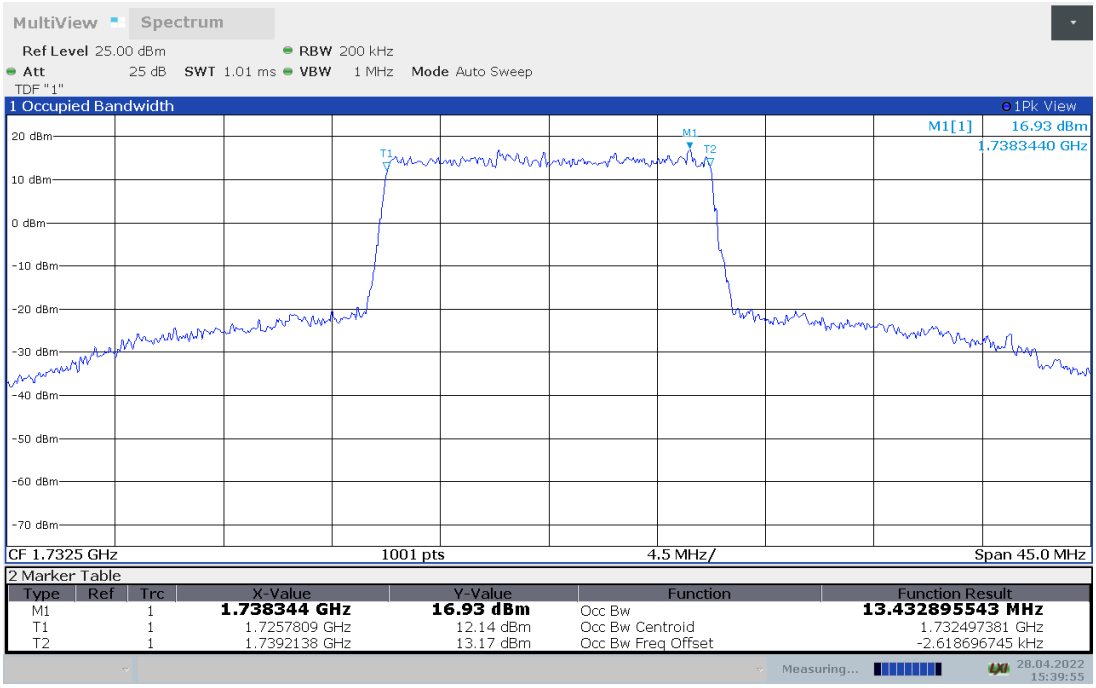
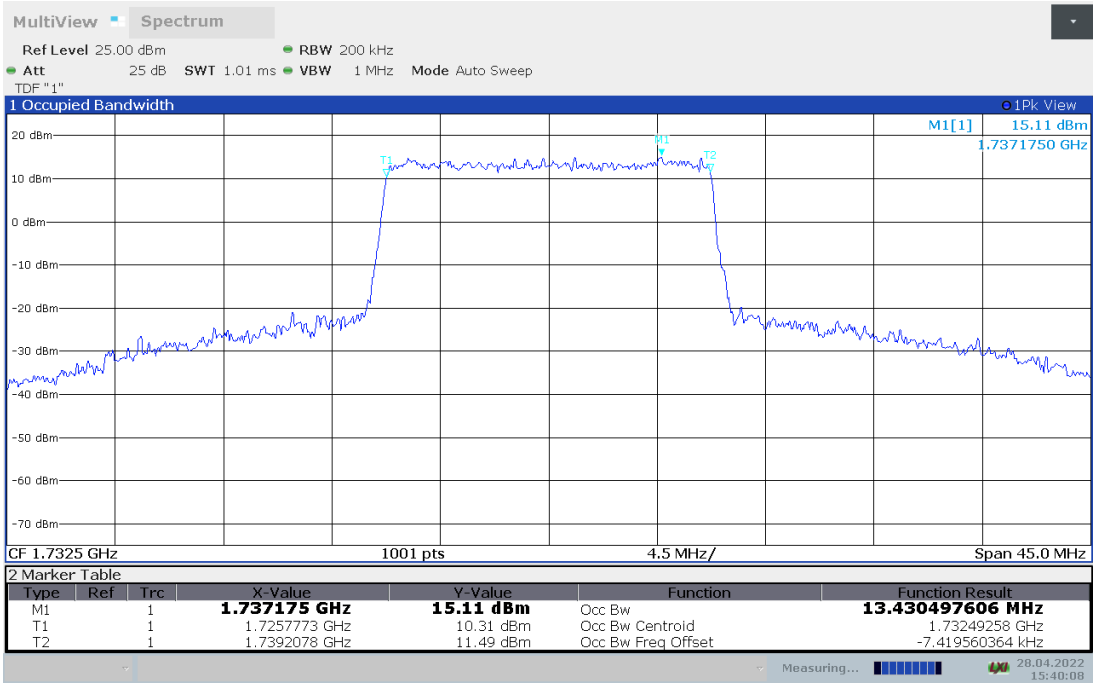
LTE band 4, 15MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	13.433	13.430	13.418

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



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



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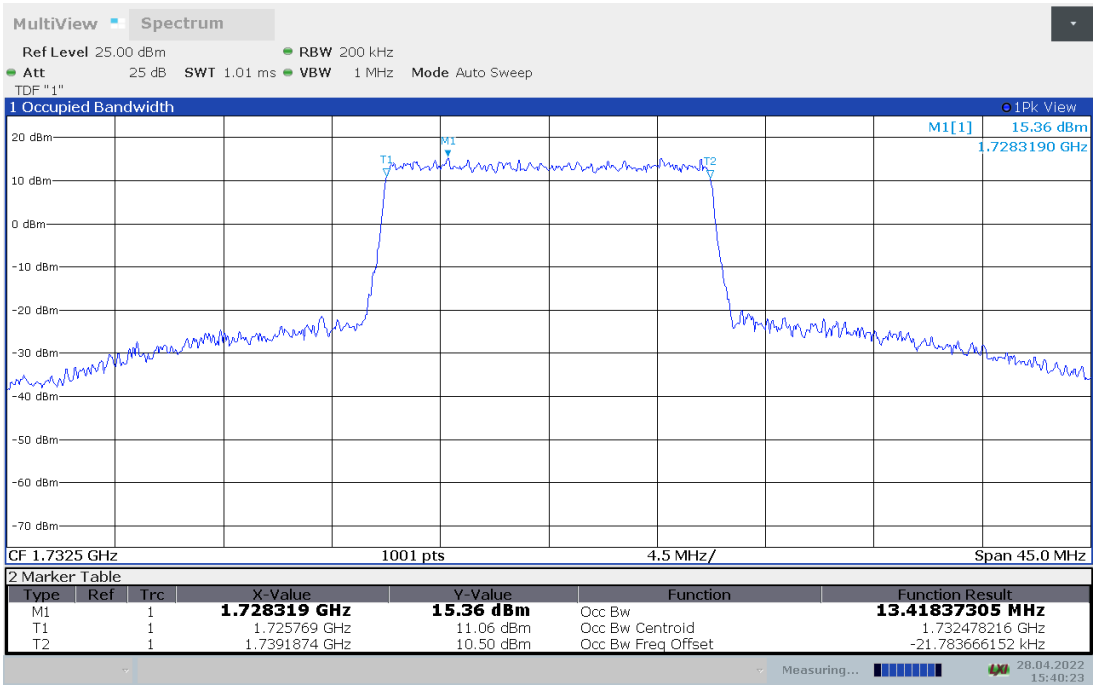
LTE band 4, 15MHz Bandwidth, 64QAM (99% BW)



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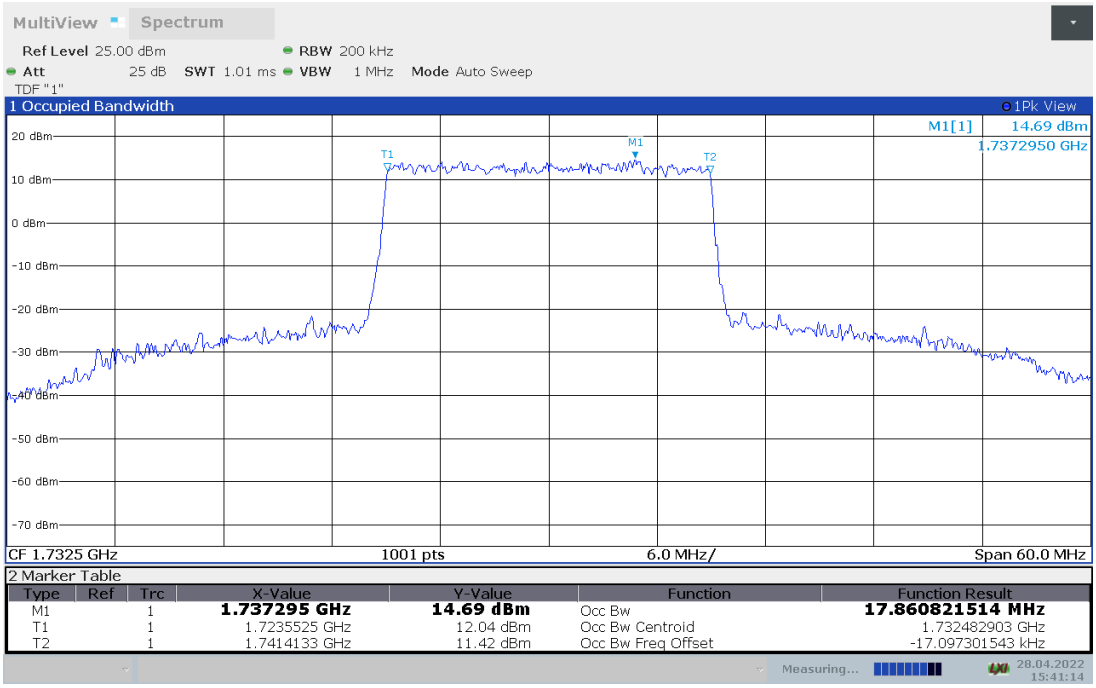
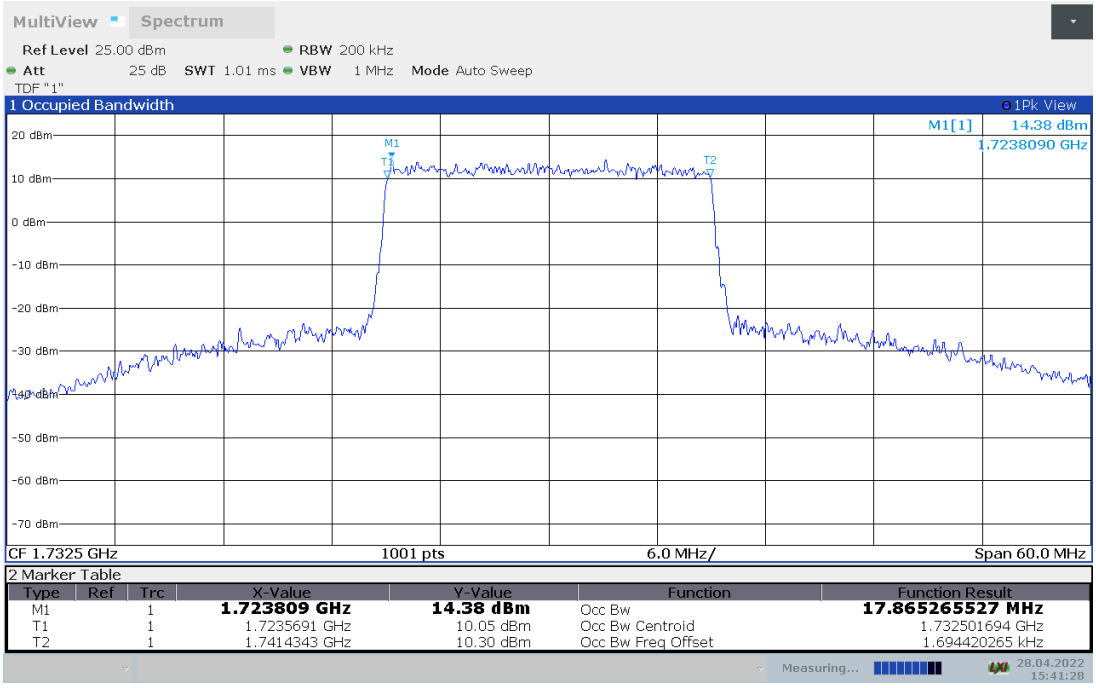
LTE band 4, 20MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1732.5	17.861	17.865	17.902

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



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



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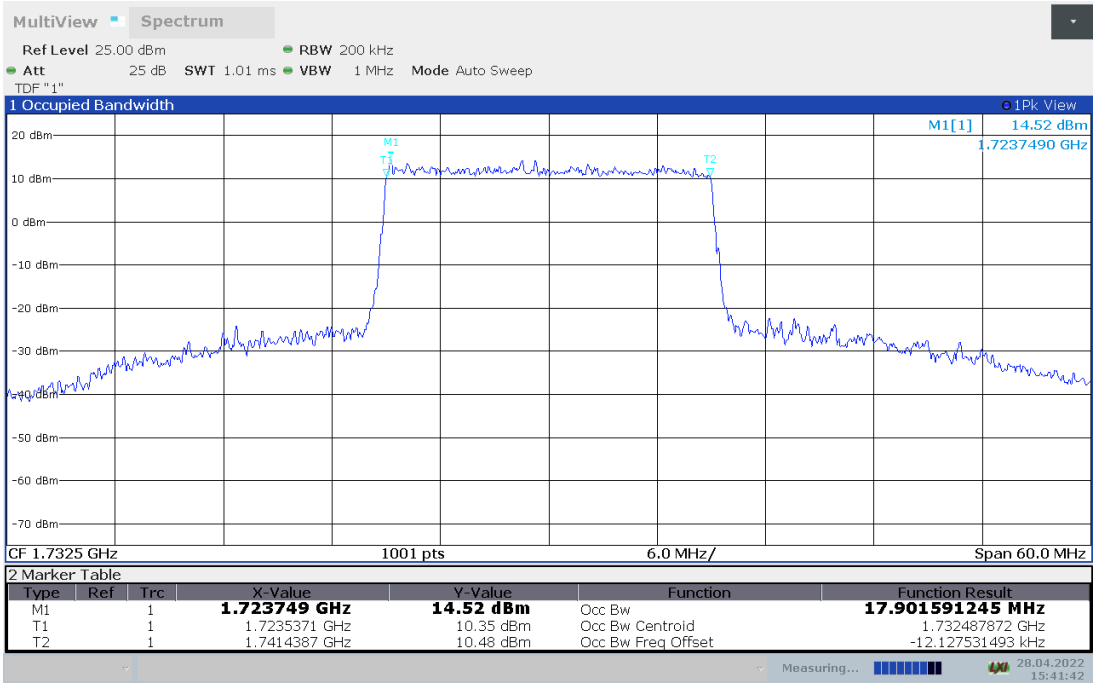
LTE band 4, 20MHz Bandwidth, 64QAM (99% BW)



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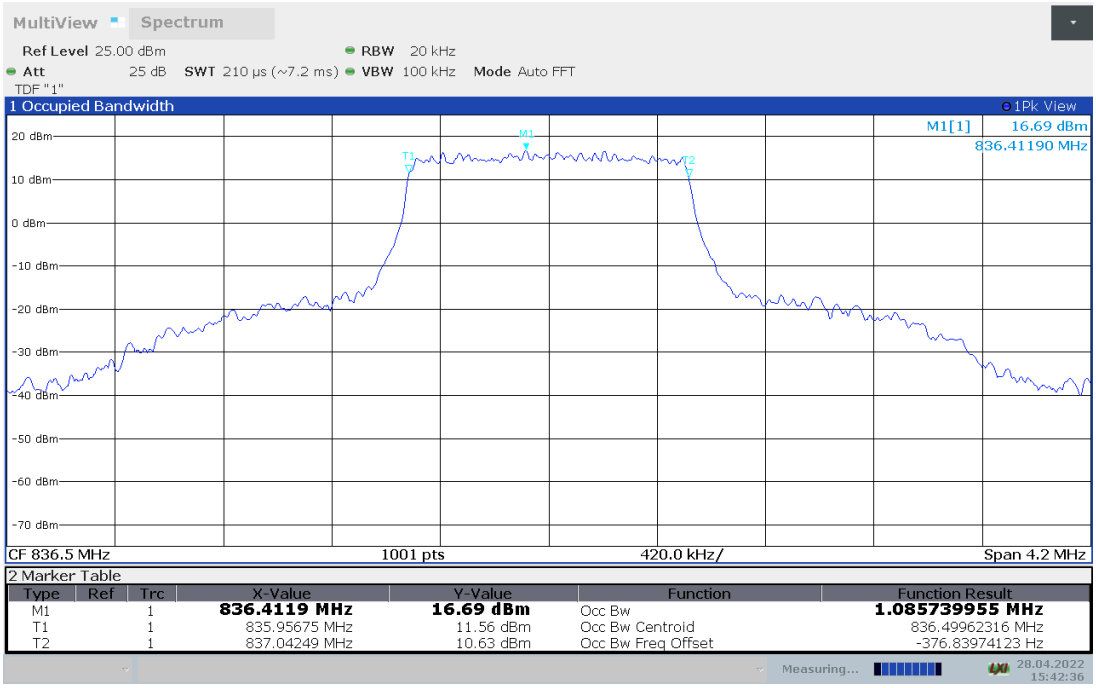
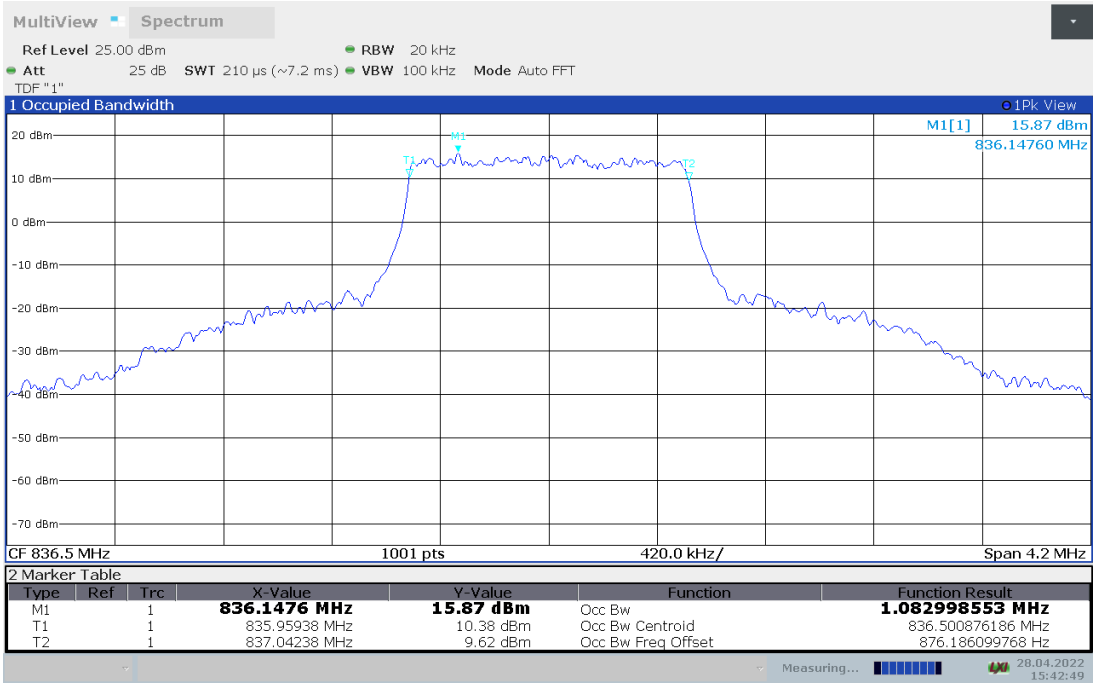
LTE band 5, 1.4MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
836.5	QPSK	16QAM	64QAM
	1.086	1.083	1.083

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



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



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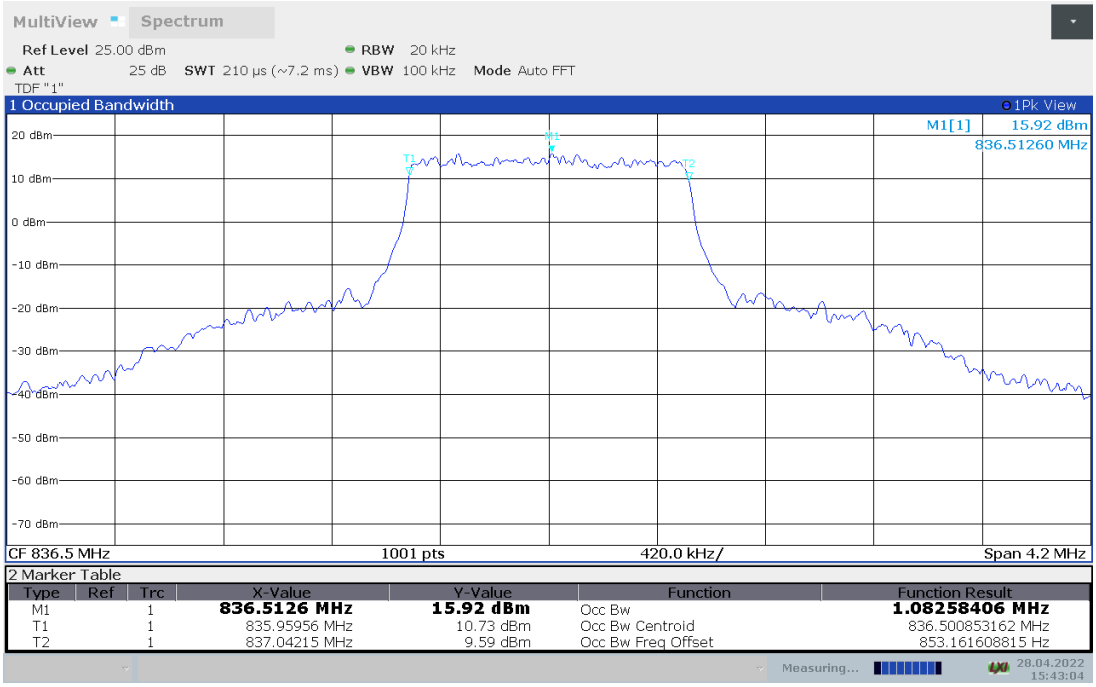
LTE band 5, 1.4MHz Bandwidth, 64QAM (99% BW)



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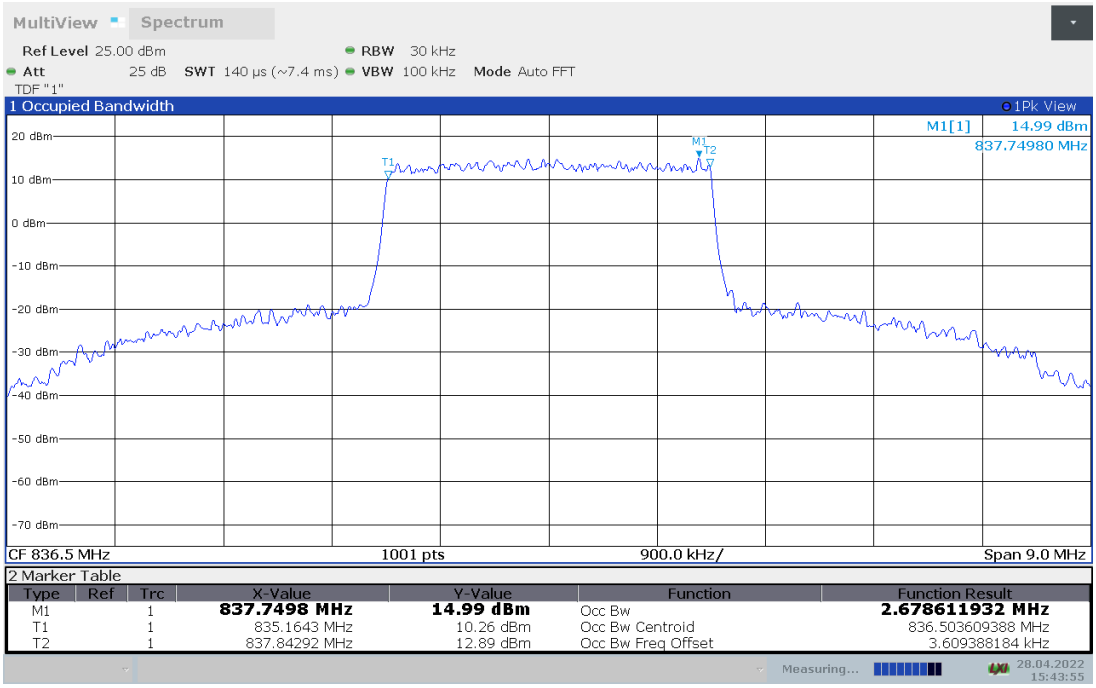
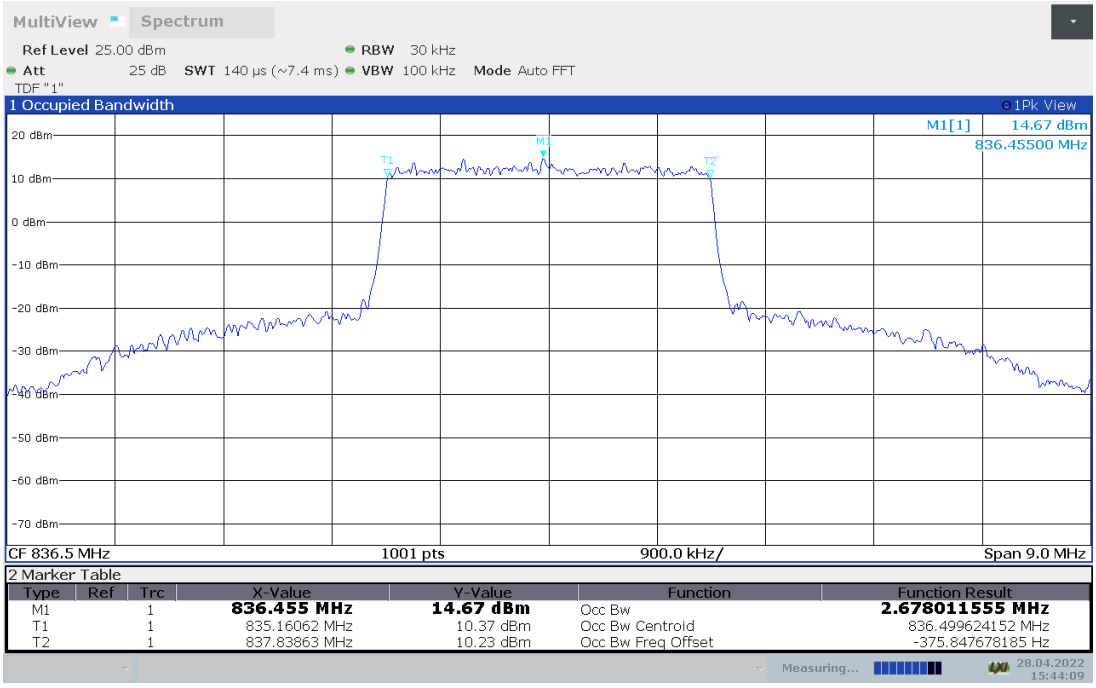
LTE band 5, 3MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
836.5	QPSK	16QAM	64QAM
	2.679	2.678	2.675

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



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



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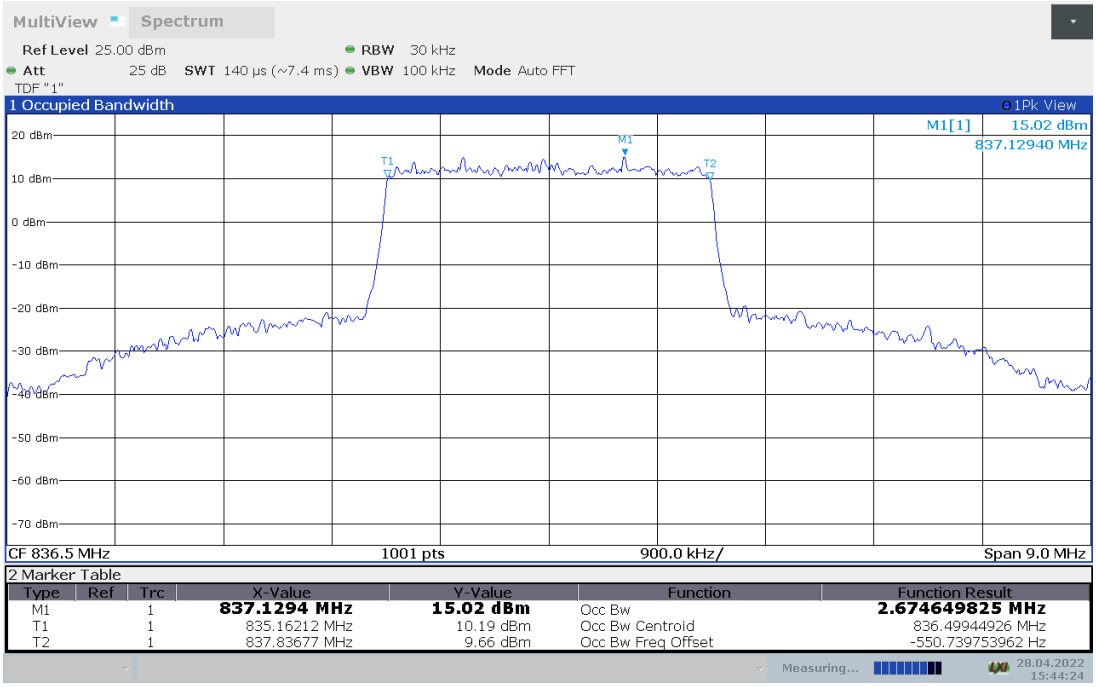
LTE band 5, 3MHz Bandwidth, 64QAM (99% BW)



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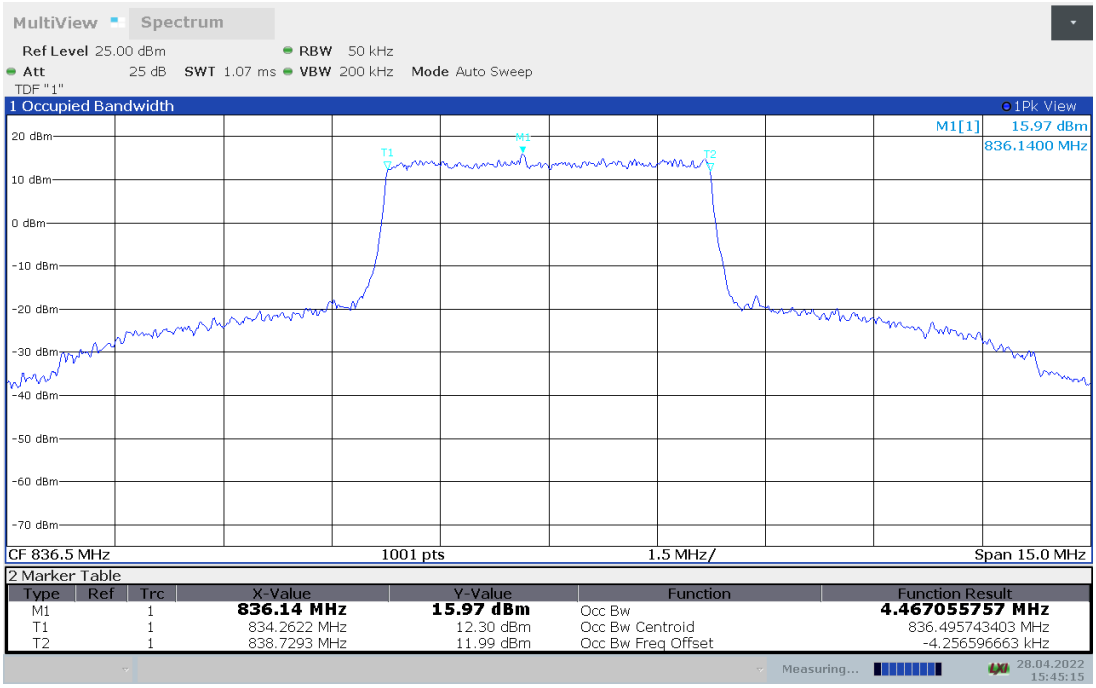
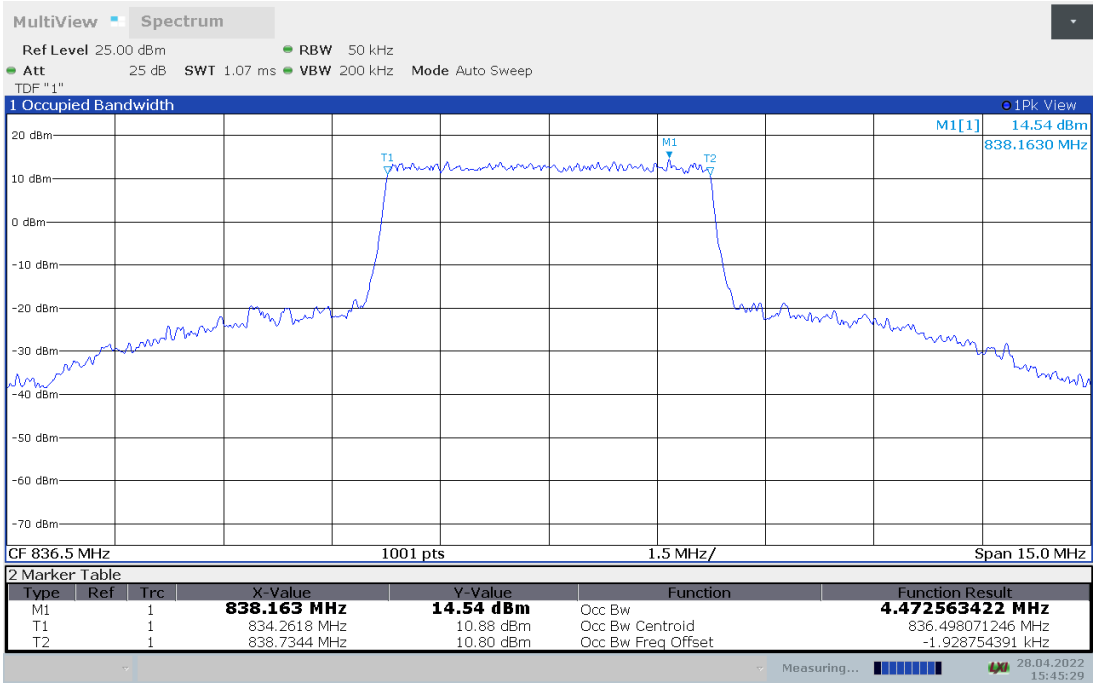
LTE band 5, 5MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
836.5	QPSK	16QAM	64QAM
	4.467	4.473	4.472

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



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



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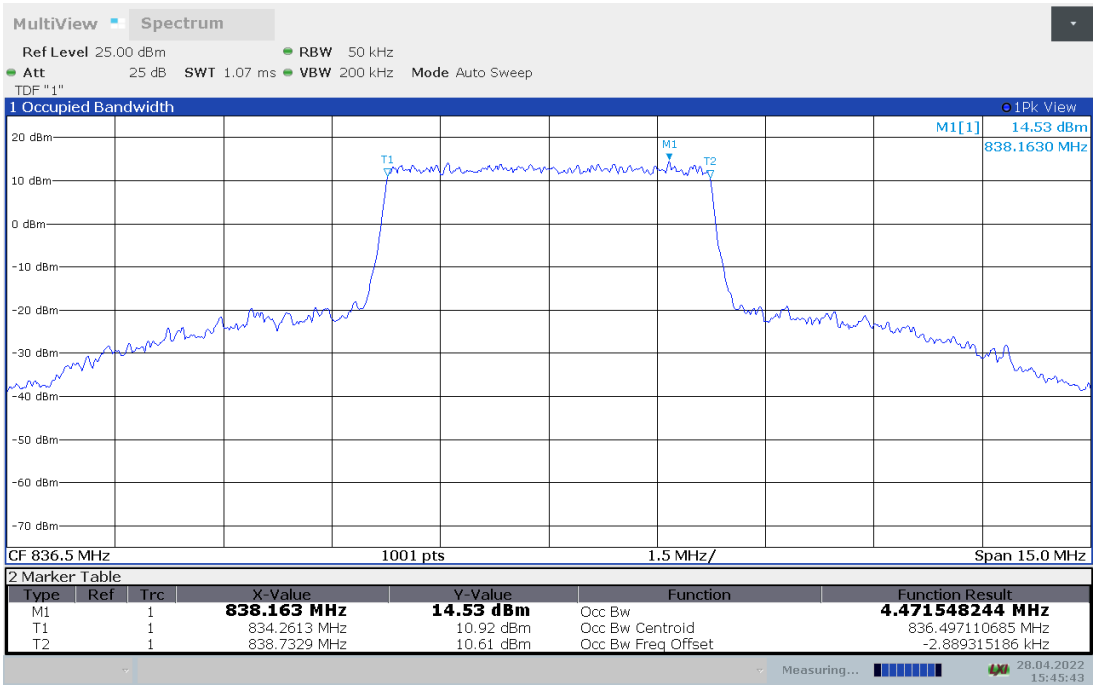
LTE band 5, 5MHz Bandwidth,64QAM (99% BW)



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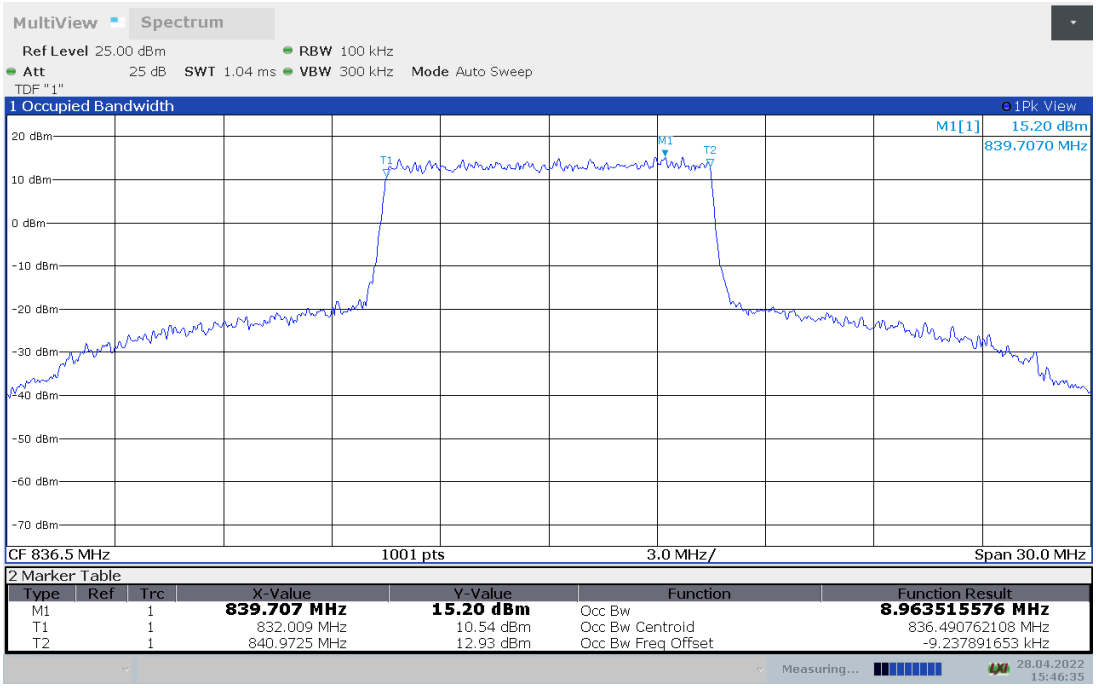
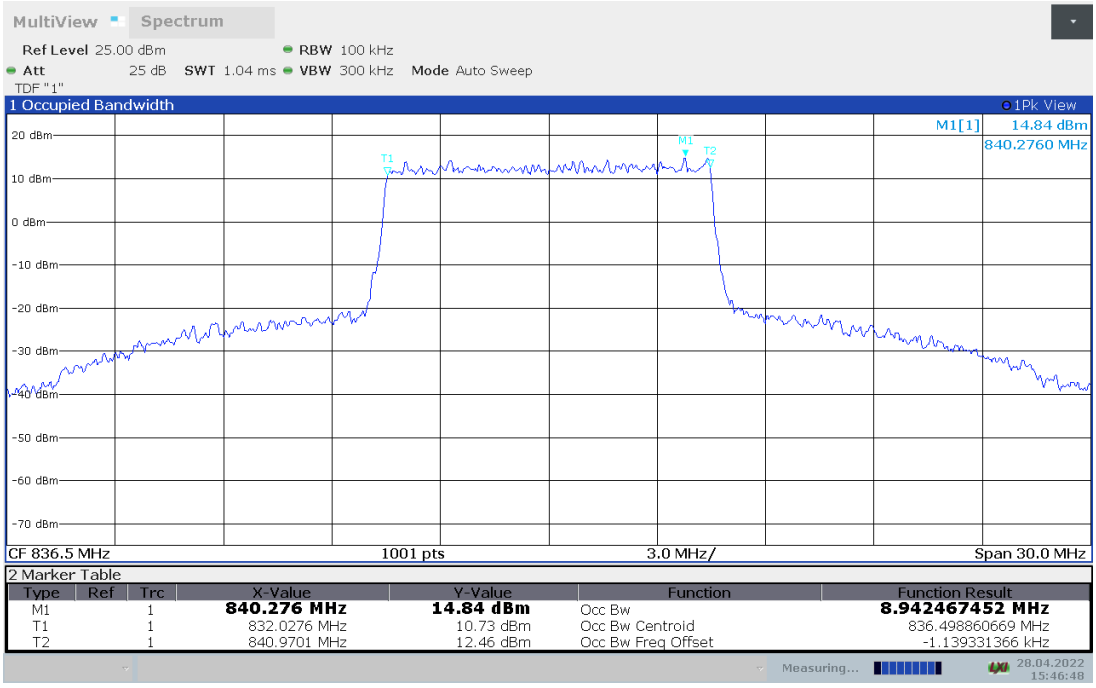
LTE band 5, 10MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
836.5	QPSK	16QAM	64QAM
	8.964	8.942	8.953

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



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



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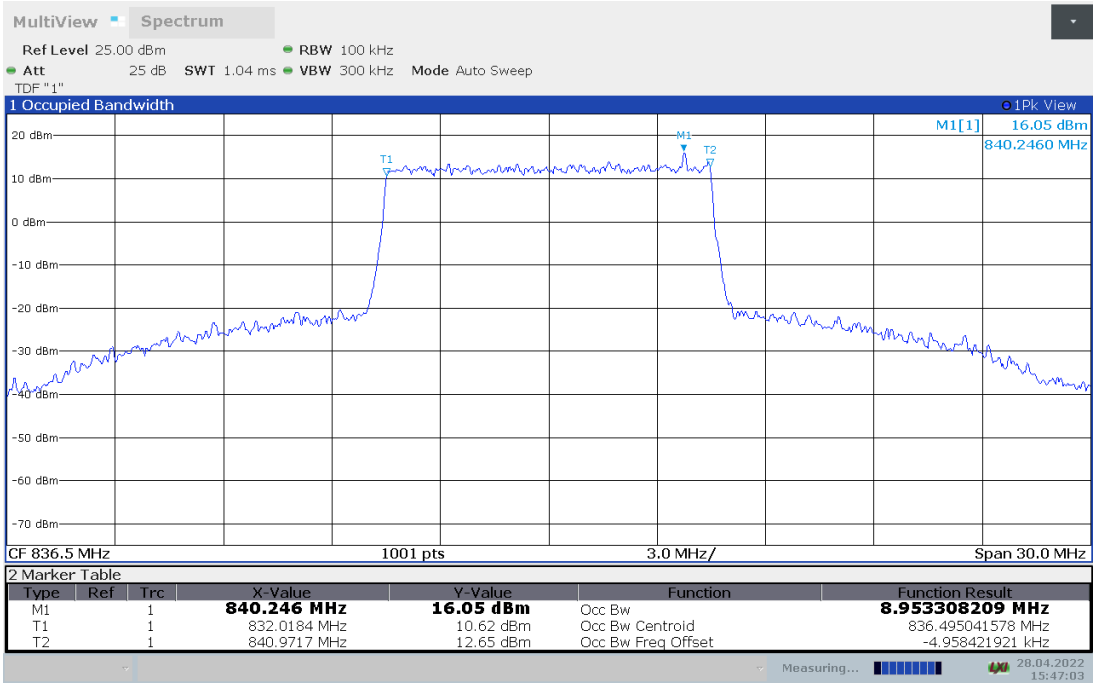
LTE band 5, 10MHz Bandwidth, 64QAM (99% BW)



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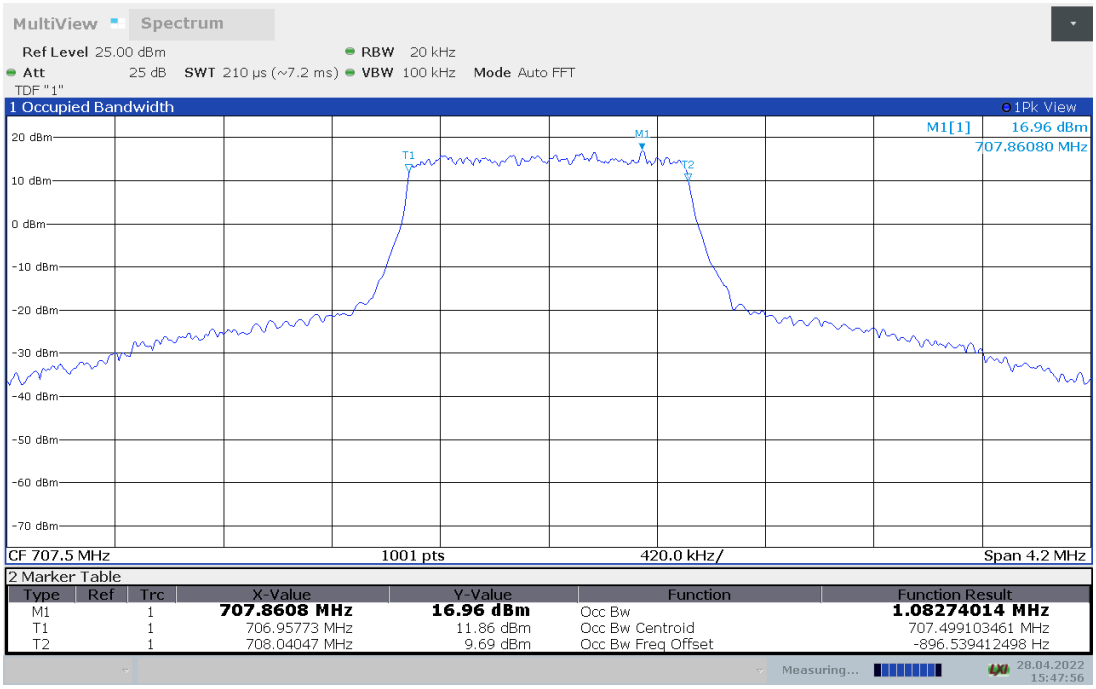
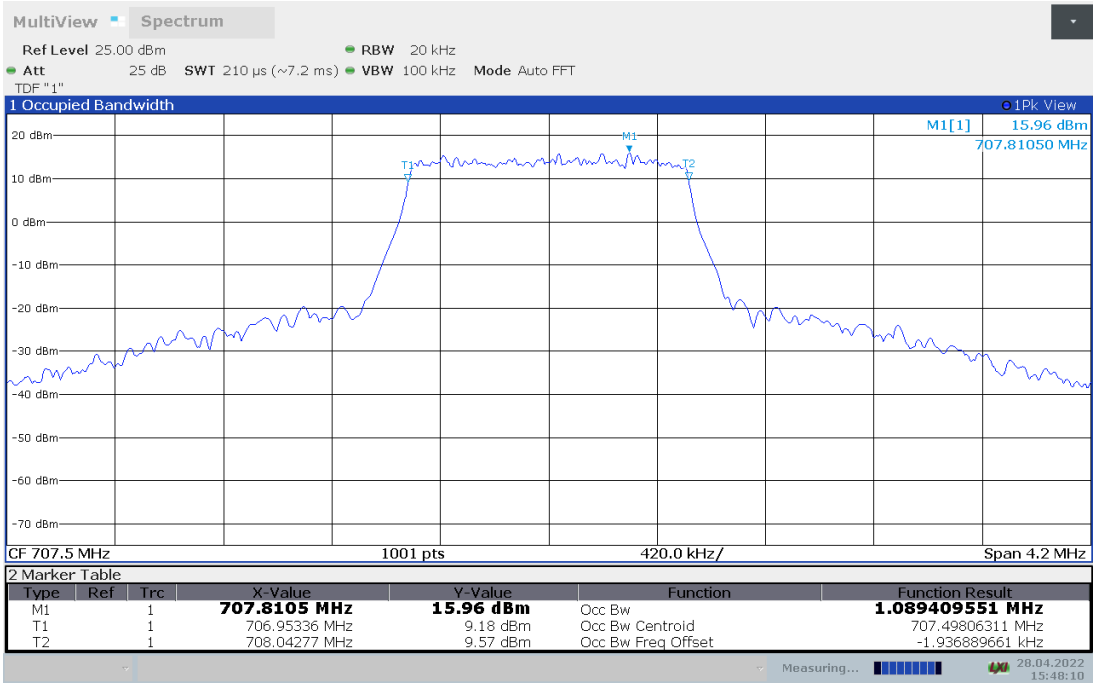
LTE band 12, 1.4MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
707.5	QPSK	16QAM	64QAM
	1.083	1.089	1.086

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



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



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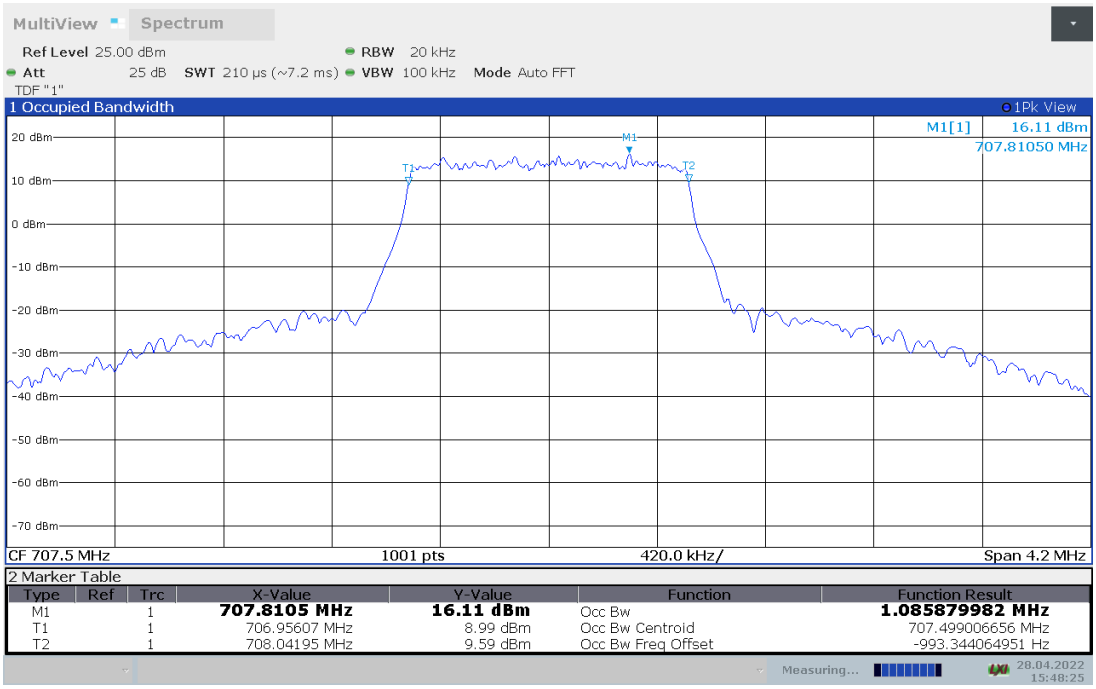
LTE band 12, 1.4MHz Bandwidth, 64QAM (99% BW)



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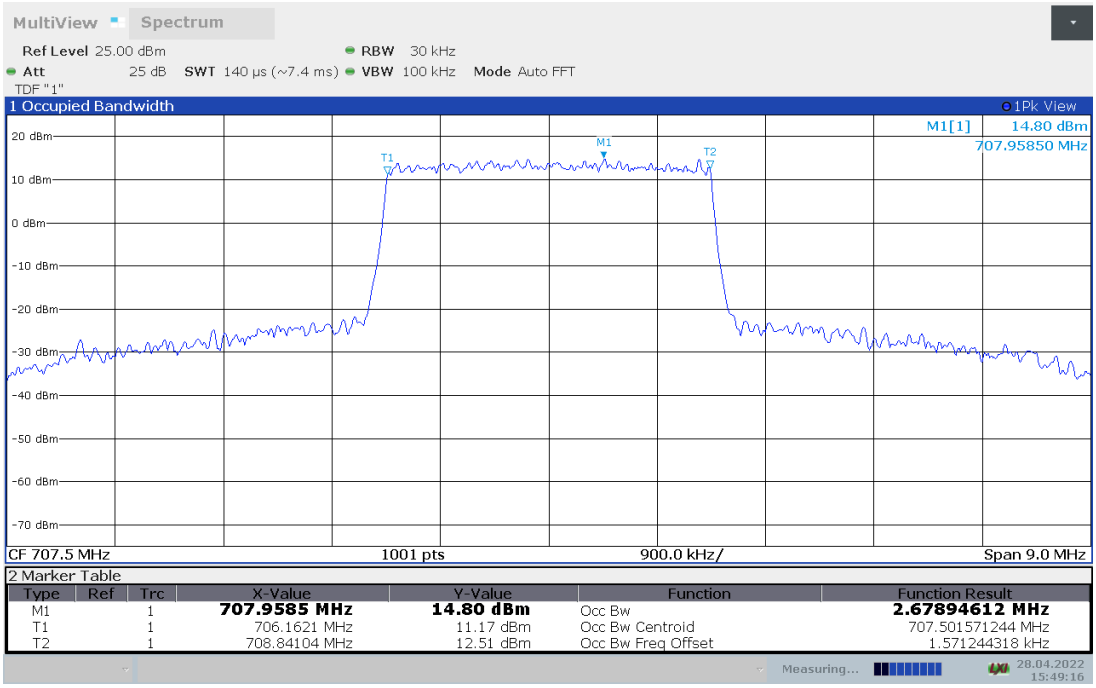
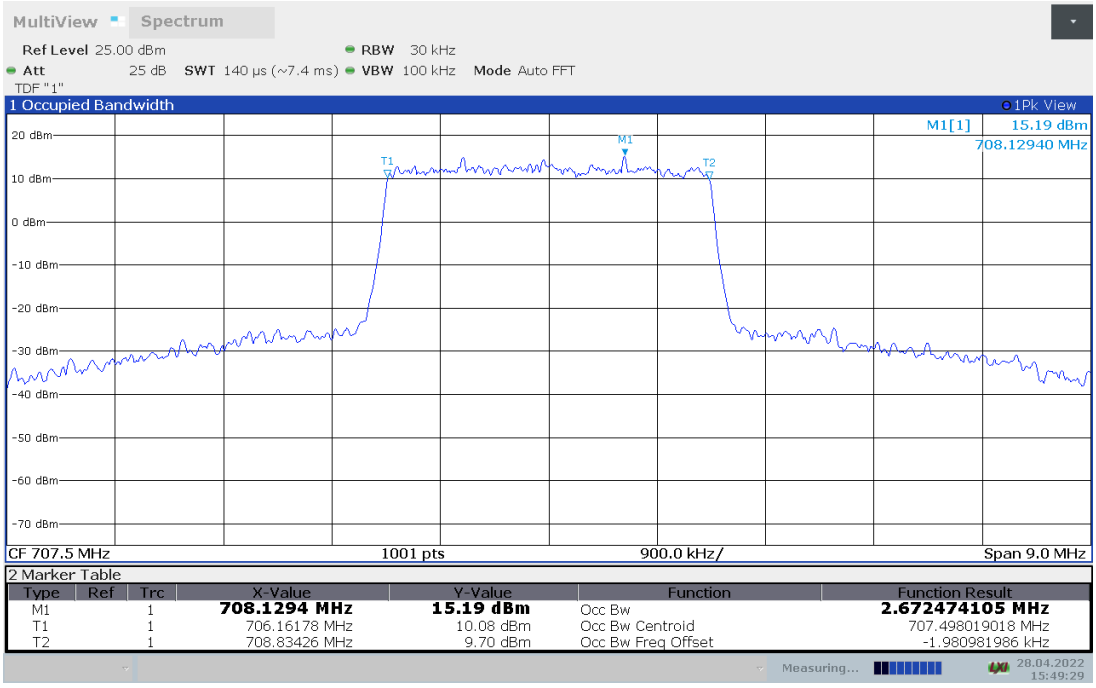
LTE band 12, 3MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
707.5	QPSK	16QAM	64QAM
	2.679	2.672	2.676

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



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



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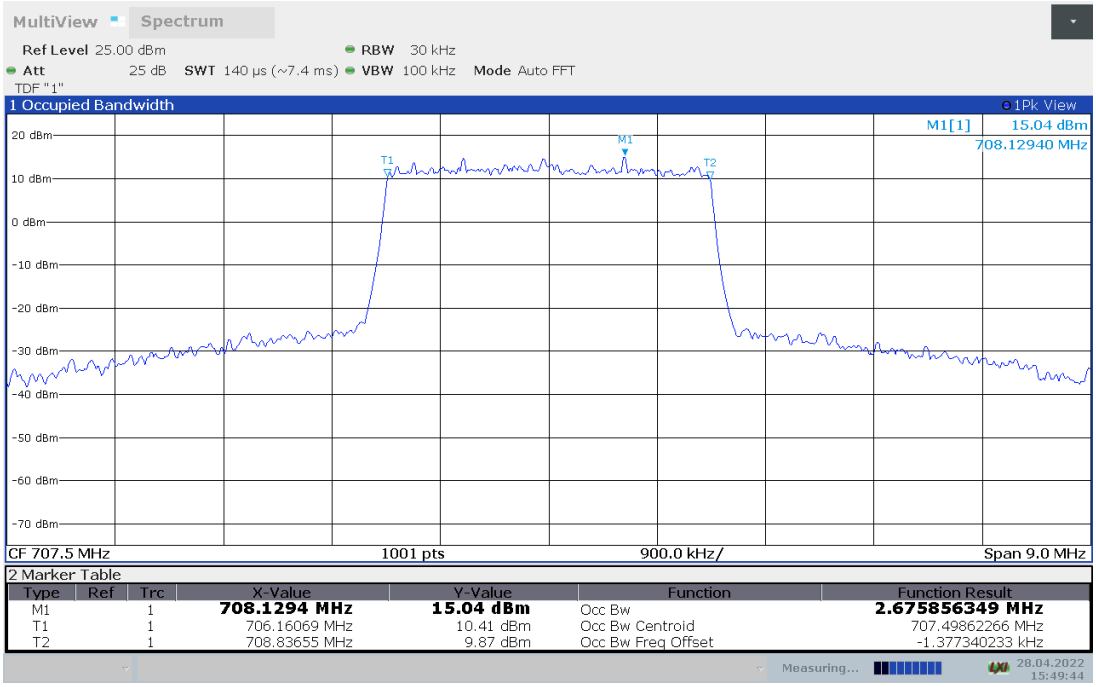
LTE band 12, 3MHz Bandwidth, 64QAM (99% BW)



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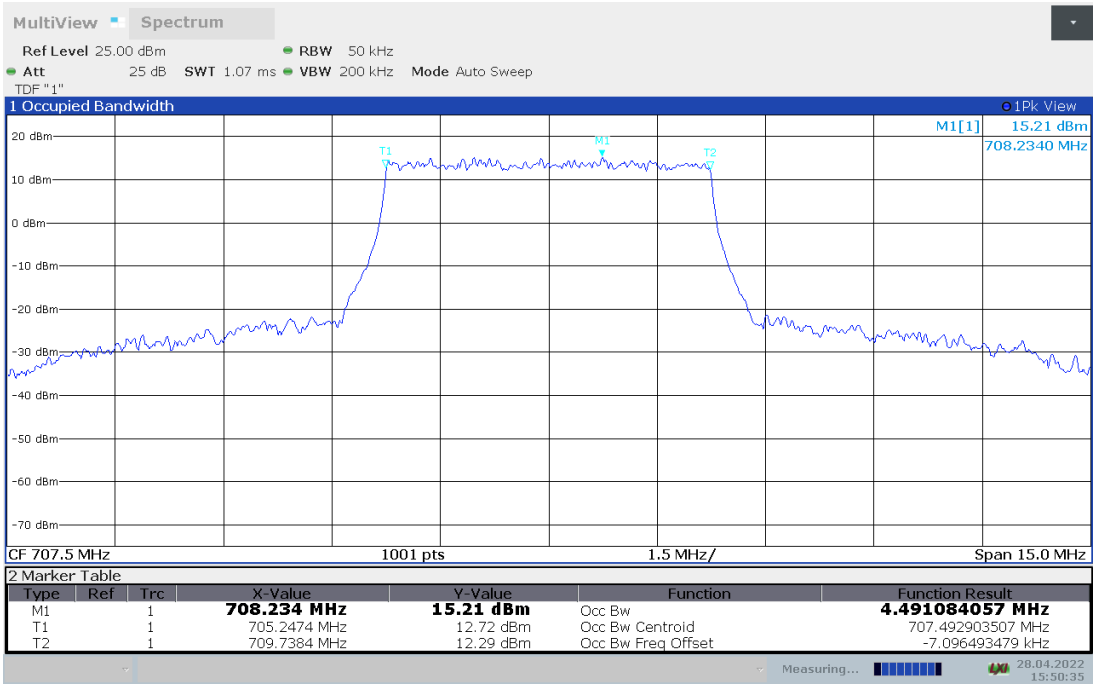
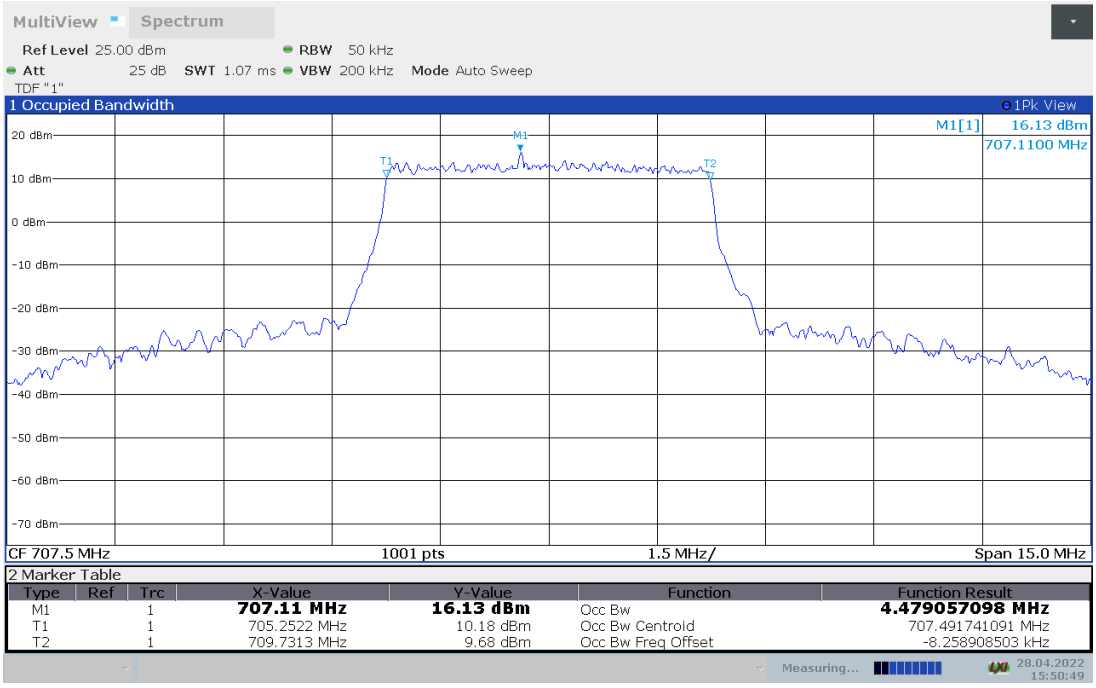
LTE band 12, 5MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
707.5	QPSK	16QAM	64QAM
	4.491	4.479	4.479

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



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



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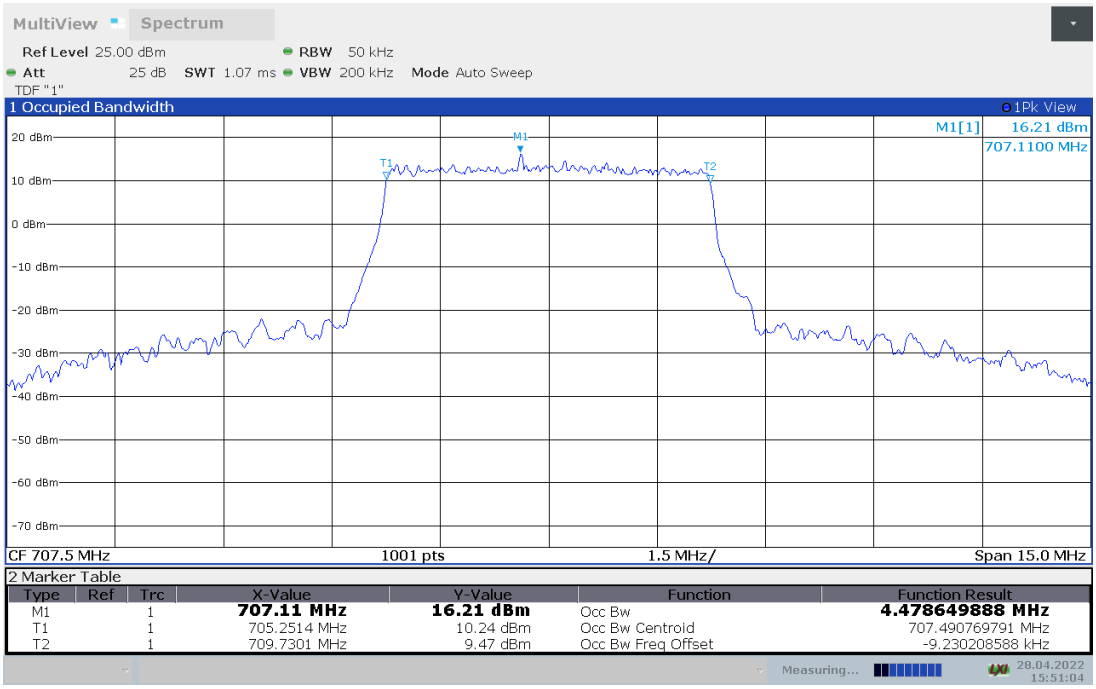
LTE band 12, 5MHz Bandwidth,64QAM (99% BW)



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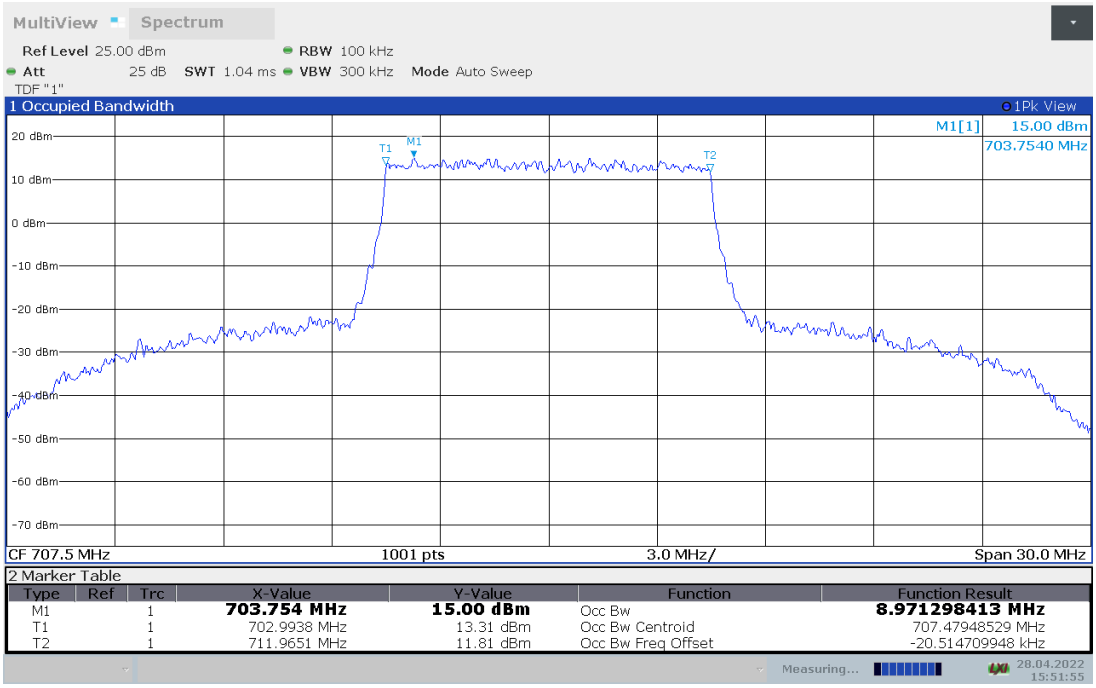
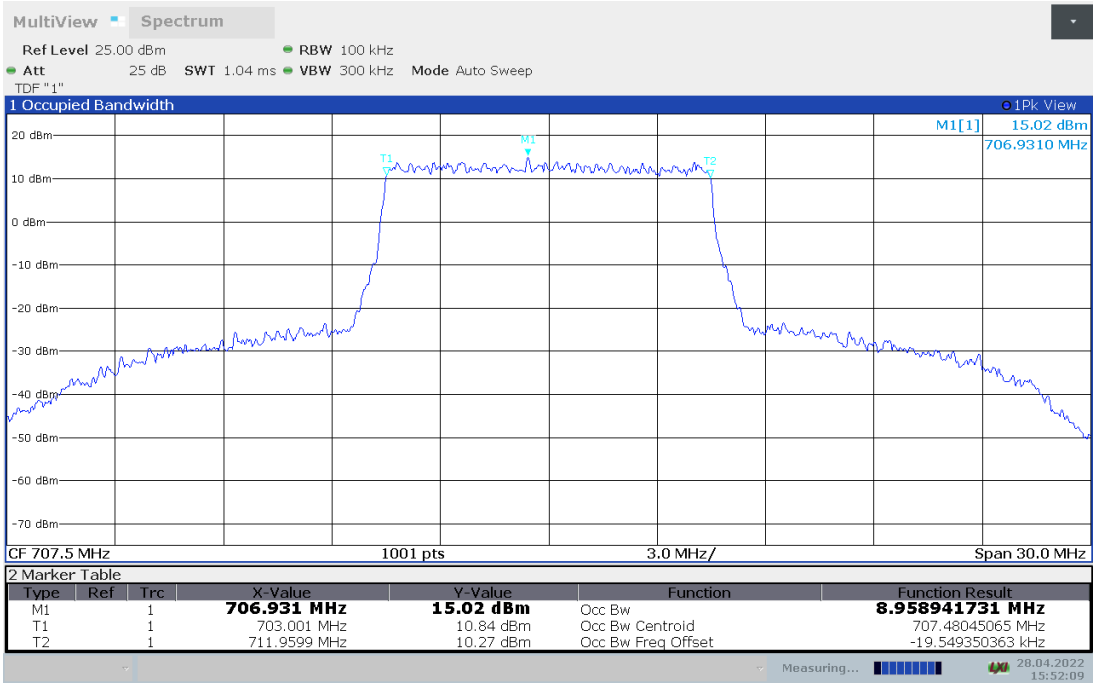
LTE band 12, 10MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
707.5	8.971	8.959	8.969

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



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



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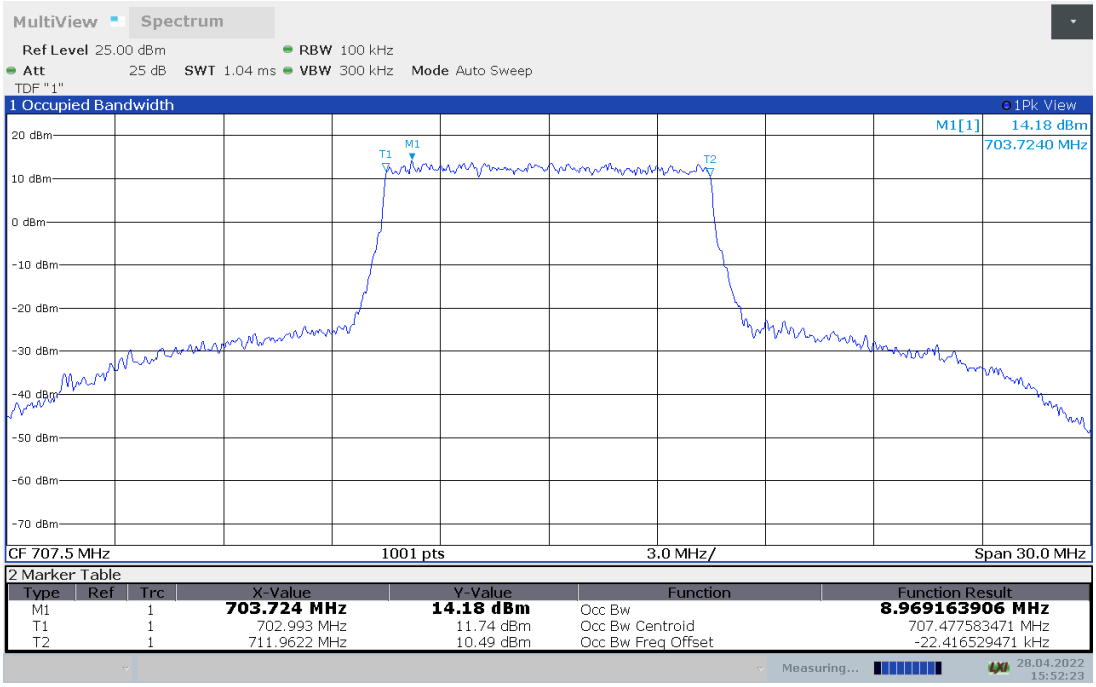
LTE band 12, 10MHz Bandwidth, 64QAM (99% BW)



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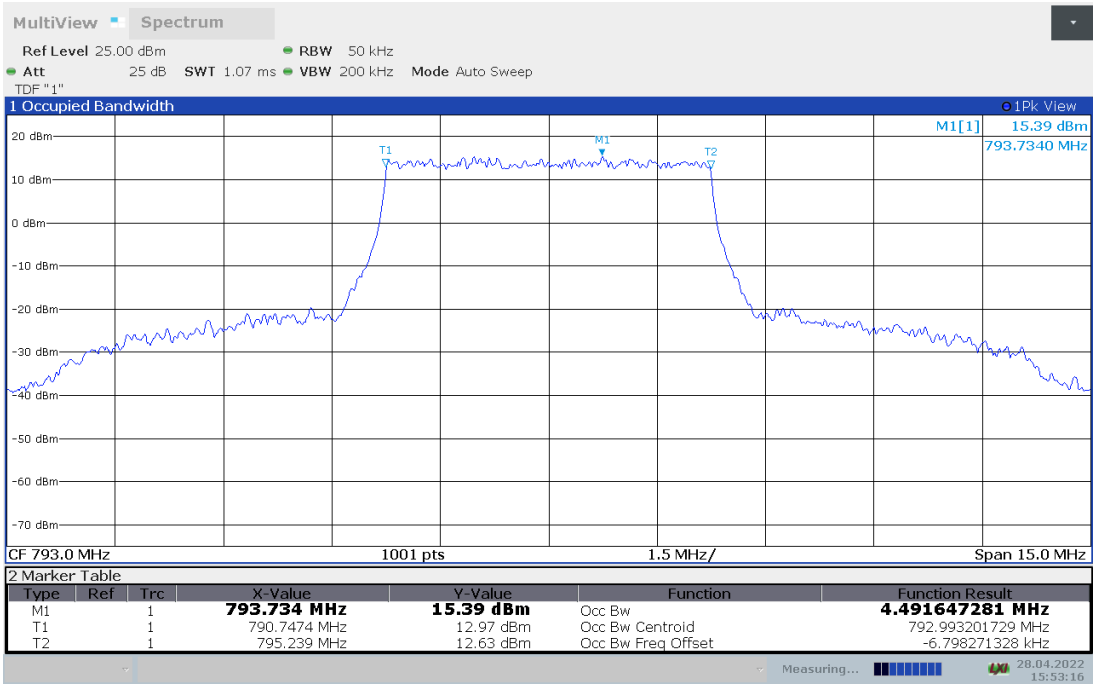
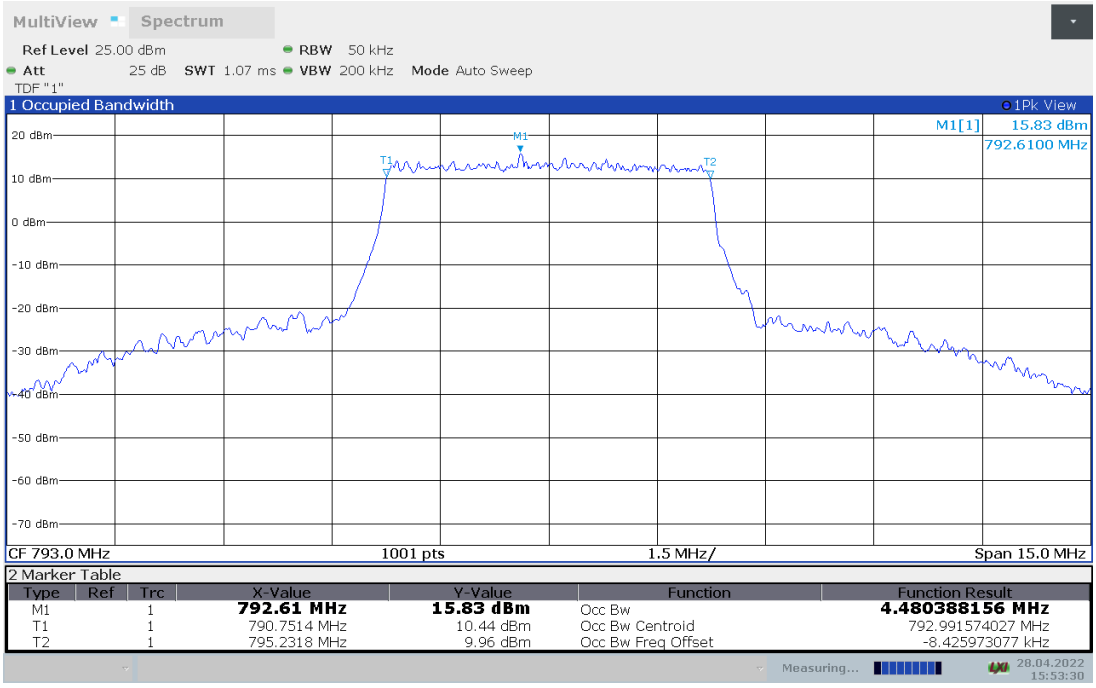
LTE band 14, 5MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
793.0	QPSK	16QAM	64QAM
	4.492	4.480	4.477

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



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



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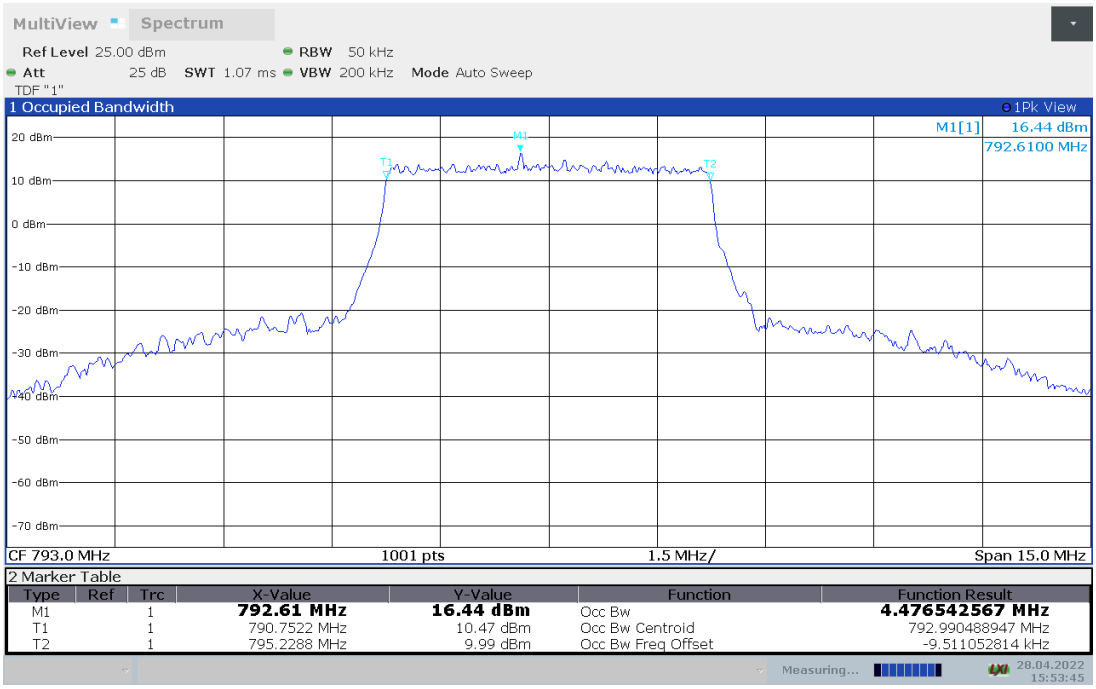
LTE band 14, 5MHz Bandwidth,64QAM (99% BW)



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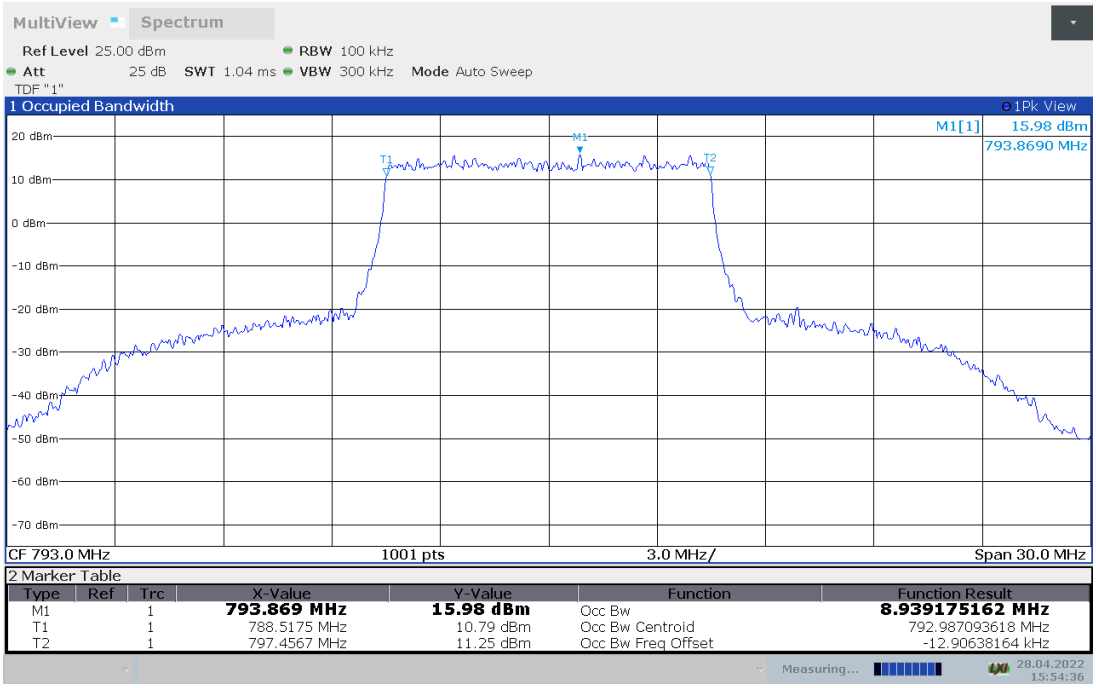
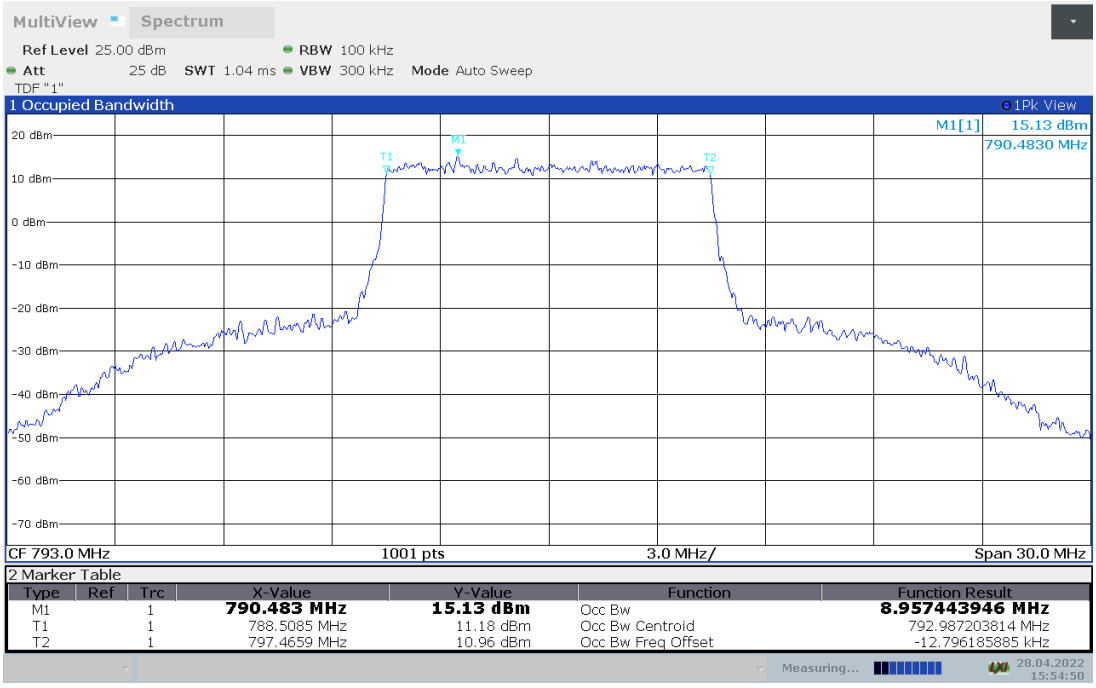
LTE band 14, 10MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
793.0	8.939	8.957	8.962

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



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



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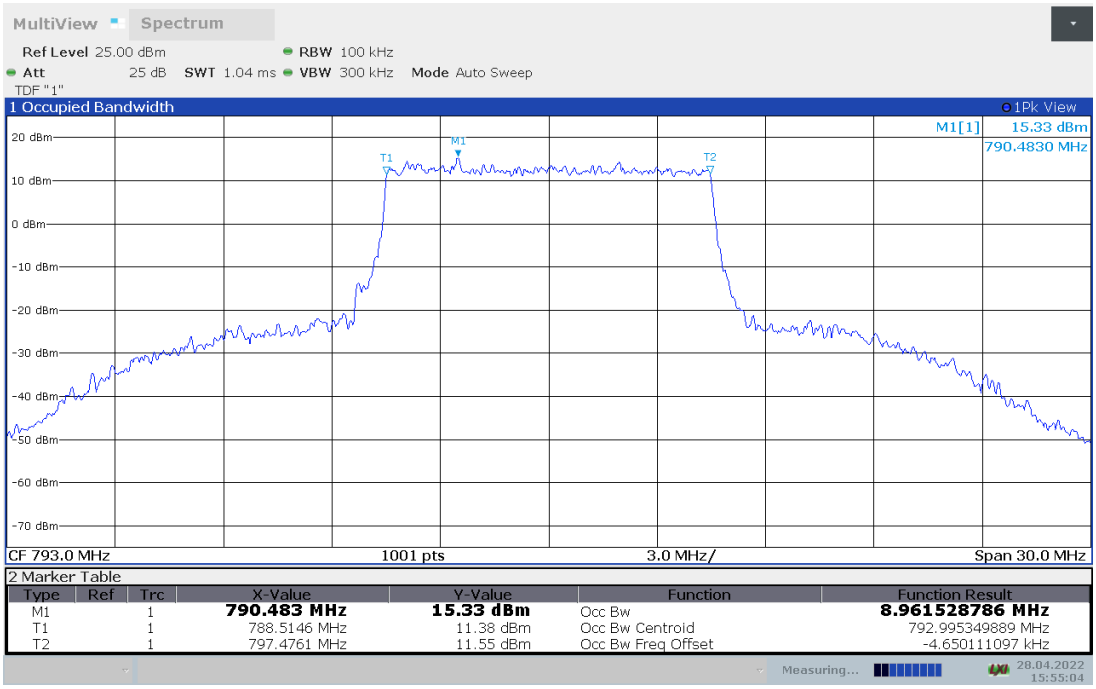
LTE band 14, 10MHz Bandwidth, 64QAM (99% BW)



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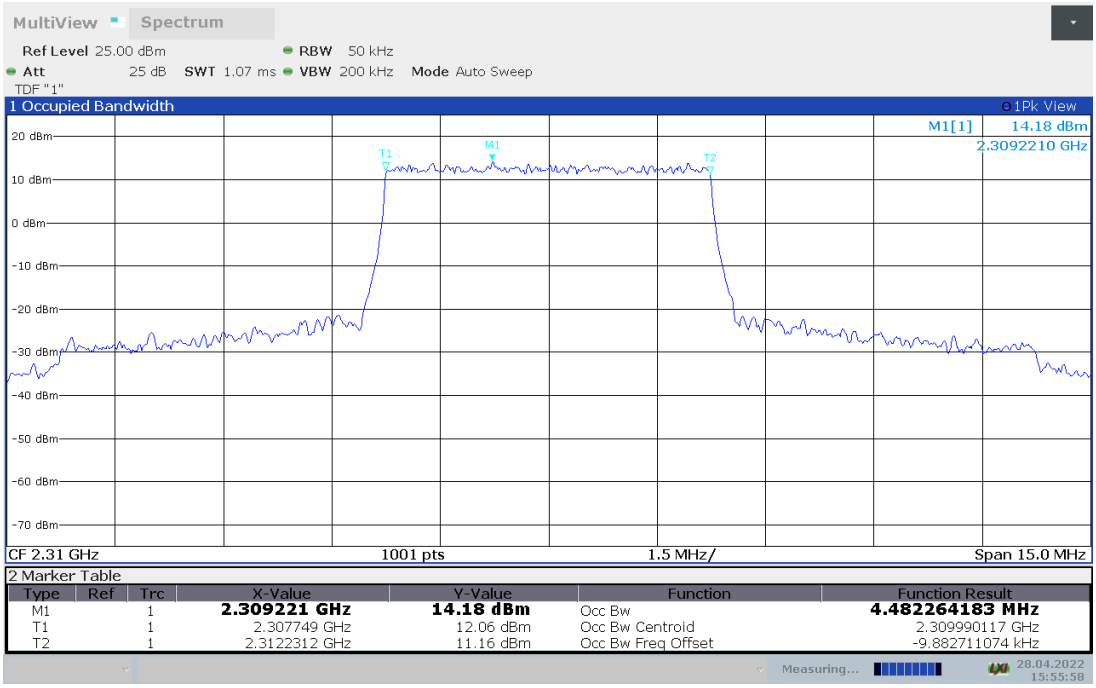
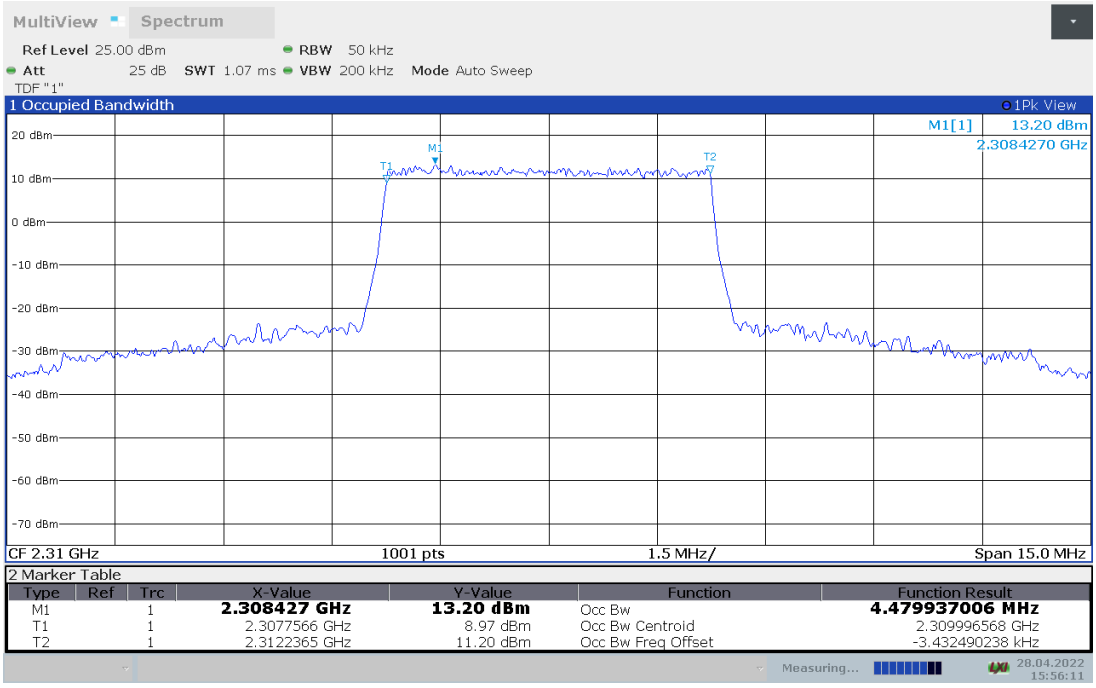
LTE band 30, 5MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
2310.0	QPSK	16QAM	64QAM
	4.482	4.480	4.477

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



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



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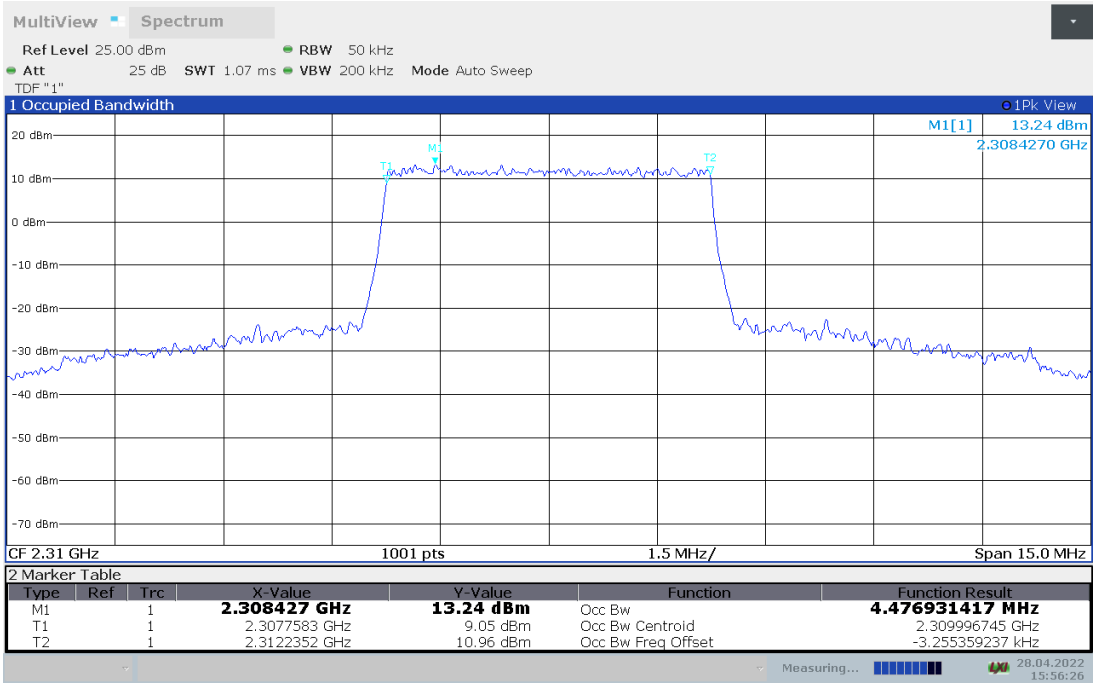
LTE band 30, 5MHz Bandwidth,64QAM (99% BW)



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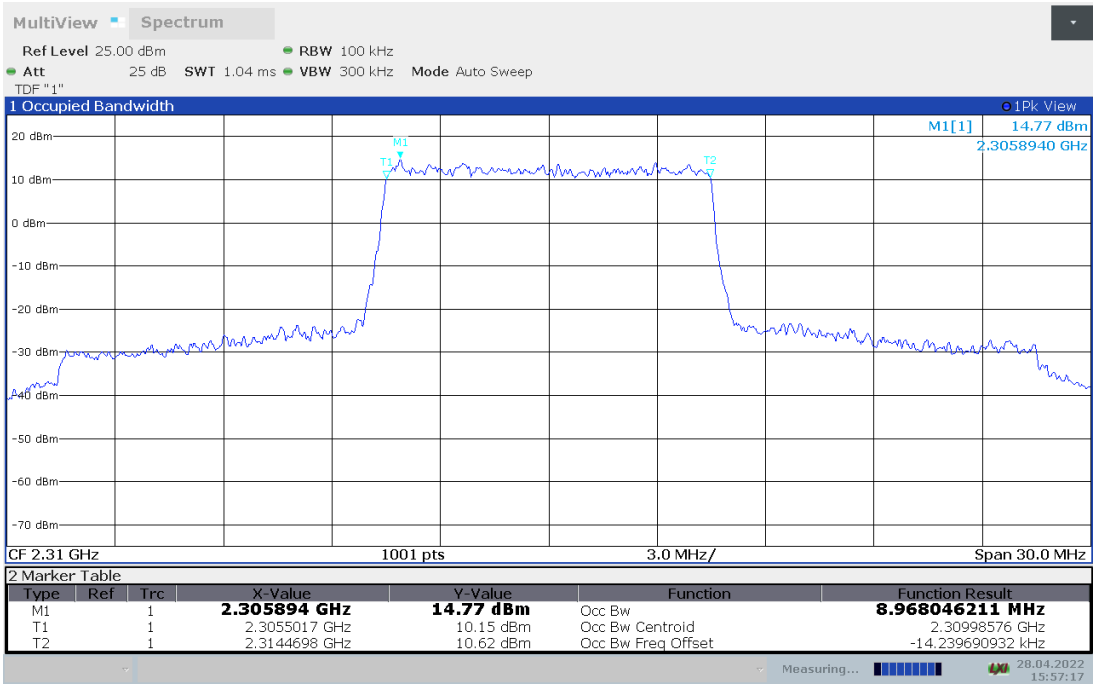
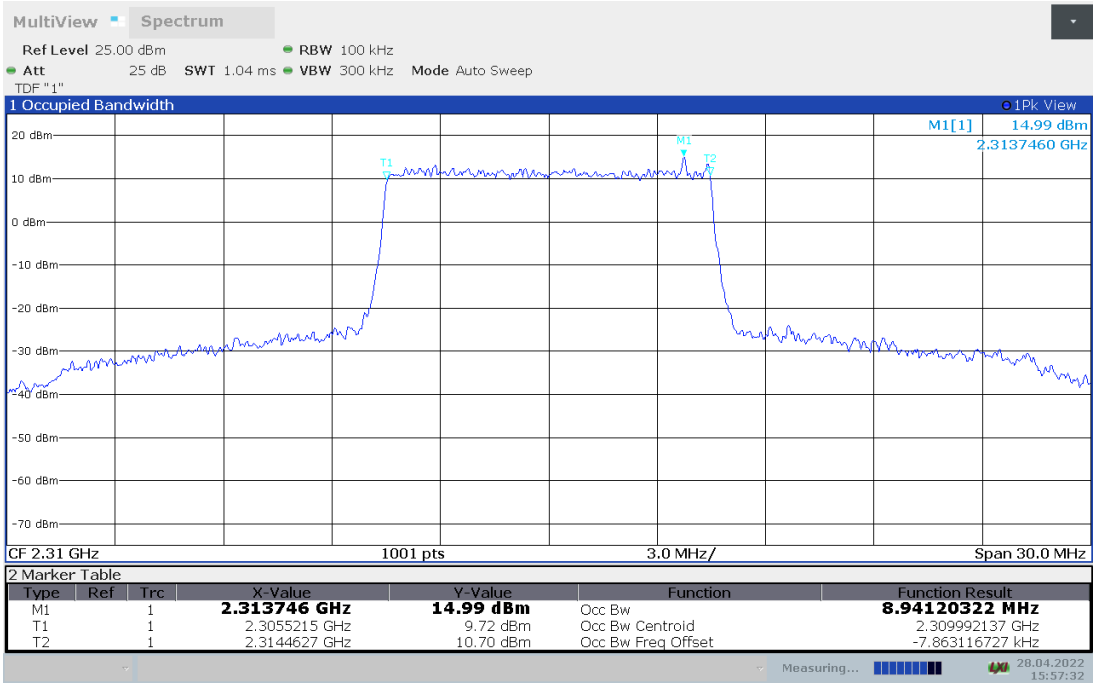
LTE band 30, 10MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
2310.0	8.968	8.941	8.939

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



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



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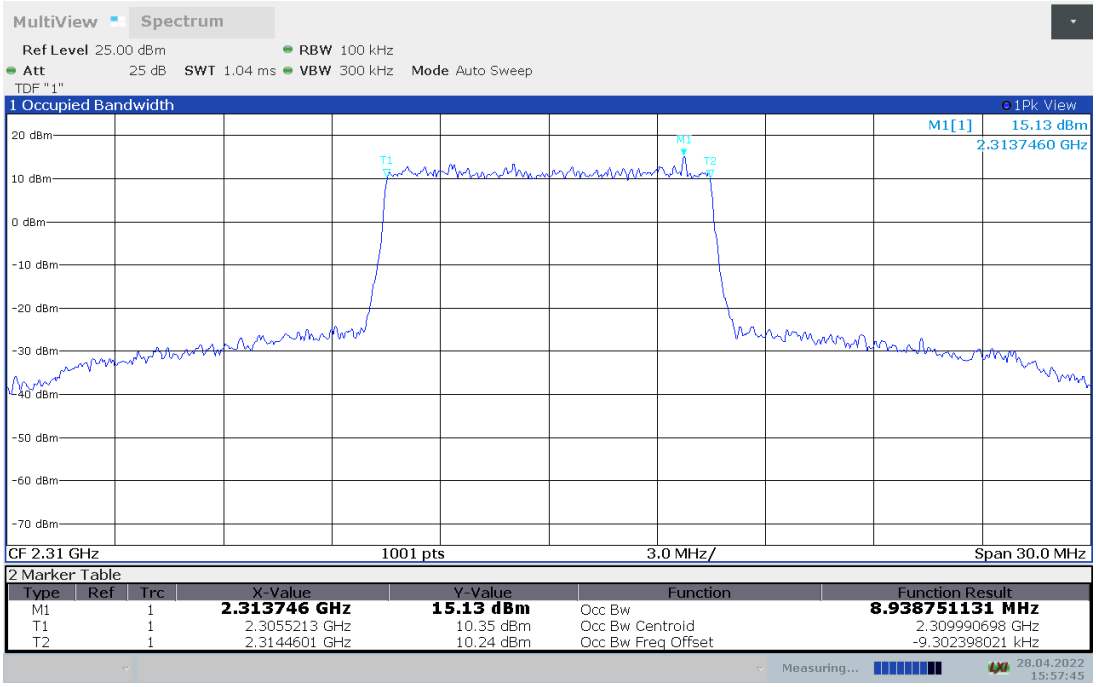
LTE band 30, 10MHz Bandwidth, 64QAM (99% BW)



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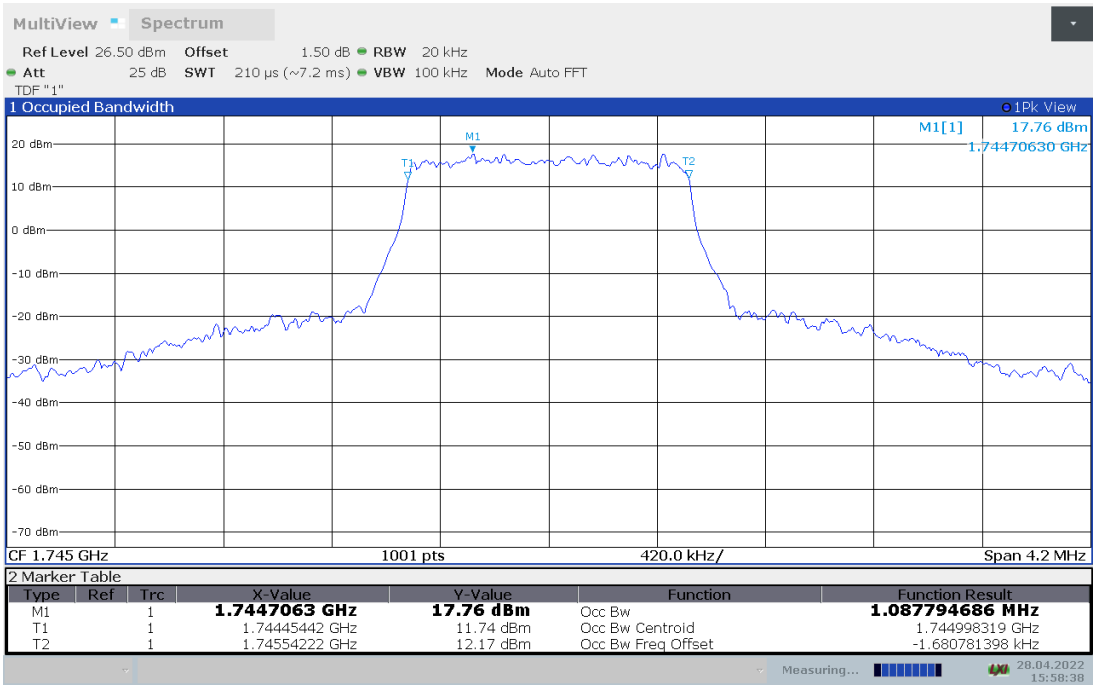
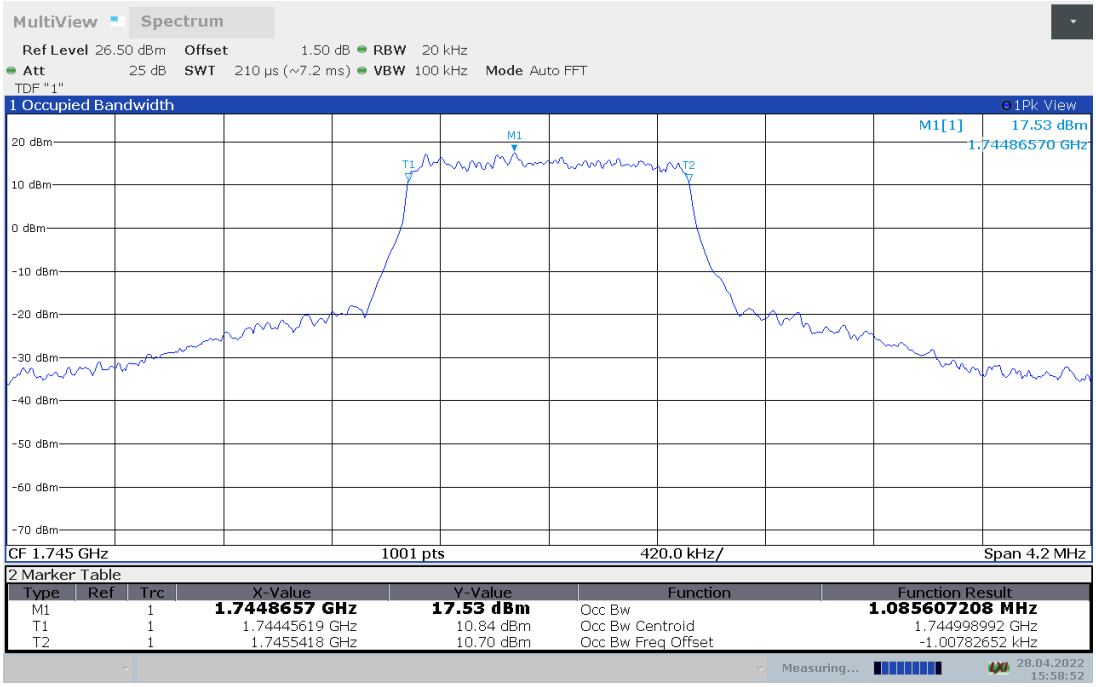
LTE band 66, 1.4MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
1745.0	QPSK	16QAM	64QAM
	1.088	1.086	1.086

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



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



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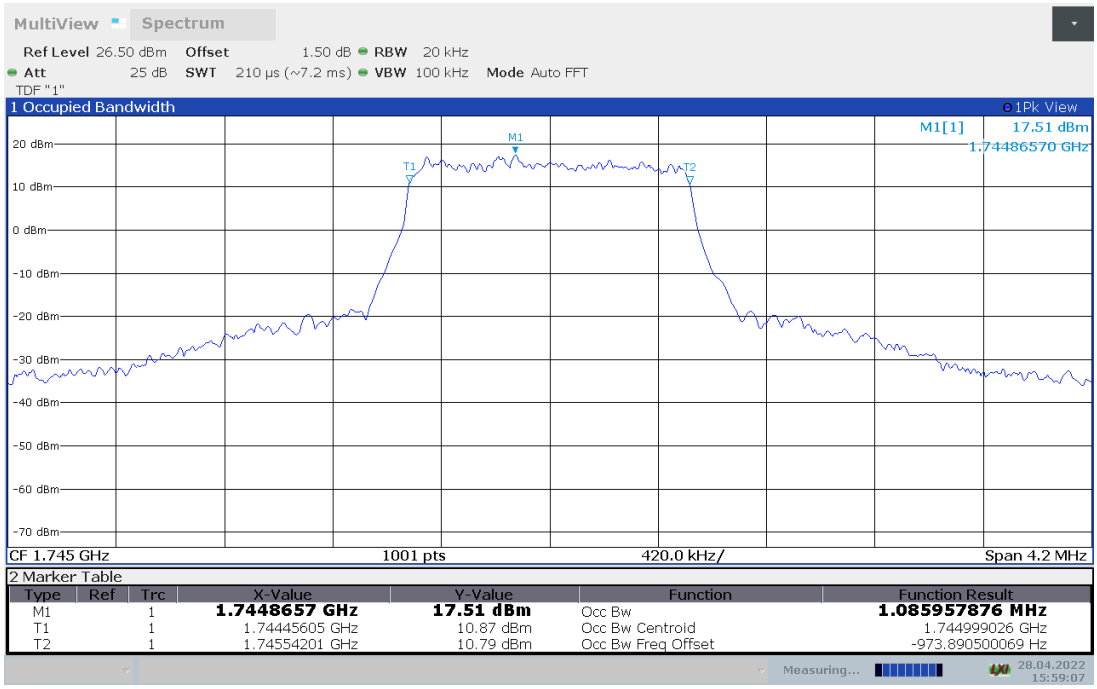
LTE band 66, 1.4MHz Bandwidth, 64QAM (99% BW)



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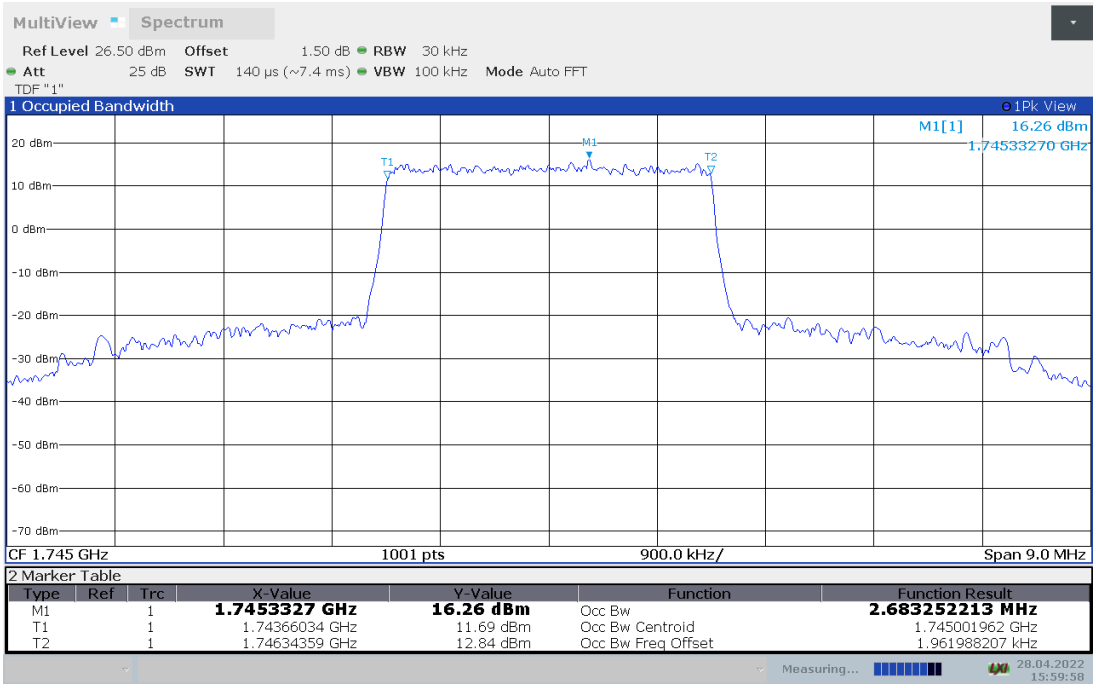
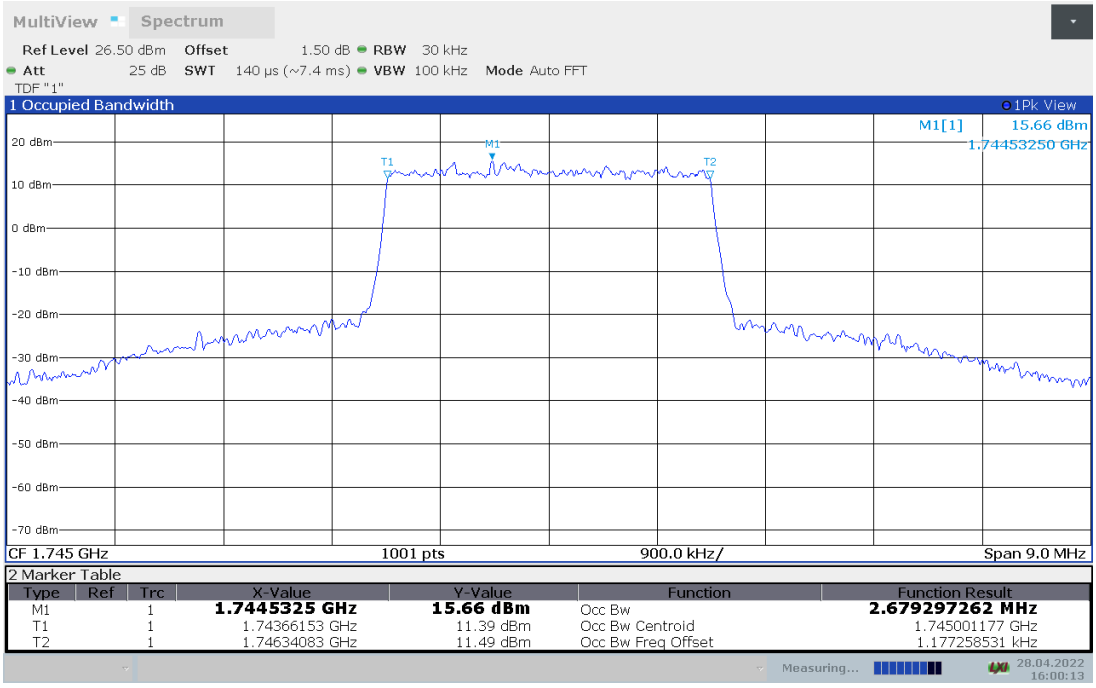
LTE band 66, 3MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1745.0	2.683	2.679	2.675

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



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



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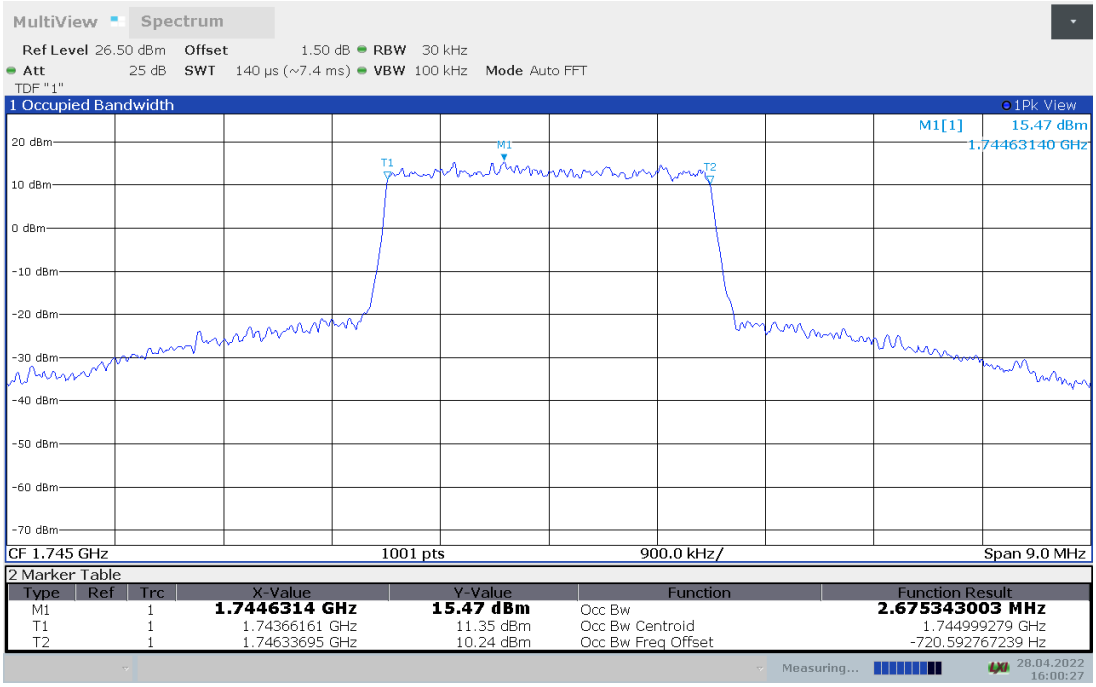
LTE band 66, 3MHz Bandwidth, 64QAM (99% BW)



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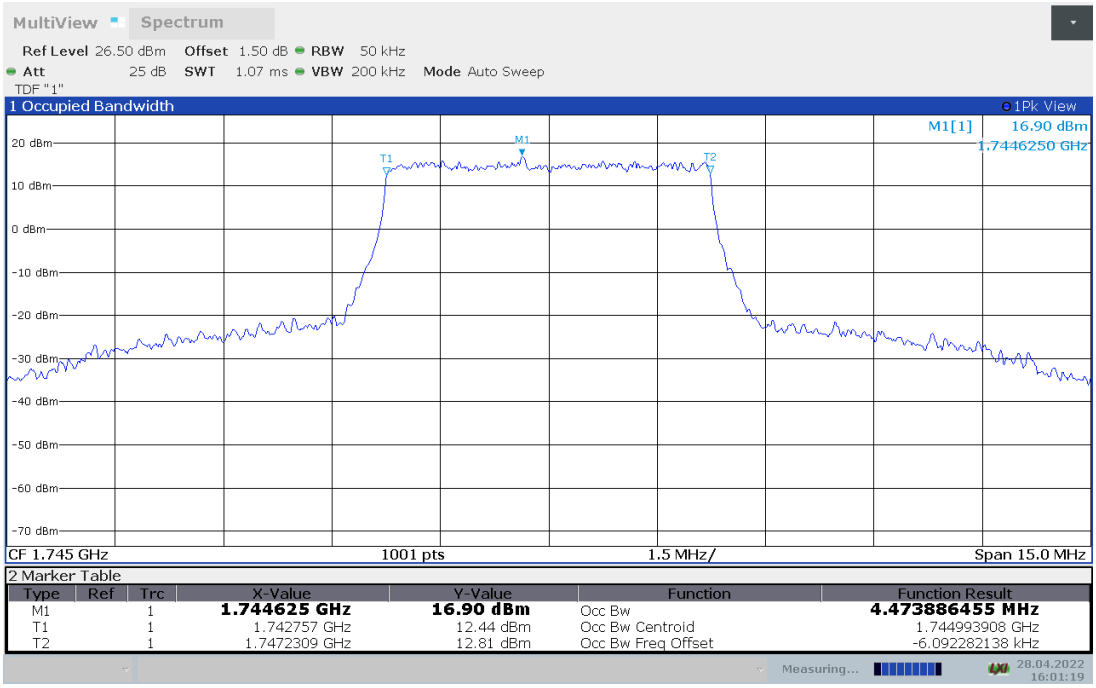
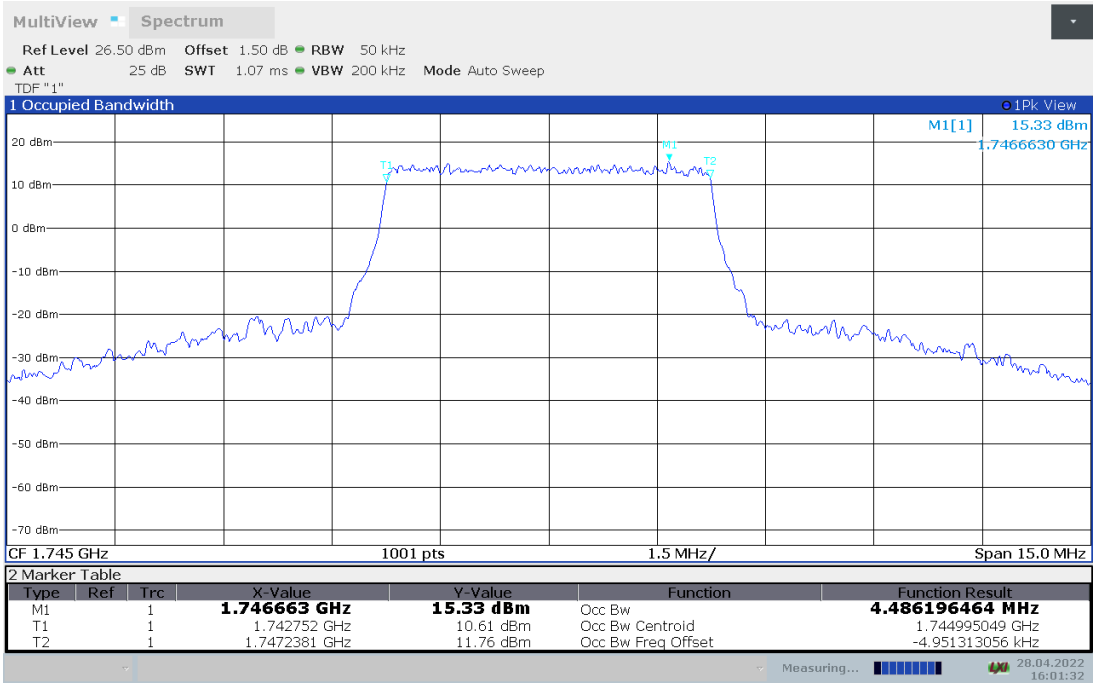
LTE band 66, 5MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1745.0	4.474	4.486	4.484

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



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



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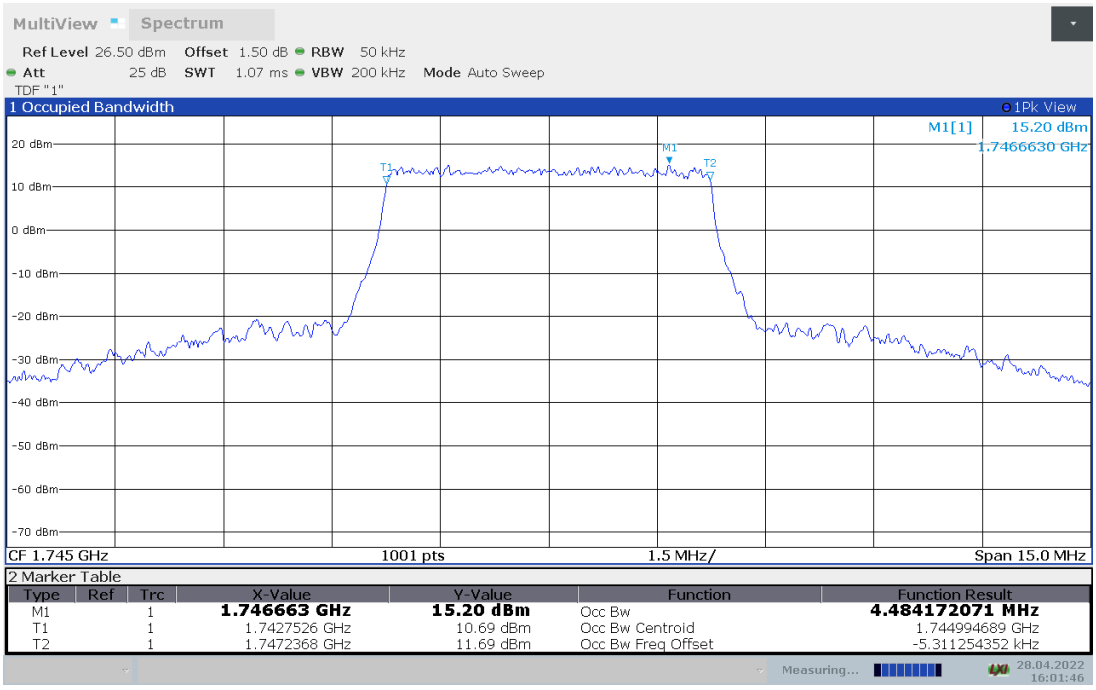
LTE band 66, 5MHz Bandwidth,64QAM (99% BW)



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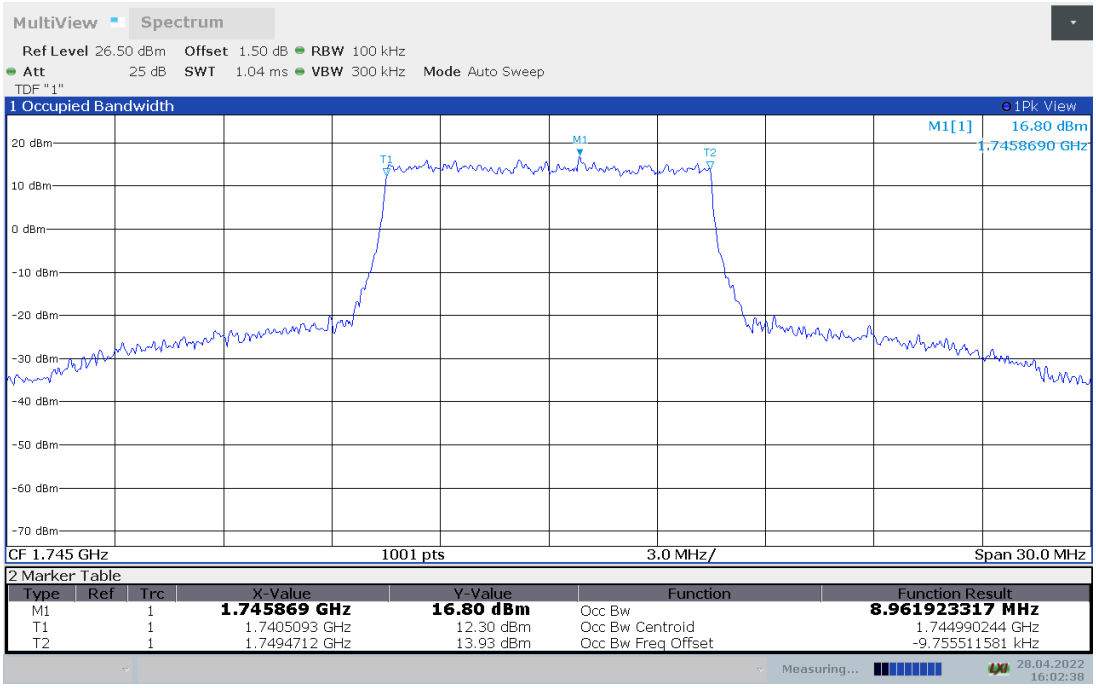
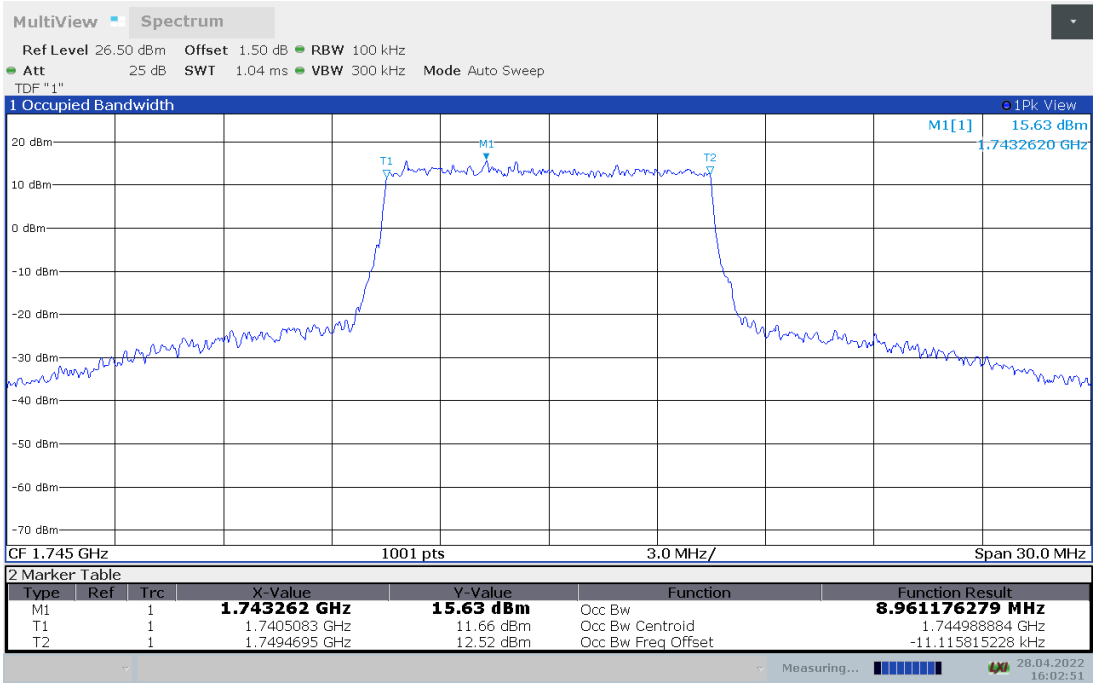
LTE band 66, 10MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1745.0	8.962	8.961	8.961

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



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



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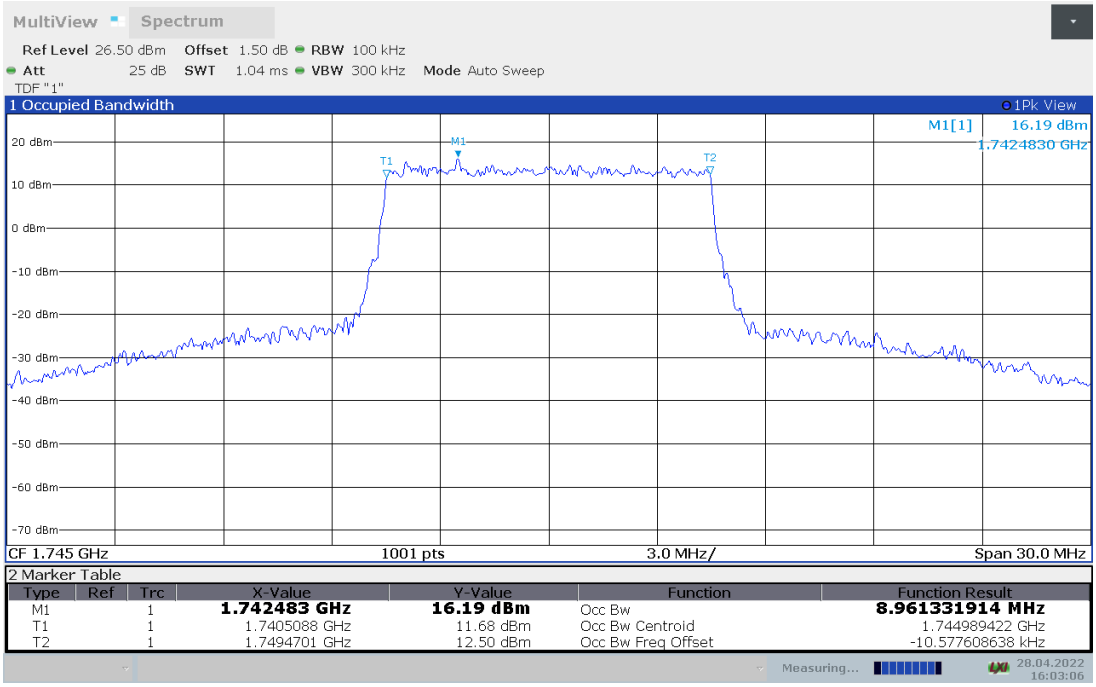
LTE band 66, 10MHz Bandwidth, 64QAM (99% BW)



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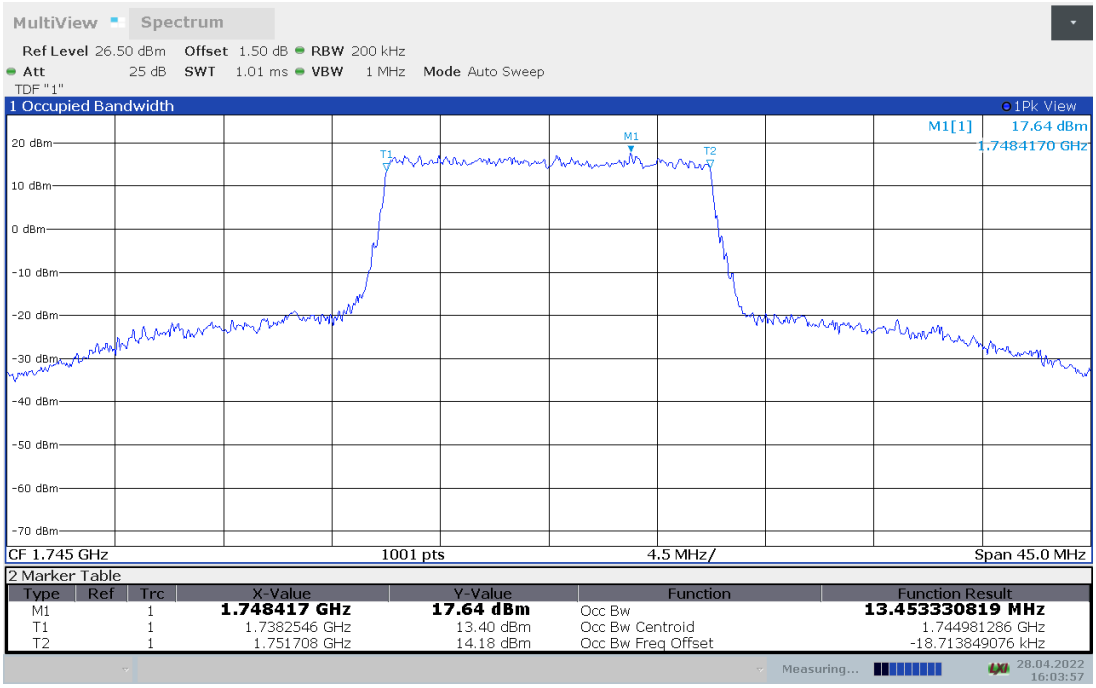
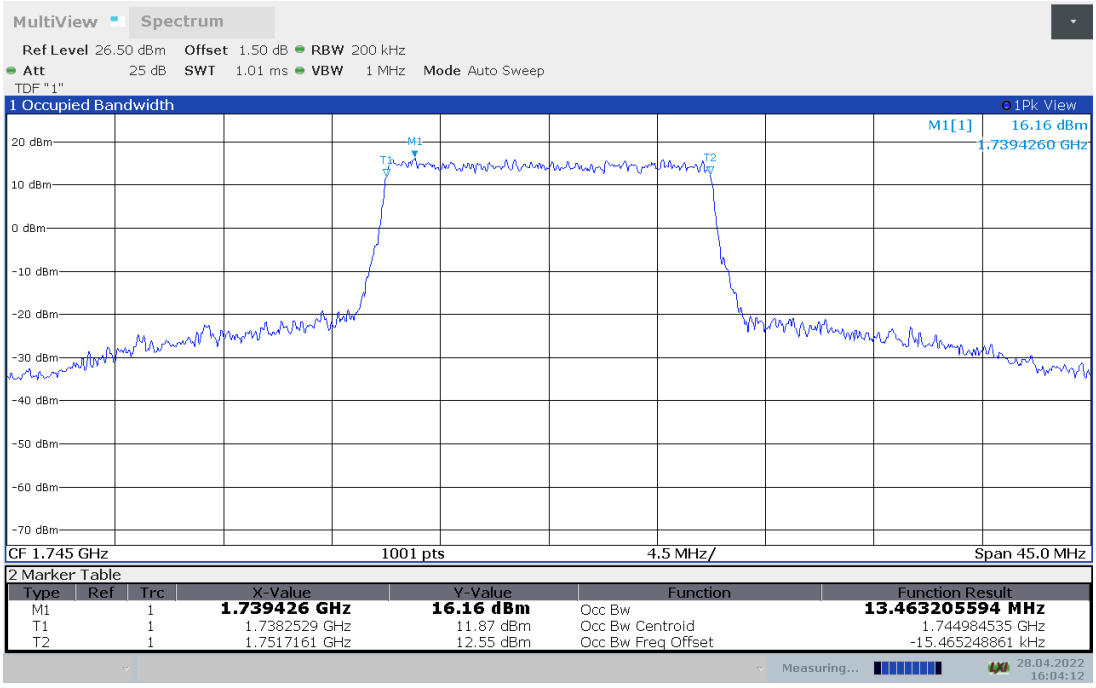
LTE band 66, 15MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1745.0	13.453	13.463	13.459

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



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



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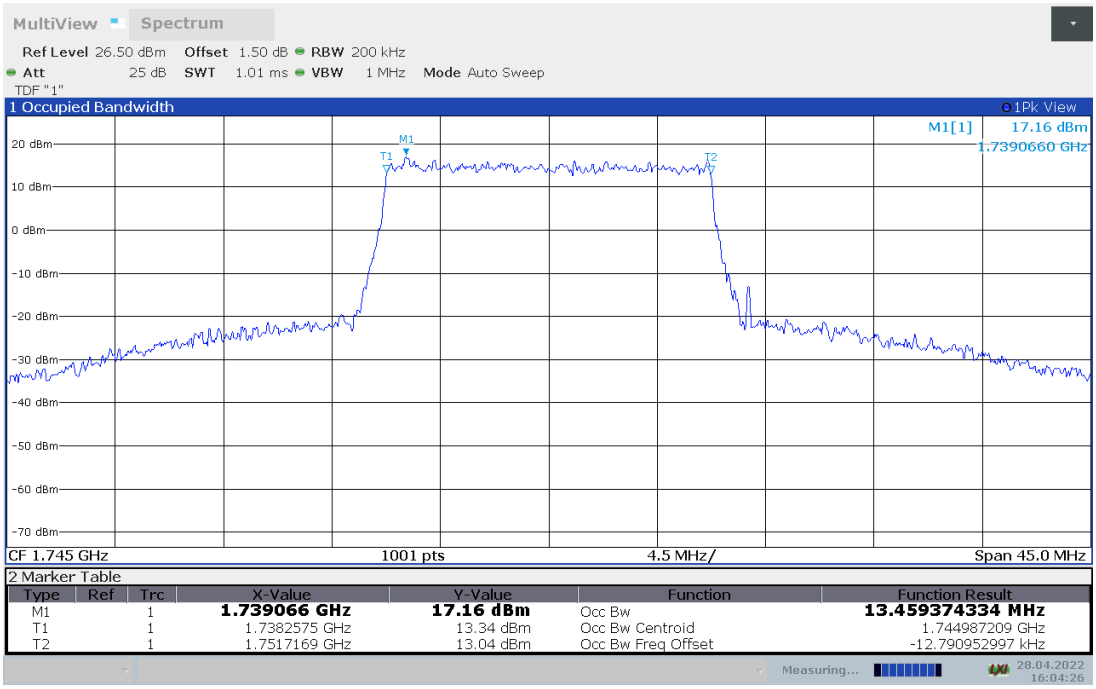
LTE band 66, 15MHz Bandwidth, 64QAM (99% BW)



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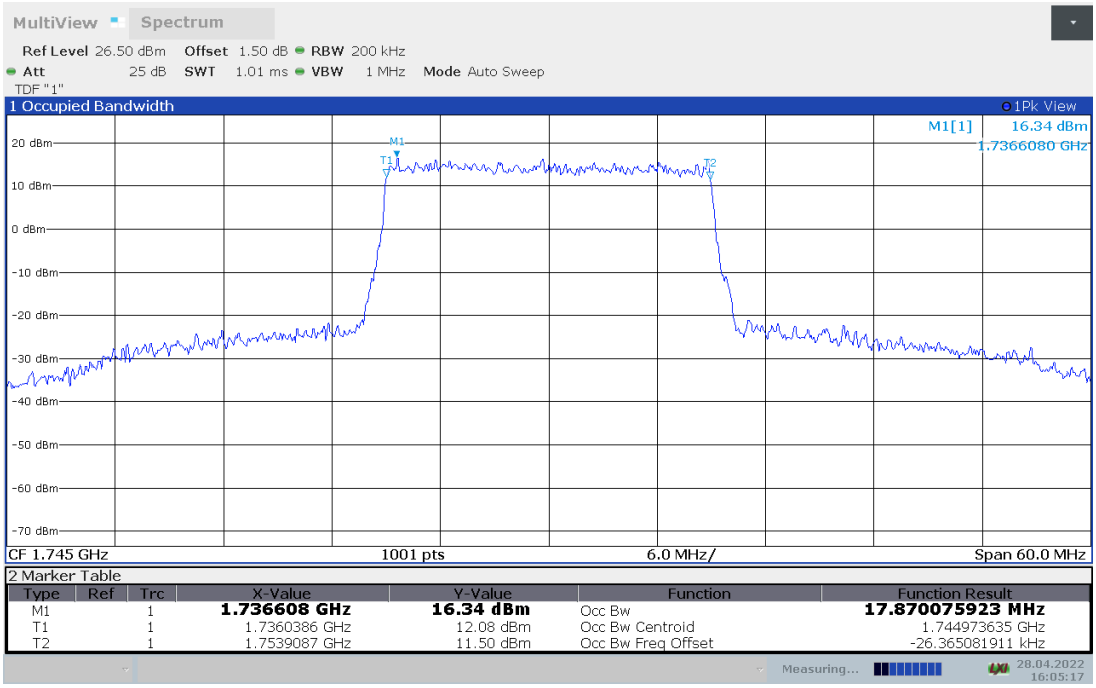
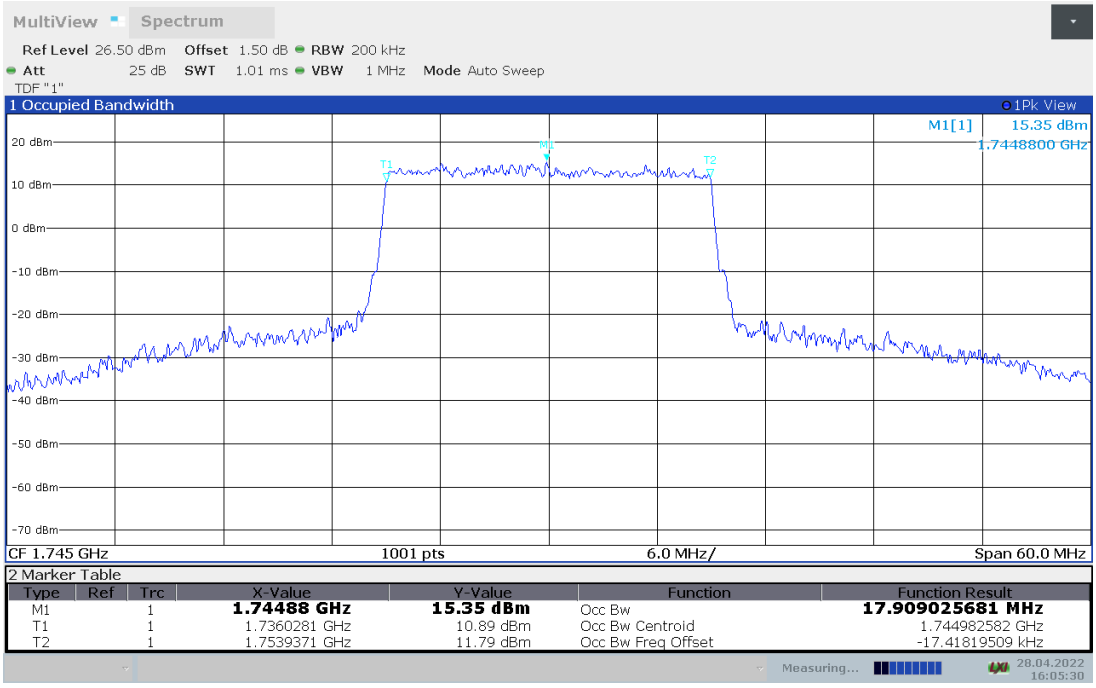
LTE band 66, 20MHz (99% BW)

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)		
	QPSK	16QAM	64QAM
1745.0	17.870	17.909	17.922

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



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



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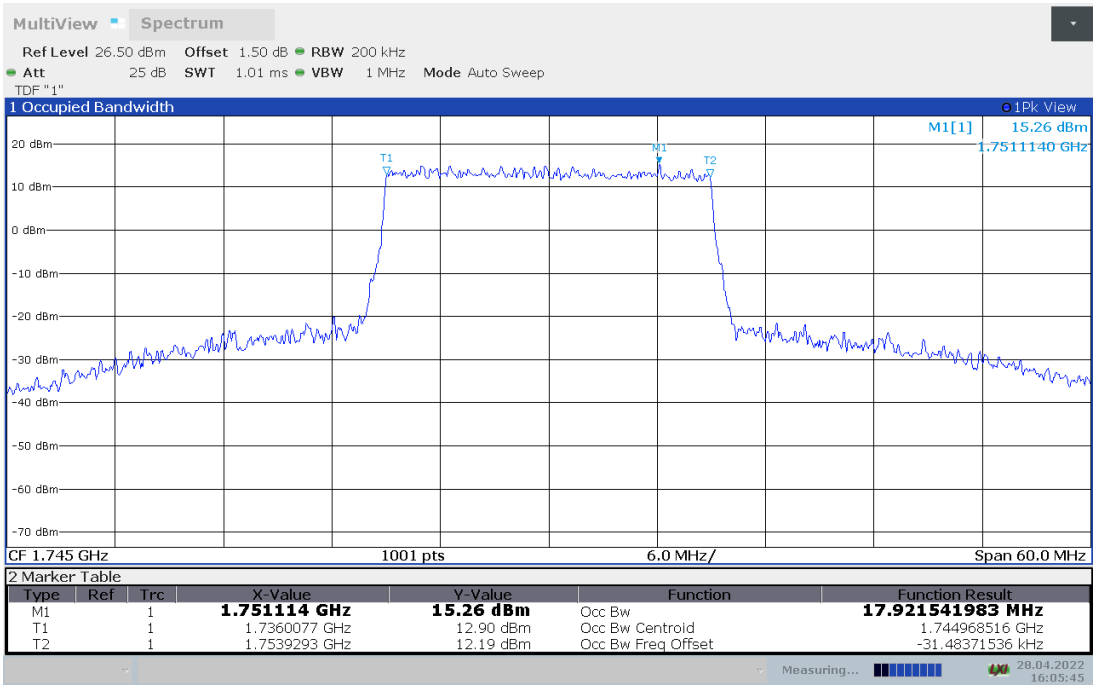
LTE band 66, 20MHz Bandwidth, 64QAM (99% BW)



Note: Expanded measurement uncertainty is U = 3428 Hz, k = 2

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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 BW)(MHz)		
1880.0	QPSK	16QAM	64QAM
	1.27	1.28	1.29

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

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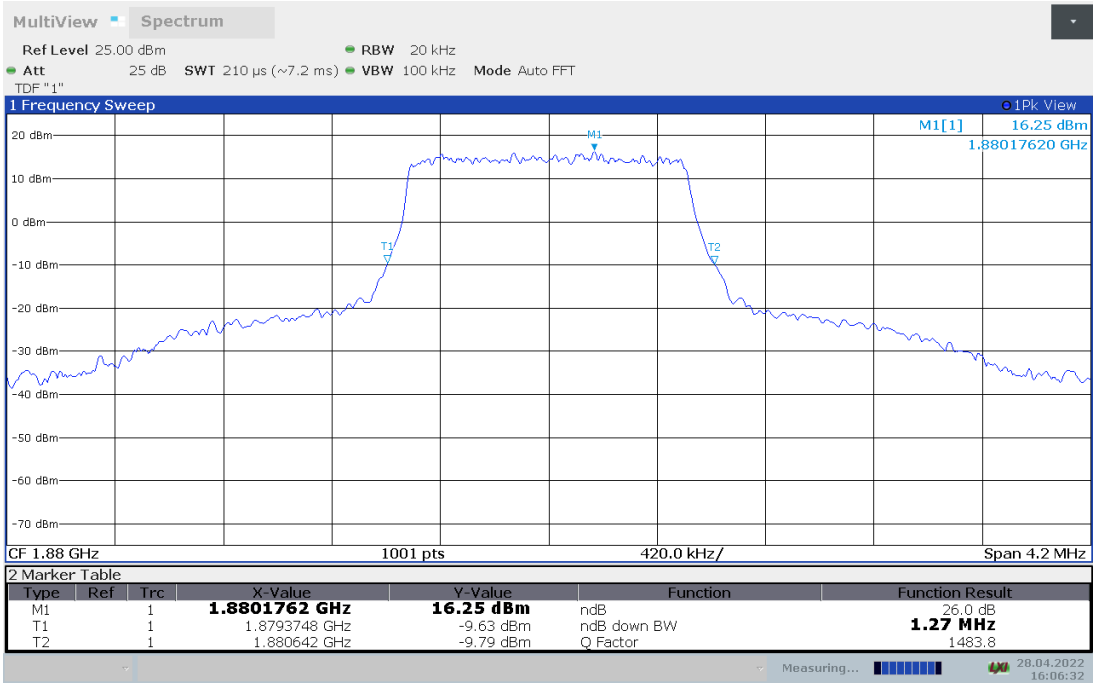
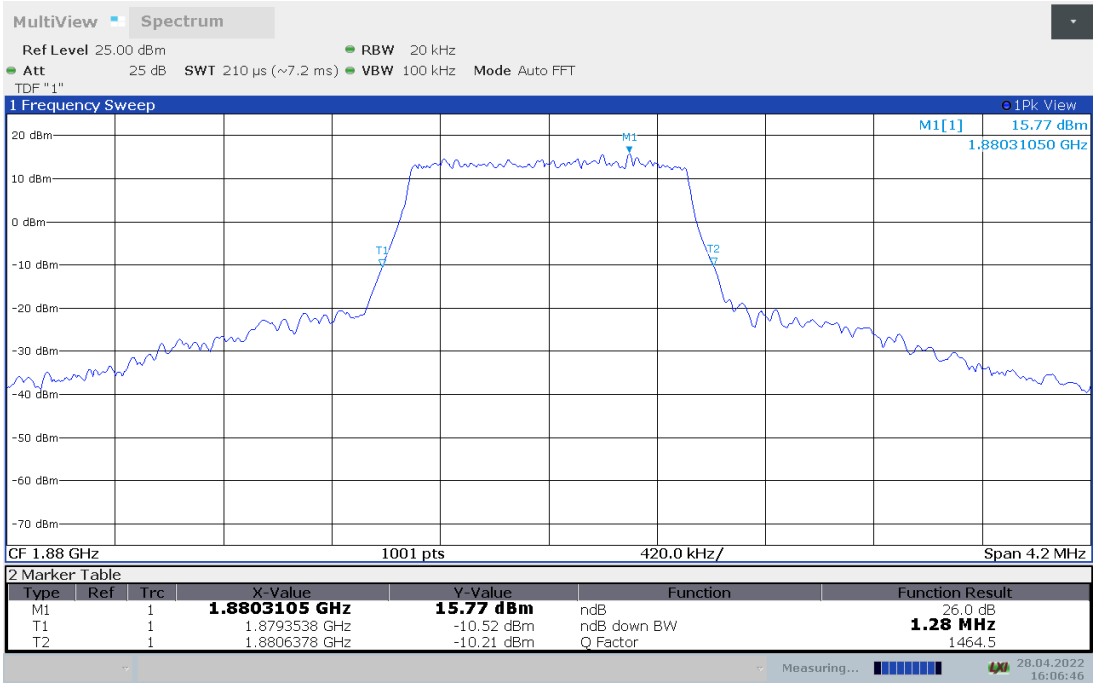


LTE band 2, 1.4MHz Bandwidth, 16QAM (-26dBc BW)



LTE band 2, 1.4MHz Bandwidth, 64QAM (-26dBc BW)

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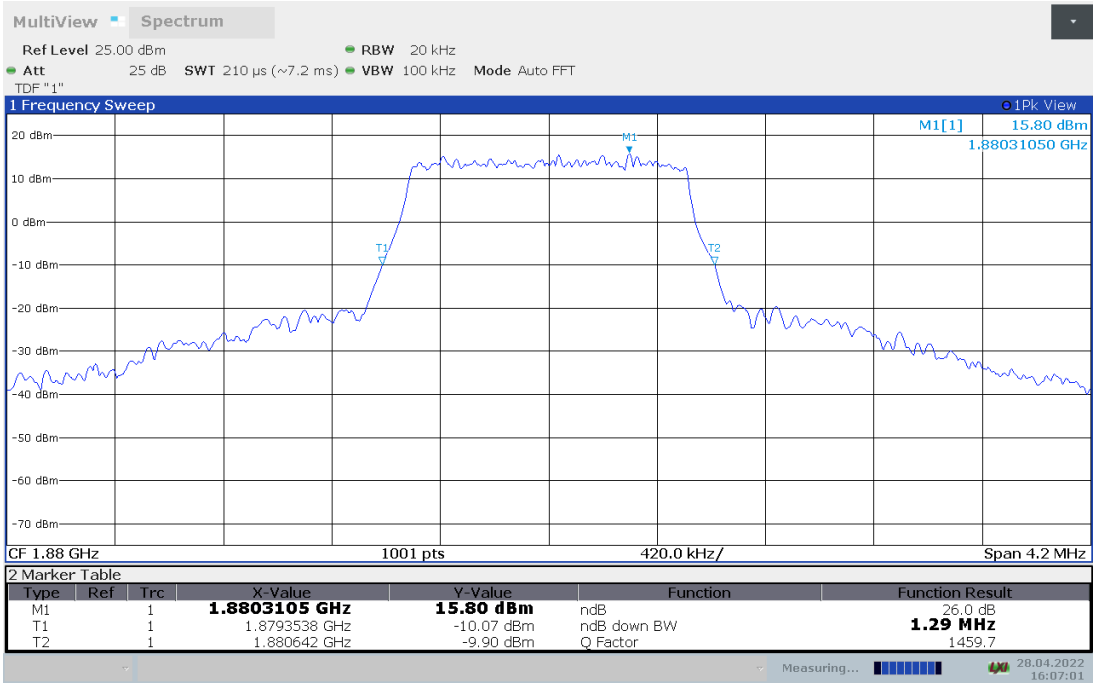

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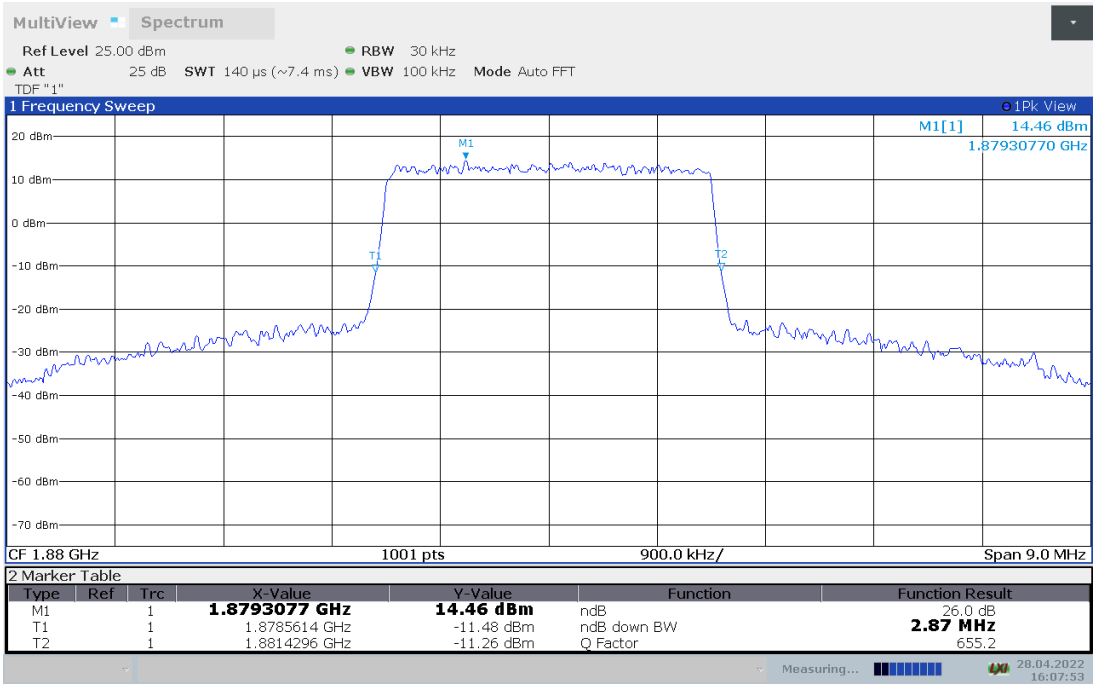
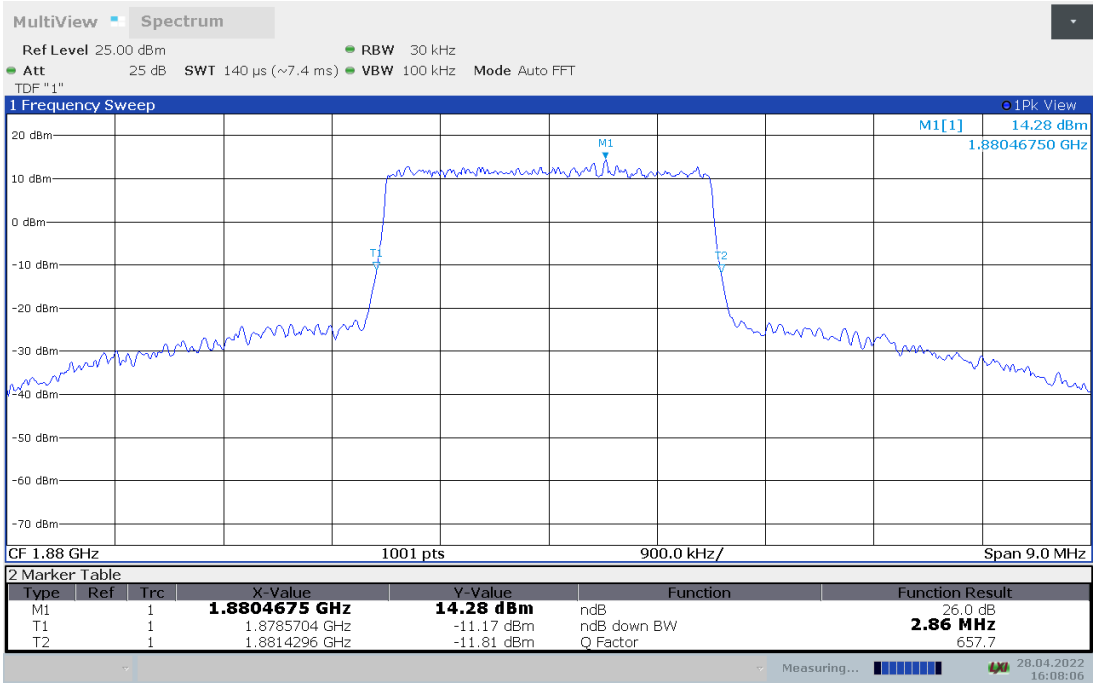
LTE band 2, 3MHz (-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)		
1880.0	QPSK	16QAM	64QAM
	2.87	2.86	2.86

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



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



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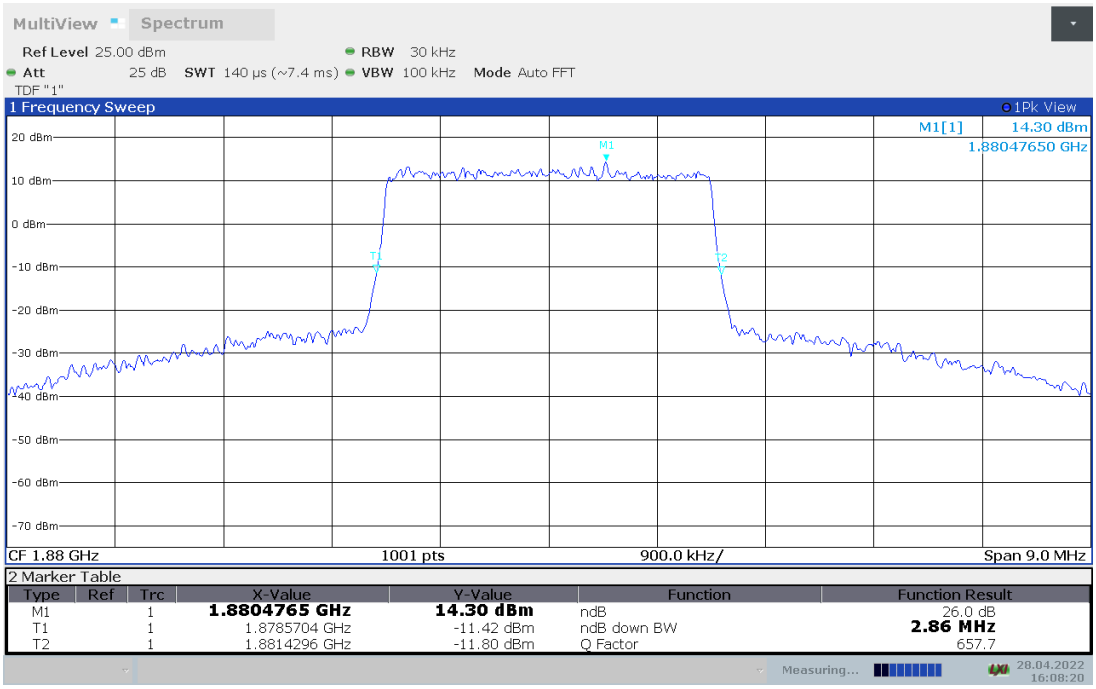
LTE band 2, 3MHz Bandwidth, 64QAM (-26dBc BW)



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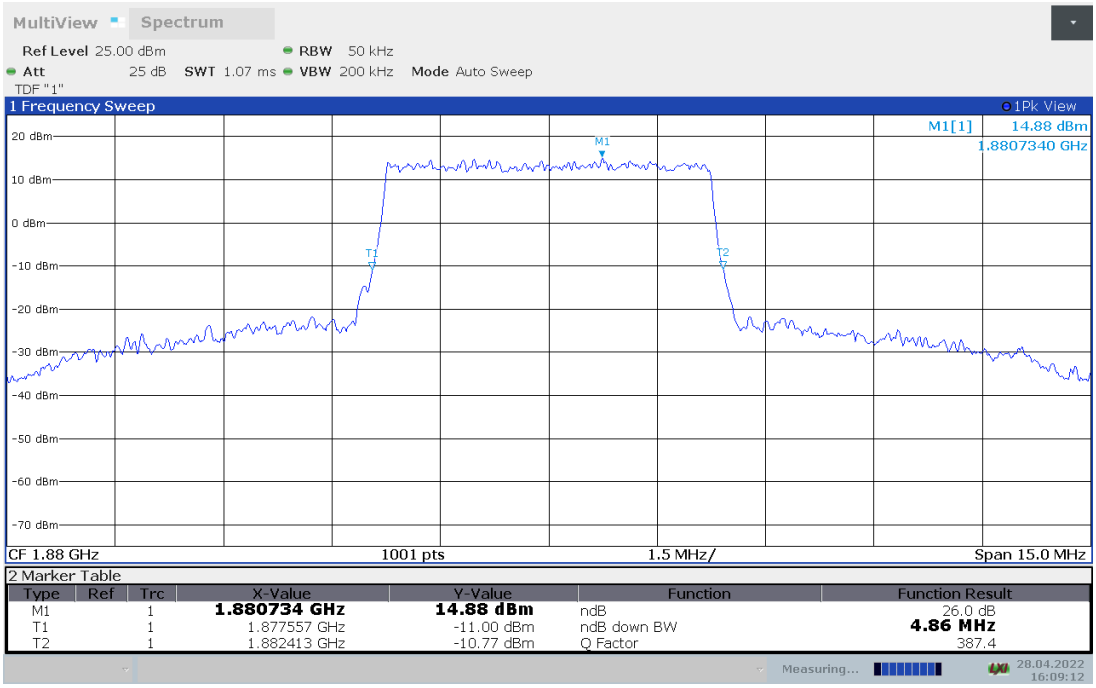
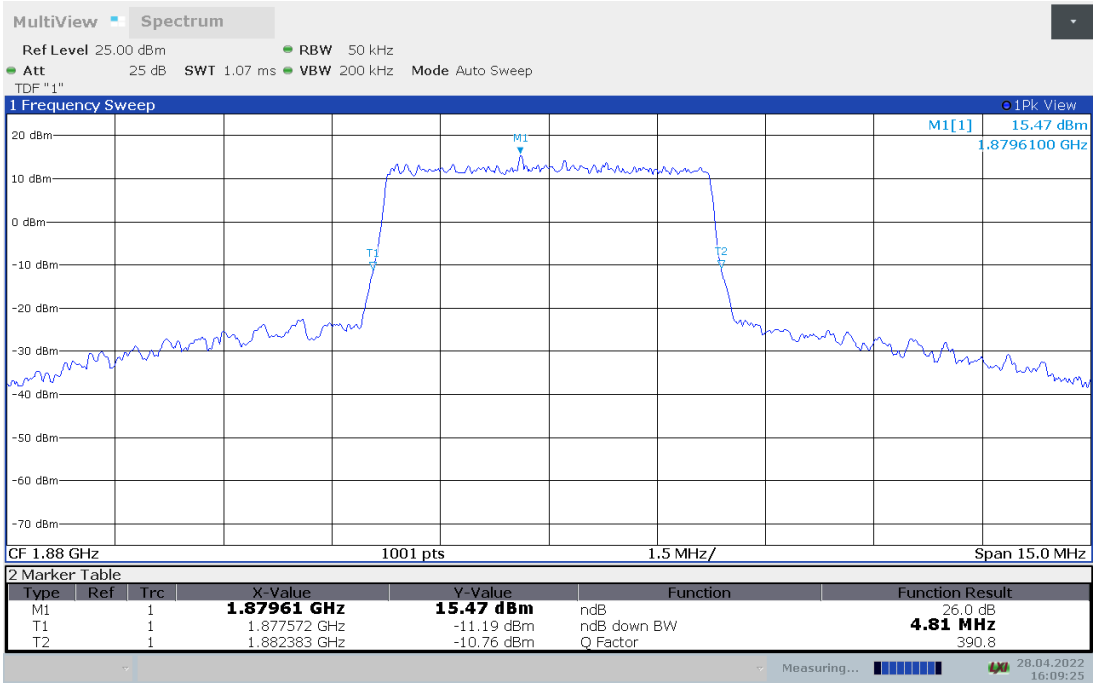
LTE band 2, 5MHz (-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)		
1880.0	QPSK	16QAM	64QAM
	4.86	4.81	4.78

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



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



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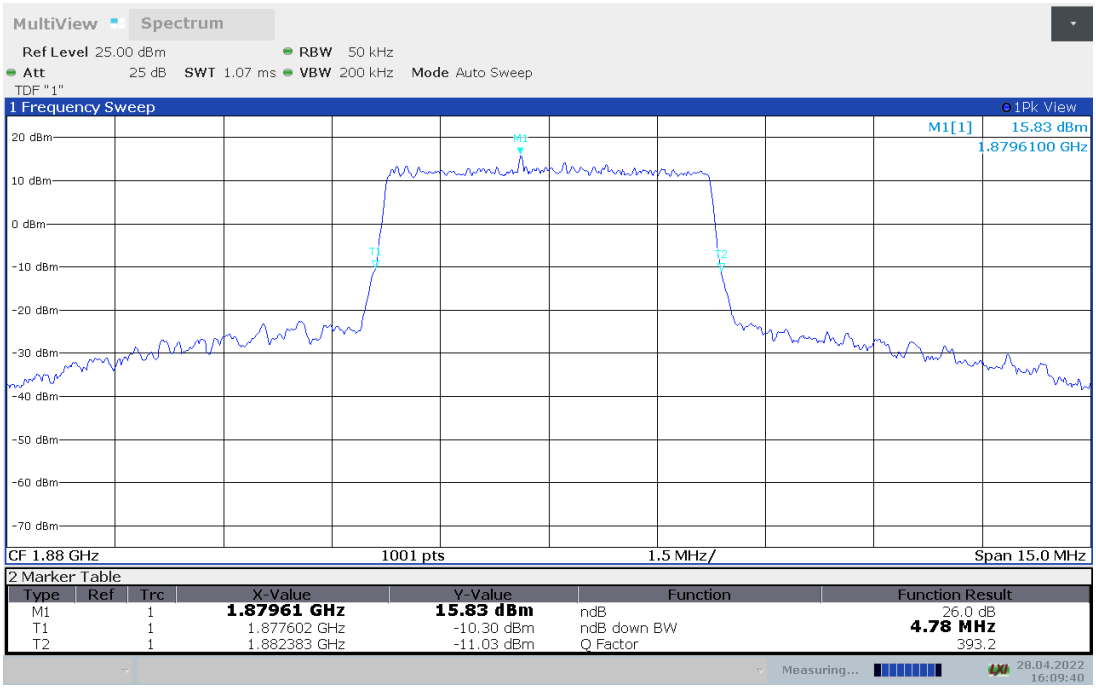
LTE band 2, 5MHz Bandwidth,64QAM (-26dBc BW)



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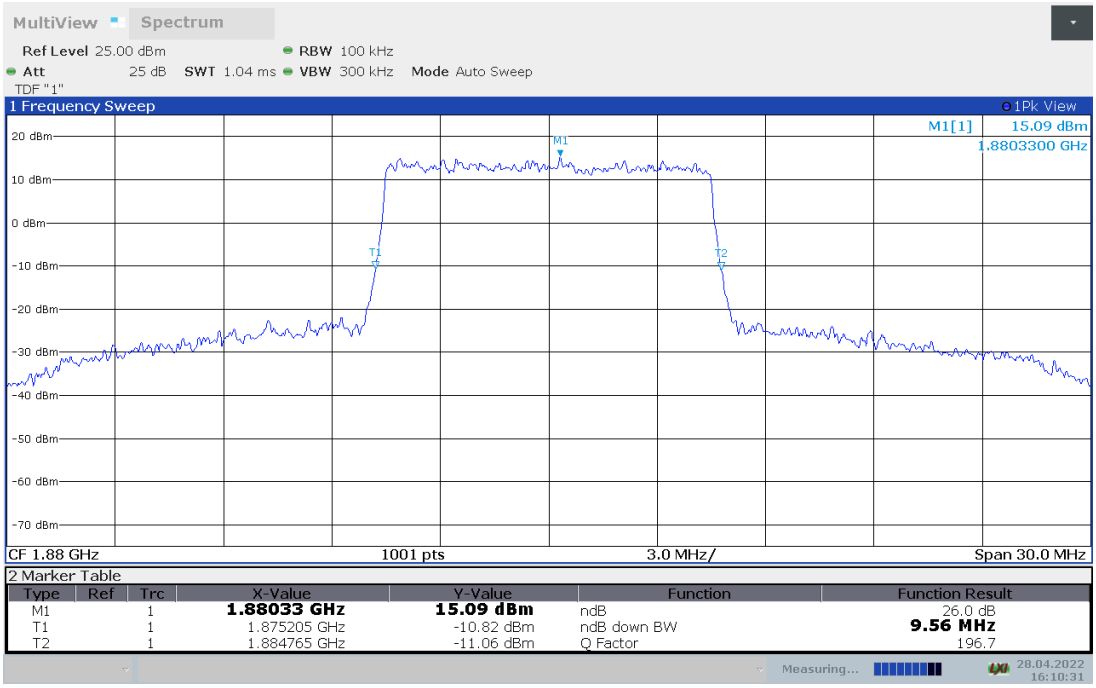
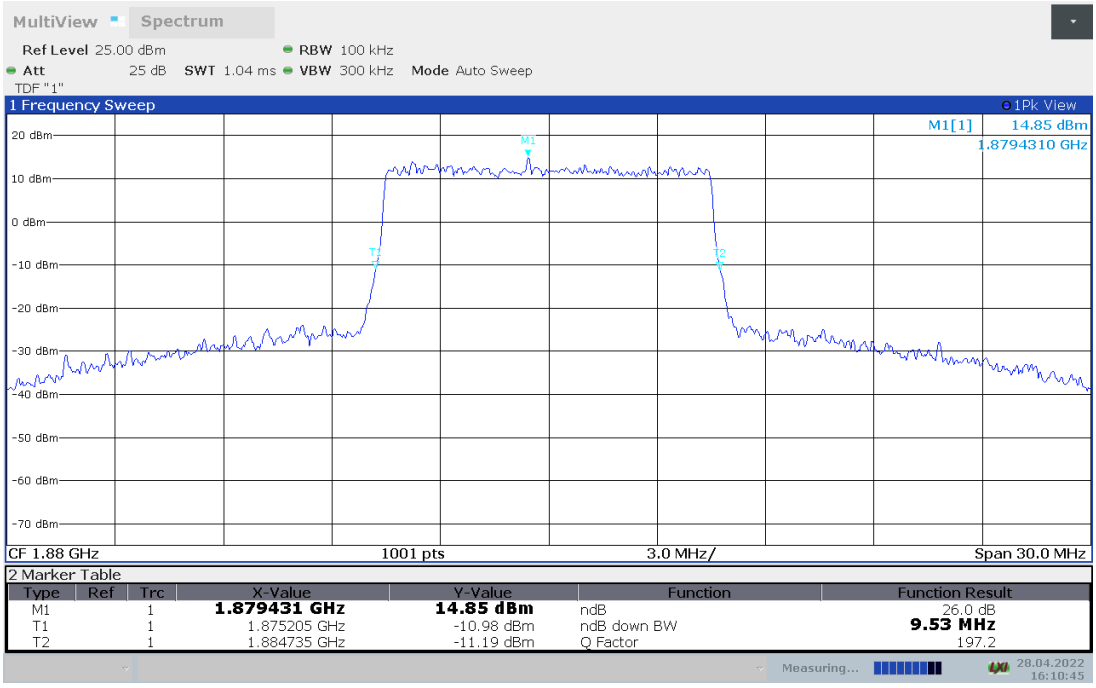
LTE band 2, 10MHz (-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)		
	QPSK	16QAM	64QAM
1880.0	9.56	9.53	9.62

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



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



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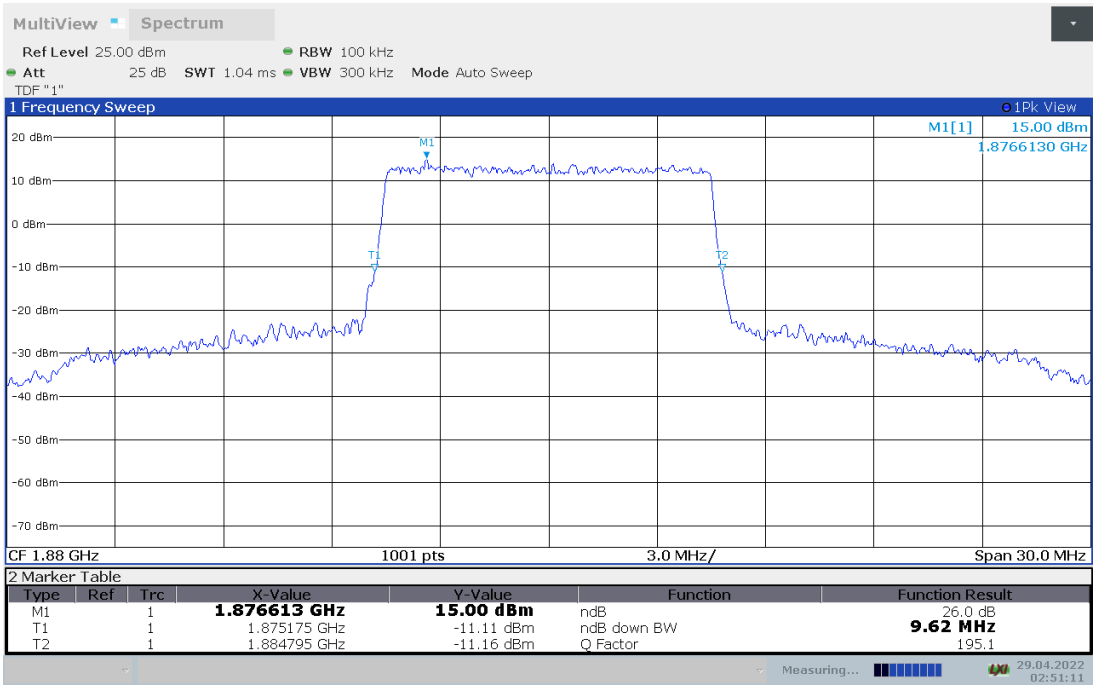
LTE band 2, 10MHz Bandwidth, 64QAM (-26dBc BW)



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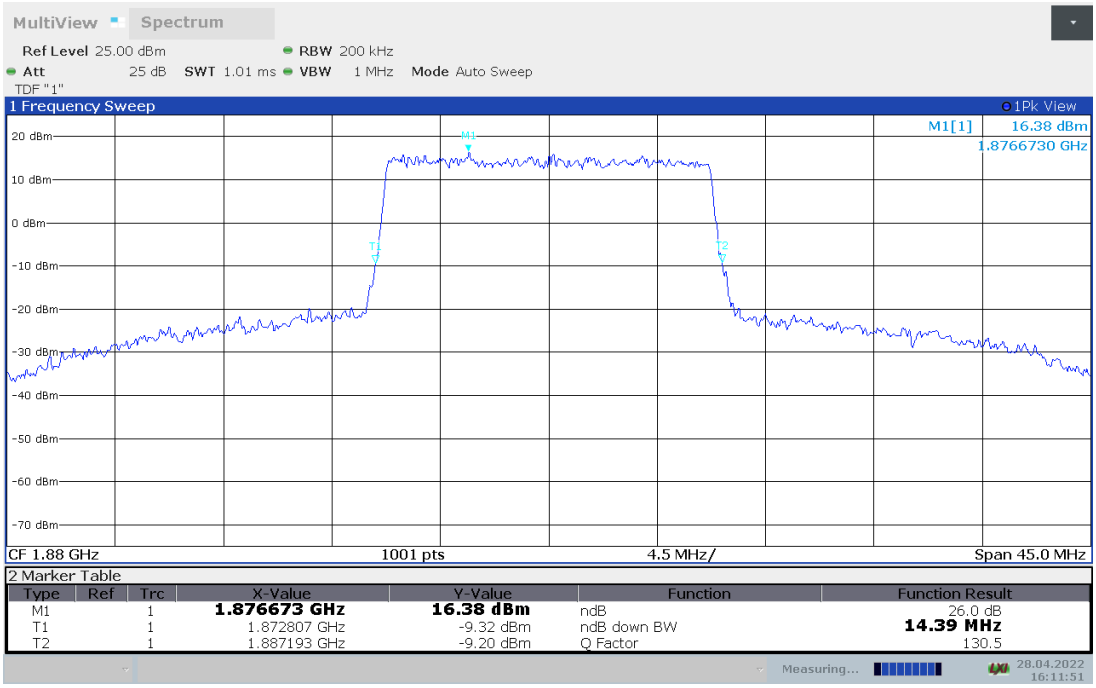
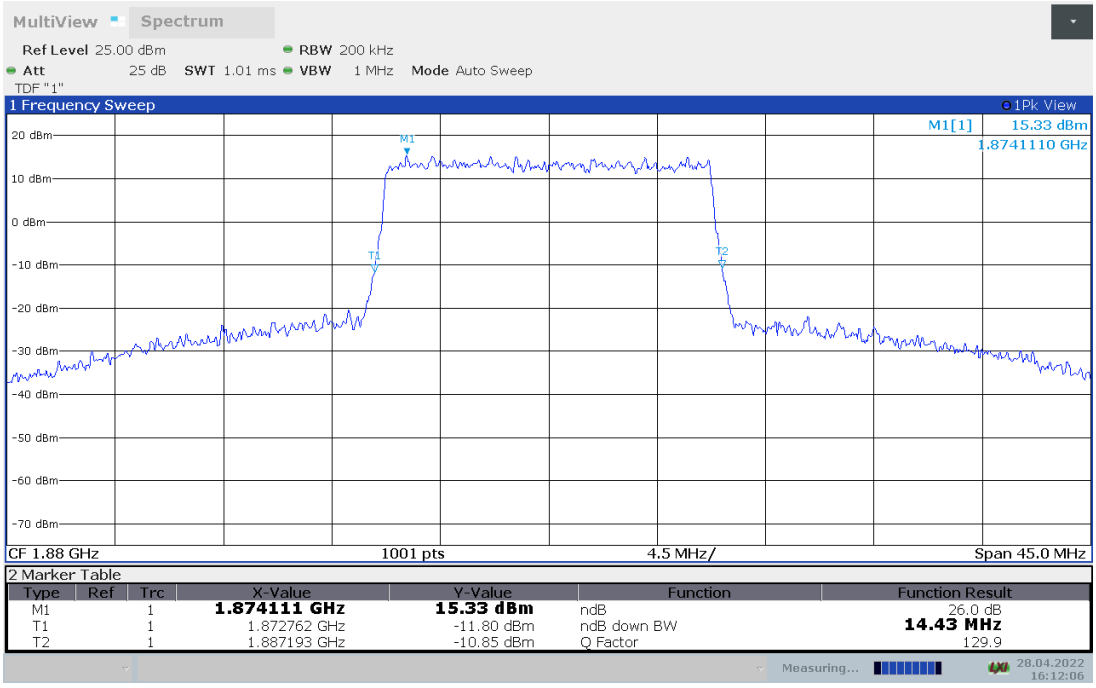
LTE band 2, 15MHz (-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)		
1880.0	QPSK	16QAM	64QAM
	14.39	14.43	14.39

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



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



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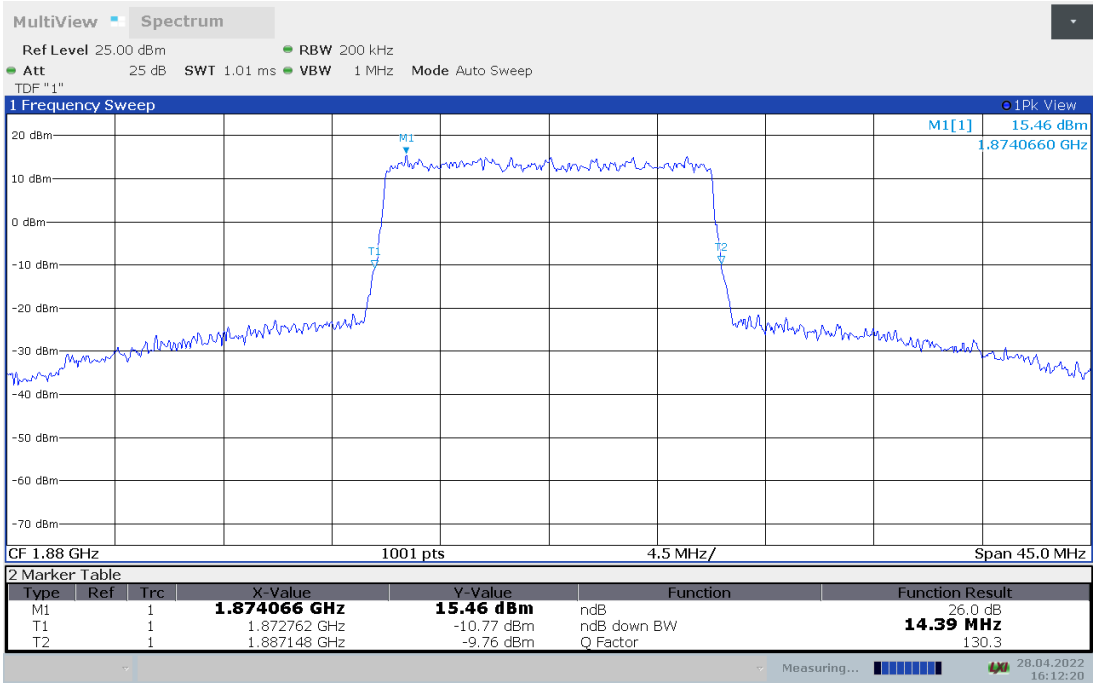
LTE band 2, 15MHz Bandwidth, 64QAM (-26dBc BW)



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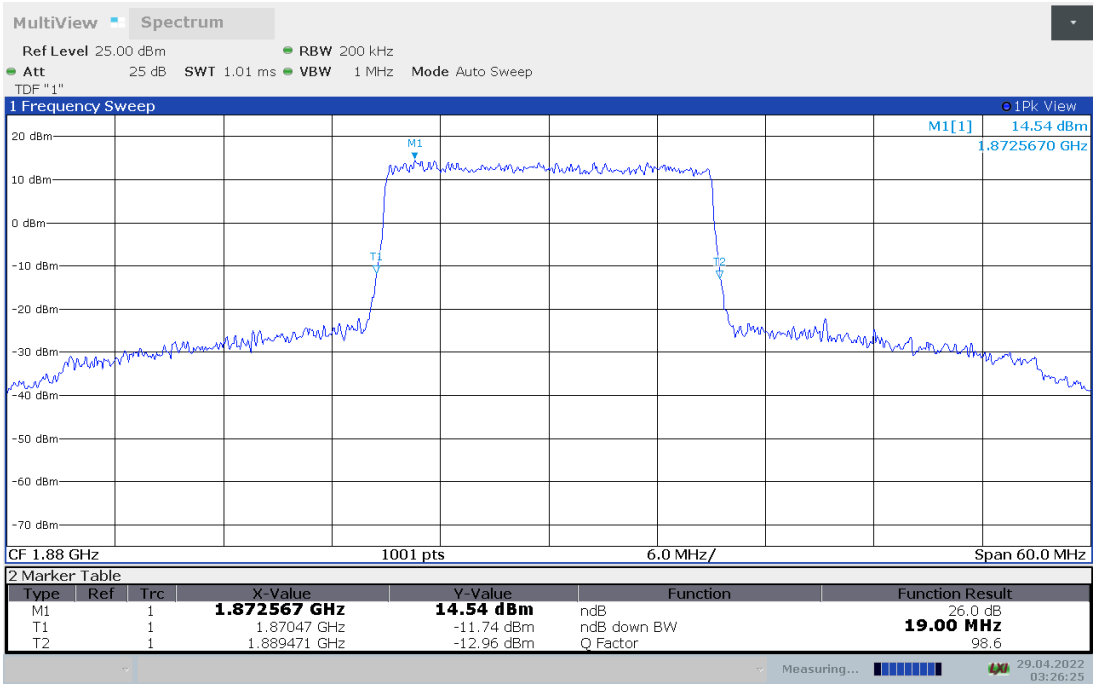
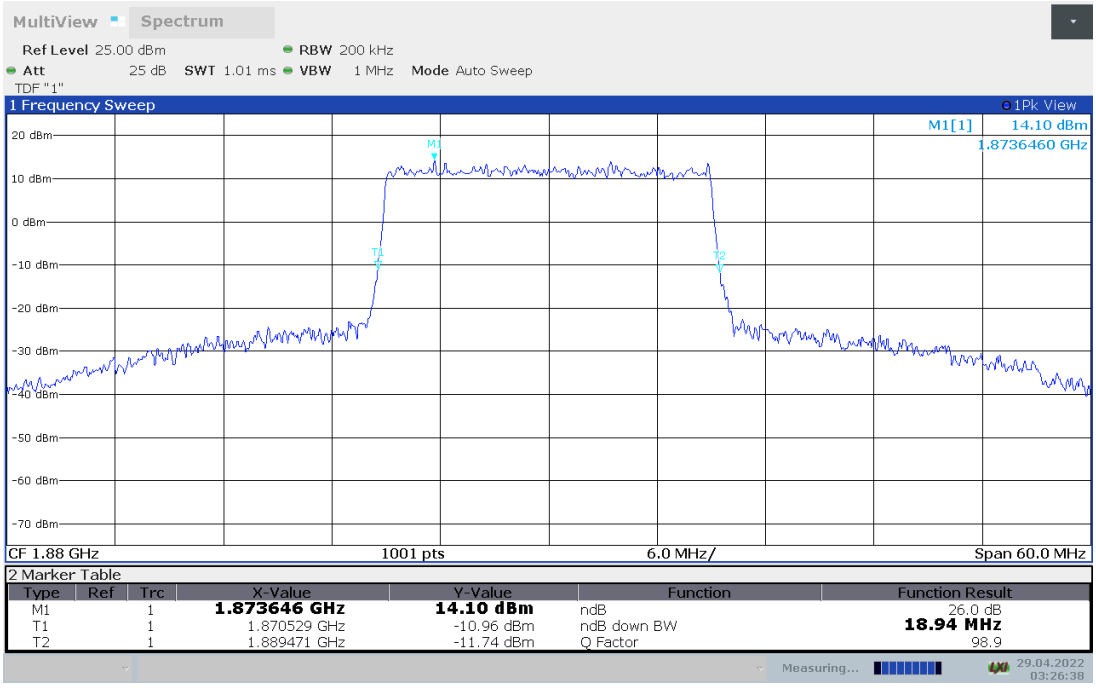
LTE band 2, 20MHz (-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)		
1880.0	QPSK	16QAM	64QAM
	19.00	18.94	18.88

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



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



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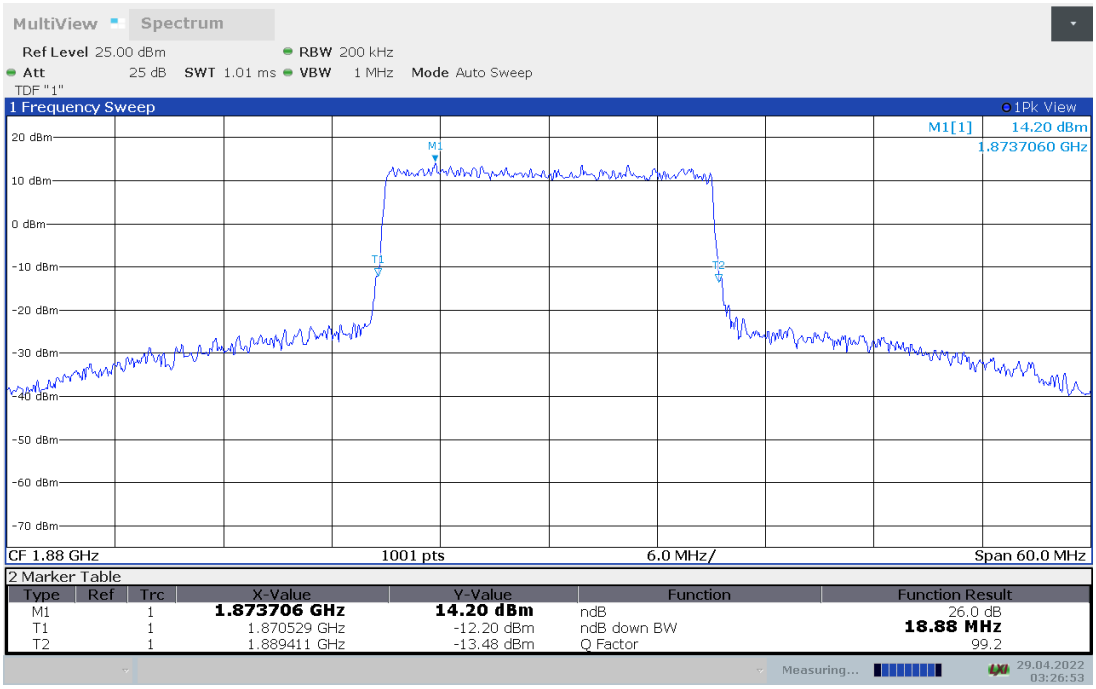
LTE band 2, 20MHz Bandwidth, 64QAM (-26dBc BW)



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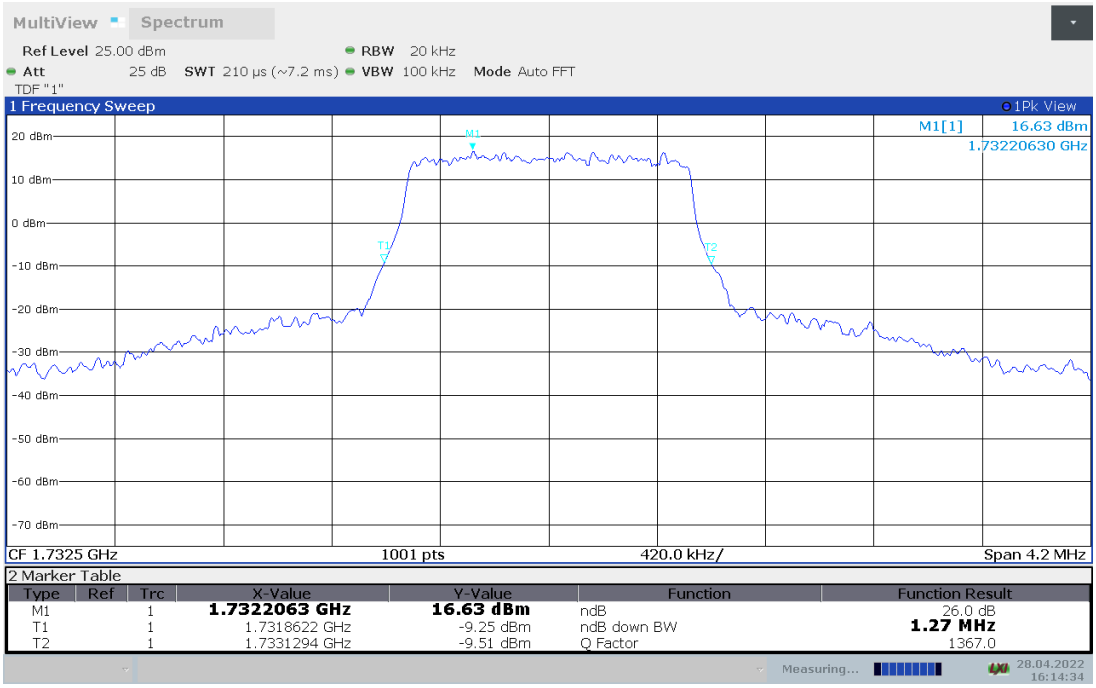
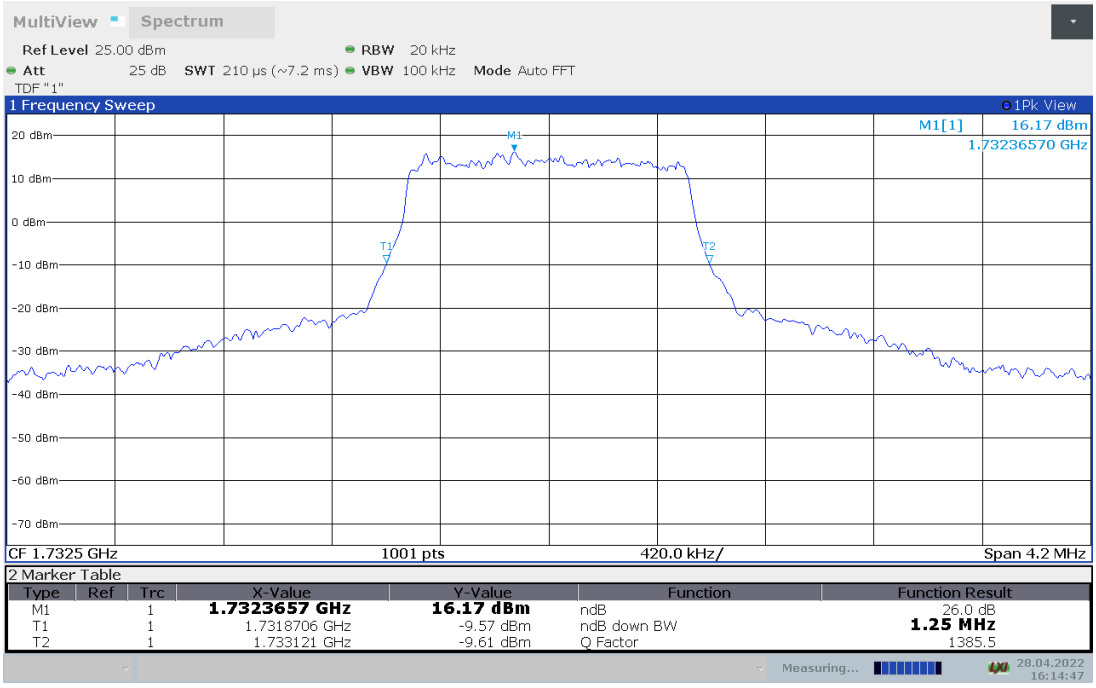
LTE band 4, 1.4MHz (-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	1.27	1.25	1.27

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



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



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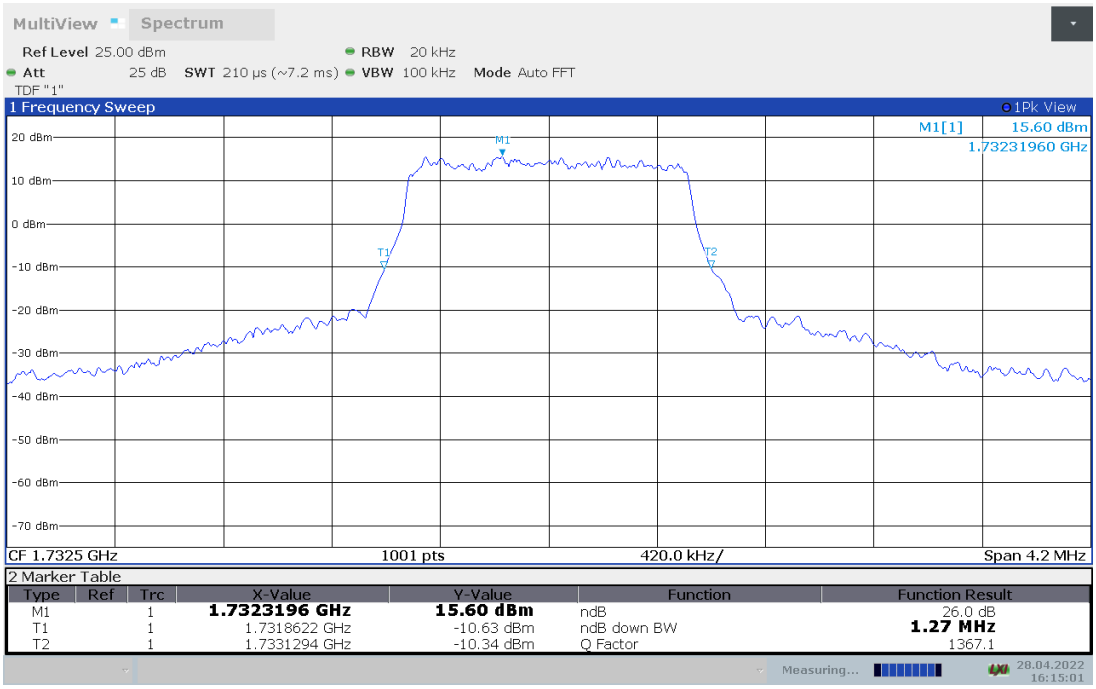
LTE band 4, 1.4MHz Bandwidth, 64QAM (-26dBc BW)



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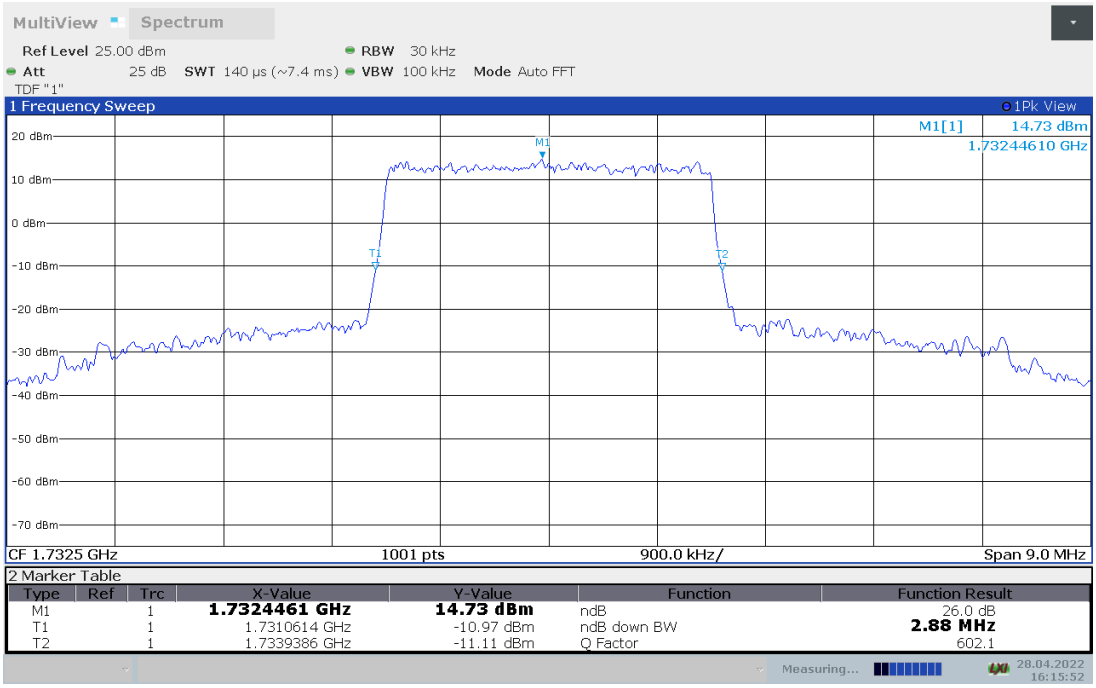
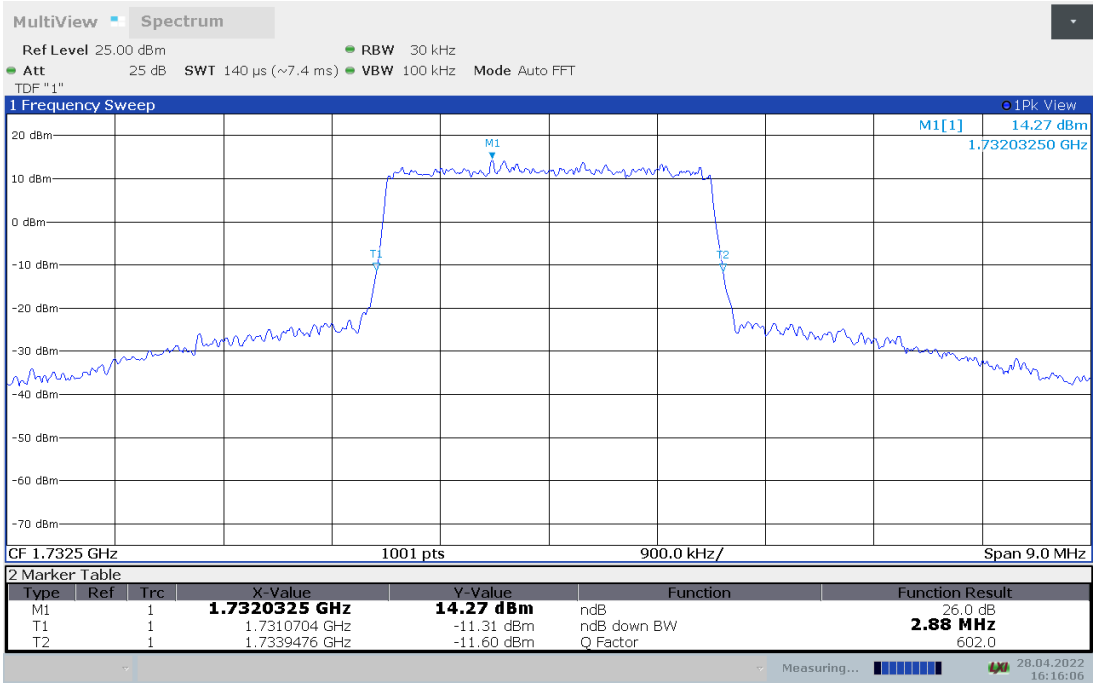
LTE band 4, 3MHz (-26dBc BW)

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)		
1732.5	QPSK	16QAM	64QAM
	2.88	2.88	2.88

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



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



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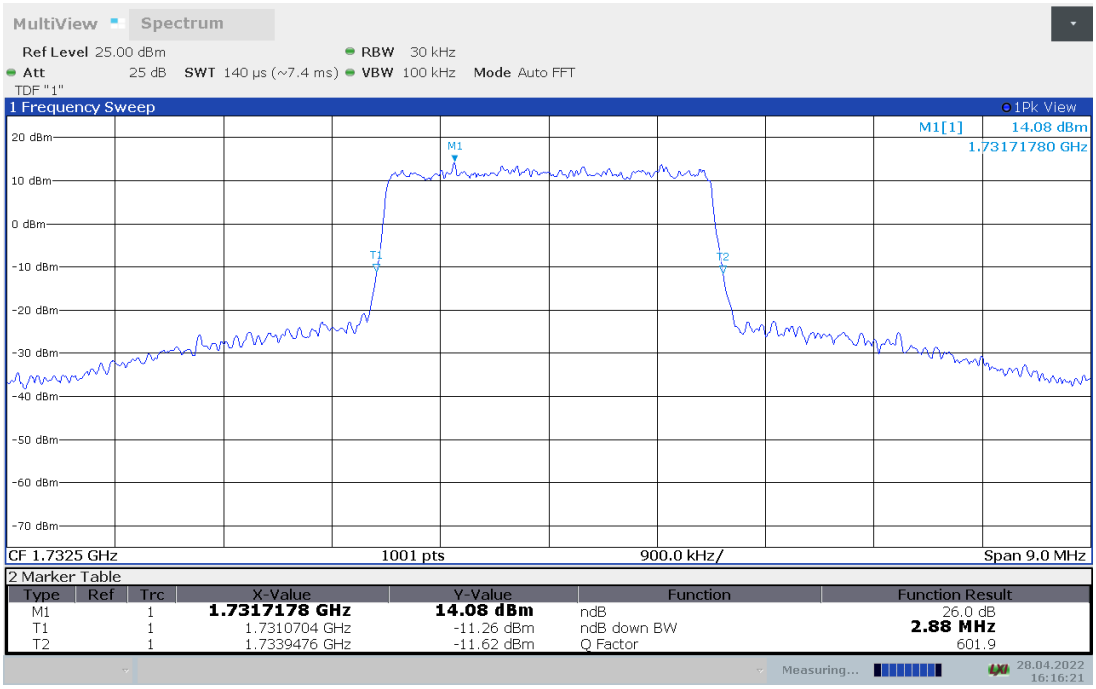
LTE band 4, 3MHz Bandwidth, 64QAM (-26dBc BW)



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