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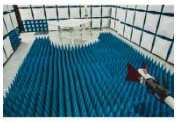

MEASUREMENT REPORT
FCC Part 30 5G mmWave

Applicant Name:
Samsung Electronics Co., Ltd.
129, Samsimg-ro,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:
10/27/2020 – 11/18/2020
Test Site/Location:
PCTEST KOREA Lab. Yongin-si, Gyeonggi-do, Korea
Test Report Serial No.:
8K20092801-02-R4.A3L

FCC ID:	**A3LAT1K01-A10**
APPLICANT:	**Samsung Electronics Co., Ltd.**

Application Type:	Class II Permissive Change
Model:	AT1K01-A10
EUT Type:	AU(AT1K01)
FCC Classification:	Part 30 Fixed Transmitter (5GB)
Test Procedure(s):	ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 842590 D01 v01r01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

This revised Test Report (S/N: 8K20092801-02-R4.A3L) supersedes and replaces the previously issued test report (S/N: 8K20092801-02-R3.A3L) on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Prepared by

Reviewed by

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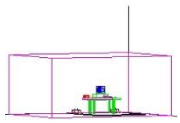
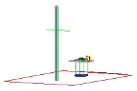


MEASUREMENT REPORT
FCC Part 30



Antenna	Bandwidth (MHz)	CCs Active	Band	FCC Rule Part	Tx Frequency (MHz)	EIRP Density		Emission Designator	Modulation
						Max. Power (W/100MHz)	Max. Power (dBm/100MHz)		
A	50	1	n261	30	27500 - 28350	85.21	49.30	46M5G7D	QPSK
A	50	1	n261	30	27500 - 28350	85.59	49.32	46M5W7D	16QAM
A	50	1	n261	30	27500 - 28350	86.42	49.37	46M4W7D	64QAM
A	50	2	n261	30	27500 - 28350	87.19	49.40	95M4G7D	QPSK
A	50	2	n261	30	27500 - 28350	87.30	49.41	95M5W7D	16QAM
A	50	2	n261	30	27500 - 28350	88.68	49.48	95M4W7D	64QAM
B	50	1	n261	30	27500 - 28350	76.09	48.81	46M3G7D	QPSK
B	50	1	n261	30	27500 - 28350	76.33	48.83	46M4W7D	16QAM
B	50	1	n261	30	27500 - 28350	76.94	48.86	46M6W7D	64QAM
B	50	2	n261	30	27500 - 28350	74.18	48.70	95M5G7D	QPSK
B	50	2	n261	30	27500 - 28350	76.08	48.81	95M4W7D	16QAM
B	50	2	n261	30	27500 - 28350	77.23	48.88	95M5W7D	64QAM
C	50	1	n261	30	27500 - 28350	81.45	49.11	46M4G7D	QPSK
C	50	1	n261	30	27500 - 28350	76.32	48.83	46M4W7D	16QAM
C	50	1	n261	30	27500 - 28350	77.98	48.92	46M4W7D	64QAM
C	50	2	n261	30	27500 - 28350	83.22	49.20	95M5G7D	QPSK
C	50	2	n261	30	27500 - 28350	81.53	49.11	95M5W7D	16QAM
C	50	2	n261	30	27500 - 28350	81.04	49.09	95M6W7D	64QAM
D	50	1	n261	30	27500 - 28350	73.64	48.67	46M5G7D	QPSK
D	50	1	n261	30	27500 - 28350	72.67	48.61	46M5W7D	16QAM
D	50	1	n261	30	27500 - 28350	73.35	48.65	46M7W7D	64QAM
D	50	2	n261	30	27500 - 28350	76.50	48.84	95M6G7D	QPSK
D	50	2	n261	30	27500 - 28350	76.48	48.84	95M4W7D	16QAM
D	50	2	n261	30	27500 - 28350	76.58	48.84	95M6W7D	64QAM

EUT Overview for Antenna A, B, C, and D

Antenna	Bandwidth (MHz)	CCs Active	Band	FCC Rule Part	Tx Frequency (MHz)	EIRP Density		Emission Designator	Modulation
						Max. Power (W/100MHz)	Max. Power (dBm/100MHz)		
A+C	50	1	n261	30	27500 - 28350	166.66	52.22	46M5G7D	QPSK
A+C	50	1	n261	30	27500 - 28350	161.90	52.09	46M5W7D	16QAM
A+C	50	1	n261	30	27500 - 28350	164.39	52.16	46M4W7D	64QAM
A+C	50	2	n261	30	27500 - 28350	170.17	52.31	95M5G7D	QPSK
A+C	50	2	n261	30	27500 - 28350	168.31	52.26	95M5W7D	16QAM
A+C	50	2	n261	30	27500 - 28350	169.71	52.30	95M6W7D	64QAM
B+D	50	1	n261	30	27500 - 28350	149.73	51.75	46M5G7D	QPSK
B+D	50	1	n261	30	27500 - 28350	149.00	51.73	46M5W7D	16QAM
B+D	50	1	n261	30	27500 - 28350	150.29	51.77	46M7W7D	64QAM
B+D	50	2	n261	30	27500 - 28350	150.68	51.78	95M6G7D	QPSK
B+D	50	2	n261	30	27500 - 28350	152.46	51.83	95M4W7D	16QAM
B+D	50	2	n261	30	27500 - 28350	153.81	51.87	95M6W7D	64QAM

EUT Overview for Antenna A + C and B + D

Antenna	Bandwidth (MHz)	CCs Active	Band	FCC Rule Part	Tx Frequency (MHz)	EIRP Density		Emission Designator	Modulation
						Max. Power (W/100MHz)	Max. Power (dBm/100MHz)		
A+B+C+D	50	1	n261	30	27500 - 28350	316.39	55.00	46M5G7D	QPSK
A+B+C+D	50	1	n261	30	27500 - 28350	310.91	54.93	46M5W7D	16QAM
A+B+C+D	50	1	n261	30	27500 - 28350	314.68	54.98	46M4W7D	64QAM
A+B+C+D	50	2	n261	30	27500 - 28350	320.85	55.06	95M5G7D	QPSK
A+B+C+D	50	2	n261	30	27500 - 28350	319.89	55.05	95M5W7D	16QAM
A+B+C+D	50	2	n261	30	27500 - 28350	317.14	55.01	95M6W7D	64QAM

EUT Overview for Antenna A + B + C + D

1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2 PCTEST KOREA Test Location

These measurement tests were conducted at the PCTEST KOREA CO., LTD. facility located at (#1407) 13, Heungdeok 1-ro, Giheung-gu, Yongin-si, Gyeonggi-do 16954, Korea.

1.3 Test Facility / Accreditations

Measurements were performed at PCTEST KOREA Lab located in Yongin-si, Gyeonggi, Korea.

- PCTEST KOREA is an ISO 17025:2005 accredited test facility under the National Institute of Standards and Technology (NIST) with Certificate number 600143-0 for Specific Absorption Rate (SAR), where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.

- PCTEST KOREA facility is accredited and designated in accordance with the provision of Radio Wave Act and International Standard ISO/IEC 17025:2017 under the National Radio Research Agency.
  - Designation Number: KR0169
  - Test Firm Registration Number: 417945

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung 5G Access Unit FCC ID: A3LAT1K01-A10**. The test data contained in this report pertains only to the emissions due to the EUT's 5G mmWave function.

The EUT supports both 50 MHz bandwidth and 100 MHz bandwidth. The EUT supports multiple and mixed component carrier configuration which also supports for contiguous and non-contiguous transmit condition.

The present document shall be constructed per the guidelines found in KDB 484596 D01 "Referencing Test Data" v01 which can be referred from 10.0 Appendix KDB 484596.

The EUT operates as a 4X4 MIMO system that consists of four antenna arrays (denoted herein as "Antenna A", "Antenna B", "Antenna C" and "Antenna D". Each of the four antenna arrays has 256 antenna elements for a total of 1024 antenna elements. Of the 4 antenna arrays, Antenna A and Antenna C have the same polarization (135 degrees from horizontal) and Antenna B and Antenna D have the same polarization (45 degrees from horizontal). Beamforming is used with Antenna A and Antenna C and it is also used with Antenna B and Antenna D. Signal correlation is possible between the outputs of all four antenna arrays.

The unit is powered by a nominal DC voltage source.

See Section 3.2 for the antenna polarization of the 5G Access Unit and the measurement antenna.

Test Device Serial No.: S616125025

2.2 Device Capabilities

This device contains the following capabilities:

5G NR (n261) with multiple configurations of operation as below:
50 MHz bandwidth with 1 or 2 component carrier.
100 MHz bandwidth with 1 to 8 component carrier
Variation of 50 MHz bandwidth + 100 MHz mixed component carrier.
The device is supports QPSK, 16QAM, and 64QAM of CP-OFDM.

2.3 Test Configuration

The EUT was tested per the guidance of KDB 842590 D01 v01r01 and ANSI C63.26-2015. See Section 7.0 of this test report for a description of the radiated tests.

2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The measurement procedures described in the document titled "American National Standard for Compliance Testing of Transmitter Used in Licensed Radio Service" (ANSI C63.26-2015) and the guidance provided in KDB 842590 D01 v01r01 were used in the measurement of the EUT.

3.2 Radiated Power and Radiated Spurious Emissions

§30.202, §30.203

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for Final measurement and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 8.5 m(L) x 6.1 m(W) x 5.6 m(H) elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1 GHz. For measurements below 1 GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80 cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5 m.

Made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5 m for measurements above 1 GHz.

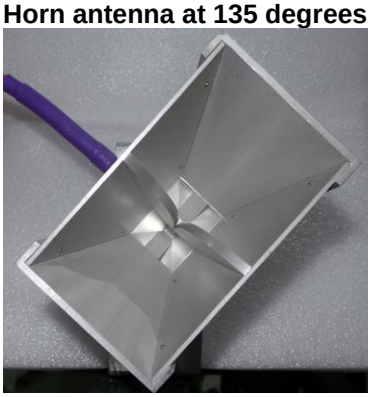
The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable. The measurement antenna is in the far field of the EUT per formula $2D^2/\lambda$ where D is the larger between the dimension of the measurement antenna and the transmitting antenna of the EUT. In this case, "D" is the largest dimension of the measurement antenna. The EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

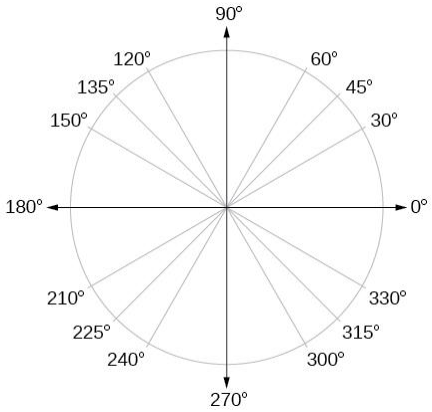
Frequency Range [GHz]	Wavelength [cm]	Far Field Distance [m]	Measurements Distance [m]
18 to 40	0.749	3.19	3.20
40 to 60	0.500	1.39	1.50
60 to 90	0.333	0.91	1.50
90 to 100	0.214	0.58	1.50

Table 3-1. Far-Field Distance & Measurement Distance per Frequency Range

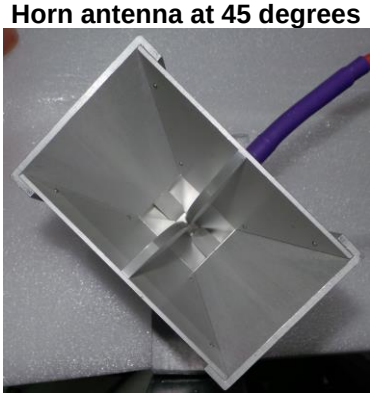
Radiated power levels are investigated with the receive antenna horizontally and vertically polarized. Additionally, the receive antenna was rotated on various angles to investigate worst case emissions on each EUT antenna array. The EUT antenna array polarization and horn antennas angle are denoted as follows:

Horn antenna at 135 degrees

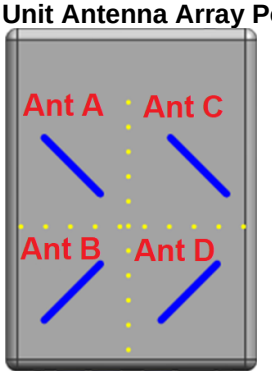




Horn antenna at 45 degrees



5G Access Unit Antenna Array Polarization



The maximized power level is recorded using the spectrum analyzer “Channel Power” function with the integration band set to the emissions’ occupied bandwidth. The EIRP is calculated from the raw power level measured with the spectrum analyzer using the formulas shown below.

Effective Isotropic Radiated Power Sample Calculation

The measured e.i.r.p is converted to E-field in V/m. Then the distance correction is applied before converted back to calculated e.i.r.p.as explained in KDB 971168 D01.

Field Strength [dBμV/m] = Measured Value (dBm) + AFCL (dB/m) + 107

= -13.34 dBm + (39.54 dB/m + 7.56 dB) + 107 = 140.76 dBuV/m

= 10^(140.76/20)/1000000

= 10.91 V/m

e.i.r.p. (dBm) = 10*log(E-Field*D_m)^2/30) + 30 dB

= 10*log(10.91 V/m * 3.20 m)^2/30) + 30 dB

= 42.67 dBm e.i.r.p.

Sample MIMO e.i.r.p. Calculation:

The e.i.r.p at Antenna A, Antenna B, Antenna C and Antenna D were first measured individually. The measured values were then summed in linear power units then converted back to dBm for the co-polarized antennas.

Conversion to linear value = 10^(e.i.r.p/10) = 10^(47.67/10) = 58479 mW

MIMO e.i.r.p. = $e.i.r.p._A + e.i.r.p._C$

= 58479 mW + 53088 mW

= 10*log(111567 mW)

= 50.48 dBm

For summation across all antennas,

MIMO e.i.r.p. = $e.i.r.p._A + e.i.r.p._B + e.i.r.p.c + e.i.r.p._D$

= 58479 mW + 54576 mW + 53088 mW + 52360 mW

= 10*log(218503 mW)

= 53.39 dBm

4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (±dB)
Conducted Bench Top Measurements	2.51
Radiated Disturbance (<1 GHz)	3.29
Radiated Disturbance (>1 GHz)	4.94

5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacture	Model	Description	Cal Date	Cal interval	Cal Due	Serial Number
Rohde & Schwarz	FSW43	Signal & Spectrum Analyzer	09/17/2020	Annual	09/16/2021	101250
KIKISUI	PWR1201ML	DC POWER SUPPLY	05/20/2020	Annual	05/19/2021	ZL000973
SUKSAN TECHNOLOGY	SE-CT-10	Temperature Chamber	09/17/2020	Annual	09/16/2021	191021
Schwarzbeck	VULB9162	Broadband TRILOG Antenna	07/09/2019	Biennial	07/08/2021	9162-217
Sunol sciences	DRH-118	Horn Antenna	08/09/2019	Biennial	08/08/2021	A102416-1
Schwarzbeck	BBHA 9170	Horn Antenna	09/02/2020	Biennial	09/01/2022	1037
MIWV	261F-25/387	Horn Antenna	06/10/2020	Annual	06/09/2021	2019
MIWV	261U-25/383	Horn Antenna	06/01/2020	Annual	05/31/2021	2019
MIWV	261G-25/387	Horn Antenna	06/10/2020	Annual	06/09/2021	-
Radiometer Physics	FS-Z140	Harmonic Mixer	03/13/2020	Annual	03/12/2021	101135
Radiometer Physics	FS-Z60	Harmonic Mixer	03/13/2020	Annual	03/12/2021	100981
Rohde & Schwarz	*FS-Z90	Harmonic Mixer	10/21/2020	Annual	10/20/2021	101860

Table 5-1. Test Equipment

Notes:

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

*FS-Z90 had been used on 11/04/2020. Thus, usage of FS-Z90 is in accredited calibration period.

6.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 800MG7D

BW = 800 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 802MW7D

BW = 802 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data transmission, telemetry, telecommand

7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.

FCC ID: A3LAT1K01-A10

FCC Classification: Part 30 Fixed Transmitter (5GB)

Mode(s): TDD

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	RADIATED	PASS	Section 7.2
30.202	Equivalent Isotropic Radiated Power Density	75 dBm/100MHz		PASS	Section 7.3
2.1046	RF Output Power	N/A		PASS	Section 7.4
2.1051 30.203	Out-of-Band Spurious Emissions	-13 dBm/MHz for all out-of-band emissions		PASS	Section 7.5
2.1051 30.203	Out-of-Band Emissions at the Band Edge	-13 dBm/MHz for all out-of-band emissions, -5 dBm/MHz from the band edge up to 10 % of the channel BW		PASS	Section 7.6
2.1055	Frequency Stability	Fundamental emissions stay within authorized frequency block		PASS	Section 7.7

Table 7-1. Summary of Radiated Test Results

Notes:

1) All modes of operation and modulations were investigated. The test results shown in the following sections represent the worst case emissions.
2) Per 2.1057(a)(3), spurious emissions were investigated up to 100 GHz for n261.
3) All radiated emission measurements at the band edge are converted to an equivalent conductive power by subtracting the known antenna gain from the EIRP measured at each frequency of interest. These emissions are compared to the 30.203 spurious emission limits as conductive power levels.
4) The radiated RF output power and all out-of-band emissions in the spurious domain are evaluated to the EIRP limits.
5) The fundamental band consists of 1 – 8 component carriers, referred as “CC” in this report.
6) In the following tables, the term “CCs Active” refers to which component carrier is transmitting for a particular test.
7) CCs active 0, 4, 7 = 1 Components Carriers Active Channel, 0-7 = 8 Component Carriers Active. 0-7(NC) = 8 Non-contiguous Component Carriers Active. Each component carrier’s bandwidth is either of 50 MHz or 100 MHz BW.
8) A3LAT1K01-A10 test result is referenced from A3LAT1K01-A00 test result which only difference power type as AC and DC. Power condition is not affected to declared RF specification which had been verified with manufacturer and testing laboratory.

7.2 Occupied Bandwidth

§2.1049

Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

ANSI C63.25-2015 Section 5.4.3
KDB 842590 D01 v01r01 Section 4.3

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5 % of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5 % of the 99 % occupied bandwidth observed in Step 7

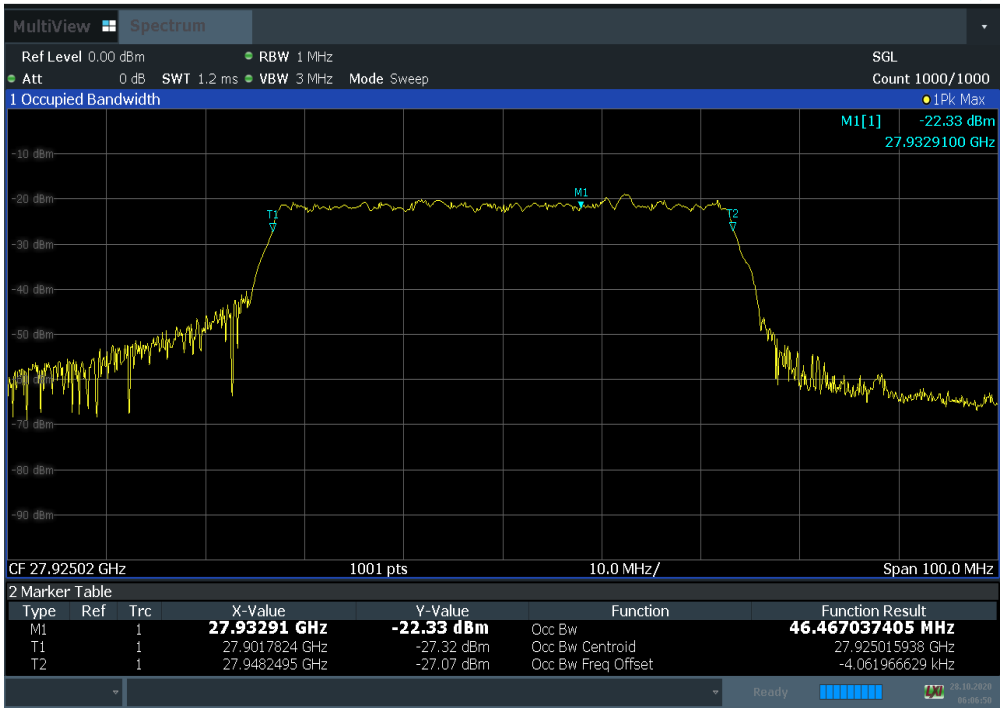
Test Notes

A3LAT1K01-A10 test result is referenced as A3LAT1K01-A00 result which is difference of power type between AC(A3LAT1K01-A00) source and DC(A3LAT1K01-A10) source. Power supply condition is not affected to declared RF specification.

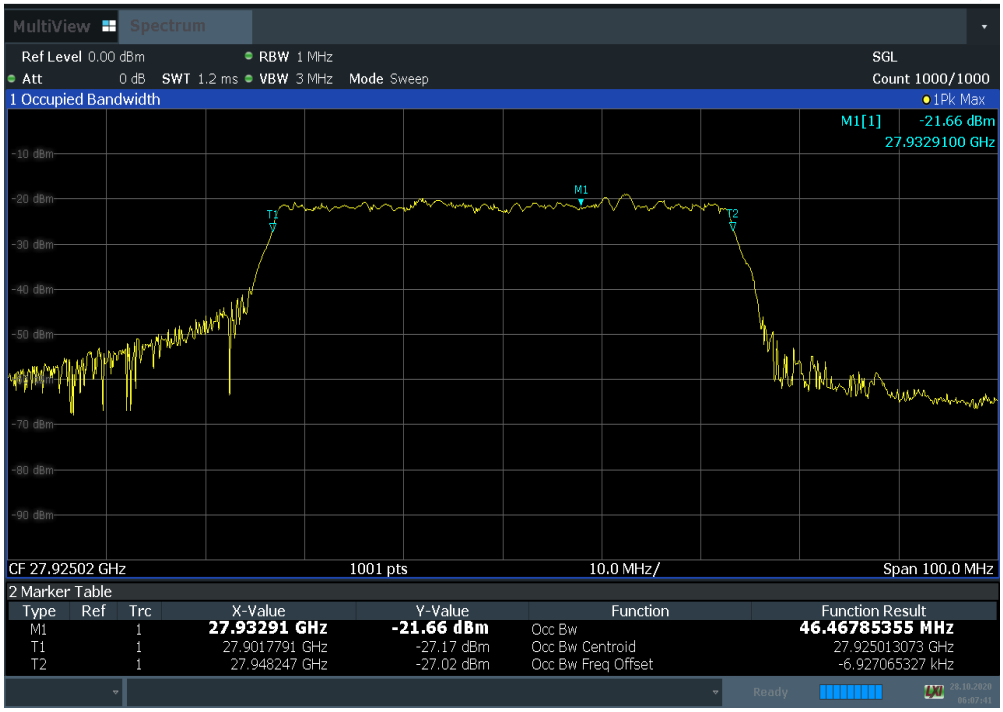
7.2.1 Antenna A Occupied Bandwidth

Bandwidth [MHz]	Channel	Antenna	CCs active	Modulation	OBW [MHz]
50	Mid	A	1	QPSK	46.47
				16QAM	46.47
				64QAM	46.45
			2	QPSK	95.40
				16QAM	95.48
				64QAM	95.42

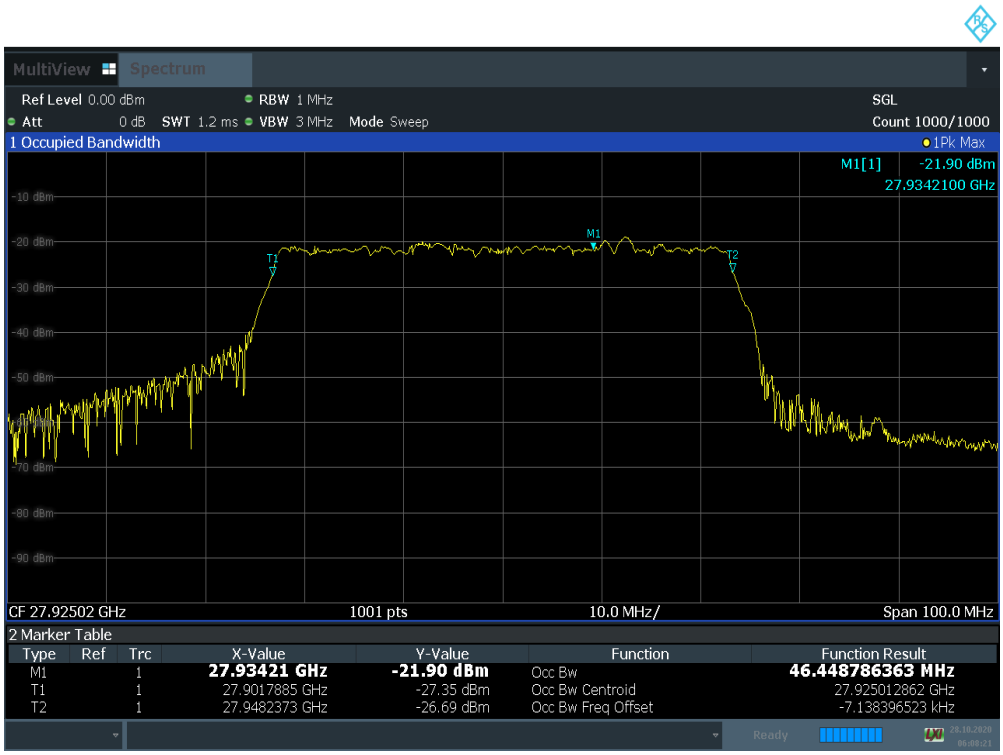
Table 7-2. Antenna A Occupied Bandwidth Summary Data



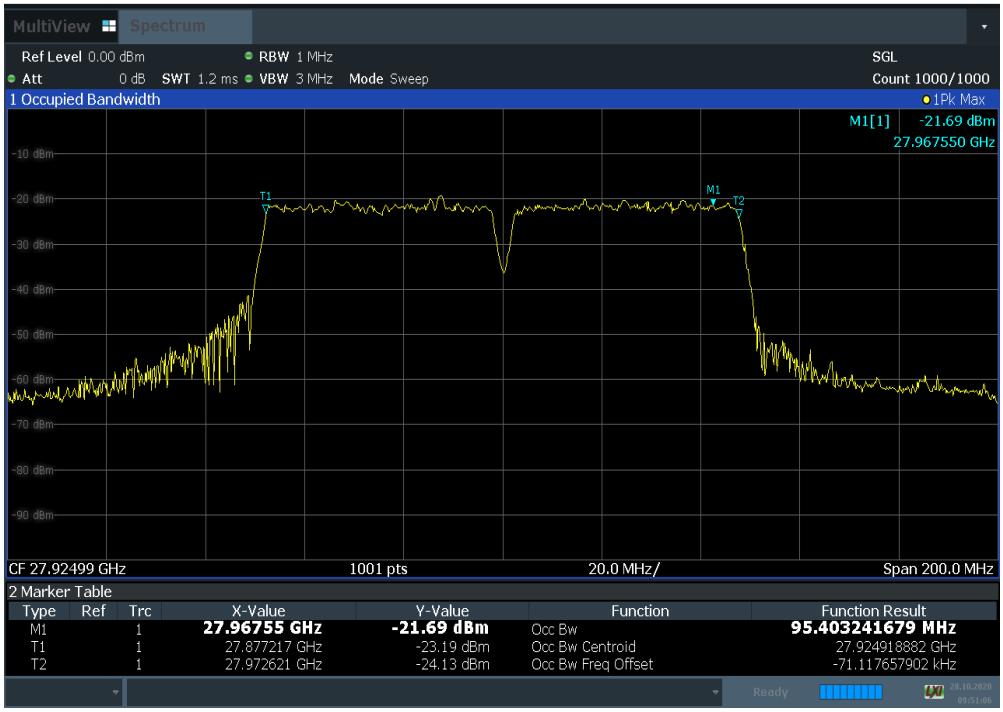
Plot 7-1. Occupied Bandwidth Plot (50 MHz 1CC BW QPSK Mid Channel)



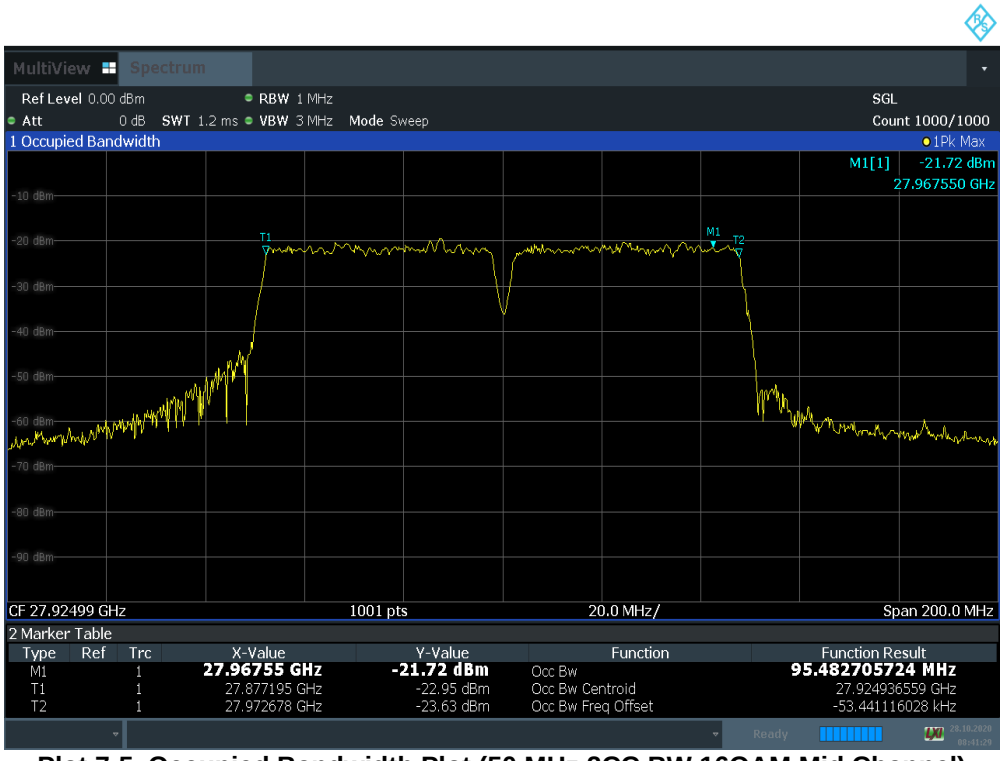
Plot 7-2. Occupied Bandwidth Plot (50 MHz 1CC BW 16QAM Mid Channel)



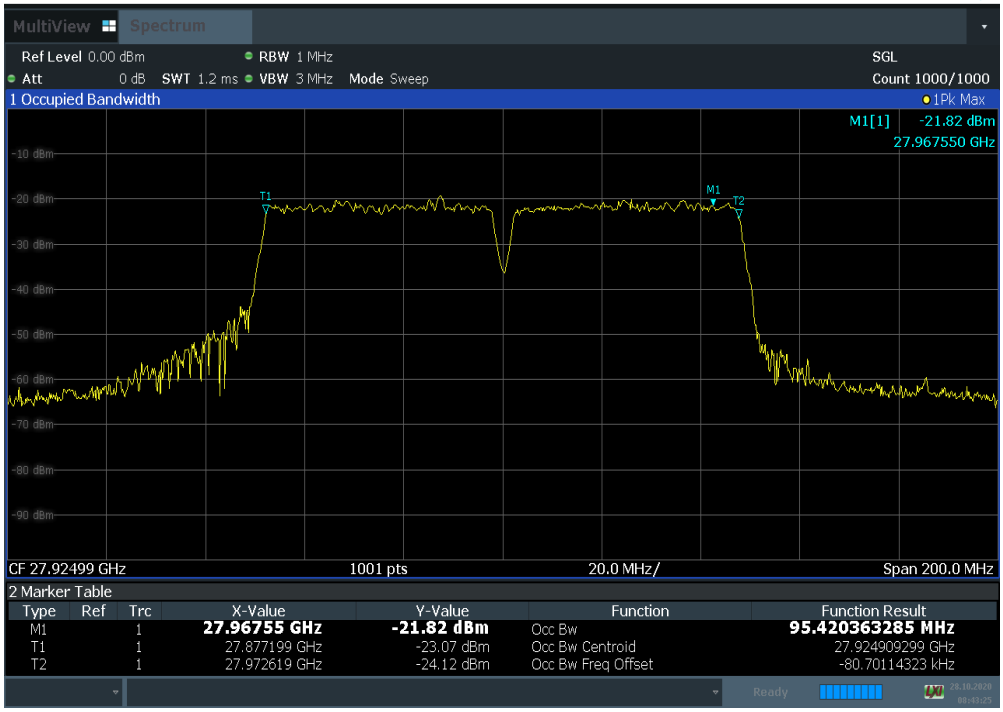
Plot 7-3. Occupied Bandwidth Plot (50 MHz 1CC BW 64QAM Mid Channel)



Plot 7-4. Occupied Bandwidth Plot (50 MHz 2CC BW QPSK Mid Channel)



Plot 7-5. Occupied Bandwidth Plot (50 MHz 2CC BW 16QAM Mid Channel)

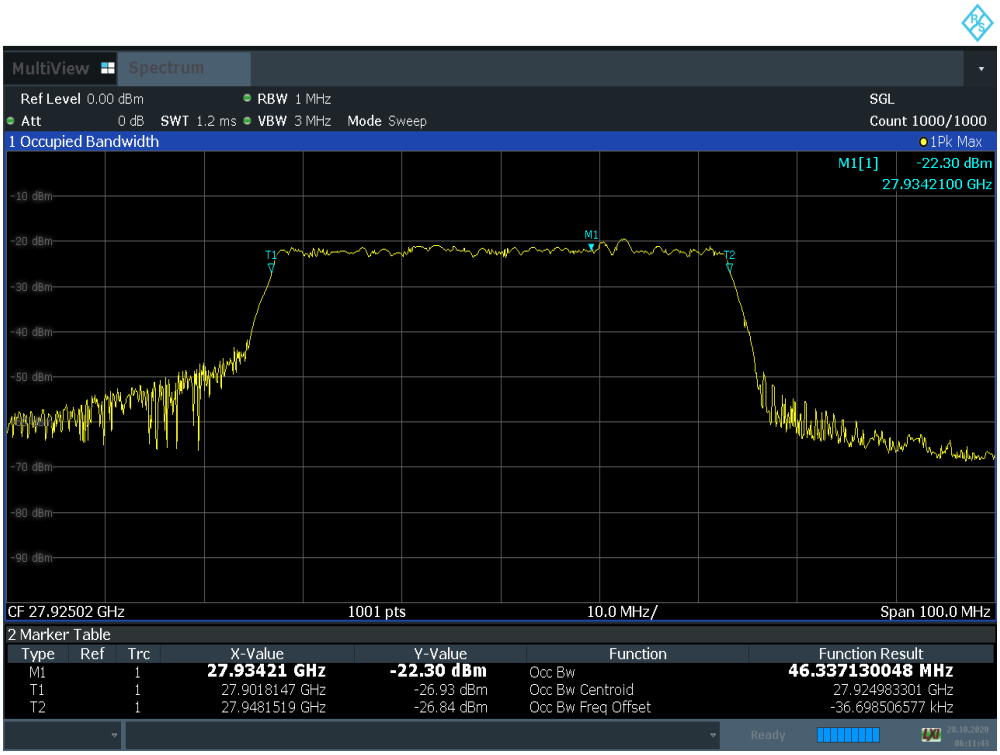


Plot 7-6. Occupied Bandwidth Plot (50 MHz 2CC BW 64QAM Mid Channel)

7.2.2 Antenna B Occupied Bandwidth

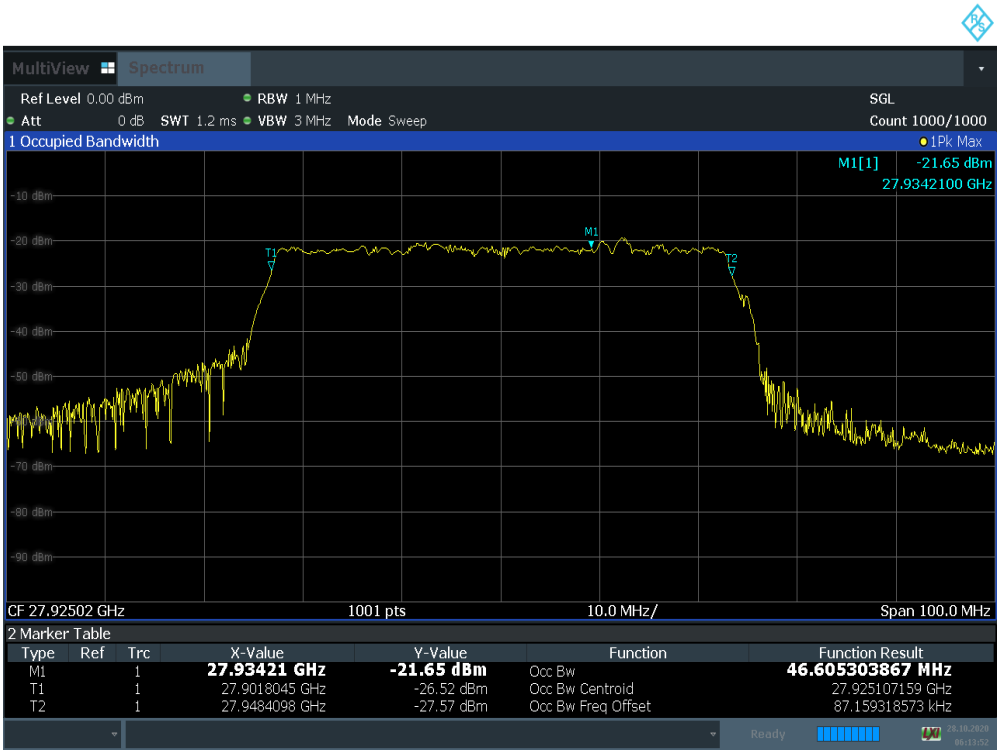
Bandwidth [MHz]	Channel	Antenna	CCs active	Modulation	OBW [MHz]
50	Mid	B	1	QPSK	46.34
				16QAM	46.40
				64QAM	46.61
			2	QPSK	95.47
				16QAM	95.42
				64QAM	95.49

Table 7-3. Antenna B Occupied Bandwidth Summary Data

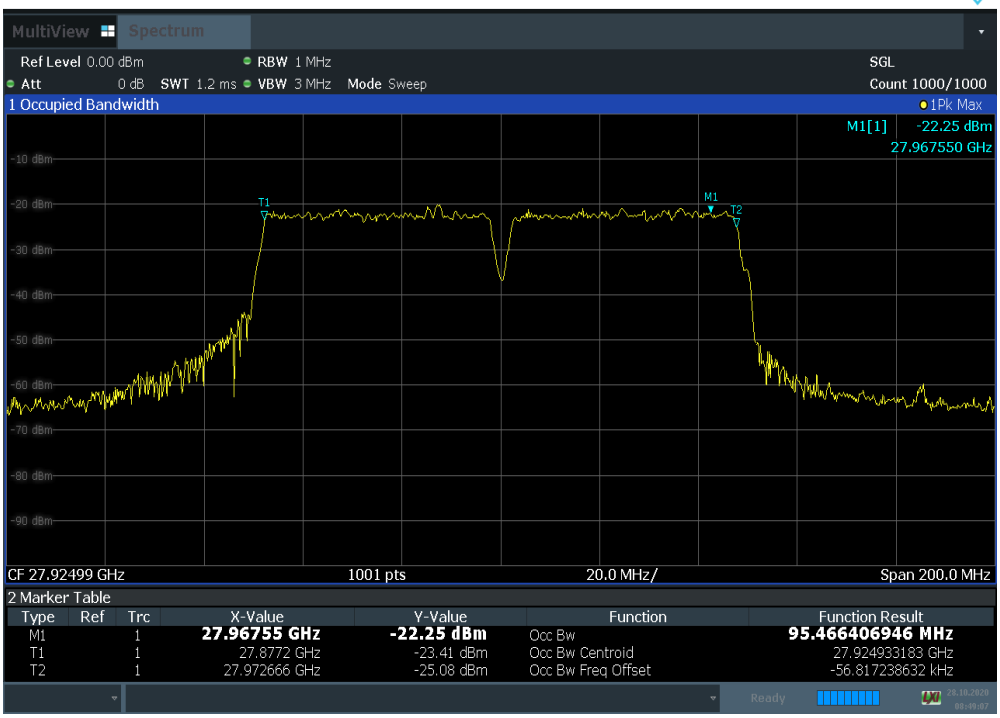


Plot 7-7. Occupied Bandwidth Plot (50 MHz 1CC BW QPSK Mid Channel)

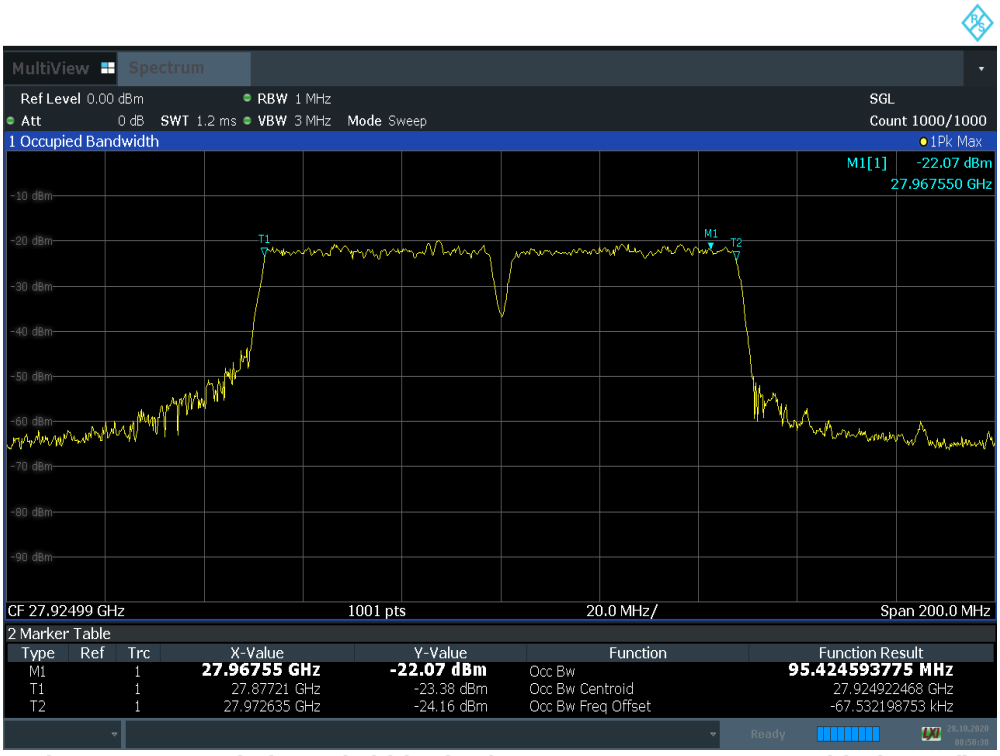
Plot 7-8. Occupied Bandwidth Plot (50 MHz 1CC BW 16QAM Mid Channel)



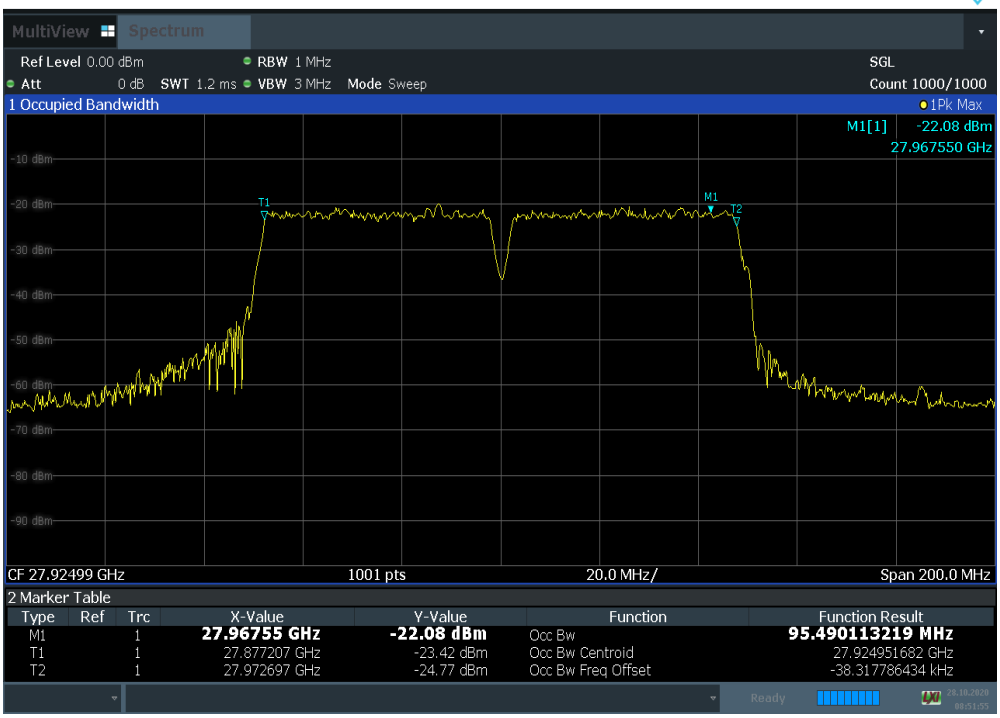
Plot 7-9. Occupied Bandwidth Plot (50 MHz 1CC BW 64QAM Mid Channel)



Plot 7-10. Occupied Bandwidth Plot (50 MHz 2CC BW QPSK Mid Channel)



Plot 7-11. Occupied Bandwidth Plot (50 MHz 2CC BW 16QAM Mid Channel)

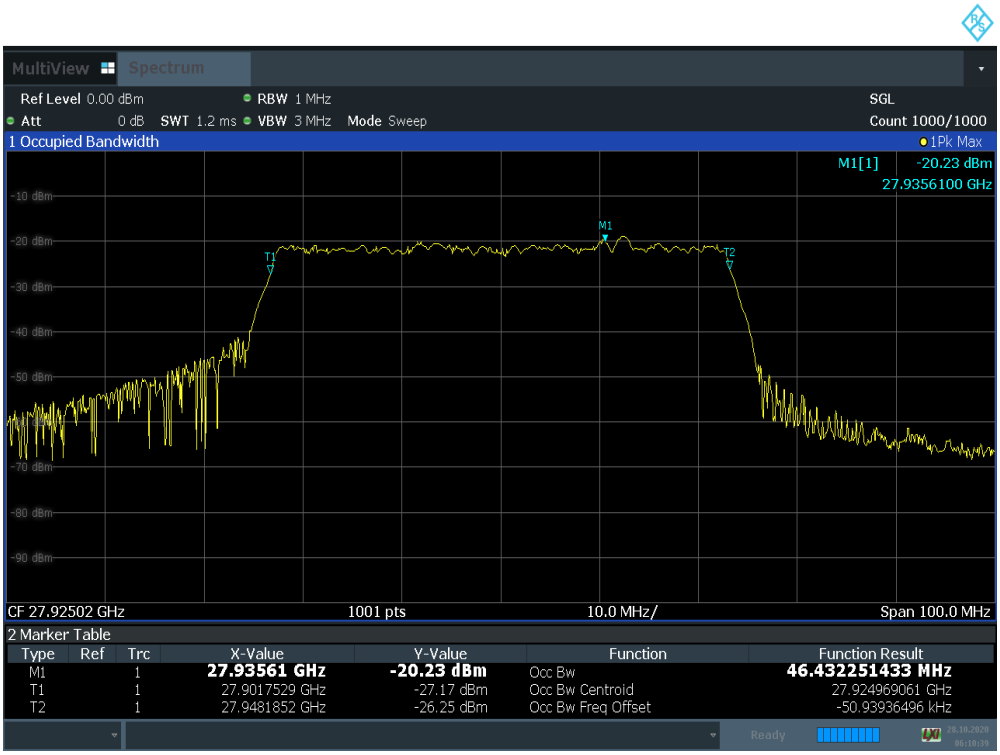


Plot 7-12. Occupied Bandwidth Plot (50 MHz 2CC BW 64QAM Mid Channel)

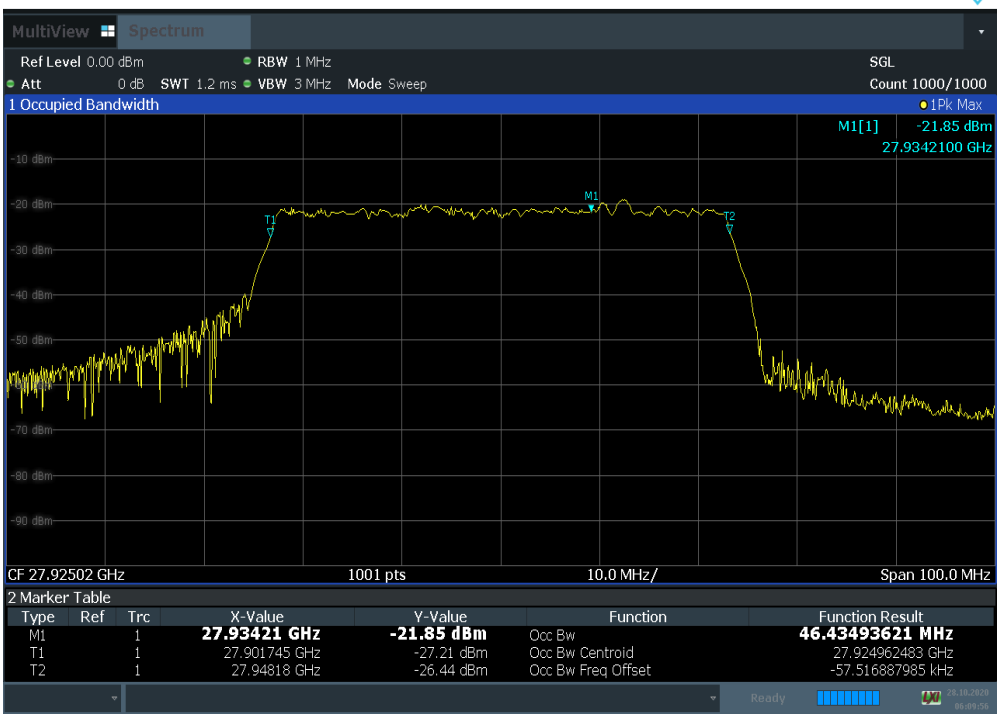
7.2.3 Antenna C Occupied Bandwidth

Bandwidth [MHz]	Channel	Antenna	CCs active	Modulation	OBW [MHz]
50	Mid	C	1	QPSK	46.43
				16QAM	46.43
				64QAM	46.44
			2	QPSK	95.50
				16QAM	95.51
				64QAM	95.59

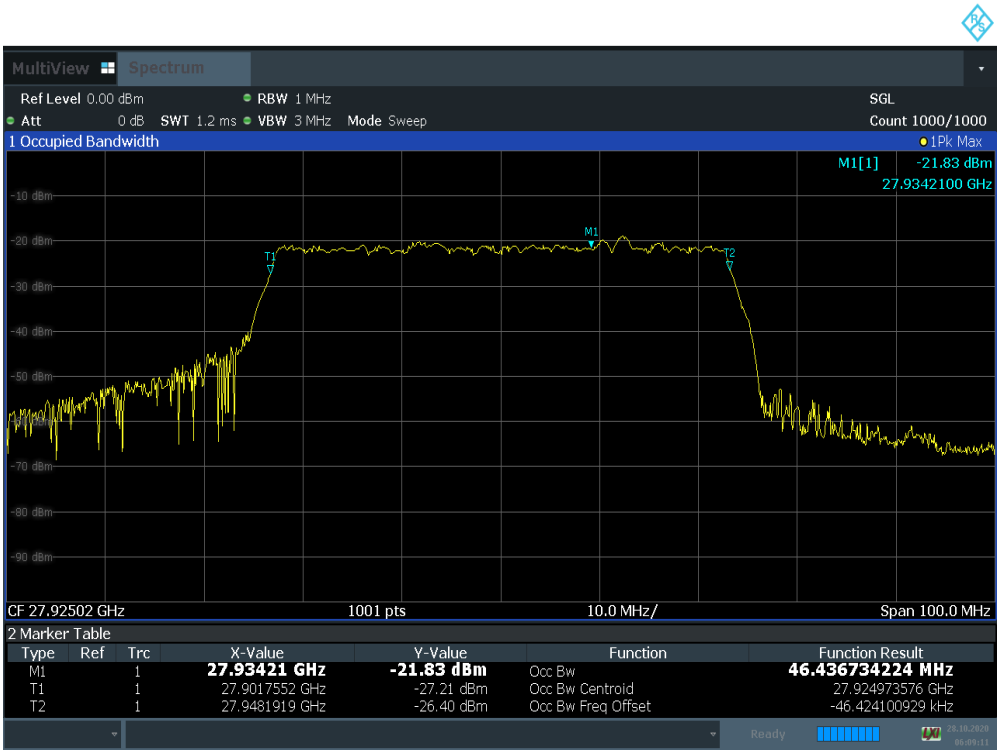
Table 7-4. Antenna C Occupied Bandwidth Summary Data



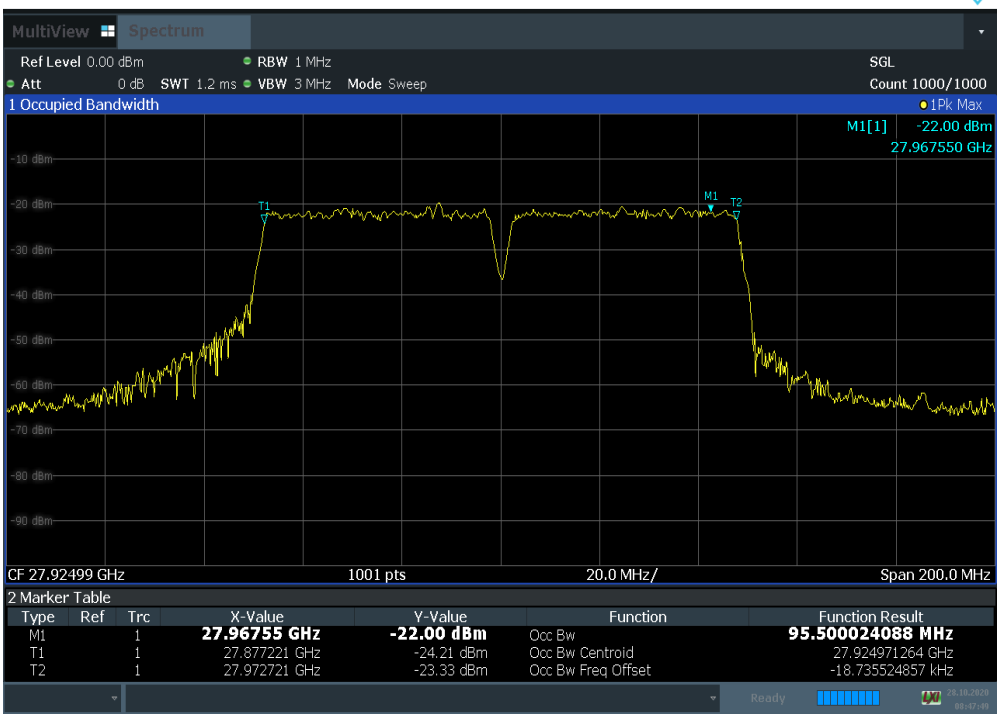
Plot 7-13. Occupied Bandwidth Plot (50 MHz 1CC BW QPSK Mid Channel)



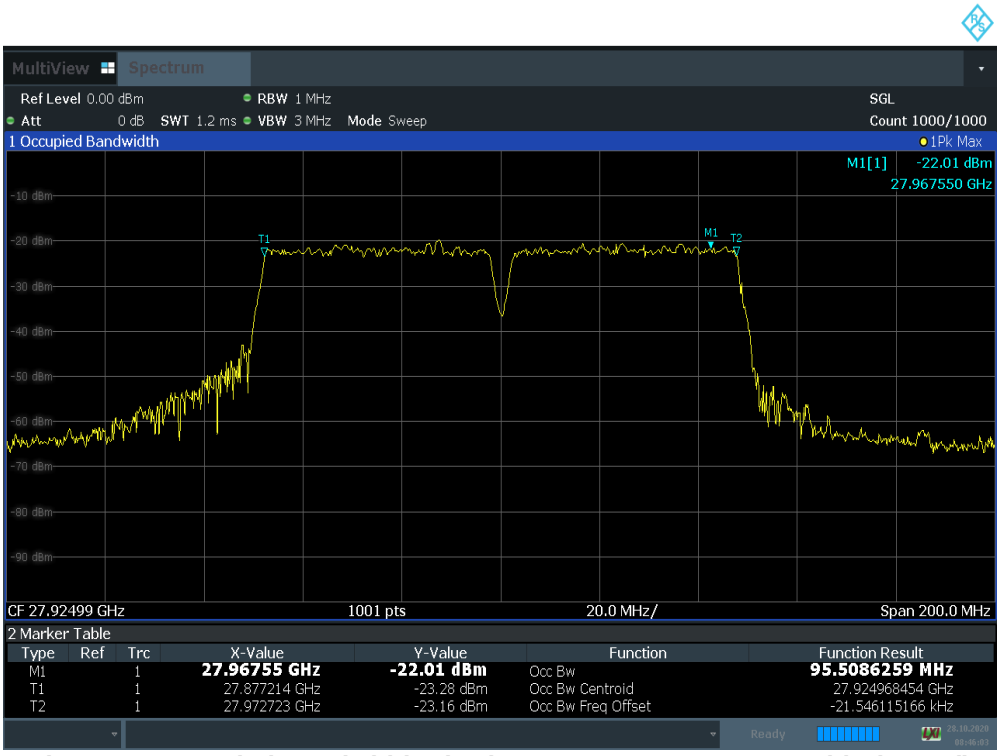
Plot 7-14. Occupied Bandwidth Plot (50 MHz 1CC BW 16QAM Mid Channel)



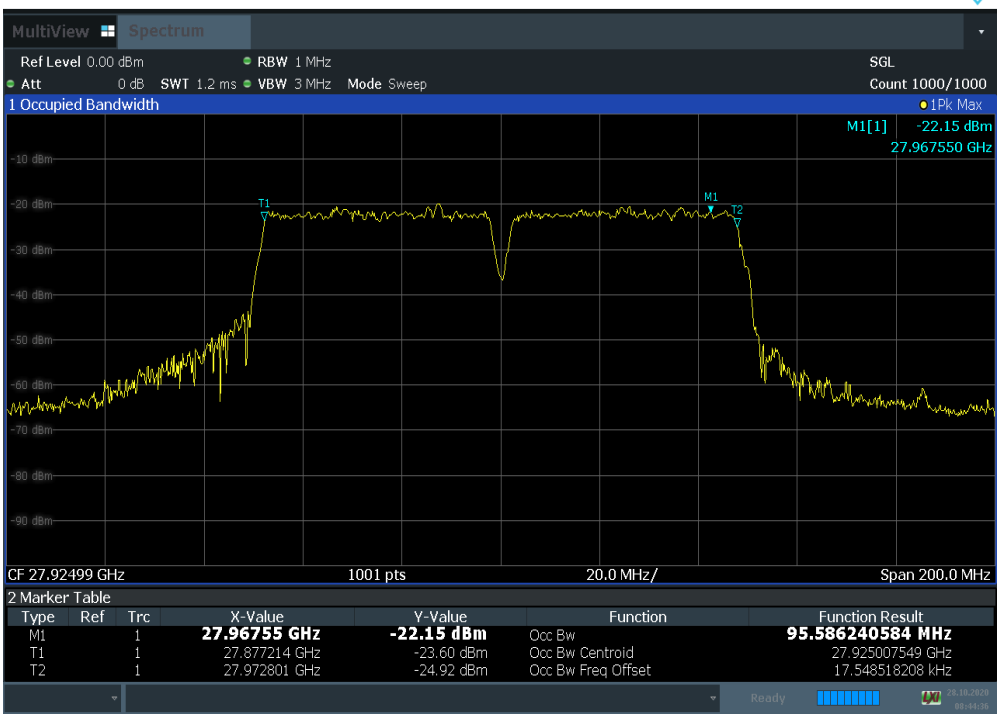
Plot 7-15. Occupied Bandwidth Plot (50 MHz 1CC BW 64QAM Mid Channel)



Plot 7-16. Occupied Bandwidth Plot (50 MHz 2CC BW QPSK Mid Channel)



Plot 7-17. Occupied Bandwidth Plot (50 MHz 2CC BW 16QAM Mid Channel)

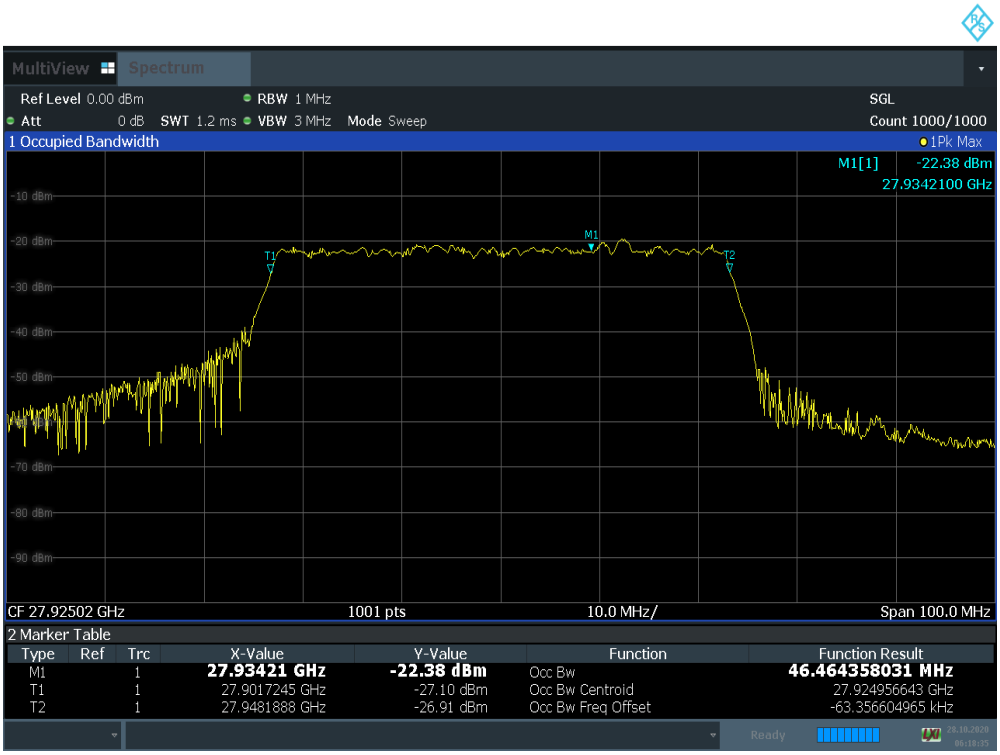


Plot 7-18. Occupied Bandwidth Plot (50 MHz 2CC BW 64QAM Mid Channel)

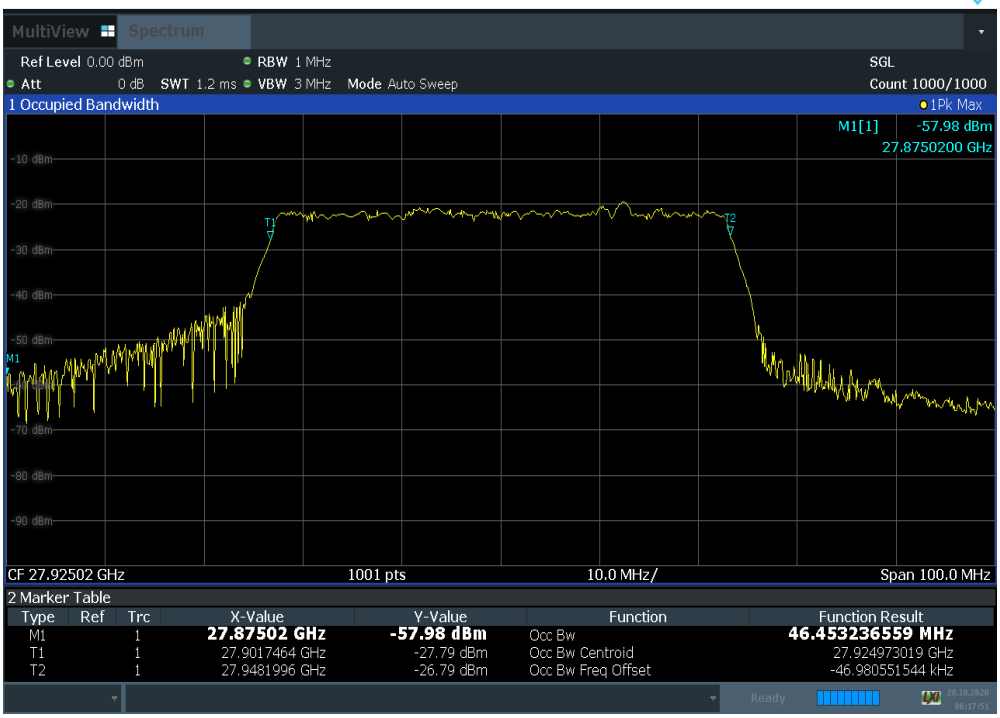
7.2.4 Antenna D Occupied Bandwidth

Bandwidth [MHz]	Channel	Antenna	CCs active	Modulation	OBW [MHz]
50	Mid	D	1	QPSK	46.46
				16QAM	46.45
				64QAM	46.74
			2	QPSK	95.56
				16QAM	95.42
				64QAM	95.57

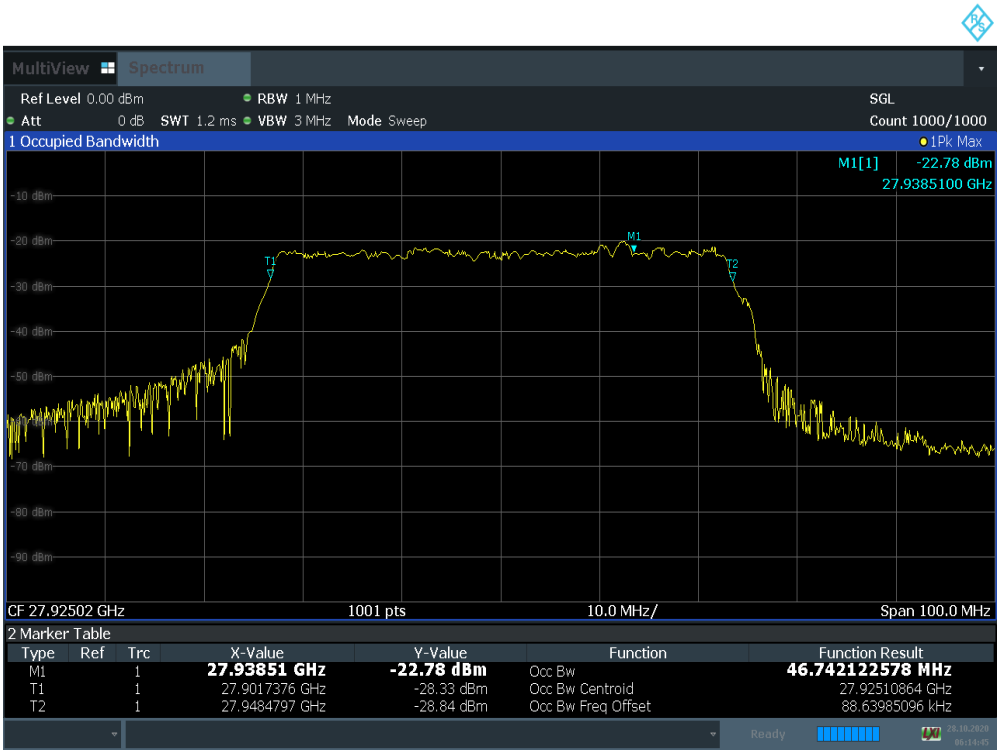
Table 7-5. Antenna D Occupied Bandwidth Summary Data



Plot 7-19. Occupied Bandwidth Plot (50 MHz 1CC BW QPSK Mid Channel)

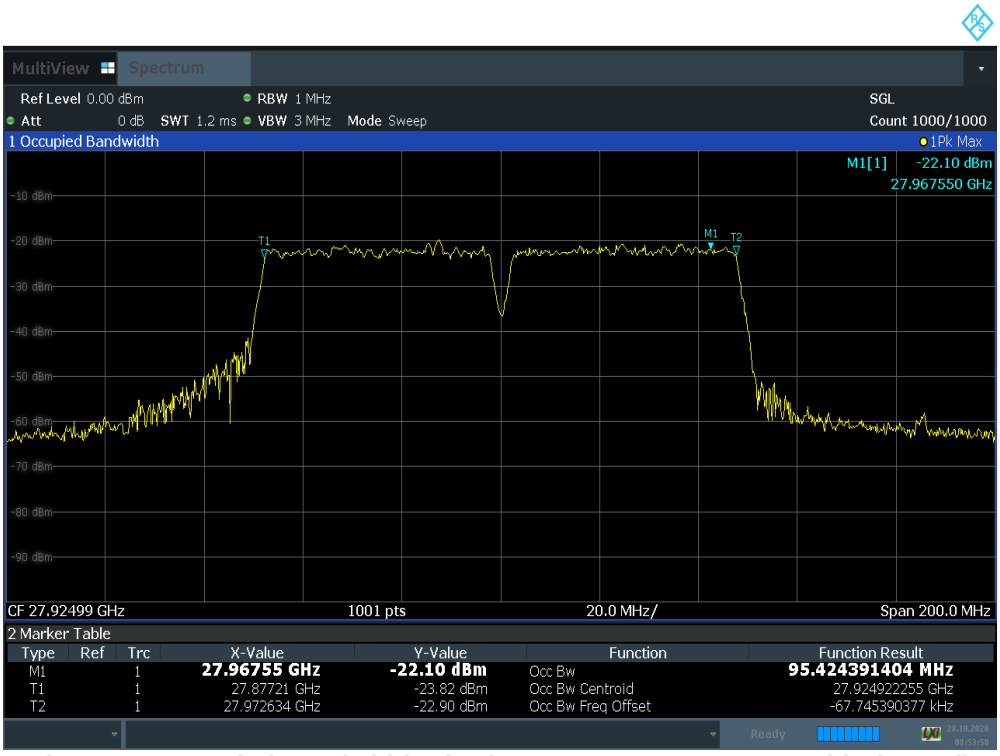


Plot 7-20. Occupied Bandwidth Plot (50 MHz 1CC BW 16QAM Mid Channel)

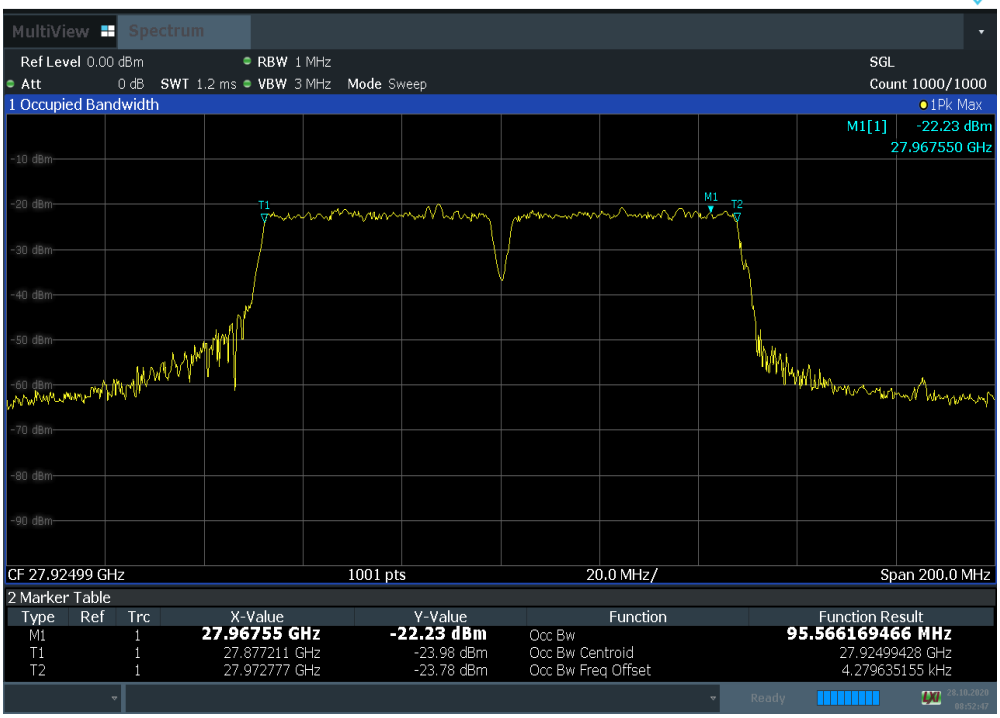


Plot 7-21. Occupied Bandwidth Plot (50 MHz 1CC BW 64QAM Mid Channel)

Plot 7-22. Occupied Bandwidth Plot (50 MHz 2CC BW QPSK Mid Channel)



Plot 7-23. Occupied Bandwidth Plot (50 MHz 2CC BW 16QAM Mid Channel)



Plot 7-24. Occupied Bandwidth Plot (50 MHz 2CC BW 64QAM Mid Channel)

7.3 Equivalent Isotropic Radiated Power (EIRP) Density

§2.1046 §30.202

Test Overview

Equivalent Isotropic Radiated Power (EIRP) measurements are performed using broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

The average power of the sum of all antenna elements is limited to an equivalent isotopically radiated power (EIRP) density of +75 dBm / 100 MHz.

Test Procedures Used

ANSI C63.26-2015 Section 5.2.4.4.1
ANSI C63.26-2015 Section 6.4
KDB 842590 D01 v01r01 Section 4.2

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5 % of the expected OBW, not to exceed 1 MHz
3. VBW ≥ 3 x RBW
4. Span = 2x to 3x the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. The integration bandwidth was roughly set equal to the measured (EIRP) Density of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
8. Trace mode = trace averaging (RMS) over 100 sweeps
9. The trace was allowed to stabilize

Test Notes

1) The EUT was tested while positioned upright and mounted on a mast at 1.5 m height. The worst case emissions are reported with the EUT in this fixed position and with the modulations and active component carriers shown in the tables below.

2) The EIRP measurements of the co-polarized antenna arrays (Antenna A/C and Antenna B/D) were added together to address MIMO concerns referenced in ANSI C63.26-2015 Section 6.4.

3) Elements within the same antenna array are correlated to produce beamforming array gain. During testing, only one antenna array was active.

4) Measurements were taken in the far field of the mmWave signal based on the formula: R ≥ 2D^2/wavelength.

5) The test case with from 1CC to 8CC active, was selected for the worst case emission testing as it created the highest EIRP within 50 MHz, 100 MHz, and 50 MHz + 100 MHz Mixed bandwidth carrier configurations.

6) The average EIRP reported below is calculate per section 5.2.7 of ANSI C63.26-2015 which states:
EIRP (dBm) = E (dBuV/m) + 20log(D) – 104.8; where D is the measurement distance (in the far field region) in m. For this section, all EIRP density measurements were performed at a distance of 3.20 m,
so, the effective correction is:
EIRP (dBm) = E (dBuV/m) – 94.72 dB

= Analyzer Level (dBm) + AFCL (dB/m) + 107 dB – 94.72 dB

= Analyzer Level (dBm) + AFCL (dB/m) + 12.28

*AFCL (dB/m) contains measurement antenna factor(dB/m) and cable loss(dB) as below:

Frequency [GHz]	Antenna Factor (dB/m)	Cable loss [dB]	AFCL (dB/m)
27.50	39.54	7.56	47.10
27.93	39.54	7.64	47.18
28.35	39.74	7.77	47.51

Table 7-6. Adopted AFCL value in the calculation

7) For channel bandwidths less than 100 MHz BW the EIRP must be reduced proportionally and linearly based on the bandwidth relative to 100 MHz BW according to §30.202(a) Power limits. Thus, 50 MHz BW test case value is added 3.01 dB scaling factor which included in EIRP overview.
*EIRP density value is in Red, if 50 MHz bandwidth with 3.01 dB scaling factor is higher than 100 MHz bandwidth in mixed component carrier configurations.

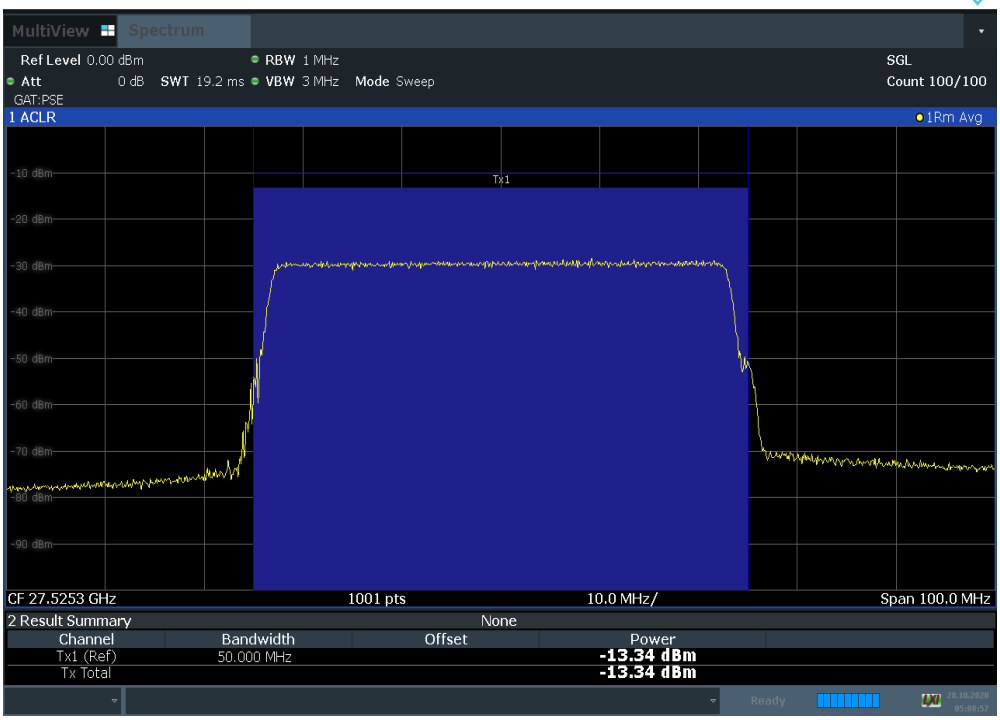
8) The angle of the horn antenna was rotated to maximize and find the worst case emissions. Worst case EIRP is reported below.

9) A3LAT1K01-A10 test result is referenced as A3LAT1K01-A00 result which is difference of power type between AC(A3LAT1K01-A00) source and DC(A3LAT1K01-A10) source. Power supply condition is not affected to declared RF specification.

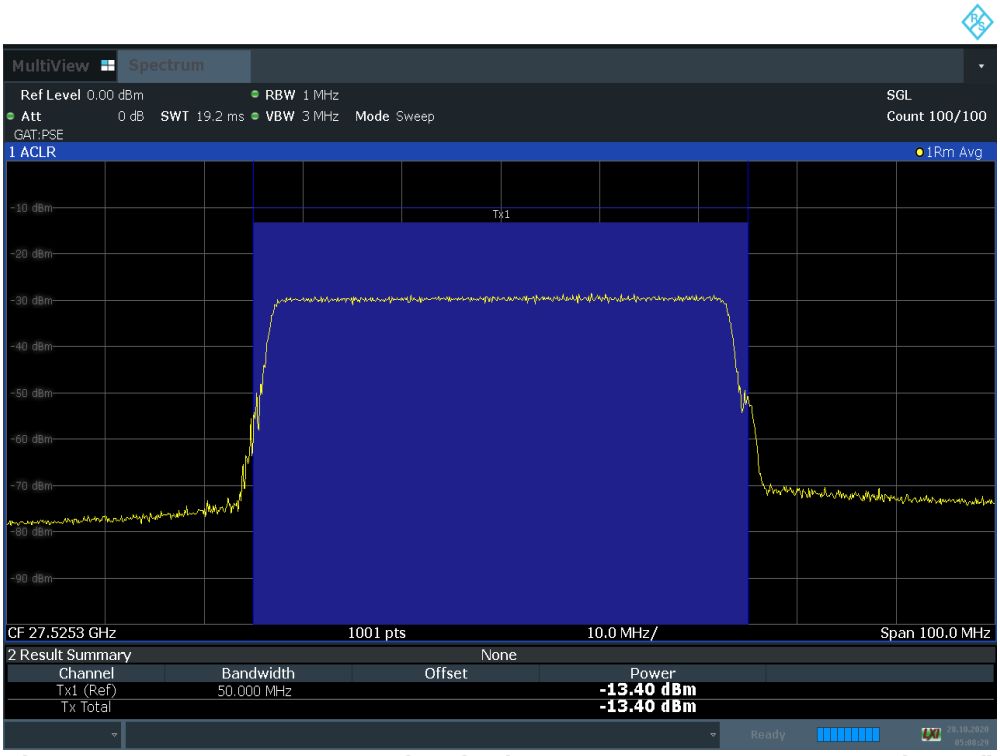
7.3.1 Antenna A EIRP Density

Antenna	Bandwidth	Configuration	Chan.	Frequency	Modulation	Horn Angle	Analyzer Level	Average e.i.r.p. PSD	Scaling factor	Average e.i.r.p. PSD	PSD Limit	Margin
	[MHz]			[GHz]		[degrees]	[dBm]	[dBm]	[dB]	[dBm/100MHz]	[dBm/100MHz]	[dB/100MHz]
A	50	1CC	Low	27.550	QPSK	135.0	-13.34	46.06	3.01	49.07	75.00	-28.94
	50		Low	27.550	16QAM	135.0	-13.40	46.00	3.01	49.01	75.00	-29.00
	50		Low	27.550	64QAM	135.0	-13.32	46.08	3.01	49.09	75.00	-28.92
	50	2CC	Low	27.550	QPSK	135.0	-13.01	46.39	3.01	49.40	75.00	-28.61
	50		Low	27.550	16QAM	135.0	-13.00	46.40	3.01	49.41	75.00	-28.60
	50		Low	27.550	64QAM	135.0	-12.93	46.47	3.01	49.48	75.00	-28.53
	50	1CC	Mid	27.925	QPSK	135.0	-13.66	45.83	3.01	48.84	75.00	-29.17
	50		Mid	27.925	16QAM	135.0	-13.71	45.77	3.01	48.78	75.00	-29.23
	50		Mid	27.925	64QAM	135.0	-14.06	45.42	3.01	48.43	75.00	-29.58
	50	2CC	Mid	27.925	QPSK	135.0	-13.73	45.75	3.01	48.76	75.00	-29.25
	50		Mid	27.925	16QAM	135.0	-13.76	45.72	3.01	48.73	75.00	-29.28
	50		Mid	27.925	64QAM	135.0	-13.75	45.74	3.01	48.75	75.00	-29.26
	50	1CC	High	28.300	QPSK	135.0	-13.52	46.29	3.01	49.30	75.00	-28.71
	50		High	28.300	16QAM	135.0	-13.50	46.31	3.01	49.32	75.00	-28.69
	50		High	28.300	64QAM	135.0	-13.46	46.36	3.01	49.37	75.00	-28.64
	50	2CC	High	28.300	QPSK	135.0	-13.43	46.38	3.01	49.39	75.00	-28.62
	50		High	28.300	16QAM	135.0	-13.48	46.33	3.01	49.34	75.00	-28.67
	50		High	28.300	64QAM	135.0	-13.44	46.37	3.01	49.38	75.00	-28.63
	100	2NC	Mid	27.925	QPSK	135.0	-10.17	49.32	0.00	49.32	75.00	-25.68
	100	3NC	Mid	27.925	QPSK	135.0	-10.79	48.70	0.00	48.70	75.00	-26.30
	100	4NC	Mid	27.925	QPSK	135.0	-9.79	49.70	0.00	49.70	75.00	-25.30
	100	5NC	Mid	27.925	QPSK	135.0	-10.42	49.07	0.00	49.07	75.00	-25.93
	100	6NC	Mid	27.925	QPSK	135.0	-11.70	47.78	0.00	47.78	75.00	-27.22
	100	7NC	Mid	27.925	QPSK	135.0	-12.34	47.14	0.00	47.14	75.00	-27.86
	50 + 100	50M x1 + 100M x1	Mid	27.925	QPSK	135.0	-13.89	45.60	3.01	48.61	75.00	-29.40
		50M x2 + 100M x1	Mid	27.925	QPSK	135.0	-11.03	48.45	0.00	48.45	75.00	-26.55
		50M x1 + 100M x2	Mid	27.925	QPSK	135.0	-10.25	49.23	0.00	49.23	75.00	-25.77
		50M x2 + 100M x2	Mid	27.925	QPSK	135.0	-10.03	49.45	0.00	49.45	75.00	-25.55
		50M x1 + 100M x3	Mid	27.925	QPSK	135.0	-12.89	46.60	3.01	49.61	75.00	-28.40
		50M x2 + 100M x3	Mid	27.925	QPSK	135.0	-12.77	46.71	3.01	**49.72**	75.00	-28.29
		50M x1 + 100M x4	Mid	27.925	QPSK	135.0	-10.16	49.32	0.00	49.32	75.00	-25.68
		50M x2 + 100M x4	Mid	27.925	QPSK	135.0	-10.88	48.61	0.00	48.61	75.00	-26.39
		50M x1 + 100M x5	Mid	27.925	QPSK	135.0	-11.23	48.25	0.00	48.25	75.00	-26.75
		50M x2 + 100M x5	Mid	27.925	QPSK	135.0	-11.64	47.84	0.00	47.84	75.00	-27.16
		50M x1 + 100M x6	Mid	27.925	QPSK	135.0	-11.73	47.75	0.00	47.75	75.00	-27.25
		50M x2 + 100M x6	Mid	27.925	QPSK	135.0	-15.43	44.05	3.01	47.06	75.00	-30.95

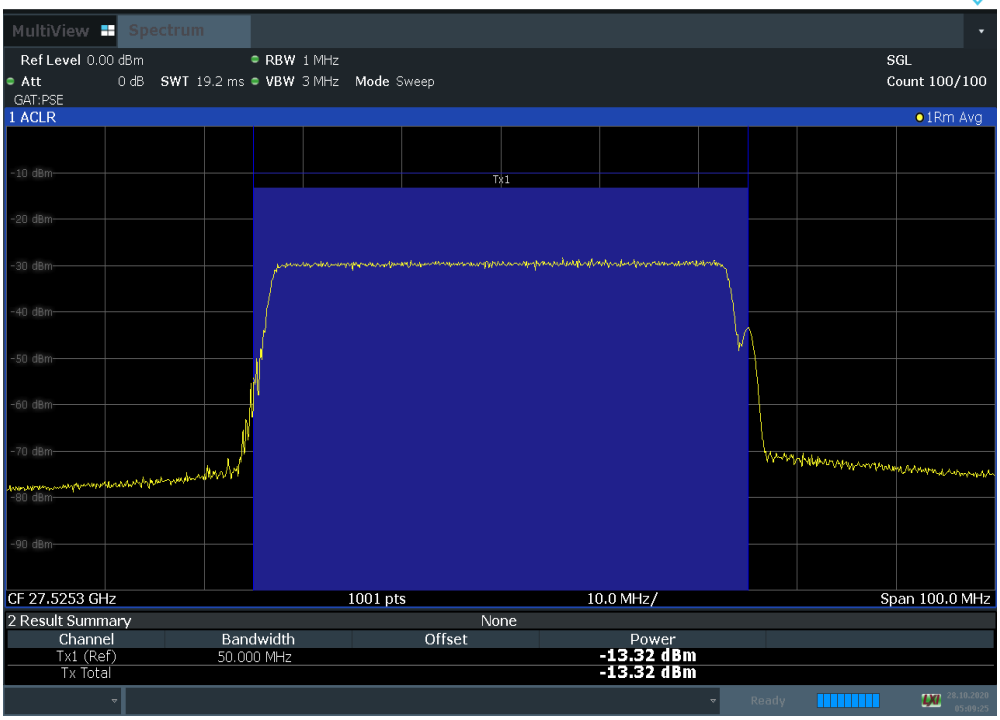
Table 7-7. Antenna A EIRP Density Summary Data



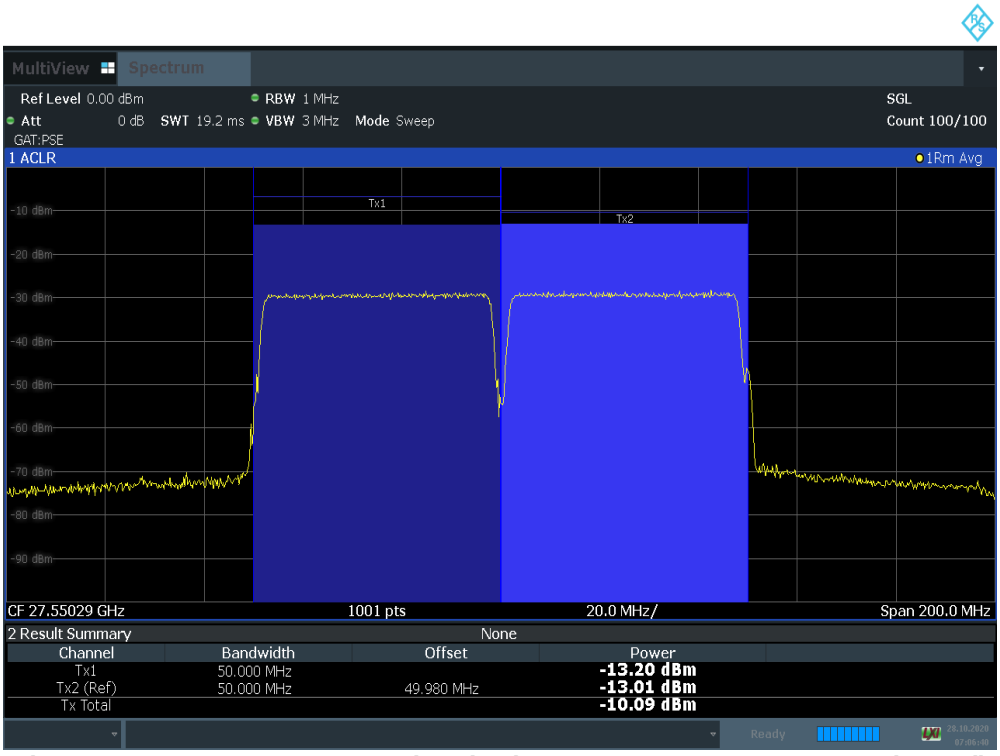
Plot 7-25. Antenna A EIRP Density Plot (50 MHz 1CC BW QPSK Low Channel)



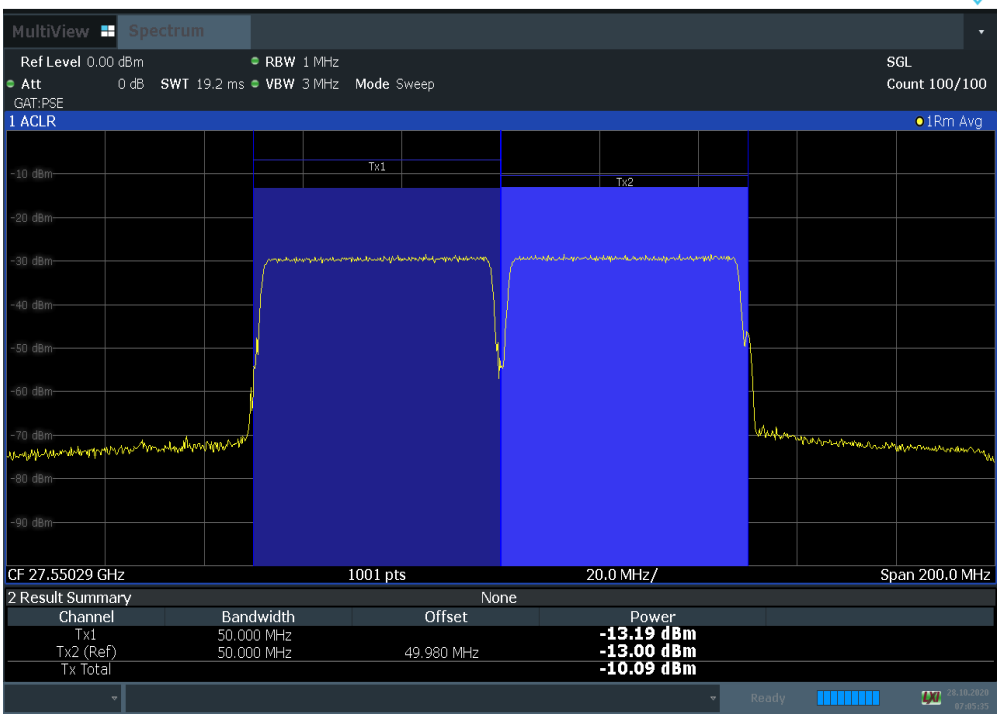
Plot 7-26. Antenna A EIRP Density Plot (50 MHz 1CC BW 16QAM Low Channel)



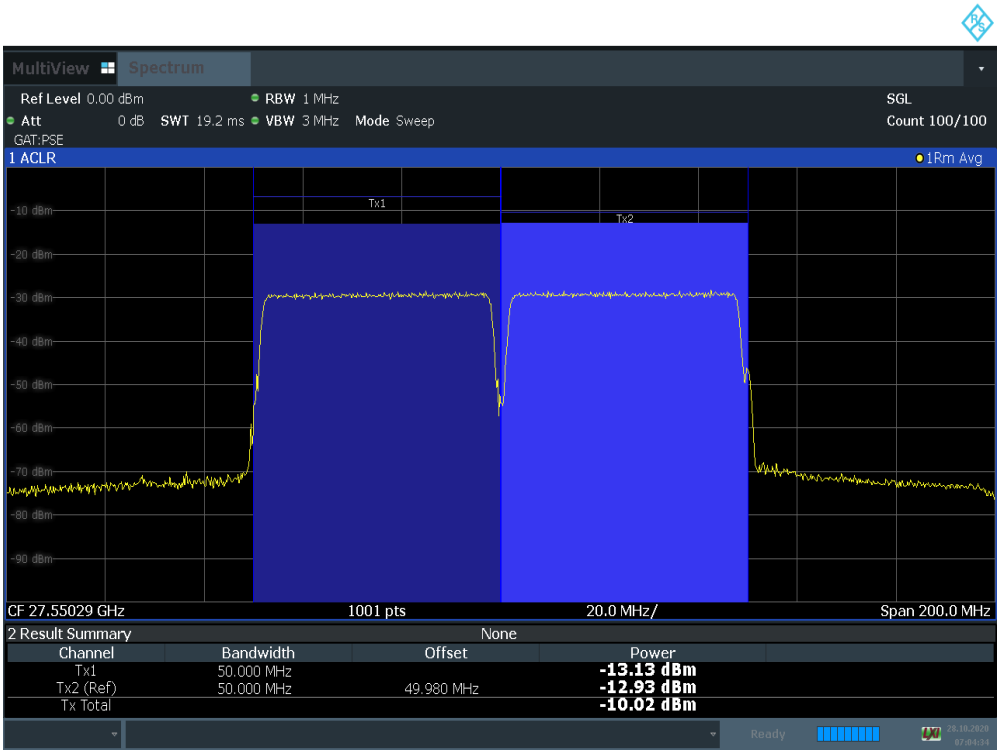
Plot 7-27. Antenna A EIRP Density Plot (50 MHz 1CC BW 64QAM Low Channel)



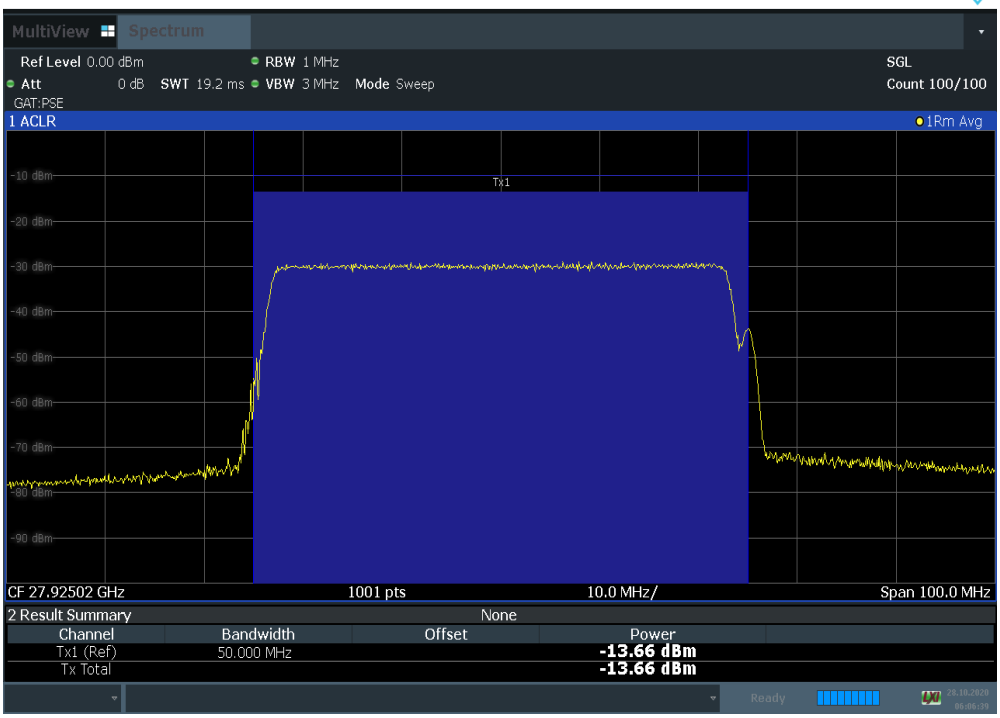
Plot 7-28. Antenna A EIRP Density Plot (50 MHz 2CC BW QPSK Low Channel)



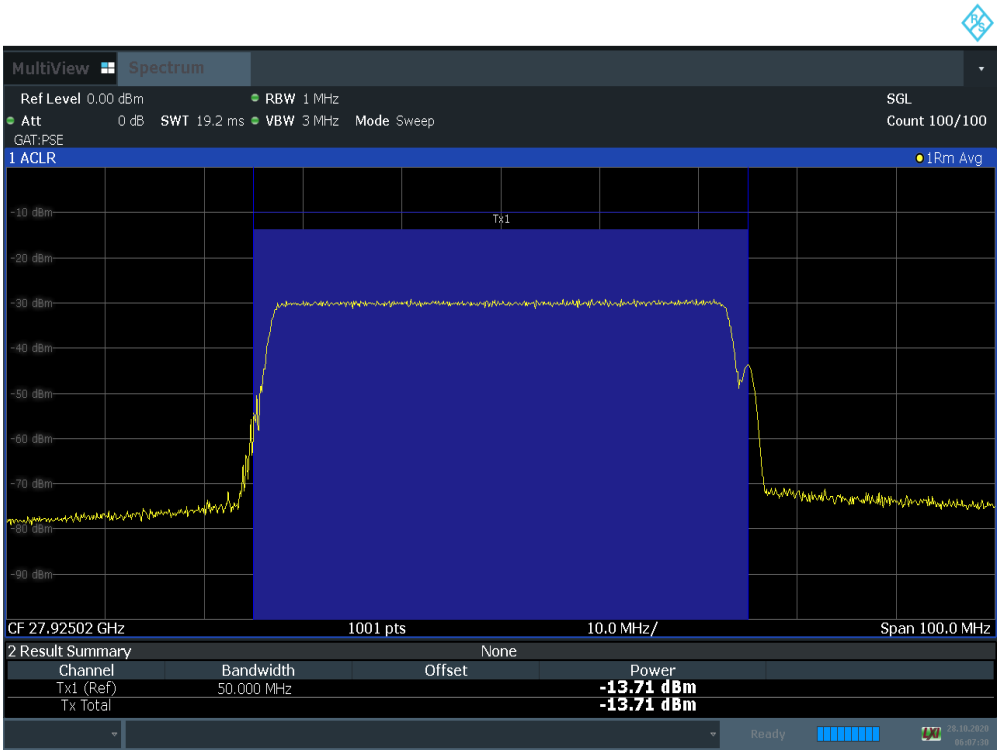
Plot 7-29. Antenna A EIRP Density Plot (50 MHz 2CC BW 16QAM Low Channel)



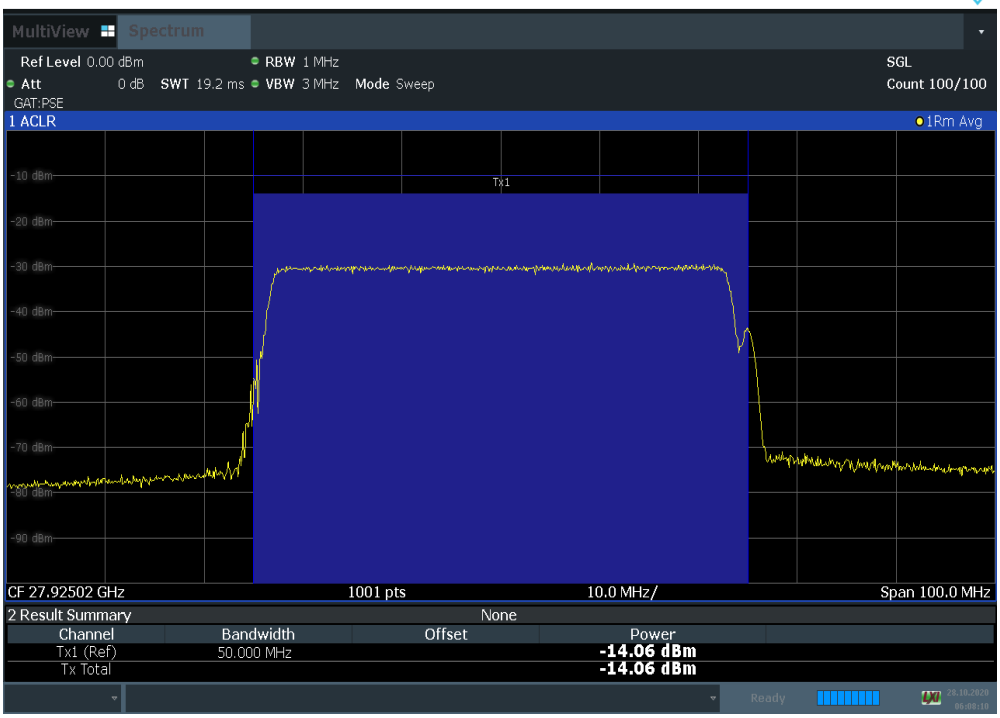
Plot 7-30. Antenna A EIRP Density Plot (50 MHz 2CC BW 64QAM Low Channel)



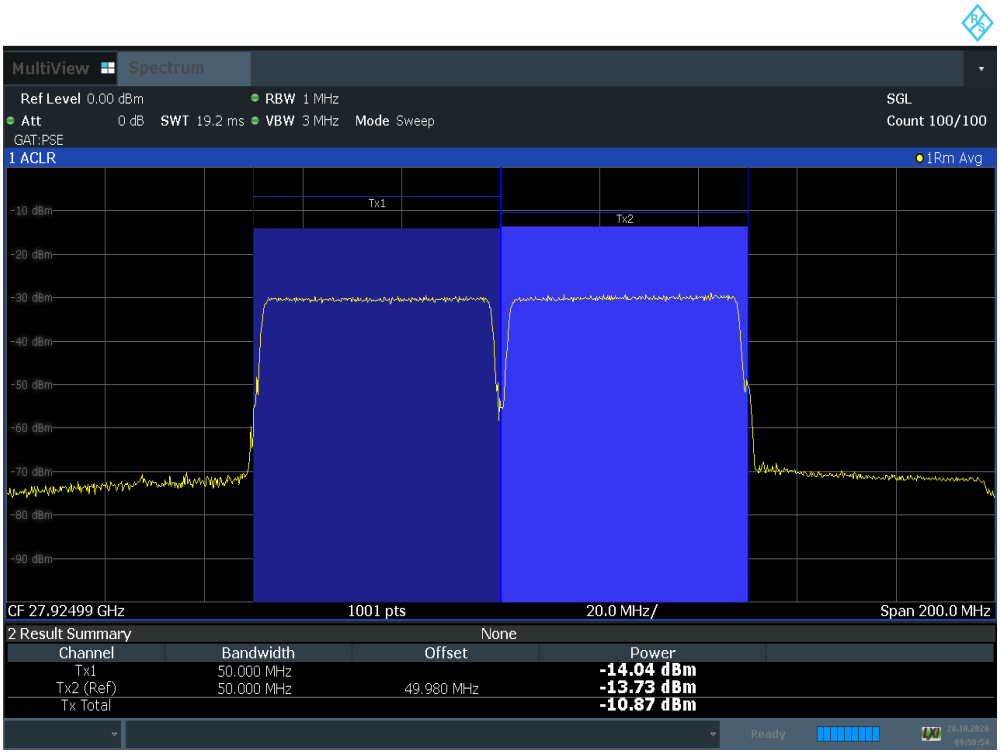
Plot 7-31. Antenna A EIRP Density Plot (50 MHz 1CC BW QPSK Mid Channel)



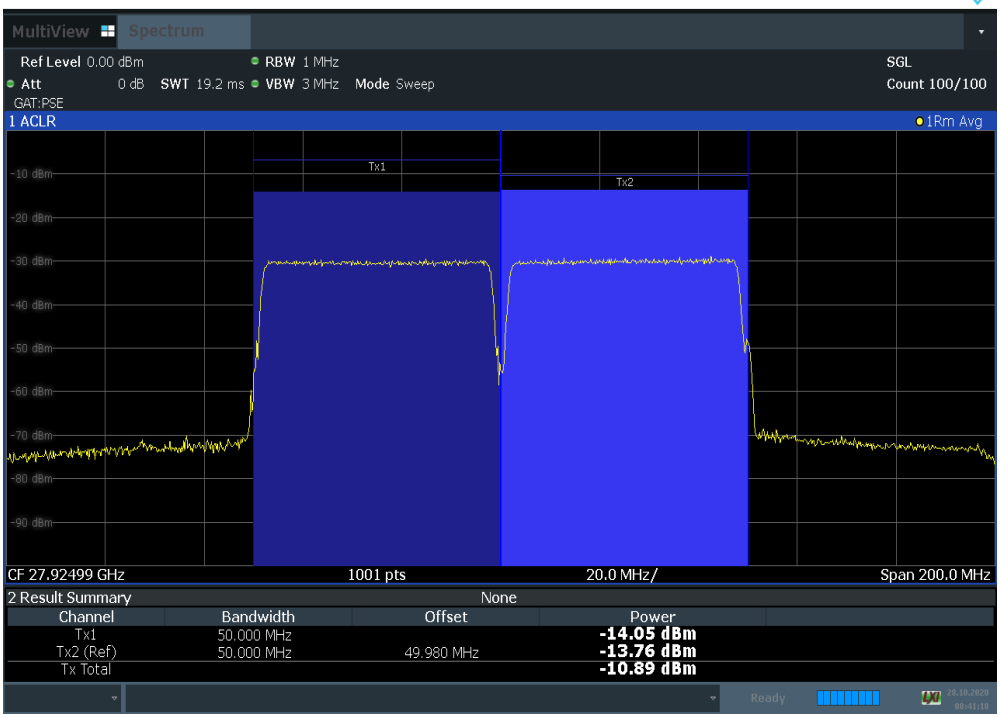
Plot 7-32. Antenna A EIRP Density Plot (50 MHz 1CC BW 16QAM Mid Channel)



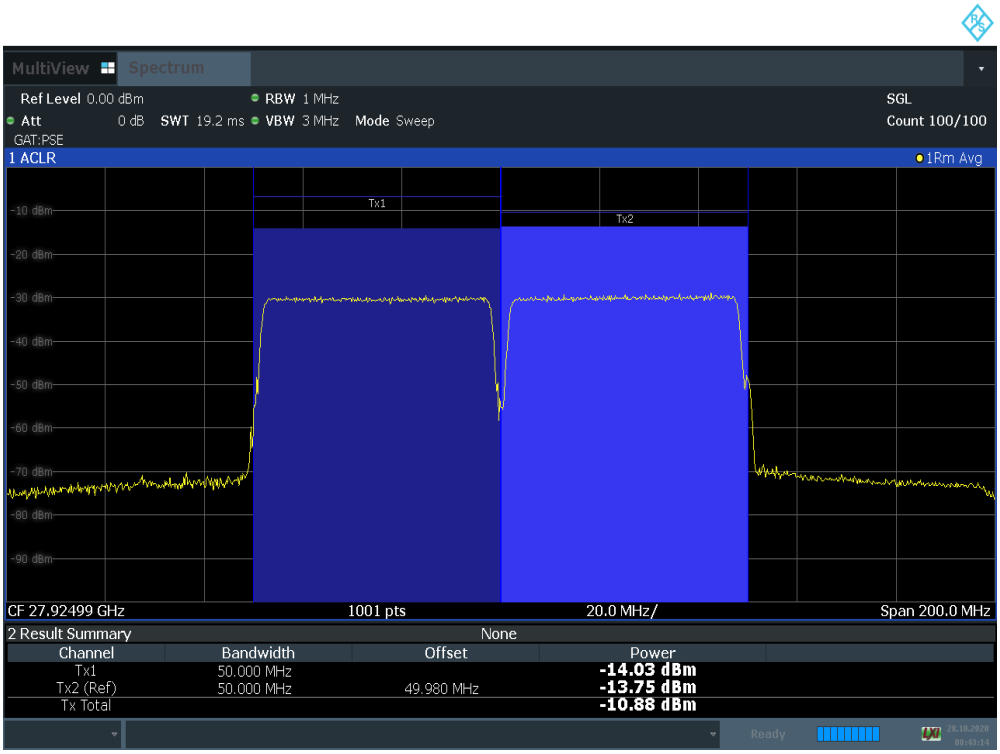
Plot 7-33. Antenna A EIRP Density Plot (50 MHz 1CC BW 64QAM Mid Channel)



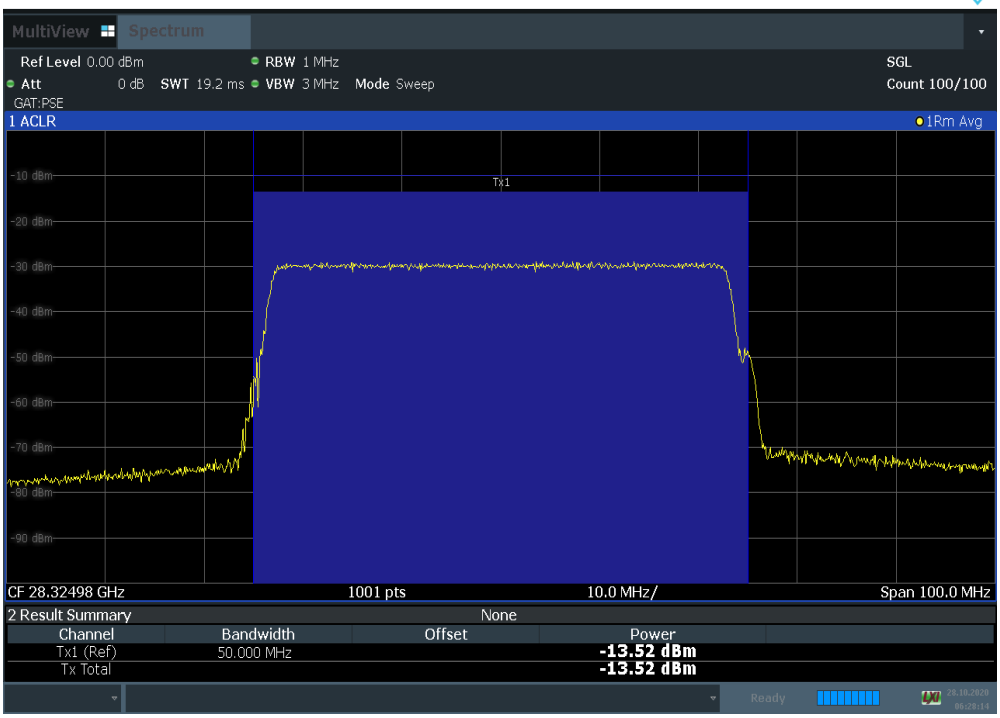
Plot 7-34. Antenna A EIRP Density Plot (50 MHz 2CC BW QPSK Mid Channel)



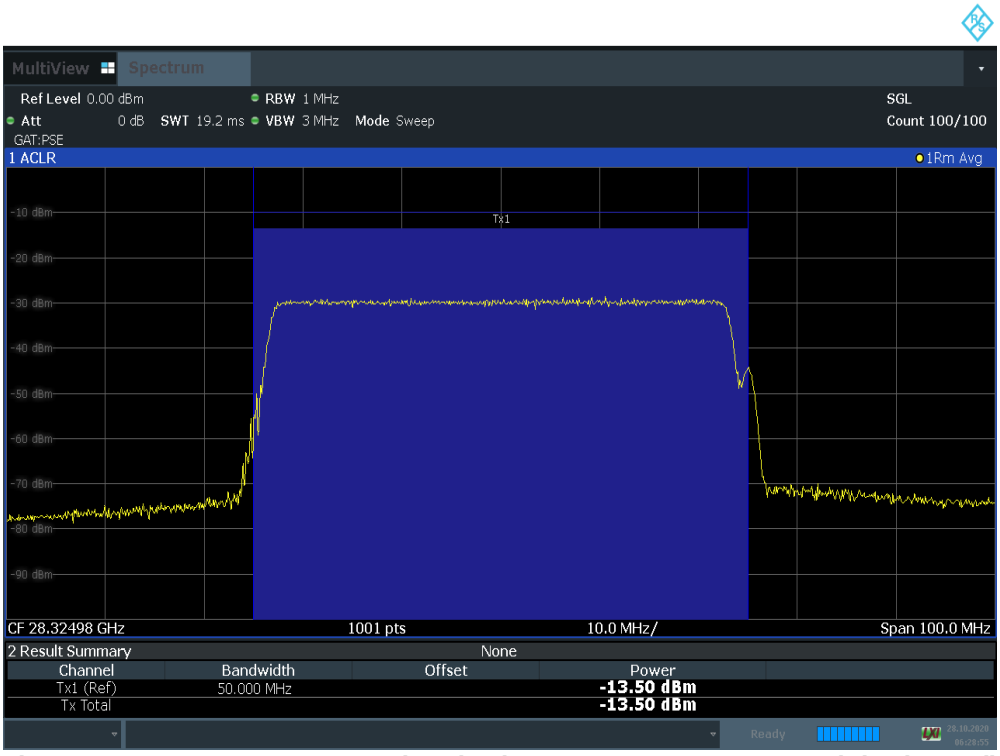
Plot 7-35. Antenna A EIRP Density Plot (50 MHz 2CC BW 16QAM Mid Channel)



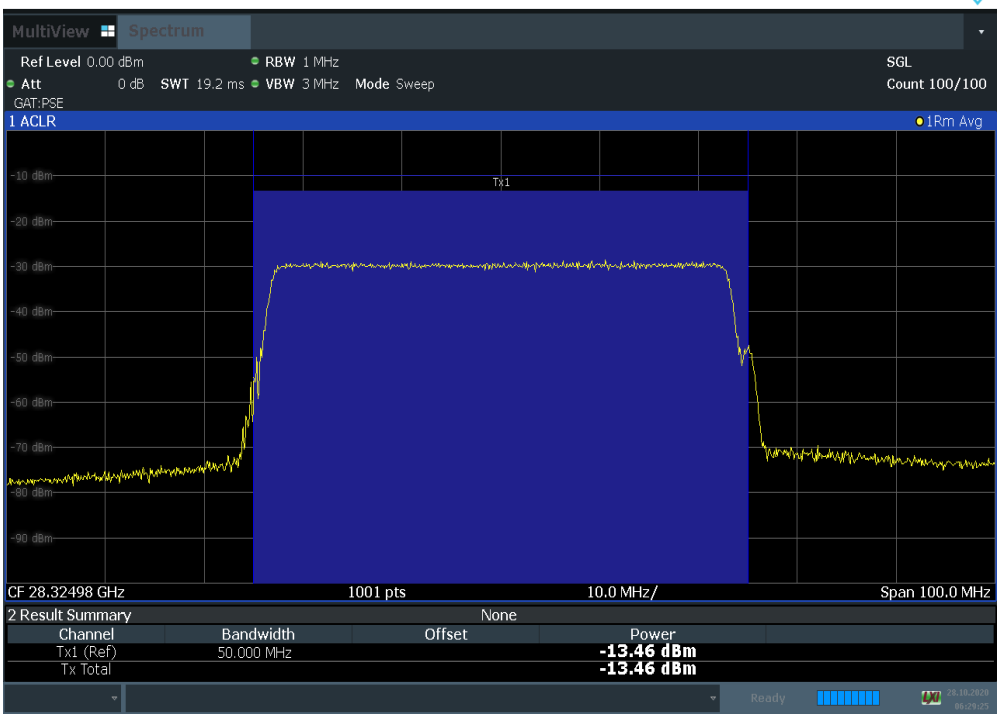
Plot 7-36. Antenna A EIRP Density Plot (50 MHz 2CC BW 64QAM Mid Channel)



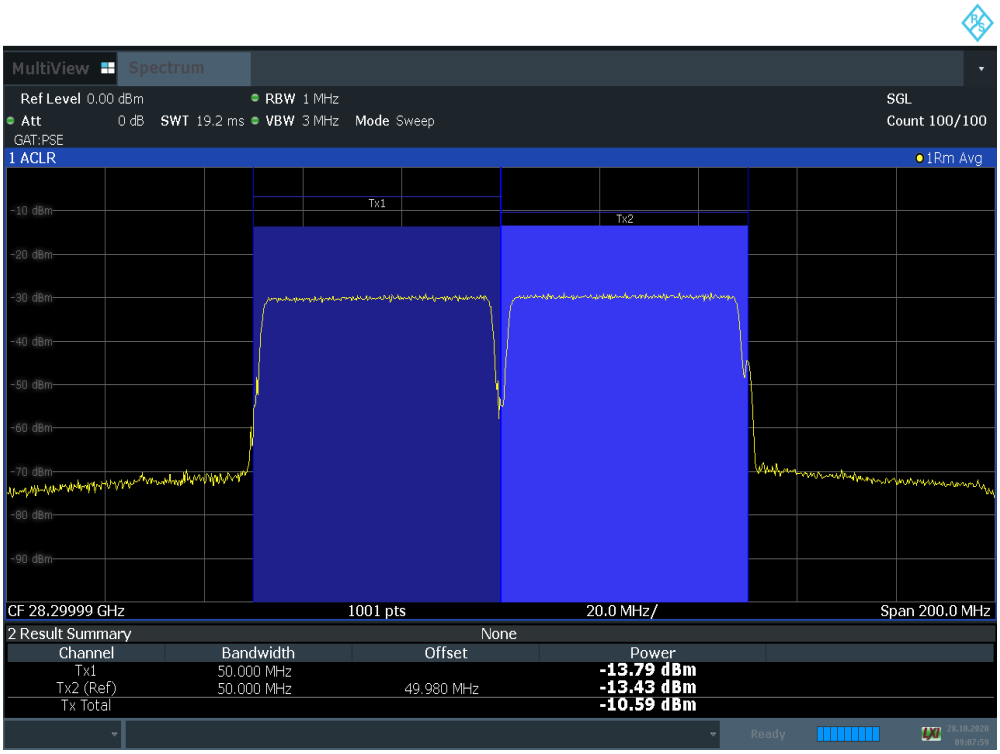
Plot 7-37. Antenna A EIRP Density Plot (50 MHz 1CC BW QPSK High Channel)



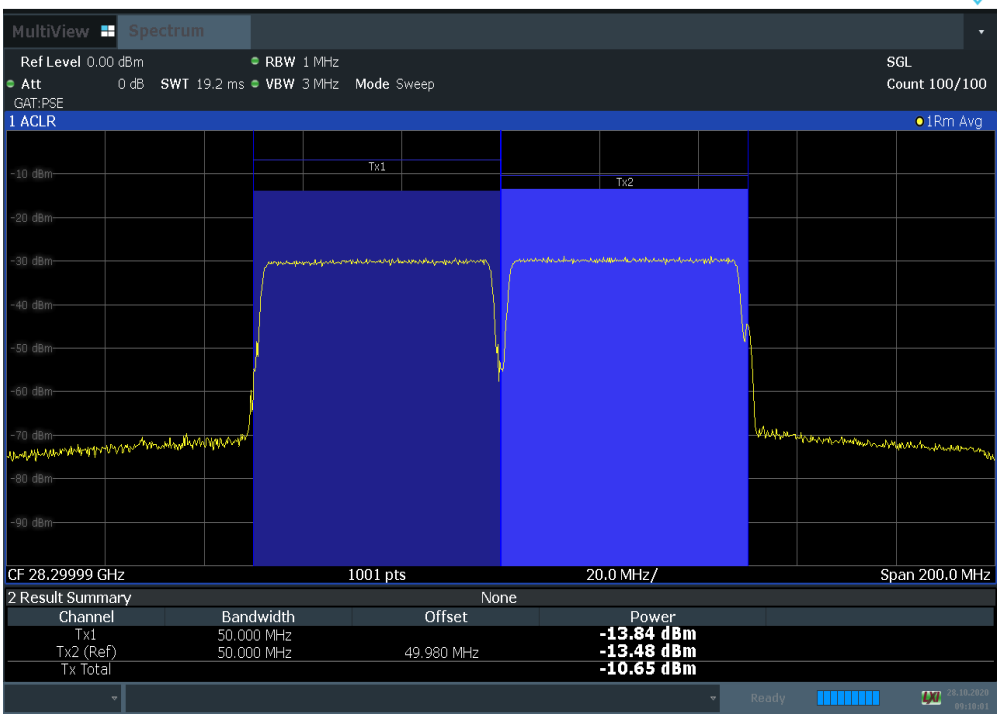
Plot 7-38. Antenna A EIRP Density Plot (50 MHz 1CC BW 16QAM High Channel)



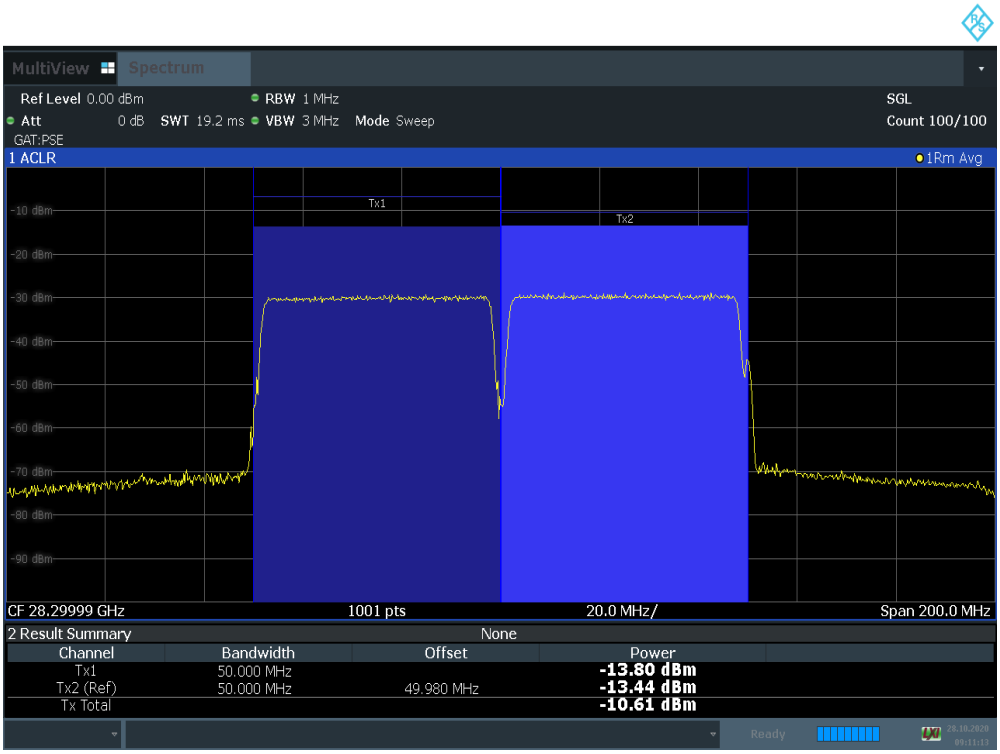
Plot 7-39. Antenna A EIRP Density Plot (50 MHz 1CC BW 64QAM High Channel)



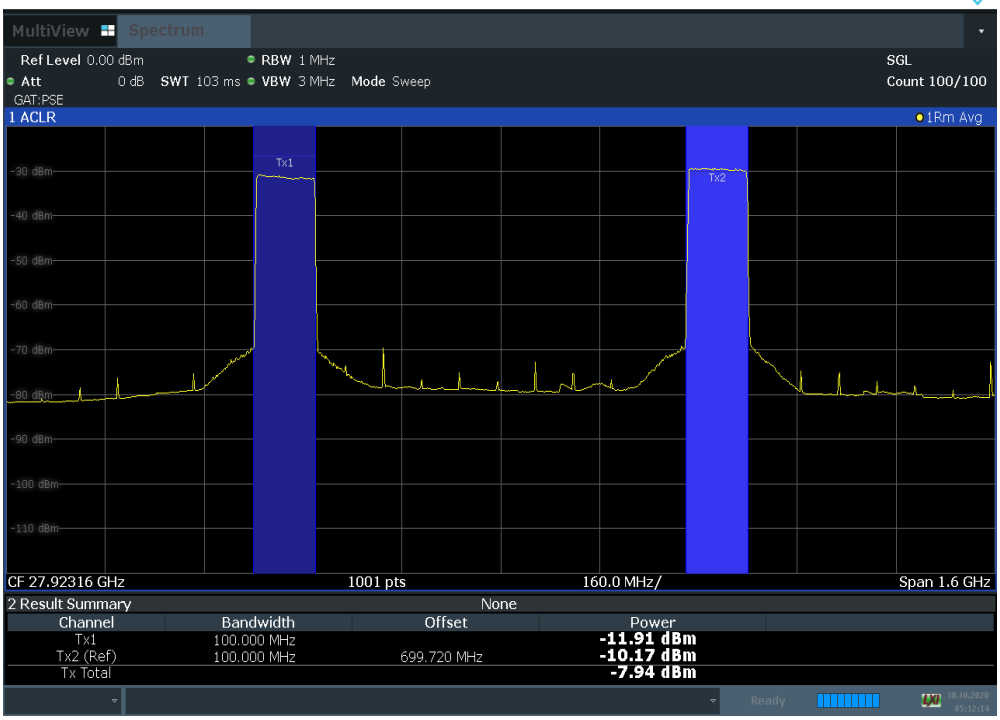
Plot 7-40. Antenna A EIRP Density Plot (50 MHz 2CC BW QPSK High Channel)



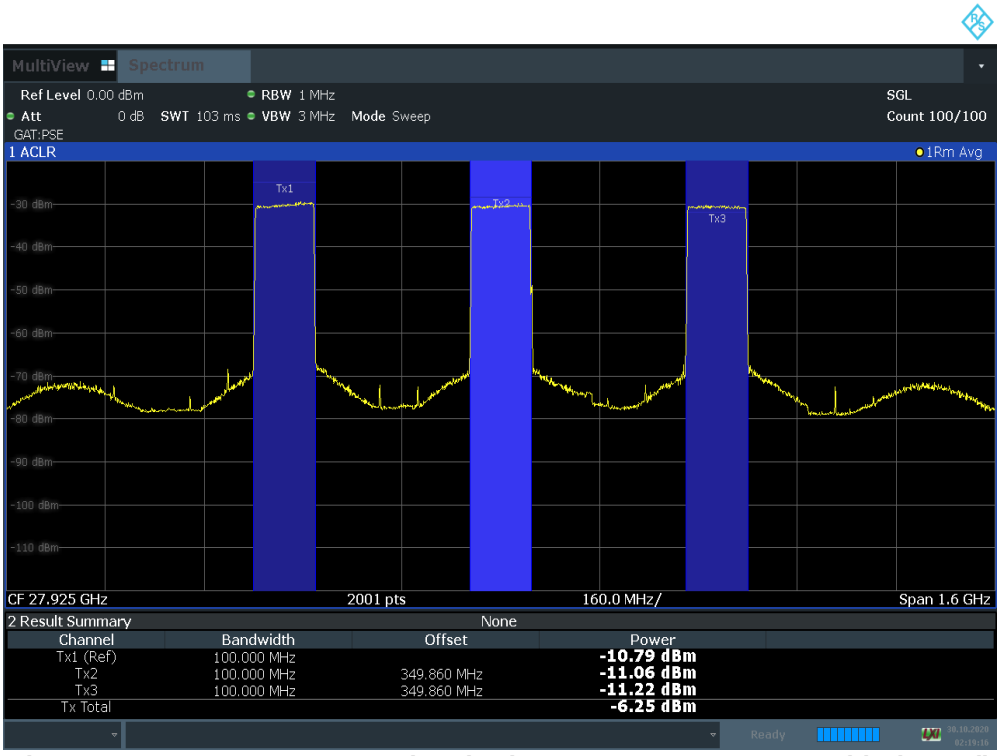
Plot 7-41. Antenna A EIRP Density Plot (50 MHz 2CC BW 16QAM High Channel)



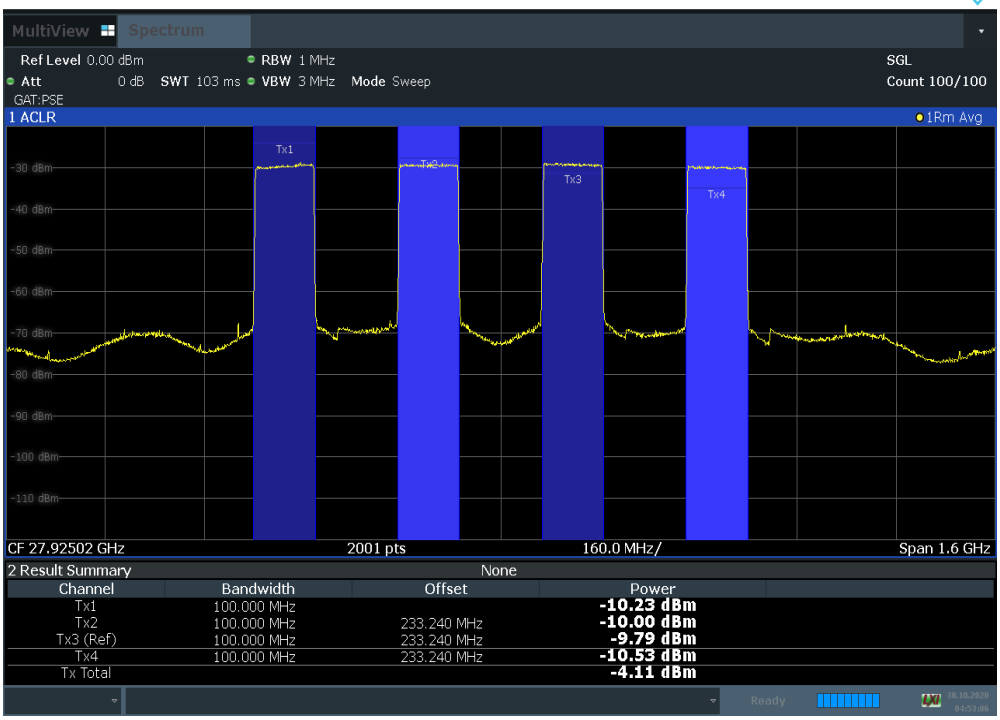
Plot 7-42. Antenna A EIRP Density Plot (50 MHz 2CC BW 64QAM High Channel)



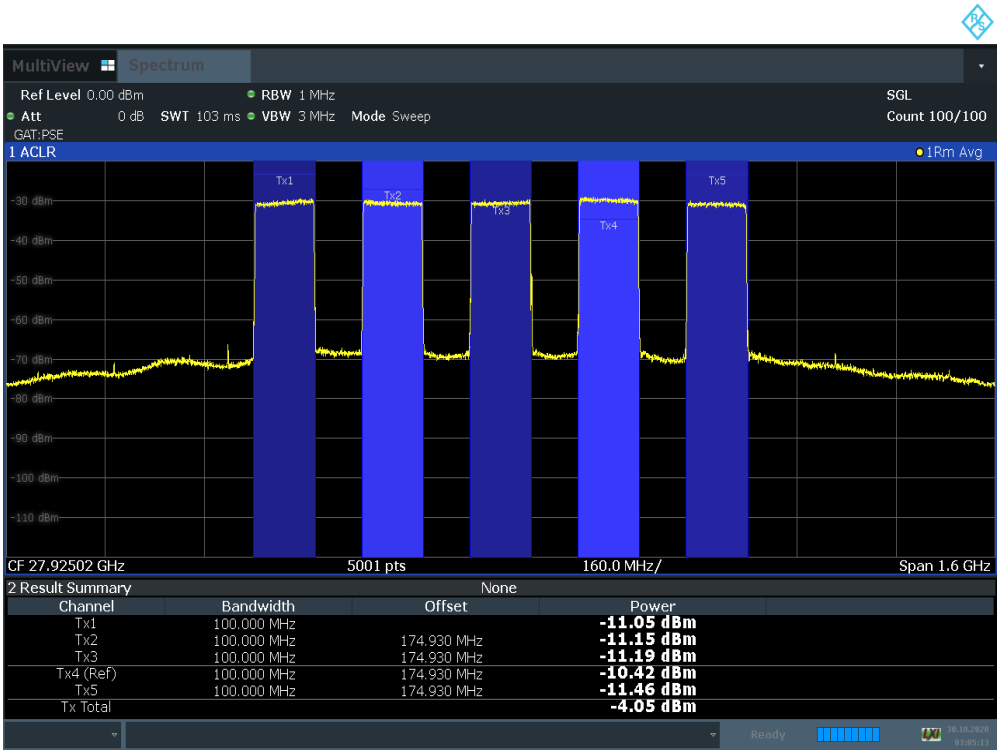
Plot 7-43. Antenna A EIRP Density Plot (100 MHz 2NC BW QPSK Mid Channel)



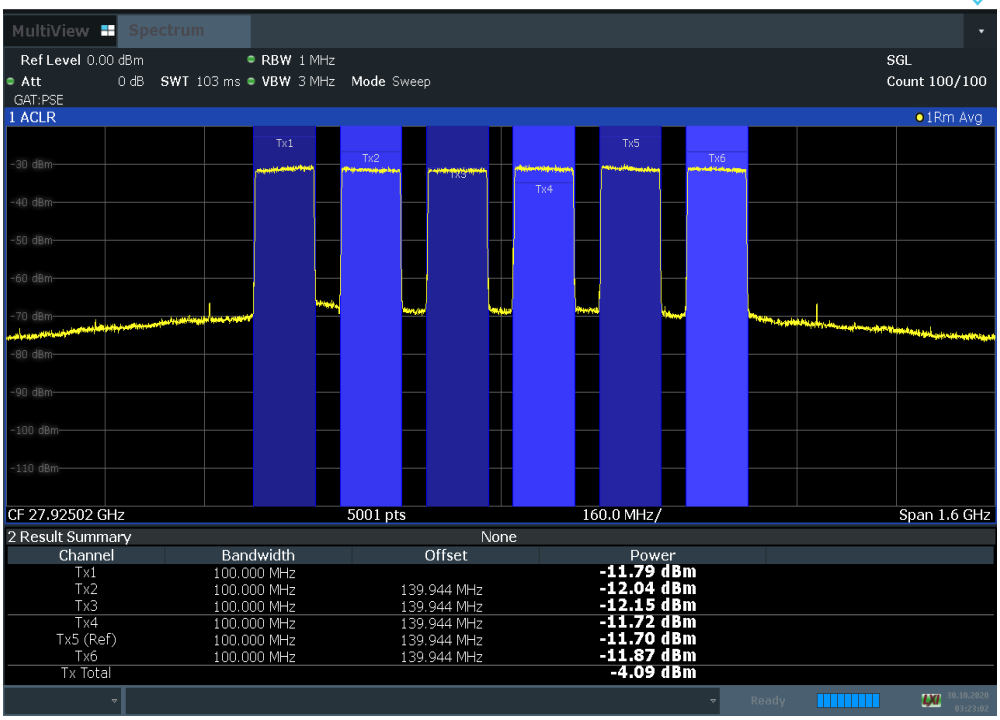
Plot 7-44. Antenna A EIRP Density Plot (100 MHz 3NC BW QPSK Mid Channel)



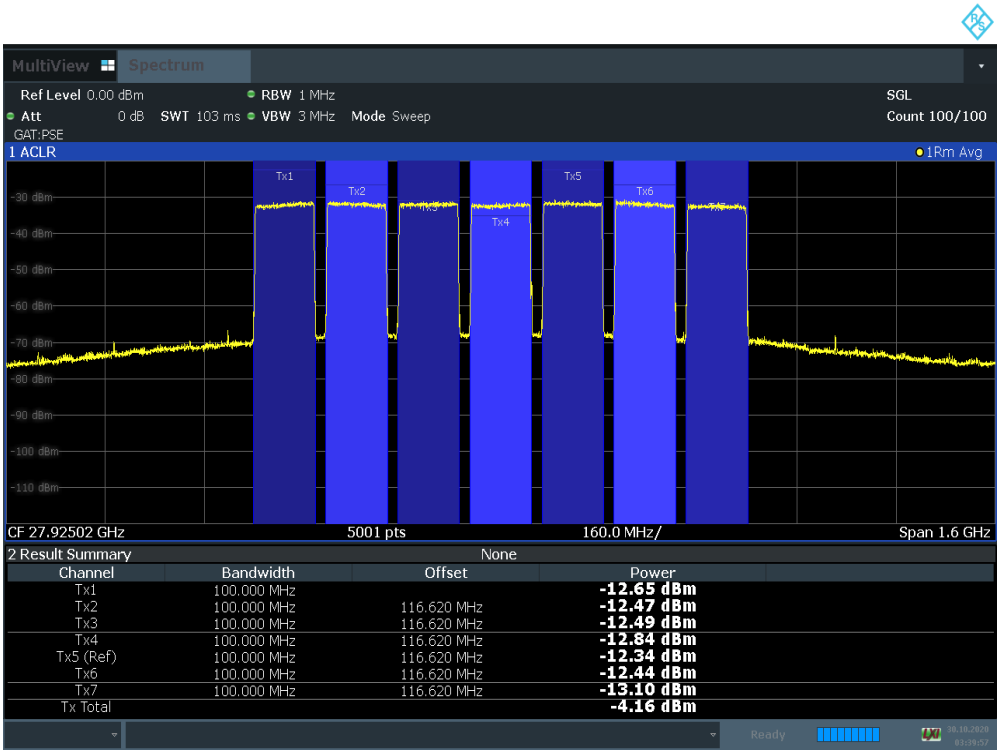
Plot 7-45. Antenna A EIRP Density Plot (100 MHz 4NC BW QPSK Mid Channel)



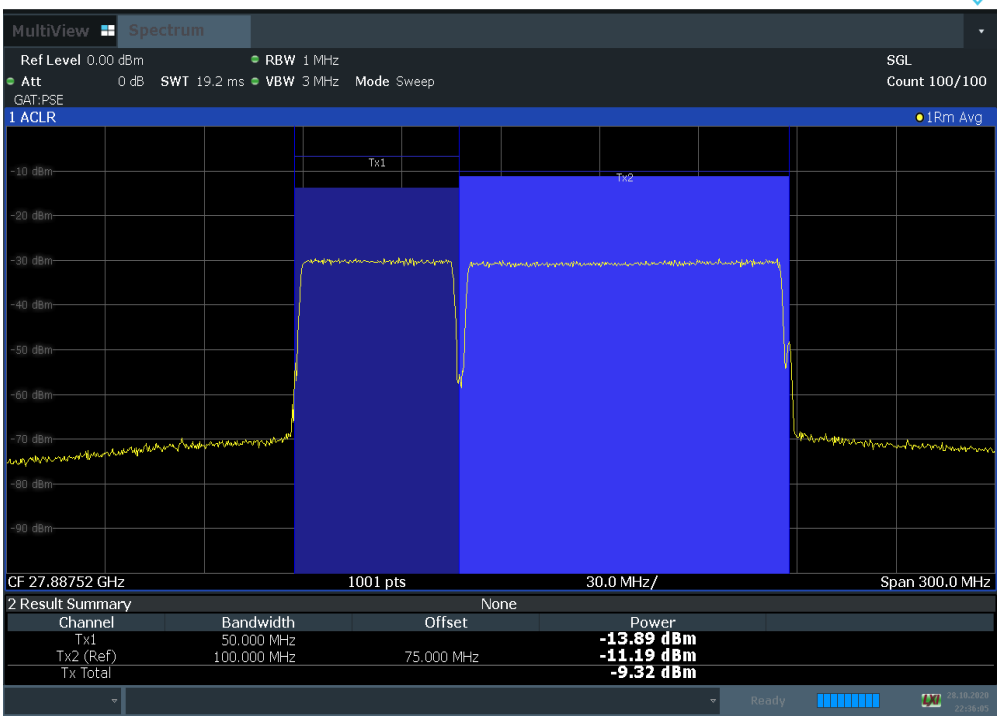
Plot 7-46. Antenna A EIRP Density Plot (100 MHz 5NC BW QPSK Mid Channel)



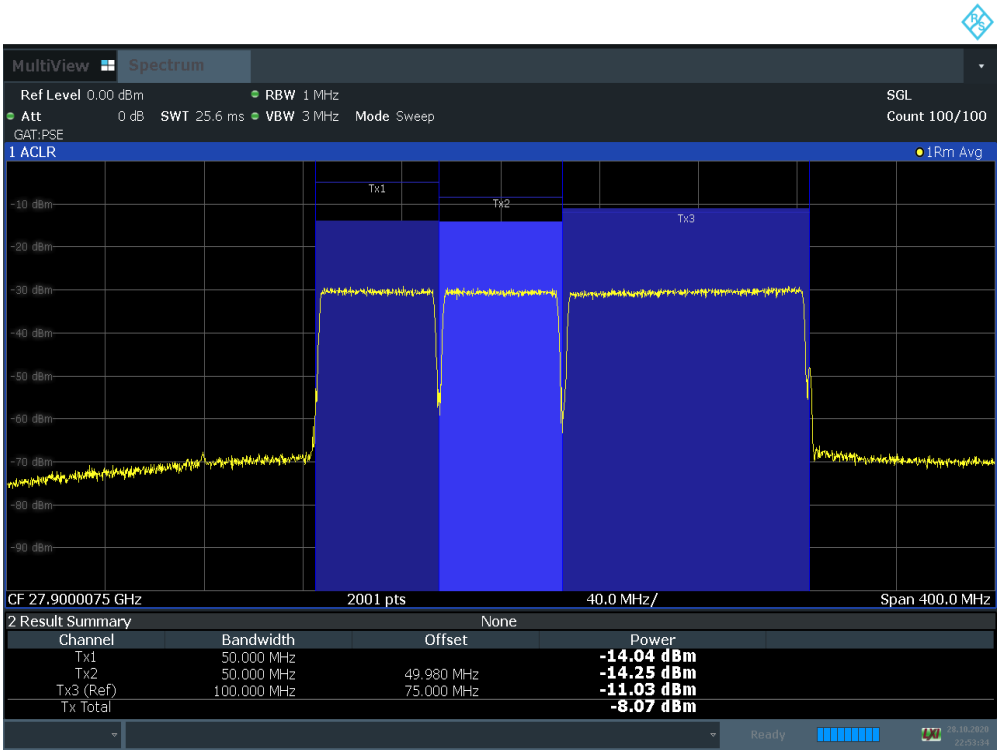
Plot 7-47. Antenna A EIRP Density Plot (100 MHz 6NC BW QPSK Mid Channel)



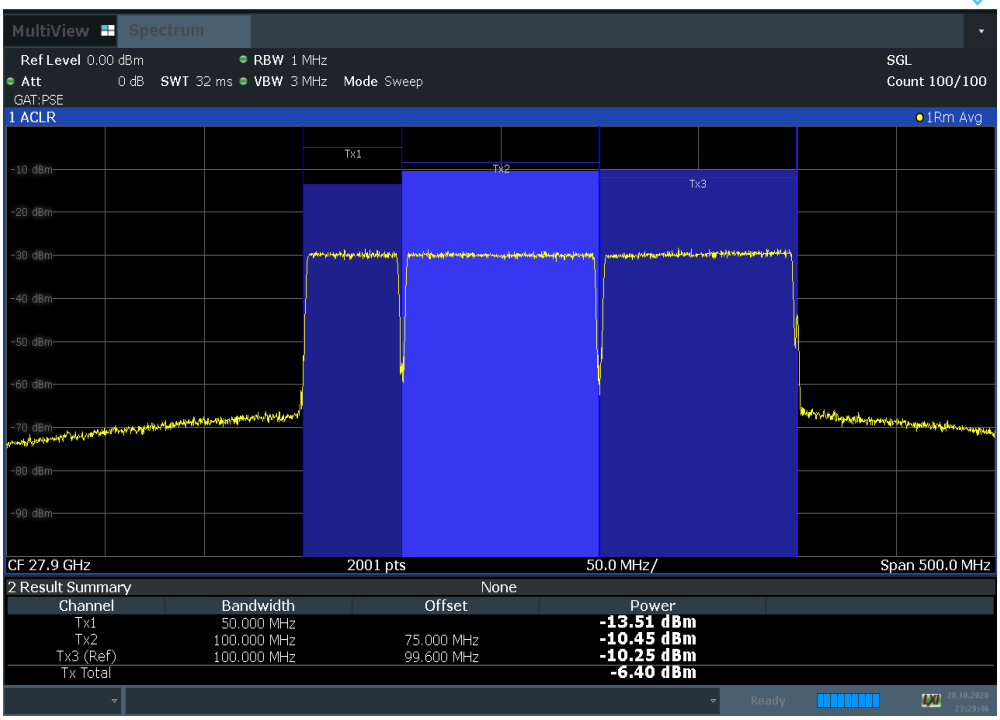
Plot 7-48. Antenna A EIRP Density Plot (100 MHz 7NC BW QPSK Mid Channel)



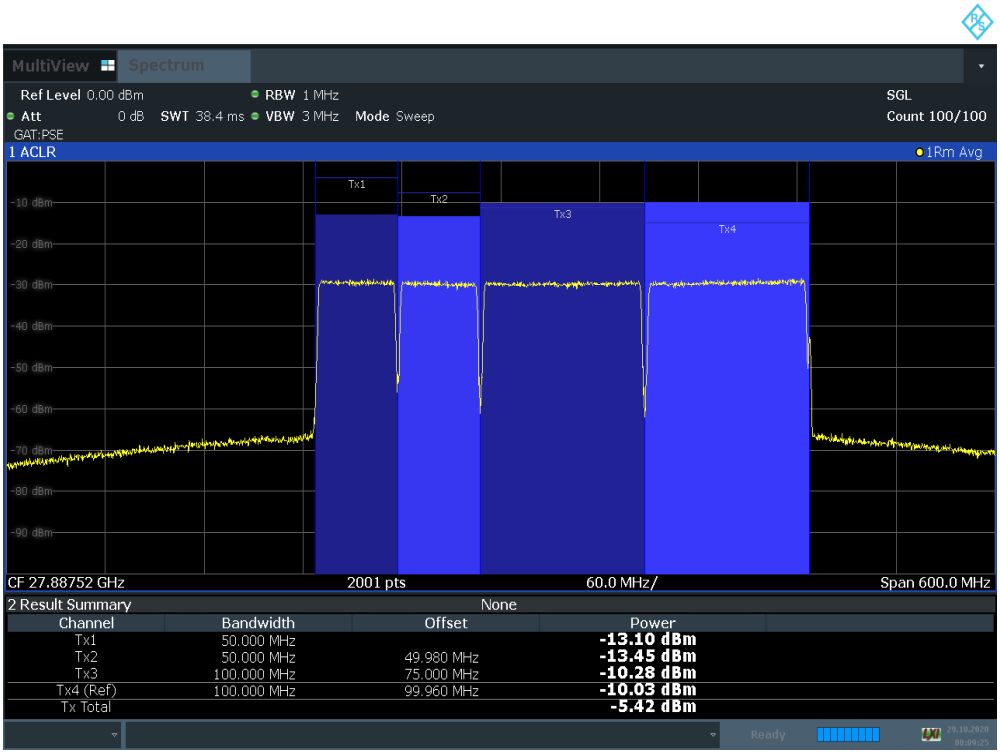
Plot 7-49. Antenna A EIRP Density Plot (50 MHz 1CC + 100 MHz 1CC BW QPSK Mid Channel)



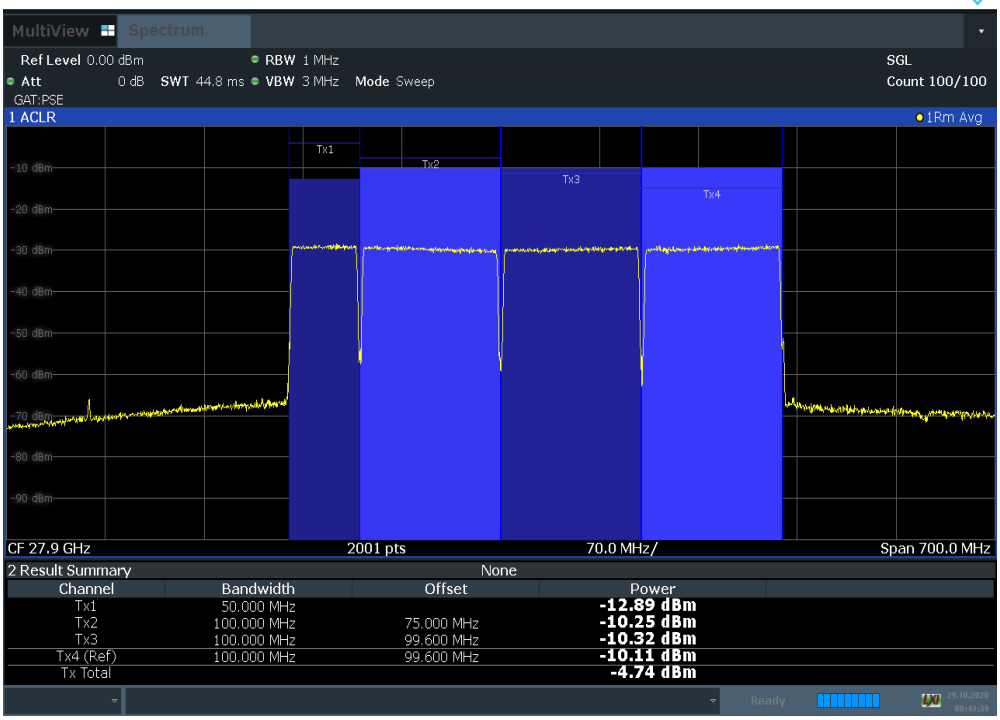
Plot 7-50. Antenna A EIRP Density Plot (50 MHz 2CC + 100 MHz 1CC BW QPSK Mid Channel)



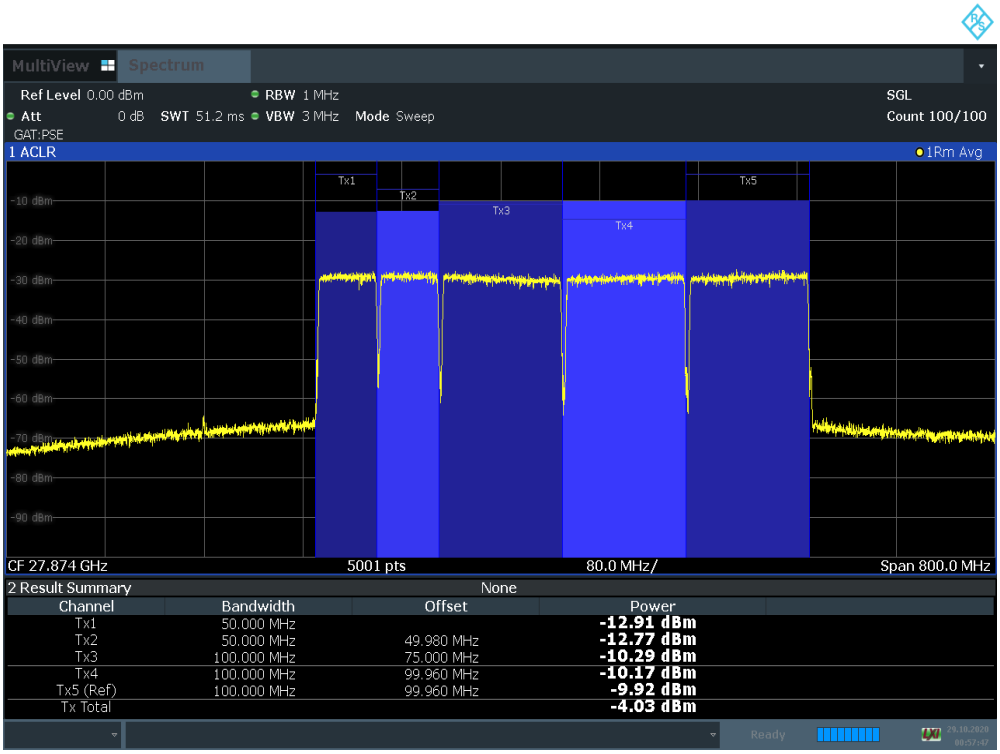
Plot 7-51. Antenna A EIRP Density Plot (50 MHz 1CC + 100 MHz 2CC BW QPSK Mid Channel)



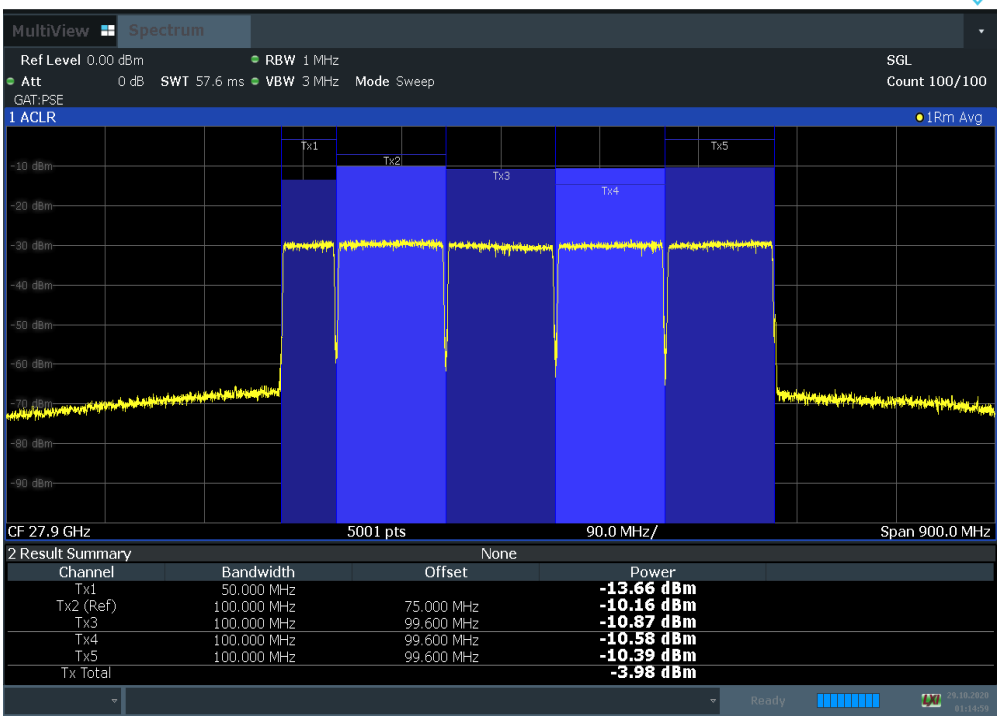
Plot 7-52. Antenna A EIRP Density Plot (50 MHz 2CC + 100 MHz 2CC BW QPSK Mid Channel)



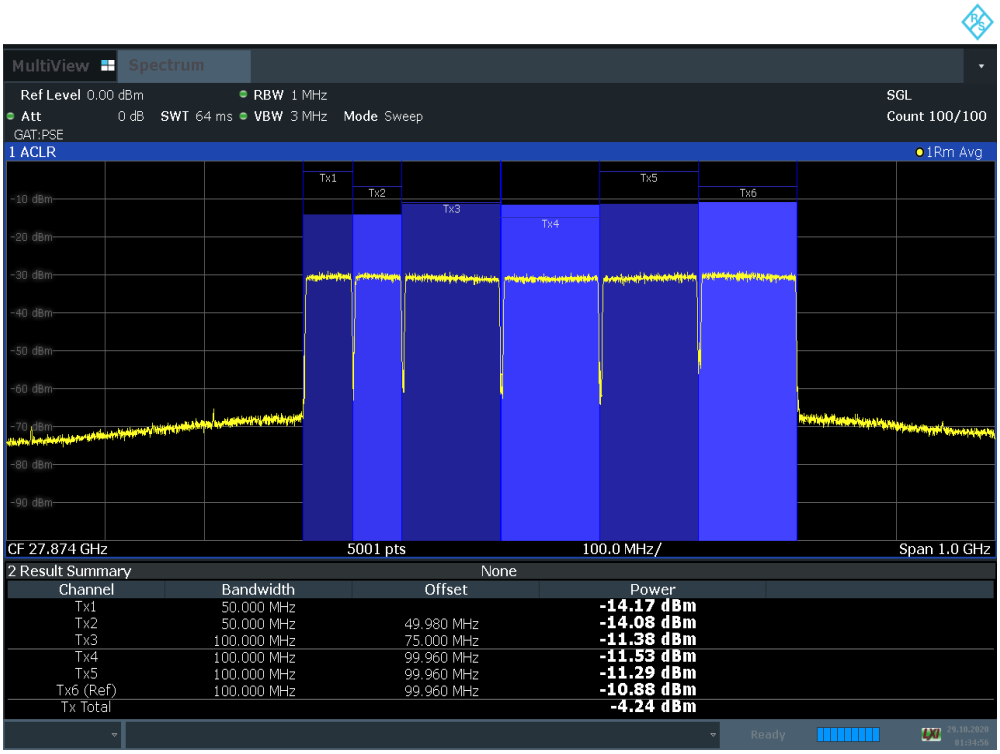
Plot 7-53. Antenna A EIRP Density Plot (50 MHz 1CC + 100 MHz 3CC BW QPSK Mid Channel)



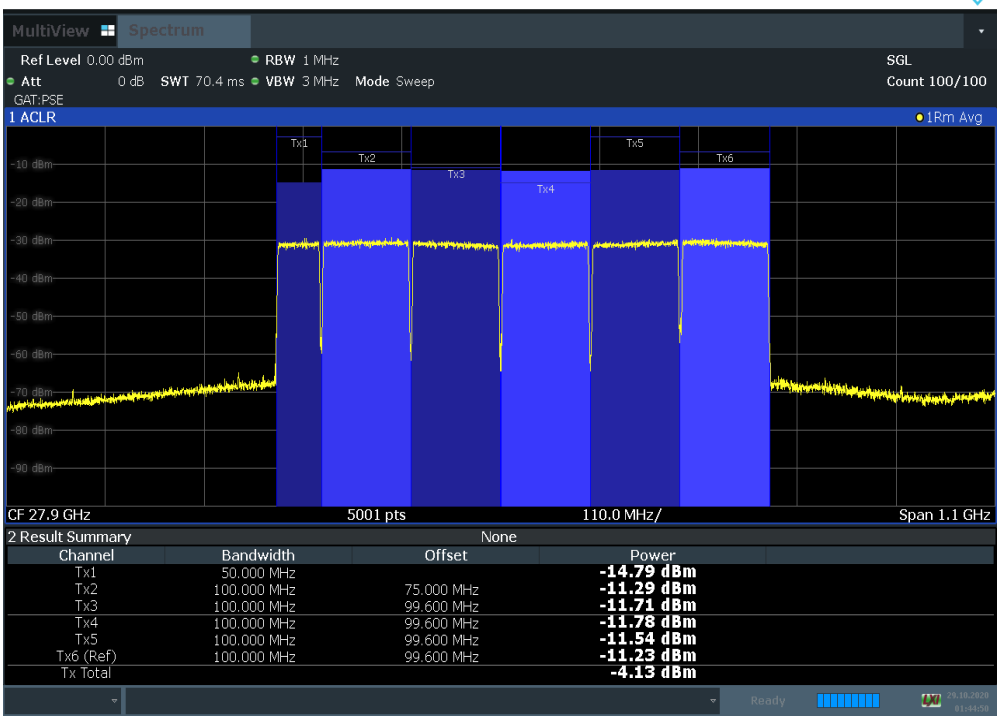
Plot 7-54. Antenna A EIRP Density Plot (50 MHz 2CC + 100 MHz 3CC BW QPSK Mid Channel)



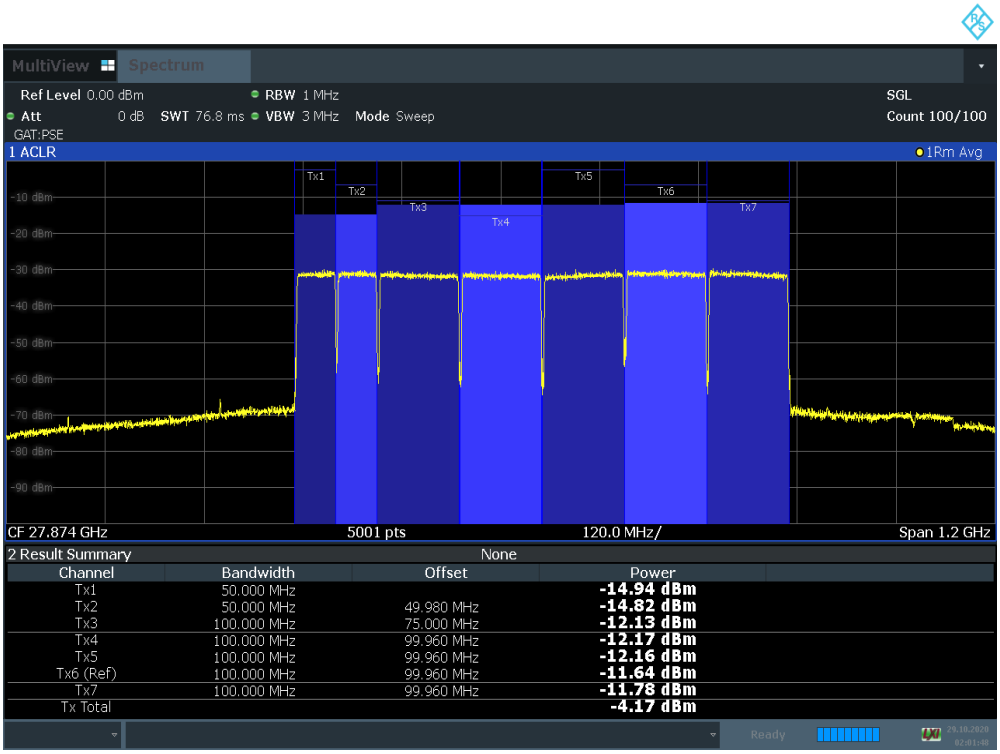
Plot 7-55. Antenna A EIRP Density Plot (50 MHz 1CC + 100 MHz 4CC BW QPSK Mid Channel)



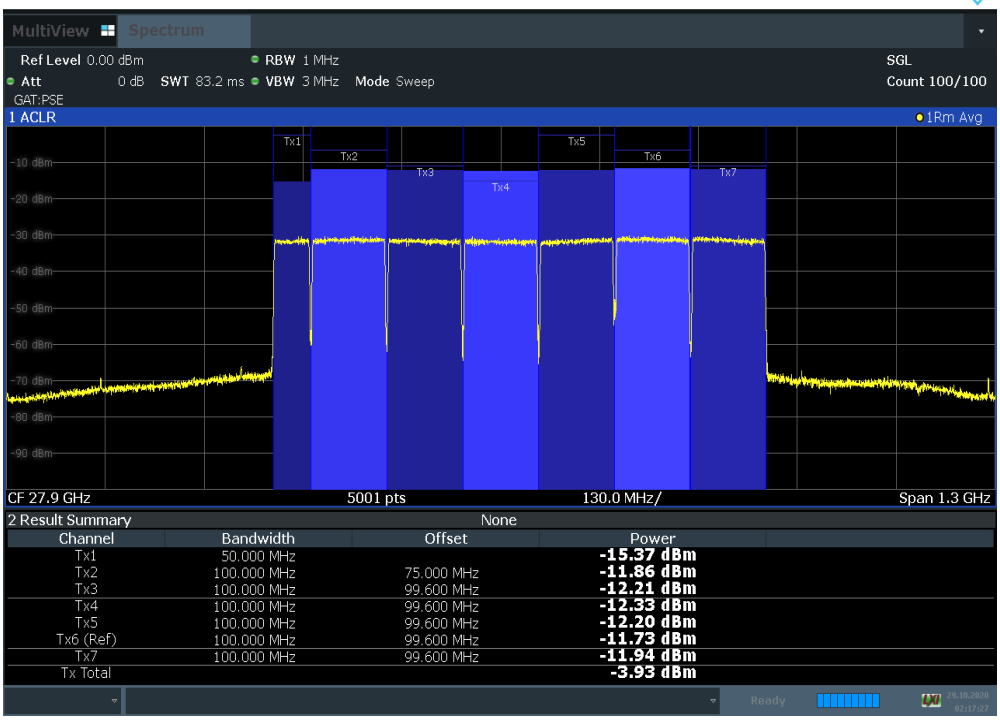
Plot 7-56. Antenna A EIRP Density Plot (50 MHz 2CC + 100 MHz 4CC BW QPSK Mid Channel)



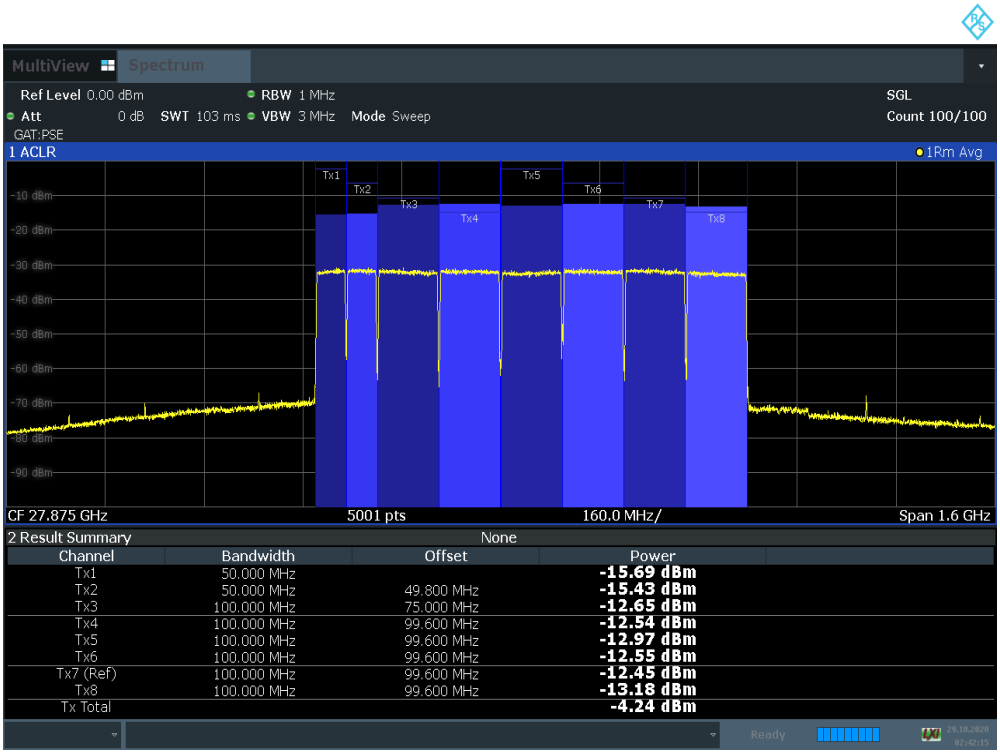
Plot 7-57. Antenna A EIRP Density Plot (50 MHz 1CC + 100 MHz 5CC BW QPSK Mid Channel)



Plot 7-58. Antenna A EIRP Density Plot (50 MHz 2CC + 100 MHz 5CC BW QPSK Mid Channel)



Plot 7-59. Antenna A EIRP Density Plot (50 MHz 1CC + 100 MHz 6CC BW QPSK Mid Channel)

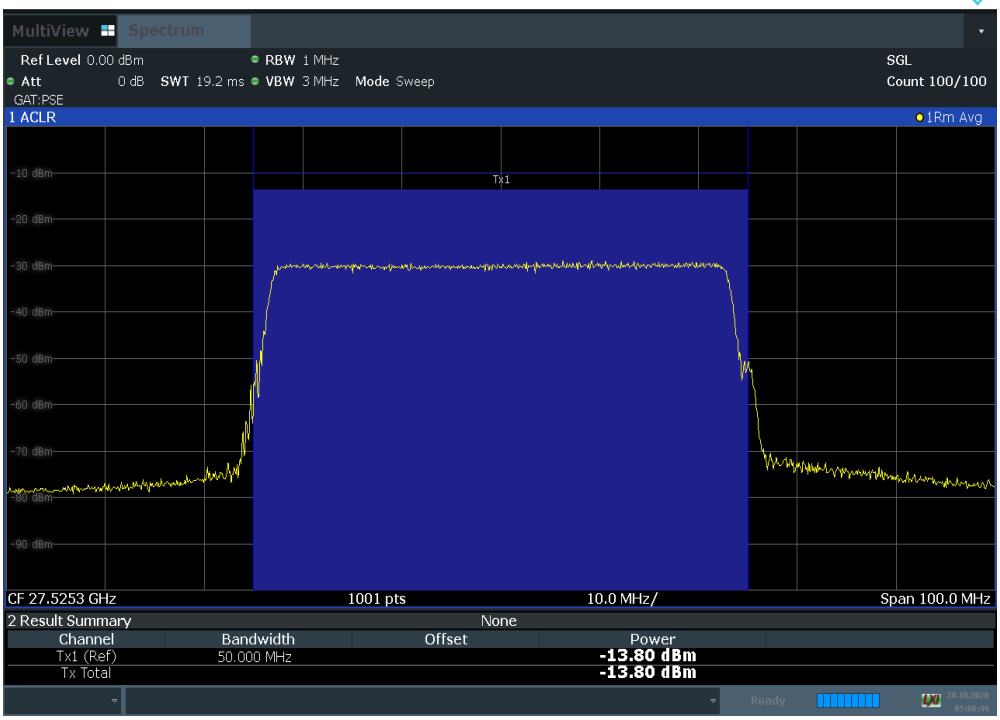


Plot 7-60. Antenna A EIRP Density Plot (50 MHz 2CC + 100 MHz 6CC BW QPSK Mid Channel)

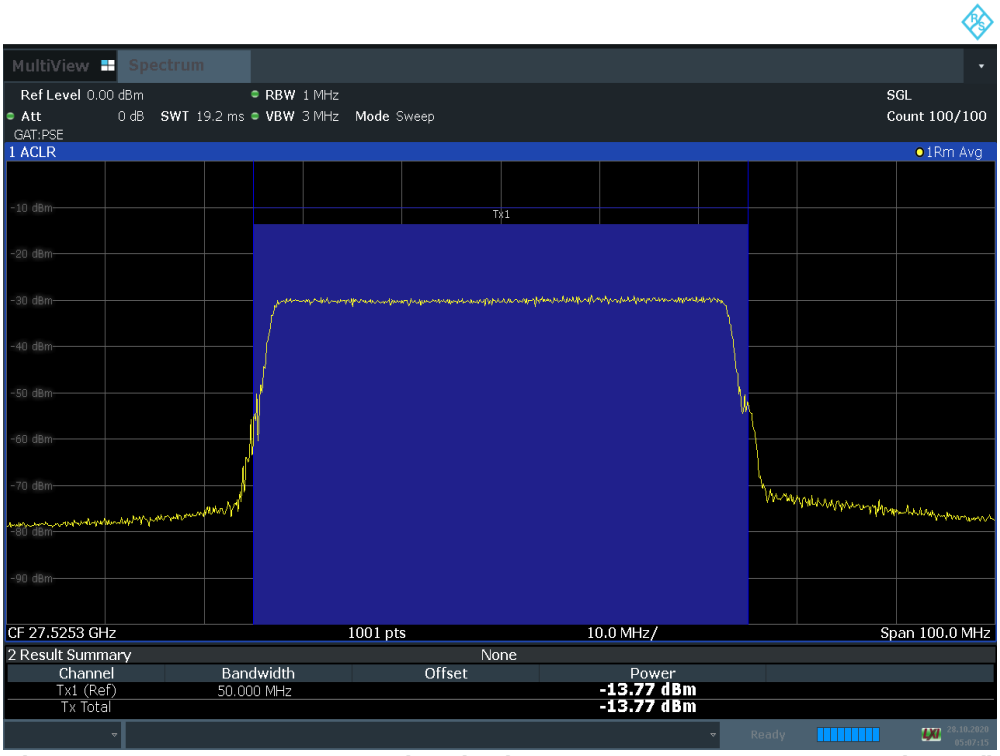
7.3.2 Antenna B EIRP Density

Antenna	Bandwidth	Configuration	Chan.	Frequency	Modulation	Horn Angle	Analyzer Level	Average e.i.r.p. PSD	Scaling factor	Average e.i.r.p. PSD	PSD Limit	Margin
	[MHz]			[GHz]		[degrees]	[dBm]	[dBm]	[dB]	[dBm/100MHz]	[dBm/100MHz]	[dB/100MHz]
B	50	1CC	Low	27.550	QPSK	45.0	-13.80	45.60	3.01	48.61	75.00	-29.40
	50		Low	27.550	16QAM	45.0	-13.77	45.63	3.01	48.64	75.00	-29.37
	50		Low	27.550	64QAM	45.0	-13.72	45.68	3.01	48.69	75.00	-29.32
	50	2CC	Low	27.550	QPSK	45.0	-13.80	45.60	3.01	48.61	75.00	-29.40
	50		Low	27.550	16QAM	45.0	-13.60	45.80	3.01	48.81	75.00	-29.20
	50		Low	27.550	64QAM	45.0	-13.55	45.85	3.01	48.86	75.00	-29.15
	50	1CC	Mid	27.925	QPSK	45.0	-14.22	45.26	3.01	48.27	75.00	-29.74
	50		Mid	27.925	16QAM	45.0	-14.07	45.41	3.01	48.42	75.00	-29.59
	50		Mid	27.925	64QAM	45.0	-14.03	45.45	3.01	48.46	75.00	-29.55
	50	2CC	Mid	27.925	QPSK	45.0	-14.41	45.07	3.01	48.08	75.00	-29.93
	50		Mid	27.925	16QAM	45.0	-14.17	45.31	3.01	48.32	75.00	-29.69
	50		Mid	27.925	64QAM	45.0	-14.19	45.29	3.01	48.30	75.00	-29.71
	50	1CC	High	28.300	QPSK	45.0	-14.01	45.80	3.01	48.81	75.00	-29.20
	50		High	28.300	16QAM	45.0	-14.00	45.82	3.01	48.83	75.00	-29.18
	50		High	28.300	64QAM	45.0	-13.96	45.85	3.01	48.86	75.00	-29.15
	50	2CC	High	28.300	QPSK	45.0	-14.12	45.69	3.01	48.70	75.00	-29.31
	50		High	28.300	16QAM	45.0	-14.02	45.80	3.01	48.81	75.00	-29.20
	50		High	28.300	64QAM	45.0	-13.94	45.87	3.01	48.88	75.00	-29.13
	100	2NC	Mid	27.925	QPSK	45.0	-10.72	48.77	0.00	48.77	75.00	-26.23
	100	3NC	Mid	27.925	QPSK	45.0	-11.08	48.40	0.00	48.40	75.00	-26.60
	100	4NC	Mid	27.925	QPSK	45.0	-10.45	49.04	0.00	49.04	75.00	-25.96
	100	5NC	Mid	27.925	QPSK	45.0	-11.42	48.06	0.00	48.06	75.00	-26.94
	100	6NC	Mid	27.925	QPSK	45.0	-12.33	47.16	0.00	47.16	75.00	-27.84
	100	7NC	Mid	27.925	QPSK	45.0	-13.03	46.46	0.00	46.46	75.00	-28.54
	50	50M x1 + 100M x1	Mid	27.925	QPSK	45.0	-14.53	44.95	3.01	47.96	75.00	-30.05
		50M x2 + 100M x1	Mid	27.925	QPSK	45.0	-11.05	48.44	0.00	48.44	75.00	-26.56
		50M x1 + 100M x2	Mid	27.925	QPSK	45.0	-10.93	48.56	0.00	48.56	75.00	-26.44
		50M x2 + 100M x2	Mid	27.925	QPSK	45.0	-10.72	48.76	0.00	48.76	75.00	-26.24
		50M x1 + 100M x3	Mid	27.925	QPSK	45.0	-13.57	45.91	3.01	48.92	75.00	-29.09
		50M x2 + 100M x3	Mid	27.925	QPSK	45.0	-13.46	46.03	3.01	**49.04**	75.00	-28.97
		50M x1 + 100M x4	Mid	27.925	QPSK	45.0	-11.02	48.46	0.00	48.46	75.00	-26.54
		50M x2 + 100M x4	Mid	27.925	QPSK	45.0	-11.43	48.06	0.00	48.06	75.00	-26.94
		50M x1 + 100M x5	Mid	27.925	QPSK	45.0	-11.87	47.61	0.00	47.61	75.00	-27.39
		50M x2 + 100M x5	Mid	27.925	QPSK	45.0	-12.24	47.24	0.00	47.24	75.00	-27.76
		50M x1 + 100M x6	Mid	27.925	QPSK	45.0	-12.51	46.97	0.00	46.97	75.00	-28.03
		50M x2 + 100M x6	Mid	27.925	QPSK	45.0	-15.90	43.58	3.01	46.59	75.00	-31.42

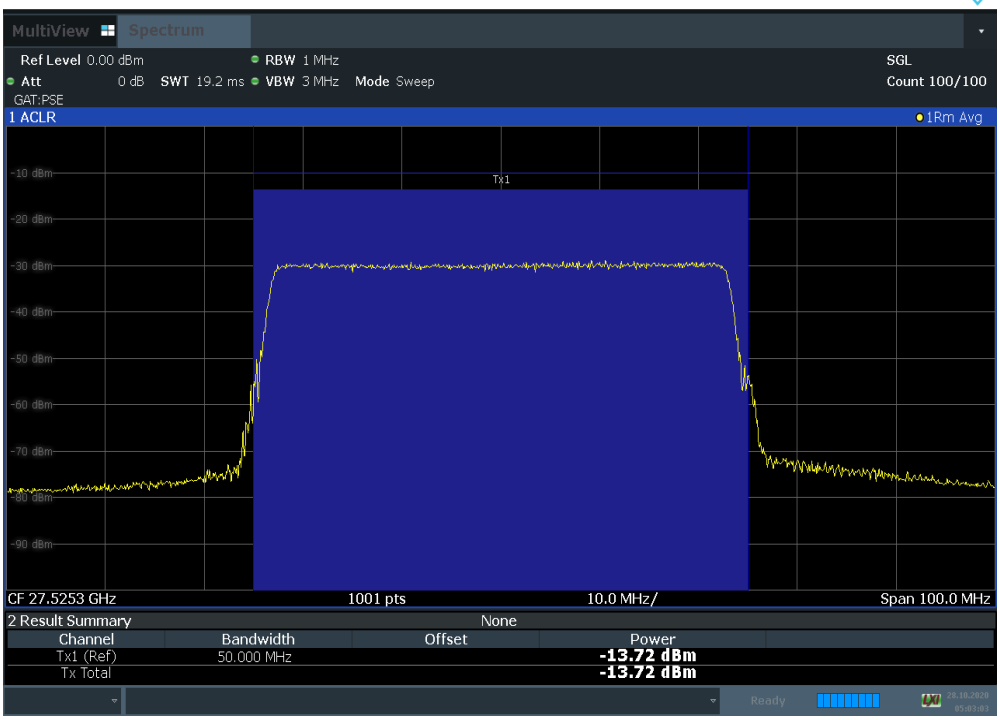
Table 7-8. Antenna B EIRP Density Summary Data



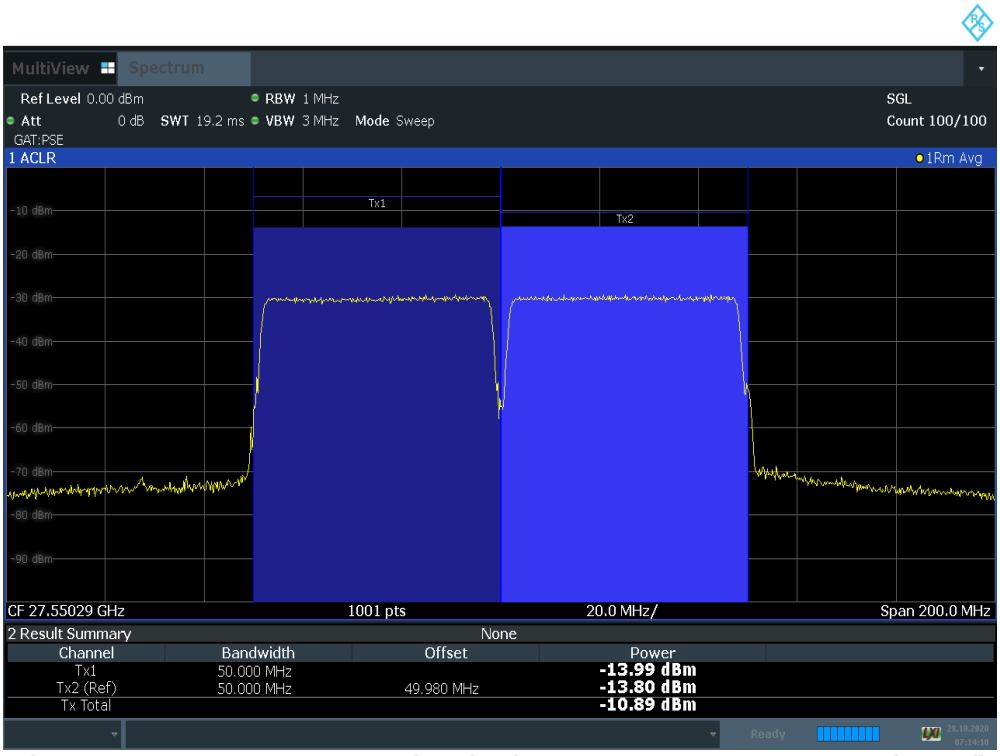
Plot 7-61. Antenna B EIRP Density Plot (50 MHz 1CC BW QPSK Low Channel)



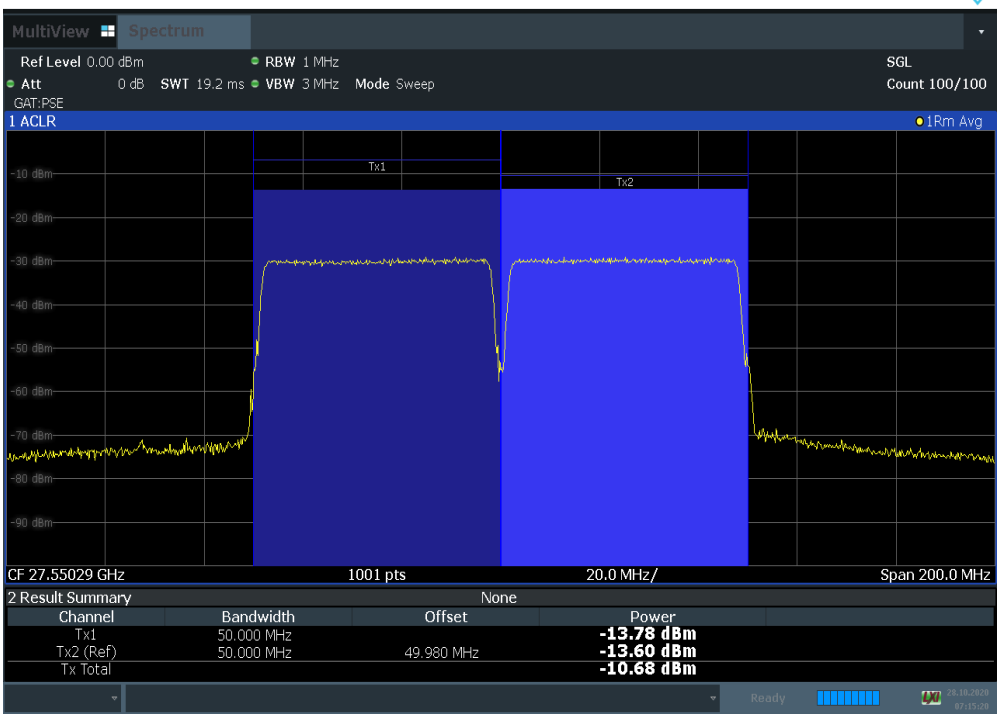
Plot 7-62. Antenna B EIRP Density Plot (50 MHz 1CC BW 16QAM Low Channel)



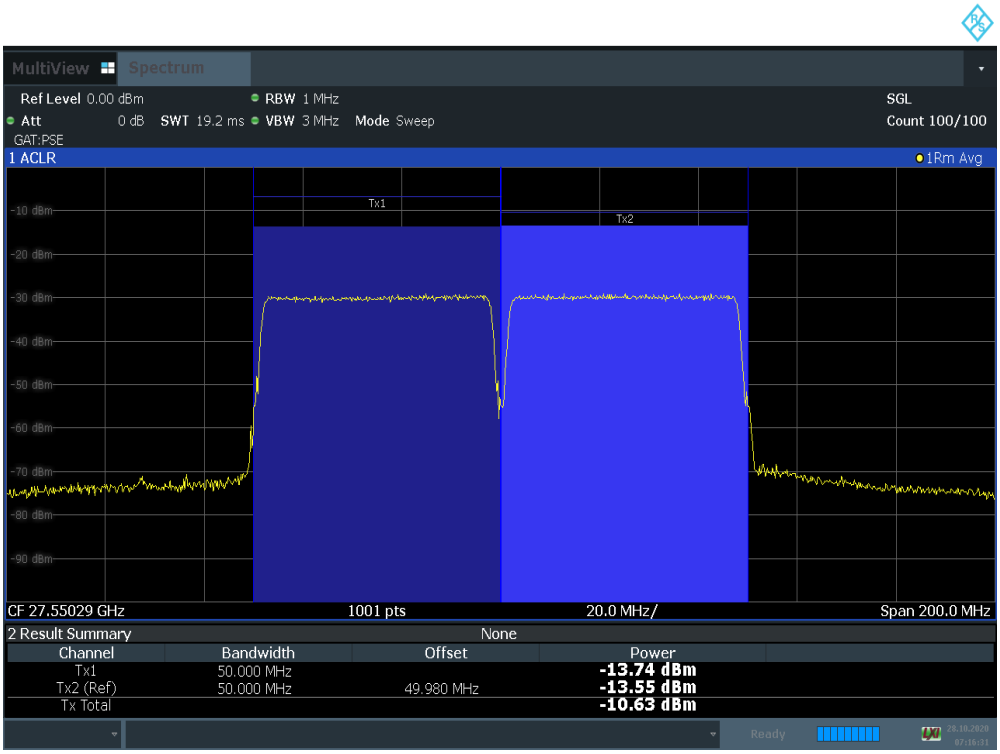
Plot 7-63. Antenna B EIRP Density Plot (50 MHz 1CC BW 64QAM Low Channel)



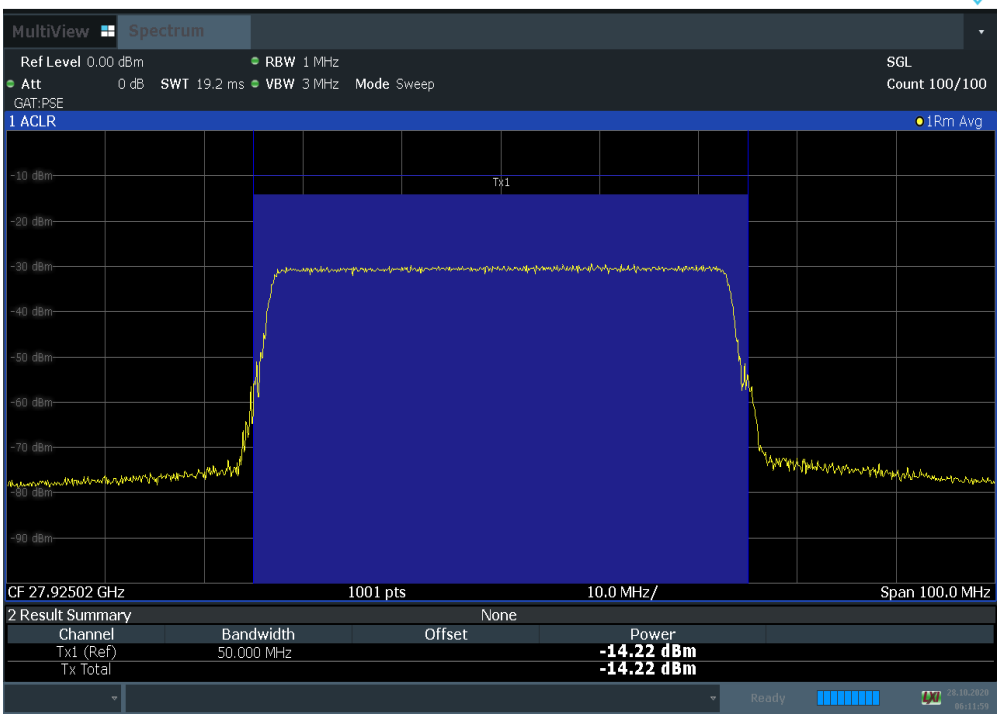
Plot 7-64. Antenna B EIRP Density Plot (50 MHz 2CC BW QPSK Low Channel)



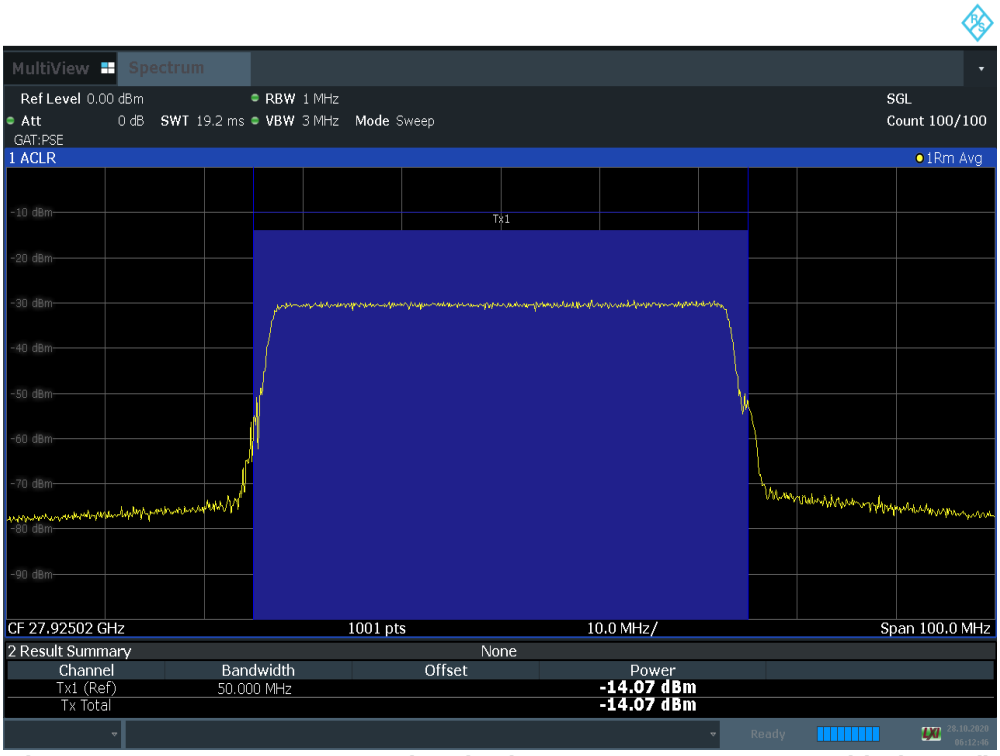
Plot 7-65. Antenna B EIRP Density Plot (50 MHz 2CC BW 16QAM Low Channel)



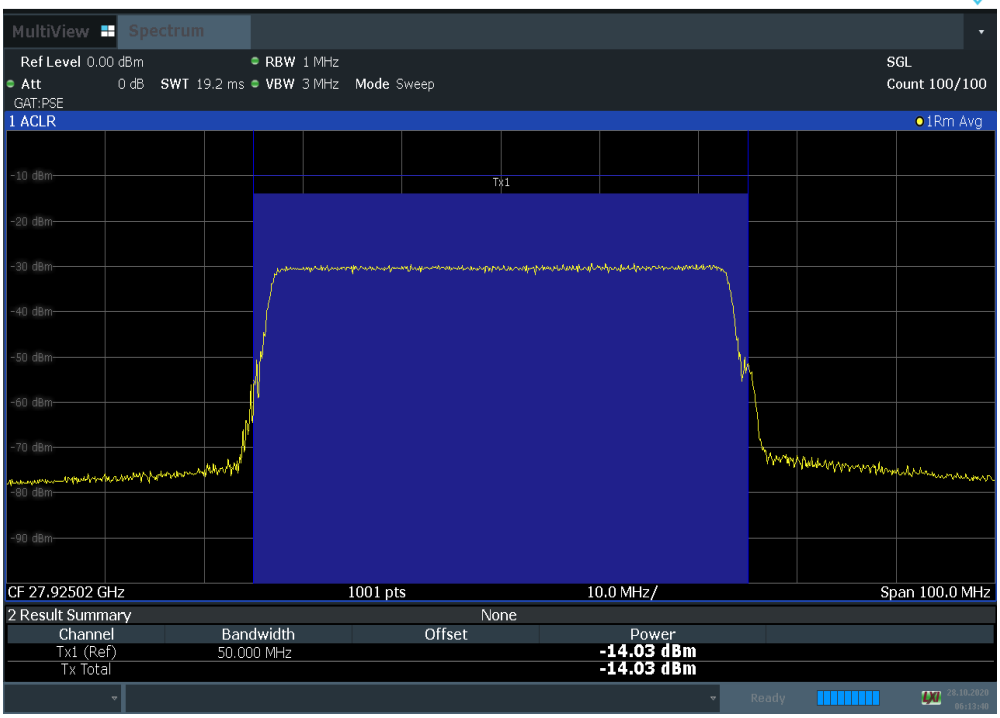
Plot 7-66. Antenna B EIRP Density Plot (50 MHz 2CC BW 64QAM Low Channel)



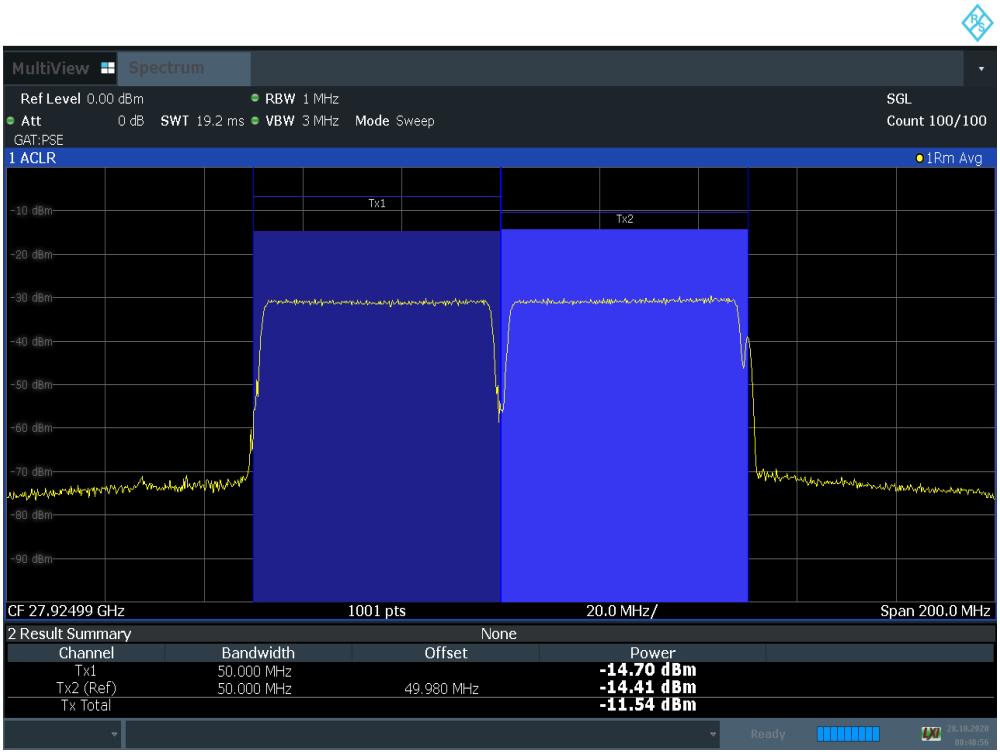
Plot 7-67. Antenna B EIRP Density Plot (50 MHz 1CC BW QPSK Mid Channel)



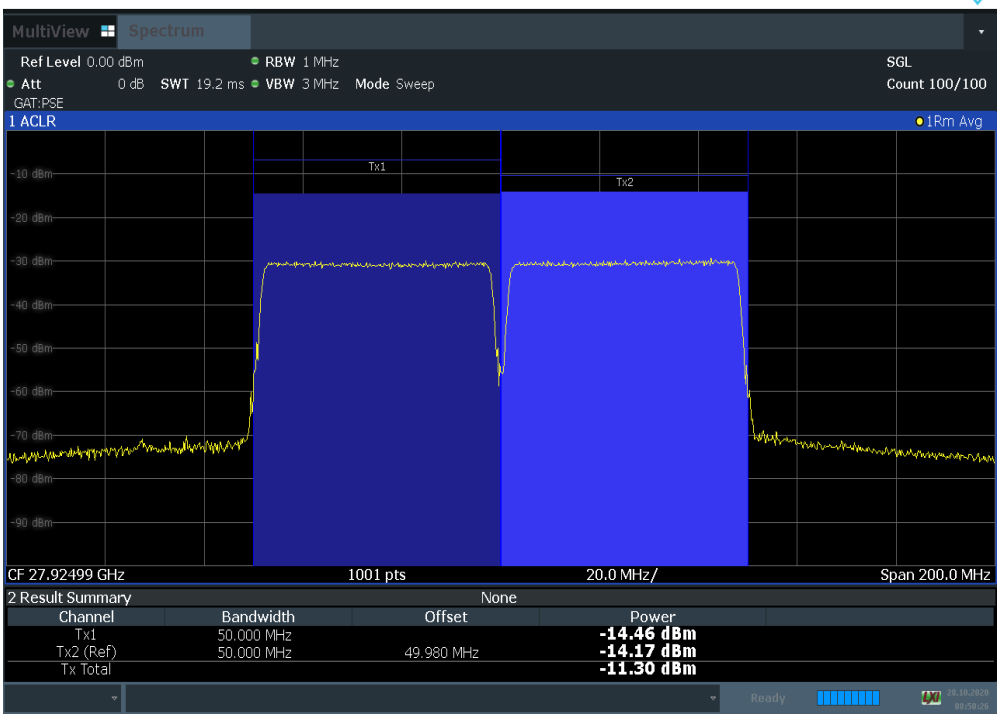
Plot 7-68. Antenna B EIRP Density Plot (50 MHz 1CC BW 16QAM Mid Channel)



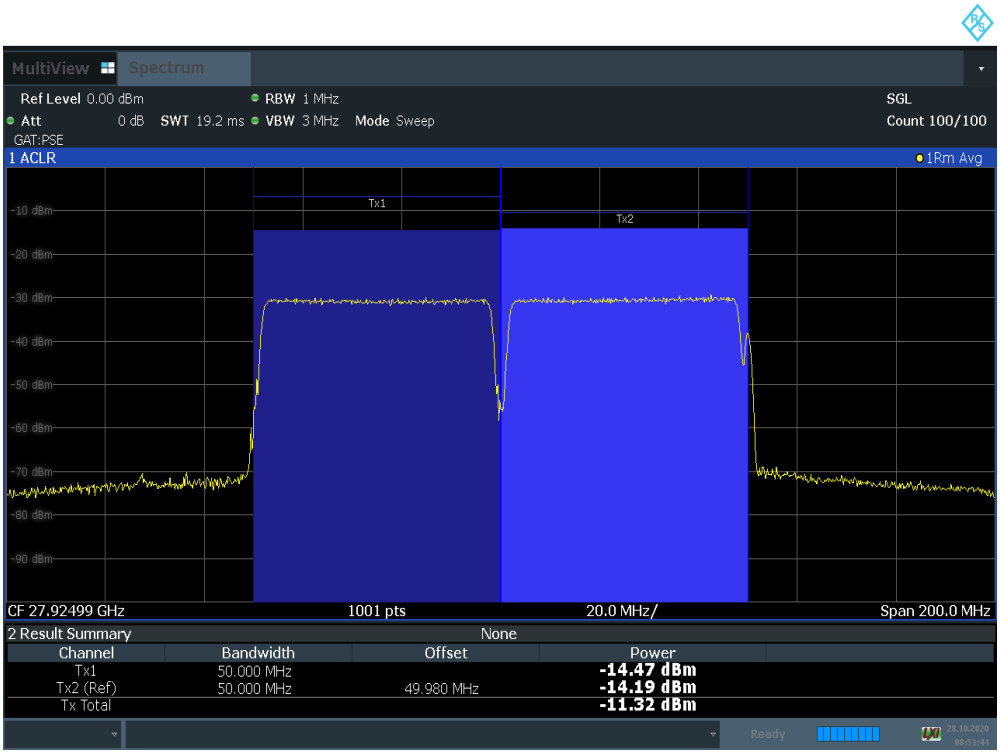
Plot 7-69. Antenna B EIRP Density Plot (50 MHz 1CC BW 64QAM Mid Channel)



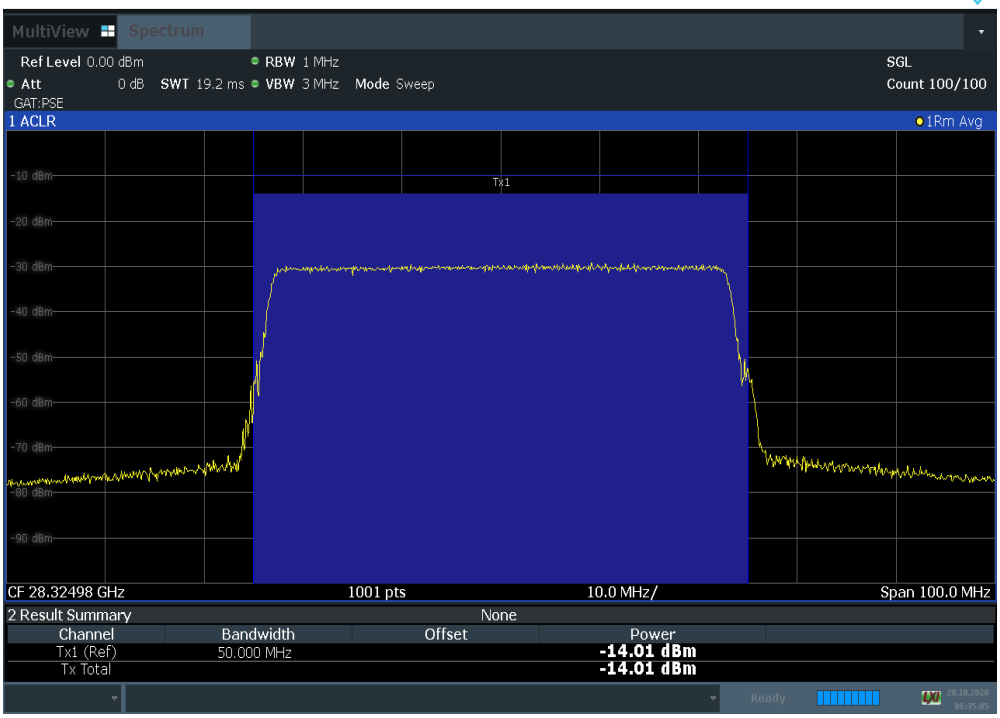
Plot 7-70. Antenna B EIRP Density Plot (50 MHz 2CC BW QPSK Mid Channel)



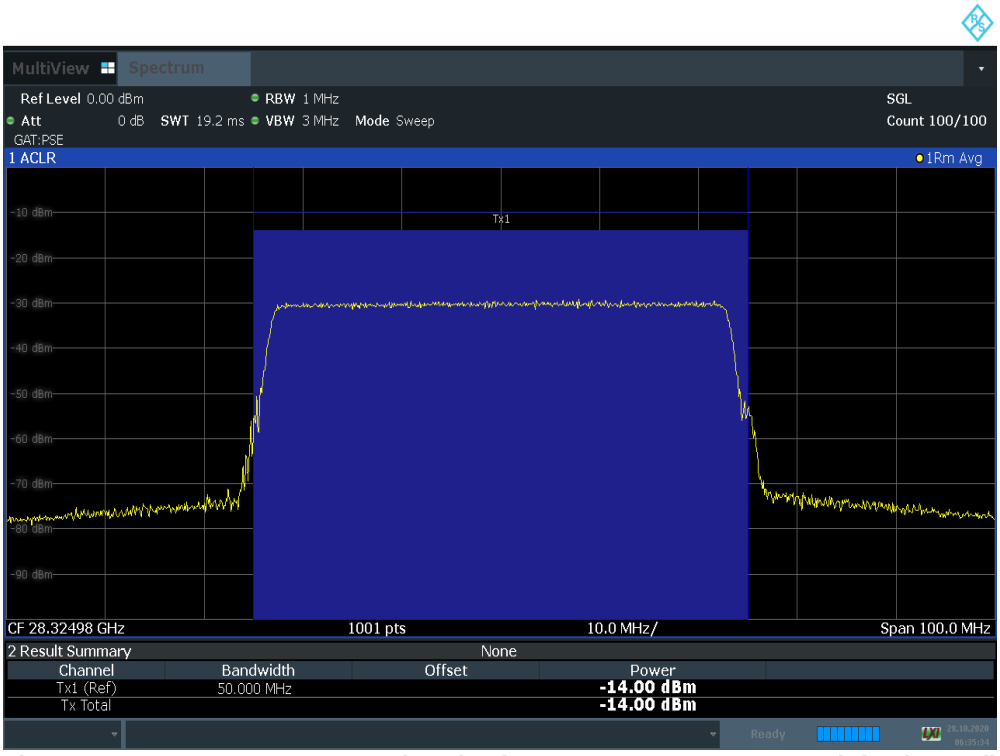
Plot 7-71. Antenna B EIRP Density Plot (50 MHz 2CC BW 16QAM Mid Channel)



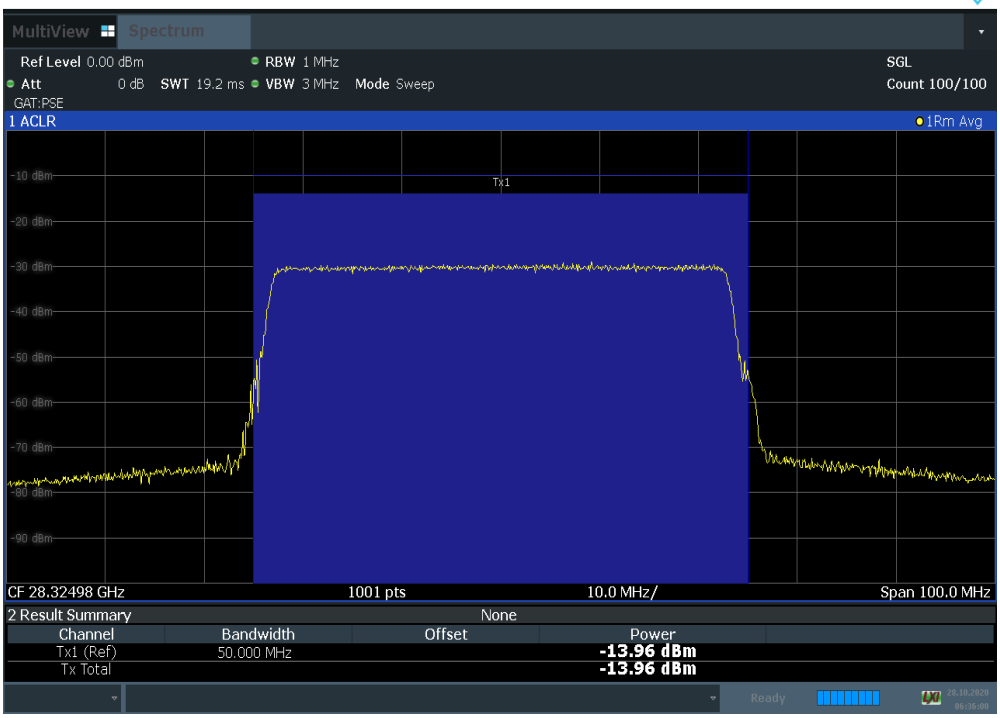
Plot 7-72. Antenna B EIRP Density Plot (50 MHz 2CC BW 64QAM Mid Channel)



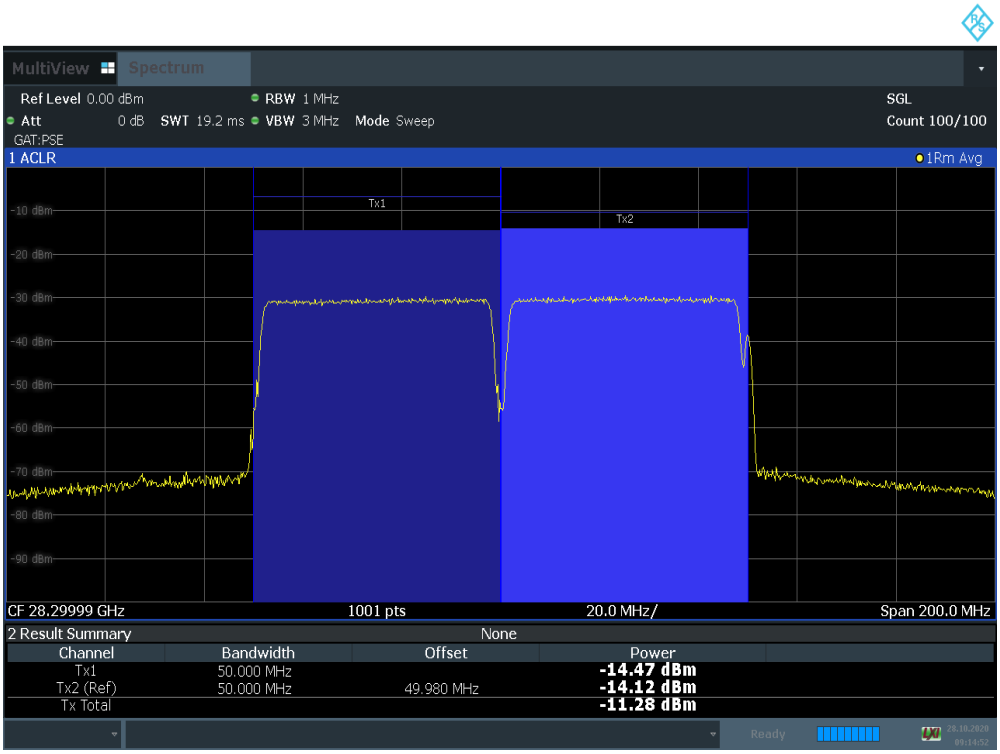
Plot 7-73. Antenna B EIRP Density Plot (50 MHz 1CC BW QPSK High Channel)



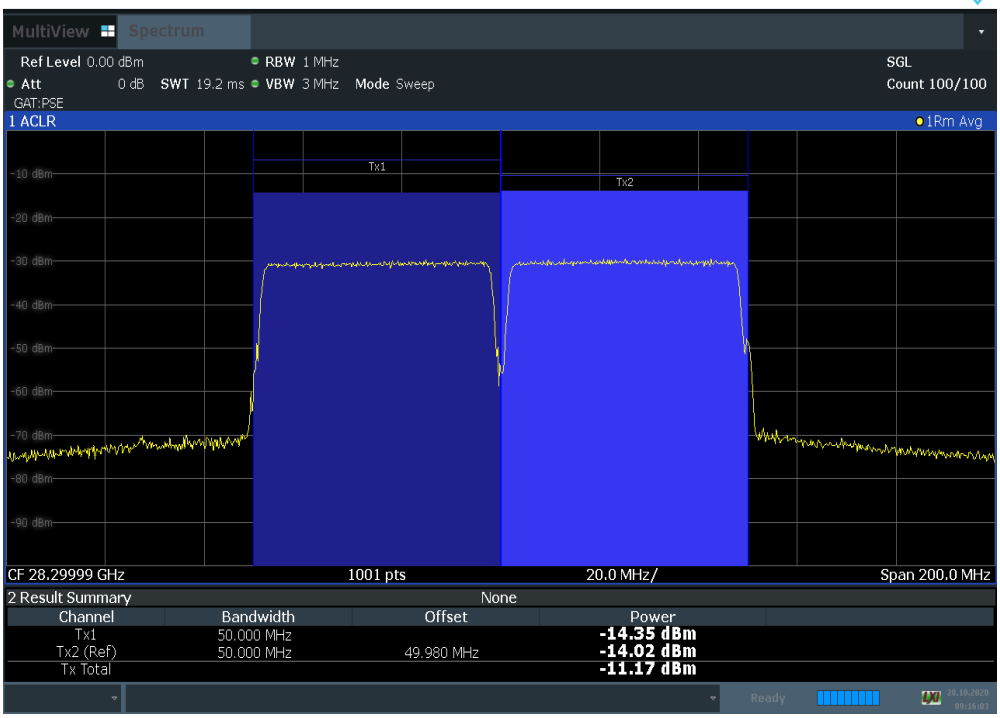
Plot 7-74. Antenna B EIRP Density Plot (50 MHz 1CC BW 16QAM High Channel)



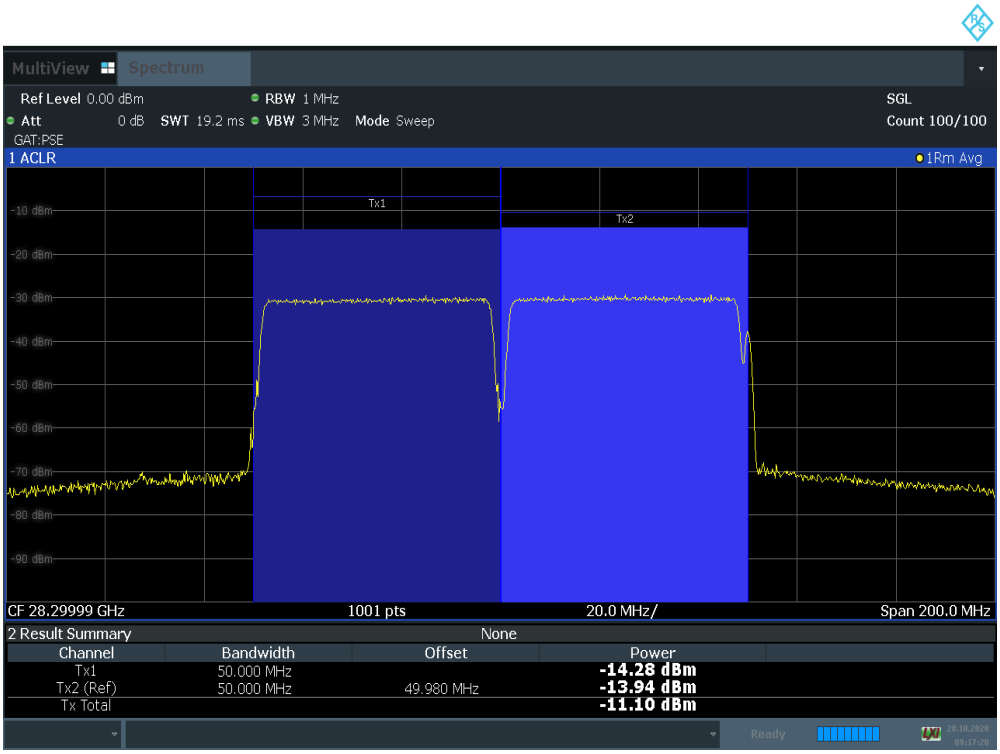
Plot 7-75. Antenna B EIRP Density Plot (50 MHz 1CC BW 64QAM High Channel)



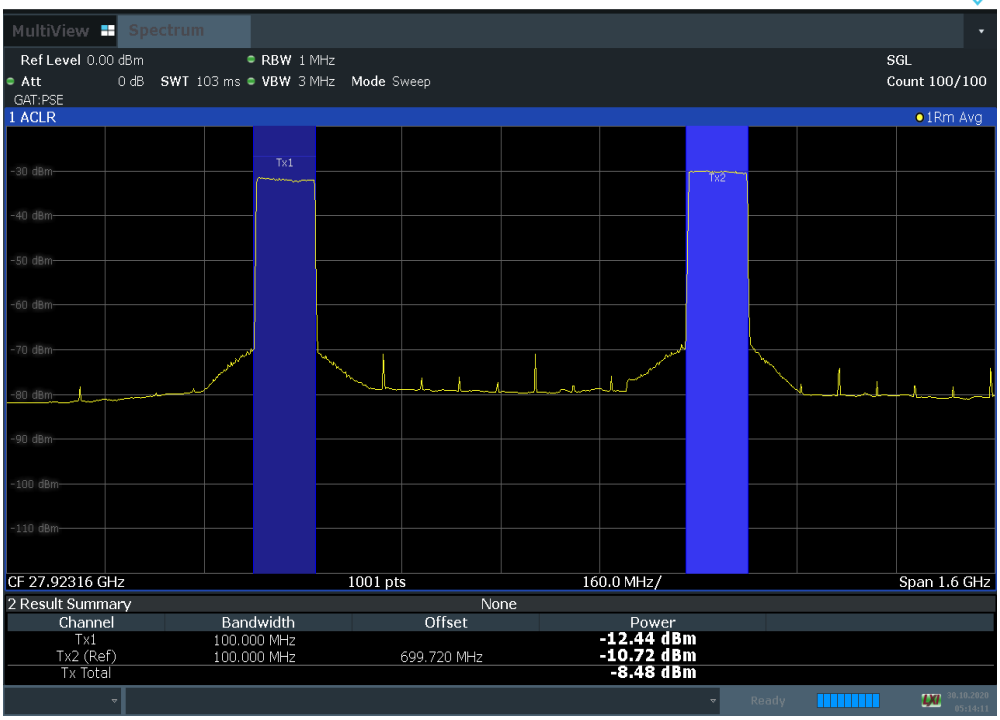
Plot 7-76. Antenna B EIRP Density Plot (50 MHz 2CC BW QPSK High Channel)



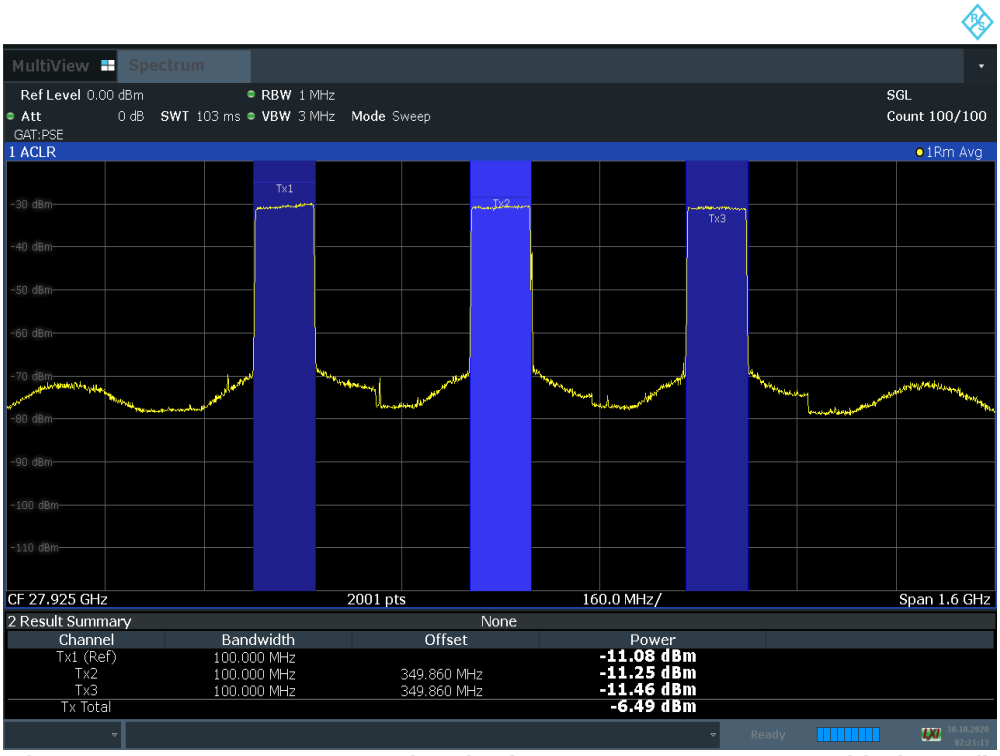
Plot 7-77. Antenna B EIRP Density Plot (50 MHz 2CC BW 16QAM High Channel)



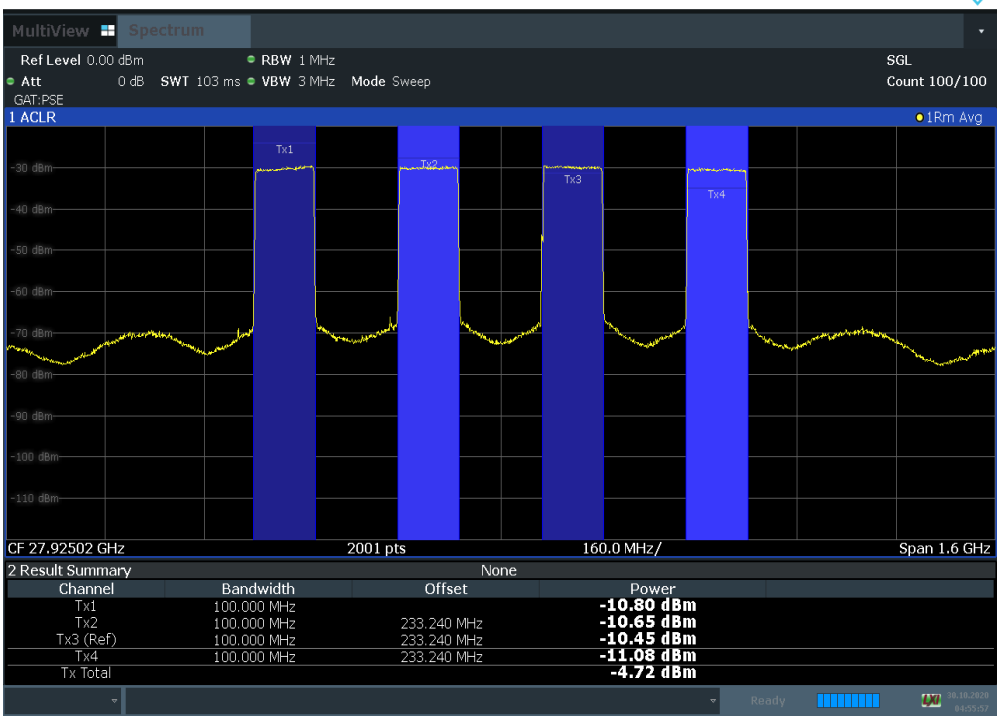
Plot 7-78. Antenna B EIRP Density Plot (50 MHz 2CC BW 64QAM High Channel)



Plot 7-79. Antenna B EIRP Density Plot (100 MHz 2NC BW QPSK Mid Channel)

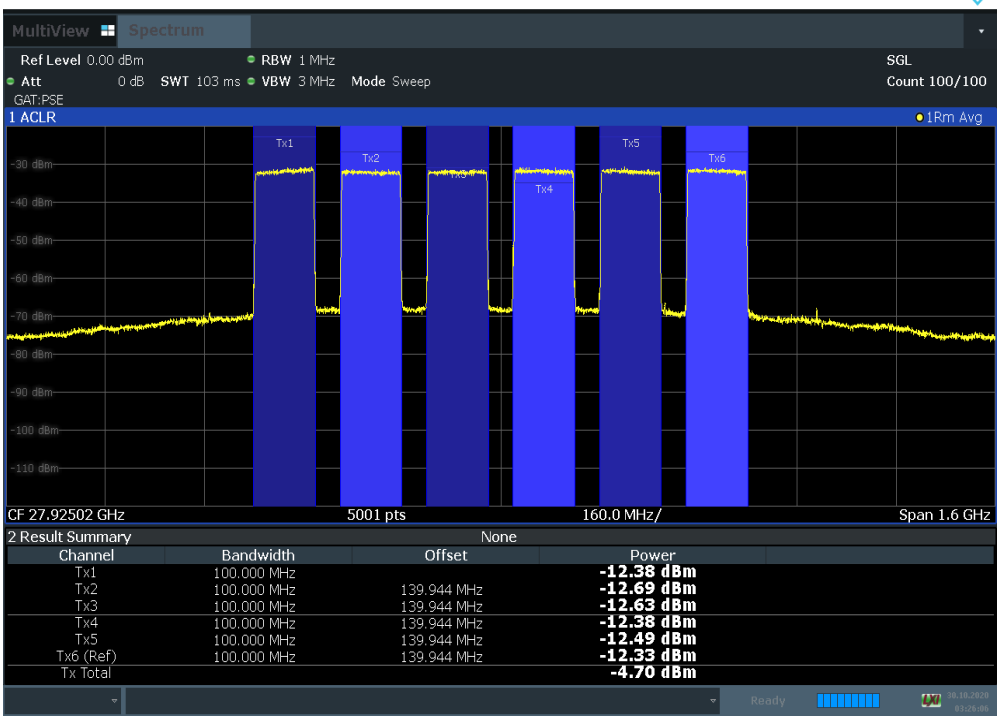


Plot 7-80. Antenna B EIRP Density Plot (100 MHz 3NC BW QPSK Mid Channel)

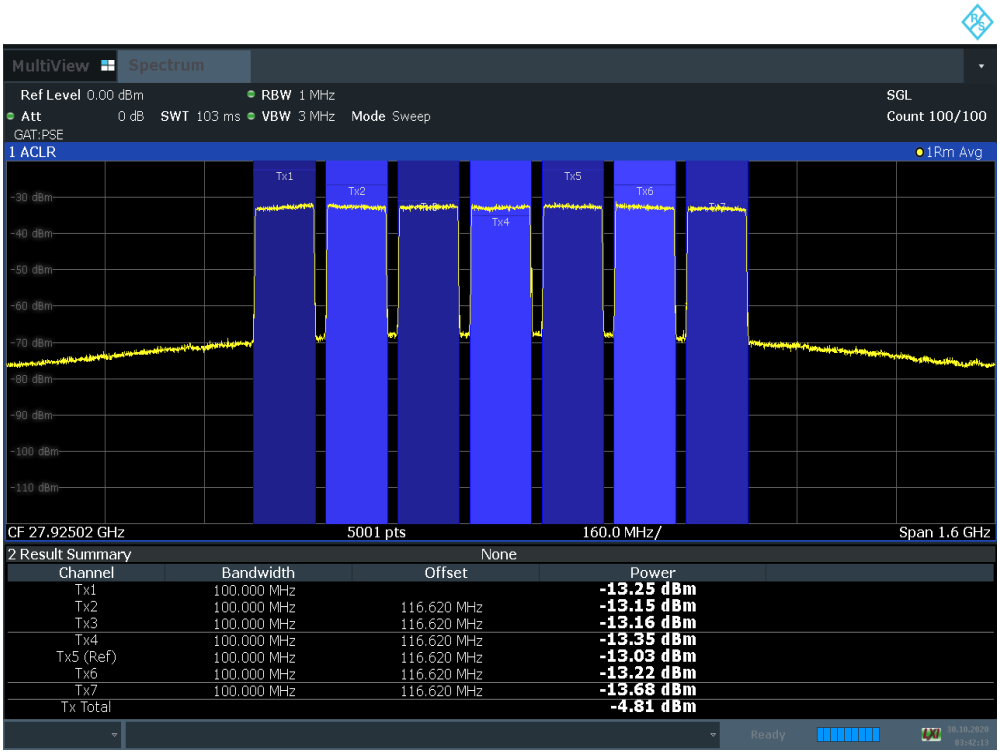


Plot 7-81. Antenna B EIRP Density Plot (100 MHz 4NC BW QPSK Mid Channel)

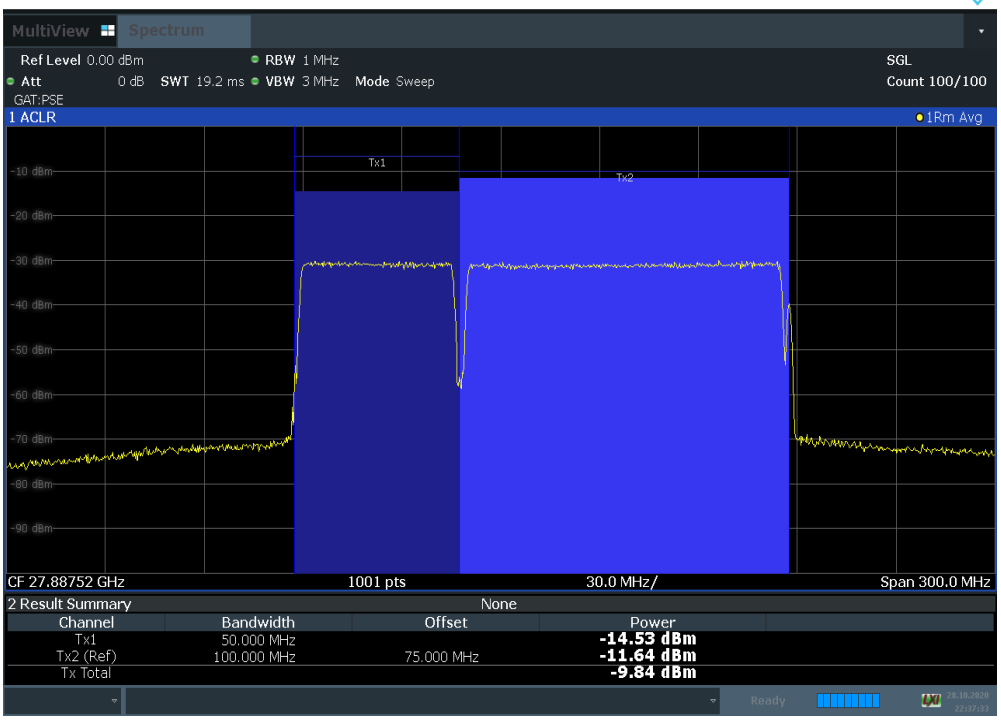
Plot 7-82. Antenna B EIRP Density Plot (100 MHz 5NC BW QPSK Mid Channel)



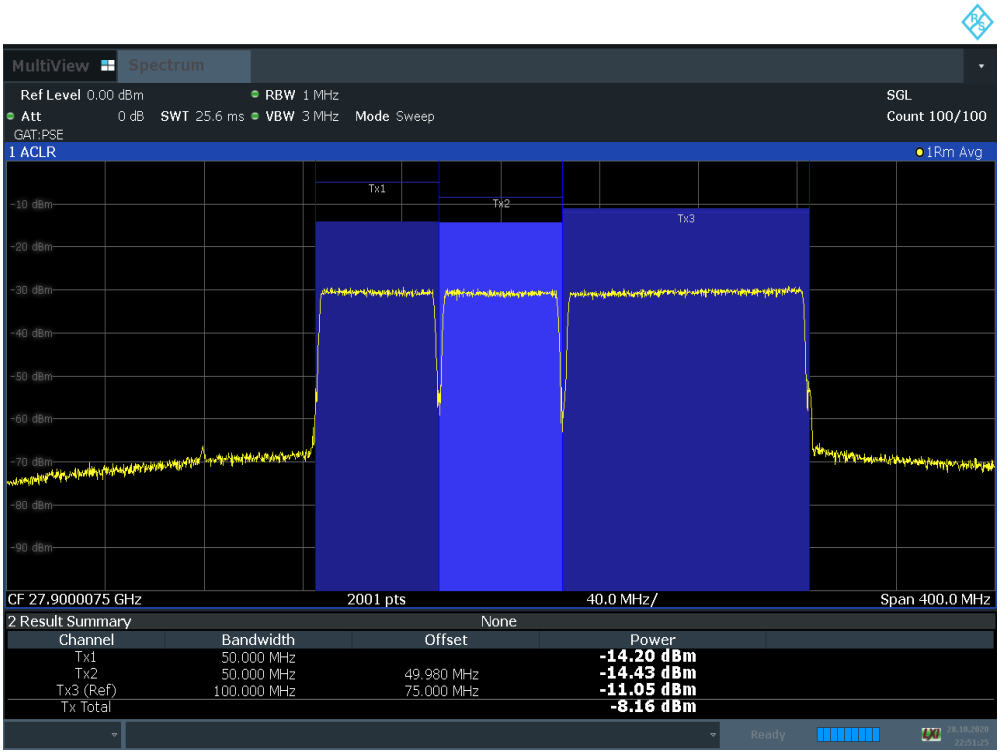
Plot 7-83. Antenna B EIRP Density Plot (100 MHz 6NC BW QPSK Mid Channel)



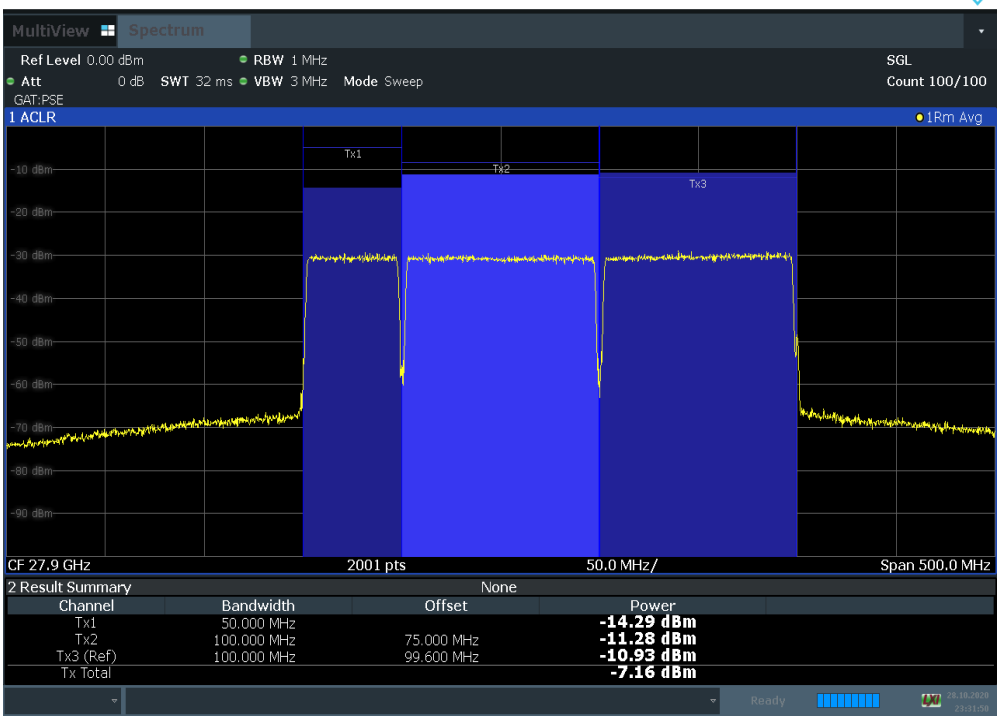
Plot 7-84. Antenna B EIRP Density Plot (100 MHz 7NC BW QPSK Mid Channel)



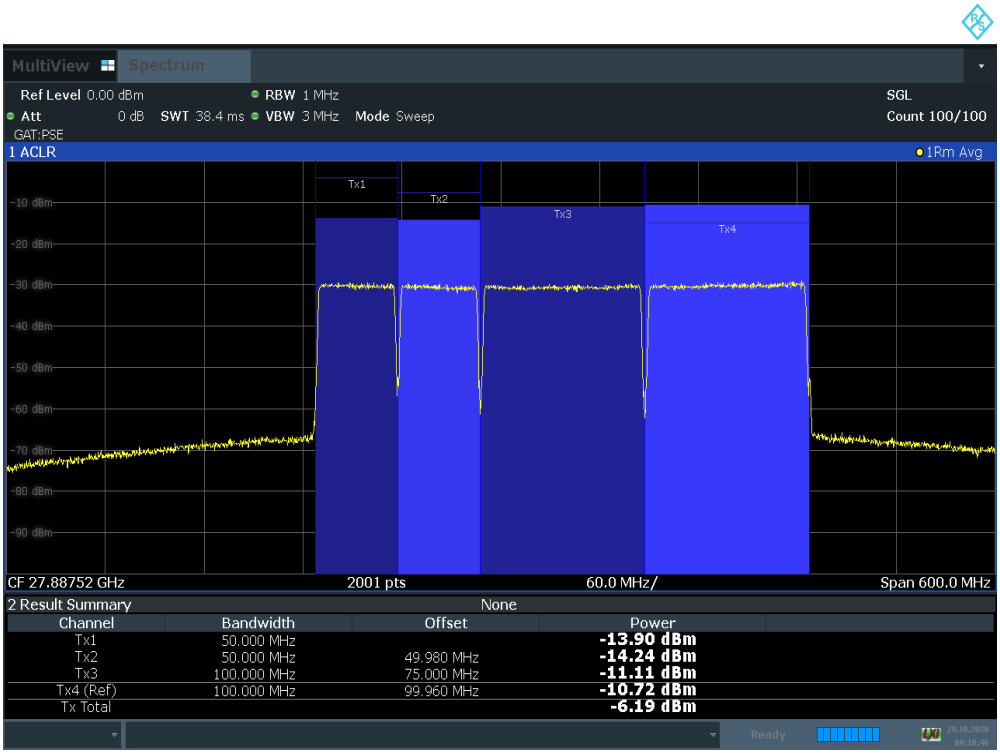
Plot 7-85. Antenna B EIRP Density Plot (50 MHz 1CC + 100 MHz 1CC BW QPSK Mid Channel)



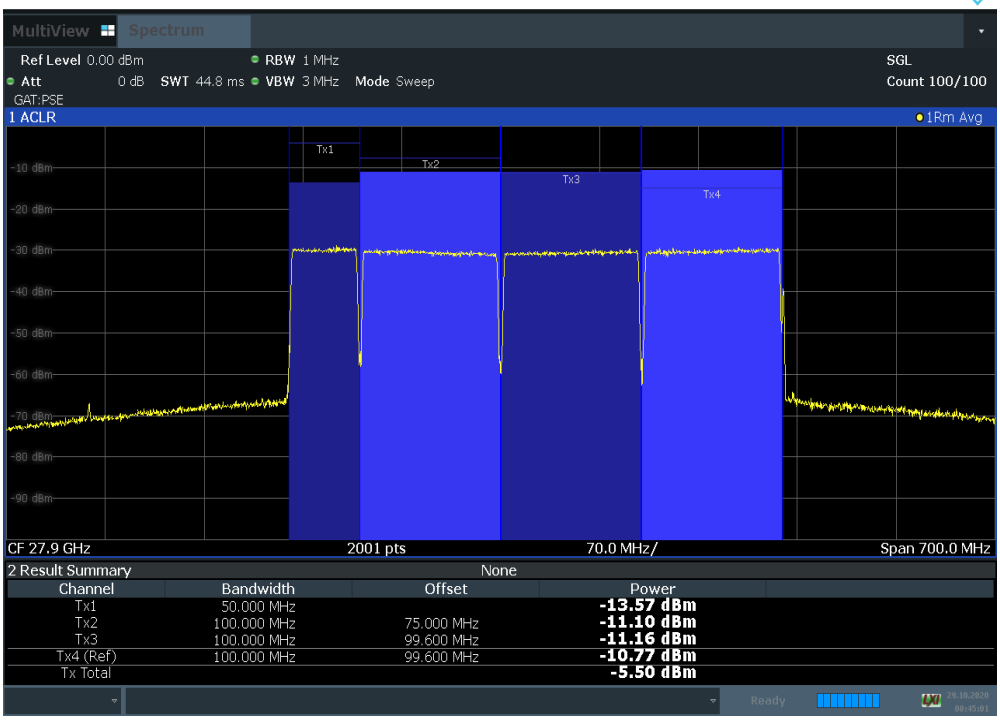
Plot 7-86. Antenna B EIRP Density Plot (50 MHz 2CC + 100 MHz 1CC BW QPSK Mid Channel)



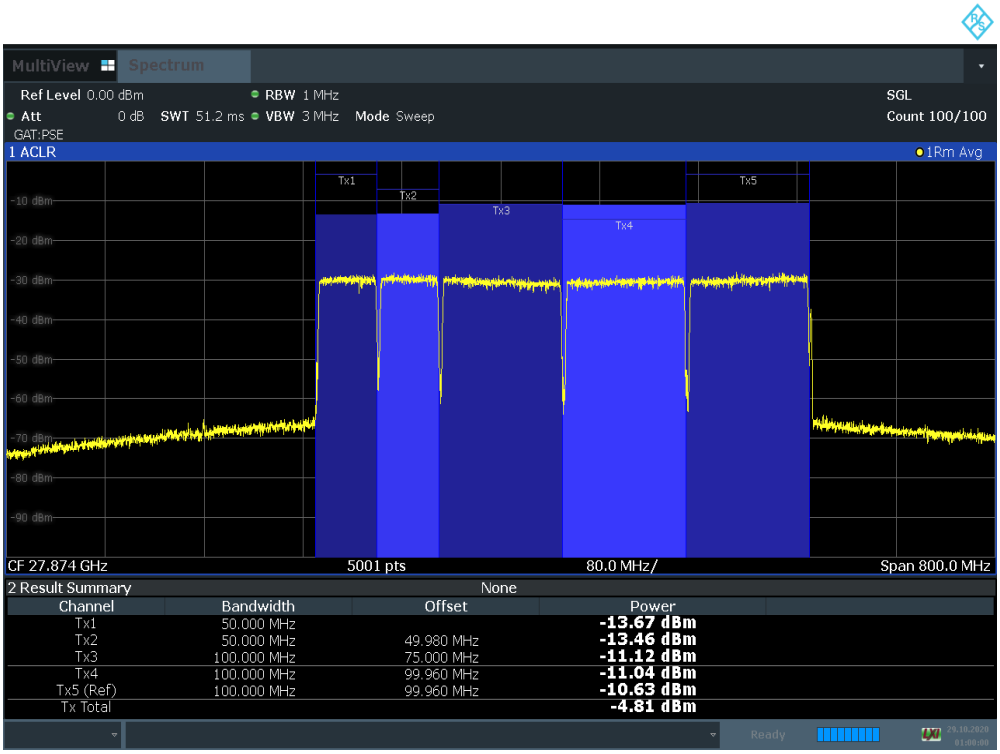
Plot 7-87. Antenna B EIRP Density Plot (50 MHz 1CC + 100 MHz 2CC BW QPSK Mid Channel)



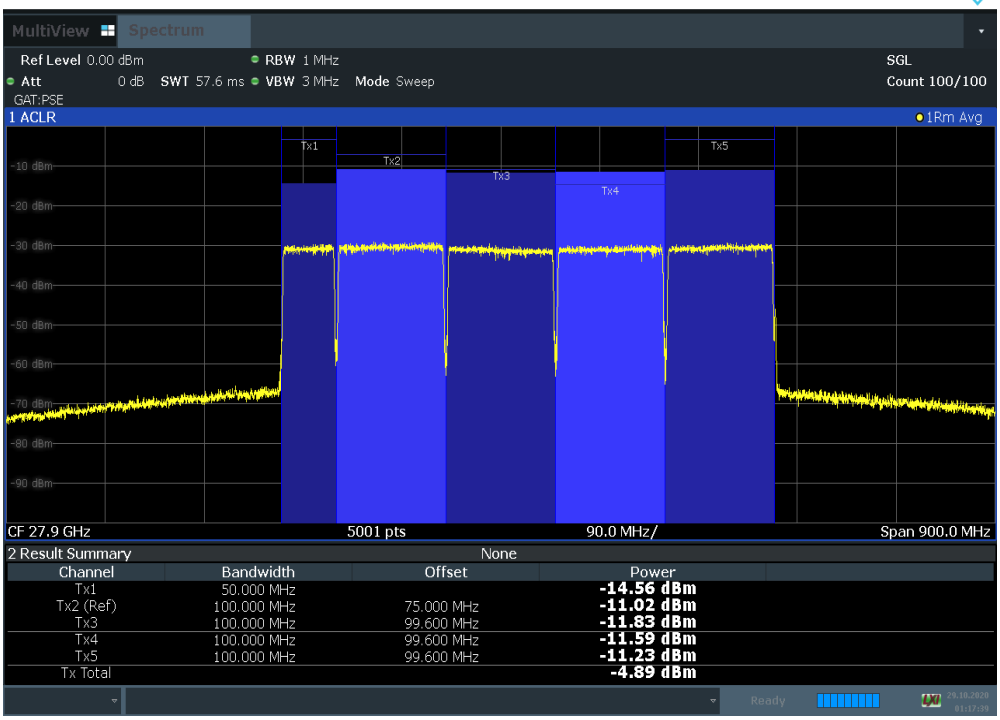
Plot 7-88. Antenna B EIRP Density Plot (50 MHz 2CC + 100 MHz 2CC BW QPSK Mid Channel)



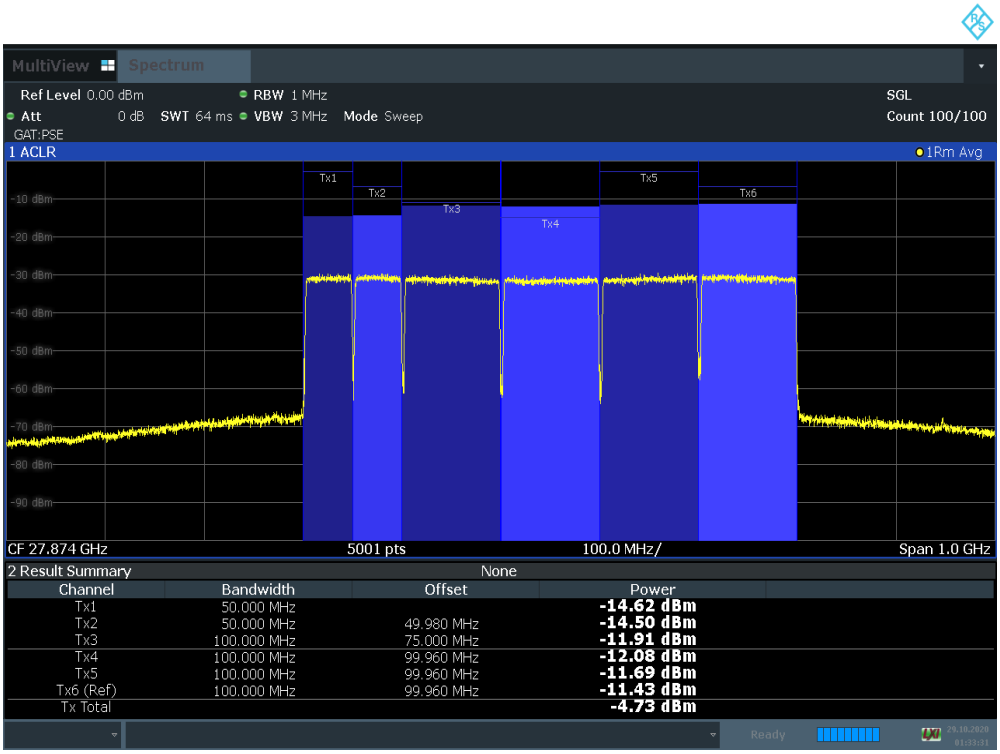
Plot 7-89. Antenna B EIRP Density Plot (50 MHz 1CC + 100 MHz 3CC BW QPSK Mid Channel)



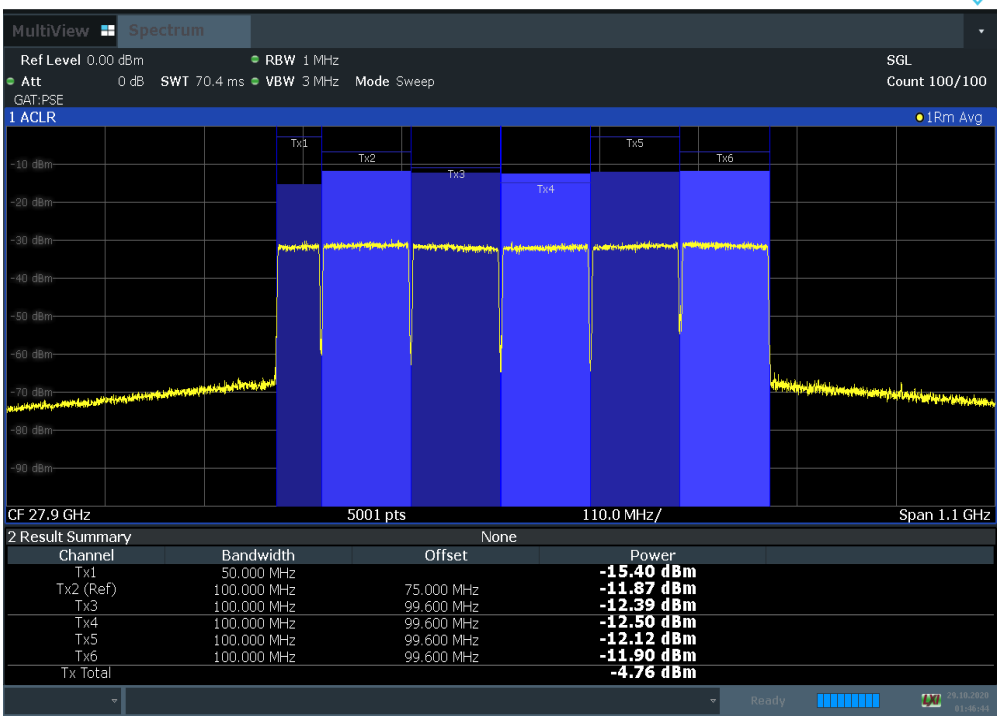
Plot 7-90. Antenna B EIRP Density Plot (50 MHz 2CC + 100 MHz 3CC BW QPSK Mid Channel)



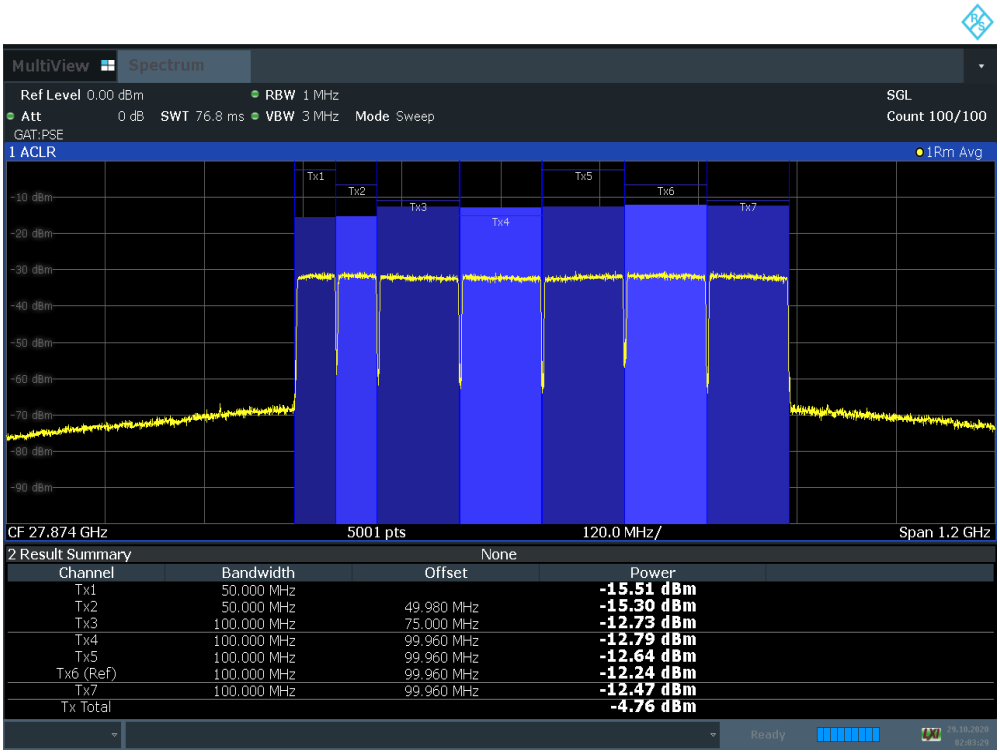
Plot 7-91. Antenna B EIRP Density Plot (50 MHz 1CC + 100 MHz 4CC BW QPSK Mid Channel)



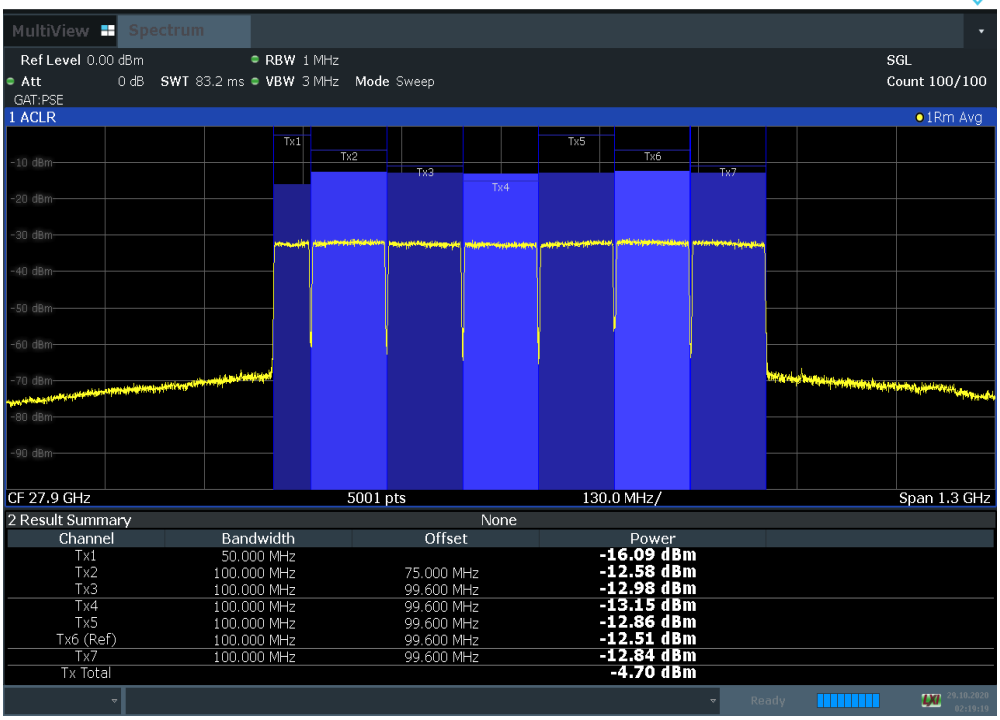
Plot 7-92. Antenna B EIRP Density Plot (50 MHz 2CC + 100 MHz 4CC BW QPSK Mid Channel)



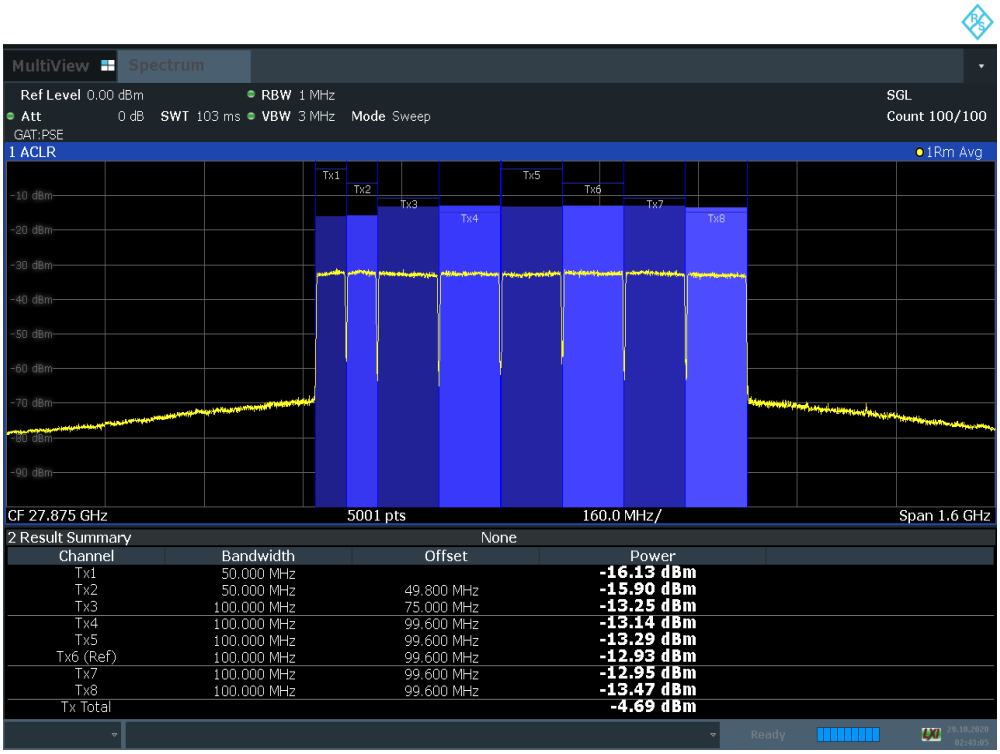
Plot 7-93. Antenna B EIRP Density Plot (50 MHz 1CC + 100 MHz 5CC BW QPSK Mid Channel)



Plot 7-94. Antenna B EIRP Density Plot (50 MHz 2CC + 100 MHz 5CC BW QPSK Mid Channel)



Plot 7-95. Antenna B EIRP Density Plot (50 MHz 1CC + 100 MHz 6CC BW QPSK Mid Channel)

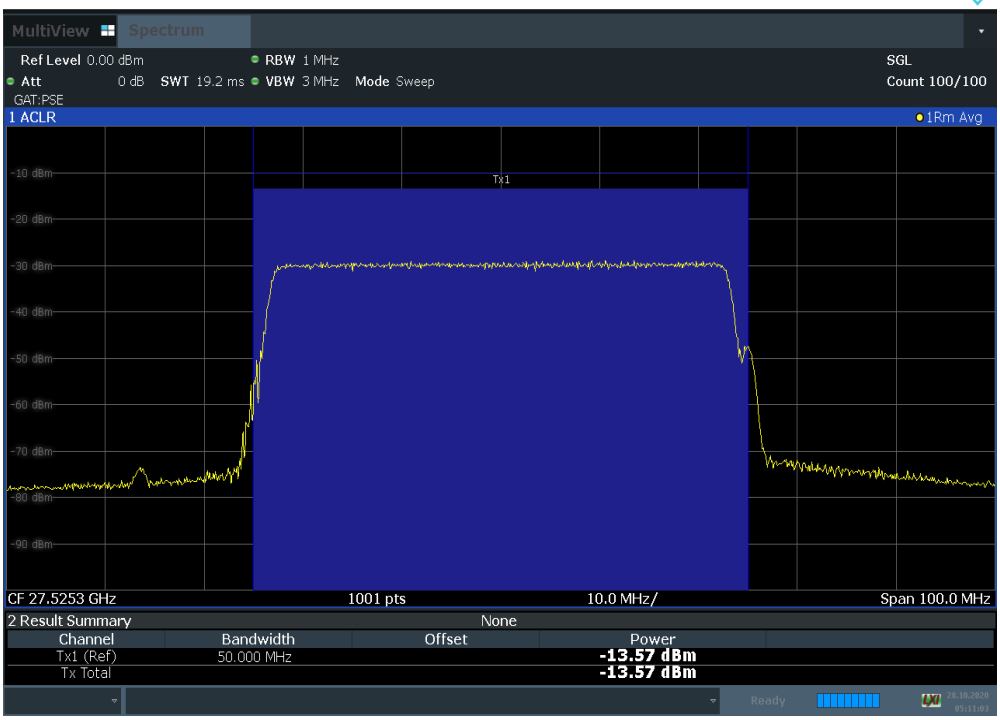


Plot 7-96. Antenna B EIRP Density Plot (50 MHz 2CC + 100 MHz 6CC BW QPSK Mid Channel)

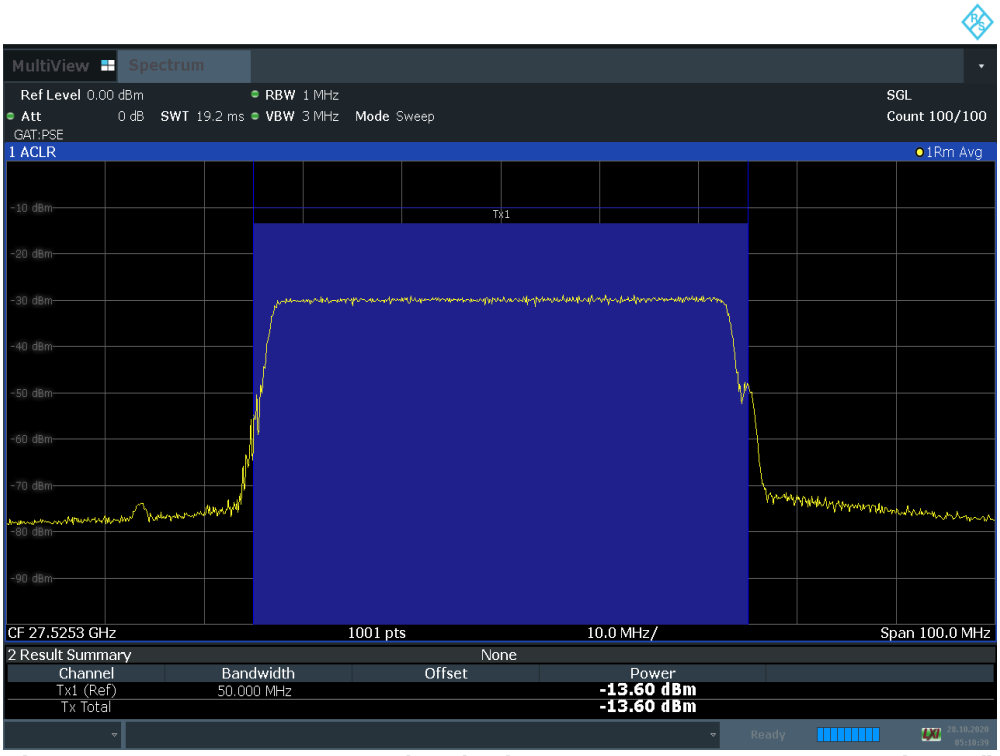
7.3.3 Antenna C EIRP Density

Antenna	Bandwidth	Configuration	Chan.	Frequency	Modulation	Horn Angle	Analyzer Level	Average e.i.r.p. PSD	Scaling factor	Average e.i.r.p. PSD	PSD Limit	Margin
	[MHz]			[GHz]		[degrees]	[dBm]	[dBm]	[dB]	[dBm/100MHz]	[dBm/100MHz]	[dB/100MHz]
C	50	1CC	Low	27.550	QPSK	135.0	-13.57	45.83	3.01	48.84	75.00	-29.17
	50		Low	27.550	16QAM	135.0	-13.60	45.80	3.01	48.81	75.00	-29.20
	50		Low	27.550	64QAM	135.0	-13.68	45.72	3.01	48.73	75.00	-29.28
	50	2CC	Low	27.550	QPSK	135.0	-13.52	45.88	3.01	48.89	75.00	-29.12
	50		Low	27.550	16QAM	135.0	-13.33	46.08	3.01	49.09	75.00	-28.92
	50		Low	27.550	64QAM	135.0	-13.33	46.08	3.01	49.09	75.00	-28.92
	50	1CC	Mid	27.925	QPSK	135.0	-13.70	45.78	3.01	48.79	75.00	-29.22
	50		Mid	27.925	16QAM	135.0	-13.77	45.72	3.01	48.73	75.00	-29.28
	50		Mid	27.925	64QAM	135.0	-13.85	45.63	3.01	48.64	75.00	-29.37
	50	2CC	Mid	27.925	QPSK	135.0	-14.00	45.49	3.01	48.50	75.00	-29.51
	50		Mid	27.925	16QAM	135.0	-14.04	45.45	3.01	48.46	75.00	-29.55
	50		Mid	27.925	64QAM	135.0	-14.26	45.22	3.01	48.23	75.00	-29.78
	50	1CC	High	28.300	QPSK	135.0	-13.71	46.10	3.01	49.11	75.00	-28.90
	50		High	28.300	16QAM	135.0	-14.00	45.82	3.01	48.83	75.00	-29.18
	50		High	28.300	64QAM	135.0	-13.90	45.91	3.01	48.92	75.00	-29.09
	50	2CC	High	28.300	QPSK	135.0	-13.62	46.19	3.01	49.20	75.00	-28.81
	50		High	28.300	16QAM	135.0	-13.71	46.10	3.01	49.11	75.00	-28.90
	50		High	28.300	64QAM	135.0	-14.01	45.80	3.01	48.81	75.00	-29.20
	100	2NC	Mid	27.925	QPSK	135.0	-10.58	48.91	0.00	48.91	75.00	-26.09
	100	3NC	Mid	27.925	QPSK	135.0	-11.09	48.39	0.00	48.39	75.00	-26.61
	100	4NC	Mid	27.925	QPSK	135.0	-10.45	49.03	0.00	49.03	75.00	-25.97
	100	5NC	Mid	27.925	QPSK	135.0	-10.93	48.56	0.00	48.56	75.00	-26.44
	100	6NC	Mid	27.925	QPSK	135.0	-12.15	47.33	0.00	47.33	75.00	-27.67
	100	7NC	Mid	27.925	QPSK	135.0	-12.72	46.76	0.00	46.76	75.00	-28.24
	50	50M x1 + 100M x1	Mid	27.925	QPSK	135.0	-14.32	45.17	3.01	48.18	75.00	-29.83
		50M x2 + 100M x1	Mid	27.925	QPSK	135.0	-11.25	48.23	0.00	48.23	75.00	-26.77
		50M x1 + 100M x2	Mid	27.925	QPSK	135.0	-10.64	48.84	0.00	48.84	75.00	-26.16
		50M x2 + 100M x2	Mid	27.925	QPSK	135.0	-10.37	49.11	0.00	49.11	75.00	-25.89
		50M x1 + 100M x3	Mid	27.925	QPSK	135.0	-10.38	49.10	0.00	49.10	75.00	-25.90
		50M x2 + 100M x3	Mid	27.925	QPSK	135.0	-10.31	49.18	0.00	**49.18**	75.00	-25.82
		50M x1 + 100M x4	Mid	27.925	QPSK	135.0	-10.85	48.63	0.00	48.63	75.00	-26.37
		50M x2 + 100M x4	Mid	27.925	QPSK	135.0	-11.23	48.25	0.00	48.25	75.00	-26.75
		50M x1 + 100M x5	Mid	27.925	QPSK	135.0	-11.85	47.63	0.00	47.63	75.00	-27.37
		50M x2 + 100M x5	Mid	27.925	QPSK	135.0	-11.95	47.54	0.00	47.54	75.00	-27.46
		50M x1 + 100M x6	Mid	27.925	QPSK	135.0	-12.20	47.29	0.00	47.29	75.00	-27.71
		50M x2 + 100M x6	Mid	27.925	QPSK	135.0	-12.40	47.09	0.00	47.09	75.00	-27.91

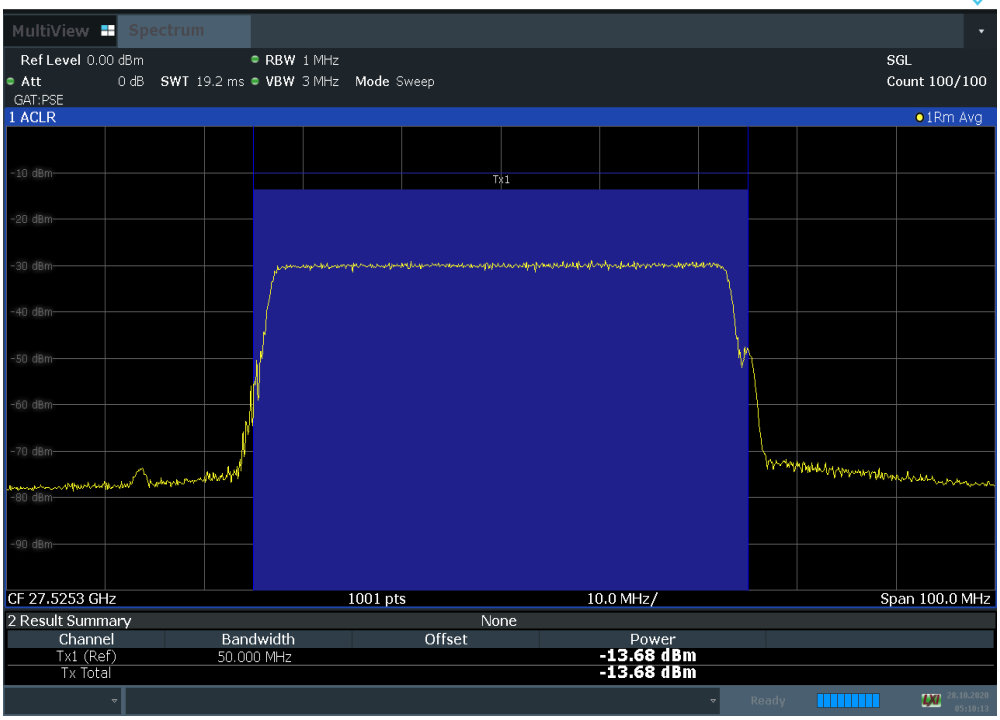
Table 7-9. Antenna C EIRP Density Summary Data



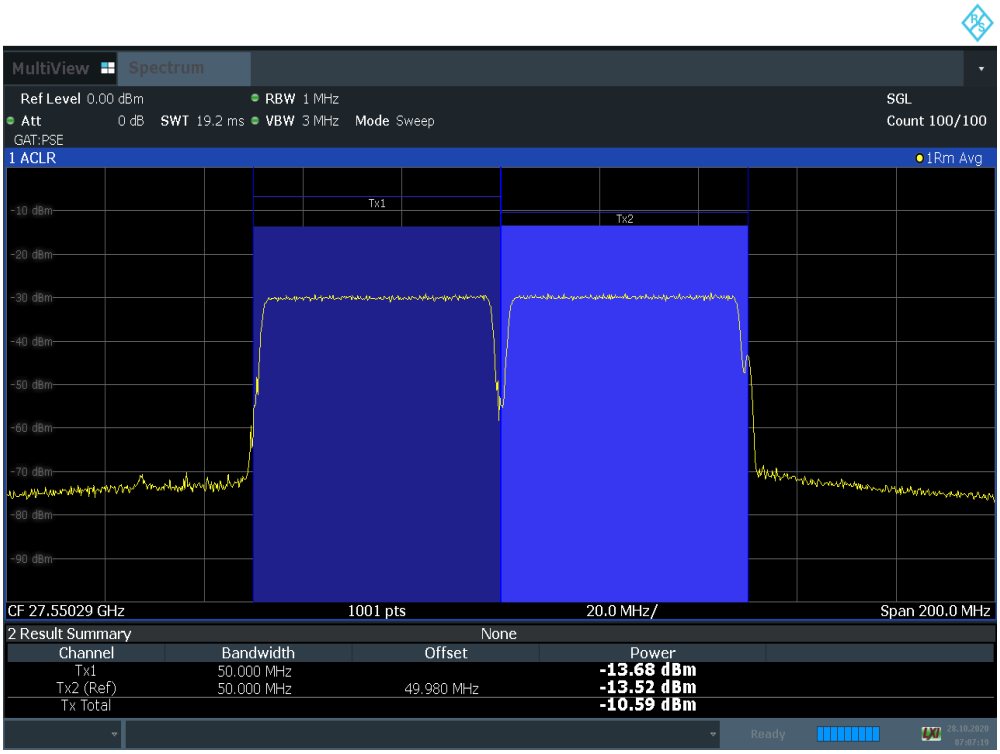
Plot 7-97. Antenna C EIRP Density Plot (50 MHz 1CC BW QPSK Low Channel)



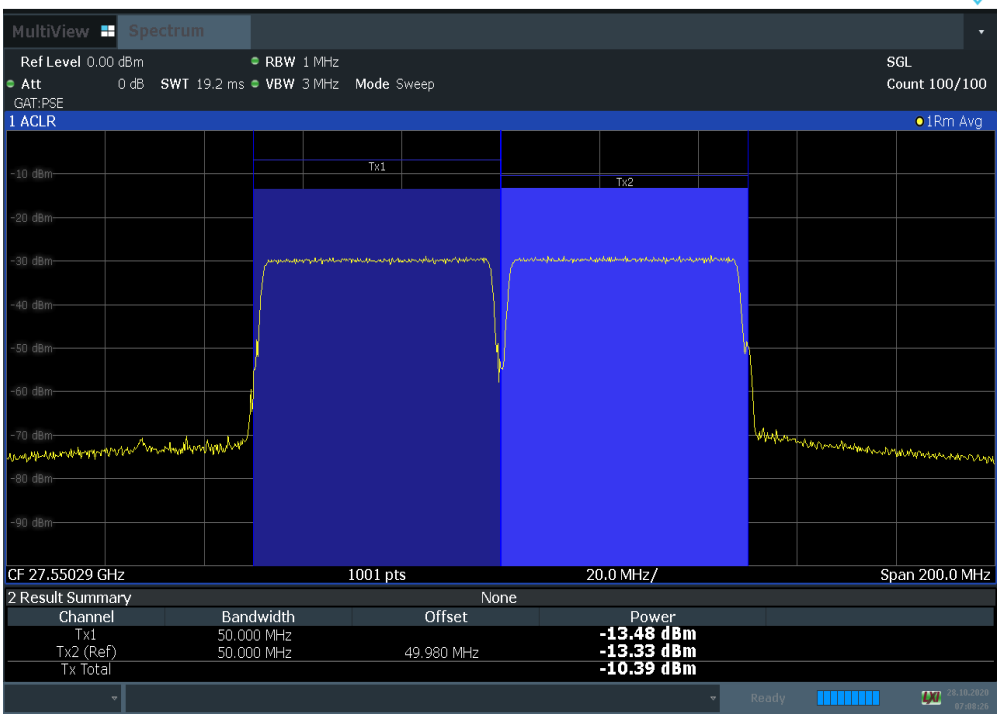
Plot 7-98. Antenna C EIRP Density Plot (50 MHz 1CC BW 16QAM Low Channel)



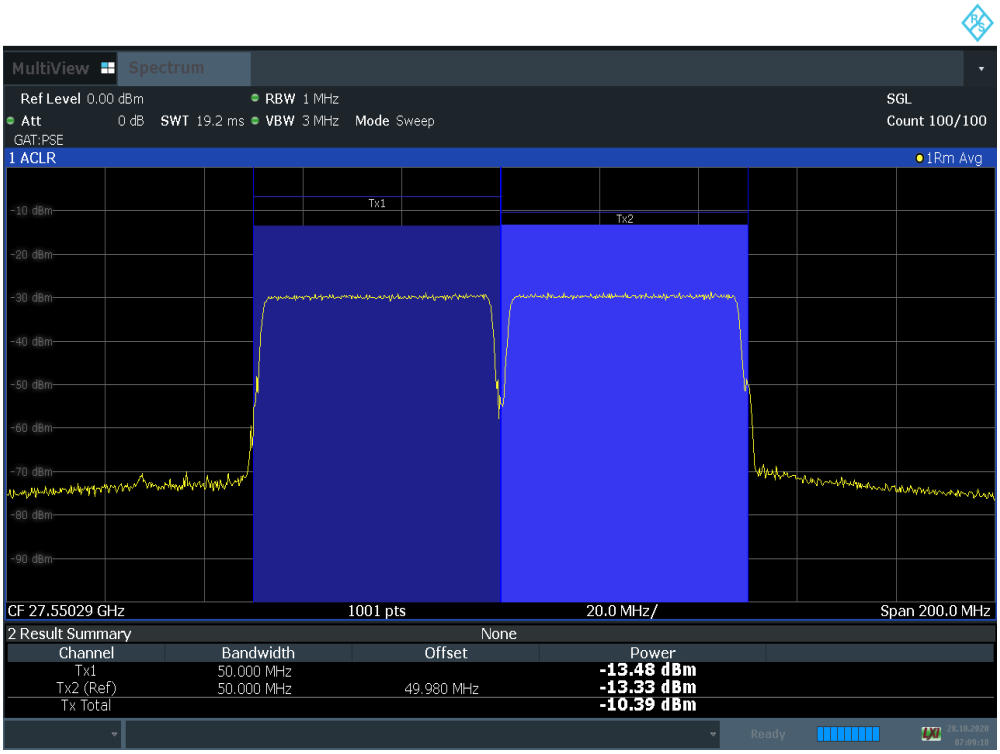
Plot 7-99. Antenna C EIRP Density Plot (50 MHz 1CC BW 64QAM Low Channel)



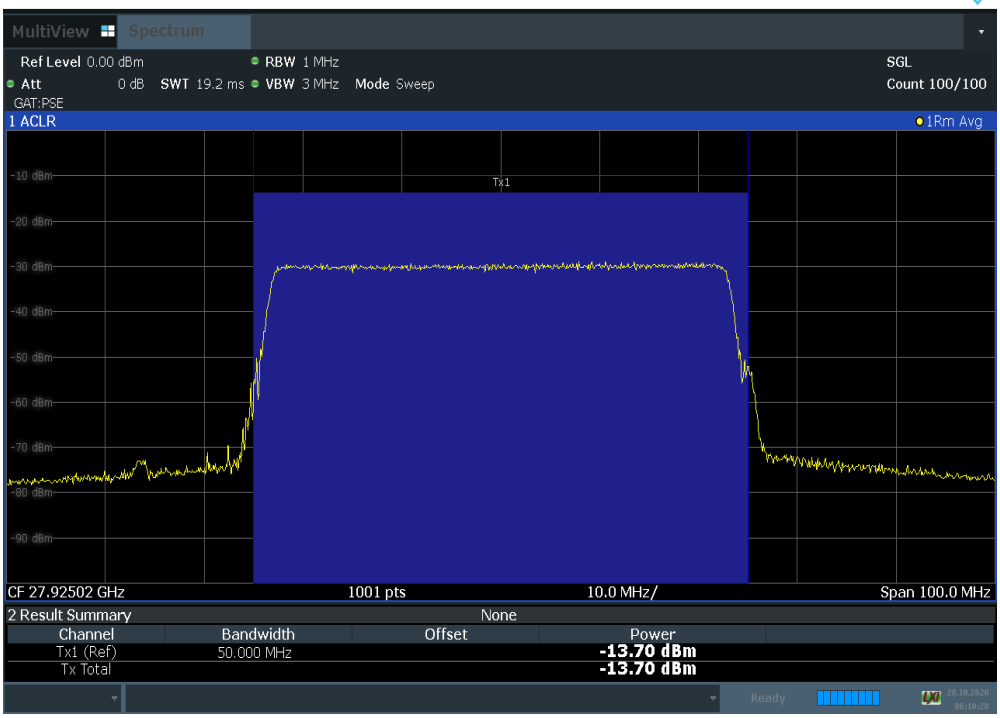
Plot 7-100. Antenna C EIRP Density Plot (50 MHz 2CC BW QPSK Low Channel)



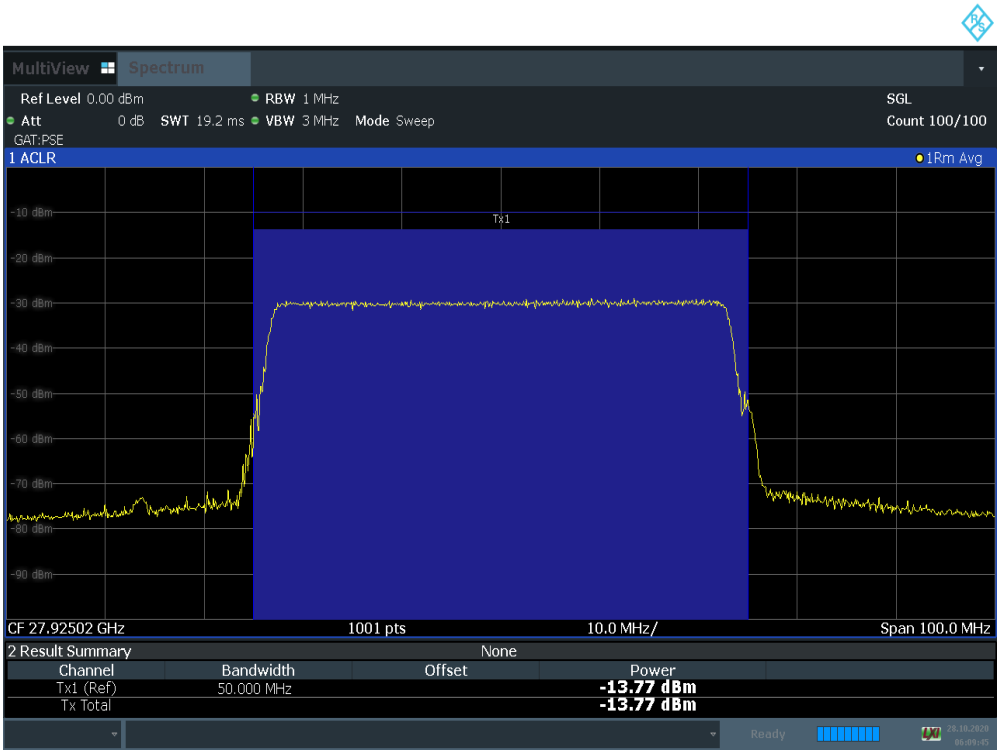
Plot 7-101. Antenna C EIRP Density Plot (50 MHz 2CC BW 16QAM Low Channel)



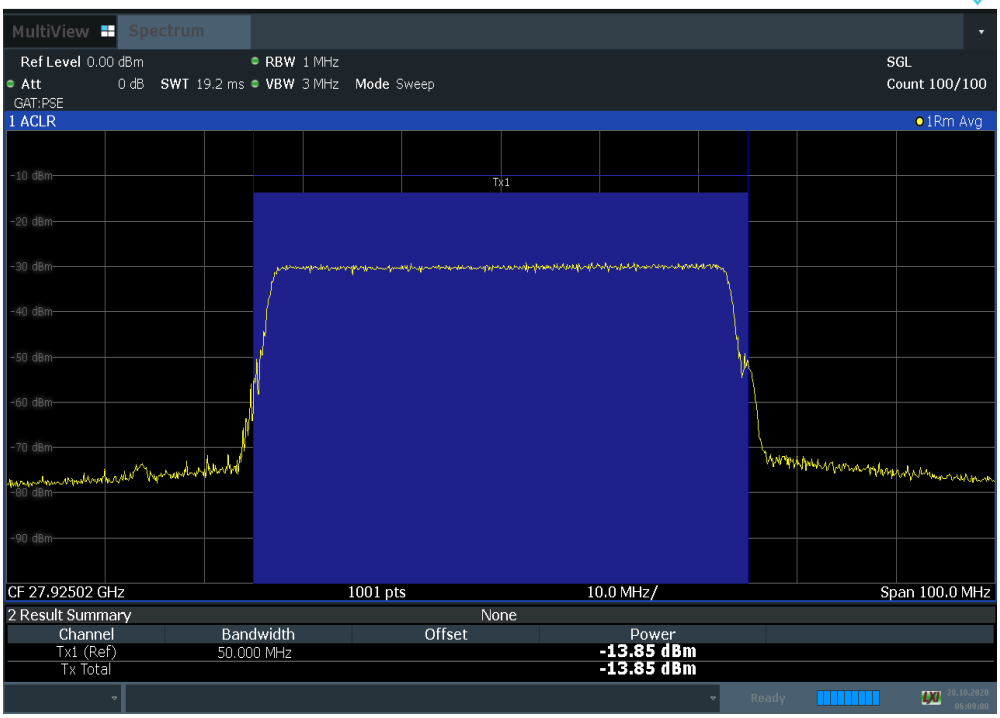
Plot 7-102. Antenna C EIRP Density Plot (50 MHz 2CC BW 64QAM Low Channel)



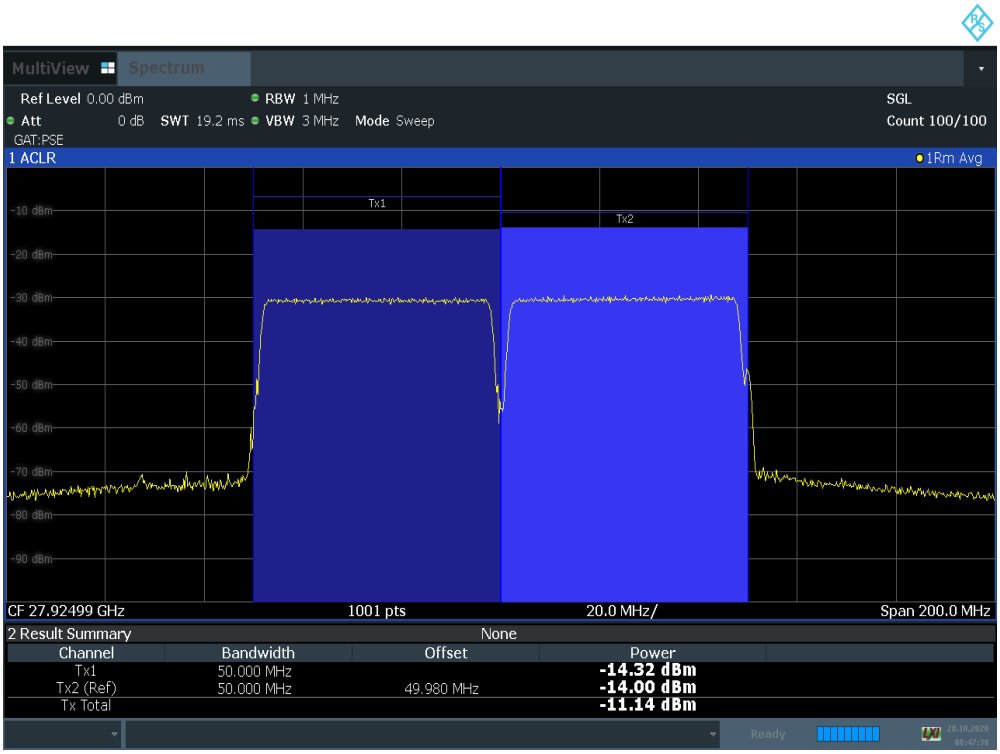
Plot 7-103. Antenna C EIRP Density Plot (50 MHz 1CC BW QPSK Mid Channel)



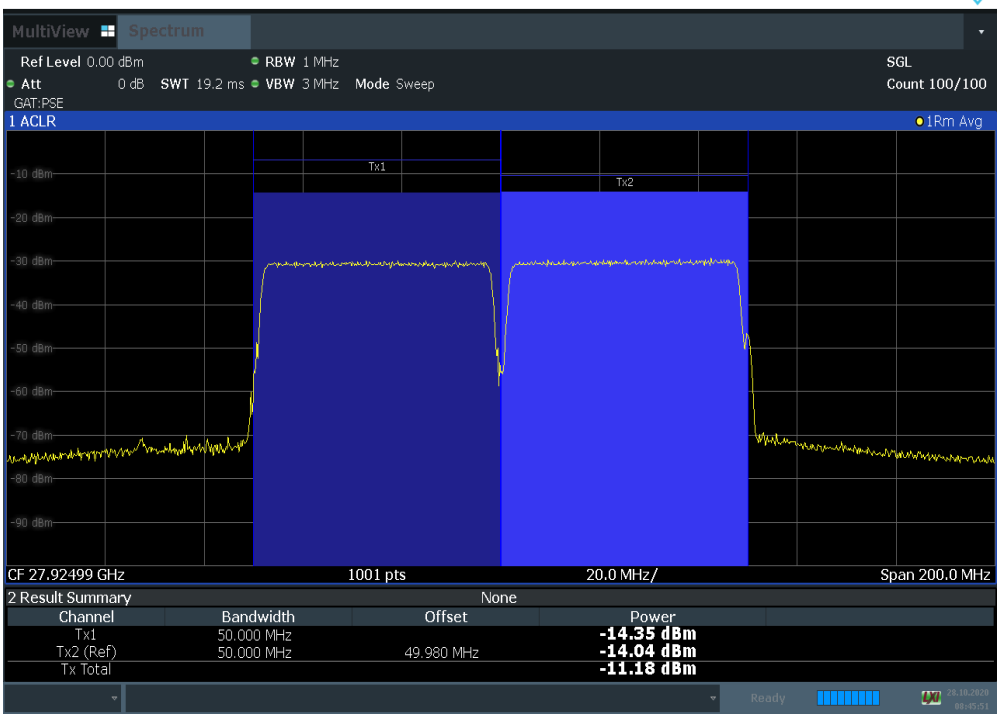
Plot 7-104. Antenna C EIRP Density Plot (50 MHz 1CC BW 16QAM Mid Channel)



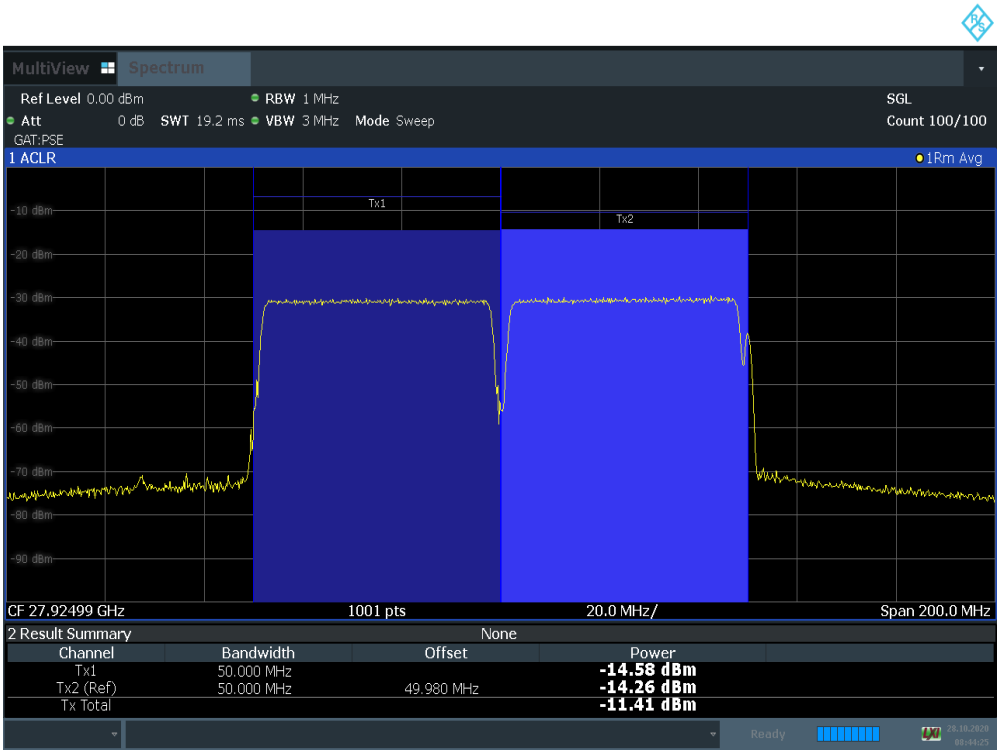
Plot 7-105. Antenna C EIRP Density Plot (50 MHz 1CC BW 64QAM Mid Channel)



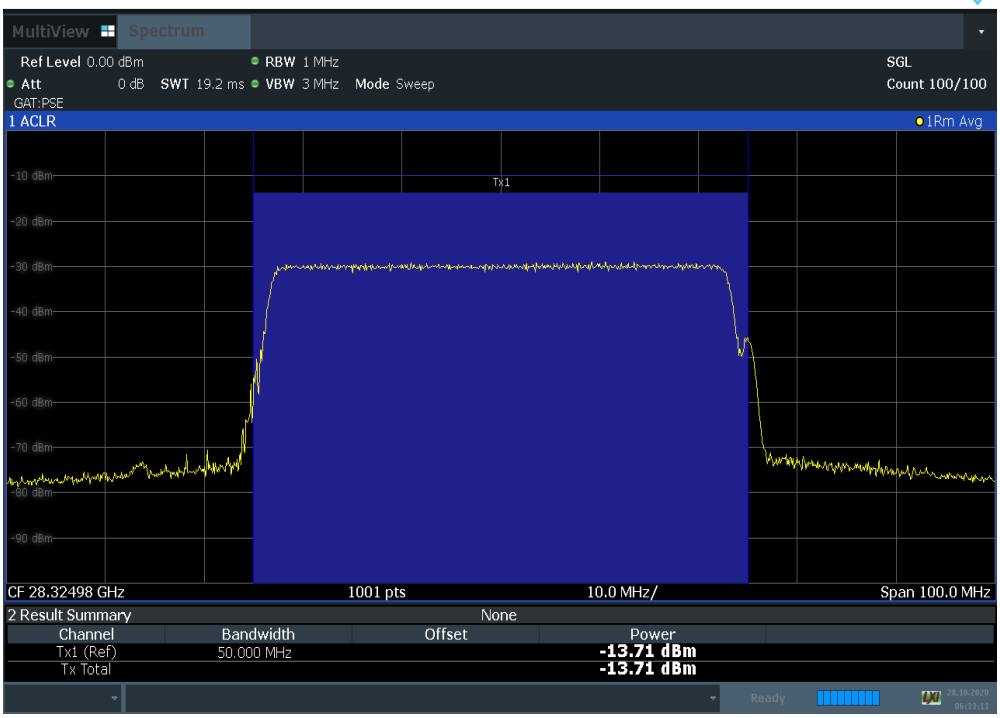
Plot 7-106. Antenna C EIRP Density Plot (50 MHz 2CC BW QPSK Mid Channel)



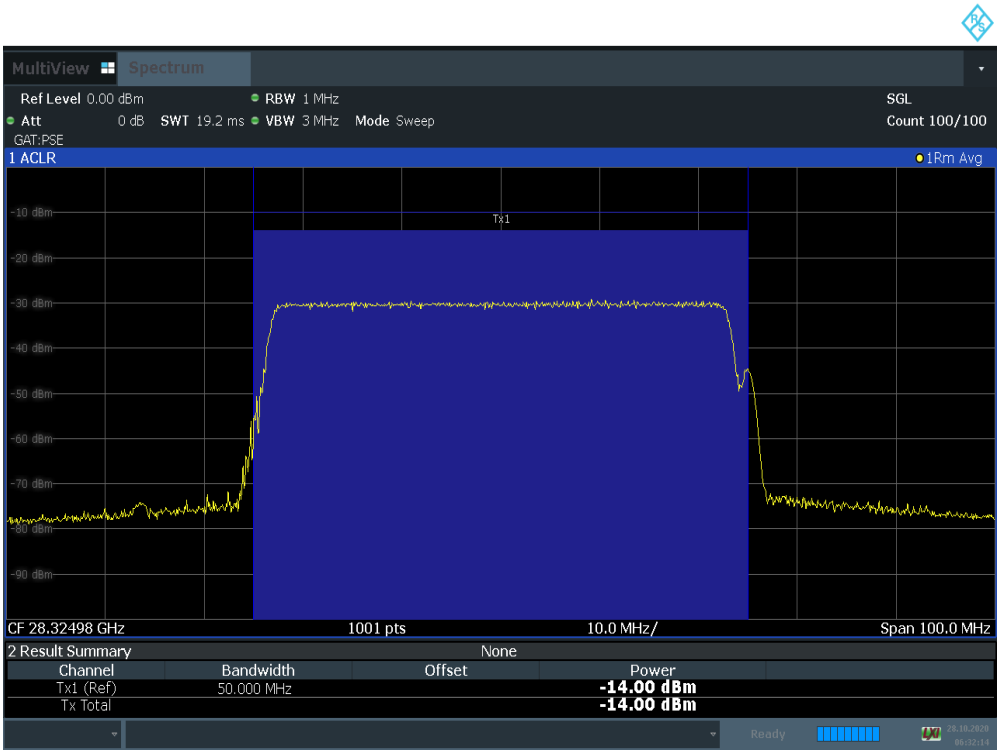
Plot 7-107. Antenna C EIRP Density Plot (50 MHz 2CC BW 16QAM Mid Channel)



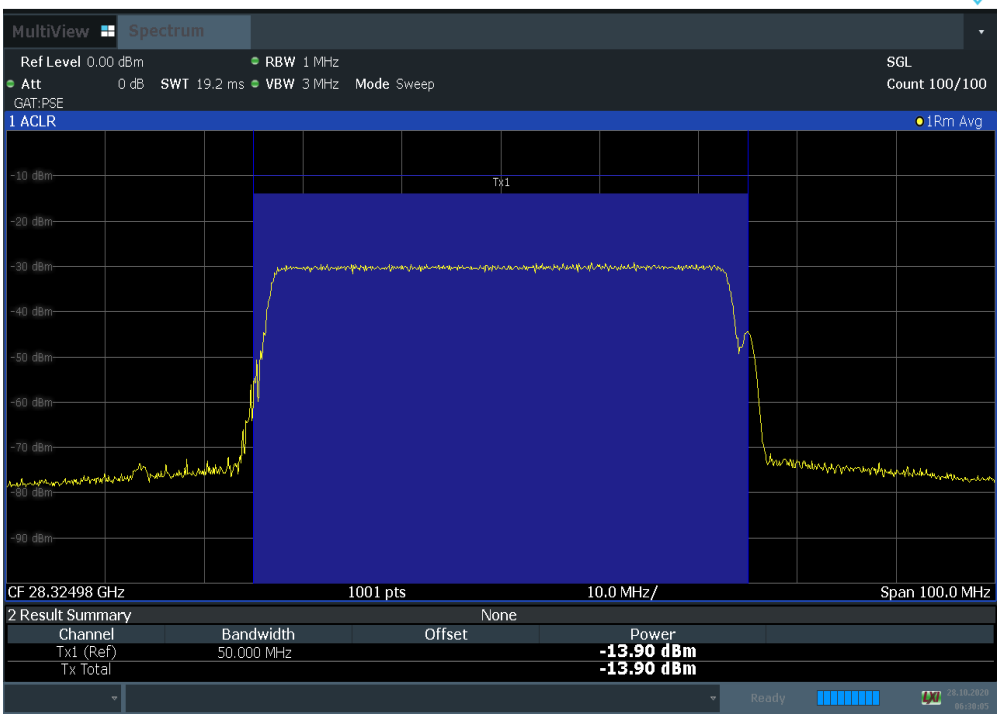
Plot 7-108. Antenna C EIRP Density Plot (50 MHz 2CC BW 64QAM Mid Channel)



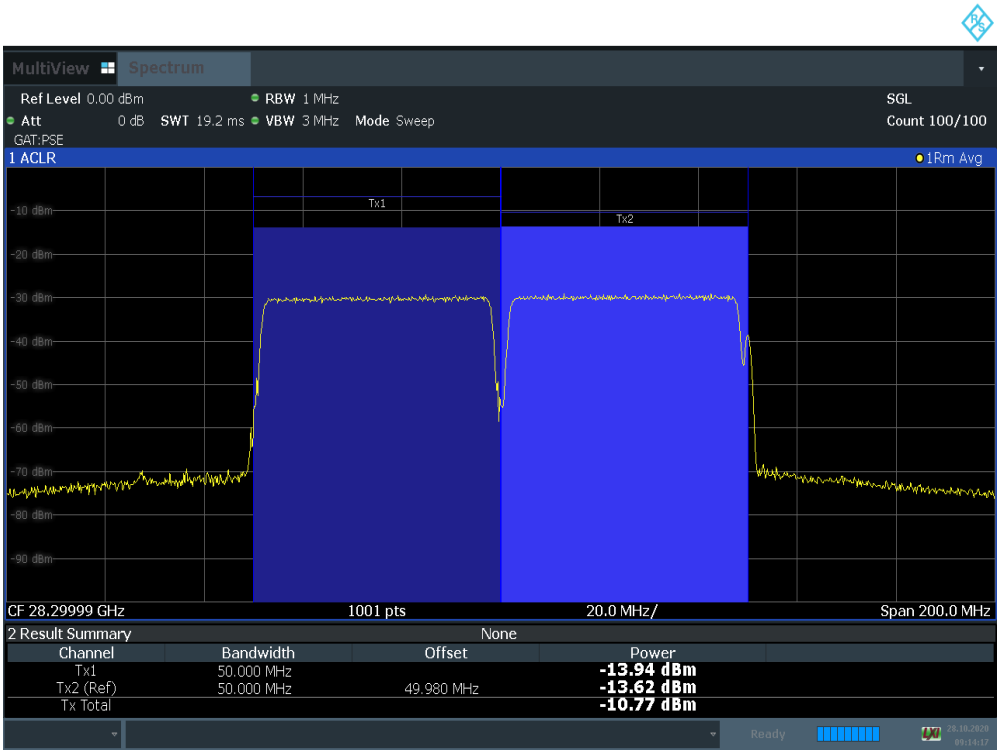
Plot 7-109. Antenna C EIRP Density Plot (50 MHz 1CC BW QPSK High Channel)



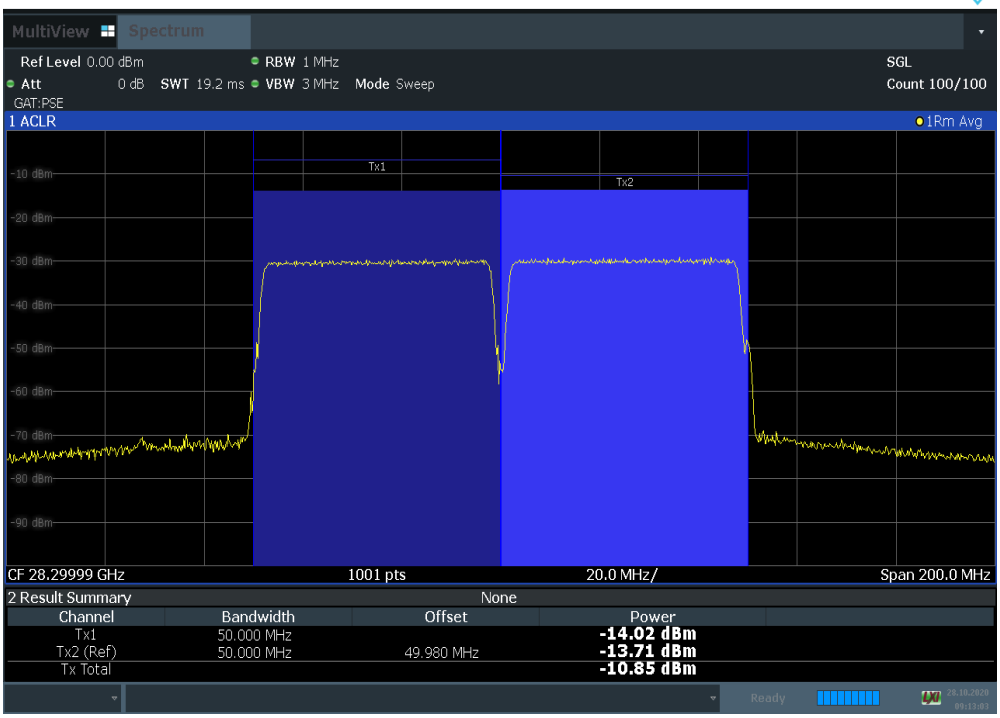
Plot 7-110. Antenna C EIRP Density Plot (50 MHz 1CC BW 16QAM High Channel)



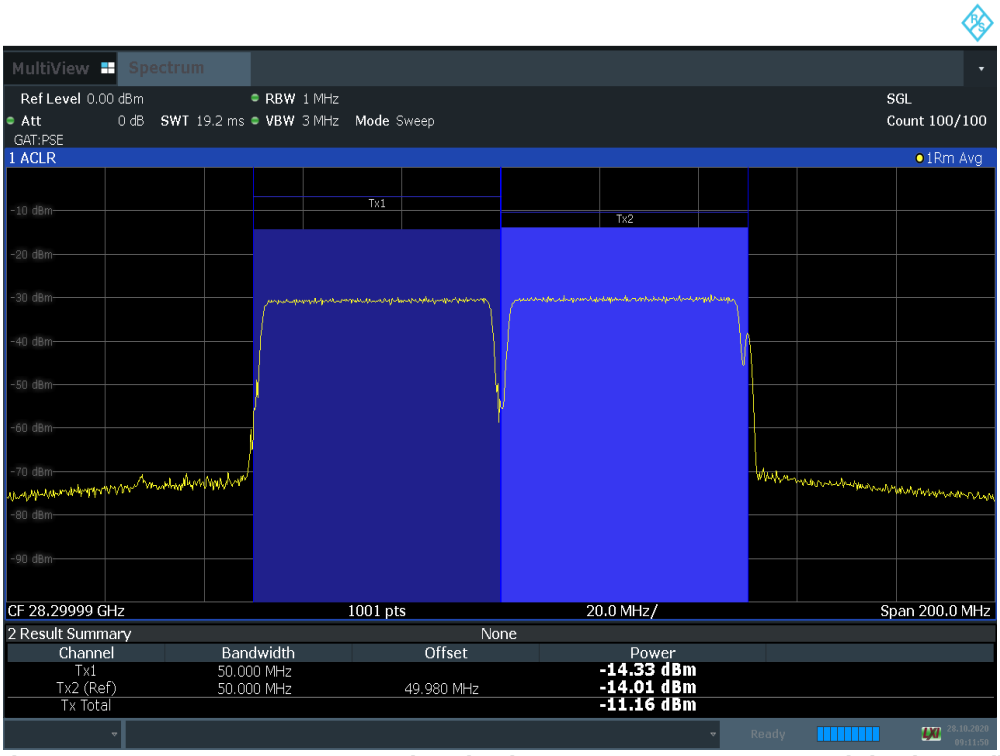
Plot 7-111. Antenna C EIRP Density Plot (50 MHz 1CC BW 64QAM High Channel)



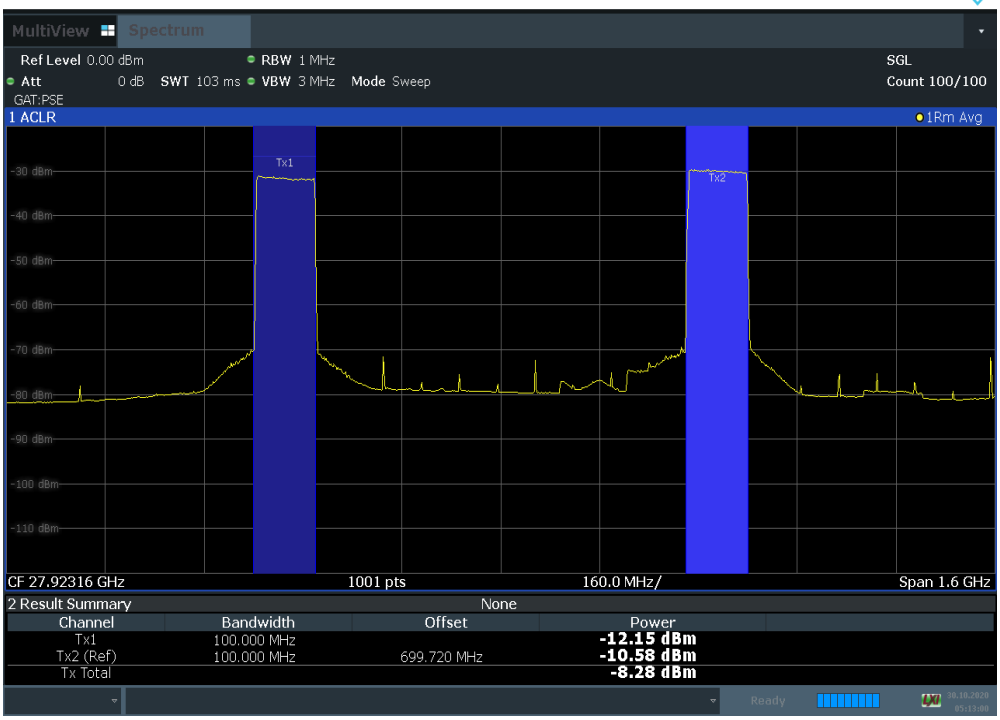
Plot 7-112. Antenna C EIRP Density Plot (50 MHz 2CC BW QPSK High Channel)



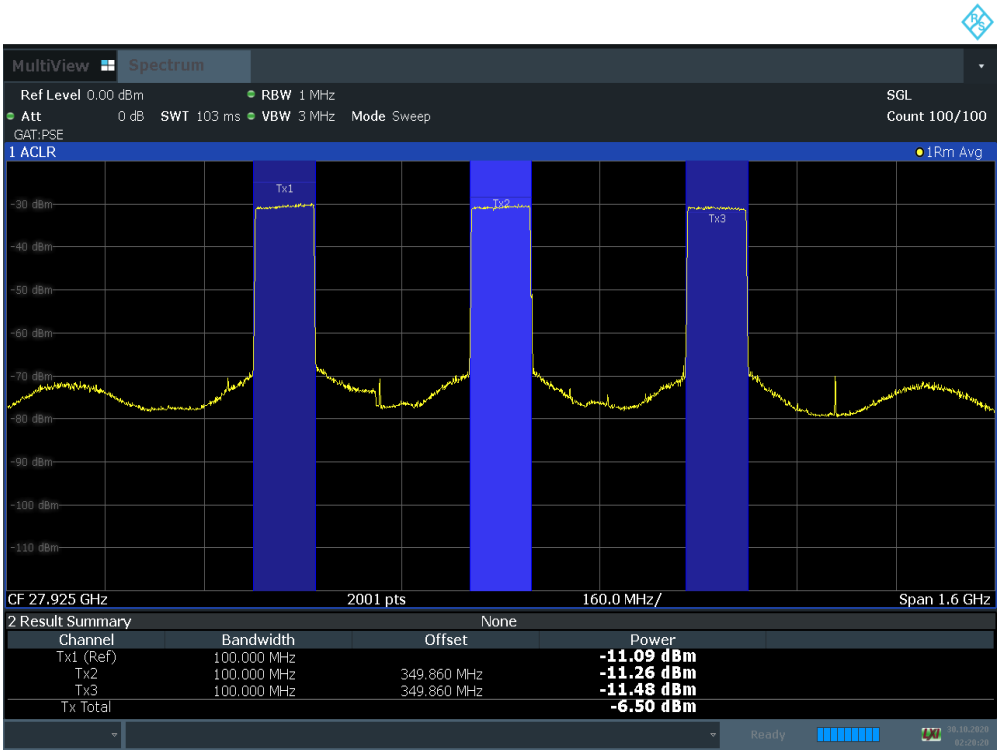
Plot 7-113. Antenna C EIRP Density Plot (50 MHz 2CC BW 16QAM High Channel)



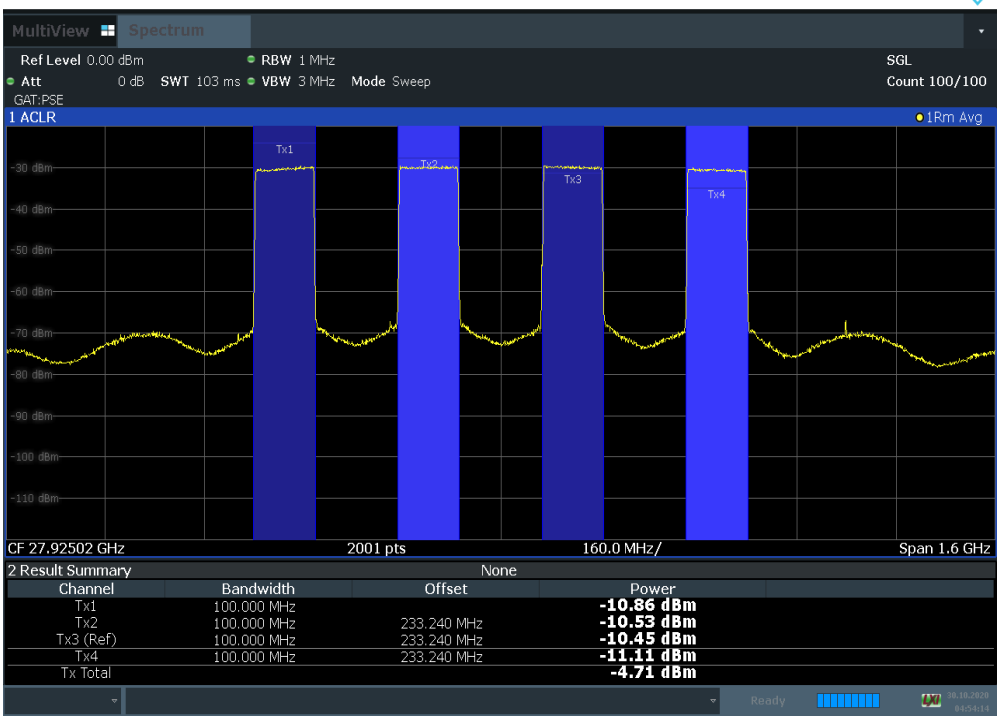
Plot 7-114. Antenna C EIRP Density Plot (50 MHz 2CC BW 64QAM High Channel)



Plot 7-115. Antenna C EIRP Density Plot (100 MHz 2NC BW QPSK Mid Channel)

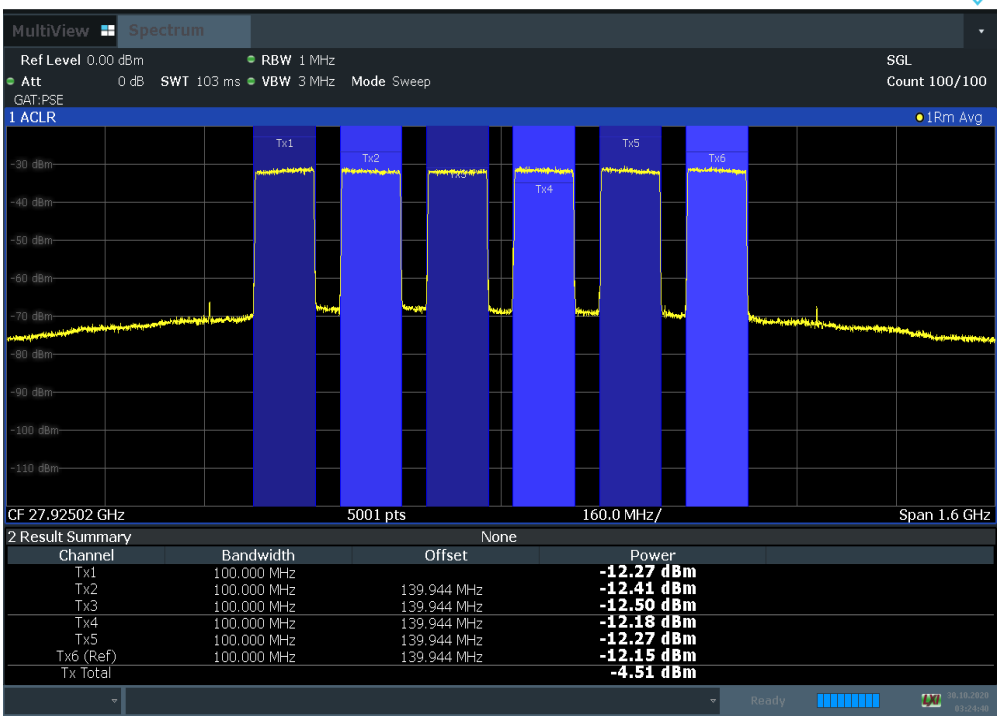


Plot 7-116. Antenna C EIRP Density Plot (100 MHz 3NC BW QPSK Mid Channel)

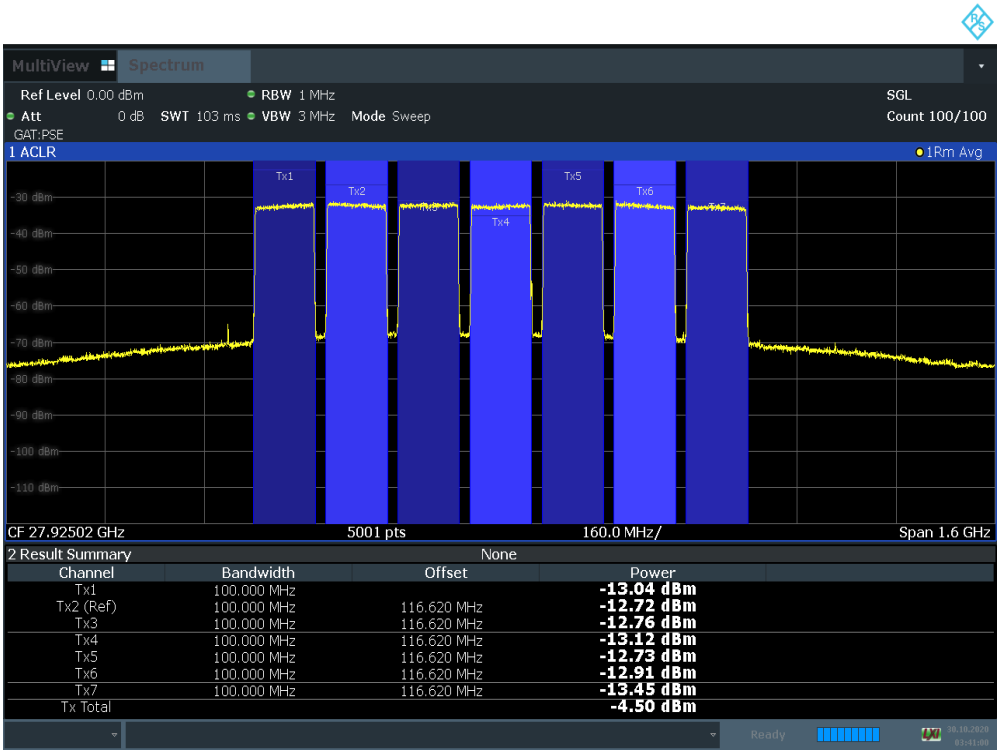


Plot 7-117. Antenna C EIRP Density Plot (100 MHz 4NC BW QPSK Mid Channel)

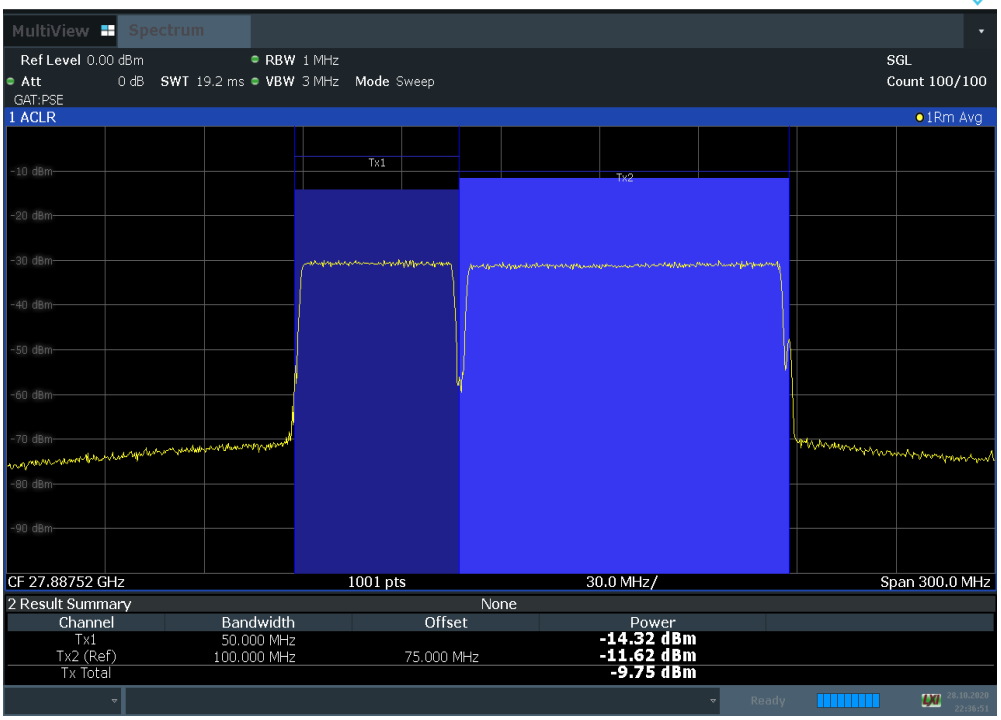
Plot 7-118. Antenna C EIRP Density Plot (100 MHz 5NC BW QPSK Mid Channel)



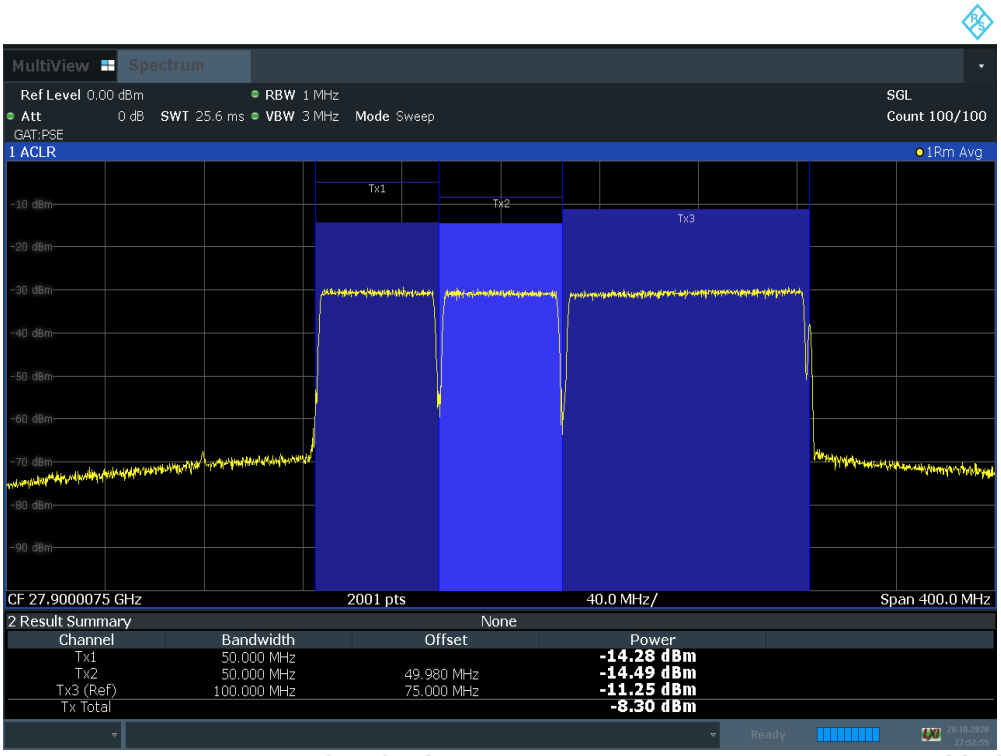
Plot 7-119. Antenna C EIRP Density Plot (100 MHz 6NC BW QPSK Mid Channel)



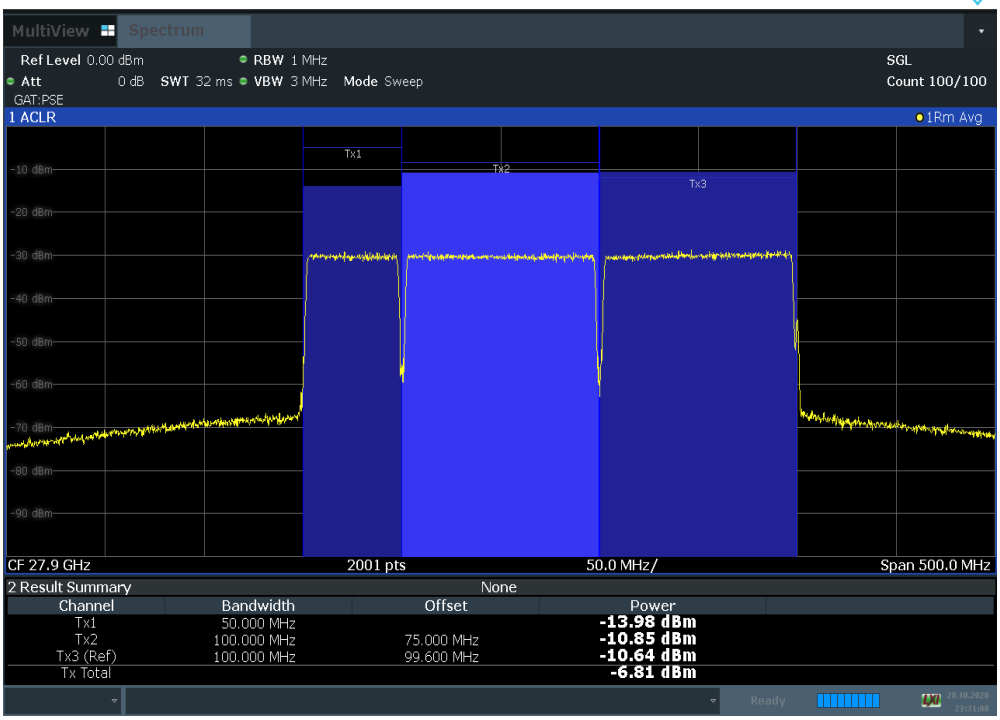
Plot 7-120. Antenna C EIRP Density Plot (100 MHz 7NC BW QPSK Mid Channel)



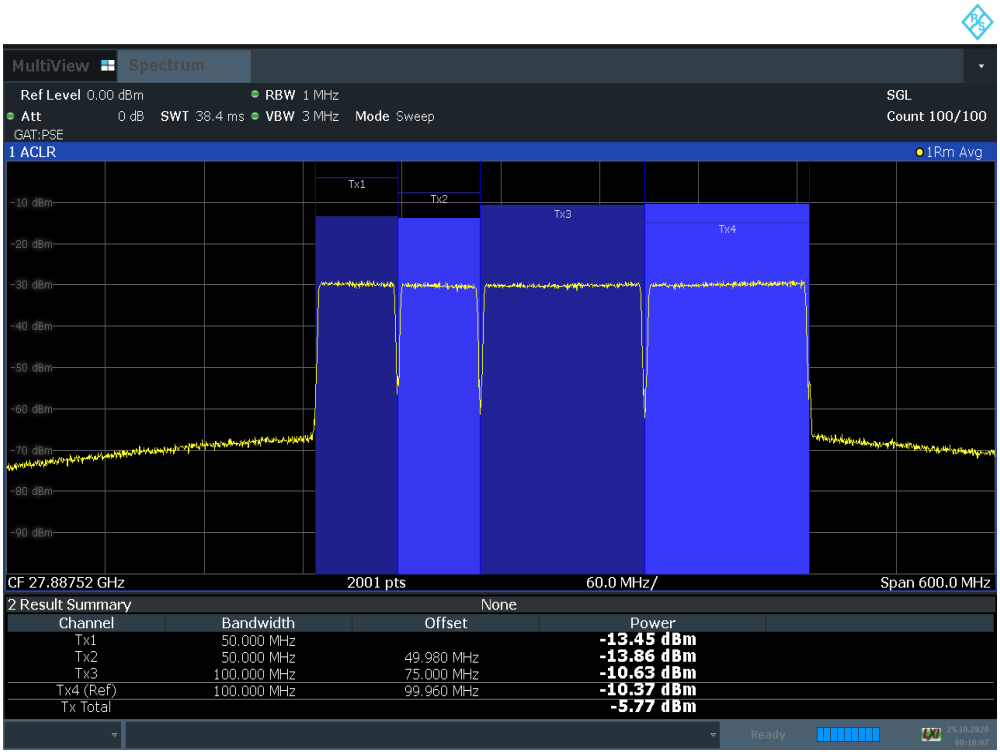
Plot 7-121. Antenna C EIRP Density Plot (50 MHz 1CC + 100 MHz 1CC BW QPSK Mid Channel)



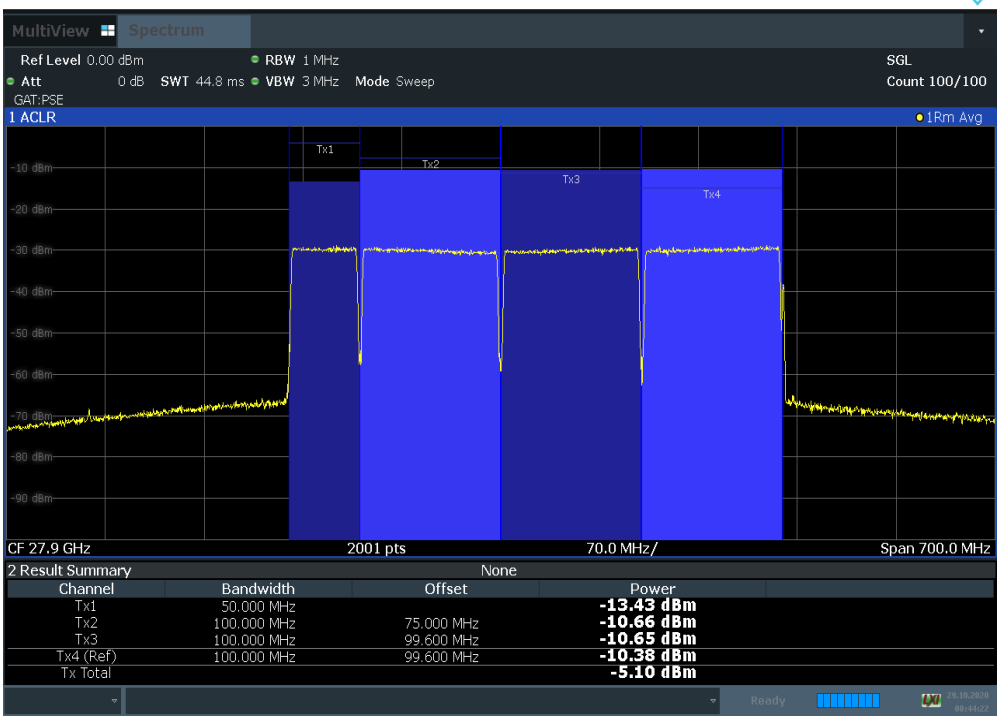
Plot 7-122. Antenna C EIRP Density Plot (50 MHz 2CC + 100 MHz 1CC BW QPSK Mid Channel)



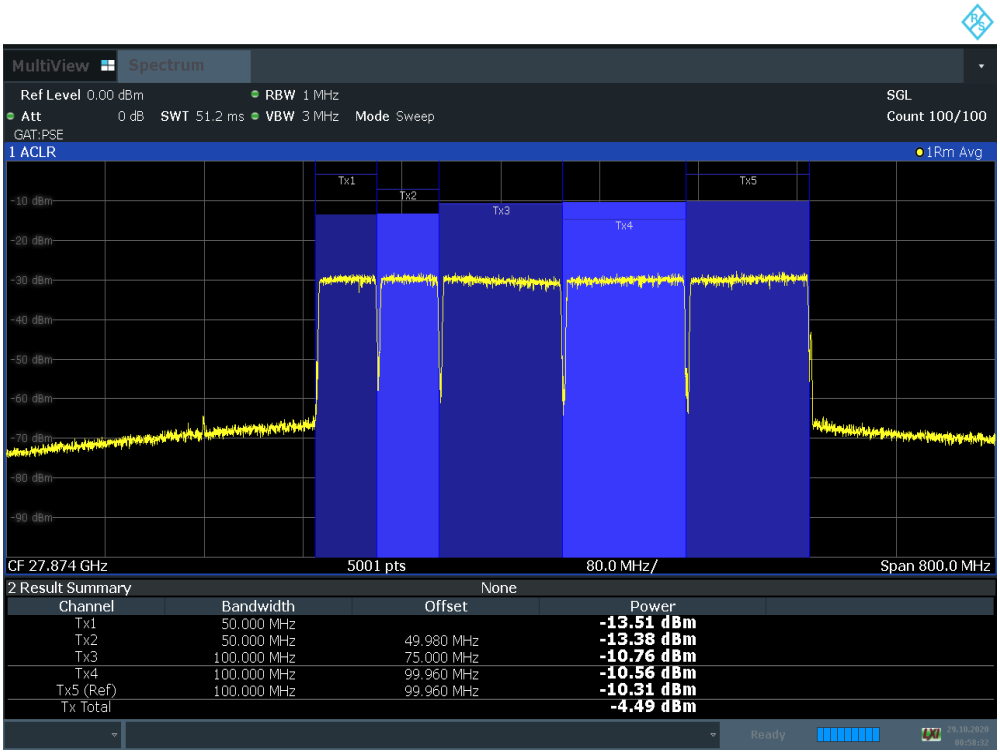
Plot 7-123. Antenna C EIRP Density Plot (50 MHz 1CC + 100 MHz 2CC BW QPSK Mid Channel)



Plot 7-124. Antenna C EIRP Density Plot (50 MHz 2CC + 100 MHz 2CC BW QPSK Mid Channel)



Plot 7-125. Antenna C EIRP Density Plot (50 MHz 1CC + 100 MHz 3CC BW QPSK Mid Channel)



Plot 7-126. Antenna C EIRP Density Plot (50 MHz 2CC + 100 MHz 3CC BW QPSK Mid Channel)