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# Report On

FCC and ISED Testing of the Ericsson Radio 4480 44B2/B25 44B66A C, KRC 161 844/1,NR and NB-IoT In Band (2100 MHz) Base Station in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 27, ISED RSS-GEN and Industry Canada RSS-139

COMMERCIAL-IN-CONFIDENCE

FCC: TA8AKRC161844 IC: 287AB-AS161844

PREPARED BY

APPROVED BY

DATED

Maltuhe

Maggie Whiting Key Account Manager

Steve Scarfe Authorised Signatory

19 October 2022

October-2022

Document 75955712 Report 03 Issue 1



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**SECTION 1** 

**REPORT INFORMATION** 



# 1.1 REPORT DETAILS

Manufacturer	Ericsson AB
Address	Torshamnsgatan 23 Kista SE-16480 Stockholm Sweden
Product Name & Product Number	Radio 4480 44B2/B25 44B66A C - KRC 161 844/1
IC Model Name	AS161844
Serial Number(s)	E23C418848
Software Version	CXP9013268/15 Revision R89MU15
Hardware Version	R2B
Non-Tested Variant (See Section 1.11 Additional Information)	Radio 4480 44B2/B25 44B66A C - KRC 161 844/3
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 Industry Canada RSS-139: Issue 4: 2022
Test Plan	MR7602-SP-2E _Spectrum Sharing with NB-IoT 11 Radios FCC and ISED_Rev-F
Start of Test	04-October-2022
Finish of Test	10-October-2022
Name of Engineer(s)	Neil Rousell, Graeme Lawler
Related Document(s)	KDB 971168 D01 v02r02 KDB 662911 D01 v02r01 ICES-003:Issue 7 (2020-10) ANSI C63.26-2015

# ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate compliance with and FCC CFR 47 Part 2: 2021, FCC CFR 47 Part 27: 2021, ISED RSS-GEN: Issue 5: March 2019 Amendment 1, 2021 Amendment 2Industry Canada RSS-139: Issue 4: 2022 The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

awler m

Neil Rousell, Graeme Lawler



# 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 Industry Canada RSS-139 is shown below.

	Specification Cl	ause				
Section	FCC CFR 47 FCC CFR 47 RSS-		RSS-	RSS-	Test Description	Result
	Part 2	Part 27	GEN	139		
2.1	2.1046	27.50	6.11	5.5	Maximum Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	27.53	6.7	-	Occupied Bandwidth	Pass
2.3	2.1051	27.53	-	5.5	Band Edge	Pass
2.4	2.1051	27.53	6.13	5.6	Transmitter Spurious Emissions	Pass
2.5	2.1053	-	6.3	5.6	Radiated Emissions	Pass

Testing in this Report covers only B66A (2100 MHz)

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

Document 759555712 Report 02 - Radio 4480 44B2/B25 44B66A C - B2/B25 (1900 MHz)



# 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

RATs	Carriers	Pout (W)	Position	BW	Freq	NR-ARFCN					
			В	10	2115	423000					
			М	10	2145	429000					
			Т	10	2175	435000					
								В	15	2117.5	423500
NR in NR/ESS Setup (NB IoT IB) QPSK	1	60	М	15	2145	429000					
								Т	15	2172.5	438500
								l		В	20
			М	20	2145	429000					
			Т	20	2170	434000					



# 1.5 DECLARATION OF BUILD STATUS

Technical Description:		Multi standard ra	emote radio unit Radio 4480			
(Please provide a brief description of the intene equipment including the technologies the prod		44B2/B25 44B66				
Manufacturer:	Ericsson AB					
Model:	4480 44B2/B25 44B66A C					
Part Number:	KRC 161 844/1					
Fait Number.	KRC 161 844/3	(NEBS variant)				
Hardware Version:		R2B				
Software Version:		CXP 9013268/15	5-R89MU15			
FCC ID of the product under test		TA8AKRC16184	14			
IC ID of the product under test		287AB-AS16184	14			
Intentional Radiators						
Frequency Range (MHz to MHz) B2 : GSM, WCDMA, LTE ,NR, NB-IoT(IB, GB), NB-IoT	TX(DL):1930- 1990MHz	BW: 60MHz				
SA,	RX(UL):1850- 1910MHz	BW: 60MHz				
Frequency Range (MHz to MHz) B25: WCDMA, LTE ,NR, NB-IoT SA, NB-	TX(DL):1930- 1995MHz PX(UL):1850	BW: 65MHz				
loT(IB, GB);	RX(UL):1850- 1915MHz TX(DL):2110 -	BW: 65MHz				
Frequency Range (MHz to MHz) B66A: WCDMA, LTE ,NR, NB-IoT SA, NB-IoT(IB,	2180MHz RX(UL):1710 -	BW: 70MHz				
GB);	1780MHz 47,8 Max output power		BW: 70MHz			
Conducted Declared Output Power (dBm)	50.0 Max output power per Port					
	BW (LTE)	BW (NR)	PWR/C			
	1.4MHz ( B2, B25)	x	20W			
	3MHz ( B2, B25)	x	20W			
	5MHz (B25, B66A)	5MHz (B25, B66A)	40 W			
RAT SC carrier Power (Max) :	10MHz (B25, B66A)	10MHz (B25, B66A)	60 W			
	15MHz (B25, B66A)	15MHz (B25, B66A)	60 W			
	20MHz (B25, B66A)	20MHz (B25, B66A)	60 W			
RAT SC carrier Power (Max) :WCDMA (B2, B25, B66A)	5MHz	40W				
RAT SC carrier Power (Max) :GSM (B2)	200kHz	20W				
RAT SC carrier Power (Max) :NB-IoT SA (B2, B25, B66A)	200kHz	20 W				
Radio Configuration:	4RX / 4TX					
Duplex mode:	FDD					
Radio Access Technology, RAT(s) B2:	Single RAT: GSM, W, Multi RAT: G+W+NB Ic NR+L+NB IoT SA; G+	T SA; G+L+NB lo	T SA;W+L+NB IoT SA			
Supported Bandwidth(s) (MHz) B25:	Single RAT: W, L, NB Multi RAT: W+L+NB Io	IoT SA, NR				
Supported Bandwidth(s) (MHz) B66A:	Single RAT: W+L+NB IO Single RAT: W, L, NB Multi RAT: W+L+NB Io	IoT SA, NR				
Antenna Gain (dBi)	Maximum antenna syst the tested configuration	tem gain (including ns to comply with m nd SRSP-510 calc	cable loss), GANT (dBi) for aximum radiated output culated using measured and			
Antenna Impedance(Ω)	50					
Supported modulation scheme, LTE:	QPSK, 16QAM, 64QAM	M, 256QAM				
Supported modulation scheme, NR:	QPSK, 16QAM, 64QAM					
Supported modulation scheme, WCDMA:	QPSK, 16QAM, 64QAM					



Supported modulation scheme, GSM:	GMSK, AQPSK, 8PSK					
Supported modulation scheme, NB-IoT :	QPSK					
NR SCS	15kHz					
RF power Tolerance:	.+0.6/-2.5dB					
Frequency Tolerance:	±0.05 ppm					
Carrier Aggregation, CA	Supported					
Maximum supported number of DL NR carrier per port	6/multi-Band					
Maximum supported number of DL LTE carrier per port	6/multi-Band					
Maximum supported number of DL WCDMA carrier per port	6/multi-Band					
Maximum supported number of DL GSM carrier per port	4/multi-Band					
Maximum supported number of DL NB-IoT carrier per port	2/multi-Band					
Nominal output power per Antenna Port / Band	Multi Band: 100W (50,0 dBm)					
Supported transmission modes:	4X4 MIMO					
Unintentional Radiators						
Highest frequency generated or used in the de tunes		Up to 10.1 Gbit/s				
Lowest frequency generated or used in the de tunes if <30MHz	levice or on which the device operates or					
Class A Digital Device (Use in commercial, inc	dustrial or business environment)					
Class B Digital Device (Use in residential envir	ronment)	Class B				
DC Power Supply (Delete if Not Applicable)						
Nominal voltage: DC power supply	-48V					
Extreme upper voltage:	-36.0V					
Extreme lower voltage:	-58.5V					
Max current:	32A					
Temperature						
Minimum temperature:	-40°C					
Maximum temperature:	55°C					
I hereby declare that I am entitled to sign on b and complete.	ehalf of the manufacturer and that the informati	on supplied is correct				
Name:	Afrah Ali sadiq					
Position held:	Regulatory Approval Eng	gineer				
Email address:	Afrah.ali.sadiq@ericssor	n.com				
Telephone number:	.+46724650796					
Date:	18-Oct-2022					

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



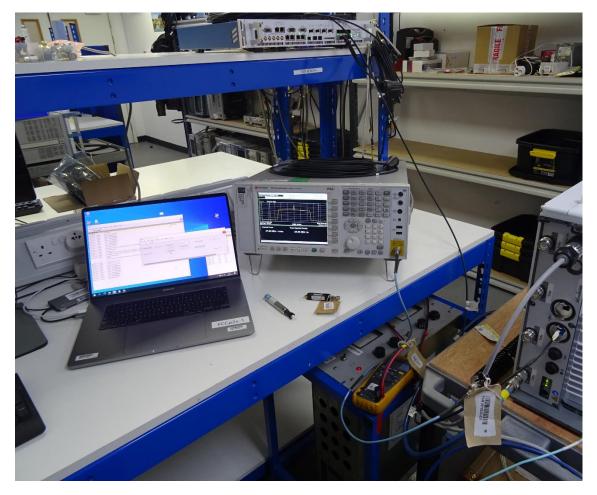
# 1.6 **PRODUCT INFORMATION**

# **1.6.1** Technical Description

The Equipment Under Test (EUT) Radio 4480 44B2/B25 44B66A C - KRC 161 844/3 is an Ericsson AB Radio Unit working in the public mobile service Band 1 band which provides communication connections to Band 1 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.

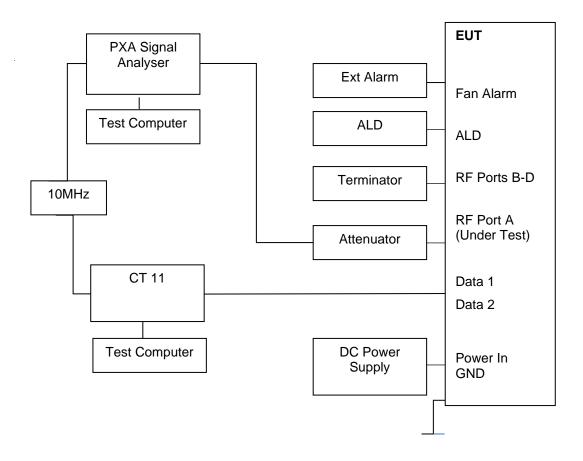


Equipment Under Test



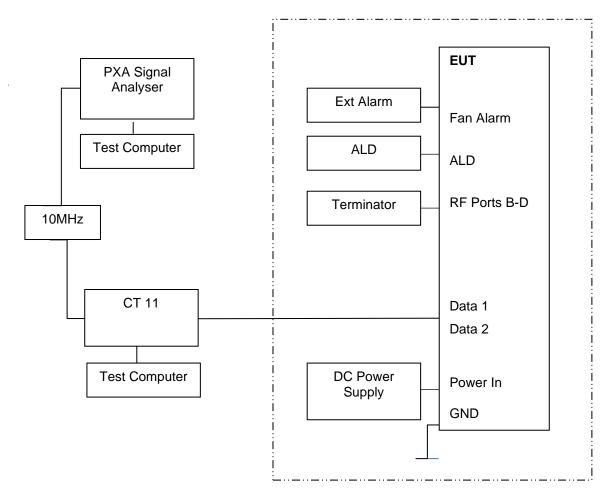
# 1.7 TEST SETUP

Conducted Test Set Up





Radiated Test Set Up – Dashed line indicates equipment inside the Chamber for Radiated 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 -48V DC supply unless otherwise stated.

FCC Measurement Facility Registration Number 90987 Octagon House, Fareham Test Laboratory Postal Address: Octagon House, Concorde Way, Fareham, Hampshire, UK, PO15 5RL

ISED Accreditation IC#12669A Octagon House, Fareham Test Laboratory Postal Address: Octagon House, Concorde Way, Fareham, Hampshire, UK, PO15 5RL

Under our UKAS Accreditation, TÜV SÜD conducted the following tests Octagon House, Fareham Laboratory.

Test Name	Name of Engineer(s)
Maximum Peak Output Power and Peak to Average Ratio - Conducted	Neil Rousell
Occupied Bandwidth	Neil Rousell
Band Edge	Neil Rousell
Transmitter Spurious Emissions	Neil Rousell
Radiated Emissions	Graeme Lawler

# 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 66, it will be limited to Band 66A.

This filing is for a Class 2 Permissive change to add NR with NB-IoT to a previously certified Radio for use in the USA and Canada under the following ID's:

FCC: TA8AKRC161844 IC: 287AB-AS161844

This device is electrically identical as originally certified as no hardware changes have been made

Frequency Stability has been verified at time of original certification.

NEBS variant ,The difference between KRC 161 844/1 and KRC 161 844/3 is a thicker casing on the filter unit on KRC 161 844/3 to fulfill NEBS requirements. The thickness is on the large surface outwards making the radio a little deeper. They are electrically identical, and the cavities are identical. Ericsson regards that this difference does not affect RF performance

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

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-GEN, Clause 6.11 Industry Canada RSS-139, Clause 5.5 FCC CFR 47 Part 2, Clause 2.1046

# 2.1.2 Date of Test and Modification State

04-October-2022 - 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 Temperature22.9°CRelative Humidity48.3%

# 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 1** 

Maximum Output Power 47.78 dBm

			Peak to Average Ratio (PAR) / Output Power / PSD							
				Channel Position B						
Antenna	Modulation Bandwidth		PAR (dB)			Total Power Port A+B+C+D	Total Power Port A+B+C+D	G <sub>ANT</sub> * Limit 62.15dB	G <sub>ANT</sub> * Limit 65.15dB	
				dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi	
А	QPSK	10.0 MHz 15 kHz SCS	7.38	47.64	39.54	53.66	45.56	16.59	19.59	
А	QPSK	15.0 MHz 15 kHz SCS	7.48	47.73	39.06	53.75	45.08	17.07	20.07	
А	QPSK	20.0 MHz 15 kHz SCS	7.46	47.78	38.62	53.80	44.64	17.51	20.51	

#### <u>Remarks</u>

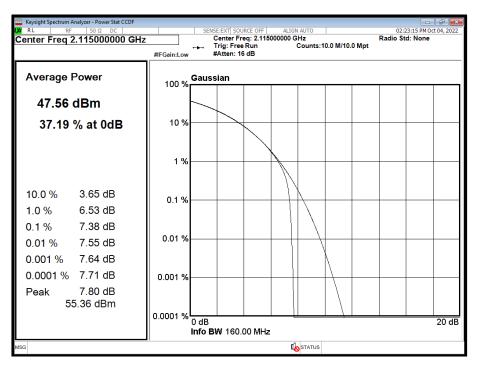
Total Power = Measured Output Power (port A) + 10log (NANT)

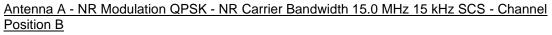
Where NANT refers to the number of Ports.

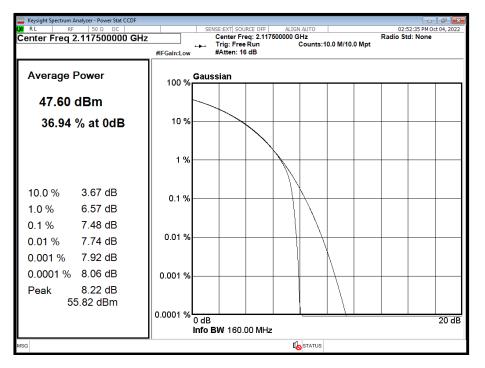
\* Maximum antenna system gain (including cable loss), GANT (dBi) 50 ohm, for the tested configurations, to comply with Maximum radiated output power in ISED SRSP-513, calculated using measured and summed PSD for all 4 ports.



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

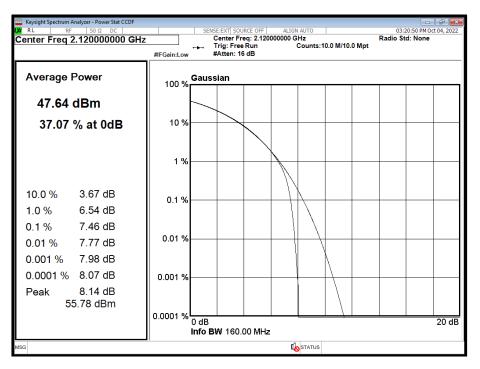








Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B



**Configuration 1** 

#### Maximum Output Power 47.78 dBm

			Peak to Average Ratio (PAR) / Output Power / PSD								
				Channel Position M							
Antenna	NR Modulation	NR Carrier Bandwidth	<b>D</b> 4 <b>D</b>		verage ver/PSD	Total Power Port A+B+C+D	Total Power Port A+B+C+D	G <sub>ANT</sub> * Limit 62.15dB	G <sub>ANT</sub> * Limit 65.15dB		
				dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi		
А	QPSK	10.0 MHz 15 kHz SCS	7.35	47.72	39.26	53.74	45.28	16.87	19.87		
A	QPSK	15.0 MHz 15 kHz SCS	7.41	47.68	38.91	53.70	44.93	17.22	20.22		
А	QPSK	20.0 MHz 15 kHz SCS	7.40	47.65	38.49	53.67	44.51	17.64	20.64		

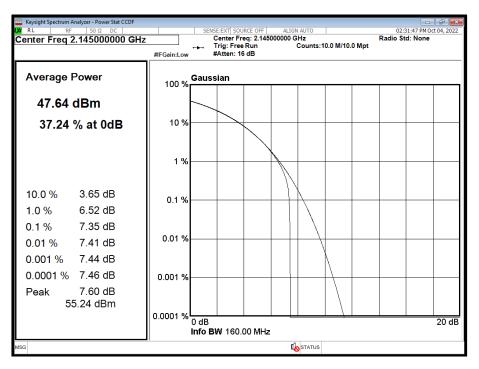
# **Remarks**

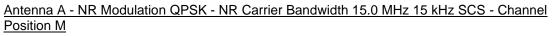
Total Power = Measured Output Power (port A) +  $10\log(NANT)$ Where NANT refers to the number of Ports.

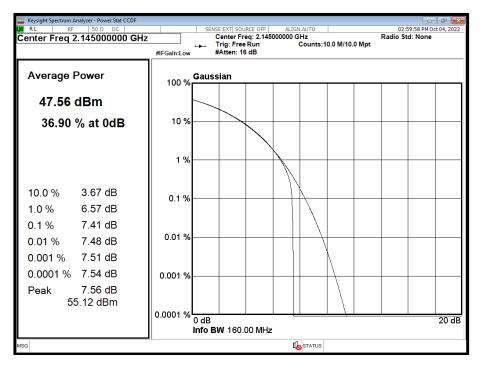
\* Maximum antenna system gain (including cable loss), GANT (dBi) 50 ohm, for the tested configurations, to comply with Maximum radiated output power in ISED SRSP-513, calculated using measured and summed PSD for all 4 ports.



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

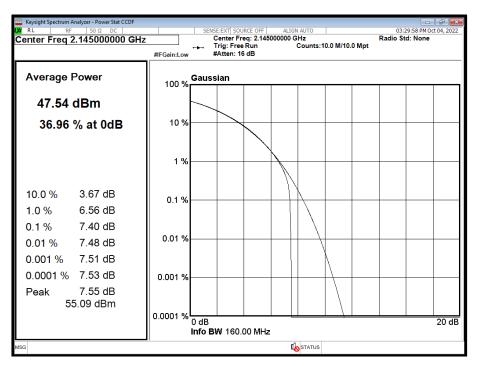








Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position M



**Configuration 1** 

#### Maximum Output Power 47.78 dBm

			Peak to Average Ratio (PAR) / Output Power / PSD								
				Channel Position T							
Antenna	NR Modulation	NR Carrier Bandwidth	<b>D</b> 4 <b>D</b>		/erage ver/PSD	Total Power Port A+B+C+D	Total Power Port A+B+C+D	G <sub>ANT</sub> * Limit 62.15dB	G <sub>ANT</sub> * Limit 65.15dB		
				dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi		
A	QPSK	10.0 MHz 15 kHz SCS	7.39	47.48	39.28	53.50	45.30	16.85	19.85		
A	QPSK	15.0 MHz 15 kHz SCS	7.46	47.67	38.79	53.69	44.81	17.34	20.34		
А	QPSK	20.0 MHz 15 kHz SCS	7.50	47.67	38.47	53.69	44.49	17.66	20.66		

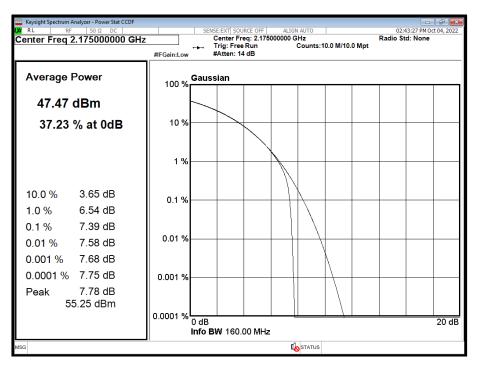
# **Remarks**

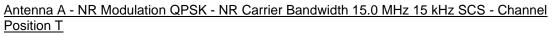
Total Power = Measured Output Power (port A) + 10log (NANT) Where NANT refers to the number of Ports.

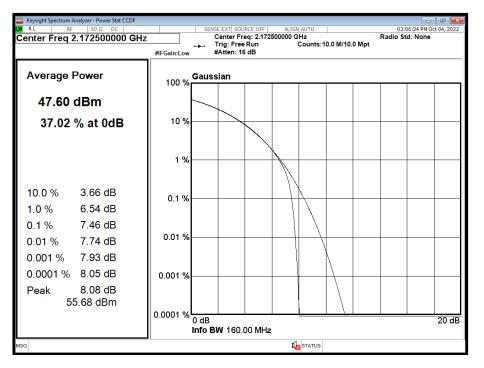
\* Maximum antenna system gain (including cable loss), GANT (dBi) 50 ohm, for the tested configurations, to comply with Maximum radiated output power in ISED SRSP-513, calculated using measured and summed PSD for all 4 ports.



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

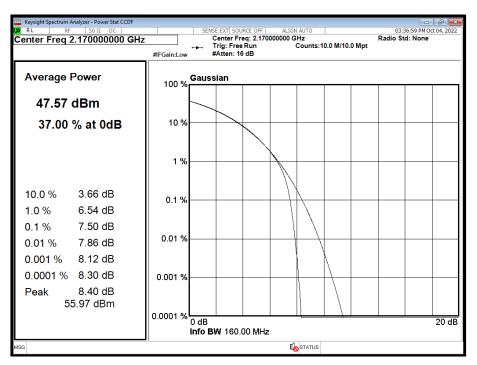








Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T



Limit	
Maximum rated output power (Non-Rural)	≤ 1640 W/MHz or ≤+62.15 dBm/MHz
Maximum rated output power (Rural)	≤ 3280 W/MHz or ≤+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 ISED RSS-GEN, Clause 6.7 FCC CFR 47 Part 2, Clause 2.1049

# 2.2.2 Date of Test and Modification State

04-October-2022 - 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 Temperature22.9°CRelative Humidity48.3%

# 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 47.78 dBm



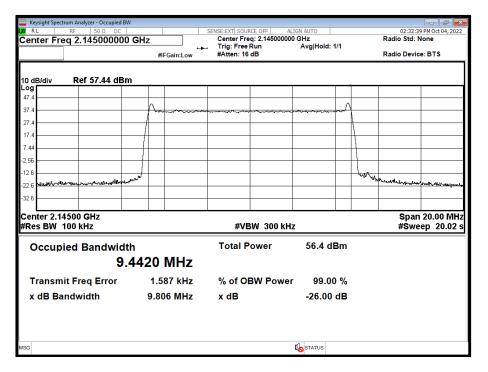
			Result (kHz)							
Antenna	NR	NR Carrier	arrier Channel Positio		Channel Position M		Channel	Position T		
Antenna	Modulation	Bandwidth	Occupied	-26 dB	Occupied	-26 dB	Occupied	-26 dB		
		Bandwidth	Bandwidth	Bandwidth	Bandwidth	Bandwidth	Bandwidth			
А	QPSK	10.0 MHz 15 kHz SCS	9444.13	9798.12	9441.99	9806.41	9445.94	9801.78		
А	QPSK	15.0 MHz 15 kHz SCS	14368.57	14808.48	14367.34	14812.14	14365.09	14805.38		
А	QPSK	20.0 MHz 15 kHz SCS	19184.30	19745.84	19185.88	19758.83	19186.36	19745.38		



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

Keysight Spectrum Analyzer - Occupied BW X/ RL RF 50 Ω DC		SENSE:EXT SOURCE OFF ALIG	N AUTO	02:24:08 PM Oct 04, 202
Center Freq 2.115000000		Center Freq: 2.115000000	3Hz Avg Hold: 1/1	Radio Std: None
	#IFGain:Low		Radio Device: BTS	
10 dB/div Ref 57.45 dBm			i	
47.5				
37.5	American			
27.5				
17.5				
7.45				
.55				
2.6				
2.6 montermation manual and	AC4 *			Warmughan margaretur here was
12.6				
enter 2.11500 GHz				Span 20.00 Mi
Res BW 100 kHz		#VBW 300 kHz		#Sweep 20.02
Occupied Bandwidth	ו	Total Power	56.4 dBm	
9.4	441 MHz			
Transmit Freq Error	4.019 kHz	% of OBW Power	99.00 %	
x dB Bandwidth	9.798 MHz	x dB	-26.00 dB	
G		Ę	STATUS	

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

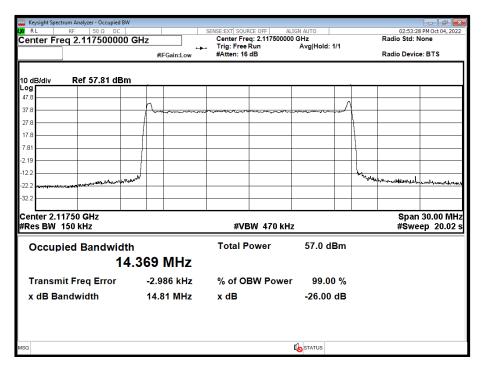




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T

#Res BW 100 kHz Occupied Bandwid 9	.4459 MHz	#VBW 300 kHz Total Power	56.2 dBm	#Sweep 20.02
7.05 2.95 3.0 3.0 3.0 3.0 Center 2.17500 GHz	A Contraction of the second se			Span 20.00 MH
og			~~~~	

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

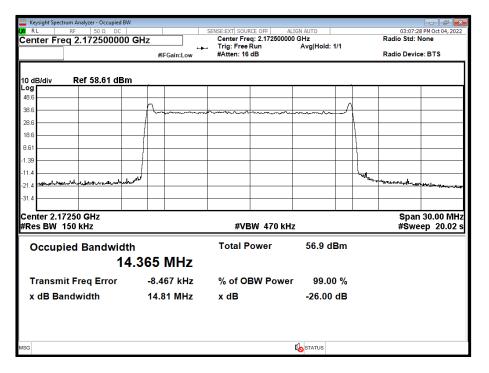




Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position M

Keysight Spectrum Analyzer - Occupied BW				
RL RF 50 Ω DC Center Freq 2.145000000	GHz	SENSE:EXT SOURCE OFF ALIG	N AUTO	03:00:49 PM Oct 04, 202 Radio Std: None
	#IFGain:Low	. Trig: Free Run #Atten: 14 dB	Avg Hold: 1/1	Radio Device: BTS
10 dB/div Ref 57.52 dBm				
47.5				
37.5	n		$\wedge$	
27.5				
17.5	1		l	
7.52				
.48				
2.5				
2.5 mailton white marked and	/مغو		Jacon Jacon	menor of the place my var this to make
2.5				
enter 2.14500 GHz Res BW 150 kHz		#VBW 470 kHz		Span 30.00 MI #Sweep 20.02
Occupied Bandwidth	1	Total Power	56.9 dBm	
14	.367 MHz			
Transmit Freq Error	-2.945 kHz	% of OBW Power	99.00 %	
x dB Bandwidth	14.81 MHz	x dB	-26.00 dB	
3G			STATUS	

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

Keysight Spectrum Analyzer - Occupied BW K RL RF 50 Ω DC			N AUTO		03:21:44 PM Oct 04, 202
Center Freq 2.120000000	GHz	Center Freq: 2.120000000 Trig: Free Run	GHz Avg Hold: 1/1	Rad	io Std: None
	#IFGain:Low	#Atten: 14 dB		Rad	io Device: BTS
10 dB/div Ref 57.28 dBm			i		
47.3			0		
37.3	- Martine	han a second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
27.3					
17.3					
7.28					
2.72					
12.7					
22.7 monumental and the second					enderman and the
32.7					
Center 2.12000 GHz					Span 40.00 MH
Res BW 200 kHz		#VBW 620 kHz			#Sweep 20.02
Occupied Bandwidth	1	Total Power	57.3 dBm		
19	.184 MHz				
Transmit Freq Error	2.740 kHz	% of OBW Power	99.00 %		
•					
x dB Bandwidth	19.75 MHz	x dB	-26.00 dB		

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

Keysight Spectrum Analyzer - Occupied BW           RL         RF         50 Ω         DC           Center Freq 2.145000000 G	Hz	Center Freq: 2.145000000	GN AUTO GHz Avg Hold: 1/1		03:30:4 Radio Std: N	9 PM Oct 04, 2022 None
	#IFGain:Low	#Atten: 14 dB			Radio Devic	e: BTS
0 dB/div Ref 57.90 dBm						
7.9	-					
7.9	francis	ware ware ware ware ware ware ware ware	anna 1			
7.9				}		
7.9				{		
.90				}		
.10						
2.1	j			weren.	with a sealing with a	. بعداد بین ملت
2.1						and the second state of th
2.1						
enter 2.14500 GHz Res BW 200 kHz		#VBW 620 kHz				40.00 MHz
		#VDVV 020 KH2			#SWC	ep 20.02 s
Occupied Bandwidth		Total Power	57.2 dBm			
19.1	86 MHz					
Transmit Freq Error	-1.907 kHz	% of OBW Power	99.00 %			
x dB Bandwidth	19.76 MHz	x dB	-26.00 dB			
G			STATUS			
-			<b>O</b> SIA108			



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

	BW								
	0 GHz				GHz		03:37:5 Radio Std: 1	2 PM Oct 04, 2022 None	
		Gain:Low	⊷⊷ Trig: Free Run Avg Hold: 1/1 #Atten: 14 dB				Radio Device: BTS		
Ref 58.64 dB	sm								
	h					Λ			
	, m	www.		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Concordinated	$\sim$			
	{					Ì			
	{					l			
	ł								
one bernahopolymenaus	ward by						Martha and martha and	and the second second	
						_			
17000 011-								40.00 0411-	
200 kHz			#VBW 6	20 kHz				40.00 MHz ep 20.02 s	
pied Bandwid	ith		Total Powe	r	57.2 dBi	n			
1	9.186	MHz							
nit Freq Error	-4.64	46 kHz	% of OBW F	ower	99.00	%			
andwidth	19.7	5 MHz	x dB		-26.00 d	в			
				Į.	STATUS				
	Ref 58.64 dE	eq 2.17000000 GHz Ref 58.64 dBm Ref 58.64 dBm Re	Ref 58.64 dBm           Ref 58.64 dBm           Image: Second secon	Ref         58.02         Sense:Ext[Source off           eq 2.170000000 GHz         Center Freq: 2.17           #IFGaint.ow         Trig: Free Run           #Ref 58.64 dBm         #Atten: 14 dB           Ref 58.64 dBm         Image: Sense:Ext[Source off           Image: Sense:Ext[Source off         Image: Sense:Ext[Source off           Image: Sense: Se	RF       50.0       DC       SENSEEXT SURCE OFF       ALIC         eq 2.170000000 GHz       Trig: Free Run       #Atten: 14 dB       Trig: Free Run         Ref 58.64 dBm       Trig: Free Run       #Atten: 14 dB         Ref 58.64 dBm       Trig: Free Run       #Atten: 14 dB         Ref 58.64 dBm       Trig: Free Run       #Atten: 14 dB         Ref 58.64 dBm       Trig: Free Run       #Atten: 14 dB         Ref 58.64 dBm       Total Power       Total Power         17000 GHz       Total Power       19.186 MHz         nit Freq Error       -4.646 kHz       % of OBW Power         andwidth       19.75 MHz       x dB	Ref         50 Ω         DC         SENSE EXT[SOURCE OFF]         ALIGN AUTO           'eq 2.170000000 GHz         Center Freq: 2.17000000 GHz         Center Freq: 2.17000000 GHz         Avg Hold: 1/4           #IFGain:Low         #IFGain:Low         #IFGain:Low         #IFGain:Low         Avg Hold: 1/4           Ref         58.64 dBm	Ref         50.0.00         Generation         ALIGN AUTO           eq 2.170000000 GHz         Center Freq: 2.17000000 GHz         Avg]Hold: 1/1           #FGain:Low         #FGain:Low         Avg]Hold: 1/1           Ref 58.64 dBm         Auton         Avg]Hold: 1/1           #Gain:Low         #Atten: 14 dB         Avg]Hold: 1/1           #IFGain:Low         #Atten: 14 dB         Avg]Hold: 1/1           #Atten: 14 dB         Avg]Hold: 1/1         #Atten: 14 dB           Ref 58.64 dBm         Image: Auton Avg]Hold: 1/1         #Atten: 14 dB           Image: Auton Avg]Hold: 1/1         #Atten: 14 dB         Image: Auton Avg]Hold: 1/1           Image: Auton Avg]Hold: 1/1         #Atten: 14 dB         Image: Auton Avg]Hold: 1/1           Image: Auton Avg]Hold: 1/1         #Atten: 14 dB         Image: Auton Avg]Hold: 1/1           Image: Auton Avg]Hold: 1/1         #Atten: 14 dB         Image: Auton Avg]Hold: 1/1           Image: Auton Avg]Hold: 1/1         #Atten: 14 dB         Image: Auton Avg]Hold: 1/1           Image: Auton Avg]Hold: 1/1         #Atten: 14 dB         Image: Auton Avg]Hold: 1/1           Image: Auton Avg]Hold: 1/1         #Image: Auton Avg]Hold: 1/1         Image: Auton Avg]Hold: 1/1           Image: Auton Avg]         #Image: Auton Avg]Hold: 1/1         Image: Auton Avg]Hold: 1/1         Im	Ref         50.0 cold         SENSE-EXT[SOURCE OF]         ALIGN AUTO         03:37:5           eq 2.170000000 GHz         Center Freq: 2.17000000 GHz         Radio Std: 1         Radio Devic           #FGain:Low         #FGain:Low         #Atten: 14 dB         Avg[Hold: 1/1         Radio Devic           Ref 58.64 dBm	



# 2.3 BAND EDGE

#### 2.3.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.53 Industry Canada RSS-139, Clause 5.5 FCC CFR 47 Part 2, Clause 2.1051

# 2.3.2 Date of Test and Modification State

04-October-2022 - 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 Temperature22.9°CRelative Humidity48.3%

# 2.3.5 Test Method

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

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

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

For single port, the limit was calculated as being -13 dBm - 10 \* Log (4) = -19 dBm.

# 2.3.6 Test Results

**Configuration 1** 

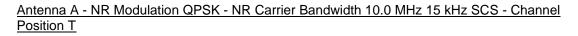
Maximum Output Power 47.78 dBm

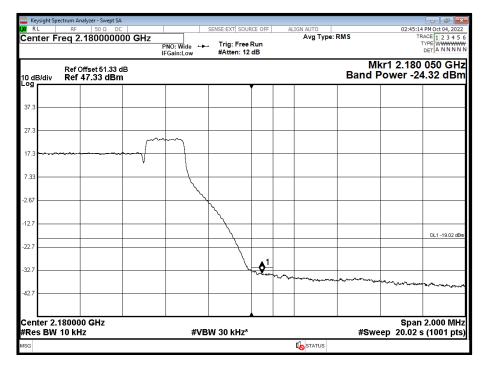
Antenna	NR Modulation	NR Carrier Bandwidth	Band Edge (MHz)			
Antenna	INR MOUUIALION		Channel Position B	Channel Position T		
A	QPSK	10.0 MHz 15 kHz SCS	2,115.0	2,175.0		
A	QPSK	15.0 MHz 15 kHz SCS	2,117.5	2,172.5		
A	QPSK	20.0 MHz 15 kHz SCS	- 1 - 1 - 1 -			



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

Keysight Spectrum Analyzer - Swept SA					
	SENSE:EXT S	SOURCE OFF A	IGN AUTO Avg Type: RN	10	02:25:31 PM Oct 04, 2022 TRACE 1 2 3 4 5
Center Freq 2.110000000 GHz	PNO: Wide +++ Irig: F	ree Run	Avg Type. Riv	13	TYPE WWWW DET A N N N N
	IFGain:Low #Atten	: 12 dB			,
Ref Offset 51.35 dB					1 2.109 950 GH wer -26.48 dBn
10 dB/div Ref 47.35 dBm					wei -20.46 ubi
		Ī			
37.4					
27.4					
				~	
17.4				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	***
7.35					
-2.65			<i>AA</i>		
-2.85		4	ſ		
-12.7					
					DL1 -19.02 dE
-22.7					
		1			
-32.7		<b>5</b> ¹./			
	any announce we want	3. r			
-42.7 - Way many and a second second					
Center 2.110000 GHz		<b>A</b>	1		Span 2.000 MH
#Res BW 10 kHz	#VBW 30 kH	z*		#Sweep	20.02 s (1001 pt
ISG			<b>I</b> STATUS		

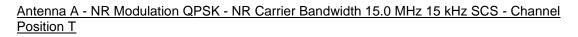






Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B

Keysight Sp	ectrum Analyzer - Swept SA RF 50 Ω DC		10.05 0.55			00.54.00	
	req 2.110000000 GHz	SENSE:EXT SO PNO: Wide Trig: Fre IFGain:Low #Atten: 8	e Run	IGN AUTO Avg Type: R		TR 1	PM Oct 04, 2022 ACE 1 2 3 4 5 YPE WWWWW DET A NNNN
I0 dB/div	Ref Offset 51.29 dB Ref 43.29 dBm				Mkr Band Po		925 GH ′.30 dBr
33.3							
23.3							
13.3						V	
3.29							
5.71				/			
6.7			+/-				DE1 -19.02 d
26.7							
16.7	mander many restration manual and		1				
16.7							
enter 2. Res BW	110000 GHz 15 kHz	#VBW 47 kHz	<u> </u>		#Swee	Span p 20.02 s	2.000 MH
5G				<b>I</b> STATUS			



RL	ectrum Analyzer - Swept SA RF 50 Ω DC		SENSE:EXT SOURCE OFF	ALIGN AUTO Avg Type: R	MS	03:08:26 PM Oct 04, 2022 TRACE 1 2 3 4 5
enter F	req 2.180000000 GHz	PNO: Wide ↔ IFGain:Low	Trig: Free Run #Atten: 12 dB	Avg Type. K		DET A N N N N
I0 dB/div	Ref Offset 51.39 dB Ref 47.39 dBm				Mkr Band Po	1 2.180 075 GHz wer -24.48 dBm
37.4						
27.4		~~~~				
17.4						
7.39	V					
2.61						
12.6						DL1 -19.02 dBr
22.6						
32.6				warman and the second s	-	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
42.6						
Center 2. Res BW	180000 GHz 15 kHz	#VB	₩ 47 kHz*		#Sweep	Span 2.000 MHz 20.02 s (1001 pts
SG				<b>I</b> o status		



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

LXI RL	ectrum Analyzer - Swept SA RF   50 Ω DC   req 2.110000000 GHz			ALIGN AUTO Avg Type: RMS		D3:22:38 PM Oct 04, 2022 TRACE 1 2 3 4 5 6
		PNO: Wide	rig: Free Run Atten: 12 dB		Mired 0	
10 dB/div	Ref Offset 51.32 dB Ref 47.32 dBm			E	Band Powe	.109 900 GHz r -27.82 dBm
37.3						
27.3						
17.3				[ [		
7.32						
-2.68						
-12.7						
-22.7						DL1 -19.02 dB
-32.7			-1			
-42.7	man and a second s	ware and the second	2			
Center 2. #Res BW	110000 GHz 20 kHz	#VBW 6	i2 kHz*			Span 2.000 MH: 0.02 s (1001 pts
MSG				<b>K</b> STATUS		

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

RL	ectrum Analyzer - Swept SA RF 50 Ω DC req 2.18000000	0 GHz		SENSE:EXT SOUR		IGN AUTO Avg Type: R	MS	TF	7 PM Oct 04, 2022 RACE 1 2 3 4 5 TYPE WWWW
		4 11	NO: Wide ++ Gain:Low	#Atten: 10					DETANNNN
0 dB/div	Ref Offset 51.32 dl Ref 45.32 dBm						MI Band F	kr1 2.180 Power -2	100 GHz 5.73 dBm
					Ĭ				
35.3									
25.3									
$\int$									
15.3									
4.68									
14.7									
									DL1 -19.02 dBr
24.7					<b>▲</b> 1				
34.7									-
44.7									
enter 2. Res BW	180000 GHz 20 kHz		#VB	W 62 kHz*	<u> </u>		#Swe	Span ep 20.02 s	2.000 MH; s (1001 pts
SG						STATUS			

Limit -19 dBm



# 2.4 TRANSMITTER SPURIOUS EMISSIONS

# 2.4.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.53 ISED RSS-GEN, Clause 6.13 Industry Canada RSS-139, Clause 5.6 FCC CFR 47 Part 2, Clause 2.1051

# 2.4.2 Date of Test and Modification State

04-October-2022 - 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 Temperature22.9°CRelative Humidity48.3%

# 2.4.5 Test Method

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

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

For single port, the limit was calculated as being -13 dBm - 10 \* Log (4) = -19 dBm.

#### 2.4.6 Test Results

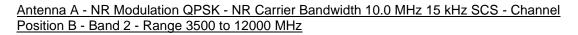
**Configuration 1** 

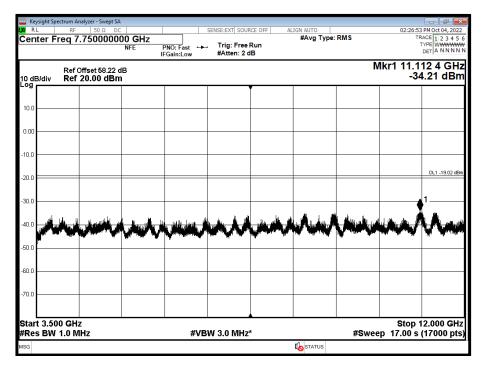
Maximum Output Power 47.78 dBm



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position B - Band 1 - Range 0.009 to 3500 MHz

			nalyzer - Swept								
Cen		RF rea 1		500 GHz		SENSE:EXT SOUR		IGN AUTO #Avg T	ype: RMS		TRACE 1 2 3 4 5 6
		oq .		NFE	PNO: Fast ↔ IFGain:Low	. Trig: Free #Atten: 12					
10 dE Log I	3/div		Offset 52.33 54.33 dB								119 3 GHz 39.85 dBm
209											
44.3								<b>●</b> <sup>1</sup> —			
								ľ			
34.3											
24.3											
14.3											
4.33											
4.55								h			
-5.67											
-15.7											DL1 -19.02 dBr
-25.7								H.			
								1			
-35.7									i onde la presidente de	الأفاط الالفري والاستقدار	and the second section of the second seco
	ويتعرفه والمراري	فاشطادون	العروبية الملاطية		فيترابل والتنامي الطوالية	المحالة، يتعل لتحد أن مع المحالة محمد المحال ويوم		i Hatari	approximate the set of the property of the		a ka ka mila na ka
	t9kH sBW				#\/P	W 3.0 MHz	*		#0	Sto Sweep 7.000	p 3.500 GHz
#Res	5 0 4 4	1.0 1	112		#VD	W J.U WINZ				weep 7.000	- s (/ 000 pts
130									2		







# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position B - Band 3 - Range 12000 to 18000 MHz

🛄 Key (X) RI		trum Ana RF	lyzer - Swept SA 50 Ω DC			SENSE:EXT SOUR		IGN AUTO		02:27:17	PM Oct 04, 2022
			.0000000	000 GHz				#Avg Type:	RMS	TR	RACE 1 2 3 4 5 6
				NFE I	PNO: Fast ↔→ Gain:High	#Atten: 0 d					DETANNNN
10 dE Log			ffset 62.04 d 2 <b>0.00 dBm</b>						N		93 7 GHz 3.34 dBm
LUg											
10.0											
0.00											
0.00											
-10.0											
											DL1 -19.02 dBm
-20.0											
-30.0					<b>●</b> <sup>1</sup>						
	Alarak	والاستر	in dia minina	بالاطان مصابين	بالأجادر بالعآلار	and the first of the	والمتعالية والمتعالية والمتعالية	فراديها فأقتلني المناب	فنورقن لرومه مراديحا أفتع	مرابع ويارانا إيرارا	معاري الفرطان ومع
-40.0					and a state of the		والألاسانية والمتحدث	a a a a a a a a a a a a a a a a a a a	and the second	lives all shirts fit	ويبير أنشريه ويروط كأفري
-50.0											
-60.0											
-70.0											
	t 12.00										18.000 GHz
#Res	s BW 1	.0 1911	1Z		#VB	W 3.0 MHz			#Swee	ep 12.00 s	(12000 pts)
1130								Normal Contraction			

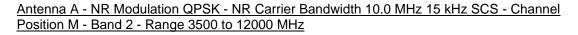
Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position B - Band 4 - Range 18000 to 22000 MHz

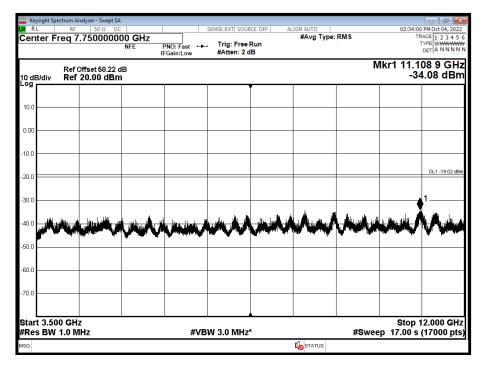
RL F	n Analyzer - Swept SA RF 50 Ω D	C I		SENSE:EXT SOUR	RCE OFF AL	IGN AUTO			PM Oct 04, 2022
enter Freq	20.000000	NFE F	PNO: Fast 🔸	. Trig: Free #Atten: 26		#Avg Type:			ACE 1 2 3 4 5 TYPE WWWWW DET A NNNN
	ef Offset 31.89 ef <b>20.00 dBr</b>		1				N	1kr1 18.8 -36	64 1 GH: 6.90 dBn
10.0									
0.00									
0.0									
0.0									DL1 -19.02 dB
10.0		<b>♦</b> <sup>1</sup>							
Provide a second se									
0.0									
0.0									
itart 18.000	GHz							Stop 2	2.000 GH2
Res BW 1.0			#VB	W 3.0 MHz	*	<b>I</b> status	#Swe	ep 8.000 s	6 (8000 pts



# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position M - Band 1 - Range 0.009 to 3500 MHz

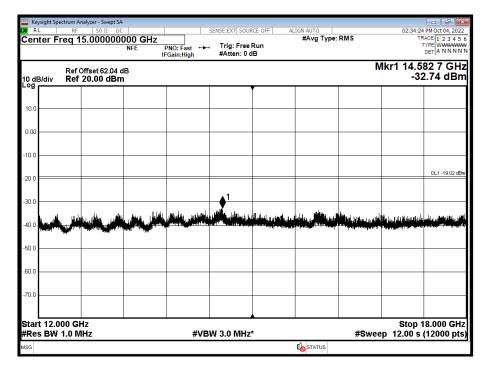
Keysight Spectrum Analyzer -									- 6
			SENSE:EXT SOUR	CE OFF AL		AUTO AVg Type:	DMS		9 PM Oct 04, 2022 RACE 1 2 3 4 5
Center Freq 1.750	NFE F	NO: Fast ↔	Trig: Free   #Atten: 12		#	Avg Type:	RWS		TYPE WWWWW DET A NNNN
/		-Galli.LOw	#/(ten. 12					Mkr1 2.1	40 8 GH
Ref Offset 10 dB/div Ref 53.95								3	9.76 dBn
44.0					٠	1			
					I				
34.0									
24.0									
14.0									
3.95									
-6.05									
-16.1									DL1 -19.02 dB
									DE1 -19.02 dB
-26.1					Ж	1			
-36.1									
التواطيع مريدة فالمالي والمتعالم	والم أن أوراقيا معرود أمر والراسية و		ر المتأويل ( المار م أمر و مرار من المر ر وحمد مراجعة ( معاد مار مرار م	الألادية (أريسية) معاد المريسية (أريسية)			ata ta kaninista ya ka		
Start 9 kHz #Res BW 1.0 MHz		#VB	W 3.0 MHz				#Sw	Stop eep 7.000	3.500 GH
wsg					<b>1</b>	STATUS	<i>"</i> <b>–</b> 11		- ( pro



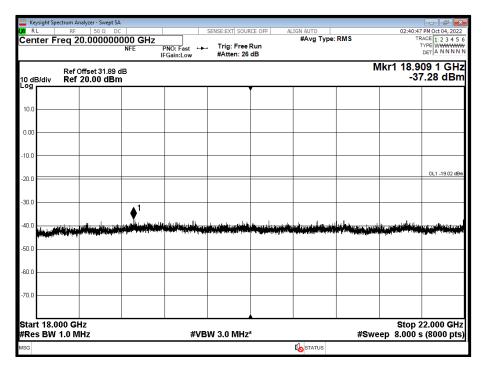




# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position M - Band 3 - Range 12000 to 18000 MHz



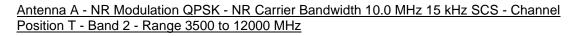
Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position M - Band 4 - Range 18000 to 22000 MHz

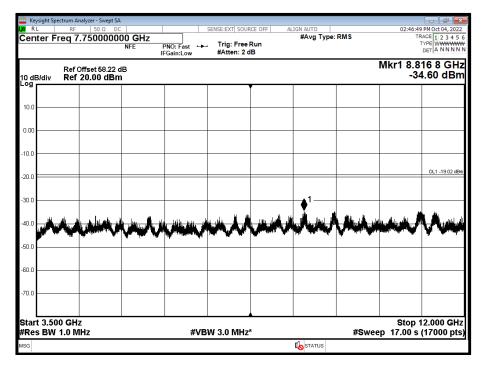




# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T - Band 1 - Range 0.009 to 3500 MHz

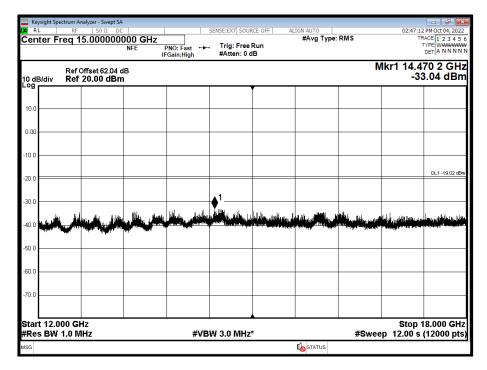
			nalyzer - Swep									- 7 -
		RF	50 Ω	500 GHz		SENSE:EXT SOUR	CE OFF AL		AUTO #Avg Type:	RMS		1 PM Oct 04, 2022 RACE 1 2 3 4 5
Cen		leq	.750002	NFE	PNO: Fast ++	Trig: Free #Atten: 12						
10 dE Log I	3/div		Offset 52.3 54.00 di								Mkr1 2.1 39	79 3 GH 9.44 dBn
44.0								(	<sup>1</sup>			
34.0									[			
24.0												
14.0												
4.00												
-6.00												
-16.0												DL1 -19.02 dB
-26.0									l			
								ľ				
-36.0			uld k tasa ti	التروي والمراجع المراجع المراجع		والعامل في فاس	le selts eine seite sittiin ja					
	t9kH				وجوور والمراجع والمراجع	ويرقى يتروك ومرايل ومرايل	and the second se					3.500 GH
#Res	s BW	<b>1.0</b> №	1Hz		#VB	W 3.0 MHz	*			#Swe	ep 7.000 s	s (7000 pts
ISG								4	STATUS			







# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T - Band 3 - Range 12000 to 18000 MHz



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 10.0 MHz 15 kHz SCS - Channel Position T - Band 4 - Range 18000 to 22000 MHz

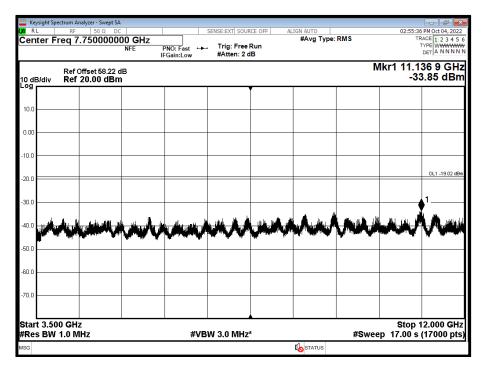
X RL	pectrum Analyzer - Swept S RF 50 Ω D Freq 20.000000	C		SENSE:EXT SOUP	RCE OFF AL	IGN AUTO #Avg Type:	RMS		PM Oct 04, 2022
Cinci i	109 20.00000	NFE	PNO: Fast ++ FGain:Low	. Trig: Free #Atten: 26		0 //		1	
I0 dB/div	Ref Offset 31.89 Ref 20.00 dBr				•		N	1kr1 19.6 -36	26 7 GHz 6.98 dBm
10.0									
0.00									
10.0									
20.0									DL1 -19.02 dBr
30.0				▲1					
40.0		i de las Meridos districto de la fila Presidente de la fila de la fila de la fila	ين المرور الأورين. مورد المرور الأورين						
50.0									
60.0									
70.0									
	000 GHz / 1.0 MHz		#VB	W 3.0 MHz	*		#Swe	Stop 2 ep 8.000 s	22.000 GHz 8 (8000 pts)
ISG						<b>K</b> STATUS			



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B - Band 1 - Range 0.009 to 3500 MHz

			nalyzer - Swept S									
RI RI		RF	50 Ω C			SENSE:EXT SOUR	AL	IGN /	AUTO Avg Type:	DMS		ACE 1 2 3 4 5 0
Cen	ter Fi	req 1	.7500045	NFE I	PNO: Fast ++	Trig: Free #Atten: 12		#/	-vg type.	RWS	1	TYPE WWWWWW
					-Gain:Low	#Atten: 12	40				Mkr1 2.1	24.2 CH-
10 dE Log	3/div		Offset 52.33 53.90 dB								39	24 3 GH2 9.54 dBm
LUg												
43.9								<b>1</b>				
								Y				
33.9								FI				
23.9												
13.9												
3.90												
-6.10								-				
-16.1												DL1 -19.02 dBr
-26.1								4				
*20.1								٦				
-36.1										<u> </u>		datatata d
	والانتفاعل	فتقط والمحمد والمراز	لمرابط ويتعالم والمراجع المرا	ويستعاله الإجابات	ر المارين المانين الم				li hain taini Ang pangangang			
	t9kH									#0		3.500 GHz
#Res	s BW	1.0 1	IHZ		#VB	W 3.0 MHz		r1	STATUS	#SWe	ep 7.000 s	s (7000 pts
DOU								<b>"</b> 0"	SIAIUS			

Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B - Band 2 - Range 3500 to 12000 MHz





# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B - Band 3 - Range 12000 to 18000 MHz

Keysight S	pectrum Analyzer - Swept S RF 50 Ω D			SENSE:EXT SOUR		IGN AUTO		02:56:00	PM Oct 04, 2022
	Freq 15.00000	000 GHz	NO: Fast	. Trig: Free		#Avg Type:	RMS	TF	RACE 1 2 3 4 5 6
		NFE F	Gain:High	#Atten: 0 c					DETANNNN
10 dB/div Log	Ref Offset 62.04 Ref 20.00 dBr						N		69 2 GHz 2.20 dBm
					ľ				
10.0									
0.00									
-10.0									
-20.0									DL1 -19.02 dBm
~~~				<b>▲</b> 1					
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-40.0				a addition and an a	والمستخليات ويتبينا	ang na kang s <mark>alah</mark> mang sala Tagang salah sa	na hanagpatalaga. Pélangguli Salaga	and the second straight of the second straigh	
-50.0									
-60.0									
-70.0									
	000 GHz / 1.0 MHz		#\/R	W 3.0 MHz	*		#Swee		18.000 GHz (12000 pts)
MSG						STATUS		P 12.003	(.2000 pts)

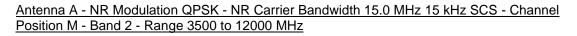
Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position B - Band 4 - Range 18000 to 22000 MHz

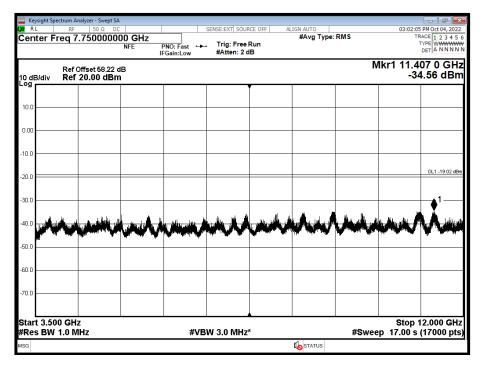
RL RF	50 Ω DC			SENSE:EXT SOUR	RCE OFF AL	IGN AUTO #Avg Type:	DMS		PM Oct 04, 2022
enter Freq 20	J.0000000	NFE F	NO: Fast ++- Gain:Low	. Trig: Free   #Atten: 26		#Avg type.		1	
	ffset 31.89 dE 2 <b>0.00 dBm</b>	3			-		N	1kr1 21.4 -36	14 9 GH 3.41 dBn
10.0									
).00									
0.0									
0.0									DL1 -19.02 dBr
30.0		h L .						1	
		ى ئەلەرلىغىلەر يەت مەلەر يەت. 1994-يەر بەيرىمىرىم بەر تارىخىر 1994-يەر بەيرىمىرىمىرىغا تارىخىر							
0.0									
0.0									
tart 18.000 GH	7							Stop 3	22.000 GHz
Res BW 1.0 M			#VB	W 3.0 MHz	*		#Swe	ep 8.000 s	; (8000 pts



# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position M - Band 1 - Range 0.009 to 3500 MHz

	ctrum Analyzer - Swept									
Center Fr	RF 50 Ω req 1.750004	500 GHz		SENSE:EXT SOUR			AUTO #Avg Type:	RMS	TF	PM Oct 04, 2022
		NFE F	NO: Fast 🔸	. Trig: Free #Atten: 12						
10 dB/div Log	Ref Offset 52.33 Ref 53.05 dB								Mkr1 2.1 39	38 3 GHz ).25 dBm
43.1						١	1			
						ł				
33.1						T				
23.1										
13.1						+				
3.05										
0.00										
-6.95						+				
-17.0										
-17.0						1				DL1 -19.02 dBi
-27.0						Д				
						ľ				
-37.0			lin	والمرفقة المحرية والإفراط والمترجر ا	فالفرجيك أيدتني وال		inder Little	المائلين بالدور ألك مربع محمد المربع مربع المربع	Contracting and Contracting an	
والماد العقاد			a the second		ferror and a second second second		L 100 - 21 - 21 - 21 - 21 - 21			
Start 9 kH #Res BW	Z			W 3.0 MHz				#Swe	Stop ep 7.000 s	3.500 GHz (7000 pts
MSG						ų,	STATUS			







# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position M - Band 3 - Range 12000 to 18000 MHz

Keys L <b>XI</b> RL	ight Spectrum	Analyzer - Swept SA 50 Ω DC			SENSE:EXT SOUR	RCE OFF AL	IGN AUTO		03:02:28	B PM Oct 04, 2022
Cent	er Freq	15.000000	NFE F	NO: Fast	Trig: Free		#Avg Type:	RMS		ACE 1 2 3 4 5 6 TYPE WWWWWW DET A N N N N N
				Gain:High	#Atten: 0 d	IB		N	Akr1 14 5	71 7 GHz
10 dB/		Offset 62.04 c f <b>20.00 dB</b> m								2.86 dBm
10.0										
0.00										
-10.0										
-20.0										DL1 -19.02 dBm
-30.0					<b>1</b>					
30.0	أسياس	بالري الار الله	الطفاف الثارر	الشاديد بادرياس	witting data large	والمنافقات والمتعادين	היוויין, גע <sup>ענע</sup> ניין, אווייין, אוויי	Materia	المتعادية والمعالية	t ta bia
-40.0				a da a tala di sa			a ann a star an	and a second second second		alar har tagan tara digan.
-50.0										
-60.0 -										
-70.0										
	12.000 G BW 1.0 I			#VB	W 3.0 MHz	*		#Swee		18.000 GHz (12000 pts)
MSG							<b>I</b> STATUS			

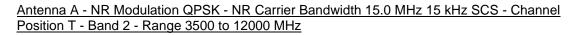
Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position M - Band 4 - Range 18000 to 22000 MHz

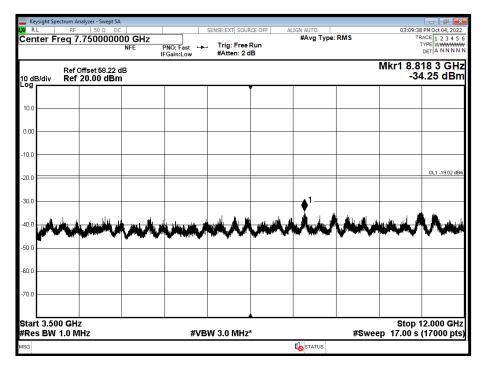
ente	r Freq 2	0.000000	NFE F	PNO: Fast ++	Trig: Free #Atten: 26		#Avg Type:	RMS		TYPE WWWWW
		Offset 31.89 c 20.00 dBm	IB	Gain:Low	#Atten: 20	ub		N	1kr1 21.9 -37	98 0 GH 7.11 dBr
00										
0.0										
0.0										DL1 -19.02 dB
D.O										<u> </u>
0.0 <b>4</b>										
0.0										
0.0										
D.O										
	8.000 GI SW 1.0 N		<u> </u>	#\/B	W 3.0 MHz	*		#Swe	Stop 2 ep 8.000 s	22.000 GH



# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position T - Band 1 - Range 0.009 to 3500 MHz

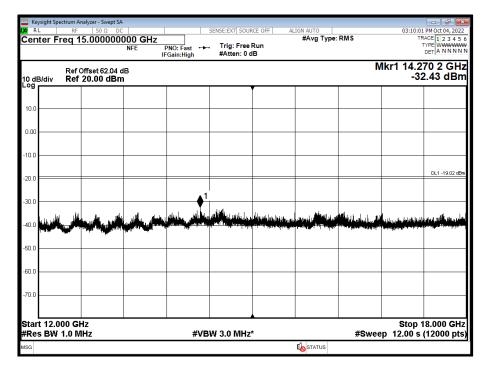
		um Analyzer - Swej									
KI RL		RF 50 Ω			SENSE:EXT SOUR	CE OFF AL		AUTO Avg Type:	RMS		ACE 1 2 3 4 5 0
Cern		q 1.75000	NFE	PNO: Fast ++ FGain:Low	. Trig: Free #Atten: 12						
10 dB Log r		Ref Offset 52.3 Ref 53.08 d								Mkr1 2.1 39	65 8 GHz 9.29 dBm
43.1							•	, <sup>1</sup>			
							ŀŀ				
33.1											
23.1											
13.1											
3.08											
3.00											
-6.92											
-16.9											DL1 -19.02 dB
-26.9											
-36.9						1	-	وروارية المراجع	يع القم فأنظرا إلى ال	فالفلاه والتعريق والألا	interfacional statute la
	ندادة أرائد ومتقال	لجامع لمتربأ بالبابل يرزل			مأمرا الانتر الطلع الألوجول. عن ا مربوع معالا محمد الإختيار عليه م			ويناجز وترجاجا ألع	and the second secon	ى يە يەتى مەتىيە يەتىيە يەتىيە يەتەرىيە يەتەرىيە يەتەرىيە يەتەرىيە يەتەرىيە يەتەرىيە يەتەرىيە يەتەرىيە يەتەرىي 1	السلاريين بيدار
	t9 kHz 6 BW 1.				W 3.0 MHz				#Swe	Stop eep 7.000 s	3.500 GHz 6 (7000 pts
MSG							4	STATUS			







# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position T - Band 3 - Range 12000 to 18000 MHz

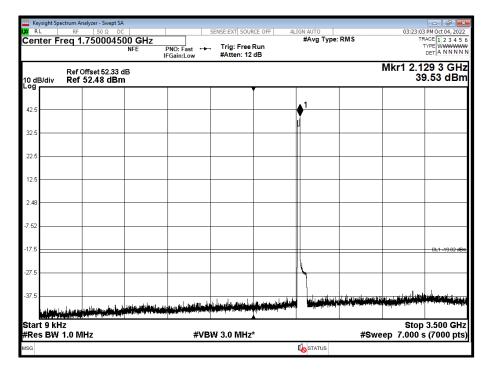


Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 15.0 MHz 15 kHz SCS - Channel Position T - Band 4 - Range 18000 to 22000 MHz

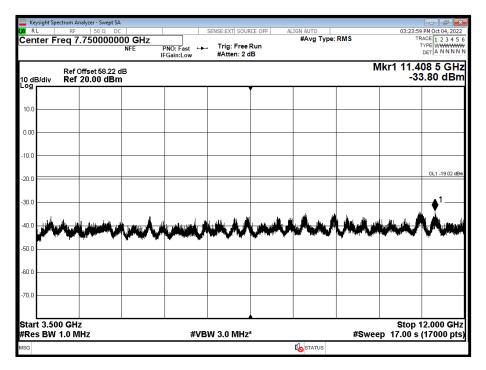
X RL	pectrum Analyzer - Swept S RF 50 Ω D Freq 20.000000	0000 GHz		SENSE:EXT SOUR		IGN AUTO #Avg Type:	RMS	TR	PM Oct 04, 2022
			NO: Fast ++ Gain:Low	#Atten: 26	dB				DETANNNN
I0 dB/div	Ref Offset 31.89 Ref 20.00 dBi						N	1kr1 19.1 -36	75 1 GHz 3.79 dBm
10.0									
0.00									
10.0									
20.0									DL1 -19.02 dBr
30.0		•	1						
40.0 ••••••••		an a			i minim providina i anna i de la compañía. Trainn a sua anna anna anna anna anna anna a				
50.0									
70.0									
									0.000.0
	000 GHz / 1.0 MHz		#VB	W 3.0 MHz	*		#Swe	ep 8.000 s	2.000 GHz 6 (8000 pts
SG						<b>I</b> STATUS			



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B - Band 1 - Range 0.009 to 3500 MHz



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B - Band 2 - Range 3500 to 12000 MHz

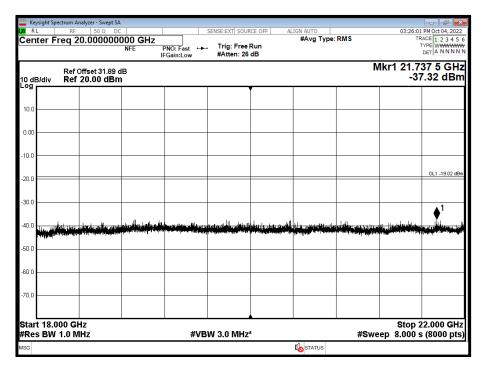




# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B - Band 3 - Range 12000 to 18000 MHz

🔜 Key: LXI R L		m Analyzer - Swept SA RF 50 Ω D0			SENSE:EXT SOUR		IGN AUTO		03:24:22	PM Oct 04, 2022
		15.000000	000 GHz				#Avg Type:	RMS	TR	ACE 1 2 3 4 5 6
			NFE F	NO: Fast ++- Gain:High	#Atten: 0 c					DETANNNNN
10 dB Log r		ef Offset 62.04 ( ef <b>20.00 dB</b> n						N		72 2 GHz 3.06 dBm
10.0										
0.00										
0.00										
-10.0										
-20.0										DL1 -19.02 dBm
-30.0				ь	'		uto .			
-40.0		الإندار والمحافظ	بنظان بالأنرية	alate data data data data data data data d	a da ante de la Canto de pro-	della die die fandikse ne. Proteinen gebruikse ne	اليونية المحمد المريكية. موريد والمحمد المريكية		اليونية المراجعة التي المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجع محمد مستقدمة المراجعة	الملكوم (كاندا والمأفقان ومركزة) محمد ويرود محمد المرور والتي
	and and a state									
-50.0										
-60.0										
-70.0 -										
Start	12.000	GHz				L			Stop 1	8.000 GHz
	BW 1.0			#VB	W 3.0 MHz	*		#Swee	p 12.00 s	(12000 pts)
MSG							<b>K</b> STATUS			

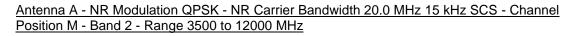
Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position B - Band 4 - Range 18000 to 22000 MHz

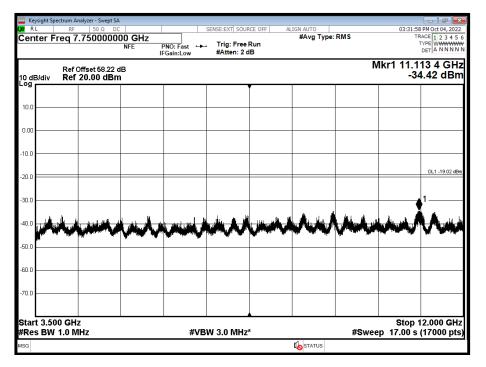




# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position M - Band 1 - Range 0.009 to 3500 MHz

			alyzer - Swept									- 6 -
Cen		RF		500 GHz		SENSE:EXT SOUR	RCE OFF AL		AUTO #Avg Type:	RMS	03:31:10 TR	PM Oct 04, 2022
Con		UY I	.750004	NFE	PNO: Fast ++ FGain:Low	. Trig: Free #Atten: 12			•		1	
10 dE Log	3/div		)ffset 52.33 51.36 dB								Mkr1 2.1 39	35 8 GHz 9.32 dBm
LUg									1			
41.4								•				
31.4												
21.4												
11.4												
1.36												
-8.64												
-18.6												DL1 -19.02 dBi
								Д				
-28.6								ľ				
-38.6	وبالأقد مشادونه	a sin satisfi	والمتراجع والمتركم و		والفرقية والمتلومة	l hann an antartar ha shelarin Marina da shekarar ya sh						
	t9 kH: sBW	z				W 3.0 MHz				#Swe	Stop ep 7.000 s	3.500 GHz (7000 pts
MSG								Ú,	STATUS			· · ·



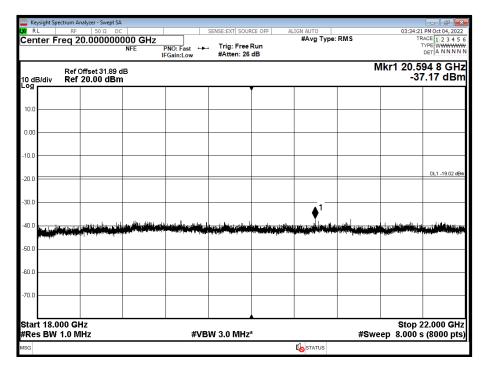




# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position M - Band 3 - Range 12000 to 18000 MHz

🛄 Key: IXI R L		Analyzer - Swept SA F 50 Ω DC			SENSE:EXT SOUR	RCE OFF AL	IGN AUTO		03:32:22	PM Oct 04, 2022
Cent	er Freq	15.000000	NFE F	NO: Fast 🔸	Trig: Free #Atten: 0 c		#Avg Type:	RMS	TF	ACE 1 2 3 4 5 6 TYPE WWWWWW DET A N N N N N
	Ba	f Offset 62.04 d		Gain:High	#Atten: 0 c	18		N	/lkr1 16.2	17 4 GHz
10 dB Log r		f 20.00 dBn		1		•		1	-32	2.33 dBm
10.0										
0.00										
-10.0										
										DL1 -19.02 dBm
-20.0								.1		
-30.0					u.h			<b>∲</b> '		
-40.0	المريد الألواد		والتلفي والتلقي		ىر يىللاردا ئۇماللى برىشىدىر خىقىمىر		الوالغ الغالمي وبالتاء		الله الانتخاب المريد التي يريد ال المريد المريد المريد المريد المريد المريد المريد المريد المريد الم	معمل إنطاقان المعر
-50.0	. un tradition of the second		1 1							
-30.0										
-60.0										
-70.0										
	12.000 C BW 1.0			#VB	W 3.0 MHz	*		#Swee		18.000 GHz (12000 pts)
MSG							STATUS		-	· · · · ·

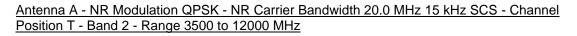
Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position M - Band 4 - Range 18000 to 22000 MHz

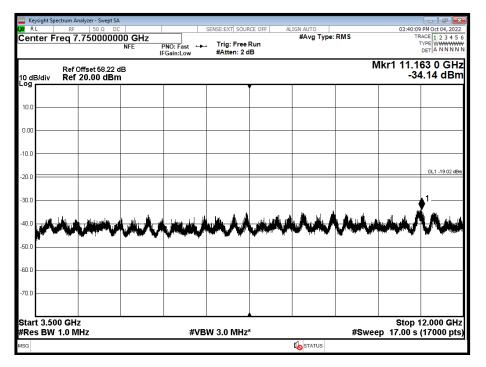




# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T - Band 1 - Range 0.009 to 3500 MHz

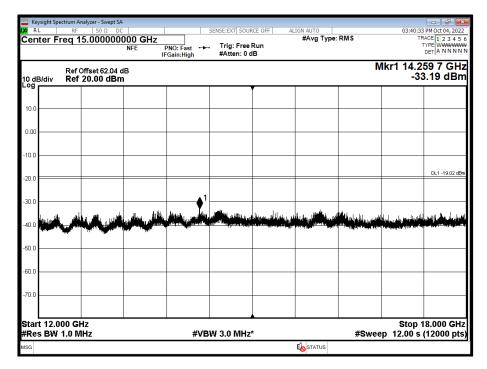
			alyzer - Swept									
(X/RL Cont		RF		500 GHz		SENSE:EXT SOUR	RCE OFF AL		AUTO #Avg Type:	RMS		PM Oct 04, 2022
Cent		eq i.	750004	NFE	PNO: Fast ++	. Trig: Free #Atten: 12						DET A N N N N
10 dB			ffset 52.33 5 <b>1.65 dB</b>								Mkr1 2.1 38	79 3 GHz 3.99 dBm
41.7								$\left  \right $	▶1			
31.7 -									1			
31.7												
21.7												
11.7												
11.7												
1.65												
-8.35												
-18.4								$\mid$				DL1 -19.02 dBm
-28.4								X				
								ľ				
-38.4	والمعالية المحالية	المراورين	litteridens, atte			n a har a line a hit dan da Marine ar gan ar pagada						
Start	9 kHz 8 BW 1	<u>. </u>		<u>' </u>		W 3.0 MHz	<b>^</b>	<u> </u>		#Swe	Stop ep 7.000 s	3.500 GHz (7000 pts)
MSG								4	STATUS		•	,



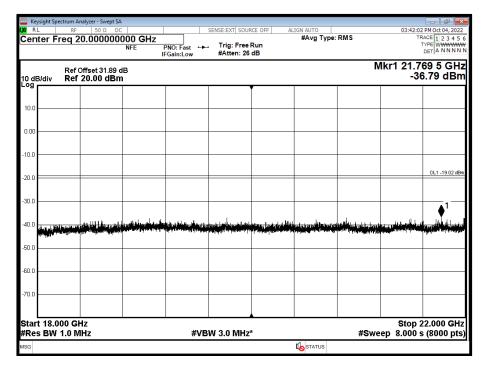




# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T - Band 3 - Range 12000 to 18000 MHz



# Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 20.0 MHz 15 kHz SCS - Channel Position T - Band 4 - Range 18000 to 22000 MHz



Limit FCC Part 27.53 (a - j) and RSS-139 Clause 6.6

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



# 2.5 RADIATED EMISSIONS

#### 2.5.1 Specification Reference

ISED RSS-GEN, Clause 6.3 Industry Canada RSS-139, Clause 5.6 FCC CFR 47 Part 2, Clause 2.1053

## 2.5.2 Date of Test and Modification State

10-October-2022 - Modification State 0

## 2.5.3 Test Equipment Used

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

## 2.5.4 Environmental Conditions

Ambient Temperature24.0°CRelative Humidity45.5%

## 2.5.5 Test Method

The test was performed in accordance with ANSI C63.26 Clause 5. The EUT was configured as defined in ANSI C63.26, clause 5.5.2.3.2.

The EUT was set up on a support replicating typical installation conditions at a height of 0.8 m above the reference ground plane for measurements below 1GHz, (see setup photos) within a semi-anechoic chamber on a remotely controlled turntable. Above 1 GHz, the height was increased to 1.5 m above the reference ground plane.

#### 2.5.6 Test Results

**Configuration 1** 

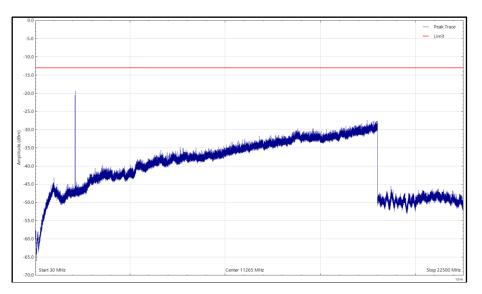
Maximum Output Power 47.78 dBm

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

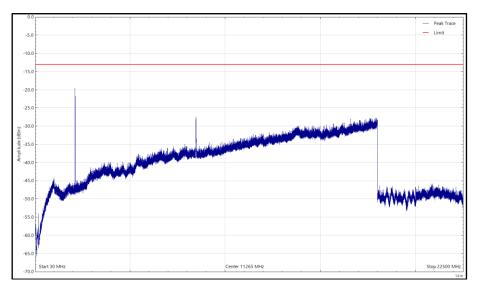
Bot - NR&NB-IoT - B66A, 2115MHz, 30 MHz to 22.5 GHz

\*No emissions found within 6 dB of the limit.





Bot - NR&NB-IoT - B66A, 2115MHz, 30 MHz to 22.5 GHz, Horizontal (Peak)



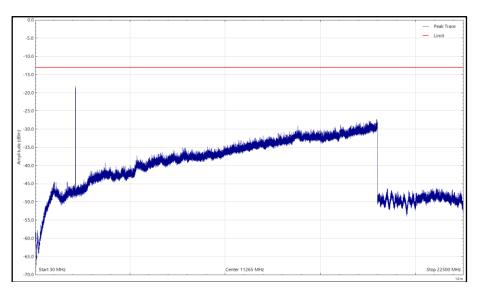
Bot - NR&NB-IoT - B66A, 2115MHz, 30 MHz to 22.5 GHz, Vertical (Peak)



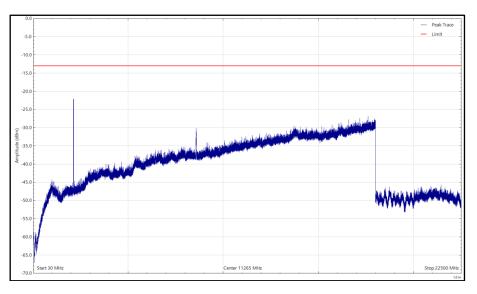
Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Mid - NR&NB-IoT - B66A, 2145MHz, 30 MHz to 22.5 GHz

\*No emissions found within 6 dB of the limit.



Mid - NR&NB-IoT - B66A, 2145MHz, 30 MHz to 22.5 GHz, Horizontal (Peak)



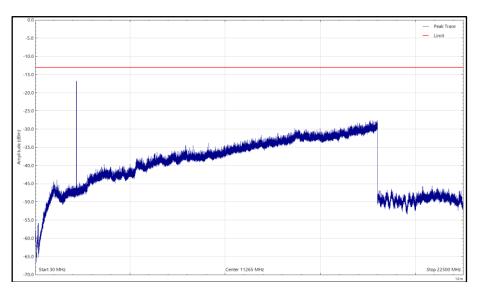
Mid - NR&NB-IoT - B66A, 2145MHz, 30 MHz to 22.5 GHz, Vertical (Peak)



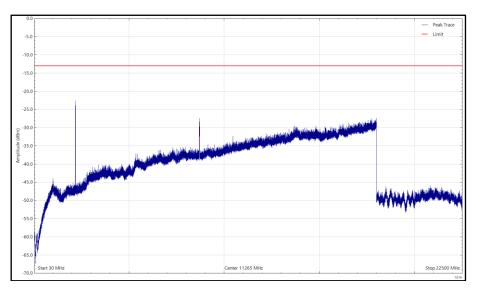
Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Top - NR&NB-IoT - B66A, 2175MHz, 30 MHz to 22.5 GHz

\*No emissions found within 6 dB of the limit.



Top - NR&NB-IoT - B66A, 2175MHz, 30 MHz to 22.5 GHz, Horizontal (Peak)



Top - NR&NB-IoT - B66A, 2175MHz, 30 MHz to 22.5 GHz, Vertical (Peak)

<u>Limit</u>



**SECTION 3** 

TEST EQUIPMENT USED



# 3.1 TEST EQUIPMENT USED

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

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Maximum Peak Output					
Hygrometer	PCE Instruments	PCE-THB-40	5475	12	25-Apr-2023
Frequency Standard	Spectracom	SecureSync 1200- 0408-0601	4393	6	01-Feb-2023
Analyser	Keysight	N9030A	4654	12	24-Nov-2022
Power Supply	Farnell	H60-25	1092	-	OP-MON
Multimeter	Fluke	177	3833	12	16-Dec-2022
Attenuator	Weinschel	48-20-43-LIM	5133	12	02-Dec-2022
Attenuator	Weinschel	48-30-43-LIM	5135	12	20-Aug-2023
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	24-Feb-2023
Calibration kit	Rohde & Schwarz	ZV-Z55	4368	12	24-Feb-2023
Occupied Bandwidth					
Hygrometer	PCE Instruments	PCE-THB-40	5475	12	25-Apr-2023
Frequency Standard	Spectracom	SecureSync 1200- 0408-0601	4393	6	01-Feb-2023
Analyser	Keysight	N9030A	4654	12	24-Nov-2022
Power Supply	Farnell	H60-25	1092	-	OP-MON
Multimeter	Fluke	177	3833	12	16-Dec-2022
Attenuator	Weinschel	48-20-43-LIM	5133	12	02-Dec-2022
Attenuator	Weinschel	48-30-43-LIM	5135	12	20-Aug-2023
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	24-Feb-2023
Calibration kit	Rohde & Schwarz	ZV-Z55	4368	12	24-Feb-2023
Band Edge	•		•	•	
Hygrometer	PCE Instruments	PCE-THB-40	5475	12	25-Apr-2023
Frequency Standard	Spectracom	SecureSync 1200- 0408-0601	4393	6	01-Feb-2023
Analyser	Keysight	N9030A	4654	12	24-Nov-2022
Power Supply	Farnell	H60-25	1092	-	OP-MON
Multimeter	Fluke	177	3833	12	16-Dec-2022
Attenuator	Weinschel	48-20-43-LIM	5133	12	02-Dec-2022
Attenuator	Weinschel	48-30-43-LIM	5135	12	20-Aug-2023
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	24-Feb-2023
Calibration kit	Rohde & Schwarz	ZV-Z55	4368	12	24-Feb-2023
Transmitter Spurious Er	nissions		•	•	•
Hygrometer	PCE Instruments	PCE-THB-40	5475	12	25-Apr-2023
Frequency Standard	Spectracom	SecureSync 1200- 0408-0601	4393	6	01-Feb-2023
Analyser	Keysight	N9030A	4654	12	24-Nov-2022



Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Power Supply	Farnell	H60-25	1092	-	OP-MON
Multimeter	Fluke	177	3833	12	16-Dec-2022
Attenuator	Weinschel	48-20-43-LIM	5133	12	02-Dec-2022
Attenuator	Weinschel	48-30-43-LIM	5135	12	20-Aug-2023
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	24-Feb-2023
Calibration kit	Rohde & Schwarz	ZV-Z55	4368	12	24-Feb-2023
Waveguide filter	Quasar	QWS20SB-UBR- UBR-50	5789	12	12-May-2023
WG20 Coaxial Adapter	Quasar	QWC20SB-UBR-K-F	5785	-	OP-MON
WG20 Coaxial Adapter	Quasar	QWC20SB-UBR-K-F	5786	-	OP-MON
Cable attenuator	Aralab	CSF6767C-C2S6500	5175	-	OP-MON
HPF	Wainwright	WHKX12-2580-3000- 18000-80SS	5547	12	11-May-2023
Radiated Emissions					
True RMS Multimeter	Fluke	79 Series III	411.00	12.00	13-Oct-2022
Power Supply (60V-50A)	Farnell	H 60/50	1056.00	0.00	TU
Screened Room (5)	Rainford	Rainford	1545.00	36.00	15-Apr-2024
Turntable Controller	Inn-Co GmbH	CO 1000	1606.00	0.00	TU
Hygromer	Rotronic	Hygropalm	2404.00	12.00	18-Jul-2023
Signal Analyser	Rohde & Schwarz	FSQ 26	3545.00	12.00	27-Apr-2023
Mast Controller	Maturo Gmbh	NCD	4810.00	0.00	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	4811.00	0.00	TU
Antenna (DRG 1- 10.5GHz)	Schwarzbeck	BBHA9120B	4848.00	12.00	28-May-2023
Cable (SMA to SMA, 2 m)	Junkosha	MWX221- 02000AMSAMS/A	5517.00	12.00	12-Apr-2023
Cable (N-Type to N- Type, 8 m)	Junkosha	MWX221- 08000NMSNMS/B	5520.00	12.00	24-Mar-2023
EMI Test Receiver	Rohde & Schwarz	ESW44	5527.00	12.00	28-Apr-2023
Cable (K Type 2m)	Junkosha	MWX241- 01000KMSKMS/B	5936.00	12.00	14-May-2023
TRILOG Super Broadband Test Antenna	Schwarzbeck	VULB 9168	5942.00	24.00	03-Feb-2024
Double Ridge Active Horn Antenna (18-40 GHz)	Com-Power	AHA-840	6189.00	24.00	02-Jun-2024
Attenuator 4dB	Pasternack	PE7074-4	6204.00	24.00	16-Jul-2024

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



# 3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	Frequency / Parameter	MU	
Conducted Maximum Peak Output Power	9 kHz to 40 GHz Amplitude	± 1.0 dB	
Conducted Emissions	9 kHz to 40 GHz Amplitude	± 3.5 dB	
	10 MHz Bandwidth		
Occupied Bandwidth	15 MHz Bandwidth	± 16.7 kHz	
	20 MHz Bandwidth		
Band Edge	< 3.6 GHz Amplitude	± 0.6 dB	
De dista d Oscaria da Esciencia da	30 MHz to 1 GHz	± 5.2 dB	
Radiated Spurious Emissions	1 GHz to 40 GHz	± 6.3 dB	

## Measurement Uncertainty Decision Rule

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

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



# 3.3 MEASUREMENT SOFTWARE USED

List of measurement software versions used for testing.

Instrument/Software	Manufacturer	Type No.	TE No.	Software Version
PXA Signal Analyser	Keysight	N9030A	4654	A 22.08
HP-VEE Software	TUV SUD	HP_VEE	N/A	V3.29
eMx	TUV SUD	N/A	N/A	V3.1.4



**SECTION 5** 

# 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 1							
Product	Product No	R-State	Serial No				
Radio 4480	KRC 161 844/1	R2B	E23C418848				
Software Version:	CXP9013268/15	Revision:	R89MU15				