

FCC TEST REPORT

For

LTE Remote Radio Unit

Model Number: ZXSDR A8988S S3600

FCC ID:Q78-A8988SS3600

Report Number : WT178006641

Test Laboratory : Shenzhen Academy of Metrology and Quality
Inspection
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Test report declaration

Applicant : ZTE Corporation
Address : ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen, Guangdong, China 518057
Manufacturer : ZTE Corporation
Address : ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen, Guangdong, China 518057
EUT Description : LTE Remote Radio Unit
Model No : ZXSDR A8988S S3600
Trade mark : ZTE
Serial Number : /
FCC ID : Q78-A8988SS3600

Test Standards:

FCC PART 90

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI/TIA-603-E (2016) & KDB971168 and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC Rules Part 90.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Project Engineer:	 _____ (Chen Silin 陈司林)	Date:	<u>Feb.08, 2018</u>
Checked by:	 _____ (Lin Yixiang 林奕翔)	Date:	<u>Feb.08, 2018</u>
Approved by:	 _____ (Lin Bin 林斌)	Date:	<u>Feb.08, 2018</u>

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TEST Results Summary

Table 1 Test Results Summary

FCC RULES	DESCRIPTION OF TEST	RESULT
§2.1046 §90.1321	RF power output	Compliance
§2.1047	Modulation characteristics	Compliance
§2.1049	Occupied Bandwidth	Compliance
§2.1051, §90.1323	Spurious emissions at Portenna terminals	Compliance
§2.1053, §90.1323	Spurious Emissions Radiated	Compliance
§ 2.1055	Frequency stability	Compliance
§90.210 (b)	Emission Masks	Compliance

CFR 47 (FCC) part 90.

Remark: "N/A" means "Not applicable."

The tests documented in this report were performed in accordance with ANSI/TIA-603-E (2016) & KDB971168, FCC CFR 47 Part 2, and Part 90.

1. GENERAL INFORMATION

1.1. Report information

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

The samples mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

1.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 582918.

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is 11177A-1 11177A-2.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is E2024086Z02.

1.3. Measurement Uncertainty

For a 95% confidence level ($k = 2$), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Radiated Emission

30MHz~1000MHz 4.5dB

1GHz~26.5GHz 4.6dB

2. PRODUCT DESCRIPTION

2.1. EUT Description

The ZTE Corporation's product, model number: ZXSDR A8988S S3600 or the "EUT" as referred to in this report is a LTE Active Antenna Unit.

Technical specification:

Total Weight: 13kg

Volume: 15L

Dimensions (H*W*D): 450 mm x 372 mm x 93 mm

Input voltage: -48VDC (-60VDC to -37VDC)

Frequency range: 3650MHz~3700 MHz

Carrier and bandwidth: 1carrier, 20MHz; 3carriers, 20+20+10MHz

Max RF output power: 22dBm for 1carrier 20MHz; 26dBm for 3carriers 20+20+10MHz

Modulation type of emission: LTE

Appearance of EUT:

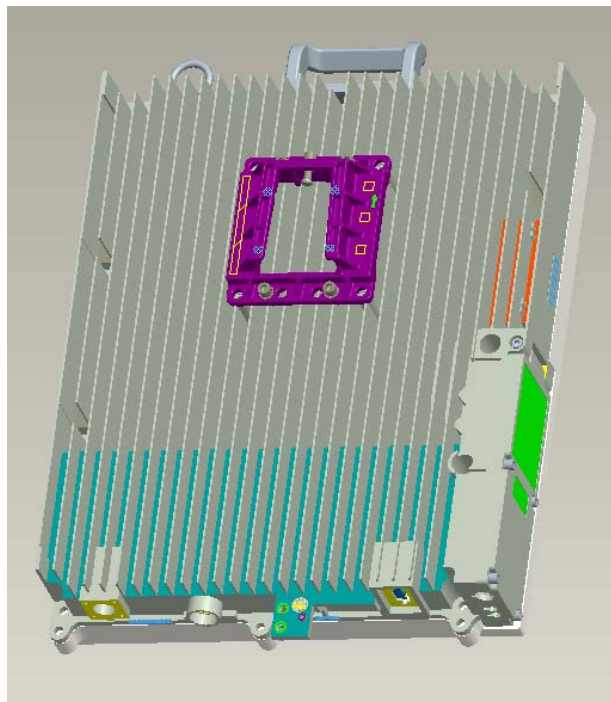


Figure 1 External View of the ZXSDR A8988S S3600

2.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **Q78-A8988SS3600** filing to comply with FCC PART 90.

2.3. Operating Condition of EUT

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (X plane).

The maximum power levels are LTE Mode for QPSK, 16QAM, 64QAMlink , only these modes were used for all tests.

Date of test: Oct.9, 2017 - Feb.03, 2018

Date of EUT Receive: Oct.9, 2017

3. TEST RESULTS

3.1.RF Power Output

3.1.1.Applicable Standard: FCC § 2.1046 ,§90.1321

According to FCC §2.1046 &90.1321

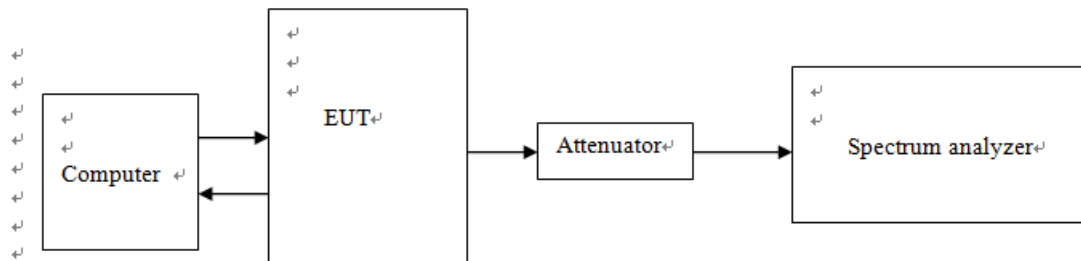
(a) Base and fixed stations are limited to 25 watts/25 MHz equivalent isotropically radiated power (EIRP). In any event, the peak EIRP power density shall not exceed 1 Watt in anyone megahertz slice of spectrum..

3.1.2.Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Signal & Spectrum Analyzer	FSW26	SB12724/01	2017.6.19	2018.6.18

***statement of traceability:**SMQ attests that all calibration has been performed per the A2LA requirements, traceable to NIM.

3.1.3.Test Procedure



The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. External attenuation Loss is 20dB, Cable Loss is about 7dB, the detector is peak.

Radiated power (dBm) = Conducted power (dBm) + Portenna gain (dBi) – Signal attenuation in the connecting cable between the transmitter and Portenna (dB)

Portenna gain (dBi):12dBi

Signal attenuation in the connecting cable between the transmitter and Portenna (dB):0dB

3.1.4.Environmental Conditions

Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

3.1.5.Test Result: Pass

3.1.6.Test Mode: Transmitting LTE

3.1.7.Test Data:

Output Power: 20MHz(1 port)

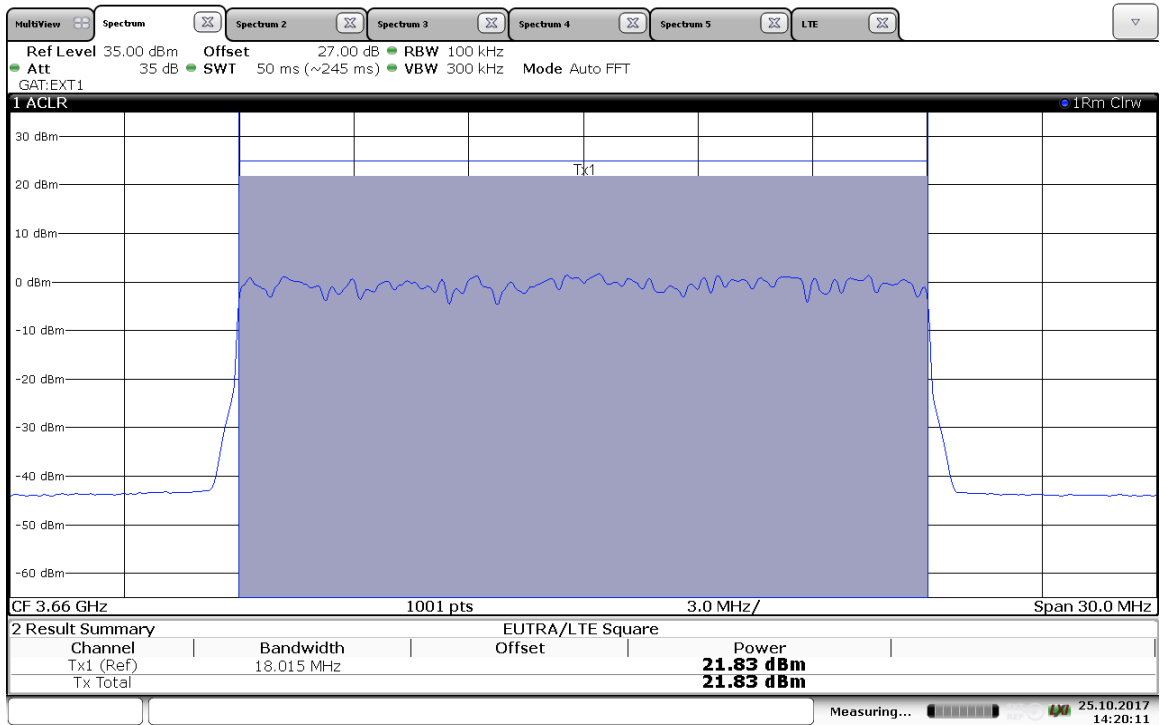
Port	Carrier Freq. (MHz)	Output Power			
		QPSK	16QAM	64QAM	Limit
		dBm/20MHz	dBm/20MHz	dBm/20MHz	dBm/20MHz
0	3660	21.83	21.71	21.67	<22
1		21.73	21.7	21.64	<22
2		21.76	21.76	21.74	<22
3		21.75	21.79	21.88	<22
4		21.78	21.69	21.56	<22
5		21.8	21.69	21.88	<22
6		21.81	21.75	21.54	<22
7		21.73	21.79	21.61	<22
0	3675	21.57	21.75	21.88	<22
1		21.55	21.78	21.91	<22
2		21.65	21.78	21.91	<22
3		21.59	21.8	21.85	<22
4		21.6	21.8	21.75	<22
5		21.62	21.7	21.77	<22
6		21.65	21.73	21.78	<22
7		21.69	21.73	21.83	<22
0	3690	21.67	21.71	21.76	<22
1		21.61	21.75	21.7	<22
2		21.61	21.69	21.7	<22
3		21.68	21.65	21.74	<22
4		21.59	21.68	21.64	<22
5		21.63	21.71	21.68	<22
6		21.64	21.72	21.72	<22
7		21.68	21.75	21.75	<22

Output Power: 20+20+10MHz(1 port)

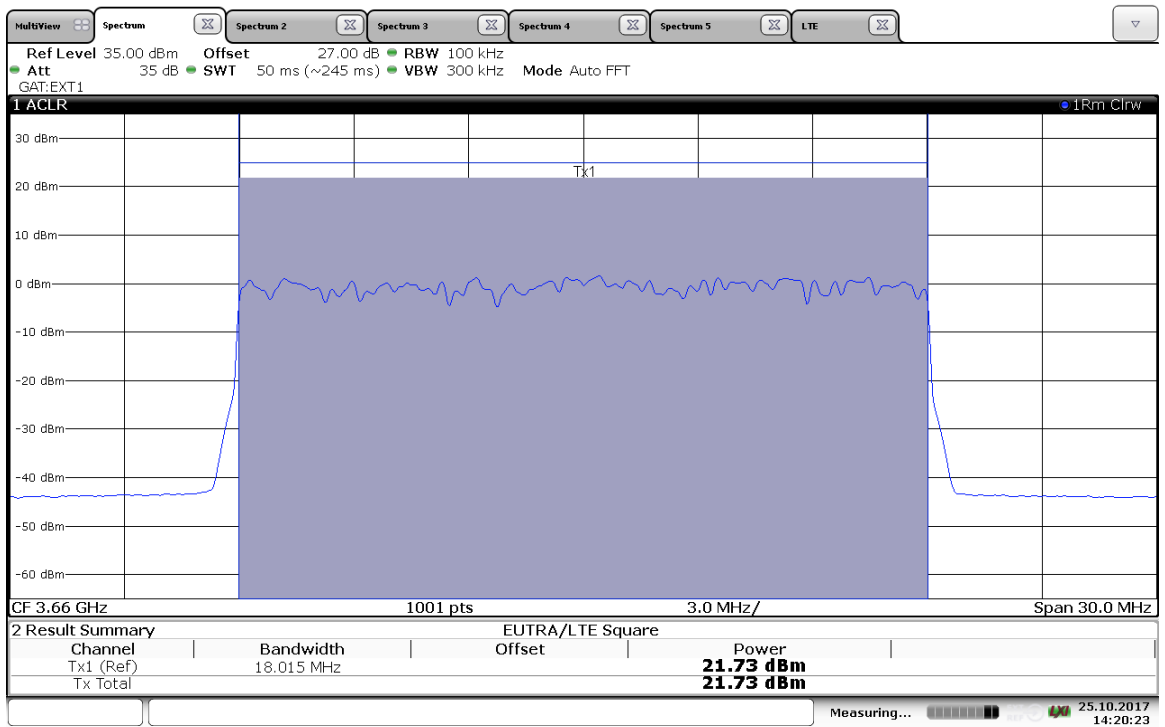
Port	Carrier Freq. (MHz)	Output Power			
		QPSK	16QAM	64QAM	Limit
		dBm/50MHz	dBm/50MHz	dBm/50MHz	dBm/50MHz
0	3660+3680+ 3695	25.87	25.86	25.86	<25.99
1		25.89	25.89	25.92	<25.99
2		25.91	25.92	25.92	<25.99
3		25.91	25.95	25.94	<25.99
4		25.93	25.95	25.85	<25.99
5		25.84	25.91	25.87	<25.99
6		25.86	25.94	25.89	<25.99
7		25.88	25.84	25.91	<25.99

Output Power: (8 port,calculated value)

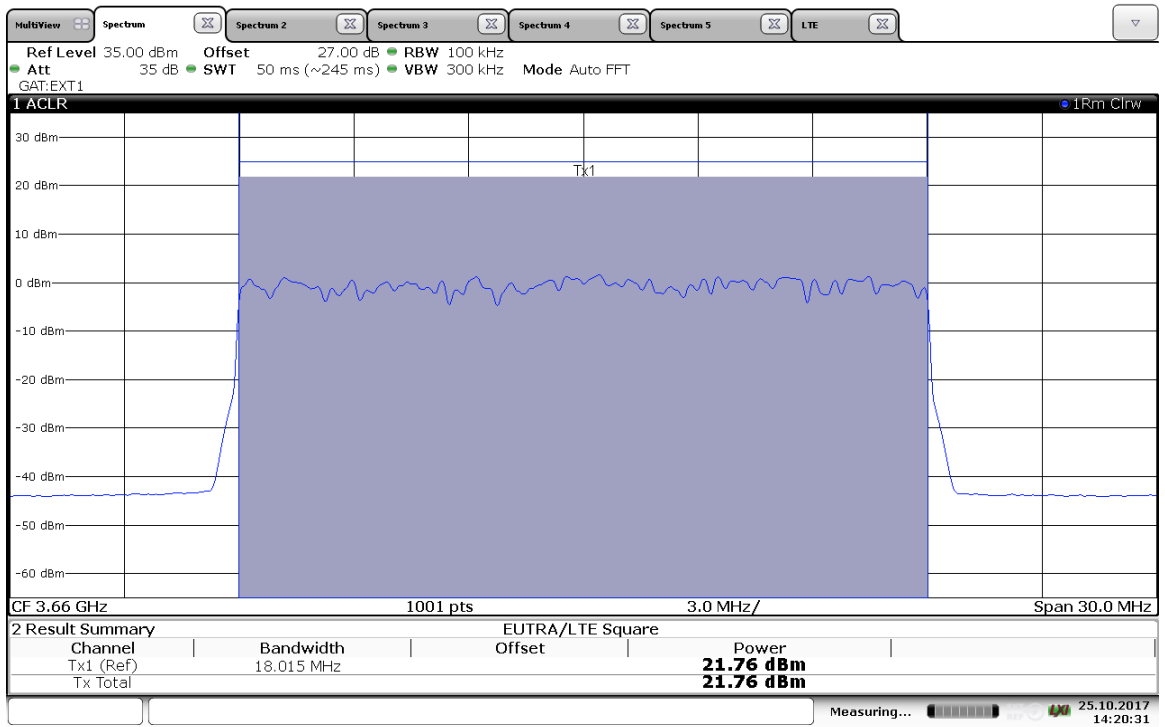
Carrier Freq.(MHz)	Output Power						Limit
	QPSK		16QAM		64QAM		
	dBm /MHz	EIRP (dBm/MHz)	dBm /MHz	EIRP (dBm/MHz)	dBm /MHz	EIRP (dBm/MHz)	
3660	17.79	29.79	17.76	29.76	17.71	29.71	<30
3675	17.64	29.64	17.78	29.78	17.86	29.86	<30
3690	17.66	29.66	17.73	29.73	17.73	29.73	<30
3660+3680+369	17.93	29.93	17.95	29.95	17.94	29.94	<30



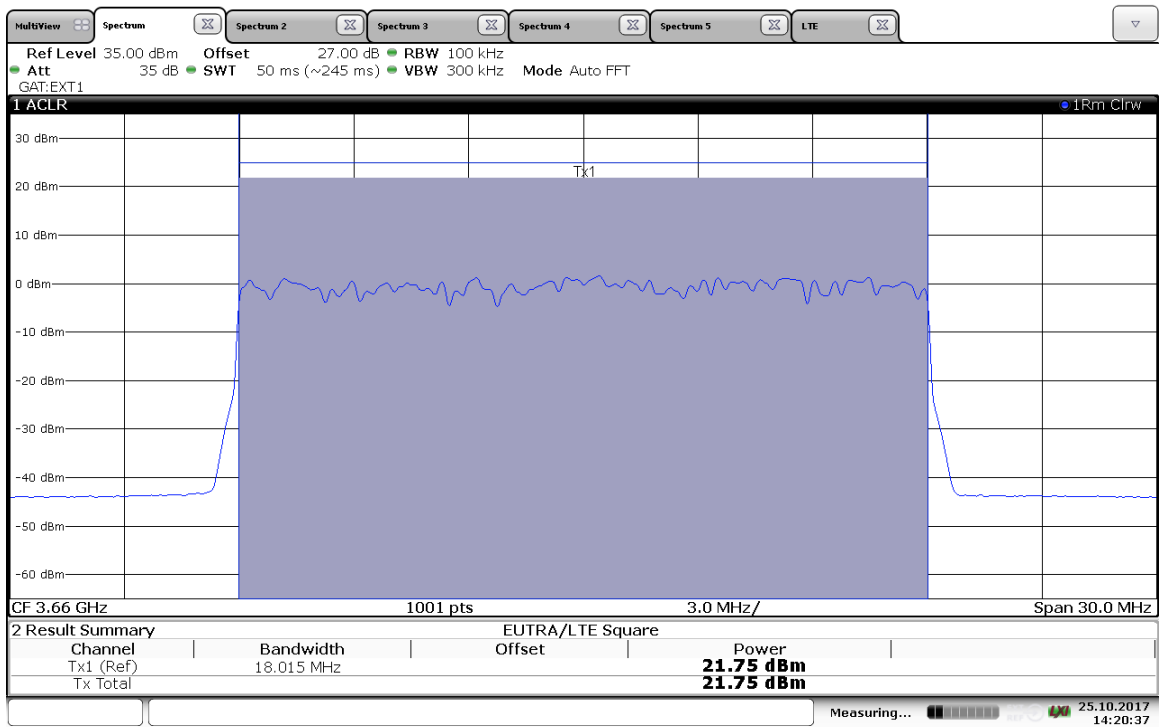
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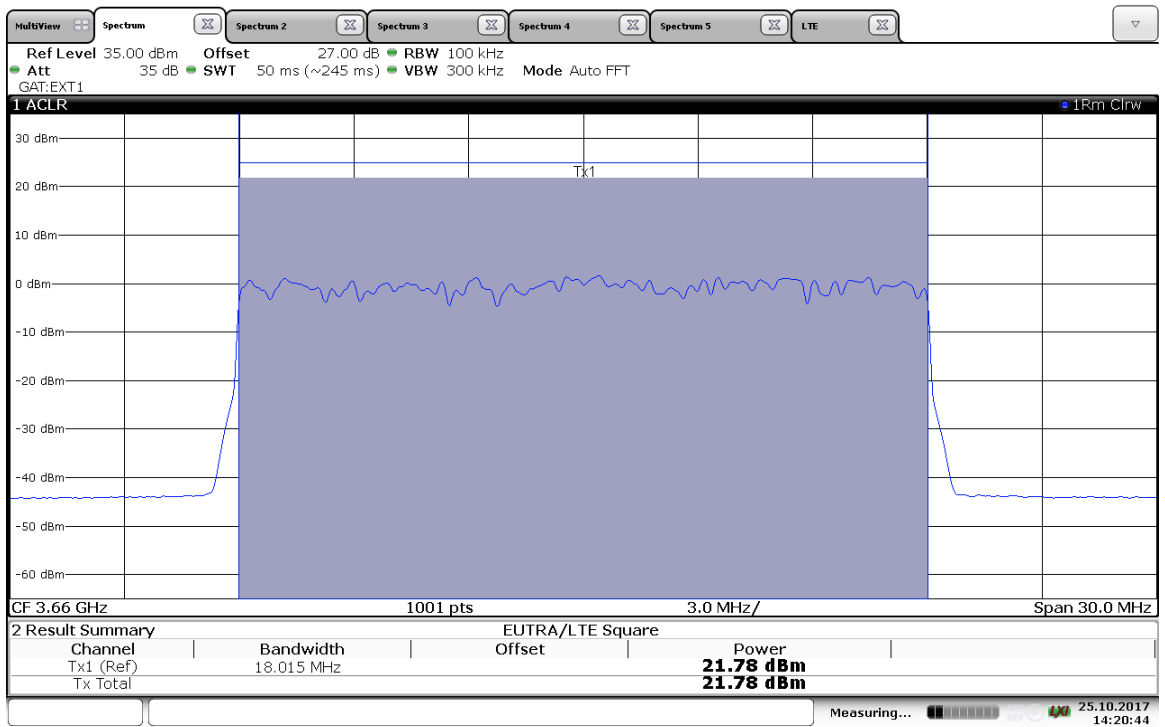
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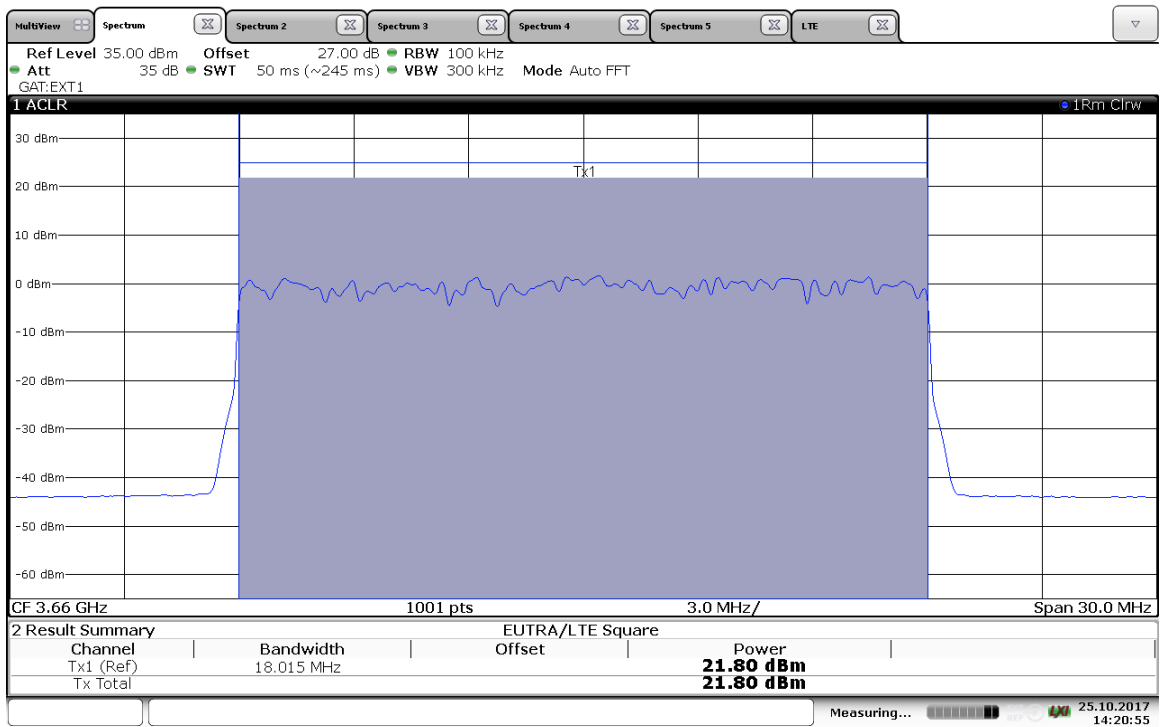
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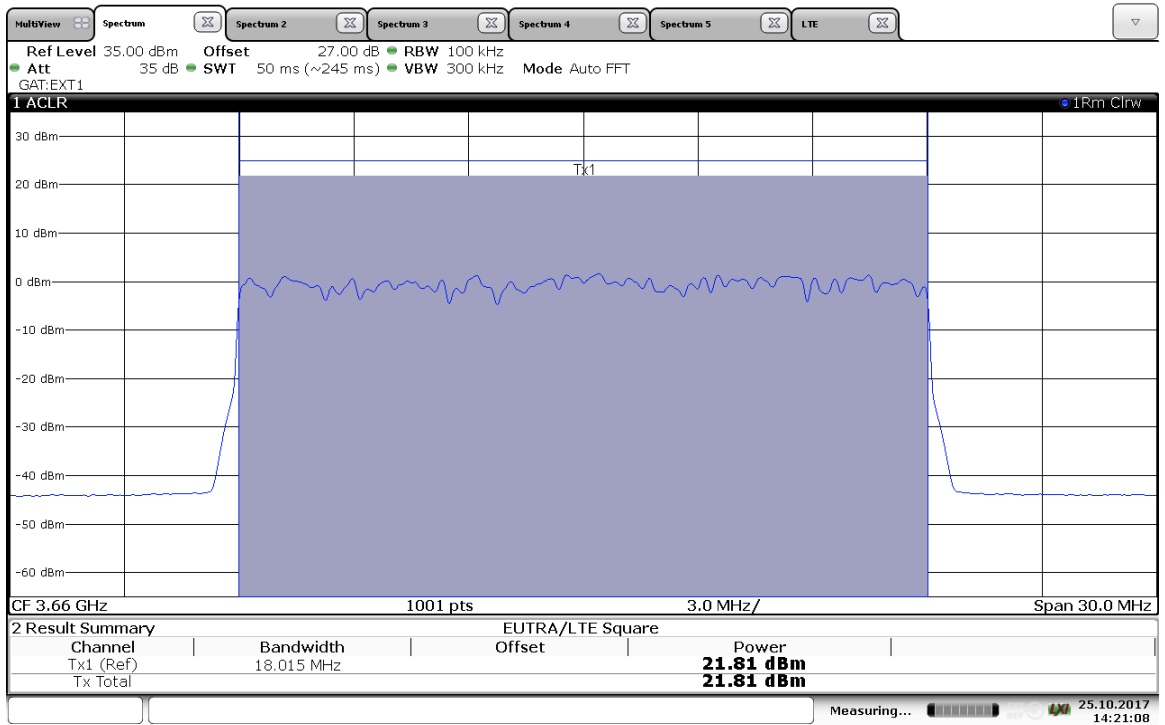
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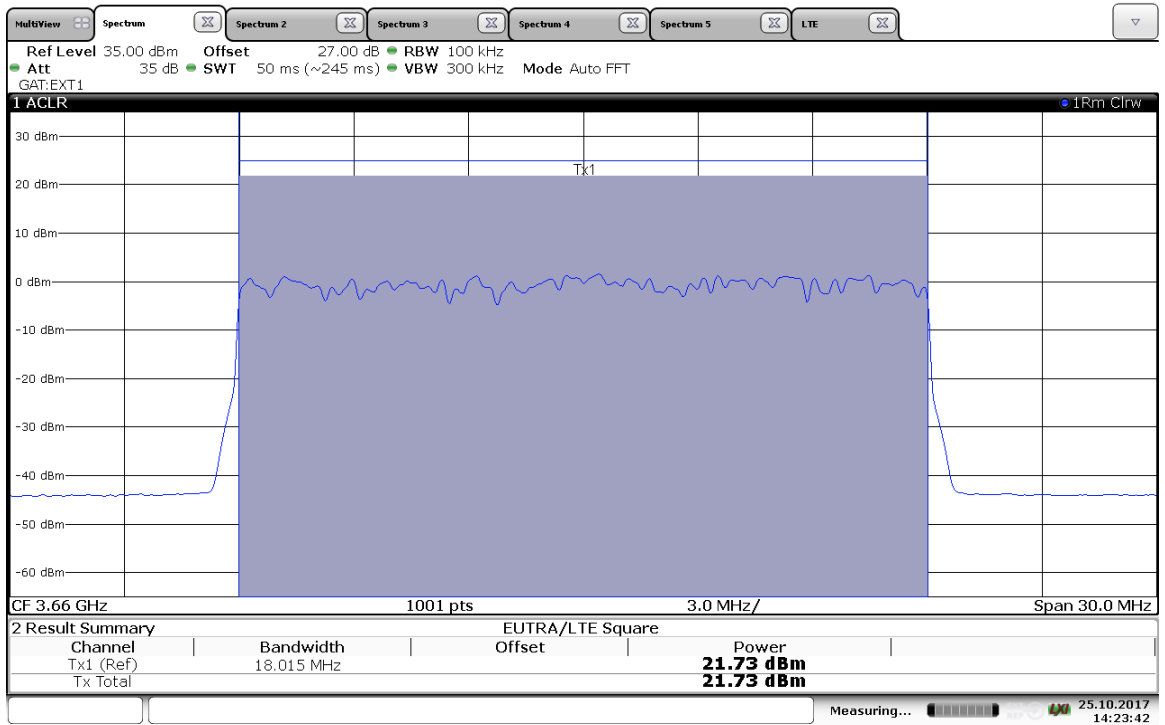
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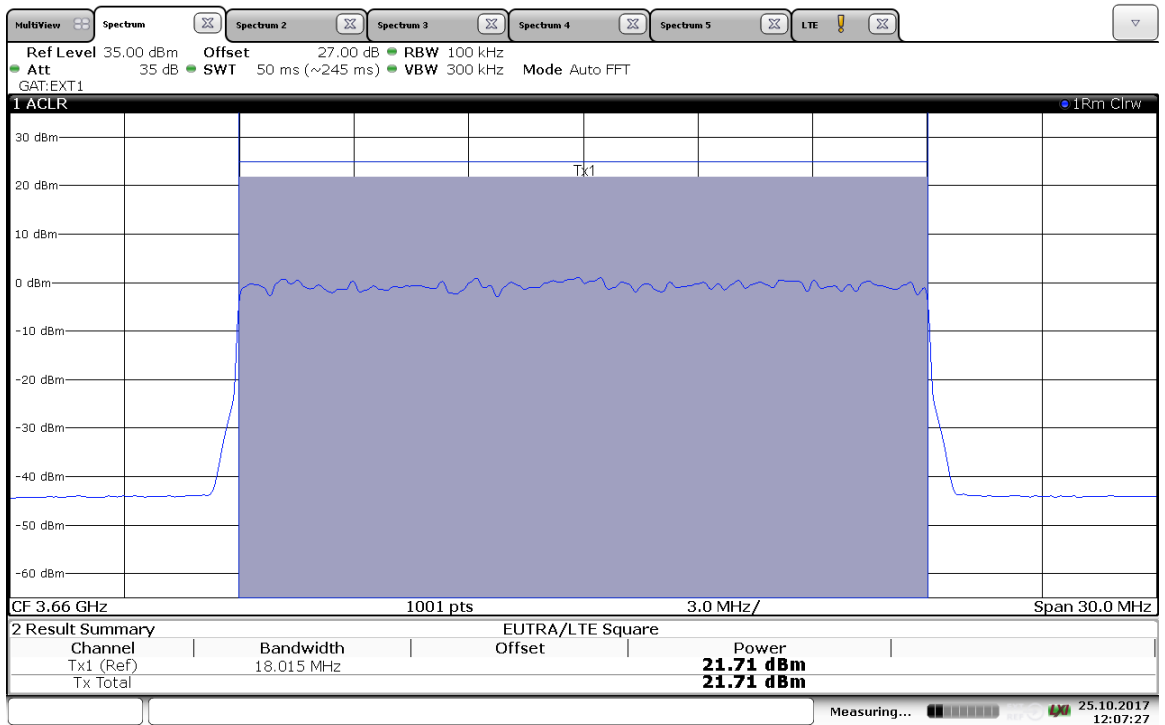
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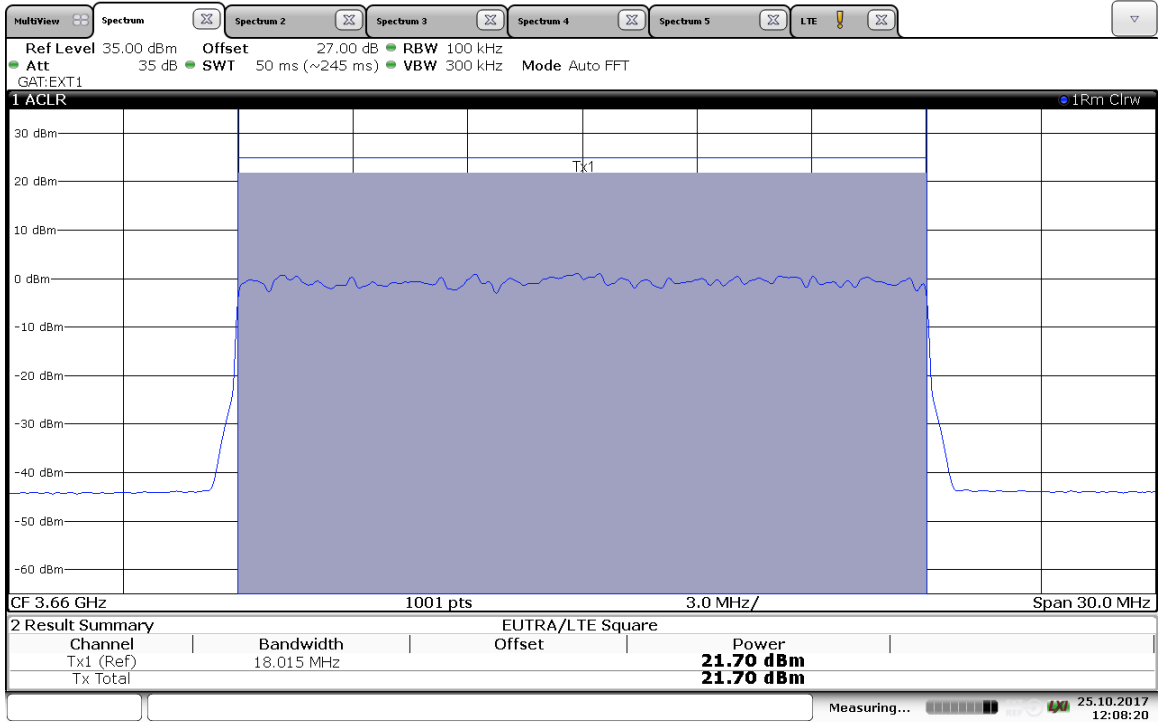
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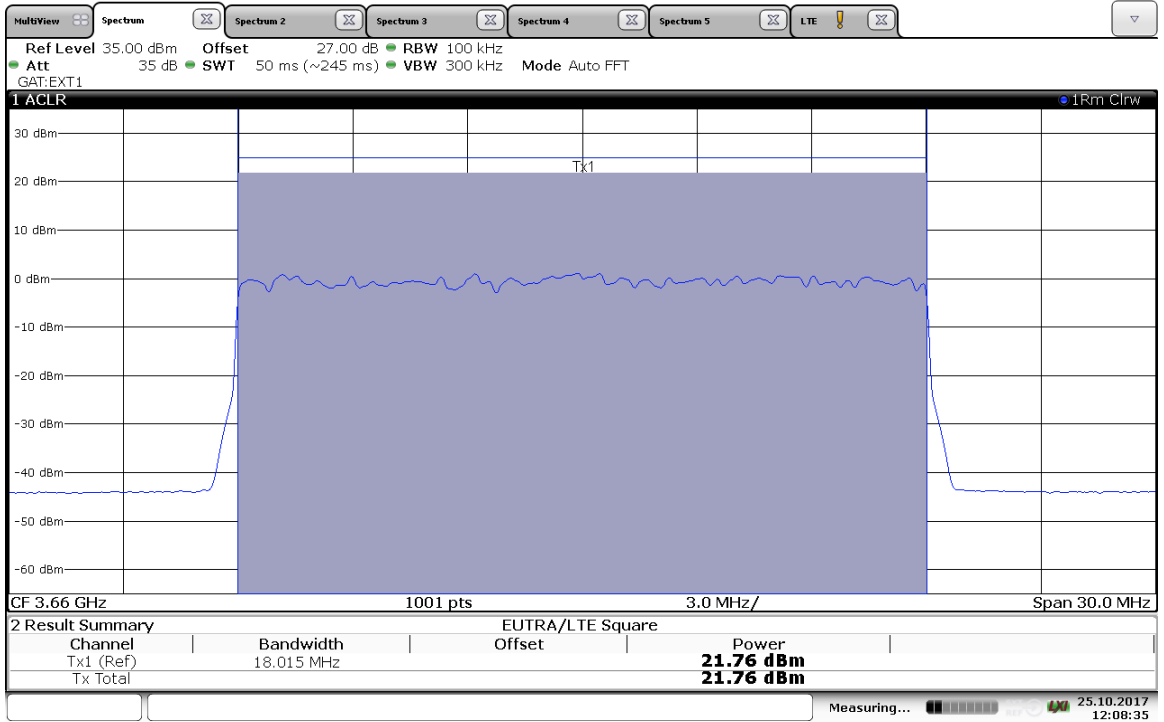
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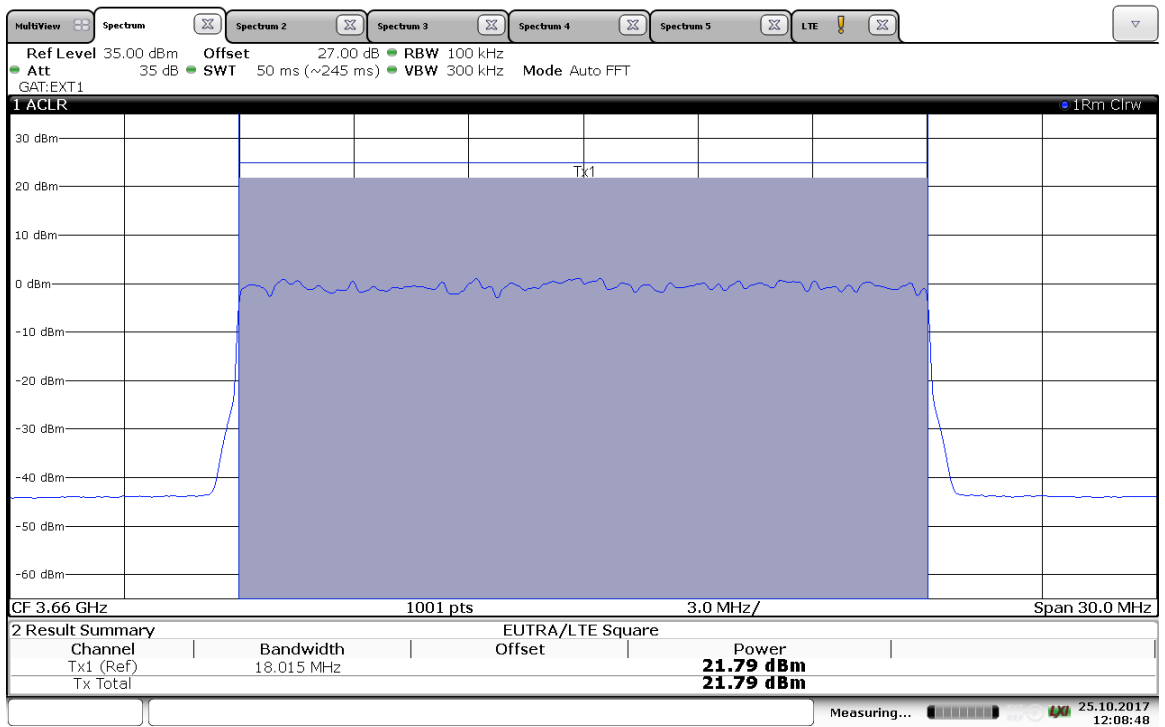
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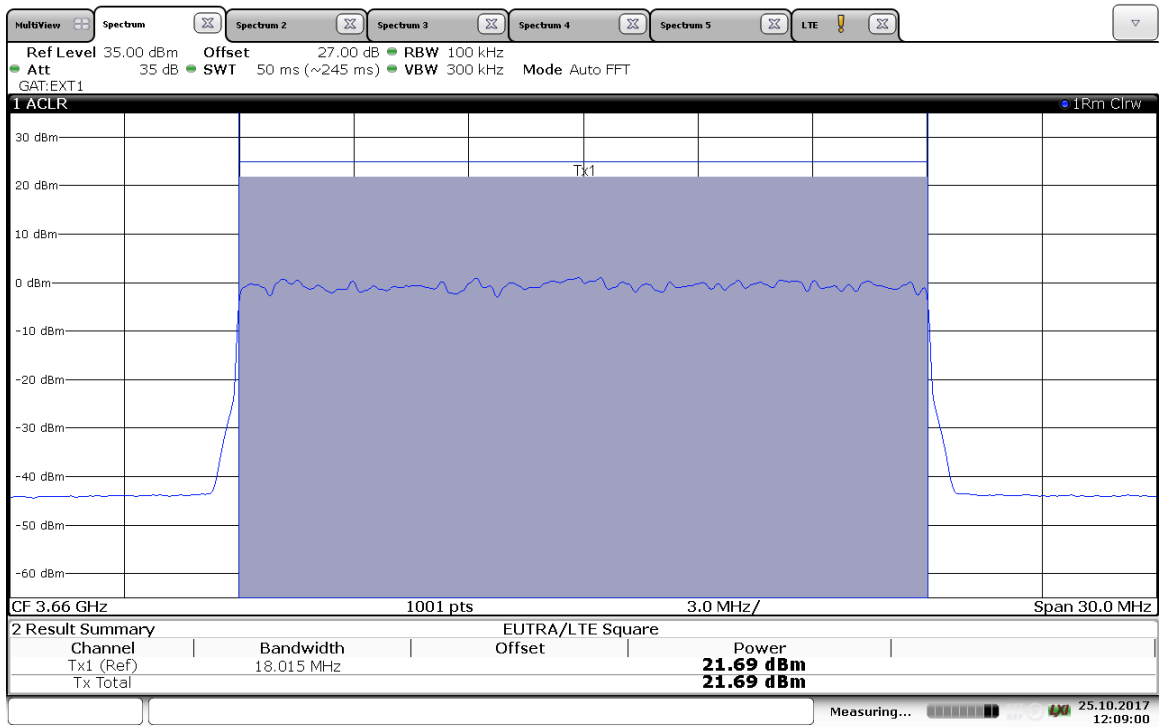
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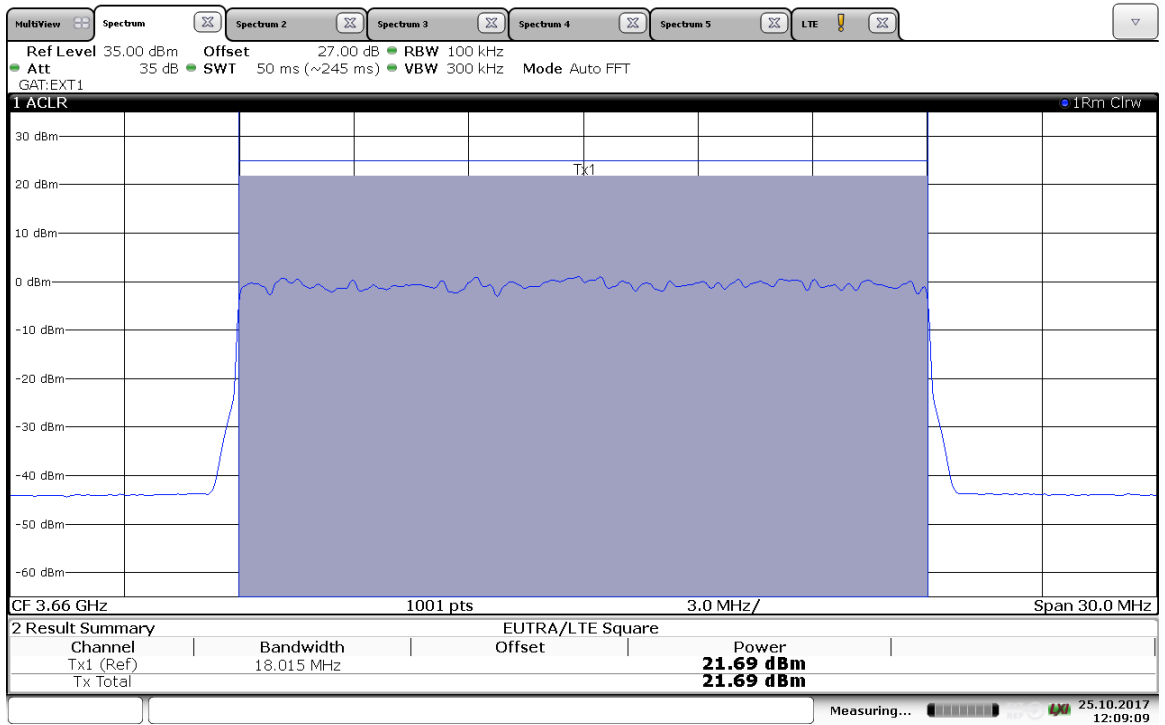
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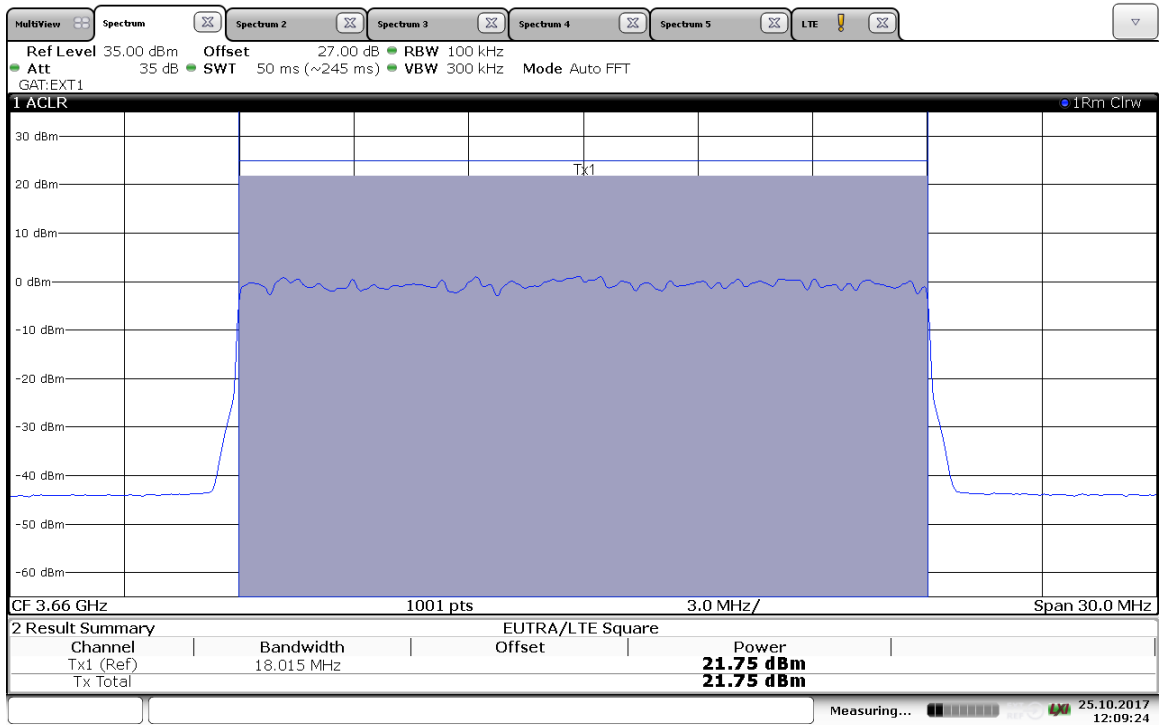
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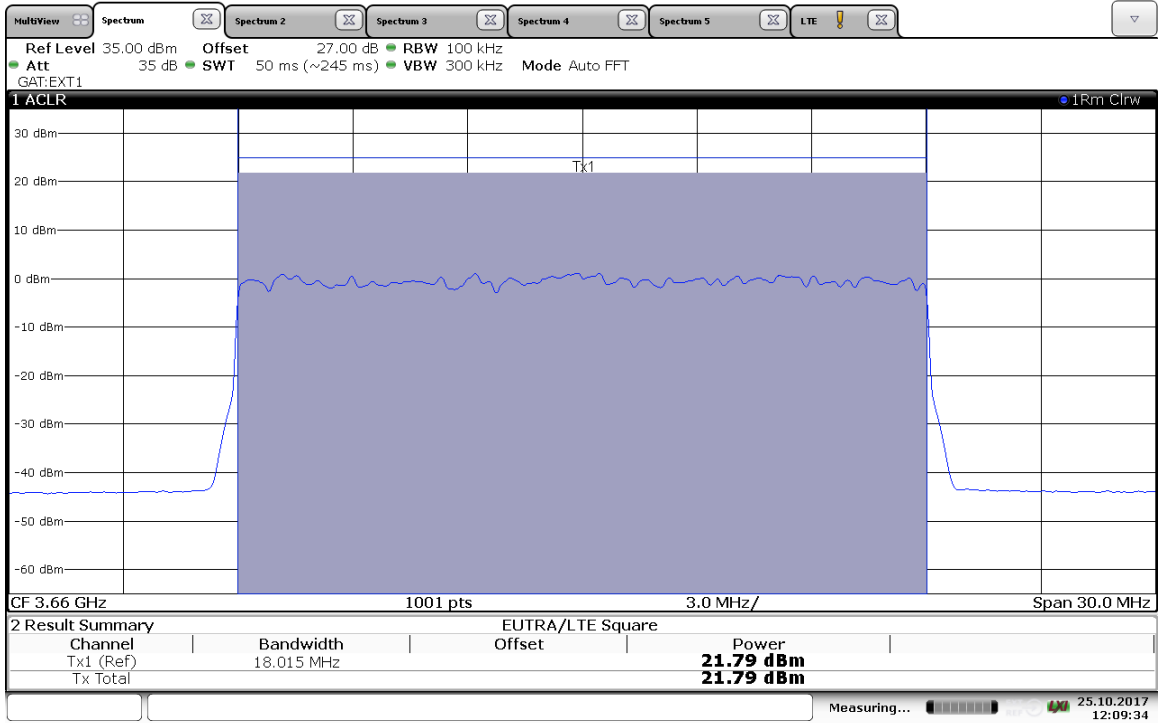
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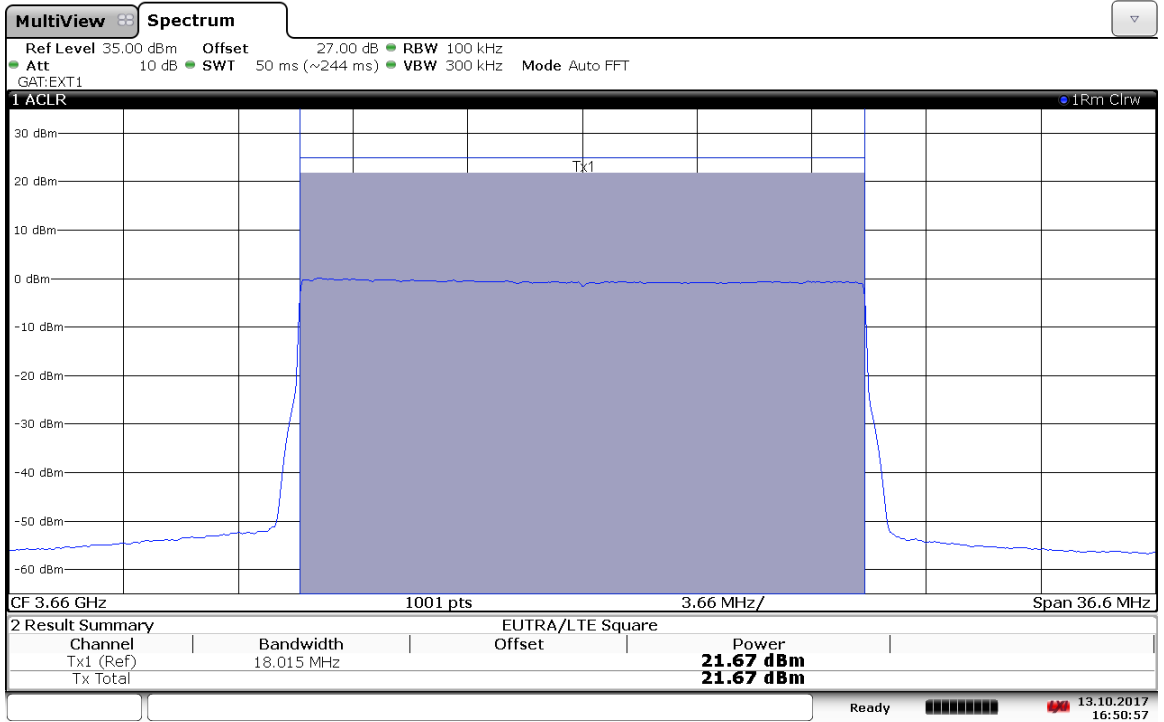
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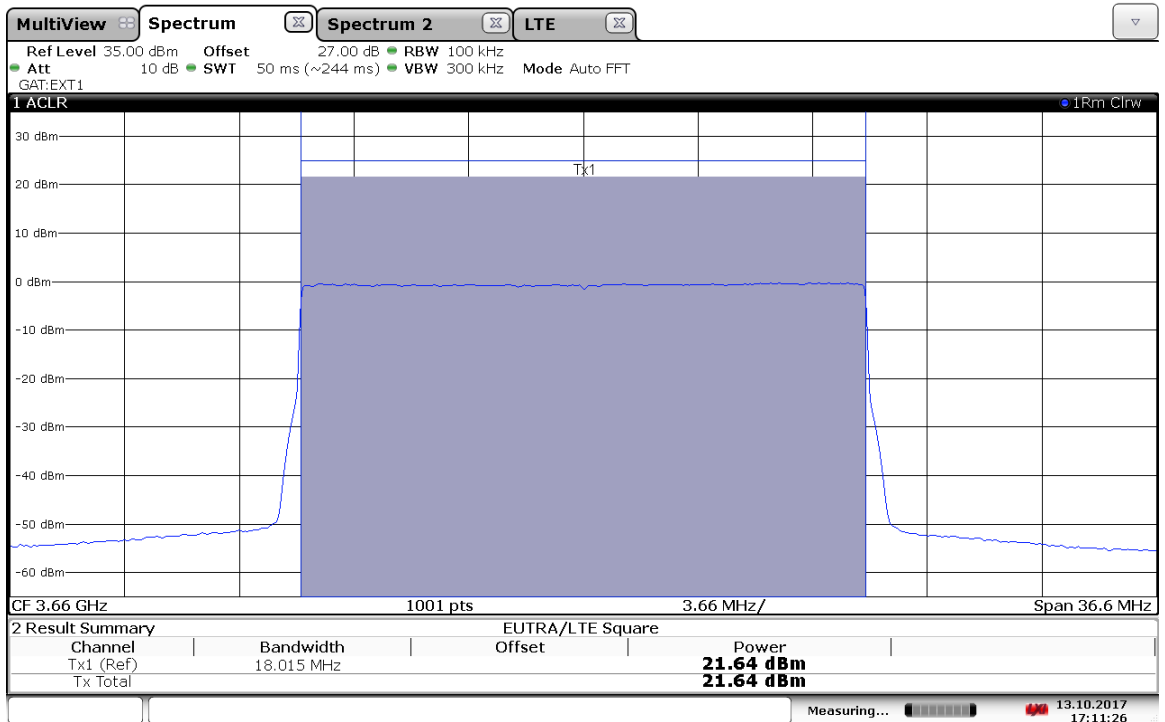
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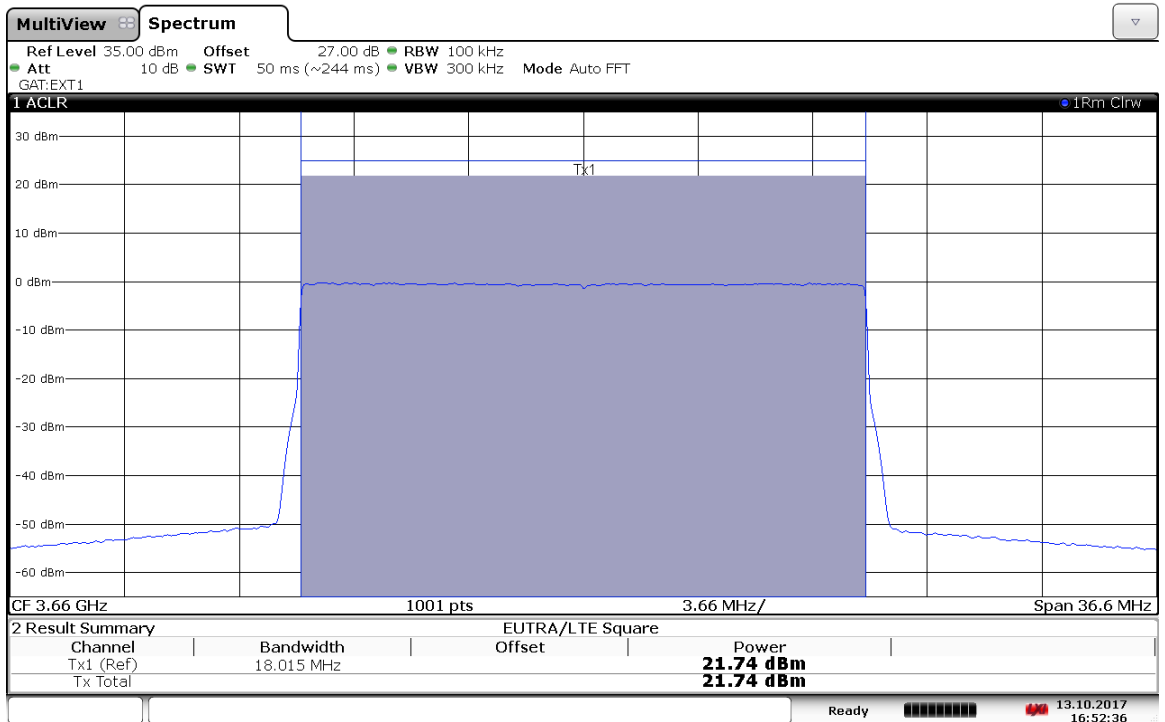
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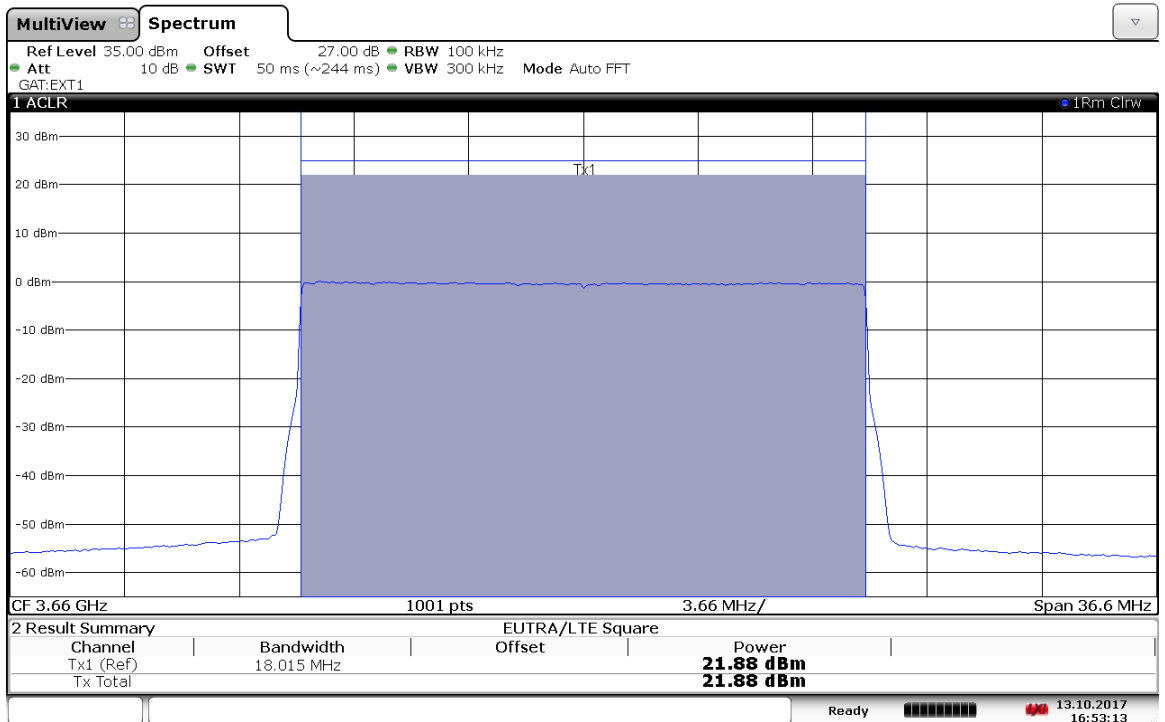
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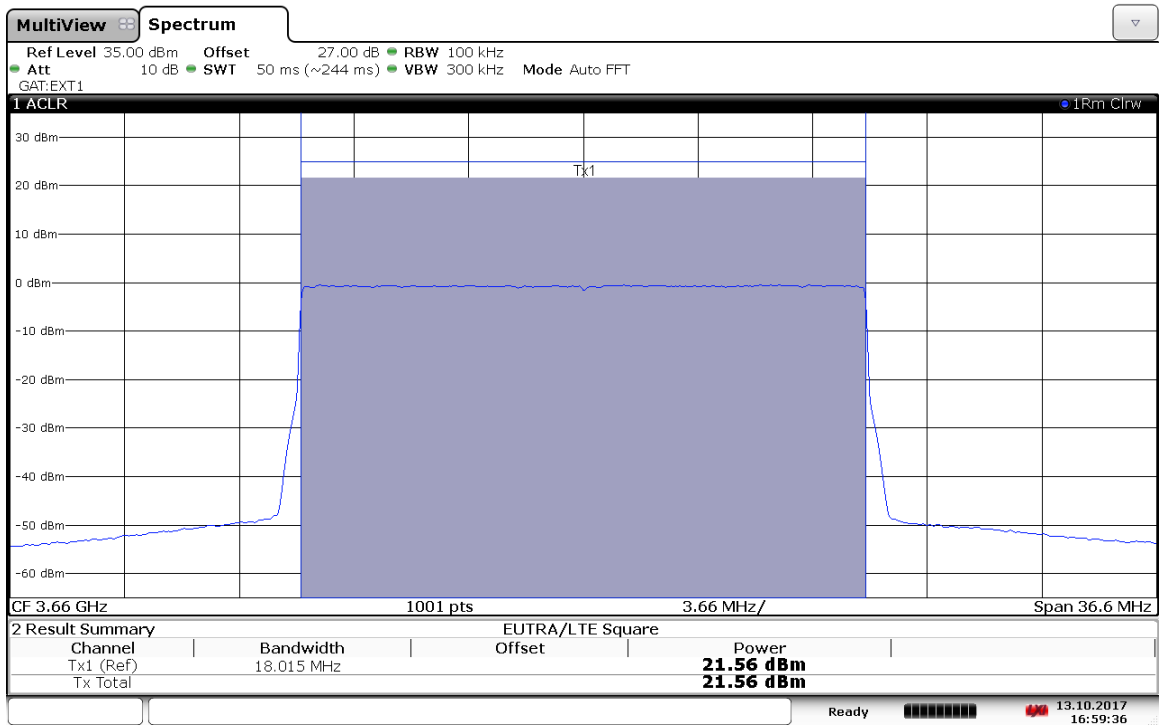
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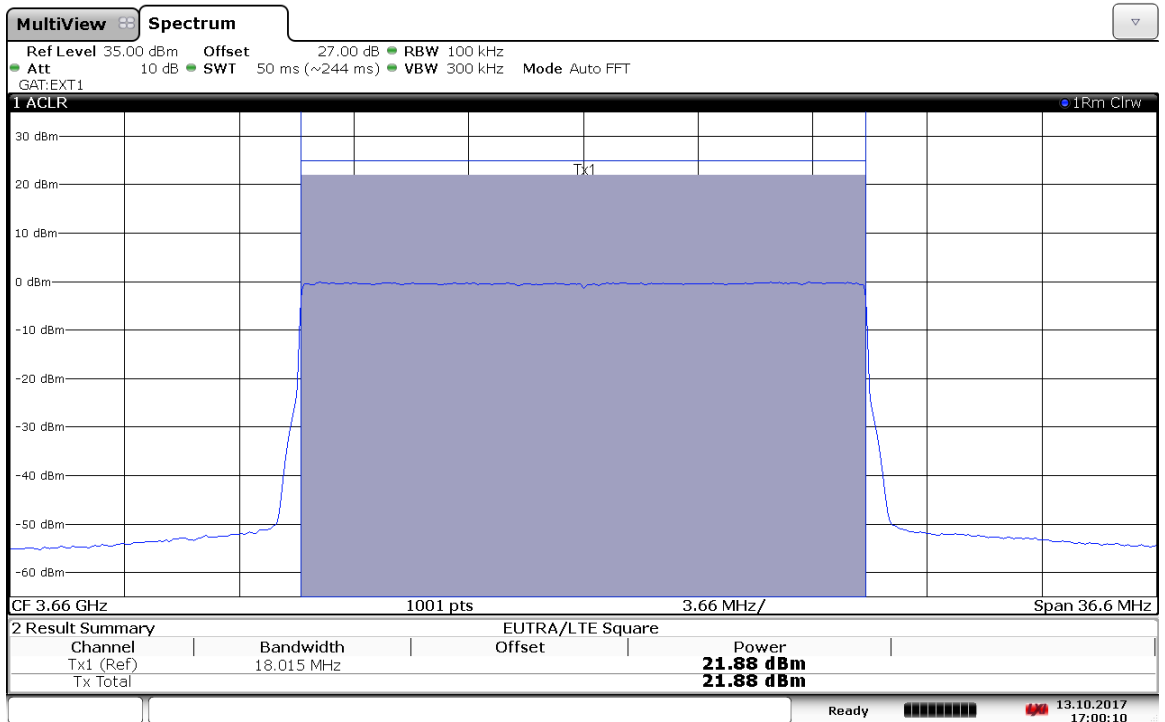
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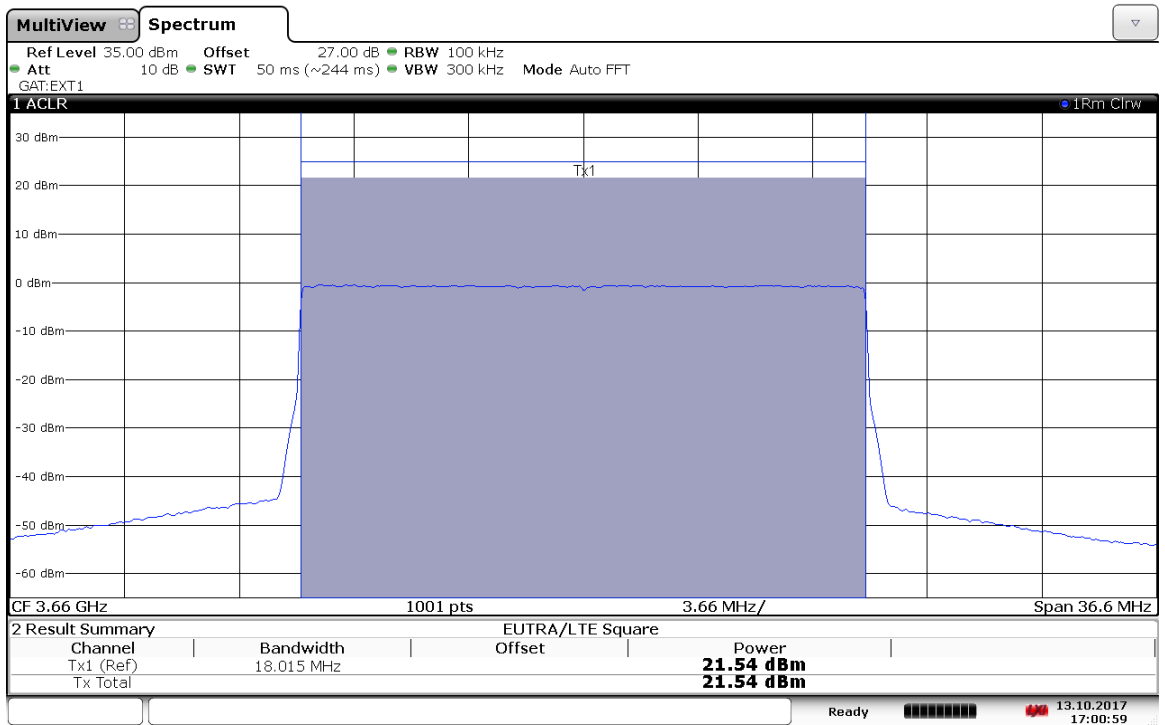
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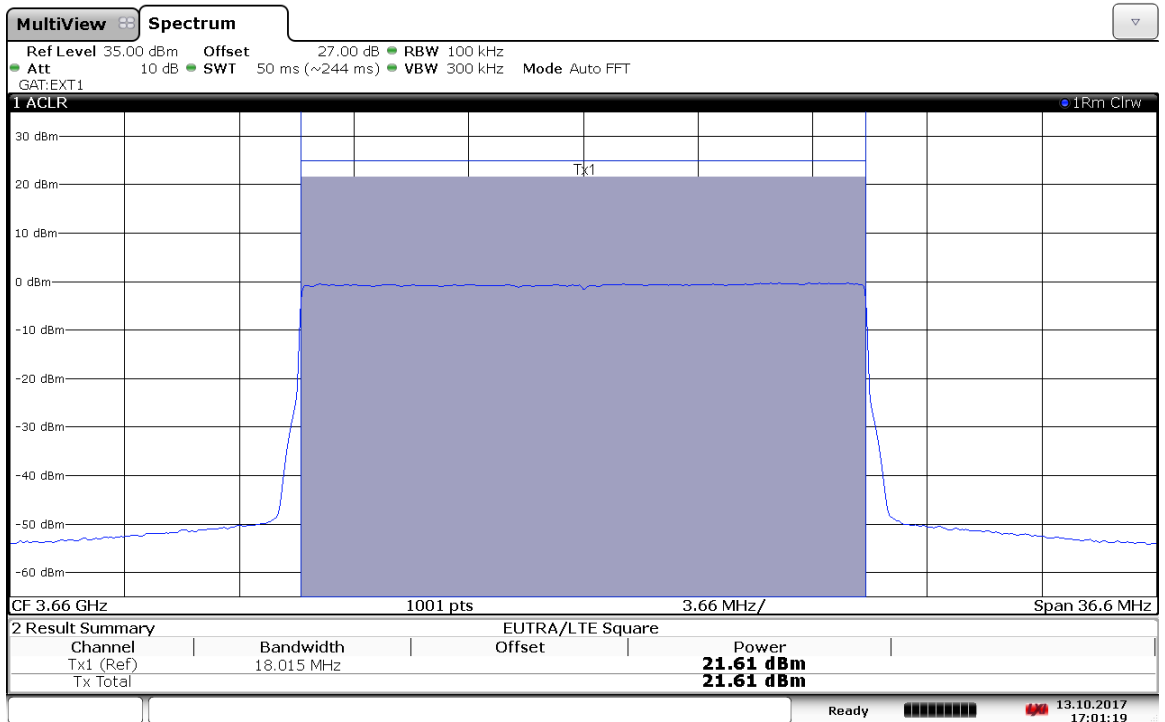
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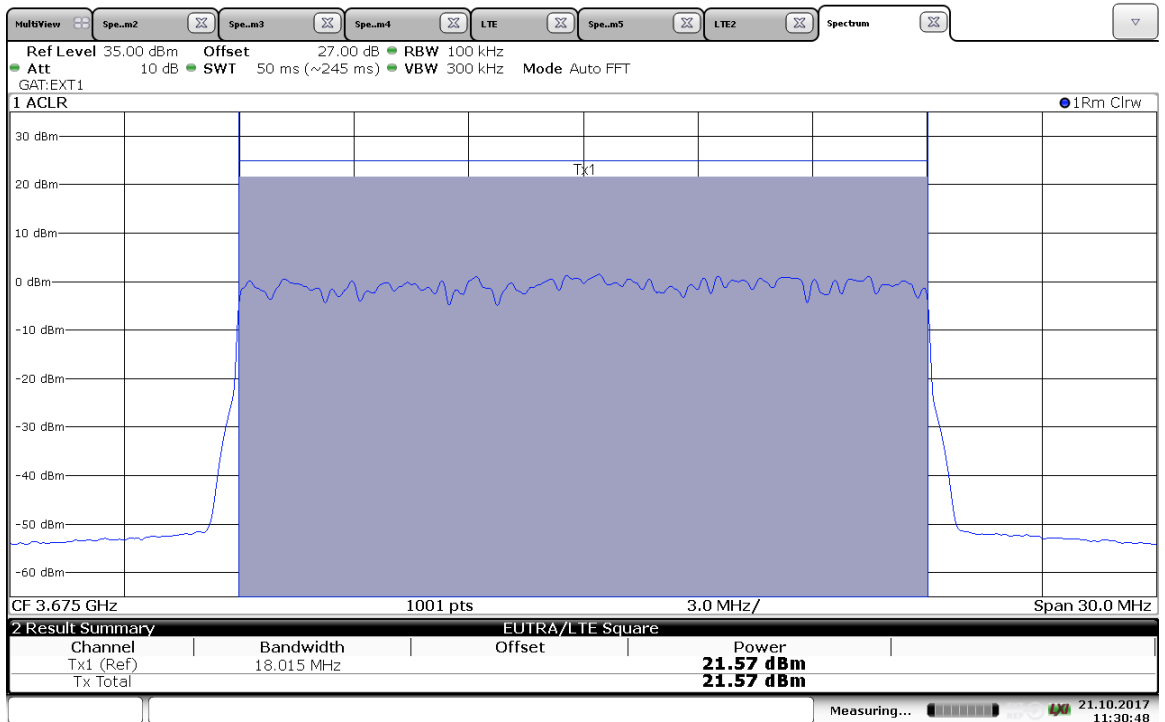
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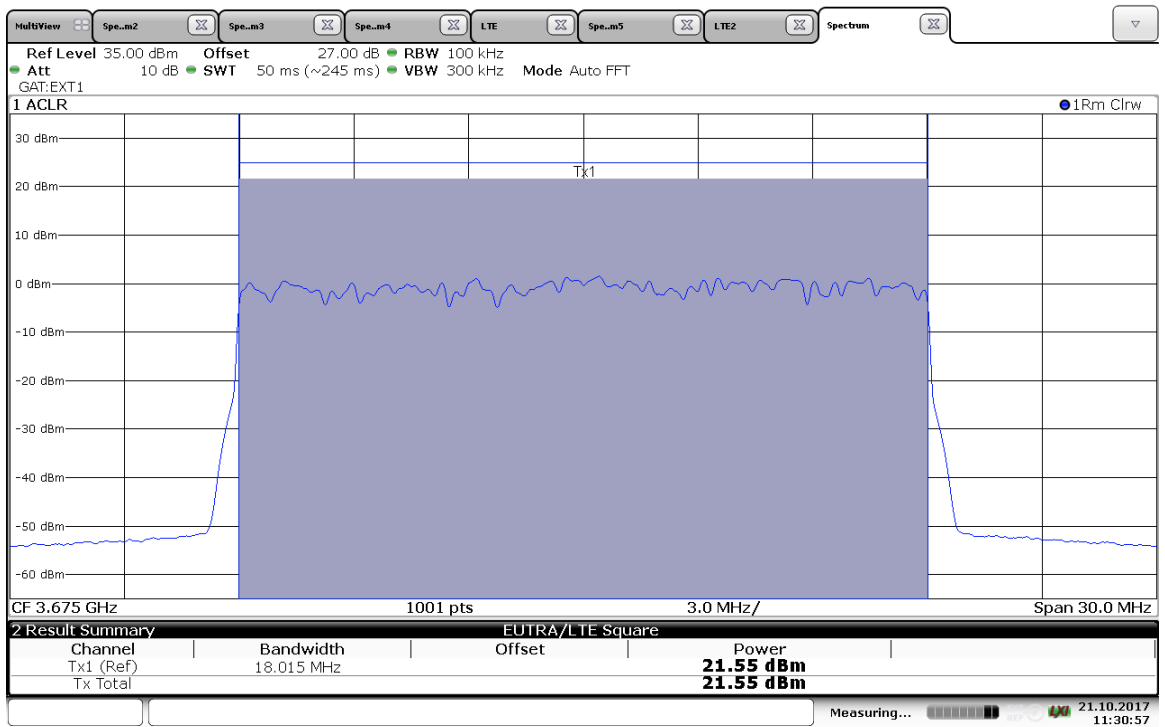
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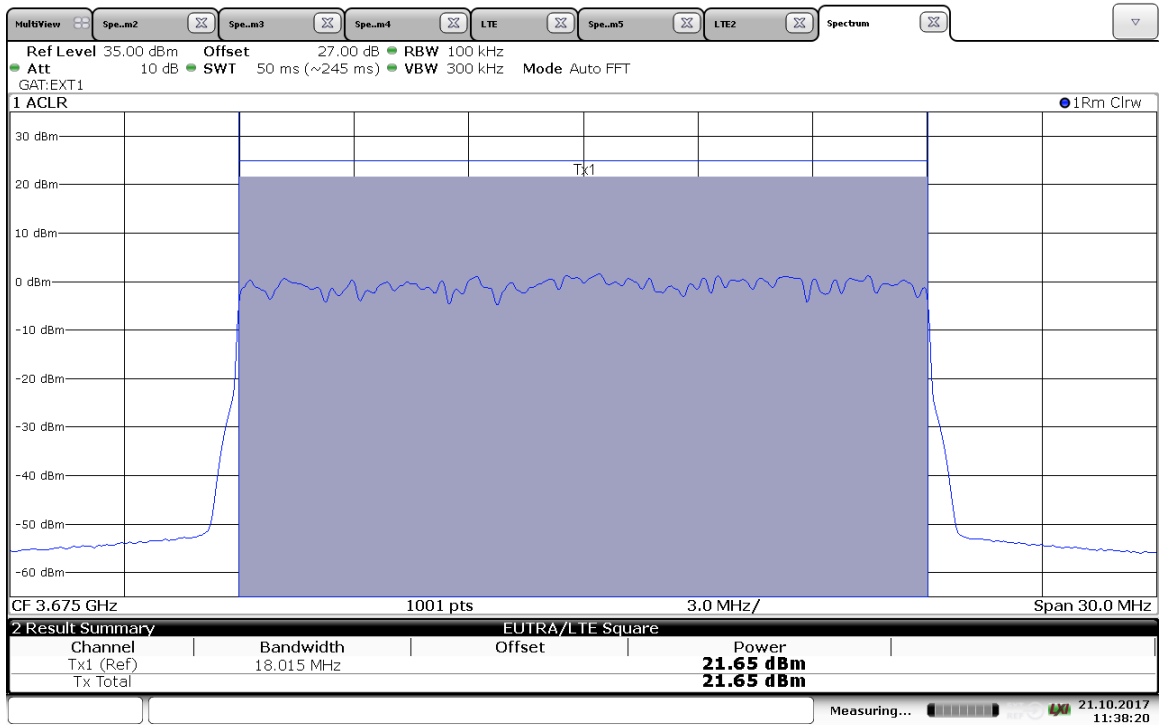
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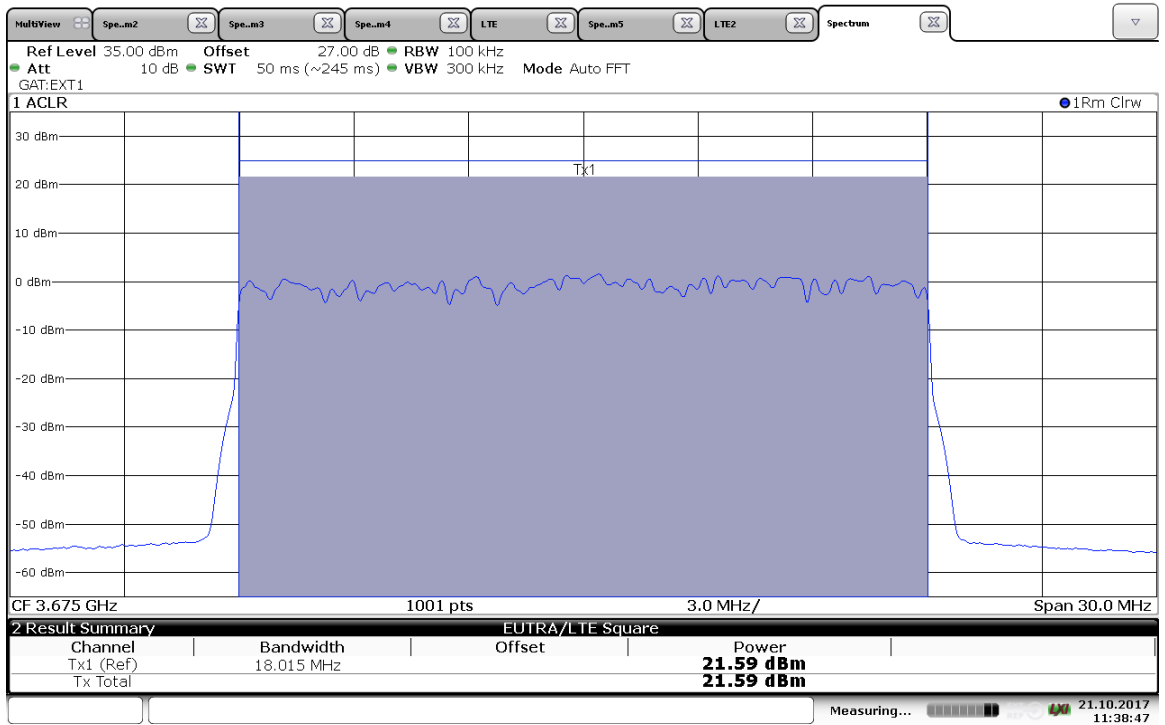
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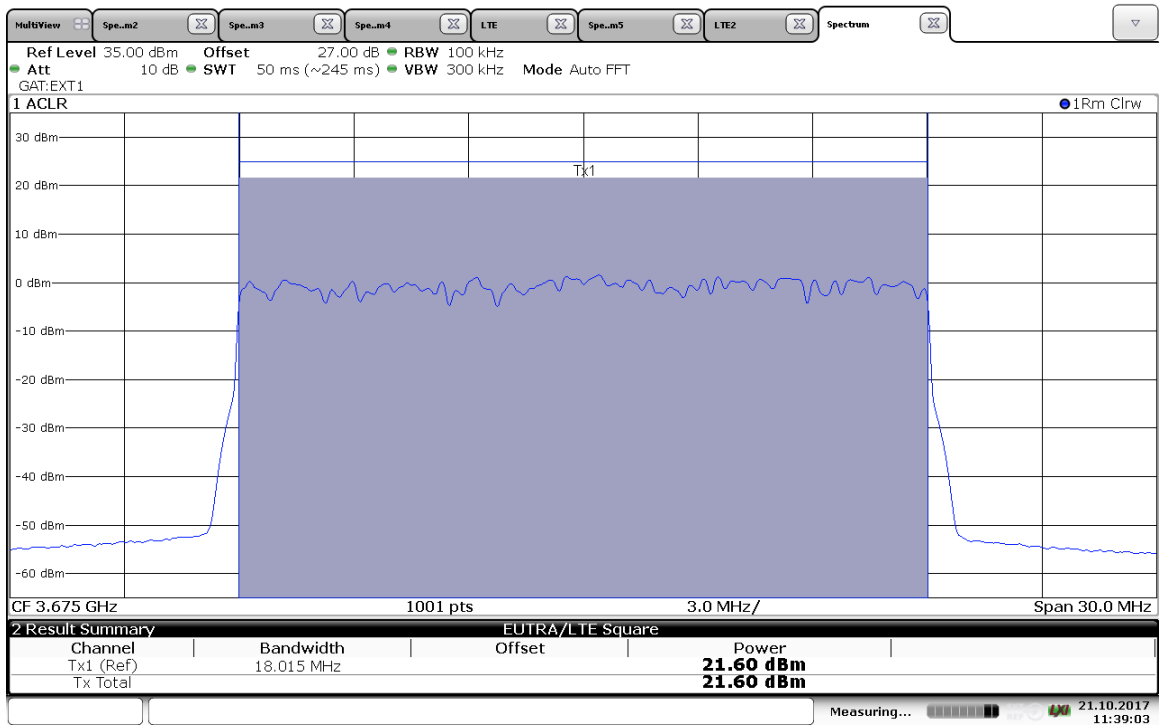
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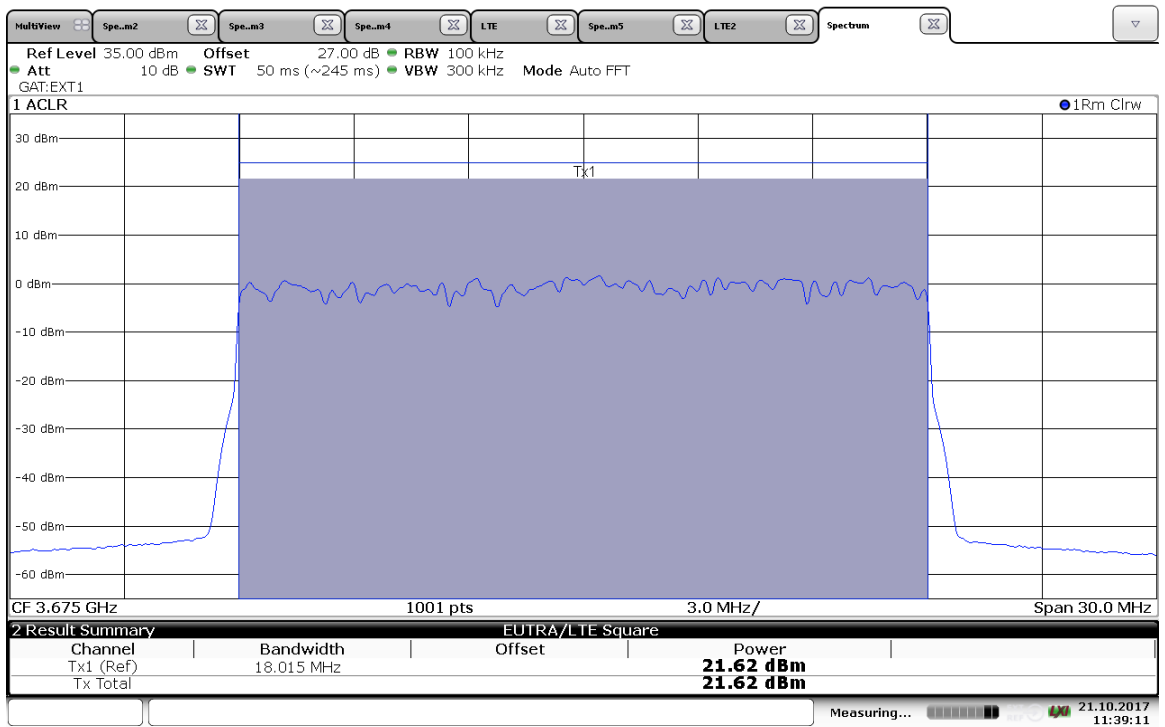
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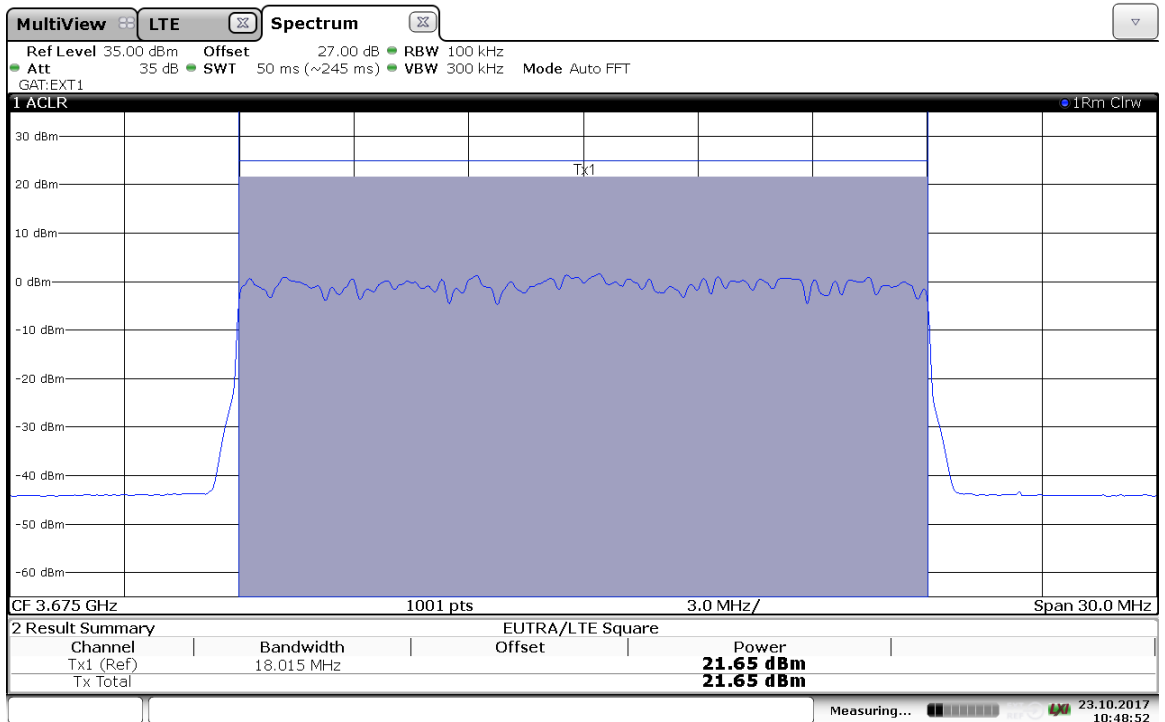
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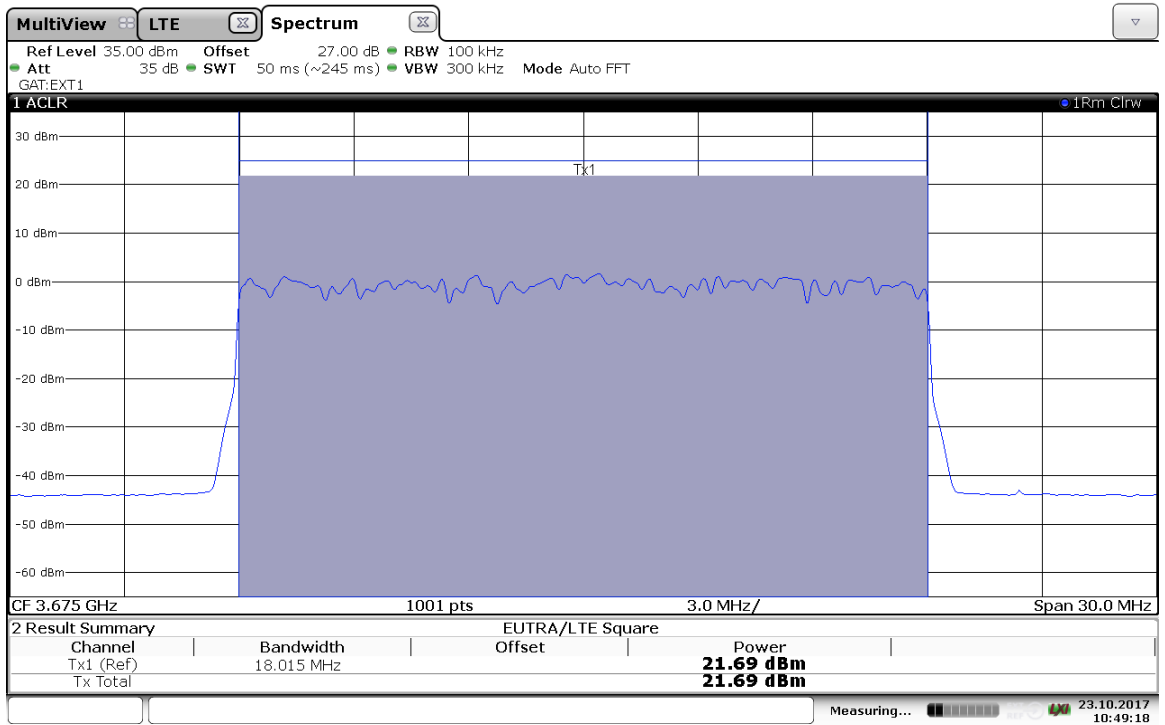
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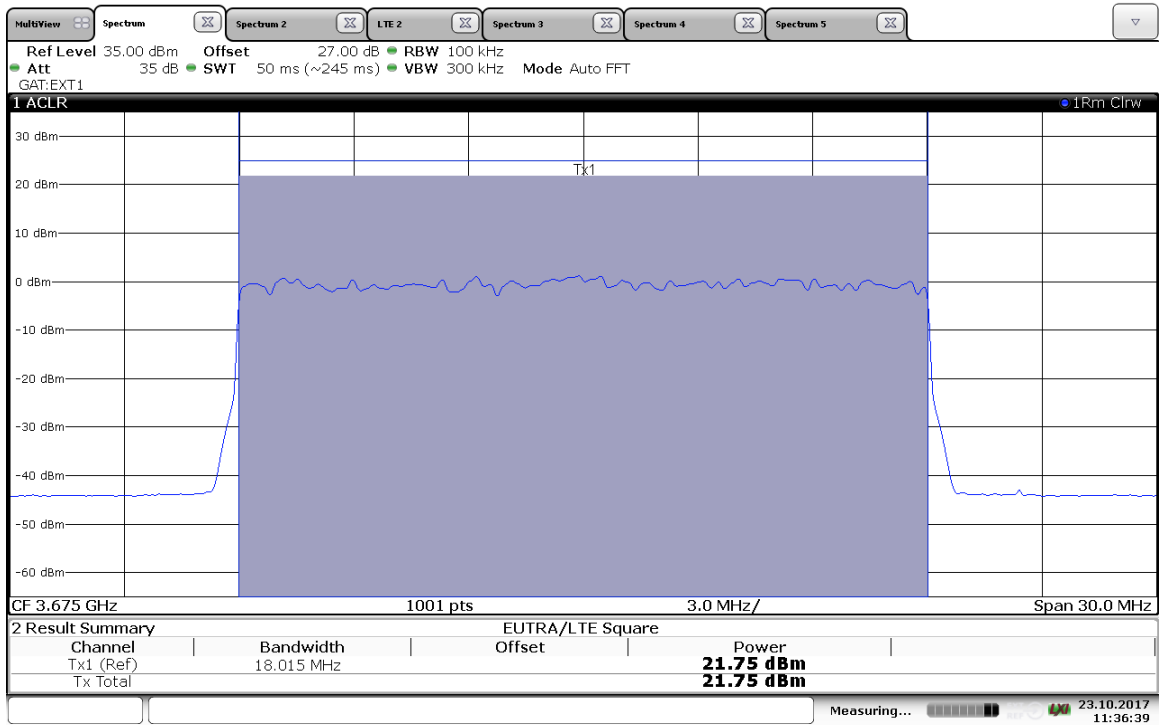
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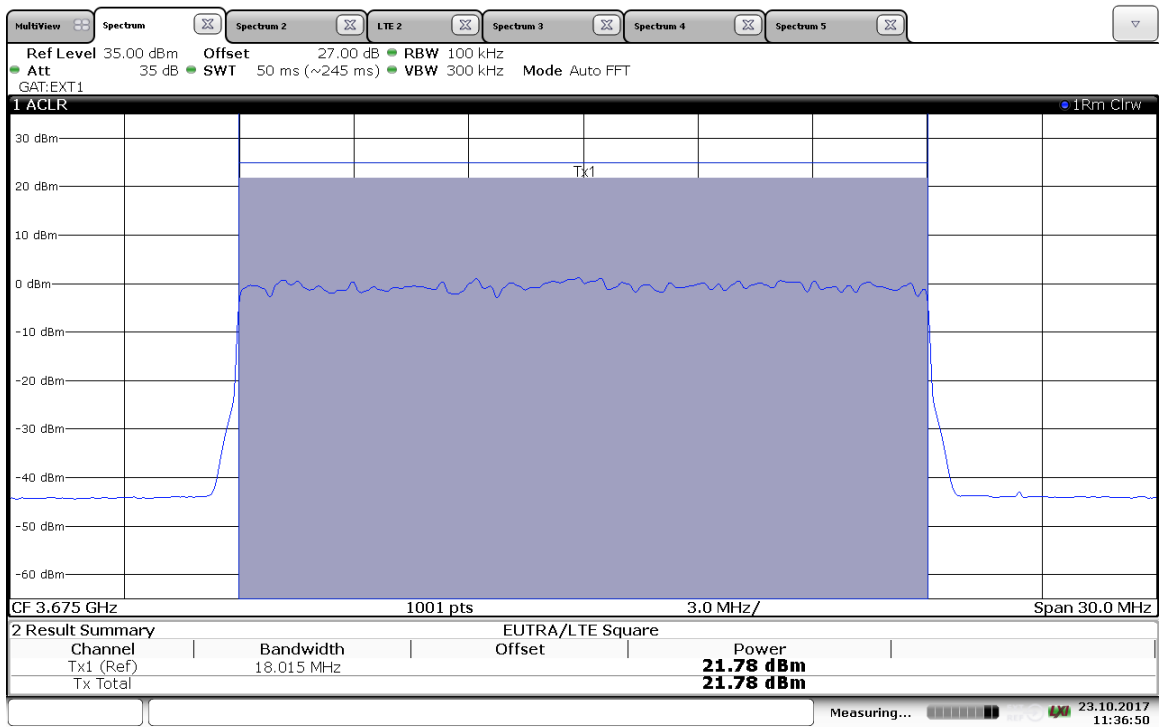
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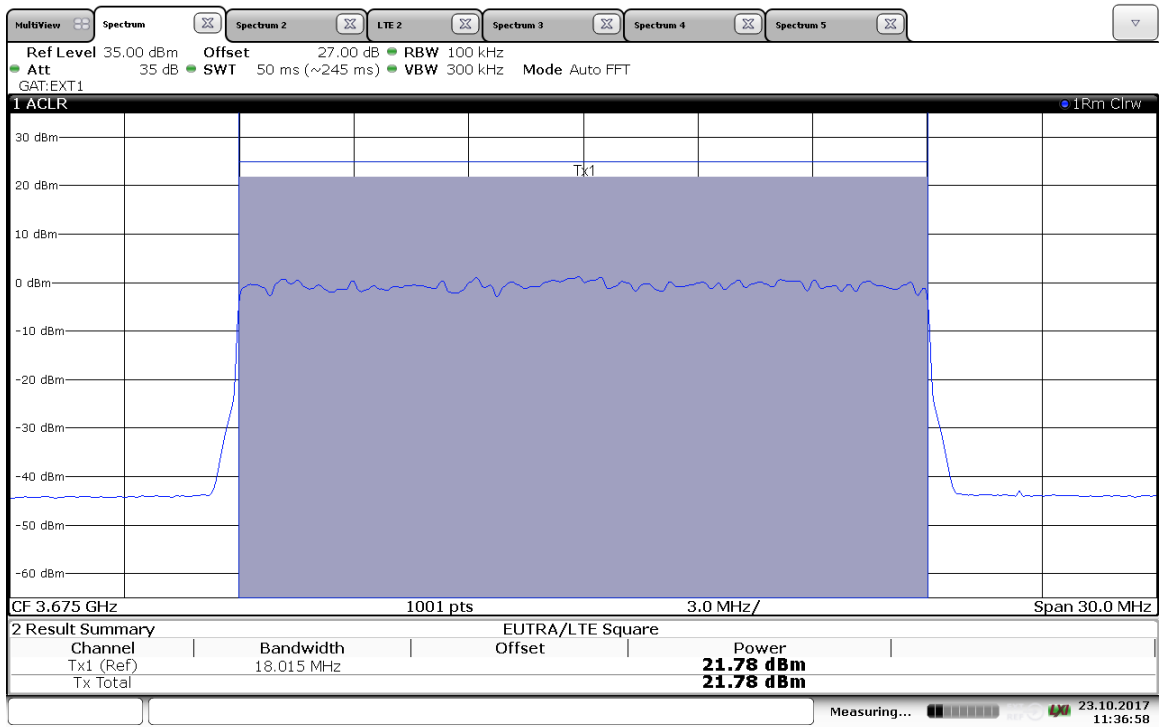
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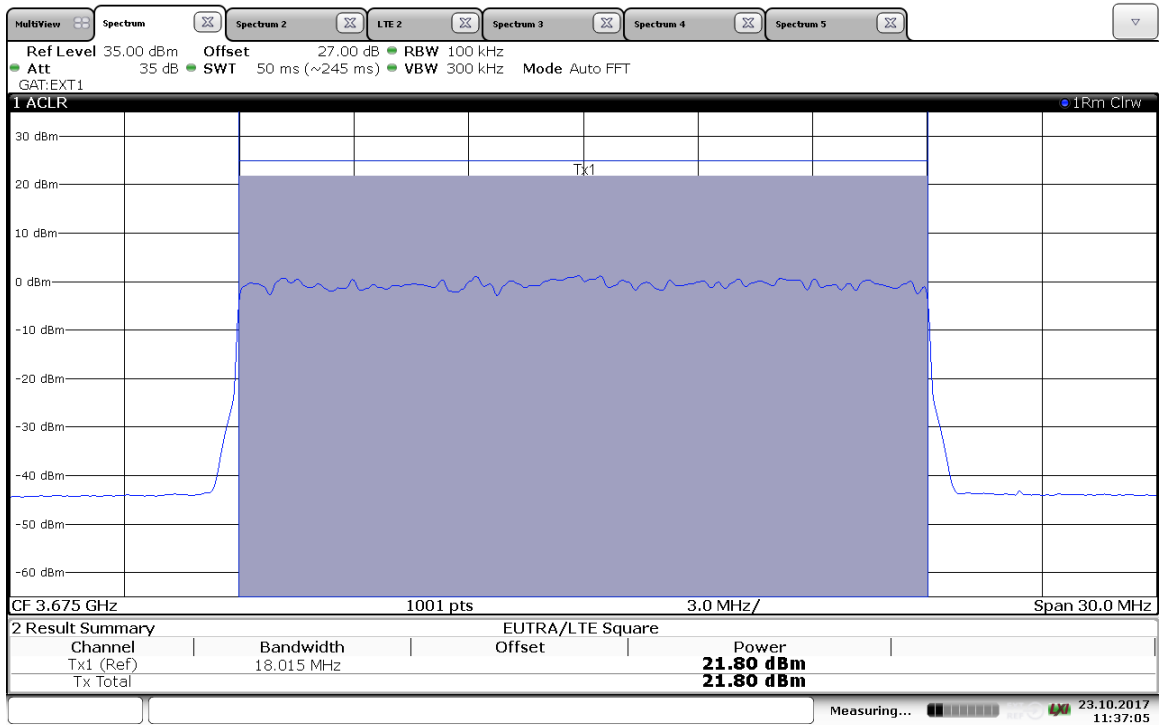
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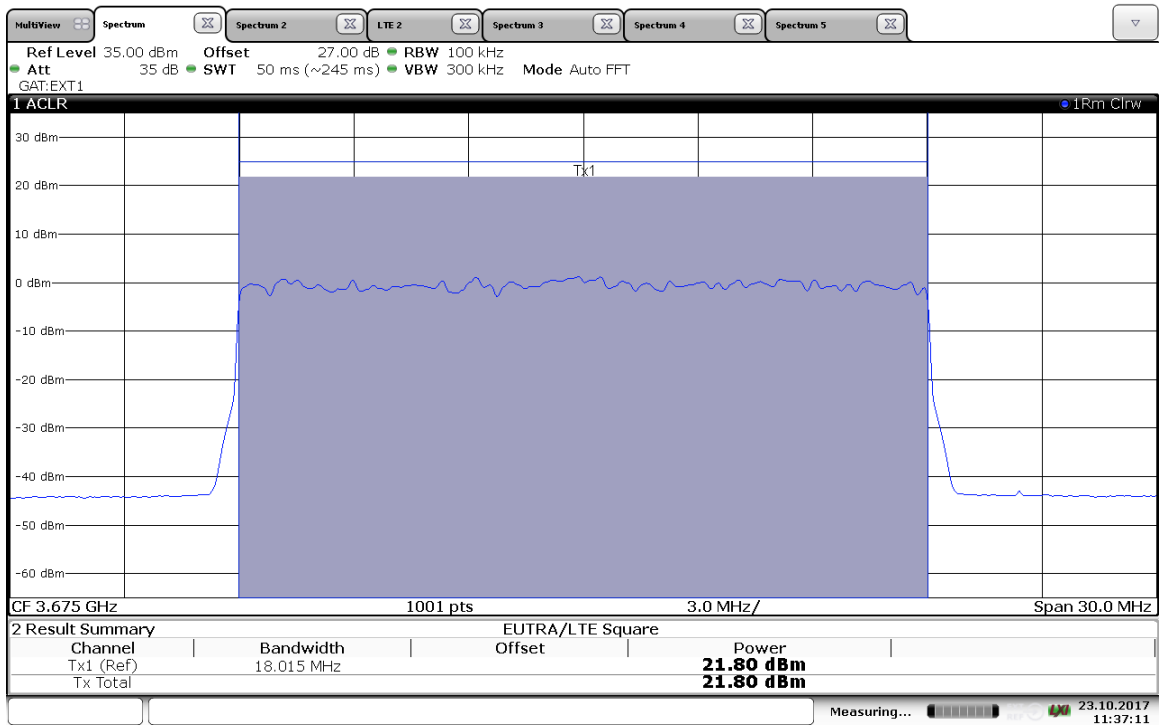
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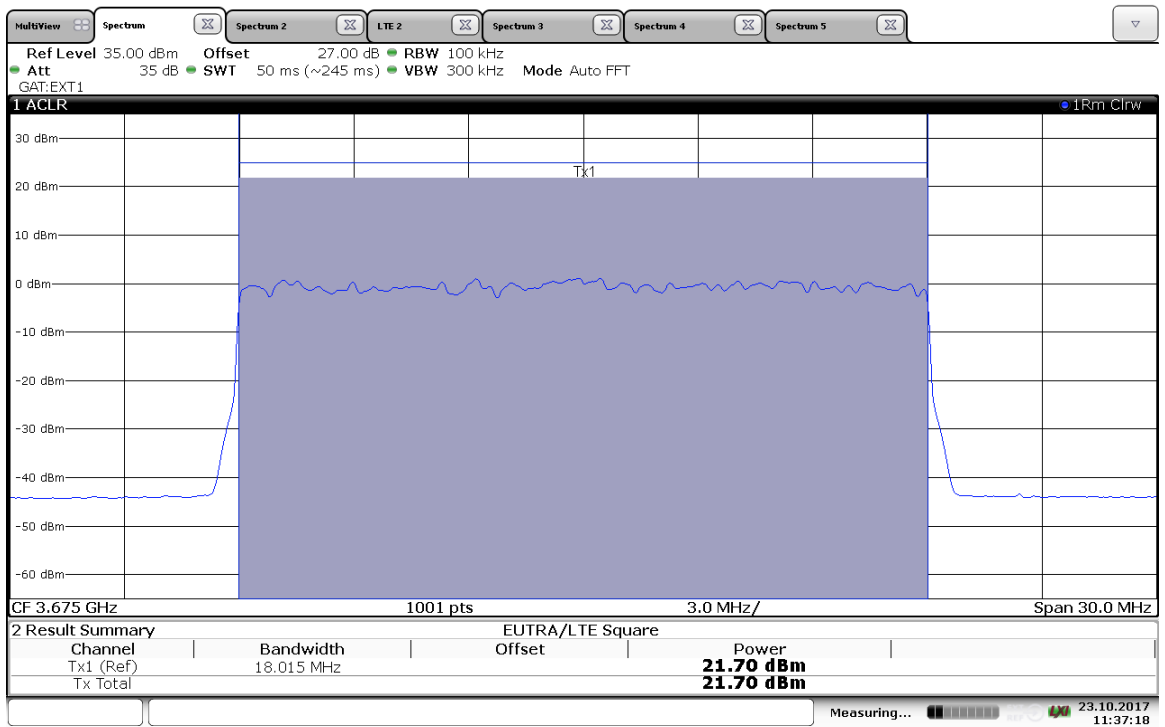
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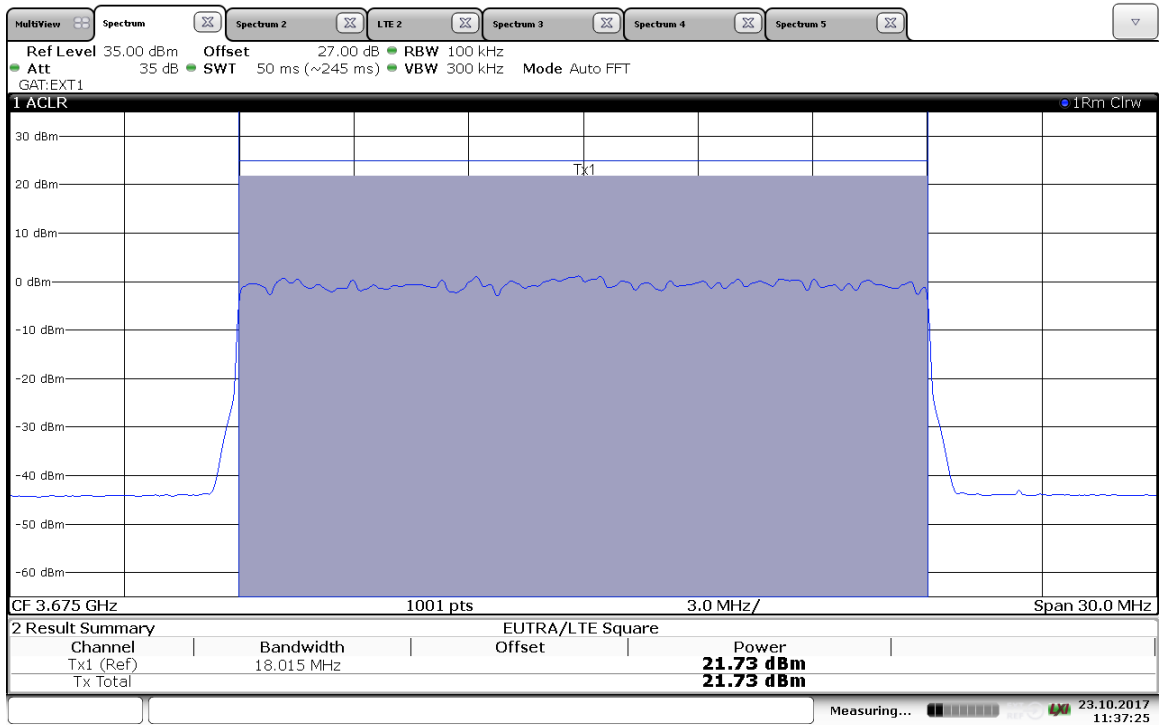
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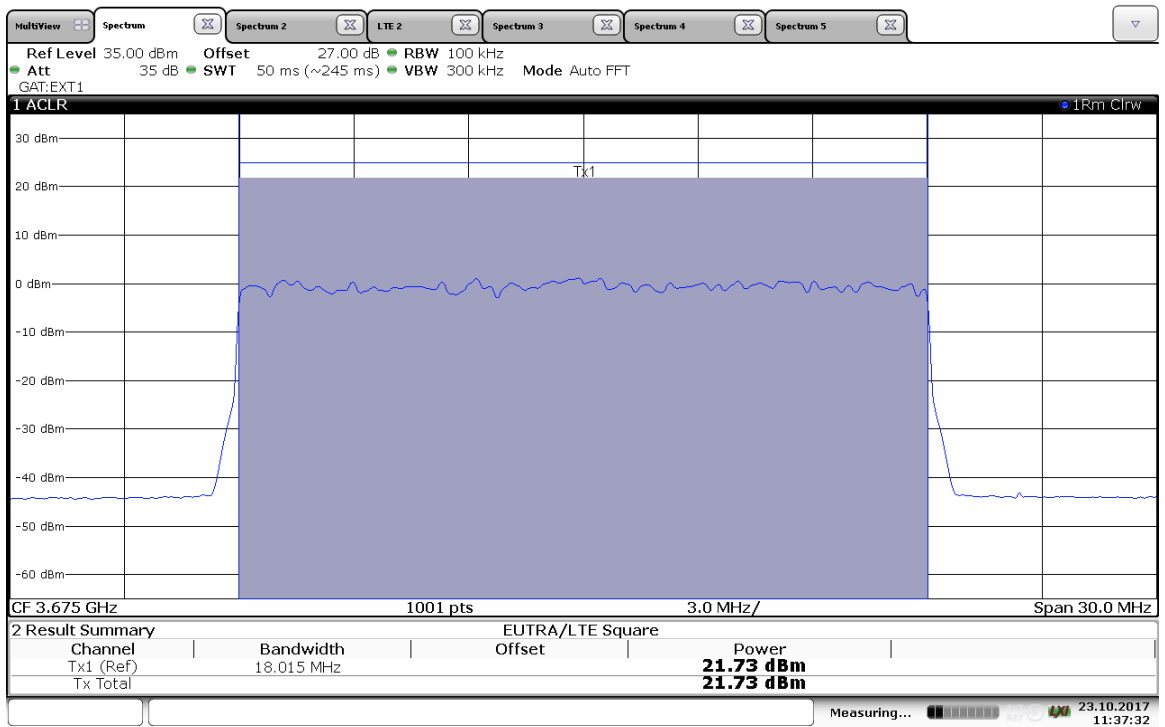
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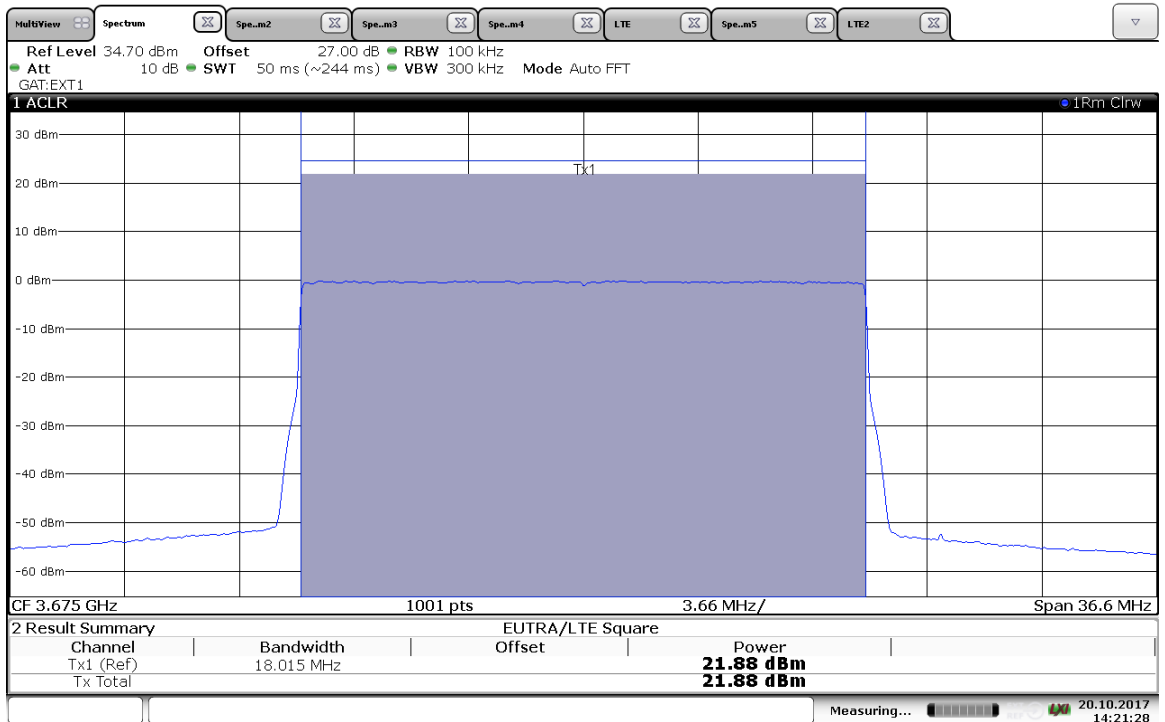
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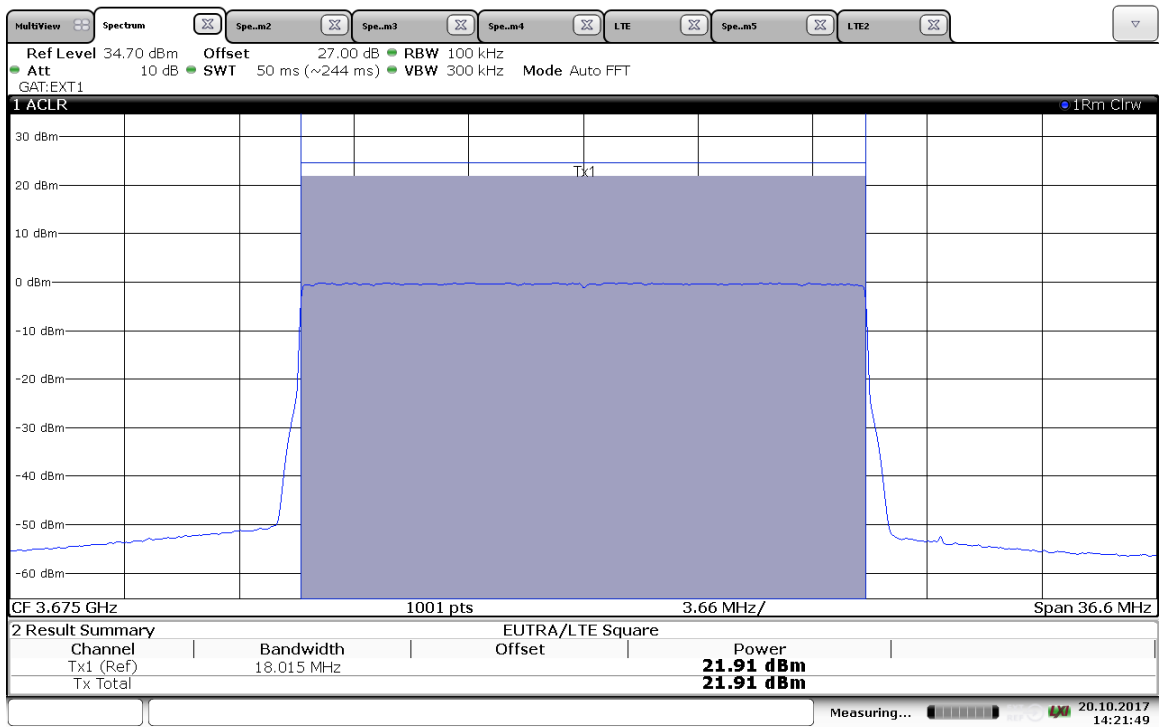
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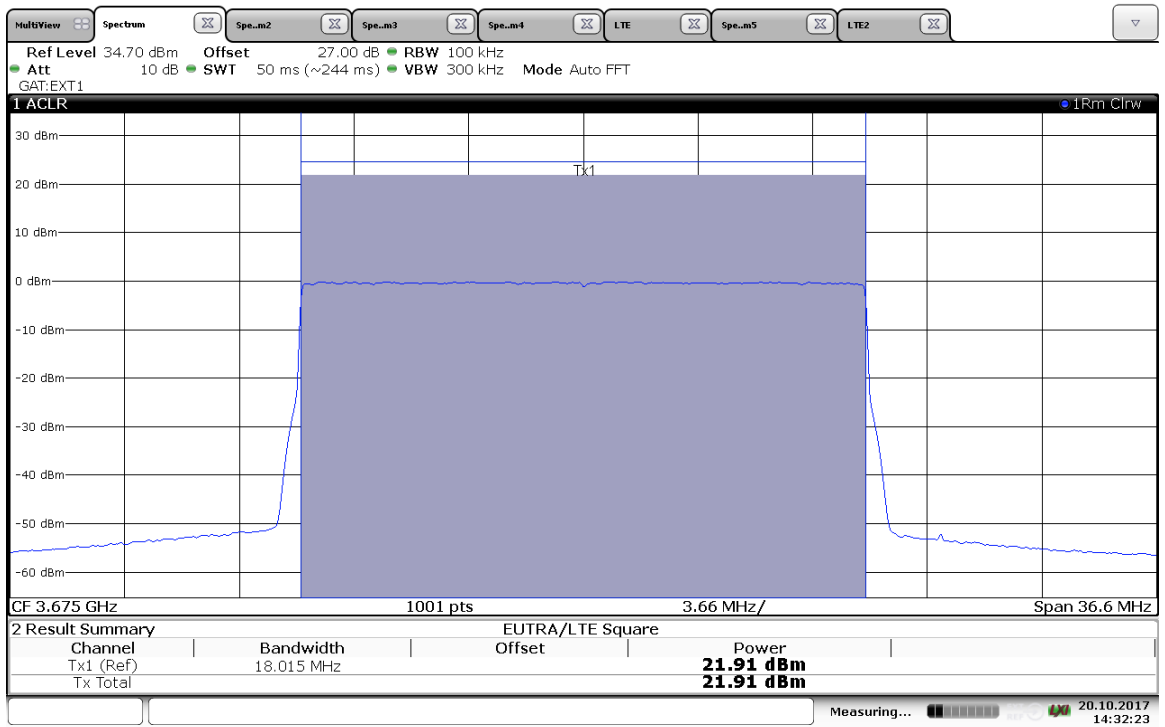
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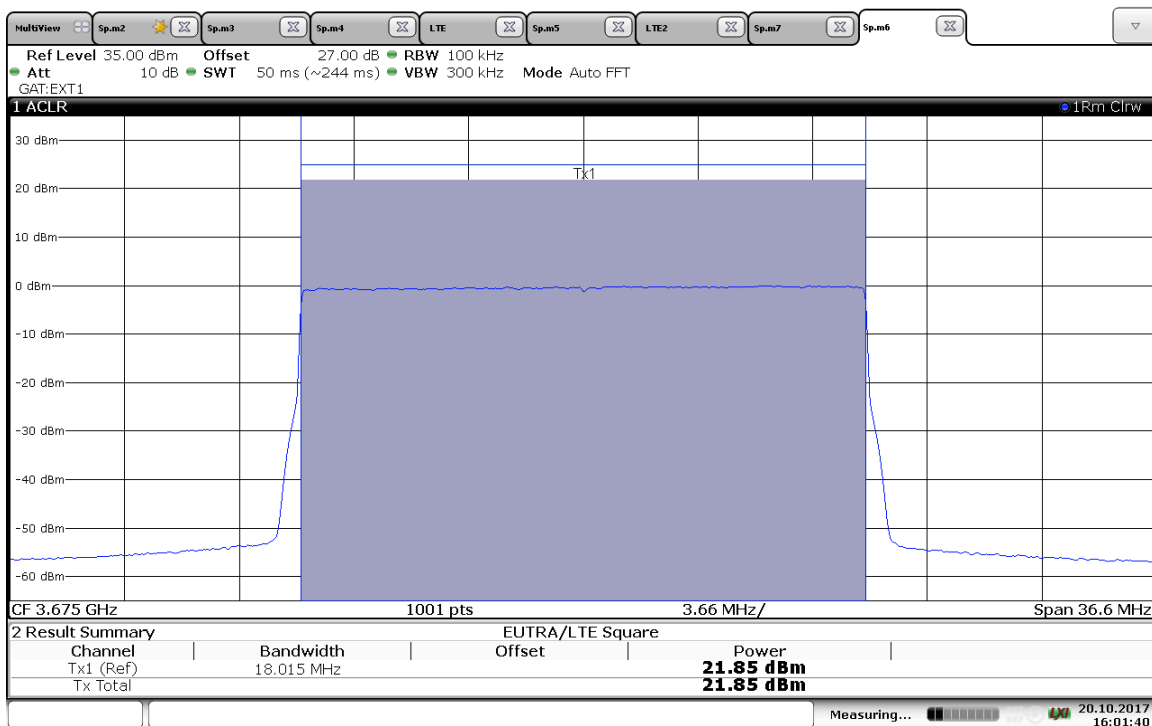
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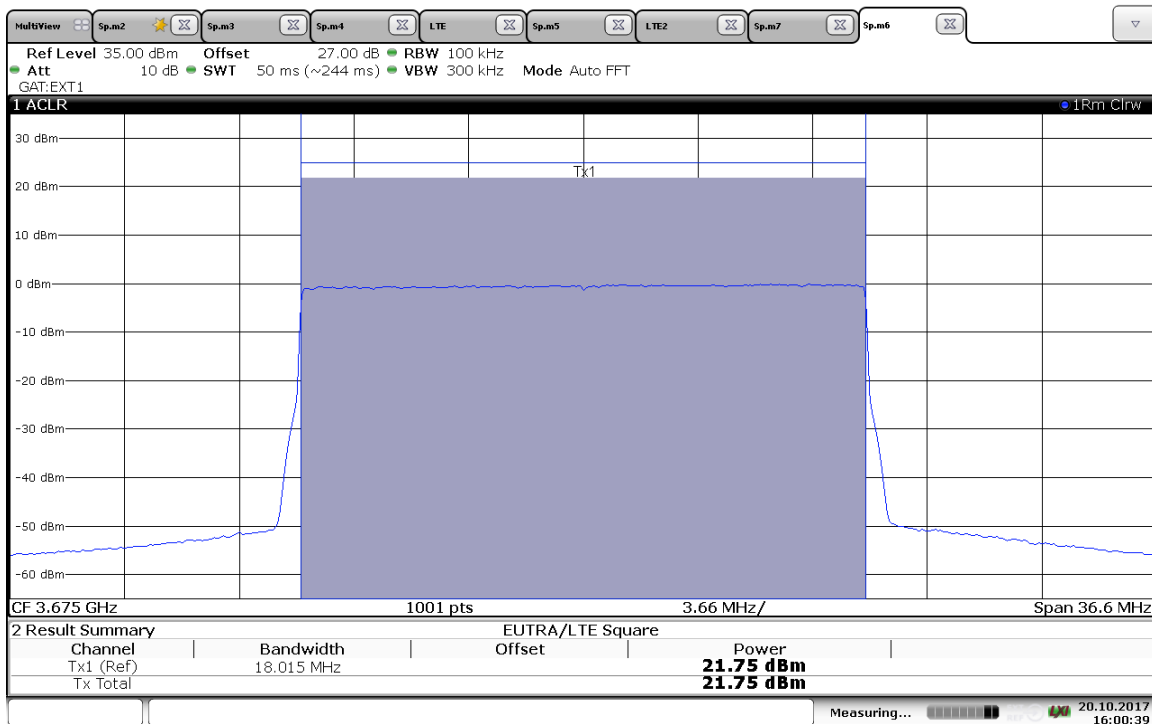
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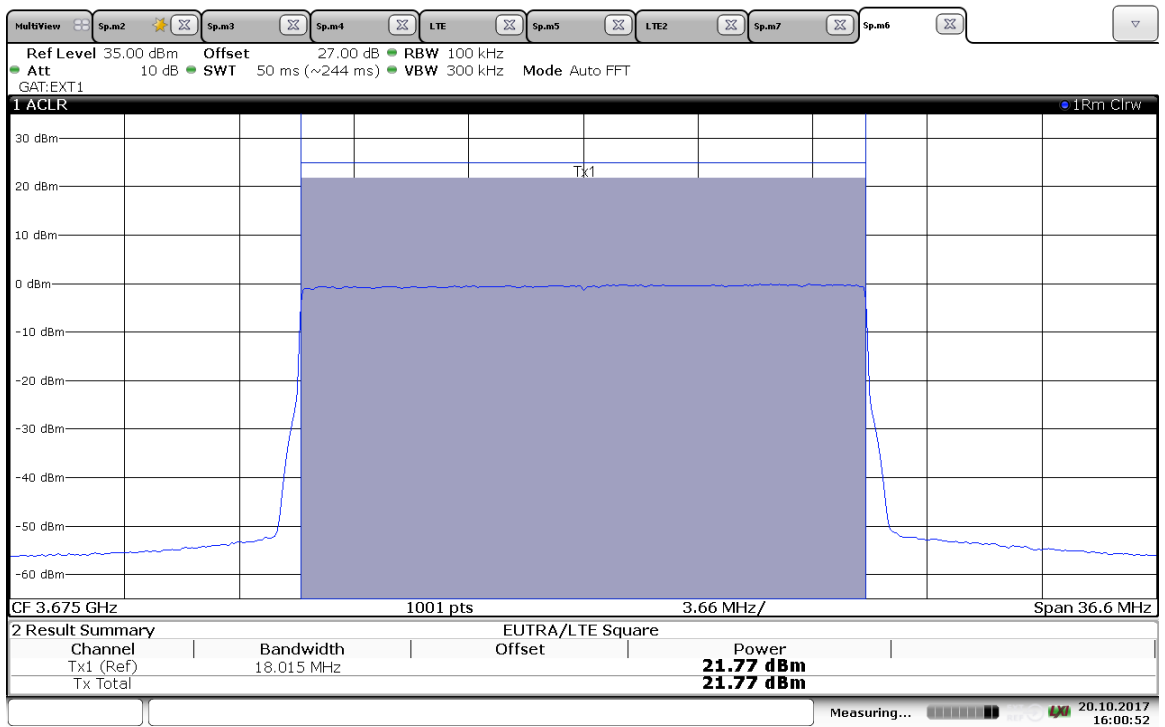
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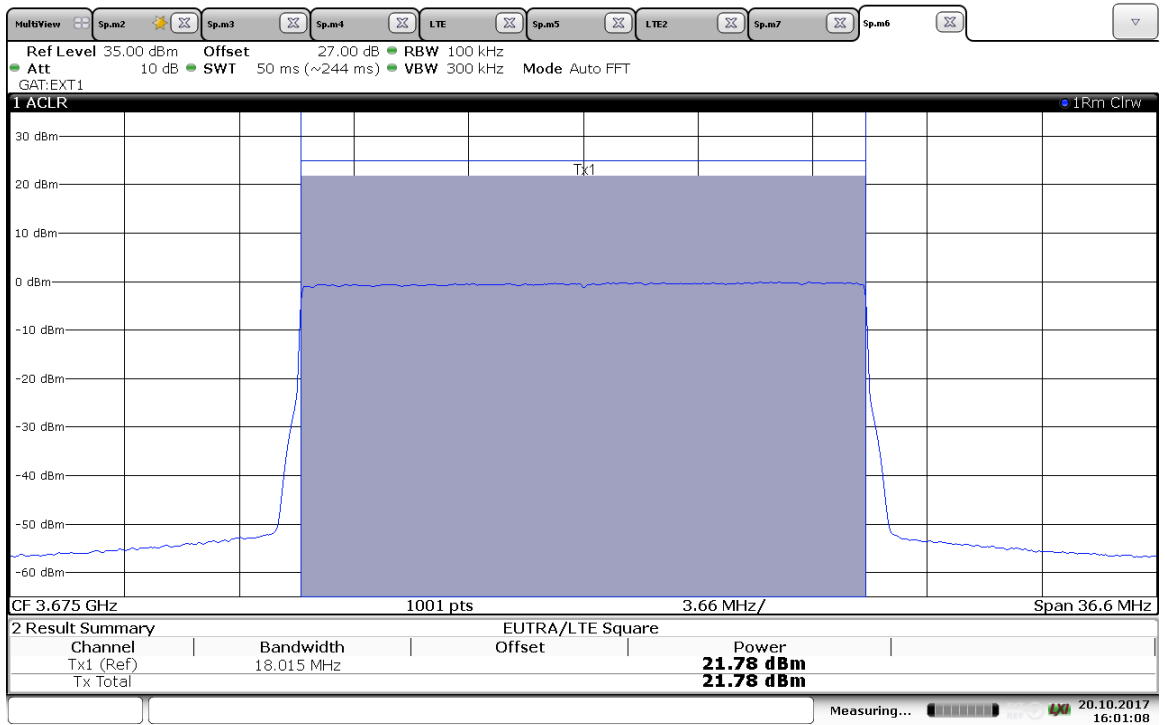
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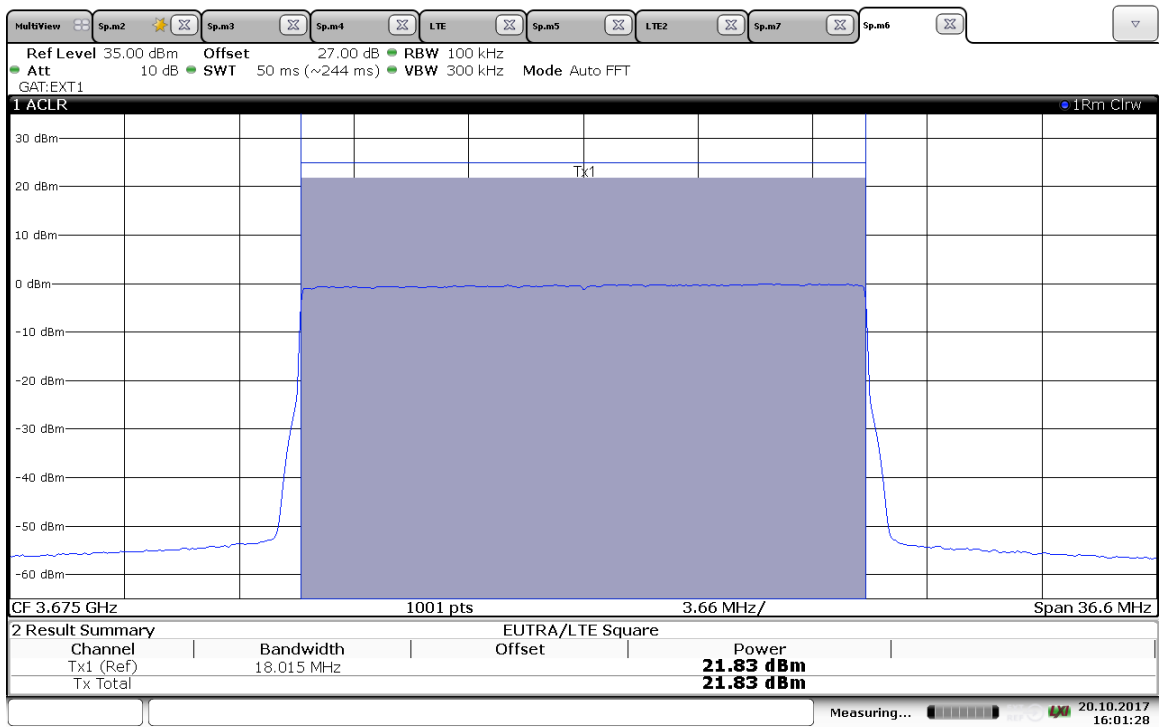
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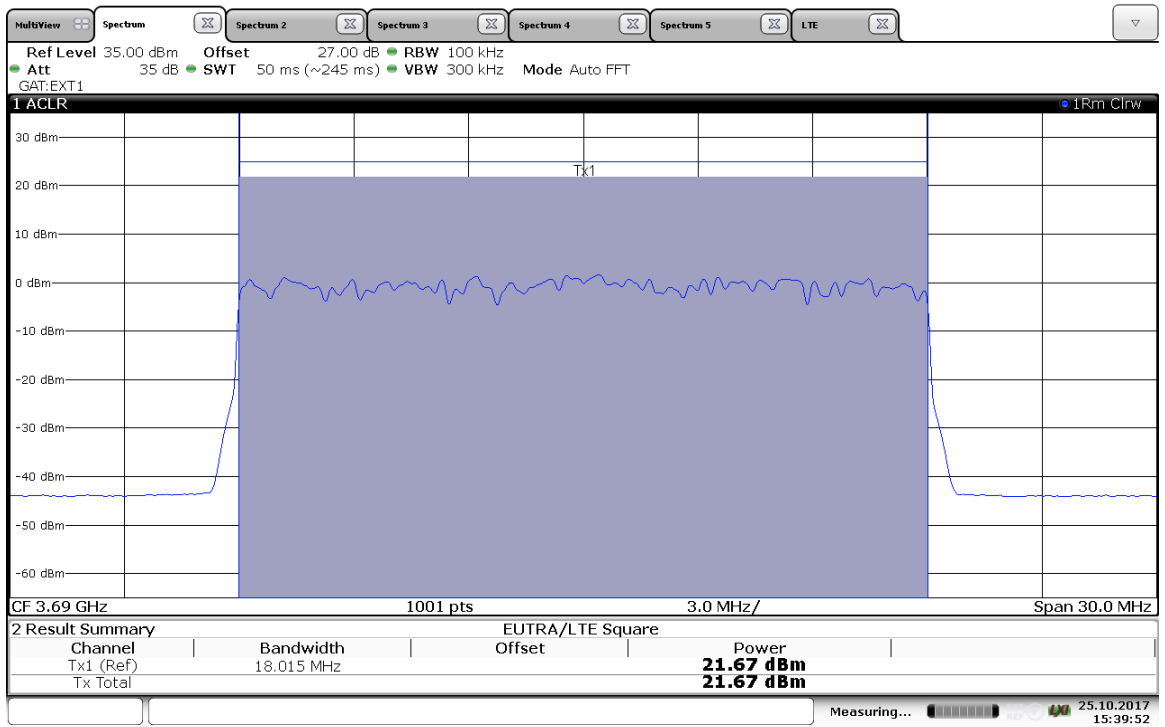
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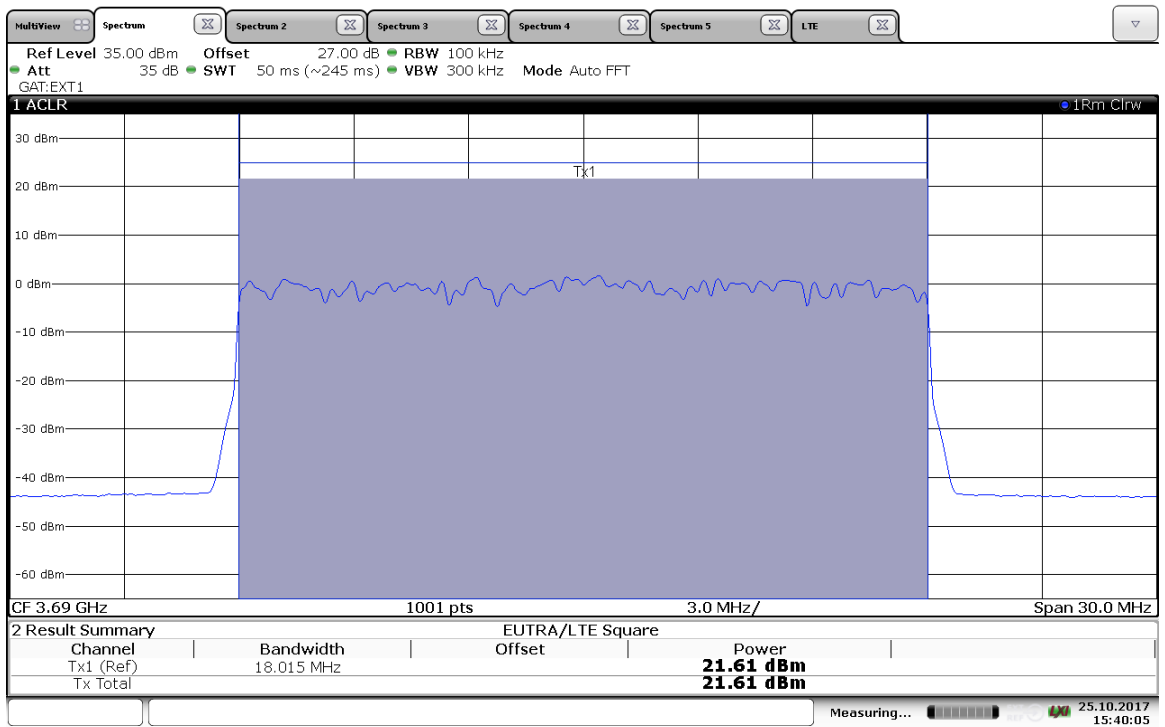
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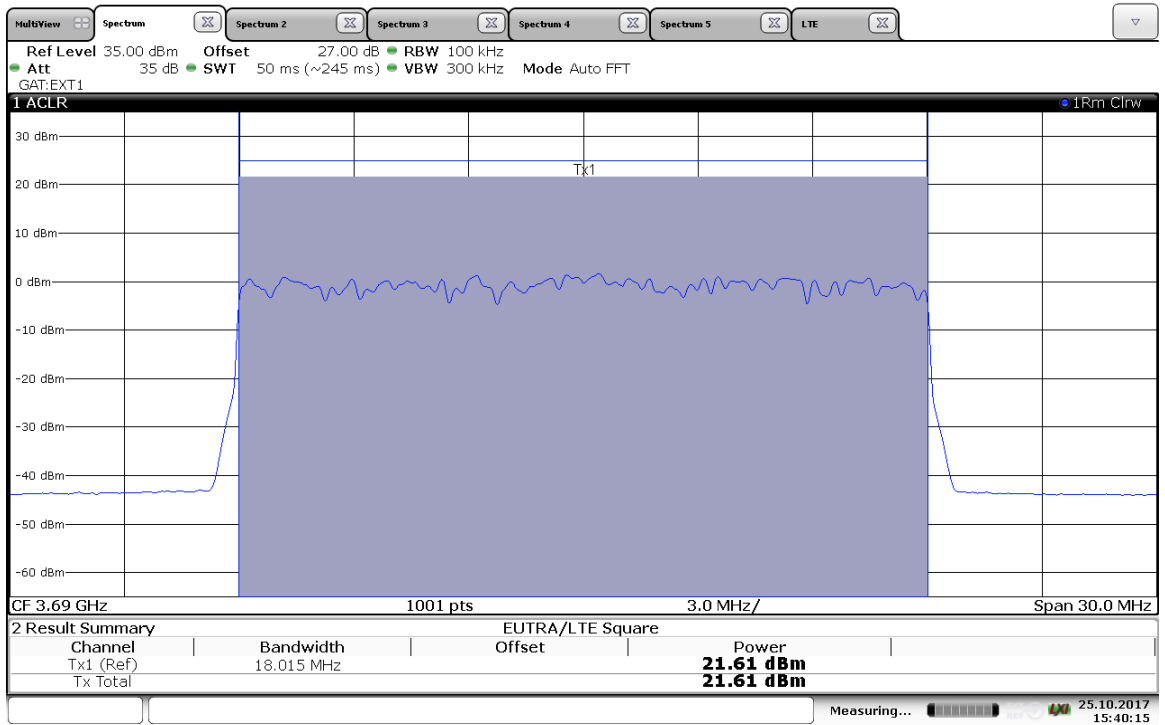
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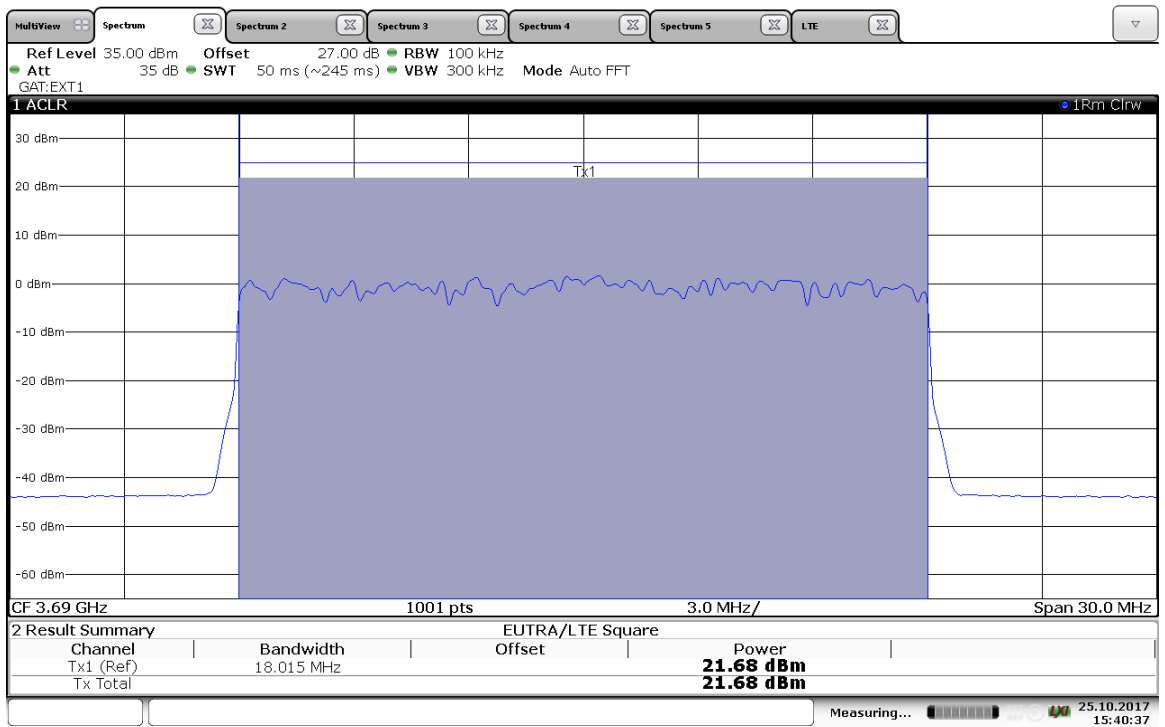
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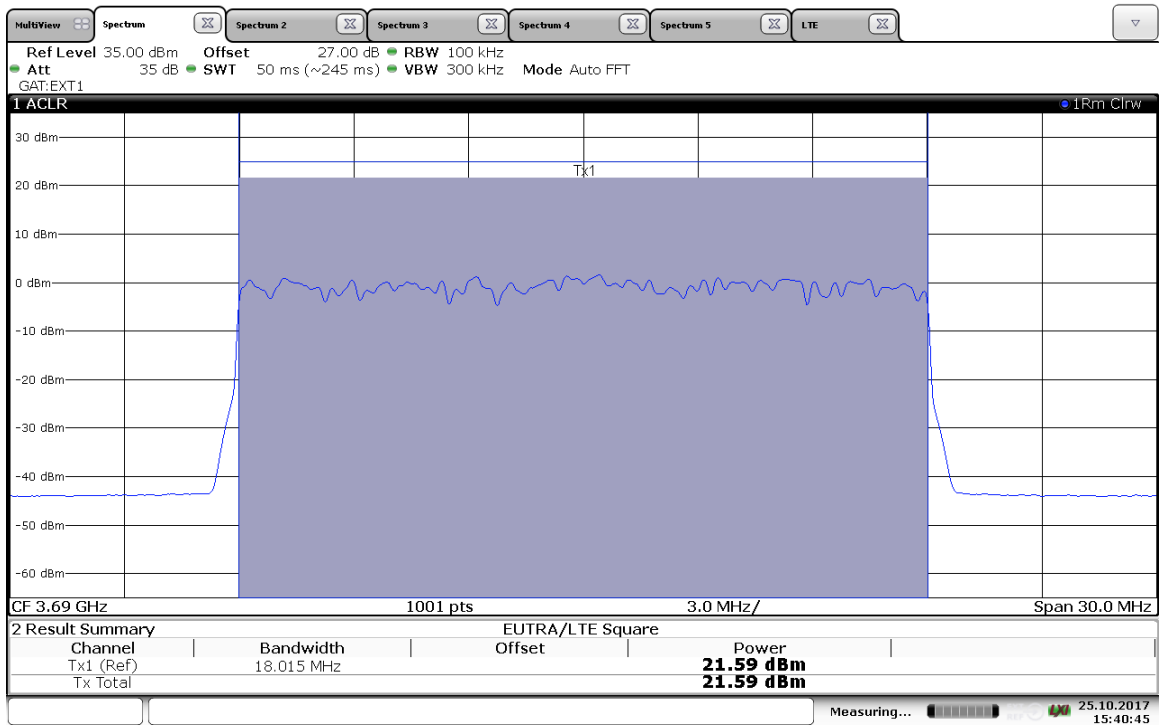
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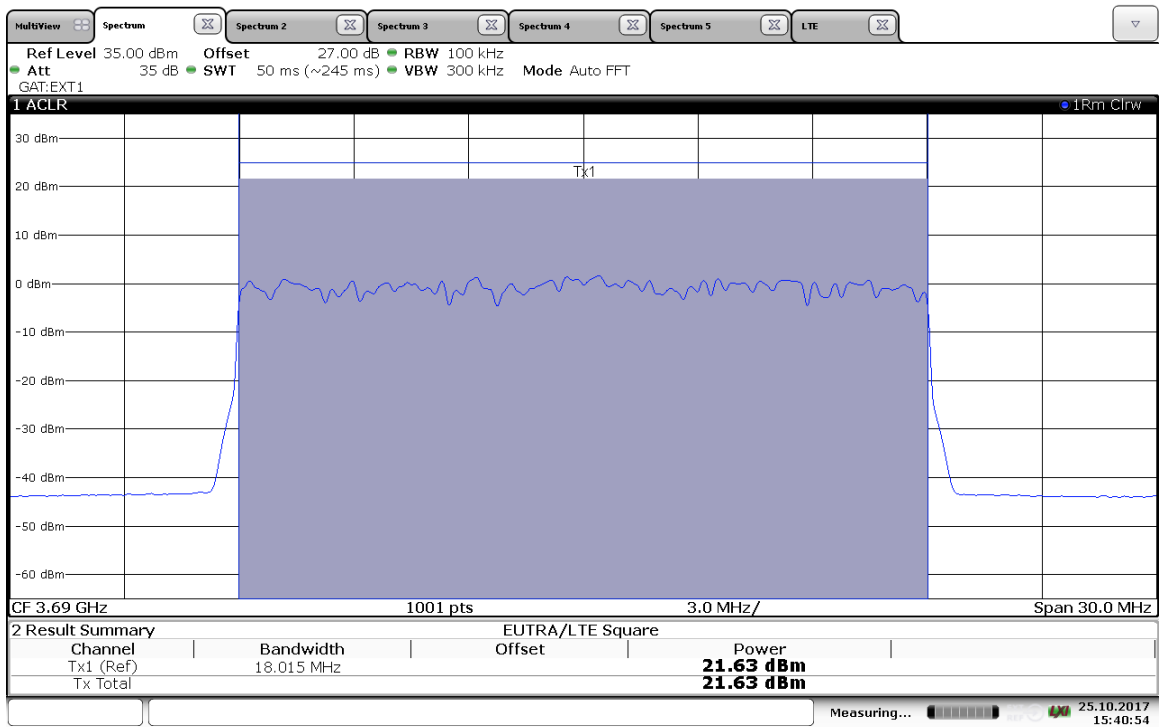
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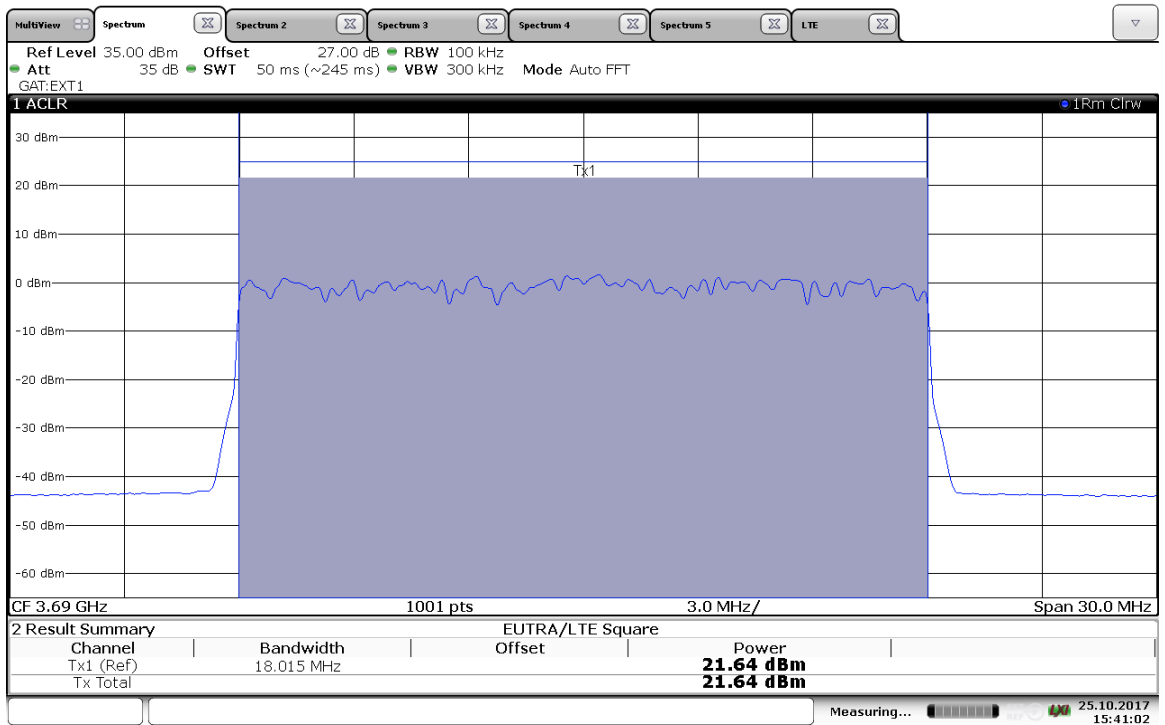
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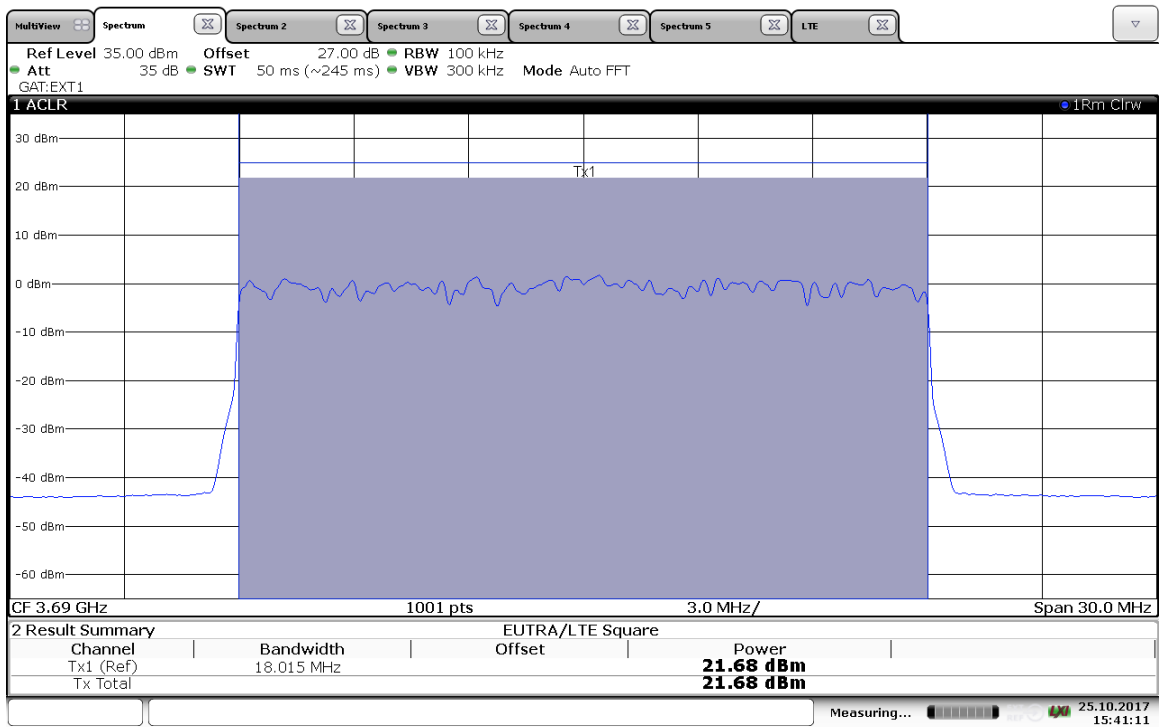
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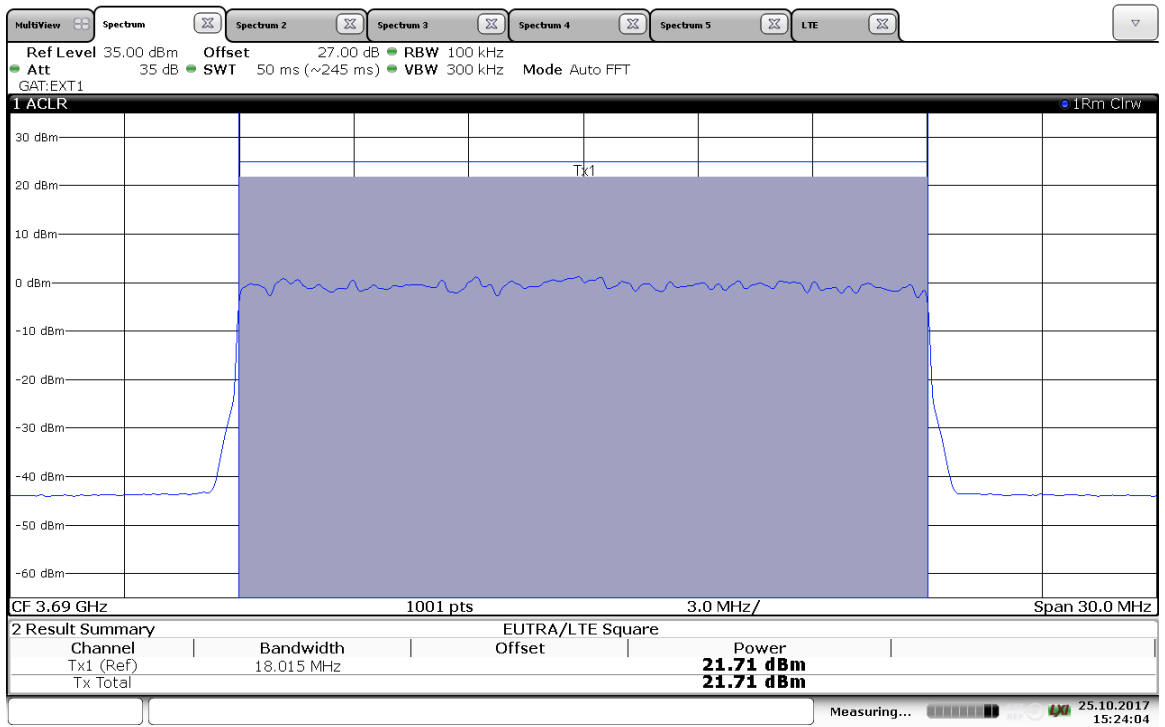
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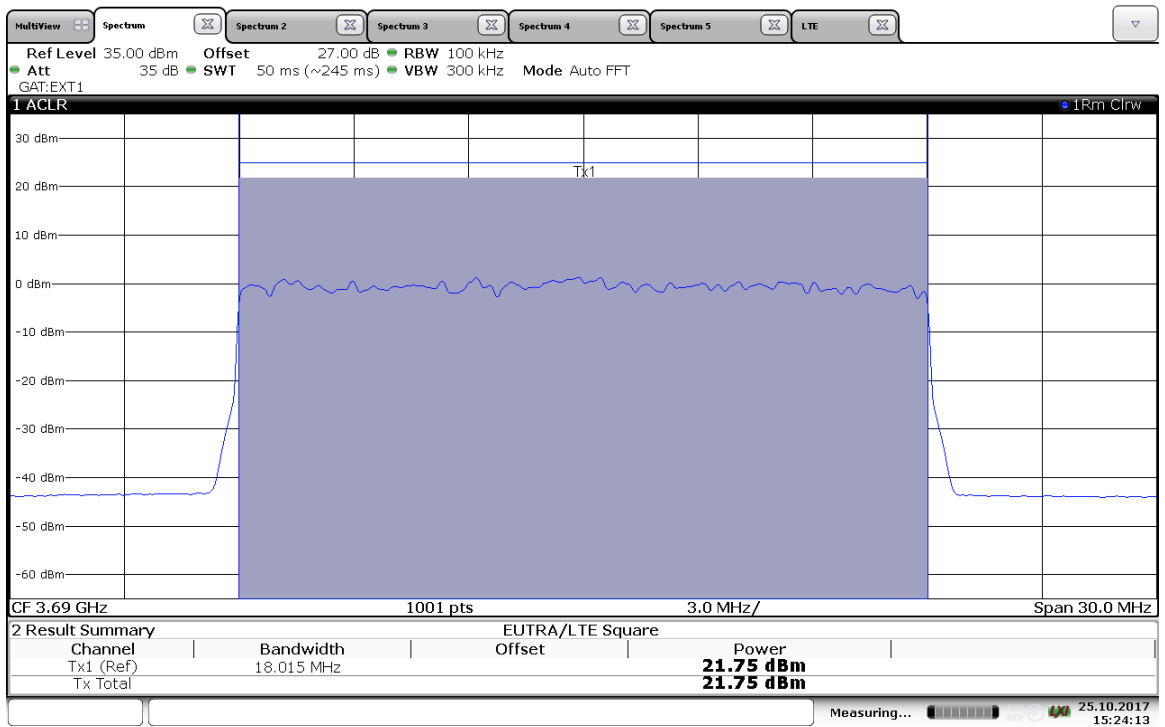
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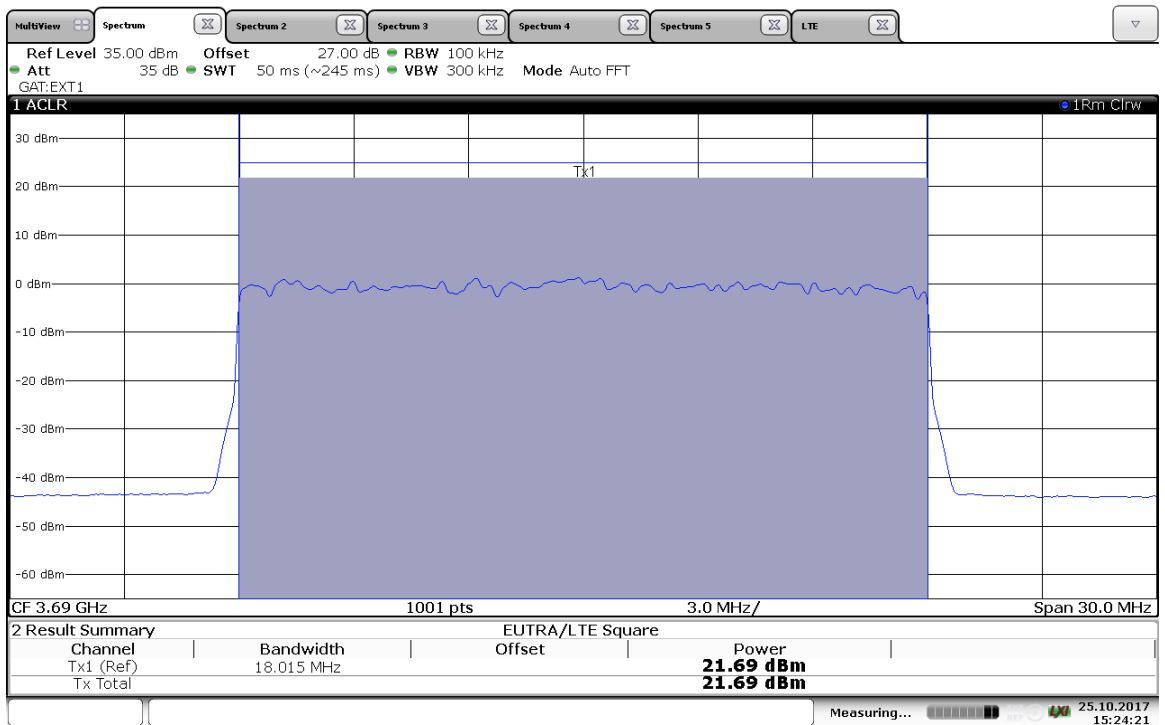
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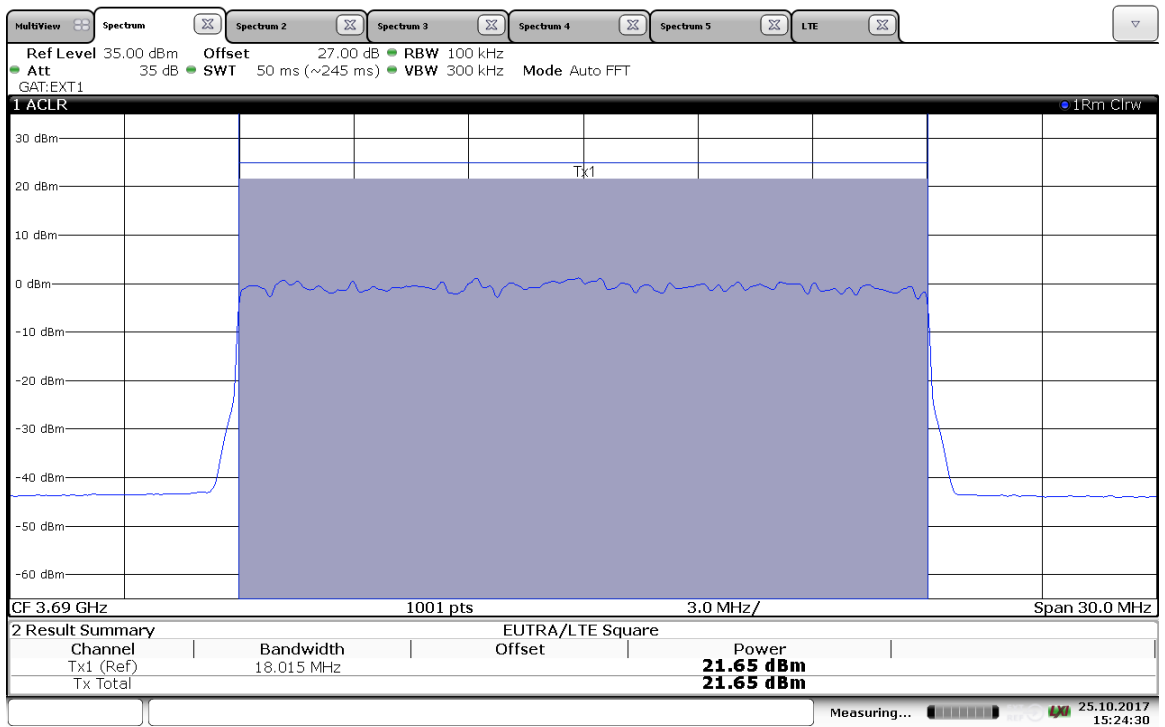
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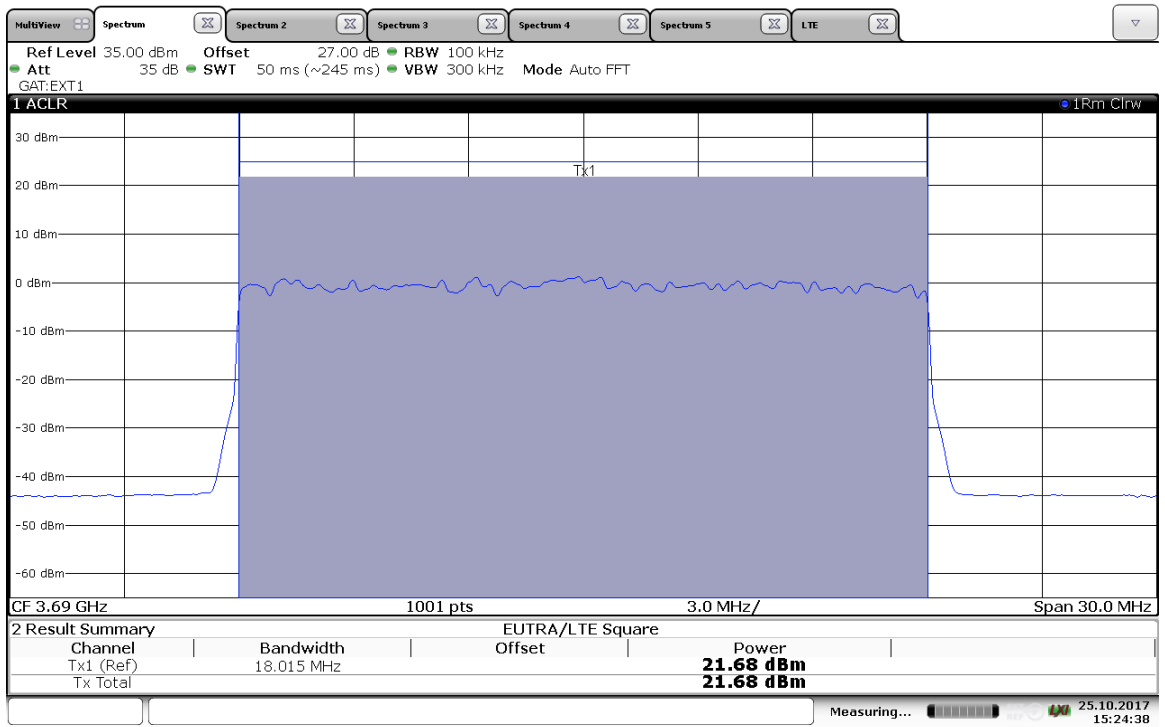
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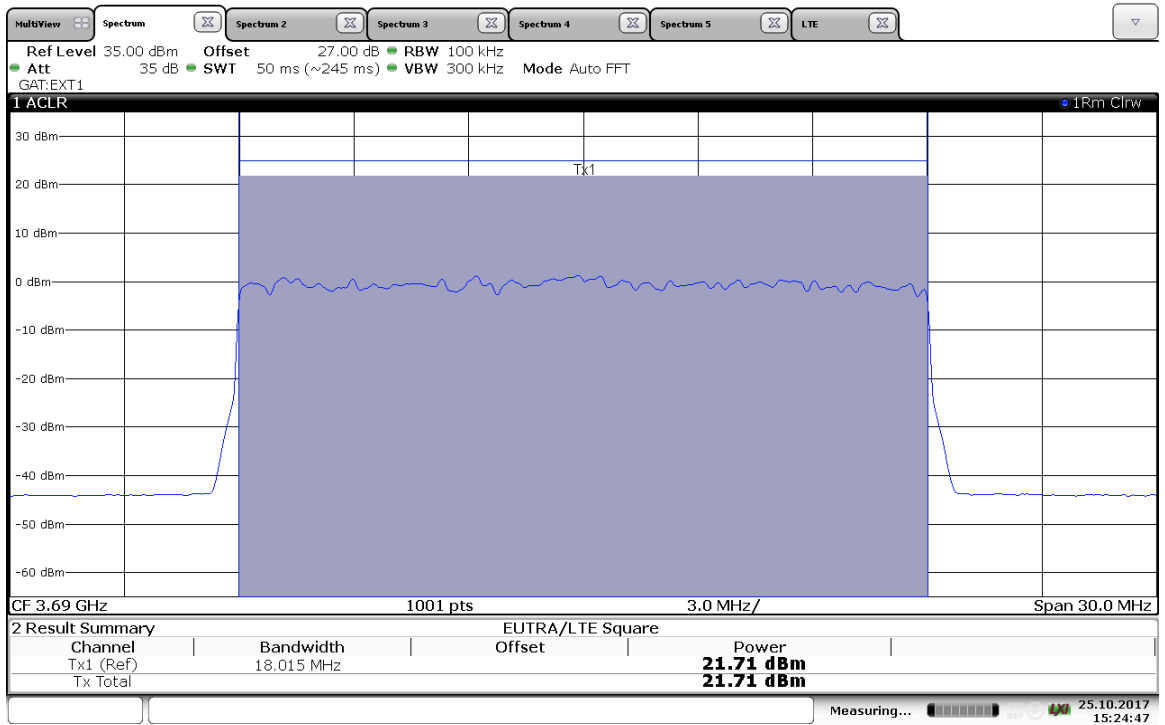
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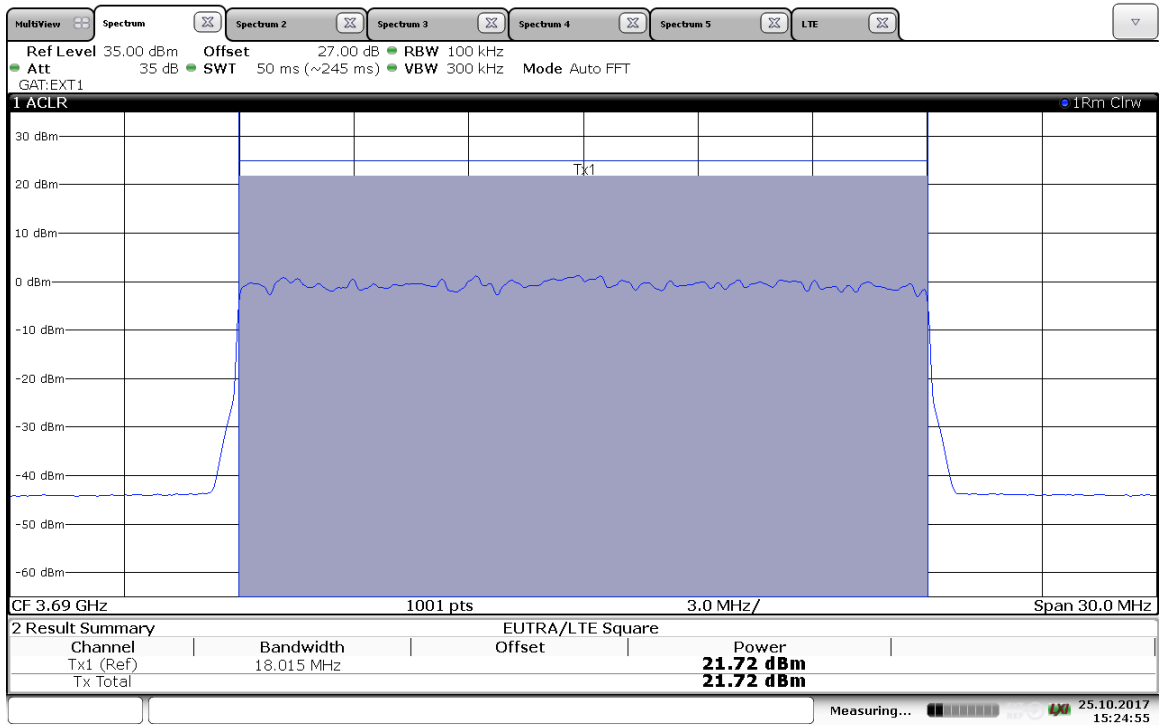
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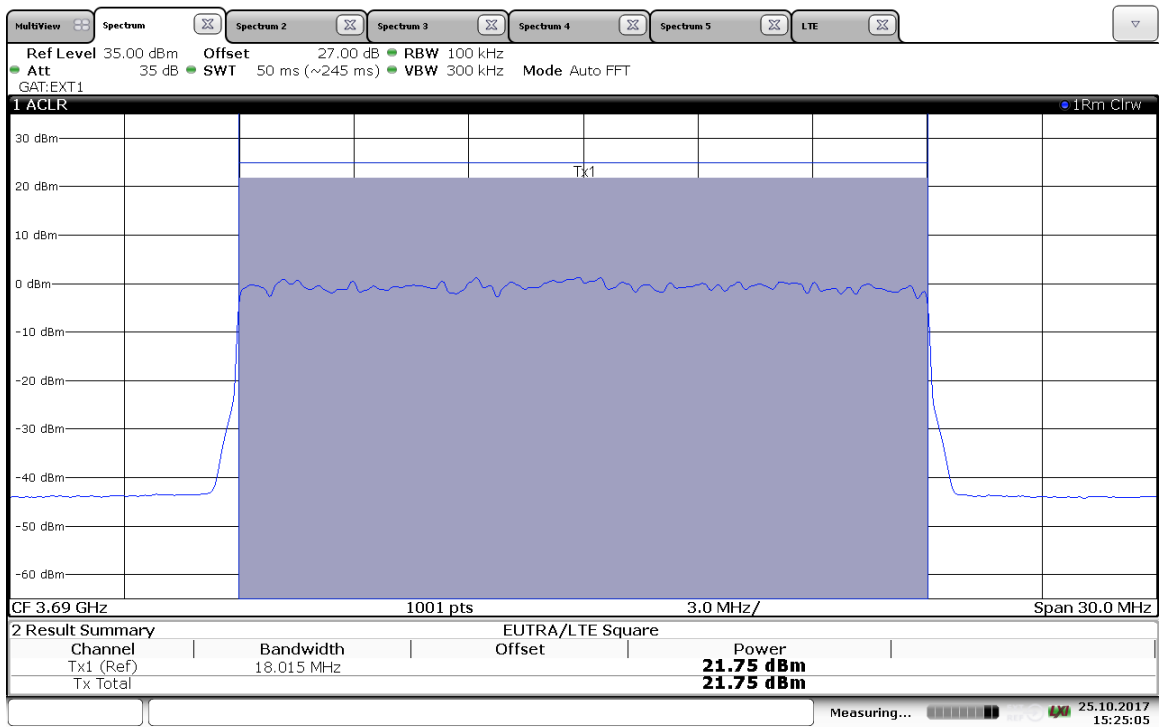
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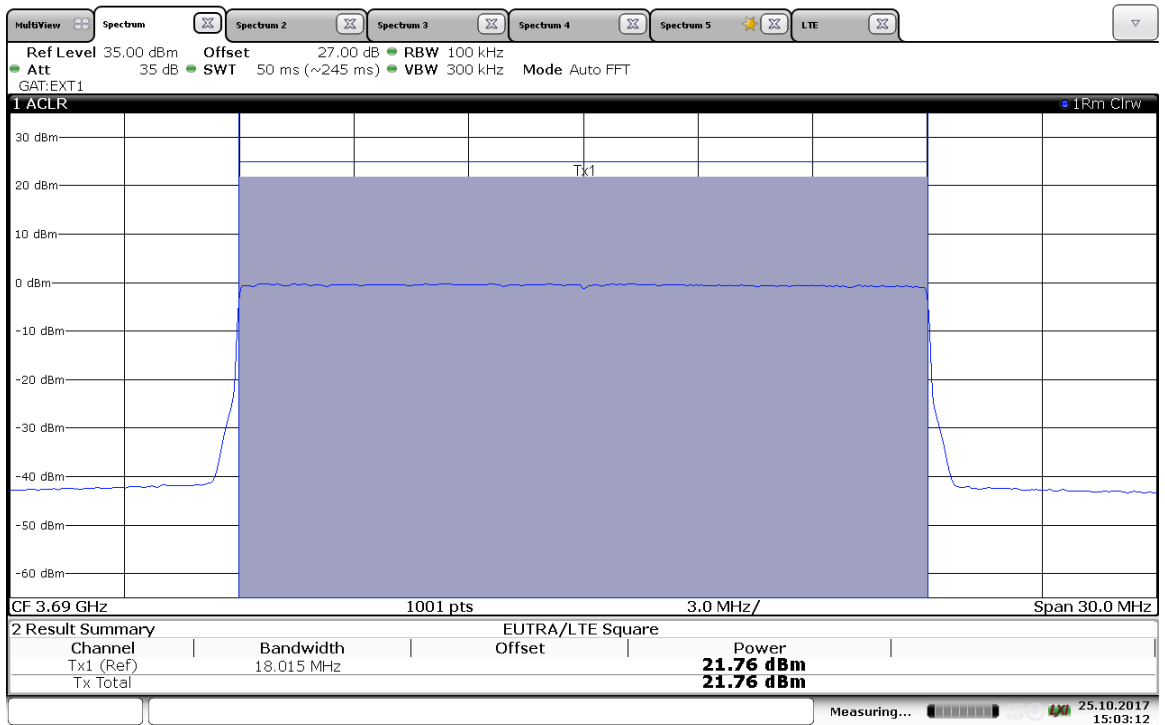
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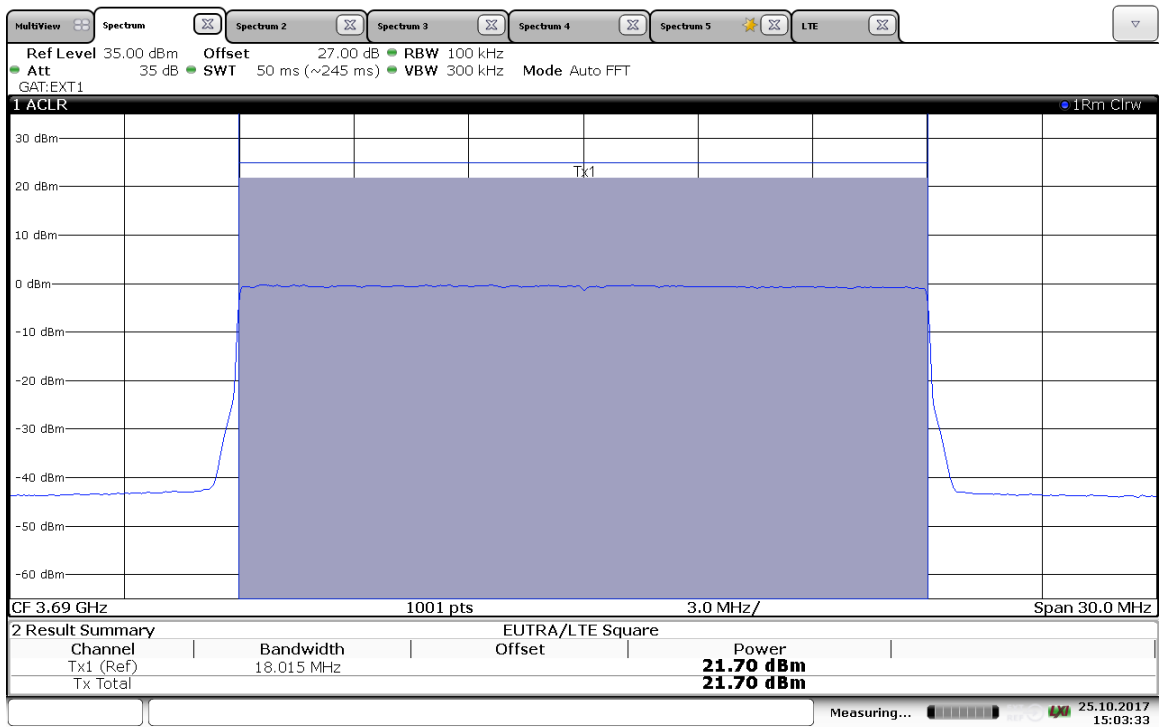
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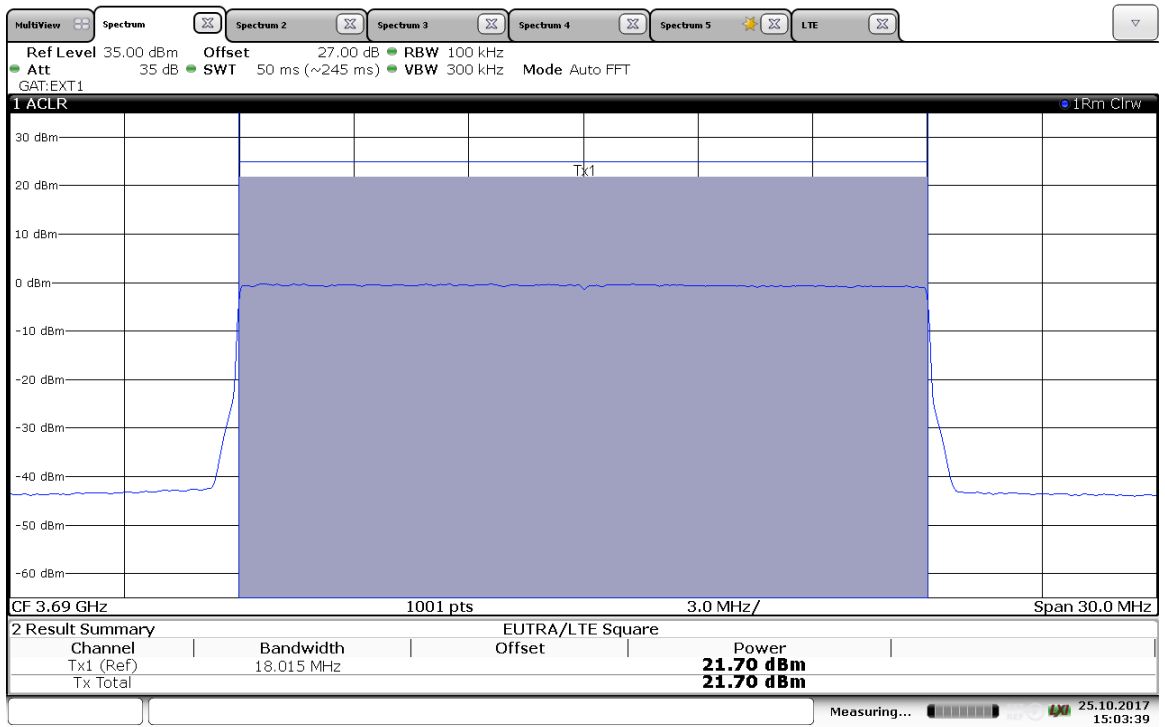
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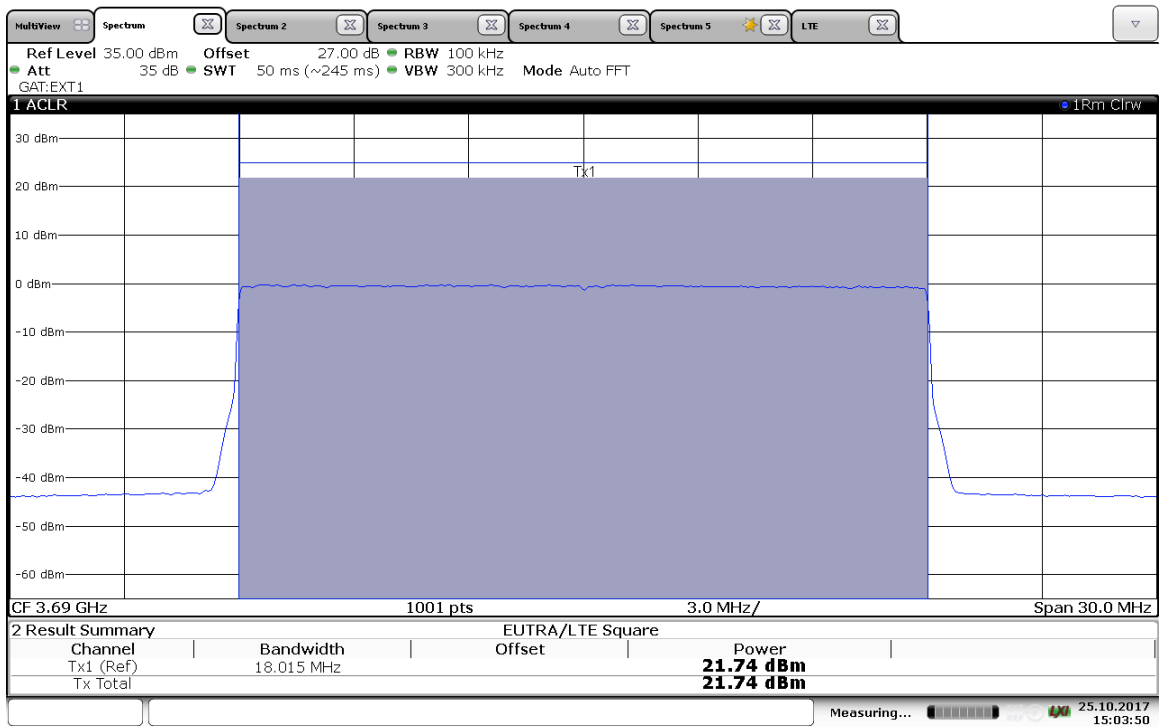
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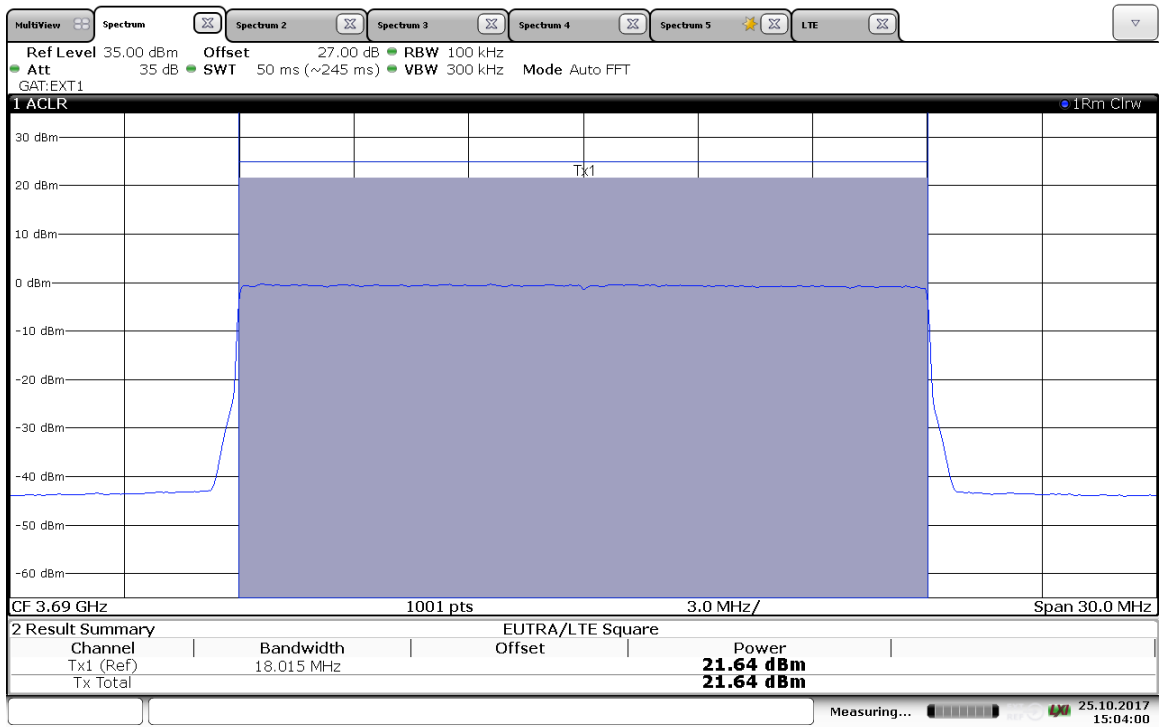
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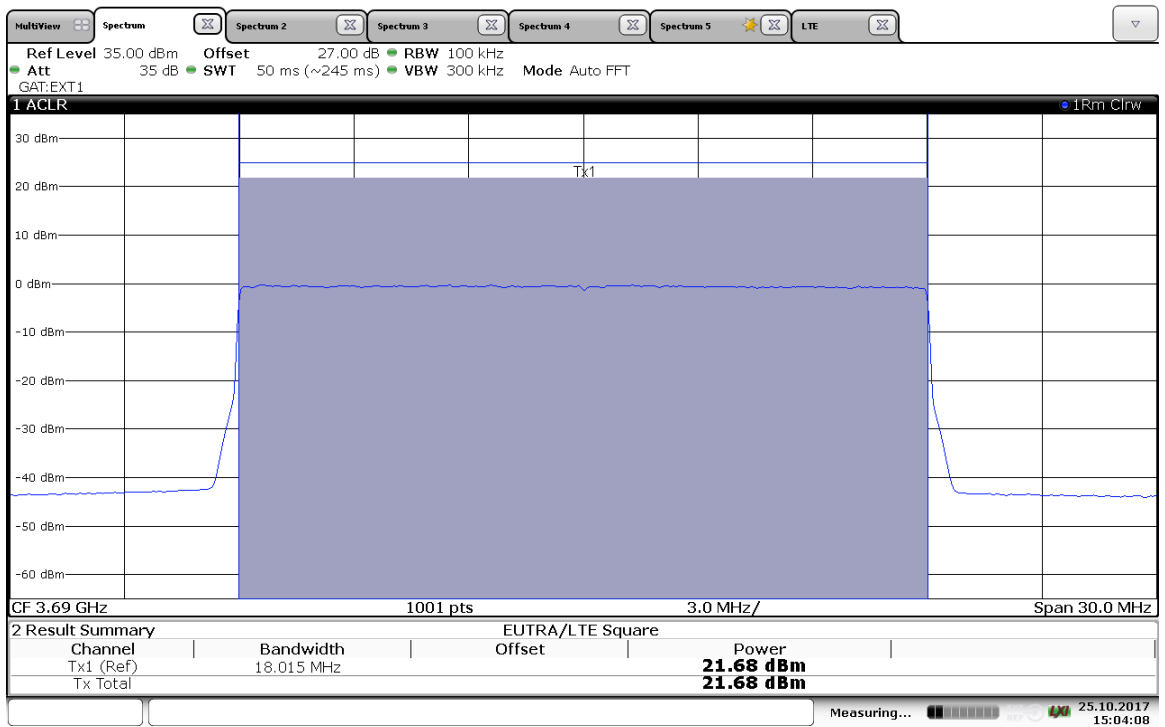
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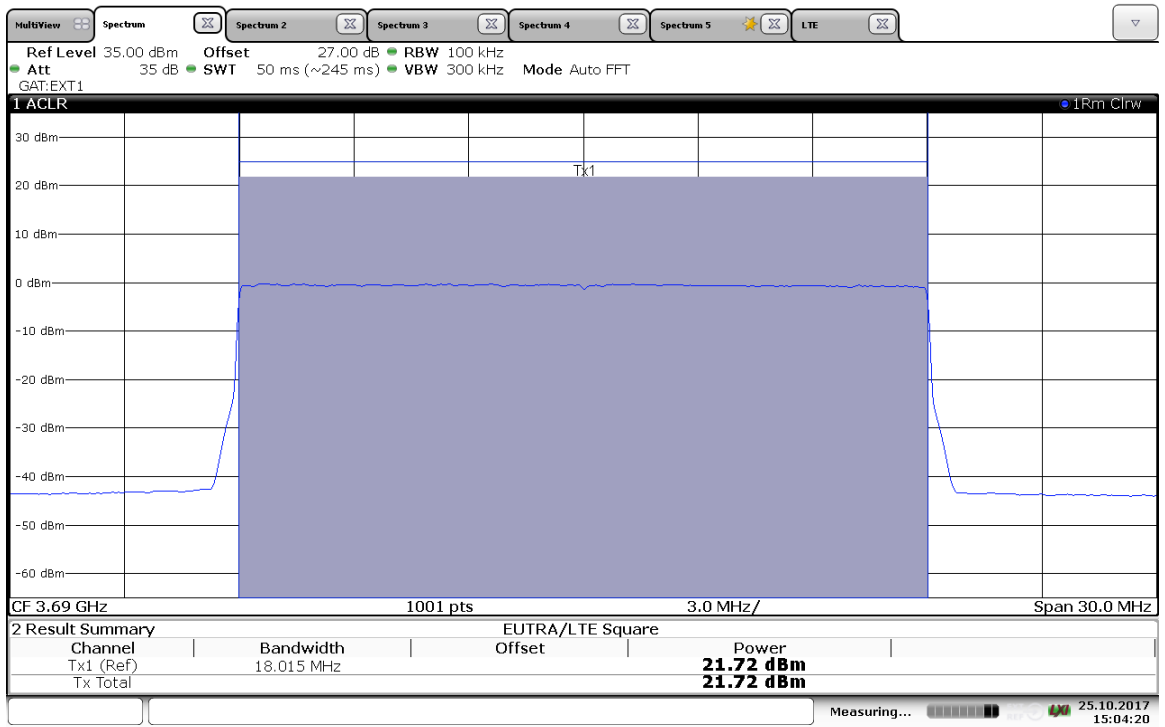
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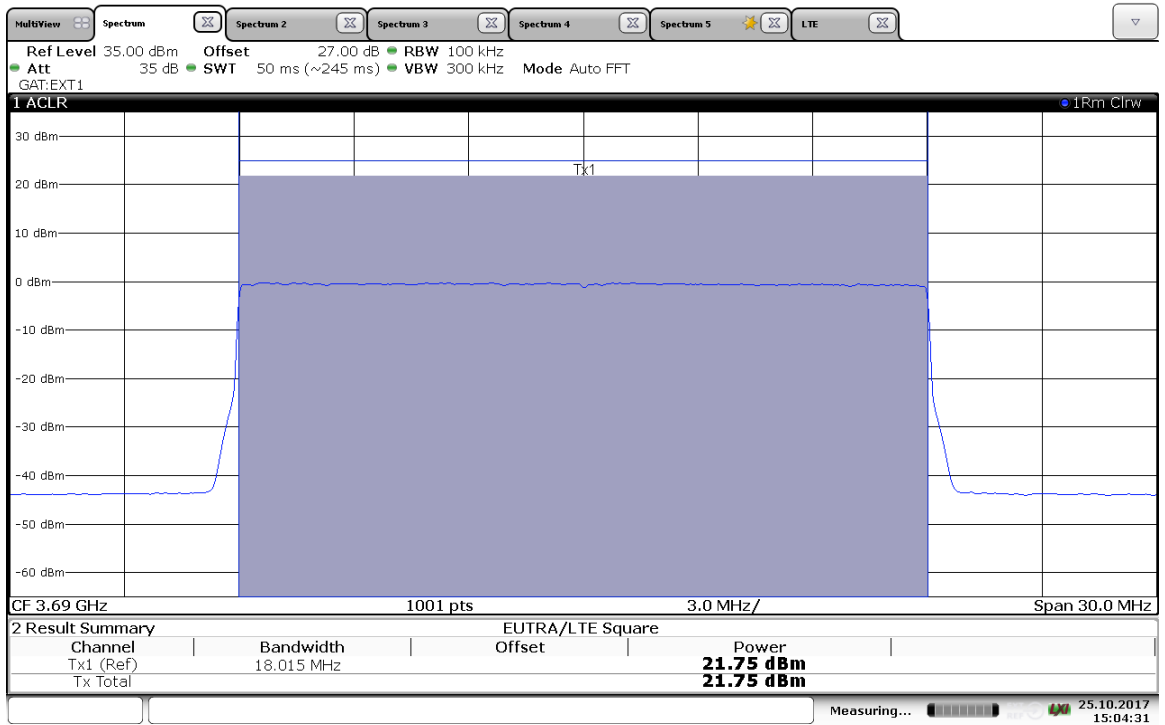
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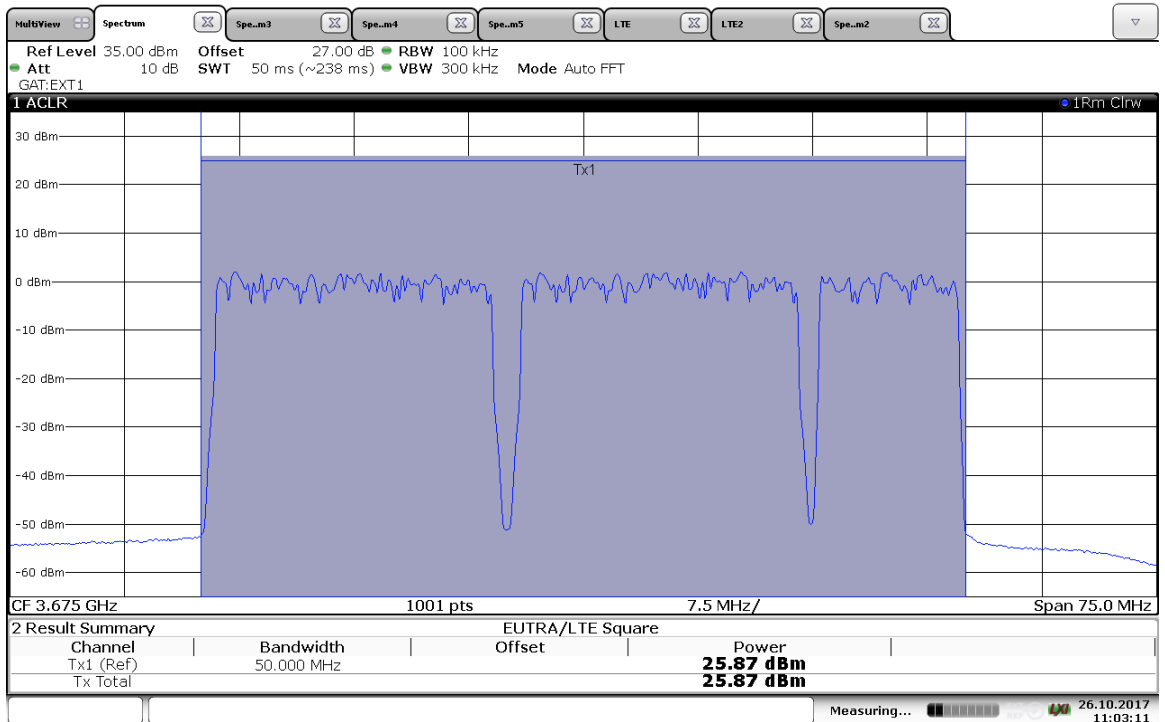
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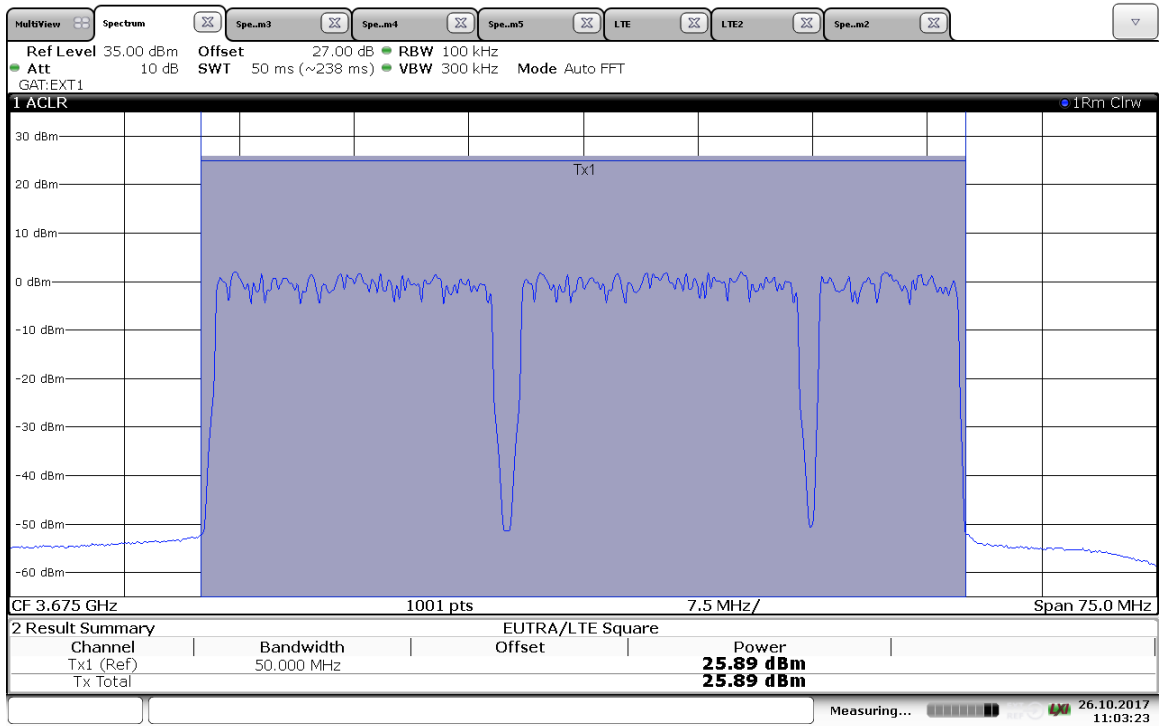
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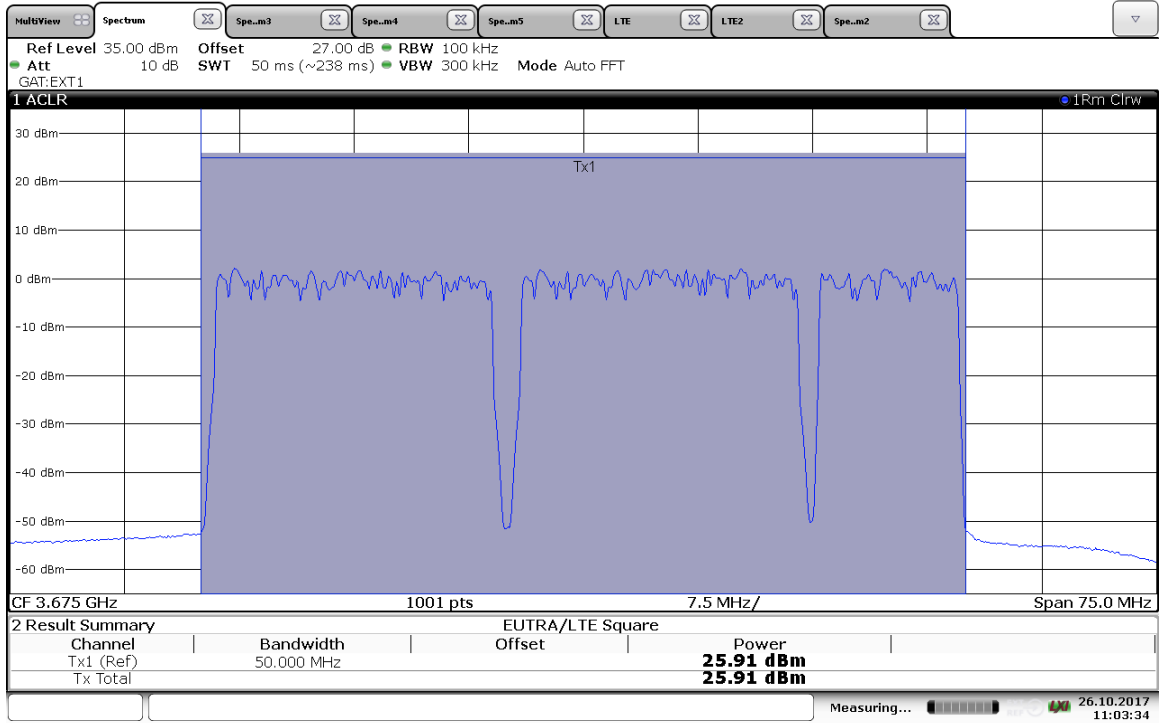
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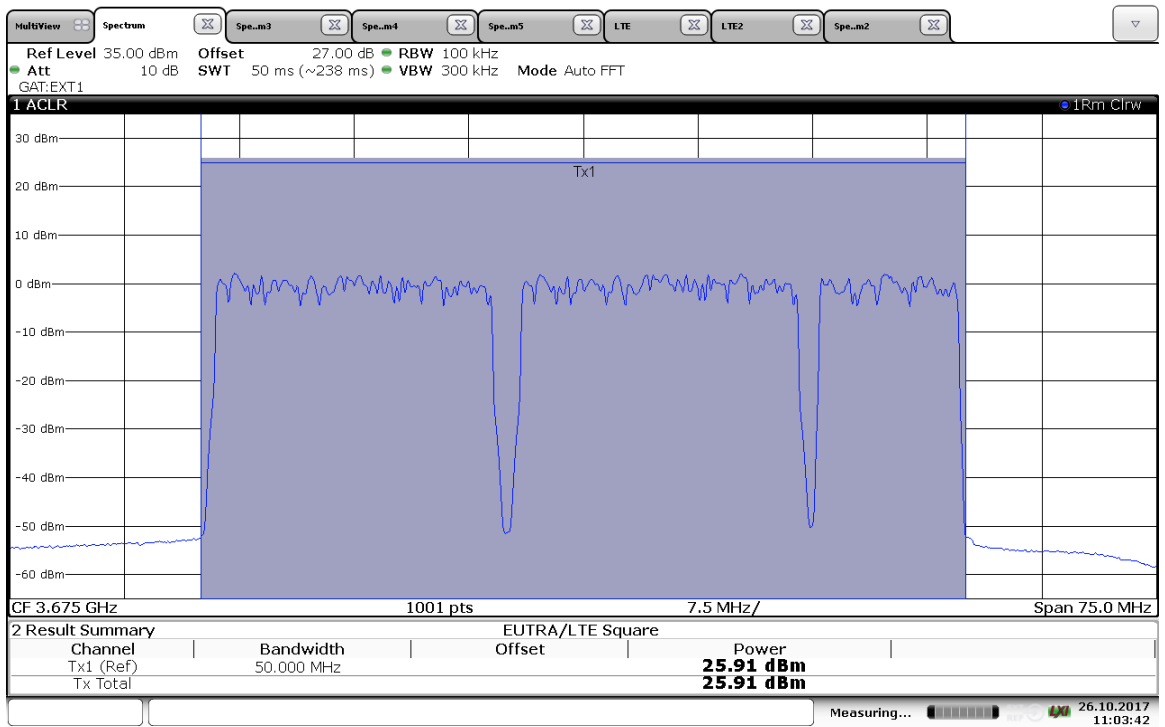
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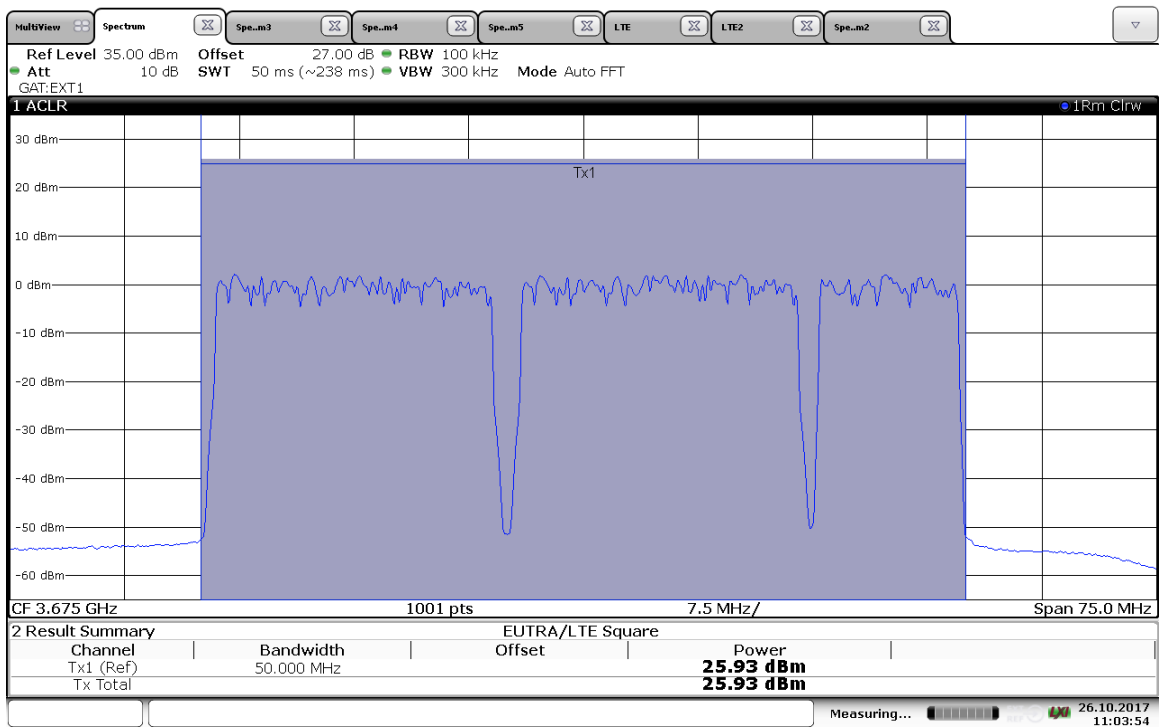
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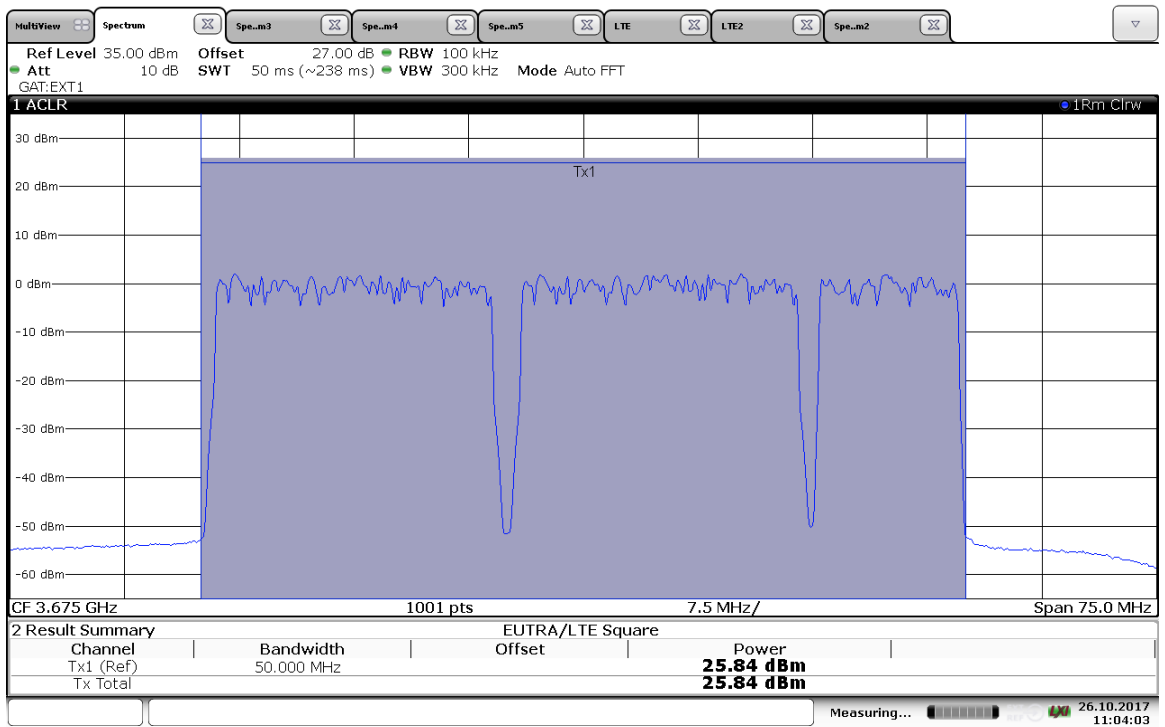
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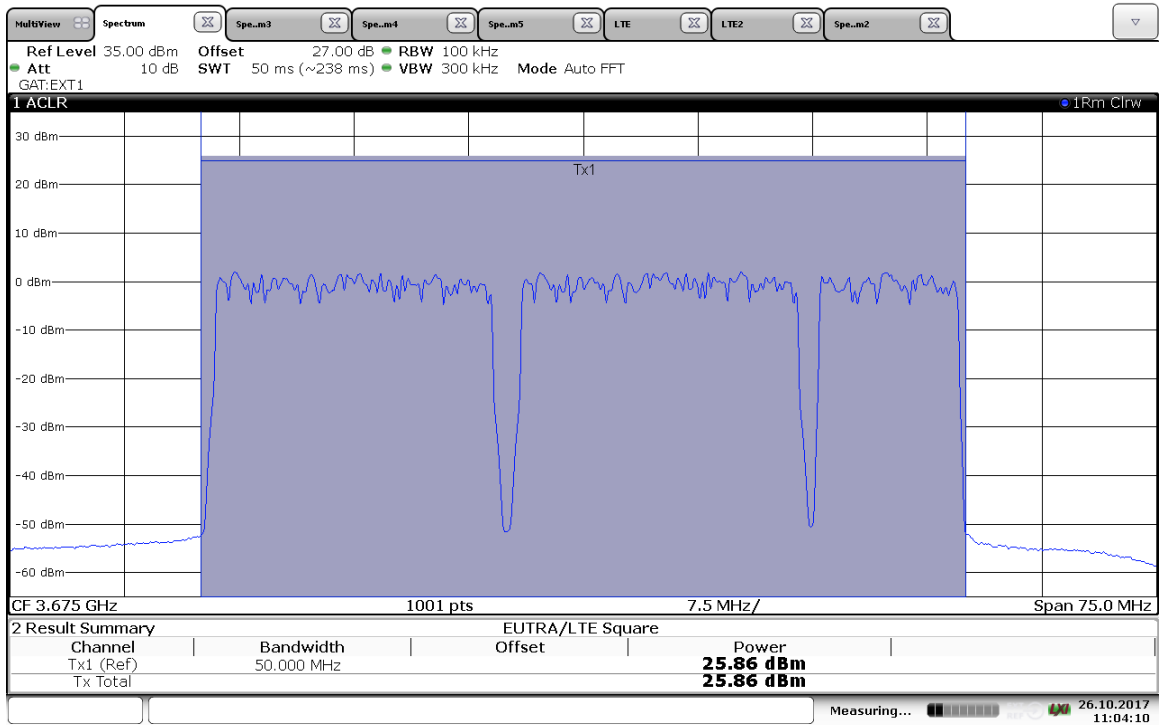
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