

CERTIFICATION TEST REPORT

Report Number. : 4790976523-E6V2

Applicant : SAMSUNG ELECTRONICS CO., LTD.
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,
GYEONGGI-DO, 16677, KOREA

Model : SM-S921U, SM-S921U1

FCC ID : A3LSMS921U

EUT Description : GSM/WCDMA/LTE 5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax,
NFC and WPT

Test Standard : FCC 47 CFR PART 30 Mobile Transmitter(5GM)

Date Of Issue:

2023-11-03

Prepared by:

UL KOREA LTD.

26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

Suwon Test Site: UL KOREA LTD. Suwon Laboratory

218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea

TEL: (031) 337-9902

FAX: (031) 213-5433

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	2023-10-26	Initial issue	Myeongjun Kwon
V2	2023-11-03	Updated to address TCB's question	Myeongjun Kwon

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	7
4.1. MEASURING INSTRUMENT CALIBRATION.....	7
4.2. SAMPLE CALCULATION.....	7
4.3. MEASUREMENT UNCERTAINTY	7
4.4. DECISION RULE	7
5. EQUIPMENT UNDER TEST.....	8
5.1. DESCRIPTION OF EUT.....	8
5.2. MAXIMUM OUTPUT POWER.....	9
5.3. WORST-CASE ORIENTATION.....	17
5.4. DESCRIPTION OF TEST SETUP.....	18
6. TEST AND MEASUREMENT EQUIPMENT	21
7. SUMMARY TABLE	22
8. LIMITS AND CONDUCTED RESULTS	23
8.1. OCCUPIED BANDWIDTH.....	23
8.1.1. OCCUPIED BANDWIDTH RESULTS	24
8.2. EQUIVALENT ISOTROPIC RADIATED POWER.....	37
8.2.1. EIRP Results	38
8.3. BAND EDGE EMISSIONS	62
8.3.1. BAND EDGE WORST CASE RESULT	65
8.4. RADIATED SPURIOUS AND HARMONIC EMISSIONS	137
8.4.1. RADIATED SPURIOUS AND HARMONIC EMISSIONS RESULT	139
8.5. FREQUENCY STABILITY.....	246
8.5.1. FREQUENCY STABILITY RESULTS	247
Appendix A.....	249
1. Accreditation Scope	249
2. VDI Mixer Certificate Report.....	250
2.1. Model : N9029AV15, S/N : SAX693	250
2.2. Model : N9029AV10, S/N : SAX597	254
2.3. Model : N9029AV06, S/N : SAX789	258

2.4. Model : N9029AV04, S/N : SAX791	262
3. CMI Horn Antenna gain	266
3.1. HO22R (33 GHz – 50 GHz).....	266
3.1. HO15R (50 GHz – 75 GHz).....	268
3.2. HO10R (75 GHz – 110 GHz).....	270
3.3. HO06R (110 GHz – 170 GHz).....	272
3.4. HO04R (170 GHz – 260 GHz).....	274

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: GSM/WCDMA/LTE 5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC and WPT.

MODEL NUMBER: SM-S921U, SM-S921U1

SERIAL NUMBER: R3CW80J5CVL, R3CW70MMJNX (Radiated), R3CW90BXLGJ (Conducted);

DATE TESTED: 2023-08-30 ~ 2023-10-26;

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 30 Mobile Transmitter (5GM)	Complies

UL KOREA LTD. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL KOREA LTD. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL KOREA LTD. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL KOREA LTD. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL KOREA LTD. By:



Seokhwan Hong
Suwon Lab Engineer
UL KOREA LTD.

Tested By:



Myeongjun Kwon
Suwon Lab Engineer
UL KOREA LTD.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with following methods.

1. FCC 47 CFR Part 2.
2. FCC 47 CFR Part 30.
3. ANSI C63.26-2015
4. KDB 842590 D01 Upper Microwave Flexible Use Service v01r02
5. KDB 971168 D01 Power Meas License Digital Systems v03r01

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro	
<input type="checkbox"/>	Chamber 1(3m semi-anechoic chamber)
<input checked="" type="checkbox"/>	Chamber 2(3m semi-anechoic chamber)
<input type="checkbox"/>	Chamber 3(3m semi-anechoic chamber)
<input type="checkbox"/>	Chamber 4(3m Full-anechoic chamber)
<input checked="" type="checkbox"/>	Chamber 5(3m Full-anechoic chamber)

UL KOREA LTD. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at <https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength[dBuV/m] = PXA reading with EUT worst orientation (dBm) +
Antenna Factor(dBuV/m) + cable loss(dB) + 107

EIRP[dBm] = PXA reading with EUT worst orientation (dBm) + Path loss (dB) –
cable loss(between the SG and substitution antenna) + Substitution Antenna
Factor (dBi)

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Disturbance, 30 MHz to 1 GHz	3.92 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.06 dB
Radiated Disturbance, Above 18 GHz	6.02 dB

Uncertainty figures are valid to a confidence level of 95%.

4.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Procedure 2, Clause 4.4.3 in IEC Guide 115:2021.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE 5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT. This test report addresses the 5G NR operational mode.

Representative model	Difference	Derivative model
		SM-S921U1
SM-S921U	Hardware	Same
	Software	The UI has changed according to Service Provider

The model SM-S921U was used for final testing and is representative of the test results in this report.

This test report addresses the 5G RF2 NR operational mode on following frequency bands:

n258(denoted as n258 SB1 in this report): 24.25 – 24.45 GHz (TDD)
 n258(denoted as n258 SB2 in this report): 24.75 – 25.25 GHz (TDD)
 n261: 27.5 – 28.35 GHz (TDD)
 n260: 37 – 40 GHz (TDD)

The EUT has an array antenna configuration.

2 patches, placed on the EUT(denoted as M and N patch).

The patch antennas is comprised of two separate antenna feeds - one for horizontal and one for vertical polarization and 1 × 5 dual-polarized patch arrays.

Antenna	Name
Antenna 1	M Patch
Antenna 2	N Patch

The EUT supports up to 4CC for UL. For each CC, the EUT supports 100MHz bandwidth.

For modulation, the EUT supports a subcarrier spacing (SCS) of 120kHz with two transmission schemes, CP-OFDM and DFT-s-OFDM, with QPSK, pi/2-BPSK, 16-QAM, and 64-QAM modulations.

Different Beam IDs are supported, each corresponding to a different position in space for 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.

The manufacturer provided the beam ID setting that produced the highest EIRP for each antenna via the EIRP simulation tool. Based on the provided beam ID, the highest beam ID was selected through actual measurement. These beam ID settings were used for all tests. All tests were performed in stand-alone mode of operation without signals.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum average radiated EIRP output powers as follows:

Antenna 1 / Ant M, n258 SB1

FCC Part 30								
Band	Frequency Range [GHz]	Antenna	BandWidth [MHz]	CCs Active	Mode	Modulation	Radiated	
							Avg [dBm]	Avg [mW]
n258 SB1	24.25 - 24.45	Ant M	50	1CC	SISO	QPSK	28.40	691.83
					SISO-Dual	QPSK	30.49	1119.44
					SISO-Dual	pi/2-BPSK	30.22	1051.96
					SISO-Dual	16QAM	30.19	1044.72
					SISO-Dual	64QAM	26.98	498.88
					MIMO	QPSK	28.50	707.95
			100	1CC	SISO	QPSK	28.23	665.27
					SISO-Dual	QPSK	29.91	979.49
					SISO-Dual	pi/2-BPSK	29.74	941.89
					SISO-Dual	16QAM	29.53	897.43
					SISO-Dual	64QAM	25.66	368.13
					MIMO	QPSK	28.09	644.17
				2CC	SISO-Dual	QPSK	26.53	449.78
					SISO-Dual	pi/2-BPSK	26.50	446.68
					SISO-Dual	16QAM	26.02	399.94
					SISO-Dual	64QAM	22.98	198.61

Antenna 1 / Ant M, n258 SB2

FCC Part 30								
Band	Frequency Range [GHz]	Antenna	BandWidth [MHz]	CCs Active	Mode	Modulation	Radiated	
							Avg [dBm]	Avg [mW]
n258 SB2	24.75 - 25.25	Ant M	50	1CC	SISO	QPSK	28.45	699.84
					SISO-Dual	QPSK	30.75	1188.50
					SISO-Dual	pi/2-BPSK	30.52	1127.20
					SISO-Dual	16QAM	30.47	1114.29
					SISO-Dual	64QAM	27.36	544.50
					MIMO	QPSK	29.47	885.12
			100	1CC	SISO	QPSK	28.50	707.95
					SISO-Dual	QPSK	30.12	1028.02
					SISO-Dual	pi/2-BPSK	29.68	928.97
					SISO-Dual	16QAM	29.57	905.73
					SISO-Dual	64QAM	26.38	434.51
					MIMO	QPSK	28.58	721.11
				2CC	SISO-Dual	QPSK	27.46	557.19
					SISO-Dual	pi/2-BPSK	27.51	563.64
					SISO-Dual	16QAM	27.03	504.66
					SISO-Dual	64QAM	23.34	215.77
				3CC	SISO-Dual	QPSK	25.23	333.43
					SISO-Dual	pi/2-BPSK	25.23	333.43
					SISO-Dual	16QAM	24.18	261.82
					SISO-Dual	64QAM	23.53	225.42
4CC	SISO-Dual	QPSK	25.14	326.59				
	SISO-Dual	pi/2-BPSK	25.07	321.37				
	SISO-Dual	16QAM	24.07	255.27				
	SISO-Dual	64QAM	23.24	210.86				

Antenna 1 / Ant M, n261

FCC Part 30								
Band	Frequency Range [GHz]	Antenna	BandWidth [MHz]	CCs Active	Mode	Modulation	Radiated	
							Avg [dBm]	Avg [mW]
n261	27.5 - 28.35	Ant M	50	1CC	SISO	QPSK	29.66	924.70
					SISO-Dual	QPSK	31.22	1324.34
					SISO-Dual	pi/2-BPSK	31.21	1321.30
					SISO-Dual	16QAM	30.64	1158.78
					SISO-Dual	64QAM	27.49	561.05
					MIMO	QPSK	29.35	860.99
			100	1CC	SISO	QPSK	29.71	935.41
					SISO-Dual	QPSK	31.49	1409.29
					SISO	pi/2-BPSK	31.02	1264.74
					SISO-Dual	16QAM	30.18	1042.32
					SISO-Dual	64QAM	27.16	520.00
					MIMO	QPSK	29.52	895.36
				2CC	SISO-Dual	QPSK	28.16	654.64
					SISO-Dual	pi/2-BPSK	28.16	654.64
					SISO-Dual	16QAM	27.60	575.44
					SISO-Dual	64QAM	24.10	257.04
				3CC	SISO-Dual	QPSK	25.85	384.59
					SISO-Dual	pi/2-BPSK	25.84	383.71
					SISO-Dual	16QAM	24.82	303.39
					SISO-Dual	64QAM	22.79	190.11
4CC	SISO-Dual	QPSK	25.90	389.05				
	SISO-Dual	pi/2-BPSK	25.94	392.64				
	SISO-Dual	16QAM	24.92	310.46				
	SISO-Dual	64QAM	22.78	189.67				

Antenna 1 / Ant M, n260

FCC Part 30								
Band	Frequency Range [GHz]	Antenna	BandWidth [MHz]	CCs Active	Mode	Modulation	Radiated	
							Avg [dBm]	Avg [mW]
n260	37 - 40	Ant M	50	1CC	SISO	QPSK	26.12	409.26
					SISO-Dual	QPSK	26.22	418.79
					SISO-Dual	pi/2-BPSK	25.97	395.37
					SISO-Dual	16QAM	26.19	415.91
					SISO-Dual	64QAM	23.01	199.99
					MIMO	QPSK	25.29	338.06
			100	1CC	SISO	QPSK	25.61	363.92
					SISO-Dual	QPSK	25.52	356.45
					SISO-Dual	pi/2-BPSK	25.44	349.95
					SISO-Dual	16QAM	25.38	345.14
					SISO-Dual	64QAM	22.47	176.60
					MIMO	QPSK	24.53	283.79
				2CC	SISO-Dual	QPSK	23.03	200.91
					SISO-Dual	pi/2-BPSK	23.03	200.91
					SISO-Dual	16QAM	22.53	179.06
					SISO-Dual	64QAM	19.04	80.17
				3CC	SISO-Dual	QPSK	20.79	119.95
					SISO-Dual	pi/2-BPSK	20.86	121.90
					SISO-Dual	16QAM	19.83	96.16
					SISO-Dual	64QAM	17.93	62.09
4CC	SISO-Dual	QPSK	20.91	123.31				
	SISO-Dual	pi/2-BPSK	20.89	122.74				
	SISO-Dual	16QAM	19.98	99.54				
	SISO-Dual	64QAM	18.10	64.57				

Antenna 2 / Ant N, n258 SB1

FCC Part 30								
Band	Frequency Range [GHz]	Antenna	BandWidth [MHz]	CCs Active	Mode	Modulation	Radiated	
							Avg [dBm]	Avg [mW]
n258 SB1	24.25 - 24.45	Ant N	50	1CC	SISO	QPSK	27.27	533.33
					SISO-Dual	QPSK	28.45	699.84
					SISO-Dual	pi/2-BPSK	27.87	612.35
					SISO-Dual	16QAM	27.50	562.34
					SISO-Dual	64QAM	24.52	283.14
					MIMO	QPSK	26.54	450.82
			100	1CC	SISO	QPSK	27.12	515.23
					SISO-Dual	QPSK	28.31	677.64
					SISO-Dual	pi/2-BPSK	27.63	579.43
					SISO-Dual	16QAM	27.54	567.54
					SISO-Dual	64QAM	24.51	282.49
					MIMO	QPSK	26.21	417.83
				2CC	SISO-Dual	QPSK	25.39	345.94
					SISO-Dual	pi/2-BPSK	25.42	348.34
					SISO-Dual	16QAM	24.84	304.79
					SISO-Dual	64QAM	21.16	130.62

Antenna 2 / Ant N, n258 SB2

FCC Part 30								
Band	Frequency Range [GHz]	Antenna	BandWidth [MHz]	CCs Active	Mode	Modulation	Radiated	
							Avg [dBm]	Avg [mW]
n258 SB2	24.75 - 25.25	Ant N	50	1CC	SISO	QPSK	26.30	426.58
					SISO-Dual	QPSK	28.24	666.81
					SISO-Dual	pi/2-BPSK	27.96	625.17
					SISO-Dual	16QAM	28.14	651.63
					SISO-Dual	64QAM	25.12	325.09
					MIMO	QPSK	26.98	498.88
			100	1CC	SISO	QPSK	26.14	411.15
					SISO-Dual	QPSK	28.31	677.64
					SISO-Dual	pi/2-BPSK	28.25	668.34
					SISO	16QAM	28.08	642.69
					SISO	64QAM	25.12	325.09
					MIMO	QPSK	27.09	511.68
				2CC	SISO-Dual	QPSK	24.59	287.74
					SISO-Dual	pi/2-BPSK	24.58	287.08
					SISO-Dual	16QAM	24.13	258.82
					SISO-Dual	64QAM	20.57	114.02
				3CC	SISO-Dual	QPSK	22.18	165.20
					SISO-Dual	pi/2-BPSK	22.23	167.11
					SISO-Dual	16QAM	21.20	131.83
					SISO-Dual	64QAM	19.94	98.63
4CC	SISO-Dual	QPSK	22.18	165.20				
	SISO-Dual	pi/2-BPSK	22.18	165.20				
	SISO-Dual	16QAM	21.17	130.92				
	SISO-Dual	64QAM	19.92	98.17				

Antenna 2 / Ant N, n261

FCC Part 30								
Band	Frequency Range [GHz]	Antenna	BandWidth [MHz]	CCs Active	Mode	Modulation	Radiated	
							Avg [dBm]	Avg [mW]
n261	27.5 - 28.35	Ant N	50	1CC	SISO	QPSK	29.55	901.57
					SISO-Dual	QPSK	30.92	1235.95
					SISO-Dual	pi/2-BPSK	30.78	1196.74
					SISO-Dual	16QAM	30.28	1066.60
					SISO-Dual	64QAM	27.05	506.99
					MIMO	QPSK	29.08	809.10
			100	1CC	SISO	QPSK	29.21	833.68
					SISO-Dual	QPSK	31.09	1285.29
					SISO-Dual	pi/2-BPSK	30.72	1180.32
					SISO-Dual	16QAM	30.23	1054.39
					SISO-Dual	64QAM	27.03	504.66
					MIMO	QPSK	29.34	859.01
				2CC	SISO-Dual	QPSK	27.84	608.14
					SISO-Dual	pi/2-BPSK	27.78	599.79
					SISO-Dual	16QAM	27.32	539.51
					SISO-Dual	64QAM	23.78	238.78
				3CC	SISO-Dual	QPSK	25.51	355.63
					SISO-Dual	pi/2-BPSK	25.53	357.27
					SISO-Dual	16QAM	24.50	281.84
					SISO-Dual	64QAM	23.17	207.49
4CC	SISO-Dual	QPSK	25.65	367.28				
	SISO-Dual	pi/2-BPSK	25.67	368.98				
	SISO-Dual	16QAM	24.69	294.44				
	SISO-Dual	64QAM	23.58	228.03				

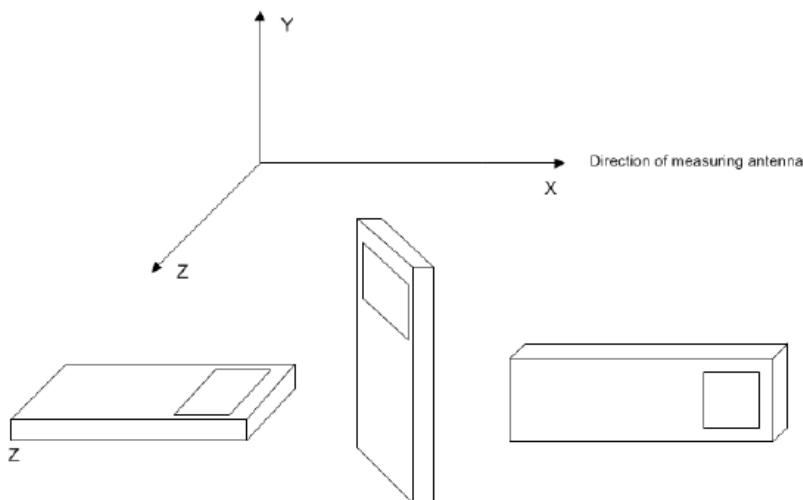
Antenna 2 / Ant N, n260

FCC Part 30								
Band	Frequency Range [GHz]	Antenna	BandWidth [MHz]	CCs Active	Mode	Modulation	Radiated	
							Avg [dBm]	Avg [mW]
n260	37 - 40	Ant N	50	1CC	SISO	QPSK	28.61	726.11
					SISO-Dual	QPSK	29.97	993.12
					SISO-Dual	pi/2-BPSK	29.86	968.28
					SISO-Dual	16QAM	29.88	972.75
					SISO-Dual	64QAM	26.76	474.24
					MIMO	QPSK	29.20	831.76
			100	1CC	SISO	QPSK	28.52	711.21
					SISO-Dual	QPSK	30.01	1002.31
					SISO-Dual	pi/2-BPSK	29.80	954.99
					SISO-Dual	16QAM	29.68	928.97
					SISO-Dual	64QAM	26.69	466.66
					MIMO	QPSK	29.00	794.33
				2CC	SISO-Dual	QPSK	26.66	463.45
					SISO-Dual	pi/2-BPSK	26.59	456.04
					SISO-Dual	16QAM	26.10	407.38
					SISO-Dual	64QAM	22.67	184.93
				3CC	SISO-Dual	QPSK	24.54	284.45
					SISO-Dual	pi/2-BPSK	24.53	283.79
					SISO-Dual	16QAM	23.54	225.94
					SISO-Dual	64QAM	21.62	145.21
4CC	SISO-Dual	QPSK	24.92	310.46				
	SISO-Dual	pi/2-BPSK	24.92	310.46				
	SISO-Dual	16QAM	23.96	248.89				
	SISO-Dual	64QAM	22.04	159.96				

5.3. WORST-CASE ORIENTATION

For all 5G NR FR2 Bands, the worst-case scenario for all measurements is based on the EIRP measurement investigation results. EIRP were measured on QPSK, pi/2-BPSK, 16QAM and 64QAM modulations. It was found that QPSK results were worst case. 16QAM and 64QAM is EIRP testing was performed using based on QPSK worst channel modulations to represent the worst case. However, the out of band emissions and spurious radiation were only performed on bandwidth and RB offset(with RB size 1) with the highest EIRP in QPSK.

The fundamental and radiated spurious emission were investigated in EUT through several positions in space by rotating about the roll axis, where is applicable. The final optimum position resulting in the highest EIRP for the frequency or band under investigation is placed on an open air fixture allowing no blockage of the signal as measured by the receiving antenna.



Note : By consulting the EIRP simulation data for all beam IDs and performing spot checks on the IDs with the highest EIRPs, we determined the worst case Beam ID pair for SISO operation and Beam ID pair for MIMO operation. This beam ID was used for final measurements.

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacture	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA800	R37MC7X35P7DK3	N/A
Data Cable	SAMSUNG	WBR0062M	GH39-02112A	N/A

I/O CABLE

I/O Cable List						
Cable No.	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Type-C	Shielded	1.0 m	N/A

TEST SETUP

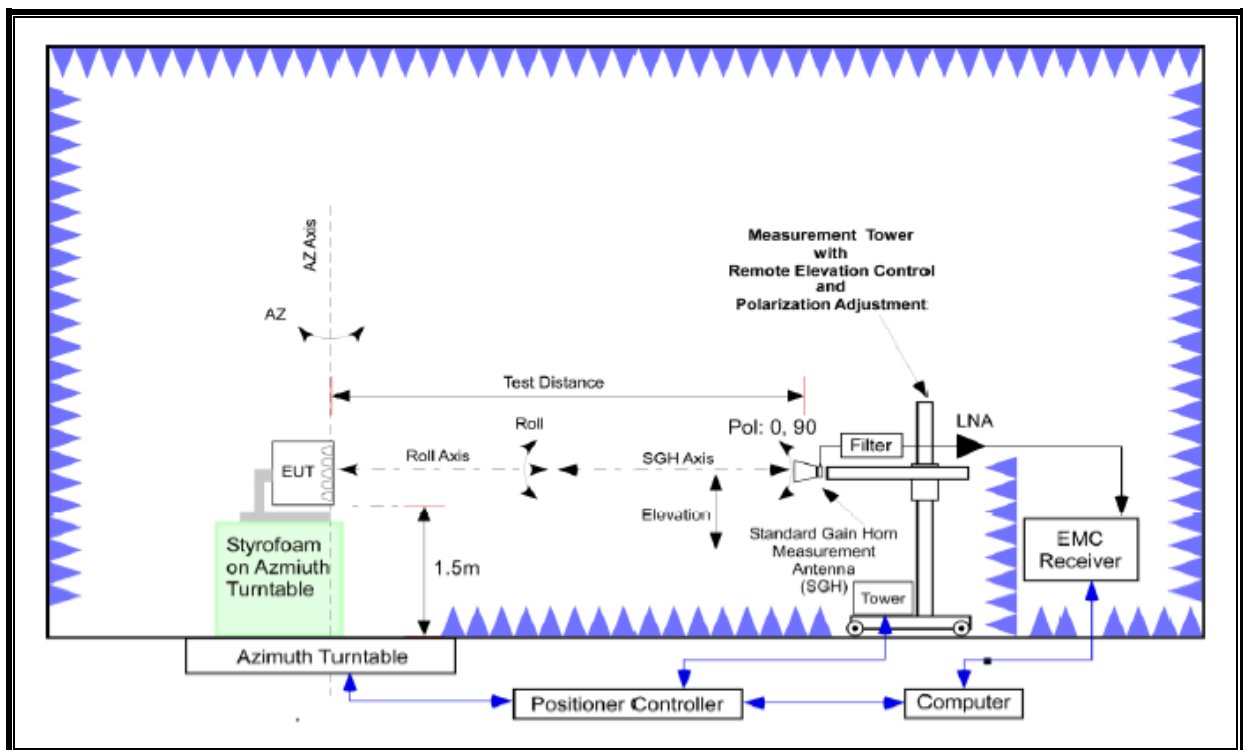
All testing was performed using FTM (Factory Test Mode) software at continuous Tx operation. When implemented out in the field, the EUT will operate with a maximum uplink configuration (i.e., a maximum uplink duty cycle of 100%). The FTM software was also used for the EUT operation in the ENDC mode.

SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)

Radiated spurious emission measurements from 30MHz - 18GHz were performed in a semi anechoic chamber (SAC) conforming to the normalized site attenuation requirements specified in ANSI C63.4 for below 1 GHz and the site validation criteria called out in CISPR 16-1-4:2019 over the frequency range 1GHz to 18 GHz.

Radiated power (EIRP) measurements of the fundamental signal and radiated spurious emissions measurements above 18 GHz were performed in a full anechoic chamber (FAC). In accordance with ANSI C63.26 and KDB publication 842590 the site meets the sVSWR validation requirements called out in CISPR 16-1-4:2019 over the frequency range 1GHz to 18 GHz. As required by ANSI C63.26 reflection contributions are reduced to the extent possible to allow for measurements to be made up to 200GHz in accordance with KDB publication 842590 V01R02.

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.



FAR-FIELD DISTANCE AND MEASUREMENT DISTANCE

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(m)	Far Field Distance(m)	Measurement Distance(m)
18-40	0.008	0.54	1.00 (EIRP and Band Edge = 3.00)
40-50	0.006	1.05	1.50
50-75	0.004	0.69	1.00
75-110	0.003	0.46	1.00
110-175	0.002	0.34	1.00
175-200	0.002	0.16	1.00

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.

The field strength E is calculated $E \text{ (dB } \mu\text{V/m)} = \text{Spectrum Analyzer Channel Power Level (dBm) + Antenna Factor (dB/m) + Cable Loss (dB) + 107.}$

$EIRP \text{ (dBm)} = E \text{ (dB } \mu\text{V/m)} + 20\log(D) - 104.8;$ where D is the measurement distance (in the far field region) in meter.

6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	S/N	Cal Due
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	2024-08-15
Antenna, Horn, 18 GHz	ETS	3117	00168724	2024-08-04
Antenna, Horn, 40 GHz	ETS	3116C	00227907	2025-01-17
Preamplifier, 1000 MHz	Sonoma	310N	351741	2024-07-24
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	2024-07-25
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2024-07-24
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	2024-07-24
Signal Analyzer, 44 GHz	R&S	FSW50	101538	2024-01-09
Signal Analyzer, 50 GHz	KEYSIGHT	N9040B	MY60080268	2024-01-19
SA Extension Module	VDI	N9029AV15	SAX693	2024-01-12
SA Extension Module	VDI	N9029AV10	SAX597	2024-01-12
SA Extension Module	VDI	N9029AV06	SAX789	2024-01-12
SA Extension Module	VDI	N9029AV04	SAX791	2024-01-11
Antenna	CMI, Inc.	HO22R	UL22002	2025-02-22
Antenna	CMI, Inc.	HO15R	UL15002	2025-02-22
Antenna	CMI, Inc.	HO10R	UL10002	2025-02-22
Antenna	CMI, Inc.	HO06R	UL06002	2025-02-22
Antenna	CMI, Inc.	HO04R	UL04002	2025-02-22
Temperature Chamber	ESPEC	SH-642	93001109	2024-07-24
UL Software				
Description	Manufacturer	Model	Version	
Radiated software	UL	UL EMC	Ver 9.5	

7. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
2.1049	Occupied Bandwidth	N/A	Radiated	Complies
2.1046, 30.202	Equivalent Isotropic Radiated Power	43 dBm		Complies
2.1051, 30.203	Out-of-Band Emissions at the Band Edge	-13 dBm/MHz for all out-of-band emissions, -5 dBm/MHz from the band edge up to 10% of the channel BW		Complies
2.1051, 30.203	Spurious Emission	-13 dBm/MHz for all out-of-band emissions		Complies
2.1055	Frequency Stability	Fundamental emissions stay within authorized frequency block		Complies

8. LIMITS AND CONDUCTED RESULTS

8.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

Automatic bandwidth measurement function of the signal analyzer was used to measure 99% occupied.

- a) RBW = 1 – 5% of OBW
- b) VBW \geq 3 x RBW
- c) Detector = Peak
- d) Trace mode = max hold
- e) Sweep = auto couple
- f) The trace was allowed to stabilize

(KDB 842590 D01 Upper Microwave Flexible Use Service v01r02 Section 4.3)
(ANSI C63.26-2015 Section 5.4.3)

Note

5G NR: All Waveforms (CP-OFDM vs DFT-s OFDM) 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.

Antenna 1 and 2 performance to similar. Therefore, in the case of the occupied bandwidth test result, each FR2 band at antenna 1 (Ant M) was reported.

RESULTS

See the following pages.

8.1.1. OCCUPIED BANDWIDTH RESULTS

OBW Result

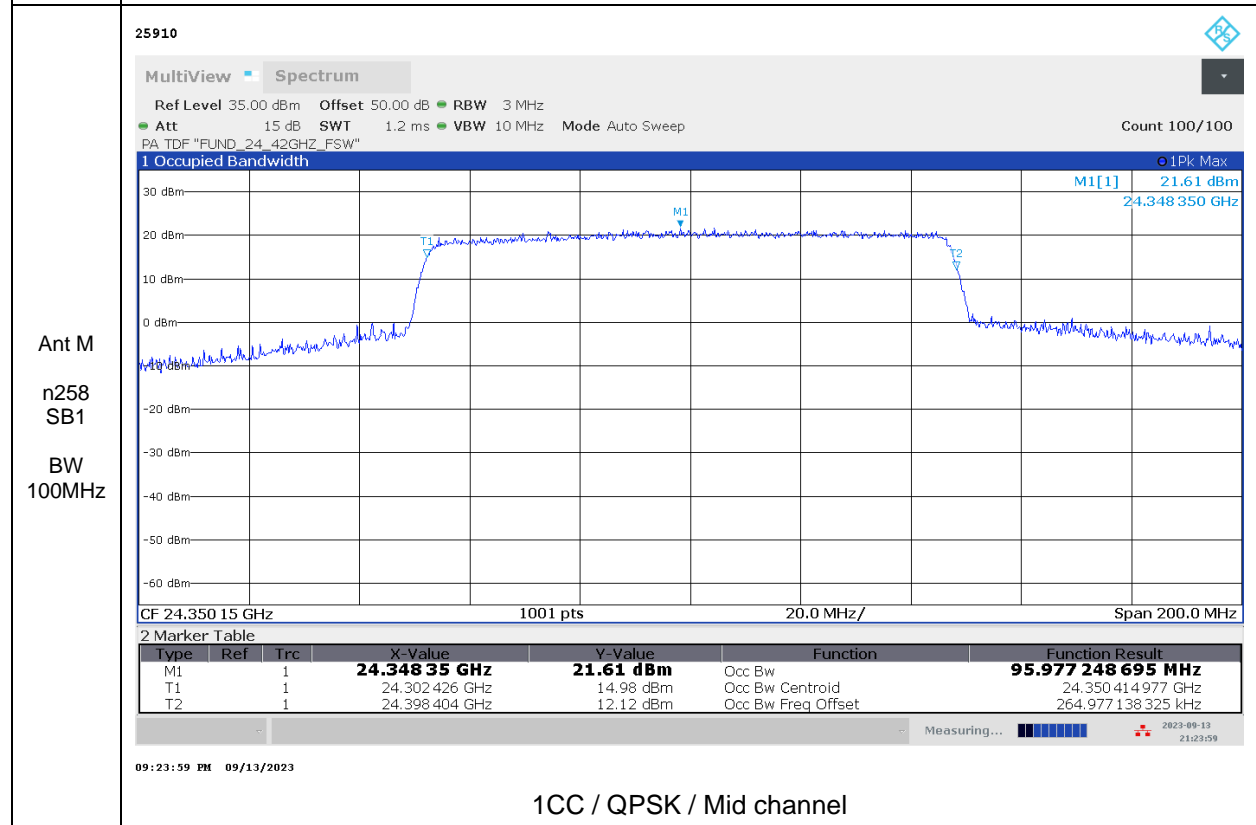
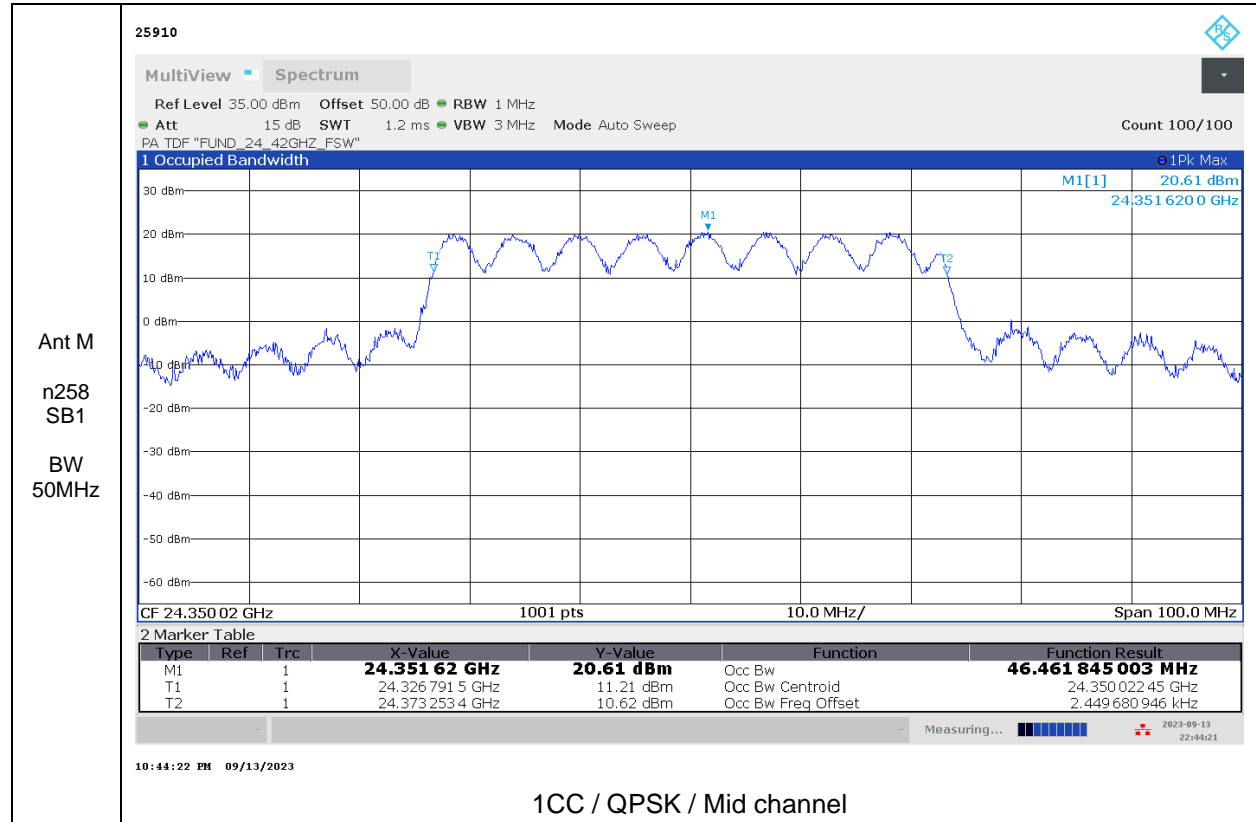
Antenna	Band	BandWidth [MHz]	CCs Active	OFDM	Modulation	OBW [MHz]
Antenna M	n258 SB1	50	1CC	DFT-s	pi/2-BPSK	46.30
				CP	QPSK	46.46
				CP	16QAM	46.40
				CP	64QAM	46.12
		100	1CC	DFT-s	pi/2-BPSK	92.73
				CP	QPSK	95.98
				CP	16QAM	95.79
				CP	64QAM	95.17
			2CC	DFT-s	pi/2-BPSK	193.88
				CP	QPSK	198.47
				CP	16QAM	198.63
				CP	64QAM	197.97

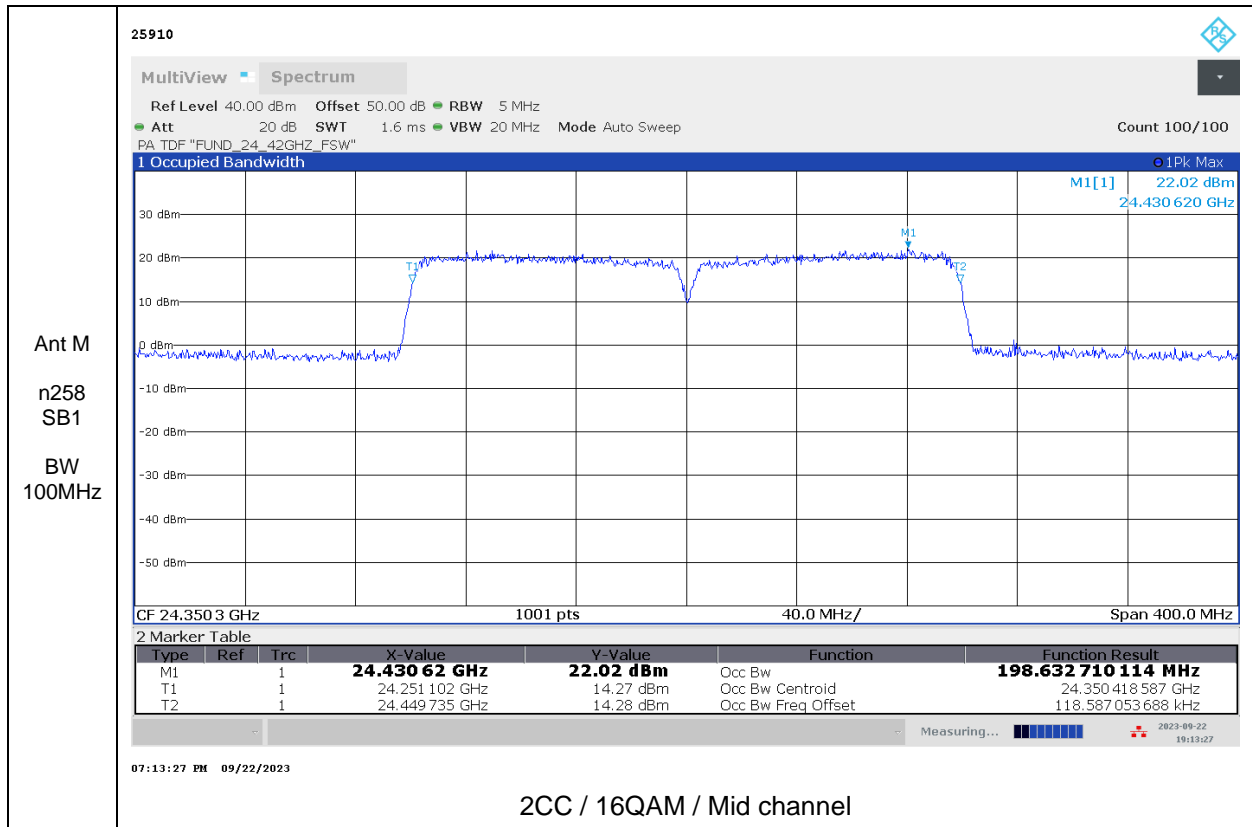
Antenna	Band	BandWidth [MHz]	CCs Active	OFDM	Modulation	OBW [MHz]
Antenna M	n258 SB2	50	1CC	DFT-s	pi/2-BPSK	46.30
				CP	QPSK	46.53
				CP	16QAM	46.47
				CP	64QAM	46.32
		100	1CC	DFT-s	pi/2-BPSK	92.52
				CP	QPSK	96.04
				CP	16QAM	95.76
				CP	64QAM	95.27
			2CC	DFT-s	pi/2-BPSK	196.64
				CP	QPSK	192.37
				CP	16QAM	196.31
				CP	64QAM	197.68
			3CC	DFT-s	pi/2-BPSK	290.93
				CP	QPSK	292.18
				CP	16QAM	292.79
				CP	64QAM	293.72
			4CC	DFT-s	pi/2-BPSK	390.15
				CP	QPSK	391.33
				CP	16QAM	392.58
				CP	64QAM	393.25

Antenna	Band	BandWidth [MHz]	CCs Active	OFDM	Modulation	OBW [MHz]
Antenna M	n261	50	1CC	DFT-s	pi/2-BPSK	46.47
				CP	QPSK	46.66
				CP	16QAM	46.47
				CP	64QAM	46.39
		100	1CC	DFT-s	pi/2-BPSK	92.39
				CP	QPSK	95.92
				CP	16QAM	95.92
				CP	64QAM	95.93
			2CC	DFT-s	pi/2-BPSK	192.39
				CP	QPSK	194.48
				CP	16QAM	194.31
				CP	64QAM	194.60
			3CC	DFT-s	pi/2-BPSK	291.55
				CP	QPSK	293.58
				CP	16QAM	293.84
				CP	64QAM	292.78
			4CC	DFT-s	pi/2-BPSK	389.92
				CP	QPSK	390.62
				CP	16QAM	390.93
				CP	64QAM	391.10

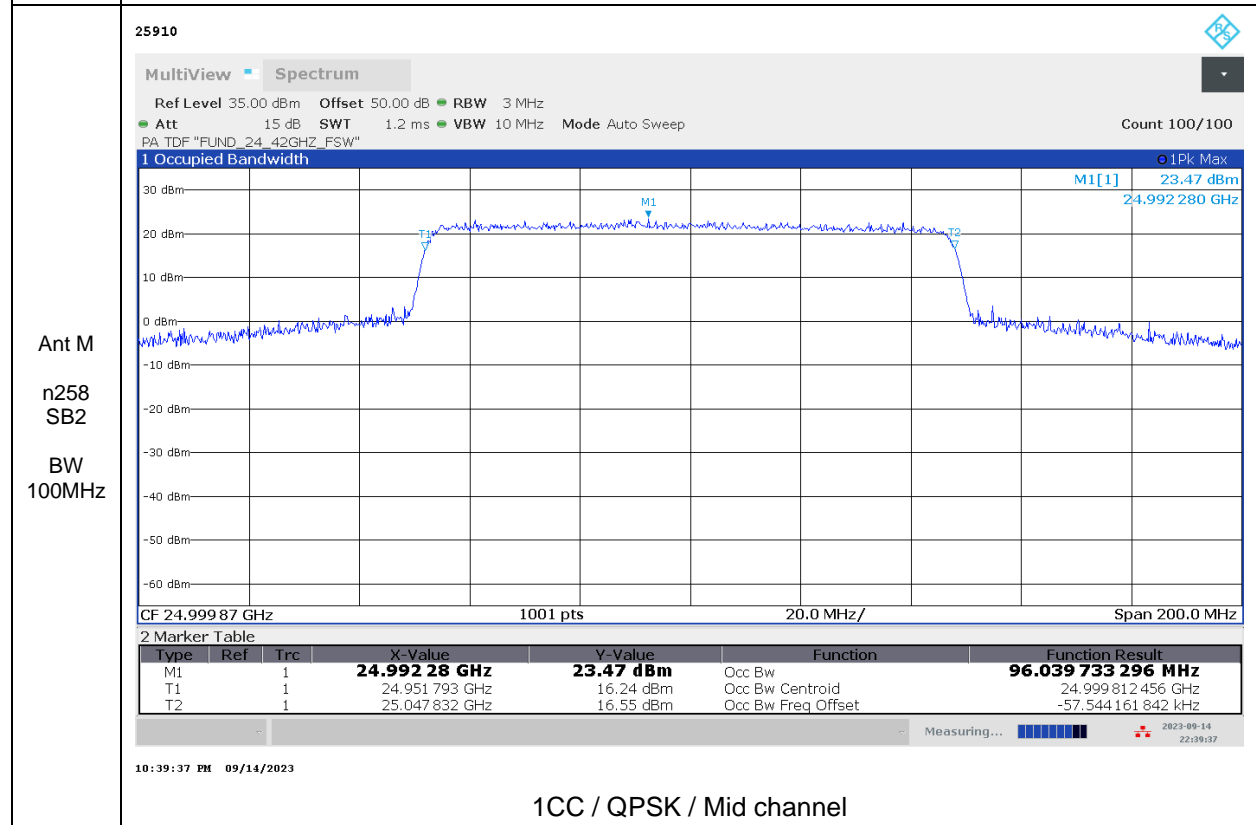
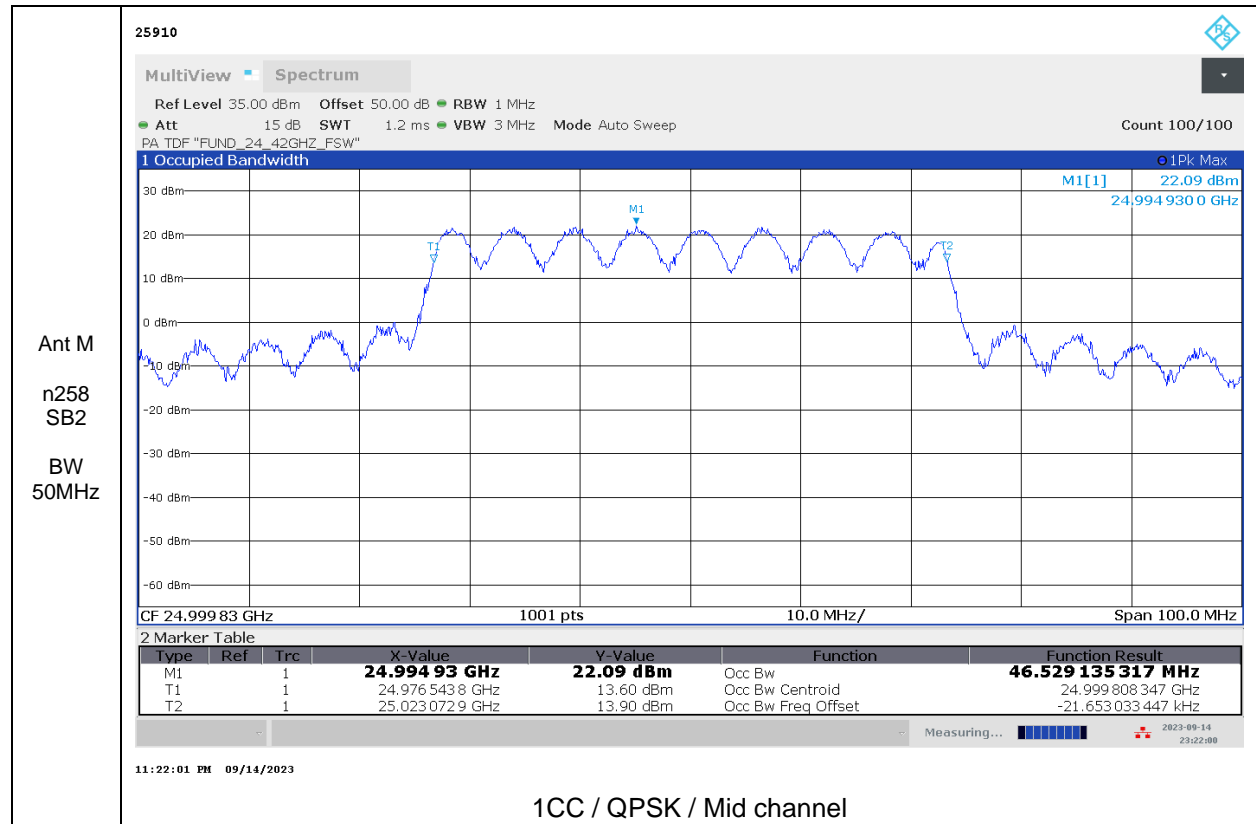
Antenna	Band	BandWidth [MHz]	CCs Active	OFDM	Modulation	OBW [MHz]
Antenna M	n260	50	1CC	DFT-s	pi/2-BPSK	46.06
				CP	QPSK	46.36
				CP	16QAM	46.27
				CP	64QAM	46.20
		100	1CC	DFT-s	pi/2-BPSK	93.24
				CP	QPSK	96.88
				CP	16QAM	96.51
				CP	64QAM	96.21
			2CC	DFT-s	pi/2-BPSK	193.49
				CP	QPSK	197.62
				CP	16QAM	197.46
				CP	64QAM	195.59
			3CC	DFT-s	pi/2-BPSK	291.41
				CP	QPSK	292.91
				CP	16QAM	294.83
				CP	64QAM	293.61
			4CC	DFT-s	pi/2-BPSK	390.53
				CP	QPSK	392.00
				CP	16QAM	391.31
				CP	64QAM	392.21

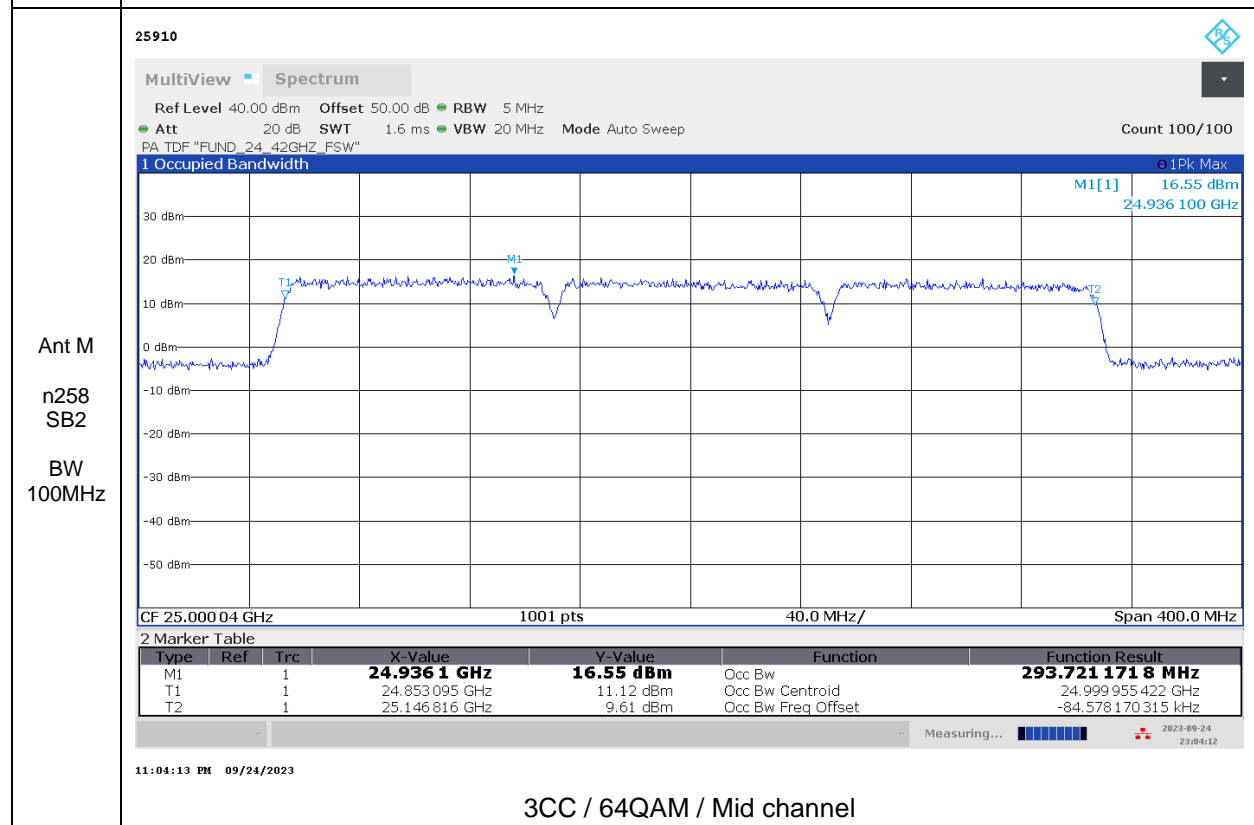
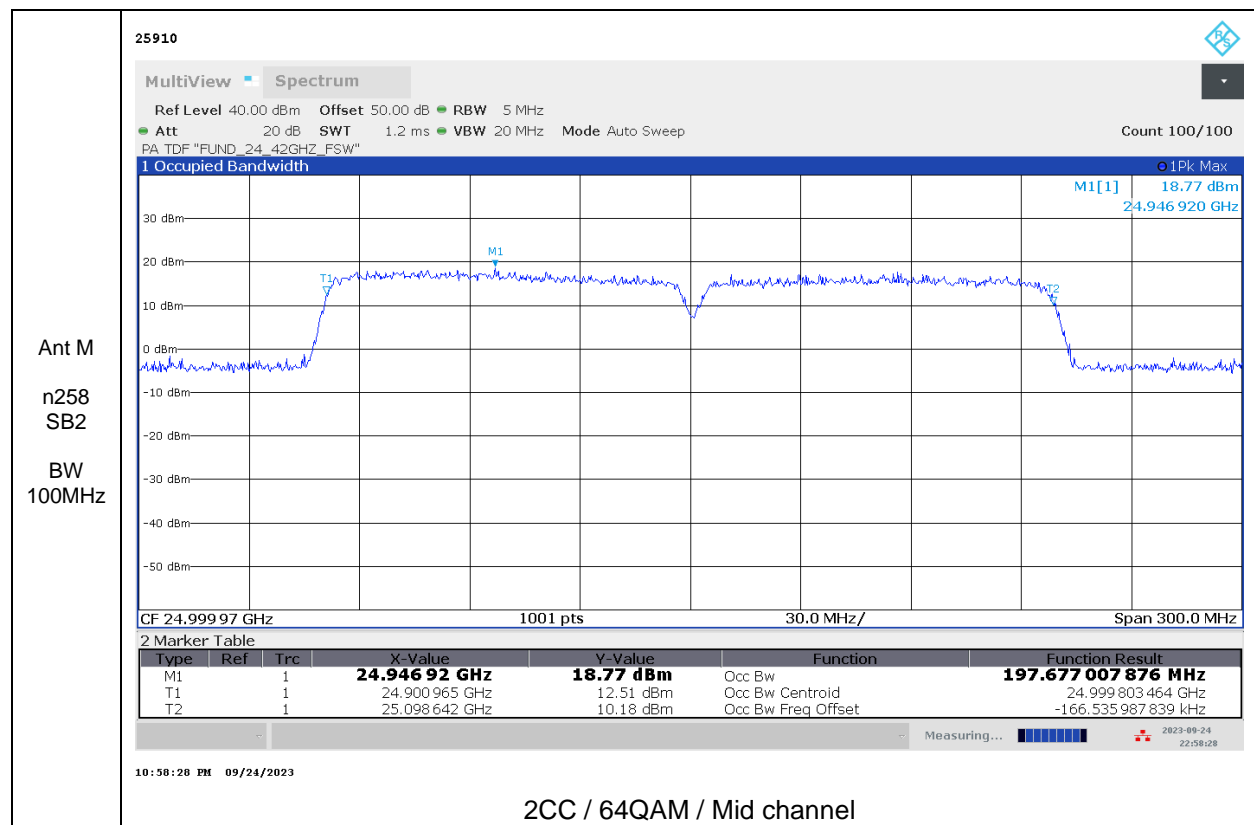
Antena 1 / Ant M / Band n258 SB1

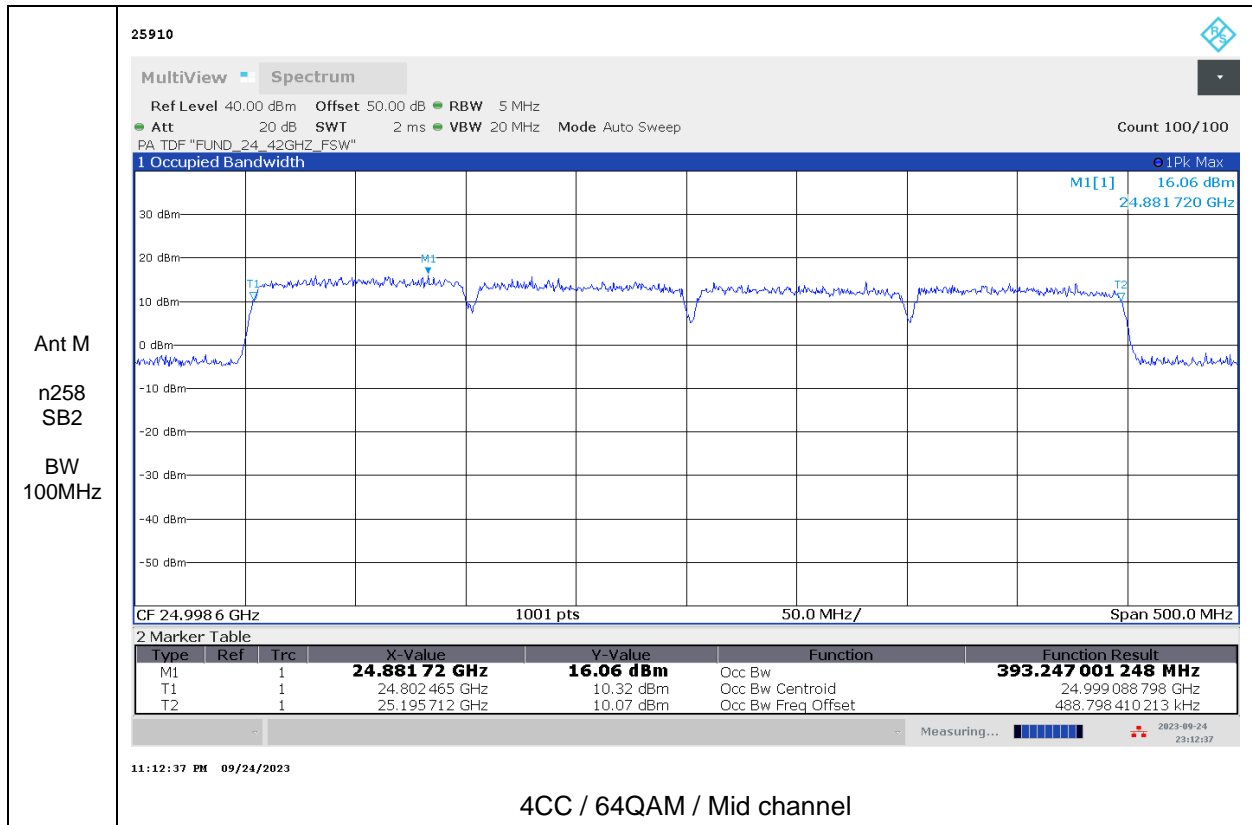




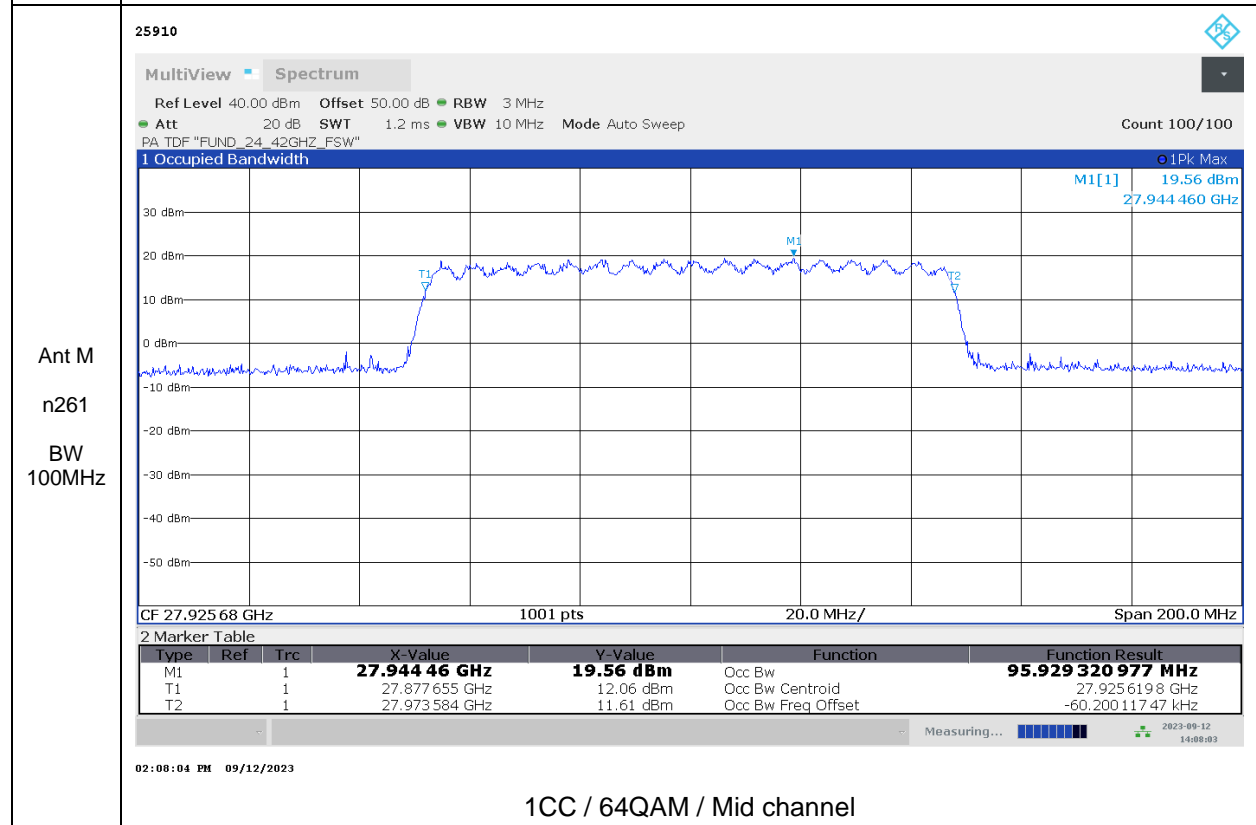
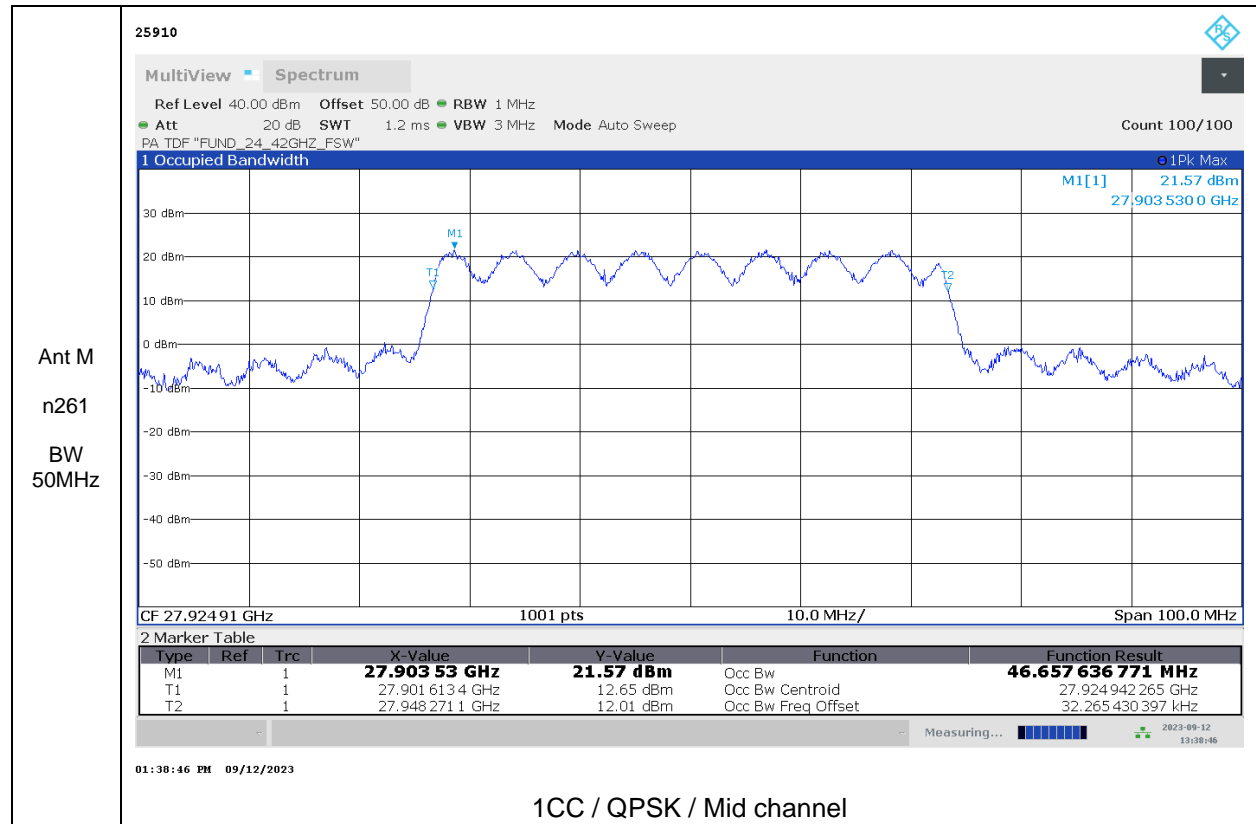
Antena 1 / Ant M / Band n258 SB2

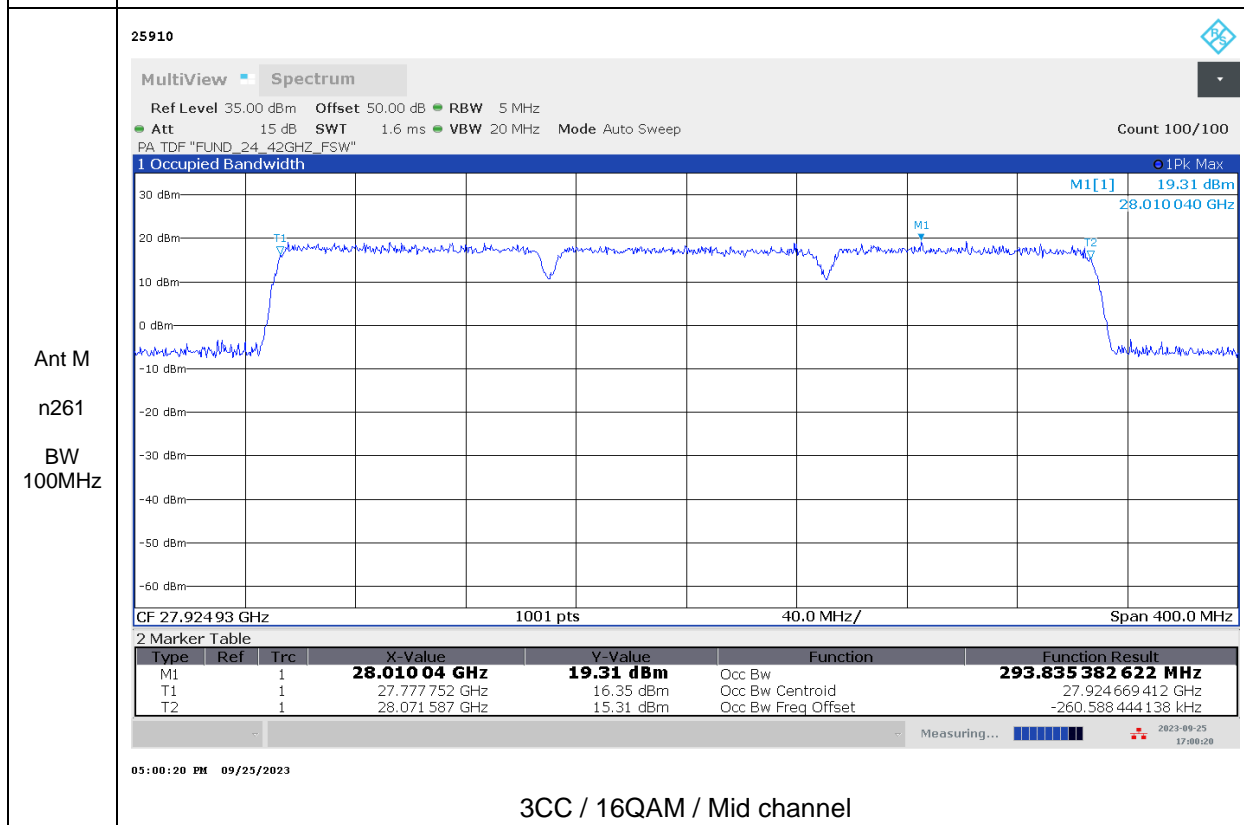
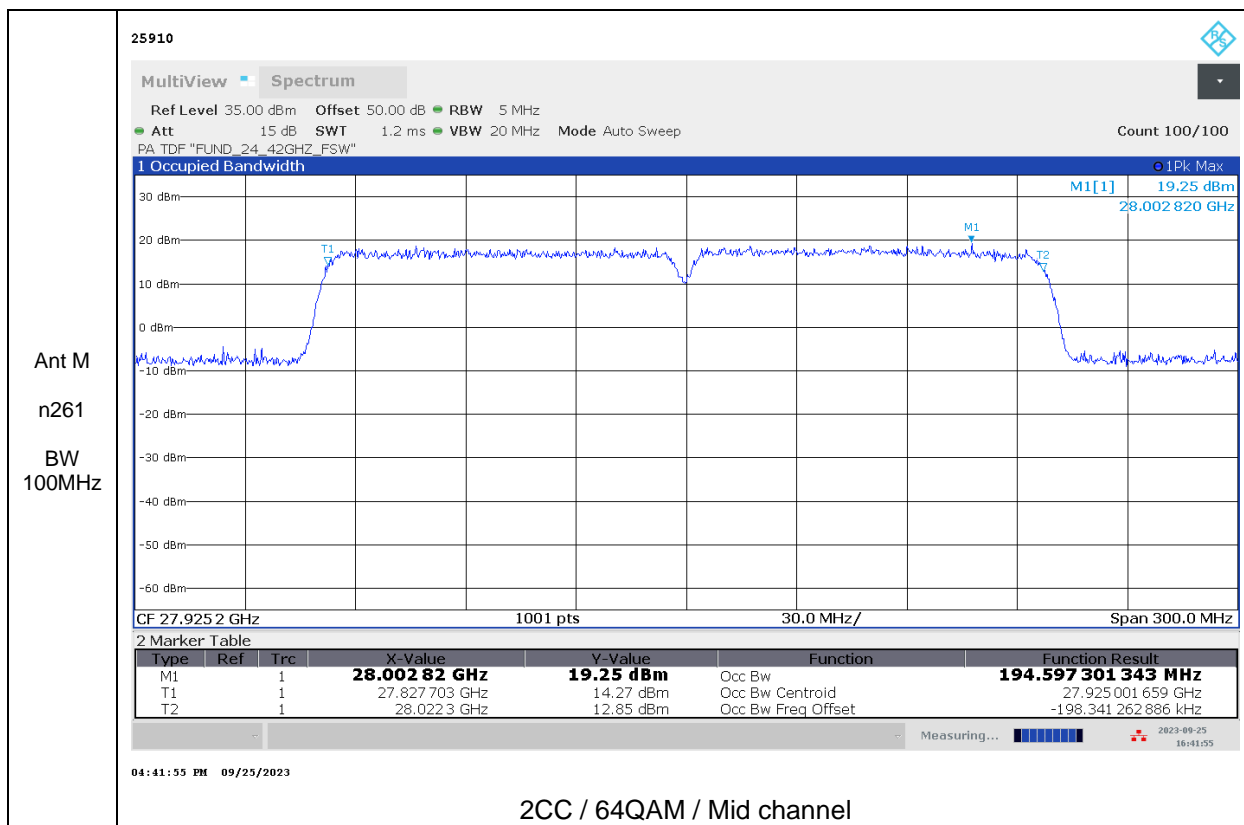


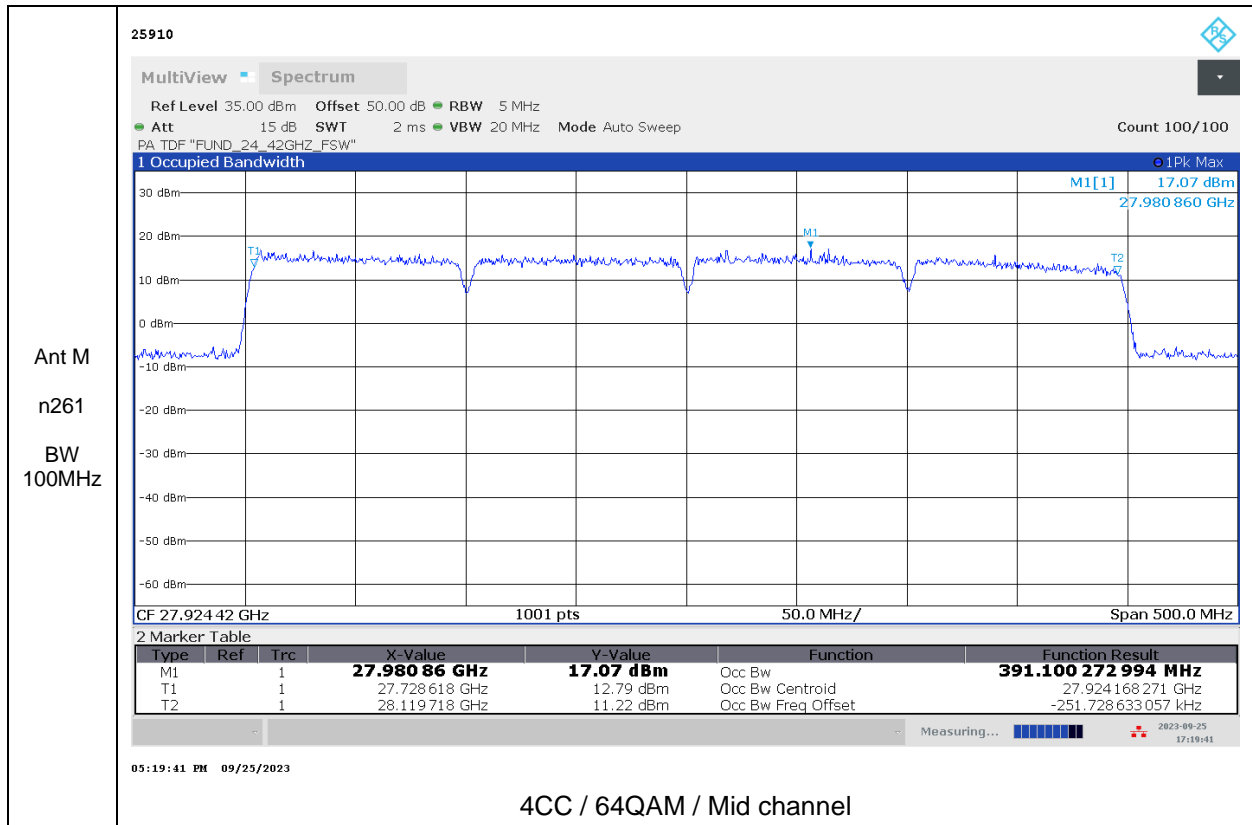




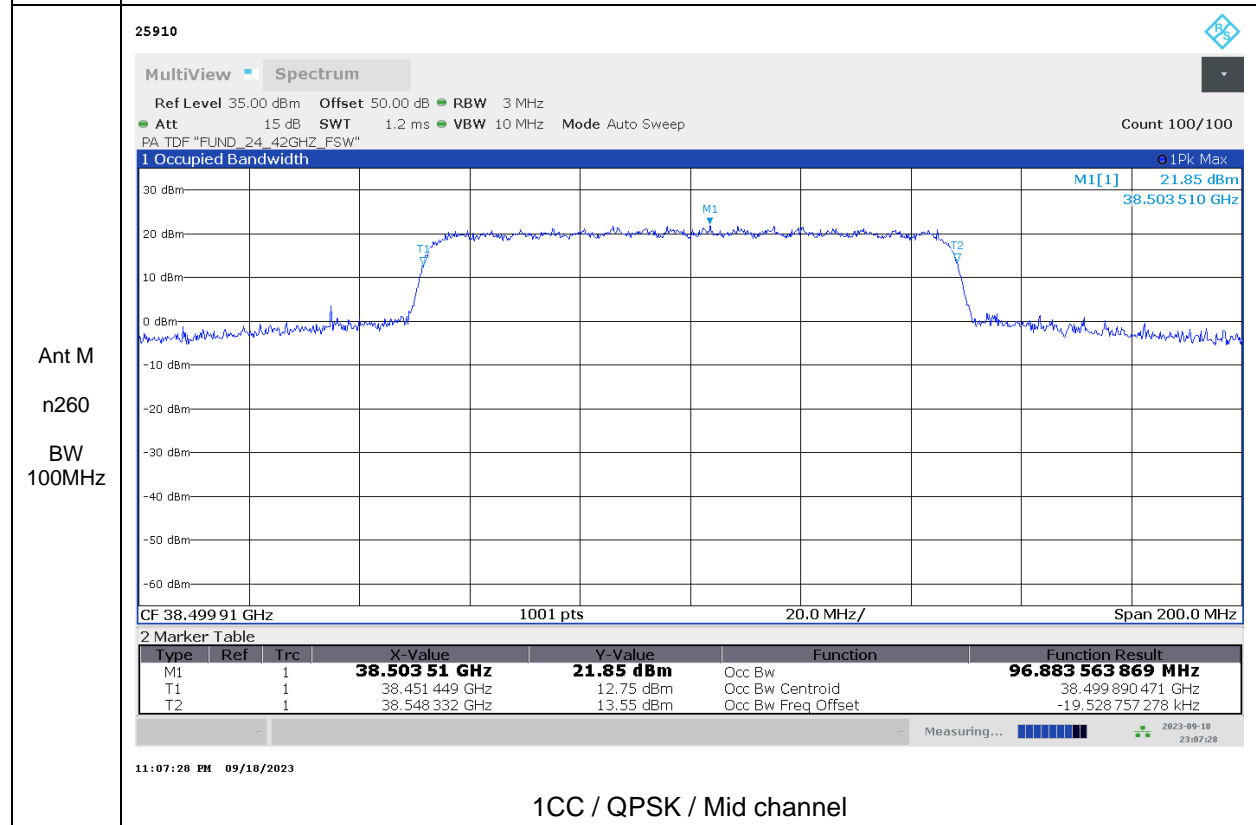
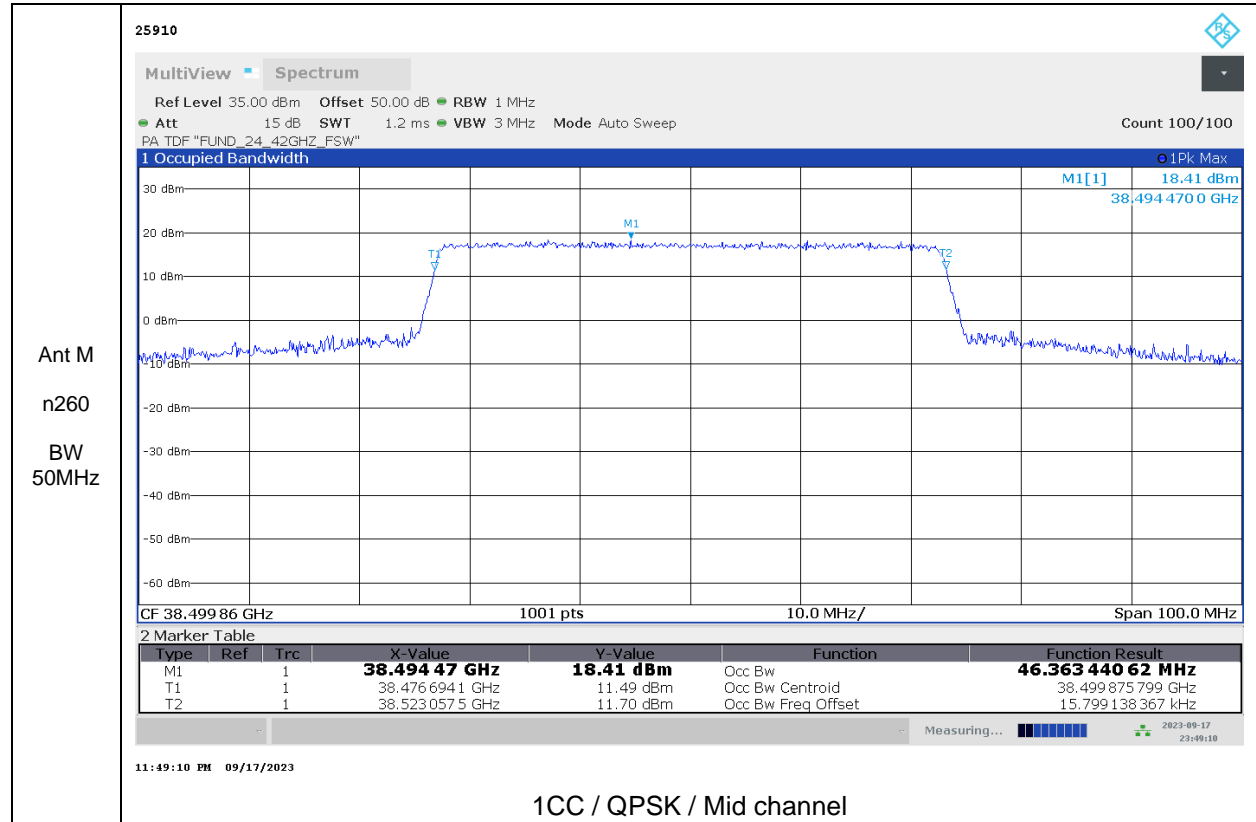
Antena 1 / Ant M / Band n261

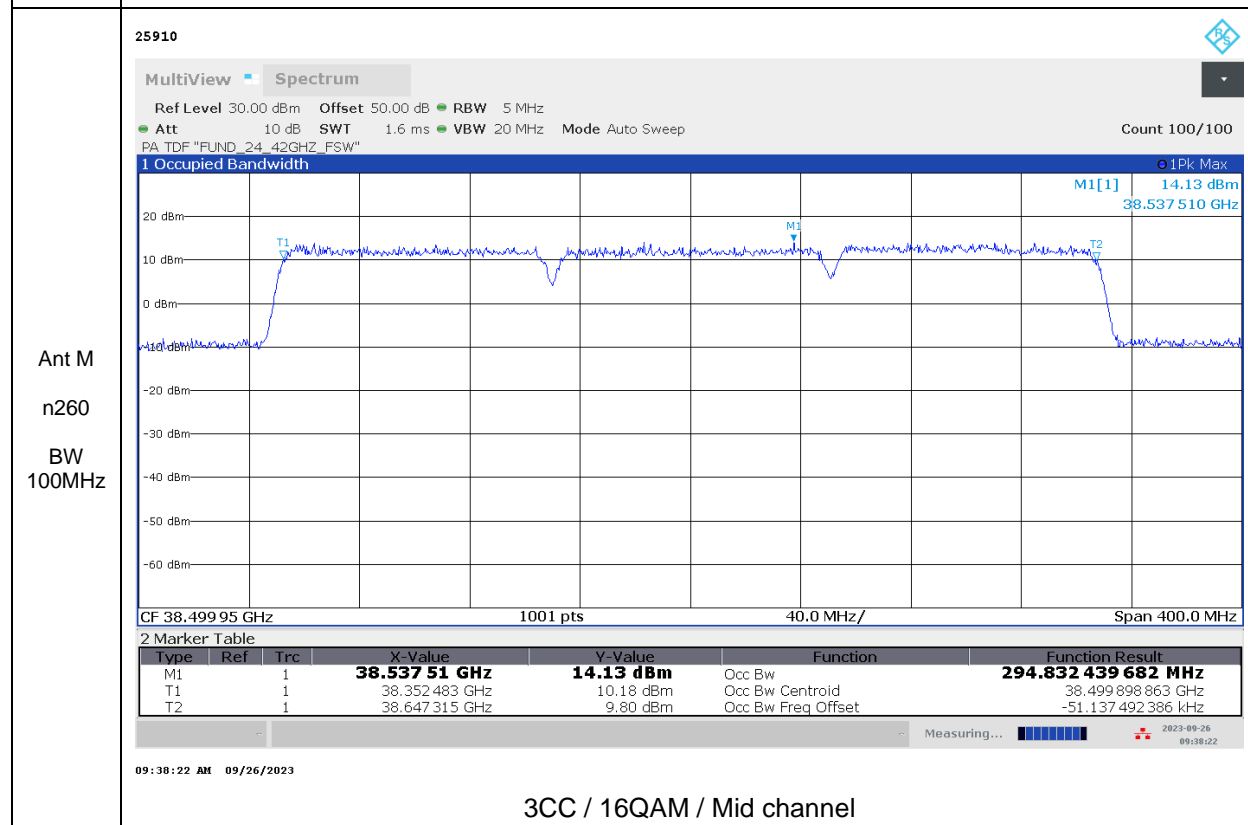
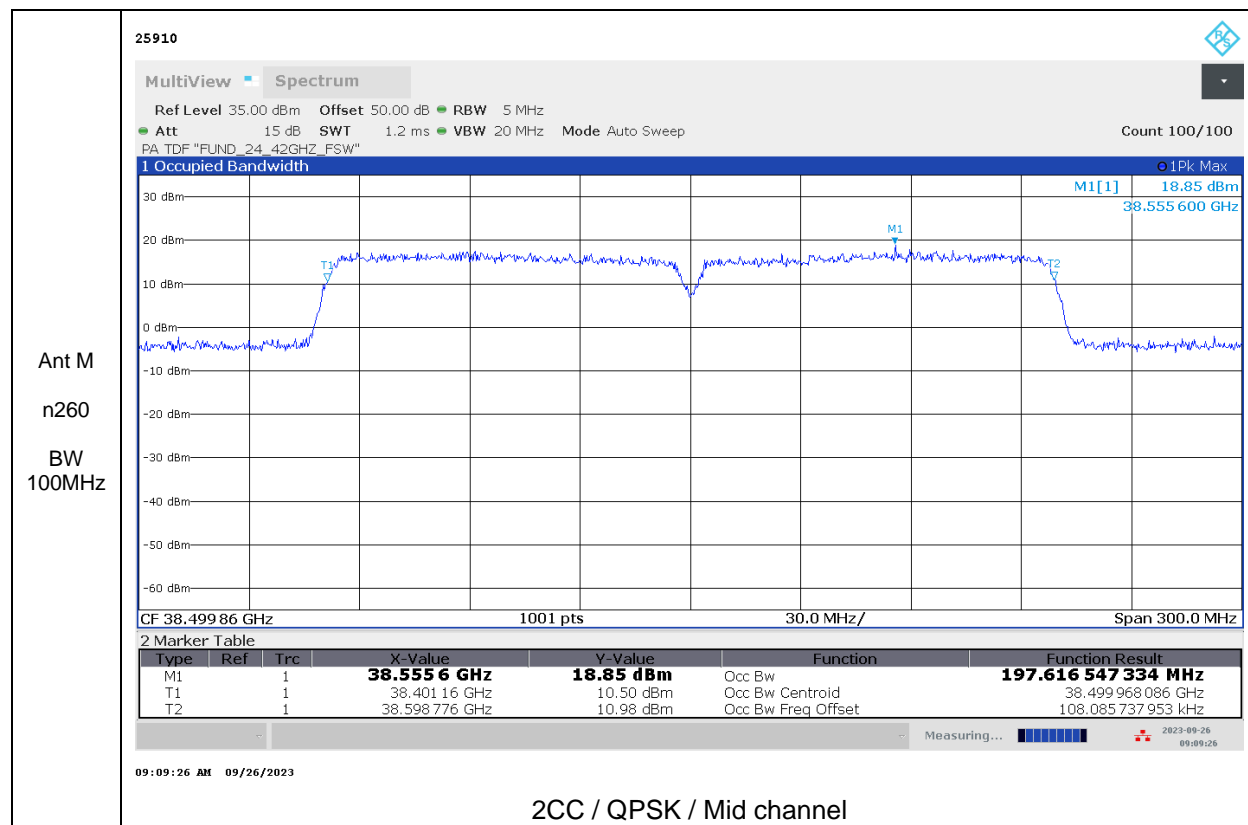


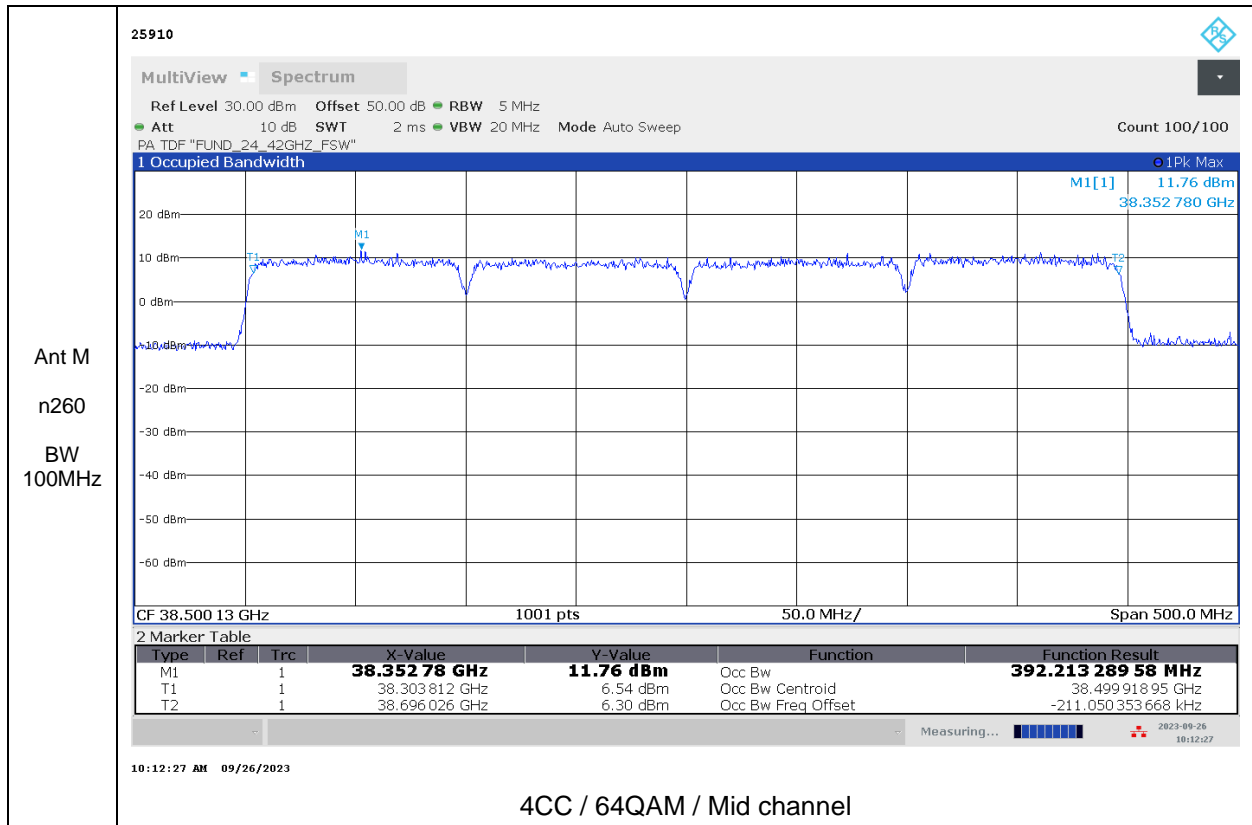




Antena 1 / Ant M / Band n260







8.2. EQUIVALENT ISOTROPIC RADIATED POWER

RULE PART(S)

FCC: §2.1046, §30.202

LIMITS

30.202 (b) - For mobile stations, the average power of the sum of all antenna elements is limited to a maximum EIRP of +43 dBm.

TEST PROCEDURE

Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.

- a) RBW = 1 – 5% of the OBW, not to exceed 1MHz
- b) VBW \geq 3 x RBW
- c) Span = 2x to 3x the OBW
- d) number of measurement points in sweep > 2 x span / RBW
- e) Sweep time = auto-couple
- f) Detector = RMS
- g) Trace mode = average over 100 sweeps

(KDB 842590 D01 Upper Microwave Flexible Use Service v01r02 Section 4.2)
(ANSI C63.26-2015 Section 5.2.4.4.1)

Note

EIRP measurements were taken at 3m test distance.

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.

The average EIRP reported below is calculated per section 5.2.7 of ANSI C63.26-2015 which states: EIRP (dBm) = E (dB μ V/m) + 20log(D) – 104.8; where D is the measurement distance (in the far field region) in meter.

The field strength E is calculated E (dB μ V/m) = Spectrum Analyzer Channel Power Level (dBm) + Antenna Factor (dB/m) + Cable Loss (dB) + 107.

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

In order properly display of signal level on the plots, the pre-loaded correction factors were intentional lowered by 50 dB and an offset factor of 50 dB was applied on spectrum analyzer to compensate the true correction factors across frequency range of measurement.

For M and N patch antenna was pi/2-BPSK, QPSK, 16QAM and 64QAM modulations were all investigated in SISO, SISO-Dual and MIMO configurations. Full data is provided for those combinations. Single RB (highest power) and full RB allocations were measured, but worst RB allocation was reported.

5G NR: All Waveforms (CP-OFDM vs DFT-s OFDM) 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.

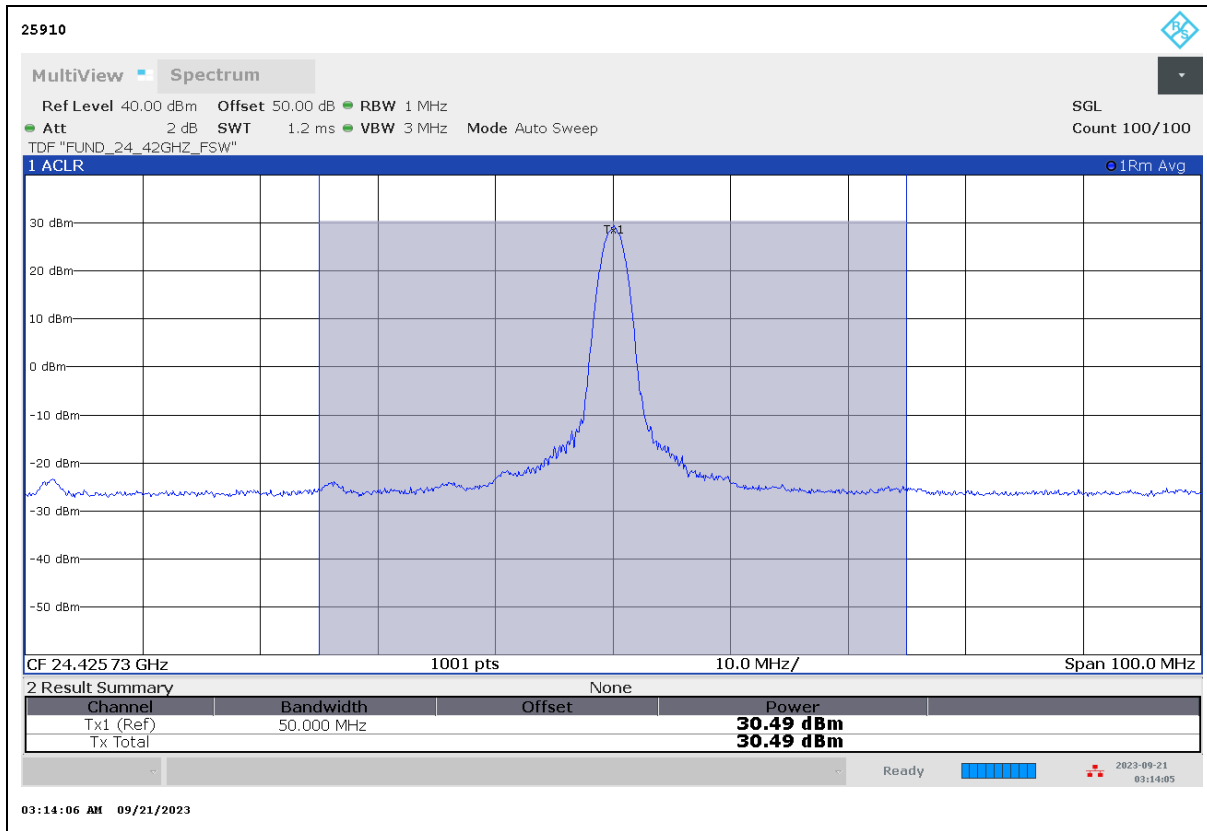
RESULTS

8.2.1. EIRP Results

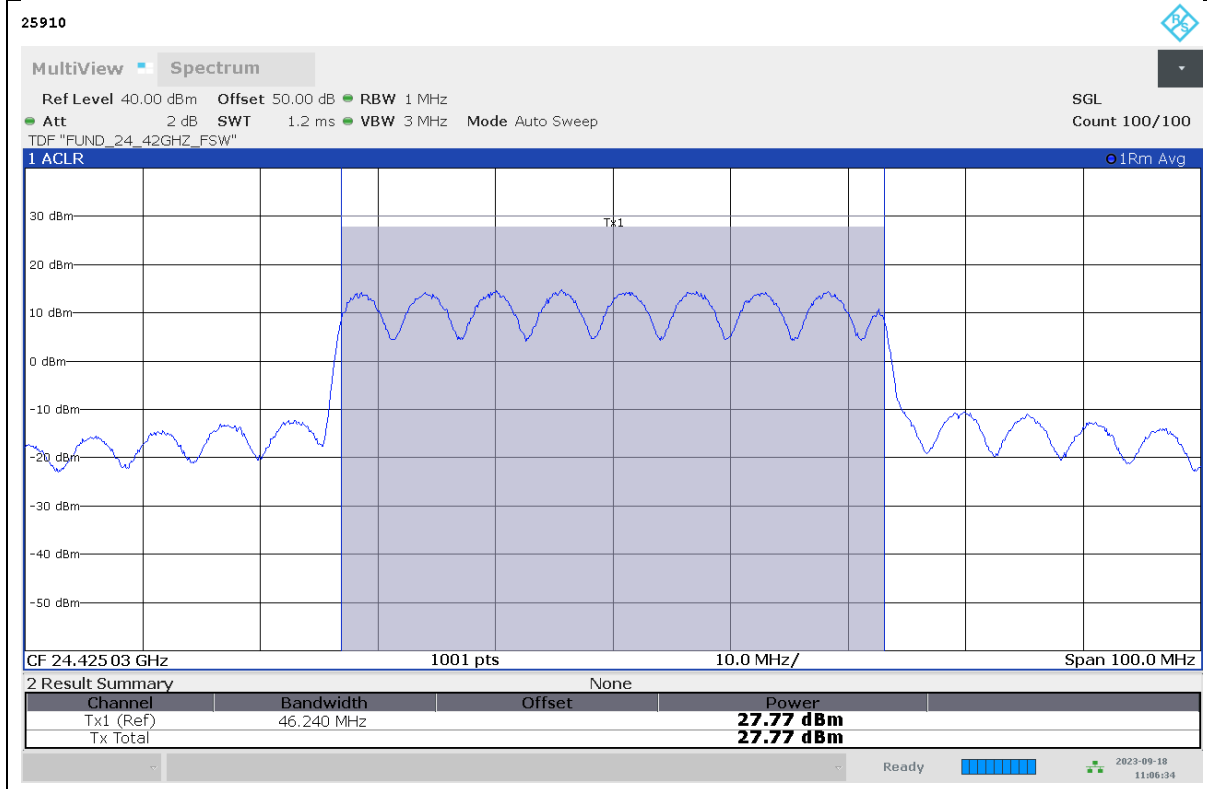
Antenna 1 / Ant M / Band n258 SB1

Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	Ant Pol	RB	Result(dBm)
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO	24275	281	H	H	1_16	27.72
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO	24350	281	H	H	1_16	27.84
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO	24425	281	H	H	1_16	28.40
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	BPSK	SISO	24425	281	H	H	1_16	28.31
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	16QAM	SISO	24425	281	H	H	1_16	28.17
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	64QAM	SISO	24425	281	H	H	1_16	24.97
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO	24275	281	H	H	32_0	27.52
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO	24350	281	H	H	32_0	27.76
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO	24425	281	H	H	32_0	28.19
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO	24300	281	H	H	1_33	27.81
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO	24350	281	H	H	1_33	28.02
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO	24400	281	H	H	1_33	28.23
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	BPSK	SISO	24400	281	H	H	1_33	28.04
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	16QAM	SISO	24400	281	H	H	1_33	27.76
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	64QAM	SISO	24400	281	H	H	1_33	24.54
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO	24300	281	H	H	64_0	27.56
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO	24350	281	H	H	64_0	27.71
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO	24400	281	H	H	64_0	27.95

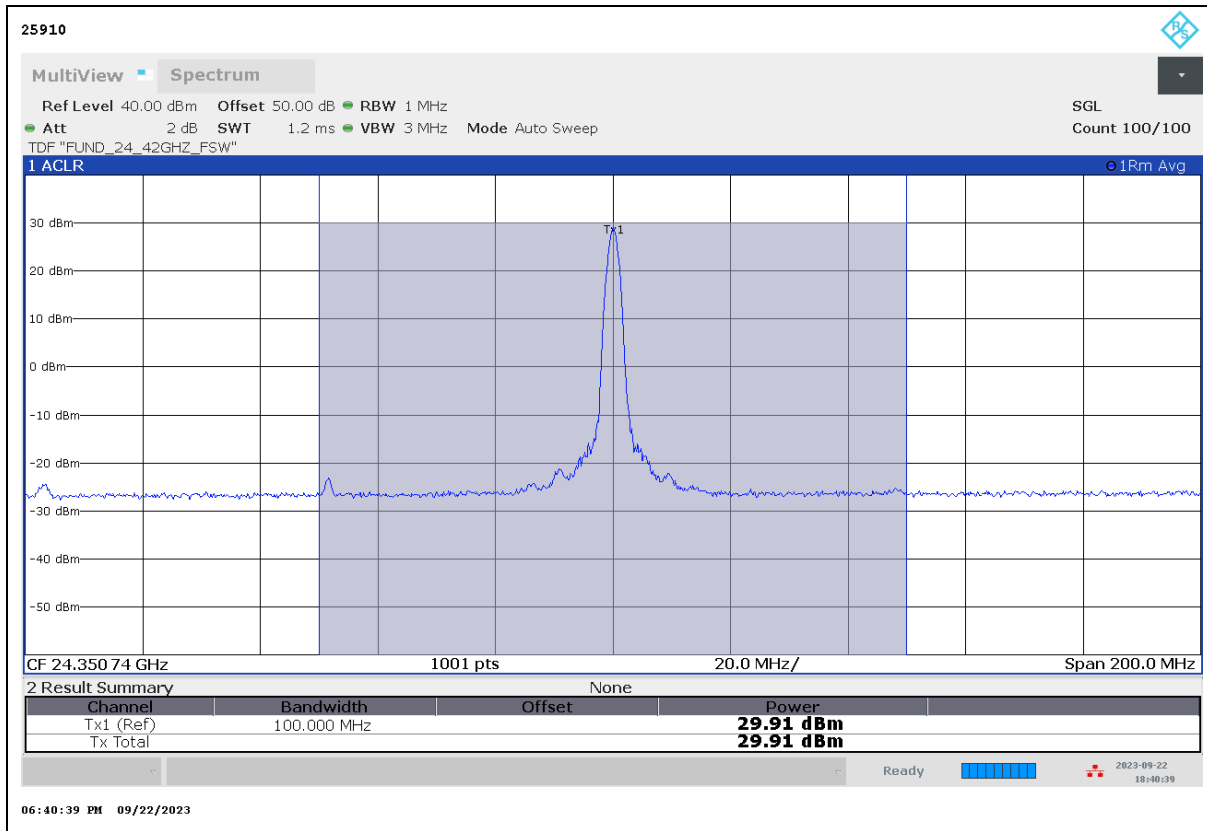
Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	RB	Result(dBm)
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO-Dual	24275	36+292	H+V	1_16	29.70
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO-Dual	24350	36+292	H+V	1_16	30.21
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO-Dual	24425	36+292	H+V	1_16	30.49
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	BPSK	SISO-Dual	24425	36+292	H+V	1_16	30.22
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	16QAM	SISO-Dual	24425	36+292	H+V	1_16	30.19
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	64QAM	SISO-Dual	24425	36+292	H+V	1_16	26.98
EIRP	CP	n258 SB1	Ant M	50	1CC	QPSK	MIMO	24425	36+292	H+V	1_16	28.50
EIRP	CP	n258 SB1	Ant M	50	1CC	16QAM	MIMO	24425	36+292	H+V	1_16	27.57
EIRP	CP	n258 SB1	Ant M	50	1CC	64QAM	MIMO	24425	36+292	H+V	1_16	23.86
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO-Dual	24275	36+292	H+V	32_0	27.04
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO-Dual	24350	36+292	H+V	32_0	27.30
EIRP	DFT-s	n258 SB1	Ant M	50	1CC	QPSK	SISO-Dual	24425	36+292	H+V	32_0	27.77
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO-Dual	24300	36+292	H+V	1_33	29.21
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO-Dual	24350	36+292	H+V	1_33	29.91
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO-Dual	24400	36+292	H+V	1_33	29.44
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	BPSK	SISO-Dual	24350	36+292	H+V	1_33	29.74
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	16QAM	SISO-Dual	24350	36+292	H+V	1_33	29.53
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	64QAM	SISO-Dual	24350	36+292	H+V	1_33	25.66
EIRP	CP	n258 SB1	Ant M	100	1CC	QPSK	MIMO	24350	36+292	H+V	1_33	28.09
EIRP	CP	n258 SB1	Ant M	100	1CC	16QAM	MIMO	24350	36+292	H+V	1_33	27.29
EIRP	CP	n258 SB1	Ant M	100	1CC	64QAM	MIMO	24350	36+292	H+V	1_33	21.84
EIRP	DFT-s	n258 SB1	Ant M	100+100	2CC	QPSK	SISO-Dual	24350	36+292	H+V	1_33	22.26
EIRP	DFT-s	n258 SB1	Ant M	100+100	2CC	BPSK	SISO-Dual	24350	36+292	H+V	1_33	22.26
EIRP	DFT-s	n258 SB1	Ant M	100+100	2CC	16QAM	SISO-Dual	24350	36+292	H+V	1_33	21.97
EIRP	DFT-s	n258 SB1	Ant M	100+100	2CC	64QAM	SISO-Dual	24350	36+292	H+V	1_33	22.98
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO-Dual	24300	36+292	H+V	64_0	27.03
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO-Dual	24350	36+292	H+V	64_0	27.12
EIRP	DFT-s	n258 SB1	Ant M	100	1CC	QPSK	SISO-Dual	24400	36+292	H+V	64_0	27.49
EIRP	DFT-s	n258 SB1	Ant M	100+100	2CC	QPSK	SISO-Dual	24400	36+292	H+V	64_0	26.53
EIRP	DFT-s	n258 SB1	Ant M	100+100	2CC	BPSK	SISO-Dual	24400	36+292	H+V	64_0	26.50
EIRP	DFT-s	n258 SB1	Ant M	100+100	2CC	16QAM	SISO-Dual	24400	36+292	H+V	64_0	26.02
EIRP	DFT-s	n258 SB1	Ant M	100+100	2CC	64QAM	SISO-Dual	24400	36+292	H+V	64_0	22.33



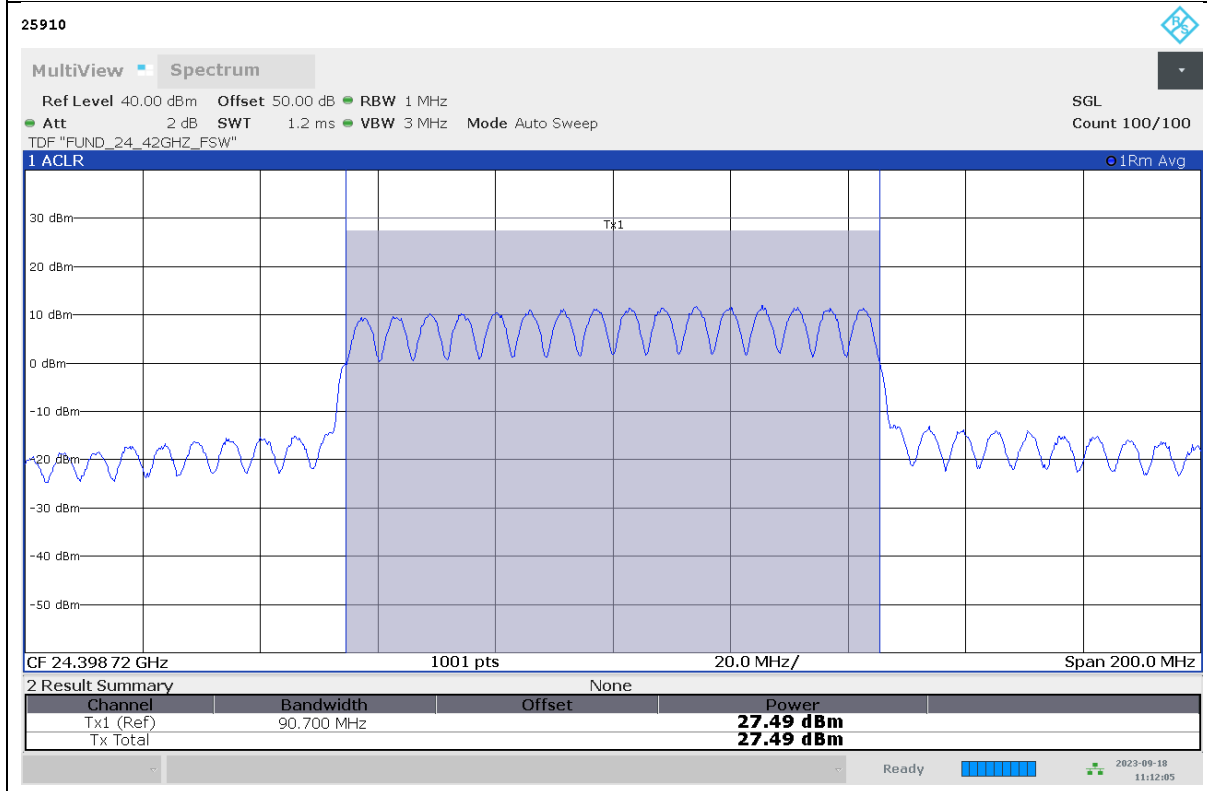
1CC / DFT-s / QPSK / SISO-Dual / High channel / 1RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / High channel / Full RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / Mid channel / 1RB / 100 MHz

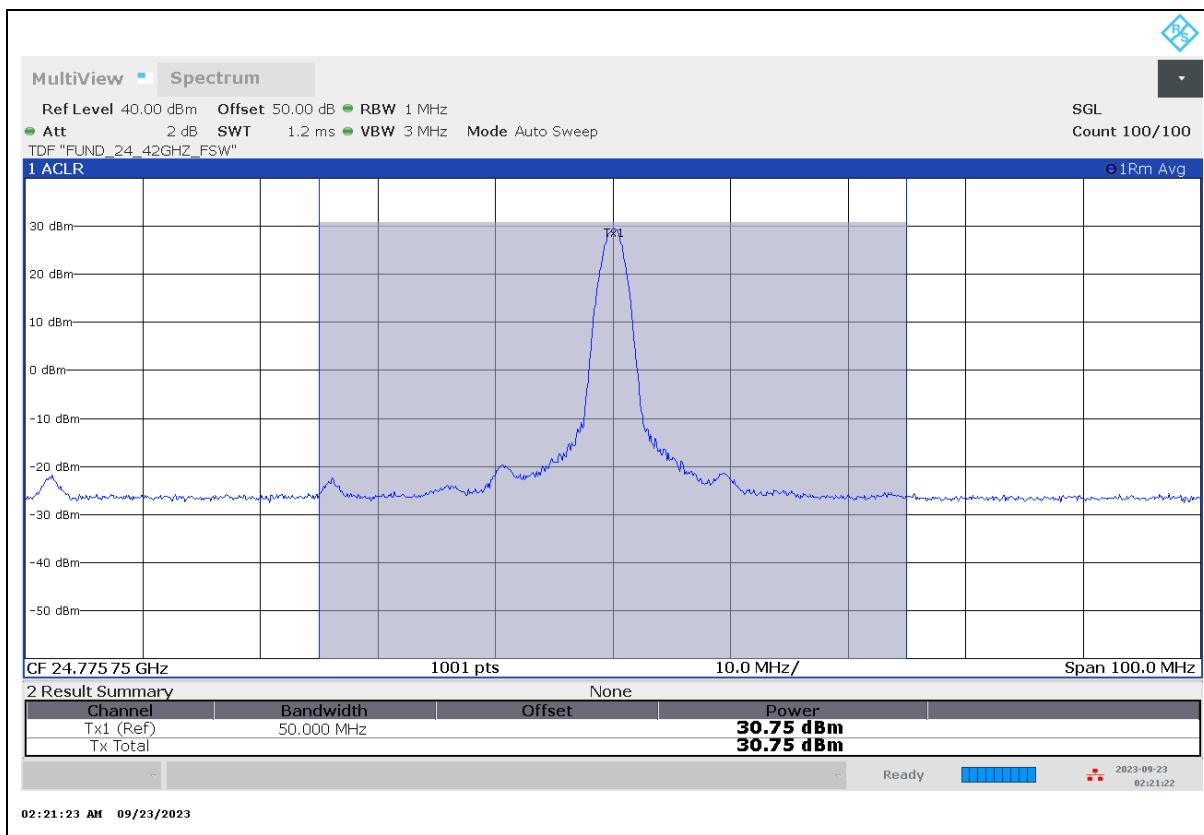


1CC / DFT-s / QPSK / SISO-Dual / High channel / Full RB / 100 MHz

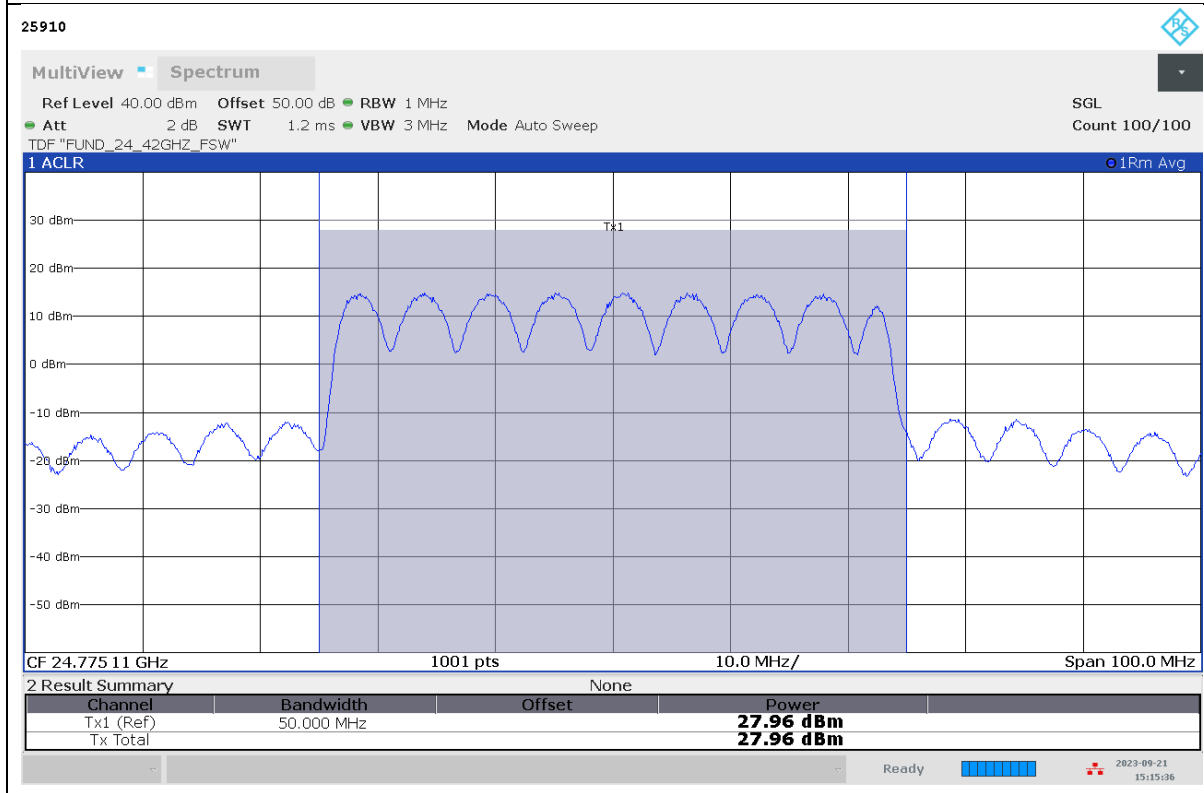
Antenna 1 / Ant M / Band n258 SB2

Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	Ant Pol	RB	Result(dBm)
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO	24775	281	H	H	1_16	28.45
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO	25000	281	H	H	1_16	27.57
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO	25225	281	H	H	1_16	27.96
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	BPSK	SISO	24775	281	H	H	1_16	28.30
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	16QAM	SISO	24775	281	H	H	1_16	28.40
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	64QAM	SISO	24775	281	H	H	1_16	25.43
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO	24775	281	H	H	32_0	28.01
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO	25000	281	H	H	32_0	27.58
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO	25225	281	H	H	32_0	27.75
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO	24800	281	H	H	1_33	28.50
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO	25000	281	H	H	1_33	27.41
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO	25200	281	H	H	1_33	27.98
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	BPSK	SISO	24800	281	H	H	1_33	28.08
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	16QAM	SISO	24800	281	H	H	1_33	28.42
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	64QAM	SISO	24800	281	H	H	1_33	25.19
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO	24800	281	H	H	64_0	27.85
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO	25000	281	H	H	64_0	27.58
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO	25200	281	H	H	64_0	27.74

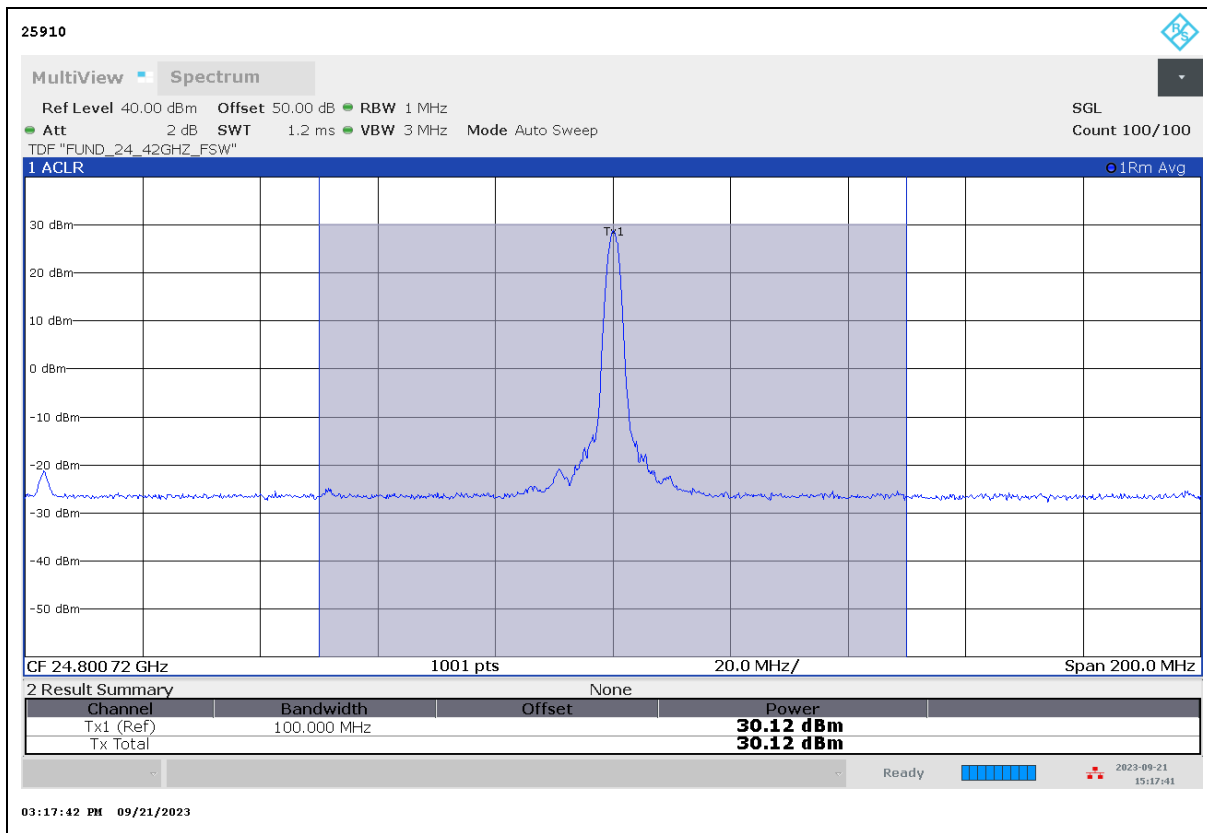
Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	RB	Result(dBm)
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO-Dual	24775	36+292	H+V	1_16	30.75
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO-Dual	25000	36+292	H+V	1_16	30.16
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO-Dual	25225	36+292	H+V	1_16	30.21
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	BPSK	SISO-Dual	24775	36+292	H+V	1_16	30.52
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	16QAM	SISO-Dual	24775	36+292	H+V	1_16	30.47
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	64QAM	SISO-Dual	24775	36+292	H+V	1_16	27.36
EIRP	CP	n258 SB2	Ant M	50	1CC	QPSK	MIMO	24775	36+292	H+V	1_16	29.47
EIRP	CP	n258 SB2	Ant M	50	1CC	16QAM	MIMO	24775	36+292	H+V	1_16	28.01
EIRP	CP	n258 SB2	Ant M	50	1CC	64QAM	MIMO	24775	36+292	H+V	1_16	23.93
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO-Dual	24775	36+292	H+V	32_0	27.96
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO-Dual	25000	36+292	H+V	32_0	27.57
EIRP	DFT-s	n258 SB2	Ant M	50	1CC	QPSK	SISO-Dual	25225	36+292	H+V	32_0	27.53
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO-Dual	24800	36+292	H+V	1_33	30.12
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO-Dual	25000	36+292	H+V	1_33	29.38
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO-Dual	25200	36+292	H+V	1_33	29.40
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	BPSK	SISO-Dual	24800	36+292	H+V	1_33	29.68
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	16QAM	SISO-Dual	24800	36+292	H+V	1_33	29.57
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	64QAM	SISO-Dual	24800	36+292	H+V	1_33	26.38
EIRP	CP	n258 SB2	Ant M	100	1CC	QPSK	MIMO	24800	36+292	H+V	1_33	28.58
EIRP	CP	n258 SB2	Ant M	100	1CC	16QAM	MIMO	24800	36+292	H+V	1_33	27.71
EIRP	CP	n258 SB2	Ant M	100	1CC	64QAM	MIMO	24800	36+292	H+V	1_33	22.49
EIRP	DFT-s	n258 SB2	Ant M	100+100	2CC	QPSK	SISO-Dual	24800	36+292	H+V	1_33	23.21
EIRP	DFT-s	n258 SB2	Ant M	100+100	2CC	BPSK	SISO-Dual	24800	36+292	H+V	1_33	23.26
EIRP	DFT-s	n258 SB2	Ant M	100+100	2CC	16QAM	SISO-Dual	24800	36+292	H+V	1_33	22.55
EIRP	DFT-s	n258 SB2	Ant M	100+100	2CC	64QAM	SISO-Dual	24800	36+292	H+V	1_33	22.44
EIRP	DFT-s	n258 SB2	Ant M	100+100+100	3CC	QPSK	SISO-Dual	24800	36+292	H+V	1_33	23.80
EIRP	DFT-s	n258 SB2	Ant M	100+100+100	3CC	BPSK	SISO-Dual	24800	36+292	H+V	1_33	23.95
EIRP	DFT-s	n258 SB2	Ant M	100+100+100	3CC	16QAM	SISO-Dual	24800	36+292	H+V	1_33	23.03
EIRP	DFT-s	n258 SB2	Ant M	100+100+100	3CC	64QAM	SISO-Dual	24800	36+292	H+V	1_33	23.53
EIRP	DFT-s	n258 SB2	Ant M	100+100+100+100	4CC	QPSK	SISO-Dual	24800	36+292	H+V	1_33	23.37
EIRP	DFT-s	n258 SB2	Ant M	100+100+100+100	4CC	BPSK	SISO-Dual	24800	36+292	H+V	1_33	23.24
EIRP	DFT-s	n258 SB2	Ant M	100+100+100+100	4CC	16QAM	SISO-Dual	24800	36+292	H+V	1_33	23.25
EIRP	DFT-s	n258 SB2	Ant M	100+100+100+100	4CC	64QAM	SISO-Dual	24800	36+292	H+V	1_33	23.24
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO-Dual	24800	36+292	H+V	64_0	27.81
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO-Dual	25000	36+292	H+V	64_0	27.41
EIRP	DFT-s	n258 SB2	Ant M	100	1CC	QPSK	SISO-Dual	25200	36+292	H+V	64_0	27.52
EIRP	DFT-s	n258 SB2	Ant M	100+100	2CC	QPSK	SISO-Dual	24800	36+292	H+V	64_0	27.46
EIRP	DFT-s	n258 SB2	Ant M	100+100	2CC	BPSK	SISO-Dual	24800	36+292	H+V	64_0	27.51
EIRP	DFT-s	n258 SB2	Ant M	100+100	2CC	16QAM	SISO-Dual	24800	36+292	H+V	64_0	27.03
EIRP	DFT-s	n258 SB2	Ant M	100+100	2CC	64QAM	SISO-Dual	24800	36+292	H+V	64_0	23.34
EIRP	DFT-s	n258 SB2	Ant M	100+100+100	3CC	QPSK	SISO-Dual	24800	36+292	H+V	64_0	25.23
EIRP	DFT-s	n258 SB2	Ant M	100+100+100	3CC	BPSK	SISO-Dual	24800	36+292	H+V	64_0	25.23
EIRP	DFT-s	n258 SB2	Ant M	100+100+100	3CC	16QAM	SISO-Dual	24800	36+292	H+V	64_0	24.18
EIRP	DFT-s	n258 SB2	Ant M	100+100+100	3CC	64QAM	SISO-Dual	24800	36+292	H+V	64_0	22.11
EIRP	DFT-s	n258 SB2	Ant M	100+100+100+100	4CC	QPSK	SISO-Dual	24800	36+292	H+V	64_0	25.14
EIRP	DFT-s	n258 SB2	Ant M	100+100+100+100	4CC	BPSK	SISO-Dual	24800	36+292	H+V	64_0	25.07
EIRP	DFT-s	n258 SB2	Ant M	100+100+100+100	4CC	16QAM	SISO-Dual	24800	36+292	H+V	64_0	24.07
EIRP	DFT-s	n258 SB2	Ant M	100+100+100+100	4CC	64QAM	SISO-Dual	24800	36+292	H+V	64_0	21.95



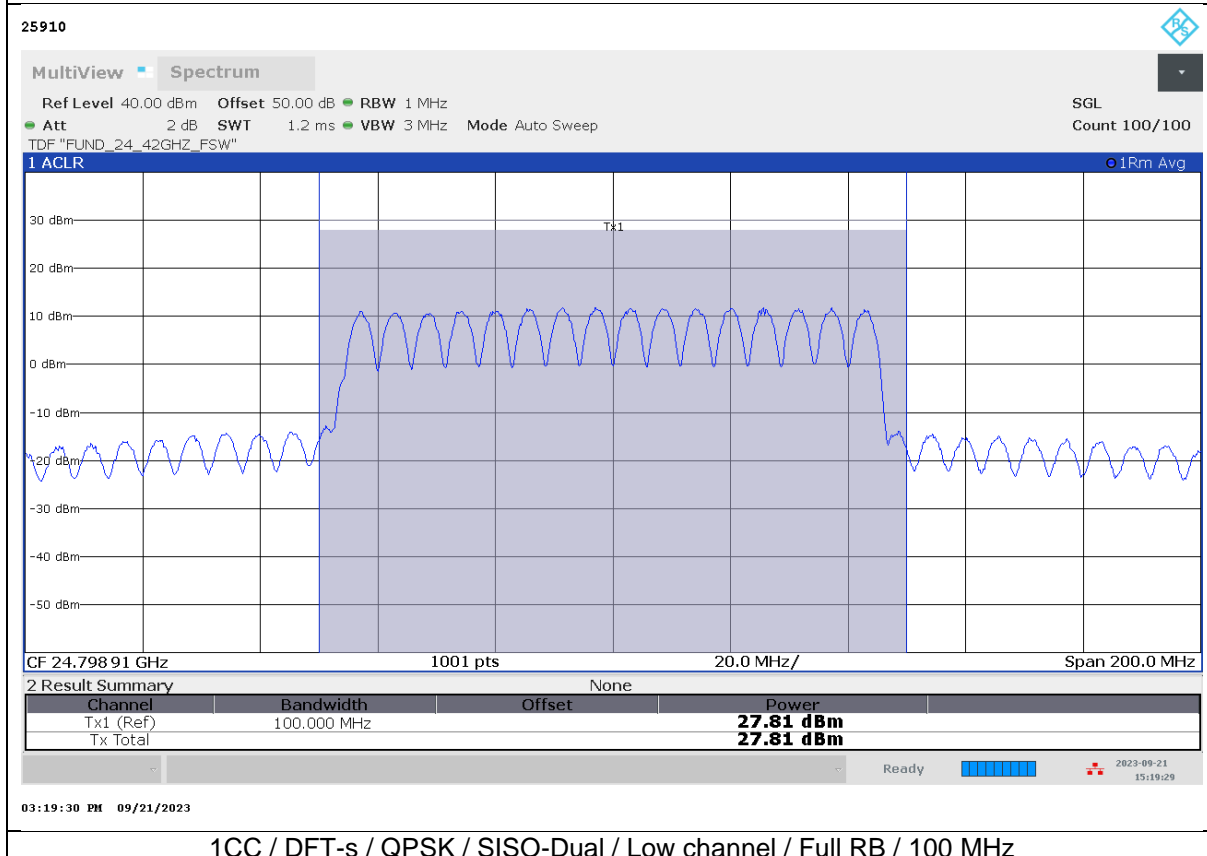
1CC / DFT-s / QPSK / SISO-Dual / Low channel / 1RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / Low channel / Full RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / Low channel / 1RB / 100 MHz

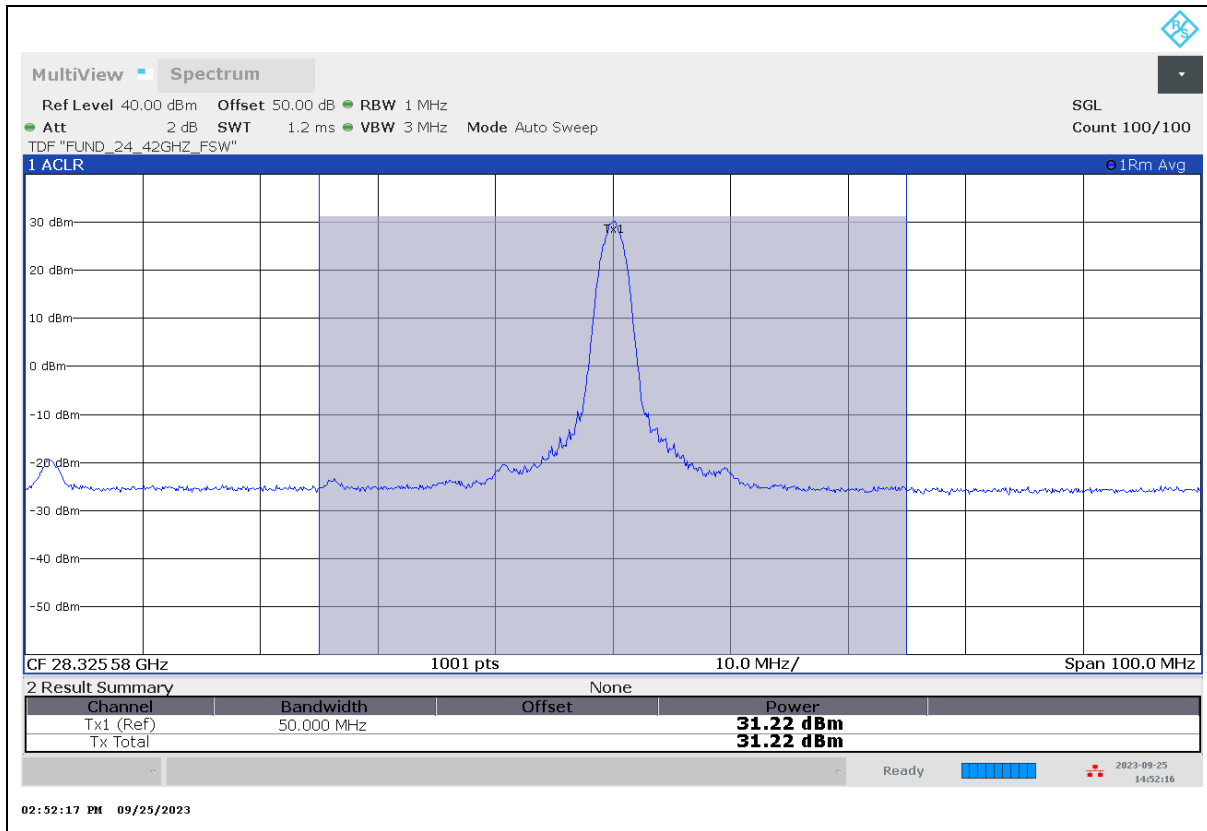


1CC / DFT-s / QPSK / SISO-Dual / Low channel / Full RB / 100 MHz

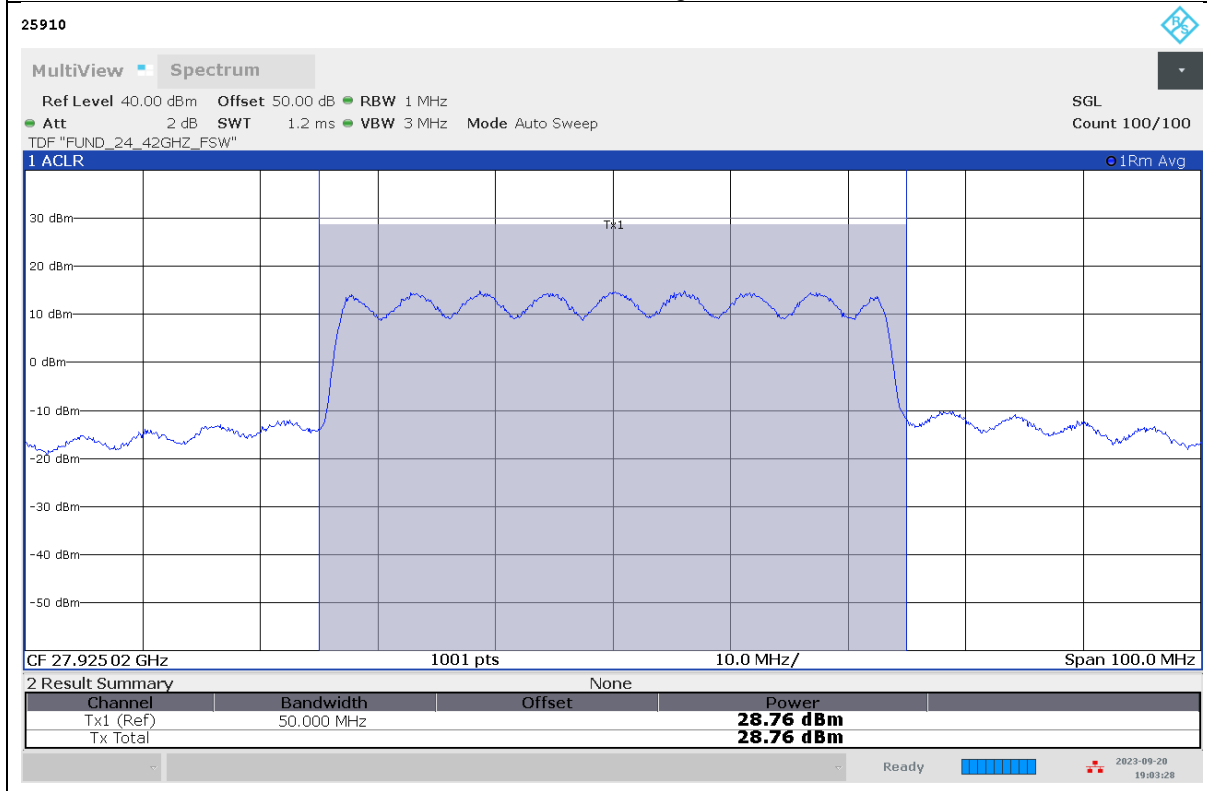
Antenna 1 / Ant M / Band n261

Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	Ant Pol	RB	Result(dBm)
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO	27525	292	H	H	1_16	29.61
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO	27925	292	H	H	1_16	29.66
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO	28325	292	H	H	1_16	29.42
EIRP	DFT-s	n261	Ant M	50	1CC	BPSK	SISO	27925	292	H	H	1_16	29.50
EIRP	DFT-s	n261	Ant M	50	1CC	16QAM	SISO	27925	292	H	H	1_16	28.94
EIRP	DFT-s	n261	Ant M	50	1CC	64QAM	SISO	27925	292	H	H	1_16	25.83
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO	27525	292	H	H	32_0	28.92
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO	27925	292	H	H	32_0	28.91
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO	28325	292	H	H	32_0	28.47
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO	27550	292	H	H	1_33	29.71
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO	27925	292	H	H	1_33	29.46
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO	28300	292	H	H	1_33	28.85
EIRP	DFT-s	n261	Ant M	100	1CC	BPSK	SISO	27550	292	H	H	1_33	29.67
EIRP	DFT-s	n261	Ant M	100	1CC	16QAM	SISO	27550	292	H	H	1_33	29.00
EIRP	DFT-s	n261	Ant M	100	1CC	64QAM	SISO	27550	292	H	H	1_33	25.88
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO	27550	292	H	H	64_0	28.93
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO	27925	292	H	H	64_0	28.84
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO	28300	292	H	H	64_0	28.64

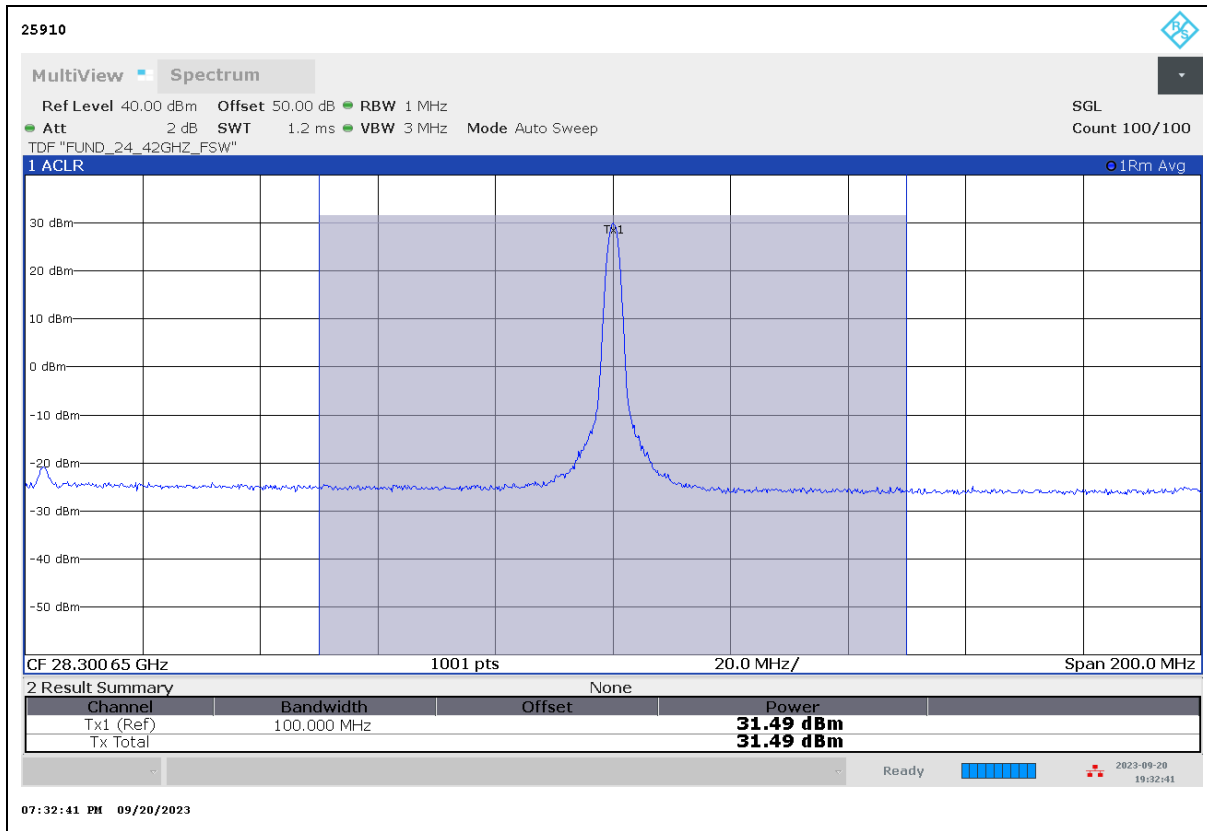
Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	RB	Result(dBm)
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO-Dual	27525	27+283	H+V	1_16	30.03
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO-Dual	27925	27+283	H+V	1_16	30.88
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO-Dual	28325	27+283	H+V	1_16	31.22
EIRP	DFT-s	n261	Ant M	50	1CC	BPSK	SISO-Dual	28325	27+283	H+V	1_16	31.21
EIRP	DFT-s	n261	Ant M	50	1CC	16QAM	SISO-Dual	28325	27+283	H+V	1_16	30.64
EIRP	DFT-s	n261	Ant M	50	1CC	64QAM	SISO-Dual	28325	27+283	H+V	1_16	27.49
EIRP	CP	n261	Ant M	50	1CC	QPSK	MIMO	28325	27+283	H+V	1_16	29.35
EIRP	CP	n261	Ant M	50	1CC	16QAM	MIMO	28325	27+283	H+V	1_16	28.31
EIRP	CP	n261	Ant M	50	1CC	64QAM	MIMO	28325	27+283	H+V	1_16	23.99
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO-Dual	27525	27+283	H+V	32_0	28.42
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO-Dual	27925	27+283	H+V	32_0	28.76
EIRP	DFT-s	n261	Ant M	50	1CC	QPSK	SISO-Dual	28325	27+283	H+V	32_0	27.99
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO-Dual	27550	27+283	H+V	1_33	30.48
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO-Dual	27925	27+283	H+V	1_33	30.87
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO-Dual	28300	27+283	H+V	1_33	31.49
EIRP	DFT-s	n261	Ant M	100	1CC	BPSK	SISO-Dual	28300	27+283	H+V	1_33	31.02
EIRP	DFT-s	n261	Ant M	100	1CC	16QAM	SISO-Dual	28300	27+283	H+V	1_33	30.18
EIRP	DFT-s	n261	Ant M	100	1CC	64QAM	SISO-Dual	28300	27+283	H+V	1_33	27.16
EIRP	CP	n261	Ant M	100	1CC	QPSK	MIMO	28300	27+283	H+V	1_33	29.52
EIRP	CP	n261	Ant M	100	1CC	16QAM	MIMO	28300	27+283	H+V	1_33	28.26
EIRP	CP	n261	Ant M	100	1CC	64QAM	MIMO	28300	27+283	H+V	1_33	24.17
EIRP	DFT-s	n261	Ant M	100+100	2CC	QPSK	SISO-Dual	28300	27+283	H+V	1_33	22.70
EIRP	DFT-s	n261	Ant M	100+100	2CC	BPSK	SISO-Dual	28300	27+283	H+V	1_33	22.66
EIRP	DFT-s	n261	Ant M	100+100	2CC	16QAM	SISO-Dual	28300	27+283	H+V	1_33	22.20
EIRP	DFT-s	n261	Ant M	100+100	2CC	64QAM	SISO-Dual	28300	27+283	H+V	1_33	22.58
EIRP	DFT-s	n261	Ant M	100+100+100	3CC	QPSK	SISO-Dual	28300	27+283	H+V	1_33	23.31
EIRP	DFT-s	n261	Ant M	100+100+100	3CC	BPSK	SISO-Dual	28300	27+283	H+V	1_33	22.66
EIRP	DFT-s	n261	Ant M	100+100+100	3CC	16QAM	SISO-Dual	28300	27+283	H+V	1_33	22.67
EIRP	DFT-s	n261	Ant M	100+100+100	3CC	64QAM	SISO-Dual	28300	27+283	H+V	1_33	21.62
EIRP	DFT-s	n261	Ant M	100+100+100+100	4CC	QPSK	SISO-Dual	28300	27+283	H+V	1_33	22.99
EIRP	DFT-s	n261	Ant M	100+100+100+100	4CC	BPSK	SISO-Dual	28300	27+283	H+V	1_33	20.91
EIRP	DFT-s	n261	Ant M	100+100+100+100	4CC	16QAM	SISO-Dual	28300	27+283	H+V	1_33	23.41
EIRP	DFT-s	n261	Ant M	100+100+100+100	4CC	64QAM	SISO-Dual	28300	27+283	H+V	1_33	20.87
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO-Dual	27550	27+283	H+V	64_0	28.37
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO-Dual	27925	27+283	H+V	64_0	28.67
EIRP	DFT-s	n261	Ant M	100	1CC	QPSK	SISO-Dual	28300	27+283	H+V	64_0	28.12
EIRP	DFT-s	n261	Ant M	100+100	2CC	QPSK	SISO-Dual	27925	27+283	H+V	64_0	28.16
EIRP	DFT-s	n261	Ant M	100+100	2CC	BPSK	SISO-Dual	27925	27+283	H+V	64_0	28.16
EIRP	DFT-s	n261	Ant M	100+100	2CC	16QAM	SISO-Dual	27925	27+283	H+V	64_0	27.60
EIRP	DFT-s	n261	Ant M	100+100	2CC	64QAM	SISO-Dual	27925	27+283	H+V	64_0	24.10
EIRP	DFT-s	n261	Ant M	100+100+100	3CC	QPSK	SISO-Dual	27925	27+283	H+V	64_0	25.85
EIRP	DFT-s	n261	Ant M	100+100+100	3CC	BPSK	SISO-Dual	27925	27+283	H+V	64_0	25.84
EIRP	DFT-s	n261	Ant M	100+100+100	3CC	16QAM	SISO-Dual	27925	27+283	H+V	64_0	24.82
EIRP	DFT-s	n261	Ant M	100+100+100	3CC	64QAM	SISO-Dual	27925	27+283	H+V	64_0	22.79
EIRP	DFT-s	n261	Ant M	100+100+100+100	4CC	QPSK	SISO-Dual	27925	27+283	H+V	64_0	25.90
EIRP	DFT-s	n261	Ant M	100+100+100+100	4CC	BPSK	SISO-Dual	27925	27+283	H+V	64_0	25.94
EIRP	DFT-s	n261	Ant M	100+100+100+100	4CC	16QAM	SISO-Dual	27925	27+283	H+V	64_0	24.92
EIRP	DFT-s	n261	Ant M	100+100+100+100	4CC	64QAM	SISO-Dual	27925	27+283	H+V	64_0	22.78



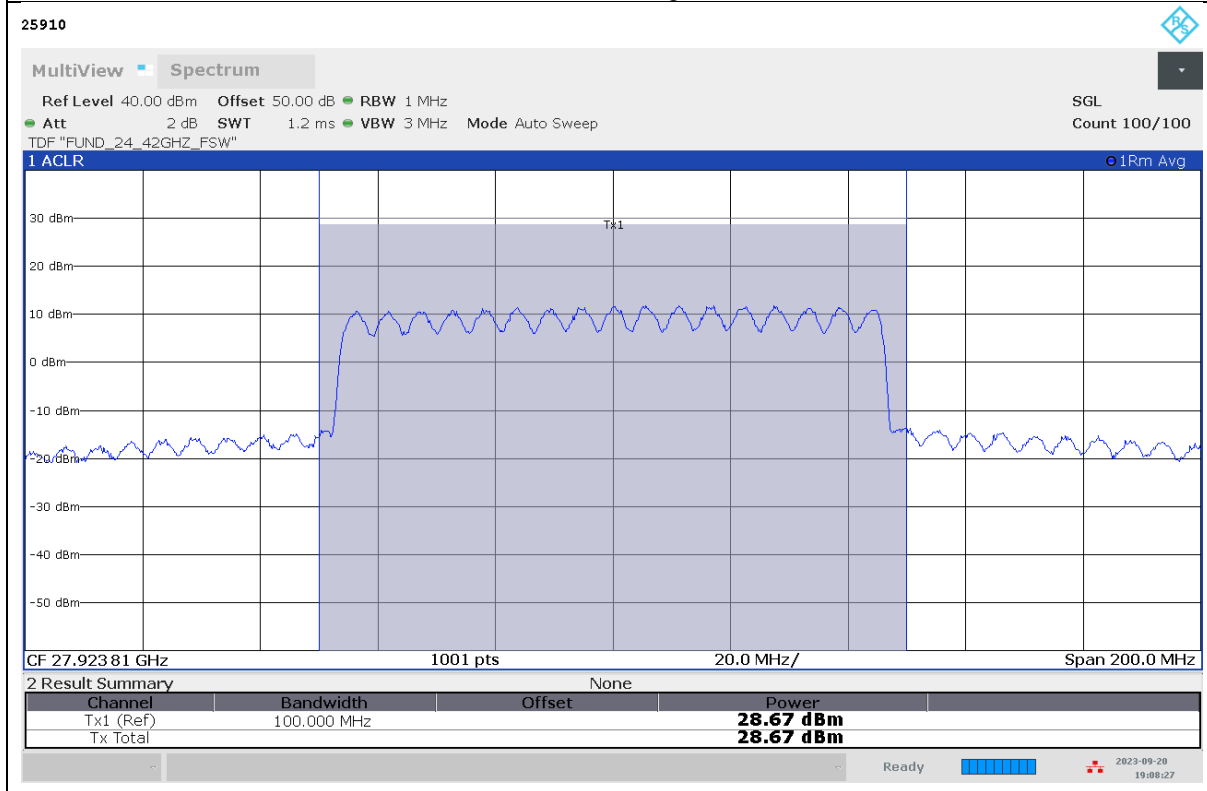
1CC / DFT-s / QPSK / SISO-Dual / High channel / 1RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / Mid channel / Full RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / High channel / 1RB / 100 MHz

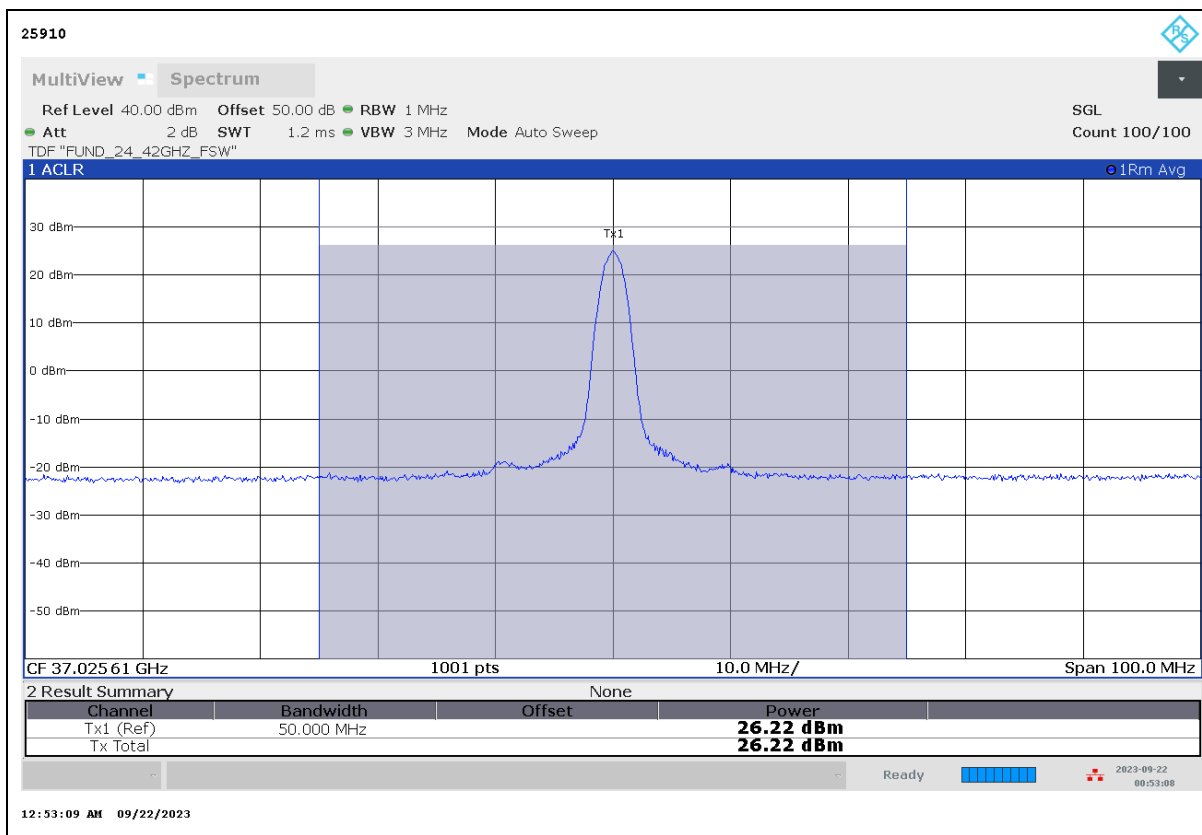


1CC / DFT-s / QPSK / SISO-Dual / Mid channel / Full RB / 100 MHz

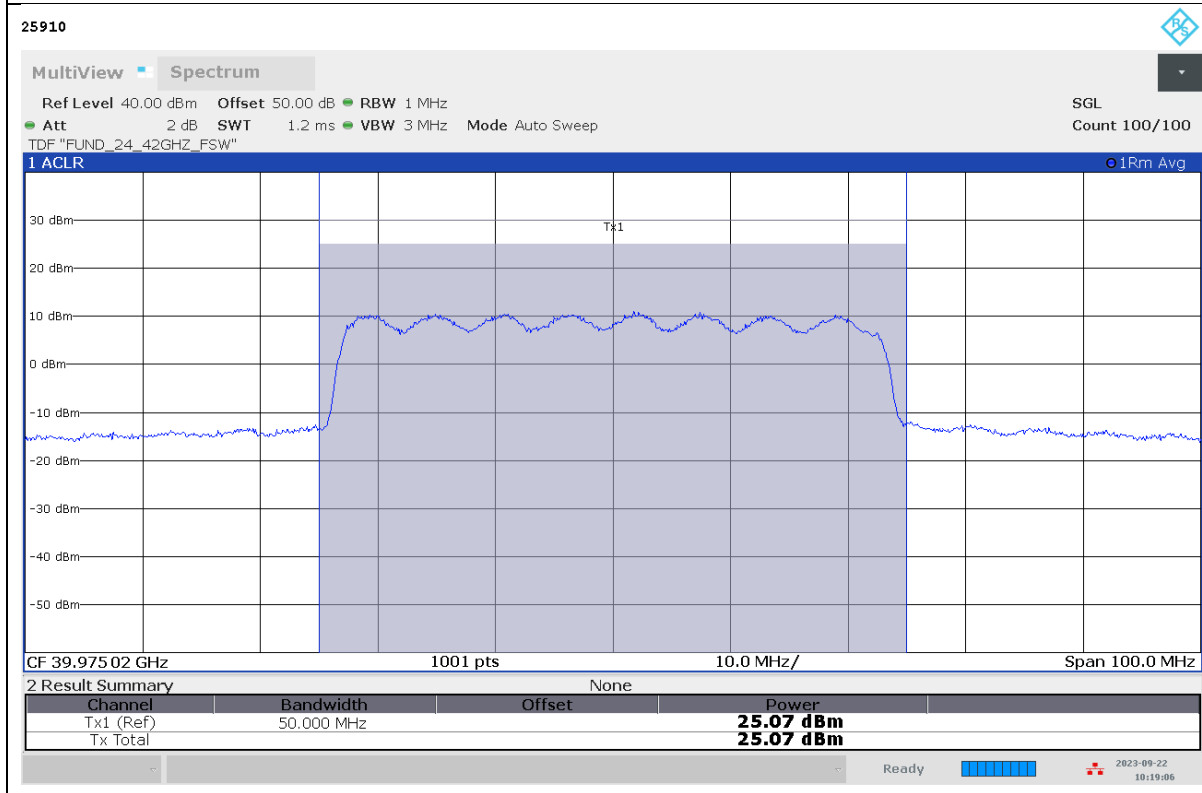
Antenna 1 / Ant M / Band n260

Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	Ant Pol	RB	Result(dBm)
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO	37025	291	V	V	1_16	24.59
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO	38500	291	V	V	1_16	25.41
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO	39975	291	V	V	1_16	26.12
EIRP	DFT-s	n260	Ant M	50	1CC	BPSK	SISO	39975	291	V	V	1_16	25.50
EIRP	DFT-s	n260	Ant M	50	1CC	16QAM	SISO	39975	291	V	V	1_16	25.34
EIRP	DFT-s	n260	Ant M	50	1CC	64QAM	SISO	39975	291	V	V	1_16	22.13
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO	37025	291	V	V	32_0	24.23
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO	38500	291	V	V	32_0	24.96
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO	39975	291	V	V	32_0	25.70
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO	37050	291	V	V	1_33	24.46
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO	38500	291	V	V	1_33	25.14
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO	39950	291	V	V	1_33	25.61
EIRP	DFT-s	n260	Ant M	100	1CC	BPSK	SISO	39950	291	V	V	1_32	25.19
EIRP	DFT-s	n260	Ant M	100	1CC	16QAM	SISO	39950	291	V	V	1_32	24.78
EIRP	DFT-s	n260	Ant M	100	1CC	64QAM	SISO	39950	291	V	V	1_32	21.62
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO	37050	291	V	V	64_0	24.25
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO	38500	291	V	V	64_0	24.90
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO	39950	291	V	V	64_0	25.36

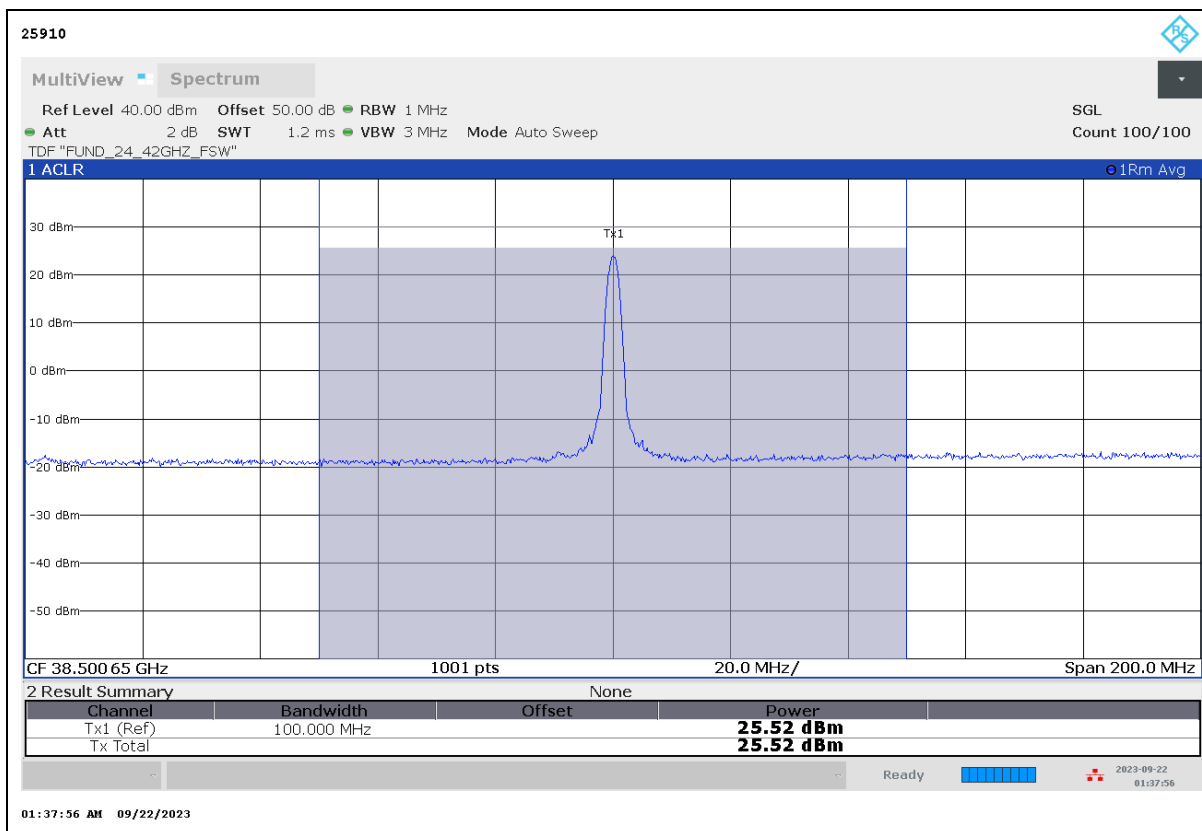
Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	RB	Result(dBm)
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO-Dual	37025	26+154	H+V	1_16	26.22
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO-Dual	38500	26+154	H+V	1_16	26.01
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO-Dual	39975	26+154	H+V	1_16	25.56
EIRP	DFT-s	n260	Ant M	50	1CC	BPSK	SISO-Dual	37025	26+154	H+V	1_16	25.97
EIRP	DFT-s	n260	Ant M	50	1CC	16QAM	SISO-Dual	37025	26+154	H+V	1_16	26.19
EIRP	DFT-s	n260	Ant M	50	1CC	64QAM	SISO-Dual	37025	26+154	H+V	1_16	23.01
EIRP	CP	n260	Ant M	50	1CC	QPSK	MIMO	37025	26+154	H+V	1_16	25.29
EIRP	CP	n260	Ant M	50	1CC	16QAM	MIMO	37025	26+154	H+V	1_16	24.47
EIRP	CP	n260	Ant M	50	1CC	64QAM	MIMO	37025	26+154	H+V	1_16	19.97
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO-Dual	37025	26+154	H+V	32_0	23.16
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO-Dual	38500	26+154	H+V	32_0	25.01
EIRP	DFT-s	n260	Ant M	50	1CC	QPSK	SISO-Dual	39975	26+154	H+V	32_0	25.07
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO-Dual	37050	26+154	H+V	1_33	25.47
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO-Dual	38500	26+154	H+V	1_33	25.52
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO-Dual	39950	26+154	H+V	1_33	25.11
EIRP	DFT-s	n260	Ant M	100	1CC	BPSK	SISO-Dual	38500	26+154	H+V	1_33	25.44
EIRP	DFT-s	n260	Ant M	100	1CC	16QAM	SISO-Dual	38500	26+154	H+V	1_33	25.38
EIRP	DFT-s	n260	Ant M	100	1CC	64QAM	SISO-Dual	38500	26+154	H+V	1_33	22.47
EIRP	CP	n260	Ant M	100	1CC	QPSK	MIMO	38500	26+154	H+V	1_33	24.53
EIRP	CP	n260	Ant M	100	1CC	16QAM	MIMO	38500	26+154	H+V	1_33	23.47
EIRP	CP	n260	Ant M	100	1CC	64QAM	MIMO	38500	26+154	H+V	1_33	19.63
EIRP	DFT-s	n260	Ant M	100+100	2CC	QPSK	SISO-Dual	38500	26+154	H+V	1_33	18.09
EIRP	DFT-s	n260	Ant M	100+100	2CC	BPSK	SISO-Dual	38500	26+154	H+V	1_33	17.90
EIRP	DFT-s	n260	Ant M	100+100	2CC	16QAM	SISO-Dual	38500	26+154	H+V	1_33	17.71
EIRP	DFT-s	n260	Ant M	100+100	2CC	64QAM	SISO-Dual	38500	26+154	H+V	1_33	17.84
EIRP	DFT-s	n260	Ant M	100+100+100	3CC	QPSK	SISO-Dual	38500	26+154	H+V	1_33	17.02
EIRP	DFT-s	n260	Ant M	100+100+100	3CC	BPSK	SISO-Dual	38500	26+154	H+V	1_33	17.47
EIRP	DFT-s	n260	Ant M	100+100+100	3CC	16QAM	SISO-Dual	38500	26+154	H+V	1_33	17.92
EIRP	DFT-s	n260	Ant M	100+100+100	3CC	64QAM	SISO-Dual	38500	26+154	H+V	1_33	17.93
EIRP	DFT-s	n260	Ant M	100+100+100+100	4CC	QPSK	SISO-Dual	38500	26+154	H+V	1_33	18.31
EIRP	DFT-s	n260	Ant M	100+100+100+100	4CC	BPSK	SISO-Dual	38500	26+154	H+V	1_33	17.63
EIRP	DFT-s	n260	Ant M	100+100+100+100	4CC	16QAM	SISO-Dual	38500	26+154	H+V	1_33	17.83
EIRP	DFT-s	n260	Ant M	100+100+100+100	4CC	64QAM	SISO-Dual	38500	26+154	H+V	1_33	17.00
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO-Dual	37050	26+154	H+V	64_0	22.71
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO-Dual	38500	26+154	H+V	64_0	25.28
EIRP	DFT-s	n260	Ant M	100	1CC	QPSK	SISO-Dual	39950	26+154	H+V	64_0	24.99
EIRP	DFT-s	n260	Ant M	100+100	2CC	QPSK	SISO-Dual	38500	26+154	H+V	64_0	23.03
EIRP	DFT-s	n260	Ant M	100+100	2CC	BPSK	SISO-Dual	38500	26+154	H+V	64_0	23.03
EIRP	DFT-s	n260	Ant M	100+100	2CC	16QAM	SISO-Dual	38500	26+154	H+V	64_0	22.53
EIRP	DFT-s	n260	Ant M	100+100	2CC	64QAM	SISO-Dual	38500	26+154	H+V	64_0	19.04
EIRP	DFT-s	n260	Ant M	100+100+100	3CC	QPSK	SISO-Dual	38500	26+154	H+V	64_0	20.79
EIRP	DFT-s	n260	Ant M	100+100+100	3CC	BPSK	SISO-Dual	38500	26+154	H+V	64_0	20.86
EIRP	DFT-s	n260	Ant M	100+100+100	3CC	16QAM	SISO-Dual	38500	26+154	H+V	64_0	19.83
EIRP	DFT-s	n260	Ant M	100+100+100	3CC	64QAM	SISO-Dual	38500	26+154	H+V	64_0	17.93
EIRP	DFT-s	n260	Ant M	100+100+100+100	4CC	QPSK	SISO-Dual	38500	26+154	H+V	64_0	20.91
EIRP	DFT-s	n260	Ant M	100+100+100+100	4CC	BPSK	SISO-Dual	38500	26+154	H+V	64_0	20.89
EIRP	DFT-s	n260	Ant M	100+100+100+100	4CC	16QAM	SISO-Dual	38500	26+154	H+V	64_0	19.98
EIRP	DFT-s	n260	Ant M	100+100+100+100	4CC	64QAM	SISO-Dual	38500	26+154	H+V	64_0	18.10



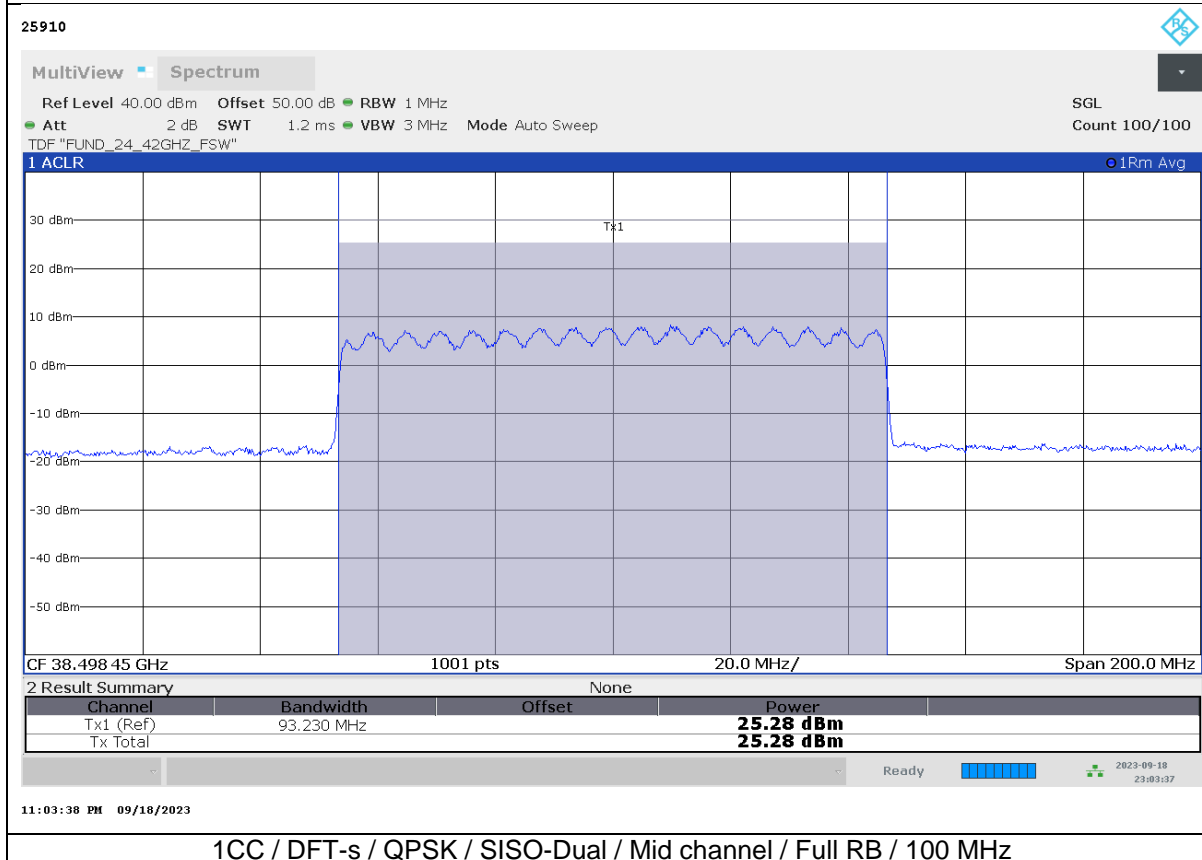
1CC / DFT-s / QPSK / SISO-Dual / Low channel / 1RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / High channel / Full RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / Mid channel / 1RB / 100 MHz

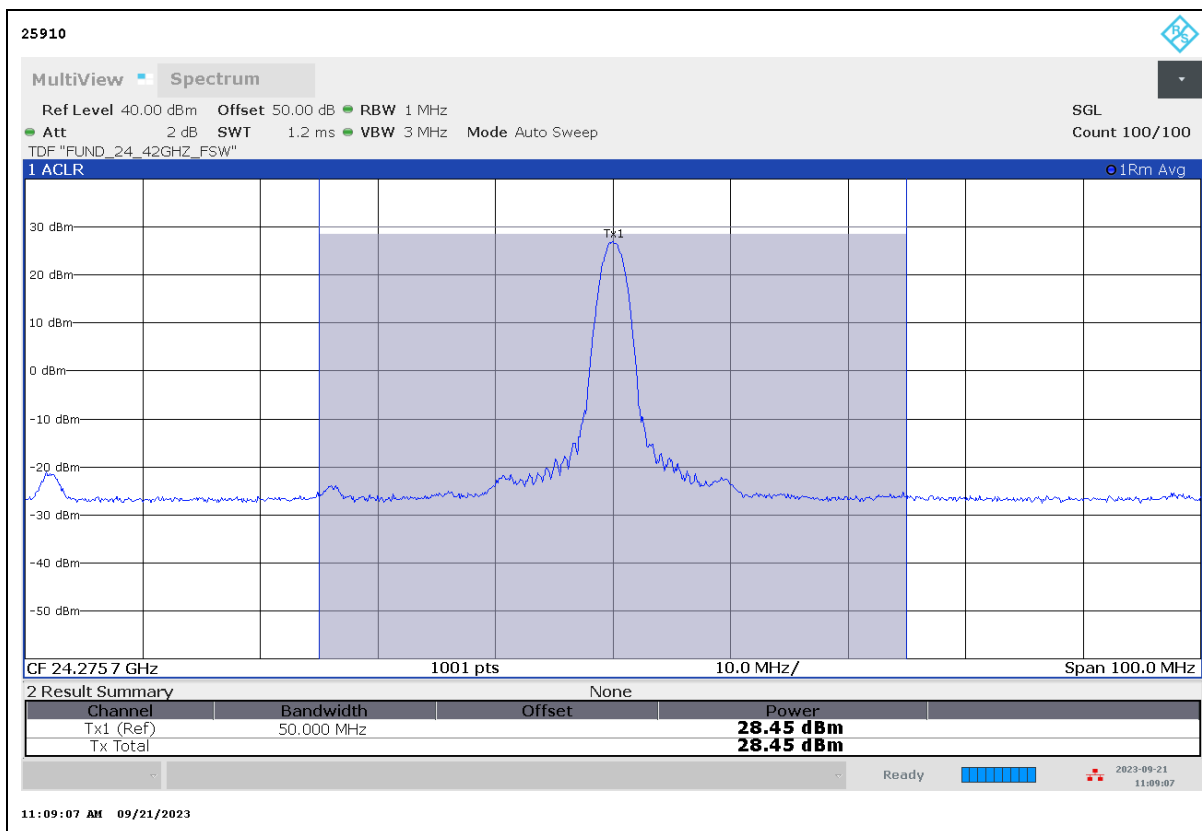


1CC / DFT-s / QPSK / SISO-Dual / Mid channel / Full RB / 100 MHz

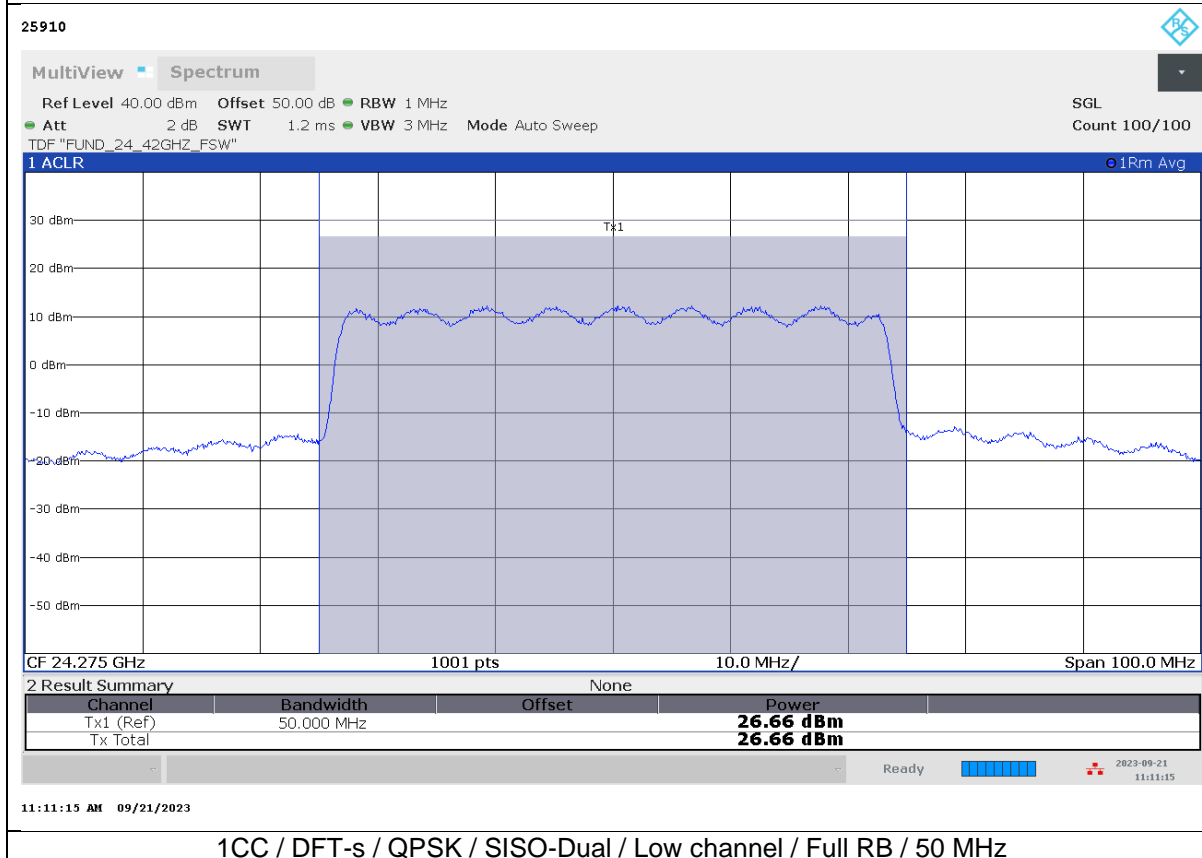
Antenna 2 / Ant N / Band n258 SB1

Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	Ant Pol	RB	Result(dBm)
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO	24275	30	V	V	1_16	27.27
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO	24350	30	V	V	1_16	27.00
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO	24425	30	V	V	1_16	26.96
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	BPSK	SISO	24275	30	V	V	1_16	27.12
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	16QAM	SISO	24275	30	V	V	1_16	26.97
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	64QAM	SISO	24275	30	V	V	1_16	23.65
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO	24275	30	V	V	32_0	27.02
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO	24350	30	V	V	32_0	26.83
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO	24425	30	V	V	32_0	26.90
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO	24300	30	V	V	1_33	27.07
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO	24350	30	V	V	1_33	27.05
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO	24400	30	V	V	1_33	27.12
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	BPSK	SISO	24400	30	V	V	1_33	26.91
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	16QAM	SISO	24400	30	V	V	1_33	26.90
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	64QAM	SISO	24400	30	V	V	1_33	23.82
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO	24300	30	V	V	64_0	26.86
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO	24350	30	V	V	64_0	26.78
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO	24400	30	V	V	64_0	26.77

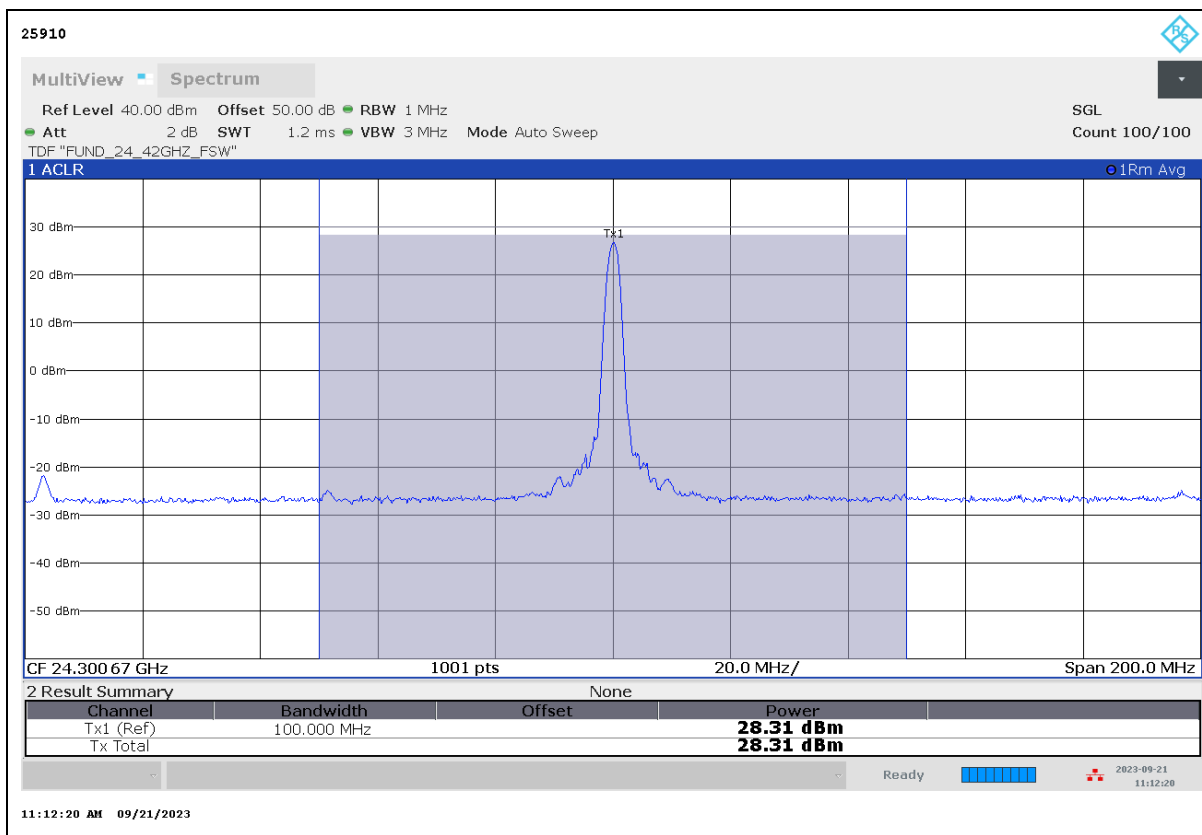
Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	RB	Result(dBm)
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO-Dual	24275	39+295	H+V	1_16	28.45
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO-Dual	24350	39+295	H+V	1_16	27.84
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO-Dual	24425	39+295	H+V	1_16	28.16
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	BPSK	SISO-Dual	24275	39+295	H+V	1_16	27.87
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	16QAM	SISO-Dual	24275	39+295	H+V	1_16	27.50
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	64QAM	SISO-Dual	24275	39+295	H+V	1_16	24.52
EIRP	CP	n258 SB1	Ant N	50	1CC	QPSK	MIMO	24275	39+295	H+V	1_16	26.54
EIRP	CP	n258 SB1	Ant N	50	1CC	16QAM	MIMO	24275	39+295	H+V	1_16	25.26
EIRP	CP	n258 SB1	Ant N	50	1CC	64QAM	MIMO	24275	39+295	H+V	1_16	21.20
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO-Dual	24275	39+295	H+V	32_0	26.66
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO-Dual	24350	39+295	H+V	32_0	26.60
EIRP	DFT-s	n258 SB1	Ant N	50	1CC	QPSK	SISO-Dual	24425	39+295	H+V	32_0	26.61
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO-Dual	24300	39+295	H+V	1_33	28.31
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO-Dual	24350	39+295	H+V	1_33	27.80
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO-Dual	24400	39+295	H+V	1_33	28.31
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	BPSK	SISO-Dual	24300	39+295	H+V	1_33	27.63
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	16QAM	SISO-Dual	24300	39+295	H+V	1_33	27.54
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	64QAM	SISO-Dual	24300	39+295	H+V	1_33	24.51
EIRP	CP	n258 SB1	Ant N	100	1CC	QPSK	MIMO	24300	39+295	H+V	1_33	26.21
EIRP	CP	n258 SB1	Ant N	100	1CC	16QAM	MIMO	24300	39+295	H+V	1_33	24.95
EIRP	CP	n258 SB1	Ant N	100	1CC	64QAM	MIMO	24300	39+295	H+V	1_33	21.25
EIRP	DFT-s	n258 SB1	Ant N	100+100	2CC	QPSK	SISO-Dual	24300	39+295	H+V	1_33	20.65
EIRP	DFT-s	n258 SB1	Ant N	100+100	2CC	BPSK	SISO-Dual	24300	39+295	H+V	1_33	20.06
EIRP	DFT-s	n258 SB1	Ant N	100+100	2CC	16QAM	SISO-Dual	24300	39+295	H+V	1_33	20.13
EIRP	DFT-s	n258 SB1	Ant N	100+100	2CC	64QAM	SISO-Dual	24300	39+295	H+V	1_33	20.21
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO-Dual	24300	39+295	H+V	64_0	26.60
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO-Dual	24350	39+295	H+V	64_0	26.44
EIRP	DFT-s	n258 SB1	Ant N	100	1CC	QPSK	SISO-Dual	24400	39+295	H+V	64_0	26.41
EIRP	DFT-s	n258 SB1	Ant N	100+100	2CC	QPSK	SISO-Dual	24300	39+295	H+V	64_0	25.39
EIRP	DFT-s	n258 SB1	Ant N	100+100	2CC	BPSK	SISO-Dual	24300	39+295	H+V	64_0	25.42
EIRP	DFT-s	n258 SB1	Ant N	100+100	2CC	16QAM	SISO-Dual	24300	39+295	H+V	64_0	24.84
EIRP	DFT-s	n258 SB1	Ant N	100+100	2CC	64QAM	SISO-Dual	24300	39+295	H+V	64_0	21.16



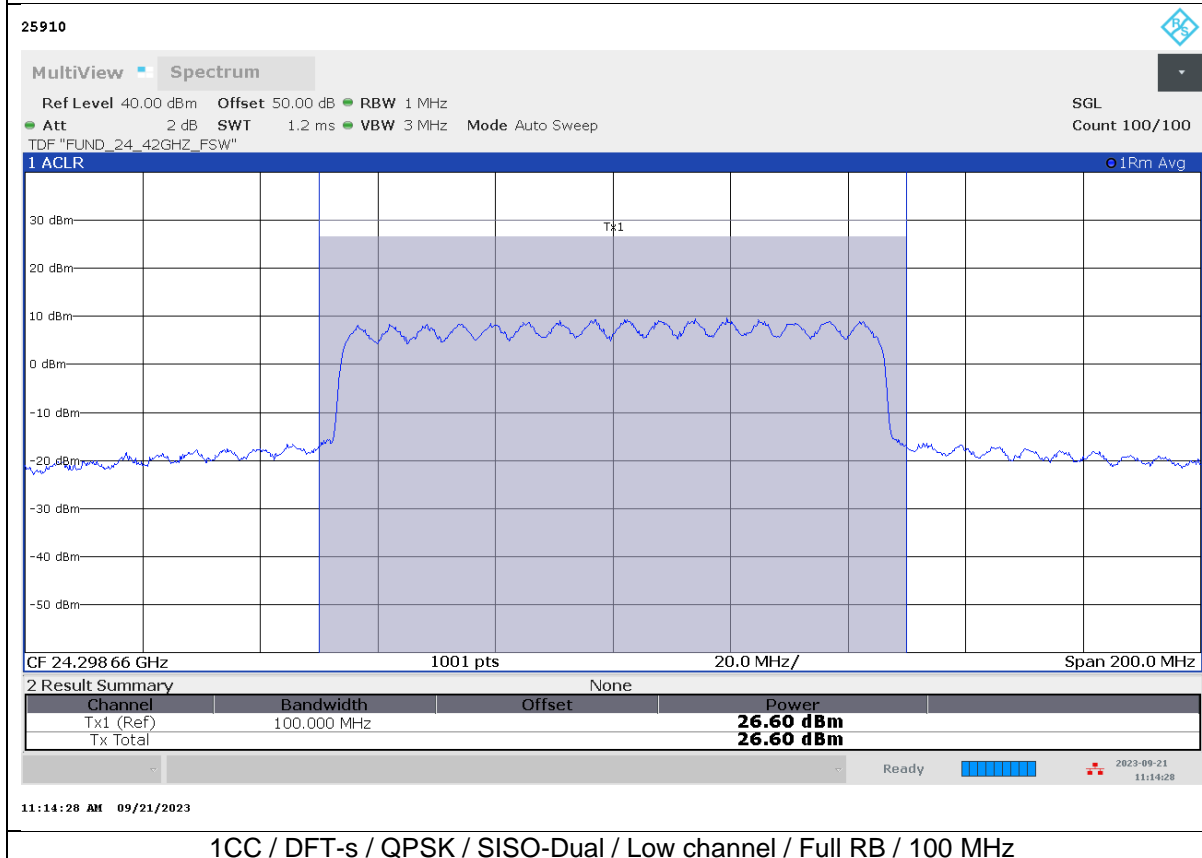
1CC / DFT-s / QPSK / SISO-Dual / Low channel / 1RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / Low channel / Full RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / Low channel / 1RB / 100 MHz

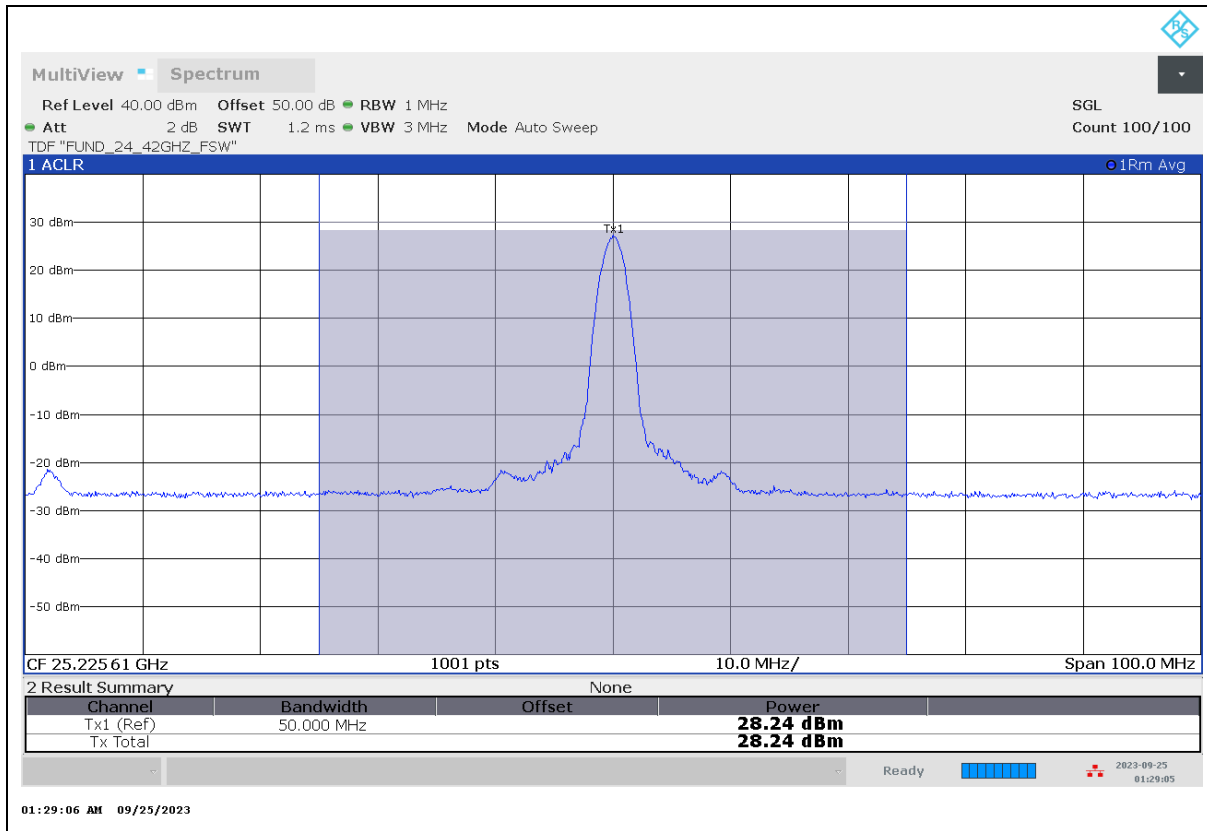


1CC / DFT-s / QPSK / SISO-Dual / Low channel / Full RB / 100 MHz

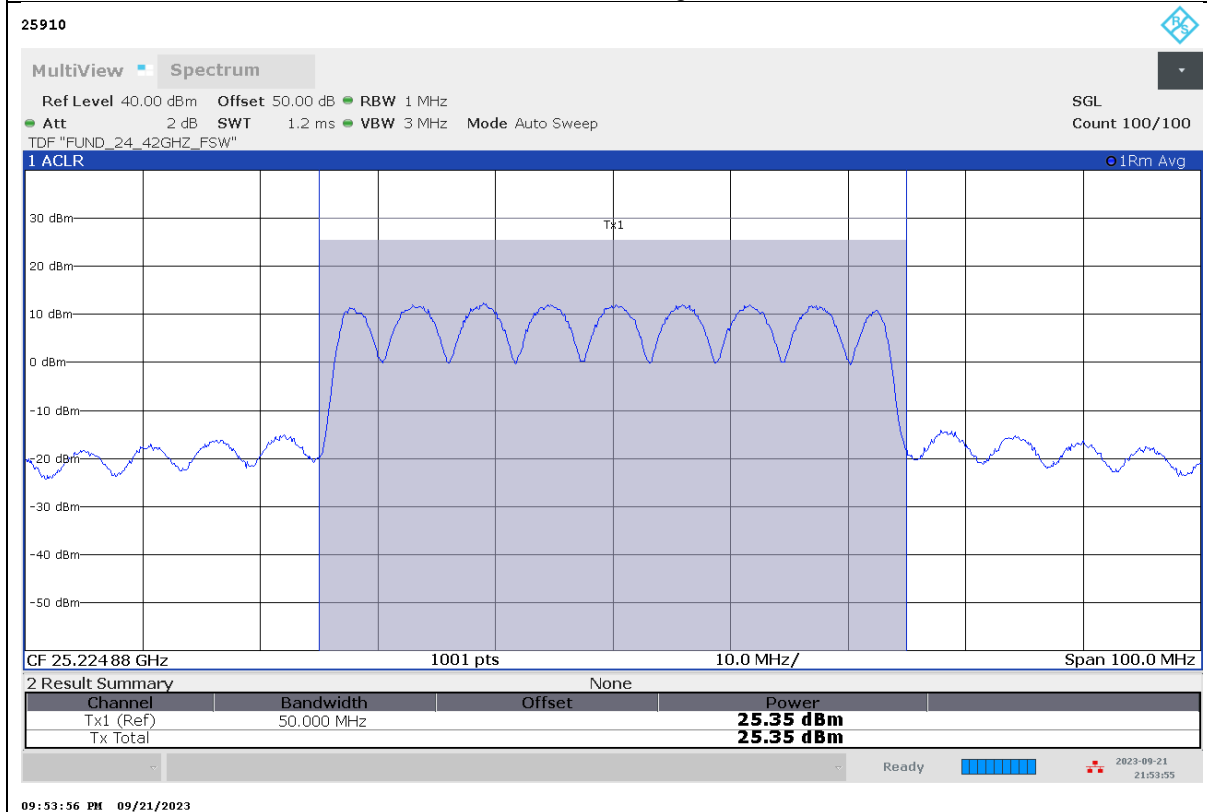
Antenna 2 / Ant N / Band n258 SB2

Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	Ant Pol	RB	Result(dBm)
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO	24775	40	V	V	1_16	26.30
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO	25000	40	V	V	1_16	25.96
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO	25225	40	V	V	1_16	26.05
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	BPSK	SISO	24775	40	V	V	1_16	26.12
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	16QAM	SISO	24775	40	V	V	1_16	26.03
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	64QAM	SISO	24775	40	V	V	1_16	22.95
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO	24775	40	V	V	32_0	25.95
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO	25000	40	V	V	32_0	25.89
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO	25225	40	V	V	32_0	25.90
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO	24800	40	V	V	1_33	26.12
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO	25000	40	V	V	1_33	26.14
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO	25200	40	V	V	1_33	25.95
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	BPSK	SISO	25000	40	V	V	1_33	25.76
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	16QAM	SISO	25000	40	V	V	1_33	25.61
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	64QAM	SISO	25000	40	V	V	1_33	22.60
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO	24800	40	V	V	64_0	25.86
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO	25000	40	V	V	64_0	25.81
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO	25200	40	V	V	64_0	25.76

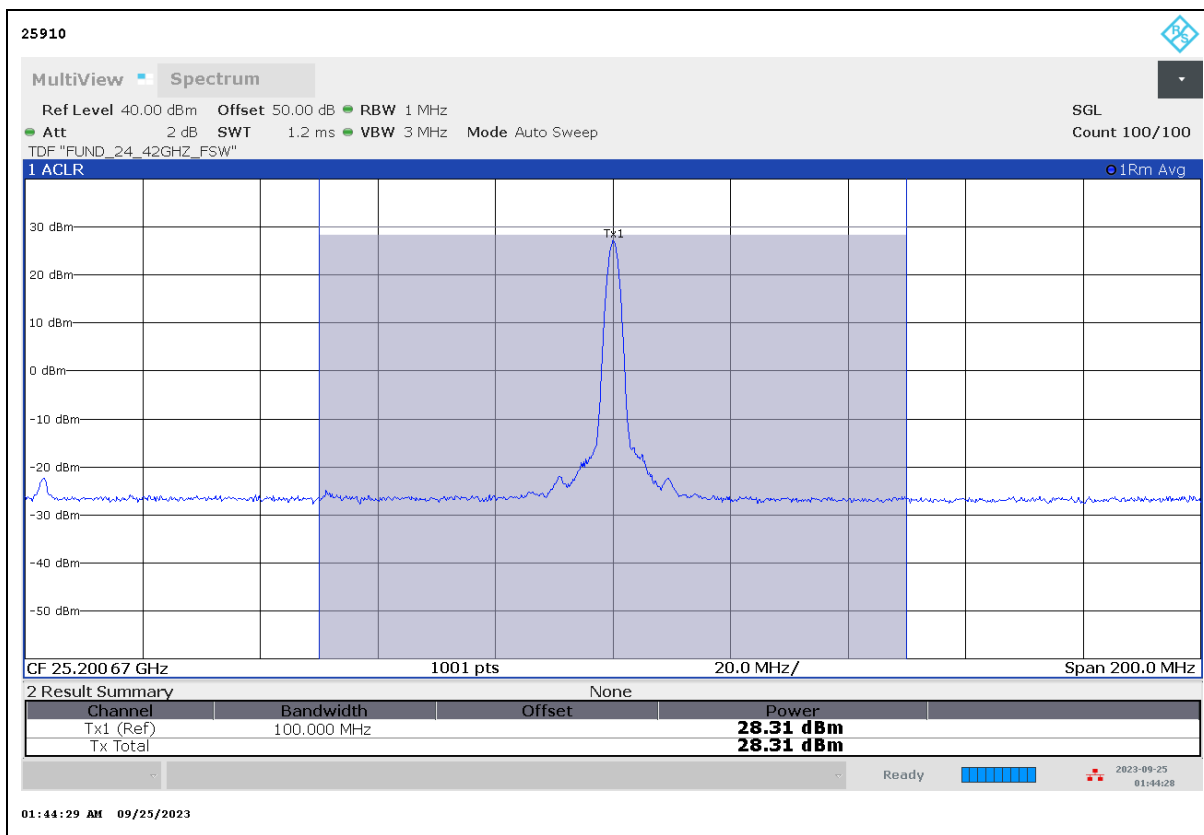
Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	RB	Result(dBm)
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO-Dual	24775	39+295	H+V	1_16	27.55
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO-Dual	25000	39+295	H+V	1_16	26.42
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO-Dual	25225	39+295	H+V	1_16	28.24
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	BPSK	SISO-Dual	25225	39+295	H+V	1_16	27.96
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	16QAM	SISO-Dual	25225	39+295	H+V	1_16	28.14
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	64QAM	SISO-Dual	25225	39+295	H+V	1_16	25.12
EIRP	CP	n258 SB2	Ant N	50	1CC	QPSK	MIMO	25225	39+295	H+V	1_16	26.98
EIRP	CP	n258 SB2	Ant N	50	1CC	16QAM	MIMO	25225	39+295	H+V	1_16	25.81
EIRP	CP	n258 SB2	Ant N	50	1CC	64QAM	MIMO	25225	39+295	H+V	1_16	21.80
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO-Dual	24775	39+295	H+V	32_0	25.19
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO-Dual	25000	39+295	H+V	32_0	24.89
EIRP	DFT-s	n258 SB2	Ant N	50	1CC	QPSK	SISO-Dual	25225	39+295	H+V	32_0	25.35
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO-Dual	24800	39+295	H+V	1_33	27.57
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO-Dual	25000	39+295	H+V	1_33	27.30
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO-Dual	25200	39+295	H+V	1_33	28.31
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	BPSK	SISO-Dual	25200	39+295	H+V	1_33	28.25
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	16QAM	SISO-Dual	25200	39+295	H+V	1_33	28.08
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	64QAM	SISO-Dual	25200	39+295	H+V	1_33	25.12
EIRP	CP	n258 SB2	Ant N	100	1CC	QPSK	MIMO	25200	39+295	H+V	1_33	27.09
EIRP	CP	n258 SB2	Ant N	100	1CC	16QAM	MIMO	25200	39+295	H+V	1_33	26.10
EIRP	CP	n258 SB2	Ant N	100	1CC	64QAM	MIMO	25200	39+295	H+V	1_33	22.06
EIRP	DFT-s	n258 SB2	Ant N	100+100	2CC	QPSK	SISO-Dual	25200	39+295	H+V	1_33	19.86
EIRP	DFT-s	n258 SB2	Ant N	100+100	2CC	BPSK	SISO-Dual	25200	39+295	H+V	1_33	19.09
EIRP	DFT-s	n258 SB2	Ant N	100+100	2CC	16QAM	SISO-Dual	25200	39+295	H+V	1_33	20.07
EIRP	DFT-s	n258 SB2	Ant N	100+100	2CC	64QAM	SISO-Dual	25200	39+295	H+V	1_33	20.09
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	3CC	QPSK	SISO-Dual	25200	39+295	H+V	1_33	17.54
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	3CC	BPSK	SISO-Dual	25200	39+295	H+V	1_33	17.37
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	3CC	16QAM	SISO-Dual	25200	39+295	H+V	1_33	19.65
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	3CC	64QAM	SISO-Dual	25200	39+295	H+V	1_33	19.94
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	4CC	QPSK	SISO-Dual	25200	39+295	H+V	1_33	19.54
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	4CC	BPSK	SISO-Dual	25200	39+295	H+V	1_33	17.58
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	4CC	16QAM	SISO-Dual	25200	39+295	H+V	1_33	17.13
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	4CC	64QAM	SISO-Dual	25200	39+295	H+V	1_33	19.92
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO-Dual	24800	39+295	H+V	64_0	24.91
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO-Dual	25000	39+295	H+V	64_0	24.88
EIRP	DFT-s	n258 SB2	Ant N	100	1CC	QPSK	SISO-Dual	25200	39+295	H+V	64_0	25.25
EIRP	DFT-s	n258 SB2	Ant N	100+100	2CC	QPSK	SISO-Dual	25200	39+295	H+V	64_0	24.59
EIRP	DFT-s	n258 SB2	Ant N	100+100	2CC	BPSK	SISO-Dual	25200	39+295	H+V	64_0	24.58
EIRP	DFT-s	n258 SB2	Ant N	100+100	2CC	16QAM	SISO-Dual	25200	39+295	H+V	64_0	24.13
EIRP	DFT-s	n258 SB2	Ant N	100+100	2CC	64QAM	SISO-Dual	25200	39+295	H+V	64_0	20.57
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	3CC	QPSK	SISO-Dual	25200	39+295	H+V	64_0	22.18
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	3CC	BPSK	SISO-Dual	25200	39+295	H+V	64_0	22.23
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	3CC	16QAM	SISO-Dual	25200	39+295	H+V	64_0	21.20
EIRP	DFT-s	n258 SB2	Ant N	100+100+100	3CC	64QAM	SISO-Dual	25200	39+295	H+V	64_0	19.24
EIRP	DFT-s	n258 SB2	Ant N	100+100+100+100	4CC	QPSK	SISO-Dual	25200	39+295	H+V	64_0	22.18
EIRP	DFT-s	n258 SB2	Ant N	100+100+100+100	4CC	BPSK	SISO-Dual	25200	39+295	H+V	64_0	22.18
EIRP	DFT-s	n258 SB2	Ant N	100+100+100+100	4CC	16QAM	SISO-Dual	25200	39+295	H+V	64_0	21.17



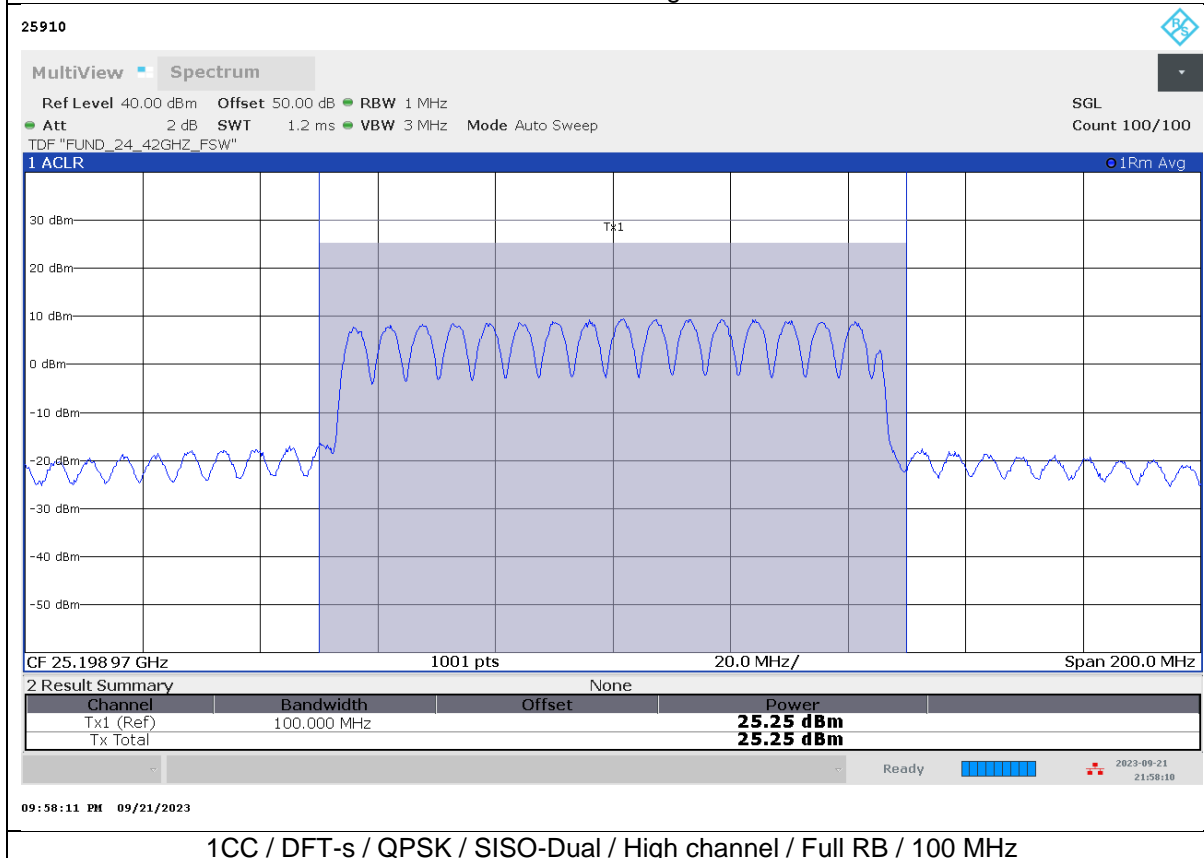
1CC / DFT-s / QPSK / SISO-Dual / High channel / 1RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / High channel / Full RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / High channel / 1RB / 100 MHz

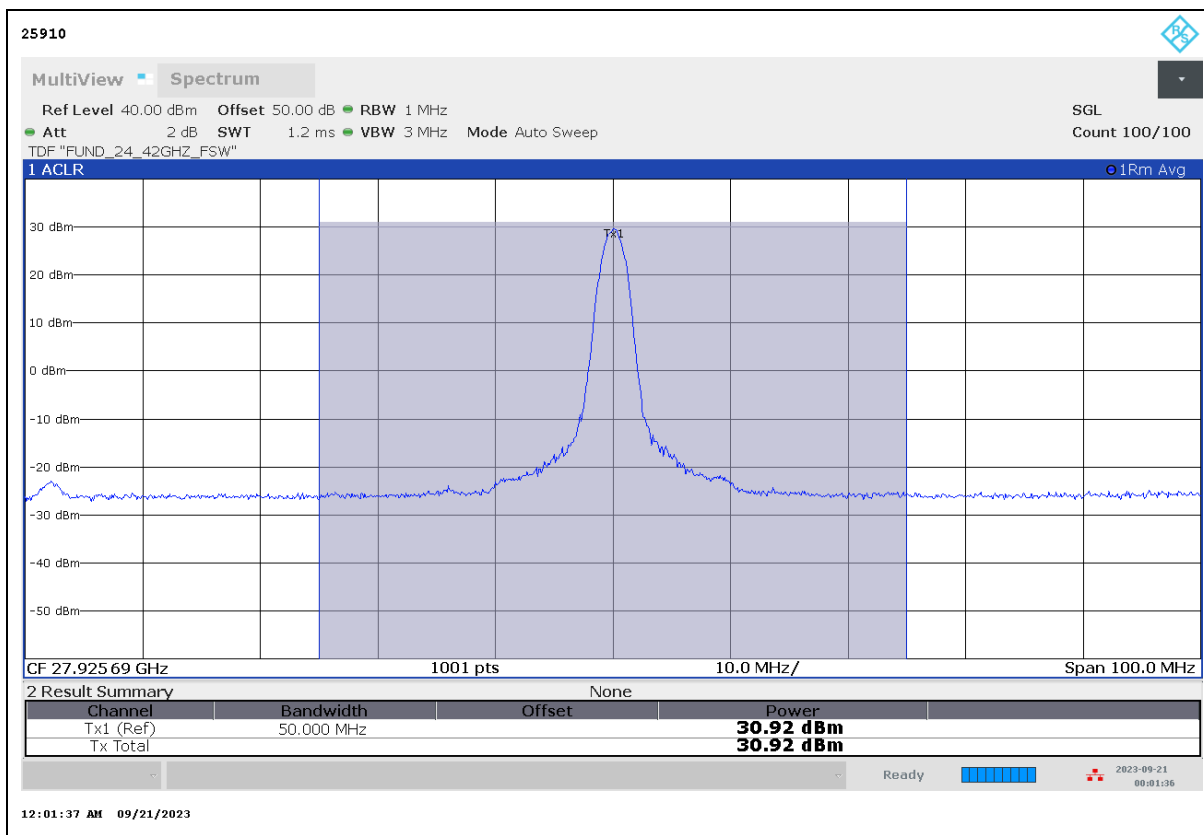


1CC / DFT-s / QPSK / SISO-Dual / High channel / Full RB / 100 MHz

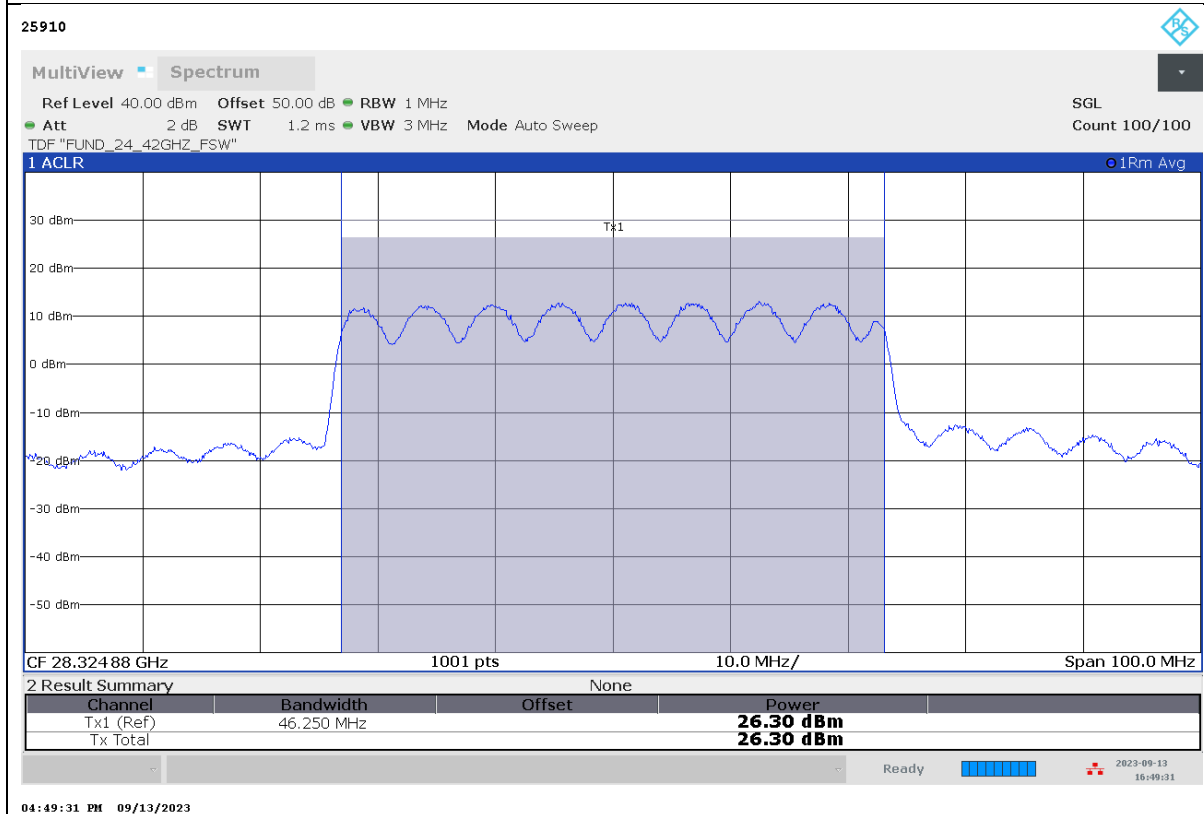
Antenna 2 / Ant N / Band n261

Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	Ant Pol	RB	Result(dBm)
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO	27525	287	H	H	1_16	27.21
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO	27925	287	H	H	1_16	29.13
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO	28325	287	H	H	1_16	29.55
EIRP	DFT-s	n261	Ant N	50	1CC	BPSK	SISO	28325	287	H	H	1_16	29.19
EIRP	DFT-s	n261	Ant N	50	1CC	16QAM	SISO	28325	287	H	H	1_16	28.93
EIRP	DFT-s	n261	Ant N	50	1CC	64QAM	SISO	28325	287	H	H	1_16	25.84
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO	27525	287	H	H	32_0	26.47
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO	27925	287	H	H	32_0	28.38
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO	28325	287	H	H	32_0	28.37
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO	27550	287	H	H	1_33	27.22
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO	27925	287	H	H	1_33	29.04
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO	28300	287	H	H	1_33	29.21
EIRP	DFT-s	n261	Ant N	100	1CC	BPSK	SISO	28300	287	H	H	1_33	29.60
EIRP	DFT-s	n261	Ant N	100	1CC	16QAM	SISO	28300	287	H	H	1_33	29.03
EIRP	DFT-s	n261	Ant N	100	1CC	64QAM	SISO	28300	287	H	H	1_33	25.83
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO	27550	287	H	H	64_0	26.47
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO	27925	287	H	H	64_0	28.30
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO	28300	287	H	H	64_0	28.48

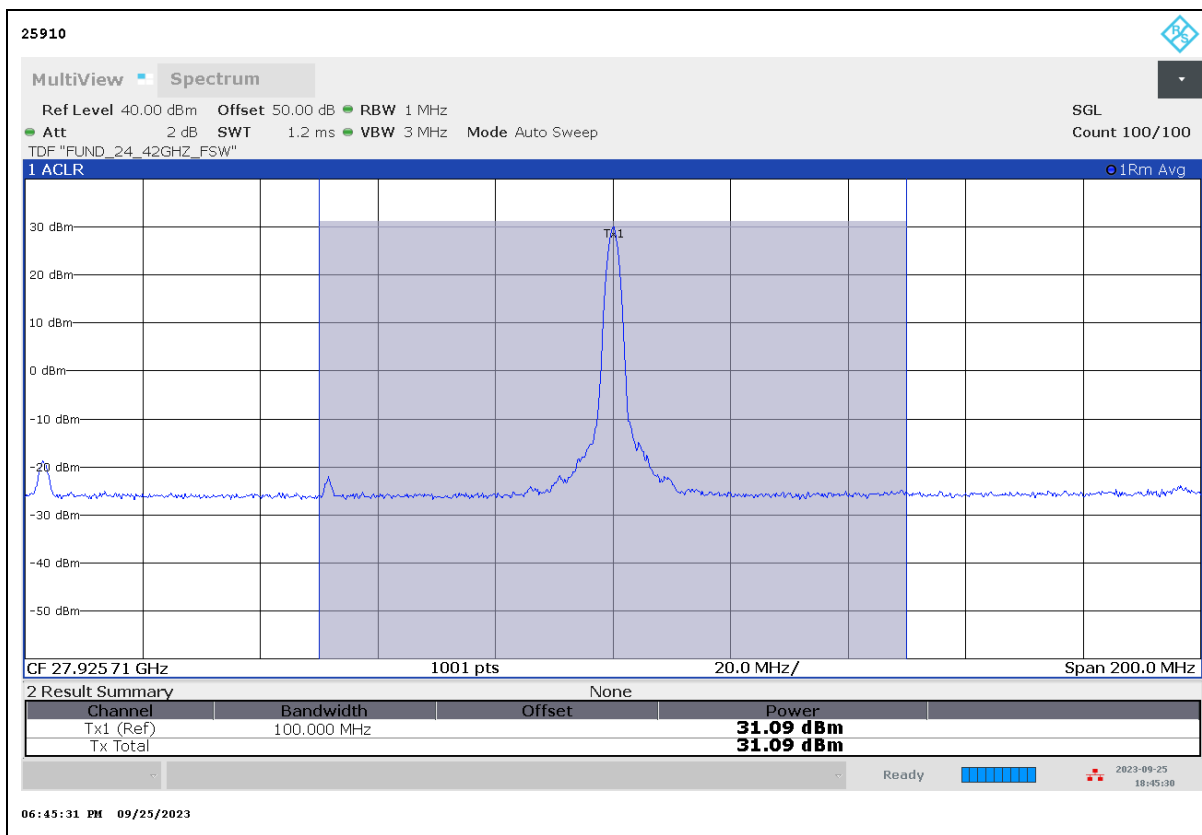
Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	RB	Result(dBm)
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO-Dual	27525	40+296	H+V	1_16	29.34
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO-Dual	27925	40+296	H+V	1_16	30.92
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO-Dual	28325	40+296	H+V	1_16	30.00
EIRP	DFT-s	n261	Ant N	50	1CC	BPSK	SISO-Dual	27925	40+296	H+V	1_16	30.78
EIRP	DFT-s	n261	Ant N	50	1CC	16QAM	SISO-Dual	27925	40+296	H+V	1_16	30.28
EIRP	DFT-s	n261	Ant N	50	1CC	64QAM	SISO-Dual	27925	40+296	H+V	1_16	27.05
EIRP	CP	n261	Ant N	50	1CC	QPSK	MIMO	27925	40+296	H+V	1_16	29.08
EIRP	CP	n261	Ant N	50	1CC	16QAM	MIMO	27925	40+296	H+V	1_16	28.10
EIRP	CP	n261	Ant N	50	1CC	64QAM	MIMO	27925	40+296	H+V	1_16	23.74
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO-Dual	27525	40+296	H+V	32_0	25.08
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO-Dual	27925	40+296	H+V	32_0	23.19
EIRP	DFT-s	n261	Ant N	50	1CC	QPSK	SISO-Dual	28325	40+296	H+V	32_0	26.30
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO-Dual	27550	40+296	H+V	1_33	29.14
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO-Dual	27925	40+296	H+V	1_33	31.09
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO-Dual	28300	40+296	H+V	1_33	29.86
EIRP	DFT-s	n261	Ant N	100	1CC	BPSK	SISO-Dual	27925	40+296	H+V	1_33	30.72
EIRP	DFT-s	n261	Ant N	100	1CC	16QAM	SISO-Dual	27925	40+296	H+V	1_33	30.23
EIRP	DFT-s	n261	Ant N	100	1CC	64QAM	SISO-Dual	27925	40+296	H+V	1_33	27.03
EIRP	CP	n261	Ant N	100	1CC	QPSK	MIMO	27925	40+296	H+V	1_33	29.34
EIRP	CP	n261	Ant N	100	1CC	16QAM	MIMO	27925	40+296	H+V	1_33	28.05
EIRP	CP	n261	Ant N	100	1CC	64QAM	MIMO	27925	40+296	H+V	1_33	23.75
EIRP	DFT-s	n261	Ant N	100+100	2CC	QPSK	SISO-Dual	27925	40+296	H+V	1_33	23.30
EIRP	DFT-s	n261	Ant N	100+100	2CC	BPSK	SISO-Dual	27925	40+296	H+V	1_33	23.10
EIRP	DFT-s	n261	Ant N	100+100	2CC	16QAM	SISO-Dual	27925	40+296	H+V	1_33	23.14
EIRP	DFT-s	n261	Ant N	100+100	2CC	64QAM	SISO-Dual	27925	40+296	H+V	1_33	23.00
EIRP	DFT-s	n261	Ant N	100+100+100	3CC	QPSK	SISO-Dual	27925	40+296	H+V	1_33	23.52
EIRP	DFT-s	n261	Ant N	100+100+100	3CC	BPSK	SISO-Dual	27925	40+296	H+V	1_33	23.71
EIRP	DFT-s	n261	Ant N	100+100+100	3CC	16QAM	SISO-Dual	27925	40+296	H+V	1_33	23.63
EIRP	DFT-s	n261	Ant N	100+100+100	3CC	64QAM	SISO-Dual	27925	40+296	H+V	1_33	23.17
EIRP	DFT-s	n261	Ant N	100+100+100+100	4CC	QPSK	SISO-Dual	27925	40+296	H+V	1_33	23.86
EIRP	DFT-s	n261	Ant N	100+100+100+100	4CC	BPSK	SISO-Dual	27925	40+296	H+V	1_33	23.69
EIRP	DFT-s	n261	Ant N	100+100+100+100	4CC	16QAM	SISO-Dual	27925	40+296	H+V	1_33	23.66
EIRP	DFT-s	n261	Ant N	100+100+100+100	4CC	64QAM	SISO-Dual	27925	40+296	H+V	1_33	23.58
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO-Dual	27550	40+296	H+V	64_0	24.72
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO-Dual	27925	40+296	H+V	64_0	21.13
EIRP	DFT-s	n261	Ant N	100	1CC	QPSK	SISO-Dual	28300	40+296	H+V	64_0	26.02
EIRP	DFT-s	n261	Ant N	100+100	2CC	QPSK	SISO-Dual	28300	40+296	H+V	64_0	27.84
EIRP	DFT-s	n261	Ant N	100+100	2CC	BPSK	SISO-Dual	28300	40+296	H+V	64_0	27.78
EIRP	DFT-s	n261	Ant N	100+100	2CC	16QAM	SISO-Dual	28300	40+296	H+V	64_0	27.32
EIRP	DFT-s	n261	Ant N	100+100	2CC	64QAM	SISO-Dual	28300	40+296	H+V	64_0	23.78
EIRP	DFT-s	n261	Ant N	100+100+100	3CC	QPSK	SISO-Dual	28300	40+296	H+V	64_0	25.51
EIRP	DFT-s	n261	Ant N	100+100+100	3CC	BPSK	SISO-Dual	28300	40+296	H+V	64_0	25.53
EIRP	DFT-s	n261	Ant N	100+100+100	3CC	16QAM	SISO-Dual	28300	40+296	H+V	64_0	24.50
EIRP	DFT-s	n261	Ant N	100+100+100	3CC	64QAM	SISO-Dual	28300	40+296	H+V	64_0	22.53
EIRP	DFT-s	n261	Ant N	100+100+100+100	4CC	QPSK	SISO-Dual	28300	40+296	H+V	64_0	25.65
EIRP	DFT-s	n261	Ant N	100+100+100+100	4CC	BPSK	SISO-Dual	28300	40+296	H+V	64_0	25.67
EIRP	DFT-s	n261	Ant N	100+100+100+100	4CC	16QAM	SISO-Dual	28300	40+296	H+V	64_0	24.69
EIRP	DFT-s	n261	Ant N	100+100+100+100	4CC	64QAM	SISO-Dual	28300	40+296	H+V	64_0	22.54



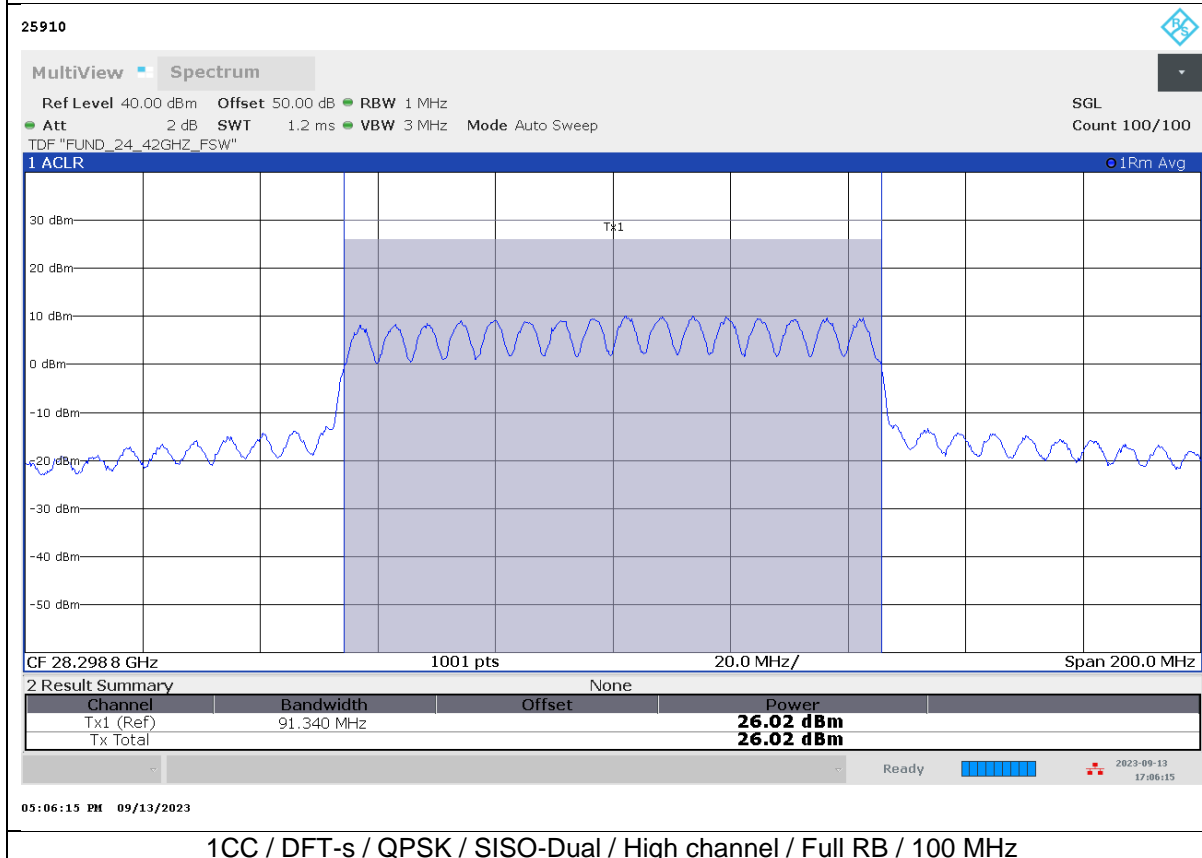
1CC / DFT-s / QPSK / SISO-Dual / Mid channel / 1RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / High channel / Full RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / Mid channel / 1RB / 100 MHz

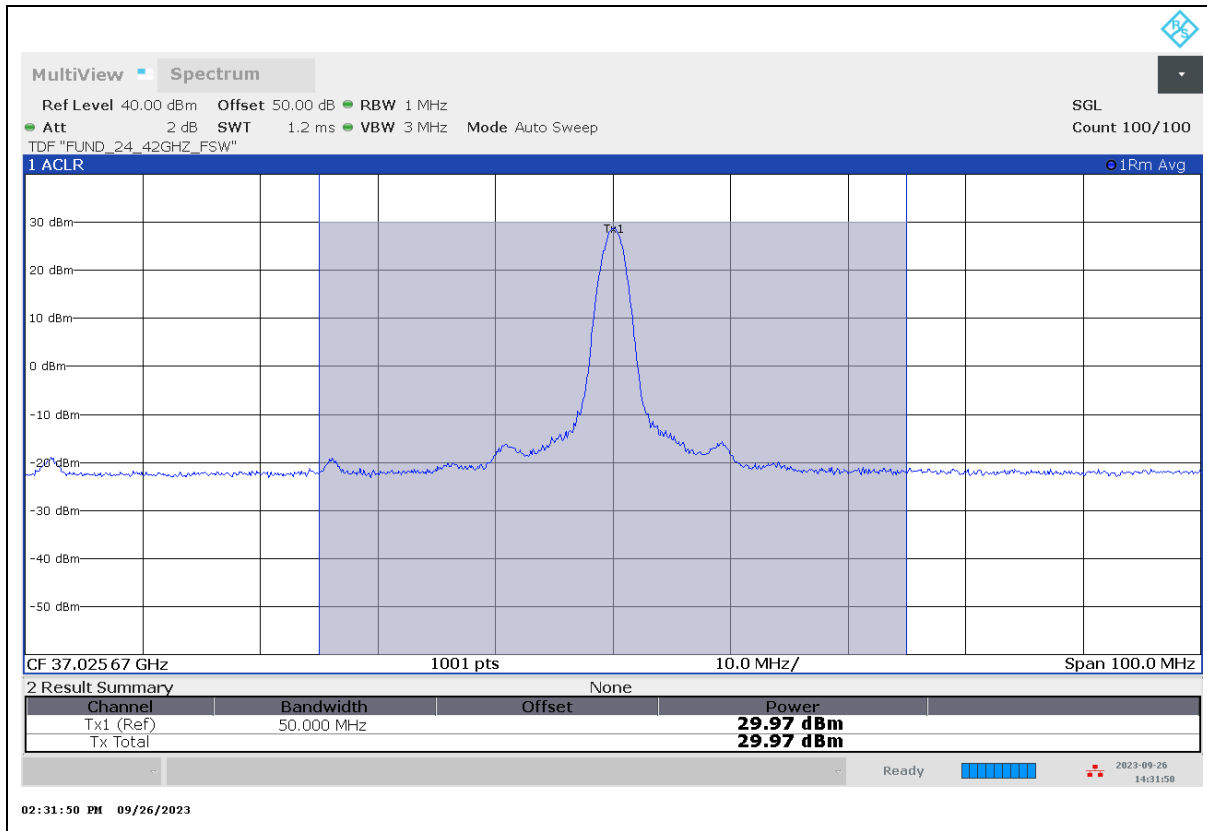


1CC / DFT-s / QPSK / SISO-Dual / High channel / Full RB / 100 MHz

Antenna 2 / Ant N / Band n260

Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	Ant Pol	RB	Result(dBm)
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO	37025	31	H	H	1_16	27.89
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO	38500	31	H	H	1_16	28.61
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO	39975	31	H	H	1_16	28.13
EIRP	DFT-s	n260	Ant N	50	1CC	BPSK	SISO	38500	31	H	H	1_16	28.40
EIRP	DFT-s	n260	Ant N	50	1CC	16QAM	SISO	38500	31	H	H	1_16	28.47
EIRP	DFT-s	n260	Ant N	50	1CC	64QAM	SISO	38500	31	H	H	1_16	25.21
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO	37025	31	H	H	32_0	27.84
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO	38500	31	H	H	32_0	28.21
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO	39975	31	H	H	32_0	27.92
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO	37050	31	H	H	1_33	27.64
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO	38500	31	H	H	1_33	28.52
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO	39950	31	H	H	1_33	27.80
EIRP	DFT-s	n260	Ant N	100	1CC	BPSK	SISO	38500	31	H	H	1_32	28.49
EIRP	DFT-s	n260	Ant N	100	1CC	16QAM	SISO	38500	31	H	H	1_32	28.13
EIRP	DFT-s	n260	Ant N	100	1CC	64QAM	SISO	38500	31	H	H	1_32	24.96
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO	37050	31	H	H	64_0	27.79
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO	38500	31	H	H	64_0	28.30
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO	39950	31	H	H	64_0	27.55

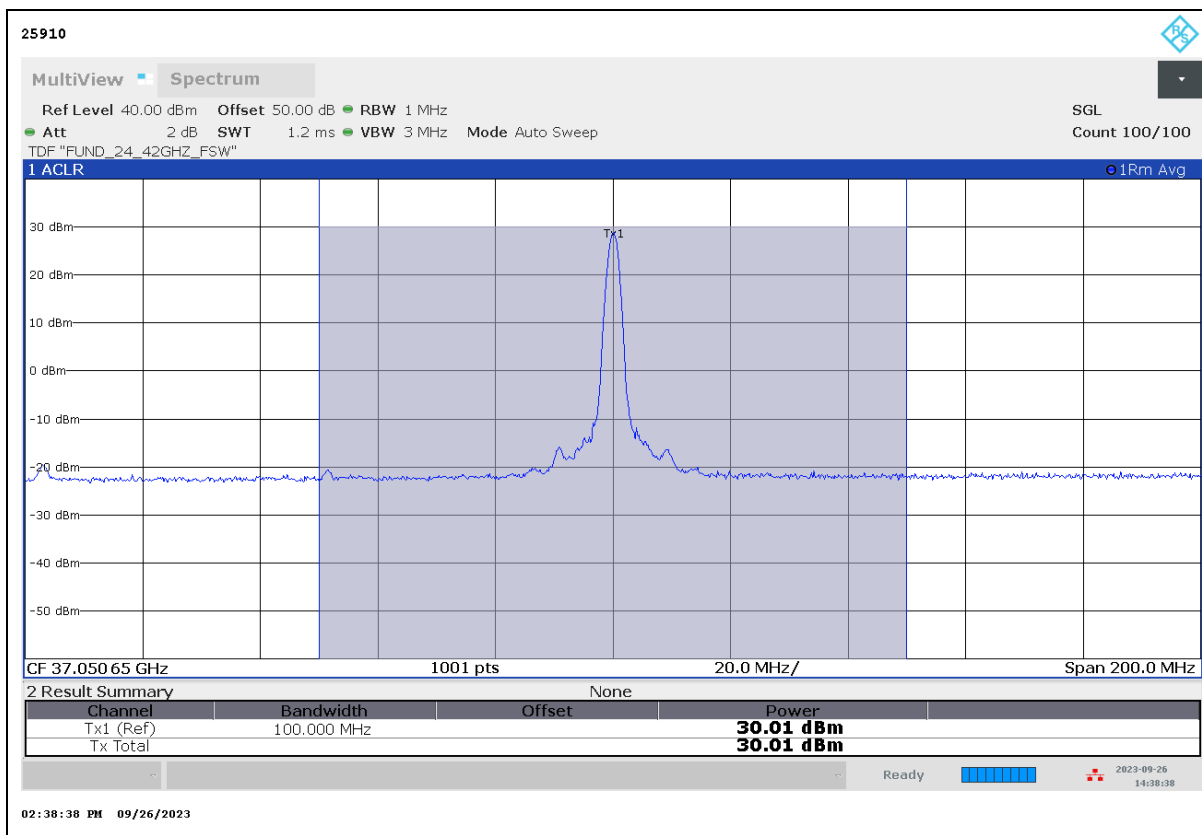
Test Case	OFDM	NR Band	Antenna	BW(MHz)	CCs	Mod	Tx Type	Freq(MHz)	Beam ID	Beam Pol	RB	Result(dBm)
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO-Dual	37025	31+287	H+V	1_16	29.97
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO-Dual	38500	31+287	H+V	1_16	29.39
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO-Dual	39975	31+287	H+V	1_16	28.83
EIRP	DFT-s	n260	Ant N	50	1CC	BPSK	SISO-Dual	37025	31+287	H+V	1_16	29.86
EIRP	DFT-s	n260	Ant N	50	1CC	16QAM	SISO-Dual	37025	31+287	H+V	1_16	29.88
EIRP	DFT-s	n260	Ant N	50	1CC	64QAM	SISO-Dual	37025	31+287	H+V	1_16	26.76
EIRP	CP	n260	Ant N	50	1CC	QPSK	MIMO	37025	31+287	H+V	1_16	29.20
EIRP	CP	n260	Ant N	50	1CC	16QAM	MIMO	37025	31+287	H+V	1_16	27.64
EIRP	CP	n260	Ant N	50	1CC	64QAM	MIMO	37025	31+287	H+V	1_16	23.96
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO-Dual	37025	31+287	H+V	32_0	27.01
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO-Dual	38500	31+287	H+V	32_0	27.04
EIRP	DFT-s	n260	Ant N	50	1CC	QPSK	SISO-Dual	39975	31+287	H+V	32_0	26.76
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO-Dual	37050	31+287	H+V	1_33	30.01
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO-Dual	38500	31+287	H+V	1_33	29.11
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO-Dual	39950	31+287	H+V	1_33	27.69
EIRP	DFT-s	n260	Ant N	100	1CC	BPSK	SISO-Dual	37050	31+287	H+V	1_33	29.80
EIRP	DFT-s	n260	Ant N	100	1CC	16QAM	SISO-Dual	37050	31+287	H+V	1_33	29.68
EIRP	DFT-s	n260	Ant N	100	1CC	64QAM	SISO-Dual	37050	31+287	H+V	1_33	26.69
EIRP	CP	n260	Ant N	100	1CC	QPSK	MIMO	37050	31+287	H+V	1_33	29.00
EIRP	CP	n260	Ant N	100	1CC	16QAM	MIMO	37050	31+287	H+V	1_33	27.95
EIRP	CP	n260	Ant N	100	1CC	64QAM	MIMO	37050	31+287	H+V	1_33	23.96
EIRP	DFT-s	n260	Ant N	100+100	2CC	QPSK	SISO-Dual	37050	31+287	H+V	1_33	21.16
EIRP	DFT-s	n260	Ant N	100+100	2CC	BPSK	SISO-Dual	37050	31+287	H+V	1_33	21.73
EIRP	DFT-s	n260	Ant N	100+100	2CC	16QAM	SISO-Dual	37050	31+287	H+V	1_33	21.01
EIRP	DFT-s	n260	Ant N	100+100	2CC	64QAM	SISO-Dual	37050	31+287	H+V	1_33	20.88
EIRP	DFT-s	n260	Ant N	100+100+100	3CC	QPSK	SISO-Dual	37050	31+287	H+V	1_33	22.10
EIRP	DFT-s	n260	Ant N	100+100+100	3CC	BPSK	SISO-Dual	37050	31+287	H+V	1_33	21.30
EIRP	DFT-s	n260	Ant N	100+100+100	3CC	16QAM	SISO-Dual	37050	31+287	H+V	1_33	21.39
EIRP	DFT-s	n260	Ant N	100+100+100	3CC	64QAM	SISO-Dual	37050	31+287	H+V	1_33	20.71
EIRP	DFT-s	n260	Ant N	100+100+100+100	4CC	QPSK	SISO-Dual	37050	31+287	H+V	1_33	20.62
EIRP	DFT-s	n260	Ant N	100+100+100+100	4CC	BPSK	SISO-Dual	37050	31+287	H+V	1_33	21.84
EIRP	DFT-s	n260	Ant N	100+100+100+100	4CC	16QAM	SISO-Dual	37050	31+287	H+V	1_33	22.44
EIRP	DFT-s	n260	Ant N	100+100+100+100	4CC	64QAM	SISO-Dual	37050	31+287	H+V	1_33	21.26
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO-Dual	37050	31+287	H+V	64_0	26.86
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO-Dual	38500	31+287	H+V	64_0	27.01
EIRP	DFT-s	n260	Ant N	100	1CC	QPSK	SISO-Dual	39950	31+287	H+V	64_0	26.79
EIRP	DFT-s	n260	Ant N	100+100	2CC	QPSK	SISO-Dual	38500	31+287	H+V	64_0	26.66
EIRP	DFT-s	n260	Ant N	100+100	2CC	BPSK	SISO-Dual	38500	31+287	H+V	64_0	26.59
EIRP	DFT-s	n260	Ant N	100+100	2CC	16QAM	SISO-Dual	38500	31+287	H+V	64_0	26.10
EIRP	DFT-s	n260	Ant N	100+100	2CC	64QAM	SISO-Dual	38500	31+287	H+V	64_0	22.67
EIRP	DFT-s	n260	Ant N	100+100+100	3CC	QPSK	SISO-Dual	38500	31+287	H+V	64_0	24.54
EIRP	DFT-s	n260	Ant N	100+100+100	3CC	BPSK	SISO-Dual	38500	31+287	H+V	64_0	24.53
EIRP	DFT-s	n260	Ant N	100+100+100	3CC	16QAM	SISO-Dual	38500	31+287	H+V	64_0	23.54
EIRP	DFT-s	n260	Ant N	100+100+100	3CC	64QAM	SISO-Dual	38500	31+287	H+V	64_0	21.62
EIRP	DFT-s	n260	Ant N	100+100+100+100	4CC	QPSK	SISO-Dual	38500	31+287	H+V	64_0	24.92
EIRP	DFT-s	n260	Ant N	100+100+100+100	4CC	BPSK	SISO-Dual	38500	31+287	H+V	64_0	24.92
EIRP	DFT-s	n260	Ant N	100+100+100+100	4CC	16QAM	SISO-Dual	38500	31+287	H+V	64_0	23.96
EIRP	DFT-s	n260	Ant N	100+100+100+100	4CC	64QAM	SISO-Dual	38500	31+287	H+V	64_0	22.04



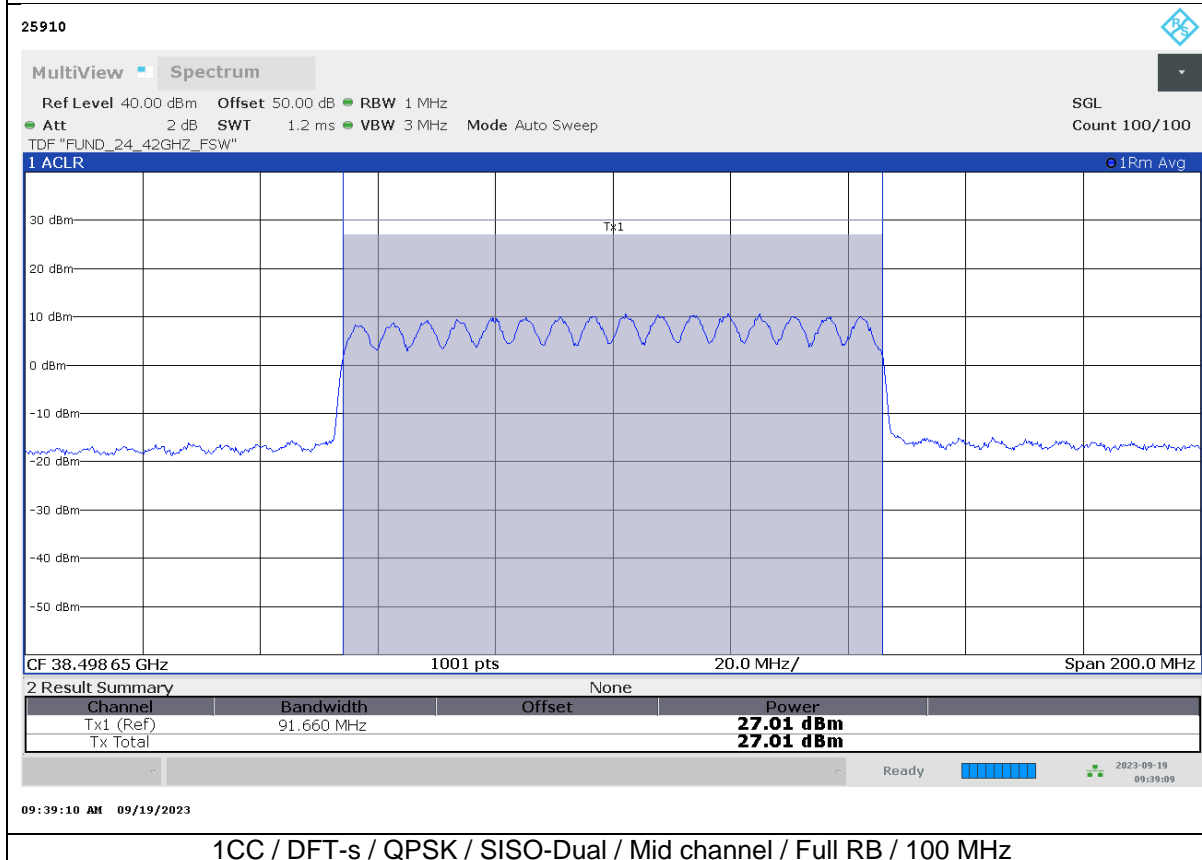
1CC / DFT-s / QPSK / SISO-Dual / Low channel / 1RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / Mid channel / Full RB / 50 MHz



1CC / DFT-s / QPSK / SISO-Dual / Low channel / 1RB / 100 MHz



1CC / DFT-s / QPSK / SISO-Dual / Mid channel / Full RB / 100 MHz

8.3. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §2.1051, §30.203

LIMITS

30.203 (a) - The conductive power or the total radiated power of any emission outside a licensee's frequency block shall be -13 dBm/MHz or lower. However, in the bands immediately outside and adjacent to the licensee's frequency block, having a bandwidth equal to 10 percent of the channel bandwidth, the conductive power or the total radiated power of any emission shall be -5 dBm/MHz or lower.

TEST PROCEDURE

- a) RBW = 1MHz
- b) VBW $\geq 3 \times$ RBW
- c) number of measurement points in sweep $> 2 \times$ span / RBW
- d) Sweep time = auto-couple
- e) Detector = RMS
- f) Trace mode = average

(KDB 842590 D01 Upper Microwave Flexible Use Service v01r02 Section 4.4.2.5)
(ANSI C63.26-2015 Section 5 and 6.4)

NOTE

Band Edge emissions were measured at a 3 meter distance.

Band Edge measurements were measured as EIRP for direct comparison to the 30.203 TRP limit to demonstrate compliance.

$\pi/2$ -BPSK, QPSK, 16QAM and 64QAM modulations were all investigated in SISO, SISO-Dual and MIMO configurations. The highest band edge emissions were for the SISO-Dual antenna configuration consistent with this also being the configuration with the highest EIRP. The SISO-Dual configuration was, therefore, use for the final band-edge measurements. Full RB test case was additional measurements were made on the MIMO configuration as it has a wider bandwidth than the SISO-DUAL configuration. Only the worst-case results are reported.

5G NR: All Waveforms (CP-OFDM vs DFT-s OFDM) 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.

In order properly display of signal level on the plots, the pre-loaded correction factors were intentional lowered by 50 dB and an offset factor of 50 dB was applied on spectrum analyzer to compensate the true correctionb factors across frequency range of measurement.

The spectrum analyzer for each measurement shows an offset value that was determined using the measurement antenna factor, cable loss, far field measurement distance, and EUT antenna gain. A sample calculation is shown below.

Sample Calculation (at 30GHz)

Measurement Antenna Factor = 46.90dB/m

Cable Loss = 2.53dB, EUT Antenna Gain = 8.22dBi

Conductive power(dBm) = AF (dB/m) + CL (dB) + 107 + 20log10(D) – 104.8dB – Gain (dBi),
 where D = 3m = 46.90dB/m + 2.53dB + 107 + 20log10(3m) – 104.8dB – 8.22dBi = 52.95dB

Antenna gain Information at the Band Edge

The following antenna gain information is provided to demonstrate the antenna performance of the 27.5 – 28.35GHz and 37 – 40GHz band. Band edge emission was initially tested without correction for antenna gain.

[Note] If the EIRP measurement result exceeds the TRP limit , then calculate TRP from EIRP by subtracting the manufacturer-supplied antenna gain from the EIRP.

EUT Antenna gain Antenna 1 / Ant M			
Antenna	Channel	Beam Pol	Gain (dBi)
n258	Low	H	9.81
		V	9.71
	High	H	10.47
		V	9.72
n261	Low	H	10.52
		V	9.87
	High	H	11.20
		V	10.82
n260	Low	H	7.45
		V	8.92
	High	H	8.15
		V	9.79

EUT Antenna gain Antenna 2 / Ant N			
Antenna	Channel	Beam Pol	Gain (dBi)
n258	Low	H	6.60
		V	10.72
	High	H	6.64
		V	10.54
n261	Low	H	8.36
		V	9.90
	High	H	8.64
		V	9.44
n260	Low	H	8.87
		V	9.98
	High	H	10.23
		V	9.98

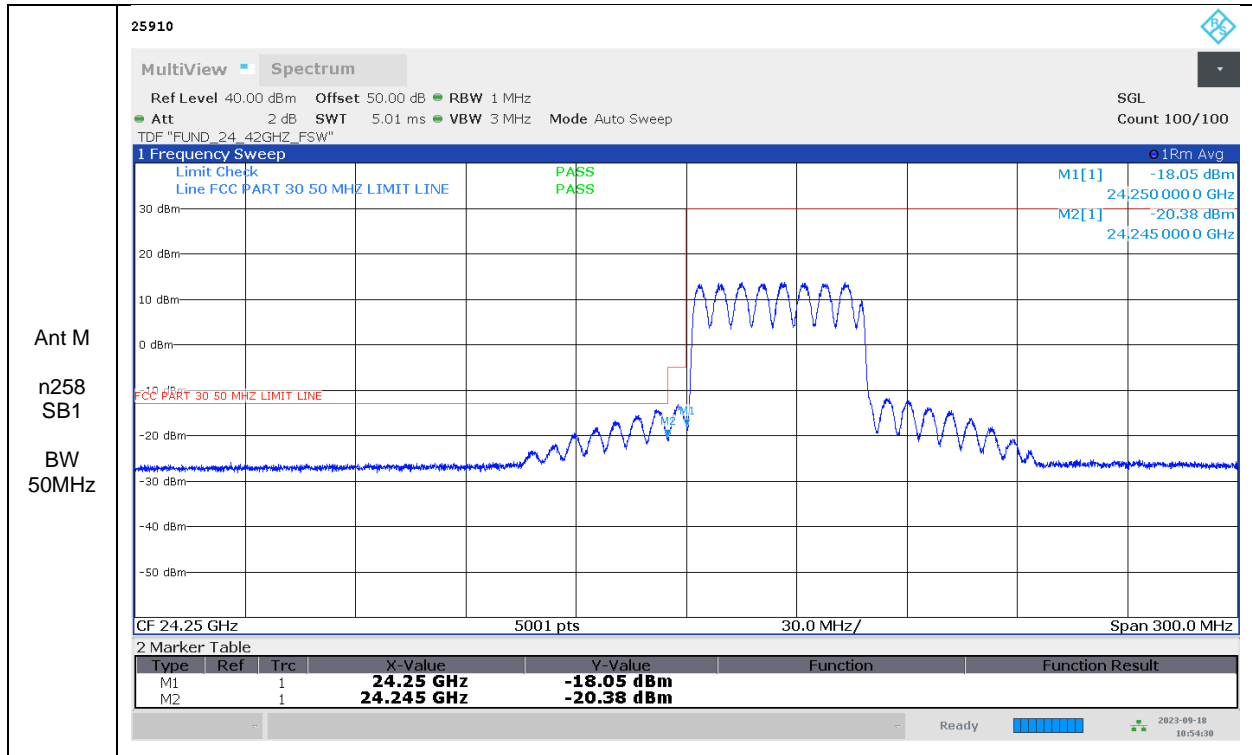
The antenna gain listed is worst value, including Out of band, and this gain value applied to the band edge test.

RESULTS

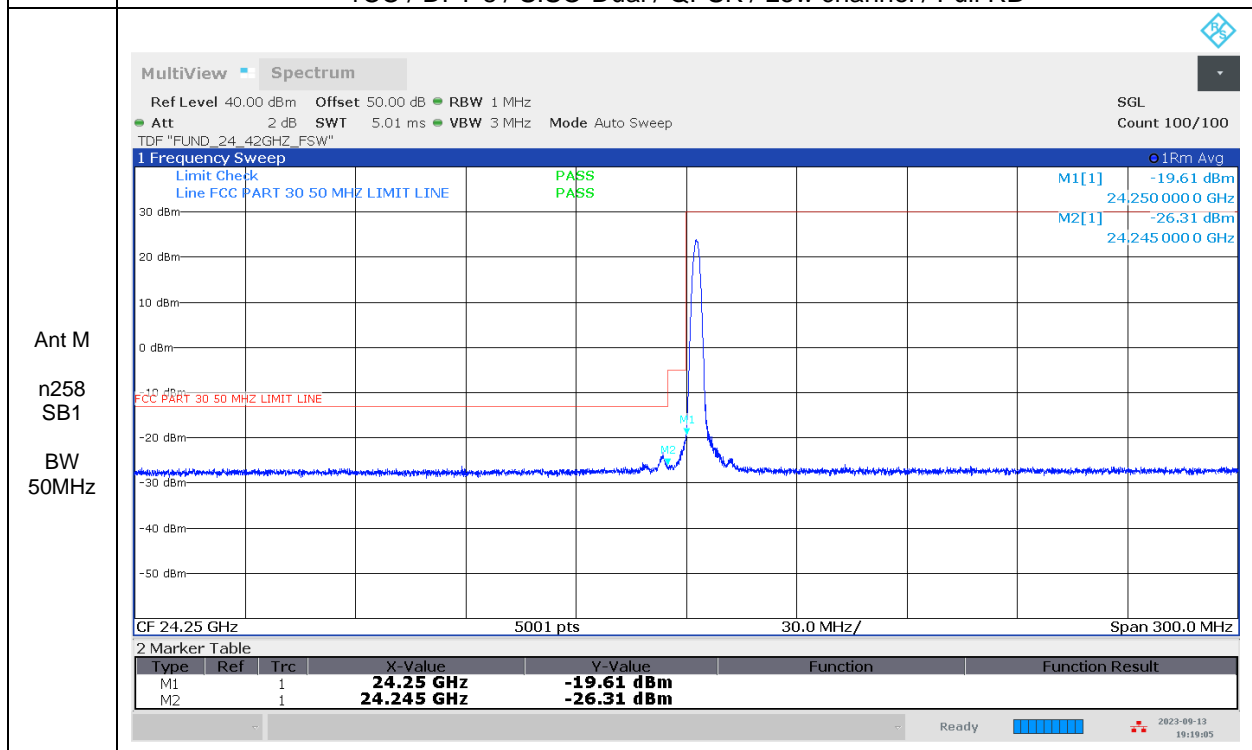
See the following pages.

8.3.1. BAND EDGE WORST CASE RESULT

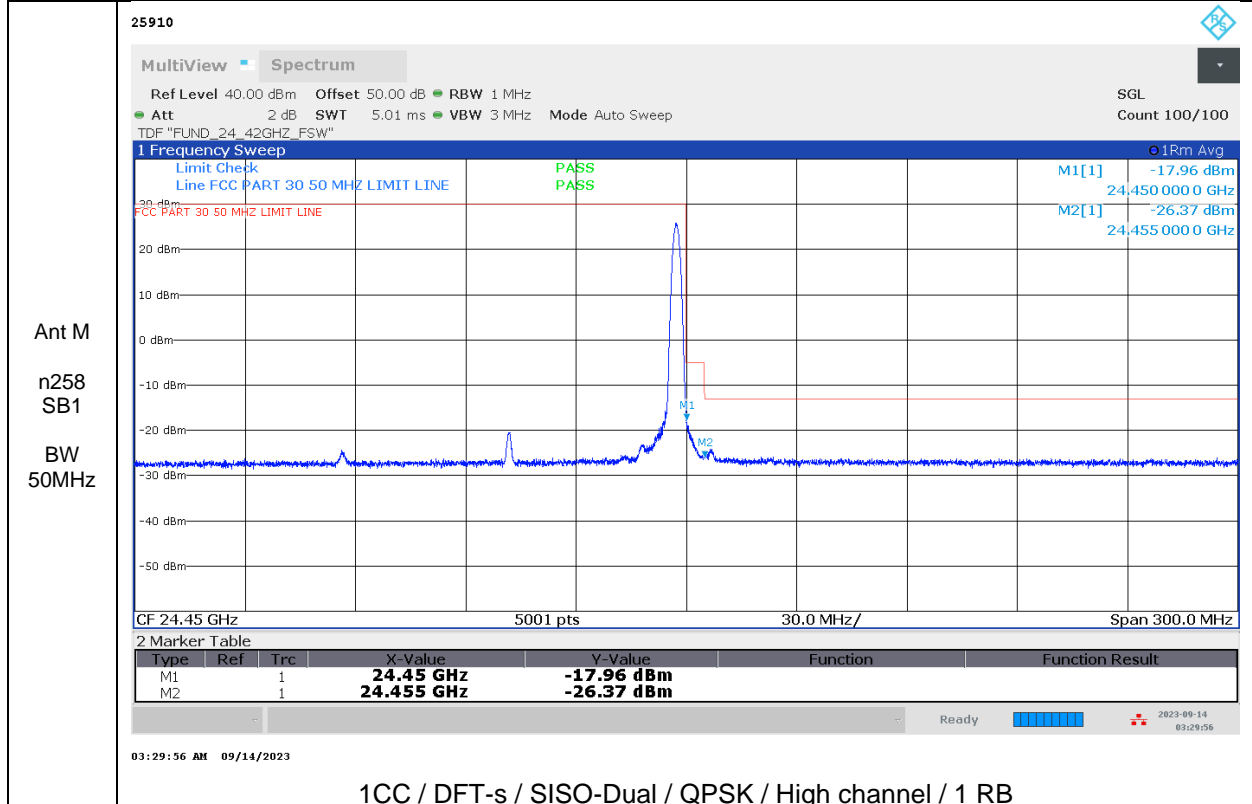
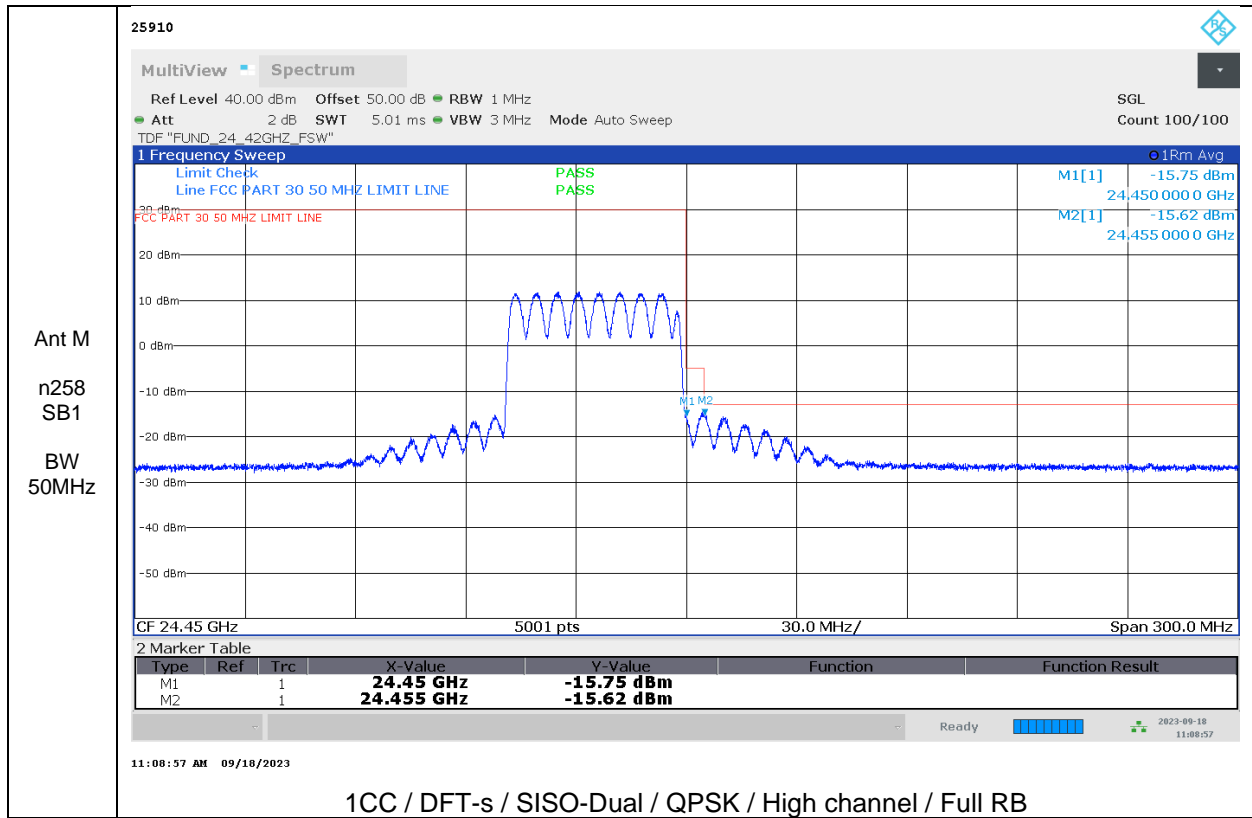
Antenna 1 / Ant M / Band n258 SB1

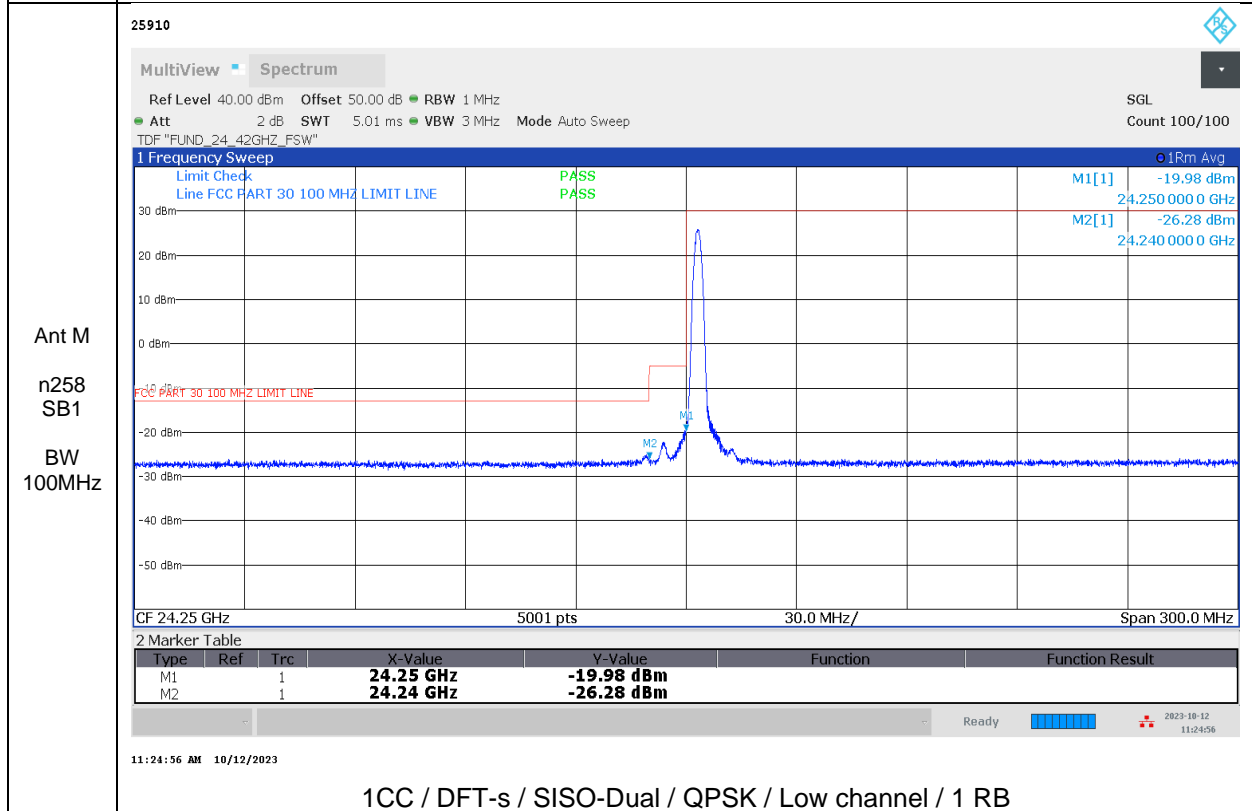
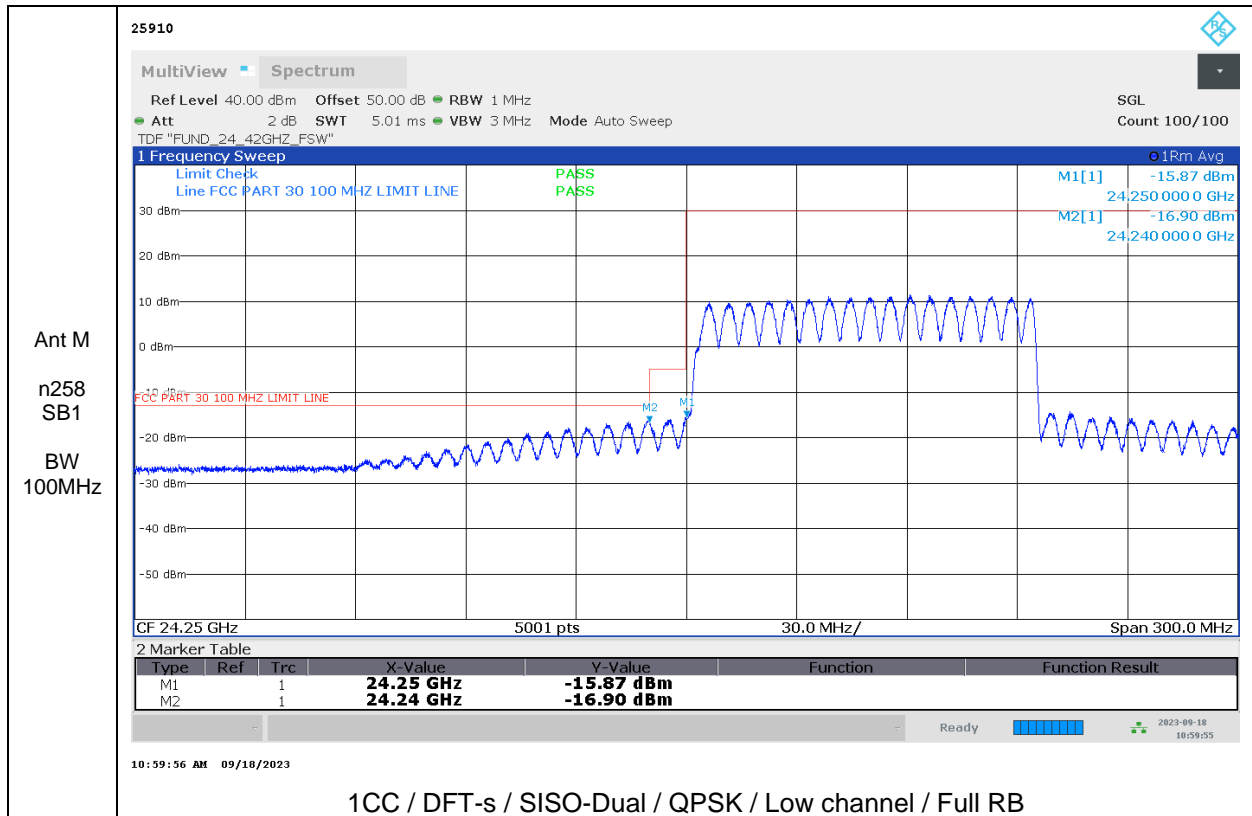


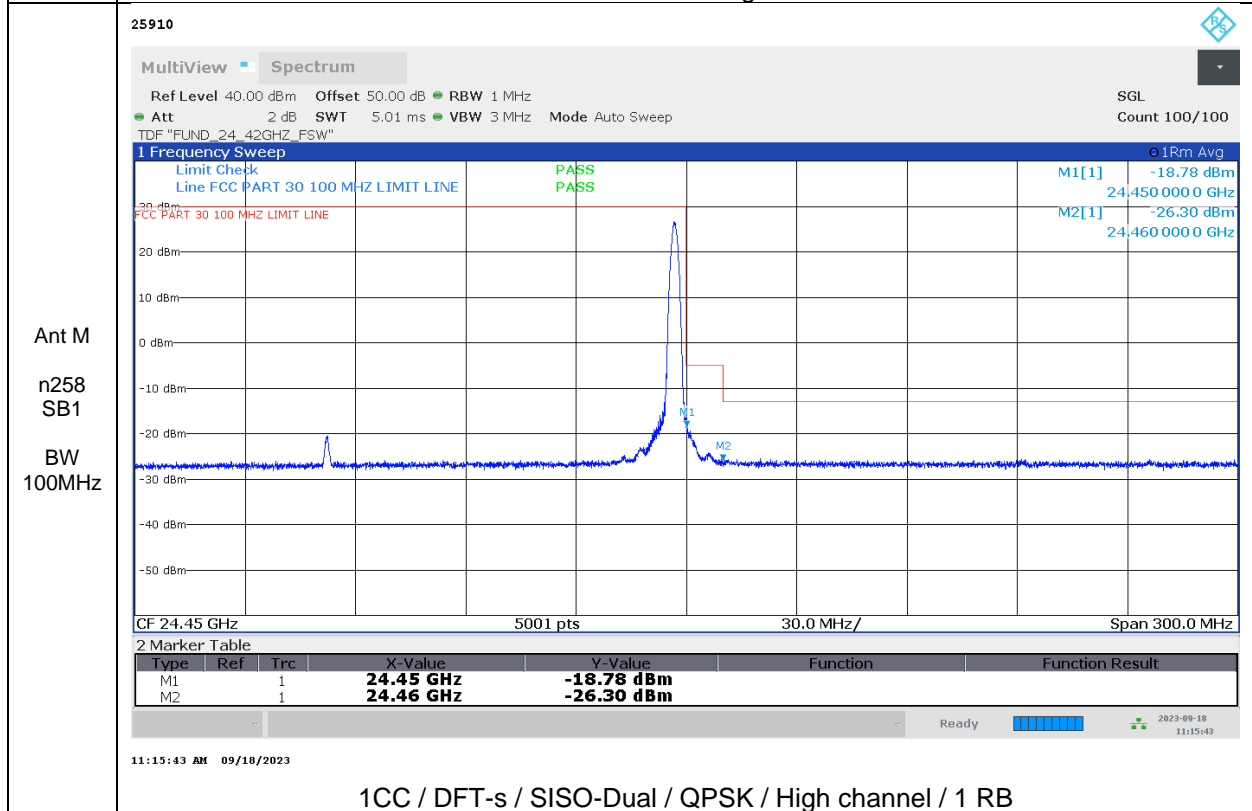
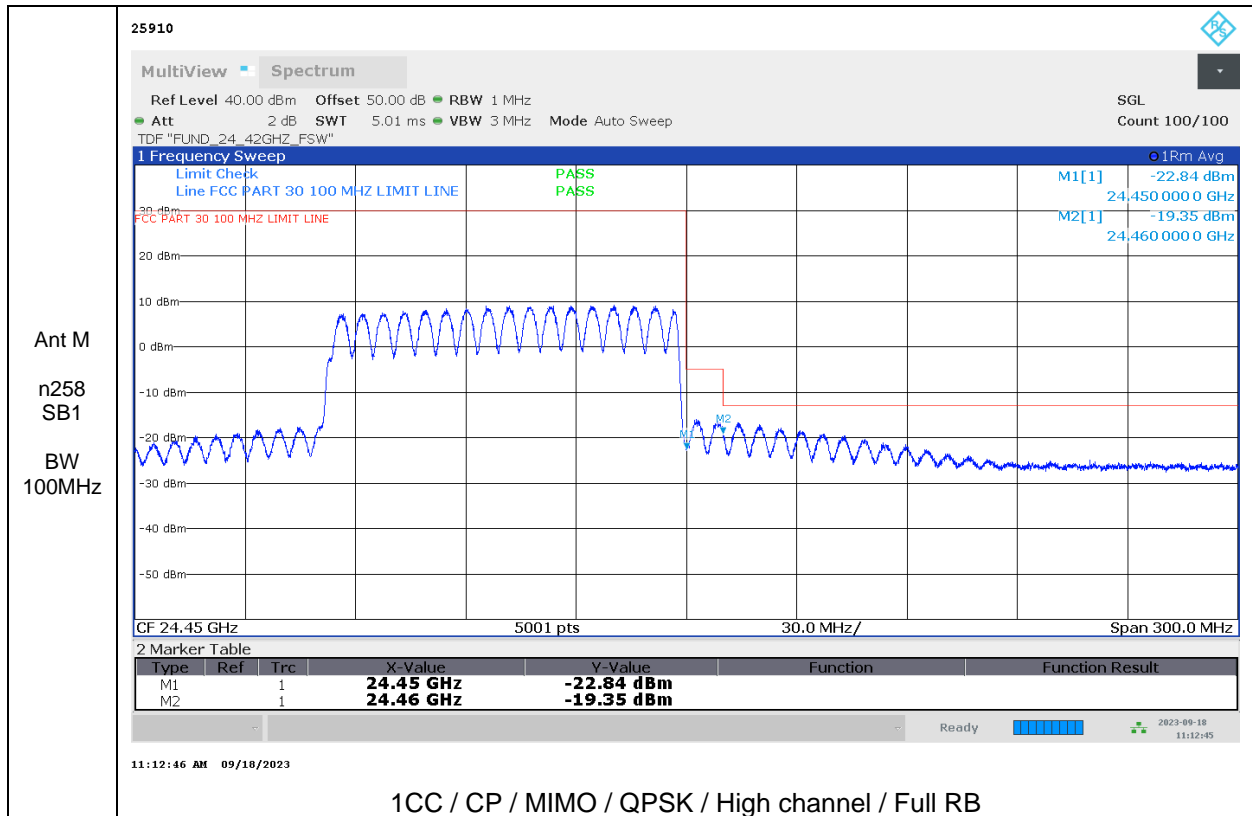
1CC / DFT-s / SISO-Dual / QPSK / Low channel / Full RB

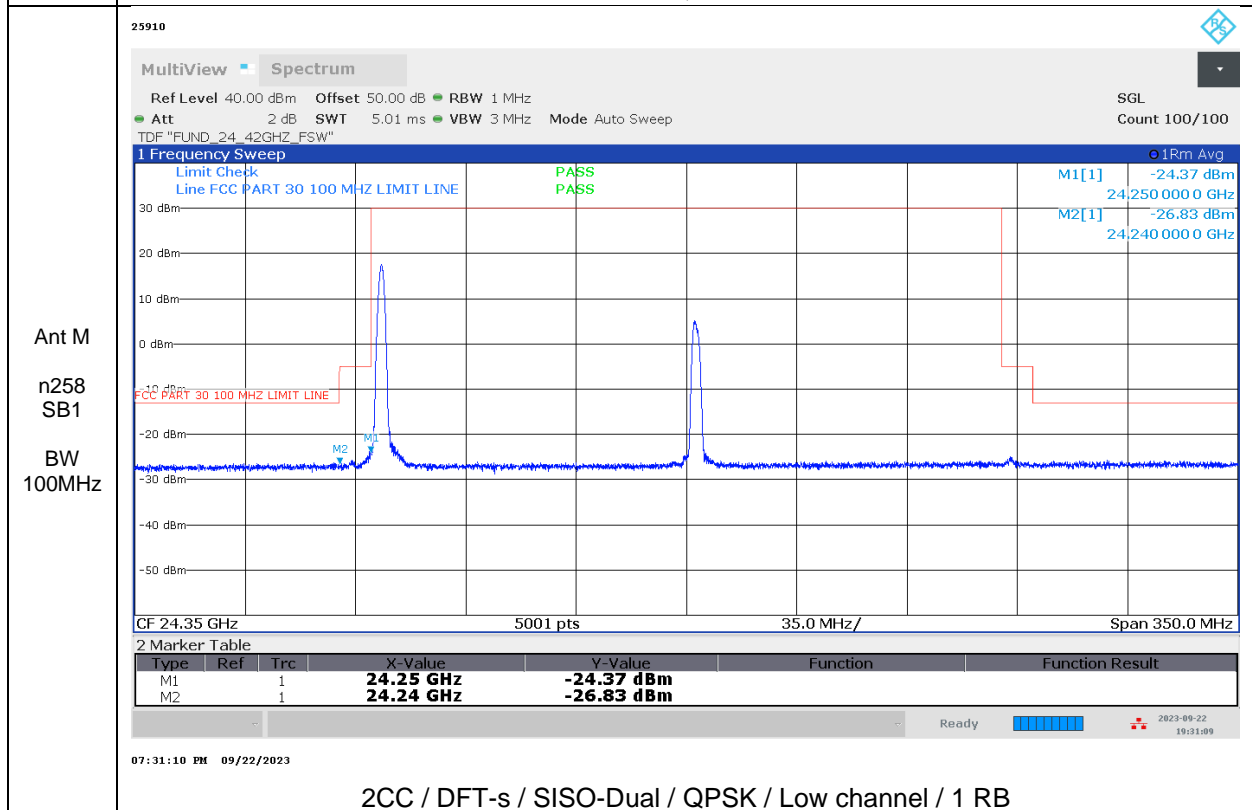
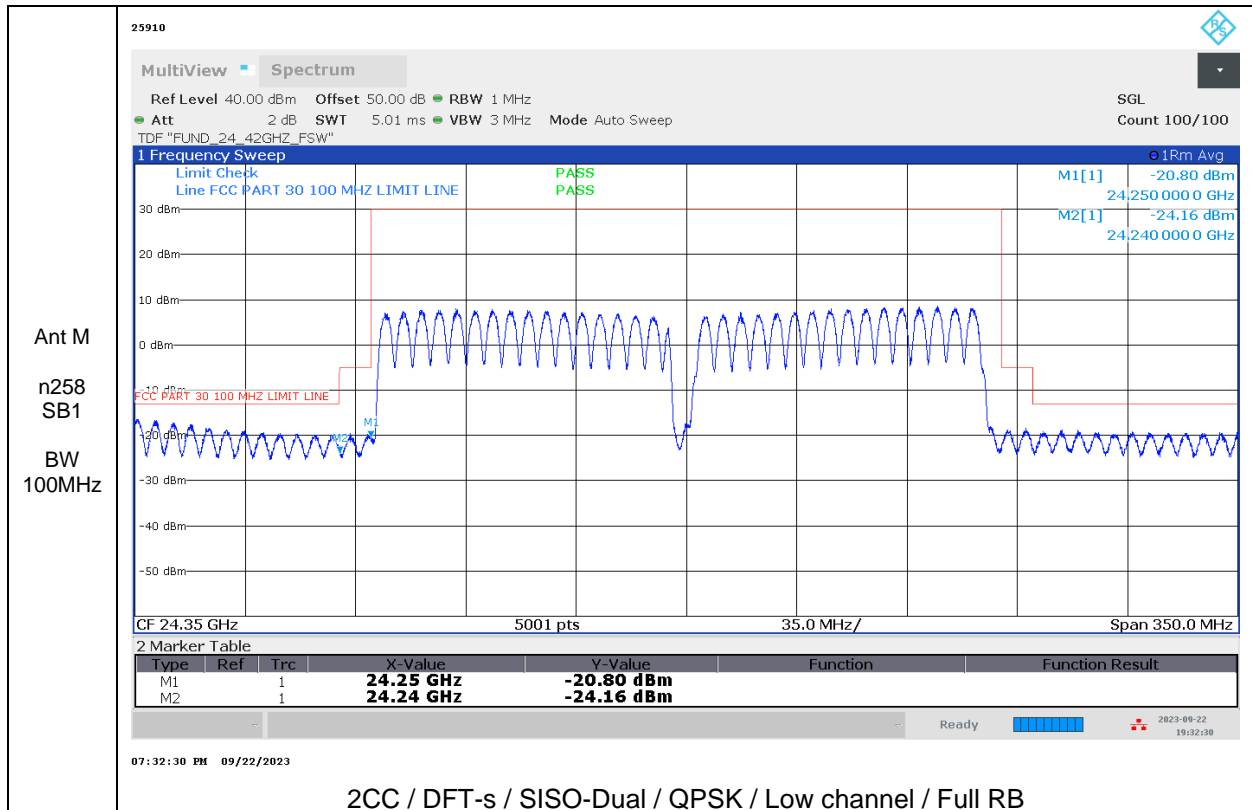


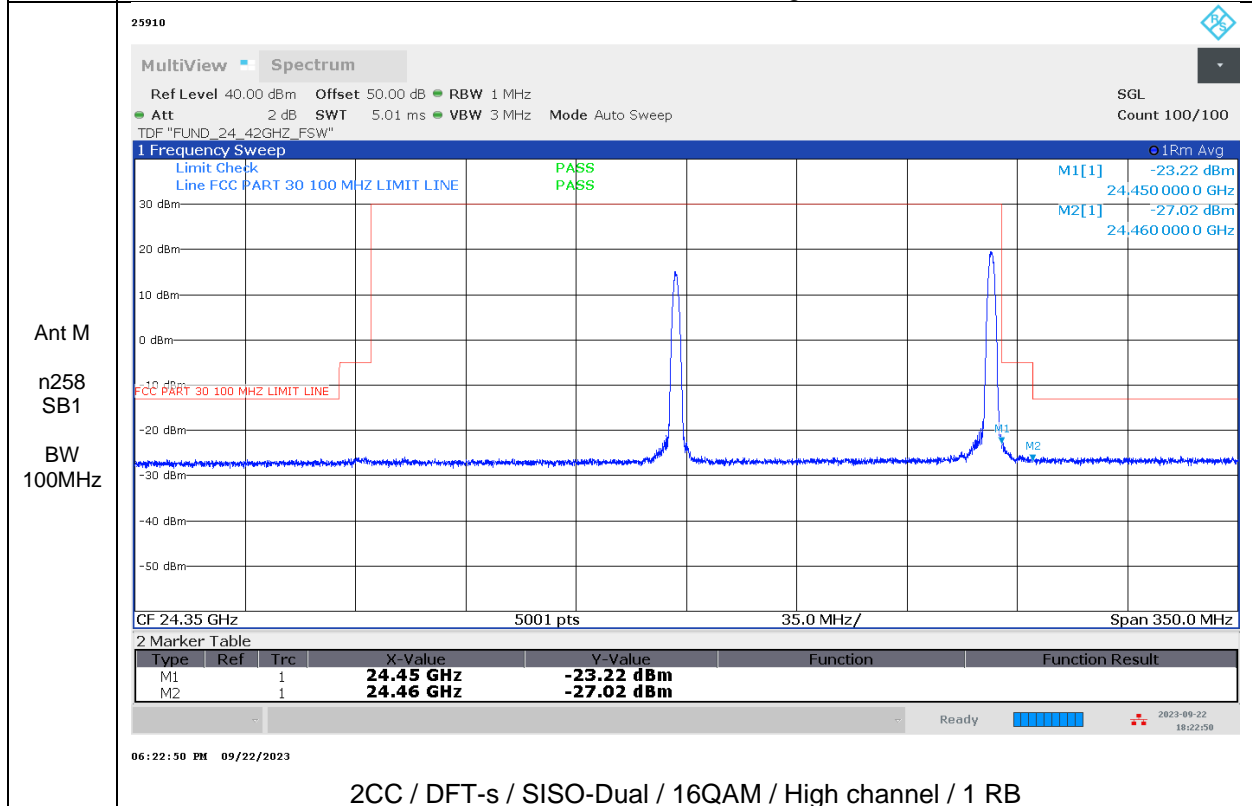
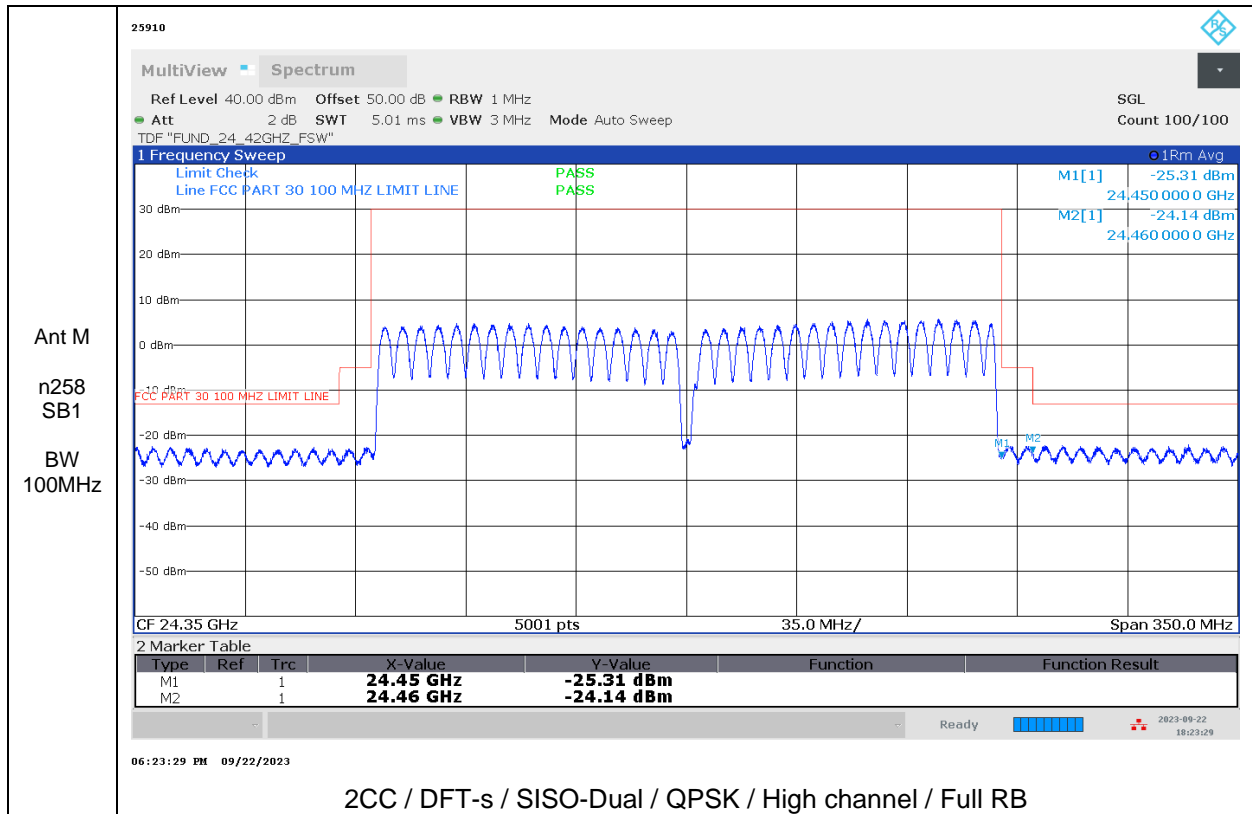
1CC / DFT-s / SISO-Dual / QPSK / Low channel / 1 RB



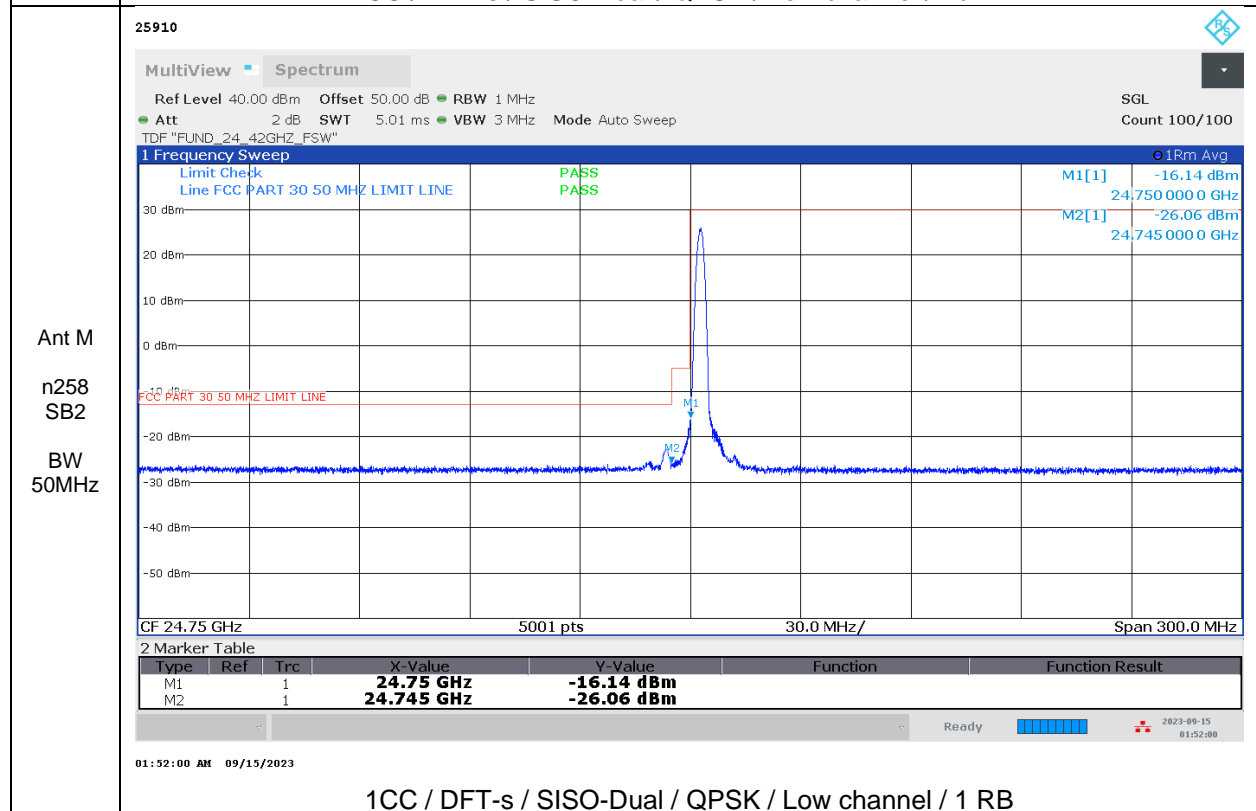
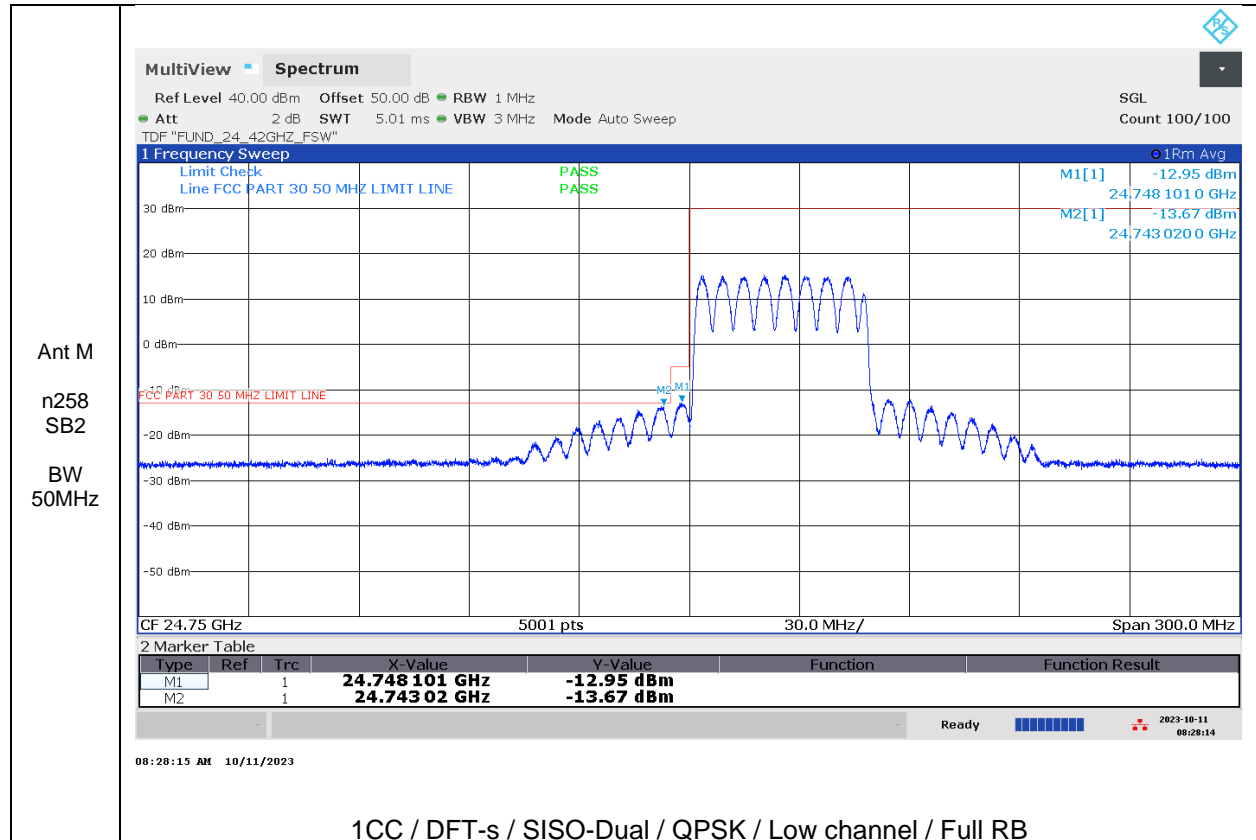


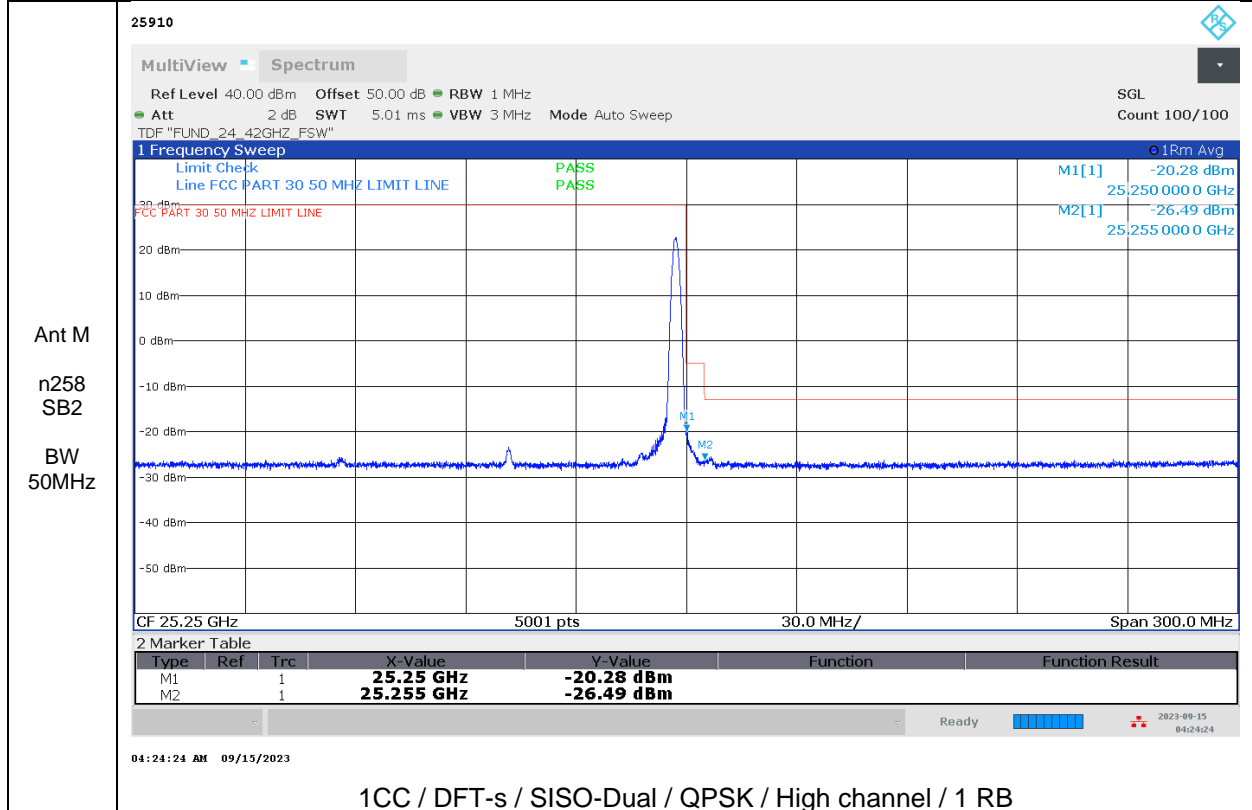
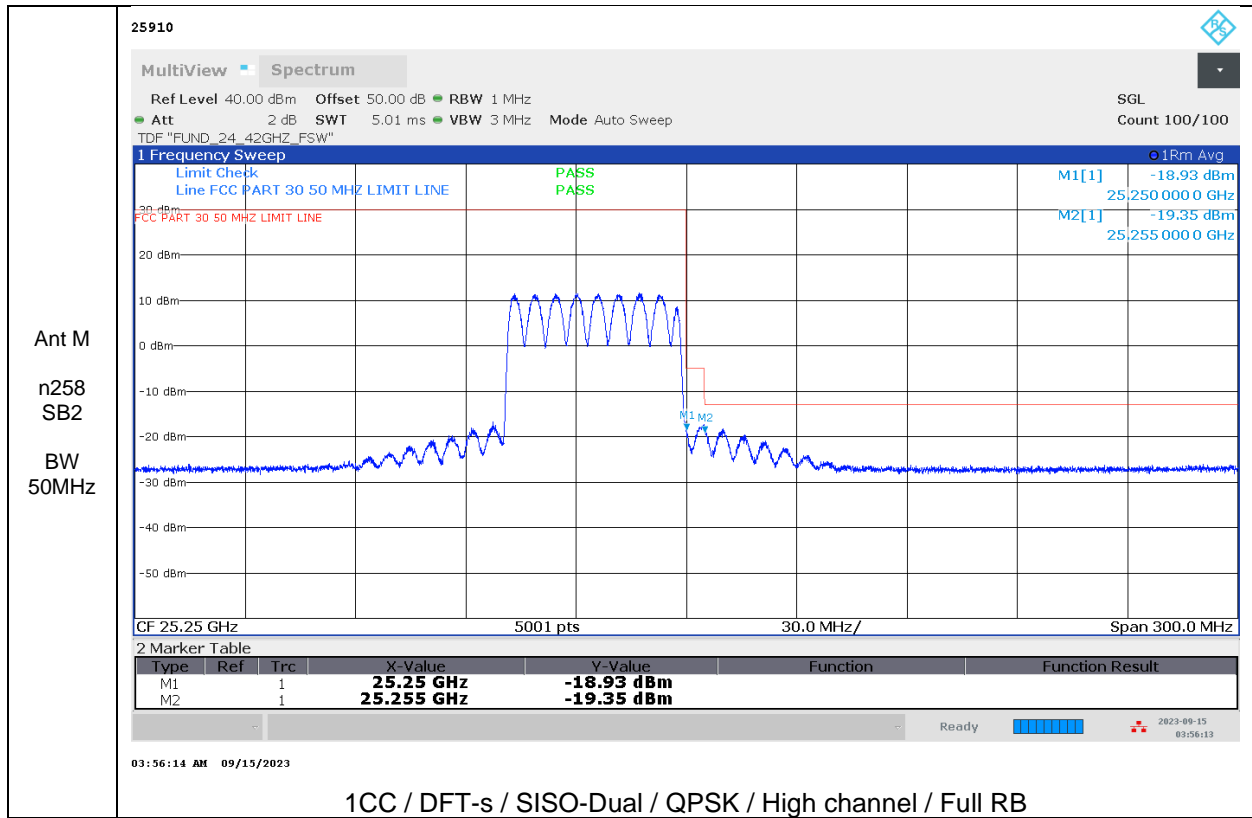


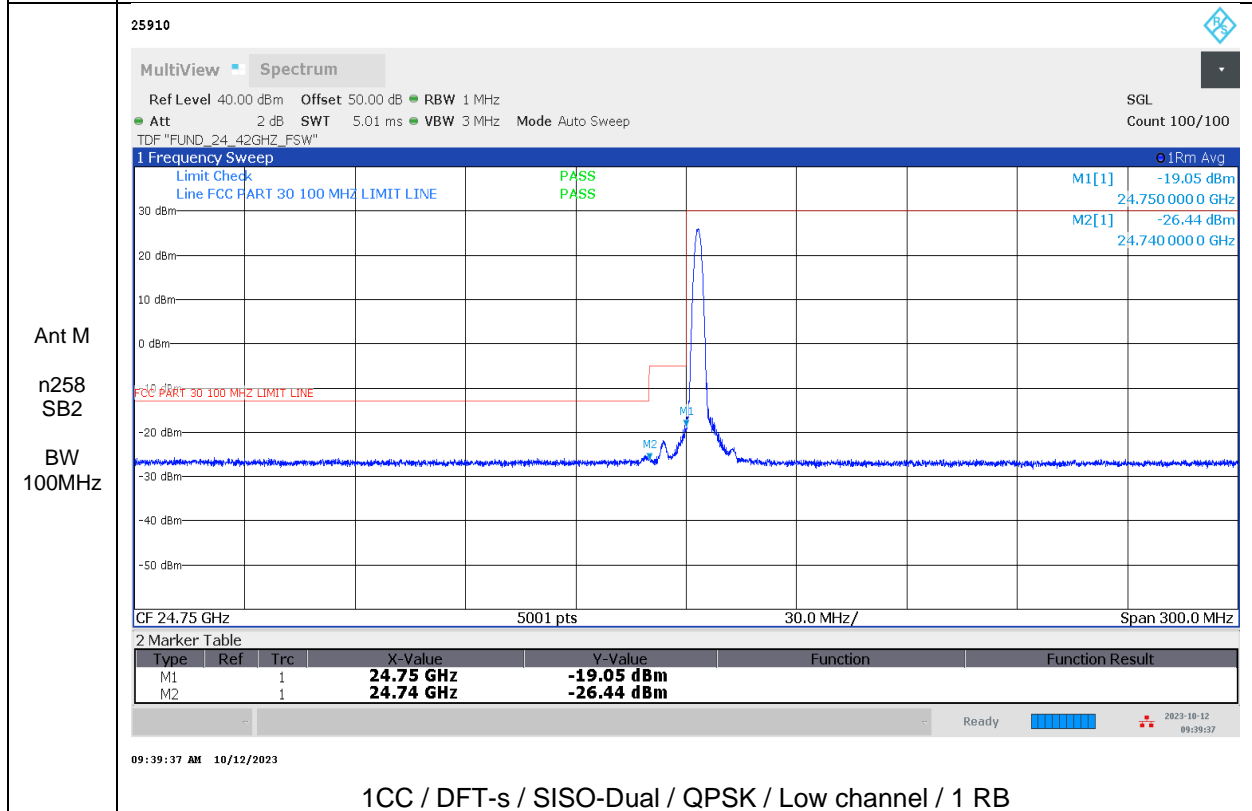
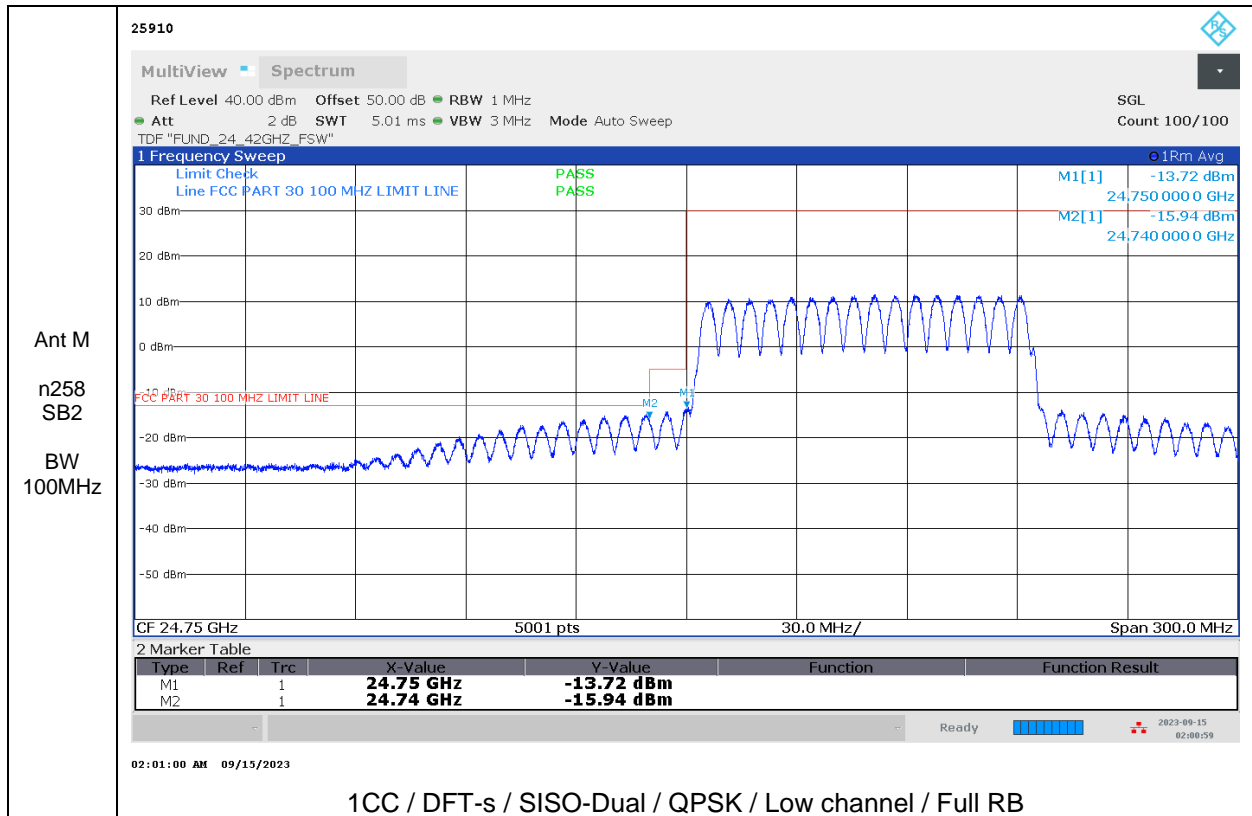


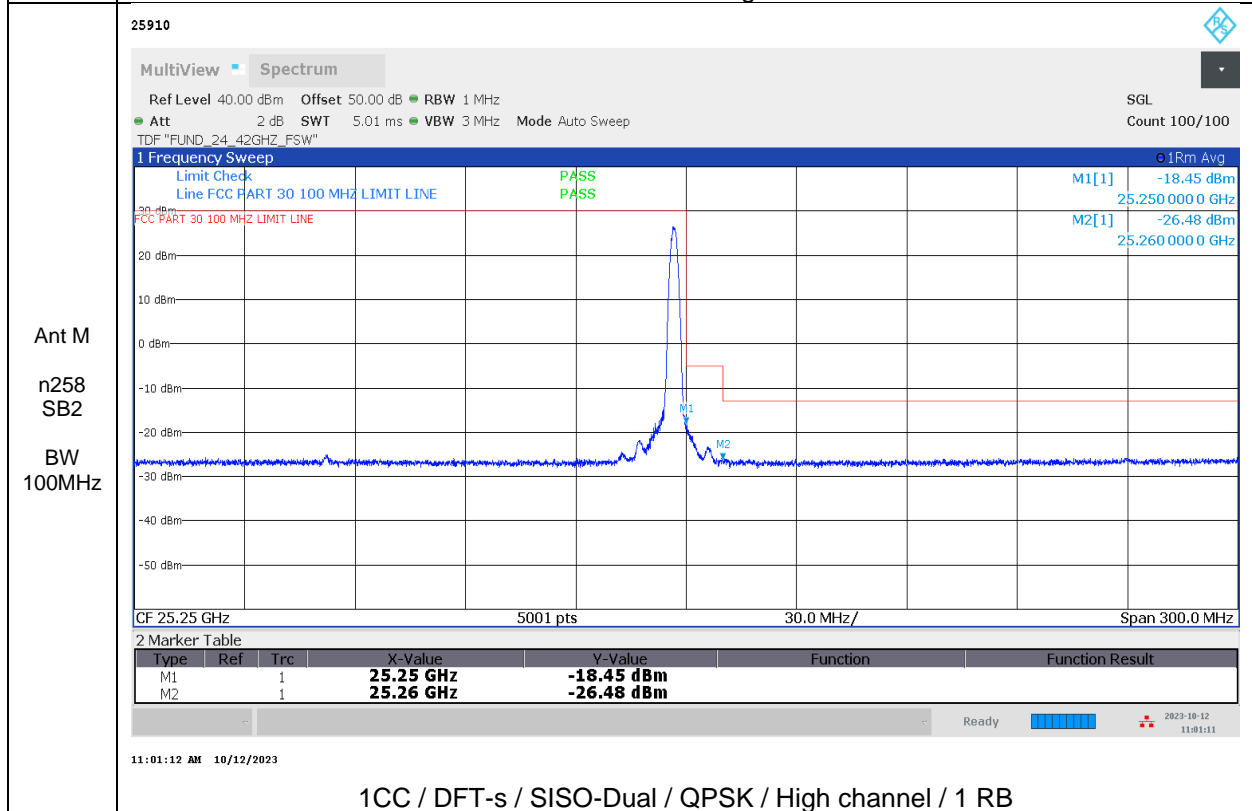
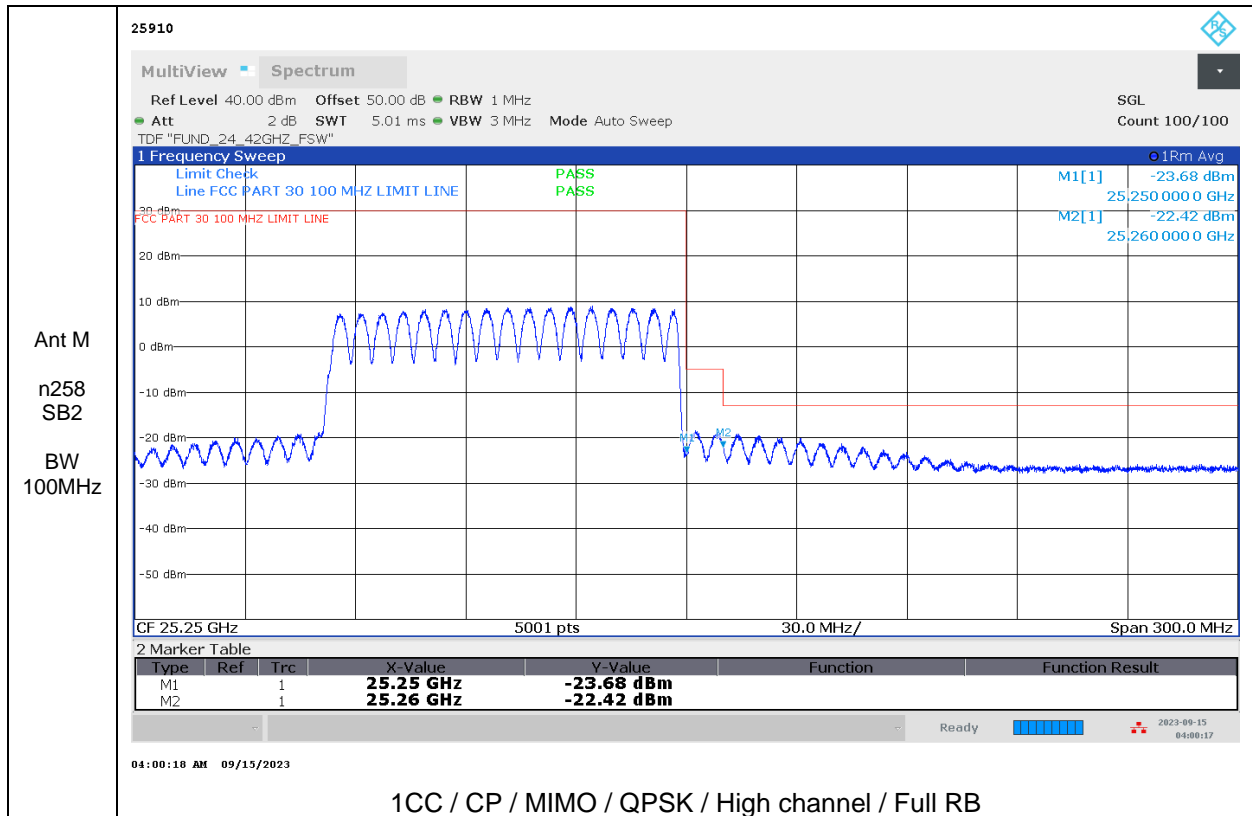


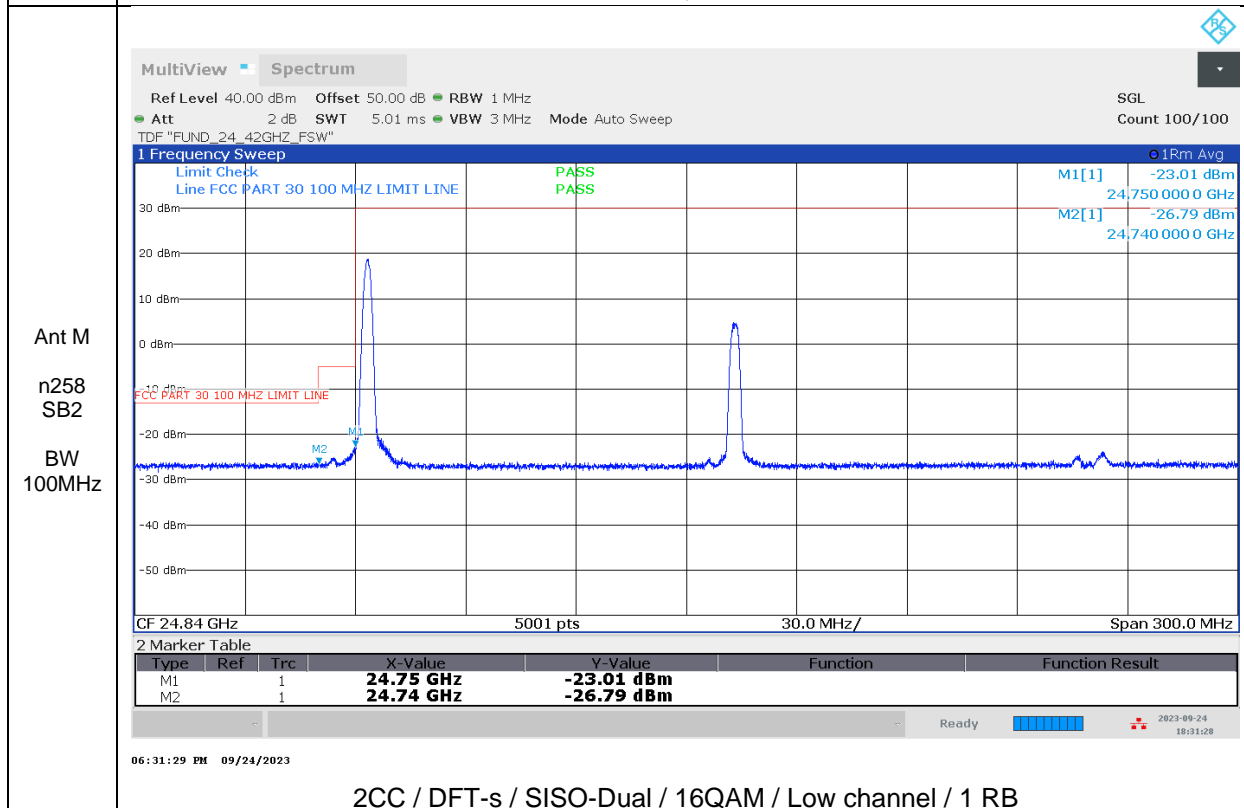
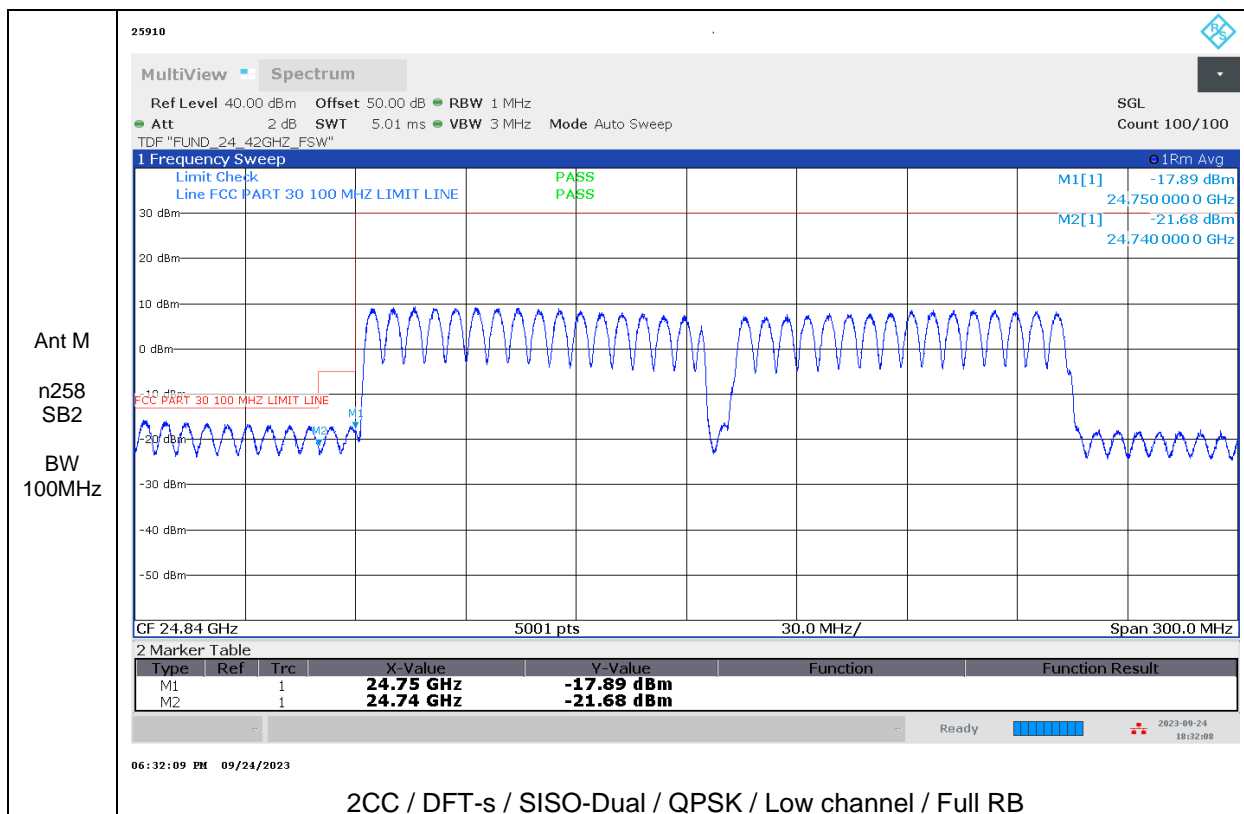
Antenna 1 / Ant M / Band n258 SB2

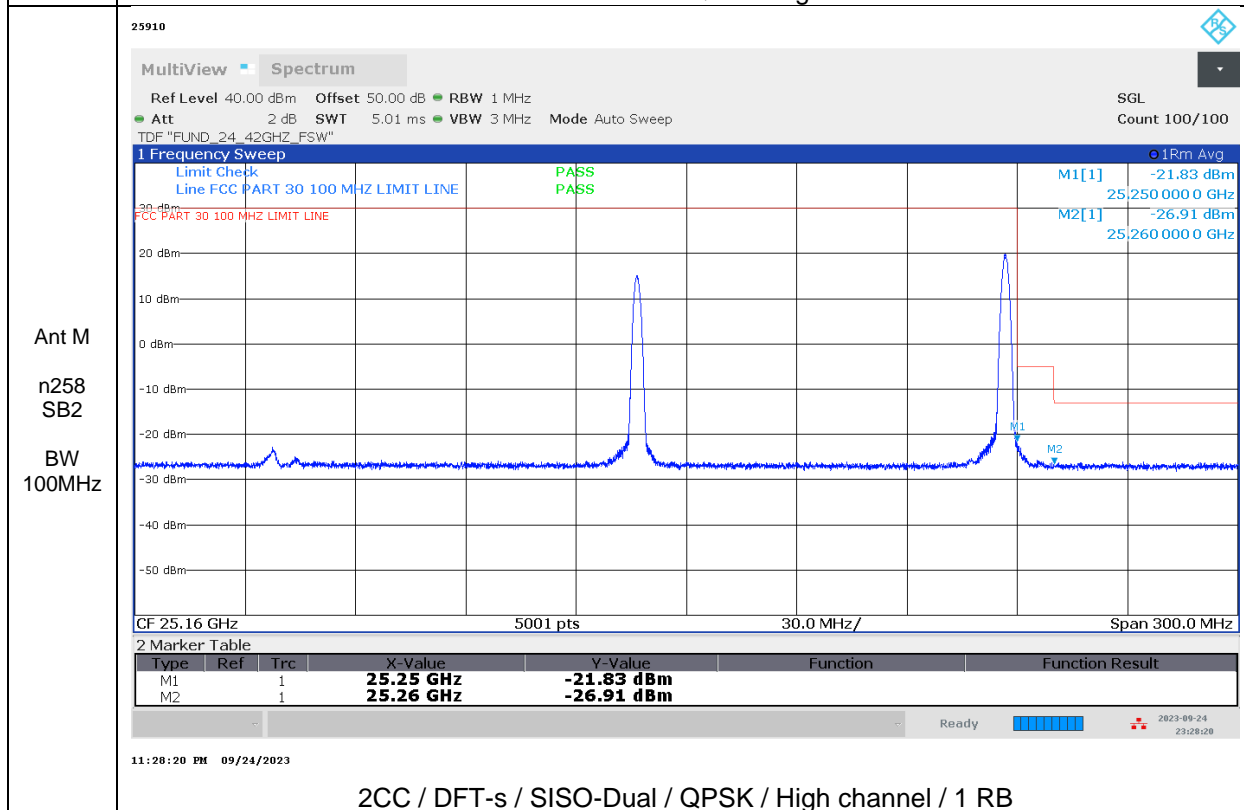
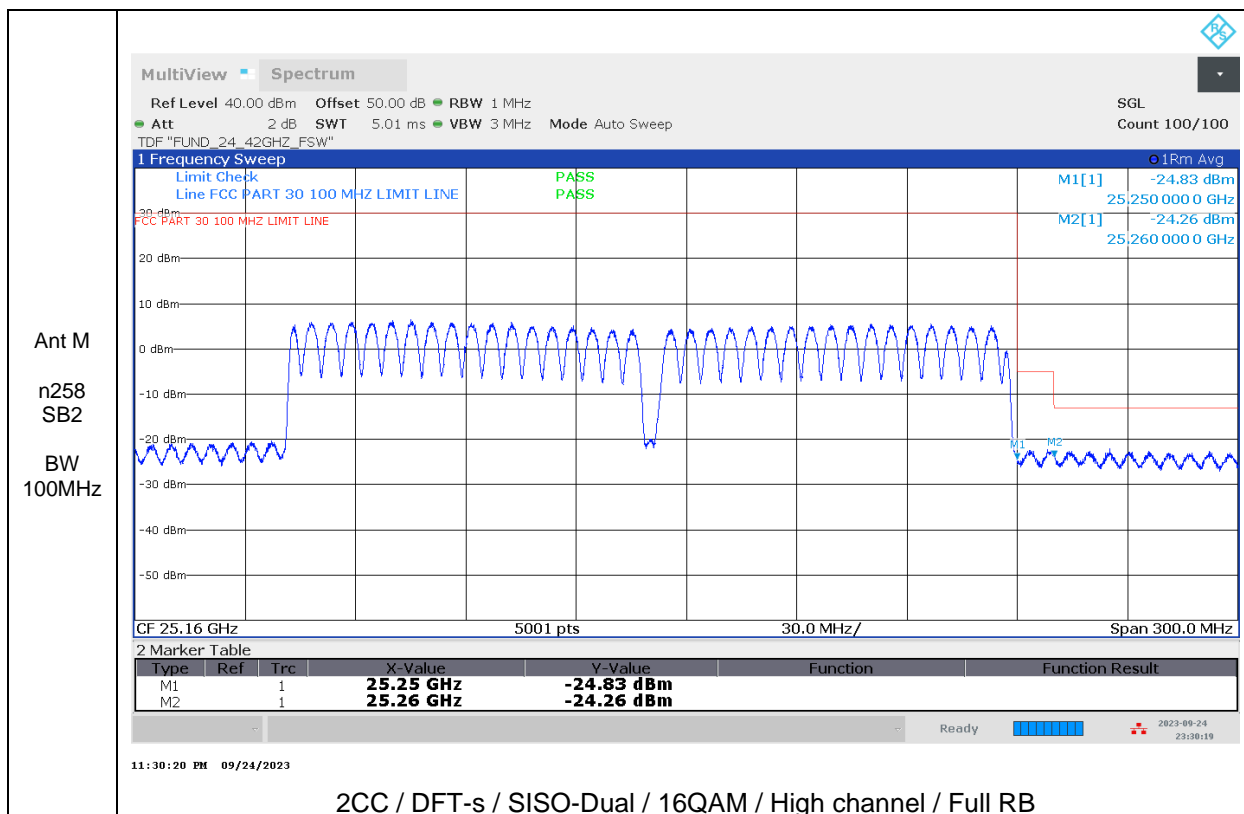


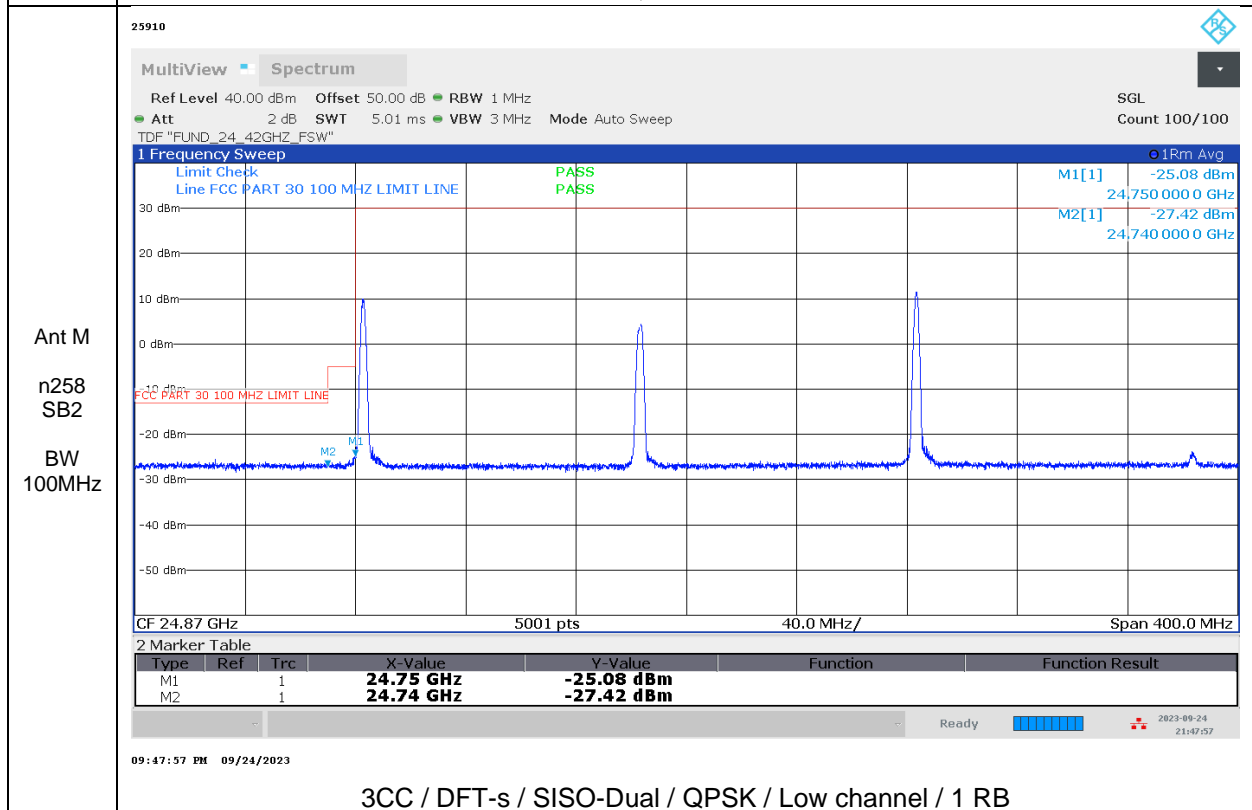
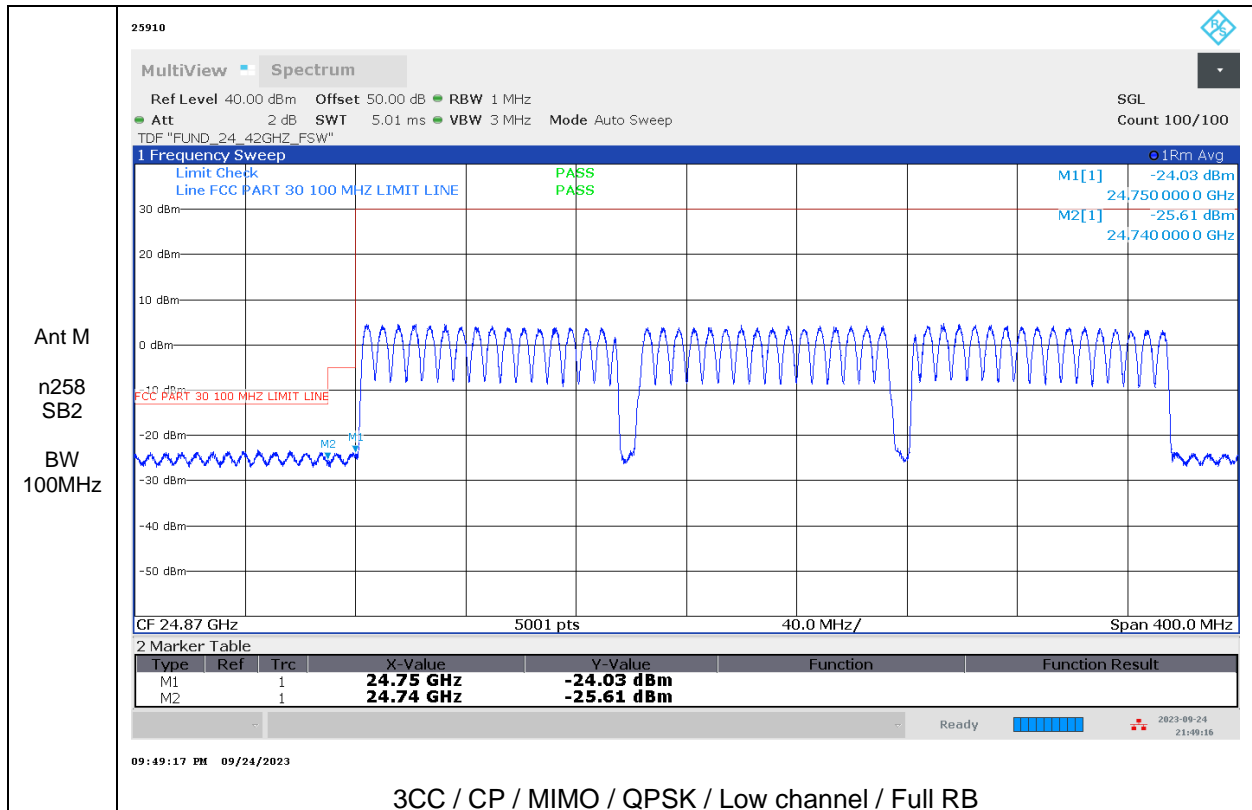


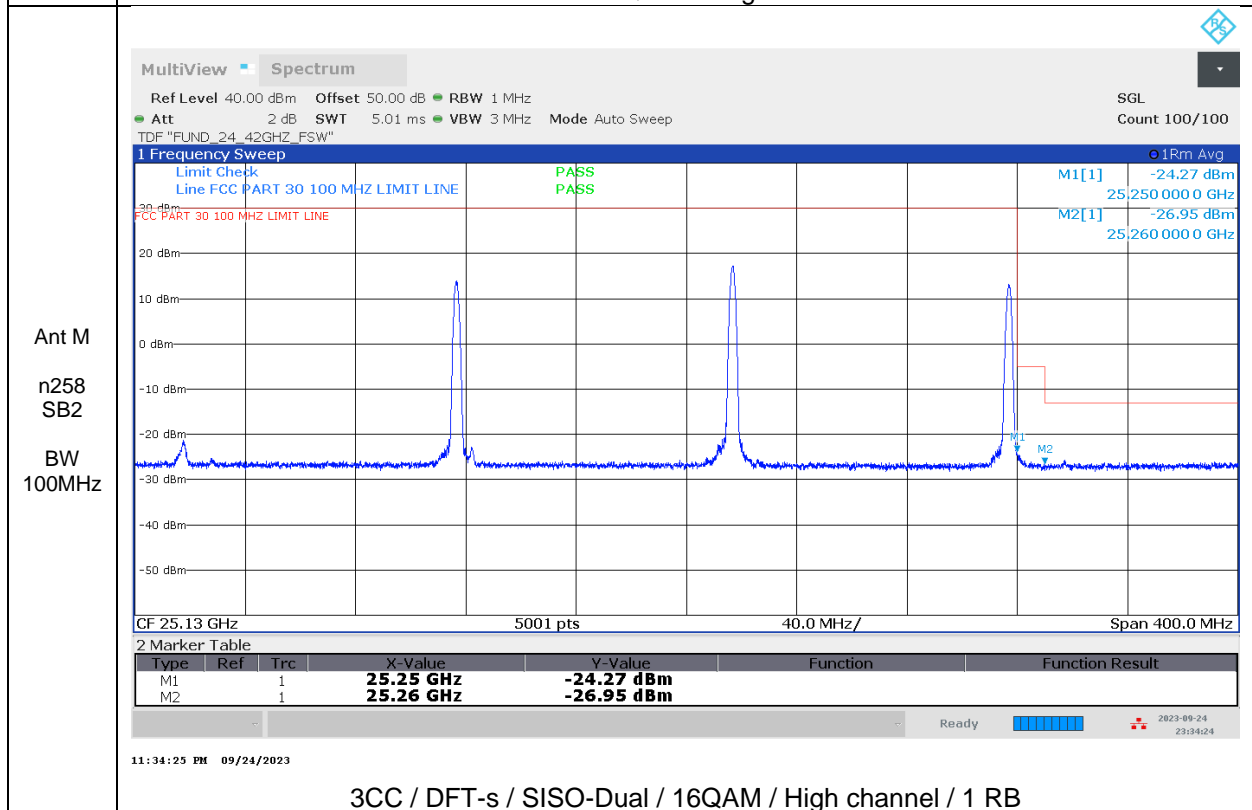
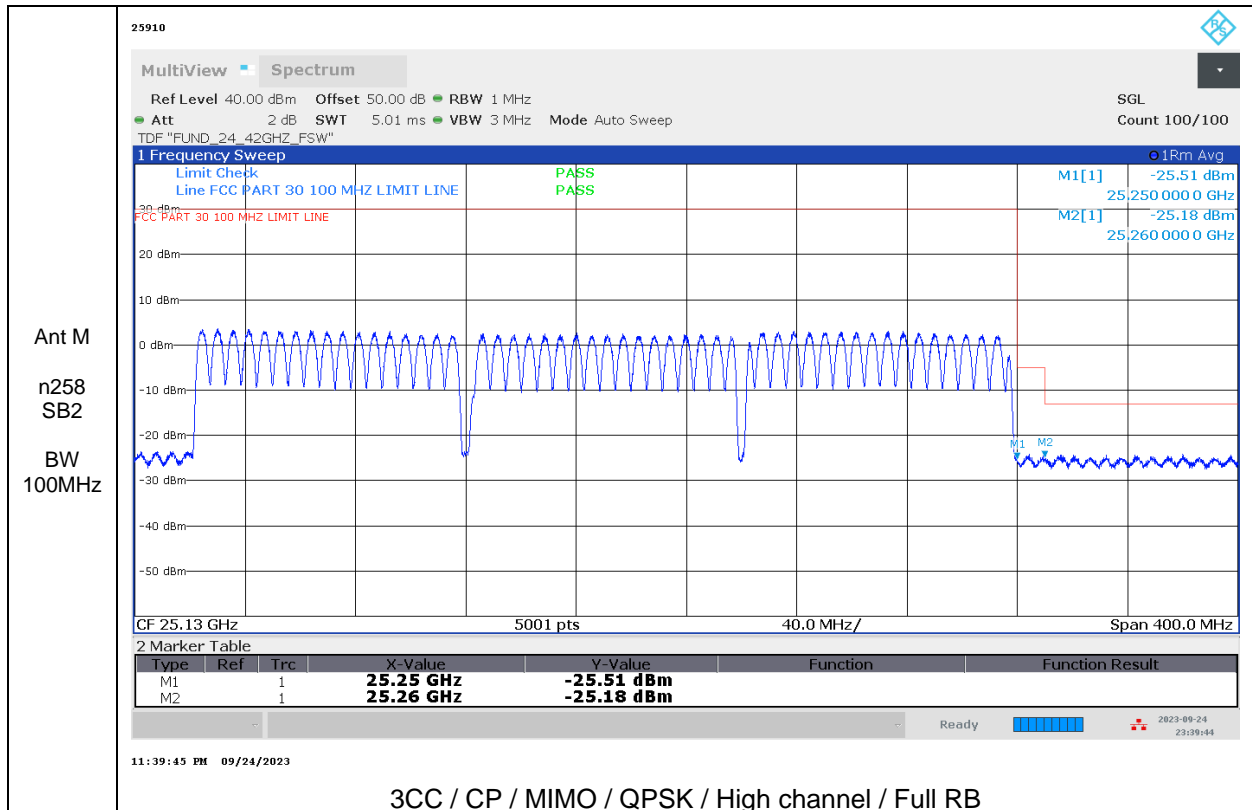


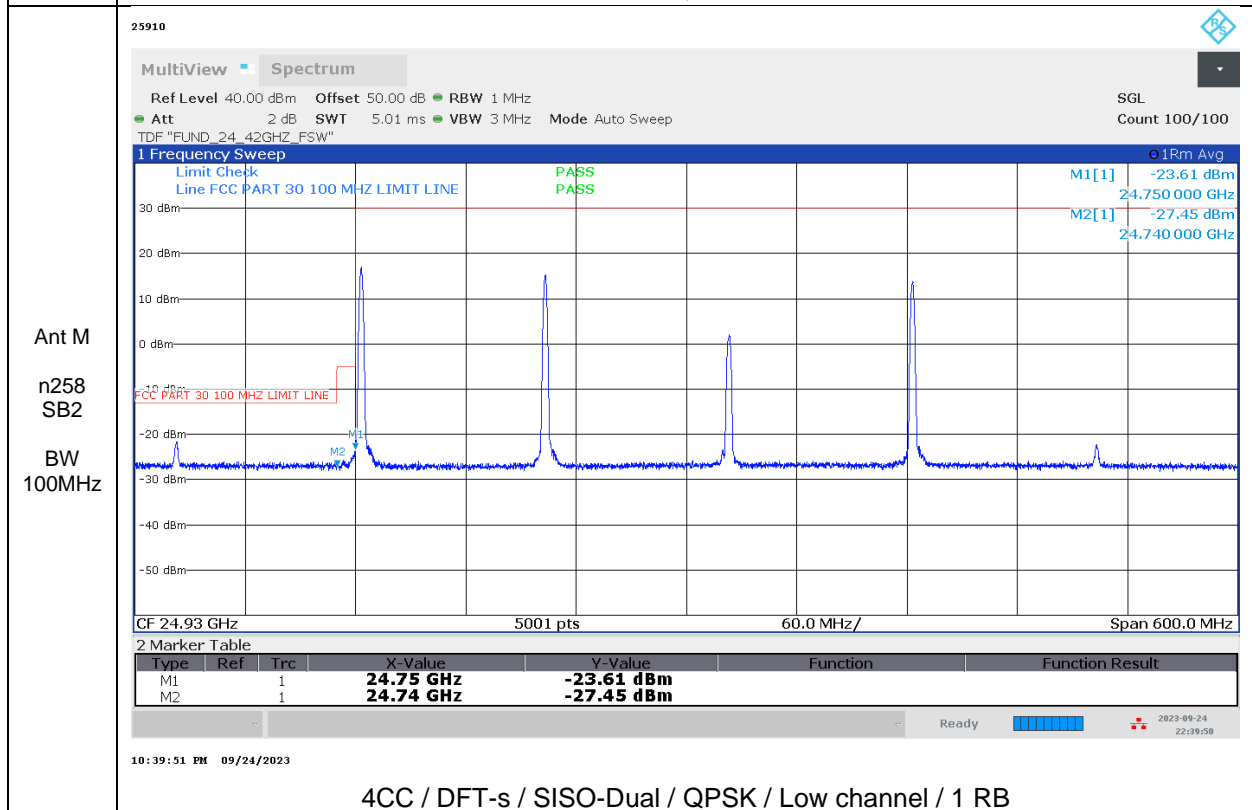
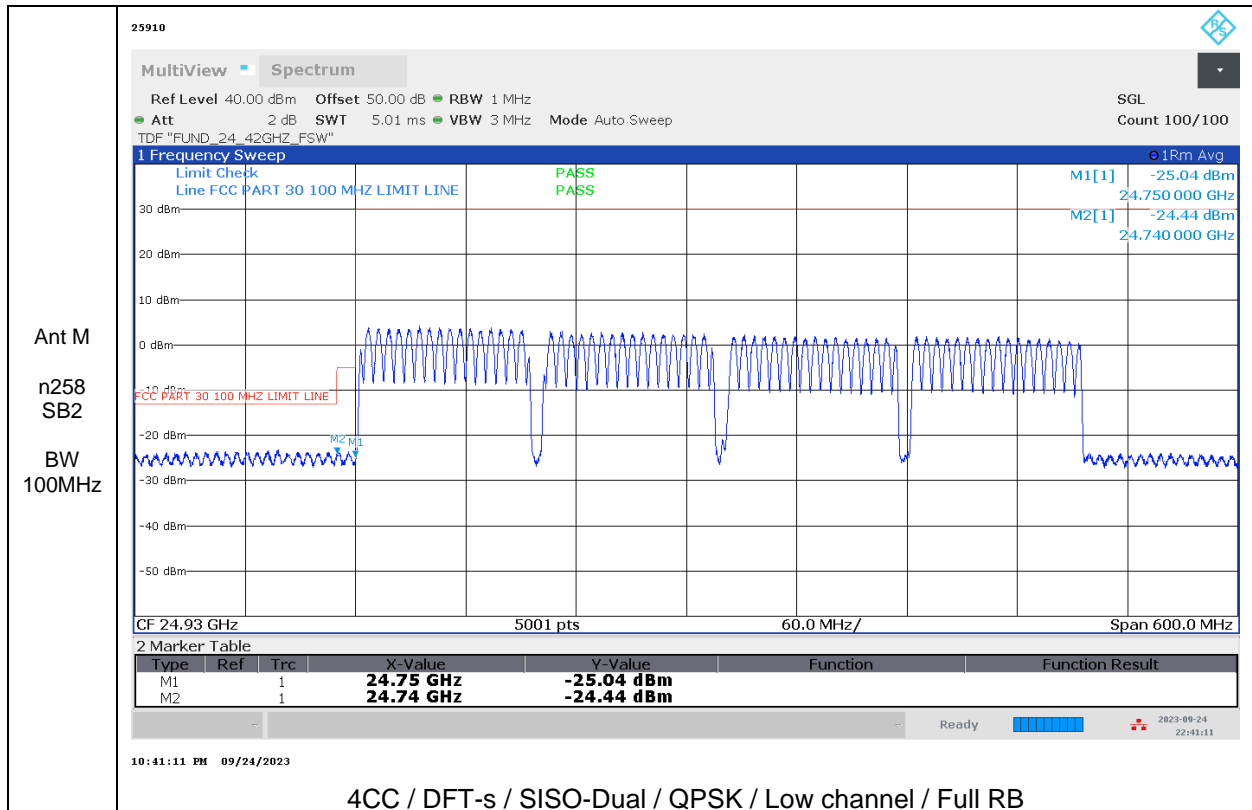


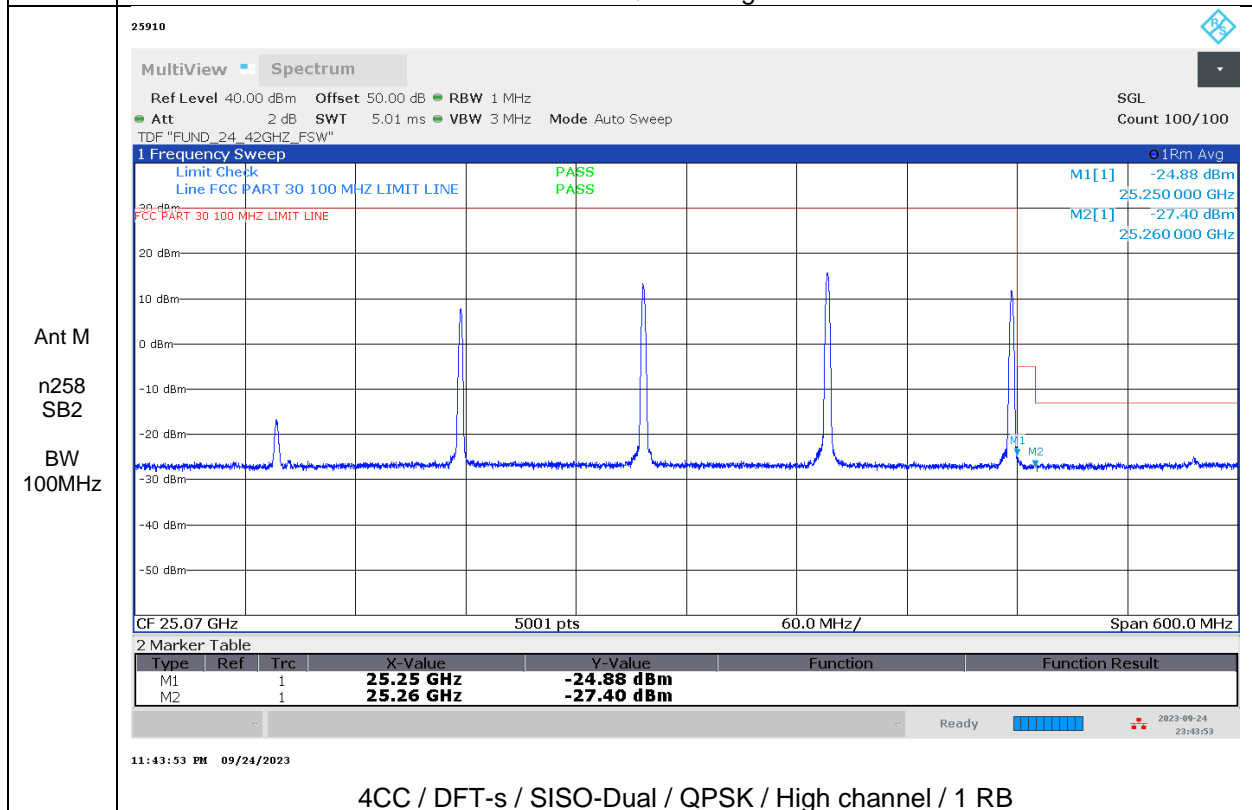
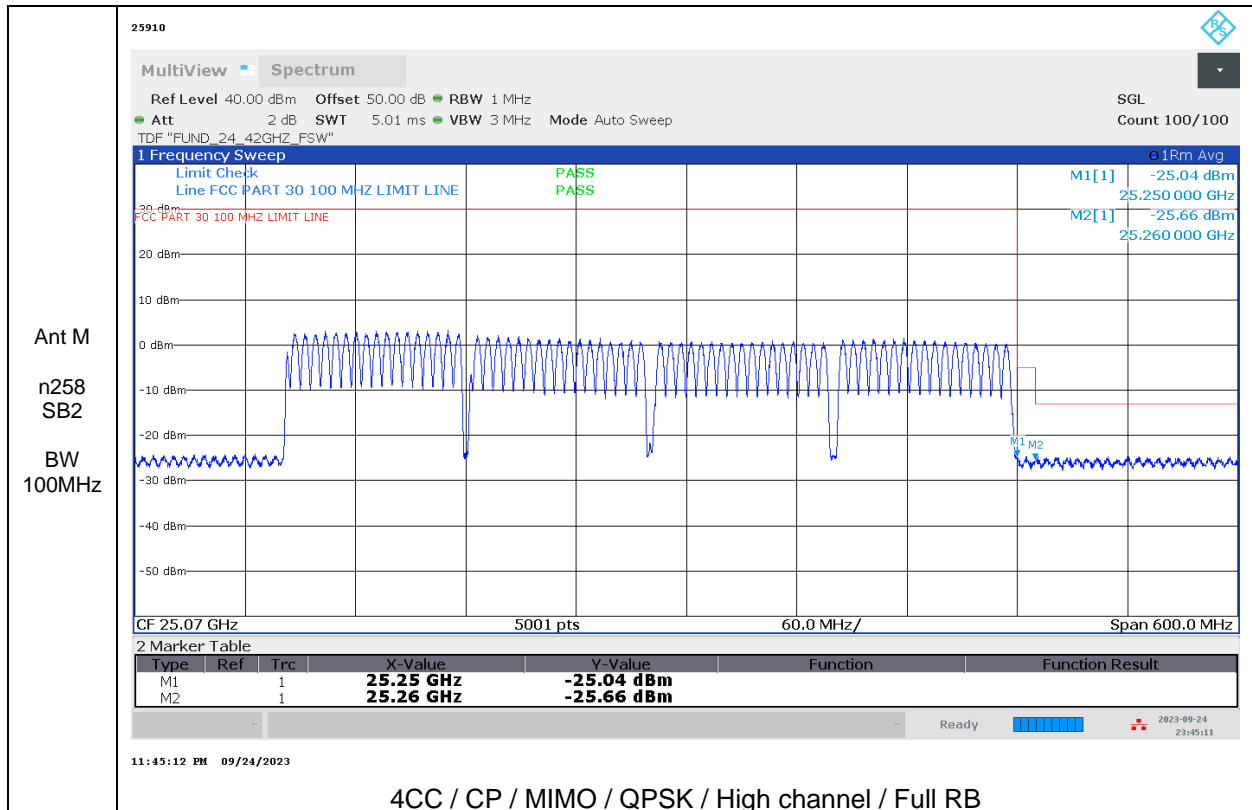




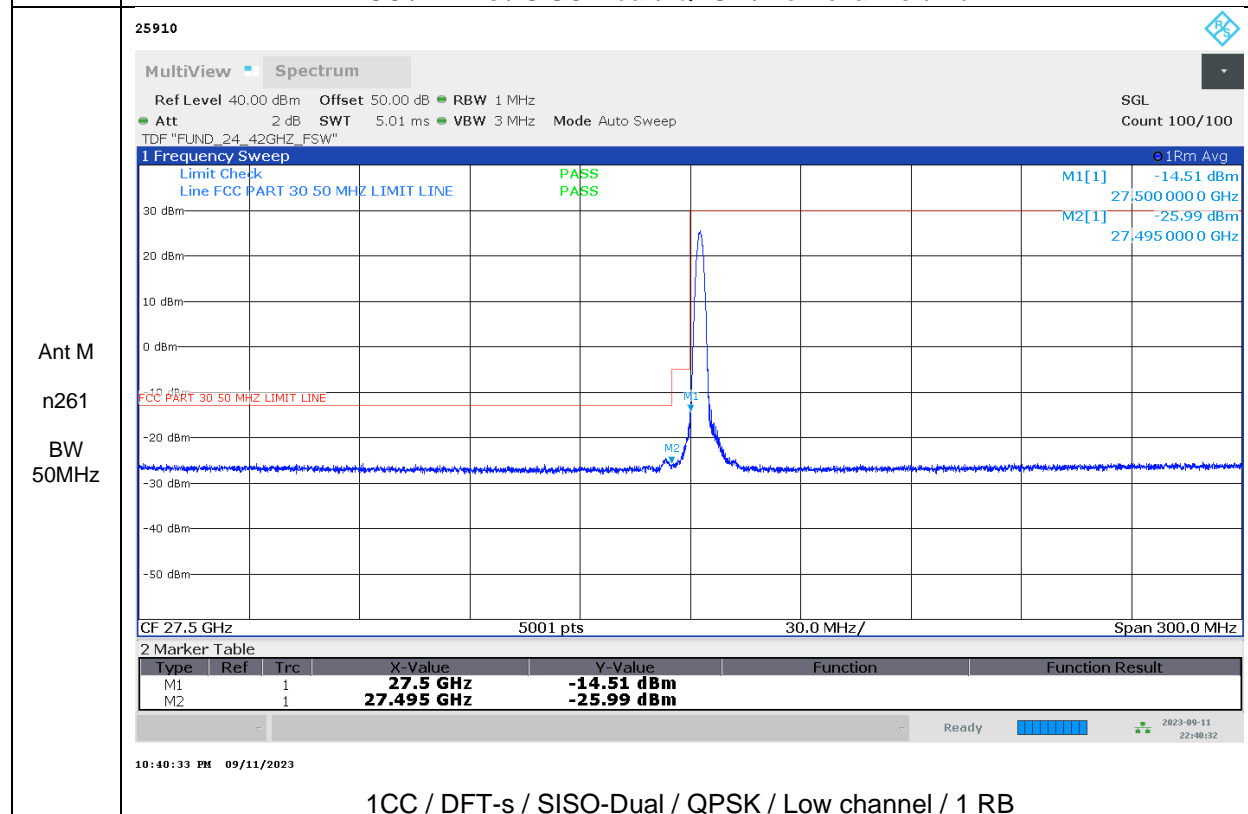
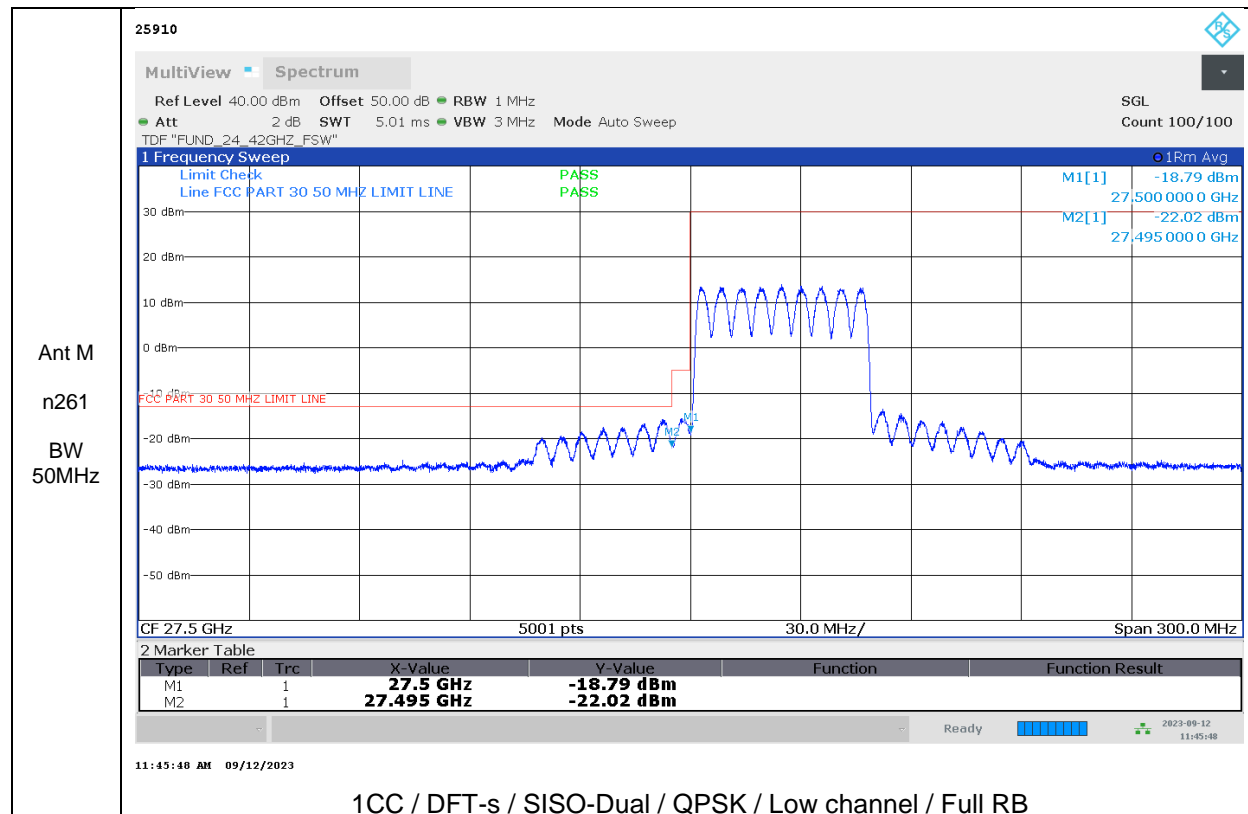


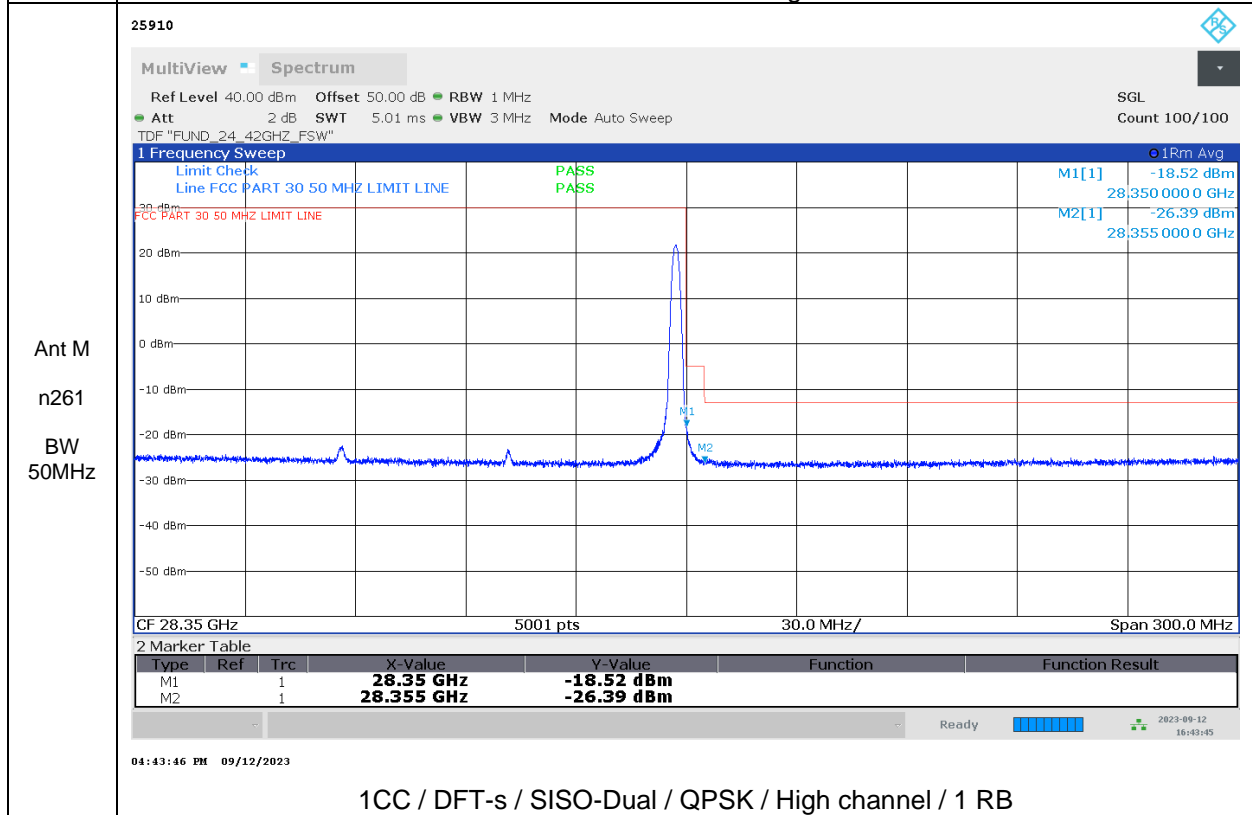
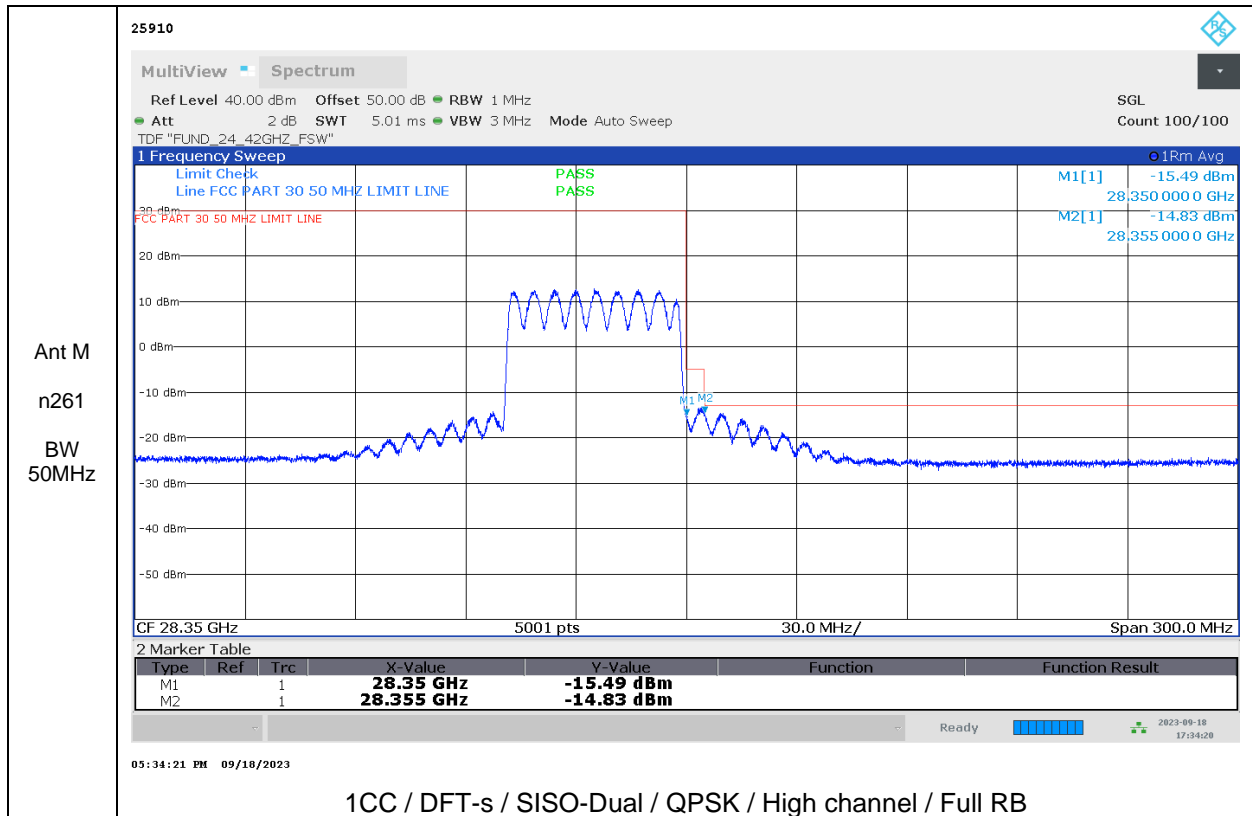


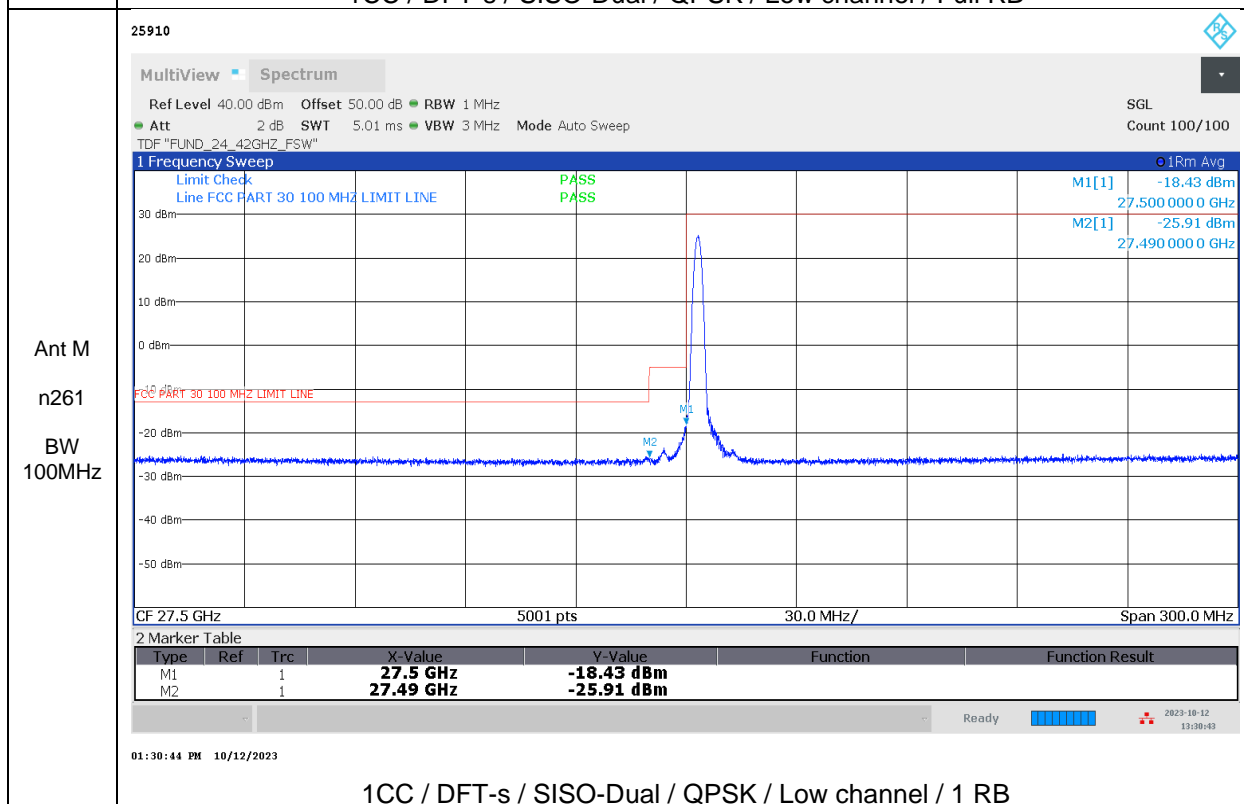
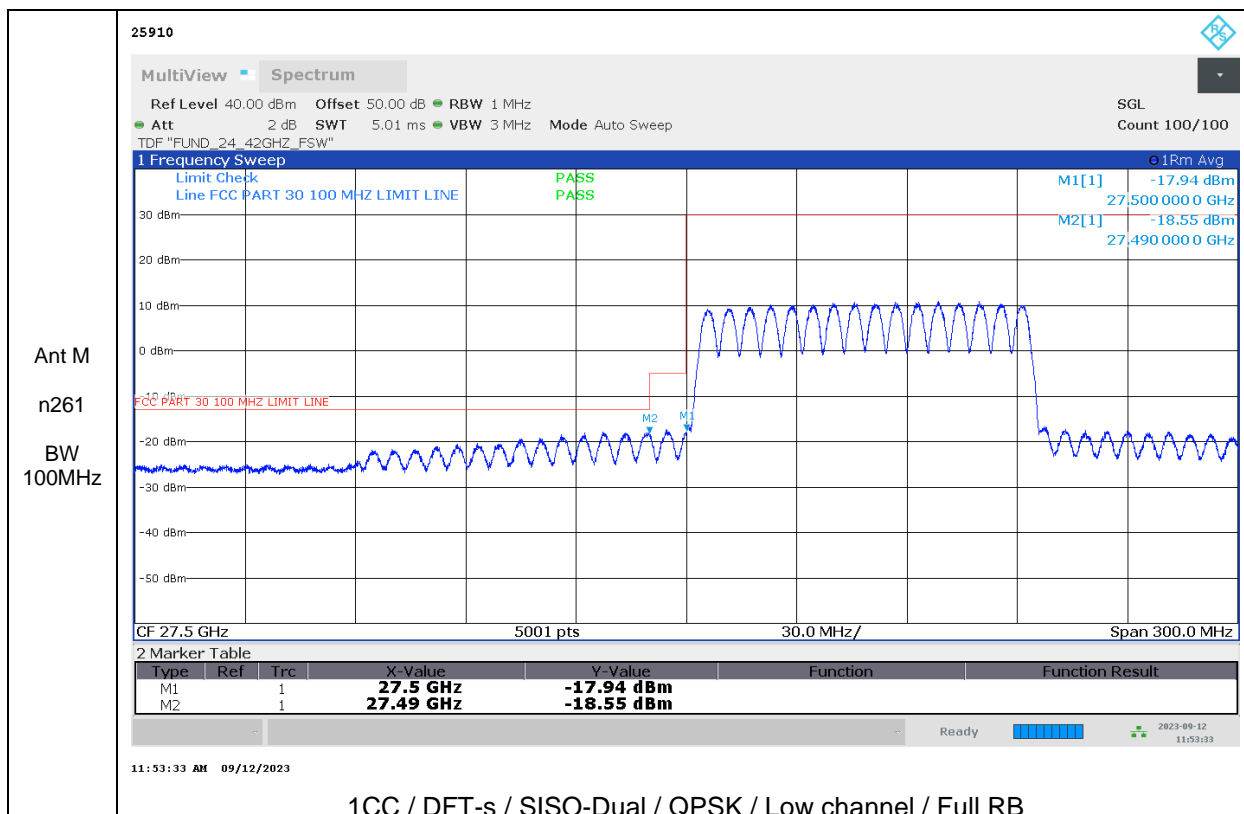


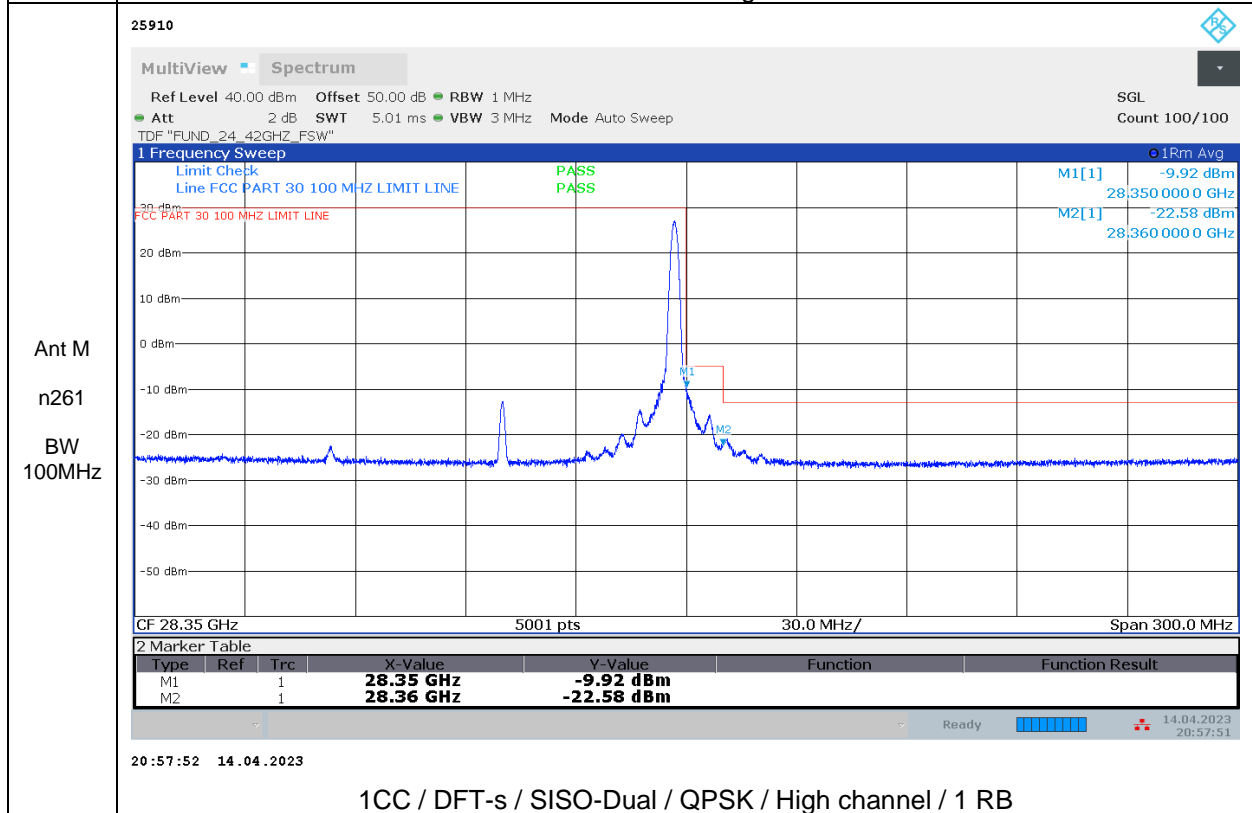
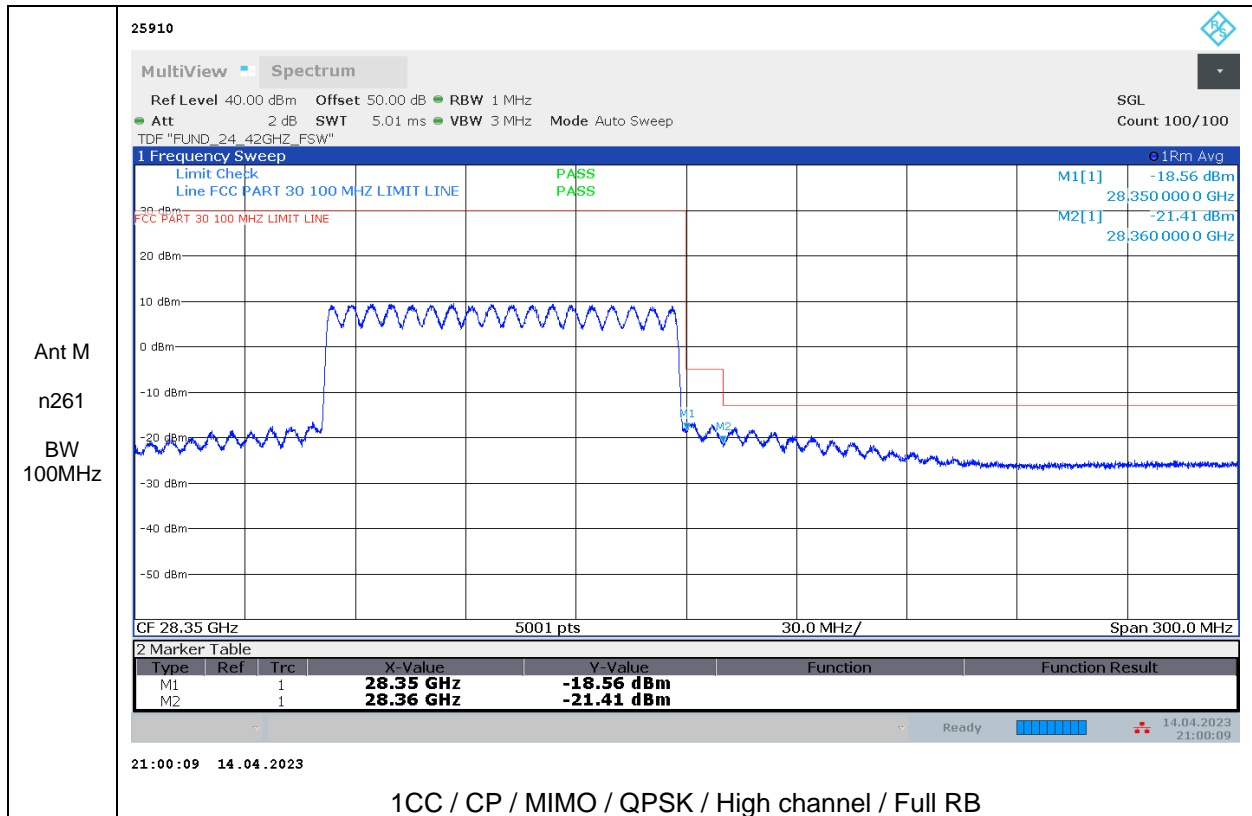


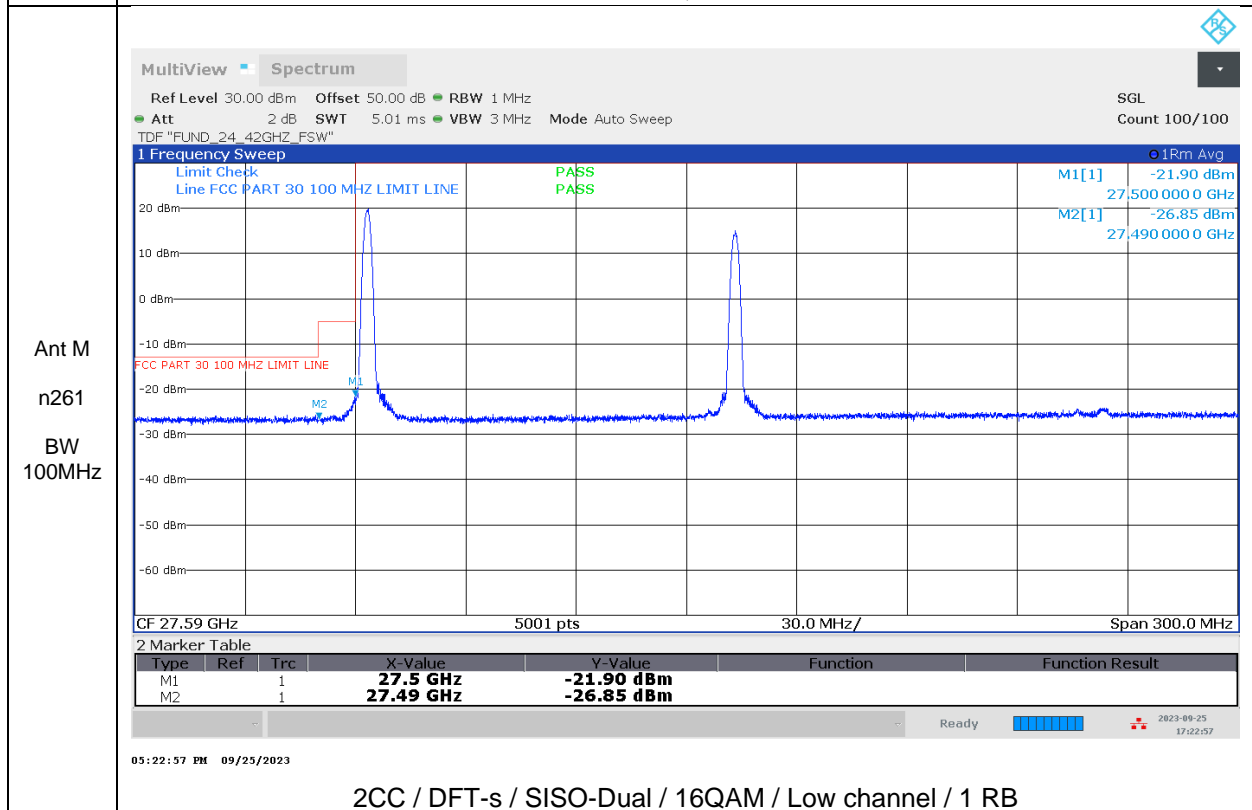
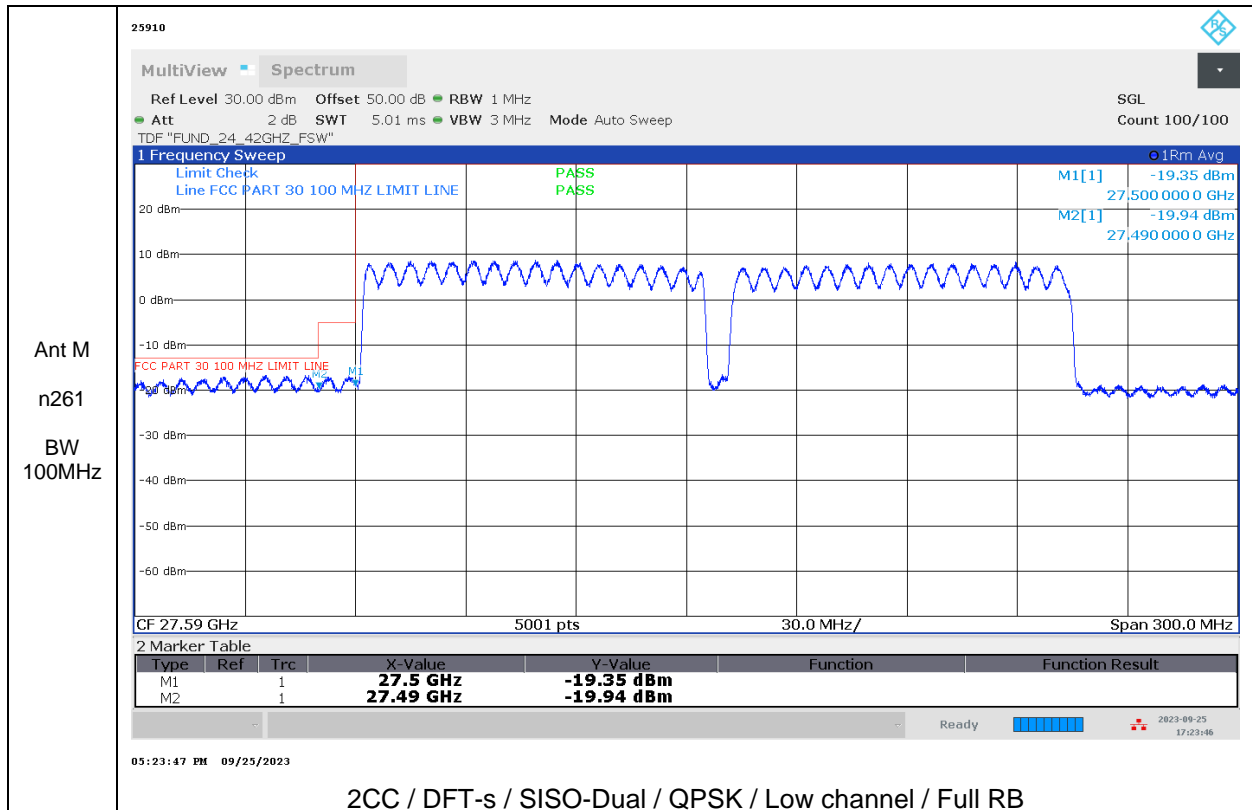
Antenna 1 / Ant M / Band n261

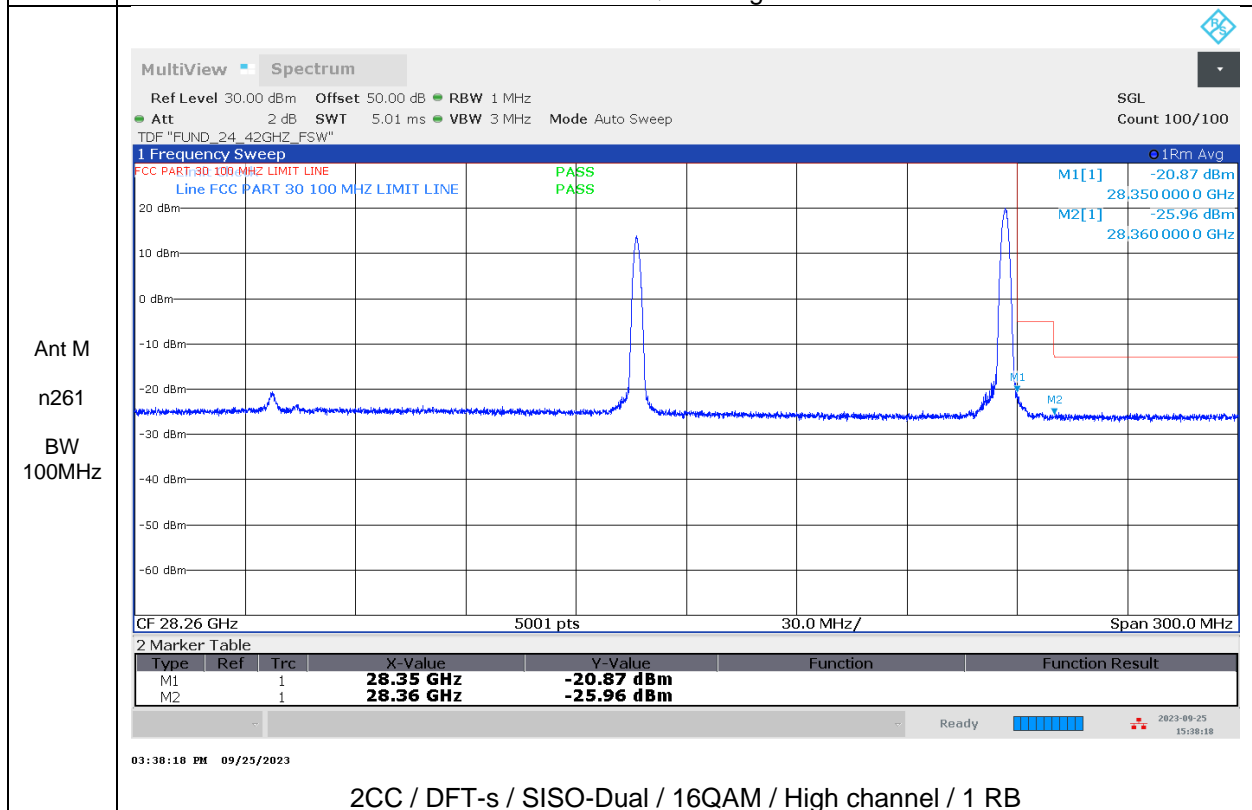
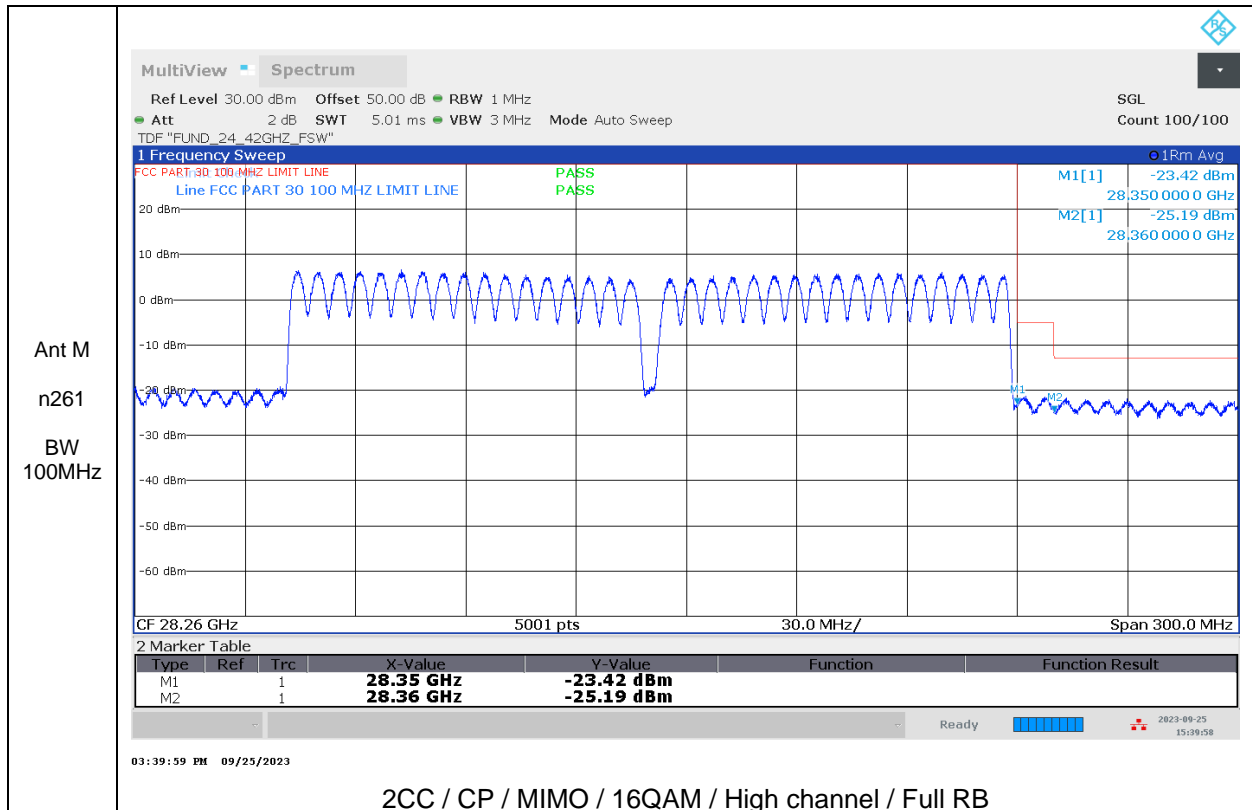


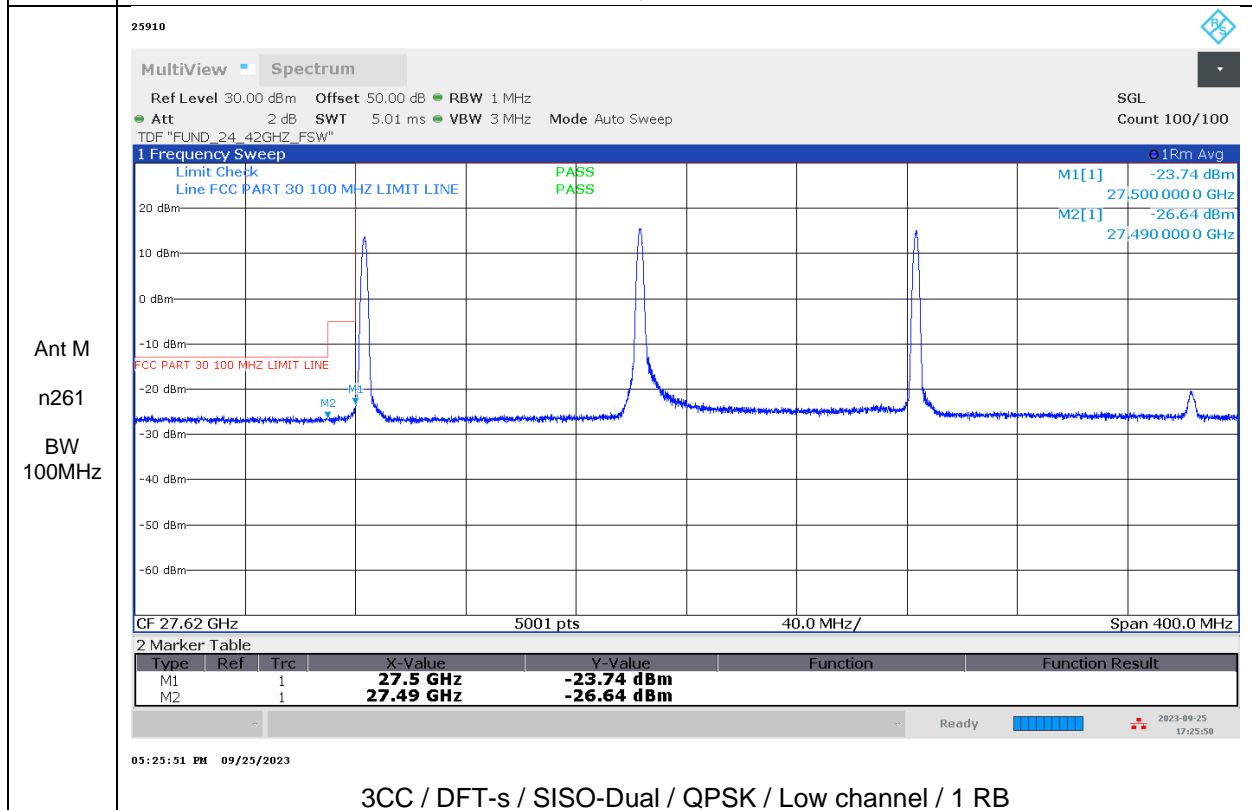
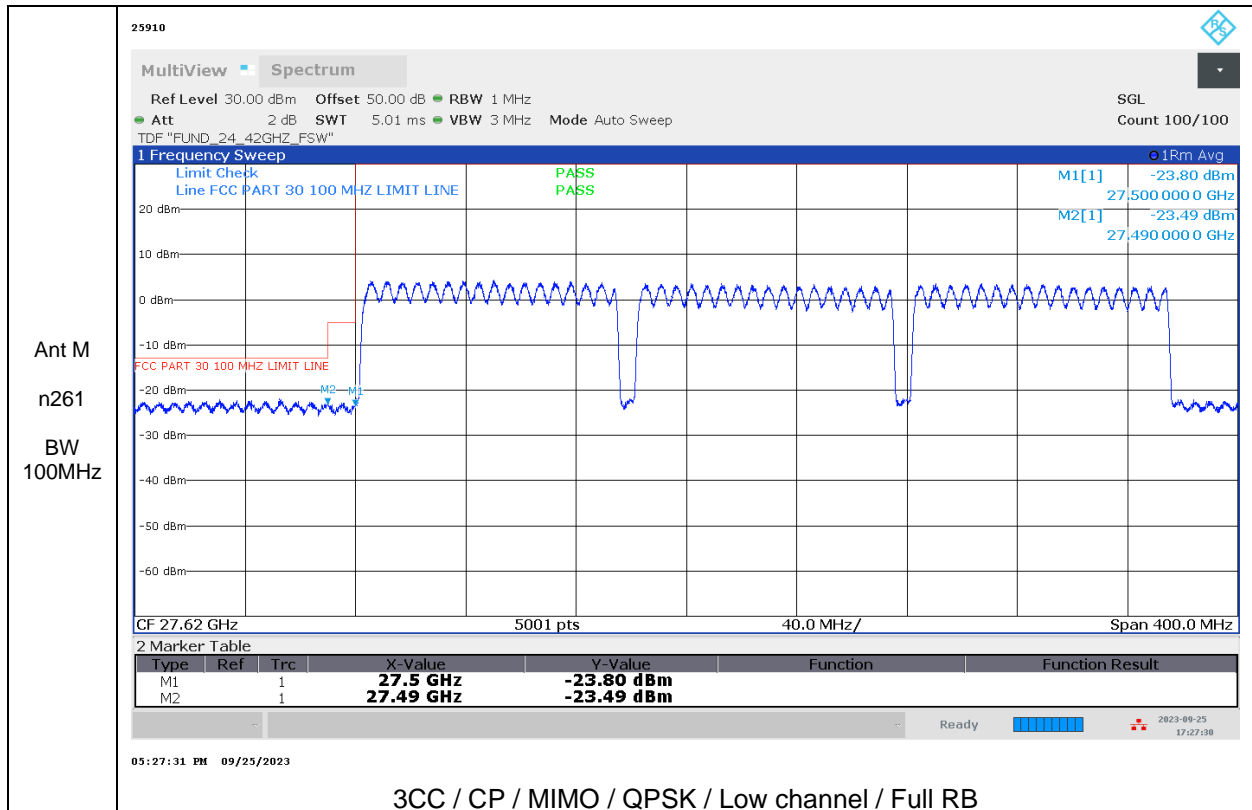


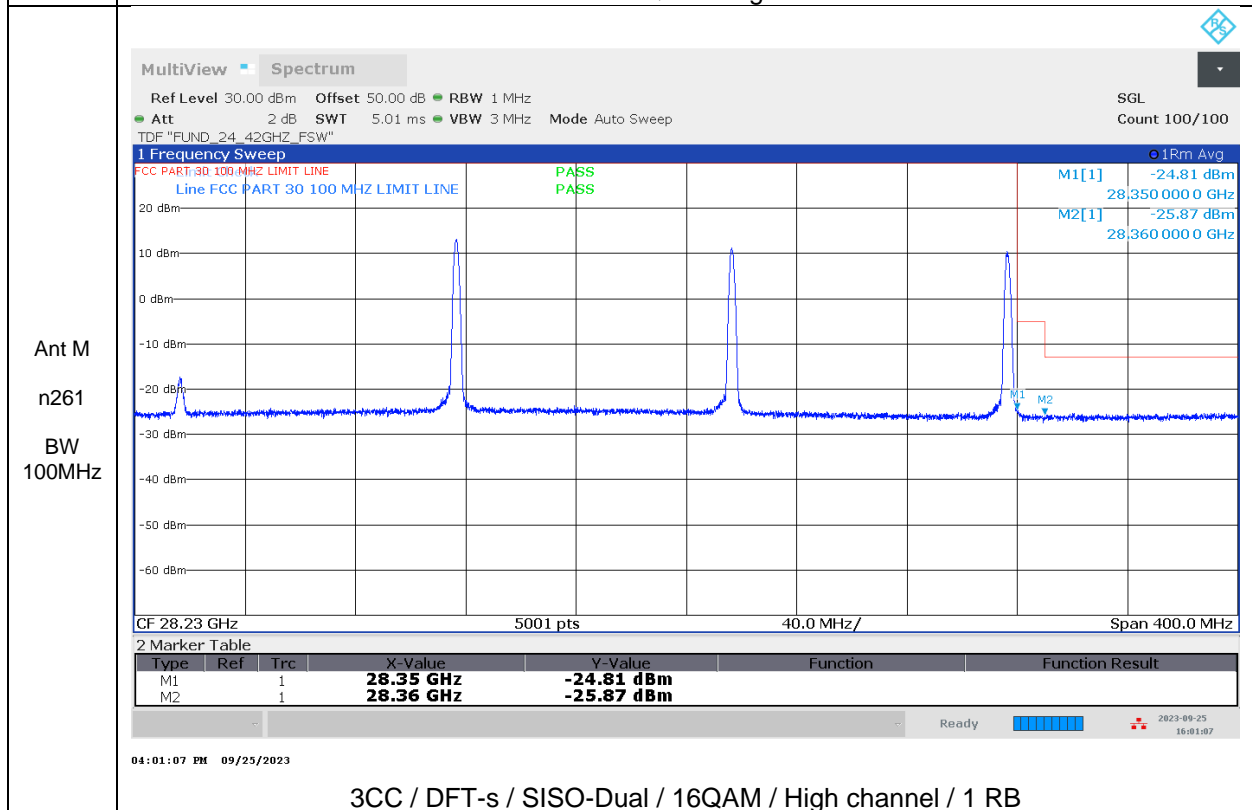
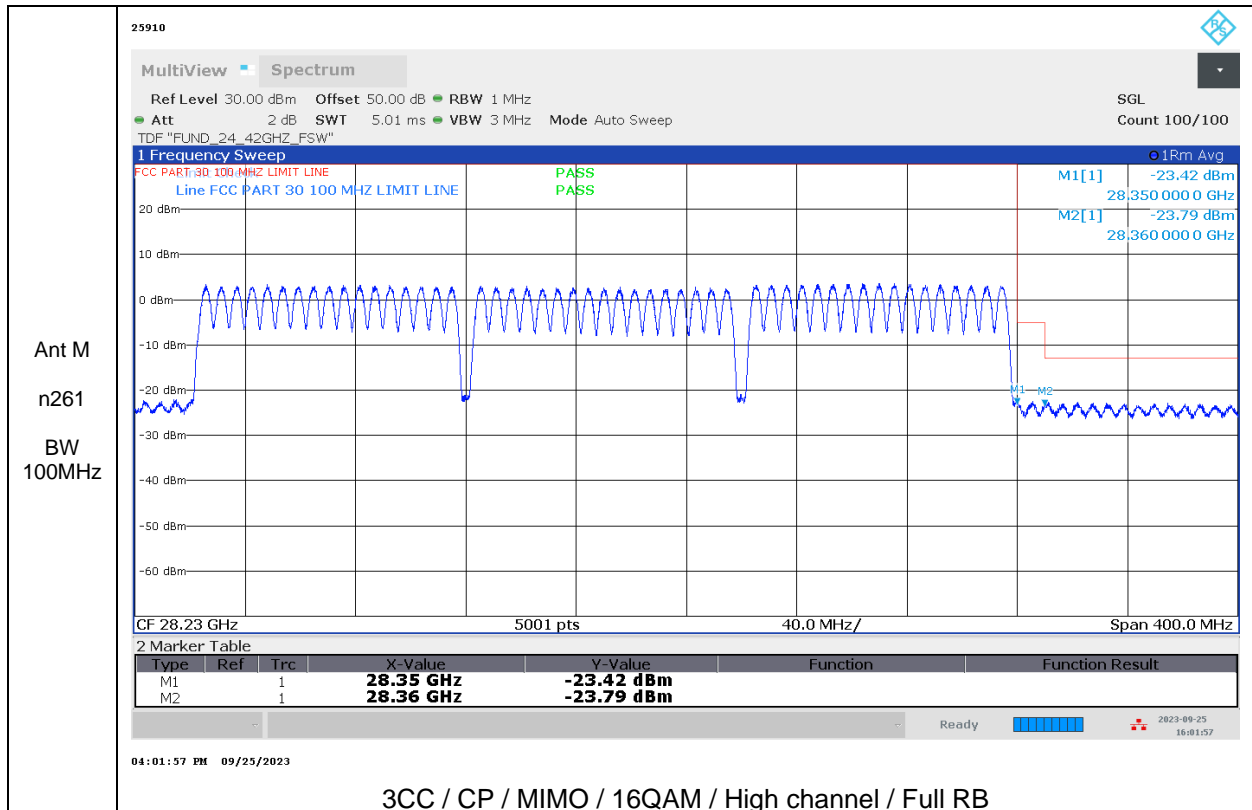


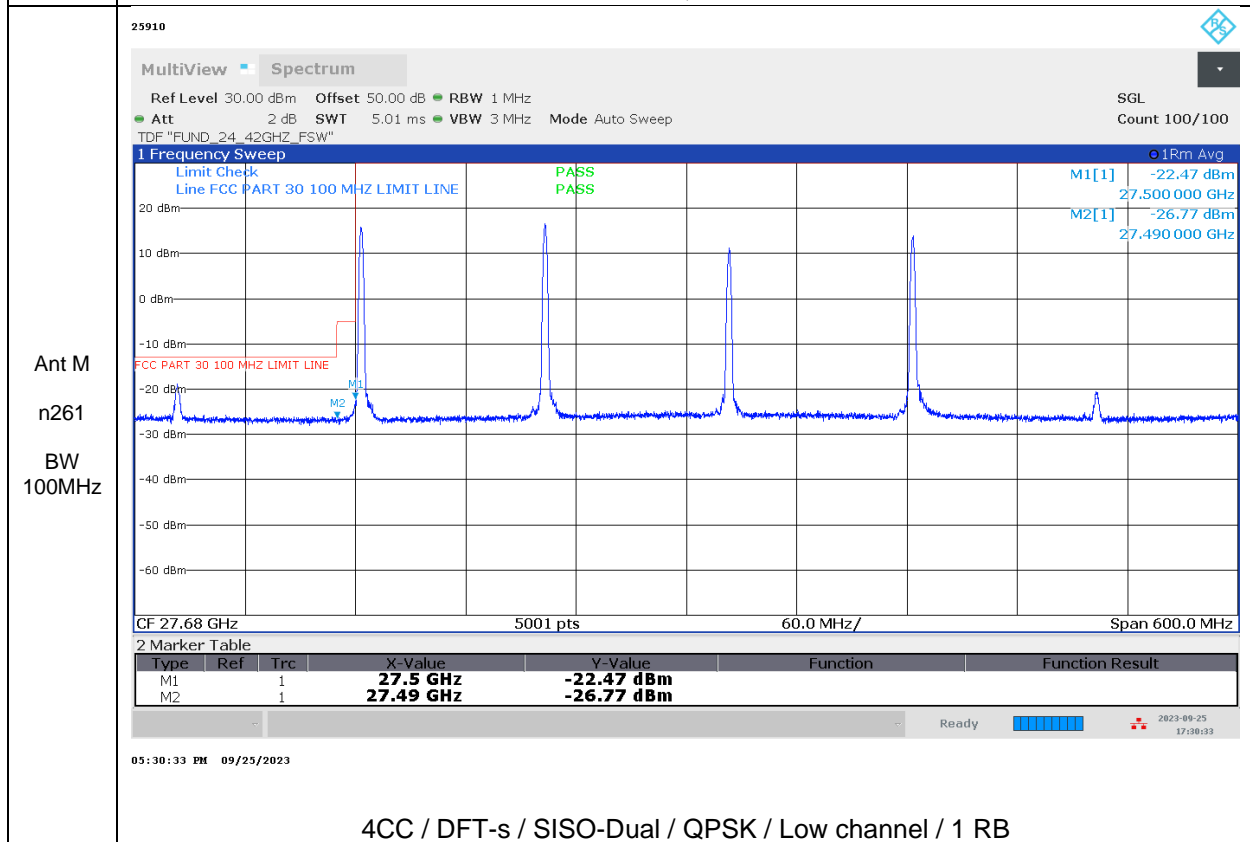
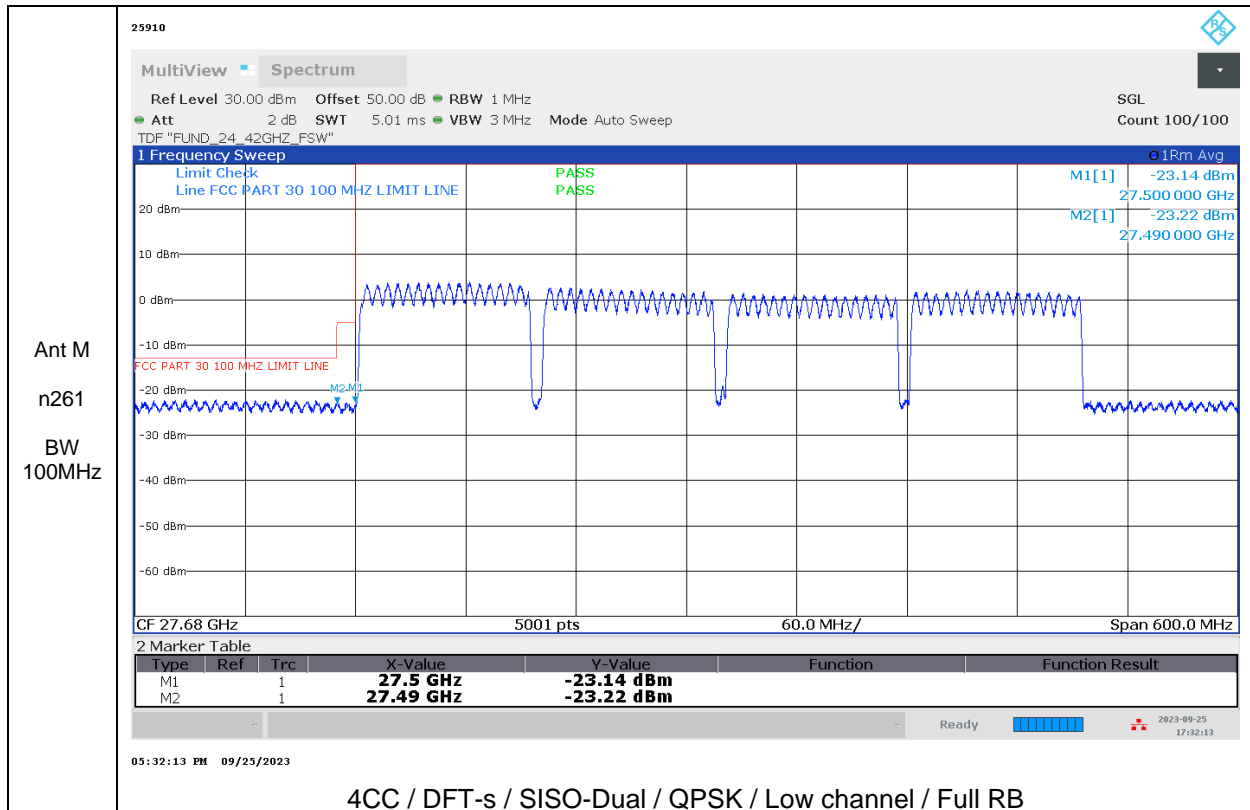


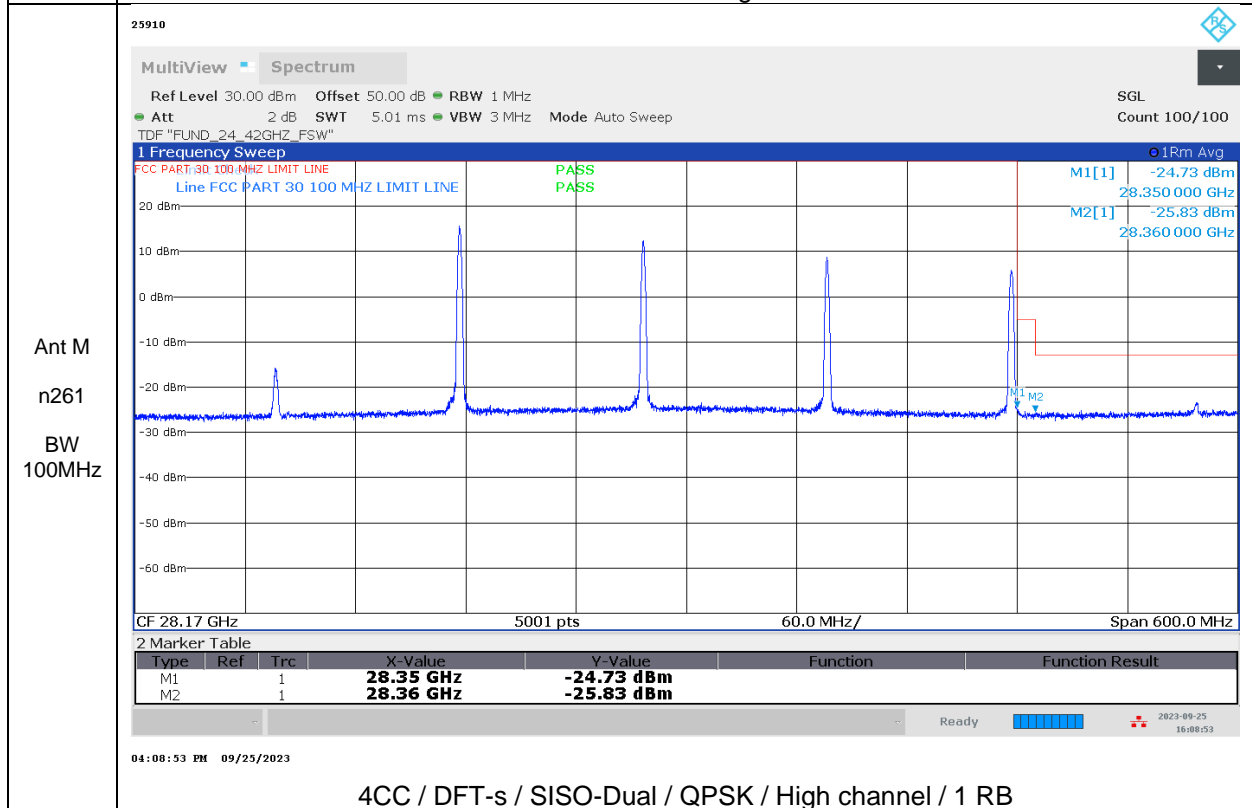
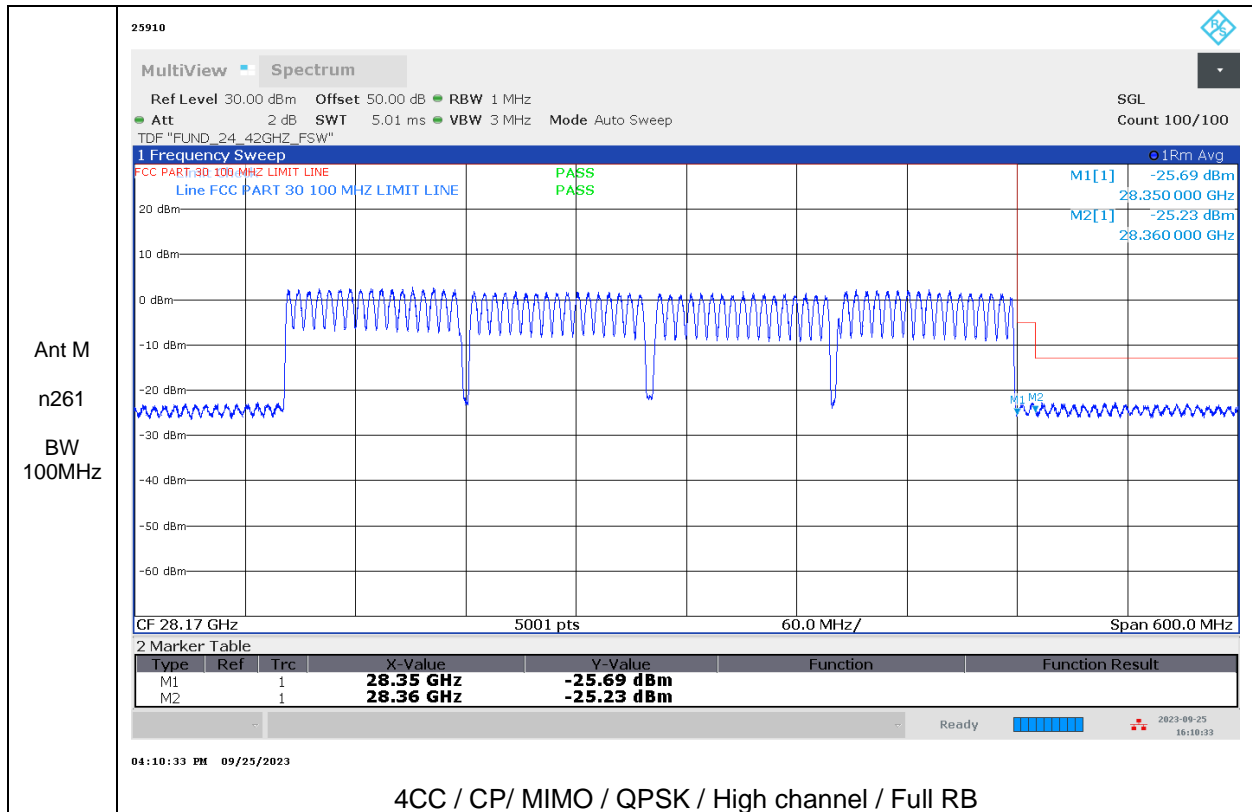




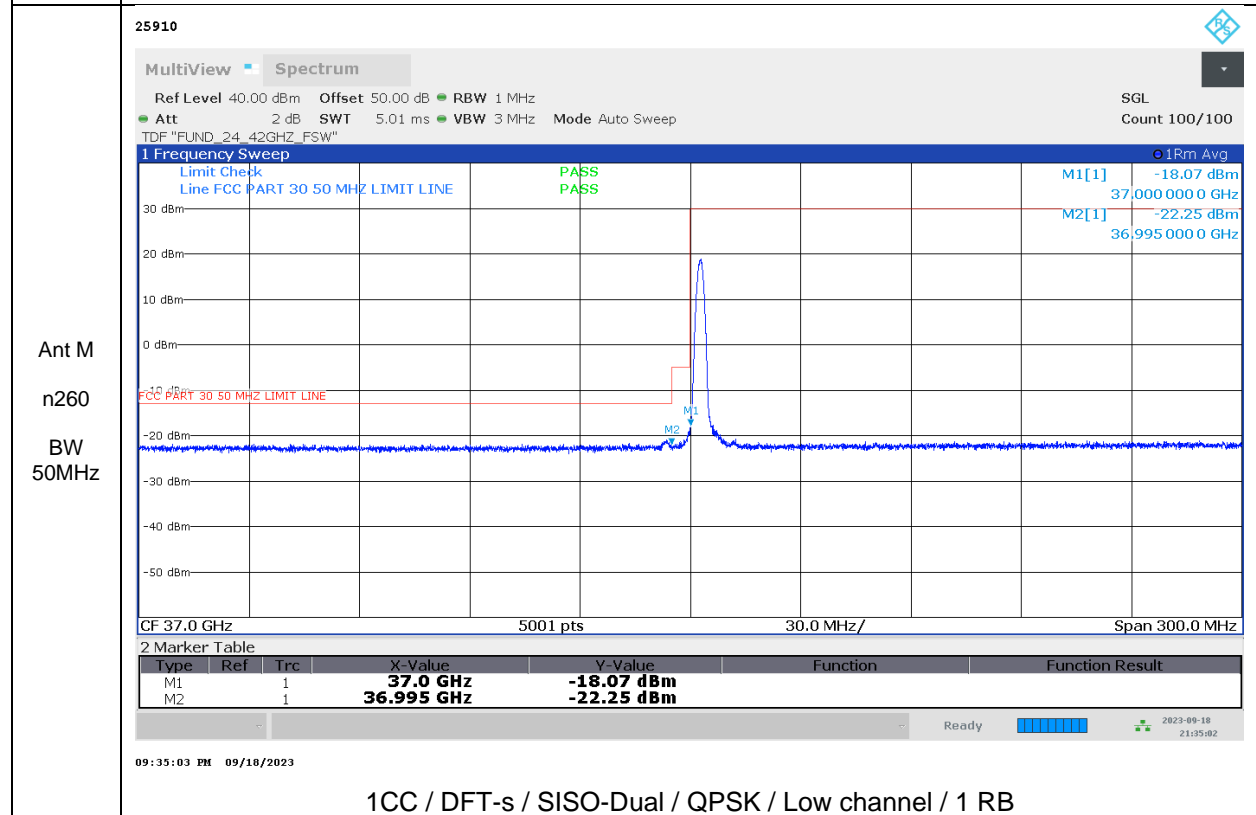
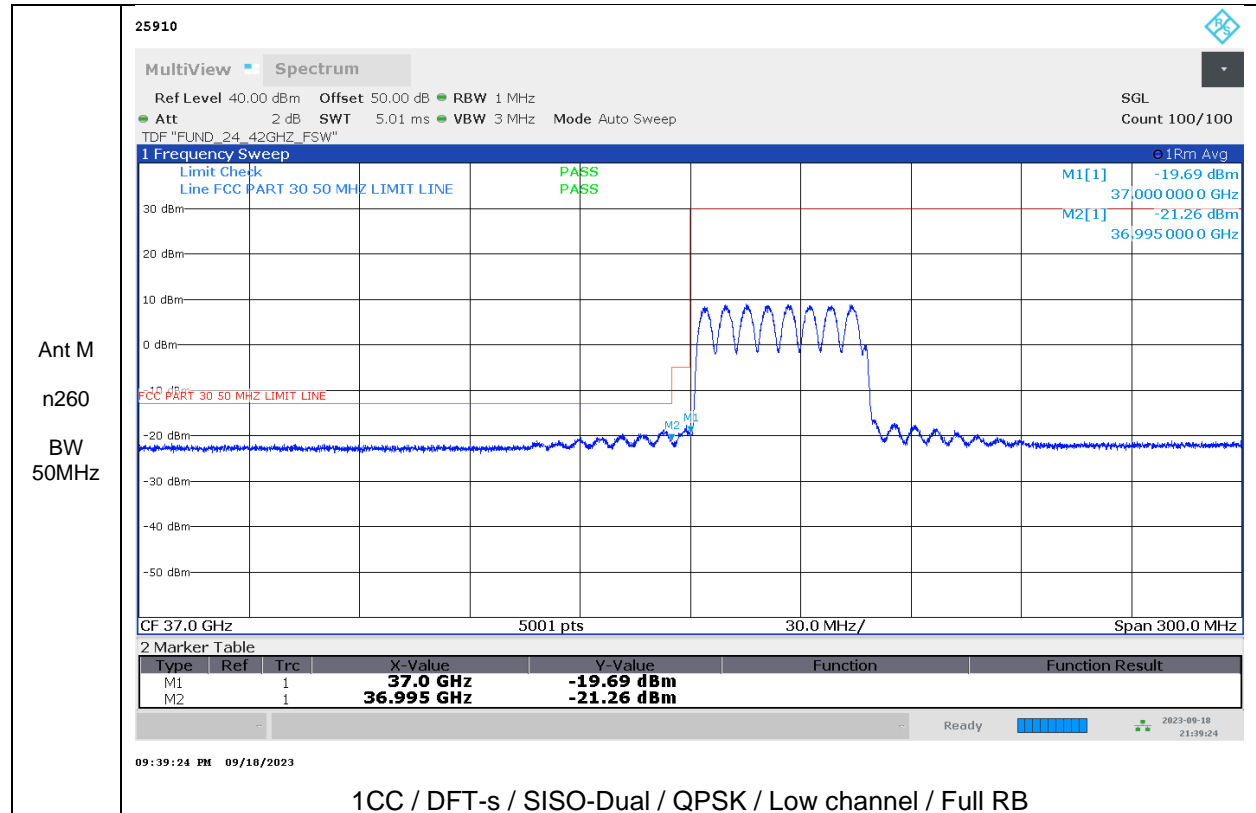


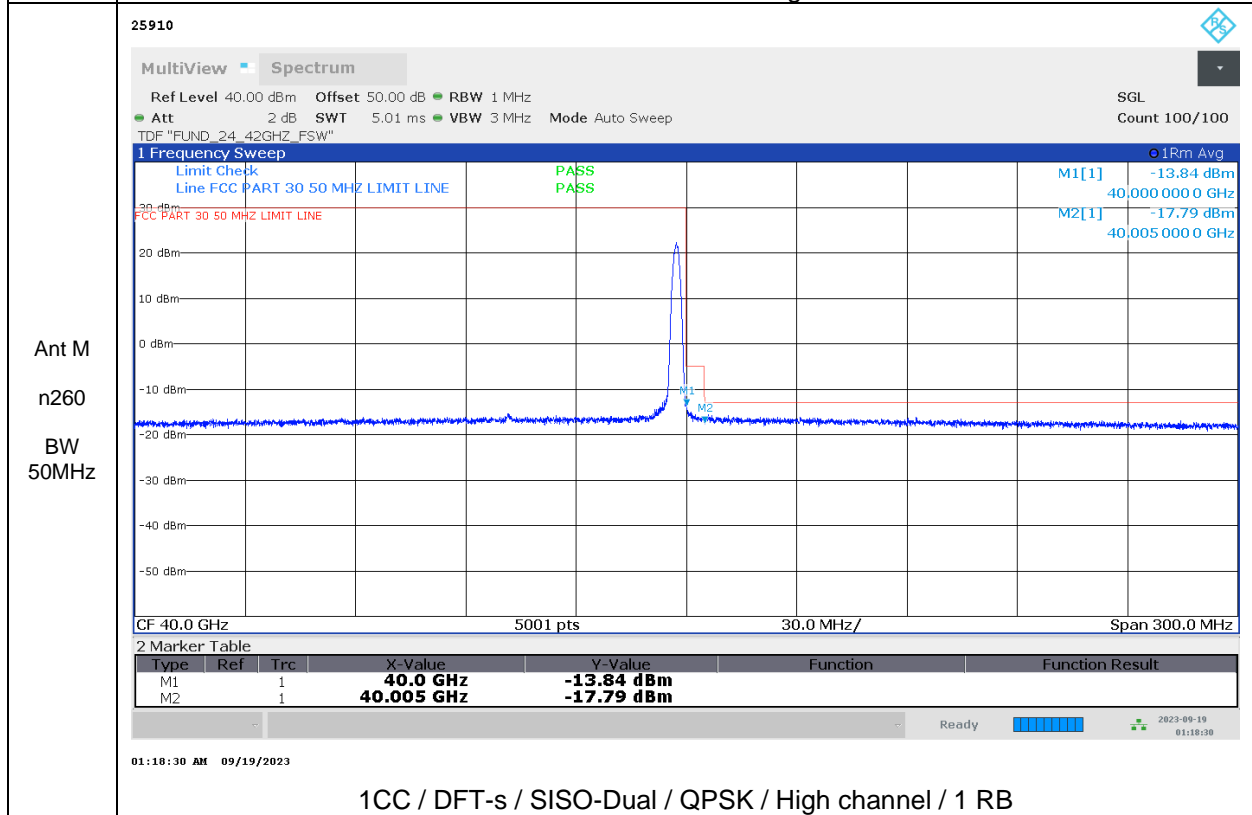
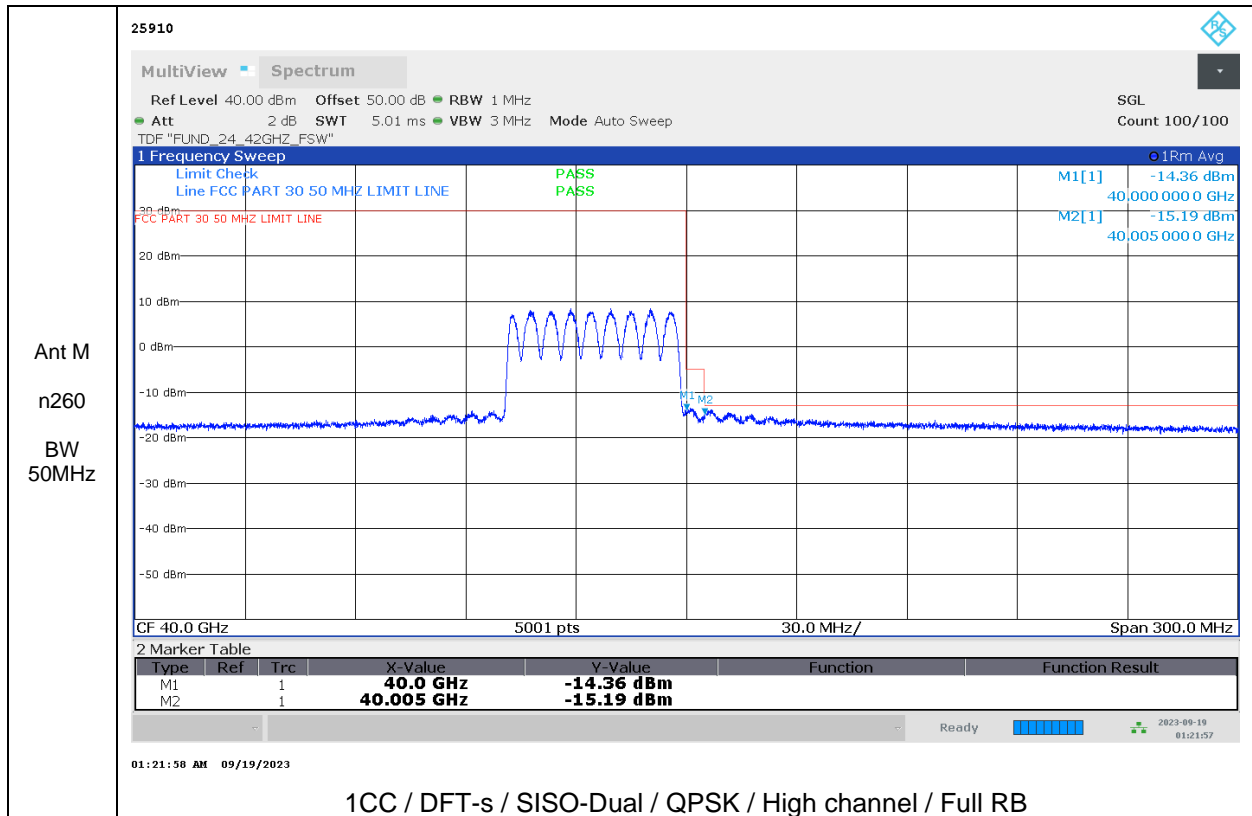


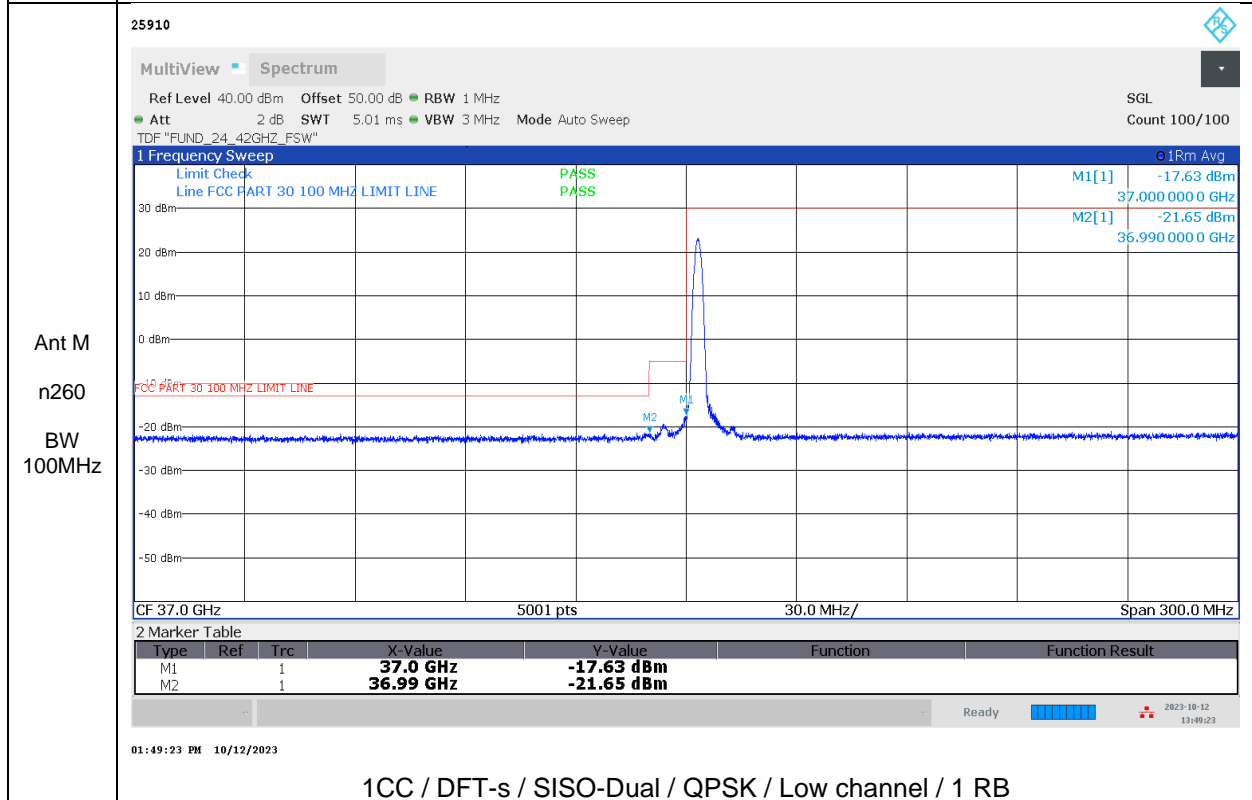
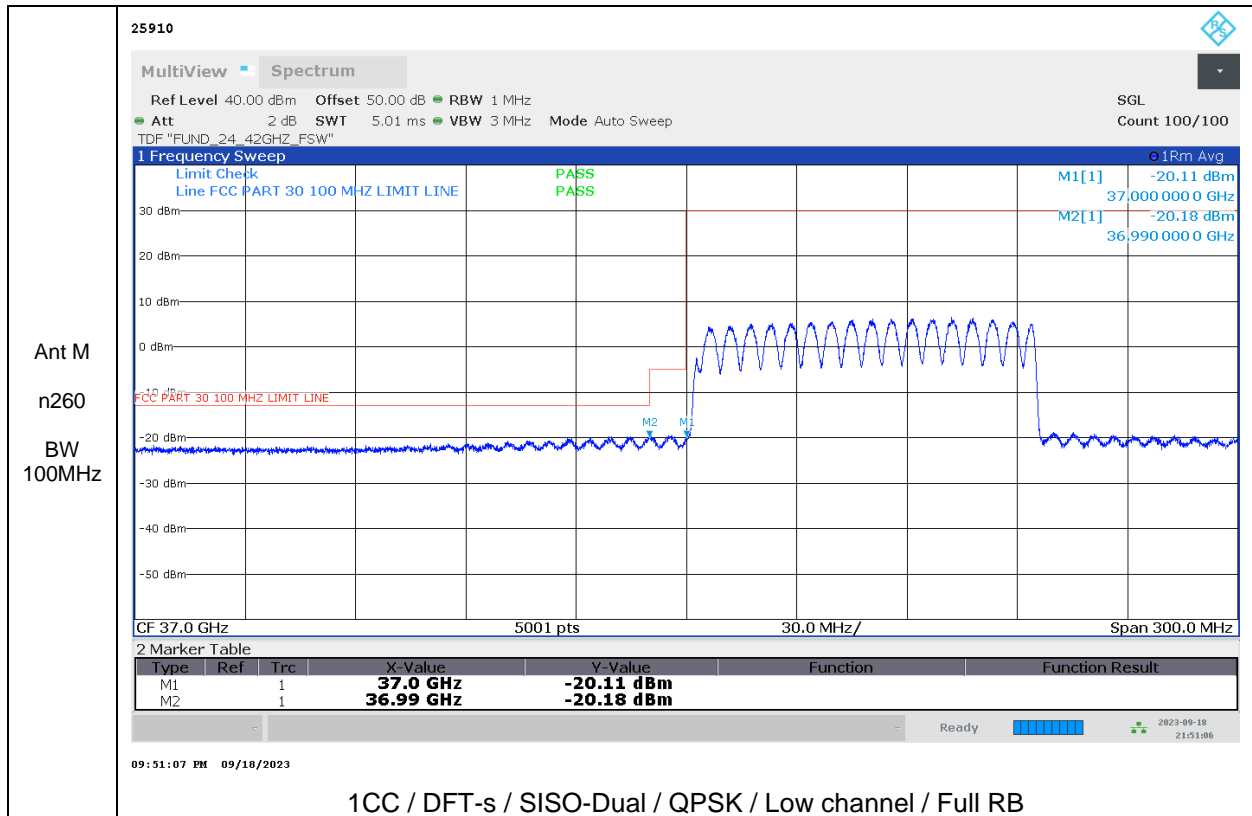


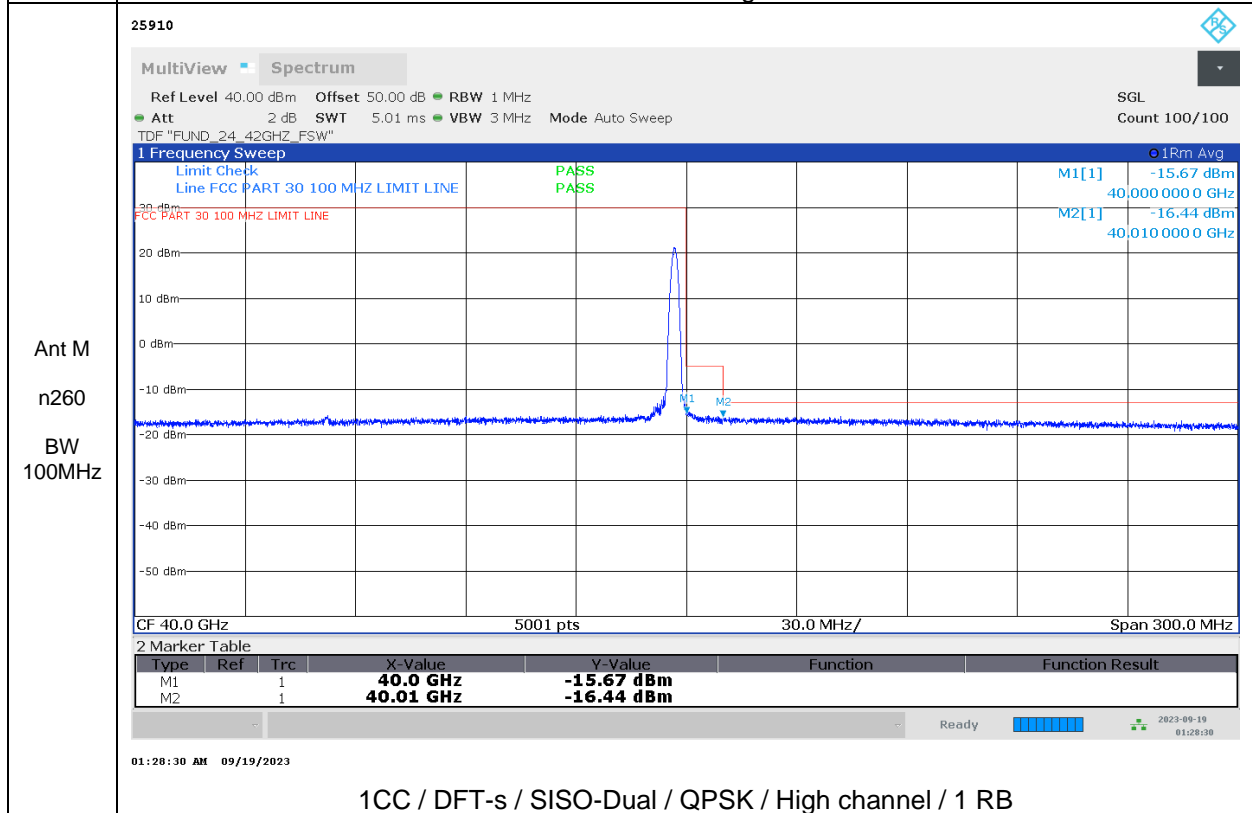
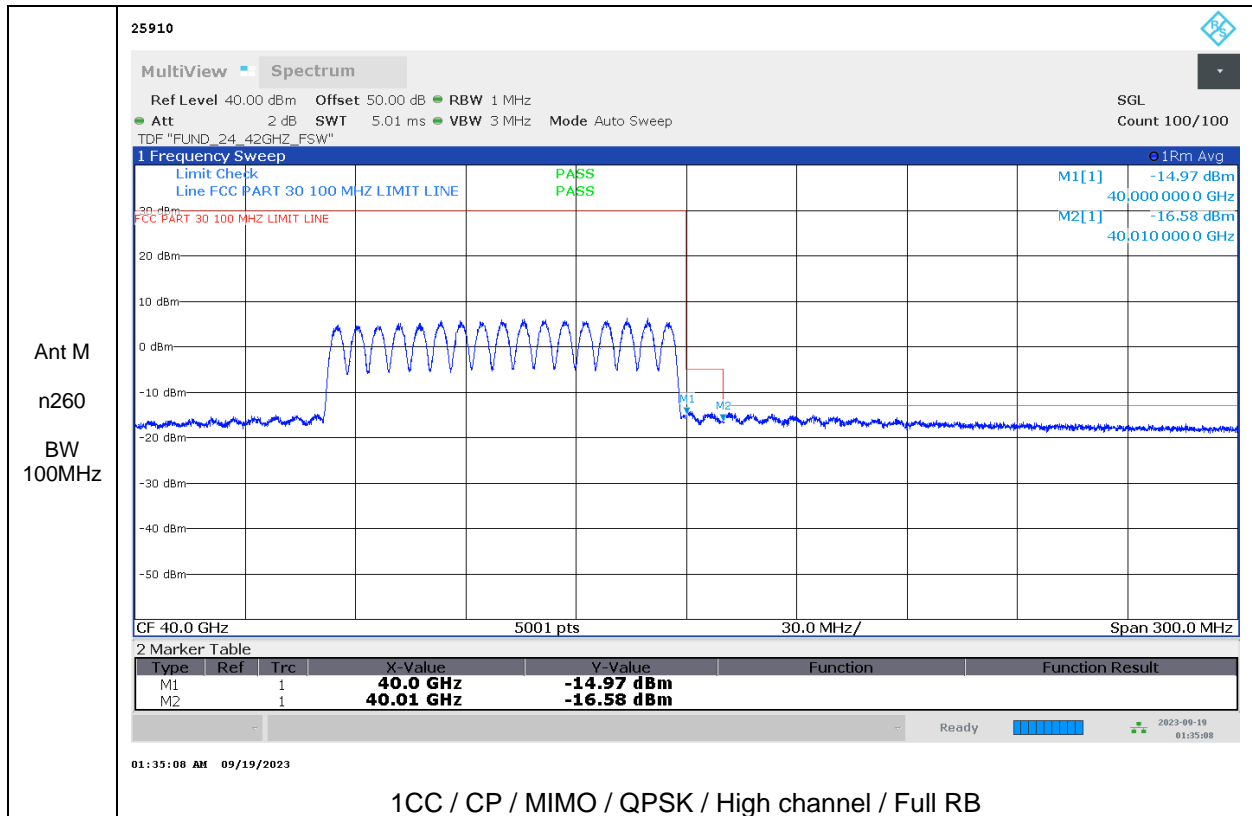


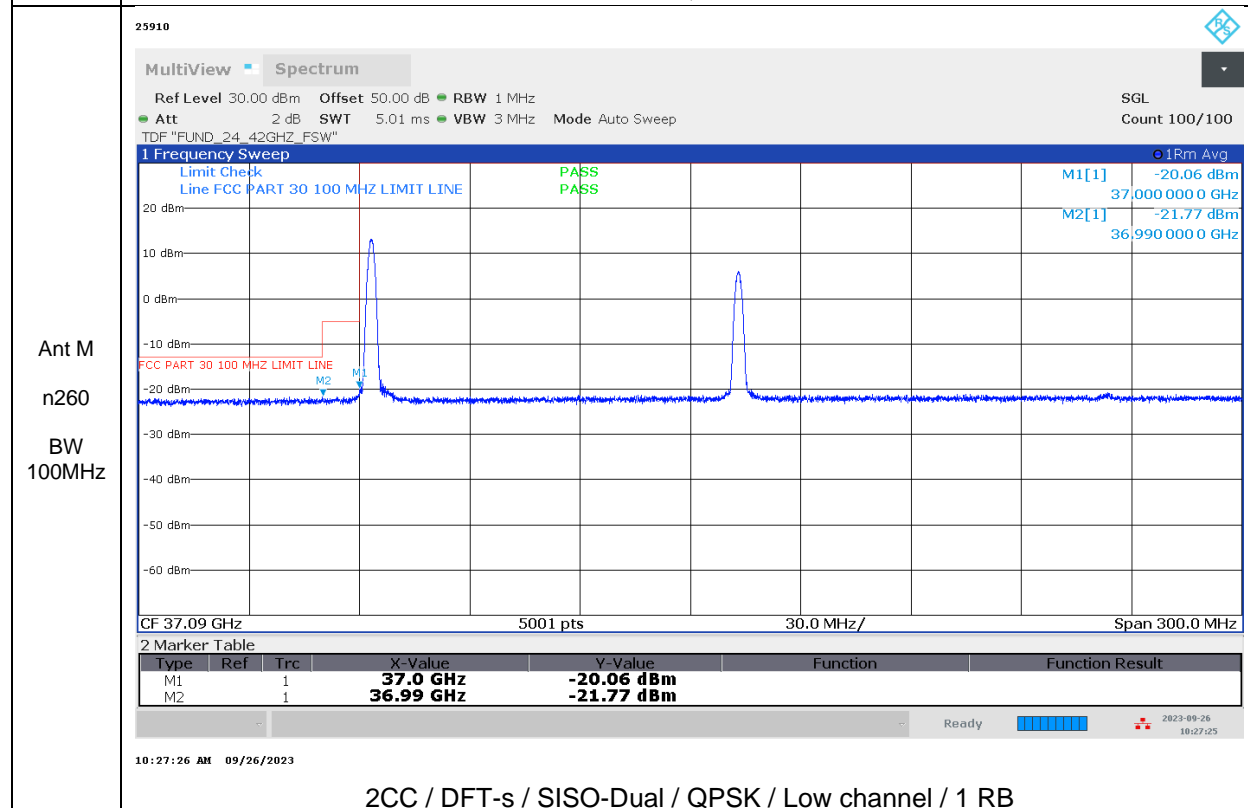
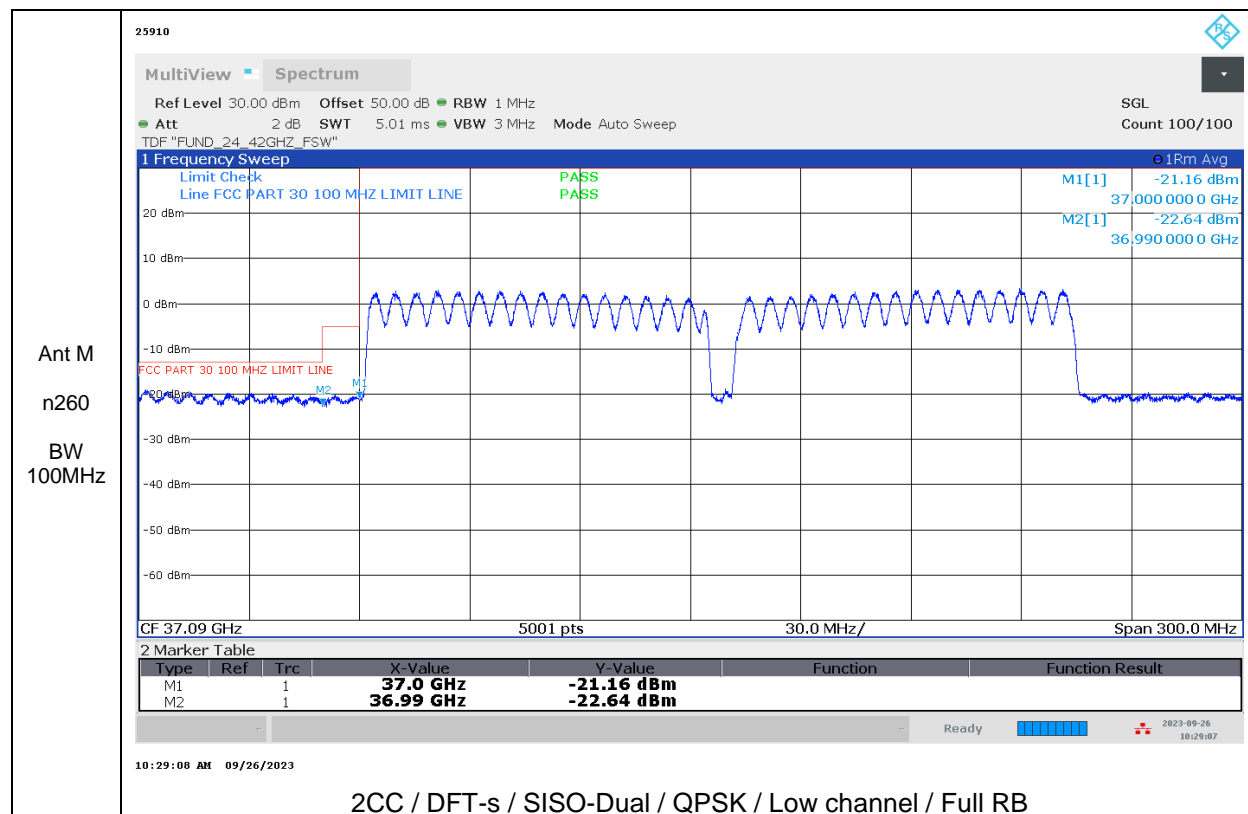
Antenna 1 / Ant M / Band n260

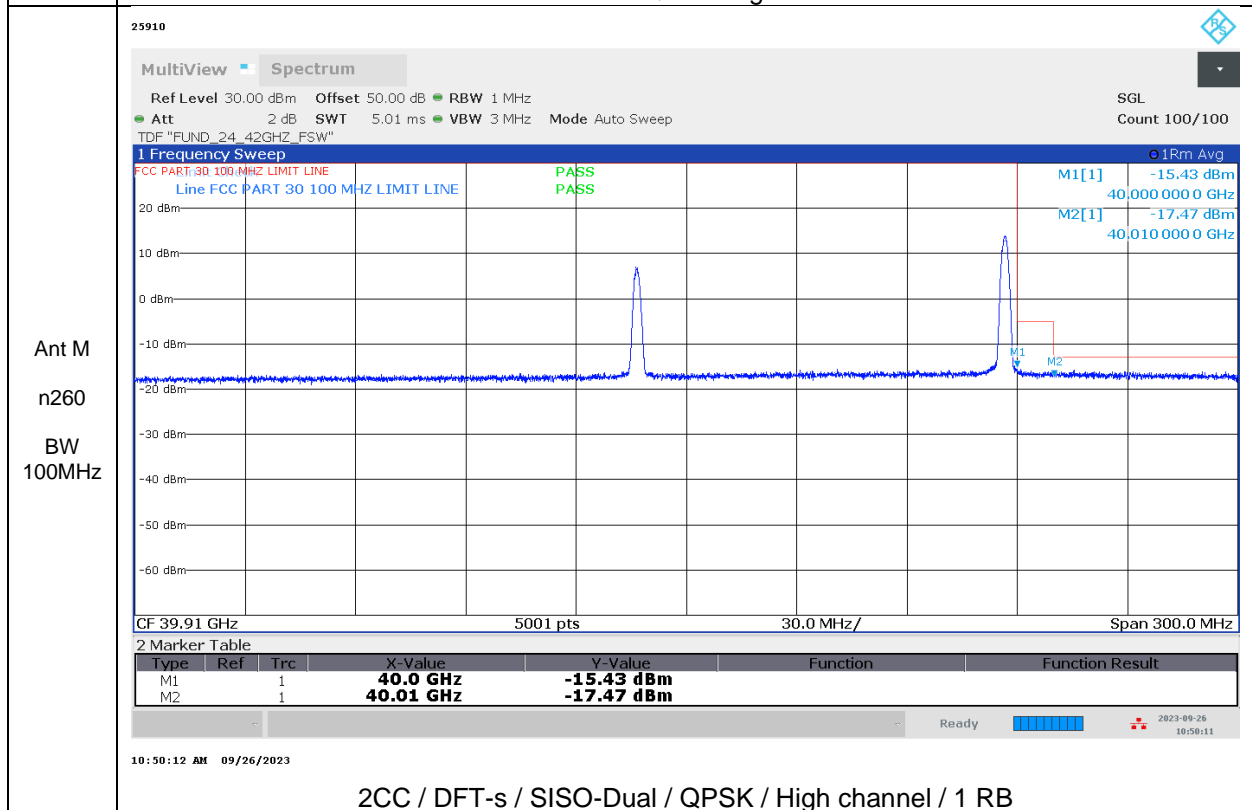
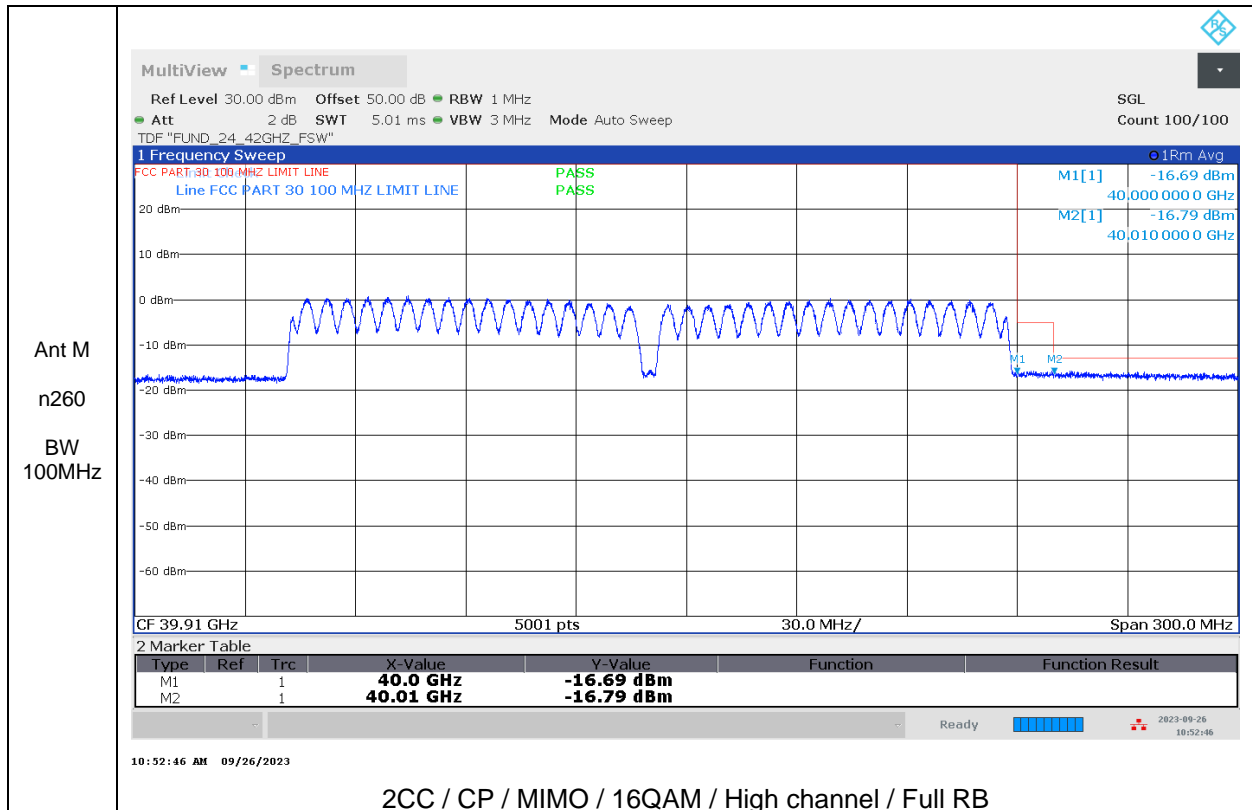


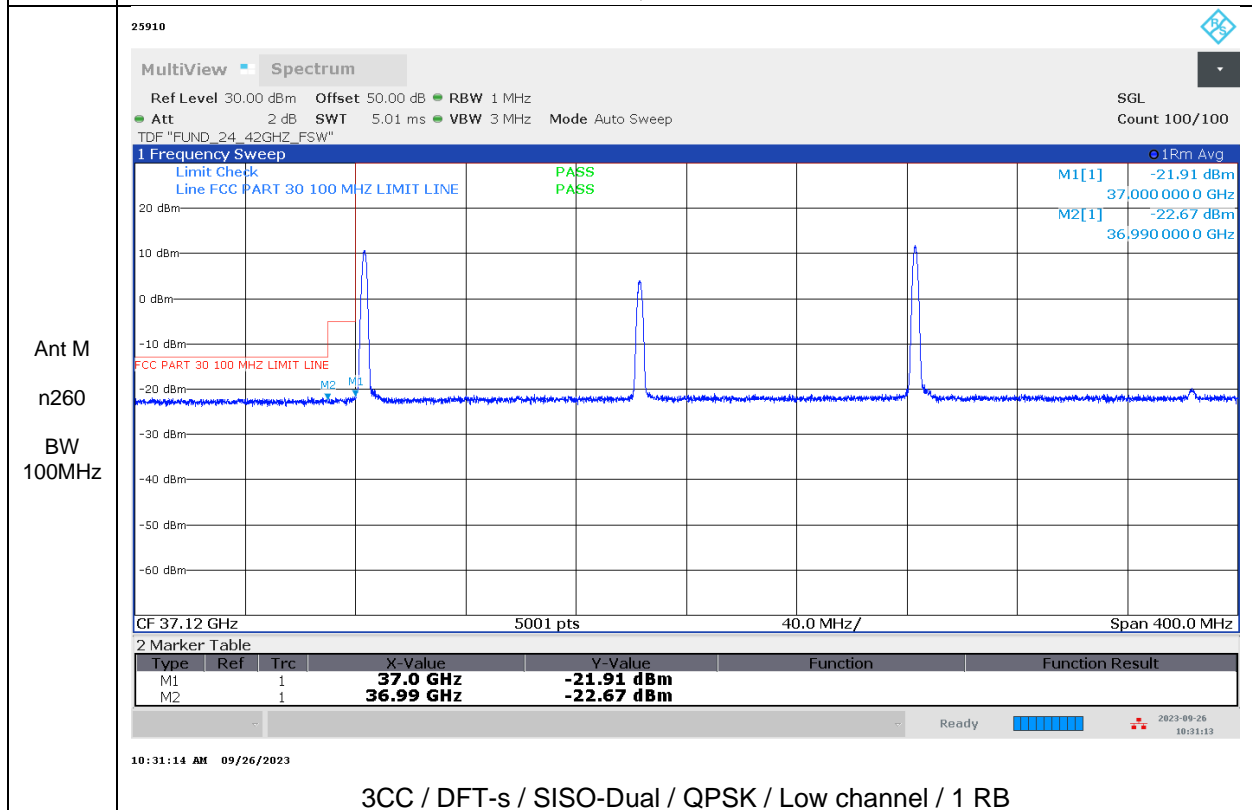
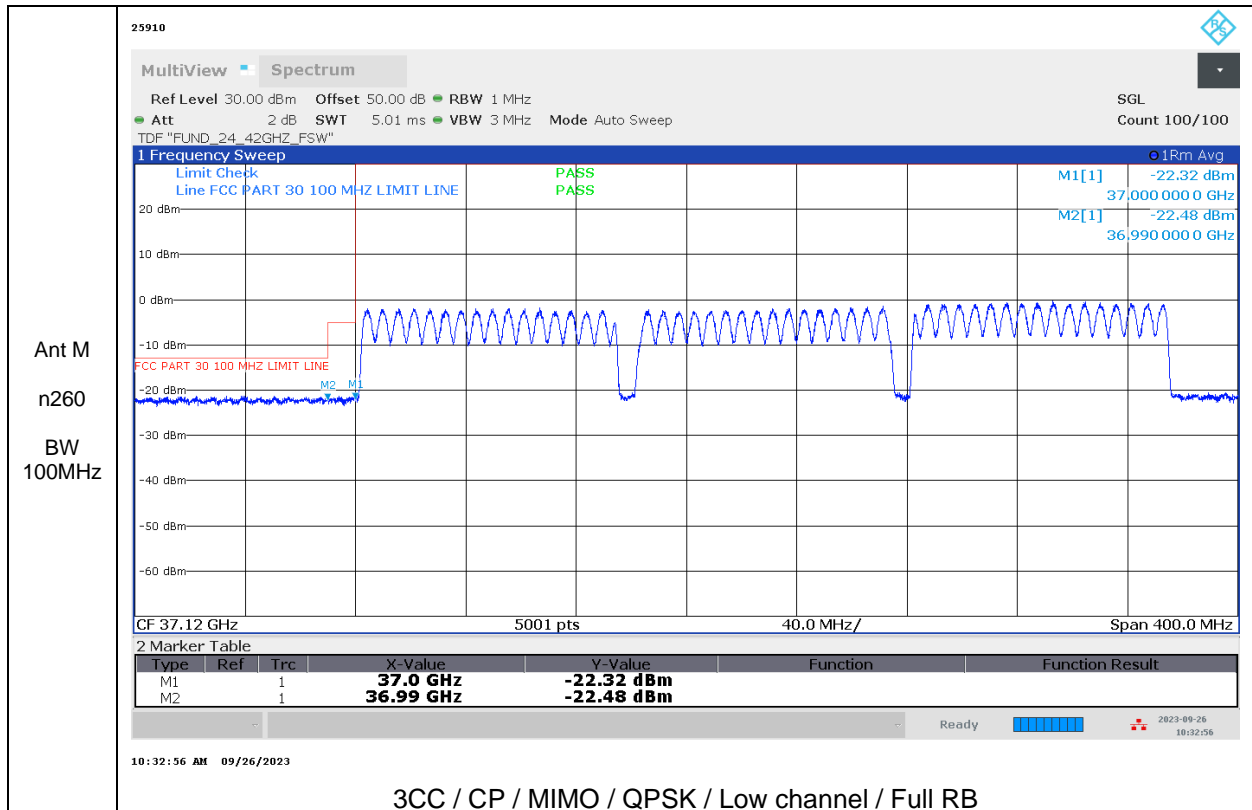


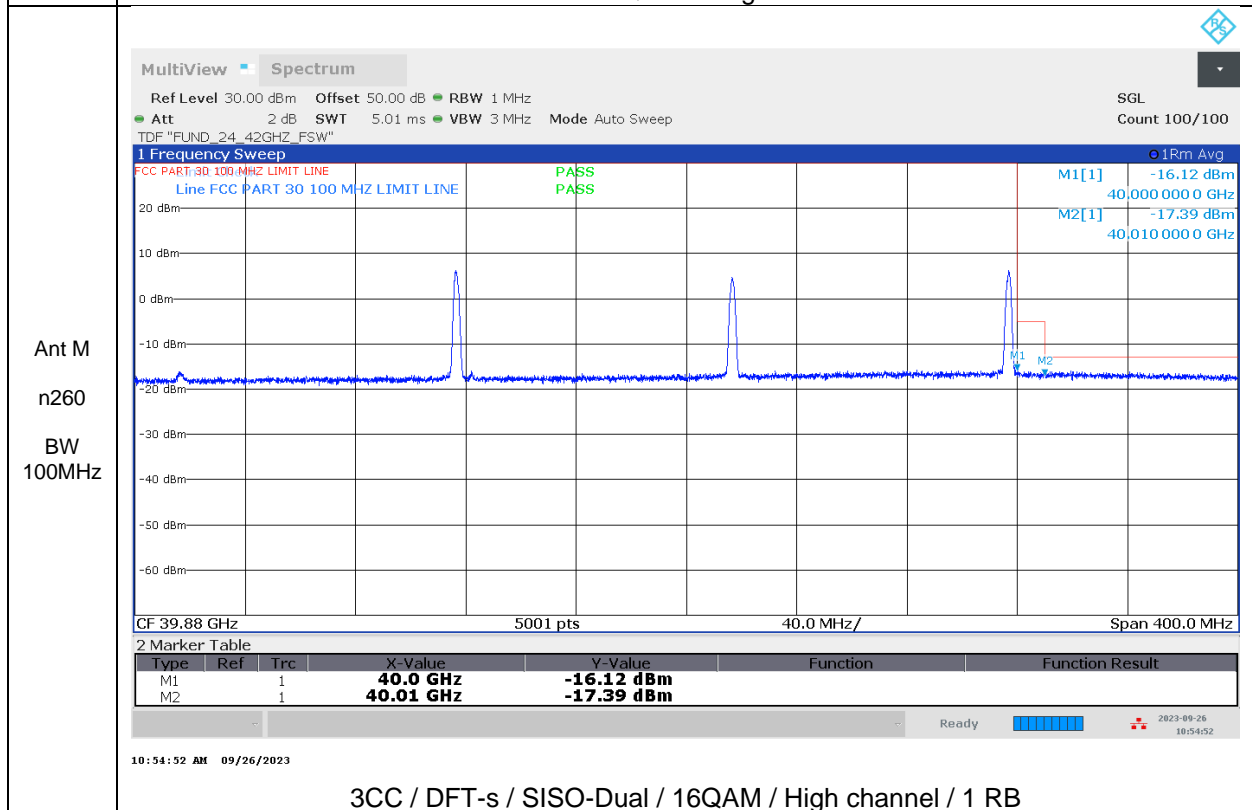
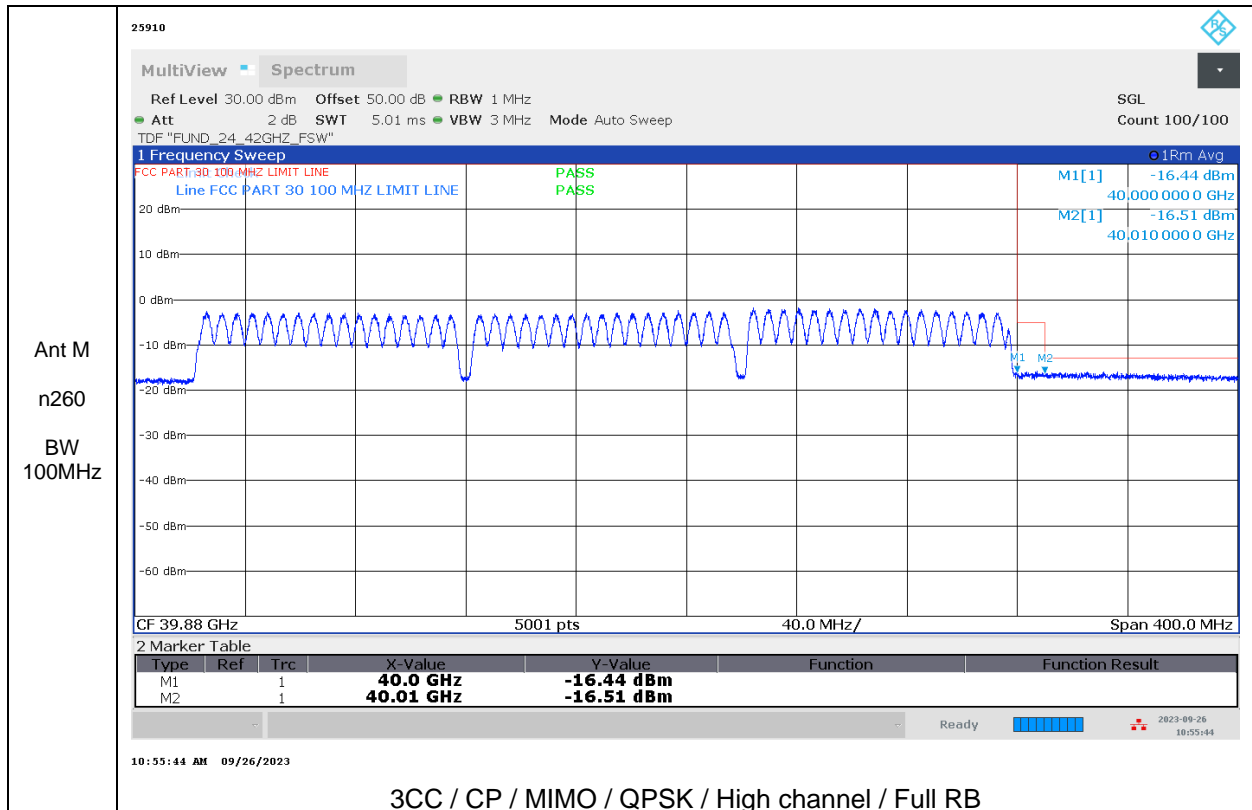


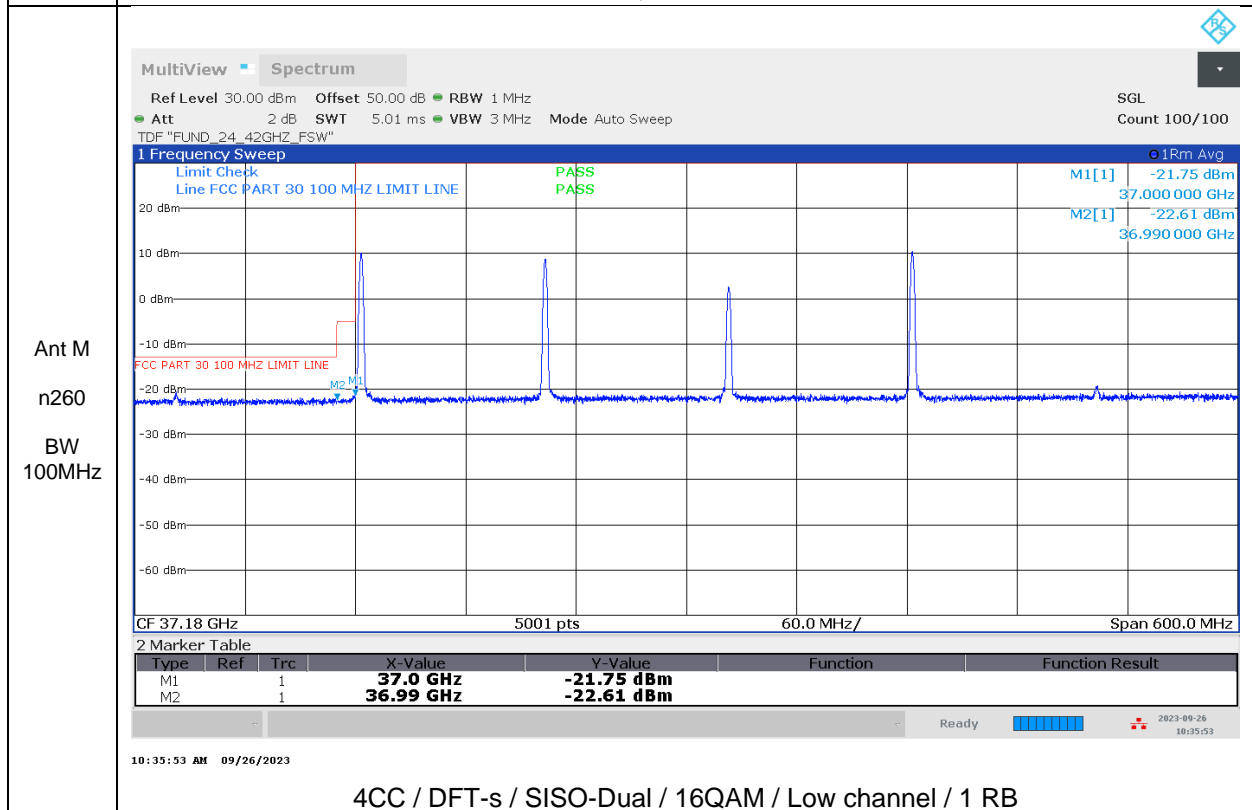
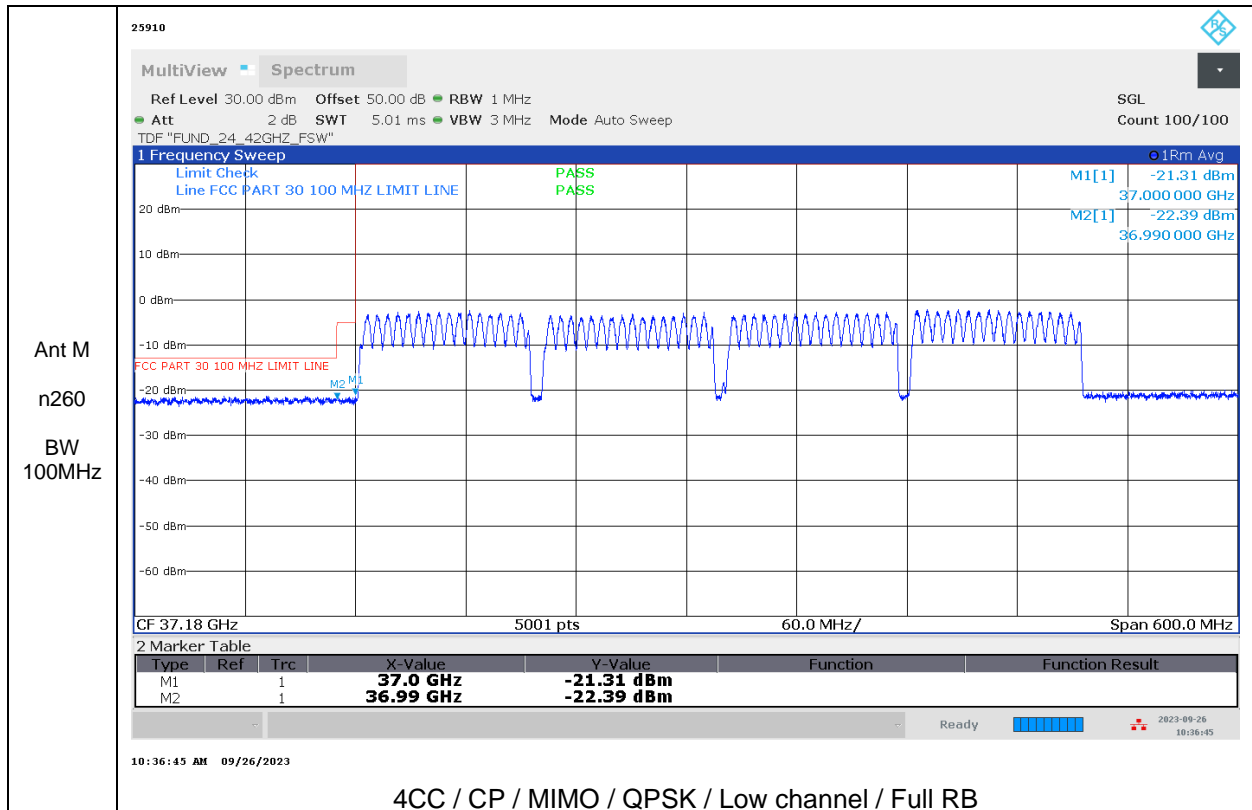


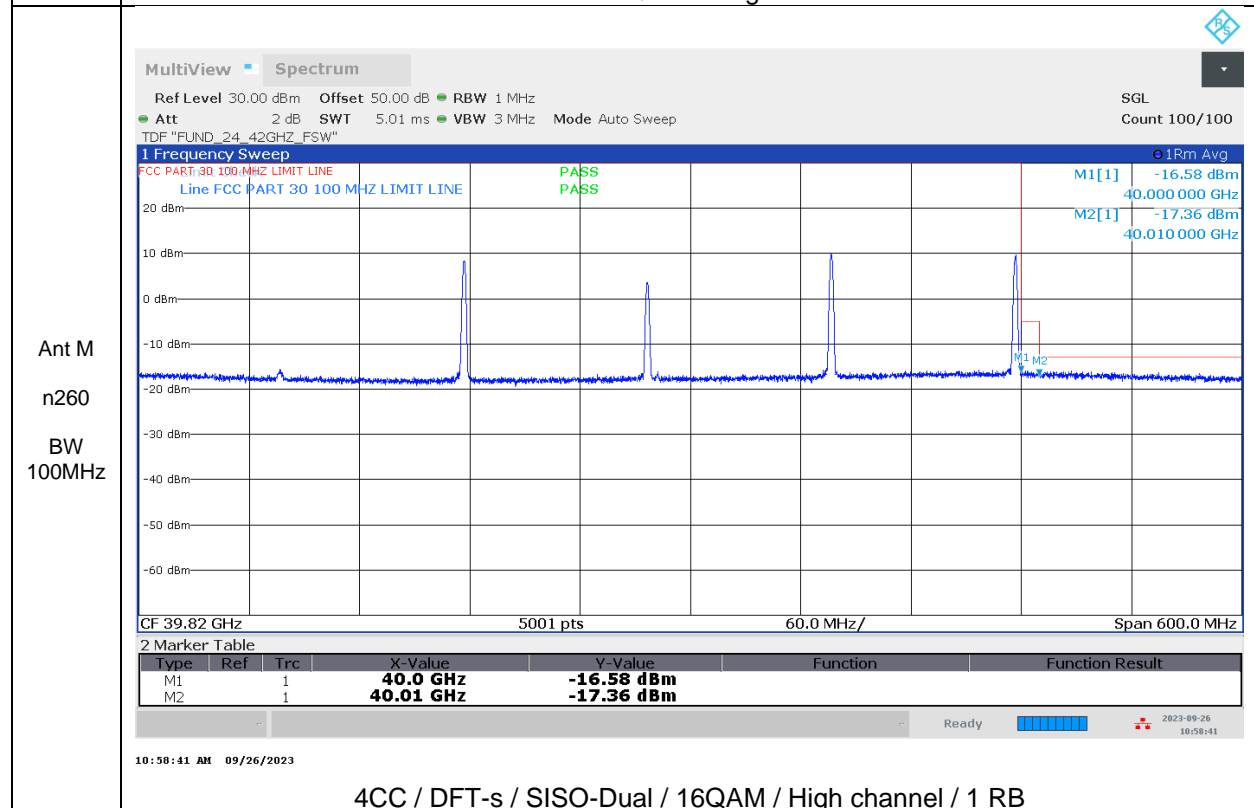
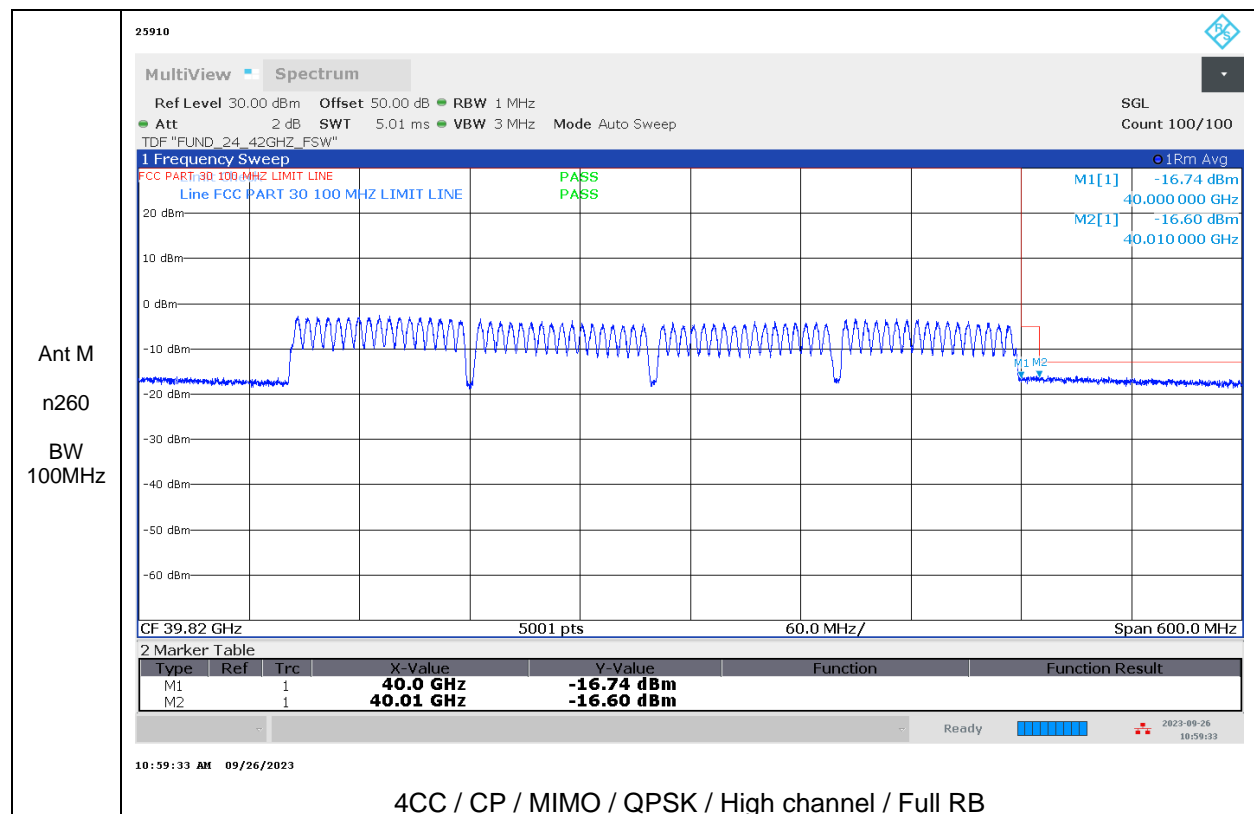




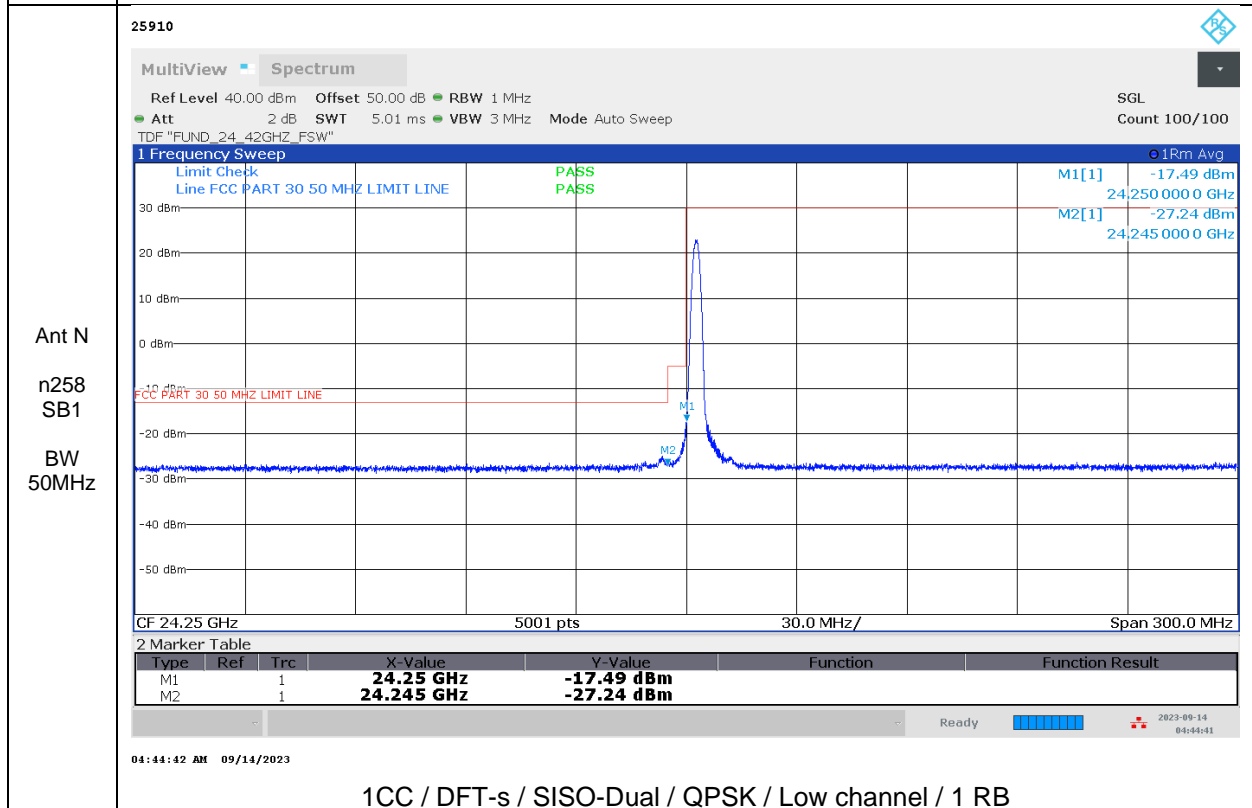
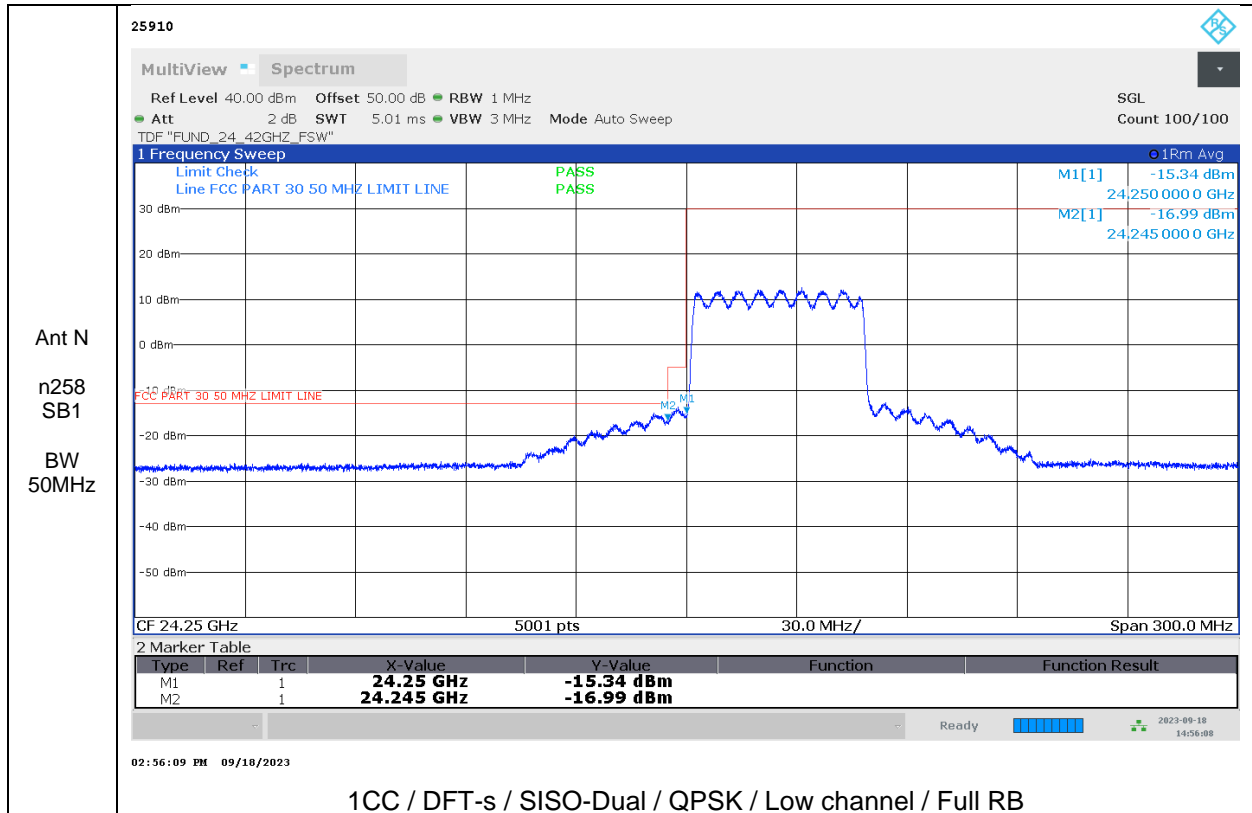


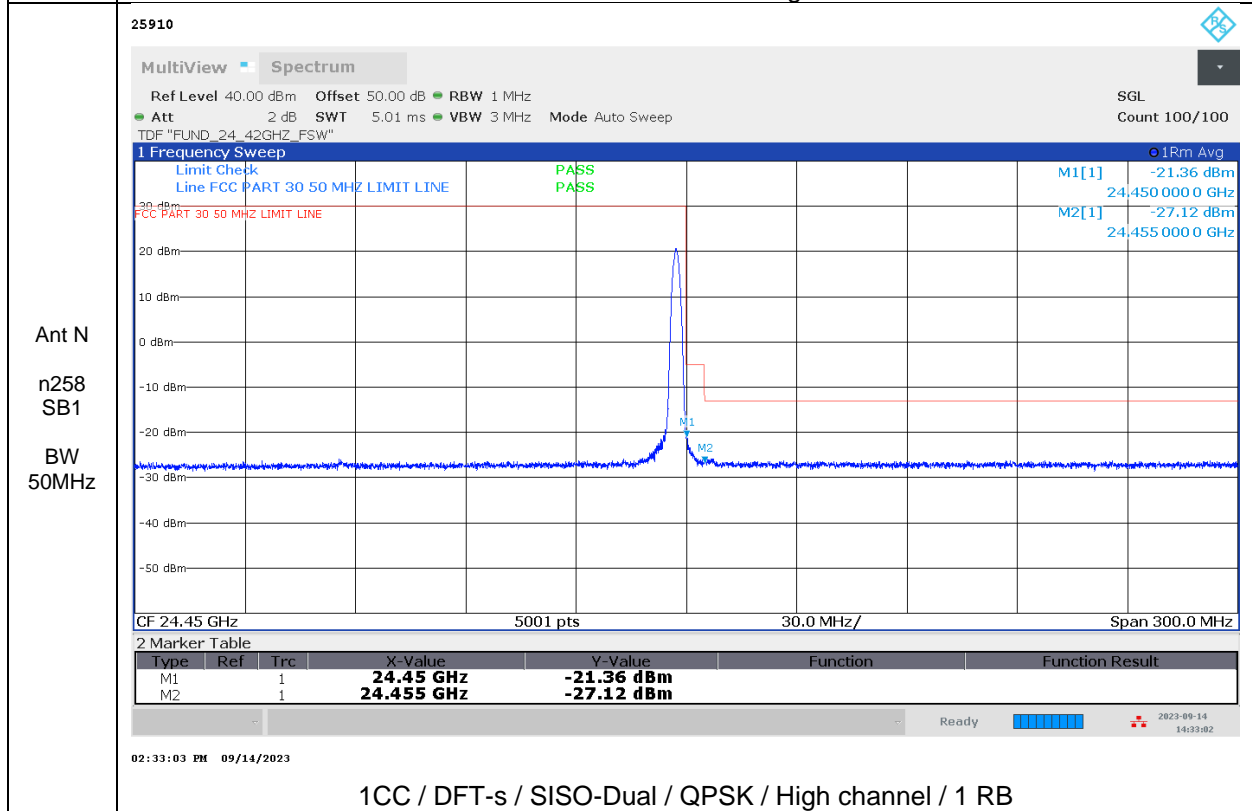
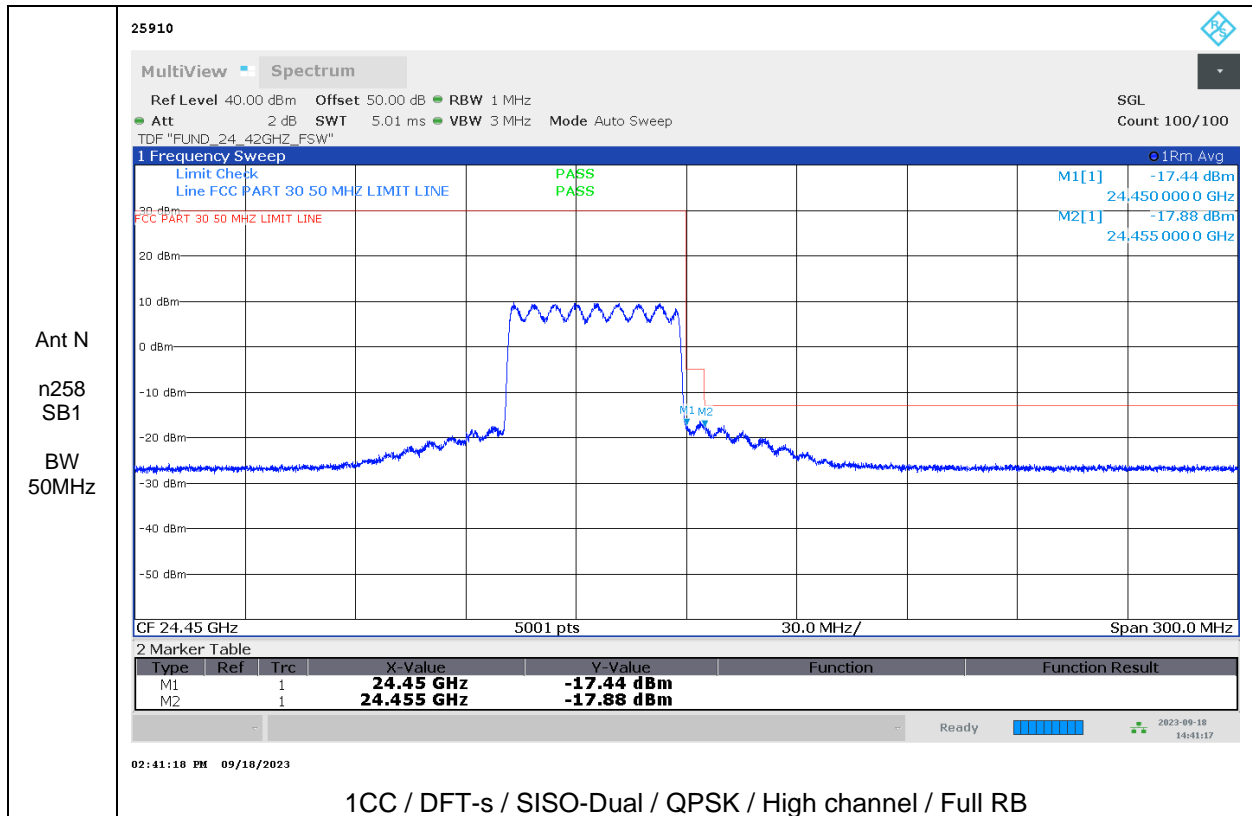


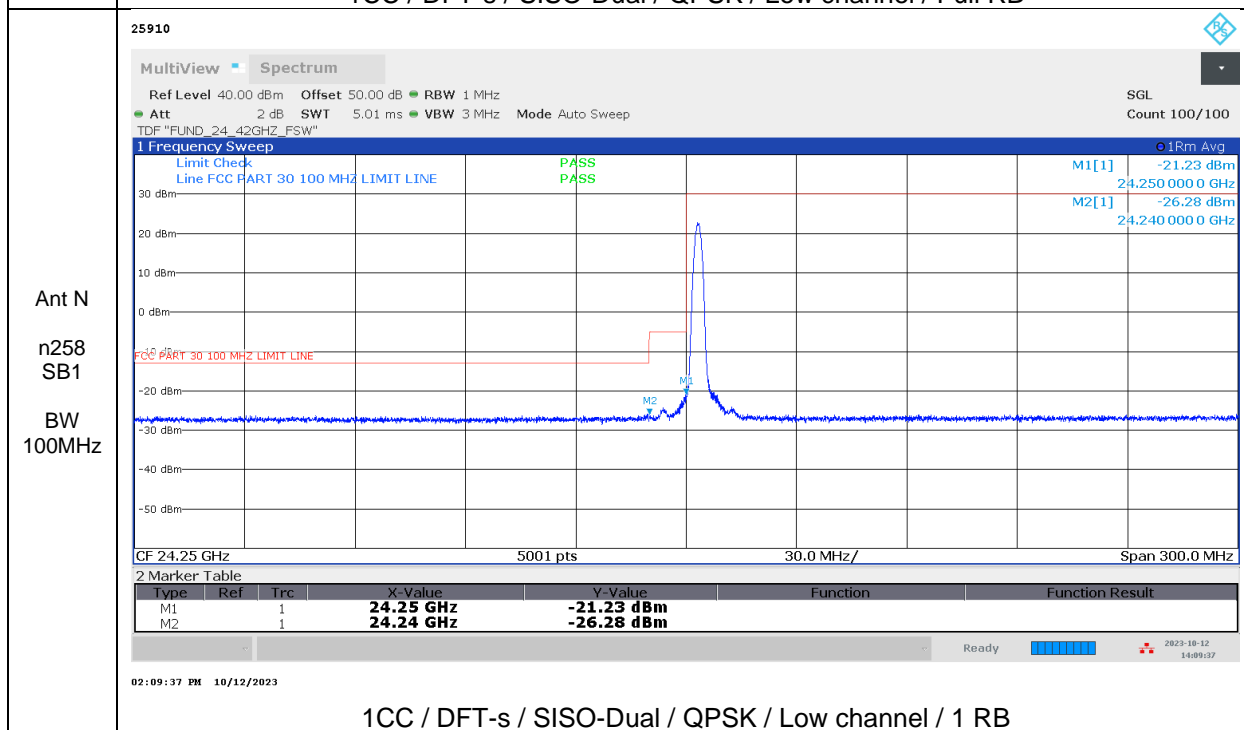
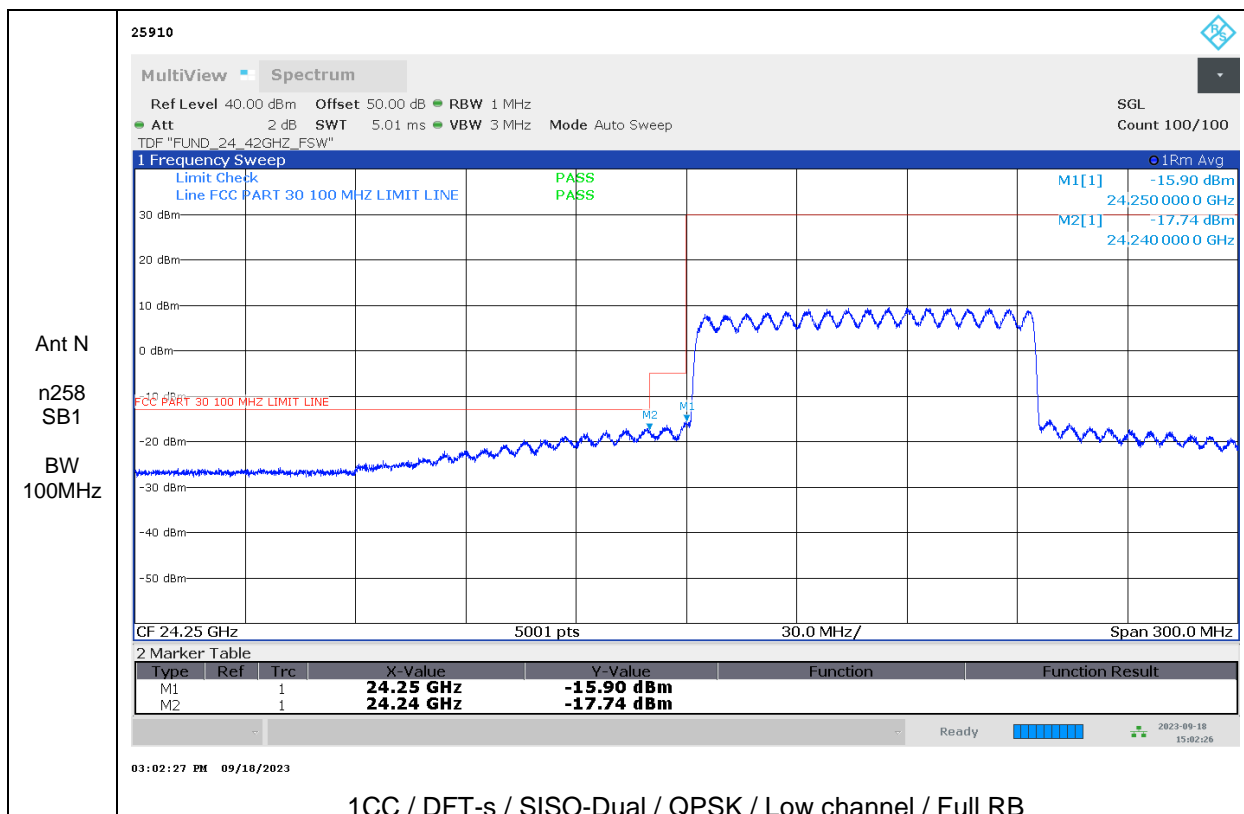


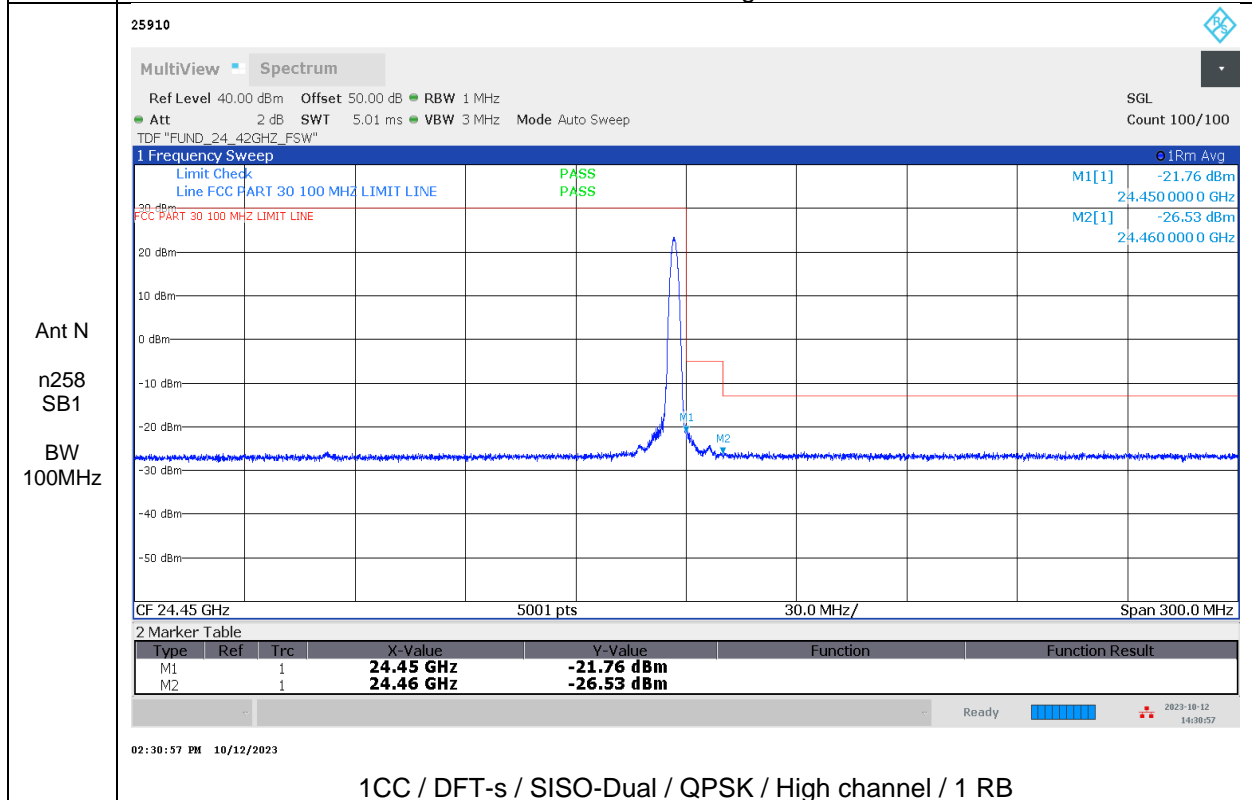
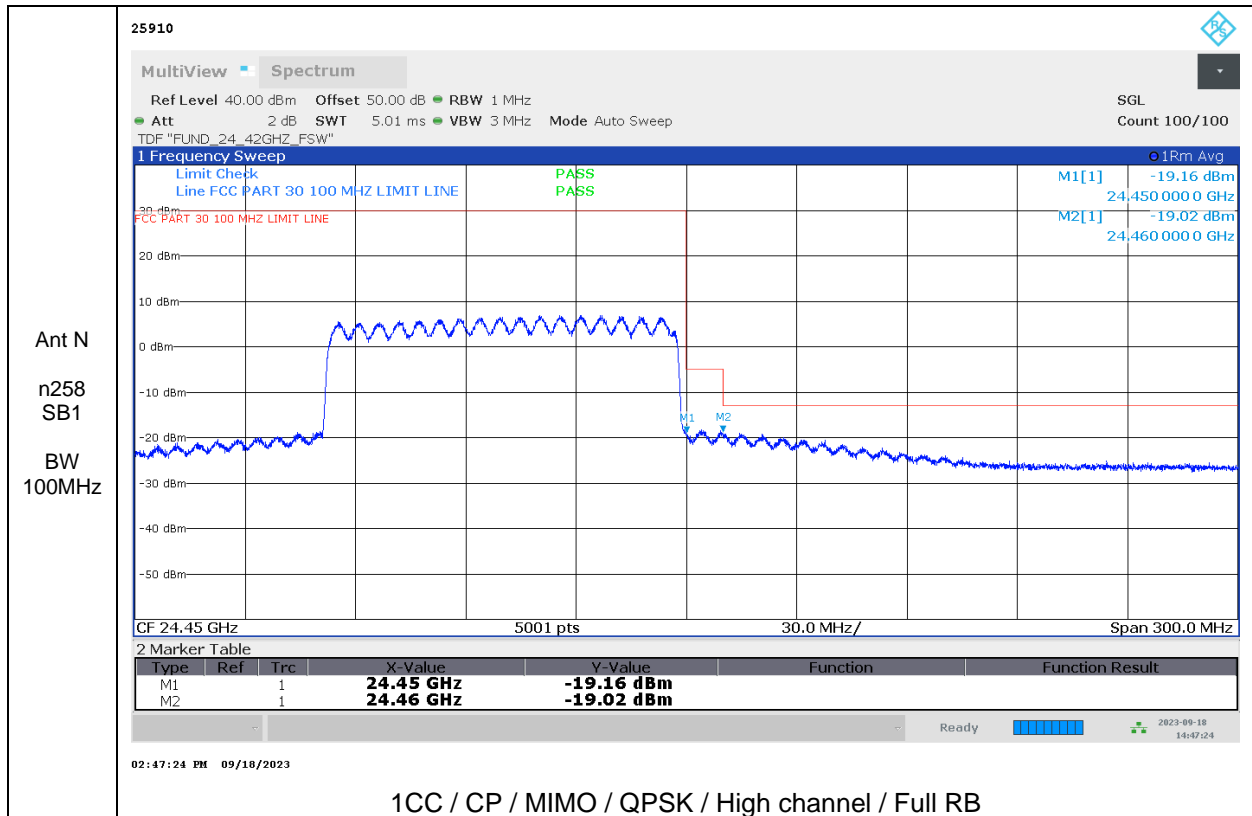


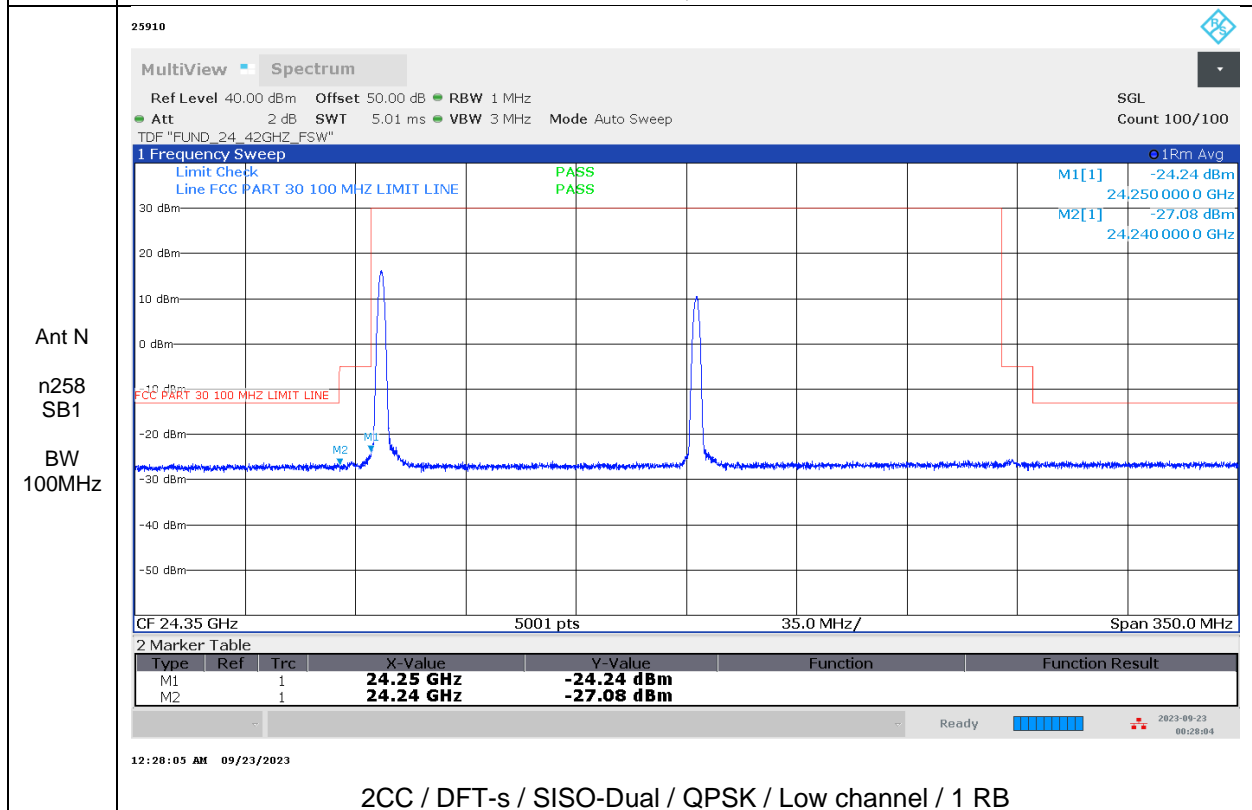
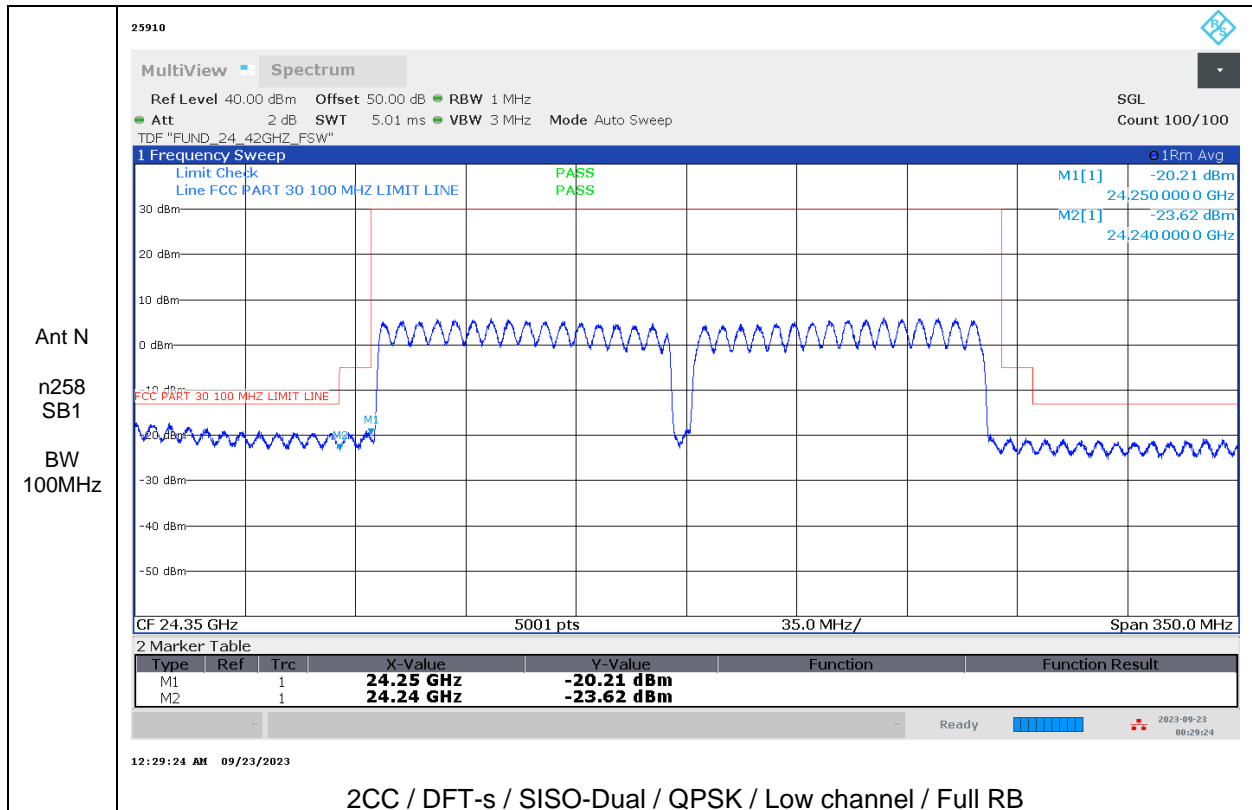
Antenna 2 / Ant N / Band n258 SB1

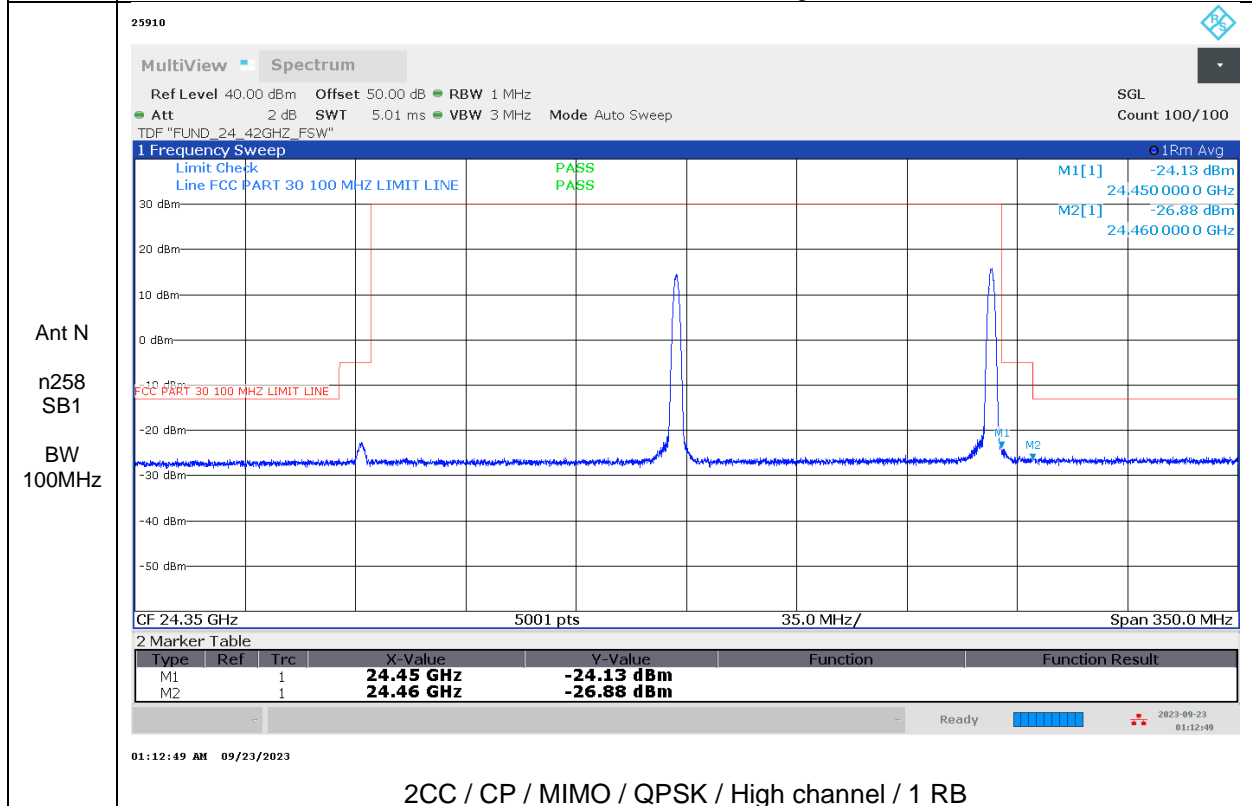
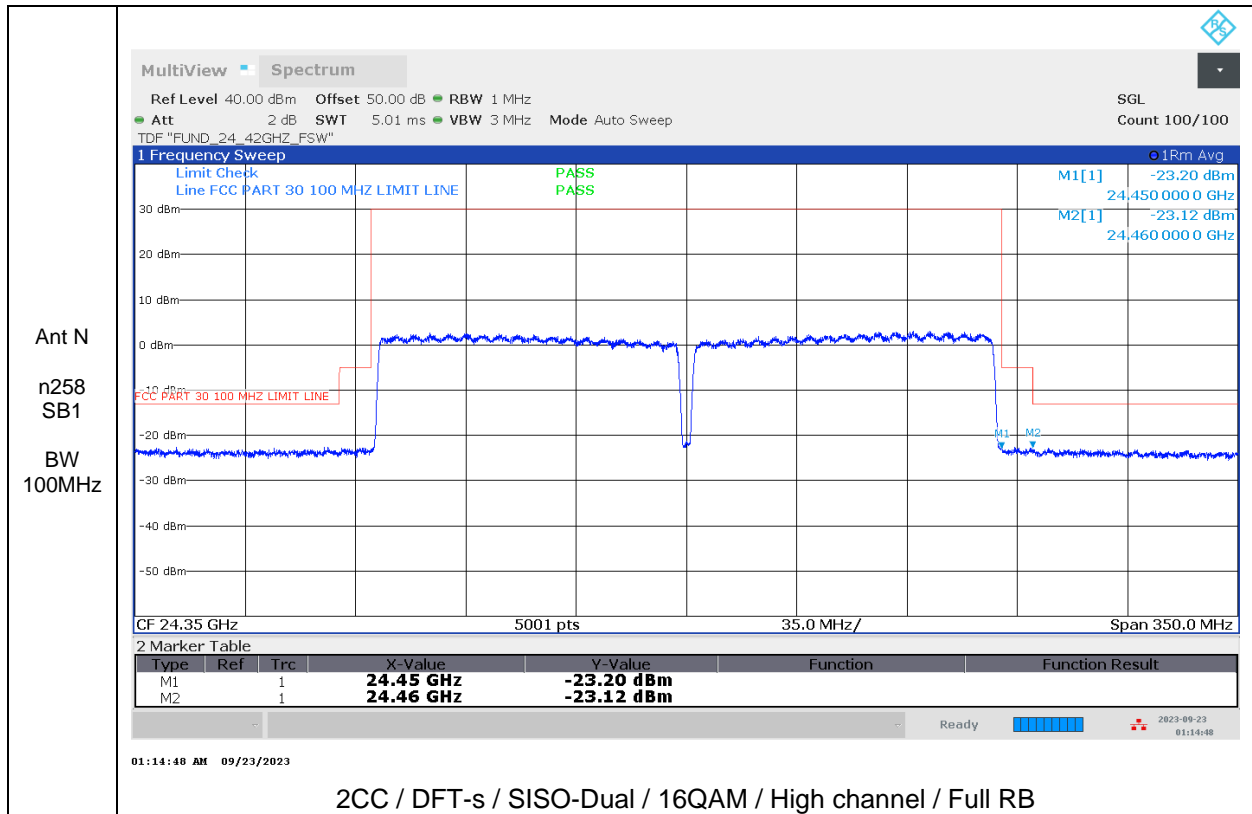












Antenna 2 / Ant N / Band n258 SB2

