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Ericsson AB

RF TEST REPORT

Report Type:
FCC Part 27 RF report

PRODUCT NAME:
Radio 4480 44B66 44B70 C

REPORT NUMBER:
2407B2016SHA-001

ISSUE DATE:
July 24, 2024

DOCUMENT CONTROL NUMBER:
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TEST REPORT

Report no.: 2407B2016SHA-001

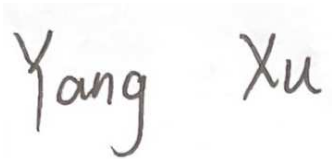
Applicant:	Ericsson AB
	Isafjordsgatan 10 SE-164 80 Stockholm 16480 Sweden
Manufacturer:	Ericsson AB
	Isafjordsgatan 10 SE-164 80 Stockholm 16480 Sweden
FCC ID:	TA8AKRC161991-1
IC:	287AB-AS1619911

SUMMARY:

The equipment is tested according to the following standard(s) or Specification:

FCC CFR 47 Part 27 (2023): MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

ISED RSS-139 Issue 4: Advanced Wireless Services Equipment Operating in the Bands 1710-1780 MHz and 2110-2200 MHz

PREPARED BY:	**REVIEWED BY:**
	
Project Engineer Xu Yang	Reviewer Jackson Huang

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Revision History

Report No.	Version	Description	Issued Date
2407B2016SHA-001	Rev. 01	Initial issue of report	July 24, 2024

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Measurement result summary

TEST ITEM	FCC REFERANCE	IC REFERANCE	RESULT
Max Output Power and Peak to Average Power Ratio and EIRP	27.50(d)	RSS-139 5.5	Pass
Occupied Bandwidth	27.53(h) 2.1049	RSS-GEN 6.7	Pass
Unwanted Emissions at Band Edge	27.53(h)	RSS-139 5.6	Pass
Conducted Unwanted Emission	27.53(h)	RSS-139 5.6	Pass
Frequency Stability	27.54	RSS-139 5.4	Pass

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Description:	Remote Radio Unit
Product name:	Radio 4480 44B66 44B70 C
Product number:	KRC 161 991/1
HVIN	AS1619911
Serial Number(s)	EA2A534732
Rating:	-48VDC
Software Version:	CXP9013268%15_R99CA
Hardware Version:	R1B
Sample received date:	July 10, 2024
Date of test:	July 10, 2024 ~ July 17, 2024

1.2 Technical Specification

Frequency Range:	B66 TX (DL): 2110–2200 MHz RX (UL): 1710–1780 MHz B70 TX (DL): 1995–2020 MHz RX (UL): 1695–1710 MHz
Number of Antenna ports:	4 TX/RX
Supported RAT:	B66: LTE, NR, NB_IoT(Inband, Guardband) B70: LTE, NR, NB_IoT(Inband, Guardband)
Max RF bandwidth (IBW):	B66: 90MHz B70: 25MHz
Supported Number of Carriers:	B66: 6 B70: 5
Supported modulation:	LTE: QPSK, 16QAM, 64QAM, 256QAM NR: QPSK, 16QAM, 64QAM, 256QAM
Supported Channel Bandwidth:	B66: LTE: 5, 10, 15, 20 MHz NR: 5, 10, 15, 20, 25, 30,35,40 MHz B70: LTE: 5, 10, 15,20 MHz NR: 5, 10, 15, 20,25MHz (20, 25MHz are DL-only for B70) LTE+NB-IoT IB: 5, 10, 15, 20 MHz LTE+NB-IoT GB: 10, 15, 20 MHz (20MHz is DL-only for B70) NR+NB_IB:10,15,20 MHz (20MHz is DL-only for B70)
Declaration output power per port:	Maximum Output Power per port per Band: 40W(46.02dBm) Maximum Output Power both Band: 320W(55.05dBm)

Note: Information in the 1.2 sheet declared by the manufacturer may affect the validity of the results and Intertek has no responsibility for its accuracy.

1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address 1:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Address 2:	F9&F8&F7, Tianfu Software Park E7 Tower, No. 1366 Tianfu Avenue Middle, Hightech Zone, Chengdu City, Sichuan Province, P.R. of China
Telephone:	+86 21 61278200
Telefax:	+86 21 54262353
The test facility is recognized, certified, or accredited by these organizations:	FCC Registration Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	A2LA Accreditation Lab Certificate Number: 3309.02

2 TEST SPECIFICATIONS

2.1 Related documents

FCC Part 27 (2023)
FCC Part 2 (2023)
ISED RSS-139 issue 4 September 29, 2022
ISED RSS-Gen issue 5 March 2019 Amendment 1
ANSI C63.26:2015
KDB 971168 D01 v03r01
KDB 662911 D01 v02r01

2.2 Product Information

The Equipment Under Test (EUT) is an Ericsson Radio Unit working in the wireless communications services B66 & B70 band which provides communication connections to network in LTE/NR/NB_IoT(Inband,Guardband) modes and MSR modes. Radio 4480 44B66 44B70 C operates from a 48VDC.

The EUT includes 4 TX/RX ports and it can be configured to transmit in MIMO mode, and MIMO mode was used for measurements as the worst configuration. The complete testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

A full technical description can be found in the Manufacturer’s documentation.

2.3 Configuration Description

The following settings were used to represent all traffic scenarios. The output power was measured on the bottom, middle and top channel of all applicable antenna ports. By measuring the output power of QPSK, 16QAM, 64QAM, 256QAM on one of the antenna ports, it was determined that 256QAM for NR B66 & B70 was the worst-case modulation schemes as data listed below and were used for all testing.

4TX/RX mode	Port	QPSK	16QAM	64QAM	256QAM
NR-1C-B66 40M Middle	Port D	45.80dBm	45.85dBm	45.90dBm	45.91dBm
4TX/RX mode	Port	QPSK	16QAM	64QAM	256QAM
NR-1C-B70 25M Middle	Port C	45.72dBm	45.77dBm	45.81dBm	45.86dBm

Complete testing was carried out on the worst-case antenna port which was established as being the highest output power from the 4 measured ports on worst case modulation scheme as data listed below. This antenna port was Port D for NR B66 and Port C for NR B70.

4TX/RX mode	modulation	Port A	Port B	Port C	Port D
NR-1C-B66 40M Middle	256QAM	45.82dBm	45.85dBm	45.79dBm	45.91dBm
4TX/RX mode	modulation	Port A	Port B	Port C	Port D
NR-1C-B70 25M Middle	256QAM	45.72dBm	45.82dBm	45.86dBm	45.79dBm

The settings below were used for all measurements unless otherwise noted:

NR

Configuration	No. of Carriers	NR Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR-1C-B66	1NR	25	2122.5	2155	2187.5
		30	2125	2155	2185
		35	2127.5	2155	2182.5
		40	2130	2155	2180
NR-2C-B66	2NR	25	-	2122.5+2187.5	-
		30	-	2125+2185	-
		35	-	2127.5+2182.5	-
		40	-	2130+2180	-
NR-3C-B66	3NR	25	-	2122.5+2155+2187.5	-
		30	-	2125+2155+2185	-

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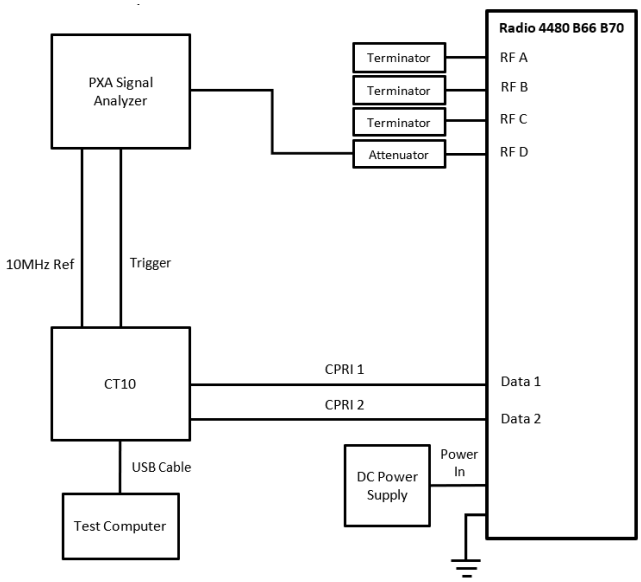
Configuration	No. of Carriers	NR Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR-1C-BE-B66	1NR	25	2122.5	-	2187.5
		30	2125	-	2185
		35	2127.5	-	2182.5
		40	2130	-	2180
NR-2C-BE-B66	2NR	25	2122.5+2147.5	-	2162.5+2187.5
		30	2125+2155	-	2155+2185
		35	2127.5+2162.5	-	2147.5+2182.5
		40	2130+2170	-	2140+2180
NR-3C-BE-B66	3NR	25	2122.5+2147.5 +2172.5	-	2137.5+2162.5 +2187.5
		30	-	2125+2155+2185	-

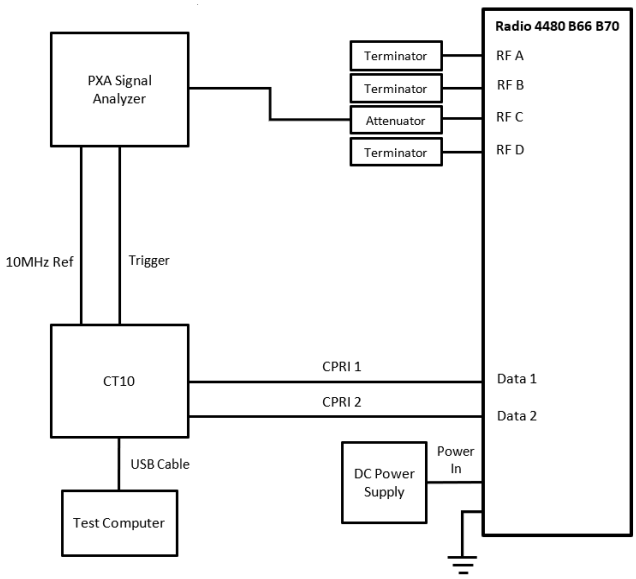
Configuration	No. of Carriers	NR Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR-1C-B70	1NR	25	-	2007.5	-

2.4 Test Setup

Conducted Measurement:
B66:



B70:



No.	Auxiliary Equipment	Product Number / Model Type	Version
1	Test computer	DELL OptiPlex 3050	-
2	CT10	LPC 102487/1	R1C
3	DC Power Supply	US21E7359S	-
4	40db Attenuator	WDTS300-40Db-6G-NFF	-
5	40db Attenuator	47-40-43	-
6	10db Attenuator	DTS50GH-A-10-18-NMF	-
7	10db Attenuator	2.92TS100-10-26.5-A	-
8	Terminator	WTF300-6-NF	-
9	Filter	W-FLTF-026-18000-26500	-

Proper Attenuator/Filter will be chosen to use in relative test case. And the cable loss of specified Attenuator/Filter with connect cable will be calibrated before test for relative frequency range and the worst reading will be used as offset in the relative test case.

2.5 Test environment condition:

Test items	Temperature	Humidity
Max Output Power and Peak to Average Power Ratio and EIRP	23°C	54% RH
Occupied Bandwidth		
Unwanted Emissions at Band Edge		
Conducted Unwanted Emission		
Frequency Stability	Please refer to clause 7	

2.6 Instrument list

Used	Equipment	Manufacturer	Type	S/N	Due date
☒	Signal Analyzer	Rohde & Schwarz	FSVA3044	101087	2025-07-09
☒	Signal Analyzer	Keysight	N9030B	MY57140894	2025-07-09
☒	Climatic Chamber	Chongqing Yinhe	SDJ61F	201700266	2025-06-27
☐	Climatic Chamber	Chongqing Yinhe	SDJ61F	201700268	2024-12-09
☐	TRUE RMS CLAMP METER	FLUKE	317	40500136WS	2025-07-22
☒	Hygrometer	TESTO	608-H1	1745127471	2024-12-09
☒	Hygrometer	TESTO	608-H1	1745127476	2024-12-09

2.7 Measurement uncertainty

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Measurement uncertainty
Maximum output power	0.73dB
Occupied Bandwidth	0.88%
Unwanted Emissions at Band Edge	3.03dB
Conducted Unwanted Emission	3.03dB
Frequency stability	0.77×10^{-7}

3 Maximum Output Power and Peak to Average Power Ratio and EIRP

Test result: Pass

3.1 Limit

Output Power:

FCC (EIRP) 1640 W(62.15dBm) or 3280W(65.16dBm) for emission bandwidth ≤ 1MHz

1640 W/MHz(62.15dBm/MHz) or 3280W/MHz(65.16dBm/MHz) for emission bandwidth > 1MHz

IC 65 dBm e.i.r.p./MHz

Peak to Average Ratio: ≤13 dB

Note: Stricter limit is applied.

3.2 Measurement Procedure

The EUT was configured to transmit on maximum power and proper modulation. The transmitter power shall be measured in terms of a root-mean-square (RMS) average value. In case of the EUT was configured to MIMO mode, since the EUT transmits on all antennas simultaneously in the same frequency range, using the Measure-and-Sum approach, the output power at all antennas were tested, and the total output power were then summed mathematically in linear power units according to FCC KDB 662911 D01.

A peak to average ratio measurement is performed at the conducted ports of the EUT for single carrier for single RAT mode. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) was used and 0.1% probability value recorded.

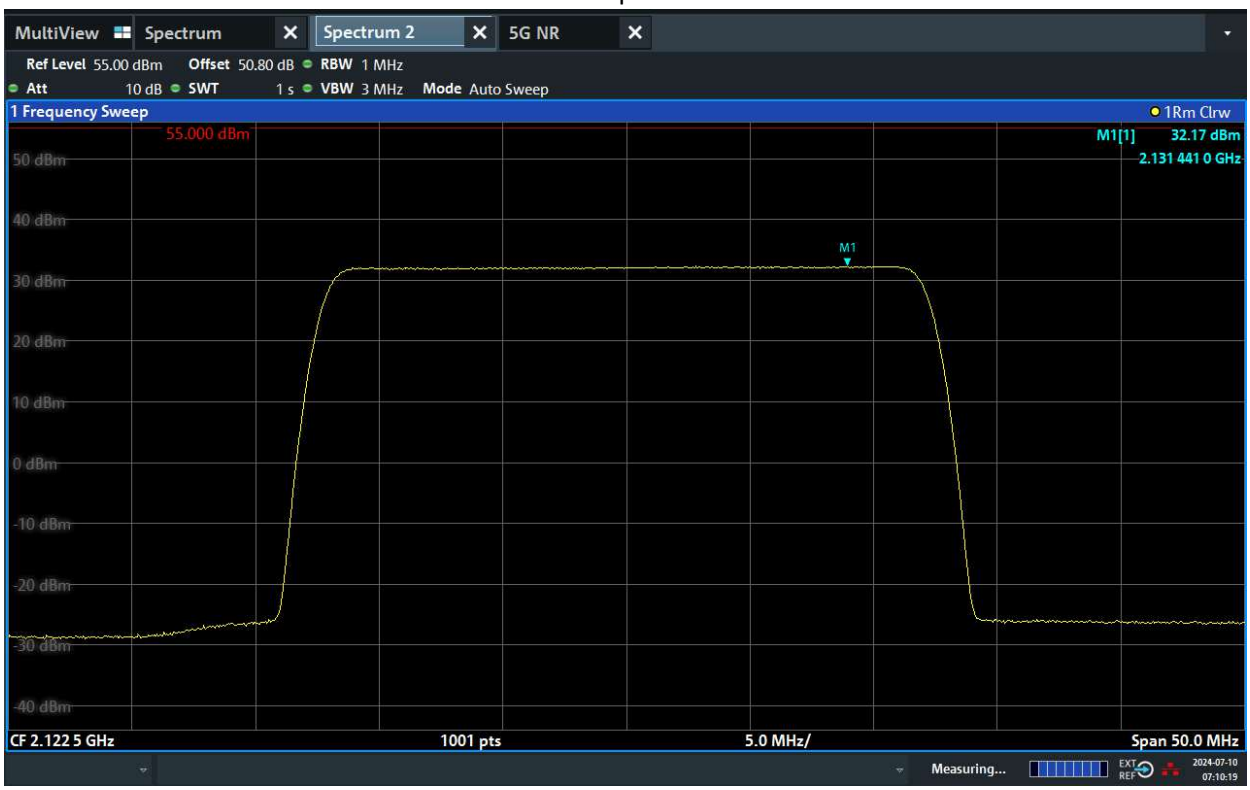
3.3 Measurement result

According to report 463928-1TRFWL-R1 issued by Nemko Canada Inc., the maximum antenna gain 18dBi with 1dB path pass is chosen to ensure the compliance which is also valid in this report as data listed below.

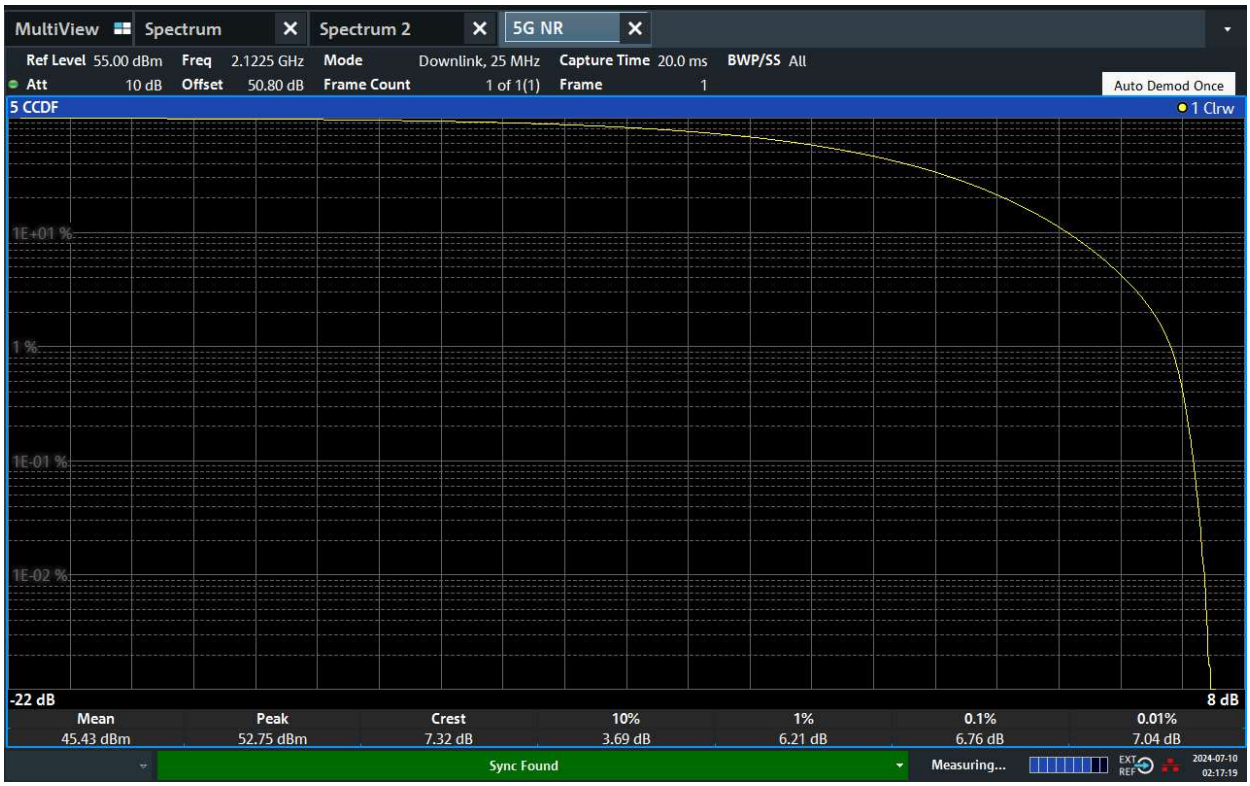
NR-1C-B66

Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	25	45.39	31.81	6.75	45.62	32.15	6.56	45.57	32.08	6.97
B	256QAM	25	45.45	32.11	6.76	45.70	32.25	6.57	45.54	32.14	6.94
C	256QAM	25	45.50	32.03	6.70	45.75	32.35	6.56	45.56	32.11	6.97
D	256QAM	25	45.56	32.17	6.74	45.80	32.33	6.58	45.07	32.22	6.98
Total conducted power			51.50	38.05	-	51.74	38.29	-	51.46	38.16	-
Antenna gain (dBi) with path loss			17								
EIRP			68.50	55.05	-	68.74	55.29	-	68.46	55.16	-
EIRP limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00

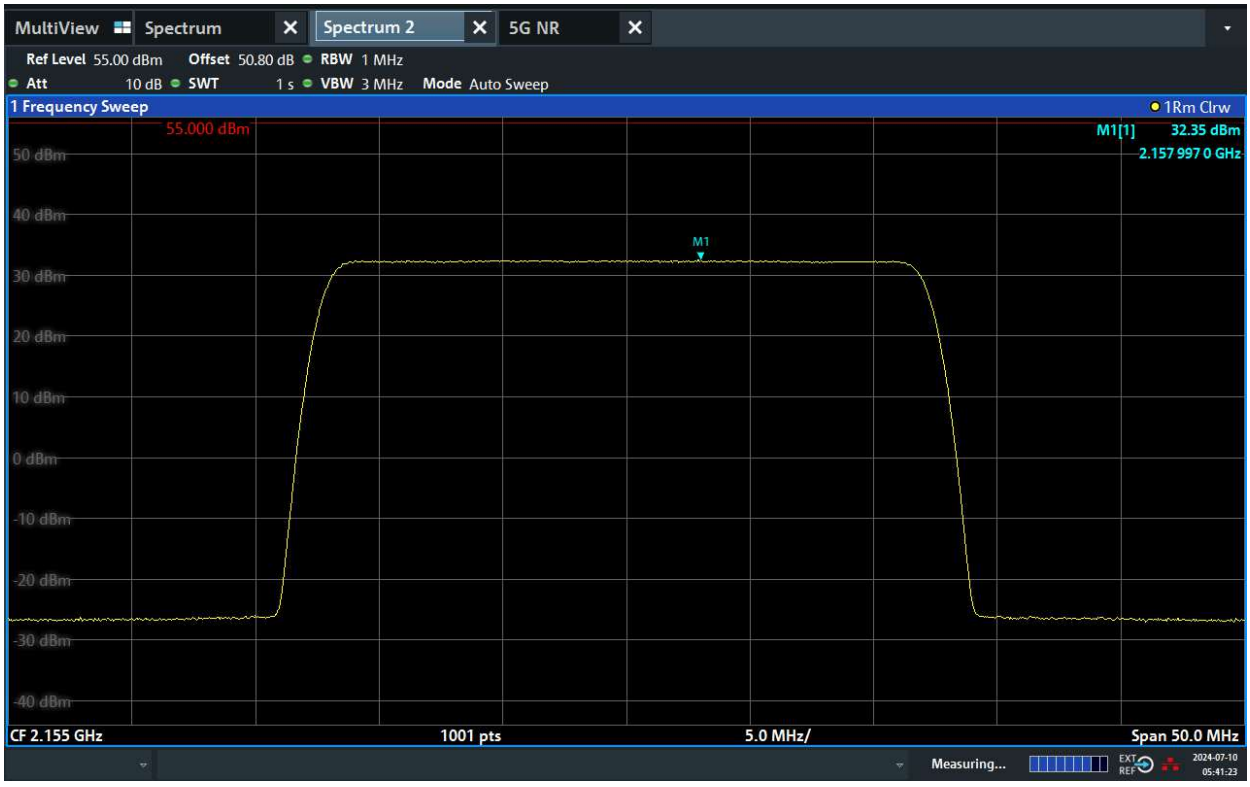
Channel position B



TEST REPORT



Channel position M



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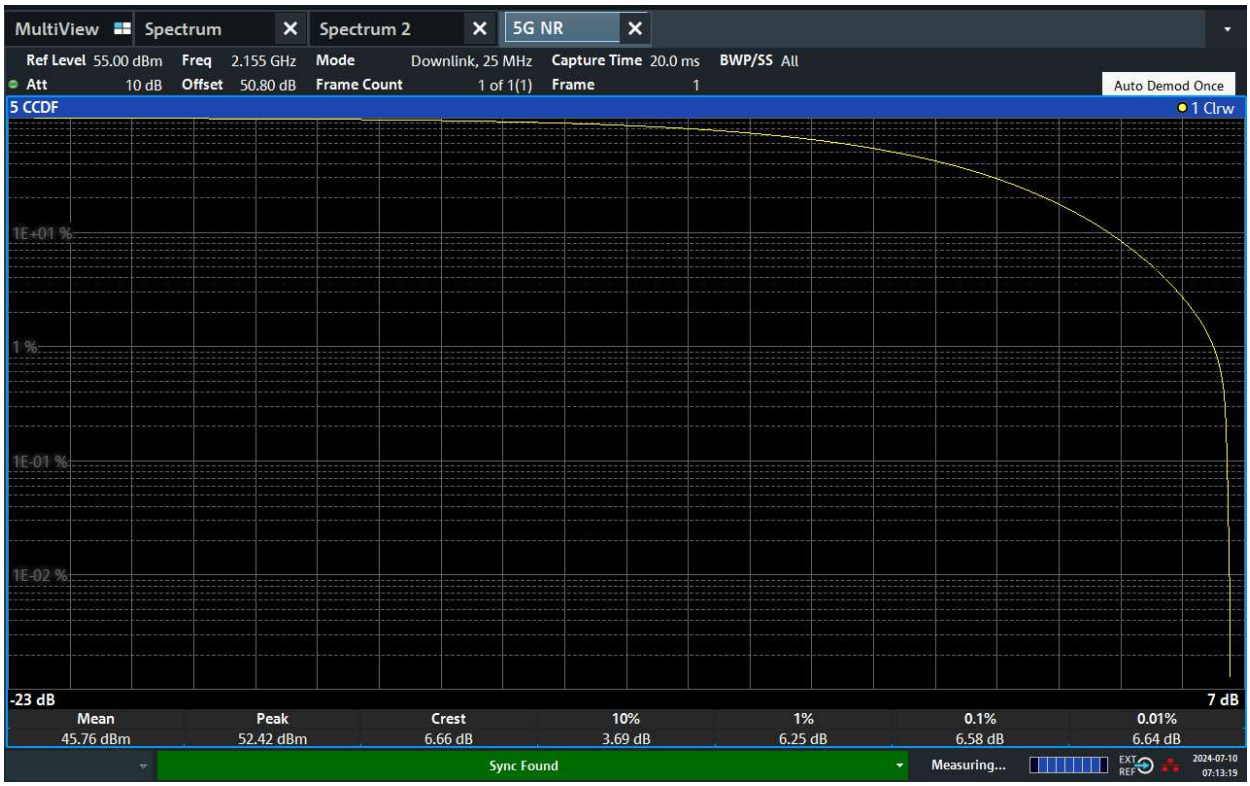
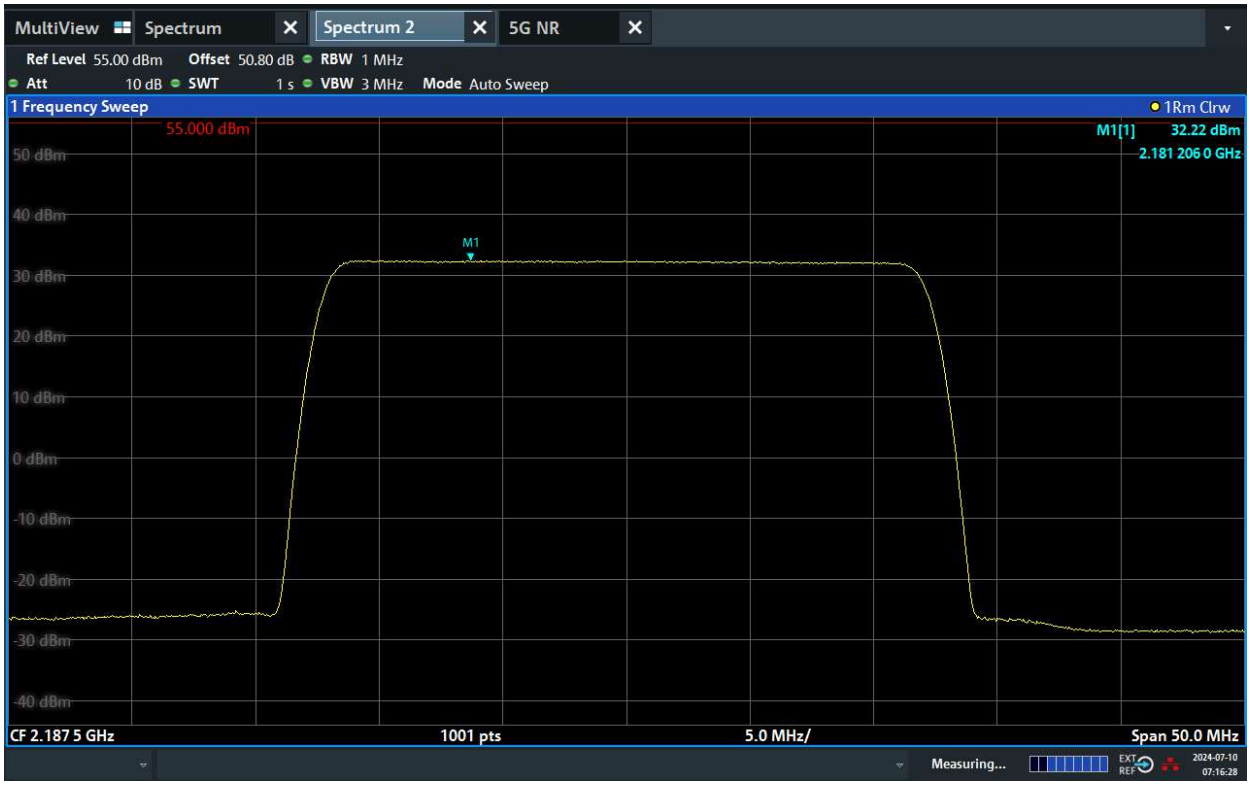
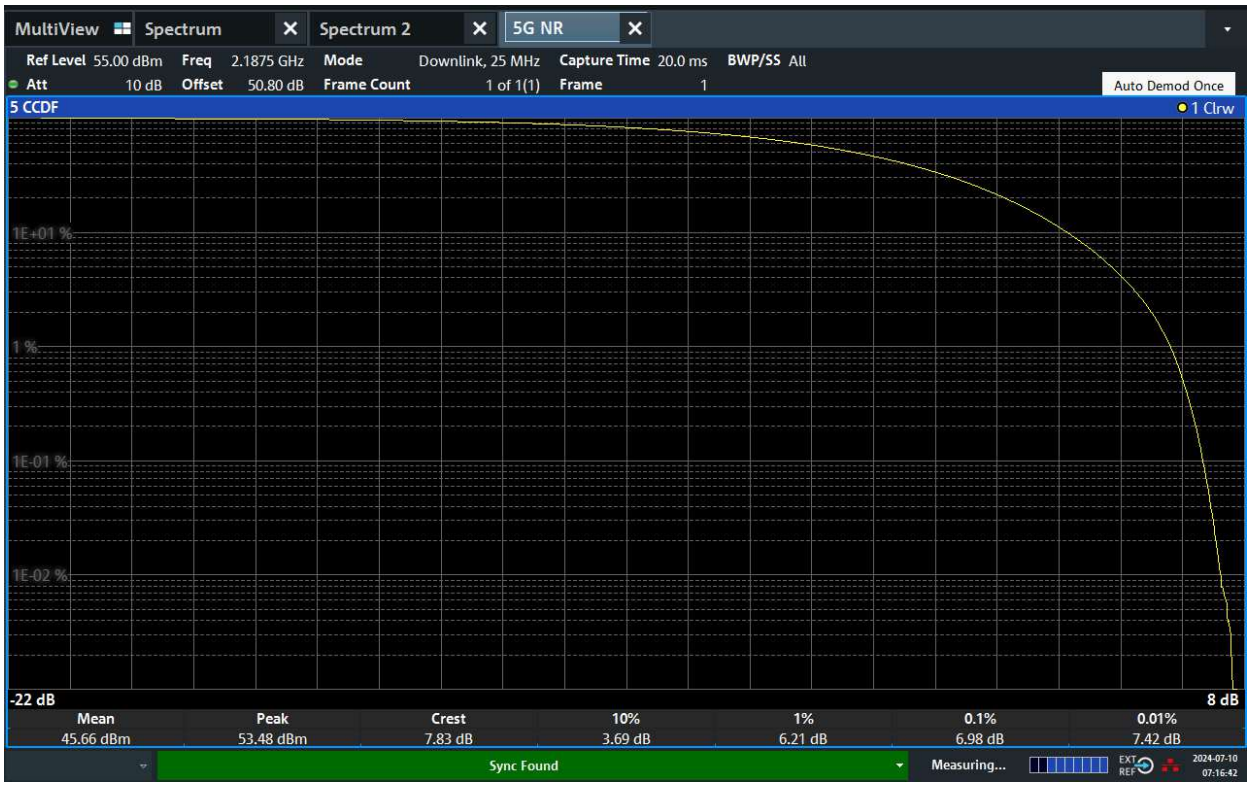


Channel position T

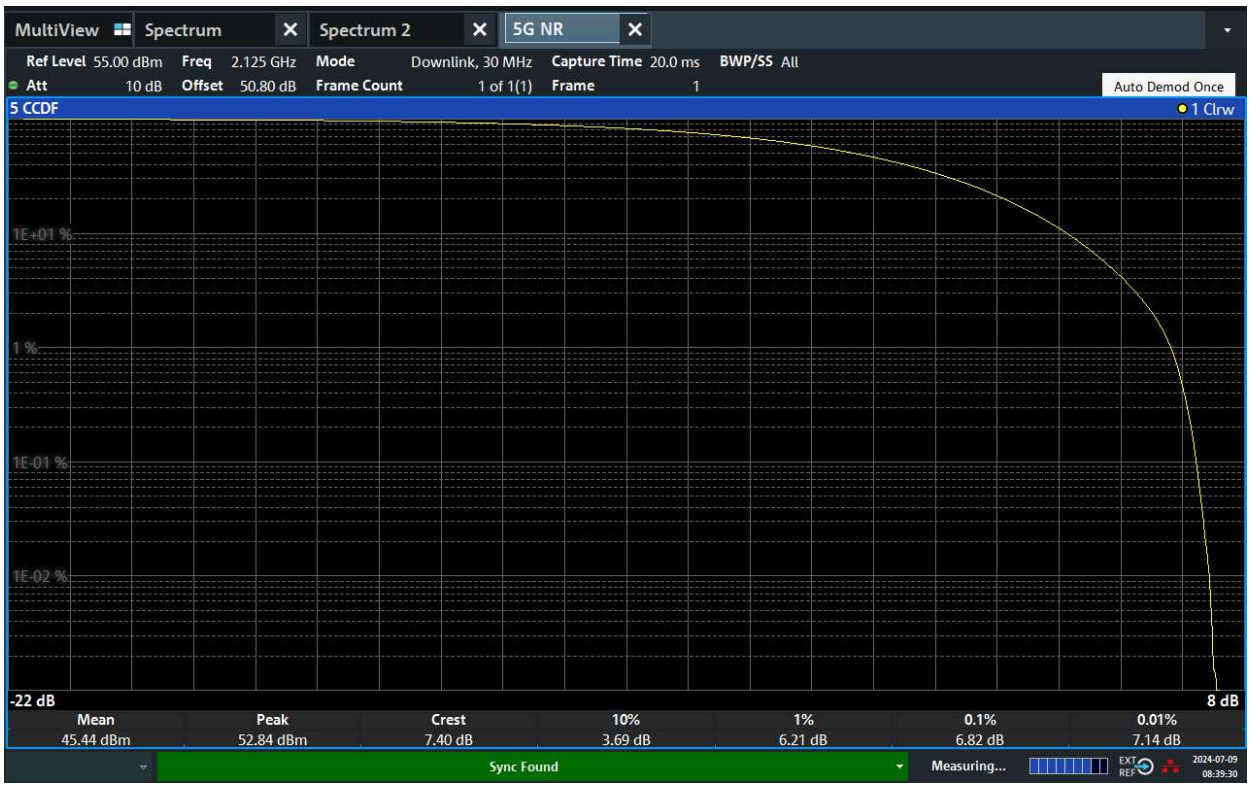




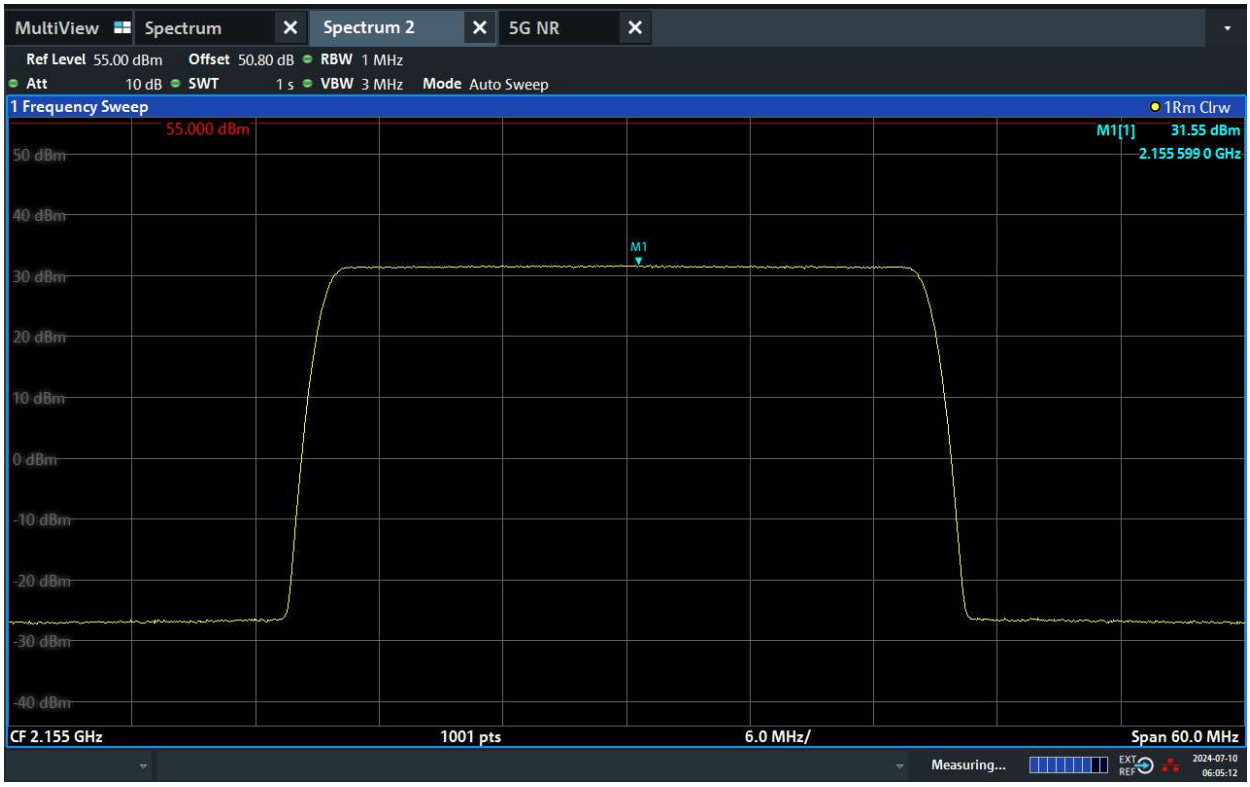
Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	30	45.47	31.32	6.82	45.71	31.44	6.59	45.65	31.40	7.07
B	256QAM	30	45.47	31.17	6.81	45.69	31.36	6.59	45.57	31.34	7.04
C	256QAM	30	45.44	31.31	6.78	45.76	31.55	6.59	45.54	31.34	7.09
D	256QAM	30	45.65	31.63	6.81	45.70	31.51	6.59	45.55	31.27	7.09
Total conducted power			51.53	37.38	-	51.74	37.49	-	51.60	37.36	-
Antenna gain (dBi) with path loss			17								
EIRP			68.53	54.38	-	68.74	54.49	-	68.60	54.36	-
EIRP limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00

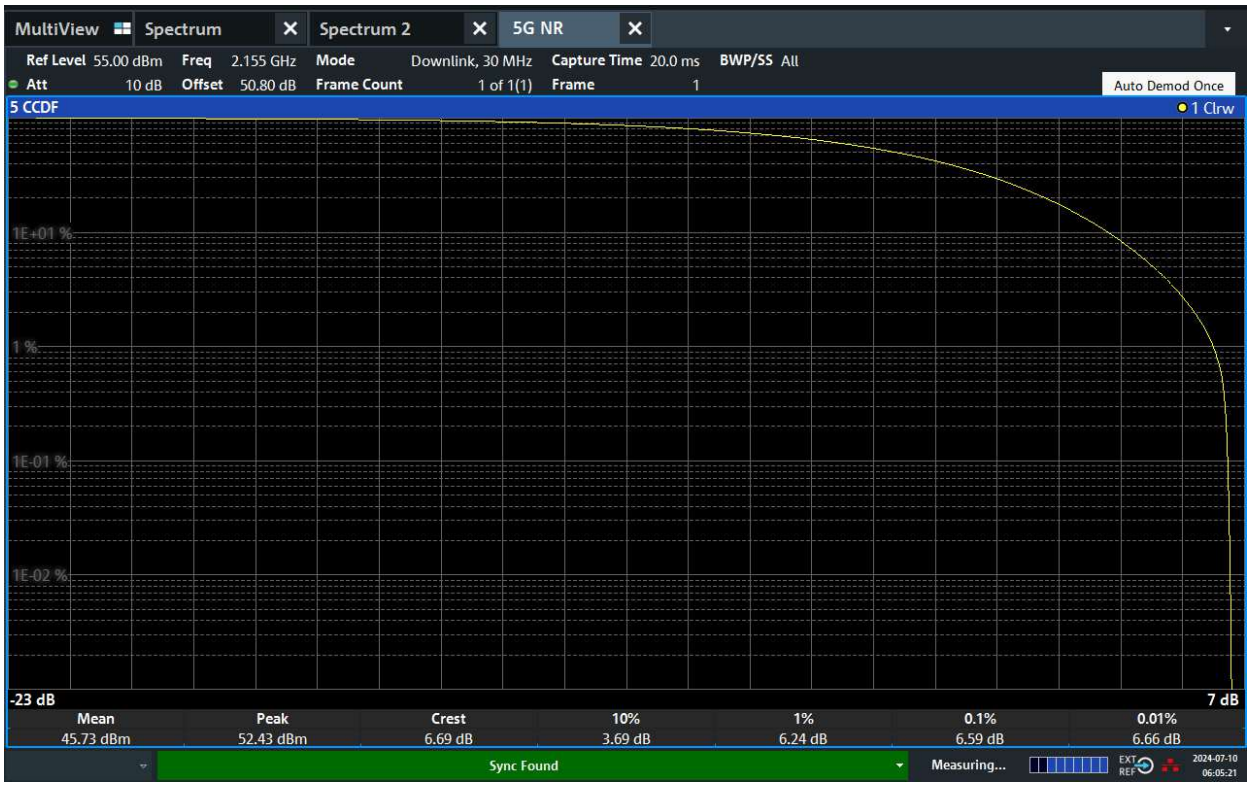
TEST REPORT

Channel position B



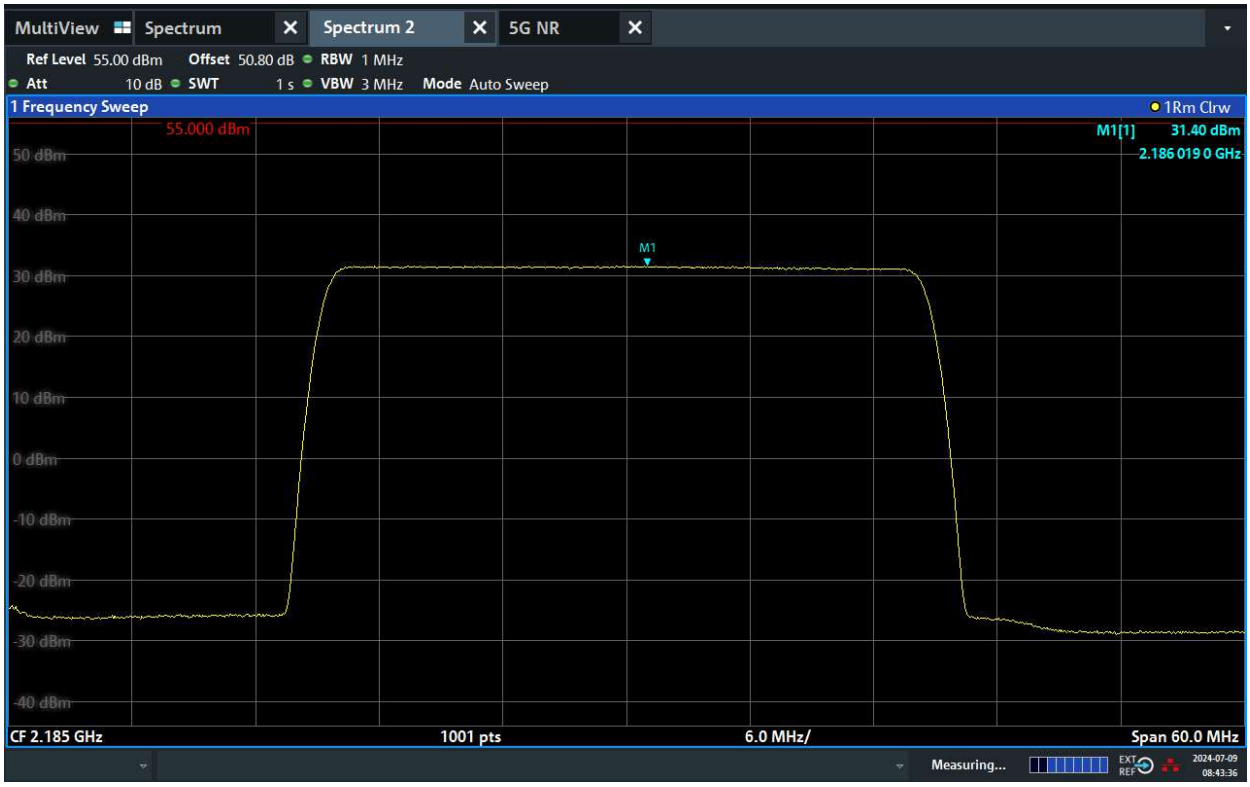
Channel position M

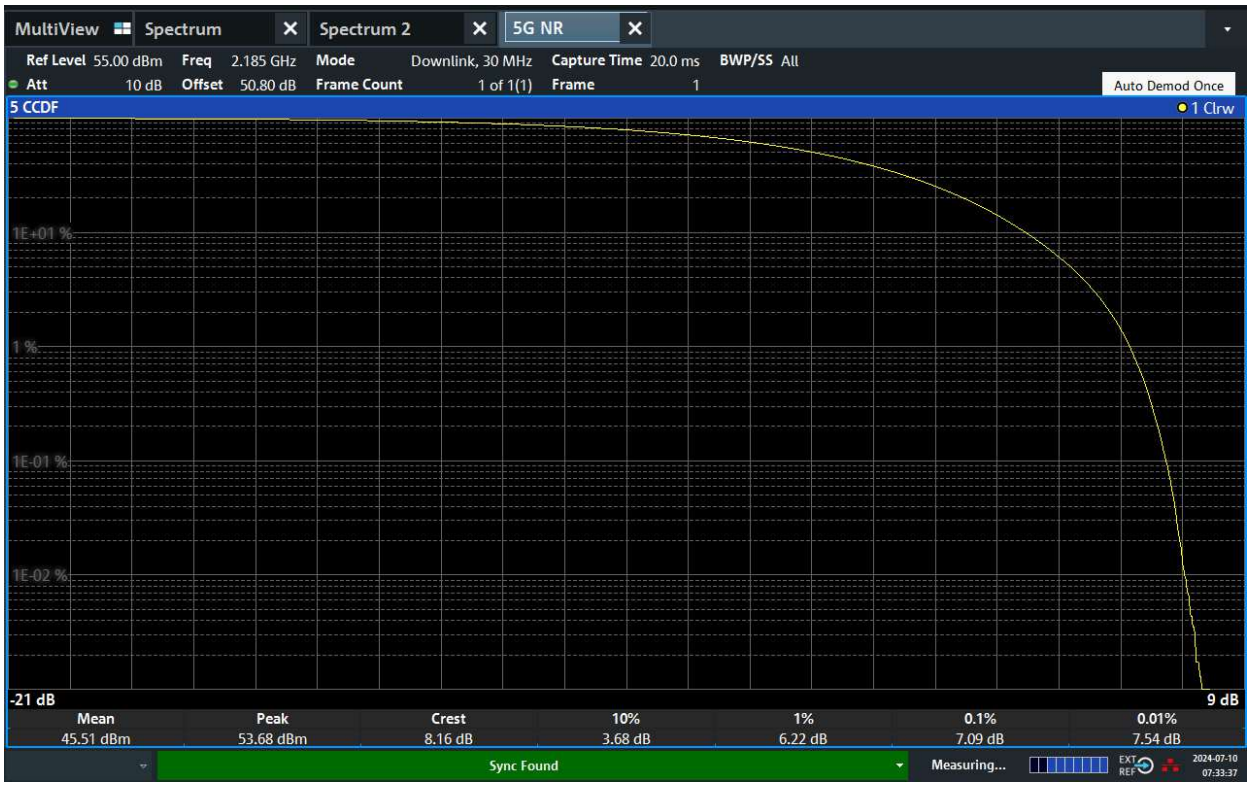




TEST REPORT

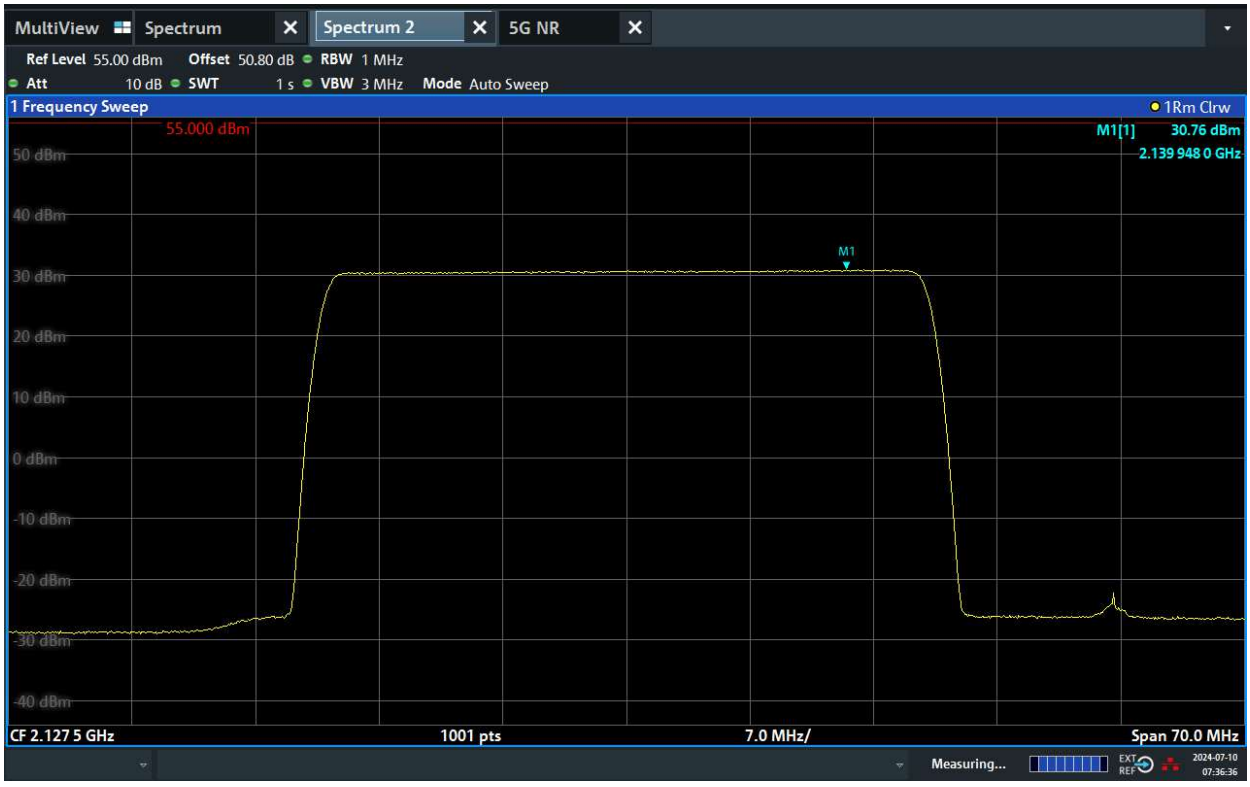
Channel position T





Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	35	45.58	30.76	6.85	45.78	30.84	6.59	45.69	30.81	7.14
B	256QAM	35	45.53	30.66	6.84	45.75	30.79	6.58	45.59	30.58	7.12
C	256QAM	35	45.53	30.60	6.80	45.60	30.80	6.58	45.57	30.66	7.15
D	256QAM	35	45.59	30.76	6.82	45.75	30.78	6.59	45.59	30.63	7.18
Total conducted power			51.58	36.72	-	51.74	36.82	-	51.63	36.69	-
Antenna gain (dBi) with path loss			17								
EIRP			68.58	53.72	-	68.74	53.82	-	68.63	53.69	-
EIRP limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00

Channel position B



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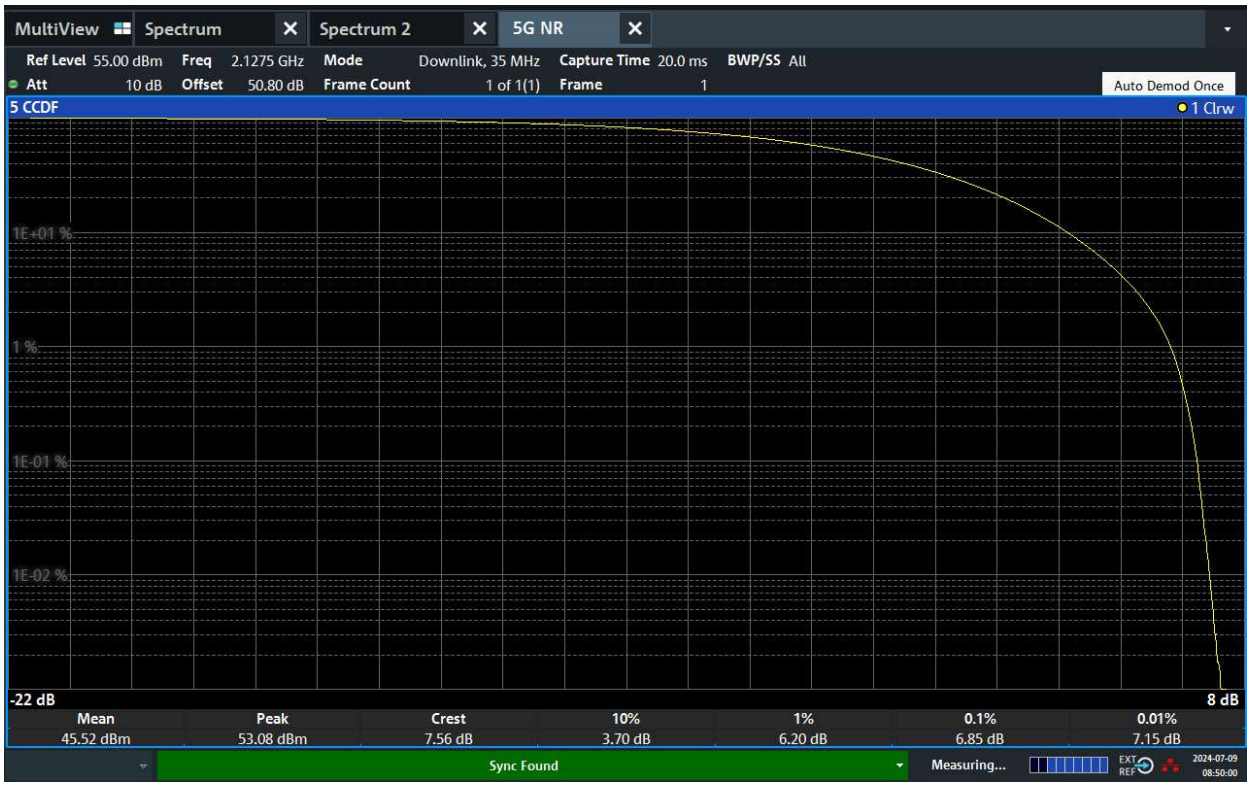
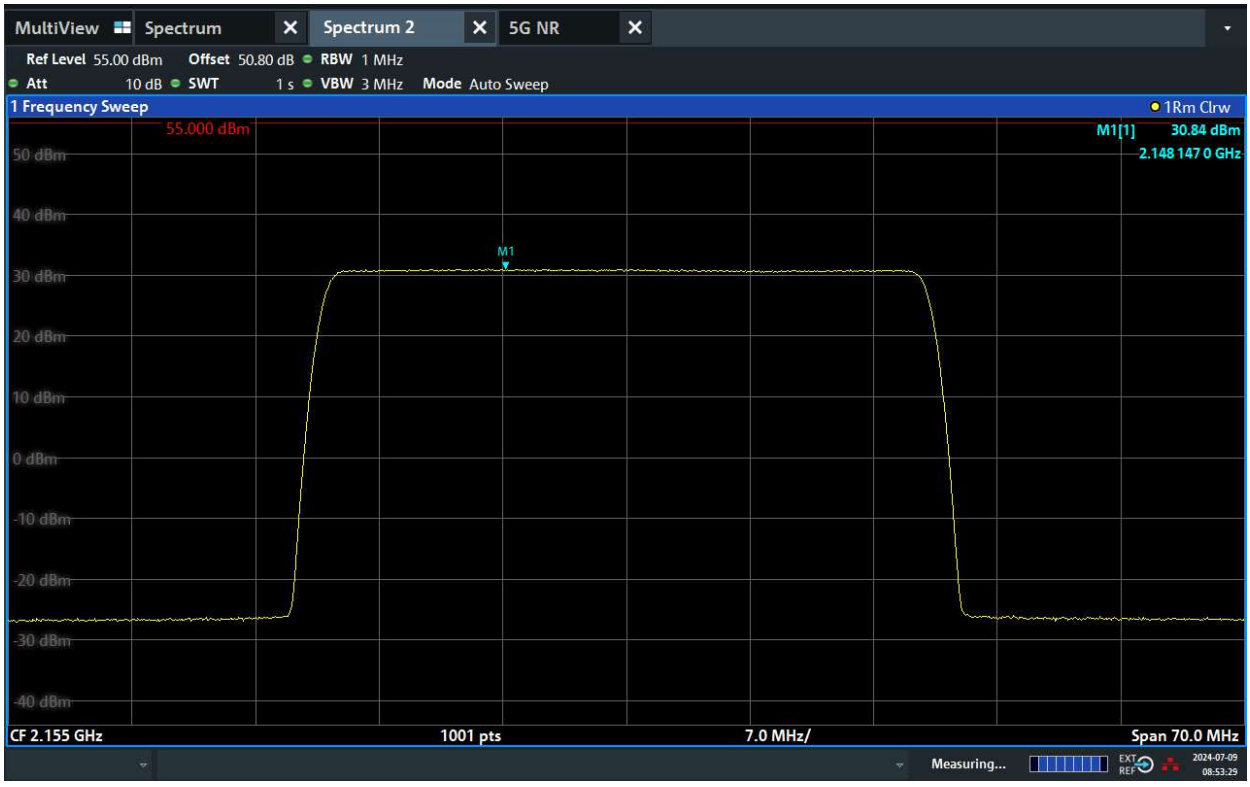


Channel position M



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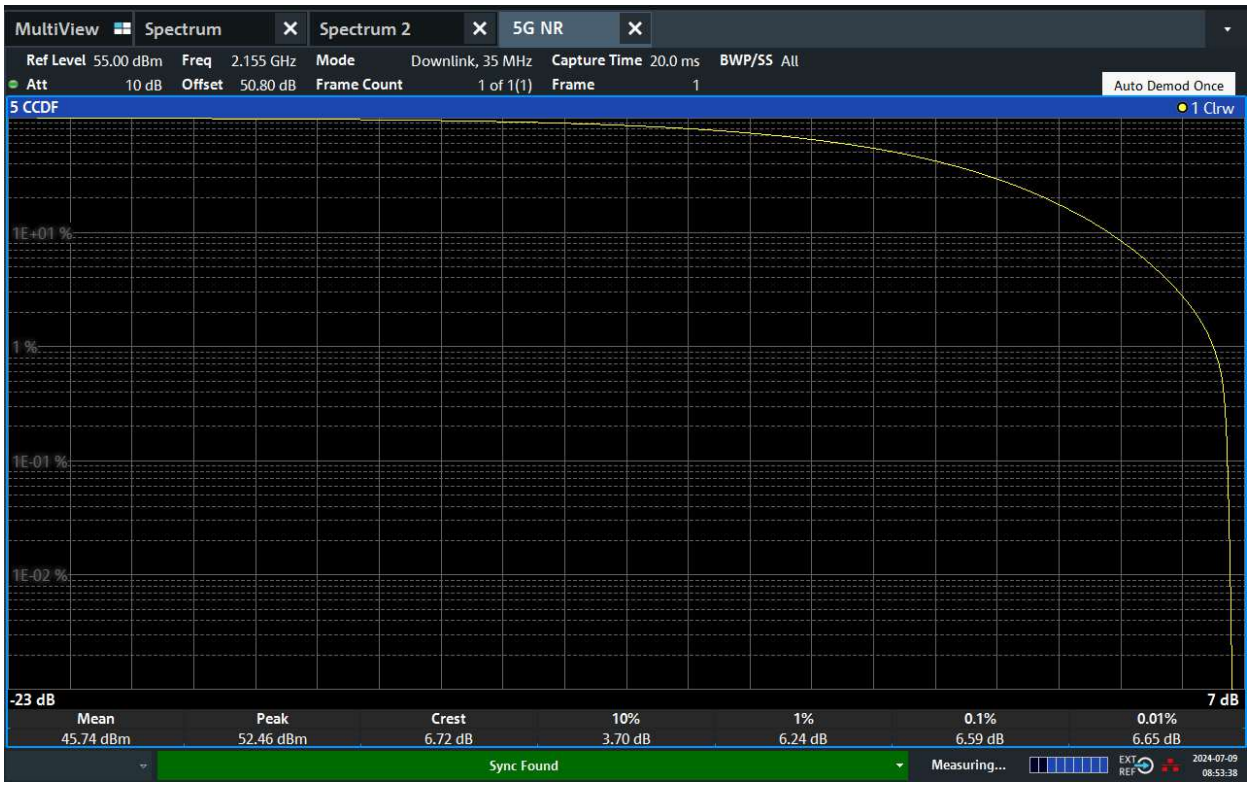
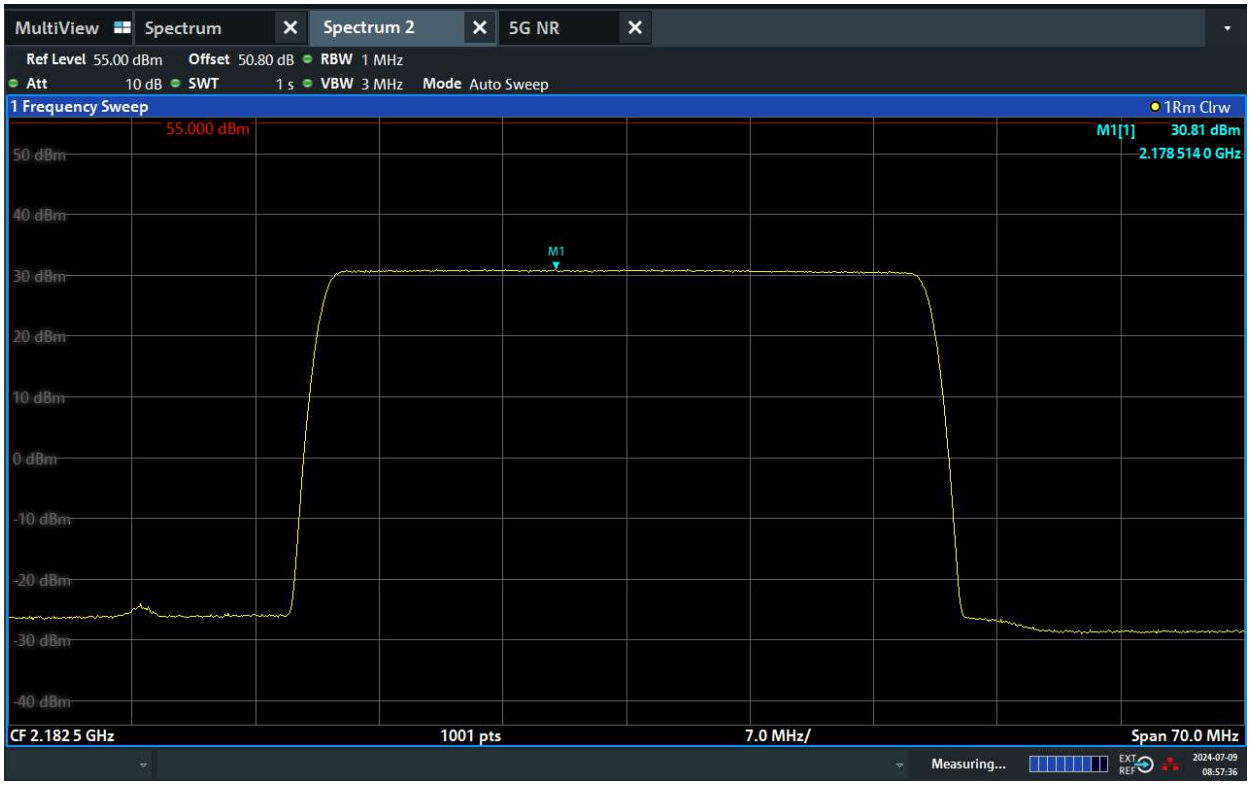


Channel position T



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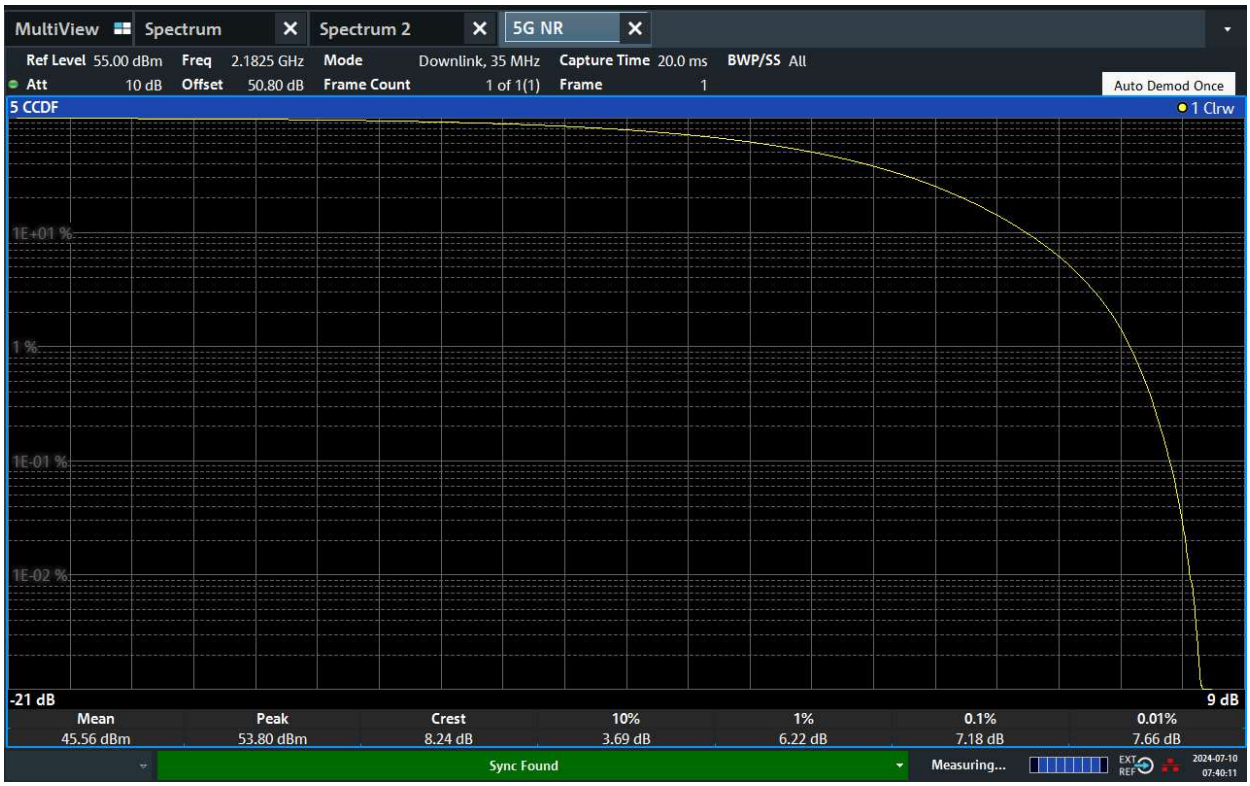
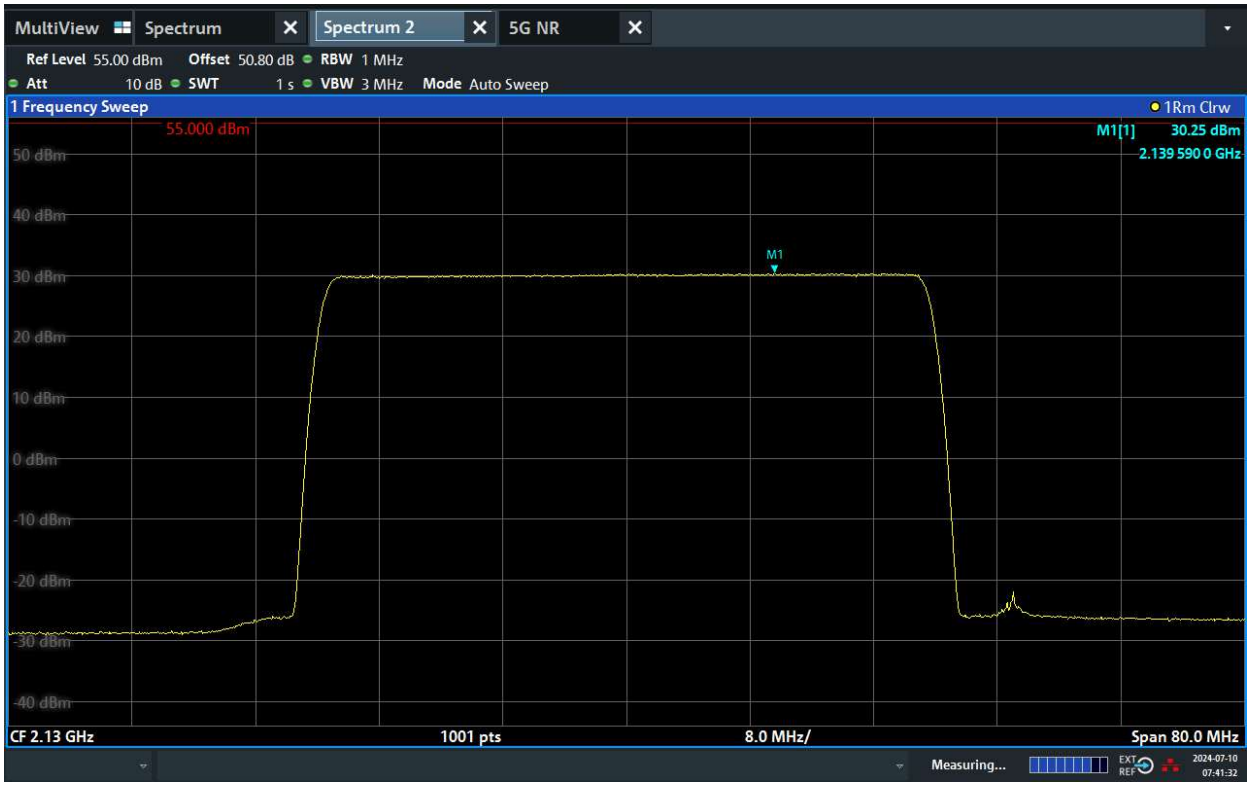
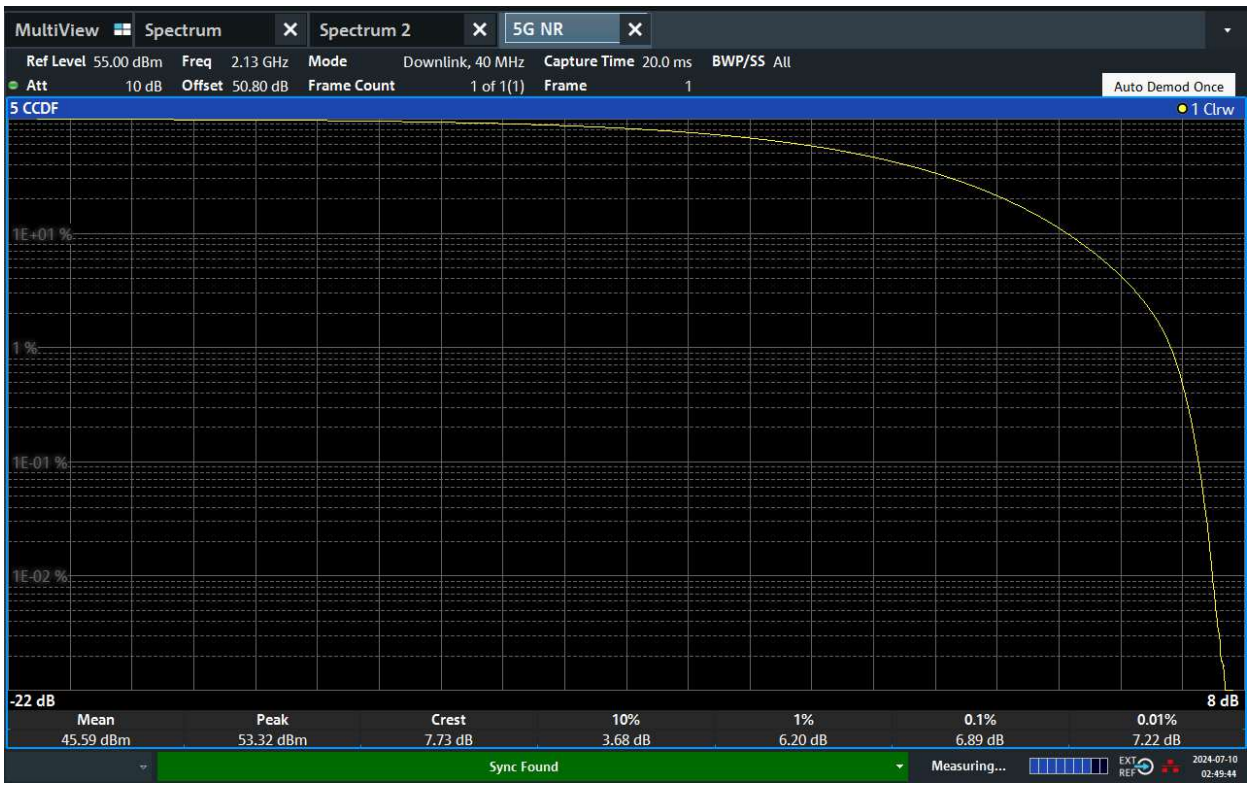


Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	40	45.65	30.19	6.88	45.80	30.35	6.61	45.72	30.17	7.22
B	256QAM	40	45.60	30.10	6.89	45.75	30.33	6.60	45.71	30.27	7.19
C	256QAM	40	45.54	30.05	6.84	45.74	30.28	6.61	45.66	29.99	7.22
D	256QAM	40	45.65	30.25	6.85	45.91	30.40	6.62	45.66	30.08	7.24
Total conducted power			51.63	36.17	-	51.82	36.36	-	51.71	36.15	-
Antenna gain (dBi) with path loss			17								
EIRP			68.63	53.17	-	68.82	53.36	-	68.71	53.15	-
EIRP limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00

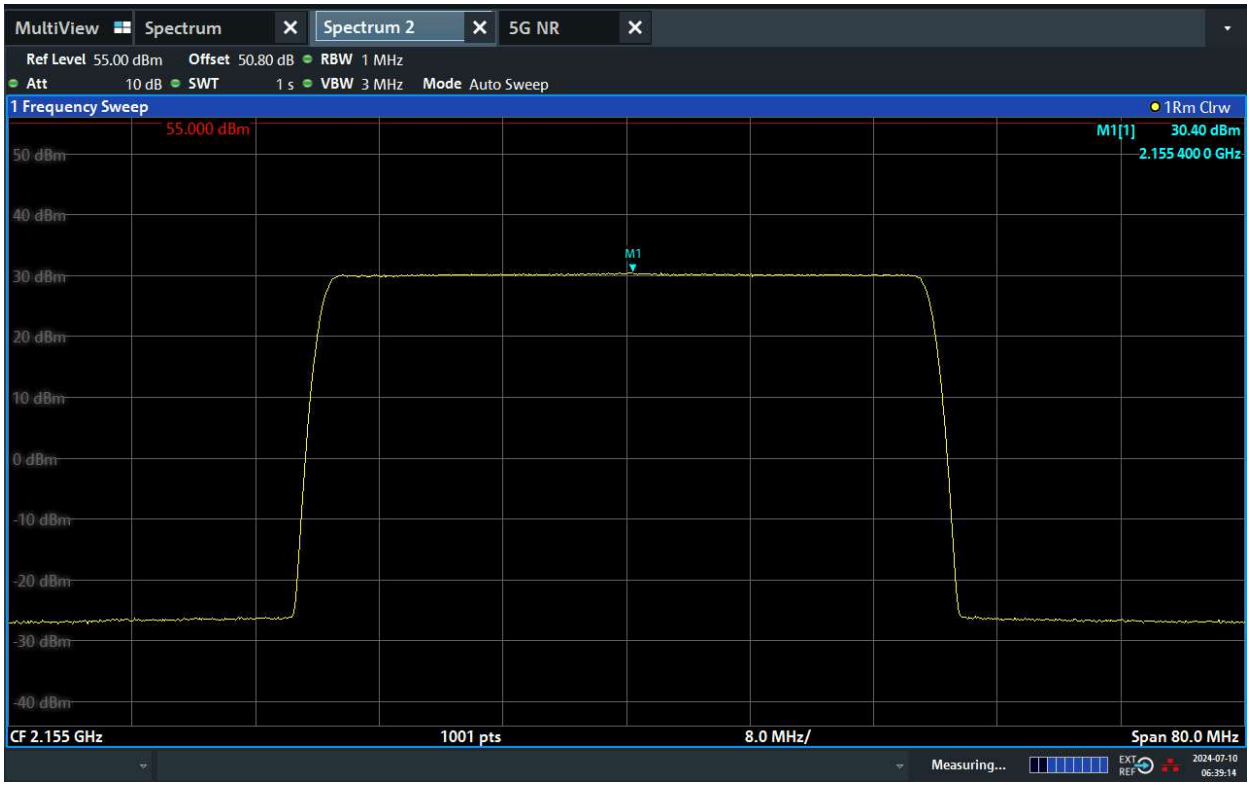
TEST REPORT

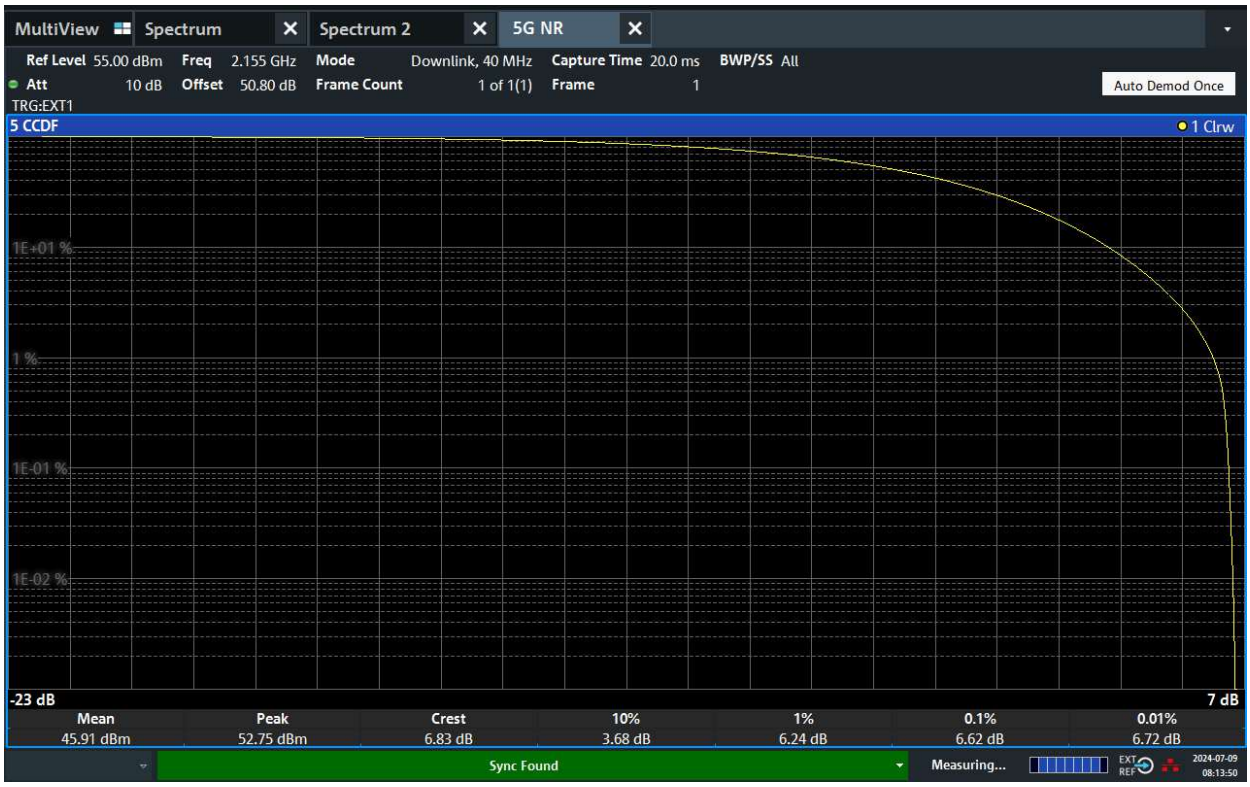
Channel position B





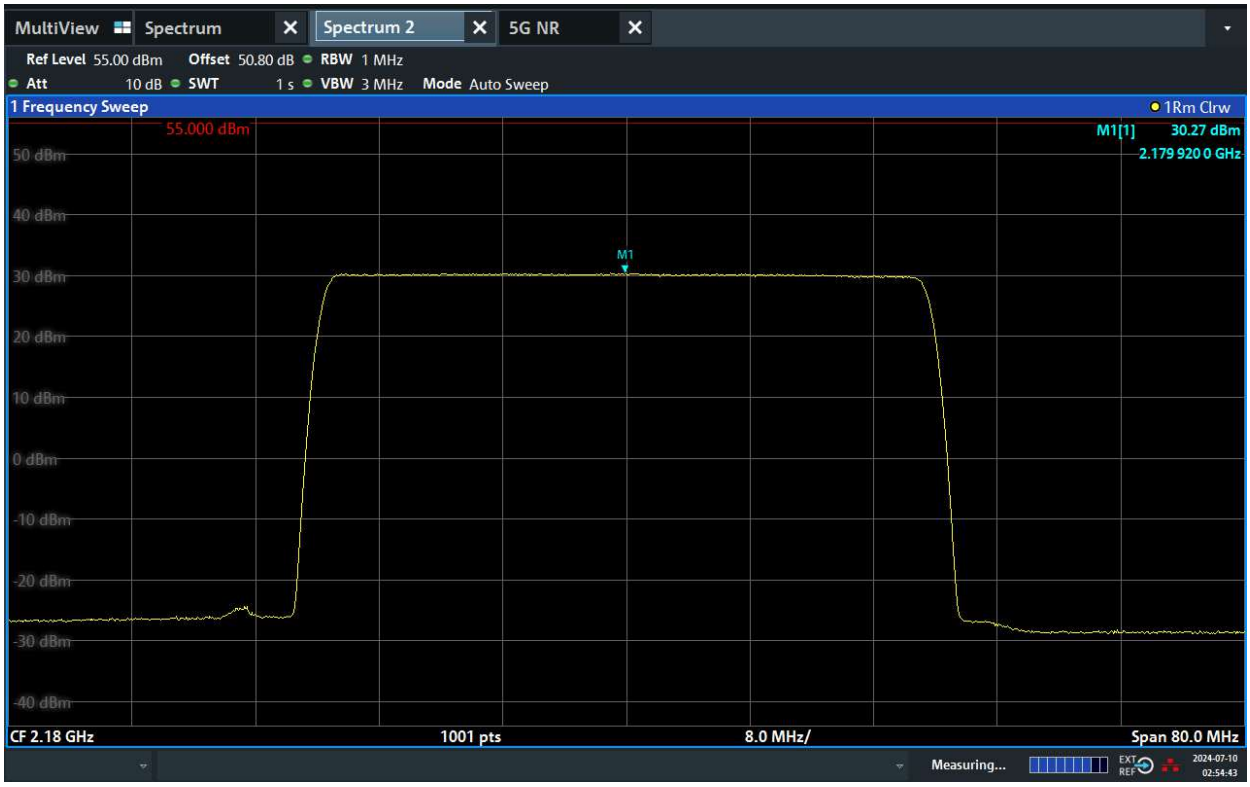
Channel position M

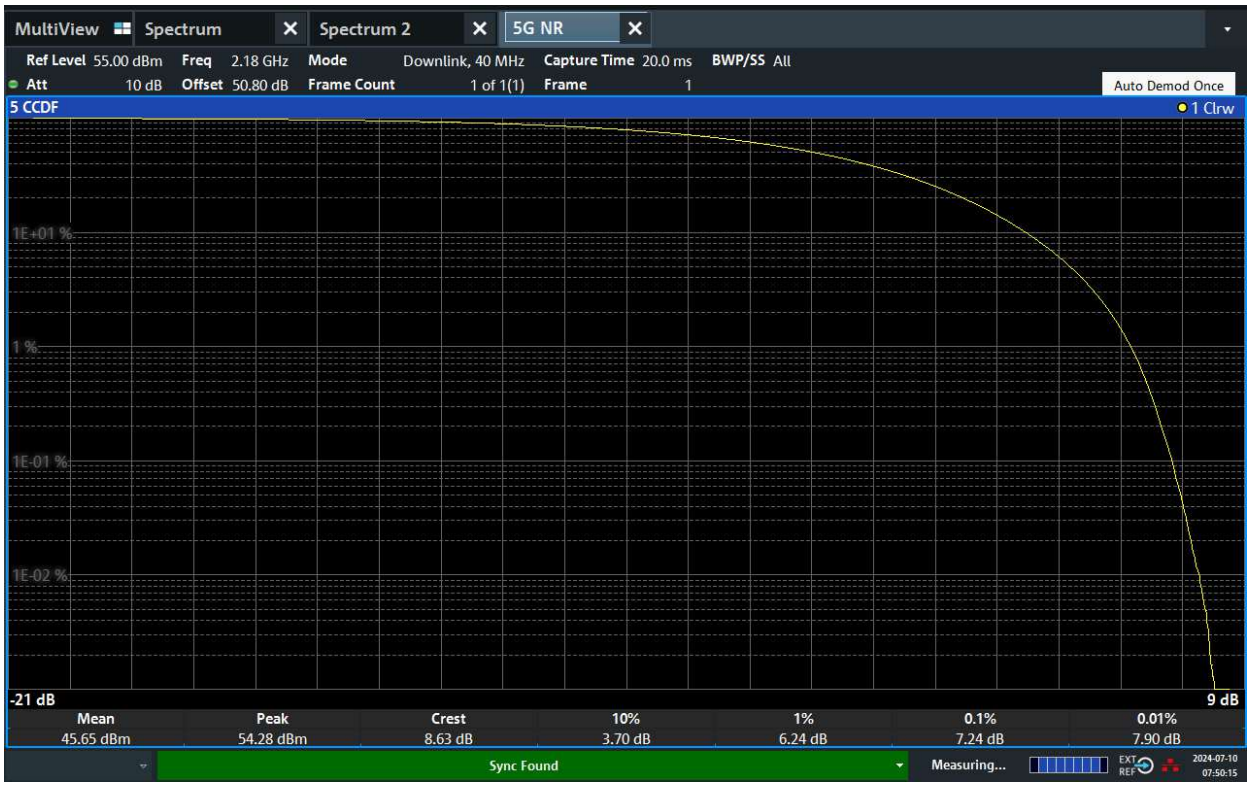




TEST REPORT

Channel position T



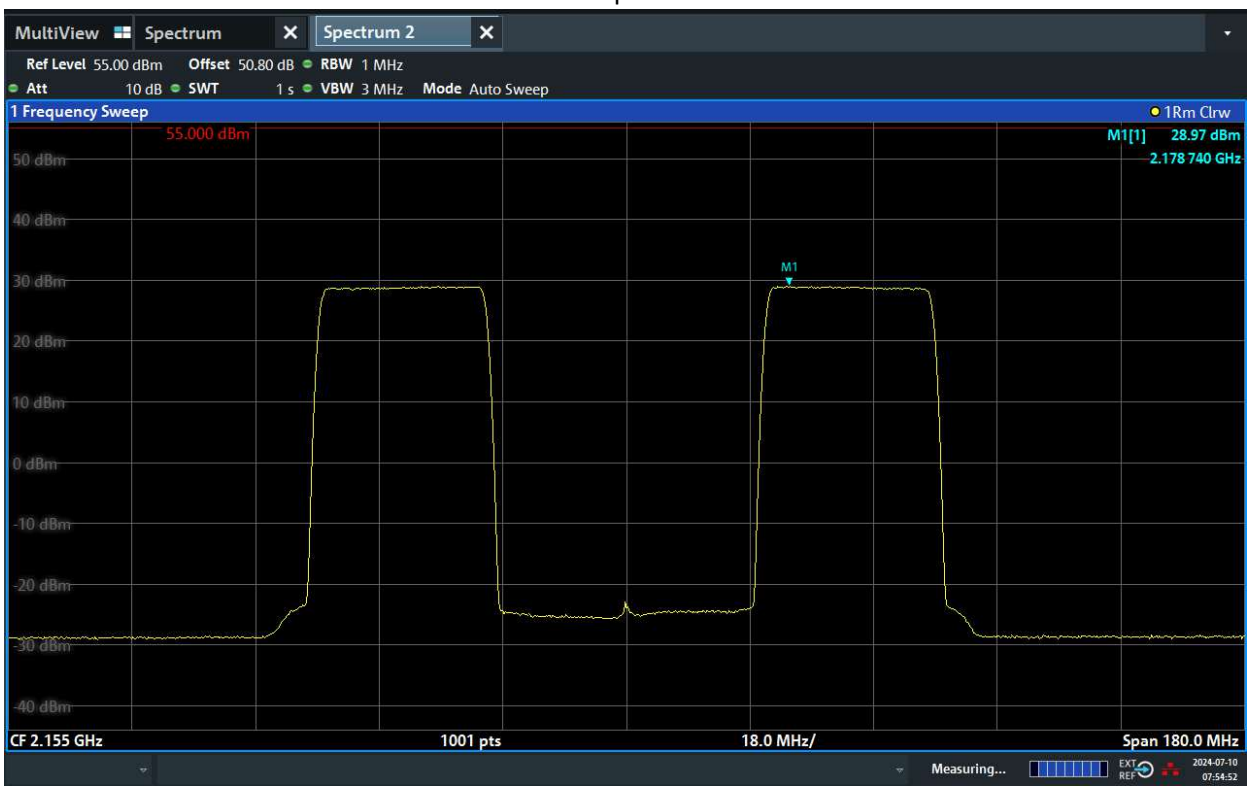


TEST REPORT

NR-2C-B66

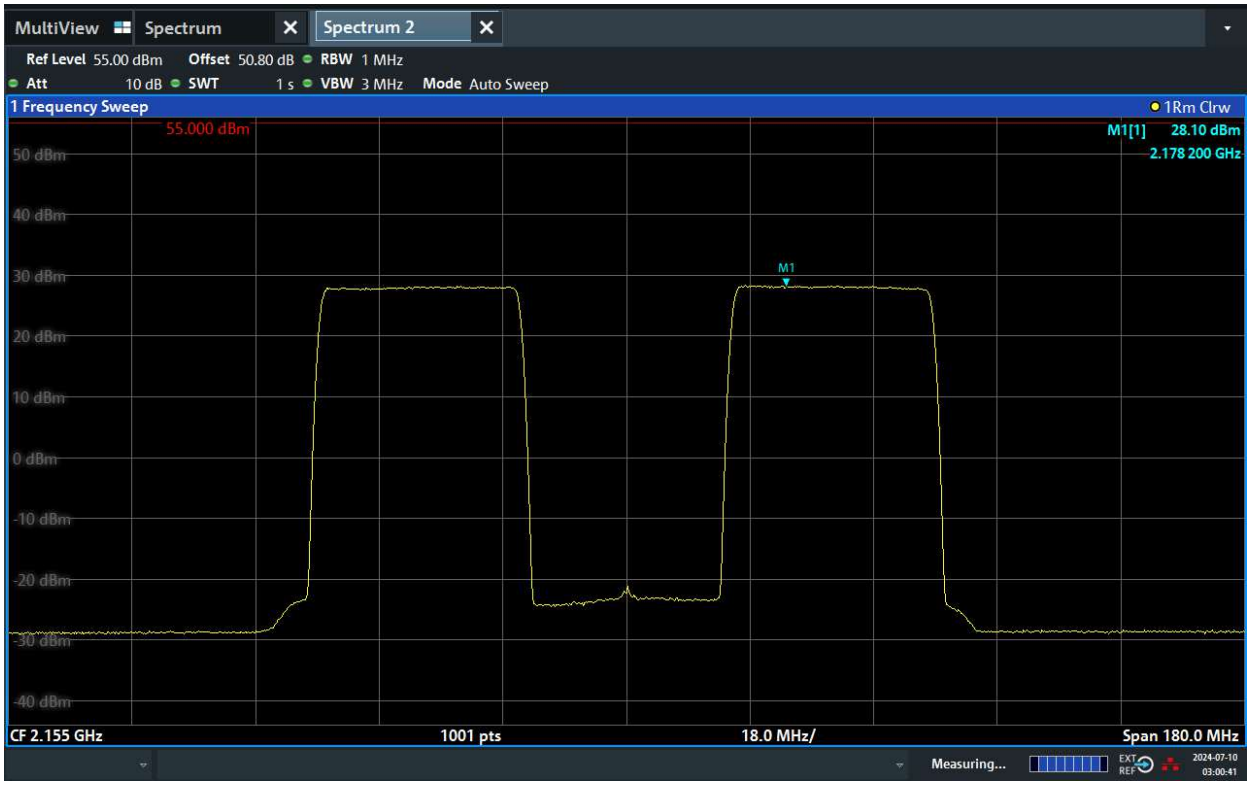
Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	25	-	-	-	45.34	28.89	-	-	-	-
B	256QAM	25	-	-	-	45.24	28.78	-	-	-	-
C	256QAM	25	-	-	-	45.29	28.96	-	-	-	-
D	256QAM	25	-	-	-	45.28	28.97	-	-	-	-
Total conducted power			-	-	-	51.31	34.92	-	-	-	-
Antenna gain (dBi) with path loss			17								
EIRP			-	-	-	68.31	51.92	-	-	-	-
EIRP limit			-	-	-	-	62.15	-	-	-	-

Channel position M



Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	30	-	-	-	45.37	28.06	-	-	-	-
B	256QAM	30	-	-	-	45.28	28.10	-	-	-	-
C	256QAM	30	-	-	-	45.25	28.01	-	-	-	-
D	256QAM	30	-	-	-	45.20	28.05	-	-	-	-
Total conducted power			-	-	-	51.30	34.08	-	-	-	-
Antenna gain (dBi) with path loss			17								
EIRP			-	-	-	68.30	51.08	-	-	-	-
EIRP limit			-	-	-	-	62.15	-	-	-	-

Channel position M



TEST REPORT

Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	35	-	-	-	45.37	27.55	-	-	-	-
B	256QAM	35	-	-	-	45.30	27.40	-	-	-	-
C	256QAM	35	-	-	-	45.34	27.41	-	-	-	-
D	256QAM	35	-	-	-	45.28	27.47	-	-	-	-
Total conducted power			-	-	-	51.34	33.48	-	-	-	-
Antenna gain (dBi) with path loss			17								
EIRP			-	-	-	68.34	50.48	-	-	-	-
EIRP limit			-	-	-	-	62.15	-	-	-	-

Channel position M

TEST REPORT

Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	40	-	-	-	45.33	26.81	-	-	-	-
B	256QAM	40	-	-	-	45.35	26.88	-	-	-	-
C	256QAM	40	-	-	-	45.26	26.94	-	-	-	-
D	256QAM	40	-	-	-	45.35	26.95	-	-	-	-
Total conducted power			-	-	-	51.34	32.92	-	-	-	-
Antenna gain (dBi) with path loss			17								
EIRP			-	-	-	68.34	49.92	-	-	-	-
EIRP limit			-	-	-	-	62.15	-	-	-	-

Channel position M

TEST REPORT

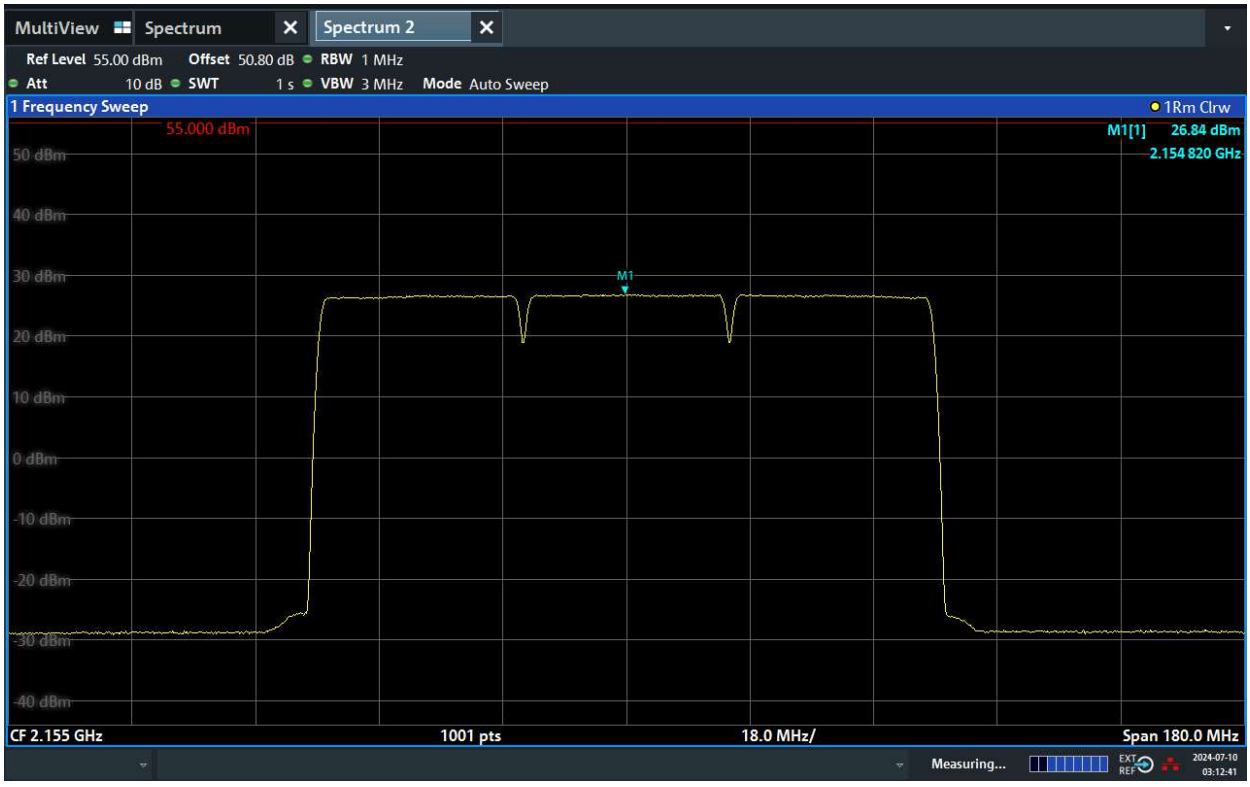
NR-3C-B66

Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	25	-	-	-	45.63	27.44	-	-	-	-
B	256QAM	25	-	-	-	45.67	27.43	-	-	-	-
C	256QAM	25	-	-	-	45.59	27.40	-	-	-	-
D	256QAM	25	-	-	-	45.61	27.39	-	-	-	-
Total conducted power			-	-	-	51.65	33.44	-	-	-	-
Antenna gain (dBi) with path loss			17								
EIRP			-	-	-	68.65	50.44	-	-	-	-
EIRP limit			-	-	-	-	62.15	-	-	-	-

Channel position M

Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	30	-	-	-	45.64	26.61	-	-	-	-
B	256QAM	30	-	-	-	45.63	26.84	-	-	-	-
C	256QAM	30	-	-	-	45.61	26.69	-	-	-	-
D	256QAM	30	-	-	-	45.65	26.62	-	-	-	-
Total conducted power			-	-	-	51.65	32.71	-	-	-	-
Antenna gain (dBi) with path loss			17								
EIRP			-	-	-	68.65	49.71	-	-	-	-
EIRP limit			-	-	-	-	62.15	-	-	-	-

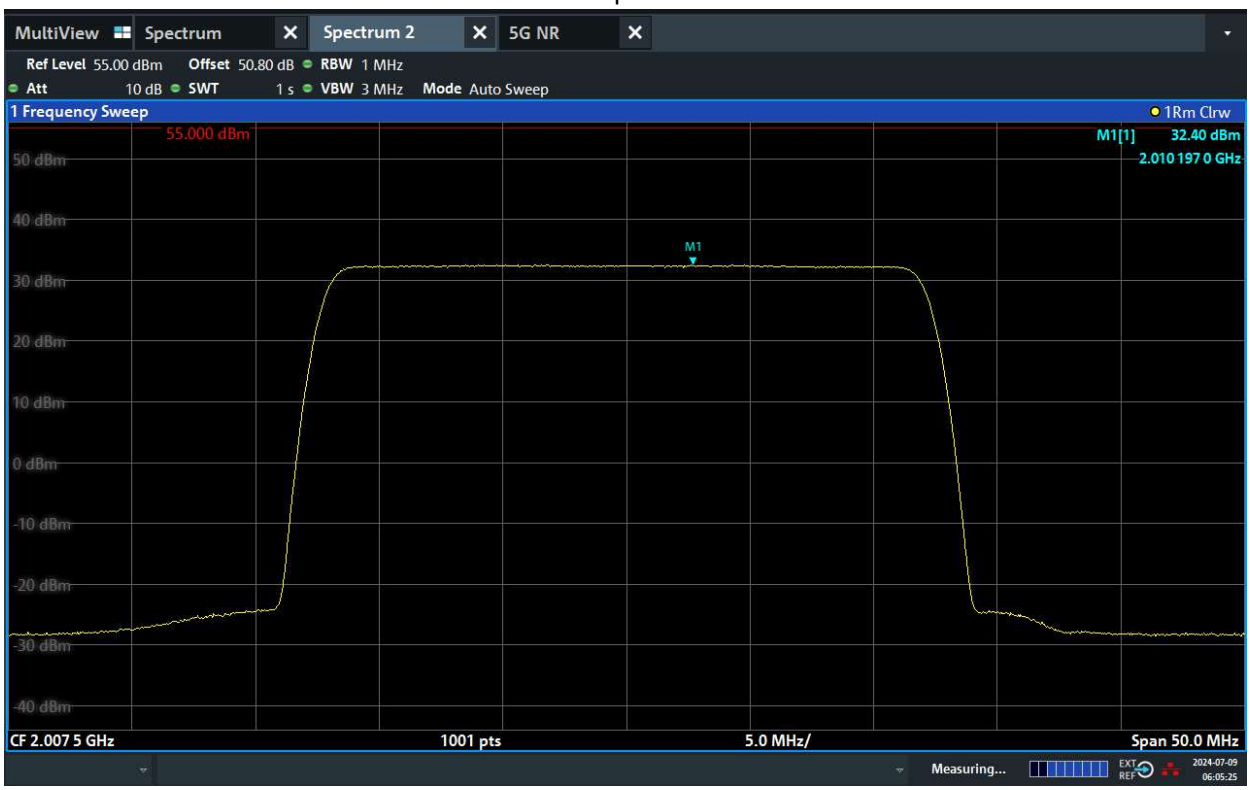
Channel position M



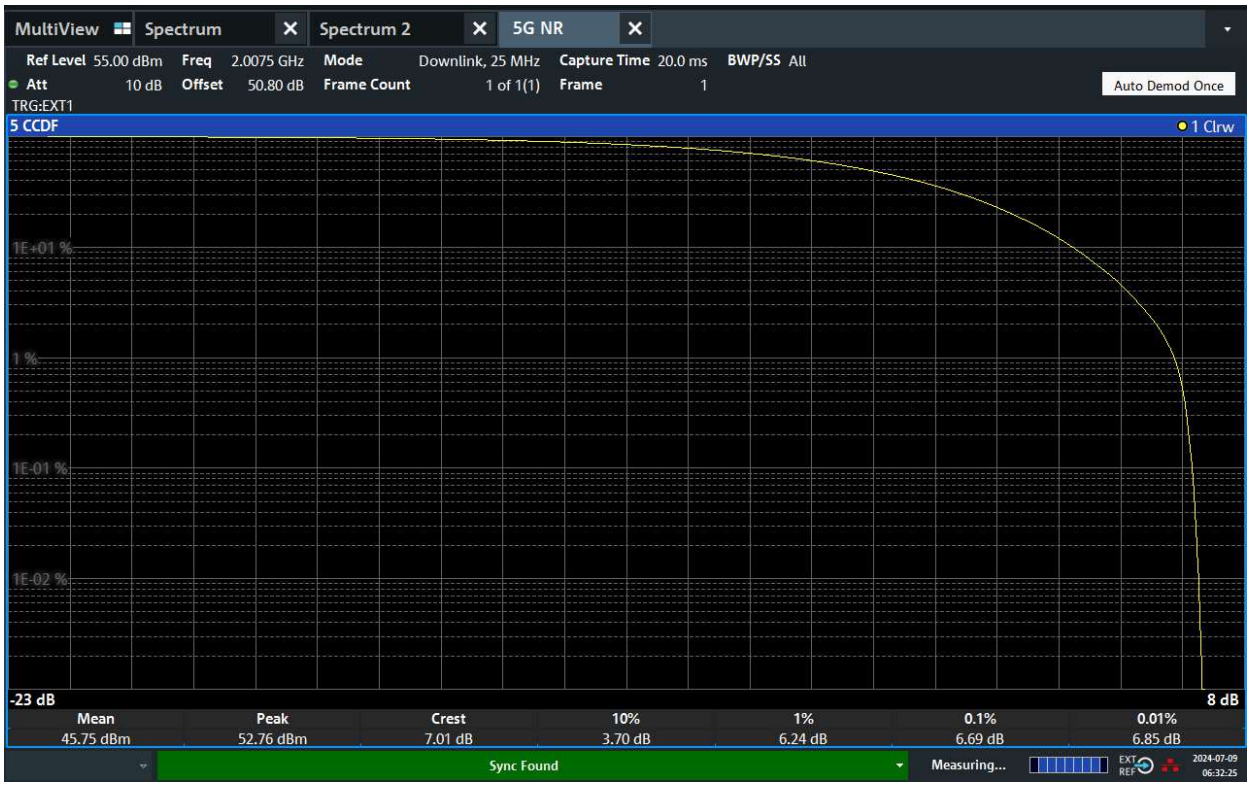
NR-1C-B70

Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	256QAM	25	-	-	-	45.72	32.22	6.67	-	-	-
B	256QAM	25	-	-	-	45.82	32.33	6.67	-	-	-
C	256QAM	25	-	-	-	45.86	32.40	6.65	-	-	-
D	256QAM	25	-	-	-	45.79	32.39	6.69	-	-	-
Total conducted power			-	-	-	51.82	38.36	-	-	-	-
Antenna gain (dBi) with path loss			17								
EIRP			-	-	-	68.82	55.36	-	-	-	-
EIRP limit			-	-	-	-	62.15	13	-	-	-

Channel position M



TEST REPORT


MultiView
Spectrum
Spectrum 2
5G NR
Ref Level 55.00 dBm
Freq 2.0075 GHz
Mode Downlink, 25 MHz
Capture Time 20.0 ms
BWP/SS All
Att 10 dB
Offset 50.80 dB
Frame Count 1 of 1(1)
Frame 1
TRG:EXT1
Auto Demod Once
5 CCDF
1 Clrw
1E+01 %
1 %
1E-01 %
1E-02 %
-23 dB
8 dB
Mean
Peak
Crest
10%
1%
0.1%
0.01%
45.75 dBm
52.76 dBm
7.01 dB
3.70 dB
6.24 dB
6.69 dB
6.85 dB
Sync Found
Measuring...
2024-07-09
06:32:25

4 Occupied Bandwidth

Test result: Pass

4.1 Measurement Procedure

The EUT was set to transmit at maximum power and testing was carried out on bottom, middle and top channels. Using the Occupied Bandwidth measurement function in the spectrum analyzer, the 26dB bandwidth was measured in accordance with FCC KDB 971168 D01 Clause 4.2.

The measurement method is from KDB 971168 4.2:
a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation product s including the emission skirts (i.e., two to five times the OBW).
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.
d) Set the detection mode to peak, and the trace mode to max hold.
e) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

4.2 Measurement result

NR-1C-B66

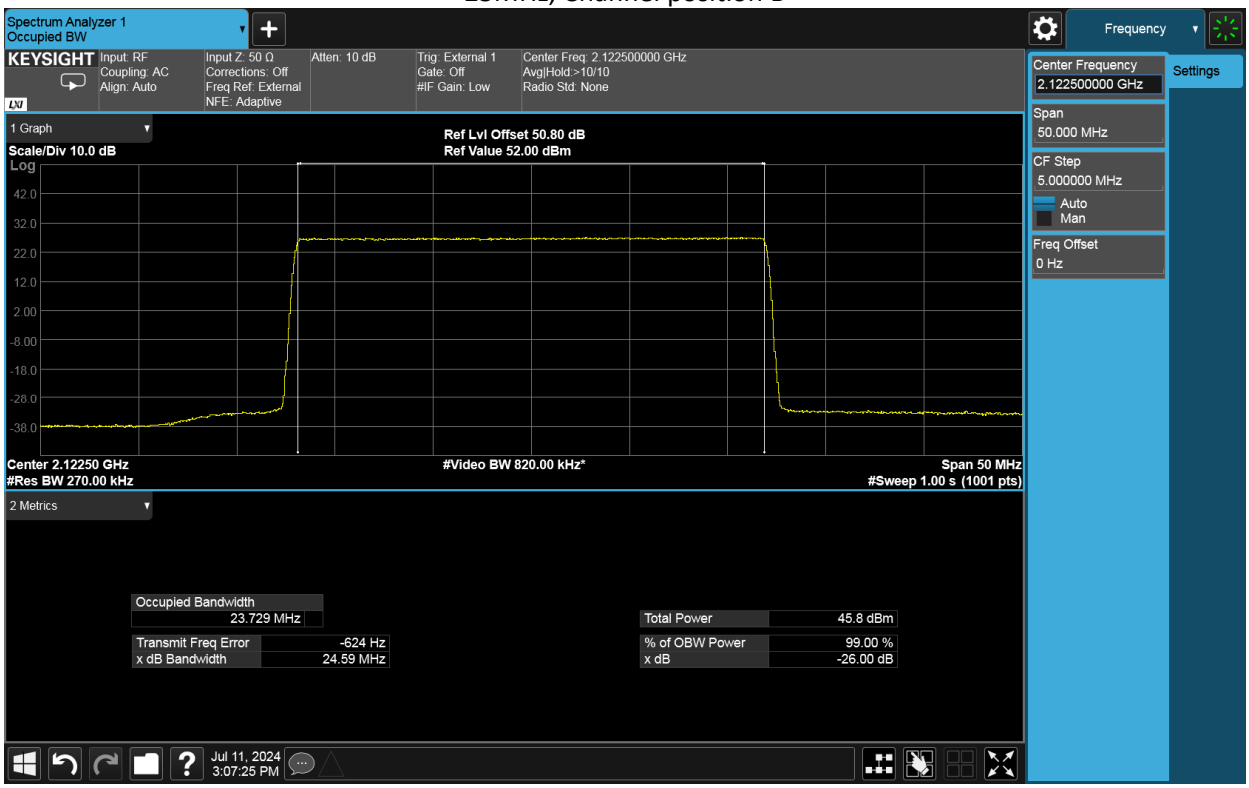
99% Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
D	256QAM	25MHz	23.729	23.729	23.722
D	256QAM	30MHz	28.546	28.544	28.535
D	256QAM	35MHz	33.527	33.526	33.515
D	256QAM	40MHz	38.529	38.528	38.517

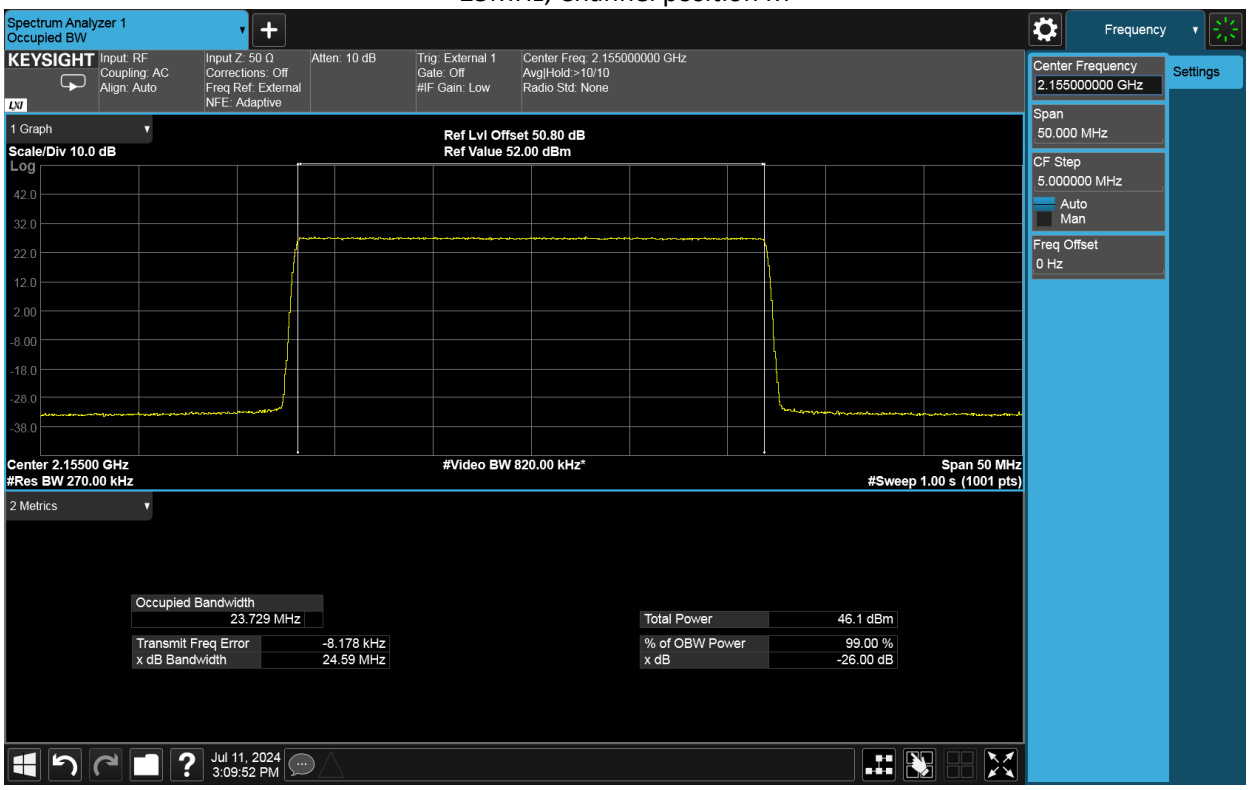
-26dBc Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
D	256QAM	25MHz	24.59	24.59	24.59
D	256QAM	30MHz	29.51	29.50	29.50
D	256QAM	35MHz	34.69	34.69	34.69
D	256QAM	40MHz	39.90	39.90	39.89

25MHz, Channel position B



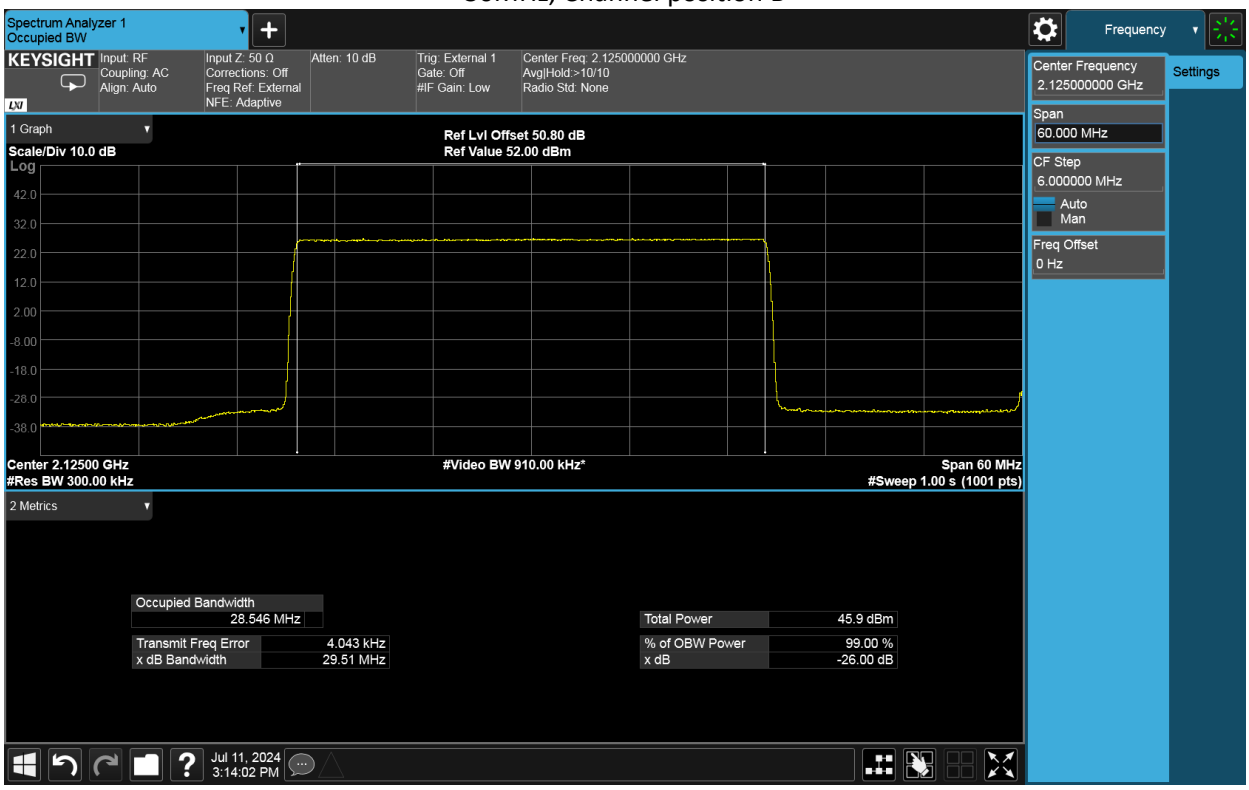
25MHz, Channel position M



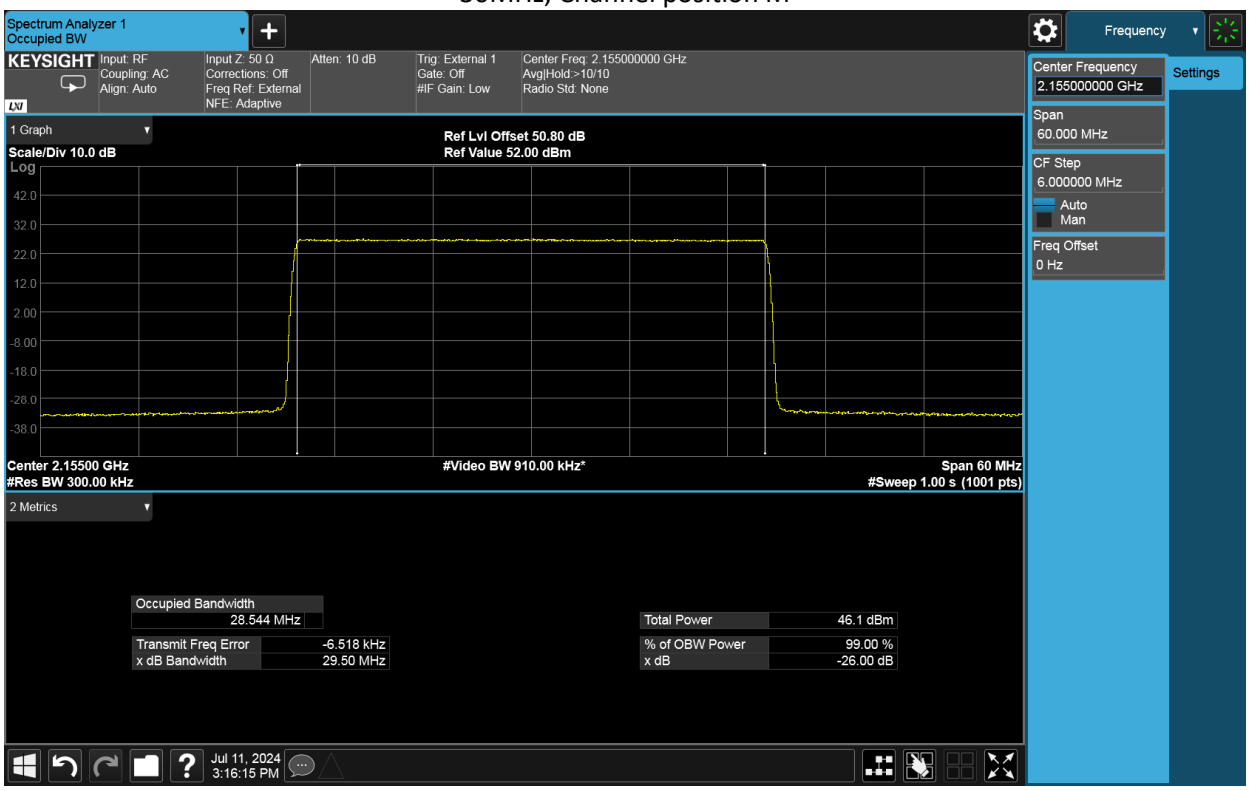
25MHz, Channel position T

TEST REPORT

30MHz, Channel position B

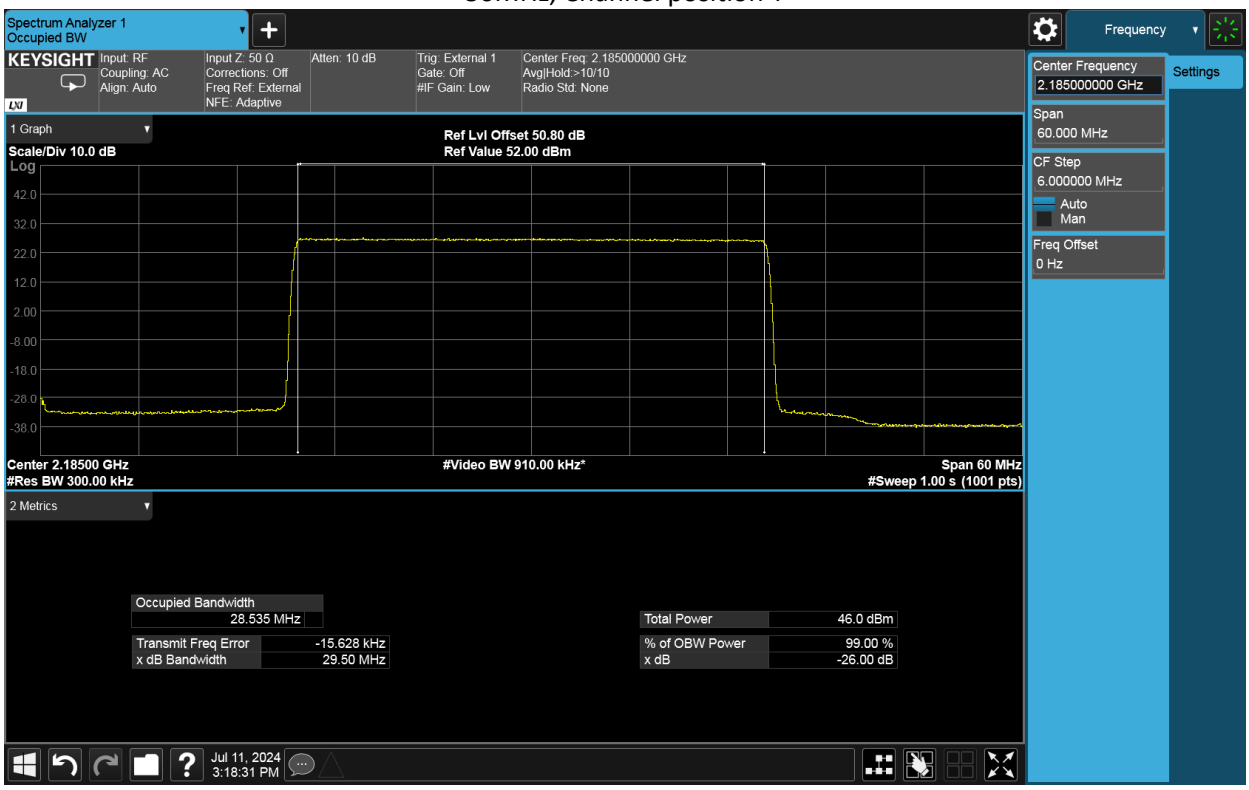


30MHz, Channel position M

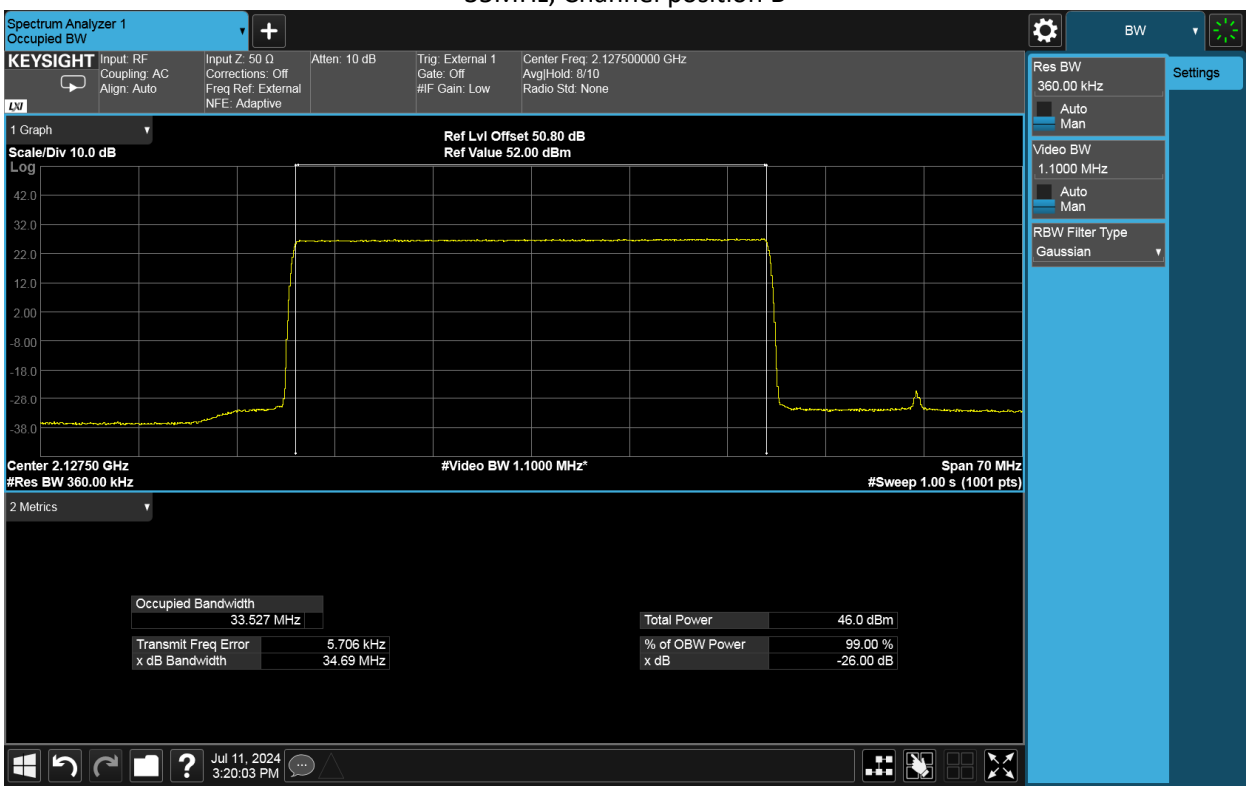


TEST REPORT

30MHz, Channel position T

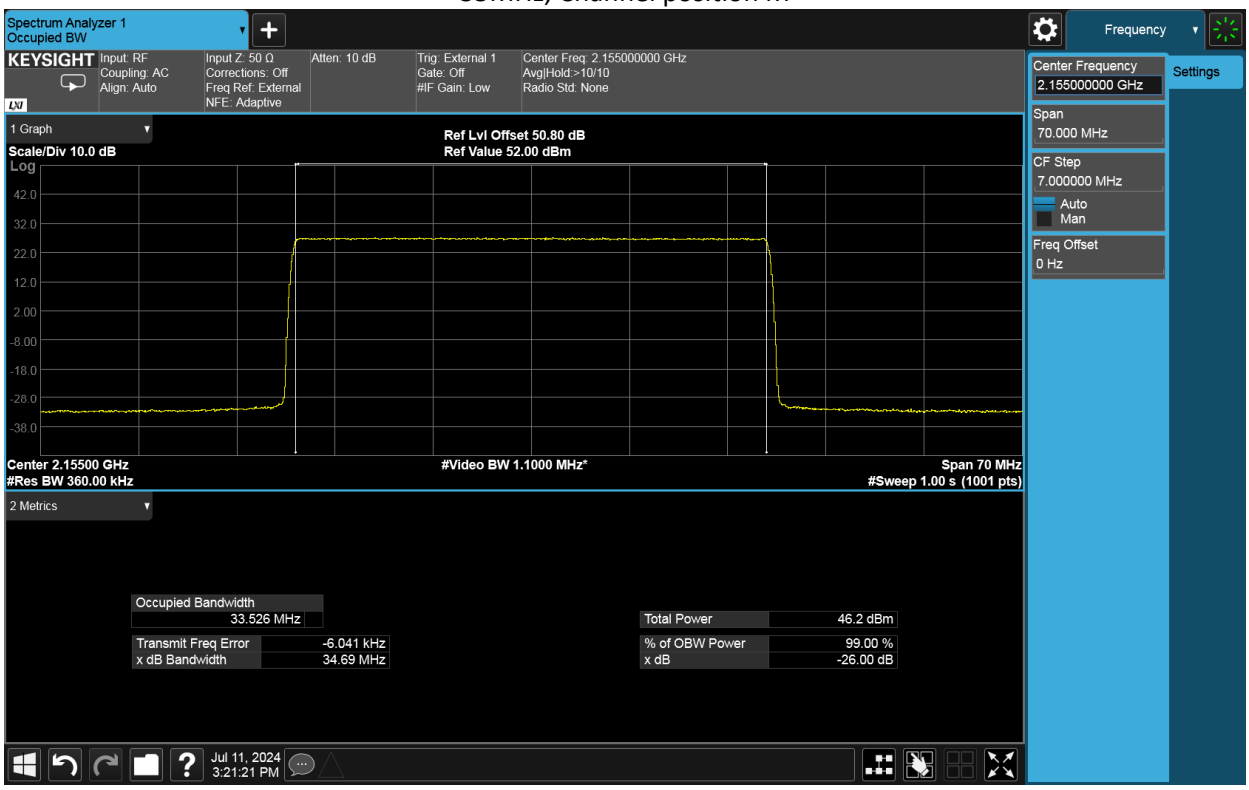


35MHz, Channel position B

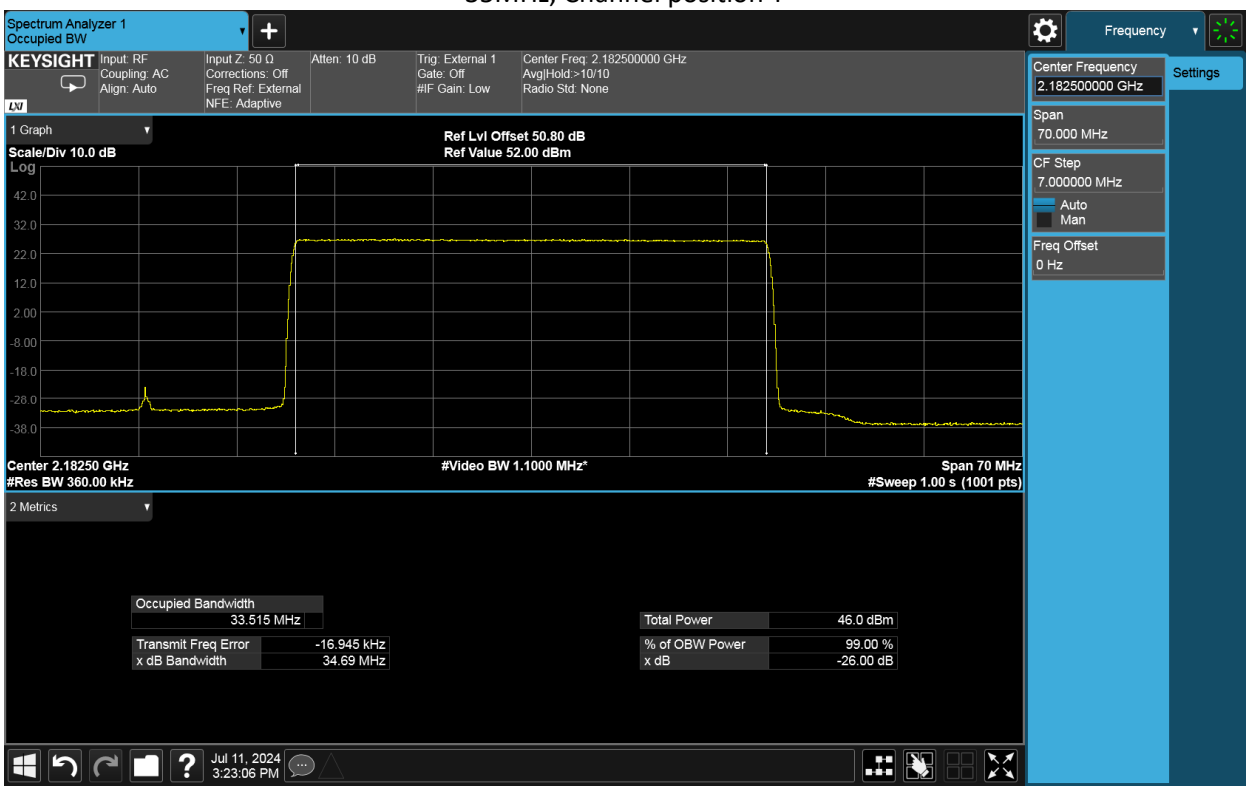


TEST REPORT

35MHz, Channel position M

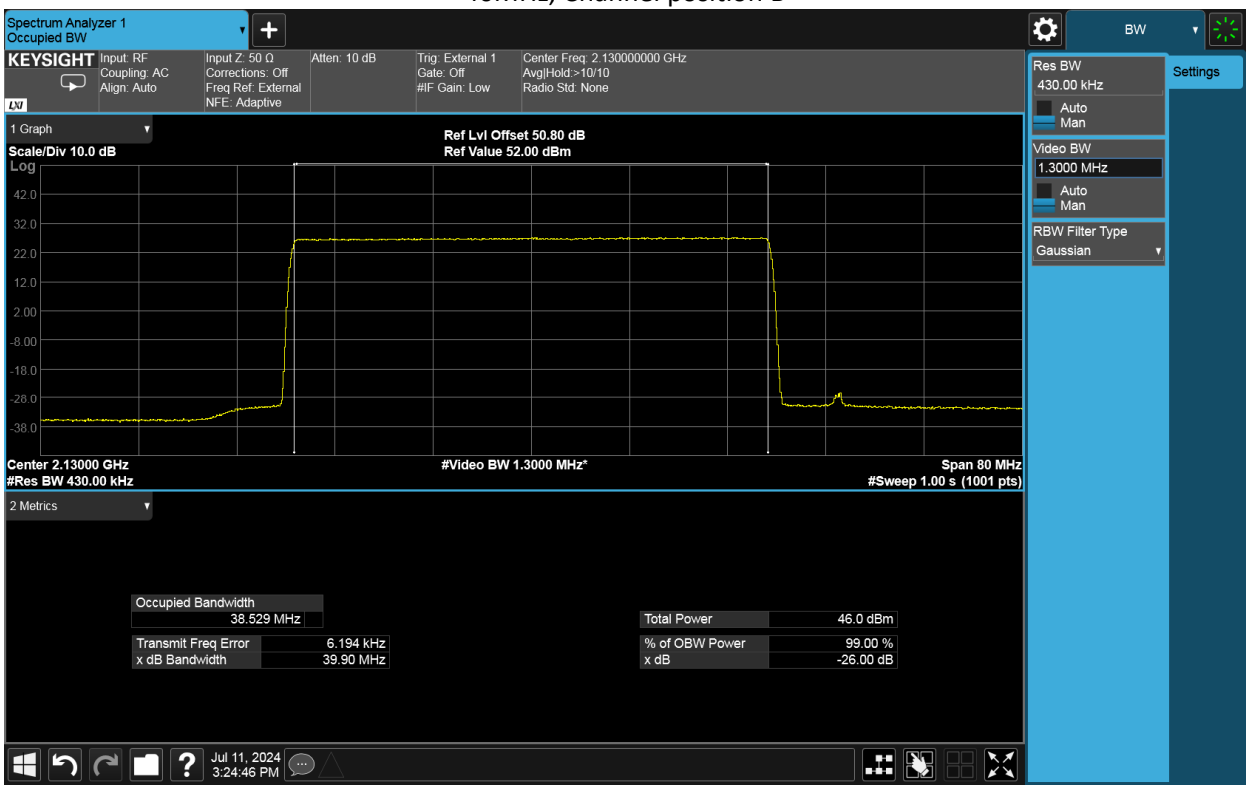


35MHz, Channel position T

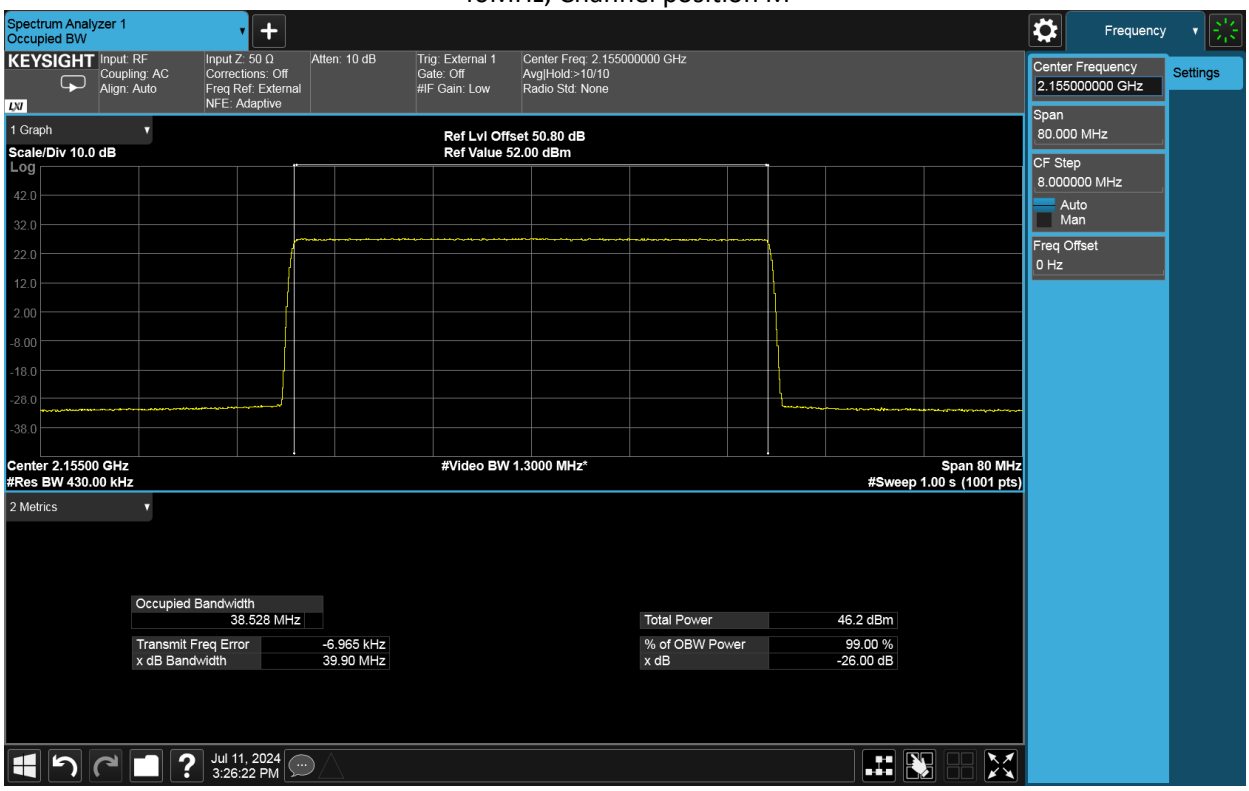


TEST REPORT

40MHz, Channel position B



40MHz, Channel position M



TEST REPORT

40MHz, Channel position T

NR-1C-B70

99% Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
C	256QAM	25MHz	-	23.720	-

-26dBc Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
C	256QAM	25MHz	-	24.59	-

TEST REPORT

25MHz, Channel position M

5 Unwanted Emissions at Band Edge

Test result: **Pass**

5.1 Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

5.2 Measurement Procedure

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.

For MIMO mode configurations, the limit was adjusted with a correction of -6.02dB [10Log(1/4)] by using the Measure and Add 10Log(N) dB technique according to KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports . Then the limit was adjusted to -19.02dBm.

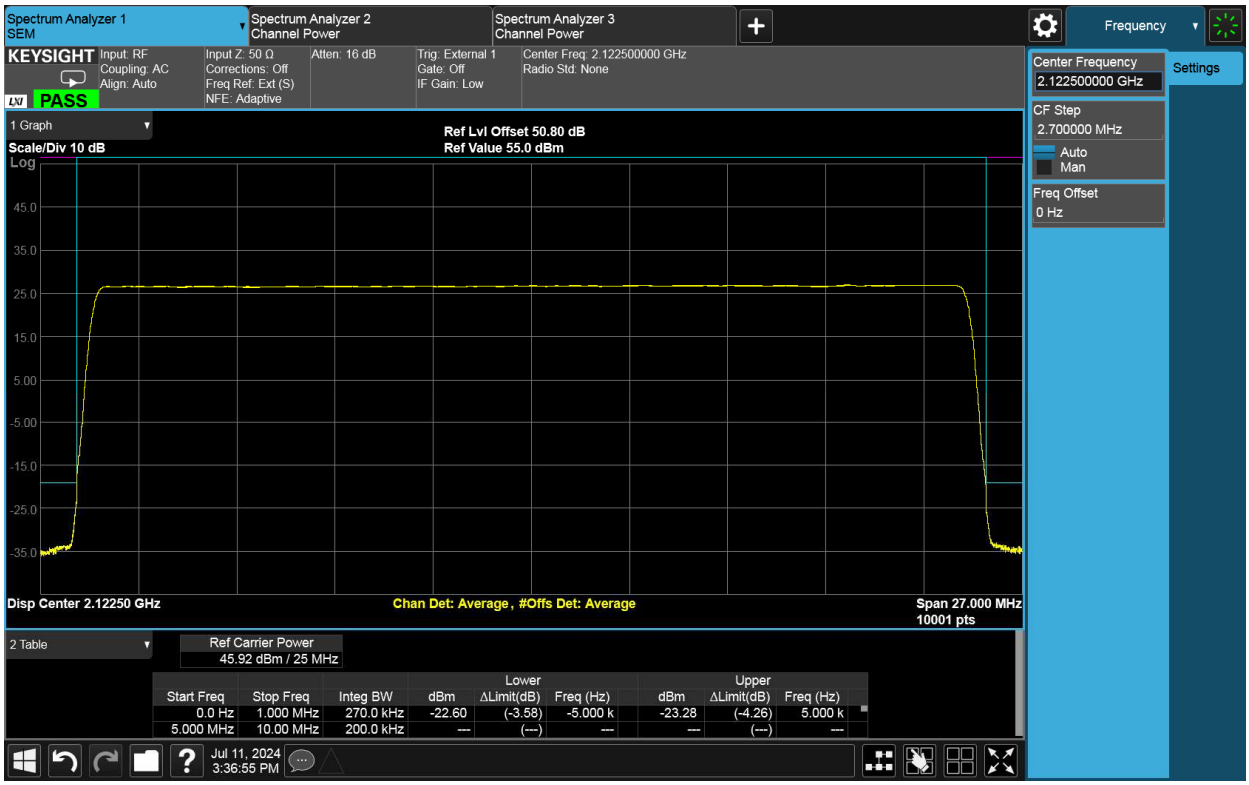
Spectrum analyzer detector was set as RMS.

5.3 Measurement result

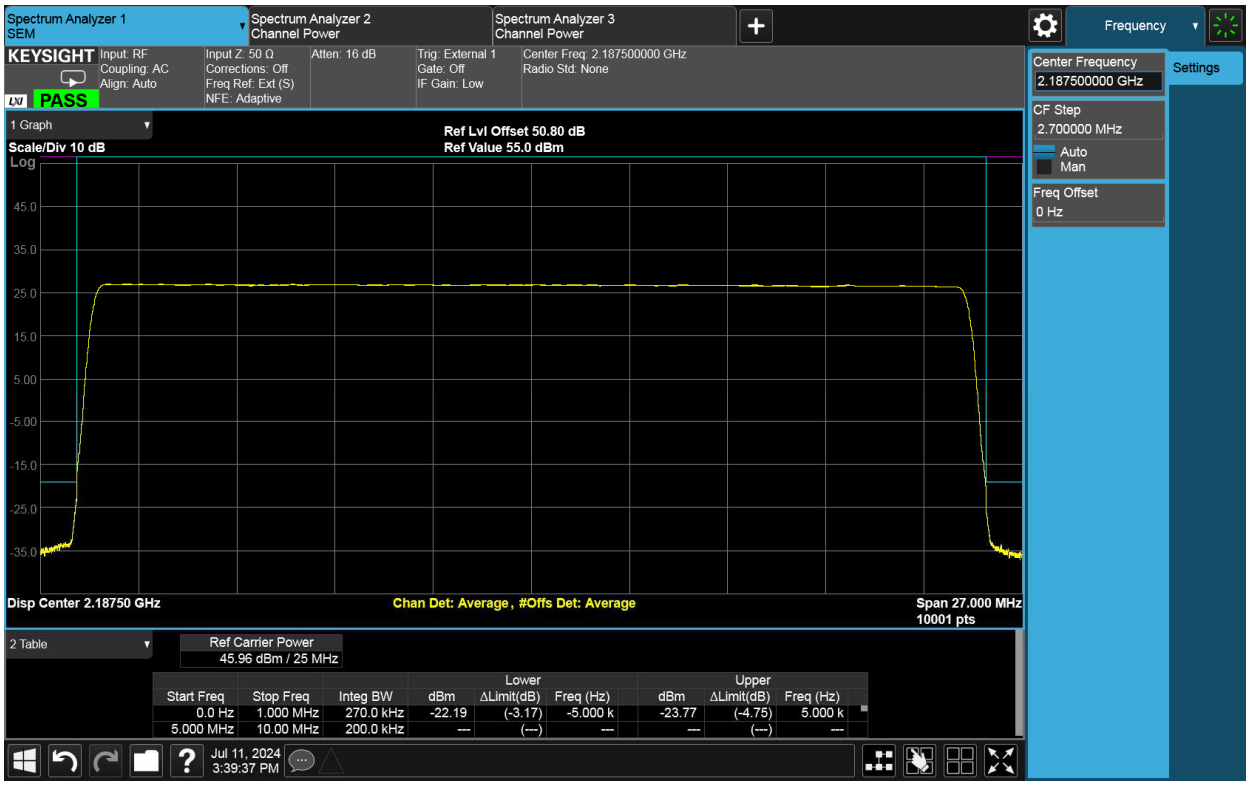
NR-1C-BE-B66

Antenna Port	Channel Position	Modulation	Carrier BW (MHz)	RBW (kHz)	Limit (dBm)
D	B	256QAM	25	270	-19.02
D	T	256QAM	25	270	-19.02

Channel Position B

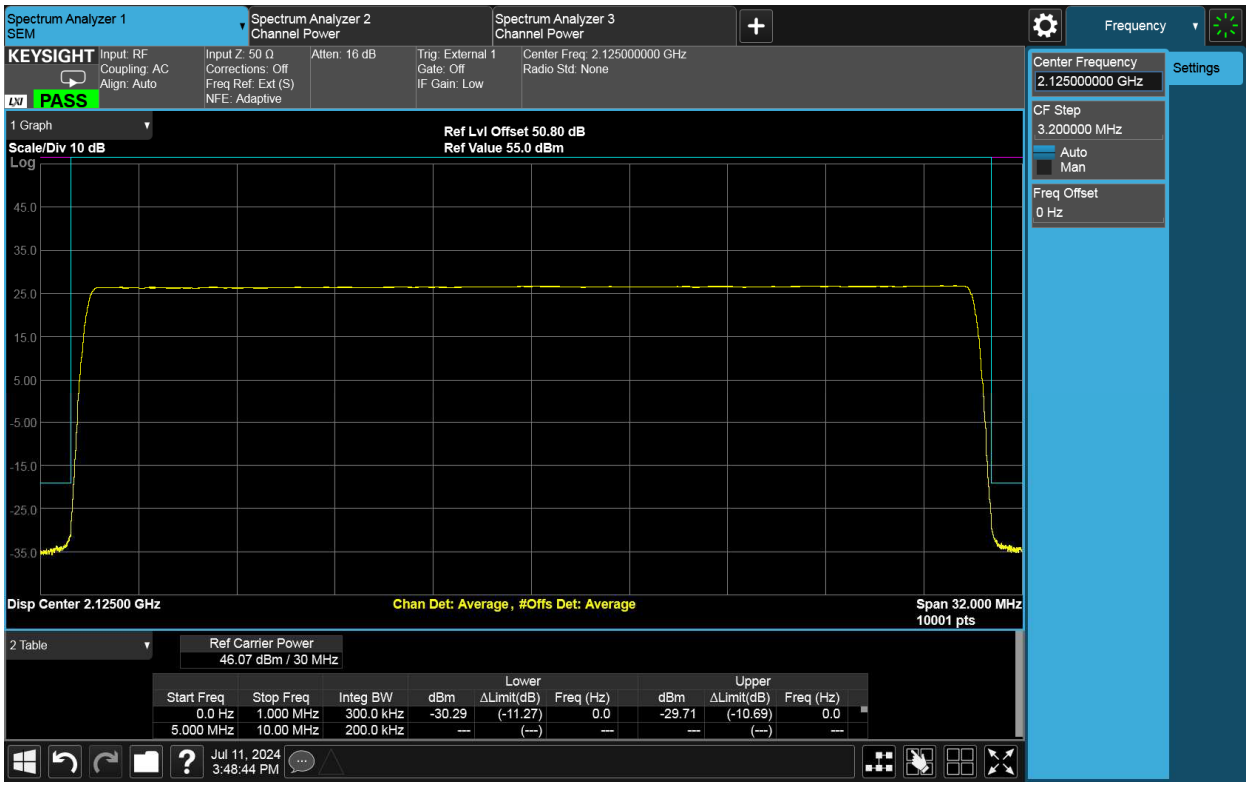


Channel Position T

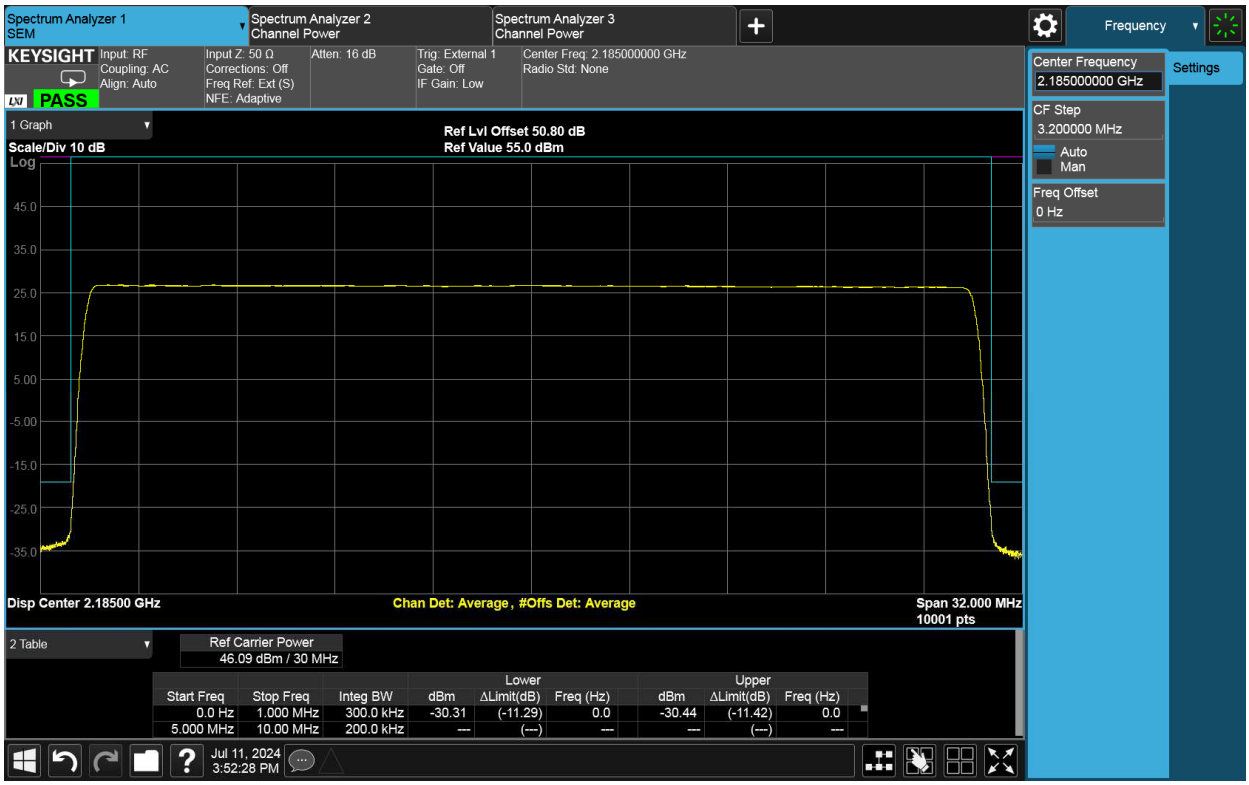


Antenna Port	Channel Position	Modulation	Carrier BW (MHz)	RBW (kHz)	Limit (dBm)
D	B	256QAM	30	300	-19.02
D	T	256QAM	30	300	-19.02

Channel Position B

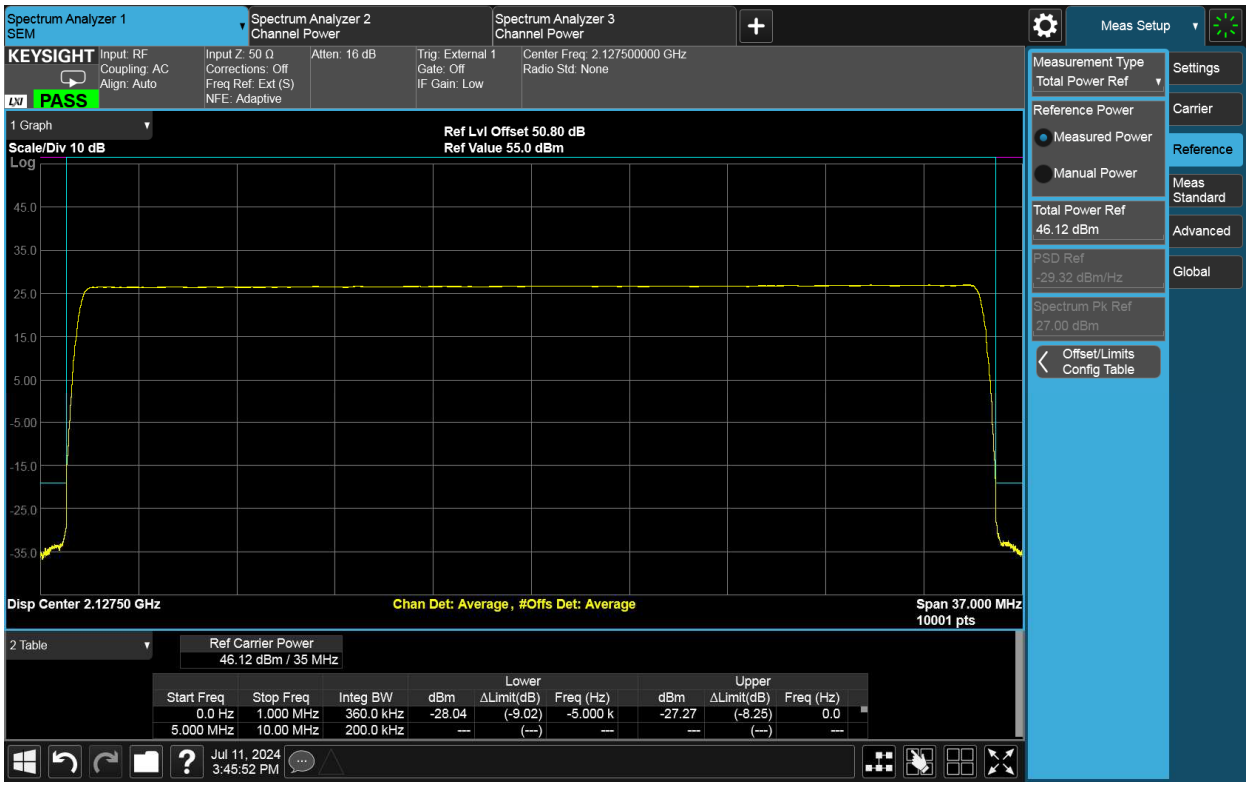


Channel Position T



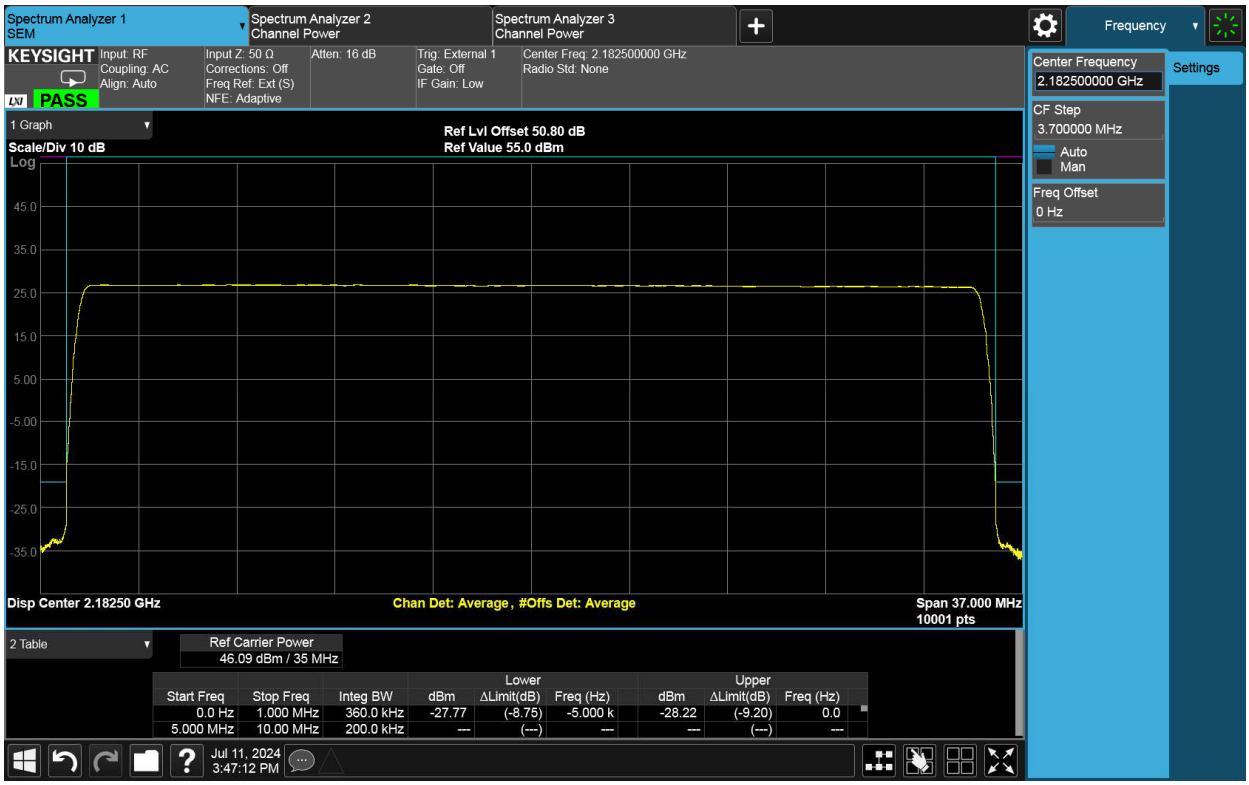
Antenna Port	Channel Position	Modulation	Carrier BW (MHz)	RBW (kHz)	Limit (dBm)
D	B	256QAM	35	360	-19.02
D	T	256QAM	35	360	-19.02

Channel Position B



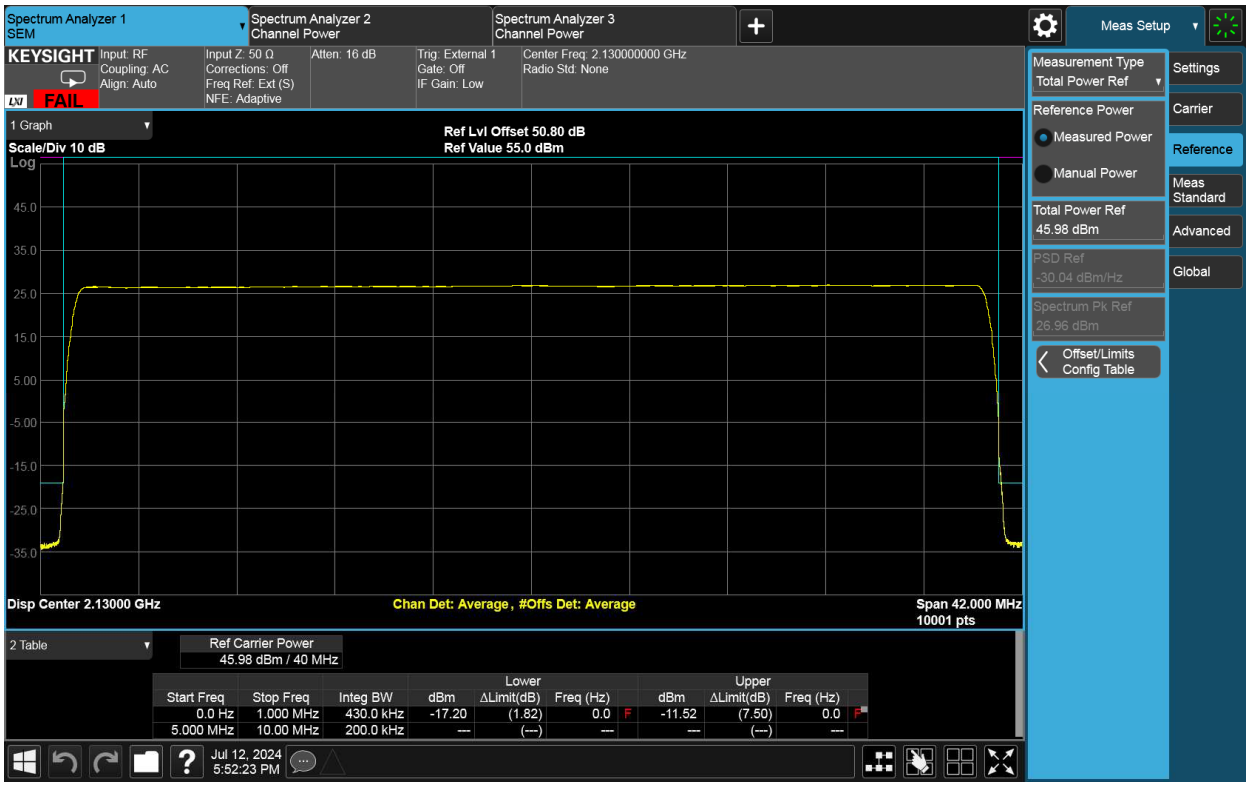
TEST REPORT

Channel Position T

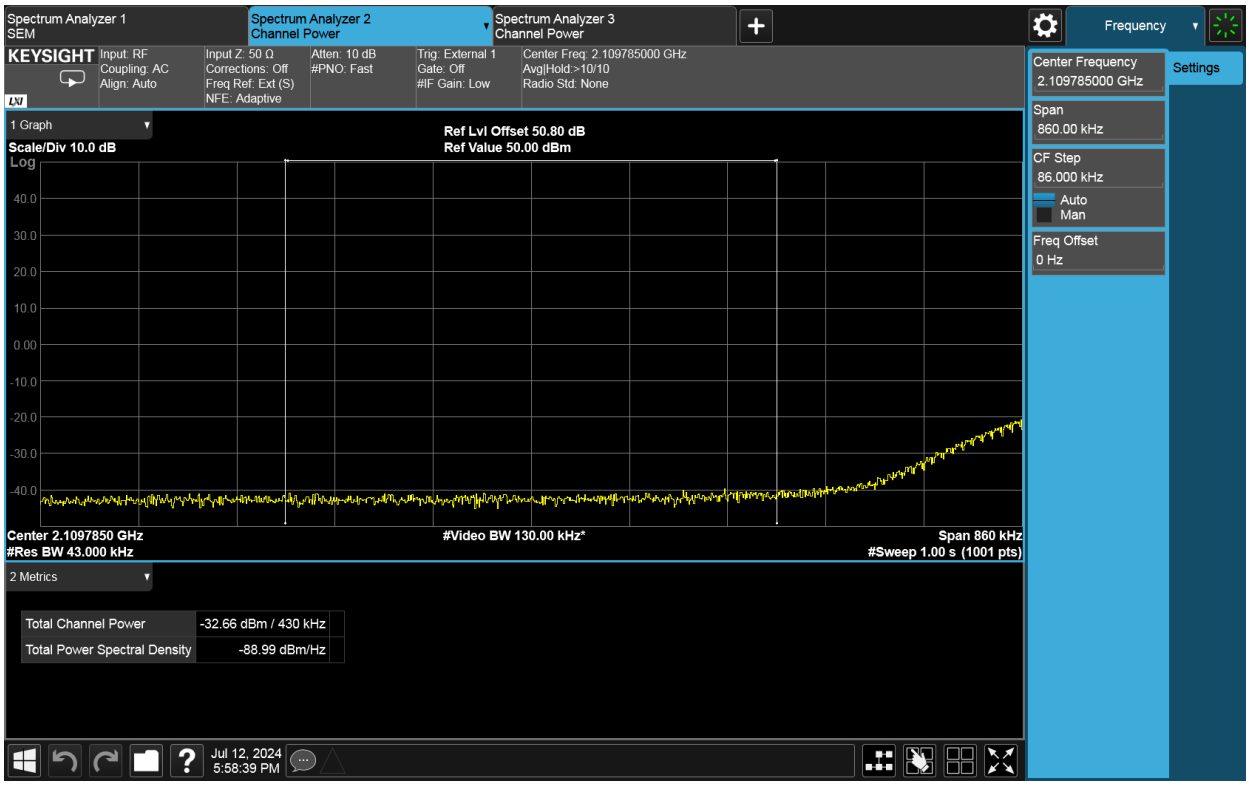


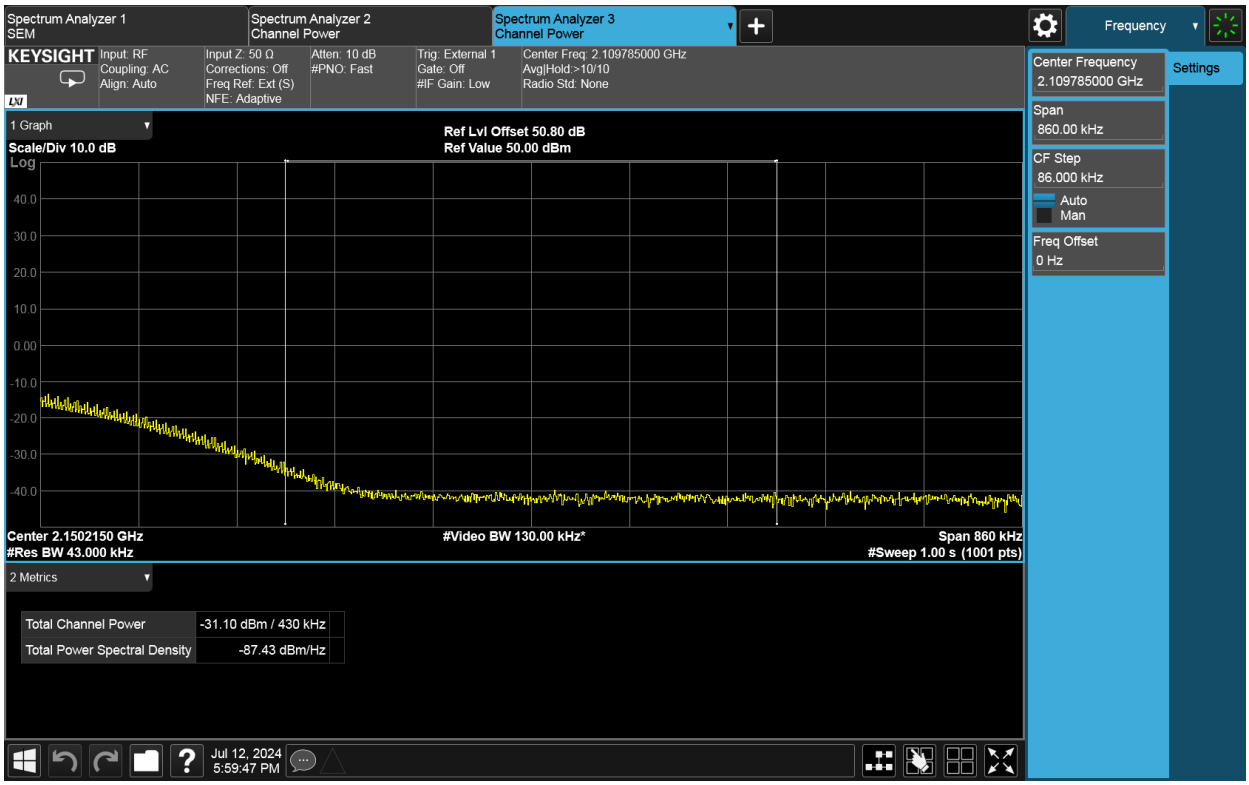
Antenna Port	Channel Position	Modulation	Carrier BW (MHz)	RBW (kHz)	Limit (dBm)
D	B	256QAM	40	430	-19.02
D	T	256QAM	40	430	-19.02

Channel Position B



TEST REPORT


Spectrum Analyzer 1
SEM
Spectrum Analyzer 2
Channel Power
Spectrum Analyzer 3
Channel Power
KEYSIGHT
Input: RF
Coupling: AC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Ext (S)
NFE: Adaptive
Atten: 10 dB
#PNO: Fast
Trig: External 1
Gate: Off
#IF Gain: Low
Center Freq: 2.109785000 GHz
Avg|Hold:>10/10
Radio Std: None
Frequency
Center Frequency
2.109785000 GHz
Settings
Span
860.00 kHz
CF Step
86.000 kHz
Auto
Man
Freq Offset
0 Hz
1 Graph
Scale/Div 10.0 dB
Log
Ref Lvl Offset 50.80 dB
Ref Value 50.00 dBm
40.0
30.0
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
Center 2.1097850 GHz
#Res BW 43.000 kHz
#Video BW 130.00 kHz*
Span 860 kHz
#Sweep 1.00 s (1001 pts)
2 Metrics
Total Channel Power
-32.66 dBm / 430 kHz
Total Power Spectral Density
-88.99 dBm/Hz
Jul 12, 2024
5:58:39 PM


Spectrum Analyzer 1
SEM
Spectrum Analyzer 2
Channel Power
Spectrum Analyzer 3
Channel Power
KEYSIGHT
Input: RF
Coupling: AC
Align: Auto
Input Z: 50 Ω
Corrections: Off
Freq Ref: Ext (S)
NFE: Adaptive
Atten: 10 dB
#PNO: Fast
Trig: External 1
Gate: Off
#IF Gain: Low
Center Freq: 2.109785000 GHz
Avg|Hold:>10/10
Radio Std: None
Frequency
Center Frequency
2.109785000 GHz
Settings
Span
860.00 kHz
CF Step
86.000 kHz
Auto
Man
Freq Offset
0 Hz
1 Graph
Scale/Div 10.0 dB
Log
Ref Lvl Offset 50.80 dB
Ref Value 50.00 dBm
40.0
30.0
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
Center 2.1502150 GHz
#Res BW 43.000 kHz
#Video BW 130.00 kHz*
Span 860 kHz
#Sweep 1.00 s (1001 pts)
2 Metrics
Total Channel Power
-31.10 dBm / 430 kHz
Total Power Spectral Density
-87.43 dBm/Hz
Jul 12, 2024
5:59:47 PM

TEST REPORT

Channel Position T