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# Report On

FCC and ISED Testing of the Ericsson Remote Radio Unit Radio 4480 44B71 4485A C, KRC 161 922/1, NR (700 MHz) Base Station in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 27, ISED RSS-GEN and ISED RSS-130

COMMERCIAL-IN-CONFIDENCE

FCC: TA8AKRC161922 IC: 287AB-AS161922

PREPARED BY

APPROVED BY

DATED

Maggie Whiting Key Account Manager

Steve Scarfe Authorised Signatory 02 November 2022

Document 75955712 Report 09 Issue 1

November-2022



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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 4480 44B71 4485A C - KRC 161 922/1
IC Model Name	AS161922
Serial Number(s)	E23C854217
Software Version	CXP9013268/15-R92BB
Hardware Version	R1B
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 ISED RSS-130: Issue 2: 2019
Test Plan	MR7602-SP-2E _Spectrum Sharing with NB-IoT 11 Radios FCC and ISED_Rev-F
Start of Test	26-September-2022
Finish of Test	26-September-2022
Name of Engineer(s)	Neil Rousell
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 2ISED RSS-130: Issue 2: 2019 The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

Neil Rousell



### 1.2 BRIEF SUMMARY OF RESULTS

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

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

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

Testing in this Report covers only B85A NR (700 MHz)

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

Document 75955712 Report 10 - Radio 4480 44B71 4485A C - NR + NB-IoT



## 1.3 TEST RATIONALE

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



## 1.4 CONFIGURATION DESCRIPTION

Config	Carrier configurations	Carriers	Pout (W)	Position	BW	Freq	NR-ARFCN
	NR in NR/ESS Setup (NB IoT IB) QPSK	1	40	В	5	730.5	146100
1	NR in NR/ESS Setup (NB IoT IB) QPSK	1	40	Т	5	742.5	148500
	NR in NR/ESS Setup (NB IoT IB) QPSK	1	40	В	10	733	146600
	NR in NR/ESS Setup (NB IoT IB) QPSK	1	40	Т	10	740	148000
	NR in NR/ESS Setup (NB IoT IB) QPSK	1	40	В	15	735.5	147100
	NR in NR/ESS Setup (NB IoT IB) QPSK	1	40	Т	15	737.5	147500



## 1.5 DECLARATION OF BUILD STATUS

Equipment Description							
Technical Description: (Please provide a brief description of the intence equipment including the technologies the produ		Multi-standard remote rad 44B85A C, 4RX/ 4TX	io unit Radio 4480 44B71				
Manufacturer:		Ericsson AB					
Model:		Radio 4480 44B71 44B85	AC				
Part Number:	KRC 161 922/1						
Hardware Version:	R1B						
Software Version:		CXP9013268/15-R92BB					
FCC ID of the product under test		TA8AKRC161922					
IC ID of the product under test		287AB-AS161922					
Intentional Radiators		I					
Frequency Range (MHz to MHz) B71 : LTE ,NR, NB-IoT SA, NB-IoT(IB, GB):	TX (DL): 617-652MHz	BW: 35MHz					
, NK, ND-101 3A, ND-101 (IB, GB).	RX (UL): 663-698MHz	BW: 35MHz					
Frequency Range (MHz to MHz) B85A: LTE ,NR, NB-IoT SA, NB-IoT(IB, GB);	TX (DL): 728- 745MHz	BW: 17MHz					
,NR, NB-IoT SA, NB-IoT(IB, GB);	RX (UL): 698-715MHz	BW: 17MHz					
Conducted Declared Output Power (dBm)	B85A: 46.0 Ma	6.0 Max output power per Carrier					
	B71: 47.8 Max	output power per Carrier					
	BW	PWR/Carrier(Max)	PWR/Carrier(Max)				
RAT SC carrier Power (Max) :Band 71		LTE	NR				
	5MHz	40W	40W				
	10MHz	60 W	60 W				
	15MHz	60 W	60 W				
	20MHz	60 W	60 W				
	BW	PWR/Carrier(Max) LTE	PWR/Carrier(Max) NR				
RAT SC carrier Power (Max) :Band 85A	5MHz	40W	40W				
	10MHz	40 W	40 W				
	15MHz	х	40 W				
RAT SC carrier Power (Max) :NB-IoT SA	200kHz	20 W					
Radio Configuration:	4RX / 4TX						
Duplex mode:	FDD						
	Single RAT :LT	Single RAT :LTE, NR, NB-IoT (IB, GB, SA)					
Radio Access Technology, RAT(s):	Multi RAT : LTI	E+ NR; LTE+ NB-IoT SA; N	IR +NB-IoT SA				
	LTE+ NR + NB	TE+ NR + NB-IoT SA;					
	NR: 5MHz, 10	MHz, 15MHz					
Supported Bandwidth(s) (MHz)B85A:	LTE:5MHz, 10	MHz					
	NB-IoT(SA): 20	00 kHz					
	NR: 5MHz, 10	MHz, 15MHz, 20MHz					
Supported Bandwidth(s) (MHz) B71:	LTE:5MHz, 10	MHz, 15MHz, 20MHz					
	NB-IoT(SA): 20	00 kHz					



Antenna Gain (dBi)	Maximum antenna system gain (including cable loss), GANT (dBi) for the tested configurations to comply with maximum radiated output power in SRSP-518 calculated using measured and summed PSD from all 4 Ports						
Antenna Impedance(Ω)	50						
Supported modulation scheme, LTE:	QPSK, 16QAM, 64QAM, 256QAM						
Supported modulation scheme, NR:	QPSK, 16QAM, 64QAM, 256QAM						
Supported modulation scheme, NB-IoT :	QPSK						
NR SCS	15kHz						
RF power Tolerance:	.+0.6/-2.0 dB						
Frequency Tolerance:	±0.05 ppm						
Carrier Aggregation, CA	Supported						
Maximum supported number of DL NR carrier per port	6/band in B71 and 5/band in 85A						
Maximum supported number of DL LTE carrier per port	6/band in B71 and 5/band in 85A						
Maximum supported number of DL NB-IoT carrier per port	2/Band						
	Without optional Fan: 80W						
Nominal output power per Antenna Port /Multi RAT - Multi carrier	With optional Fan: 100W						
Supported transmission modes:	4X4 MIMO						
Unintentional Radiators							
Highest frequency generated or used in the dev tunes	vice or on which the device operates or	Up to 10.1 Gbit/s					
Lowest frequency generated or used in the dev tunes if <30MHz	ice or on which the device operates or						
Class A Digital Device (Use in commercial, inde	ustrial or business environment)						
Class B Digital Device (Use in residential enviro	onment)	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:	38A						
Temperature	1						
Minimum temperature:	-40°C						
Maximum temperature:	55°C						
I hereby declare that I am entitled to sign on be and complete.	half of the manufacturer and that the informat	ion supplied is correct					
Name:	Afrah Ali sadiq						
Position held:	Regulatory Approval Engineer						
Email address:	Afrah.ali.sadiq@ericsso	on.com					
Telephone number:	.+46724650796						
Date:	01-Nov-2022						

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



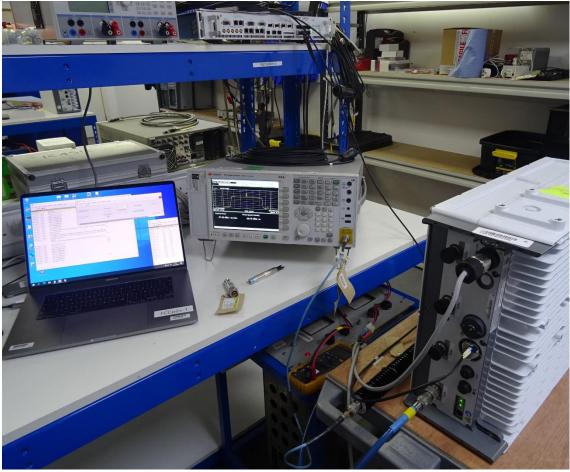
#### 1.6 **PRODUCT INFORMATION**

#### **1.6.1** Technical Description

The Equipment Under Test (EUT) Radio 4480 44B71 4485A C - KRC 161 922/1 is an Ericsson AB Radio Unit working in the public mobile service Band 71 and B85A bands which provide communication connections to Band 71 and Band 85A networks.

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.

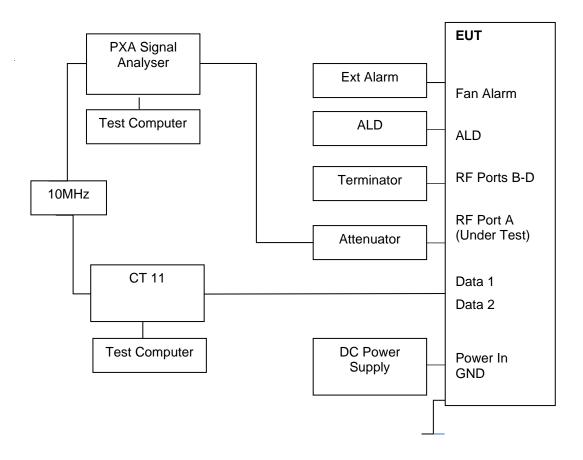


Equipment Under Test



#### 1.7 TEST SETUP

Conducted Test Set Up





#### 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

#### 1.9 DEVIATION FROM THE STANDARD

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

#### 1.10 MODIFICATION RECORD

No modifications were made to the EUT during testing.



#### 1.11 ADDITIONAL INFORMATION

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

FCC: TA8AKRC161922 IC: 287AB-AS161922

Ericsson will limit this product through the software from operating across the whole of Band 85, it will be limited to (728-745MHz).

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.

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-130, Clause 4.6 FCC CFR 47 Part 2, Clause 2.1046

#### 2.1.2 Date of Test and Modification State

26-September-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 Temperature22.0°CRelative Humidity52.2%

#### 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 46.00 dBm

			Peak to Average Ratio (PAR) / Output Power / PSD									
				Channel Position B								
Antenna	NR Modulation						Average Power/PSD		al Power rt A + B	GANT* Limit 62.15dB	GANT* Limit 65.15dB	
			. ,	dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi			
А	QPSK	5.0 MHz 15 kHz SCS	7.46	45.60	39.22	51.62	45.24	16.91	19.91			
А	QPSK	10.0 MHz 15 kHz SCS	-	45.68	-	51.70	-	-	-			
А	QPSK	15.0 MHz 15 kHz SCS	-	45.61	-	51.63	-	-	-			

#### Remarks

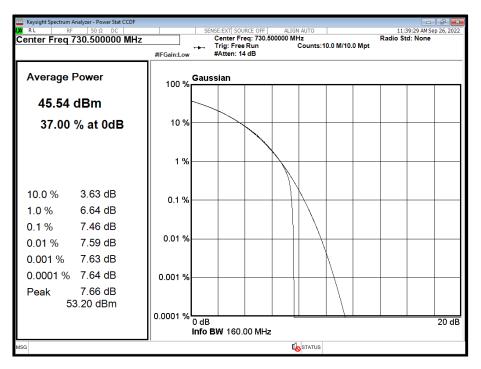
Calculations: Total power = Measured Output Power (port A, worst case) + 10log (NANT)

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-518, calculated using measured and summed PSD for both ports.



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



**Configuration 1** 

Maximum Output Power 46.00 dBm

	na NR NR Carrier Modulation Bandwidth		Peak to Average Ratio (PAR) / Output Power / PSD Channel Position T								
Antenna			PAR (dB)	Average Power/PSD		Total Power Port A + B		GANT* Limit 62.15dB	GANT* Limit 65.15dB		
		. ,	dBm	dBm/MHz	dBm	dBm/MHz	dBi	dBi			
А	QPSK	5.0 MHz 15 kHz SCS	7.47	45.70	39.32	51.72	45.34	16.81	19.81		
А	QPSK	10.0 MHz 15 kHz SCS	-	45.74	-	51.76	-	-	-		
А	QPSK	15.0 MHz 15 kHz SCS	-	45.58	-	51.60	-	-	-		

#### Remarks

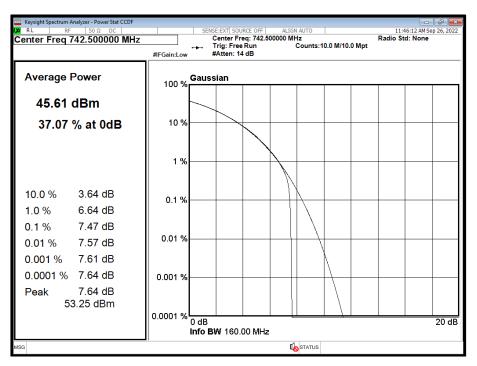
Calculations: Total power = Measured Output Power (port A, worst case) + 10log (NANT)

#### 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-518, calculated using measured and summed PSD for both ports.



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 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 FCC CFR 47 Part 2, Clause 2.1049

#### 2.2.2 Date of Test and Modification State

26-September-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 Temperature	22.0°C
Relative Humidity	52.2%

#### 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 46.00 dBm



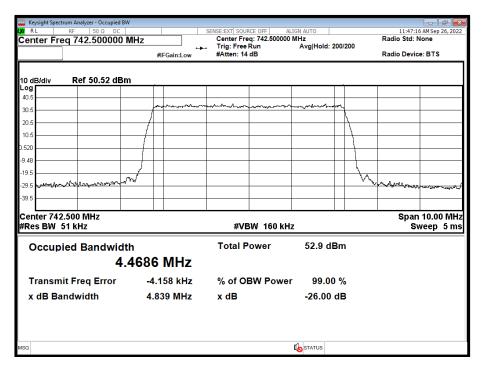
			Result (kHz)								
Antenna	NR	NR Carrier	Channel I	Position B	Channel F	Position M	Channel Position T				
Antenna	Modulation	Bandwidth	Occupied	-26 dB	Occupied	-26 dB	Occupied	-26 dB			
			Bandwidth	Bandwidth	Bandwidth	Bandwidth	Bandwidth	Bandwidth			
А	QPSK	5.0 MHz 15 kHz SCS	4469.59	4831.07	-	-	4468.58	4839.27			
А	QPSK	10.0 MHz 15 kHz SCS	9291.01	9779.07	-	-	9294.89	9769.31			
А	QPSK	15.0 MHz 15 kHz SCS	14143.52	14756.99	-	-	14144.34	14810.38			



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

Keysight Spectrum Analyzer - Occupied BW		SENSE:EXT SOURCE OFF	ALIGN AUTO	11:40:17 AM Sep 26, 2022		
Center Freq 730.500000 N	<b>1</b> Hz	Center Freq: 730.50000	0 MHz	Radio Std: None		
	#IFGain:Low	→ Trig: Free Run #Atten: 14 dB	Avg Hold: 200/200	Radio Device: BTS		
10 dB/div Ref 50.50 dBm						
Log	· · · · · · · · · · · · · · · · · · ·					
30.5	harmon	- man man man man	man			
20.5	/					
10.5	1					
1.500						
9.50						
-19.5	. /					
29.5 mbrig and particular	Nagl		V	Manager - where a second		
39.5						
Center 730.500 MHz				Span 10.00 MH		
#Res BW 51 kHz		#VBW 160 kH	1Z	Sweep 5 m		
Occupied Bandwidt	h	Total Power	52.8 dBm			
4.4	4696 MHz					
Transmit Freq Error	-3.554 kHz	% of OBW Powe	er 99.00 %			
x dB Bandwidth	4.831 MHz	x dB	-26.00 dB			
			4			
SG			STATUS			

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

Keysight Spectrum Analyzer - Occupied BW			IGN AUTO	11:52:01 AM Sep 26, 2022
Center Freq 733.000000 N	IHz	Center Freq: 733.000000	MHz Avg Hold: 200/200	Radio Std: None
	#IFGain:Low	#Atten: 14 dB		Radio Device: BTS
10 dB/div Ref 51.28 dBm				
Log				
31.3	mannen	monarchight	mannahan	
21.3	f			
11.3				
1.28				
8.72				
18.7				
28.7 marrow marrow marrow	A <sup>rd</sup>			V.M. ware marked
38.7				
Center 733.00 MHz #Res BW 100 kHz		#VBW 300 kHz	,	Span 20.00 MH Sweep 1.933 m
			-	
Occupied Bandwidth		Total Power	53.6 dBm	
9.2	2910 MHz			
Transmit Freq Error	-2.952 kHz	% of OBW Power	99.00 %	
x dB Bandwidth	9.779 MHz	x dB	-26.00 dB	
			1	
SG				

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

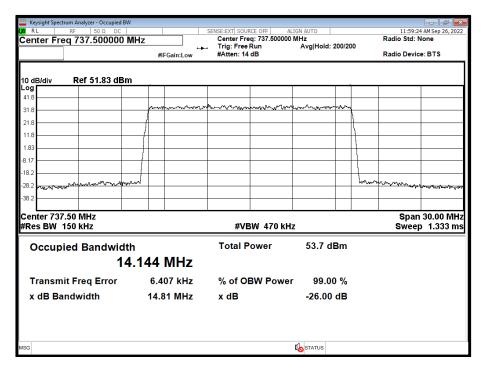
Keysight Spectrum Analyzer - Occupie									- ¢ 🛃
RL RF 50 Ω D enter Freg 740.00000		SE	ENSE:EXT SOUR Center Fre	RCE OFF AL c: 740.000000	IGN AUTO			11:54:3 Radio Std: 1	2 AM Sep 26, 2022 <b>Jone</b>
sinci 1100 740.00000		ain:Low	Trig: Free #Atten: 14	Run	Avg Hold: 2	200/20	0	Radio Devid	e: BTS
	#110	am.cow							
D-5 54 00 -									
dB/div Ref 51.38 d	Bm								
1.4									
1.4	winne	murhanth	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Mr. Marana	ᡐᡎᠧᡎᠬᠰᠬᢌ᠆ᡥ᠆	~~			
1.4	+ 1+								
.4							\		
38	- / -						1		
62							1		
3.6							1		
3.6 mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	mon						h no	water and the second	www.www.a
8.6									
enter 740.00 MHz Res BW 100 kHz			40./E	300 kHz	_				20.00 MH
			#VE	544 300 KH	<u> </u>			Swee	) 1.955 ms
Occupied Bandwi	idth		Total P	ower	53.5 di	Bm			
	9.2949 N	1Hz							
Transmit Freq Error	-6.63	1 kHz	% of O	BW Power	99.00	%			
x dB Bandwidth	9.769	MHz	x dB		-26.00	dB			
					<b>STATUS</b>				



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

Keysight Spectrum Analyzer - Occupied I	3W	SENSE:EXT SOURCE OFF	LIGN AUTO	다. 6과 💽 11:57:32 AM Sep 26, 2022		
Center Freq 735.500000		Center Freq: 735.500000		Radio Std: None		
	#IFGain:Low	#Atten: 14 dB	Avginoid: 200/200	Radio Device: BTS		
10 dB/div  Ref 51.81 dB    Log		A-m-dampa				
-28.2	marne			marcheron and a construction of the second		
Center 735.50 MHz #Res BW 150 kHz		#VBW 470 kH	z	Span 30.00 MH: Sweep 1.333 m		
Occupied Bandwid	th 4.144 MHz	Total Power	53.6 dBm			
Transmit Freq Error	4.565 kHz	% of OBW Powe	r 99.00 %			
x dB Bandwidth	14.76 MHz	x dB	-26.00 dB			
MSG			STATUS			

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





### 2.3 BAND EDGE

#### 2.3.1 Specification Reference

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

#### 2.3.2 Date of Test and Modification State

26-September-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 Temperature	22.0°C
Relative Humidity	52.2%

#### 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

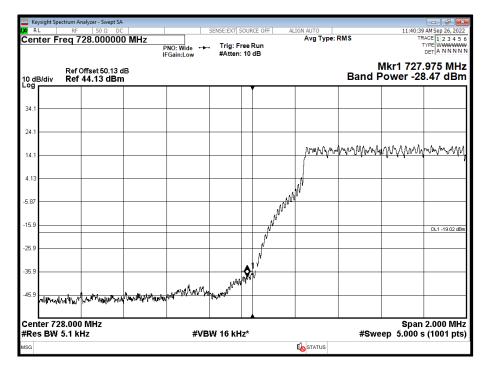
Configuration 1

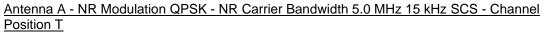
Maximum Output Power 46.00 dBm

Antenna	NR Modulation	NR Carrier Bandwidth	Band Edge (MHz)			
		NR Camer Bandwidth	Channel Position B	Channel Position T		
A	QPSK	5.0 MHz 15 kHz SCS	730.5	742.5		
А	QPSK	10.0 MHz 15 kHz SCS	733.0	740.0		
A	QPSK	15.0 MHz 15 kHz SCS	735.5	737.5		



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



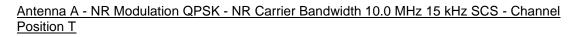


		PNO: Wide ↔ IFGain:Low	. Trig: Free #Atten: 10					DETANNN
Ref Offset 6 dB/div Ref 44.18							Mkr1 746. -37	058 MH 7.55 dBr
4.2								
4.2								
4.2								
18								
82								
5.8								DL1 -19.02 dB
	4.m.e			<b>▲</b> 1				
5.8	danan daga farka araka ya	r all thread is a survival	ht.	anterial manufactures	to one your productions	aren <b>a</b> ren den ez	หารเราจะรุกาสตางรางส <sub>าวเค</sub>	รร <sub>ั</sub> รงไปไปไรราชการสุ
enter 746.000 MHz							Snan	2.000 MH



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

	ectrum Analyzer - Swept SA								
Center F	RF 50 Ω DC req 728.000000	MHz		ISE:EXT SOUR		IGN AUTO Avg Type: F	RMS	TR	AM Sep 26, 2022 ACE 1 2 3 4 5
			Wide ↔ n:Low	Trig: Free #Atten: 12					DET A NNNN
	Ref Offset 50.19 d							Mkr1 727 Power -33	
10 dB/div <sup>Log</sup>	Ref 46.19 dBm						Danur	- 0wei -50	
36.2									
26.2				_					
16.2						~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		*******
6.19									
						<i>\</i>			
-3.81					~	مم			
-13.8				_	می مر می مر				
-23.8									DL1 -19.02 dB
-23.0					1				
-33.8					1				
-43.8					ŕ				
-40.0 1011-102	gh.m. plann	Later and Strategic Strate	JAN BURNAR MU	eren frederik i					
	28.000 MHz							Span	2.000 MH
#Res BW			#VBW	30 kHz*			#Swe	ep 5.000 s	
MSG						<b>I</b> STATUS			



RL	RF 50 Ω DC <b>req 746.000000 MF</b>	z	SENSE:EXT  SOURCE OFF	ALIGN AUTO Avg Type: RMS		45 AM Sep 26, 202 TRACE 1 2 3 4 5 TYPE WWWWW
		PNO: Wide ↔ IFGain:Low	#Atten: 12 dB			DETANNNN
0 dB/div	Ref Offset 50.17 dB Ref 46.17 dBm				Mkr1 74	6.032 MH: 35.93 dBn
36.2						
26.2						
16.2						
6.17						
.83						
3.8						DL1 -19.02 dB
13.8			<b></b> 1			
13.8	man and a second second second		and the state of t	***1ml*********************************		
	46.000 MHz 100 kHz	#VE	300 kHz*		Spa Sweep 5.000#	n 2.000 MH: s (1001 pts
SG				STATUS		



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

	ectrum Analyzer - Swept SA								
RL	RF 50 Ω DC		SEN	NSE:EXT SOUR	AL	IGN AUTO Avg Type: F	MC		2 AM Sep 26, 202
Senter F	req 728.000000	PNO: W	ide 🔸	Trig: Free #Atten: 12		Avg Type: H	CIVI S		TYPE WWWW DET A NNNN
		IFGain:L	.ow	#Atten: 12	ub			Mkr1 727	,
10 dB/div	Ref Offset 50.14 dB Ref 46.14 dBm							ower -3	
36.1									
26.1									
16.1						ſ		w~~~	$\sim \sim \sim \sim$
6.14									
						/			
3.86									
13.9					,				
									DL1 -19.02 dE
23.9									
33.9					/				
					1				
43.9 Northan	and the second and the second	algerry water piper processing	A property	New York /					
enter 72	28.000 MHz							Snan	2.000 MH
Res BW			#VBW	47 kHz*			#Swe	ep 5.000	s (1001 pt
SG						<b>I</b> STATUS			

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

RL	ectrum Analyzer - Swept SA RF 50 Ω DC		SENSE:EXT SOURCE OFF	ALIGN AUTO	11:	59:38 AM Sep 26, 2022
Center F	req 746.000000	MHz PNO: Wide ↔ IFGain:Low		Avg Type: RM	15	TYPE WWWWW DET A N N N N
0 dB/div	Ref Offset 50.17 dB Ref 42.17 dBm				Mkr1 7	46.362 MHz -35.01 dBm
32.2						
22.2						
12.2						
2.17						
17.83						DL1 -19.02 dBr
27.8						UC1-19.0200h
37.8			**************************************	••••••••••••••••••••••••••••••••••••••	warman and a second and a second and a second and a second a secon	****
47.8						
Center 74 Res BW	6.000 MHz 150 kHz	#VE	3W 470 kHz*		Sp #Sweep 5.00	oan 2.000 MHz 00 s (1001 pts
SG				STATUS		

Limit -13 dBm



#### 2.4 TRANSMITTER SPURIOUS EMISSIONS

#### 2.4.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.53 ISED RSS-130, Clause 4.7 FCC CFR 47 Part 2, Clause 2.1051

#### 2.4.2 Date of Test and Modification State

26-September-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 Temperature22.0°CRelative Humidity52.2%

#### 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** 

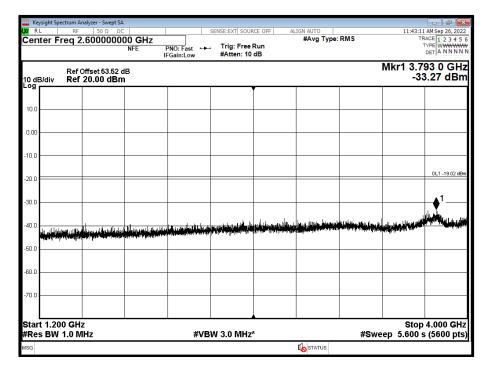
Maximum Output Power 46.00 dBm



#### Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B - Band 1.00 - Range 0.009 to 1200 MHz

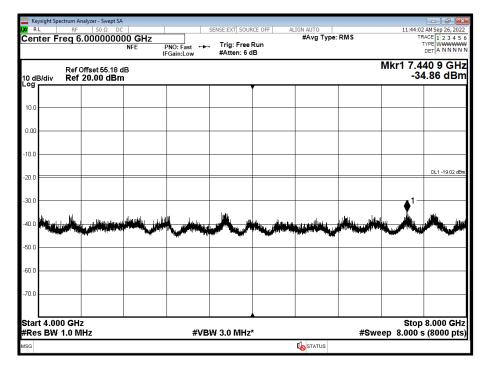
		nalyzer - Swept SA									
KI RL	RF Frog 6	50 Ω DC			SENSE:EXT SOUR	CE OFF AL		AUTO Avg Type:	RMS		AM Sep 26, 2022
Center	rieq o	00.00450	NFE F	NO: Fast ++	. Trig: Free #Atten: 10						
10 dB/div		Dffset 50.62 o 50.62 dBm								Mkr1 7 39	31.3 MHz 9.88 dBm
LUg							<b>A</b> 1	1			
40.6							7				
30.6											
20.6											
10.6											
0.620											
-9.38											
-19.4											DL1 -19.02 dB
-29.4							l				
-39.4											
	يؤار وحاوز ليغر	مالى بارر والسرار بين للأوري	والمعاصر المساحلة أو	فاستعال فالتلاسط	haddhannailtea	with the subject of the state		-	whenter	(mining in the second	www.alterlife
Start 9 k #Res BW	Hz				W 3.0 MHz				#Swe	Stop 1 ep 2.400 s	.2000 GHz (2400 pts
MSG							4	STATUS		•	<u> </u>

Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B - Band 2.00 - Range 1200 to 4000 MHz





#### Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position B - Band 3.00 - Range 4000 to 8000 MHz



Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T - Band 1 - Range 0.009 to 1200 MHz

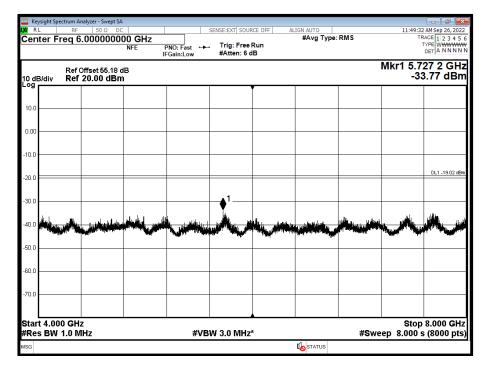
Center F	req 600.0	04500 MHz	PNO: Fast	Trig: Free #Atten: 10	#	Avg Type:	RMS	TF	TYPE WWWWW DET A NNNN
0 dB/div	Ref Offset Ref 50.6								41.8 MH: 9.92 dBn
40.6						1			
30.6					f				
20.6									
10.6					_				
.620									
9.38									
19.4									DL1 -19.02 dBr
29.4					ſ				
					ſ				
39.4						hi si	ւսվումեւս	المعالية والمعالية الم	المحمد المحمد
tart 9 k		i meletiki katelaisi	ين الان المراجعية ال #\/B	W 3.0 MHz			uniter the second		1.2000 GHz



#### Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T - Band 2 - Range 1200 to 4000 MHz

	Keysight Spectrum Analyzer - Swept SA										
IXI RI		RF	50 Ω DC			SENSE:EXT SOUR	ALCE OFF AL	IGN AUTO #Avg Type:	DMS		AM Sep 26, 2022
Cen	ter Fre	eq 2.0	6000000	NFE F	NO: Fast 🔸	. Trig: Free	Run	#Avg Type.	RWS		TYPE WWWWWW
					Gain:Low	#Atten: 10					DETANNNN
										Mkr1 3 7	69 0 GHz
10 dE			fset 53.52 d 0.00 dBm							-33	3.41 dBm
Log		Kel Z	0.00 UBII								
10.0											
10.0											
0.00											
-10.0											
-20.0											DL1 -19.02 dBm
-30.0											<b>▲</b> 1
-30.0											
								للم استخذا المريد .	alle fet the set of the	متعادر ال	الأمدر وزور برا الأثانية
-40.0	اسادة علامة	يتأليك ورا	والمطالب المالية ومستقرأ	n İ. Antonis (dahi)	ali ya walio wa shi			a service a			
	A STREET, STREET, STREET, ST	harden ges	طاري يترابعك تكاطره	alasheatan.	al <b>a distribute</b> a consecutive			-10			
-50.0											
-60.0											
-70.0											
-70.0											
Star	t 1.200	GHz								Stop	4.000 GHz
	s BW 1.		z		#VB	W 3.0 MHz	*		#Swe	ep 5.600 s	s (5600 pts)
MSG								<b>I</b> STATUS			, ···· p·••
mod								Norw103			

#### Antenna A - NR Modulation QPSK - NR Carrier Bandwidth 5.0 MHz 15 kHz SCS - Channel Position T - Band 3 - Range 4000 to 8000 MHz



#### Limit 4.7.1

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



**SECTION 3** 

TEST EQUIPMENT USED



## 3.1 TEST EQUIPMENT USED

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

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Maximum Peak Output	Power and Peak to Ave	rage Ratio - Conducted			
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		1			1
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
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
HPF	Mini-Circuits	NHP 1000+	5260	12	20-Aug-2023

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	± 16.7 kHz	
Occupied Bandwidth	15 MHz Bandwidth		
	20 MHz Bandwidth		
Band Edge	< 3.6 GHz Amplitude	± 0.6 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



**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 161 922/1	R1B	E23C854217				
Software Version:	CXP9013268/15	Revision:	R92BB				