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Report On

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

COMMERCIAL-IN-CONFIDENCE

FCC: TA8AKRC161981

IC: 287AB-AS161981

PREPARED BY

APPROVED BY

DATED

Maggie Whiting
Key Account Manager

Steve Scarfe
Authorised Signatory

19 April 2023

Document 75957662 Report 02 Issue 4

April-2023



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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)	E23E439818
Software Version	CXP2021113/1_R16A470
Hardware Version	R1B
Non-Tested Variant (See Section 1.10 Additional Information)	Radio 4490HP 44B5 44B12A C - KRC 161 981/31
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2021, FCC CFR 47 Part 27: 2021, ISED RSS-GEN: Issue 5: March 2019 Amendment 1, 2021 Amendment 2, and ISED RSS-130: Issue 2: 2019
Test Plan	General RA FCC-ISED Test Plan for Radio 4490HP B5B12A_J
Start of Test	08-March-2023
Finish of Test	31-March-2023
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 SRSP-518 Issue 2: February 2019

This report has been up issued to Issue 4 and should be read in place of Issue 3 to correct typing errors

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 FCC CFR 47 Part 2: 2021, FCC CFR 47 Part 27: 2021, ISED RSS-GEN: Issue 5: March 2019 Amendment 1, 2021 Amendment 2, and ISED RSS-130: Issue 2: 2019. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

Ashok Kumar



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 27, ISED RSS-GEN and ISED RSS-130 is shown below.

Section	Specification Clause				Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 27	RSS-GEN	ISED RSS-130		
2.1	2.1046	27.50	-	4.6	Maximum Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	27.53	-	-	Occupied Bandwidth	Pass
2.3	2.1051	27.53	-	-	Band Edge	Pass
2.4	2.1051	27.53	-	4.7	Transmitter Spurious Emissions	Pass
2.5	2.1055	27.54	6.11	4.5	Frequency Stability	Pass

Testing in this Report covers only B12A (700 MHz) and Multiband B12A + B5.

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) only.

TÜV SÜD Document 7595662 Report 03 - Radio 4490HP 44B5 44B12A C – B5 (8500MHz) – ESS only.

TÜV SÜD Document 7595662 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	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	LTE	1	5.0 MHz	731.5	737.0	742.5	47.8	
		1	10.0 MHz	734.0	737.0	740.0	47.8	
2		5.0 MHz	-	731,5+742,5	-	44.8		
3		5.0 MHz	-	731,5+737,0+742,5	-	43.0		
4		NR	1	5.0 MHz 15 kHz SCS	731.5	737.0	742.5	47.8
				10.0 MHz 30 kHz SCS	734.0	737.0	740.0	47.8
	15.0 MHz 30 kHz SCS			736.5	737.0	736.5	47.8	
5	2	5.0 MHz 15 kHz SCS	-	731,5+742,5	-	44.8		
6	3	5.0 MHz 15 kHz SCS	-	731,5+737,0+742,5	-	43.0		
7	LTE+NR	2	LTE 5.0 MHz + NR 15.0 MHz 30 kHz SCS	-	734+742.5	-	44.8	
8	NR NB-IoT IB	1	5.0 MHz 15 kHz SCS	731.5	737.0	742.5	47.8	
			10.0 MHz 30 kHz SCS	734.0	737.0	740.0	47.8	
			15.0 MHz 30 kHz SCS	736.5	737.0	737.5	47.8	
9	LTE NB-IoT IB	1	5.0 MHz 15 kHz SCS	731.5	737.0	742.5	47.8	
10	LTE NB-IoT GB	1	10.0 MHz	734.0	737.0	740.0	47.8	
11	Multiband NR(B5) + LTE(12A)	2	NR SCS 30kHz QPSK 25MHz + LTE 64QAM 5MHz. 10 MHz SCS 15 kHz	-	(NR) 881,5 + (LTE) 731,5	-	47.8	
12	Multiband NR(B5) + LTE(12A)+ LTE(12A)+ LTE(12A)	4	NR SCS 30kHz QPSK 25MHz +LTE 64QAM 5MHz	-	(NR) 881,5 + (LTE)731,5 + (LTE) 737,0 + (LTE) 742,5	-	NR 47.8 LTE 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:	R1B	
Software Version:	CXP2021113/1_R16A470	
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
Frequency Range (MHz to MHz) B5	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
Conducted Declared Output Power (dBm)	47,8 Max output power per port/ 60W 50,8 Max output power multi band per port/120W 56.81Max output power per Radio 480W.	47,8 Max output power per port / 60W 50,8 Max output powermultiband per port/120W. 56.81Max 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
Total RF bandwidth (IBW) B12A	16MHz	16MHz
Supported Bandwidth(s) (MHz) B5	5,10MHz	5,10,15, 20,25MHz(SCS15kHz),10,15, 20, 25MHz(SCS30kHz)
Supported Bandwidth(s) (MHz) B5	ESS: 10MHz	
Supported Bandwidth(s) (MHz) B12A	5,10MHz	5,10,15MHz(SCS 15kHz),10,15MHz(SCS 30kHz)
Supported Bandwidth(s) (MHz) B12A	ESS :10MHz	
Modulation Scheme(s)	QPSK, 16QAM, 64QAM, 256QAM	QPSK, 16QAM, 64QAM, 256QAM
Supported NB-IoT: B5, B12A	NB-IoT(IB,GB), Modulation QPSK,	NB-IoT(IB) ,Modulation QPSK,
ITU Emission Designator	B5:	B12A:
	LTE with and without NB IoT IB: 5 MHz, BW: 4M48W7D LTE with NB IoT GB: 10 MHz,BW: 9M35W7D LTE carrier aggregation: 25MHz, BW: 24M3W7D (5 x 5MHz, CA)	LTE with and without NB IoT IB: 5 MHz, BW:4M49W7D LTE with NB IoT GB: 10 MHz,BW: 9M33W7D LTE carrier aggregation: 10MHz, BW: 9M45W7D (5MHz + 5MHz, CA)
	NR with NB IoT IB: 5 MHz, BW: 4M56W7D 10 MHz,BW:9M40W7D 15 MHz,BW:14M4W7D 20 MHz,BW:19M2W7D 25 MHz,BW:23M9W7D NR carrier aggregation: 25MHz, BW: 24M3W7D (5 x 5MHz, CA)	NR with NB IoT IB: 5 MHz, BW: 4M56W7D 10 MHz,BW:9M42W7D 15 MHz,BW:14M4W7D 20 MHz,BW:not support 25MHz,BW:not support NR carrier aggregation: 10MHz, BW: 9M43W7D



		(5MHz + 5MHz, CA)
Duplex mode:	FDD	FDD
Supported transmission modes:	4X4 MIMO	4X4 MIMO
Maximum number of carriers per band B5/Port	5	5
Maximum number of carriers per band 12A/Port	3	3
Maximum number of carriers per multi band (B5, 12A)/Port	8	8
Maximum NB-IoT GB carriers per host carrier	2	2
Maximum NB-IoT IB carriers per host carrier	1	1
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:	03/04/2023	

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 12A band which provides communication connections to Band 12A network.

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

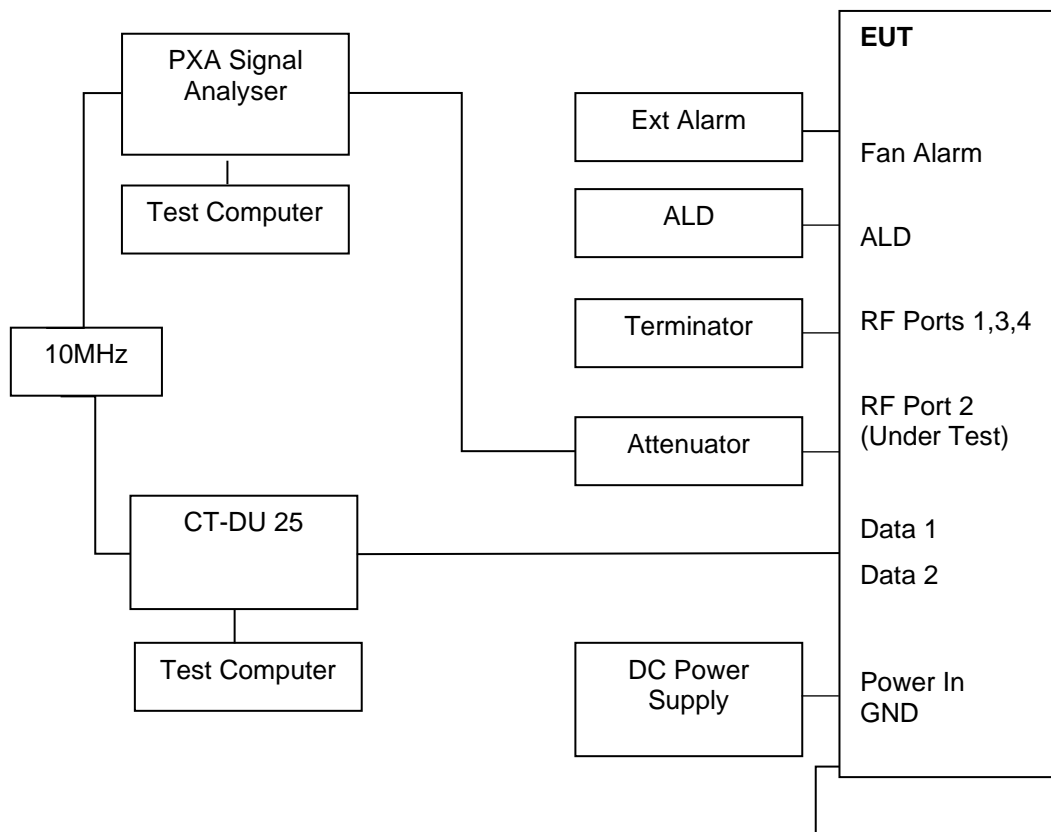
The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.



Equipment Under Test

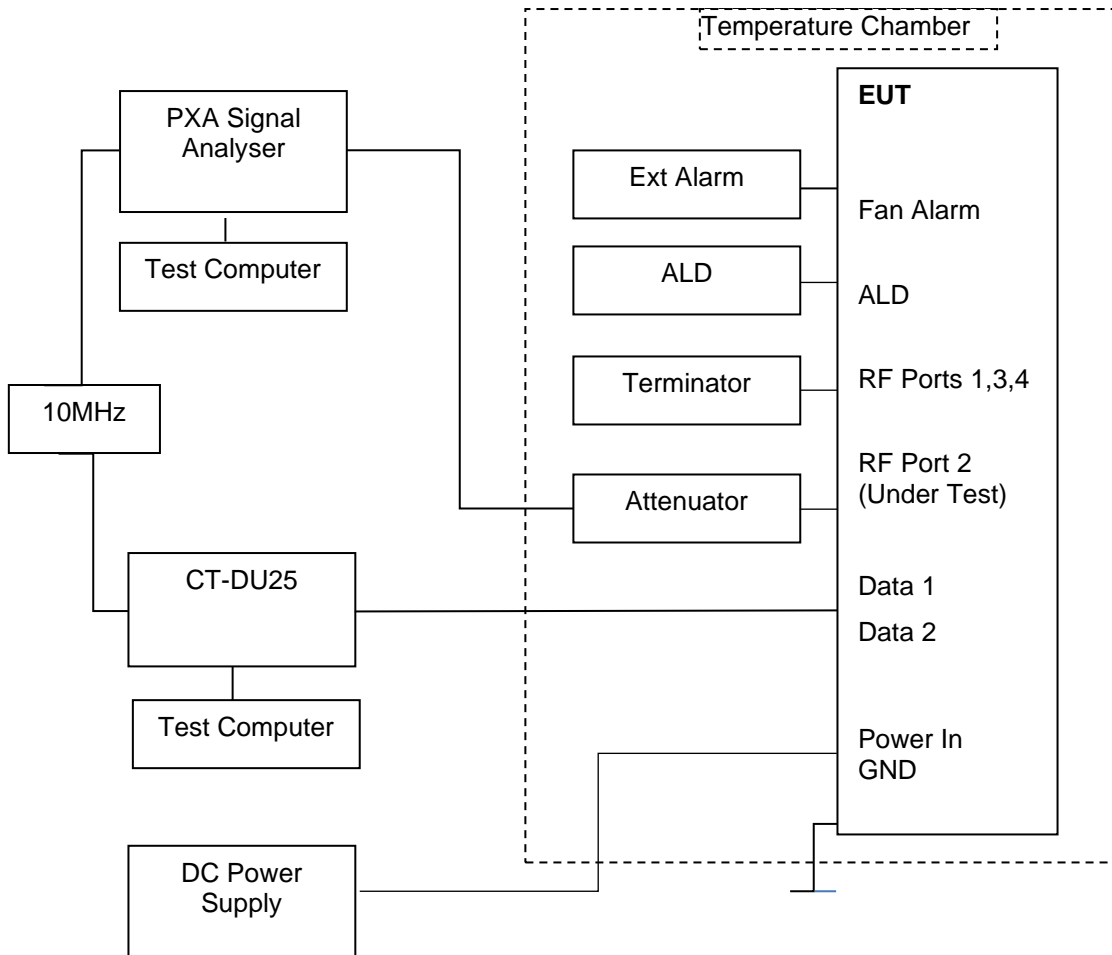
1.7 TEST SETUP

Conducted Test Set Up





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

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

Ericsson will limit this product through the software from operating across the whole of Band 12, it will be limited to Band 12A.

The Test Plan is based on the TÜV SUD Document FCC and ISED Test Plan Rationale for Base Station Equipment.

Pre-testing was performed in accordance with the Test Plan to establish the worst-case Port, modulation schemes and bandwidths.

The port with the highest power, worst case port was port 2

Worst case modulation was 16QAM (LTE), QPSK (NR)

Worst case bandwidth was 5 MHz for LTE, 10 MHz for NR SCS 15kHz and 15 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.

This EUT uses the same port for Tx and Rx and therefore RX Spurious Emissions 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 27, Clause 27.50
ISED RSS-130, Clause 4.6
FCC CFR 47 Part 2, Clause 2.1046

2.1.2 Date of Test and Modification State

09, 10, 13, 15, 18, 19, 21, 22, 23, 24 March-2023 - 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	22.0 - 22.8°C
Relative Humidity	37.8 - 39.8%

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 A, worst case) + 10log (NANT)
Where NANT refers to the number of Ports.

Total Power = Measured Output Power (port 2, 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-518

2.1.6 Test Results

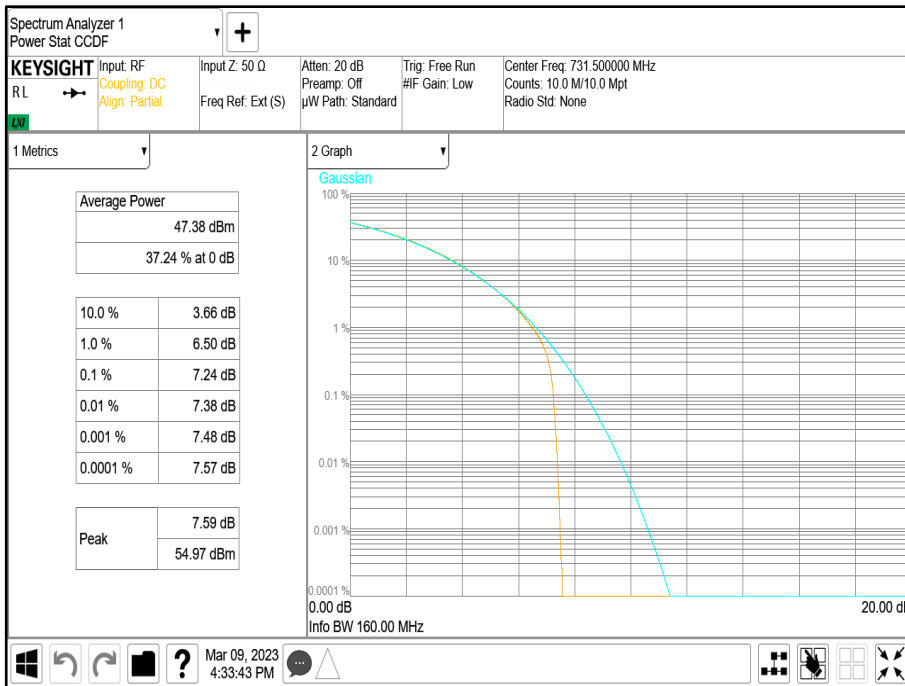
Configuration 1

Maximum Output Power 47.80 dBm

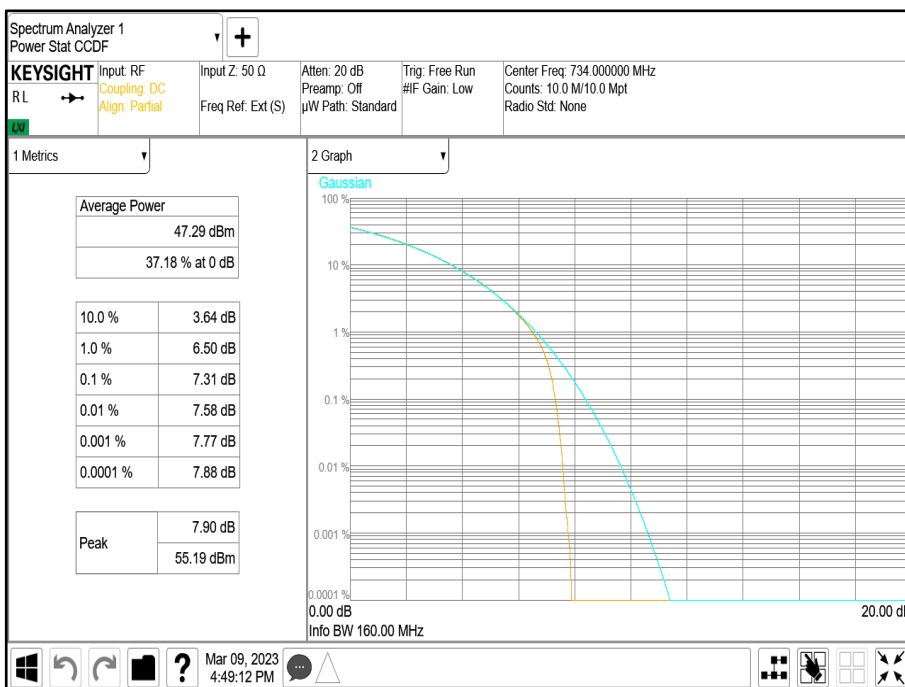


Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position B						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
dBm	dBm/MHz	dBm		dBm/MHz	dBi	dBi			
2	64QAM	5.0 MHz	7.24	47.28	40.95	53.30	46.97	15.18	18.18
2	64QAM	10.0 MHz	7.31	47.29	38.00	53.31	44.02	18.13	21.13

Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



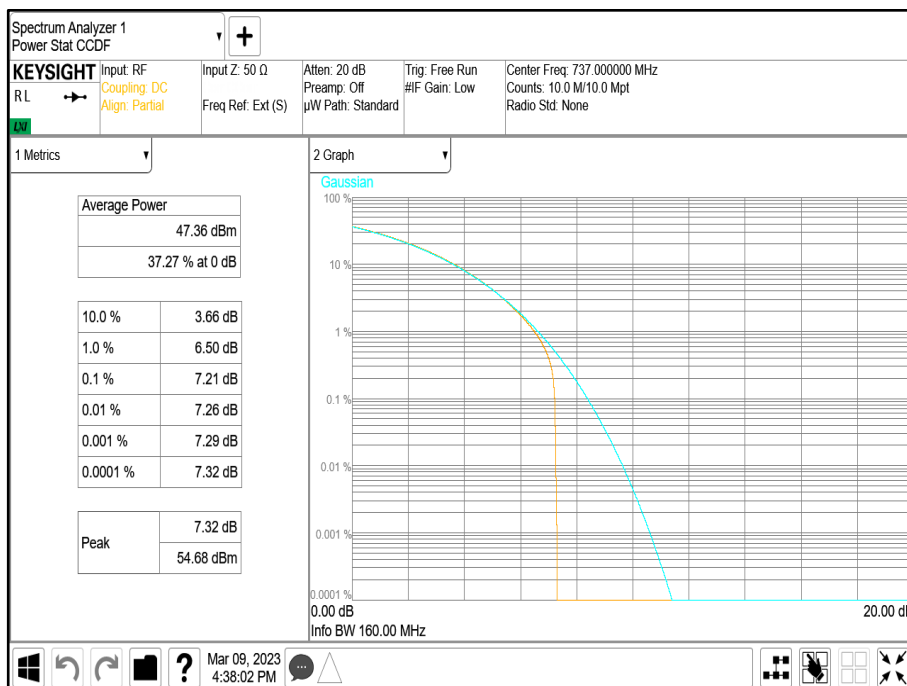


Configuration 1

Maximum Output Power 47.80 dBm

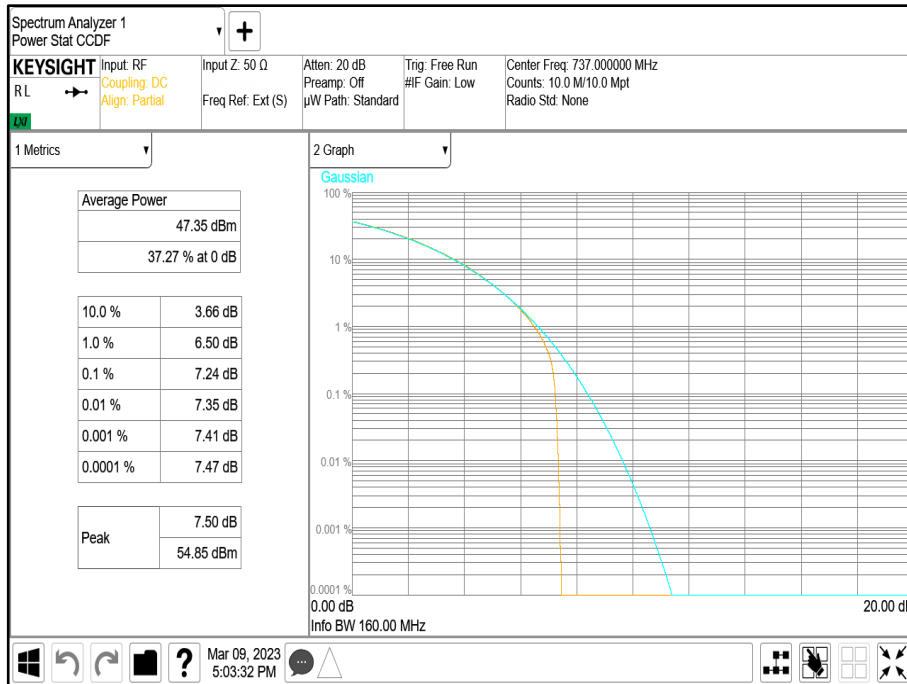
Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position M						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
			dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi	
2	64QAM	5.0 MHz	7.21	47.29	40.90	53.31	46.92	15.23	18.23
2	64QAM	10.0 MHz	7.24	47.30	37.92	53.32	43.94	18.21	21.21

Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M





Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



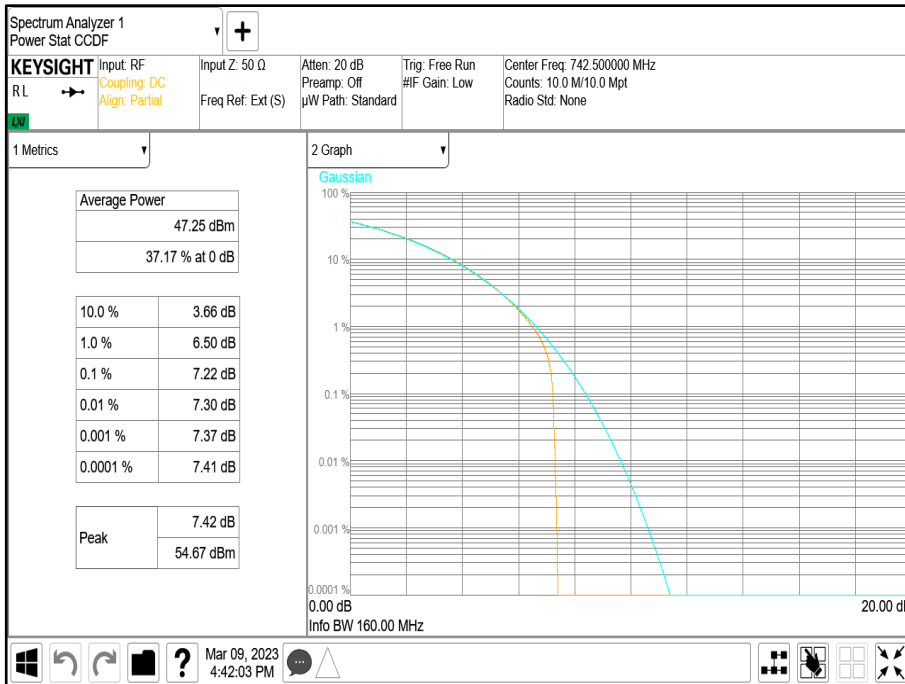
Configuration 1

Maximum Output Power 47.80 dBm

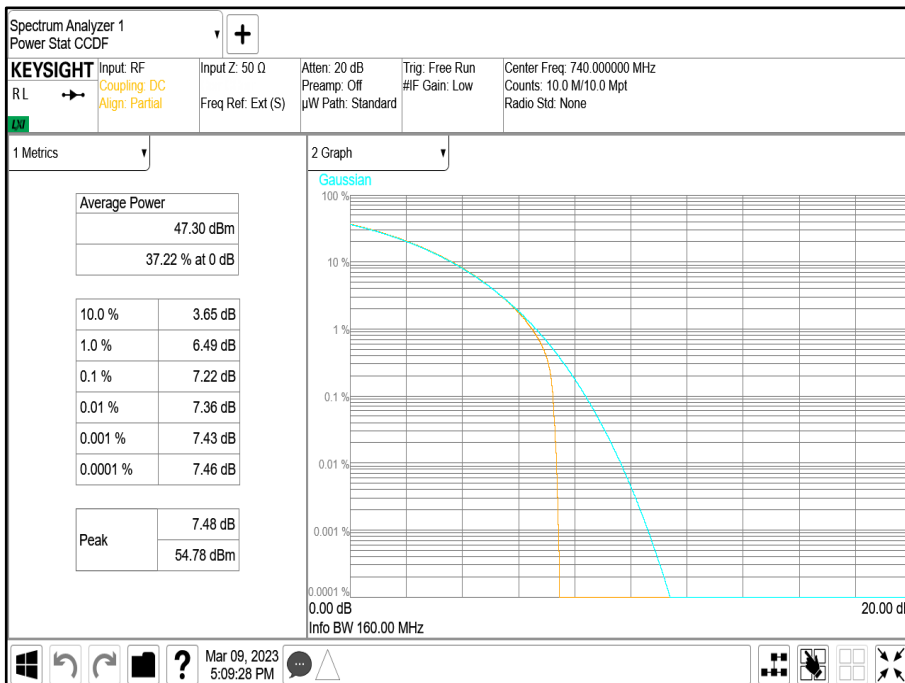
Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position T						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
			dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi	
2	64QAM	5.0 MHz	7.22	47.18	40.88	53.20	46.90	15.25	18.25
2	64QAM	10.0 MHz	7.22	47.26	37.97	53.28	43.99	18.16	21.16



Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T





Configuration 2

Maximum Output Power 47.80 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M				
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4	
				dBm	dBm/MHz	dBm	dBm/MHz
2	64QAM	5.0 MHz	-	47.41	37.93	53.43	43.95

Configuration 3

Maximum Output Power 47.80 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M				
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4	
				dBm	dBm/MHz	dBm	dBm/MHz
2	64QAM	5.0 MHz	-	47.21	36.05	53.23	42.07

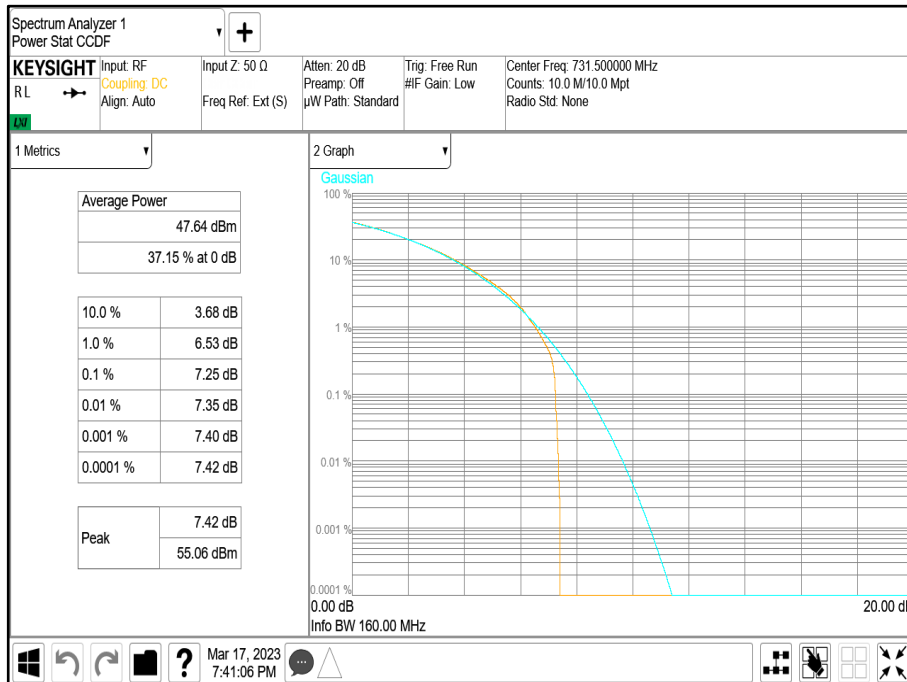


Configuration 4

Maximum Output Power 47.80 dBm

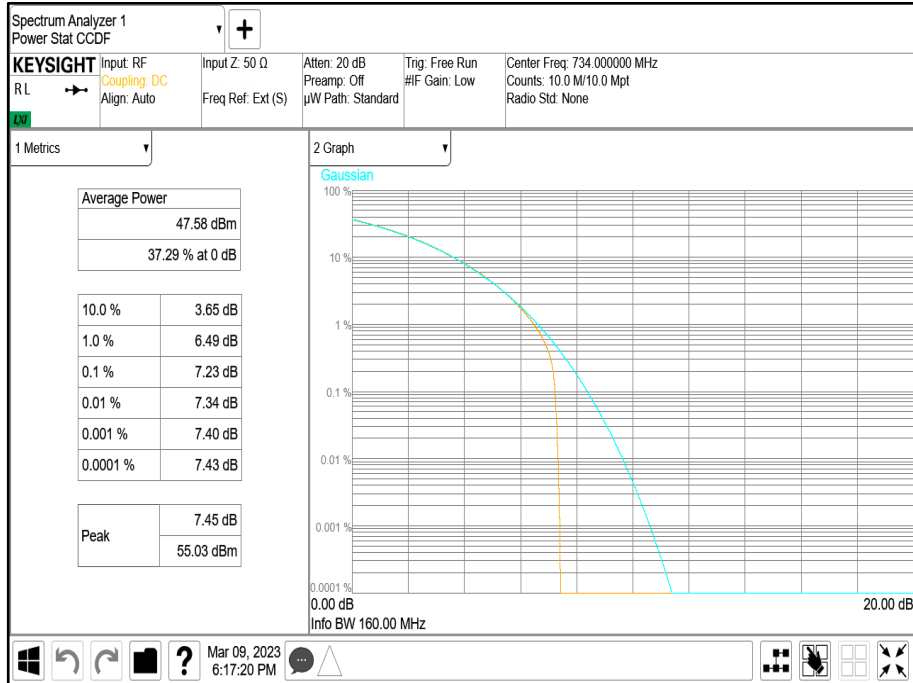
Antenna	NR Modulation	NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position B						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
			dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi	
2	QPSK	5.0 MHz 15 kHz SCS	7.25	47.56	42.36	53.58	48.38	13.77	16.77
3	QPSK	10.0 MHz 30 kHz SCS	7.25	47.56	42.36	53.58	48.38	13.77	16.77
2	QPSK	15.0 MHz 30 kHz SCS	7.34	47.36	36.16	53.38	42.18	19.97	22.97

Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B

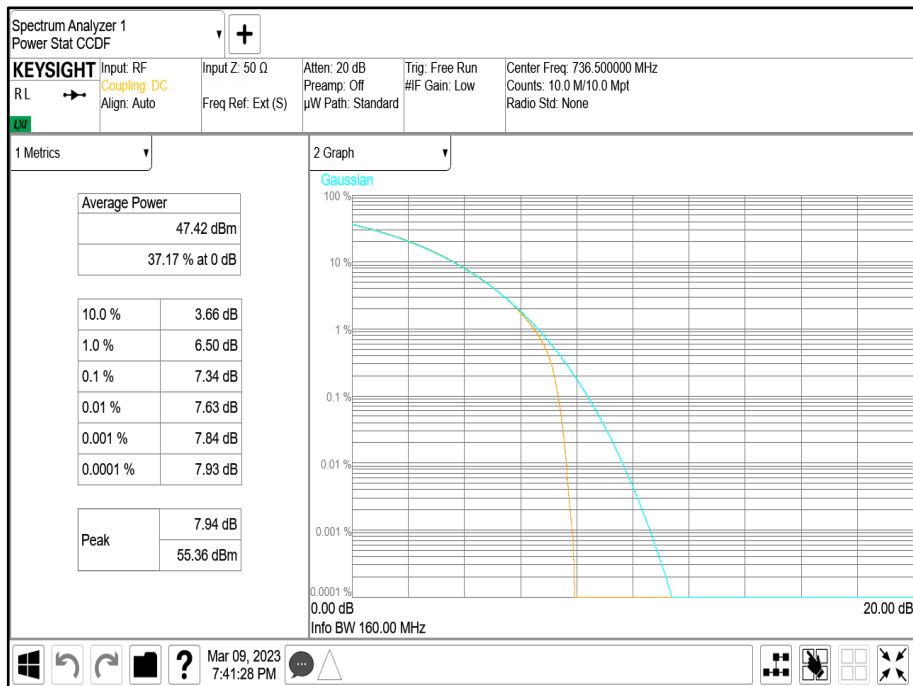




Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 30 kHz SCS - Channel Position B



Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 30 kHz SCS - Channel Position B



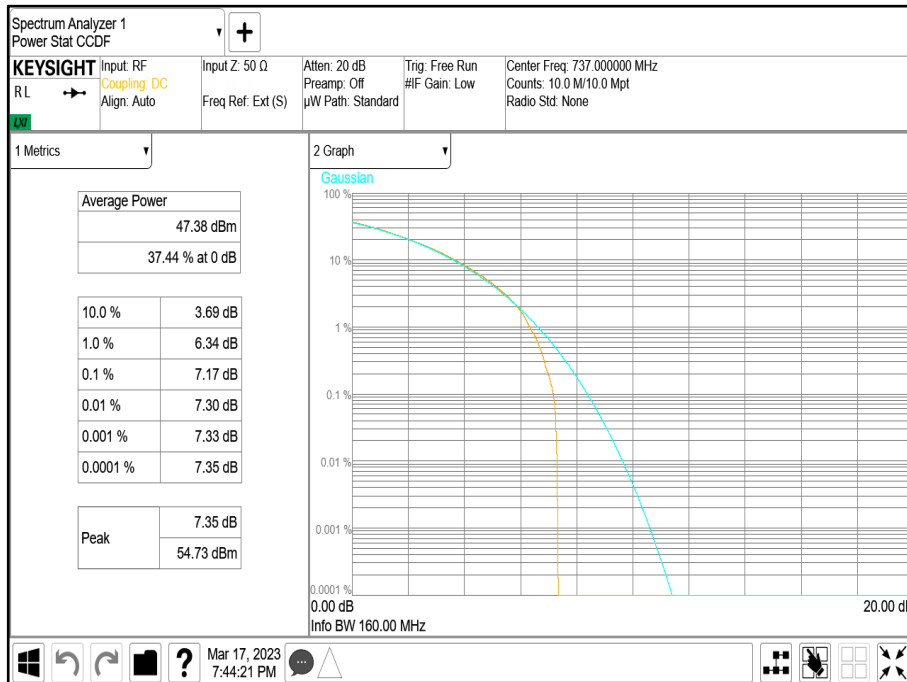


Configuration 4

Maximum Output Power 47.80 dBm

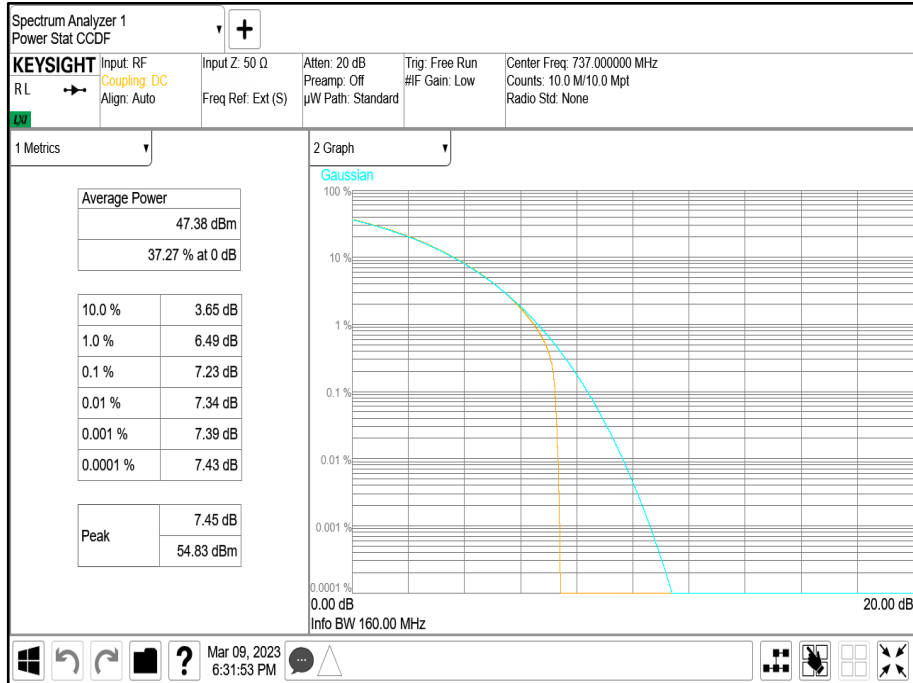
Antenna	NR Modulation	NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
				dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi
2	QPSK	5.0 MHz 15 kHz SCS	7.17	47.30	42.20	53.32	48.22	13.93	16.93
2	QPSK	10.0 MHz 30 kHz SCS	7.23	47.33	38.10	53.35	44.12	18.03	21.03
2	QPSK	15.0 MHz 30 kHz SCS	7.31	47.21	36.15	53.23	42.17	19.98	22.98

Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position M

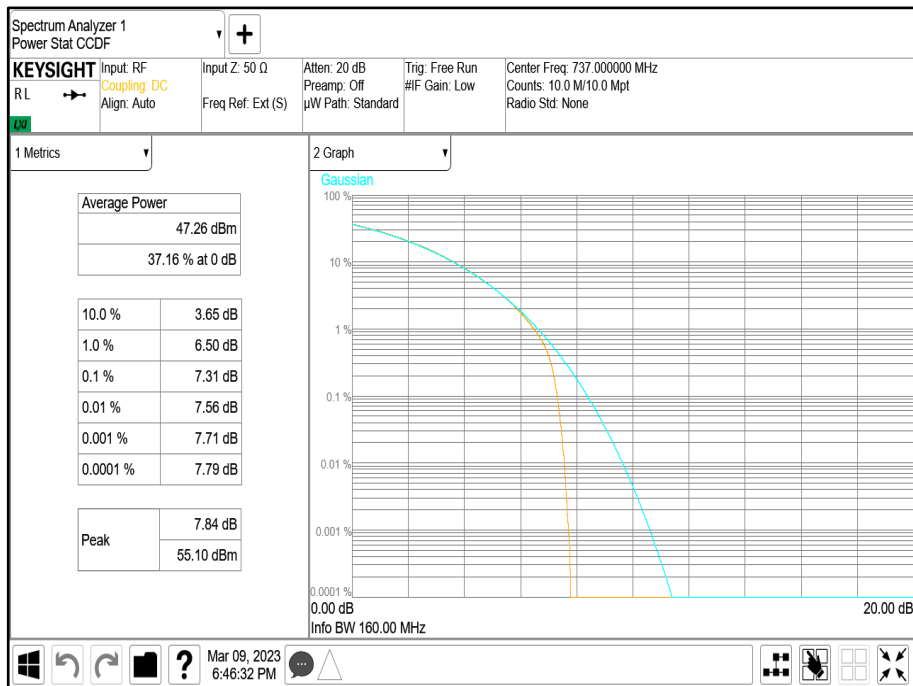




Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 30 kHz SCS - Channel Position M



Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 30 kHz SCS - Channel Position M



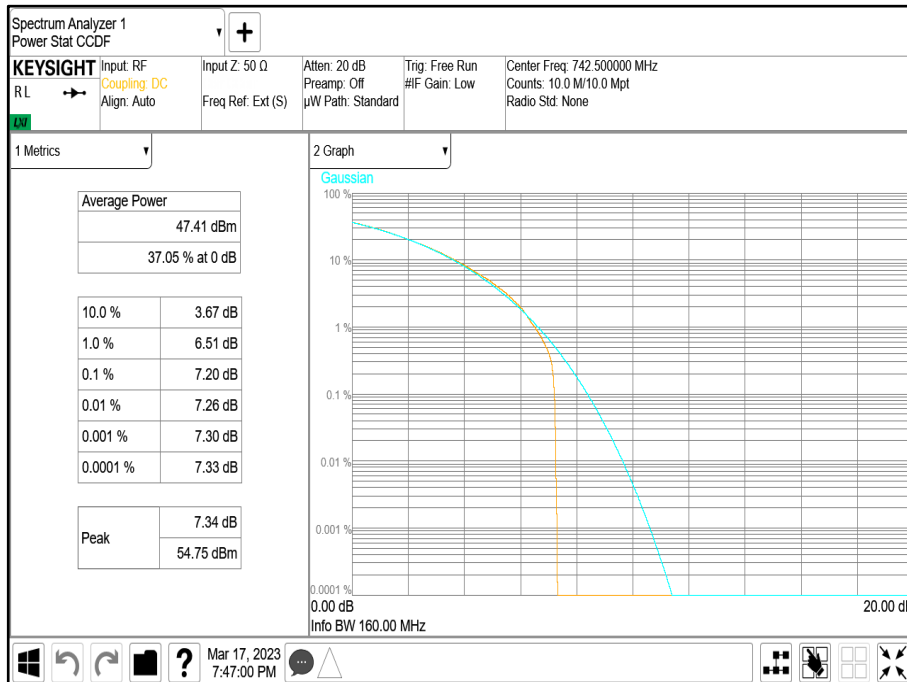


Configuration 4

Maximum Output Power 47.80 dBm

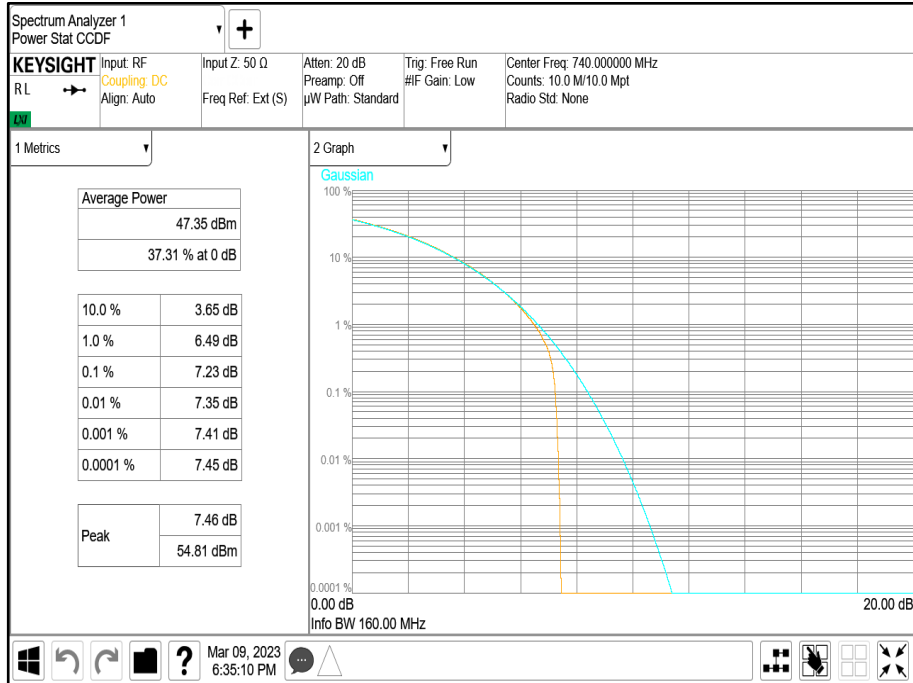
Antenna	NR Modulation	NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position T						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
			dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi	
2	QPSK	5.0 MHz 15 kHz SCS	7.20	47.32	42.08	53.34	48.10	14.05	17.05
2	QPSK	10.0 MHz 30 kHz SCS	7.23	47.29	38.10	53.31	44.12	18.03	21.03
2	QPSK	15.0 MHz 30 kHz SCS	7.34	47.21	36.02	53.23	42.04	20.11	23.11

Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T

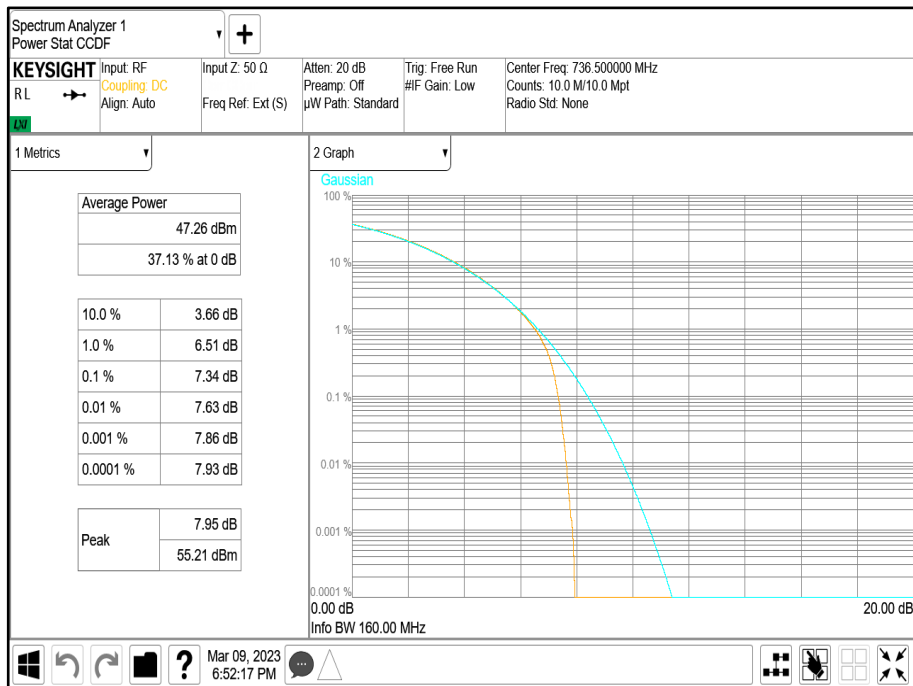




Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 30 kHz SCS - Channel Position T



Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 30 kHz SCS - Channel Position T





Configuration 5

Maximum Output Power 47.80 dBm

Antenna	NR Modulation	NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M				
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4	
				dBm	dBm/MHz	dBm	dBm/MHz
2	QPSK	5.0 MHz 15 kHz SCS	-	47.06	37.69	53.08	43.71

Configuration 6

Maximum Output Power 47.80 dBm

Antenna	NR Modulation	NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M				
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4	
				dBm	dBm/MHz	dBm	dBm/MHz
2	QPSK	5.0 MHz 15 kHz SCS	-	47.16	35.98	53.18	42.00

Configuration 7

Maximum Output Power 47.80 dBm

Antenna	LTE / NR Modulation	LTE / NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M _{RFEW}				
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4	
				dBm	dBm/MHz	dBm	dBm/MHz
2	64QAM /QPSK	L 5.0 MHz 15 kHz SCS: N 10.0 MHz 30 kHz SCS	-	47.56	38.57	53.58	44.59

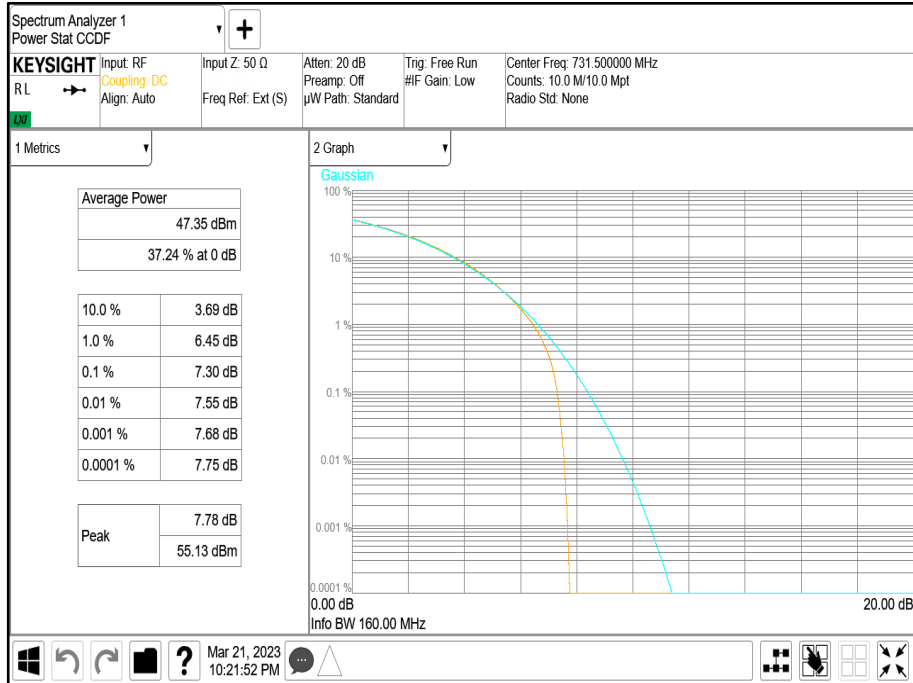
Configuration 8

Maximum Output Power 47.80 dBm

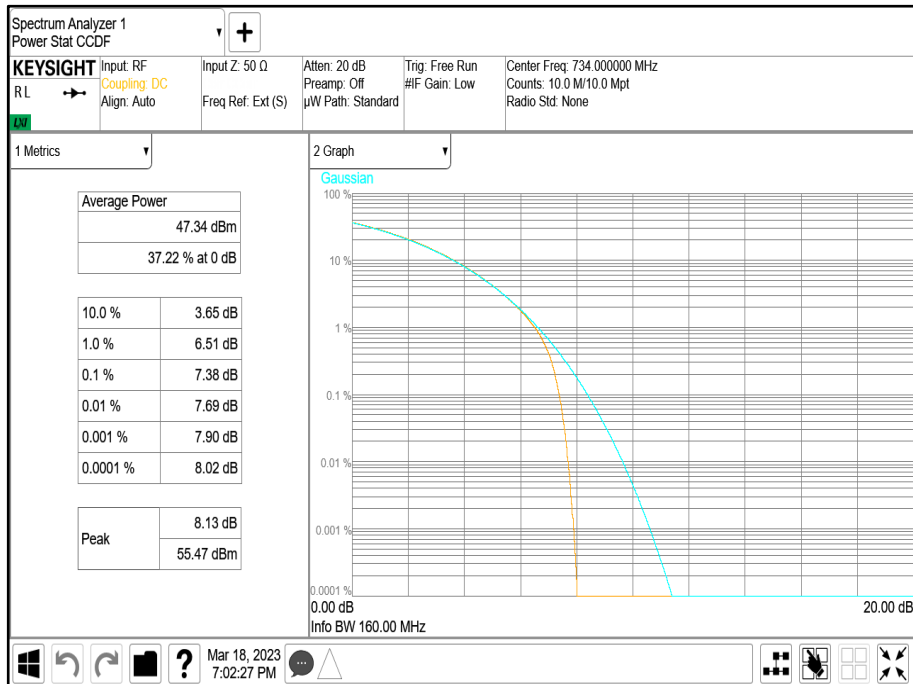
Antenna	NB-IoT IB / NR Modulation	NB-IoT IB / NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position B						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
				dBm	dBm/MHz	dBm	dBm/MHz	dBm	dBm
2	QPSK	5.00 MHz	7.30	47.32	41.72	53.34	47.74	14.41	17.41
2	QPSK	10.00 MHz	7.38	47.24	38.68	53.26	44.70	17.45	20.45
2	QPSK	15.00 MHz	7.22	47.29	38.35	53.31	44.37	17.78	20.78



Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 5.00 MHz - Channel Position B

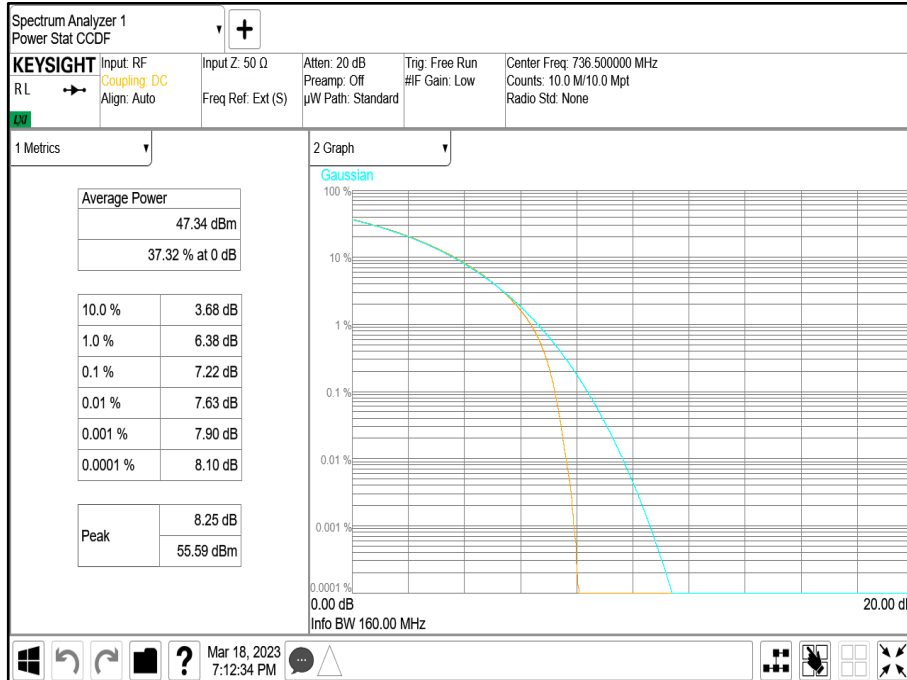


Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 10.00 MHz - Channel Position B





Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 15.00 MHz - Channel Position B



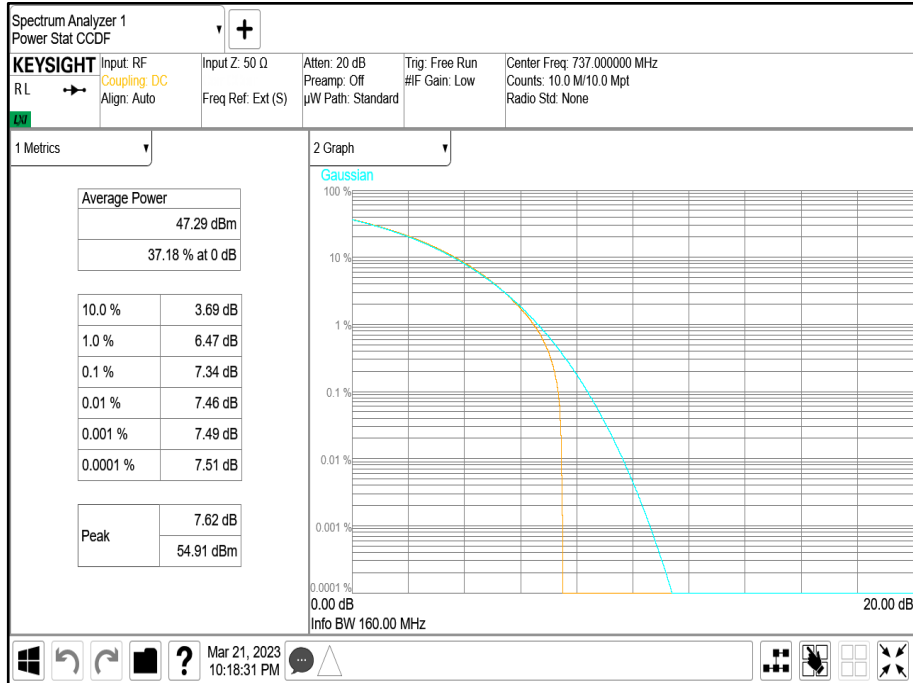
Configuration 8

Maximum Output Power 47.80 dBm

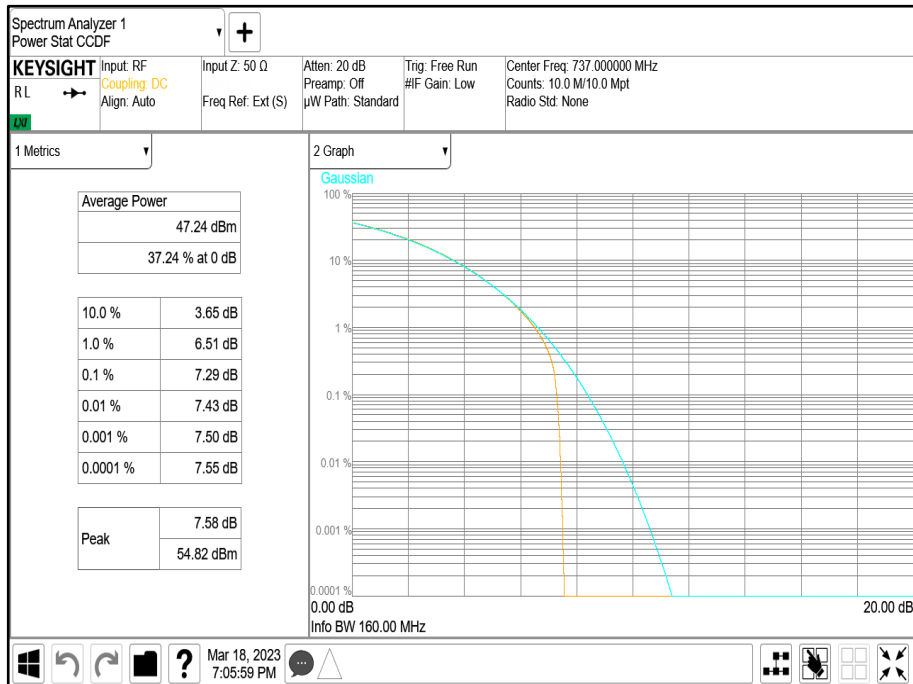
Antenna	NB-IoT IB / NR Modulation	NB-IoT IB / NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position M						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
	dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi			
2	QPSK	5.00 MHz	7.34	47.32	41.75	53.34	47.77	14.38	17.38
2	QPSK	10.00 MHz	7.29	47.16	38.72	53.18	44.74	17.41	20.41
2	QPSK	15.00 MHz	7.22	47.37	38.59	53.39	44.61	17.54	20.54



Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 5.00 MHz - Channel Position M

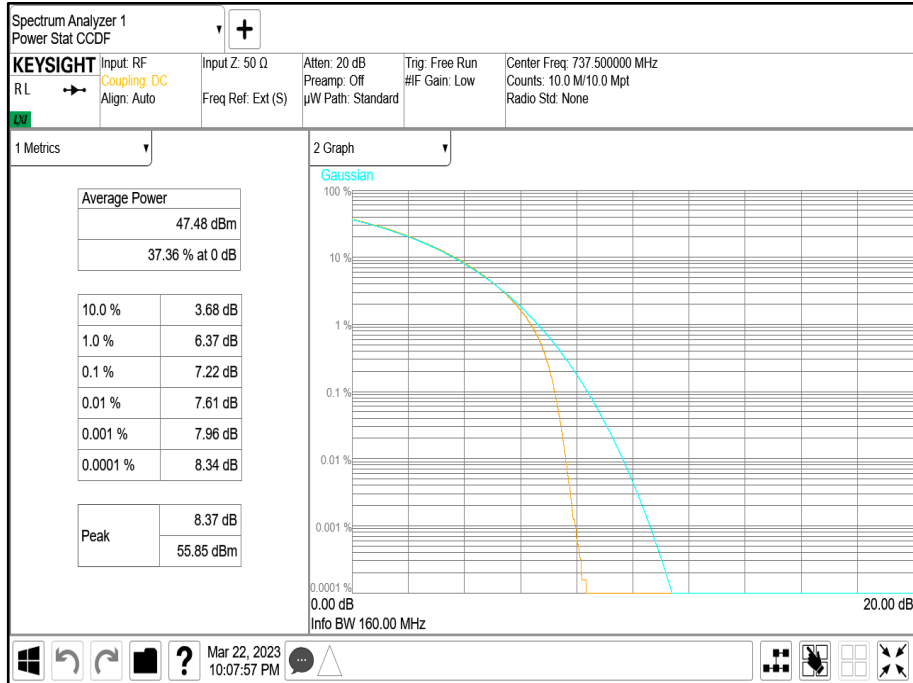


Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 10.00 MHz - Channel Position M





Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 15.00 MHz - Channel Position M



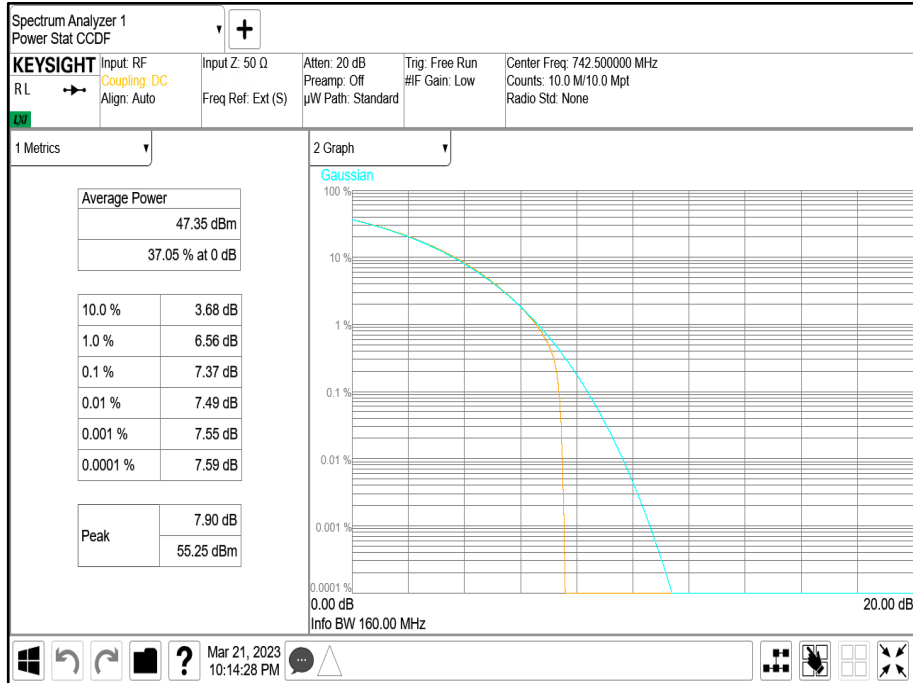
Configuration 8

Maximum Output Power 47.80 dBm

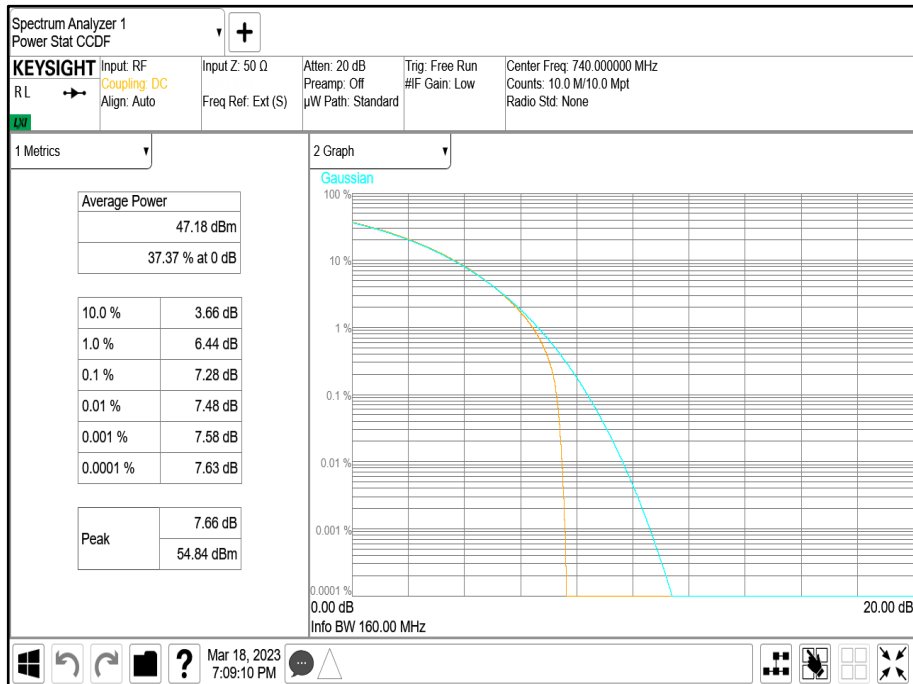
Antenna	NB-IoT IB / NR Modulation	NB-IoT IB / NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
				dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi
2	QPSK	5.00 MHz	7.37	47.33	41.89	53.35	47.91	14.24	17.24
2	QPSK	10.00 MHz	7.28	47.11	38.67	53.13	44.69	17.46	20.46
2	QPSK	15.00 MHz	7.18	47.23	38.43	53.25	44.45	17.70	20.70



Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 5.00 MHz - Channel Position T

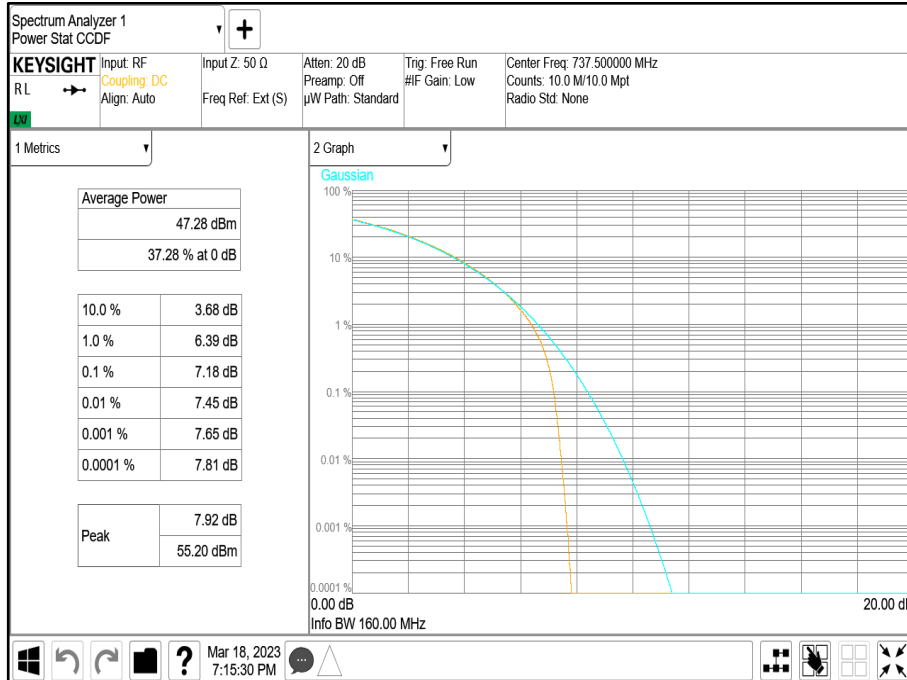


Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 10.00 MHz - Channel Position T





Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 15.00 MHz - Channel Position T



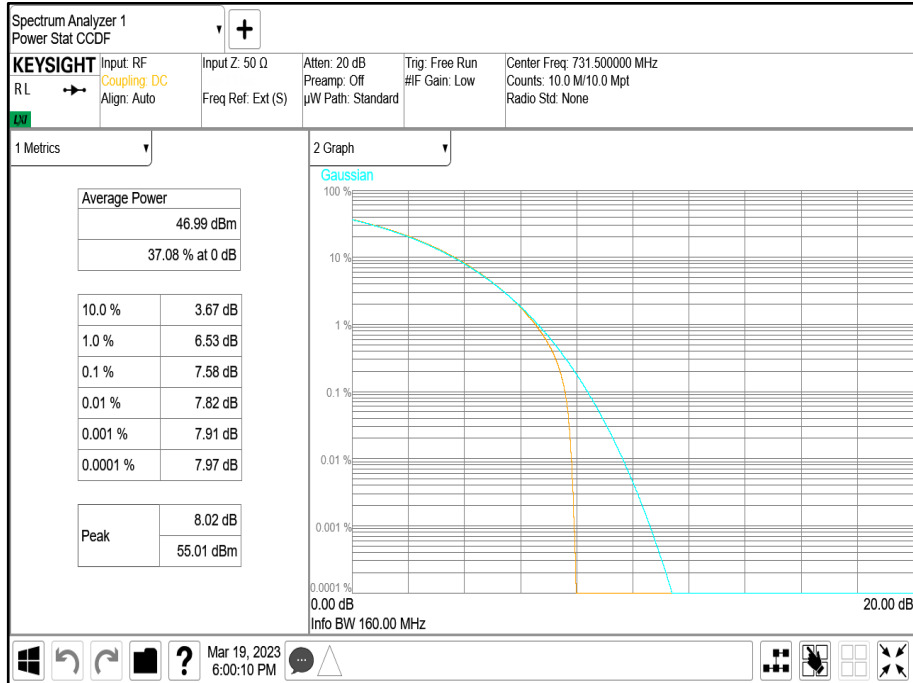
Configuration 9

Maximum Output Power 47.80 dBm

Antenna	LTE / NB-IoT IB Modulation	LTE / NB-IoT IB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position B						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
			dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi	
2	QPSK	5.00 MHz	7.58	46.98	41.83	53.00	47.85	14.30	17.30



Antenna 2 - LTE / NB-IoT IB Modulation QPSK - LTE / NB-IoT IB Carrier Bandwidth 5.00 MHz - Channel Position B



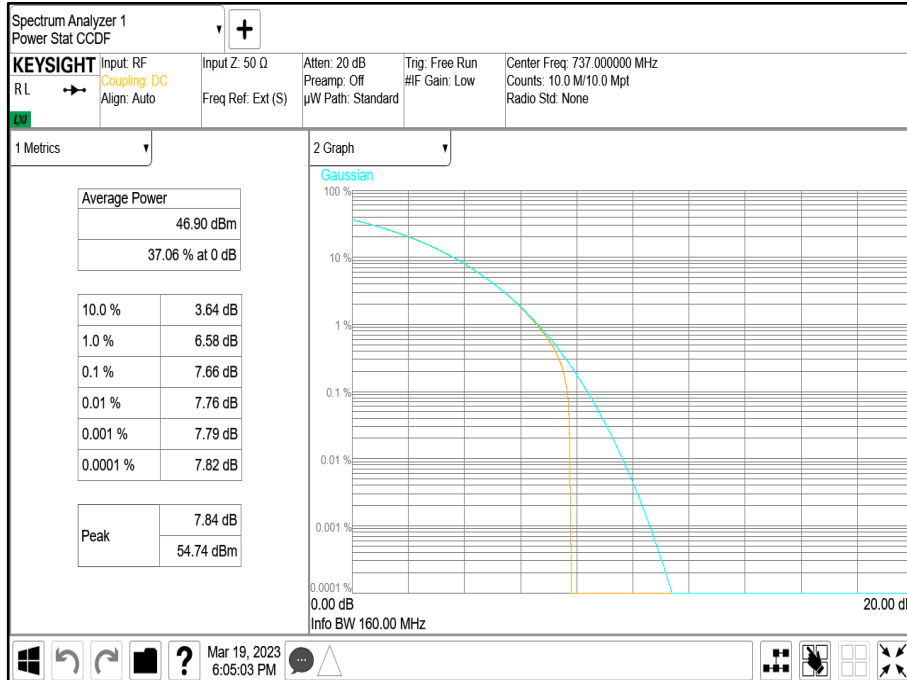
Configuration 9

Maximum Output Power 47.80 dBm

Antenna	LTE / NB-IoT IB Modulation	LTE / NB-IoT IB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position M						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
			dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi	
2	QPSK	5.00 MHz	7.66	46.87	41.74	52.89	47.76	14.39	17.39



Antenna 2 - LTE / NB-IoT IB Modulation QPSK - LTE / NB-IoT IB Carrier Bandwidth 5.00 MHz - Channel Position M



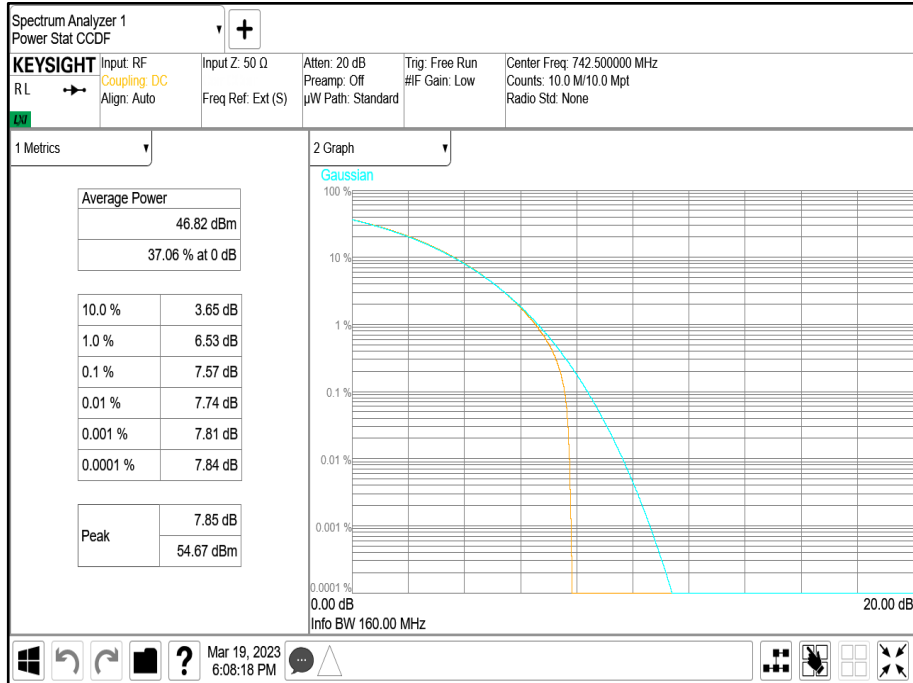
Configuration 9

Maximum Output Power 47.80 dBm

Antenna	LTE / NB-IoT IB Modulation	LTE / NB-IoT IB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position T						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
			dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi	
2	QPSK	5.00 MHz	7.57	46.81	41.70	52.83	47.72	14.43	17.43



Antenna 2 - LTE / NB-IoT GB Modulation QPSK - LTE / NB-IoT GB Carrier Bandwidth 5.00 MHz - Channel Position T



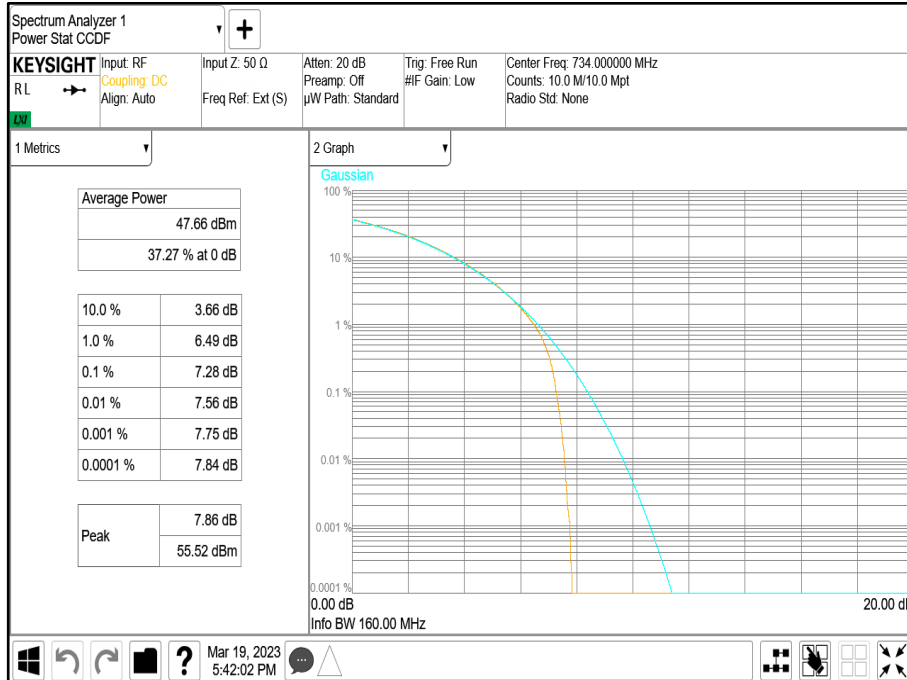
Configuration 10

Maximum Output Power 47.80 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position B						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
			dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi	
2	QPSK	10.00 MHz	7.28	47.63	39.26	53.65	45.28	16.87	19.87



Antenna 2 - LTE / NB-IoT GB Modulation QPSK - LTE / NB-IoT GB Carrier Bandwidth 10.00 MHz - Channel Position B



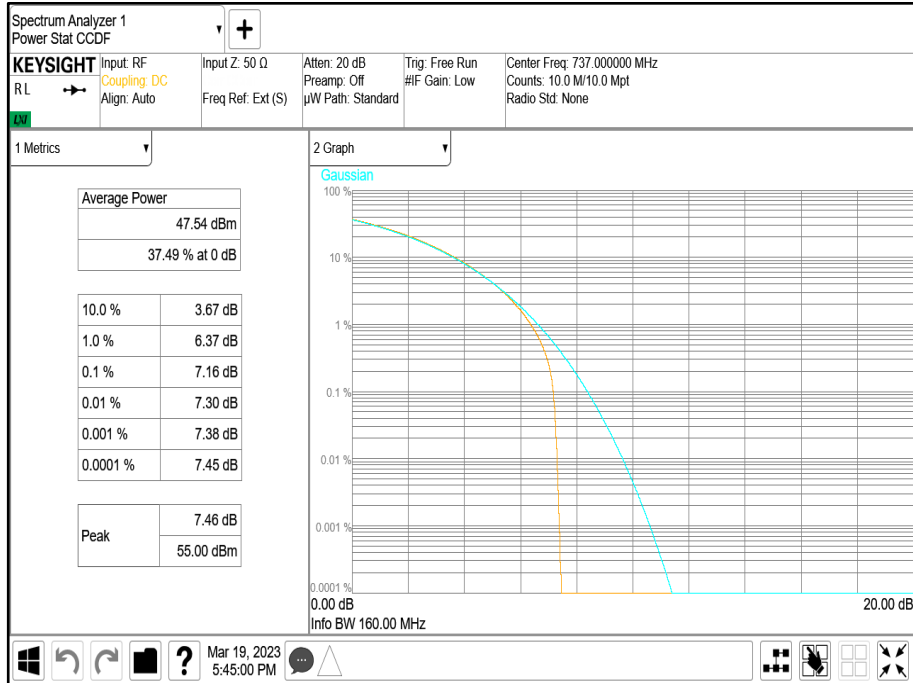
Configuration 10

Maximum Output Power 47.80 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position M						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
			dBm	dBm/MHz	dBm	dBm/MHz	dBm	dBm	
2	QPSK	10.00 MHz	7.16	47.50	38.99	53.52	45.01	17.14	20.14



Antenna 2 - LTE / NB-IoT GB Modulation QPSK - LTE / NB-IoT GB Carrier Bandwidth 10.00 MHz - Channel Position M



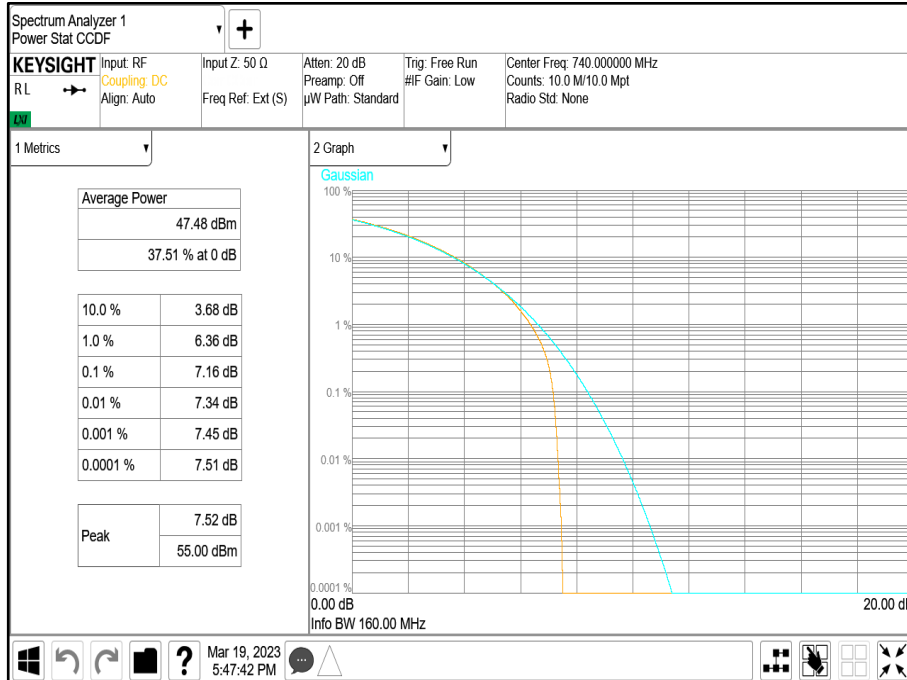
Configuration 10

Maximum Output Power 47.80 dBm

Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD						
			Channel Position T						
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4		GANT* Limit 62.15dBm	GANT* Limit 65.15dBm
			dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi	
2	QPSK	10.00 MHz	7.16	47.40	38.78	53.42	44.80	17.35	20.35



Antenna 2 - LTE / NB-IoT GB Modulation QPSK - LTE / NB-IoT GB Carrier Bandwidth 10.00 MHz - Channel Position T



Configuration 11

Maximum Output Power 50.80 dBm

Antenna	LTE / NR Modulation	LTE / NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M _{RFBW}				
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4	
	dBm	dBm/MHz	dBm	dBm/MHz			
2	NR:QPSK / LTE:64QAM	NR 25.0 MHz / LTE 5.0 MHz	-	50.62	36.37	56.64	42.39

Configuration 12

Maximum Output Power 50.80 dBm

Antenna	LTE / NR Modulation	LTE / NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power / PSD				
			Channel Position M _{RFBW}				
			PAR (dB)	Average Power/PSD		Total Power Port 1+2+3+4	
	dBm	dBm/MHz	dBm	dBm/MHz			
2	NR:QPSK / LTE:64QAM	NR 25.0 MHz / LTE 5.0 MHz / LTE 5.0 MHz	-	50.40	41.26	56.42	47.28



Limit	
Maximum rated output power (Non-Rural)	≤ 1640 W/MHz or $\leq +62.15$ dBm/MHz
Maximum rated output power (Rural)	≤ 3280 W/MHz or $\leq +65.15$ dBm/MHz
Peak to Average Ratio	13 dB

The radio unit was tested with maximum output power and without an antenna. ERP/EIRP compliance is addressed at the time of licensing, as required by the responsible FCC/ISED Bureau(s). Licensees are required to take into account maximum allowed antenna gain used in combination with the applicable power settings to prevent the radiated output power exceeding the limits.



2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.53
 FCC CFR 47 Part 2, Clause 2.1049

2.2.2 Date of Test and Modification State

09, 10, 13, 18, 19, 29, 31 March-2023 - 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 22.0 - 22.8°C
 Relative Humidity 37.8 - 39.8%

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 analyzer).

2.2.6 Test Results

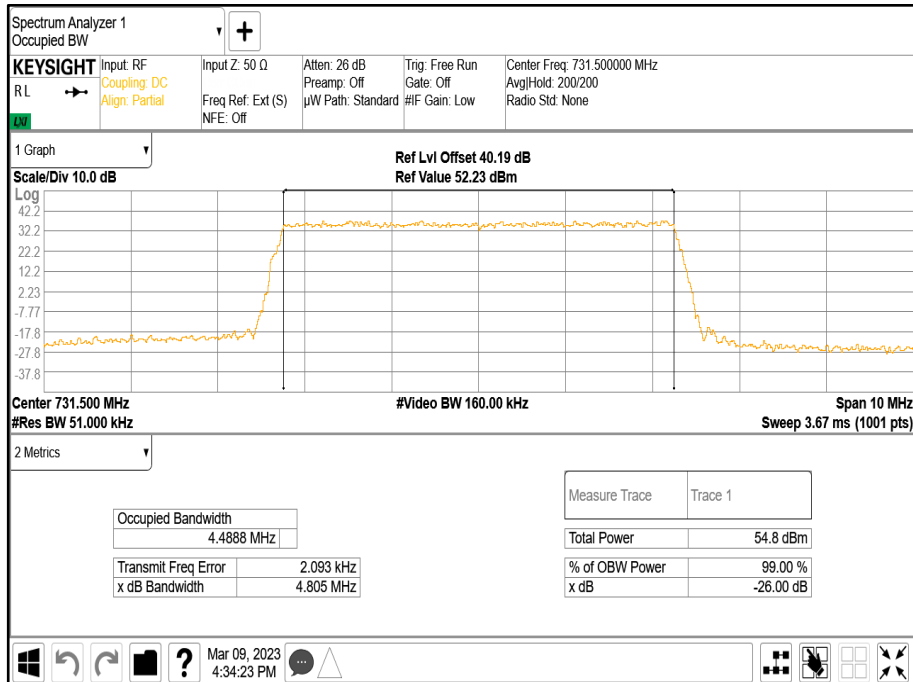
Configuration 1

Maximum Output Power 47.80 dBm

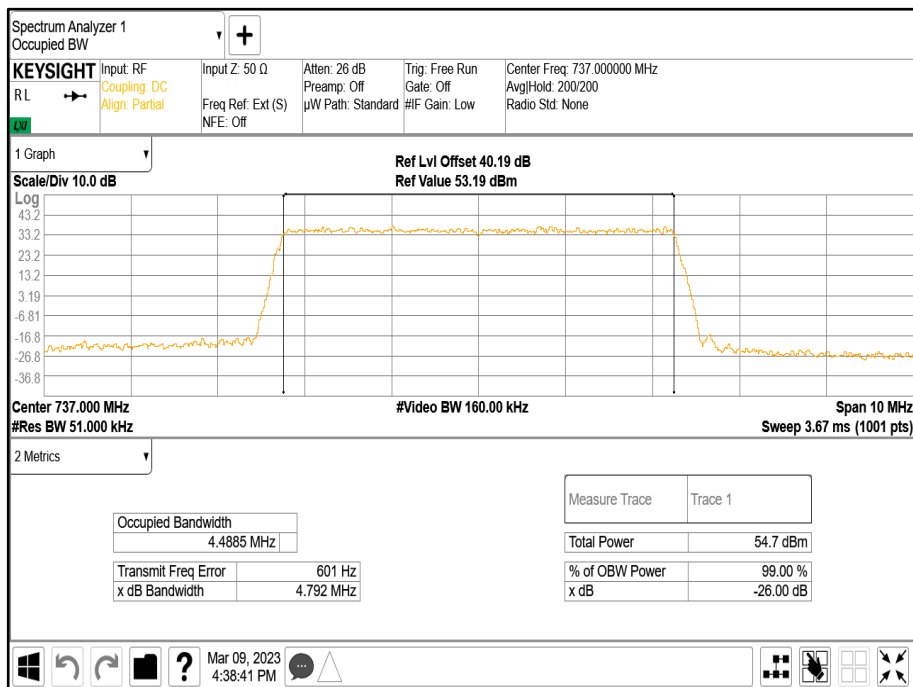
Antenna	LTE Modulation	LTE Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
2	64QAM	5.0 MHz	4488.80	4804.88	4488.48	4791.93	4493.26	4814.43
2	64QAM	10.0 MHz	8958.81	9567.68	8958.17	9590.88	8967.40	9580.52



Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B

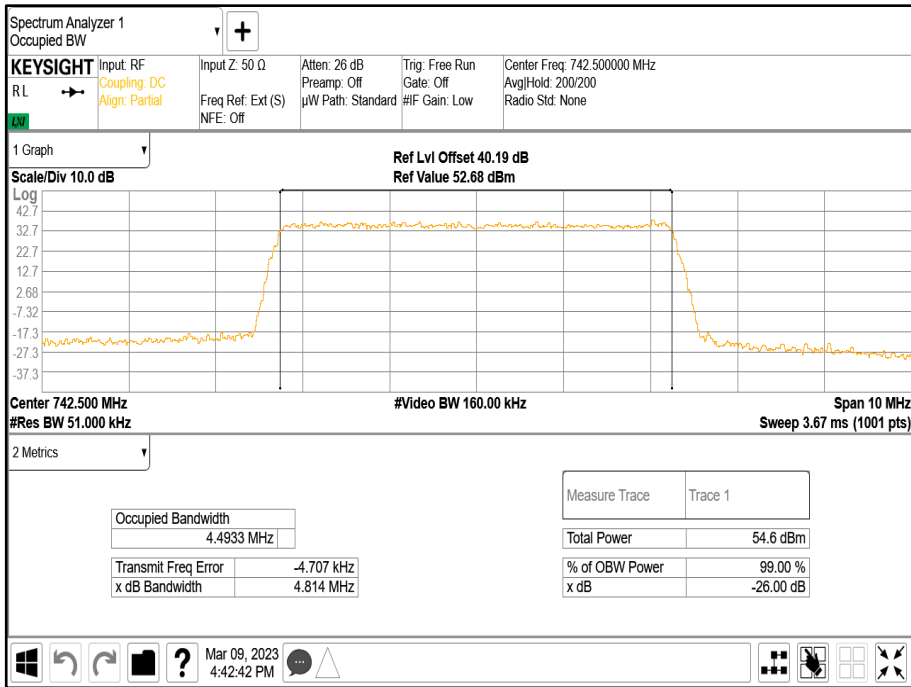


Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M

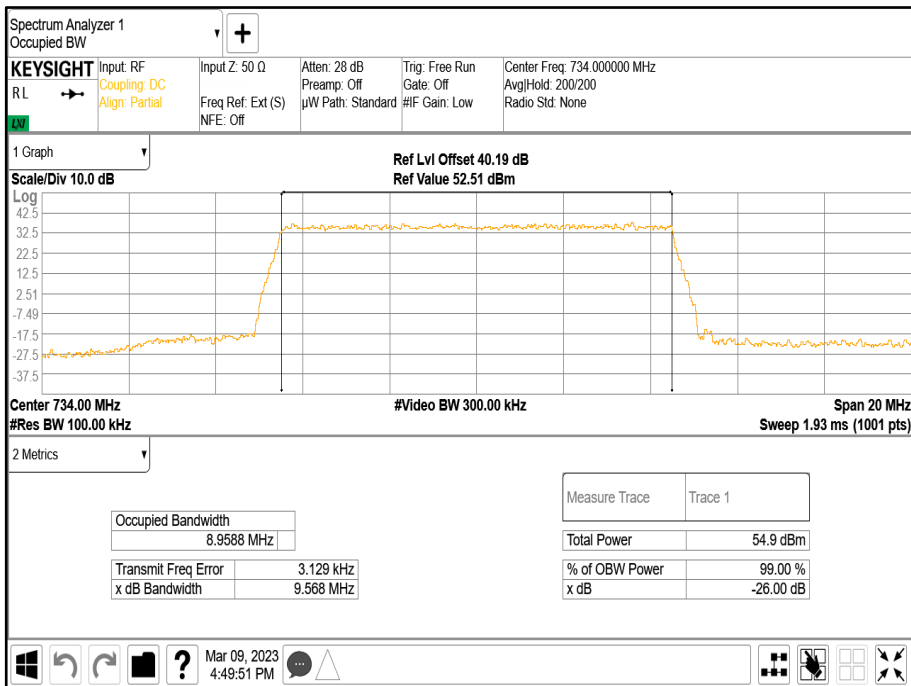




Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T

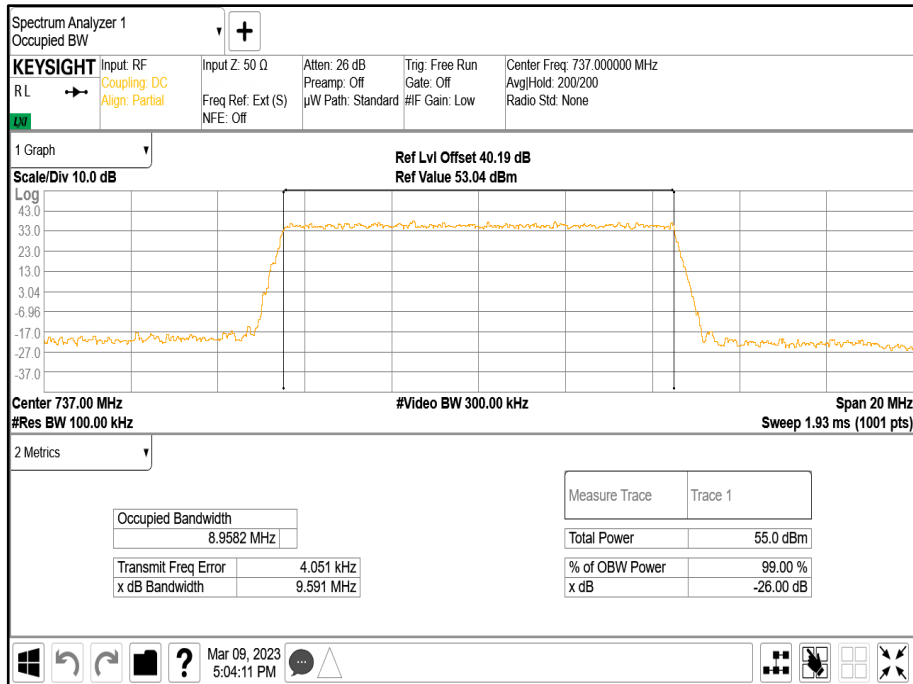


Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B

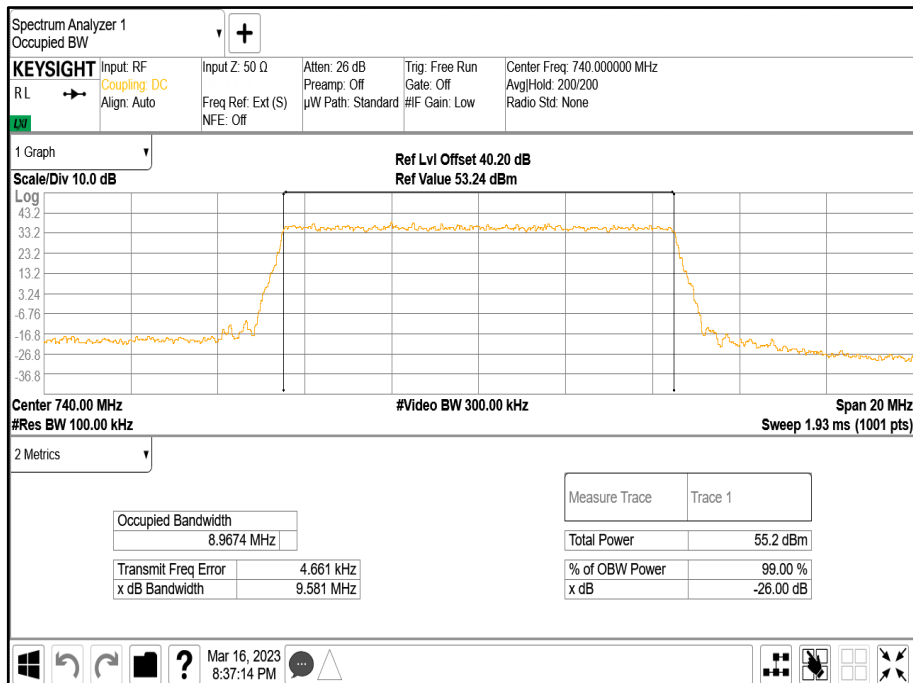




Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position M



Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T



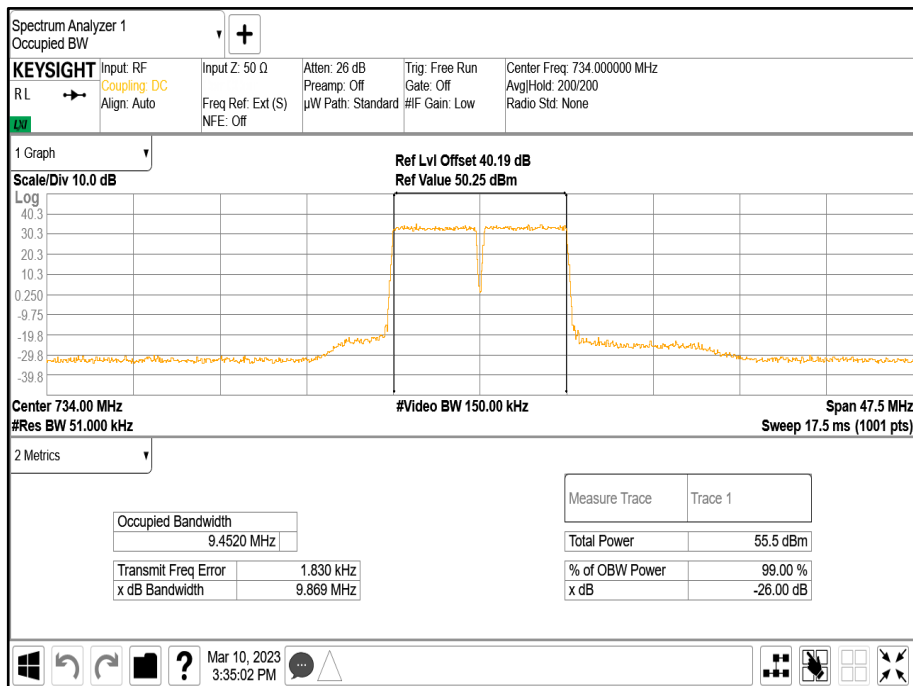


Configuration 2

Maximum Output Power 47.80 dBm

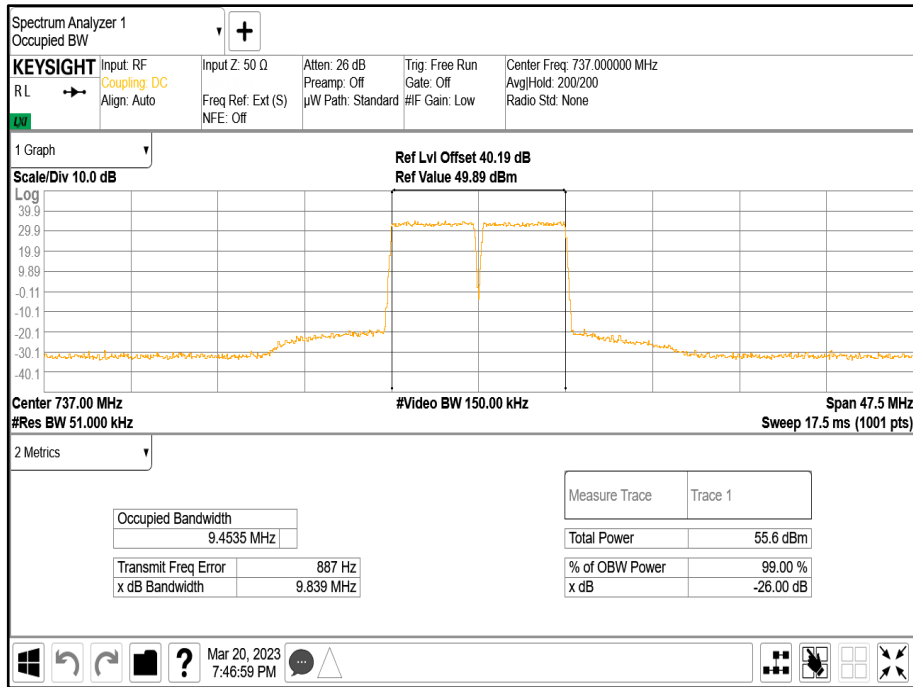
Antenna	LTE Modulation	LTE Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
2	64QAM	5.0 MHz	9451.95	9868.60	9453.52	9838.68	9450.48	9861.09

Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B

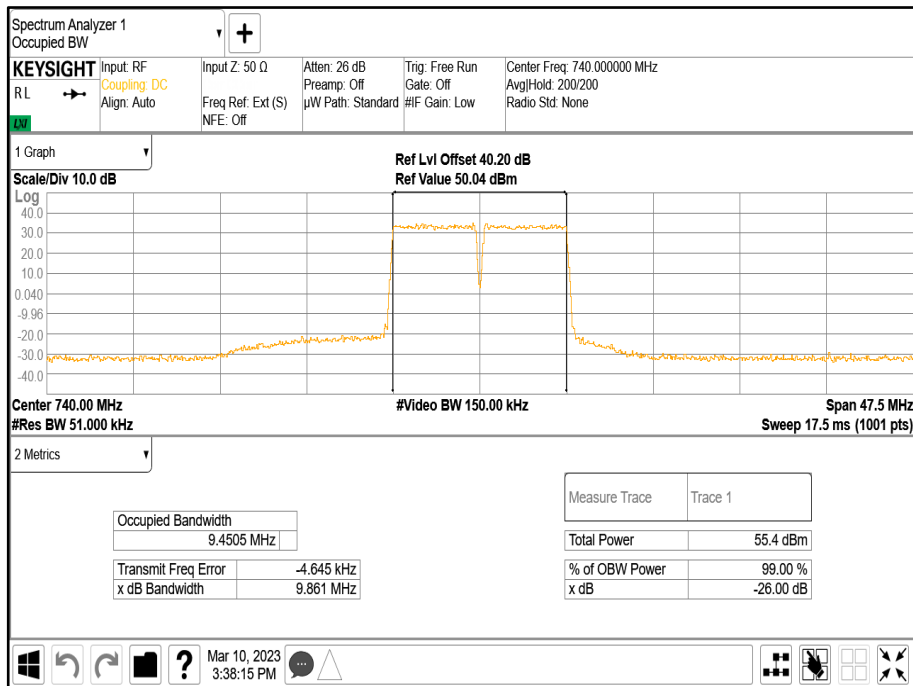




Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



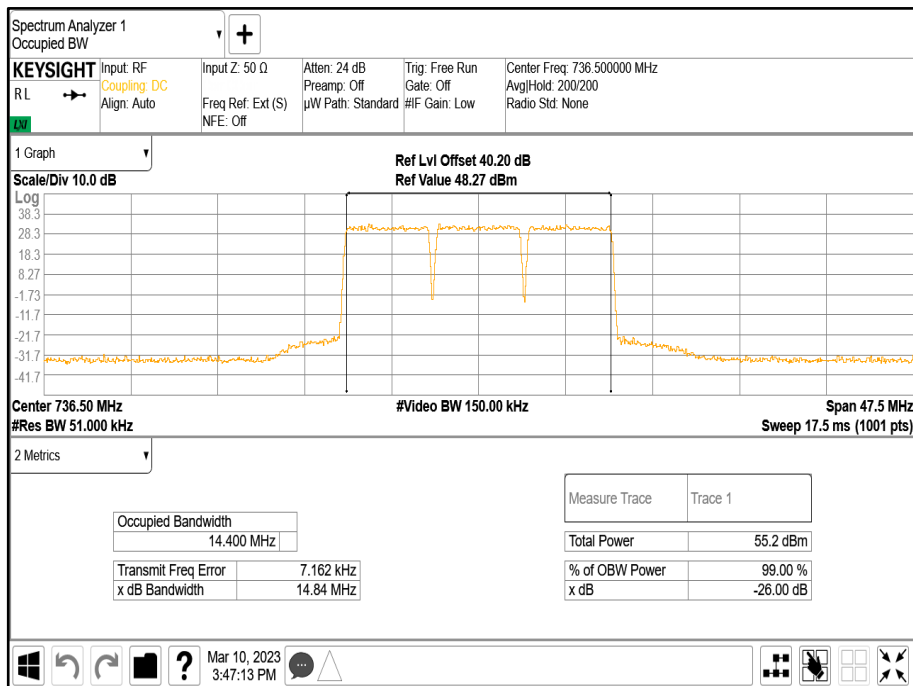


Configuration 3

Maximum Output Power 47.80 dBm

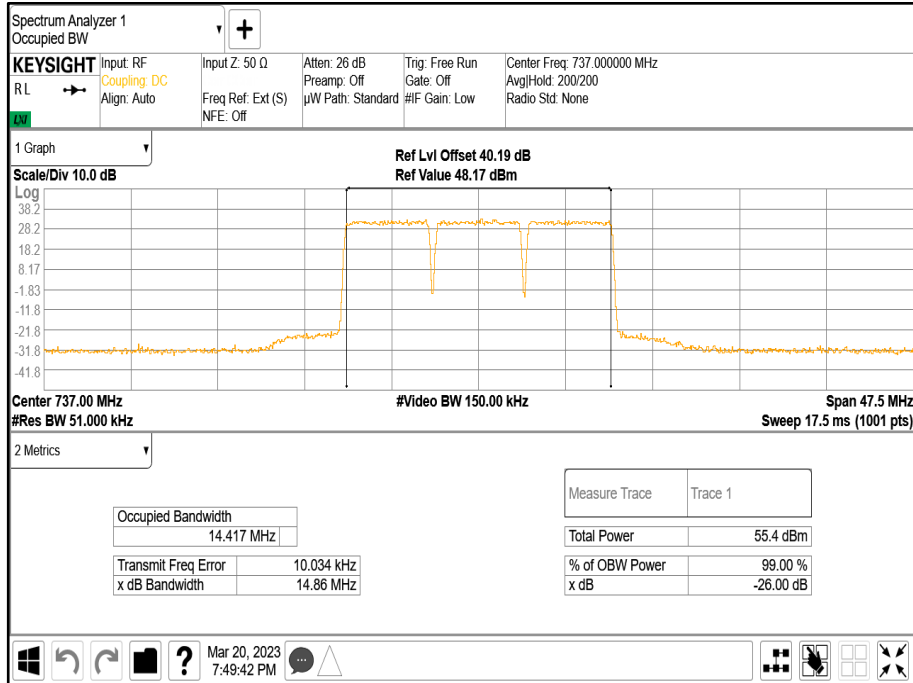
Antenna	LTE Modulation	LTE Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
2	64QAM	5.0 MHz	14399.77	14835.61	15416.77	15838.93	14390.36	14844.24

Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B

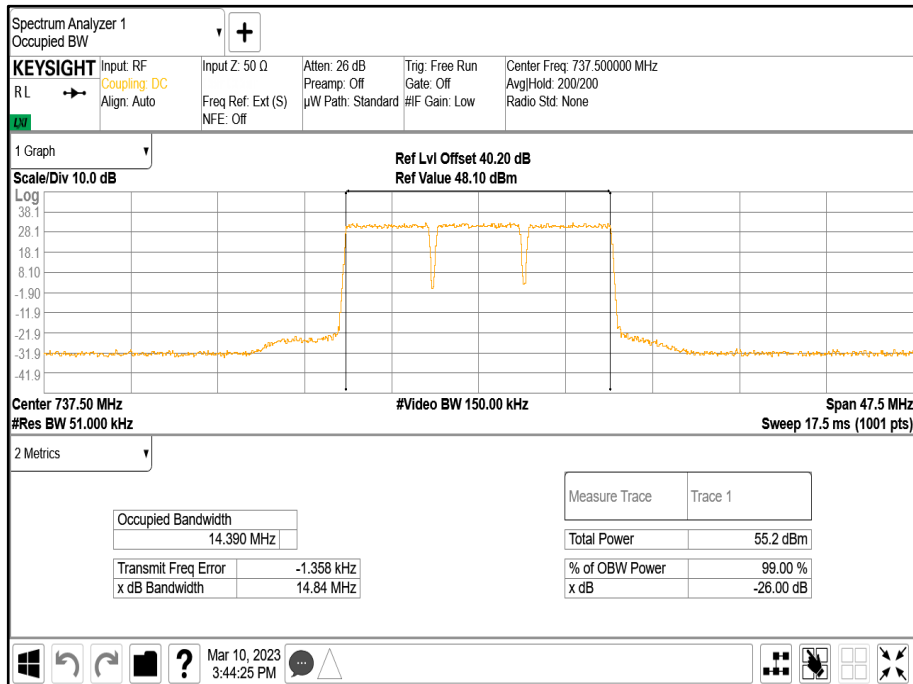




Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T



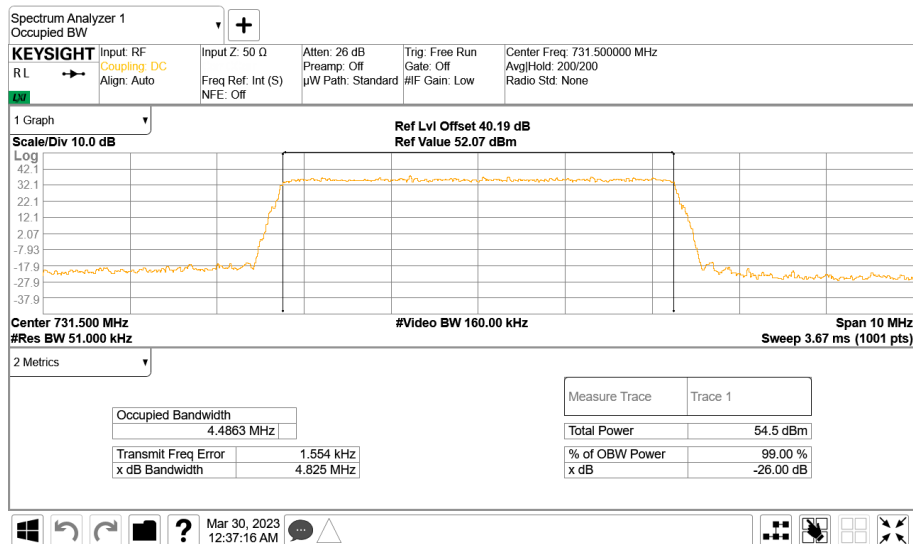


Configuration 4

Maximum Output Power 47.80 dBm

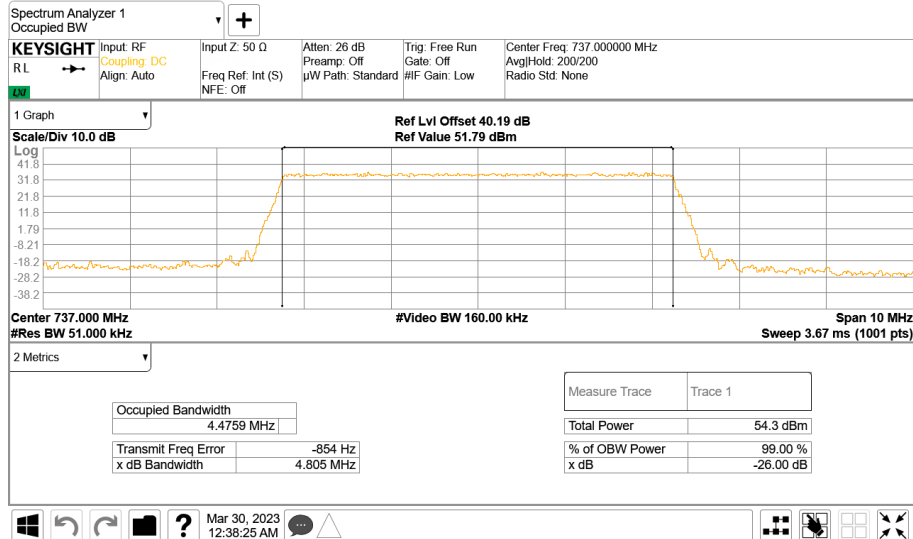
Antenna	NR Modulation	NR Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
2	QPSK	5.0 MHz 15 kHz SCS	4,486.30	4,769.11	4,475.91	4,864.56	4,475.54	4,782.18
2	QPSK	10.0 MHz 30 kHz SCS	8,597.20	9,663.09	8,604.18	9,590.81	8,643.13	9,601.06
2	QPSK	15.0 MHz 30 kHz SCS	13596.97	14686.69	13591.28	14690.40	13573.14	14712.26

Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B

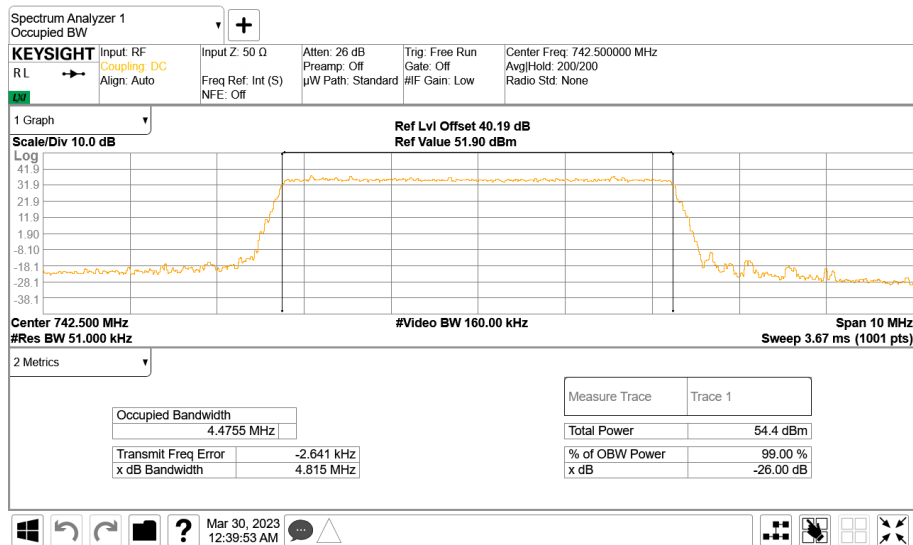




Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position M

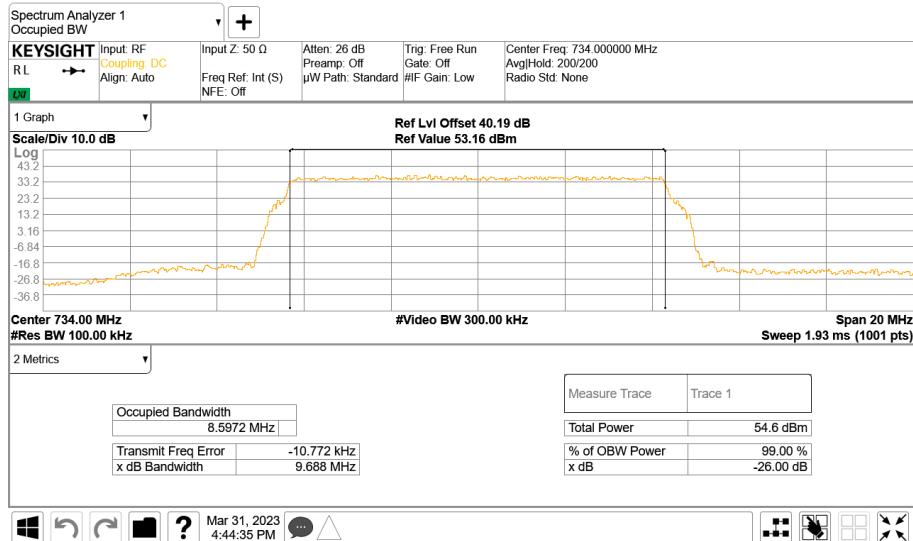


Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T

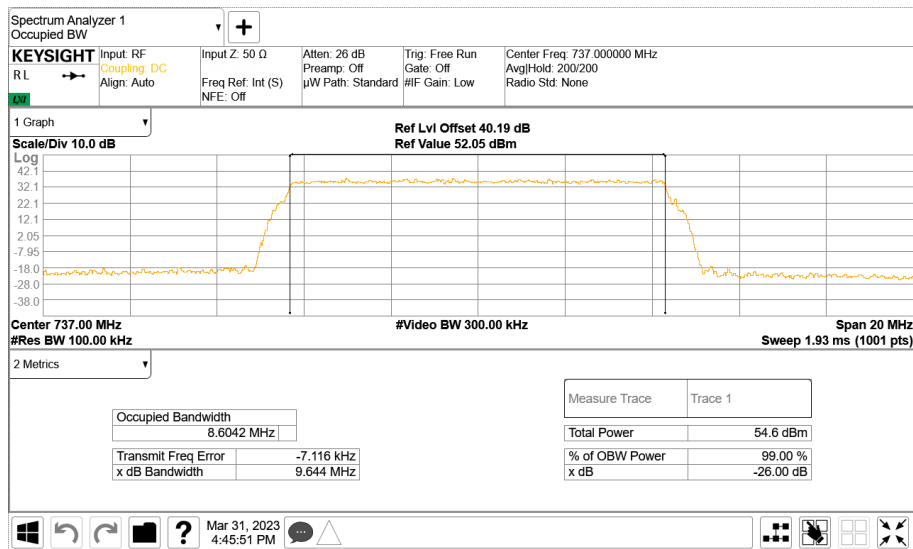




Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 30 kHz SCS - Channel Position B

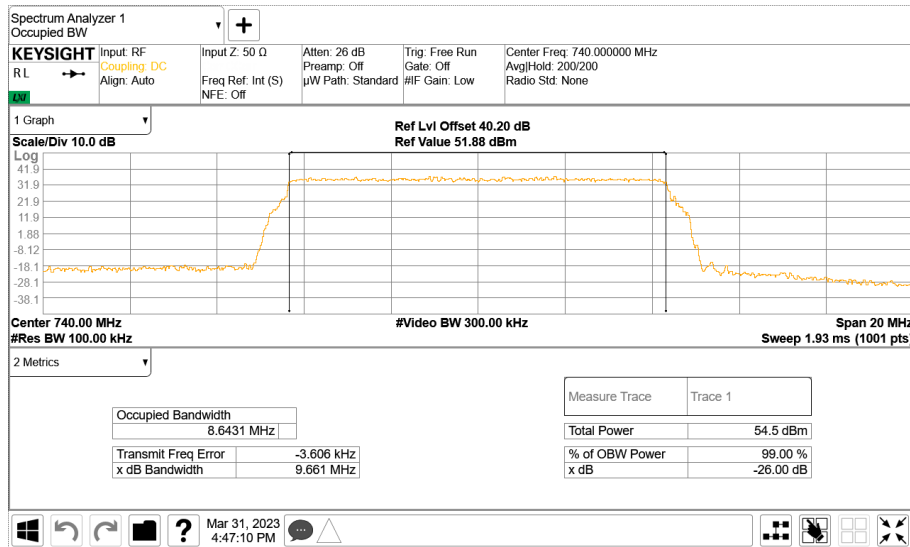


Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 30 kHz SCS - Channel Position M

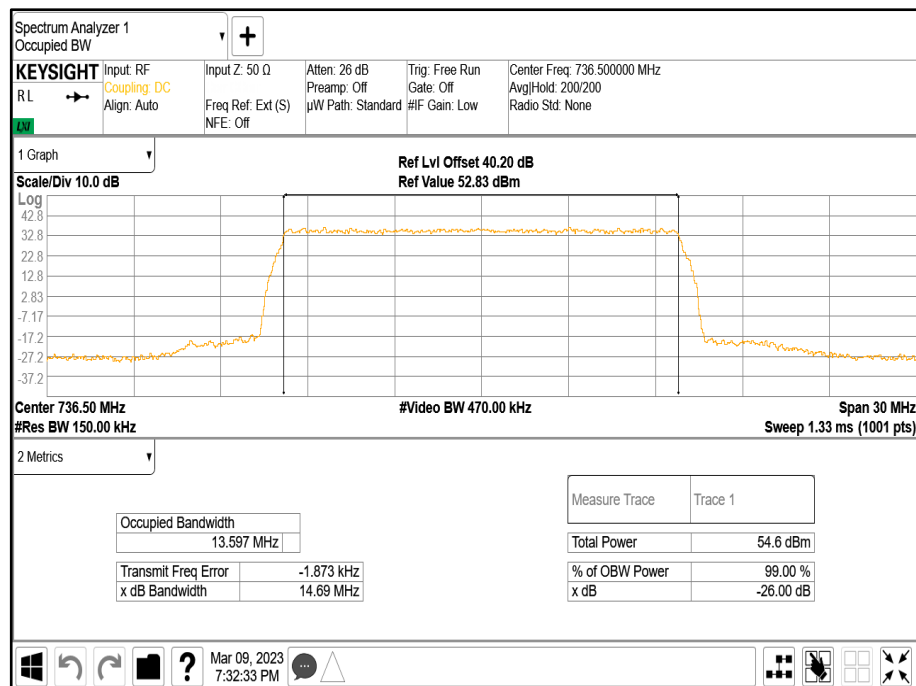




Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 30 kHz SCS - Channel Position T

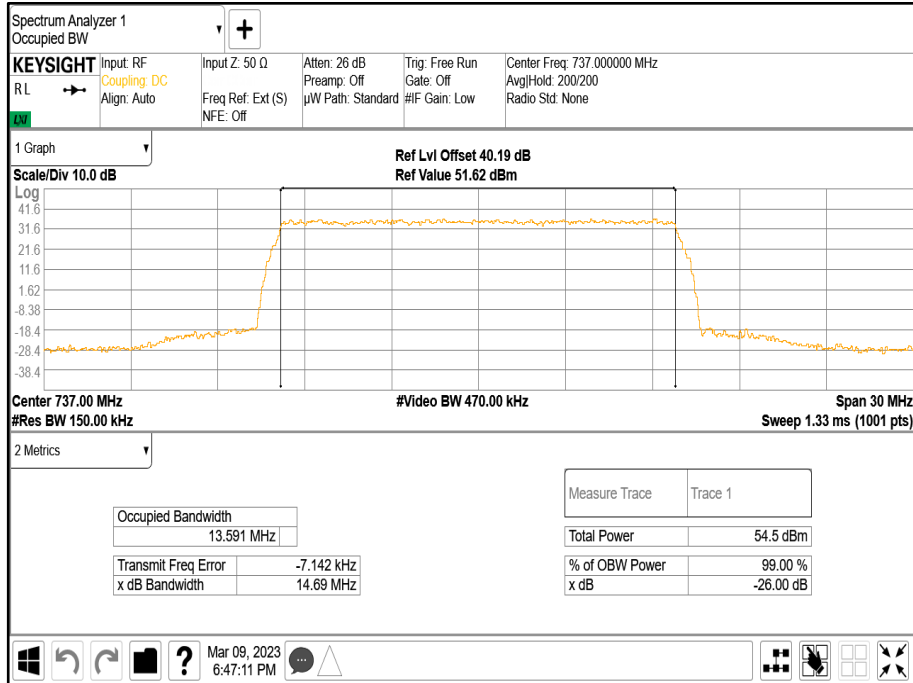


Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 30 kHz SCS - Channel Position B

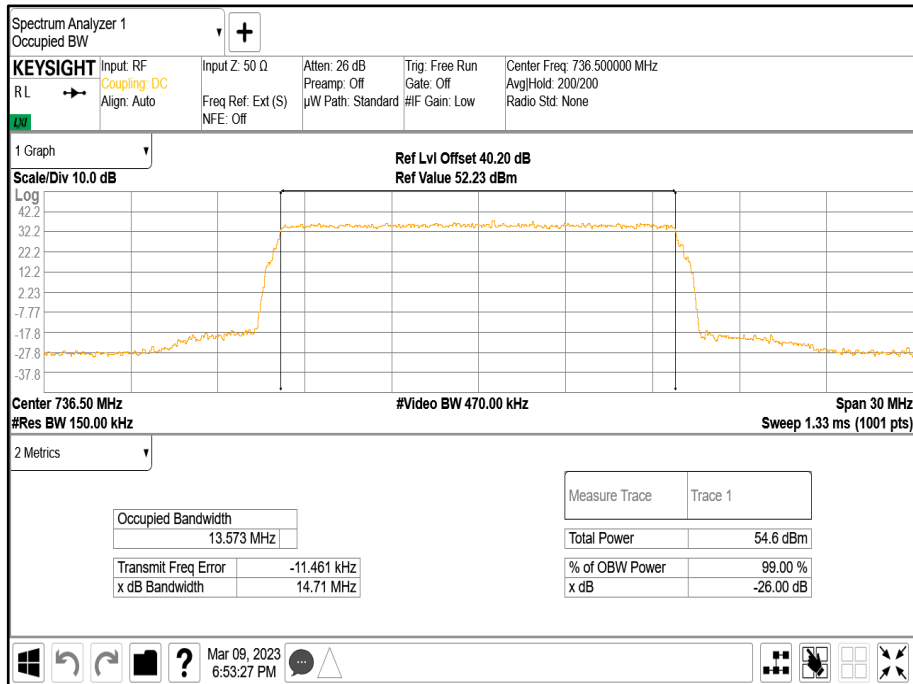




Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 30 kHz SCS - Channel Position M



Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 30 kHz SCS - Channel Position T



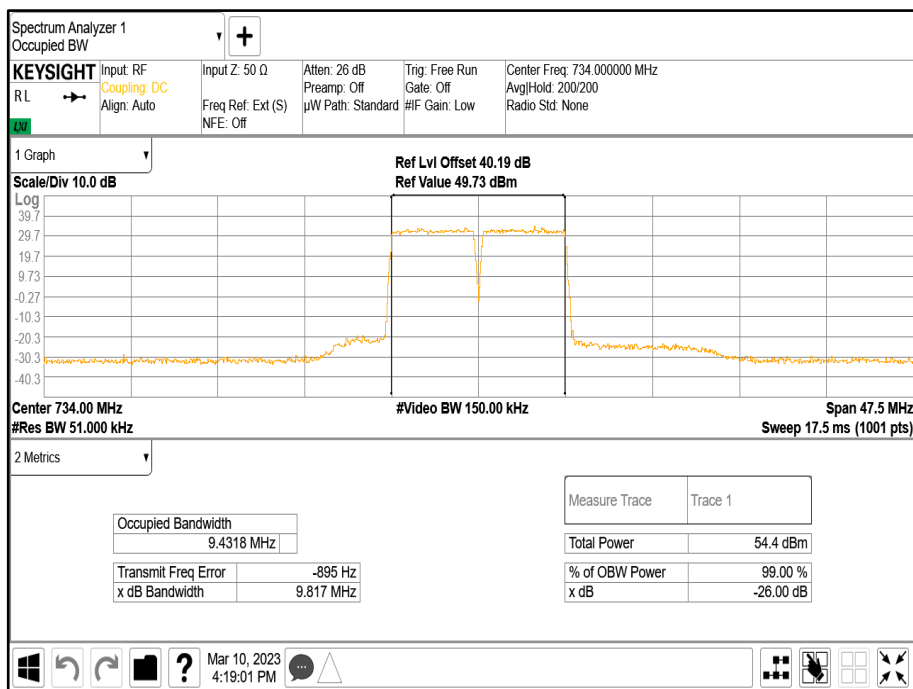


Configuration 5

Maximum Output Power 47.80 dBm

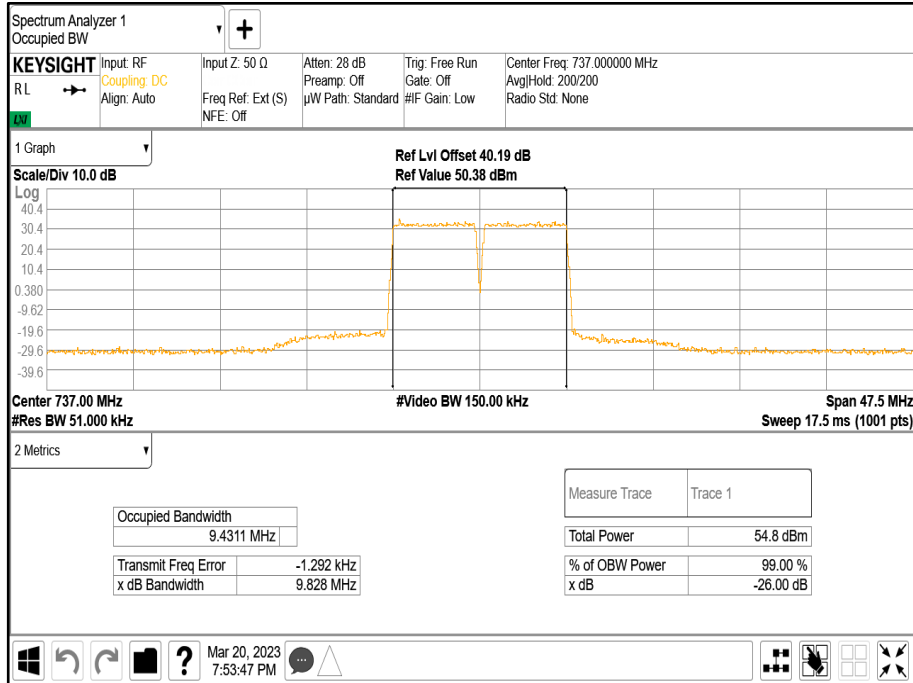
Antenna	NR Modulation	NR Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
2	QPSK	5.0 MHz 15 kHz SCS	9431.78	9817.04	9431.07	9828.05	9434.03	9851.43

Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B

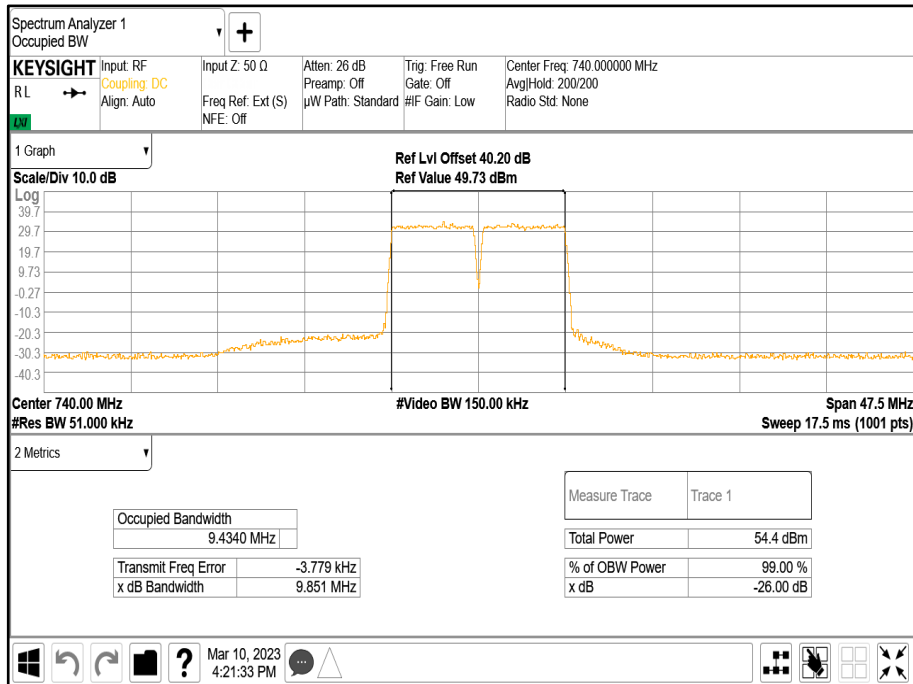




Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position M



Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T



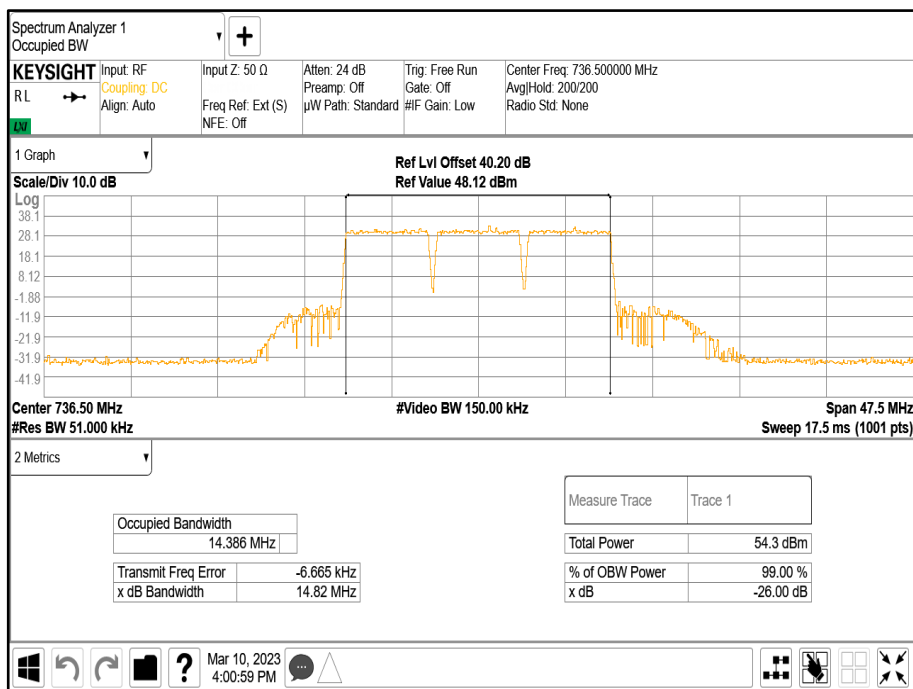


Configuration 6

Maximum Output Power 47.80 dBm

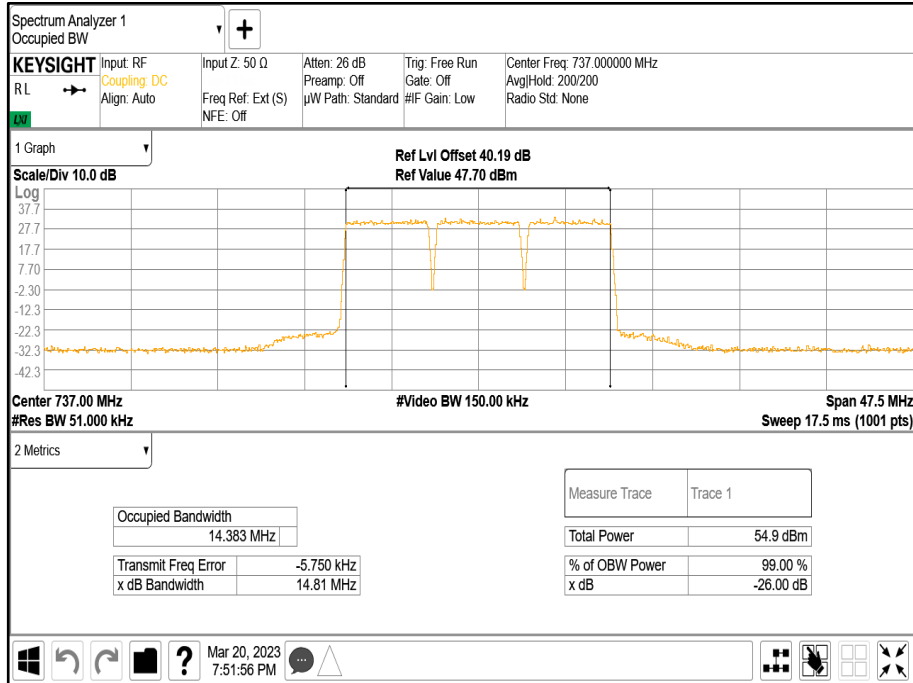
Antenna	NR Modulation	NR Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
2	QPSK	5.0 MHz 15 kHz SCS	14386.30	14820.38	15389.87	15848.94	14381.14	14861.19

Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B

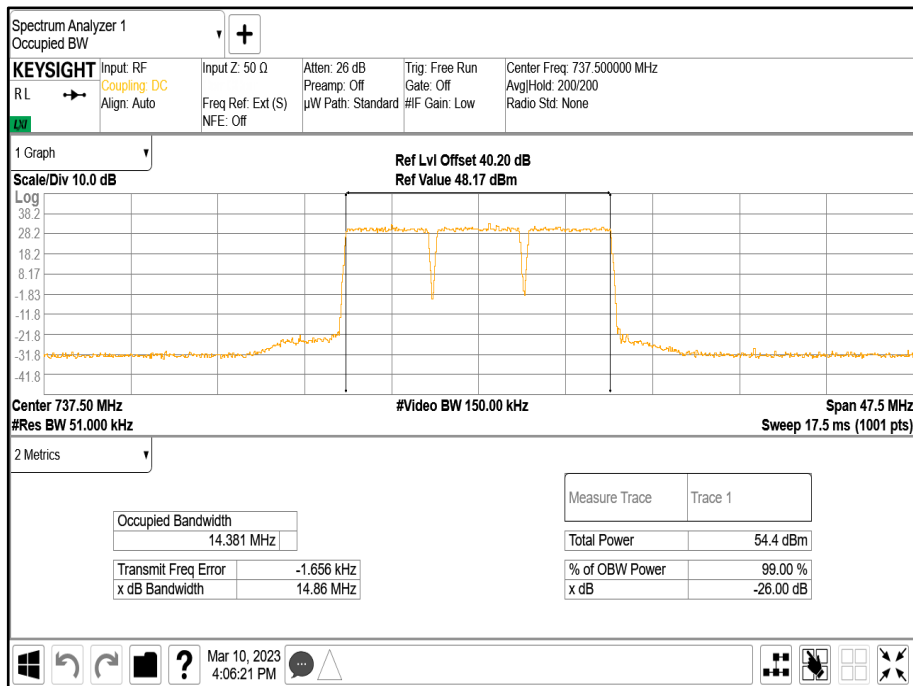




Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position M



Antenna 2 - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T



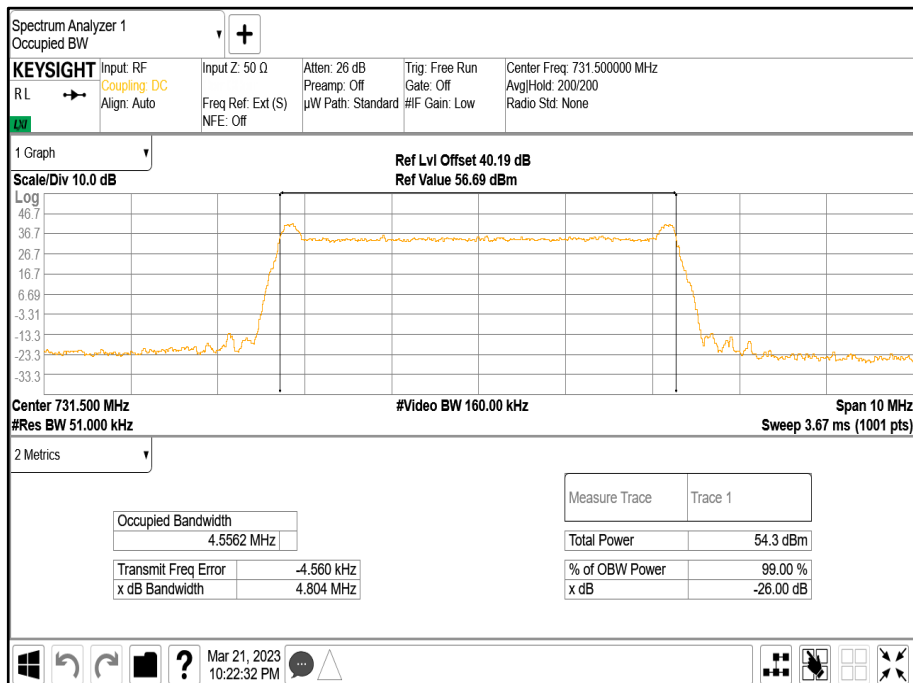


Configuration 8

Maximum Output Power 47.80 dBm

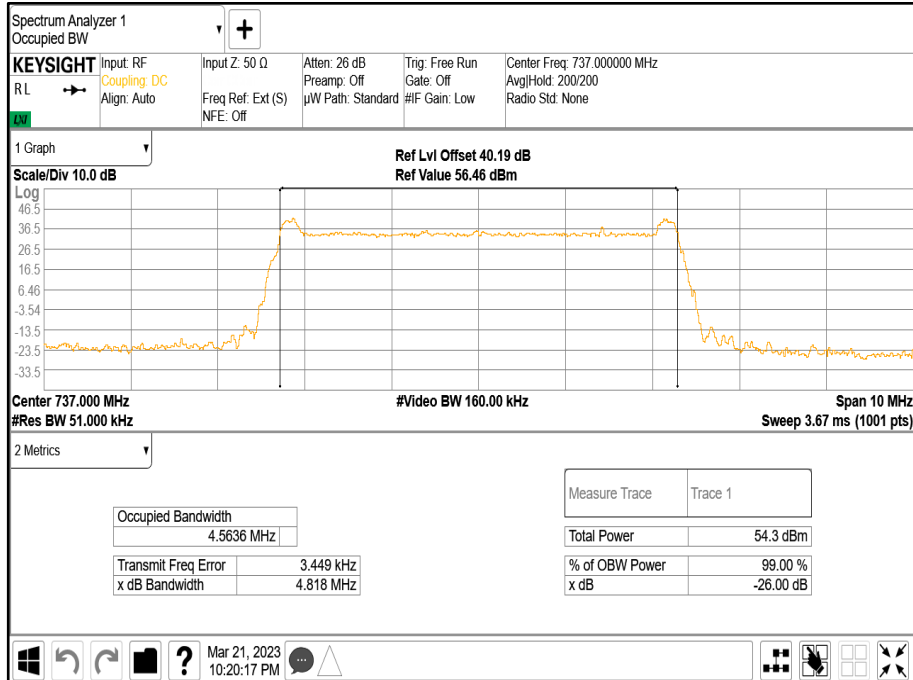
Antenna	NB-IoT IB / NR Modulation	NB-IoT IB / NR Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
2	QPSK	5.00 MHz	4556.18	4803.84	4563.62	4818.47	4552.14	4824.10
2	QPSK	10.00 MHz	9417.07	9704.29	9393.37	9723.43	9396.91	9730.03
2	QPSK	15.00 MHz	14373.33	14800.13	14364.64	14812.12	14368.17	14767.07

Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 5.00 MHz - Channel Position B

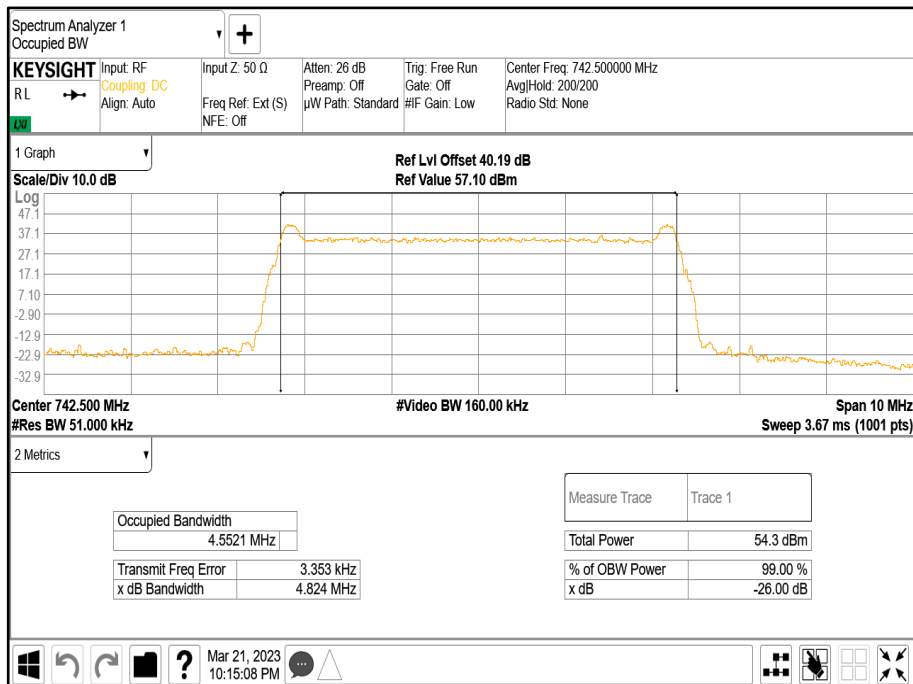




Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 5.00 MHz - Channel Position M

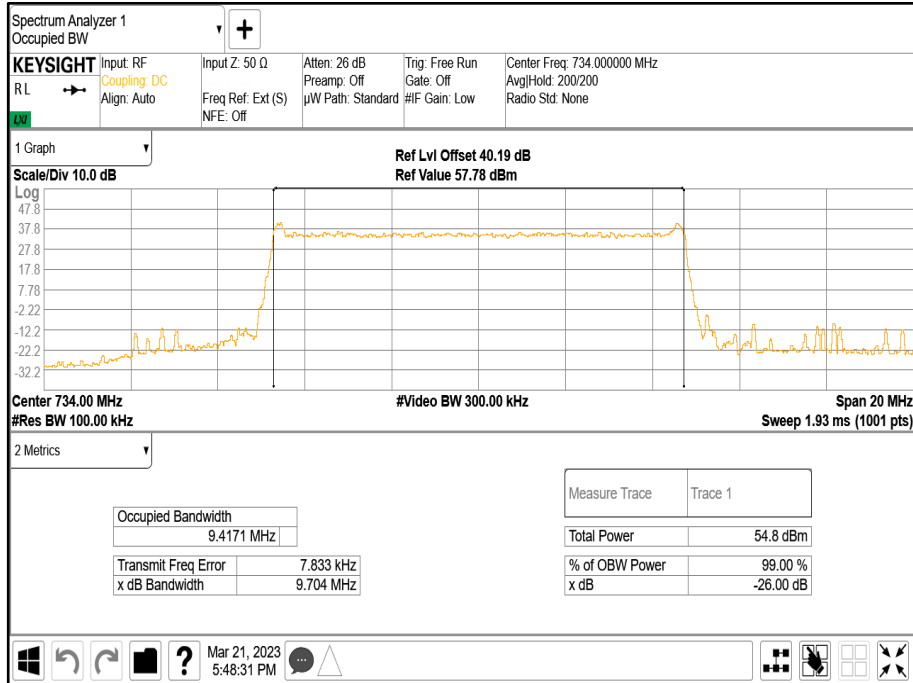


Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 5.00 MHz - Channel Position T

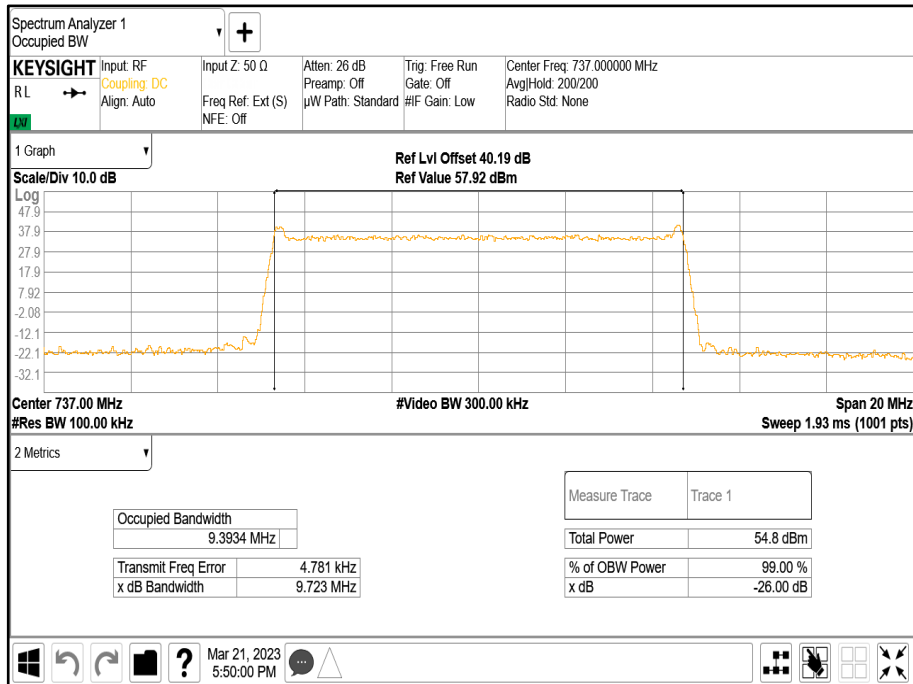




Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 10.00 MHz - Channel Position B

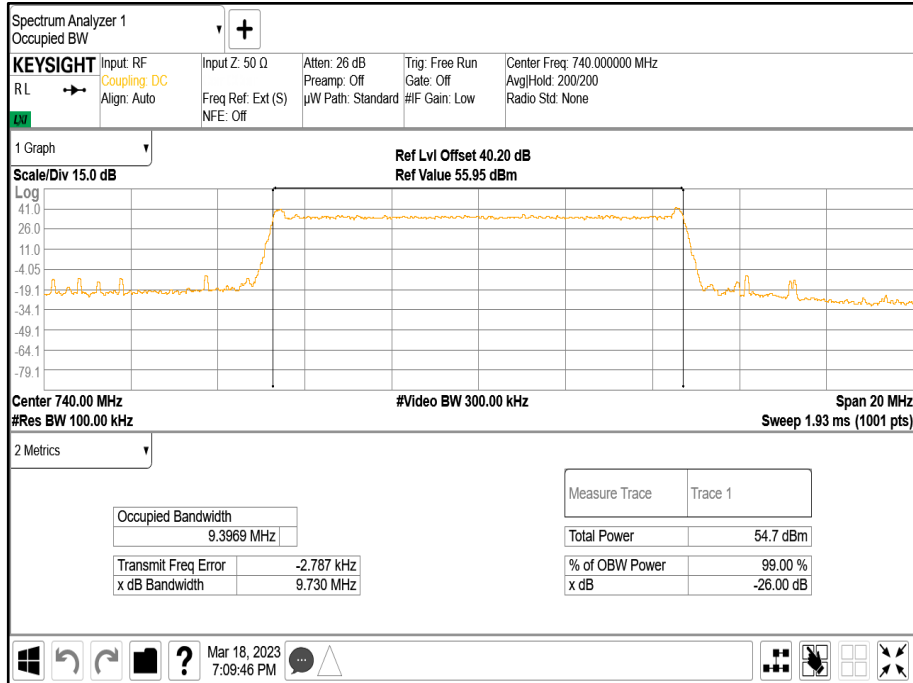


Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 10.00 MHz - Channel Position M

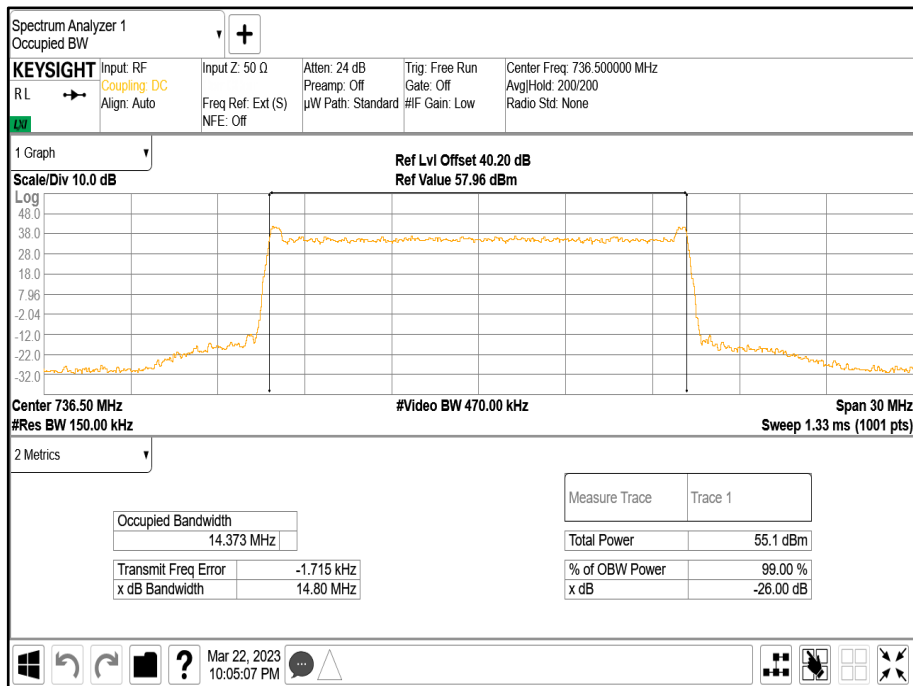




Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 10.00 MHz - Channel Position T

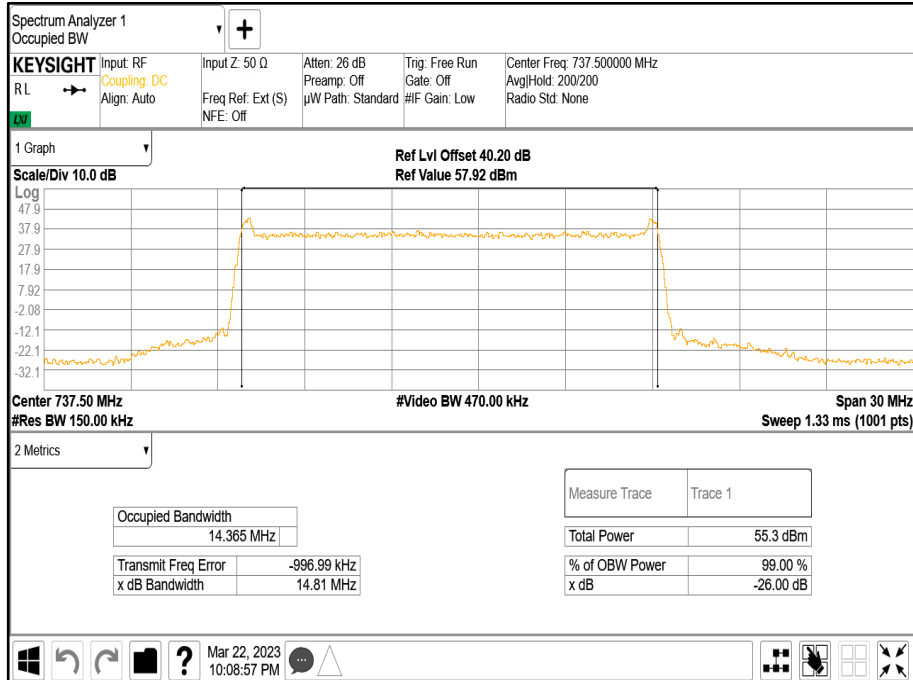


Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 15.00 MHz - Channel Position B

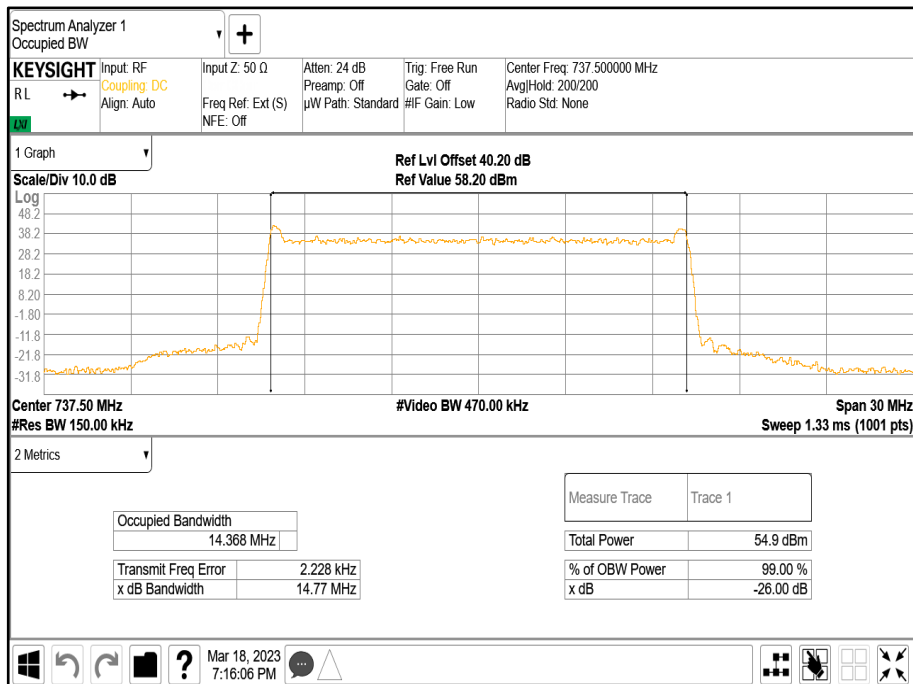




Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 15.00 MHz - Channel Position M



Antenna 2 - NB-IoT IB / NR Modulation QPSK - NB-IoT IB / NR Carrier Bandwidth 15.00 MHz - Channel Position T



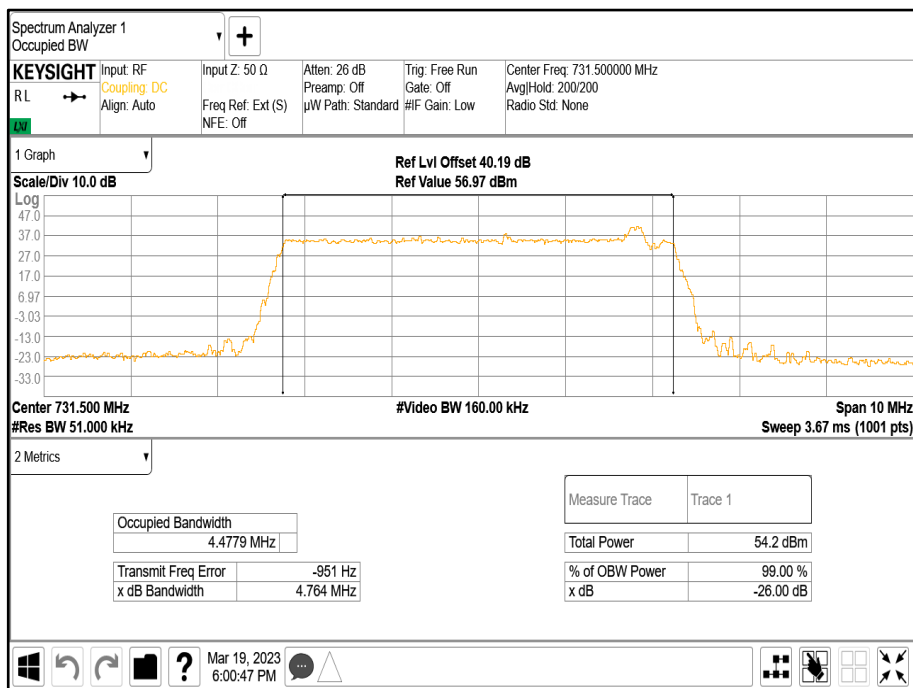


Configuration 9

Maximum Output Power 47.80 dBm

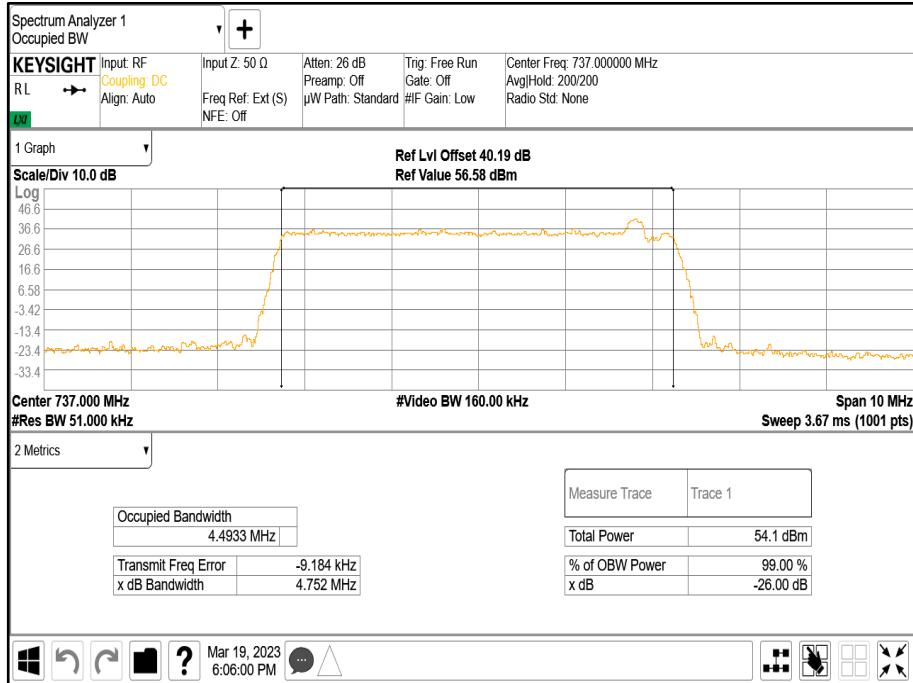
Antenna	LTE / NB-IoT IB Modulation	LTE / NB-IoT IB Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
2	QPSK	5.0 MHz	4477.85	4763.56	4493.31	4751.77	4477.79	4754.68

Antenna 2 - LTE / NB-IoT IB Modulation QPSK - LTE / NB-IoT IB Carrier Bandwidth 5.0 MHz - Channel Position B

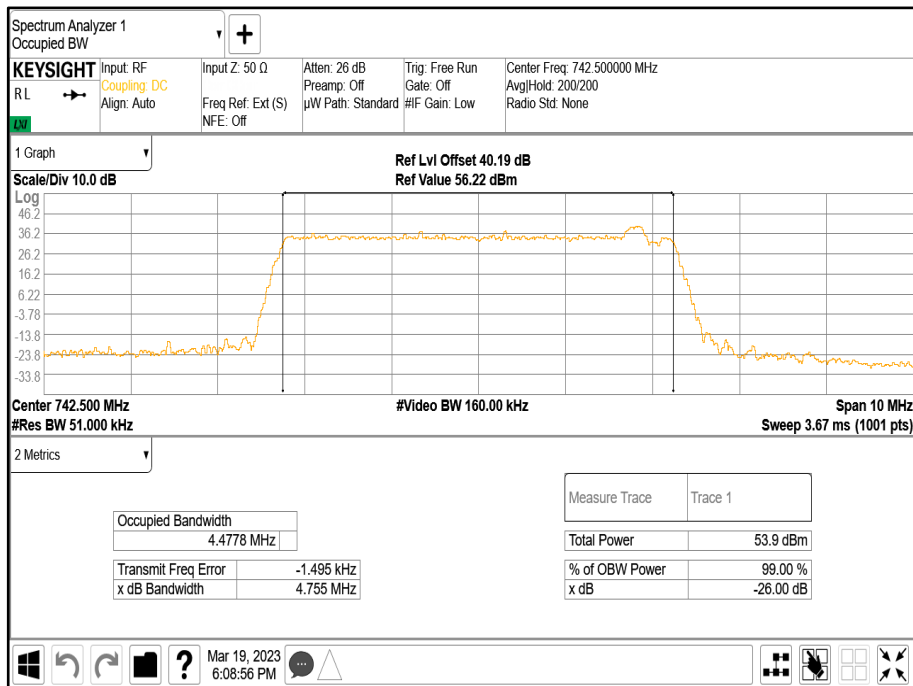




Antenna 2 - LTE / NB-IoT IB Modulation QPSK - LTE / NB-IoT IB Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna 2 - LTE / NB-IoT IB Modulation QPSK - LTE / NB-IoT IB Carrier Bandwidth 5.0 MHz - Channel Position T



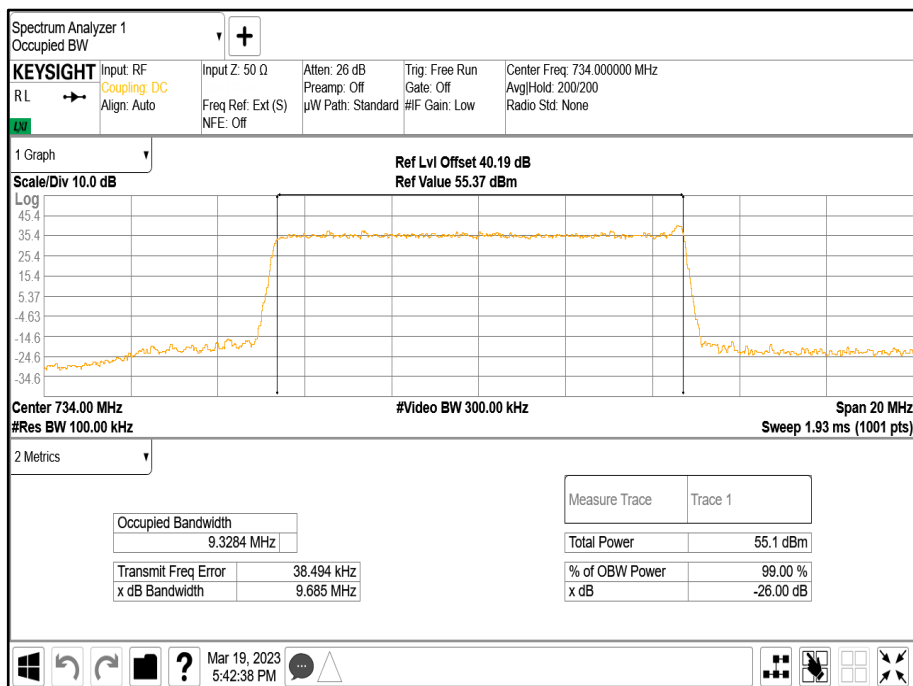


Configuration 10

Maximum Output Power 47.80 dBm

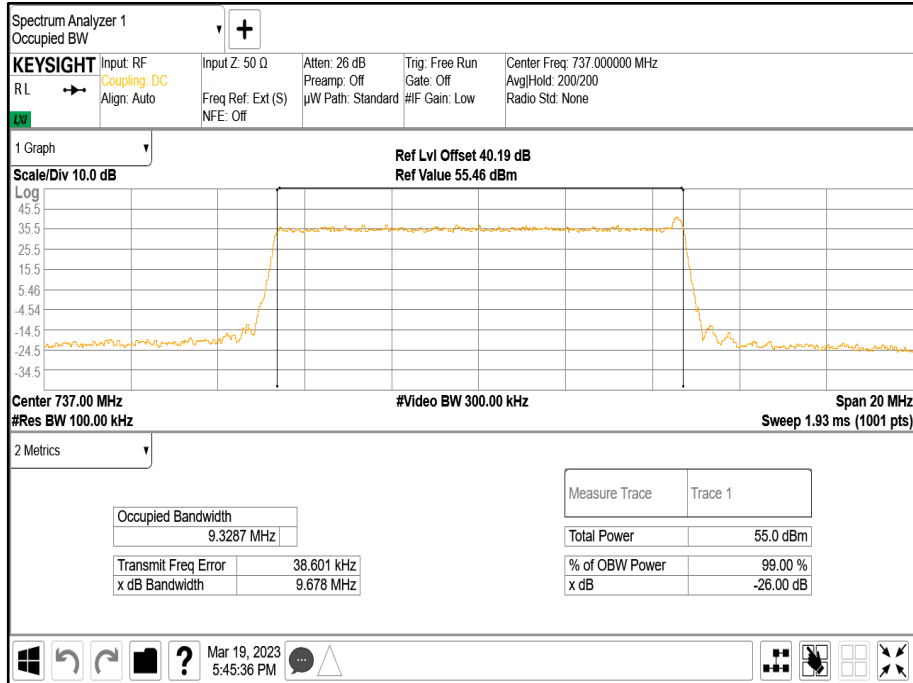
Antenna	LTE / NB-IoT GB Modulation	LTE / NB-IoT GB Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
2	QPSK	10.00 MHz	9328.39	9685.48	9328.74	9677.85	9316.11	9662.62

Antenna 2 - LTE / NB-IoT GB Modulation QPSK - LTE / NB-IoT GB Carrier Bandwidth 10.00 MHz - Channel Position B

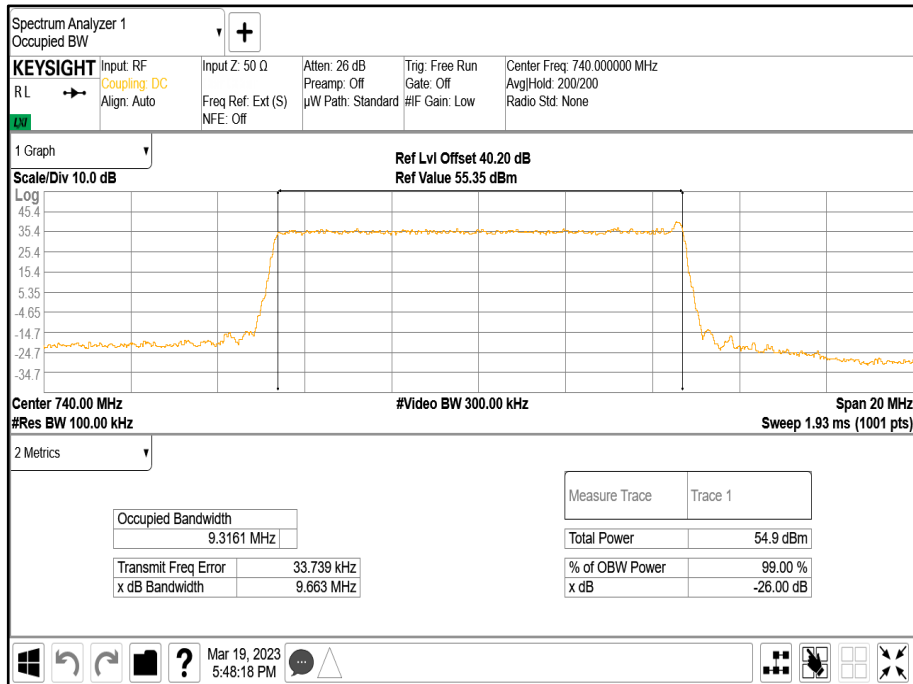




Antenna 2 - LTE / NB-IoT GB Modulation QPSK - LTE / NB-IoT GB Carrier Bandwidth 10.00 MHz - Channel Position M



Antenna 2 - LTE / NB-IoT GB Modulation QPSK - LTE / NB-IoT GB Carrier Bandwidth 10.00 MHz - Channel Position T





2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.53
FCC CFR 47 Part 2, Clause 2.1051

2.3.2 Date of Test and Modification State

09, 10, 13, 15, 18, 19 March-2023 - 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 22.0 - 22.8°C
Relative Humidity 37.8 - 39.8%

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 $10 * \text{Log}(N)$, where N is equal to the number of MIMO antenna ports.

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

2.3.6 Test Results

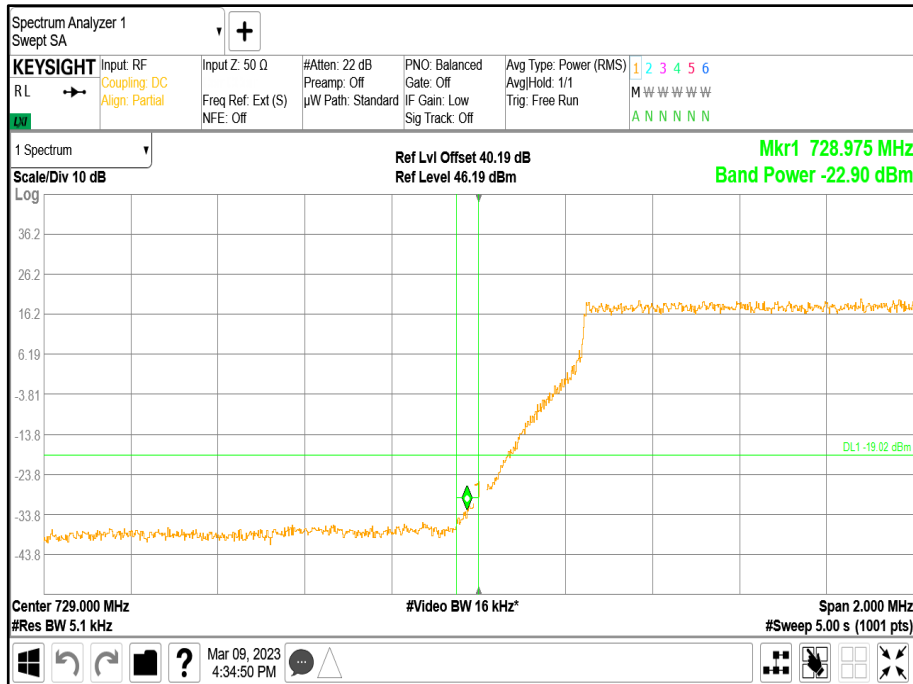
Configuration 1

Maximum Output Power 47.80 dBm

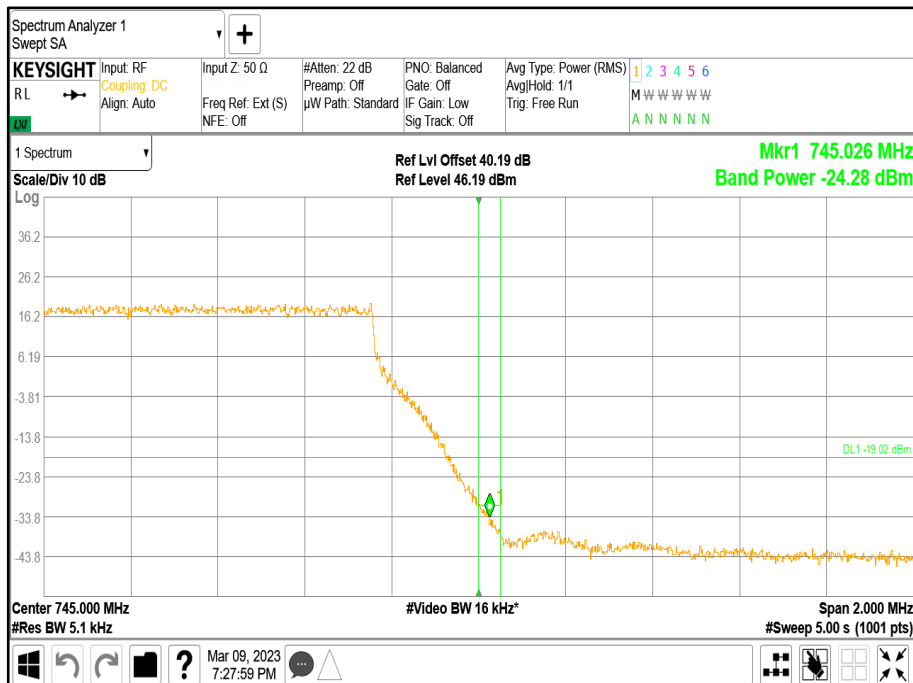
Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
2	64QAM	5.0 MHz	731.5	742.5
2	64QAM	10.0 MHz	734.0	740.0



Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 5.0 MHz - Channel Position T





Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position B



Antenna 2 - LTE Modulation 64QAM - LTE Carrier Bandwidth 10.0 MHz - Channel Position T

