TEST REPORT
No.I19Z62331-WMD03

for

LG ElectronicsUSA,Inc.

Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN

Model Name: LM-K510BMW, LMK510BMW, K510BMW, LM-K510HM,

LMK510HM, K510HM

FCC ID: ZNFK510HM

with

Issued Date: 2020-03-10

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

No.52, HuayuanNorth Road, Haidian District, Beijing, P. R. China 100191.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I19Z62331-WMD03	Rev.0	1stedition	2020-03-06
I19Z62331-WMD03	Rev.1	Changed the applicant Information	2020-03-10

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

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0 and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: CTTL(huayuan North Road)

  Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China100191

Location 2: CTTL(Shouxiang)

  Address: No. 51 Shouxiang Science Building, Xueyuan Road, Haidian District, Beijing, P. R. China100191

Location 3: CTTL(BDA)

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

1.3. <u>Testing Environment</u>

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

1.4. <u>Project data</u>

Testing Start Date: 2020-01-16
Testing End Date: 2020-03-05

1.5. <u>Signature</u>

Dong Yuan
(Prepared this test report)

Zhou Yu
(Reviewed this test report)

Zhao Hui Lin
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	LG ElectronicsUSA,Inc.
Address /Post:	1000 Sylvan Avenue,Englewood Cliffs NJ 07632
Contact:	N/A
Email:	N/A
Telephone:	N/A
Fax:	N/A

2.2. Manufacturer Information

Company Name:	LG Electronics Inc.
Address/Post:	LG Twin Towers,128,Yeoui-daero,Yeongdeungpo-gu,Seoul，Korea 150-721
Contact:	N/A
Email:	N/A
Telephone:	+82-2-6946-1675
Fax:	N/A

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

3.1. About EUT

Description	Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN
Model Name	LM-K510BMW, LMK510BMW, K510BMW, LM-K510HM, LMK510HM, K510HM
FCC ID	ZNFK510HM
Antenna	Embedded
Output power	22.85dBm maximum EIRP measured for WCDMA Band II
Extreme vol. Limits	3.6VDC to 4.2VDC (nominal: 3.85VDC)
Extreme temp. Tolerance	-10°C to +55°C

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

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	Date of receipt
UT39a	353265110055094/ 353265110055102	2020-01-15
UT46a	353265110055573/ 353265110055581	2020-01-19

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

3.3. Internal Identification of AE used during the test

AE ID*	Description
AE1	Battery

AE1

Model	BL-T49
Manufacturer	ATL
Capacitance	4000mAh

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

4. Reference Documents

4.1. Reference Documents for testing

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

Reference	Title	Version
FCC Part 24	PERSONAL COMMUNICATIONSSERVICES	10-1-19 Edition
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-19 Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-19 Edition
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
ANSI/TIA-102.CAAA -E	DIGITAL C4FMCQPSK TRANSCEIVER MEASUREMENT METHODS	2016
ANSI C63.26	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
KDB 971168 D01	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS	v03r01

5. LABORATORY ENVIRONMENT

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

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

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

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	>2 MΩ
Ground system resistance	< 1 Ω
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

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

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 100 dB
Electrical insulation	>2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	<±3.5 dB, 3 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

6. <u>SUMMARY OF TEST RESULT</u>

LTE Band 2

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

LTE Band 5

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

LTEBand 7

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

LTE Band 12

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

LTEBand 13

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

LTEBand 38

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

LTEBand 66

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

Terms used in Verdict column

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

Explanation of worst-case configuration

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

7. Test Equipment Utilized

NO.	Description	Type	Series Number	Manufacture	Cal Due Date	Calibration Interval
1	Universal Radio Communication Tester	CMW500	159082	R&S	2020-12-24	1 year
2	Spectrum Analyzer	FSU26	200030	R&S	2020-06-03	1 year
3	Climate chamber	SH-242	93008556	ESPEC	2020-12-21	3 year
4	Radio Communication Analyzer	MT8821C	6201763159	Anritsu	2020-07-23	1 year
5	EMI Antenna	VULB9163	9163-483	Schwarzbeck	2020-09-16	1 year
6	EMI Antenna	3117	00058889	ETS-Lindgren	2020-11-18	1 year
7	EMI Antenna	3117	00139065	ETS-Lindgren	2020-10-15	1 year
8	EMI Antenna	9117	167	Schwarzbeck	2020-05-27	1 year
9	Signal Generator	N5183A	MY49060052	R&S	2020-06-24	1 year
10	Test Receiver	E4440A	MY48250642	Agilent	2020-03-18	1 year
11	Universal Radio Communication Tester	CMW500	143008	R&S	2020-11-26	1 year
12	Power Amplifier	5S1G4	0341863	AR	/	
13	Universal Radio Communication Tester	MT8821C	6201623363	Anritsu	2020-07-11	1 year

ANNEX A: MEASUREMENT RESULTS

A.1OUTPUT POWER

A.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Universal Radio Communication Tester (CMW500) or Anritsu Radio Communication Analyzer (MT8821C) to ensure max power transmission and proper modulation.

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

A.1.2 Conducted

A.1.2.1 Method of Measurements

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

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

A.1.2.2 Measurement result

LTE band 2

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1909.3	22.87	21.94	21.50
		1880.0	22.93	22.10	21.53
		1850.7	23.05	22.45	21.56
	1 RB low	1909.3	22.89	21.96	21.51
		1880.0	22.98	22.12	21.52
		1850.7	23.05	22.42	21.57
	50% RB mid	1909.3	23.02	22.24	21.50
		1880.0	23.08	22.18	21.57
		1850.7	23.25	22.38	21.55
	100% RB	1909.3	21.99	21.15	20.37
		1880.0	22.03	21.20	20.40
		1850.7	22.10	21.04	20.40
3MHz	1 RB high	1908.5	22.82	21.85	21.37
		1880.0	22.87	21.91	21.53
		1851.5	23.03	22.41	21.59
	1 RB low	1908.5	22.82	21.99	21.44
		1880.0	22.86	21.98	21.56
		1851.5	23.04	22.40	21.48
	50% RB mid	1908.5	21.95	21.05	20.34
		1880.0	21.95	21.17	20.42

		1851.5	22.02	21.18	20.44
	100% RB	1908.5	21.87	20.90	20.29
		1880.0	21.95	21.04	20.34
		1851.5	22.02	21.08	20.33
5MHz	1 RB high	1907.5	22.79	21.87	21.34
		1880.0	22.86	22.02	21.40
		1852.5	22.88	22.38	21.41
	1 RB low	1907.5	22.80	21.90	21.50
		1880.0	22.90	22.04	21.50
		1852.5	22.89	22.42	21.46
	50% RB mid	1907.5	21.92	21.03	20.40
		1880.0	21.99	21.15	20.43
		1852.5	22.03	21.24	20.37
	100% RB	1907.5	21.85	20.87	20.30
		1880.0	21.93	21.04	20.34
		1852.5	21.99	21.13	20.33
10MHz	1 RB high	1905.0	22.81	21.88	21.38
		1880.0	22.84	21.85	21.50
		1855.0	22.91	22.26	21.52
	1 RB low	1905.0	22.80	21.86	21.43
		1880.0	22.86	21.88	21.54
		1855.0	22.98	22.36	21.52
	50% RB mid	1905.0	21.93	21.04	20.39
		1880.0	22.02	21.09	20.37
		1855.0	22.05	21.15	20.41
	100% RB	1905.0	21.97	21.03	20.41
		1880.0	22.00	21.03	20.40
		1855.0	22.01	21.09	20.39
15MHz	1 RB high	1902.5	22.74	22.17	21.45
		1880.0	22.72	21.72	21.52
		1857.5	22.88	22.26	21.46
	1 RB low	1902.5	22.78	22.19	21.54
		1880.0	22.85	21.86	21.56
		1857.5	22.93	22.32	21.58
	50% RB mid	1902.5	21.89	20.87	20.44
		1880.0	21.95	20.95	20.48
		1857.5	21.94	21.01	20.47
	100% RB	1902.5	21.93	20.96	20.46
		1880.0	21.95	20.99	20.46

		1857.5	21.94	21.00	20.40
20MHz	1 RB high	1900.0	22.75	22.21	21.37
		1880.0	22.75	22.13	21.34
		1860.0	22.85	22.37	21.30
	1 RB low	1900.0	22.74	22.23	21.36
		1880.0	22.83	22.28	21.47
		1860.0	22.90	22.41	21.46
	50% RB mid	1900.0	21.94	21.01	20.31
		1880.0	21.99	21.03	20.35
		1860.0	21.99	21.07	20.34
	100% RB	1900.0	21.99	21.03	20.32
		1880.0	22.01	21.07	20.37
		1860.0	21.89	20.96	20.25

LTE band 5

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	848.3	23.55	22.58	21.87
		836.5	23.51	22.64	21.84
		824.7	23.60	22.97	21.83
	1 RB low	848.3	23.50	22.54	21.84
		836.5	23.54	22.62	21.84
		824.7	23.65	22.97	21.81
	50% RB mid	848.3	23.66	22.81	21.89
		836.5	23.60	22.66	21.94
		824.7	23.70	22.91	21.63
	100% RB	848.3	22.75	21.80	20.72
		836.5	22.63	21.76	20.71
		824.7	22.69	21.61	20.40
3MHz	1 RB high	847.5	23.56	22.54	21.97
		836.5	23.56	22.44	21.96
		825.5	23.65	23.01	21.98
	1 RB low	847.5	23.58	22.62	21.94
		836.5	23.47	22.47	21.84
		825.5	23.67	22.95	21.90
	50% RB mid	847.5	22.68	21.69	20.78
		836.5	22.67	21.74	20.80
		825.5	22.66	21.77	20.82
	100% RB	847.5	22.59	21.59	20.74
		836.5	22.59	21.59	20.78
		825.5	22.62	21.64	20.76
5MHz	1 RB high	846.5	23.50	22.57	21.84
		836.5	23.53	22.63	21.85
		826.5	23.48	23.02	21.89
	1 RB low	846.5	23.46	22.57	21.88
		836.5	23.50	22.60	21.88
		826.5	23.51	23.02	21.91
	50% RB mid	846.5	22.66	21.66	20.80
		836.5	22.64	21.69	20.80
		826.5	22.68	21.75	20.81
	100% RB	846.5	22.57	21.56	20.77
		836.5	22.56	21.56	20.79
		826.5	22.58	21.68	20.64
10MHz	1 RB high	844.0	23.53	22.51	21.40

		836.5	23.53	22.47	21.46
		829.0	23.58	22.90	21.77
	1 RB low	844.0	23.47	22.52	21.44
		836.5	23.49	22.49	21.41
		829.0	23.63	22.94	21.89
	50% RB mid	844.0	22.65	21.71	20.38
		836.5	22.60	21.63	20.38
		829.0	22.66	21.68	20.56
	100% RB	844.0	22.64	21.69	20.37
		836.5	22.57	21.58	20.58
		829.0	22.65	21.70	20.47

LTE band 7

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2567.5	22.53	21.64	20.84
		2535	22.71	21.83	21.04
		2502.5	22.75	22.25	21.26
	1 RB low	2567.5	22.51	21.63	20.90
		2535	22.72	21.81	21.14
		2502.5	22.84	22.34	21.28
	50% RB mid	2567.5	21.64	20.67	19.83
		2535	21.80	20.84	20.05
		2502.5	21.95	21.07	20.25
	100% RB	2567.5	21.55	20.51	19.81
		2535	21.82	20.74	19.98
		2502.5	21.90	20.95	20.21
10MHz	1 RB high	2565	22.64	21.59	21.69
		2535	22.75	21.67	21.09
		2505	22.88	22.21	21.23
	1 RB low	2565	22.69	21.66	21.83
		2535	22.72	21.64	21.20
		2505	22.81	22.24	21.40
	50% RB mid	2565	21.60	20.67	19.82
		2535	21.74	20.81	20.01
		2505	21.94	20.94	20.24
	100% RB	2565	21.58	20.59	19.86
		2535	21.71	20.72	20.03
		2505	21.92	20.92	20.21
15MHz	1 RB high	2562.5	22.59	21.87	20.84
		2535	22.68	22.01	21.01
		2507.5	22.73	21.67	21.30
	1 RB low	2562.5	22.65	21.94	20.99
		2535	22.74	22.04	21.20
		2507.5	22.84	21.82	21.37
	50% RB mid	2562.5	21.65	20.70	19.83
		2535	21.83	20.75	20.02
		2507.5	21.98	20.90	20.18
	100% RB	2562.5	21.65	20.66	19.82
		2535	21.83	20.75	20.00
		2507.5	21.97	20.91	20.23

20MHz	1 RB high	2560	22.39	21.84	20.78
		2535	22.54	22.12	20.88
		2510	22.70	22.17	21.18
	1 RB low	2560	22.44	21.96	20.91
		2535	22.59	22.13	21.08
		2510	22.77	22.23	21.24
	50% RB mid	2560	21.62	20.59	19.86
		2535	21.78	20.78	20.04
		2510	21.90	20.89	20.18
	100% RB	2560	21.57	20.56	19.83
		2535	21.75	20.75	19.99
		2510	21.87	20.86	20.20

LTE band 12

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	715.3	23.83	22.55	21.87
		707.5	23.65	22.67	21.42
		699.7	23.72	22.93	21.36
	1 RB low	715.3	23.66	22.57	21.92
		707.5	23.60	22.64	21.40
		699.7	23.59	22.95	21.39
	50% RB mid	715.3	23.69	22.79	21.58
		707.5	23.75	22.69	21.49
		699.7	23.72	22.84	21.47
	100% RB	715.3	22.65	21.80	20.39
		707.5	22.68	21.81	20.33
		699.7	22.70	21.63	20.35
3MHz	1 RB high	714.5	23.82	22.63	21.68
		707.5	23.71	22.51	21.39
		700.5	23.72	23.01	21.37
	1 RB low	714.5	23.67	22.66	21.81
		707.5	23.65	22.57	21.39
		700.5	23.73	22.98	21.40
	50% RB mid	714.5	22.76	21.77	20.37
		707.5	22.67	21.85	20.37
		700.5	22.74	21.85	20.33
	100% RB	714.5	22.62	21.67	20.30
		707.5	22.62	21.75	20.30
		700.5	22.70	21.76	20.26
5MHz	1 RB high	713.5	23.56	22.99	21.56
		707.5	23.51	22.61	21.30
		701.5	23.55	22.71	21.24
	1 RB low	713.5	23.49	22.98	21.46
		707.5	23.53	22.60	21.36
		701.5	23.52	22.68	21.36
	50% RB mid	713.5	22.65	21.73	20.45
		707.5	22.70	21.75	20.33
		701.5	22.70	21.77	20.36
	100% RB	713.5	22.61	21.70	20.29
		707.5	22.68	21.67	20.33
		701.5	22.60	21.64	20.26
10MHz	1 RB high	711.0	23.65	22.60	21.80
		707.5	23.65	22.49	21.35

		704.0	23.68	22.94	21.35
	1 RB low	711.0	23.62	22.60	21.52
		707.5	23.61	22.49	21.37
		704.0	23.70	22.91	21.51
	50% RB mid	711.0	22.69	21.80	20.34
		707.5	22.73	21.76	20.29
		704.0	22.73	21.77	20.32
	100% RB	711.0	22.66	21.71	20.29
		707.5	22.78	21.80	20.42
		704.0	22.69	21.68	20.35

LTE band 13

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	784.5	23.62	22.78	22.64
		782	23.62	22.81	22.28
		779.5	23.72	23.14	22.19
	1 RB low	784.5	23.67	22.73	22.76
		782	23.64	22.84	22.32
		779.5	23.72	23.16	22.29
	50% RB mid	784.5	22.84	21.84	21.79
		782	22.85	21.86	21.53
		779.5	22.85	21.93	21.32
	100% RB	784.5	22.76	21.72	21.66
		782	22.75	21.77	21.36
		779.5	22.76	21.79	21.24
10MHz	1 RB high	782.0	23.78	23.05	22.23
	1 RB low	782.0	23.82	23.04	22.36
	50% RB mid	782.0	22.86	21.86	21.31
	100% RB	782.0	22.76	21.74	21.26

LTE band 38

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
5MHz	1 RB high	2617.5	22.42	21.87	20.82
		2595.0	22.43	21.75	20.80
		2572.5	22.53	21.85	20.66
	1 RB low	2617.5	22.42	21.89	20.87
		2595.0	22.46	21.73	20.79
		2572.5	22.53	21.81	20.74
	50% RB mid	2617.5	21.63	20.69	20.04
		2595.0	21.66	20.71	19.98
		2572.5	21.70	20.66	19.90
	100% RB	2617.5	21.55	20.57	20.02
		2595.0	21.61	20.61	19.95
		2572.5	21.60	20.66	19.91
10MHz	1 RB high	2615.0	22.47	21.99	20.89
		2595.0	22.54	21.91	20.80
		2575.0	22.69	22.07	20.79
	1 RB low	2615.0	22.57	21.98	20.94
		2595.0	22.53	21.85	20.86
		2575.0	22.70	22.08	20.89
	50% RB mid	2615.0	21.66	20.71	20.10
		2595.0	21.71	20.72	20.04
		2575.0	21.71	20.68	19.97
	100% RB	2615.0	21.59	20.63	20.02
		2595.0	21.65	20.57	19.98
		2575.0	21.70	20.68	19.92
15MHz	1 RB high	2612.5	22.57	21.95	20.77
		2595.0	22.48	21.83	20.78
		2577.5	22.45	21.84	20.65
	1 RB low	2612.5	22.59	22.02	20.88
		2595.0	22.53	21.92	20.84
		2577.5	22.54	21.89	20.78
	50% RB mid	2612.5	21.62	20.62	19.92
		2595.0	21.69	20.70	19.89
		2577.5	21.67	20.66	19.84
	100% RB	2612.5	21.62	20.63	19.92
		2595.0	21.66	20.64	19.89
		2577.5	21.65	20.64	19.85

20MHz	1 RB high	2610.0	22.61	21.71	20.71
		2595.0	22.66	21.62	20.71
		2580.0	22.64	21.52	20.67
	1 RB low	2610.0	22.62	21.75	20.86
		2595.0	22.65	21.61	20.78
		2580.0	22.65	21.58	20.76
	50% RB mid	2610.0	21.78	20.82	19.99
		2595.0	21.79	20.74	19.95
		2580.0	21.79	20.82	19.91
	100% RB	2610.0	21.71	20.71	19.93
		2595.0	21.77	20.73	19.90
		2580.0	21.74	20.72	19.86

LTE band 66

Bandwidth	RB size/offset	Frequency (MHz)	Power (dBm)		
			QPSK	16QAM	64QAM
1.4MHz	1 RB high	1779.3	23.04	22.18	21.35
		1745.0	23.06	22.47	21.54
		1710.7	22.98	22.11	21.51
	1 RB low	1779.3	23.00	22.19	21.41
		1745.0	23.09	22.54	21.53
		1710.7	22.99	22.10	21.54
	50% RB mid	1779.3	23.21	22.23	21.50
		1745.0	23.23	22.40	21.53
		1710.7	23.21	22.37	21.54
	100% RB	1779.3	22.09	21.27	20.35
		1745.0	22.10	21.07	20.33
		1710.7	22.15	21.32	20.33
3MHz	1 RB high	1778.5	23.08	22.01	21.44
		1745.0	23.13	22.54	21.57
		1711.5	23.03	22.10	21.52
	1 RB low	1778.5	23.03	22.08	21.42
		1745.0	23.11	22.50	21.44
		1711.5	23.09	22.18	21.56
	50% RB mid	1778.5	22.14	21.29	20.33
		1745.0	22.12	21.27	20.37
		1711.5	22.17	21.23	20.40
	100% RB	1778.5	22.12	21.19	20.24
		1745.0	22.13	21.21	20.30
		1711.5	22.07	21.10	20.28
5MHz	1 RB high	1777.5	22.90	22.10	21.35
		1745.0	22.98	22.52	21.46
		1712.5	22.89	22.06	21.34
	1 RB low	1777.5	22.88	22.13	21.32
		1745.0	22.93	22.48	21.45
		1712.5	22.89	22.08	21.54
	50% RB mid	1777.5	22.10	21.22	20.34
		1745.0	22.11	21.29	20.39
		1712.5	22.09	21.15	20.36
	100% RB	1777.5	22.05	21.15	20.26
		1745.0	22.12	21.22	20.34
		1712.5	22.02	21.03	20.29
10MHz	1 RB high	1775.0	23.00	21.93	21.34
		1745.0	23.00	22.46	21.57

		1715.0	22.94	21.98	21.44
	1 RB low	1775.0	22.95	21.98	21.46
		1745.0	22.93	22.35	21.42
		1715.0	22.97	22.05	21.54
	50% RB mid	1775.0	21.99	21.16	20.34
		1745.0	22.06	21.21	20.39
		1715.0	22.01	21.17	20.32
	100% RB	1775.0	22.04	21.14	20.35
		1745.0	22.10	21.21	20.35
		1715.0	22.04	21.14	20.35
15MHz	1 RB high	1772.5	22.87	21.84	21.42
		1745.0	23.00	22.37	21.48
		1717.5	22.89	22.33	21.36
	1 RB low	1772.5	22.95	21.94	21.55
		1745.0	22.95	22.36	21.47
		1717.5	22.96	22.38	21.54
	50% RB mid	1772.5	22.07	21.06	20.38
		1745.0	22.08	21.17	20.36
		1717.5	22.03	20.99	20.30
	100% RB	1772.5	22.06	21.07	20.34
		1745.0	22.08	21.11	20.35
		1717.5	22.02	21.01	20.28
20MHz	1 RB high	1770.0	22.80	22.29	21.25
		1745.0	22.90	22.38	21.33
		1720.0	22.89	22.35	21.23
	1 RB low	1770.0	22.84	22.37	21.42
		1745.0	22.83	22.26	21.38
		1720.0	22.89	22.40	21.44
	50% RB mid	1770.0	22.07	21.14	20.37
		1745.0	22.12	21.15	20.36
		1720.0	22.04	21.08	20.25
	100% RB	1770.0	22.01	21.12	20.32
		1745.0	22.12	21.16	20.37
		1720.0	21.93	20.98	20.18

A.1.3 Radiated

A.1.3.1 Description

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

Rule Part 22.913(a)specifies "Mobilestations are limited to 2.0 wattsEIRP.".

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 1710–1755MHz band are limited to 1 watt EIRP".

Rule Part 27.50(h)(2) specifies "Mobilestations are limited to 2.0 wattsEIRP.".

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

A.1.3.2 Method of Measurement

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

1. EUT was placed on a 1.5-meter-high non-conductive stand at a 3-meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUTfor emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360 and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with rms detector.

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

In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna. Adjust the level of the signal generator output until the value of the receiver reaches the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. 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 (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 - 2.15.

A.1.3.3 Measurement result

LTE Band 2- EIRP

Limits: ≤33dBm (2W)

LTE Band 2_1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1850.70	-23.22	2.92	43.75	4.87	22.48	33.00	10.52	H
1880.00	-23.18	2.85	43.75	4.82	22.54	33.00	10.46	V
1909.30	-22.81	2.87	43.77	4.76	22.85	33.00	10.15	H

LTE Band 2_3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1851.50	-23.22	2.87	43.75	4.87	22.53	33.00	10.47	H
1880.00	-23.24	2.85	43.75	4.82	22.48	33.00	10.52	V
1908.50	-22.89	2.89	43.78	4.76	22.76	33.00	10.24	H

LTE Band 2_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1852.50	-23.32	2.87	43.75	4.87	22.43	33.00	10.57	H
1880.00	-23.21	2.85	43.75	4.82	22.51	33.00	10.49	V
1907.50	-23.07	2.84	43.77	4.77	22.63	33.00	10.37	H

LTE Band 2_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1855.00	-23.37	2.88	43.74	4.86	22.35	33.00	10.65	H
1880.00	-23.19	2.85	43.75	4.82	22.53	33.00	10.47	V
1905.00	-23.29	2.87	43.77	4.77	22.38	33.00	10.62	H

LTE Band 2_15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1857.50	-23.45	2.87	43.75	4.86	22.29	33.00	10.71	H
1880.00	-23.22	2.85	43.75	4.82	22.50	33.00	10.50	V
1902.50	-23.49	2.86	43.77	4.78	22.20	33.00	10.80	H

LTE Band 2_20 MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1860.00	-23.36	2.86	43.75	4.85	22.38	33.00	10.62	H
1880.00	-23.16	2.85	43.75	4.82	22.56	33.00	10.44	V
1900.00	-23.49	2.87	43.77	4.78	22.19	33.00	10.81	H

LTE Band 2_1.4MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1850.70	-23.91	2.92	43.75	4.87	21.79	33.00	11.21	H
1880.00	-23.86	2.85	43.75	4.82	21.86	33.00	11.14	V
1909.30	-23.50	2.87	43.77	4.76	22.16	33.00	10.84	H

LTE Band 2_3MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1851.50	-23.93	2.87	43.75	4.87	21.82	33.00	11.18	H
1880.00	-23.95	2.85	43.75	4.82	21.77	33.00	11.23	V
1908.50	-23.61	2.89	43.78	4.76	22.04	33.00	10.96	H

LTE Band 2_5MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1852.50	-24.01	2.87	43.75	4.87	21.74	33.00	11.26	H
1880.00	-23.92	2.85	43.75	4.82	21.80	33.00	11.20	V
1907.50	-22.79	2.84	43.77	4.77	22.91	33.00	10.09	H

LTE Band 2_10MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1855.00	-24.06	2.88	43.74	4.86	21.66	33.00	11.34	H
1880.00	-23.90	2.85	43.75	4.82	21.82	33.00	11.18	V
1905.00	-23.98	2.87	43.77	4.77	21.69	33.00	11.31	H

LTE Band 2_15MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1857.50	-24.13	2.87	43.75	4.86	21.61	33.00	11.39	H
1880.00	-23.92	2.85	43.75	4.82	21.80	33.00	11.20	V
1902.50	-24.17	2.86	43.77	4.78	21.52	33.00	11.48	H

LTE Band 2_20 MHz_16QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1860.00	-24.03	2.86	43.75	4.85	21.71	33.00	11.29	H
1880.00	-23.85	2.85	43.75	4.82	21.87	33.00	11.13	V
1900.00	-24.23	2.87	43.77	4.78	21.45	33.00	11.55	H

LTE Band 2_1.4MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1850.70	-24.99	2.92	43.75	4.87	20.71	33.00	12.29	H
1880.00	-24.97	2.85	43.75	4.82	20.75	33.00	12.25	V
1909.30	-24.57	2.87	43.77	4.76	21.09	33.00	11.91	H

LTE Band 2_3MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1851.50	-24.99	2.87	43.75	4.87	20.76	33.00	12.24	H
1880.00	-25.02	2.85	43.75	4.82	20.70	33.00	12.30	V
1908.50	-24.68	2.89	43.78	4.76	20.97	33.00	12.03	H

LTE Band 2_5MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1852.50	-25.09	2.87	43.75	4.87	20.66	33.00	12.34	H
1880.00	-25.00	2.85	43.75	4.82	20.72	33.00	12.28	V
1907.50	-24.85	2.84	43.77	4.77	20.85	33.00	12.15	H

LTE Band 2_10MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1855.00	-25.14	2.88	43.74	4.86	20.58	33.00	12.42	H
1880.00	-24.97	2.85	43.75	4.82	20.75	33.00	12.25	V
1905.00	-25.07	2.87	43.77	4.77	20.60	33.00	12.40	H

LTE Band 2_15MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1857.50	-25.22	2.87	43.75	4.86	20.52	33.00	12.48	H
1880.00	-24.99	2.85	43.75	4.82	20.73	33.00	12.27	V
1902.50	-25.25	2.86	43.77	4.78	20.44	33.00	12.56	H

LTE Band 2_20 MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1860.00	-25.14	2.86	43.75	4.85	20.60	33.00	12.40	H
1880.00	-24.94	2.85	43.75	4.82	20.78	33.00	12.22	V
1900.00	-25.28	2.87	43.77	4.78	20.40	33.00	12.60	H

LTE Band 5- ERP

Limits: ≤38.45dBm (7W)

LTE Band 5_1.4MHz_QPSK

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
824.70	-24.04	2.26	45.79	0.95	2.15	18.29	38.45	20.16	H
836.50	-24.12	2.26	45.66	0.82	2.15	17.95	38.45	20.50	H
848.30	-24.53	2.27	45.55	0.80	2.15	17.40	38.45	21.05	V

LTE Band 5_3MHz_QPSK

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
825.50	-24.14	2.26	45.79	0.94	2.15	18.18	38.45	20.27	H
836.50	-24.21	2.26	45.66	0.82	2.15	17.86	38.45	20.59	H
847.50	-24.60	2.27	45.56	0.81	2.15	17.35	38.45	21.10	V

LTE Band 5_5MHz_QPSK

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
826.50	-24.16	2.25	45.77	0.93	2.15	18.14	38.45	20.31	H
836.50	-24.23	2.26	45.66	0.82	2.15	17.84	38.45	20.61	H
846.50	-24.60	2.26	45.56	0.82	2.15	17.37	38.45	21.08	V

LTE Band 5_10MHz_QPSK

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
829.00	-24.23	2.13	45.74	0.90	2.15	18.13	38.45	20.32	H
836.50	-24.18	2.26	45.66	0.82	2.15	17.89	38.45	20.56	H
844.00	-24.71	2.26	45.59	0.82	2.15	17.29	38.45	21.16	V

LTE Band 5_1.4MHz_16QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
824.70	-24.74	2.26	45.79	0.95	2.15	17.59	38.45	20.86	H
836.50	-24.83	2.26	45.66	0.82	2.15	17.24	38.45	21.21	H
848.30	-25.27	2.27	45.55	0.80	2.15	16.66	38.45	21.79	V

LTE Band 5_3MHz_16QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
825.50	-24.85	2.26	45.79	0.94	2.15	17.47	38.45	20.98	H
836.50	-24.92	2.26	45.66	0.82	2.15	17.15	38.45	21.30	H
847.50	-25.32	2.27	45.56	0.81	2.15	16.63	38.45	21.82	V

LTE Band 5_5MHz_16QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
826.50	-24.87	2.25	45.77	0.93	2.15	17.43	38.45	21.02	H
836.50	-24.91	2.26	45.66	0.82	2.15	17.16	38.45	21.29	H
846.50	-25.32	2.26	45.56	0.82	2.15	16.65	38.45	21.80	V

LTE Band 5_10MHz_16QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
829.00	-24.93	2.13	45.74	0.90	2.15	17.43	38.45	21.02	H
836.50	-24.87	2.26	45.66	0.82	2.15	17.20	38.45	21.25	H
844.00	-25.48	2.26	45.59	0.82	2.15	16.52	38.45	21.93	V

LTE Band 5_1.4MHz_64QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
824.70	-25.79	2.26	45.79	0.95	2.15	16.54	38.45	21.91	H
836.50	-25.92	2.26	45.66	0.82	2.15	16.15	38.45	22.30	H
848.30	-26.35	2.27	45.55	0.80	2.15	15.58	38.45	22.87	V

LTE Band 5_3MHz_64QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
825.50	-25.92	2.26	45.79	0.94	2.15	16.40	38.45	22.05	H
836.50	-25.97	2.26	45.66	0.82	2.15	16.10	38.45	22.35	H
847.50	-26.39	2.27	45.56	0.81	2.15	15.56	38.45	22.89	V

LTE Band 5_5MHz_64QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
826.50	-25.94	2.25	45.77	0.93	2.15	16.36	38.45	22.09	H
836.50	-25.99	2.26	45.66	0.82	2.15	16.08	38.45	22.37	H
846.50	-26.41	2.26	45.56	0.82	2.15	15.56	38.45	22.89	V

LTE Band 5_10MHz_64QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
829.00	-26.02	2.13	45.74	0.90	2.15	16.34	38.45	22.11	H
836.50	-25.96	2.26	45.66	0.82	2.15	16.11	38.45	22.34	H
844.00	-26.53	2.26	45.59	0.82	2.15	15.47	38.45	22.98	V

LTE Band 7- EIRP

Limits: ≤33 dBm (2W)

LTE Band 7_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2502.50	-28.32	3.58	45.68	6.10	19.88	33.00	13.12	H
2535.00	-25.84	3.63	44.82	6.16	21.51	33.00	11.49	H
2567.50	-26.15	3.65	44.92	6.22	21.34	33.00	11.66	H

LTE Band 7_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2505.00	-28.14	3.59	45.64	6.11	20.02	33.00	12.98	H
2535.00	-25.82	3.63	44.82	6.16	21.53	33.00	11.47	H
2565.00	-26.27	3.65	44.97	6.22	21.27	33.00	11.73	H

LTE Band 7_15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2507.50	-27.48	3.59	44.92	6.11	19.96	33.00	13.04	H
2535.00	-25.89	3.63	44.82	6.16	21.46	33.00	11.54	H
2562.50	-26.89	3.65	45.67	6.21	21.34	33.00	11.66	H

LTE Band 7_20 MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2510.00	-27.57	3.58	45.36	6.12	20.33	33.00	12.67	H
2535.00	-25.82	3.63	44.82	6.16	21.53	33.00	11.47	H
2560.00	-27.12	3.64	45.98	6.21	21.43	33.00	11.57	H

LTE Band 7_5MHz_16QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2502.50	-29.04	3.58	45.68	6.10	19.16	33.00	13.84	H
2535.00	-26.61	3.63	44.82	6.16	20.74	33.00	12.26	H
2567.50	-26.89	3.65	44.92	6.22	20.60	33.00	12.40	H

LTE Band 7_10MHz_16QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2505.00	-28.84	3.59	45.64	6.11	19.32	33.00	13.68	H
2535.00	-26.60	3.63	44.82	6.16	20.75	33.00	12.25	H
2565.00	-27.01	3.65	44.97	6.22	20.53	33.00	12.47	H

LTE Band 7_15MHz_16QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2507.50	-28.19	3.59	44.92	6.11	19.25	33.00	13.75	H
2535.00	-26.65	3.63	44.82	6.16	20.70	33.00	12.30	H
2562.50	-27.61	3.65	45.67	6.21	20.62	33.00	12.38	H

LTE Band 7_20 MHz_16QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2510.00	-28.30	3.58	45.36	6.12	19.60	33.00	13.40	H
2535.00	-26.57	3.63	44.82	6.16	20.78	33.00	12.22	H
2560.00	-27.85	3.64	45.98	6.21	20.70	33.00	12.30	H

LTE Band 7_5MHz_64QAM

Frequency (MHz)	P_Mea (dBm)	P_cl (dB)	P_Ag (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2502.50	-30.17	3.58	45.68	6.10	18.03	33.00	14.97	H
2535.00	-27.67	3.63	44.82	6.16	19.68	33.00	13.32	H
2567.50	-27.97	3.65	44.92	6.22	19.52	33.00	13.48	H

LTE Band 7_10MHz_64QAM

Frequency (MHz)	P_Mea (dBm)	P_cl (dB)	P_Ag (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2505.00	-29.96	3.59	45.64	6.11	18.20	33.00	14.80	H
2535.00	-27.69	3.63	44.82	6.16	19.66	33.00	13.34	H
2565.00	-28.06	3.65	44.97	6.22	19.48	33.00	13.52	H

LTE Band 7_15MHz_64QAM

Frequency (MHz)	P_Mea (dBm)	P_cl (dB)	P_Ag (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2507.50	-29.30	3.59	44.92	6.11	18.14	33.00	14.86	H
2535.00	-27.72	3.63	44.82	6.16	19.63	33.00	13.37	H
2562.50	-28.68	3.65	45.67	6.21	19.55	33.00	13.45	H

LTE Band 7_20 MHz_64QAM

Frequency (MHz)	P_Mea (dBm)	P_cl (dB)	P_Ag (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2510.00	-29.38	3.58	45.36	6.12	18.52	33.00	14.48	H
2535.00	-27.66	3.63	44.82	6.16	19.69	33.00	13.31	H
2560.00	-28.96	3.64	45.98	6.21	19.59	33.00	13.41	H

LTE Band 12 - ERP

Limits: ≤34.77dBm (3W)

LTE Band 12_1.4MHz_QPSK

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
699.70	-23.82	1.90	44.66	0.77	2.15	17.56	34.77	17.21	V
707.50	-23.61	1.91	44.94	0.62	2.15	17.89	34.77	16.88	V
715.30	-23.53	1.92	45.26	0.50	2.15	18.16	34.77	16.61	V

LTE Band 12_3MHz_QPSK

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
700.50	-23.80	1.90	44.68	0.76	2.15	17.59	34.77	17.18	V
707.50	-23.70	1.91	44.94	0.62	2.15	17.80	34.77	16.97	V
714.50	-23.60	1.92	45.26	0.50	2.15	18.09	34.77	16.68	V

LTE Band 12_5MHz_QPSK

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
701.50	-23.84	1.90	44.81	0.74	2.15	17.66	34.77	17.11	V
707.50	-23.72	1.91	44.94	0.62	2.15	17.78	34.77	16.99	V
713.50	-23.50	1.92	45.22	0.50	2.15	18.15	34.77	16.62	V

LTE Band 12_10MHz_QPSK

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
704.00	-23.69	1.91	44.93	0.70	2.15	17.88	34.77	16.89	V
707.50	-23.68	1.91	44.94	0.62	2.15	17.82	34.77	16.95	V
711.00	-23.58	1.92	45.19	0.53	2.15	18.07	34.77	16.70	V

LTE Band 12_1.4MHz_16QAM

Frequency (MHz)	P_Mea(dBm)	P_cl(dB)	P_Ag(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
699.70	-24.56	1.90	44.66	0.77	2.15	16.82	34.77	17.95	V
707.50	-24.33	1.91	44.94	0.62	2.15	17.17	34.77	17.60	V
715.30	-24.34	1.92	45.26	0.50	2.15	17.35	34.77	17.42	V

LTE Band 12_3MHz_16QAM

Frequency (MHz)	P_Mea(dBm)	P_cl(dB)	P_Ag(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
700.50	-24.55	1.90	44.68	0.76	2.15	16.84	34.77	17.93	V
707.50	-24.46	1.91	44.94	0.62	2.15	17.04	34.77	17.73	V
714.50	-24.41	1.92	45.26	0.50	2.15	17.28	34.77	17.49	V

LTE Band 12_5MHz_16QAM

Frequency (MHz)	P_Mea(dBm)	P_cl(dB)	P_Ag(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
701.50	-24.60	1.90	44.81	0.74	2.15	16.90	34.77	17.87	V
707.50	-24.48	1.91	44.94	0.62	2.15	17.02	34.77	17.75	V
713.50	-24.29	1.92	45.22	0.50	2.15	17.36	34.77	17.41	V

LTE Band 12_10MHz_16QAM

Frequency (MHz)	P_Mea(dBm)	P_cl(dB)	P_Ag(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
704.00	-24.42	1.91	44.93	0.70	2.15	17.15	34.77	17.62	V
707.50	-24.45	1.91	44.94	0.62	2.15	17.05	34.77	17.72	V
711.00	-24.34	1.92	45.19	0.53	2.15	17.31	34.77	17.46	V

LTE Band 12_1.4MHz_64QAM

Frequency (MHz)	P_Mea(dBm)	P_cl(dB)	P_Ag(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
699.70	-25.59	1.90	44.66	0.77	2.15	15.79	34.77	18.98	V
707.50	-25.37	1.91	44.94	0.62	2.15	16.13	34.77	18.64	V
715.30	-25.31	1.92	45.26	0.50	2.15	16.38	34.77	18.39	V

LTE Band 12_3MHz_64QAM

Frequency (MHz)	P_Mea(dBm)	P_cl(dB)	P_Ag(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
700.50	-25.56	1.90	44.68	0.76	2.15	15.83	34.77	18.94	V
707.50	-25.45	1.91	44.94	0.62	2.15	16.05	34.77	18.72	V
714.50	-25.36	1.92	45.26	0.50	2.15	16.33	34.77	18.44	V

LTE Band 12_5MHz_64QAM

Frequency (MHz)	P_Mea(dBm)	P_cl(dB)	P_Ag(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
701.50	-25.63	1.90	44.81	0.74	2.15	15.87	34.77	18.90	V
707.50	-25.49	1.91	44.94	0.62	2.15	16.01	34.77	18.76	V
713.50	-25.25	1.92	45.22	0.50	2.15	16.40	34.77	18.37	V

LTE Band 12_10MHz_64QAM

Frequency (MHz)	P_Mea(dBm)	P_cl(dB)	P_Ag(dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
704.00	-25.45	1.91	44.93	0.70	2.15	16.12	34.77	18.65	V
707.50	-25.48	1.91	44.94	0.62	2.15	16.02	34.77	18.75	V
711.00	-25.35	1.92	45.19	0.53	2.15	16.30	34.77	18.47	V

LTE Band 13- ERP

Limits: ≤34.77 dBm (3W)

LTE Band 13_5MHz_QPSK

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag} (dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
779.50	-23.29	2.01	45.64	0.04	2.15	18.23	34.77	16.54	V
782.00	-23.34	2.01	45.65	0.09	2.15	18.24	34.77	16.53	V
784.50	-23.36	2.01	45.67	0.16	2.15	18.31	34.77	16.46	V

LTE Band 13_10MHz_QPSK

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag} (dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
782.00	-23.33	2.01	45.65	0.09	2.15	18.25	34.77	16.52	V

LTE Band 13_5MHz_16QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag} (dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
779.50	-24.08	2.01	45.64	0.04	2.15	17.44	34.77	17.33	V
782.00	-24.15	2.01	45.65	0.09	2.15	17.43	34.77	17.34	V
784.50	-24.16	2.01	45.67	0.16	2.15	17.51	34.77	17.26	V

LTE Band 13_10MHz_16QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag} (dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
782.00	-24.12	2.01	45.65	0.09	2.15	17.46	34.77	17.31	V

LTE Band 13_5MHz_64QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag} (dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
779.50	-25.13	2.01	45.64	0.04	2.15	16.39	34.77	18.38	V
782.00	-25.17	2.01	45.65	0.09	2.15	16.41	34.77	18.36	V
784.50	-25.20	2.01	45.67	0.16	2.15	16.47	34.77	18.30	V

LTE Band 13_10MHz_64QAM

Frequency (MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag} (dB)	G_a (dBi)	Correction(dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
782.00	-25.16	2.01	45.65	0.09	2.15	16.42	34.77	18.35	V

LTE Band 38- EIRP

Limits: ≤33dBm(2W)

LTE Band 38_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2572.50	-29.99	3.66	44.92	6.23	17.50	33.00	15.50	H
2595.00	-30.41	3.69	44.91	6.27	17.08	33.00	15.92	H
2617.50	-30.86	3.68	44.94	6.31	16.71	33.00	16.29	H

LTE Band 38_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2575.00	-30.02	3.66	44.92	6.23	17.47	33.00	15.53	H
2595.00	-30.37	3.69	44.91	6.27	17.12	33.00	15.88	H
2615.00	-30.97	3.68	44.94	6.31	16.60	33.00	16.40	H

LTE Band 38_15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2577.50	-30.01	3.66	44.92	6.23	17.48	33.00	15.52	H
2595.00	-30.48	3.69	44.91	6.27	17.01	33.00	15.99	H
2612.50	-31.22	3.68	44.94	6.30	16.34	33.00	16.66	H

LTE Band 38_20MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2580.00	-29.83	3.67	44.92	6.24	17.66	33.00	15.34	H
2595.00	-30.36	3.69	44.91	6.27	17.13	33.00	15.87	H
2610.00	-30.87	3.68	44.94	6.30	16.69	33.00	16.31	H

LTE Band 38_5MHz_16QAM

Frequency (MHz)	P_Mea (dBm)	P_cl (dB)	P_Ag (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2572.50	-30.83	3.66	44.92	6.23	16.66	33.00	16.34	H
2595.00	-31.27	3.69	44.91	6.27	16.22	33.00	16.78	H
2617.50	-31.71	3.68	44.94	6.31	15.86	33.00	17.14	H

LTE Band 38_10MHz_16QAM

Frequency (MHz)	P_Mea (dBm)	P_cl (dB)	P_Ag (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2575.00	-30.86	3.66	44.92	6.23	16.63	33.00	16.37	H
2595.00	-31.23	3.69	44.91	6.27	16.26	33.00	16.74	H
2615.00	-31.81	3.68	44.94	6.31	15.76	33.00	17.24	H

LTE Band 38_15MHz_16QAM

Frequency (MHz)	P_Mea (dBm)	P_cl (dB)	P_Ag (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2577.50	-30.88	3.66	44.92	6.23	16.61	33.00	16.39	H
2595.00	-31.33	3.69	44.91	6.27	16.16	33.00	16.84	H
2612.50	-32.07	3.68	44.94	6.30	15.49	33.00	17.51	H

LTE Band 38_20MHz_16QAM

Frequency (MHz)	P_Mea (dBm)	P_cl (dB)	P_Ag (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2580.00	-30.70	3.67	44.92	6.24	16.79	33.00	16.21	H
2595.00	-31.21	3.69	44.91	6.27	16.28	33.00	16.72	H
2610.00	-31.74	3.68	44.94	6.30	15.82	33.00	17.18	H

LTE Band 38_5MHz_64QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2572.50	-31.86	3.66	44.92	6.23	15.63	33.00	17.37	H
2595.00	-32.28	3.69	44.91	6.27	15.21	33.00	17.79	H
2617.50	-32.74	3.68	44.94	6.31	14.83	33.00	18.17	H

LTE Band 38_10MHz_64QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2575.00	-31.89	3.66	44.92	6.23	15.60	33.00	17.40	H
2595.00	-32.25	3.69	44.91	6.27	15.24	33.00	17.76	H
2615.00	-31.83	3.68	44.94	6.31	15.74	33.00	17.26	H

LTE Band 38_15MHz_64QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2577.50	-31.90	3.66	44.92	6.23	15.59	33.00	17.41	H
2595.00	-32.36	3.69	44.91	6.27	15.13	33.00	17.87	H
2612.50	-33.09	3.68	44.94	6.30	14.47	33.00	18.53	H

LTE Band 38_20MHz_64QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2580.00	-31.73	3.67	44.92	6.24	15.76	33.00	17.24	H
2595.00	-32.24	3.69	44.91	6.27	15.25	33.00	17.75	H
2610.00	-32.75	3.68	44.94	6.30	14.81	33.00	18.19	H

LTE Band 66- EIRP

Limits: ≤30dBm (1W)

LTE Band 66_1.4MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1710.70	-31.66	3.17	44.10	5.12	20.73	30.00	9.27	H
1745.00	-30.92	3.68	44.16	5.06	21.98	30.00	8.02	H
1779.30	-29.29	3.04	44.03	5.00	22.78	30.00	7.22	H

LTE Band 66_3MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1711.50	-31.94	3.40	44.10	5.12	20.68	30.00	9.32	H
1745.00	-31.04	3.68	44.16	5.06	21.86	30.00	8.14	H
1778.50	-29.31	3.04	44.03	5.00	22.76	30.00	7.24	H

LTE Band 66_5MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1712.50	-24.88	3.66	44.10	5.12	20.68	30.00	9.32	H
1745.00	-23.72	3.68	44.16	5.06	21.82	30.00	8.18	H
1777.50	-23.26	3.04	44.04	5.00	22.74	30.00	7.26	H

LTE Band 66_10MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1715.00	-24.92	3.56	44.10	5.11	20.73	30.00	9.27	H
1745.00	-23.69	3.68	44.16	5.06	21.85	30.00	8.15	H
1775.00	-23.23	3.05	44.05	5.01	22.77	30.00	7.23	H

LTE Band 66_15MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1717.50	-24.99	3.47	44.11	5.11	20.76	30.00	9.24	H
1745.00	-23.73	3.68	44.16	5.06	21.81	30.00	8.19	H
1772.50	-23.67	3.05	44.06	5.01	22.35	30.00	7.65	H

LTE Band 66_20MHz_QPSK

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1720.00	-24.97	3.37	44.11	5.10	20.87	30.00	9.13	H
1745.00	-23.70	3.68	44.16	5.06	21.84	30.00	8.16	H
1770.00	-23.67	3.05	44.07	5.01	22.37	30.00	7.63	H

LTE Band 66_1.4MHz_16QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1710.70	-32.30	3.17	44.10	5.12	20.09	30.00	9.91	H
1745.00	-31.57	3.68	44.16	5.06	21.33	30.00	8.67	H
1779.30	-29.98	3.04	44.03	5.00	22.09	30.00	7.91	H

LTE Band 66_3MHz_16QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1711.50	-32.61	3.40	44.10	5.12	20.01	30.00	9.99	H
1745.00	-31.72	3.68	44.16	5.06	21.18	30.00	8.82	H
1778.50	-30.00	3.04	44.03	5.00	22.07	30.00	7.93	H

LTE Band 66_5MHz_16QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1712.50	-25.57	3.66	44.10	5.12	19.99	30.00	10.01	H
1745.00	-24.38	3.68	44.16	5.06	21.16	30.00	8.84	H
1777.50	-23.92	3.04	44.04	5.00	22.08	30.00	7.92	H

LTE Band 66_10MHz_16QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1715.00	-25.61	3.56	44.10	5.11	20.04	30.00	9.96	H
1745.00	-24.26	3.68	44.16	5.06	21.28	30.00	8.72	H
1775.00	-23.91	3.05	44.05	5.01	22.09	30.00	7.91	H

LTE Band 66_15MHz_16QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1717.50	-25.70	3.47	44.11	5.11	20.05	30.00	9.95	H
1745.00	-24.38	3.68	44.16	5.06	21.16	30.00	8.84	H
1772.50	-24.34	3.05	44.06	5.01	21.68	30.00	8.32	H

LTE Band 66_20MHz_16QAM

Frequency (MHz)	P$_{Mea}$ (dBm)	P$_{cl}$ (dB)	P$_{Ag}$ (dB)	G$_a$ (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1720.00	-25.70	3.37	44.11	5.10	20.14	30.00	9.86	H
1745.00	-24.36	3.68	44.16	5.06	21.18	30.00	8.82	H
1770.00	-24.36	3.05	44.07	5.01	21.68	30.00	8.32	H

LTE Band 66_1.4MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1710.70	-33.38	3.17	44.10	5.12	19.01	30.00	10.99	H
1745.00	-32.64	3.68	44.16	5.06	20.26	30.00	9.74	H
1779.30	-31.03	3.04	44.03	5.00	21.04	30.00	8.96	H

LTE Band 66_3MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1711.50	-33.65	3.40	44.10	5.12	18.97	30.00	11.03	H
1745.00	-32.78	3.68	44.16	5.06	20.12	30.00	9.88	H
1778.50	-31.05	3.04	44.03	5.00	21.02	30.00	8.98	H

LTE Band 66_5MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1712.50	-26.60	3.66	44.10	5.12	18.96	30.00	11.04	H
1745.00	-25.43	3.68	44.16	5.06	20.11	30.00	9.89	H
1777.50	-24.97	3.04	44.04	5.00	21.03	30.00	8.97	H

LTE Band 66_10MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1715.00	-26.66	3.56	44.10	5.11	18.99	30.00	11.01	H
1745.00	-25.38	3.68	44.16	5.06	20.16	30.00	9.84	H
1775.00	-24.97	3.05	44.05	5.01	21.03	30.00	8.97	H

LTE Band 66_15MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1717.50	-26.73	3.47	44.11	5.11	19.02	30.00	10.98	H
1745.00	-25.45	3.68	44.16	5.06	20.09	30.00	9.91	H
1772.50	-25.40	3.05	44.06	5.01	20.62	30.00	9.38	H

LTE Band 66_20MHz_64QAM

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	P_{Ag} (dB)	G_a (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1720.00	-26.75	3.37	44.11	5.10	19.09	30.00	10.91	H
1745.00	-25.42	3.68	44.16	5.06	20.12	30.00	9.88	H
1770.00	-25.42	3.05	44.07	5.01	20.62	30.00	9.38	H

Peak EIRP (dBm)= P_{Mea}(-22.81dBm) -G_a (-4.76dBi) - P_{Ag} (-43.77dB) - P_{cl}(2.87dB) =22.85dBm

Note: Expanded measurement uncertainty is U = 2.84 dB, k = 2.

A.2EMISSION LIMIT

A.2.1 Measurement Method

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

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier. The resolution bandwidth is set 1MHz. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the LTE Bands2,5,7,12,13,38,66.

The procedure of radiated spurious emissions is as follows:

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

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

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

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

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.
   An amplifier should be connected in for the test.
   The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.
   The measurement results are obtained as described below:
   Power (EIRP)=P_{Mea}+ P_{pl} + G_a

5. This value is EIRP since the measurement is calibrated using an antenna of known gain (unit: dBi) and known input power.

6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP - 2.15dB.

A.2.2 Measurement Limit

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

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Part 27.53(m)(4) specifies for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part27.53(c) states for operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 +

10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the LTE Bands2,5,7,12,13,38,66. 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 Bands2,5,7,12,13,38,66 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. The range of evaluated frequency is from 30MHz to 26GHz.

LTE Band 2, 1.4MHz, QPSK, Channel 18607

Frequency (MHz)	P_Mea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3677.02	-55.71	6.48	8.45	-53.74	-13.00	40.74	H
5556.02	-56.34	7.19	10.59	-52.94	-13.00	39.94	H
7438.01	-54.15	8.22	12.13	-50.24	-13.00	37.24	V
9207.01	-53.49	8.94	13.22	-49.21	-13.00	36.21	V
11138.01	-51.65	9.67	13.17	-48.15	-13.00	35.15	V
12935.01	-48.51	10.49	13.46	-45.54	-13.00	32.54	V

LTE Band 2, 1.4MHz, QPSK, Channel 18900

Frequency (MHz)	P_Mea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3801.02	-57.25	6.14	8.62	-54.77	-13.00	41.77	H
5652.02	-56.40	7.27	10.57	-53.10	-13.00	40.10	H
7559.01	-54.51	8.15	12.25	-50.41	-13.00	37.41	H
9433.01	-54.51	9.20	13.36	-50.35	-13.00	37.35	H
11231.01	-51.41	9.59	13.15	-47.85	-13.00	34.85	H
13174.01	-47.48	10.61	13.74	-44.35	-13.00	31.35	H

LTE Band 2, 1.4MHz, QPSK, Channel 19193

Frequency (MHz)	P_Mea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3803.02	-56.95	6.13	8.62	-54.46	-13.00	41.46	H
5754.02	-55.89	7.26	10.55	-52.60	-13.00	39.60	V
7638.01	-54.48	8.15	12.31	-50.32	-13.00	37.32	H
9509.01	-53.38	9.51	13.39	-49.50	-13.00	36.50	H
11474.01	-50.17	9.88	13.11	-46.94	-13.00	33.94	H
13354.01	-47.96	10.57	14.00	-44.53	-13.00	31.53	H

LTE Band 5, 1.4MHz, QPSK, Channel 20407

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1663.01	-59.67	3.57	5.21	2.15	-60.18	-13.00	47.18	H
2466.00	-52.28	4.59	6.00	2.15	-53.02	-13.00	40.02	V
3305.02	-54.84	5.29	7.73	2.15	-54.55	-13.00	41.55	V
4123.02	-56.05	6.04	9.02	2.15	-55.22	-13.00	42.22	H
4955.01	-55.03	6.68	9.86	2.15	-54.00	-13.00	41.00	H
5782.01	-53.60	7.22	10.54	2.15	-52.43	-13.00	39.43	H

LTE Band 5, 1.4MHz, QPSK, Channel 20525

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673.01	-59.57	3.58	5.19	2.15	-60.11	-13.00	47.11	H
2521.00	-52.89	4.65	6.14	2.15	-53.55	-13.00	40.55	H
3343.02	-54.68	5.31	7.82	2.15	-54.32	-13.00	41.32	H
4190.02	-55.19	6.18	9.09	2.15	-54.43	-13.00	41.43	V
5022.01	-55.09	6.57	9.93	2.15	-53.88	-13.00	40.88	H
5863.01	-53.66	7.28	10.53	2.15	-52.56	-13.00	39.56	H

LTE Band 5, 1.4MHz, QPSK, Channel 20643

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1689.01	-60.39	3.59	5.16	2.15	-60.97	-13.00	47.97	V
2541.00	-51.80	4.66	6.17	2.15	-52.44	-13.00	39.44	H
3383.02	-55.49	5.35	7.92	2.15	-55.07	-13.00	42.07	V
4248.02	-55.75	6.24	9.15	2.15	-54.99	-13.00	41.99	H
5099.01	-55.22	6.77	10.04	2.15	-54.10	-13.00	41.10	V
5943.01	-53.31	7.47	10.51	2.15	-52.42	-13.00	39.42	V

LTE Band 7, 5 MHz, QPSK, Channel 20775

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
4996.02	-57.80	6.61	9.90	-54.51	-25.00	29.51	V
7507.01	-54.47	8.36	12.21	-50.62	-25.00	25.62	V
10013.01	-53.19	9.22	12.91	-49.50	-25.00	24.50	V
12526.01	-49.80	10.25	13.22	-46.83	-25.00	21.83	H
15006.00	-45.72	11.22	14.00	-42.94	-25.00	17.94	V
17520.00	-43.17	12.80	14.93	-41.04	-25.00	16.04	H

LTE Band 7, 5 MHz, QPSK, Channel 21100

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5086.02	-56.70	6.73	10.02	-53.41	-25.00	28.41	H
7623.01	-54.24	8.08	12.30	-50.02	-25.00	25.02	H
10135.01	-52.44	9.41	12.95	-48.90	-25.00	23.90	V
12661.01	-47.56	10.36	13.30	-44.62	-25.00	19.62	V
15212.00	-45.58	11.38	13.87	-43.09	-25.00	18.09	H
17729.00	-43.75	12.34	15.22	-40.87	-25.00	15.87	H

LTE Band 7, 5 MHz, QPSK, Channel 21425

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5129.02	-56.86	6.85	10.08	-53.63	-25.00	28.63	V
7703.01	-54.10	8.42	12.36	-50.16	-25.00	25.16	V
10288.01	-51.85	9.60	13.02	-48.43	-25.00	23.43	H
12843.01	-49.10	10.66	13.41	-46.35	-25.00	21.35	V
15424.00	-46.22	11.43	13.75	-43.90	-25.00	18.90	H
17962.00	-43.53	12.89	15.55	-40.87	-25.00	15.87	H

LTE Band 12, 1.4MHz, QPSK, Channel 23017

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1402.01	-58.79	3.24	4.99	2.15	-59.19	-13.00	46.19	H
2105.00	-55.57	4.20	4.92	2.15	-57.00	-13.00	44.00	H
2798.00	-51.87	4.91	6.64	2.15	-52.29	-13.00	39.29	H
3509.02	-55.40	5.54	8.21	2.15	-54.88	-13.00	41.88	H
4193.02	-55.64	6.19	9.09	2.15	-54.89	-13.00	41.89	H
4893.01	-55.66	6.73	9.79	2.15	-54.75	-13.00	41.75	H

LTE Band 12, 1.4MHz, QPSK, Channel 23095

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1415.01	-59.66	3.25	5.06	2.15	-60.00	-13.00	47.00	V
2123.00	-54.36	4.21	4.97	2.15	-55.75	-13.00	42.75	H
2841.00	-51.28	4.95	6.71	2.15	-51.67	-13.00	38.67	V
3540.02	-55.56	5.72	8.26	2.15	-55.17	-13.00	42.17	V
4258.02	-55.57	6.23	9.16	2.15	-54.79	-13.00	41.79	V
4942.01	-54.41	6.70	9.84	2.15	-53.42	-13.00	40.42	H

LTE Band 12, 1.4MHz, QPSK, Channel 23173

Frequency (MHz)	P_{Mea} (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1435.01	-60.13	3.28	5.16	2.15	-60.40	-13.00	47.40	H
2140.00	-54.86	4.23	5.02	2.15	-56.22	-13.00	43.22	V
2849.00	-52.10	4.96	6.73	2.15	-52.48	-13.00	39.48	V
3584.02	-54.48	6.17	8.32	2.15	-54.48	-13.00	41.48	V
4284.02	-55.44	6.21	9.18	2.15	-54.62	-13.00	41.62	H
5021.01	-55.20	6.57	9.93	2.15	-53.99	-13.00	40.99	H

LTE Band 13, 5MHz, QPSK, Channel 23205

Frequency (MHz)	P_Mea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1545.01	-60.78	3.46	5.42	2.15	-60.97	-13.00	47.97	H
2343.00	-54.07	4.45	5.63	2.15	-55.04	-13.00	42.04	V
3111.02	-53.91	5.36	7.27	2.15	-54.15	-13.00	41.15	H
3893.02	-54.96	6.10	8.75	2.15	-54.46	-13.00	41.46	V
4671.02	-54.26	6.48	9.57	2.15	-53.32	-13.00	40.32	V
5471.01	-54.79	6.95	10.56	2.15	-53.33	-13.00	40.33	V

LTE Band 13, 5MHz, QPSK, Channel 23230

Frequency (MHz)	P_Mea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1557.01	-60.19	3.47	5.40	2.15	-60.41	-13.00	47.41	H
2358.00	-53.45	4.47	5.67	2.15	-54.40	-13.00	41.40	V
3114.02	-54.08	5.37	7.27	2.15	-54.33	-13.00	41.33	H
3905.02	-54.71	6.11	8.77	2.15	-54.20	-13.00	41.20	V
4698.02	-55.07	6.50	9.60	2.15	-54.12	-13.00	41.12	V
5467.01	-54.71	6.93	10.55	2.15	-53.24	-13.00	40.24	H

LTE Band 13, 5MHz, QPSK, Channel 23255

Frequency (MHz)	P_Mea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Correction (dB)	Peak ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1561.01	-60.45	3.47	5.39	2.15	-60.68	-13.00	47.68	H
2366.00	-53.36	4.48	5.70	2.15	-54.29	-13.00	41.29	H
3136.02	-53.63	5.39	7.33	2.15	-53.84	-13.00	40.84	H
3932.02	-55.31	6.12	8.80	2.15	-54.78	-13.00	41.78	V
4719.02	-54.74	6.52	9.62	2.15	-53.79	-13.00	40.79	H
5502.01	-55.20	7.07	10.60	2.15	-53.82	-13.00	40.82	V

LTE Band 38, 5MHz, QPSK, Channel 37775

Frequency (MHz)	P$_{Mea}$ (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5125.02	-56.88	6.84	10.08	-53.64	-25.00	28.64	H
7702.01	-55.51	8.42	12.36	-51.57	-25.00	26.57	V
10308.01	-51.80	9.66	13.02	-48.44	-25.00	23.44	V
12872.01	-49.27	10.58	13.42	-46.43	-25.00	21.43	V
15419.00	-45.43	11.42	13.75	-43.10	-25.00	18.10	V
17990.00	-43.52	12.90	15.59	-40.83	-25.00	15.83	H

LTE Band 38, 5MHz, QPSK, Channel 38000

Frequency (MHz)	P$_{Mea}$ (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5158.02	-56.70	6.89	10.12	-53.47	-25.00	28.47	H
7806.01	-55.15	8.30	12.44	-51.01	-25.00	26.01	H
10412.01	-51.11	9.78	13.06	-47.83	-25.00	22.83	H
12990.01	-49.67	10.47	13.49	-46.65	-25.00	21.65	H
15579.00	-45.62	11.49	13.70	-43.41	-25.00	18.41	H
16859.00	-42.23	12.04	13.74	-40.53	-25.00	15.53	V

LTE Band 38, 5MHz, QPSK, Channel 38225

Frequency (MHz)	P$_{Mea}$ (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
5251.02	-55.81	7.00	10.25	-52.56	-25.00	27.56	H
7856.01	-54.90	8.37	12.48	-50.79	-25.00	25.79	H
10501.01	-51.99	9.65	13.10	-48.54	-25.00	23.54	H
13105.01	-47.63	10.91	13.65	-44.89	-25.00	19.89	V
15725.00	-46.04	11.62	13.70	-43.96	-25.00	18.96	H
16994.00	-42.16	12.35	13.80	-40.71	-25.00	15.71	H

LTE Band 66, 1.4MHz QPSK, Channel 131979

Frequency (MHz)	P_Mea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3417.02	-57.68	5.38	8.00	-55.06	-13.00	42.06	H
5134.02	-56.07	6.86	10.09	-52.84	-13.00	39.84	V
6847.01	-54.51	7.83	11.42	-50.92	-13.00	37.92	H
8557.01	-55.65	8.57	13.01	-51.21	-13.00	38.21	H
10262.01	-53.19	9.51	13.00	-49.70	-13.00	36.70	H
11978.01	-50.69	10.15	13.00	-47.84	-13.00	34.84	V

LTE Band 66, 1.4MHz, QPSK, Channel 132322

Frequency (MHz)	P_Mea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3490.02	-55.58	5.50	8.18	-52.90	-13.00	39.90	H
5238.02	-57.81	7.00	10.23	-54.58	-13.00	41.58	H
6979.01	-55.36	8.14	11.57	-51.93	-13.00	38.93	H
8722.01	-55.09	8.43	13.04	-50.48	-13.00	37.48	H
10472.01	-52.58	9.69	13.09	-49.18	-13.00	36.18	V
12219.01	-50.41	10.05	13.09	-47.37	-13.00	34.37	V

LTE Band 66, 1.4MHz, QPSK, Channel 132665

Frequency (MHz)	P_Mea (dBm)	Path Loss(dB)	Antenna Gain(dBi)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3556.02	-58.13	5.88	8.28	-55.73	-13.00	42.73	V
5341.02	-57.71	6.95	10.38	-54.28	-13.00	41.28	H
7116.01	-55.09	8.16	11.74	-51.51	-13.00	38.51	V
8900.01	-55.62	8.85	13.08	-51.39	-13.00	38.39	H
10671.01	-52.40	9.30	13.13	-48.57	-13.00	35.57	H
12454.01	-49.85	10.30	13.18	-46.97	-13.00	33.97	V

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

A.3FREQUENCY STABILITY

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 CMW500DIGITAL 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 CMW500or MT8821C, and in a simulated call on middle channel for LTE band 2,5,7,12,13,38,66,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 center channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 ℃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.

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 3.6VDC and 4.2VDC, with a nominal voltage of 3.85VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress.

A.3.2 Measurement results

LTE Band 2, 20MHz bandwidth QPSK (worst case of all bandwidths)
Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
20					
50				4.36	0.0023
40				-0.90	0.0005
30				3.09	0.0016
10	3.85	1850.785	1909.215	1.57	0.0008
0				0.96	0.0005
-10				0.39	0.0002
-20				-0.94	0.0005
-30				-1.83	0.0010

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1850.785	1909.215	5.42	0.0029
4.2				-1.53	0.0008

LTE Band 5, 10MHz bandwidth QPSK (worst case of all bandwidths)
Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
20					
50				-1.03	0.0012
40				-3.21	0.0038
30				0.78	0.0009
10	3.85	824.401	848.599	-2.53	0.0030
0				0.43	0.0005
-10				1.10	0.0013
-20				-2.61	0.0031
-30				-2.05	0.0025

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	824.401	848.599	1.23	0.0015
4.2				-1.16	0.0014

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

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
20					
50				0.93	0.0004
40				7.38	0.0029
30				-0.17	0.0001
10	3.85	2500.449	2569.567	4.82	0.0019
0				6.88	0.0027
-10				7.60	0.0030
-20				6.67	0.0026
-30				6.41	0.0025

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	2500.449	2569.567	-0.53	0.0002
4.2				1.29	0.0005

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

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
20					
50				-0.72	0.0010
40				-0.64	0.0009
30				1.44	0.0020
10	3.85	699.465	715.519	-0.14	0.0002
0				-1.3	0.0018
-10				2.55	0.0036
-20				2.47	0.0035
-30				1.09	0.0015

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	699.465	715.519	0.66	0.0009
4.2				0.46	0.0007

LTE Band 13, 10MHz bandwidth QPSK (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
20					
50				-2.18	0.0028
40				-7.30	0.0093
30				-5.55	0.0071
10	3.85	777.465	786.519	-5.30	0.0068
0				-6.94	0.0089
-10				-3.64	0.0047
-20				-4.50	0.0058
-30				-3.09	0.0040

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	777.465	786.519	-8.19	0.0105
4.2				-6.71	0.0086

LTE Band 38, 20MHz bandwidth QPSK (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
20					
50				-0.10	0.0000
40				2.82	0.0011
30				1.91	0.0007
10	3.85	2570.112	2619.808	-1.53	0.0006
0				6.34	0.0024
-10				2.98	0.0011
-20				2.18	0.0008
-30				0.85	0.0003

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	2570.112	2619.808	3.19	0.0012
4.2				-0.85	0.0003

LTE Band 66, 20MHz bandwidth QPSK (worst case of all bandwidths)

Frequency Error vs Temperature

Temperature(℃)	Voltage(V)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
20					
50				2.95	0.0017
40				0.70	0.0004
30				-24.94	0.0143
10	3.85	1710.801	1779.215	0.15	0.0001
0				4.02	0.0023
-10				-0.95	0.0005
-20				-2.86	0.0016
-30				-0.48	0.0003

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	F_L(MHz)	F_H(MHz)	Offset(Hz)	Frequency error(ppm)
3.6	20	1710.801	1779.215	-0.31	0.0002
4.2				-2.04	0.0012

A.4 OCCUPIED BANDWIDTH

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 frequency. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

The measurement method is from ANSI C63.26:

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. Thefrequency span for the spectrum analyzer shall be set wide enough to capture all modulationproducts including the emission skirts.

b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipatedOBW, and the VBW shall be set ≥ 3 × RBW.

c) Set the reference level of the instrument as required to prevent the signal amplitude from exceedingthe maximum spectrum analyzer input mixer level for linear operation.

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

LTE band 2, 1.4MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%) (kHz)		
1880.0	QPSK	16QAM	64QAM
	1089.74	1097.76	1089.74

LTE band 2, 1.4MHz Bandwidth, QPSK (99% BW)
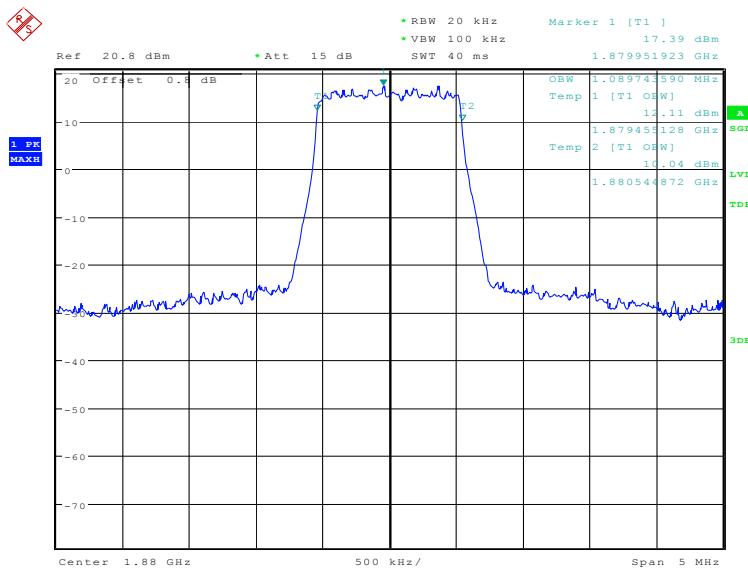
Date: 20.JAN.2020 18:10:01

LTE band 2, 1.4MHz Bandwidth, 16QAM (99% BW)
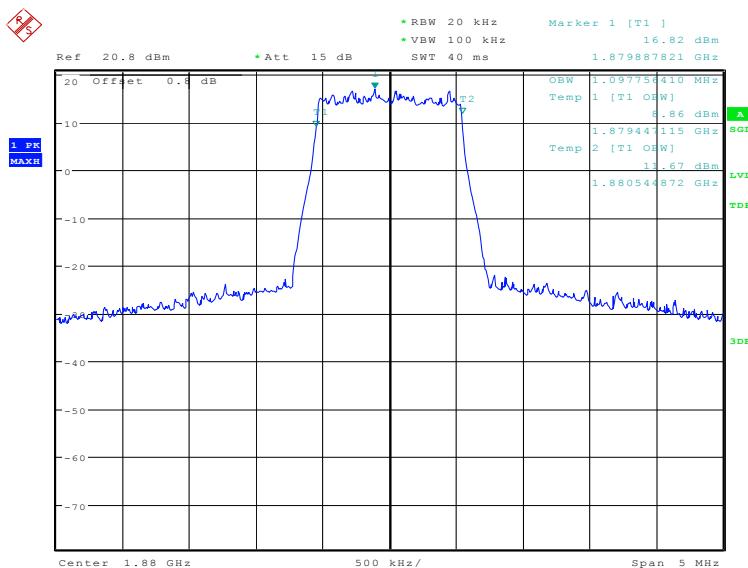
Date: 20.JAN.2020 18:11:25

LTE band 2, 1.4MHz Bandwidth, 64QAM (99% BW)
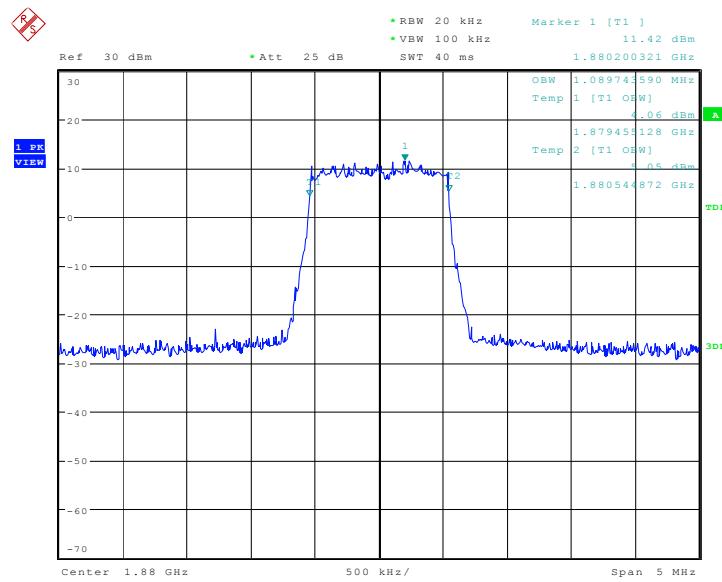
Date: 21.JAN.2020 17:06:57

LTE band 2, 3MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%) (kHz)		
1880.0	QPSK	16QAM	64QAM
	2692.31	2692.31	2692.31

**LTE band 2, 3MHz Bandwidth, QPSK (99% BW)**
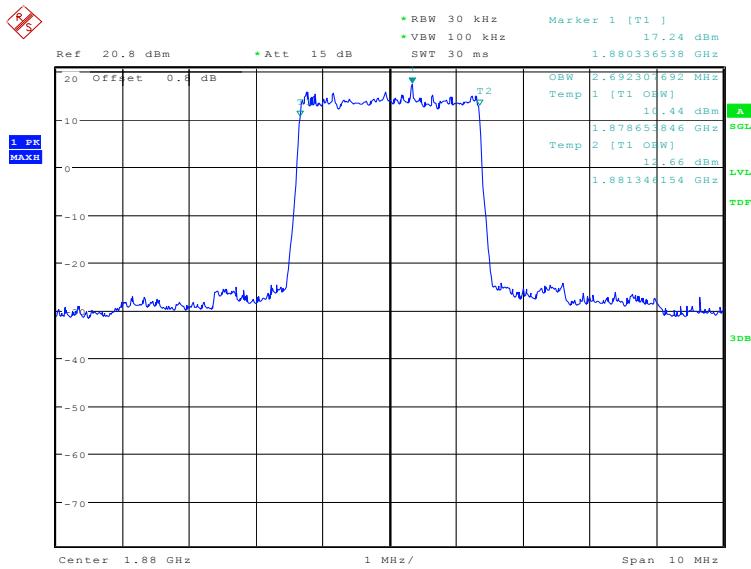
Date: 20.JAN.2020 18:13:39

LTE band 2, 3MHz Bandwidth, 16QAM (99% BW)
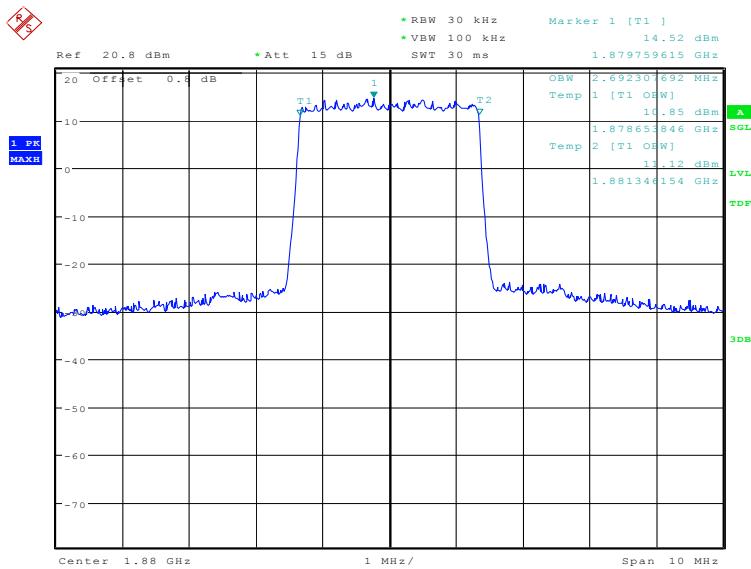
Date: 20.JAN.2020 18:15:03

LTE band 2, 3MHz Bandwidth, 64QAM (99% BW)
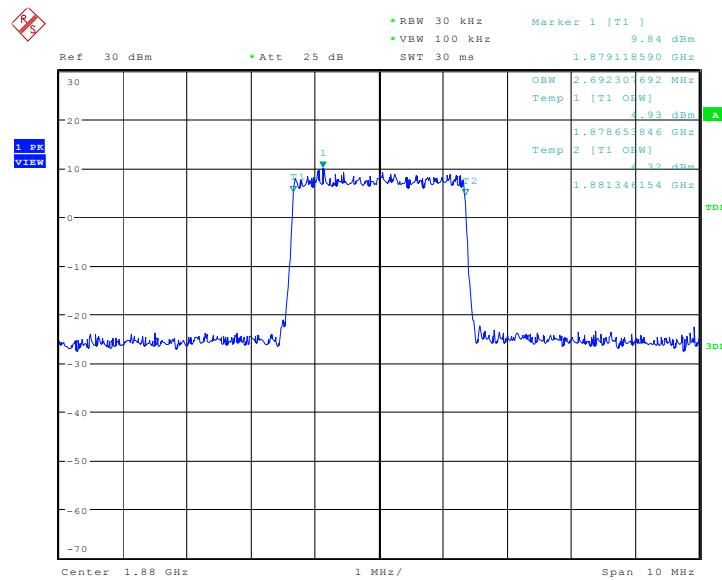
Date: 21.JAN.2020 17:09:29

LTE band 2, 5MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%) (kHz)		
1880.0	QPSK	16QAM	64QAM
	4495.19	4495.19	4495.19

LTE band 2, 5MHz Bandwidth, QPSK (99% BW)
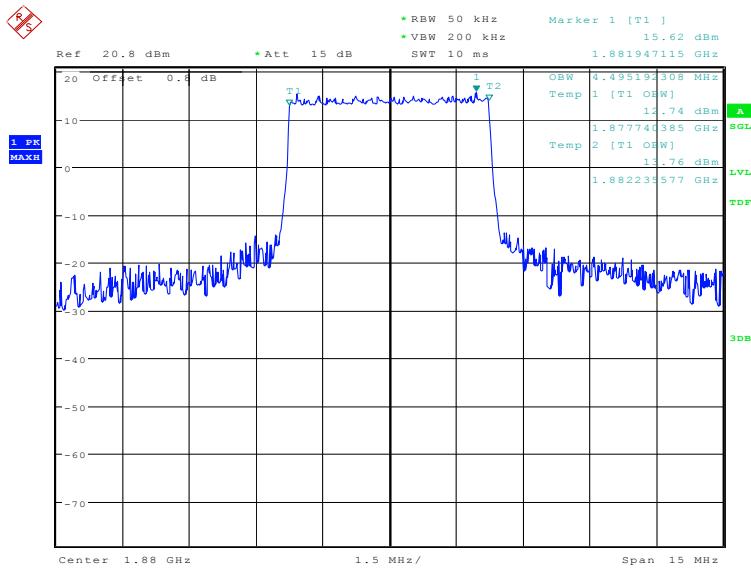
Date: 20.JAN.2020 18:17:16

LTE band 2, 5MHz Bandwidth, 16QAM (99% BW)
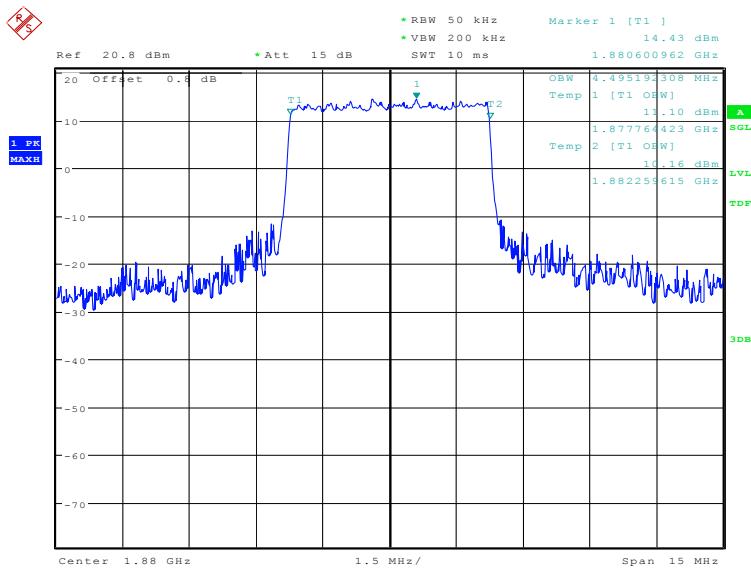
Date: 20.JAN.2020 18:18:40

LTE band 2, 5MHz Bandwidth,64QAM (99% BW)
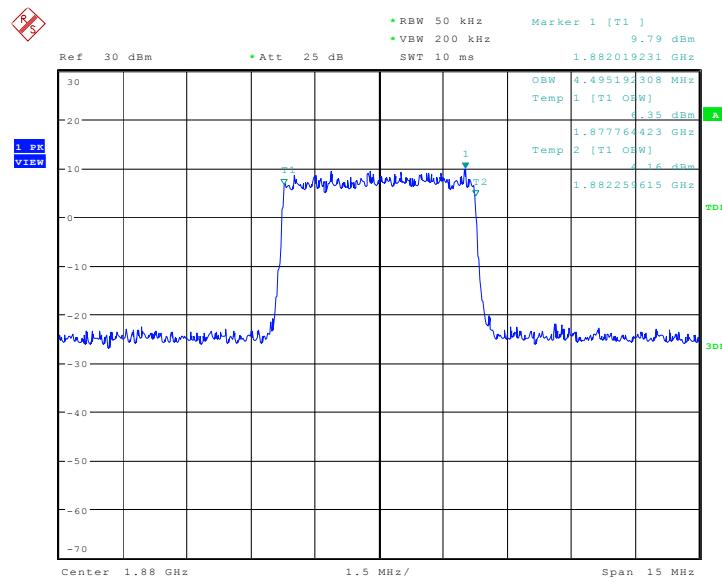
Date: 21.JAN.2020 17:10:44

LTE band 2, 10MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%)(kHz)		
1880.0	QPSK	16QAM	64QAM
	8990.38	9038.46	8990.38

LTE band 2, 10MHz Bandwidth, QPSK (99% BW)
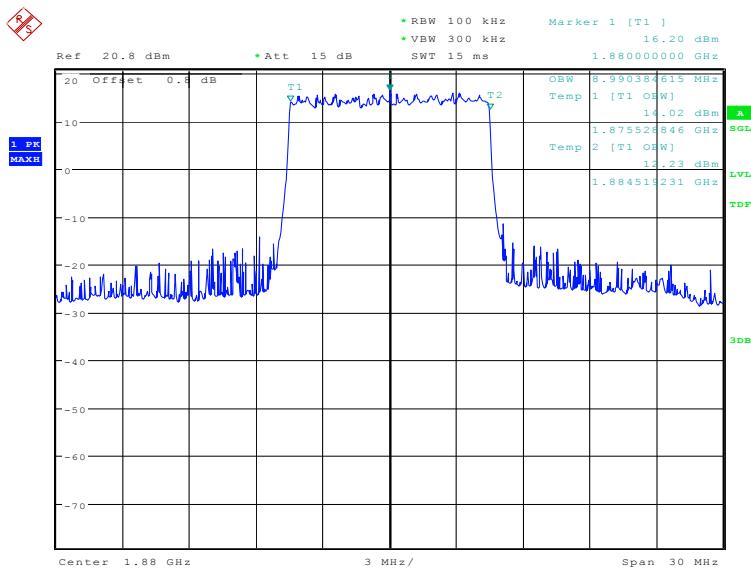
Date: 20.JAN.2020 18:20:53

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

Date: 20.JAN.2020 18:22:17

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


```
                                    * RBW 100 kHz      Marker 1 [T1 ]
                                    * VBW 300 kHz                  9.39 dBm
  Ref  30 dBm        * Att  25 dB   SWT 15 ms          1.877644231 GHz

  30                                              OBW 8.990384615 MHz
                                                  Temp 1 [T1 OBW]
 -20                                                          6.26 dBm    A
1 PK                                                1.875528846 GHz
VIEW                                              Temp 2 [T1 OBW]
 -10                                    1                     55 dBm
                                                    1.884519231 GHz    TDF
   0

 -10

 -20                                                                    3DB

 -30

 -40

 -50

 -60

 -70
  Center  1.88 GHz              3 MHz/              Span  30 MHz
```
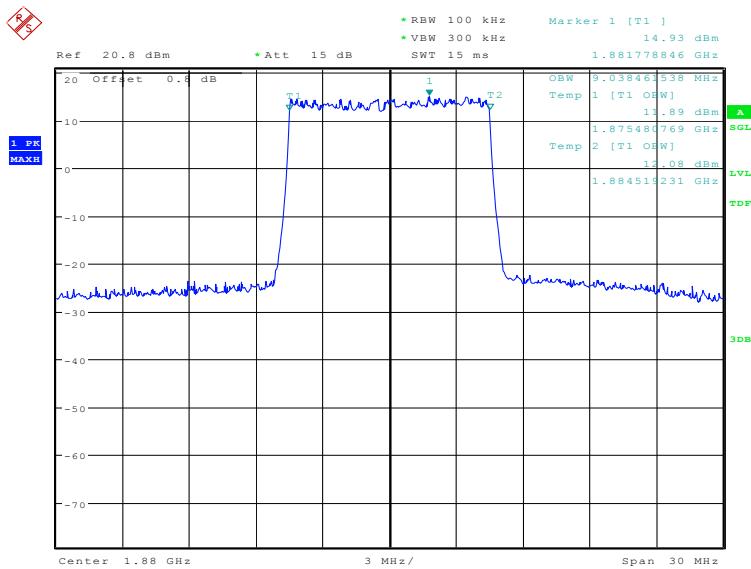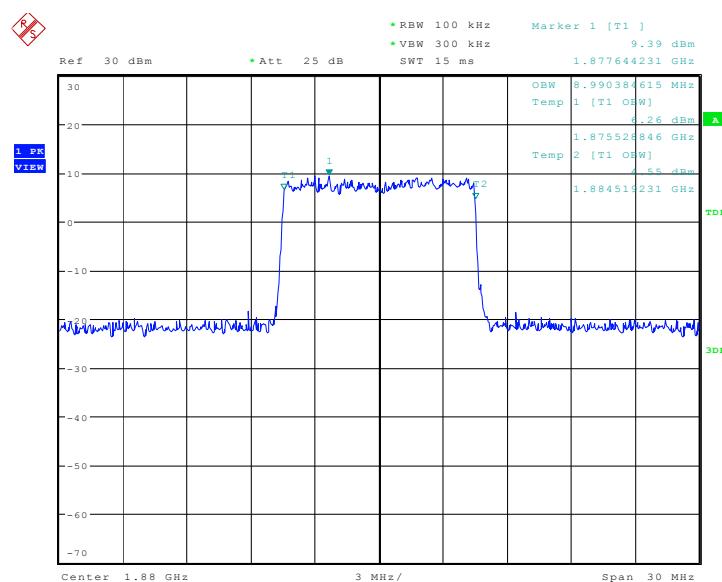
Date: 21.JAN.2020 17:13:15

LTE band 2, 15MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%) (kHz)		
1880.0	QPSK	16QAM	64QAM
	13485.58	13485.58	13485.58

LTE band 2, 15MHz Bandwidth, QPSK (99% BW)
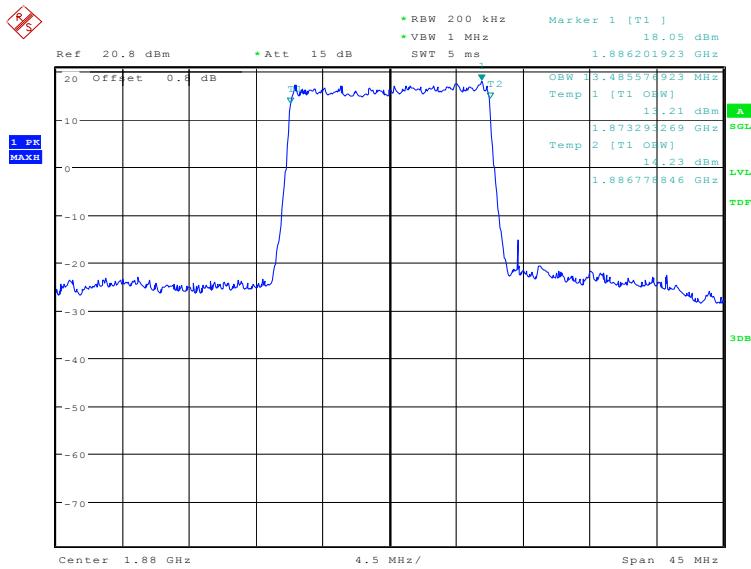
Date: 20.JAN.2020 18:24:31

LTE band 2, 15MHz Bandwidth, 16QAM (99% BW)
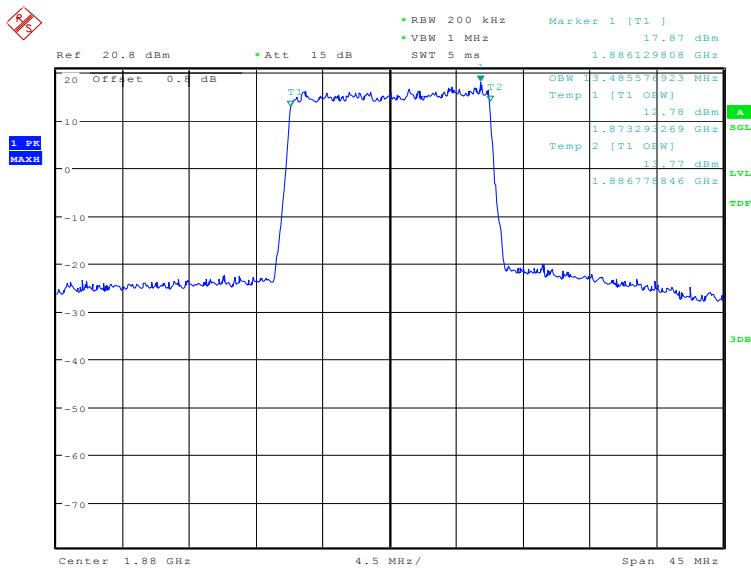
Date: 20.JAN.2020 18:25:55

LTE band 2, 15MHz Bandwidth, 64QAM (99% BW)
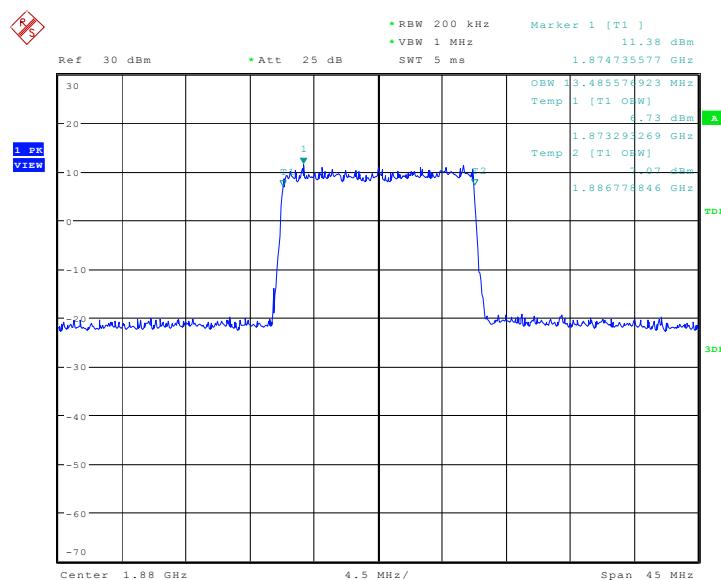
LTE band 2, 20MHz (99%)

Frequency(MHz)	Occupied Bandwidth (99%) (kHz)		
1880.0	QPSK	16QAM	64QAM
	17980.77	17980.77	17980.77

**LTE band 2, 20MHz Bandwidth, QPSK (99% BW)**
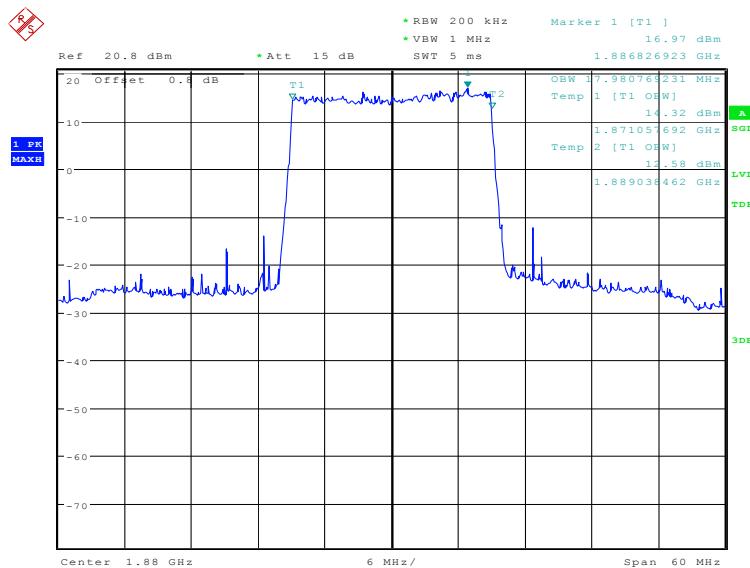
Date: 20.JAN.2020 18:28:08

LTE band 2, 20MHz Bandwidth, 16QAM (99% BW)
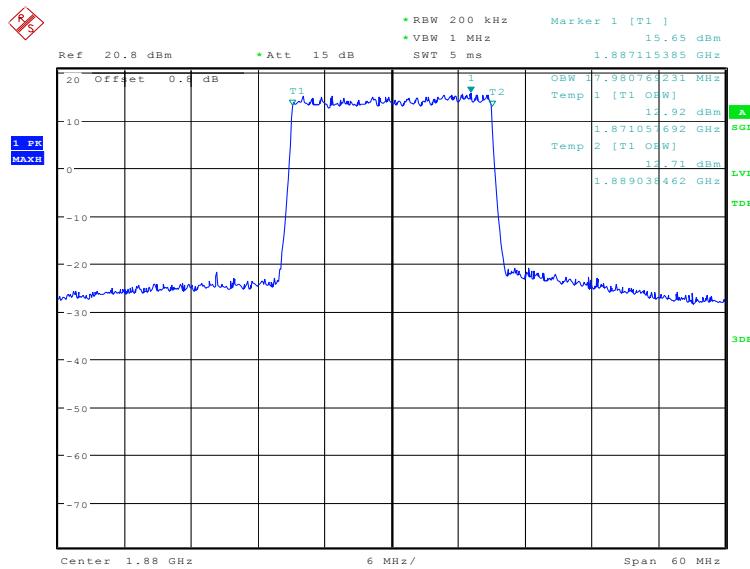
Date: 20.JAN.2020 18:29:32

LTE band 2, 20MHz Bandwidth, 64QAM (99% BW)
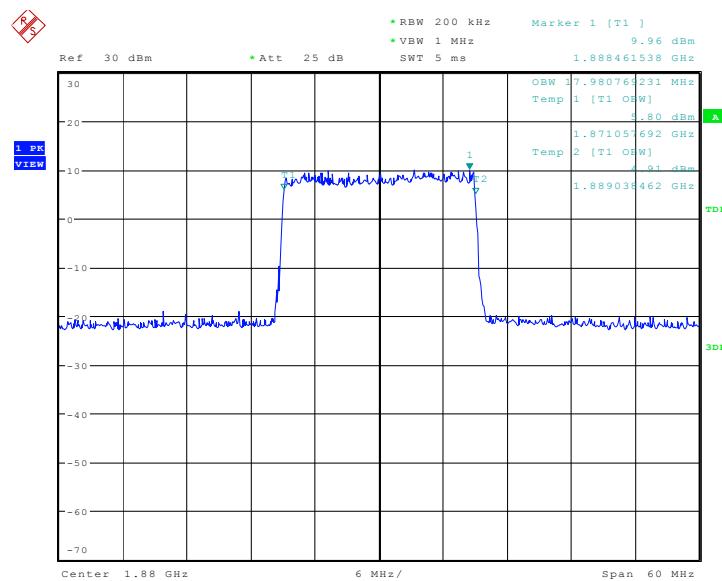
Date: 21.JAN.2020 17:02:39

LTE band 5, 1.4MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
836.5	QPSK	16QAM	64QAM
	1089.74	1097.76	1089.74

LTE band 5, 1.4MHz Bandwidth, QPSK (99% BW)
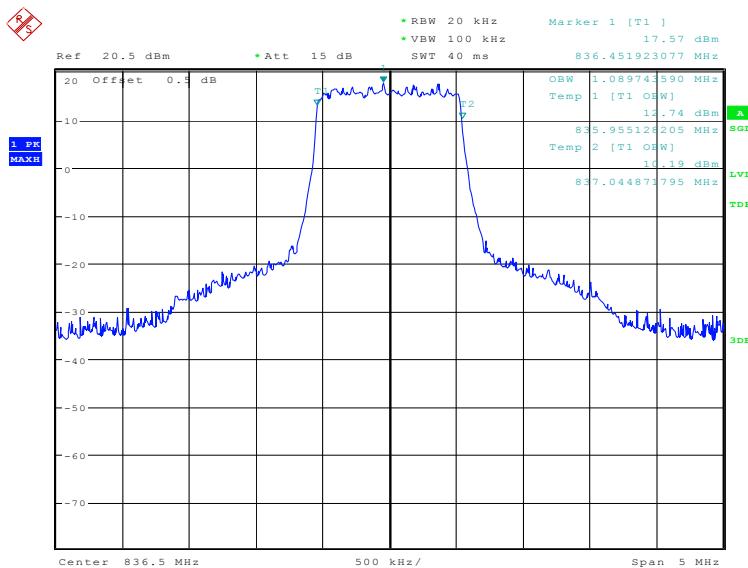
Date: 21.JAN.2020 08:06:58

LTE band 5, 1.4MHz Bandwidth, 16QAM (99% BW)
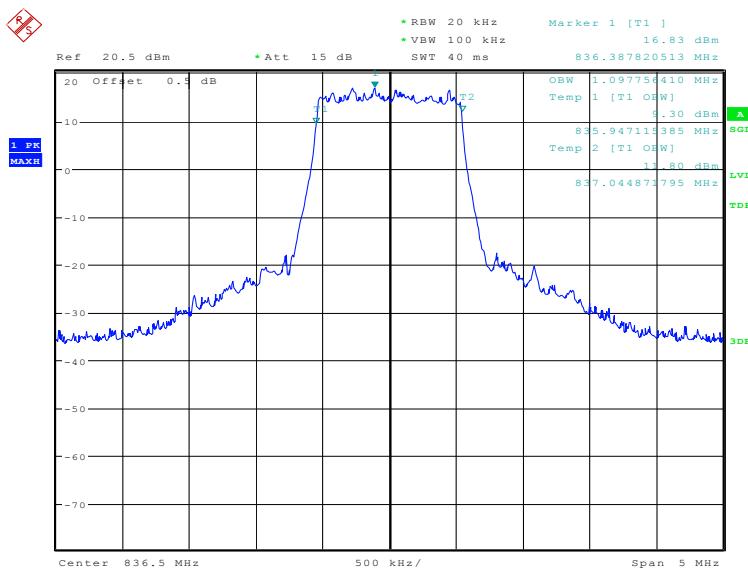
Date: 21.JAN.2020 08:08:22

LTE band 5, 1.4MHz Bandwidth, 64QAM (99% BW)
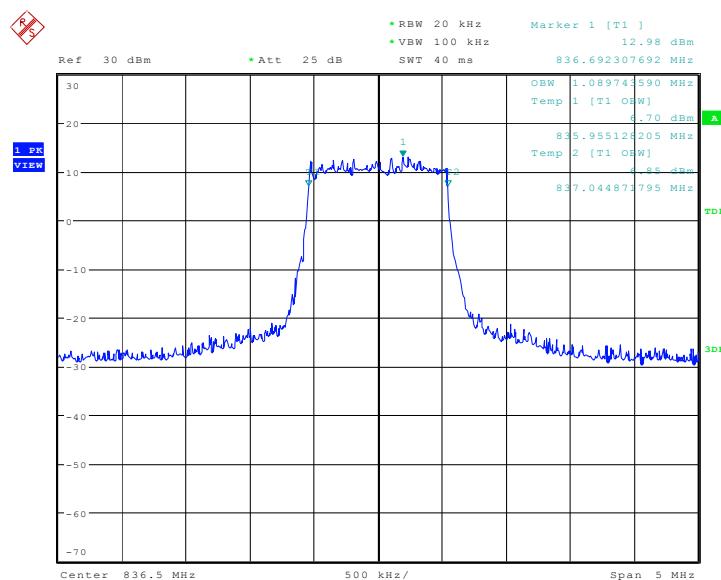
Date: 21.JAN.2020 16:14:09

LTE band 5, 3MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
836.5	QPSK	16QAM	64QAM
	2692.31	2692.31	2692.31

LTE band 5, 3MHz Bandwidth, QPSK (99% BW)
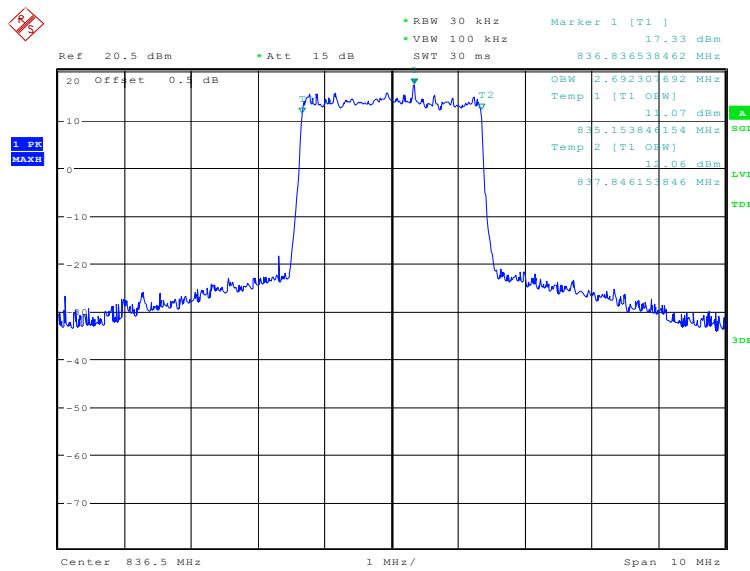
Date: 21.JAN.2020 08:10:35

LTE band 5, 3MHz Bandwidth, 16QAM (99% BW)
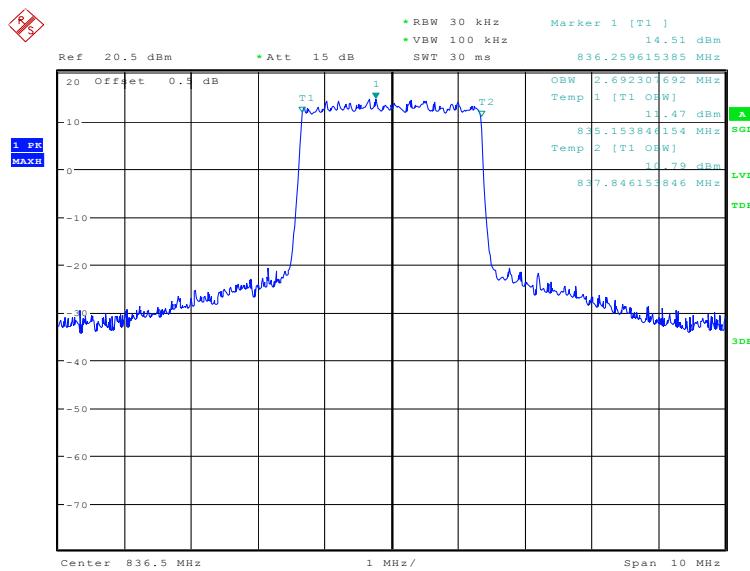
Date: 21.JAN.2020 08:11:59

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


```
                                    * RBW  30 kHz     Marker 1 [T1 ]
                                    * VBW  100 kHz               11.65 dBm
         Ref  30 dBm      * Att  25 dB    SWT 30 ms    836.403846154 MHz

    30                                      OBW  2.692307692 MHz
                                            Temp 1 [T1 OBW]
   -20                                                    6.48 dBm        A
1 PK                                                835.153846154 MHz
VIEW                                        Temp 2 [T1 OBW]
   -10                                                    6.34 dBm
                                                    837.846153846 MHz   TDF
    0

  -10

  -20
                                                                        3DB
  -30

  -40

  -50

  -60

  -70
         Center  836.5 MHz            1 MHz/              Span  10 MHz
```
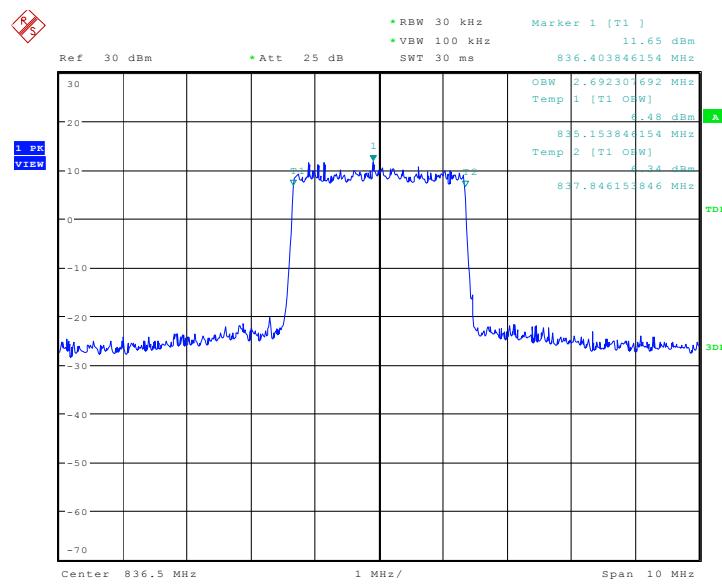
Date: 21.JAN.2020 16:09:38

LTE band 5, 5MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
836.5	QPSK	16QAM	64QAM
	4495.19	4495.19	4495.19

LTE band 5, 5MHz Bandwidth, QPSK (99% BW)
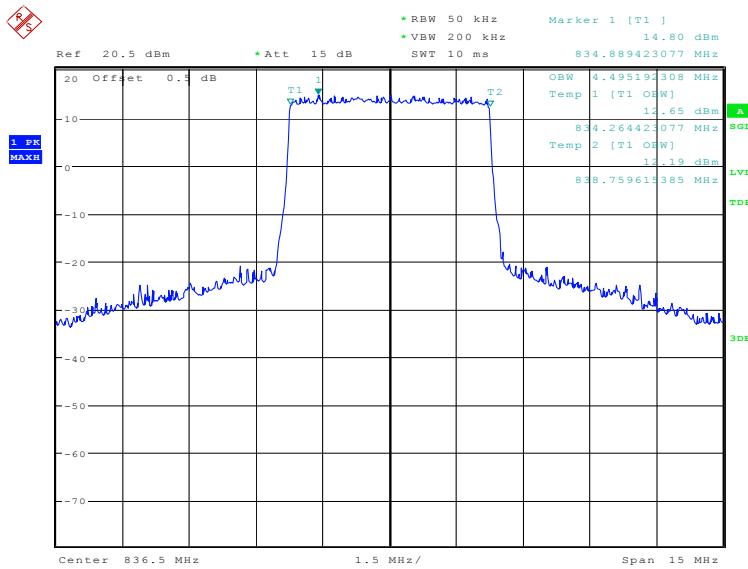
Date: 21.JAN.2020 08:14:13

LTE band 5, 5MHz Bandwidth, 16QAM (99% BW)
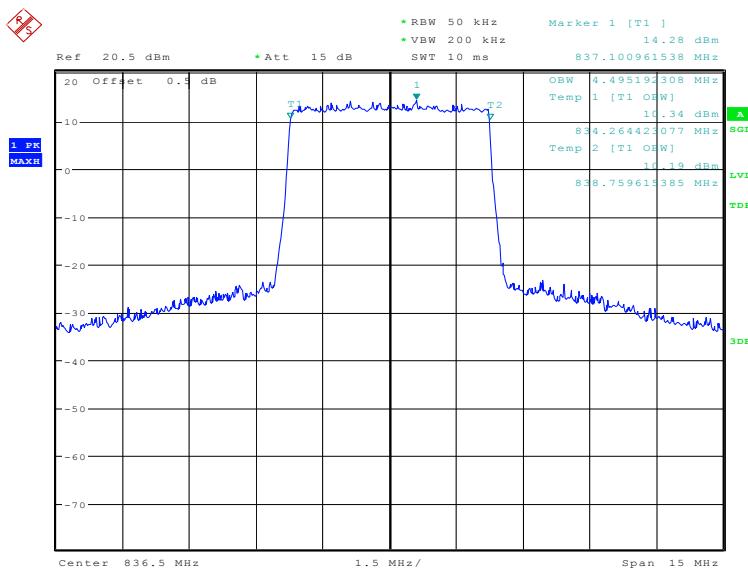
Date: 21.JAN.2020 08:15:37

LTE band 5, 5MHz Bandwidth,64QAM (99% BW)
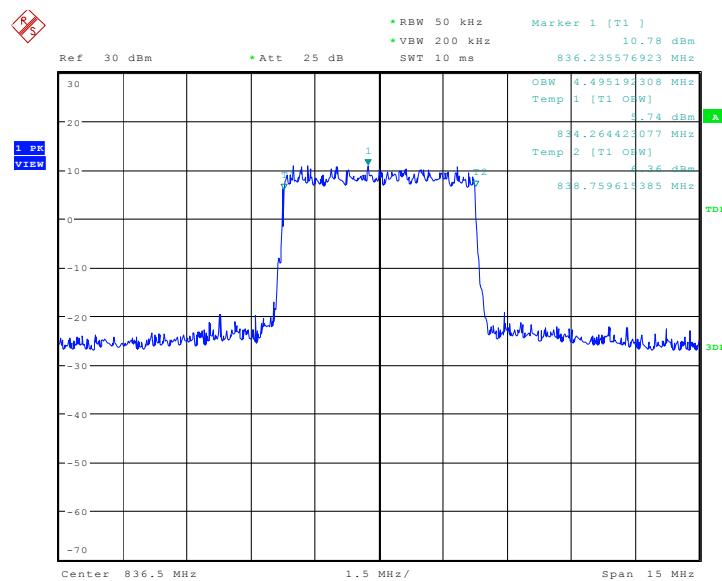
Date: 21.JAN.2020 16:10:40

LTE band 5, 10MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
836.5	QPSK	16QAM	64QAM
	8942.31	8942.31	8990.38

LTE band 5, 10MHz Bandwidth, QPSK (99% BW)
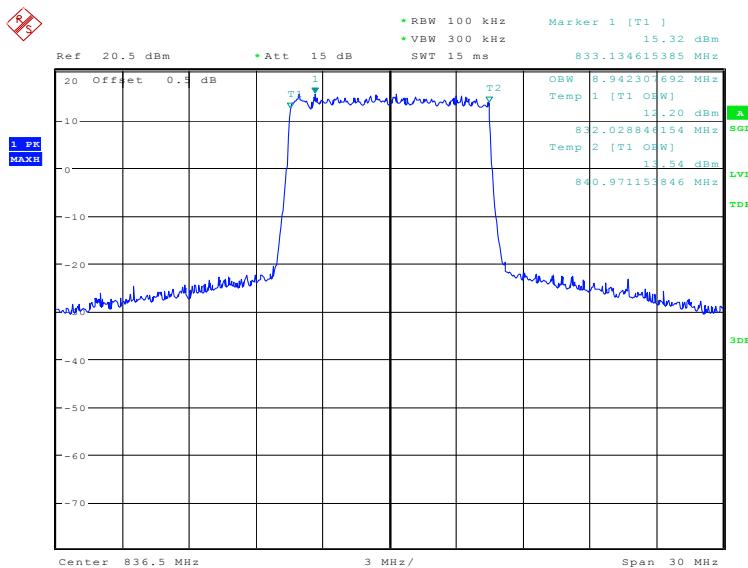
Date: 21.JAN.2020 08:17:50

LTE band 5, 10MHz Bandwidth, 16QAM (99% BW)
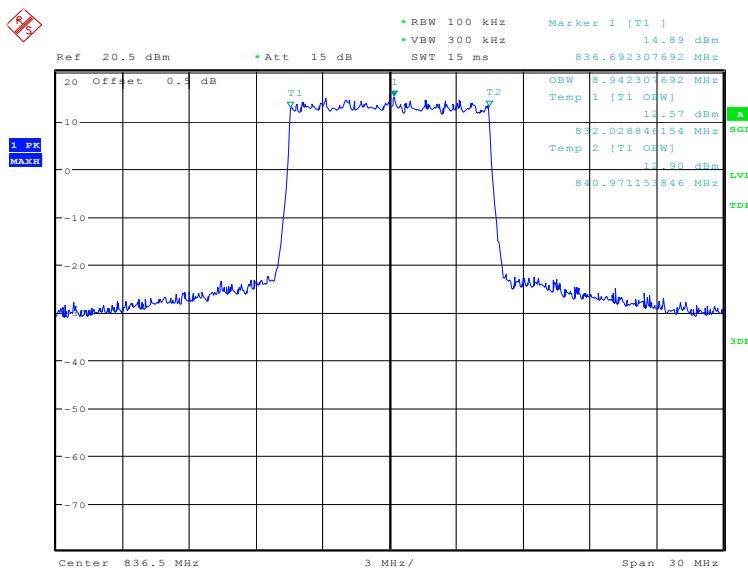
Date: 21.JAN.2020 08:19:14

LTE band 5, 10MHz Bandwidth, 64QAM (99% BW)
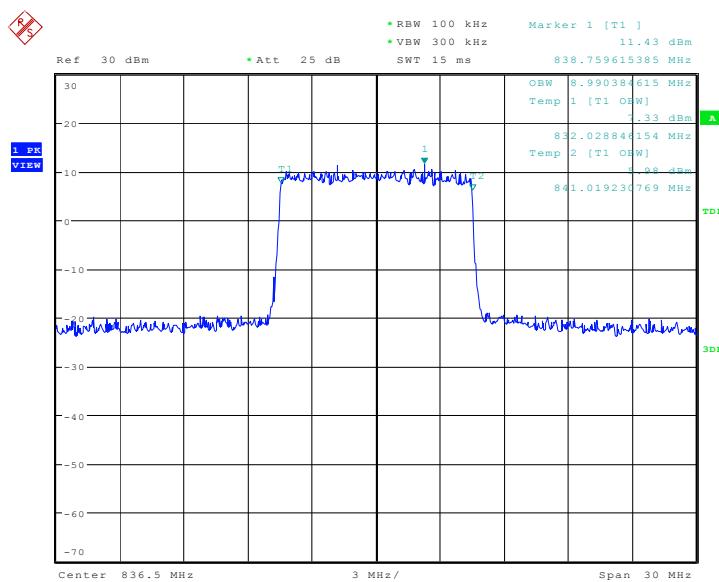
LTE band 7, 5MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
2535.0	QPSK	16QAM	64QAM
	4495.19	4471.15	4495.19

LTE band 7, 5MHz Bandwidth, QPSK (99% BW)
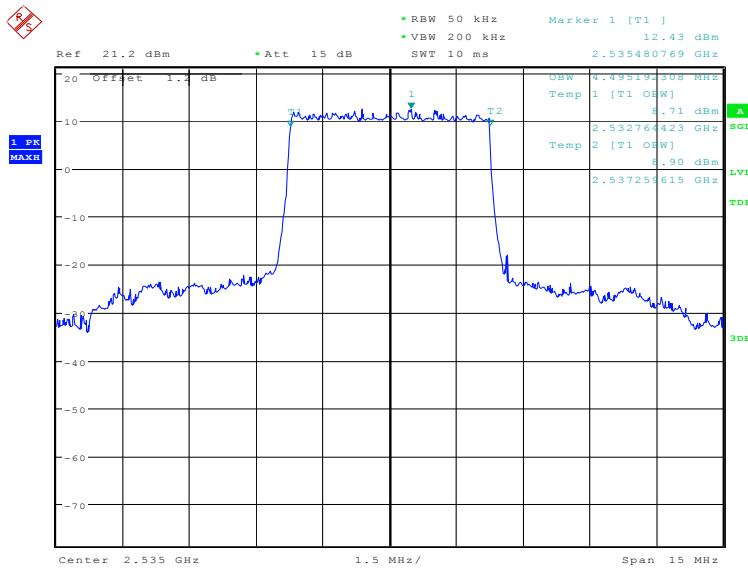
Date: 21.JAN.2020 08:21:29

LTE band 7, 5MHz Bandwidth, 16QAM (99% BW)
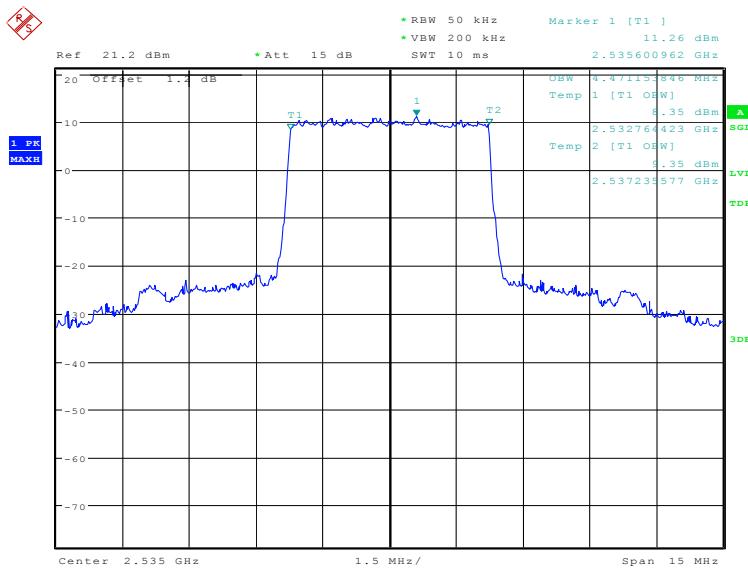
Date: 21.JAN.2020 08:22:53

LTE band 7, 5MHz Bandwidth,64QAM (99% BW)
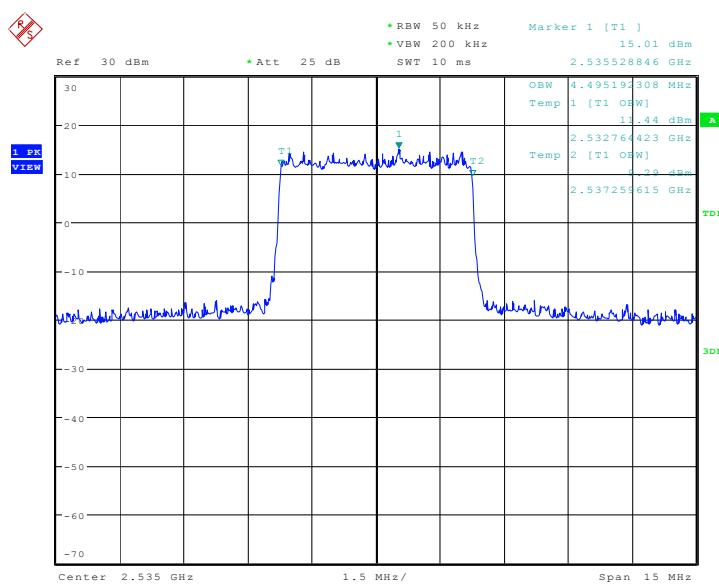
Date: 5.MAR.2020 13:12:15

LTE band 7, 10MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
2535.0	QPSK	16QAM	64QAM
	8942.31	8990.38	9038.46

LTE band 7, 10MHz Bandwidth, QPSK (99% BW)
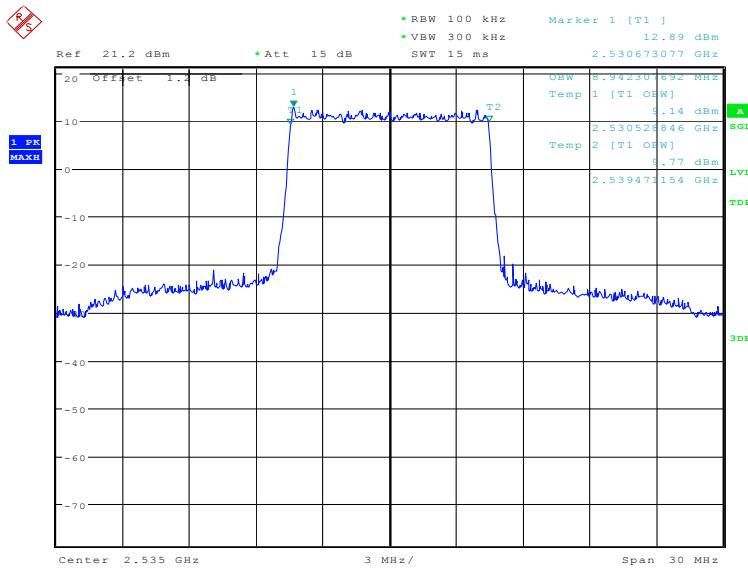
Date: 21.JAN.2020 08:25:06

LTE band 7, 10MHz Bandwidth, 16QAM (99% BW)
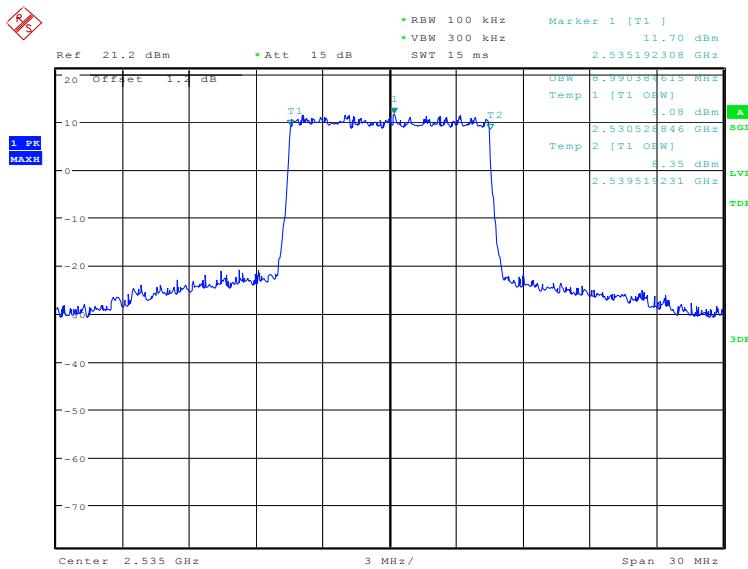
Date: 21.JAN.2020 08:26:30

LTE band 7, 10MHz Bandwidth, 64QAM (99% BW)


```
                                    • RBW  100 kHz      Marker 1 [T1 ]
                                    • VBW  300 kHz                 15.04 dBm
    Ref  30 dBm        • Att  25 dB  SWT 15 ms          2.533942308 GHz

    30                                            OBW 9.038461538 MHz
                                                  Temp 1 [T1 OBW]
   -20                                                        6.08 dBm      A
                                                      2.530480769 GHz
                                  1                   Temp 2 [T1 OBW]
   -10                                                        6.77 dBm
                                                      2.539519231 GHz       TDF

    0

  -10

  -20                                                                       3DB

  -30

  -40

  -50

  -60

  -70

    Center  2.535 GHz           3 MHz/                   Span  30 MHz
```
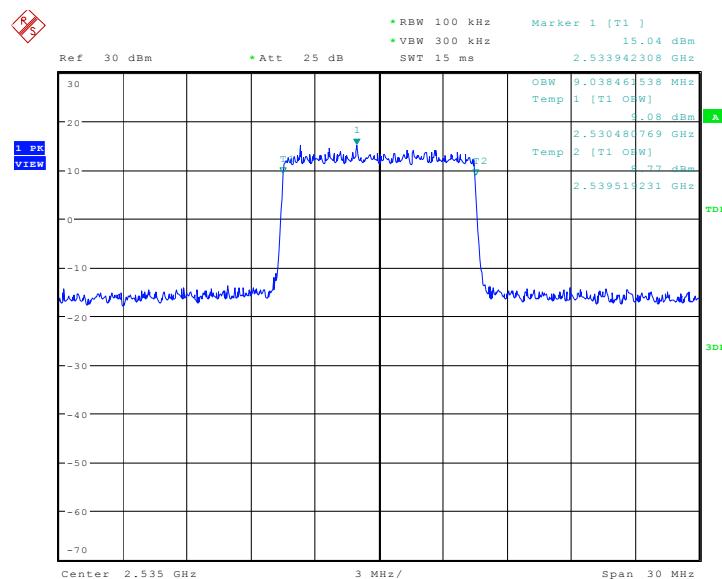
Date: 5.MAR.2020 13:13:43

LTE band 7, 15MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
2535.0	QPSK	16QAM	64QAM
	13413.46	13485.58	13485.58

LTE band 7, 15MHz Bandwidth, QPSK (99% BW)
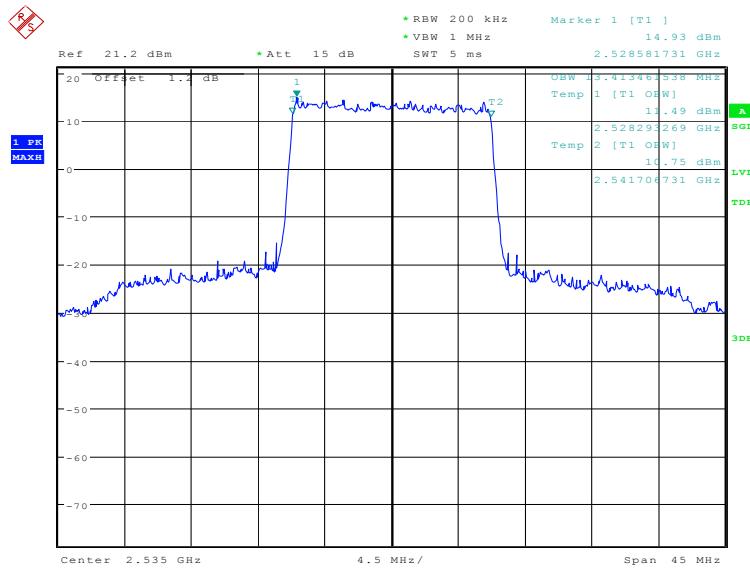
Date: 21.JAN.2020 08:28:43

LTE band 7, 15MHz Bandwidth, 16QAM (99% BW)
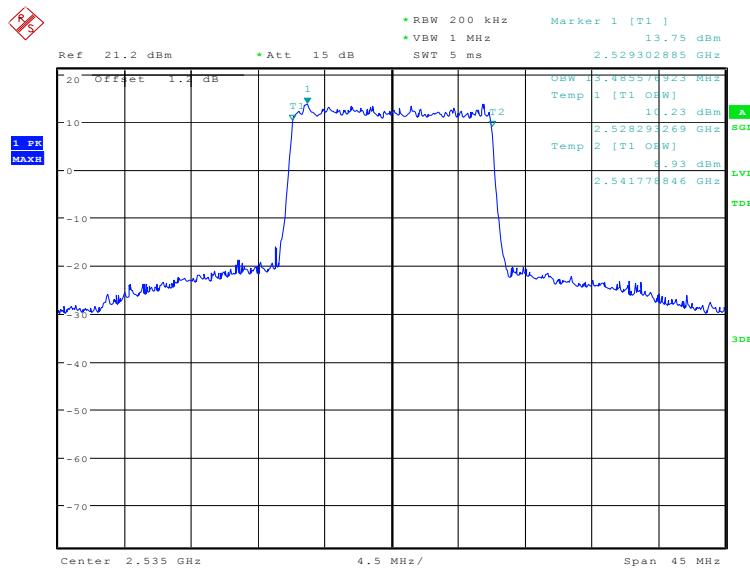
Date: 21.JAN.2020 08:30:07

LTE band 7, 15MHz Bandwidth, 64QAM (99% BW)
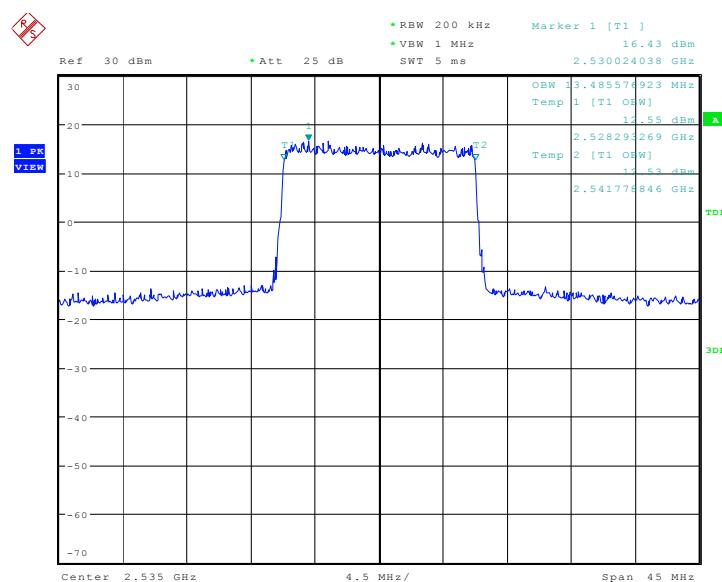
Date: 5.MAR.2020 13:14:48

LTE band 7, 20MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
2535.0	QPSK	16QAM	64QAM
	17980.77	17884.62	17980.77

LTE band 7, 20MHz Bandwidth, QPSK (99% BW)
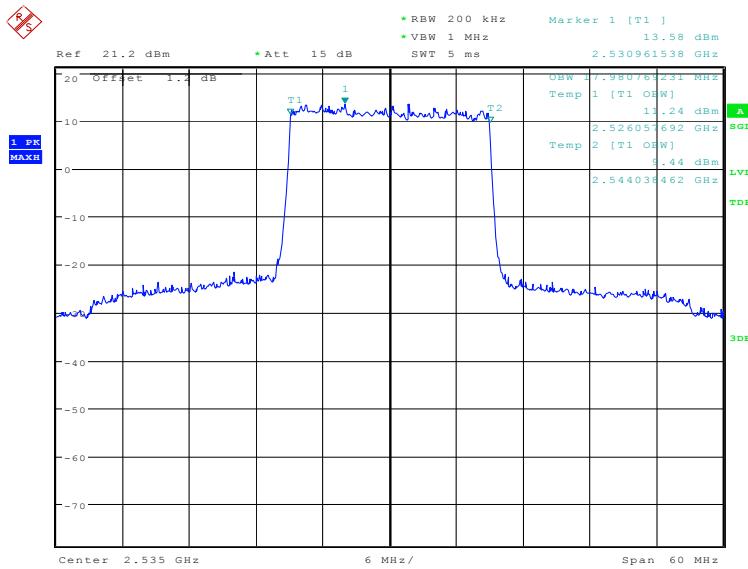
Date: 21.JAN.2020 08:32:21

LTE band 7, 20MHz Bandwidth, 16QAM (99% BW)
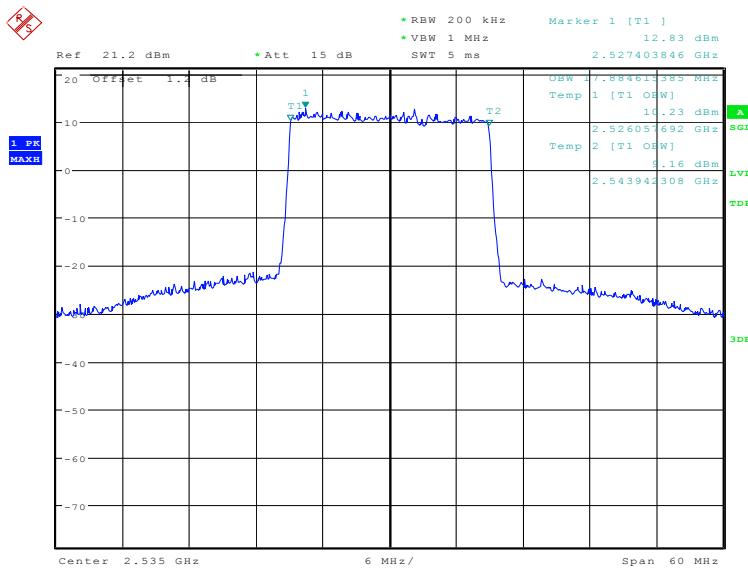
Date: 21.JAN.2020 08:33:45

LTE band 7, 20MHz Bandwidth, 64QAM (99% BW)
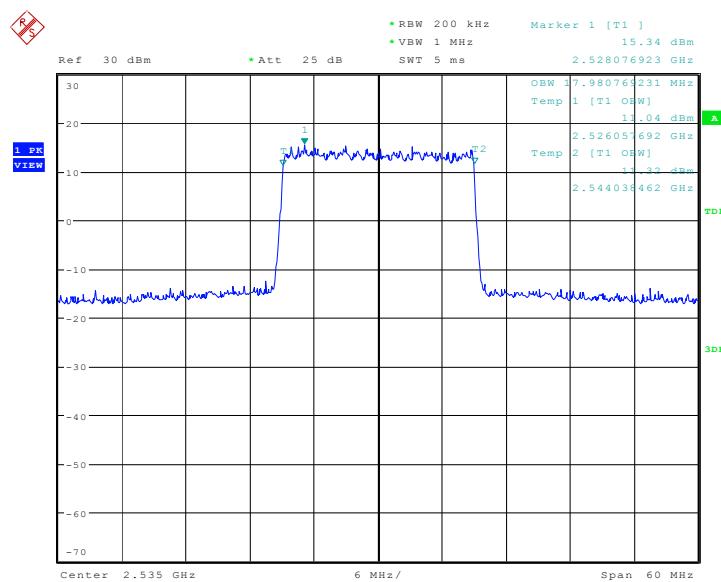
LTE band 12, 1.4MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
707.5	QPSK	16QAM	64QAM
	1081.73	1089.74	1089.74

LTE band 12, 1.4MHz Bandwidth, QPSK (99% BW)
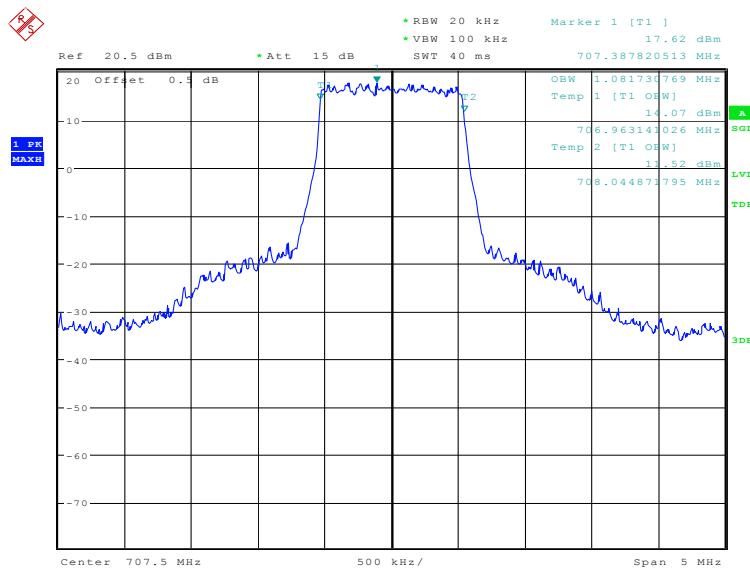
Date: 21.JAN.2020 08:35:59

LTE band 12, 1.4MHz Bandwidth, 16QAM (99% BW)
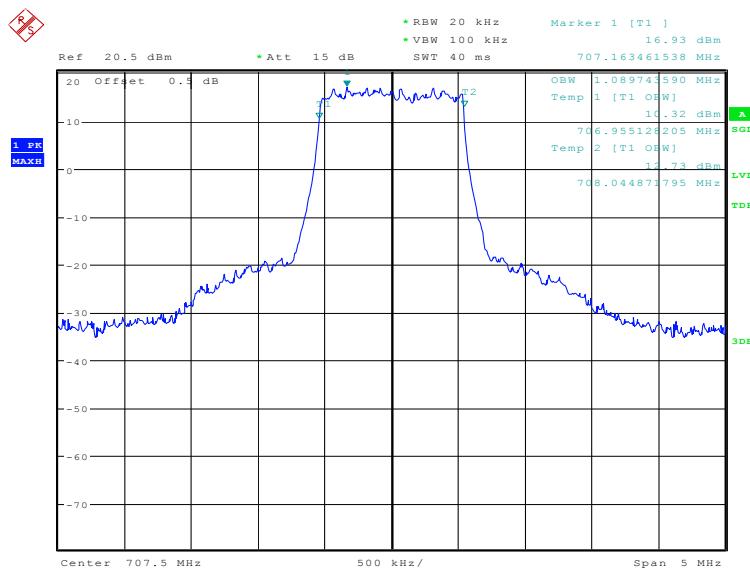
Date: 21.JAN.2020 08:37:23

LTE band 12, 1.4MHz Bandwidth, 64QAM (99% BW)
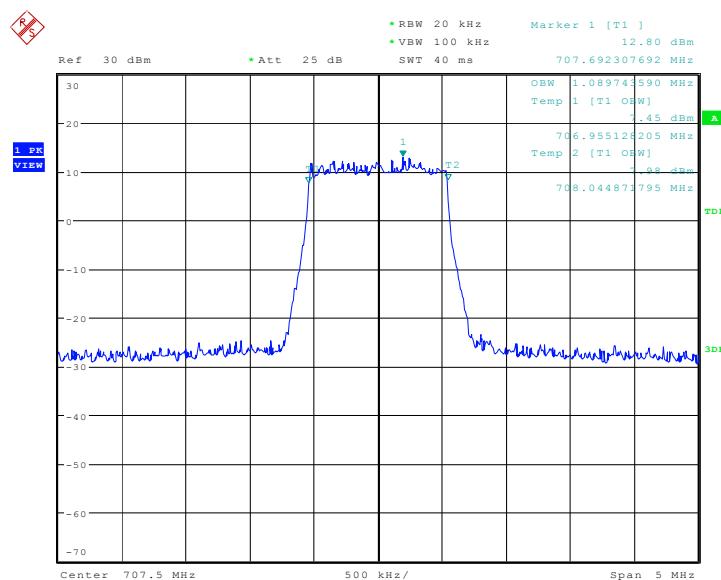
Date: 21.JAN.2020 16:03:36

LTE band 12, 3MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
707.5	QPSK	16QAM	64QAM
	2692.31	2692.31	2692.31

LTE band 12, 3MHz Bandwidth, QPSK (99% BW)
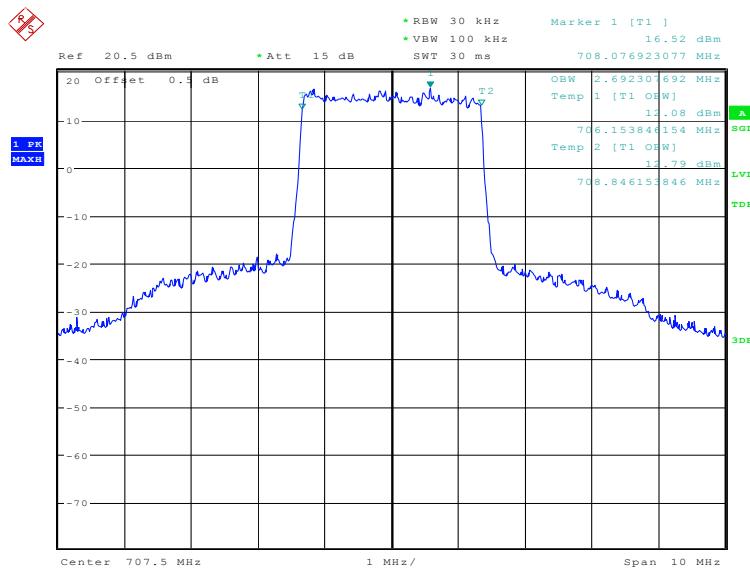
Date: 21.JAN.2020 08:39:36

LTE band 12, 3MHz Bandwidth, 16QAM (99% BW)
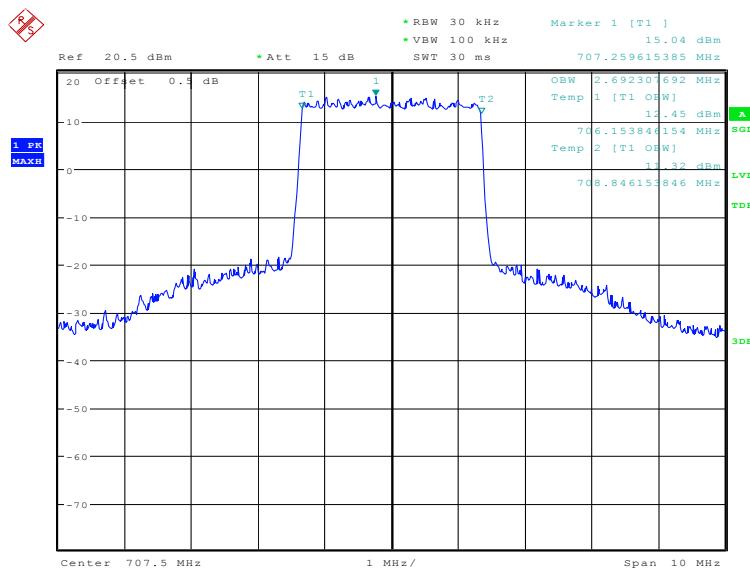
Date: 21.JAN.2020 08:41:01

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


```
                                          * RBW  30 kHz      Marker 1 [T1 ]
                                          * VBW 100 kHz                 11.27 dBm
       Ref  30 dBm          * Att  25 dB   SWT 30 ms         707.403846154 MHz
       30                                             OBW  2.692307692 MHz
                                                      Temp 1 [T1 OBW]
       -20                                                      9.89 dBm
                                                      706.153846154 MHz
1 PK   -10                                            Temp 2 [T1 OBW]
VIEW                                                          9.46 dBm
        0                                             708.846153846 MHz
                                                                          TDF
      -10
      -20
                                                                          3DB
      -30
      -40
      -50
      -60
      -70
       Center 707.5 MHz              1 MHz/              Span 10 MHz
```
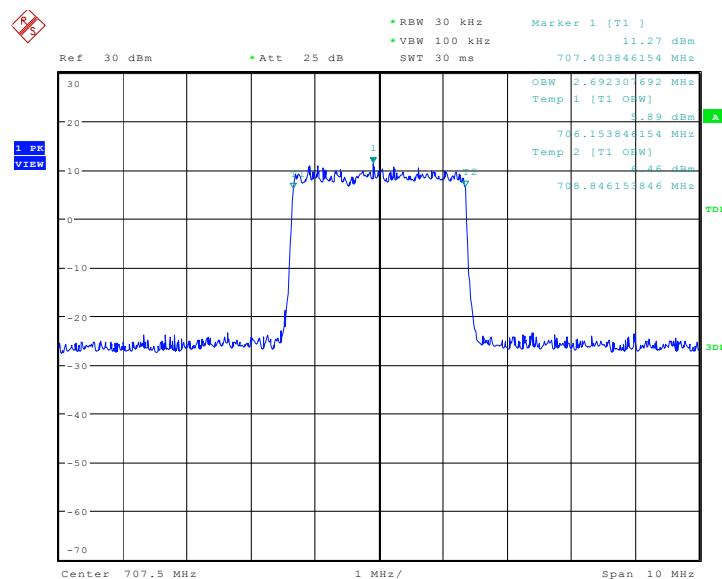
Date: 21.JAN.2020 16:04:36

LTE band 12, 5MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
707.5	QPSK	16QAM	64QAM
	4519.23	4519.23	4519.23

LTE band 12, 5MHz Bandwidth, QPSK (99% BW)
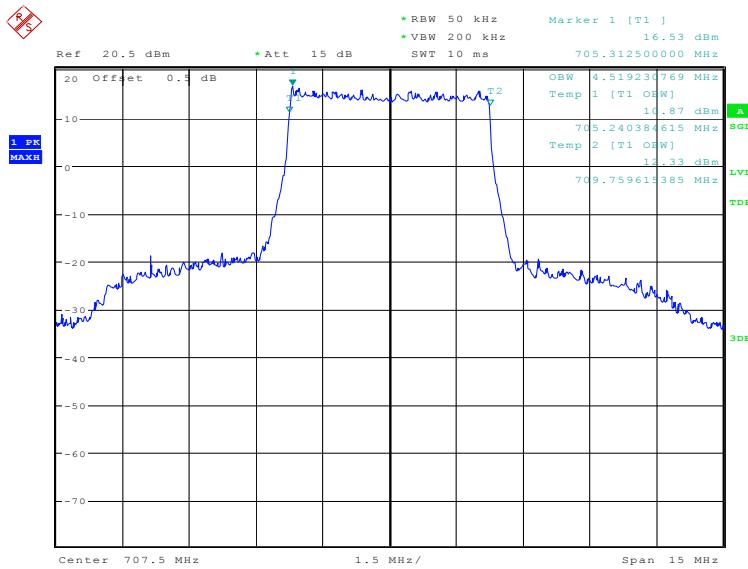
Date: 21.JAN.2020 08:43:14

LTE band 12, 5MHz Bandwidth, 16QAM (99% BW)
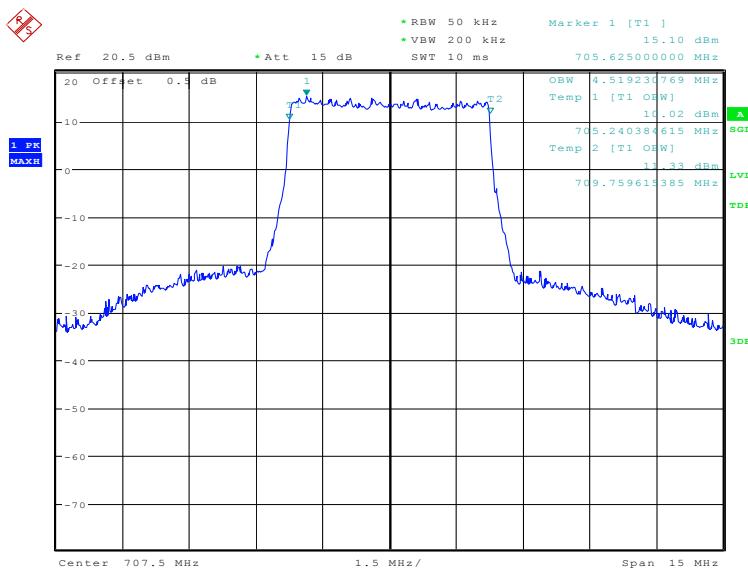
Date: 21.JAN.2020 08:44:38

LTE band 12, 5MHz Bandwidth,64QAM (99% BW)
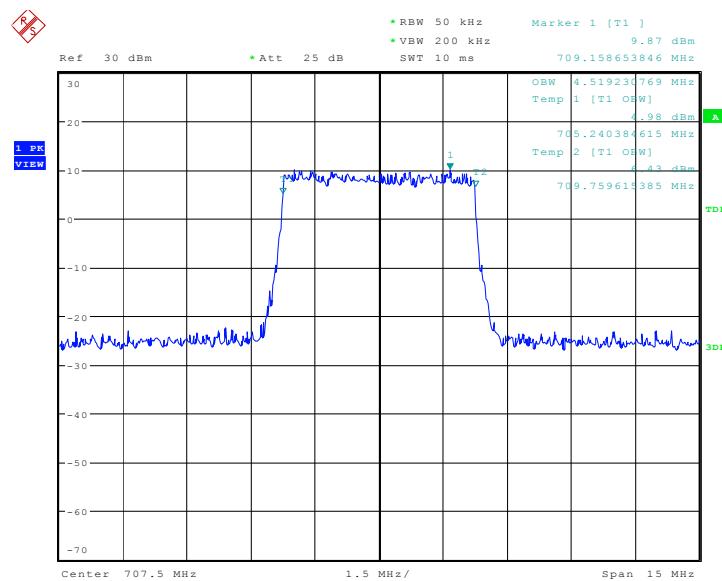
Date: 21.JAN.2020 16:05:35

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LTE band 12, 10MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
	QPSK	16QAM	64QAM
707.5	9038.46	8990.38	9038.46

LTE band 12, 10MHz Bandwidth, QPSK (99% BW)
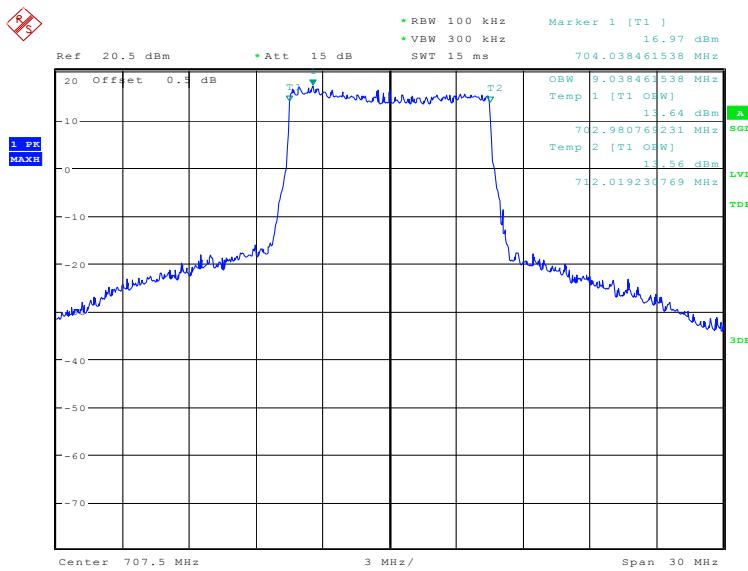
Date: 21.JAN.2020 08:46:51

LTE band 12, 10MHz Bandwidth, 16QAM (99% BW)
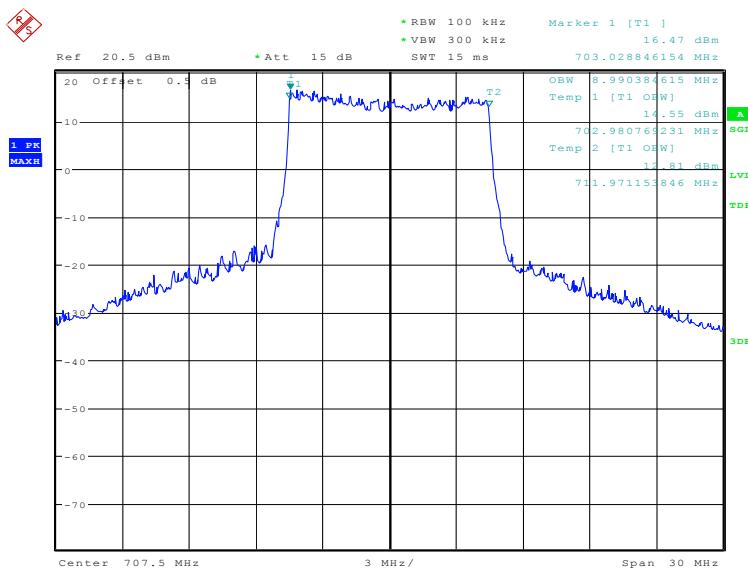
Date: 21.JAN.2020 08:48:16

LTE band 12, 10MHz Bandwidth, 64QAM (99% BW)
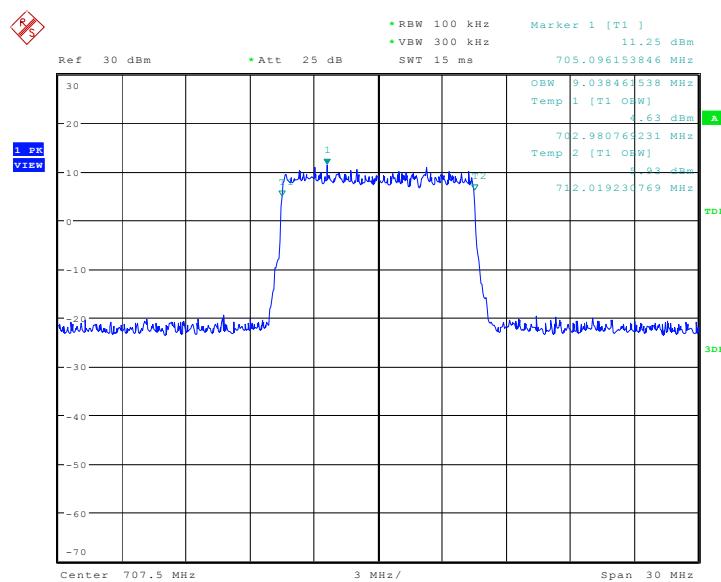
Date: 21.JAN.2020 16:06:36

LTE band 13, 5MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
	QPSK	16QAM	64QAM
782.0	4495.19	4495.19	4471.15

LTE band 13, 5MHz Bandwidth, QPSK (99% BW)
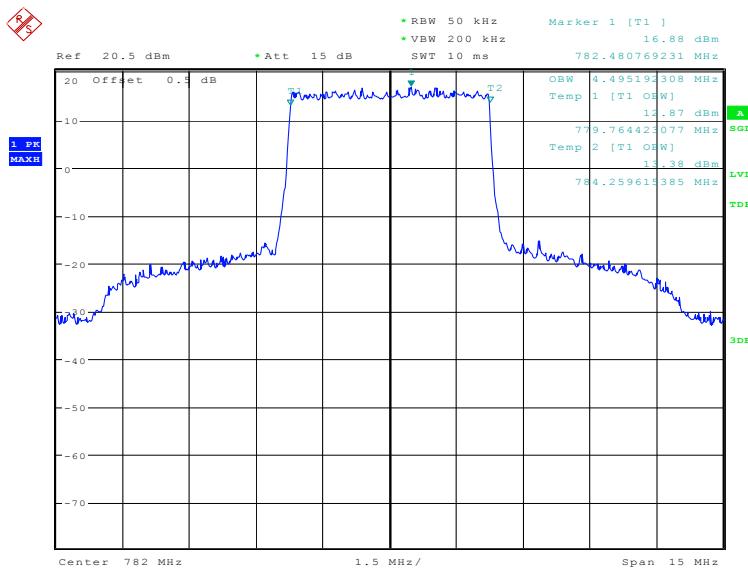
Date: 21.JAN.2020 08:50:30

LTE band 13, 5MHz Bandwidth,16QAM (99% BW)
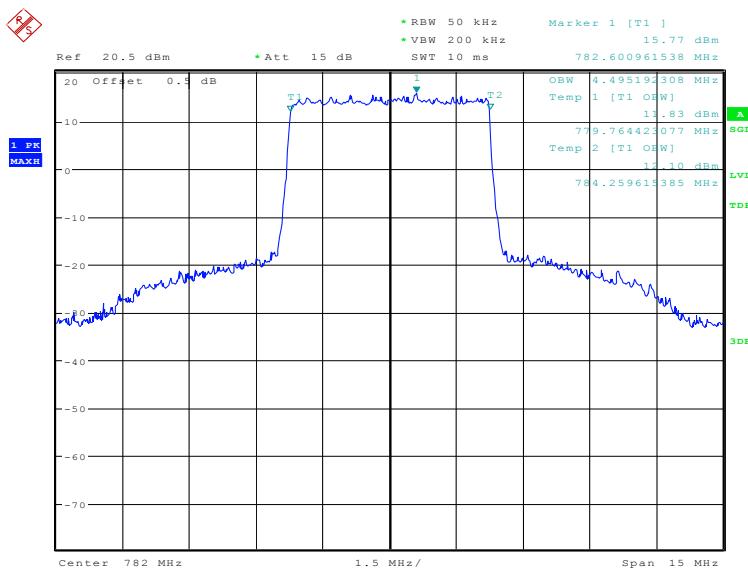
Date: 21.JAN.2020 08:51:54

LTE band 13, 5MHz Bandwidth,64QAM (99% BW)
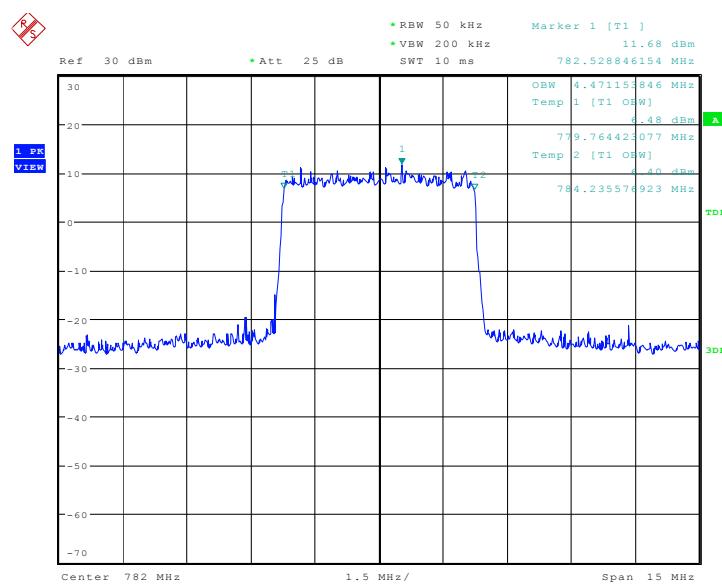
Date: 21.JAN.2020 16:00:56

LTE band 13, 10MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
782.0	QPSK	16QAM	64QAM
	8990.38	8942.31	8942.31

LTE band 13, 10MHz Bandwidth, QPSK (99% BW)
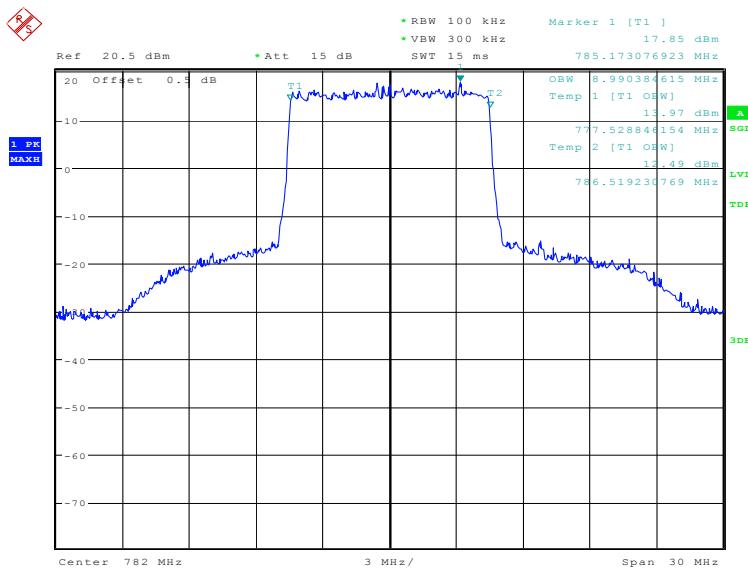
Date: 21.JAN.2020 08:54:08

LTE band 13, 10MHz Bandwidth,16QAM (99% BW)
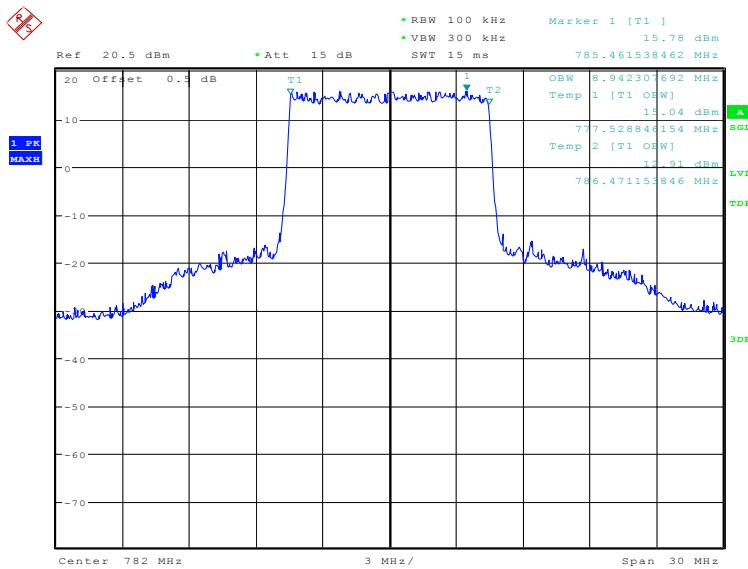
Date: 21.JAN.2020 08:55:32

LTE band 13, 10MHz Bandwidth, 64QAM (99% BW)

Date: 21.JAN.2020 16:02:23
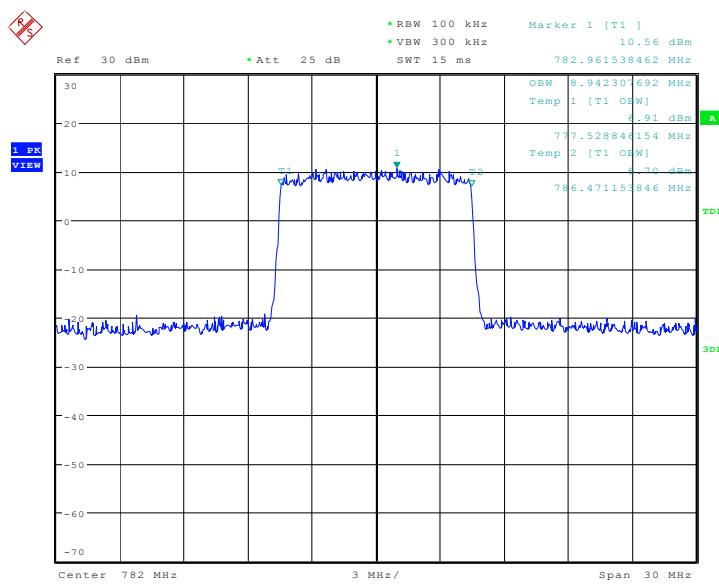
LTE band 38, 5MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
2595.0	QPSK	16QAM	64QAM
	4519.23	4471.15	4495.19

LTE band 38, 5MHz Bandwidth, QPSK (99% BW)
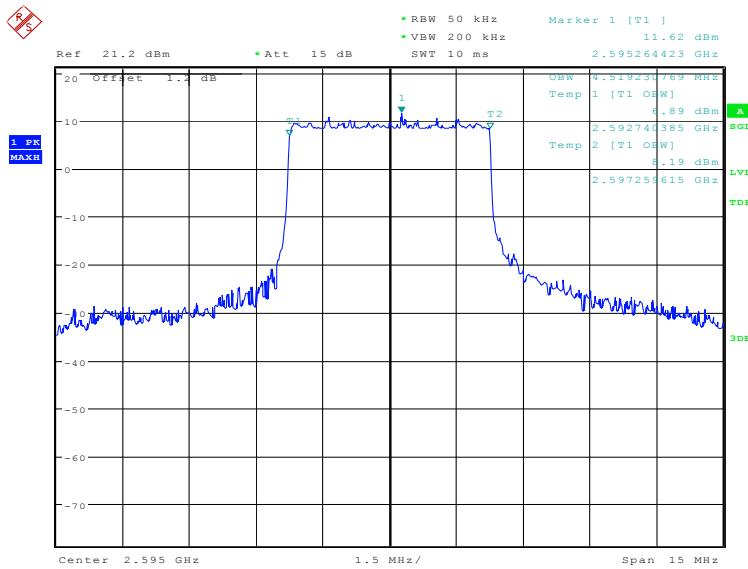
Date: 21.JAN.2020 08:57:52

LTE band 38, 5MHz Bandwidth,16QAM (99% BW)
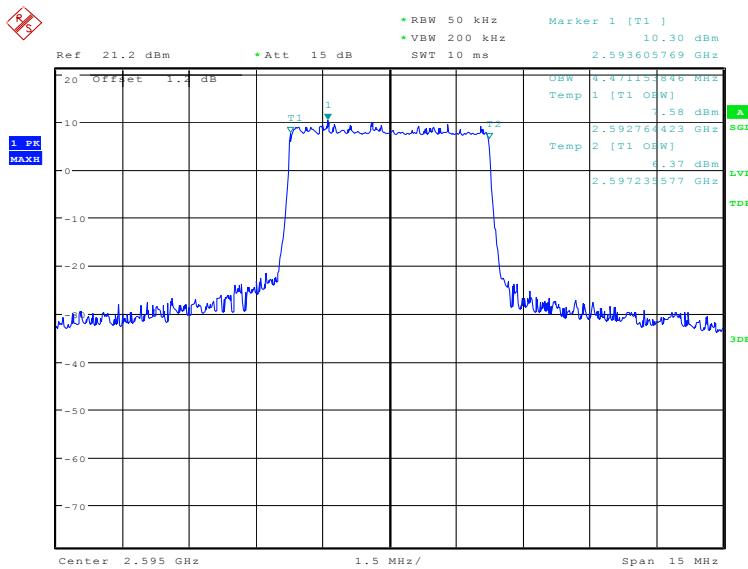
Date: 21.JAN.2020 08:59:16

LTE band 38, 5MHz Bandwidth, 64QAM (99% BW)
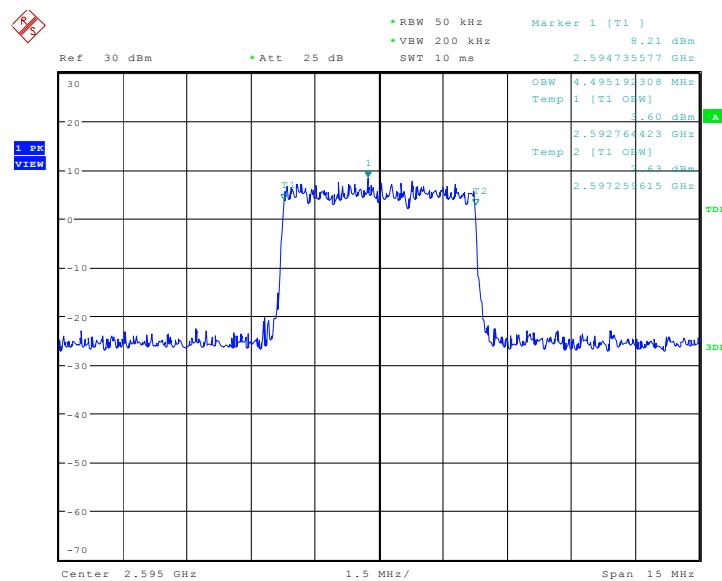
Date: 21.JAN.2020 16:15:23

LTE band 38, 10MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
	QPSK	16QAM	64QAM
2595.0	8990.38	9038.46	8990.38

LTE band 38, 10MHz Bandwidth, QPSK (99% BW)
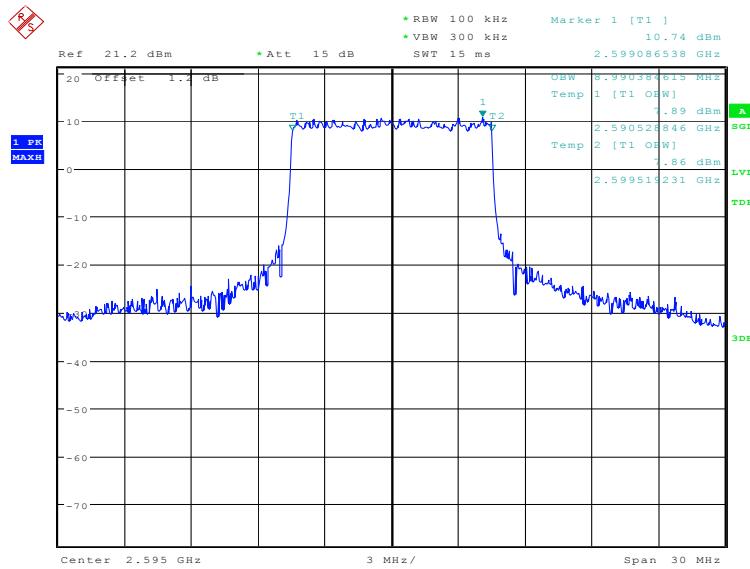
Date: 21.JAN.2020 09:01:30

LTE band 38, 10MHz Bandwidth,16QAM (99% BW)
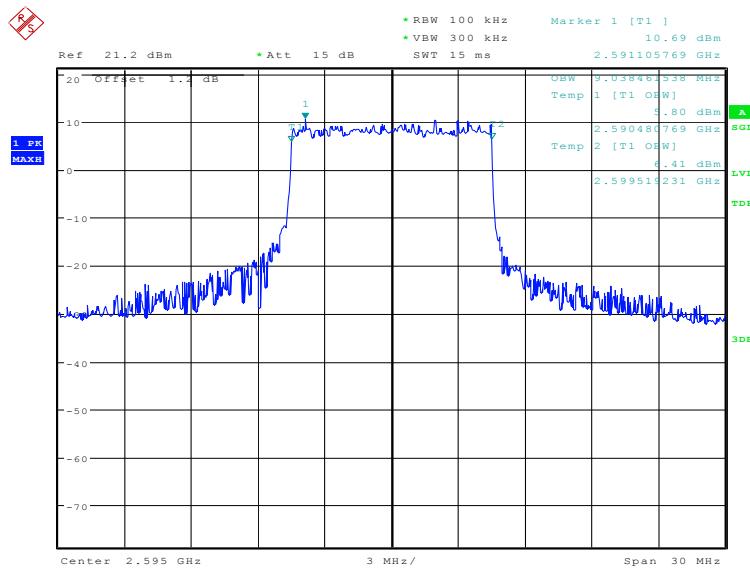
Date: 21.JAN.2020 09:02:54

LTE band 38, 10MHz Bandwidth, 64QAM (99% BW)
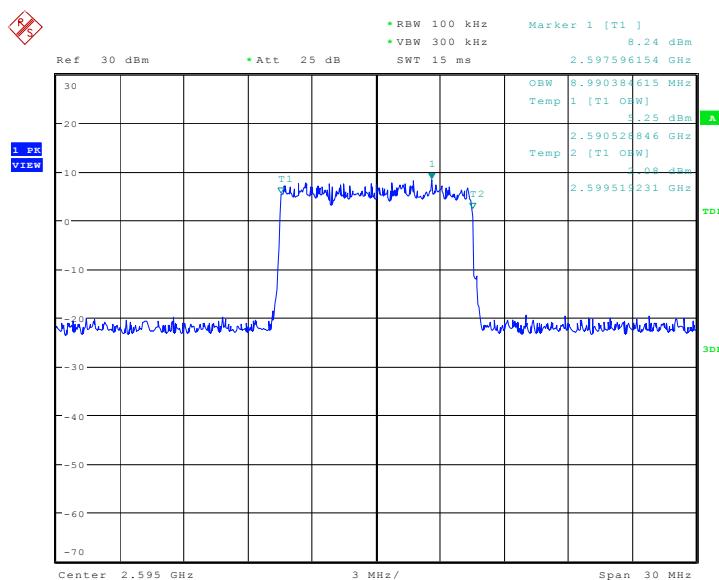
LTE band 38,15MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
2595.0	QPSK	16QAM	64QAM
	13485.58	13485.58	13485.58

LTE band 38,15MHz Bandwidth, QPSK (99% BW)
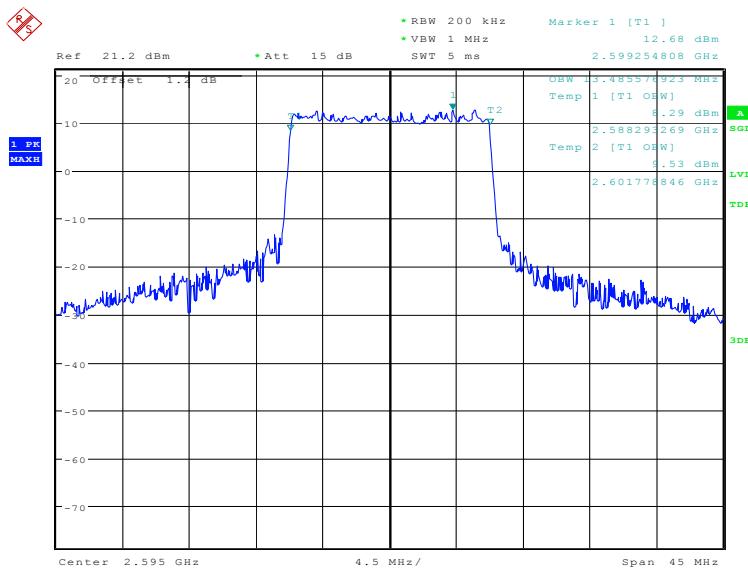
Date: 21.JAN.2020 09:04:20

LTE band 38, 15MHz Bandwidth,16QAM (99% BW)
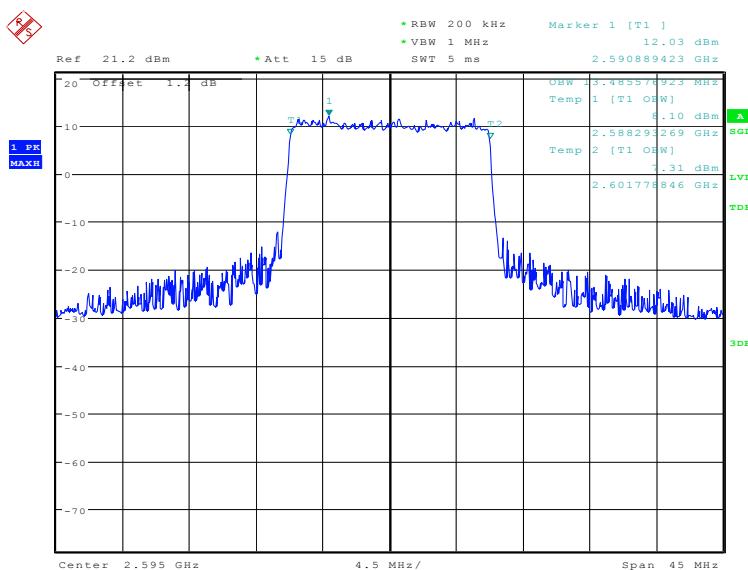
Date: 21.JAN.2020 09:05:44

LTE band 38, 15MHz Bandwidth, 64QAM (99% BW)
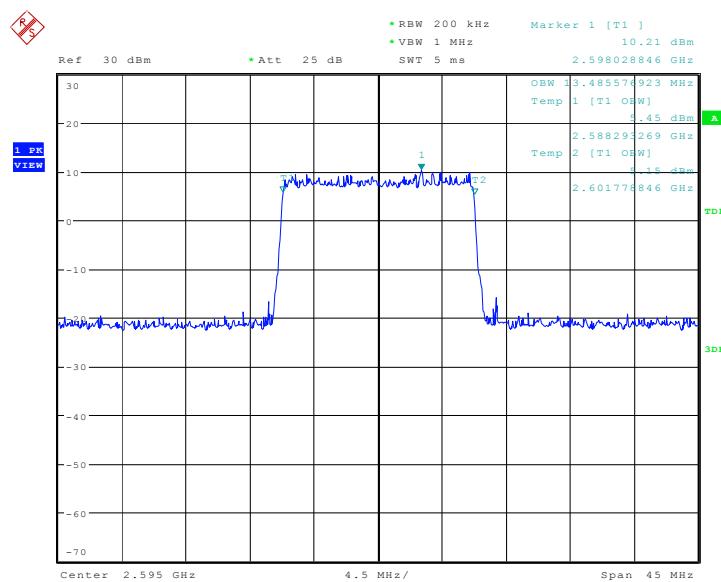
Date: 21.JAN.2020 16:17:23

LTE band 38, 20MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
	QPSK	16QAM	64QAM
2595.0	17980.77	17884.62	17980.77

LTE band 38, 20MHz Bandwidth, QPSK (99% BW)
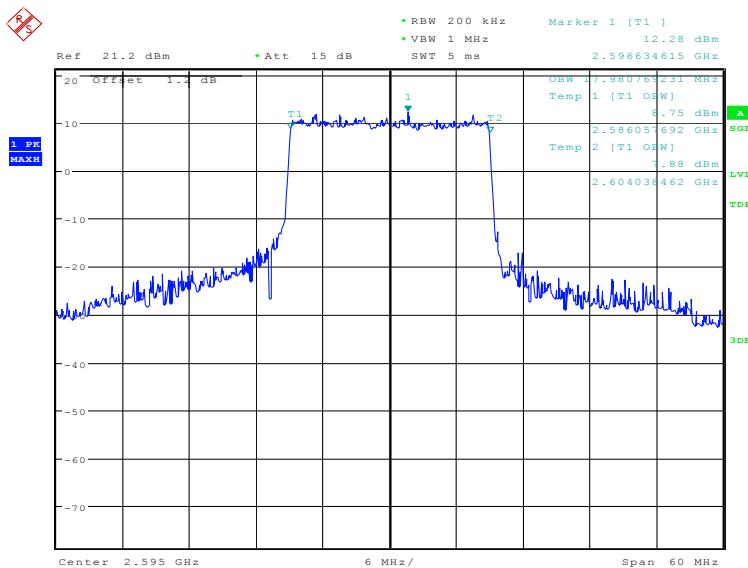
Date: 21.JAN.2020 09:07:10

LTE band 38, 20MHz Bandwidth,16QAM (99% BW)
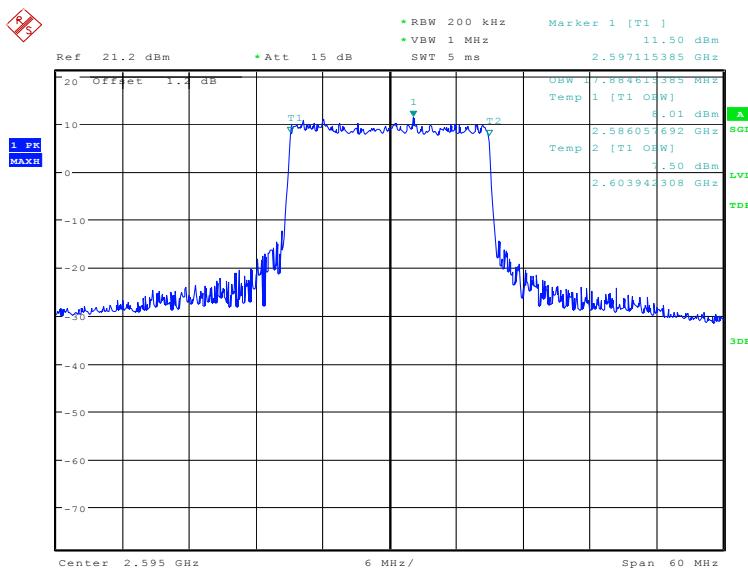
Date: 21.JAN.2020 09:08:35

LTE band 38, 20MHz Bandwidth, 64QAM (99% BW)
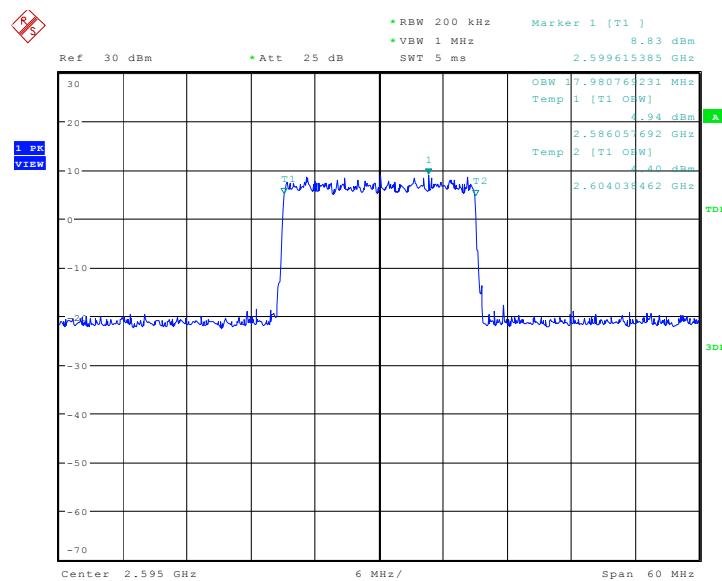
Date: 21.JAN.2020 16:23:10

LTE band 66, 1.4MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
1745.0	QPSK	16QAM	64QAM
	1097.76	1097.76	1089.74

LTE band 66, 1.4MHz Bandwidth, QPSK (99% BW)
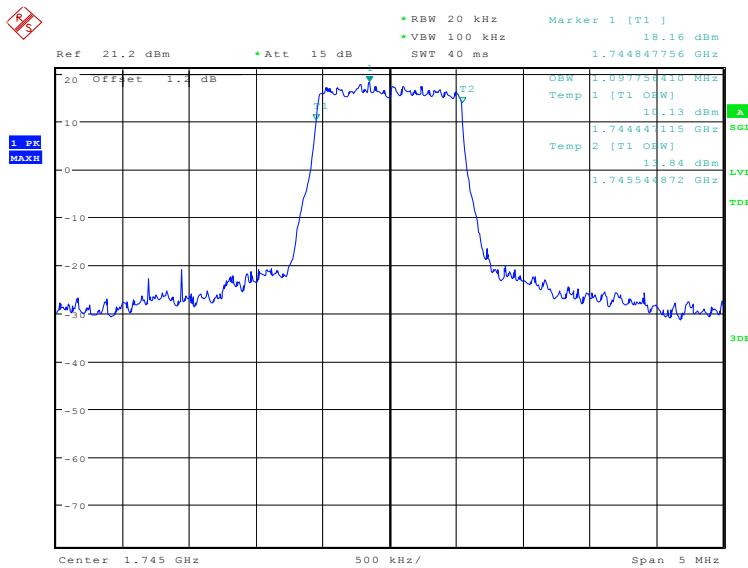
Date: 20.JAN.2020 18:31:47

LTE band 66, 1.4MHz Bandwidth, 16QAM (99% BW)
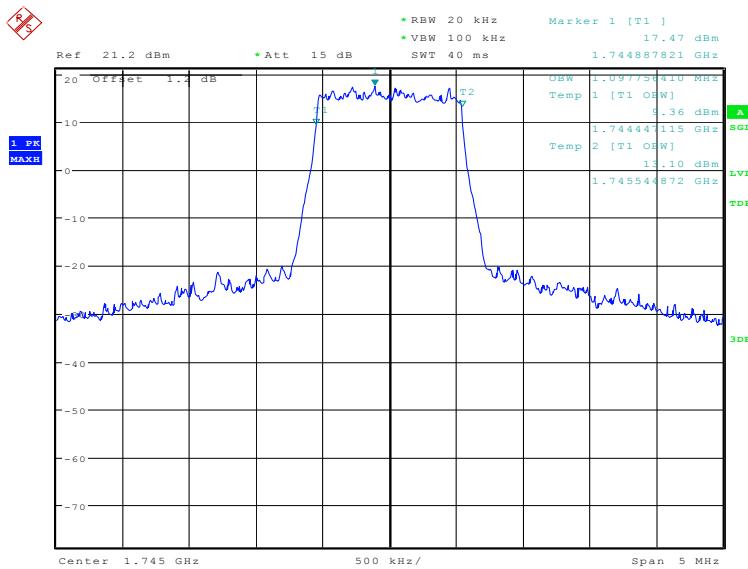
Date: 20.JAN.2020 18:33:11

LTE band 66, 1.4MHz Bandwidth, 64QAM (99% BW)
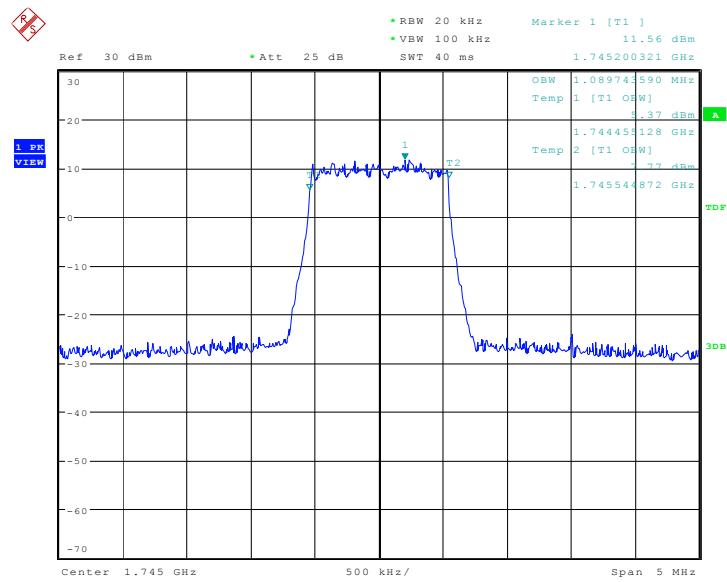
Date: 21.JAN.2020 16:32:36

LTE band 66, 3MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
1745.0	QPSK	16QAM	64QAM
	2692.31	2692.31	2692.31

LTE band 66, 3MHz Bandwidth, QPSK (99% BW)
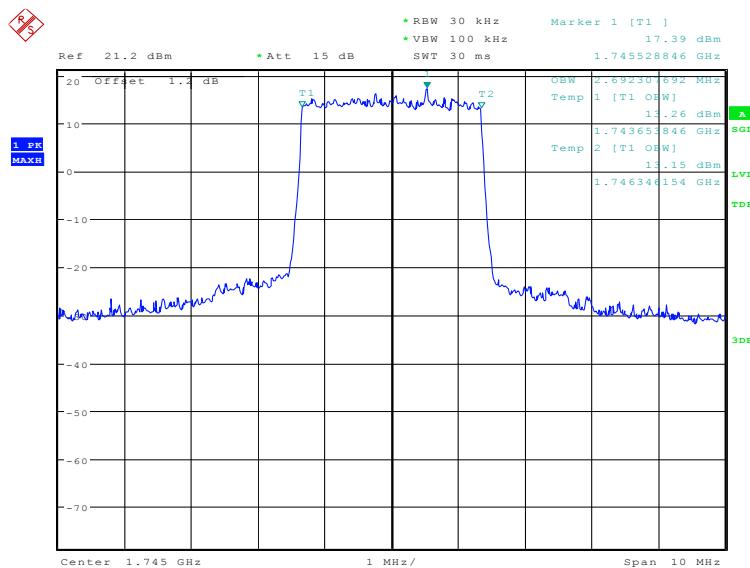
Date: 20.JAN.2020 18:35:24

LTE band 66, 3MHz Bandwidth, 16QAM (99% BW)
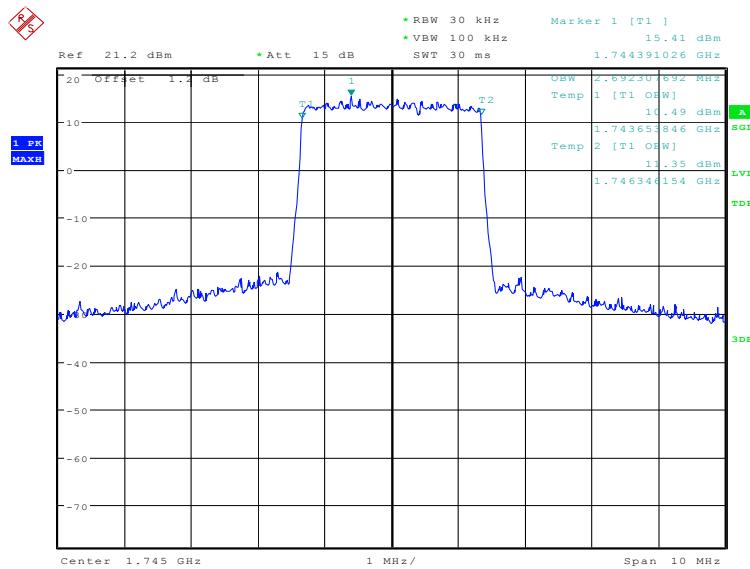
Date: 20.JAN.2020 18:36:48

LTE band 66, 3MHz Bandwidth, 64QAM (99% BW)
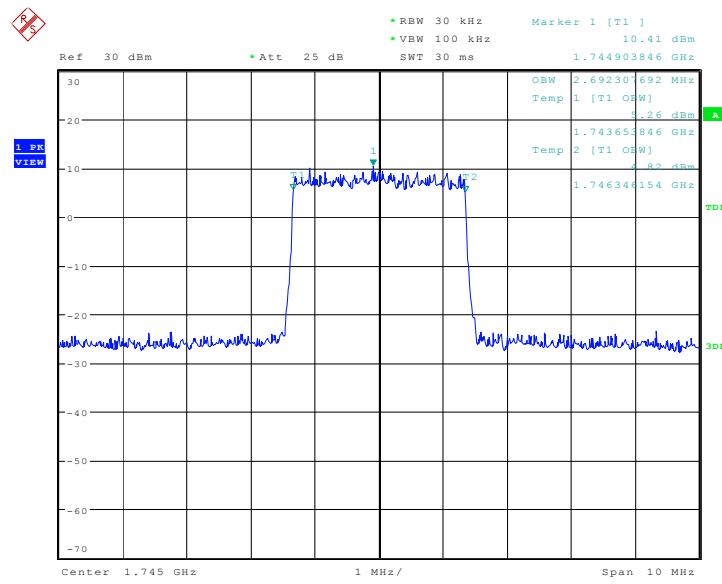
Date: 21.JAN.2020 16:35:05

LTE band 66, 5MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
1745.0	QPSK	16QAM	64QAM
	4495.19	4495.19	4495.19

LTE band 66, 5MHz Bandwidth, QPSK (99% BW)
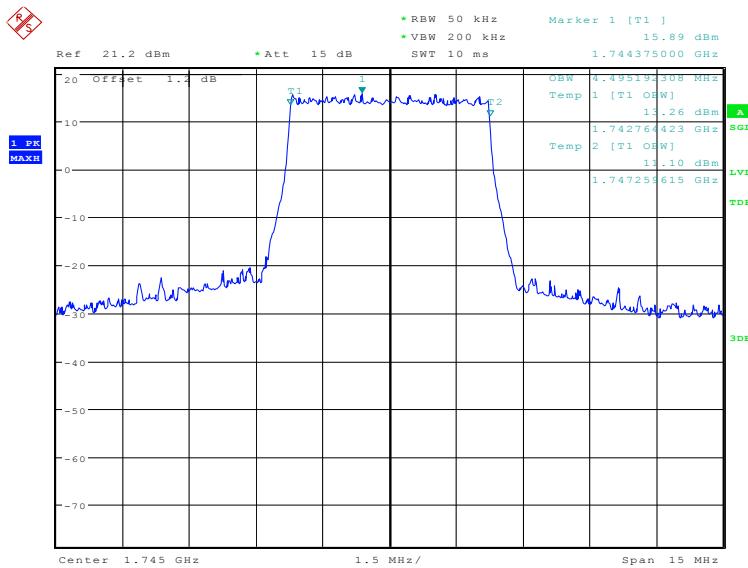
Date: 20.JAN.2020 18:39:02

LTE band 66, 5MHz Bandwidth, 16QAM (99% BW)
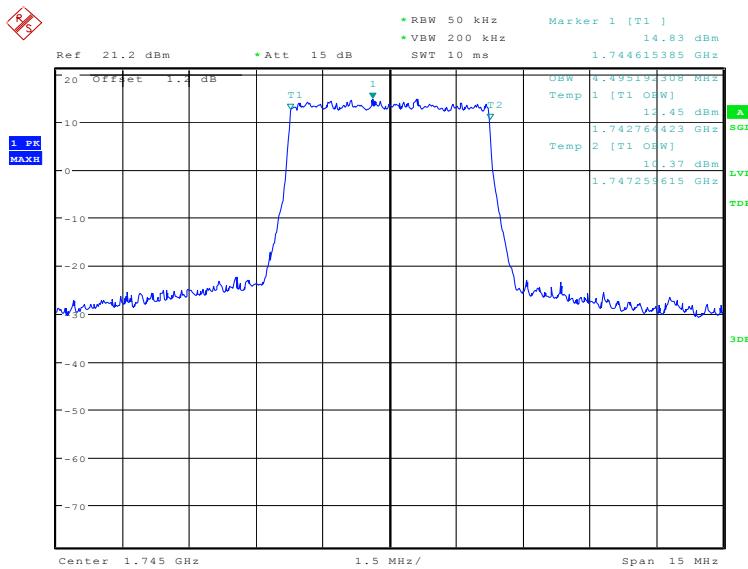
Date: 20.JAN.2020 18:40:26

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


```
                                          * RBW 50 kHz        Marker 1 [T1 ]
                                          * VBW 200 kHz                 9.83 dBm
        Ref  30 dBm          * Att  25 dB   SWT 10 ms         1.743149038 GHz
    30                                            OBW  4.495192308 MHz
                                                  Temp 1 [T1 OBW]
    -20                                                        .73 dBm         A
1 PK                                              1.742764423 GHz
VIEW                                              Temp 2 [T1 OBW]
    10                                                        02 dBm
                                                  1.747259615 GHz           TDF
     0
   -10
   -20                                                                      3DB
   -30
   -40
   -50
   -60
   -70
        Center  1.745 GHz              1.5 MHz/                Span 15 MHz
```
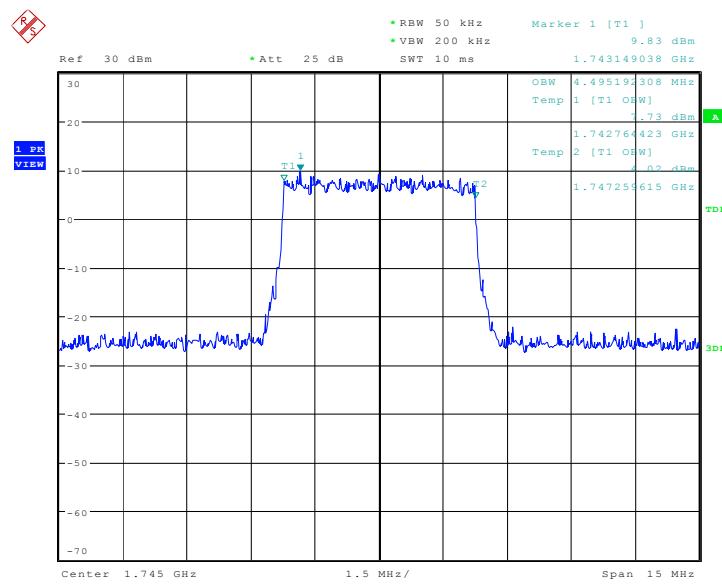
Date: 21.JAN.2020 16:36:45

LTE band 66, 10MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
1745.0	QPSK	16QAM	64QAM
	9038.46	8942.31	8990.38

LTE band 66, 10MHz Bandwidth, QPSK (99% BW)
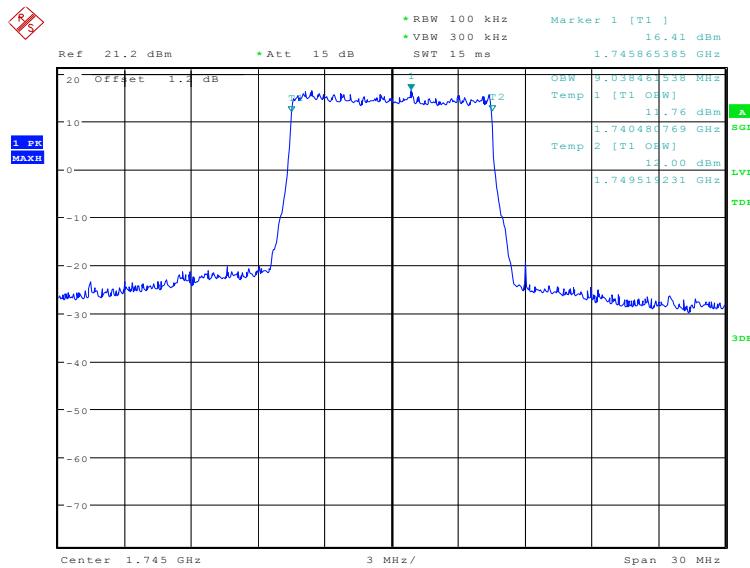
Date: 20.JAN.2020 18:42:39

LTE band 66, 10MHz Bandwidth, 16QAM (99% BW)
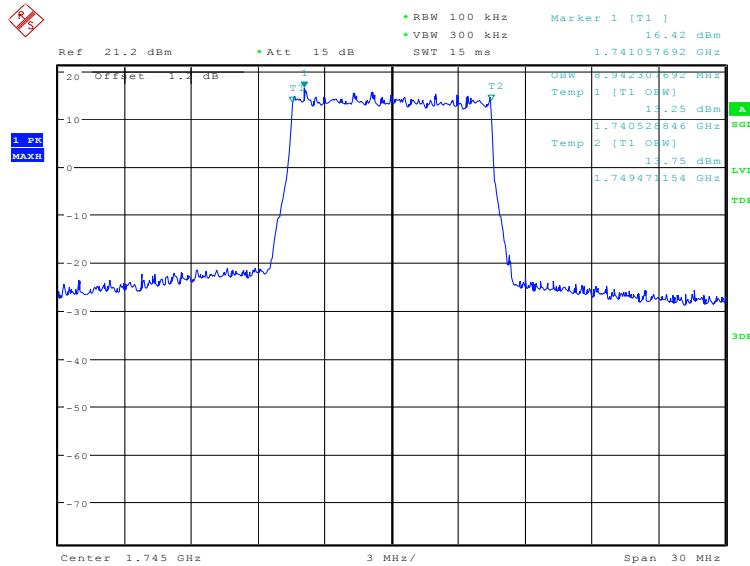
Date: 20.JAN.2020 18:44:03

LTE band 66, 10MHz Bandwidth, 64QAM (99% BW)
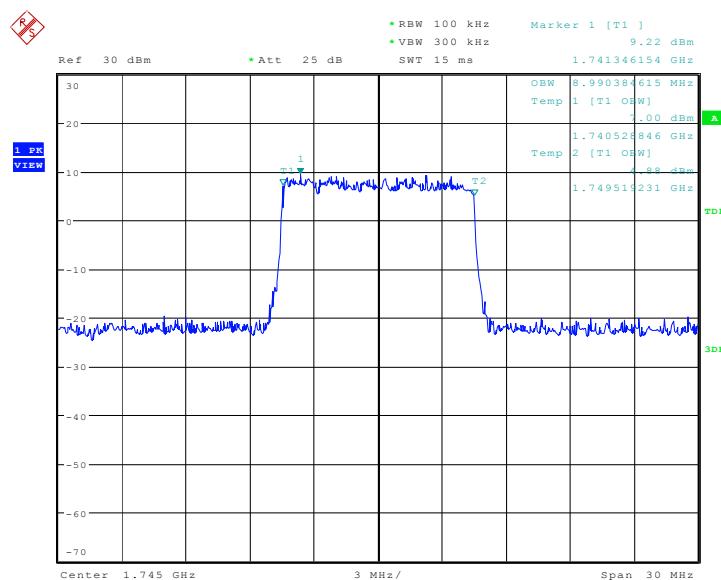
Date: 21.JAN.2020 16:37:46

LTE band 66, 15MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
1745.0	QPSK	16QAM	64QAM
	13557.69	13557.69	13557.69

LTE band 66, 15MHz Bandwidth, QPSK (99% BW)
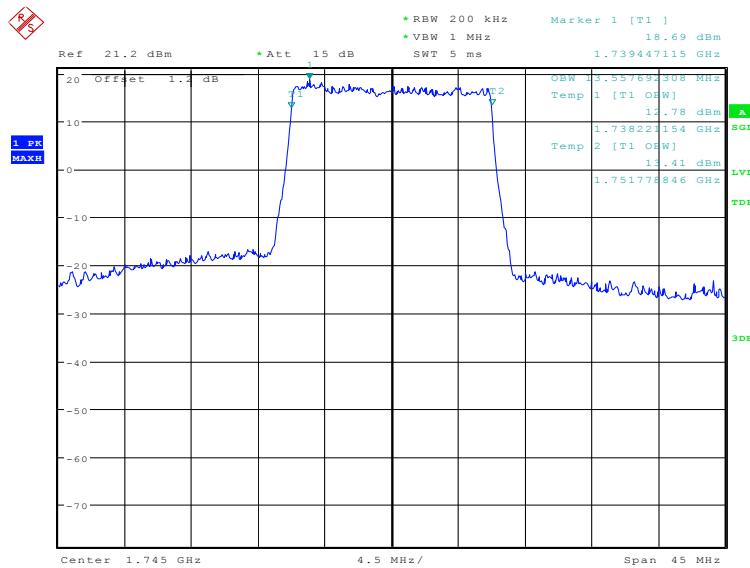
Date: 20.JAN.2020 18:46:16

LTE band 66, 15MHz Bandwidth, 16QAM (99% BW)
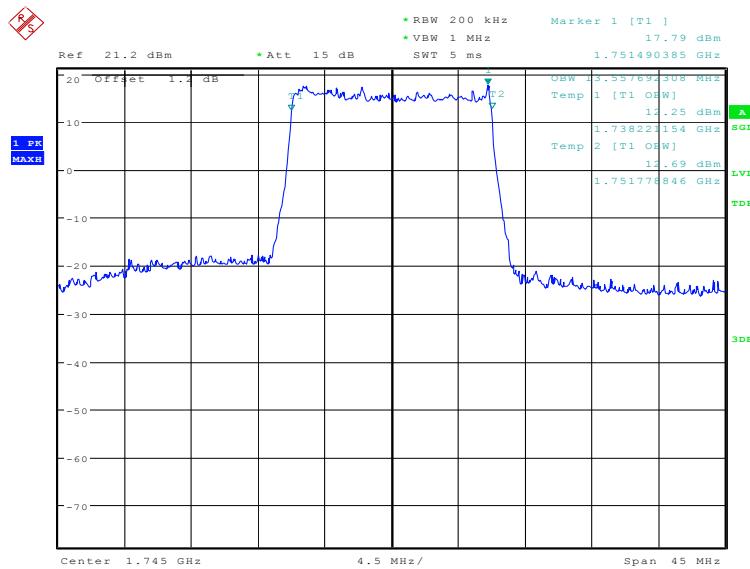
Date: 20.JAN.2020 18:47:40

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


```
                                        • RBW 200 kHz      Marker 1 [T1 ]
                                        • VBW 1 MHz                  12.45 dBm
           Ref  30 dBm      • Att  25 dB    SWT 5 ms        1.739663462 GHz
       30                                        OBW 13.557691308 MHz
                                                 Temp 1 [T1 OBW]
       20                                                     6.86 dBm  A
 1 PK                                                 1.738221154 GHz
 VIEW                                            Temp 2 [T1 OBW]
       10                                                     6.66 dBm
                                                      1.751778846 GHz  TDF
        0

      -10

      -20
                                                                       3DB
      -30

      -40

      -50

      -60

      -70
           Center  1.745 GHz          4.5 MHz/              Span  45 MHz
```
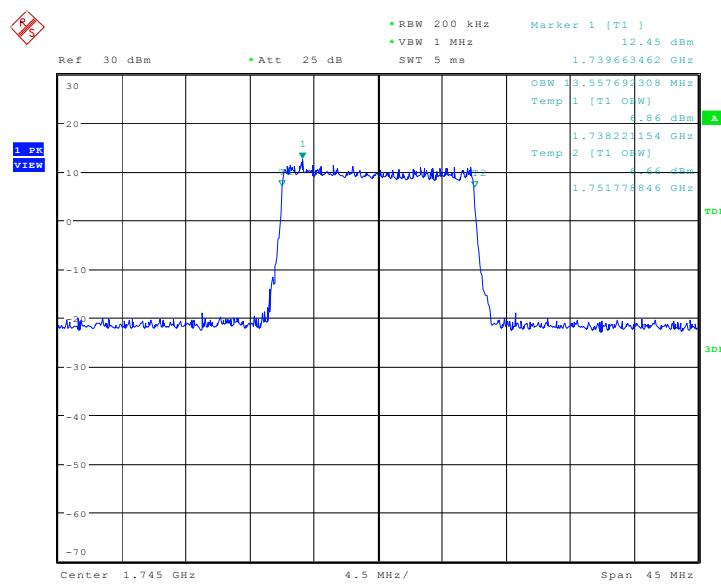
Date: 21.JAN.2020 16:56:42

LTE band 66, 20MHz (99%)

Frequency (MHz)	Occupied Bandwidth (99%) (kHz)		
1745.0	QPSK	16QAM	64QAM
	17980.77	17980.77	17980.77

LTE band 66, 20MHz Bandwidth, QPSK (99% BW)
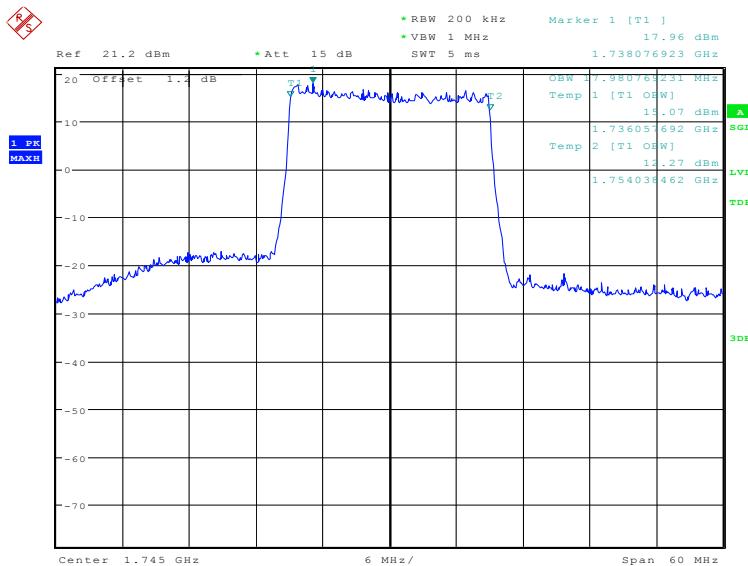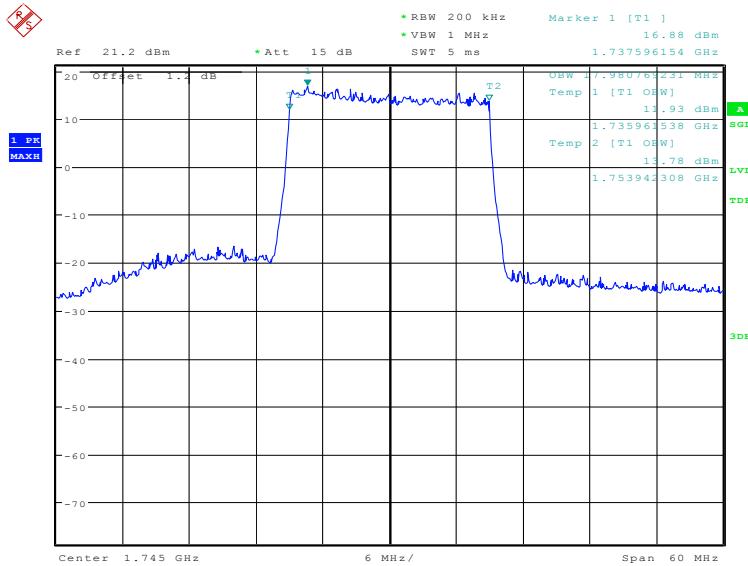
Date: 20.JAN.2020 18:49:54

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

Date: 20.JAN.2020 18:51:18

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


```
                                          • RBW  200 kHz      Marker 1 [T1 ]
                                          • VBW  1 MHz                    11.68 dBm
   Ref   30 dBm         • Att   25 dB      SWT 5 ms               1.736826923 GHz
    30                                              OBW 17.980769231 MHz
                                                    Temp 1 [T1 OBW]
   -20                                                        6.30 dBm
 1 PK                                                1.736057692 GHz
 VIEW                                          1               Temp 2 [T1 OBW]
   -10                                                        6.04 dBm
                                                     1.754038462 GHz
     0
   -10
   -20
   -30
   -40
   -50
   -60
   -70
   Center  1.745 GHz              6 MHz/                   Span  60 MHz
```
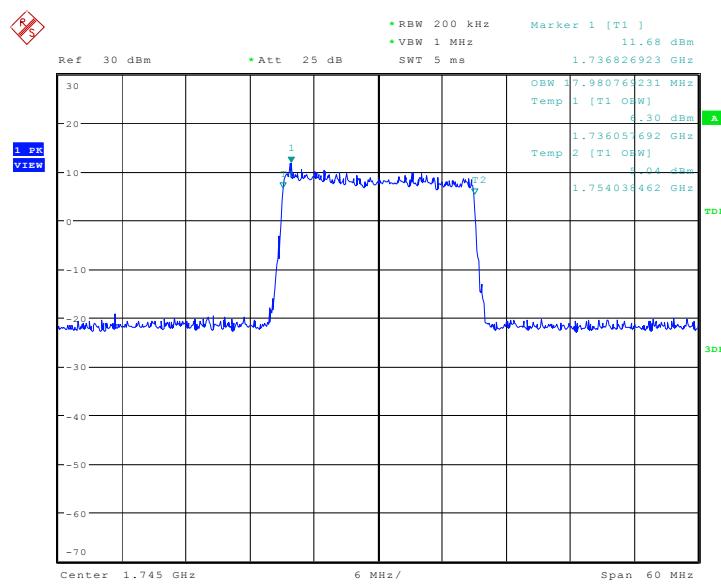
Date: 21.JAN.2020 16:59:41

A.5 EMISSION BANDWIDTH

A.5.1Emission Bandwidth Results

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

The measurement method is from ANSI C63.26:

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. Thespan range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal tomake the measurement.

b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shallbe set ≥ 3 × RBW.

c) Set the reference level of the instrument as required to prevent the signal amplitude from exceedingthe maximum spectrum analyzer input mixer level for linear operation.

d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB belowthe target "−X dB" requirement, i.e., if the requirement calls for measuring the −26 dB OBW, thespectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.

e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.

LTE band 2, 1.4MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
1880.0	QPSK	16QAM	64QAM
	1274.04	1290.06	1298.08

LTE band 2, 1.4MHz Bandwidth, QPSK (-26dBc BW)
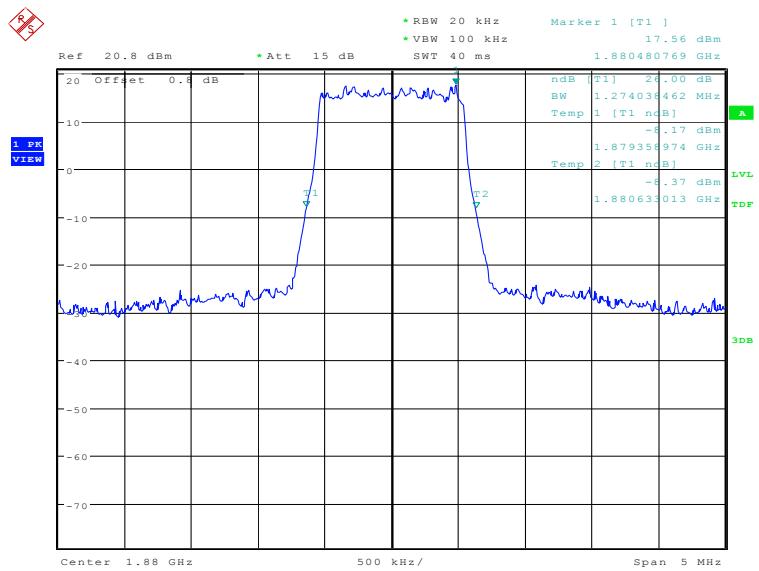
Date: 20.JAN.2020 18:53:18

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


```
                                    *RBW 20 kHz      Marker 1 [T1 ]
                                    *VBW 100 kHz               16.29 dBm
        Ref  20.8 dBm    *Att  15 dB  SWT 40 ms       1.880312500 GHz
        20  Offset  0.8 dB                          ndB [T1]    26.00 dB
                                                    BW  1.290064103 MHz
        10                                          Temp 1 [T1 ndB]
                                                             -9.60 dBm
         0                                           1.879358974 GHz
                                                    Temp 2 [T1 ndB]
        -10                                              -9.13 dBm
                                                     1.880649038 GHz
        -20

        -40

        -50

        -60

        -70
        Center  1.88 GHz        500 kHz/          Span  5 MHz
```
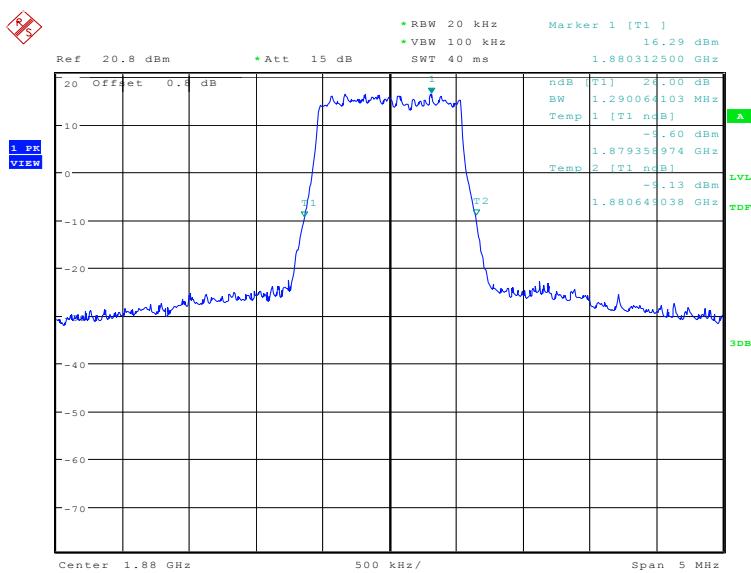
Date: 20.JAN.2020 18:54:42

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


```
                                    *RBW 20 kHz      Marker 1 [T1 ]
                                    *VBW 100 kHz               11.39 dBm
        Ref  30 dBm     *Att  25 dB  SWT 40 ms       1.880104167 GHz
        30                                          ndB [T1]    26.00 dB
                                                    BW  1.298076923 MHz
        -20                                         Temp 1 [T1 ndB]
                                                            -15.12 dBm
        10                                           1.879350962 GHz
                                                    Temp 2 [T1 ndB]
         0                                               -14.87 dBm
                                                     1.880649038 GHz
        -10

        -20

        -30

        -40

        -50

        -60

        -70
        Center  1.88 GHz        500 kHz/          Span  5 MHz
```
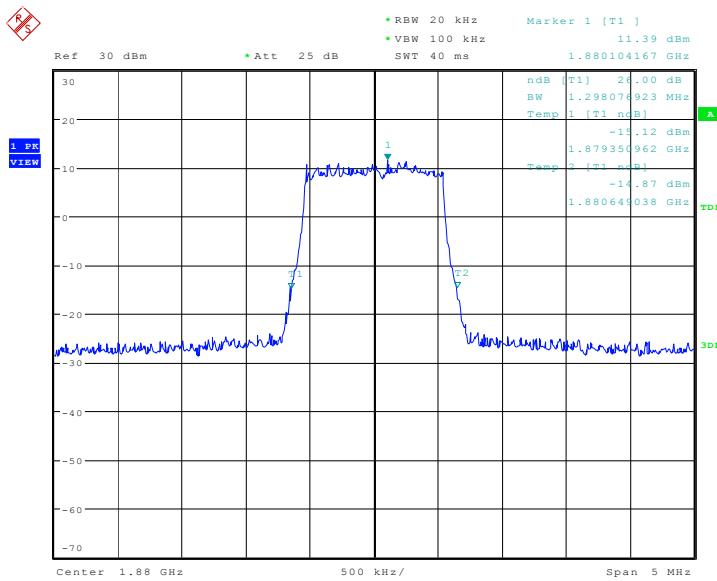
Date: 21.JAN.2020 17:07:33

LTE band 2, 3MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
1880.0	QPSK	16QAM	64QAM
	2884.62	2900.64	2884.62

**LTE band 2, 3MHz Bandwidth, QPSK (-26dBc BW)**
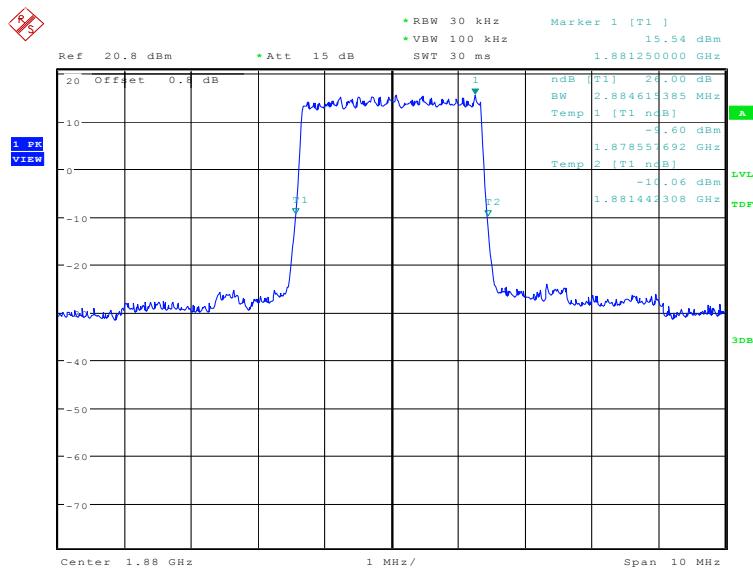
Date: 20.JAN.2020 18:56:56

**LTE band 2, 3MHz Bandwidth, 16QAM (-26dBc BW)**
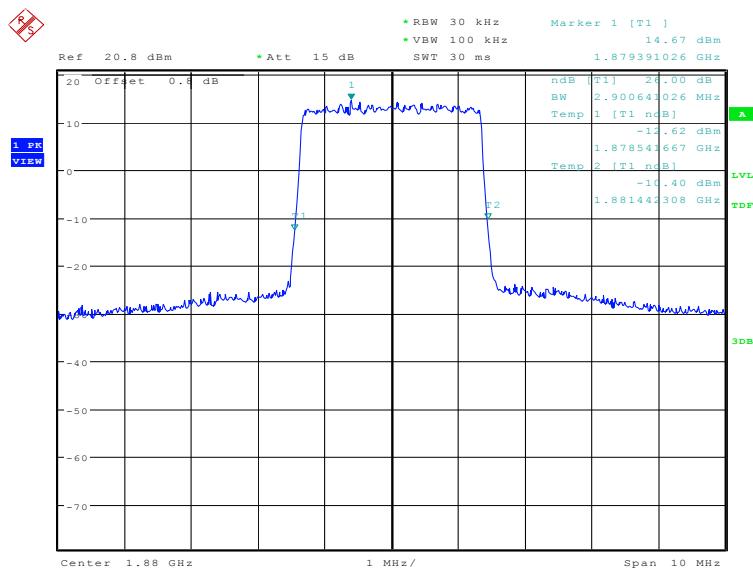
Date: 20.JAN.2020 18:58:20

**LTE band 2, 3MHz Bandwidth, 64QAM (-26dBc BW)**
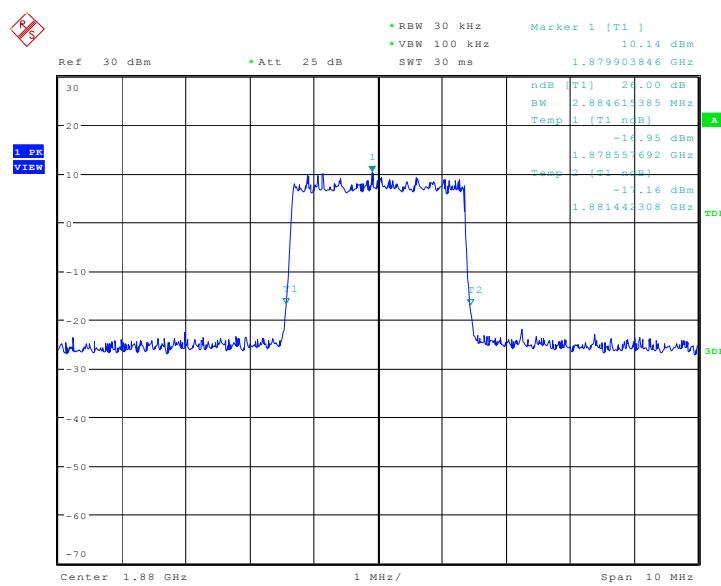
LTE band 2, 5MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
	QPSK	16QAM	64QAM
1880.0	4879.81	5024.04	4807.69

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

Date: 20.JAN.2020 19:00:34

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


Date: 20.JAN.2020 19:01:58

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


```
                                         • RBW  50 kHz      Marker 1 [T1 ]
                                         • VBW  200 kHz                    10.25 dBm
              Ref   30 dBm    • Att  25 dB    SWT  10 ms          1.881225962 GHz
                                                          ndB  [T1]   26.00 dB
                                                          BW   4.807692308 MHz
                                                          Temp 1 [T1 ndB]
                                                                     -14.73 dBm
                                                              1.877596154 GHz
                                                          Temp 2 [T1 ndB]
                                                                     -15.10 dBm
                                                              1.882403846 GHz

              Center  1.88 GHz          1.5 MHz/                   Span  15 MHz
```
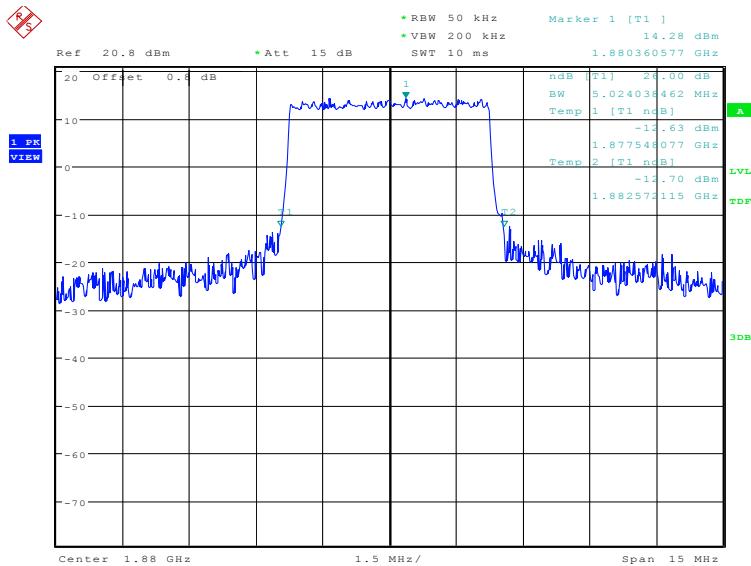
Date: 21.JAN.2020 17:11:04

LTE band 2, 10MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
1880.0	QPSK	16QAM	64QAM
	9663.46	9663.46	9615.38

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

Date: 20.JAN.2020 19:04:12
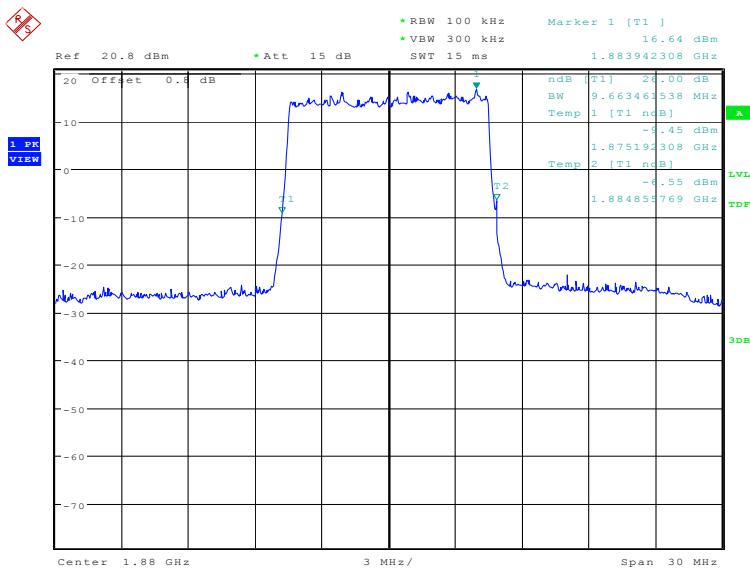
LTE band 2, 10MHz Bandwidth, 16QAM (-26dBc BW)
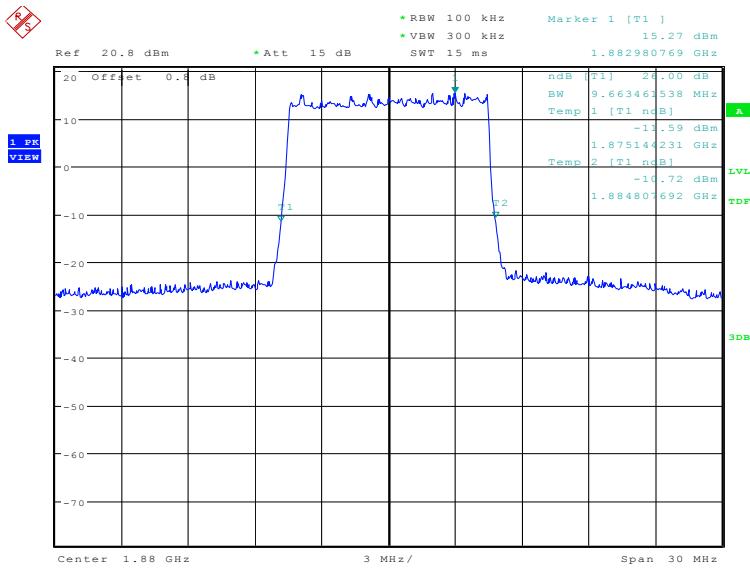
Date: 20.JAN.2020 19:05:36

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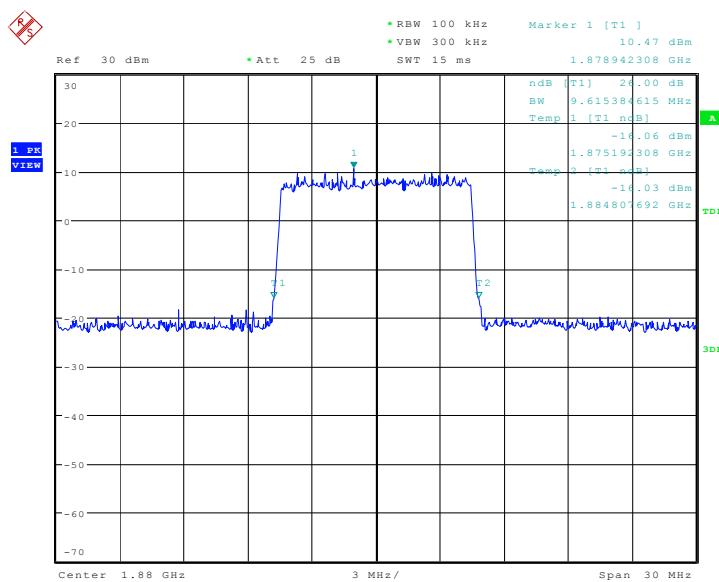


Date: 21.JAN.2020 17:13:34

LTE band 2, 15MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
1880.0	QPSK	16QAM	64QAM
	14639.42	14567.31	14567.31

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

Date: 20.JAN.2020 19:07:50
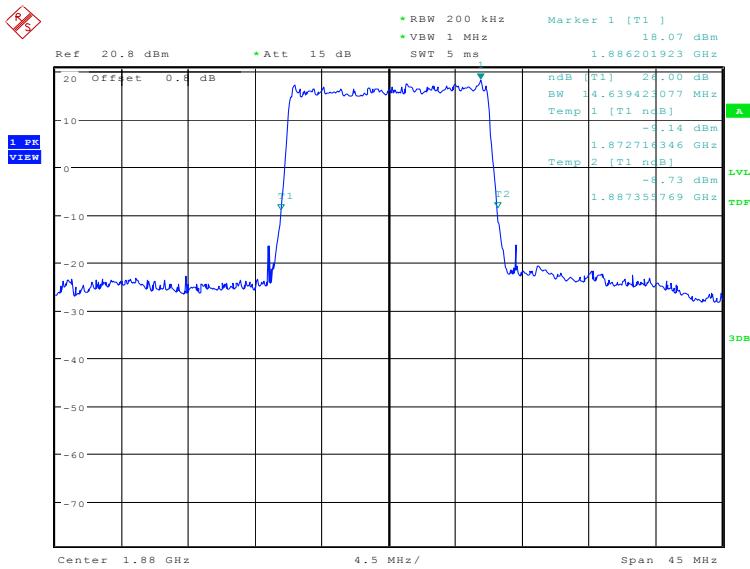
LTE band 2, 15MHz Bandwidth, 16QAM (-26dBc BW)
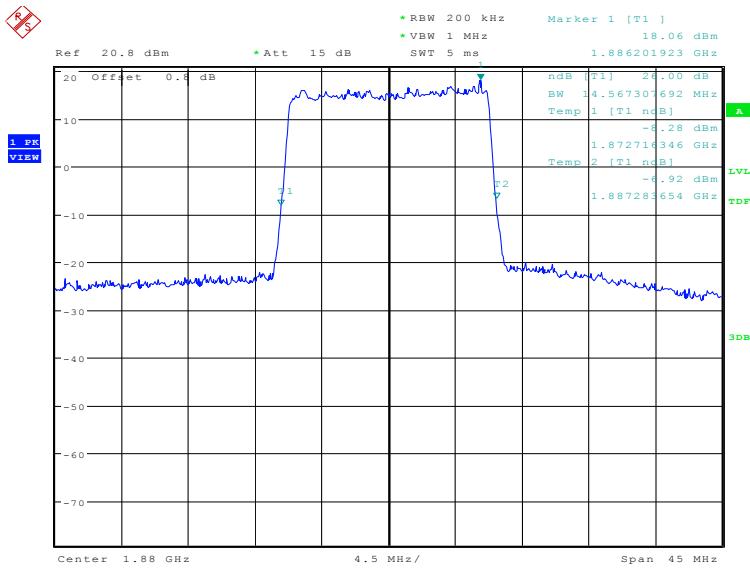
Date: 20.JAN.2020 19:09:14

LTE band 2, 15MHz Bandwidth, 64QAM (-26dBc BW)
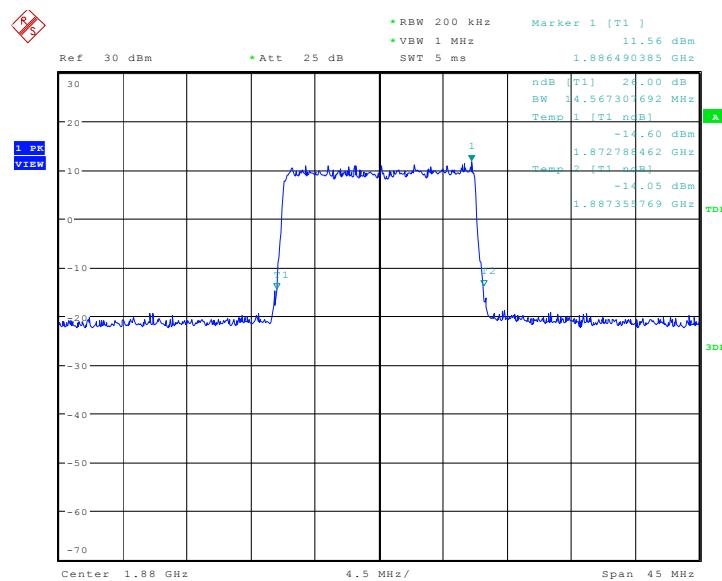
Date: 21.JAN.2020 17:14:33

LTE band 2, 20MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
1880.0	QPSK	16QAM	64QAM
	19134.62	19134.62	19230.77

LTE band 2, 20MHz Bandwidth, QPSK (-26dBc BW)
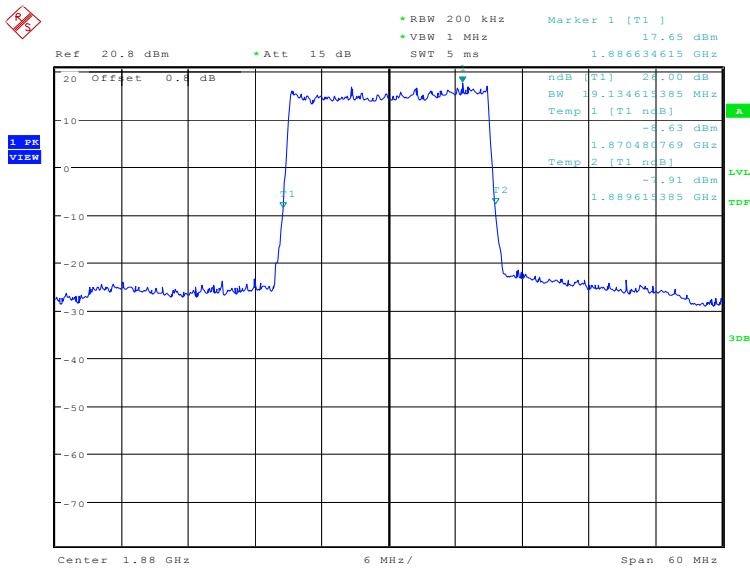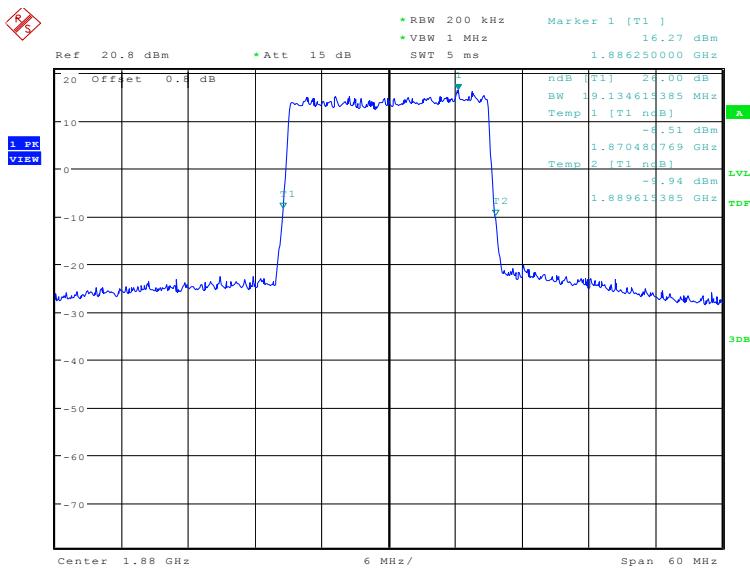
Date: 20.JAN.2020 19:11:28

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

Date: 20.JAN.2020 19:12:52

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

Date: 21.JAN.2020 17:02:59
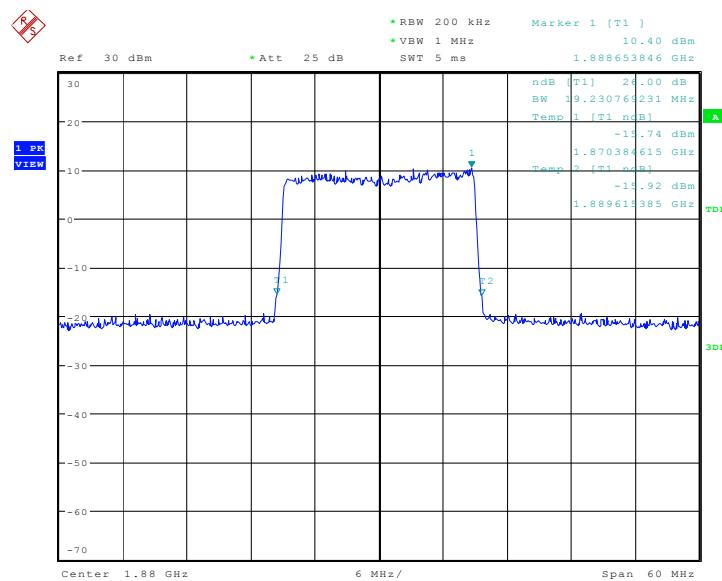
LTE band 5, 1.4MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
836.5	QPSK	16QAM	64QAM
	1274.04	1306.09	1298.08

**LTE band 5, 1.4MHz Bandwidth, QPSK (-26dBc BW)**
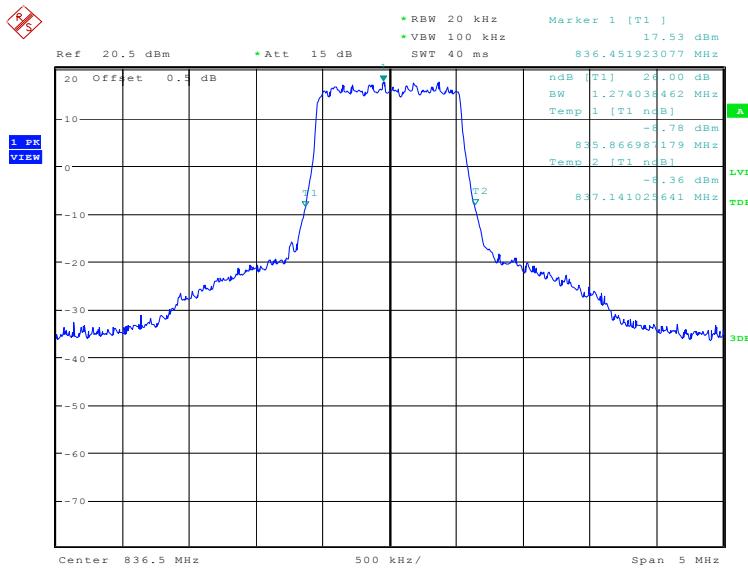
Date: 21.JAN.2020 09:10:35

LTE band 5, 1.4MHz Bandwidth, 16QAM (-26dBc BW)
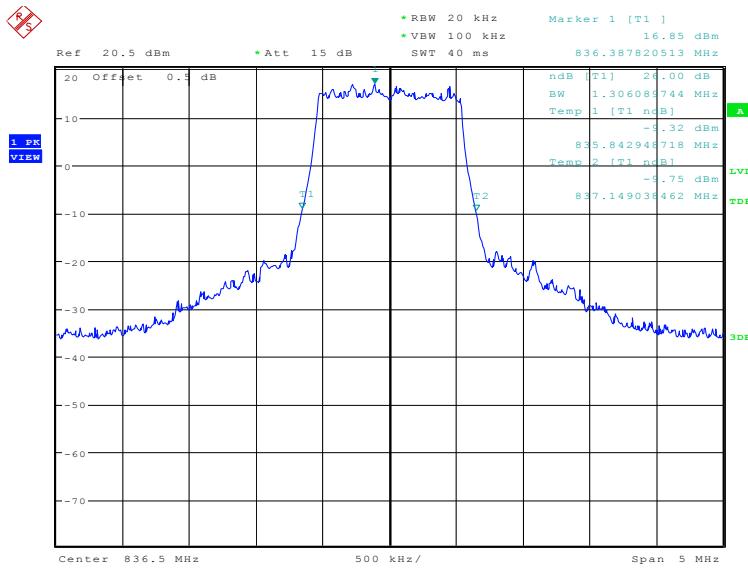
Date: 21.JAN.2020 09:11:59

LTE band 5, 1.4MHz Bandwidth, 64QAM (-26dBc BW)
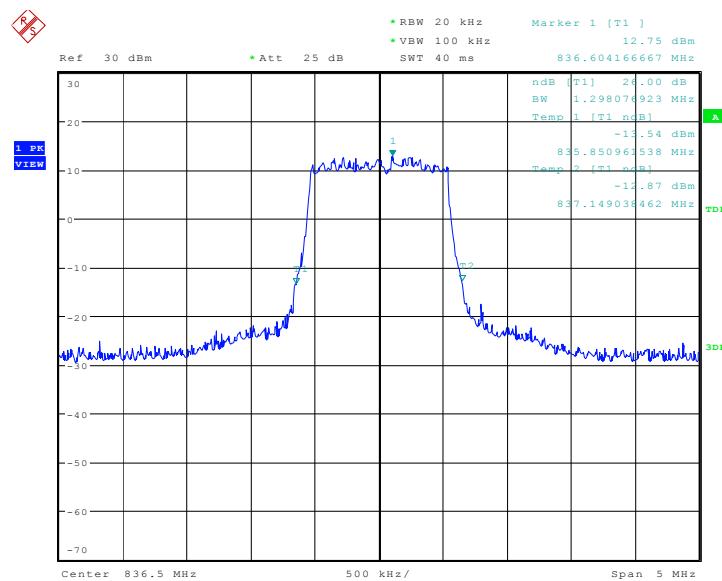
Date: 21.JAN.2020 16:14:28

LTE band 5, 3MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
	QPSK	16QAM	64QAM
836.5	2900.64	2900.64	2852.56

LTE band 5, 3MHz Bandwidth, QPSK (-26dBc BW)
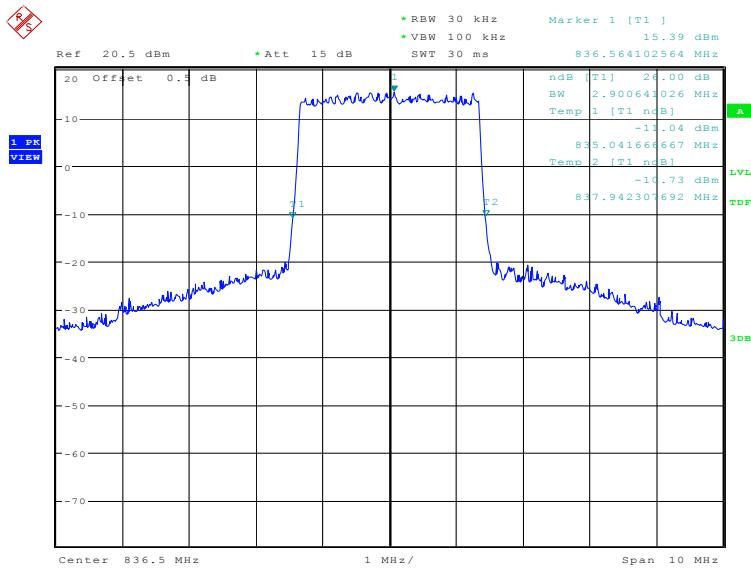
Date: 21.JAN.2020 09:14:13

LTE band 5, 3MHz Bandwidth, 16QAM (-26dBc BW)
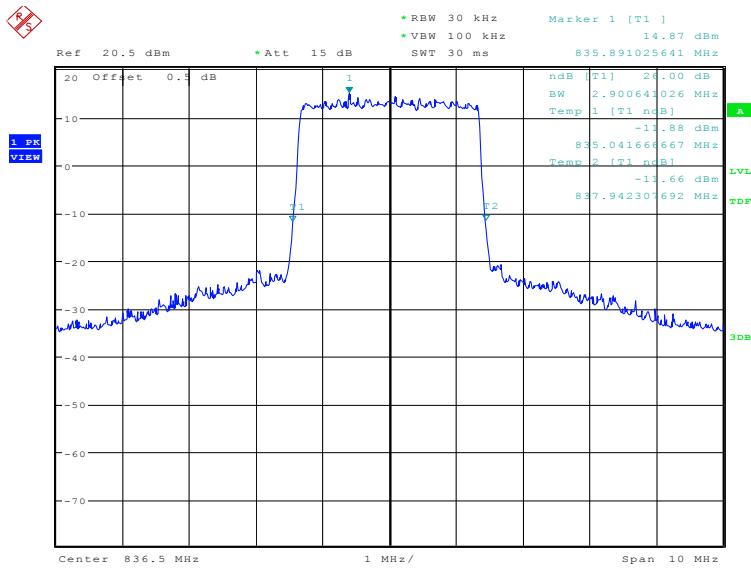
Date: 21.JAN.2020 09:15:37

**LTE band 5, 3MHz Bandwidth, 64QAM (-26dBc BW)**
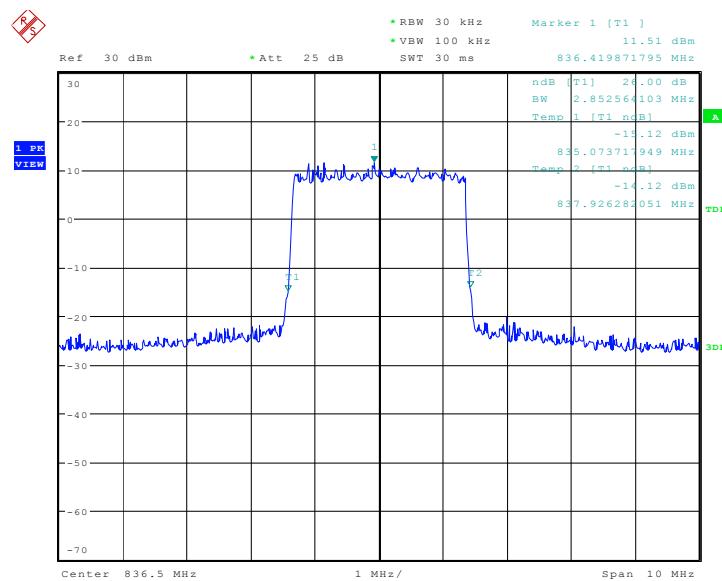
Date: 21.JAN.2020 16:09:56

LTE band 5, 5MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
836.5	QPSK	16QAM	64QAM
	4855.77	4807.69	4831.73

**LTE band 5, 5MHz Bandwidth, QPSK (-26dBc BW)**
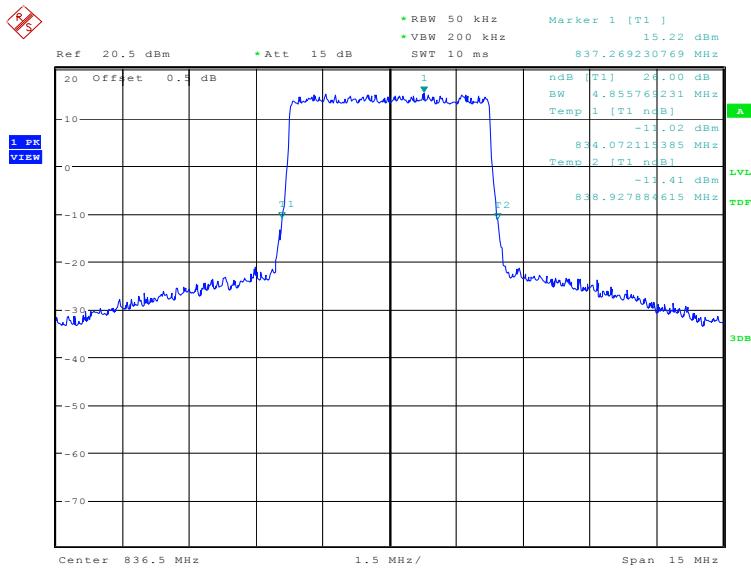
Date: 21.JAN.2020 09:17:51

LTE band 5, 5MHz Bandwidth, 16QAM (-26dBc BW)
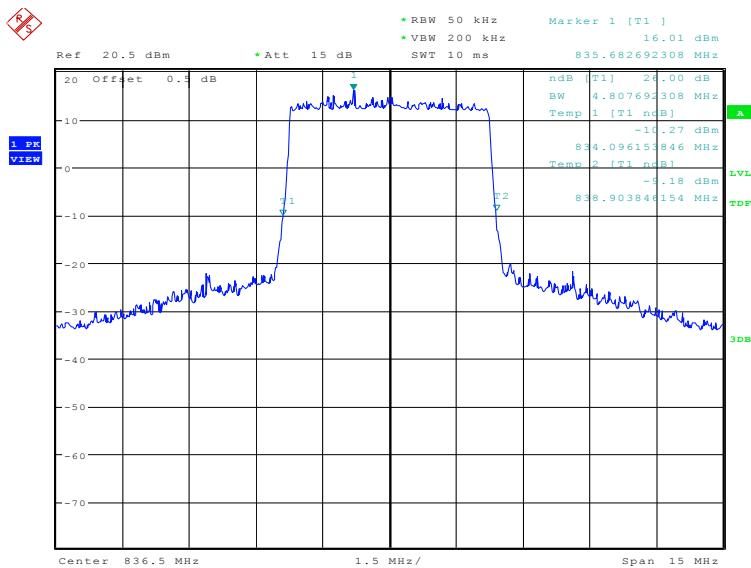
Date: 21.JAN.2020 09:19:15

LTE band 5, 5MHz Bandwidth,64QAM (-26dBc BW)
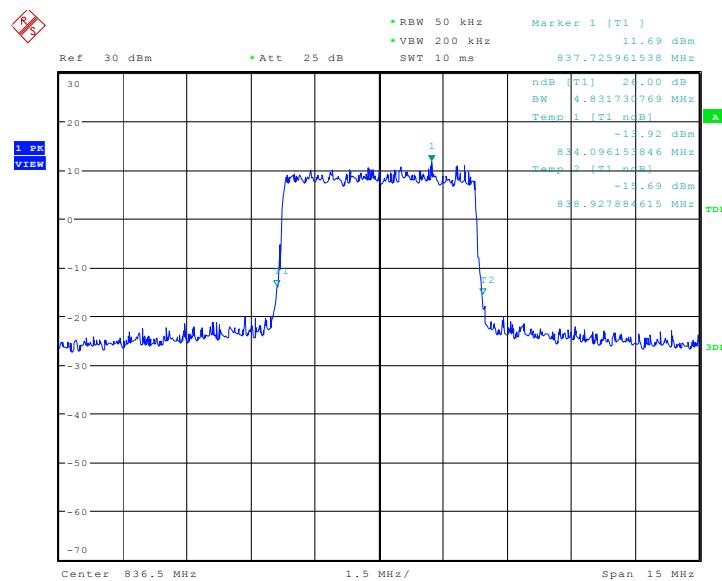
Date: 21.JAN.2020 16:11:12

LTE band 5, 10MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
	QPSK	16QAM	64QAM
836.5	9567.31	9615.38	9615.38

LTE band 5, 10MHz Bandwidth, QPSK (-26dBc BW)
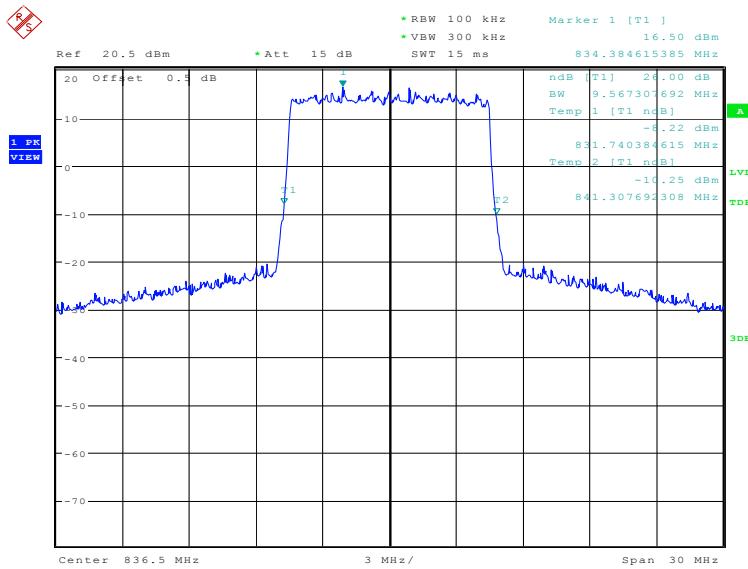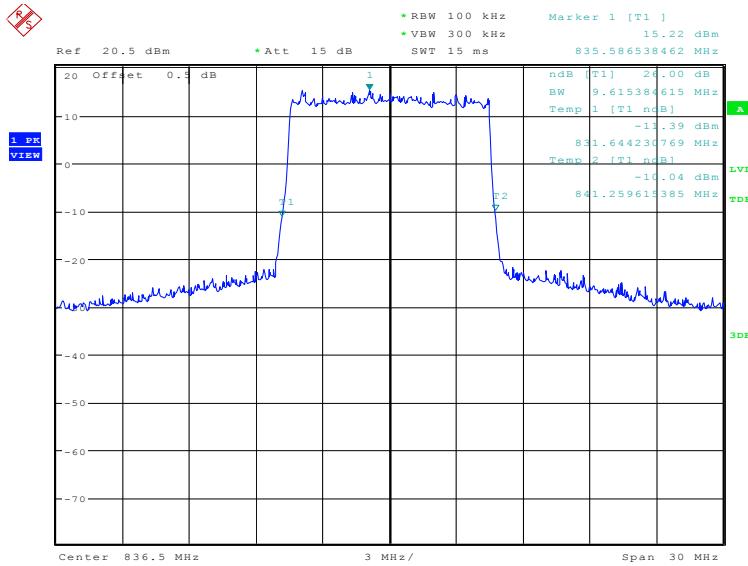
Date: 21.JAN.2020 09:21:29

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

Date: 21.JAN.2020 09:22:54

**LTE band 5, 10MHz Bandwidth, 64QAM (-26dBc BW)**
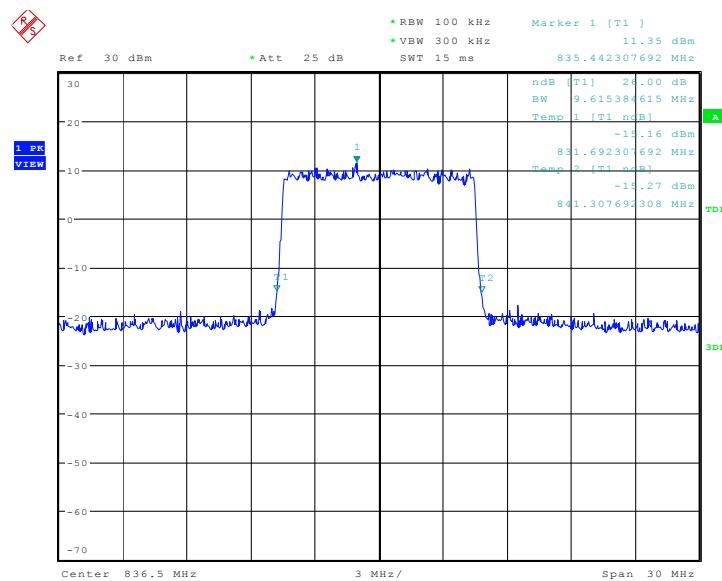
Date: 21.JAN.2020 16:12:12

LTE band 7, 5MHz (-26dBc)

| Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
	QPSK	16QAM	64QAM
2535.0	4903.85	4903.85	4807.69

LTE band 7, 5MHz Bandwidth, QPSK (-26dBc BW)
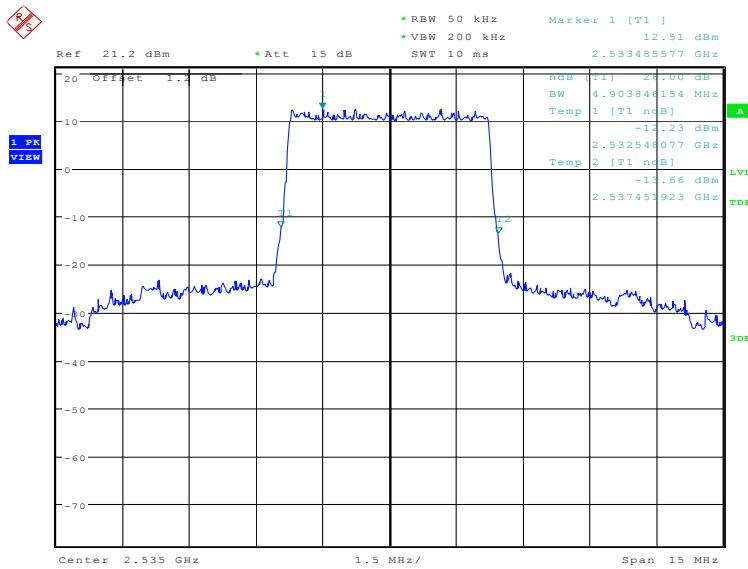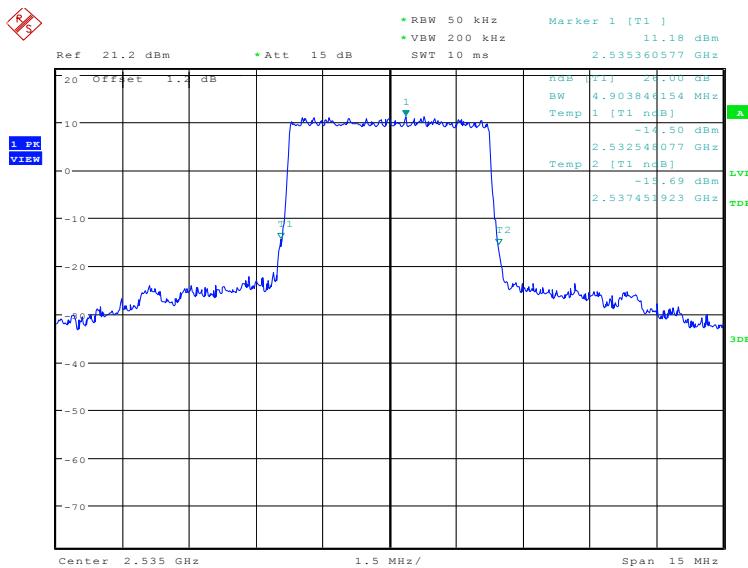
Date: 21.JAN.2020 09:25:09

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

Date: 21.JAN.2020 09:26:33

LTE band 7, 5MHz Bandwidth,64QAM (-26dBc BW)


```
                              * RBW  50 kHz        Marker 1 [T1 ]
                              * VBW  200 kHz                   15.23 dBm
Ref  30 dBm      * Att  25 dB   SWT  10 ms          2.536225962 GHz

  30                                                 ndB [T1]    26.00 dB
                                                     BW  4.807692308 MHz
  20                                                 Temp 1 [T1 ndB]           A
                                              1                   -11.38 dBm
  10                                                      2.532596154 GHz
                                                     Temp 2 [T1 ndB]
   0                                                             -10.50 dBm
                                                         2.537403846 GHz     TDF
 -10        T1                        T2
                                      ▽
 -20                                                                         3DB

 -30

 -40

 -50

 -60

 -70
Center  2.535 GHz            1.5 MHz/              Span  15 MHz
```
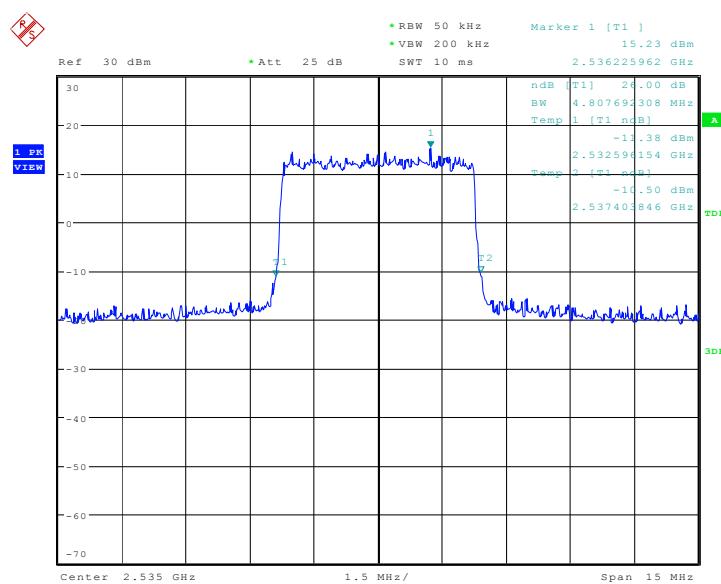
Date: 5.MAR.2020 13:12:40

LTE band 7, 10MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
2535.0	QPSK	16QAM	64QAM
	9759.62	9711.54	9615.38

**LTE band 7, 10MHz Bandwidth, QPSK (-26dBc BW)**
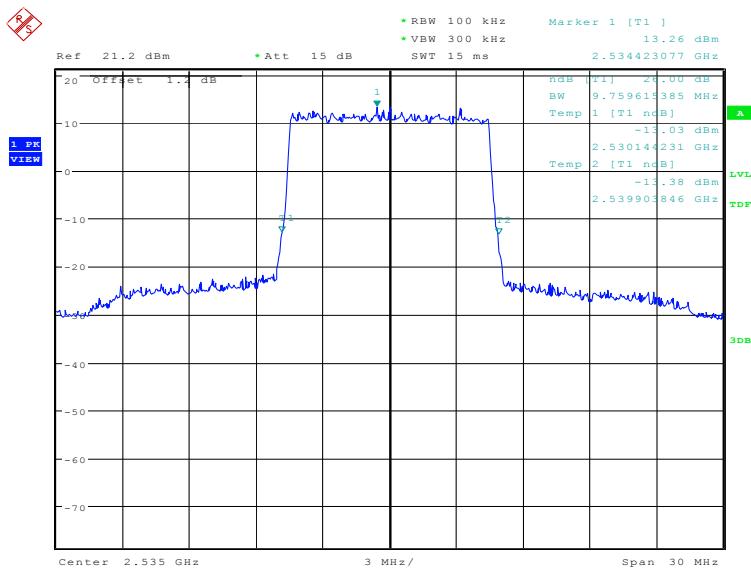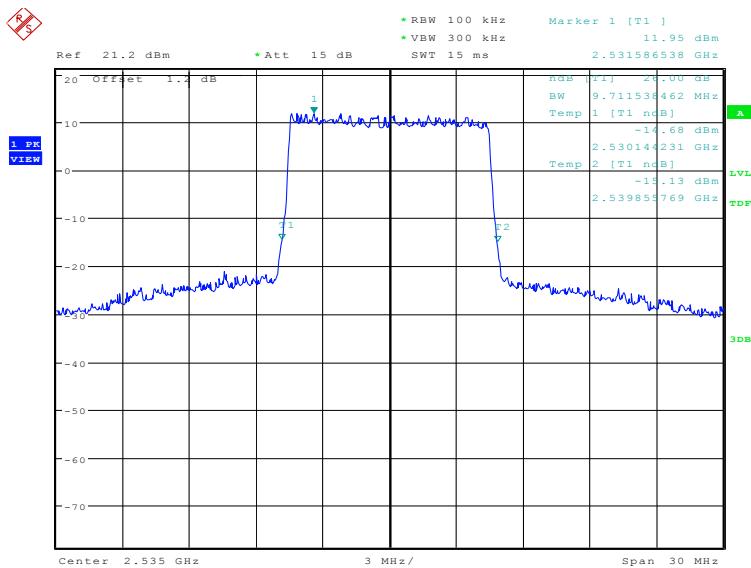
Date: 21.JAN.2020 09:28:47

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

Date: 21.JAN.2020 09:30:12

## LTE band 7, 10MHz Bandwidth, 64QAM (-26dBc BW)


```
                                    *RBW  100 kHz      Marker 1 [T1 ]
                                    *VBW  300 kHz              14.68 dBm
    Ref  30 dBm        *Att  25 dB   SWT  15 ms         2.532596154 GHz

     30                                               ndB [T1]    26.00 dB
                                                      BW  9.615384615 MHz
     20                                               Temp 1 [T1 ndB]
                                  1                           -10.70 dBm
     10                                                2.530192308 GHz
                                                      Temp 2 [T1 ndB]
                                                             -10.83 dBm
      0                                                2.539807692 GHz

    -10        T1                      T2

    -20

    -30

    -40

    -50

    -60

    -70
    Center  2.535 GHz         3 MHz/             Span  30 MHz
```
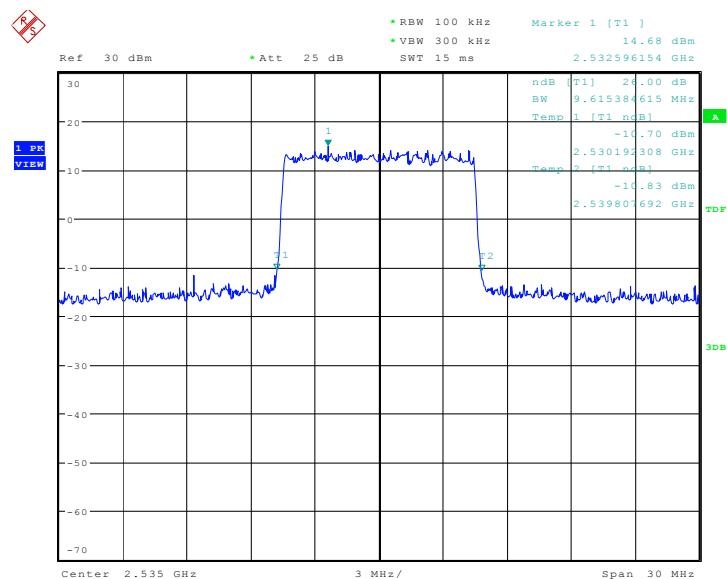
Date: 5.MAR.2020 13:14:02

LTE band 7, 15MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
2535.0	QPSK	16QAM	64QAM
	14711.54	14639.42	14567.31

LTE band 7, 15MHz Bandwidth, QPSK (-26dBc BW)
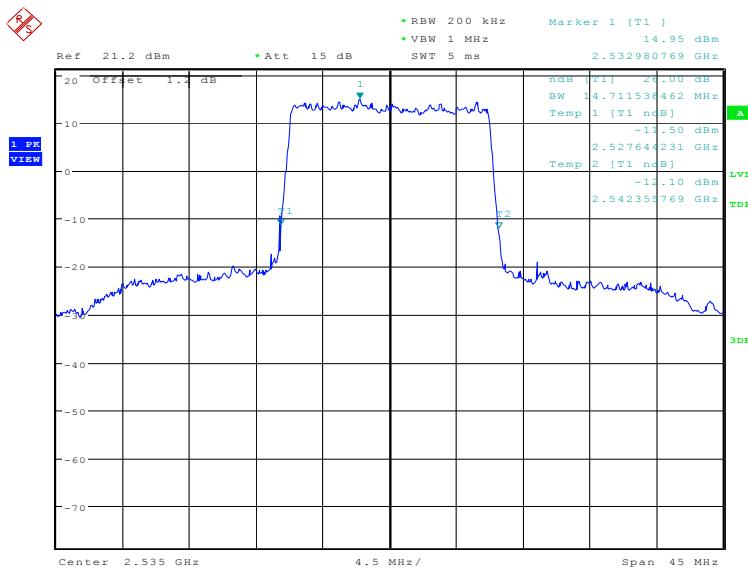
Date: 21.JAN.2020 09:32:25

LTE band 7, 15MHz Bandwidth,16QAM (-26dBc BW)
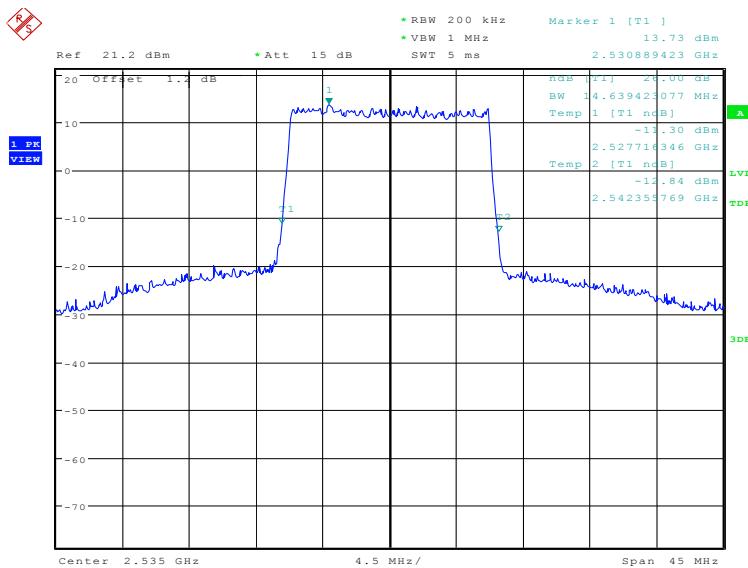
Date: 21.JAN.2020 09:33:50

## LTE band 7, 15MHz Bandwidth, 64QAM (-26dBc BW)


```
              *RBW 200 kHz      Marker 1 [T1 ]
              *VBW 1 MHz                  17.00 dBm
Ref  30 dBm   *Att  25 dB   SWT 5 ms      2.529735577 GHz
 30                                  ndB [T1]    26.00 dB
                                     BW  14.567307692 MHz
 20                                  Temp 1 [T1 ndB]
                                               -9.70 dBm
 10                                  2.527785462 GHz
                                     Temp 2 [T1 ndB]
                                               -9.91 dBm
  0                                  2.542355769 GHz
-10        T1              T2
-20
-30
-40
-50
-60
-70
Center  2.535 GHz        4.5 MHz/            Span  45 MHz
```
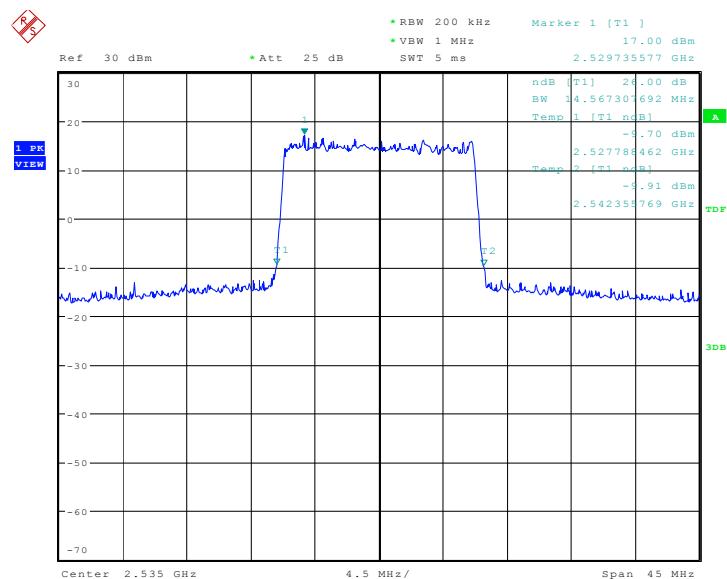
Date: 5.MAR.2020 13:15:12

LTE band 7, 20MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
2535.0	QPSK	16QAM	64QAM
	19230.77	19134.62	19326.92

LTE band 7, 20MHz Bandwidth, QPSK (-26dBc BW)
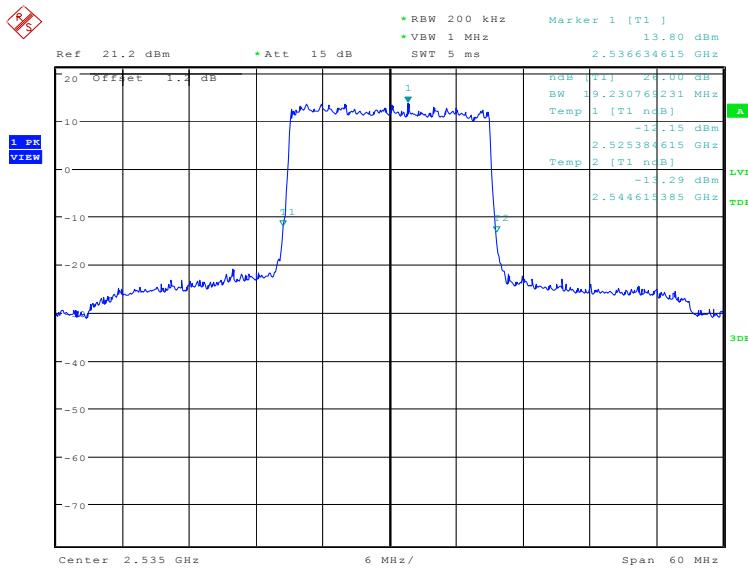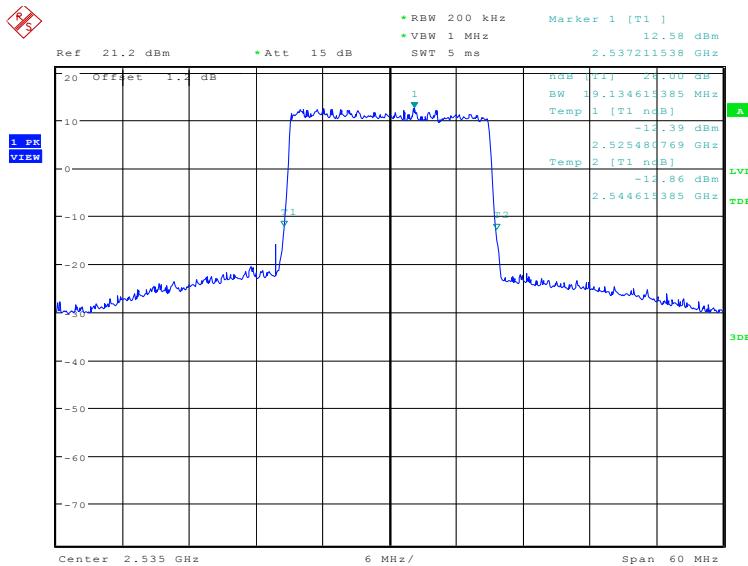
Date: 21.JAN.2020 09:36:04

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

Date: 21.JAN.2020 09:37:28

## LTE band 7, 20MHz Bandwidth, 64QAM (-26dBc BW)


```
                              • RBW  200 kHz    Marker 1 [T1 ]
                              • VBW  1 MHz              15.41 dBm
   Ref  30 dBm      • Att  25 dB   SWT 5 ms       2.529615385 GHz

    30                                          ndB [T1]    26.00 dB
                                                BW  19.326923077 MHz
    20                                          Temp 1 [T1 ndB]           A
 1 PK                                                    -11.55 dBm
 VIEW   10                                          2.525384615 GHz
                                                Temp 2 [T1 ndB]
     0                                                   -10.58 dBm
                                                    2.544711538 GHz   TDF
   -10        T1                    T2

   -20                                                                 3DB

   -30

   -40

   -50

   -60

   -70
   Center  2.535 GHz        6 MHz/              Span  60 MHz
```
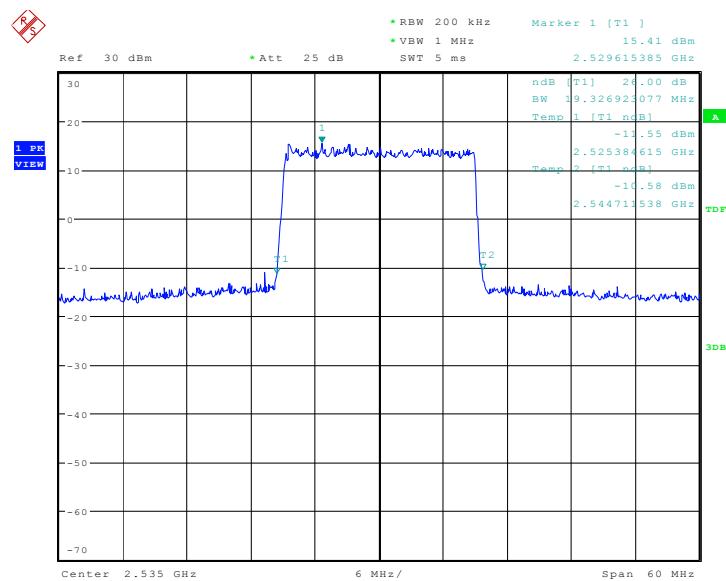
Date: 5.MAR.2020 13:20:02

LTE band 12, 1.4MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
707.5	QPSK	16QAM	64QAM
	1298.08	1306.09	1298.08

LTE band 12, 1.4MHz Bandwidth, QPSK (-26dBc BW)
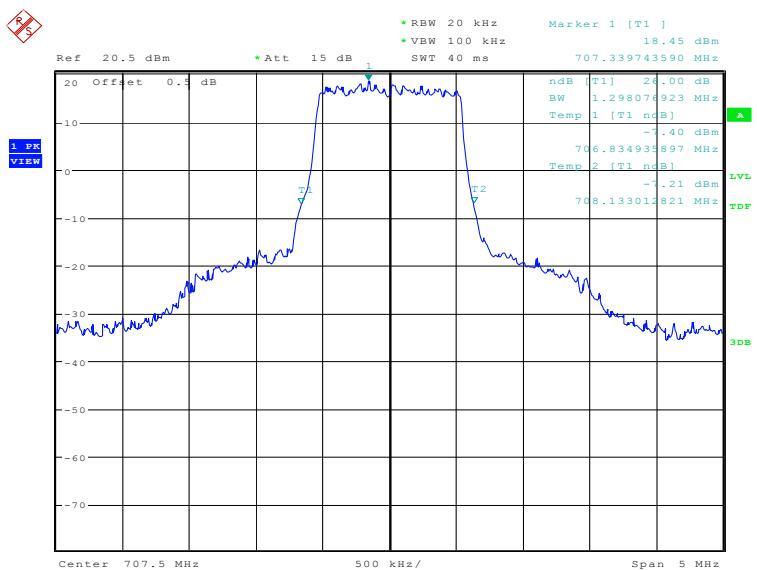
Date: 21.JAN.2020 09:39:42

LTE band 12, 1.4MHz Bandwidth, 16QAM (-26dBc BW)
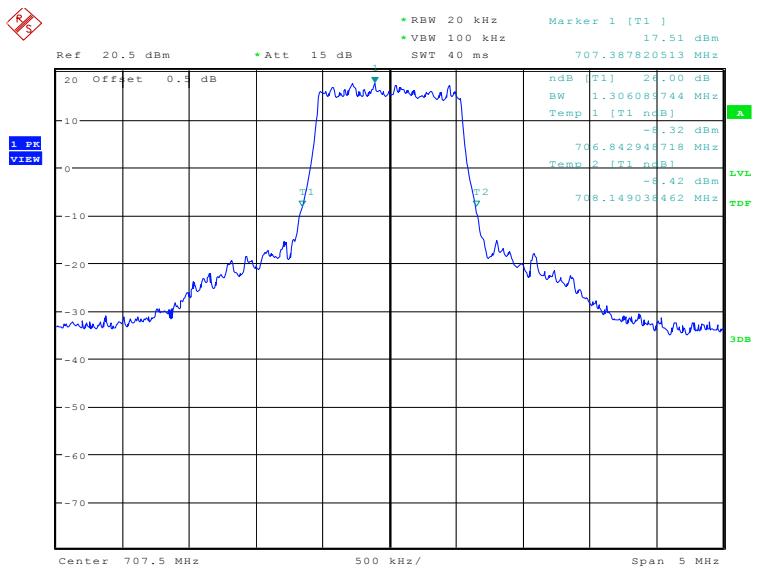
Date: 21.JAN.2020 09:41:07

LTE band 12, 1.4MHz Bandwidth, 64QAM (-26dBc BW)
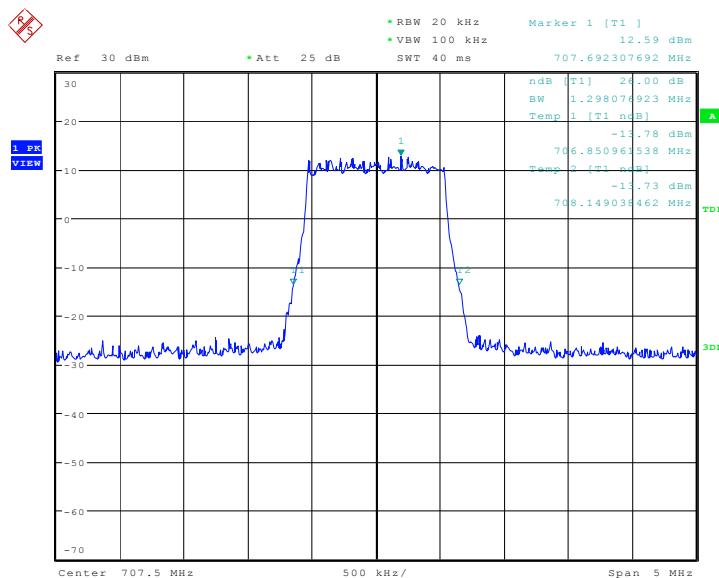
Date: 21.JAN.2020 16:03:54

LTE band 12, 3MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
707.5	QPSK	16QAM	64QAM
	2900.64	2900.64	2868.59

LTE band 12, 3MHz Bandwidth, QPSK (-26dBc BW)
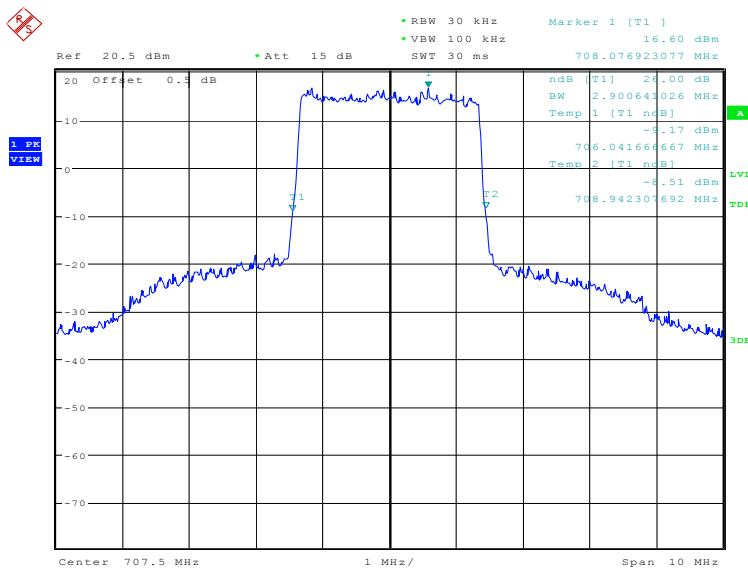
Date: 21.JAN.2020 09:43:21

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

Date: 21.JAN.2020 09:44:45
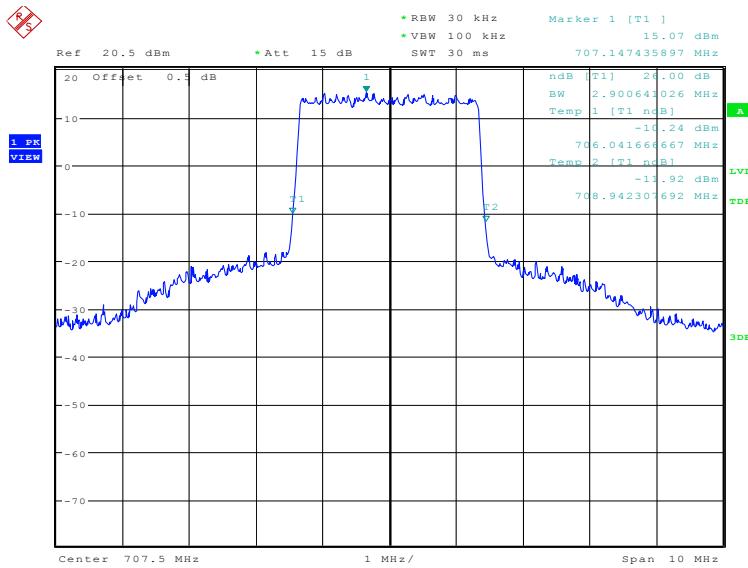
LTE band 12, 3MHz Bandwidth, 64QAM (-26dBc BW)
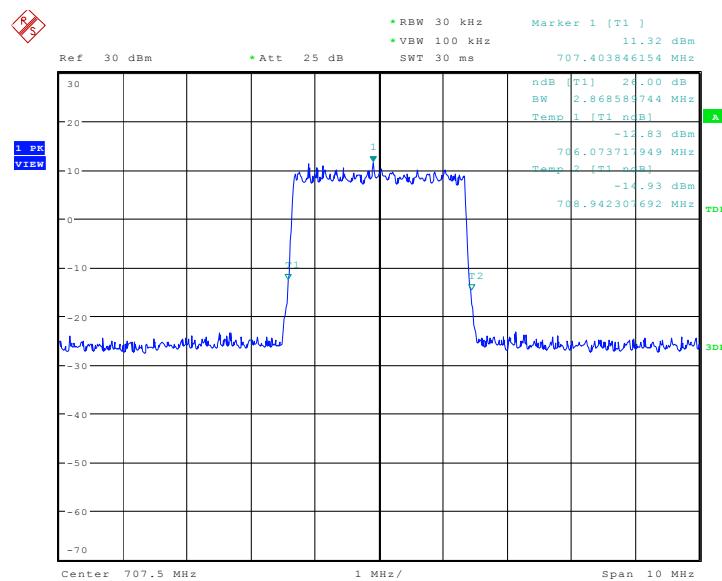
Date: 21.JAN.2020 16:04:56

LTE band 12, 5MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
707.5	QPSK	16QAM	64QAM
	5072.12	5096.15	5024.04

LTE band 12, 5MHz Bandwidth, QPSK (-26dBc BW)
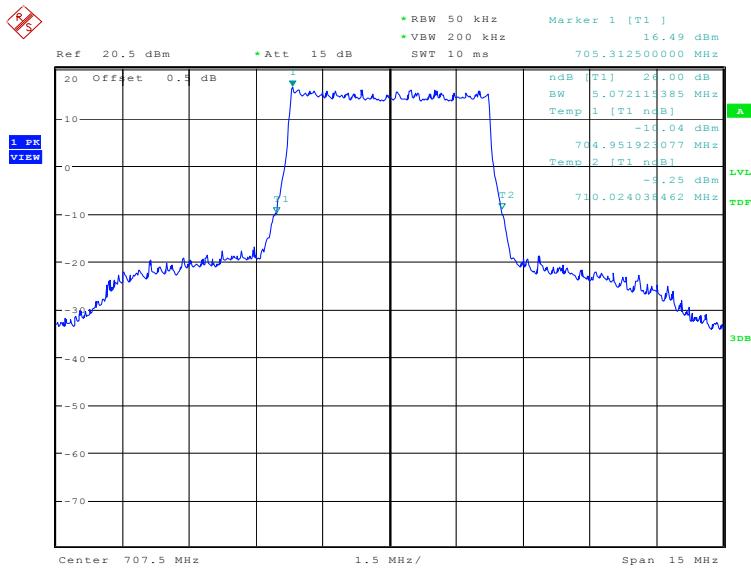
Date: 21.JAN.2020 09:46:59

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

Date: 21.JAN.2020 09:48:23
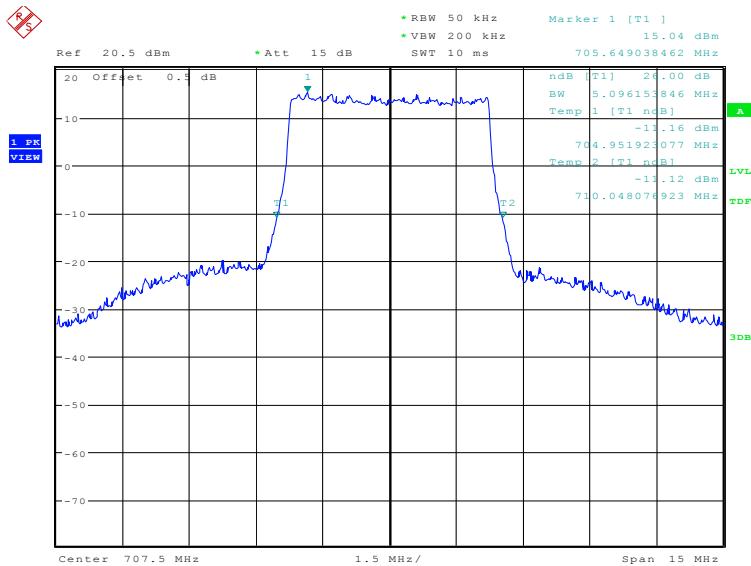
LTE band 12, 5MHz Bandwidth,64QAM (-26dBc BW)
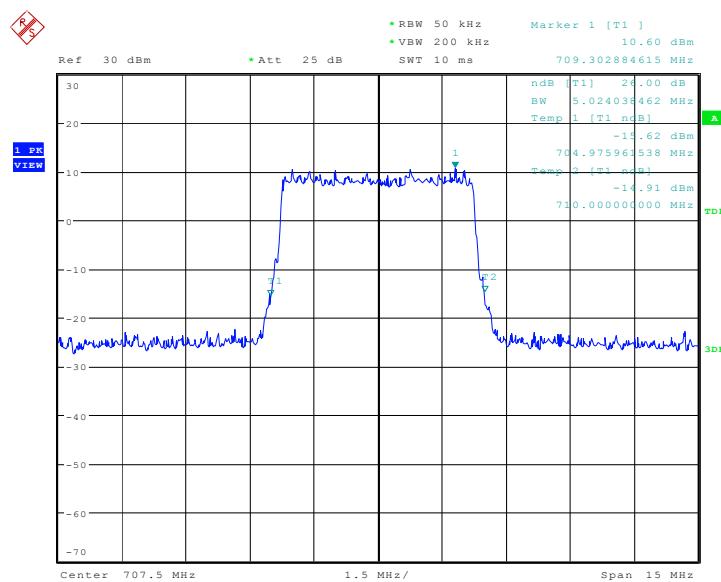
Date: 21.JAN.2020 16:05:55

LTE band 12, 10MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
707.5	QPSK	16QAM	64QAM
	10000.00	9951.92	9951.92

LTE band 12, 10MHz Bandwidth, QPSK (-26dBc BW)
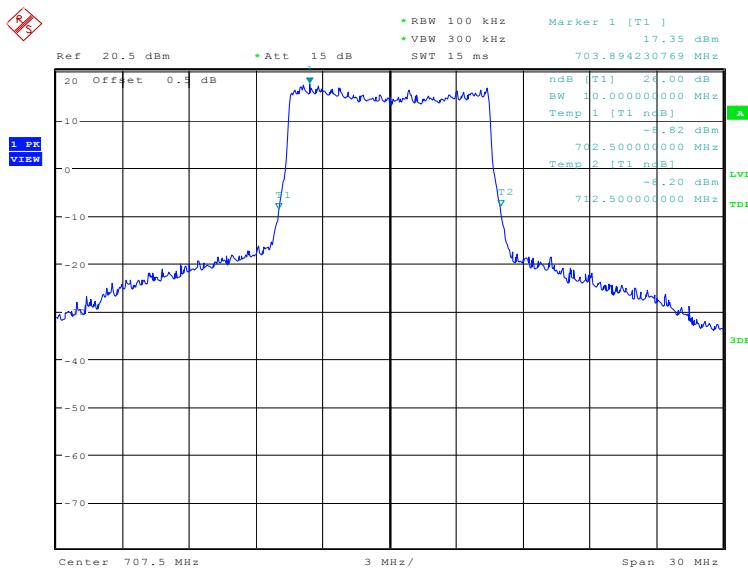
Date: 21.JAN.2020 09:50:37

LTE band 12, 10MHz Bandwidth, 16QAM (-26dBc BW)

Date: 21.JAN.2020 09:52:02
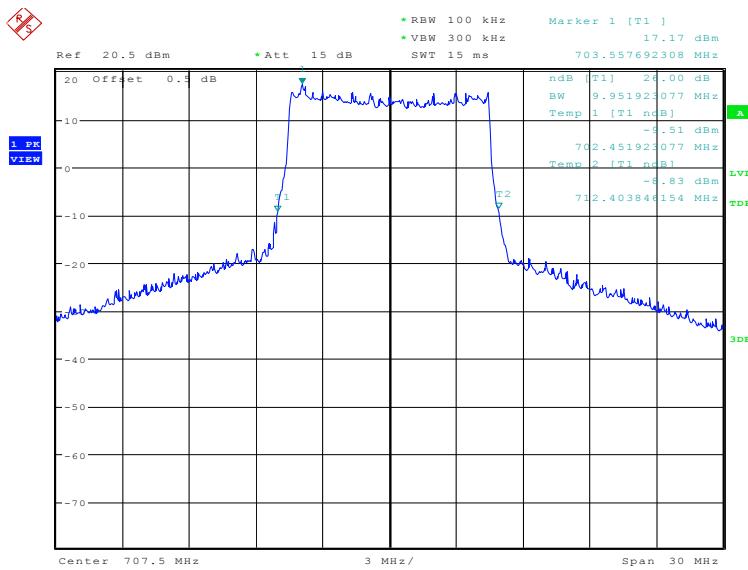
LTE band 12, 10MHz Bandwidth, 64QAM (-26dBc BW)
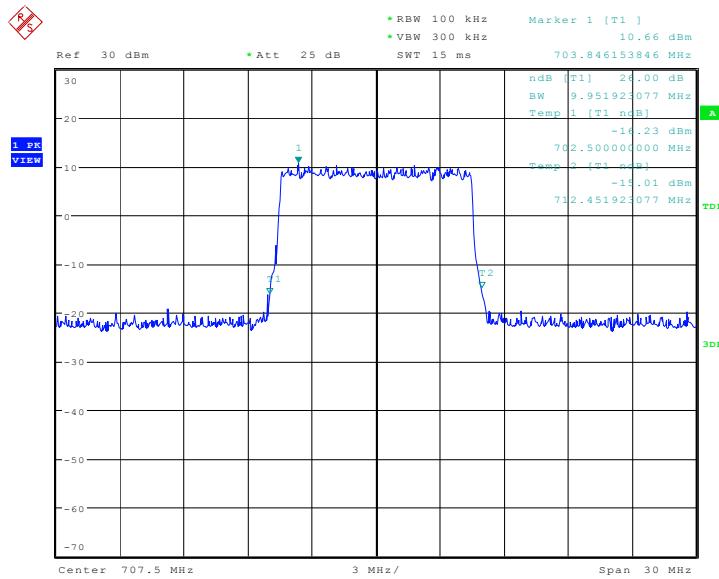
Date: 21.JAN.2020 16:06:54

LTE band 13, 5MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
	QPSK	16QAM	64QAM
782.0	4831.73	4807.69	4807.69

LTE band 13, 5MHz Bandwidth, QPSK (-26dBc BW)
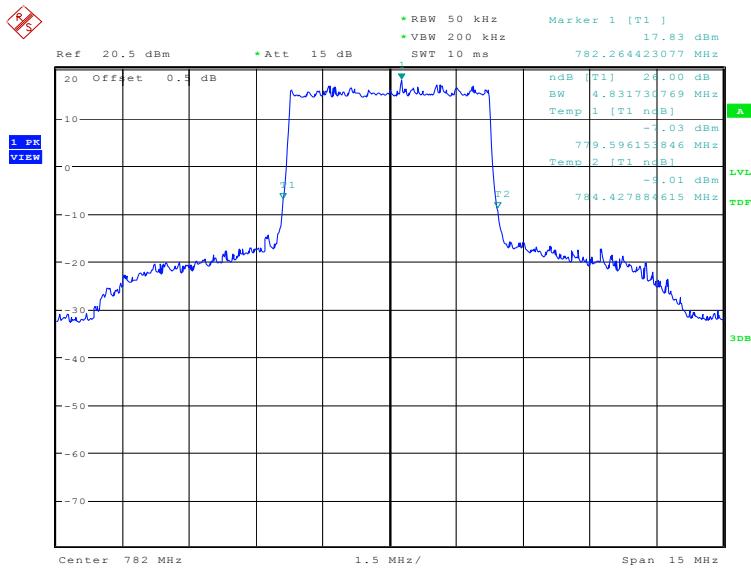
Date: 21.JAN.2020 09:54:17

LTE band 13, 5MHz Bandwidth,16QAM (-26dBc BW)

Date: 21.JAN.2020 09:55:42
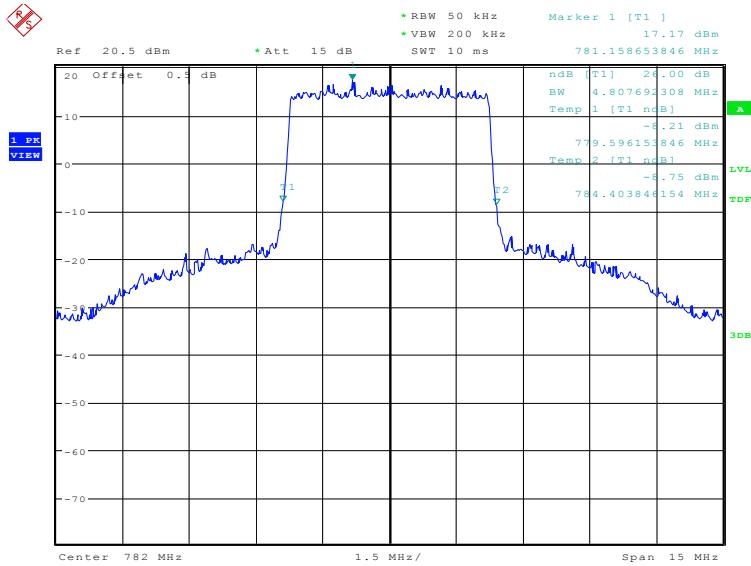
LTE band 13, 5MHz Bandwidth,64QAM (-26dBc BW)
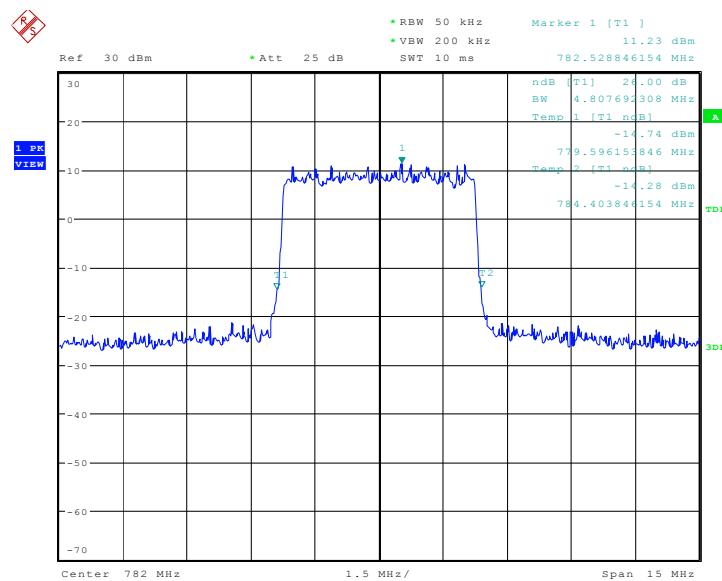
Date: 21.JAN.2020 16:01:24

LTE band 13, 10MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
782.0	QPSK	16QAM	64QAM
	9663.46	9663.46	9519.23

LTE band 13, 10MHz Bandwidth, QPSK (-26dBc BW)
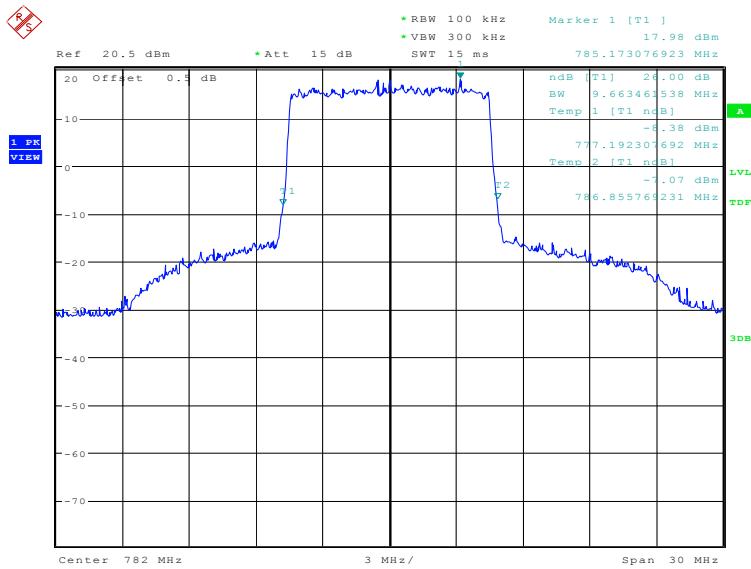
Date: 21.JAN.2020 09:57:55

LTE band 13, 10MHz Bandwidth,16QAM (-26dBc BW)

Date: 21.JAN.2020 09:59:20

LTE band 13, 10MHz Bandwidth, 64QAM (-26dBc BW)

Page166of226
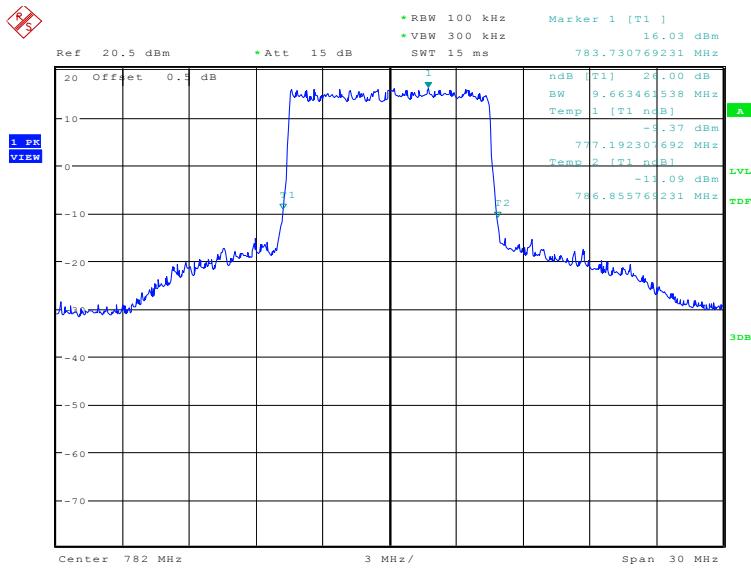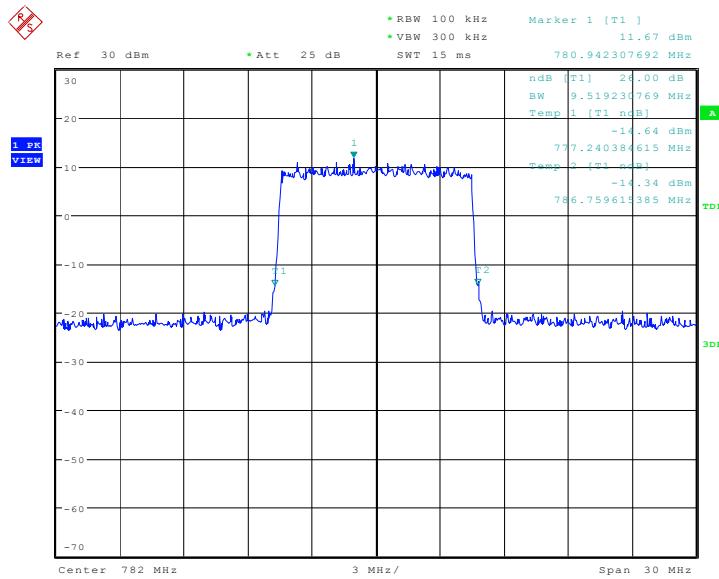
LTE band 38, 5MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
2595.0	QPSK	16QAM	64QAM
	5048.08	4831.73	4711.54

LTE band 38, 5MHz Bandwidth, QPSK (-26dBc BW)
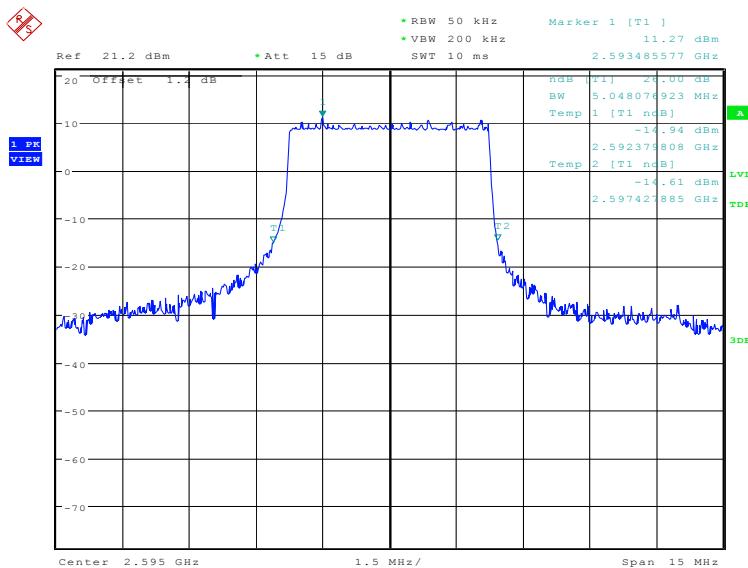
Date: 21.JAN.2020 10:01:25

LTE band 38, 5MHz Bandwidth,16QAM (-26dBc BW)
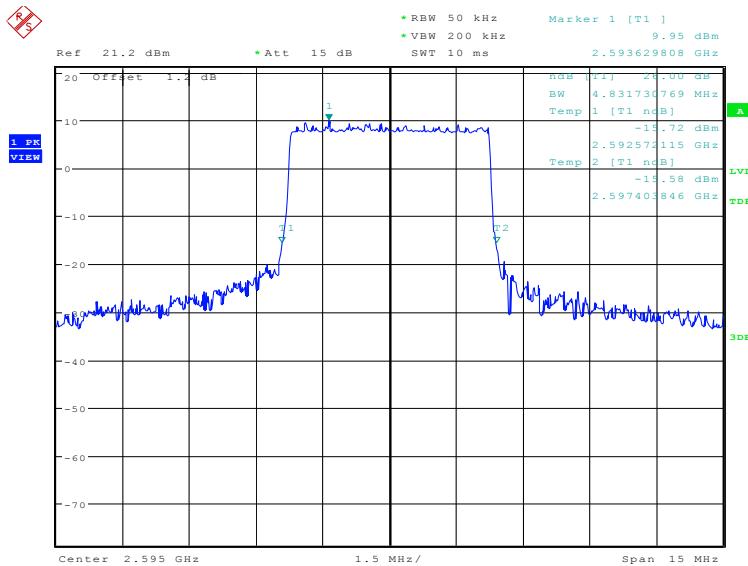
Date: 21.JAN.2020 10:02:50

LTE band 38, 5MHz Bandwidth,64QAM (-26dBc BW)
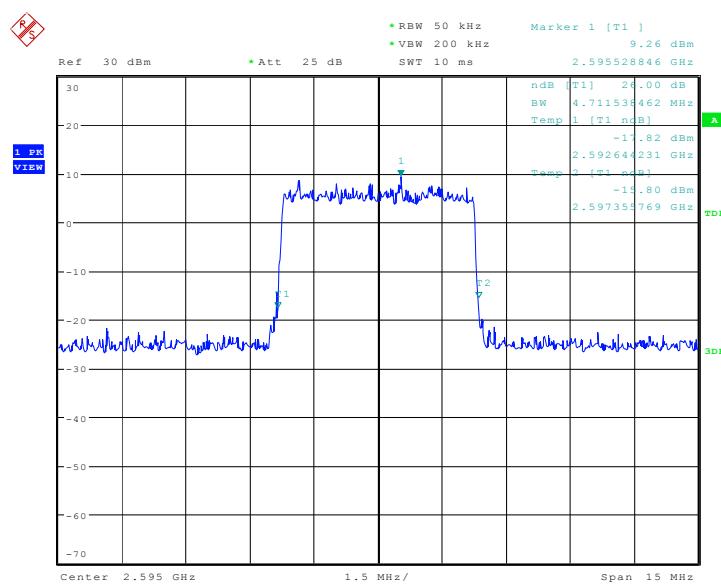
Date: 21.JAN.2020 16:15:42

LTE band 38, 10MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
2595.0	QPSK	16QAM	64QAM
	9855.77	9951.92	9519.23

LTE band 38, 10MHz Bandwidth, QPSK (-26dBc BW)
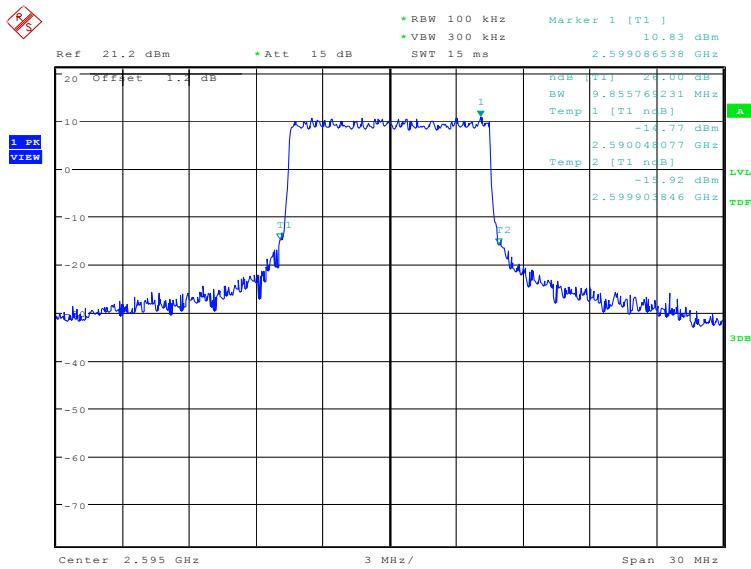
Date: 21.JAN.2020 10:05:03

LTE band 38, 10MHz Bandwidth,16QAM (-26dBc BW)

Date: 21.JAN.2020 10:06:28
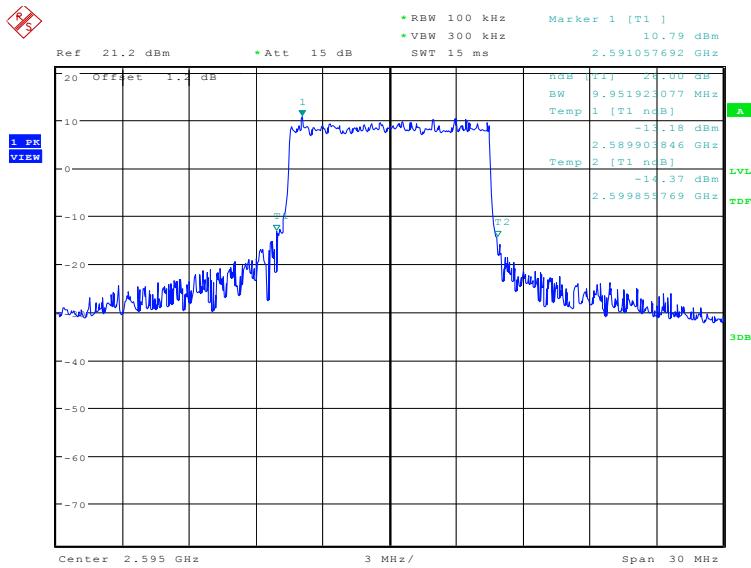
LTE band 38, 10MHz Bandwidth,64QAM (-26dBc BW)
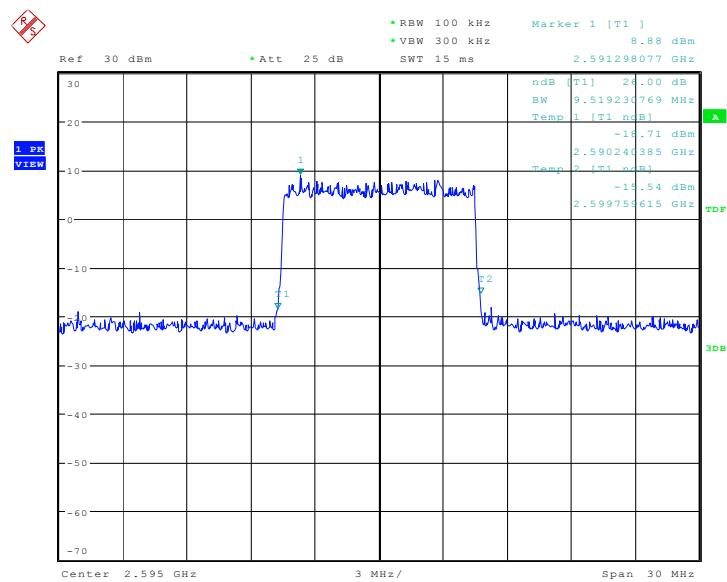
Date: 21.JAN.2020 16:16:41

LTE band 38, 15MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
2595.0	QPSK	16QAM	64QAM
	14783.65	15144.23	14639.42

LTE band 38, 15MHz Bandwidth, QPSK (-26dBc BW)
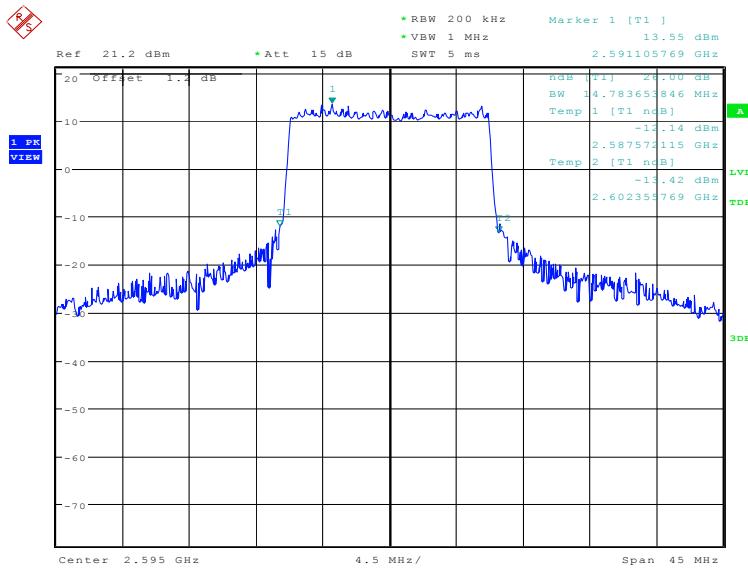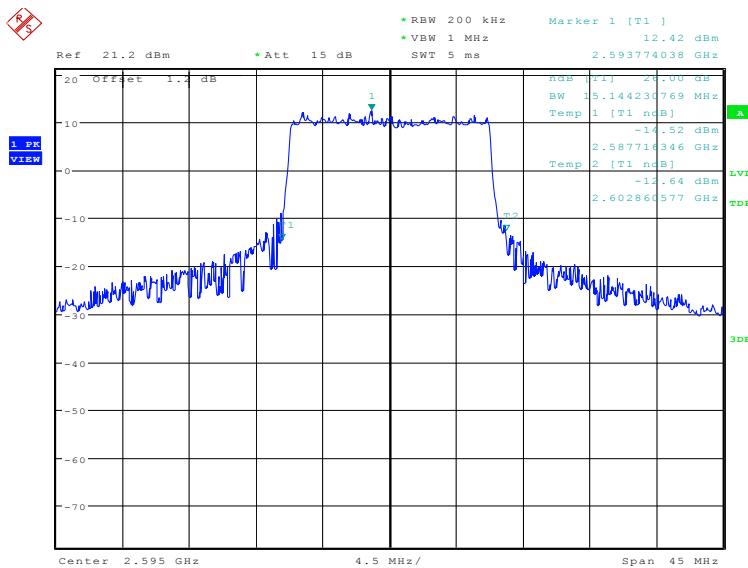
Date: 21.JAN.2020 10:08:42

LTE band 38, 15MHz Bandwidth,16QAM (-26dBc BW)

Date: 21.JAN.2020 10:10:07

LTE band 38, 15MHz Bandwidth,64QAM (-26dBc BW)
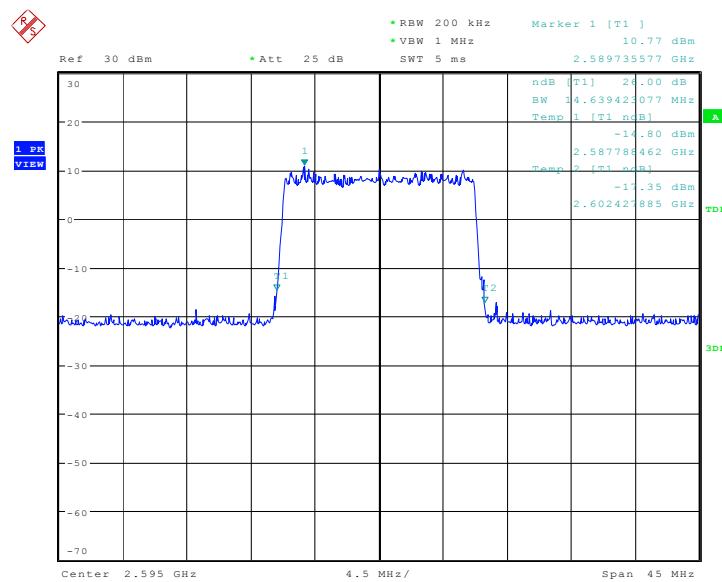
Date: 21.JAN.2020 16:18:25

LTE band 38, 20MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
2595.0	QPSK	16QAM	64QAM
	19519.23	19519.23	19230.77

LTE band 38, 20MHz Bandwidth, QPSK (-26dBc BW)
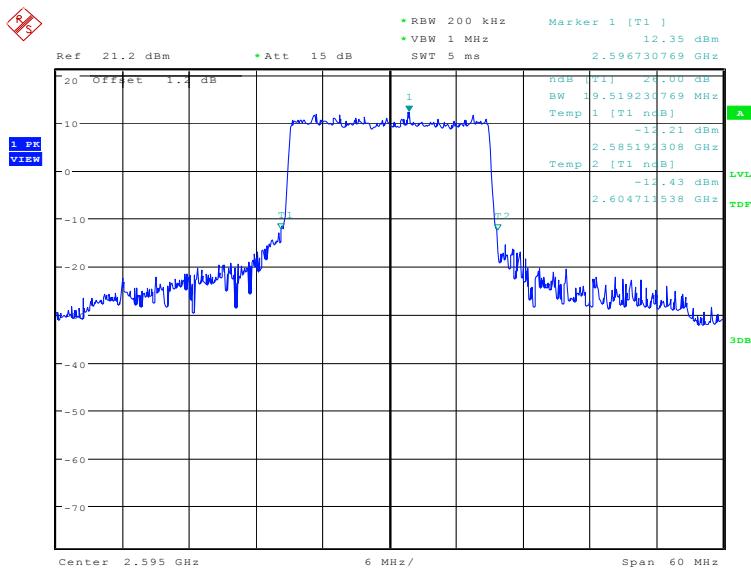
Date: 21.JAN.2020 10:11:33

LTE band 38, 20MHz Bandwidth,16QAM (-26dBc BW)

Date: 21.JAN.2020 10:12:58

LTE band 38, 20MHz Bandwidth,64QAM (-26dBc BW)


```
                                      * RBW  200 kHz      Marker 1 [T1 ]
                                      * VBW  1 MHz                    9.73 dBm
           Ref  30 dBm    * Att  25 dB   SWT 5 ms         2.586730769 GHz
       30                                       ndB  [T1]    26.00 dB
                                                BW  19.230769231 MHz
       20                                       Temp 1 [T1 ndB]          A
                                                             -16.66 dBm
       10                          1                2.585384615 GHz
                                                Temp 2 [T1 ndB]
        0                                                    -19.28 dBm
                                                    2.604615385 GHz    TDF
      -10
                                  T1              T2
      -20                                                              3DB
      -30
      -40
      -50
      -60
      -70
           Center  2.595 GHz          6 MHz/              Span  60 MHz
```
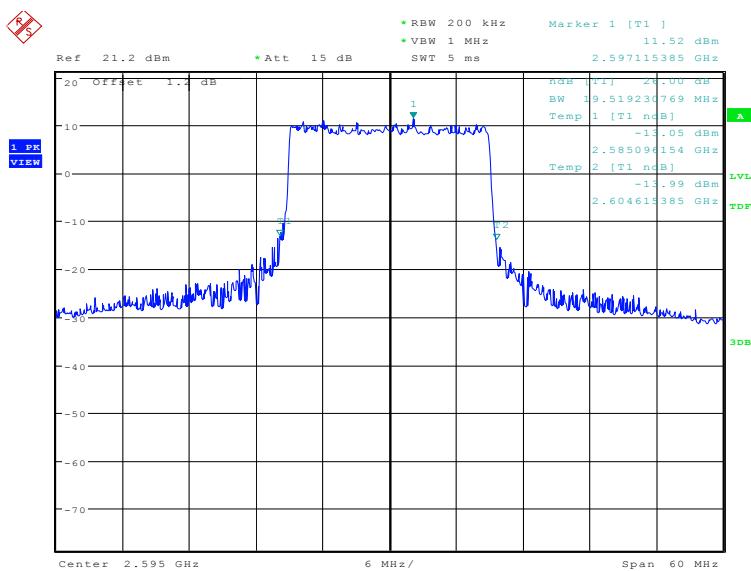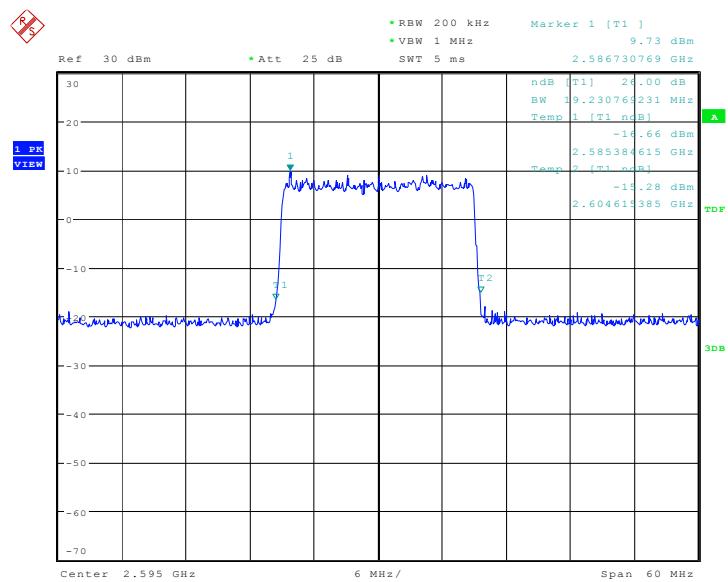
Date: 21.JAN.2020 16:23:58

LTE band 66, 1.4MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
1745.0	QPSK	16QAM	64QAM
	1290.06	1298.08	1282.05

LTE band 66, 1.4MHz Bandwidth, QPSK (-26dBc BW)
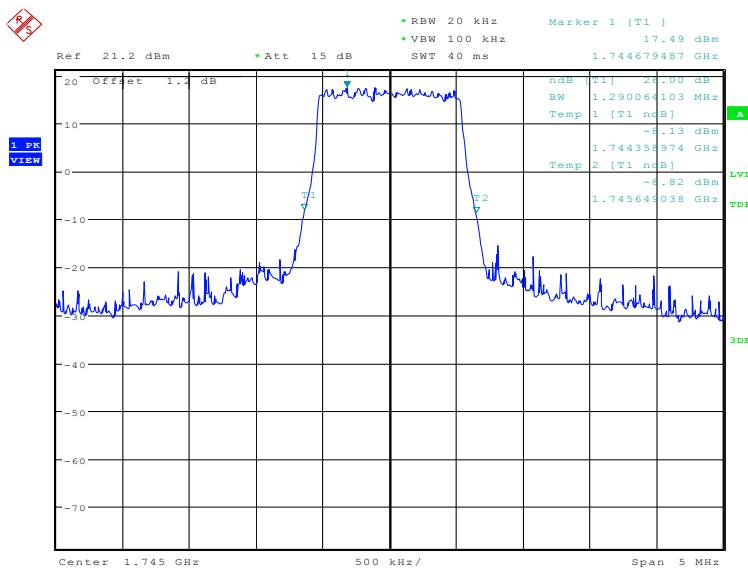
Date: 20.JAN.2020 19:15:07

LTE band 66, 1.4MHz Bandwidth, 16QAM (-26dBc BW)
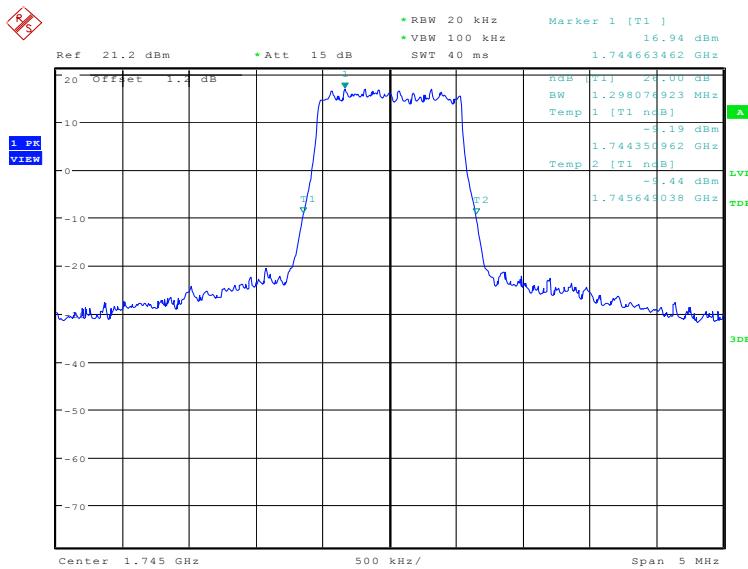
Date: 20.JAN.2020 19:16:32

LTE band 66, 1.4MHz Bandwidth, 64QAM (-26dBc BW)
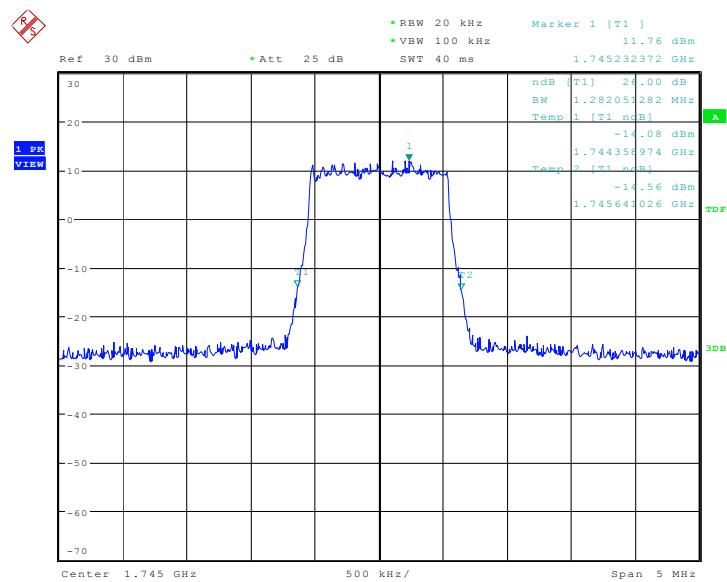
Date: 21.JAN.2020 16:34:27

LTE band 66, 3MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
	QPSK	16QAM	64QAM
1745.0	2884.62	2884.62	2868.59

LTE band 66, 3MHz Bandwidth, QPSK (-26dBc BW)
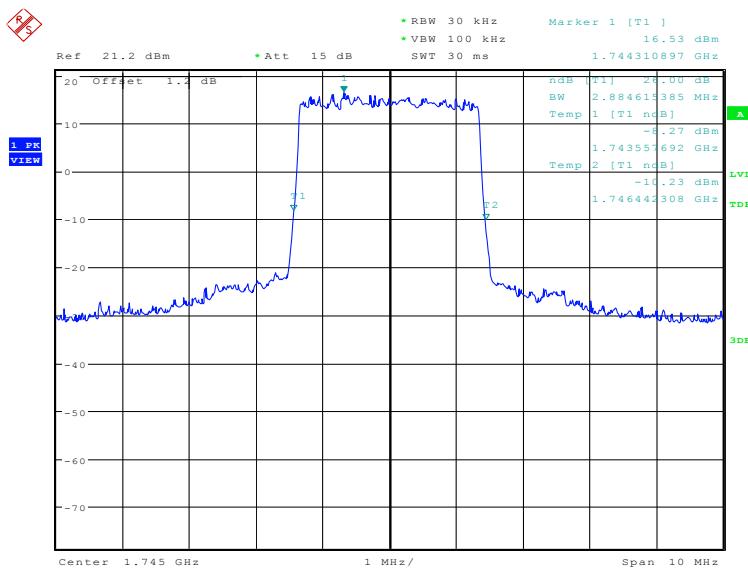
Date: 20.JAN.2020 19:18:45

LTE band 66, 3MHz Bandwidth, 16QAM (-26dBc BW)
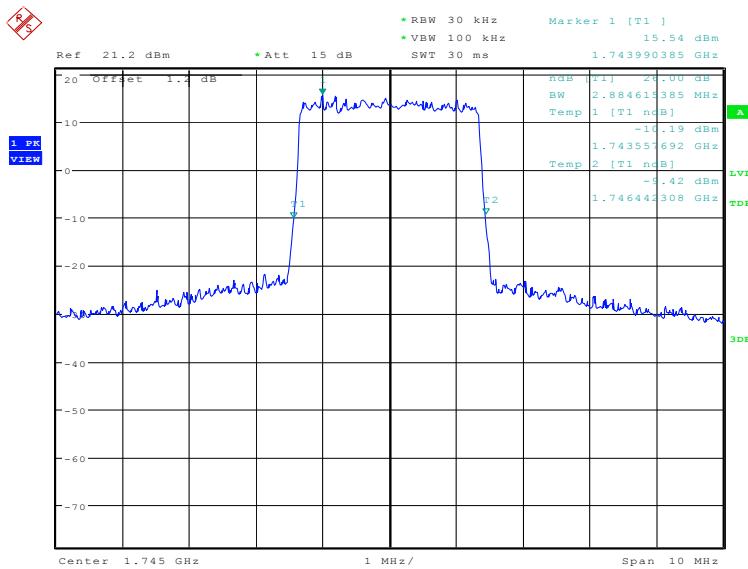
Date: 20.JAN.2020 19:20:10

LTE band 66, 3MHz Bandwidth, 64QAM (-26dBc BW)
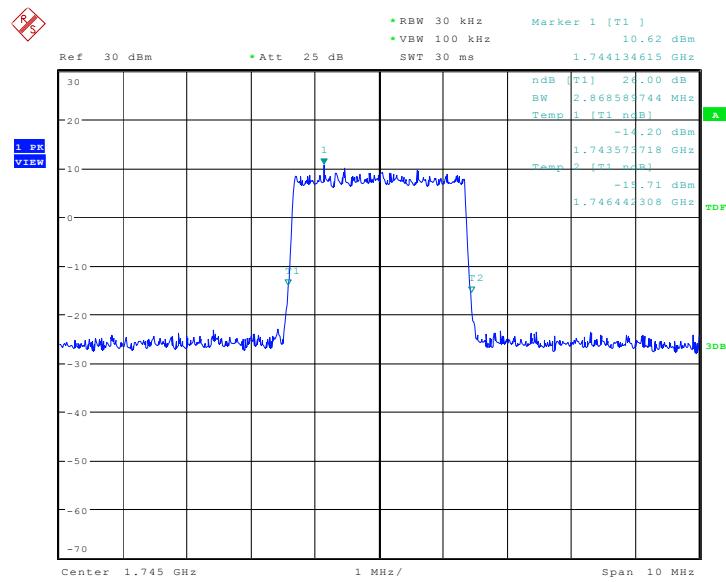
Date: 21.JAN.2020 16:35:24

LTE band 66, 5MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
1745.0	QPSK	16QAM	64QAM
	5000.00	4951.92	5000.00

LTE band 66, 5MHz Bandwidth, QPSK (-26dBc BW)
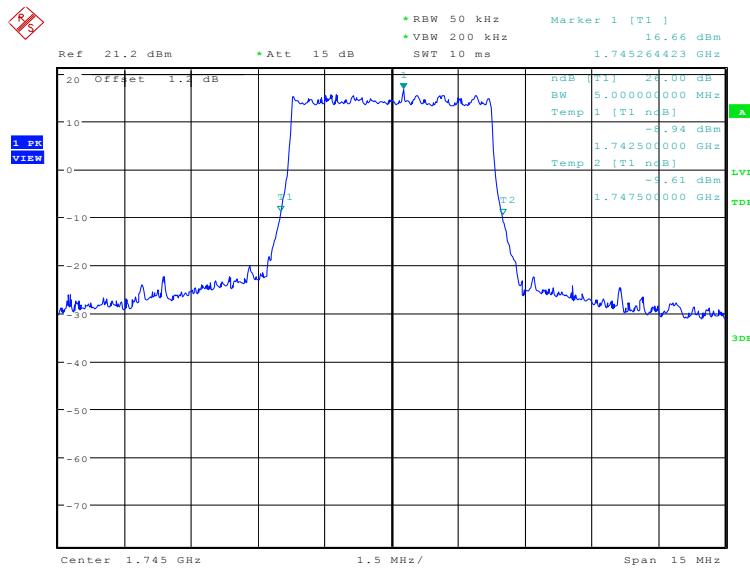
Date: 20.JAN.2020 19:22:24

LTE band 66, 5MHz Bandwidth, 16QAM (-26dBc BW)
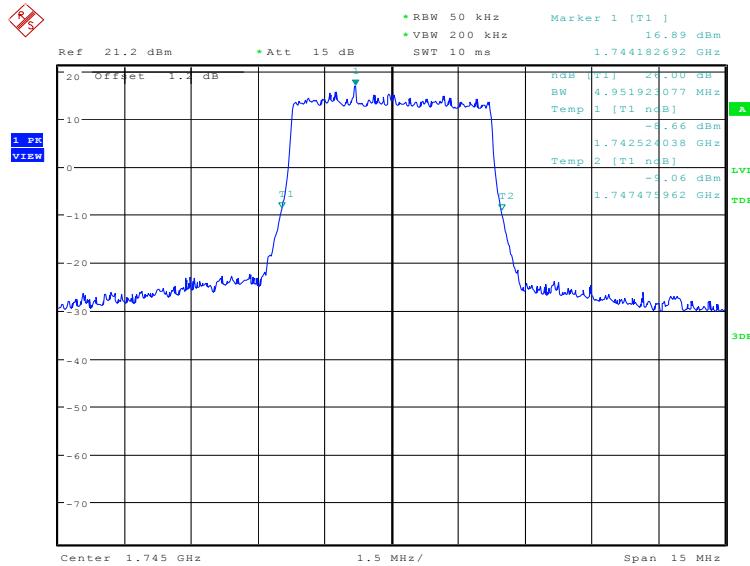
Date: 20.JAN.2020 19:23:48

LTE band 66, 5MHz Bandwidth,64QAM (-26dBc BW)
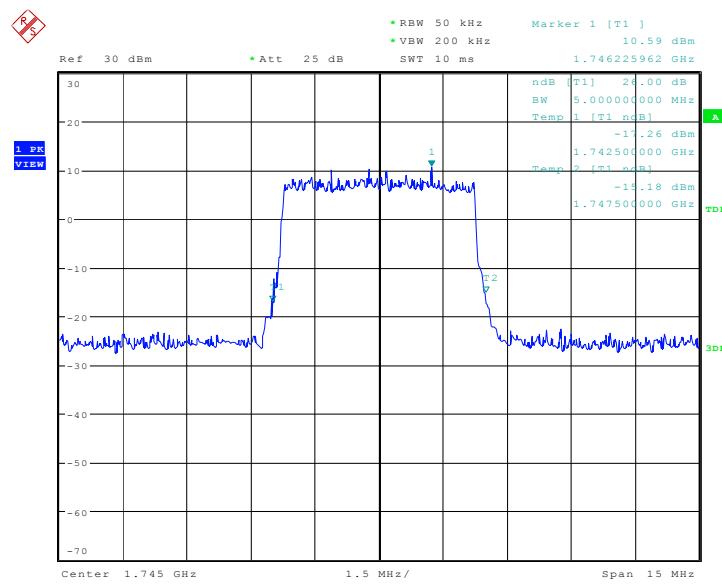
Date: 21.JAN.2020 16:37:06

LTE band 66, 10MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
	QPSK	16QAM	64QAM
1745.0	10096.15	9951.92	9855.77

LTE band 66, 10MHz Bandwidth, QPSK (-26dBc BW)
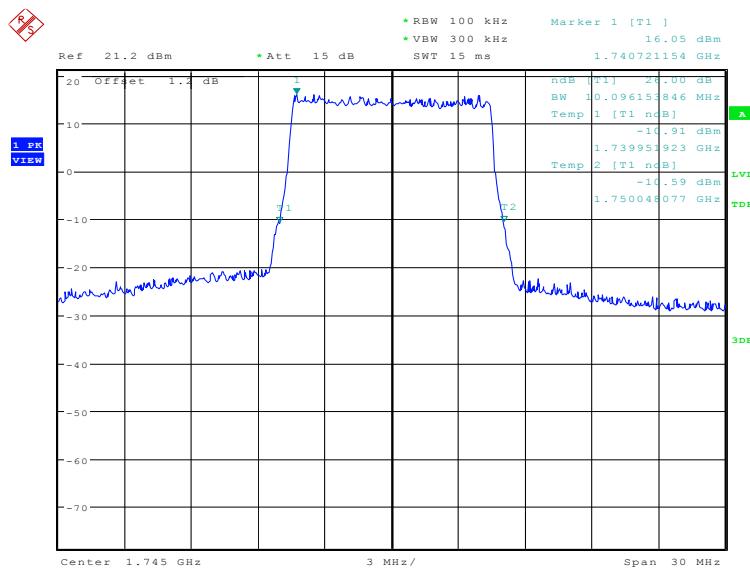
Date: 20.JAN.2020 19:26:02

LTE band 66, 10MHz Bandwidth, 16QAM (-26dBc BW)

Date: 20.JAN.2020 19:27:26
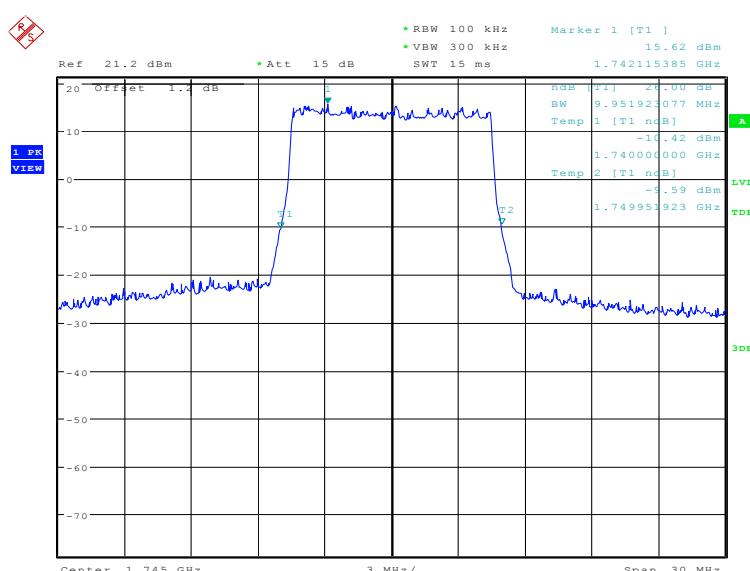
LTE band 66, 10MHz Bandwidth, 64QAM (-26dBc BW)
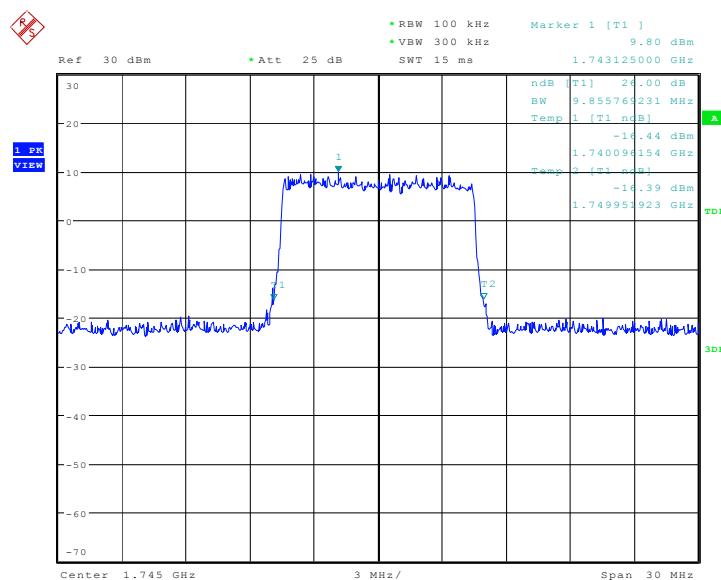
Date: 21.JAN.2020 16:38:05

LTE band 66, 15MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
	QPSK	16QAM	64QAM
1745.0	14855.77	15000.00	15000.00

LTE band 66, 15MHz Bandwidth, QPSK (-26dBc BW)
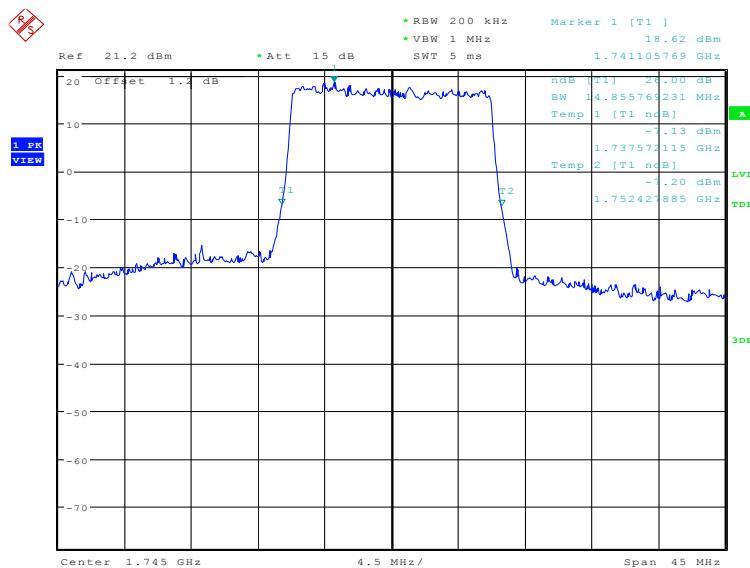
Date: 20.JAN.2020 19:29:40

LTE band 66, 15MHz Bandwidth, 16QAM (-26dBc BW)
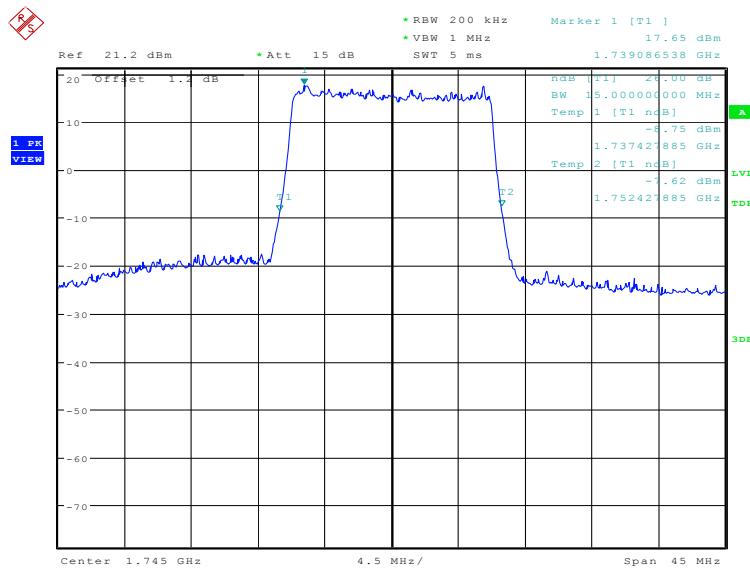
Date: 20.JAN.2020 19:31:05

LTE band 66, 15MHz Bandwidth, 64QAM (-26dBc BW)
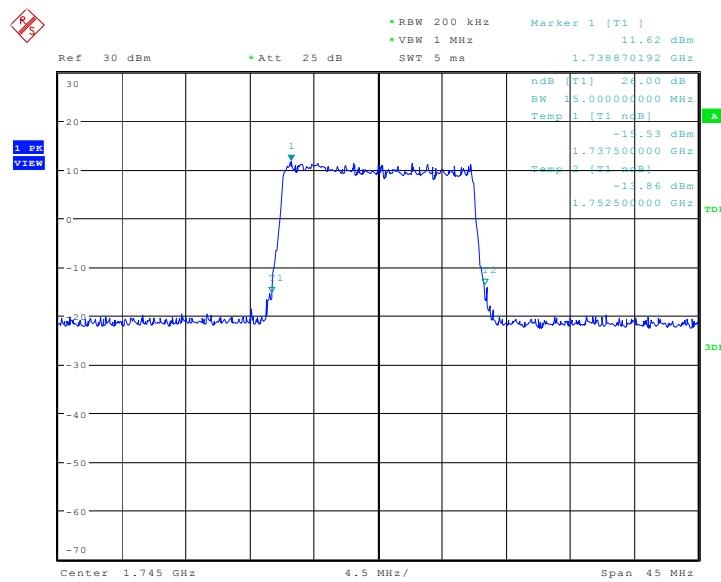
Date: 21.JAN.2020 16:57:01

LTE band 66, 20MHz (-26dBc)

Frequency (MHz)	Occupied Bandwidth (-26dBc) (kHz)		
1745.0	QPSK	16QAM	64QAM
	19615.38	19423.08	19615.38

LTE band 66, 20MHz Bandwidth, QPSK (-26dBc BW)

Date: 20.JAN.2020 19:33:18
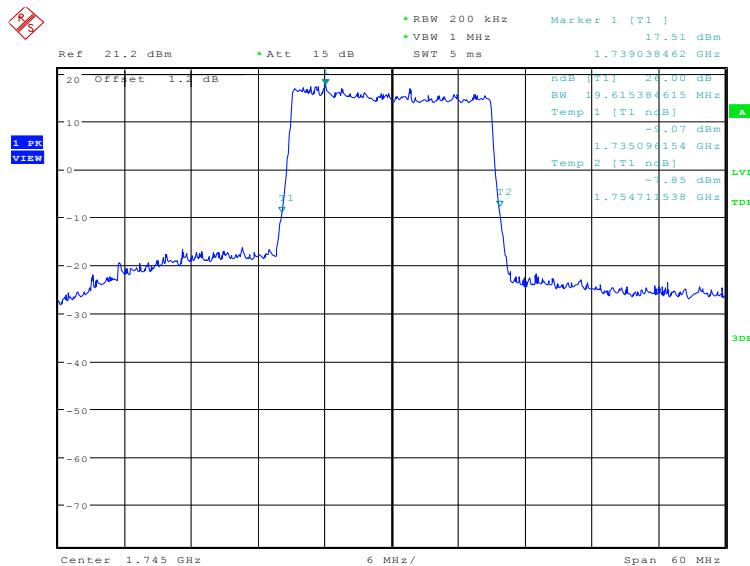
LTE band 66, 20MHz Bandwidth, 16QAM (-26dBc BW)
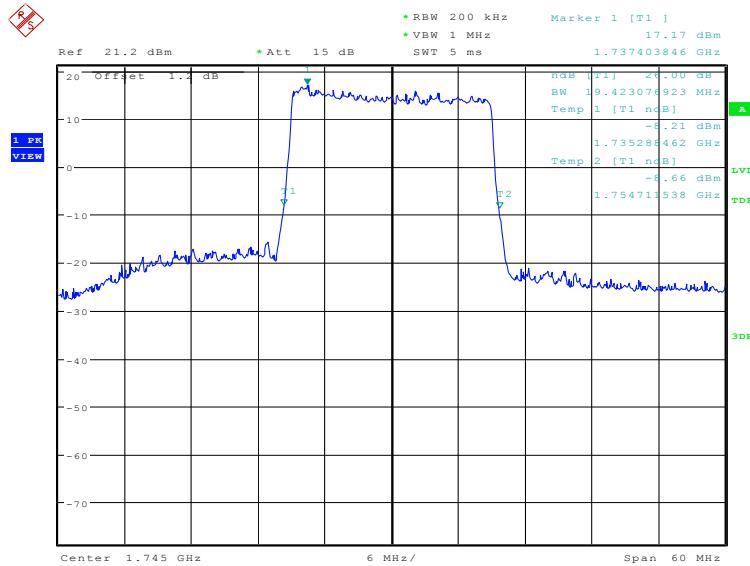
Date: 20.JAN.2020 19:34:43

LTE band 66, 20MHz Bandwidth, 64QAM (-26dBc BW)
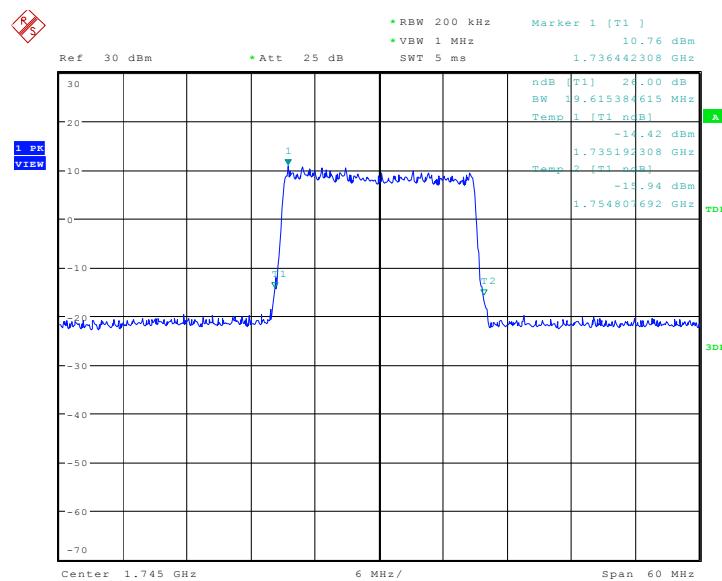
Date: 21.JAN.2020 17:00:01

A.6 BAND EDGE COMPLIANCE

A.6.1 Measurement limit

Part 22.917, Part 24.238 and Part 27.53(h) specify that the powerof any emission outside of the authorizedoperating frequency ranges mustbe attenuated below the transmittingpower (P) by a factor of at least 43 + 10log(P) dB.

According to KDB 971168, a relaxation of the reference bandwidth is often provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is often implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Part 27.53(m)(4) specifies for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part27.53(c) states for operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.

A.6.2 Measurement result
Only the worst case result is given below
## LTE band 2
OBW: 1RB-low_offset
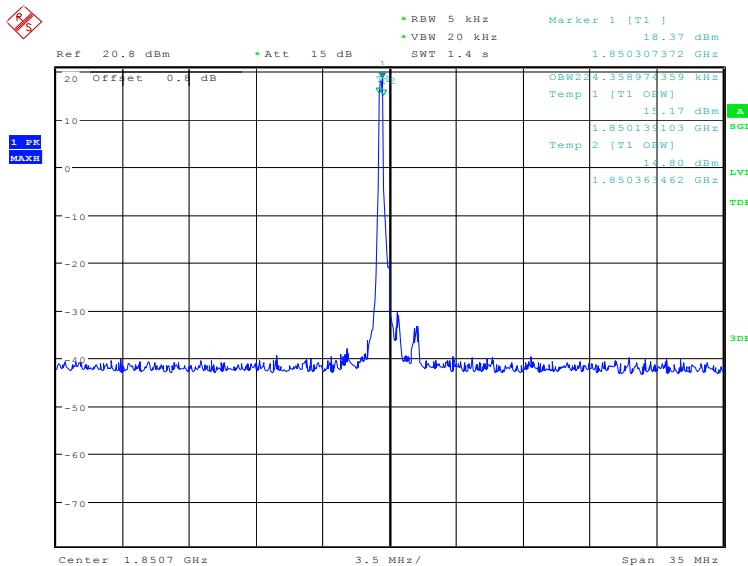
Date: 27.FEB.2020 10:15:39

## LOW BAND EDGEBLOCK-1RB-low_offset
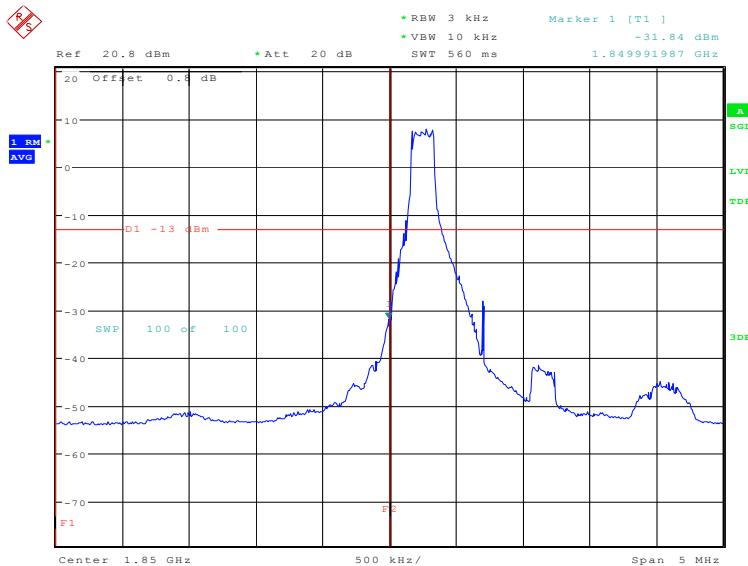
Date: 27.FEB.2020 10:17:17

OBW: 1RB-high_offset
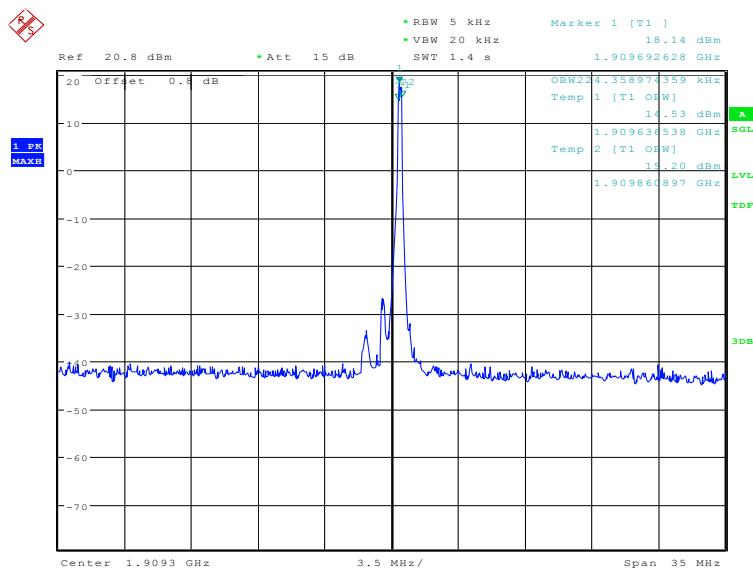
Date: 27.FEB.2020 10:22:36

HIGH BAND EDGEBLOCK-1RB-high_offset
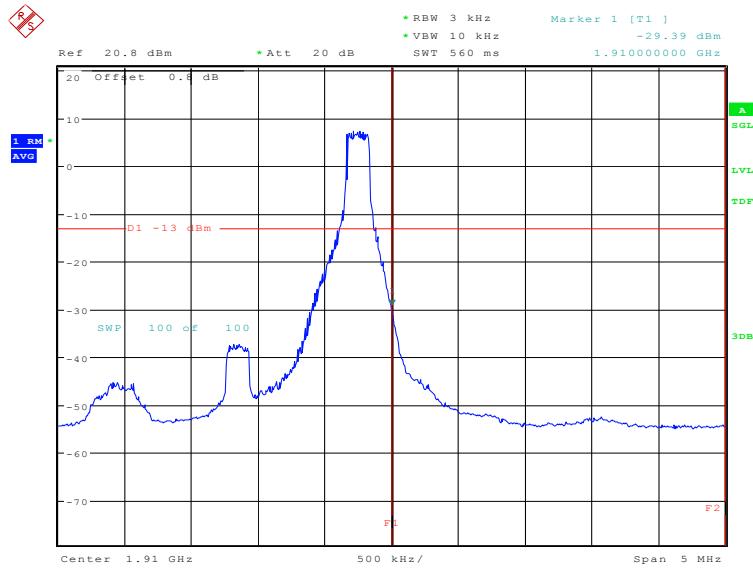
Date: 27.FEB.2020 10:24:15

LOW BAND EDGEBLOCK-20MHz-100%RB

```
                                    *RBW 200 kHz      Marker 1 [T1 ]
                                    *VBW 1 MHz              -34.28 dBm
Ref  20.8 dBm        *Att  20 dB    SWT 2.5 ms       1.849935897 GHz
20  Offset  0.8  dB                                              A
                                                                 SGL
 10
1 RM                                                             LVL
AVG                                                              TDF
-10     D1 -13 dBm
-20
-30
        SWP   100 of   100                                       3DB
-40
-50
-60
-70
F1                      F2
Center  1.85 GHz         2 MHz/              Span  20 MHz
```
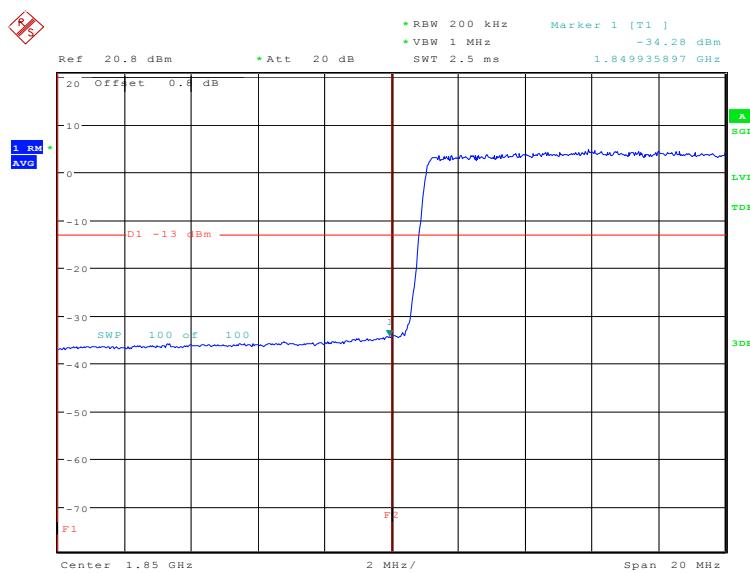
Date: 27.FEB.2020 10:20:13

HIGH BAND EDGEBLOCK-20MHz-100%RB

```
                                    *RBW 200 kHz      Marker 1 [T1 ]
                                    *VBW 1 MHz              -33.71 dBm
Ref  20.8 dBm        *Att  20 dB    SWT 2.5 ms       1.910096154 GHz
20  Offset  0.8  dB                                              A
                                                                 SGL
 10
1 RM                                                             LVL
AVG                                                              TDF
-10     D1 -13 dBm
-20
-30
        SWP   100 of   100                                       3DB
-40
-50
-60
-70
                        F1                                      F2
Center  1.91 GHz         2 MHz/              Span  20 MHz
```
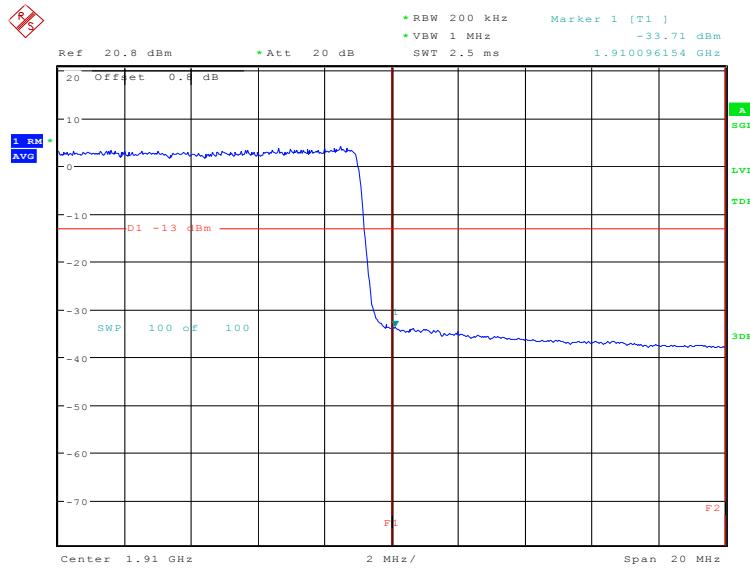
Date: 27.FEB.2020 10:31:45

LTE band 5
OBW: 1RB-low_offset
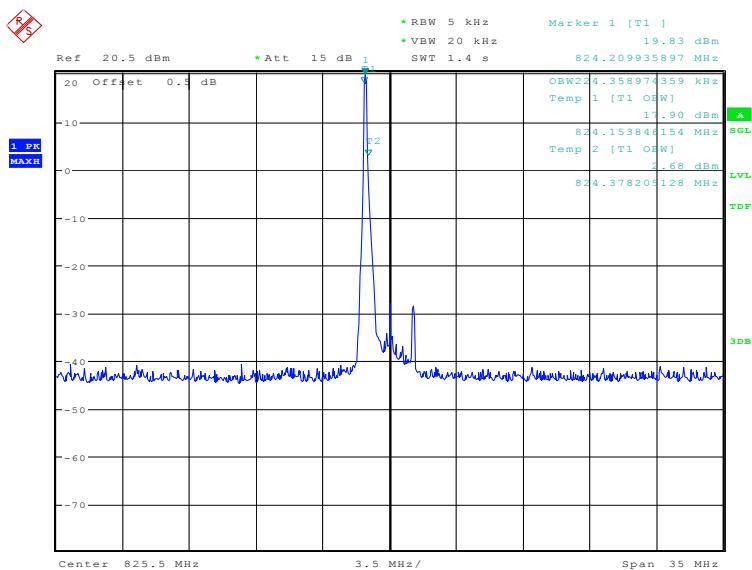
Date: 27.FEB.2020 11:03:00

LOW BAND EDGEBLOCK-1RB-low_offset
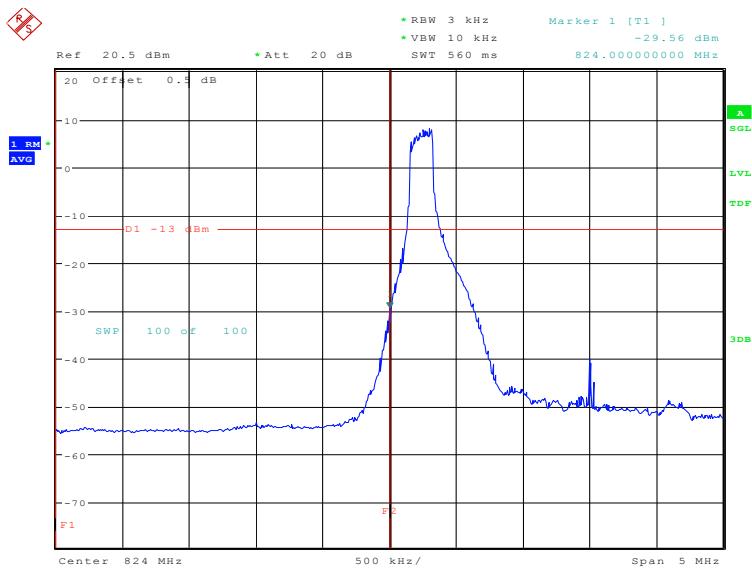
Date: 27.FEB.2020 11:04:39

OBW: 1RB-high_offset
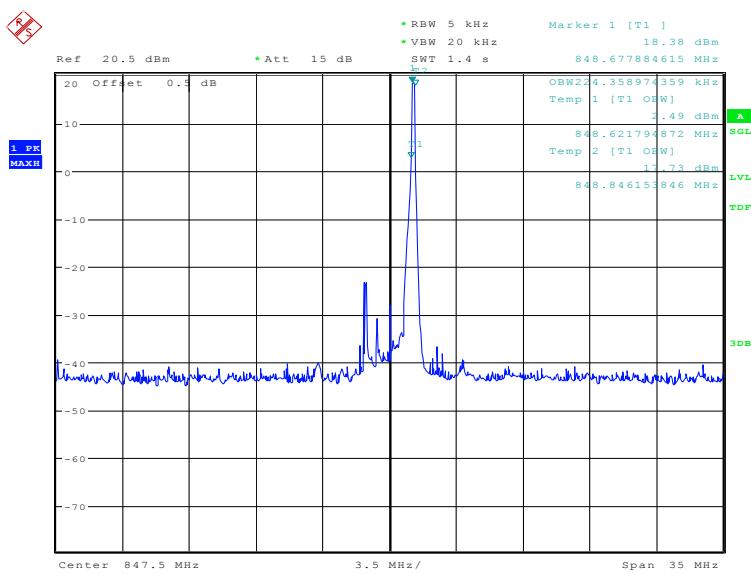
Date: 27.FEB.2020 11:08:33

HIGH BAND EDGEBLOCK-1RB-high_offset
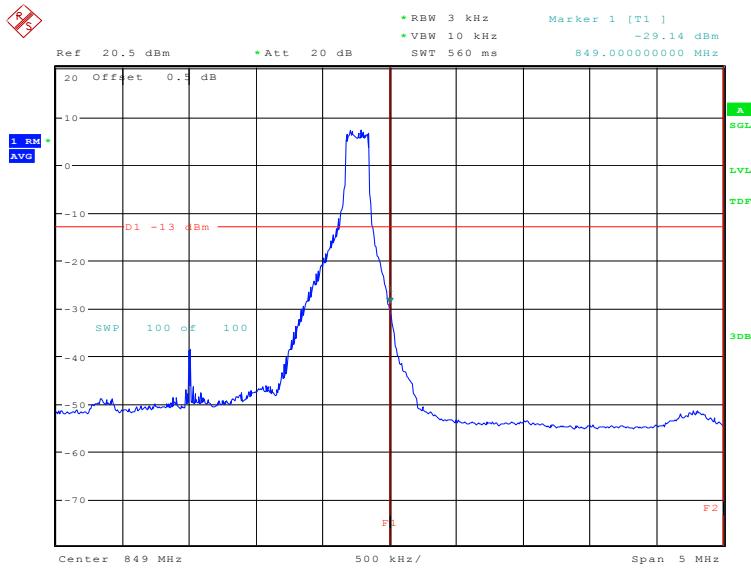
Date: 27.FEB.2020 11:10:11

LOW BAND EDGEBLOCK-10MHz-100%RB
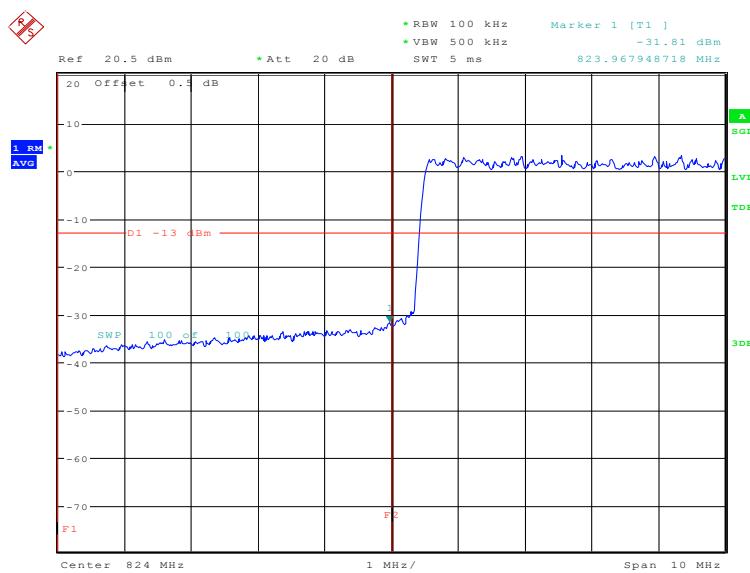
Date: 27.FEB.2020 11:06:34

HIGH BAND EDGEBLOCK-10MHz-100%RB
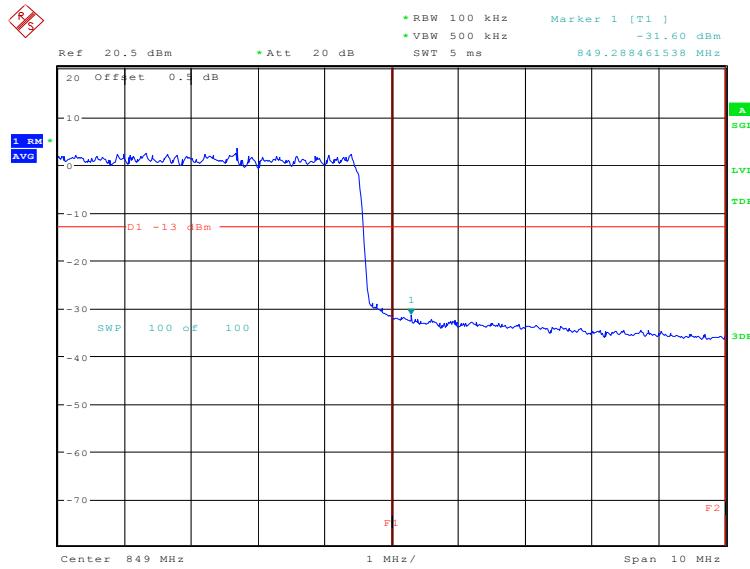
Date: 27.FEB.2020 11:12:06

LTE band 7

OBW: 1RB-low_offset
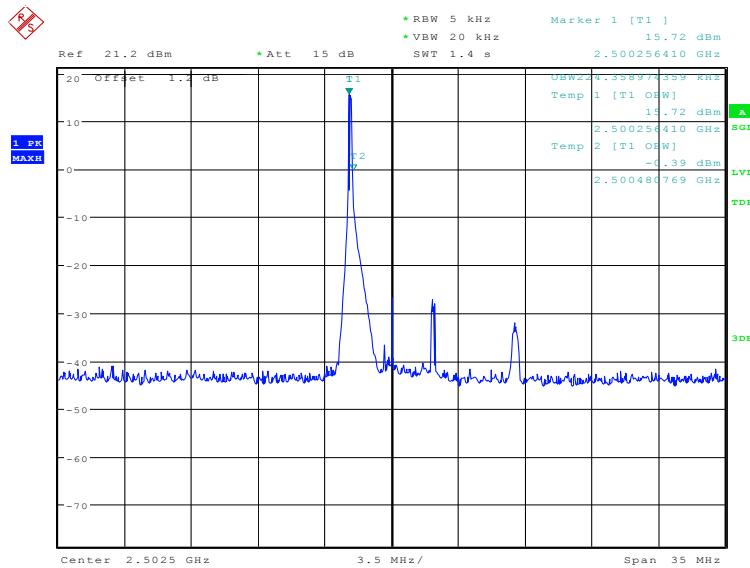
Date: 3.MAR.2020 08:43:50

LOW BAND EDGEBLOCK-1RB-low_offset

Date: 3.MAR.2020 08:45:36

Ref -3.8 dBm   Att 20 dB   SWT 2.5 ms   2.499000000 GHz1

★ RBW 1 MHz   Marker 1 [T1]
★ VBW 10 MHz   5.78 dBm

Offset 1.2 dB

LIMIT CHECK   FAIL
LINE TEST   FAIL

1 RM
VIEW

TEST1

SWP   100 of   100

Start 2.4895 GHz   950 kHz/   Stop 2.499 GHz

Date: 3.MAR.2020 08:47:19

Ref -3.8 dBm   Att 5 dB   SWT 2 s

★ RBW 1 kHz
★ VBW 10 kHz

Offset 1.2 dB

1 RM
MAXH

Center 2.499 GHz   200 kHz/   Span 2 MHz

Tx Channel
Bandwidth   1 MHz   Power   -30.97 dBm
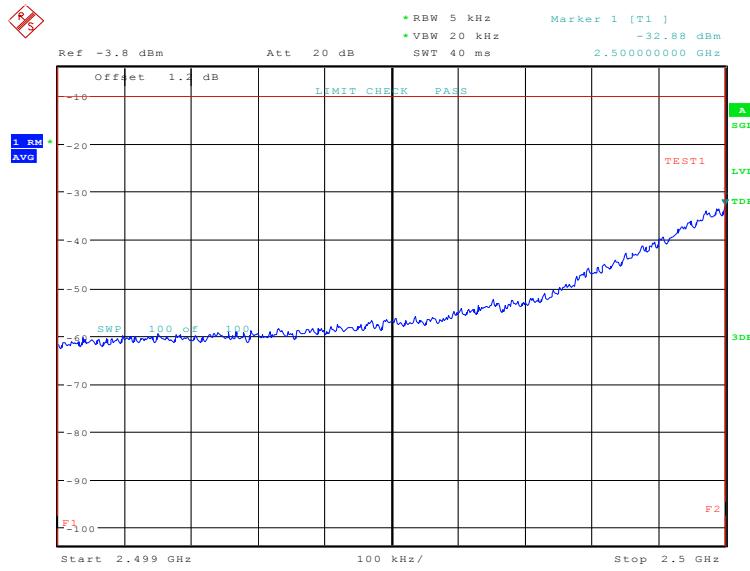
Date: 3.MAR.2020 08:47:31
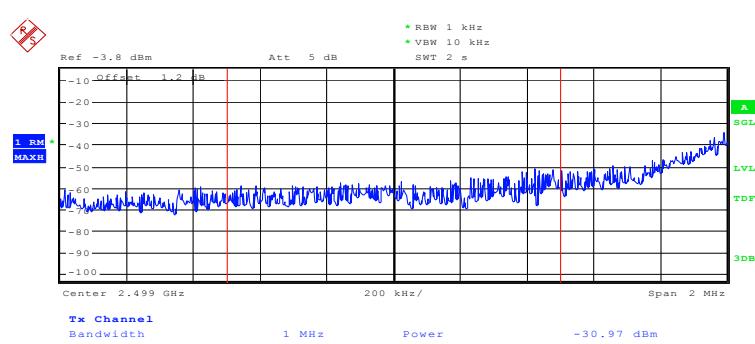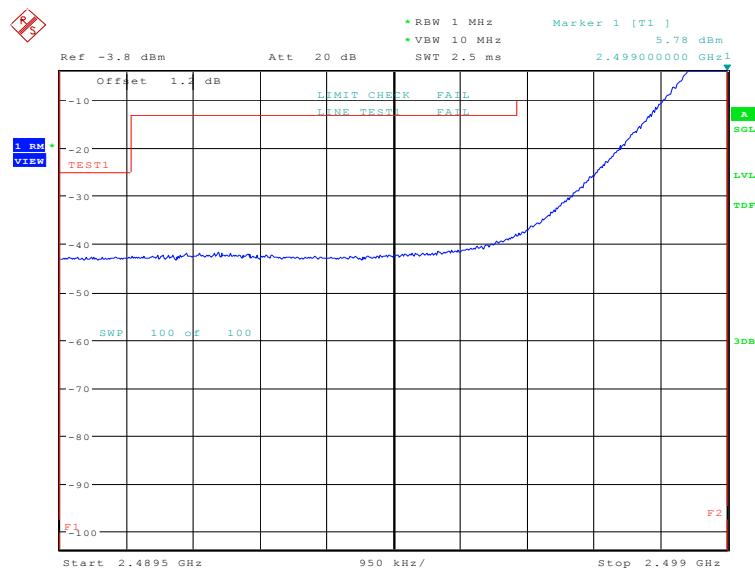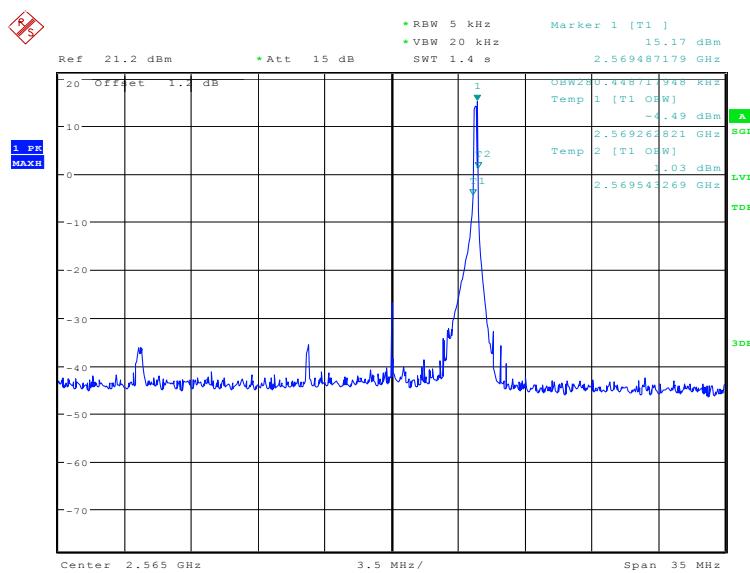
OBW: 1RB-high_offset

Date: 3.MAR.2020 08:53:21

HIGH BAND EDGEBLOCK-1RB-high_offset

Date: 3.MAR.2020 08:55:07

Ref -3.8 dBm   Att 20 dB   SWT 2.5 ms   2.575067308 GHz

* RBW 1 MHz   Marker 2 [T1]
* VBW 10 MHz   -41.74 dBm

Offset 1.2 dB   Marker 1 [T1]
LIMIT CHECK   FAIL   90 dBm
LINE TEST1   FAIL   2.571000000 GHz

TEST1

SWP 100 of 100

Start 2.571 GHz   900 kHz/   Stop 2.58 GHz

Date: 3.MAR.2020 08:56:52

Ref -3.8 dBm   Att 5 dB   SWT 2 s

* RBW 1 kHz
* VBW 10 kHz

Offset 1.2 dB

Center 2.571 GHz   200 kHz/   Span 2 MHz

Tx Channel
Bandwidth   1 MHz   Power   -36.57 dBm
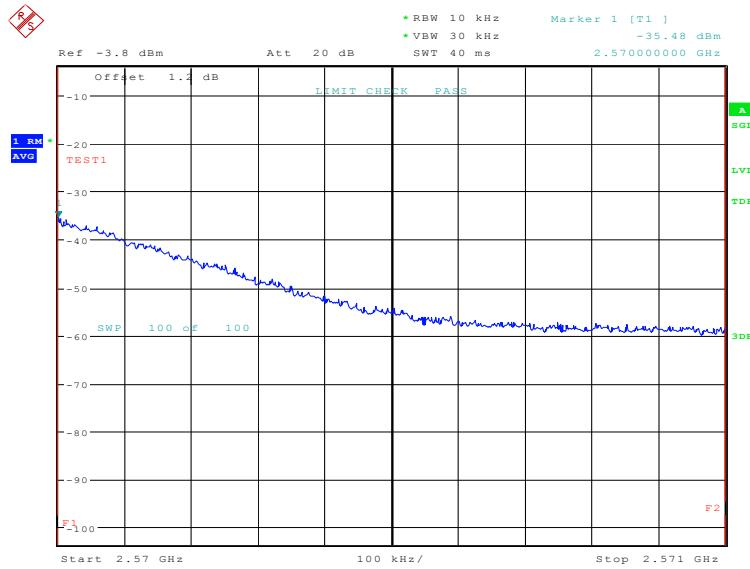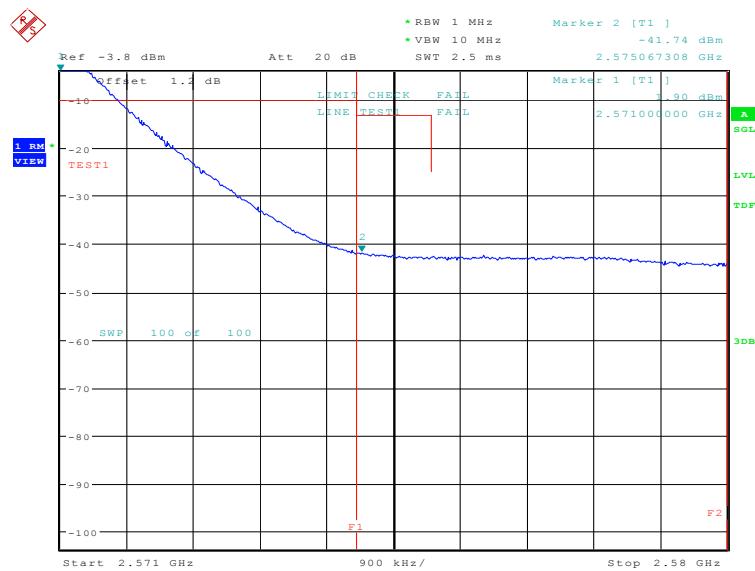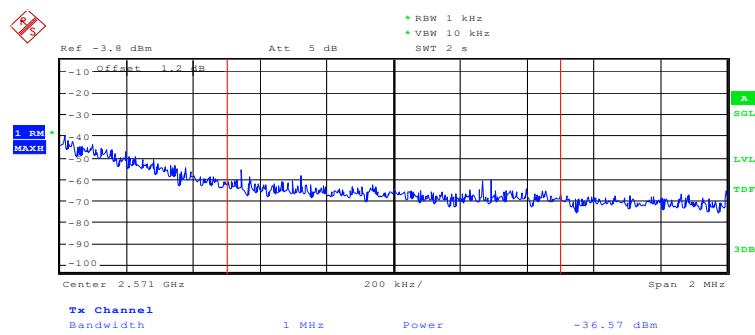
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LOW BAND EDGEBLOCK-20MHz-100%RB
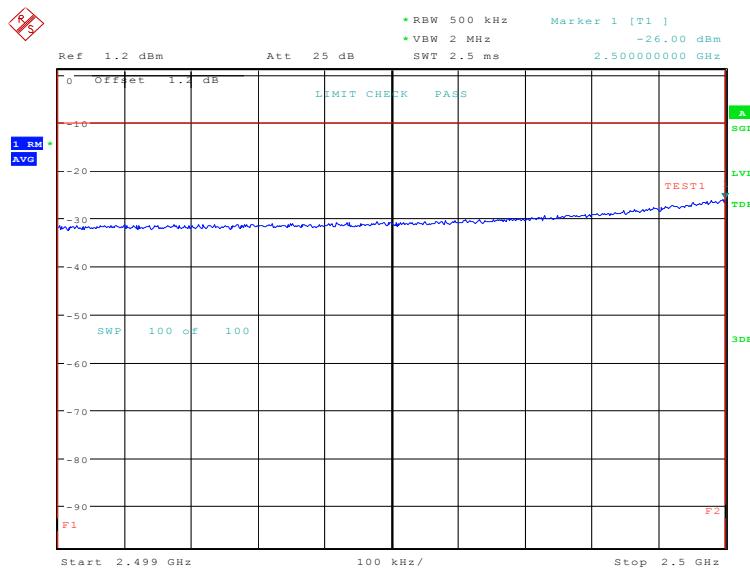
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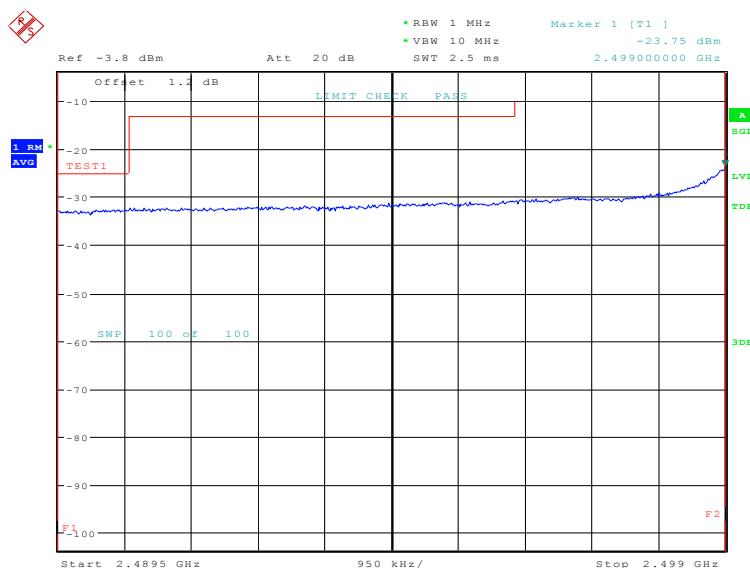
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HIGH BAND EDGEBLOCK-20MHz-100%RB
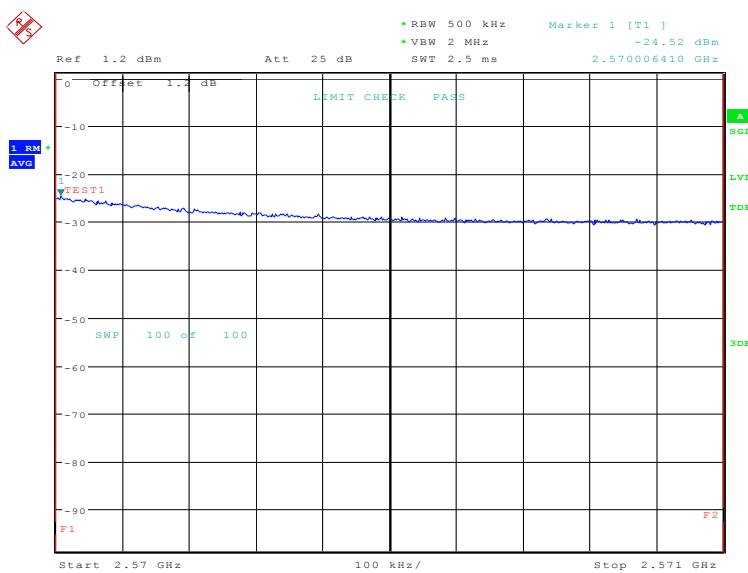
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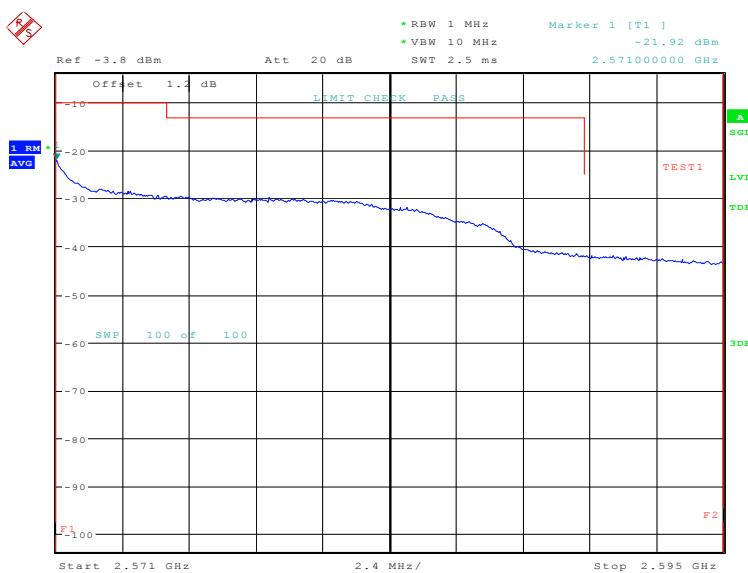
Date: 3.MAR.2020 09:00:53

LTE band 12
OBW: 1RB-low_offset
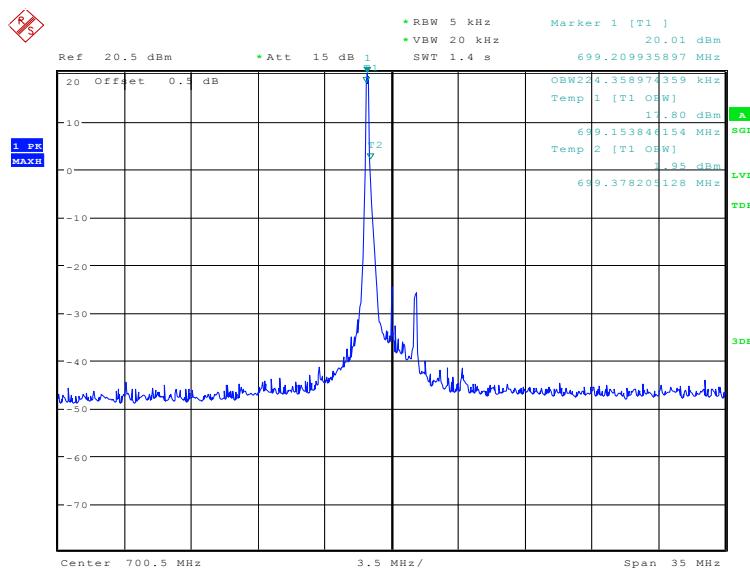
Date: 27.FEB.2020 11:14:06

**LOW BAND EDGEBLOCK-1RB-low_offset**
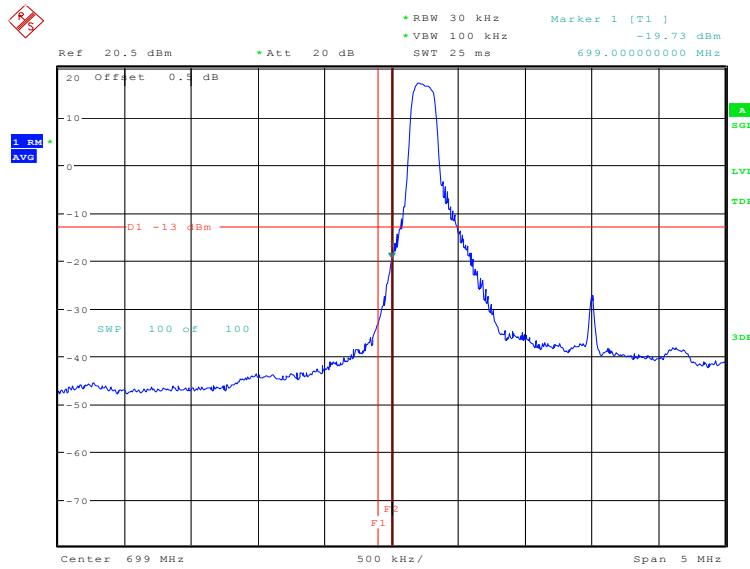
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OBW: 1RB-high_offset
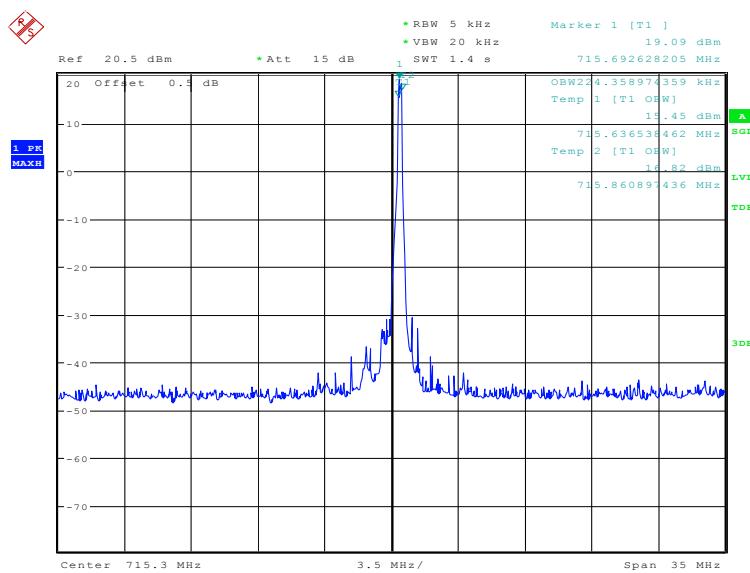
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HIGH BAND EDGEBLOCK-1RB-high_offset
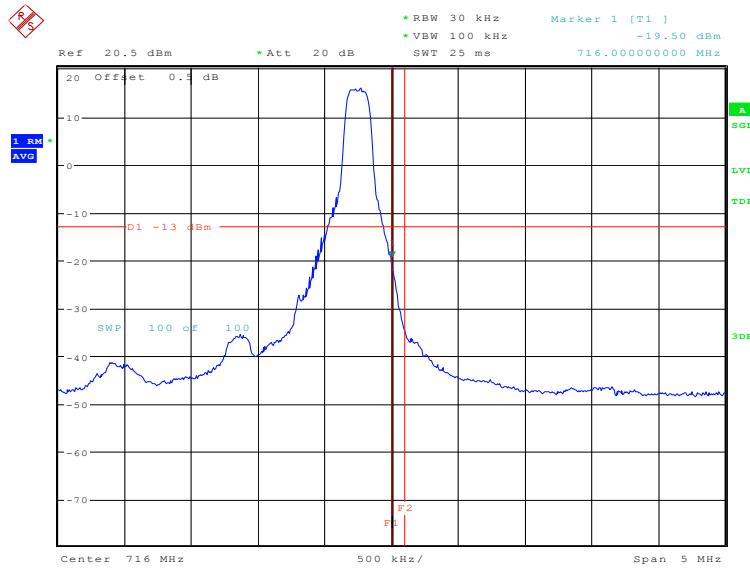
Date: 27.FEB.2020 11:21:26

LOW BAND EDGEBLOCK-10MHz-100%RB
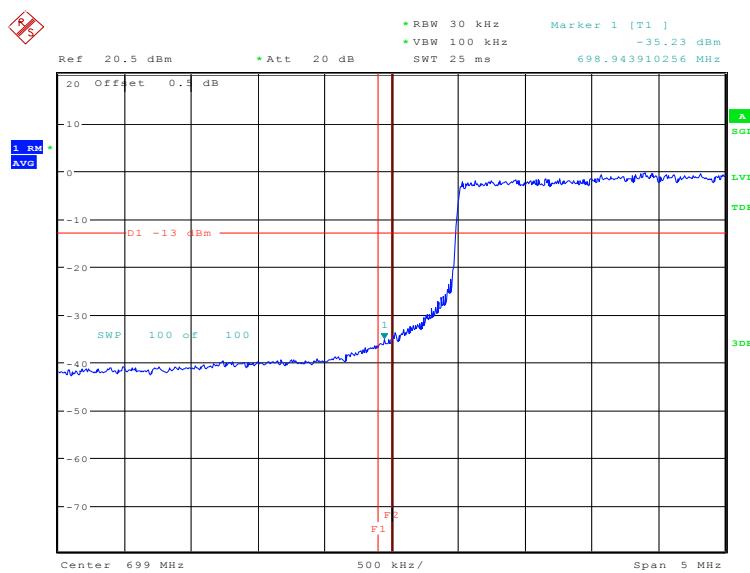
Date: 27.FEB.2020 11:17:49

HIGH BAND EDGEBLOCK-10MHz-100%RB
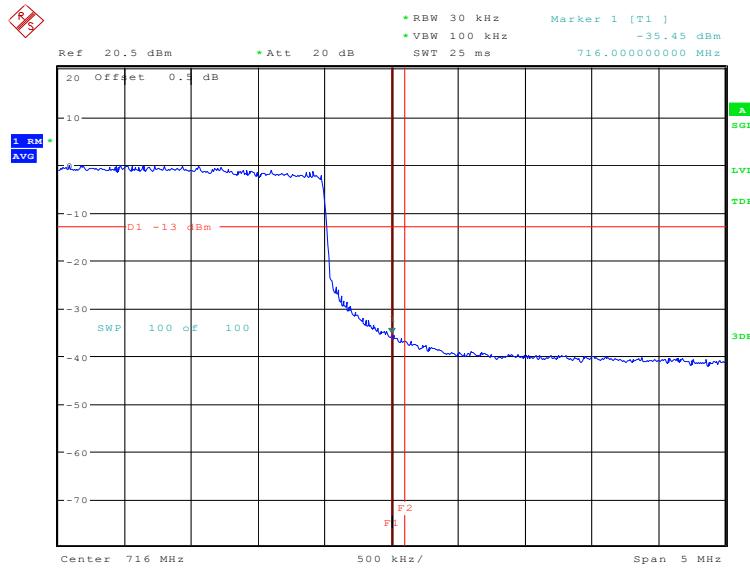
Date: 27.FEB.2020 11:23:20

LTE band 13
OBW: 1RB-low_offset
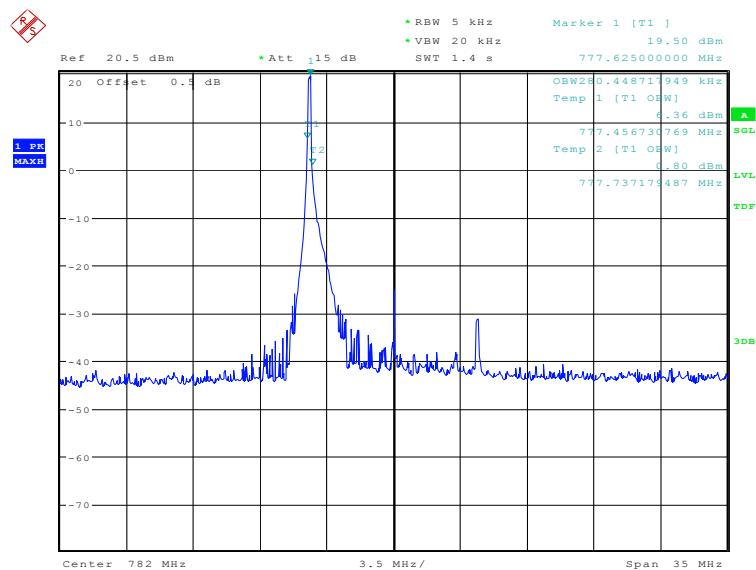
Date: 27.FEB.2020 11:24:41

LOW BAND EDGEBLOCK-1RB-low_offset
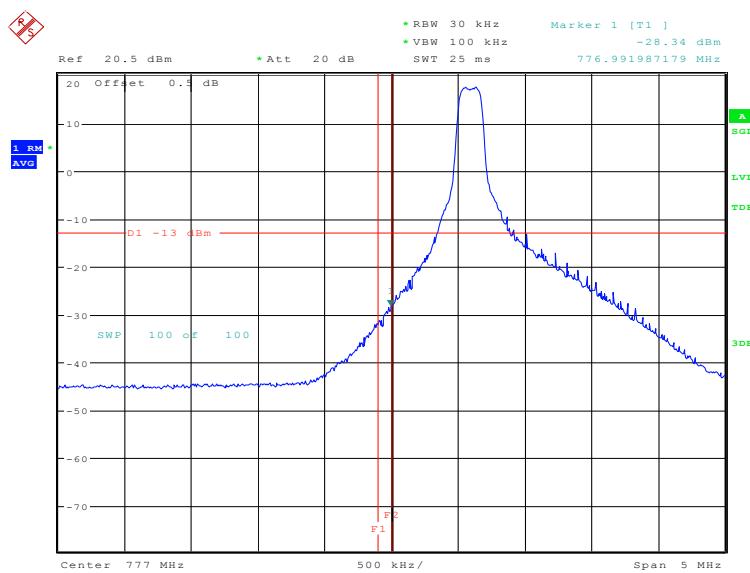
Date: 27.FEB.2020 11:26:20
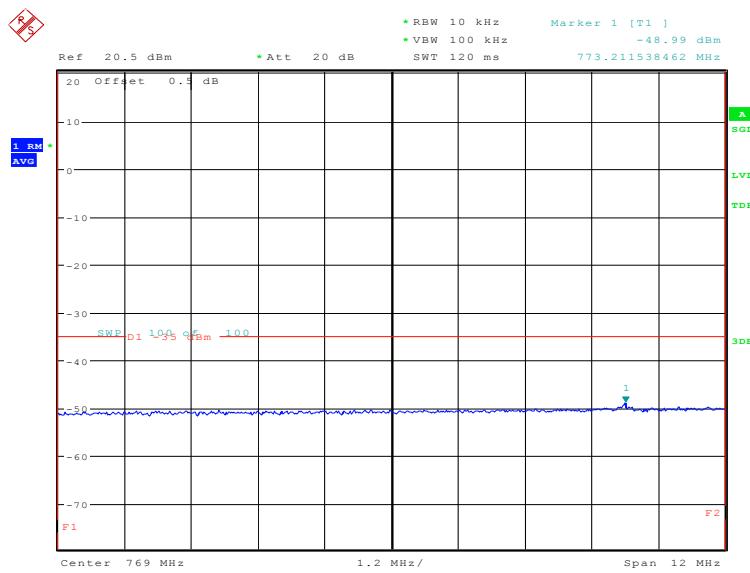
Date: 27.FEB.2020 11:27:58

OBW: 1RB-high_offset
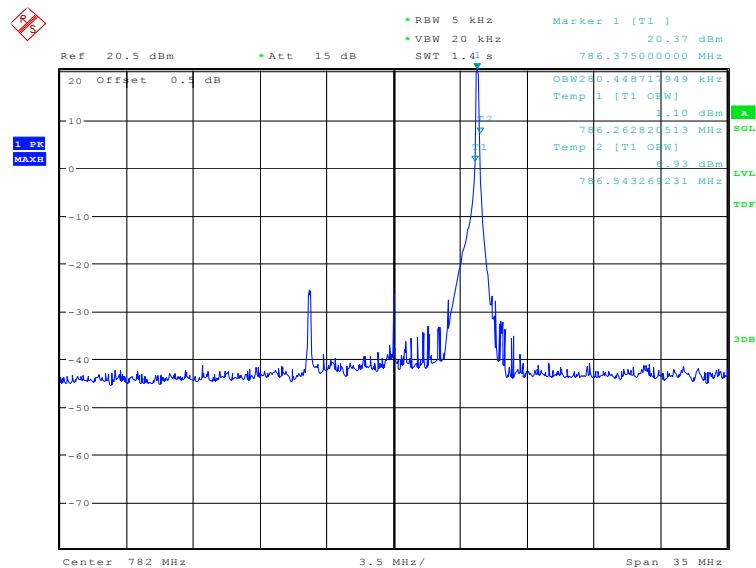
Date: 27.FEB.2020 11:32:47

I19Z62331-WMD03

HIGH BAND EDGEBLOCK-1RB-high_offset
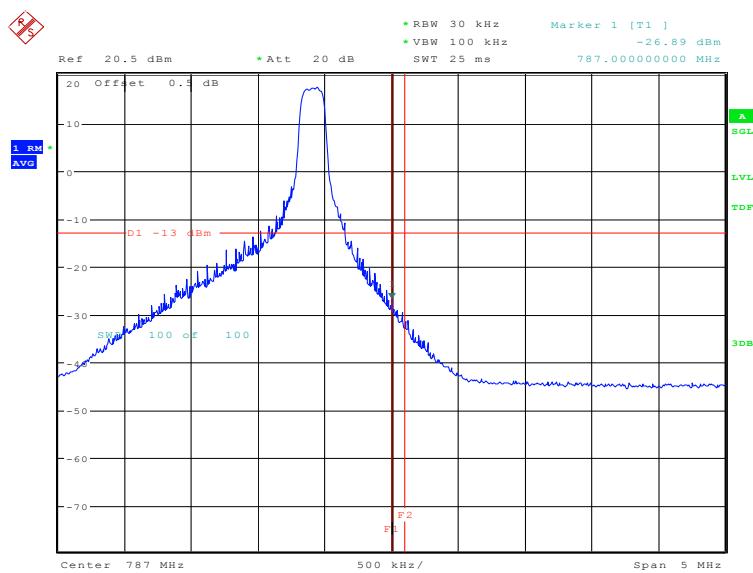
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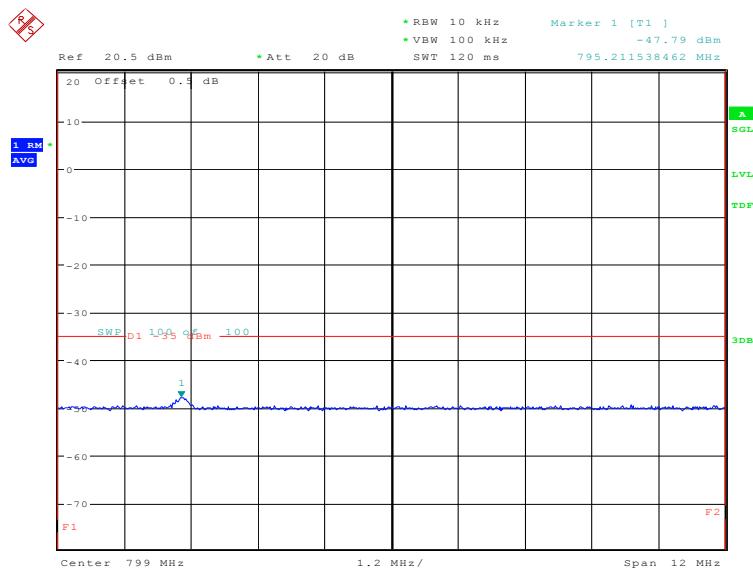
Date: 27.FEB.2020 11:36:03

LOW BAND EDGEBLOCK-10MHz-100%RB
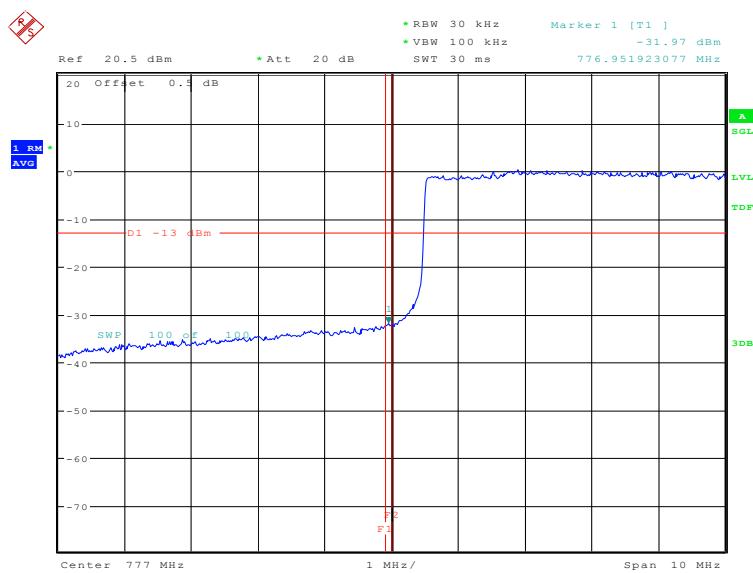
Date: 27.FEB.2020 11:29:50
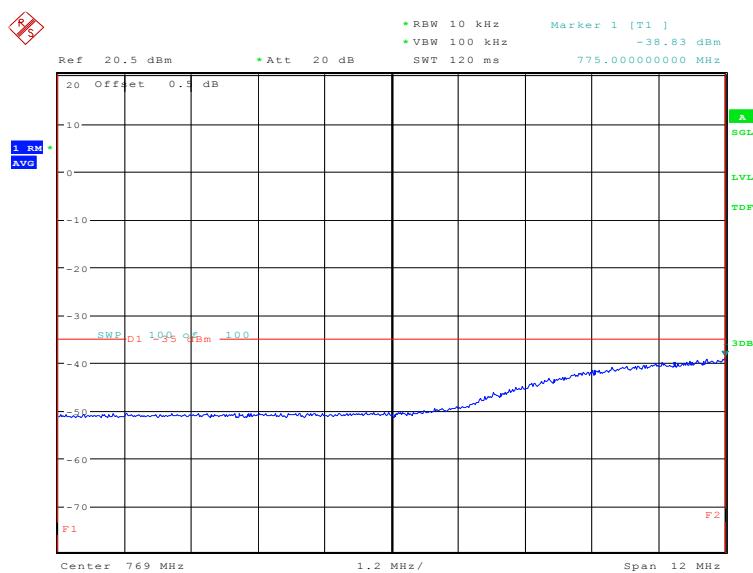
Date: 27.FEB.2020 11:31:27

HIGH BAND EDGEBLOCK-10MHz-100%RB
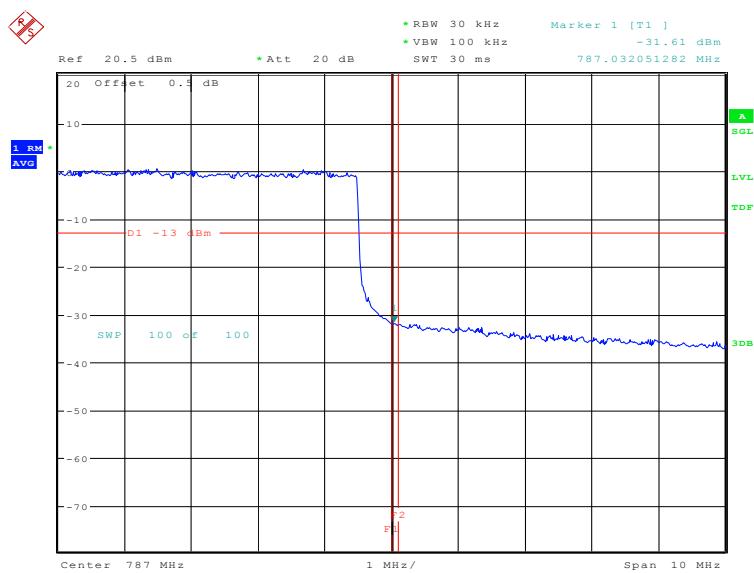
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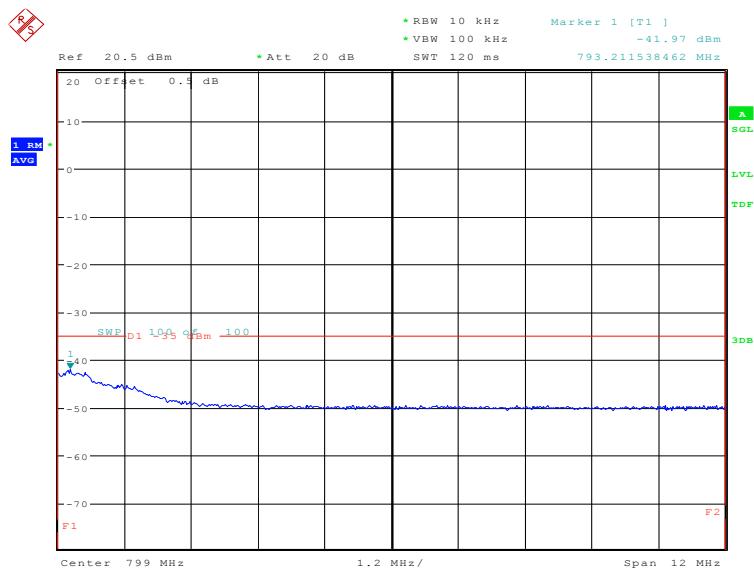
Date: 27.FEB.2020 11:39:33

LTE band 38
OBW: 1RB-low_offset
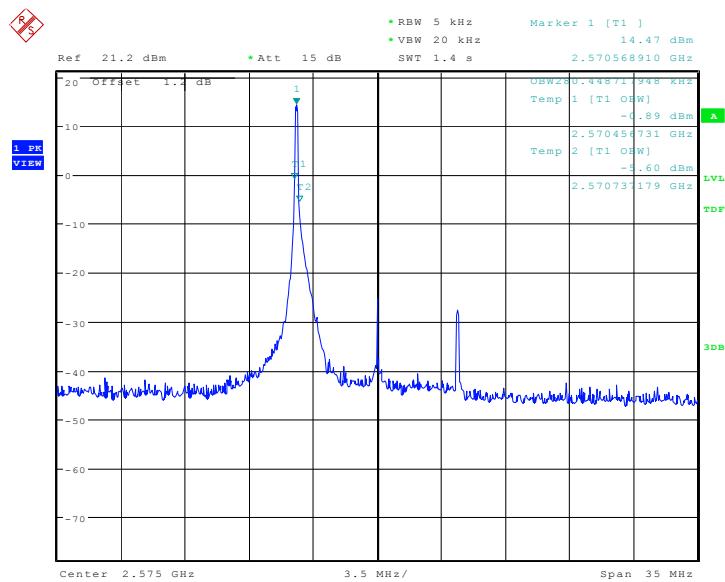
Date: 27.FEB.2020 13:29:35

LOW BAND EDGEBLOCK-1RB-low_offset
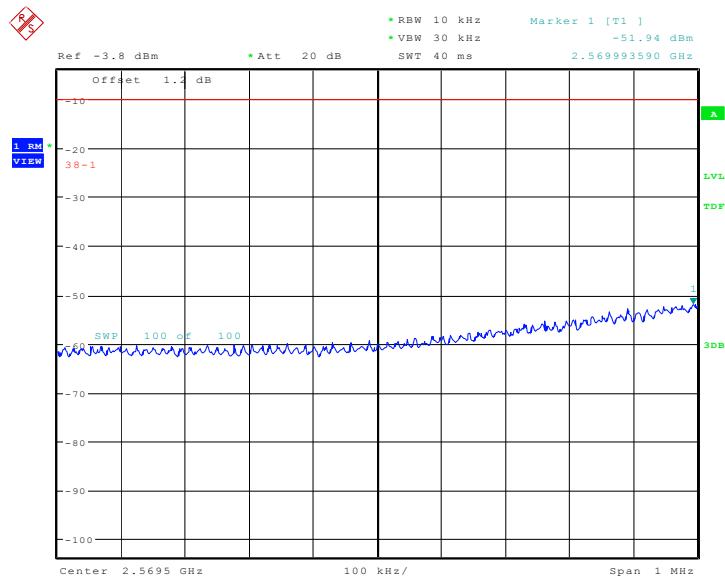
Date: 27.FEB.2020 13:34:39
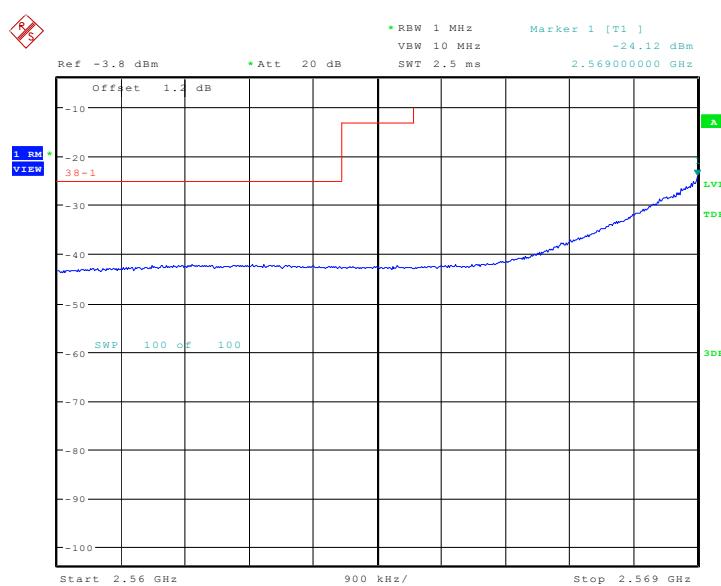
Date: 27.FEB.2020 13:36:09

OBW: 1RB-high_offset
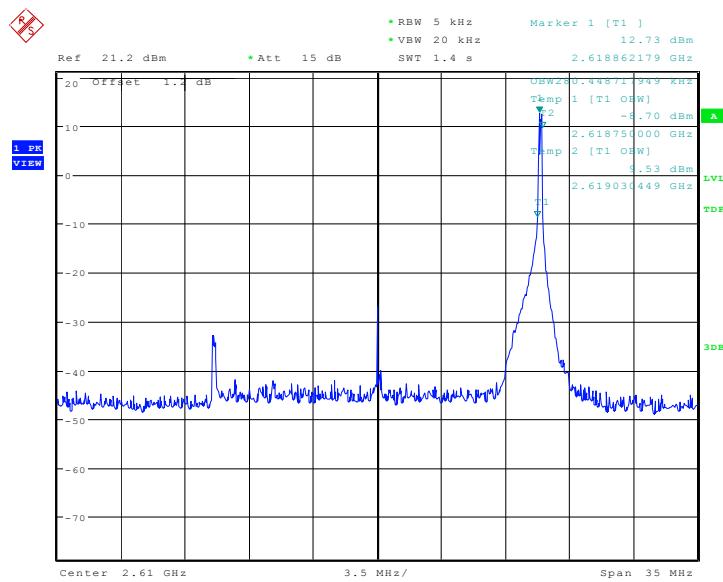
Date: 27.FEB.2020 13:38:00

HIGH BAND EDGEBLOCK-1RB-high_offset
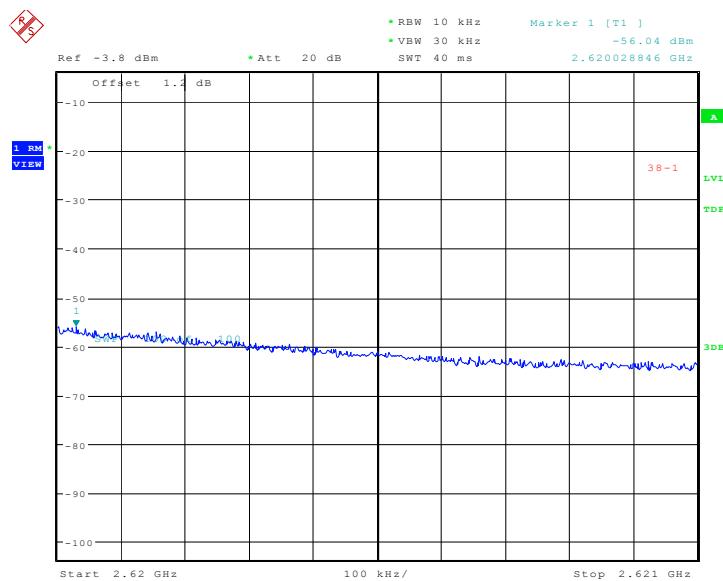
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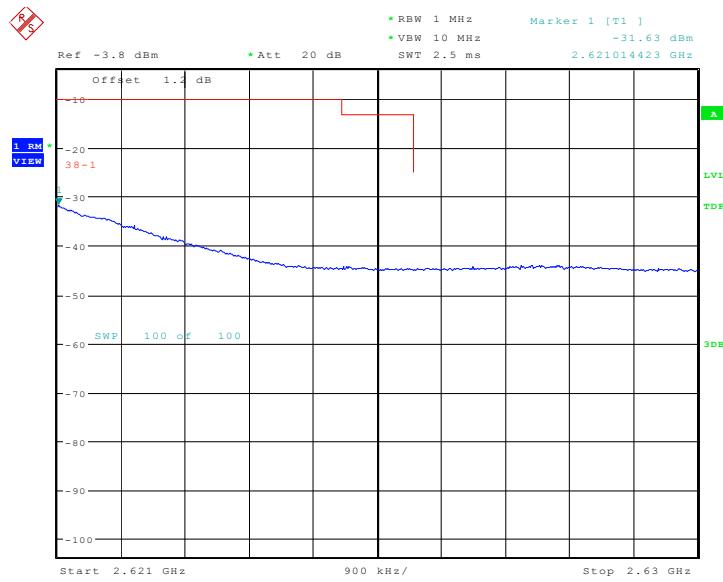
Date: 27.FEB.2020 13:46:38

LOW BAND EDGEBLOCK-20MHz-100%RB
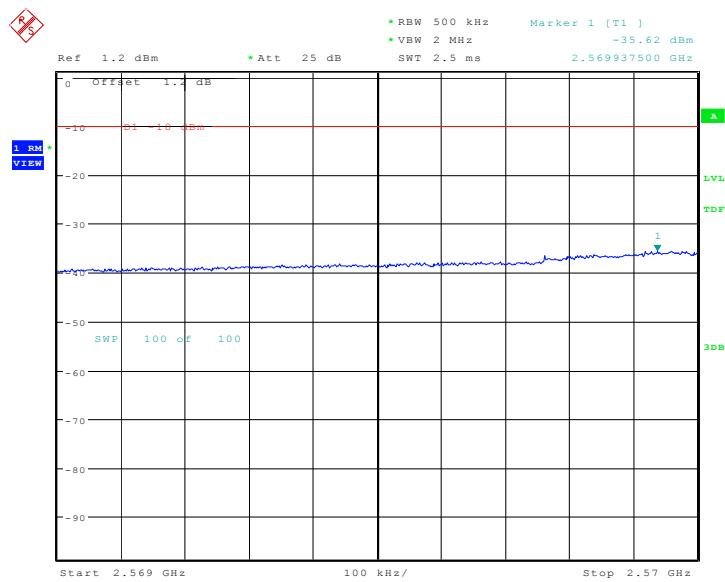
Date: 27.FEB.2020 13:54:58
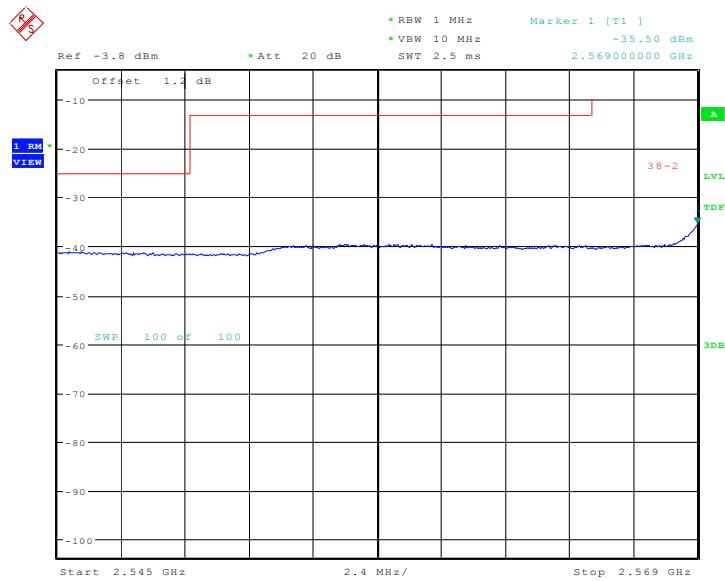
Date: 27.FEB.2020 14:00:57

HIGH BAND EDGEBLOCK-20MHz-100%RB
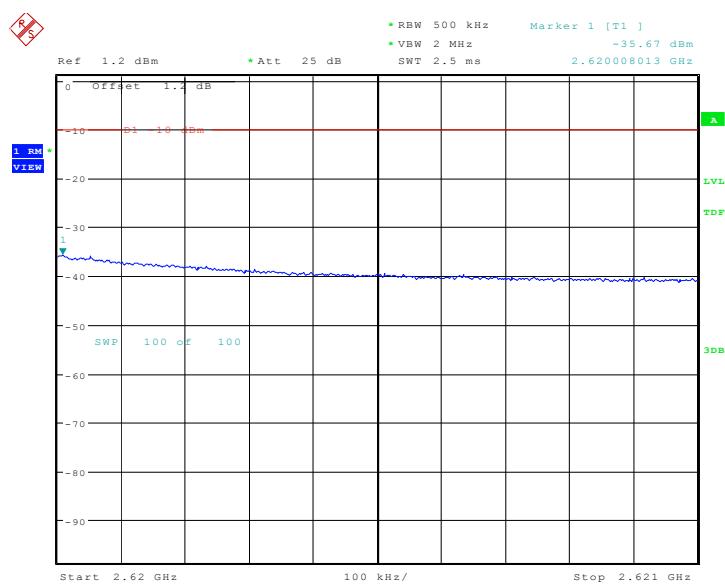
Date: 27.FEB.2020 14:07:21
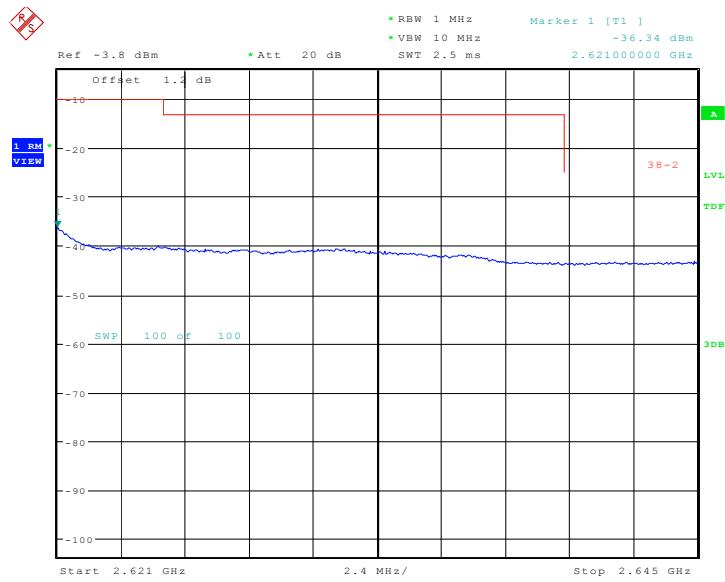
Date: 27.FEB.2020 14:09:58

LTE band 66
OBW: 1RB-low_offset
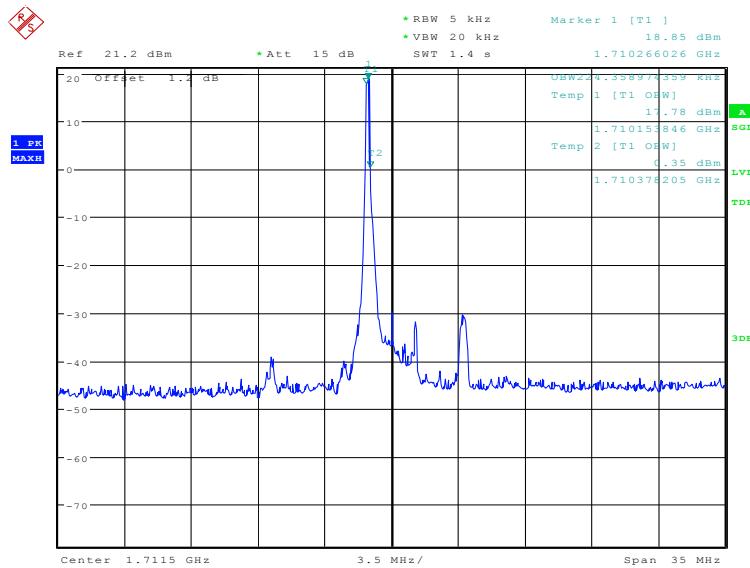
Date: 27.FEB.2020 13:07:41

LOW BAND EDGEBLOCK-1RB-low_offset
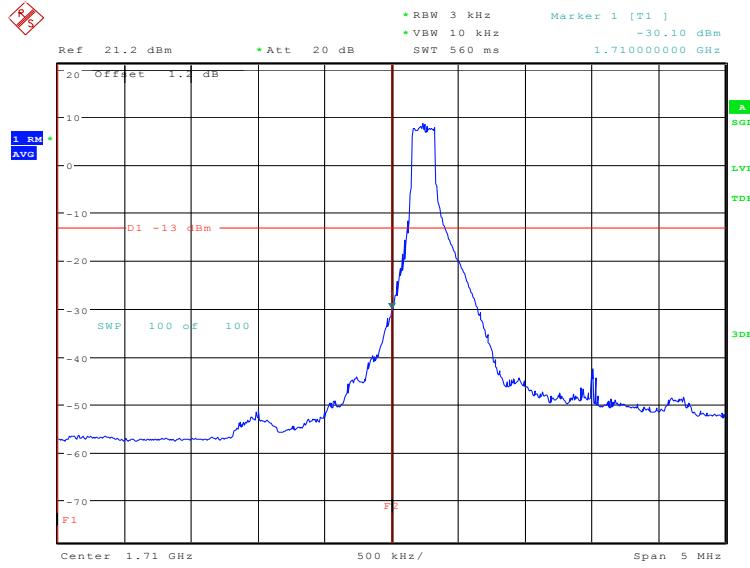
Date: 27.FEB.2020 13:09:19

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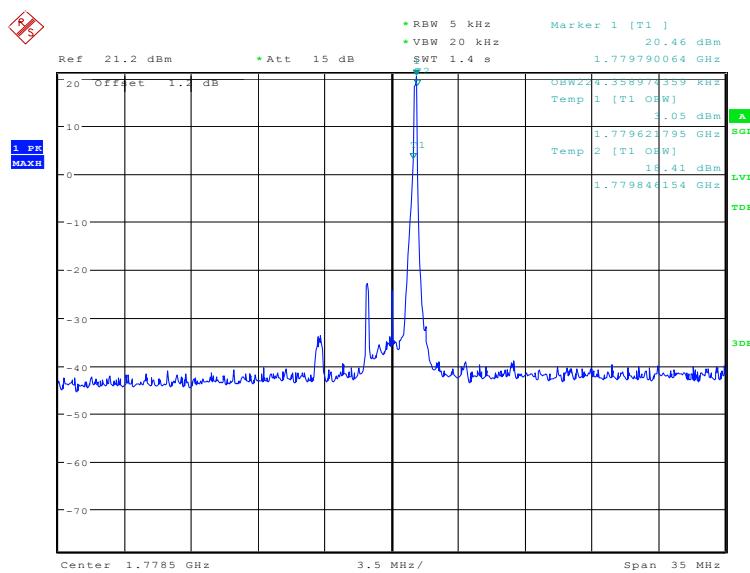
OBW: 1RB-high_offset

Date: 27.FEB.2020 13:12:45

HIGH BAND EDGEBLOCK-1RB-high_offset
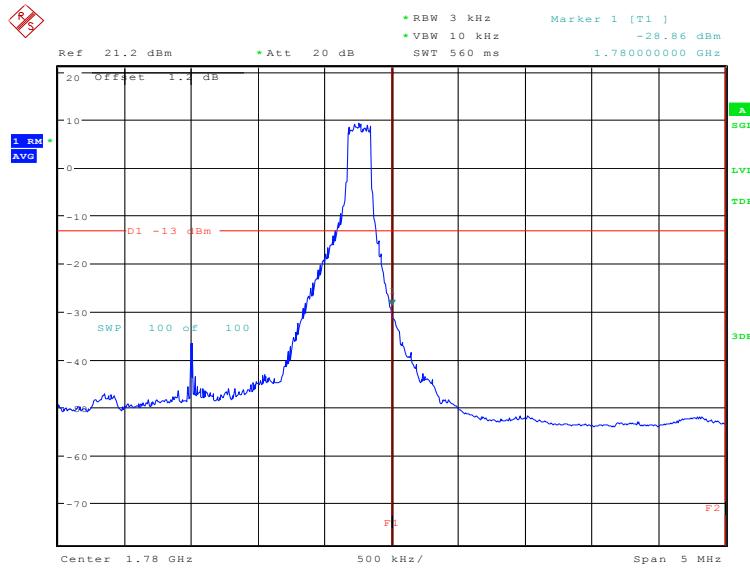
Date: 27.FEB.2020 13:14:24

LOW BAND EDGEBLOCK-20MHz-100%RB
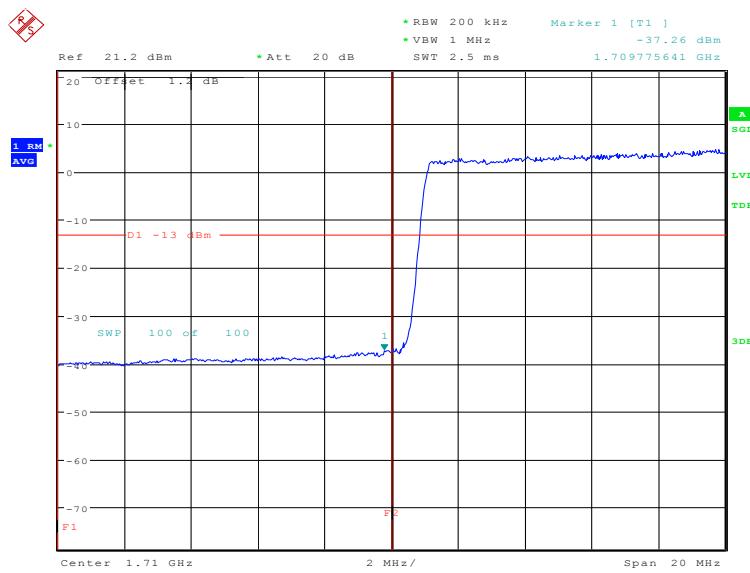
Date: 27.FEB.2020 13:11:24

HIGH BAND EDGEBLOCK-20MHz-100%RB
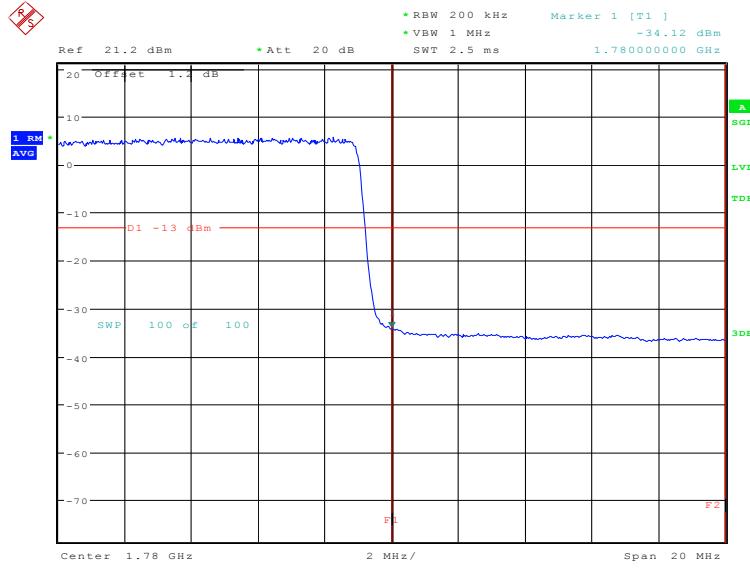
Date: 27.FEB.2020 13:16:28

A.7 CONDUCTED SPURIOUS EMISSION

A.7.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. In measuring unwanted emissions, the spectrum shall be investigated from 30 MHz or the lowest radio frequency signal generated in the equipment, whichever is lower, without going below 9 kHz, up to at least the frequency given below:
   (a) If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
   (b) If the equipment operates at or above 10 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.
3. The number of sweep points of spectrum analyzer is set to 30001 which is greater than span/RBW.

A.7.2 Measurement Limit

Part 22.917, Part 24.238 and Part 27.53(h) specify that the powerof any emission outside of the authorizedoperating frequency ranges mustbe attenuated below the transmittingpower (P) by a factor of at least 43 + 10log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Part 27.53(m)(4) specifies for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part27.53(c) states for operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 +

10 log (P) dB;(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.

A.7.2 Measurement result
## Only the worst case result is given below

LTE band 2: 30MHz – 19.1GHz
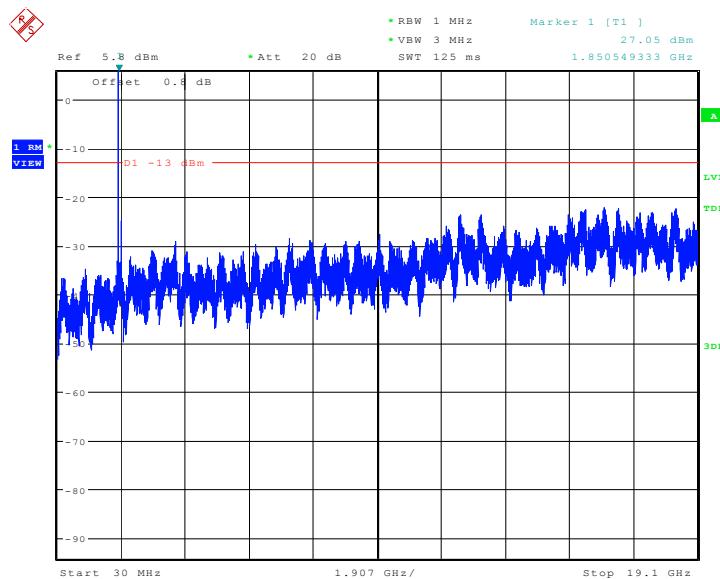
LTE band 5: 30MHz – 8.49GHz
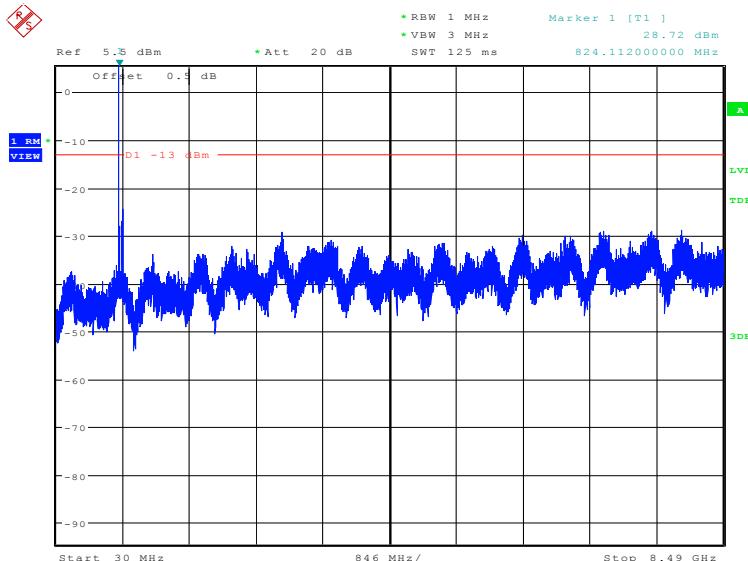
## LTE band 7: 30MHz – 25.7GHz
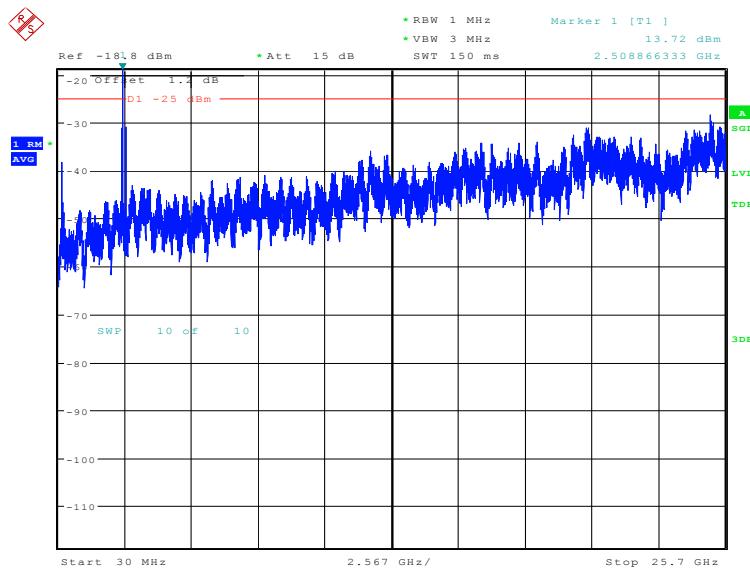
Date: 3.MAR.2020 09:01:55

LTE band 12: 30MHz – 7.16GHz
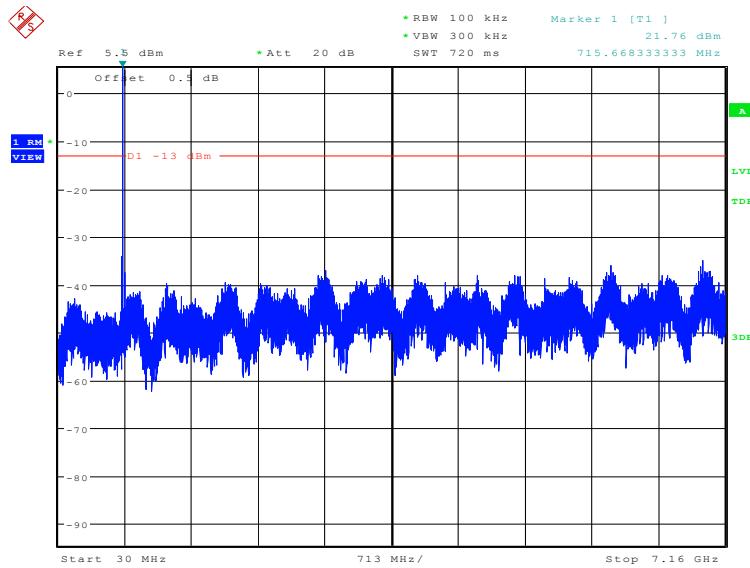
Date: 27.FEB.2020 11:51:53

LTE band 13: 30MHz – 7.87GHz
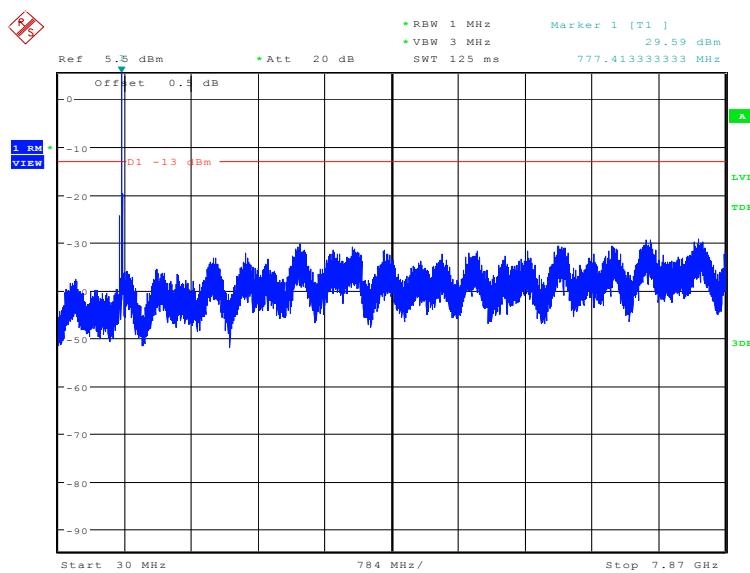

Date: 27.FEB.2020 11:52:56

LTE band 13: 1559MHz – 1610MHz
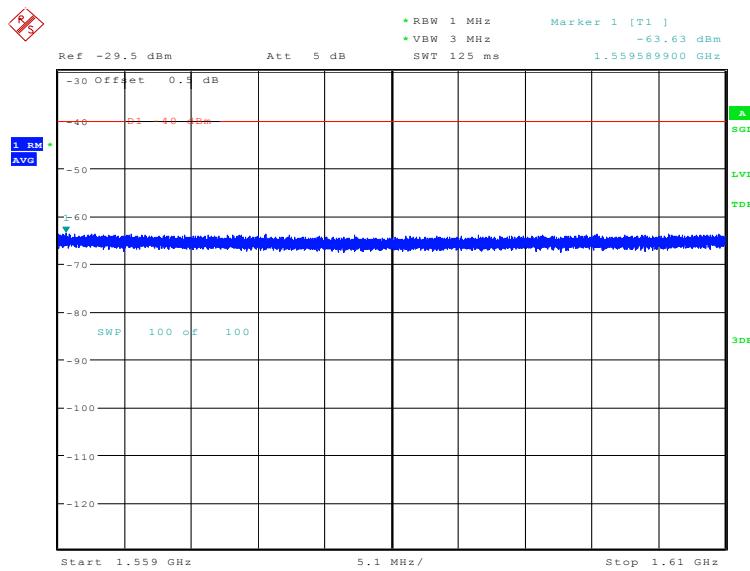
Date: 27.FEB.2020 11:53:30

LTE band 38: 30MHz – 26.2GHz
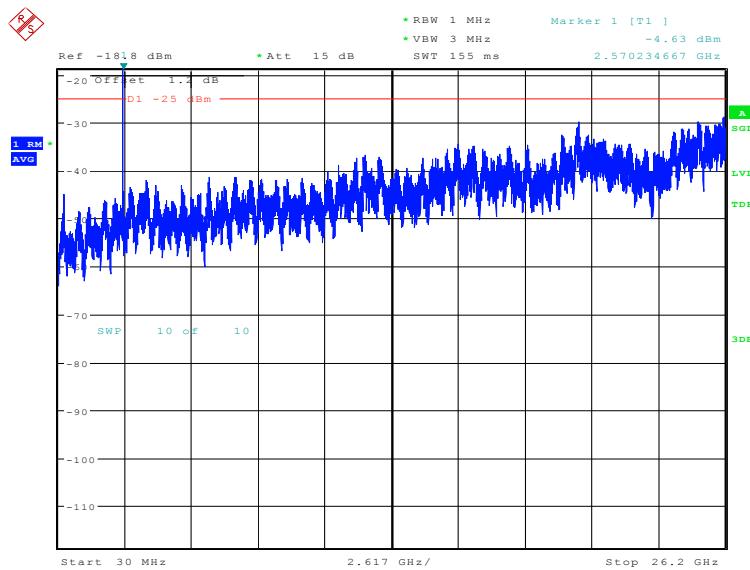
Date: 27.FEB.2020 13:03:29

LTE band 66: 30MHz – 17.8GHz
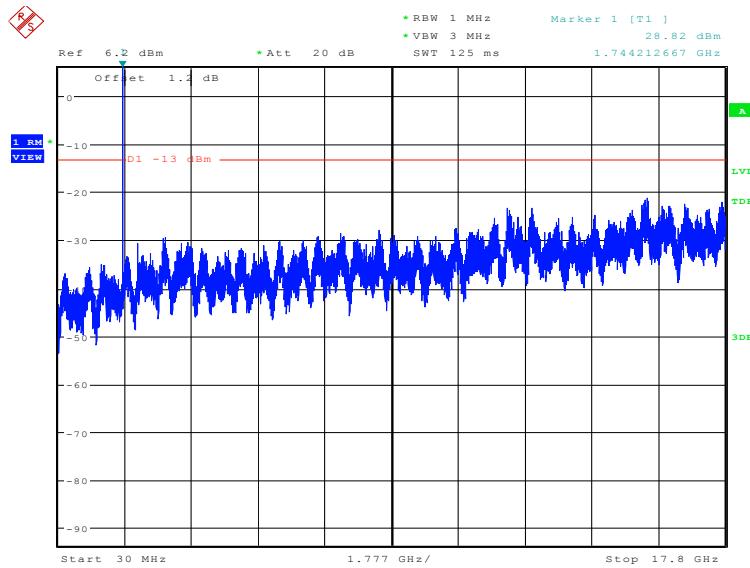
Date: 27.FEB.2020 13:17:29

A.8 PEAK-TO-AVERAGE POWER RATIO

The peak-to-average power ratio(PAPR) of the transmitter outputpower must not exceed 13 dB.ThePAPR measurements should be madeusing either an instrument with complementarycumulative distributionfunction (CCDF) capabilities to determinethat PAPR will not exceed 13 dBfor more than 0.1 percent of the time orother Commission approved procedure.The measurement must be performedusing a signal corresponding to thehighest PAPR expected during periodsof continuous transmission.

a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;

b) Set resolution/measurement bandwidth $\geqslant$ signal's occupied bandwidth;

c) Set the number of counts to a value that stabilizes the measured CCDF curve;

d) Set the measurement interval to 1ms;

e)Record the maximum PAPR level associated with a probability of 0.1%.

A.8.1 Measurement limit

not exceed 13 dB

A.8.2 Measurement results

LTE band 2, 20MHz

Frequency (MHz)	PAPR(dB)		
1880.0	QPSK	16QAM	64QAM
	6.73	7.50	7.63

LTE band 7, 20MHz

Frequency (MHz)	PAPR(dB)		
2535.0	QPSK	16QAM	64QAM
	6.86	7.34	7.79

LTE band 12,10MHz

Frequency (MHz)	PAPR(dB)		
707.5	QPSK	16QAM	64QAM
	5.51	6.28	6.67

LTE band 13,10MHz

Frequency (MHz)	PAPR(dB)		
782.0	QPSK	16QAM	64QAM
	5.22	6.03	6.41

LTE band 38, 20MHz

Frequency (MHz)	PAPR(dB)		
2595.0	QPSK	16QAM	64QAM
	8.21	8.81	9.01

LTE band 66, 20MHz

Frequency (MHz)	PAPR(dB)		
1745.0	QPSK	16QAM	64QAM
	6.51	7.21	7.60

ANNEX B: Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 600118-0

Telecommunication Technology Labs, CAICT

Beijing

China

is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2019-09-26 through 2020-09-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

END OF REPORT