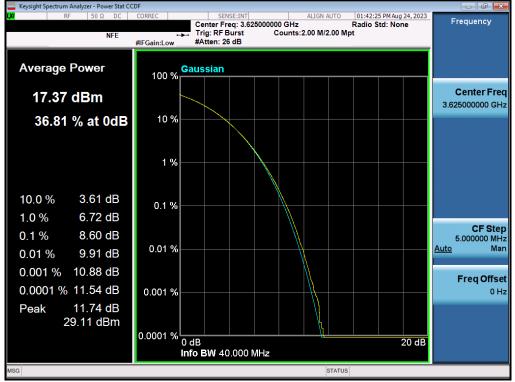
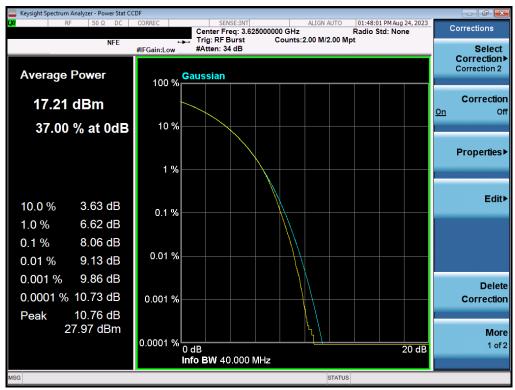


Channel B Peak to Average Power Ratio Measurements



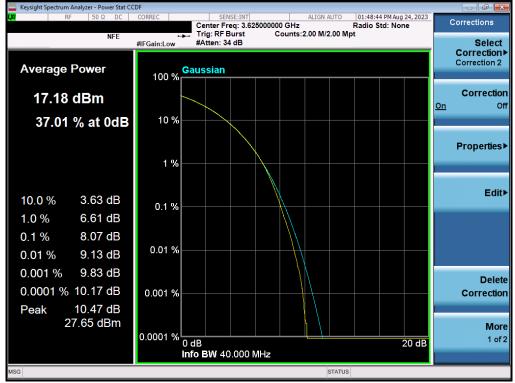
Plot 7.113. Peak to Average Power Ratio Plot (40MHz, QPSK – Mid Channel) – Ch.B



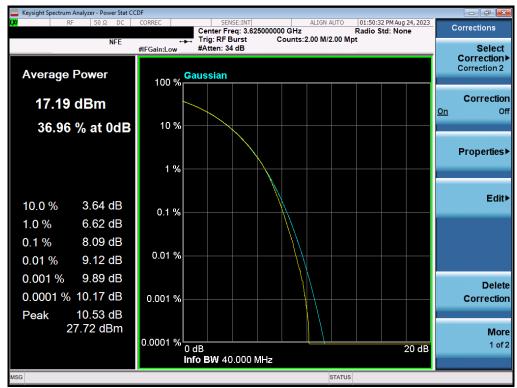
Plot 7.114. Peak to Average Power Ratio Plot (40MHz, 16QAM – Mid Channel) – Ch.B

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 79 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 78 of 124
	<u>.</u>		V3.0 1/6/2022





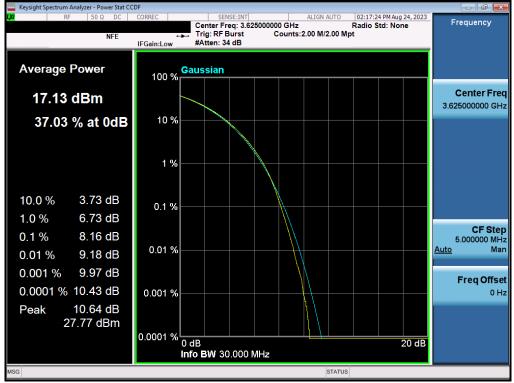




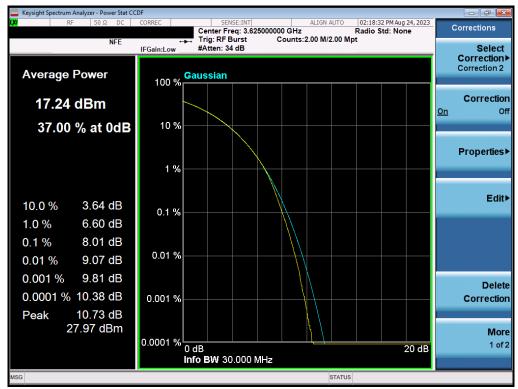
Plot 7.116. Peak to Average Power Ratio Plot (40MHz, 256QAM – Mid Channel) – Ch.B

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 70 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 79 of 124
		-	V3.0 1/6/2022





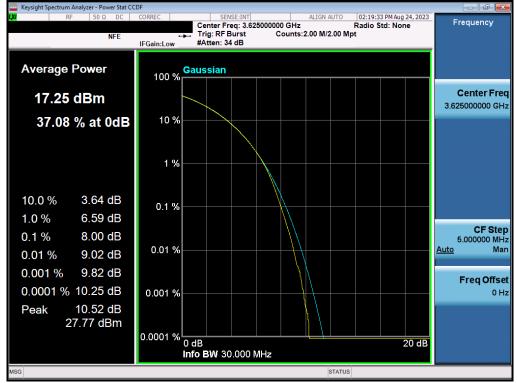
Plot 7.117. Peak to Average Power Ratio Plot (30MHz, QPSK – Mid Channel) – Ch.B



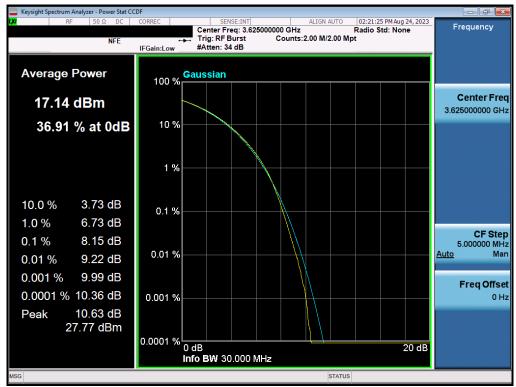
Plot 7.118. Peak to Average Power Ratio Plot (30MHz, 16QAM - Mid Channel) - Ch.B

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 90 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 80 of 124
			V3.0 1/6/2022





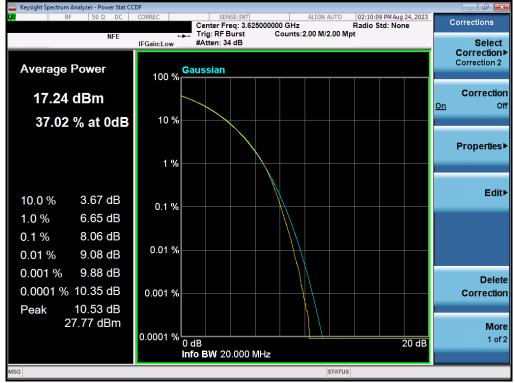




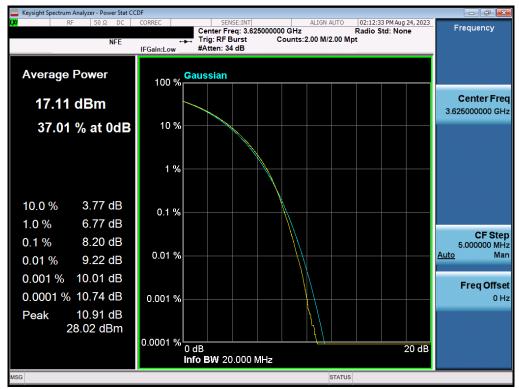
Plot 7.120. Peak to Average Power Ratio Plot (30MHz, 256QAM – Mid Channel) – Ch.B

FCC ID: 2AS22-LUMACH2	PART 96 MEASUREMENT REPORT Class II Permissive Change		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 91 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 81 of 124
	-	-	V3.0 1/6/2022





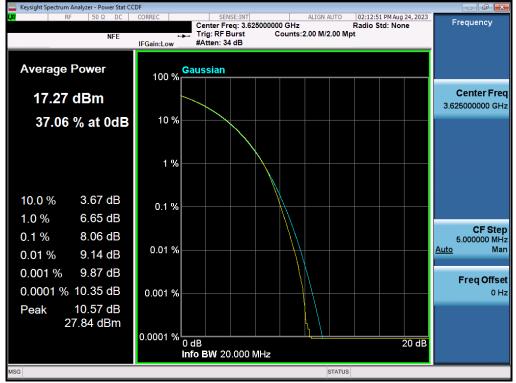
Plot 7.121. Peak to Average Power Ratio Plot (20MHz, QPSK - Mid Channel) - Ch.B



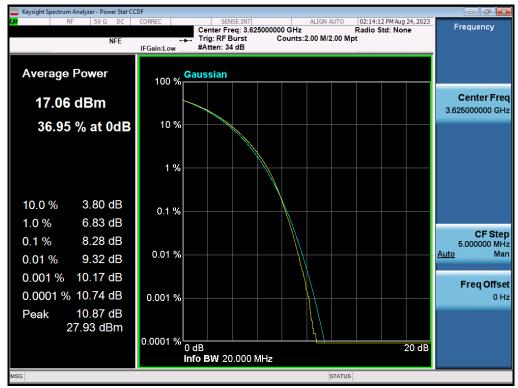
Plot 7.122. Peak to Average Power Ratio Plot (20MHz, 16QAM - Mid Channel) - Ch.B

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 92 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 82 of 124
	•	-	V3.0 1/6/2022





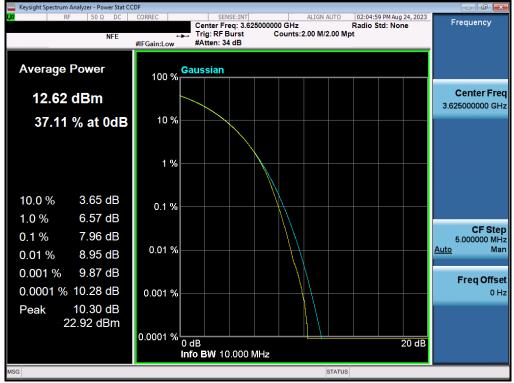
Plot 7.123. Peak to Average Power Ratio Plot (20MHz, 64QAM - Mid Channel) - Ch.B



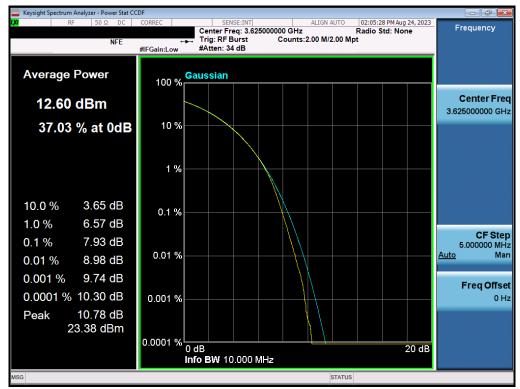
Plot 7.124. Peak to Average Power Ratio Plot (20MHz, 256QAM - Mid Channel) - Ch.B

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 92 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 83 of 124
	-	-	V3.0 1/6/2022





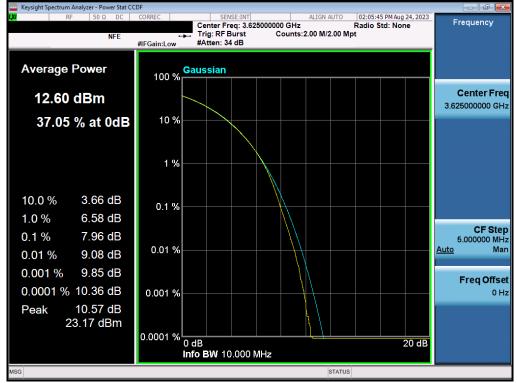
Plot 7.125. Peak to Average Power Ratio Plot (10MHz, QPSK – Mid Channel) – Ch.B



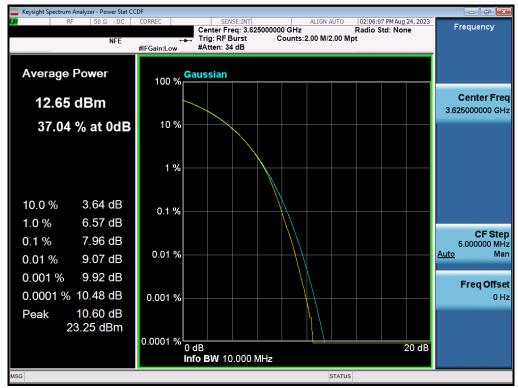
Plot 7.126. Peak to Average Power Ratio Plot (10MHz, 16QAM - Mid Channel) - Ch.B

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 94 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 84 of 124
<u></u>			V3.0 1/6/2022





Plot 7.127. Peak to Average Power Ratio Plot (10MHz, 64QAM – Mid Channel) – Ch.B



Plot 7.128. Peak to Average Power Ratio Plot (10MHz, 256QAM - Mid Channel) - Ch.B

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 95 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 85 of 124
	-	-	V3.0 1/6/2022



7.6 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/Mhz.

Test Procedure Used

ANSI C63.26-2015 - Section 5.7.4

Test Settings

- 1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = Max Hold
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

~ *	
-=	
	EUT

Figure 7-5. Test Instrument & Measurement Setup

Test Notes

- 1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz.
- 2. The Plots in this section have a 11.46dB (10*log(total ports[14])) correction applied to the individual plots to address the MIMO requirements in ANSI C63.26
- 3. Any emissions failing in max hold wide spectrum sweeps were found to be passing when more closely examined with gated average measurements

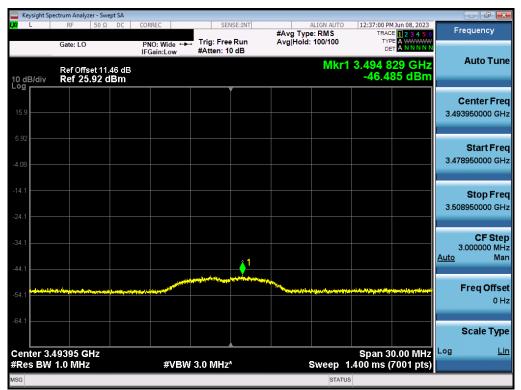
FCC ID: 2AS22-LUMACH2	PART 96 MEASUREMENT REPORT Class II Permissive Change		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo % of 124	
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 86 of 124	
			V/3 0 1/6/2022	



Channel A Conducted Spurious Emissions



Plot 7.129. Conducted Spurious Plot (10MHz QPSK, Low Channel - Ch.A)



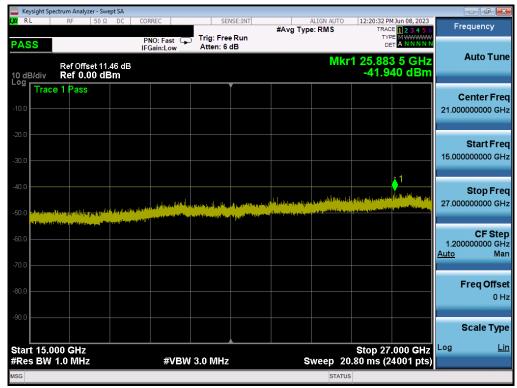
Plot 7.130. Conducted Spurious Plot (10MHz QPSK, Low Channel - 3495 MHz - Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 07 of 104
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 87 of 124
	·		V3.0 1/6/2022



🔤 Keysight Spectrum Analyzer - Swept SA					
LX/RL RF 50Ω DC	CORREC SEN	ISE:INT #Avg Typ		MAug 03, 2023	Frequency
PASS	PNO: Fast ++ Trig: Free IFGain:Low Atten: 6 of		DI		Auto Tune
Ref Offset 11.46 dB 10 dB/div Ref 0.00 dBm			Mkr1 3.93 -40.2	1 9 GHz 90 dBm	Auto Tune
-10.0 Trace 1 Pass					Center Freq 9.300000000 GHz
-20.0					
-30.0					Start Freq 3.60000000 GHz
-40.0					Stop Freq
-50.0		ويشجونهم وبالمرجون والمراقين	and a fill a start of the start	the polytest and the	15.000000000 GHz
-60.0		a de la des des antes de la definitación de la definitación de la definitación de la definitación de la definit	المتألي عاداته عدائل وتنمي والأهاداذ بالمريستان حدائش و		CF Step 1.14000000 GHz
-70.0				Æ	Auto Man
-80.0					Freq Offset
-90.0					0 Hz
					Scale Type
Start 3.600 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	s	Stop 15 weep 19.79 ms (2	.000 GHZ	.og <u>Lin</u>
MSG			STATUS		

Plot 7.131. Conducted Spurious Plot (10MHz QPSK, Low Channel - Ch.A)



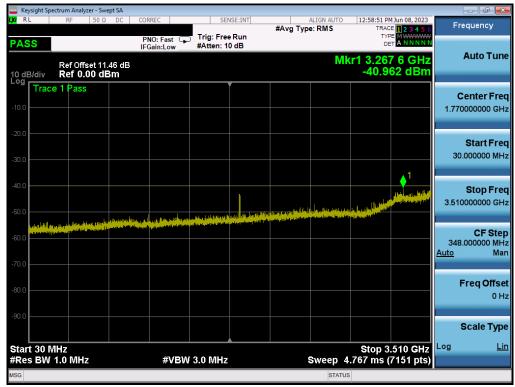
Plot 7.132. Conducted Spurious Plot (10MHz QPSK, Low Channel - Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dege 00 of 104
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 88 of 124
	•	·	V3.0 1/6/2022



Keysight Spectrum Analyzer									
IXI RL RF 5	50 Ω DC C	ORREC	SENSE:	INT #Avg Typ	ALIGN AUTO e: RMS	12:21:38 PM] TRACE	Jun 08, 2023	Frequ	iency
PASS	IF	PNO: Fast 🖵 FGain:High	Trig: Free Ru #Atten: 0 dB	in	Mkr			Au	ito Tune
10 dB/div Ref 0.00						-42.38	2 dBm		
Trace 1 Pass									ter Freq
-10.0								33.00000	0000 GHz
-20.0									art Freq
-30.0								27.00000	0000 GHz
-40.0							_ 1	St	op Freq
50.0	مروار والمرور والمرور والمرور والمرور	والمتعاربة والمتعادة	and the second	a Bettelen geben	CARDING ALL AND A	and the second of the late	Differ Distanleys		0000 GHz
-50.0 Here the local set of the s	and the second	na statenina da se	a contrastina pasta samà	and the second					05.04
-60.0								1.20000	CF Step
-70.0								<u>Auto</u>	Man
-80.0								Fre	q Offset
-00.0									0 Hz
-90.0								Sci	ale Type
Start 27.000 GHz #Res BW 1.0 MHz		#VBW	3.0 MHz	s	weep 20	Stop 39.0 .80 ms (24	000 GHz 001 pts)	LUg	Lin
MSG					STATUS	· · ·			

Plot 7.133. Conducted Spurious Plot (10MHz QPSK, Low Channel - Ch.A)



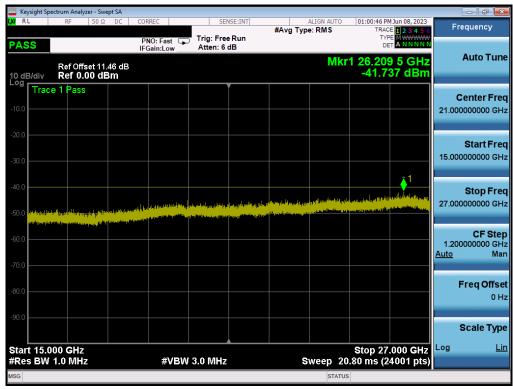
Plot 7.134. Conducted Spurious Plot (10MHz QPSK, Mid Channel - Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change				
Test Report S/N:	Test Dates:					
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023					
			V3.0 1/6/2022			



	trum Analyzer -						
IX/RL	RF 5	DΩ DC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	02:42:47 PM Aug 24, 2023 TRACE 1 2 3 4 5 6	Frequency
PASS			PNO: Fast ↔ IFGain:Low	Trig: Free Run Atten: 10 dB	Avg Hold: 100/100		A
	Ref Offset Ref 11.4				MI	kr1 3.932 4 GHz -40.246 dBm	Auto Tune
Trace	1 Pass						Center Fred
1.46							9.370000000 GHz
-8.54							Start Fred
-18.5							3.740000000 GHz
-28.5							Stop Fro
-38.5							Stop Fred 15.000000000 GH:
				lan, a da a dha a dhi a cha a dhina bilan	analitik alla det man til ett erretati	alanay paramatan katalan aktika da	CF Ster
-48.5			na de la Palancia de la Compositione de la Composit	· · · · · · · · · · · · · · · · · · ·	and a state of the state of the second s		1.126000000 GH Auto Mar
-58.5							
-68.5							Freq Offset 0 Hi
.78.5							
							Scale Type
Start 3.740 #Res BW 1			#VBW	3.0 MHz*	Sweep 19	Stop 15.000 GHz 9.68 ms (22711 pts)	Log <u>Lir</u>
ISG					STATU		

Plot 7.135. Conducted Spurious Plot (10MHz QPSK, Mid Channel - Ch.A)



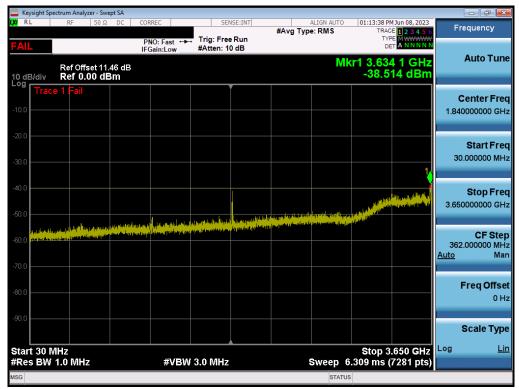
Plot 7.136. Conducted Spurious Plot (10MHz QPSK, Mid Channel - Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change				
Test Report S/N:	Test Dates:	EUT Type:	Dogo 00 of 124			
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 90 of 124			
	•		V3.0 1/6/2022			



	Spectrum Analyz									_	
L <mark>XI</mark> RL	RF	50 Ω DC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO e: RMS		MJun 08, 2023	Fr	equency
PASS			PNO: Fast 🕞	Trig: Free #Atten: 0		• ,,		TYF			
10 dB/div		et 11.46 dB 00 dBm					Mk	r1 38.75 -42.4	0 0 GHz 59 dBm		Auto Tune
-10.0	ace 1 Pass										Center Freq 0000000 GHz
-20.0										27.00	Start Freq 0000000 GHz
-40.0	ىلەر بىلىدىغا قىرانلىرىتى _د كىر	nippe in the late of the late	and the first state of the	L _{evel} te Manager and States of States	(na tangangangangan)	a Milatana Antai anna anna anna		ana parina atau garan		39.00	Stop Freq 0000000 GHz
-60.0	terðisti gifti _{en s} ur an en sakk á									1.20 <u>Auto</u>	CF Step 0000000 GHz Man
-80.0											Freq Offset 0 Hz
-90.0											Scale Type
	7.000 GHz W 1.0 MHz		#VBM	/ 3.0 MHz		s	weep_2	Stop 39 0.80 ms (2	.000 GHz 4001 pts)	Log	<u>Lin</u>
MSG							STAT	_			

Plot 7.137. Conducted Spurious Plot (10MHz QPSK, Mid Channel – Ch.A)



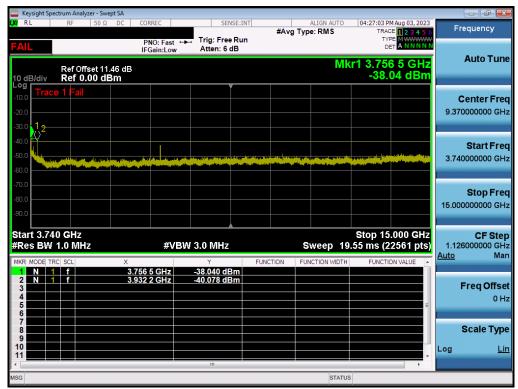
Plot 7.138. Conducted Spurious Plot (10MHz QPSK, High Channel - Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 01 of 124	
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 91 of 124	
			V3.0 1/6/2022	



	ectrum Analyzer - Swept S					
L <mark>XI</mark> L	RF 50 Ω D	C CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	01:19:03 PM Jun 08, 2023 TRACE 1 2 3 4 5 6	Frequency
10 dB/div	Gate: LO Ref Offset 11.46 Ref 0.00 dBm		Trig: Free Run #Atten: 10 dB	Avg Hold: 100/100	-43.387 dBm	Auto Tune
-10.0						Center Freq 3.634000000 GHz
-20.0						Start Freq 3.629000000 GHz
-40.0			1			Stop Freq 3.639000000 GHz
-60.0						CF Step 1.000000 MHz <u>Auto</u> Man
-80.0						Freq Offset 0 Hz
-90.0						Scale Type
Center 3.6 #Res BW	634000 GHz 1.0 MHz	#VBW	3.0 MHz*	Sweep 1	Span 10.00 MHz 6.99 ms (7281 pts)	Log <u>Lin</u>
MSG				STATU	3	

Plot 7.139. Conducted Spurious Plot (10MHz QPSK, High Channel - 3634 MHz - Ch.A)



Plot 7.140. Conducted Spurious Plot (10MHz QPSK, High Channel - Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dega 02 of 124	
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 92 of 124	
	<u>.</u>		V3.0 1/6/2022	



🧱 Keysight Spe	ectrum Analyzer - Swe										
L <mark>XI</mark> L	RF 50 Ω	DC CO	RREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO		Jun 08, 2023	F	requency
	Gate: LO Ref Offset 11	IF	NO: Wide ↔ Gain:Low	Trig: Free #Atten: 1		Avg Hold	: 100/100	TYPE DET	6 GHz		Auto Tune
10 dB/div Log	Ref 0.00 dB	3m						-42.61	3 dBm		
-10.0											Center Freq 6465000 GHz
-20.0										3.74	Start Freq 7965000 GHz
-40.0	ntigente generation and a state of the	and the second		hanner an fairt an	an fan de ster ster ster ster ster ster ster ste	araya karalari da kara			a kana sa daharang	3.76	Stop Freq 4965000 GHz
-60.0										<u>Auto</u>	CF Step 1.700000 MHz Man
-80.0											Freq Offset 0 Hz
-90.0											Scale Type
Center 3.7 #Res BW	756465 GHz 1.0 MHz		#VBW	3.0 MHz	к к	s	weep 1.	Span 17 504 ms (22	.VV IVII 12	Log	<u>Lin</u>
MSG							STATU	s			

Plot 7.141. Conducted Spurious Plot (10MHz QPSK, High Channel – 3755 MHz Ch.A)



Plot 7.142. Conducted Spurious Plot (10MHz QPSK, High Channel - Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change				
Test Report S/N:	Test Dates:	Test Dates: EUT Type:				
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 93 of 124			
	·		V3.0 1/6/2022			



	ctrum Analyzer - Sw										×
I <mark>XI</mark> RL	RF 50 Ω	DC CC	ORREC	SEI	NSE:INT	ALIGN AUTO #Avg Type: RMS			1 Jun 08, 2023 E 1 2 3 4 5 6	Frequency	
PASS			PNO: Fast 🖵 Gain:High	Trig: Free #Atten: 0				TYF DE			
10 dB/div Log	Ref Offset 11 Ref 0.00 dl						Mkr	1 38.678 -41.6	3 0 GHz 57 dBm	Auto Tu	Ine
Trace	e 1 Pass									Center Fi	req
-10.0										33.000000000	GHz
-20.0											
										Start Fr 27.000000000	
-30.0										21.0000000000	
-40.0									••••••••••••••••••••••••••••••••••••••	Stop Fr	req
-50.0	a a la la sur	ية المراجع المراجع الم	andra I. I	a da a tribun da a da	and Districtly by		AND A CONTRACTOR OF A	n har _{pers} enter <mark>hieren</mark> Statue		39.000000000	GHz
	and a second sec	a na ann an Albert Bara	in the summer of the twee states	ten (statistical data data data data data data data da	handberg and disk por	The second second second				CF St	
-60.0										1.20000000 0	GHz
-70.0										<u>Auto</u> N	Man
										Freq Off	set
-80.0										0) Hz
-90.0											
										Scale Ty	
Start 27.0 #Res BW			#VBW	3.0 MHz		s	ween 20	Stop 39 1.80 ms (2	.000 GHz 4001 pts)	Log	Lin
MSG			7 O 244				STATUS		ree i proj		

Plot 7.143. Conducted Spurious Plot (10MHz QPSK, High Channel – Ch.A)

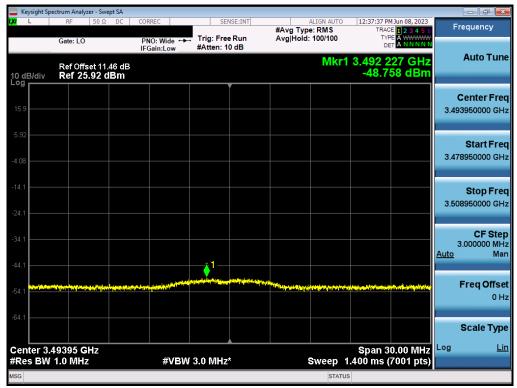
FCC ID: 2AS22-LUMACH2		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Page 94 of 124	
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 94 01 124	
			\/3.0.1/6/2022	



Channel B Conducted Spurious Emissions



Plot 7.144. Conducted Spurious Plot (10MHz QPSK, Low Channel - Ch.B)



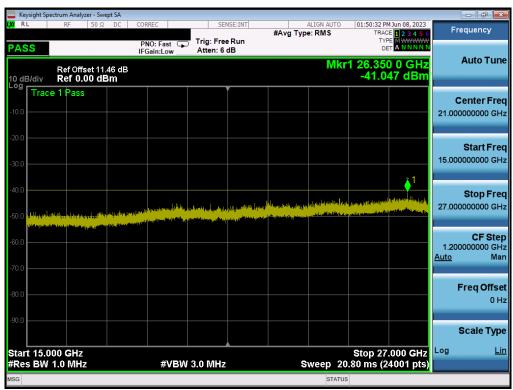
Plot 7.145. Conducted Spurious Plot (10MHz QPSK, Low Channel - 3495 MHz Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Dage OF of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 95 of 124		
	<u>.</u>		V3.0 1/6/2022		



Keysight Spectrum Analyzer - Swept SA					
LX RL RF 50 Ω DC	CORREC SEI	MSE:INT #Avg T	ALIGN AUTO	01:48:57 PM Jun 08, 2023 TRACE 1 2 3 4 5 6	Frequency
PASS	PNO: Fast Trig: Free IFGain:Low Atten: 6				
	IFGain:Low Attent o	40	Mk	r1 3.617 0 GHz	Auto Tune
Ref Offset 11.46 dB 10 dB/div Ref 0.00 dBm Log				-40.886 dBm	
Trace 1 Pass		Ĭ			Center Freq
-10.0					9.300000000 GHz
-20.0					Start Freq
-30.0					3.600000000 GHz
. 1					
-40.0					Stop Freq
					15.00000000 GHz
-50.0					
-60.0					CF Step
					1.140000000 GHz <u>Auto</u> Man
-70.0					
					Freq Offset
-80.0					0 Hz
-90.0					
					Scale Type
Start 3.600 GHz				Stop 15.000 GHz	Log <u>Lin</u>
#Res BW 1.0 MHz	#VBW 3.0 MHz		Sweep 19	.79 ms (22841 pts)	
MSG			STATUS	5	

Plot 7.146. Conducted Spurious Plot (10MHz QPSK, Low Channel – Ch.B)



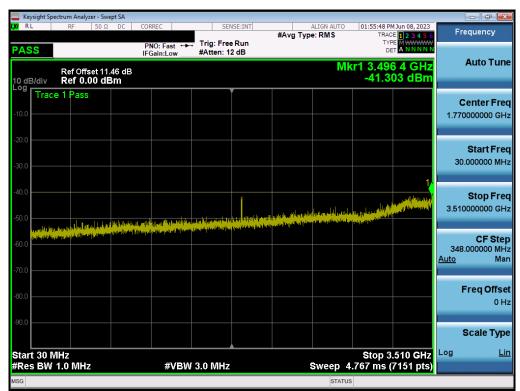
Plot 7.147. Conducted Spurious Plot (10MHz QPSK, Low Channel - Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Dage 06 of 104		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 96 of 124		
			V3.0 1/6/2022		



Keysight Spectrum Analyzer - Swep					
<mark>ΙΧ΄ R L</mark> RF 50 Ω	DC CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	01:52:23 PM Jun 08, 2023 TRACE 1 2 3 4 5 6	Frequency
PASS		Trig: Free Run #Atten: 0 dB	- //	TYPE M WWWW DET A NNNN	Auto Tune
Ref Offset 11.4 10 dB/div Ref 0.00 dB				1 38.026 0 GHz -41.361 dBm	
Trace 1 Pass		Ĭ			Center Freq
-10.0					33.000000000 GHz
-20.0					Start Freq
-30.0					27.000000000 GHz
-40.0				1 dour h	Stop Freq
-50.0 Million and the state of	e topological de la la constance de la la la constance de la la la constance de la la constance de la constance	annonada la contensa la contens	the second s		39.000000000 GHz
-60.0	an a	a 1948 a controllocalify and be control and a control of a	Forth		CF Step
-6U.U					1.200000000 GHz <u>Auto</u> Man
-70.0					_
-80.0					Freq Offset 0 Hz
-90.0					
					Scale Type
Start 27.000 GHz #Res BW 1.0 MHz	#VBW 3	.0 MHz	Sweep 20	Stop 39.000 GHz 80 ms (24001 pts).	Log <u>Lin</u>
MSG			STATUS	3	

Plot 7.148. Conducted Spurious Plot (10MHz QPSK, Low Channel - Ch.B)



Plot 7.149. Conducted Spurious Plot (10MHz QPSK, Mid Channel - Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Dego 07 of 104		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 97 of 124		
			V3.0 1/6/2022		



Keysight Spectrum Analyzer - Swept SA				_	
LX RL RF 50Ω DC	CORREC SET	NSE:INT #Avg Typ		M Jun 08, 2023	Frequency
PASS	PNO: Fast Trig: Free IFGain:Low #Atten: 1		TYF De		Auto Tune
Ref Offset 11.46 dB 10 dB/div Ref 0.00 dBm			Mkr1 3.74 -40.5	8 9 GHz 65 dBm	Auto Tune
Trace 1 Pass					Center Freq
-10.0					9.370000000 GHz
-20.0					Start Freq
-30.0					3.740000000 GHz
-40.0				anteres a superior	Stop Freq
	الارد و ما اور والاستان المراجع معنون من و الاربوع الاربوع المراجع و مراجع و مراجع و المراجع و المراجع و المراج مناطقة المامة ومناطقة ومناطقة والمناطقة والمناطقة والمراجع والماطق ومناطقة والمراجع والماطق و المراجع والماطق و	y Degeneral konstalar, politechon gradegogiti gegeneration of the officer devention and	a makennike an a field Alferiation		5.000000000 GHz
-60.0					CF Step
				A	1.126000000 GHz <u>uto</u> Man
-70.0					Ener Offeret
-80.0					Freq Offset 0 Hz
-90.0					Coolo Trate
					Scale Type
Start 3.740 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	s	51 Stop 2) weep 19.68 ms	.000 GHZ	
MSG			STATUS		

Plot 7.150. Conducted Spurious Plot (10MHz QPSK, Mid Channel – Ch.B)



Plot 7.151. Conducted Spurious Plot (10MHz QPSK, Mid Channel - Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Daga 09 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 98 of 124		
			V3.0 1/6/2022		



Keysight Spectrum A						
LXIRL RF	50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref	Offset 11.46 dB 0.00 dBm	PNO: Fast 🕞 IFGain:High	Trig: Free Run #Atten: 0 dB	Mk	r1 38.337 5 GHz -41.305 dBm	Auto Tune
Log Trace 1 Pa						Center Freq 33.000000000 GHz
-20.0						Start Freq 27.00000000 GHz
-40.0	A LEMAN OF A LOW ALLOW A		room (1999) room (1997) The second se		And have a provide the part of the state of	Stop Freq 39.00000000 GHz
-60.0						CF Step 1.200000000 GHz <u>Auto</u> Man
-80.0						Freq Offset 0 Hz
-90.0						Scale Type
Start 27.000 G #Res BW 1.0 M		#VBW	3.0 MHz	Sweep 2	Stop 39.000 GHz 0.80 ms (24001 pts)	Log <u>Lin</u>
MSG				STAT		

Plot 7.152. Conducted Spurious Plot (10MHz QPSK, Mid Channel – Ch.B)



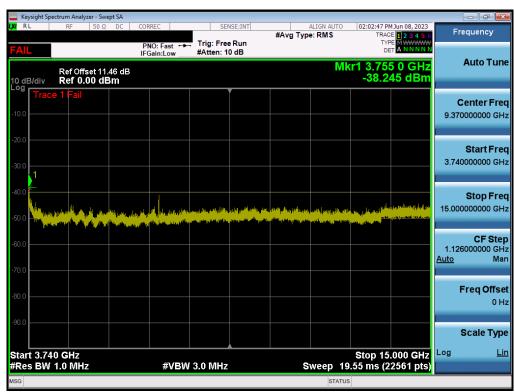
Plot 7.153. Conducted Spurious Plot (10MHz QPSK, High Channel – Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Daga 00 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 99 of 124		
	·		V3.0 1/6/2022		



Keysight Sp	ectrum Analyzer - Sv										
L <mark>XI</mark> L	RF 50 \$	2 DC	CORREC	SEN	SE:INT	#Avg Typ	ALIGN AUTO e: RMS		MJun 08, 2023	F	requency
	Gate: LO		PNO: Wide	Trig: Free #Atten: 10		Avg Hold	: 100/100	TYF DE 3.634 60			Auto Tune
10 dB/div	Ref Offset 1' Ref 0.00 d							-43.6	04 dBm		
				,							Center Freq
-10.0										3.63	3722139 GHz
-20.0										3.62	Start Freq
-30.0										0.02	.0722109 6112
-40.0	te physiology and a state of a state		14999 - 1499 - 1499 - 1499 - 1499 - 1499 - 1499 - 1499 - 1499 - 1499 - 1499 - 1499 - 1499 - 1499 - 1499 - 1499	an a		an a		tette des se se state de se de s	al at the state	3.64	Stop Freq 3722139 GHz
-60.0											CF Step 2.000000 MHz
-70.0										<u>Auto</u>	Mar
-80.0											Freq Offset
-90.0											
											Scale Type
Center 3. #Res BW	63372 GHz 1.0 MHz		#VBW	3.0 MHz*	ĸ		Sweep	2 Span 1.456 ms (0.00 MHz 7281 pts)	Log	<u>Lin</u>
MSG							STATU	s			

Plot 7.154. Conducted Spurious Plot (10MHz QPSK, High Channel – 3634MHz Ch.B)



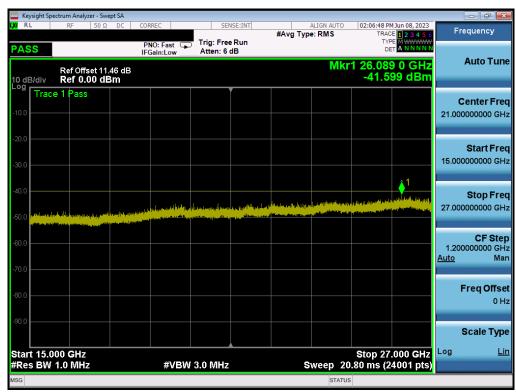
Plot 7.155. Conducted Spurious Plot (10MHz QPSK, High Channel – Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Dega 100 of 101		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 100 of 124		
	· · ·		V3.0 1/6/2022		



Keysight Sp	ectrum Analyzer - Sv										
LXI L	RF 50 \$	2 DC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO e: RMS		Jun 08, 2023	Fi	requency
	Gate: LO Ref Offset 1		PNO: Wide	Trig: Free #Atten: 10		Avg Hold:		TYP DE .757 206			Auto Tune
10 dB/div Log	Ref 0.00 d	Bm						-45.32	21 dBm		
-10.0											Center Freq 6350000 GHz
-20.0										3.74	Start Freq 6350000 GHz
-40.0 -50.0 (*** 44)**	ter di si se setter si de			ang bang <mark>di kalang sang sang sa</mark> ng sang sang sang sang sang sang sang sa				a the state of the		3.76	Stop Freq 6350000 GHz
-60.0										Auto	CF Step 2.000000 MHz Man
-80.0											Freq Offset 0 Hz
-90.0											Scale Type
Center 3. #Res BW	75635 GHz 1.0 MHz		#VBW	3.0 MHz*	:	s	weep 1.	Span 20 504 ms (2)).00 MHz 2561 pts)	Log	Lin
MSG							STATU	s			

Plot 7.156. Conducted Spurious Plot (10MHz QPSK, High Channel – 3755MHz Ch.B)



Plot 7.157. Conducted Spurious Plot (10MHz QPSK, High Channel - Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Dage 101 of 101		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 101 of 124		
	•	·	V3.0 1/6/2022		



		ctrum Analyzer - Sw										
L <mark>XI</mark> RL		RF 50 Ω	DC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO		MJun 08, 2023	Fre	equency
PAS	S			PNO: Fast 🔾 IFGain:High	Trig: Free #Atten: 0		****8 · JP		TYP			
10 dB Log r	3/div	Ref Offset 11 Ref 0.00 di	.46 dB Bm					Mł	(r1 38.74 -42.3	6 5 GHz 73 dBm		Auto Tune
-10.0 -	Trace	e 1 Pass										enter Freq 000000 GHz
-20.0 + -30.0 +											27.000	Start Freq 000000 GHz
-40.0	اللغه ملم <u>رامار)</u> . ا	Real and including a proving	John Martin		l _u natikaatistise	Inder Strategy (international)	a part de Marine das Alexandos Alexandos de Alexander	A SULTAN CONTRACTOR	n de la la constante de la cons		39.000	Stop Freq 000000 GHz
-60.0 -	den state prove	a film a cale y Lacon, a da film basis à de film		in the second second second							1.200 <u>Auto</u>	CF Step 000000 GHz Man
-80.0 -											F	F req Offset 0 Hz
		00 GHz							Stop 39	.000 GHz	s Log	Scale Type <u>Lin</u>
#Res	s BW 1	1.0 MHz		#VBV	V 3.0 MHz		S	weep 2	20.80 ms (2 usl	4001 pts)		
								51/41				

Plot 7.158. Conducted Spurious Plot (10MHz QPSK, High Channel – Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Page 102 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Faye 102 01 124		
			\/3.0.1/6/2022		



7.7 Band Edge Emissions at Antenna Terminal

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

For an End User Device, the conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B MHz (where B is the bandwidth in MHz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B MHz below the lower CBSD-assigned channel edge. At all frequencies greater than B MHz above the upper CBSD assigned channel edge and less than B MHz below the lower CBSD-assigned channel edge, the conducted power of any end user device emission shall not exceed -25 dBm/MHz. The conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

Test Procedure Used

ANSI C63.26-2015 - Section 5.7.3

Test Settings

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW > 1% of the emission bandwidth
- 4. VBW <u>></u> 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



Figure 7-6. Test Instrument & Measurement Setup

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Page 103 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 103 01 124		
,			V3.0 1/6/2022		



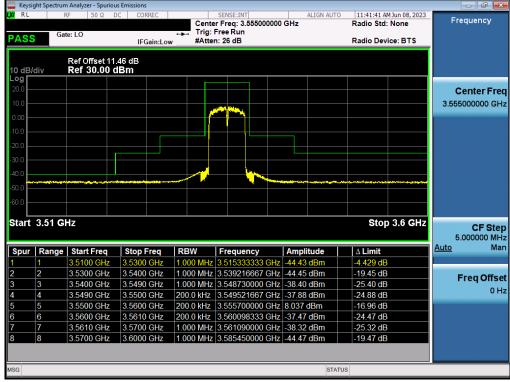
Test Notes

- 1. Per 96.41(e)(3)(i), compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's authorized frequency channel, a resolution bandwidth of no less than one percent of the fundamental emission bandwidth may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full reference bandwidth (i.e., 1 MHz or 1 percent of emission bandwidth, as specified). The fundamental emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
- 2. The Plots in this section have a 11.46dB (10*log(total ports[14]))correction applied to the individual plots to address the MIMO requirements in ANSI C63.26

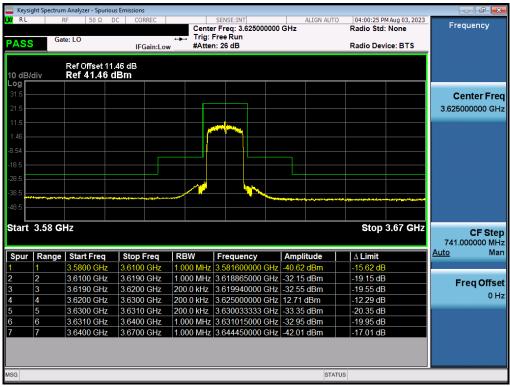
FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 104 of 124	
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 104 01 124	
			V3.0.1/6/2022	



Channel A Conducted Band Edge Measurements



Plot 7.159. Conducted Band Edge Plot (10MHz, QPSK, Low Channel, Ch.A)



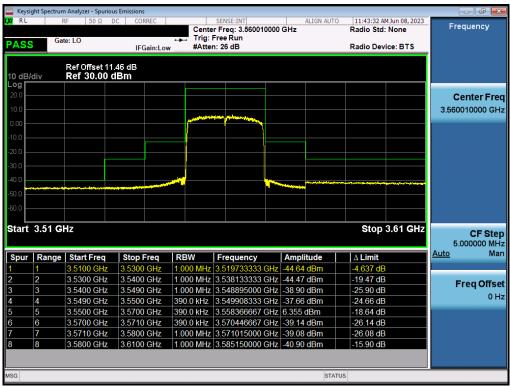
Plot 7.160. Conducted Band Edge Plot (10MHz, QPSK, Mid Channel, Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Page 105 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 105 01 124		
L			V3.0 1/6/2022		



	- ·	n Analyzer - Spuriou						
L <mark>XI</mark> RL	F	RF 50Ω [DC CORREC	Cente	SENSE:INT r Freg: 3.694980000	ALIGN AUTO	11:42:59 AM Jun 08, 2023 Radio Std: None	Frequency
PASS	Gat	te: LO	IFGain:Lov		Free Run n: 26 dB		Radio Device: BTS	
			IF Gain: Lov	W WALLE	1. 20 GB		Radio Bevice: B13	
		Ref Offset 11						
10 dB/ Log F	div	Ref 40.00 d	aBm					
30.0								Center Free
20.0								3.694980000 GH
10.0								
0.00				/				
-10.0								
-20.0								
-30.0								
-40.0								
-50.0								
start	3.65 GI	ĦΖ					Stop 3.74 GHz	CF Step 5.000000 MH
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	∆ Limit	Auto Mar
1 1	1	3.6500 GHz	3.6800 GHz		3.672100000 GHz		-17.14 dB	
2	2	3.6800 GHz	3.6890 GHz		3.688955000 GHz		-18.50 dB	Ener Offere
3	3	3.6890 GHz	3.6900 GHz	200.0 kHz	3.689991667 GHz	: -31.66 dBm	-18.66 dB	Freq Offse
4	4	3.6900 GHz	3.7000 GHz	200.0 kHz	3.695900000 GHz	11.78 dBm	-13.22 dB	0 H:
5	5	3.7000 GHz	3.7010 GHz		3.700058333 GHz		-18.82 dB	
6	6	3.7010 GHz	3.7100 GHz		3.701000000 GHz		-19.37 dB	
7	7	3.7100 GHz	3.7200 GHz	_	3.710816667 GHz		-16.47 dB	
8	8	3.7200 GHz	3.7400 GHz	1.000 MHz	3.734500000 GHz	-40.63 dBm	-0.628 dB	
MSG						STAT	US	
_								

Plot 7.161. Conducted Band Edge Plot (10MHz, QPSK, High Channel, Ch.A)



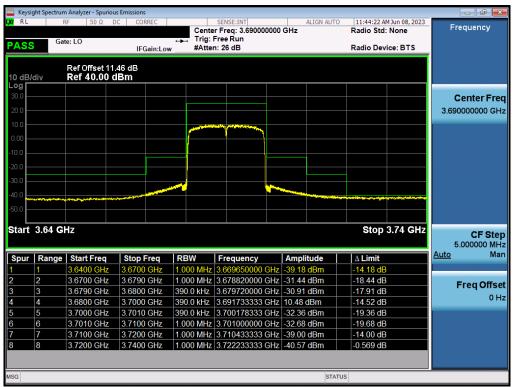
Plot 7.162. Conducted Band Edge Plot (20MHz, QPSK, Low Channel, Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 106 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 100 01 124
	·	·	V3.0 1/6/2022



	n Analyzer - Spuriou						
L <mark>XI</mark> RL F	RF 50Ω D	OC CORREC	Cente	SENSE:INT r Freg: 3.62500000	ALIGN AUT 0 GHz	0 04:01:43 PM Aug 03, 2023 Radio Std: None	Frequency
PASS Ga	te: LO	IFGain:Low		Free Run n: 26 dB		Radio Device: BTS	
		IFGain:Low	#Alle	1. 20 00		Radio Device. D 13	
	Ref Offset 11.						
10 dB/div	Ref 30.00 c	IBm					
20.0							Center Freq
10.0							
			1 martine	Construction of the local division of the lo			3.625000000 GHz
0.00							
-10.0							
-20.0							
-30.0							
-40.0		1 martine and the second			The state of the s		
						And a second of the second sec	
-50.0							
-60.0							
Start 3.575 (GHZ					Stop 3.675 GHz	CF Step 741.000000 MHz
				-			Auto Man
Spur Range	Start Freq	Stop Freq	RBW	Frequency 3.604600000 GH	Amplitude		
$\frac{1}{2}$ 2	3.5750 GHz 3.6050 GHz	3.6050 GHz 3.6140 GHz		3.604600000 GH		-8.019 dB -10.07 dB	
3 3	3.6140 GHz	3.6150 GHz		3.614835000 GH		-11.65 dB	Freq Offset
4 4	3.6150 GHz	3.6350 GHz		3.625000000 GH		-8.358 dB	0 Hz
5 5	3.6350 GHz	3.6360 GHz		3.635018333 GH		-13.38 dB	
6 6	3.6360 GHz	3.6450 GHz		3.636180000 GH		-12.20 dB	
7 7	3.6450 GHz	3.6750 GHz		3.645800000 GH		-10.75 dB	
MSG					STA	TUS	

Plot 7.163. Conducted Band Edge Plot (20MHz, QPSK, Mid Channel, Ch.A)



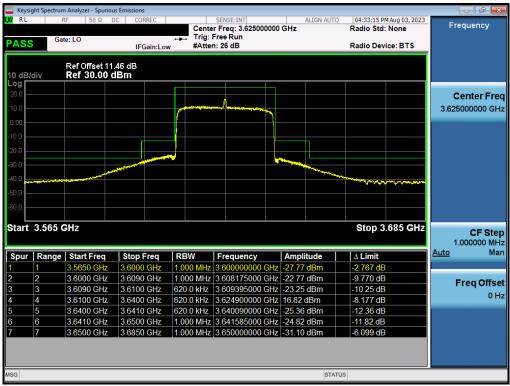
Plot 7.164. Conducted Band Edge Plot (20MHz, QPSK, High Channel, Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Page 107 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 107 01 124		
L			V3.0 1/6/2022		



Keysight Spectrum							- 7 🔀
<mark>(</mark> RL F	RF 50 Ω	DC CORREC	Cente	SENSE:INT Freg: 3.56001000	ALIGN AUT	2 11:44:53 AM Jun 08, 2023 Radio Std: None	Frequency
PASS Gat	te: LO		-	Free Run n: 26 dB		Dadia Davias, BTS	
A00		IFGain:Lov	w #Atte	n: 26 dB		Radio Device: BTS	-
	Ref Offset 11	I.46 dB					
I0 dB/div	Ref 30.00	dBm					
_ og 20.0							O antes Franc
							Center Free
10.0		And the second	man moure				3.560010000 GH
3.00							
10.0							
20.0							
30.0							
40.0							
				a second second			
50.0							
60.0							
Start 3.525 (247					Stop 3.625 GHz	
5turt 0.020 (5112					010p 0.020 0112	CF Step 5.000000 MH
			Loow				Auto Mar
Spur Range	Start Freq 3.5250 GHz	Stop Freq 3.5300 GHz	RBW	Frequency 3.527258333 GH	Amplitude	Δ Limit -4.318 dB	
2 2	3.5300 GHz	3.5400 GHz		3.539133333 GH		-18.50 dB	
3 3	3.5400 GHz	3.5490 GHz		3.548535000 GH		-25.78 dB	Freq Offse
4	3.5490 GHz	3.5500 GHz		3.549978333 GH		-24.19 dB	0 H:
5 5	3.5500 GHz	3.5800 GHz		3.560400000 GH		-19.07 dB	
) 6	3.5800 GHz	3.5810 GHz	620.0 kHz	3.580008333 GH	z -38.37 dBm	-25.37 dB	
7 7	3.5810 GHz	3.5900 GHz		3.581060000 GH		-27.23 dB	
8	3.5900 GHz	3.6250 GHz	1.000 MHz	3.591866667 GH	z -40.95 dBm	-15.95 dB	
SG					CTV.	TUS	
MSG					STA	TUS	

Plot 7.165. Conducted Band Edge Plot (30MHz, QPSK, Low Channel, Ch.A)



Plot 7.166. Conducted Band Edge Plot (30MHz, QPSK, Mid Channel, Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 108 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 106 01 124
	-		V3.0 1/6/2022



	- ·	Analyzer - Sp										
L <mark>XI</mark> RL	F	F 50 Ω	DC	CORREC	Cente	SENSE:INT r Freq: 3.690000	0000 GHz	ALIGN AUT	0 11:45:44 A Radio Std:	1 Jun 08, 2023 None	Freq	uency
PASS	Gat	e: LO			Trig:	Free Run n: 26 dB			De l'e De	DTO		
T AGC	<u> </u>			IFGain:Lo	w #Attel	n: 26 dB			Radio Dev	ICE: BIS		
		Ref Offset										
10 dB/ Log F	div	Ref 40.0	0 dBm									
30.0											Co	nter Fred
20.0												00000 GHz
											3.0900	00000 GH2
10.0		م م				**						
0.00		(
-10.0 —												
-20.0 —												
-30.0												
-40.0		and the second				-						
-50.0								The start where	Contraction of the second s	- Marriel Concerning of Source		
-50.0												
Start	3.655 C	Hz							Stop 3	.745 GHz		CF Step
											5.00	CF Step 20000 MHz
Spur	Range	Start Fre	a St	op Freq	RBW	Frequency	Amp	litude	∆ Limit		Auto	Man
1	1	3.6550 GH		600 GHz		3.659241667			-13.89 dB			
2	2	3.6600 GH	lz 3.6	690 GHz	1.000 MHz	3.668820000 0	GHz -33.39	9 dBm	-20.39 dB		Er	eq Offset
3	3	3.6690 GH	łz 3.6	6700 GHz	620.0 kHz	3.669908333 0	GHz -33.20) dBm	-20.20 dB		Г	
4		3.6700 GH	lz 3.7	'000 GHz	620.0 kHz	3.683700000 0	GHz 9.588	dBm	-15.41 dB			0 Hz
5	5	3.7000 GH		'010 GHz		3.700080000 0			-20.30 dB			
6	6	3.7010 GH	lz 3.7	'100 GHz	1.000 MHz	3.701090000 0	GHz -34.33	3 dBm	-21.33 dB			
7		3.7100 GH		200 GHz		3.710433333			-13.50 dB			
8	8	3.7200 GH	lz 3.7	'450 GHz	1.000 MHz	3.734375000 0	GHz -40.29	9 dBm	-0.295 dB			
MSG								STA	TUS			
								514				

Plot 7.167. Conducted Band Edge Plot (30MHz, QPSK, High Channel, Ch.A)

PASS		RF 50 Ω 1 te: LO	DC CORREC	+++ Trig: I	SENSE:INT r Freq: 3.570000000 Free Run n: 26 dB	ALIGN AUTO	11:46:22 AM Jun 08, 2023 Radio Std: None Radio Device: BTS	Frequency
10 d <u>B/</u>	'div	Ref Offset 11 Ref 30.00 (
-og - 20.0 - 10.0 - 10.0 - 10.0 - 20.0 - 30.0 - 40.0 - 50.0 -								Center Fre 3.570000000 GH
60.0 Start Spur	3.51 G	Hz	Stop Freq	RBW	Frequency	Amplitude	Stop 3.64 GHz	CF Ste 5.000000 MH <u>Auto</u> Ma
1	1	3.5100 GHz	3.5300 GHz		3.528000000 GHz		-4.694 dB	
	2	3.5300 GHz	3.5400 GHz		3.539700000 GHz		-18.41 dB	Ener Off
2	3	3.5400 GHz	3.5490 GHz		3.549000000 GHz		-26.18 dB	Freq Offs
	4	3.5490 GHz	3.5500 GHz		3.549960000 GHz		-25.64 dB	0 H
}		3.5500 GHz	3.5900 GHz		3.559142857 GHz		-19.39 dB	
}	5		3.5910 GHz		3.590080000 GHz		-27.68 dB	
3 	5 6	3.5900 GHz	13.5910 GHZ					
2 3 4 5 6 7	-			1.000 MHz	3.591000000 GHz	-41.07 dBm	-28.07 dB	
	-	3.5900 GHz 3.5910 GHz 3.6000 GHz	3.6000 GHz 3.6400 GHz		3.591000000 GHz 3.601600000 GHz		-28.07 dB -16.84 dB	-

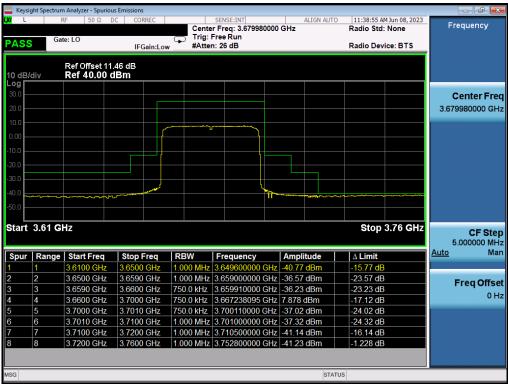
Plot 7.168. Conducted Band Edge Plot (40MHz, QPSK, Low Channel, Ch.A)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 109 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 109 01 124
			V3.0 1/6/2022



	. .	n Analyzer - Spurio										_	
L <mark>XI</mark> RL	R	F 50 Ω	DC CORF	EC		SENSE:INT r Freq: 3.62500	0000		IGN AUTO	04:37:24 F Radio Std	M Aug 03, 2023 : None	Fre	equency
PASS	Gat	e: LO	IFGa	in:Low		Free Run n: 26 dB				Radio Dev	vice: BTS		
		Ref Offset 1	1 46 dB								Í		
10 dB	div	Ref 30.00											
Log 20.0												c	enter Freg
10.0													000000 GHz
0.00							Γ					0.020	
-10.0													
-20.0													
-30.0													
-40.0			~~~~~										
-40.0	~~~~									~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
-60.0													
Start	3.55 GI	lz								Sto	o 3.7 GHz		CF Step
												1.	000000 MHz
Spur	Range	Start Freq	Stop F	eq	RBW	Frequency		Amplitu	de	∆ Limit		<u>Auto</u>	Man
1	1	3.5500 GHz	3.5950 (3.595000000				-6.164 dE	3		
2	2	3.5950 GHz	3.6040 (3.603820000				-14.41 dE		F	req Offset
3	3	3.6040 GHz	3.6050 (3.604990000				-13.96 dE			0 Hz
4	4	3.6050 GHz	3.6450 (3.624809524 (-10.73 dE			0 112
5	5	3.6450 GHz	3.6460 (3.645080000				-16.95 dE	3		
6	6	3.6460 GHz	3.6550 (3.646000000				-16.87 dE			
7	7	3.6550 GHz	3.7000 (GHz 1	.000 MHz	3.655000000	GHz	-34.45 dl	Bm	-9.446 dE	3		
MSG				_			-	_	STATUS	3			
_							_			_			

Plot 7.169. Conducted Band Edge Plot (40MHz, QPSK, Mid Channel, Ch.A)

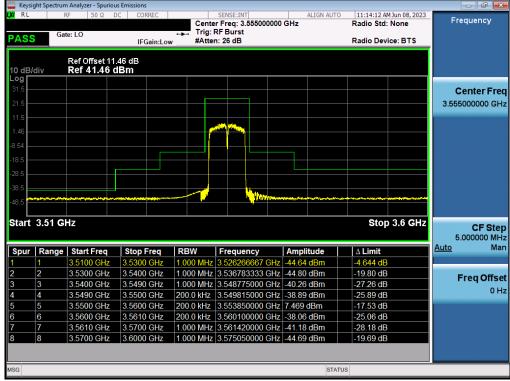


Plot 7.170. Conducted Band Edge Plot (40MHz, QPSK, High Channel, Ch.A)

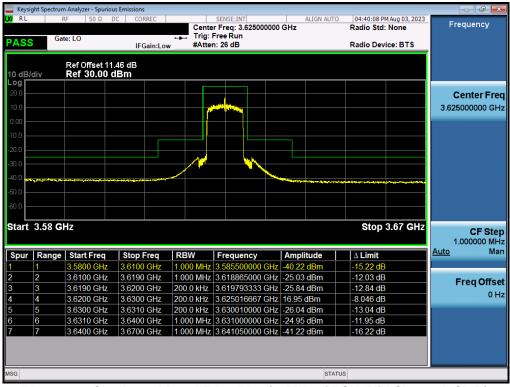
FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 110 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 110 of 124
		·	V3.0 1/6/2022



Channel B Conducted Band Edge Measurements



Plot 7.171. Conducted Band Edge Plot (10MHz, QPSK, Low Channel, Ch.B)



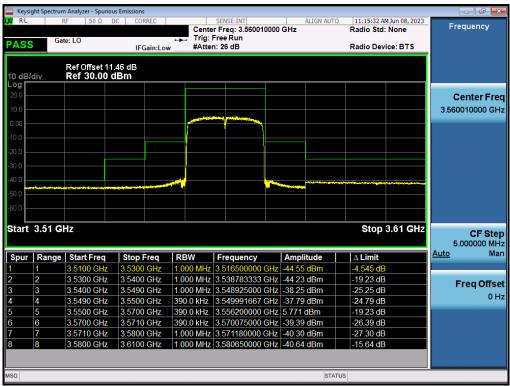
Plot 7.172. Conducted Band Edge Plot (10MHz, QPSK, Mid Channel, Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 111 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 111 of 124
L	-		V3.0 1/6/2022



	- ·	· · ·	us Emissions					
XI RL	F	F 50Ω [DC CORREC	Cente	SENSE:INT r Freg: 3.694980000	ALIGN AUTO	11:14:52 AM Jun 08, 2023 Radio Std: None	Frequency
	Gat	e: LO		🛶 Trig:	Free Run	- Offic		
PASS	<u> </u>		IFGain:Lov	v #Atter	n: 26 dB		Radio Device: BTS	-
		Ref Offset 11	46 dB					
10 dB/		Ref 40.00 c						
Log 30.0								
								Center Free
20.0								3.694980000 GH:
10.0				<i>,</i>	A COLOR			
0.00								
10.0								
20.0								
-30.0								
-40.0	«بور برای می دور باز اس می از ا							
-50.0								
_ L								
start								
	3.65 GI	lz					Stop 3.74 GHz	Cr Slep
	3.65 GI	lz					Stop 3.74 GHz	5.000000 MHz
Spur	3.65 GI		Stop Freq	RBW	Frequency	Amplitude	Stop 3.74 GHz	5.000000 MHz
Spur 1	Range	Start Freq 3.6500 GHz	3.6800 GHz	1.000 MHz	3.679900000 GHz	-41.19 dBm		5.000000 MHz
1 2	Range	Start Freq 3.6500 GHz 3.6800 GHz	3.6800 GHz 3.6890 GHz	1.000 MHz 1.000 MHz	3.679900000 GHz 3.688820000 GHz	-41.19 dBm -31.94 dBm	∆ Limit -16.19 dB -18.94 dB	5.000000 MHz <u>Auto</u> Mar
 2 }	Range 1 2 3	Start Freq <u>3.6500 GHz</u> 3.6800 GHz 3.6890 GHz	3.6800 GHz 3.6890 GHz 3.6900 GHz	1.000 MHz 1.000 MHz 200.0 kHz	3.679900000 GHz 3.688820000 GHz 3.689793333 GHz	-41.19 dBm -31.94 dBm -31.08 dBm	∆ Limit -16.19 dB -18.94 dB -18.08 dB	5.000000 MHz Auto Mar
• 1 2 3 4	Range 1 2 3 4	Start Freq 3.6500 GHz 3.6800 GHz 3.6890 GHz 3.6900 GHz	3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz	1.000 MHz 1.000 MHz 200.0 kHz 200.0 kHz	3.679900000 GHz 3.688820000 GHz 3.689793333 GHz 3.695966667 GHz	-41.19 dBm -31.94 dBm -31.08 dBm 12.52 dBm	Δ Limit -16.19 dB -18.94 dB -18.08 dB -12.48 dB	5.000000 MHz Auto Mar
1 2 3 4 5	Range 1 2 3 4 5	Start Freq 3.6500 GHz 3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz	3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz 3.7010 GHz	1.000 MHz 1.000 MHz 200.0 kHz 200.0 kHz 200.0 kHz	3.679900000 GHz 3.688820000 GHz 3.689793333 GHz 3.695966667 GHz 3.700105000 GHz	-41.19 dBm -31.94 dBm -31.08 dBm 12.52 dBm -31.98 dBm	Δ Limit -16.19 dB -18.94 dB -18.08 dB -12.48 dB -18.98 dB	5.000000 MHz
1 2 3 4 5	Range 1 2 3 4 5 6	Start Freq 3.6500 GHz 3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz 3.7010 GHz	3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz 3.7010 GHz 3.7100 GHz	1.000 MHz 1.000 MHz 200.0 kHz 200.0 kHz 200.0 kHz 1.000 MHz	3.679900000 GHz 3.688820000 GHz 3.689793333 GHz 3.695966667 GHz 3.700105000 GHz 3.701075000 GHz	-41.19 dBm -31.94 dBm -31.08 dBm 12.52 dBm -31.98 dBm -32.28 dBm	Δ Limit -16.19 dB -18.94 dB -18.08 dB -12.48 dB -18.98 dB -19.28 dB	5.000000 MHz Auto Mar
Spur 1 2 3 4 5 6 7 8	Range 1 2 3 4 5 6 7	Start Freq 3.6500 GHz 3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz 3.7010 GHz 3.7100 GHz	3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz 3.7010 GHz 3.7100 GHz 3.7200 GHz	1.000 MHz 1.000 MHz 200.0 kHz 200.0 kHz 200.0 kHz 1.000 MHz 1.000 MHz 1.000 MHz	3.67990000 GHz 3.688820000 GHz 3.689793333 GHz 3.695966667 GHz 3.700105000 GHz 3.701075000 GHz 3.710250000 GHz	-41.19 dBm -31.94 dBm -31.08 dBm 12.52 dBm -31.98 dBm -32.28 dBm -40.77 dBm	Δ Limit -16.19 dB -18.94 dB -18.08 dB -12.48 dB -18.98 dB -19.28 dB -15.77 dB	5.000000 MHz Auto Mar
1 2 3 4 5	Range 1 2 3 4 5 6	Start Freq 3.6500 GHz 3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz 3.7010 GHz	3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz 3.7010 GHz 3.7100 GHz	1.000 MHz 1.000 MHz 200.0 kHz 200.0 kHz 200.0 kHz 1.000 MHz 1.000 MHz 1.000 MHz	3.679900000 GHz 3.688820000 GHz 3.689793333 GHz 3.695966667 GHz 3.700105000 GHz 3.701075000 GHz	-41.19 dBm -31.94 dBm -31.08 dBm 12.52 dBm -31.98 dBm -32.28 dBm -40.77 dBm	Δ Limit -16.19 dB -18.94 dB -18.08 dB -12.48 dB -18.98 dB -19.28 dB	5.000000 MHz Auto Mar
1 2 3 4 5 5 6 7	Range 1 2 3 4 5 6 7	Start Freq 3.6500 GHz 3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz 3.7010 GHz 3.7100 GHz	3.6800 GHz 3.6890 GHz 3.6900 GHz 3.7000 GHz 3.7010 GHz 3.7100 GHz 3.7200 GHz	1.000 MHz 1.000 MHz 200.0 kHz 200.0 kHz 200.0 kHz 1.000 MHz 1.000 MHz 1.000 MHz	3.67990000 GHz 3.688820000 GHz 3.689793333 GHz 3.695966667 GHz 3.700105000 GHz 3.701075000 GHz 3.710250000 GHz	-41.19 dBm -31.94 dBm -31.08 dBm 12.52 dBm -31.98 dBm -32.28 dBm -40.77 dBm	Δ Limit -16.19 dB -18.94 dB -18.08 dB -12.48 dB -18.98 dB -19.28 dB -15.77 dB	5.000000 MH: Auto Mar

Plot 7.173. Conducted Band Edge Plot (10MHz, QPSK, High Channel, Ch.B)



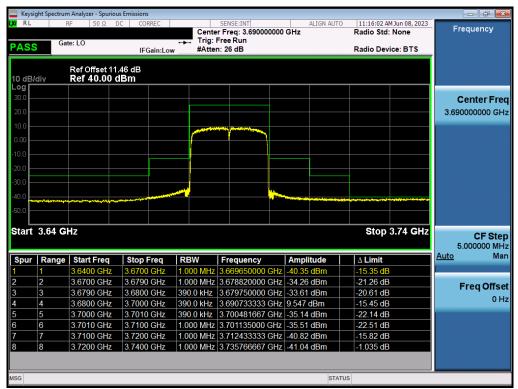
Plot 7.174. Conducted Band Edge Plot (20MHz, QPSK, Low Channel, Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 112 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 112 01 124
			V3.0 1/6/2022



📫 Keysi XI R L	. .	n Analyzer - Spuriou F 50 Ω [us Emissions DC CORREC		SENSE:INT r Freq: 3.62500000	ALIGN AUTO	04:41:24 PM Aug 03, 2023 Radio Std: None	Frequency
PASS	Gat	e: LO	IFGain:Lov		Free Run n: 26 dB		Radio Device: BTS	
10 dB/ Log [Ref Offset 11 Ref 30.00 (-
20.0 — 10.0 —				ſ				Center Free 3.625000000 GH
0.00 -								
-30.0								
-50.0								
Start	3.575 C	GHz					Stop 3.675 GHz	CF Stej 1.000000 MH
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	∆ Limit	<u>Auto</u> Ma
1	1	3.5750 GHz	3.6050 GHz	1.000 MHz	3.604800000 GH	z -31.50 dBm	-6.499 dB	
2	2	3.6050 GHz	3.6140 GHz	1.000 MHz	3.613880000 GH	z -22.21 dBm	-9.210 dB	Freq Offse
3	3	3.6140 GHz	3.6150 GHz		3.614955000 GH		-10.19 dB	0 H
4	4	3.6150 GHz	3.6350 GHz		3.625033333 GH		-7.964 dB	UH
5	5	3.6350 GHz	3.6360 GHz		3.635135000 GH		-11.93 dB	
6	6	3.6360 GHz	3.6450 GHz		3.636015000 GH		-10.82 dB	
7	7	3.6450 GHz	3.6750 GHz	1.000 MHz	3.645050000 GH	z -34.92 dBm	-9.916 dB	
/								

Plot 7.175. Conducted Band Edge Plot (20MHz, QPSK, Mid Channel, Ch.B)



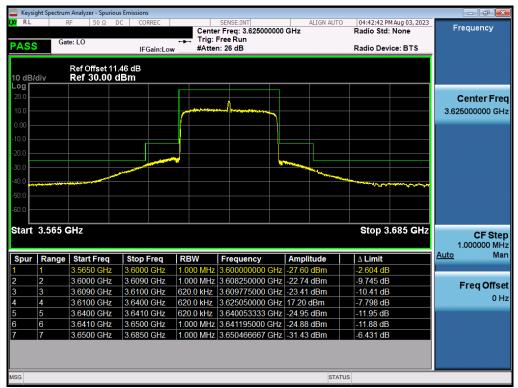
Plot 7.176. Conducted Band Edge Plot (20MHz, QPSK, High Channel, Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dega 112 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 113 of 124
	•		V3.0 1/6/2022



RL	R	RF 50 Ω	DC	COR	REC		SENSE:II	T			ALIGN AUTO	0 11	L:16:38 A	M Jun 08, 2023	-	
							r Freq: 3	3.56001	0000				dio Std		Fr	equency
ASS	Gat	te: LO					Free Ru					_				
ASS	<u> </u>			IFG	ain:Low	v #Atter	n: 26 dB					Ra	dio Dev	ice: BTS		
		Ref Offset	14 46	4D												
0 dB/		Ref 30.0														
.og 🔽								_								
20.0															C	enter Fre
10.0																010000 GH
				Warn											0.000	
3.00				ſ.				1								
10.0																
20.0																
30.0								\								
40.0								the second second		-	****	****	hand have the			
50.0																
60.0																
60.0																
	3.525 C	GHz											Stop 3	.625 GHz		CESte
	3.525 0	GHz											Stop 3	.625 GHz	5	CF Ste .000000 M⊢
Start				Stop F	reg	RBW	Frequ	encv		Ampli	itude			.625 GHz	5 <u>Auto</u>	
Start		Start Free	-	Stop F		RBW	Frequ		GHz	Ampli		Δ	Limit			.000000 MH
Start Spur		Start Free 3.5250 GH	Iz 3	.5300	GHz	1.000 MHz	3.5299	41667 (-44.65	dBm	Δ -4	Limit .646 dB		<u>Auto</u>	.000000 M⊢ Ma
	Range	Start Free	lz 3 Iz 3		GHz GHz		3.5299 3.5331	41667 (33333 (GHz	-44.65 -44.33	dBm dBm	Δ -4. -19	Limit		<u>Auto</u>	.000000 M⊢ Ma Freq Offse
Start	Range	Start Free 3.5250 GH 3.5300 GH	iz 3 iz 3 iz 3	.5300 .5400	GHz GHz GHz	1.000 MHz 1.000 MHz	3.5299 3.5331 3.5486	41667 (33333 (85000 (GHz GHz	- <mark>44.65</mark> -44.33 -40.28	dBm dBm dBm	Δ -4. -19 -2	Limit .646 dB 9.33 dB		<u>Auto</u>	.000000 M⊢ Ma Freq Offse
Start	Range 1 2 3	Start Free 3.5250 GF 3.5300 GF 3.5400 GF	iz 3 iz 3 iz 3 iz 3 iz 3	.5300 .5400 .5490	GHz GHz GHz GHz GHz	1.000 MHz 1.000 MHz 1.000 MHz	3.5299 3.5331 3.5486 3.5499	41667 (33333 (85000 (55000 (GHz GHz GHz	-44.65 -44.33 -40.28 -38.39	dBm dBm dBm dBm	Δ -4. -19 -21	Limit 646 dB 9.33 dB 7.28 dB		<u>Auto</u>	.000000 M⊢ Ma Freq Offso
Start	Range 1 2 3 4	Start Free 3.5250 GF 3.5300 GF 3.5400 GF 3.5490 GF	iz 3 iz 3 iz 3 iz 3 iz 3 iz 3	.5300 .5400 .5490 .5500	GHz GHz GHz GHz GHz GHz	1.000 MHz 1.000 MHz 1.000 MHz 620.0 kHz	3.5299 3.5331 3.5486 3.5499 3.5590	41667 (33333 (85000 (55000 (50000 (GHz GHz GHz GHz	-44.65 -44.33 -40.28 -38.39 5.315	dBm dBm dBm dBm dBm	Δ -4 -19 -21 -21 -21	Limit 646 dB 9.33 dB 7.28 dB 5.39 dB		<u>Auto</u>	.000000 M⊢ Ma Freq Offso
Start	Range 1 2 3 4 5	Start Free 3.5250 GH 3.5300 GH 3.5400 GH 3.5490 GH 3.5500 GH	iz 3 iz 3 iz 3 iz 3 iz 3 iz 3 iz 3 iz 3	.5300 .5400 .5490 .5500 .5800	GHz GHz GHz GHz GHz GHz GHz	1.000 MHz 1.000 MHz 1.000 MHz 620.0 kHz 620.0 kHz	3.5299 3.5331 3.5486 3.5499 3.5590 3.5802	41667 (33333 (85000 (55000 (50000 (58333 (GHz GHz GHz GHz GHz	-44.65 -44.33 -40.28 -38.39 5.315 -39.35	dBm dBm dBm dBm dBm dBm	Δ -4. -19 -29 -29 -19 -29	Limit 646 dE 9.33 dE 7.28 dE 5.39 dE 9.69 dE		<u>Auto</u>	.000000 M⊢ Ma Freq Offso
Start	Range 1 2 3 4 5 6	Start Free 3.5250 GH 3.5300 GH 3.5400 GH 3.5490 GH 3.5500 GH 3.5800 GH	Iz 3 Iz 3	.5300 .5400 .5490 .5500 .5800 .5810	GHz GHz GHz GHz GHz GHz GHz GHz	1.000 MHz 1.000 MHz 1.000 MHz 620.0 kHz 620.0 kHz 620.0 kHz	3.5299 3.5331 3.5486 3.5499 3.5590 3.5590 3.5802 3.5814	41667 (33333 (85000 (55000 (50000 (58333 (80000 (GHz GHz GHz GHz GHz GHz	-44.65 -44.33 -40.28 -38.39 5.315 -39.35 -41.26	dBm dBm dBm dBm dBm dBm dBm	Δ -4. -19 -22 -22 -19 -20 -20 -20	Limit 646 dE 9.33 dE 7.28 dE 5.39 dE 9.69 dE 6.35 dE		<u>Auto</u>	.000000 M⊢ Ma Freq Offso
Start	Range 1 2 3 4 5 6 7	Start Free 3.5250 GF 3.5300 GF 3.5400 GF 3.5490 GF 3.5500 GF 3.5800 GF 3.5810 GF	Iz 3 Iz 3	.5300 .5400 .5490 .5500 .5800 .5810 .5900	GHz GHz GHz GHz GHz GHz GHz GHz	1.000 MHz 1.000 MHz 1.000 MHz 620.0 kHz 620.0 kHz 620.0 kHz 1.000 MHz	3.5299 3.5331 3.5486 3.5499 3.5590 3.5590 3.5802 3.5814	41667 (33333 (85000 (55000 (50000 (58333 (80000 (GHz GHz GHz GHz GHz GHz	-44.65 -44.33 -40.28 -38.39 5.315 -39.35 -41.26	dBm dBm dBm dBm dBm dBm dBm	Δ -4. -19 -22 -22 -19 -20 -20 -20	Limit 646 dE 9.33 dE 7.28 dE 5.39 dE 9.69 dE 6.35 dE 8.26 dE		<u>Auto</u>	.000000 MH
Spur	Range 1 2 3 4 5 6 7	Start Free 3.5250 GF 3.5300 GF 3.5400 GF 3.5490 GF 3.5500 GF 3.5800 GF 3.5810 GF	Iz 3 Iz 3	.5300 .5400 .5490 .5500 .5800 .5810 .5900	GHz GHz GHz GHz GHz GHz GHz GHz	1.000 MHz 1.000 MHz 1.000 MHz 620.0 kHz 620.0 kHz 620.0 kHz 1.000 MHz	3.5299 3.5331 3.5486 3.5499 3.5590 3.5590 3.5802 3.5814	41667 (33333 (85000 (55000 (50000 (58333 (80000 (GHz GHz GHz GHz GHz GHz	-44.65 -44.33 -40.28 -38.39 5.315 -39.35 -41.26	dBm dBm dBm dBm dBm dBm dBm	Δ -4. -19 -22 -22 -19 -20 -20 -20	Limit 646 dE 9.33 dE 7.28 dE 5.39 dE 9.69 dE 6.35 dE 8.26 dE		<u>Auto</u>	.000000 M⊢ Ma Freq Offso

Plot 7.177. Conducted Band Edge Plot (30MHz, QPSK, Low Channel, Ch.B)



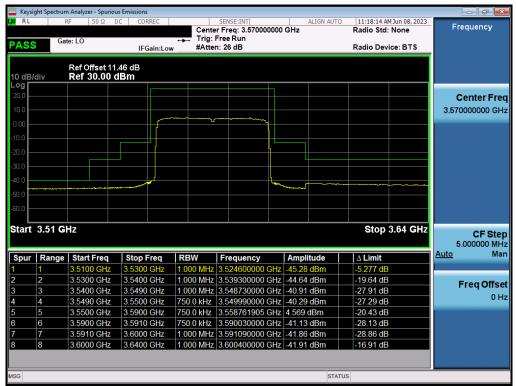
Plot 7.178. Conducted Band Edge Plot (30MHz, QPSK, Mid Channel, Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 111 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 114 of 124
	·	·	V3.0 1/6/2022



	G	F 50	ΩD	OC COI	RREC			NSE:INT req: 3.69000 Run	0000 G		ALIGN AU	ТО	11:17:4 Radio S		un 08, 20 Ione	23	Freque	ncy
ASS				IFC	Gain:Lo	w #At	ten: 2	6 dB					Radio D)evic	e: BTS			
0 dB/ .og Г		Ref Offse Ref 40.																
30.0 — 20.0 —																	Cent 3.690000	er Fre 000 G⊦
10.0).00		[v	an a	-											
10.0 20.0																		
10.8										****		~~~~	and an air faith ann.			***		
50.0	3.655 C	SHz								44474474			Stop	0 3.7	'45 GH	łz		F Ste
50.0			eq	Stop	Freq	RBW	Fr	equency		Ampli	tude		Stop		45 GH			F Ste 000 M⊦ Ma
50.0	3.655 C			Stop	-			equency		Ampli				it	'45 GH		5.000	000 MH
itart	3.655 C	Start Fre	Hz	_) GHz	1.000 MI	-Iz 3.6		GHz -	Ampli 39.95	dBm		∆ Limi	it dB	45 GH		5.000 Auto	000 MH Ma
itart	3.655 C	Start Fre 3.6550 G	Hz Hz	3.6600) GHz) GHz	1.000 MI 1.000 MI	Hz 3.6	58408333 (GHz -:	Ampli 39.95 35.11	dBm dBm		Δ Limi -14.95	it dB dB	45 GF		5.000 Auto	DOO MI Mi
itart	3.655 C	Start Fre 3.6550 G 3.6600 G	Hz Hz Hz	3.6600 3.6690) <mark>GHz</mark>) GHz) GHz	1.000 M 1.000 M 620.0 k	Hz 3.6 Hz 3.6 Iz 3.6	58408333 (68955000 (GHz -: GHz -: GHz -:	Ampli 39.95 35.11 34.17	dBm dBm dBm		Δ Limi -14.95 -22.11	it dB dB dB	'45 Gł		5.000 Auto	DOO MI M
o.o	3.655 C	Start Fre 3.6550 G 3.6600 G 3.6690 G	Hz Hz Hz Hz	3.6600 3.6690 3.6700) GHz) GHz) GHz) GHz	1.000 Mi 1.000 Mi 620.0 kH 620.0 kH	Hz 3.6 Hz 3.6 Iz 3.6 Iz 3.6	58408333 (68955000 (69873333 (GHz - GHz - GHz - GHz - GHz 9	Ampli 39.95 35.11 34.17 9.921 (dBm dBm dBm dBm		Δ Limi -14.95 -22.11 -21.17	it dB dB dB dB	'45 GF		5.000 Auto	DOO MI M
itart	3.655 C	Start Fre 3.6550 G 3.6600 G 3.6690 G 3.6700 G	Hz Hz Hz Hz Hz	3.6600 3.6690 3.6700 3.7000) GHz) GHz) GHz) GHz) GHz) GHz	1.000 MI 1.000 MI 620.0 kH 620.0 kH 620.0 kH	Hz 3.6 Hz 3.6 Iz 3.6 Iz 3.6 Iz 3.6 Iz 3.7	58408333 (668955000 (669873333 (683500000 (GHz - GHz - GHz - GHz - GHz - GHz -	Ampli 39.95 35.11 34.17 9.921 c 34.42	dBm dBm dBm dBm dBm		Δ Limi -14.95 -22.11 -21.17 -15.08	it dB dB dB dB dB dB	′45 GF		5.000 Auto	000 MI Mi
0.0 tart	3.655 C Range 1 2 3 4 5	Start Fre 3.6550 G 3.6600 G 3.6690 G 3.6700 G 3.7000 G	Hz Hz Hz Hz Hz Hz	3.6600 3.6690 3.6700 3.7000 3.7010) GHz) GHz) GHz) GHz) GHz) GHz	1.000 MI 1.000 MI 620.0 kH 620.0 kH 620.0 kH 1.000 MI	Hz 3.6 Hz 3.6 Iz 3.6 Iz 3.6 Iz 3.7 Hz 3.7	58408333 (668955000 (669873333 (83500000 (700123333 (GHz - GHz - GHz - GHz - GHz - GHz - GHz - GHz -	Ampli 39.95 35.11 34.17 0.921 (34.42 36.05	dBm dBm dBm dBm dBm dBm		∆ Limi -14.95 -22.11 -21.17 -15.08 -21.42	it dB dB dB dB dB dB dB	′45 GF		5.000 Auto	DOO MI M
0.0 tart	3.655 C	Start Fra 3.6550 G 3.6600 G 3.6690 G 3.6700 G 3.7000 G 3.7010 G	Hz Hz Hz Hz Hz Hz Hz Hz	3.6600 3.6690 3.6700 3.7000 3.7010 3.7100) GHz) GHz) GHz) GHz) GHz) GHz) GHz	1.000 MI 1.000 MI 620.0 kH 620.0 kH 620.0 kH 1.000 MI 1.000 MI	Iz 3.6 Iz 3.6 Iz 3.6 Iz 3.6 Iz 3.6 Iz 3.6 Iz 3.7 Iz 3.7	58408333 (68955000 (69873333 (883500000 (700123333 (701165000 (GHZ - GHZ - GHZ - GHZ - GHZ - GHZ - GHZ - GHZ -	Ampli 39.95 35.11 34.17 0.921 o 34.42 36.05 40.33	dBm dBm dBm dBm dBm dBm dBm		∆ Limi -14.95 -22.11 -21.17 -15.08 -21.42 -23.05	it dB dB dB dB dB dB dB dB	45 GF		5.000 Auto	DOO MI M

Plot 7.179. Conducted Band Edge Plot (30MHz, QPSK, High Channel, Ch.B)



Plot 7.180. Conducted Band Edge Plot (40MHz, QPSK, Low Channel, Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Daga 115 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 115 of 124		
	· · ·	·	V3.0 1/6/2022		



		¥F 50 Ω	DC CO	RREC			NSE:INT req: 3.625000	0000	ALIGN A	04:06:48 Radio Sto	PM Aug 03, 2023 d: None	Frequenc	У
PAS	Gat	te: LO	IF	Gain:Lov		g. Free tten: 2				Radio De	vice: BTS		
		Ref Offset 11											
10 dB. -og F	/div	Ref 30.00	dBm										
20.0												Center	Fre
10.0												3.625000000	
0.00					{			}					
10.0													
20.0													
30.0					~			- L_	~				
40.0										 <u> </u>			
50.0													
-60.0													
L													
14-1-1-1	3.55 G												
รเลก	3.33 G	Hz								Sto	p 3.7 GHz	CF : 741.000000	
Start		HZ Start Freq	Stop	Freq	RBW	Fr	requency		Amplitude	Sto ∆ Limit	p 3.7 GHz		MH
			Stop 3.5950				requency 594550000 (741.000000	MH
Spur 1 2	Range 1 2	Start Freq 3.5500 GHz 3.5950 GHz	3.5950 3.6040) GHz) GHz	1.000 M	Hz 3.5 Hz 3.6	594550000 (603910000 (GHz - GHz -	33.30 dBm 30.93 dBm	∆ Limit -8.296 d -17.93 d	<mark>В</mark> В	741.000000 <u>Auto</u>	MH Ma
Spur 1 2 3	Range 1 2 3	Start Freq 3.5500 GHz 3.5950 GHz 3.6040 GHz	3.5950 3.6040 3.6050) GHz) GHz) GHz	1.000 M 1.000 M 750.0 kH	-lz 3.6 -lz 3.6 lz 3.6	594550000 (503910000 (504940000 (GHz GHz GHz	33.30 dBm 30.93 dBm 30.85 dBm	∆ Limit -8.296 d -17.93 d -17.85 d	<mark>В</mark> В В	741.000000	Ma Ma
Spur 1 2 3 4	Range 1 2 3 4	Start Freq 3.5500 GHz 3.5950 GHz 3.6040 GHz 3.6050 GHz	3.5950 3.6040 3.6050 3.6450) GHz) GHz) GHz) GHz) GHz	1.000 M 1.000 M 750.0 kH 750.0 kH	Hz 3.6 Hz 3.6 Iz 3.6 Iz 3.6	594550000 (503910000 (504940000 (513000000 (ing ing ing ing ing ing ing ing ing ing	33.30 dBm 30.93 dBm 30.85 dBm 11.35 dBm	∆ Limit -8.296 d -17.93 d -17.85 d -13.65 d	B B B B B	741.000000 <u>Auto</u>	Ma Ma
Spur 1 2 3 4 5	Range 1 2 3 4 5	Start Freq 3.5950 GHz 3.5950 GHz 3.6040 GHz 3.6050 GHz 3.6450 GHz	3.5950 3.6040 3.6050 3.6450 3.6460) GHz) GHz) GHz) GHz) GHz) GHz	1.000 M 1.000 M 750.0 k 750.0 k 750.0 k	Hz 3.6 Hz 3.6 Iz 3.6 Iz 3.6 Iz 3.6	594550000 (603910000 (604940000 (613000000 (645000000 (SHz SHz SHz SHz SHz SHz	33.30 dBm 30.93 dBm 30.85 dBm 11.35 dBm 32.97 dBm	<u>∆ Limit</u> -8.296 d -17.93 d -17.85 d -13.65 d -19.97 d	B B B B B B B	741.000000 <u>Auto</u>	Ma Ma
Spur 1 2 3 4 5 3	Range 1 2 3 4 5 6	Start Freq 3.5500 GHz 3.5950 GHz 3.6040 GHz 3.6050 GHz 3.6450 GHz 3.6460 GHz	3.5950 3.6040 3.6050 3.6450 3.6460 3.6550) GHz) GHz) GHz) GHz) GHz) GHz) GHz	1.000 M 1.000 M 750.0 k 750.0 k 750.0 k 1.000 M	Hz 3.6 Hz 3.6 Iz 3.6 Iz 3.6 Iz 3.6 Hz 3.6	594550000 (603910000 (604940000 (613000000 (645000000 (646090000 (GHZ - GHZ - GHZ - GHZ - GHZ - GHZ -	33.30 dBm 30.93 dBm 30.85 dBm 11.35 dBm 32.97 dBm 33.16 dBm	△ Limit -8.296 d -17.93 d -17.85 d -13.65 d -19.97 d -20.16 d	B B B B B B B B	741.000000 <u>Auto</u>	Ma Ma
	Range 1 2 3 4 5	Start Freq 3.5950 GHz 3.5950 GHz 3.6040 GHz 3.6050 GHz 3.6450 GHz	3.5950 3.6040 3.6050 3.6450 3.6460) GHz) GHz) GHz) GHz) GHz) GHz) GHz	1.000 M 1.000 M 750.0 k 750.0 k 750.0 k 1.000 M	Hz 3.6 Hz 3.6 Iz 3.6 Iz 3.6 Iz 3.6 Hz 3.6	594550000 (603910000 (604940000 (613000000 (645000000 (GHZ - GHZ - GHZ - GHZ - GHZ - GHZ -	33.30 dBm 30.93 dBm 30.85 dBm 11.35 dBm 32.97 dBm 33.16 dBm	<u>∆ Limit</u> -8.296 d -17.93 d -17.85 d -13.65 d -19.97 d	B B B B B B B B	741.000000 <u>Auto</u>	MH: Mar
Spur 1 2 3 4	Range 1 2 3 4 5 6	Start Freq 3.5500 GHz 3.5950 GHz 3.6040 GHz 3.6050 GHz 3.6450 GHz 3.6460 GHz	3.5950 3.6040 3.6050 3.6450 3.6460 3.6550) GHz) GHz) GHz) GHz) GHz) GHz) GHz	1.000 M 1.000 M 750.0 k 750.0 k 750.0 k 1.000 M	Hz 3.6 Hz 3.6 Iz 3.6 Iz 3.6 Iz 3.6 Hz 3.6	594550000 (603910000 (604940000 (613000000 (645000000 (646090000 (GHZ - GHZ - GHZ - GHZ - GHZ - GHZ -	33.30 dBm 30.93 dBm 30.85 dBm 11.35 dBm 32.97 dBm 33.16 dBm	△ Limit -8.296 d -17.93 d -17.85 d -13.65 d -19.97 d -20.16 d	B B B B B B B B	741.000000 <u>Auto</u>	MH: Mar

Plot 7.181. Conducted Band Edge Plot (40MHz, QPSK, Mid Channel, Ch.B)



Plot 7.182. Conducted Band Edge Plot (40MHz, QPSK, High Channel, Ch.B)

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 116 of 104
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 116 of 124
	·		V3.0 1/6/2022



7.8 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the field strength conversion method described in ANSI C63.26-2015 with the EUT transmitting into a 500hm load. Measurements on signals operating below 1GHz are performed using hybrid (biconical/log) antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

ANSI C63.26-2015 - Section 5.5.4

Test Settings

- 1. RBW = 1MHz
- 2. VBW \geq 3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points \geq 2 x span / RBW
- 5. Detector = RMS
- 6. Trace mode = Max Hold (In cases where the level is within 2dB of the limit, the final measurement

is taken using triggering/gating and trace averaging.)

7. The trace was allowed to stabilize

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Page 117 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	05/08/2023 – 08/24/2023 CBRS Radio Module			
			V/2 0 1/6/2022		



Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

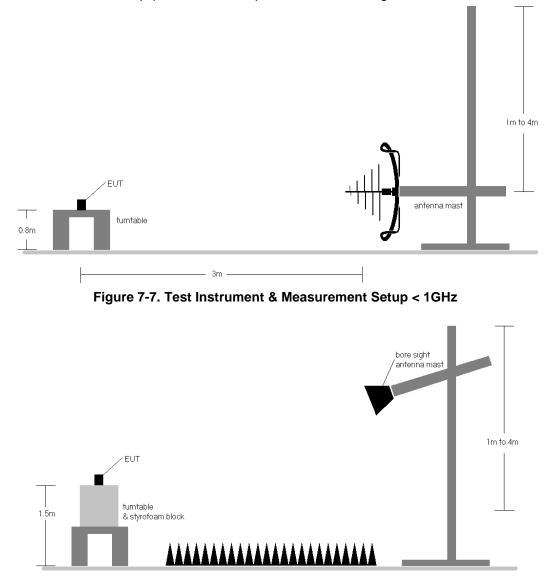


Figure 7-8. Test Instrument & Measurement Setup >1 GHz

3m -

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 118 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 118 01 124
		-	V3.0 1/6/2022



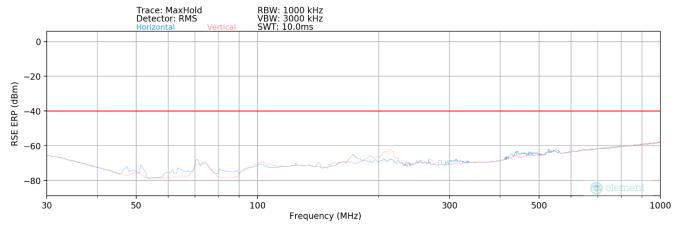
Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in ANSI C63.26-2015 Section 5.2.7:
 - a) $E(dB\mu V/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m) b) EIRP (dBm) = E(dB\mu V/m) + 20logD 104.8; where D is the measurement distance in meters.$
- 2) The worst case emissions are reported with the EUT modulations and channel bandwidth configurations shown in the tables below.
- 3) The spectrum is measured from 30MHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 6) Any failing emissions shown on wide band RSE plots were found to be passing upon closer inspection and measurement.

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Dege 110 of 104		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 119 of 124		
<u> </u>	•		V3.0 1/6/2022		

Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from Element. If you have any questions about this or have an inquiry about obtaining additional rights to this report or assembly of contents thereof, please contact ct.info@element.com.





Plot 7.183. Radiated Spurious Plot 30MH	z-1GHz
---	--------

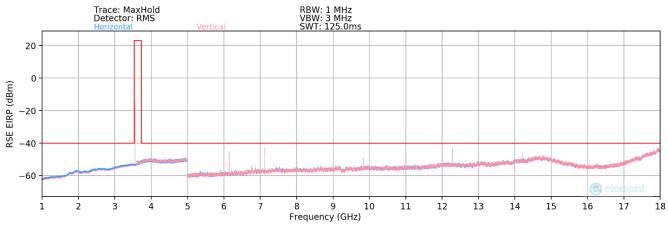
Bandwidth (MHz):	10
Frequency (MHz):	3625.0
Modulation Signal:	QPSK
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz/3MHz
RBH / YBH:	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
51.10	н	101	251	-95.65	14.34	25.69	-69.57	-40.00	-29.57
59.20	Н	100	169	-96.46	13.93	24.47	-70.78	-40.00	-30.78
71.00	н	101	309	-91.33	14.45	30.12	-65.14	-40.00	-25.14
75.60	Н	110	12	-93.92	14.38	27.46	-67.80	-40.00	-27.80
93.20	Н	112	222	-96.20	15.44	26.24	-69.01	-40.00	-29.01
109.60	н	100	290	-97.07	19.33	29.26	-66.00	-40.00	-26.00
139.50	V	158	288	-99.52	20.05	27.53	-67.73	-40.00	-27.73
173.00	V	139	273	-95.44	18.99	30.55	-64.71	-40.00	-24.71
218.00	V	129	91	-80.73	17.82	44.09	-51.16	-40.00	-11.16
253.80	V	101	82	-81.01	18.74	44.73	-50.53	-40.00	-10.53
265.40	V	129	84	-86.11	20.13	41.02	-54.24	-40.00	-14.24

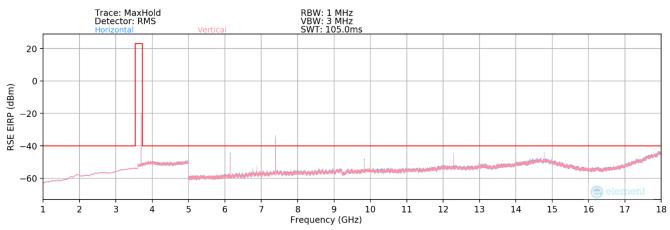
Table 7-7. Radiated Spurious Data 30MHz-1GHz - Mid Channel

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dega 120 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 120 of 124
			V3.0 1/6/2022

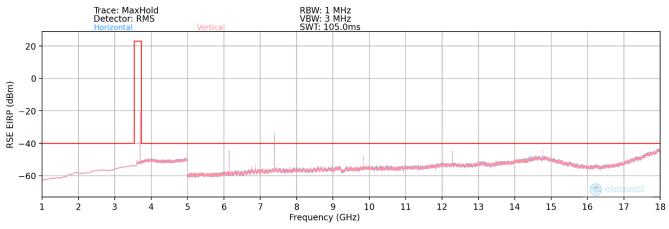








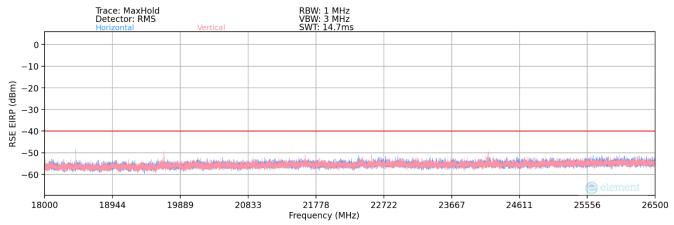




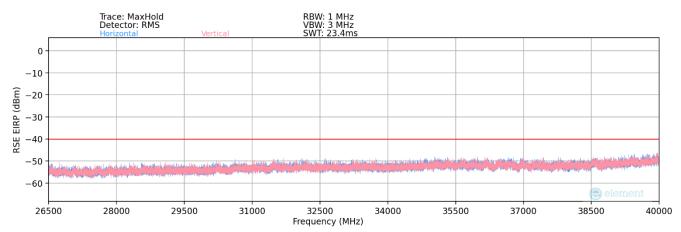


FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Dage 121 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 121 of 124		
			V3.0 1/6/2022		





Plot 7.187. Radiated Spurious Plot 18-26.5GHz



Plot 7.188. Radiated Spurious Plot 26.5-40GHz

Bandwidth (MHz):	10
Frequency (MHz):	3555.0
Modulation Signal:	QPSK
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz/3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
6144.00	Н	136	196	-57.02	1.34	51.32	-43.94	-40.00	-3.94
6758.50	Н	122	180	-67.81	3.20	42.39	-52.87	-40.00	-12.87
6811.00	Н	-	-	-75.60	2.98	34.38	-60.88	-40.00	-20.88
7110.00	Н	155	239	-56.07	3.80	54.73	-40.53	-40.00	-0.53
10665.00	Н	137	258	-78.42	7.81	36.39	-58.87	-40.00	-18.87
12288.00	V	167	191	-65.97	9.47	50.50	-44.76	-40.00	-4.76
14220.00	Н	187	179	-73.26	12.22	45.96	-49.30	-40.00	-9.30
17775.00	Н	-	-	-77.26	15.47	45.21	-50.05	-40.00	-10.05
21330.00	Н	-	-	-57.89	4.04	53.15	-51.65	-40.00	-11.65
24885.00	Н	-	-	-58.07	4.19	53.13	-51.67	-40.00	-11.67
28440.00	Н	-	-	-58.04	5.26	54.21	-50.59	-40.00	-10.59

Table 7-8. Radiated Spurious Data – Low Channel

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Dega 122 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Page 122 of 124		
	•		V3.0 1/6/2022		



Bandwidth (MHz):	10
Frequency (MHz):	3625.0
Modulation Signal:	QPSK
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz/3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
6144.00	V	185	196	-62.69	1.34	45.65	-49.61	-40.00	-9.61
6758.50	Н	250	240	-64.81	2.98	45.17	-50.09	-40.00	-10.09
6811.00	Н	131	235	-65.24	3.20	44.96	-50.30	-40.00	-10.30
7250.00	Н	176	224	-58.25	3.66	52.41	-42.85	-40.00	-2.85
10875.00	Н	-	-	-78.22	8.05	36.83	-58.43	-40.00	-18.43
12288.00	V	210	216	-61.23	9.47	55.24	-40.02	-40.00	-0.02
14500.00	Н	122	232	-75.94	13.04	44.10	-51.16	-40.00	-11.16
18125.00	Н	-	-	-55.39	1.60	53.21	-51.59	-40.00	-11.59
18432.00	Н	150	193	-52.44	1.66	56.22	-48.58	-40.00	-8.58
21750.00	Н	-	-	-55.59	3.86	55.27	-49.53	-40.00	-9.53
24162.00	V	150	63	-54.17	4.27	57.10	-47.70	-40.00	-7.70
25375.00	Н	-	-	-58.12	4.26	53.15	-51.66	-40.00	-11.66
29000.00	Н	-	-	-58.32	5.40	54.08	-50.72	-40.00	-10.72
32625.00	Н	-	-	-57.67	7.10	56.43	-48.37	-40.00	-8.37

Table 7-9. Radiated Spurious Data – Mid Channel

Bandwidth (MHz):	10
Frequency (MHz):	3695.0
Modulation Signal:	QPSK
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz/3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
6144.00	V	157	210	-57.89	1.34	50.45	-44.81	-40.00	-4.81
6758.50	V	110	182	-67.83	2.98	42.15	-53.11	-40.00	-13.11
6811.00	Н	-	-	-75.67	3.20	34.53	-60.73	-40.00	-20.73
7390.00	Н	197	243	-59.73	4.26	51.53	-43.73	-40.00	-3.73
11085.00	V	-	-	-78.69	8.18	36.49	-58.77	-40.00	-18.77
12288.00	V	179	191	-66.22	9.47	50.25	-45.01	-40.00	-5.01
14780.00	V	199	167	-71.10	13.43	49.33	-45.93	-40.00	-5.93
18475.00	V	-	-	-57.54	1.86	51.32	-53.48	-40.00	-13.48
22170.00	V	-	-	-58.54	3.80	52.27	-52.54	-40.00	-12.54
25865.00	V	-	-	-56.80	4.65	54.85	-49.95	-40.00	-9.95

Table 7-10. Radiated Spurious Data – High Channel

FCC ID: 2AS22-LUMACH2		PART 96 MEASUREMENT REPORT Class II Permissive Change			
Test Report S/N:	Test Dates:	EUT Type:	Page 123 of 124		
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 125 01 124		
			V3.0 1/6/2022		



8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Skylark Wireless**, **LLC CBRS Radio Module FCC ID: 2AS22-LUMACH2** complies with all of the Category B CBSD requirements of Part 96 of the FCC Rules for Band 48 operation only when integrating up to 7 modules into a single chassis.

FCC ID: 2AS22-LUMACH2		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 124 of 124
1M2308230095-01.2AS22	05/08/2023 - 08/24/2023	CBRS Radio Module	Fage 124 01 124
			V3.0 1/6/2022