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MEASUREMENT REPORT
FCC Part 30 5G mmWave

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

Date of Testing:
9/12 – 11/7/2022
Test Report Issue Date:
11/15/2022
Test Site/Location:
Element Lab., Columbia, MD, USA
Test Report Serial No.:
1M2209010097-08.A3L

FCC ID:	**A3LSMS916U**
APPLICANT:	**Samsung Electronics Co., Ltd.**

Application Type:	Certification
Model:	SM-S916U
Additional Models:	SM-S916U1
EUT Type:	Portable Handset
FCC Classification:	Part 30 Mobile Transmitter (5GM)
FCC Rule Part(s):	30
Test Procedure(s):	ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 842590 D01 v01r02

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.

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.

RJ Ortanez
Executive Vice President

ACCREDITED
CERT #2041.01

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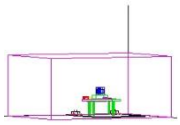
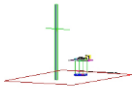


MEASUREMENT REPORT
FCC Part 30



Antenna	Band	Bandwidth [MHz]	Tx Frequency [MHz]	CCs Active	Modulation	Mode	EIRP		Emission Designator
							Max Power [W]	Max Power [dBm]	
M - Patch	NR-n258-R1	50	24275 - 24425	1	QPSK	SISO	0.796	29.01	46M2G7D
					QPSK	2Tx	1.028	30.12	46M2G7D
					π/2 BPSK	2Tx	1.084	30.35	45M8G7D
					16QAM	2Tx	0.655	28.16	46M2W7D
					64QAM	2Tx	0.339	25.30	46M1W7D
		100	24300 - 24400	1	QPSK	SISO	0.916	29.62	95M1G7D
					QPSK	2Tx	1.578	31.98	95M1G7D
					π/2 BPSK	2Tx	1.592	32.02	91M7G7D
					16QAM	2Tx	1.009	30.04	95M1W7D
					64QAM	2Tx	0.491	26.91	95M1W7D
				2	QPSK	2Tx	0.398	26.00	194MG7D
					π/2 BPSK	2Tx	0.400	26.02	194MG7D
					16QAM	2Tx	0.245	23.89	194MW7D
					64QAM	2Tx	0.187	22.71	194MW7D
N - Patch	NR-n258-R1	50	24275 - 24425	1	QPSK	SISO	0.689	28.38	-
					QPSK	2Tx	0.859	29.34	-
					π/2 BPSK	2Tx	0.855	29.32	-
					16QAM	2Tx	0.504	27.02	-
					64QAM	2Tx	0.265	24.24	-
		100	24300 - 24400	1	QPSK	SISO	0.679	28.32	-
					QPSK	2Tx	0.798	29.02	-
					π/2 BPSK	2Tx	0.853	29.31	-
					16QAM	2Tx	0.550	27.40	-
					64QAM	2Tx	0.273	24.36	-
				2	QPSK	2Tx	0.288	24.60	-
					π/2 BPSK	2Tx	0.294	24.69	-
					16QAM	2Tx	0.179	22.52	-
					64QAM	2Tx	0.118	20.73	-

EUT Overview (Band n258, 24.25-24.45GHz)

Antenna	Band	Bandwidth [MHz]	Tx Frequency [MHz]	CCs Active	Modulation	Mode	EIRP		Emission Designator
							Max Power [W]	Max Power [dBm]	
M - Patch	NR-n258-R2	50	24775 - 25225	1	QPSK	SISO	0.570	27.56	46M0G7D
					QPSK	2Tx	1.734	32.39	46M0G7D
					π/2 BPSK	2Tx	1.738	32.40	45M9G7D
					16QAM	2Tx	1.038	30.16	45M9W7D
					64QAM	2Tx	0.571	27.57	45M9W7D
		100	24800 - 25200	1	QPSK	SISO	0.551	27.41	94M7G7D
					QPSK	2Tx	1.923	32.84	94M7G7D
					π/2 BPSK	2Tx	1.941	32.88	92M5G7D
					16QAM	2Tx	1.216	30.85	94M4W7D
					64QAM	2Tx	0.615	27.89	93M5W7D
				2	QPSK	2Tx	0.542	27.34	194MG7D
					π/2 BPSK	2Tx	0.550	27.40	192MG7D
					16QAM	MIMO	0.347	25.40	194MW7D
					64QAM	2Tx	0.219	23.40	194MW7D
				3	QPSK	2Tx	0.543	27.35	298MG7D
					π/2 BPSK	2Tx	0.540	27.32	297MG7D
					16QAM	2Tx	0.344	25.37	297MW7D
					64QAM	2Tx	0.256	24.08	297MW7D
N - Patch	NR-n258-R2	50	24775 - 25225	1	QPSK	SISO	1.194	30.77	-
					QPSK	2Tx	1.493	31.74	-
					π/2 BPSK	2Tx	1.455	31.63	-
					16QAM	2Tx	0.879	29.44	-
					64QAM	2Tx	0.412	26.15	-
		100	24800 - 25200	1	QPSK	SISO	1.140	30.57	-
					QPSK	2Tx	1.479	31.70	-
					π/2 BPSK	2Tx	1.507	31.78	-
					16QAM	2Tx	0.897	29.53	-
					64QAM	2Tx	0.449	26.52	-
				2	QPSK	2Tx	0.652	28.14	-
					π/2 BPSK	2Tx	0.652	28.14	-
					16QAM	2Tx	0.403	26.05	-
					64QAM	2Tx	0.250	23.98	-
				3	QPSK	2Tx	0.574	27.59	-
					π/2 BPSK	2Tx	0.575	27.60	-
					16QAM	2Tx	0.270	24.32	-
					64QAM	2Tx	0.171	22.34	-

EUT Overview (Band n258, 24.75-25.25GHz)

Antenna	Band	Bandwidth [MHz]	Tx Frequency [MHz]	CCs Active	Modulation	Mode	EIRP		Emission Designator
							Max Power [W]	Max Power [dBm]	
M - Patch	NR-n261	50	27525 - 28325	1	QPSK	SISO	0.838	29.23	45M9G7D
					QPSK	2Tx	2.000	33.01	45M9G7D
					π/2 BPSK	2Tx	2.023	33.06	45M3G7D
					16QAM	2Tx	1.191	30.76	46M0W7D
					64QAM	2Tx	0.647	28.11	46M2W7D
		100	27550 - 28300	1	QPSK	SISO	0.879	29.44	95M8G7D
					QPSK	2Tx	1.770	32.48	95M8G7D
					π/2 BPSK	2Tx	1.799	32.55	92M3G7D
					16QAM	2Tx	1.074	30.31	96M3W7D
					64QAM	2Tx	0.558	27.47	97M0W7D
				2	QPSK	2Tx	0.475	26.77	193MG7D
					π/2 BPSK	2Tx	0.468	26.70	191MG7D
					16QAM	2Tx	0.294	24.68	193MW7D
					64QAM	2Tx	0.183	22.62	193MW7D
				3	QPSK	2Tx	0.447	26.50	293MG7D
					π/2 BPSK	2Tx	0.437	26.40	290MG7D
					16QAM	2Tx	0.272	24.35	293MW7D
					64QAM	2Tx	0.207	23.15	293MW7D
				4	QPSK	2Tx	0.429	26.32	396MG7D
					π/2 BPSK	2Tx	0.412	26.15	397MG7D
					16QAM	2Tx	0.262	24.18	396MW7D
					64QAM	2Tx	0.166	22.21	397MW7D
N - Patch	NR-n261	50	27525 - 28325	1	QPSK	SISO	0.547	27.38	-
					QPSK	2Tx	1.585	32.00	-
					π/2 BPSK	2Tx	1.618	32.09	-
					16QAM	2Tx	0.933	29.70	-
					64QAM	2Tx	0.461	26.64	-
		100	27550 - 28300	1	QPSK	SISO	0.718	28.56	-
					QPSK	2Tx	1.138	30.56	-
					π/2 BPSK	2Tx	1.138	30.56	-
					16QAM	2Tx	1.112	30.46	-
					64QAM	2Tx	0.546	27.37	-
				2	QPSK	2Tx	0.641	28.07	-
					π/2 BPSK	2Tx	0.628	27.98	-
					16QAM	2Tx	0.394	25.95	-
					64QAM	2Tx	0.266	24.25	-
				3	QPSK	2Tx	0.508	27.06	-
					π/2 BPSK	2Tx	0.502	27.01	-
					16QAM	2Tx	0.342	25.34	-
					64QAM	2Tx	0.269	24.29	-
				4	QPSK	2Tx	0.463	26.66	-
					π/2 BPSK	2Tx	0.482	26.83	-
					16QAM	2Tx	0.327	25.14	-
					64QAM	2Tx	0.208	23.18	-

EUT Overview (Band n261)

Antenna	Band	Bandwidth [MHz]	Tx Frequency [MHz]	CCs Active	Modulation	Mode	EIRP		Emission Designator
							Max Power [W]	Max Power [dBm]	
M - Patch	NR-n260	50	37025 - 39975	1	QPSK	SISO	0.597	27.76	-
					QPSK	2Tx	0.774	28.89	-
					π/2 BPSK	2Tx	0.774	28.89	-
					16QAM	2Tx	0.483	26.84	-
					64QAM	2Tx	0.232	23.65	-
		100	37050 - 39950	1	QPSK	SISO	0.619	27.92	-
					QPSK	2Tx	0.760	28.81	-
					π/2 BPSK	2Tx	0.746	28.73	-
					16QAM	2Tx	0.465	26.67	-
					64QAM	2Tx	0.223	23.49	-
				2	QPSK	2Tx	0.195	22.90	-
					π/2 BPSK	2Tx	0.197	22.94	-
					16QAM	2Tx	0.139	21.43	-
					64QAM	2Tx	0.087	19.38	-
				3	QPSK	2Tx	0.195	22.91	-
					π/2 BPSK	2Tx	0.194	22.88	-
					16QAM	2Tx	0.141	21.48	-
					64QAM	2Tx	0.115	20.59	-
				4	QPSK	2Tx	0.175	22.42	-
					π/2 BPSK	2Tx	0.174	22.41	-
					16QAM	2Tx	0.121	20.82	-
					64QAM	2Tx	0.093	19.69	-
N - Patch	NR-n260	50	37025 - 39975	1	QPSK	SISO	0.762	28.82	46M2G7D
					QPSK	2Tx	1.146	30.59	46M2G7D
					π/2 BPSK	2Tx	1.156	30.63	46M1G7D
					16QAM	2Tx	0.714	28.54	46M0W7D
					64QAM	2Tx	0.315	24.98	46M1W7D
		100	37050 - 39950	1	QPSK	SISO	0.887	29.48	94M8G7D
					QPSK	2Tx	1.125	30.51	94M8G7D
					π/2 BPSK	2Tx	1.138	30.56	91M8G7D
					16QAM	2Tx	0.600	27.78	94M7W7D
					64QAM	2Tx	0.308	24.89	94M5W7D
				2	QPSK	2Tx	0.307	24.87	193MG7D
					π/2 BPSK	2Tx	0.308	24.89	191MG7D
					16QAM	2Tx	0.197	22.94	194MW7D
					64QAM	2Tx	0.132	21.19	193MW7D
				3	QPSK	2Tx	0.281	24.49	294MG7D
					π/2 BPSK	2Tx	0.283	24.52	292MG7D
					16QAM	2Tx	0.197	22.95	294MW7D
					64QAM	2Tx	0.140	21.46	294MW7D
				4	QPSK	2Tx	0.254	24.04	392MG7D
					π/2 BPSK	2Tx	0.255	24.06	391MG7D
					16QAM	2Tx	0.177	22.47	393MW7D
					64QAM	2Tx	0.118	20.72	392MW7D

EUT Overview (Band n260)

Note: Due to similar antenna performance from the antennas after thorough investigation, the Occupied Bandwidth was only measured on one antenna for each band.

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.

1.2 Element Test Location

These measurement tests were conducted at the Element laboratory located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

1.3 Test Facility / Accreditations

Measurements were performed at Element lab located in Columbia, MD 21046, U.S.A.

- Element Washington DC LLC is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.

- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).

- Element Washington DC LLC facility is a registered (2451B) test laboratory with the site description on file with ISED.

- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreement.

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMS916U**. The test data contained in this report pertains only to the emissions due to the EUT's 5G mmWave function.

The EUT contains two patch antennas, referred to herein as Ant1 (M-Patch) and Ant2 (N-Patch). Each of the antennas is comprised of two separate antenna feeds - one for horizontal and one for vertical polarization. Only one array antenna can be active at a time.

Antenna	Name
Ant1	M Patch
Ant2	N Patch

The EUT supports both 50MHz bandwidth and 100MHz bandwidth. The EUT supports 1CC for 50MHz bandwidth and upto 4CC for 100MHz bandwidth. The table below indicates the supported bandwidths and component carriers for the Frequency ranges tested.

# CC's	BW (MHz)	Total CC BW (MHz)	Channel	24.25 - 24.45GHz (n258-R1)	24.75 - 25.25GHz (n258-R2)	27.5 - 28.35GHz (n261)	37 - 40GHz (n260)
1CC	50	50	Low	x	x	x	x
			Mid	x	x	x	x
			High	x	x	x	x
	100	100	Low	x	x	x	x
			Mid	x	x	x	x
			High	x	x	x	x
2CC	50	100	Low	-	-	-	-
			Mid	-	-	-	-
			High	-	-	-	-
	100	200	Low	-	x	x	x
			Mid	x	x	x	x
			High	-	x	x	x
3CC	50	150	Low	-	-	-	-
			Mid	-	-	-	-
			High	-	-	-	-
	100	300	Low	-	x	x	x
			Mid	-	x	x	x
			High	-	x	x	x
4CC	50	200	Low	-	-	-	-
			Mid	-	-	-	-
			High	-	-	-	-
	100	400	Low	-	-	x	x
			Mid	-	-	x	x
			High	-	-	x	x

The EUT supports a subcarrier spacing (SCS) of 120kHz with two transmission schemes, CP-OFDM and DFT-s-OFDM, with pi/2-BPSK, QPSK, 16-QAM, and 64-QAM modulations. Different Beam IDs are supported, each corresponding to a different position in space for each antenna. During testing, FTM (Factory Test Mode) was used to operate the transmitter. MIMO operation was achieved by enabling two Beam IDs at the same time: one is from the list of H Beam IDs and other is from the list of V Beam IDs.

Test Device Serial No.: 0609M, 0644M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR (FR1 and FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz and 6GHz), Bluetooth (1x, EDR, LE), NFC, UWB, Wireless Power Transfer

2.3 Test Configuration

The EUT was tested per the guidance of KDB 842590 D01 v01r02 and ANSI C63.26-2015. See Section 7.0 of this test report for a description of the radiated tests.

EIRP Simulation data for all Beam IDs was used to help determine the worst case Beam ID for SISO operation and Beam ID pair for 2Tx (DFT-s-OFDM) and MIMO (CP-OFDM) operation. Several additional Beam ID's were also investigated to determine the Beam ID's producing the highest measured EIRP.

All testing was performed using FTM (Factory Test Mode) software at continuous Tx operation. When implemented out in the field, the EUT will operate with a maximum uplink configuration as allowed by the 5G network/carrier. The FTM software was also used for the EUT operation in the EN-DC and NR-DC mode.

While operating in the FR2 band, this device supports anchor band operation with either an LTE carrier or an NR FR1 carrier. Both were investigated during FR2 measurements.

2.4 Software and Firmware

The test was conducted with firmware version S916USQU0AVJS installed on the EUT.

2.5 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 Transmitters Used in Licensed Radio Services" (ANSI C63.26-2015) and the guidance provided in KDB 842590 D01 v01r02 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 measurements and exploratory measurements, when necessary for radiated emissions measurements in the spurious domain. 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 6m x 5.2m 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 1GHz. For measurements below 1GHz, 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 80cm 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 1.5m for measurements above 1GHz.

Radiated power (EIRP) measurements were performed in a full anechoic chamber (FAC) conforming to the site validation requirements of CISPR 16-1-4. Radiated spurious emission measurements from 30MHz - 18GHz were performed in a semi anechoic chamber (SAC) conforming to the site validation requirements of CISPR 16-1-4. A positioner was used to manipulate the EUT through several positions in space by rotating about the roll axis as shown in the figure below. The positioner was mounted on top of a turntable bringing the total EUT height to 1.5m.

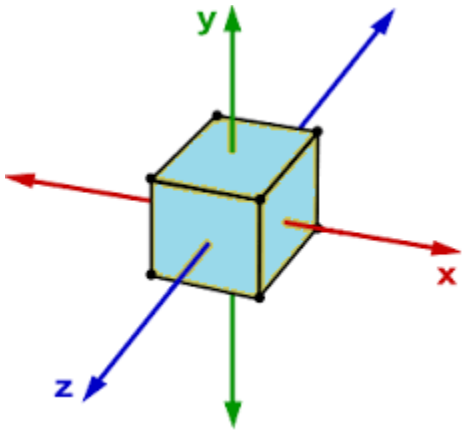


Figure 3-1. Rotation of the EUT Through Three Orthogonal Planes

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)	Measurement Distance (m)
18-40	0.749	0.54	1.00
40-60	0.500	1.39	1.50
60-90	0.333	0.91	1.00
90-140	0.214	0.58	1.00
140-200	0.150	0.39	1.00

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

Radiated power levels are investigated while the receive antenna was rotated through all angles to determine the worst case polarization/positioning. It was determined that H=0 degree and V=90 degree are the worst case positions when the EUT was transmitting horizontally and vertically polarized beams, respectively.

The maximized power level is recorded using the spectrum analyzer “Channel Power” function with the integration bandwidth 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 converting back to calculated e.i.r.p, as explained in KDB 971168 D01.

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

= - 32.74 dBm + (40.7dB/m + 8.78dB) + 107 = 123.74dBuV/m

= 10^(123.74/20)/1000000 = 1.54 V/m

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

= 10*log((1.54V/m * 1.00m)^2/30) + 30dB

= 18.98 dBm e.i.r.p.

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	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to an accredited ISO/IEC 17025 calibration facility. Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
N/A	AP2-001	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	AP2-001
N/A	AP2-002	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	AP2-002
N/A	ETS-001	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	ETS-001
N/A	ETS-002	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	ETS-002
EMCO	3115	Horn Antenna (1-18GHz)	8/8/2022	Biennial	8/8/2024	9704-5182
Espec	SCP-220	Temperature Chamber	5/25/2022	Biennial	5/25/2024	OCPS5H0612K05
ETS-Lindgren	3116C	DRG Horn Antenna	5/11/2021	Biennial	5/11/2023	218893
ETS-Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/20/2021	Biennial	4/20/2023	125518
Keysight Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	8/18/2022	Annual	8/18/2023	MY49430494
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	2/14/2022	Annual	2/14/2023	MY52350166
Narda	180-422-KF	Horn (Small)	8/30/2022	Biennial	8/30/2024	U157403-01
OML, Inc.	M08RH	WR-08 Horn Antenna, 24dBi, 90 to 140 GHz	10/6/2021	Biennial	10/6/2023	17111701
OML, Inc.	M19RH	WR-19 Horn Antenna, 24dBi, 40 to 60 GHz	10/12/2021	Biennial	10/12/2023	17111701
OML, Inc.	M12RH	WR-12 Horn Antenna, 24dBi, 60 to 90 GHz	11/16/2021	Biennial	11/16/2023	17111701
OML, Inc.	M05RH	WR-05 Horn Antenna, 24dBi, 140 to 220 GHz	9/27/2022	Biennial	9/27/2024	18073001
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	12/16/2021	Annual	12/16/2022	1312.8000K67
Sunol Sciences	JB5	Bi-Log Antenna (30M-5GHz)	8/30/2022	Biennial	8/30/2024	A051107
UTiFlex	UTiFlex	FAC mmWave UTiFlex 40GHz	3/9/2022	Annual	3/9/2023	234142-001
UTiFlex	UTiFlex	FAC mmWave UTiFlex 40GHz	8/15/2022	Annual	8/15/2023	232062-001
Virginia Diodes Inc	SAX253	SAX Module (90 - 140GHz)	2/24/2021	Biennial	2/24/2023	SAX253
Virginia Diodes Inc	SAX252	SAX Module (60 - 90GHz)	2/24/2021	Biennial	2/24/2023	SAX252
Virginia Diodes Inc	SAX254	SAX Module (140 - 220GHz)	2/24/2021	Biennial	2/24/2023	SAX254
Virginia Diodes Inc	SAX411	SAX Module (40 - 60GHz)	2/24/2021	Biennial	2/24/2023	SAX411

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.

6.0 SAMPLE CALCULATIONS

Emission Designator

π/2 BPSK/ 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: A3LSMS916U

FCC Classification: Part 30 Mobile Transmitter (5GM)

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
2.1046, 30.202	Equivalent Isotropic Radiated Power	43dBm		PASS	Section 7.3
2.1051, 30.203	Spurious Emissions	-13dBm/MHz for all out-of-band emissions		PASS	Section 7.4
2.1051, 30.203	Out-of-Band Emissions at the Band Edge	-13dBm/MHz for all out-of-band emissions, -5dBm/MHz from the band edge up to 10% of the channel BW		PASS	Section 7.5
2.1055	Frequency Stability	Fundamental emissions stay within authorized frequency block		PASS	Section 7.6

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) This report contains references to "n258-R1" and "n258-R2". These correspond to n258 Range 1, operating from 24.25 - 24.45GHz, and n258 Range 2, operating from 24.75 - 25.25GHz, respectively, as defined in Part 30.4(a).
3) Per 2.1057(a)(2), spurious emissions were investigated up to 100GHz for n258-R1, n258-R2 and n261. For n260, spurious emissions were investigated up to 200GHz.
4) The radiated RF output power and all out-of-band emissions in the spurious domain are evaluated to the EIRP limits.
5) “CC” refers to “Component Carriers”.
6) Beam IDs were chosen based on which Beam ID produces the highest EIRP during EIRP simulation.
7) All testing was performed using FTM (Factory Test Mode) software at continuous Tx operation (100% duty cycle).
8) The CP-OFDM and DFT-s-OFDM transmission schemes were investigated fully for each test type and only the worst case data is included.

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 percent 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 C63.26-2015 Section 5.4.3
KDB 842590 D01 v01r02 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

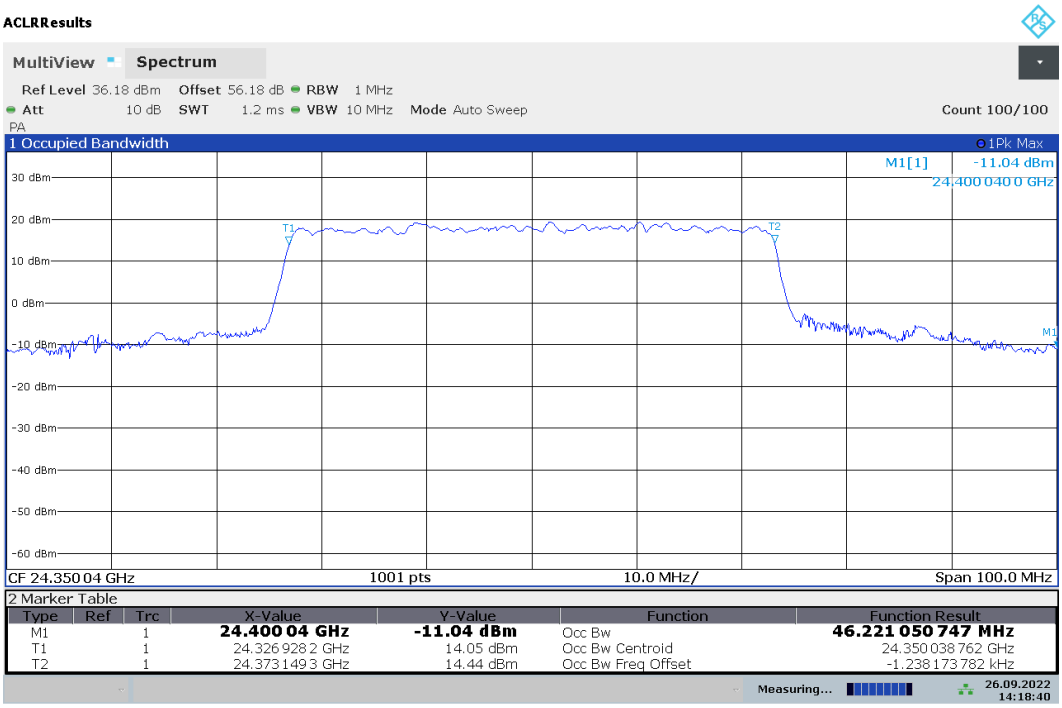
Test Notes

1. The EUT supports CP-OFDM and DFT-s-OFDM. OBW was measured for both waveforms and the worst case has been included in the report.
2. Due to similar antenna performance from both patch antennas, the Occupied Bandwidth was only measured on one antenna for each band.

Band n258-R1

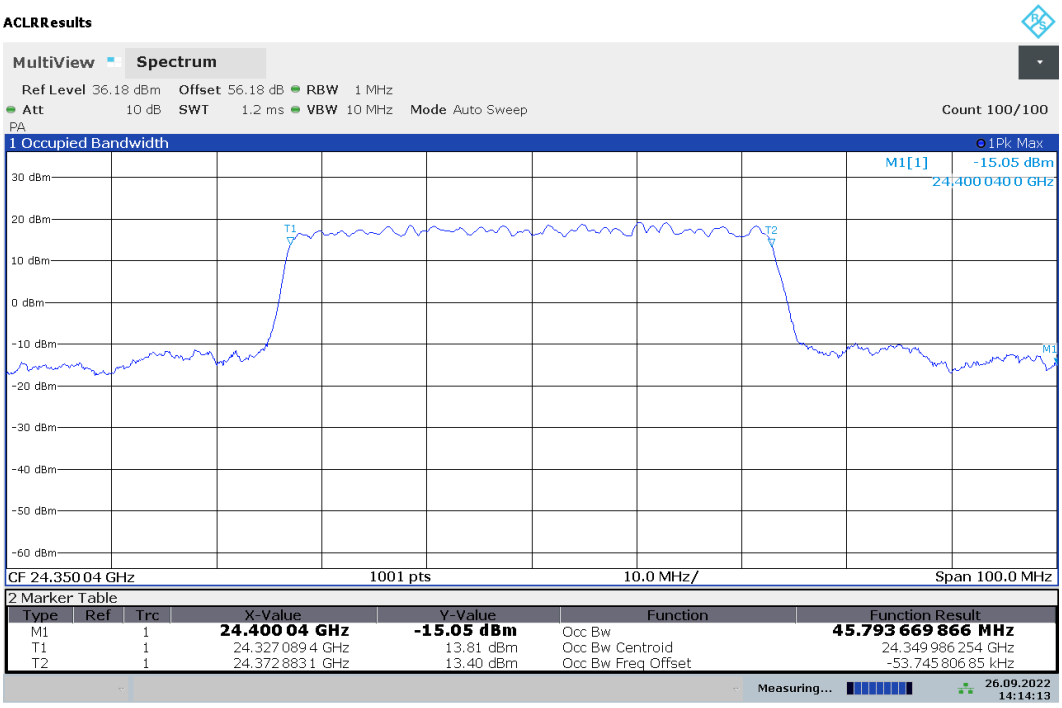
Bandwidth [MHz]	CCs Active	Transmission Scheme	Modulation	OBW [MHz]
50	1	CP-OFDM	QPSK	46.22
		DFT-s-OFDM	π/2 BPSK	45.79
		CP-OFDM	16QAM	46.23
		CP-OFDM	64QAM	46.11
100	1	CP-OFDM	QPSK	95.08
		DFT-s-OFDM	π/2 BPSK	91.73
		CP-OFDM	16QAM	95.06
		CP-OFDM	64QAM	95.06
	2	CP-OFDM	QPSK	194.07
		DFT-s-OFDM	π/2 BPSK	193.84
		CP-OFDM	16QAM	193.97
		CP-OFDM	64QAM	193.90

Table 7-2. Summary of Occupied Bandwidths (n258-R1)



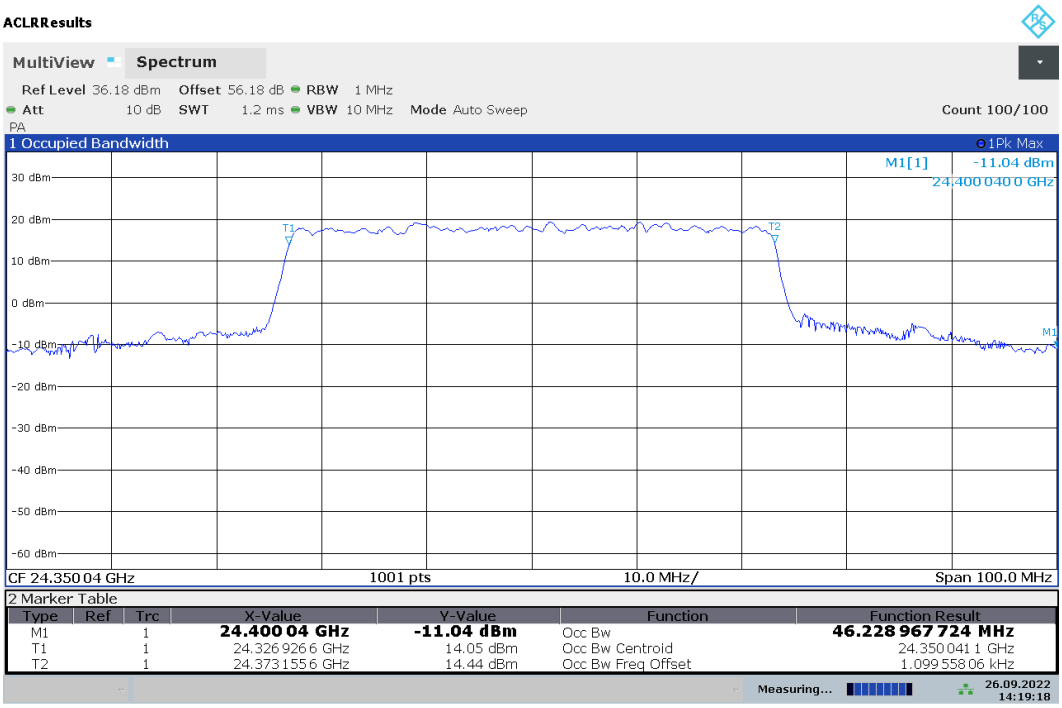
14:18:40 26.09.2022

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



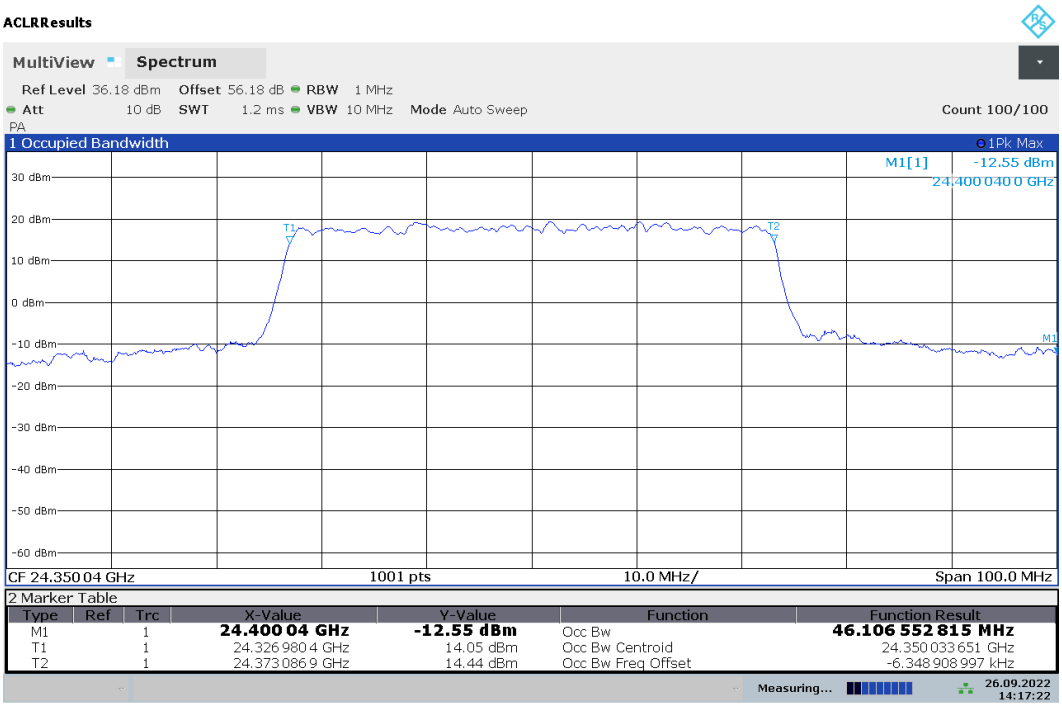
14:14:14 26.09.2022

Plot 7-2. Occupied Bandwidth Plot (50MHz-1CC – pi/2-BPSK – Mid Channel)



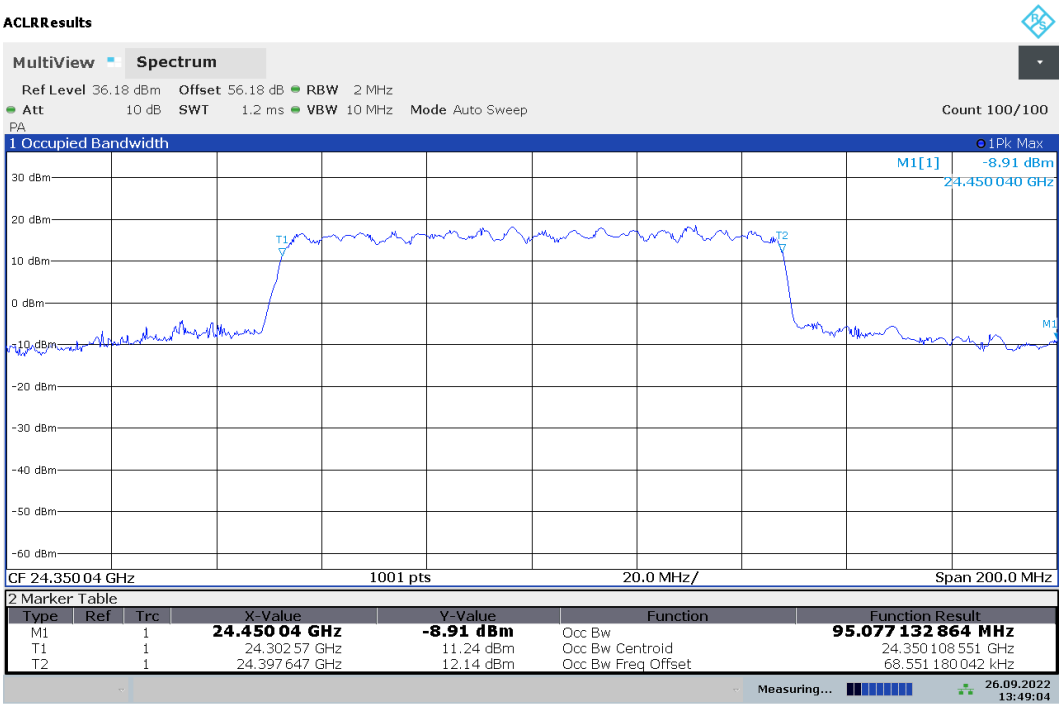
14:19:19 26.09.2022

Plot 7-3. Occupied Bandwidth Plot (50MHz-1CC – 16QAM – Mid Channel)



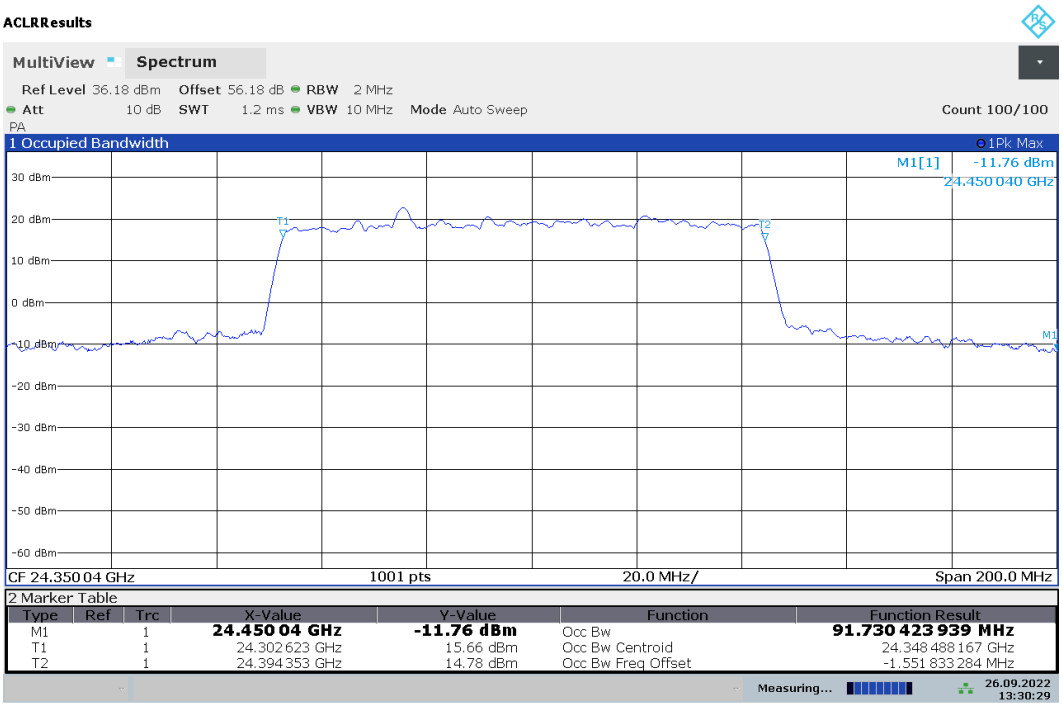
14:17:22 26.09.2022

Plot 7-4. Occupied Bandwidth Plot (50MHz-1CC – 64QAM – Mid Channel)



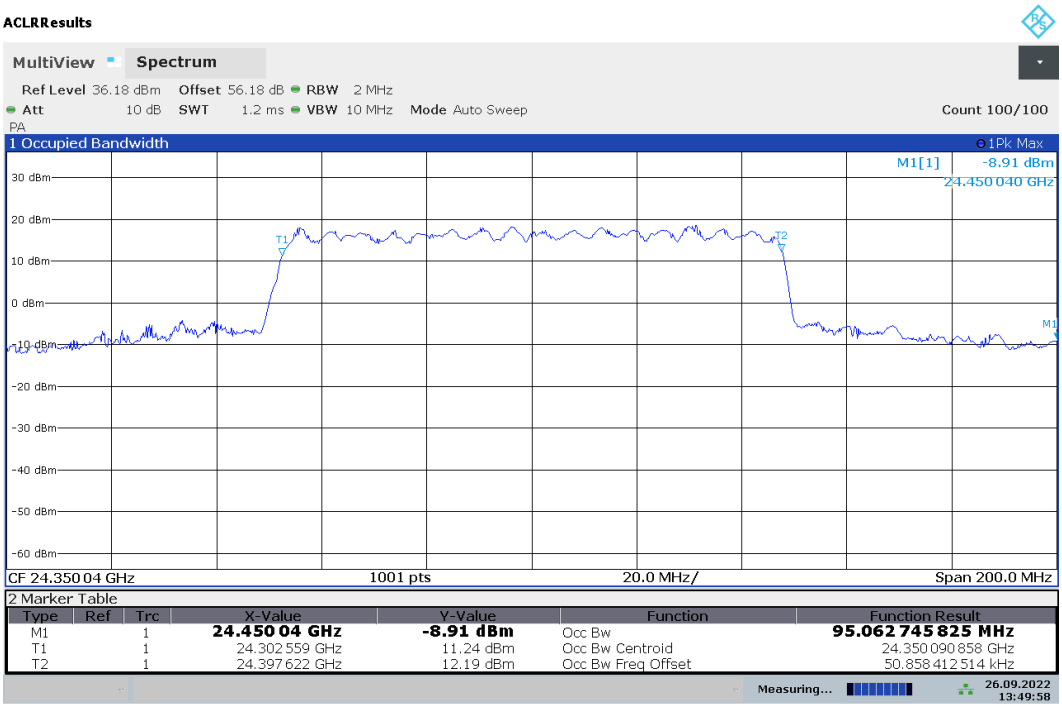
13:49:05 26.09.2022

Plot 7-5. Occupied Bandwidth Plot (100MHz-1CC – QPSK – Mid Channel)



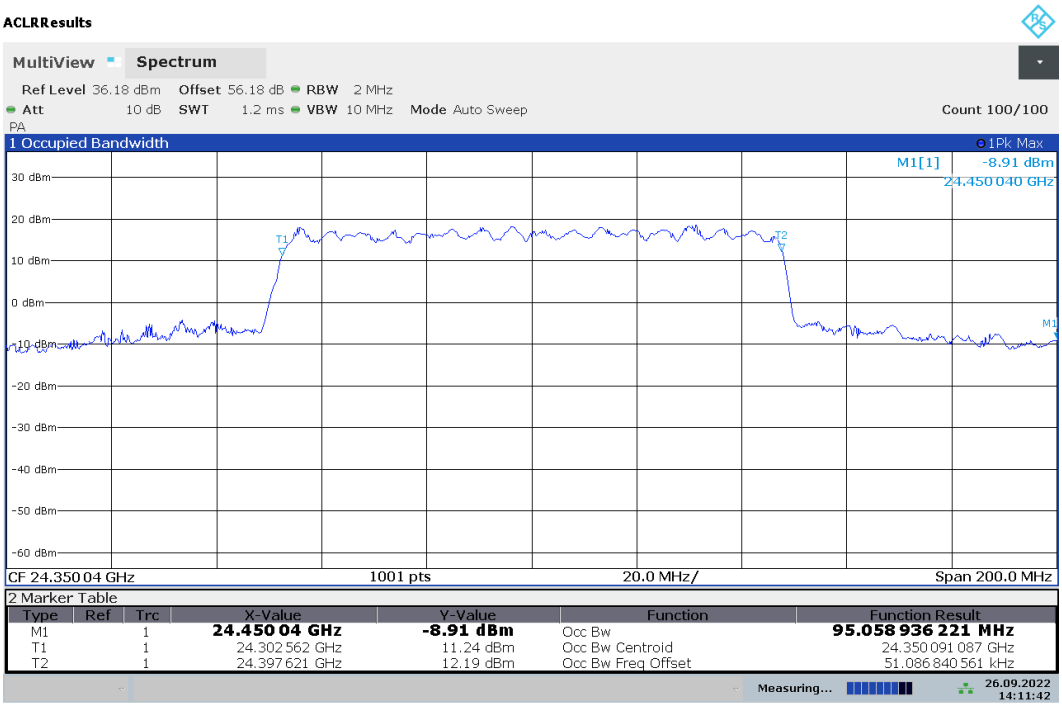
13:30:30 26.09.2022

Plot 7-6. Occupied Bandwidth Plot (100MHz-1CC – pi/2-BPSK – Mid Channel)



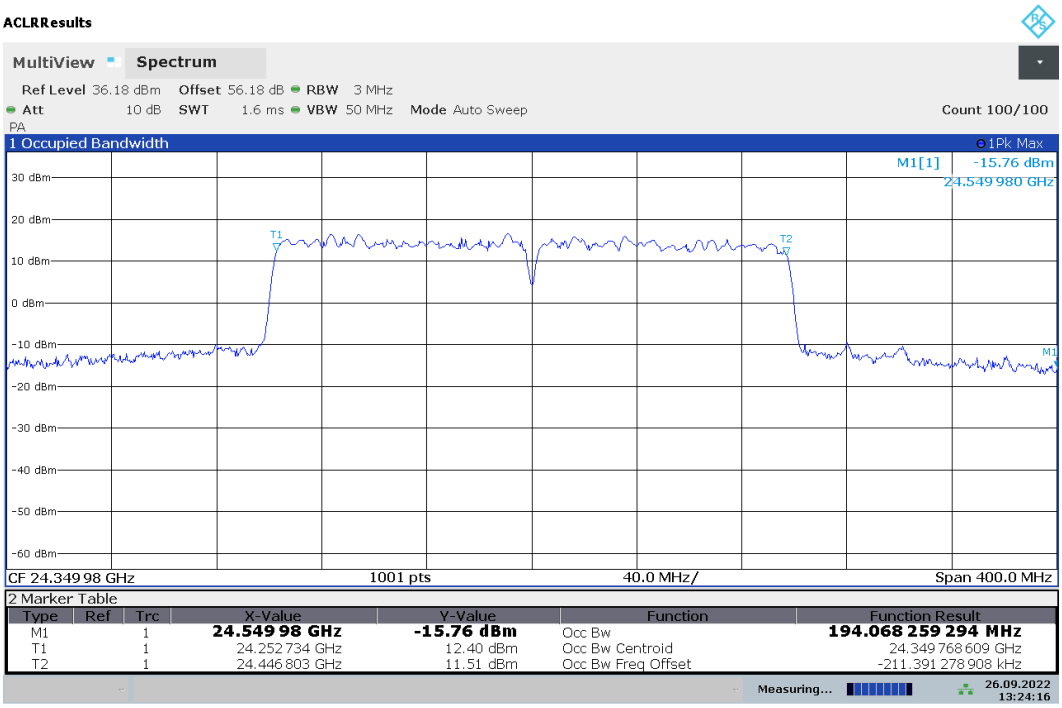
13:49:59 26.09.2022

Plot 7-7. Occupied Bandwidth Plot (100MHz-1CC – 16QAM – Mid Channel)



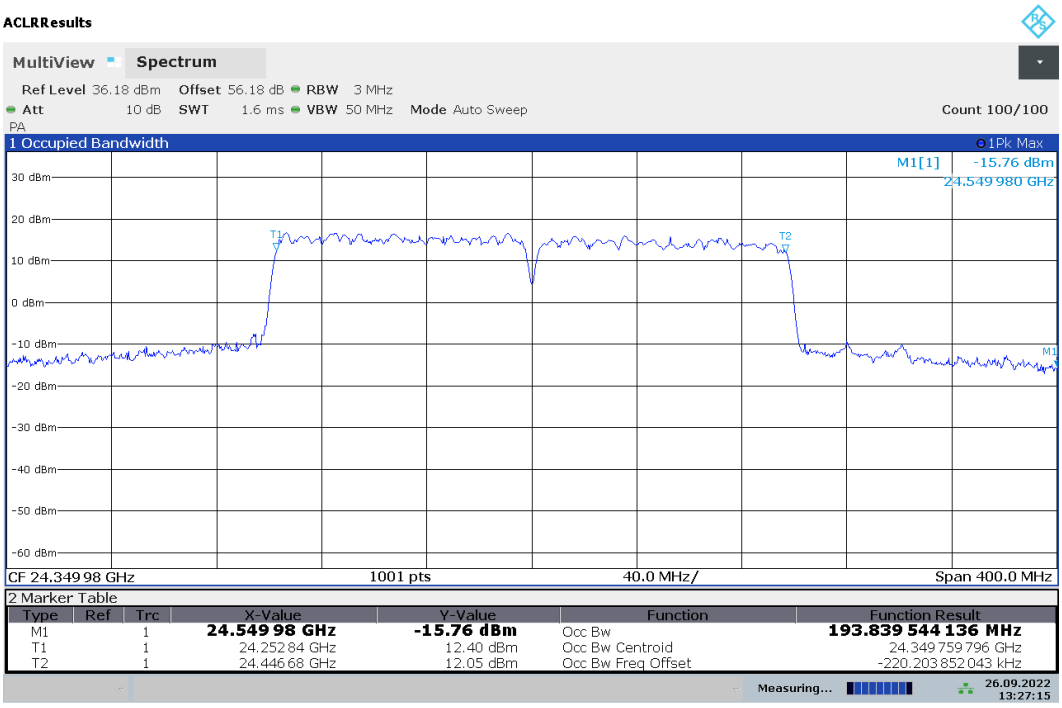
14:11:43 26.09.2022

Plot 7-8. Occupied Bandwidth Plot (100MHz-1CC – 64QAM – Mid Channel)



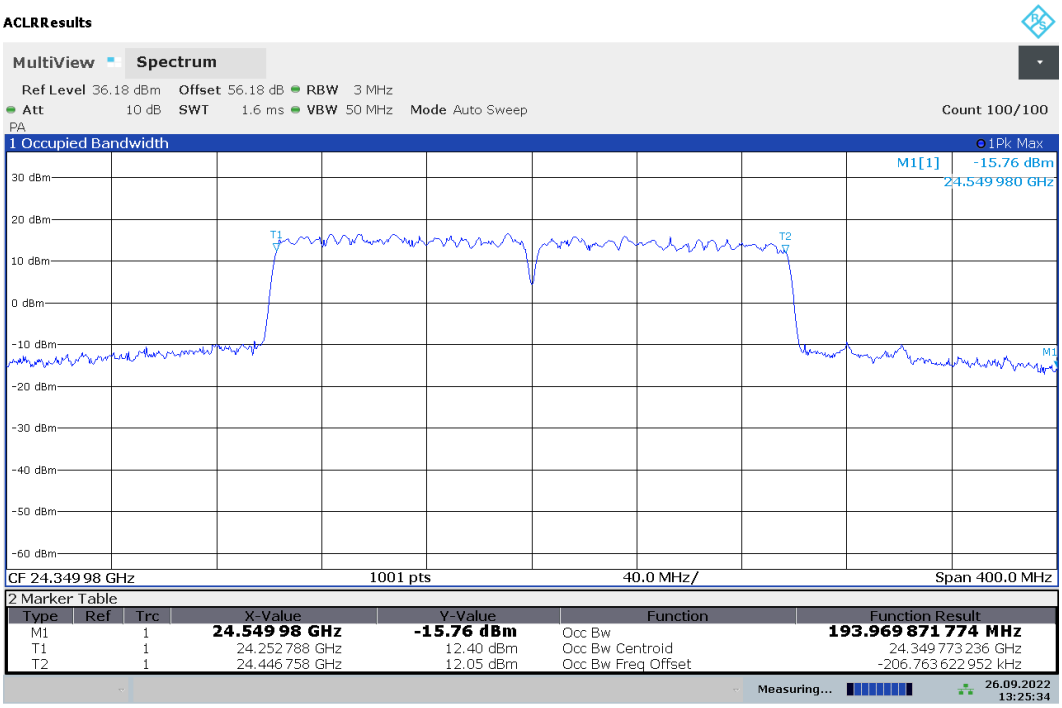
13:24:17 26.09.2022

Plot 7-9. Occupied Bandwidth Plot (100MHz-2CC – QPSK – Mid Channel)



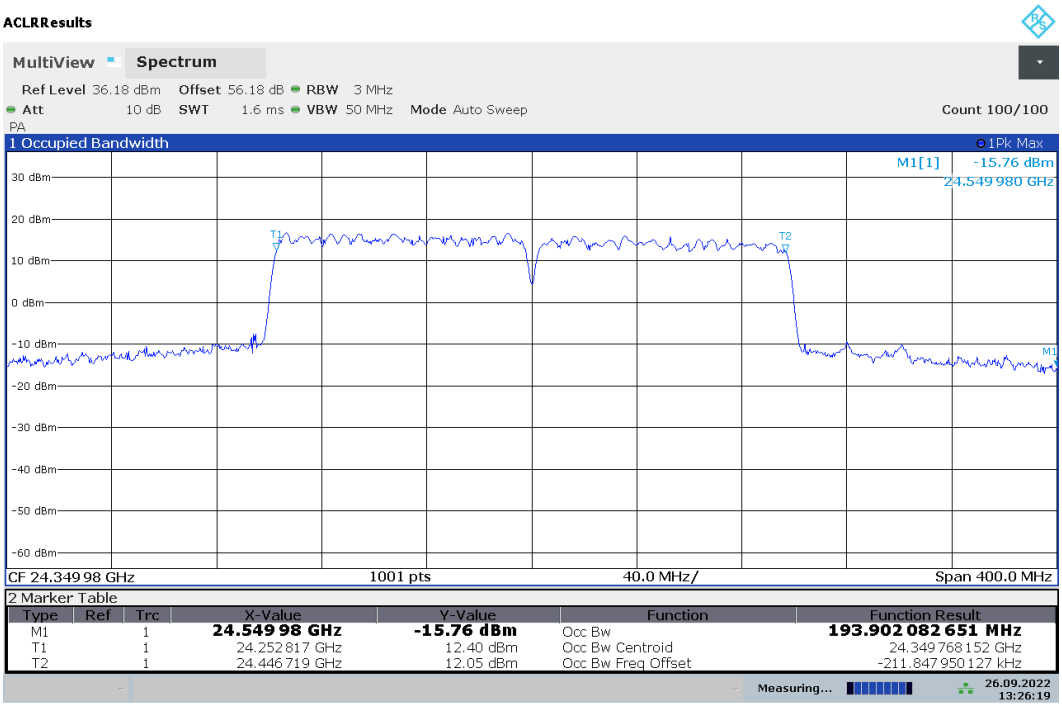
13:27:16 26.09.2022

Plot 7-10. Occupied Bandwidth Plot (100MHz-2CC – pi/2-BPSK – Mid Channel)



13:25:35 26.09.2022

Plot 7-11. Occupied Bandwidth Plot (100MHz-2CC – 16QAM – Mid Channel)



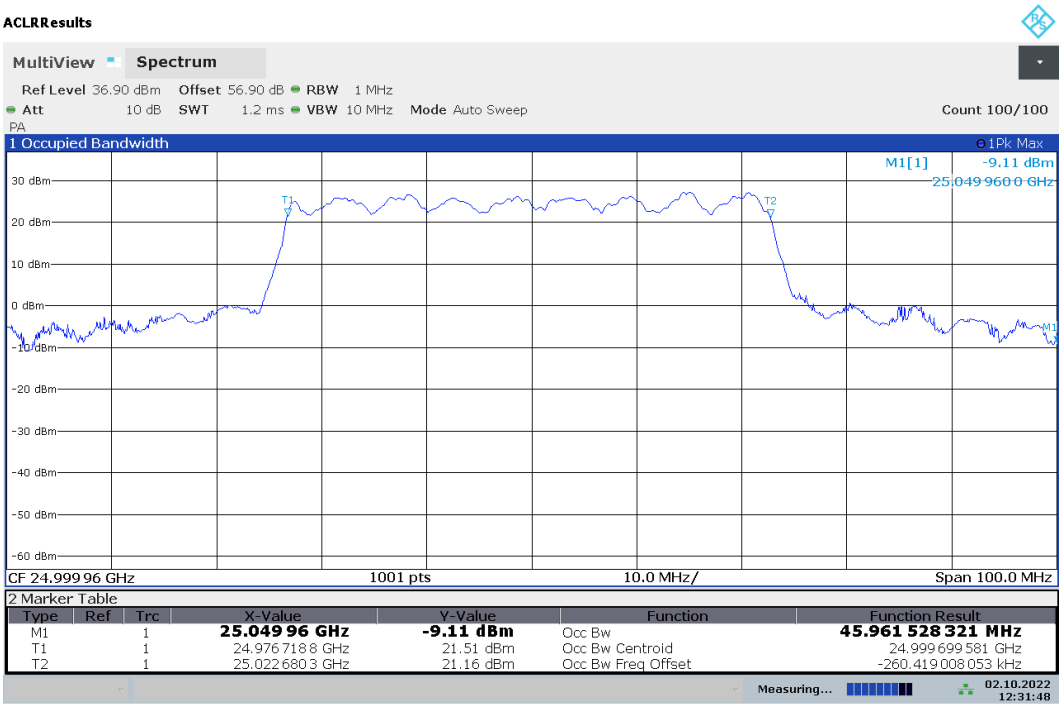
13:26:19 26.09.2022

Plot 7-12. Occupied Bandwidth Plot (100MHz-2CC – 64QAM – Mid Channel)

Band n258-R2

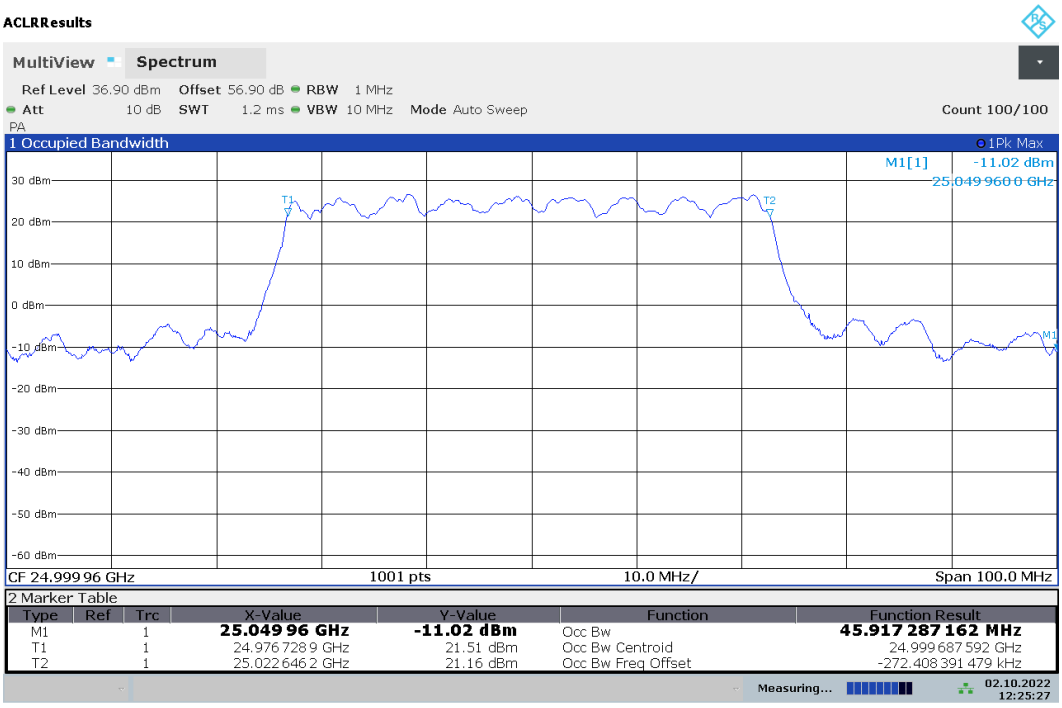
Bandwidth [MHz]	CCs Active	Transmission Scheme	Modulation	OBW [MHz]
50	1	CP-OFDM	QPSK	45.96
		DFT-s-OFDM	π/2 BPSK	45.92
		CP-OFDM	16QAM	45.91
		CP-OFDM	64QAM	45.91
100	1	CP-OFDM	QPSK	94.69
		DFT-s-OFDM	π/2 BPSK	92.47
		CP-OFDM	16QAM	94.37
		CP-OFDM	64QAM	93.50
	2	CP-OFDM	QPSK	194.29
		DFT-s-OFDM	π/2 BPSK	191.62
		CP-OFDM	16QAM	193.66
		CP-OFDM	64QAM	193.98
	3	CP-OFDM	QPSK	298.17
		DFT-s-OFDM	π/2 BPSK	297.25
		CP-OFDM	16QAM	296.91
		CP-OFDM	64QAM	297.11

Table 7-3. Summary of Occupied Bandwidths (n258-R2)



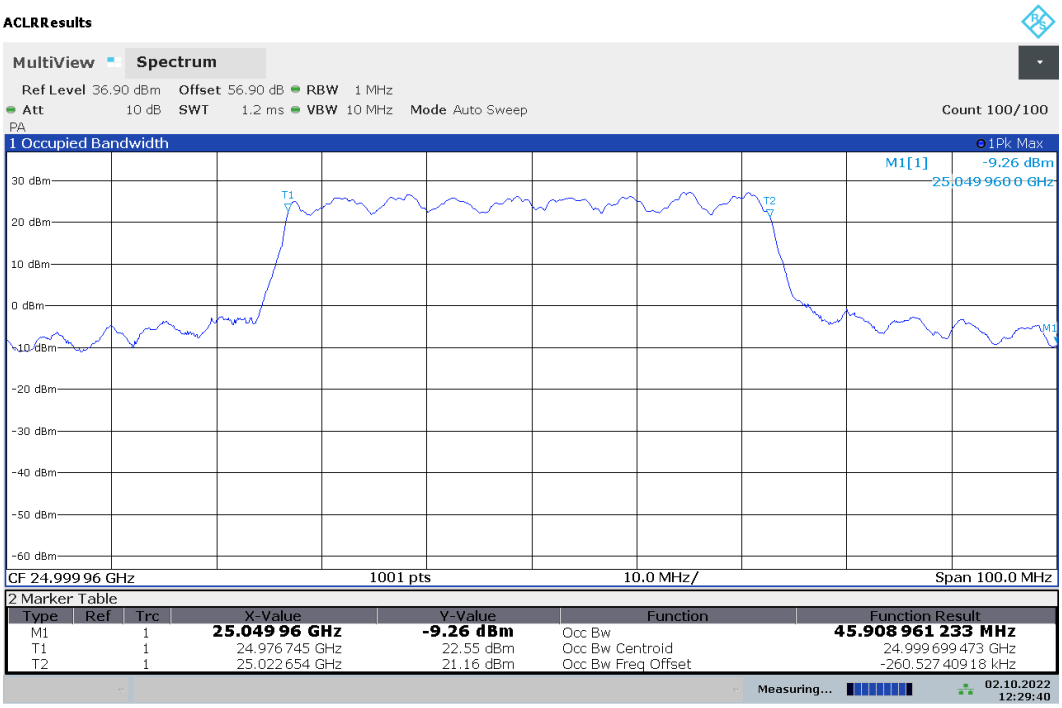
12:31:48 02.10.2022

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



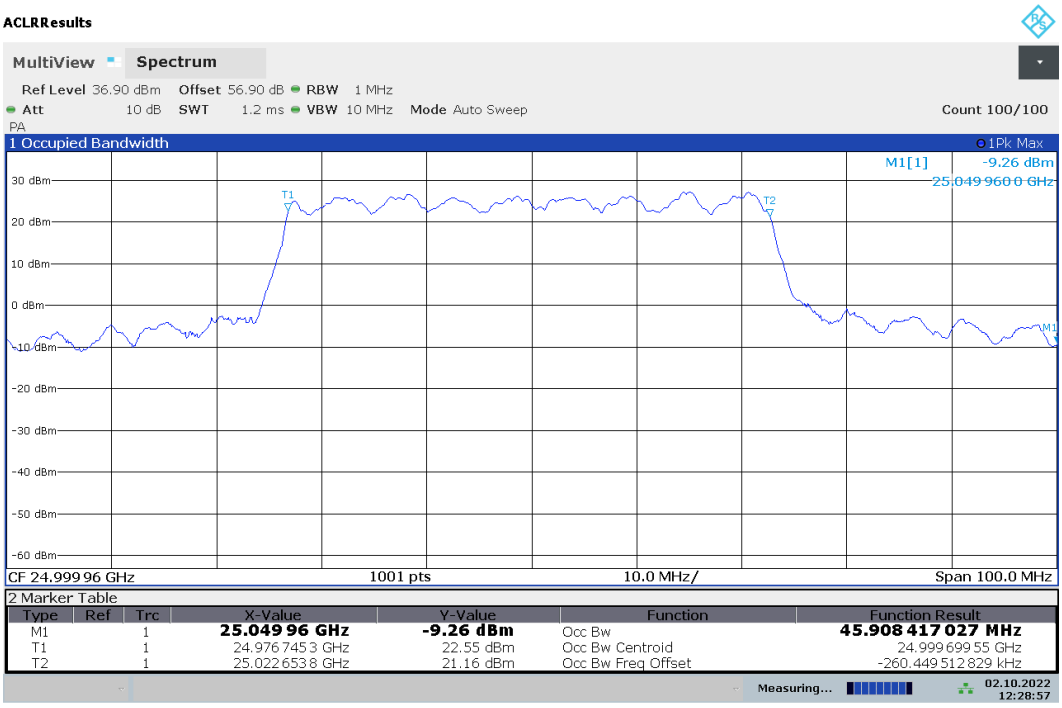
12:25:27 02.10.2022

Plot 7-14. Occupied Bandwidth Plot (50MHz-1CC – pi/2-BPSK – Mid Channel)



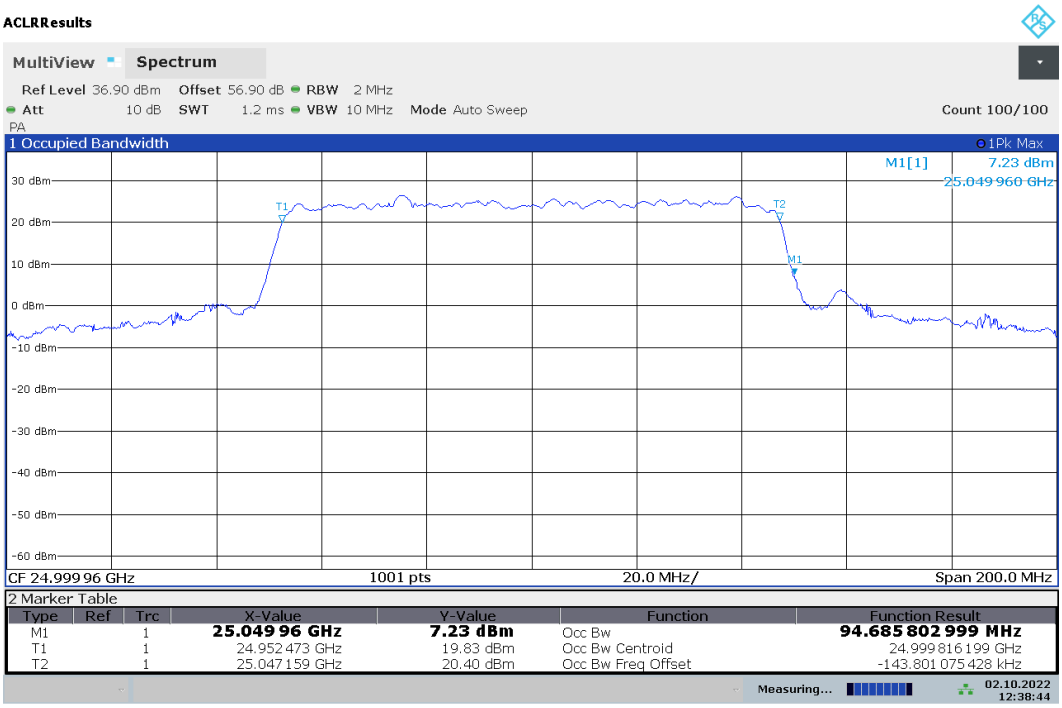
12:29:41 02.10.2022

Plot 7-15. Occupied Bandwidth Plot (50MHz-1CC – 16QAM – Mid Channel)



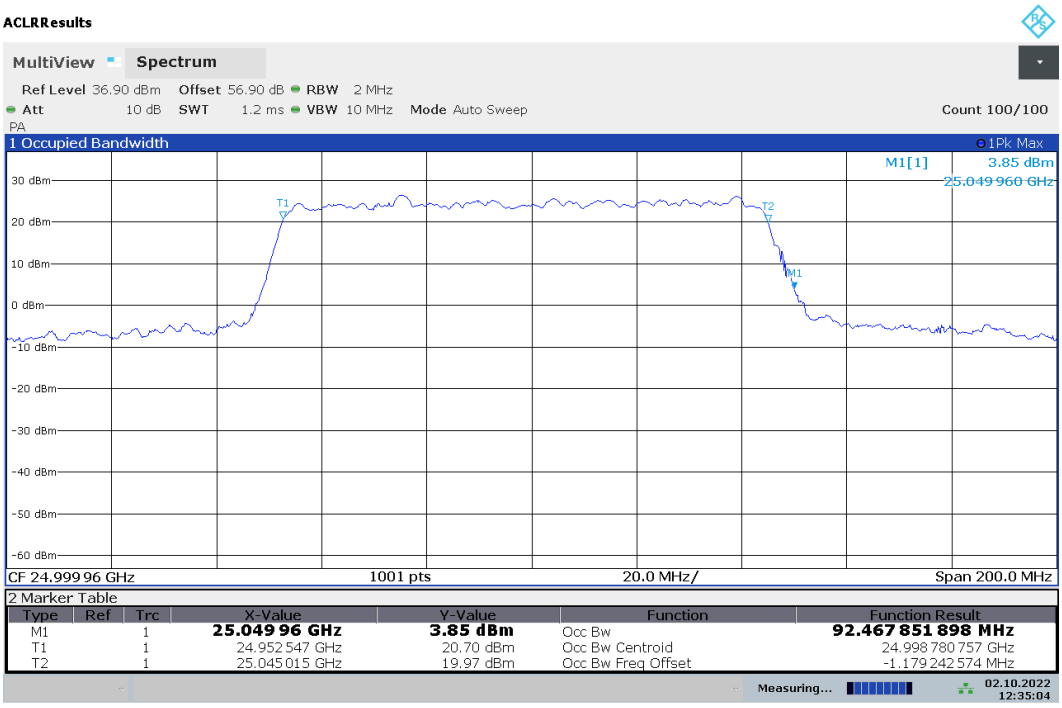
12:28:58 02.10.2022

Plot 7-16. Occupied Bandwidth Plot (50MHz-1CC – 64QAM – Mid Channel)



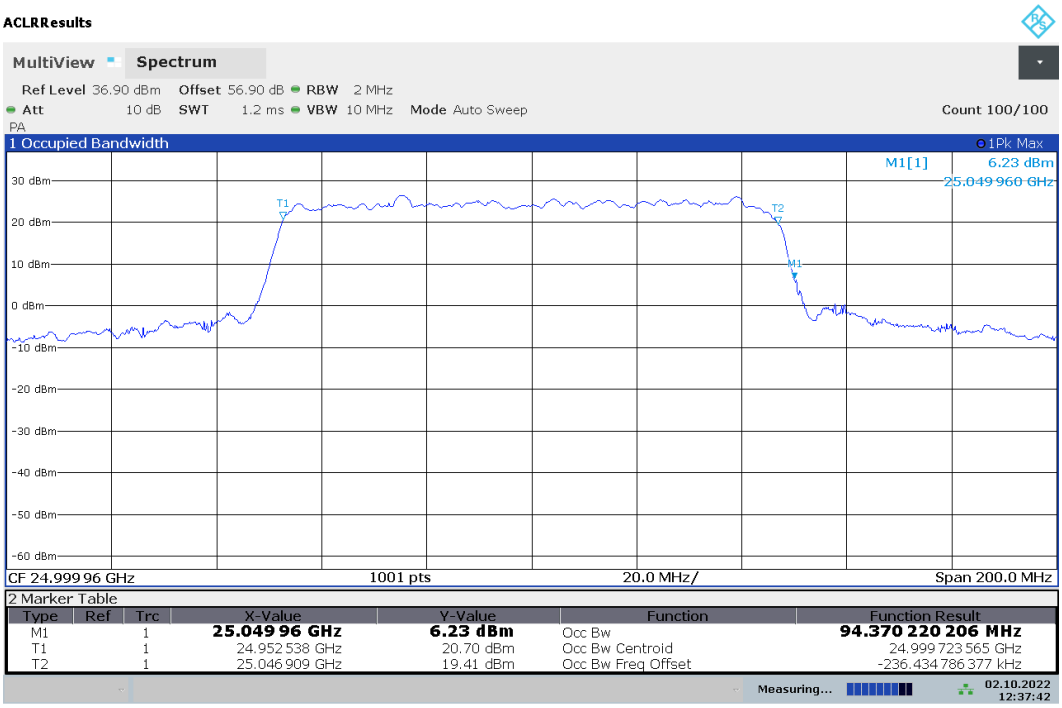
12:38:45 02.10.2022

Plot 7-17. Occupied Bandwidth Plot (100MHz-1CC – QPSK – Mid Channel)



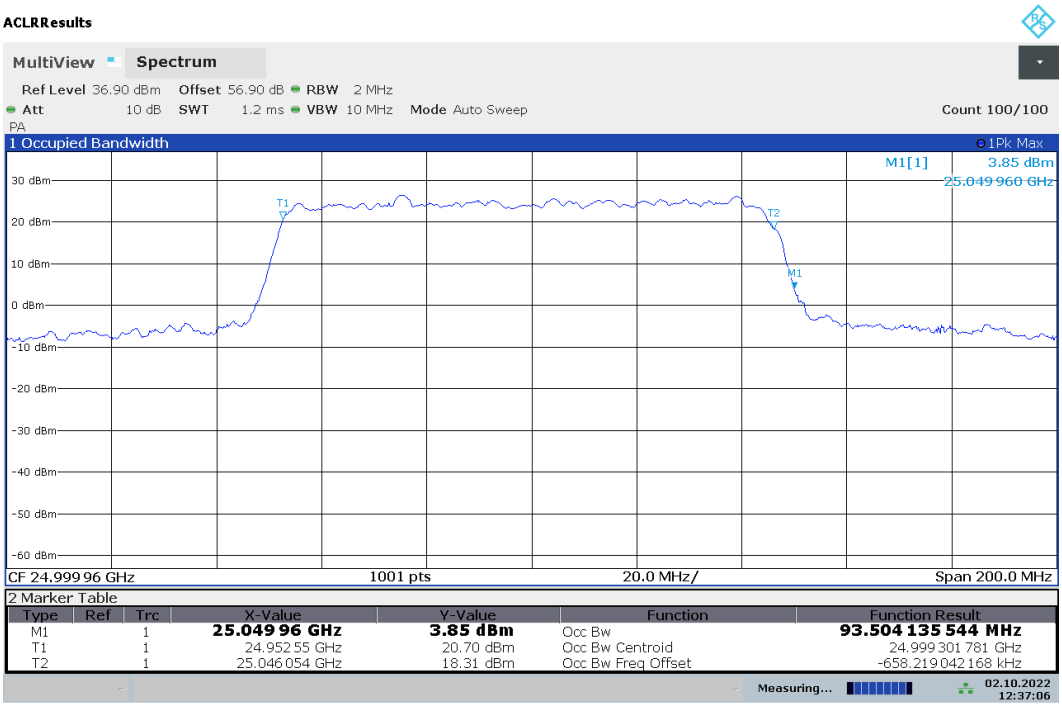
12:35:05 02.10.2022

Plot 7-18. Occupied Bandwidth Plot (100MHz-1CC – pi/2-BPSK – Mid Channel)



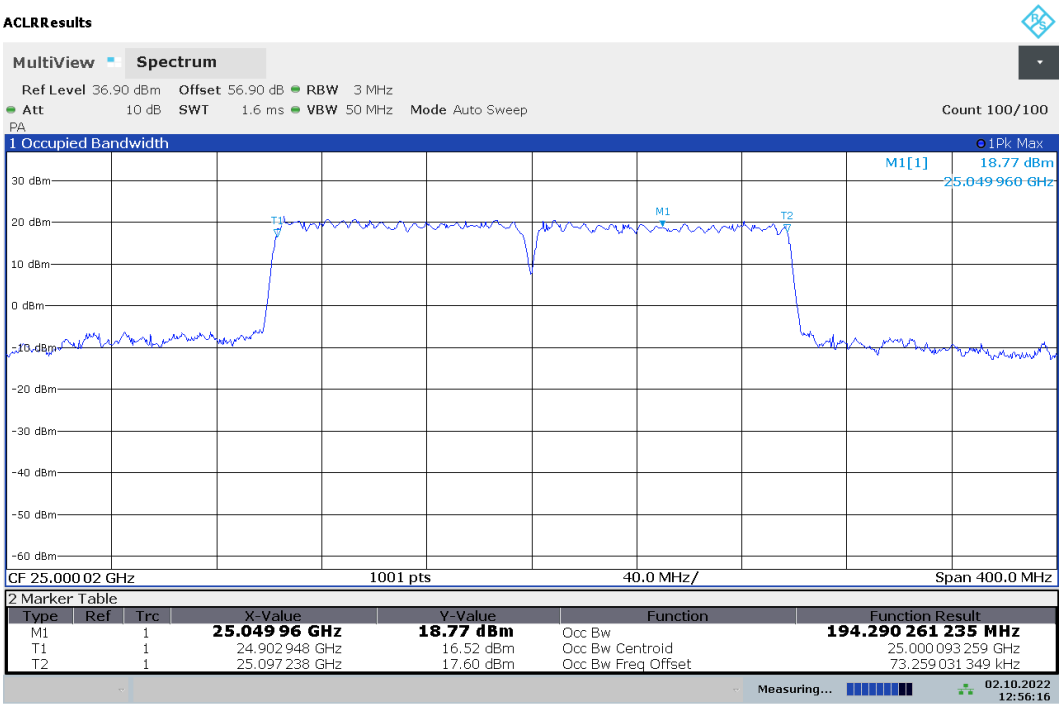
12:37:43 02.10.2022

Plot 7-19. Occupied Bandwidth Plot (100MHz-1CC – 16QAM – Mid Channel)



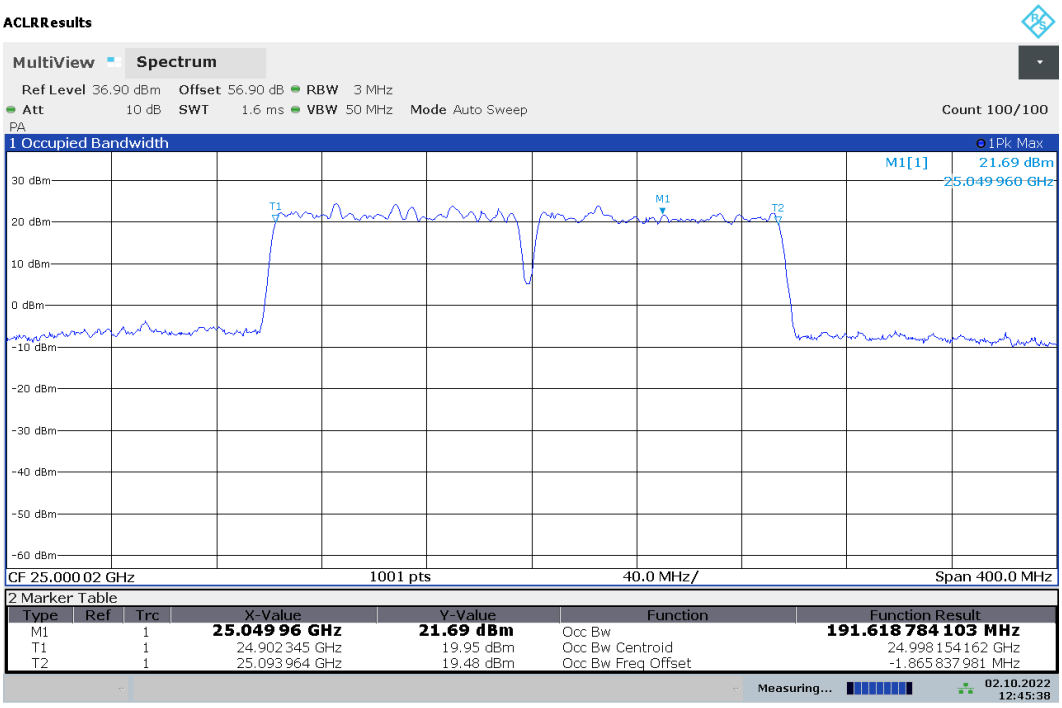
12:37:06 02.10.2022

Plot 7-20. Occupied Bandwidth Plot (100MHz-1CC – 64QAM – Mid Channel)



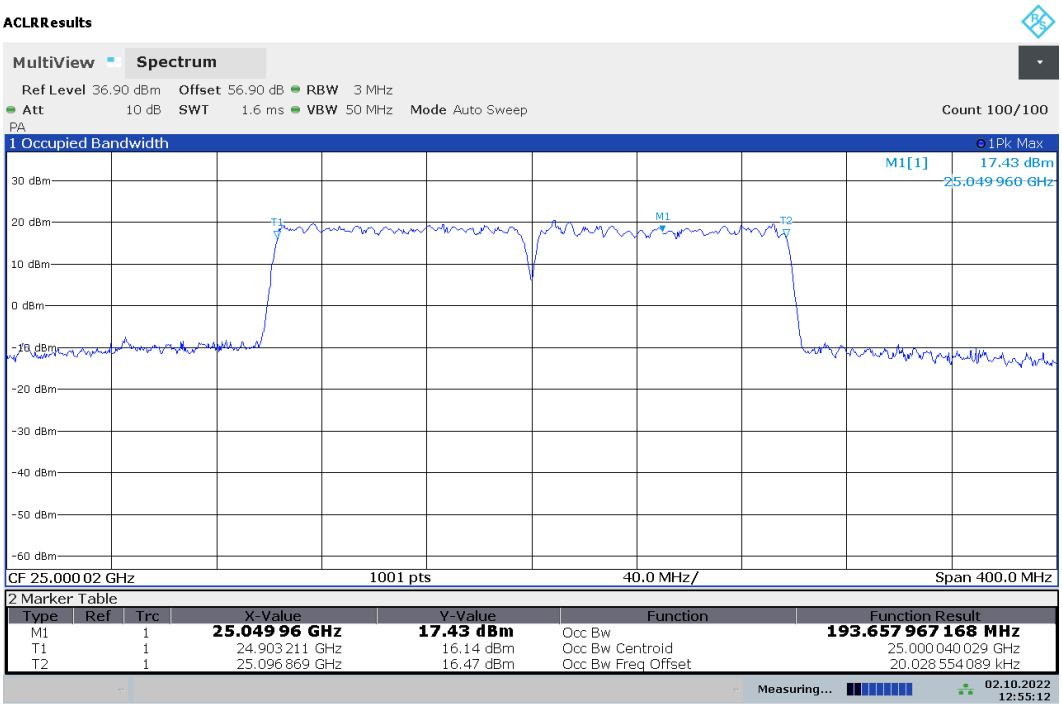
12:56:16 02.10.2022

Plot 7-21. Occupied Bandwidth Plot (100MHz-2CC – QPSK – Mid Channel)



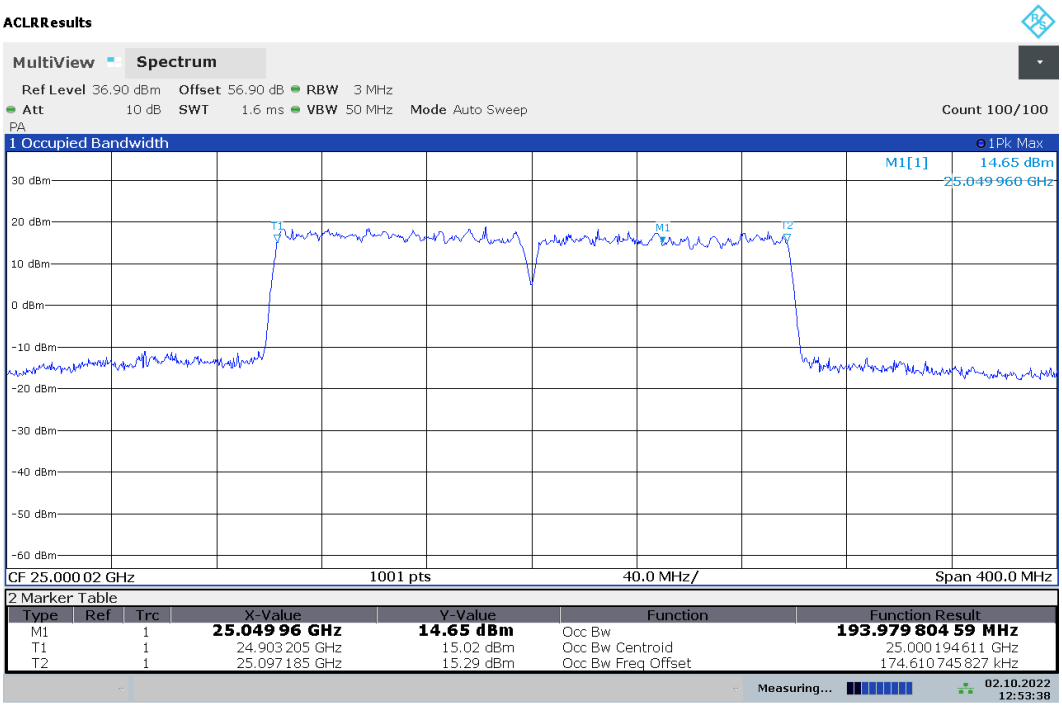
12:45:38 02.10.2022

Plot 7-22. Occupied Bandwidth Plot (100MHz-2CC – pi/2-BPSK – Mid Channel)



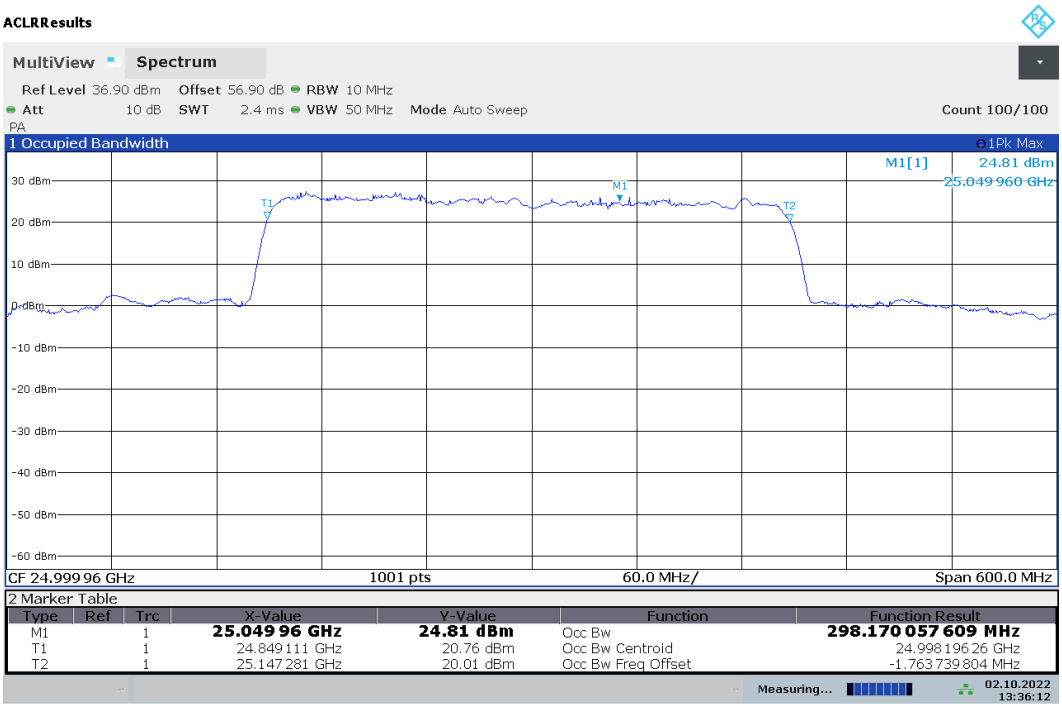
12:55:13 02.10.2022

Plot 7-23. Occupied Bandwidth Plot (100MHz-2CC – 16QAM – Mid Channel)



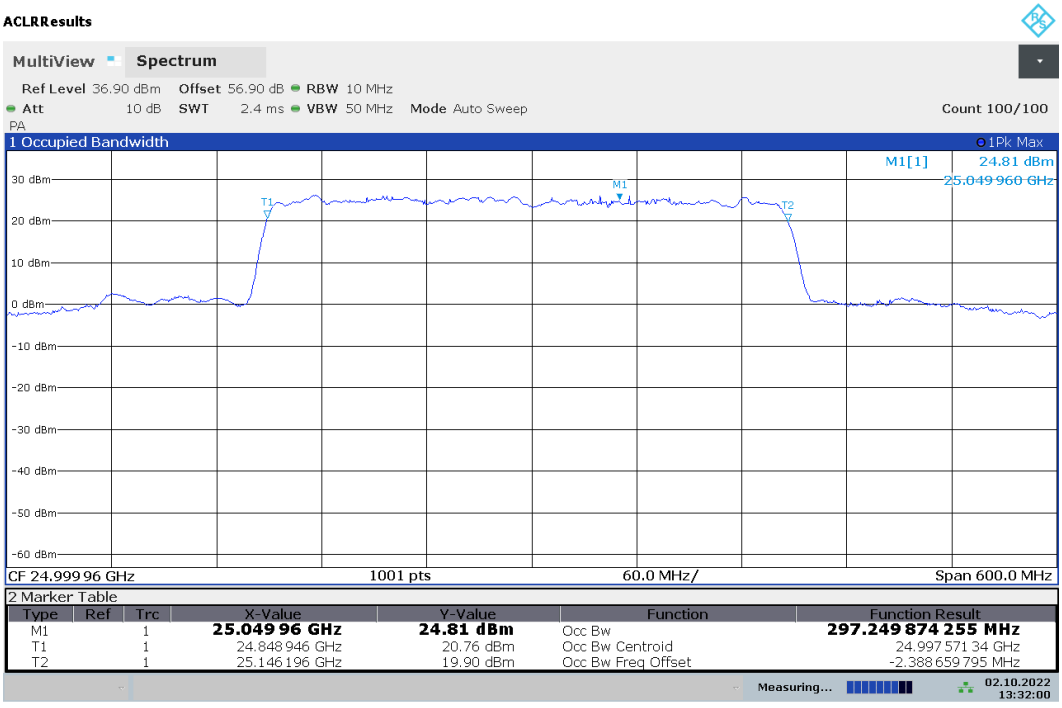
12:53:39 02.10.2022

Plot 7-24. Occupied Bandwidth Plot (100MHz-2CC – 64QAM – Mid Channel)



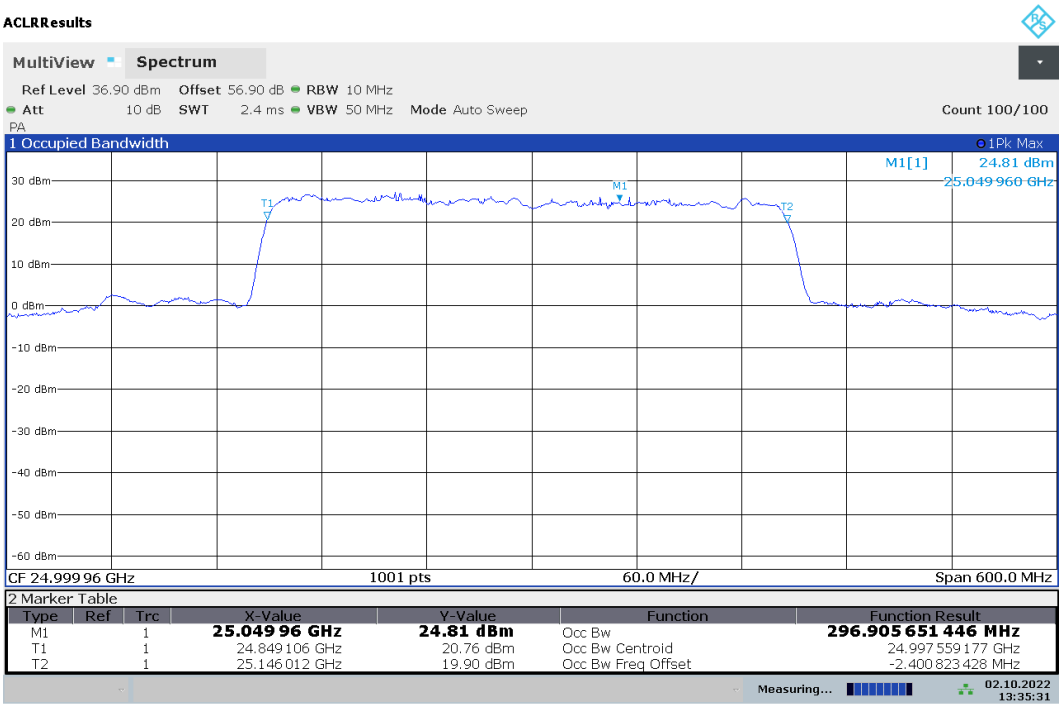
13:36:12 02.10.2022

Plot 7-25. Occupied Bandwidth Plot (100MHz-3CC – QPSK – Mid Channel)



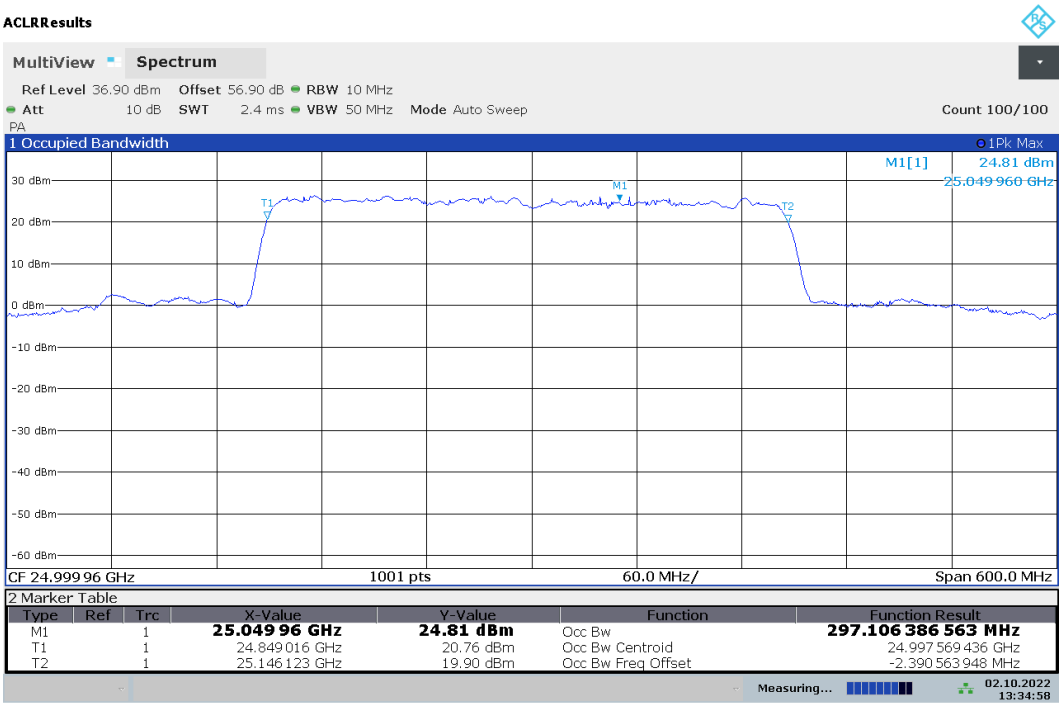
13:32:00 02.10.2022

Plot 7-26. Occupied Bandwidth Plot (100MHz-3CC – pi/2-BPSK – Mid Channel)



13:35:32 02.10.2022

Plot 7-27. Occupied Bandwidth Plot (100MHz-3CC – 16QAM – Mid Channel)



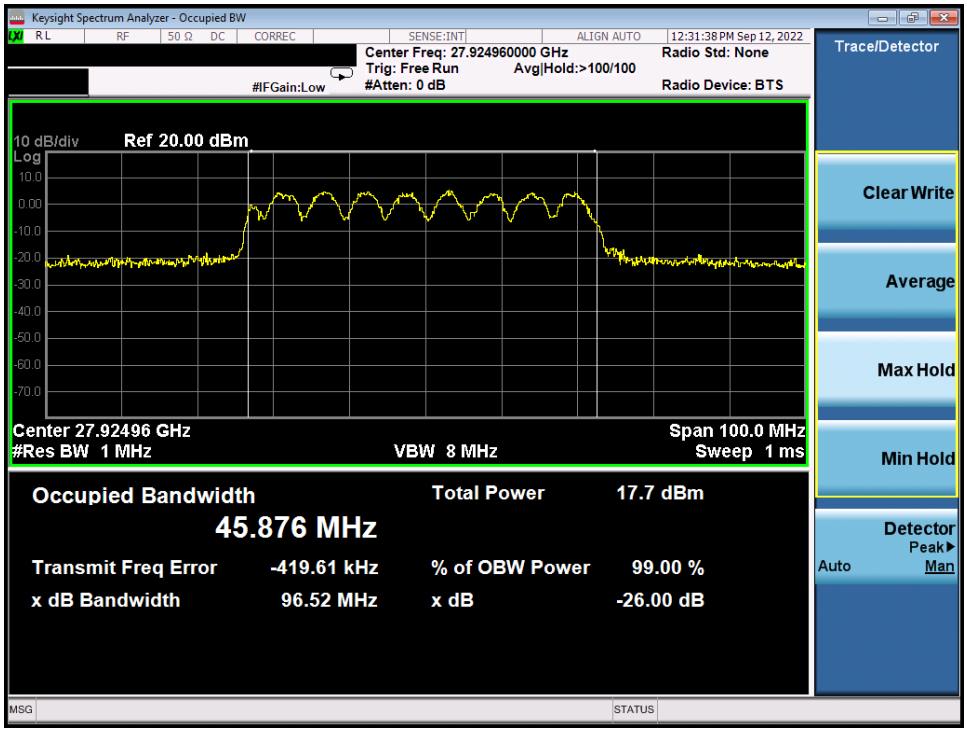
13:34:59 02.10.2022

Plot 7-28. Occupied Bandwidth Plot (100MHz-3CC – 64QAM – Mid Channel)

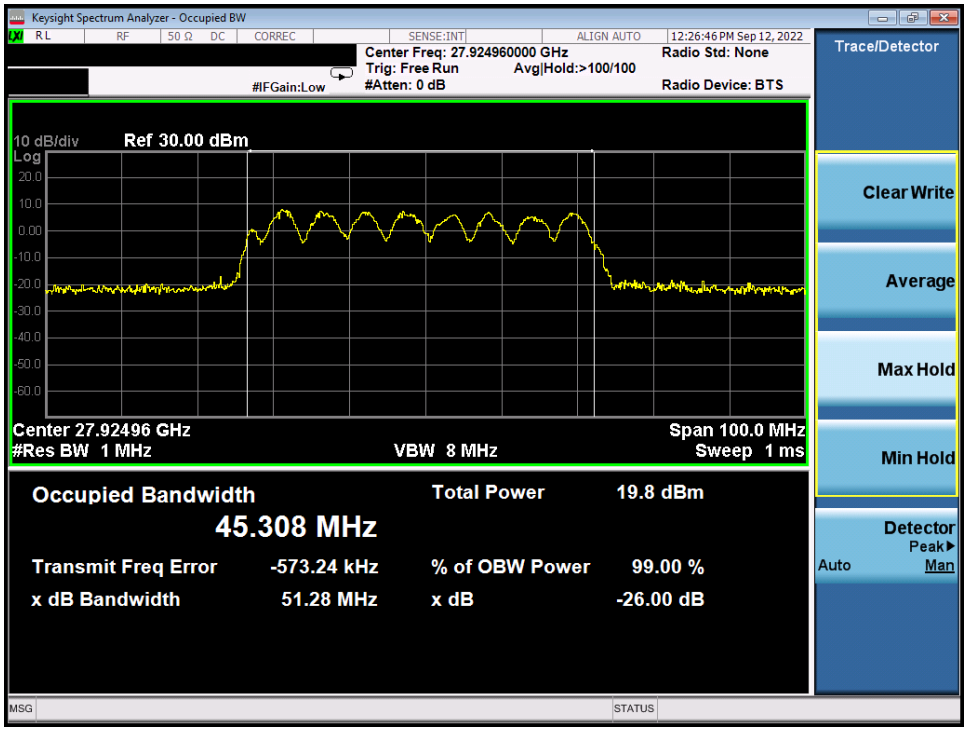
Band n261

Bandwidth [MHz]	CCs Active	Transmission Scheme	Modulation	OBW [MHz]
50	1	CP-OFDM	QPSK	45.88
		DFT-s-OFDM	π/2 BPSK	45.31
		CP-OFDM	16QAM	45.95
		CP-OFDM	64QAM	46.18
100	1	CP-OFDM	QPSK	95.79
		DFT-s-OFDM	π/2 BPSK	92.33
		CP-OFDM	16QAM	96.29
		CP-OFDM	64QAM	97.02
	2	CP-OFDM	QPSK	193.32
		DFT-s-OFDM	π/2 BPSK	190.71
		CP-OFDM	16QAM	193.34
		CP-OFDM	64QAM	193.31
	3	CP-OFDM	QPSK	292.70
		DFT-s-OFDM	π/2 BPSK	290.47
		CP-OFDM	16QAM	292.74
		CP-OFDM	64QAM	292.73
	4	CP-OFDM	QPSK	396.20
		DFT-s-OFDM	π/2 BPSK	397.48
		CP-OFDM	16QAM	396.38
		CP-OFDM	64QAM	397.02

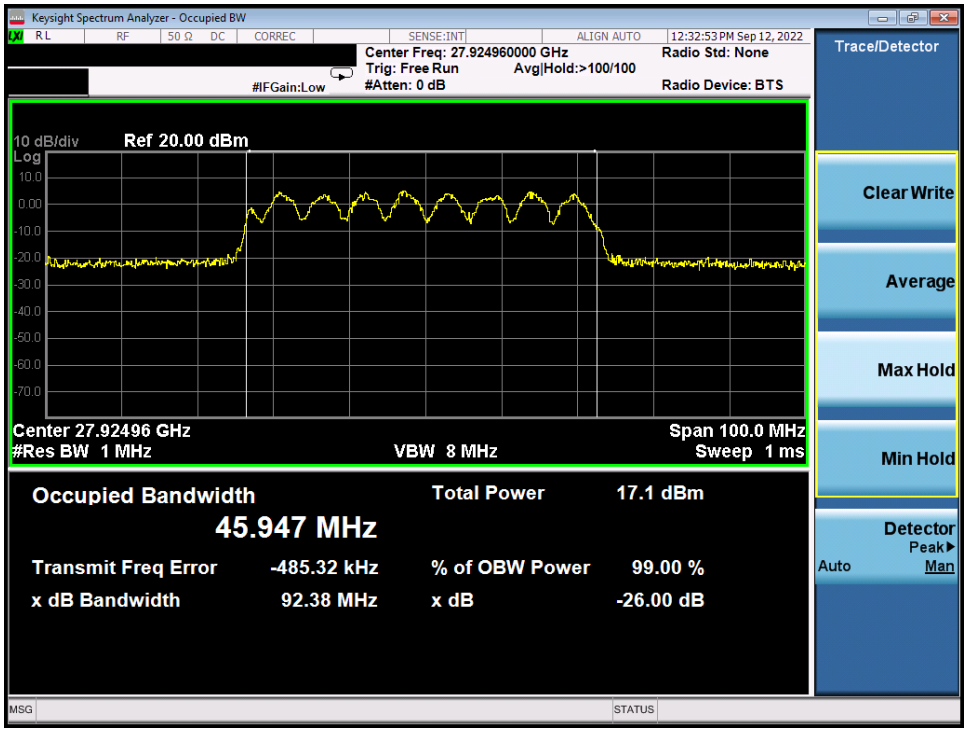
Table 7-4. Summary of Occupied Bandwidths (n261)



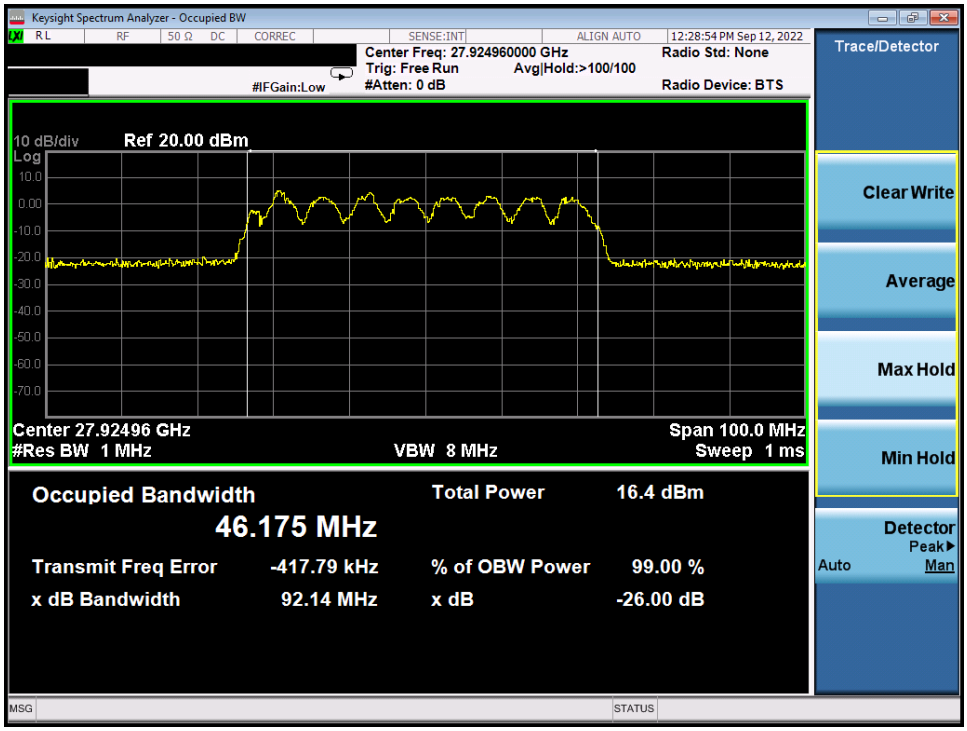
Plot 7-29. Occupied Bandwidth Plot (50MHz-1CC – QPSK – Mid Channel)



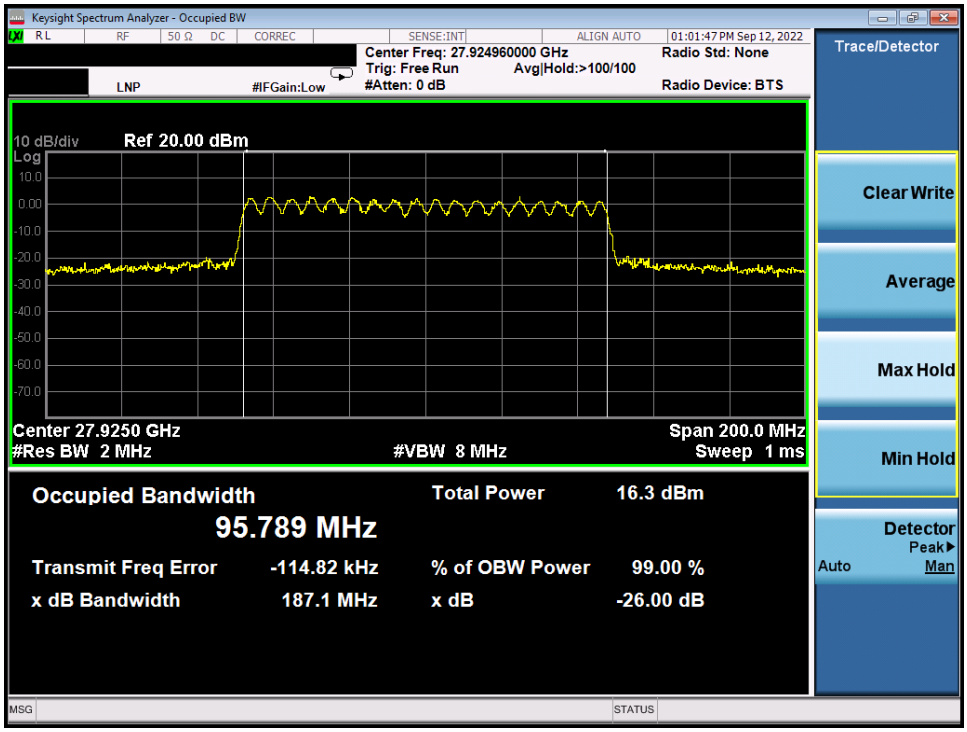
Plot 7-30. Occupied Bandwidth Plot (50MHz-1CC – pi/2-BPSK – Mid Channel)



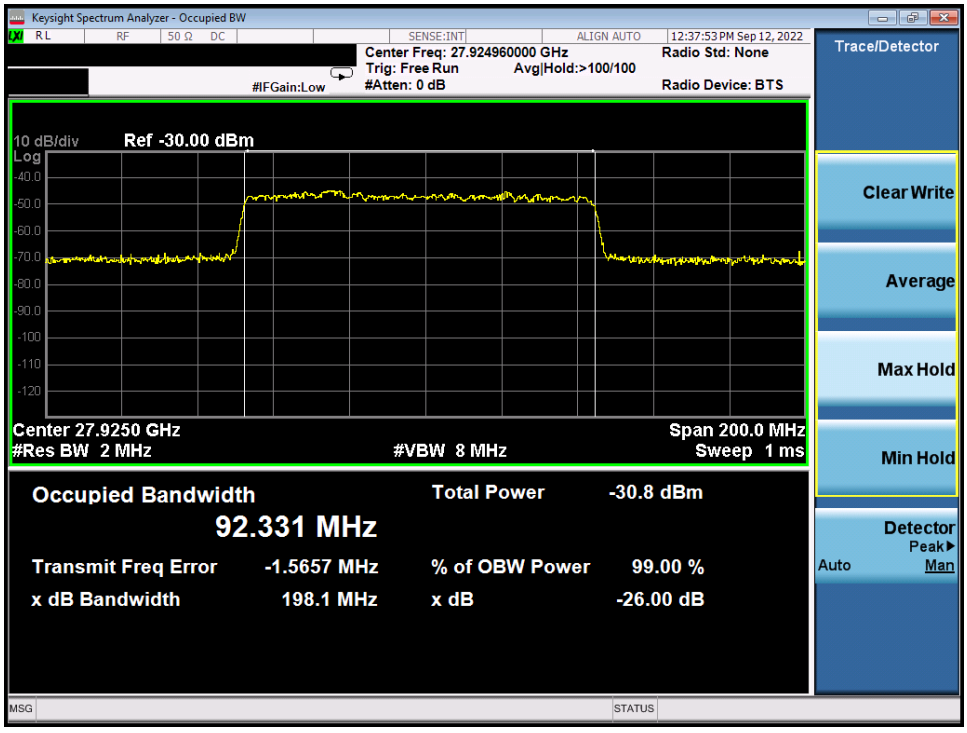
Plot 7-31. Occupied Bandwidth Plot (50MHz-1CC – 16QAM – Mid Channel)



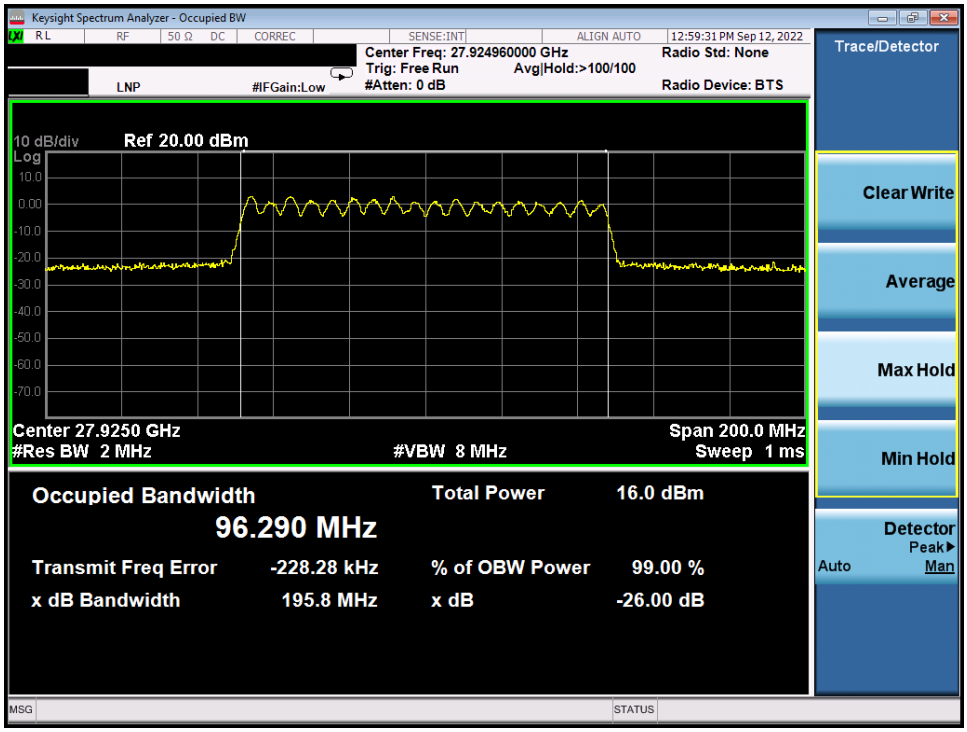
Plot 7-32. Occupied Bandwidth Plot (50MHz-1CC – 64QAM – Mid Channel)



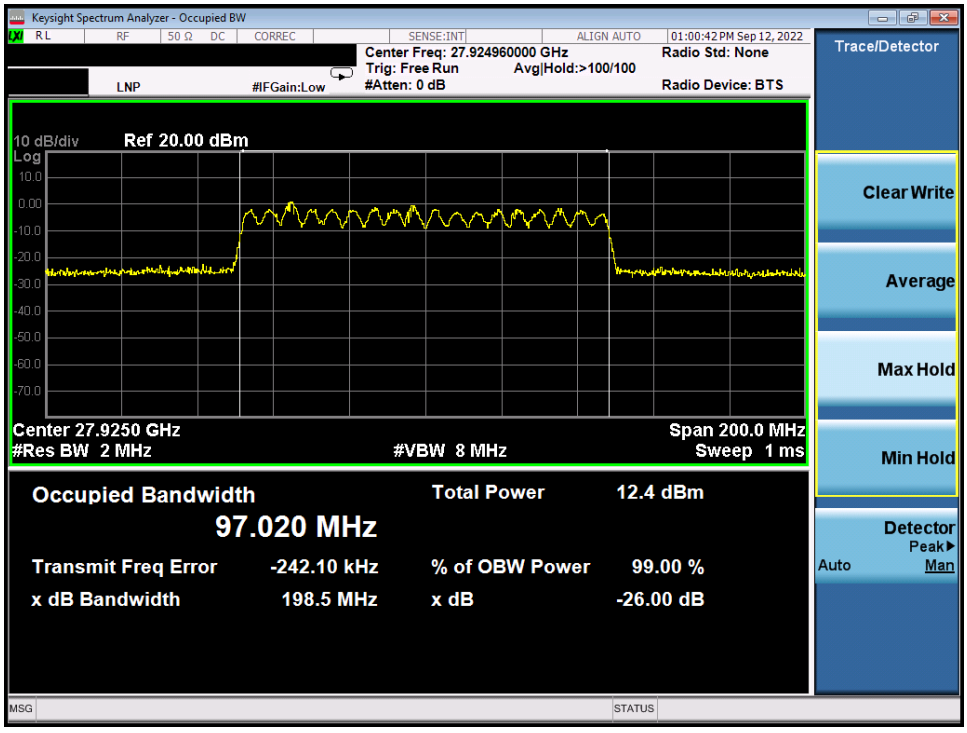
Plot 7-33. Occupied Bandwidth Plot (100MHz-1CC – QPSK – Mid Channel)



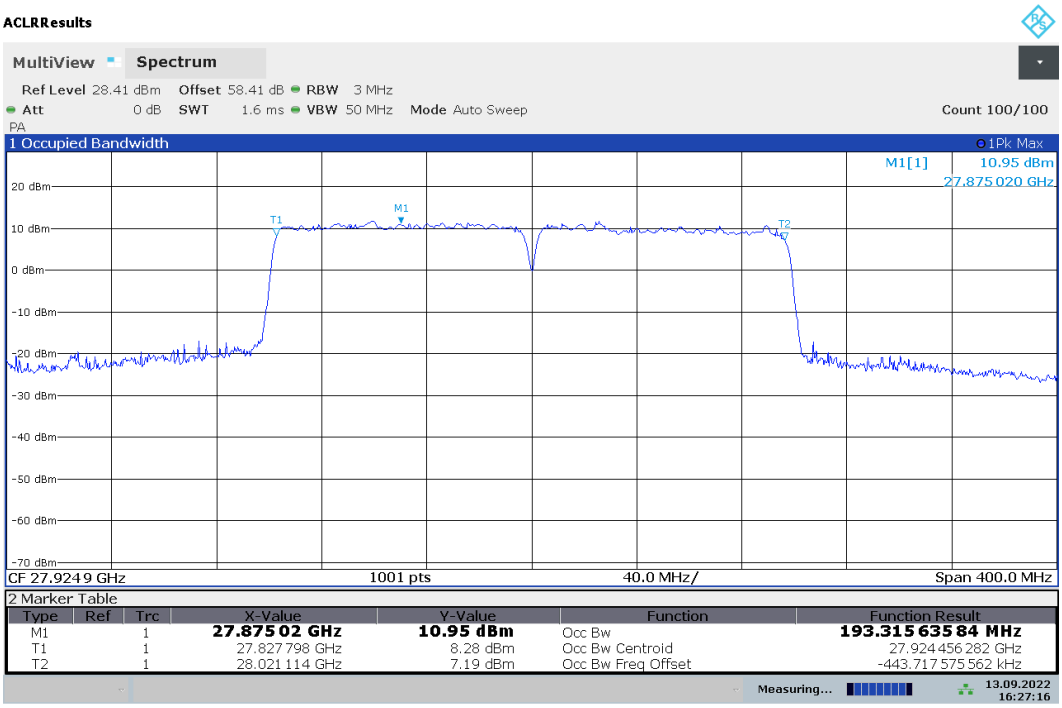
Plot 7-34. Occupied Bandwidth Plot (100MHz-1CC – pi/2-BPSK – Mid Channel)



Plot 7-35. Occupied Bandwidth Plot (100MHz-1CC – 16QAM – Mid Channel)

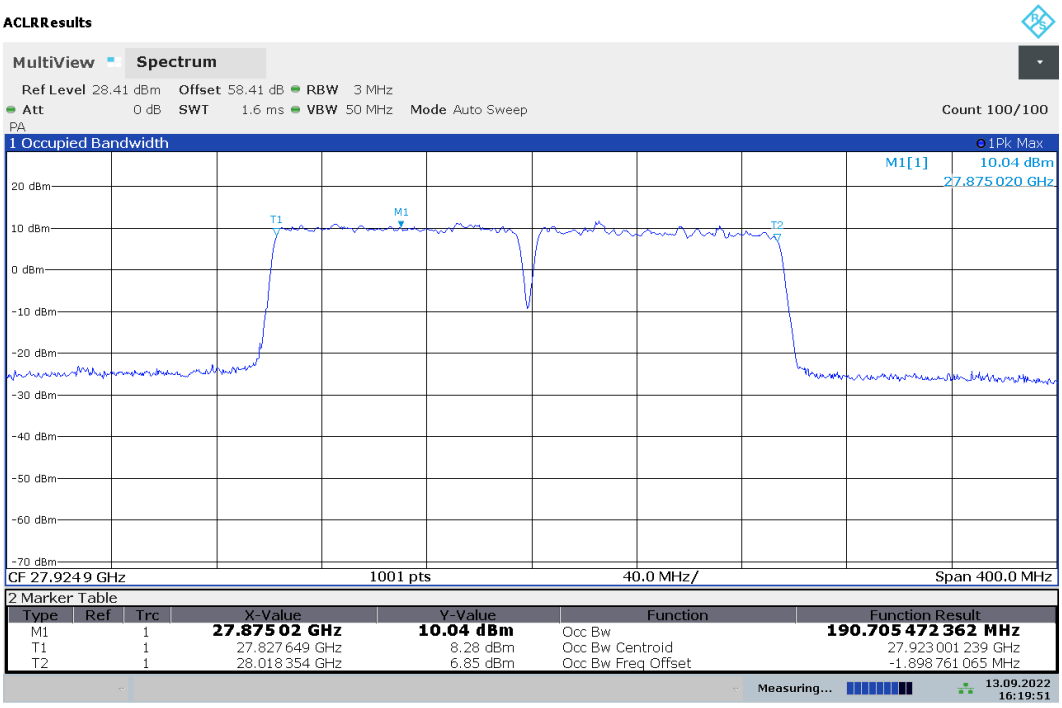


Plot 7-36. Occupied Bandwidth Plot (100MHz-1CC – 64QAM – Mid Channel)



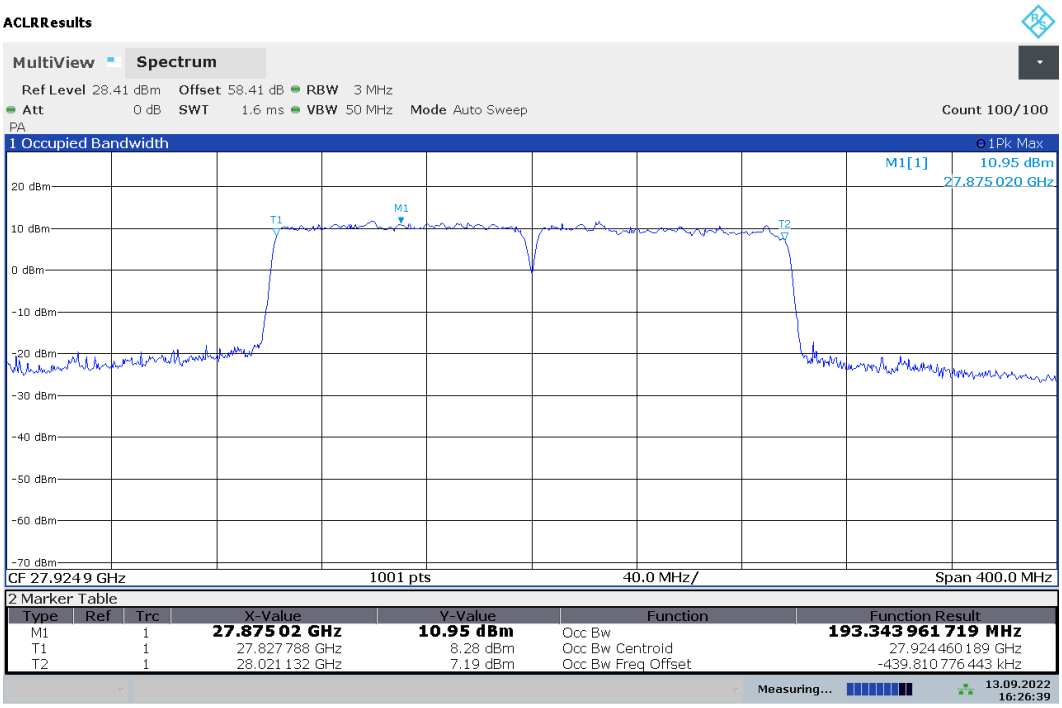
16:27:17 13.09.2022

Plot 7-37. Occupied Bandwidth Plot (100MHz-2CC – QPSK – Mid Channel)



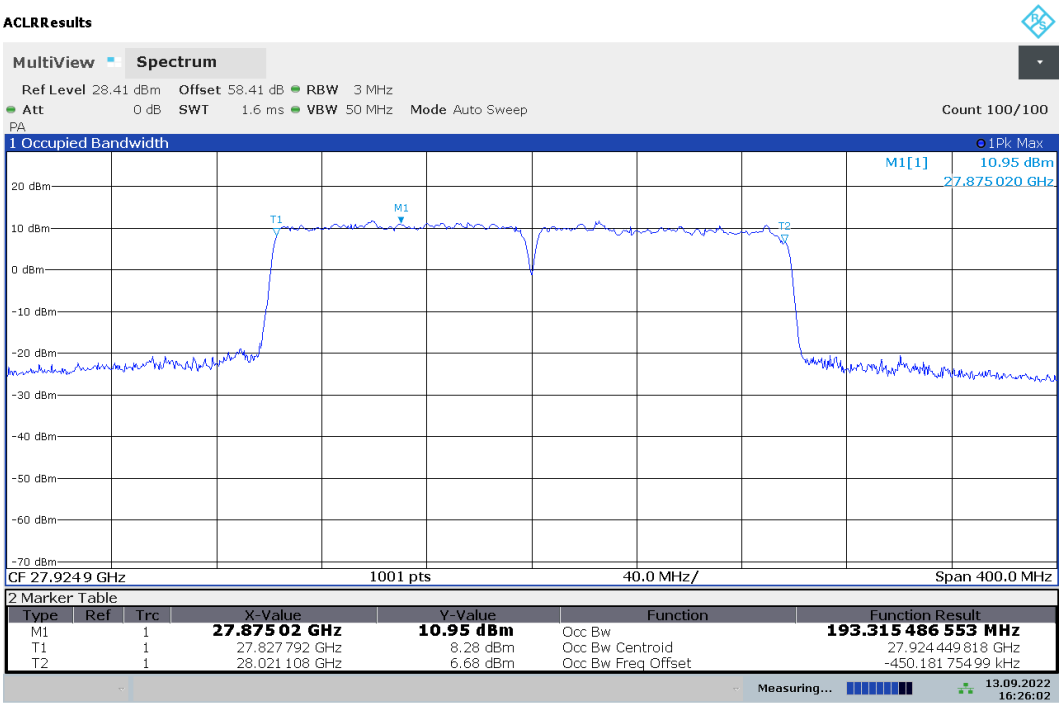
16:19:51 13.09.2022

Plot 7-38. Occupied Bandwidth Plot (100MHz-2CC – pi/2-BPSK – Mid Channel)



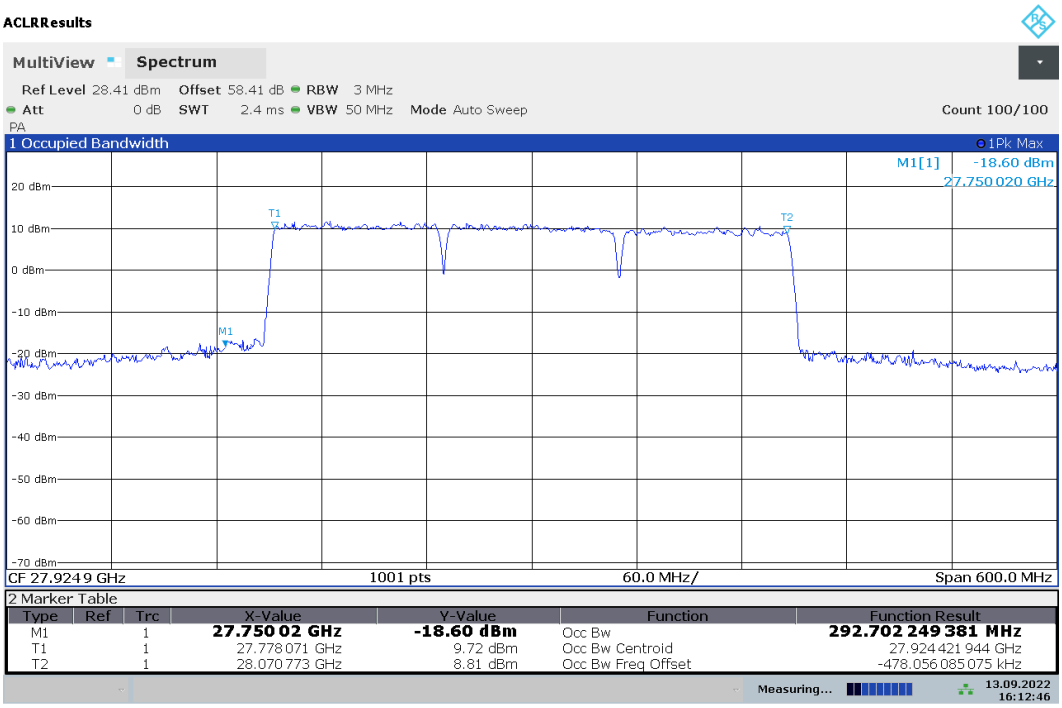
16:26:40 13.09.2022

Plot 7-39. Occupied Bandwidth Plot (100MHz-2CC – 16QAM – Mid Channel)



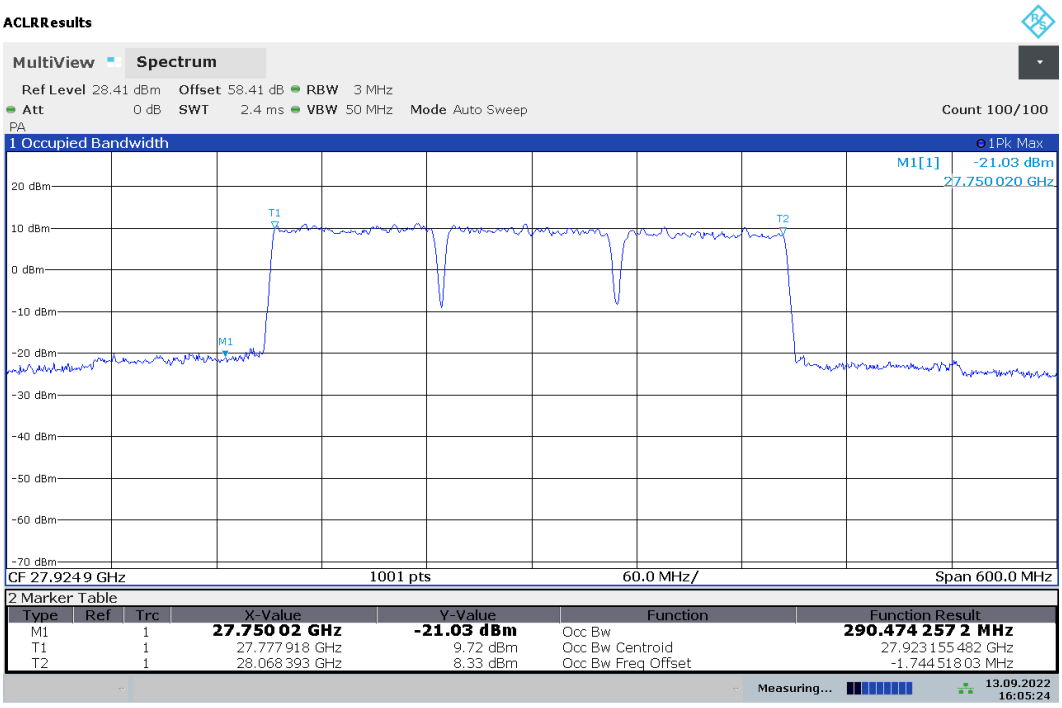
16:26:02 13.09.2022

Plot 7-40. Occupied Bandwidth Plot (100MHz-2CC – 64QAM – Mid Channel)



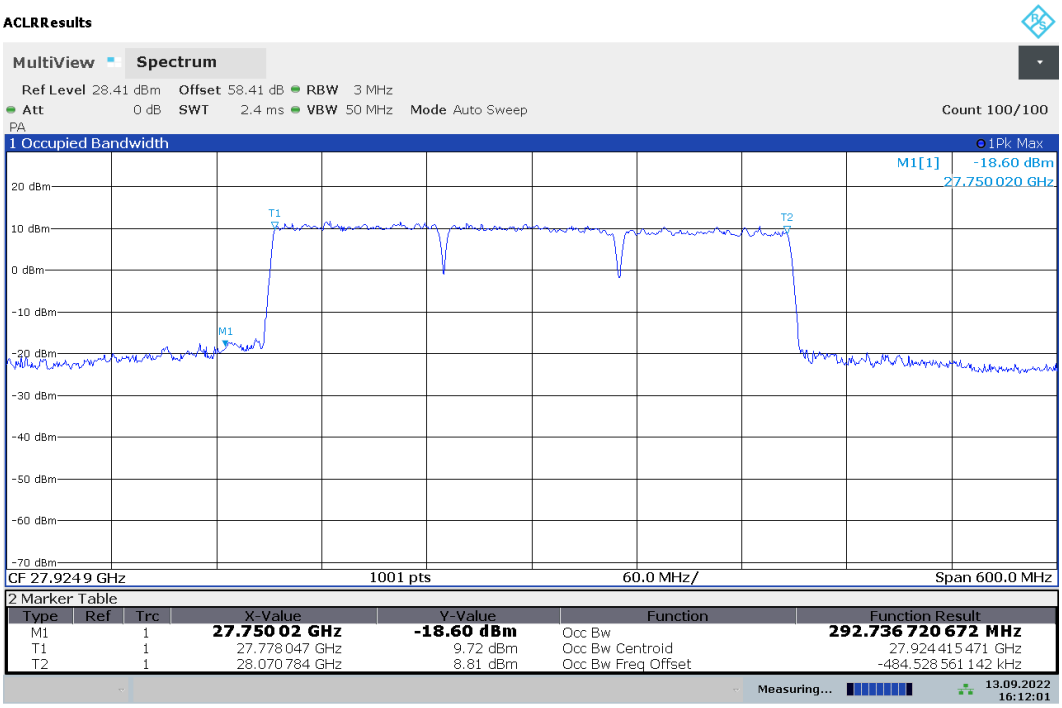
16:12:46 13.09.2022

Plot 7-41. Occupied Bandwidth Plot (100MHz-3CC – QPSK – Mid Channel)



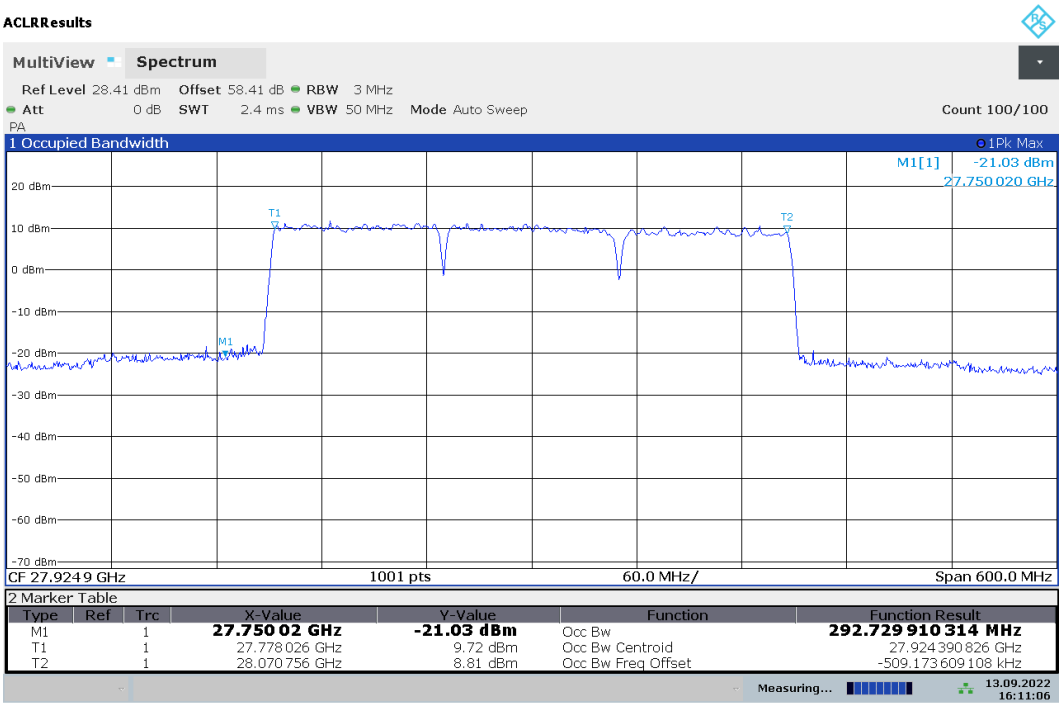
16:05:24 13.09.2022

Plot 7-42. Occupied Bandwidth Plot (100MHz-3CC – pi/2-BPSK – Mid Channel)



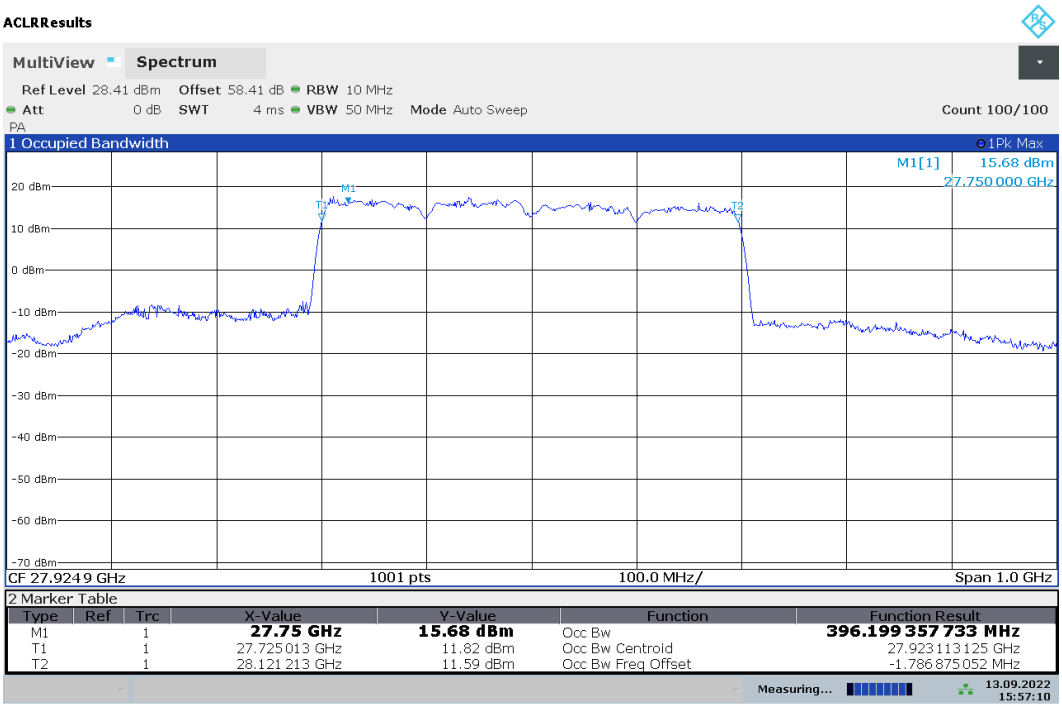
16:12:02 13.09.2022

Plot 7-43. Occupied Bandwidth Plot (100MHz-3CC – 16QAM – Mid Channel)



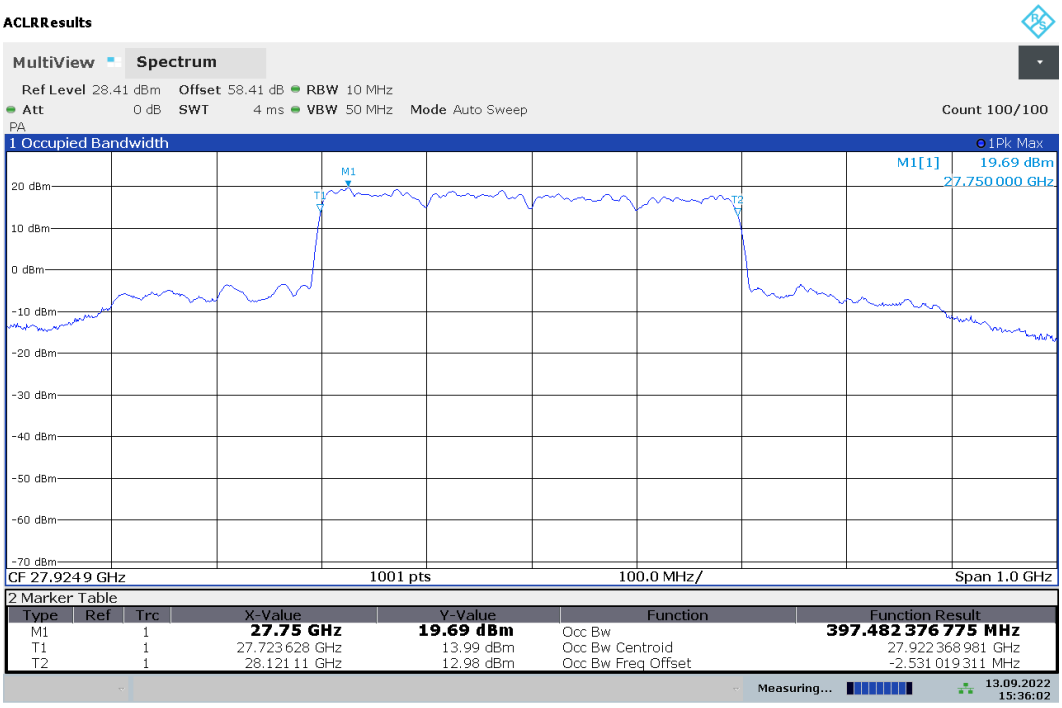
16:11:07 13.09.2022

Plot 7-44. Occupied Bandwidth Plot (100MHz-3CC – 64QAM – Mid Channel)



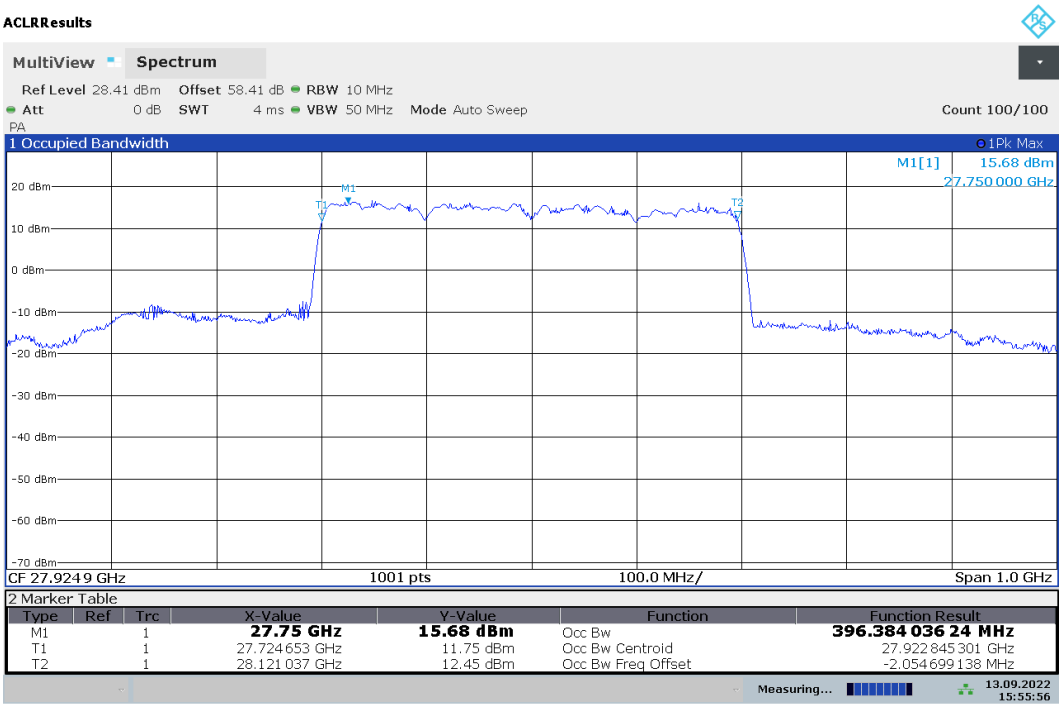
15:57:10 13.09.2022

Plot 7-45. Occupied Bandwidth Plot (100MHz-4CC – QPSK – Mid Channel)



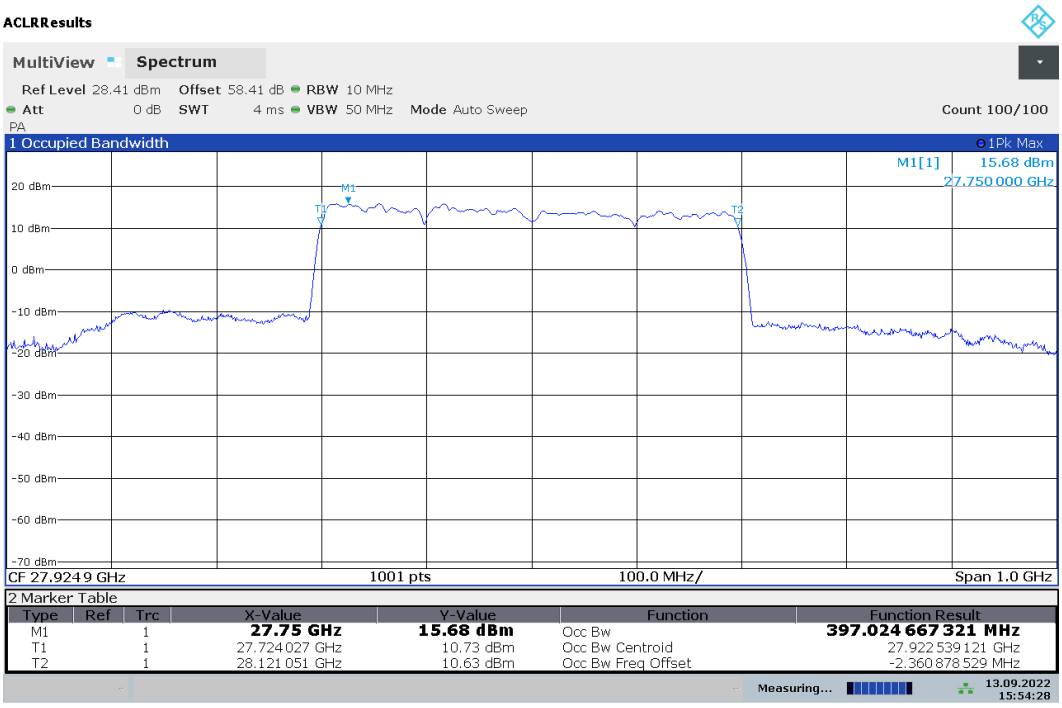
15:36:03 13.09.2022

Plot 7-46. Occupied Bandwidth Plot (100MHz-4CC – pi/2-BPSK – Mid Channel)



15:55:57 13.09.2022

Plot 7-47. Occupied Bandwidth Plot (100MHz-4CC – 16QAM – Mid Channel)



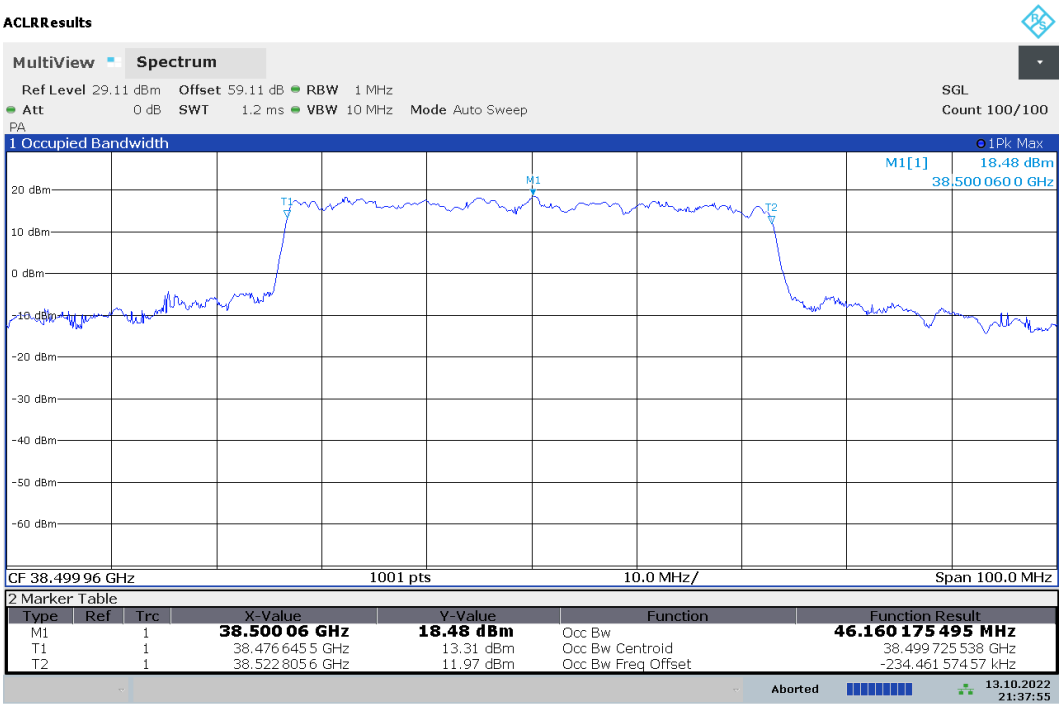
15:54:28 13.09.2022

Plot 7-48. Occupied Bandwidth Plot (100MHz-4CC – 64QAM – Mid Channel)

Band n260

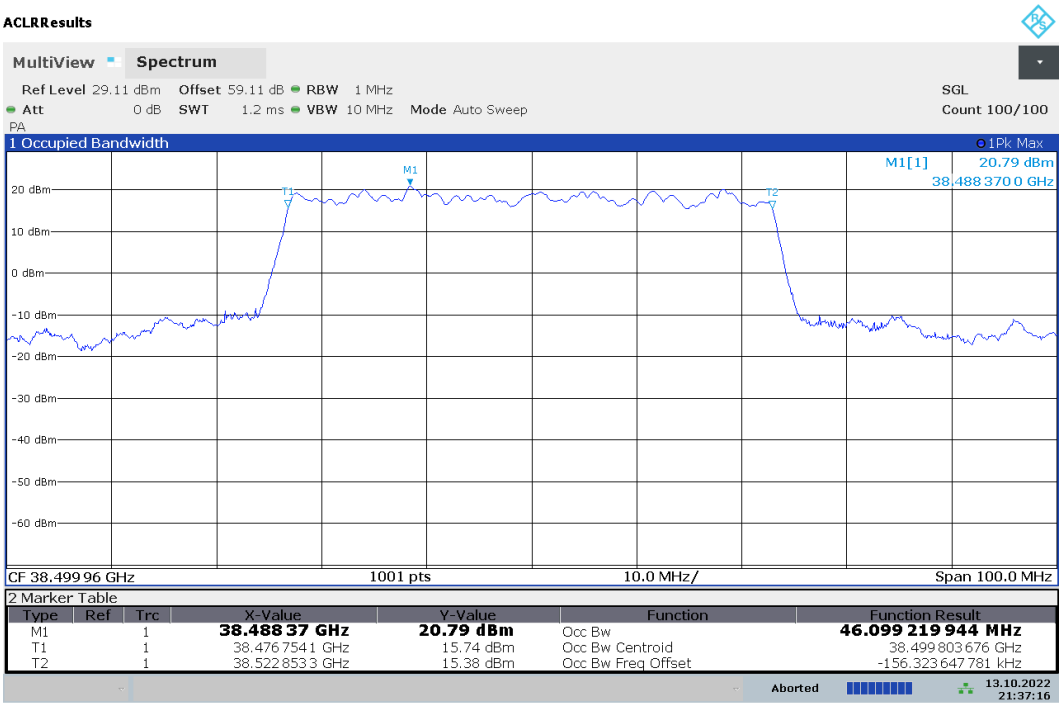
Bandwidth [MHz]	CCs Active	Transmission Scheme	Modulation	OBW [MHz]
50	1	CP-OFDM	QPSK	46.16
		DFT-s-OFDM	π/2 BPSK	46.10
		CP-OFDM	16QAM	46.01
		CP-OFDM	64QAM	46.07
100	1	CP-OFDM	QPSK	94.83
		DFT-s-OFDM	π/2 BPSK	91.80
		CP-OFDM	16QAM	94.67
		CP-OFDM	64QAM	94.49
	2	CP-OFDM	QPSK	193.46
		DFT-s-OFDM	π/2 BPSK	191.20
		CP-OFDM	16QAM	193.52
		CP-OFDM	64QAM	193.15
	3	CP-OFDM	QPSK	294.07
		DFT-s-OFDM	π/2 BPSK	292.02
		CP-OFDM	16QAM	294.36
		CP-OFDM	64QAM	293.51
	4	CP-OFDM	QPSK	391.64
		DFT-s-OFDM	π/2 BPSK	391.15
		CP-OFDM	16QAM	392.92
		CP-OFDM	64QAM	391.94

Table 7-5. Summary of Occupied Bandwidths (n260)



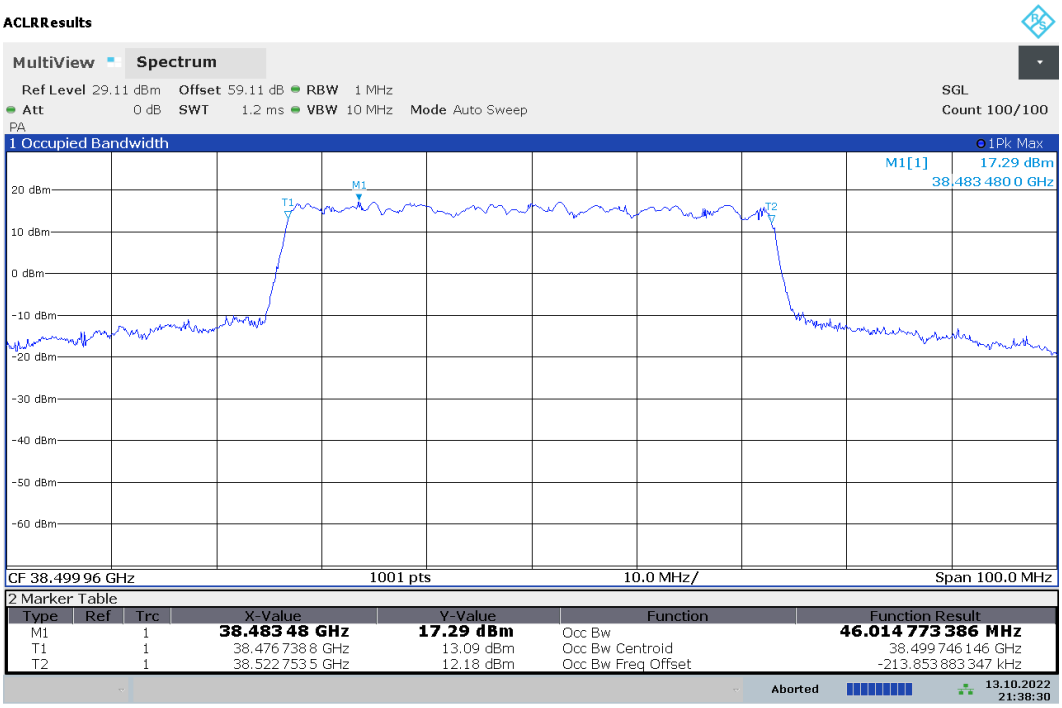
21:37:55 13.10.2022

Plot 7-49. Occupied Bandwidth Plot (50MHz-1CC – QPSK – Mid Channel)



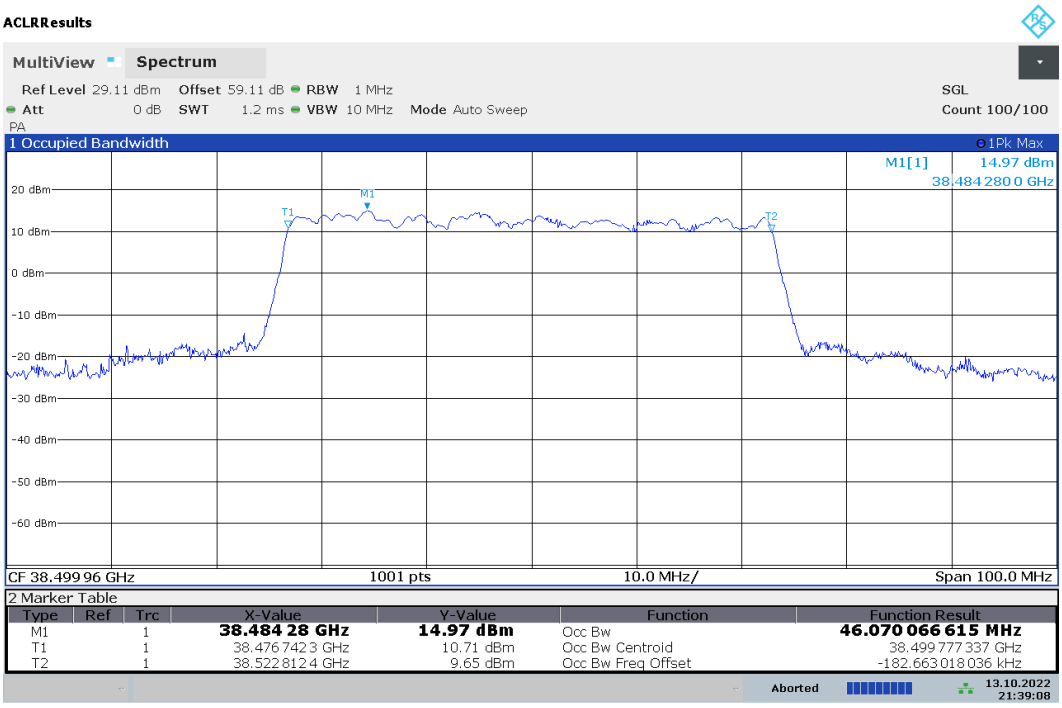
21:37:16 13.10.2022

Plot 7-50. Occupied Bandwidth Plot (50MHz-1CC – pi/2-BPSK – Mid Channel)



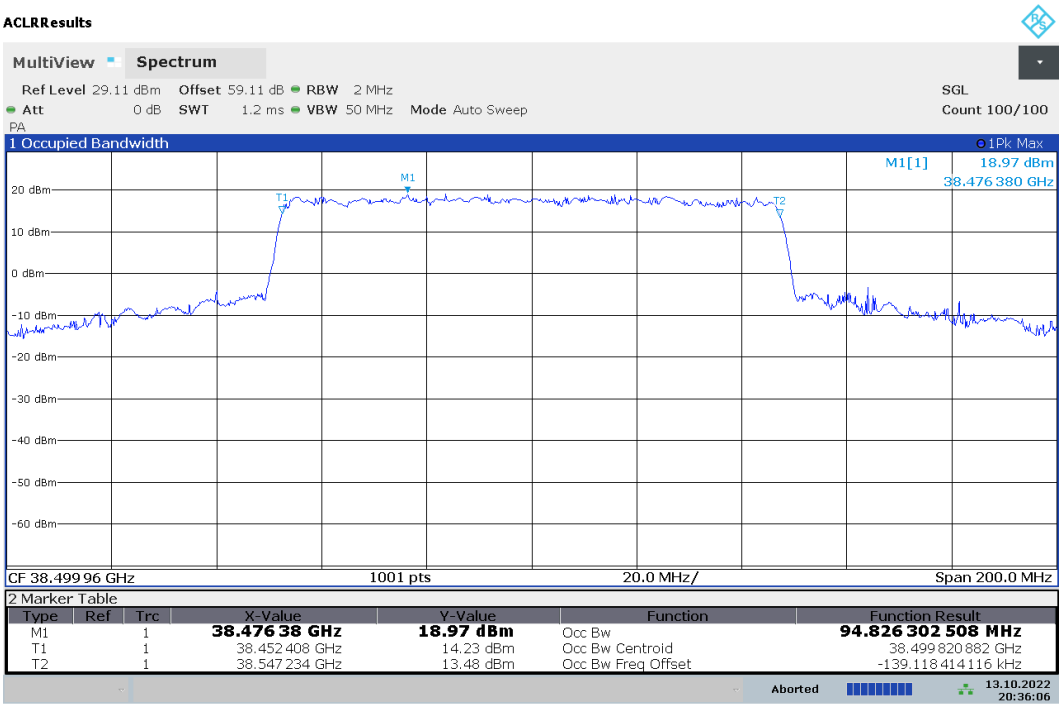
21:38:30 13.10.2022

Plot 7-51. Occupied Bandwidth Plot (50MHz-1CC – 16QAM – Mid Channel)



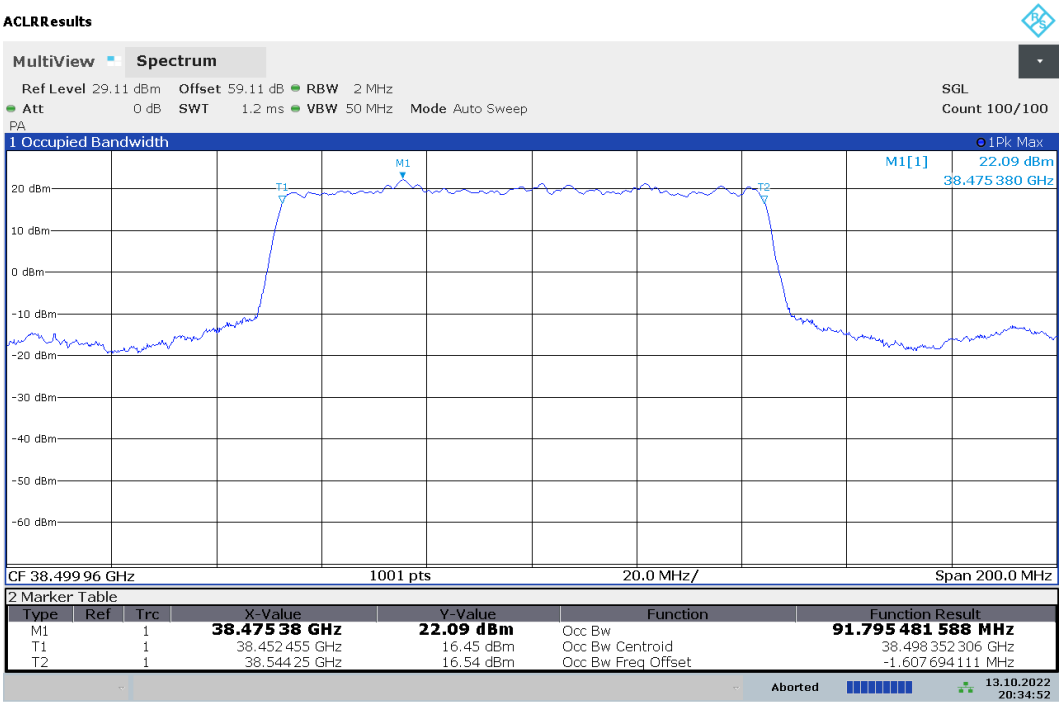
21:39:08 13.10.2022

Plot 7-52. Occupied Bandwidth Plot (50MHz-1CC – 64QAM – Mid Channel)



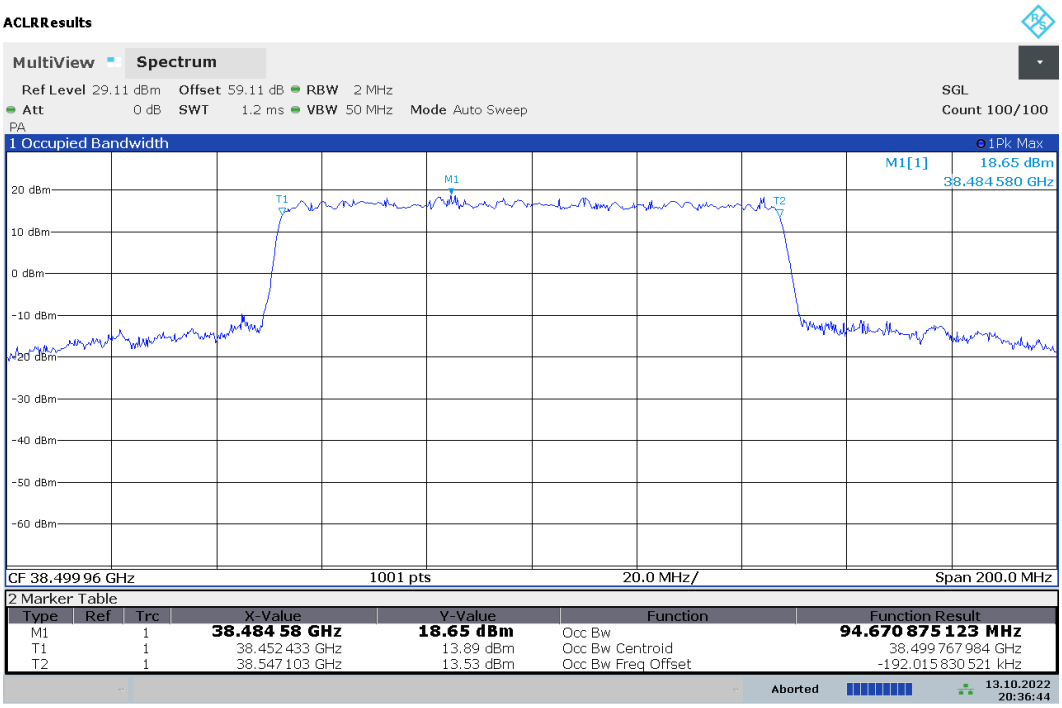
20:36:07 13.10.2022

Plot 7-53. Occupied Bandwidth Plot (100MHz-1CC – QPSK – Mid Channel)



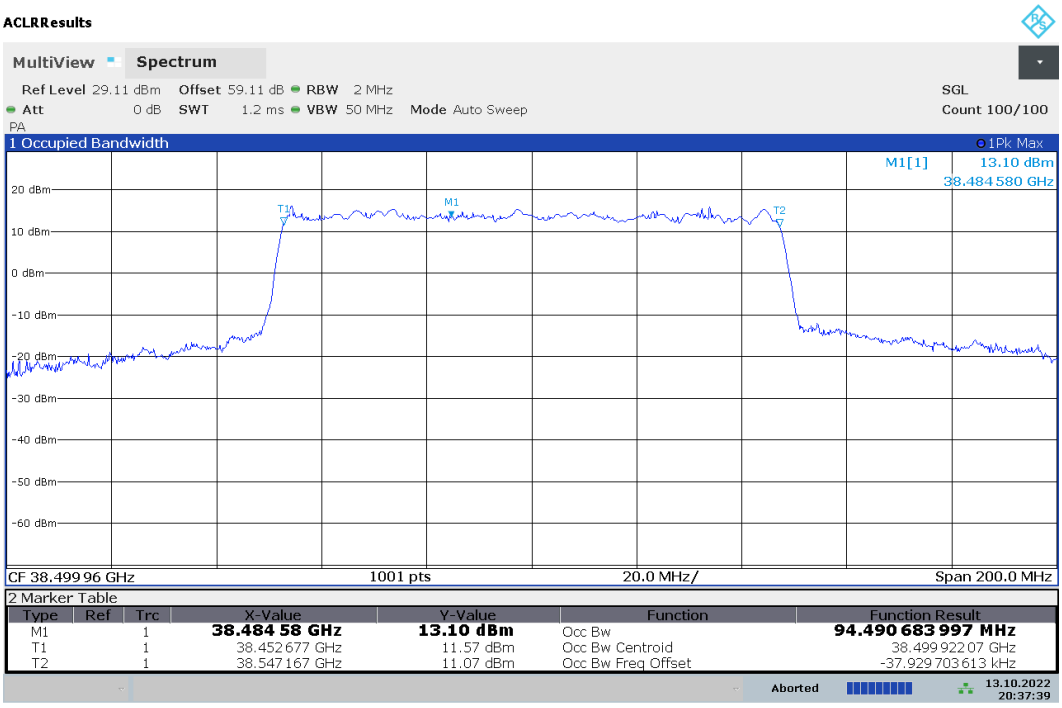
20:34:53 13.10.2022

Plot 7-54. Occupied Bandwidth Plot (100MHz-1CC – pi/2-BPSK – Mid Channel)



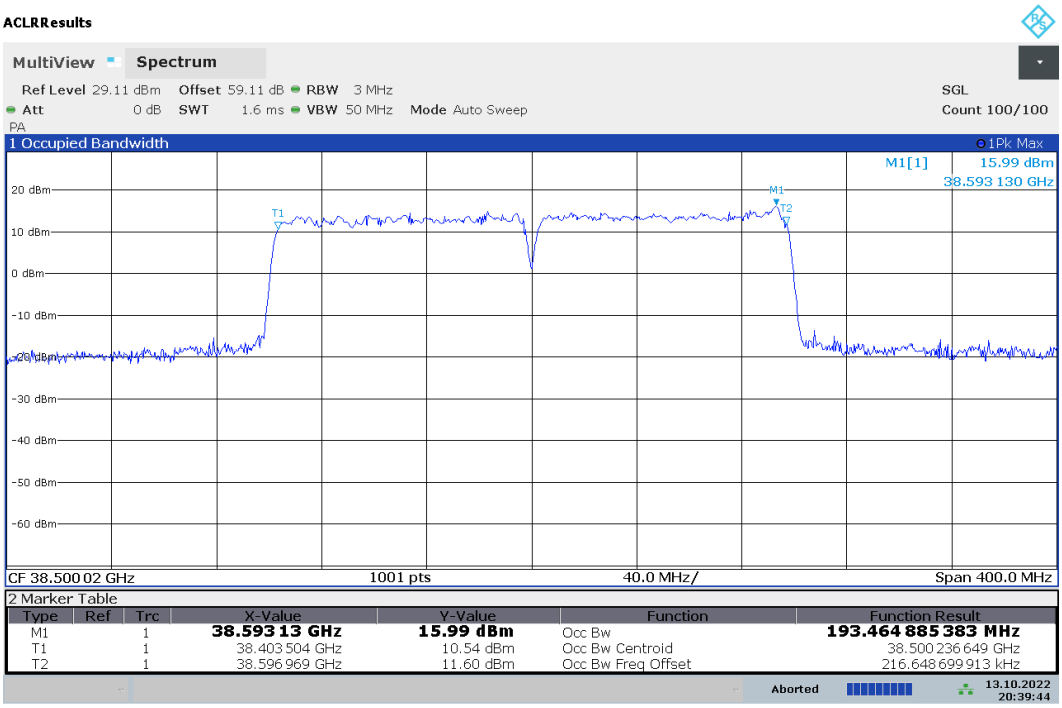
20:36:44 13.10.2022

Plot 7-55. Occupied Bandwidth Plot (100MHz-1CC – 16QAM – Mid Channel)



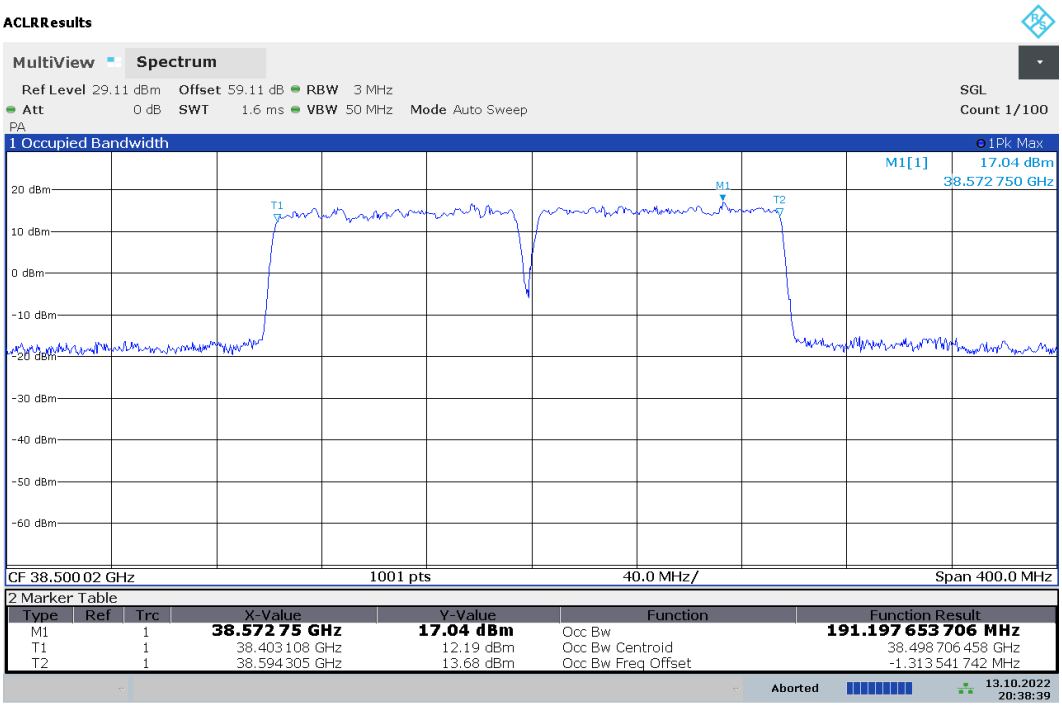
20:37:39 13.10.2022

Plot 7-56. Occupied Bandwidth Plot (100MHz-1CC – 64QAM – Mid Channel)



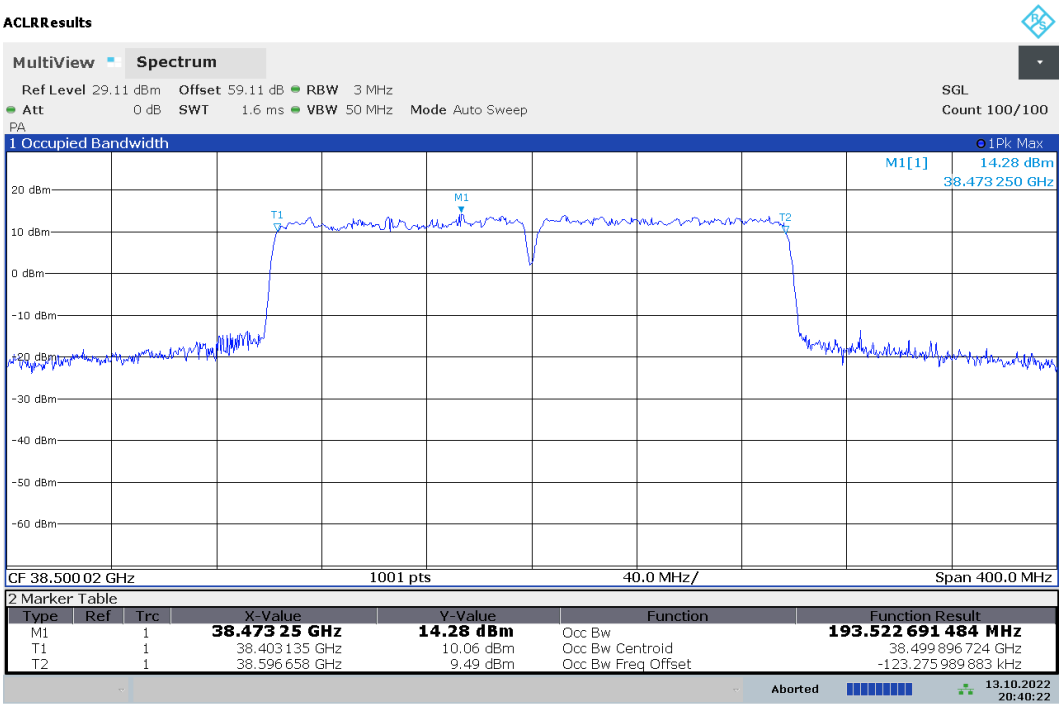
20:39:44 13.10.2022

Plot 7-57. Occupied Bandwidth Plot (100MHz-2CC – QPSK – Mid Channel)



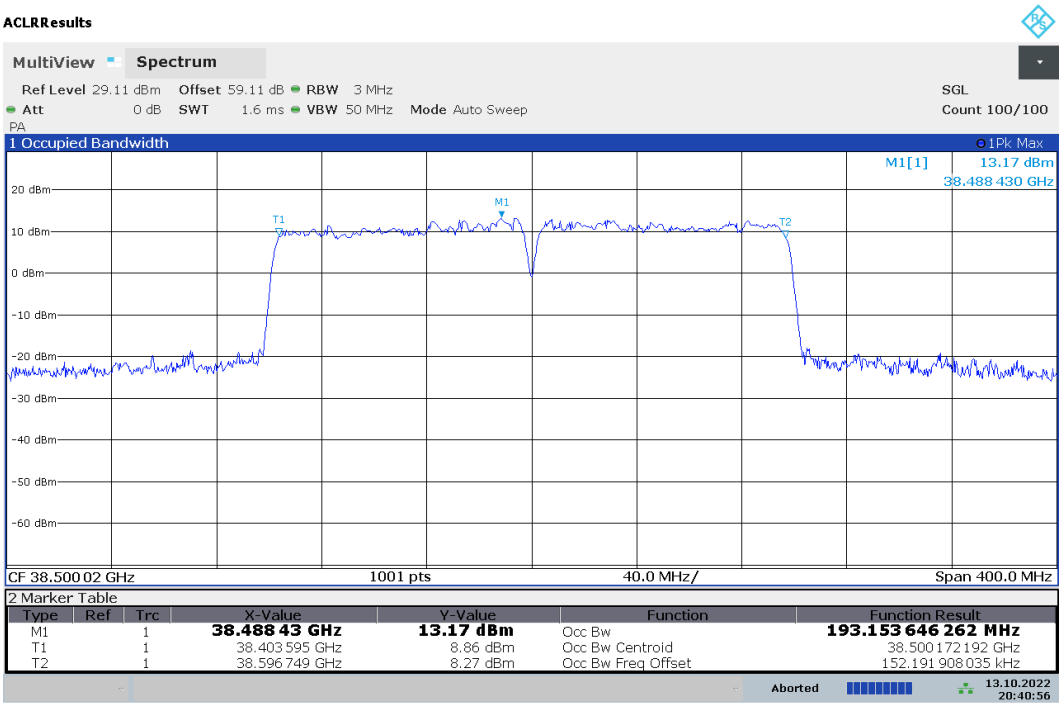
20:38:39 13.10.2022

Plot 7-58. Occupied Bandwidth Plot (100MHz-2CC – pi/2-BPSK – Mid Channel)



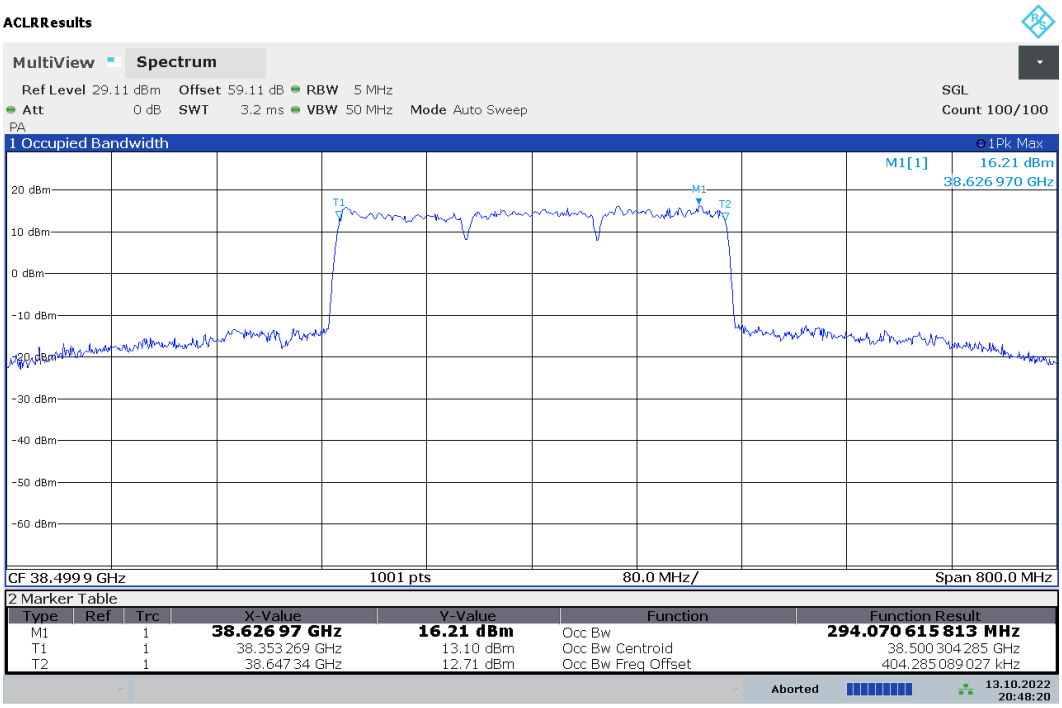
20:40:23 13.10.2022

Plot 7-59. Occupied Bandwidth Plot (100MHz-2CC – 16QAM – Mid Channel)



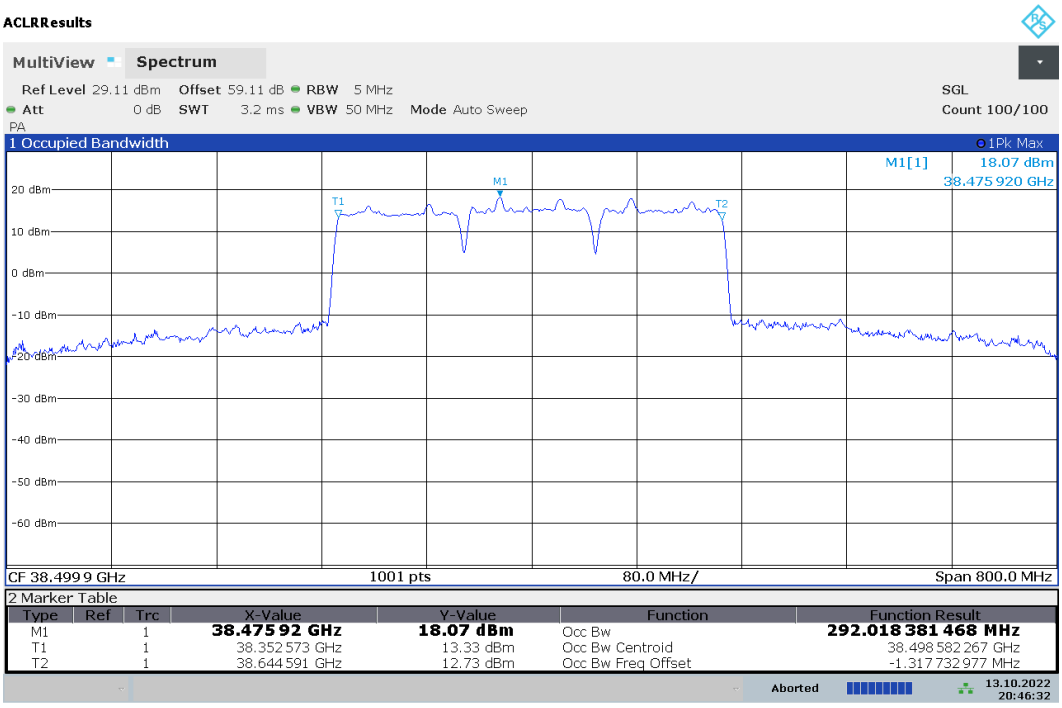
20:40:57 13.10.2022

Plot 7-60. Occupied Bandwidth Plot (100MHz-2CC – 64QAM – Mid Channel)



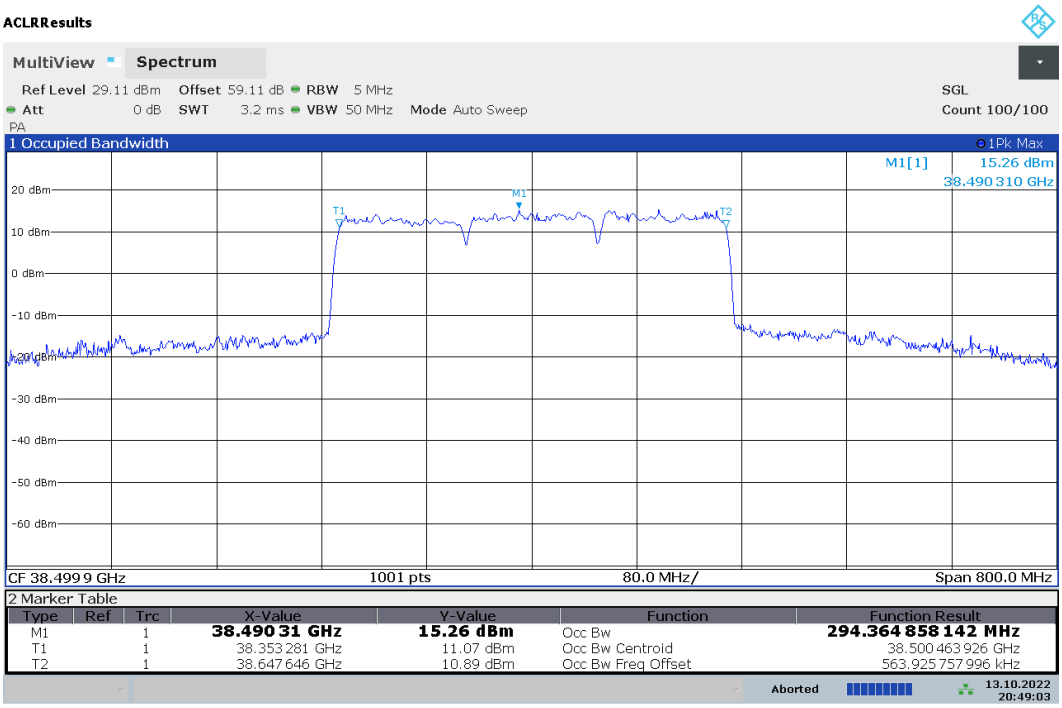
20:48:21 13.10.2022

Plot 7-61. Occupied Bandwidth Plot (100MHz-3CC – QPSK – Mid Channel)



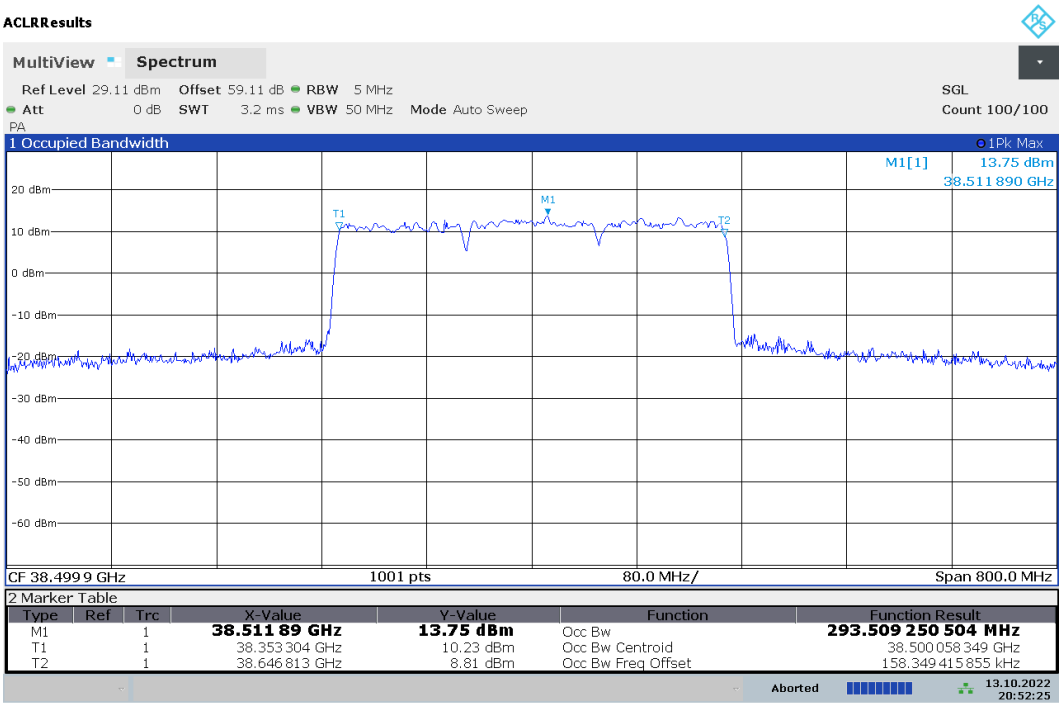
20:46:33 13.10.2022

Plot 7-62. Occupied Bandwidth Plot (100MHz-3CC – pi/2-BPSK – Mid Channel)



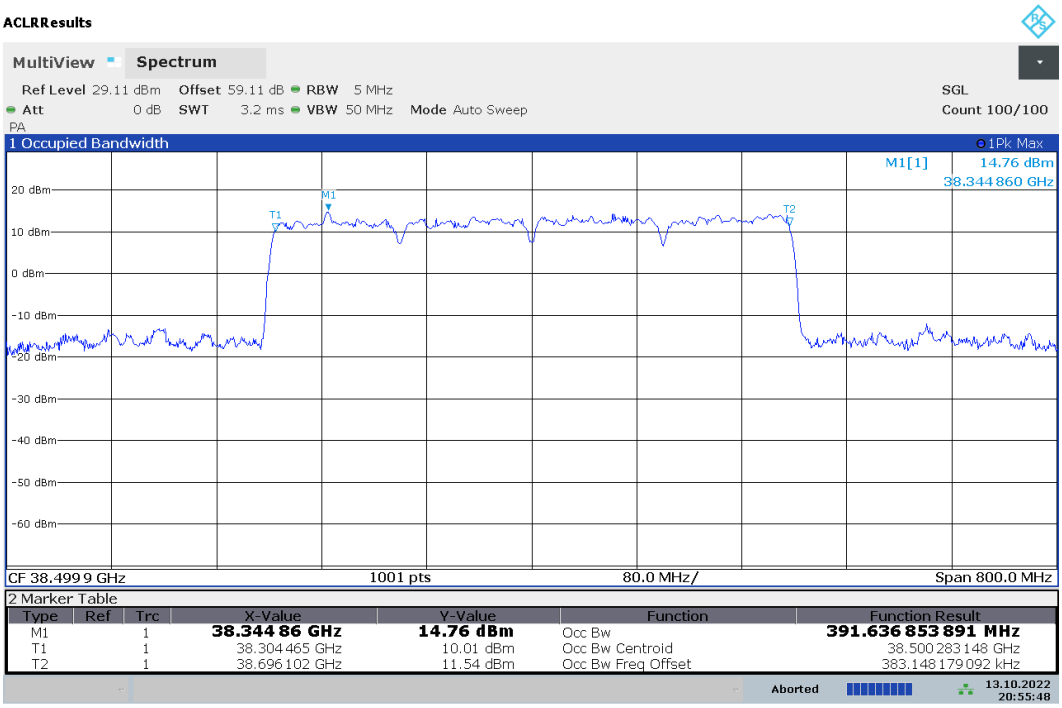
20:49:03 13.10.2022

Plot 7-63. Occupied Bandwidth Plot (100MHz-3CC – 16QAM – Mid Channel)



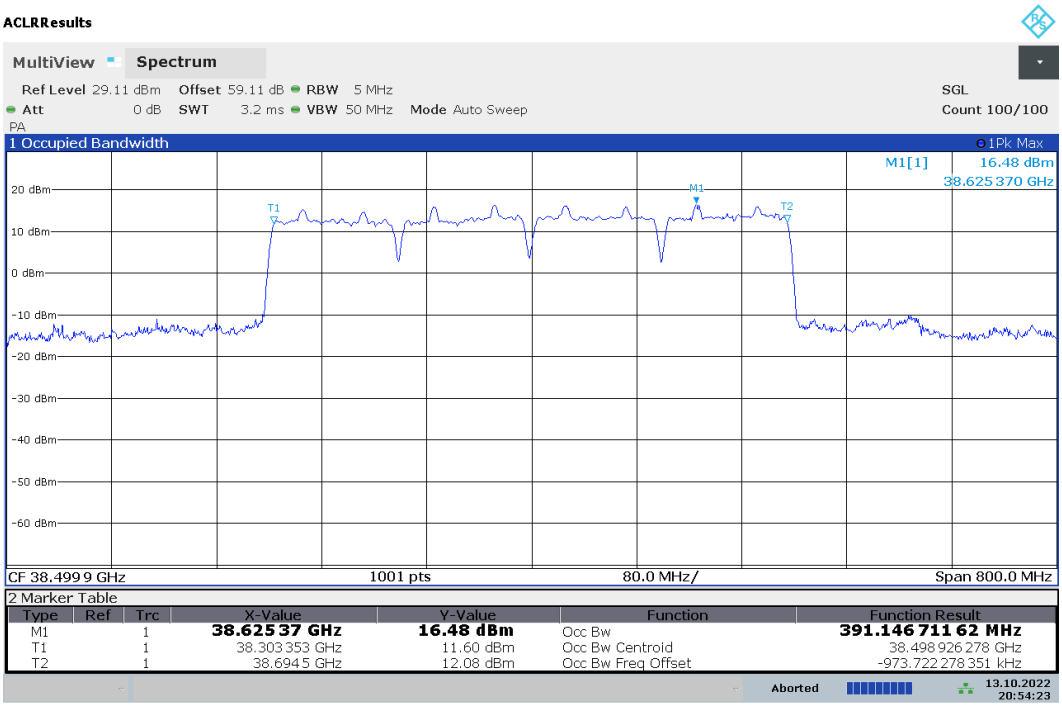
20:52:25 13.10.2022

Plot 7-64. Occupied Bandwidth Plot (100MHz-3CC – 64QAM – Mid Channel)



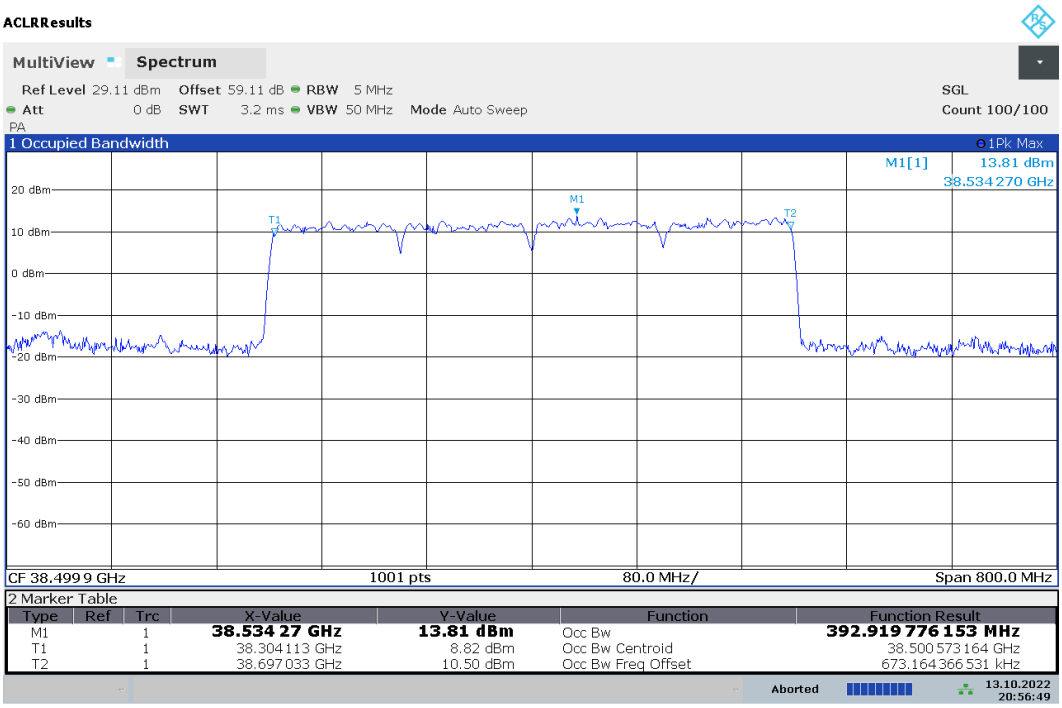
20:55:49 13.10.2022

Plot 7-65. Occupied Bandwidth Plot (100MHz-4CC – QPSK – Mid Channel)



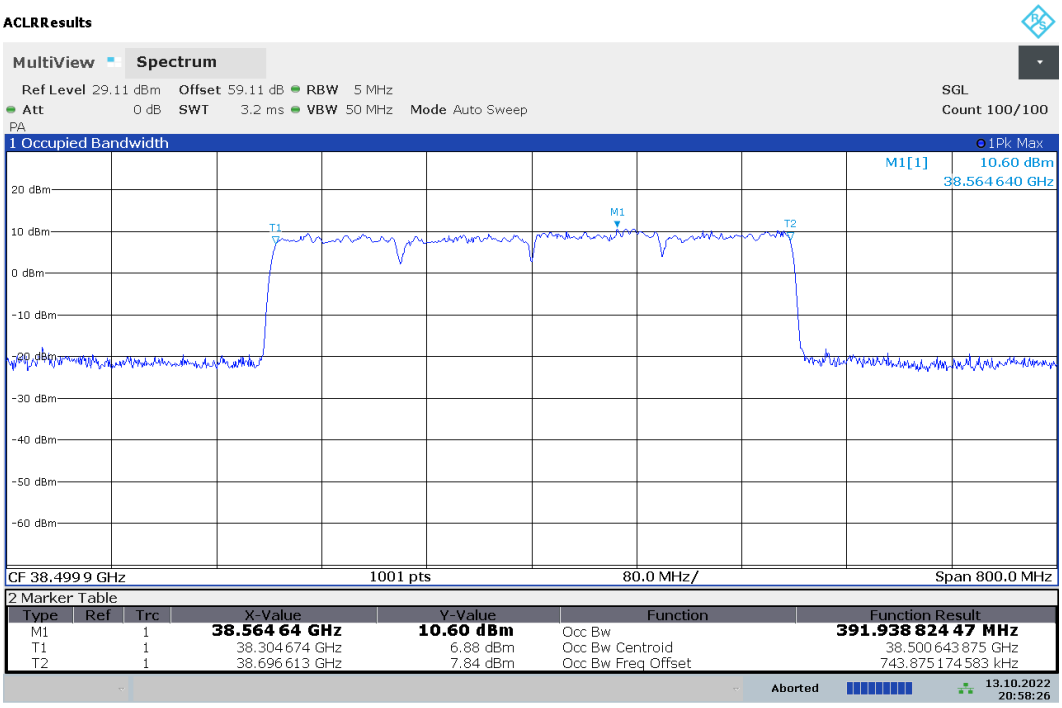
20:54:24 13.10.2022

Plot 7-66. Occupied Bandwidth Plot (100MHz-4CC – pi/2-BPSK – Mid Channel)



20:56:49 13.10.2022

Plot 7-67. Occupied Bandwidth Plot (100MHz-4CC – 16QAM – Mid Channel)



20:58:26 13.10.2022

Plot 7-68. Occupied Bandwidth Plot (100MHz-4CC – 64QAM – Mid Channel)

7.3 Equivalent Isotropic Radiated Power

§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 a maximum EIRP of +43 dBm.

Test Procedures Used

ANSI C63.26-2015 Section 5.2.4.4.1
KDB 842590 D01 v01r02 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 1MHz
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 OBW of the signal for signals with continuous operation.
8. Trace mode = trace averaging (RMS) over 100 sweeps
9. The trace was allowed to stabilize

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below. Both H-Beam and V-Beam were investigated and the worst-case measurements were reported below.

2) Elements within the same antenna array are correlated to produce beamforming array gain. Antenna arrays cannot be correlated with another antenna array. During testing, only one antenna array was active.

3) EIRP measurements for all bands were taken at 1m test distance as was required for far-field conditions (see Table 3-1).

4) The average EIRP reported below is calculated per section 5.2.7 of ANSI C63.26-2015 which states: EIRP (dBm) = E (dBµV/m) + 20log(D) − 104.8; where D is the measurement distance (in the far field region) in m. The field strength at the antenna terminals E is calculated as: E (dBµV/m) = Spectrum Analyzer Channel Power Level (dBm) + Antenna Factor (dB/m) + Cable Loss (dB) + 107.

5) All EIRP measurements were made with the appropriate offset levels loaded into the spectrum analyzer as determined from the measurement distance, antenna factor, cable loss, and the equations in Note 4 above.

6) Radiated power levels are investigated while the receive antenna was rotated through all angles to determine the worst case polarization/positioning.

7) This device supports transmission of H-polarized and V-polarized beams from the antenna array in both CP-OFDM and DFT-s-OFDM transmission schemes. SISO and MIMO operation is also supported for some configurations. As part of the testing, all modes are investigated fully on the channel showing the highest simulated EIRP using QPSK modulation. The configuration that shows the highest measured EIRP was then used to determine the EIRP for the low and high channels and for the additional modulations.

8) Several BeamID's are investigated based on the provided simulated data to determine the worst-case BeamID.

Sample Calculation

The offset level loaded into the spectrum analyzer allows for a direct conversion of the raw channel power level measured by the analyzer into an EIRP. This offset level is frequency dependent and is calculated as follows:

Offset Level [dB] = Antenna Factor [dB/m] + Cable Loss [dB] + 20 Log(Distance [m]) + 107 - 104.8 .

For example, to measure an EIRP at a frequency of 24400MHz with an antenna factor of 45.49dB/m, a cable loss of 8.53dB, and a measurement distance of 1 meter, an offset level of:

Offset Level = 45.49dB/m + 8.53dB + 20 Log(1 meter) + 107 - 104.8 = 56.22 dB

shall be loaded into the spectrum analyzer.

Band n258-R1 Beam ID Configurations

Mode	Channel	Beam Polarization	Beam ID	Beam ID Pair
SISO	Low	H	156	-
		V	34	-
	Mid	H	156	-
		V	34	-
	High	H	156	-
		V	34	-
MIMO	Low	2Tx/MIMO	165	37
	Mid	2Tx/MIMO	165	37
	High	2Tx/MIMO	165	37

Table 7-6. Ant 1 Worst Case Beam ID

Mode	Channel	Beam Polarization	Beam ID	Beam ID Pair
SISO	Low	H	166	-
		V	31	-
	Mid	H	166	-
		V	31	-
	High	H	158	-
		V	31	-
MIMO	Low	2Tx/MIMO	159	31
	Mid	2Tx/MIMO	159	31
	High	2Tx/MIMO	159	31

Table 7-7. Ant 2 Worst Case Beam ID

Band n258-R1

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	24275.04	DFT-s-OFDM	π/2 BPSK	37+165	H + V	2Tx	H	300	240.6	1 / 16	**28.43**
		Mid	24350.04	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	113	128.5	1 / 16	30.12
				DFT-s-OFDM	QPSK	34	V	SISO	V	105	92.5	1 / 16	27.70
				DFT-s-OFDM	QPSK	156	H	SISO	H	113	128	1 / 20	29.01
				CP-OFDM	QPSK	37+165	H + V	MIMO	H	113	128.5	1 / 16	27.24
				CP-OFDM	QPSK	34	V	SISO	V	105	92.5	1 / 16	24.36
				CP-OFDM	QPSK	156	H	SISO	H	113	128	1 / 20	26.20
				DFT-s-OFDM	π/2 BPSK	37+165	H + V	2Tx	H	113	128.5	1 / 16	**30.35**
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	113	128.5	1 / 16	28.16
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	113	128.5	1 / 16	25.30
		High	24424.92	DFT-s-OFDM	π/2 BPSK	37+165	H + V	2Tx	H	113	128.9	1 / 16	**29.44**

Table 7-8. Ant 1 EIRP Data (Band n258-R1 − 50MHz)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	24300.00	DFT-s-OFDM	π/2 BPSK	37+165	H + V	2Tx	H	305	233.9	1 / 42	**31.23**
		Mid	24350.04	DFT-s-OFDM	π/2 BPSK	37+165	H + V	2Tx	H	307	244	1 / 42	**29.42**
		High	24399.96	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	113	128	1 / 23	31.98
				DFT-s-OFDM	QPSK	34	V	SISO	V	102	95.2	1 / 23	28.57
				DFT-s-OFDM	QPSK	156	H	SISO	H	108	131.5	1 / 23	29.62
				CP-OFDM	QPSK	37+165	H + V	MIMO	H	113	128	1 / 23	29.14
				CP-OFDM	QPSK	34	V	SISO	V	102	95.2	1 / 23	25.98
				CP-OFDM	QPSK	156	H	SISO	H	108	131.5	1 / 23	26.53
				DFT-s-OFDM	π/2 BPSK	37+165	H + V	2Tx	H	113	128	1 / 23	**32.02**
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	113	128	1 / 23	30.04
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	113	128	1 / 23	26.91
100+100	2	Mid	24349.98	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	122	127	64 / 0	26.00
				CP-OFDM	QPSK	37+165	H + V	MIMO	H	122	127	66 / 0	24.05
				DFT-s-OFDM	π/2 BPSK	37+165	H + V	2Tx	H	122	127	64 / 0	**26.02**
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	122	127	1 / 23	23.89
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	122	127	1 / 23	22.71

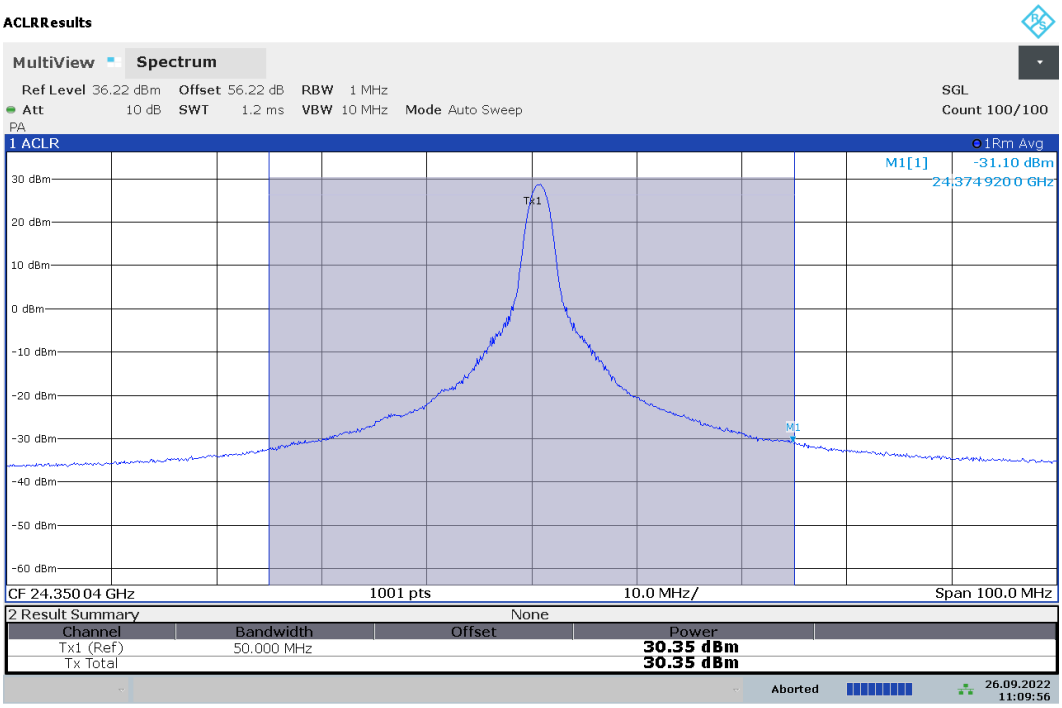
Table 7-9. Ant 1 EIRP Data (Band n258-R1 − 100MHz)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	24275.04	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	H	38	21.6	1 / 19	**28.42**
		Mid	24350.04	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	H	78	26.3	1 / 19	**29.34**
				DFT-s-OFDM	QPSK	31	V	SISO	H	77	27.2	1 / 16	28.38
				DFT-s-OFDM	QPSK	166	H	SISO	H	40	47	1 / 16	23.41
				CP-OFDM	QPSK	31+159	H + V	MIMO	H	78	26.3	1 / 19	26.15
				CP-OFDM	QPSK	31	V	SISO	H	77	27.2	1 / 16	25.22
				CP-OFDM	QPSK	166	H	SISO	H	40	47	1 / 16	20.31
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	78	26.3	1 / 19	29.32
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	H	78	26.3	1 / 19	27.02
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	H	78	26.3	1 / 19	24.24
		High	24424.92	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	H	80	27.1	1 / 19	**28.62**

Table 7-10. Ant 2 EIRP Data (Band n258-R1 − 50MHz)

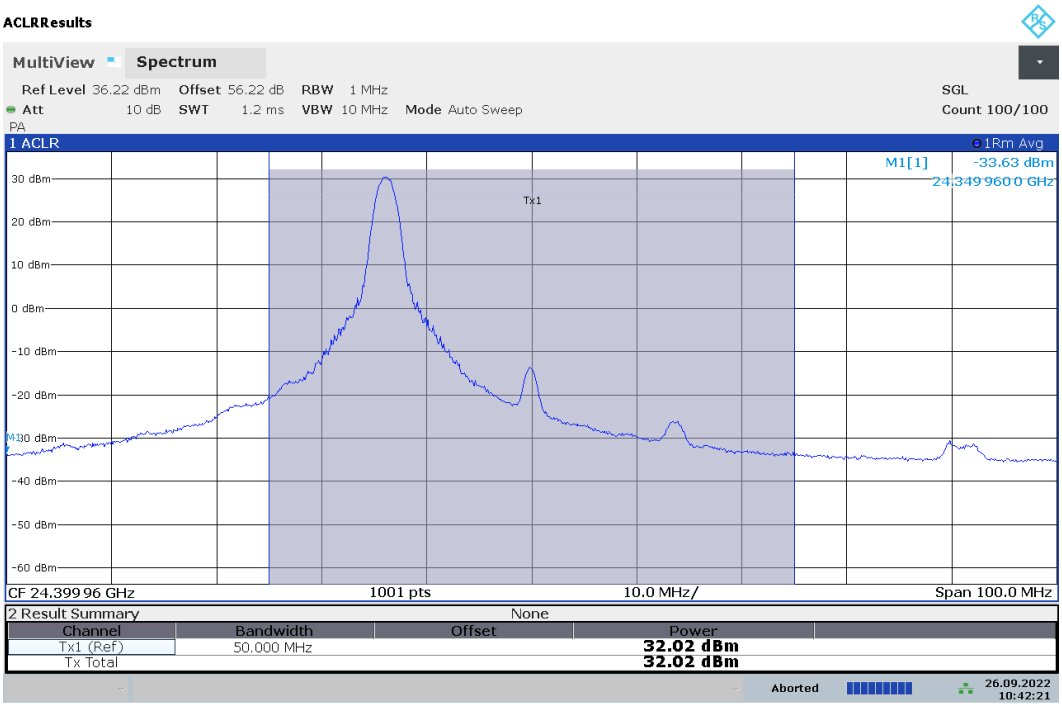
Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	24300.00	DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	302	18.5	1 / 42	**27.56**
		Mid	24350.04	DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	80	27.6	1 / 42	**29.13**
		High	24399.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	H	80	26.6	1 / 23	29.02
				DFT-s-OFDM	QPSK	31	V	SISO	H	77	27.2	1 / 33	28.32
				DFT-s-OFDM	QPSK	158	H	SISO	H	351	295.4	1 / 42	22.70
				CP-OFDM	QPSK	31+159	H + V	MIMO	H	80	26.6	1 / 42	26.53
				CP-OFDM	QPSK	31	V	SISO	H	77	27.2	1 / 33	25.29
				CP-OFDM	QPSK	158	H	SISO	H	351	295.4	1 / 42	19.63
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	80	26.6	1 / 42	**29.31**
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	H	80	26.6	1 / 42	27.40
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	H	80	26.6	1 / 42	24.36
100+100	2	Mid	24349.98	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	H	79	25.7	64 / 0	24.60
				CP-OFDM	QPSK	31+159	H + V	MIMO	H	79	25.7	66 / 0	22.47
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	79	25.7	64 / 0	**24.69**
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	H	79	25.7	64 / 0	22.52
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	H	79	25.7	1 / 33	20.73

Table 7-11. Ant 2 EIRP Data (Band n258-R1 − 100MHz)



11:09:57 26.09.2022

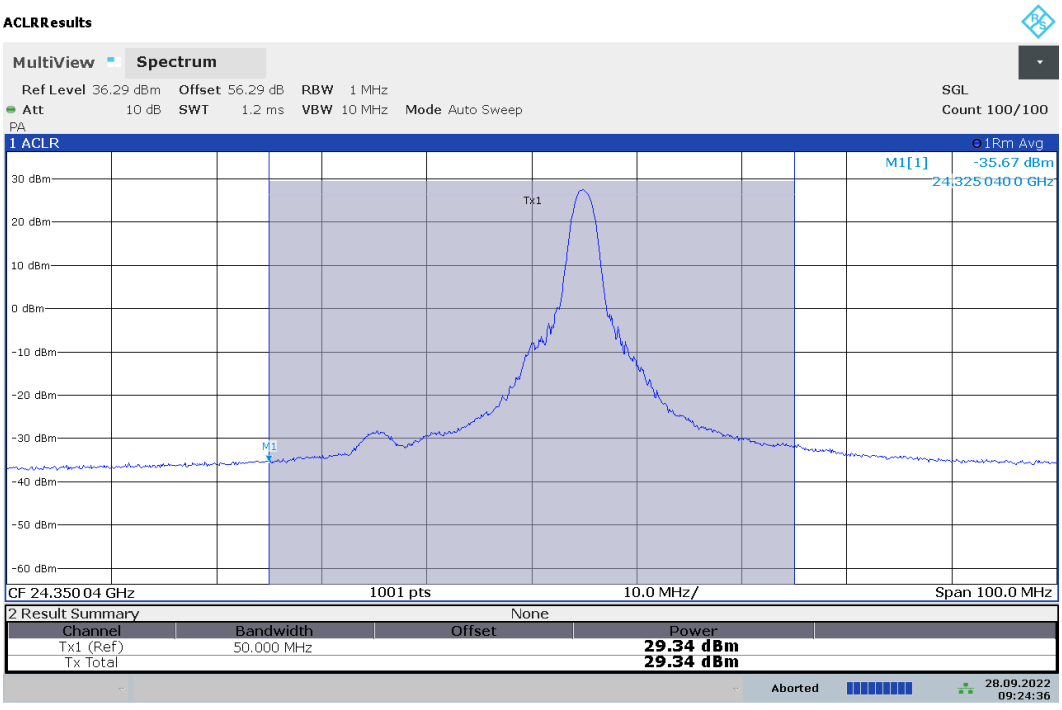
Plot 7-69. Ant 1 EIRP Plot (Band n258-R1 − 50MHz-1CC − pi/2-BPSK – Mid Channel)



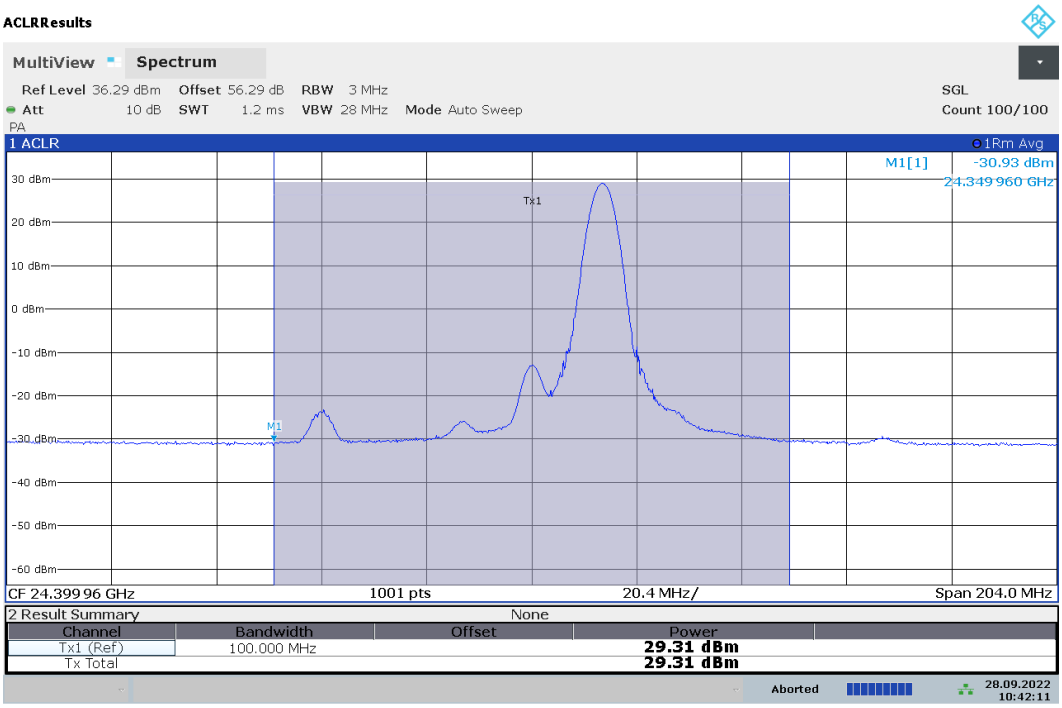
10:42:22 26.09.2022

Plot 7-70. Ant 1 EIRP Plot (Band n258-R1 − 100MHz-1CC − pi/2-BPSK – High Channel)

Plot 7-71. Ant 1 EIRP Plot (Band n258-R1 − 100MHz-2CC − pi/2-BPSK – Mid Channel)



Plot 7-72. Ant 2 EIRP Plot (Band n258-R1 − 50MHz-1CC − QPSK – Mid Channel)



10:42:12 28.09.2022

Plot 7-73. Ant 2 EIRP Plot (Band n258-R1 − 100MHz-1CC − pi/2-BPSK – High Channel)

10:57:55 28.09.2022

Plot 7-74. Ant 2 EIRP Plot (Band n258-R1 − 100MHz-2CC − pi/2-BPSK – Mid Channel)

Band n258-R2 Beam ID Configurations

Mode	Channel	Beam Polarization	Beam ID	Beam ID Pair
SISO	Low	H	165	-
		V	26	-
	Mid	H	165	-
		V	26	-
	High	H	165	-
		V	26	-
MIMO	Low	2Tx/MIMO	156	28
	Mid	2Tx/MIMO	156	28
	High	2Tx/MIMO	156	28

Table 7-12. Ant 1 Worst Case Beam ID

Mode	Channel	Beam Polarization	Beam ID	Beam ID Pair
SISO	Low	H	166	-
		V	31	-
	Mid	H	166	-
		V	31	-
	High	H	158	-
		V	31	-
MIMO	Low	2Tx/MIMO	159	31
	Mid	2Tx/MIMO	159	31
	High	2Tx/MIMO	159	31

Table 7-13. Ant 2 Worst Case Beam ID

Band n258-R2

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	24775.08	DFT-s-OFDM	π/2 BPSK	28+156	H + V	2Tx	H	252	305	1 / 19	**30.56**
		Mid	24999.96	DFT-s-OFDM	π/2 BPSK	28+156	H + V	2Tx	H	250	302	1 / 19	**31.98**
		High	25224.96	DFT-s-OFDM	QPSK	28+156	H + V	2Tx	H	257	306.9	1 / 19	32.39
				DFT-s-OFDM	QPSK	26	V	SISO	V	267	88.3	1 / 19	27.49
				DFT-s-OFDM	QPSK	165	H	SISO	H	96	231.7	1 / 19	27.56
				CP-OFDM	QPSK	28+156	H + V	MIMO	H	257	306.9	1 / 19	29.18
				CP-OFDM	QPSK	26	V	SISO	V	267	88.3	1 / 19	24.27
				CP-OFDM	QPSK	165	H	SISO	H	96	231.7	1 / 19	25.02
				DFT-s-OFDM	π/2 BPSK	28+156	H + V	2Tx	H	257	306	1 / 19	**32.40**
				DFT-s-OFDM	16QAM	28+156	H + V	2Tx	H	257	306	1 / 19	30.16
				DFT-s-OFDM	64QAM	28+156	H + V	2Tx	H	257	306	1 / 19	27.57

Table 7-14. Ant 1 EIRP Data (Band n258-R2 − 50MHz)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	24800.04	DFT-s-OFDM	π/2 BPSK	28+156	H + V	2Tx	H	256	302	1 / 23	**31.52**
		Mid	24999.96	DFT-s-OFDM	π/2 BPSK	28+156	H + V	2Tx	H	255	306	1 / 42	**32.72**
		High	25200.00	DFT-s-OFDM	QPSK	28+156	H + V	2Tx	H	254	307.5	1 / 42	32.84
				DFT-s-OFDM	QPSK	26	V	SISO	V	267	88.3	1 / 42	27.37
				DFT-s-OFDM	QPSK	165	H	SISO	H	96	231.6	1 / 42	27.41
				CP-OFDM	QPSK	28+156	H + V	MIMO	H	254	307.5	1 / 42	29.66
				CP-OFDM	QPSK	26	V	SISO	V	267	88.3	1 / 42	24.01
				CP-OFDM	QPSK	165	H	SISO	H	96	231.6	1 / 42	24.54
				DFT-s-OFDM	π/2 BPSK	28+156	H + V	2Tx	H	254	307.5	1 / 42	**32.88**
				DFT-s-OFDM	16QAM	28+156	H + V	2Tx	H	254	307.5	1 / 42	30.85
				DFT-s-OFDM	64QAM	28+156	H + V	2Tx	H	254	307.5	1 / 42	27.89
100+100	2	Low	24850.02	DFT-s-OFDM	π/2 BPSK	28+156	H + V	2Tx	H	267	88.3	64 / 0	**27.01**
		Mid	25000.02	DFT-s-OFDM	π/2 BPSK	28+156	H + V	2Tx	H	76	55.4	64 / 0	**26.95**
		High	25150.02	DFT-s-OFDM	QPSK	28+156	H + V	2Tx	H	254	307.5	64 / 0	27.34
				CP-OFDM	QPSK	28+156	H + V	MIMO	H	254	307.5	66 / 0	25.40
				DFT-s-OFDM	π/2 BPSK	28+156	H + V	2Tx	H	254	307.5	64 / 0	**27.40**
				DFT-s-OFDM	16QAM	28+156	H + V	2Tx	H	254	307.5	64 / 0	25.40
				DFT-s-OFDM	64QAM	28+156	H + V	2Tx	H	254	307.5	64 / 0	23.40
100+100+100	3	Low	24900.00	DFT-s-OFDM	QPSK	28+156	H + V	2Tx	H	76	55.4	64 / 0	**26.89**
		Mid	25000.02	DFT-s-OFDM	QPSK	28+156	H + V	2Tx	H	76	55.4	64 / 0	**26.46**
		High	25100.04	DFT-s-OFDM	QPSK	28+156	H + V	2Tx	H	255	308.2	64 / 0	**27.35**
				CP-OFDM	QPSK	28+156	H + V	MIMO	H	255	308.2	66 / 0	25.29
				DFT-s-OFDM	π/2 BPSK	28+156	H + V	2Tx	H	255	308.2	64 / 0	27.32
				DFT-s-OFDM	16QAM	28+156	H + V	2Tx	H	255	308.2	1 / 23	25.37
				DFT-s-OFDM	64QAM	28+156	H + V	2Tx	H	255	308.2	1 / 23	24.08

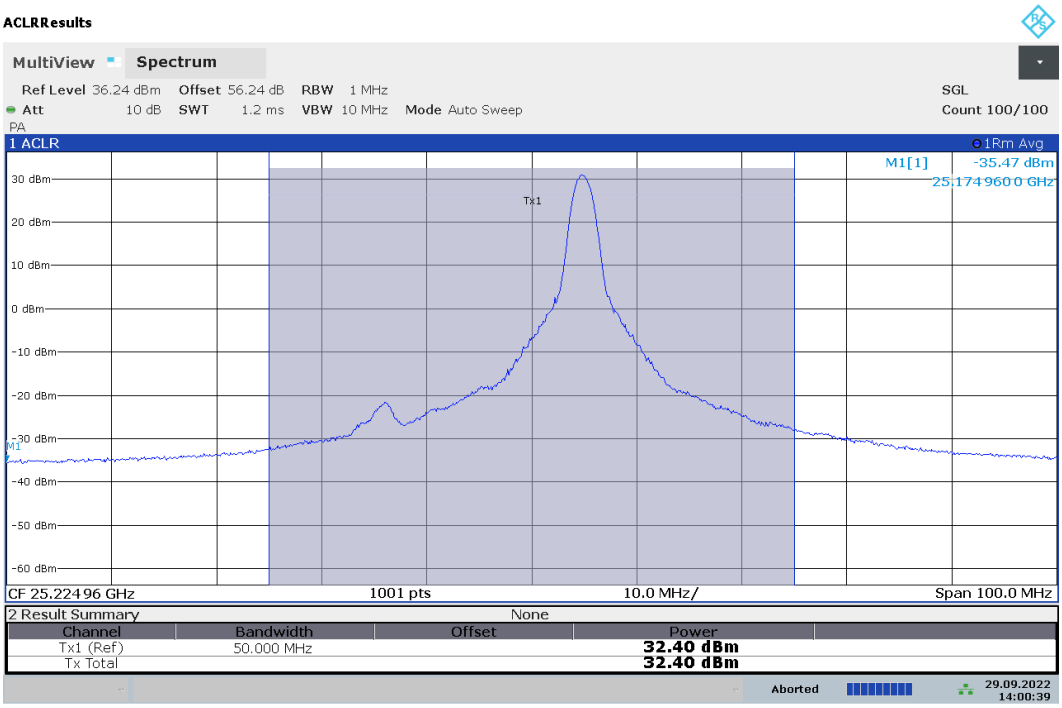
Table 7-15. Ant 1 EIRP Data (Band n258-R2 − 100MHz)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	24775.08	DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	79	43.3	1 / 19	**30.33**
		Mid	24999.96	DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	79	44.9	1 / 19	**30.52**
		High	25224.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	H	80	45.7	1 / 19	**31.74**
				DFT-s-OFDM	QPSK	31	V	SISO	H	80	26.6	1 / 16	30.77
				DFT-s-OFDM	QPSK	158	H	SISO	H	6	296.2	1 / 16	23.42
				CP-OFDM	QPSK	31+159	H + V	MIMO	H	80	45.7	1 / 16	28.52
				CP-OFDM	QPSK	31	V	SISO	H	80	26.6	1 / 16	27.62
				CP-OFDM	QPSK	158	H	SISO	H	6	296.2	1 / 16	20.19
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	80	45.7	1 / 16	31.63
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	H	80	45.7	1 / 16	29.44
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	H	80	45.7	1 / 16	26.15

Table 7-16. Ant 2 EIRP Data (Band n258-R2 − 50MHz)

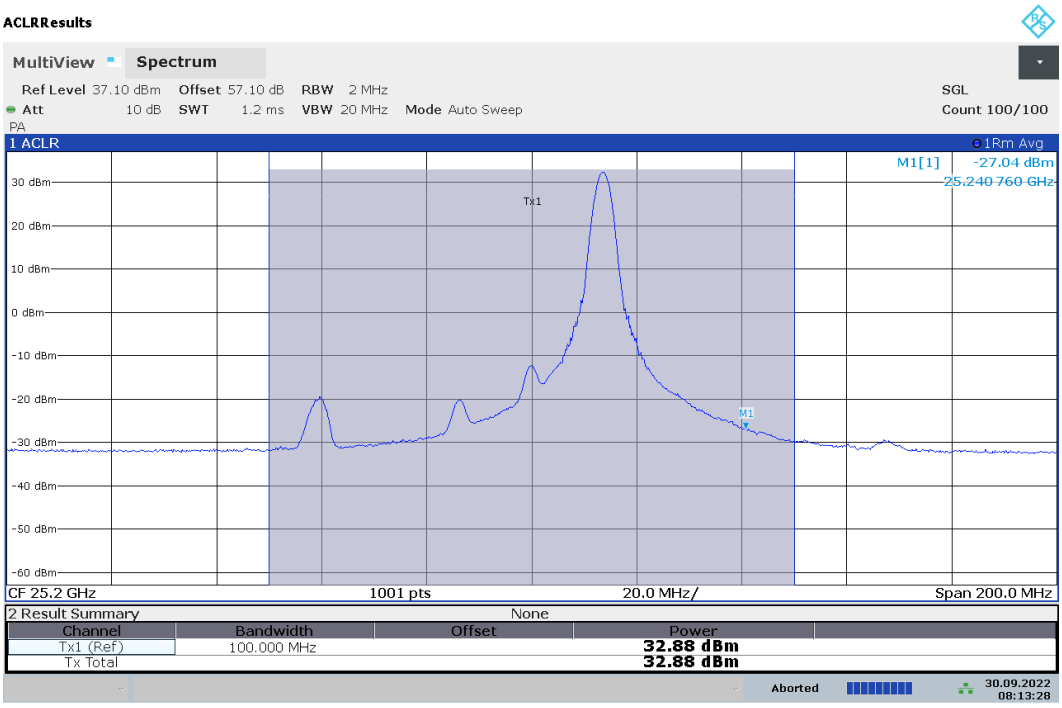
Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	24800.04	DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	80	43.6	1 / 23	**29.31**
		Mid	24999.96	DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	80	43.2	1 / 23	**31.41**
		High	25200.00	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	H	79	45.6	1 / 42	31.70
				DFT-s-OFDM	QPSK	31	V	SISO	H	80	48.9	1 / 42	30.57
				DFT-s-OFDM	QPSK	158	H	SISO	H	6	296.2	1 / 42	23.07
				CP-OFDM	QPSK	31+159	H + V	MIMO	H	79	45.6	1 / 42	28.70
				CP-OFDM	QPSK	31	V	SISO	H	80	48.9	1 / 42	27.48
				CP-OFDM	QPSK	158	H	SISO	H	6	296.2	1 / 42	19.90
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	79	45.6	1 / 42	**31.78**
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	H	79	45.6	1 / 42	29.53
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	H	79	45.6	1 / 42	26.52
100+100	2	Low	24850.02	DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	86	46.9	64 / 0	**26.16**
		Mid	25000.02	DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	85	46.6	64 / 0	**27.47**
		High	25150.02	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	H	85	47.6	64 / 0	**28.14**
				CP-OFDM	QPSK	31+159	H + V	MIMO	H	85	47.6	66 / 0	26.06
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	85	47.6	64 / 0	28.14
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	H	85	47.6	64 / 0	26.05
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	H	85	47.6	1 / 33	23.98
100+100+100	3	Low	24900.00	DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	85	48.1	64 / 0	**26.55**
		Mid	25000.02	DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	85	45.8	64 / 0	**27.31**
		High	25100.04	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	H	85	44.5	64 / 0	27.59
				CP-OFDM	QPSK	31+159	H + V	MIMO	H	85	44.5	66 / 0	24.38
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	H	85	44.5	64 / 0	**27.60**
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	H	85	44.5	64 / 0	24.32
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	H	85	44.5	1 / 23	22.34

Table 7-17. Ant 2 EIRP Data (Band n258-R2 − 100MHz)



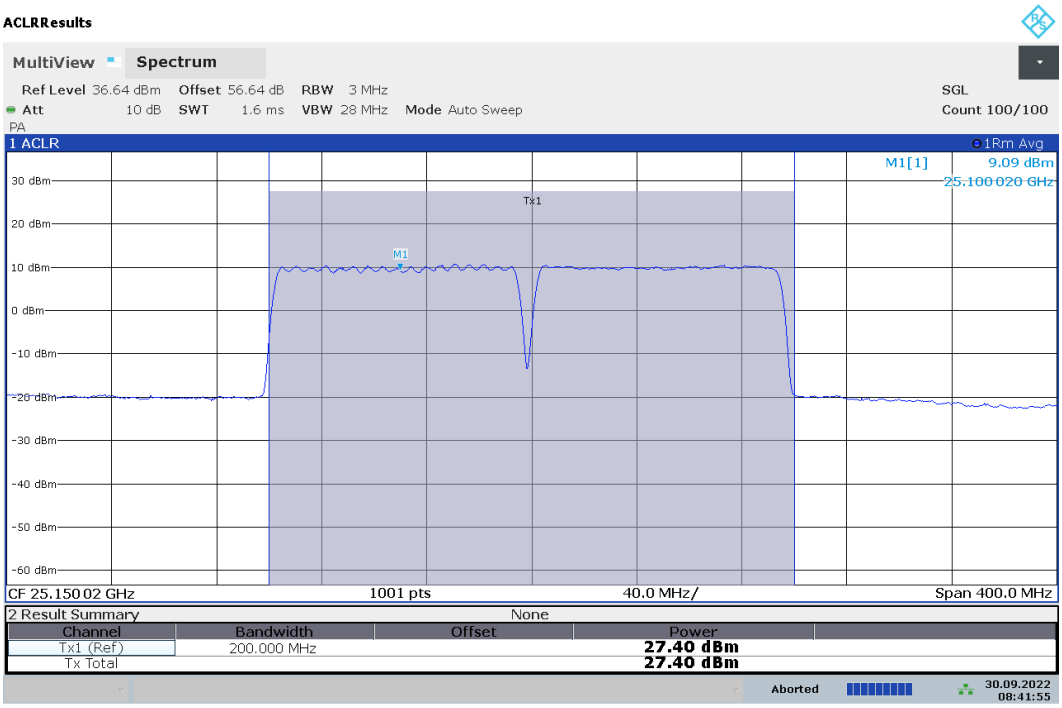
14:00:39 29.09.2022

Plot 7-75. Ant 1 EIRP Plot (Band n258-R2 − 50MHz-1CC − pi/2-BPSK – High Channel)



08:13:28 30.09.2022

Plot 7-76. Ant 1 EIRP Plot (Band n258-R2 − 100MHz-1CC − pi/2-BPSK – High Channel)

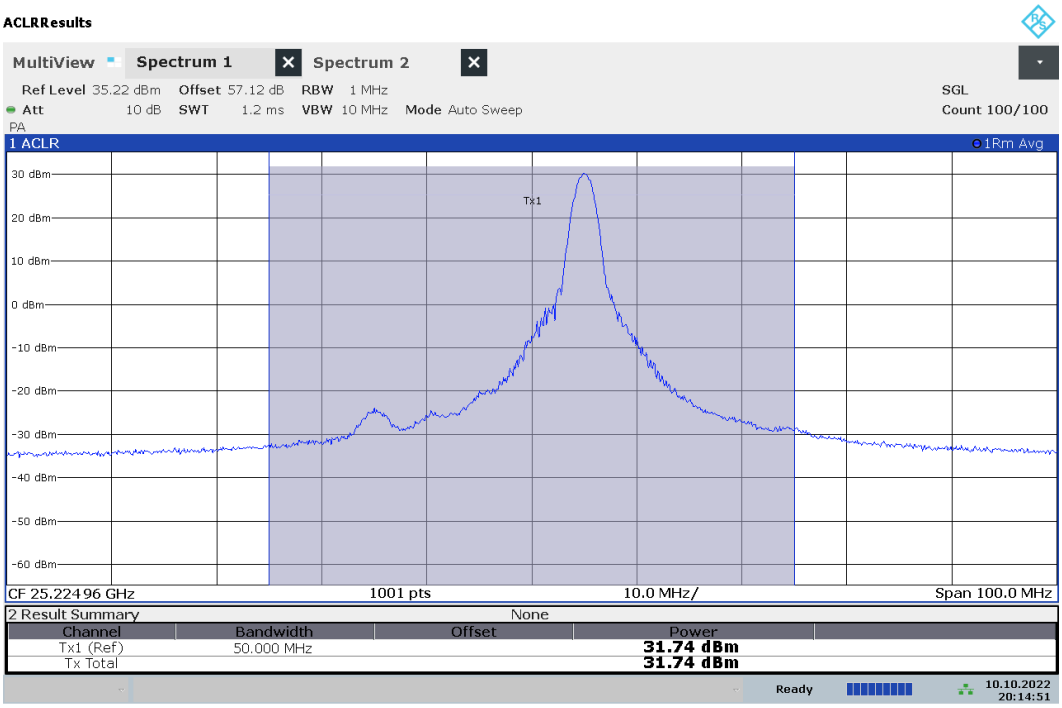


08:41:56 30.09.2022

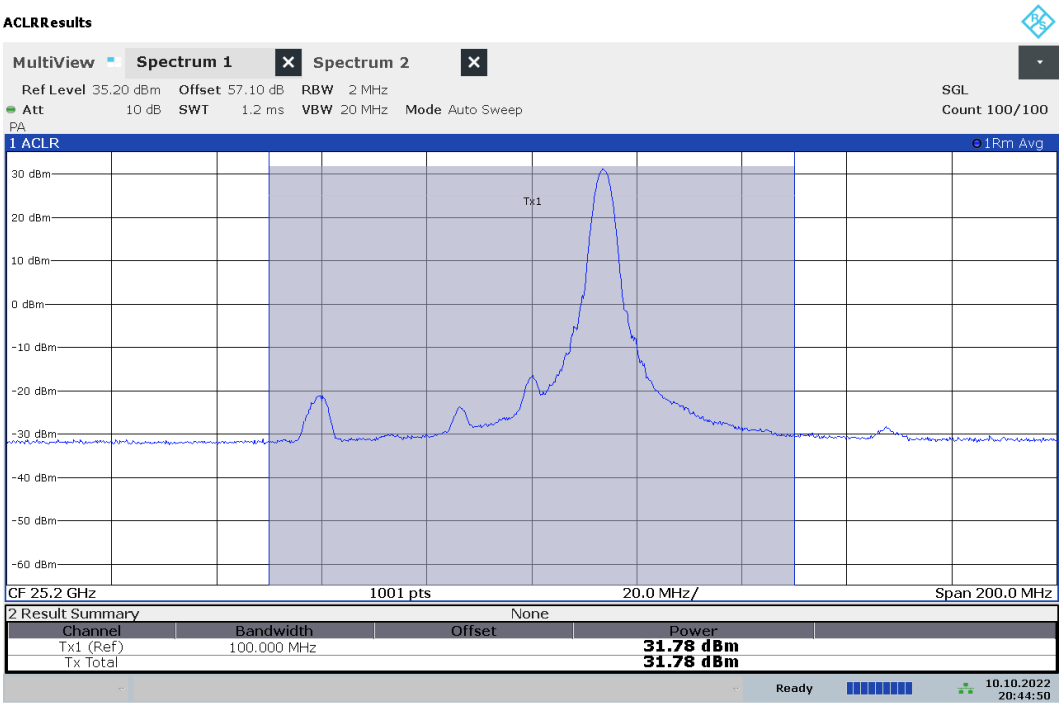
Plot 7-77. Ant 1 EIRP Plot (Band n258-R2 − 100MHz-2CC − pi/2-BPSK – High Channel)

10:07:34 30.09.2022

Plot 7-78. Ant 1 EIRP Plot (Band n258-R2 − 100MHz-3CC − QPSK – High Channel)



Plot 7-79. Ant 2 EIRP Plot (Band n258-R2 − 50MHz-1CC − QPSK – High Channel)



Plot 7-80. Ant 2 EIRP Plot (Band n258-R2 − 100MHz-1CC − pi/2-BPSK – High Channel)

01:53:40 11.10.2022

Plot 7-81. Ant 2 EIRP Plot (Band n258-R2 − 100MHz-2CC – pi/2-BPSK – High Channel)

01:45:34 11.10.2022

Plot 7-82. Ant 2 EIRP Plot (Band n258-R2 − 100MHz-3CC – pi/2-BPSK – High Channel)

Band n261 Beam ID Configurations

Mode	Channel	Beam Polarization	Beam ID	Beam ID Pair
SISO	Low	H	163	-
		V	26	-
	Mid	H	153	-
		V	36	-
	High	H	164	-
		V	26	-
MIMO	Low	2Tx/MIMO	154	26
	Mid	2Tx/MIMO	164	36
	High	2Tx/MIMO	154	26

Table 7-18. Ant 1 Worst Case Beam ID

Mode	Channel	Beam Polarization	Beam ID	Beam ID Pair
SISO	Low	H	159	-
		V	40	-
	Mid	H	159	-
		V	39	-
	High	H	159	-
		V	39	-
MIMO	Low	2Tx/MIMO	158	30
	Mid	2Tx/MIMO	159	31
	High	2Tx/MIMO	158	30

Table 7-19. Ant 2 Worst Case Beam ID

Band n261

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	27525.00	DFT-s-OFDM	π/2 BPSK	26+154	H + V	2Tx	H	103	81	1 / 19	**32.16**
		Mid	27924.96	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	103	96	1 / 19	33.01
				DFT-s-OFDM	QPSK	36	V	SISO	V	244	74.8	1 / 16	25.80
				DFT-s-OFDM	QPSK	153	H	SISO	H	278	112.3	1 / 19	29.23
				CP-OFDM	QPSK	36+164	H + V	MIMO	H	103	96	1 / 19	29.92
				CP-OFDM	QPSK	36	V	SISO	V	244	74.8	1 / 16	21.46
				CP-OFDM	QPSK	153	H	SISO	H	278	112.3	1 / 19	25.93
				DFT-s-OFDM	π/2 BPSK	36+164	H + V	2Tx	H	103	96	1 / 19	**33.06**
				DFT-s-OFDM	16QAM	36+164	H + V	2Tx	H	103	96	1 / 19	30.76
				DFT-s-OFDM	64QAM	36+164	H + V	2Tx	H	103	96	1 / 19	28.11
		High	28324.92	DFT-s-OFDM	π/2 BPSK	26+164	H + V	2Tx	H	102	80.8	1 / 19	**29.94**

Table 7-20. Ant 1 EIRP Data (Band n261 − 50MHz)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	27550.08	DFT-s-OFDM	π/2 BPSK	26+154	H + V	2Tx	H	76	90	1 / 33	**29.54**
		Mid	27924.96	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	77	84.5	1 / 33	32.48
				DFT-s-OFDM	QPSK	36	V	SISO	V	244	74.8	1 / 33	26.23
				DFT-s-OFDM	QPSK	153	H	SISO	H	278	112.3	1 / 33	29.44
				CP-OFDM	QPSK	36+164	H + V	MIMO	H	77	84.5	1 / 33	29.48
				CP-OFDM	QPSK	36	V	SISO	V	244	74.8	1 / 33	22.85
				CP-OFDM	QPSK	153	H	SISO	H	278	112.3	1 / 33	25.68
				DFT-s-OFDM	π/2 BPSK	36+164	H + V	2Tx	H	77	84.5	1 / 33	**32.55**
				DFT-s-OFDM	16QAM	36+164	H + V	2Tx	H	77	84.5	1 / 33	30.31
				DFT-s-OFDM	64QAM	36+164	H + V	2Tx	H	77	84.5	1 / 33	27.47
		High	28299.96	DFT-s-OFDM	π/2 BPSK	26+164	H + V	2Tx	H	77	88	1 / 33	**27.54**
100+100	2	Low	27600.06	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	H	76	90	64 / 0	**24.31**
		Mid	27925.02	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	77	84.5	64 / 0	**26.77**
				CP-OFDM	QPSK	36+164	H + V	MIMO	H	77	84.5	66 / 0	24.74
				DFT-s-OFDM	π/2 BPSK	36+164	H + V	2Tx	H	77	84.5	64 / 0	26.70
				DFT-s-OFDM	16QAM	36+164	H + V	2Tx	H	77	84.5	64 / 0	24.68
				DFT-s-OFDM	64QAM	36+164	H + V	2Tx	H	77	84.5	64 / 0	22.62
		High	28249.98	DFT-s-OFDM	QPSK	26+164	H + V	2Tx	H	77	88	64 / 0	**23.42**
100+100+100	3	Low	27650.04	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	H	76	90	64 / 0	**24.66**
		Mid	27924.96	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	77	84.5	64 / 0	**26.50**
				CP-OFDM	QPSK	36+164	H + V	MIMO	H	77	84.5	66 / 0	24.52
				DFT-s-OFDM	π/2 BPSK	36+164	H + V	2Tx	H	77	84.5	64 / 0	26.40
				DFT-s-OFDM	16QAM	36+164	H + V	2Tx	H	77	84.5	1 / 33	24.35
				DFT-s-OFDM	64QAM	36+164	H + V	2Tx	H	77	84.5	1 / 33	23.15
		High	28200.00	DFT-s-OFDM	QPSK	26+164	H + V	2Tx	H	77	88	64 / 0	**24.32**
00+100+100+10	4	Low	27700.02	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	H	76	90	64 / 0	**25.93**
		Mid	27925.02	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	77	84.5	64 / 0	**26.32**
				CP-OFDM	QPSK	36+164	H + V	MIMO	H	77	84.5	66 / 0	24.01
				DFT-s-OFDM	π/2 BPSK	36+164	H + V	2Tx	H	77	84.5	64 / 0	26.15
				DFT-s-OFDM	16QAM	36+164	H + V	2Tx	H	77	84.5	64 / 0	24.18
				DFT-s-OFDM	64QAM	36+164	H + V	2Tx	H	77	84.5	64 / 0	22.21
		High	28150.02	DFT-s-OFDM	QPSK	26+164	H + V	2Tx	H	77	88	64 / 0	**25.43**

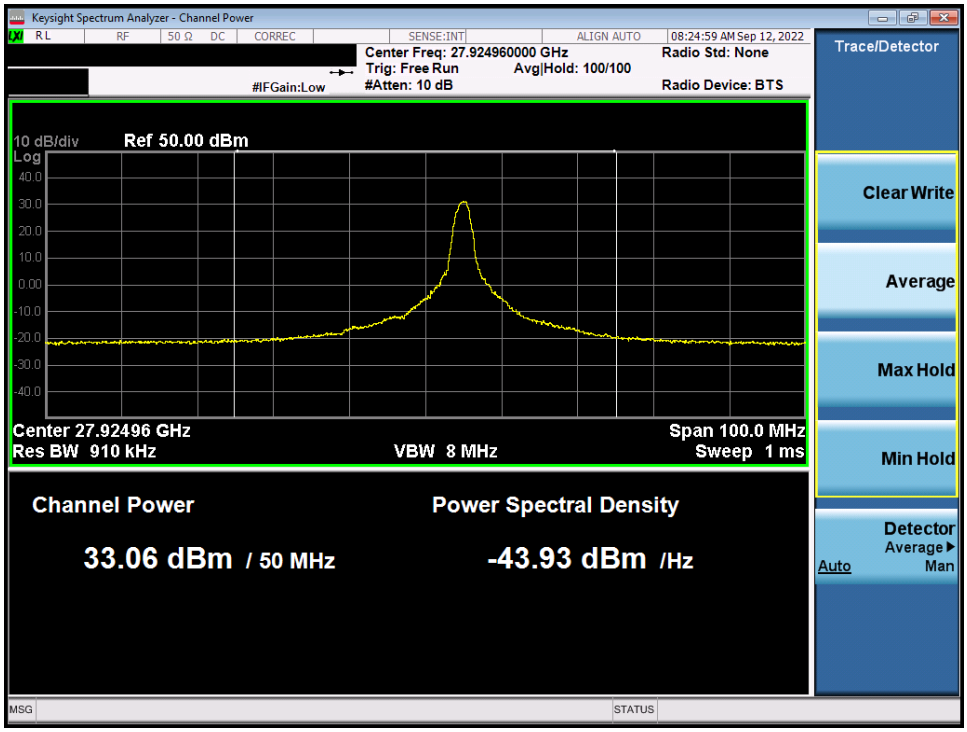
Table 7-21. Ant 1 EIRP Data (Band n261 − 100MHz)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	27525.00	DFT-s-OFDM	π/2 BPSK	30+158	H + V	2Tx	V	85	24.5	1 / 16	**30.97**
		Mid	27924.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	86	25.5	1 / 16	32.00
				DFT-s-OFDM	QPSK	39	V	SISO	H	33	281.2	1 / 12	27.38
				DFT-s-OFDM	QPSK	159	H	SISO	H	105	94.5	1 / 16	30.09
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	86	25.5	1 / 16	29.94
				CP-OFDM	QPSK	39	V	SISO	H	33	281.2	1 / 19	24.23
				CP-OFDM	QPSK	159	H	SISO	H	105	94.5	1 / 16	27.01
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	V	86	25.5	1 / 16	**32.09**
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	86	25.5	1 / 16	29.70
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	86	25.5	1 / 16	26.64
		High	28324.92	DFT-s-OFDM	π/2 BPSK	30+158	H + V	2Tx	V	84	24.5	1 / 16	**30.84**

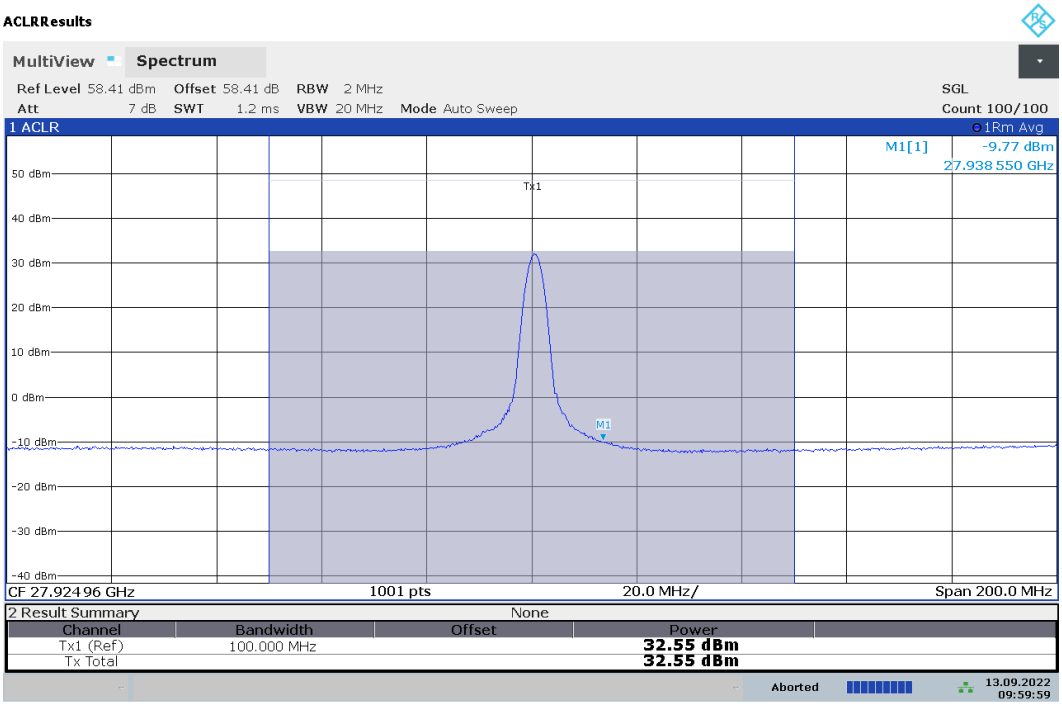
Table 7-22. Ant 2 EIRP Data (Band n261 − 50MHz)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	27550.08	DFT-s-OFDM	π/2 BPSK	30+158	H + V	2Tx	V	85	24.5	1 / 42	**28.42**
		Mid	27924.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	86	25.5	1 / 42	30.56
				DFT-s-OFDM	QPSK	39	V	SISO	H	33	281.2	1 / 23	26.87
				DFT-s-OFDM	QPSK	159	H	SISO	H	105	94.5	1 / 23	28.56
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	86	25.5	1 / 23	29.26
				CP-OFDM	QPSK	39	V	SISO	H	33	281.2	1 / 23	23.75
				CP-OFDM	QPSK	159	H	SISO	H	105	94.5	1 / 23	26.41
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	V	86	25.5	1 / 23	**30.56**
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	86	25.5	1 / 23	30.46
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	86	25.5	1 / 42	27.37
		High	28299.96	DFT-s-OFDM	π/2 BPSK	30+158	H + V	2Tx	V	84	24.5	1 / 42	**29.01**
100+100	2	Low	27600.06	DFT-s-OFDM	QPSK	30+158	H + V	2Tx	V	85	24.5	64 / 0	**28.01**
		Mid	27925.02	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	86	25.5	64 / 0	**28.07**
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	86	25.5	66 / 0	25.98
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	V	86	25.5	64 / 0	27.98
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	86	25.5	64 / 0	25.95
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	86	25.5	1 / 42	24.25
		High	28249.98	DFT-s-OFDM	QPSK	30+158	H + V	2Tx	V	88	27	64 / 0	**27.64**
100+100+100	3	Low	27650.04	DFT-s-OFDM	QPSK	30+158	H + V	2Tx	V	85	24.5	64 / 0	**26.95**
		Mid	27924.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	86	25.5	64 / 0	**27.06**
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	86	25.5	66 / 0	25.13
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	V	86	25.5	64 / 0	27.01
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	86	25.5	1 / 42	25.34
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	86	25.5	1 / 42	24.29
		High	28200.00	DFT-s-OFDM	QPSK	30+158	H + V	2Tx	V	88	27	64 / 0	**25.43**
00+100+100+10	4	Low	27700.02	DFT-s-OFDM	π/2 BPSK	30+158	H + V	2Tx	V	85	24.5	64 / 0	**26.28**
		Mid	27925.02	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	86	25.5	64 / 0	26.66
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	86	25.5	66 / 0	24.99
				DFT-s-OFDM	π/2 BPSK	31+159	H + V	2Tx	V	86	25.5	64 / 0	**26.83**
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	86	25.5	64 / 0	25.14
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	86	25.5	1 / 23	23.18
		High	28150.02	DFT-s-OFDM	π/2 BPSK	30+158	H + V	2Tx	V	88	27	64 / 0	**25.54**

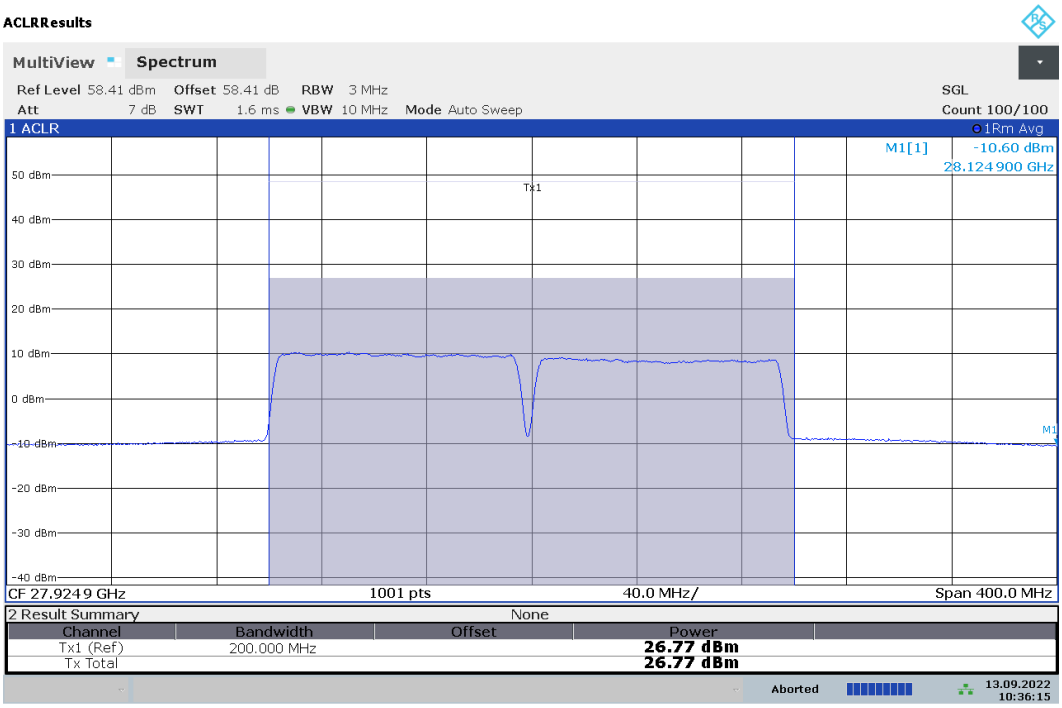
Table 7-23. Ant 2 EIRP Data (Band n261 − 100MHz)



Plot 7-83. Ant 1 EIRP Plot (Band n261 − 50MHz-1CC − pi/2-BPSK – Mid Channel)



Plot 7-84. Ant 1 EIRP Plot (Band n261 − 100MHz-1CC − pi/2-BPSK – Mid Channel)



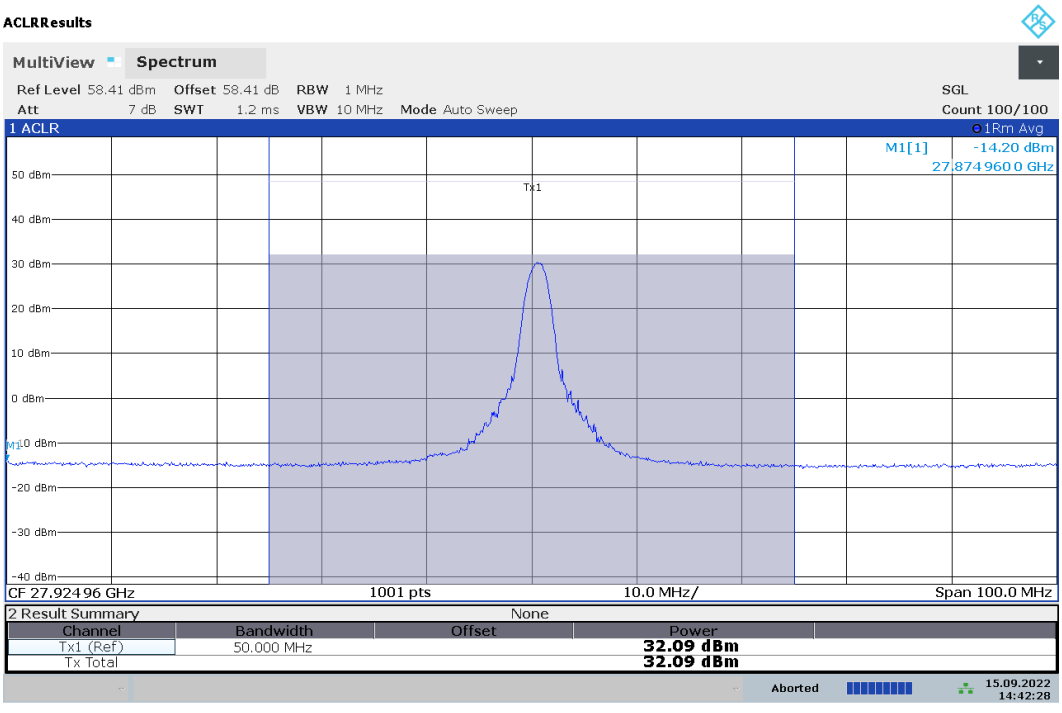
10:36:15 13.09.2022

Plot 7-85. Ant 1 EIRP Plot (Band n261 − 100MHz-2CC – QPSK – Mid Channel)

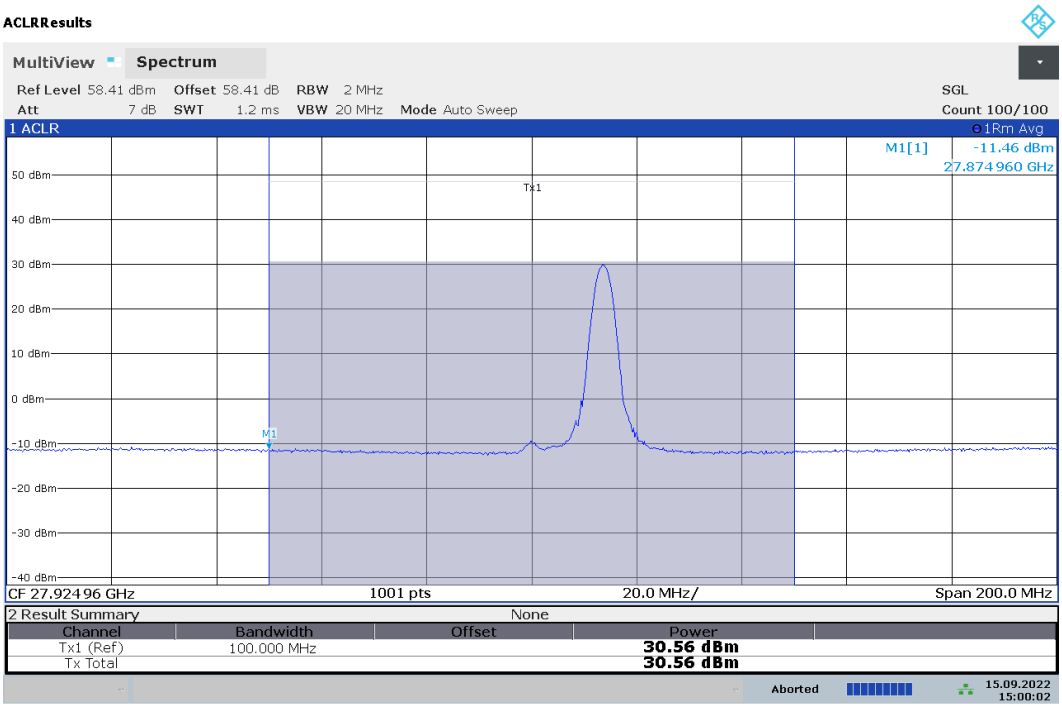
11:22:55 13.09.2022

Plot 7-86. Ant 1 EIRP Plot (Band n261 − 100MHz-3CC – QPSK – Mid Channel)

Plot 7-87. Ant 1 EIRP Plot (Band n261 − 100MHz-4CC – QPSK – Mid Channel)

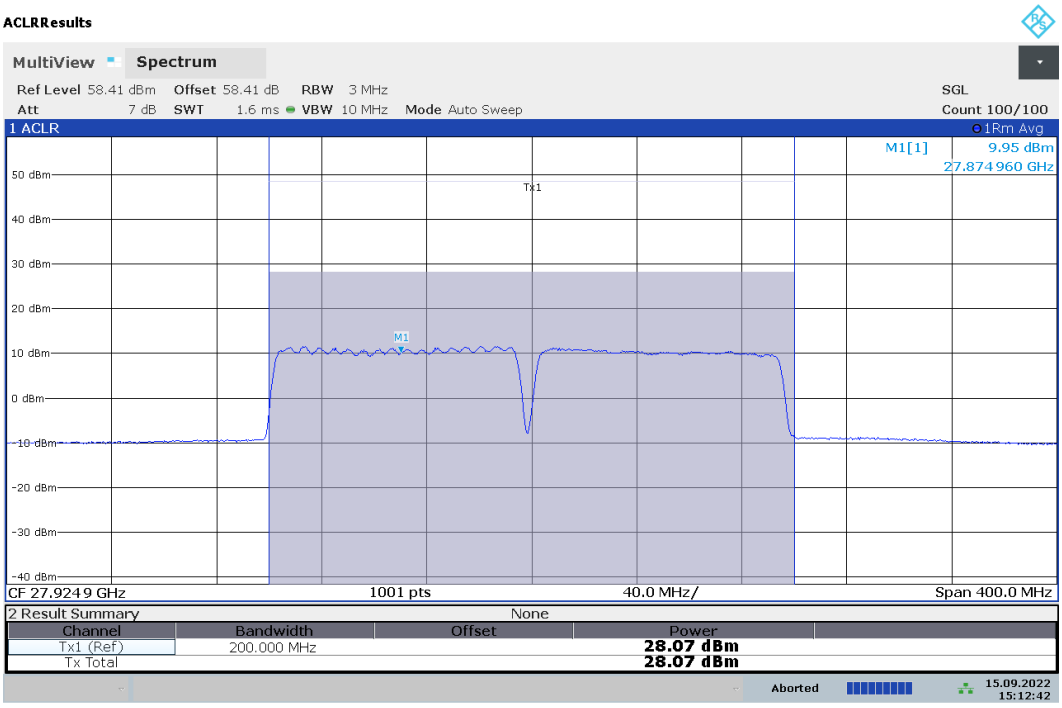


Plot 7-88. Ant 2 EIRP Plot (Band n261 − 50MHz-1CC − pi/2-BPSK – Mid Channel)



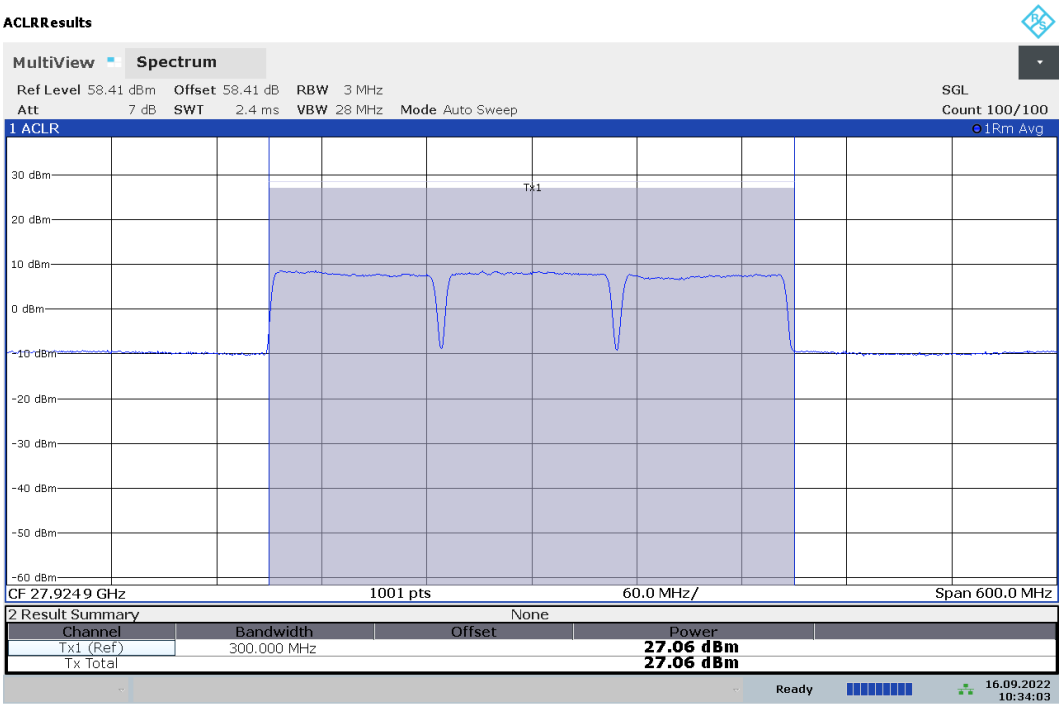
15:00:02 15.09.2022

Plot 7-89. Ant 2 EIRP Plot (Band n261 − 100MHz-1CC − QPSK – Mid Channel)



15:12:43 15.09.2022

Plot 7-90. Ant 2 EIRP Plot (Band n261 − 100MHz-2CC – QPSK – Mid Channel)



10:34:03 16.09.2022

Plot 7-91. Ant 2 EIRP Plot (Band n261 − 100MHz-3CC – QPSK – Mid Channel)

09:59:19 16.09.2022

Plot 7-92. Ant 2 EIRP Plot (Band n261 − 100MHz-4CC – pi/2-BPSK – Mid Channel)

Band n260 Beam ID Configurations

Mode	Channel	Beam Polarization	Beam ID	Beam ID Pair
SISO	Low	H	164	-
		V	36	-
	Mid	H	164	-
		V	26	-
	High	H	154	-
		V	37	-
MIMO	Low	2Tx/MIMO	164	36
	Mid	2Tx/MIMO	154	26
	High	2Tx/MIMO	155	27

Table 7-24. Ant 1 Worst Case Beam ID

Mode	Channel	Beam Polarization	Beam ID	Beam ID Pair
SISO	Low	H	168	-
		V	40	-
	Mid	H	168	-
		V	40	-
	High	H	168	-
		V	40	-
MIMO	Low	2Tx/MIMO	168	40
	Mid	2Tx/MIMO	168	40
	High	2Tx/MIMO	168	40

Table 7-25. Ant 2 Worst Case Beam ID

Band n260

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	37025.04	DFT-s-OFDM	π/2 BPSK	36+164	H + V	2Tx	H	297	253.2	1 / 16	**27.48**
		Mid	38499.96	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	V	308	89.3	1 / 12	28.89
				DFT-s-OFDM	QPSK	26	V	SISO	V	78	63.8	1 / 16	26.97
				DFT-s-OFDM	QPSK	164	H	SISO	V	237	259.2	1 / 16	27.76
				CP-OFDM	QPSK	26+154	H + V	MIMO	V	308	89.3	1 / 12	25.62
				CP-OFDM	QPSK	26	V	SISO	V	78	63.8	1 / 16	23.11
				CP-OFDM	QPSK	164	H	SISO	V	237	259.2	1 / 16	24.50
				DFT-s-OFDM	π/2 BPSK	26+154	H + V	2Tx	V	308	89.3	1 / 12	**28.89**
				DFT-s-OFDM	16QAM	26+154	H + V	2Tx	V	308	89.3	1 / 12	26.84
				DFT-s-OFDM	64QAM	26+154	H + V	2Tx	V	308	89.3	1 / 12	23.65
		High	39975.00	DFT-s-OFDM	π/2 BPSK	27+155	H + V	2Tx	H	251	253	1 / 16	**26.10**

Table 7-26. Ant 1 EIRP Data (Band n260 − 50MHz)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	37050.00	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	292	251.9	1 / 33	**26.40**
		Mid	38499.96	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	V	308	89.3	1 / 33	**28.81**
				DFT-s-OFDM	QPSK	26	V	SISO	H	77	64.2	1 / 33	26.65
				DFT-s-OFDM	QPSK	164	H	SISO	V	237	259.2	1 / 33	27.92
				CP-OFDM	QPSK	26+154	H + V	MIMO	V	308	89.3	1 / 33	25.38
				CP-OFDM	QPSK	26	V	SISO	H	77	64.2	1 / 33	23.01
				CP-OFDM	QPSK	164	H	SISO	V	237	259.2	1 / 33	24.52
				DFT-s-OFDM	π/2 BPSK	26+154	H + V	2Tx	V	308	89.3	1 / 33	28.73
				DFT-s-OFDM	16QAM	26+154	H + V	2Tx	V	308	89.3	1 / 33	26.67
				DFT-s-OFDM	64QAM	26+154	H + V	2Tx	V	308	89.3	1 / 33	23.49
		High	39949.92	DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	270	251.5	1 / 42	**26.02**
100+100	2	Low	37099.98	DFT-s-OFDM	π/2 BPSK	36+164	H + V	2Tx	H	75	279.2	64 / 0	**21.56**
		Mid	38500.02	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	V	308	89.3	64 / 0	22.90
				CP-OFDM	QPSK	26+154	H + V	MIMO	V	308	89.3	66 / 0	21.43
				DFT-s-OFDM	π/2 BPSK	26+154	H + V	2Tx	V	308	89.3	64 / 0	**22.94**
				DFT-s-OFDM	16QAM	26+154	H + V	2Tx	V	308	89.3	64 / 0	21.43
				DFT-s-OFDM	64QAM	26+154	H + V	2Tx	V	308	89.3	64 / 0	19.38
		High	39899.94	DFT-s-OFDM	π/2 BPSK	27+155	H + V	2Tx	H	270	251.5	64 / 0	**20.28**
100+100+100	3	Low	37149.96	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	75	279.2	64 / 0	**21.42**
		Mid	38499.96	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	V	308	89.3	64 / 0	**22.91**
				CP-OFDM	QPSK	26+154	H + V	MIMO	V	308	89.3	66 / 0	21.34
				DFT-s-OFDM	π/2 BPSK	26+154	H + V	2Tx	V	308	89.3	64 / 0	22.88
				DFT-s-OFDM	16QAM	26+154	H + V	2Tx	V	308	89.3	1 / 23	21.48
				DFT-s-OFDM	64QAM	26+154	H + V	2Tx	V	308	89.3	1 / 23	20.59
		High	39849.96	DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	270	251.5	64 / 0	**20.20**
)0+100+100+10	4	Low	37199.94	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	75	279.2	64 / 0	**21.02**
		Mid	38500.02	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	V	308	89.3	64 / 0	**22.42**
				CP-OFDM	QPSK	26+154	H + V	MIMO	V	308	89.3	66 / 0	21.31
				DFT-s-OFDM	π/2 BPSK	26+154	H + V	2Tx	V	308	89.3	64 / 0	22.41
				DFT-s-OFDM	16QAM	26+154	H + V	2Tx	V	308	89.3	1 / 33	20.82
				DFT-s-OFDM	64QAM	26+154	H + V	2Tx	V	308	89.3	1 / 33	19.69
		High	39799.98	DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	270	251.5	64 / 0	**19.64**

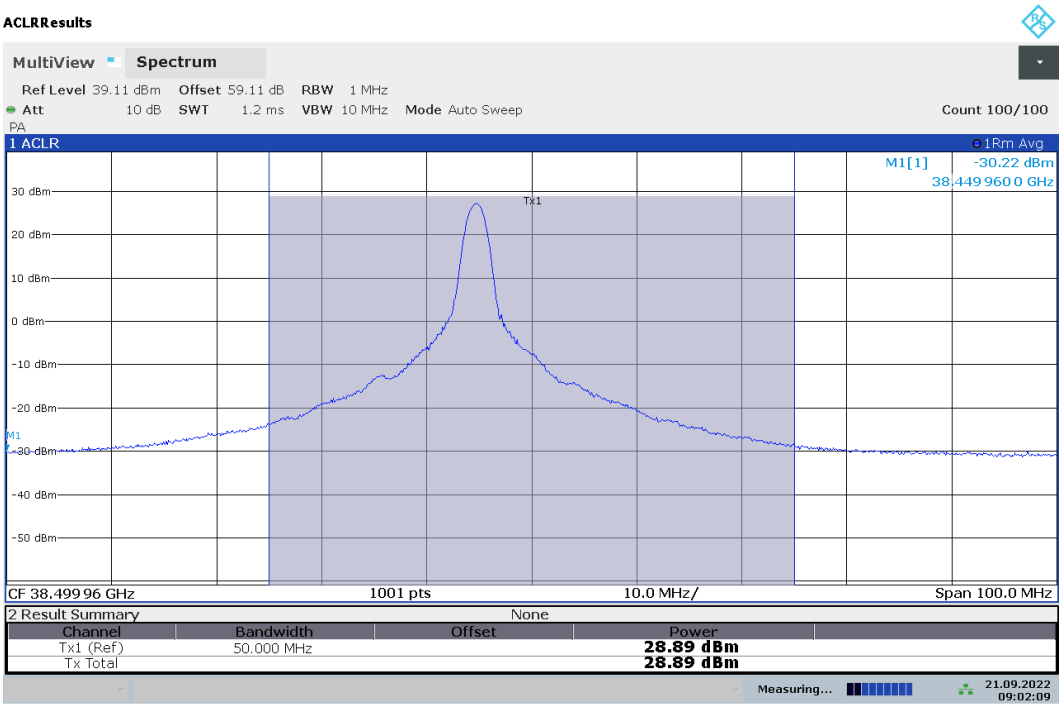
Table 7-27. Ant 1 EIRP Data (Band n260 − 100MHz)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	37025.04	DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	356	272.6	1 / 12	**30.18**
		Mid	38499.96	DFT-s-OFDM	QPSK	40 + 168	H + V	2Tx	H	5	270.6	1 / 12	30.59
				DFT-s-OFDM	QPSK	40	V	SISO	H	3	270.5	1 / 12	28.82
				DFT-s-OFDM	QPSK	168	H	SISO	H	274	149.7	1 / 12	27.77
				CP-OFDM	QPSK	40 + 168	H + V	MIMO	H	5	270.6	1 / 12	27.36
				CP-OFDM	QPSK	40	V	SISO	H	3	270.5	1 / 12	25.62
				CP-OFDM	QPSK	168	H	SISO	H	274	149.7	1 / 12	24.43
				DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	5	270.6	1 / 12	**30.63**
				DFT-s-OFDM	16QAM	40 + 168	H + V	2Tx	H	5	270.6	1 / 12	28.54
				DFT-s-OFDM	64QAM	40 + 168	H + V	2Tx	H	5	270.6	1 / 12	24.98
		High	39975.00	DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	9	270.9	1 / 12	**28.52**

Table 7-28. Ant 2 EIRP Data (Band n260 − 50MHz)

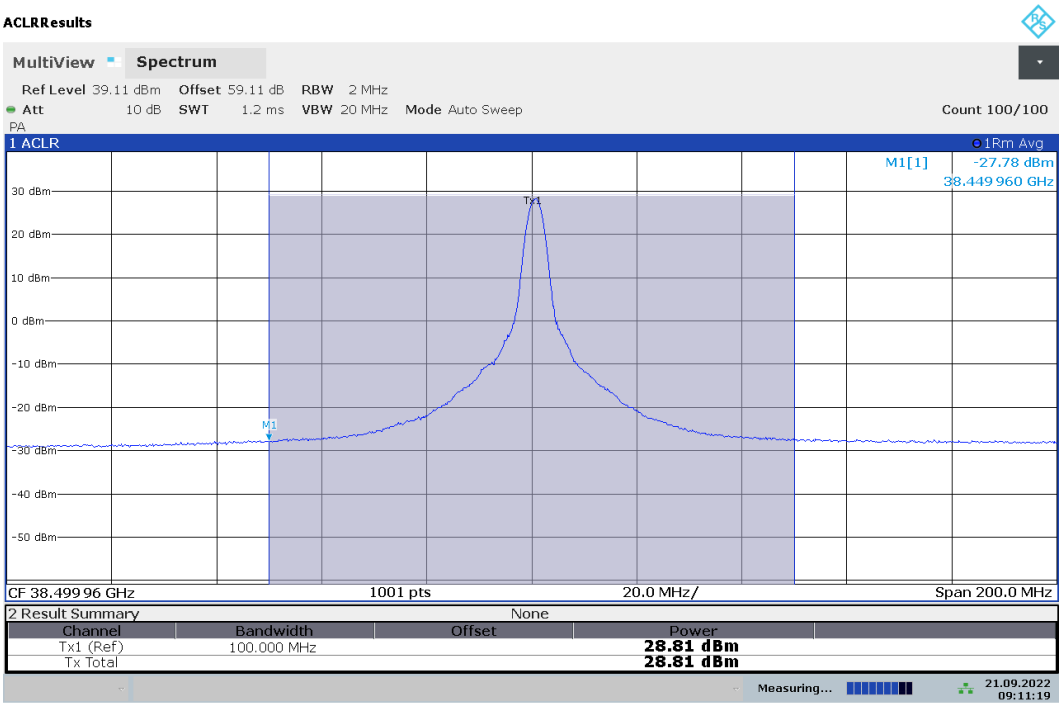
Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	37050.00	DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	358	273.6	1 / 33	**29.70**
		Mid	38499.96	DFT-s-OFDM	QPSK	40 + 168	H + V	2Tx	H	4	270.4	1 / 23	30.51
				DFT-s-OFDM	QPSK	40	V	SISO	H	4	271.1	1 / 23	29.48
				DFT-s-OFDM	QPSK	168	H	SISO	H	274	151.4	1 / 42	27.40
				CP-OFDM	QPSK	40 + 168	H + V	MIMO	H	4	270.4	1 / 23	27.21
				CP-OFDM	QPSK	40	V	SISO	H	4	271.1	1 / 23	26.26
				CP-OFDM	QPSK	168	H	SISO	H	274	151.4	1 / 42	24.49
				DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	4	270.4	1 / 23	**30.56**
				DFT-s-OFDM	16QAM	40 + 168	H + V	2Tx	H	4	270.4	1 / 23	27.78
				DFT-s-OFDM	64QAM	40 + 168	H + V	2Tx	H	4	270.4	1 / 23	24.89
		High	39949.92	DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	7	271.2	1 / 23	**28.39**
100+100	2	Low	37099.98	DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	354	273.2	64 / 0	**23.93**
		Mid	38500.02	DFT-s-OFDM	QPSK	40 + 168	H + V	2Tx	H	3	271.8	64 / 0	24.87
				CP-OFDM	QPSK	40 + 168	H + V	MIMO	H	3	271.8	66 / 0	23.05
				DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	3	271.8	64 / 0	**24.89**
				DFT-s-OFDM	16QAM	40 + 168	H + V	2Tx	H	3	271.8	64 / 0	22.94
				DFT-s-OFDM	64QAM	40 + 168	H + V	2Tx	H	3	271.8	64 / 0	21.19
		High	39899.94	DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	4	272.2	64 / 0	**24.08**
100+100+100	3	Low	37149.96	DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	355	271.5	64 / 0	**23.70**
		Mid	38499.96	DFT-s-OFDM	QPSK	40 + 168	H + V	2Tx	H	3	270.6	64 / 0	24.49
				CP-OFDM	QPSK	40 + 168	H + V	MIMO	H	3	270.6	66 / 0	22.98
				DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	3	270.6	64 / 0	**24.52**
				DFT-s-OFDM	16QAM	40 + 168	H + V	2Tx	H	3	270.6	64 / 0	22.95
				DFT-s-OFDM	64QAM	40 + 168	H + V	2Tx	H	3	270.6	1 / 33	21.46
		High	39849.96	DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	4	271.7	64 / 0	**24.35**
00+100+100+10	4	Low	37199.94	DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	355	272.4	64 / 0	**23.29**
		Mid	38500.02	DFT-s-OFDM	QPSK	40 + 168	H + V	2Tx	H	3	271.8	64 / 0	24.04
				CP-OFDM	QPSK	40 + 168	H + V	MIMO	H	3	271.8	66 / 0	22.47
				DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	3	271.8	64 / 0	**24.06**
				DFT-s-OFDM	16QAM	40 + 168	H + V	2Tx	H	3	271.8	64 / 0	22.47
				DFT-s-OFDM	64QAM	40 + 168	H + V	2Tx	H	3	271.8	1 / 42	20.72
		High	39799.98	DFT-s-OFDM	π/2 BPSK	40 + 168	H + V	2Tx	H	4	272.5	64 / 0	**23.98**

Table 7-29. Ant 2 EIRP Data (Band n260 − 100MHz)



09:02:10 21.09.2022

Plot 7-93. Ant 1 EIRP Plot (Band n260 − 50MHz-1CC − pi/2-BPSK – Mid Channel)



09:11:19 21.09.2022

Plot 7-94. Ant 1 EIRP Plot (Band n260 − 100MHz-1CC − QPSK – Mid Channel)

09:31:12 21.09.2022

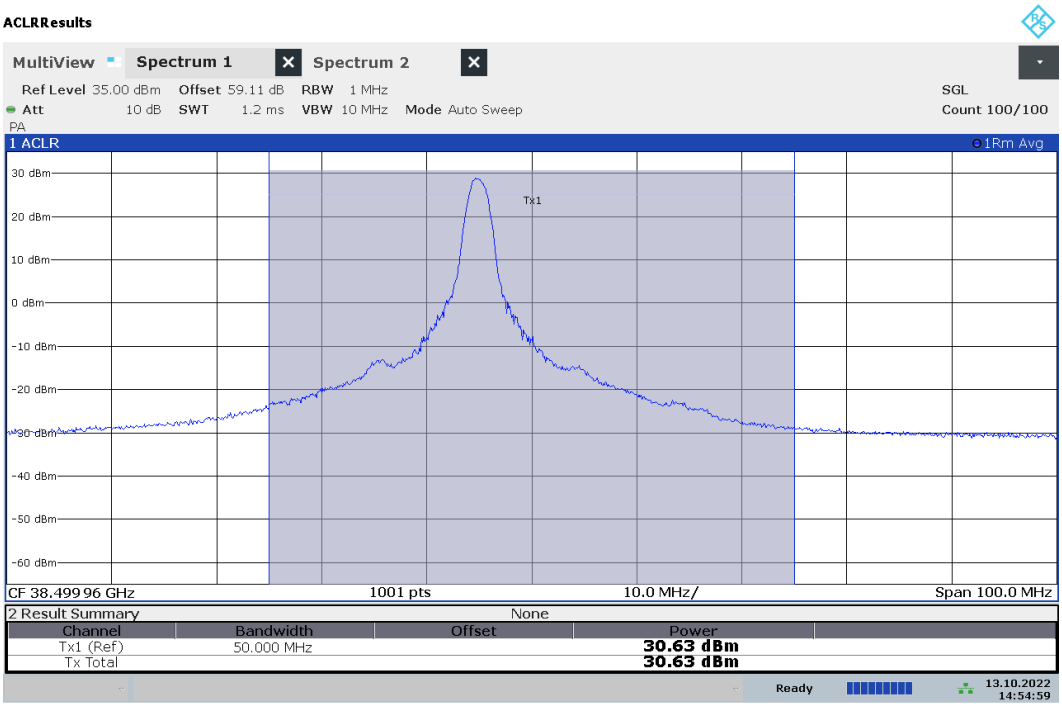
Plot 7-95. Ant 1 EIRP Plot (Band n260 − 100MHz-2CC − pi/2-BPSK – Mid Channel)

09:43:07 21.09.2022

Plot 7-96. Ant 1 EIRP Plot (Band n260 − 100MHz-3CC − QPSK – Mid Channel)

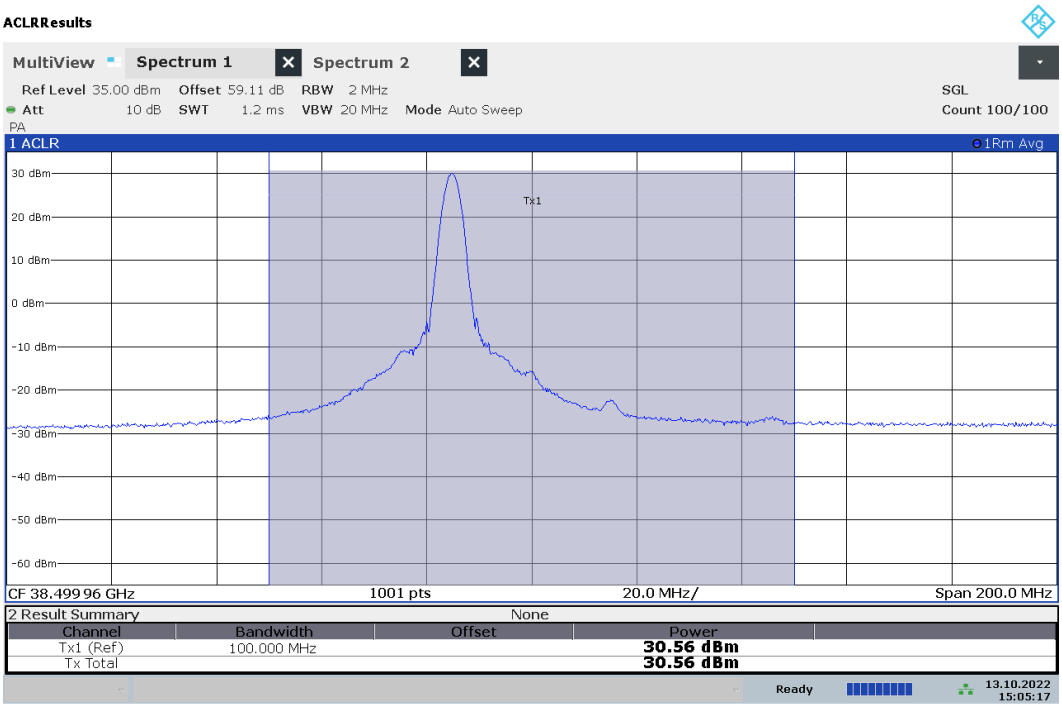
09:59:26 21.09.2022

Plot 7-97. Ant 1 EIRP Plot (Band n260 − 100MHz-4CC − QPSK – Mid Channel)



14:55:00 13.10.2022

Plot 7-98. Ant 2 EIRP Plot (Band n260 − 50MHz-1CC − pi/2-BPSK – Mid Channel)



15:05:18 13.10.2022

Plot 7-99. Ant 2 EIRP Plot (Band n260 − 100MHz-1CC − pi/2-BPSK – Mid Channel)

15:53:57 13.10.2022

Plot 7-100. Ant 2 EIRP Plot (Band n260 − 100MHz-2CC – pi/2-BPSK – Mid Channel)

16:05:20 13.10.2022

Plot 7-101. Ant 2 EIRP Plot (Band n260 − 100MHz-3CC – pi/2-BPSK – Mid Channel)

16:16:48 13.10.2022

Plot 7-102. Ant 2 EIRP Plot (Band n260 − 100MHz-4CC – pi/2-BPSK – Mid Channel)

7.4 Radiated Spurious and Harmonic Emissions

§2.1051, §30.203

Test Overview

The spectrum is scanned from 30MHz to 100GHz for n258-R1, n258-R2, and n261. For n260, the spectrum is scanned from 30MHz to 200GHz. All out of band emissions are measured in a radiated test setup while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All modulations were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The conductive power or total radiated power of any emissions outside a licensee's frequency block shall be -13dBm/1MHz.

Test Procedure Used

ANSI C63.26-2015 Section 5.7.4
KDB 842590 D01 v01r02 Section 4.4.3

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to 100 GHz for n258/n261 and 200GHz for n260. Several plots are used to show investigations in this entire span.
2. Detector = RMS
3. Trace mode = trace average
4. Sweep time = auto couple
5. Number of sweep points ≥ 2 x Span/RBW
6. The trace was allowed to stabilize
7. RBW = 1MHz, VBW = 3MHz

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) All radiated spurious emissions were measured as EIRP to compare with the §30.203 TRP limits. Emissions that were found to be non-compliant using the EIRP method were re-measured using the Spherical Grid TRP Method per KDB 842590.

3) The plots in this section were taken with the analyzer set to max hold. All final measurements shown in the tables that accompany the plots were taken with trace averaging performed over 100 sweeps while the analyzer was triggering on a specific emission of interest.

4) Elements within the same antenna array are correlated to produce beamforming array gain. Antenna arrays cannot be correlated with another antenna array. During testing, only one antenna array was active.

5) The plots from 1-200GHz show corrected average EIRP levels. The average EIRP reported below is calculated per section 5.2.7 of ANSI C63.26-2015 which states: EIRP (dBm) = E (dBµV/m) + 20log(D) − 104.8; where D is the measurement distance (in the far field region) in m. The field strength E is calculated E (dBµV/m) = Spectrum Analyzer Level (dBm) + Antenna Factor (dB/m) + Cable Loss (dB) + Harmonic Mixer Conversion Loss (dB) + 107. All appropriate Antenna Factor and Cable Loss have been applied in the spectrum analyzer for each measurement. For measurements > 40GHz, Harmonic Mixer Conversion Loss was also applied to the spectrum analyzer.

6) Emissions below 18GHz were measured at a 3 meter test distance, while emissions above 18GHz were measured at the appropriate far field distance. The far field of the mmWave signal is based on formula: R > 2D^2/wavelength, 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.

Frequency Range (GHz)	Wavelength(cm)	Far Field Distance (m)	Measurement Distance (m)
18-40	0.749	0.54	1.00
40-60	0.500	1.39	1.50
60-90	0.333	0.91	1.00
90-140	0.214	0.58	1.00
140-200	0.150	0.39	1.00

Table 7-30. Far-Field Distance & Measurement Distance per Frequency Range

7) All emissions from 30MHz - 40GHz were measured using a spectrum analyzer with an internal preamplifier. Emissions >40GHz were measured using a harmonic mixer with the spectrum analyzer.

8) All RSE's were measured with 1CC. It was determined that adding more CC's causes the overall amplitude of just 1CC to decrease, therefore, 1CC is the worst case for the purposes of spurious emissions measurements.

9) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

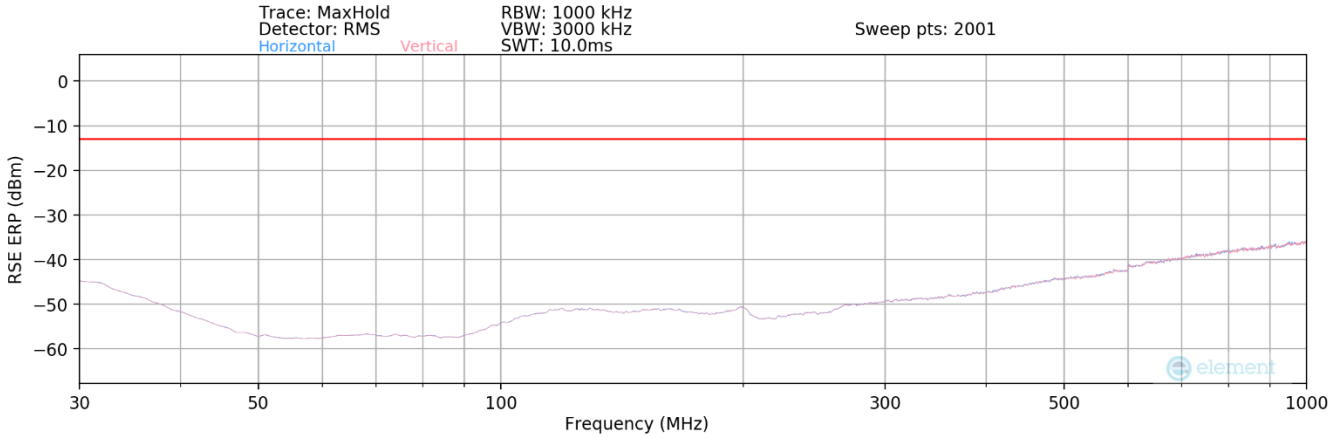
10) All RSE's were investigated in EN-DC mode and with 802.11 chipset active. It was determined that there is no new emission introduced by EN-DC mode, or the 802.11 chipset. For EN-DC mode, n261 uses LTE B2, B4, B5, B12, B13, B48 and B66, n260 uses LTE B2, B5, B12, B13, B14, B30, B48 and B66 and n258 uses LTE B2, B5, B12, B14, B30, and B66.

11) Additionally, this device supports anchor bands operating in FR1 spectrum. The n261 band uses NR Bands n2, n5, n25, n41, n48, n66 and n77. The n260 band uses NR Bands n2, n5, n12, n25, n30, n41, n48, n66 and n77. The n258 band uses NR Bands NR n2, n5, n12, n25, n30, n41, n66 and n77 as anchor bands.

12) LTE and and FR1 anchor bands supports default configuration and Tx hopping configration. Both configrations were invstigtaed. There was no discernible difference in the spurious emission levels when using different LTE and NR FR1 anchor bands. Thus, FR1 Band n41 was used as a representative anchor band for EN-DC and NR-DC investigations.

Band n258-R1 – Ant 1

30MHz - 1GHz



Plot 7-103. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions ERP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE ERP level is calculated by applying the additional factors shown below for a test distance of 3 meter.

RSE ERP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 – 2.15 (dB)

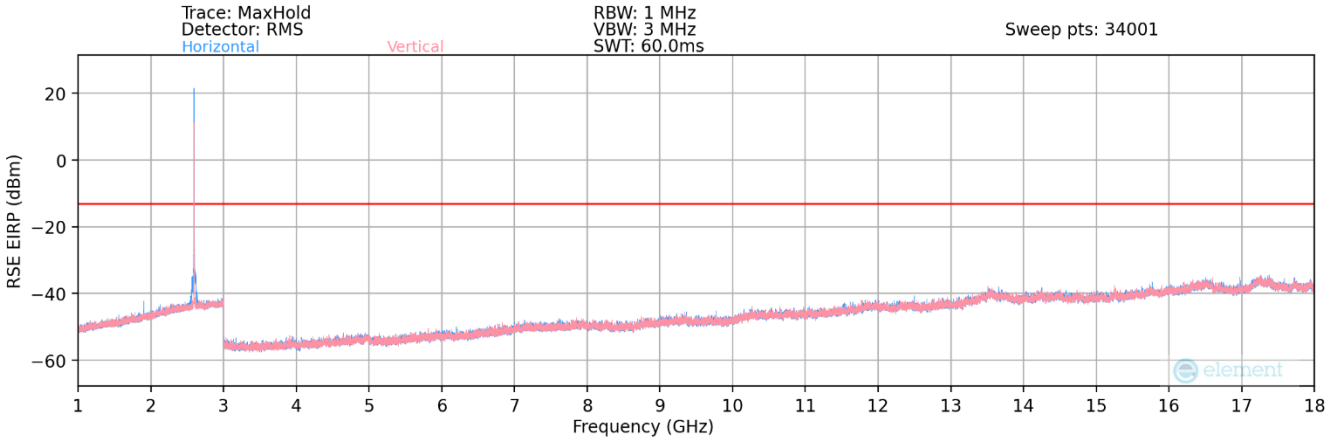
Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Antenna Height [cm]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
576.25	Low	50	2Tx	QPSK	V	-	-	-50.99	-13.00	-37.99
694.30	Mid	50	2Tx	QPSK	V	-	-	-48.55	-13.00	-35.55
817.60	High	50	2Tx	QPSK	V	-	-	-46.97	-13.00	-33.97

Table 7-31. Ant 1 - n258-R1 Radiated Spurious Emissions Table (30MHz - 1GHz)

Notes

The RSE ERP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 3 meter.

1GHz - 18GHz



Plot 7-104. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8

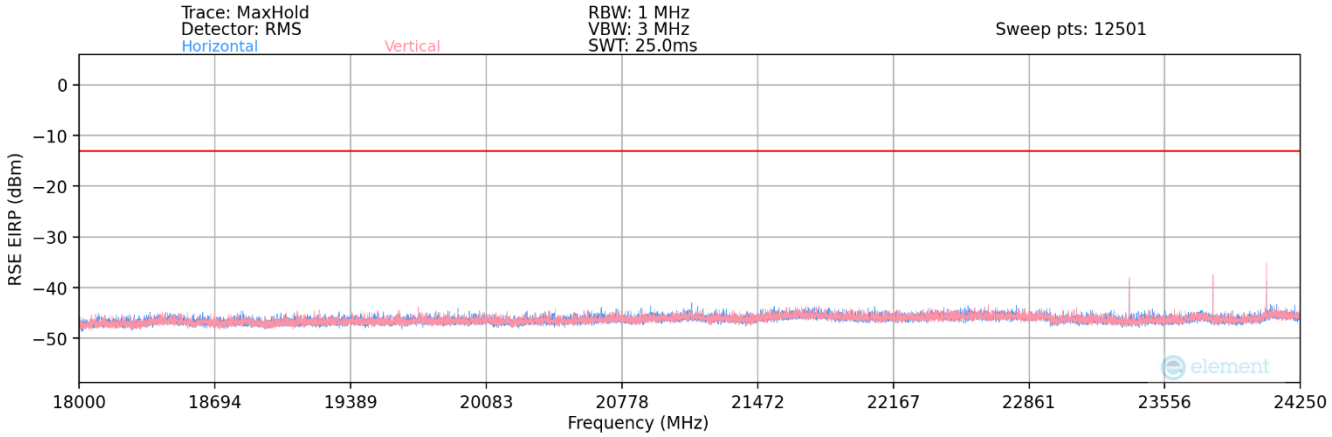
Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Antenna Height [cm]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
8367.00	Low	50	2Tx	QPSK	V	102	313	-51.09	-13.00	-38.09
8442.00	Mid	50	2Tx	QPSK	V	108	313	-52.43	-13.00	-39.43
8517.00	High	50	2Tx	QPSK	V	116	312	-52.52	-13.00	-39.52

Table 7-32. Ant 1 - n258-R1 Radiated Spurious Emissions Table (1GHz - 18GHz)

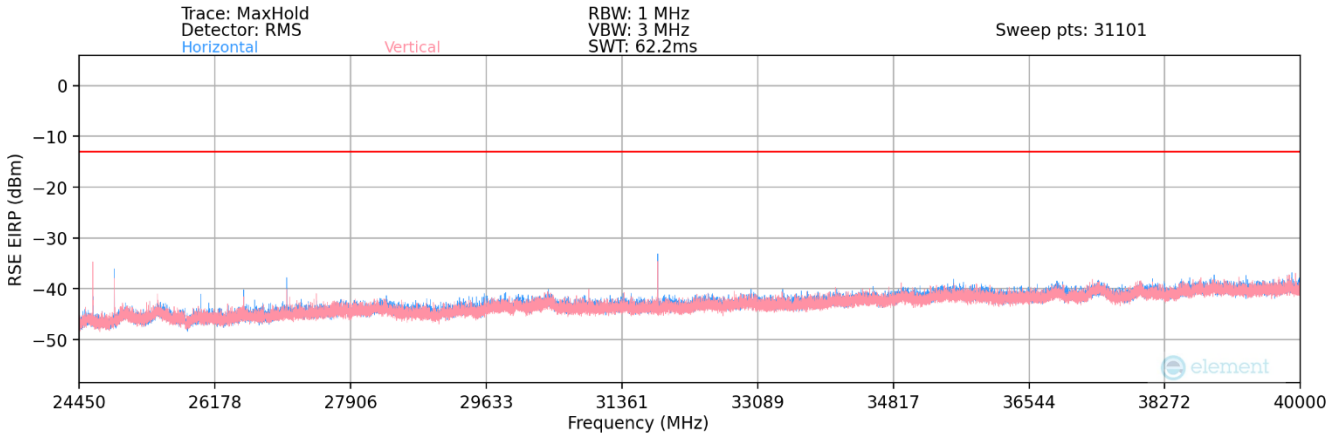
Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 3 meter.

18GHz - 40GHz



Plot 7-105. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)



Plot 7-106. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8

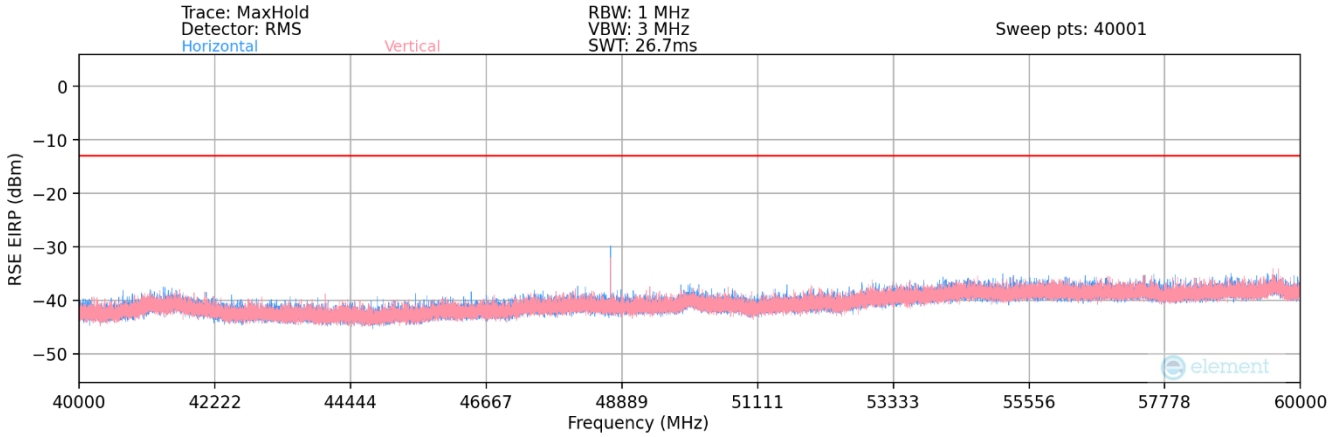
Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
23450.00	Low	50	2Tx	QPSK	V	23	169	-35.81	-13.00	-22.81
23727.50	Low	50	2Tx	QPSK	V	218	313	-36.06	-13.00	-23.06
24824.00	Low	50	2Tx	QPSK	H	220	313	-32.48	-13.00	-19.48
27018.00	Low	50	2Tx	QPSK	H	234	303	-36.03	-13.00	-23.03
23375.00	Mid	50	2Tx	QPSK	V	253	304	-34.52	-13.00	-21.52
23802.50	Mid	50	2Tx	QPSK	V	220	312	-36.95	-13.00	-23.95
24899.00	Mid	50	2Tx	QPSK	H	283	292	-29.22	-13.00	-16.22
27093.00	Mid	50	2Tx	QPSK	H	249	292	-37.26	-13.00	-24.26
31817.00	Mid	50	2Tx	QPSK	H	288	282	-26.15	-13.00	-13.15
23299.80	High	50	2Tx	QPSK	V	292	317	-37.03	-13.00	-24.03
23877.00	High	50	2Tx	QPSK	V	247	315	-38.71	-13.00	-25.71
24974.00	High	50	2Tx	QPSK	H	290	292	-29.21	-13.00	-16.21
27168.00	High	50	2Tx	QPSK	H	250	301	-31.72	-13.00	-18.72

Table 7-33. Ant 1 - n258-R1 Radiated Spurious Emissions Table (18GHz - 40GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 1 meter.

40GHz - 60GHz



Plot 7-107. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1.5 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

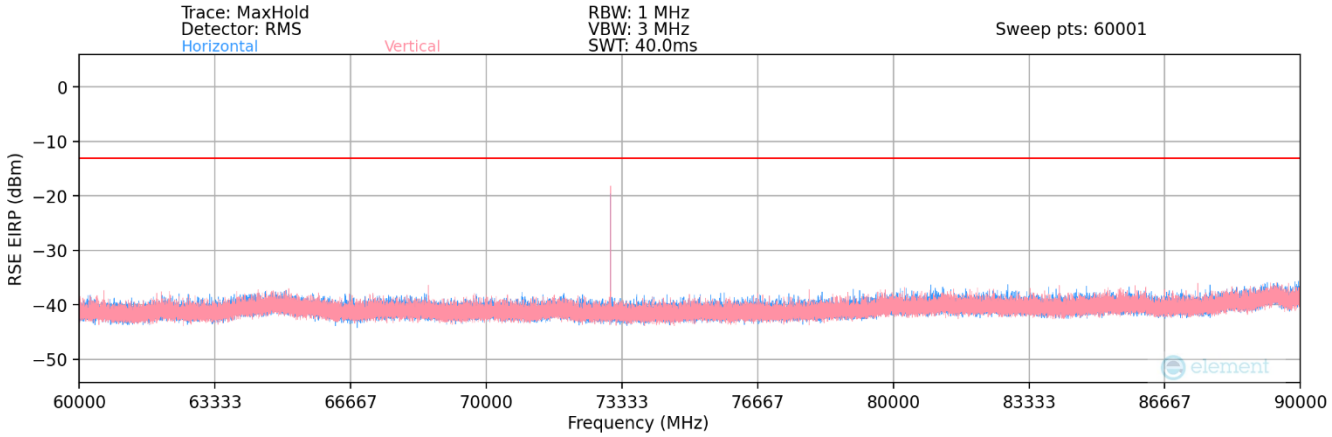
Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
48550.08	Low	50	2Tx	QPSK	H	248	253	-31.52	-13.00	-18.52
48700.08	Mid	50	2Tx	QPSK	H	250	253	-30.37	-13.00	-17.37
48849.84	High	50	2Tx	QPSK	H	250	253	-29.83	-13.00	-16.83

Table 7-34. Ant 1 - n258-R1 Radiated Spurious Emissions Table (40GHz - 60GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1.5 meter.

60GHz - 90GHz



Plot 7-108. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

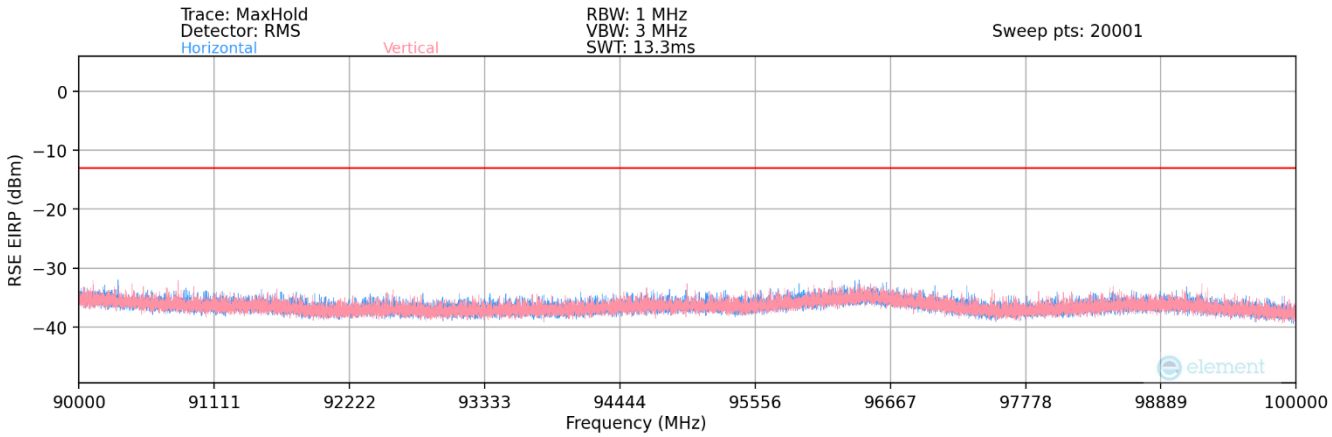
Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
72825.12	Low	50	2Tx	QPSK	V	323	276	-19.65	-13.00	-6.65
73050.12	Mid	50	2Tx	QPSK	V	324	276	-17.66	-13.00	-4.66
73274.76	High	50	2Tx	QPSK	V	324	276	-18.24	-13.00	-5.24

Table 7-35. Ant 1 - n258-R1 Radiated Spurious Emissions Table (60GHz - 90GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

90GHz - 100GHz



Plot 7-109. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
95990.00	Low	50	2Tx	QPSK	V	-	-	-40.64	-13.00	-27.64
96495.00	Mid	50	2Tx	QPSK	V	-	-	-40.07	-13.00	-27.07
97268.00	High	50	2Tx	QPSK	V	-	-	-42.51	-13.00	-29.51

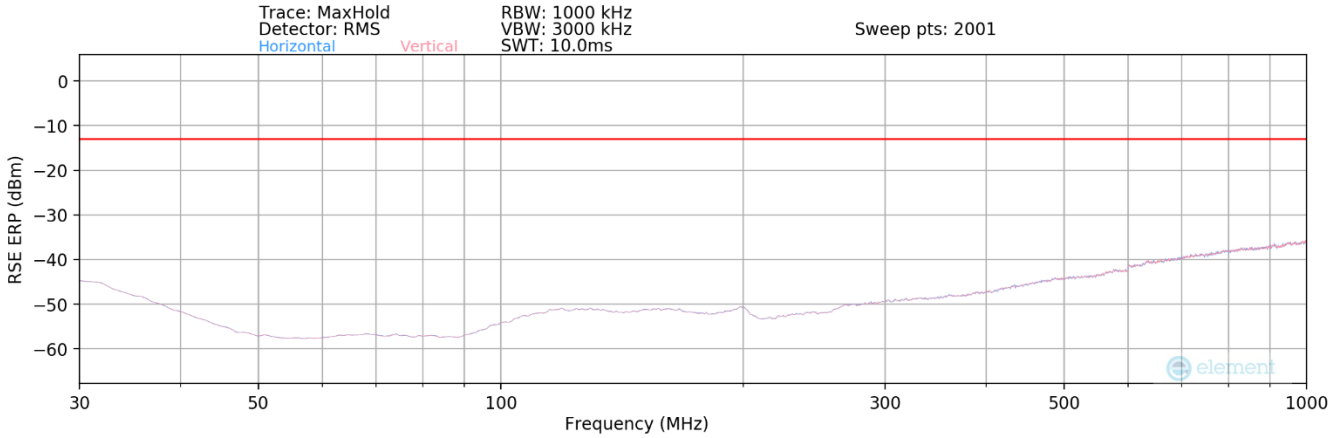
Table 7-36. Ant 1 - n258-R1 Radiated Spurious Emissions Table (90GHz - 100GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

Band n258-R1 – Ant 2

30MHz - 1GHz



Plot 7-110. Ant 2 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions ERP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE ERP level is calculated by applying the additional factors shown below for a test distance of 3 meter.

RSE ERP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 – 2.15 (dB)

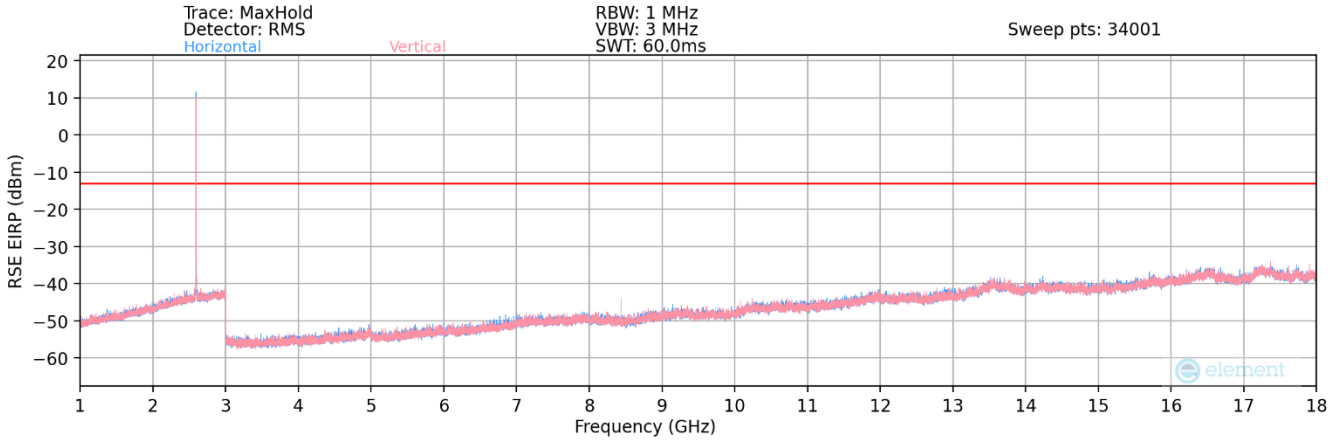
Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Antenna Height [cm]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
99.10	Low	50	2Tx	QPSK	V	-	-	-62.56	-13.00	-49.56
613.45	Mid	50	2Tx	QPSK	V	-	-	-50.36	-13.00	-37.36
895.70	High	50	2Tx	QPSK	V	-	-	-45.97	-13.00	-32.97

Table 7-37. Ant 2 - n258-R1 Radiated Spurious Emissions Table (30MHz - 1GHz)

Notes

The RSE ERP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 3 meter.

1GHz - 18GHz



Plot 7-111. Ant 2 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8

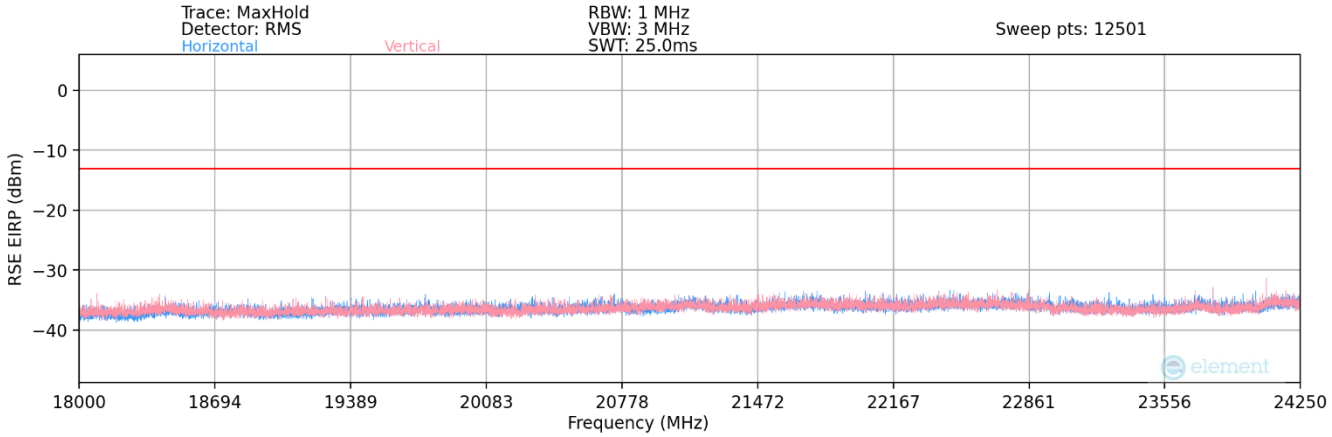
Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Antenna Height [cm]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
8367.00	Low	50	2Tx	QPSK	V	108	135	-44.73	-13.00	-31.73
8442.00	Mid	50	2Tx	QPSK	V	103	135	-45.16	-13.00	-32.16
8517.00	High	50	2Tx	QPSK	V	110	132	-46.78	-13.00	-33.78

Table 7-38. Ant 2 - n258-R1 Radiated Spurious Emissions Table (1GHz - 18GHz)

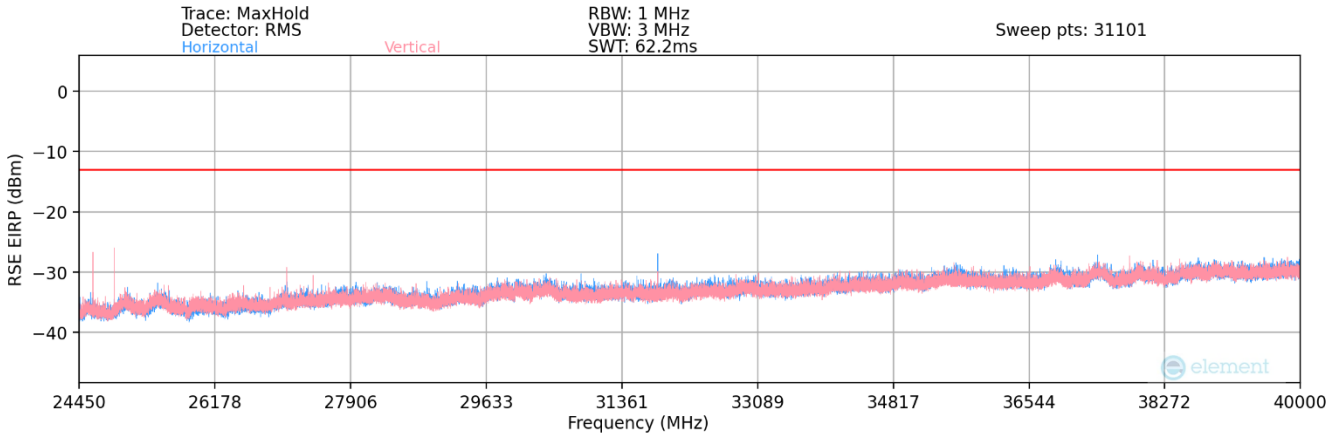
Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 3 meter.

18GHz - 40GHz



Plot 7-112. Ant 2 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)



Plot 7-113. Ant 2 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8

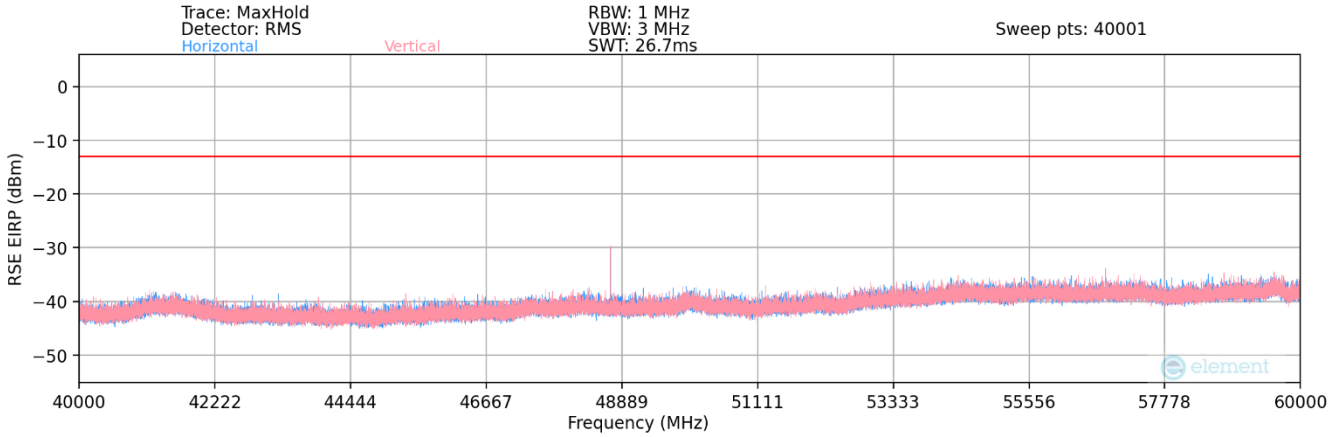
Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
23450.00	Low	50	2Tx	QPSK	V	99	254	-40.98	-13.00	-27.98
23727.50	Low	50	2Tx	QPSK	V	37	95	-39.41	-13.00	-26.41
24824.00	Low	50	2Tx	QPSK	V	26	97	-27.82	-13.00	-14.82
27018.00	Low	50	2Tx	QPSK	V	11	91	-30.92	-13.00	-17.92
23375.00	Mid	50	2Tx	QPSK	V	96	256	-40.83	-13.00	-27.83
23802.50	Mid	50	2Tx	QPSK	V	19	93	-39.98	-13.00	-26.98
24899.00	Mid	50	2Tx	QPSK	V	30	87	-28.71	-13.00	-15.71
27093.00	Mid	50	2Tx	QPSK	V	6	90	-31.16	-13.00	-18.16
31817.00	Mid	50	2Tx	QPSK	H	30	344	-23.94	-13.00	-10.94
23299.80	High	50	2Tx	QPSK	V	98	259	-41.62	-13.00	-28.62
23877.00	High	50	2Tx	QPSK	V	50	99	-38.25	-13.00	-25.25
24974.00	High	50	2Tx	QPSK	V	31	94	-28.12	-13.00	-15.12
27168.00	High	50	2Tx	QPSK	V	31	91	-31.98	-13.00	-18.98

Table 7-39. Ant 2 - n258-R1 Radiated Spurious Emissions Table (18GHz - 40GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 1 meter.

40GHz - 60GHz



Plot 7-114. Ant 2 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1.5 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

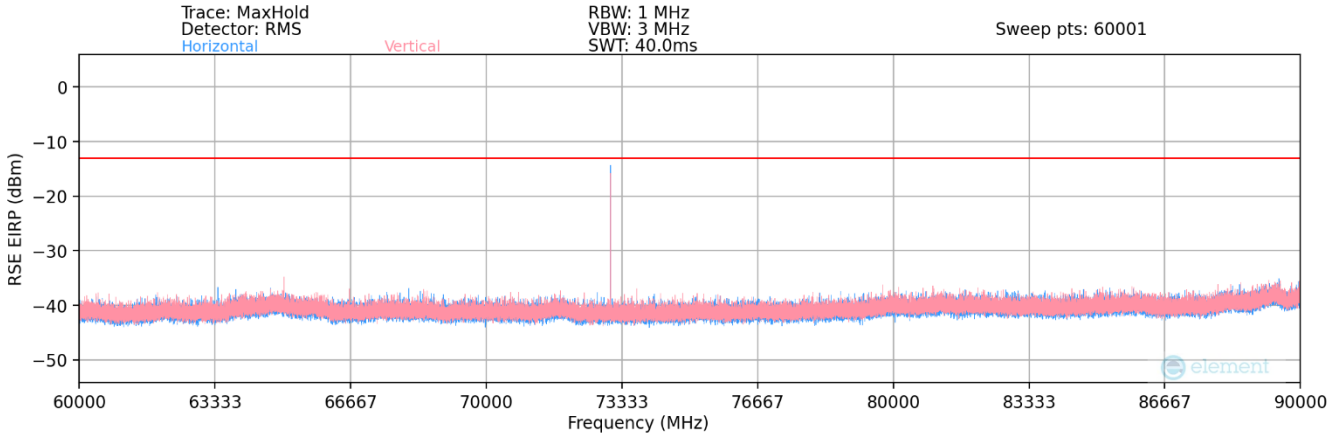
Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
48550.08	Low	50	2Tx	QPSK	V	3	266	-30.21	-13.00	-17.21
48700.08	Mid	50	2Tx	QPSK	V	3	268	-30.11	-13.00	-17.11
48849.84	High	50	2Tx	QPSK	V	6	265	-29.97	-13.00	-16.97

Table 7-40. Ant 2 - n258-R1 Radiated Spurious Emissions Table (40GHz - 60GHz)

Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1.5 meter.

60GHz - 90GHz



Plot 7-115. Ant 2 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx − NR-DC Anchor Band 41)

Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channnel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
72825.12	Low	50	2Tx	QPSK	H	*	*	-23.15	-13.00	-10.15
73050.12	Mid	50	2Tx	QPSK	H	*	*	-22.94	-13.00	-9.94
73274.76	High	50	2Tx	QPSK	H	*	*	-23.88	-13.00	-10.88

Table 7-41. Ant 2 - n258-R1 Radiated Spurious Emissions Table (60GHz - 90GHz)

Notes

1) The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1 meter.

2) Rows marked with ***** indicate a spurious emission level that was measured using the Spherical Grid TRP Method per KDB 842590.