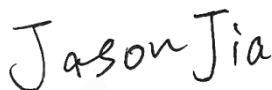


FCC RF Test Report

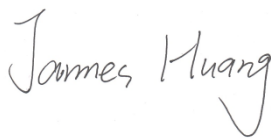
APPLICANT : Fibocom Wireless Inc.
EQUIPMENT : 5G Module
BRAND NAME : Fibocom
MODEL NAME : FM150-NA
FCC ID : ZMOFM150NA
STANDARD : 47 CFR Part 2, 96
CLASSIFICATION : Citizens Band End User Devices (CBE)
EQUIPMENT TYPE : End User Equipment

The product was received on May 14, 2020 and completely tested on Sep. 09, 2020. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Reviewed by: Jason Jia / Supervisor



Approved by: James Huang / Manager



Sporton International (Kunshan) Inc.

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 Applicant.....	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test.....	5
1.4 Maximum EIRP Power, Frequency Tolerance, and Emission Designator	6
1.5 Testing Site.....	8
1.6 Test Software	8
1.7 Applied Standards	8
2 Test Configuration of Equipment Under Test	9
2.1 Test Mode.....	9
2.2 Connection Diagram of Test System	10
2.3 Support Unit used in test configuration	11
2.4 Measurement Results Explanation Example	11
2.5 Frequency List of Low/Middle/High Channels	11
3 Conducted Test Items.....	13
3.1 Measuring Instruments.....	13
3.2 Conducted Output Power	14
3.3 EIRP	15
3.4 Occupied Bandwidth	16
3.5 Conducted Band Edge	17
3.6 Conducted Spurious Emission	18
3.7 Frequency Stability	19
4 Radiated Test Items	20
4.1 Measuring Instruments.....	20
4.2 Test Setup	20
4.3 Test Result of Radiated Test.....	20
4.4 Radiated Spurious Emission	21
5 List of Measuring Equipment.....	22
6 Uncertainty of Evaluation.....	23
Appendix A. Test Results of Conducted Test	
Appendix B. Test Results of EIRP and Radiated Test	
Appendix C. Test Setup Photographs	



History of this test report

Report No.	Version	Description	Issued Date
FG051416I	01	Initial issue of report	Sep. 14, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
-	§96.41	Peak-to-Average Ratio	Not Required	Not applicable for End User Devices
3.3	§96.41	Maximum E.I.R.P	Pass	-
		Maximum Power Spectral Density	Not Required	Not applicable for End User Devices
3.4	§2.1049 §96.41	Occupied Bandwidth	Reporting only	-
3.5	§2.1051 §96.41	Conducted Band Edge Measurement Adjacent Channel Leakage Ratio	Pass	-
3.6	§2.1051 §96.41	Conducted Spurious Emission	Pass	
3.7	§2.1055	Frequency Stability for Temperature & Voltage	Pass	-
4.4	§2.1051 §96.41	Radiated Spurious Emission	Pass	Under limit 18.93 dB at 10656.00 MHz

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.



1 General Description

1.1 Applicant

Fibocom Wireless Inc.

5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China

1.2 Manufacturer

Fibocom Wireless Inc.

5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	5G Module
Brand Name	Fibocom
Model Name	FM150-NA
FCC ID	ZMOFM150NA
Tx Frequency	LTE Band 42: 3552.5 MHz ~ 3597.5 MHz LTE Band 43: 3602.5 MHz ~ 3697.5 MHz LTE Band 48: 3552.5 MHz ~ 3697.5 MHz
Rx Frequency	LTE Band 42: 3552.5 MHz ~ 3597.5 MHz LTE Band 43: 3602.5 MHz ~ 3697.5 MHz LTE Band 48: 3552.5 MHz ~ 3697.5 MHz
Bandwidth	5MHz / 10MHz / 15MHz / 20MHz
Uplink CA Band(s)	48C
Type of Modulation	QPSK / 16QAM / 64QAM
IMEI Code	Conducted/ Radiation: 867654040223105
HW Version	V1.0.1
SW Version	89601.1000.00.02.11.20
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

WWAN ANTENNA GAIN (dBi)		
Frequency Band	ANT.1: GHT-019A	ANT.2: AN0750-64S01BSM
LTE Band 42	-1.18	0.42
LTE Band 43	-0.13	0.48
LTE Band 48	-0.13	0.48

Remark: Between the two types of antennas, only the worst antenna gain evaluated test is shown in bold.

1.4 Maximum EIRP Power, Frequency Tolerance, and Emission Designator

LTE Band 48/42		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum Conducted power(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum Conducted power(W)
5	3552.5~3697.5	4M52G7D	-	0.1396	4M49W7D	-	0.1167
10	3555~3695	9M05G7D	0.0044	0.1413	9M09W7D	-	0.1167
15	3557.5~3692.5	13M5G7D	-	0.1393	13M5W7D	-	0.1216
20	3560~3690	18M5G7D	-	0.1303	18M4W7D	-	0.1076
LTE Band 48/42		64QAM					
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)		Maximum Conducted power(W)		
5	3552.5~3697.5	4M54W7D	-		0.0718		
10	3555~3695	9M03W7D	-		0.0692		
15	3557.5~3692.5	13M5W7D	-		0.0582		
20	3560~3690	18M5W7D	-		0.0762		

LTE Band 43		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum Conducted power(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum Conducted power(W)
5	3602.5~3697.5	4M52G7D	-	0.1396	4M49W7D	-	0.1167
10	3605~3695	9M05G7D	0.0044	0.1413	9M09W7D	-	0.1167
15	3607.5~3692.5	13M5G7D	-	0.1393	13M5W7D	-	0.1216
20	3610~3690	18M5G7D	-	0.1303	18M4W7D	-	0.1076
LTE Band 43		64QAM					
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)		Maximum Conducted power(W)		
5	3602.5~3697.5	4M54W7D	-		0.0718		
10	3605~3695	9M03W7D	-		0.0692		
15	3607.5~3692.5	13M5W7D	-		0.0582		
20	3610~3690	18M5W7D	-		0.0762		



LTE Band 48 CA	QPSK			16QAM		
BW (MHz) Frequency (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum Conducted power(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum Conducted power(W)
20MHz+20MHz (3560 ~ 3690 MHz)	37M8G7D	-	0.1545	37M7W7D	-	0.1570
LTE Band 48 CA	64QAM					
BW (MHz) Frequency (MHz)	Emission Designator (99%OBW)		Frequency Tolerance (ppm)	Maximum Conducted power(W)		
20MHz+20MHz (3560 ~ 3690 MHz)	37M8W7D		-	0.1265		

Note:

LTE Band 48 overlaps the entire frequency range of LTE Band 42 and Band 43 under Part 96 rule. Therefore, the test results of LTE Band 48 provided in this report covers Band 42 and Band 43.

1.5 Testing Site

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH02-KS TH01-KS	CN1257	314309

1.6 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH02-KS	AUDIX	E3	6.2009-8-24a

1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ 47 CFR Part 2, 96
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 940660 D01 Part 96 CBRS v02
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

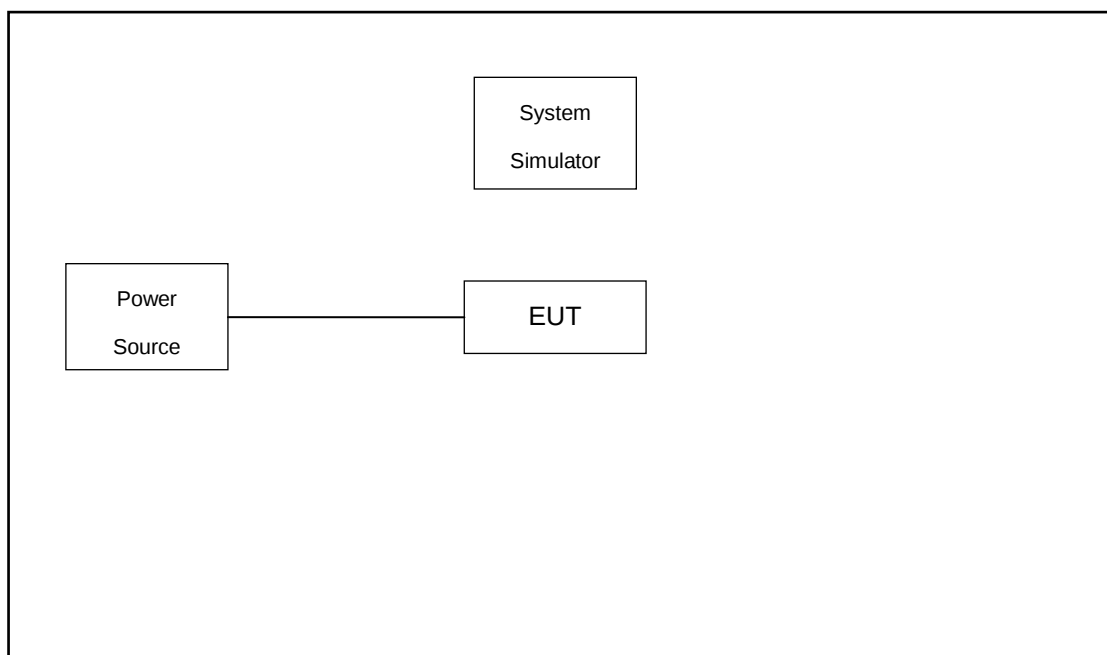
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

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

Test Items	Band	Bandwidth (MHz)						Modulation			RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	48	-	-	v	v	v	v	v	v	v	v	v	v	v	v	v
26dB and 99% Bandwidth	48	-	-	v	v	v	v	v	v	v			v	v	v	v
Conducted Band Edge	48	-	-	v	v	v	v	v	v	v	v		v	v		v
Conducted Spurious Emission	48	-	-	v	v	v	v	v	v	v	v		v	v	v	v
E.R.P / E.I.R.P	48	-	-	v	v	v	v	v	v	v	v		v	v	v	v
Frequency Stability	48	-	-		v			v	v	v	v				v	
Radiated Spurious Emission	48	Worst Case												v	v	v
Remark	1. The mark “v” means that this configuration is chosen for testing 2. The mark “-” means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. All the radiated test cases were performed with Adapter. 5. This module is limited to installation in fixed applications.															

Test Items	Band	Bandwidth (MHz)							Modulation			RB #			Test Channel		
		20+20	20+15	15+20	20+10	10+20	20+5	5+20	QPSK	16QAM	64QAM	1	Half	Full	L	M	H
Max. Output Power	48C	v	v	v	v	v	v	v	v	v	v	v		v	v	v	v
26dB and 99% Bandwidth	48C	v	v	v	v	v	v	v	v	v	v			v	v	v	v
Conducted Band Edge	48C	v	v	v	v	v	v	v	v	v	v	v		v	v		v
Conducted Spurious Emission	48C	v	v	v	v	v	v	v	v	v	v	v			v	v	v
E.R.P / E.I.R.P	48C	v	v	v	v	v	v	v	v	v	v	v			v	v	v
Radiated Spurious Emission	48C	Worst Case													v	v	v
Note	1. The mark “v ” means that this configuration is chosen for testing 2. The mark “-“ means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. All the radiated test cases were performed with Adapter. 5. Frequency stability only shows the worst case of LTE band 48/48C. 6. LTE band48C only show the maximum power and maximum bandwidth combination in the report. 7. All the radiated test cases were performed with Adapter.																

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Power Supply	GWINSTEK	PSS-2002	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	Antenna	N/A	N/A	N/A	N/A	N/A
4.	Adapter	N/A	N/A	N/A	N/A	N/A
5.	Test jig	N/A	N/A	N/A	N/A	N/A

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 6.0 dB.

Example:

Offset (dB) = RF cable loss (dB).
= 6.0 (dB)

2.5 Frequency List of Low/Middle/High Channels

LTE Band 48 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	55340	55990	56640
	Frequency	3560.0	3625.0	3690.0
15	Channel	55315	55990	56665
	Frequency	3557.5	3625.0	3692.5
10	Channel	55290	55990	56690
	Frequency	3555.0	3625.0	3695.0
5	Channel	55265	55990	56715
	Frequency	3552.5	3625.0	3697.5

LTE Band 48C_CA Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
5 + 20	PCC	Channel	55273	55898	56523
		Frequency	3553.3	3615.8	3678.3
	SCC	Channel	55390	56015	56640
		Frequency	3565	3627.5	3690
20 + 5	PCC	Channel	55340	55965	56590
		Frequency	3560	3622.5	3685
	SCC	Channel	55457	56082	56707
		Frequency	3571.7	3634.2	3696.7
10 + 20	PCC	Channel	55295	55896	56496
		Frequency	3555.5	3615.6	3675.6
	SCC	Channel	55439	56040	56640
		Frequency	3569.9	3630	3690
20 + 10	PCC	Channel	55340	55941	56541
		Frequency	3560	3620.1	3680.1
	SCC	Channel	55484	56085	56685
		Frequency	3574.4	3634.5	3694.5
15 + 20	PCC	Channel	55318	55893	56469
		Frequency	3557.8	3615.3	3672.9
	SCC	Channel	55489	56064	56640
		Frequency	3574.9	3632.4	3690
20 + 15	PCC	Channel	55340	55916	56491
		Frequency	3560	3617.6	3675.1
	SCC	Channel	55511	56087	56662
		Frequency	3577.1	3634.7	3692.2
20 + 20	PCC	Channel	55340	55891	56442
		Frequency	3560	3615.1	3670.2
	SCC	Channel	55538	56089	56640
		Frequency	3579.8	3634.9	3690

3 Conducted Test Items

3.1 Measuring Instruments

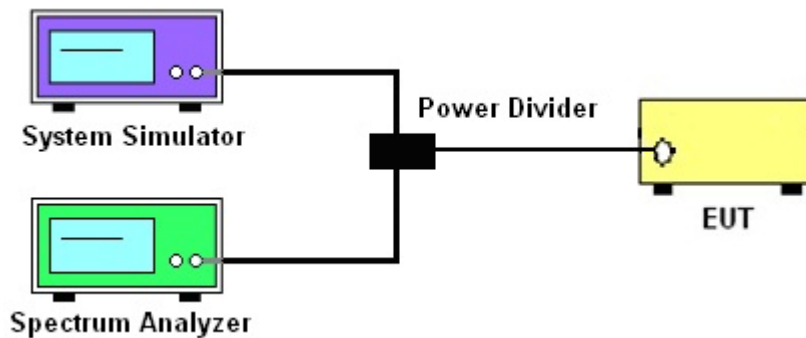
See list of measuring instruments of this test report.

3.1.1 Test Setup

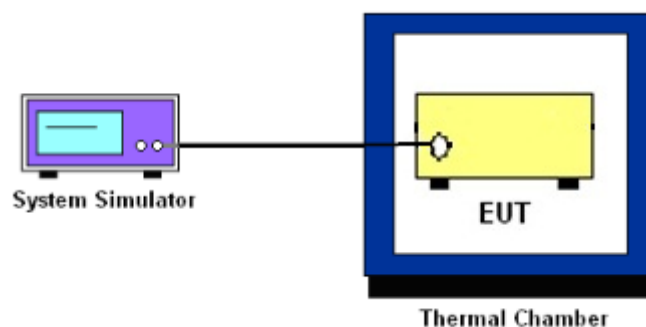
3.1.2 Conducted Output Power



3.1.3 EIRP, Occupied Bandwidth, Conducted Band-Edge and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

3.2 Conducted Output Power

3.2.1 Description of the Conducted Output Power Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

3.3 EIRP

3.3.1 Description of the EIRP Measurement

EIRP and PSD limits for CBRS equipment as below table:

Device		Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)
V	End User Device	23	n/a
	Category A CBSD	30	20
	Category B CBSD	47	37

Remark: Maximum PSD values are radiated. Measurements can be done conducted and add antenna gain back in.

1. Set instrument center frequency to OBW center frequency.
2. Set span to at least 2 times the OBW.
3. Set the RBW to the specified reference bandwidth (often 1 MHz).
4. Set VBW $\geq 3 \times$ RBW.
5. Detector = RMS (power averaging).
6. Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
7. Sweep time = auto couple.
8. Employ trace averaging (RMS) mode over a minimum of 100 traces.
9. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).
10. Determine the EIRP by adding the effective antenna gain to the adjusted power level.
11. Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.

The testing follows ANSI C63.26-2015 Section 5.2.5.5

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.4 Occupied Bandwidth

3.4.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

3.4.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
4. Set the detection mode to peak, and the trace mode to max hold.
5. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.
(this is the reference value)
6. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

Part 96.41 (e) (1) (i)

For CBSD the emission limits outside the fundamental are as follows:

Within 0 MHz to 10 MHz above and below the assigned channel ≤ -13 dBm/MHz

Greater than 10 MHz above and below the assigned channel ≤ -25 dBm/MHz

Part 96.41 (e) (1) (ii)

For End User Devices the emission limits outside the fundamental are as follows:

Within 0 MHz to B MHz above and below the assigned channel ≤ -13 dBm/MHz

Greater than B MHz above and below the assigned channel ≤ -25 dBm/MHz

where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device.

Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

Part 96.41 (e) (2)

For CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used
5. Offset has included the duty factor for LTE Band 48. Duty factor $=10 \log (1/x)$, where x is the measured duty cycle.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.6 Conducted Spurious Emission

3.6.1 Description of Conducted Spurious Emission Measurement

96.41 (e)(2)

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
6. Set spectrum analyzer with RMS detector.
7. Taking the record of maximum spurious emission.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. The limit line is -40dBm/MHz.

3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency

3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was placed in a temperature chamber at $25\pm 5^{\circ}\text{C}$ and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

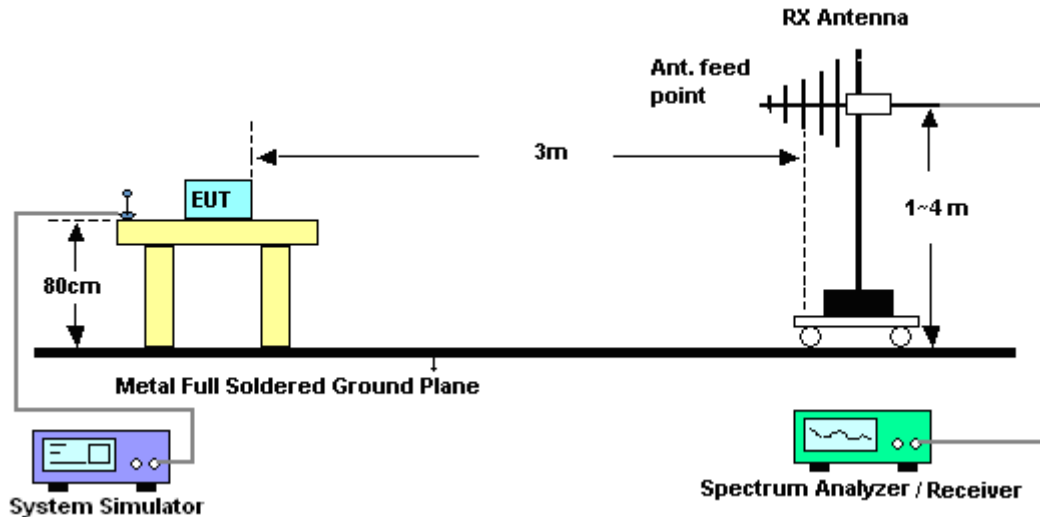
4 Radiated Test Items

4.1 Measuring Instruments

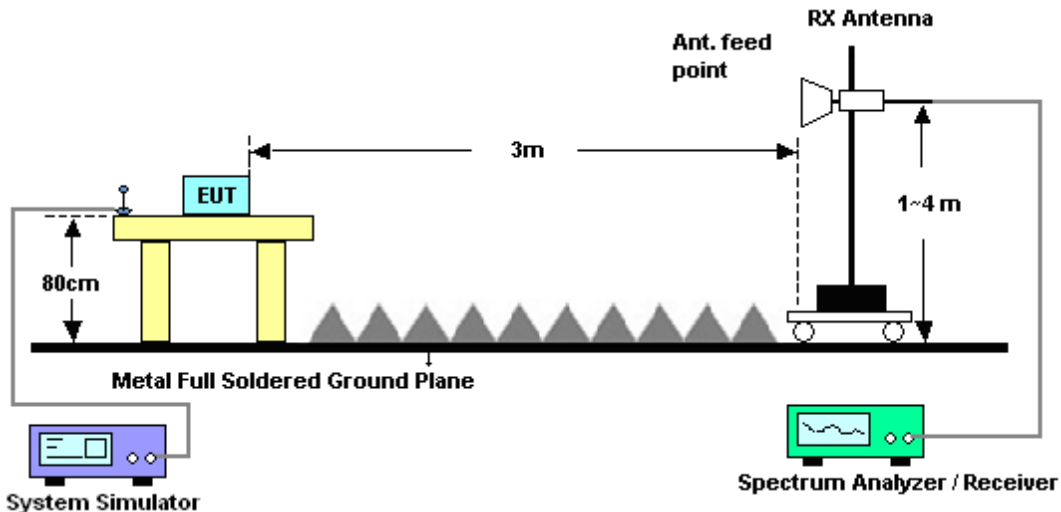
See list of measuring instruments of this test report.

4.2 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least -40dBm / MHz.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
$$\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$$
$$\text{ERP (dBm)} = \text{EIRP} - 2.15$$
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
The limit line is -40dBm/MHz



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Nov. 02, 2019	Aug. 04, 2020~ Sep. 09, 2020	Nov. 01, 2020	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-9605 02	-40~+150°C	Oct. 28, 2019	Aug. 04, 2020~ Sep. 09, 2020	Oct. 27, 2020	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Ma x 30dBm	Oct. 18, 2019	Aug. 10, 1010	Oct. 17, 2020	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY553705 28	10Hz~44G,MAX 30dB	Oct. 18, 2019	Aug. 10, 1010	Oct. 17, 2020	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz-1GHz	Dec. 30, 2019	Aug. 10, 1010	Dec. 29, 2020	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 10, 2019	Aug. 10, 1010	Nov. 09, 2020	Radiation (03CH02-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	2025788	100MHz-18GHz	Jan. 03, 2020	Aug. 10, 1010	Jan. 02, 2021	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Nov. 10, 2019	Aug. 10, 1010	Nov. 09, 2020	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 03, 2020	Aug. 10, 1010	Jan. 02, 2021	Radiation (03CH02-KS)
Amplifier	Keysight	83017A	MY532703 16	500MHz~26.5G Hz	Oct. 18, 2019	Aug. 10, 1010	Oct. 17, 2020	Radiation (03CH02-KS)
Amplifier	MITEQ	EM18G40GG A	060728	18~40GHz	Jan. 08, 2020	Aug. 10, 1010	Jan. 07, 2021	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002 473	N/A	NCR	Aug. 10, 1010	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Aug. 10, 1010	NCR	Radiation (03CH02-KS)

NCR: No Calibration Required

6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.5dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.1dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.1dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

LTE Band 48						
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.
Channel				55340	55990	56640
Frequency (MHz)				3560	3625	3690
20	QPSK	1	0	20.86	20.95	21.06
20	QPSK	1	99	21.15	20.92	20.65
20	QPSK	100	0	20.56	20.13	20.22
20	16QAM	1	0	20.32	20.25	20.06
20	16QAM	1	99	20.21	20.17	20.16
20	16QAM	100	0	18.36	18.21	18.58
20	64QAM	1	0	18.58	18.82	18.55
20	64QAM	1	99	17.36	17.63	17.52
20	64QAM	100	0	17.22	17.56	17.33
Channel				55315	55990	56665
Frequency (MHz)				3557.5	3625	3692.5
15	QPSK	1	0	21.36	21.25	21.44
15	QPSK	1	74	21.06	21.22	21.06
15	QPSK	75	0	20.15	20.32	20.33
15	16QAM	1	0	20.68	20.85	20.71
15	16QAM	1	74	20.66	20.26	20.52
15	16QAM	75	0	18.62	18.56	18.32
15	64QAM	1	0	17.52	17.36	17.23
15	64QAM	1	74	17.33	17.65	17.51
15	64QAM	75	0	17.52	17.36	17.19
Channel				55290	55990	56690
Frequency (MHz)				3555	3625	3695
10	QPSK	1	0	21.50	21.14	21.34
10	QPSK	1	49	21.47	21.14	21.33
10	QPSK	50	0	20.52	20.45	20.54
10	16QAM	1	0	20.51	20.44	20.56
10	16QAM	1	49	20.67	20.43	20.53
10	16QAM	50	0	19.57	19.44	19.25
10	64QAM	1	0	18.27	18.09	18.06
10	64QAM	1	49	18.23	18.06	17.96
10	64QAM	50	0	18.40	18.21	17.55
Channel				55265	55990	56715
Frequency (MHz)				3552.5	3625	3697.5
5	QPSK	1	0	21.44	21.32	21.38
5	QPSK	1	24	21.45	21.35	21.43
5	QPSK	25	0	20.56	20.45	20.57
5	16QAM	1	0	20.66	20.48	20.57
5	16QAM	1	24	20.56	20.48	20.67

5	16QAM	25	0	19.53	19.47	19.32
5	64QAM	1	0	18.37	18.26	18.08
5	64QAM	1	24	18.35	18.27	18.18
5	64QAM	25	0	18.56	18.37	17.54

LTE Band 48C_CA							
Combination 20MHz+20MHz (100RB+100RB)							
PCC Channel	SCC Channel	Modulation	PCC		SCC		Measured Power (dBm)
			RB Size	RB offset	RB Size	RB offset	
55340	55538	QPSK	100	0	100	0	12.05
			1	0	1	99	0.53
			1	99	1	0	18.33
		16QAM	100	0	100	0	12.32
			1	0	1	99	0.67
			1	99	1	0	18.52
		64QAM	100	0	100	0	12.36
			1	0	1	99	0.38
			1	99	1	0	15.96
55891	56089	QPSK	100	0	100	0	18.16
			1	0	1	99	9.16
			1	99	1	0	21.89
		16QAM	100	0	100	0	17.12
			1	0	1	99	9.36
			1	99	1	0	21.96
		64QAM	100	0	100	0	16.03
			1	0	1	99	9.02
			1	99	1	0	21.02
56442	56640	QPSK	100	0	100	0	12.09
			1	0	1	99	1.76
			1	99	1	0	18.42
		16QAM	100	0	100	0	12.15
			1	0	1	99	1.96
			1	99	1	0	18.53
		64QAM	100	0	100	0	11.98
			1	0	1	99	1.58
			1	99	1	0	15.98



LTE Band 48

EIRP

1RB0

Mode	LTE Band 48 : EIRP											
BW	5MHz		10MHz		15MHz		20MHz		5MHz	10MHz	15MHz	20MHz
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	64QAM	64QAM	64QAM	64QAM
Lowest CH	22.27	21.37	21.55	20.89	21.84	21.16	21.34	21.84	19.53	19.34	18.00	19.06
Middle CH	22.14	21.22	21.25	20.90	21.73	21.33	21.43	21.73	19.00	19.32	17.84	19.3
Highest CH	21.63	20.79	21.2	20.94	21.92	21.19	21.54	21.92	17.60	18.07	17.71	19.03
Limit	23dBm /10MHz											
Result	Pass											

1RB Max

Mode	LTE Band 48 : EIRP											
BW	5MHz		10MHz		15MHz		20MHz		5MHz	10MHz	15MHz	20MHz
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	64QAM	64QAM	64QAM	64QAM
Lowest CH	21.72	21.38	21.64	21.01	21.54	21.14	21.63	20.69	19.11	19.59	17.81	17.84
Middle CH	22.13	21.06	21.51	20.66	21.70	20.74	21.4	20.65	18.46	19.24	18.13	18.11
Highest CH	21.84	21.13	21.10	20.96	21.54	21.00	21.13	20.64	18.23	18.24	17.99	18.00
Limit	23dBm /10MHz											
Result	Pass											

Full RB0

Mode	LTE Band 48 : EIRP											
BW	5MHz		10MHz		15MHz		20MHz		5MHz	10MHz	15MHz	20MHz
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	64QAM	64QAM	64QAM	64QAM
Lowest CH	20.79	19.68	20.12	19.41	20.63	19.10	21.04	18.84	18.21	18.24	18.00	17.7
Middle CH	20.73	19.74	20.02	19.24	20.80	19.04	20.61	18.69	17.71	18.06	17.84	18.04
Highest CH	20.52	18.68	20.26	18.53	20.81	18.80	20.70	19.06	16.90	17.14	17.67	17.81
Limit	23dBm /10MHz											
Result	Pass											

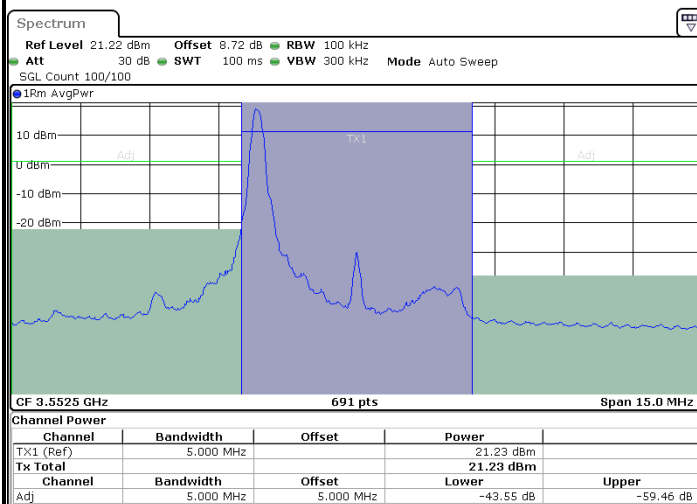


ACLR

LTE Band 48 / 5MHz

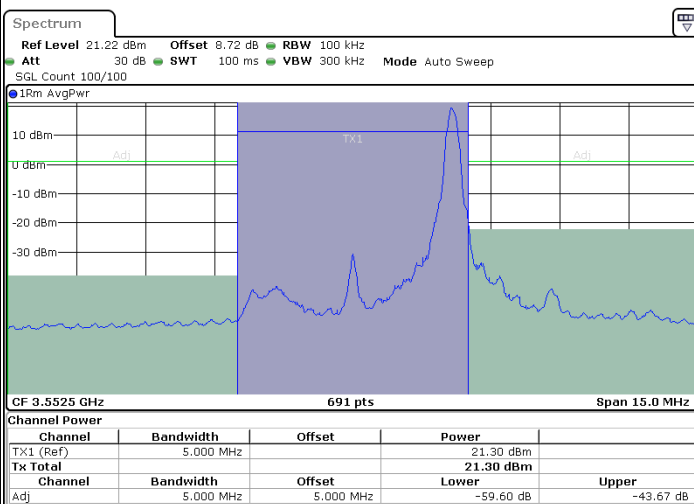
QPSK

Lowest Channel / 1RB0



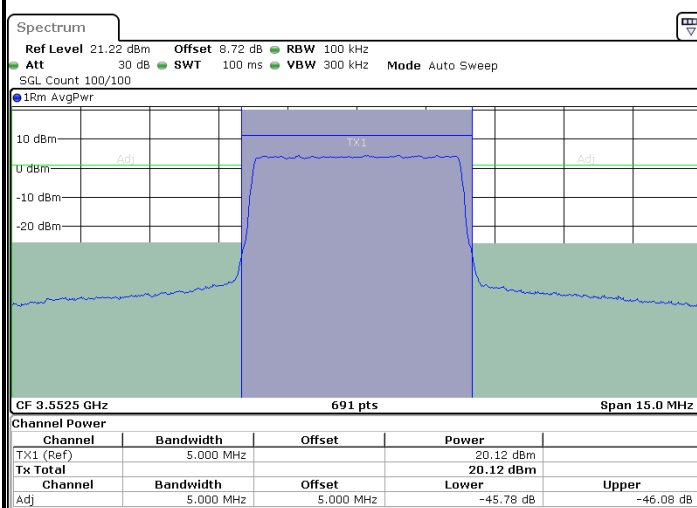
Date: 29 AUG 2020 14:54:06

Lowest Channel / 1RBmax



Date: 29 AUG 2020 14:56:32

Lowest Channel / Full RB



Date: 29 AUG 2020 14:51:48

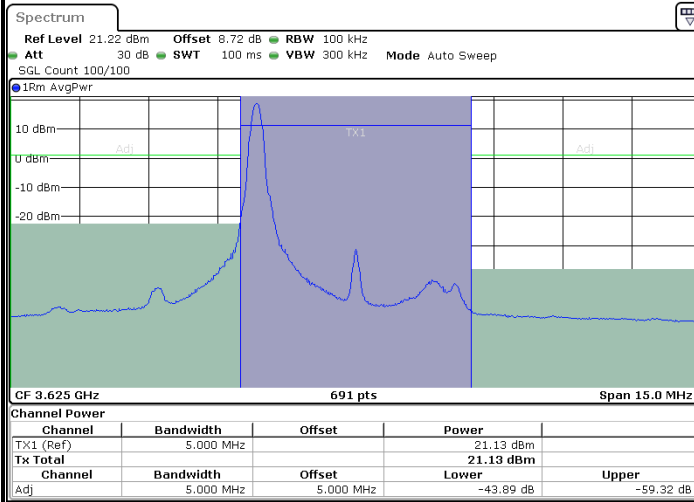
N/A



LTE Band 48 / 5MHz

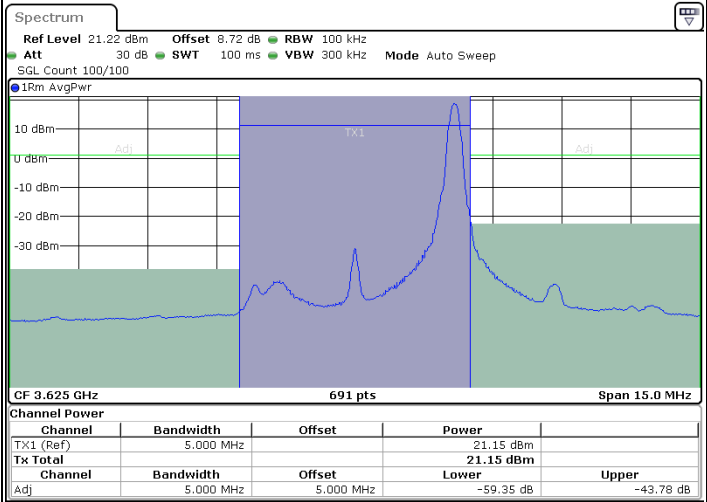
QPSK

Middle Channel / 1RB0



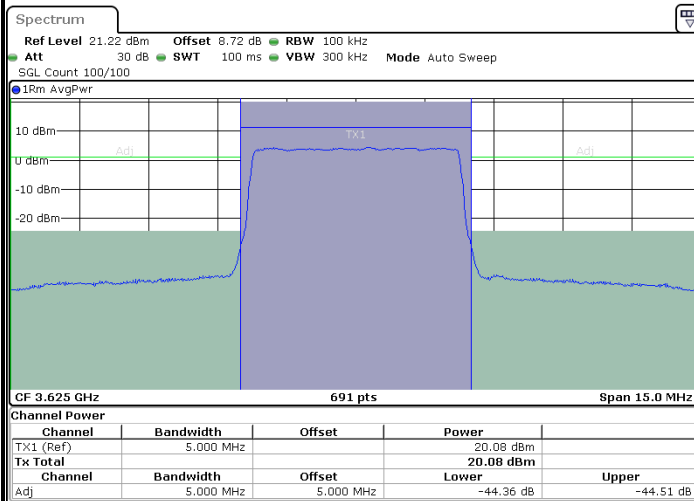
Date: 29 AUG 2020 15:00:36

Middle Channel / 1RBmax



Date: 29 AUG 2020 14:58:28

Middle Channel / Full RB



Date: 29 AUG 2020 15:03:21

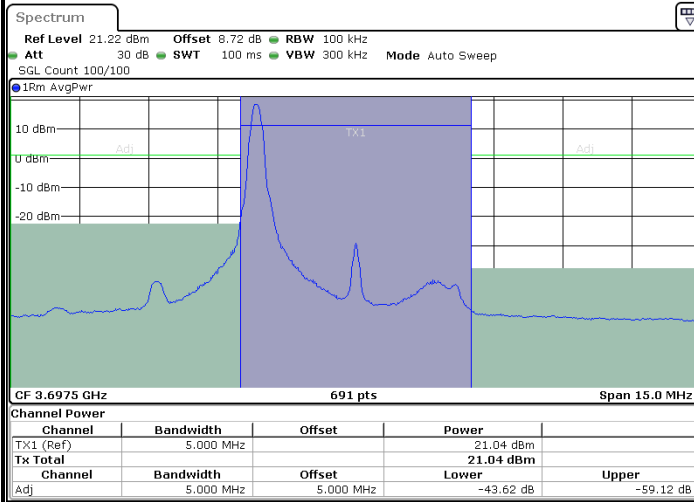
N/A



LTE Band 48 / 5MHz

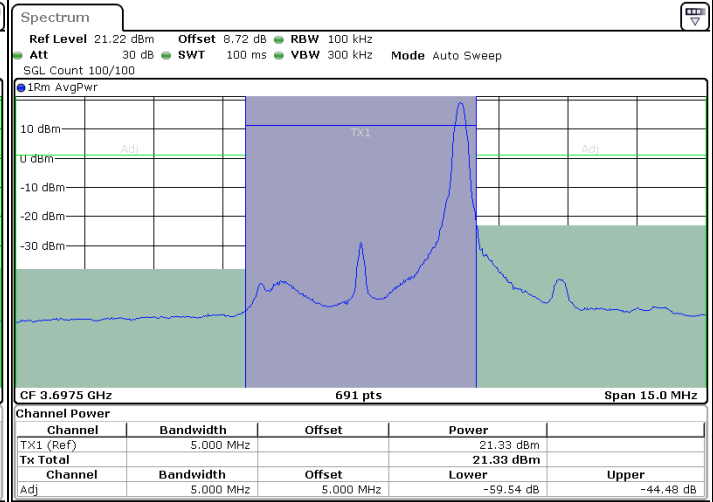
QPSK

Highest Channel / 1RB0



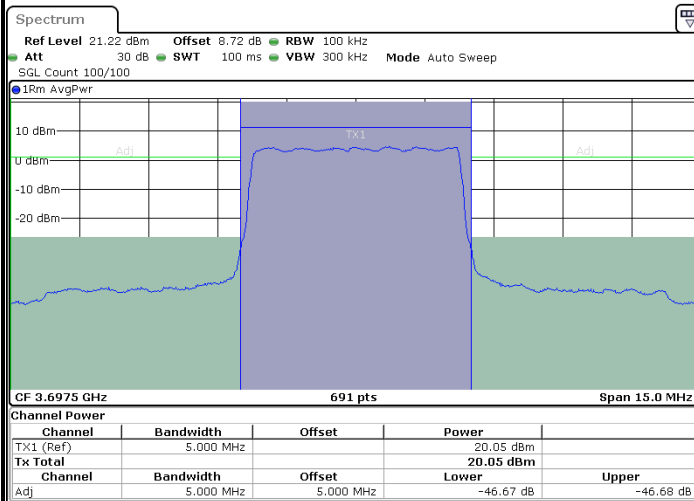
Date: 29 AUG 2020 15:10:43

Highest Channel / 1RBmax



Date: 29 AUG 2020 15:12:32

Highest Channel / Full RB



Date: 29 AUG 2020 15:05:57

N/A

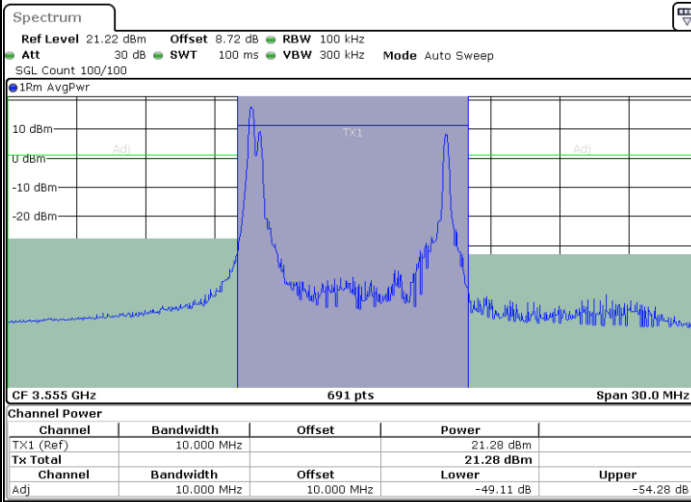


LTE Band 48 / 10MHz

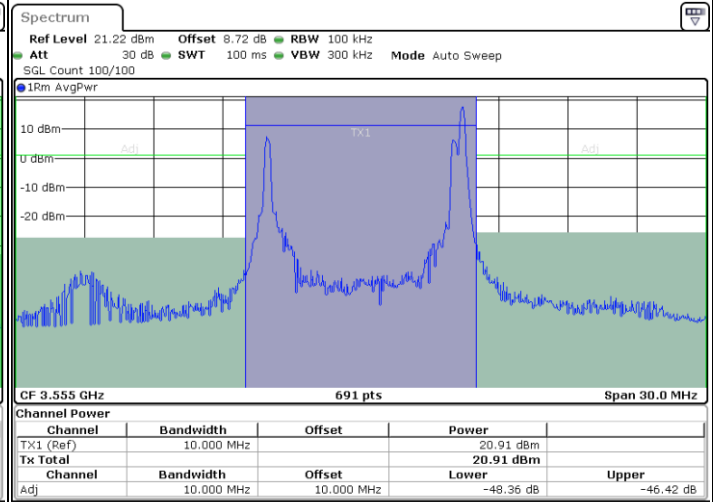
QPSK

Lowest Channel / 1RB0

Lowest Channel / 1RBmax



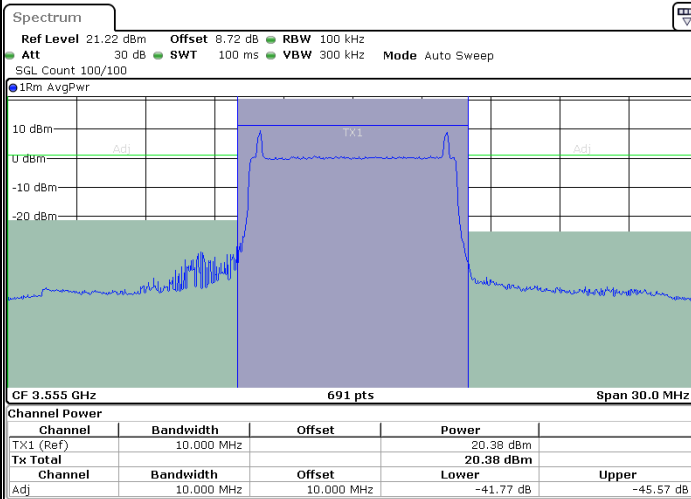
Date: 29 AUG 2020 15:17:06



Date: 29 AUG 2020 15:19:15

Lowest Channel / Full RB

N/A



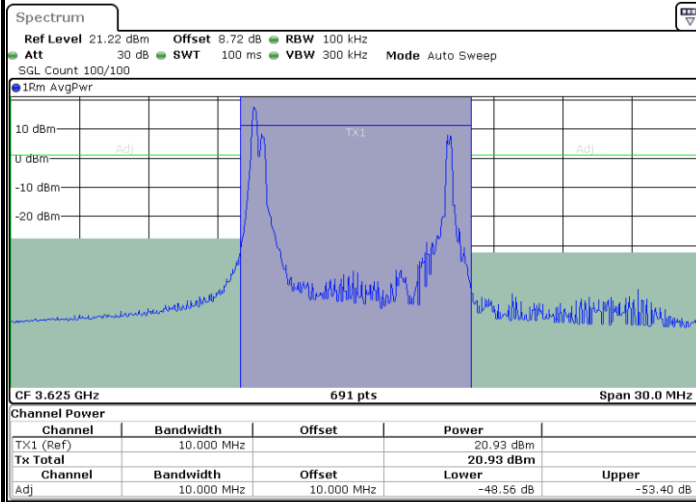
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LTE Band 48 / 10MHz

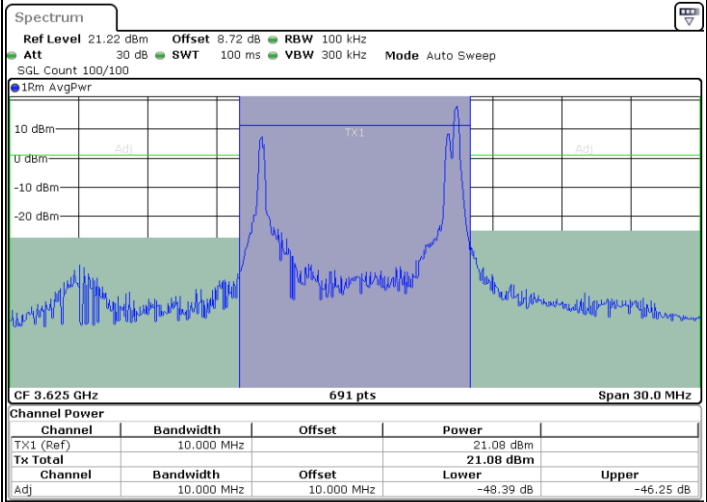
QPSK

Middle Channel / 1RB0



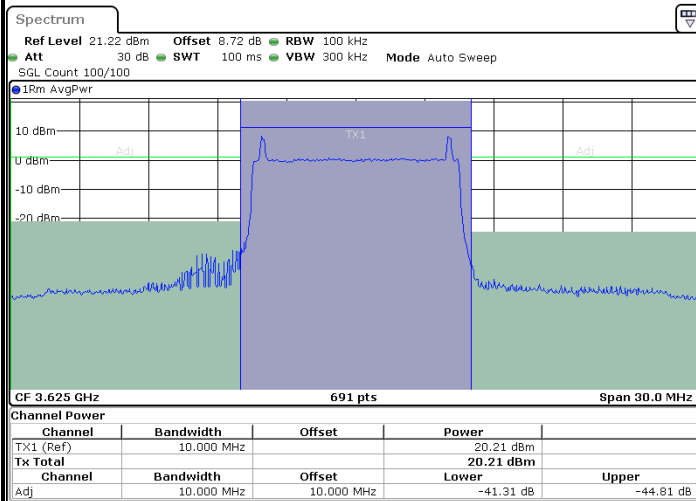
Date: 29 AUG 2020 15:41:33

Middle Channel / 1RBmax



Date: 29 AUG 2020 15:21:36

Middle Channel / Full RB



Date: 29 AUG 2020 15:43:47

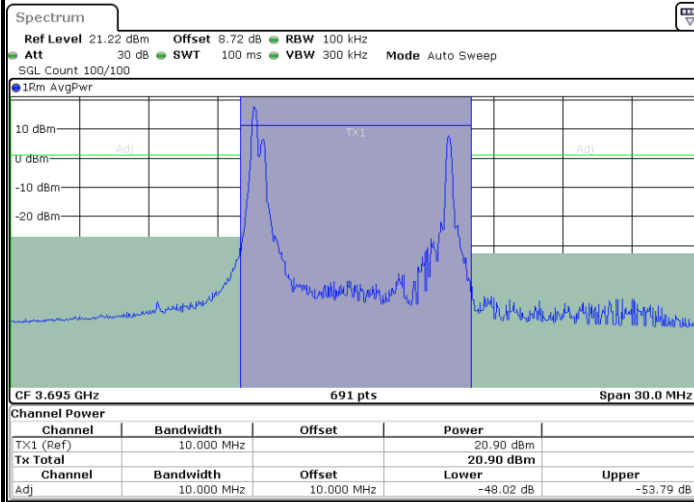
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LTE Band 48 / 10MHz

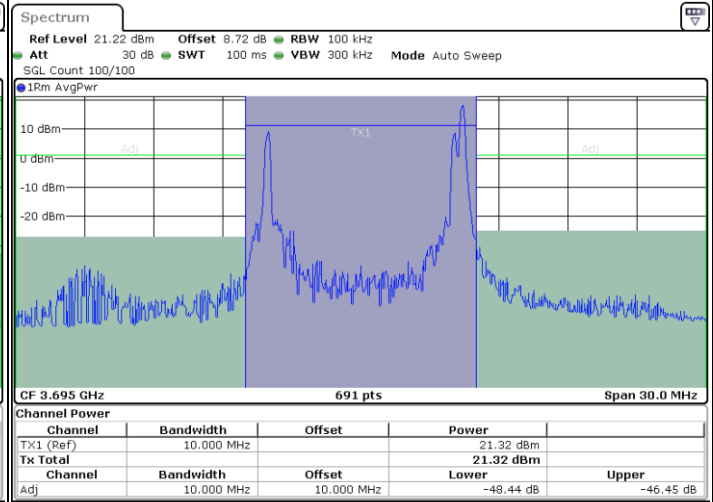
QPSK

Highest Channel / 1RB0



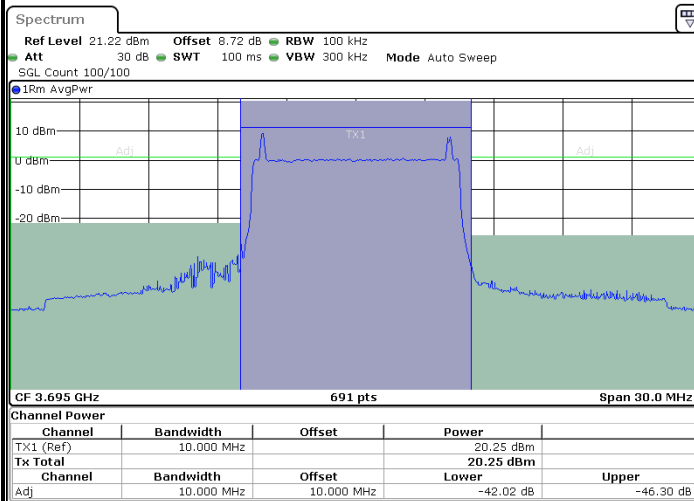
Date: 29 AUG.2020 15:47:40

Highest Channel / 1RBmax



Date: 29 AUG.2020 15:49:51

Highest Channel / Full RB



Date: 29 AUG.2020 15:45:52

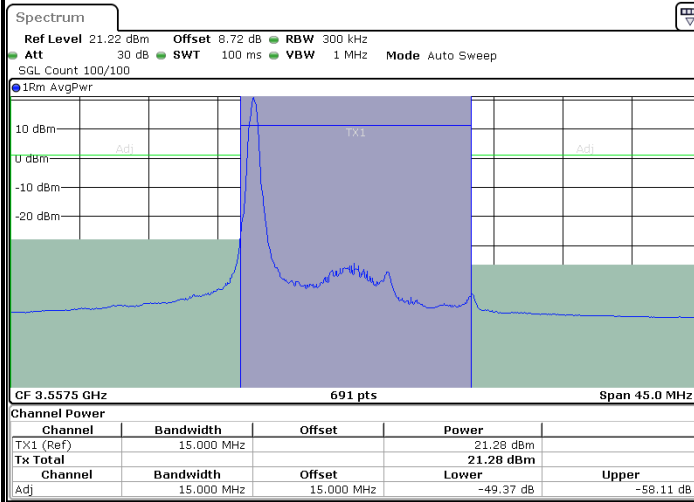
N/A



LTE Band 48 / 15MHz

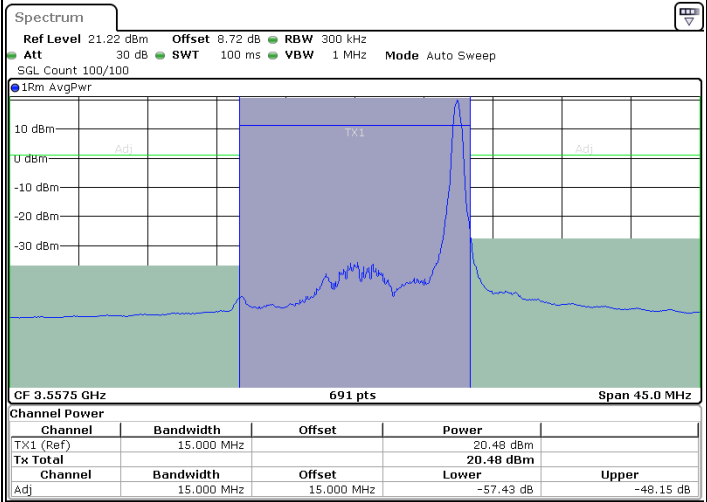
QPSK

Lowest Channel / 1RB0



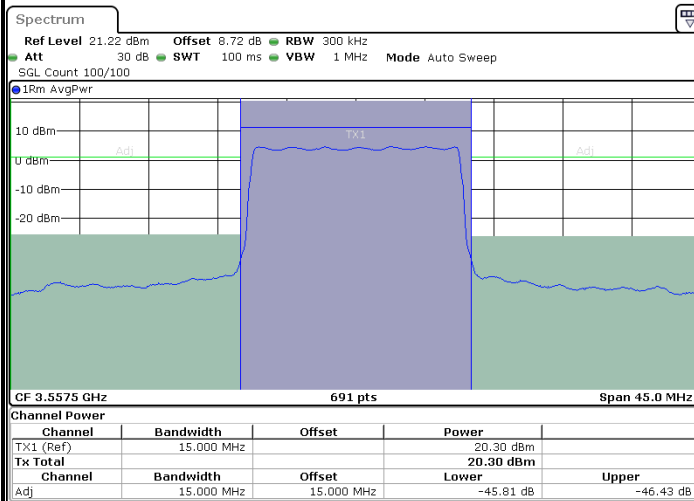
Date: 29 AUG 2020 15:55:48

Lowest Channel / 1RBmax



Date: 29 AUG 2020 15:57:30

Lowest Channel / Full RB



Date: 29 AUG 2020 15:54:04

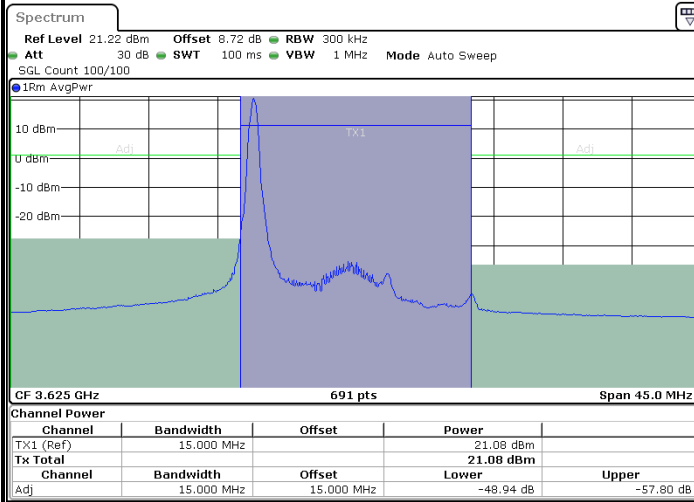
N/A



LTE Band 48 / 15MHz

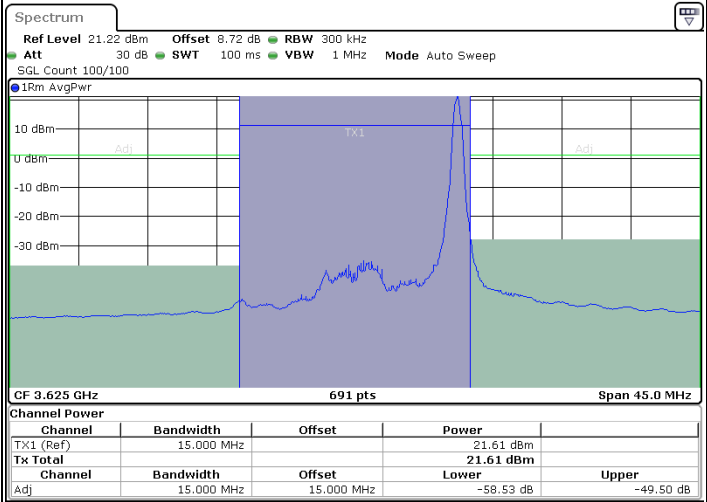
QPSK

Middle Channel / 1RB0



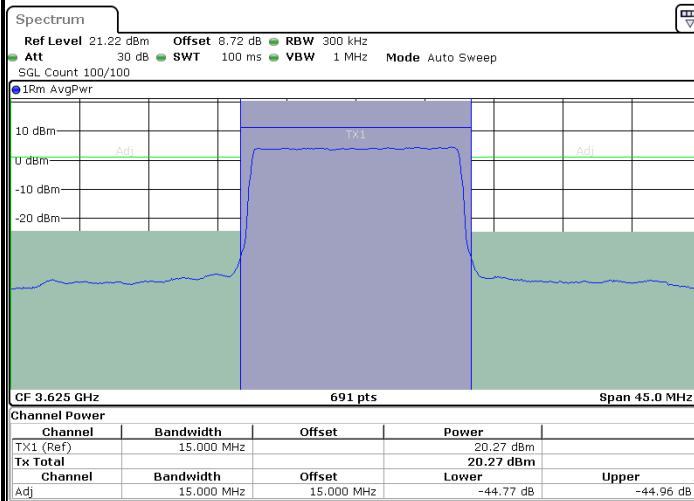
Date: 29 AUG 2020 15:59:35

Middle Channel / 1RBmax



Date: 29 AUG 2020 16:01:45

Middle Channel / Full RB



Date: 29 AUG 2020 16:03:32

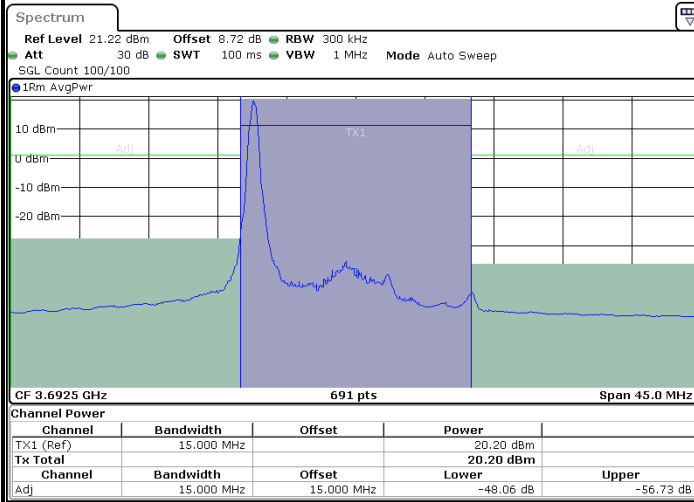
N/A



LTE Band 48 / 15MHz

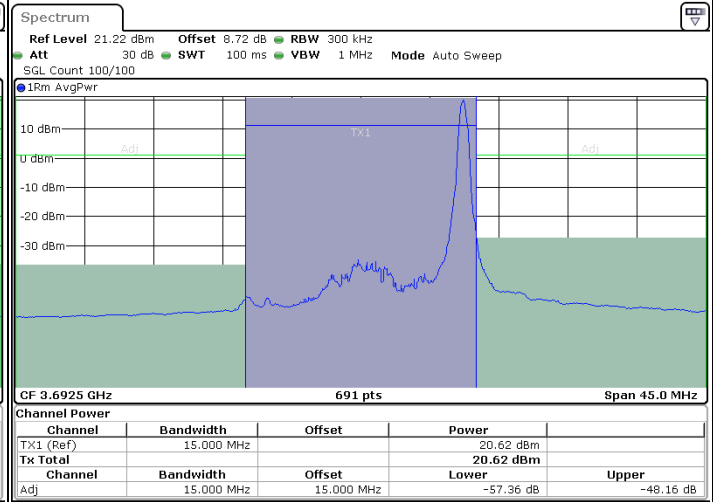
QPSK

Highest Channel / 1RB0



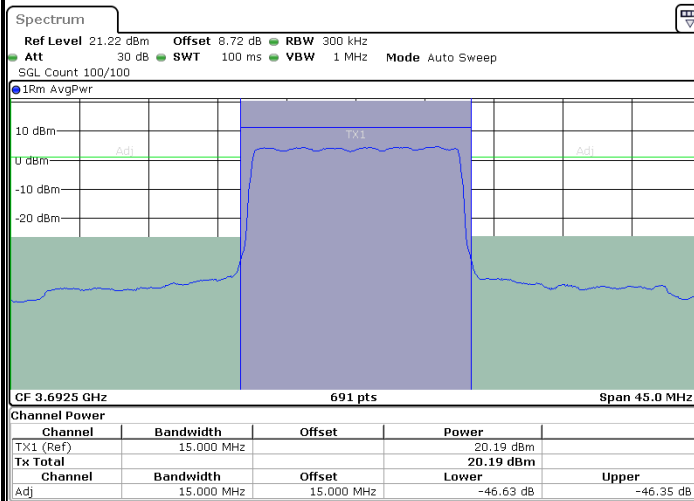
Date: 29 AUG 2020 16:06:54

Highest Channel / 1RBmax



Date: 29 AUG 2020 16:08:32

Highest Channel / Full RB



Date: 29 AUG 2020 16:05:19

N/A

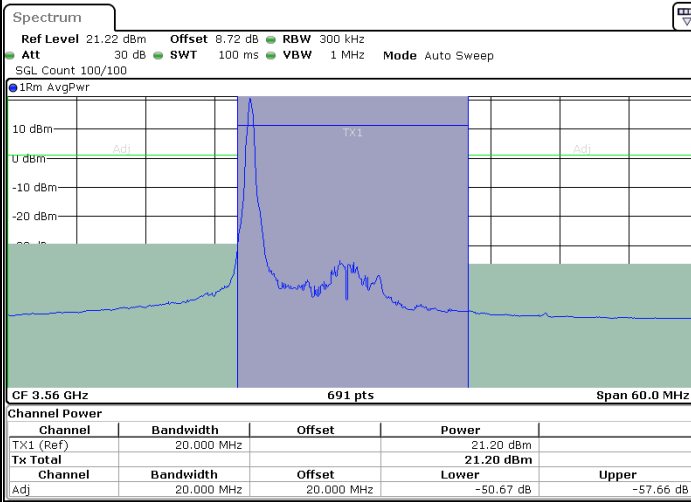


LTE Band 48 / 20MHz

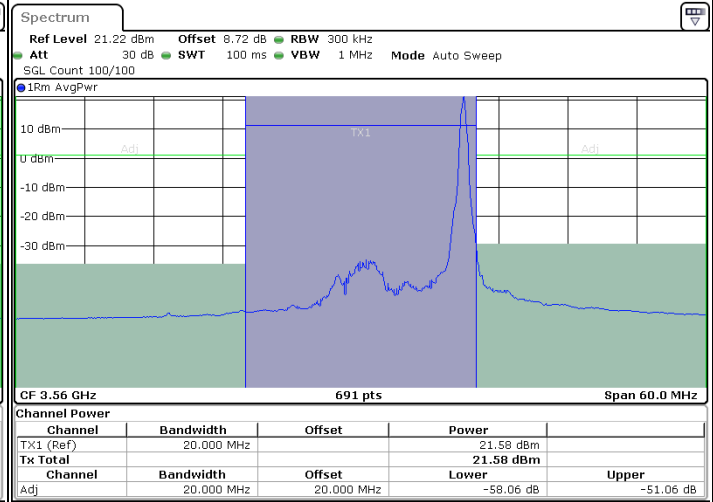
QPSK

Lowest Channel / 1RB0

Lowest Channel / 1RBmax



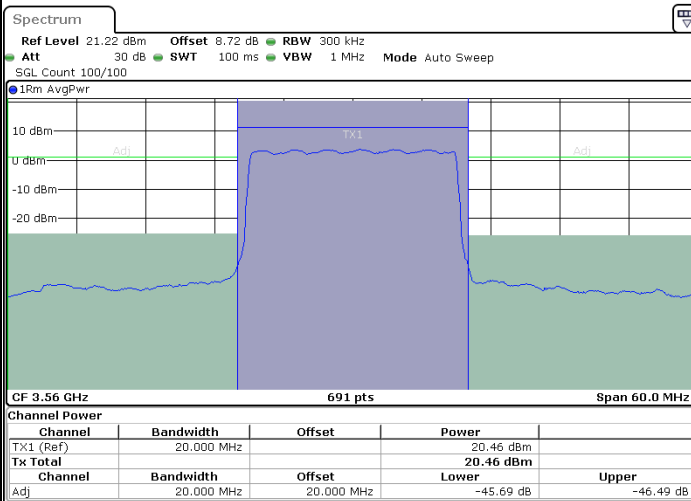
Date: 29 AUG 2020 16:31:40



Date: 29 AUG 2020 16:34:11

Lowest Channel / Full RB

N/A



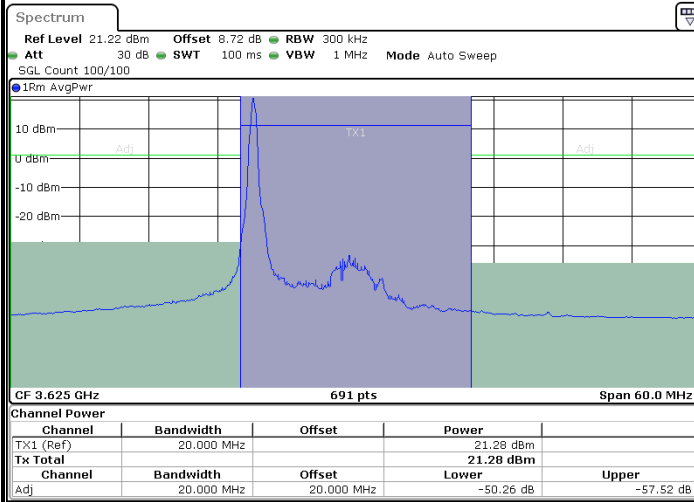
Date: 29 AUG 2020 16:29:25



LTE Band 48 / 20MHz

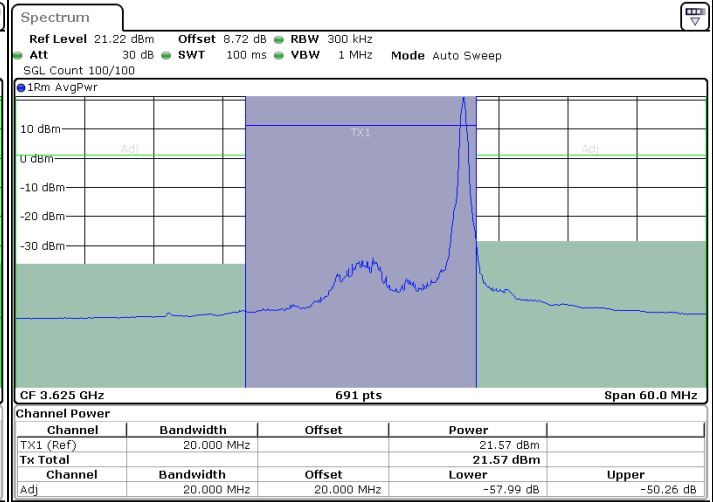
QPSK

Middle Channel / 1RB0



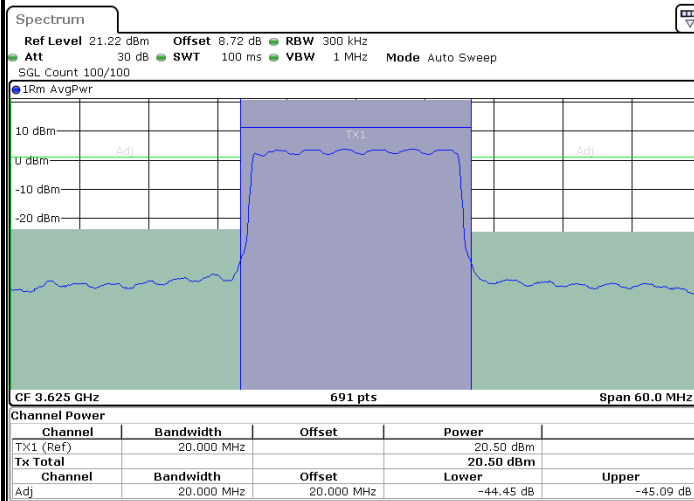
Date: 29 AUG 2020 16:36:20

Middle Channel / 1RBmax



Date: 29 AUG 2020 16:38:12

Middle Channel / Full RB



Date: 29 AUG 2020 16:41:34

N/A

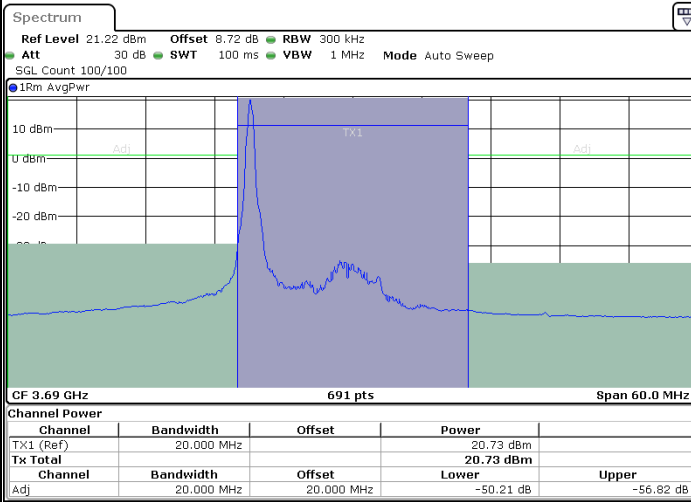


LTE Band 48 / 20MHz

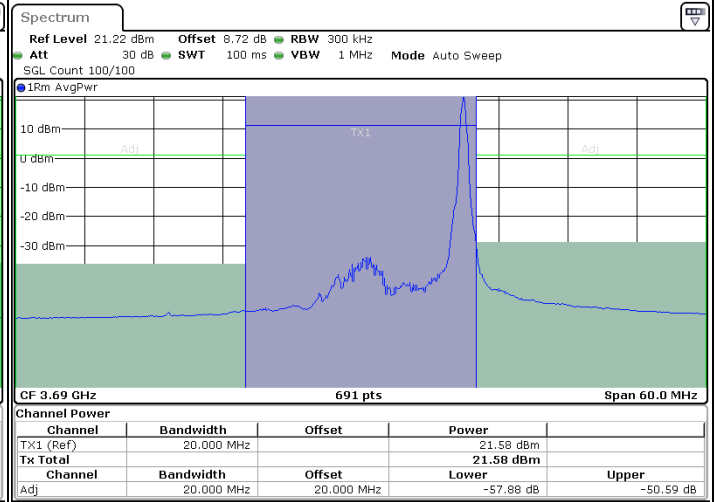
QPSK

Highest Channel / 1RB0

Highest Channel / 1RBmax



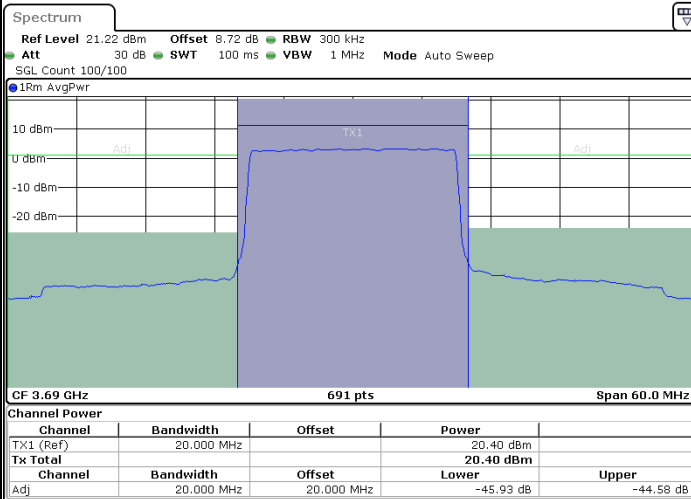
Date: 29 AUG 2020 16:44:08



Date: 29 AUG 2020 16:45:58

Highest Channel / Full RB

N/A



Date: 29 AUG 2020 16:42:21

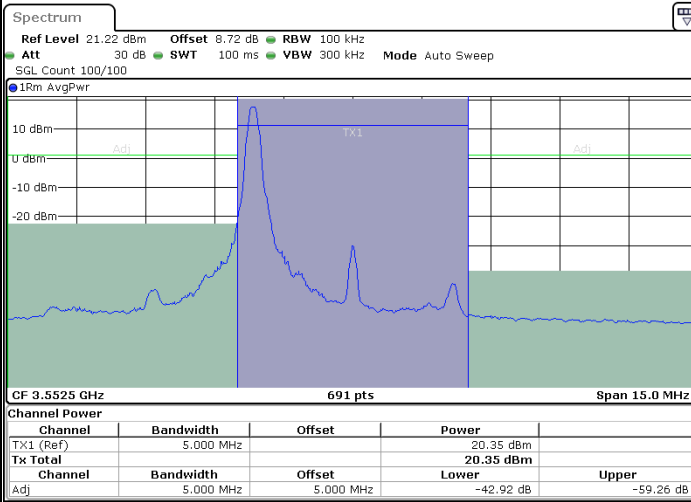


LTE Band 48 / 5MHz

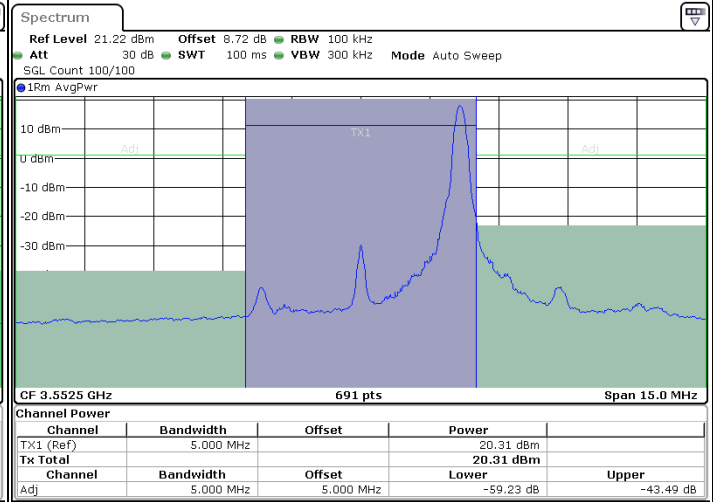
16QAM

Lowest Channel / 1RB0

Lowest Channel / 1RBmax



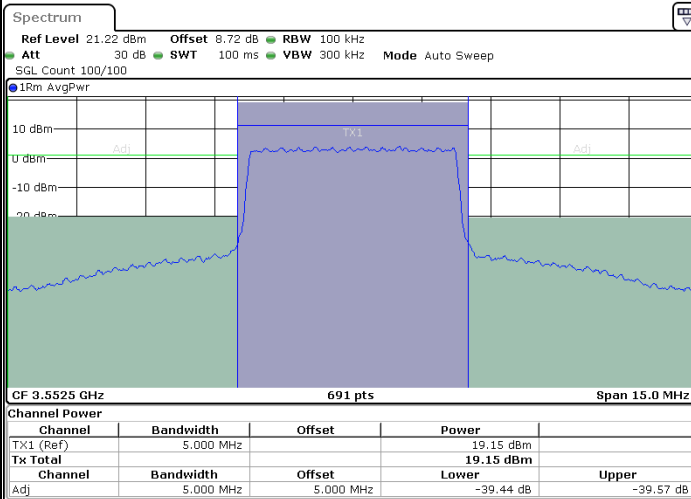
Date: 29 AUG 2020 14:54:42



Date: 29 AUG 2020 14:57:10

Lowest Channel / Full RB

N/A



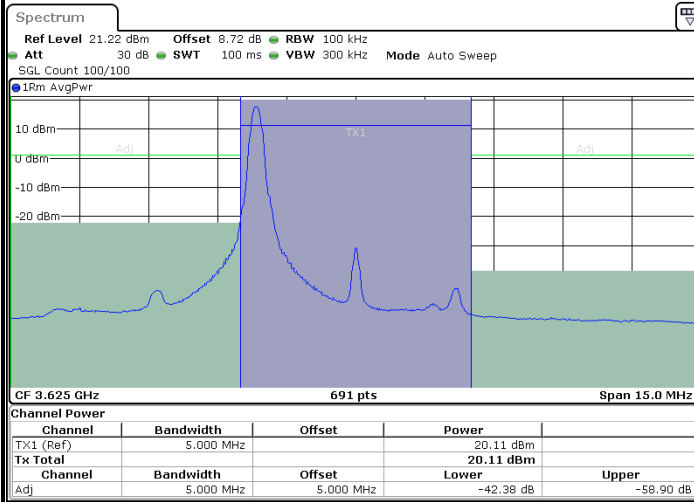
Date: 29 AUG 2020 14:52:40



LTE Band 48 / 5MHz

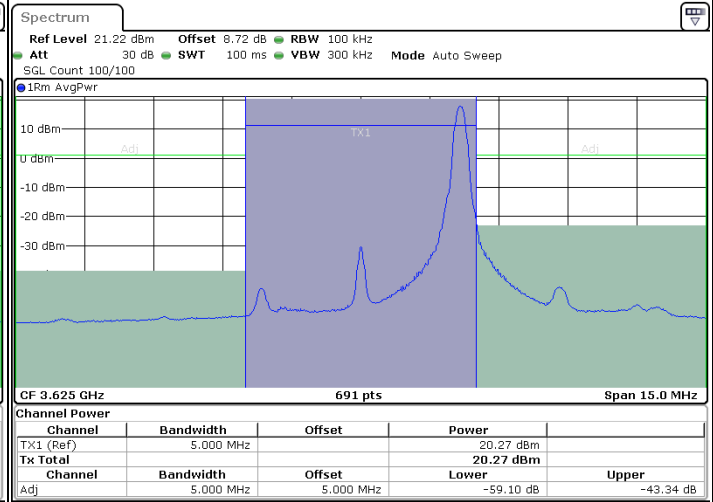
16QAM

Middle Channel / 1RB0



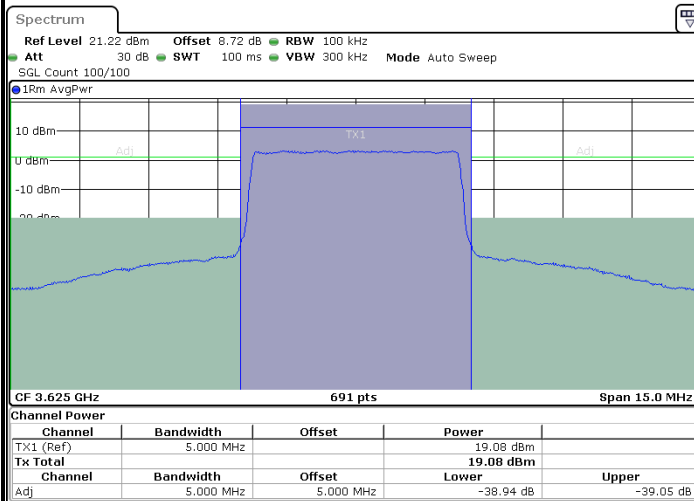
Date: 29 AUG 2020 15:01:27

Middle Channel / 1RBmax



Date: 29 AUG 2020 14:59:02

Middle Channel / Full RB



Date: 29 AUG 2020 15:03:57

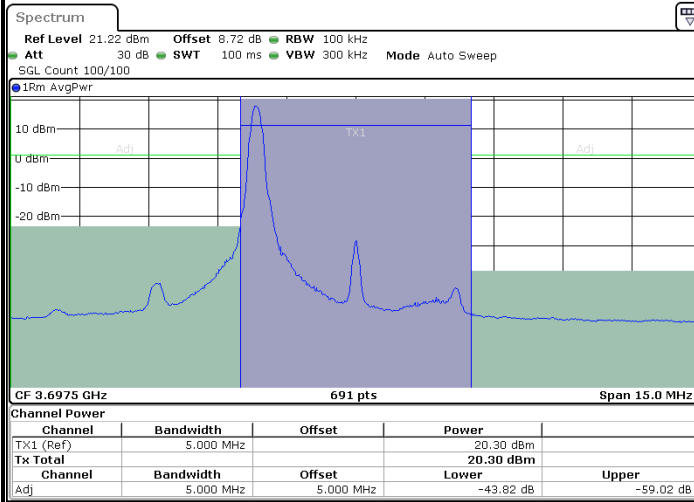
N/A



LTE Band 48 / 5MHz

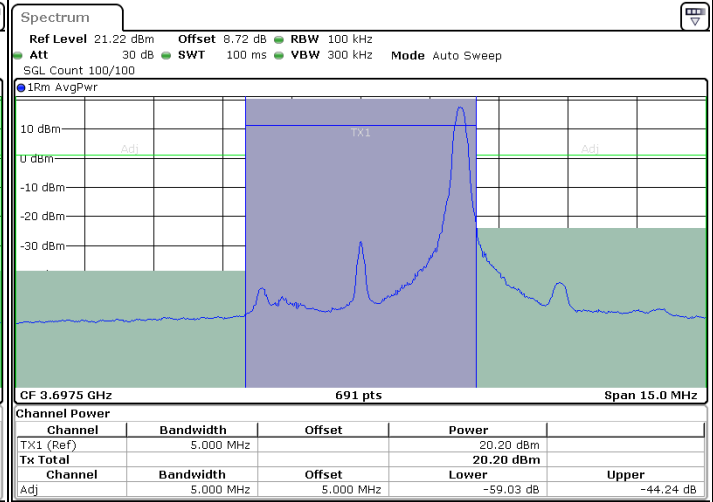
16QAM

Highest Channel / 1RB0



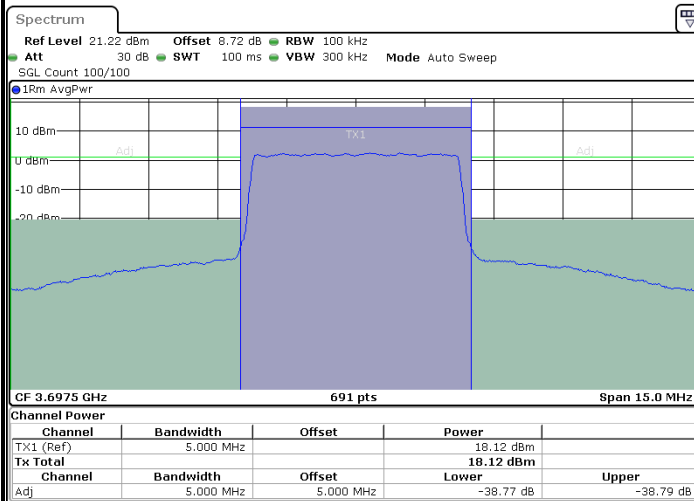
Date: 29 AUG 2020 15:11:17

Highest Channel / 1RBmax



Date: 29 AUG 2020 15:13:11

Highest Channel / Full RB



Date: 29 AUG 2020 15:06:32

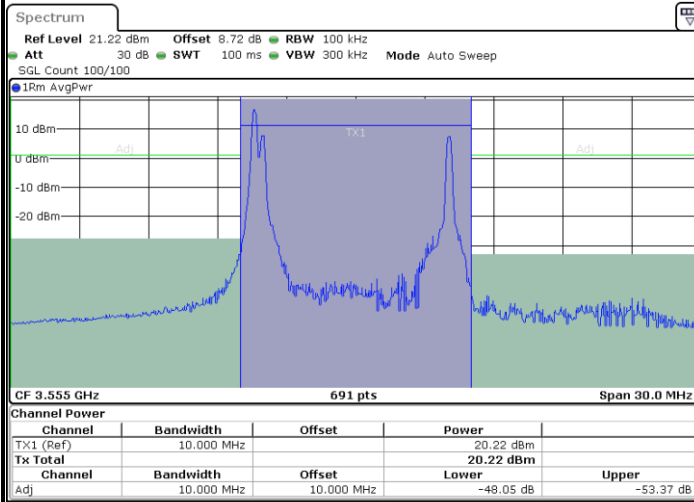
N/A



LTE Band 48 / 10MHz

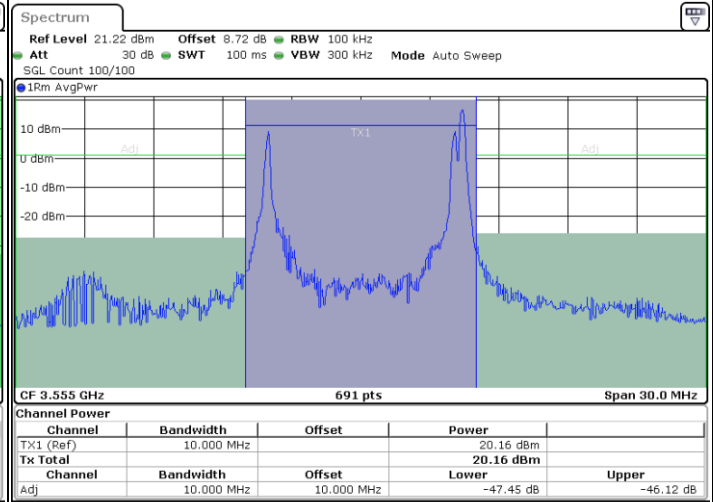
16QAM

Lowest Channel / 1RB0



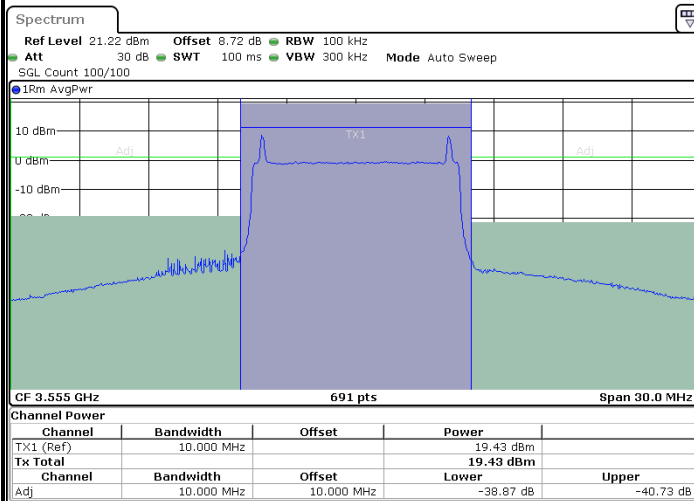
Date: 29 AUG 2020 15:17:36

Lowest Channel / 1RBmax



Date: 29 AUG 2020 15:19:58

Lowest Channel / Full RB



Date: 29 AUG 2020 15:15:58

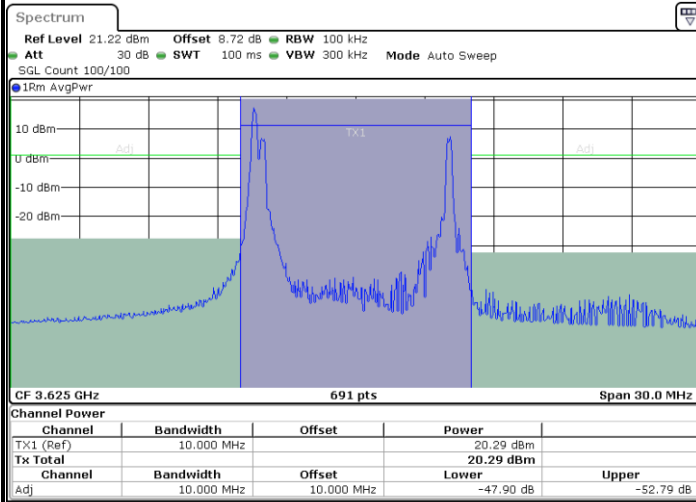
N/A



LTE Band 48 / 10MHz

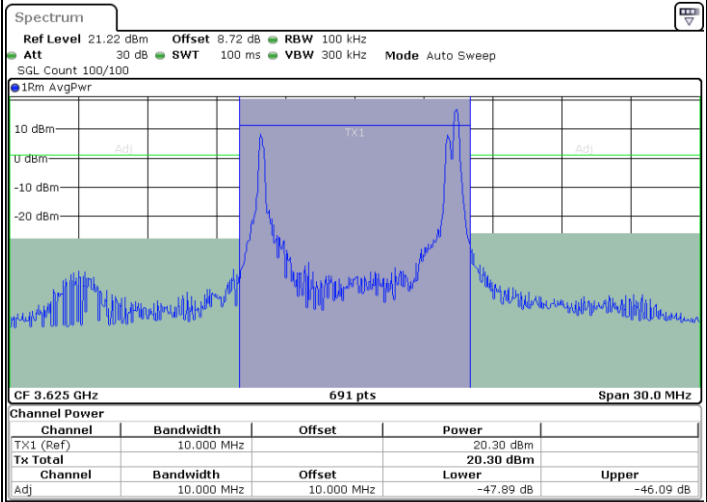
16QAM

Middle Channel / 1RB0



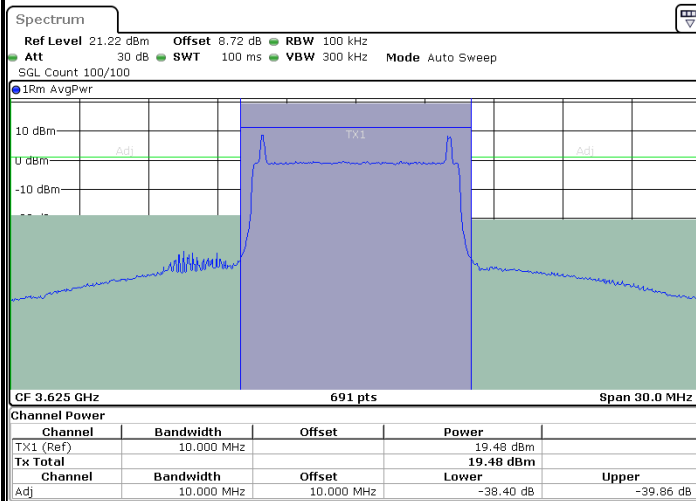
Date: 29 AUG.2020 15:42:09

Middle Channel / 1RBmax



Date: 29 AUG.2020 15:22:13

Middle Channel / Full RB



Date: 29 AUG.2020 15:44:21

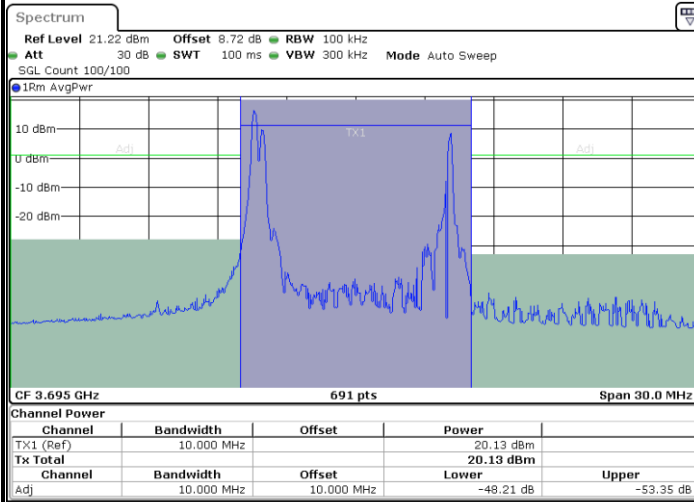
N/A



LTE Band 48 / 10MHz

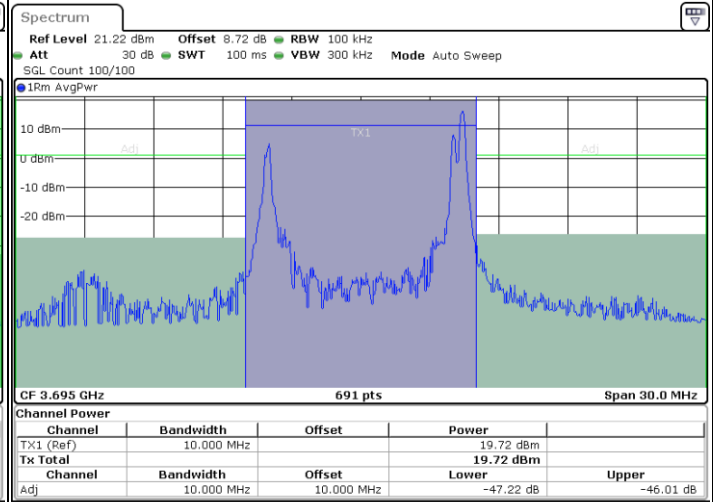
16QAM

Highest Channel / 1RB0



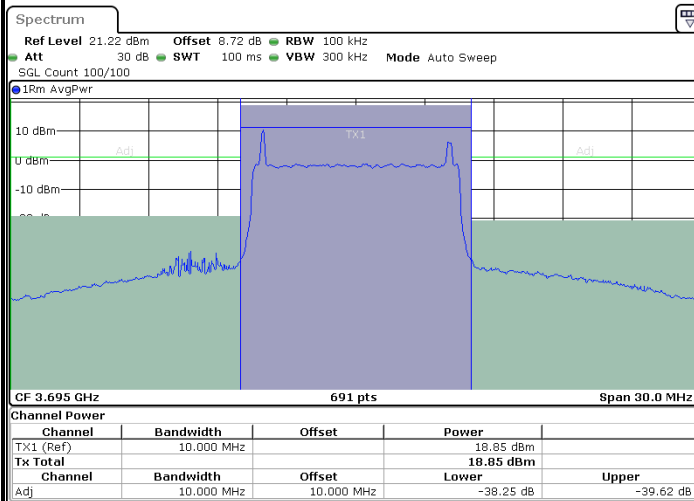
Date: 29 AUG 2020 15:48:13

Highest Channel / 1RBmax



Date: 29 AUG 2020 15:50:24

Highest Channel / Full RB



Date: 29 AUG 2020 15:46:26

N/A

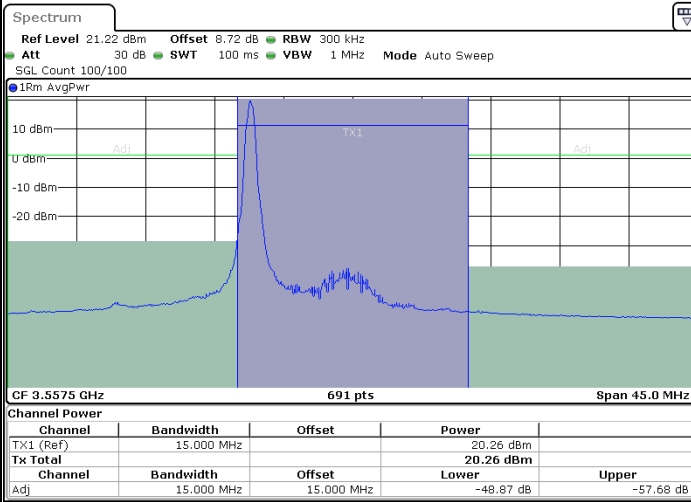


LTE Band 48 / 15MHz

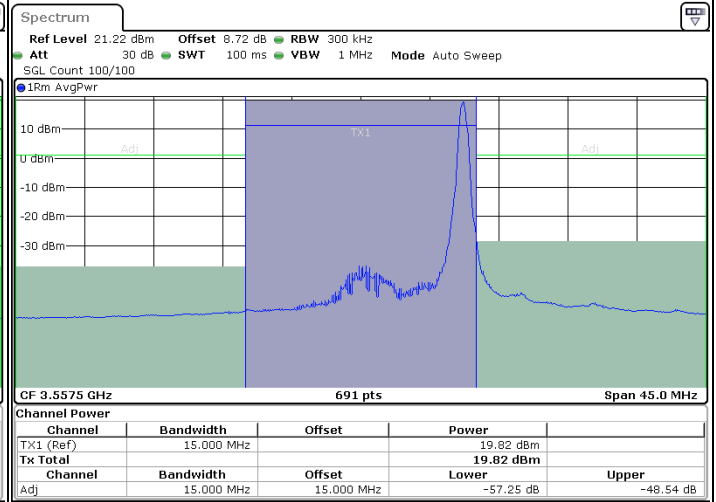
16QAM

Lowest Channel / 1RB0

Lowest Channel / 1RBmax



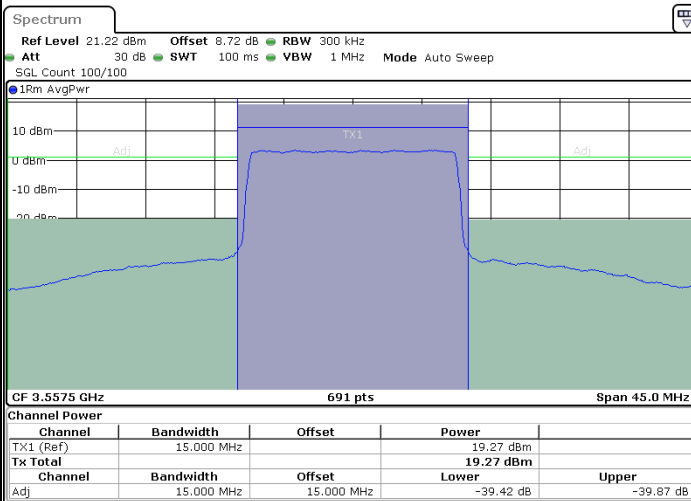
Date: 29 AUG 2020 15:56:23



Date: 29 AUG 2020 15:58:03

Lowest Channel / Full RB

N/A



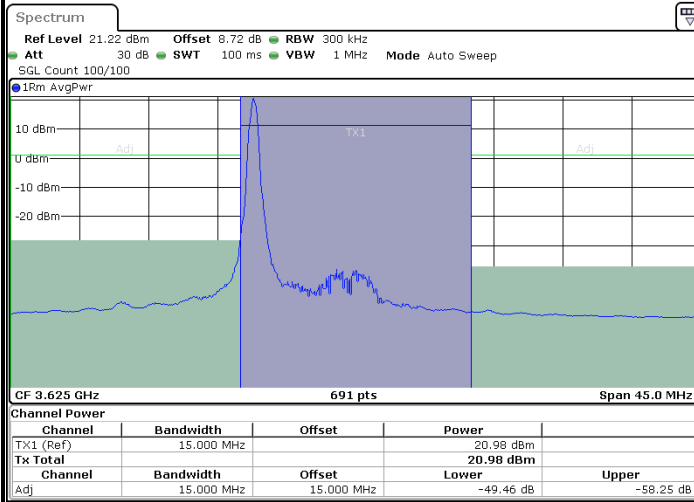
Date: 29 AUG 2020 15:54:37



LTE Band 48 / 15MHz

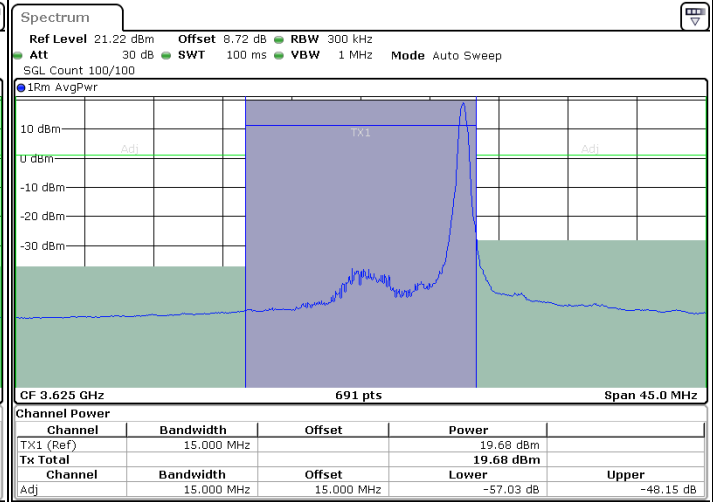
16QAM

Middle Channel / 1RB0



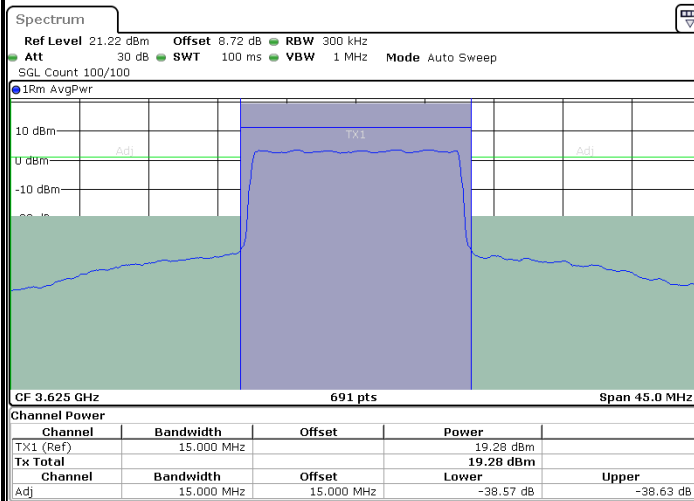
Date: 29 AUG 2020 16:00:08

Middle Channel / 1RBmax



Date: 29 AUG 2020 16:02:17

Middle Channel / Full RB



Date: 29 AUG 2020 16:04:02

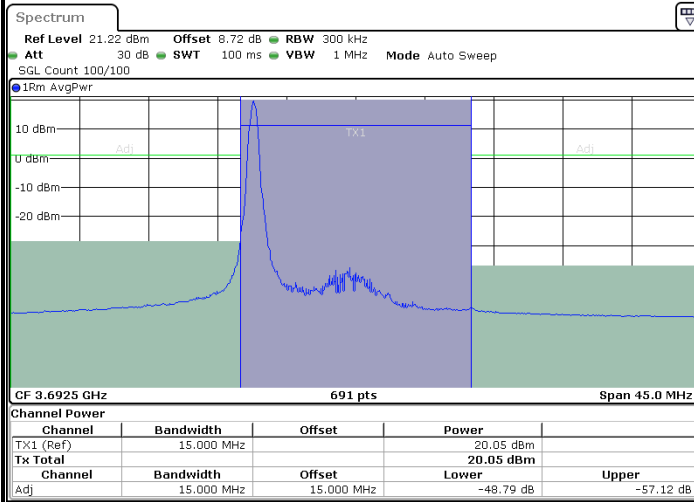
N/A



LTE Band 48 / 15MHz

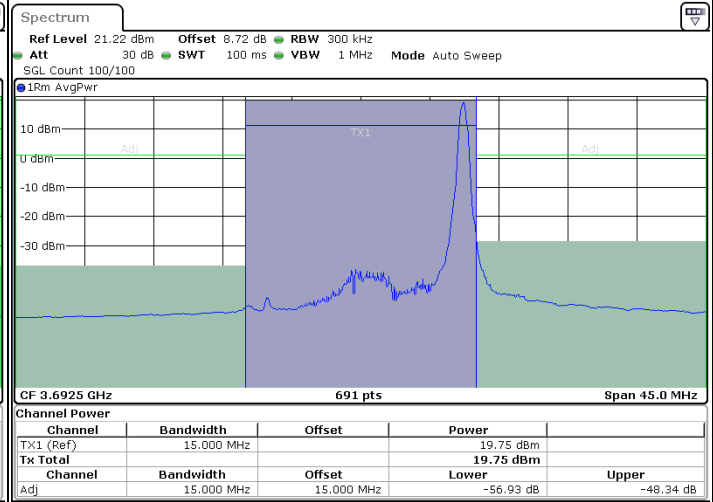
16QAM

Highest Channel / 1RB0



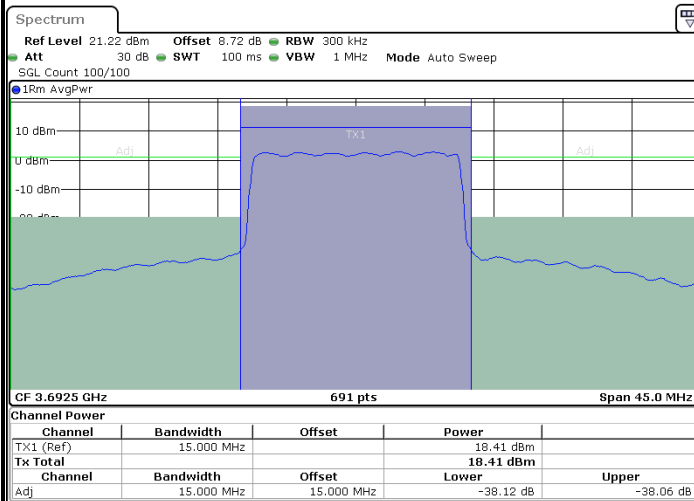
Date: 29 AUG 2020 16:07:24

Highest Channel / 1RBmax



Date: 29 AUG 2020 16:09:03

Highest Channel / Full RB



Date: 29 AUG 2020 16:05:51

N/A

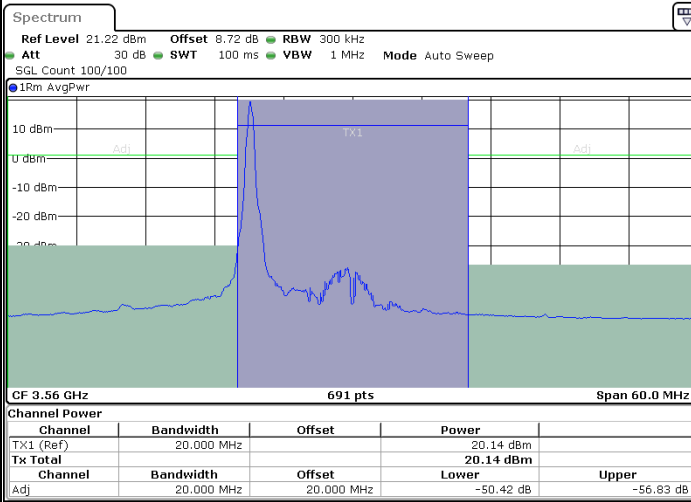


LTE Band 48 / 20MHz

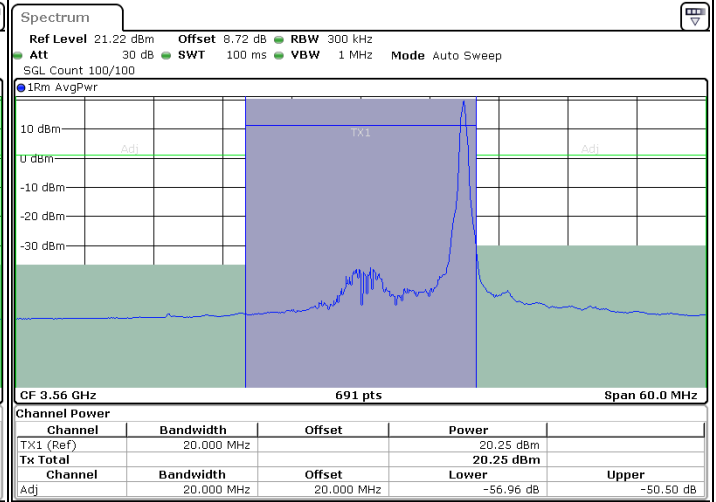
16QAM

Lowest Channel / 1RB0

Lowest Channel / 1RBmax



Date: 29 AUG 2020 16:32:17



Date: 29 AUG 2020 16:34:43

Lowest Channel / Full RB

N/A



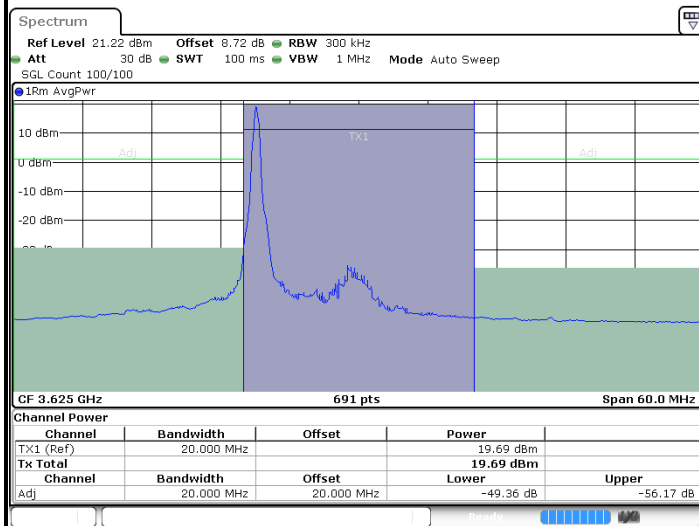
Date: 29 AUG 2020 16:29:55



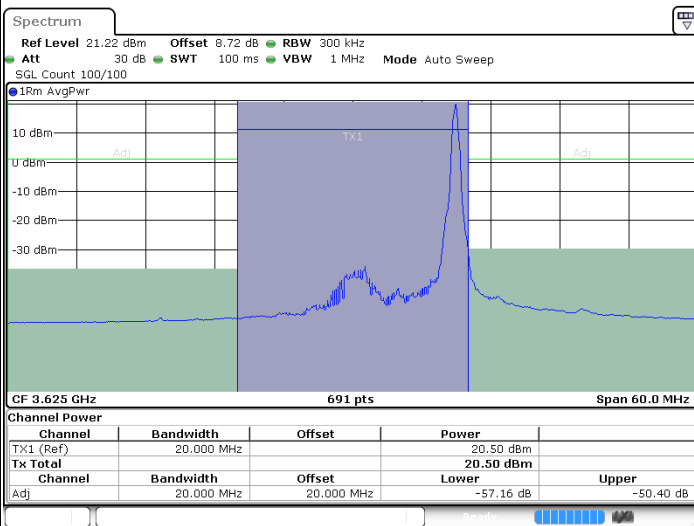
LTE Band 48 / 20MHz

16QAM

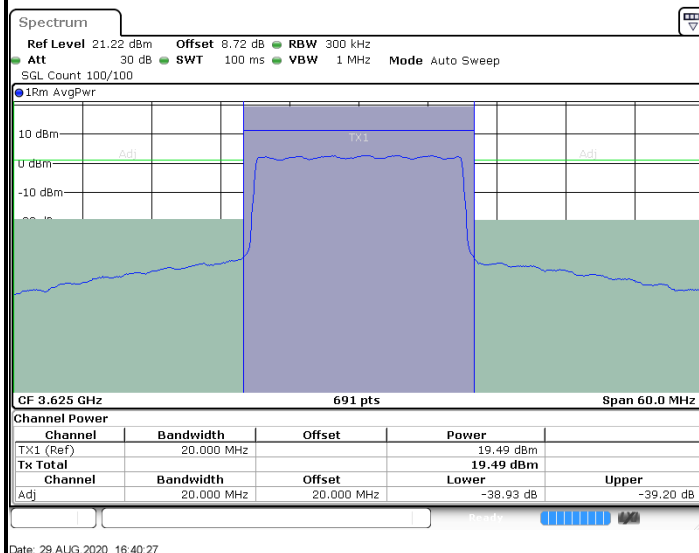
Middle Channel / 1RB0



Middle Channel / 1RBmax



Middle Channel / Full RB



N/A

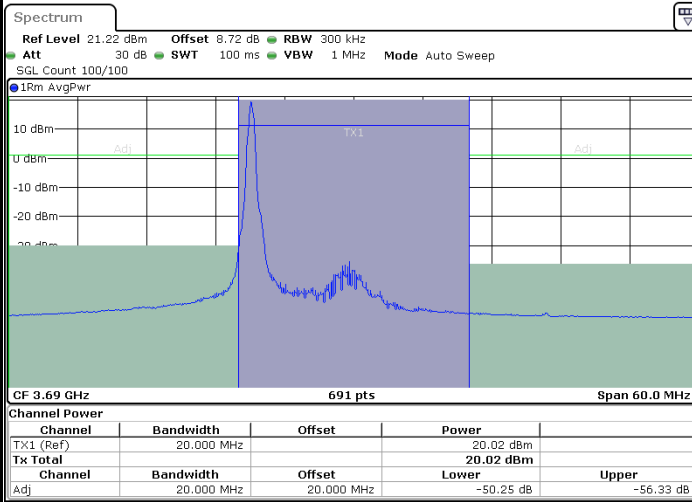


LTE Band 48 / 20MHz

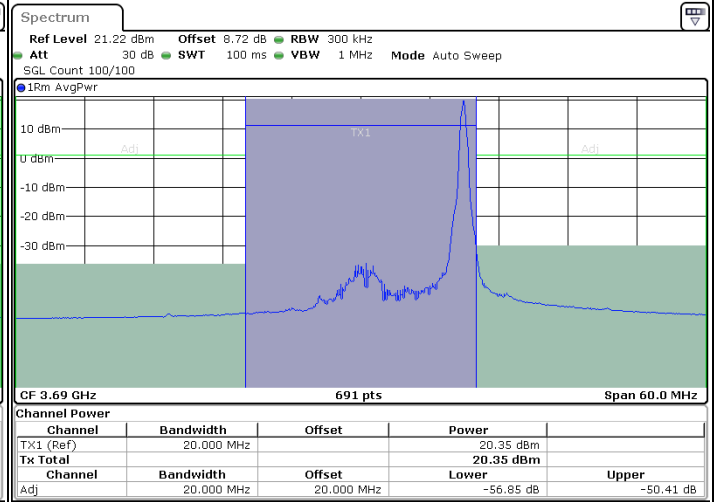
16QAM

Highest Channel / 1RB0

Highest Channel / 1RBmax



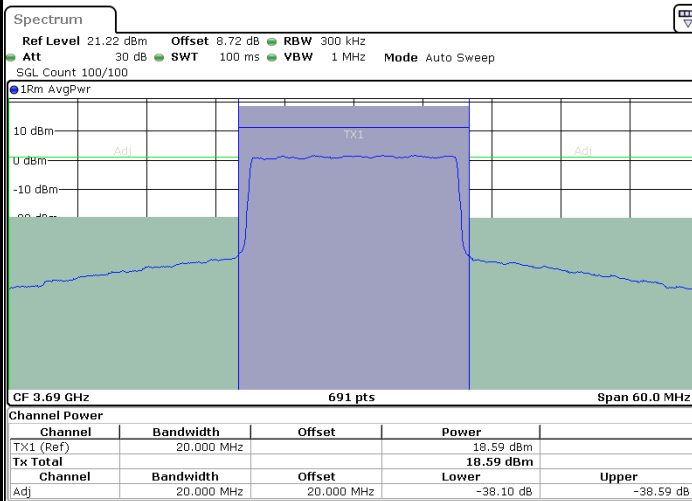
Date: 29 AUG 2020 16:44:38



Date: 29 AUG 2020 16:46:32

Highest Channel / Full RB

N/A



Date: 29 AUG 2020 16:42:55

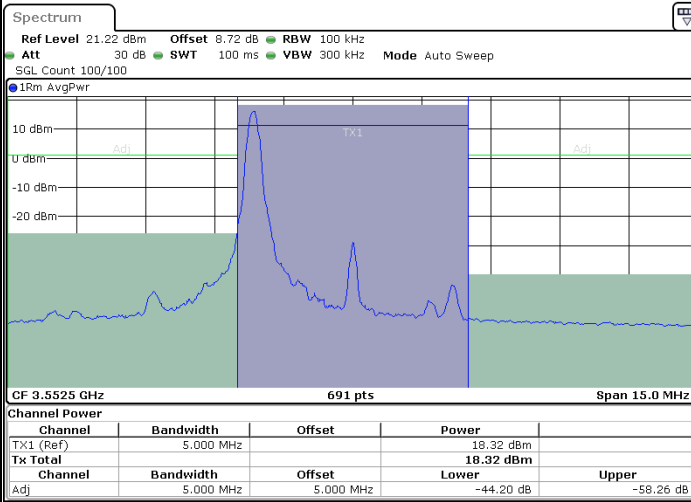


LTE Band 48 / 5MHz

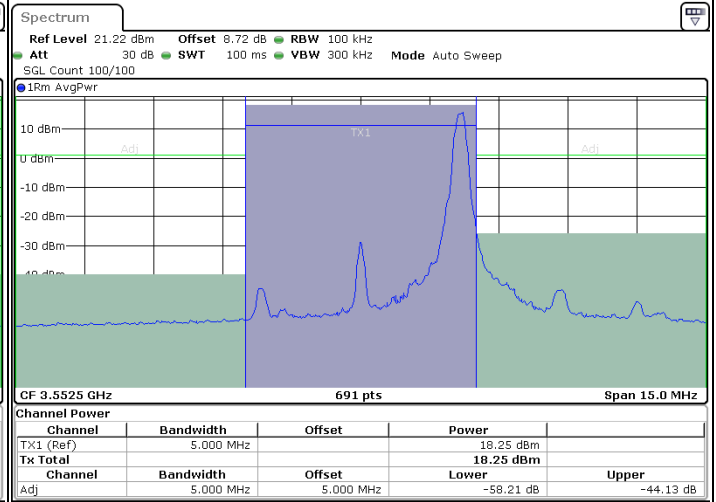
64QAM

Lowest Channel / 1RB0

Lowest Channel / 1RBmax



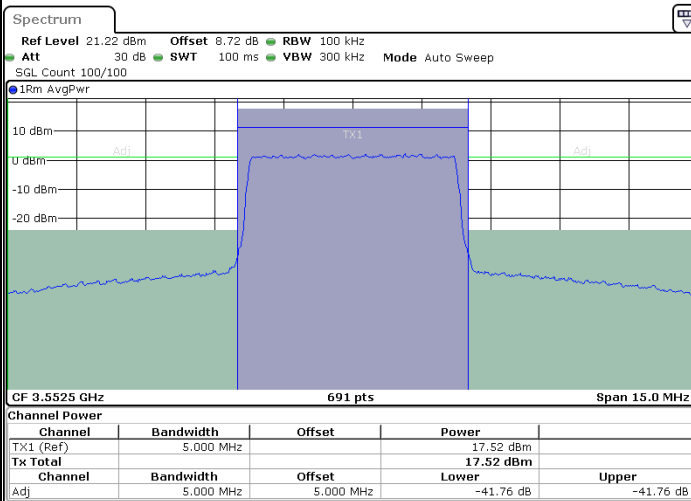
Date: 29 AUG 2020 14:55:20



Date: 29 AUG 2020 14:57:43

Lowest Channel / Full RB

N/A



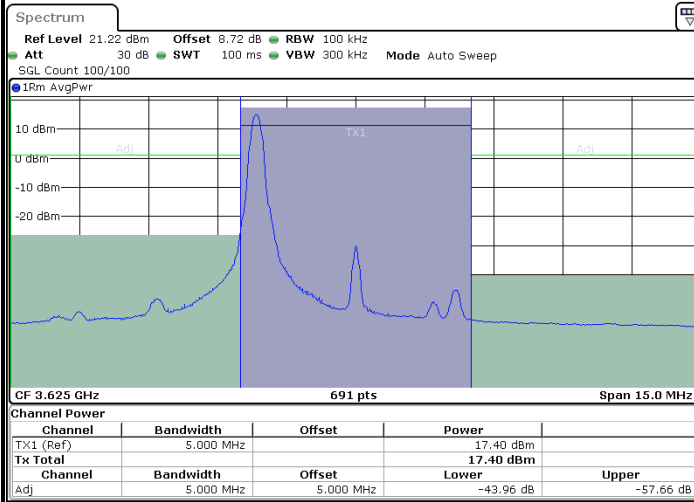
Date: 29 AUG 2020 14:53:14



LTE Band 48 / 5MHz

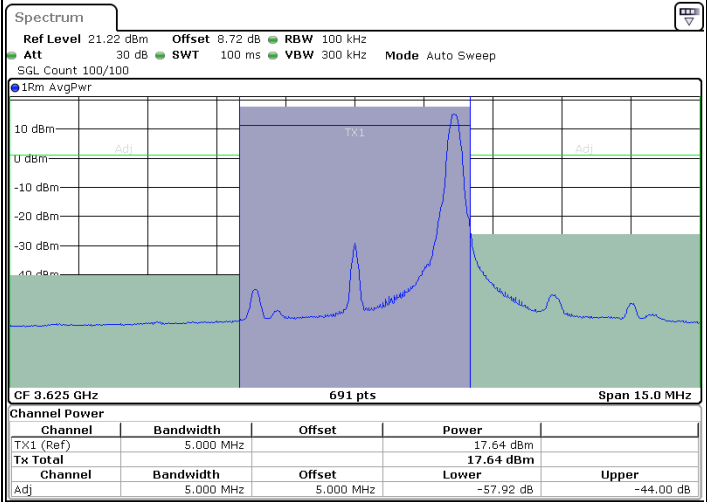
64QAM

Middle Channel / 1RB0



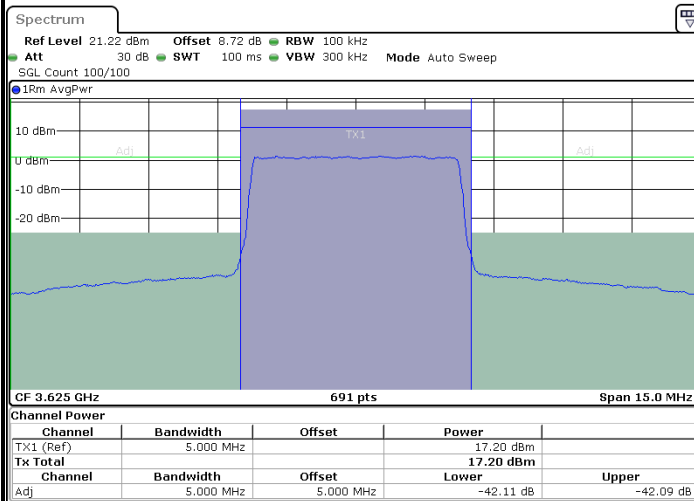
Date: 29 AUG 2020 15:02:01

Middle Channel / 1RBmax



Date: 29 AUG 2020 14:59:45

Middle Channel / Full RB



Date: 29 AUG 2020 15:04:33

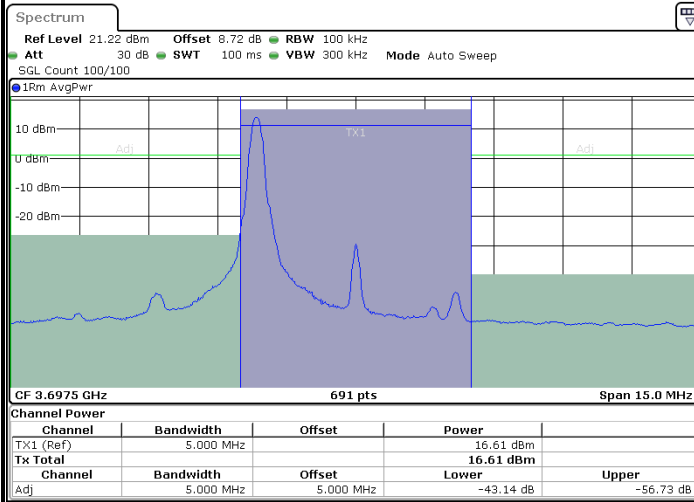
N/A



LTE Band 48 / 5MHz

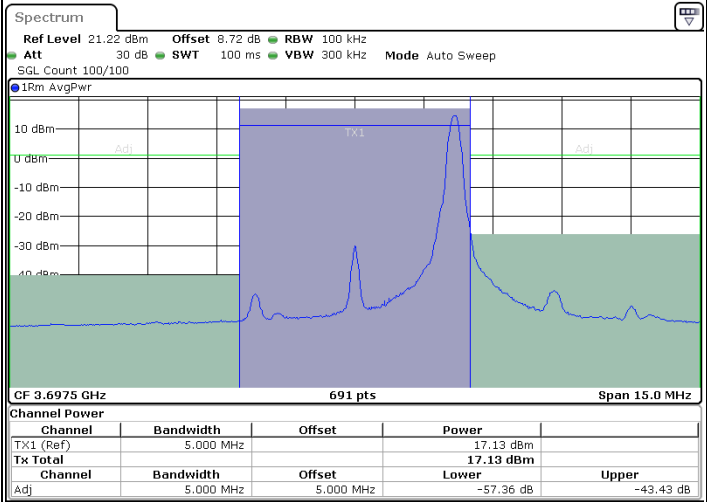
64QAM

Highest Channel / 1RB0



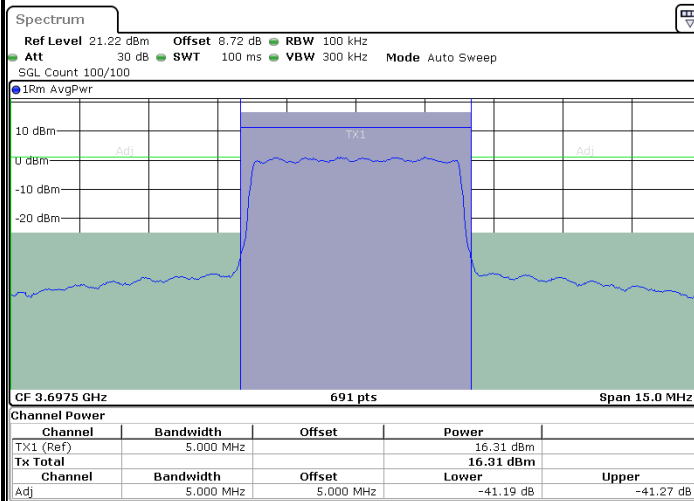
Date: 29 AUG 2020 15:11:50

Highest Channel / 1RBmax



Date: 29 AUG 2020 15:13:45

Highest Channel / Full RB



Date: 29 AUG 2020 15:09:46

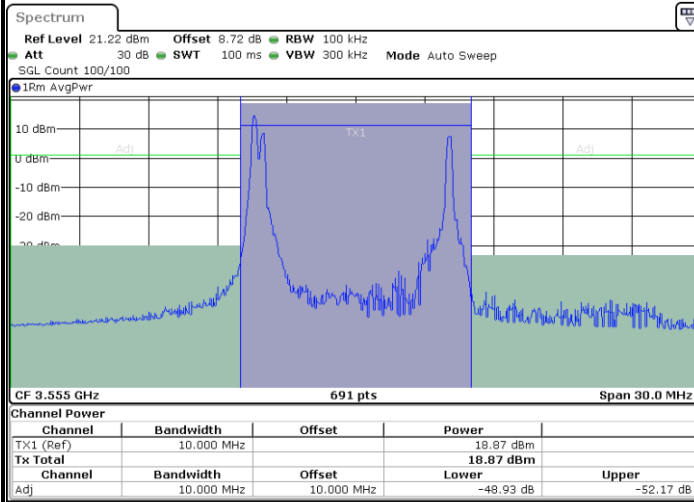
N/A



LTE Band 48 / 10MHz

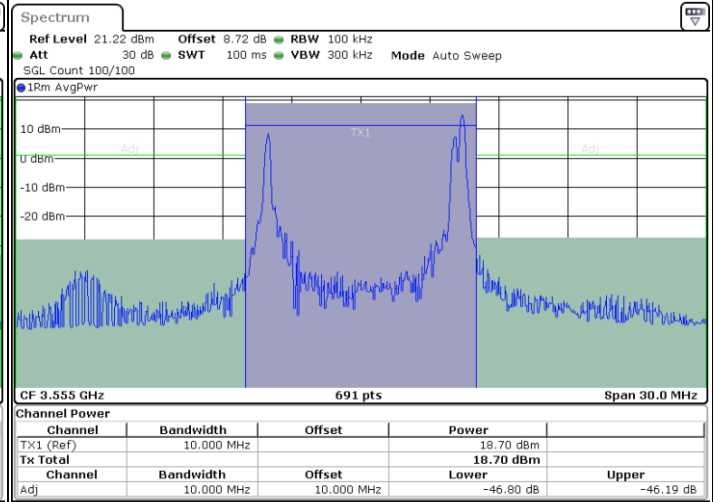
64QAM

Lowest Channel / 1RB0



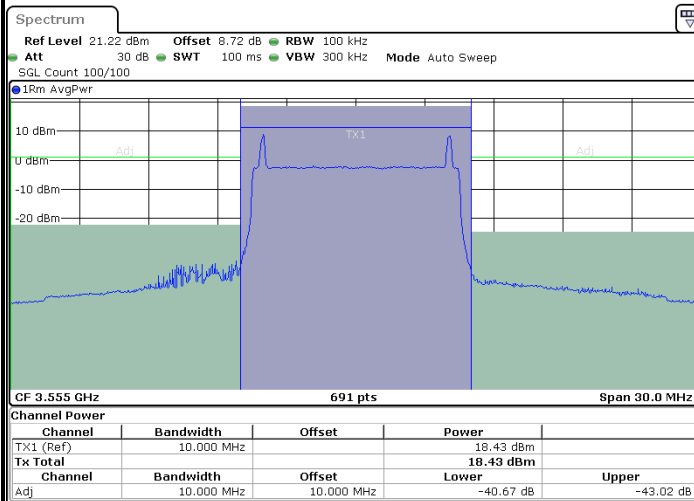
Date: 29 AUG.2020 15:18:05

Lowest Channel / 1RBmax



Date: 29 AUG.2020 15:20:34

Lowest Channel / Full RB



Date: 29 AUG.2020 15:16:28

N/A

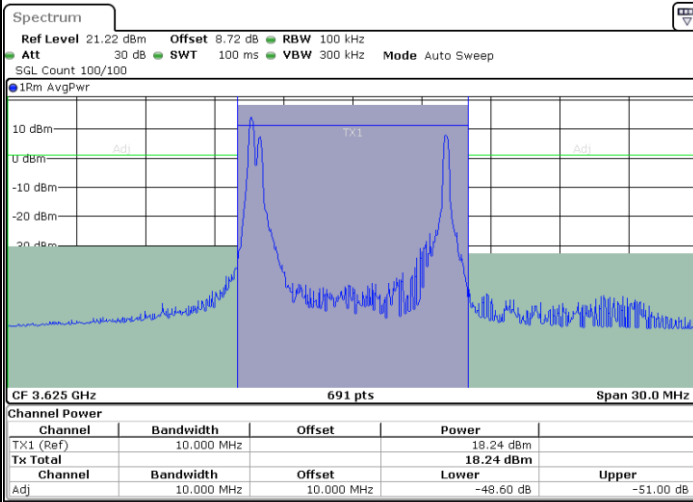


LTE Band 48 / 10MHz

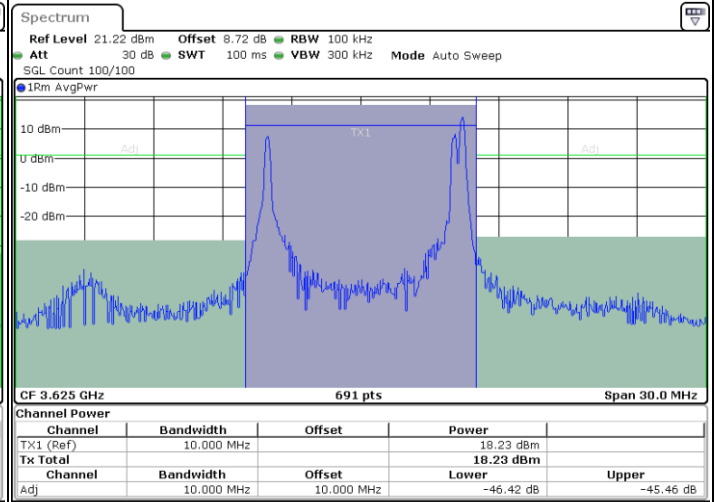
64QAM

Middle Channel / 1RB0

Middle Channel / 1RBmax



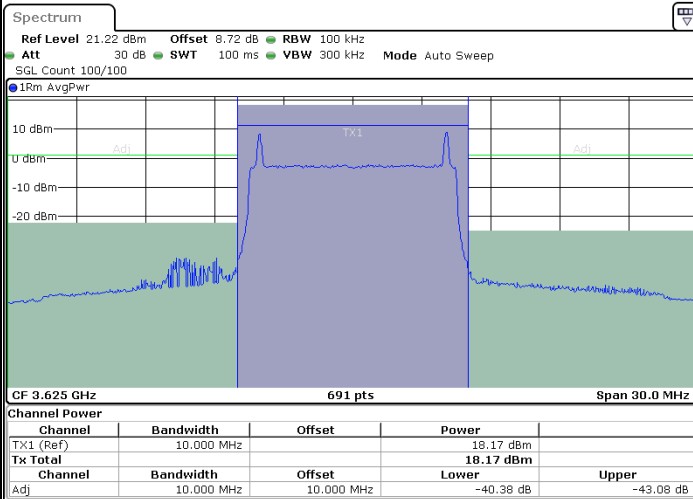
Date: 29 AUG.2020 15:42:44



Date: 29 AUG.2020 15:22:48

Middle Channel / Full RB

N/A



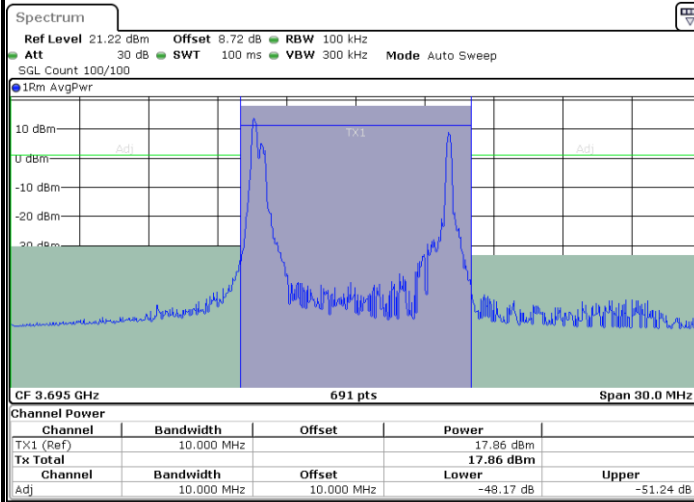
Date: 29 AUG.2020 15:44:53



LTE Band 48 / 10MHz

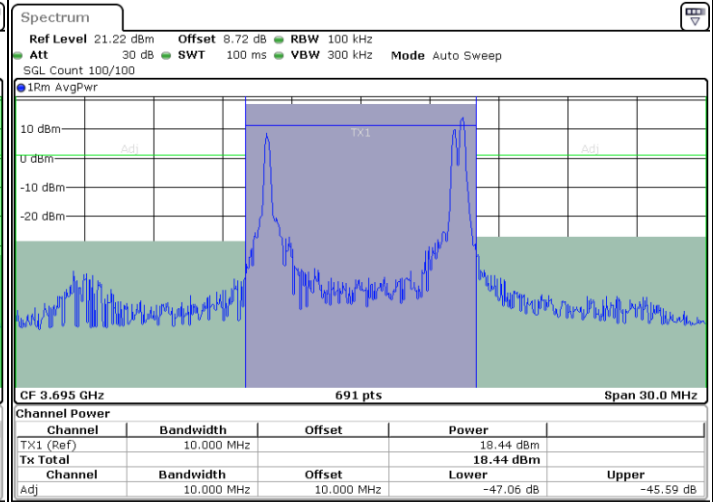
64QAM

Highest Channel / 1RB0



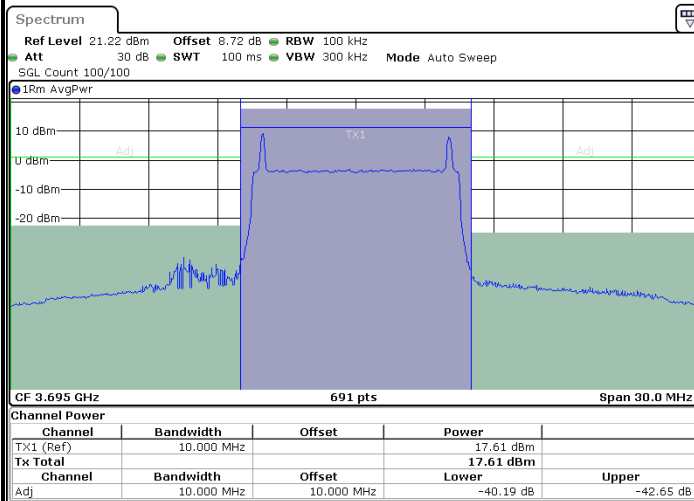
Date: 29 AUG.2020 15:48:43

Highest Channel / 1RBmax



Date: 29 AUG.2020 15:51:01

Highest Channel / Full RB



Date: 29 AUG.2020 15:46:57

N/A

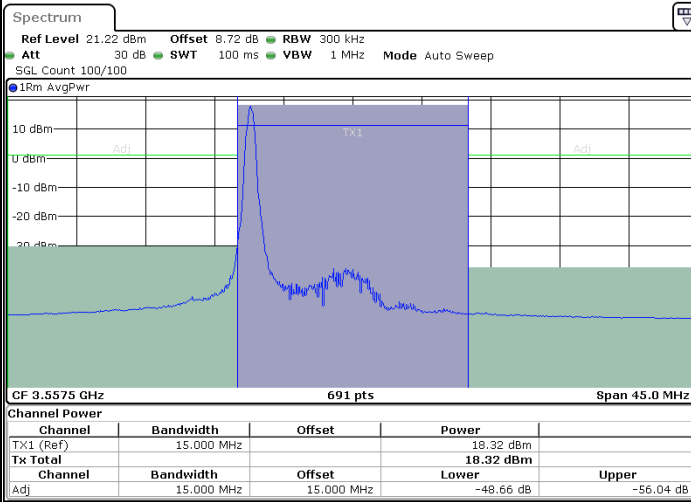


LTE Band 48 / 15MHz

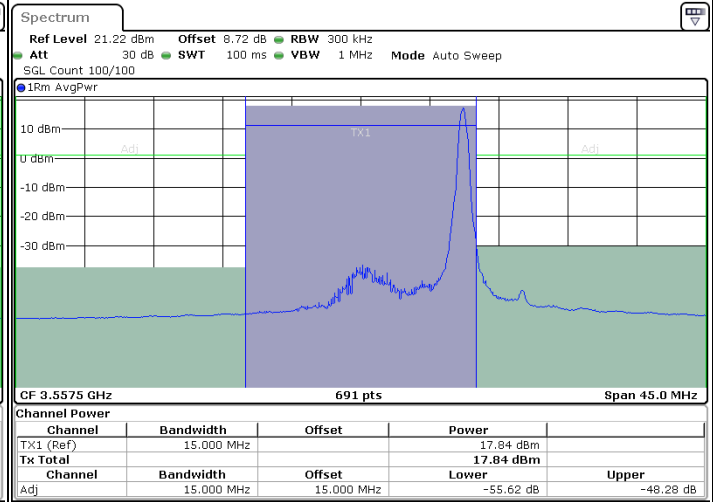
64QAM

Lowest Channel / 1RB0

Lowest Channel / 1RBmax



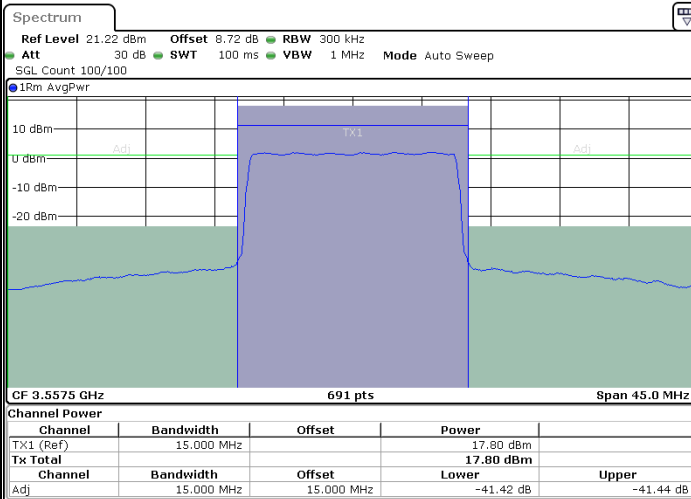
Date: 29 AUG 2020 15:56:52



Date: 29 AUG 2020 15:58:37

Lowest Channel / Full RB

N/A



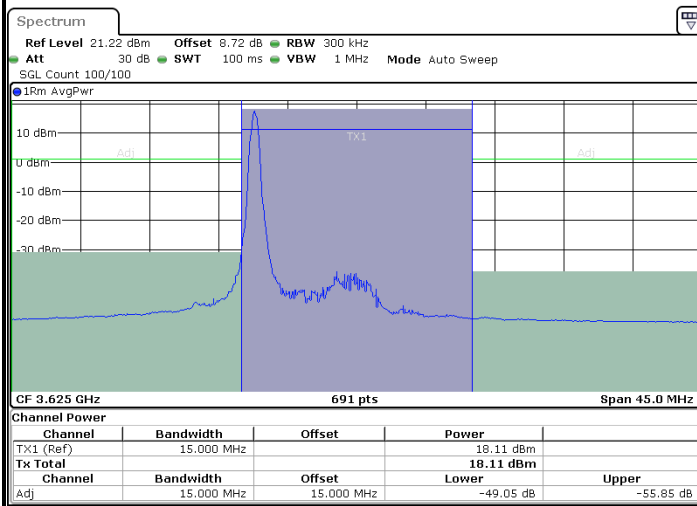
Date: 29 AUG 2020 15:55:11



LTE Band 48 / 15MHz

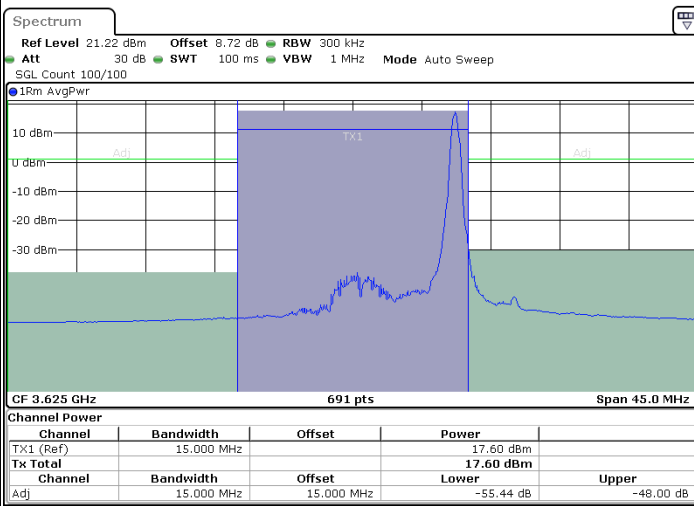
64QAM

Middle Channel / 1RB0



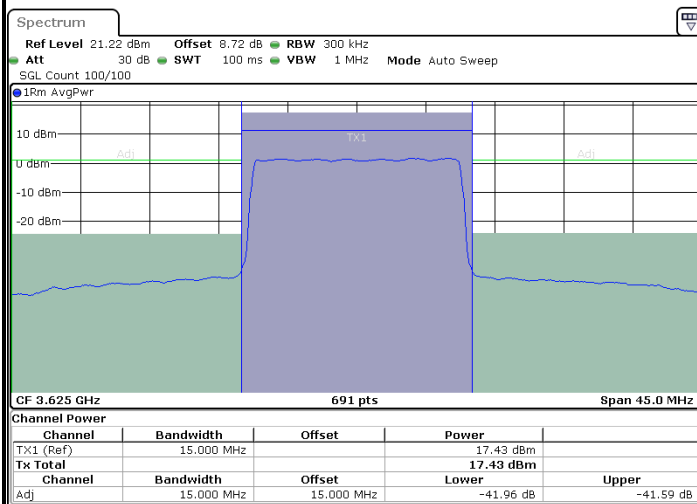
Date: 29 AUG 2020 16:00:38

Middle Channel / 1RBmax



Date: 29 AUG 2020 16:02:51

Middle Channel / Full RB



Date: 29 AUG 2020 16:04:34

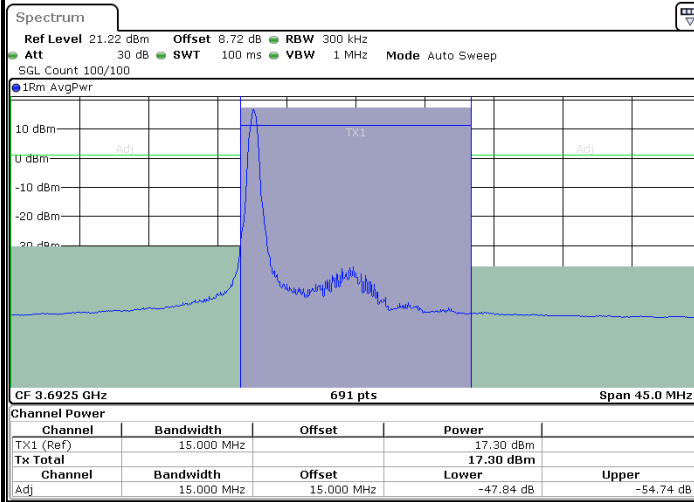
N/A



LTE Band 48 / 15MHz

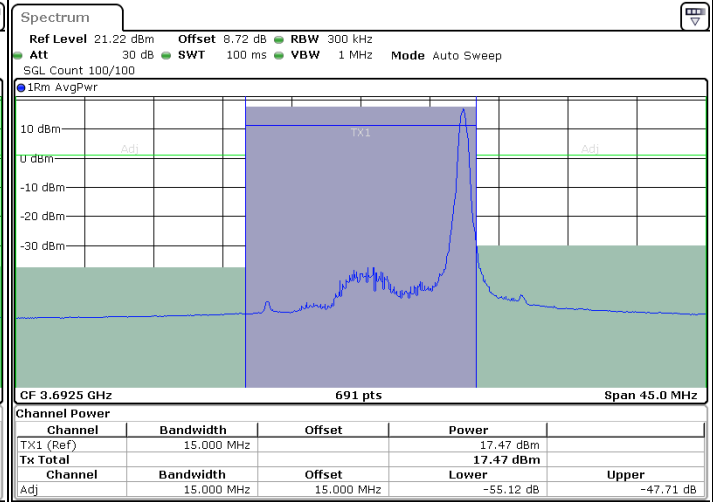
64QAM

Highest Channel / 1RB0



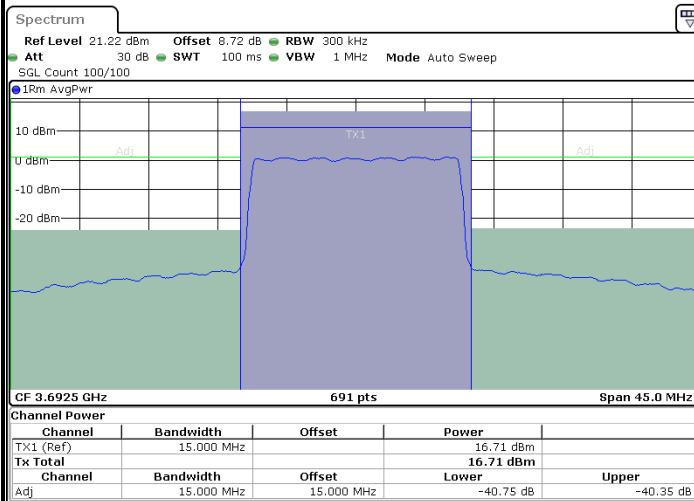
Date: 29 AUG 2020 16:08:00

Highest Channel / 1RBmax



Date: 29 AUG 2020 16:09:54

Highest Channel / Full RB



Date: 29 AUG 2020 16:06:20

N/A

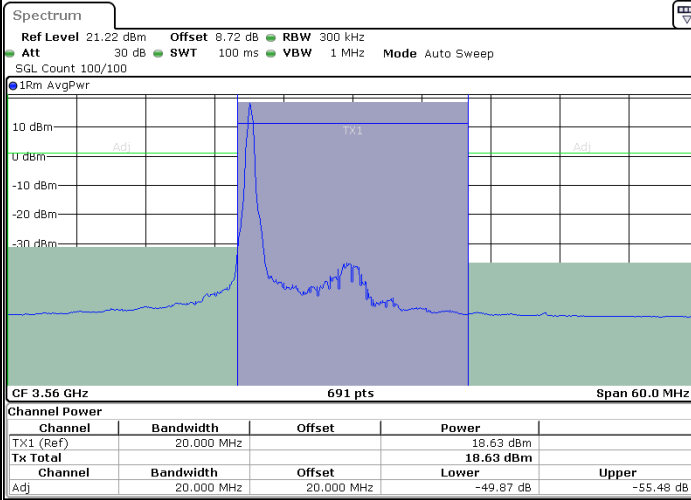


LTE Band 48 / 20MHz

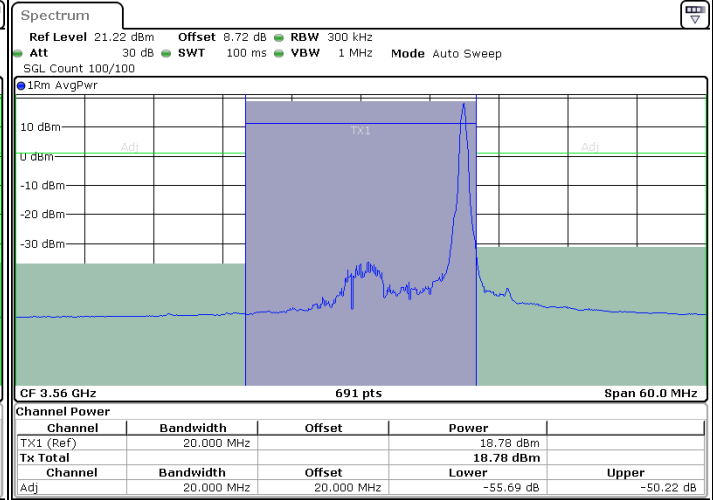
64QAM

Lowest Channel / 1RB0

Lowest Channel / 1RBmax



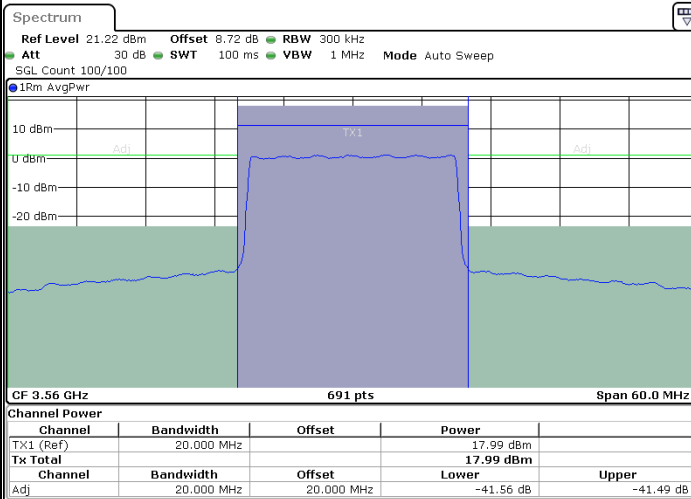
Date: 29 AUG 2020 16:32:48



Date: 29 AUG 2020 16:35:17

Lowest Channel / Full RB

N/A



Date: 29 AUG 2020 16:30:28

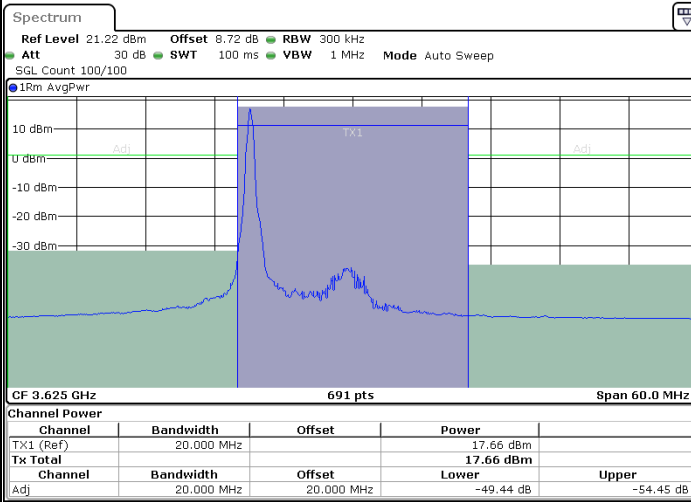


LTE Band 48 / 20MHz

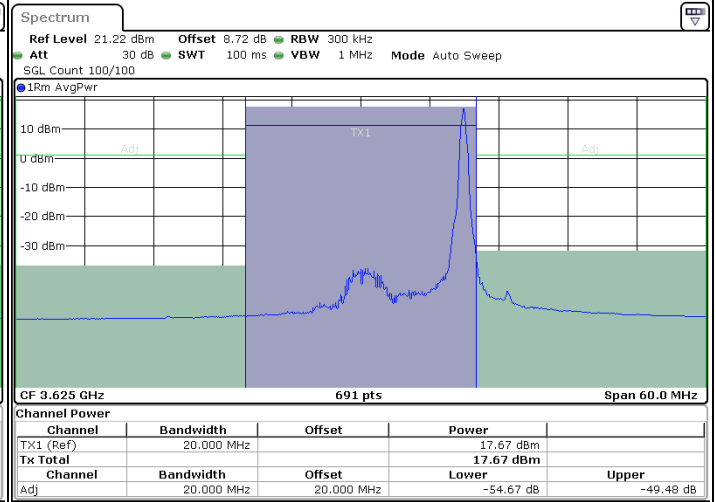
64QAM

Middle Channel / 1RB0

Middle Channel / 1RBmax



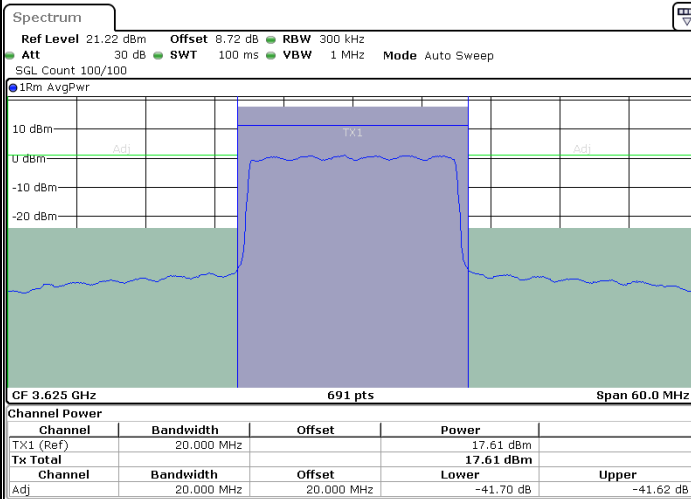
Date: 29 AUG 2020 16:37:23



Date: 29 AUG 2020 16:39:17

Middle Channel / Full RB

N/A



Date: 29 AUG 2020 16:41:00

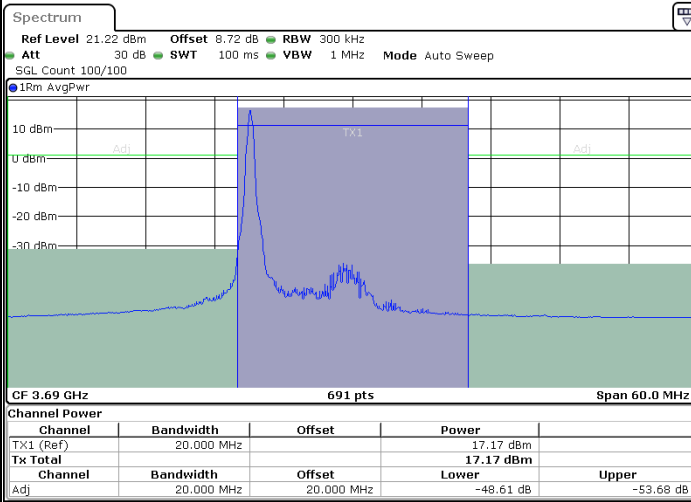


LTE Band 48 / 20MHz

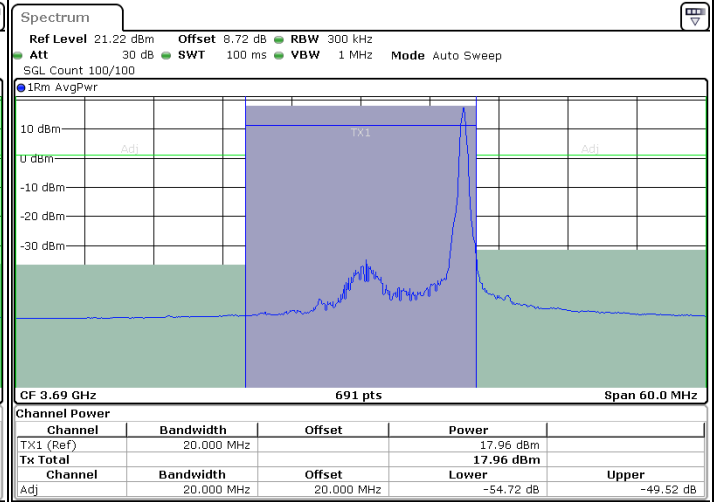
64QAM

Highest Channel / 1RB0

Highest Channel / 1RBmax



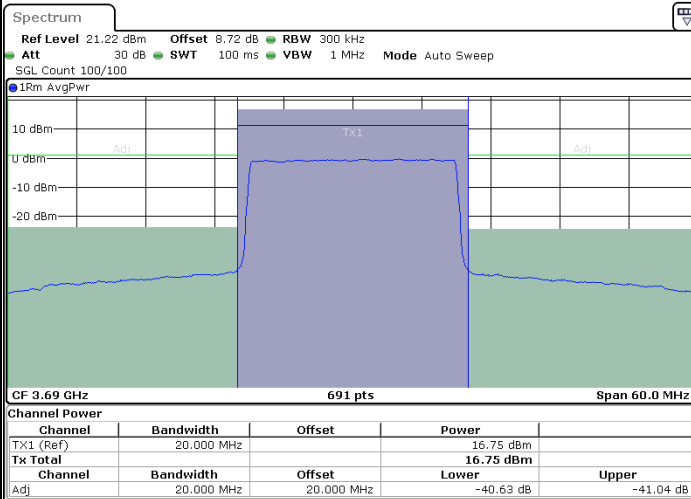
Date: 29 AUG 2020 16:45:09



Date: 29 AUG 2020 16:47:18

Highest Channel / Full RB

N/A



Date: 29 AUG 2020 16:43:29

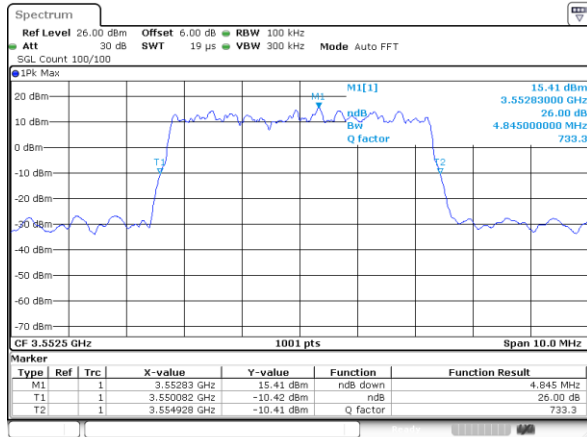
**26dB Bandwidth**

Mode	LTE Band 48 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.85	4.88	9.79	9.71	14.42	14.33	20.18	20.10
Middle CH	-	-	-	-	4.94	4.83	9.69	9.59	14.24	14.15	20.22	20.14
Highest CH	-	-	-	-	4.90	4.91	9.65	9.75	14.42	14.12	20.18	20.02
Mode	LTE Band 48 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM	
Lowest CH	-	-	-	-	4.85	-	9.63	-	14.21	-	20.02	-
Middle CH	-	-	-	-	4.80	-	9.63	-	14.51	-	19.94	-
Highest CH	-	-	-	-	4.85	-	9.77	-	14.48	-	19.98	-

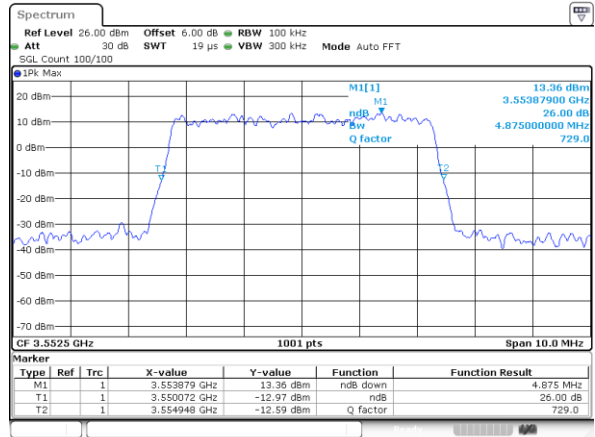


LTE Band 48

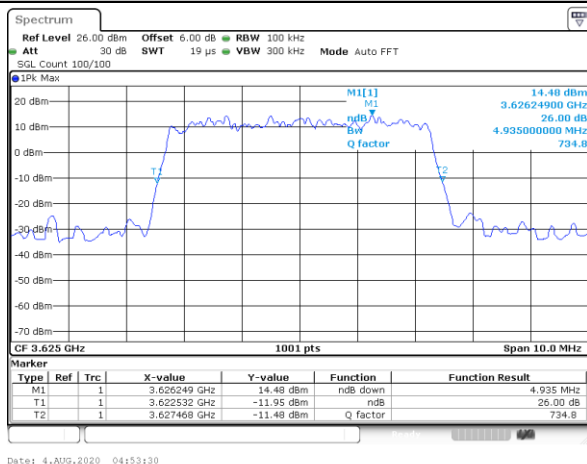
Lowest Channel / 5MHz / QPSK



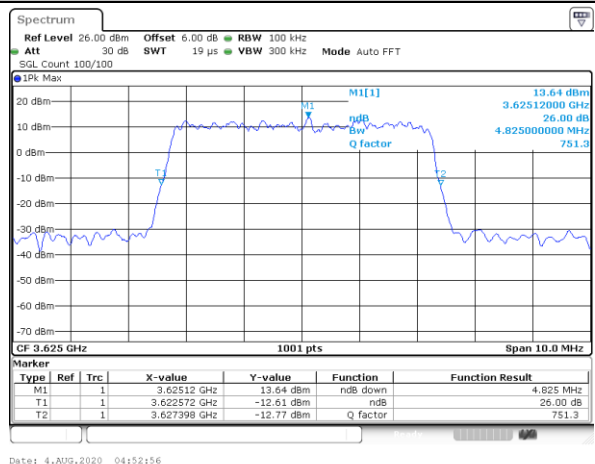
Lowest Channel / 5MHz / 16QAM



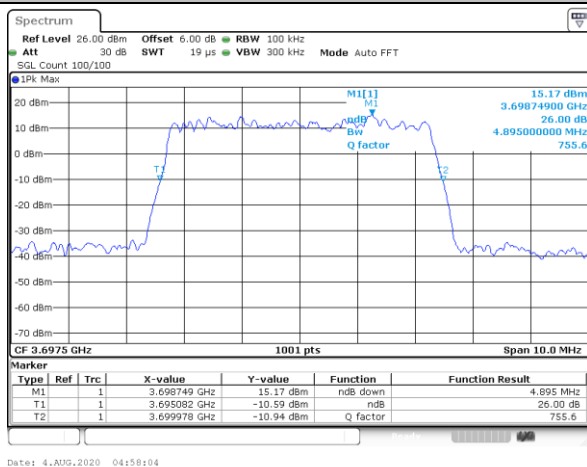
Middle Channel / 5MHz / QPSK



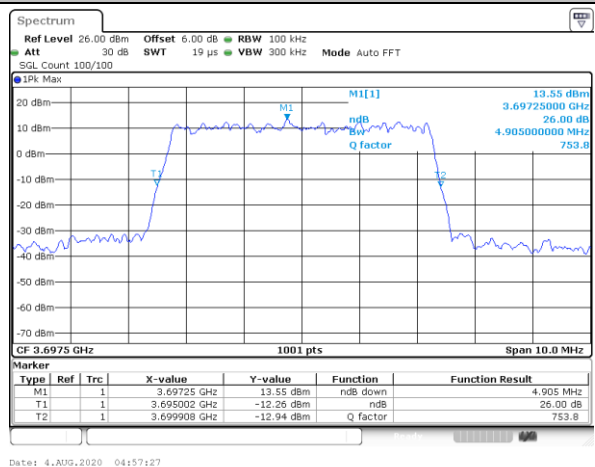
Middle Channel / 5MHz / 16QAM



Highest Channel / 5MHz / QPSK



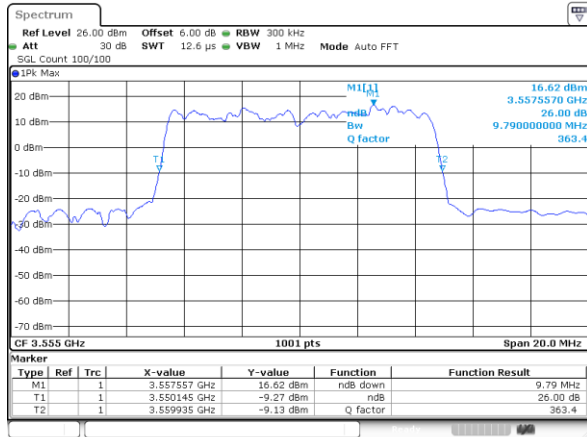
Highest Channel / 5MHz / 16QAM



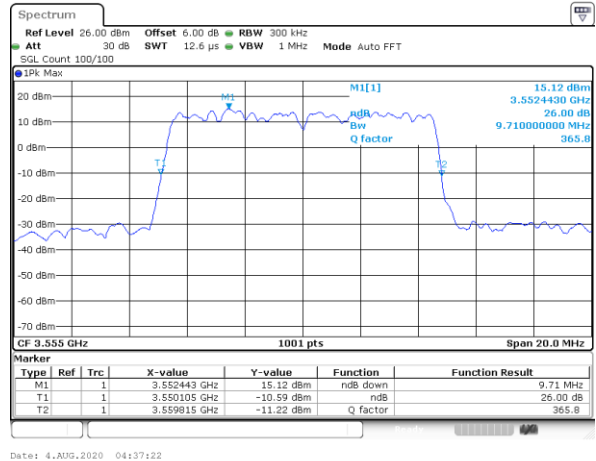


LTE Band 48

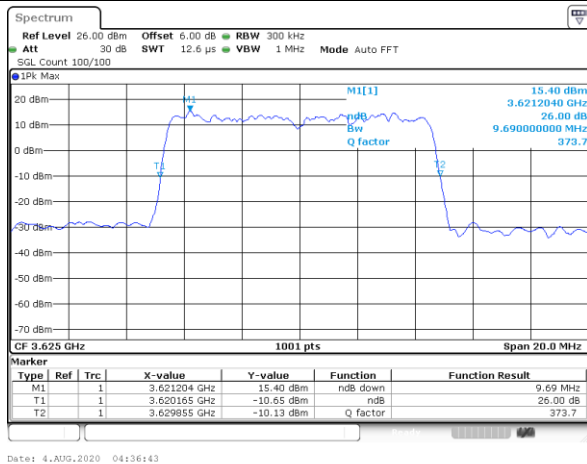
Lowest Channel / 10MHz / QPSK



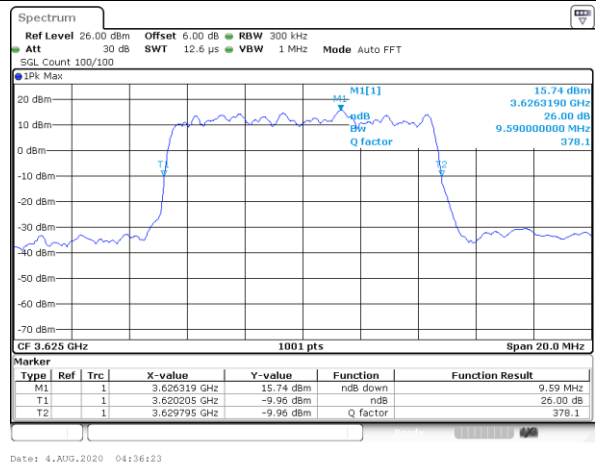
Lowest Channel / 10MHz / 16QAM



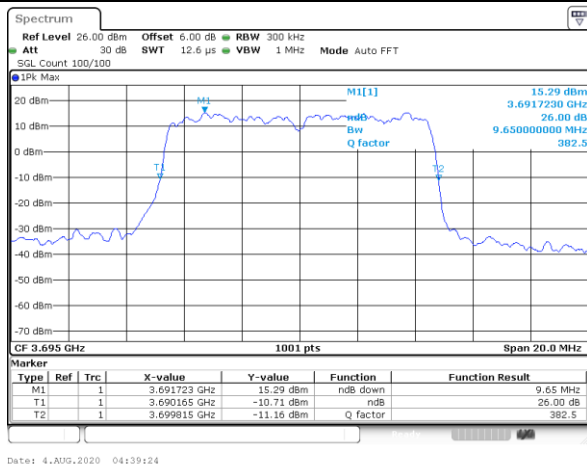
Middle Channel / 10MHz / QPSK



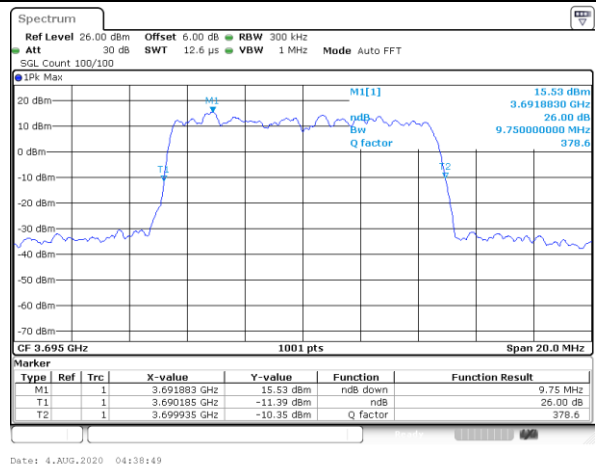
Middle Channel / 10MHz / 16QAM



Highest Channel / 10MHz / QPSK



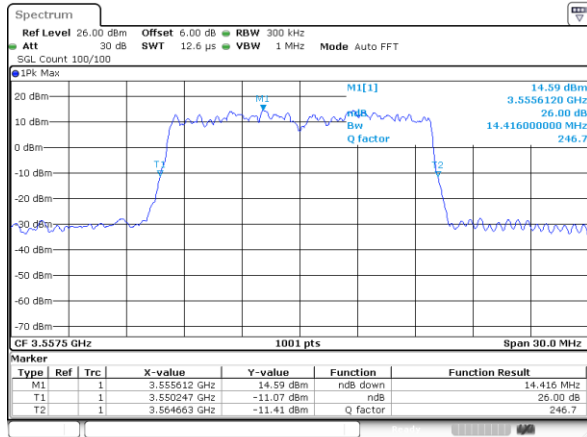
Highest Channel / 10MHz / 16QAM



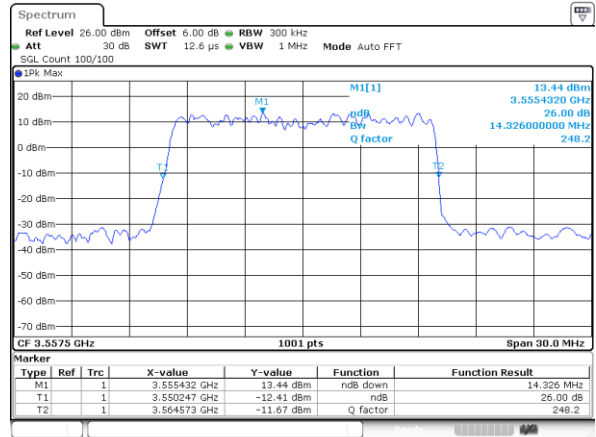


LTE Band 48

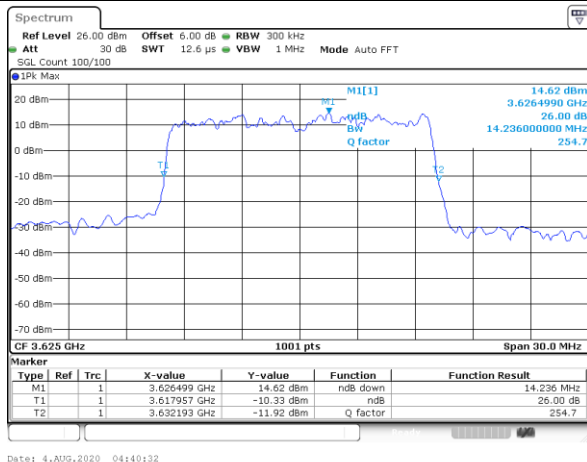
Lowest Channel / 15MHz / QPSK



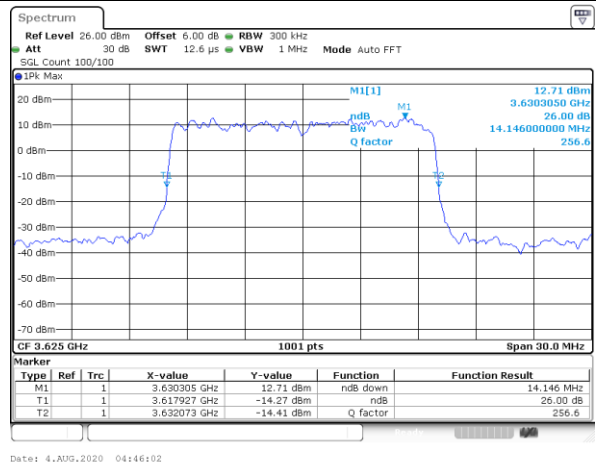
Lowest Channel / 15MHz / 16QAM



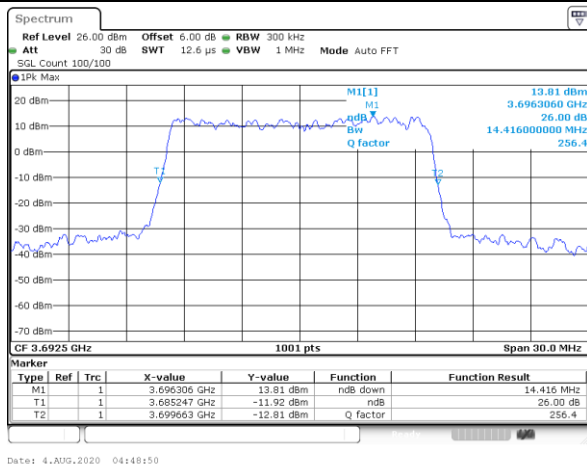
Middle Channel / 15MHz / QPSK



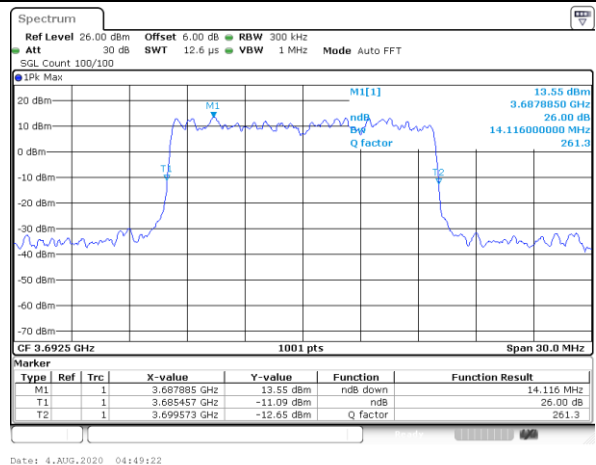
Middle Channel / 15MHz / 16QAM



Highest Channel / 15MHz / QPSK



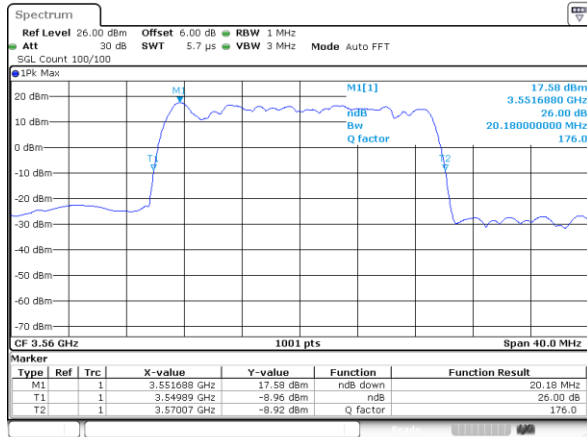
Highest Channel / 15MHz / 16QAM





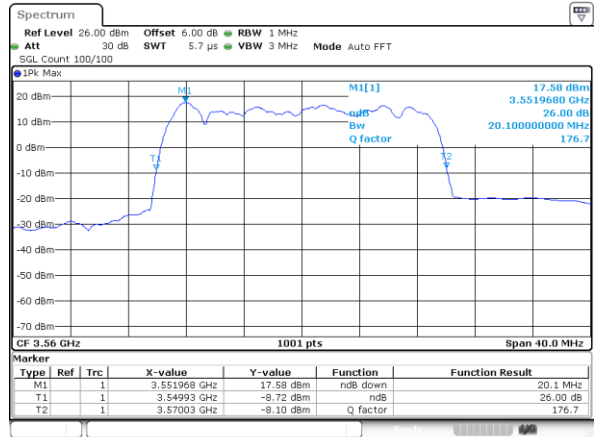
LTE Band 48

Lowest Channel / 20MHz / QPSK



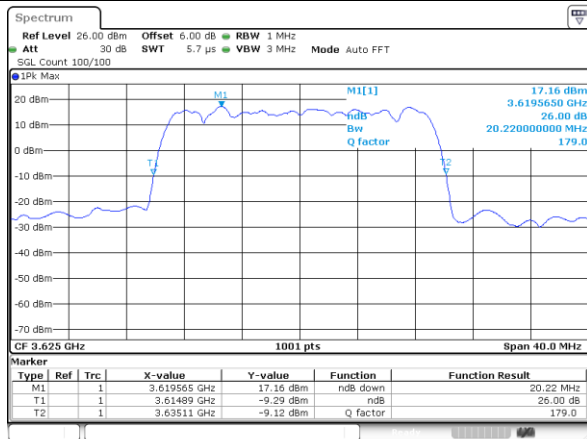
Date: 4.AUG.2020 04:21:56

Lowest Channel / 20MHz / 16QAM



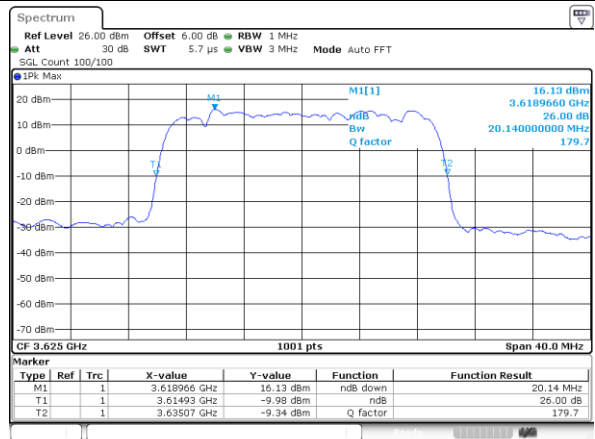
Date: 4.AUG.2020 04:22:26

Middle Channel / 20MHz / QPSK



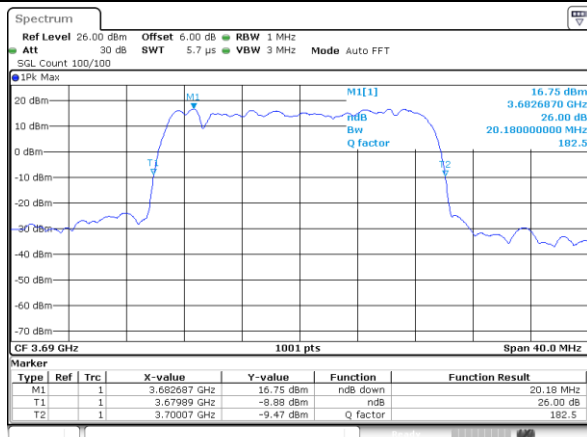
Date: 4.AUG.2020 04:32:43

Middle Channel / 20MHz / 16QAM



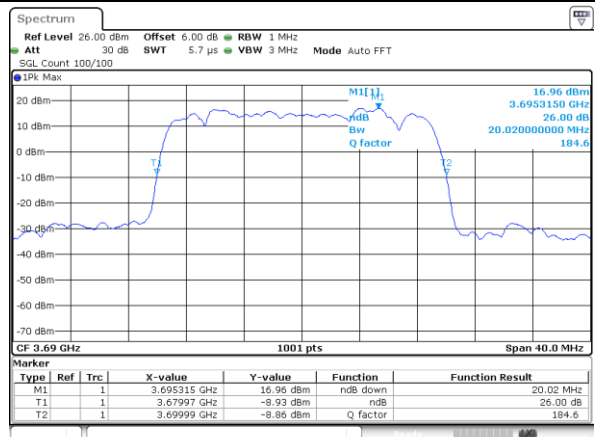
Date: 4.AUG.2020 04:32:01

Highest Channel / 20MHz / QPSK



Date: 4.AUG.2020 04:27:26

Highest Channel / 20MHz / 16QAM

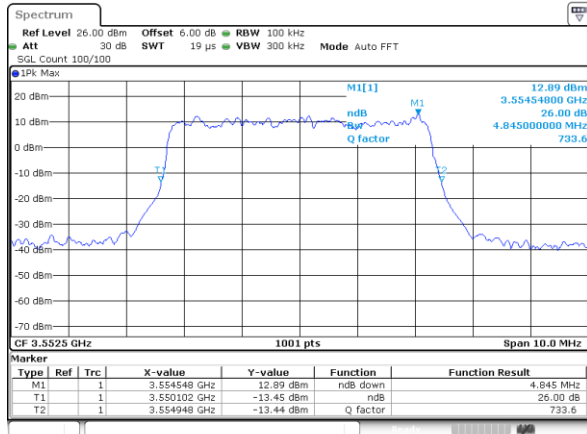


Date: 4.AUG.2020 04:26:55



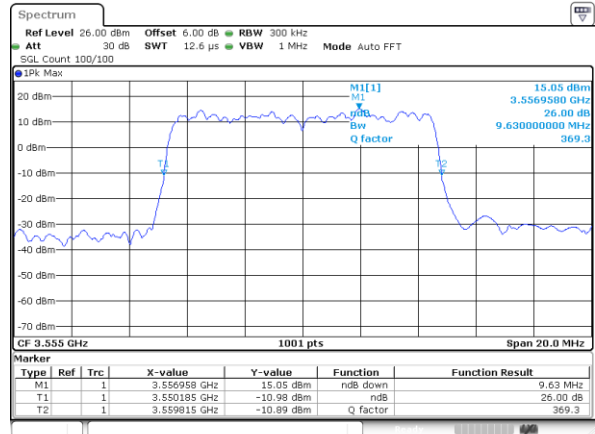
LTE Band 48

Lowest Channel / 5MHz / 64QAM



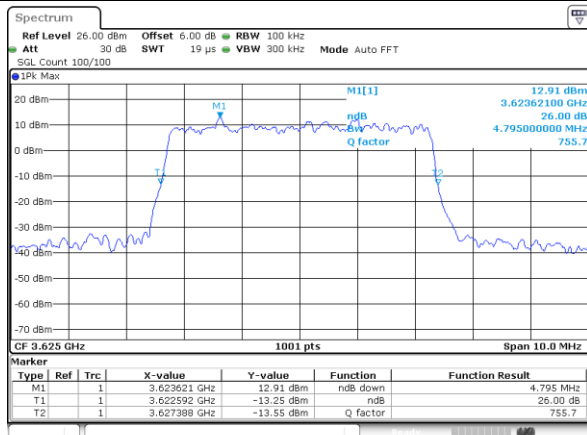
Date: 4.AUG.2020 04:56:22

Lowest Channel / 10MHz / 64QAM



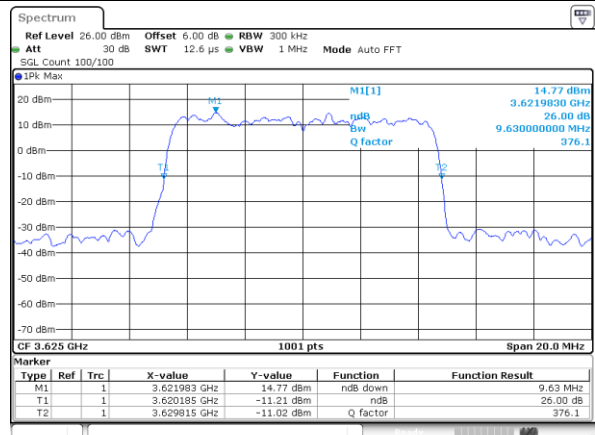
Date: 4.AUG.2020 04:37:50

Middle Channel / 5MHz / 64QAM



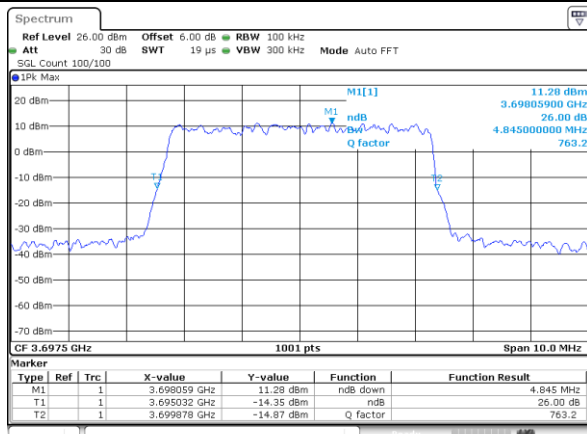
Date: 4.AUG.2020 04:51:45

Middle Channel / 10MHz / 64QAM



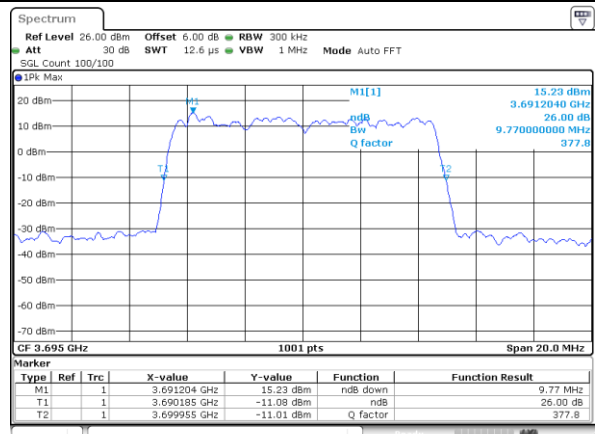
Date: 4.AUG.2020 04:34:35

Highest Channel / 5MHz / 64QAM



Date: 4.AUG.2020 04:56:53

Highest Channel / 10MHz / 64QAM

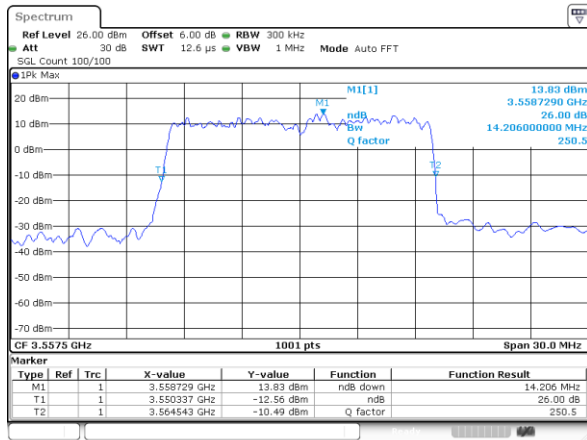


Date: 4.AUG.2020 04:38:19



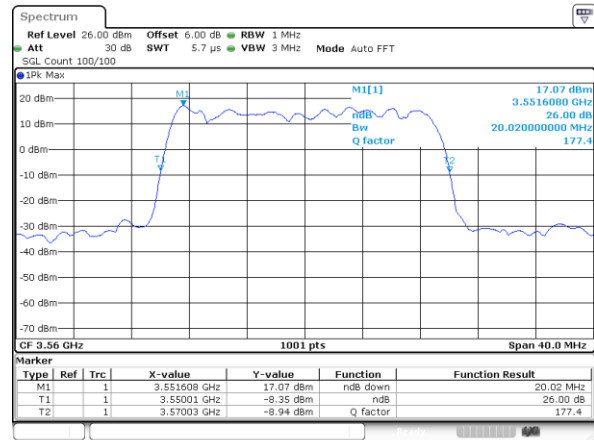
LTE Band 48

Lowest Channel / 15MHz / 64QAM



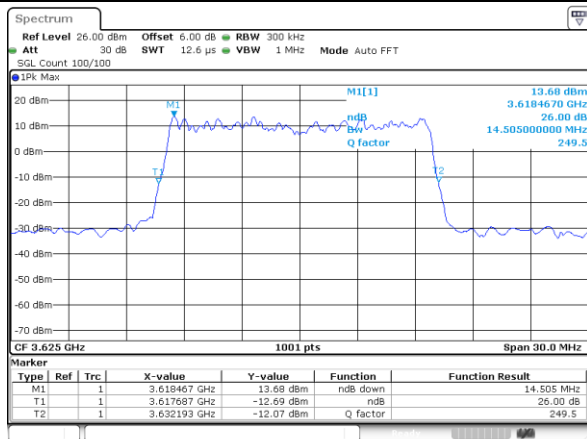
Date: 4.AUG.2020 04:46:50

Lowest Channel / 20MHz / 64QAM



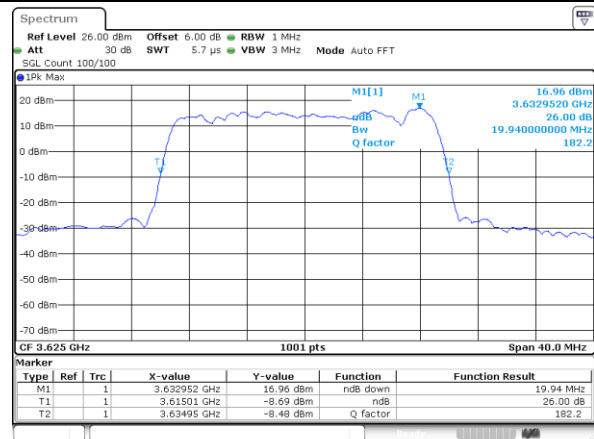
Date: 4.AUG.2020 04:23:35

Middle Channel / 15MHz / 64QAM



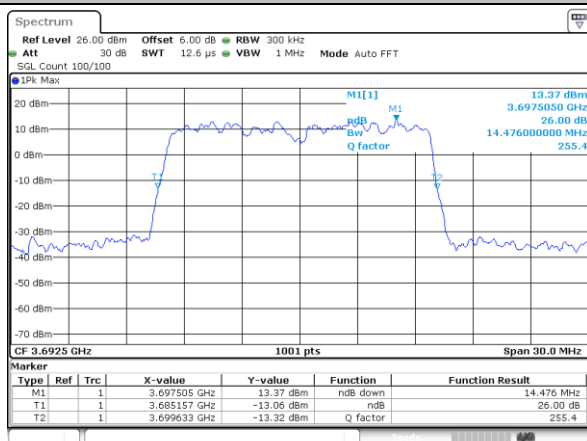
Date: 4.AUG.2020 04:46:26

Middle Channel / 20MHz / 64QAM



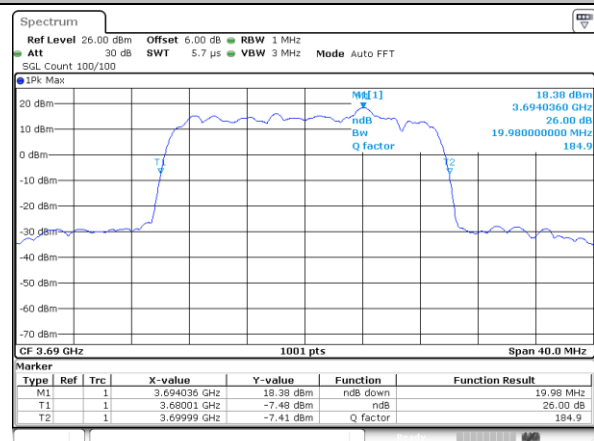
Date: 4.AUG.2020 04:31:49

Highest Channel / 15MHz / 64QAM



Date: 4.AUG.2020 04:50:10

Highest Channel / 20MHz / 64QAM



Date: 4.AUG.2020 04:26:29

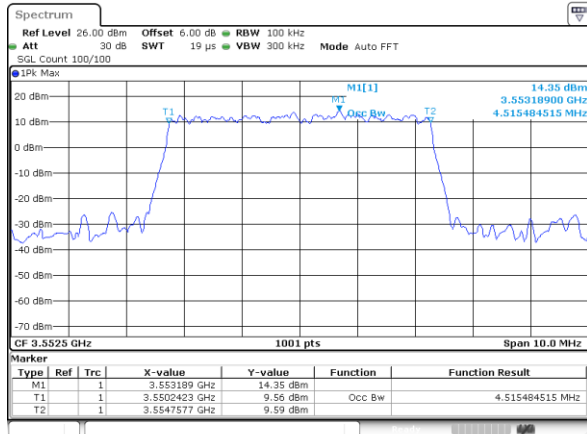
**Occupied Bandwidth**

Mode	LTE Band 48 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.52	4.49	9.01	9.03	13.46	13.49	18.26	18.26
Middle CH	-	-	-	-	4.49	4.47	9.05	8.99	13.34	13.40	18.50	18.34
Highest CH	-	-	-	-	4.46	4.49	9.03	9.09	13.43	13.40	18.22	18.38
Mode	LTE Band 48 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	64QAM		64QAM		64QAM		64QAM		64QAM		64QAM	
Lowest CH	-	-	-	-	4.51	-	9.03	-	13.40	-	18.30	-
Middle CH	-	-	-	-	4.52	-	9.03	-	13.52	-	18.54	-
Highest CH	-	-	-	-	4.54	-	9.01	-	13.37	-	18.34	-



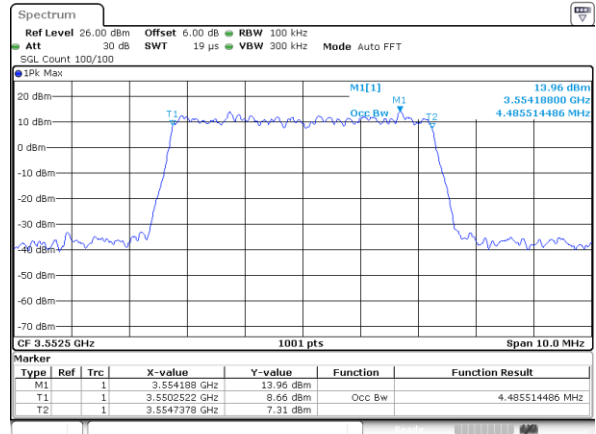
LTE Band 48

Lowest Channel / 5MHz / QPSK



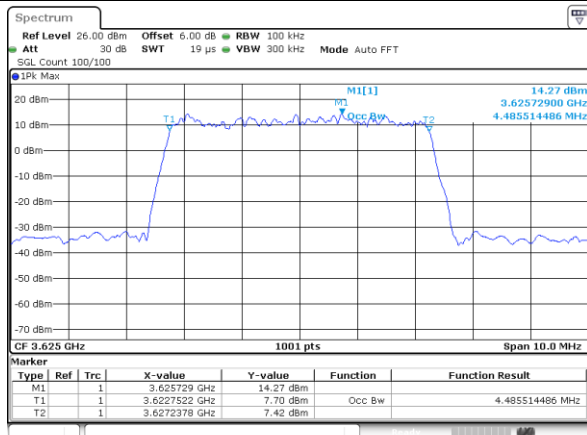
Date: 4.AUG.2020 04:54:53

Lowest Channel / 5MHz / 16QAM



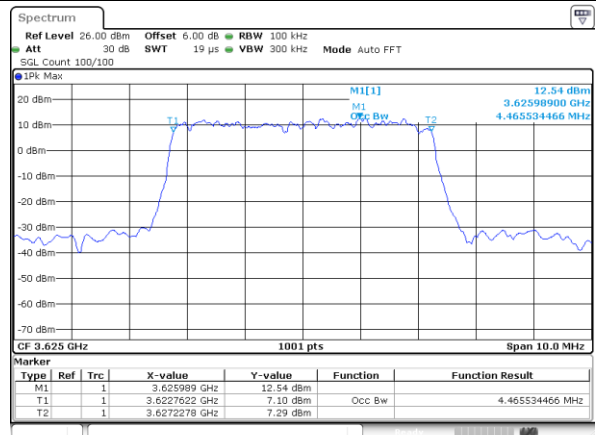
Date: 4.AUG.2020 04:55:52

Middle Channel / 5MHz / QPSK



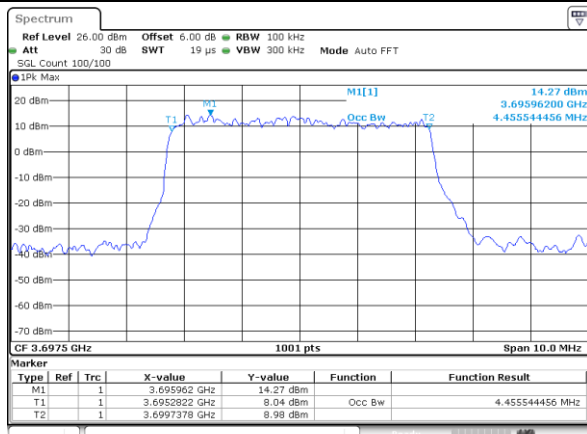
Date: 4.AUG.2020 04:55:22

Middle Channel / 5MHz / 16QAM



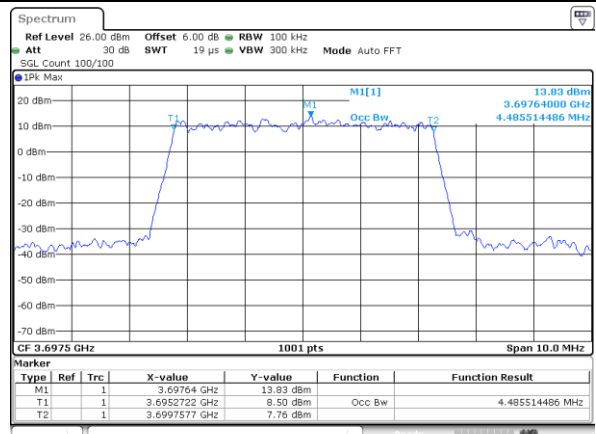
Date: 4.AUG.2020 04:56:12

Highest Channel / 5MHz / QPSK



Date: 4.AUG.2020 04:57:48

Highest Channel / 5MHz / 16QAM

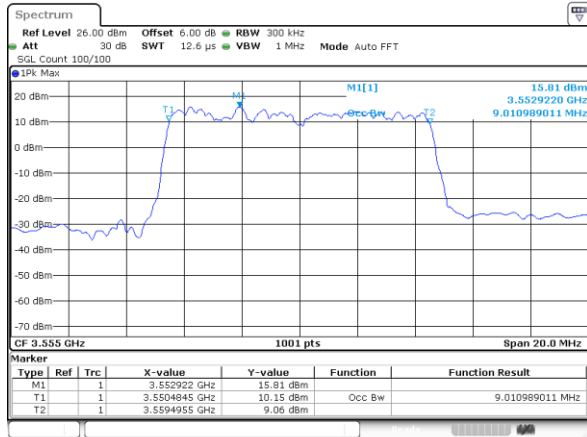


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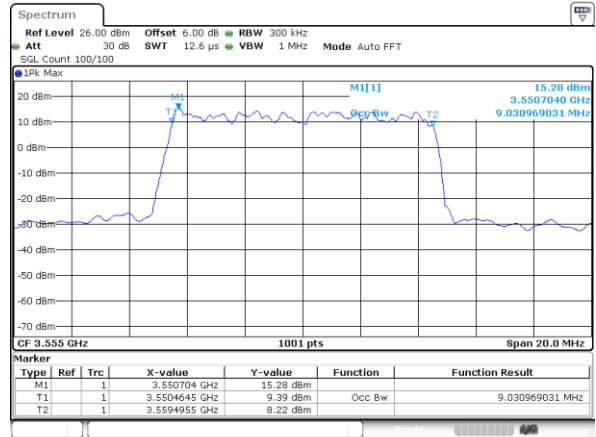


LTE Band 48

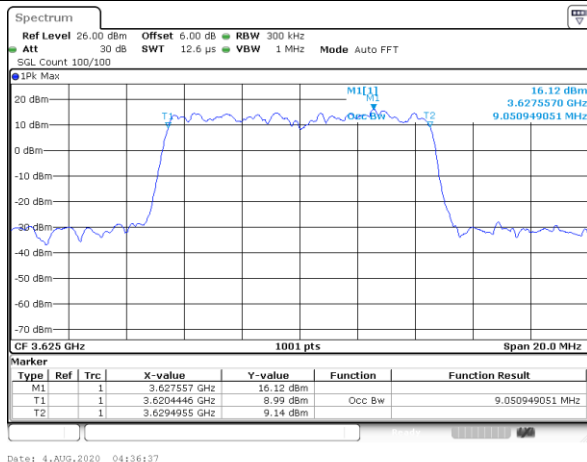
Lowest Channel / 10MHz / QPSK



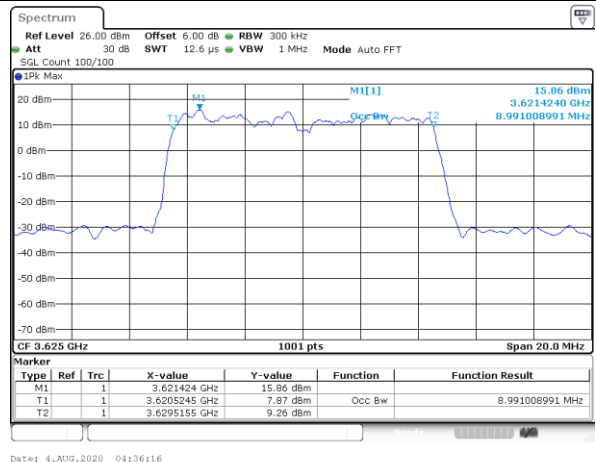
Lowest Channel / 10MHz / 16QAM



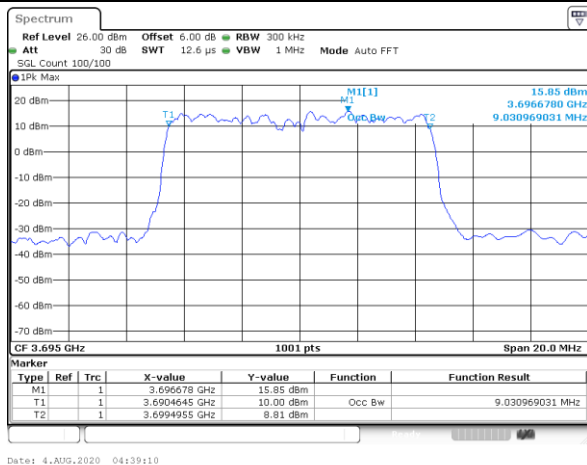
Middle Channel / 10MHz / QPSK



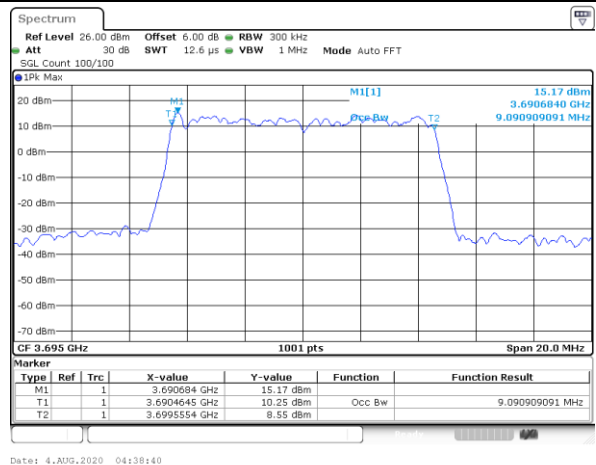
Middle Channel / 10MHz / 16QAM



Highest Channel / 10MHz / QPSK



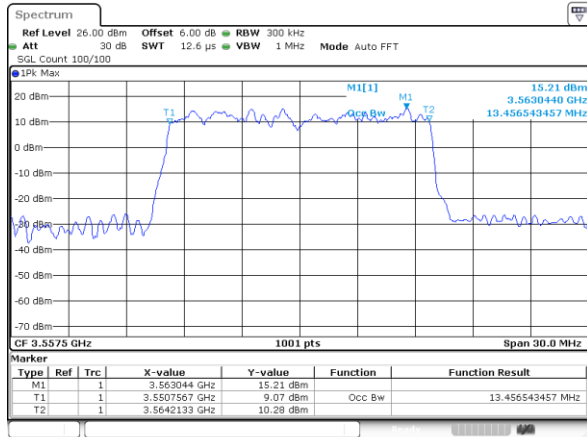
Highest Channel / 10MHz / 16QAM



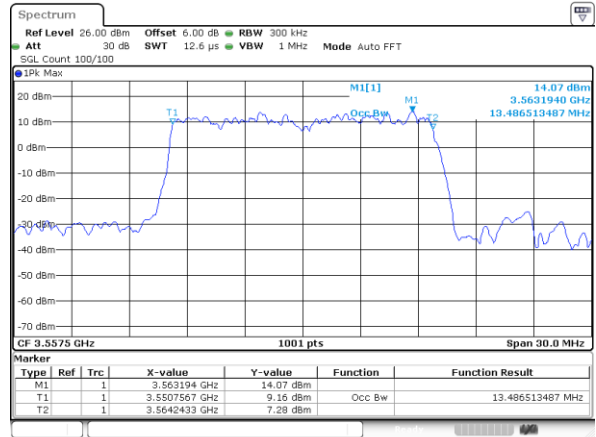


LTE Band 48

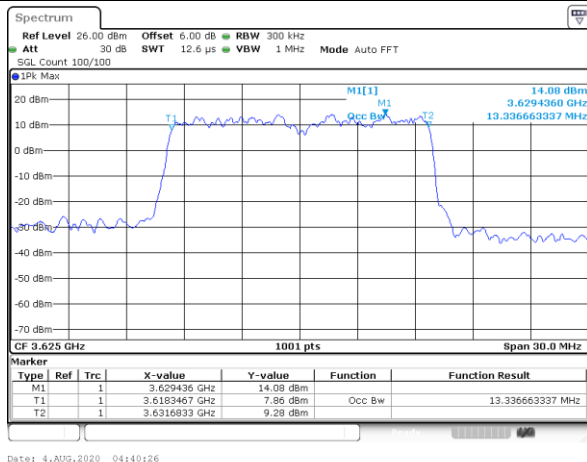
Lowest Channel / 15MHz / QPSK



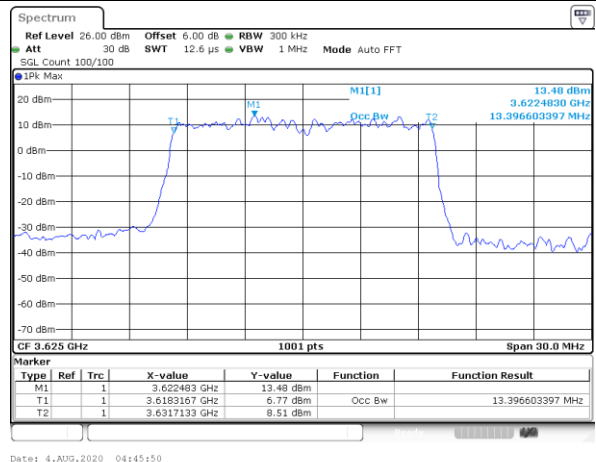
Lowest Channel / 15MHz / 16QAM



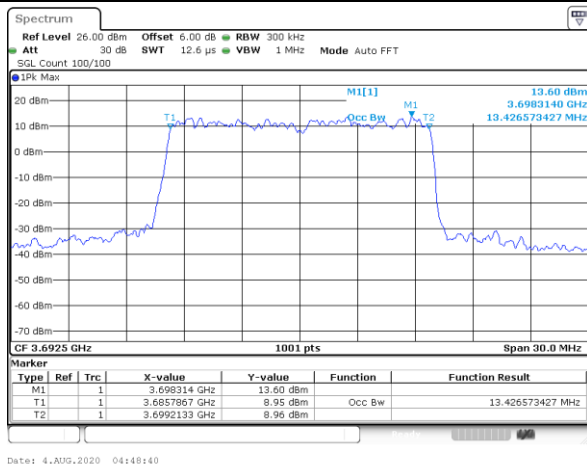
Middle Channel / 15MHz / QPSK



Middle Channel / 15MHz / 16QAM



Highest Channel / 15MHz / QPSK



Highest Channel / 15MHz / 16QAM

