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# Report On

FCC and ISED Testing of the

Ericsson Remote Radio Unit LTE+NB-IoT, NR, LTE + NR, LTE + WCDMA KRY 901 386/1, RD 4442 B25B66A (2100 MHz), with compatible Main Unit in a Base Station configuration 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 ID: TA8AKRY901386-1 IC: 287AB-AS9013861 FCC ID: TA8AKRY901404-1 IC: 287AB-AS9014041

PREPARED BY

Latades

APPROVED BY #D Drysdale

DATED

Mar. 18th 2021

Authorised Signatory

Document 7169009108.1 Report 02 Issue 1

March 2021



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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	RD 4442 B25B66A
IC Model Name	KRY 901 386/1
Serial Number(s)	TD3T308261 (for RD 4442 B25B66A)
Software Version	R79JC
Hardware Version	RIB
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2019 FCC CFR 47 Part 27: 2019 ISED RSS-GEN: Issue 5: March 2019 Amendment 1 Industry Canada RSS-139: Issue 3: 2015
Test Plan	RD 4442 B25B66A_RA_testplan_NR_LTE(NBIOT)_WCDMA_Revised
Start of Test	29 January 2021
Finish of Test	30 January 2021
Name of Engineer(s)	Glen Westwell
Related Document(s)	KDB 971168 D01 v02r02 KDB 662911 D01 v02r01

### ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate compliance with FCC CFR 47 Part 2: 2019, FCC CFR 47 Part 27: 2019, ISED RSS-GEN: Issue 5: March 2019 Amendment 1, Industry Canada RSS-139: Issue 3: 2015. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

e littal

Glen Westwell



# 1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 27, ISED RSS-GEN and Industry Canada RSS-139 is shown below.

	Specificati	on Clause				
Section	FCC CFR 47 Part 2	FCC CFR 47 Part 27	RSS- GEN	RSS-139	Test Description	Result
2.1	2.1046	27.50	-	6.4	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 (h)	-	6.6	Band Edge	Pass
2.4	2.1051	27.53 (h)	6.13/7.4	6.6	Transceiver Spurious Emissions	Pass



# 1.3 CONFIGURATION DESCRIPTION

	Configuration A								
RAT N0. Of		Carrier	Carrier Freq	Carrier Frequency Configuration (MHz)					
	Carriers	Bandwidth	Bottom	Middle	Тор				
LTE + NB-loT		10 MHz	2115.0	2145.0	2175.0				
	1	15 MHz	2117.5	2145.0	2172.5				
		20 MHz	2120.0	2145.0	2170.0				
		5 MHz	2112.5	2145.0	2177.5				
NR	1	10 MHz	2115.0	2145.0	2175.0				
	I	15 MHz	2117.5	2145.0	2172.5				
		20 MHz	2120.0	2145.0	2170.0				

	Configuration B							
RAT		Carrier	Carrie	er Frequency Configuration	(MHz)			
KAI		Bandwidth	Bottom	Middle	Тор			
LTE		No. of	2112.5+2117.5+2122.5	2132.5+2137.5+2142.5	2162.5+2167.5+2172.5			
NR LTE+NR	<u>TE+NR</u> _TE10 + 6	5 MHz	+2127.5+2132.5+2137.5	+2147.5+2152.5+2157.5	+2177.5+2182.5+2187.5			
2LTE10 +		-	2115.0+2125.0+2132.5	2130.0+2140.0+2147.5	2145.0+2155.0+2162.5			
4WCDMA5		10+5 MHz	+2137.5+2142.5+2147.5	+2152.5+2157.5+2162.5	+2167.5+2172.5+2177.5			



# 1.4 DECLARATION OF BUILD STATUS

	MAIN EUT
MANUFACTURING DESCRIPTION	Radio Dot
MANUFACTURER	Ericsson
ТҮРЕ	Remote Radio Base Station
PART NUMBER	RD 4442 B25B66A:       KRY 901 386/1         RD 2243 B25:       KRY 901 402/1         RD 2243 B66A:       KRY 901 404/1
SERIAL NUMBER	TD3T308261 (for RD 4442 B25B66A)
HARDWARE VERSION	R1B
SOFTWARE VERSION	R79JC
TRANSMITTER OPERATING RANGE	B25         1930 – 1995 MHz           B66A         2110 – 2180 MHz
RECEIVER OPERATING RANGE	B25         1850 – 1915 MHz           B66A         1710 – 1780 MHz
COUNTRY OF ORIGIN	China
INTERMEDIATE FREQUENCIES	DL: 110 – 150MHz, UL: 40 – 80MHz
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)	WCDMA:         5M00F9W           LTE:         5M00W7D, 10M0W7D, 15M0W7D, 20M0W7D           NBIoT Guardband:         10M0W7D, 15M0W7D, 20M0W7D           NR:         5M00F9W, 10M0F9W, 15M0F9W, 20M0F9W
MODULATION TYPES: (i.e. GMSK, QPSK)	WCDMA: QPSK, 16QAM, 64QAM LTE: QPSK, 16QAM, 64QAM, 256QAM NR: QPSK, 16QAM, 64QAM, 256QAM
HIGHEST INTERNALLY GENERATED FREQUENCY	2.2 GHz
OUTPUT POWER (W or dBm)	4x 0.05 W (17dBm)
Antenna Gain (max)	B25: 1.8dBi B66A: 2.9 dBi
FCC ID	Tested EUT:TA8AKRY901386-1Non-tested variant:TA8AKRY901402-1Non-tested variant:TA8AKRY901404-1
INDUSTRY CANADA ID	Tested EUT:287AB-AS9013861Non-tested variant:287AB-AS9014021Non-tested variant:287AB-AS9014041
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	<ul> <li>The RD 4442 B25B66A (KRY 901 386/1) is a dual band Remote Radio Unit forming part of the Ericsson Radio Base Station (RBS) equipment.</li> <li>The RD provides radio access for mobile and fixed devices and is intended for the indoor environment. The radio operates over 4 Transmit ports in MRO;Single, Multi-Carrier, and MIMO transmission with a maximum rated RF Output of 0.050W per port over an operational temperature of 5°C to +40°C. The unit is designed to be ceiling mounted.</li> <li>The RD 2243 B25 product is a single band radio identical to the dual band RD 4442 B25B66A product except that B66A circuits have been de- populated.</li> <li>The RD 2243 B66A product is a single band radio identical to the dual band RD 4442 B25B66A product except that B25 circuits have been de- populated.</li> </ul>



Signature:

.....

Denis Lalonde

Date: 17 March 2021

Declaration of Build Status Serial Number: TD3T308261

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

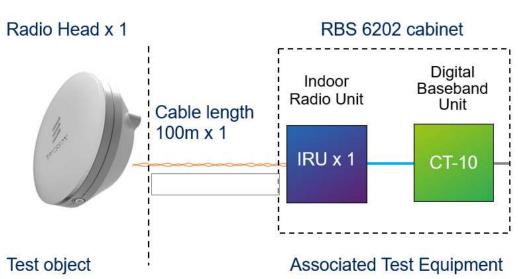


## 1.5 **PRODUCT INFORMATION**

#### 1.5.1 Technical Description

The Equipment Under Test (EUT) RD 4442 B25B66A is an Ericsson AB Radio Unit working in the public mobile service 2100MHz band which provides communication connections to 2100MHz network. The RD 4442 B25B66A operates from a -48V DC supply.

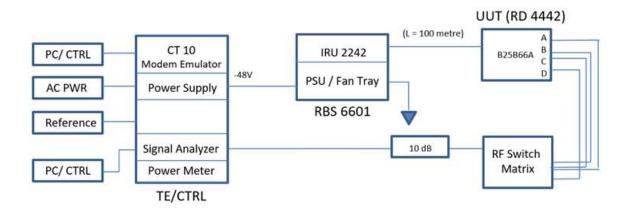
The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.



## Equipment Under Test



## 1.6 TEST SETUP





#### 1.7 TEST CONDITIONS

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

The EUT was powered from a -48V DC supply.

FCC Measurement Facility Registration Number: CA4810

ISED Accreditation ISED#24015, TUV SUD, Ottawa, Canada

Under our group A2LA Accreditation, TÜV SÜD conducted the following tests at the Ericsson facility in Ottawa.

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

#### 1.8 DEVIATION FROM THE STANDARD

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

#### 1.9 MODIFICATION RECORD

No modifications were made to the EUT during testing.

#### 1.10 ADDITIONAL INFORMATION

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

FCC ID: TA8AKRY901386-1 and TA8AKRY901404-1 ISED ID: 287AB-AS9013861 and 287AB-AS9014041

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

3. Transmitter performance was measured for top, mid & bottom channels, where aplicable, accross both antenna ports as presented in the average power measurement tables. Maximum power performance was determined to be, antenna port A.

4. Frequency Stability has been verified at time of original certification.



**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 Industry Canada RSS-139, Clause 6.4 FCC CFR 47 Part 2, Clause 2.1046

#### 2.1.2 Date of Test and Modification State

29-30 January 2021 - 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 Temperature24.1°CRelative Humidity33.4%

#### 2.1.5 Test Method

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

• The declared Maximum Antenna Gain to be used with this product, as Declared by the Manufacturer is 2.9 dBi. The EIRP is calculated as the sum of the measured power plus the antenna gain.



## 2.1.6 Test Results

#### Configuration A

#### Maximum Output Power 17.00 dBm/Port

			Pea	k to Average Ratio	(PAR) / Output F	ower
		Carrier		Channel I	Position B	
Antenna	Modulation	Bandwidth		Average Power		
		Bandwidth	PAR (dB)	dBm	EIRP (dBm)	EIRP dBm/MHz
A	LTE: QPSK	10.0 MHz	7.91	16.55	19.45	10.85
В	LTE: QPSK	10.0 MHz	-	16.03	18.93	10.85
	Total		-	19.31	22.21	13.86
A	LTE: QPSK	15.0 MHz	7.85	16.65	19.55	9.48
В	LTE: QPSK	15.0 MHz	-	16.54	19.44	9.48
	Total		-	19.61	22.51	12.49
A	LTE: QPSK	20.0 MHz	7.79	16.60	19.50	8.12
В	LTE: QPSK	20.0 MHz	-	16.57	19.47	8.12
Total			-	19.60	22.50	11.13
A	NR: QPSK	5.0 MHz	7.34	16.43	19.33	13.53
В	NR: QPSK	5.0 MHz	-	16.27	19.17	13.53
Total			-	19.36	22.26	16.54
A	NR: QPSK	10.0 MHz	7.45	16.93	19.83	10.61
В	NR: QPSK	10.0 MHz	-	16.46	19.36	10.61
	Total		-	19.71	22.61	13.62
A	NR: QPSK	15.0 MHz	7.81	16.56	19.46	8.97
В	NR: QPSK	15.0 MHz	-	16.26	19.16	8.97
	Total		-	19.42	22.32	11.98
A	NR: QPSK	20.0 MHz	7.78	16.43	19.33	7.93
В	NR: QPSK	20.0 MHz	-	16.41	19.31	7.93
	Total		-	19.43	22.33	10.94

#### **Remarks**

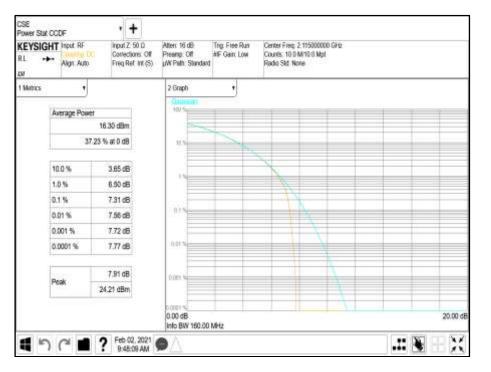
1. Transmitter performance was measured for top, mid, bottom channels accross both antenna ports as represented in the average power measurement tables. 2. The plot results presented represent typical performance for all bands and antenna ports based on worst-case performance. 3. Plot data performance are on file and available on request. 4. An NB-IoT GB carrier is included in the 10MHz LTE RAT for evaluation as part of this submission. 5. The Antenna Gain for this DOT 4442 B66A is 2.9 dBi.



Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position B

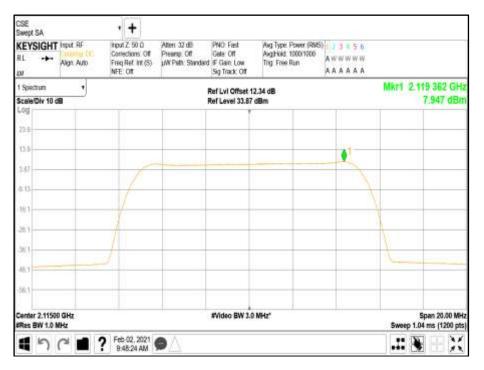
Log         NFE_OR         PFHQT Fact           1 Graphi         *         Ref Lvi Offset 12.34 dB           ScaleDiv 10.0 dB         Ref Value 18.41 dBm           Log         -         -           1.5 <td< th=""><th>InputZ 50 D Attent 24 dB Ting: Fite Run Center Fite; 2 155000000 GHz CenterCons: Off Preeing: Off Gela: Off AugHvid: 1000/1000 Fite; Ref. Int (S) J/W Path: Standard WF Gen: Low Redio Skt None NFE: Off WFX0: Fixed</th><th></th></td<>	InputZ 50 D Attent 24 dB Ting: Fite Run Center Fite; 2 155000000 GHz CenterCons: Off Preeing: Off Gela: Off AugHvid: 1000/1000 Fite; Ref. Int (S) J/W Path: Standard WF Gen: Low Redio Skt None NFE: Off WFX0: Fixed	
ScaleDiv 10.0 dB Ref Value 18.41 dBm Log Ref Log Ref Log Ref Log Ref Value 18.41 dBm Log Context Ref Value 18.41 dBm Ref Value	Ref Lyi Offeet 12 34 rlB	
E41 1.50 1.50 275 515 418 518 418 518 418 518 418 518 418 518 418 518 418 518 418 518 418 518 418 518 418 518 418 518 518 518 518 518 518 518 5		
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516 418 516 516 516 516 516 516 516 516		
418 418 418 418 418 418 418 418 418 418		
51 8 61 6 71 8 Center 2.11500 GHz #Video BW 300.00 kHz* Span 2		
61.5 71.6 Center 2.11500 GHz #Video BW 300.00 kHz* Span 2		
71.6		
Center 2.11500 GHz #Video BW 300.00 kHz* Span 2		
Res 8W 100.00 kHz Sweep 2.48 ms (12)	#Video BW 300.00 kHz* Span Sweep 2.48 ms (1:	
2 Metrics		
Total Channel Power 16.55 dBm / 15.0 MHz	16.55 dBm / 15.0 MHz	
Total Power Spectral Density -58.21 dBm/Hz	-58.21 dBmHz	

Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position B

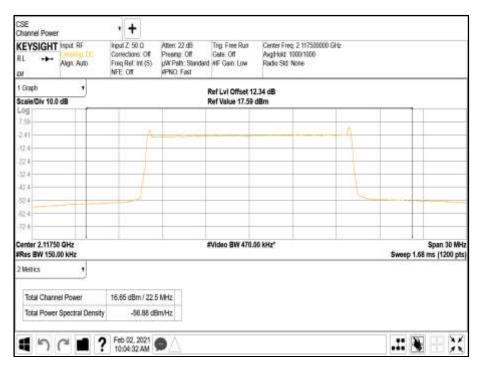




Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position B

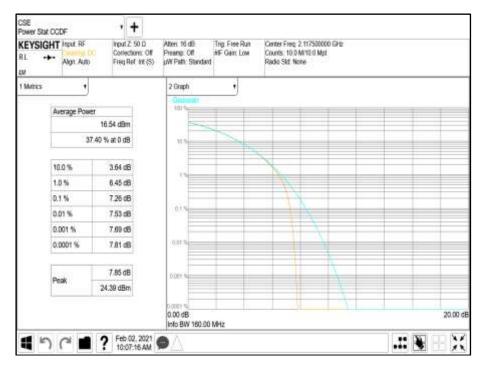


Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position B





Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position B



Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position B

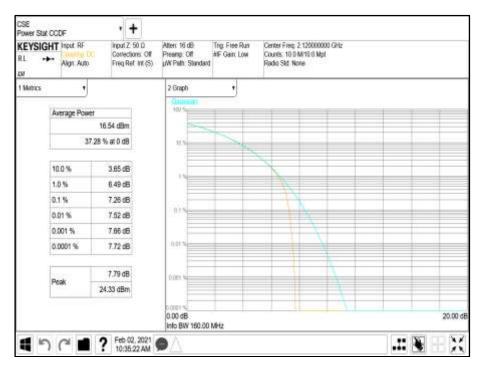




Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B

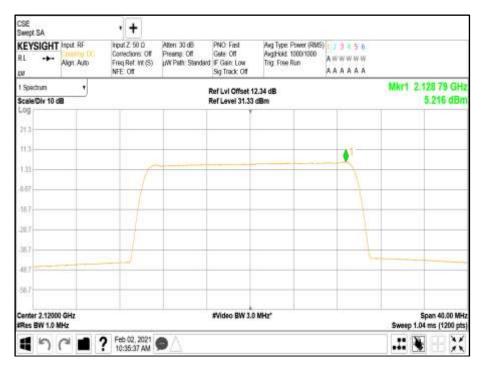
Channel Power	hand DF	• +	Atten: 22 dB	Trg: Free Run	Center Freq: 2.1250000	V. Chin		
	Align Auto	Contections: Off Freq Ref. Mt (S) NFE: Off	Preamp: Off pW/Pisth: Standard #PNO: Fast	Gate: Off	AvgHold 1000/1000 Radio Std None	N GRE		
1 Graph			- Contraction	Ref Lvi Offset 12				
Scale/Div 10.0	dB			Ref Value 16.86				
Log	-	0.00						-
£.M								
-3.14		1						
13.1		1	-					
23.1			-					
-53.1		1						
43.1		1	-			1		
3311								
40.1								
711						_		
Center 2.12000 PRes BW 200.0				Video BW 620.0	10 kHz*		Sweep 1.2	Span 40 MHz 8 ms (1200 pts)
2 Metrics	•							
Total Chann	el Power	16.60 dBm / 30.	D MHz					
Total Power	Total Power Spectral Density -58.17		9m9Hz					
		Feb 02, 2021 10:32:46 AM	OA				.:: 🕅	

Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B

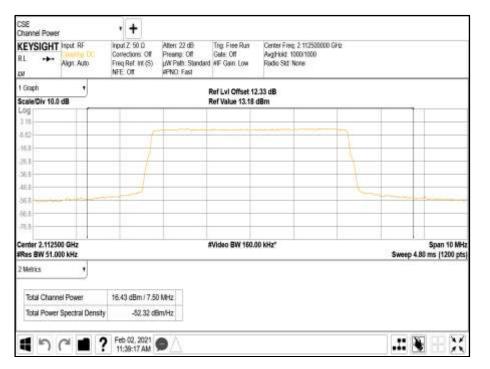




Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B

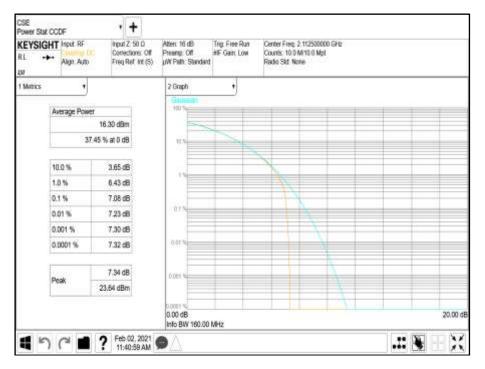


Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position B

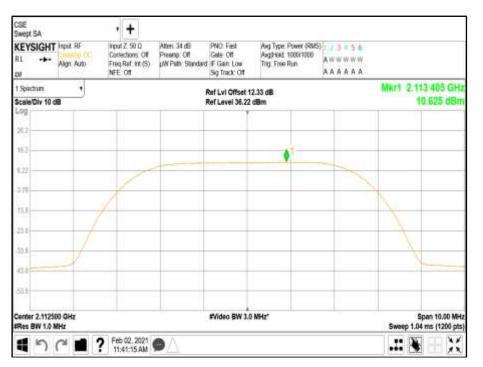




Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position B

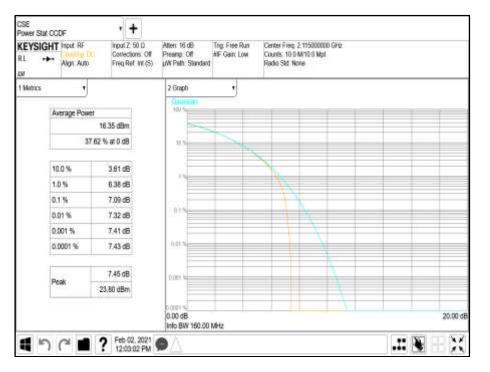




Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position B

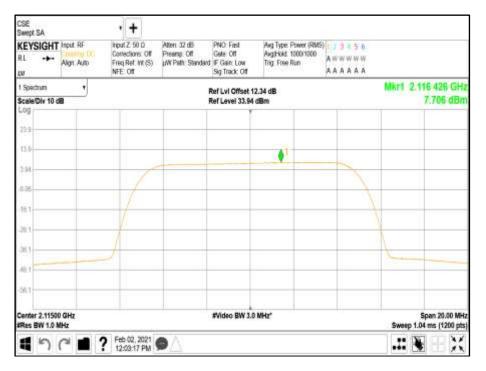
Channel Power	hand DC	• +	Atten 24 dB	Trg: Free Run	Center Freq: 2 115000	200 CL2		
	Align: Auto	Contections Off Freq Ref. Mt (S) NFE: Off	Preamp: Off p/W Pisth: Standard #PNO: Fast	Gate: Off	AvgHold: 1000/1000 Radio Std: None	000 672		
1 Graph	,		-borner:	Ref Lvi Offset 12				
Scale/Div 10.0	dB			Ref Value 13.27				
Log		010						
3.27								
-8.75						1		
16.7								
26.7								
367		1				1		
48.7			_					
367	-							
46.7								-
76.7	_		_					-
Center 2.11500 Res BW 100.0				Wideo BW 300.0	IO KH2"		Sweep 2	Span 20 MHz 48 ms (1200 pts)
2 Metrics	•							
Total Channe	el Power	16.93 dBm / 15.1	0 MHz					
		y -54.83 d	9mvHz					
		Feb 02, 2021 11:59:50 AM	<b>6</b> A				.:: 8	

Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position B

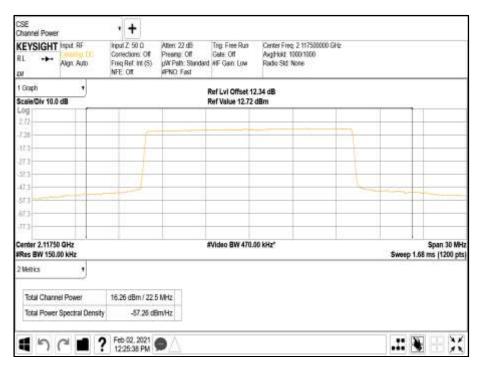




Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position B

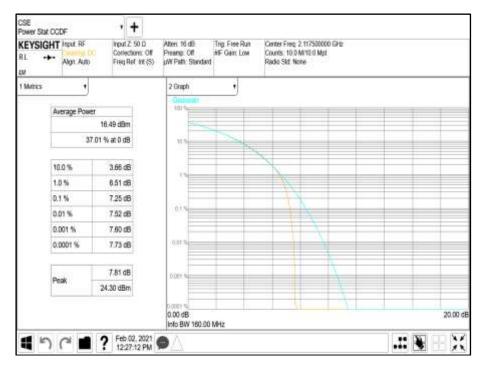


Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position B

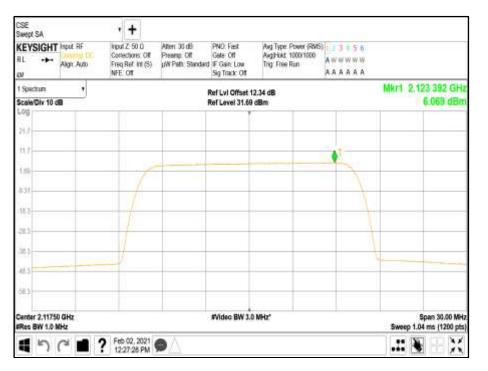




Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position B

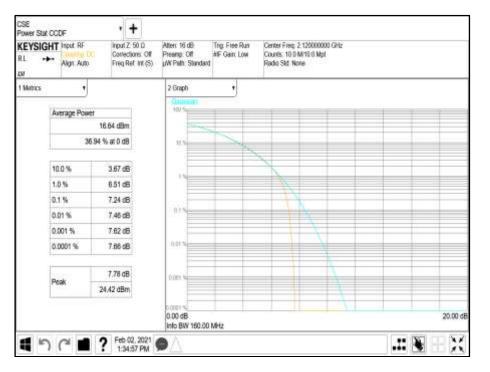




Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B

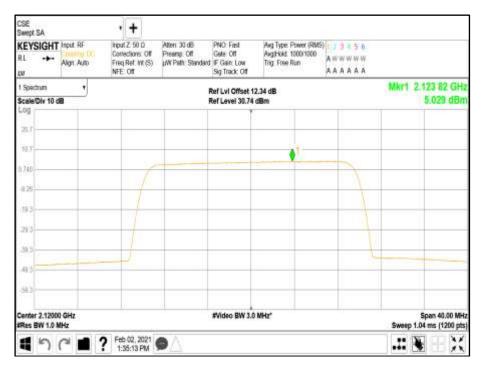
Channel Power	Local DE	• +	Atten 22 di)	They Free Day	Out - 5 - 5 +54000	and calls		
KEYSIGHT	Align: Auto	Gonections: Off Freq Ref. Mt (S) NFE: Off	Preamp: Off p/W Path: Standard #PNO: Fast	Trig: Free Run Gete: Off AIF Gen: Low	Center Freq: 2 120000 AvgHold: 1000/1000 Radio Std: None	000 GH2		
1 Graph				Ref Lvi Offset 12	14.48			
Scale/Div 10.0	dB			Ref Value 12.85				
Log		010						174
2.45								
-7.15		ſ				1		
173								
27.7								
57.2								
47.2								
-572								
47.2			-					
112								
Center 2.12000 #Res BW 200.0			,	Wideo BW 620.0	10 kHz*		Sweep	Span 40 MHz 1.28 ms (1200 pts)
2 Metrics	•							
Total Channe	el Power	16.43 dBm / 30.	D MHz					
		y -58.34 d	9m/Hz					
		Feb 02, 2021 1:32:25 PM	OA				.:: {	

Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B





Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B





# Configuration A

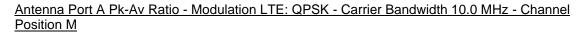
# Maximum Output Power 17.00 dBm/Port

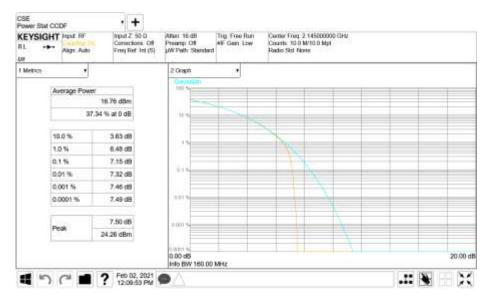
		Carrier	Pea	k to Average Ratio	(PAR) / Output P	ower			
			Channel Position M						
Antenna	Modulation	Bandwidth		Average Power					
		Banuwiuth	PAR (dB)	dBm	EIRP (dBm) 19.51 19.17 22.35 19.42 19.05 22.25 19.35 19.23 22.30 19.23 22.30 19.59 19.31 22.46 19.72 19.32 22.53 19.42 19.05 22.25 19.42 19.05 22.25 19.42	EIRP dBm/MHz			
A	LTE: QPSK	10.0 MHz	7.50	16.61	19.51	10.71			
В	LTE: QPSK	10.0 MHz	-	16.27	19.17	10.71			
	Total		-	19.45	22.35	13.72			
A	LTE: QPSK	15.0 MHz	7.67	16.52	19.42	9.1			
В	LTE: QPSK	15.0 MHz	-	16.15	19.05	9.1			
	Total		-	19.35	22.25	12.11			
A	LTE: QPSK	20.0 MHz	7.65	16.45	19.35	7.91			
В	LTE: QPSK	20.0 MHz	-	16.33	19.23	7.91			
	Total			19.40	22.30	10.92			
A	NR: QPSK	5.0 MHz	7.27	16.69	19.59	13.57			
В	NR: QPSK	5.0 MHz	-	16.41	19.31	13.57			
	Total		-	19.56	22.46	16.58			
A	NR: QPSK	10.0 MHz	7.50	16.82	19.72	10.71			
В	NR: QPSK	10.0 MHz	-	16.42	19.32	10.71			
	Total		-	19.63	22.53	13.72			
A	NR: QPSK	15.0 MHz	7.69	16.52	19.42	8.52			
В	NR: QPSK	15.0 MHz	-	16.15	19.05	8.52			
	Total			19.35	22.25	11.53			
A	NR: QPSK	20.0 MHz	7.60	16.31	19.21	7.79			
В	NR: QPSK	20.0 MHz	-	16.16	19.06	7.79			
	Total		-	19.25	22.15	10.8			



Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M

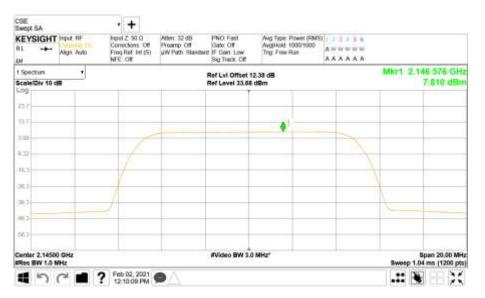
Channel Power KEYSIGHT	rout RF	• +	Atten 24 dB	Trig: Free Run	Center Freq: 2	14500000 GH	tr				
D/	lign: Auto	Contections: Off Freq Ref. Mt (S) NFE: Off	Preamp: Off µW Path: Standard #PNO: Fast	Gate: Off	AugHvid 1000/1000 Radio Sid None						
1 Graph				Ref Lvi Offset 12	18 48						
Scale/Div 10.0 d	8			tef Value 17.94							
Log		010								171	
734		10					0				
2.06		1					1				
121		1									
-22.1		f i									
S21							-				
42.1											_
-52.1		_						-		-	
42.1							-				
721			1 1								-
Center 2.14500 #Res BW 100.00				Video BW 300.0	IO KHZ"				Sweep	Spa 2.48 ms (	n 20 MHz 1200 ptsl
2 Metrics	•										
Total Channel	Power	16.61 dBm / 15/	0 MHz								
Total Power S	pectral Densit	y -55.15 d	9m/Hz								
and income the second se	3 <b>1</b>	Feb 02, 2021 9:54:49 AM							.::		**



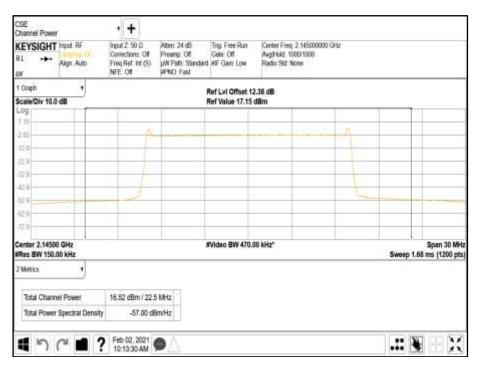




Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M

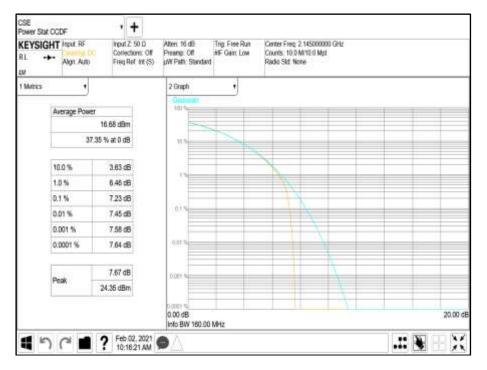


Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position M





Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position M



Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position M

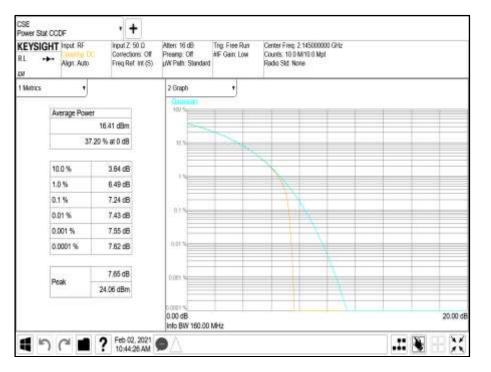




Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position M

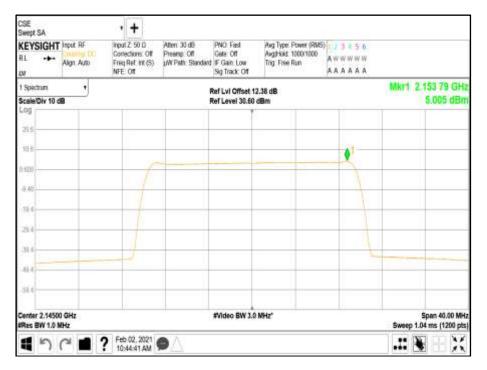
Channel Power	and DE	• +	Atten: 22 dB	Trig. Free Run	Contra Contra S \$45000	00.054			
	Align: Auto	Gonections Off Freq Ref. htt (S) NFE. Off	Preeng: Off p/W Path: Standard #PNO: Fast	Gate: Off	Center Fire; 2:14500000 GHz AsgH4kt: 10001000 Rudio Std: None				
1 Graph	•			Ref Lvi Offset 12	10 JB				
Scale/Div 10.0	18			Ref Value 16.65					
Log		111							
6.65									
-3.36		-							
13.4									
23.4		1							
-\$3.4		1				1			
43.4		1				1			
-5314	_								
43.4									
734			1. 1.						
Center 2.14500 #Res BW 200.0				Wideo BW 620.	10 kHz*		Sweep 1.2	Span 40 MHz 8 ms (1200 pts)	
2 Metrics	•								
Total Channe	Power	16.45 dBm / 30.1	D MHz						
Total Power S	Spectral Density	y -58.32 di	9mvHz						
	11-17-	Feb 02, 2021 10:40:18 AM	OA				.:: 🖲		

Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position M

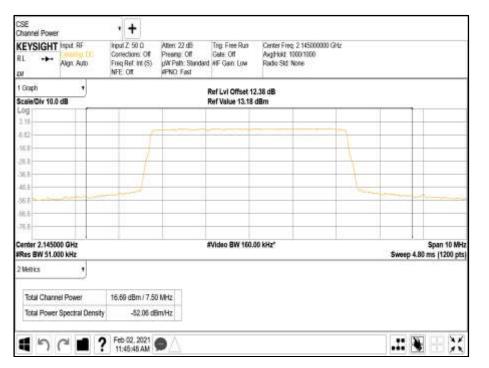




Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position M

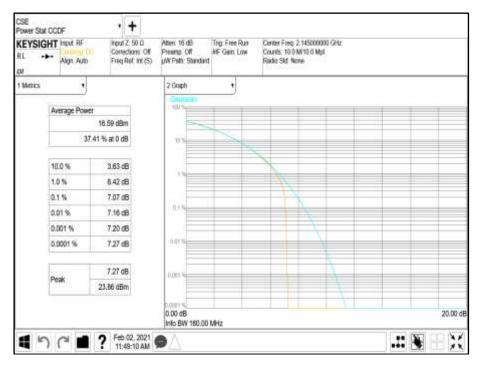


Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M

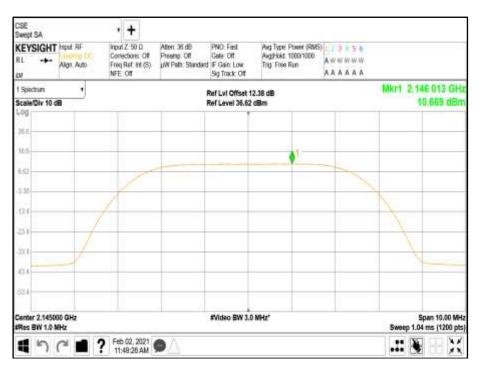




Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M





Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M

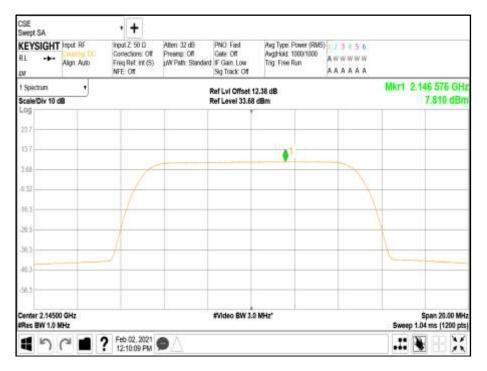
REYSIGHT	Align: Auto	Input Z: 50 D Contections: Off Freq Ref. Mt (S)	Atten: 24 dB Preamp: Off p/W Path: Standard	Trig: Free Run Gate: Off AFF Gain: Low	Center Freq. 2.1 AvgHold. 1000 Radio Std. None	1000			
ψ.	1000	NFE Off	#PNO Fast	10000000	284.682.0752				
1 Graph	•			Ref Lvi Offset 12					
Scale/Div 10.0	dB			tef Value 13.01	dBm				
301		010	1						
-6.90			-	-					
17.0		10 1							
27.0		10							
57.0		- K					1		
47.0		0.00							
							-		
37.9									
47.0		100							
77.0									
Center 2.14500 #Res BW 100.0				Video BW 300.0	10 kHz*			Sweep	Span 20 MH 2.48 ms (1200 pts
2 Metrics									
Total Chann	el Power	16.82 dBm / 15.	0 MHz						
Total Power	Spectral Densit	y .54,94 d	9m9Hz						
11		Feb 02, 2021 12:08:01 PM							N N

Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M

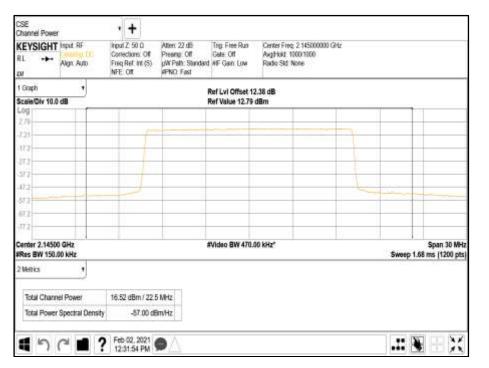




Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M

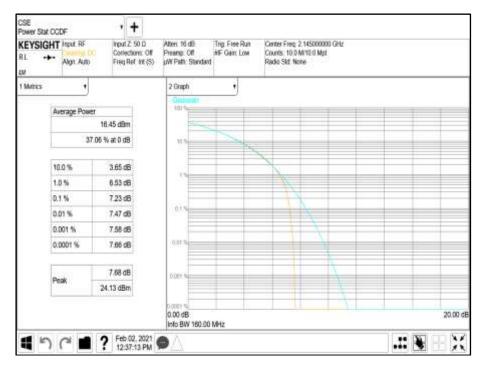


Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position M

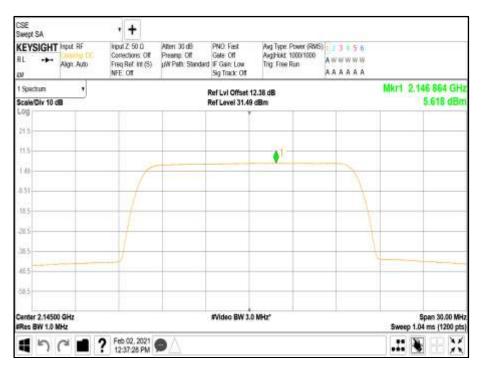




Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position M



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position M

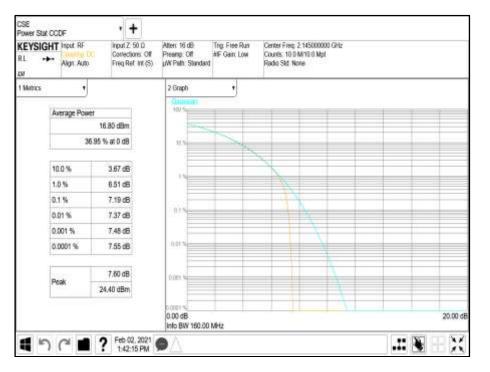




Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position M

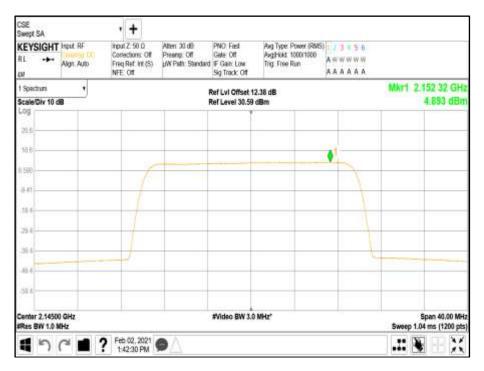
Channel Power		• +	A			P100000 /011			
	Ngn Auto	Input Z 50 0 Contections: Off Freq Ref. Int (S) NFE: Off	Atten: 22 dB Preamp: Off p/W Path: Standard #PNO: Fast	Trig: Free Run Gete: Off MF Gain: Low	Center Fing, 2.14500000 GHz AngHold: 1000/1000 Routio Std None				
1 Graph				Ref Lvi Offset 12	38 dB				
Scale/Div 10.0	18			tef Value 12.50					
Log		000							1
2.50		-							
7.50		1					1		
17.5							1		
27,5							-		
57.5									
47.5									
573									
67.5									
77.5			1. 2		-				
Center 2.14500 Res BW 200.0				Video BW 620.0	10 kHz*			Sweep 1	Span 40 MHz 28 ms (1200 pts)
2 Metrics	•								
Total Channe	Power	16.31 dBm / 30.	D MiHz						
Total Power S	Spectral Density	y -58.46 di	9mvHz						
15	3 <b>1</b> 1	Feb 02, 2021 1:40:37 PM						.:: 9	

Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position M





Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position M





# Configuration A

# Maximum Output Power 17.00 dBm

			Pea	k to Average Ratio	(PAR) / Output P	ower
		Carrier		Channel I	Position T	
Antenna	Modulation	Bandwidth		Average Power		
		Banuwiuth	PAR (dB)	dBm	EIRP (dBm)	EIRP dBm/MHz
A	LTE: QPSK	10.0 MHz	7.89	16.43	19.33	10.15
В	LTE: QPSK	10.0 MHz	-	16.23	19.13	10.15
	Total		-	19.34	22.24	13.16
A	LTE: QPSK	15.0 MHz	7.90	16.62	19.52	8.74
В	LTE: QPSK	15.0 MHz	-	16.25	19.15	8.74
	Total		-	19.45	22.35	11.75
A	LTE: QPSK	20.0 MHz	8.01	16.46	19.36	7.65
В	LTE: QPSK	20.0 MHz	-	16.32	19.22	7.65
	Total		-	19.40	22.30	10.66
A	NR: QPSK	5.0 MHz	7.28	16.54	19.44	13.46
В	NR: QPSK	5.0 MHz	-	16.26	19.16	13.46
	Total		-	19.41	22.31	16.47
A	NR: QPSK	10.0 MHz	7.69	16.87	19.77	10.64
В	NR: QPSK	10.0 MHz	-	16.38	19.28	10.64
	Total		-	19.64	22.54	13.65
A	NR: QPSK	15.0 MHz	7.85	16.46	19.36	8.49
В	NR: QPSK	15.0 MHz	-	16.21	19.11	8.49
	Total		-	19.35	22.25	11.50
A	NR: QPSK	20.0 MHz	7.90	16.56	19.46	7.32
В	NR: QPSK	20.0 MHz	-	16.12	19.02	7.32
	Total		-	19.36	22.26	10.33



Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position T

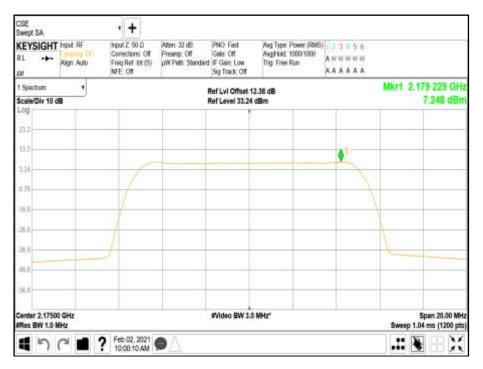
Channel Power KEYSIGHT	and DE	• +	Atten 24 dB	Trg. Free Run	Center Freq: 2.175000	000 CHr		
RL 🔸	Align: Auto	Contections: Off Freq Ref. Int (S) NFE: Off	Preering: Off p/W Pisth: Standard #PNO: Fast	Gate: Off	AvgHold 10001000 Rodo Std None	000 012		
UNI 1 Graph		HEL. OL	- Contraction					
Scale/Div 10.0				Ref Lvi Offset 12 Ref Value 17.45				
Log	08			cer value 17.45	aem		1	
7.45								
255		1						
12.8	_							
-22.8						1		
52.5								
42.6								
42.8						-		
40.6								
72.6		10						
							1	
Center 2.17500 #Res BW 100.0				Wideo BW 300.0	IO KHZ"		Sweep :	Span 20 MHz 2.48 ms (1200 pts)
2 Metrics	•							
Total Channe	Power	16.43 dBm / 15.1	0 MHz					
Total Power	Spectral Densit	y -55.33 d	9m/Hz					
		Feb 02, 2021 9:57:40 AM					.:: {	

Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position T

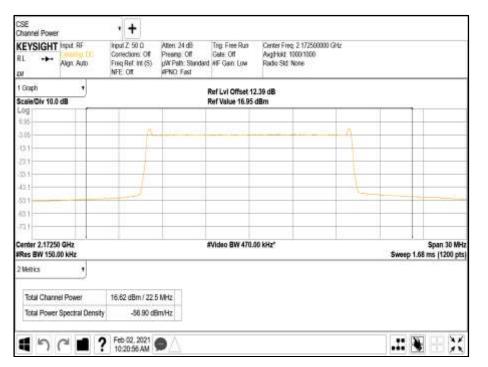




Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position <u>T</u>

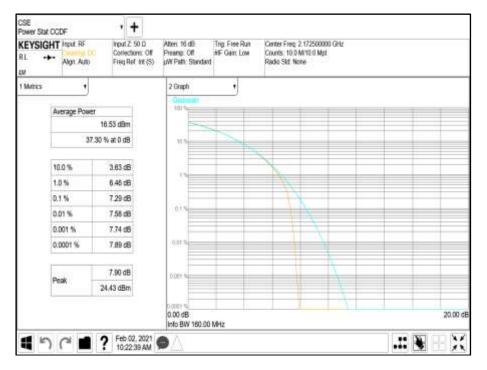


Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position T

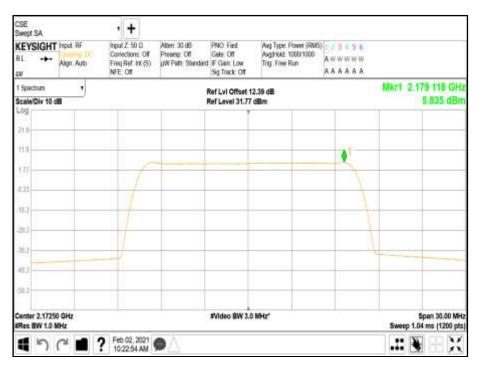




Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position T



Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position T

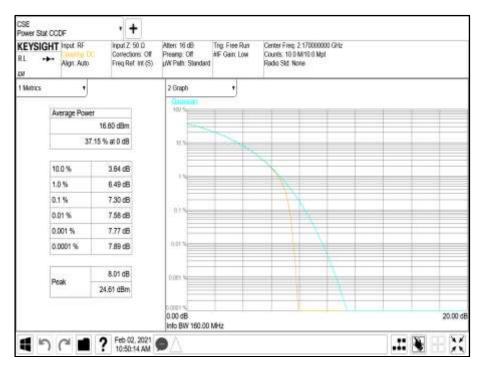




Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position T

Channel Power KEYSIGHT	and DE	• +	Atten: 22 dB	Trg: Free Run	Center Freq: 2 1700000	) Cale		
01	Align: Auto	Genections: Off Freq Ref. Int (S) NFE: Off	Preering: Off p/W Pisth: Standard #PNO: Fast	Gate: Off	AvgHold 1000/1000 Radio Std None	- Gra		
1 Graph		100.00	- Contraction					
Scale/Div 10.0				Ref Lvi Offset 12 Ref Value 16.11				
Log	-	111						
ñ.11								-
-3.60		P				-4		
13.0	_							-
9.63								
5512		1						
42.8	_	-						
-53.9	_							
40.0								-
73.9								
Center 2.17000 #Res BW 200.0				Wideo BW 620.0	10 kHz*		Sweep 1.2	Span 40 MHz 8 ms (1200 pts)
2 Metrics	•							
Total Channe	Power	16.46 dBm / 30.1	D MHz					
Total Power S	Spectral Densit	-58.32 di	9mvHz					
		Feb 02, 2021 10:48:20 AM	OA				.:: 🖲	v

Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position T

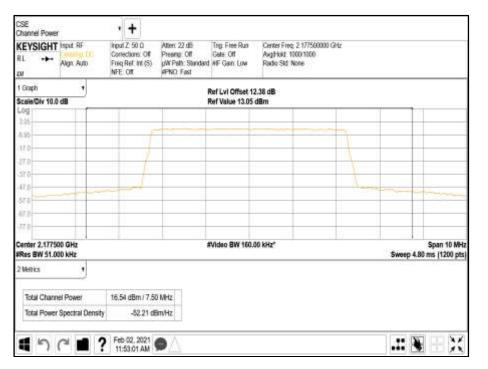




Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position <u>T</u>

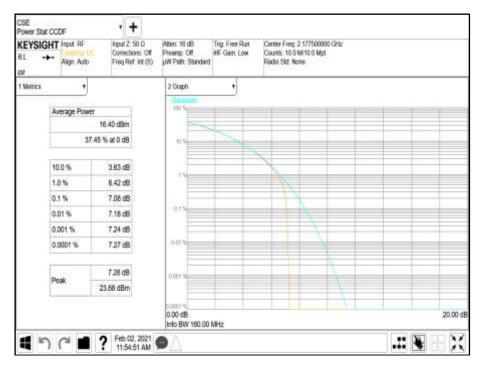


Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position T

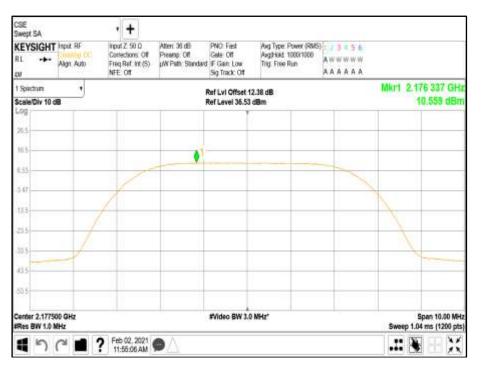




Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position T



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position T





Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position T

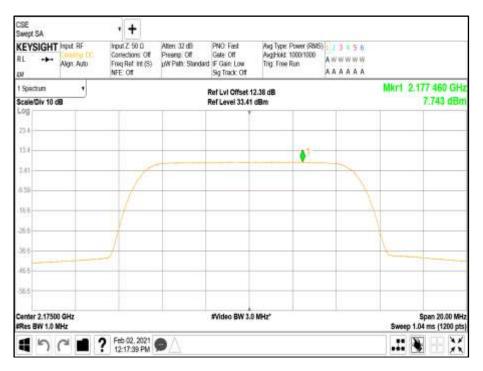
Channel Power	land DC	• +	Alten 24 dB	Trig: Free Run	Center Freq: 2.17500000	Color.		
	Align: Auto	Contections: Off Freq Ref. Mt (S) NFE: Off	Prearup: Off p/W Path: Standard #PNO: Fast	Gate: Off	Center Freg. 2 1750000 AugHold: 10001000 Radio Skt None	u onz		
1 Graph				Ref Lvi Offset 12	18 40			
Scale/Div 10.0	dB			Ref Value 12.94	10.00			
Log		111						
234						_		
-7.06		-				13		
47.1		1				-		-
27,1			_					
57.1		1.1	-			1		
47.1	-	-						
3/1								
47.1								
77.1								
Center 2.17500 Res BW 100.0			,	Wideo BW 300.0	IO kHz*		Sweep 2.4	Span 20 MHz 8 ms (1200 pts)
2 Metrics	•							
Total Channe	I Power	16.87 dBm / 15.	D MHz					
Total Power	Spectral Density	-54.89 d	Bm/Hz					
	a 💼 1	Feb.02, 2021 12:14:24 PM					.:: 🖲	v

Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position T

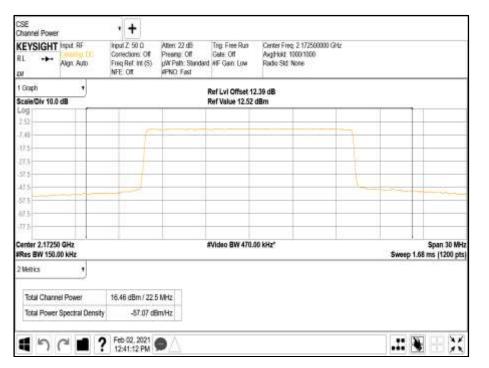




Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position <u>T</u>

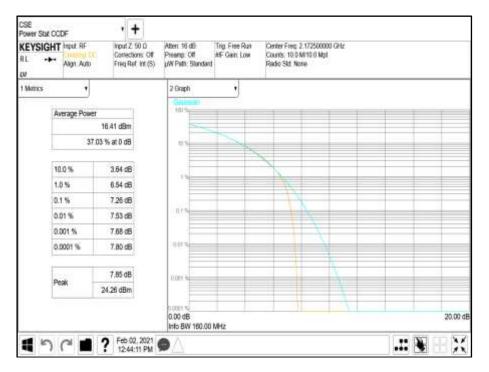


Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position T

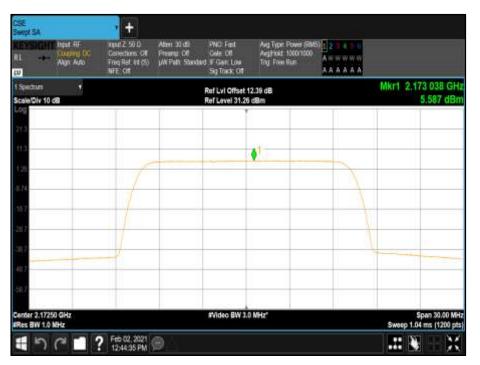




Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position T



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 15.0 MHz - Channel Position <u>T</u>

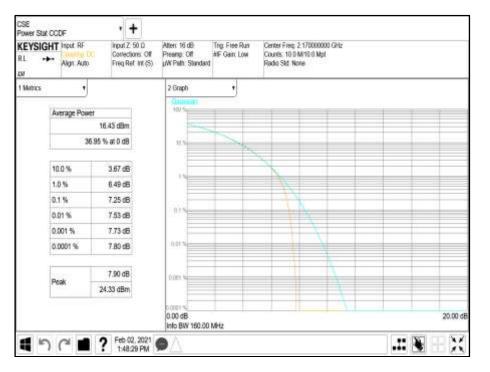




Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position T

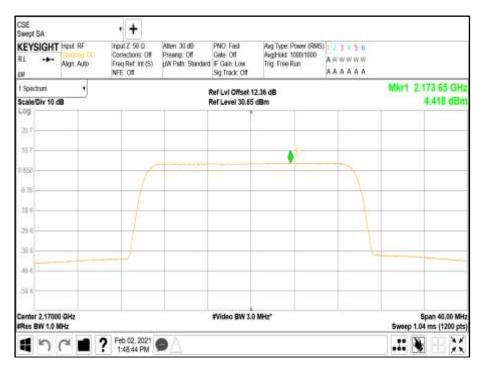
Channel Power KEYSIGHT	and DE	• +	Atten 22 dB	Trg: Free Run	Center Freq: 2.170000000 0	Sel 2			
01	Align: Auto	Contections: Off Freq Ref. Int (S) NFE: Off		Gate: Off	Aughold 10001000 Radio Sid None				
1 Graph			- Contractor	tef Lvi Offset 12	36 AB.				
Scale/Div 10.0	8			ter Lvi Griser 12.67					
Log		010							
2.47									
7.33		6				3			
17.3	_								
27.3									
57.3									
47.2		-							
373									
173									
773									
Center 2.17000 Res BW 200.0			-12 - 21	Video BW 620.0	IO KHZ"	9 9	Span 40 MHz Sweep 1.28 ms (1200 pts		
2 Metrics	•								
Total Channel	Bauni	16.56 dBm / 30	D B B-J P						
and the second second second		and the second second							
Total Power 3	Spectral Densit	-58.21 d	Bm/Hz						
	3	Feb 02, 2021 1:45:38 PM	-				.:		

Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position T





Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position <u>T</u>





# Configuration B

# Maximum Output Power 17.00 dBm/Port

			Peak to Aver	age Ratio (PAR) / C	Dutput Power		
Antenna	Modulation	Carrier Bandwidth	Channel Position M				
Antenna	wouldtion		PAR (dB)	Average Power			
			FAR (UD)	dBm	EIRP (dBm)		
A	LTE: QPSK	5.0+5.0+5.0+5.0+5.0+ 5.0 MHz	-	16.79	19.69		
В	LTE: QPSK	5.0+5.0+5.0+5.0+5.0+ 5.0 MHz	-	16.43	19.33		
	Total		-	19.62	22.52		
A	NR: QPSK	5.0+5.0+5.0+5.0+5.0+ 5.0 MHz	-	16.62	19.52		
В	NR: QPSK	5.0+5.0+5.0+5.0+5.0+ 5.0 MHz	-	16.37	19.27		
	Total		-	19.51	22.41		
A	LTE + NR: QPSK	5.0+5.0+5.0+5.0+5.0+ 5.0 MHz	-	16.57	19.47		
В	LTE + NR: QPSK	5.0+5.0+5.0+5.0+5.0+ 5.0 MHz	-	16.20	19.10		
	Total		-	19.40	22.30		
A	LTE + WCDMA: QPSK	10.0+10.0+5.0+5.0+5. 0+5.0 MHz	-	16.43	19.33		
В	LTE + WCDMA: QPSK	10.0+10.0+5.0+5.0+5. 0+5.0 MHz	-	16.23	19.13		
	Total		-	19.34	22.24		

# <u>Remarks</u>

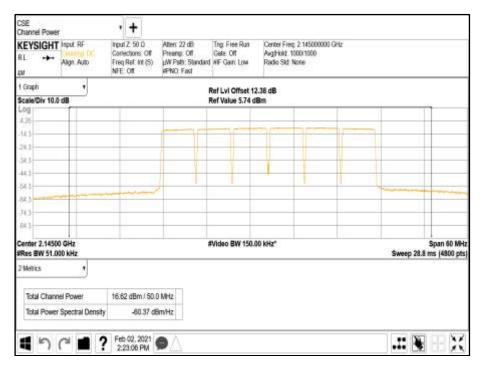
- 1. Six carrier transmitter performance is presented.
- 2. The plot results represent typical radio performace across all channels.
- 3. Plot data performance for all transmitter ports and channels are available on request.



Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0+5.0 MHz -Channel Position M

Channel Power	-G		+							
REVSIGHT	Align Auto Freq Ref. Mt (S) g/W Pal		Atten: 23 dB Preamp: Off µ/W Path: Standard #PNO: Fast	Trig: Free Run Gete: Off AIF Gain: Low	AvgHold.	Center Freg. 2.145000000 GHz Aughtwid: 10001000 Roudio Skt None				
1 Graph	•				Ref Lvi Offset 12	1.10 40				
Scale/Div 10.0	dB				tel Value 5.70 d					
Log	1	11								1
4.35		- 11								
-14.3										
.24.5				10 10						-
303		-				-				-
44.5						-				
513		-	-	/						
14.3	-	-								
74.3		-								-
84.3										
Center 2.1450 Res BW 51.0					Video BW 150.	00 kHz*				i Span 60 MHz ms (4800 pts)
2 Metrics	•									
Total Chann	al Douat	16.78	9 dBm / 50	0.1842						
	and the second strategy and the	117752	Section of the							
Total Power	Spectral Densit	1	-60.20 d	BitvHz						
-	<b>A</b>	Enh	02, 2021 17:07 AM	• A :					.:: 🔖	

Antenna A - Modulation NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0+5.0 MHz - Channel Position M

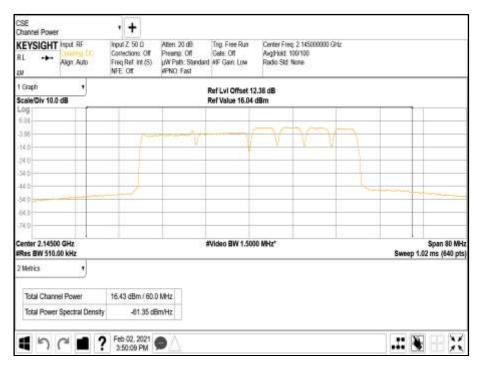




<u>Antenna A - Modulation LTE+NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0+5.0 MHz -</u> <u>Channel Position M</u>

Channel Power			+	Atten 20 dB	100 F 100 F	No.		1. ALL		
REYSIGHT	L ++ Algn Auto F		Z 50 D ctions Off Ref. W(S)	Alter: 20:00 Preamp: Off pW Path: Standard #PNO: Fast	Trig: Free Run Gete: Off AFF Gain: Low	Center Fre AvgHold Radio Std				
to		NFE	OIL .	ernal rabi						
1 Graph					tef Lvi Offset 1					
Scale/Div 10.0	OB .				tef Value 6.21 o	Bm .	-			á
3.70										
13.8							-	The second second		
23.8										
33.8										
45.8					T:	1	1			
53.0										
13.5		-		-						
(1997) - 1997										
73.8										
80.8				- K				- N - N		
Center 2.14500 PRes BW 51.00					Video BW 150.	00 kHz*			Sweep 28.8	Span 60 MHz ms (4800 pts)
2 Metrics	•									
Total Chann	el Power	16.57	7 dBm / 50	0 MHz						
Total Power	Spectral Densit	y	-60.42 d	8m/Hz						
										- Are
<b>1</b>		7 Feb	02, 2021 4:41 PM	<b>A</b> A					.: 🔖	ΗX

Antenna A - Modulation LTE+WCDMA: QPSK - Carrier Bandwidth 10.0+10.0+5.0+5.0+5.0+5.0 MHz - Channel Position M





Limit	
Peak Power	≤ 1640 W/MHz or ≤+62.15 dBm RSS-139 2110-2180MHz ≤ 1640 W/MHz or ≤+62.15 dBm
Peak to Average Ratio	13 dB



# 2.2 OCCUPIED BANDWIDTH

# 2.2.1 Specification Reference

FCC CFR 47 Part 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

29 January 2021 - 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 Temperature24.1°CRelative Humidity33.4%

## 2.2.5 Test Method

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

#### 2.2.6 Test Results

Configuration A

Maximum Output Power 17.00 dBm/Port

		Result	(MHz)					
Modulation	Carrier Bandwidth	Channel Bandwidth						
		Occupied Bandwidth	-26 dB Bandwidth					
LTE: QPSK	LTE: 10.0 MHz	9.39	9.63					
LTE: QPSK	LTE: 15.0 MHz	13.99	14.36					
LTE: QPSK	LTE: 20.0 MHz	18.40	18.90					
NR: QPSK	NR: 5.0 MHz	4.46	4.75					
NR: QPSK	NR: 10.0 MHz	9.26	9.64					
NR: QPSK	NR: 15.0 MHz	14.07	14.58					
NR: QPSK	NR: 20.0 MHz	18.79	19.54					

#### Remarks

Representative occupied banwitdth performance results presented. Plot data performance for all transmitter ports and channel positions are on file and available on request.



# 2.3 BAND EDGE

#### 2.3.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.53 (h) Industry Canada RSS-139, Clause 6.5 FCC CFR 47 Part 2, Clause 2.1051

## 2.3.2 Date of Test and Modification State

29 - 30 January 2021 - 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 Temperature24.4°CRelative Humidity33.0%

#### 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.

This product has 2 transmitter ports. To account for this, the limit was tightened by 10 \* Log(N), where N is equal to the number of MIMO antenna ports.

For dual port, the limit was calculated as being -13 dBm - 10 \* Log(2) = -16 dBm.

## 2.3.6 Test Results

Configuration A

Maximum Output Power 17.00 dBm/Port

Modulation	Carrier Bandwidth	E	Band Edge (MHz)
wouldtion		Channel Position B	Channel Position T
LTE: QPSK	LTE: 10.0 MHz	2,115.0	2,175.0
LTE: QPSK	LTE: 15.0 MHz	2,117.5	2,172.5
LTE: QPSK	LTE: 20.0 MHz	2,120.0	2,170.0
NR: QPSK	NR: 5.0 MHz	2,112.5	2,177.5
NR: QPSK	NR: 10.0 MHz	2,115.0	2,175.0
NR: QPSK	NR: 15.0 MHz	2,117.5	2,172.5
NR: QPSK	NR: 20.0 MHz	2,120.0	2,170.0

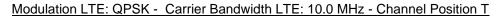
## **Remarks**

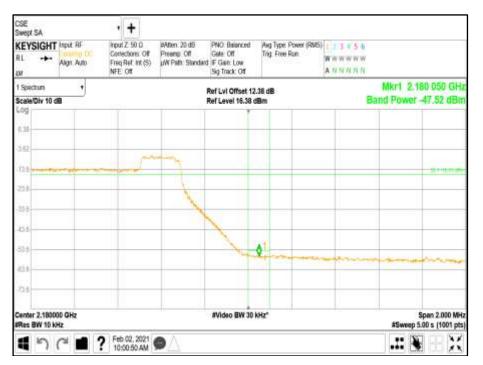
The plot results represent typical worst-case radio performace.



10	aut. RF gn. Auto	Input Z Contect Freq Re NFE: 0	ons: Off f: Wt (S)	IAAtten 16 dB Preang: Off µW Path: Standar	PND B Gete O d IF Gain Sig Trac	t Low	Avg Type: Pt Trig: Free Ra	wer (RMS) m	123456 WWWWWWW ANNNNN			
ur 1 Spectrum Scale/Div 10 dB	•	Jare O			Ref Lvi C	Affset 12		_		Mkr1 land Pow	2.109 9	
Log	-	11		7 1	Net Leve	1.04.04.0	on I		- i - i			
4.34					_	1						
5.66												
								1	and and			anes.c
15.7		-			-	-		1		and apply		Lillia and
26.7	-	-			-	-		1			-	
35.7						_		/		_		
45.7							/					
							1					
55.7	-			-	and a state	01	6					
167 1.00.00.00.00.00.00.00.00.00.00.00.00.00	Color to the			and a start of the	Autor I					_		
75.7	_				_	_						
Center 2.110000 ( Res BW 10 kHz	JHz				#Video	BW 30 1	¢Hz"			#Curr	Span 3 ep 5.00 s	000 MHz

# Modulation LTE: QPSK - Carrier Bandwidth LTE: 10.0 MHz - Channel Position B



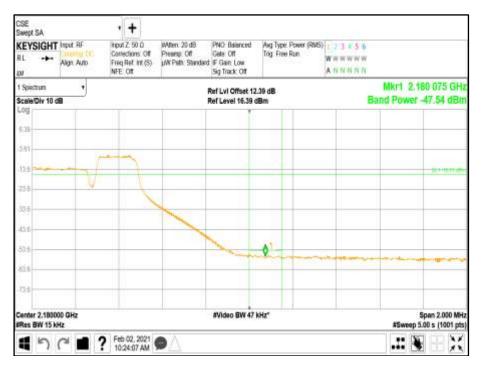




CEYSIGHT		Input Z: 50 D Contections: Off	AMen: 20 dB Preamp: Off	PNO Balanced Gale: Off	Avg Type: Power (RMS) Trig: Free Run	123456		
N	Align: Auto	Freq Ref. Int (S) NFE: Off	J/W Path: Standard	Sig Track: Off	The second se	ANNNNN		
l Spectrum	•			Ref Lvi Offset 12		_	Mkr1 2.10	
Scale/Div 10 d				Ref Level 16.34 d	8m	8	and Power -	51.51 dBm
-09								
6.04	-			-				
3.66								
						1 mil		
13.7	_			-		-	17-	
217	_	_				1	¥.	
						1		
33.7					1	1		
457	-	_		-	1			
53.7				12.0				
1005				0	1			
83.7		Constant De	Charles and the state of the st					
73.7	_		_					
			1					
Center 2.11000 Res BW 15 kH				#Video BW 47 I	kHz"	1.1		pan 2.000 MHz 00 s (1001 pts)

Modulation LTE: QPSK - Carrier Bandwidth LTE: 15.0 MHz - Channel Position B

Modulation LTE: QPSK - Carrier Bandwidth LTE: 15.0 MHz - Channel Position T

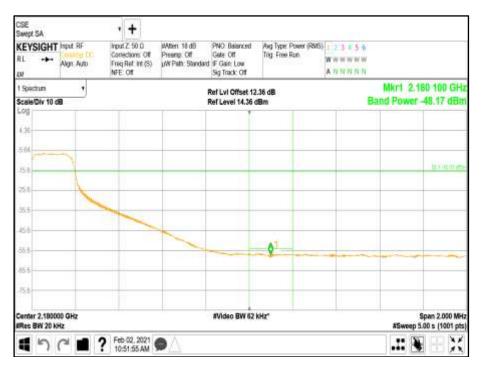




RL + Algn	Auto	Input Z 50 D Contections Off Frieg Ref. Int (S) NFE: Off	RAtten 18 dB Preang: Off yW Path: Standard	PNO Balanced Gete Off IF Gain: Low Sig Track: Off	Deep 10000 111 111	123455 WWWWWW ANNNNN		
1 Spectrum Scale/Div 10 dill	•			Ref Lvi Offset 12. Ref Level 14.34 d		Ba	Mkr1 2.10 nd Power -	9900 GHz
.00		1	7 1	1	-	-		
4.34								
5.66								
2.00								-
15.7								C. B. COLDINGS
267							- 1	
35.7			_				/	
457						1		
41.7					->			
55.7				61				
KET					Not the local data	_		
15.7								
and a second second								
Center 2.110000 GH Res BW 20 kHz	z			#Video BW 62 )	(Hz"			pan 2.000 MHz 00 s (1001 pts)

Modulation LTE: QPSK - Carrier Bandwidth LTE: 20.0 MHz - Channel Position B

Modulation LTE: QPSK - Carrier Bandwidth LTE: 20.0 MHz - Channel Position T

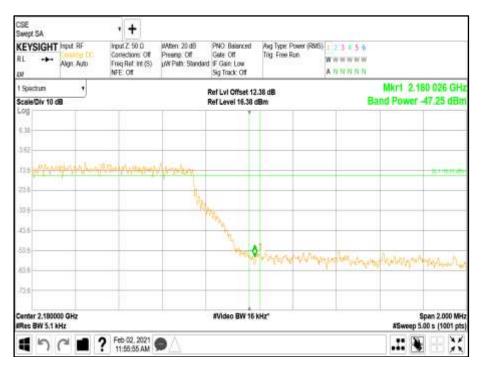




CSE Swept SA	• +				
RL ++ Algn. Auto	Contections Off Preer		ig: Free Run Wilw V	1 # 5 <del>0</del> v w w w v n n n	
1 Spectrum 🔹 🕴		Ref Lvi Offset 12.33	2411	Mkr1 2.10	
Scale/Div 10 dB	100	Ref Level 18.33 dBn	r	Band Power -	01.24 GB/
111					
1.67					
11.7				MANA MARANDAN	-Versile of less
21.7					
51.7			1		
41.7			ANT I		
51.7		/			
ALT Westerny Provent	Wangerman Der Datig	- Anna - Anna			
31.1	and restriction of the second				
Center 2.110000 GHz Res BW 5.1 kHz		#Video BW 16 kHz		S	pan 2.000 MHz
	Cub (0) 2021			The second se	00 s (1001 pts)
1	? Feb 02, 2021				$\pm X$

Modulation NR: QPSK - Carrier Bandwidth NR: 5.0 MHz - Channel Position B

Modulation NR: QPSK - Carrier Bandwidth NR: 5.0 MHz - Channel Position T





CSIE Swept SA	• +						
RL + Algn. Auto	Input Z: 50 D Corrections: Off Freq Ref. Mt (S) NFE: Off	Preamp: Off Gat g/W Path: Standard IF C	D: Baianced a: Off Rait: Low Track: Off	Trig. Free Run	23455 WWWWW NNNNN		
1 Spectrum 🔹		2222.2	vi Offset 12.	(A. 1994)		kr1 2.109 9	
Scale/Div 10 dB	-	Ref L	.evel 16.34 dl	Im	Band	Power -48.8	o apri
6.04			1				
3.66							
13.7				N	mound	- mar	rus marrie
217				-			
33.7				1			
457	_			1			
53.7			01	1			
Kär mannan	month	and a second	A service of				
12.7			-				
Center 2.110000 GHz Res BW 10 kHz		#V	deo BW 30 k	Hz*		Span 2 #Sweep 5.00 s	2.000 MHz (1001 pts
1901	? Feb 02, 2021 12:04:20 PM	<b>o</b> A				.:: 🖲 -	X

Modulation NR: QPSK - Carrier Bandwidth NR: 10.0 MHz - Channel Position B

Modulation NR: QPSK - Carrier Bandwidth NR: 10.0 MHz - Channel Position T

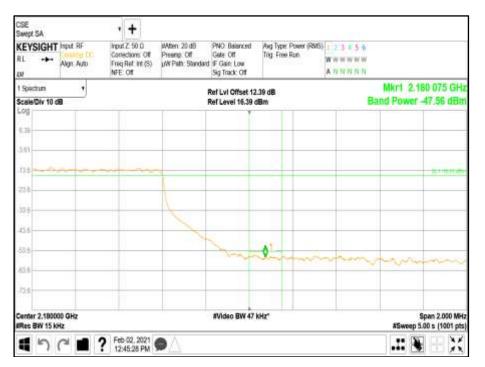




CSE Swept SA	• +	1000 - 00 40 Data Data	to Taylor (Decision)				
RL + Algn. Auto	Input Z: 50 D Contections: Off Frieg Ref. Mt (S) NFE: Off	eAtten: 20 dB PNO: Balanced Preamp: Off Gate: Off p/W Path: Standard IF Gate: Low Sig Track: Off	Aug Type: Power (RMS) 1 2 3 Trig: Free Ran W w w A 7/ N	w w w			
1 Spectrum 🔹		Ref Lvi Offset 1	Ref Lvi Offset 12.34 dB				
Scale/Div 10 dB		Ref Level 16.34	dBm	Band Power -51.36 dBm			
Log							
6.04							
5.66	_						
13.7							
115	_						
33.7							
457							
53.7			1				
107		and the	×				
12.7							
-		and the second s					
Center 2.110000 GHz Res BW 15 KHz		#Video BW 4	7 kHz*	Span 2.000 MH #Sweep 5.00 s (1001 pts			
1501	? Feb 02, 2021 12:28:11 PM	<b>o</b> A		.:: 🖲 🕂 🗙			

Modulation NR: QPSK - Carrier Bandwidth NR: 15.0 MHz - Channel Position B

Modulation NR: QPSK - Carrier Bandwidth NR: 15.0 MHz - Channel Position T

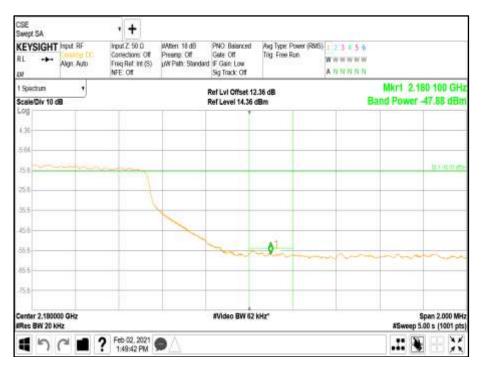




CSE Swept SA	• +			
KEYSIGHT Input RF RL ++ Country CC Align Auto	Input Z 50 D Corrections: Off Freq Ref. Mt (S) NFE: Off	Aften: 20 dB PNO: Balanced Preamp: Of Gate: Off gW Path: Standard IF Gate: Low Sig Track: Off	Aug Type Power (RMS) Trig. Free Ran W w w w w A N N N N	YW
1 Spectrum 🔹		Ref Lvi Offset 12		Mkr1 2.109 900 GHz
Scale/Div 10 dB		Ref Level 16.34	mBm	Band Power -52.77 dBm
6.04				
5.96	-			
13.7				
211			6	
33.7			1º	
457				
-53.7				
107		\$1.	~	
32.7				
Center 2.110000 GHz Res BW 20 kHz		#Video BW 62	KHZ"	Span 2.000 MHz #Sweep 5.00 s (1001 pts
1501	? Feb 02, 2021	<b>D</b> A		.:: N H X

Modulation NR: QPSK - Carrier Bandwidth NR: 20.0 MHz - Channel Position B

Modulation NR: QPSK - Carrier Bandwidth NR: 20.0 MHz - Channel Position T





# Configuration B

# Maximum Output Power 17 dBm/Port

Anten	Modulation	Carrier Bandwidth	Band Edg	ge (MHz)
na	Modulation	Carrier Bandwidth	Channel Position B	Channel Position T
А	LTE: QPSK	5.0+5.0+5.0+5.0+5.0+ 5.0 MHz	2112.5+2117.5+2122.5+2127.5+ 2132.5+2137.5	2152.5+2157.5+2162.5+2167.5+ 2172.5+2177.5
A	NR: QPSK	5.0+5.0+5.0+5.0+5.0+ 5.0 MHz	2132.5+2137.5 2112.5+2117.5+2122.5+2127.5+ 2132.5+2137.5	2172.3+2177.5 2152.5+2157.5+2162.5+2167.5+ 2172.5+2177.5
A	LTE + NR QPSK	5.0+5.0+5.0+5.0+5.0+ 5.0 MHz	2112.5+2117.5+2122.5+2127.5+ 2132.5+2137.5	2152.5+2157.5+2162.5+2167.5+ 2172.5+2177.5
A	LTE + WCDMA QPSK	10.0+10.0+5.0+5.0+5. 0+5.0 MHz	2115.0+2125.0+2132.5+2137.5+ 2142.5+2147.5	2145.0+2155.0+2162.5+2167.5+ 2172.5+2177.5

# Remarks

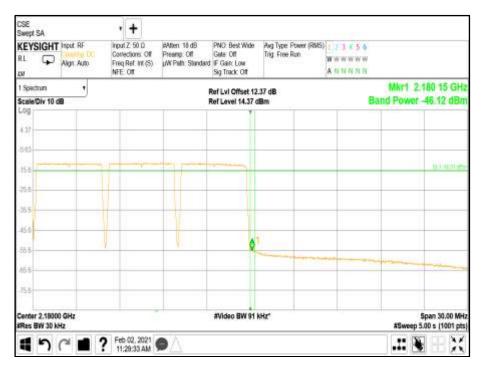
Six carrier transmitter performance is presented. The plot results represent typical worst-case radio performace.



Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0+5.0 MHz -Channel Position B

Swept SA KEYSIGHT Input. RF RL P Allon. Auto	Input Z 50 D Conections: Off Freq Ref. Int (S)	AMen 16 dB Prearig: Off µW Path: Standard	PNO Best Wide Gate: Off IF Gate: Low	Avg Type: Power (F Trig: Free Run	845) 123456 WWWWWWW		
tu	NFE Off		Sig Track: Off	_	ANNNNN		
1 Spectrum 🔹		,	ef Lvi Offset 12	36 dB			109 85 GHz
Scale/Div 10 dB		,	tef Level 12.36 d	8m		Band Power -	49.14 dBm
Log	111	1 1					
235							
764	_						
					-		10.1.00.00.00
17.0							
27.6							
37.6							
-5/18					1	1	
47.0							
57.6			0			1	
87.6							
37.0							
Center 2.11000 GHz Res BW 30 kHz		3	#Video BW 91 1	úHz"			Span 30.00 MH: .00 s (1001 pts
	? Feb 02, 2021 11:10:38 AM	OA				.:: 🖲	HX

<u>Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0+5.0 MHz -</u> <u>Channel Position T</u>

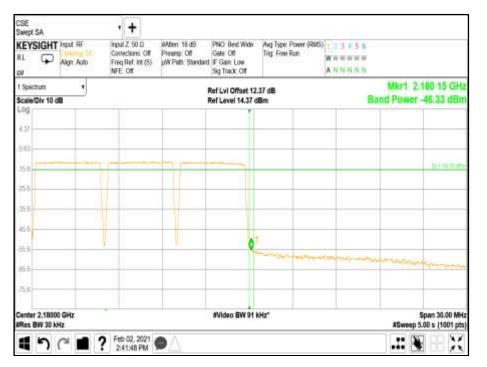




<u>Antenna A - Modulation NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0+5.0 MHz -</u> <u>Channel Position B</u>

Swept SA	AND A DO	• +	iAben 18d8	PNO: Best Wide	A . 7			
KEYSIG RL G	HT Input RF Align: Auto	Input Z 50 D Contections: O Freq Ref. Int (5 NFE: Off	f Preerip Off	Gate: Off	Avg Type: Power (RME Trig: Free Run	4 N N N N N		
1 Spectrum	•			Ref Lvi Offset 12	36 dB		Mkr1 2.1	09 85 GHz
Scale/Div 1	10 dB			Ref Level 14.36 d		Ba	nd Power -4	9.97 dBm
Log			ľ ľ				1	
4.35								
564								
			_			-		timine.
158				17			11	a riteri a
25.6		_	_					
35.5								
45.6								
55.5				01	-			
166		-	and and the second second	un and				
	Martin .							
75.8								
Center 2.11 Res BW 3				#Video BW 91 1	Hz"		Sp #Sweep 5.0	van 30.00 MHz 0 s (1001 pts
1 5	C .	Peb 02, 202					.:: 🔖	HX

Antenna A - Modulation NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0+5.0 MHz - Channel Position T

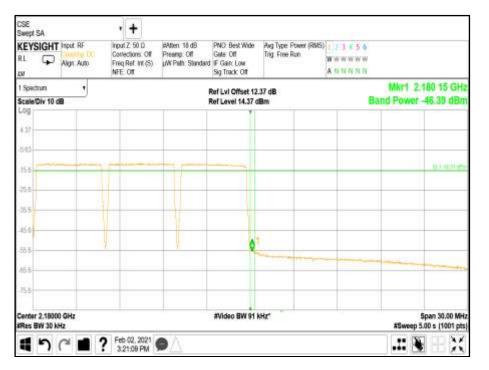




<u>Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0+5.0 MHz -</u> <u>Channel Position B</u>

CSE Swept S				+						
KEYS RL W		Ngn Auto	Conte	Z 50 0 ctions: Off Ref. Int (S) Off	#Atten: 20 dB Preamp: Off #W Path: Standard	PND Best Wide Gate: Off IF Gain: Low Sig Track: Off	Aug Type: Power (RMS) Trig: Free Run	123455 WWWWWWW ANNNNN		
1 Spect	nım	,			,	Ref Lvi Offset 1	2.36 dB			109 85 GHz
	Div 10 dB					Ref Level 16.36	dBm	8	and Power -	49.71 dBm
Log					1 1				1	
6.35										
5.64		_	_							
12.5								-	-	
23.6 -			-		_					
33.8-										
45.5		-	-							
53.5						6				
15.6			-							
72.5		-								
	2.11000 W 30 kH				1. A	#Video BW 91	kHz"			ipan 30.00 MH 00 s (1001 pts
4	5	3	? Feb	02, 2021 0:52 PM	<u>A</u>				.:: 😽	EX

<u>Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 5.0+5.0+5.0+5.0+5.0+5.0 MHz -</u> <u>Channel Position T</u>

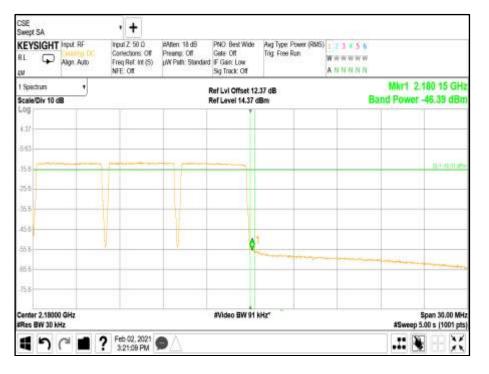




## Antenna A - Modulation LTE + WCDMA QPSK - Carrier Bandwidth 10.0+10.0+5.0+5.0+5.0+5.0 MHz - Channel Position B

CSE Swept SA			+						
KEYSIGH RL C	Align, Auto	Cork	(Z. 50 D) ections: Off Ref. Mt (S) Off	AAtten 18 dB Prearap: Off y/W Pisth: Standar	PNO Best Wide Gate: Off I IF Gain: Low Sig Track: Off	Aug Type: Power (R& Trig: Free Run	AS) 123456 WWWWWWW ANNNNN		
1 Spectrum	•				Ref Lvi Offset 12	36 dB			109 79 GHz
Scale/Div 1	0 dB				Ref Level 14.36 d			Band Power	45.93 dBm
Log	1	11		1		1			
4.36									
5.64									
15.8		_		_	10		-		(as more
25.5									
-0.0									l)
35.5				-			-		
456								_	
							1		
-56.5					-		_		
155	4	-	- mar	-				_	
-									
75.6									
Center 2.11 Res BW 43					#Video BW 130	kHz"			Span 50.00 MH: .00 s (1001 pts
15	C .	? Fet	02, 2021 45:11 PM	ØA				.:: 🖲	I H X

Antenna A - Modulation LTE + WCDMA QPSK - Carrier Bandwidth 10.0+10.0+5.0+5.0+5.0+5.0 MHz - Channel Position T



Limit -16 dBm



# 2.4 TRANSCEIVER SPURIOUS EMISSIONS

## 2.4.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.53 (h) Industry Canada RSS-139, Clause 6.5 FCC CFR 47 Part 2, Clause 2.1051

# 2.4.2 Date of Test and Modification State

29 - 30 January 2021 - Modification State 0

## 2.4.3 Test Equipment Used

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

## 2.4.4 Environmental Conditions

Ambient Temperature	24.1 - 24.4°C
Relative Humidity	31.7 - 33.0%

## 2.4.5 Test Method

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

This product has 2 transmitter ports. To account for this, the limit was tightened by 10 \* Log(N), where N is equal to the number of MIMO antenna ports.

For dual port, the limit was calculated as being -13 dBm - 10 \* Log (2) = -16 dBm.

# 2.4.6 Test Results

Configuration A

Maximum Output Power 17.00 dBm/Port

# **Remarks**

1. Transceiver spurious emssions have been searched for all channel bandwidths and antenna ports.

2. Representavie spurious emissions performance has been presented for all modulations.

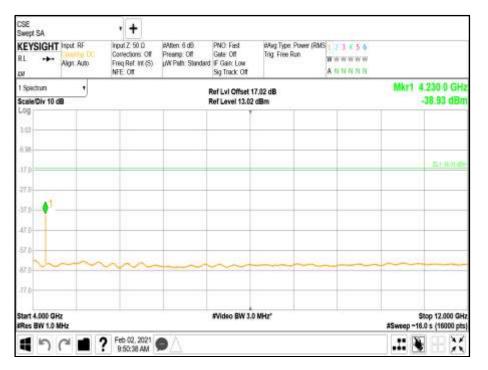
3. Plot data performance for all transmitter ports, channel bandwidths, and channel positions are on file and available on request.



Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M - Band 1.00 - Range 0.009 to 4000 MHz

CSE Swept SA		• +			
KEYSIGH	Algn. Auto	Input Z: 50 D Contections: 01 Freq Ref. Int (S NFE: 01t		BAug Type: Power (RMS) 2 3 6 5 6 Trig: Free Ran W w w w w A N N N N N	
1 Spectrum	•		Ref Lvi Offset 1	3.70 dB	Mkr1 2.119 3 GHz
Scale/Div 1	0 08		Ref Level 21.70	dBm	9.16 dBm
Log	1			203	
11.7				•	
1.70				M 4	
8.30					0.100125
18.3					641 H / 25
28.3					
30.3					
48.3					
-58.5					~~~
101					
Start 9 kHz Res BW 1/	0 MHz		#Video BW 3.4	9 MHz"	Stop 4.000 GH: #Sweep ~8.01 s (8000 pts
15					

Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M - Band 2.00 - Range 4000 to 12000 MHz





Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position M - Band 3.00 - Range 12000 to 22000 MHz

Swept SA KEYSIGHT Input RF RL + Align Auto N	Contections Off	Atten 0 d8 PNO Fast Peeng: Off Gate Off W Path: Standard IF Gare High Sig Track: Off	dAug Type: Power (RMS 1 2 3 4 5 6 Trig. Free Run W W W W W W A N N N N N		
1 Spectrum • Scale/Div 10 dB		Ref Lvi Offset 21 Ref Level 1.95 di		Mkr1 21	1.455 9 GH -60.39 dBn
Log					1
8.05					11403
18.1					
38.1					
411.1					
58.1				1	
88(1	- 1000 000 000				
nici					
rn 1					
Start 12.000 GHz		#Video BW 3.0	MHz*		Stop 23.000 GH 2.0 s (22000 pts
1901	? Feb.02, 2021	A		.:: 1	

Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1.00 - Range 0.009 to 4000 MHz

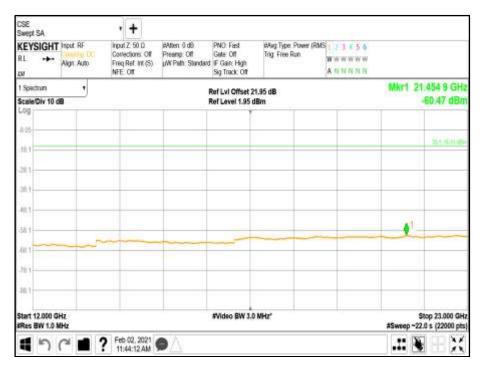




Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2.00 - Range 4000 to 12000 MHz

CSE Swept SA	• +			
KEYSIGHT Input RF RL ++ Align: Auto W	Input Z 50 D AAtten 6 dB Contections Off Preamp Off Frieg Ref. Mt (S) J/W Path: Sta NFE_Off	PNO: Fast Gate: Otf IF Gain: Low Sig Track: Otf	RAwg Type: Power (RMS) 1 2 3 4 5 6 Trig: Free Run W W W W W W W A N N N N N	
1 Spectrum 🔹 🔹		Ref Lvi Offset 17.0	2 dB	Mkr1 4.225 5 GH
Scale/Div 10 dB		Ref Level 13.02 dB	im	-36.99 dBn
Log		1 1		
3.02				
4.56				
17.0				E1440 -
27.0				
57.0				
47.0				
-57.0				
67.0	m			
77.0				
itart 4.000 GHz Res BW 1.0 MHz		#Video BW 3.0 M	Hz'	Stop 12.000 GH #Sweep ~16.0 s (16000 pts
4 5 C 1	? Feb 02, 2021			.:: 🖲 🗄 🔀

Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 3.00 - Range 12000 to 22000 MHz

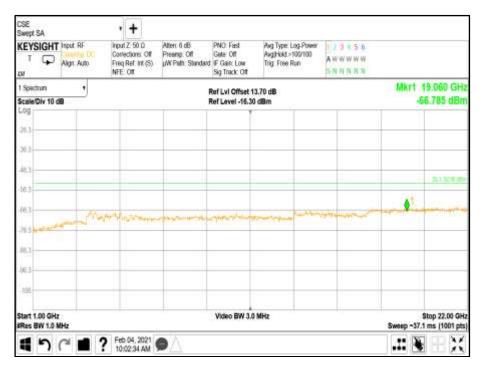




Modulation Receiver Spurious - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1.00 - Range 30 MHz to 1000 MHz

CSE Swept S	- 17			+						
T T		at RF	Conte	Z 50 0 schons Off Ref. Int (S) Off	Atten: 6 dB Preanp: Off pW Path: Standar	PNO Fast Gate Off IF Gain Low Sig Track Off	Avg Type: Log-Power Avg(Hold >100/100 Trig: Free Run	123450 AWWWWW SNNNNN		
1 Spachum • Ref Lvi Offset 13.70 dB							Mkr1 838.01 MHz			
	iv 10 dB					Ref Level -16.30	dBm		-8	4.188 dBm
Log		1			1 1				1 1	
26.3		-	-							
36.3-		-	-		_					
48.2										
56.3										D.L. Harden
86.3-										
16.5										
26.3									•	
	(s)(s)	1								
.06.3										
-105		-								
	0300 GHz W 100 kHz					Video BW 300	) kHz			op 1.0000 GH ms (1001 pts
■ <sup>5</sup> ( <sup>2</sup> ■ ? Feb 04, 2021						.: 1	HX			

<u>Modulation Receiver Spurious - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2.00 - Range 1000 to 22000 MHz</u>





Configuration B

Maximum Output Power 17 dBm/Port

#### **Remarks**

1. Transceiver spurious emssions have been searched for all channel bandwidths and antenna ports.

2. Representavie worst-case spurious emissions performance has been presented.

Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1.00 - Range 0.009 to 4000 MHz

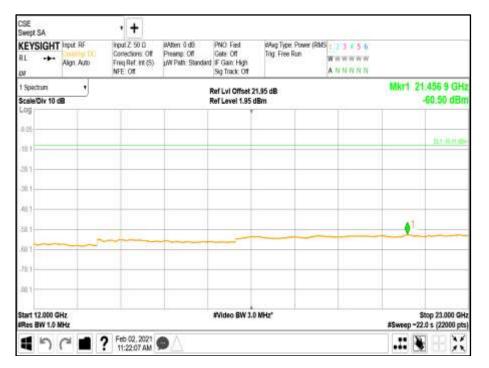
PL.	sput RF Xuging DC Nga Auto	rout 2 50 0 Convectories Off Frieq Ref. Atr (S) NFE: Off	#Alten 22 dB Preamp: Off yW Path Standard	PNO Fest Gale Of IF Gale Loa Sig Track: Of	Alveg Type: Power (RMS 2 2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
i Spectrum Scale/Div 10 dB	•			tef Lvi Offset 13 tef Level 17.69		Mkr1 2	154 3 GH 4.26 dBr
.og 7.25	1		1		1		
211	_						
12.1				_			101 14 01 e
21							
12.1	_				*		
21				-	1		~
12.1							
itart 9 kHz Res BW 1.0 MH	ŧ.			#Video BW 3.0	MHz		Stop 4.000 GH 01 s (8000 pt
5		Feb 02, 2021 11:20:50 AM	9				



Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2.00 - Range 4000 to 12000 MHz

Swept SA	• +	en 6d6 PNO Fast	Alter Ten Oner (DMC)		
RL INPUT RF	Contections Off Pre-	ang: Off Gate: Off	dAag Type: Power (RMS 1 3 4 5 th Trig: Free Ran		
Align: Auto	Freq Ref. Mt (S) UW NFE: Off	Path: Standard IF Gain: Low Sig Track: Off	ANNNN		
1 Spectrum 🔹		Ref Lvi Offset 1	7.02 dB	Mkr1 4	295 0 GH
Scale/Div 10 dB		Ref Level 13.02			43.39 dBn
Log					
3.02					
4.56	0				
1.00					Distances of the
17.0					and the state of the state
27.0				_	
37.0					
Sr.p					
47.0					
57.0					
h	min				
407.0					
37.0				_	
Start 4.000 GHz Res BW 1.0 MHz		#Video BW 3.0	MHz"		top 12.000 GH 0 s (16000 pts
1901	? Feb 02, 2021	A.:		.:: 🔖	1

Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 3.00 - Range 12000 to 22000 MHz

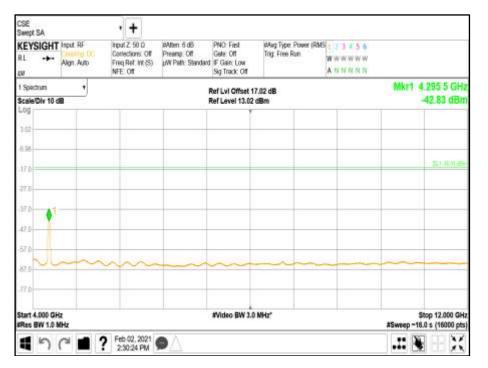




Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1.00 - Range 0.009 to 4000 MHz

KEYSIGHT Input AF RL -+- Align Av 30	Conections Of	#Alten 24 dB PNO Fest Preung: Of Gate Of yW Path Standard IF Gate Low Sig Tinck: Of	AAug Type: Power (RMS 1 2 3 4 3 F Trig: Free Run W w w w w w A N N N N N	
Spectrum		Ref Lvi Offset 1 Ref Level 19.21		Mkr1 2.154 8 GH 4.37 dB
021			1	
0.79				
10.8				11 KH 4
50.0				
10.0				
			1	~~~
10.0				
tart 9 kHz Res BW 1.0 MHz		#Video BW 3.0	) MHz"	Stop 4.000 G #Sweep ~8.01 s (8000 p
501	? Feb 02, 2021 2:29:38 PM	9		

Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2.00 - Range 4000 to 12000 MHz

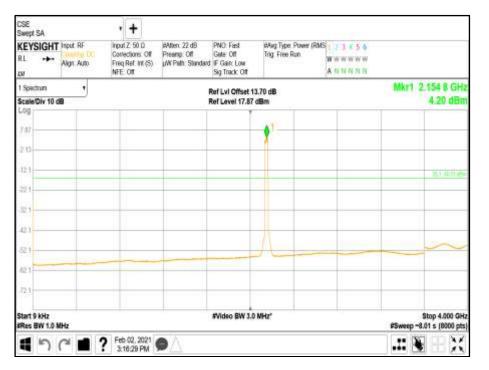




Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 3.00 - Range 12000 to 22000 MHz

RL ++ Algn: Auto		0 db PWO Fast pA p: Off Gete Off Trig th Standard IF Gain; High Sig Track; Off	ag Type Power (RMS 1 2 3 # 5 6 g. Free Run A N N N N N		
1 Spectrum + Scale/Div 10 dB		Ref Lvi Offset 21.95 d Ref Level 1.95 dBm	в		.490 9 GH: 60.28 dBn
Log	The second se	1		1 1	
A 05					Acres and
10.1					111013
261					
56.1				_	
411.1					
58.1					
80.1					
ni i				_	
an 1				_	
Start 12.000 GHz Res BW 1.0 MHz		#Video BW 3.0 MHz			top 23.000 GH 0 s (22000 pts
1901	? Feb 02, 2021	0		.:: 🔖	H-X

Modulation LTE+NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1.00 - Range 0.009 to 4000 MHz

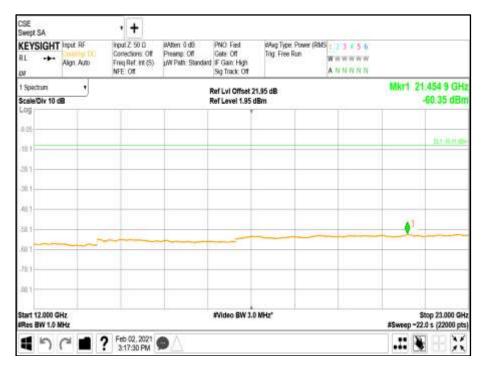




Modulation LTE+NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2.00 - Range 4000 to 12000 MHz

Swept SA KEYSIGHT Input RF		en 6.d8 PNO Fast	RAwg Type: Power (RMS) 1 3 4 5	
R.L ++ Align Auto		rep: Off Gate: Off Path: Standard IF Gate: Low Sig Track: Off	Trig. Free Run A 11 N N N N	v
1 Spectrum 🔹		Ref Lvi Offset 17.0	2 dB	Mkr1 4.295 0 GH
Scale/Div 10 dB		Ref Level 13.02 dB	lm	-42.98 dBn
Log		1		
3.02				
6.56				
17.0				E. HALE
27.0				
37.0 1				
47.0				
57.0				
87.0	~~~~~			
77.0				
itart 4.000 GHz Res BW 1.0 MHz		#Video BW 3.0 M	Hz'	Stop 12.000 GH #Sweep =16.0 s (16000 pts
1501	? Feb.02, 2021	λ		

Modulation LTE+NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 3.00 - Range 12000 to 22000 MHz

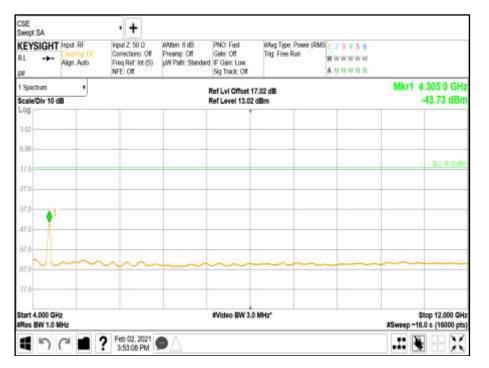




Modulation LTE+WCDMA: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1.00 - Range 0.009 to 4000 MHz

NEY SIGHT Input AF Coloury DC Al+- Algo Auto	Imput Z 59.0 #Alten 22.d8 Corrections Of Preamp Of Freq Ref at (S) J/N Path Stand NFE Of	PNC: Fast Cete: Off ard IF Gast: Low Sig Track: Off	Alwg Type: Power (RMS 1 2 3 4 3 F Trig: Free Run W W W W W W A R N N N N N	
Spectrum + Scale/Div 10 dB		Ref Lvi Offset 13 Ref Level 17.36 d		Mkr1 2.151 8 GH 4.86 dB
/g / <u>%</u>			•	
			1	
70				21.10.01 B
28			A	
10				
tart, 9 kHz		#Video BW 3.0	M45"	Stop 4.000 GI
Res BW 1.0 MHz		white pre stell	one:	#Sweep ~8.01 s (8000 pt

Modulation LTE+WCDMA: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2.00 - Range 4000 to 12000 MHz

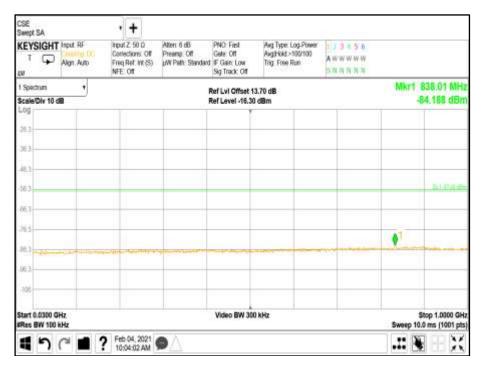




Modulation LTE+WCDMA: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 3.00 - Range 12000 to 22000 MHz

1 Spachum • Ref Lvi Offset 21.95 dB Mkr1 21.451 4 Scale/Div 10 dB Ref Level 1.95 dBm - 60.47 Log		Algn Auto	Input Z 50 D Contections: Off Freq Ref. Mt (S) NFE: Off	#Atten: 0 dB Preamp: Off g/W Path: Standa	PWD Fast Gete: Off rd IF Gain: High Sig Track: Off	eAwg Type: Power (RMS) (2.2.3.4 Trig: Free Ran W w w w A ni h n	www.
	1 Spectrum Scale/Div 10 d						Mkr1 21.451 4 GH -60.47 dBr
	Log	Ĩ.					
201 201 401 501 501 401 101 101 101 101 101 101 1							S. ( ill of its
	38.1						
Au 1 70.1	40.1	_	_				
Jú1	58.1	-			-		•
	41(1						
10.1	J1(1			-			
	.nn 1	_					
				4 6	#Video BW 3.0	MHz*	Stop 23.000 GH #Sweep ~22.0 s (22000 pt

Modulation Receiver Spurious - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1.00 - Range 30 MHz to 1000 MHz





Modulation Receiver Spurious - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2.00 - Range 1000 to 22000 MHz

CSE Swept SA			+						
	put RF Ign Auto		tions: Off ef. W.(S)	Atten: 6 dB Prearu: Off yW Path: Standa	PNO: Fast Gete: Off of IF Gain: Low Sig Track: Off	Avg Type: Log-Power Avg3Hold > 100/100 Trig: Free Run	113450 Awwwww SNNNNN		
1 Spectrum	,				Ref Lvi Offset 13	20 AB		Mkr1 1	9.060 GH
Scale/Div 10 dB					Ref Level -16.30				6.785 dBm
Log	1	111		1					
26.3		_							
36.3	_	_							
46.2		_		_					
56.3						· · · · · · · · ·			RINFO
86.3	- 24						and the second second	1	
183		Aut. Henry	a many	man	Jurnah				
26.3									
06.3	_	-							
-106		-					_		
Start 1.00 GHz Res BW 1.0 MH	z				Video BW 3.0	MHz			itop 22.00 GH ms (1001 pts
100	-	? Feb.0	4, 2021 2:34 AM	DA				.:: 🔖	HX

Limit	-16 dBm RSS-GEN limit for Rx emissions = -57 dBm f < 1GHz -53 dBm f> 1GHz
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**SECTION 3** 

TEST EQUIPMENT USED



# 3.1 TEST EQUIPMENT USED

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

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Spectrum Analyzer	Keysight	PXA N9030B	MY57144347	24	24/04/2022
Thermometer	VWR	61161-364	192595396.00	24	25-10-2021
PSU	Xantrex	XKW60-50	E00109862	-	O/P Mon
Attenuator (10dB)	Mini-Circuits	BW-K10-2W44+	-	-	O/P Mon
RF Switch	Ericsson	RARSFW 4x1	1.00	-	O/P Mon
Switching Control Unit	HP	11713A	3748A060876	-	O/P Mon
Climate Chamber	Burnsco	RTC-37P-3-3	-07-07	-	O/P Mon

N/A – Not Applicable

O/P Mon – Output Monitored with Calibrated Equipment



### 3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	Frequency / Parameter	MU		
Conducted Maximum Peak Output Power	30 MHz to 20 GHz Amplitu	de	± 0.7 dB	
Conducted Emissions	30 MHz to 20 GHz Amplitu	30 MHz to 20 GHz Amplitude		
Frequency Stability	30 MHz to 2 GHz		± 5.0 Hz	
		5 MHz Bandwidth	± 11547 Hz	
	Up to 20 MHz Bandwidth	10 MHz Bandwidth	± 23094 Hz	
Occupied Bandwidth		15 MHz Bandwidth	± 34641 Hz	
		20 MHz Bandwidth	± 46188 Hz	
Band Edge	30 MHz to 20 GHz Amplitude		±0.8 dB	
Dedicted Courieurs Enciceiens	30 MHz to 1 GHz	± 5.2 dB		
Radiated Spurious Emissions	1 GHz to 40GHz	1 GHz to 40GHz		

#### Measurement Uncertainty Decision Rule

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



**SECTION 4** 

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



## 4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Testing Laboratory Certificate #2955.19

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

This report does not imply product endorsement by any government, accreditation agency, or TÜV SÜD Canada Inc.

Opinions or interpretations expressed in this report, if any, are outside the scope of TÜV SÜD Canada Inc. accreditations. Any opinions expressed do not necessarily reflect the opinions of TÜV SÜD Canada Inc., unless otherwise stated.

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

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## 4.2 MODULE LIST

Configuration							
Product	Product No	R-State	Serial No				
CT11	LPC 102 494/1	R2A	T01G495060				
SUP 6601	1/BFL 901 009/1	R3B	BR81278870				
IRU 2242	KRC 161 444/3	R1C	D826463200				
RD 4442 B25B66A (EUT)	KRY 901 386/1	R1B	TD3T308261				
Software Version:	CXP 901 3268/14	Revision:	R79JC				