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Report On

FCC and ISED Testing of the
Ericsson KRC 161 489/1 Radio 2203 B2 B25 (1900MHz) NR Base
Station in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 24,
ISED RSS-GEN and Industry Canada RSS-133
COMMERCIAL-IN-CONFIDENCE
FCC ID: TA8AKRC161489-1
IC: 287AB-AS1614891

PREPARED BY

A handwritten signature in black ink, appearing to read 'Daria Fiedorowicz', written over a horizontal line.

Daria Fiedorowicz
Senior Administrator
(Technical)

APPROVED BY

A handwritten signature in black ink, appearing to read 'Steve Scarfe', written over a horizontal line.

Steve Scarfe
Authorised Signatory

DATED

19 March 2020

Document 75948011 Report 01 Issue 1

March 2020



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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 2203 B2 B25 & KRC 161 489/1
IC Model Name	AS1614891
Serial Number(s)	D825087587
Software Version	CXP 901 3268/9 Rev R77ZT
Hardware Version	R1F
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2018 FCC CFR 47 Part 24: 2018 ISED RSS-GEN Issue 5: (04-2018) + A1 (03-2019) Industry Canada RSS-133: Issue 6 (01-2013) + A1 (01-2018)
Test Plan	20Q1 FCC_IC test plan for NR legacy_PB1 (1)
Start of Test	10 February 2020
Finish of Test	10 February 2020
Name of Engineer(s)	Brian Scarfe
Related Document(s)	KDB 971168 D01 v02r02 KDB 662911 D01 v02r01

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, FCC CFR 47 Part 24. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

A handwritten signature in black ink, appearing to be 'Brian Scarfe', written over a horizontal line.

Brian Scarfe



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 24, ISSED RSS-GEN and Industry Canada RSS-133 is shown below.

Section	Specification Clause				Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 24	RSS-GEN	RSS-133		
2.1	2.1046	24.232 (a)	-	6.4	Maximum Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	24.238 (b)	6.7	-	Occupied Bandwidth	Pass
2.3	2.1051	24.238 (b)	-	6.5	Band Edge	Pass
2.4	2.1051	24.238 (a)	-	6.5	Transmitter Spurious Emissions	Pass

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.



1.3 CONFIGURATION DESCRIPTION

Configuration	RAT	No. Of carriers	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
				Bottom	Middle	Top
A	NR	1	5 MHz – SCS 15kHz	1932.5	-	1987.5
	NR	1	10 MHz – SCS 15kHz	1935.0	-	1985.0
	NR	1	15 MHz – SCS 15kHz	1937.5	-	1982.5
	NR	1	20 MHz – SCS 15kHz	1940.0	-	1980.0
	NR	1	20 MHz – SCS 60kHz	1940.0	-	1980.0
B	NR	1	5 MHz – SCS 15kHz	1932.5	-	1992.5
	NR	1	10 MHz – SCS 15kHz	1935.0	-	1990.0
	NR	1	15 MHz – SCS 15kHz	1937.5	-	1987.5
	NR	1	20 MHz – SCS 15kHz	1940.0	-	1985.0
	NR	1	20 MHz – SCS 60kHz	1940.0	-	1985.0
	NR	2	20 MHz + 20 MHz SCS 15kHz	-	1950.0+1975.0	-



1.4 DECLARATION OF BUILD STATUS

DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Radio Unit
MANUFACTURER	Ericsson AB
PRODUCT NAME	Radio 2203 B2 B25
PART NUMBER	KRC 161 489/1
IC Model Name	AS1614891
SERIAL NUMBER	D825087587
HARDWARE VERSION	R1F
SOFTWARE VERSION	CXP 901 3268/9 – R77ZT
TRANSMITTER OPERATING RANGE	B2: 1930 - 1990 MHz B25: 1930 - 1995 MHz
MODULATIONS	WCDMA: QPSK, 16QAM, 64QAM LTE & NR: QPSK, 16QAM, 64QAM, 256QAM
ITU DESIGNATION OF EMISSION	WCDMA 5 MHz BW channel: 5M00F9W
	LTE 1.4 MHz BW channel: 1M40W7D
	LTE 3 MHz BW channel: 3M00W7D
	LTE 5 MHz BW channel: 5M00W7D
	LTE 10 MHz BW channel: 10M0W7D
	LTE 15 MHz BW channel: 15M0W7D
	LTE 20 MHz BW channel: 20M0W7D
	NB IoT SA channel: 210KW7D
	NR 5 MHz BW channel: 5M00W7D
	NR 10 MHz BW channel: 10M0W7D
	NR 15 MHz BW channel: 15M0W7D
	NR 20 MHz BW channel: 20M0W7D
	NR 20+20 MHz CA channel: 40M0W7D
OUTPUT POWER (RMS) (W or dBm)	2 ports, 5W per port
FCC ID	TA8AKRC161489-1
IC ID	287AB-AS1614891
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Base station radio

Supports NB IoT for LTE (IB, GB, SA)

Signature

Xiaoying Jiang
Xiaoying Jiang

Date

2020-03-03

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

1.5 PRODUCT INFORMATION

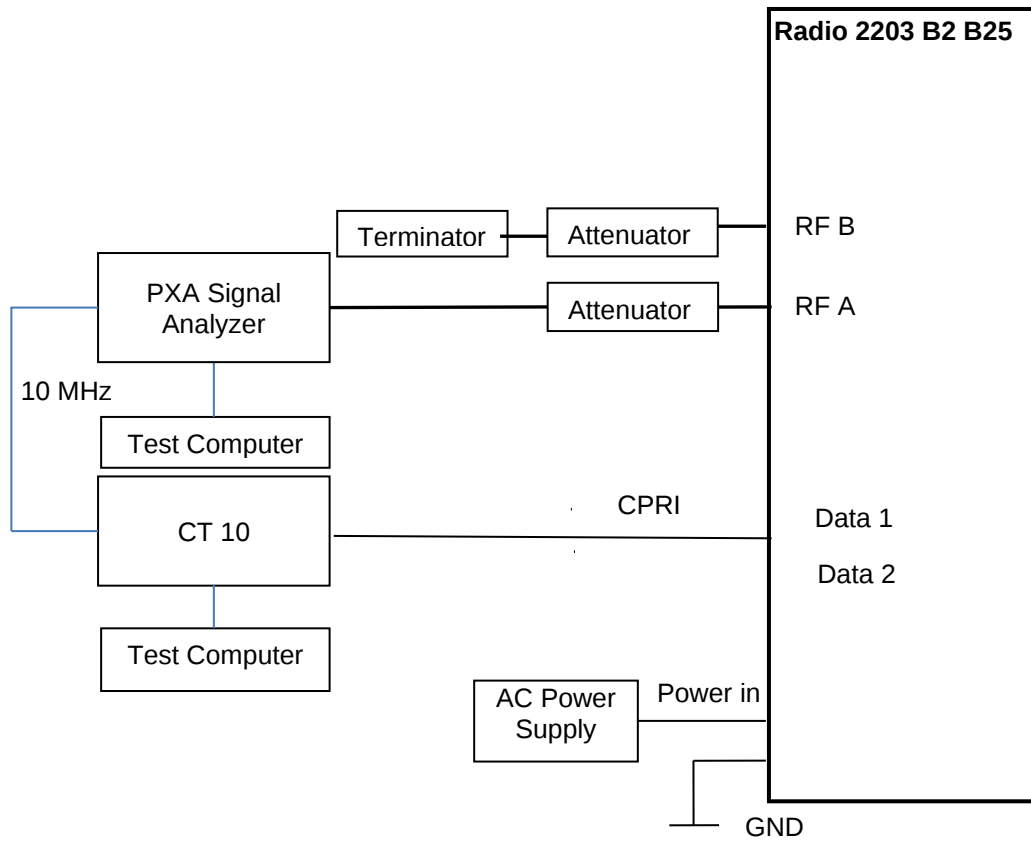
1.5.1 Technical Description

The Equipment Under Test (EUT) Radio 2203 B2 B25 is an Ericsson AB Radio Unit working in the public mobile service 1900MHz band which provides communication connections to 1900MHz network. The Radio 2203 B2 B25 operates from 36VDC via -48VDC supply or 230VAC 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

**1.6 TEST SETUP**



1.7 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 with 36VDC via PSU AC 10.

FCC Measurement Facility Registration Number
90987 Octagon House, Fareham Test Laboratory

ISED Accreditation
12669A Octagon House, Fareham Test Laboratory

Test Name	Name of Engineer(s)
Maximum Peak Output Power and Peak to Average Ratio - Conducted	Brian Scarfe
Occupied Bandwidth	Brian Scarfe
Band Edge	Brian Scarfe
Transmitter Spurious Emissions	Brian Scarfe

1.8 DEVIATION FROM THE STANDARD

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

1.9 MODIFICATION RECORD

No modifications were made to the EUT during testing.



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 24, Clause 24.232 (a)
 Industry Canada RSS-133, Clause 6.4
 FCC CFR 47 Part 2, Clause 2.1046

2.1.2 Date of Test and Modification State

10 February 2020 - 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 21.3°C
 Relative Humidity 45.8%

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.

2.1.6 Test Results

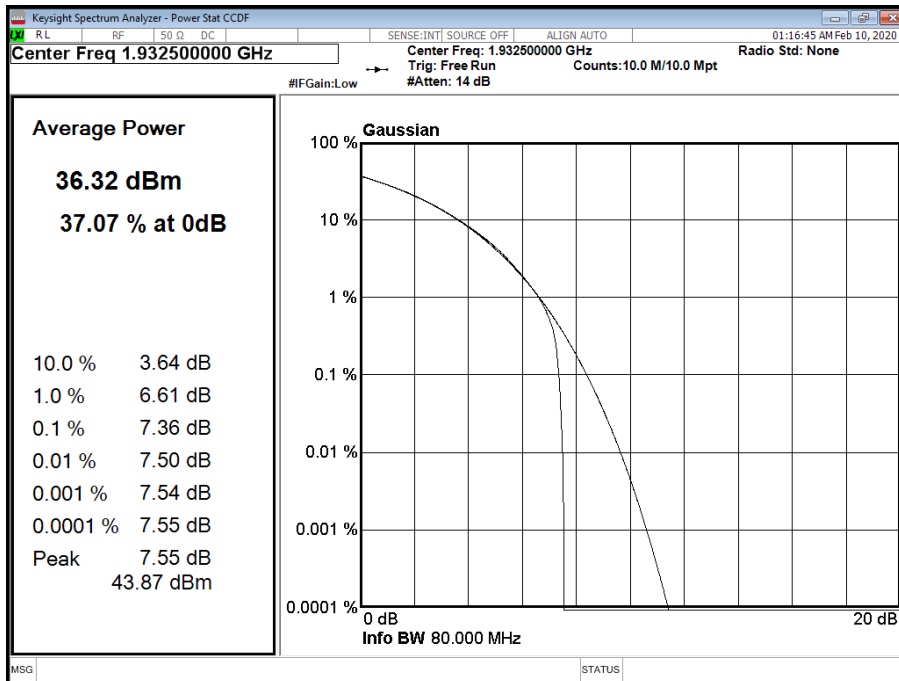
Configuration A

Maximum Output Power 37.00 dBm

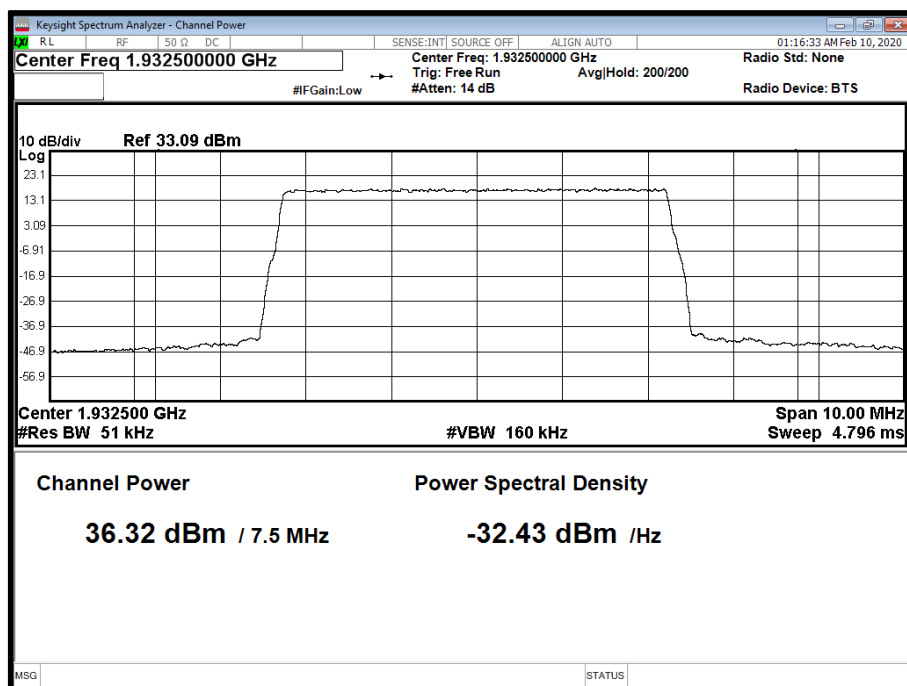
Antenna	NR Modulation	NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position B		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	QPSK	5.0 MHz 15 kHz SCS	7.36	36.32	30.37
A	QPSK	10.0 MHz 15 kHz SCS	-	36.38	-
A	QPSK	15.0 MHz 15 kHz SCS	-	36.39	-
A	QPSK	20.0 MHz 15 kHz SCS	-	36.52	-
A	QPSK	20.0 MHz 60 kHz SCS	-	36.63	-



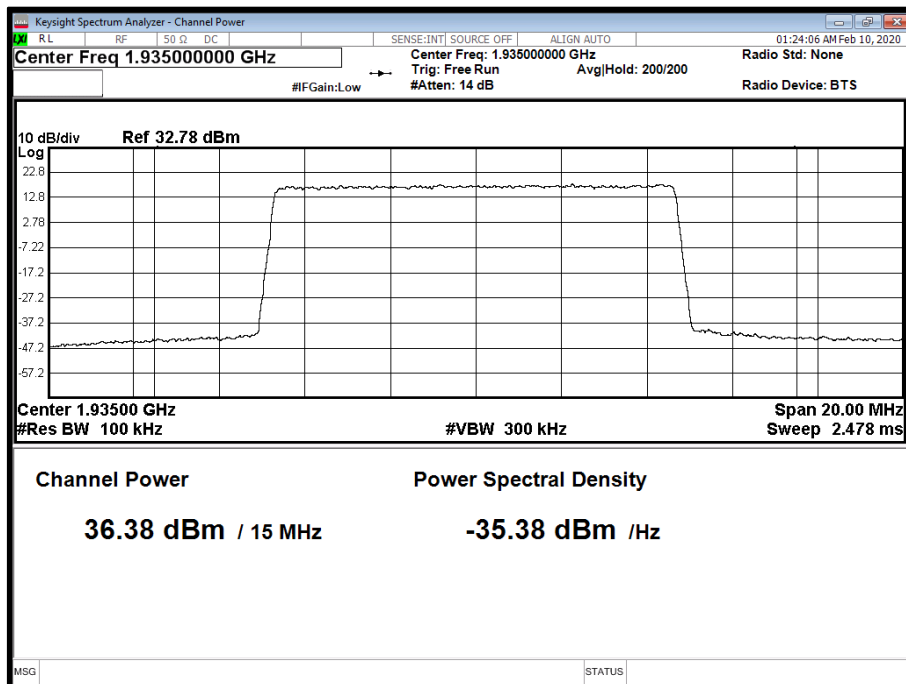
Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B



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

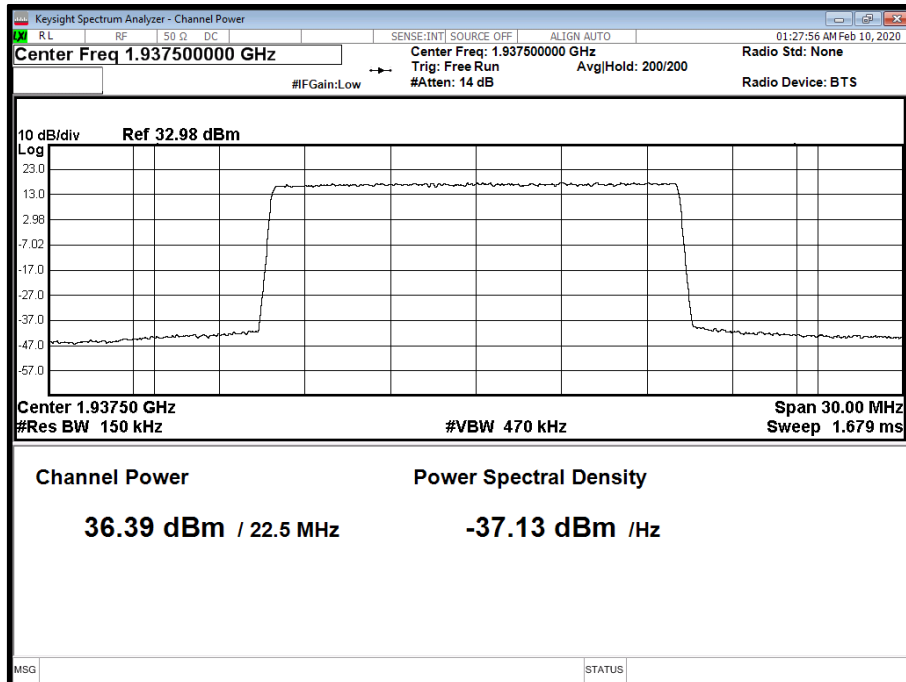


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position B

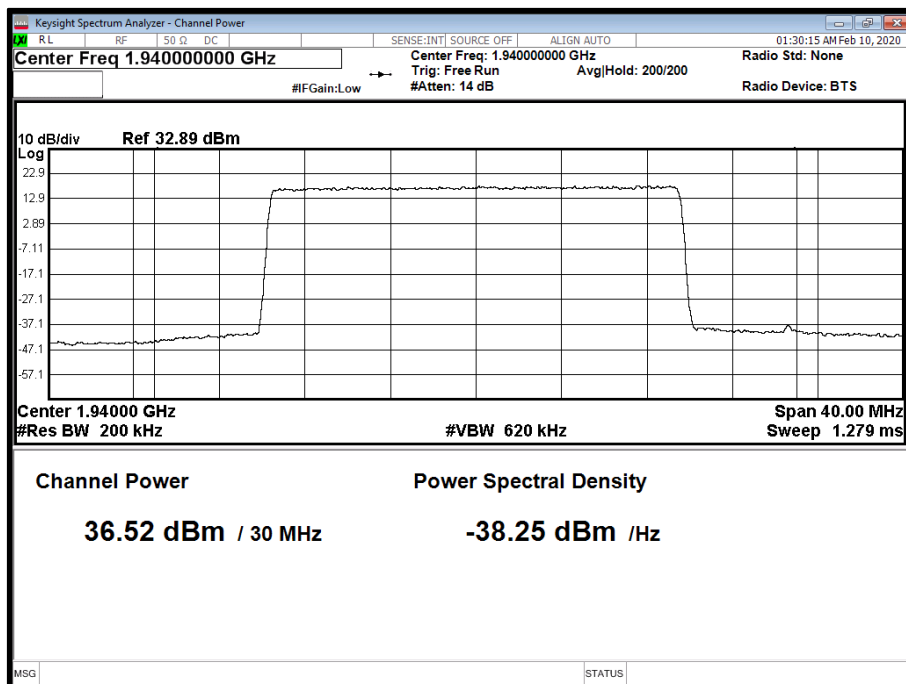




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B

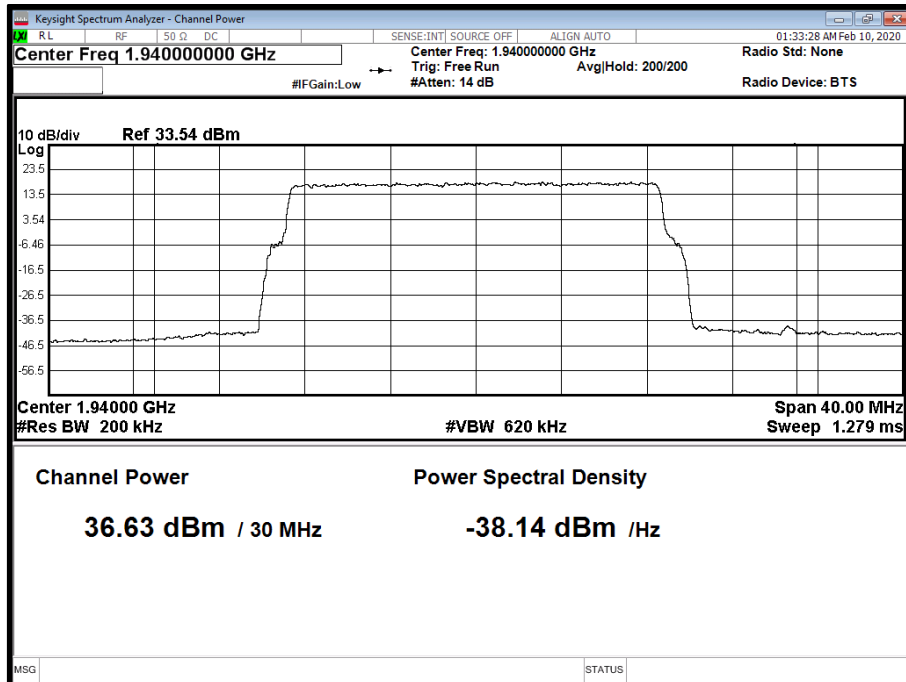


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B





Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position B



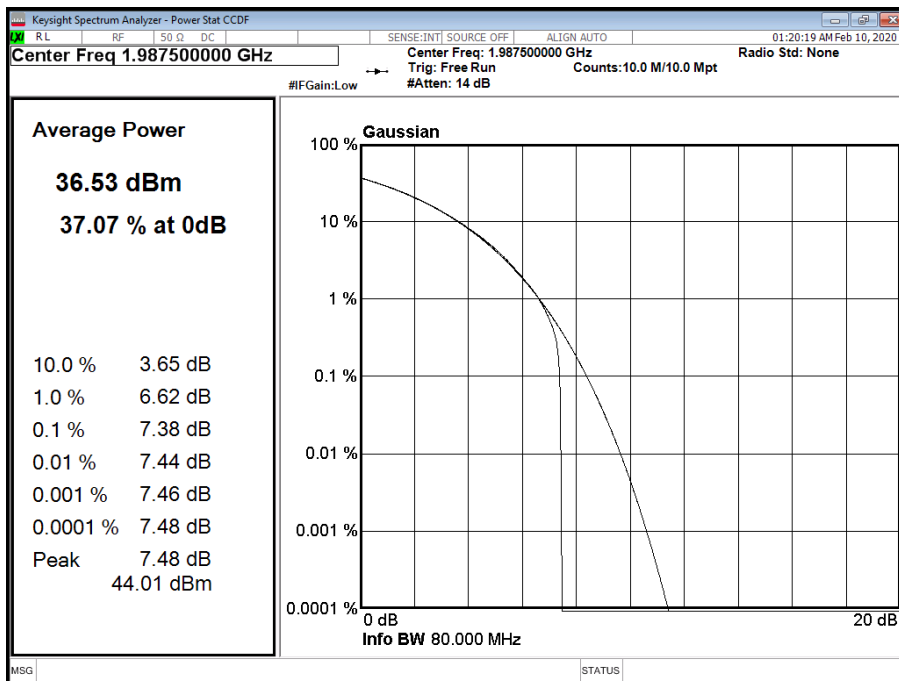
Configuration A

Maximum Output Power 37.00 dBm

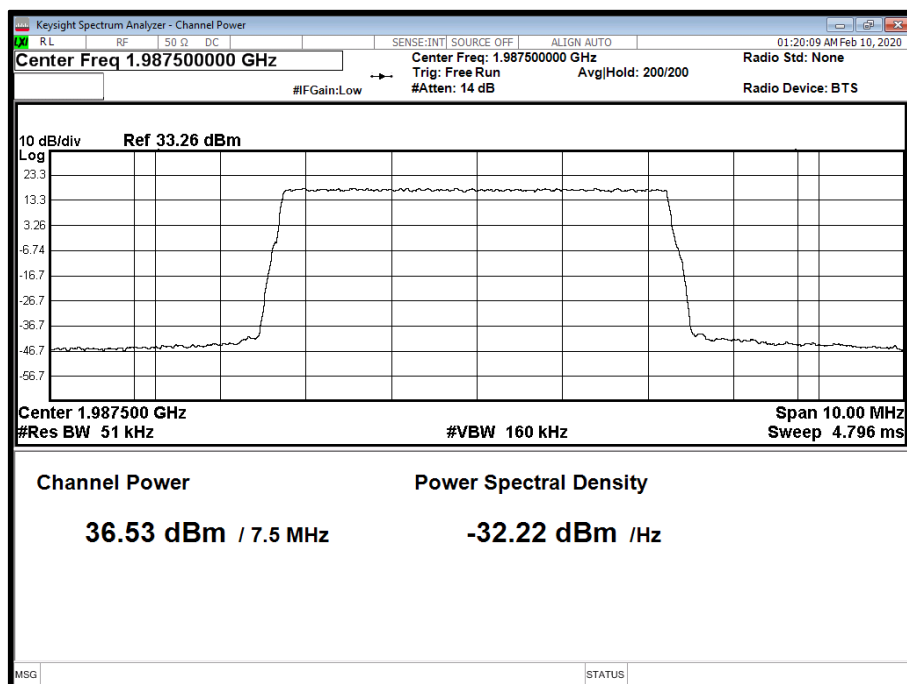
Antenna	NR Modulation	NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position T		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	QPSK	5.0 MHz 15 kHz SCS	7.38	36.53	30.61
A	QPSK	10.0 MHz 15 kHz SCS	-	36.57	-
A	QPSK	15.0 MHz 15 kHz SCS	-	36.62	-
A	QPSK	20.0 MHz 15 kHz SCS	-	36.70	-
A	QPSK	20.0 MHz 60 kHz SCS	-	36.68	-



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

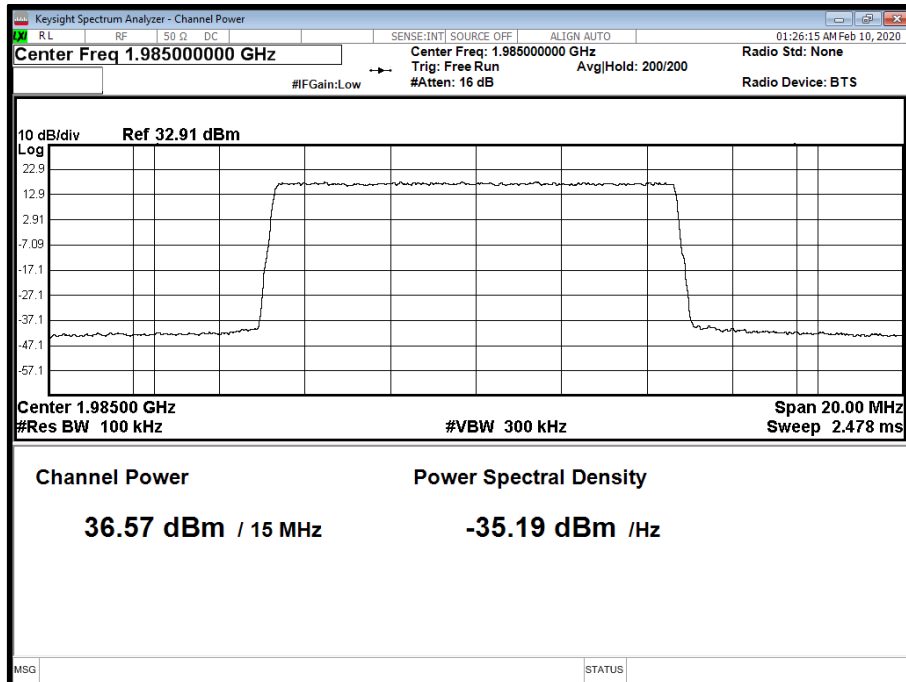


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T



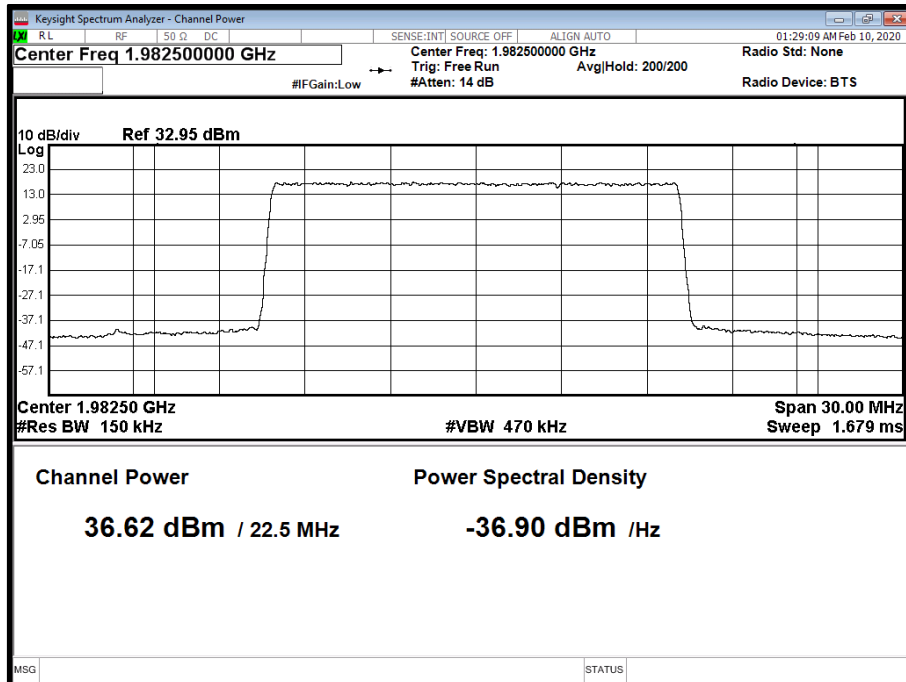


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T

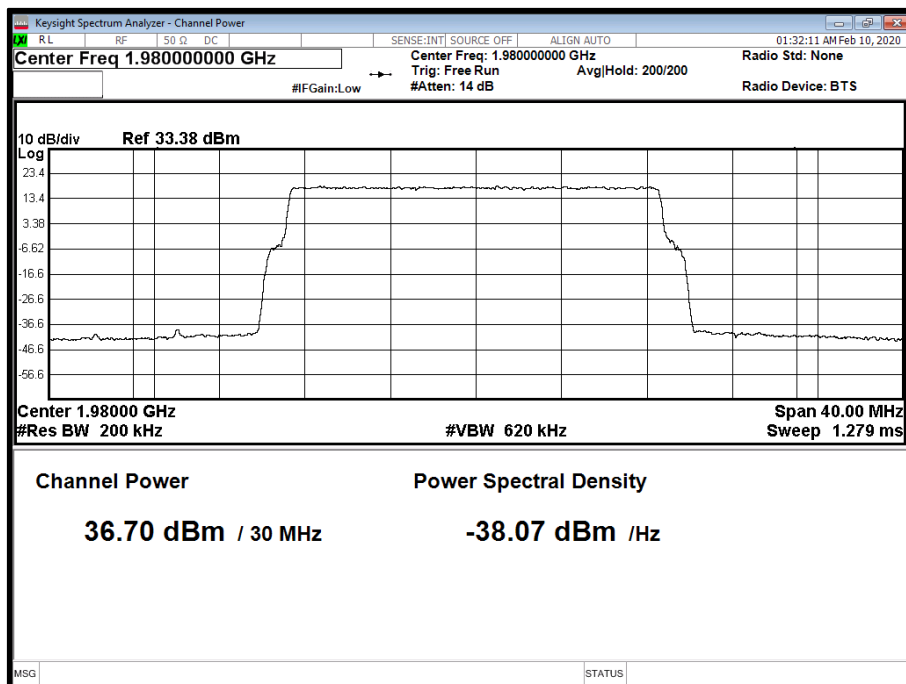




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position T

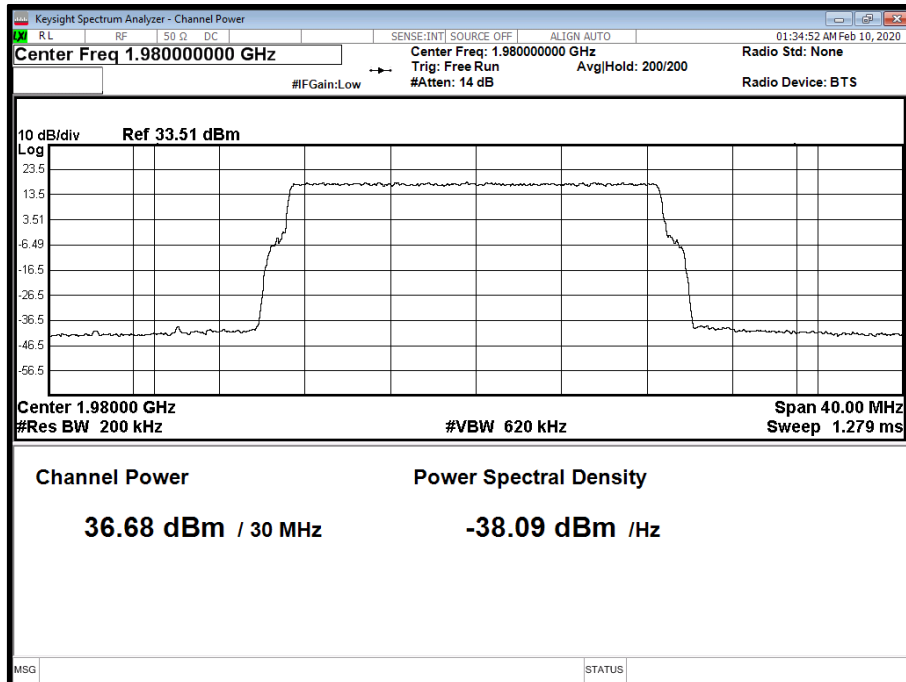


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T





Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position T



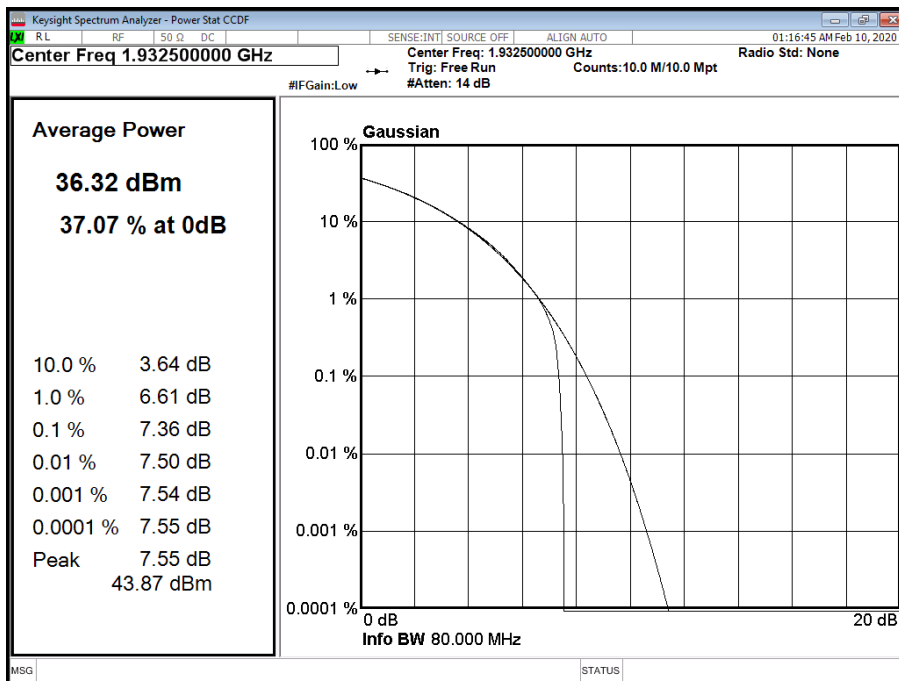
Configuration B

Maximum Output Power 37.00 dBm

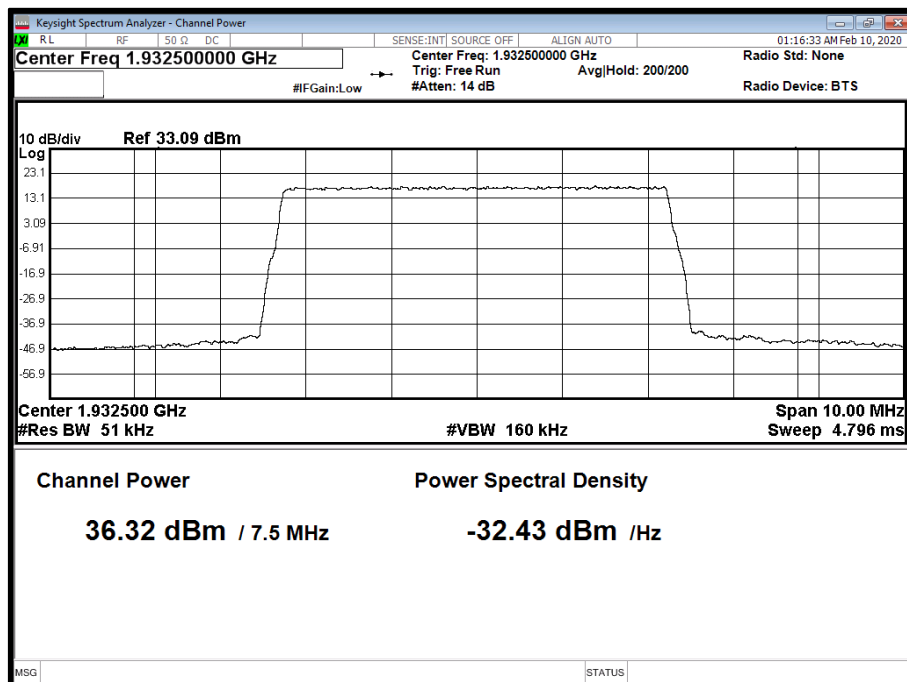
Antenna	NR Modulation	NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position B		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	QPSK	5.0 MHz 15 kHz SCS	7.36	36.32	30.37
A	QPSK	10.0 MHz 15 kHz SCS	-	36.38	-
A	QPSK	15.0 MHz 15 kHz SCS	-	36.39	-
A	QPSK	20.0 MHz 15 kHz SCS	-	36.52	-
A	QPSK	20.0 MHz 60 kHz SCS	-	36.63	-



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

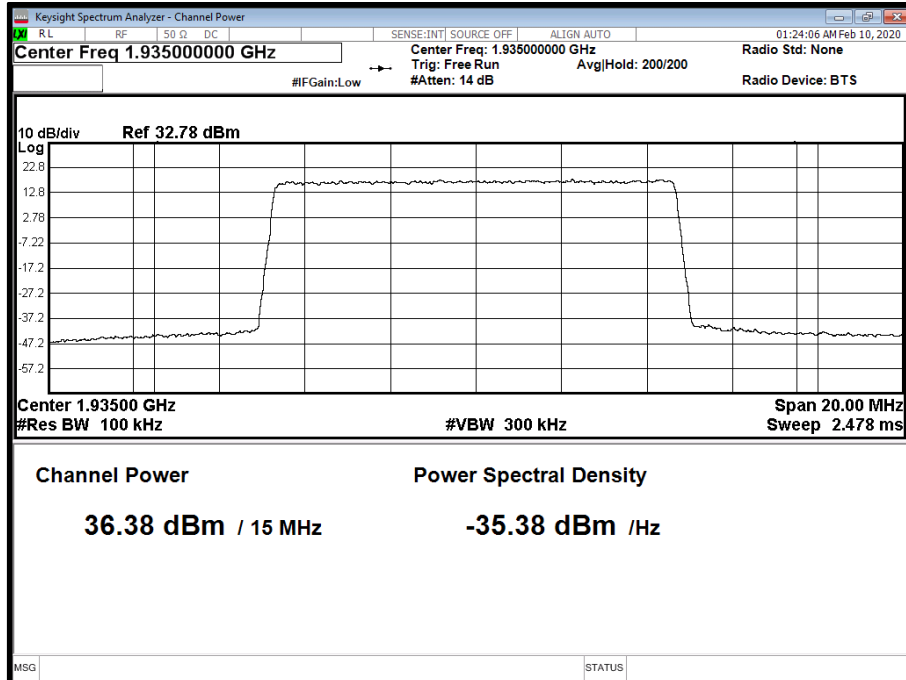


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B



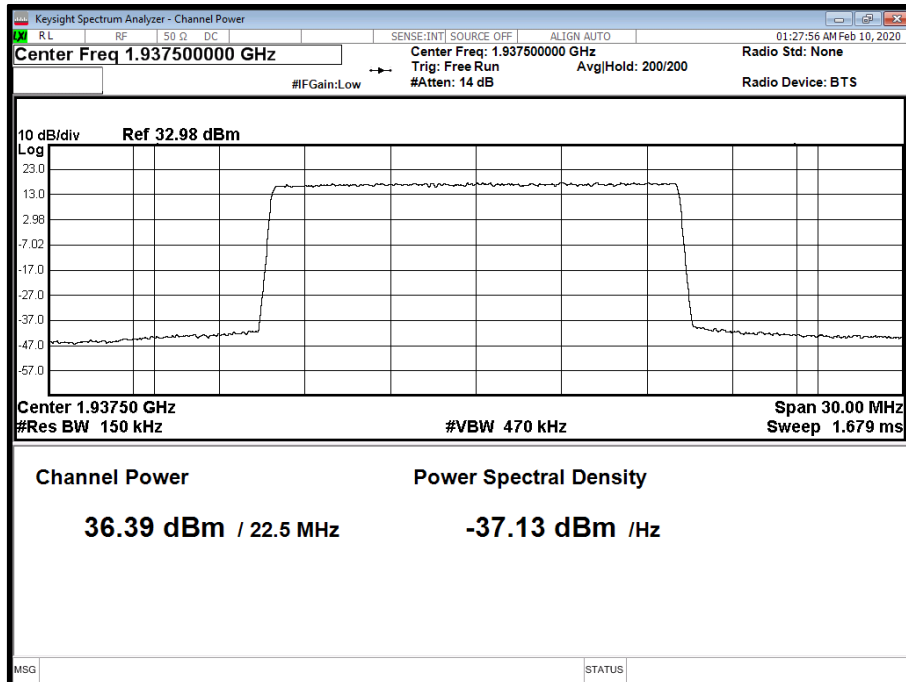


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position B

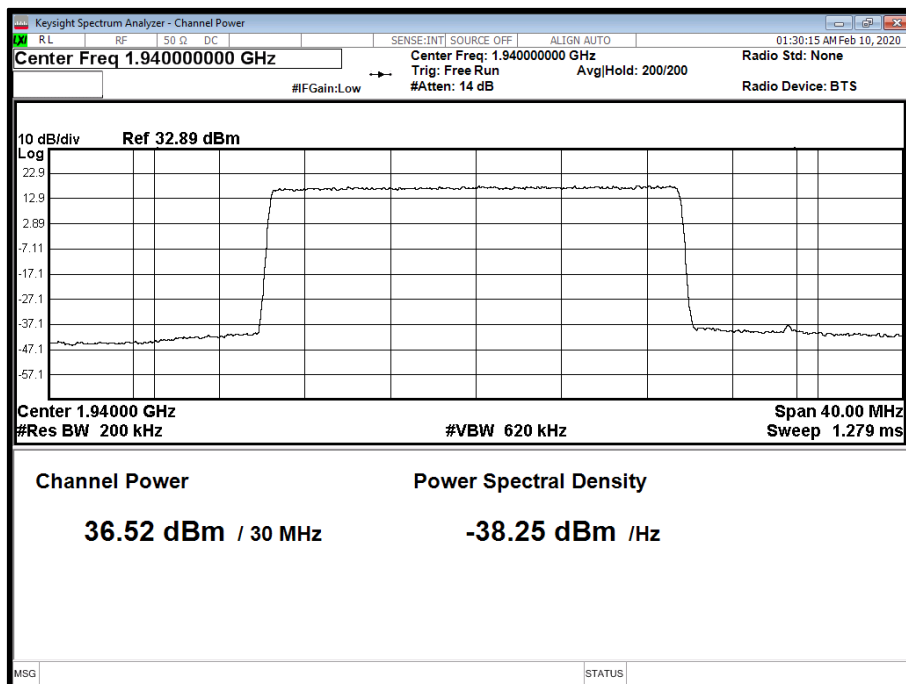




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B

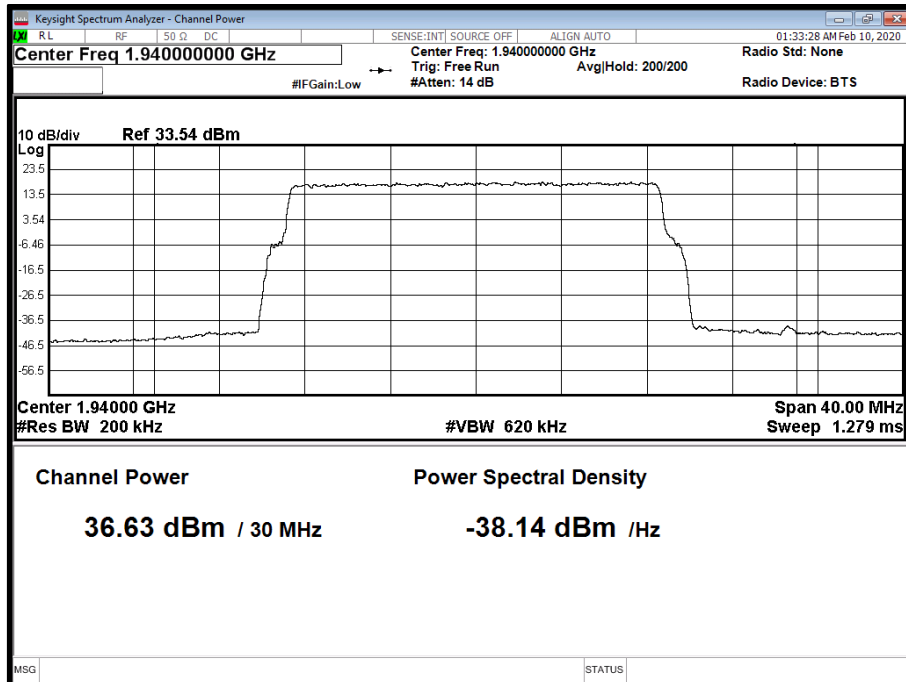


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B





Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position B



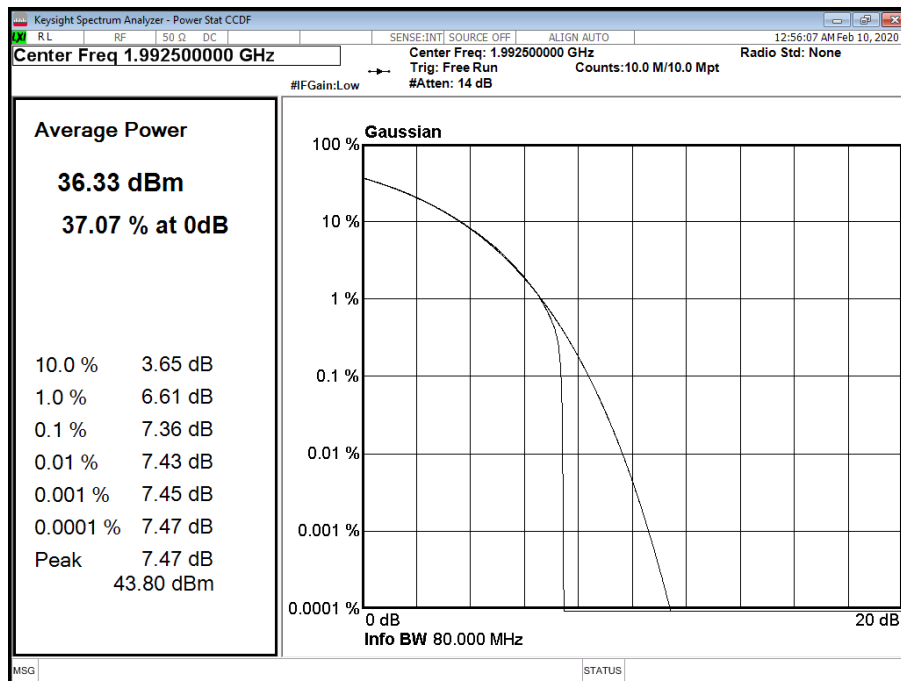
Configuration B

Maximum Output Power 37.00 dBm

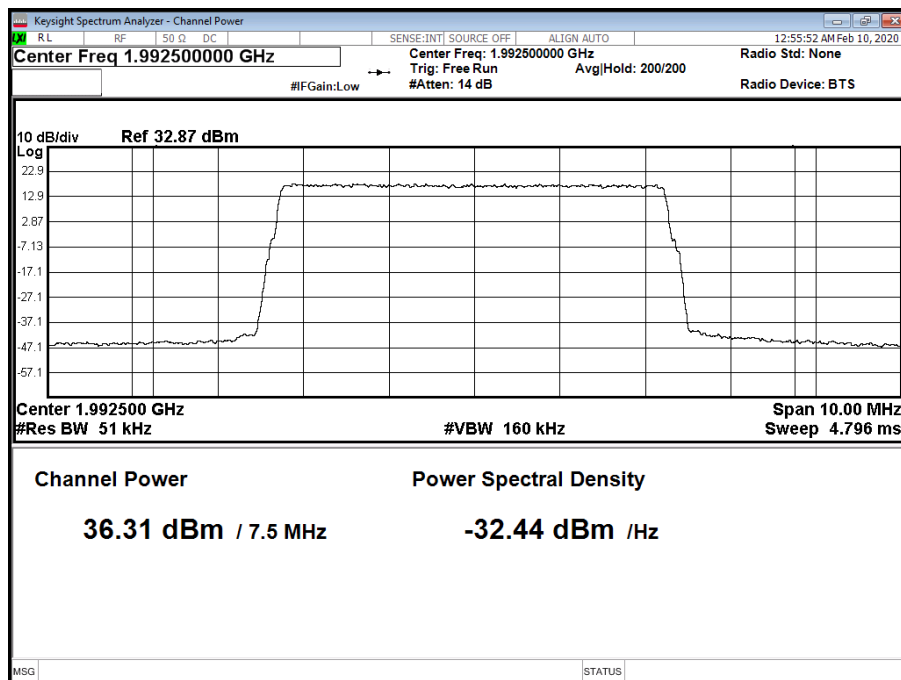
Antenna	NR Modulation	NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position T		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	QPSK	5.0 MHz 15 kHz SCS	7.36	36.31	30.41
A	QPSK	10.0 MHz 15 kHz SCS	-	36.50	-
A	QPSK	15.0 MHz 15 kHz SCS	-	36.49	-
A	QPSK	20.0 MHz 15 kHz SCS	-	36.41	-
A	QPSK	20.0 MHz 60 kHz SCS	-	36.56	-



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

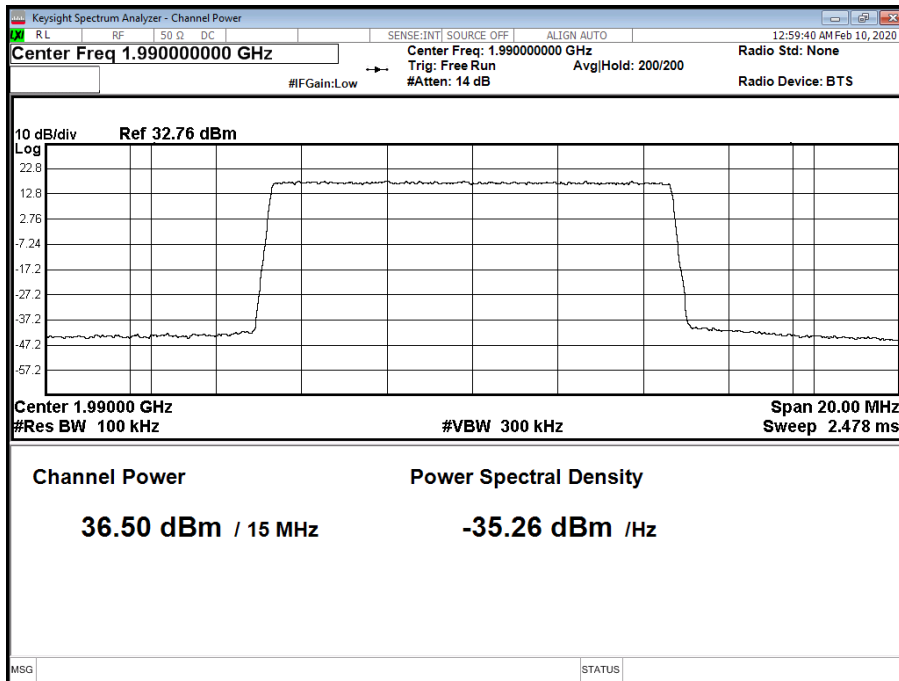


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T



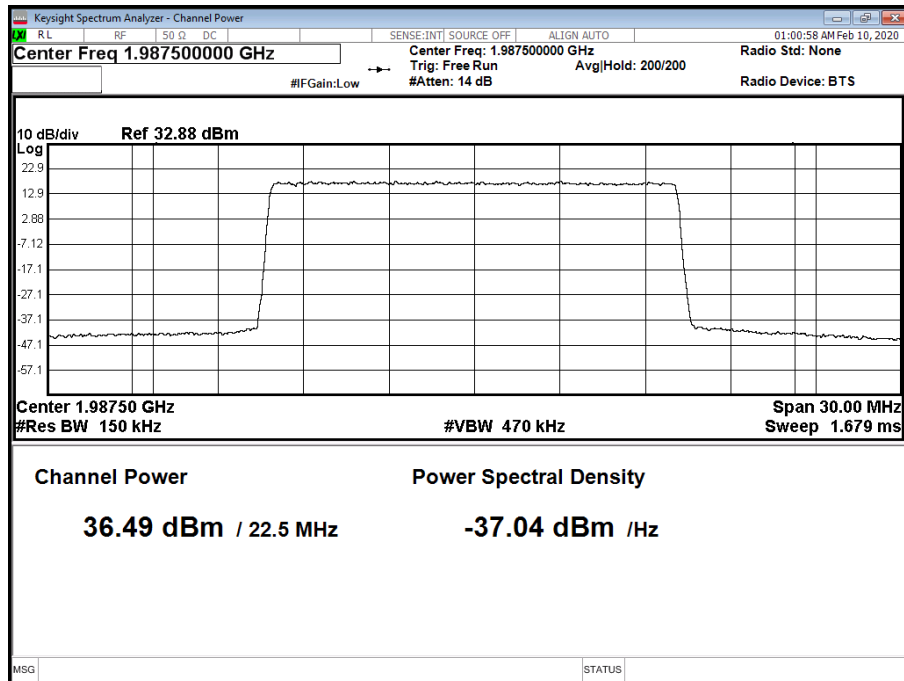


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T

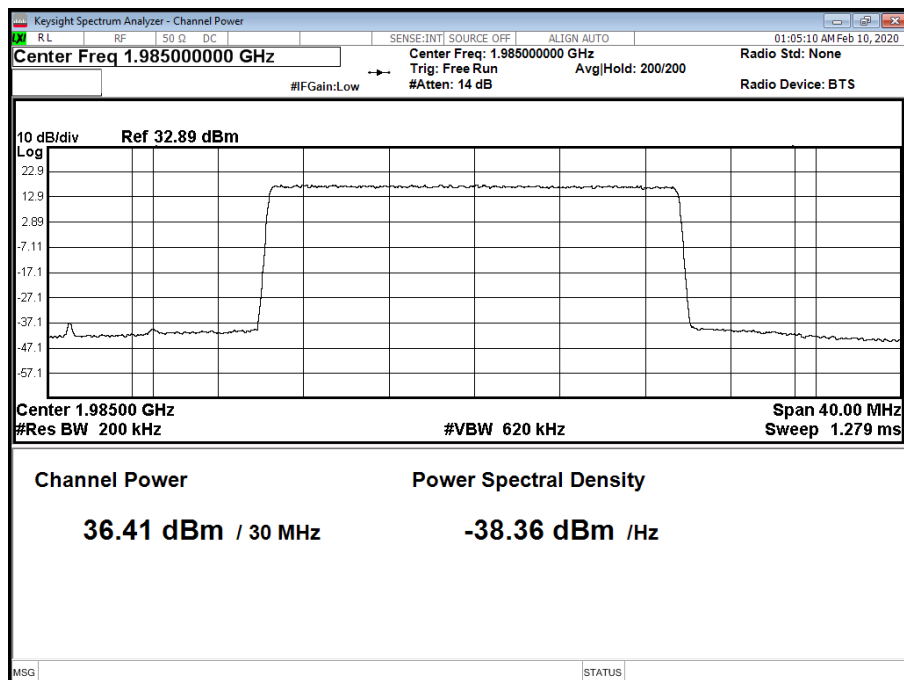




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position T

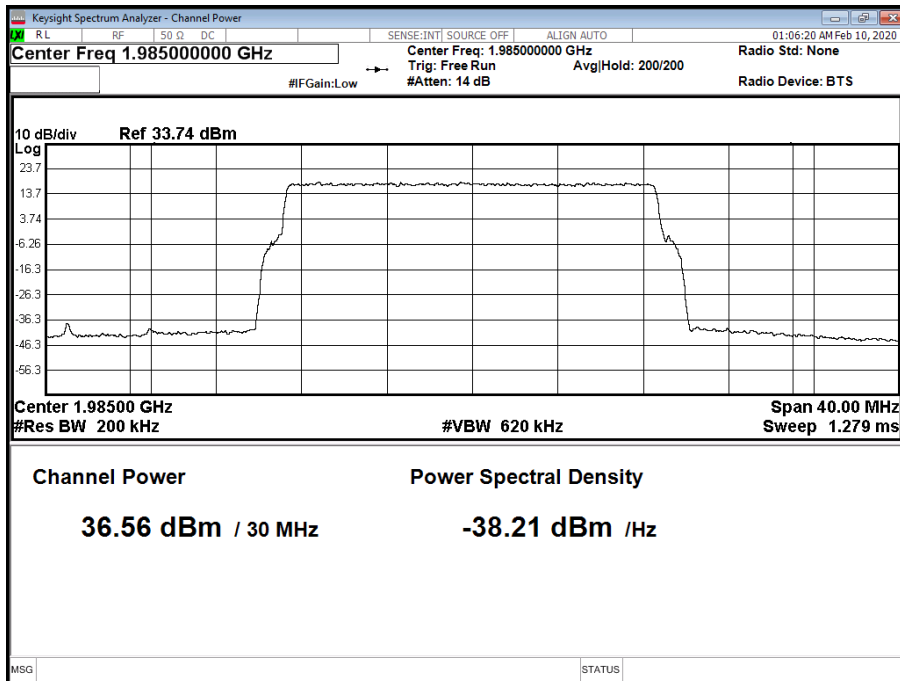


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T





Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position T



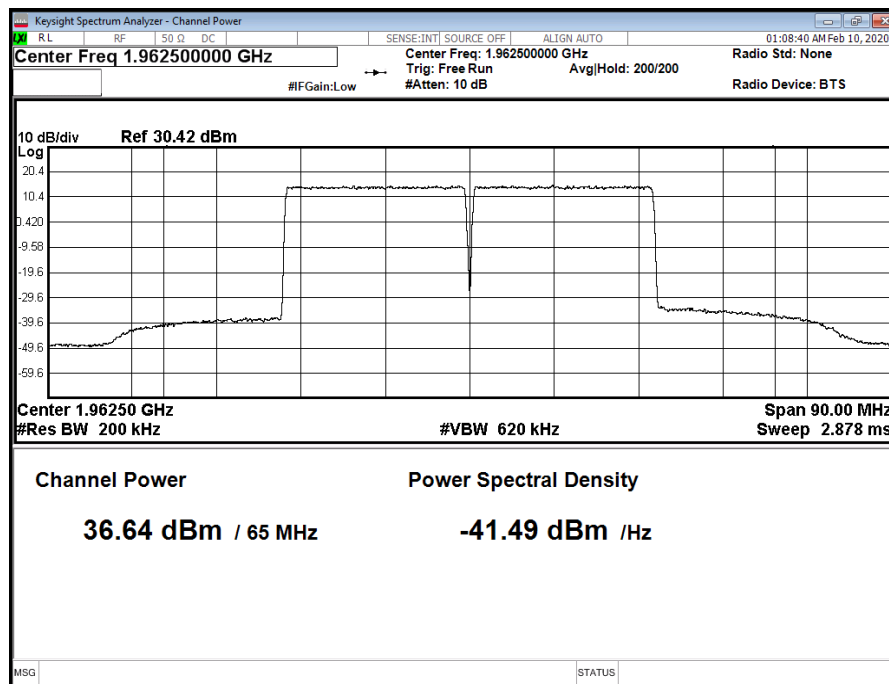


Configuration B

Maximum Output Power 37.00 dBm

Antenna	NR Modulation	NR Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power		
			Channel Position M		
			PAR (dB)	Average Power	
				dBm	dBm/MHz
A	QPSK	20.0 MHz +20MHz 15 kHz SCS	-	36.64	-

Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz +20MHz 15 kHz SCS - Channel Position M



Limit	
Peak Power	≤ 1640 W/MHz or ≤ +62.15 dBm
Peak to Average Ratio	13 dB



2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 24, Clause 24.238 (b)
ISED RSS-GEN, Clause 6.7
FCC CFR 47 Part 2, Clause 2.1049

2.2.2 Date of Test and Modification State

10 February 2020 - 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 21.3°C
Relative Humidity 45.8%

2.2.5 Test Method

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

2.2.6 Test Results

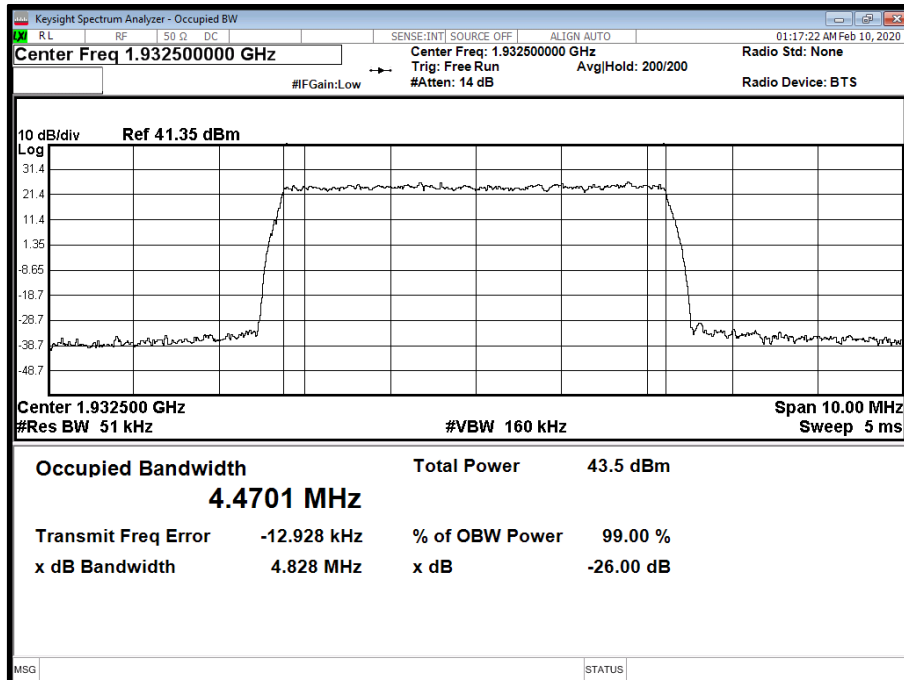
Configuration A

Maximum Output Power 37.00 dBm

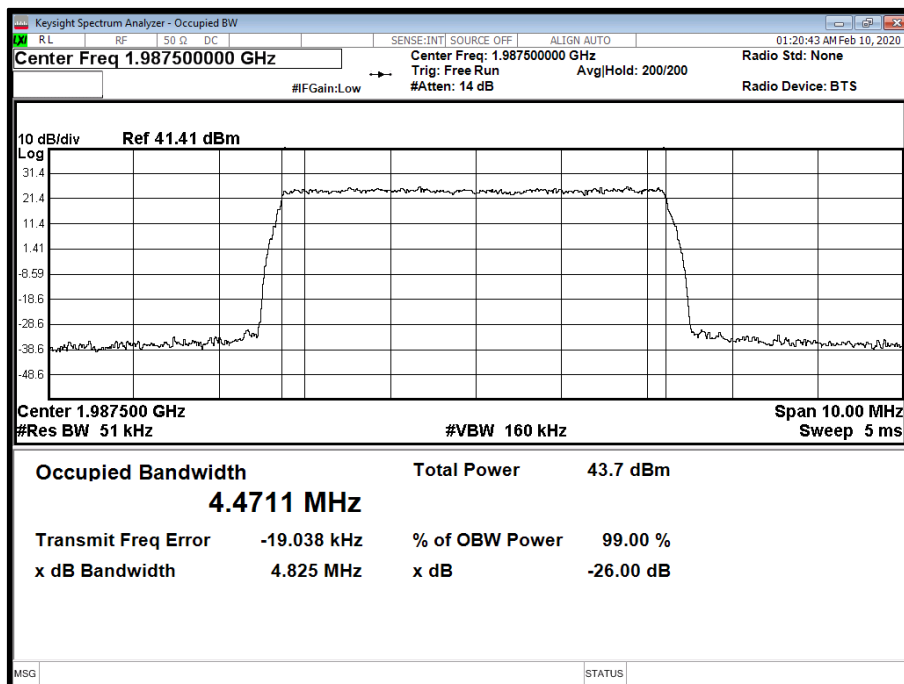
Antenna	NR Modulation	NR Carrier Bandwidth	Result (KHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
A	QPSK	5.0 MHz 15 kHz SCS	4470.09	4828.00	-	-	4471.15	4825.24
A	QPSK	10.0 MHz 15 kHz SCS	9290.29	9778.62	-	-	9296.53	9775.56
A	QPSK	15.0 MHz 15 kHz SCS	14112.15	14712.31	-	-	14118.78	14786.90
A	QPSK	20.0 MHz 15 kHz SCS	18922.71	19718.85	-	-	18921.42	19739.68
A	QPSK	20.0 MHz 60 kHz SCS	17202.06	19476.57	-	-	17224.95	19534.76



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

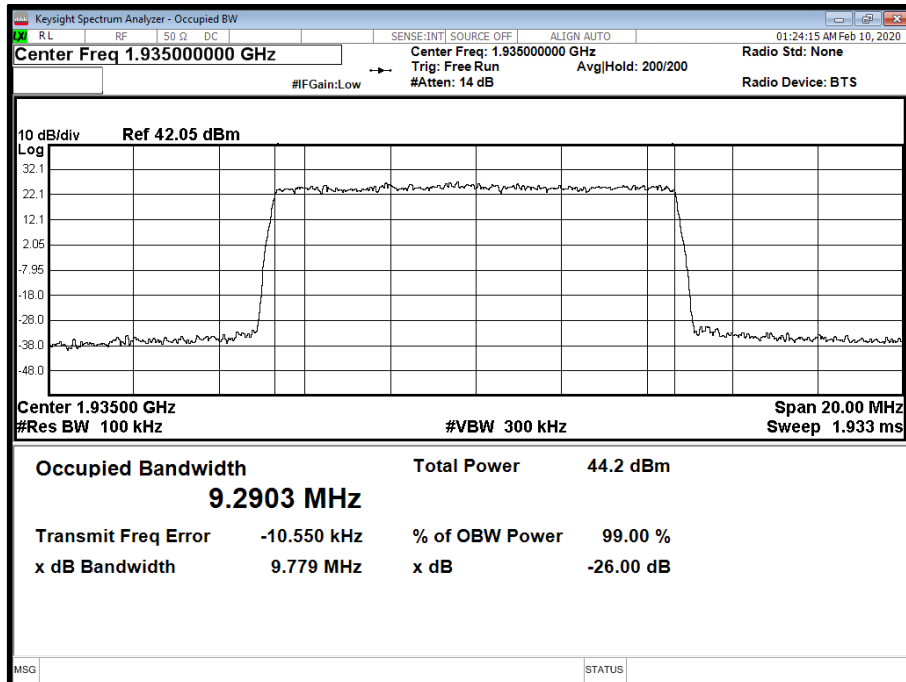


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T

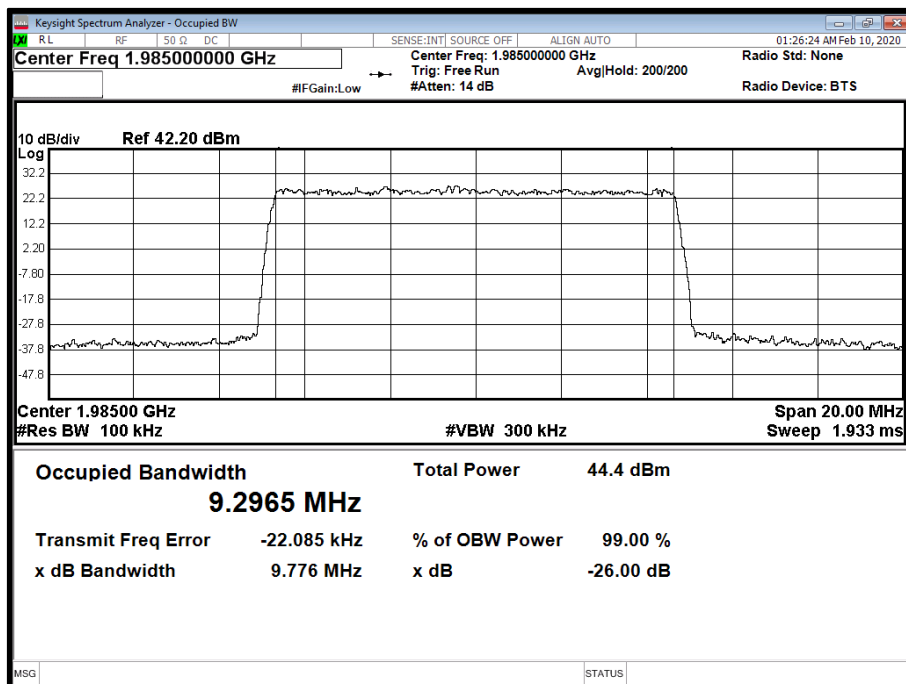




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position B

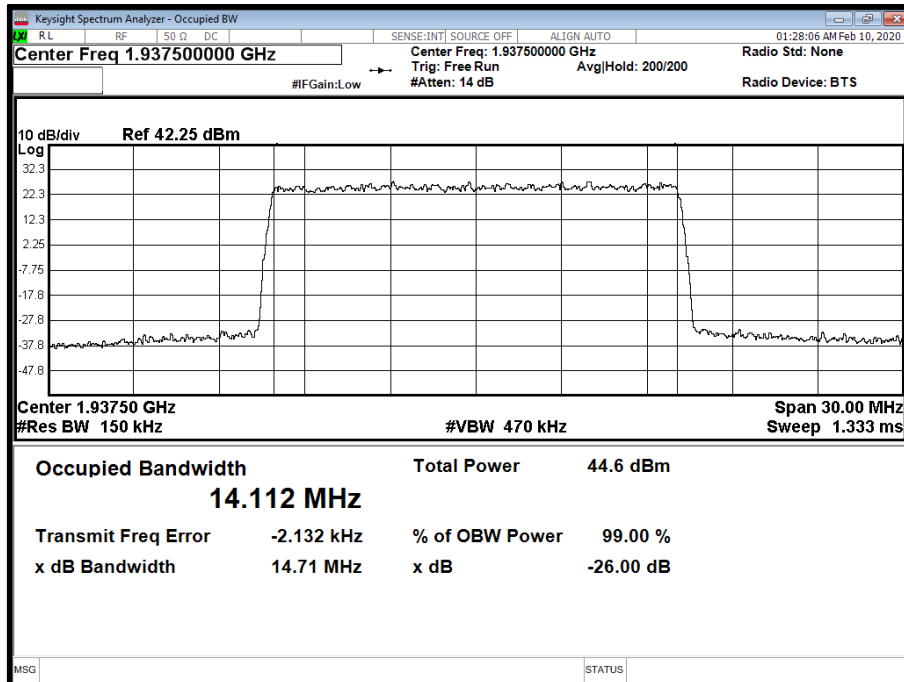


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T

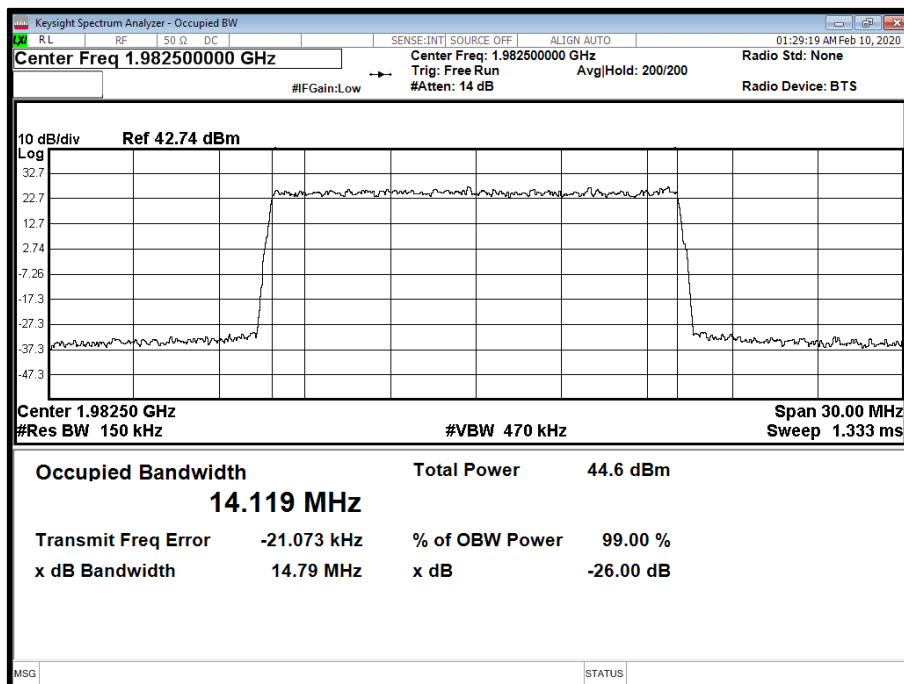




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B

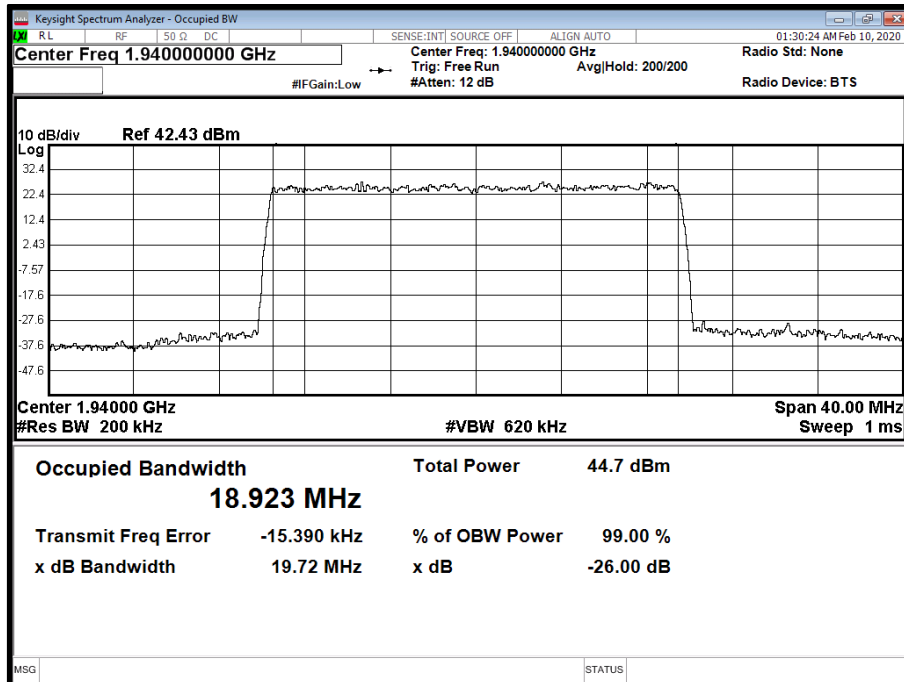


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position T

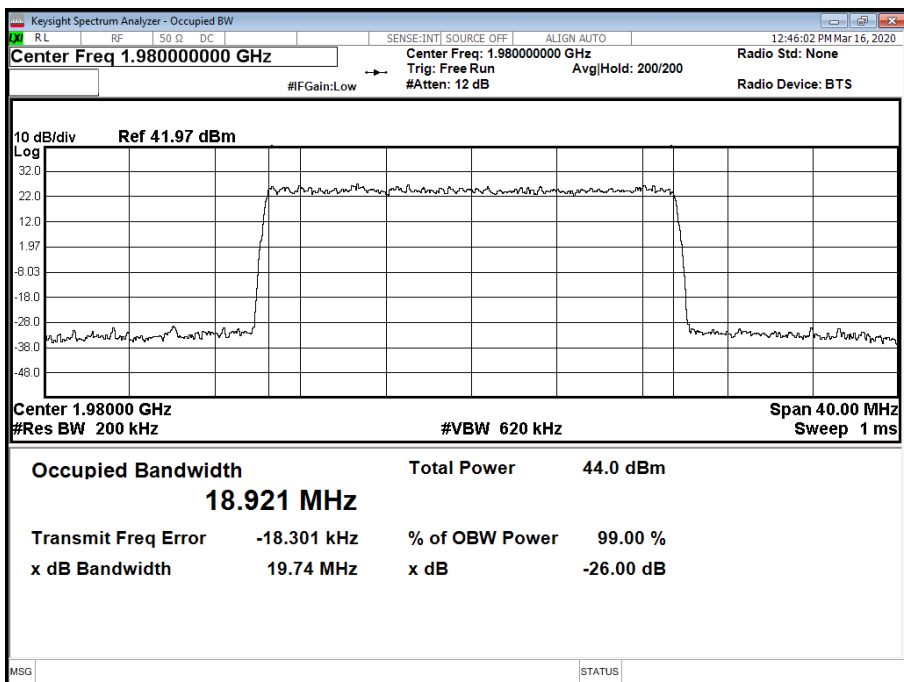




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B

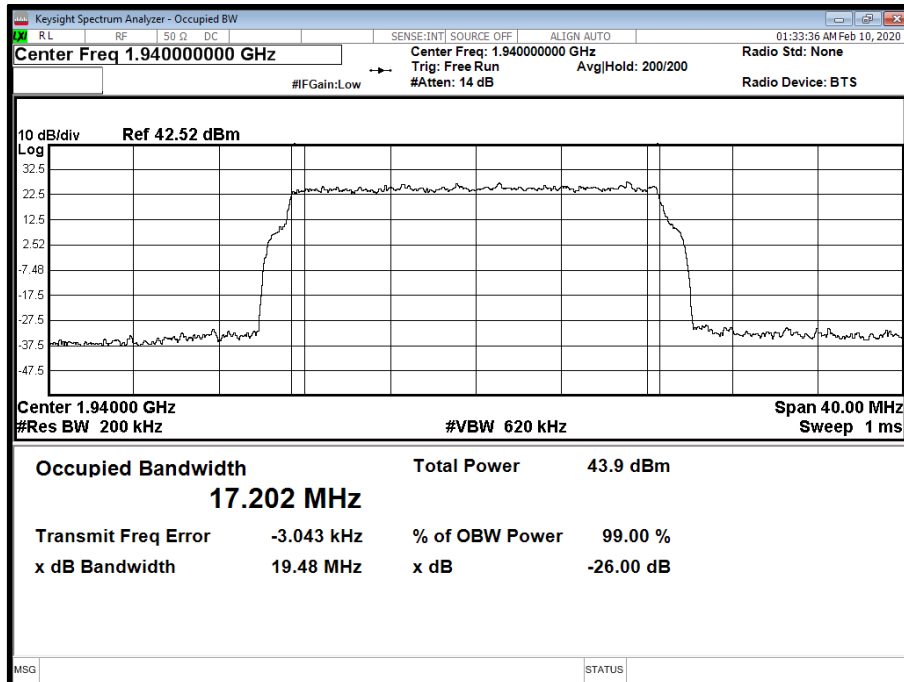


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T

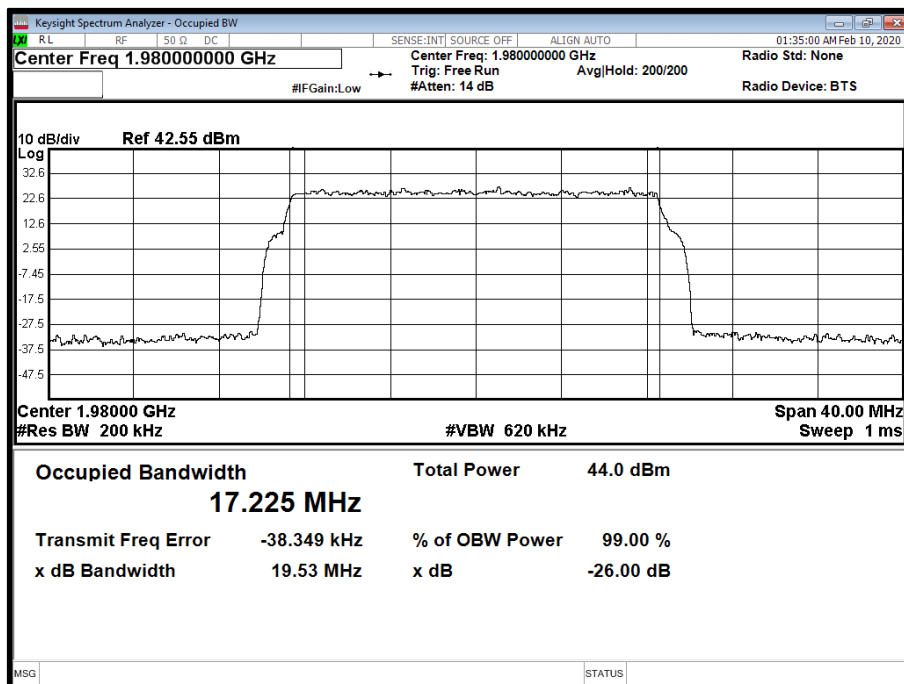




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position B



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position T



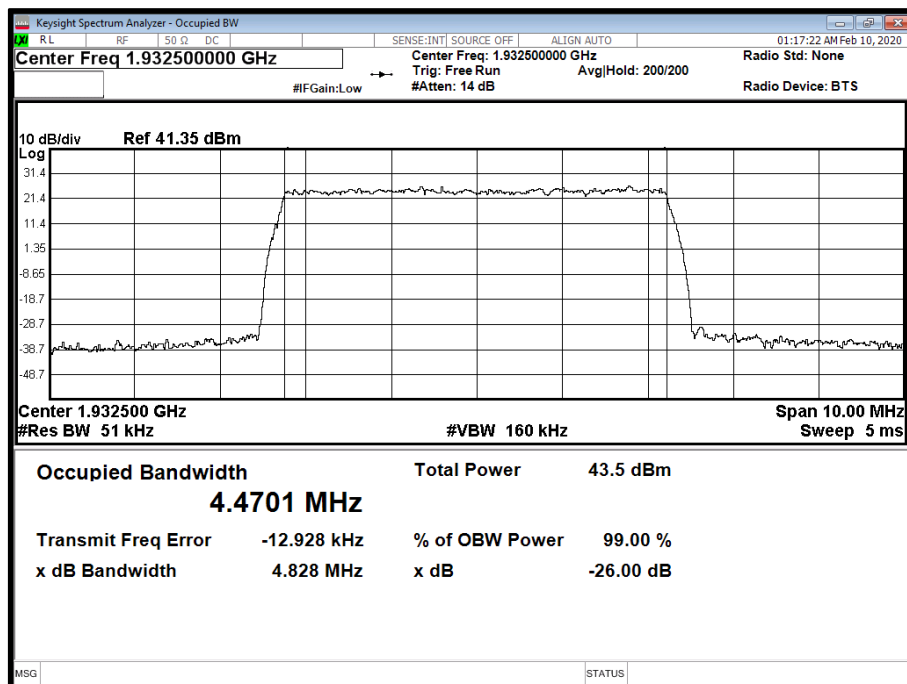


Configuration B

Maximum Output Power 37.00 dBm

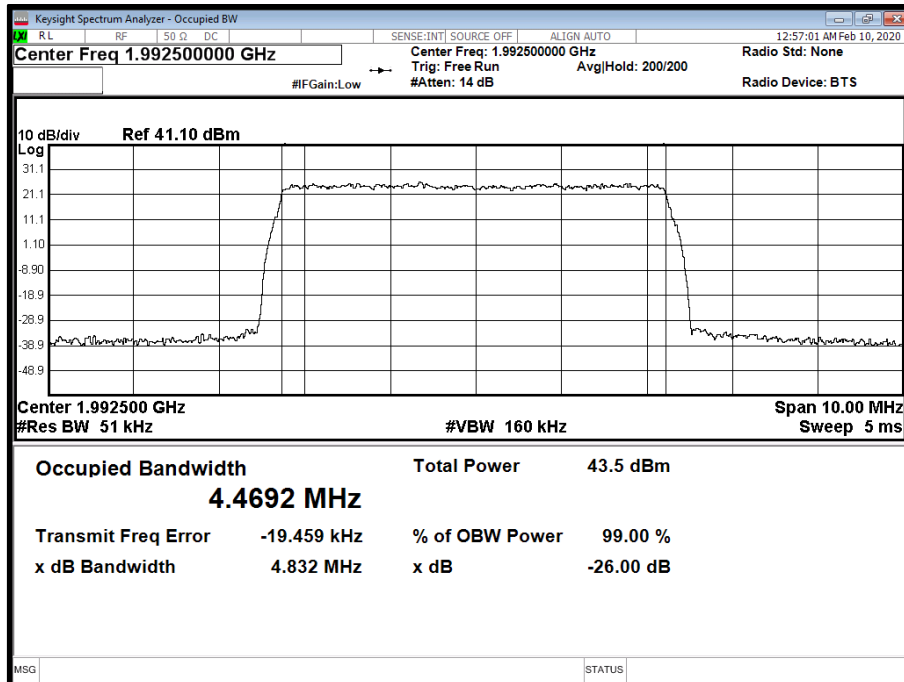
Antenna	NR Modulation	NR Carrier Bandwidth	Result (KHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
A	QPSK	5.0 MHz 15 kHz SCS	4470.09	4828.00	-	-	4469.17	4831.54
A	QPSK	10.0 MHz 15 kHz SCS	9290.29	9778.62	-	-	9290.28	9782.42
A	QPSK	15.0 MHz 15 kHz SCS	14112.15	14712.31	-	-	14122.87	14750.44
A	QPSK	20.0 MHz 15 kHz SCS	18922.71	19718.85	-	-	18904.71	19697.03
A	QPSK	20.0 MHz 60 kHz SCS	17202.06	19476.57	-	-	17206.46	19532.77
A	QPSK	20.0 +20.0 MHz 15 kHz SCS	-	-	38696.64	39782.90	-	-

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

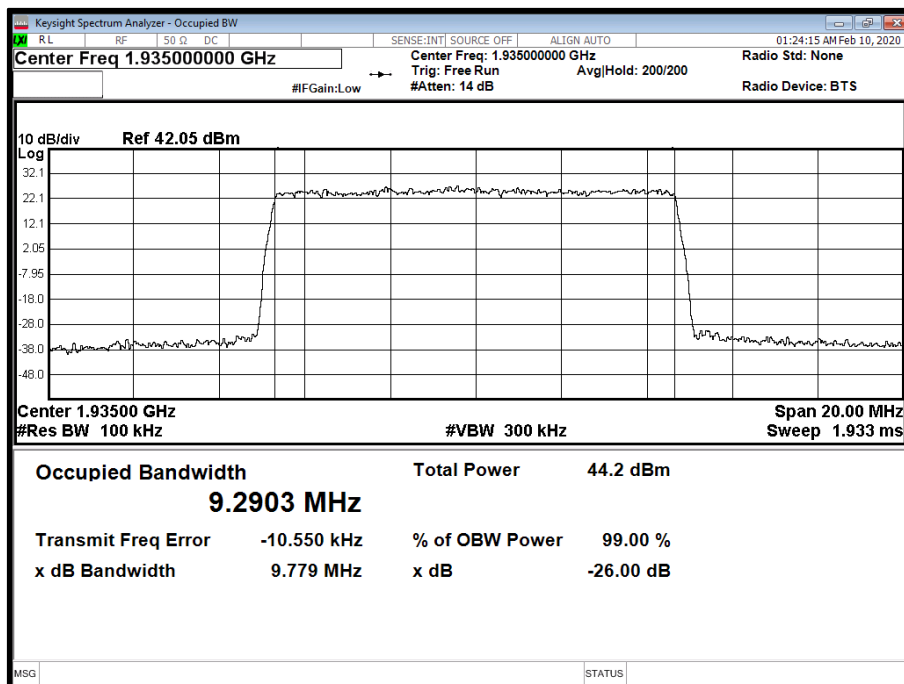




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T

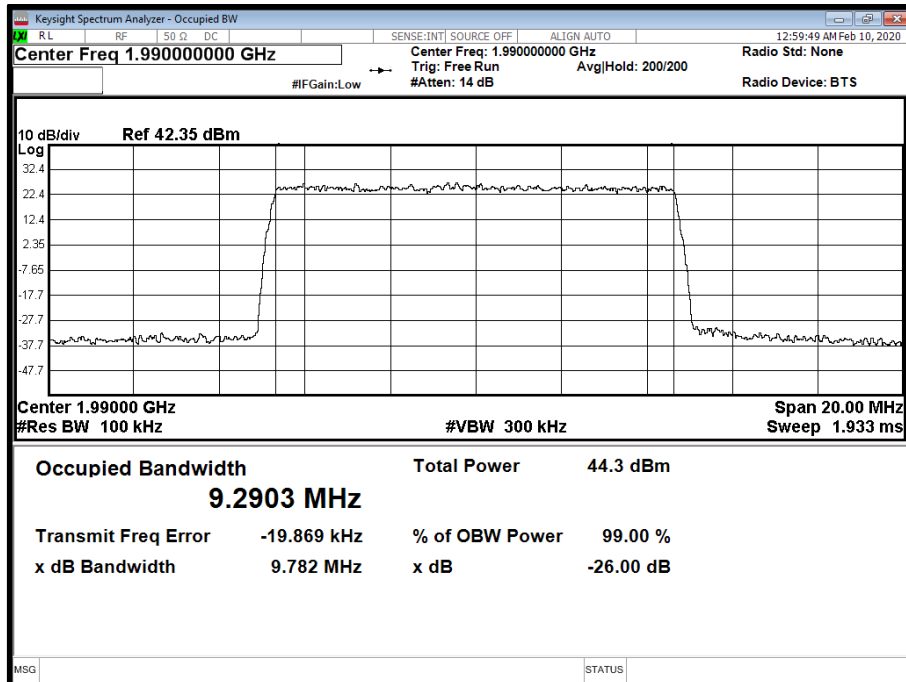


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position B

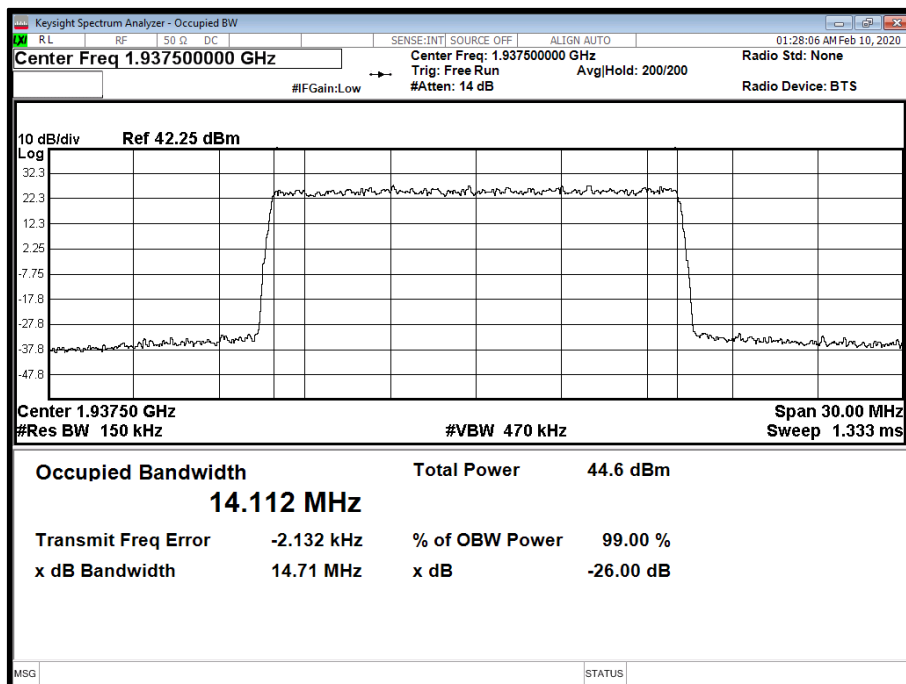




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T

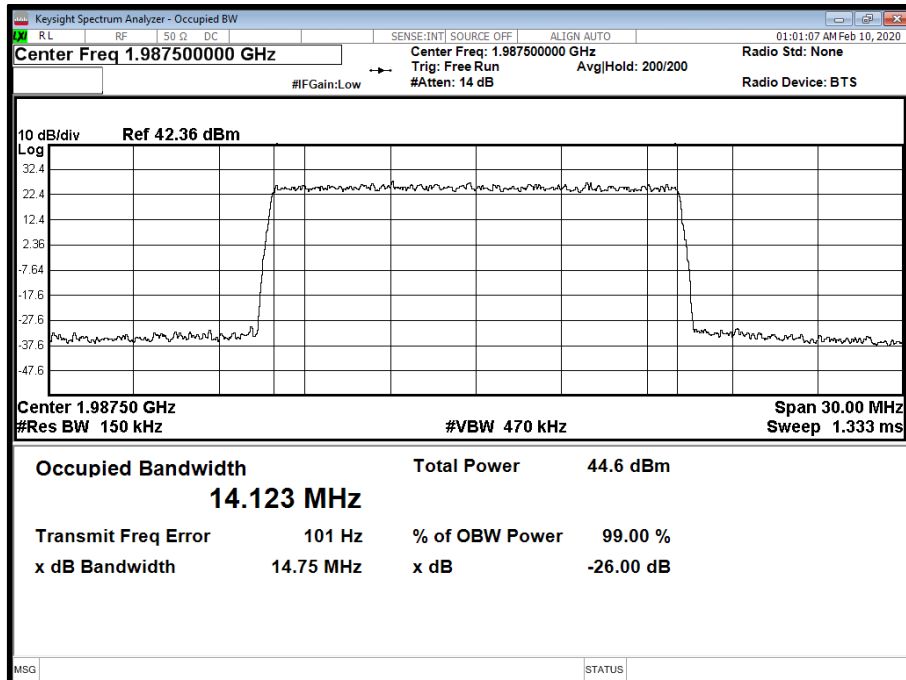


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B

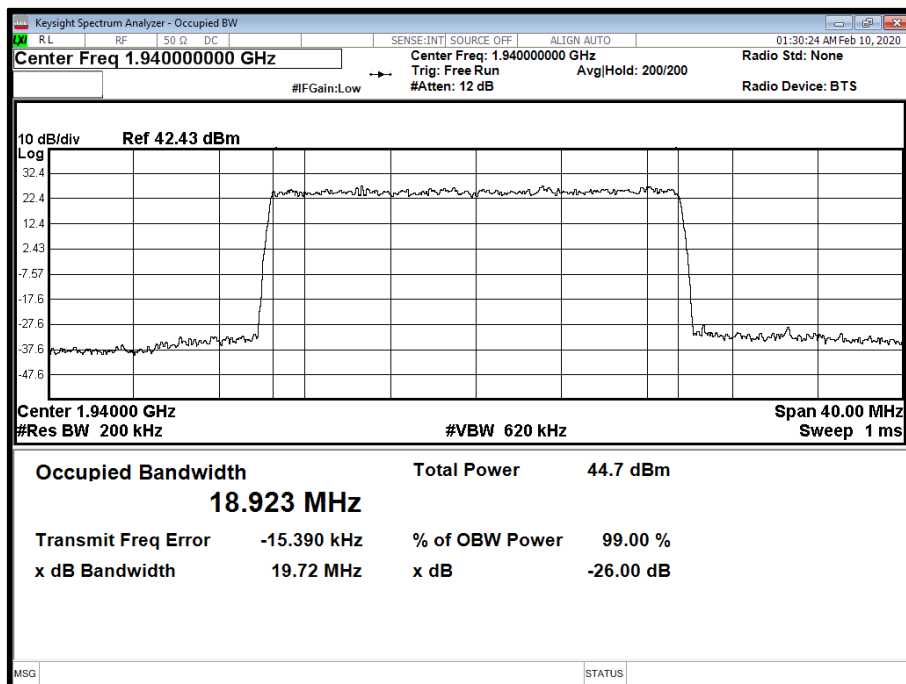




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position T

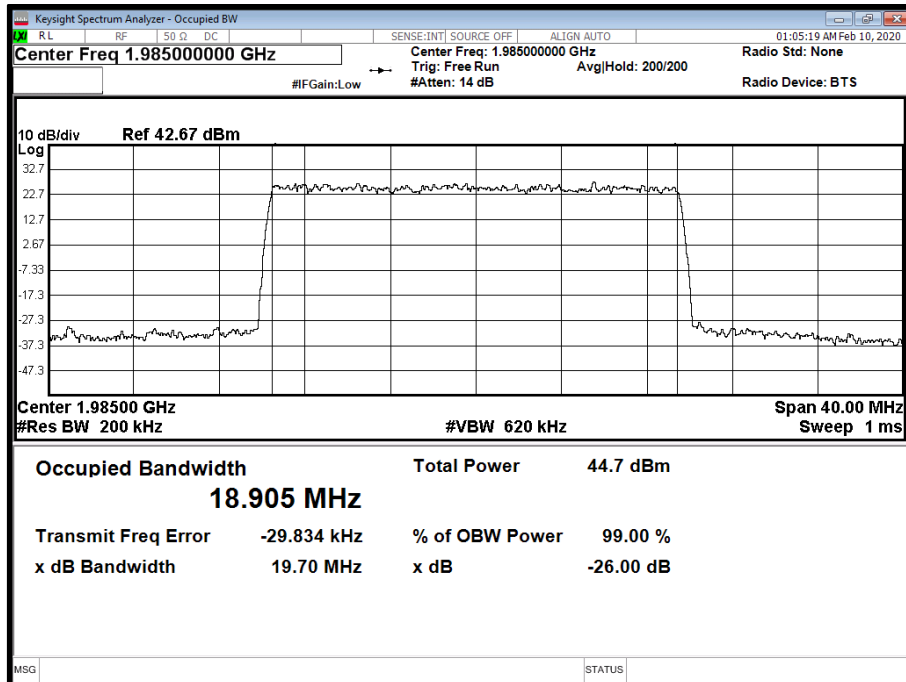


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B

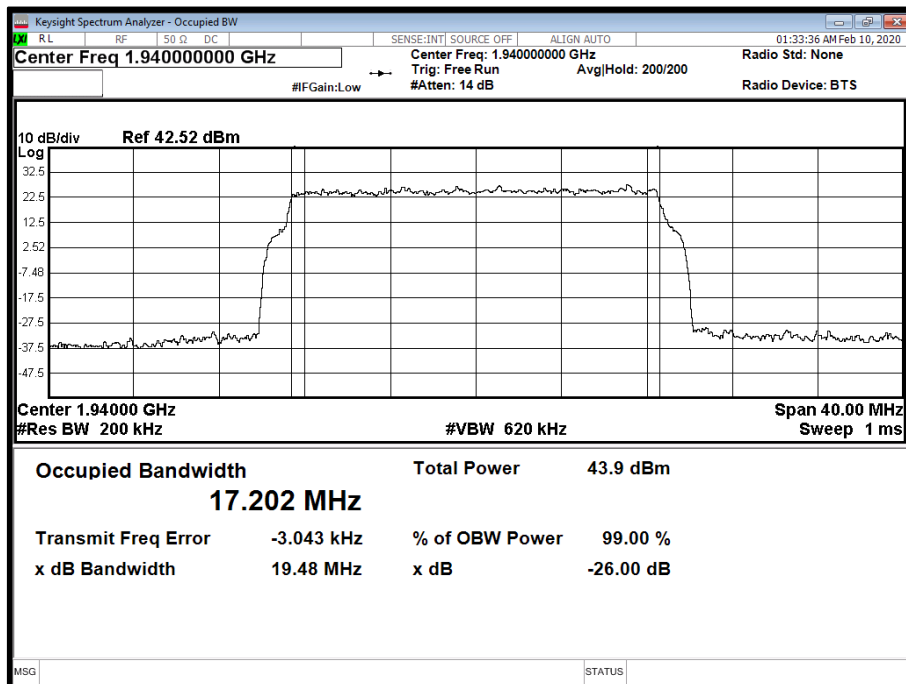




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T

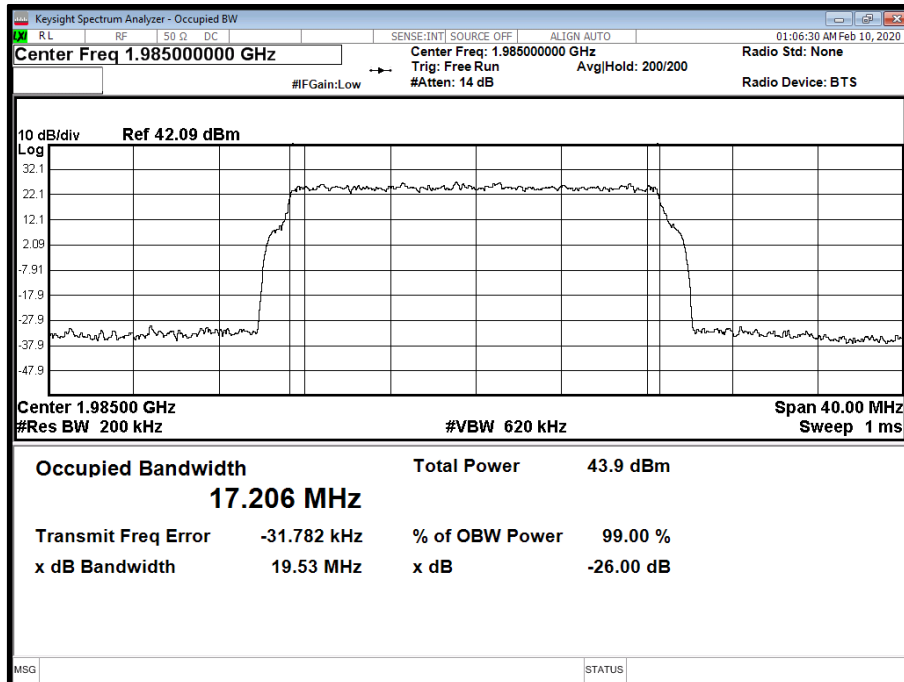


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position B

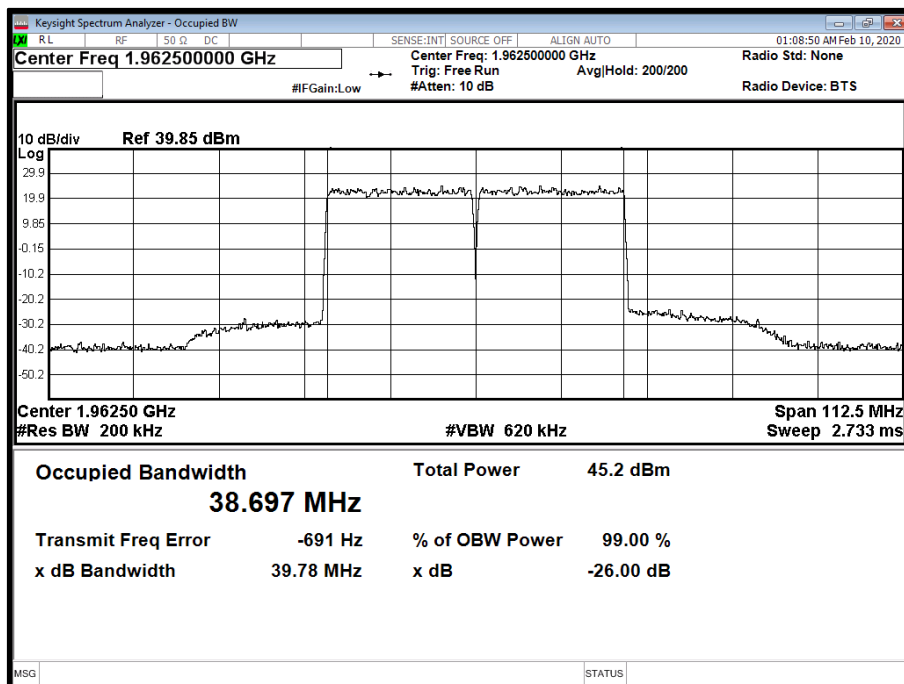




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position T



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0+20.0 MHz 15 kHz SCS - Channel Position M





2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 24, Clause 24.238 (b)
Industry Canada RSS-133, Clause 6.5
FCC CFR 47 Part 2, Clause 2.1051

2.3.2 Date of Test and Modification State

10 February 2020 - 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 21.3°C
Relative Humidity 45.8%

2.3.5 Test Method

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

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 single carrier, the limit was calculated as being $-13 \text{ dBm} - 10 * \log(4) = -19 \text{ dBm}$.

For dual carrier, the limit was calculated as being $-13 \text{ dBm} - 10 * \log(2) = -16 \text{ dBm}$.

2.3.6 Test Results

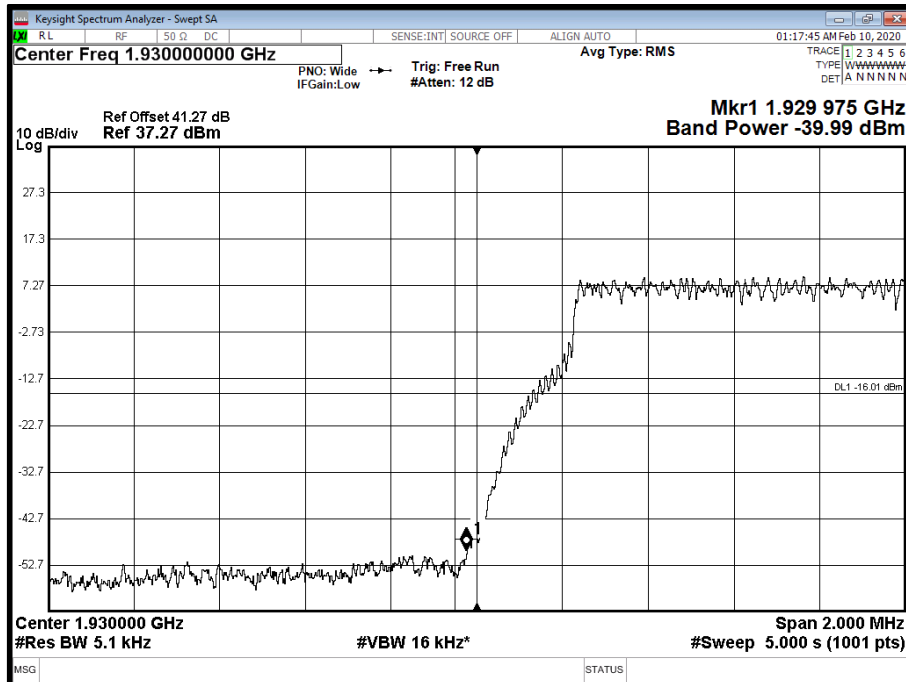
Configuration A

Maximum Output Power 37.00 dBm

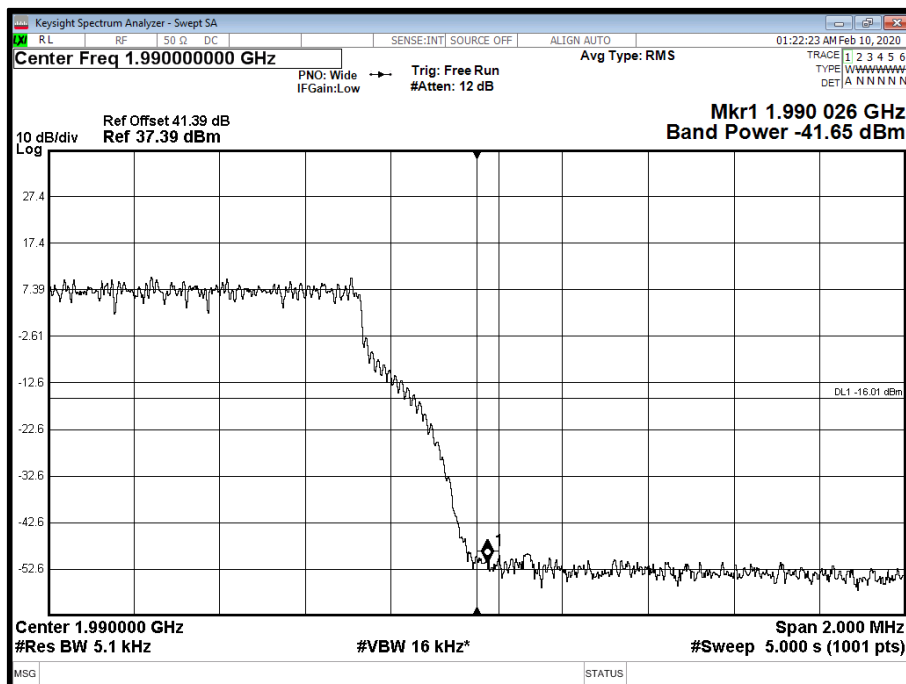
Antenna	NR Modulation	NR Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	QPSK	5.0 MHz 15 kHz SCS	1.932.5	1.987.5
A	QPSK	10.0 MHz 15 kHz SCS	1.935.0	1.985.0
A	QPSK	15.0 MHz 15 kHz SCS	1.937.5	1.982.5
A	QPSK	20.0 MHz 15 kHz SCS	1.940.0	1.980.0
A	QPSK	20.0 MHz 60 kHz SCS	1.940.0	1.980.0



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

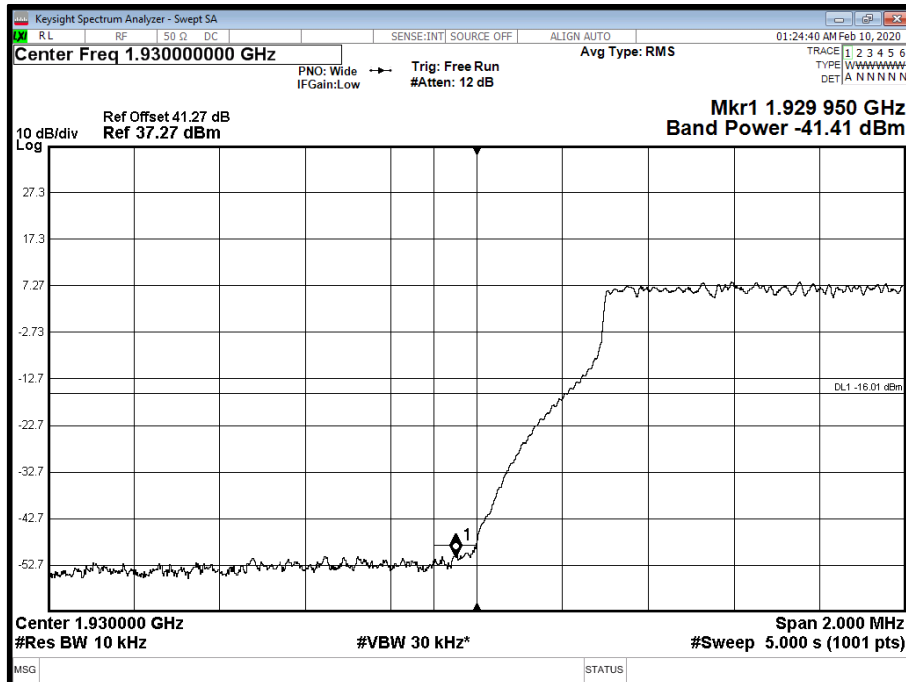


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T

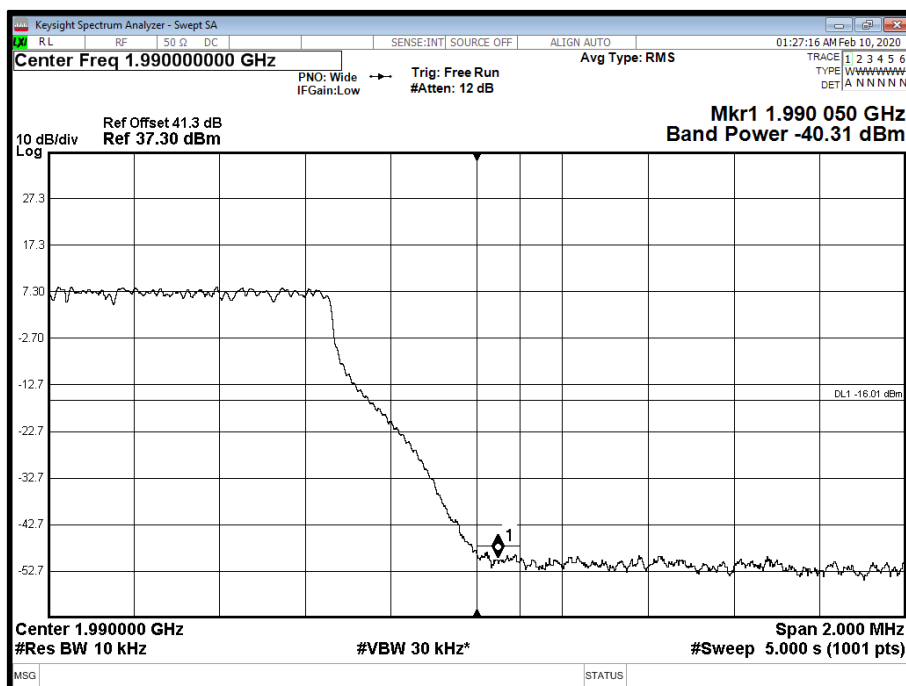




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position B

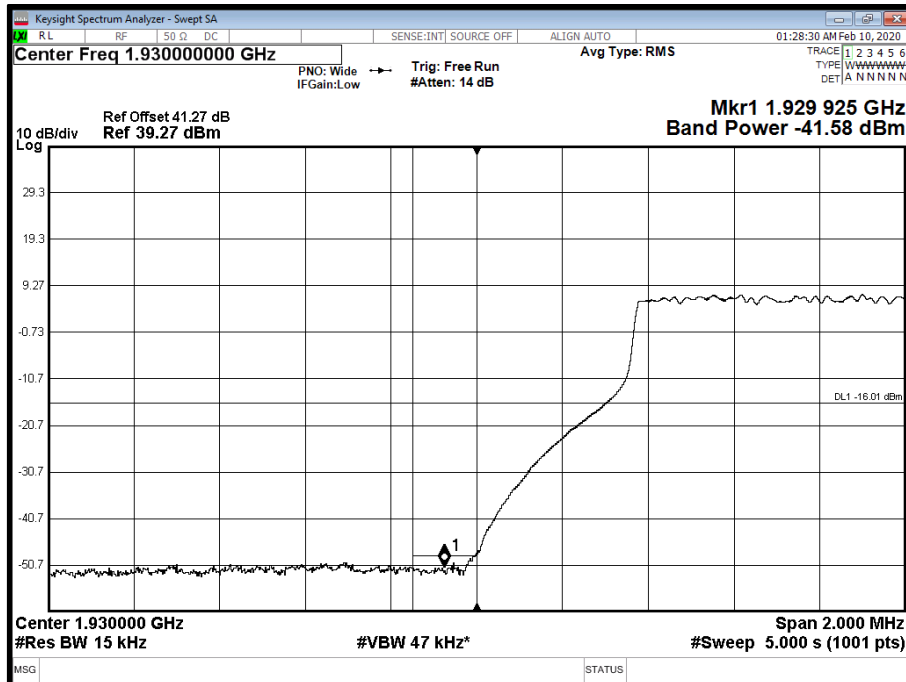


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T

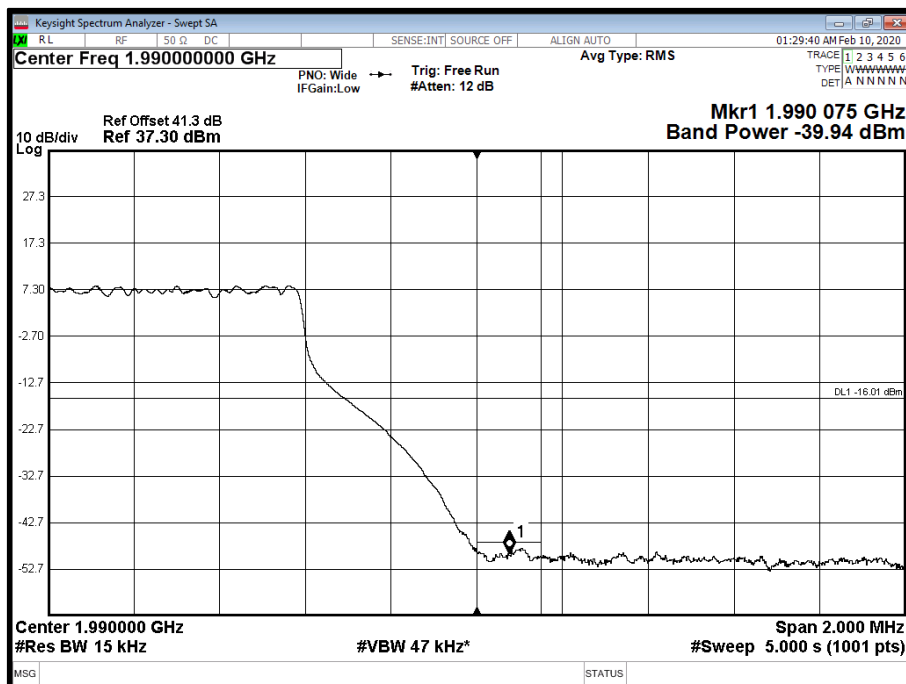




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B

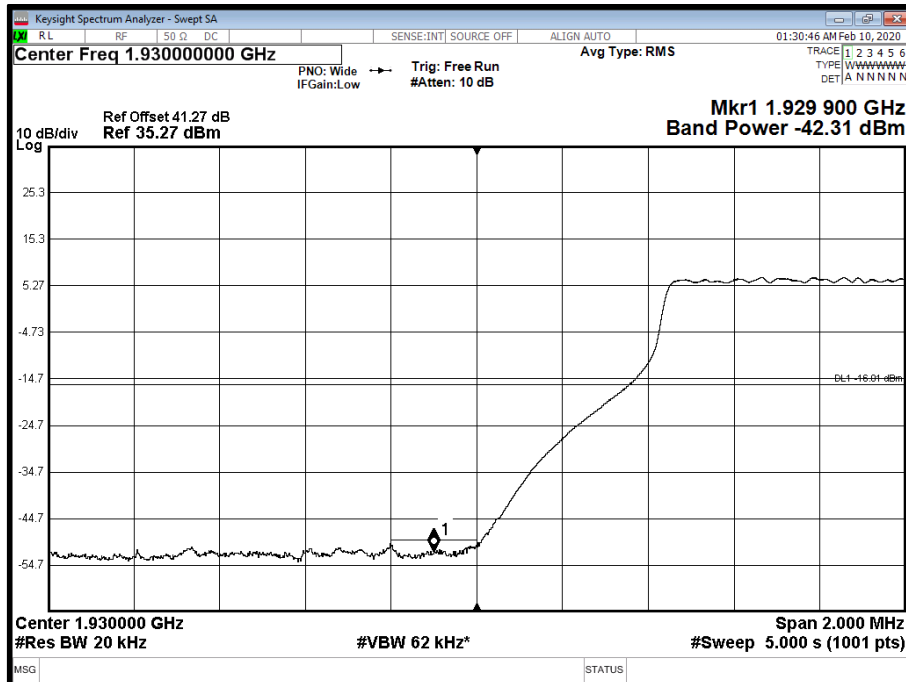


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position T

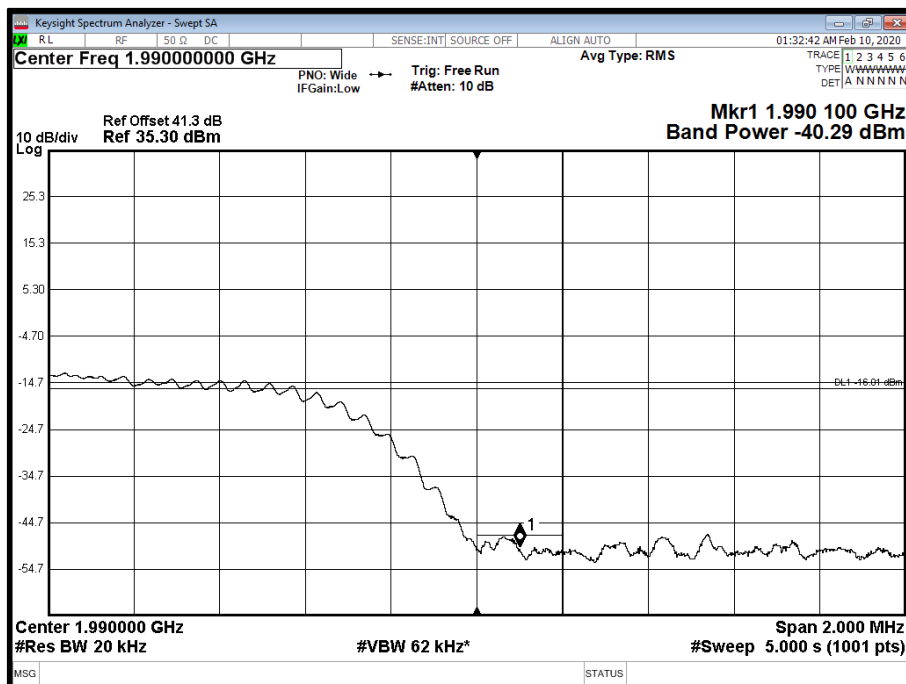




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B

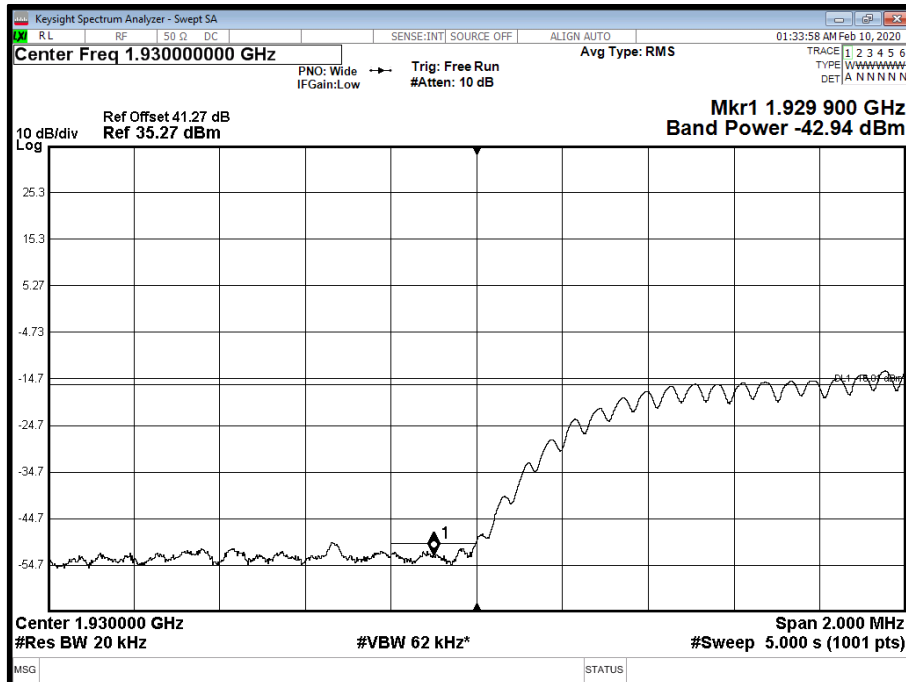


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T

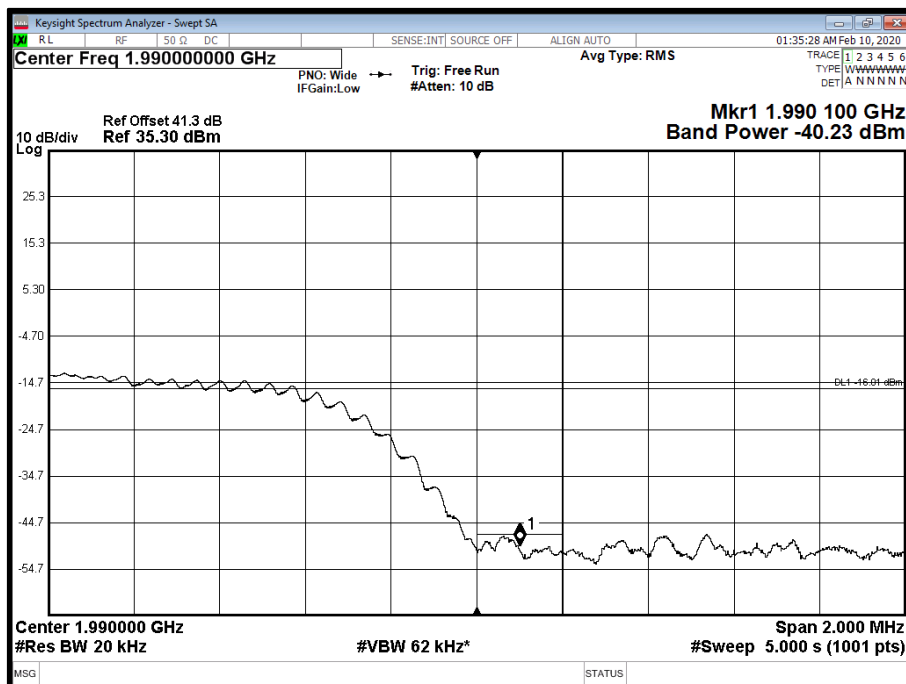




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position B



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position T



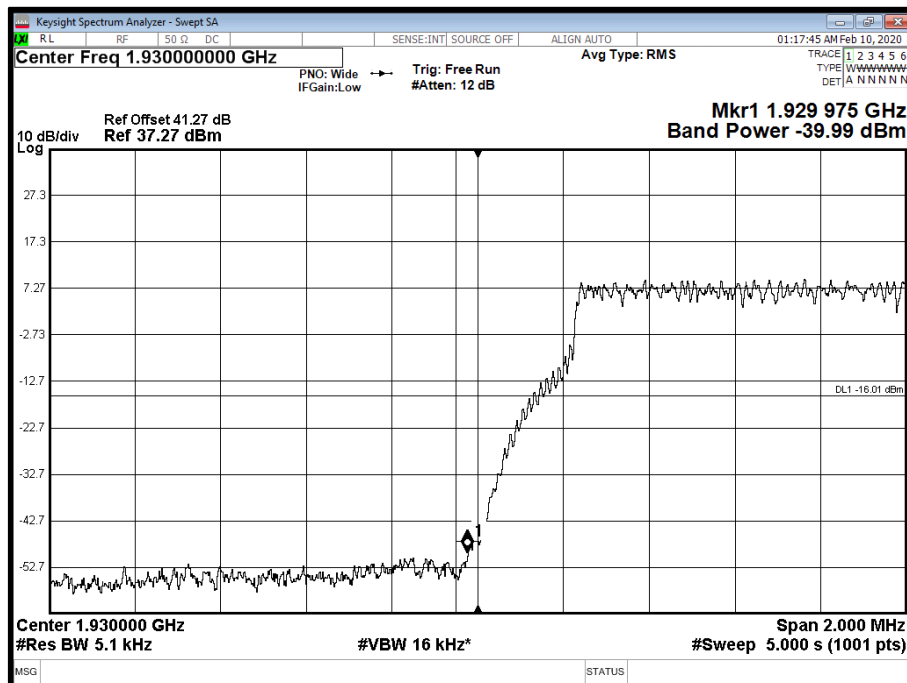


Configuration B

Maximum Output Power 37.00 dBm

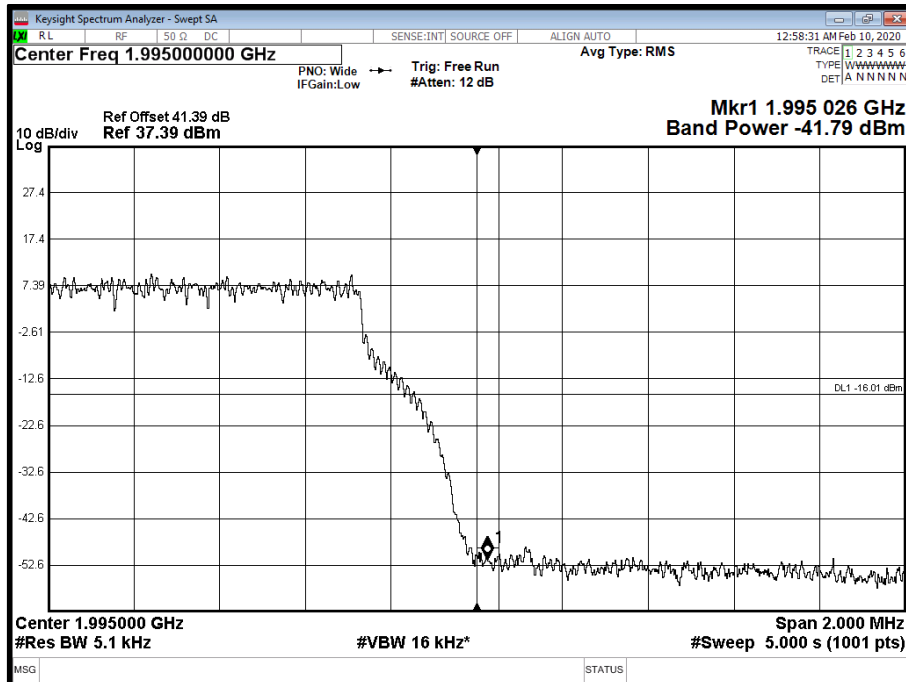
Antenna	NR Modulation	NR Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	QPSK	5.0 MHz 15 kHz SCS	1.932.5	1.992.5
A	QPSK	10.0 MHz 15 kHz SCS	1.935.0	1.990.0
A	QPSK	15.0 MHz 15 kHz SCS	1.937.5	1.987.5
A	QPSK	20.0 MHz 15 kHz SCS	1.940.0	1.985.0
A	QPSK	20.0 MHz 60 kHz SCS	1.940.0	1.985.0

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

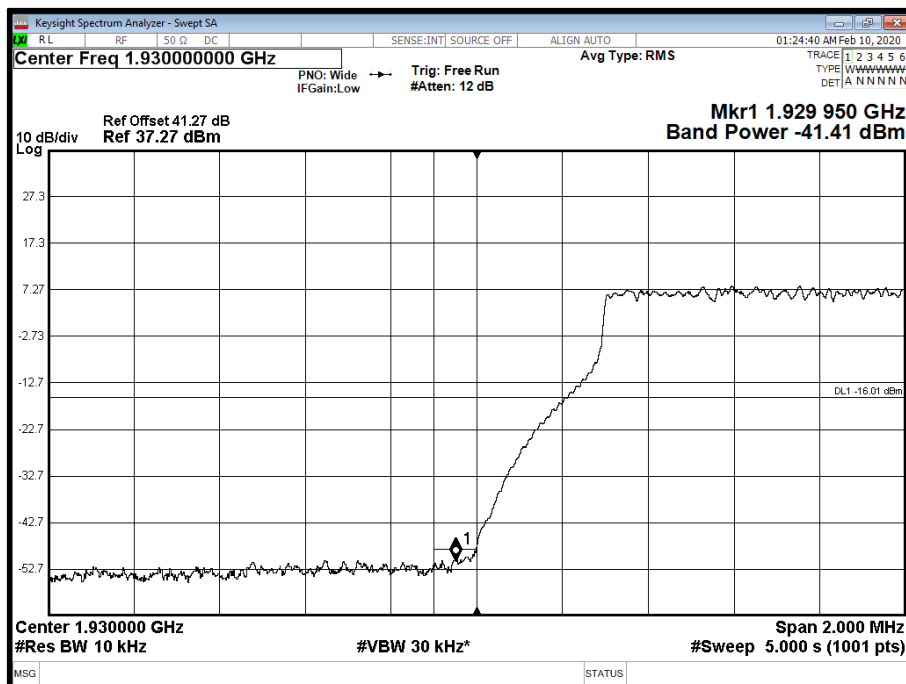




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T

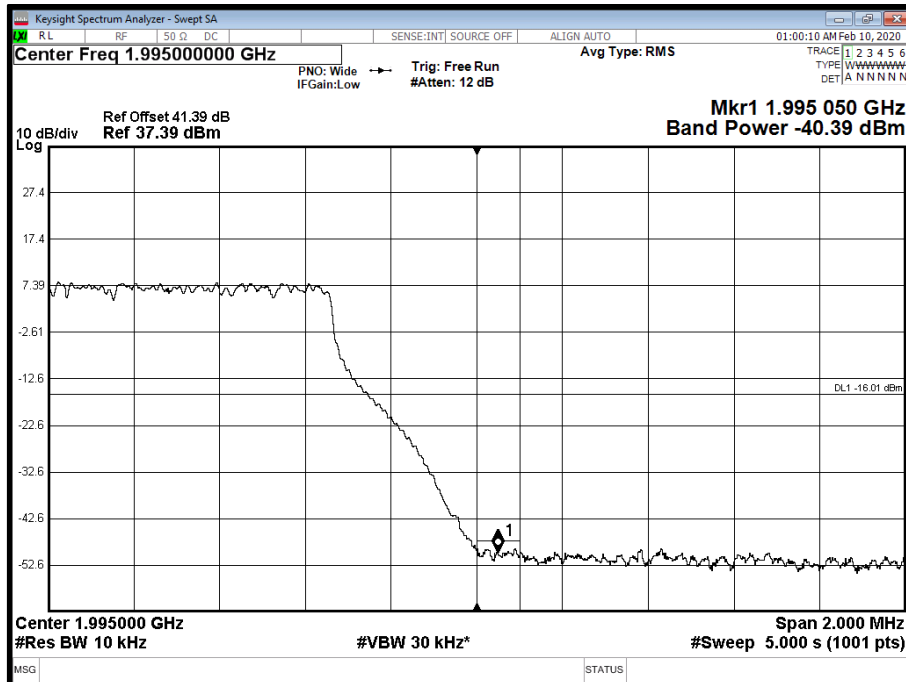


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position B

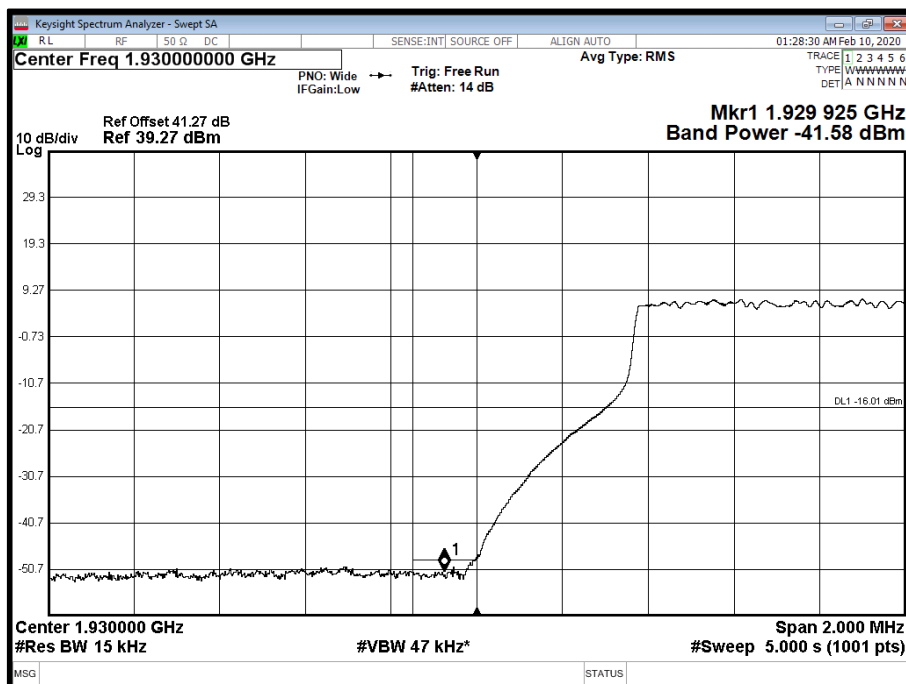




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T

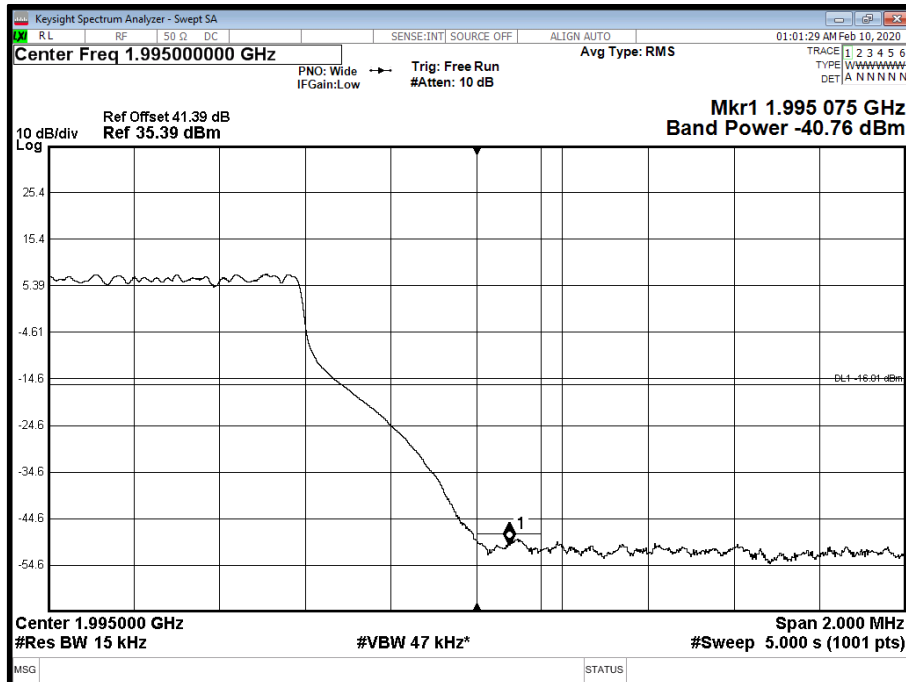


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B

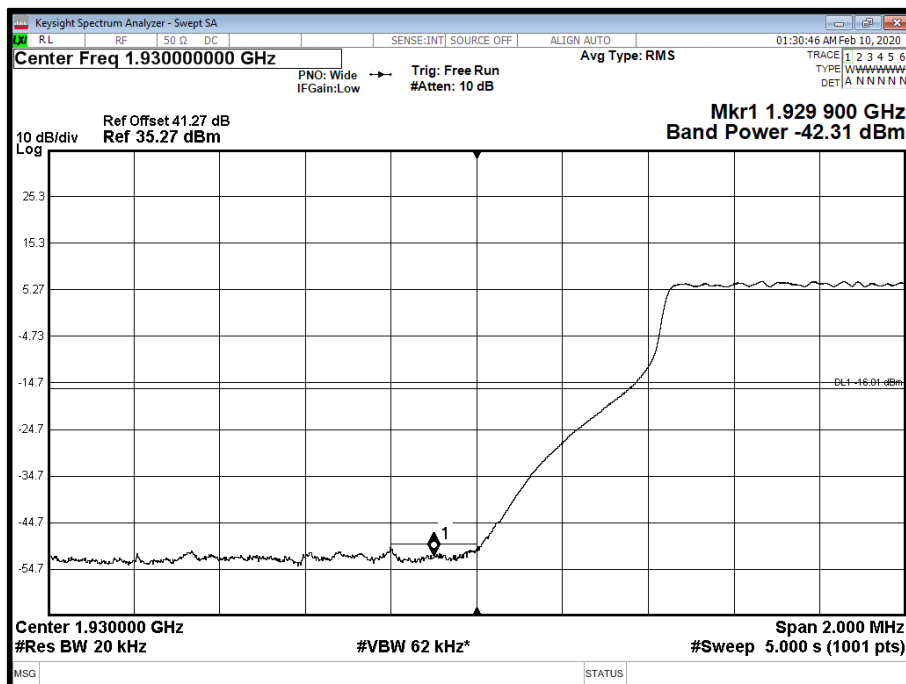




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position T

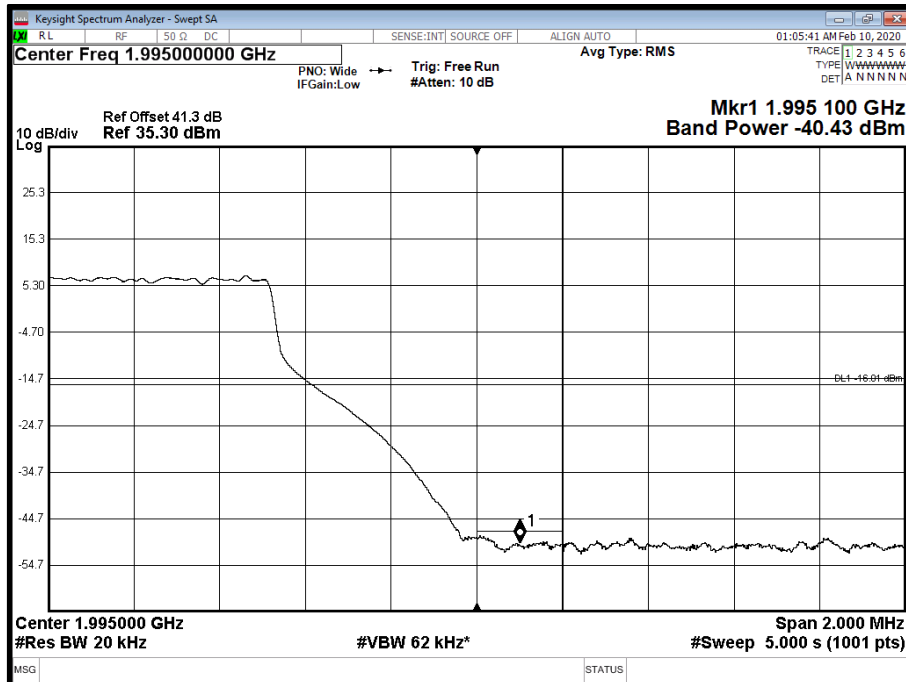


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B

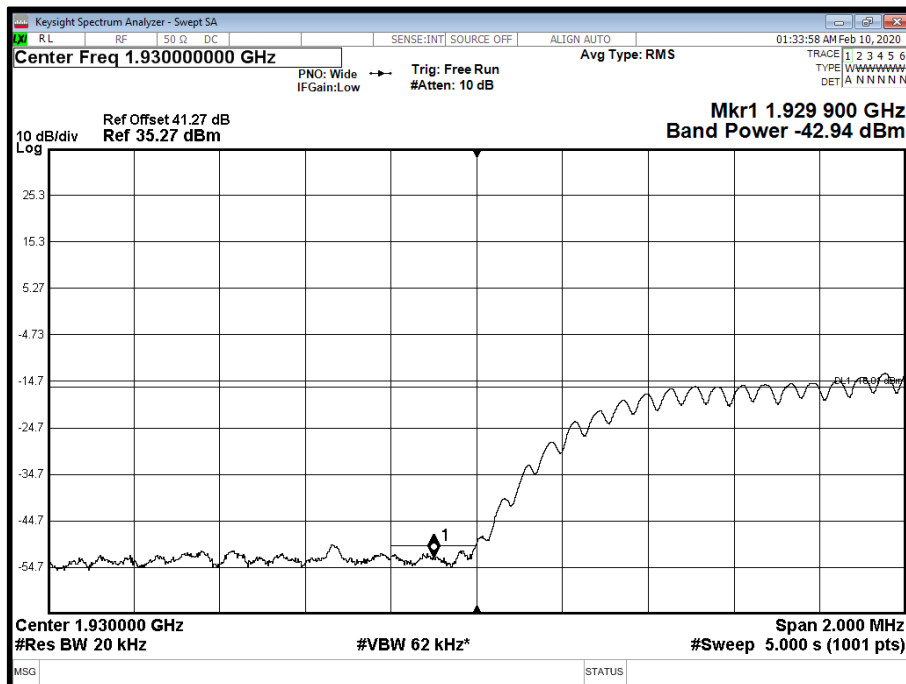




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T

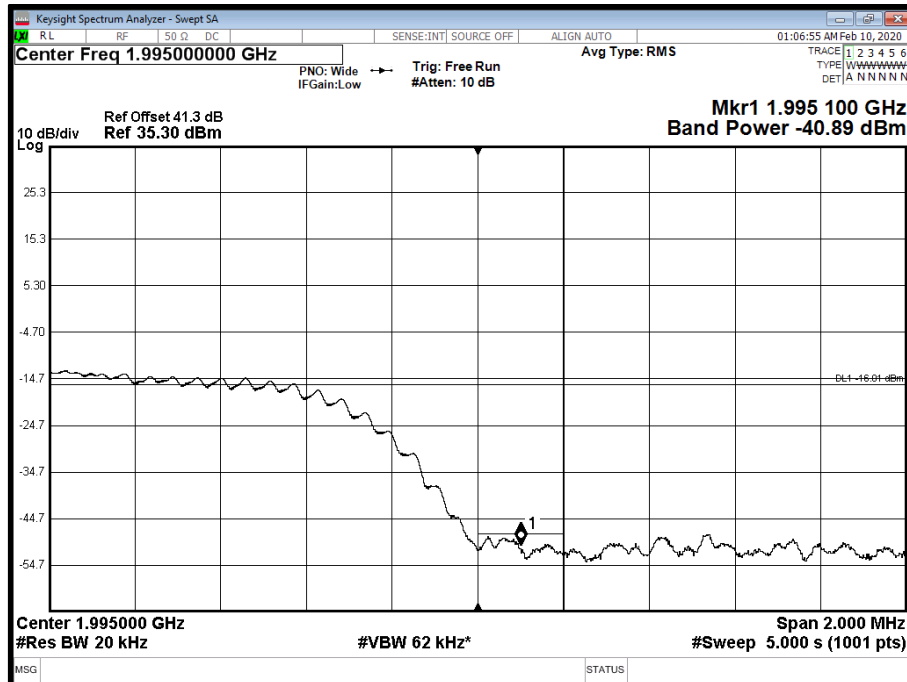


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position B





Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 60 kHz SCS - Channel Position T



Limit	-16 dBm
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2.4 TRANSMITTER SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 24, Clause 24.238 (a)
Industry Canada RSS-133, Clause 6.5
FCC CFR 47 Part 2, Clause 2.1051

2.4.2 Date of Test and Modification State

10 February 2020 - 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	21.3°C
Relative Humidity	45.8%

2.4.5 Test Method

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

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 single carrier, the limit was calculated as being $-13 \text{ dBm} - 10 * \log(4) = -19 \text{ dBm}$.

For dual carrier, the limit was calculated as being $-13 \text{ dBm} - 10 * \log(2) = -16 \text{ dBm}$.

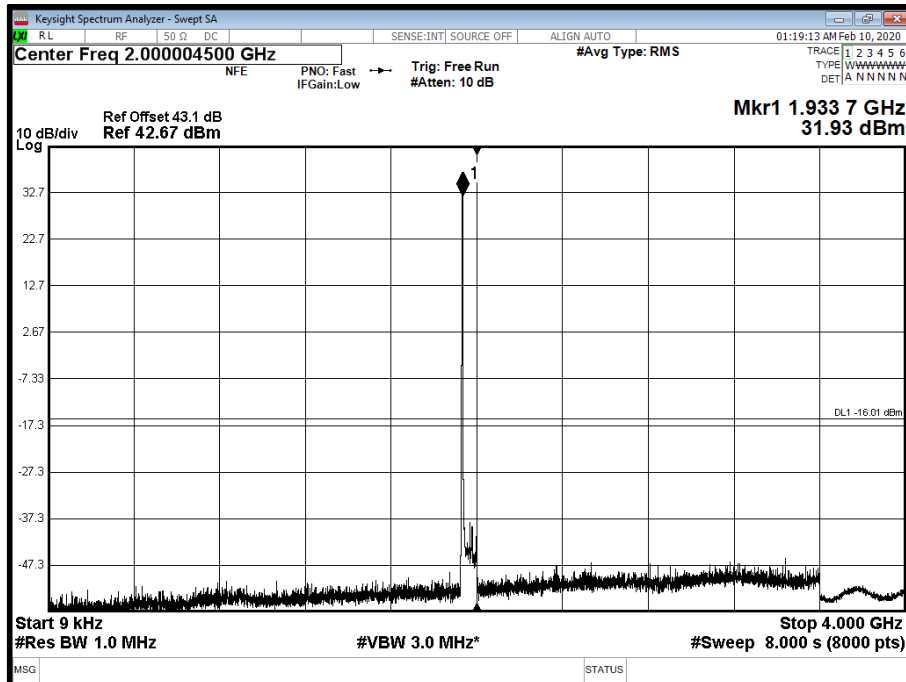
2.4.6 Test Results

Configuration A

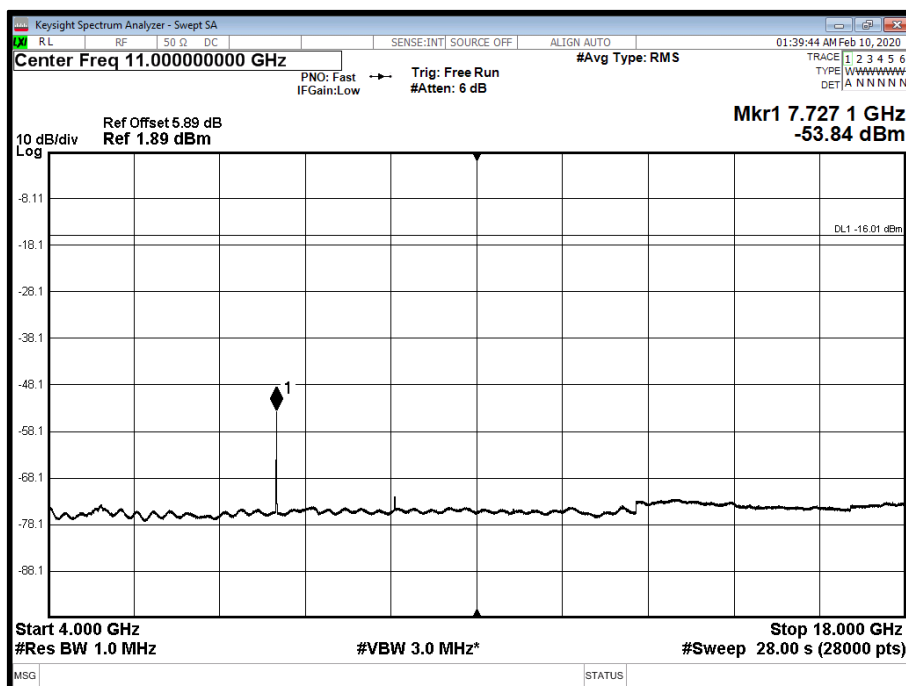
Maximum Output Power 37.00 dBm



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel
Position B - Band 1 - Range 0.009 to 4000 MHz

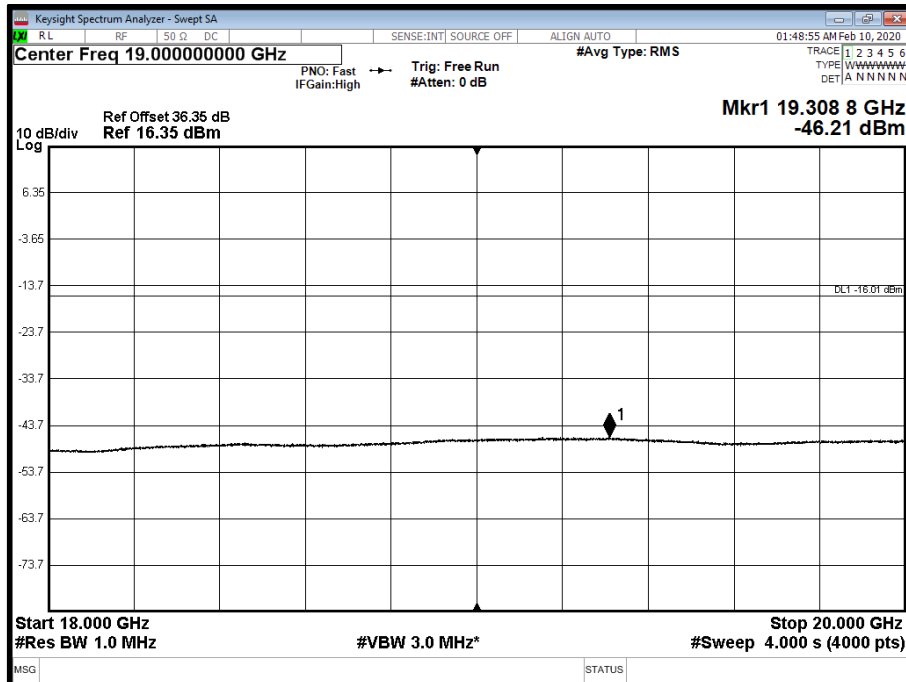


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel
Position B - Band 2 - Range 4000 to 18000 MHz

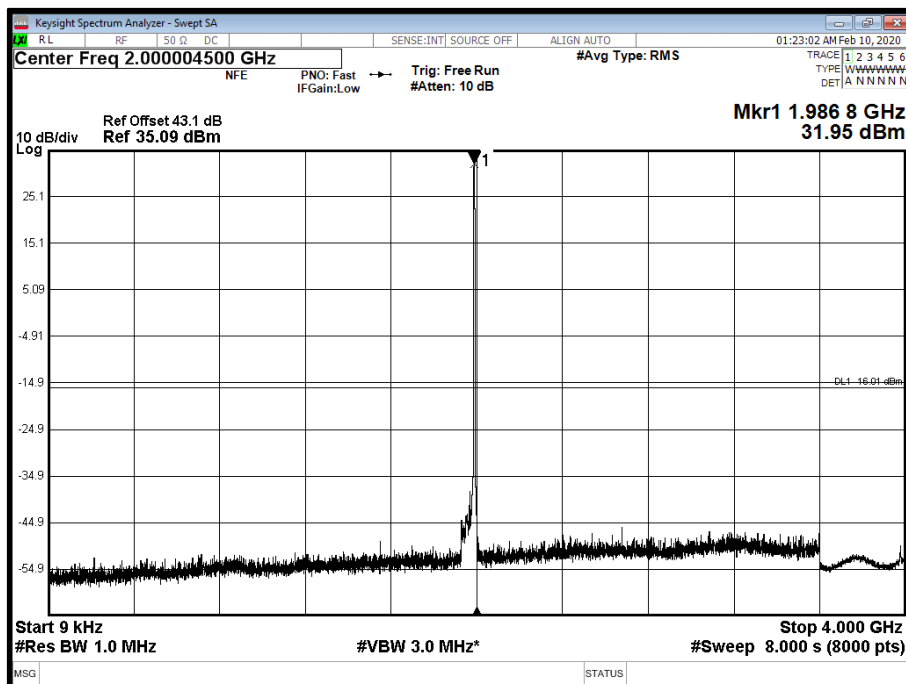




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B - Band 3 - Range 18000 to 20000 MHz

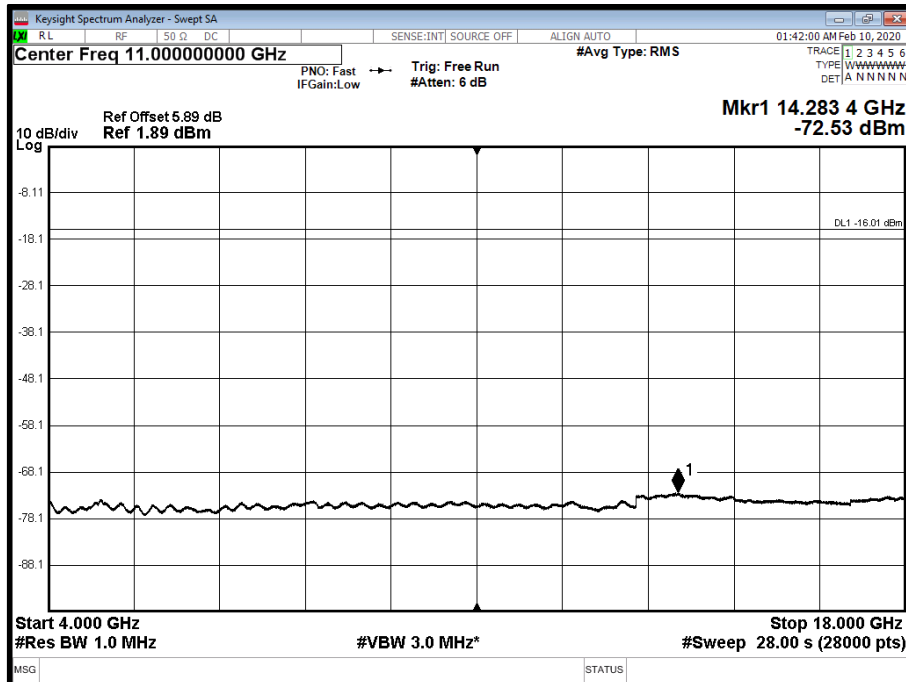


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T - Band 1 - Range 0.009 to 4000 MHz

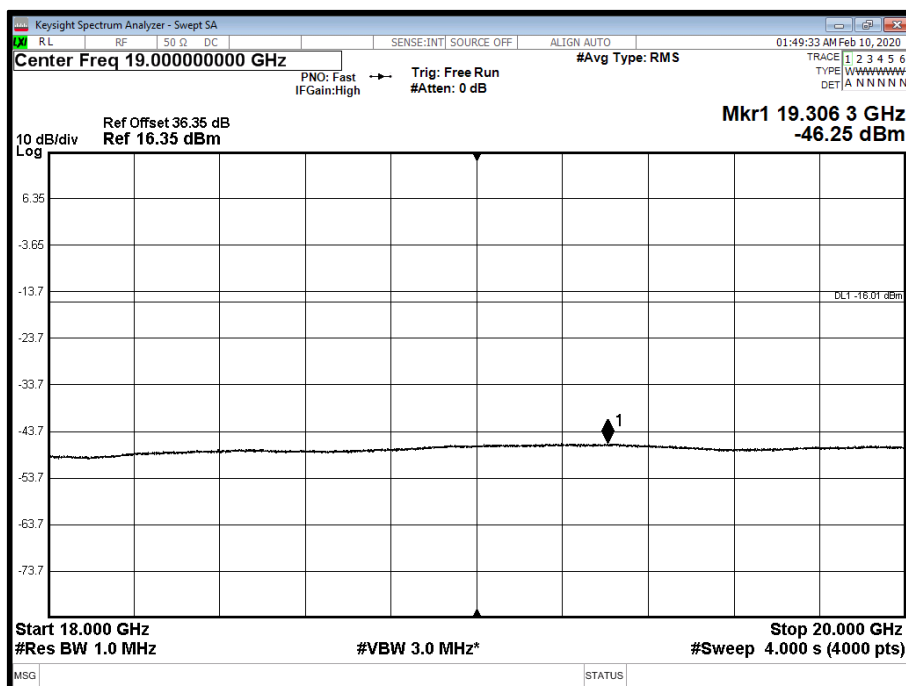




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T - Band 2 - Range 4000 to 18000 MHz



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T - Band 3 - Range 18000 to 20000 MHz

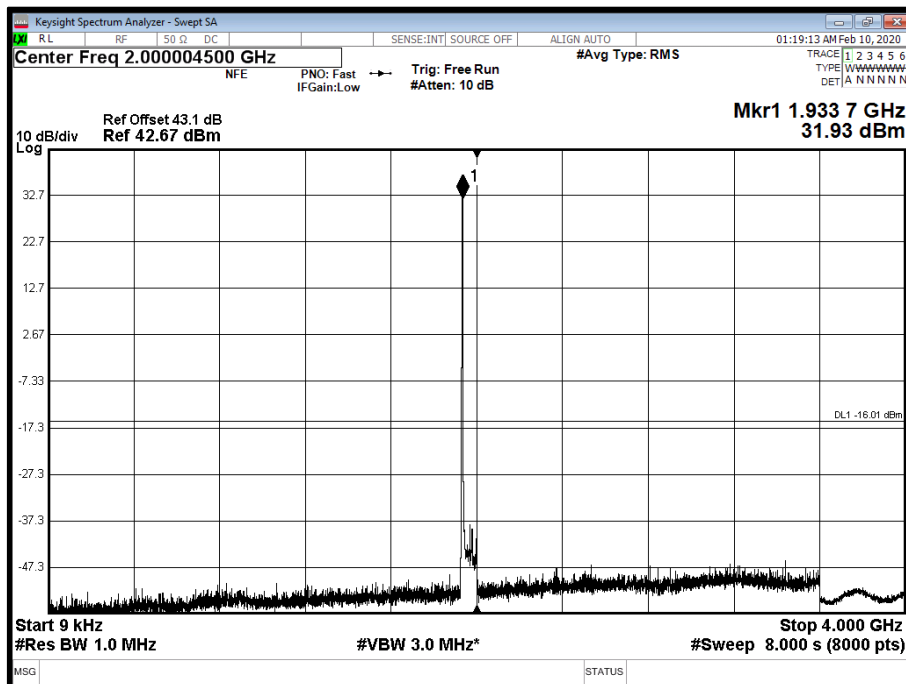




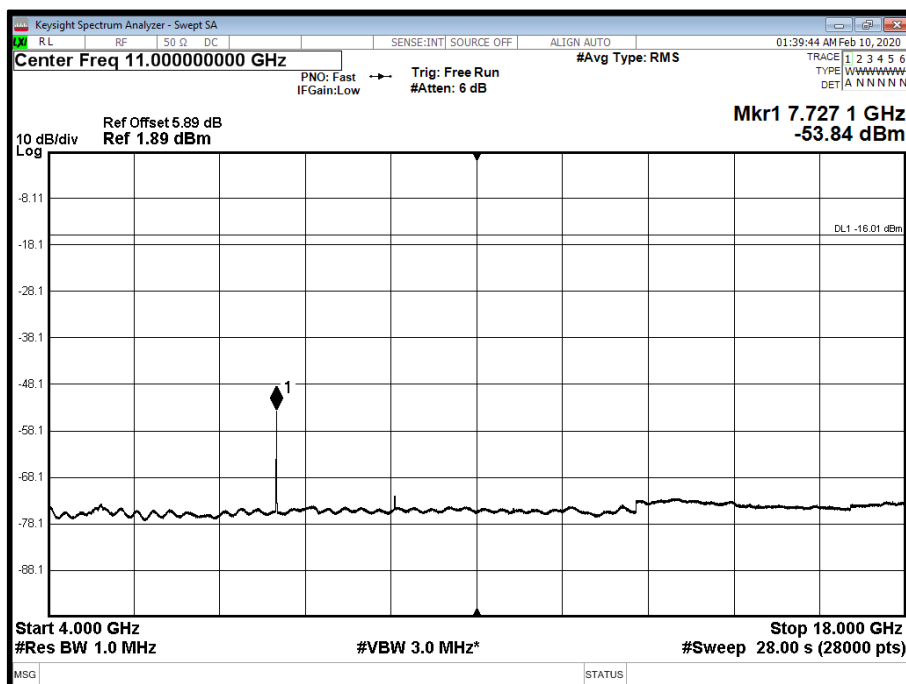
Configuration B

Maximum Output Power 37.00 dBm

Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel
Position B - Band 1 - Range 0.009 to 4000 MHz

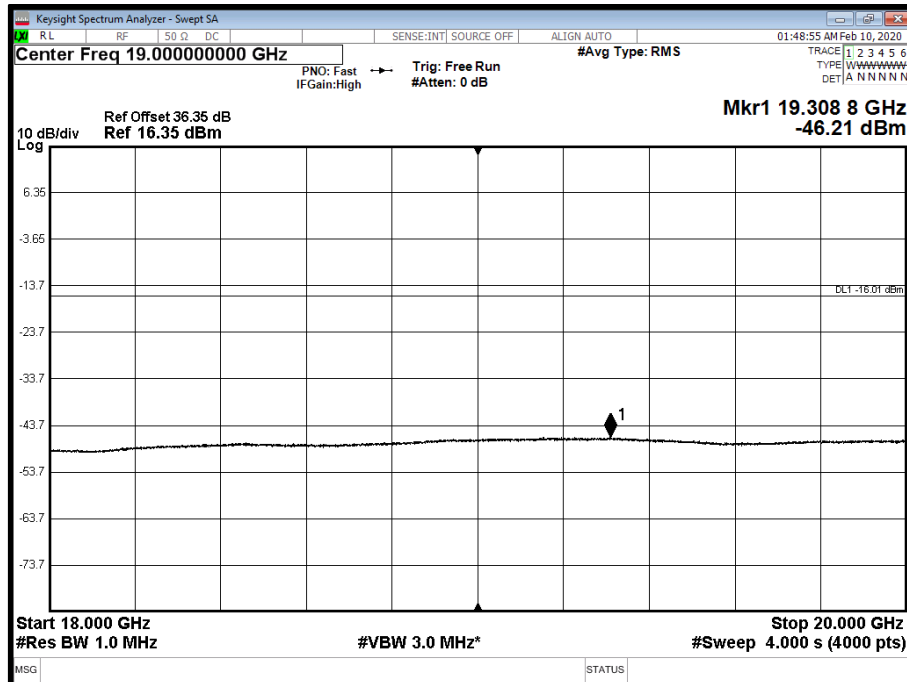


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel
Position B - Band 2 - Range 4000 to 18000 MHz

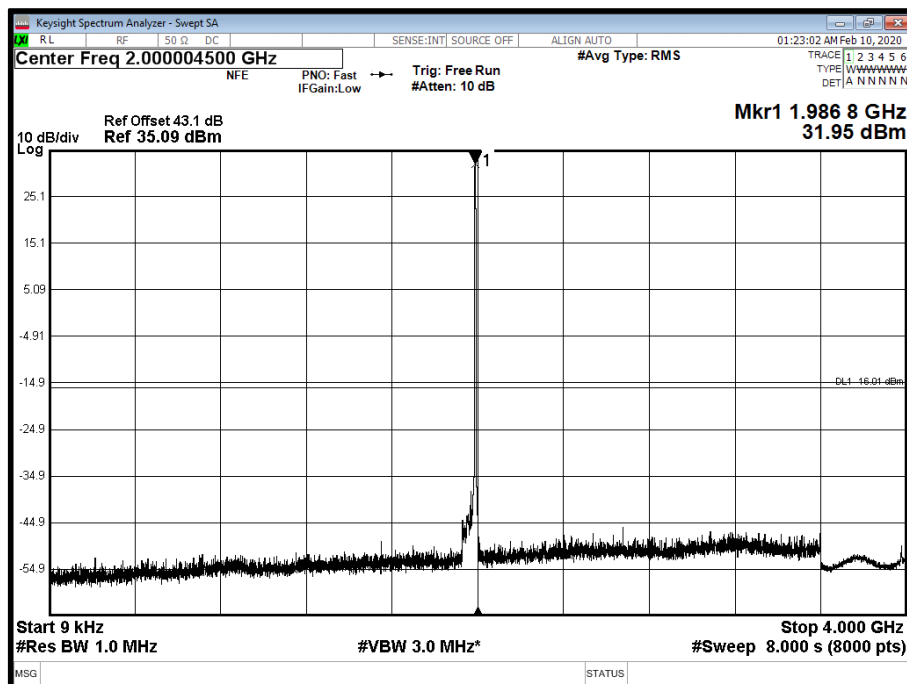




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B - Band 3 - Range 18000 to 20000 MHz

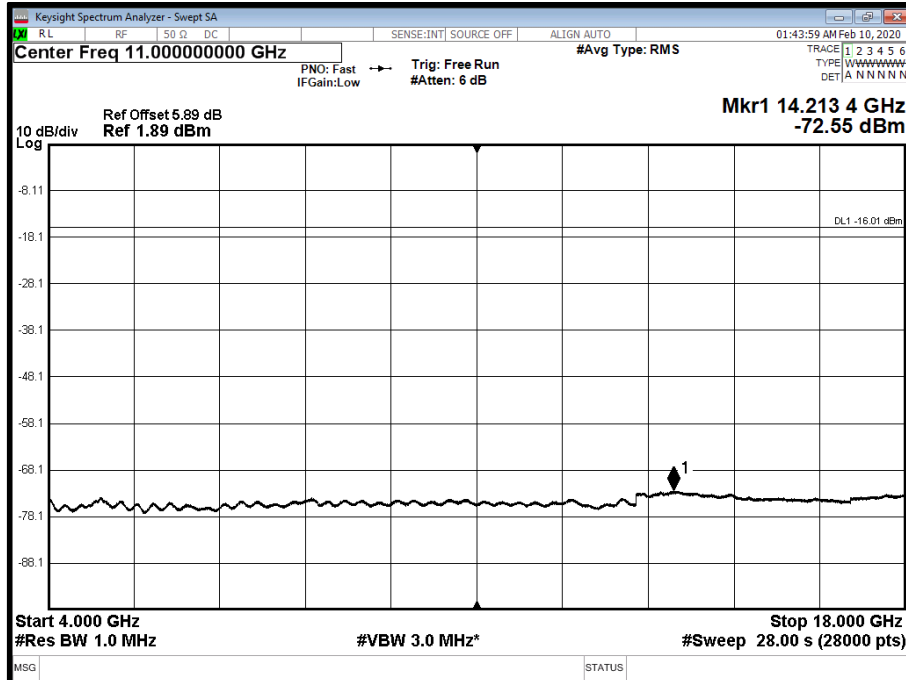


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T - Band 1 - Range 0.009 to 4000 MHz

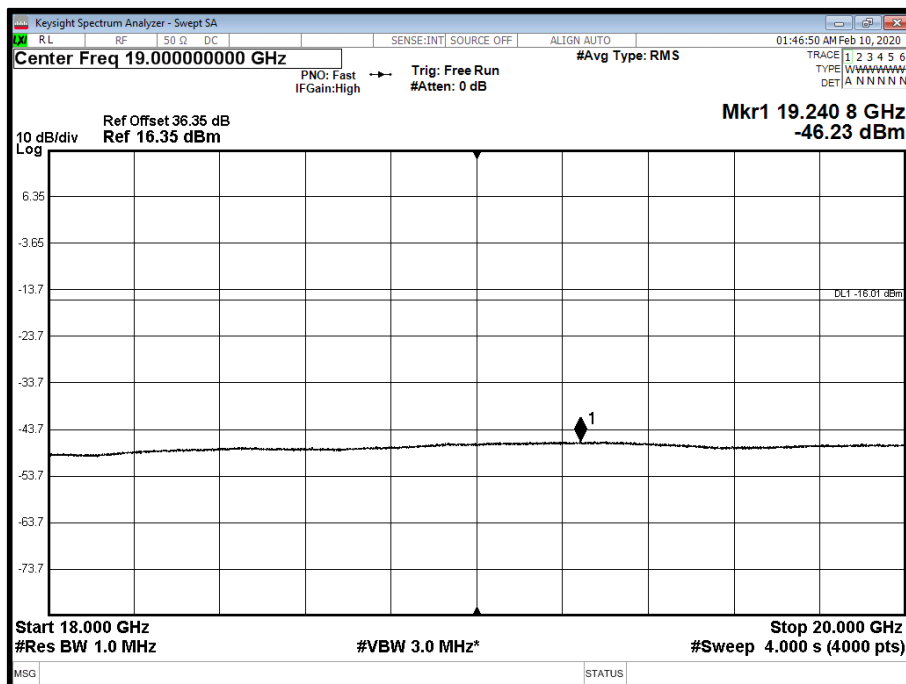




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T - Band 2 - Range 4000 to 18000 MHz



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T - Band 3 - Range 18000 to 20000 MHz



Limit	-16dBm
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SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

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

Maximum Peak Output Power and Peak to Average Ratio - Conducted					
3.5 mm 2m K-Type Cable	Junkosha	1911S239	5426	6	13-Jun-2020
3.5 mm 2m K-Type Cable	Junkosha	1911S237	5424	6	13-Jun-2020
PXA Signal Analyser	Keysight	N9030A	4654	12	21-Oct-2020
Attenuator	API weinschel inc.	10dB	4867	12	29-Nov-2020
Attenuator	API weinschel inc.	40dB	5134	12	29-Nov-2020
Multimeter	Fluke	13380293	3813	12	09-Oct-2020
Hygrometer	Rotronic	HP21	5004	12	02-Oct-2020
Occupied Bandwidth					
3.5 mm 2m K-Type Cable	Junkosha	1911S239	5426	6	13-Jun-2020
3.5 mm 2m K-Type Cable	Junkosha	1911S237	5424	6	13-Jun-2020
PXA Signal Analyser	Keysight	N9030A	4654	12	21-Oct-2020
Attenuator	API weinschel inc.	10dB	4867	12	29-Nov-2020
Attenuator	API weinschel inc.	40dB	5134	12	29-Nov-2020
Multimeter	Fluke	13380293	3813	12	09-Oct-2020
Hygrometer	Rotronic	HP21	5004	12	02-Oct-2020
Band Edge					
3.5 mm 2m K-Type Cable	Junkosha	1911S239	5426	6	13-Jun-2020
3.5 mm 2m K-Type Cable	Junkosha	1911S237	5424	6	13-Jun-2020
PXA Signal Analyser	Keysight	N9030A	4654	12	21-Oct-2020
Attenuator	API weinschel inc.	10dB	4867	12	29-Nov-2020
Attenuator	API weinschel inc.	40dB	5134	12	29-Nov-2020
Multimeter	Fluke	13380293	3813	12	09-Oct-2020
Hygrometer	Rotronic	HP21	5004	12	02-Oct-2020
Transmitter Spurious Emissions					
3.5 mm 2m K-Type Cable	Junkosha	1911S239	5426	6	13-Jun-2020
3.5 mm 2m K-Type Cable	Junkosha	1911S237	5424	6	13-Jun-2020
PXA Signal Analyser	Keysight	N9030A	4654	12	21-Oct-2020
Attenuator	API weinschel inc.	10dB	4867	12	29-Nov-2020
Attenuator	API weinschel inc.	40dB	5134	12	29-Nov-2020
Multimeter	Fluke	13380293	3813	12	09-Oct-2020
Hygrometer	Rotronic	HP21	5004	12	02-Oct-2020
1500 Mhz High Pass Filter	Wainwright	WHKX12-1290-1500-18000-80SS	4961	12	11-Oct-2020



3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	Frequency / Parameter		MU
Conducted Maximum Peak Output Power	30 MHz to 20 GHz Amplitude		± 0.7 dB
Conducted Emissions	30 MHz to 20 GHz Amplitude		± 2.6 dB
Occupied Bandwidth	Up to 20 MHz Bandwidth	5 MHz Bandwidth	± 11547 Hz
		10 MHz Bandwidth	± 23094 Hz
		15 MHz Bandwidth	± 34641 Hz
		20 MHz Bandwidth	± 46188 Hz
Band Edge	30 MHz to 20 GHz Amplitude		± 0.8 dB

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.



SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



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

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

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

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ANNEX A

MODULE LIST



Configuration A and B			
Product	Product No	R-State	Serial No
Radio 2203 B2 B25	KRC 161 489/1	R1F	D825087587
Software Version:	CXP 901 3268/9	Revision:	R77ZT