# FCC TEST REPORT

For

**Macro Radio Remote Unit**

**Model Number: ZXSDR R8854 S1700**

**FCC ID: Q78-R8854S1700**

**Report Number : WT198001218**


| | | |
|---|---|---|
| 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 | : | Macro Radio Remote Unit |
| Model No | : | ZXSDR R8854 S1700 |
| Trade mark | : | ZTE |
| FCC ID | : | Q78-R8854S1700 |

Test Standards:

FCC CFR 47 Part 27

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 C63.26 (2015) & KDB971168 and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC Rules Part 27.
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: | Apr.04, 2019 |
| Checked by: | (Lin Yixiang 林奕翔) | Date: | Apr.04, 2019 |
| Approved by: | (Lin Bin 林斌) | Date: | Apr.04, 2019 |

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# 1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| RULES | DESCRIPTION OF TEST | RESULT |
|---|---|---|
| § 2.1046 , §27.50 | Transmitter output Power | Compliance |
| § 2.1091 ,§1.1037 | RF Exposure | Compliance |
| § 2.1047 | Modulation Characteristic | Compliance |
| § 2.1053, §27.53 | Spurious Radiated Emissions | Compliance |
| § 2.1051, §27.53 | Spurious Emissions AT Antenna Terminals | Compliance |
| § 2.1049,§27.53 | Occupied Bandwidth | Compliance |
| § 2.1051,§27.53 | Band Edge | Compliance |
| § 2.1055 | Frequency stability | Compliance |

Remark: “N/A” means “Not applicable.”
The tests documented in this report were performed in accordance with ANSI C63.26 (2015) & KDB971168, FCC CFR 47 Part 2, Part 27.

# 2. GENERAL INFORMATION

## 2.1. 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 sample/s 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.

## 2.2. Laboratory Accreditation and Relationship to Customer

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 Accredited Testing Laboratory of FCC with Designation number CN1165 and Site registration number 582918.

The Laboratory is registered to perform emission tests with Innovation, Science and Economic Development (ISED), and the registration number is 11177A.

## 2.3. 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

26dB & Occupied Bandwidth: ±0.39%

Frequency Stability: ±0.42%

Peak to Average Ratio: 0.45 dB

Conducted power : 0.3 dB

Temperature: ±0.698

Supply voltages: ±0.15%

# 3. PRODUCT DESCRIPTION

## 3.1. EUT Description

The ZTE Corporation's product, model number: ZXSDR R8854 S1700 or the "EUT" as referred to in this report is a Macro Radio Remote Unit.

**Technical specification:**
Size: 415 mm x 296 mm x 104 mm (HxWxD)
Input voltage: -37V~-57V
Frequency range: Rx: 1710MHz – 1770MHz；Tx: 2110MHz – 2170MHz
Max RF output power: 46dBm
Gain of the antenna: 17.5dBi
Appearance of EUT:

FIGURE 1 APPEARANCE OF ZXSDR R8854 S1700

## 3.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **Q78-R8854S1700** filing to comply with FCC Part 27 Rules.

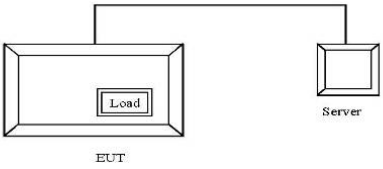
## 3.3. Operating Condition of EUT

Justification
The EUT was configured for testing according to ANSI C63.26 (2015).
The final qualification test was performed with EUT operating at normal mode.
Equipment Modifications
SMQ has not done any modification on the EUT.

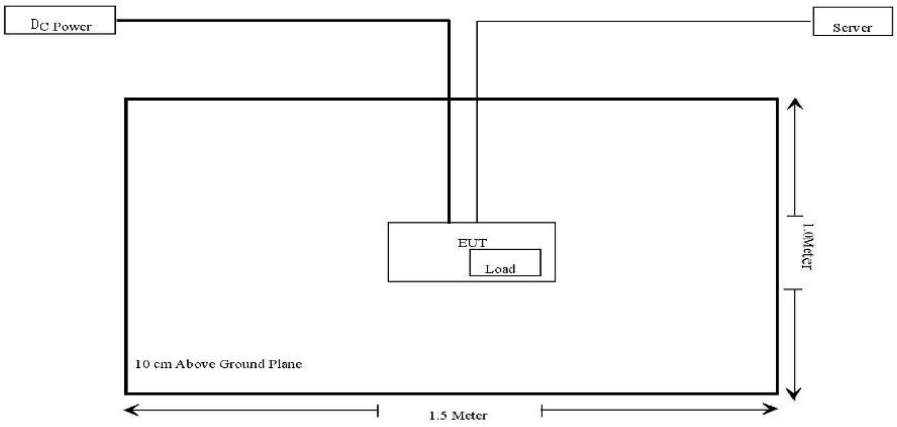
During all testing, EUT at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (X plane).

Date of test：Jan.02, 2019 - Apr.03, 2019
Date of EUT Receive：Dec.30, 2018

**Configuration of Test Setup**




**Block Diagram of Test Setup**



## 3.4. Special Accessories

Not available for this EUT intended for grant.

## 3.5. Equipment Modifications

Not available for this EUT intended for grant.

# 4. TRANSMITTER OUTPUT POWER

## 4.1. Applicable Standard:

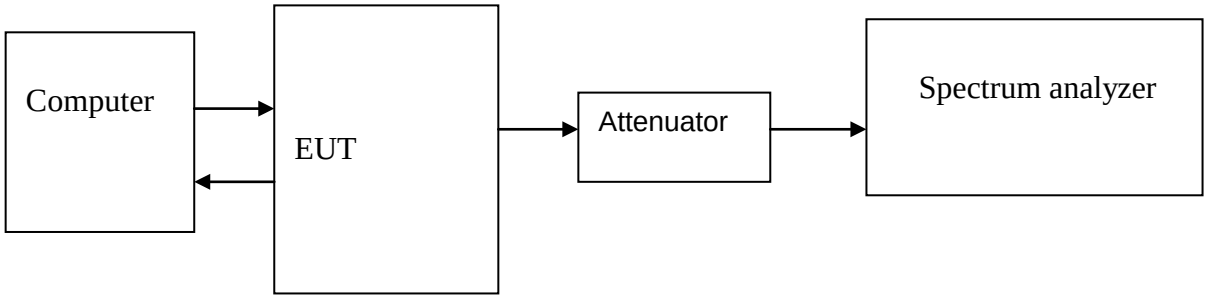
FCC §2.1046, §27.50
According to FCC §2.1046 &27.50, the ERP (equivalent radiated power) must not exceed 1640 watts.
Note: ERP= Max output Power+ Antenna gain-Cable loss-2.15
The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

## 4.2. Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| R&S | Signal & Spectrum Analyzer | FSW26 | SB12724/01 | 2018.06.06 | 2019.06.05 |
| DTS | DTS 40dB Attenuator | DTS100-40-3-1 | 09112005 | 2018.07.19 | 2019.07.19 |
| Radiall | RF Cable | 1807188 | --- | --- | --- |

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

## 4.3. Test Procedure:




The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. External attenuation Loss is 40dB, Cable Loss is about 2dB

## 4.4. Environmental Conditions:

| | |
|---|---|
| Temperature: | 22 °C |
| Relative Humidity: | 51 % |
| ATM Pressure: | 1020 mbar |

## 4.5. Test Result: Pass

## 4.6. Test Mode: Transmitting LTE

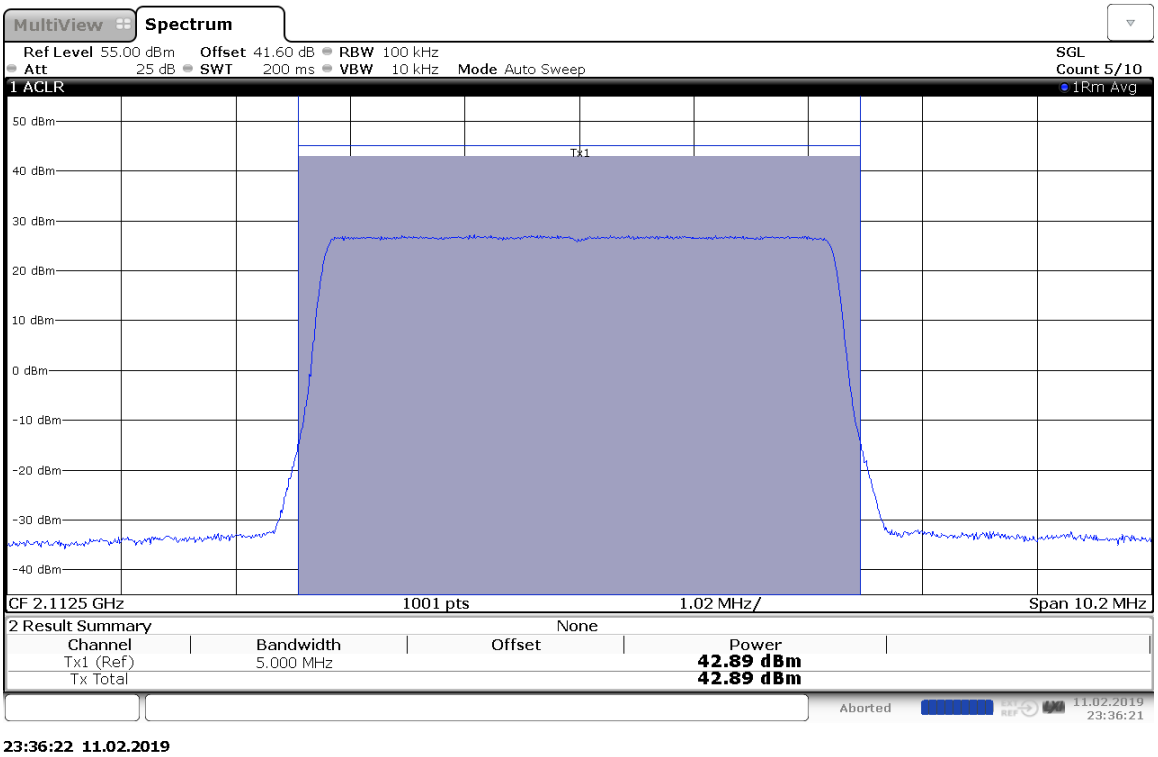
## 4.7. Test Data:

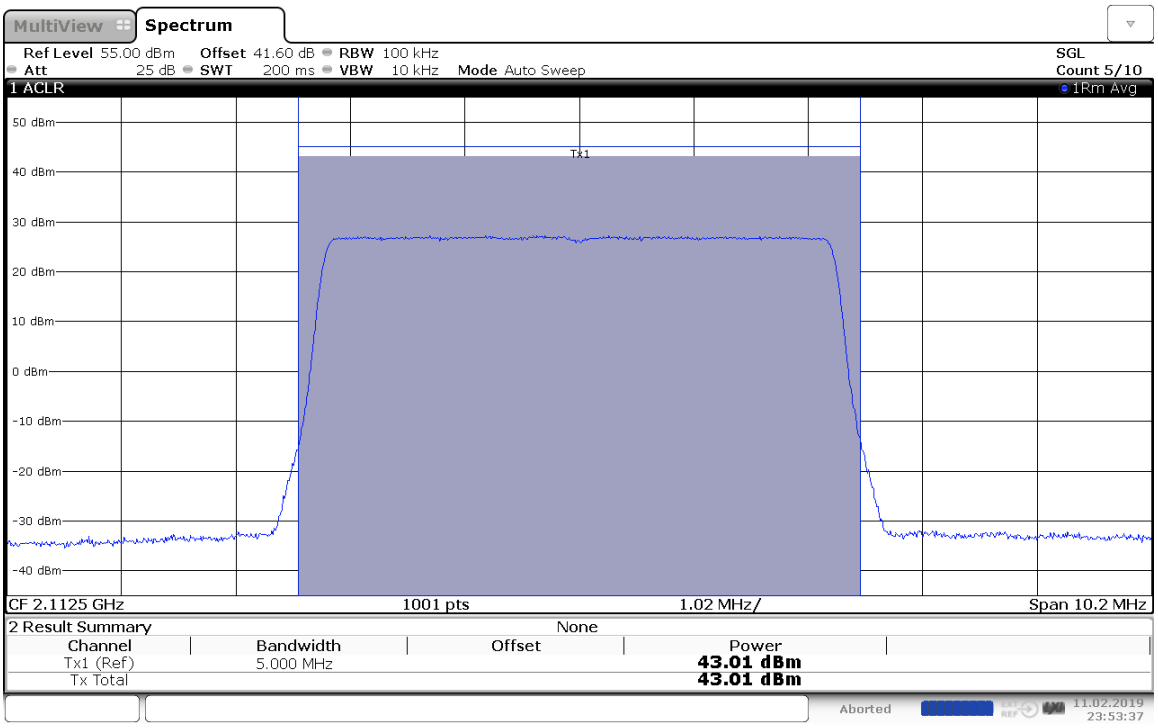
**Dual Carrier_ERP:**

Channel Bandwidth :5M+5M 2112.5MHz & 2152.5MHz)

| Port | Carrier1 Center Freq. (MHz) | Carrier1 Max output Power in dBm | Carrier2 Center Freq. (MHz) | Carrier2 Max output Power in dBm | Antenna gain dBi | Cable Loss dB | Dipole Antenna | Total Power in W Of single antenna |
|---|---|---|---|---|---|---|---|---|
| 1 | 2112.5 | 42.89 | 2152.5 | 43.08 | 17.5 | 2 | 2.15 | 860.27 |
| 2 | | 43.01 | | 43.21 | 17.5 | 2 | 2.15 | 885.41 |
| 3 | | 42.95 | | 43.15 | 17.5 | 2 | 2.15 | 873.26 |
| 4 | | 42.85 | | 43.06 | 17.5 | 2 | 2.15 | 854.39 |

5M+5M -2112.5MHz-Port 1~4:



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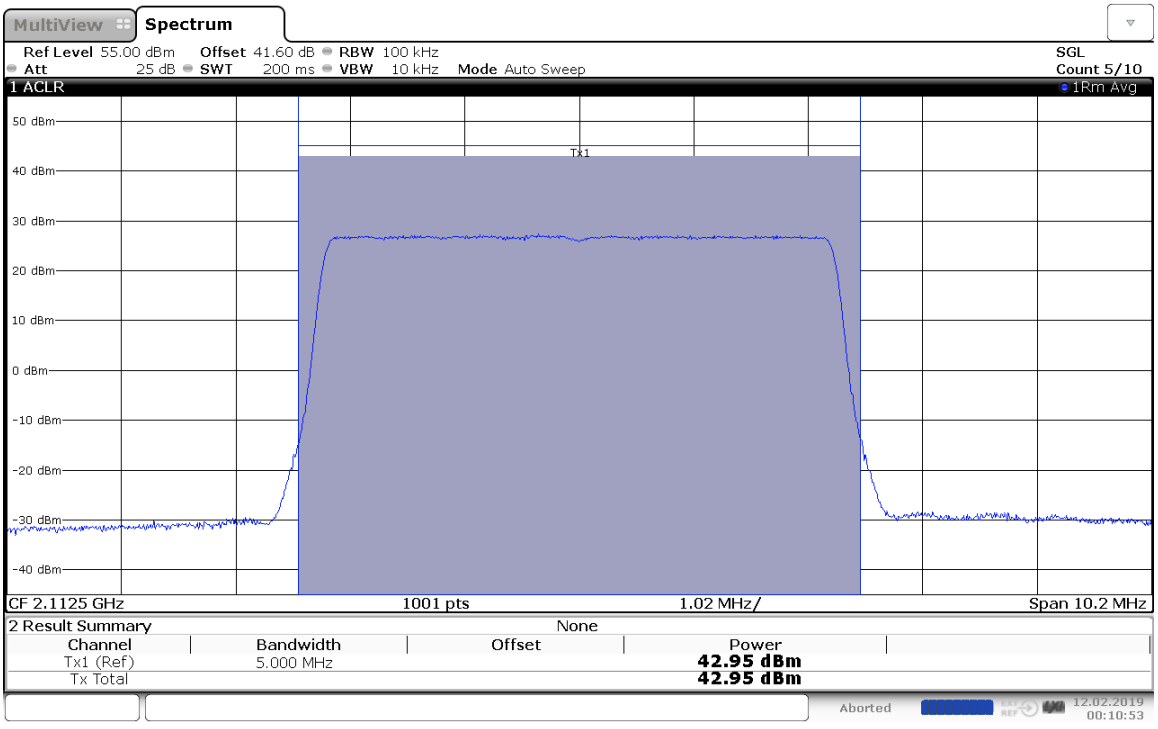


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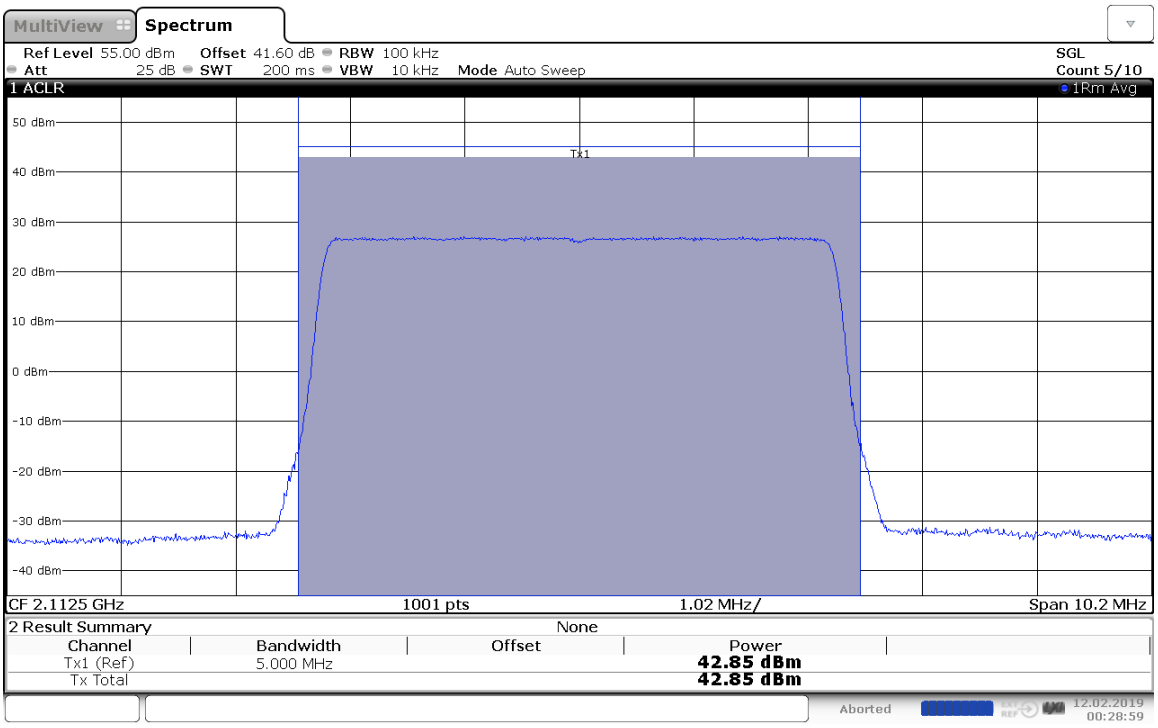
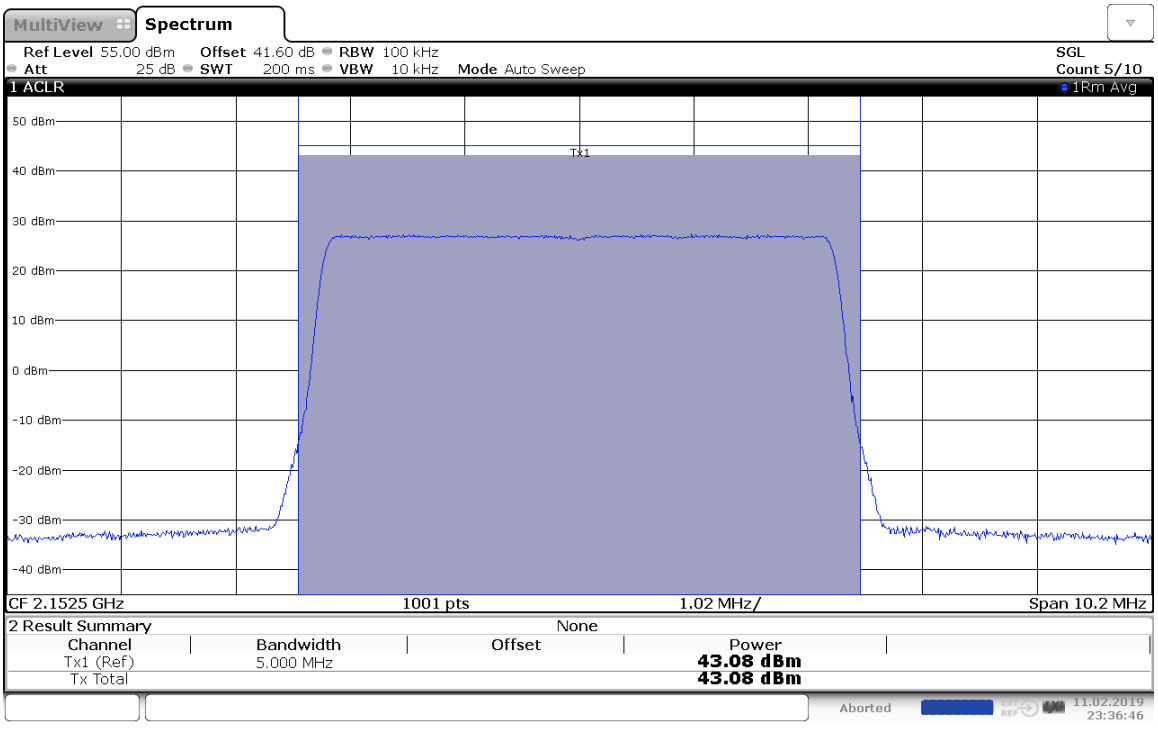



**00:29:00 12.02.2019**

5M+5M -2152.5MHz-Port 1~4:

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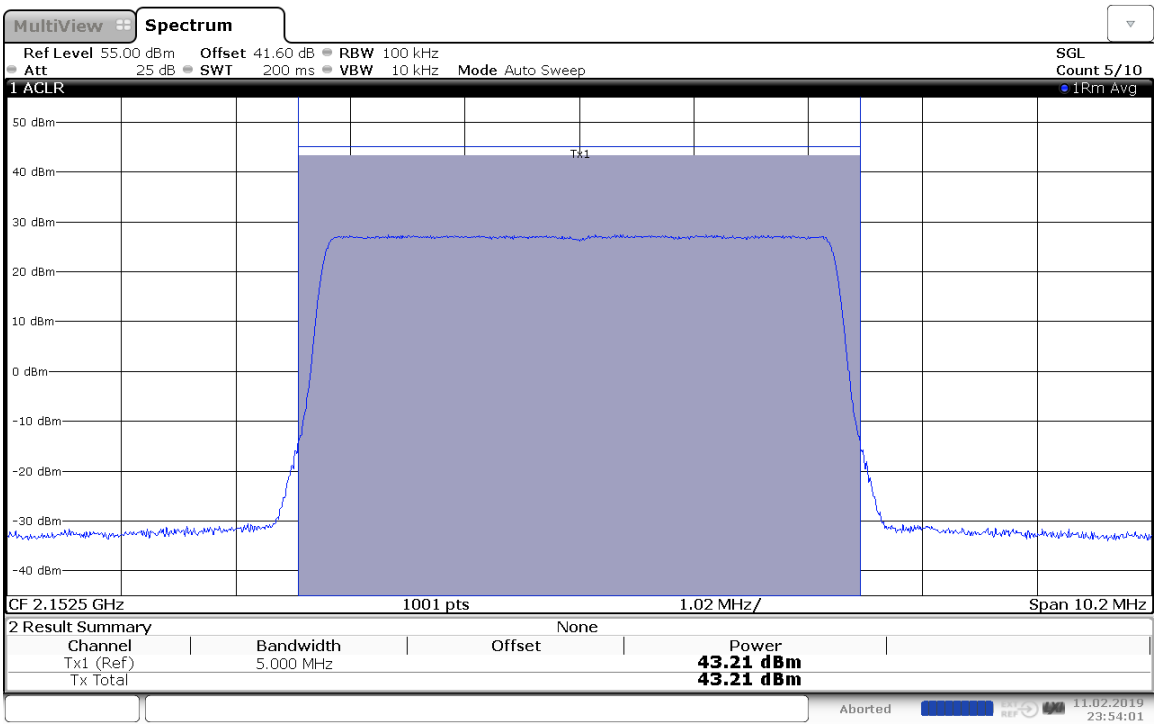


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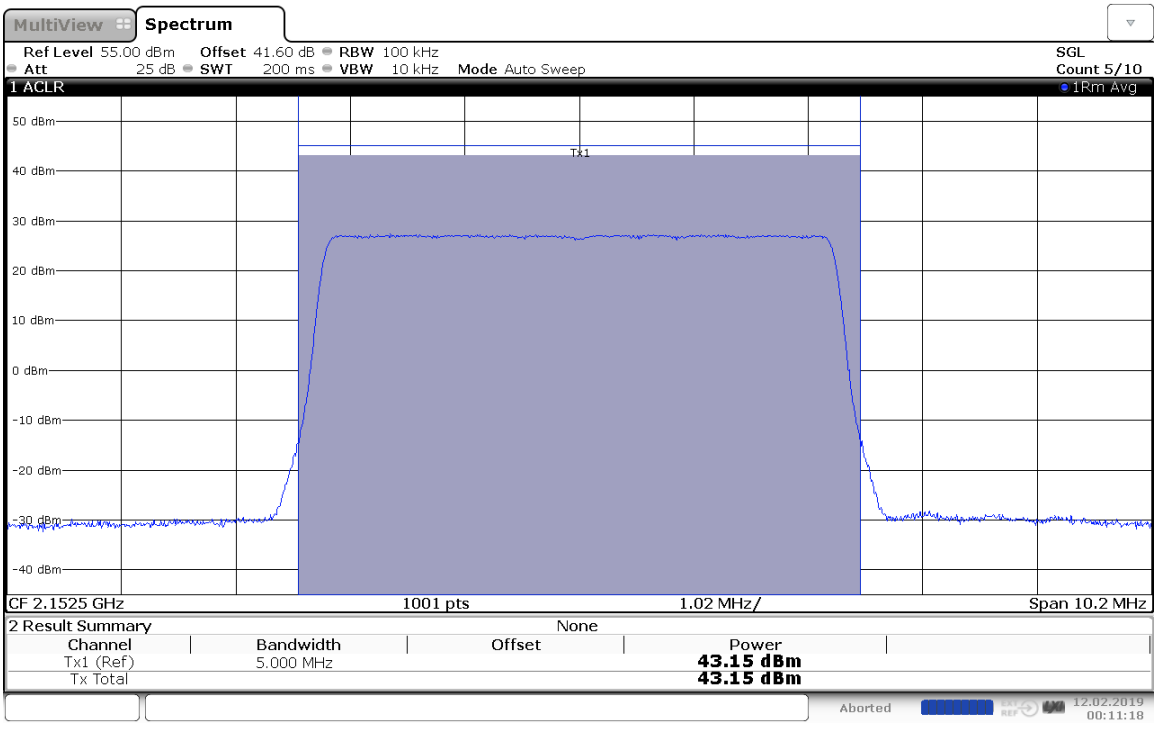


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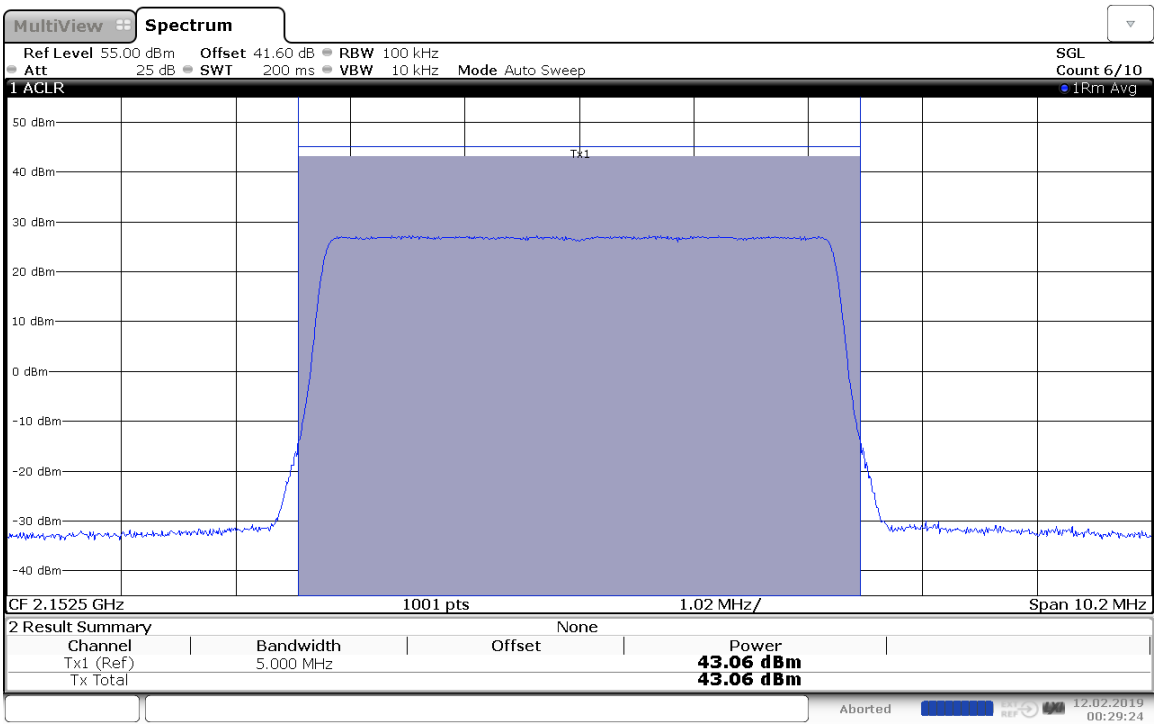
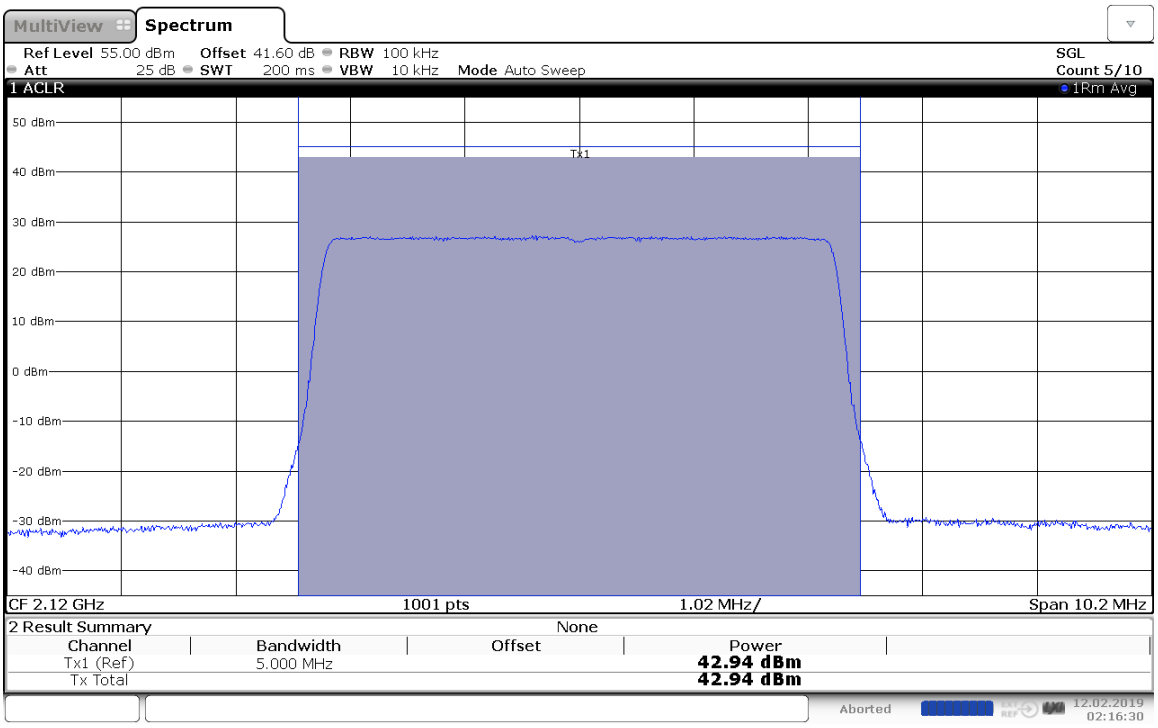



**00:29:24 12.02.2019**

Channel Bandwidth :5M+5M(2120MHz & 2160MHz)

| Port | Carrier1 Center Freq. (MHz) | Carrier1 Max output Power in dBm | Carrier2 Center Freq. (MHz) | Carrier2 Max output Power in dBm | Antenna gain dBi | Cable Loss dB | Dipole Antenna | Total Power in W Of single antenna |
|---|---|---|---|---|---|---|---|---|
| 1 | 2120 | 42.94 | 2160 | 43.11 | 17.5 | 2 | 2.15 | 868.19 |
| 2 | | 42.87 | | 43.03 | 17.5 | 2 | 2.15 | 853.30 |
| 3 | | 42.86 | | 43.05 | 17.5 | 2 | 2.15 | 854.35 |
| 4 | | 42.81 | | 43.00 | 17.5 | 2 | 2.15 | 844.57 |

5M+5M -2120MHz-Port 1~4:

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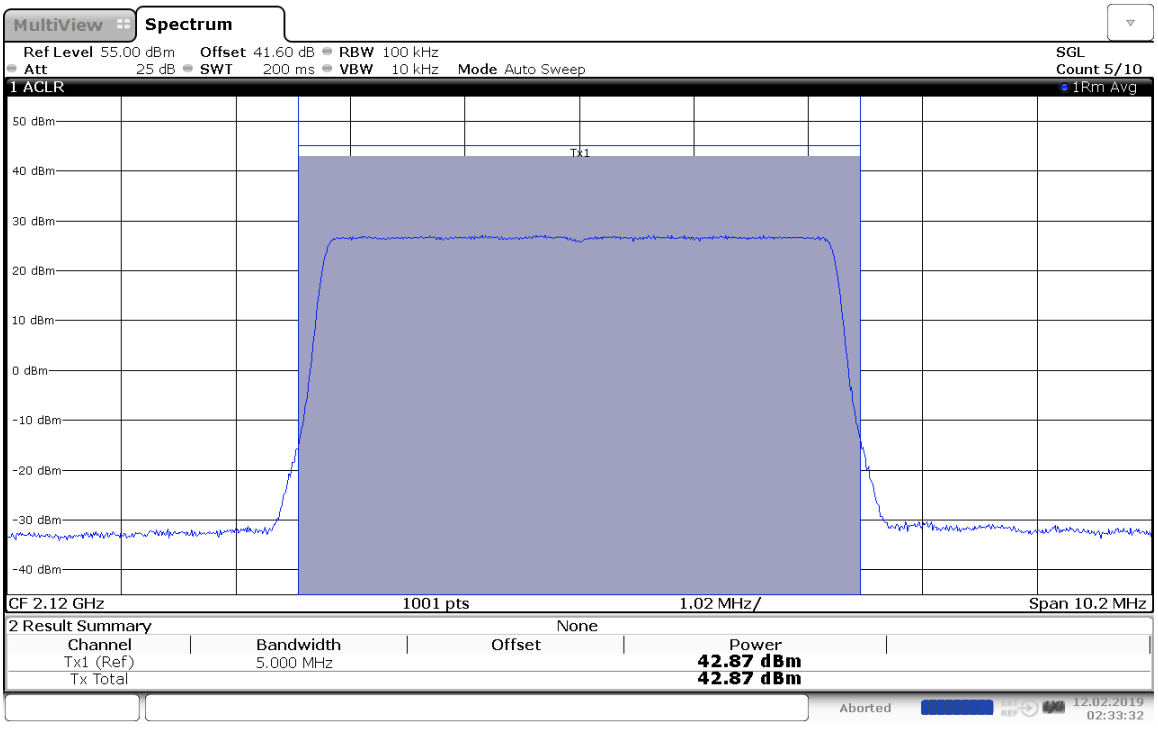


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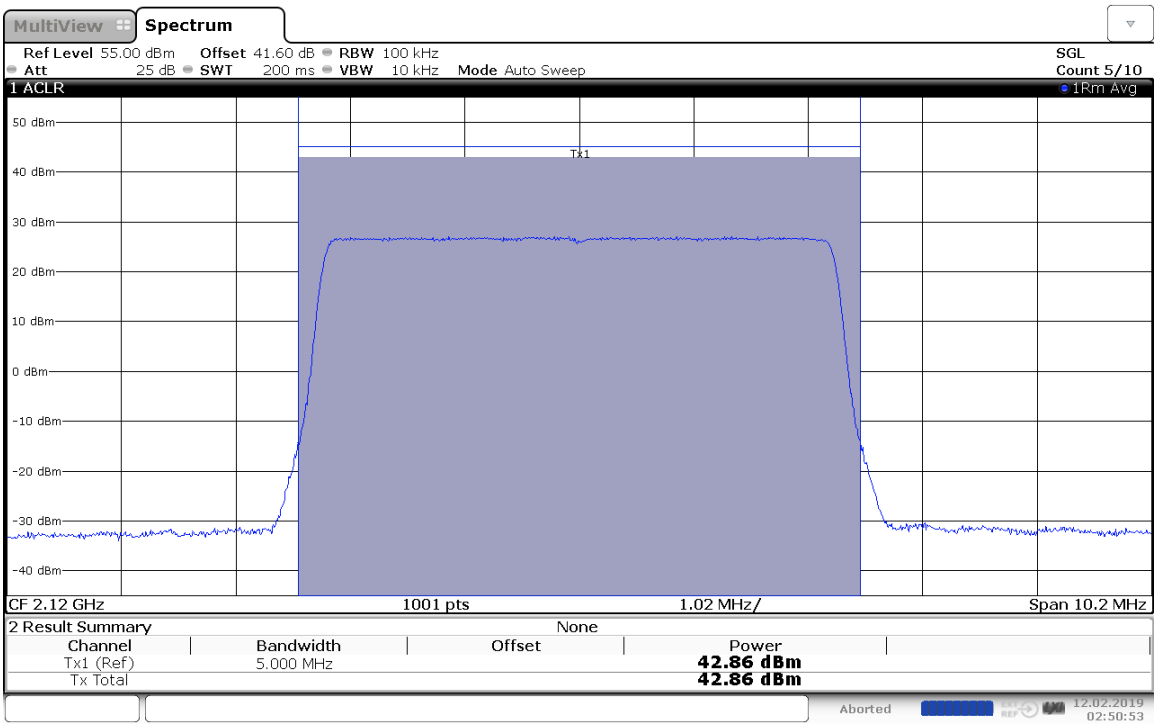


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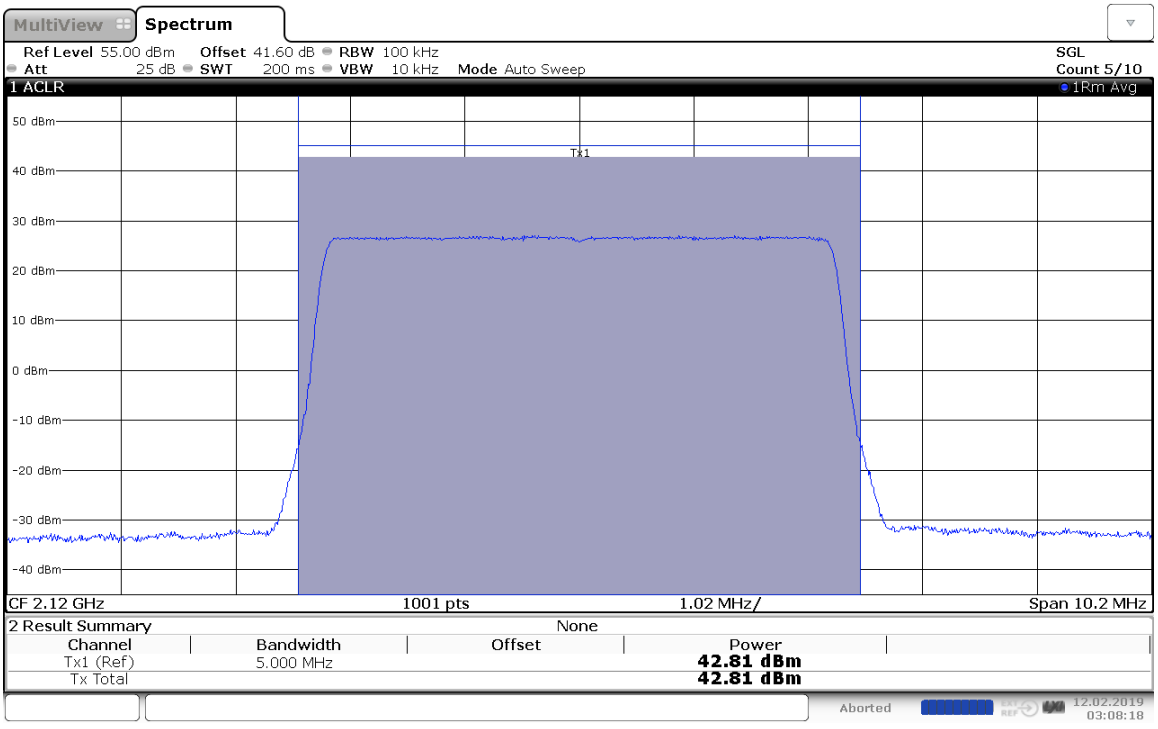
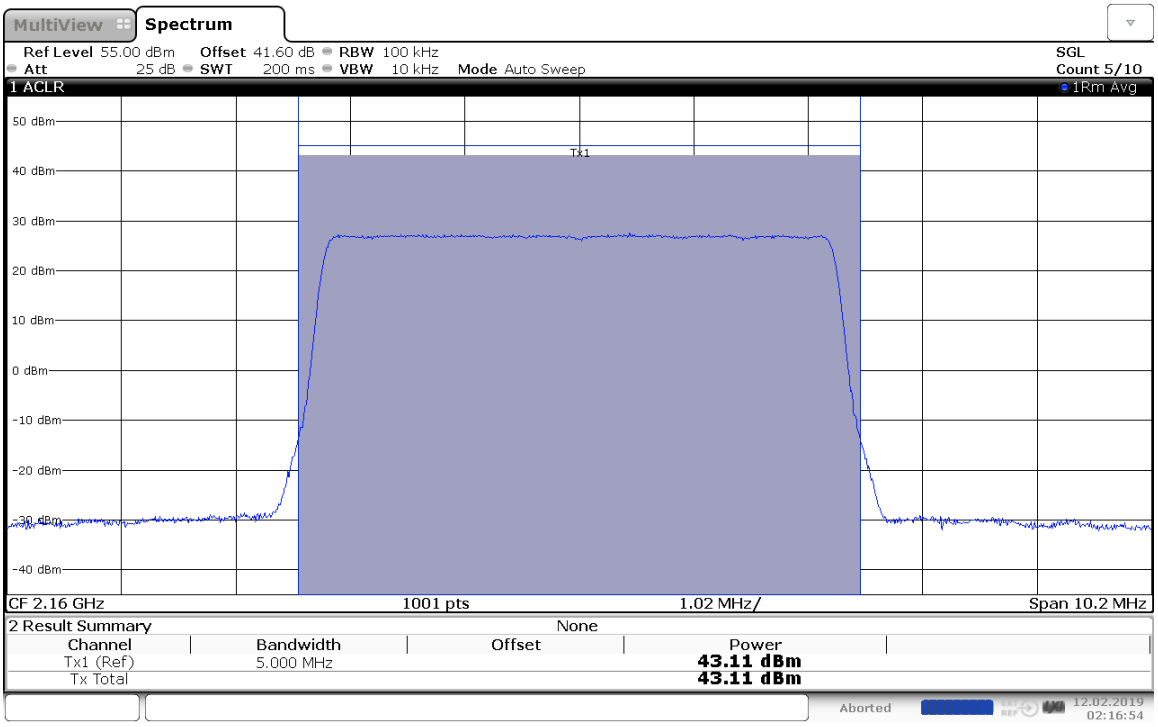



**03:08:19 12.02.2019**

5M+5M -2160MHz-Port 1~4:

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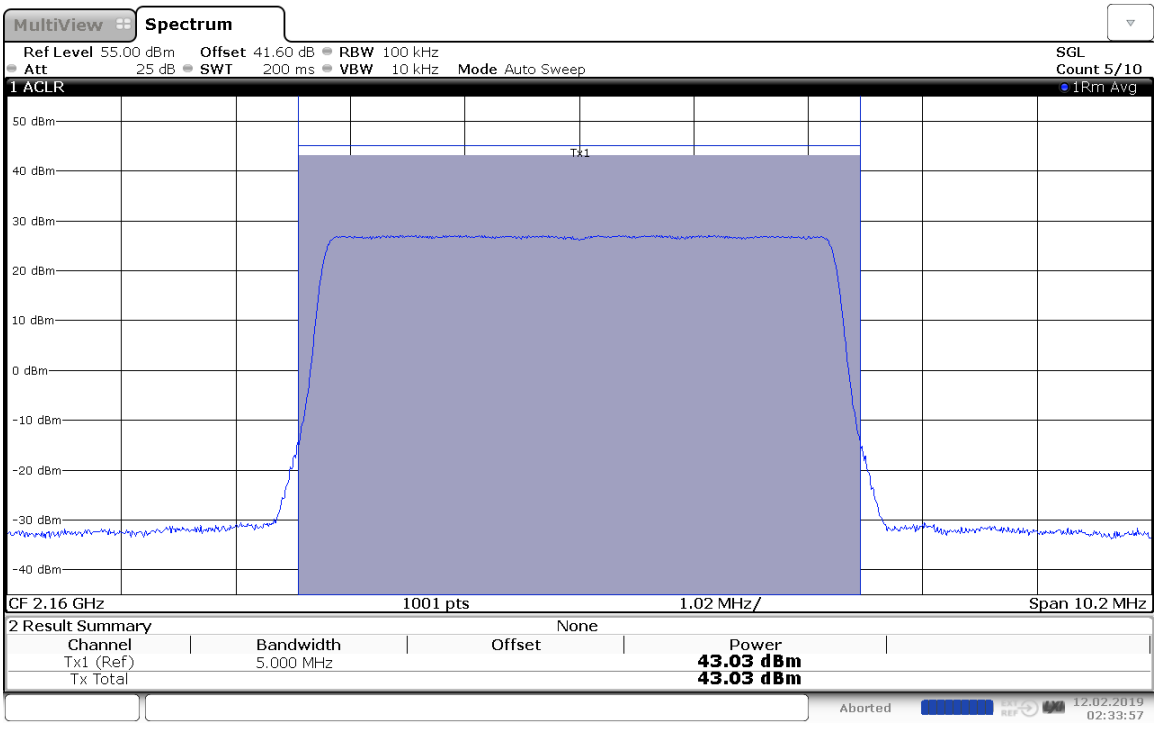


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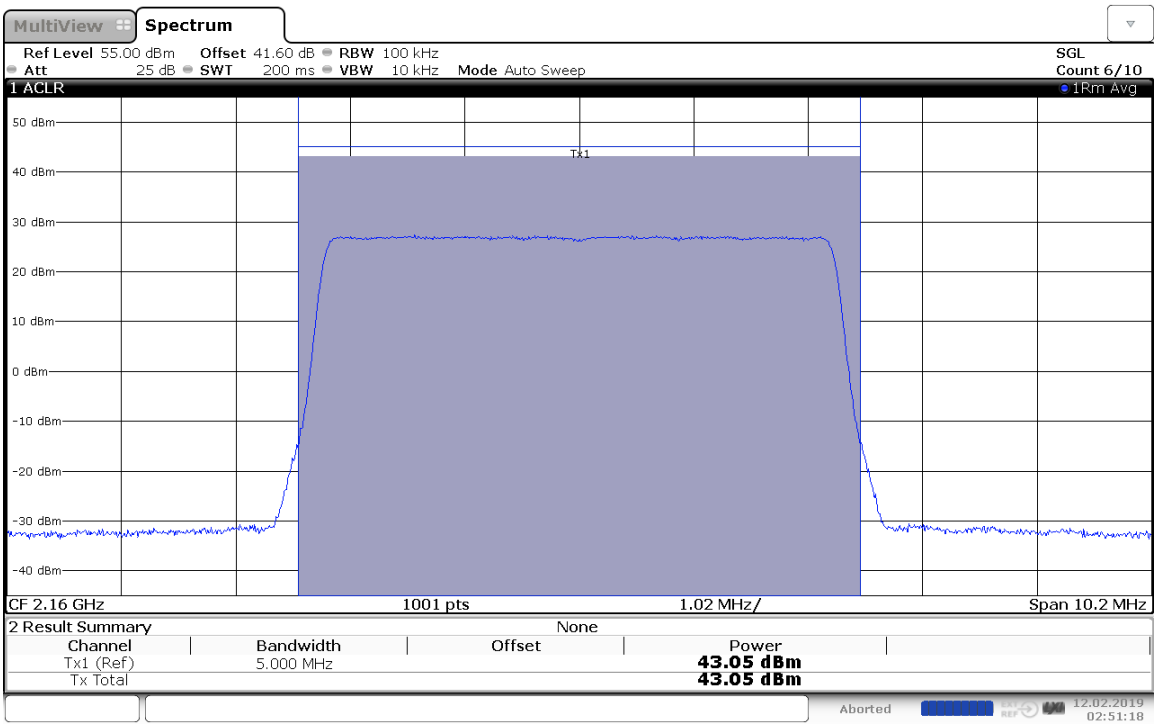


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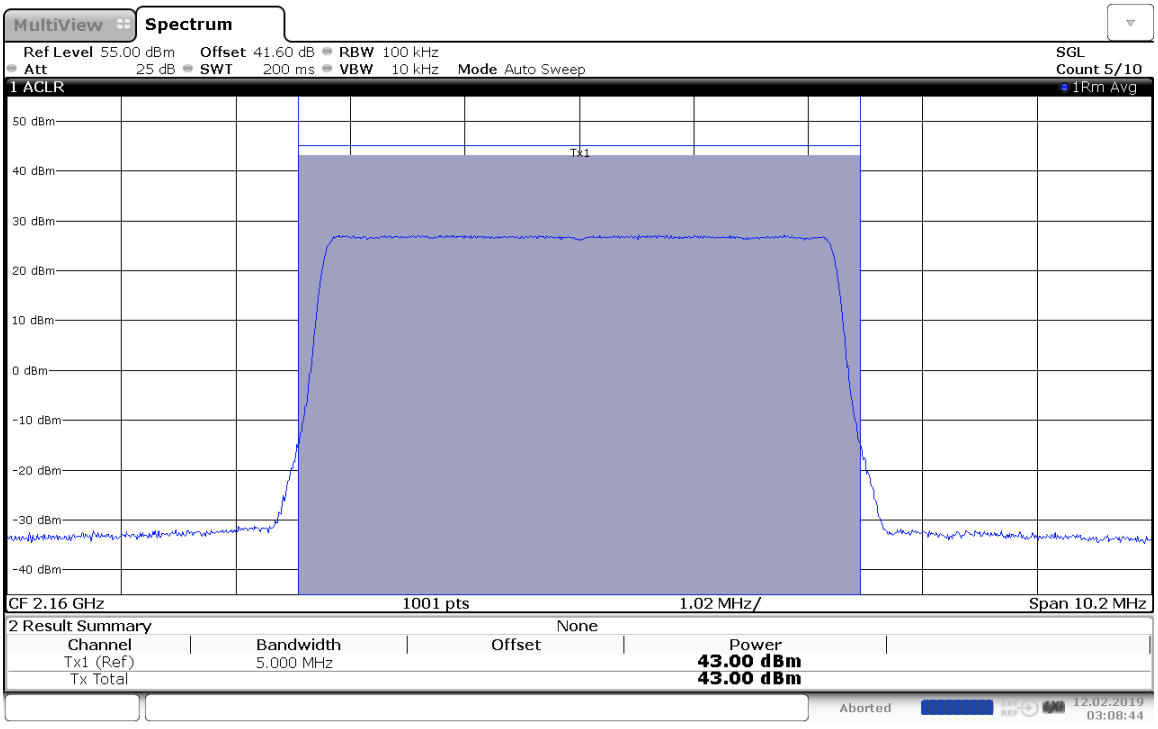
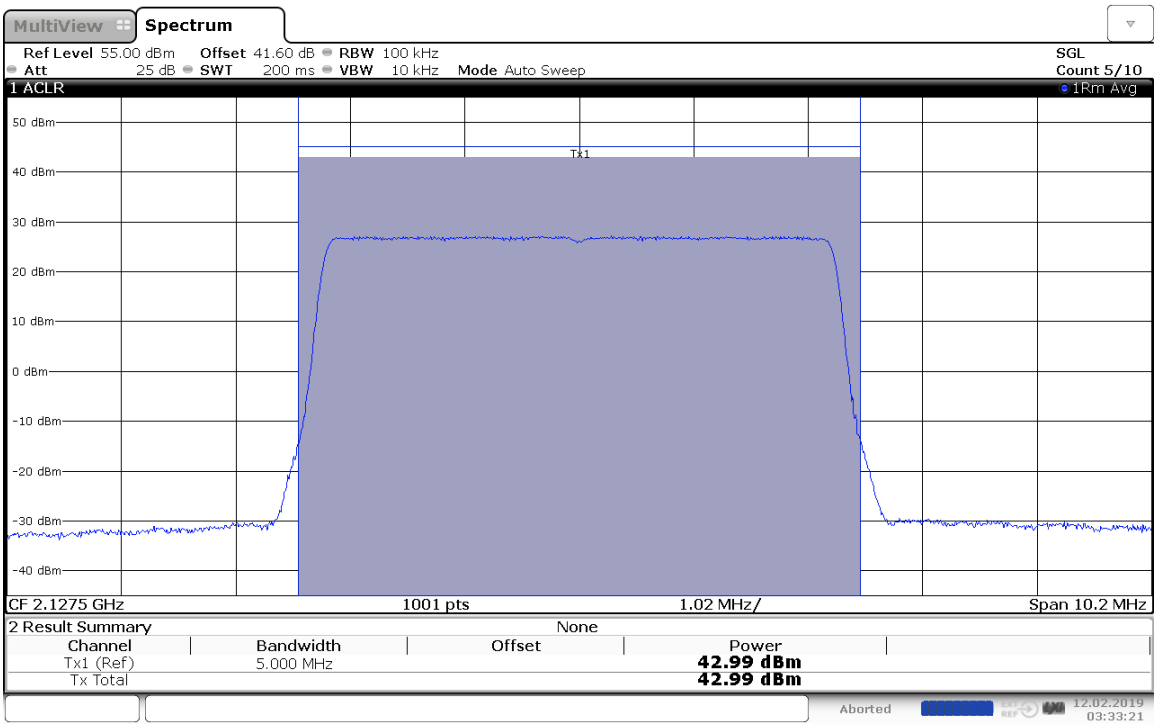



**03:08:44 12.02.2019**

Channel Bandwidth :5M+5M(2127.5MHz & 2167.5MHz)

| Port | Carrier1 Center Freq. (MHz) | Carrier1 Max output Power in dBm | Carrier2 Center Freq. (MHz) | Carrier2 Max output Power in dBm | Antenna gain dBi | Cable Loss dB | Dipole Antenna | Total Power in W Of single antenna |
|---|---|---|---|---|---|---|---|---|
| 1 | 2127.5 | 42.99 | 2167.5 | 42.89 | 17.5 | 2 | 2.15 | 851.25 |
| 2 | | 42.98 | | 42.91 | 17.5 | 2 | 2.15 | 852.21 |
| 3 | | 42.98 | | 42.91 | 17.5 | 2 | 2.15 | 852.21 |
| 4 | | 42.93 | | 42.87 | 17.5 | 2 | 2.15 | 843.41 |

5M+5M -2127.5MHz-Port 1~4:

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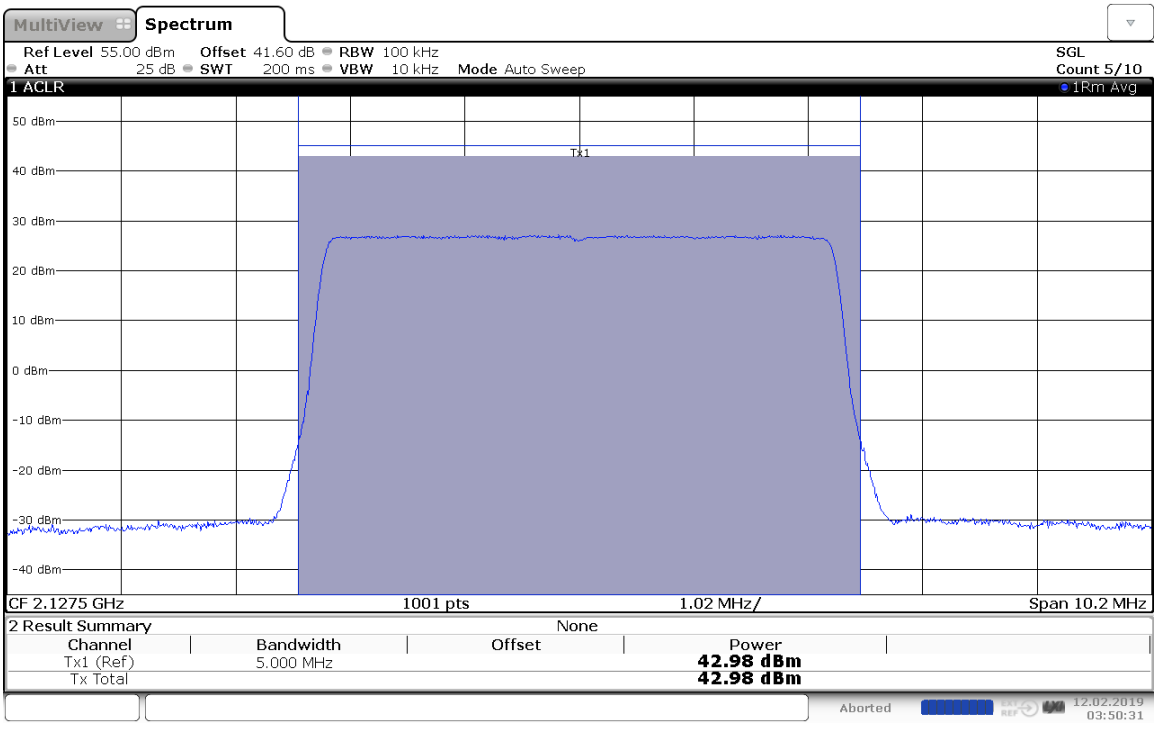


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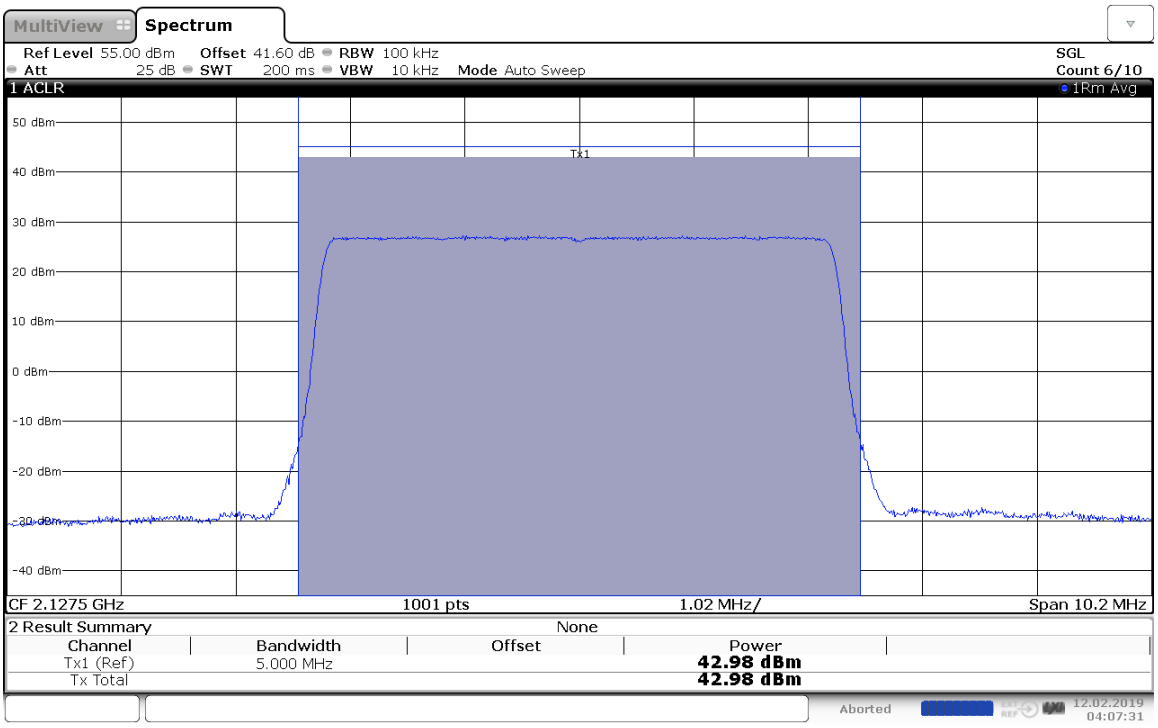


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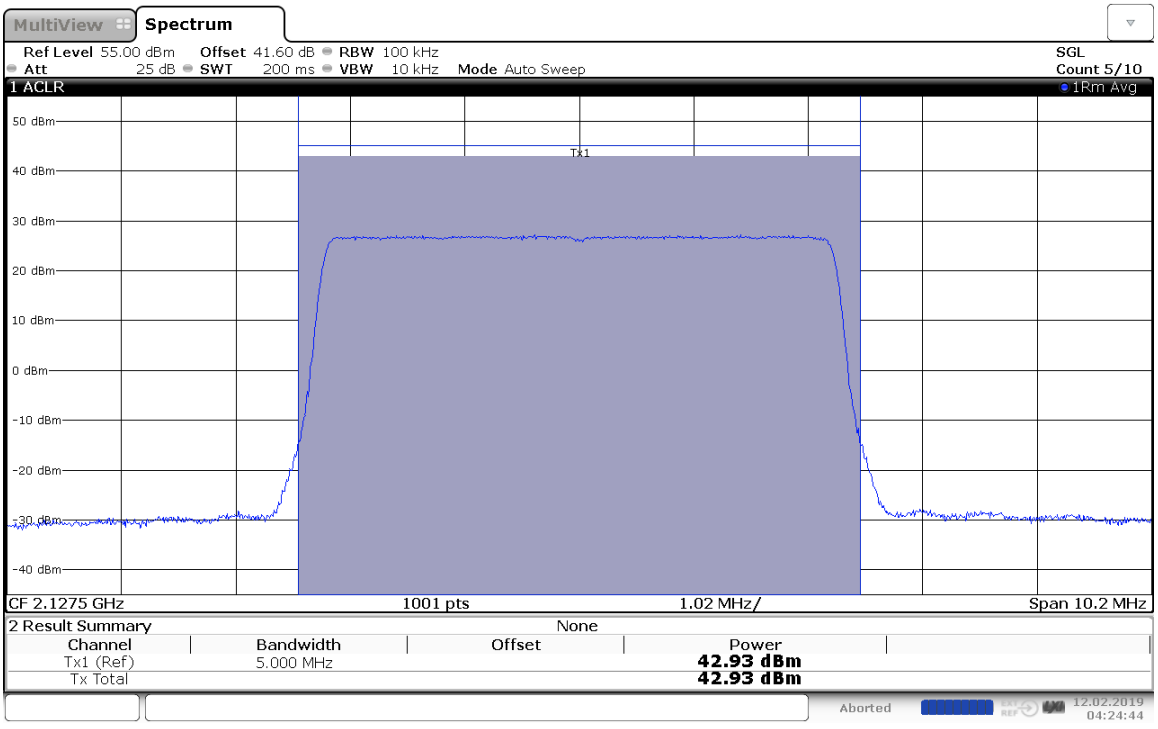
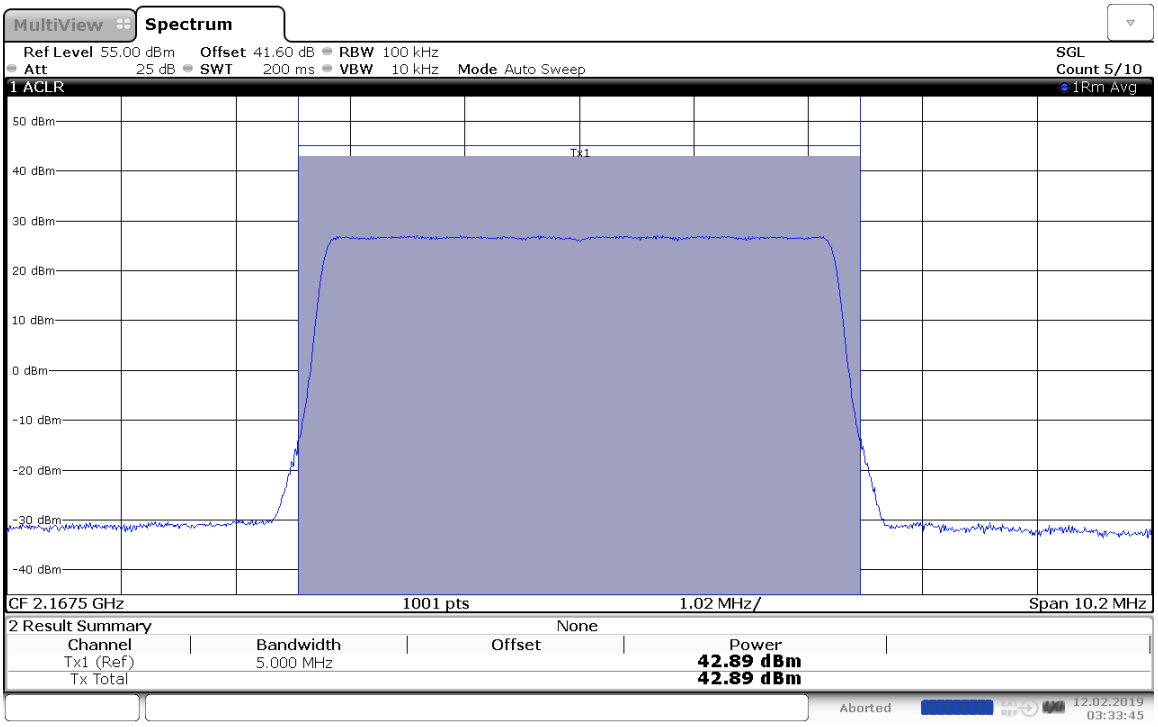



**04:24:44 12.02.2019**

5M+5M -2167.5MHz-Port 1~4:

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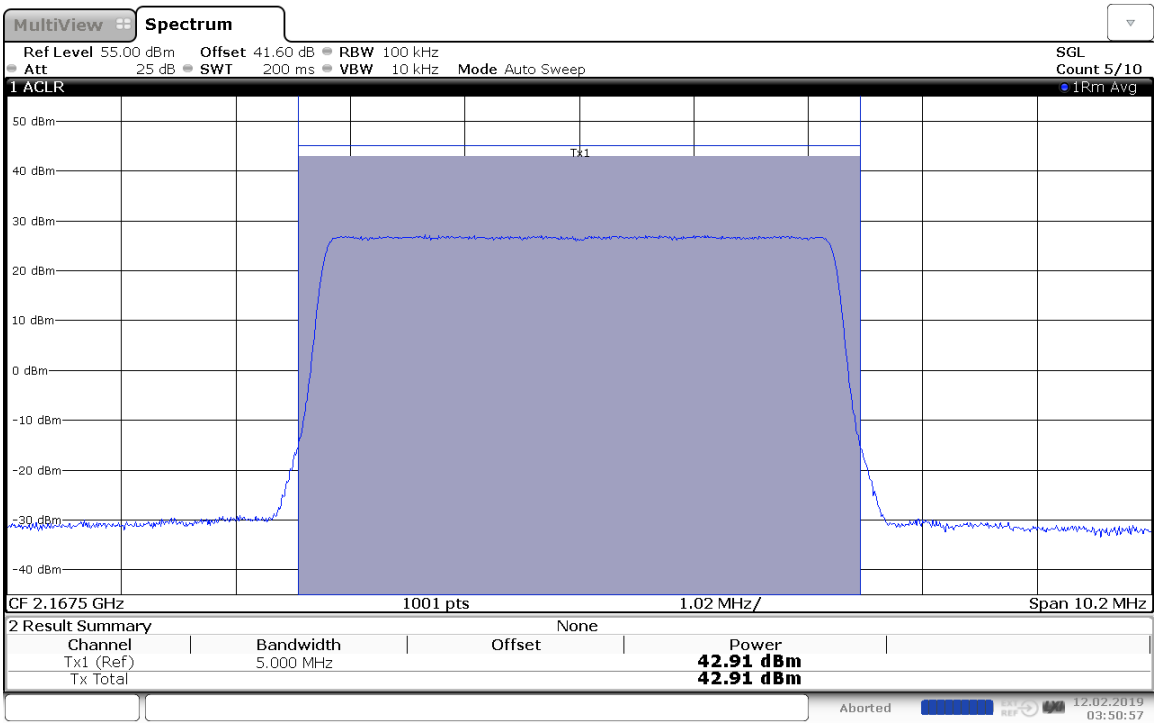


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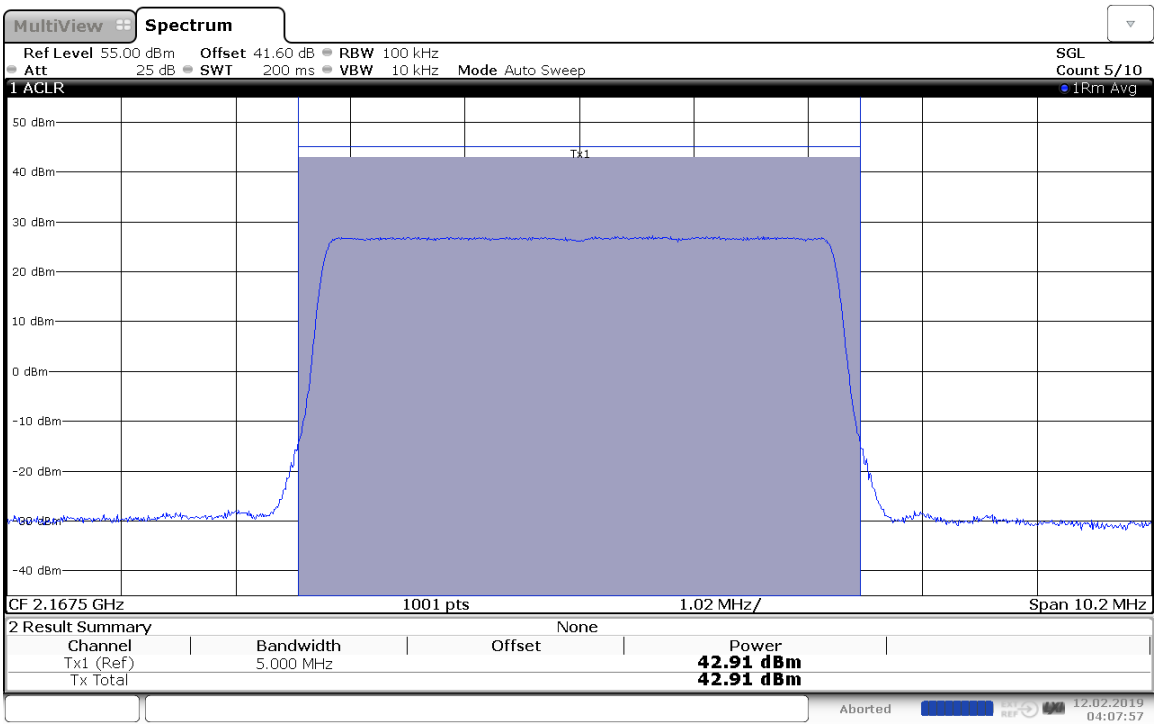
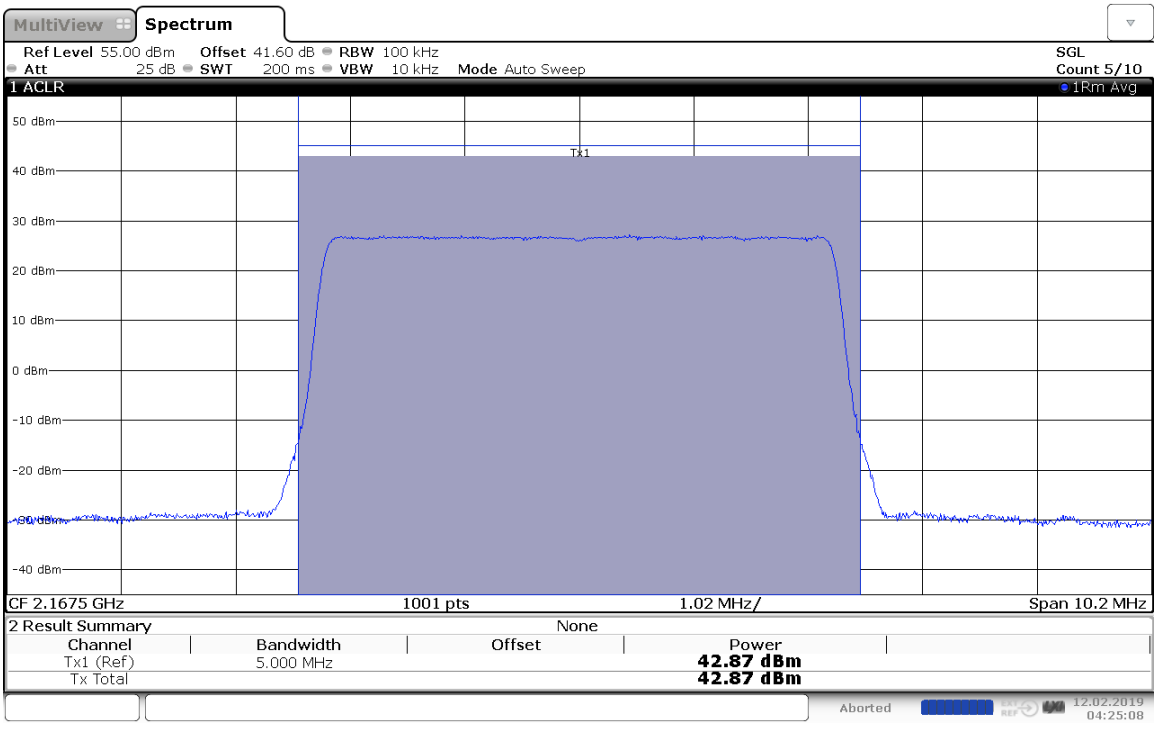



**04:07:57 12.02.2019**

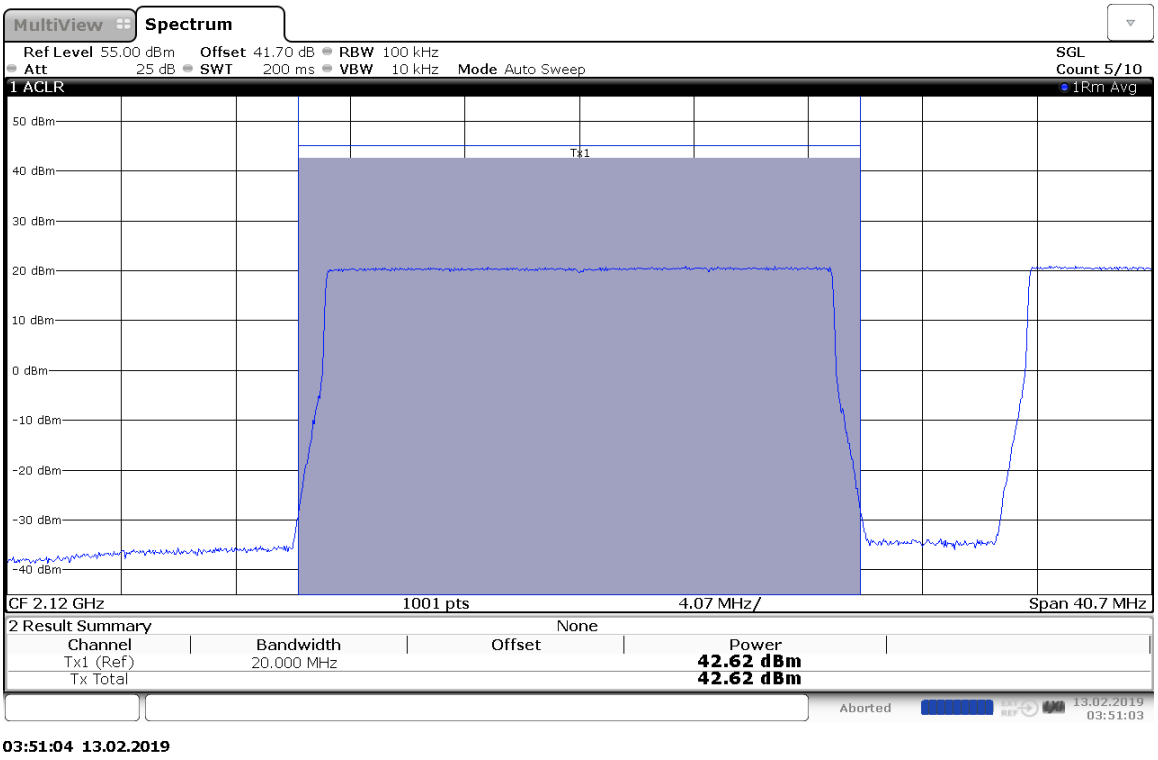



**04:25:08 12.02.2019**

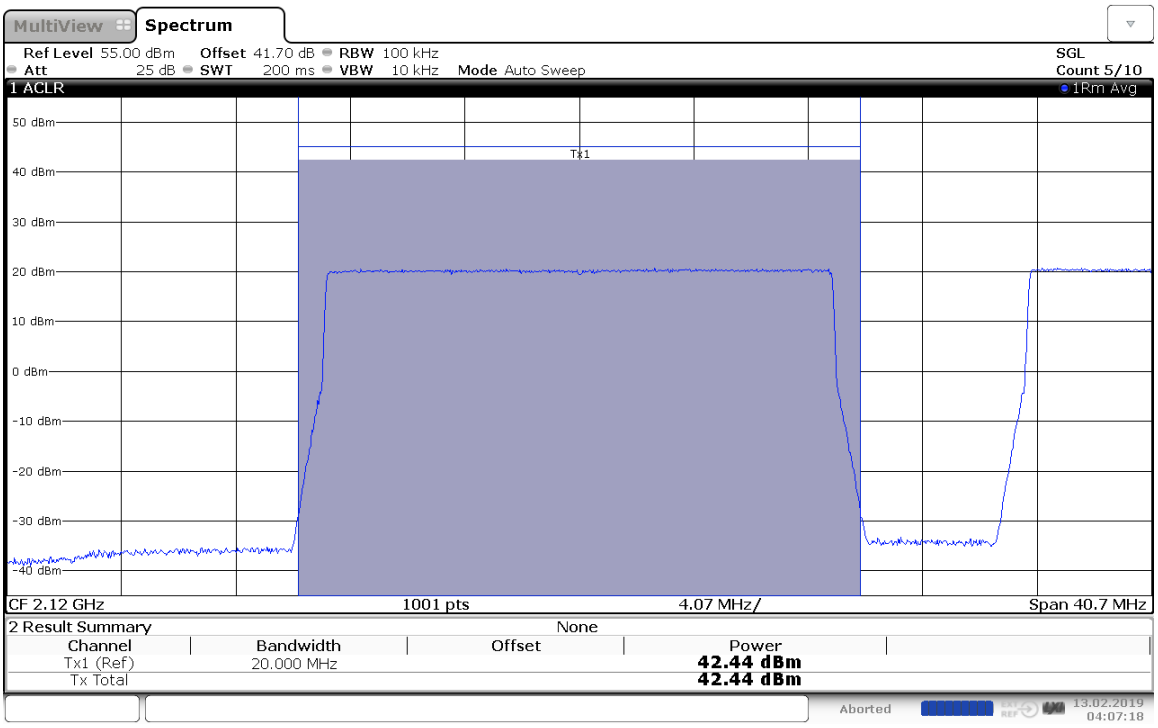
Channel Bandwidth :20M+20M(2120MHz &2145MHz)

| Port | Carrier1 Center Freq. (MHz) | Carrier1 Max output Power in dBm | Carrier2 Center Freq. (MHz) | Carrier2 Max output Power in dBm | Antenna gain dBi | Cable Loss dB | Dipole Antenna | Total Power in W Of single antenna |
|---|---|---|---|---|---|---|---|---|
| 1 | 2120 | 42.62 | 2145 | 42.89 | 17.5 | 2 | 2.15 | 816.09 |
| 2 | | 42.44 | | 42.72 | 17.5 | 2 | 2.15 | 783.89 |
| 3 | | 42.34 | | 42.60 | 17.5 | 2 | 2.15 | 764.23 |
| 4 | | 42.43 | | 42.71 | 17.5 | 2 | 2.15 | 782.09 |

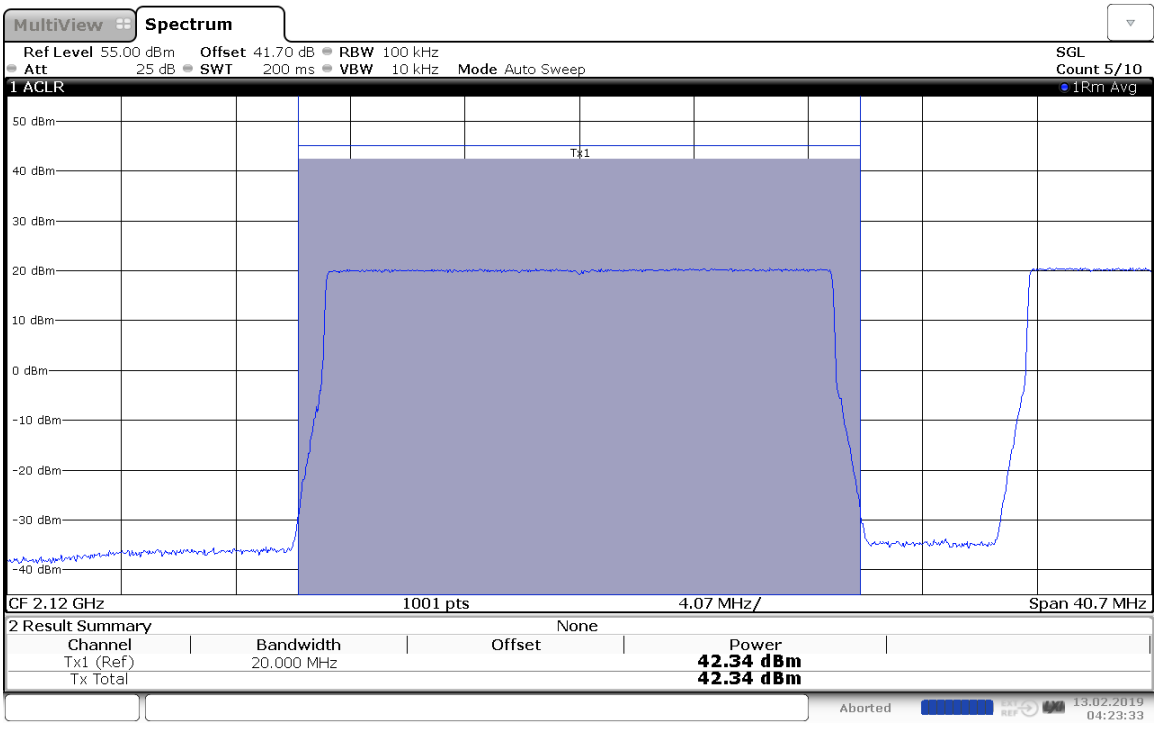
20M+20M -2120MHz-Port 1~4:



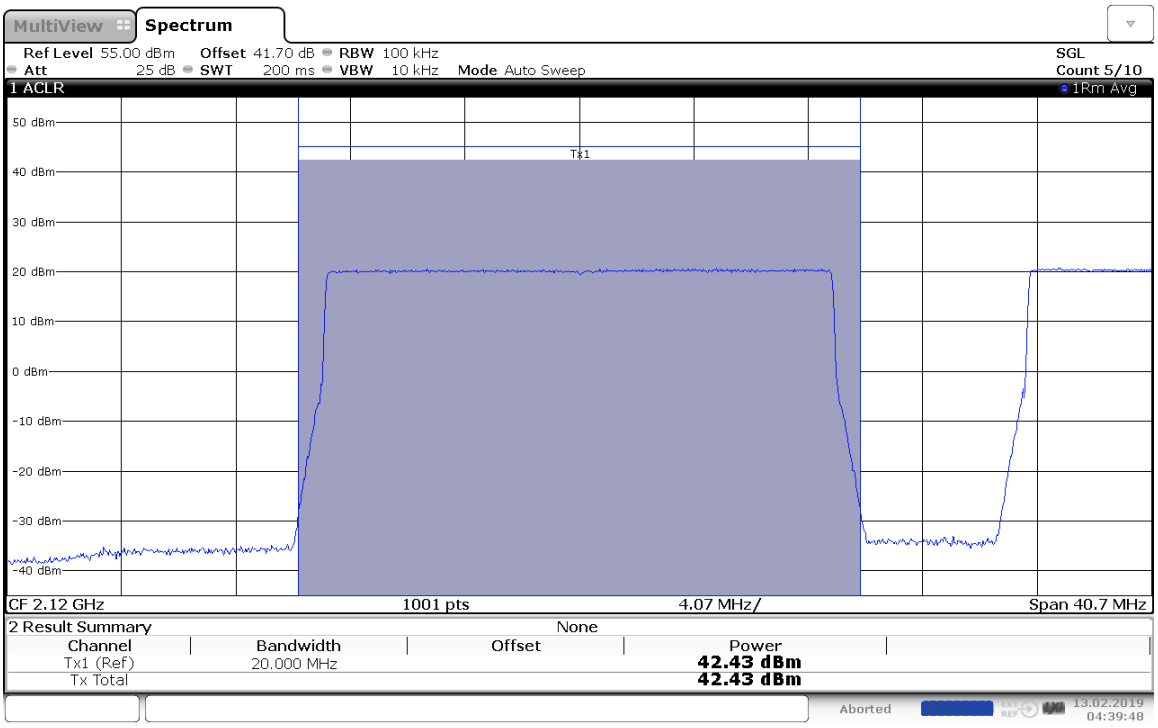

03:51:04 13.02.2019




**04:07:18 13.02.2019**

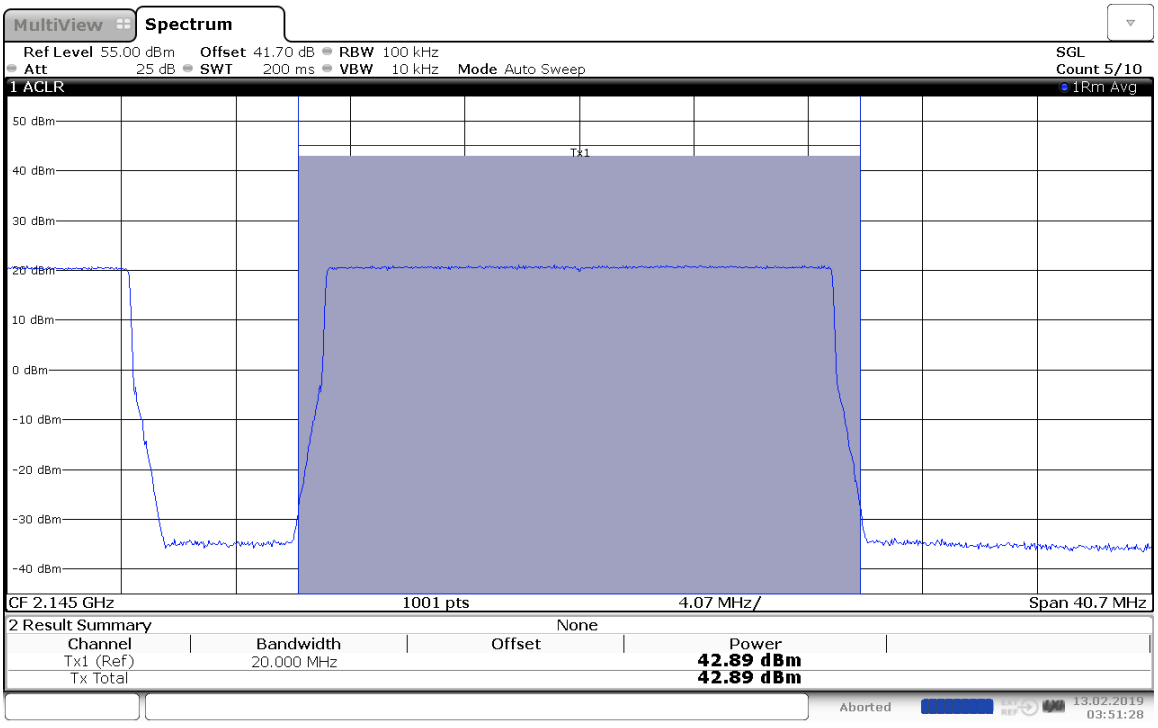



**04:23:33 13.02.2019**

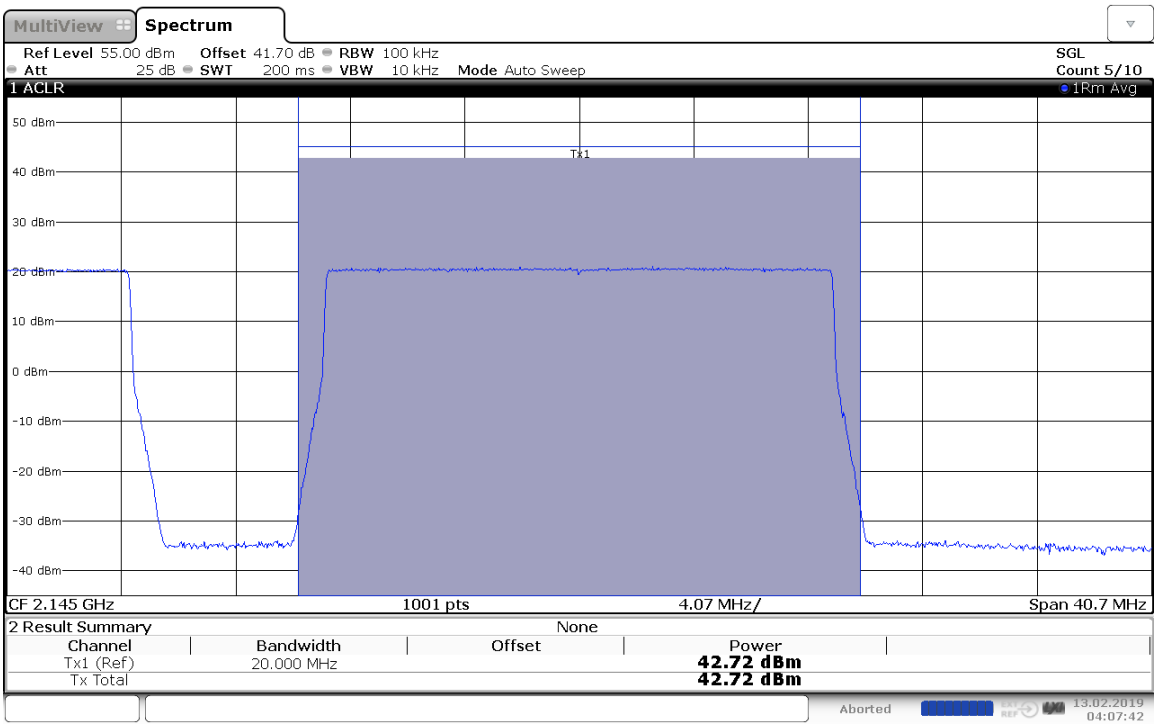



**04:39:49 13.02.2019**

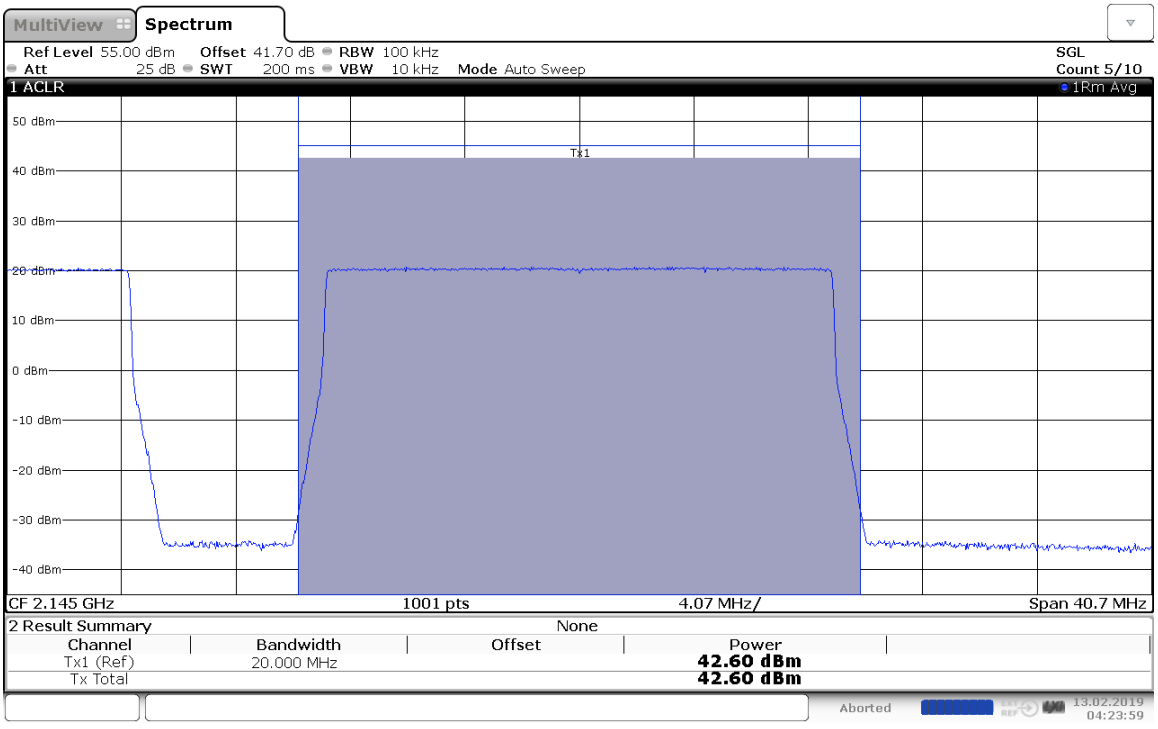
20M+20M -2145MHz-Port 1~4:



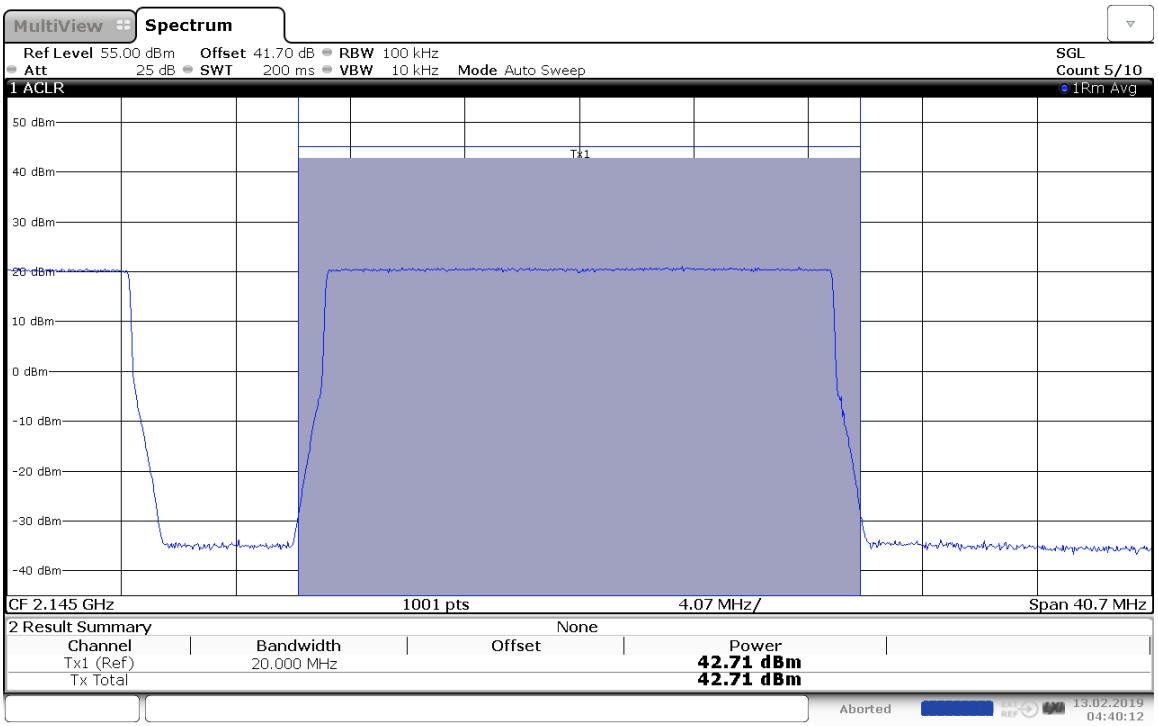

**03:51:28 13.02.2019**




**04:07:43 13.02.2019**




**04:24:00 13.02.2019**

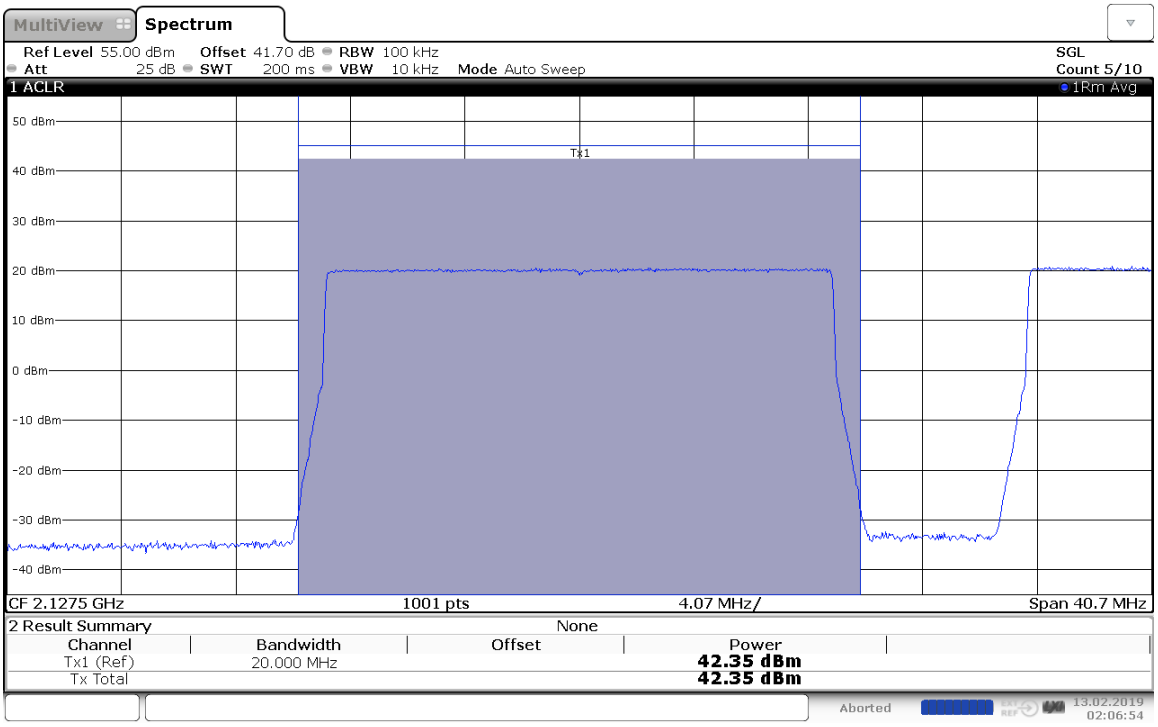



**04:40:13 13.02.2019**

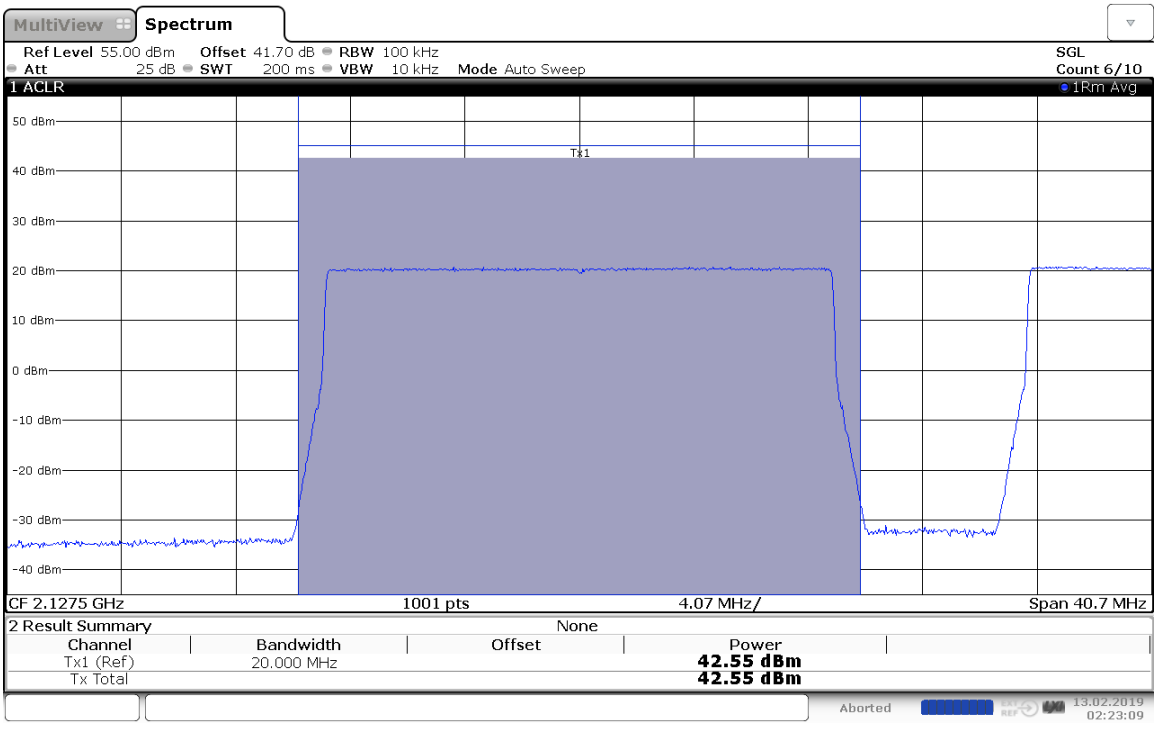
Channel Bandwidth :20M+20M(2127.5MHz & 2152.5MHz)

| Port | Carrier1 Center Freq. (MHz) | Carrier1 Max output Power in dBm | Carrier2 Center Freq. (MHz) | Carrier2 Max output Power in dBm | Antenna gain dBi | Cable Loss dB | Dipole Antenna | Total Power in W Of single antenna |
|---|---|---|---|---|---|---|---|---|
| 1 | 2127.5 | 42.35 | 2152.5 | 42.64 | 17.5 | 2 | 2.15 | 768.73 |
| 2 | | 42.55 | | 42.82 | 17.5 | 2 | 2.15 | 803.04 |
| 3 | | 42.48 | | 42.74 | 17.5 | 2 | 2.15 | 789.27 |
| 4 | | 42.59 | | 42.84 | 17.5 | 2 | 2.15 | 808.56 |

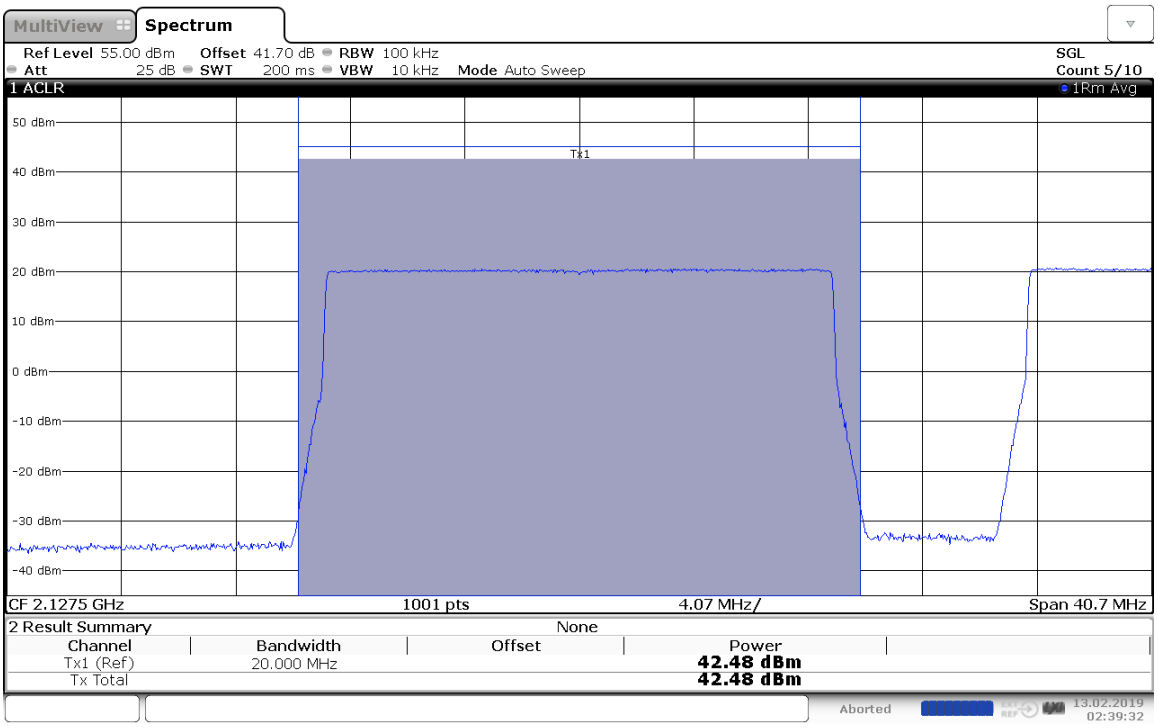
20M+20M -2127.5MHz-Port 1~4:



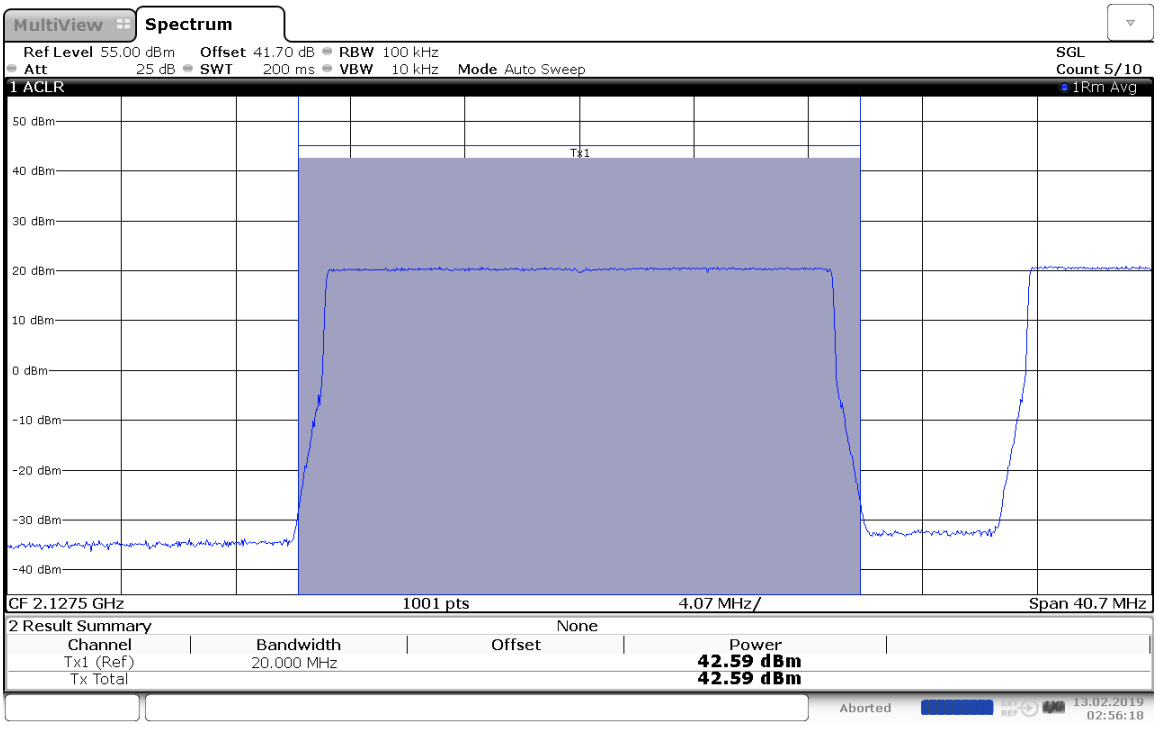

**02:06:54 13.02.2019**




**02:23:10 13.02.2019**

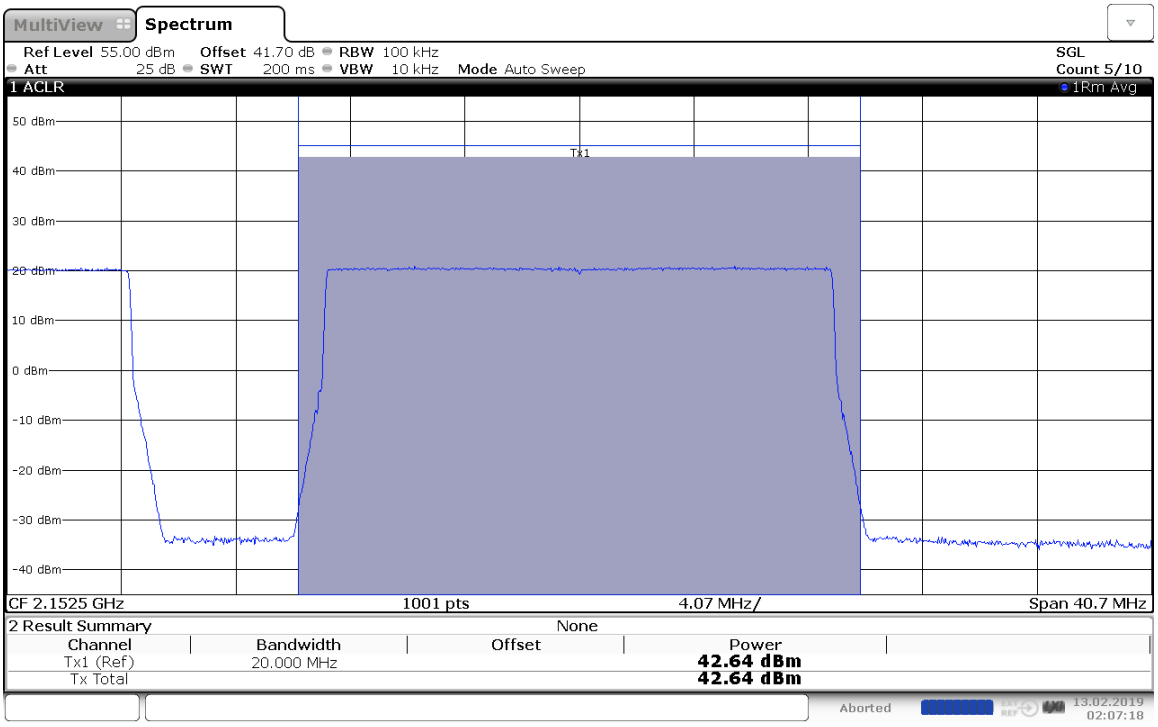



**02:39:32 13.02.2019**

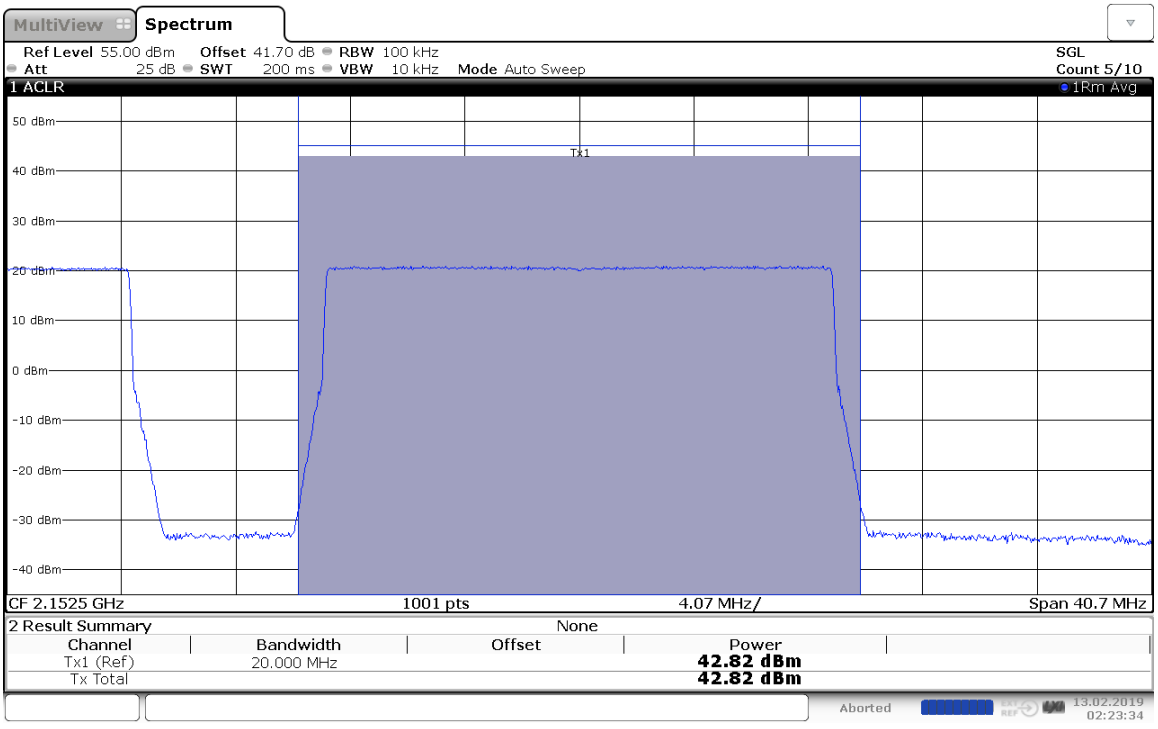



**02:56:18 13.02.2019**

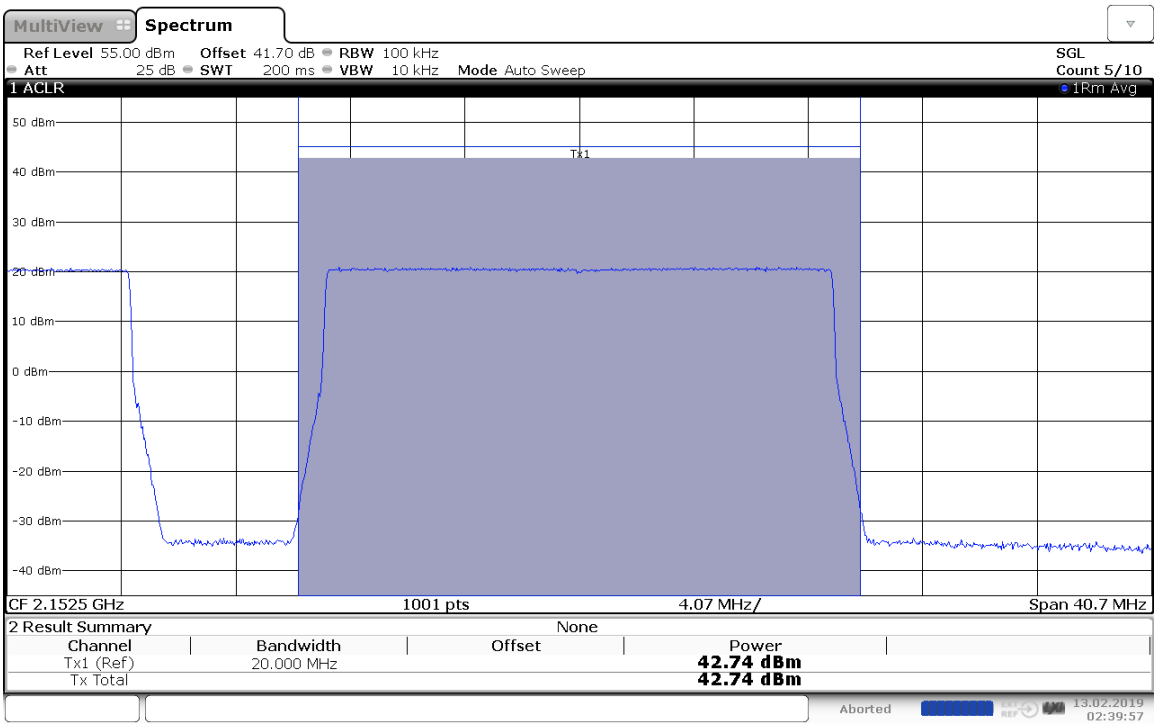
20M+20M -2152.5MHz-Port 1~4:



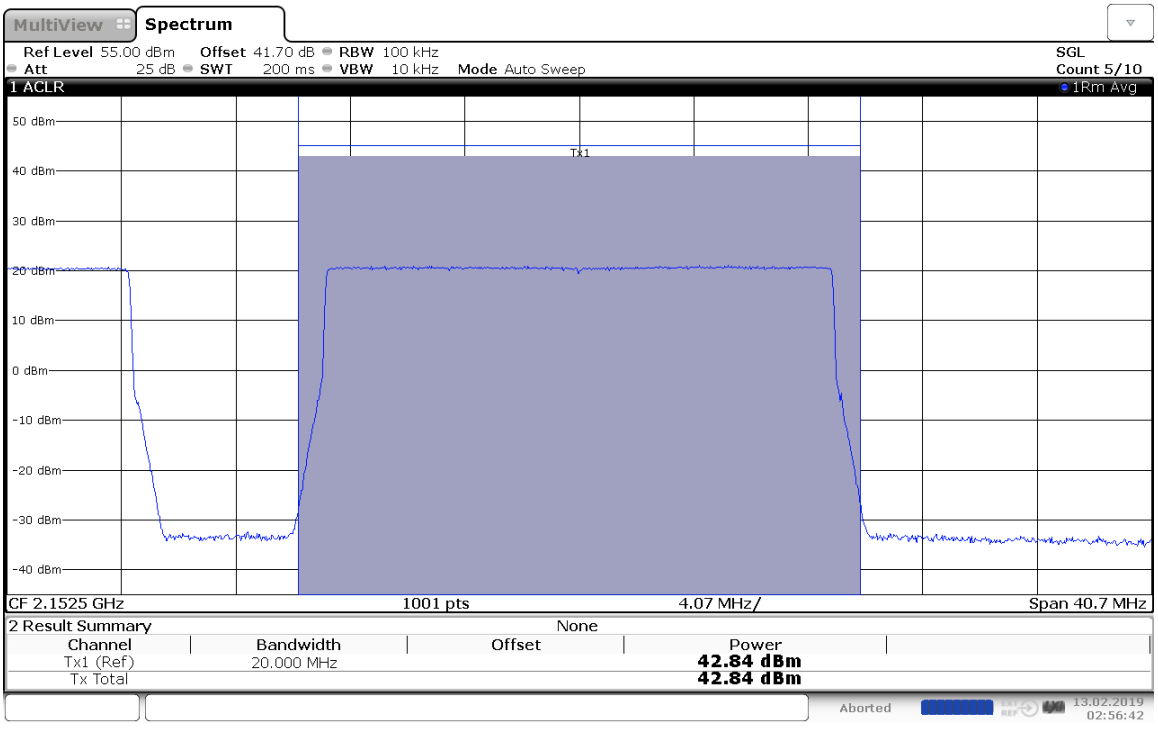

**02:07:18 13.02.2019**




**02:23:35 13.02.2019**




**02:39:57 13.02.2019**

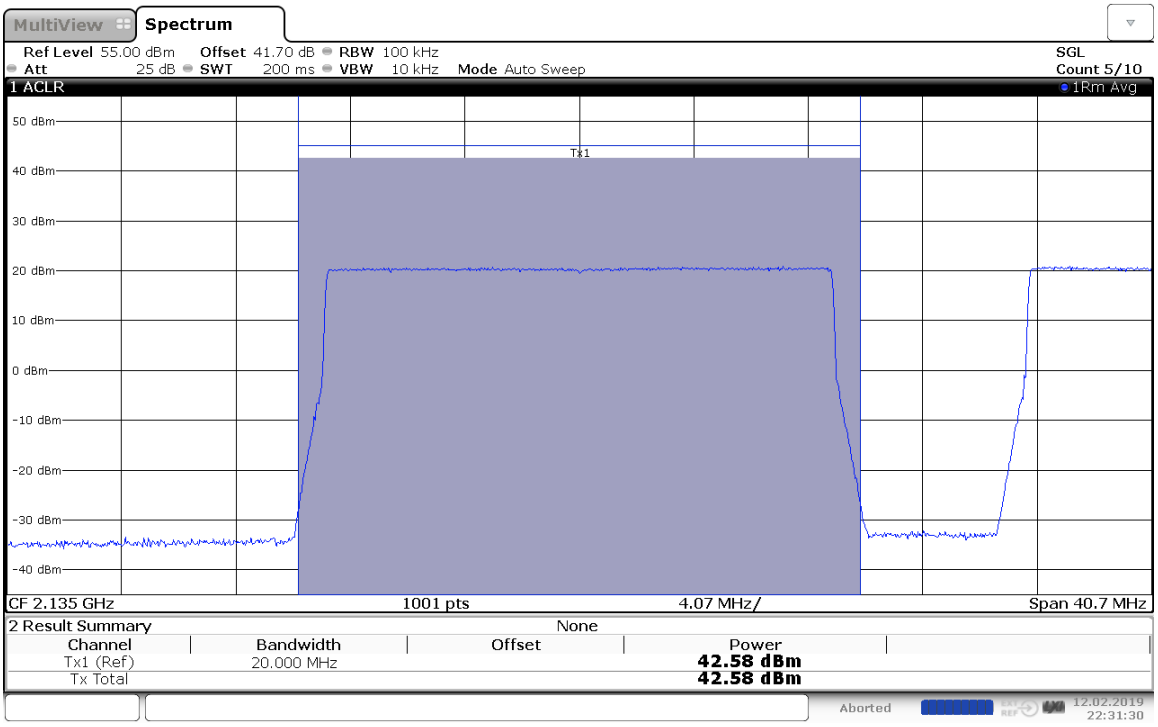



**02:56:43 13.02.2019**

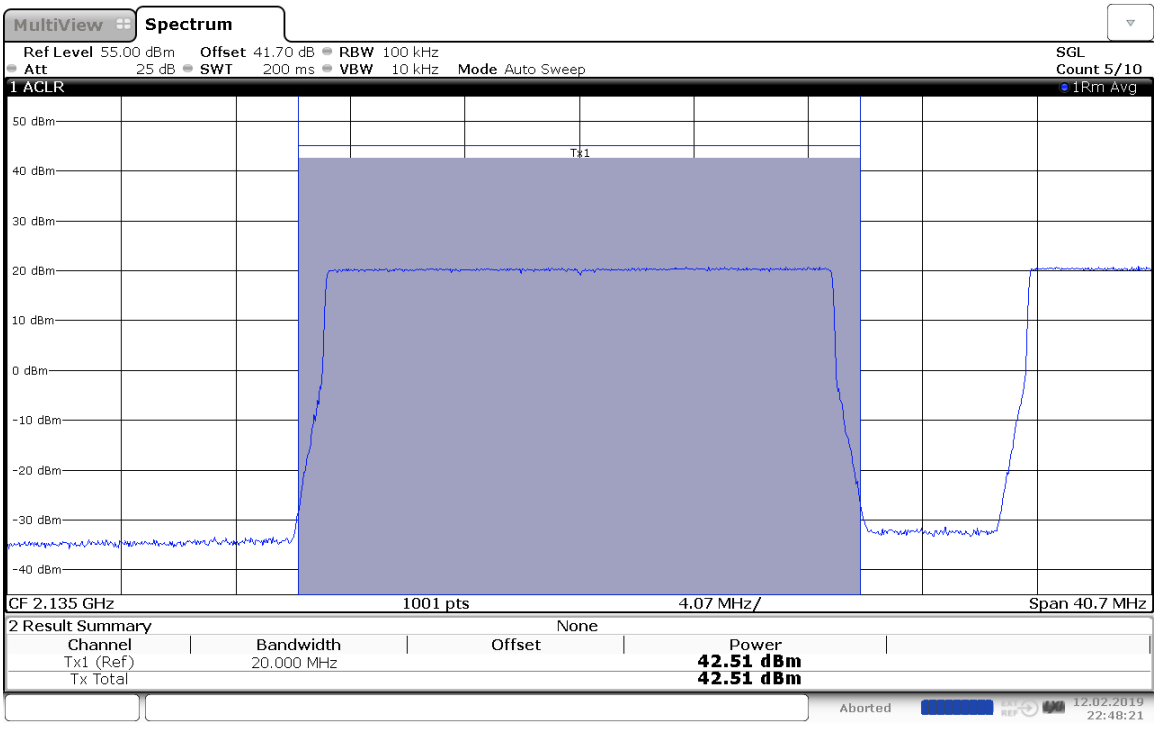
Channel Bandwidth :20M+20M(2135MHz & 2160MHz)

| Port | Carrier1 Center Freq. (MHz) | Carrier1 Max output Power in dBm | Carrier2 Center Freq. (MHz) | Carrier2 Max output Power in dBm | Antenna gain dBi | Cable Loss dB | Dipole Antenna | Total Power in W Of single antenna |
|---|---|---|---|---|---|---|---|---|
| 1 | 2135 | 42.58 | 2160 | 42.73 | 17.5 | 2 | 2.15 | 797.25 |
| 2 | | 42.51 | | 42.65 | 17.5 | 2 | 2.15 | 783.59 |
| 3 | | 42.55 | | 42.70 | 17.5 | 2 | 2.15 | 791.76 |
| 4 | | 42.57 | | 42.71 | 17.5 | 2 | 2.15 | 794.49 |

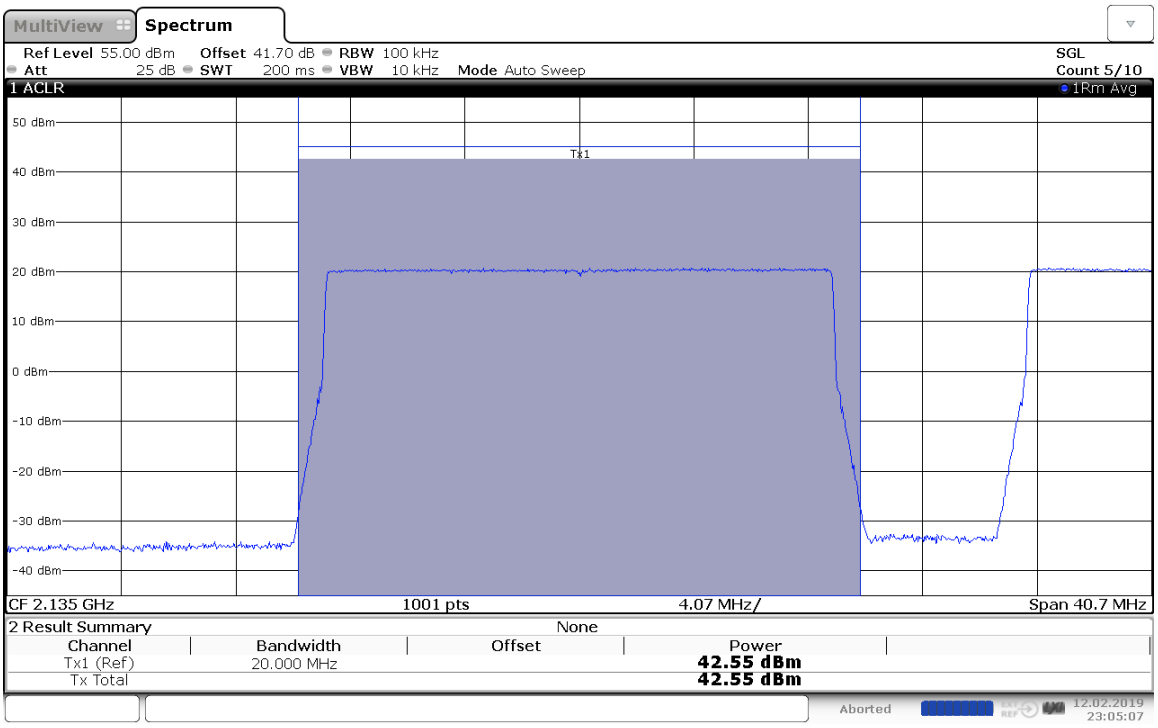
20M+20M -2135MHz-Port 1~4:



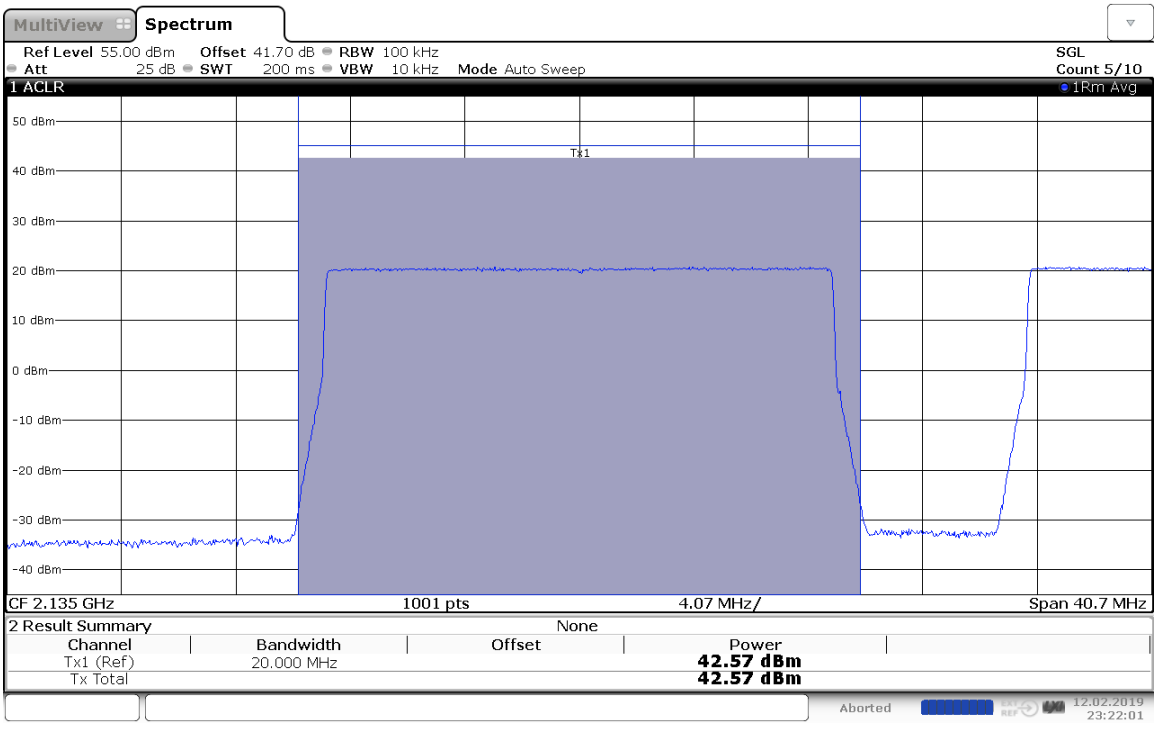

**22:31:30 12.02.2019**




**22:48:21 12.02.2019**

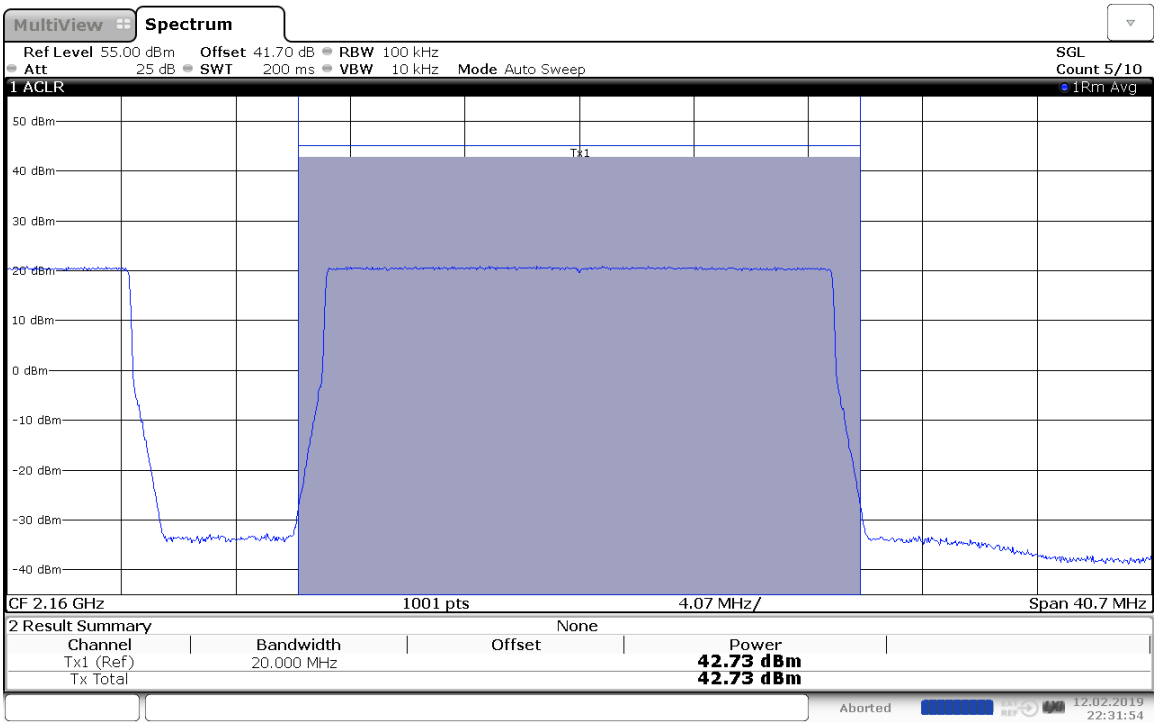



**23:05:08 12.02.2019**

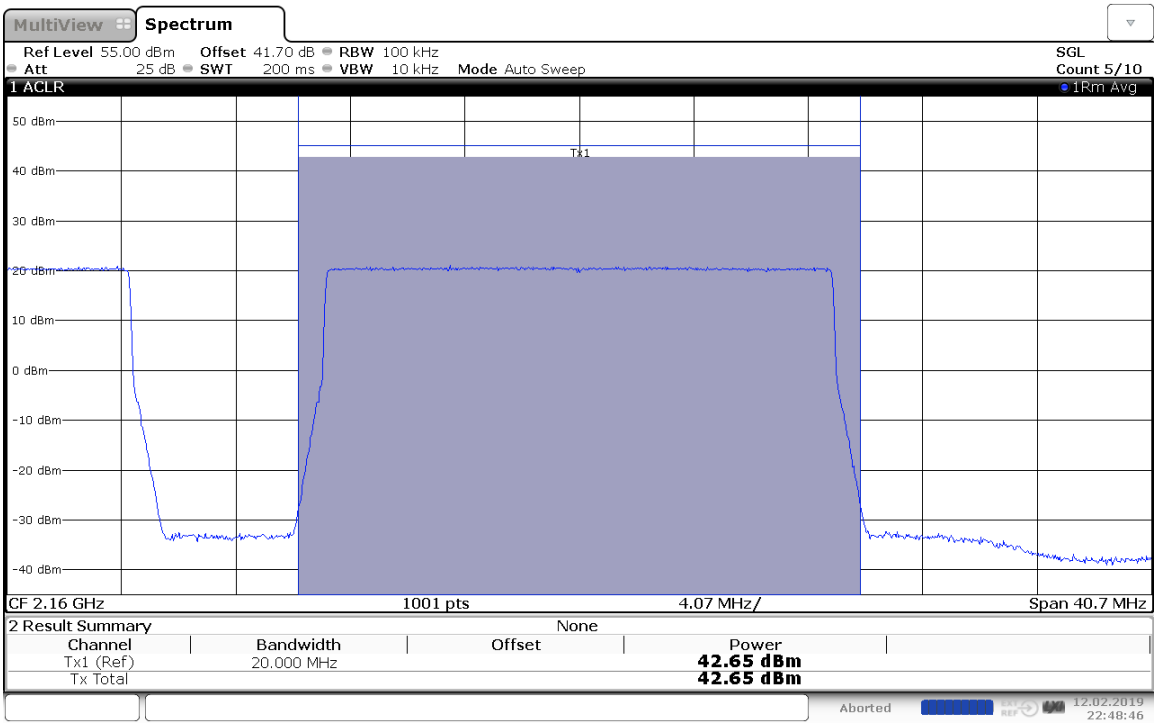



**23:22:01 12.02.2019**

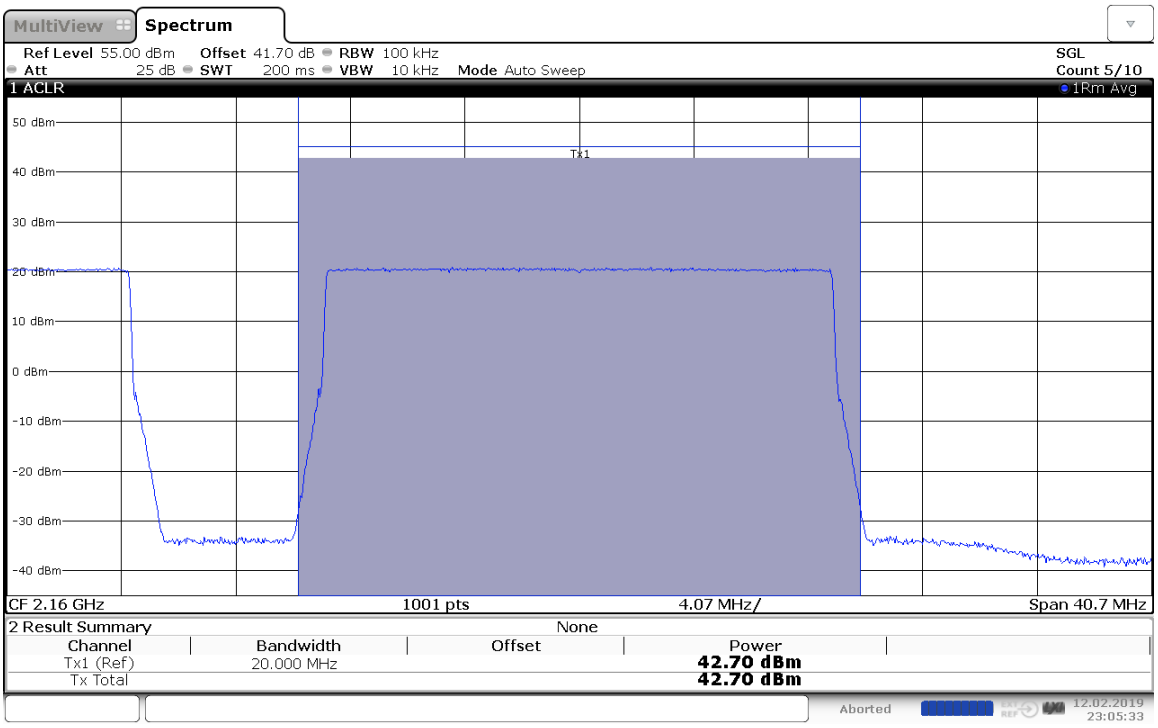
20M+20M -2160MHz-Port 1~4:



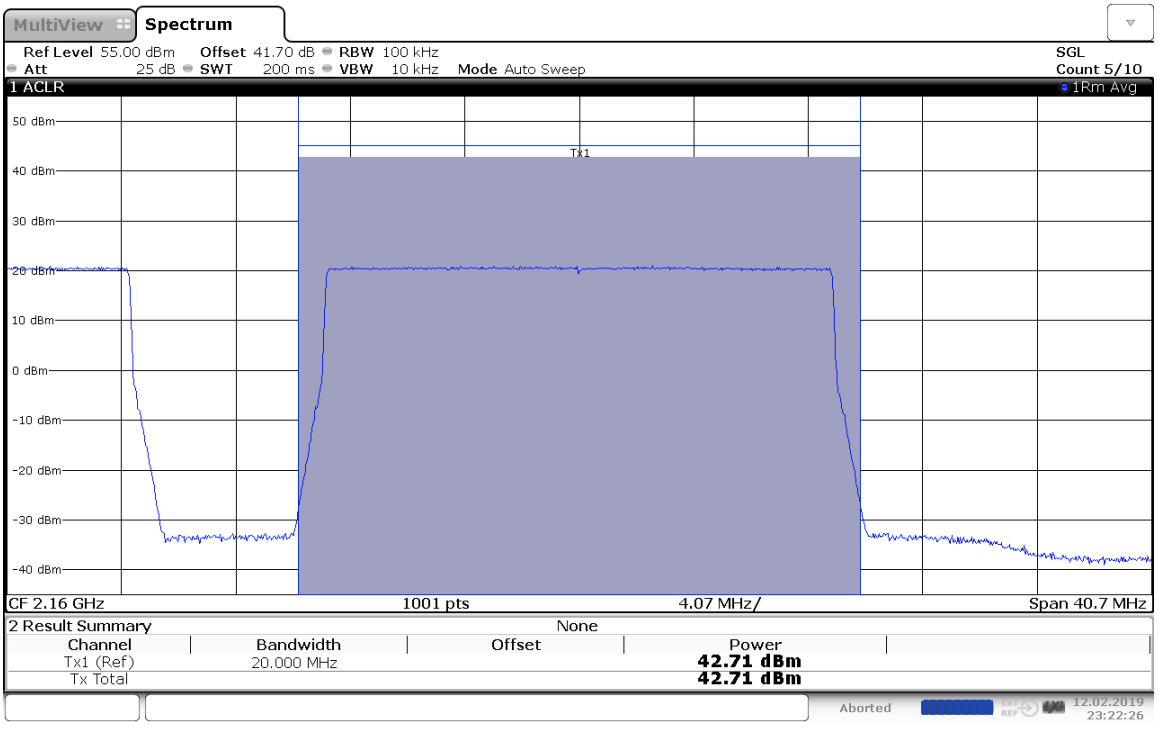

**22:31:55 12.02.2019**




**22:48:46 12.02.2019**




**23:05:33 12.02.2019**



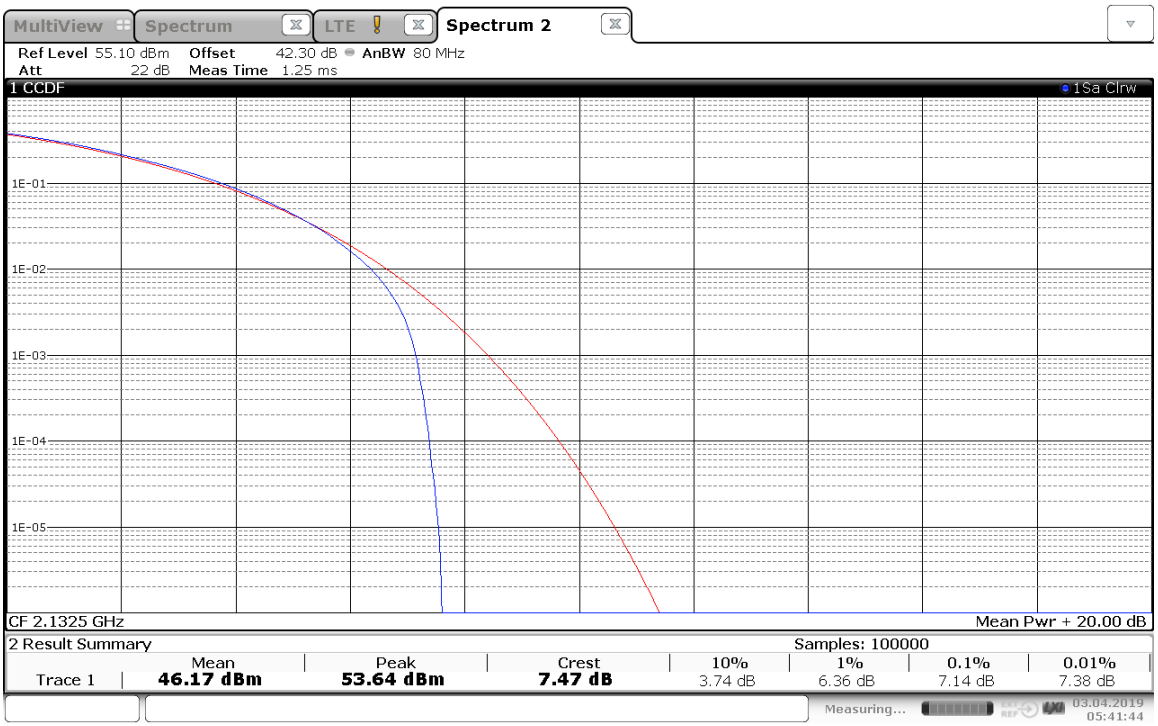

**23:22:26 12.02.2019**

**Dual Carrier_PAR:**

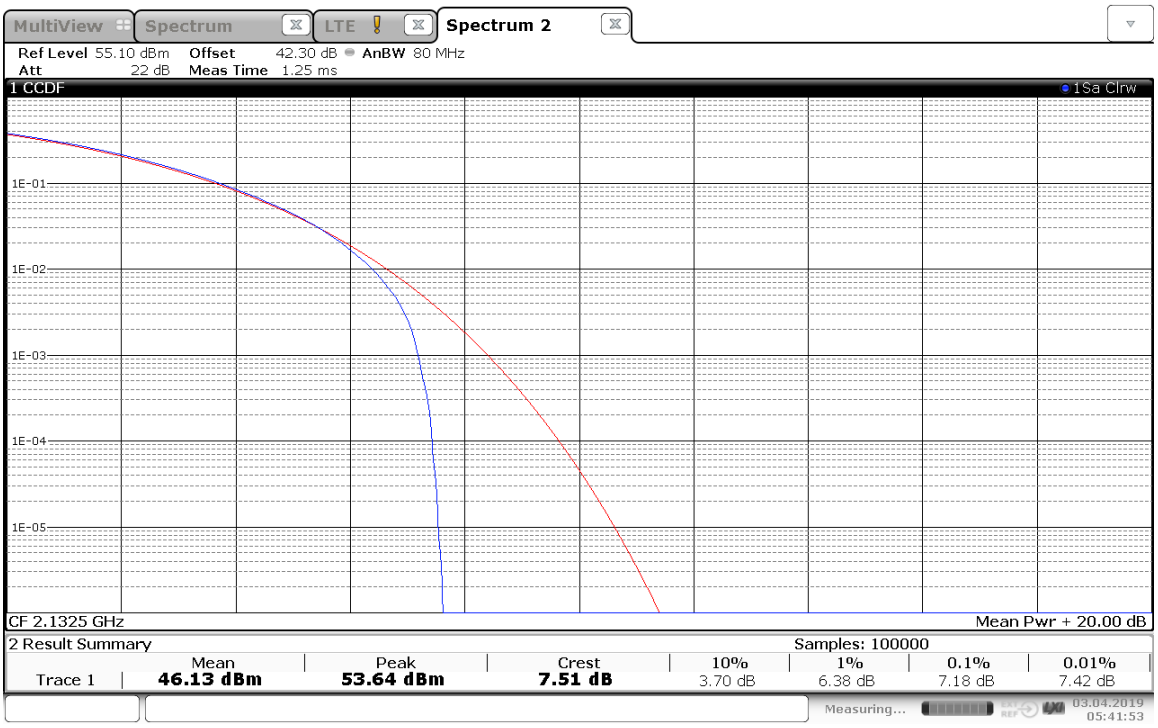
Channel Bandwidth :5M+5M 2112.5MHz & 2152.5MHz)

| Port | Center Freq. (MHz) | PAR in dB |
|---|---|---|
| 1 | 2112.5MHz & 2152.5MHz | 7.47 |
| 2 | | 7.51 |
| 3 | | 7.52 |
| 4 | | 7.63 |

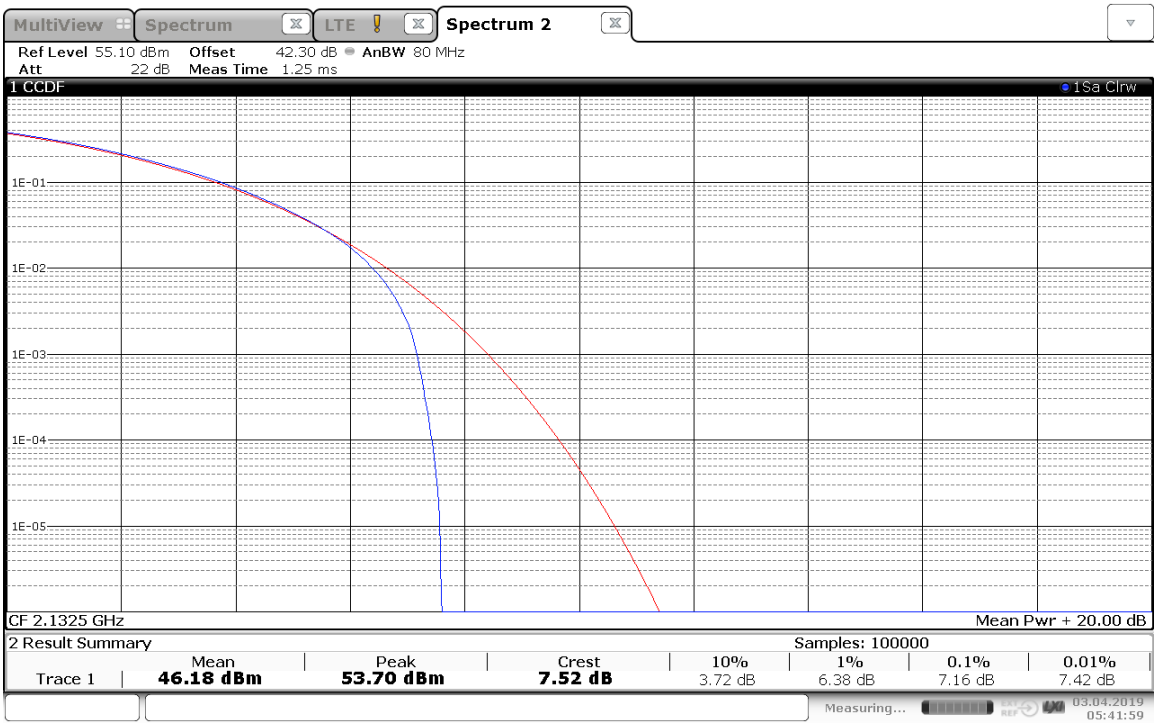
5M+5M -2112.5MHz & 2152.5MHz-Port 1~4:



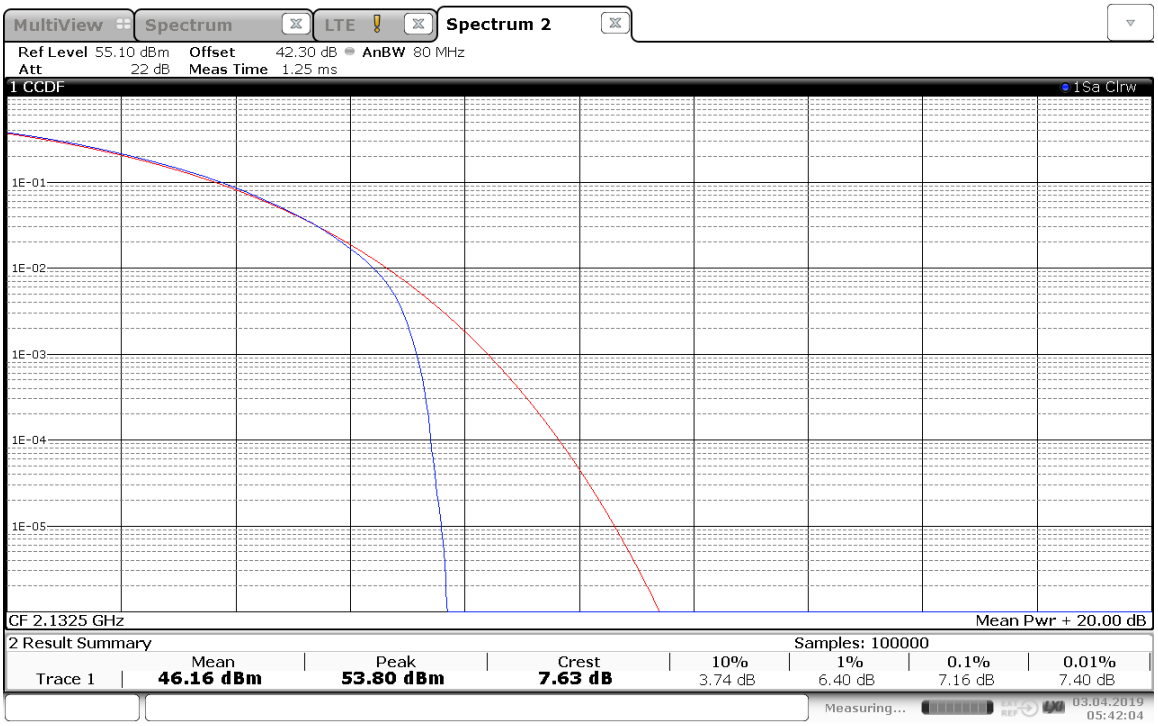

**05:41:45 03.04.2019**




**05:41:53 03.04.2019**




**05:42:00 03.04.2019**

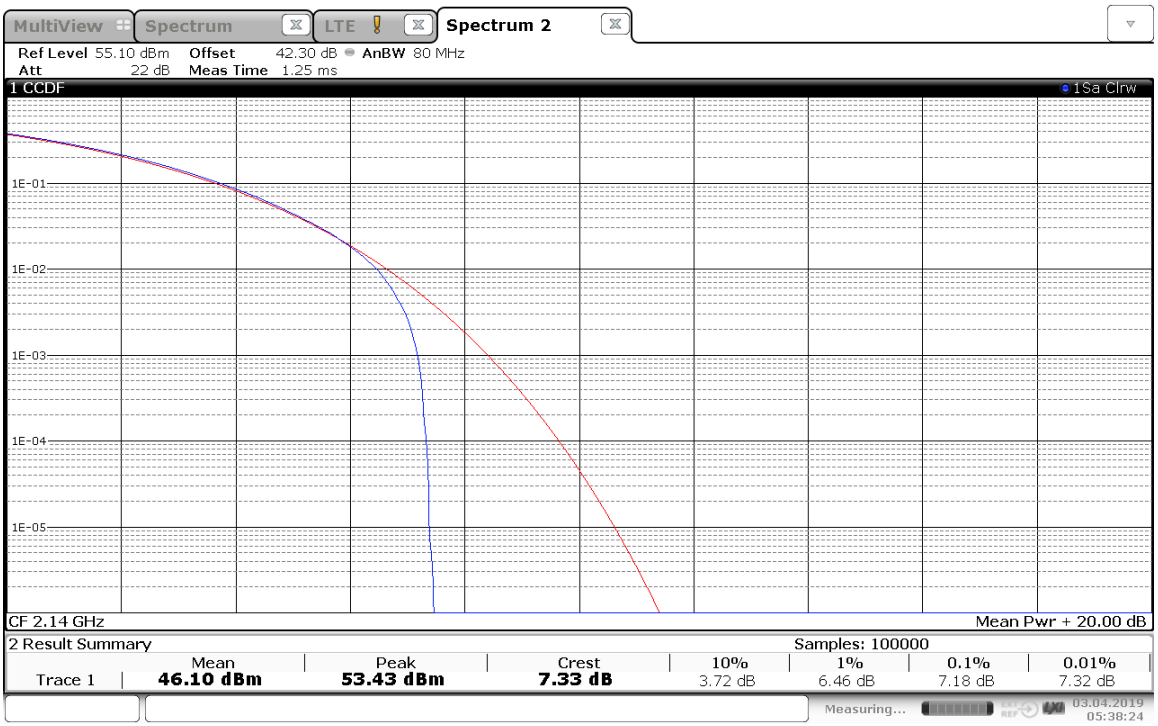



**05:42:05 03.04.2019**

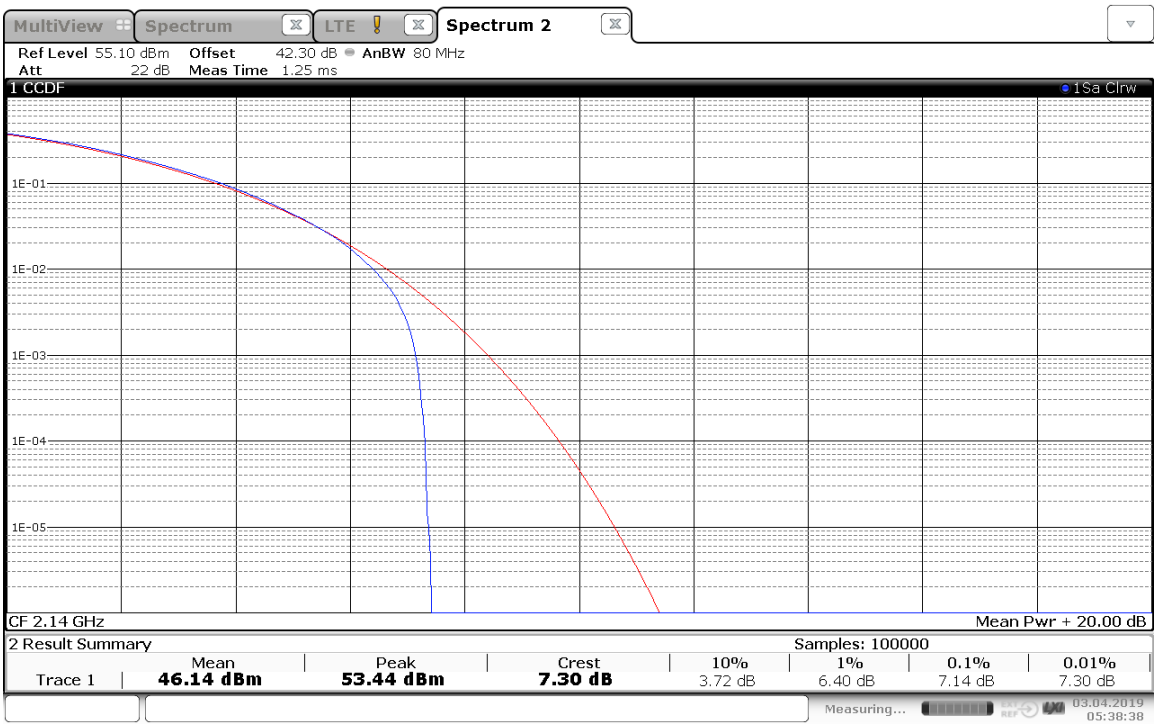
Channel Bandwidth :5M+5M(2120MHz & 2160MHz)

| Port | Center Freq. (MHz) | PAR in dB |
|---|---|---|
| 1 | 2120MHz & 2160MHz | 7.33 |
| 2 | | 7.30 |
| 3 | | 7.35 |
| 4 | | 7.37 |

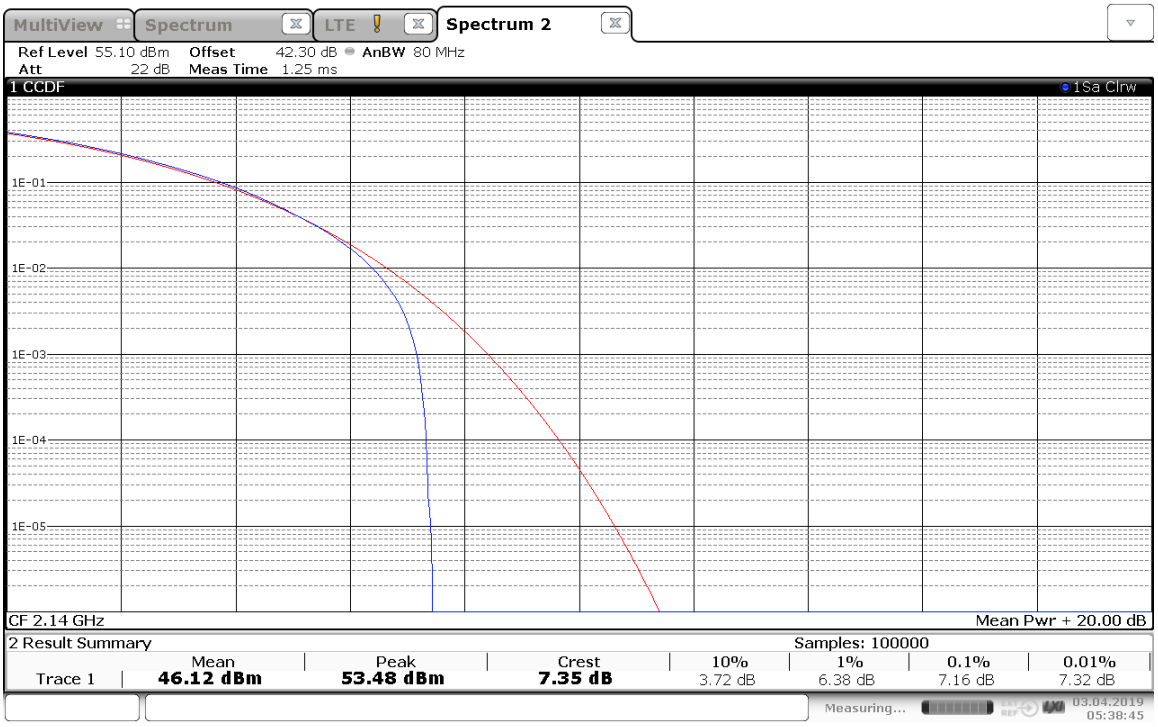
5M+5M -2120MHz & 2160MHz-Port 1~4:



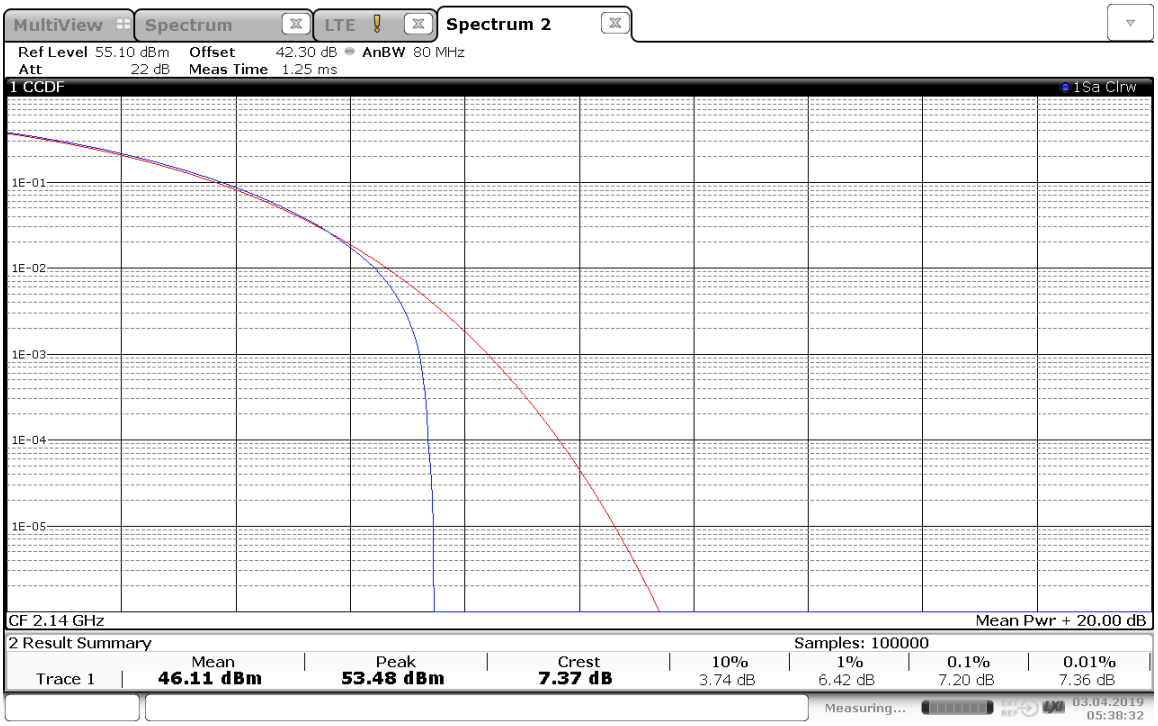

**05:38:25 03.04.2019**




**05:38:39 03.04.2019**




**05:38:45 03.04.2019**

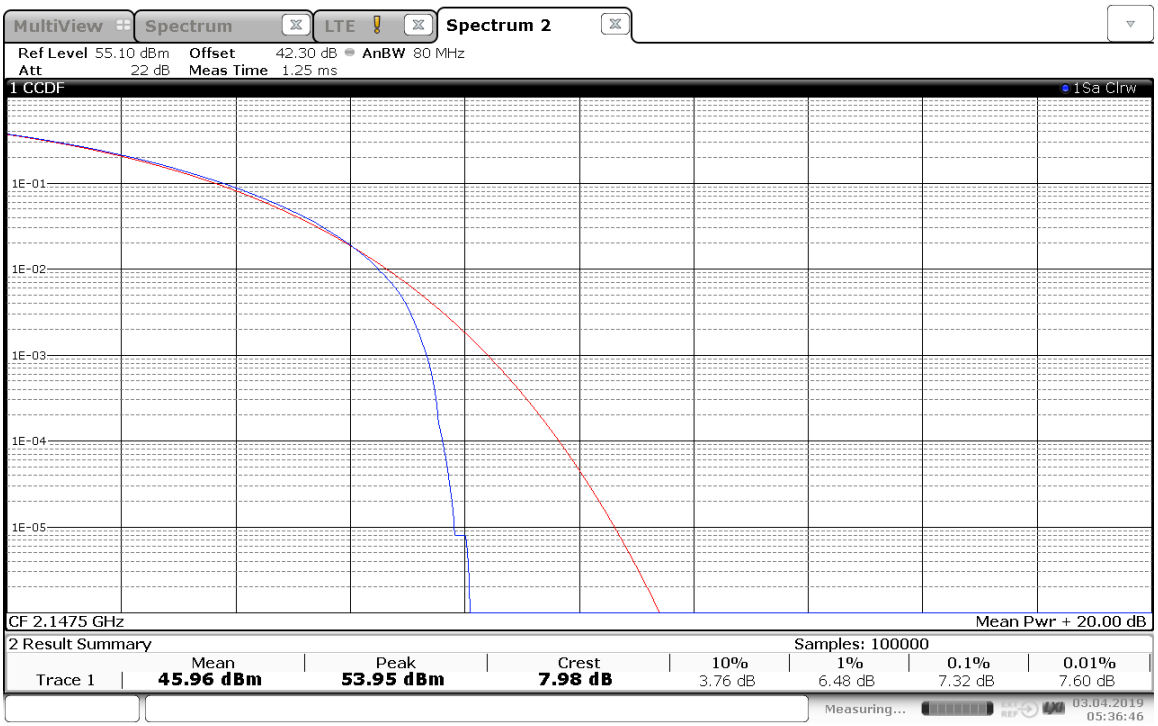



**05:38:33 03.04.2019**

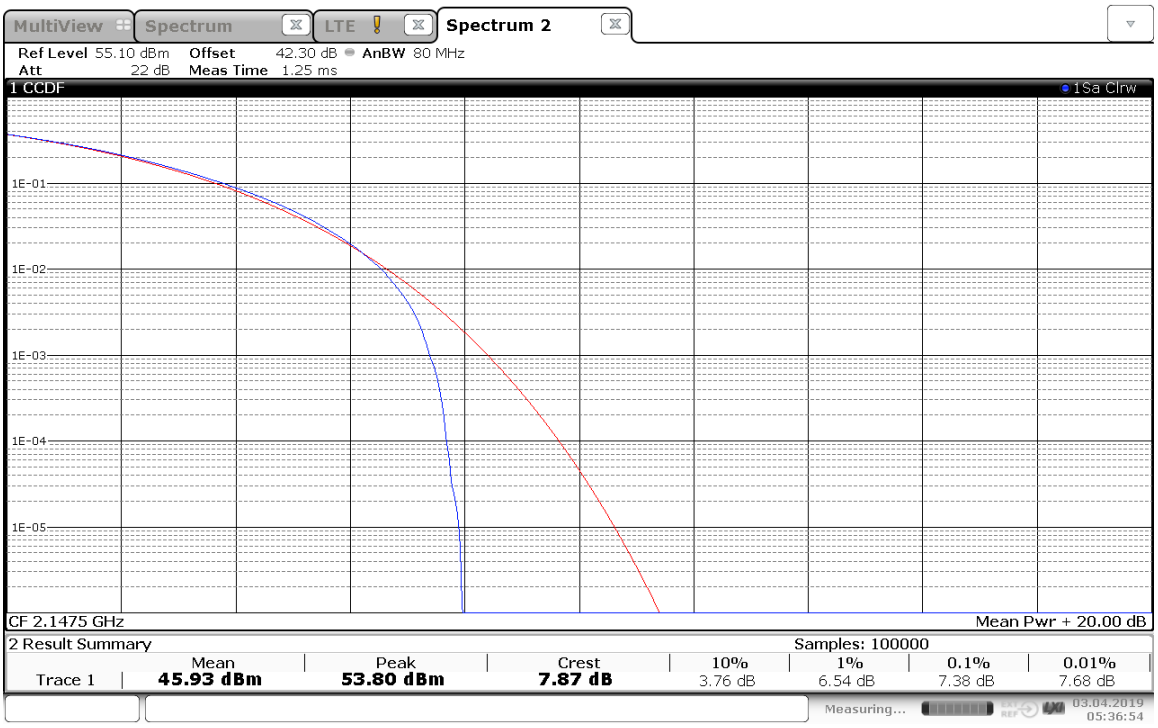
Channel Bandwidth :5M+5M(2127.5MHz & 2167.5MHz)

| Port | Center Freq. (MHz) | PAR in dB |
|---|---|---|
| 1 | 2127.5MHz & 2167.5MHz | 7.98 |
| 2 | | 7.87 |
| 3 | | 7.80 |
| 4 | | 7.80 |

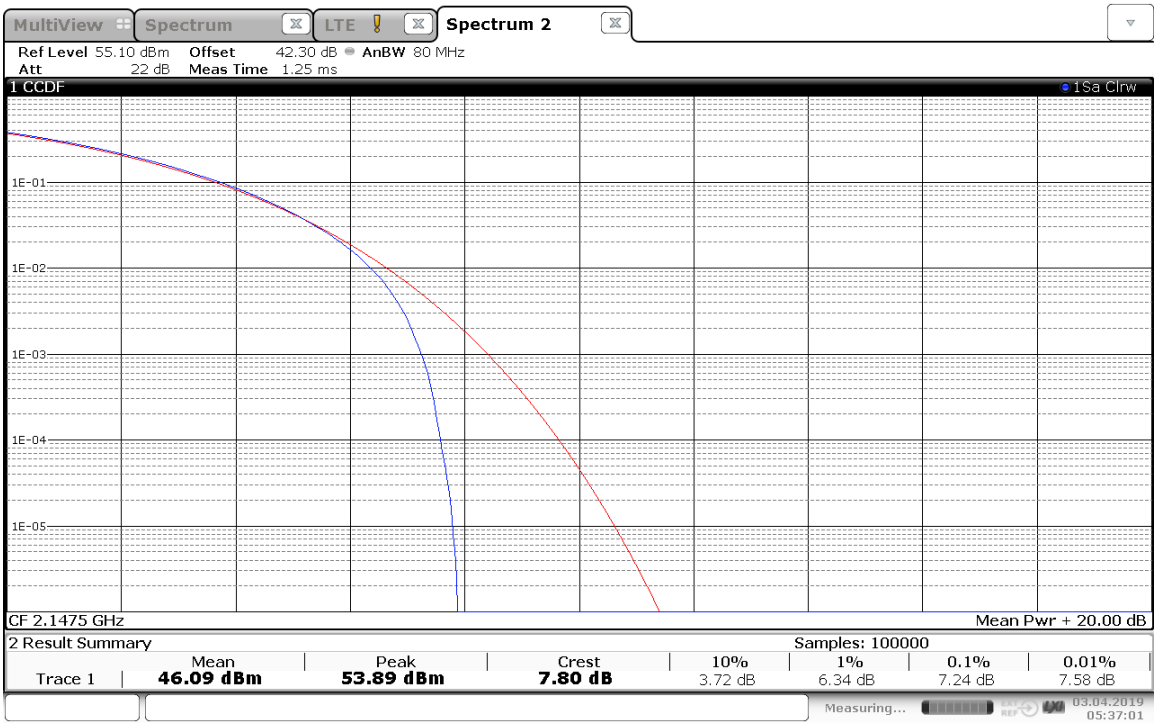
5M+5M -2127.5MHz & 2167.5MHz-Port 1~4:



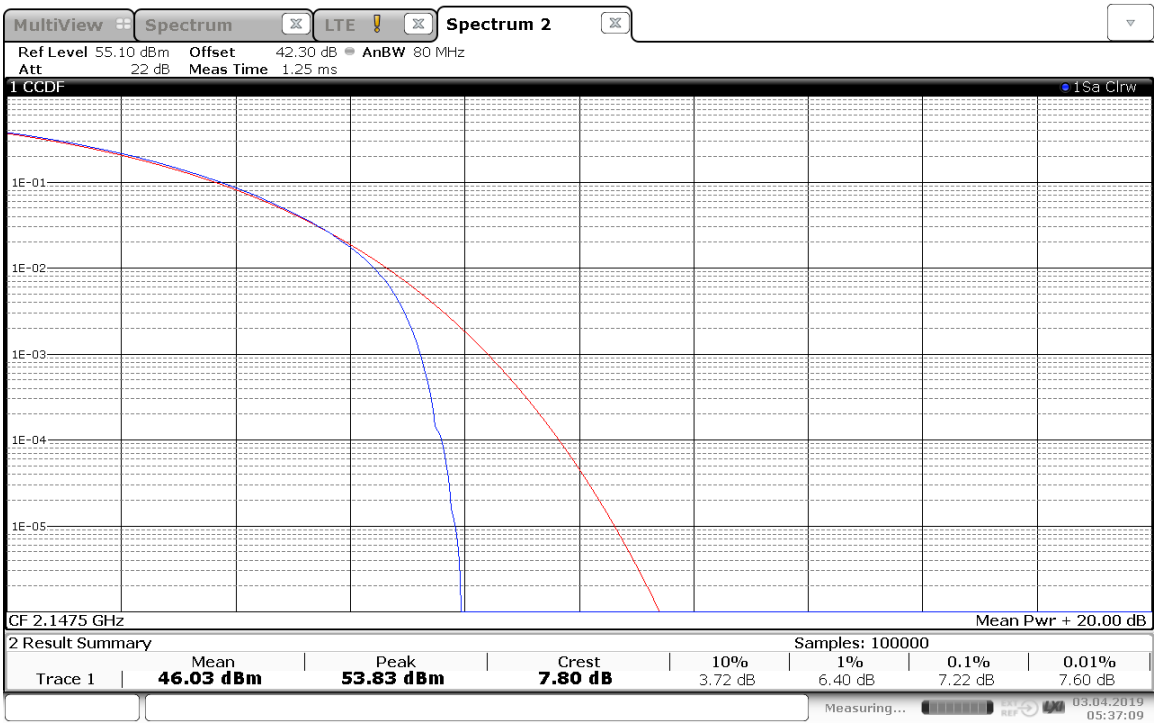

**05:36:46 03.04.2019**




**05:36:54 03.04.2019**




**05:37:02 03.04.2019**

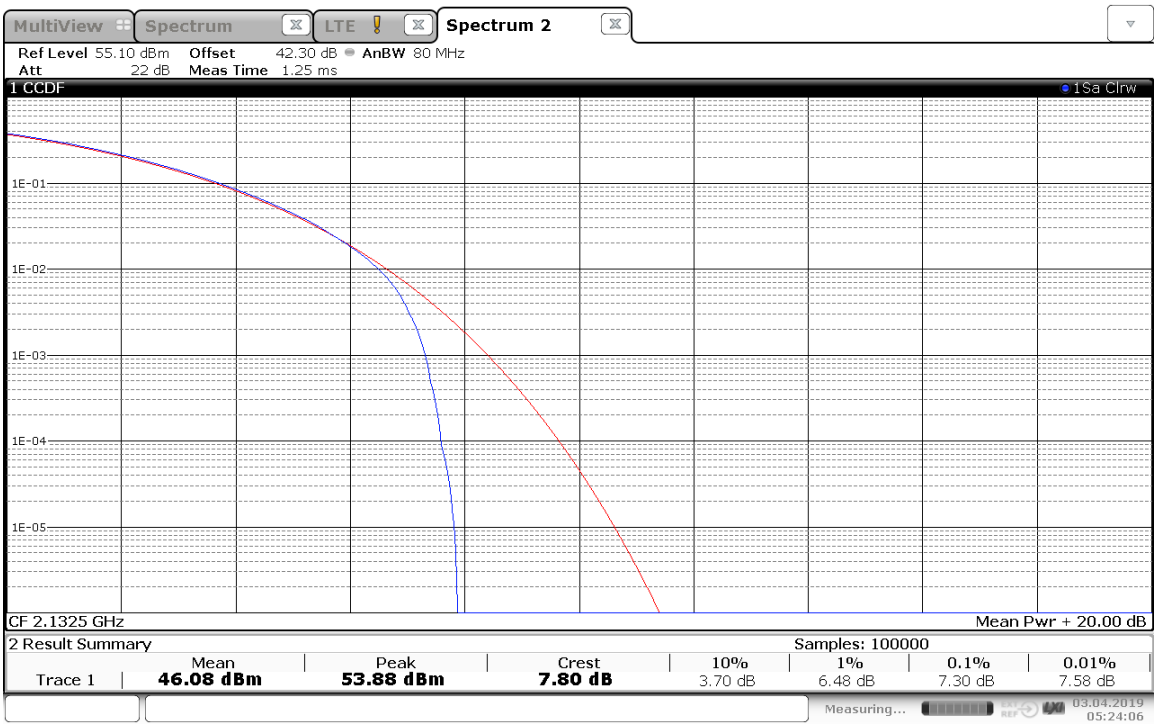



**05:37:10 03.04.2019**

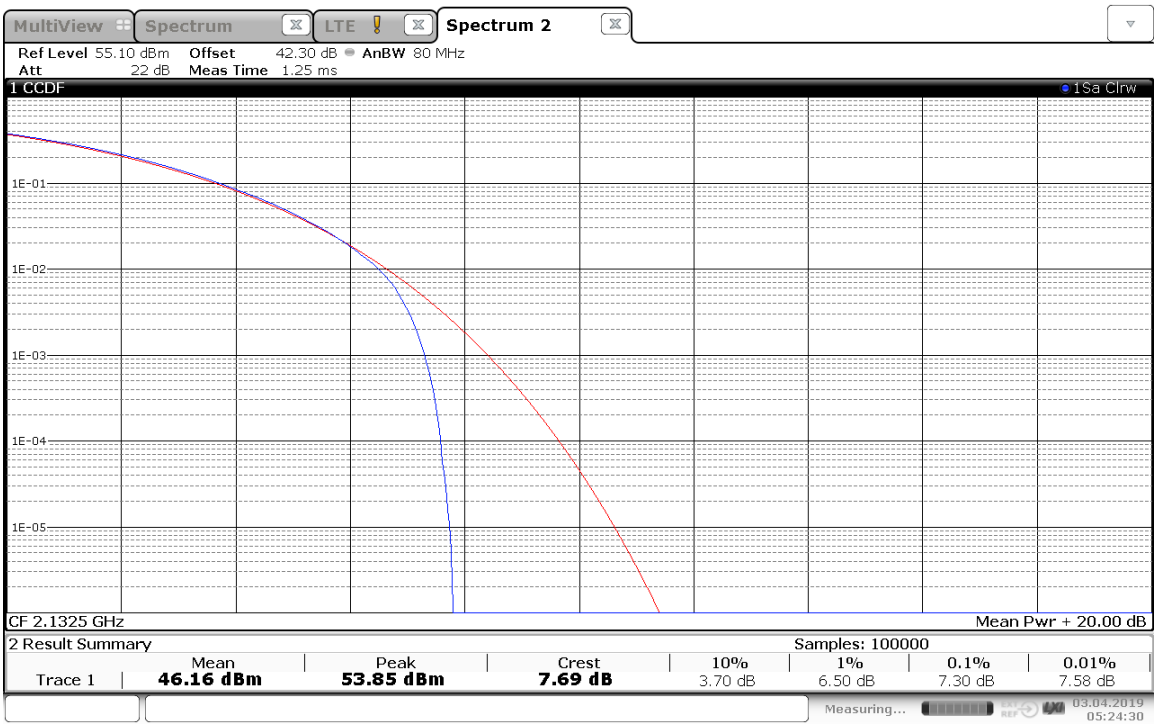
Channel Bandwidth :20M+20M(2120MHz &2145MHz)

| Port | Center Freq. (MHz) | PAR in dB |
|---|---|---|
| 1 | 2120MHz &2145MHz | 7.80 |
| 2 | | 7.69 |
| 3 | | 7.97 |
| 4 | | 8.04 |

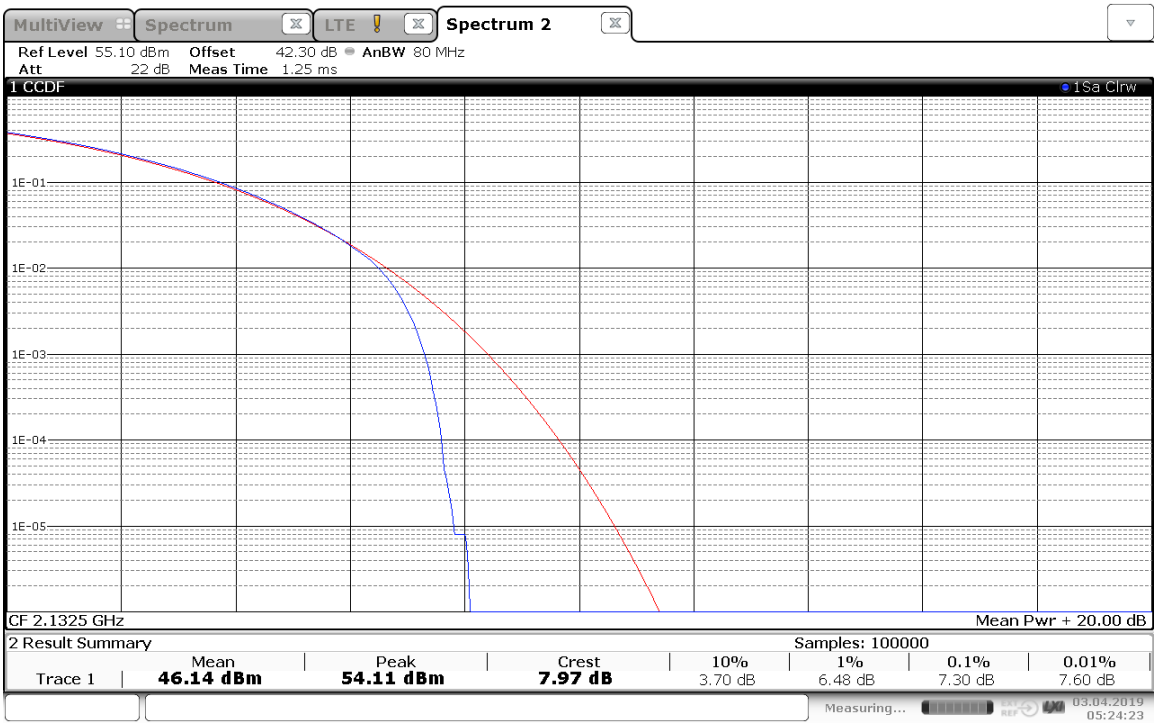
20M+20M -2120MHz &2145MHz-Port 1~4:



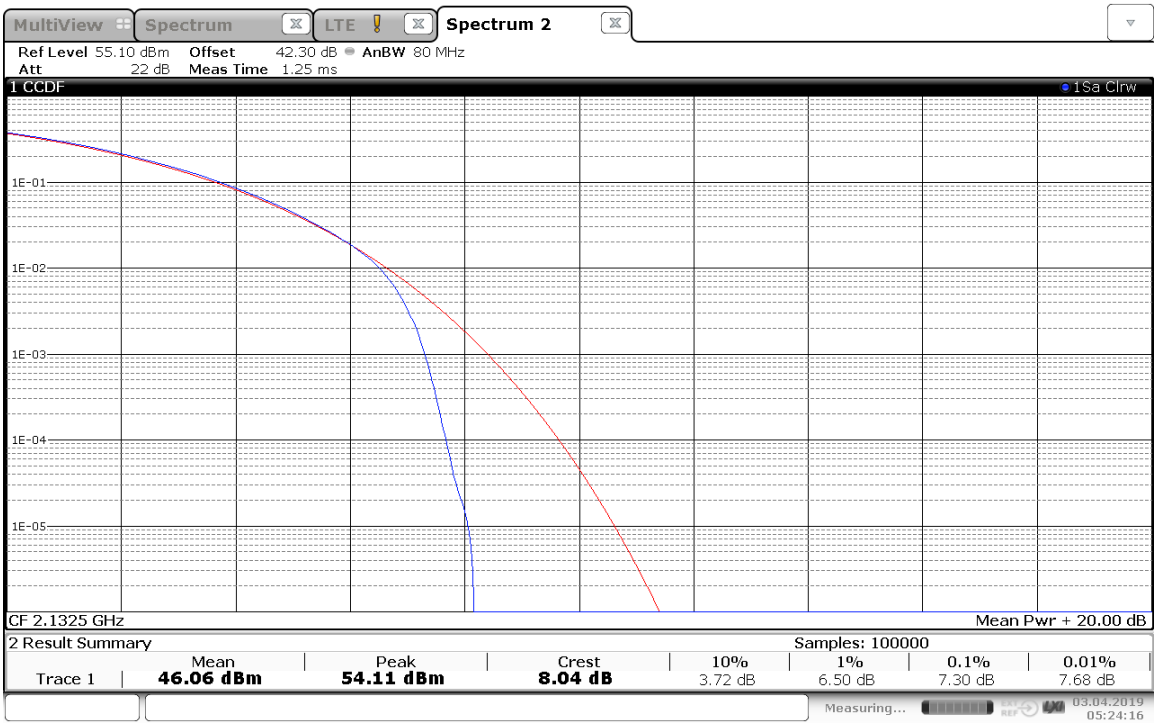

**05:24:07 03.04.2019**




**05:24:30 03.04.2019**




**05:24:23 03.04.2019**

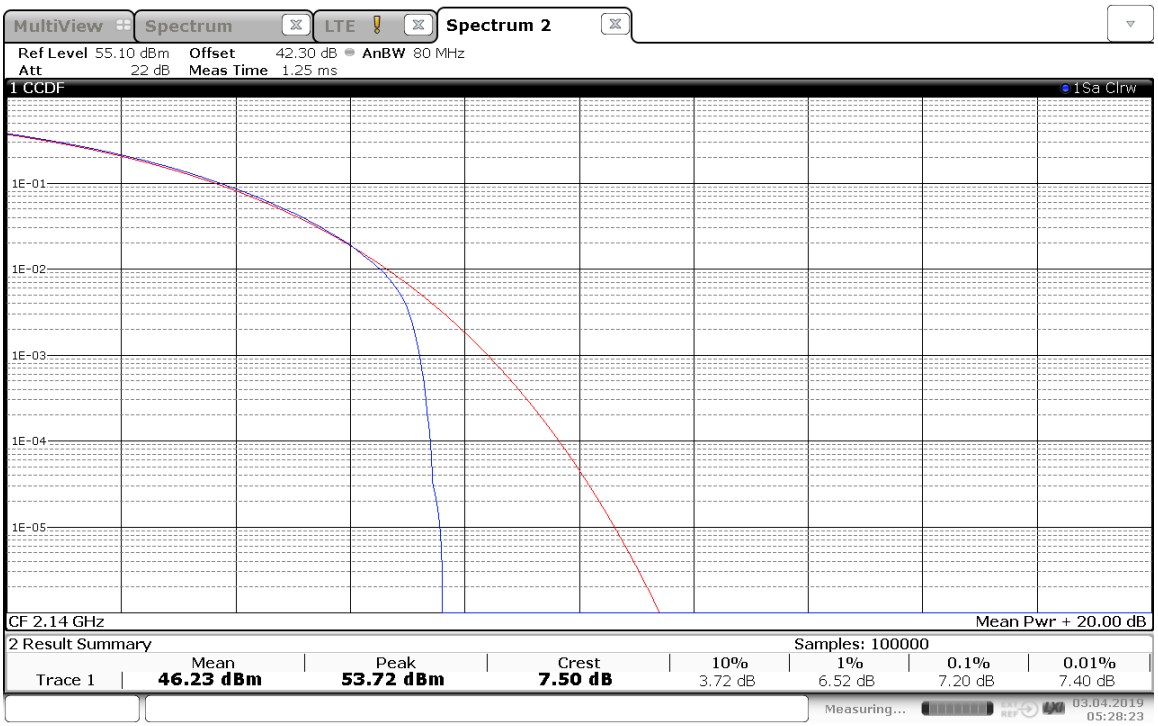



**05:24:16 03.04.2019**

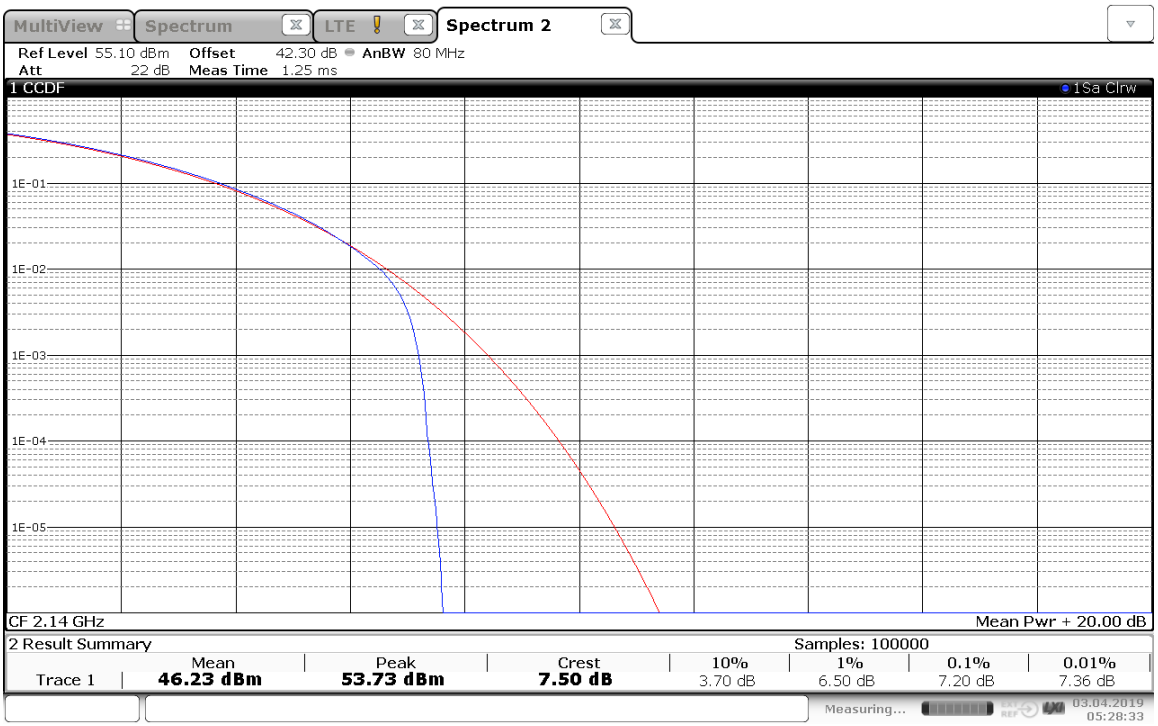
Channel Bandwidth :20M+20M(2127.5MHz & 2152.5MHz)

| Port | Center Freq. (MHz) | PAR in dB |
|---|---|---|
| 1 | 2127.5MHz & 2152.5MHz | 7.50 |
| 2 | | 7.50 |
| 3 | | 7.48 |
| 4 | | 7.60 |

20M+20M -2127.5MHz & 2152.5MHz-Port 1~4:




05:28:24 03.04.2019

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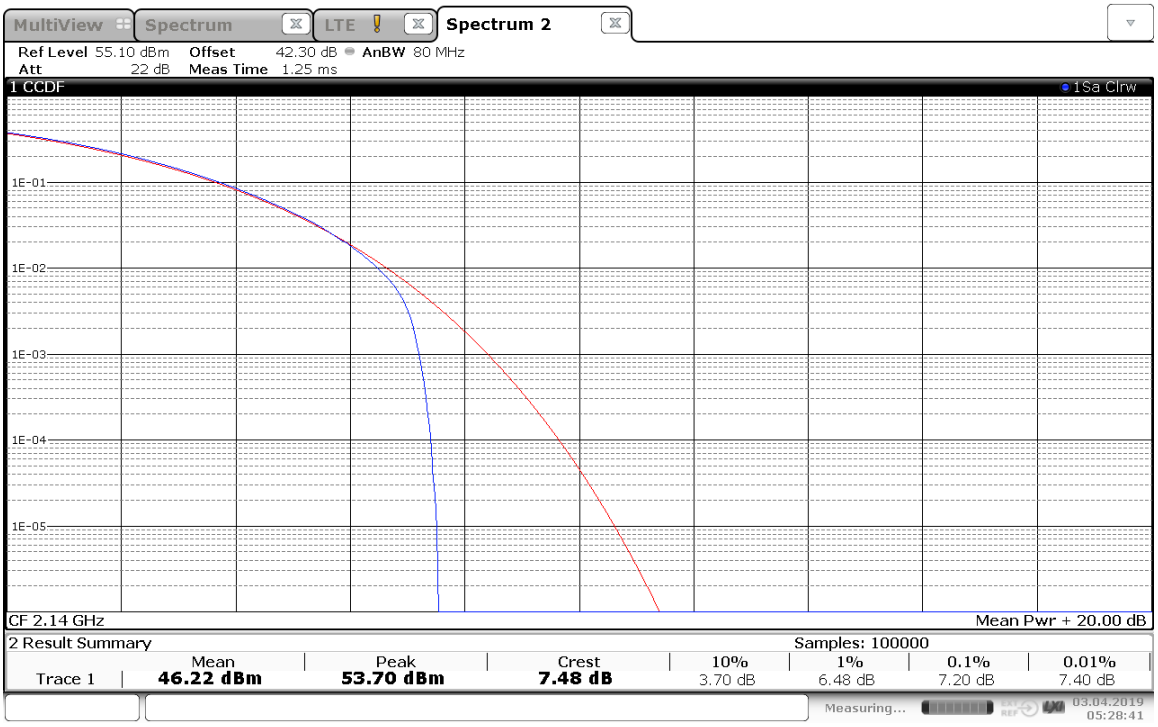


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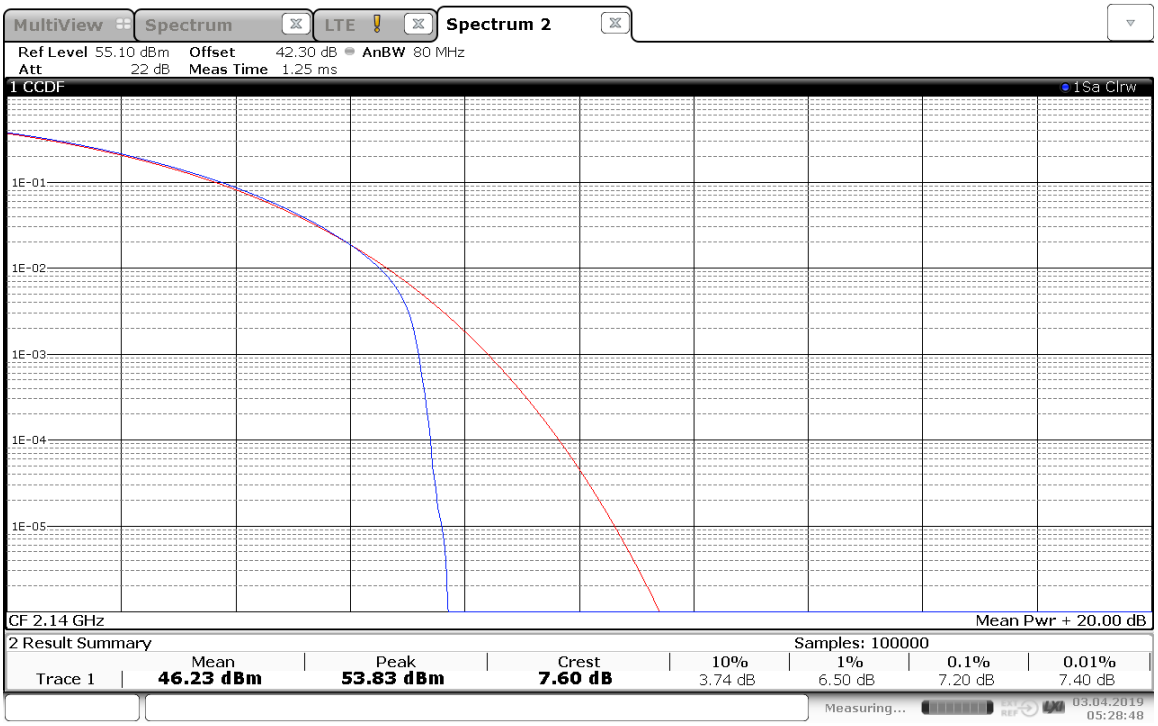
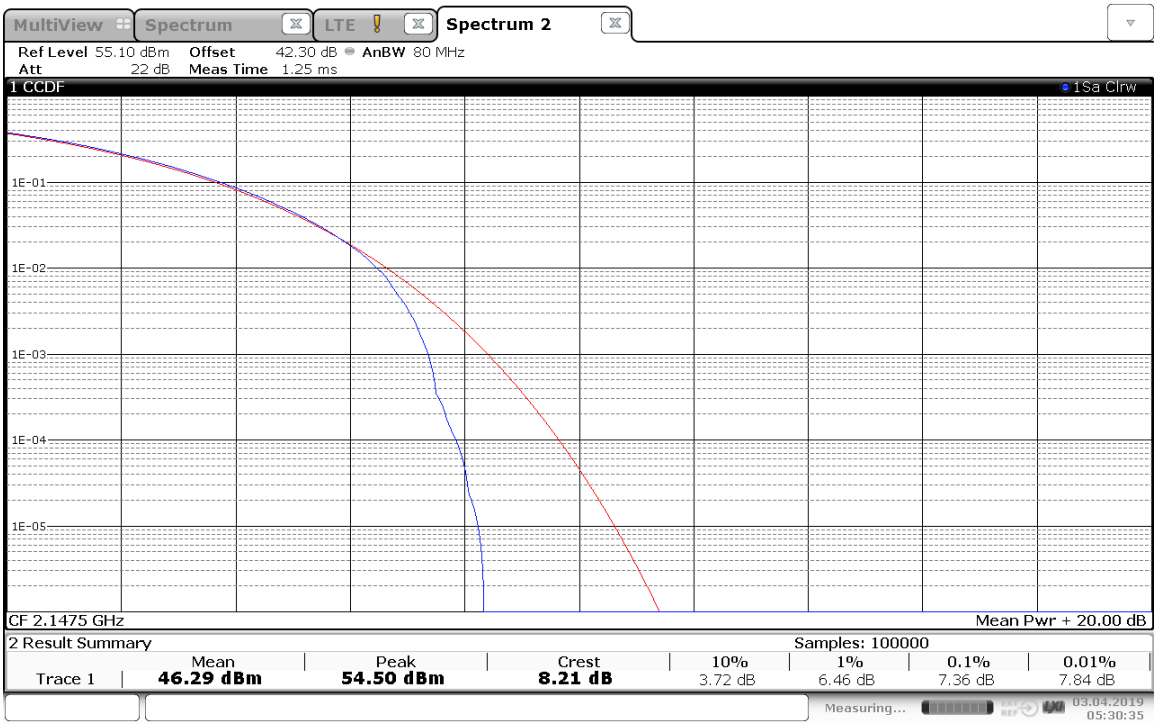



**05:28:49 03.04.2019**

Channel Bandwidth :20M+20M(2135MHz & 2160MHz)

| Port | Center Freq. (MHz) | PAR in dB |
|---|---|---|
| 1 | 2135MHz & 2160MHz | 8.21 |
| 2 | | 8.16 |
| 3 | | 8.20 |
| 4 | | 8.20 |

20M+20M -2135MHz & 2160MHz-Port 1~4:

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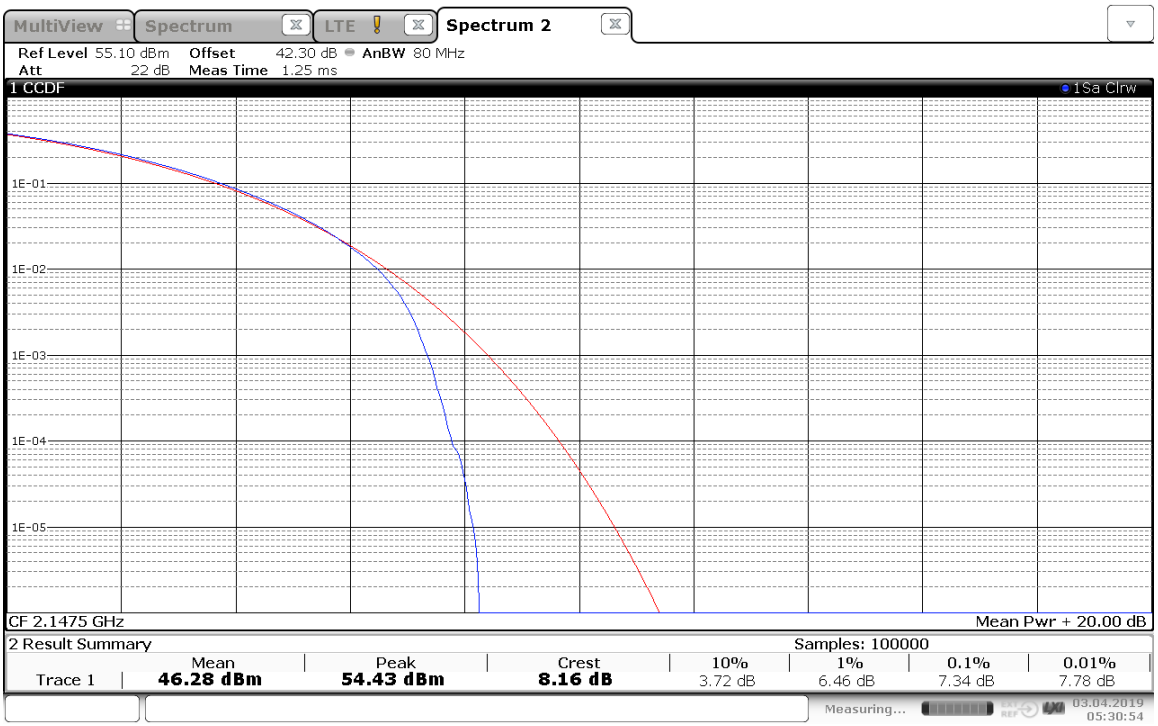


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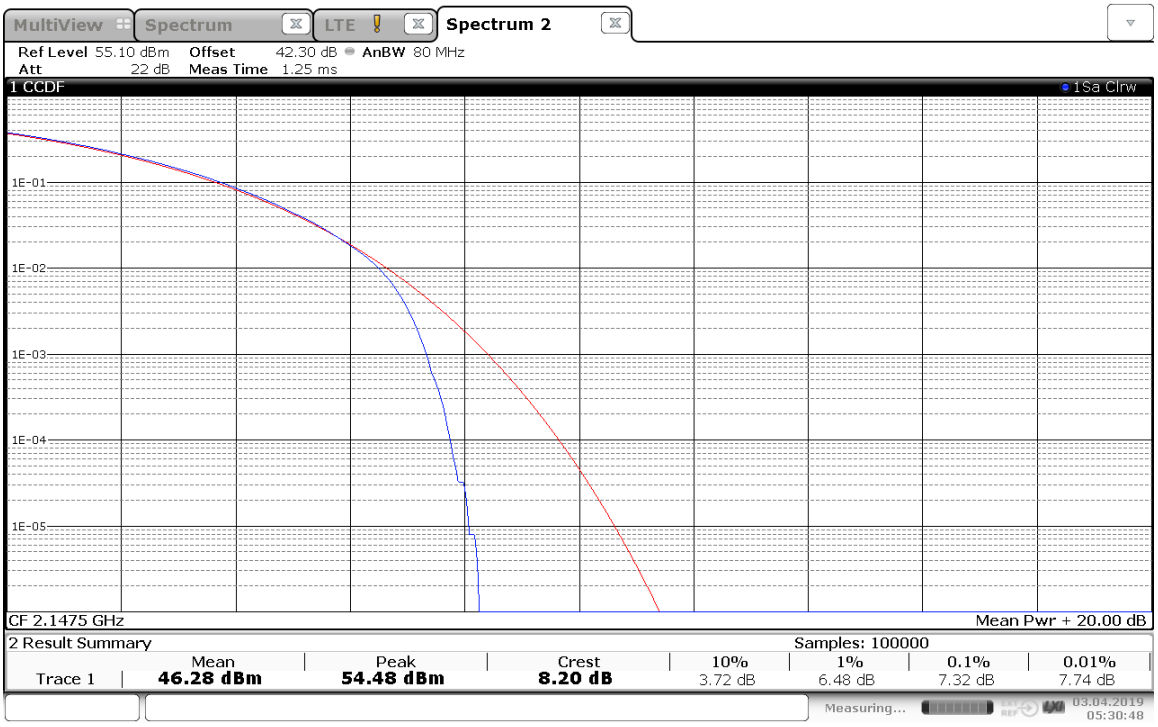


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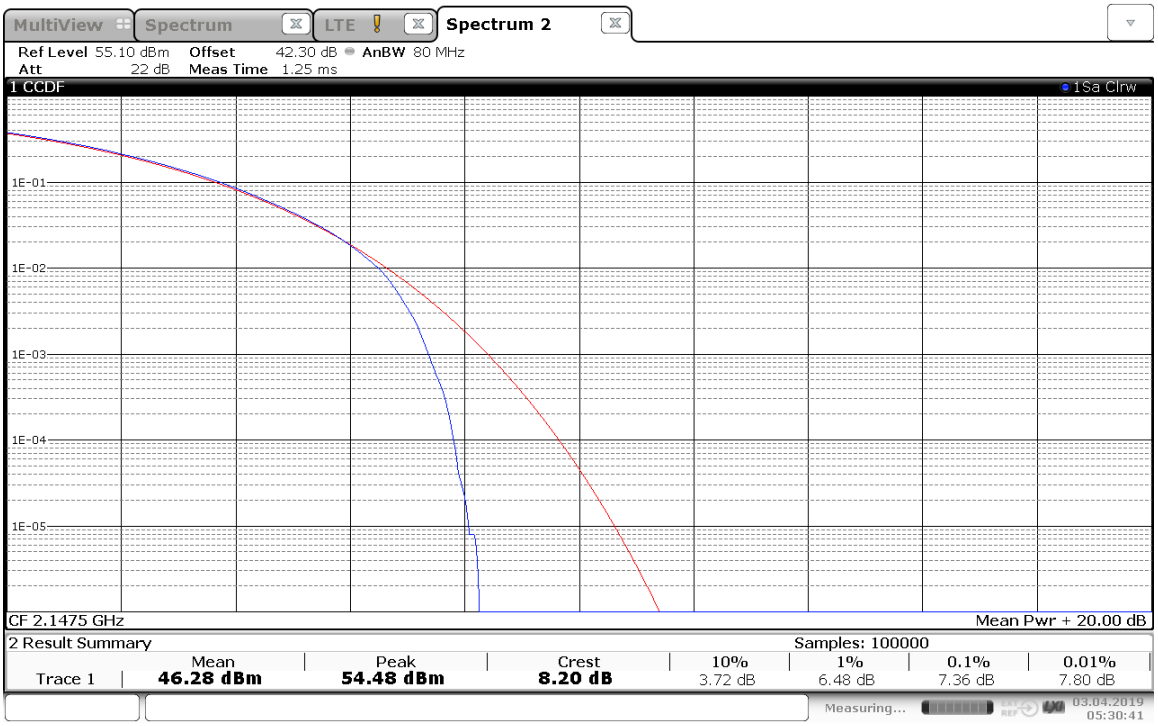


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