Accred. no. 10363
Testing
ISO/IEC 17025

Report On

FCC and ISED Testing of the Ericsson Radio 4490HP 44B5 44B12A C, KRC 161 981/3, WCDMA and LTE and NR, NB-IoT IB, NB-IoT GB, (700 MHz and 850 MHz) Base Station in accordance with FCC CFR 47 Part 2:2022, FCC CFR 47 Part 22:2022, FCC Part 27:2022, ISED RSS-Gen: Issue 5: March 2019 Amendment 1, 2021 Amendment 2, and ISED RSS-130: Issue 2: 2019 and RSS-132: Issue 4:2023

COMMERCIAL-IN-CONFIDENCE

FCC: TA8AKRC161981
IC: 287AB-AS161981

PREPARED BY	APPROVED BY	DATED
Maggie Whiting Key Account Manager	Steven Scarfe Authorised Signatory	29 February 2024

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SECTION 1

REPORT INFORMATION

1.1 REPORT DETAILS

Manufacturer	Ericsson
Address	Torshamnsgatan 23 Kista SE-16480 Stockholm Sweden
Product Name & Product Number	Radio 4490HP 44B5 44B12A C - KRC 161 981/3
IC Model Name	AS161981
Serial Number(s)	E23E485204
Software Version	CXP2021113/1 Revision R20A103
Hardware Version	R1C
Non-Tested Variant (See Section 1.11 Additional Information)	Radio 4490HP 44B5 44B12A C - KRC 161 981/31
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2022 FCC CFR 47 Part 22: 2023 FCC CFR 47 Part 27: 2023 ISED RSS-GEN: Issue 5: March 2019 Amendment 1, 2021 Amendment 2 ISED RSS-130: Issue 2: 2019 ISED RSS-132: Issue 4: 2023
Test Plan	General RA FCC-ISED Test Plan for Radio 4490HP B5B12A C PC2_PC3 _R1
Start of Test	12 February-2024
Finish of Test	19-February-2024
Name of Engineer(s)	Ashok Kumar
Related Document(s)	KDB 971168 D01 v02r02 KDB 662911 D01 v02r01 ICES-003:Issue 7 (2020-10) ANSI C63.26-2015

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate compliance with and FCC CFR 47 Part 2: 2022, FCC CFR 47 Part 22: 2023, FCC CFR 47 Part 27: 2023, ISED RSS-GEN: Issue 5: March 2019 Amendment 1, 2021 Amendment 2, ISED RSS-130 Issue 2:2019 and ISED RSS-132: Issue 4: 2023 The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s): 

Ashok Kumar

This report has been amended to Issue 3 and should be read in place of Issue 2. This report has been amended to correct a typographical error in the Test Results pages.

1.2 BRIEF SUMMARY OF RESULTS

The tests that have been selected are detailed in the customer Test Plan as defined in section 1.1 of this report. The Test Plan is based on the TÜV SÜD FCC Test Plan Rationale, available on request.

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 22, CFR 47 Part 27, ISED RSS-GEN, ISED RSS-130 and ISED RSS-132 is shown below.

Section	Specification Clause						Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 22	FCC CFR 47 Part 27	RSS-GEN	ISED RSS-130	ISED RSS-132		
2.1	2.1046	22.913 (a)	27.50	6.12	4.6	5.4	Maximum Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	22.917 (b)	27.53	6.7	4.7	5.5	Occupied Bandwidth	Pass
2.3	2.1051	22.917(b)	27.53	6.13	4.7	5.5	Band Edge	Pass
2.4	2.1051	22.917(b)	27.53	6.13	4.7	5.5	Transmitter Spurious Emissions	Pass
2.5	2.1055	22.355	27.54	6.11	4.5	5.3	Frequency Stability	Pass

Testing in this Report covers B5 (850 MHz) and B12A (700MHz) WCDMA, WCDMA + LTE, WCDMA + NR, WCDMA+LTE+NR.

For additional configurations and test cases not contained within this test report, refer to the following reports:

For additional configurations and test cases not contained within this test report, refer to the following reports:

TÜV SÜD Document 75957662 Report 01 - Radio 4490HP 44B5 44B12A C – B5 (850MHz).

TÜV SÜD Document 75957662 Report 02 - Radio 4490HP 44B5 44B12A C – B12A (700MHz) and Multiband B12A + B5 only.

TÜV SÜD Document 75957662 Report 03 - Radio 4490HP 44B5 44B12A C – B5 (8500MHz) – ESS only.

TÜV SÜD Document 75957662 Report 04 - Radio 4490HP 44B5 44B12A C – B12A (700MHz) – ESS only.

1.3 TEST RATIONALE

The tests that have been selected are detailed in the customer Test Plan as defined in section 1.1 of this report. The Test Plan is based on the TÜV SÜD FCC Test Plan Rationale, available on request.

1.4 CONFIGURATION DESCRIPTION

Config No	RAT	Band	No Of carriers	Carrier Bandwidth	Carrier Frequency Configuration (MHz)			
					Channel position B (MHz)	Channel position M (MHz)	Channel position T (MHz)	Power (dBm) per Carrier
1	WCDMA	5	1	5.0 MHz	871.4	881.6	891.6	46.0
2		5	2	5.0 MHz	-	871.4+891.6	-	43.0
3		5	4	5.0 MHz	-	871.4+876.4+886.6+ 891.6	-	40.0
4	WCDMA +LTE	5	2	5.0 MHz (WCDMA) + 5.0 MHz (LTE)	-	871.4+891.5	-	44.8
5	WCDMA +NR	5	2	5.0 MHz (WCDMA) + 15.0 MHz 30 kHz SCS (NR)	-	871.4+886.5	-	44.8
6	WCDMA+ LTE+NR	5	3	5.0 MHz (WCDMA) +5.0 MHz (LTE) + 15.0 MHz 30 kHz SCS (NR)	-	871.4+881.5+891.5	-	43.0
7	Multiband WCDMA+ LTE	5 + 12A	2	WCDMA (B5) + LTE(12A)-MIMO-2C (WCDMA 64QAM 5MHz) + (LTE 64QAM 5MHz).	-	871.4 + 731.5	-	46.0 (WCDMA) 47.8 (LTE)
8	Multiband WCDMA+NR	5 + 12A	2	WCDMA (B5) + NR(12A)-MIMO-2C (WCDMA 64QAM 5MHz) + (NR SCS 30kHz QPSK 15MHz).	-	871.4 + 737.5	-	46.0 (WCDMA) 47.8 (NR)
9	Multiband WCDMA+ LTE+NR	5 + 12A	6	WCDMA(B5)+WCDMA(B5)+NR(B5) + LTE(12A)+ LTE(12A)+ LTE(12A) - MIMO-6C,(WCDMA 64QAM 5MHz) + (NR SCS 30kHz QPSK 15MHz)+ (LTE 64QAM 5MHz).	-	871.4 +876.4+886.5 + 731.5+737.0 +742.5	-	43.0

1.5 DECLARATION OF BUILD STATUS

Equipment Description			
Technical Description:	Multi standard Radio 4490HP 44B5 44B12A C 4Tx/4Rx		
Manufacturer:	Ericsson AB		
Model:	Radio 4490HP 44B5 44B12A C		
Part Number:	KRC161981/3 and Variant KRC161981/31		
Hardware Version:	R1C		
Software Version:	CXP2021113/1 Revision R20A103		
FCC ID of the product under test	TA8AKRC161981		
IC ID of the product under test	287AB-AS161981		
HVIN:	AS161981		
Intentional Radiators			
RAT	LTE +NB-IoT(IB, GB) SCS:15kHz	NR + NB-IoT(IB) ,SCS:15kHz, 30kHz	WCDMA
Frequency Range (MHz to MHz) B5	DL: 869 - 894 MHz, UL 824-849 MHz	DL: 869 - 894 MHz, UL 824-849 MHz	DL: 869 - 894 MHz, UL 824-849 MHz
Frequency Range (MHz to MHz) B12A	DL: 729 - 745 MHz, UL 699- 715MHz	DL: 729 - 745 MHz, UL 699- 715MHz	X
Conducted Declared Output Power (dBm)	47,8dBm Max output power per port/ 60W	47,8dBm Max output power per port / 60W	46dBm Max output power per port / 40W
	50,8dBm Max output power multi band per port/120W	50,8dBm Max output power multiband per port/120W.	50,8dBm Max output powe rmultiband per port/120W.
	56.8dBm Max output power per Radio 480W	56.8dBm Max output power per Radio 480W	56.8dBm Max output power per Radio 480W
Antenna Gain (dBi)	According to SRSP-503(B5) & SRSP-518(B12A) calculation		
Antenna Impedance(Ω)	50		
Total RF bandwidth (IBW) B5	25MHz	25MHz	25MHz
Total RF bandwidth (IBW) B12A	16MHz	16MHz	x
Supported Bandwidth(s) (MHz) B5	LTE: 5,10MHz	NR: 5,10,15, 20,25MHz(SCS 15kHz),10,15, 20, 25MHz(SCS 30kHz)	WCDMA: 3,8-5MHz
Supported Bandwidth(s) (MHz) B12A	LTE: 5,10MHz	NR: 5,10,15MHz(SCS 15kHz),10,15MHz(SCS 30kHz)	x
Modulation Scheme(s) B5	LTE:QPSK, 16QAM, 64QAM, 256QAM	NR: QPSK, 16QAM, 64QAM, 256QAM	WCDMA: QPSK,16QAM, 64QAM
Modulation Scheme(s) B12A	LTE:QPSK, 16QAM, 64QAM, 256QAM	NR: QPSK, 16QAM, 64QAM, 256QAM	x
Supported NB-IoT: B5, B12A	NB-IoT(IB,GB), Modulation QPSK,	NB-IoT(IB) ,Modulation QPSK,	x
ITU Emission Designator B5	LTE with and without NB IoT IB:	NR with NB IoT IB:	WCDMA
	5 MHz, BW: 4M48W7D	5 MHz, BW: 4M56W7D	5 MHz, BW:
	LTE with NB IoT GB:	10 MHz,BW:9M40W7D	x
	10 MHz,BW: 9M35W7D	15 MHz,BW:14M4W7D	x
	LTE carrier aggregation:	20 MHz,BW:19M2W7D	x
	25MHz, BW: 24M3W7D (5 x 5MHz, CA)	25 MHz,BW:23M9W7D	x
	x	NR carrier aggregation:	x
	x	25MHz, BW: 24M3W7D (5 x 5MHz, CA)	x

ITU Emission Designator B12 A	LTE with and without NB IoT IB:	NR with NB IoT IB:	x
	5 MHz, BW:4M49W7D	5 MHz, BW: 4M56W7D	x
	LTE with NB IoT GB:	10 MHz,BW:9M42W7D	x
	10 MHz,BW: 9M33W7D	15 MHz,BW:14M4W7D	x
	LTE carrier aggregation:	NR carrier aggregation:	x
	10MHz, BW: 9M45W7D (5MHz + 5MHz, CA)	10MHz, BW: 9M43W7D (5MHz + 5MHz, CA)	x
Supported Bandwidth(s) (MHz) B5 , B12A	ESS: 10MHz		
Duplex mode:	FDD	FDD	FDD
Supported transmission modes:	4X4 MIMO	4X4 MIMO	4X4 MIMO
Maximum number of carriers per band B5/Port	5 (LTE)	5 (NR)	4 (WCDMA)
Maximum number of carriers per band12A/Port	3 (LTE)	3 (NR)	x
Maximum number of carriers per multi band (B5,12A)/Port	8	8	8
Unintentional Radiators			
Highest frequency generated or used in the device or on which the device operates or tunes			Up to 25.8 Gbit/s
Lowest frequency generated or used in the device or on which the device operates or tunes if <30MHz			.-
Class A Digital Device (Use in commercial, industrial or business environment)			.-
Class B Digital Device (Use in residential environment)			Class B
DC Power Supply (Delete if Not Applicable)			
Nominal voltage:	-48V		
Extreme upper voltage:	-36V		
Extreme lower voltage:	-58.5V		
Max current:	36A		
Temperature			
Minimum temperature:	-40°C		
Maximum temperature:	55°C		
Ancillaries			
Manufacturer:	X	Part Number:	X
Model:	X	Model:	X
I hereby declare that I am entitled to sign on behalf of the manufacturer and that the information supplied is correct and complete.			
Name:	Afrah Ali sadiq		
Position held:	Regulatory Approval Engineer		
Email address:	Afrah.ali.sadiq@ericsson.com		
Telephone number:	.+46724650796		
Date:	22/12/2023		

No responsibility will be accepted by TÜV SÜD as to the accuracy of the information declared in this document by the manufacturer.

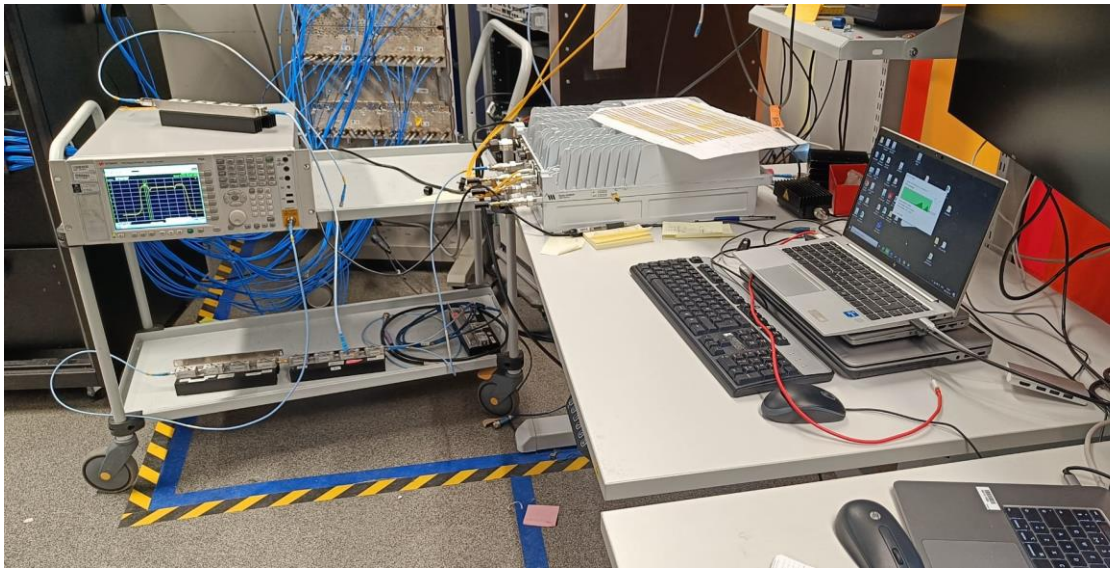
1.6 PRODUCT INFORMATION

1.6.1 Technical Description

The Equipment Under Test (EUT) Radio 4490HP 44B5 44B12A C - KRC 161 981/3 is an Ericsson AB Radio Unit working in the public mobile service Band 5 band which provides communication connections to Band 5 network.

The EUT is declared as operating from a nominal -48V DC supply.

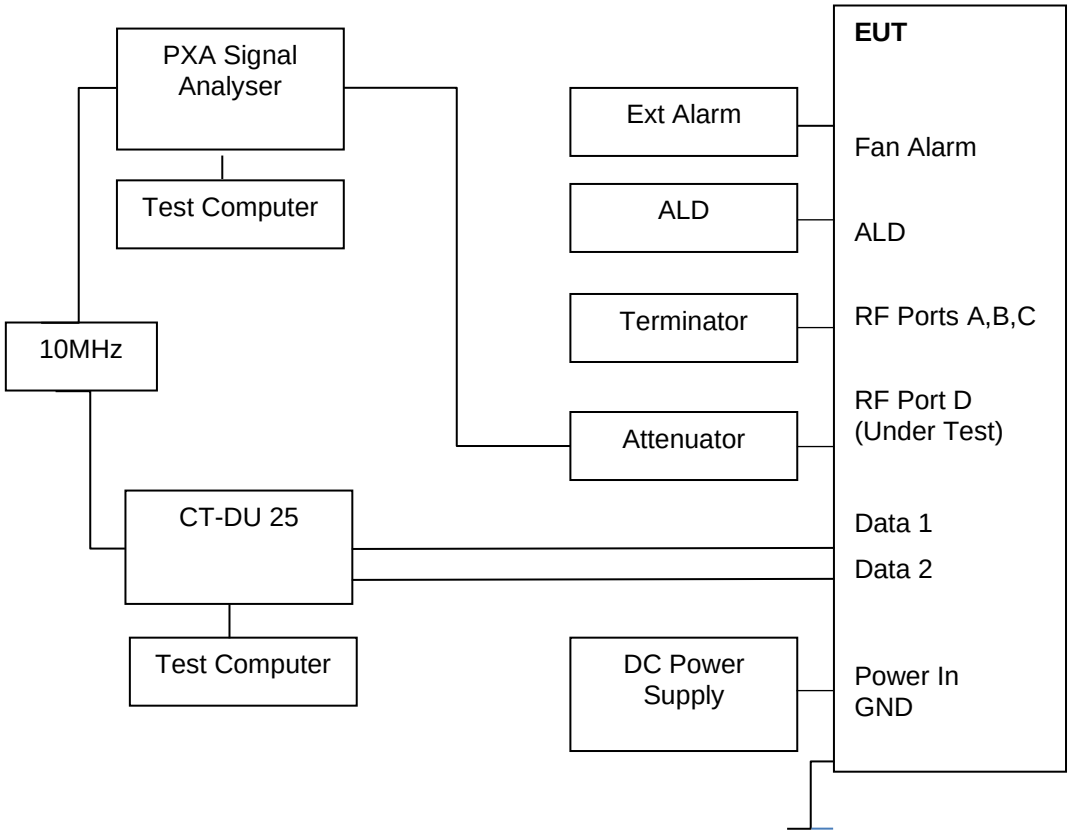
The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.



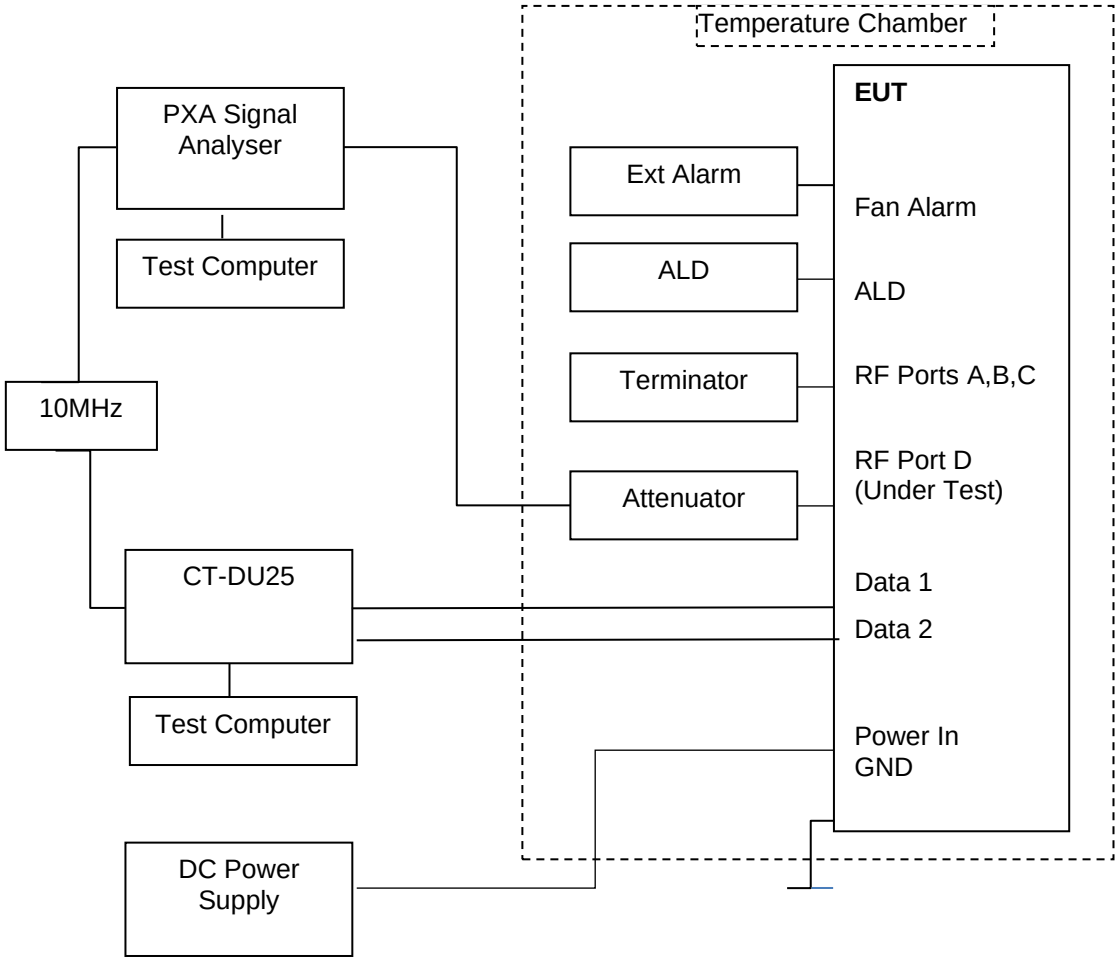
Equipment Under Test

1.7 TEST SETUP

Conducted Test Set Up – Power, PSD, PAR, Occupied Bandwidth, Band Edge, Conducted Emissions



Conducted Test Set Up – Frequency Stability
Dashed line indicates equipment inside the Temperature Chamber for testing



1.8 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated as described in the Test Method for each Test.

The EUT was powered from a -54V DC supply unless otherwise stated.

563983 Ericsson Test Laboratory, Kista
Postal Address: Ericsson AB, Isafjordsgatan 10, Stockholm, SE-16 440, Sweden
CA4810 TUV SUD Ottawa, Canada

ISED Accreditation
IC#26170 Ericsson Test Laboratory, Kista
Postal Address: Ericsson AB, Isafjordsgatan 10, Stockholm, SE-164 40, Sweden

Under our group Swedac Accreditation, TÜV SÜD Sverige conducted the following tests Ericsson Test Lab, Kista.

Test Name	Name of Engineer(s)
Occupied Bandwidth	Ashok Kumar
Band Edge	Ashok Kumar
Transmitter Spurious Emissions	Ashok Kumar
Frequency Stability	Ashok Kumar

1.9 DEVIATION FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.10 MODIFICATION RECORD

No modifications were made to the EUT during testing.

1.11 ADDITIONAL INFORMATION

This filing is for a Class 2 Permissive change to add the WCDMA RAT to a previously certified Radio for use in the USA and Canada under the following ID's:

FCC ID: TA8AKRC161981
ISED ID: 287AB-AS161981

Ericsson will limit this product through the software from operating across the whole of Band 12, it will be limited to (729-745MHz).

The Test Plan is based on the TUV SUD Document FCC and ISED Test Plan Rationale for Base Station Equipment.
For LTE and NR RATS Pre-testing was performed in previously in TUV SUD Project 75957662 and therefore the worst-case modulation schemes and bandwidths form that testing will be used.

Band 5
Worst case modulation was QPSK (LTE), QPSK (NR)
Worst case bandwidth was 5 MHz for LTE, 25 MHz for NR SCS 15kHz and 25 MHz for NR SCS 30 kHz.
For 2 Carrier Multi RAT tests the following combinations were chosen as the worst case supported NR 15 MHz SCS 30kHz + LTE 5 MHz SCS 15kHz.
For 3 Carrier Multi RAT tests the following combinations were chosen as the worst case supported NR 15 MHz SCS 30kHz + LTE 5 MHz SCS 15kHz+ LTE 5 MHz SCS 15kHz.
For WCDMA pre-testing was performed in accordance with the Test Plan to establish the worst-case Port and modulation scheme.
The port with the highest power, worst case port was port D
Worst case modulation was 64QAM

Band 12A
Worst case modulation was 16QAM (LTE), QPSK (NR)
Worst case bandwidth was 5 MHz for LTE, 10 MHz for NR SCS 15kHz and15 MHz for NR SCS 30 kHz.
For 2 Carrier Multi RAT tests the following combinations were chosen as the worst case supported NR 10 MHz SCS 30kHz + LTE 5 MHz SCS 15kHz.

Transmitter performance was measured for top, mid & bottom channels across all 4 antenna ports as presented in the average power measurement tables. Maximum power performance was determined to be, antenna port D.
These worst-case results from antenna port D are presented in this report to demonstrate compliance.

This EUT uses the same port for Tx and Rx and therefore RX Spurious Emisisons has not been performed. Rx Spurious Emissions have been covered by testing to FCC Part 15B, which are covered by a separate test report.

Ericsson have provided the following details about the variant of the Radio 4490HP 44B5 44B12A C, KRC 161 981/3*
KRC 161 981/31** – (with security software for testing purpose.
Note*: Tests have been performed on this unit.
Note**: This will be the marketed, sold unit.

Therefore, KRC 161 981/31 is equivalent to KRC 161 981/3 in conducted radio performance terms, as such no extra testing is required to prove conformity.

Throughout this report the power unit dBm is used. dBm is a unit of level used to indicate that a power level is expressed in decibels (dB) with reference to one milliwatt (mW). It is used as a convenient measure of absolute power because of its capability to express both very large and very small values in a short form.

SECTION 2

TEST DETAILS

2.1 MAXIMUM PEAK OUTPUT POWER AND PEAK TO AVERAGE RATIO - CONDUCTED

2.1.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.913 (a)
FCC CFR 47 Part 27, Clause 27.50
ISED RSS-GEN, Clause 6.12
ISED RSS-130, Clause 4.6
ISED RSS-132, Clause 5.4
FCC CFR 47 Part 2, Clause 2.1046

2.1.2 Date of Test and Modification State

12, 13, 20 February -2024 - Modification State 0

2.1.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.4 Environmental Conditions

Ambient Temperature	22.1 - 23.1°C
Relative Humidity	29.8 - 33.8%

2.1.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, clause 5.2.1 and summed in accordance with FCC KDB 662911 D01.

The plot results presented are the measured worst case and represent typical performance for all bands and antenna ports, plot data performance is on file and available on request.

Calculations
Total power = Measured Output Power (port x, worst case) + 10log (NANT)
Where NANT refers to the number of Ports.

Total Power = Measured Output Power (port D, worst case) + 10log (4)

Remarks

* Maximum antenna system gain (including cable loss), GANT (dBi) 50 ohm, for the tested configurations, to comply with Maximum radiated output power in ISED SRSP-503 and SRSP-518

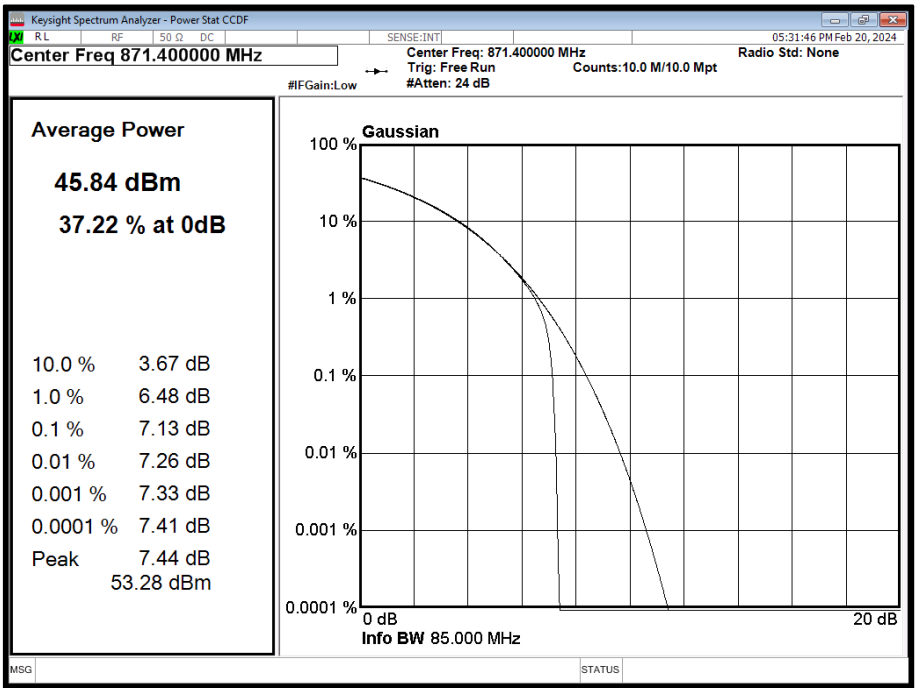
2.1.6 Test Results

Configuration 1

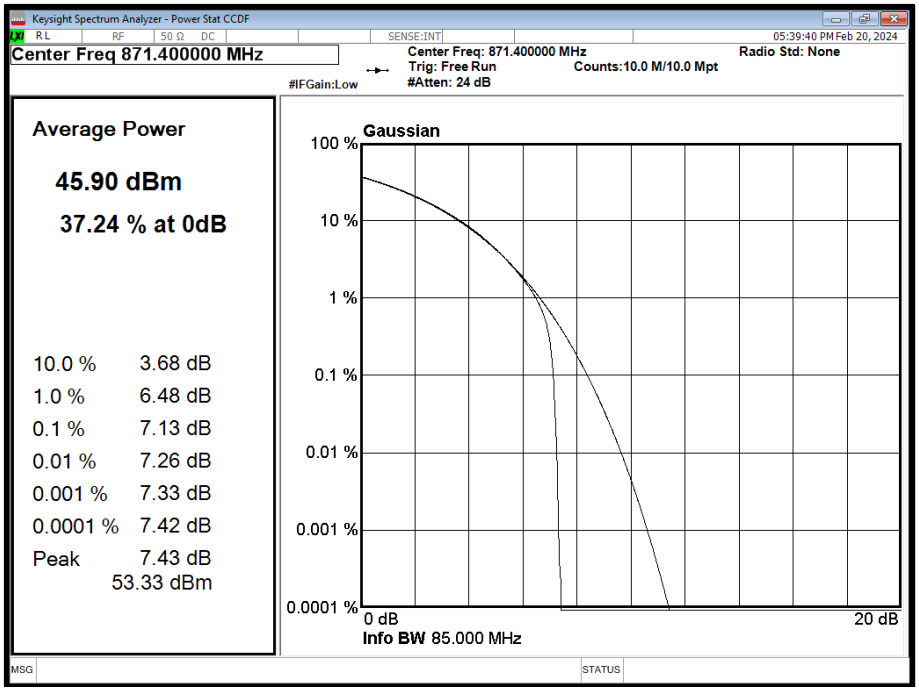
Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD										
			Channel Position B										
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D		Urban E.I.R.P Limit 820W/5MHz		Non Urban E.I.R.P Limit 1640W/5MHz		GANT* Urban	GANT* Non Urban
				dBm	dBm/ MHz	dBm	dBm/ MHz	dBm	dBm/ MHz	dBm	dBm/ MHz	dBi	dBi
A	64QAM	5.0 MHz	7.13	45.93	40.18	51.95	46.20	59.14	-	62.15	-	7.19	10.20
B	64QAM	5.0 MHz	7.13	45.89	40.15	51.91	46.17	59.14	-	62.15	-	7.23	10.24
C	64QAM	5.0 MHz	7.13	45.87	40.06	51.89	46.08	59.14	-	62.15	-	7.25	10.26
D	64QAM	5.0 MHz	7.14	45.91	40.13	51.93	46.15	59.14	-	62.15	-	7.21	10.22

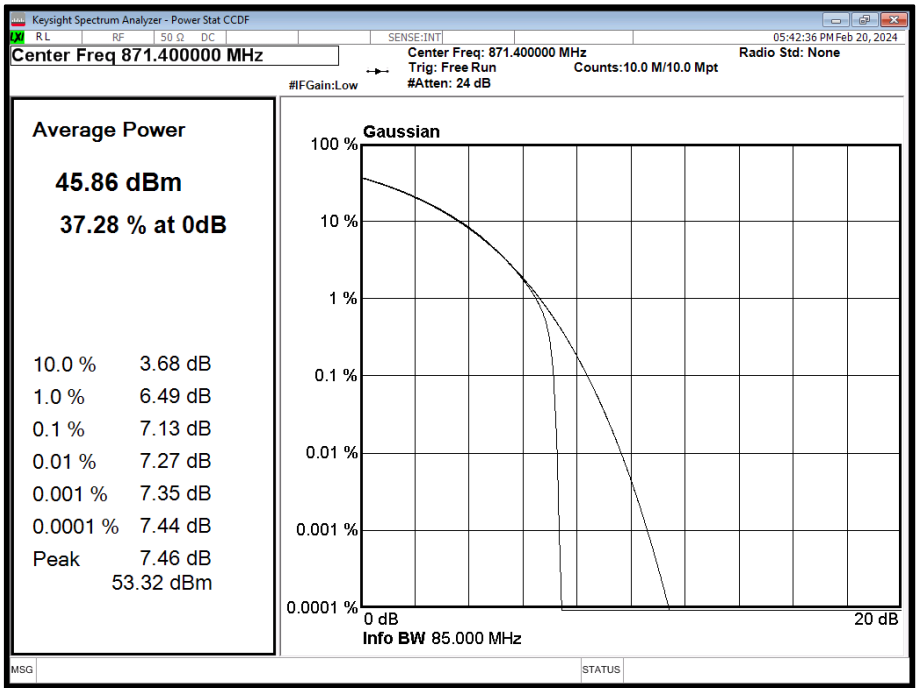
Antenna A - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position B



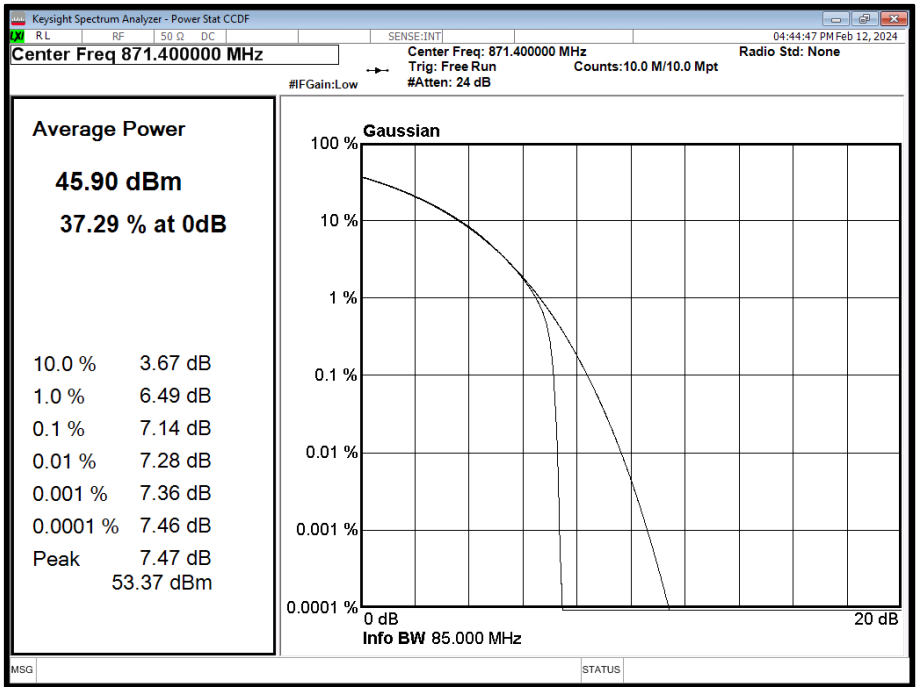
Antenna B - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna C - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position B

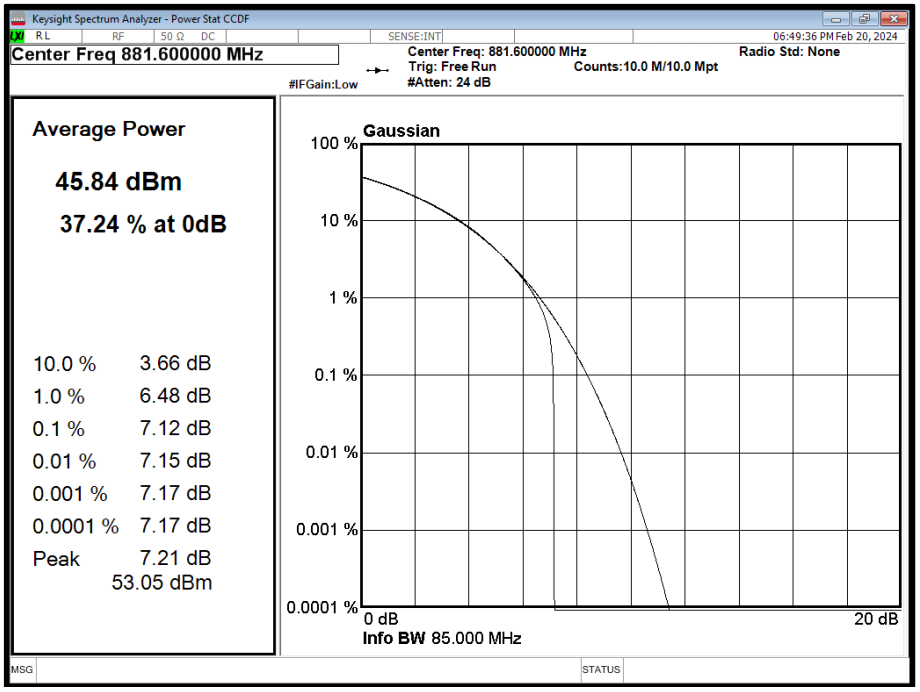


Configuration 1

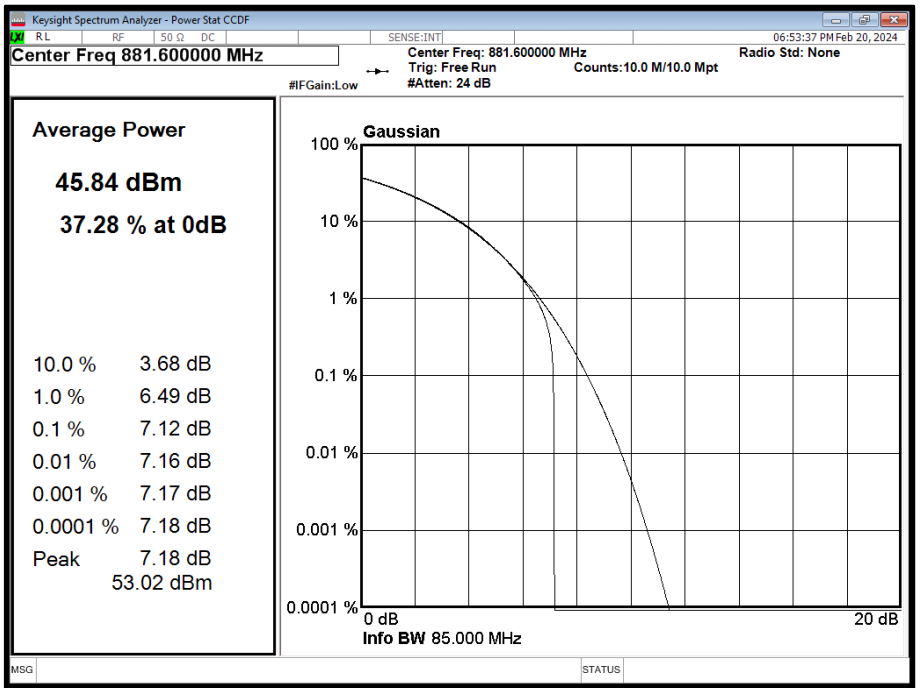
Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD										
			Channel Position B										
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D		Urban E.I.R.P Limit 820W/5MHz		Non Urban E.I.R.P Limit 1640W/5MHz		GANT* Urban	GANT* Non Urban
				dBm	dBm/ MHz	dBm	dBm/ MHz	dBm	dBm/ MHz	dBm	dBm/ MHz	dBi	dBi
A	64QAM	5.0 MHz	7.12	45.77	40.10	51.79	46.12	59.14	-	62.15	-	7.35	10.36
B	64QAM	5.0 MHz	7.12	45.72	40.03	51.74	46.05	59.14	-	62.15	-	7.40	10.41
C	64QAM	5.0 MHz	7.12	45.72	40.01	51.74	46.03	59.14	-	62.15	-	7.40	10.41
D	64QAM	5.0 MHz	7.12	45.77	40.10	51.79	46.12	59.14	-	62.15	-	7.35	10.36

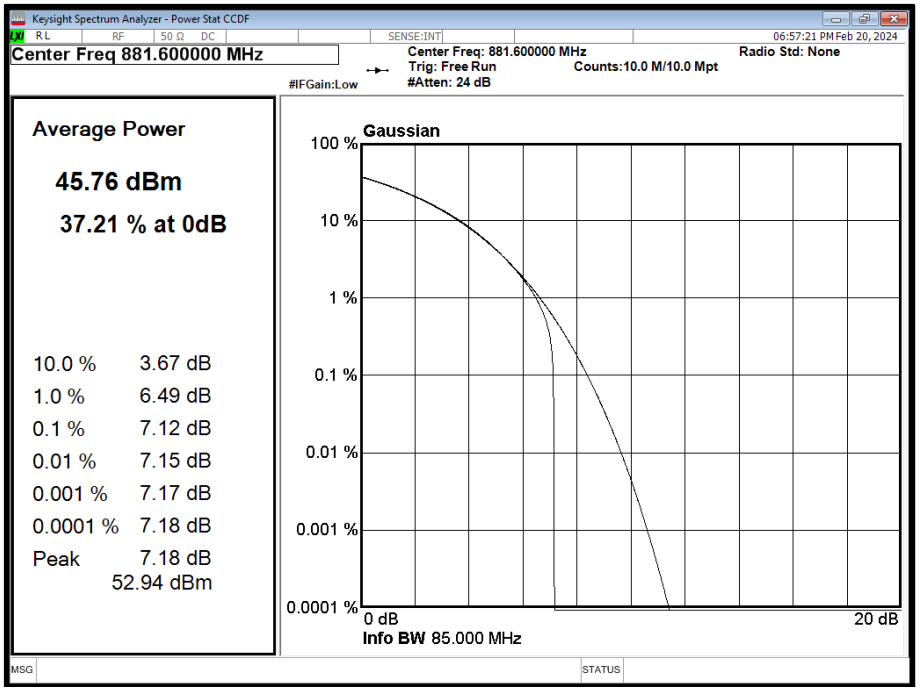
Antenna A - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M



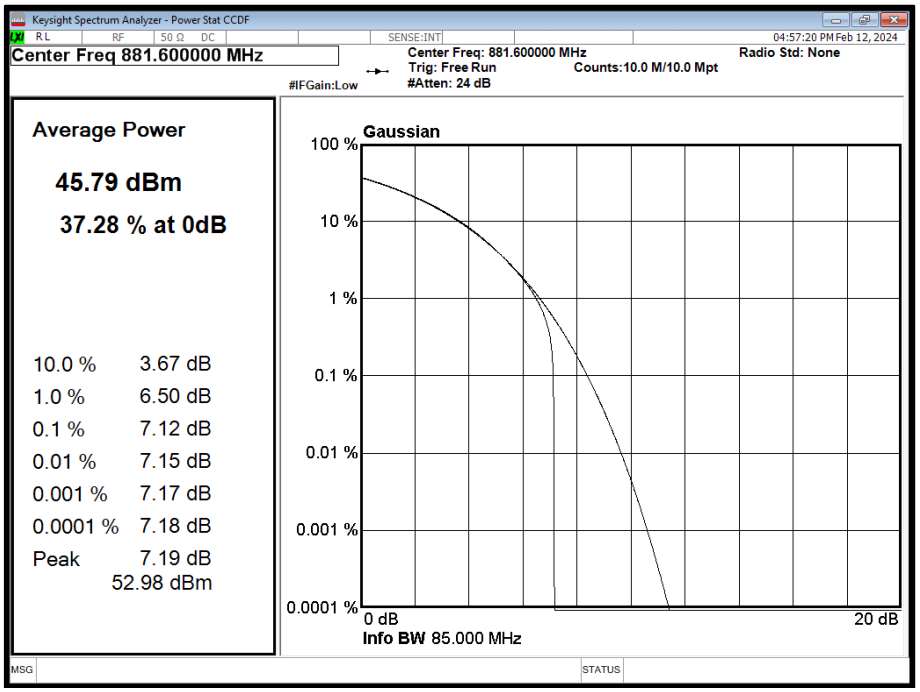
Antenna B - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna C - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M

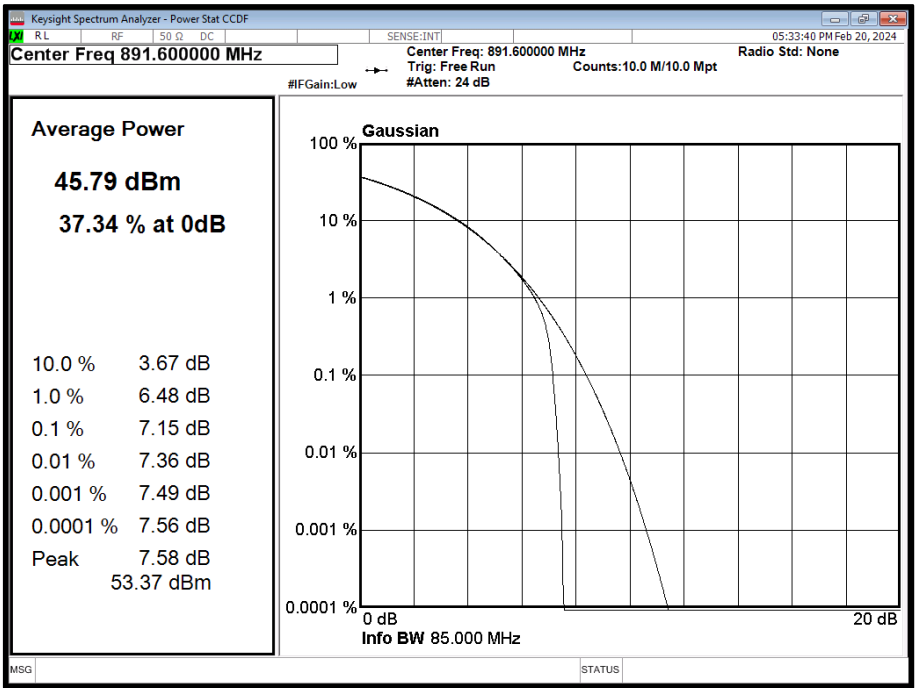


Configuration 1

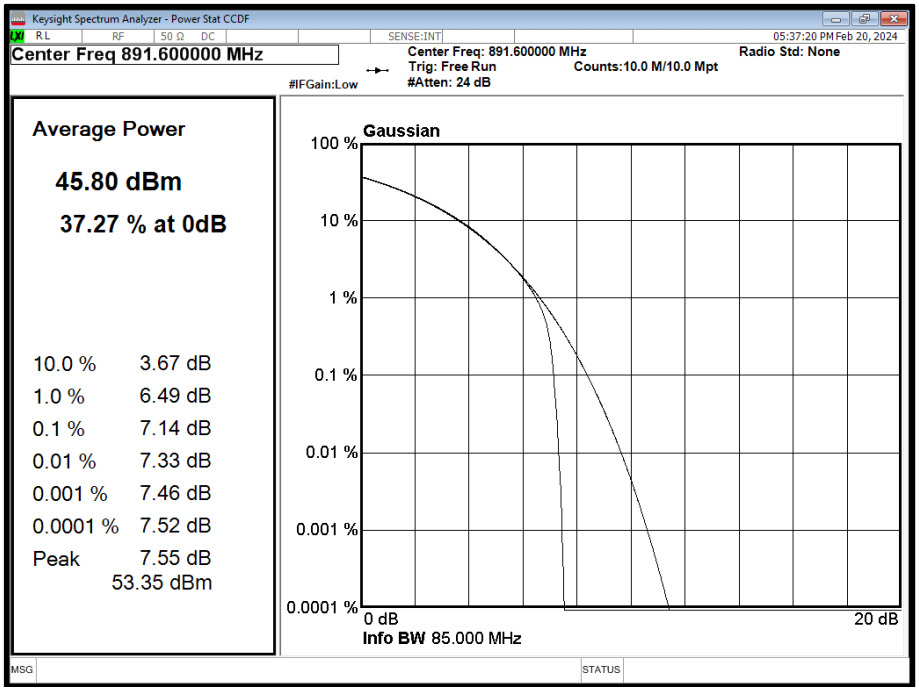
Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD										
			Channel Position B										
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D		Urban E.I.R.P Limit 820W/5MHz		Non Urban E.I.R.P Limit 1640W/5MHz		GANT* Urban	GANT* Non Urban
				dBm	dBm/ MHz	dBm	dBm/ MHz	dBm	dBm/ MHz	dBm	dBm/ MHz	dBi	dBi
A	64QAM	5.0 MHz	7.15	45.78	40.01	51.80	46.03	59.14	-	62.15	-	7.34	10.35
B	64QAM	5.0 MHz	7.14	45.79	40.05	51.81	46.07	59.14	-	62.15	-	7.33	10.34
C	64QAM	5.0 MHz	7.15	45.77	39.99	51.79	46.01	59.14	-	62.15	-	7.35	10.36
D	64QAM	5.0 MHz	7.13	45.79	39.98	51.81	46.00	59.14	-	62.15	-	7.33	10.34

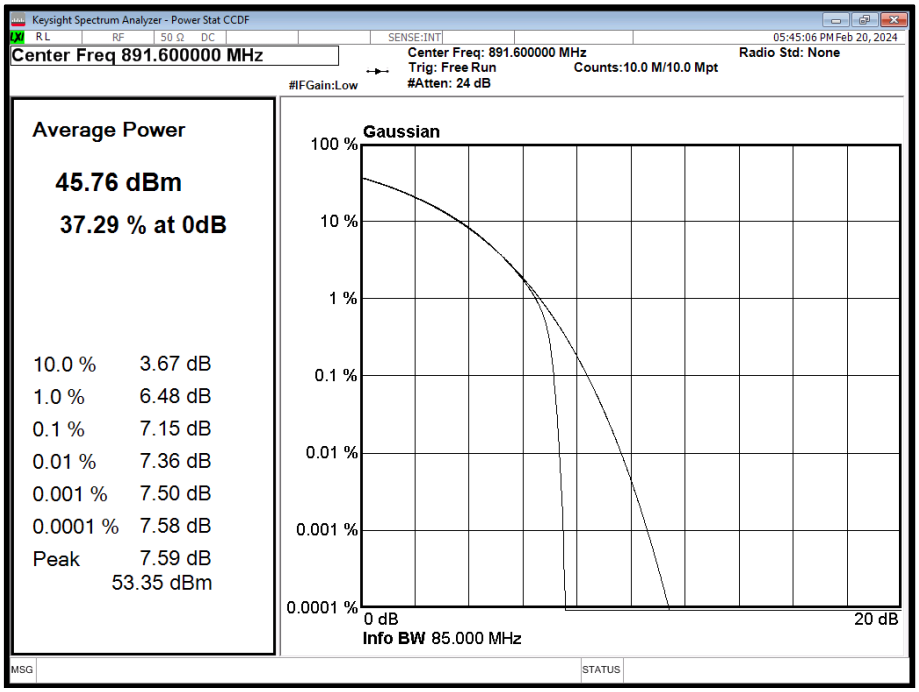
Antenna A - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position T



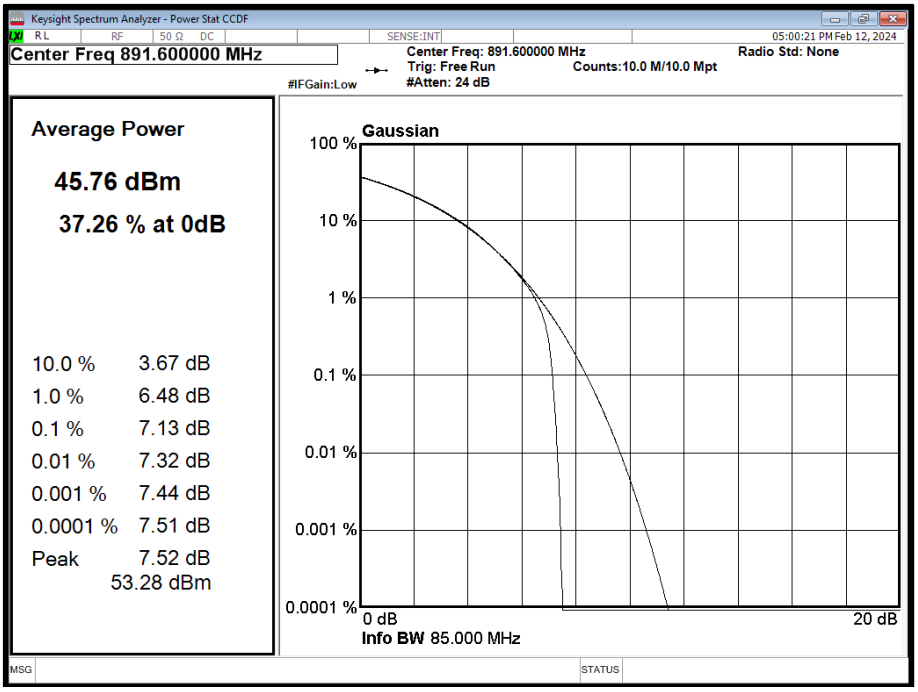
Antenna B - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position T



Antenna C - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position T



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position T



Configuration 2

Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M				
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D	
				dBm	dBm/MHz	dBm	dBm/MHz
D	64QAM	5.0 MHz	-	45.48	36.73	51.50	42.75

Configuration 3

Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M				
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D	
				dBm	dBm/MHz	dBm	dBm/MHz
D	64QAM	5.0 MHz	-	45.59	33.84	51.61	39.86

Configuration 4

Maximum Output Power 47.80 dBm

Antenna	WCDMA / LTE Modulation	WCDMA / LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M_{RFBW}				
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D	
				dBm	dBm/MHz	dBm	dBm/MHz
D	64QAM / QPSK	5.0 MHz / 5.0 MHz	-	47.06	38.17	53.08	44.19

Configuration 5

Maximum Output Power 47.80 dBm

Antenna	WCDMA / NR Modulation	WCDMA / NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M_{RFBW}				
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D	
				dBm	dBm/MHz	dBm	dBm/MHz
A	64QAM/ QPSK	5.0 MHz / 15.0 MHz 30 kHz SCS	-	47.52	38.57	53.54	44.59

Configuration 6

Maximum Output Power 47.80 dBm

Antenna	WCDMA / LTE / NR Modulation	WCDMA / LTE / NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M_{RFBW}				
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D	
				dBm	dBm/MHz	dBm	dBm/MHz
D	64QAM / QPSK / QPSK	5.0 MHz / 5.0 MHz / 15.0 MHz 30 kHz SCS	-	47.36	36.67	53.38	42.69

Configuration 7

Maximum Output Power 46.00 dBm (WCDMA) 47.80 dBm (LTE)

Antenna	WCDMA / LTE Modulation	WCDMA / LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M_{RFBW}				
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D	
				dBm	dBm/MHz	dBm	dBm/MHz
D	64QAM / 64QAM	5.0 MHz / 5.0 MHz	-	49.11	40.19	55.13	46.21

Configuration 8

Maximum Output Power 46.00 dBm (WCDMA) 47.80 dBm (NR)

Antenna	WCDMA / NR Modulation	WCDMA / NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M_{RFBW}				
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D	
				dBm	dBm/MHz	dBm	dBm/MHz
A	N:QPSK / 64QAM	N:15.0 MHz 30 kHz SCS / 5.0 MHz	-	48.97	40.12	54.99	46.14

Configuration 9

Maximum Output Power 50.80 dBm

Antenna	WCDMA / LTE / NR Modulation	WCDMA / LTE / NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M_{RFBW}				
			PAR (dB)	Average Power/PSD		Total Power Port A+B+C+D	
				dBm	dBm/MHz	dBm	dBm/MHz
A	64QAM / QPSK / 64QAM	5.0 MHz / N:15.0 MHz 30 kHz SCS / 5.0 MHz	-	49.73	37.05	55.75	43.07

FCC Part 22.913(a) Clauses (i) & (i) & FCC Part 27.50(c)

Limit	
Maximum ERP (Non-Urban)	≤ 2000 W or ≤ 800W/MHz (>72km from International Border)
	≤ 1000 W or ≤ 800W/MHz
Maximum ERP (Urban)	≤ 500 W or ≤ 400W/MHz
Peak to Average Ratio	13 dB

RSS-130 Clause 4.6 and RSS-132 Clause 5.4

Limit	
Peak to Average Ratio	13 dB

SRSP-503 Power and Antenna Height Limitations Clause 5.1.1 & 5.1.2 and SPSR -518 Clause 5.1, 21

Limit	
Maximum EIRP (Non-Urban)	≤ 1640 W/MHz or ≤+62.15 dBm
Maximum EIRP (Urban)	≤ 820 W/MHz or ≤+59.15 dBm

2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049
FCC CFR 47 Part 22, Clause 22.917 (b)
FCC CFR 47 Part 27, Clause 27.53
ISED RSS-GEN, Clause 6.13
ISED RSS-130, Clause 4.7
ISED RSS-132, 5.5

2.2.2 Date of Test and Modification State

12-February-2024 - Modification State 0

2.2.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.4 Environmental Conditions

Ambient Temperature	22.1°C
Relative Humidity	33.8%

2.2.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 4.2 and 4.3. The Spectrum Analyser RBW was configured to be at least 1% of the channel bandwidth of the carrier to be measured.

For 26 dB Bandwidth, in accordance with KDB 971168 D01, a peak detector and a trace setting of Max Hold were used. The trace was allowed to stabilise. Using the Spectrum Analyser function, the 26dB measurement result was obtained.

4.2 Occupied bandwidth – relative measurement procedure
The reference value is the highest level of the spectral envelope of the modulated signal, unless otherwise specified in an applicable rule section.
Subclause 5.4.3 of ANSI C63.26-2015 is applicable.

4.3 Occupied bandwidth – power bandwidth (99 %) measurement procedure
Subclause 5.4.4 of ANSI C63.26-2015 is applicable (wherein the recommendation is to use the 99 % power bandwidth function of a spectrum analyser).

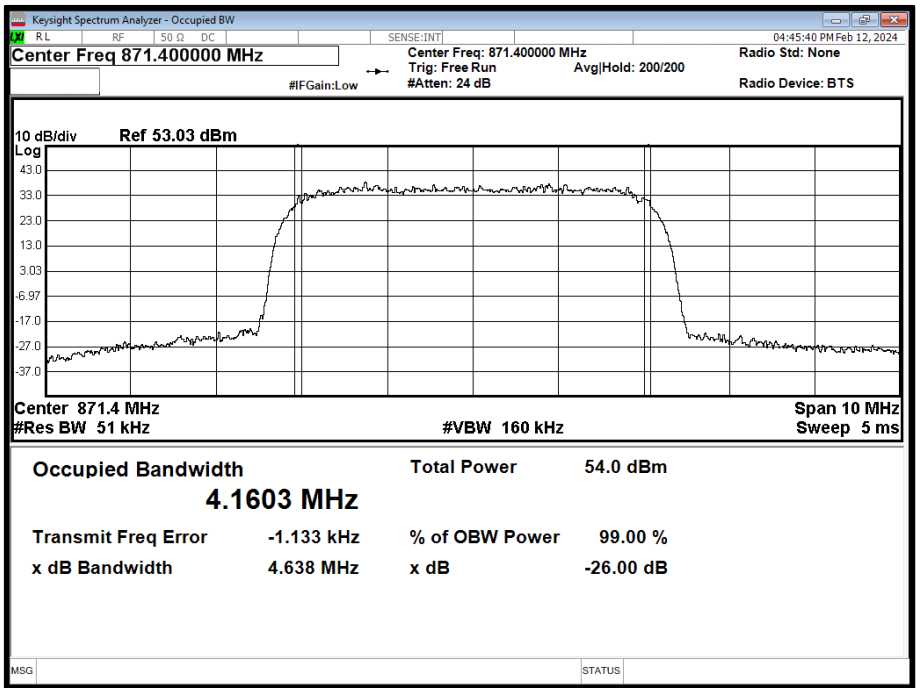
2.2.6 Test Results

Configuration 1

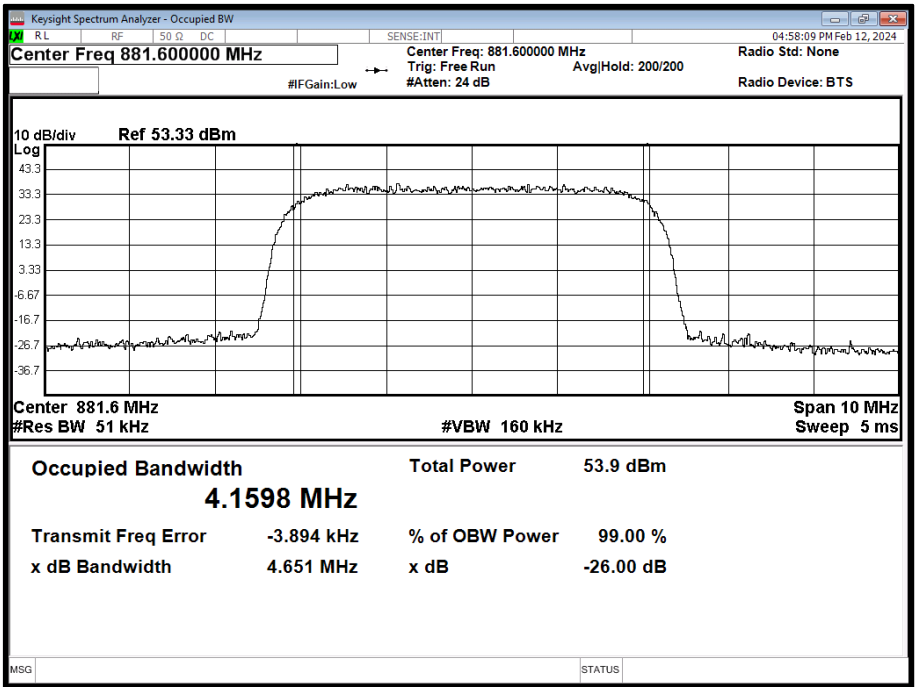
Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
D	64QAM	5.0 MHz	4160.31	4638.47	4159.78	4651.01	4155.40	4663.04

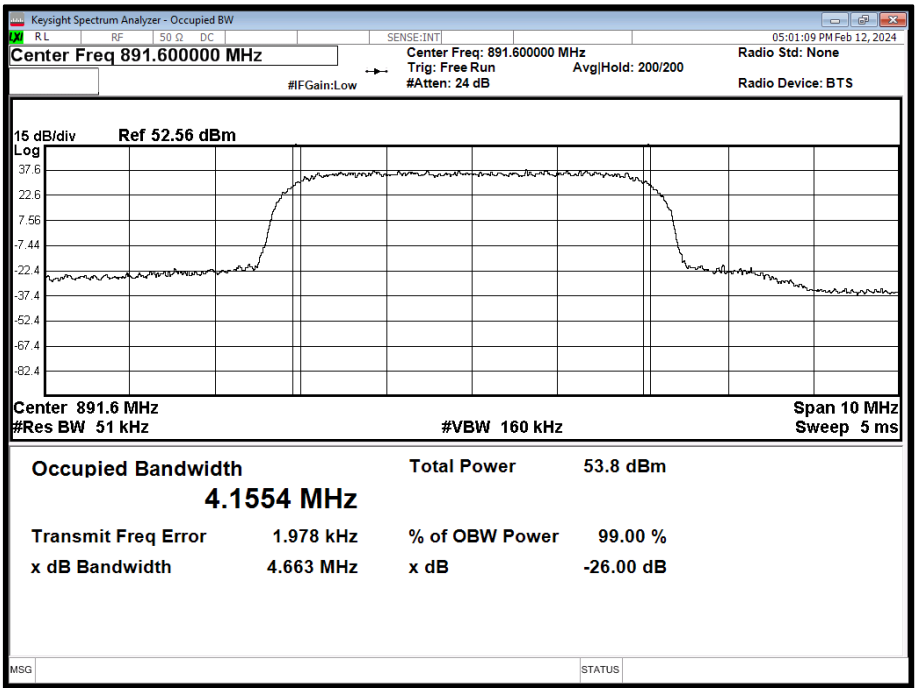
Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position T

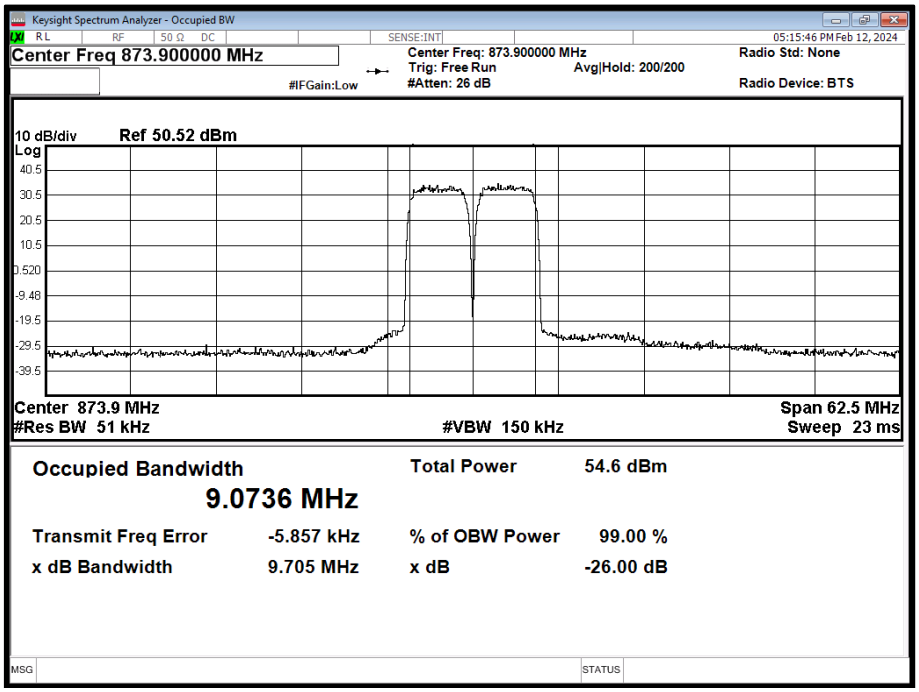


Configuration 2

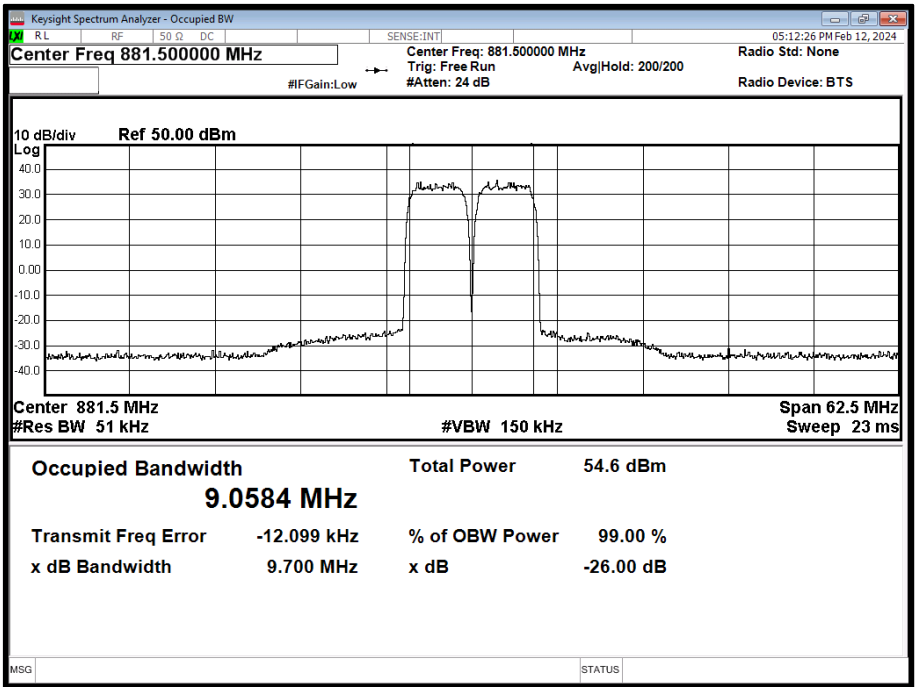
Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
D	64QAM	5.0 MHz	9073.60	9705.40	9058.38	9700.20	9075.43	9711.12

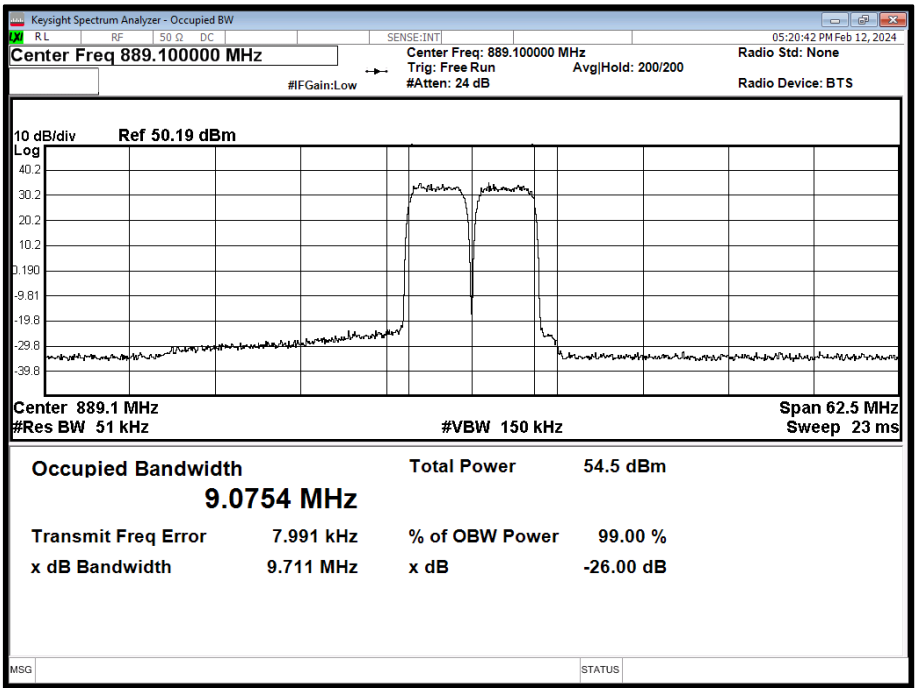
Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position T

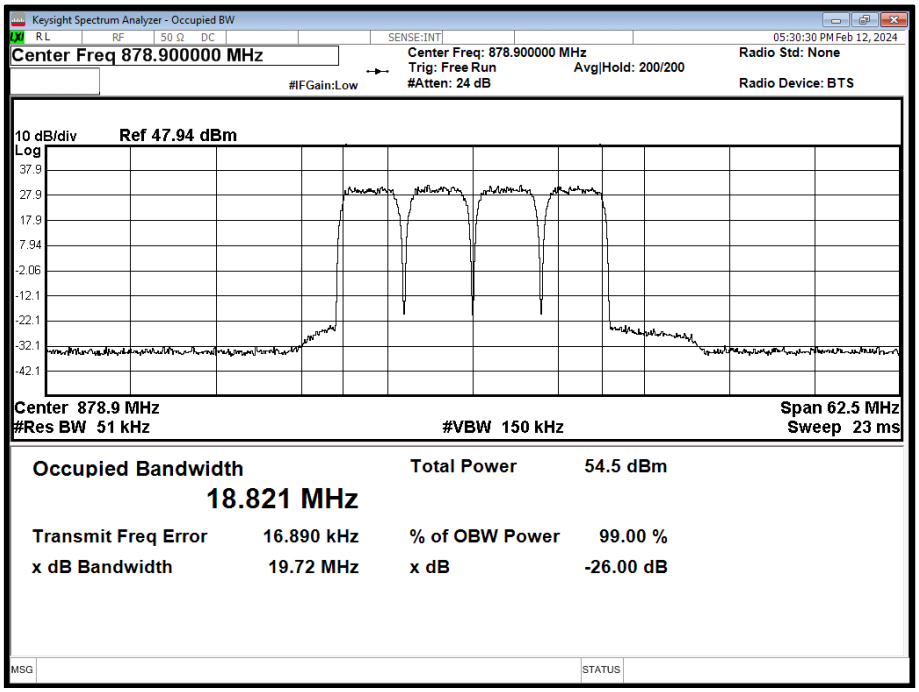


Configuration 3

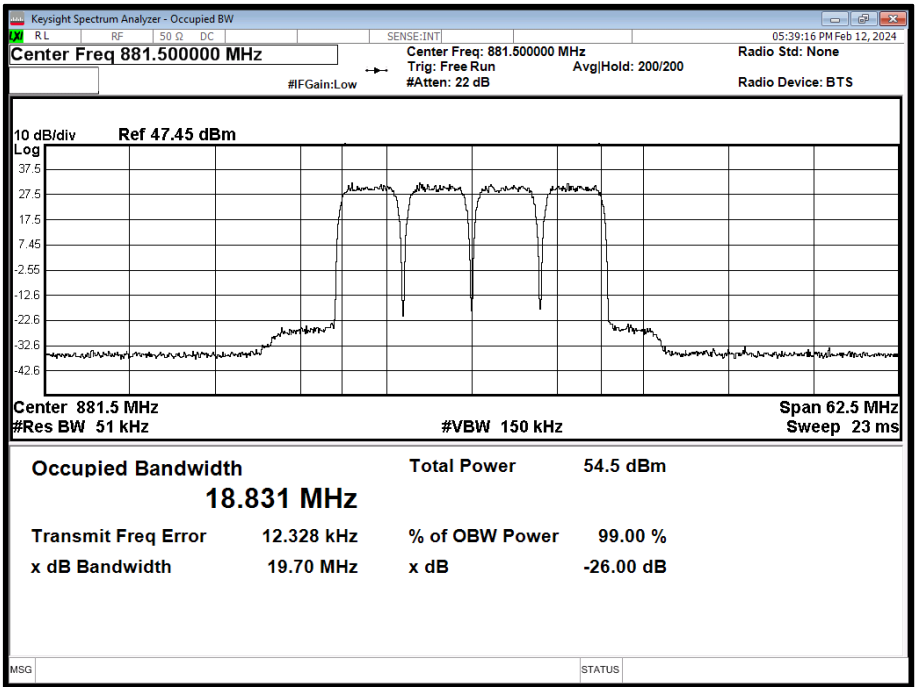
Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
D	64QAM	5.0 MHz	18821.33	19716.36	18831.23	19704.61	18869.03	19713.80

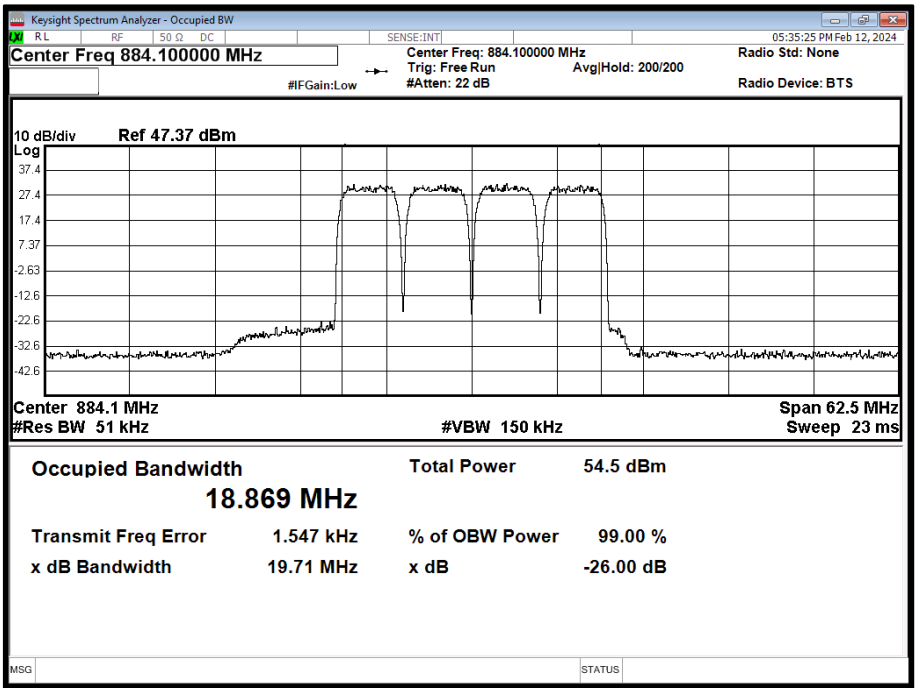
Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position T



2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.917(b)
FCC CFR 47 Part 27, Clause 27.53
ISED RSS-GEN, Clause 6.13
ISED RSS-130, Clause 4.7
ISED RSS-132, Clause 5.5
FCC CFR 47 Part 2, Clause 2.1051

2.3.2 Date of Test and Modification State

12, 13 February-2024 - Modification State 0

2.3.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.4 Environmental Conditions

Ambient Temperature	22.1 - 23.1°C
Relative Humidity	29.8 - 33.8%

2.3.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 6.0.

Band Edge measurements were used an Integration Bandwidth of at least 1% of the measured 26dB Bandwidth.

Each antenna port has been declared as being equivalent, therefore measurements were made on one antenna port only. To account for this, the limit was tightened by 10 * Log(N), where N is equal to the number of MIMO antenna ports.

For the number of ports, the limit was calculated as being -13 dBm - 10 * Log (4) = -19 dBm.

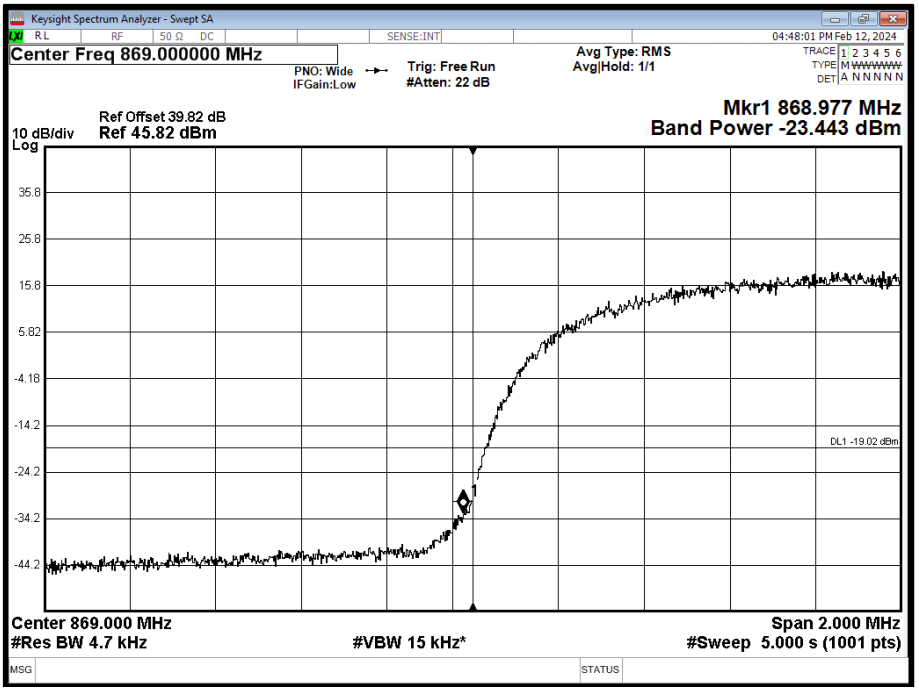
2.3.6 Test Results

Configuration 1

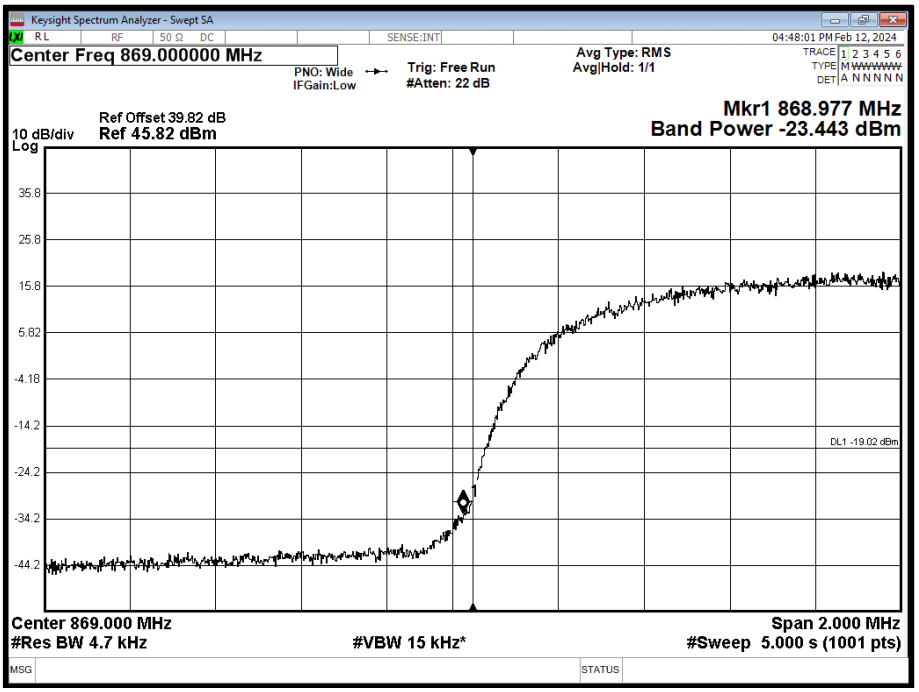
Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
D	64QAM	5.0 MHz	871.4	891.6

Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position T

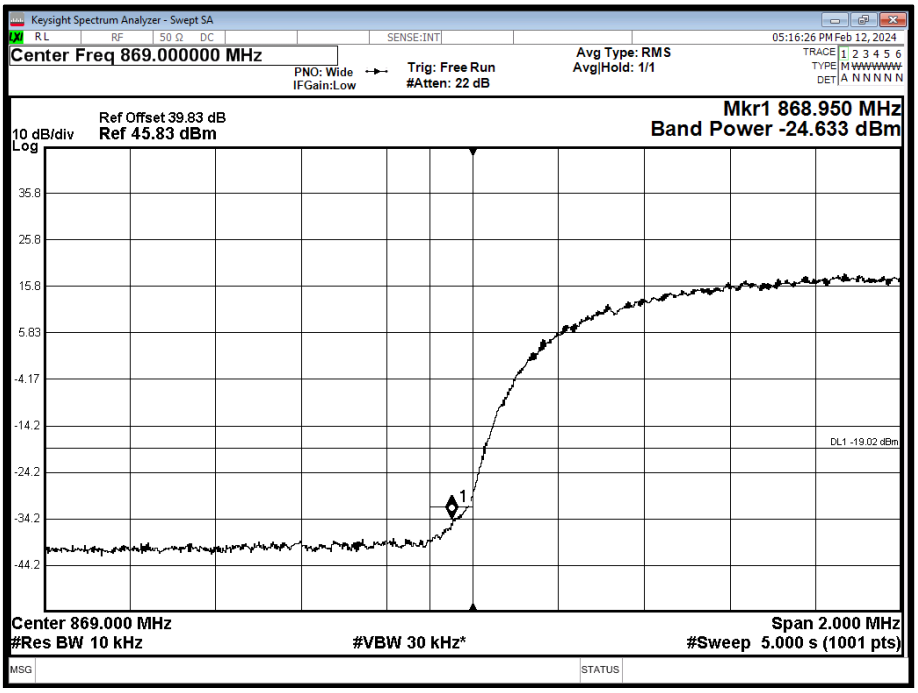


Configuration 2

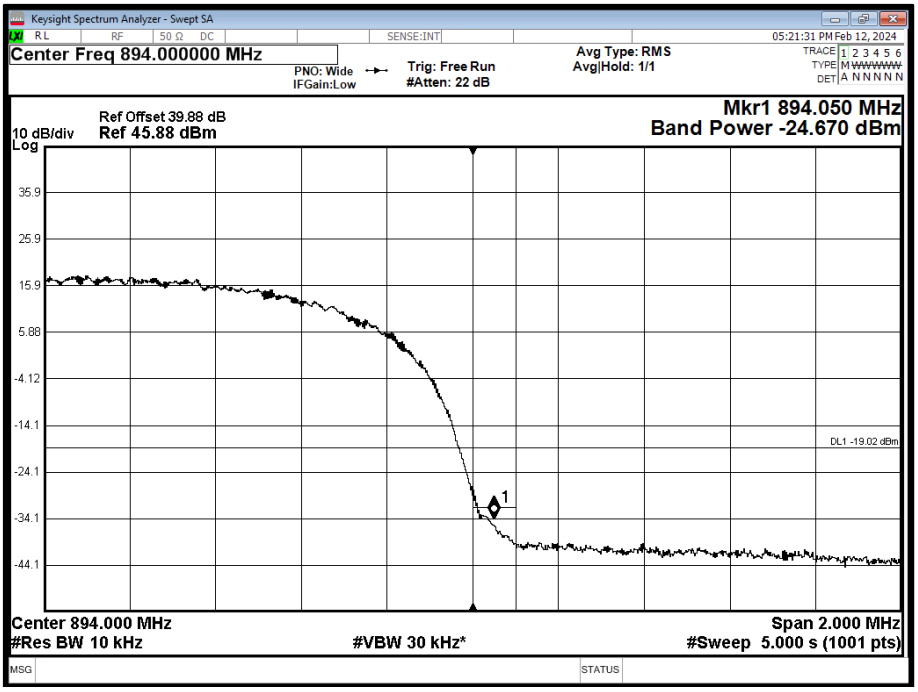
Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
D	64QAM	5.0 MHz	871.4+876.4	891.6+886.6

Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position T

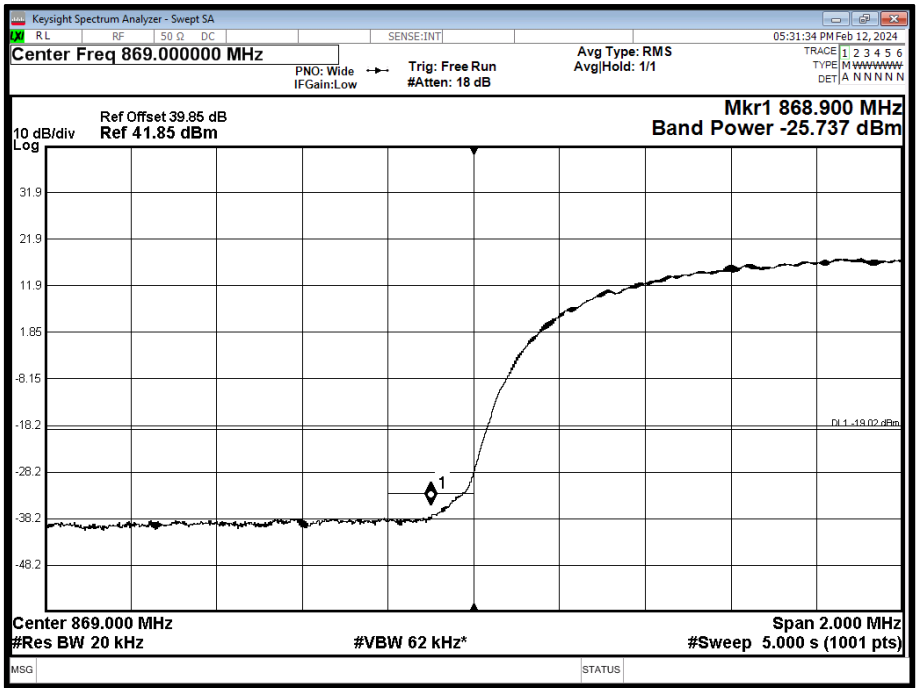


Configuration 3

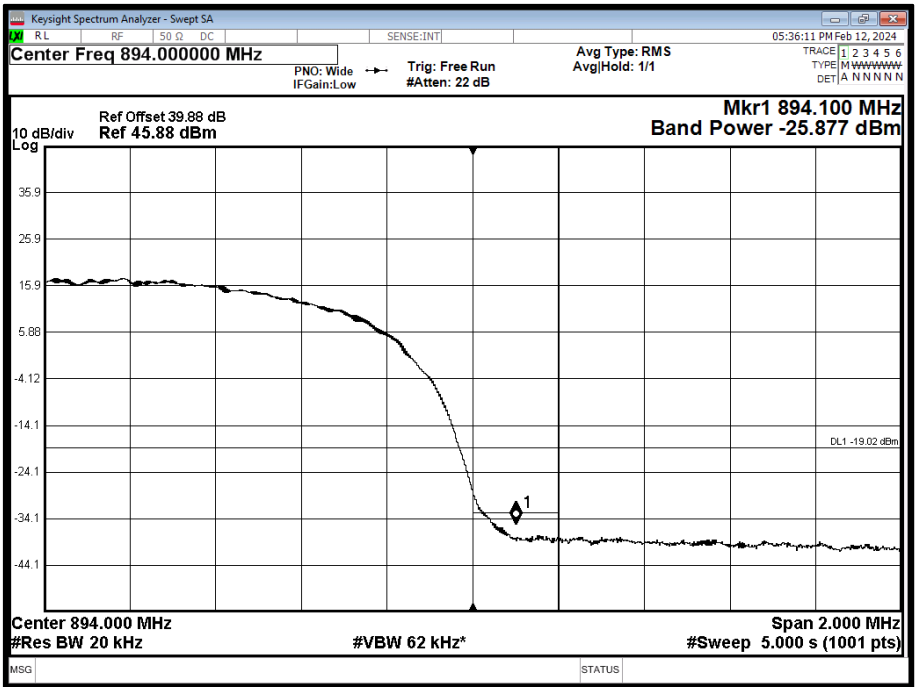
Maximum Output Power 46.00 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
D	64QAM	5.0 MHz	871.4+876.4+881.4+886.4	876.6+881.6+886.6+891.6

Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position T

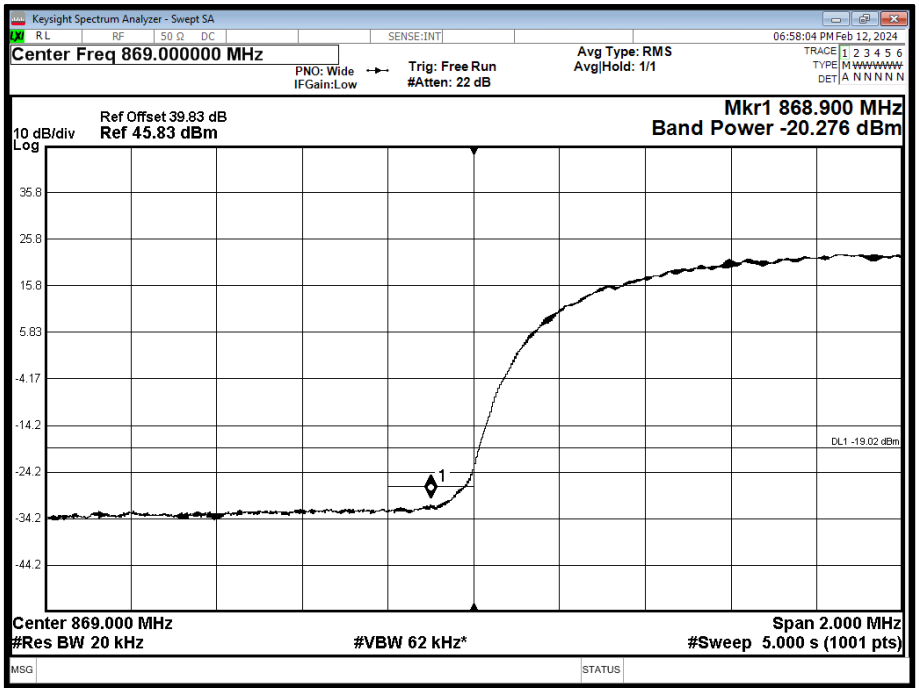


Configuration 4

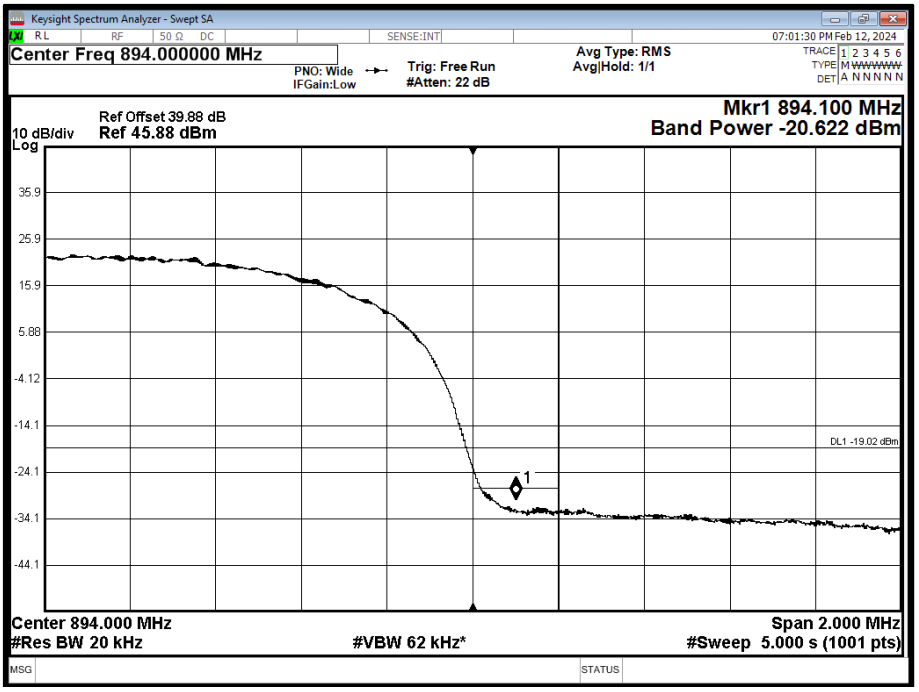
Maximum Output Power 47.80 dBm

Antenna	WCDMA / LTE Modulation	WCDMA / LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B_{RFBW}	Channel Position T_{RFBW}
D	64QAM / QPSK	5.0 MHz / 5.0 MHz	871.4+876.4	891.6+886.6

Antenna D - WCDMA / LTE Modulation 64QAM / QPSK - WCDMA / LTE Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position B



Antenna D - WCDMA / LTE Modulation 64QAM / QPSK - WCDMA / LTE Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position T

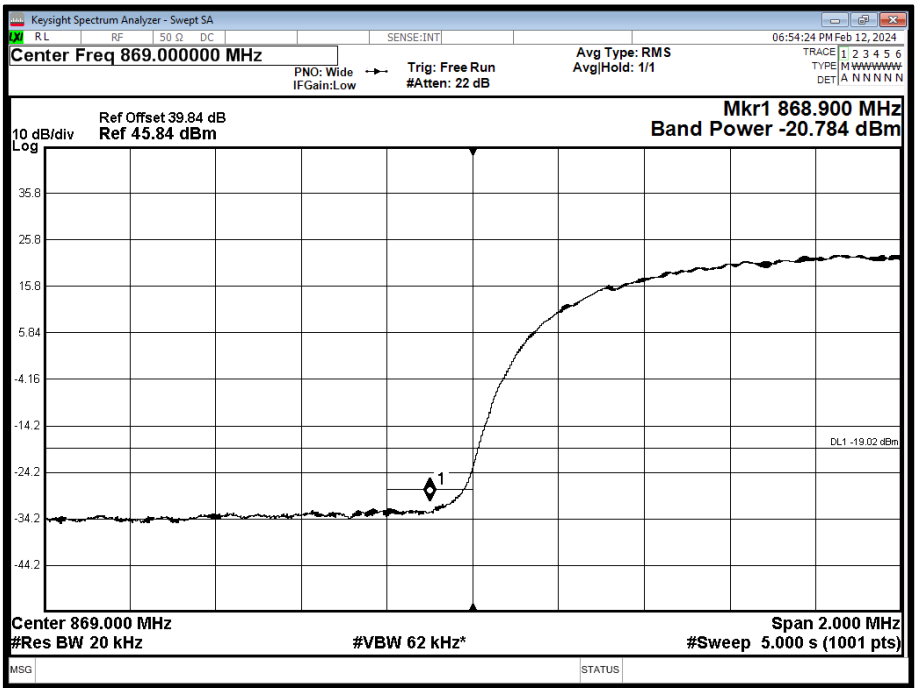


Configuration 5

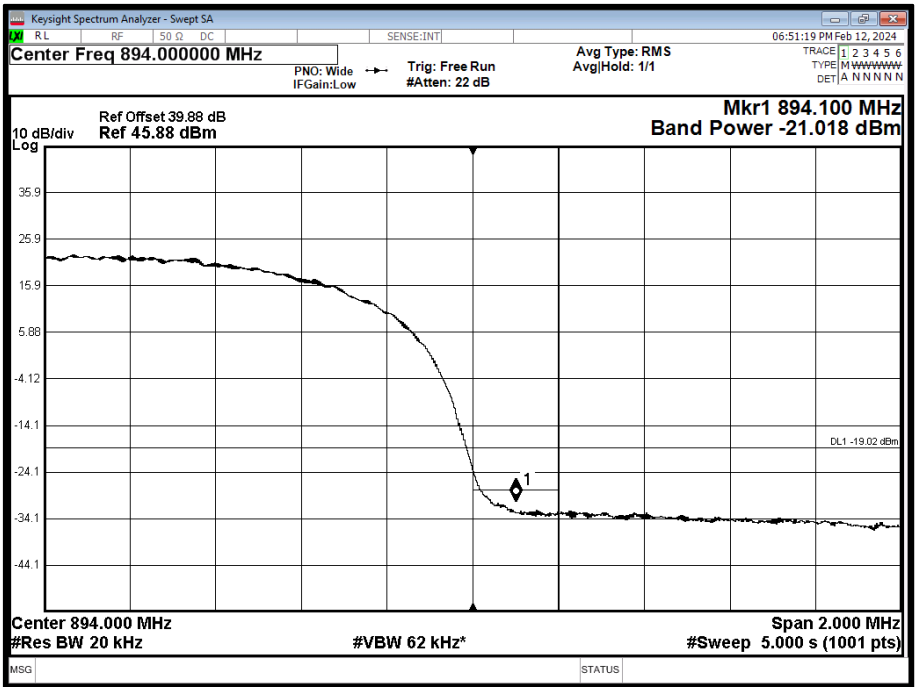
Maximum Output Power 47.80 dBm

Antenna	WCDMA / NR Modulation	WCDMA / NR Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
D	64QAM / QPSK	5.0 MHz / 5.0 MHz	871.4+881.4	891.6+881.6

Antenna D - WCDMA /NR Modulation 64QAM / QPSK - WCDMA / NR Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position B



Antenna D - WCDMA /NR Modulation 64QAM / QPSK - WCDMA / NR Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position T

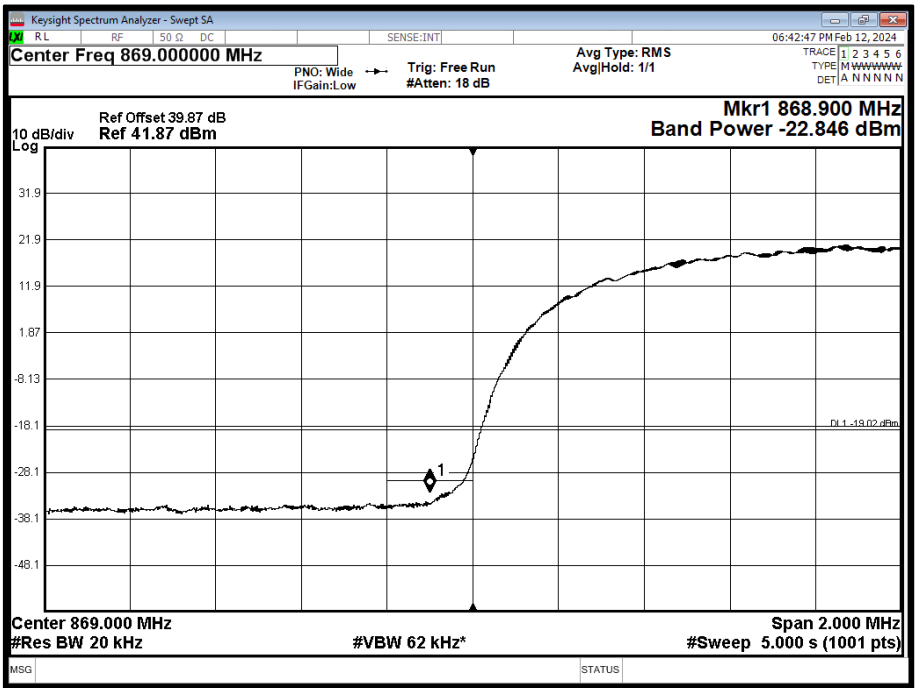


Configuration 6

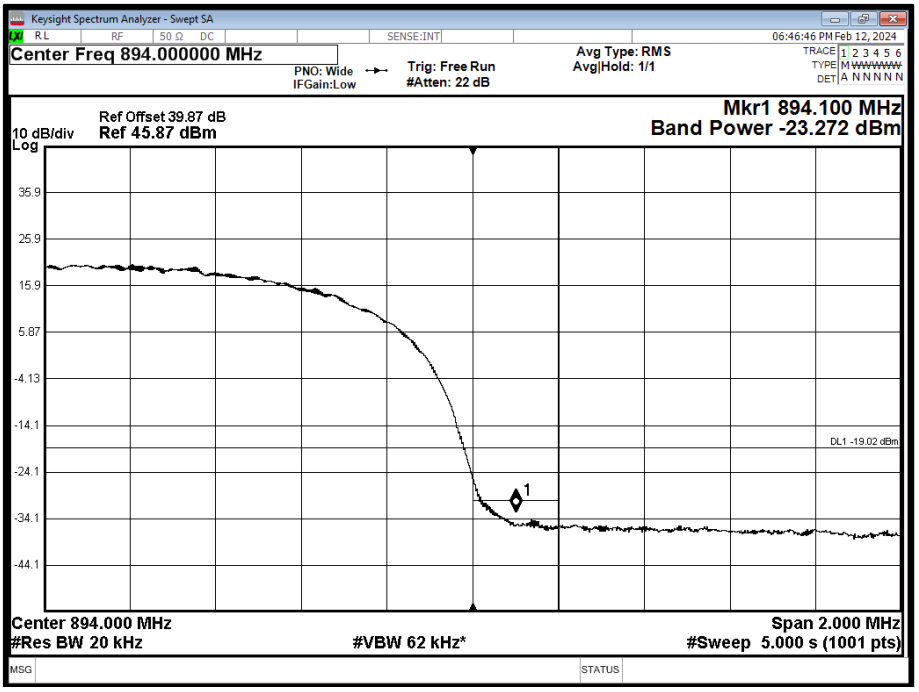
Maximum Output Power 47.80 dBm

Antenna	WCDMA / NR Modulation	WCDMA / NR Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
D	64QAM / QPSK	5.0 MHz / 5.0 MHz	871.4+881.4+891.4	891.6+881.6+871.6

Antenna D - WCDMA /NR Modulation 64QAM / QPSK - WCDMA / NR Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position B



Antenna D - WCDMA /NR Modulation 64QAM / QPSK - WCDMA / NR Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position T



Limit	-19 dBm

2.4 TRANSMITTER SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.917(b)
FCC CFR 47 Part 27, Clause 27.53
ISED RSS-130, Clause 4.7
ISED RSS-GEN, Clause 6.13
ISED RSS-132, Clause 5.5
FCC CFR 47 Part 2, Clause 2.1051

2.4.2 Date of Test and Modification State

12, 13 February and 02-December-2024 - Modification State 0

2.4.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.4 Environmental Conditions

Ambient Temperature	22.1 - 22.9°C
Relative Humidity	30.8 - 33.8%

2.4.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 6.1.

Each antenna port has been declared as being equivalent, therefore measurements were made on one antenna port only. To account for this, the limit was tightened by 10 * Log(N), where N is equal to the number of MIMO antenna ports.

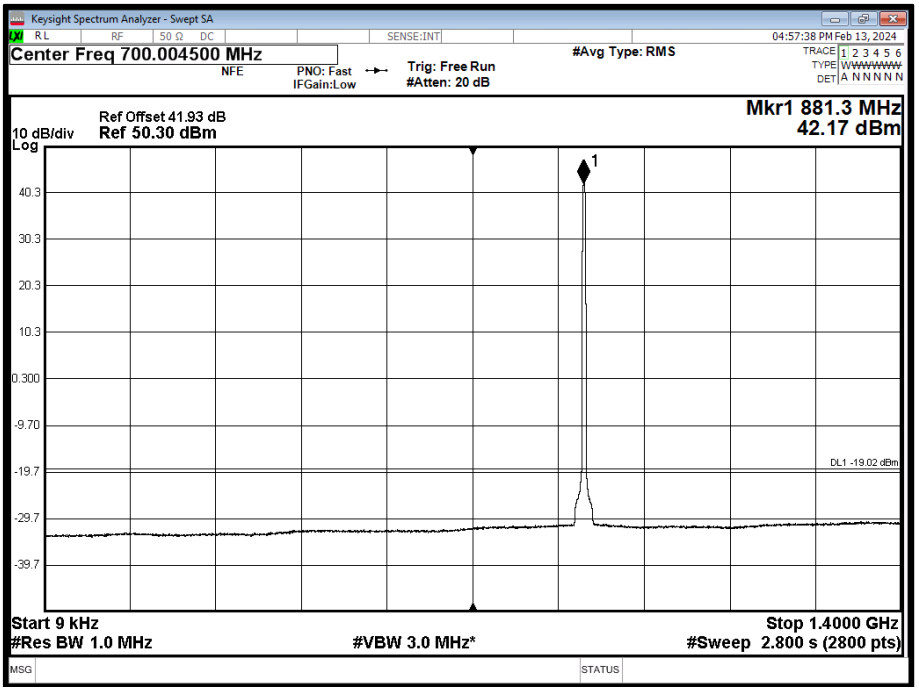
For the number of ports, the limit was calculated as being -13 dBm - 10 * Log (4) = -19 dBm.

2.4.6 Test Results

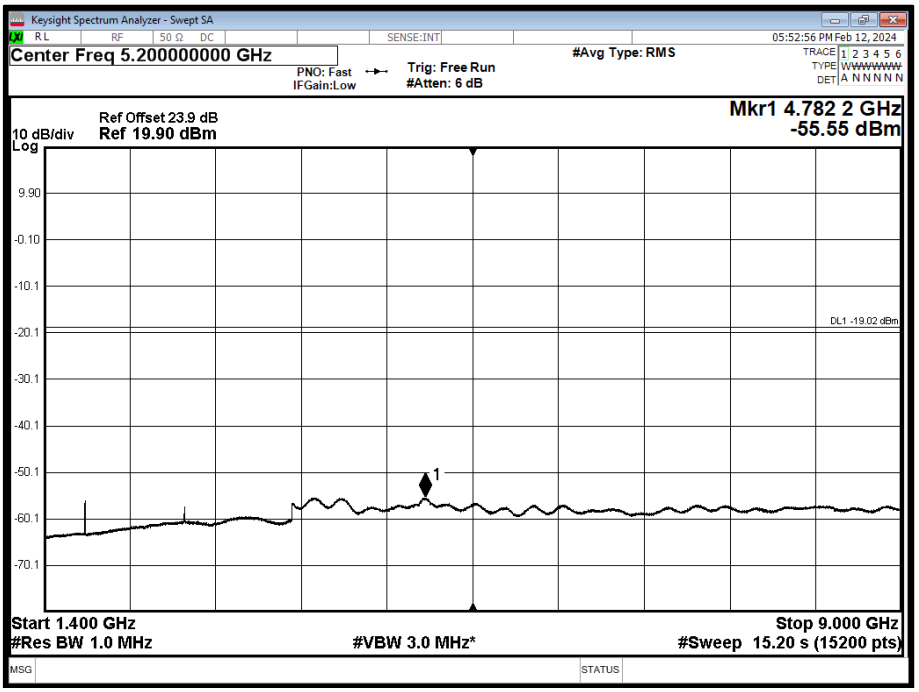
Configuration 1

Maximum Output Power 46.00 dBm

Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1400 MHz



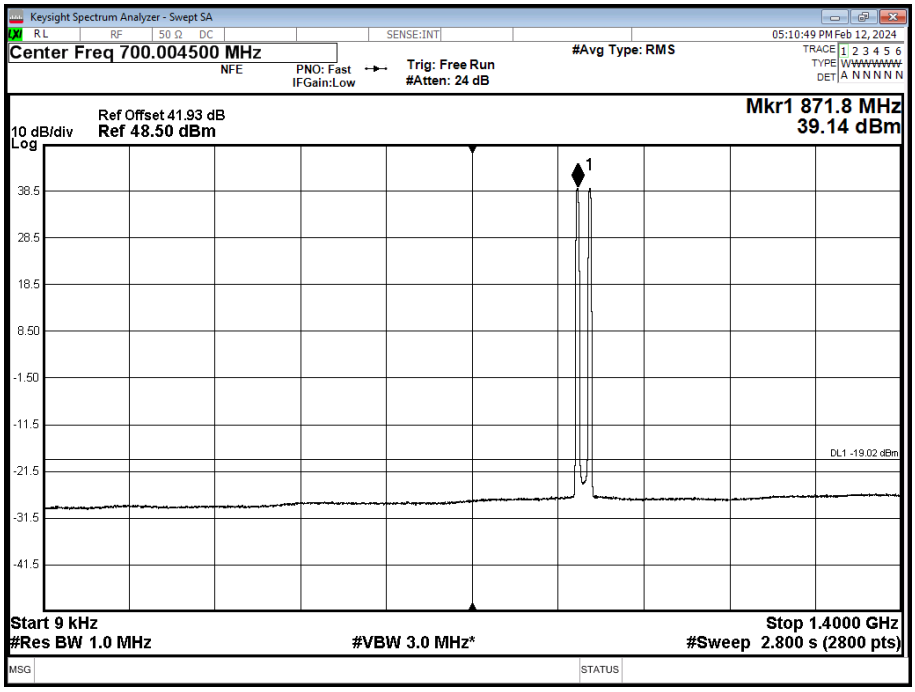
Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1400 to 9000 MHz



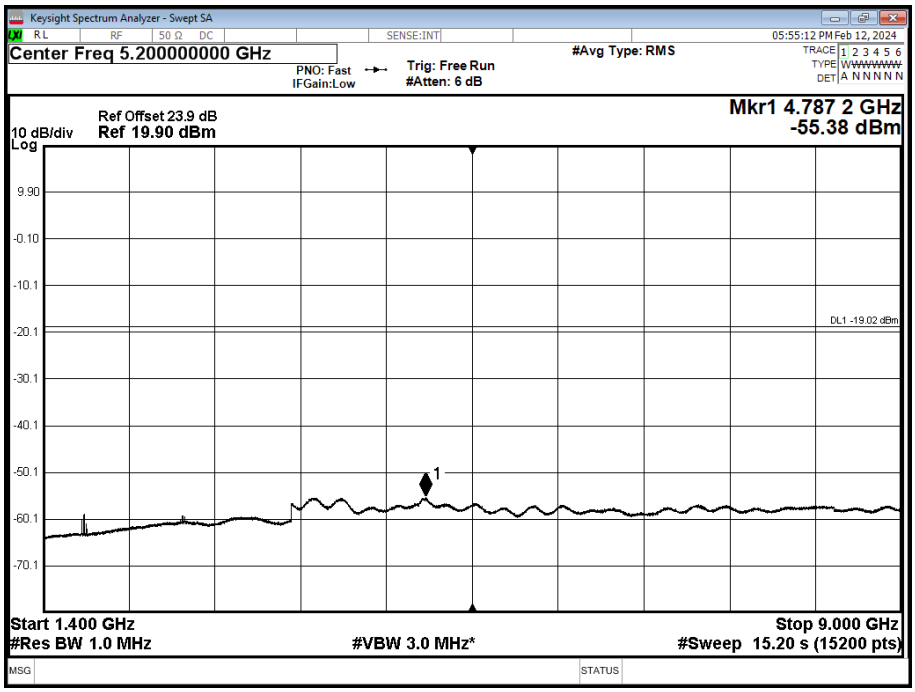
Configuration 2

Maximum Output Power 46.00 dBm

Antenna D - WCDMA Modulation QPSK - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1400 MHz



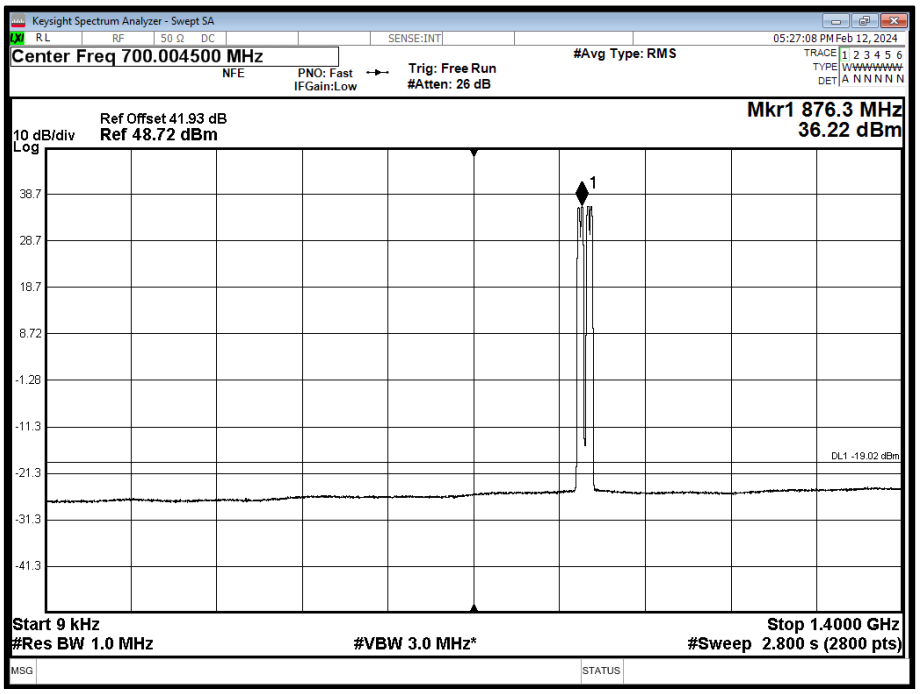
Antenna D - WCDMA Modulation QPSK - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1400 to 9000 MHz



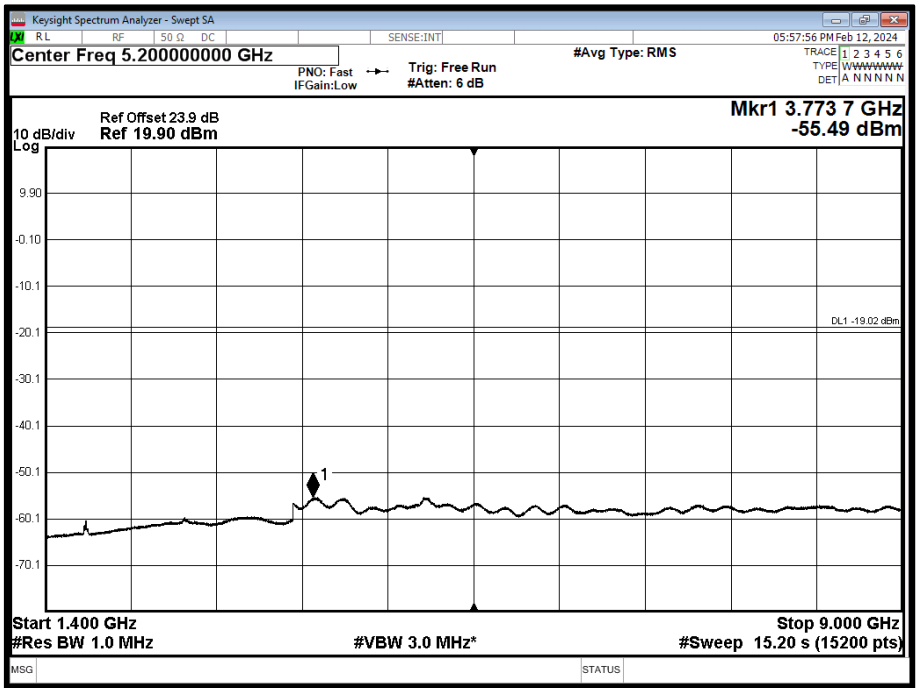
Configuration 3

Maximum Output Power 46.00 dBm

Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1400 MHz



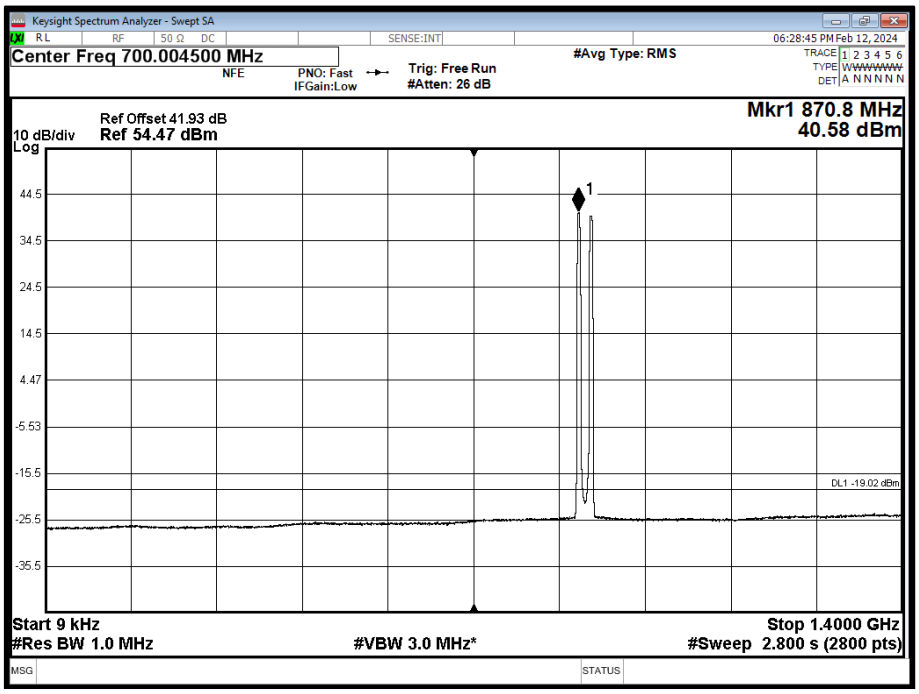
Antenna D - WCDMA Modulation 64QAM - WCDMA Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1400 to 9000 MHz



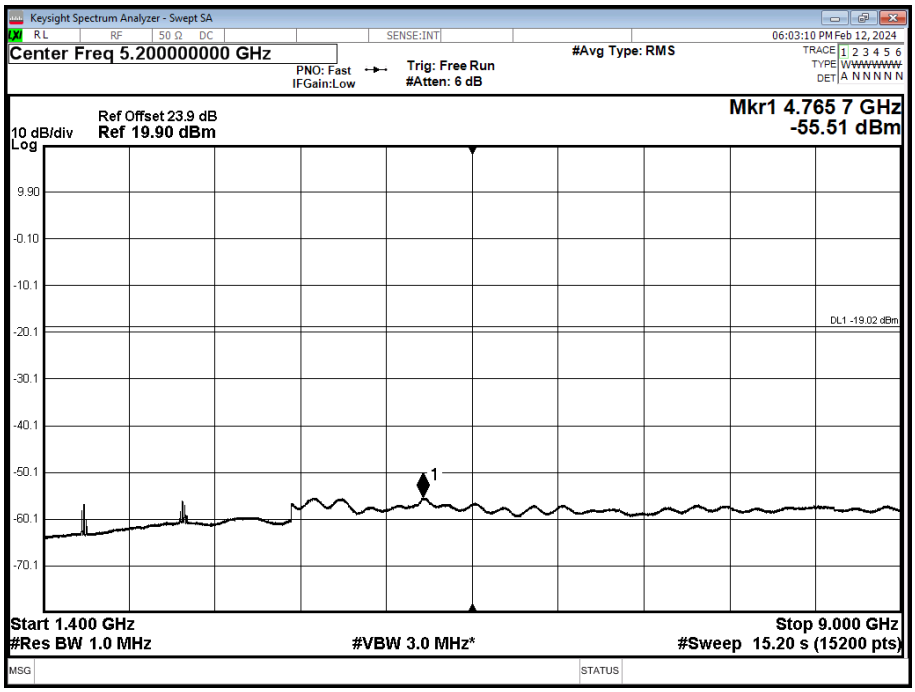
Configuration 4

Maximum Output Power 47.80 dBm

Antenna D - WCDMA / LTE Modulation 64QAM / QPSK - WCDMA / LTE Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1400 MHz



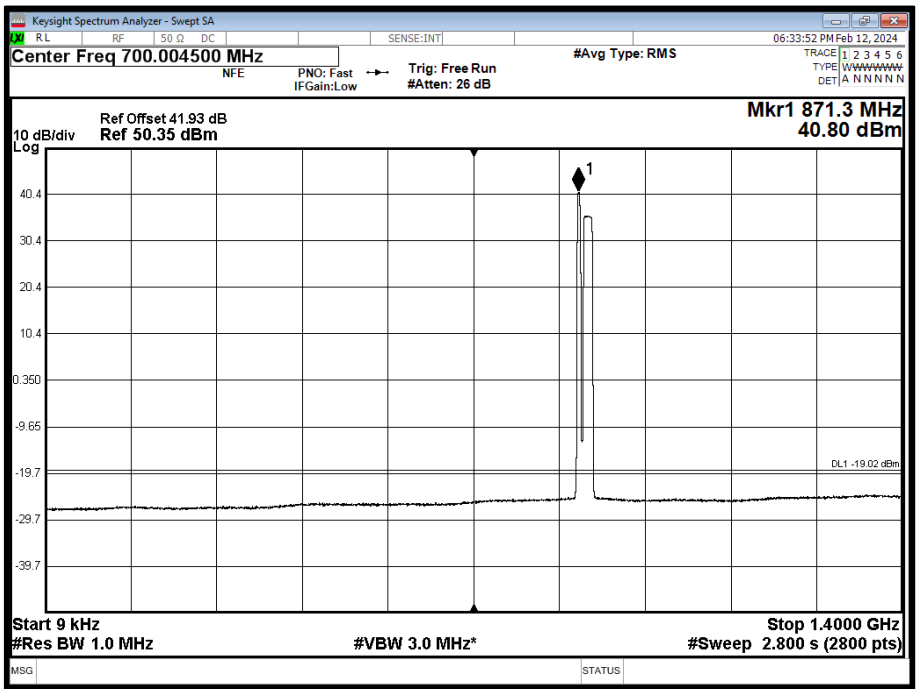
Antenna D - WCDMA / LTE Modulation 64QAM / QPSK - WCDMA / LTE Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position M - Band 2 - Range 1400 to 9000 MHz



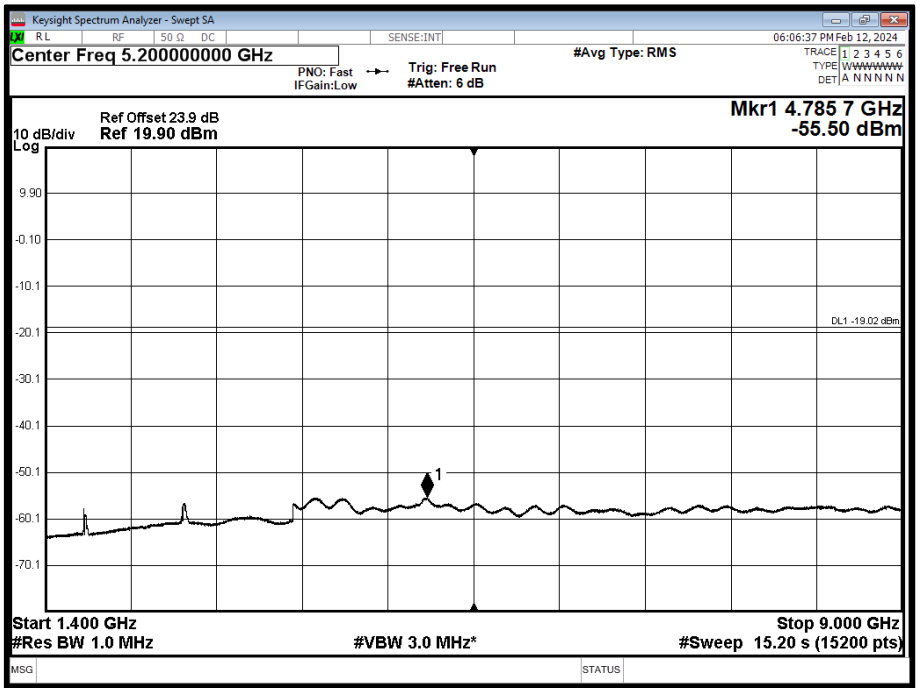
Configuration 5

Maximum Output Power 47.80 dBm

Antenna D - WCDMA / NR Modulation 64QAM/QPSK - WCDMA / NR Carrier Bandwidth 5.0 MHz / 15.0 MHz 30 kHz SCS - Channel Position M - Band 1 - Range 0.009 to 1400 MHz



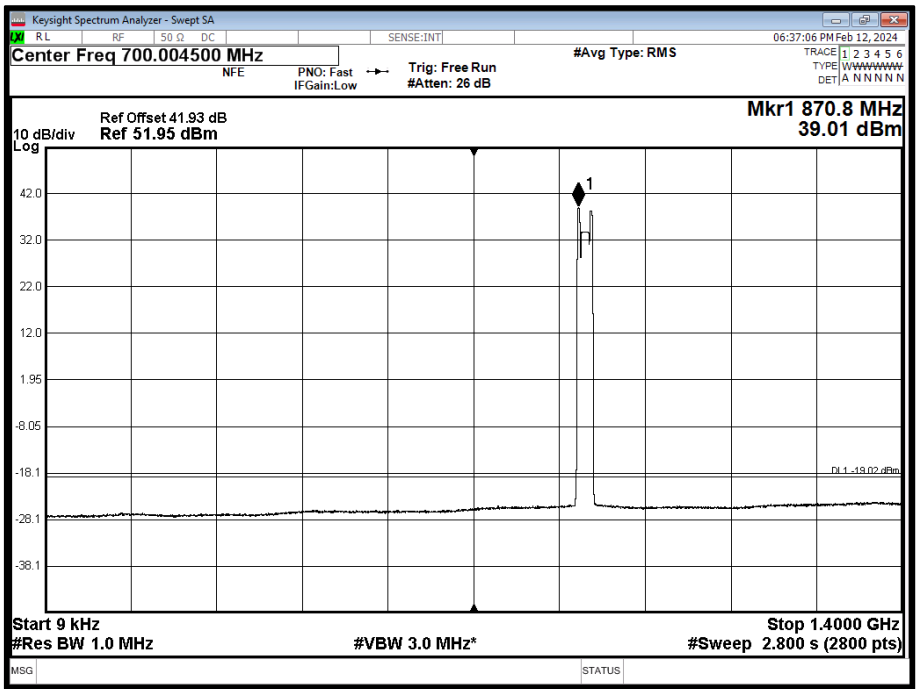
Antenna D - WCDMA / NR Modulation 64QAM/QPSK - WCDMA / NR Carrier Bandwidth 5.0 MHz / 15.0 MHz 30 kHz SCS - Channel Position M - Band 2 - Range 1400 to 9000 MHz



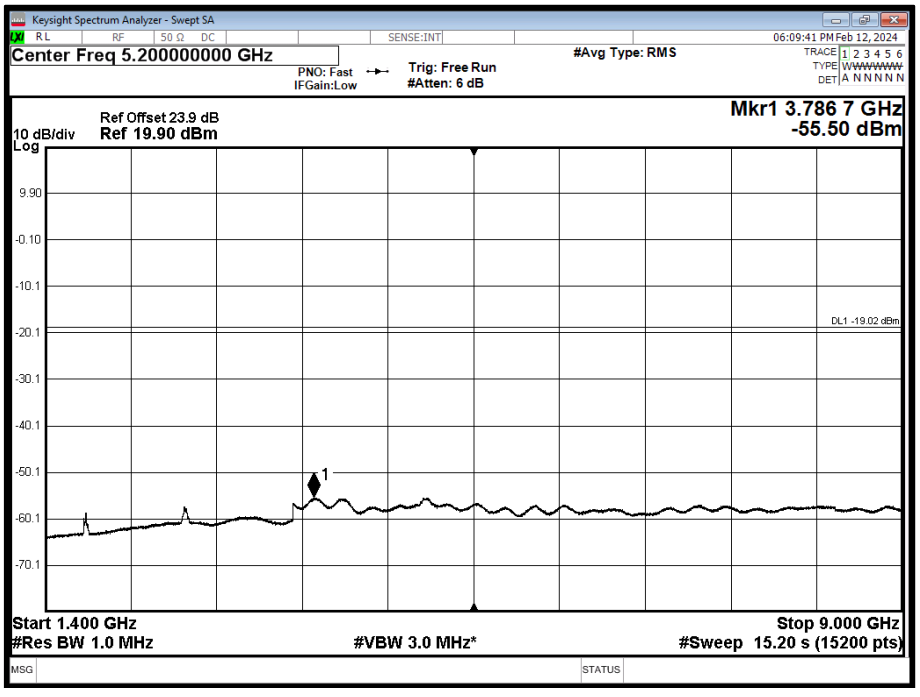
Configuration 6

Maximum Output Power 47.80 dBm

Antenna D - WCDMA / LTE / NR Modulation 64QAM / QPSK / QPSK - WCDMA / LTE / NR Carrier Bandwidth 5.0 MHz / 5.0 MHz / 25.0 MHz 30 kHz SCS - Channel Position M - Band 1 - Range 0.009 to 1400 MHz



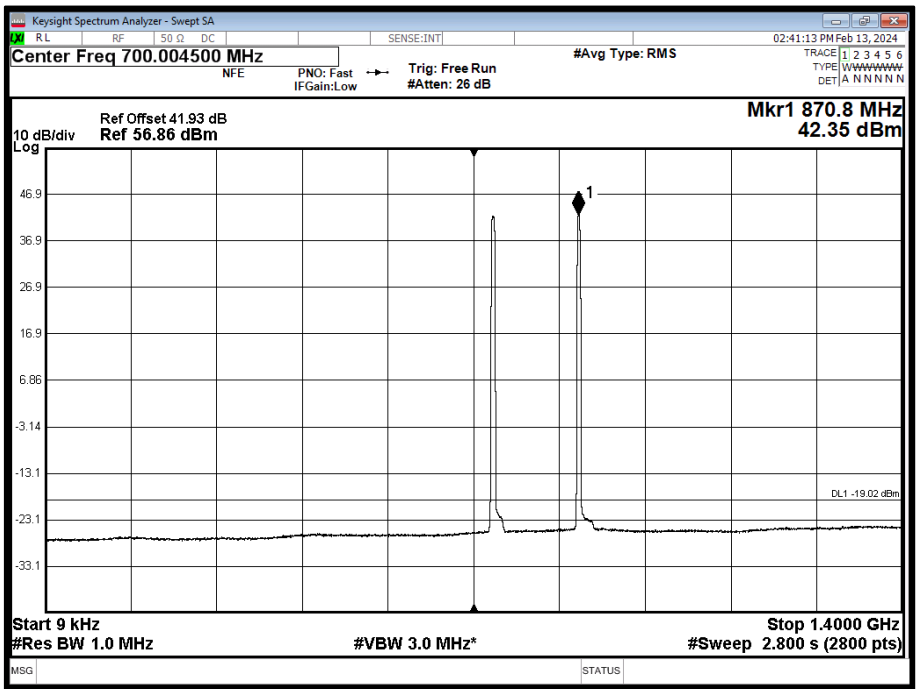
Antenna D - WCDMA / LTE / NR Modulation 64QAM / QPSK / QPSK - WCDMA / LTE / NR Carrier Bandwidth 5.0 MHz / 5.0 MHz / 25.0 MHz 30 kHz SCS - Channel Position M - Band 2 - Range 1400 to 9000 MHz



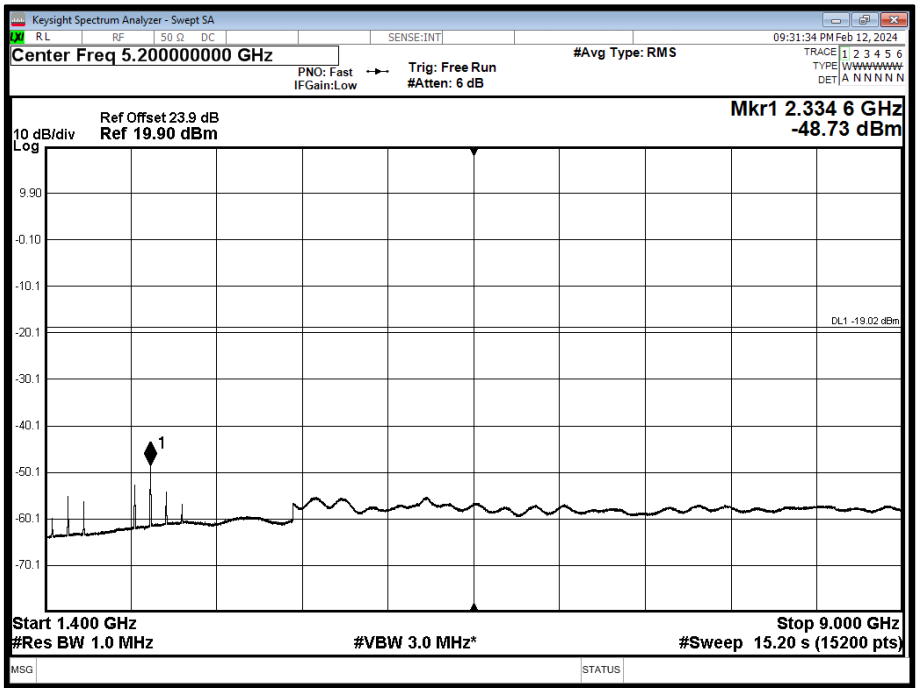
Configuration 7

Maximum Output Power 46.00 dBm (WCDMA) 47.80 dBm (LTE)

Antenna D - WCDMA / LTE Modulation 64QAM / 64QAM - WCDMA / LTE Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1400 MHz



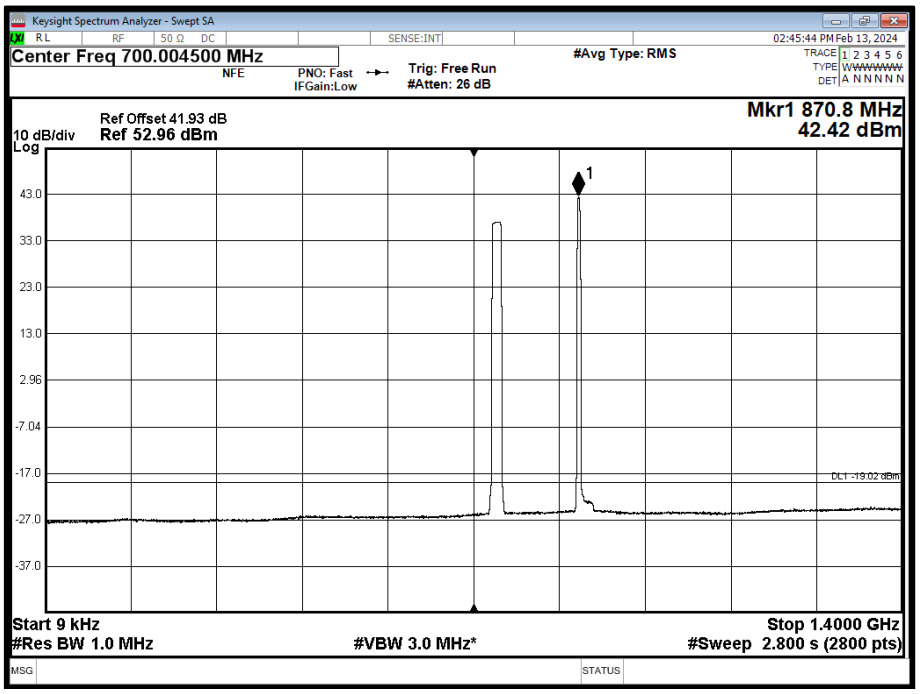
Antenna D - WCDMA / LTE Modulation 64QAM / 64QAM- WCDMA / LTE Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position M - Band 2 - Range 1400 to 9000 MHz



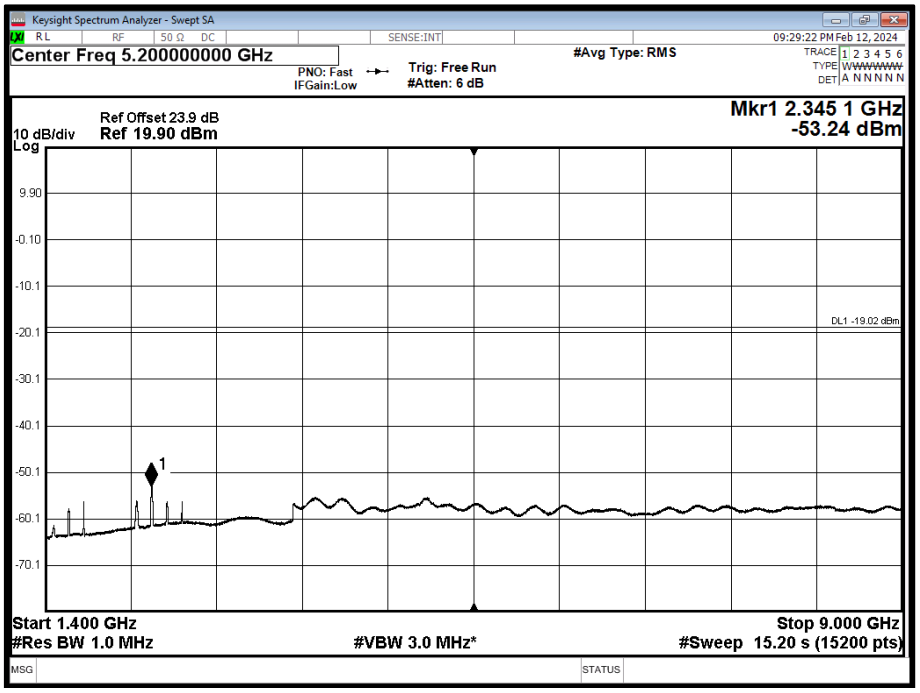
Configuration 8

Maximum Output Power 46.00 dBm (WCDMA) 47.80 dBm (NR)

Antenna D - WCDMA / NR Modulation 64QAM / QPSK - WCDMA /NR Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1400 MHz



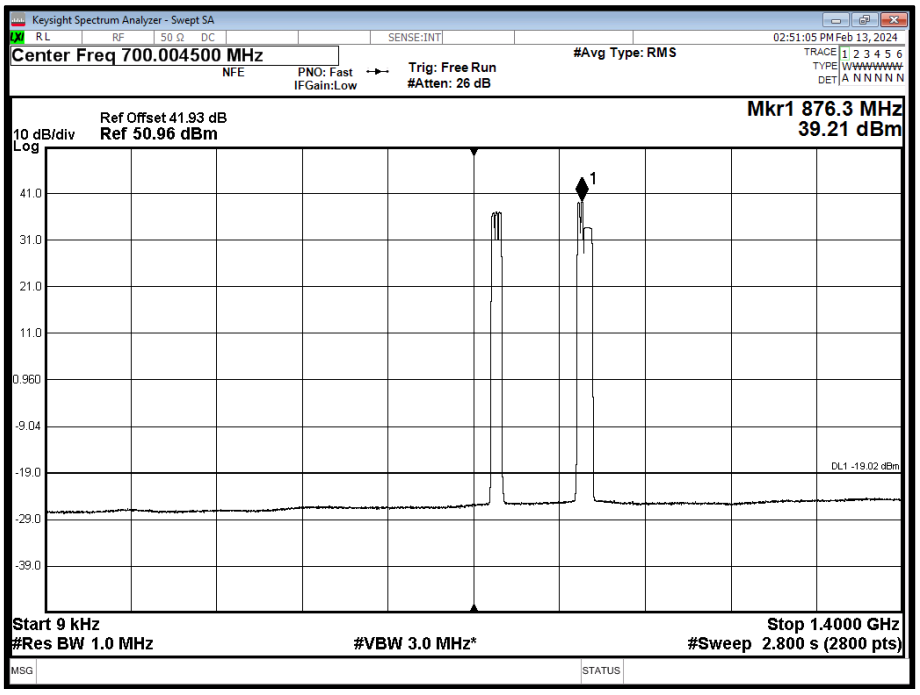
Antenna D - WCDMA / NR Modulation 64QAM / QPSK - WCDMA /NR Carrier Bandwidth 5.0 MHz / 5.0 MHz - Channel Position M - Band 2 - Range 1400 to 9000 MHz



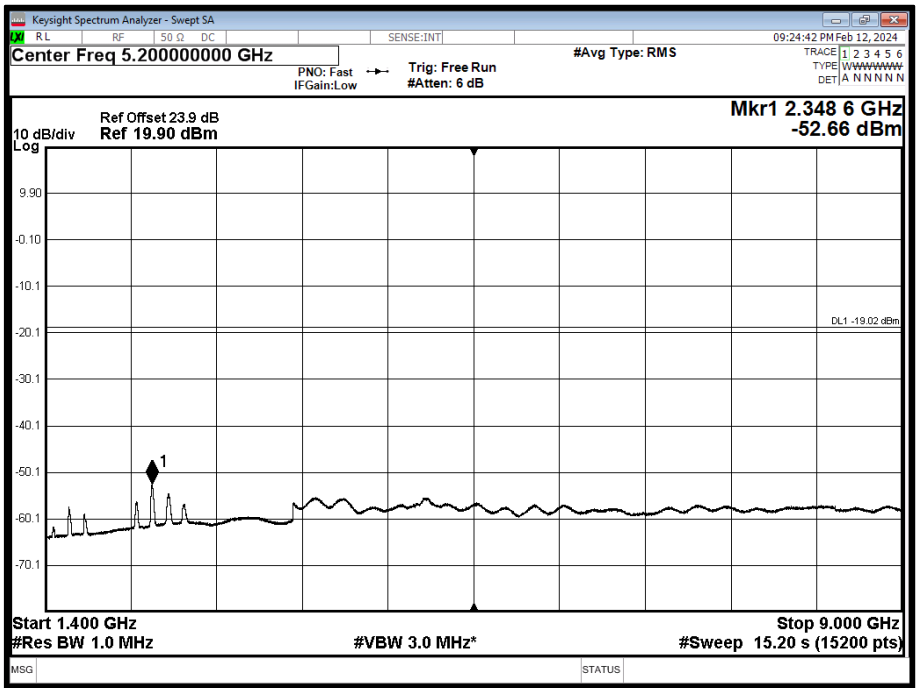
Configuration 9

Maximum Output Power 50.80 dBm

Antenna D - WCDMA / LTE / NR Modulation 64QAM / 64QAM / QPSK - WCDMA / LTE / NR Carrier Bandwidth 5.0 MHz / N:15.0 MHz 30 kHz SCS / 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1400 MHz



Antenna D - WCDMA / LTE / NR Modulation 64QAM / 64QAM / QPSK - WCDMA / LTE / NR Carrier Bandwidth 5.0 MHz / N:15.0 MHz 30 kHz SCS / 5.0 MHz - Channel Position M - Band 2 - Range 1400 to 9000 MHz



Limit	-19dBm

2.5 FREQUENCY STABILITY

2.5.1 Specification Reference

FCC CFR 47 Part 22, Clause 22.355
FCC CFR 47 Part 27, Clause 27.54
ISED RSS-GEN, Clause 6.11
ISED RSS-130, Clause 4.5
ISED RSS-132, Clause 5.3
FCC CFR 47 Part 2, Clause 2.1055

2.5.2 Date of Test and Modification State

19-February-2024 - Modification State 0

2.5.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.4 Environmental Conditions

Ambient Temperature	23.1°C
Relative Humidity	30.6%

2.5.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 9 and ANSI C63.26 Clause 5.6

2.5.6 Test Results

Configuration 1

Maximum Output Power 46.00 dBm

Temperature	Voltage	Frequency Error (Hz)
		Channel Position M
-30°C	-48.0 V DC	0.06
-20°C	-48.0 V DC	0.14
-10°C	-48.0 V DC	0.04
0°C	-48.0 V DC	0.07
+10°C	-48.0 V DC	0.20
+20°C	-40.8 V DC	1.02
+20°C	-48.0 V DC	1.08
+20°C	-55.2 V DC	1.01
+30°C	-48.0 V DC	1.14
+40°C	-48.0 V DC	1.27
+50°C	-48.0 V DC	1.04

RSS-130 Clause 4.5 and RSS-132 Clause 5.3

Limit	The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within each of the sub-bands when tested at the temperature and supply voltage variations specified in RSS-Gen

Frequency Tolerance FCC Part 22.355

Frequency range (MHz)	Limit (ppm)
25 to 50	20.0
50 to 450	5.0
450 to 512	2.5
821 to 896	1.5
928 to 929	5.0
929 to 960	1.5
2110 to 2220	10.0

FCC Part 27.54

Limit	The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

SECTION 3

TEST EQUIPMENT USED

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Maximum Peak Output Power and Peak to Average Ratio - Conducted					
ENA Network Analyzer (2Hz-44GHz)	Keysight	E5080B	BAMS 1056688792	12	11-Jan-2025
PXA Signal Analyzer (2Hz-44GHz)	Keysight	N9030A	BAMS 1001562403	12	02-Jan-2025
Power Supply	Keysight	N8738A	BAMS 1001643633	N/A	O/P Mon
Thermo Hygro Barometer	RS PRO	521801	5931	12	28-Apr-2024
Milliohm Meter	RS PRO	ILOM-508A	5755	12	17-May-2024
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: QM935	N/A	O/P Mon
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: 004	N/A	O/P Mon
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: 002	N/A	O/P Mon
Occupied Bandwidth					
ENA Network Analyzer (2Hz-44GHz)	Keysight	E5080B	BAMS 1056688792	12	11-Jan-2025
PXA Signal Analyzer (2Hz-44GHz)	Keysight	N9030A	BAMS 1001562403	12	02-Jan-2025
Power Supply	Keysight	N8738A	BAMS 1001643633	N/A	O/P Mon
Thermo Hygro Barometer	RS PRO	521801	5931	12	28-Apr-2024
Milliohm Meter	RS PRO	ILOM-508A	5755	12	17-May-2024
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: QM935	N/A	O/P Mon
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: 004	N/A	O/P Mon
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: 002	N/A	O/P Mon
Band Edge					
ENA Network Analyzer (2Hz-44GHz)	Keysight	E5080B	BAMS 1056688792	12	11-Jan-2025
PXA Signal Analyzer (2Hz-44GHz)	Keysight	N9030A	BAMS 1001562403	12	02-Jan-2025
Power Supply	Keysight	N8738A	BAMS 1001643633	N/A	O/P Mon
Thermo Hygro Barometer	RS PRO	521801	5931	12	28-Apr-2024
Milliohm Meter	RS PRO	ILOM-508A	5755	12	17-May-2024
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: QM935	N/A	O/P Mon
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: 004	N/A	O/P Mon
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: 002	N/A	O/P Mon
Transmitter Spurious Emissions					
ENA Network Analyzer (2Hz-44GHz)	Keysight	E5080B	BAMS 1056688792	12	11-Jan-2025
PXA Signal Analyzer (2Hz-44GHz)	Keysight	N9030A	BAMS 1001562403	12	02-Jan-2025
Power Supply	Keysight	N8738A	BAMS 1001643633	N/A	O/P Mon
Thermo Hygro Barometer	RS PRO	521801	5931	12	28-Apr-2024
Milliohm Meter	RS PRO	ILOM-508A	5755	12	17-May-2024
High Pass Filter	Wainwright	Model: WHK 1.4/15 GHz	SERIAL NO: 7	N/A	O/P Mon

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: QM935	N/A	O/P Mon
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: 004	N/A	O/P Mon
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: 002	N/A	O/P Mon
Frequency Stability					
Multimeter	RS PRO	RS-14	6609	12	04-Jul-2024
Thermo Hygro Barometer	RS PRO	521801	5931	12	28-Apr-2024
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: QM935	N/A	O/P Mon
Attenuator 20dB	Aeroflex/Weinschel	Model: 6834-20-11	SERIAL NO: 004	N/A	O/P Mon
Milliohm Meter	RS PRO	ILOM-508A	5755	12	17-May-2024
Power Supply	Keysight	N8738A	BAMS 1001982630	N/A	O/P Mon
PXA Signal Analyzer (2Hz-44GHz)	Keysight	N9030B	BAMS 1002016870	12	21-Jun-2024
Chamber	Vötsch	VT 7060	BAMS 1001148977	N/A	O/P Mon

N/A – Not Applicable
O/P Mon – Output Monitored with Calibrated Equipment

3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter		MU	MU Unit
Conducted Maximum Peak Output Power- HP-VEE Software	729 MHz to 894 MHz		±1.768	dB
Conducted Emissions- HP-VEE Software	9 kHz to 9 GHz		±0.89	dB
Frequency Stability - HP-VEE Software	729 MHz to 894 MHz		31,3	Hz
Occupied Bandwidth - HP-VEE Software or Spectrum	WCDMA Bandwidth	5 MHz Bandwidth	187715	Hz
Band Edge- HP-VEE Software	729 MHz to 894 MHz		±1.768	dB

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the results of the compliance measurement and does not take into account measurement instrumentation uncertainty as defined in ANSI C63.26:2015 Clause 1.3.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8

3.3 MEASUREMENT SOFTWARE USED

List of measurement software versions used for testing.

Instrument	Manufacturer	Type No.	TE No.	Software Version
PXA Signal Analyser	Keysight	N9030A	BAMS1001562403	A.19.05
HP-VEE Software	TUV SUD	HP_VEE	N/A	V3.34

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

Accred. no. 10363
Testing
ISO/IEC 17025

This report relates only to the actual item/items tested.

Our Swedac Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our Swedac Accreditation.

Results of tests not covered by our Swedac Accreditation Schedule are marked NSA (Not Swedac Accredited).

Postal Address: Adelgatan 2, 211 22 Malmö, Sweden

ANNEX A

MODULE LIST

Configuration			
Product	Product No	R-State	Serial No
Radio 4490HP B5B12A	KRC 161 981/3	R1C	E23E485204
CT-DU25	LPC102500/1	R3B	T01G520910
Software Version:	CXP2021113/1	Revision:	R20A103