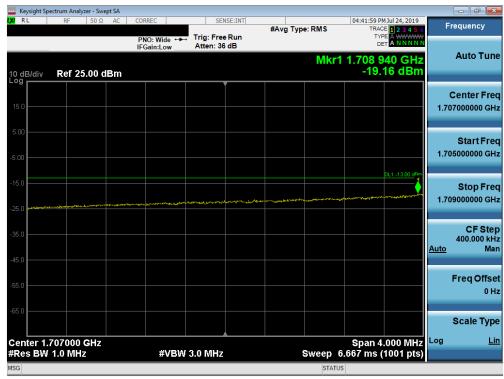


	ctrum Analyzer -										
L <mark>XI</mark> RL	RF 50	Ω AC	CORREC	SE	NSE:INT	#Avg Typ	e: RMS		M Jul 24, 2019	F	requency
10 dB/div	Ref 25.00) dBm	PNO: Wide ← IFGain:Low	Trig: Fre Atten: 3		• 11		יזי וס 1 1.710 0			Auto Tune
15.0											Center Freq 10000000 GHz
5.00						gerten gedytten formi	yang mananananananananananananananananananan	under an		1.70	Start Freq 66000000 GHz
-15.0				den tratige	1 married				DL1 -13.00 dBm	1.71	Stop Freq 4000000 GHz
-35.0	and a second	ng na an	and the second							<u>Auto</u>	CF Step 800.000 kHz Man
-55.0											Freq Offset 0 Hz
-65.0 Center 1.7	/10000 GH							Snan 8	.000 MHz	Log	Scale Type <u>Lin</u>
#Res BW		2	#VB	W 430 kHz			Sweep	13.33 ms (
MSG							STAT				

Plot 7-118. Lower Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-119. Lower Extended Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 91 of 142
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	ectrum Analyzer - Sw									_	
X/RL	RF 50 Ω	AC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS		MJul 24, 2019	F	requency
			PNO: Wide ++ IFGain:Low	Atten: 36		0 ,1		TY			Auto Tune
10 dB/div Log	Ref 25.00	dBm					WIKI	-27.1	48 dBm		
				ľ í							Center Freq
15.0										1.78	5000000 GHz
5.00	an a	Part of the state	ะปรุ่งใกษ์สะที่จะมู่ สามุรมมีประชา	n=~							Start Fred
-5.00										1.78	1000000 GH
-15.0									DL1 -13.00 dBm		
-25.0				he	1					1.78	Stop Free 9000000 GH
-25.0				ALC: NO	acola warman	and more stars and a					
-35.0							and the second second second	ACTING AND	ter vetin dan dan dan dan dan dan dan dan dan da	<u>Auto</u>	CF Step 800.000 kH Mar
-45.0											
-55.0											Freq Offse 0 Ha
-65.0											
											Scale Type
	755000 GHz	· · · ·						Span 8	.000 MHz	Log	<u>Lir</u>
#Res BW	120 kHz		#VBW	430 kHz			Sweep	13.33 ms (1001 pts)		
ISG							STATU	S			

Plot 7-120. Upper Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-121. Upper Extended Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		
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Keysight Spectrum Analyzer - Swept SA						
KI RF 50Ω AC	CORREC	SENSE:INT	#Avg Type: RM		E 1 2 3 4 5 6	Frequency
	PNO: Wide ↔ IFGain:Low	Trig: Free Run Atten: 36 dB				
10 dB/div Ref 25.00 dBm			Ν	0 Mkr1 1.780 -28.9	24 GHz 93 dBm	Auto Tune
		Í				Center Free
15.0						1.780000000 GH
5.00 จุษณีของจากการสารเกิดของการสารเกิดจาก	๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛	NA.				Start Free
5.00					DL1 -13.00 dBm	1.776000000 GH
15.0					DET -13.00 GBII	Stop Free
25.0		h1				1.784000000 GH
35.0		Approximited have	Martin Martin Conception of Station 1994	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	277 That- Bak. (Bak.)	CF Ste 800.000 kH
-45.0						<u>Auto</u> Mar
55.0						Freq Offse
						0 H
-65.0						Scale Typ
Center 1.780000 GHz				Span 8.	000 MHz	Log <u>Li</u>
≇Res BW 120 kHz	#VBW 4	30 kHz	Swe	ep 13.33 ms (*	1001 pts)	
ISG				STATUS		

Plot 7-122. Upper Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-123. Upper Extended Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🔁 LG	Approved by: Quality Manager
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	ectrum Analyzer - Sw										
LXI RL	RF 50 Ω	2 AC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS		M Jul 24, 2019	Fr	equency
			PNO: Wide ↔ IFGain:Low	Trig: Free Atten: 36				tyf De			Auto Tune
10 dB/div Log	Ref 25.00	dBm					Mkr1	1.710 0 -25.9	00 GHz 38 dBm		Auto Tulle
											enter Freq
15.0										1.71	0000000 GHz
5.00						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		mann an	and the start		Start Freq
-5.00										1.704	4000000 GHz
-15.0									DL1 -13.00 dBm		Stop Freq
-25.0					1					1.71	5000000 GHz
-20.0	when many many many many			and the second second	<i>\</i> ~ <i>T</i>						CF Step
-35.0										1 <u>Auto</u>	200000 MHz. Man
-45.0										<u>//uro</u>	
-55.0										I	Freq Offset
-65.0											0 Hz
-8510											Scale Type
Center 1.7	710000 GHz							Span 1	2.00 MHz	Log	Lin
#Res BW			#VBW	620 kHz			Sweep 1		1001 pts)		
MSG							STATU	s			

Plot 7-124. Lower Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-125. Lower Extended Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:						
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🔤 Keysight Spectru											- ē ×
LX/RL	RF 50 Ω	AC (CORREC	SEI	NSE:INT	#Avg Typ	e: RMS		M Jul 24, 2019	Fre	equency
			PNO: Wide 🕶 IFGain:Low	Trig: Free Atten: 36		0 ,1		TYI Di			Auto Tune
10 dB/div R	ef 25.00 d	Bm					Mkr	1 1.755 0 -27.1	00 GHz 54 dBm		Auto Tune
					Í					c	enter Freq
15.0										1.758	000000 GHz
5.00		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm	~~~							Start Freq
-5.00										1.749	0000000 GHz
-15.0									DL1 -13.00 dBm		
					1					1.761	Stop Fred
-25.0				- Strange	horan						
-35.0					· · · · ·		un martere	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		-	CF Step 200000 MH2
-45.0										<u>Auto</u>	Man
-55.0										F	req Offset
											0 Hz
-65.0											Scale Type
Center 1.755	000 GHz							Span 1	2.00 MHz	Log	Lin
#Res BW 18			#VBW	/ 620 kHz			Sweep	1.000 ms (
MSG							STATU	IS			

Plot 7-126. Upper Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-127. Upper Extended Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 05 of 142
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SENSE:INT Trig: Free Run Atten: 36 dB	#Avg Type		TRA TY C 1 1.780 (MJul 24, 2019 (PE A	Frequency Auto Tu Center F 1.780000000 Start F 1.774000000
		Mkr	۔ 1 1.780 (012 GHz	Center F 1.780000000 Start F
		Mkr	1 1.780 (-29	012 GHz 92 dBm	Center F 1.780000000 Start F
					1.780000000 0 Start F
					Start F
				DL1 -13.00 dBm	
					Stop F
					1.786000000
Www	man	hann			CFS
			Man Canal La Dava	Marrie Carl	1.200000 M Auto
					Freq Off (
					Scale Ty
			Span	12.00 MHz	Log
620 kHz		Sweep	1.000 ms	(1001 pts)	
	620 kHz	620 kHz		Span '	Span 12.00 MHz 620 kHz Sweep 1.000 ms (1001 pts)

Plot 7-128. Upper Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-129. Upper Extended Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
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	ctrum Analyzer - Sv										
LXVI RL	RF 50 Ω	2 AC	CORREC	SEI	SE:INT	#Avg Typ	e: RMS		M Jul 24, 2019 E 1 2 3 4 5 6	F	requency
10 dB/div	Ref 25.00		PNO: Wide ++ IFGain:Low	Trig: Free Atten: 36		• •	Mkr	יזי וס 1 1.709 9			Auto Tune
15.0	Kei 23.00										Center Freq 0000000 GHz
-5.00							and a second	Mar Anna an Anna Anna Anna Anna Anna Anna		1.70	Start Freq 2000000 GHz
-15.0					1				DL1 -13.00 dBm	1.71	Stop Fred 8000000 GH2
-35.0	magant	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	man							Auto	CF Step 1.600000 MHz Mar
-55.0											Freq Offse 0 Hz
	710000 GHz							Span 1	6.00 MHz	Log	Scale Type <u>Lir</u>
#Res BW	240 kHz		#VBW	í 820 kHz			Sweep	1.000 ms ((1001 pts)		
MSG							STAT	US			

Plot 7-130. Lower Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-131. Lower Extended Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 07 of 142
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	ectrum Analy		t SA									_	
XI RL	RF	50 Ω	AC	CORREC		SEN	SE:INT	#Avg Typ	e: RMS		M Jul 24, 2019 DE 1 2 3 4 5 6	F	requency
				PNO: W IFGain:	/ide ↔ Low	Trig: Free Atten: 36				TY D			A
10 dB/div Log	Ref 2	5.00 dE	3m						Mkr	1 1.755 (-28.6	000 GHz 78 dBm		Auto Tune
													Center Freq
15.0												1.78	5000000 GHz
5.00	wwwwwww	and the state of t	an a		and and a	m							Start Free
-5.00												1.74	7000000 GHz
-15.0											DL1 -13.00 dBm		Stop Fred
-25.0						ا ار	1					1.76	3000000 GH
2010						w Vruk	som aller	grand and and and and and and and and and	Martin and an a				CF Ster
35.0										on white the second	ᡧᡰᢅᡅᡗᠬᠬᢘᢇᡪᢪᠣᡧᢧᢛᡵ	<u>Auto</u>	CF Step 1.600000 MH: Mar
45.0													
.55.0													Freq Offse 0 Ha
.65.0													U HA
-85.0													Scale Type
Center 1.	755000	GHz								Span 1	6.00 MHz	Log	Lin
#Res BW					#VBW	820 kHz			Sweep	1.000 ms	(1001 pts)		
ISG									STATU	JS			

Plot 7-132. Upper Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-133. Upper Extended Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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🚾 Keysight Spectrum Analyzer - S						
RL RF 50	Ω AC CORREC	SEN	ISE:INT	Avg Type: RMS	04:32:33 PM Jul 24, 2019 TRACE 1 2 3 4 5 6	Frequency
	PNO: W IFGain:L	ide ↔ Trig: Free ow Atten: 36	Run		DET A NNNN	Auto Tune
10 dB/div Ref 25.00	dBm			Mkr1	1.780 016 GHz -31.19 dBm	Auto Tune
						Center Freq
15.0						1.780000000 GHz
5.00	www	meran				Start Freq
-5.00						1.772000000 GHz
					DL1 -13.00 dBm	
-15.0						Stop Freq 1.788000000 GHz
-25.0			1			1.70000000 0112
-35.0		long	· · · · · · · · · · · · · · · · · · ·			CF Step 1.600000 MHz
-45.0					and a construction of the	<u>Auto</u> Man
43.0						Freq Offset
-55.0						0 Hz
-65.0						Coolo Tras
						Scale Type
Center 1.780000 GHz #Res BW 240 kHz		#VBW 820 kHz		Sween 1	Span 16.00 MHz .000 ms (1001 pts)	Log <u>Lin</u>
MSG		791299 020 KHZ		STATUS		

Plot 7-134. Upper Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

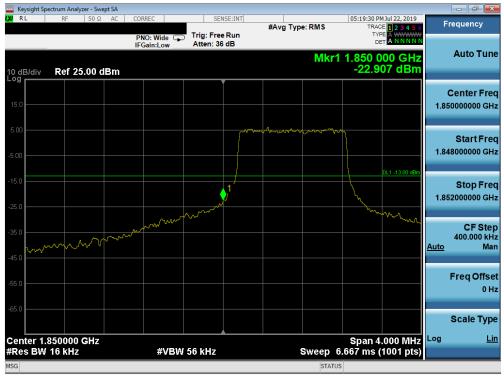


Plot 7-135. Upper Extended Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

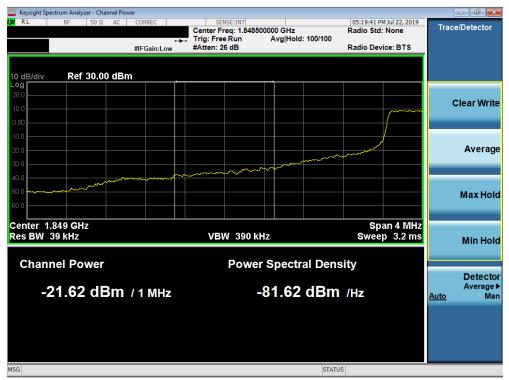
FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	G	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 80 of 142
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Band 2



Plot 7-136. Lower Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



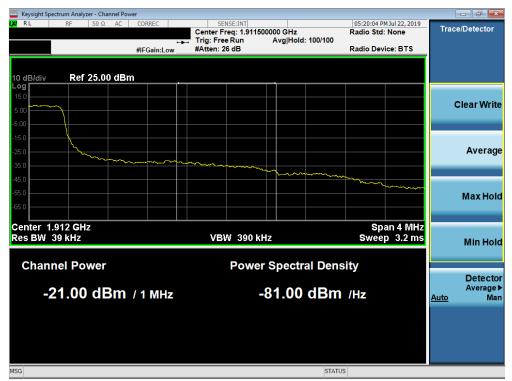
Plot 7-137. Lower Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕐 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dago 00 of 142
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Keysight Spectrum											- ē 🗙
RL F	¥F 50 Ω	AC	CORREC	Trig: Fre		#Avg Typ	e: RMS	TRAC	M Jul 22, 2019 DE 1 2 3 4 5 6 DE A WWWW T A N N N N N	Fi	requency
0 dB/div Re	ef 25.00 d	IBm	IFGain:Low	Atten: 3	6 dB		Mkr	1 1.910 0			Auto Tun
15.0											Center Fre 0000000 GH
5.00			Garde-andre						DL1 -13.00 dBm	1.90	Start Fre
25.0					1				DET -13.00 0Bm	1.91	Stop Fre 2000000 Gł
15.0	www.				M. J. Ward	www.two.	~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mon man	<u>Auto</u>	CF Ste 400.000 kl M
5.0											Freq Offs 0
enter 1.910								Span 4	.000 MHz	Log	Scale Typ L
Res BW 16			#VB\	V 56 kHz			Sweep	6.667 ms ((1001 pts)		
G							STAT	US			

Plot 7-138. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



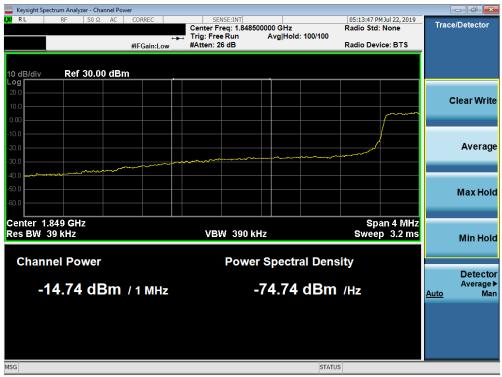
Plot 7-139. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Dage 01 of 142				
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	ctrum Analyze	r - Swept S	A									
LXI RL	RF	50Ω A	C COF	REC	SEI	ISE:INT	#Avg Typ	e: RMS		MJul 22, 2019	F	requency
			PI IF(IO: Wide	Trig: Free Atten: 36				TY			
	D of 05 (o dDe						Mkr	1 1.850 (00 GHz 58 dBm		Auto Tune
10 dB/div	Ref 25.0	ло авг	1		,							
												Center Freq
15.0											1.85	0000000 GHz
5.00												
5.00							- Warde Anter Anter Anter	and a free and		and and a second		Start Freq
-5.00											1.84	8000000 GHz
										DL1 -13.00 dBm		
-15.0						1						Stop Freq
					0.00	2					1.85	2000000 GHz
-25.0	And the Andrews	ma	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	An Maria							
-35.0												CF Step
											Auto	400.000 kHz Man
-45.0												
												Freq Offset
-55.0												0 Hz
-65.0												
												Scale Type
Center 1.8	50000 0	LI-7									Log	Lin
#Res BW		ΠZ		#VBV	V 130 kHz			Sweep	5 span 4 6.667 ms (.000 MHz 1001 pts)	209	<u></u>
MSG								STAT				

Plot 7-140. Lower Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



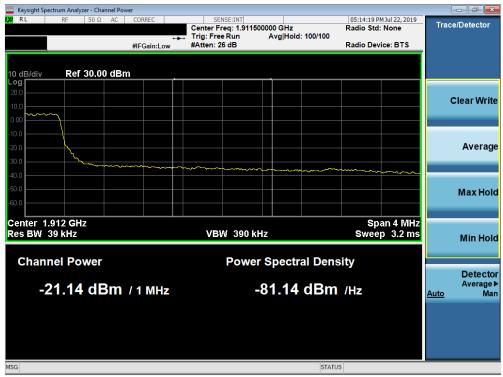
Plot 7-141. Lower Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ectrum Analyzer -										
LXI RL	RF 5	OΩ AC	CORREC	SEI	NSE:INT	#Avg Typ	e: RMS		M Jul 22, 2019 DE 1 2 3 4 5 6	F	requency
			PNO: Wide G	Trig: Free Atten: 36				TY D	PE A WWWWW ET A NNNNN		
			II Gam.Low				Mkr	1 1.910 (008 GHz		Auto Tune
10 dB/div	Ref 25.0	0 dBm						-26.	31 dBm		
				``````````````````````````````````````	Í						Center Freq
15.0											0000000 GHz
										1.01	
5.00	wooler and wo	www.	and the product of the	many							Otort Eror
										1 90	Start Freq 8000000 GHz
-5.00										1.50	
-15.0									DL1 -13.00 dBm		Oton Enon
					. 1					1.01	Stop Freq 2000000 GHz
-25.0				أر	·					1.51	2000000 0112
					and have a second	mm					CF Step
-35.0						11 P. 11 P. 18 C.	100 <del>, مىرىد</del> ە مە	www.wwwwww	A from the second		400.000 kHz
-45.0										<u>Auto</u>	Man
											-
-55.0											Freq Offset 0 Hz
											0 112
-65.0											Scale Type
Center 1.		lz	-43 (1914	400 1.11-				Span 4	.000 MHz	Log	<u>Lin</u>
#Res BW	36 KHZ		#VBN	/ 130 kHz				6.667 ms (	(1001 pts)		
MSG							STATI	JS			

Plot 7-142. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



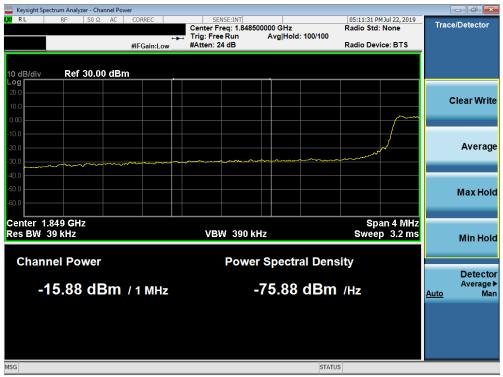
Plot 7-143. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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	ctrum Analyzer - S										- 6 ×
LXVI RL	RF 50	Ω AC	CORREC	SEN	ISE:INT	#Avg Typ			M Jul 22, 2019	F	requency
			PNO: Wide IFGain:Low	Trig: Free Atten: 36		#718 JP		TYP			Auto Tune
10 dB/div Log	Ref 25.00	dBm						-23.	21 dBm		
15.0											Center Freq
5.00									and the flo	1.00	0000000 GH2
					No.	and a second second	-245-477247-47-47-47-47-47-47-47-47-47-47-47-47-4	all and a second second	مقمقه للمحمل الماحة	1.84	Start Freq 8000000 GHz
-5.00									DL1 -13.00 dBm		
-15.0					1 wh					1.85	Stop Freq 2000000 GHz
-25.0	KN Massager	rendly myen han yn de	man and a second se	Mart Wald							CF Step
-35.0										<u>Auto</u>	400.000 kHz Man
-45.0											
-55.0											Freq Offset 0 Hz
-65.0											Scale Type
Center 1.8	350000 GHz	2						Span 4	.000 MHz	Log	<u>Lin</u>
#Res BW			#VBW	220 kHz			Sweep 6	6.667 ms (	1001 pts)		
MSG							STATU	s			

Plot 7-144. Lower Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



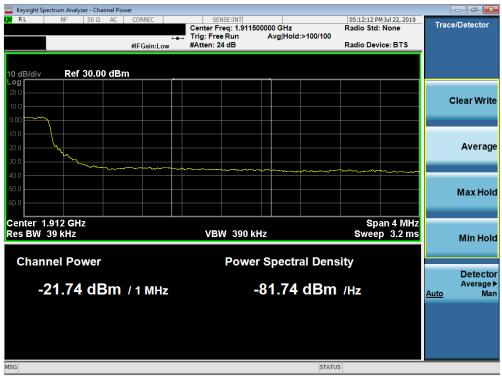
Plot 7-145. Lower Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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	ctrum Analyzer -										
LXI RL	RF 50	Ω AC	CORREC	SEI	ISE:INT	#Avg Typ	e: RMS		M Jul 22, 2019	F	requency
			PNO: Wide 🕞	Trig: Free Atten: 36		•		TY			
			II Gain.cow	,			Mkr1	1.910 (	04 GHz		Auto Tune
10 dB/div	Ref 25.00	) dBm						-25.	73 dBm		
				Ì							0 <b>1</b>
15.0											Center Freq
										1.0	
5.00	and	and and and and	where we are a second of the	m							04
										1 01	Start Freq 8000000 GHz
-5.00										1.50	0000000 GHZ
-15.0									DL1 -13.00 dBm		
10.0				٦. H	1					1.01	Stop Freq 2000000 GHz
-25.0				M. Nu						1.5	2000000 GH2
					and the second	www.	ward war ward ward	4 martin and and and and and and and and and an			CF Step
-35.0								i da a construction d'anna a faire d'anna a faire a fai	and a second		400.000 kHz
-45.0										<u>Auto</u>	Man
											-
-55.0											Freq Offset 0 Hz
											0 H2
-65.0											Scale Type
Center 1.9		z						Span 4		Log	Lin
#Res BW	62 KHZ		#VBW	220 kHz					1001 pts)		
MSG							STATU	S			

Plot 7-146. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



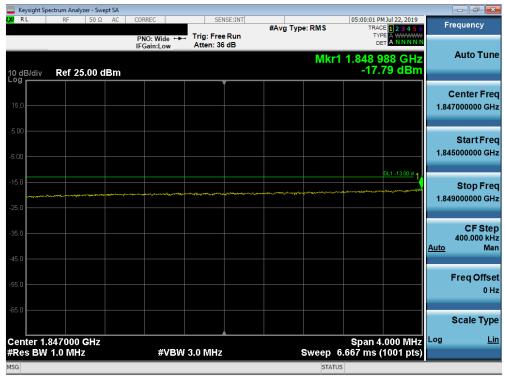
Plot 7-147. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 05 of 142
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	ctrum Analyzer - Swe										- • ×
LXI RL	RF 50 Ω	AC	CORREC	SEN	SE:INT	#Avg Typ			MJul 22, 2019	F	requency
			PNO: Wide IFGain:Low	Trig: Free Atten: 36		#/( <b>1</b> 8-1)P		TYI Di			Auto Tune
10 dB/div Log	Ref 25.00 c	iBm					MKr1	-24.	68 GHz 99 dBm		, allo Fullo
15.0											Center Freq
5.00										1.0	0000000 GH2
					and the second sec	r and a second second	₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽	and the second secon	and a second	1.84	Start Freq 6000000 GHz
-5.00									DL1 -13.00 dBm		
-15.0				4	1					1.85	Stop Freq 54000000 GHz
-25.0	ensystelly with work	en franske kerek	Laboration Mr. A. Martin	and and a second second							CF Step
-35.0										<u>Auto</u>	800.000 kHz Man
-45.0										-	
-55.0											Freq Offset 0 Hz
-65.0											Scale Type
Center 1.8	350000 GHz							Span 8	.000 MHz	Log	Lin
#Res BW			#VBW	430 kHz			Sweep 1	13.33 ms (	1001 pts)		
MSG							STATU	s			

Plot 7-148. Lower Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-149. Lower Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		
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	ectrum Analyzer - S										
X/RL	RF 50	Ω AC	CORREC	SEI	NSE:INT	#Avg Typ	e: RMS		M Jul 22, 2019 CE 1 2 3 4 5 6	F	requency
			PNO: Wide G	Trig: Free Atten: 36		0 ,1		TY D			Auto Tune
10 dB/div Log	Ref 25.00	dBm					Mkr	1 1.910 ( -29.0	000 GHz 66 dBm	_	Auto Tulle
											Center Freq
15.0										1.91	0000000 GHz
5.00 <b></b>	andanan yana yang manan kanan kan	hime of a second	and a second	and							Start Fred
-5.00										1.90	6000000 GHz
-15.0									DL1 -13.00 dBm		Stop Fred
-25.0				L N	1					1.91	4000000 GHz
				24	Meren and The state	and angeologithe property	ATTAL AND				CF Ster
-35.0							all-l-d-states	yken (millefyfini)	Martin Charles and	<u>Auto</u>	800.000 kHz Mar
-45.0											_
-55.0											Freq Offse 0 Ha
-65.0											
											Scale Type
	910000 GH	Z	#\(B)(	V 420 KH=			Swoon		.000 MHz	Log	Lin
#Res BW	TZU KHZ		#VBV	V 430 kHz				13.33 ms (	(1001 pts)		
ISG							STATU	JS			

Plot 7-150. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-151. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 07 of 142
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	ectrum Analyzer - Swept SA						I			
Center F	RF 50 Ω AC req 1.850000000	GHz		E:INT	#Avg Typ	e: RMS	TRAC	M Jul 22, 2019 E 1 2 3 4 5 6	Fr	equency
		PNO: Wide 🖵 IFGain:Low	Trig: Free Atten: 36 d				DI			
						Mkr′	1 1.849 9	76 GHz		Auto Tune
10 dB/div Log	Ref 25.00 dBm						-23.	76 dBm		
									c	enter Freq
15.0									1.85	0000000 GHz
5.00										
0.00					· · · · · · · · · · · · · · · · · · ·					Start Freq
-5.00									1.84	4000000 GHz
-15.0								DL1 -13.00 dBm		
-15.0				1 📈					4.05	Stop Freq 6000000 GHz
-25.0	- market and a second	man	www.	N					1.80	5000000 GHZ
										CF Step
-35.0										.200000 MHz Man
-45.0									<u>Auto</u>	Ivian
										Freq Offset
-55.0										0 Hz
-65.0										
										Scale Type
Center 1.	850000 GHz						Span 1	2.00 MHz	Log	<u>Lin</u>
#Res BW		#VBW	620 kHz			Sweep	1.000 ms (			
MSG						STATU	IS			

Plot 7-152. Lower Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-153. Lower Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		
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	ctrum Analyzer - Sv										
LXVI RL	RF 50 Ω	2 AC	CORREC	SEI	NSE:INT	#Avg Typ	e: RMS		M Jul 22, 2019	F	requency
			PNO: Wide IFGain:Low	Trig: Free Atten: 36		•		TYI Di			Auto Tune
10 dB/div Log	Ref 25.00	dBm					MKr1	1.910 0 -29.	33 dBm		Auto Tulle
					Í						Center Freq
15.0										1.91	0000000 GHz
5.00		· · · · · · · · · · · · · · · · · · ·	m. Man	~							Start Freq
-5.00										1.90	4000000 GHz
-15.0									DL1 -13.00 dBm		Stop Freq
					1					1.91	6000000 GHz
-25.0				W.y			m		~		05.044.0
-35.0					^	www		- Mar		<u>Auto</u>	CF Step 1.200000 MHz Man
-45.0											_
-55.0											Freq Offset 0 Hz
-65.0											
											Scale Type
	10000 GHz						_	Span 1	2.00 MHz	Log	<u>Lin</u>
#Res BW	180 kHz		#VBW	620 kHz			Sweep 1	1.000 ms (	1001 pts)		
MSG							STATU	S			

Plot 7-154. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



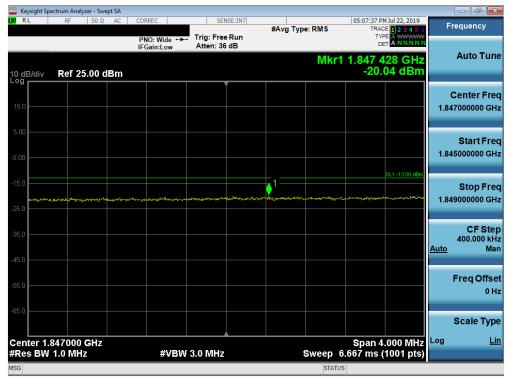
Plot 7-155. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 00 of 142	
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Keysight Spectrum Analyzer - S					
X RL RF 50	Ω AC CORREC	SENSE:INT	#Avg Type: RMS	05:07:29 PM Jul 22, 2019 TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide 🕞 IFGain:Low	Trig: Free Run Atten: 36 dB		TYPE A WWWW DET A N N N N N 1 1.849 952 GHz	Auto Tune
10 dB/div Ref 25.00	dBm			-25.44 dBm	
15.0					Center Freq 1.85000000 GHz
5.00					
-5.00					Start Freq 1.842000000 GHz
				DL1 -13.00 dBm	
-15.0		1			Stop Fred 1.858000000 GHz
-20.0 man man man	www.www.www.www.				
-35.0					CF Step 1.600000 MH <u>Auto</u> Mar
					Freq Offse
-55.0					0 Hz
-65.0					
					Scale Type
Center 1.850000 GHz	2			Span 16.00 MHz	Log <u>Lin</u>
#Res BW 240 kHz		/ 820 kHz	Sweep	1.000 ms (1001 pts)	
ISG			STAT	US	

Plot 7-156. Lower Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-157. Lower Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 142
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- 6										Analyzer - Swe		
Frequency	M Jul 22, 2019 E 1 2 3 4 5 6 E A WWWWW	TRAC	e: RMS	#Avg Typ	ISE:INT	SEN		CORREC	AC	= 50 Ω	F	<mark>u</mark> Rl
Auto Tun		DE				Atten: 36	Wide 😱 :Low	PNO: IFGair				
Auto Tuli	00 GHz 62 dBm	1.910 0 -29.	Mkr′						lBm	f 25.00 d	/div Re	0 dE
Center Fre												a
1.91000000 GH												15.0
Start Fre						~	www.yww	www.		مريمونيوني مريمونيوني مريمونيونيونيونيونيونيونيونيونيونيونيونيونيو	مر ^س مهر مرسمه	5.00
1.902000000 GH						$\rightarrow$						5.00
	DL1 -13.00 dBm											
Stop Fre 1.918000000 GH												15.0
					1	hr.						25.0
CF Ste 1.600000 MH	and the second s	- And Marin	man and the second	and the second sec	inner of the second							35.0
<u>Auto</u> Ma												45.0
Freq Offse												
0 H												55.0
Scale Typ												65.0
	6.00 MHz	Snan 1								00 GHz	er 1.910	`enf
	1001 pts)	1.000 m <u>s (</u>	Sweep			820 kHz	#VBW				BW 240	

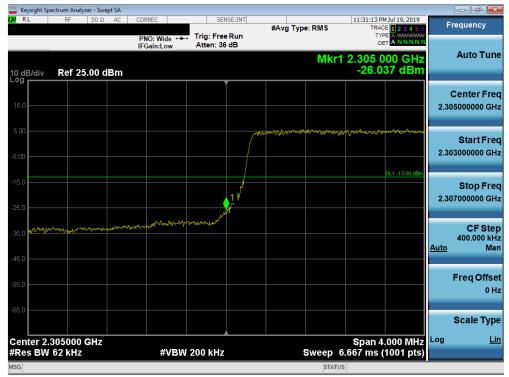
Plot 7-158. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-159. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 101 of 142
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Plot 7-160. Lower Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-161. Lower Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕐 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 102 of 142
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	pectrum Analyze									
X/RL	RF	50 Ω AC	CORREC		SE:INT	#Avg Typ	e: RMS	TRAC	M Jul 24, 2019 DE 1 2 3 4 5 6 DE A WWWWW	Frequency
10 dB/div Log	Ref 25.	NFE 00 dBm	PNO: Wide ++ IFGain:Low	Trig: Free Atten: 36			Mkr	□ 1 2.315	00 GHz 16 dBm	Auto Tun
15.0										Center Fre 2.315000000 GH
5.00	and and a second se	antif managed after	Mind Jorgan Angeland	mper very e					DL1 -13.00 dBm	Start Fre 2.310000000 GH
-15.0					1					Stop Fre 2.320000000 GH
45.0					munder	Martine May and a state	Marine La Marine	mr.	the state of the s	CF Ste 1.000000 MH <u>Auto</u> Ma
55.0										Freq Offse 0 H
Center 2	.315000 G	H7						Span 1	0.00 MHz	Scale Typ Log <u>Li</u>
#Res BW			#VBW	220 kHz			Sweep 1	6.67 ms	(1001 pts)	
ISG							STATUS	5		

Plot 7-162. Upper Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-163. Upper Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Keysight Spectrum Ar							
K RL RF	50 Ω AC	CORREC	SENSE:I	TT #Avg Typ	e: RMS	03:49:02 PM Jul 24, 2019 TRACE 1 2 3 4 5 6	Frequency
	NFE	PNO: Wide ↔ IFGain:Low	Trig: Free Ru Atten: 36 dB	n	Mkr1	2.305 000 GHz	Auto Tune
10 dB/div Ref	25.00 dBm					-30.019 dBm	
15.0							Center Freq 2.305000000 GHz
-5.00				August Au	Anglese-JMelsin Anglese	มากราช <mark>างสูงให้ที่มีการการสุขานสาวสุขานสาวสุขาน</mark>	Start Fred 2.301000000 GHz
-15.0						DL1 -13.00 dBm	Stop Free 2.309000000 GH
-25.0			under and the second	ł			CF Step
45.0	and any for a support of the	Sarles Street States					800.000 kH <u>Auto</u> Mar
-55.0							Freq Offse 0 H:
-65.0							Scale Type
Center 2.30500 #Res BW 120 k		#VBW	430 kHz		Sweep_1	Span 8.000 MHz 3.33 ms (1001 pts)	Log <u>Lin</u>
MSG					STATUS		

Plot 7-164. Lower Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-165. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 104 of 142
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🔤 Keysight Spectrum Analyzer - Swept					
<b>LX RE 50 Ω</b>	AC CORREC	SENSE:INT	#Avg Type: RMS	03:49:30 PM Jul 24, 2019 TRACE 1 2 3 4 5 6	Frequency
NF	IFGain:Low	Trig: Free Run Atten: 36 dB	Mk	r1 2.315 03 GHz -27.98 dBm	Auto Tune
15.0					Center Freq 2.315000000 GHz
-5.00					Start Freq 2.310000000 GHz
-15.0		1		DL1 -13.00 dBm	Stop Freq 2.320000000 GHz
-35.0			and and a second and a second and a second as a second		CF Step 1.000000 MHz <u>Auto</u> Man
-55.0					Freq Offset 0 Hz
-65.0					Scale Type
Center 2.315000 GHz #Res BW 120 kHz	#VBW	430 kHz	Sweep	Span 10.00 MHz 16.67 ms (1001 pts)	
MSG			STAT		

Plot 7-166. Upper Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-167. Upper Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
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# 7.5 Peak-Average Ratio

# **Test Overview**

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

### Test Procedure Used

KDB 971168 D01 v03r01 - Section 5.7.1

# **Test Settings**

- 1. The signal analyzer's CCDF measurement profile is enabled
- 2. Frequency = carrier center frequency
- 3. Measurement BW ≥ OBW or specified reference bandwidth
- 4. The signal analyzer was set to collect one million samples to generate the CCDF curve
- 5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.

#### Test Setup

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



Figure 7-4. Test Instrument & Measurement Setup

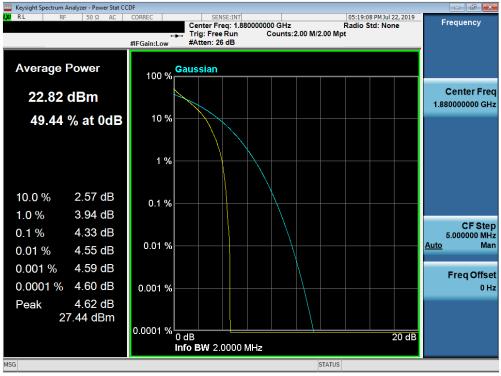
# Test Notes

None.

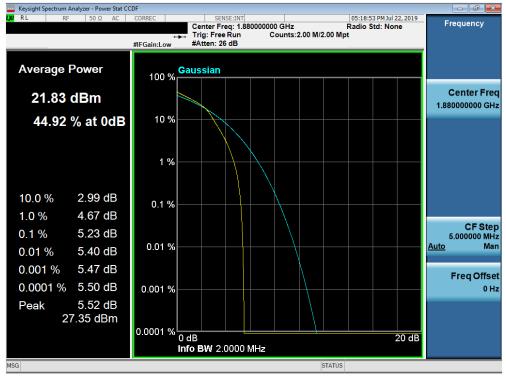
FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 106 of 142
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#### Band 2



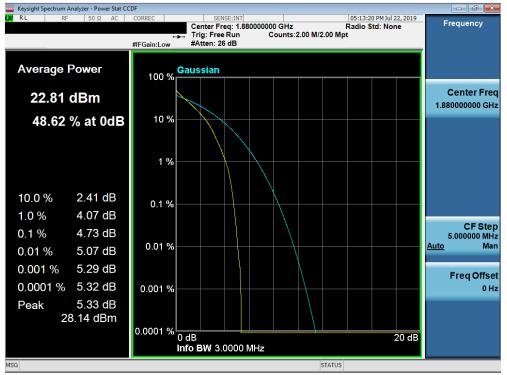




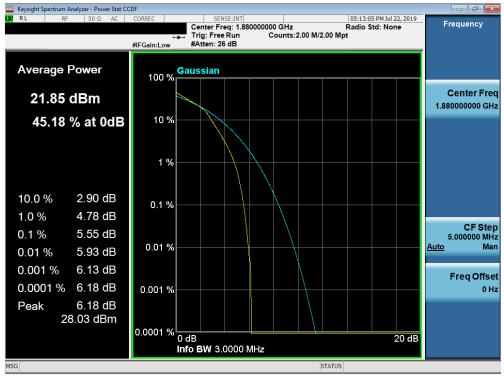
#### Plot 7-169. PAR Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
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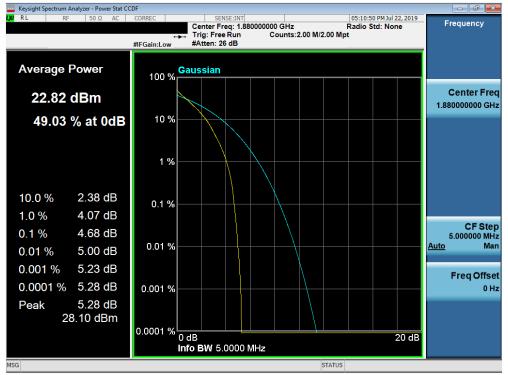




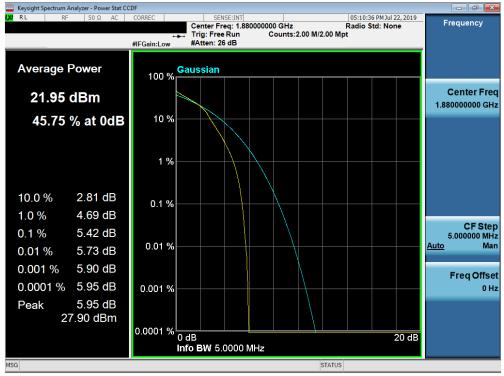
Plot 7-171. PAR Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 142
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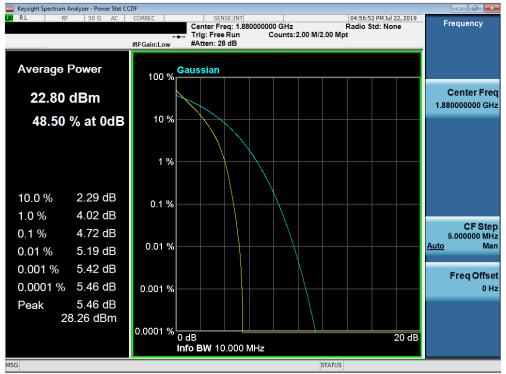




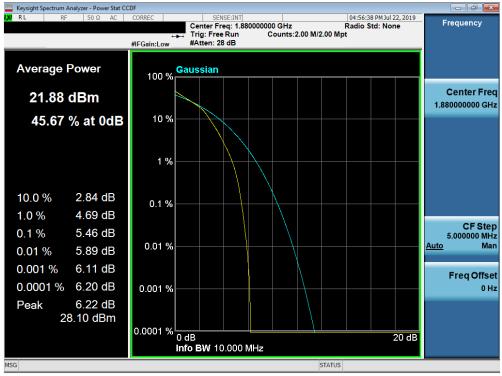
Plot 7-173. PAR Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 142				
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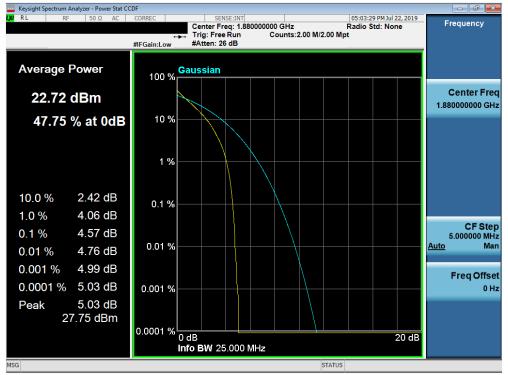




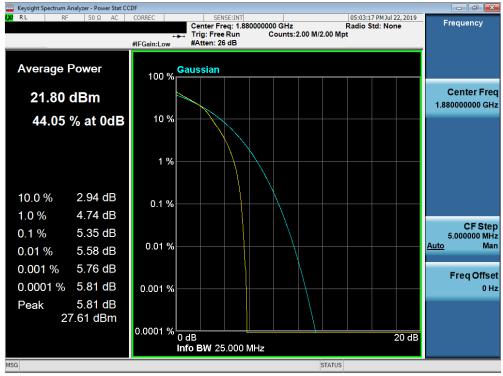
Plot 7-175. PAR Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Dage 110 of 142				
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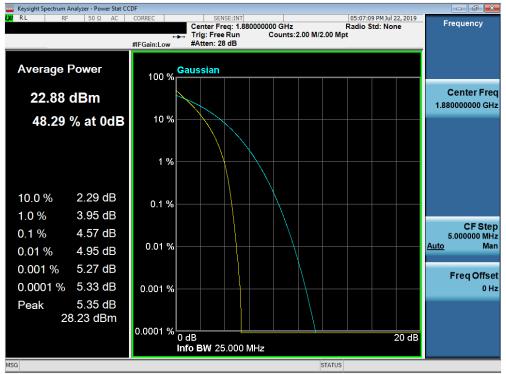




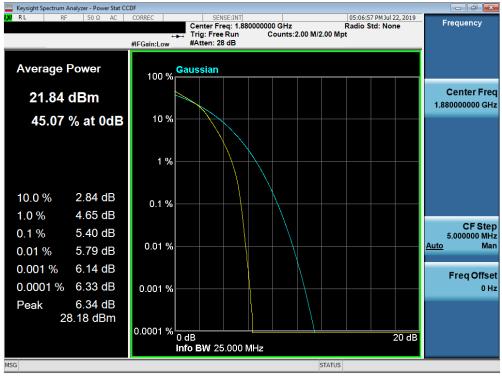
Plot 7-177. PAR Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕚 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 111 of 142
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Plot 7-179. PAR Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

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# 7.6 Radiated Power (ERP/EIRP)

# **Test Overview**

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized tuned broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

# **Test Procedures Used**

KDB 971168 D01 v03r01 - Section 5.2.1

ANSI/TIA-603-E-2016 - Section 2.2.17

# Test Settings

- 1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW ≥ 3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points  $\geq 2 \times \text{span} / \text{RBW}$
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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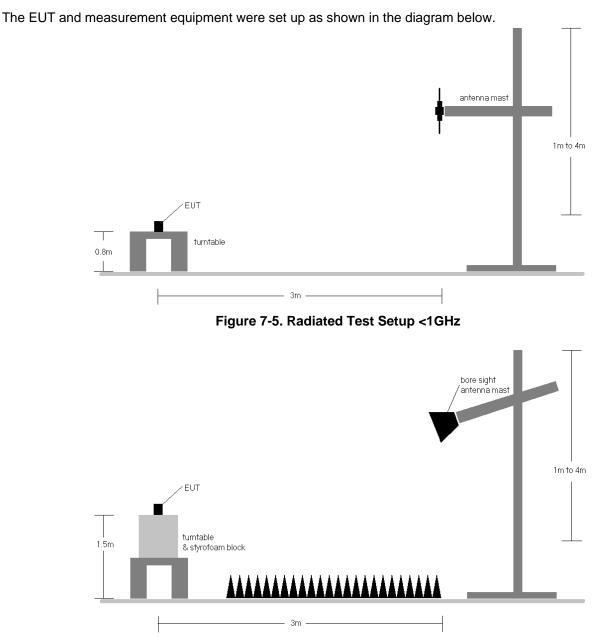


Figure 7-6. Radiated Test Setup >1GHz

# Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.

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PCTE												
Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	V	100	240	1 / 5	15.40	4.50	17.75	0.060	34.77	-17.02
707.50	1.4	QPSK	V	100	244	1 / 5	15.43	4.60	17.88	0.061	34.77	-16.89
715.30	1.4	QPSK	V	101	243	1 / 5	15.66	4.63	18.14	0.065	34.77	-16.63
707.50	1.4	16-QAM	V	100	244	1 / 5	14.14	4.60	16.59	0.046	34.77	-18.18
700.50	3	QPSK	V	100	248	1 / 14	15.61	4.55	18.01	0.063	34.77	-16.76
707.50	3	QPSK	V	101	238	1 / 14	15.44	4.60	17.89	0.062	34.77	-16.88
714.50	3	QPSK	V	104	241	1 / 14	15.61	4.60	18.06	0.064	34.77	-16.71
707.50	3	16-QAM	V	101	238	1 / 14	14.21	4.60	16.66	0.046	34.77	-18.11
701.50	5	QPSK	V	100	246	1 / 24	15.50	4.60	17.95	0.062	34.77	-16.82
707.50	5	QPSK	V	103	240	1 / 24	15.43	4.60	17.88	0.061	34.77	-16.89
713.50	5	QPSK	V	100	247	1 / 24	15.48	4.60	17.93	0.062	34.77	-16.84
707.50	5	16-QAM	V	103	240	1 / 24	14.07	4.60	16.52	0.045	34.77	-18.25
704.00	10	QPSK	V	100	248	1 / 49	15.13	4.50	17.48	0.056	34.77	-17.29
707.50	10	QPSK	V	100	241	1 / 49	15.42	4.60	17.87	0.061	34.77	-16.90
711.00	10	QPSK	V	100	252	1 / 49	15.27	4.60	17.72	0.059	34.77	-17.05
707.50	10	16-QAM	V	100	241	1 / 49	13.98	4.60	16.43	0.044	34.77	-18.34
715.30	10	QPSK	Н	190	182	1 / 49	14.59	3.65	16.09	0.041	34.77	-18.68

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Table 7-3. ERP Data (Band 12)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 115 of 142
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	139	262	1 / 5	13.22	6.70	17.77	0.060	38.45	-20.68
836.50	1.4	QPSK	V	143	260	1 / 5	13.08	6.70	17.63	0.058	38.45	-20.82
848.30	1.4	QPSK	V	140	253	1 / 5	13.28	6.70	17.83	0.061	38.45	-20.62
824.70	1.4	16-QAM	V	139	262	1 / 5	11.81	6.70	16.36	0.043	38.45	-22.09
825.50	3	QPSK	V	139	268	1 / 14	13.16	6.70	17.71	0.059	38.45	-20.74
836.50	3	QPSK	V	145	262	1 / 14	13.05	6.70	17.60	0.058	38.45	-20.85
847.50	3	QPSK	V	149	263	1 / 14	13.34	6.65	17.84	0.061	38.45	-20.61
825.50	3	16-QAM	V	139	268	1 / 14	11.77	6.70	16.32	0.043	38.45	-22.13
826.50	5	QPSK	V	137	267	1 / 24	13.23	6.70	17.78	0.060	38.45	-20.67
836.50	5	QPSK	V	147	263	1 / 24	13.08	6.70	17.63	0.058	38.45	-20.82
846.50	5	QPSK	V	148	253	1 / 24	13.31	6.60	17.76	0.060	38.45	-20.69
826.50	5	16-QAM	V	137	267	1 / 24	11.65	6.70	16.20	0.042	38.45	-22.25
829.00	10	QPSK	V	138	264	1 / 49	12.95	6.70	17.50	0.056	38.45	-20.95
836.50	10	QPSK	V	143	259	1 / 49	13.36	6.70	17.91	0.062	38.45	-20.54
844.00	10	QPSK	V	144	257	1 / 49	12.14	6.60	16.59	0.046	38.45	-21.86
829.00	10	16-QAM	V	138	264	1 / 49	11.81	6.70	16.36	0.043	38.45	-22.09
836.50	10	QPSK	Н	212	263	1 / 49	12.66	6.70	17.21	0.053	38.45	-21.24

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Table 7-4	ERP	Data	(Band	5)
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FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕐 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 116 of 143	
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	140	207	1 / 5	11.10	9.44	20.54	0.113	30.00	-9.46
1745.00	1.4	QPSK	V	130	331	1 / 5	13.46	9.23	22.69	0.186	30.00	-7.31
1779.30	1.4	QPSK	V	131	9	1 / 5	10.62	9.26	19.88	0.097	30.00	-10.12
1745.00	1.4	16-QAM	V	130	331	1 / 5	12.63	9.23	21.86	0.153	30.00	-8.14
1711.50	3	QPSK	V	142	201	1 / 14	11.11	9.44	20.55	0.113	30.00	-9.45
1745.00	3	QPSK	V	134	329	1 / 14	13.44	9.23	22.67	0.185	30.00	-7.33
1778.50	3	QPSK	V	132	11	1 / 14	10.61	9.26	19.87	0.097	30.00	-10.13
1745.00	3	16-QAM	V	134	329	1 / 14	12.71	9.23	21.94	0.156	30.00	-8.06
1712.50	5	QPSK	V	134	204	1 / 24	11.09	9.43	20.52	0.113	30.00	-9.48
1745.00	5	QPSK	V	131	328	1 / 24	13.65	9.23	22.88	0.194	30.00	-7.12
1777.50	5	QPSK	V	141	15	1 / 24	10.59	9.26	19.85	0.097	30.00	-10.15
1745.00	5	16-QAM	V	131	328	1 / 24	12.78	9.23	22.01	0.159	30.00	-7.99
1715.00	10	QPSK	V	138	210	1 / 49	11.11	9.42	20.53	0.113	30.00	-9.47
1745.00	10	QPSK	V	130	334	1 / 49	13.74	9.23	22.97	0.198	30.00	-7.03
1775.00	10	QPSK	V	132	7	1 / 49	10.74	9.25	19.99	0.100	30.00	-10.01
1745.00	10	16-QAM	V	130	334	1 / 49	13.17	9.23	22.40	0.174	30.00	-7.60
1717.50	15	QPSK	V	140	204	1 / 74	11.09	9.40	20.49	0.112	30.00	-9.51
1745.00	15	QPSK	V	132	340	1 / 74	13.74	9.23	22.97	0.198	30.00	-7.03
1772.50	15	QPSK	V	135	10	1 / 74	10.71	9.25	19.96	0.099	30.00	-10.04
1745.00	15	16-QAM	V	132	340	1 / 74	12.79	9.23	22.02	0.159	30.00	-7.98
1720.00	20	QPSK	V	146	208	1 / 99	11.03	9.38	20.41	0.110	30.00	-9.59
1745.00	20	QPSK	V	136	333	1 / 99	13.67	9.23	22.90	0.195	30.00	-7.10
1770.00	20	QPSK	V	138	4	1 / 99	10.74	9.24	19.98	0.100	30.00	-10.02
1745.00	20	16-QAM	V	136	333	1 / 99	12.63	9.23	21.86	0.153	30.00	-8.14
1745.00	20	QPSK	Н	100	11	1 / 99	10.78	9.23	20.01	0.100	30.00	-9.99

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Table 7-5. ERP Data (Band 66/4)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕐 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 117 of 142
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	н	105	344	1 / 5	10.41	9.48	19.89	0.098	33.01	-13.12
1880.00	1.4	QPSK	н	102	350	1 / 5	11.24	9.90	21.14	0.130	33.01	-11.87
1909.30	1.4	QPSK	Н	100	349	1 / 5	10.83	10.25	21.08	0.128	33.01	-11.93
1880.00	1.4	16-QAM	Н	102	350	1 / 5	10.45	9.90	20.35	0.108	33.01	-12.66
1851.50	3	QPSK	Н	104	348	1 / 14	10.26	9.50	19.76	0.095	33.01	-13.25
1880.00	3	QPSK	Н	101	351	1 / 14	11.35	9.90	21.25	0.133	33.01	-11.76
1908.50	3	QPSK	Н	100	357	1 / 14	10.66	10.25	20.91	0.123	33.01	-12.10
1880.00	3	16-QAM	Н	101	351	1 / 14	10.61	9.90	20.51	0.112	33.01	-12.50
1852.50	5	QPSK	Н	101	350	1 / 24	10.34	9.51	19.85	0.097	33.01	-13.16
1880.00	5	QPSK	Н	103	355	1 / 24	11.46	9.90	21.36	0.137	33.01	-11.65
1907.50	5	QPSK	Н	100	348	1 / 24	10.91	10.24	21.15	0.130	33.01	-11.86
1880.00	5	16-QAM	Н	103	355	1 / 24	10.68	9.90	20.58	0.114	33.01	-12.43
1855.00	10	QPSK	Н	100	352	1 / 49	10.25	9.55	19.80	0.095	33.01	-13.21
1880.00	10	QPSK	Н	100	349	1 / 49	11.48	9.90	21.38	0.137	33.01	-11.63
1905.00	10	QPSK	Н	101	351	1 / 49	10.58	10.22	20.80	0.120	33.01	-12.21
1880.00	10	16-QAM	Н	100	349	1 / 49	10.63	9.90	20.53	0.113	33.01	-12.48
1857.50	15	QPSK	Н	100	348	1 / 74	10.15	9.58	19.73	0.094	33.01	-13.28
1880.00	15	QPSK	Н	102	351	1 / 74	10.92	9.90	20.82	0.121	33.01	-12.19
1902.50	15	QPSK	Н	100	358	1 / 74	10.50	10.20	20.70	0.117	33.01	-12.31
1880.00	15	16-QAM	Н	102	351	1 / 74	9.99	9.90	19.89	0.097	33.01	-13.12
1860.00	20	QPSK	Н	100	359	1 / 99	10.41	9.62	20.03	0.101	33.01	-12.98
1880.00	20	QPSK	Н	100	354	1 / 99	11.30	9.90	21.20	0.132	33.01	-11.81
1900.00	20	QPSK	Н	100	354	1 / 99	10.67	10.18	20.85	0.122	33.01	-12.16
1900.00	20	16-QAM	Н	100	354	1 / 99	10.91	10.18	21.09	0.129	33.01	-11.92
1880.00	20	QPSK	V	122	360	1 / 49	9.73	9.90	19.63	0.092	33.01	-13.38

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Table 7-6. EIRP Data (Band 2)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 110 of 142
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	Н	100	155	1 / 0	10.19	10.31	20.50	0.112	23.98	-3.48
2312.50	5	QPSK	Н	110	157	1 / 24	9.98	10.31	20.29	0.107	23.98	-3.69
2312.50	5	16-QAM	н	110	157	1 / 24	9.37	10.31	19.68	0.093	23.98	-4.30
2310.00	10	QPSK	Н	100	151	1 / 0	9.93	10.31	20.24	0.106	23.98	-3.74
2310.00	10	16-QAM	н	100	151	1 / 0	9.02	10.31	19.33	0.086	23.98	-4.65
2307.50	5	QPSK	V	102	262	1 / 0	9.54	10.23	19.77	0.095	23.98	-4.21

Table 7-7. EIRP Data (Band 30)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
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## 7.7 Radiated Spurious Emissions Measurements

### **Test Overview**

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

### **Test Procedures Used**

KDB 971168 D01 v03r01 - Section 5.8

ANSI/TIA-603-E-2016 - Section 2.2.12

#### **Test Settings**

- 1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
- 2. VBW  $\geq$  3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x span / RBW
- 5. Detector = RMS
- 6. Trace mode = Average (Max Hold for pulsed emissions)
- 7. The trace was allowed to stabilize

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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EUT turntable 8. styrofoam block

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

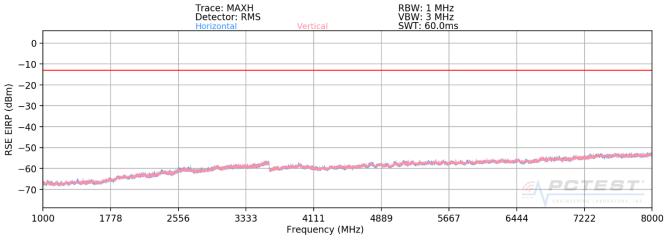
Figure 7-7. Test Instrument & Measurement Setup

#### **Test Notes**

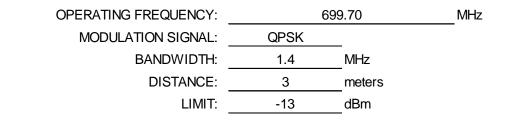
- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) The spectrum is measured from 9kHz 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.

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Plot 7-180. Radiated Spurious Plot above 1GHz (Band 12)

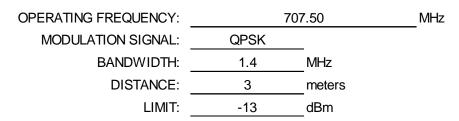


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1399.40	Н	222	38	-67.87	2.63	-65.24	-52.2
2099.10	H	-	-	-67.77	3.56	-64.22	-51.2
2798.80	H	-	-	-67.42	4.92	-62.50	-49.5

Table 7-8. Radiated Spurious Data (Band 12 – Low Channel)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕐 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 140
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	Н	199	32	-66.50	2.80	-63.70	-50.7
2122.50	Н	-	-	-67.37	3.57	-63.79	-50.8
2830.00	н	-	-	-67.63	5.02	-62.61	-49.6

Table 7-9. Radiated Spurious Data (Band 12 – Mid Channel)

OPERATING FREQUENCY:

MODULATION SIGNAL: QPSK

_

MHz

715.30

BANDWIDTH: <u>1.4</u> MHz DISTANCE: 3 meters

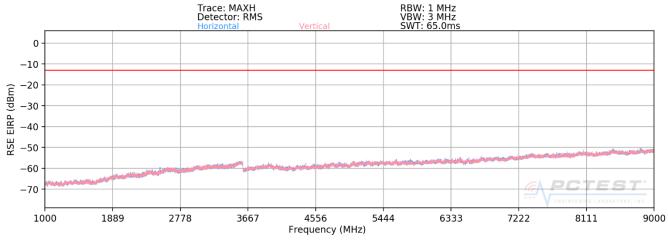
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1430.60	Н	209	35	-67.24	2.98	-64.26	-51.3
2145.90	Н	-	-	-67.66	3.59	-64.07	-51.1
2861.20	Н	-	-	-68.00	5.12	-62.89	-49.9

Table 7-10. Radiated Spurious Data (Band 12 – High Channel)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 102 of 142	
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Plot 7-181. Radiated Spurious Plot above 1GHz (Band 5)

OPERATING FREQUENCY:	82	9.00	MHz
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	V	283	47	-65.59	3.61	-61.98	-49.0
2487.00	V	-	-	-64.94	4.25	-60.69	-47.7
3316.00	V	-	-	-65.32	5.83	-59.49	-46.5

Table 7-11. Radiated Spurious Data (Band 5 – Low Channel)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 124 of 142	
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OPERATING FREQUENCY:836.50MHzMODULATION SIGNAL:QPSKBANDWIDTH:10.0MHzDISTANCE:3metersLIMIT:-13dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	V	380	34	-64.10	3.62	-60.48	-47.5
2509.50	V	-	-	-65.07	4.33	-60.74	-47.7
3346.00	V	-	-	-65.26	5.92	-59.34	-46.3

Table 7-12. Radiated Spurious Data (Band 5 – Mid Channel)

844.00

MHz

OPERATING FREQUENCY:

MODULATION SIGNAL: QPSK BANDWIDTH: 10.0 MHz DISTANCE: 3 meters

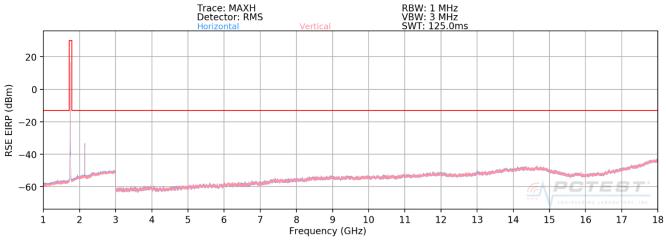
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	V	331	27	-64.67	3.63	-61.04	-48.0
2532.00	V	-	-	-65.42	4.47	-60.95	-48.0
3376.00	V	-	-	-65.10	6.05	-59.05	-46.0

Table 7-13. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Degs 125 of 142	
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OPERATING FREQUENCY:	171	5.00	MHz
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3430.00	V	122	360	-63.79	6.22	-57.57	-44.6
5145.00	V	-	-	-67.20	8.68	-58.53	-45.5
6860.00	V	-	-	-63.34	8.76	-54.59	-41.6

Table 7-14. Radiated Spurious Data (Band 66/4 - Low Channel)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 126 of 142
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OPERATING FREQUENCY:	174	MHz	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	V	395	18	-63.29	6.32	-56.96	-44.0
5235.00	V	-	-	-67.32	8.71	-58.60	-45.6
6980.00	V	-	-	-62.92	8.74	-54.18	-41.2
8725.00	V	-	-	-62.32	9.42	-52.91	-39.9

Table 7-15. Radiated Spurious Data (Band 66/4 - Mid Channel)

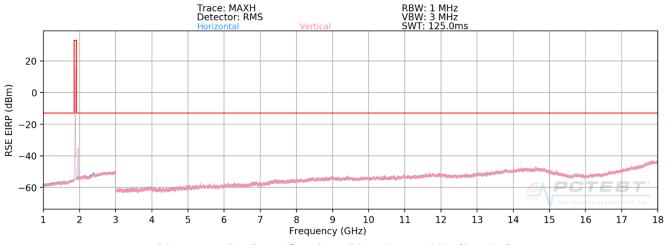
OPERATING FREQUENCY:	1775.00		
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3550.00	V	152	350	-63.18	6.31	-56.87	-43.9
5325.00	V	-	-	-67.19	8.74	-58.46	-45.5
7100.00	V	-	-	-63.72	8.66	-55.06	-42.1

Table 7-16. Radiated Spurious Data (Band 66/4 – High Channel)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 107 of 142	
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Plot 7-183. Radiated Spurious Plot above 1GHz (Band 2)

OPERATING FREQUENCY:	185	55.00	MHz
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3710.00	Н	315	18	-67.06	6.57	-60.49	-47.5
5565.00	Н	201	345	-67.59	8.73	-58.86	-45.9
7420.00	Н	346	54	-56.62	8.41	-48.21	-35.2
9275.00	Н	-	-	-65.11	9.40	-55.71	-42.7
11130.00	Н	183	358	-58.57	9.32	-49.25	-36.3
12985.00	Н	-	-	-60.19	8.99	-51.20	-38.2
14840.00	Н	-	-	-58.61	8.62	-49.98	-37.0

Table 7-17. Radiated Spurious Data (Band 2 – Low Channel)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dogo 129 of 142		
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OPERATING FREQUENCY:	188	MHz	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	Н	104	47	-65.21	6.67	-58.54	-45.5
5640.00	Н	210	349	-68.40	8.81	-59.59	-46.6
7520.00	Н	348	49	-58.28	8.48	-49.79	-36.8
9400.00	Н	-	-	-64.72	9.32	-55.40	-42.4
11280.00	Н	177	354	-57.67	9.24	-48.43	-35.4
13160.00	Н	-	-	-60.31	9.07	-51.24	-38.2
15040.00	Н	-	-	-58.15	8.77	-49.38	-36.4

Table 7-18. Radiated Spurious Data (Band 2 – Mid Channel)

QPSK

3

1905.00

MHz

dBm

meters

**OPERATING FREQUENCY:** 

MODULATION SIGNAL:

BANDWIDTH: 10.0 DISTANCE: LIMIT: -13

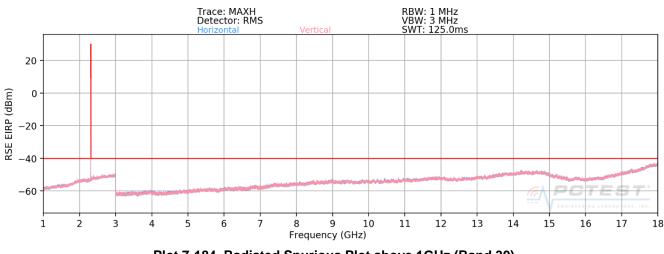
MHz

Antenna Turntable **Substitute** Spurious Ant. Frequency Level at Antenna Margin Azimuth **Emission Level** Pol. Height Antenna Gain [MHz] Terminals [dBm] [dB] [H/V] [degree] [dBi] [dBm] [cm] 3810.00 Н 105 51 -62.58 6.94 -55.64 -42.6 -67.57 5715.00 н 206 364 8.77 -58.81 -45.8 7620.00 н 340 44 -59.00 8.51 -50.50 -37.5 Н 9525.00 --65.48 9.40 -56.08 -43.1 -11430.00 н 189 349 -57.939.19 -48.73 -35.7 13335.00 Н -59.89 8.91 -50.98 -38.0 --15240.00 Н ---57.43 8.41 -49.02 -36.0

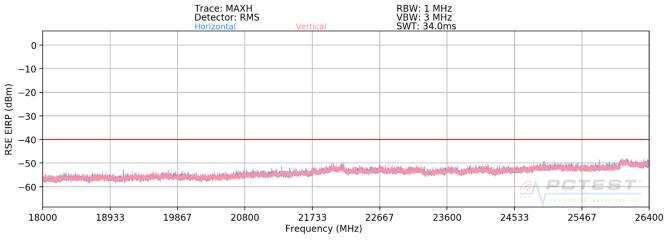
Table 7-19. Radiated Spurious Data (Band 2 – High Channel)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 142
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Plot 7-185. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 120 of 142
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OPERATING FREQUENCY:	231	MHz	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-40	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	Н	218	26	-62.32	8.25	-54.07	-14.1
6930.00	Н	-	-	-66.98	8.72	-58.25	-18.3
9240.00	Н	195	318	-60.07	9.52	-50.55	-10.5
11550.00	Н	-	-	-62.28	9.19	-53.09	-13.1
13860.00	Н	-	-	-60.27	9.00	-51.27	-11.3

Table 7-20. Radiated Spurious Data (Band 30 - Mid Channel)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 121 of 142
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## 7.8 Frequency Stability / Temperature Variation

### **Test Overview and Limit**

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency. For Part 24, Part 2the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### Test Procedure Used

ANSI/TIA-603-E-2016

#### Test Settings

- 1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

#### Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

#### Test Notes

None

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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### **Band 12 Frequency Stability Measurements**

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23790	_
REFERENCE VOLTAGE:	4.37	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.37	- 30	707,500,036	36	0.0000051
100 %		- 20	707,499,922	-78	-0.0000110
100 %		- 10	707,499,931	-69	-0.000098
100 %		0	707,499,893	-107	-0.0000151
100 %		+ 10	707,499,941	-59	-0.0000083
100 %		+ 20	707,499,813	-187	-0.0000264
100 %		+ 30	707,499,991	-9	-0.0000013
100 %		+ 40	707,500,077	77	0.0000109
100 %		+ 50	707,499,792	-208	-0.0000294
BATT. ENDPOINT	3.05	+ 20	707,500,129	129	0.0000182

Table 7-21. Frequency Stability Data (Band 12)

### Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
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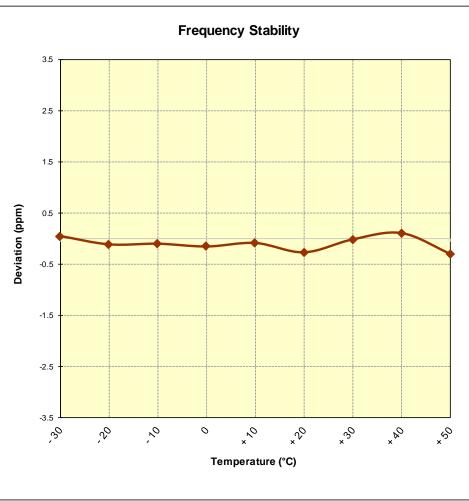


Figure 7-8. Frequency Stability Graph (Band 12)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕐 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 124 of 142
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# **Band 5 Frequency Stability Measurements**

OPERATING FREQUENCY:	836,500,000	Hz
CHANNEL:	20525	_
REFERENCE VOLTAGE:	4.37	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.37	- 30	836,500,465	465	0.0000556
100 %		- 20	836,500,046	46	0.0000055
100 %		- 10	836,500,120	120	0.0000143
100 %		0	836,499,973	-27	-0.0000032
100 %		+ 10	836,499,746	-254	-0.0000304
100 %		+ 20	836,500,218	218	0.0000261
100 %		+ 30	836,500,035	35	0.0000042
100 %		+ 40	836,500,131	131	0.0000157
100 %		+ 50	836,500,049	49	0.0000059
BATT. ENDPOINT	3.05	+ 20	836,500,015	15	0.0000018

Table 7-22. Frequency Stability Data (Band 5)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 125 of 142
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**Band 5 Frequency Stability Measurements** 

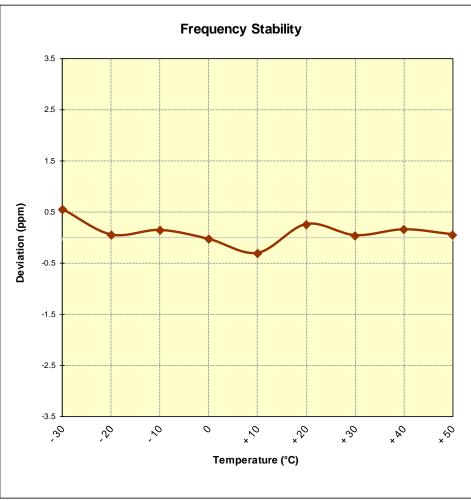


Figure 7-9. Frequency Stability Graph (Band 5)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 126 of 142
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### **Band 66/4 Frequency Stability Measurements**

OPERATING FREQUENCY:	1,745,000,000	Hz
CHANNEL:	132322	-
REFERENCE VOLTAGE:	4.37	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.37	- 30	1,745,000,011	11	0.0000006
100 %		- 20	1,745,000,157	157	0.0000090
100 %		- 10	1,744,999,697	-303	-0.0000174
100 %		0	1,744,999,690	-310	-0.0000178
100 %		+ 10	1,745,000,048	48	0.0000028
100 %		+ 20	1,744,999,962	-38	-0.0000022
100 %		+ 30	1,744,999,757	-243	-0.0000139
100 %		+ 40	1,744,999,904	-96	-0.0000055
100 %		+ 50	1,744,999,711	-289	-0.0000166
BATT. ENDPOINT	3.05	+ 20	1,745,000,008	8	0.0000005

Table 7-23. Frequency Stability Data (Band 66/4)

### Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
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# **Band 66/4 Frequency Stability Measurements**

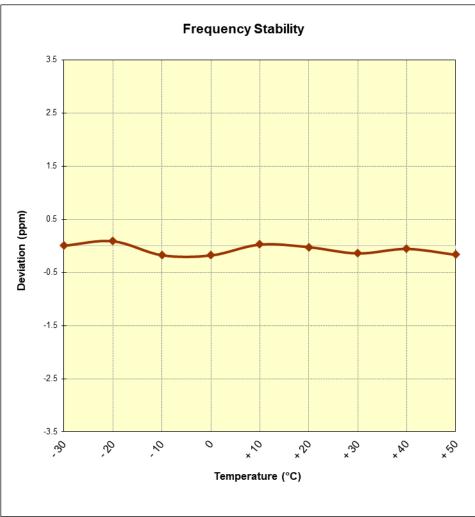


Figure 7-10. Frequency Stability Graph (Band 66/4)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 129 of 142
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# **Band 2 Frequency Stability Measurements**

OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	18900	_
REFERENCE VOLTAGE:	4.37	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	_

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.37	- 30	1,880,000,119	119	0.0000063
100 %		- 20	1,879,999,753	-247	-0.0000131
100 %		- 10	1,879,999,840	-160	-0.0000085
100 %		0	1,880,000,404	404	0.0000215
100 %		+ 10	1,880,000,018	18	0.0000010
100 %		+ 20	1,879,999,825	-175	-0.0000093
100 %		+ 30	1,880,000,061	61	0.0000032
100 %		+ 40	1,879,999,647	-353	-0.0000188
100 %		+ 50	1,880,000,123	123	0.0000065
BATT. ENDPOINT	3.05	+ 20	1,879,999,947	-53	-0.0000028

Table 7-24. Frequency Stability Data (Band 2)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕞 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 120 of 142
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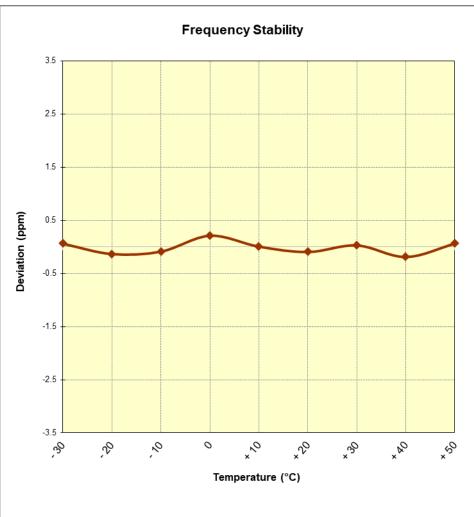


Figure 7-11. Frequency Stability Graph (Band 2)

FCC ID: ZNFQ720AM		MEASUREMENT REPORT (CERTIFICATION)	🕐 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 140 of 142
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### **Band 30 Frequency Stability Measurements**

OPERATING FREQUENCY:	2,310,000,000	Hz
CHANNEL:	27710	_
REFERENCE VOLTAGE:	4.37	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.37	- 30	2,310,000,136	136	0.0000059
100 %		- 20	2,310,000,080	80	0.0000035
100 %		- 10	2,309,999,956	-44	-0.0000019
100 %		0	2,309,999,997	-3	-0.0000001
100 %		+ 10	2,310,000,314	314	0.0000136
100 %		+ 20	2,309,999,816	-184	-0.0000080
100 %		+ 30	2,309,999,799	-201	-0.0000087
100 %		+ 40	2,309,999,827	-173	-0.0000075
100 %		+ 50	2,309,999,896	-104	-0.0000045
BATT. ENDPOINT	3.05	+ 20	2,309,999,831	-169	-0.0000073

Table 7-25. Frequency Stability Data (Band 30)

### Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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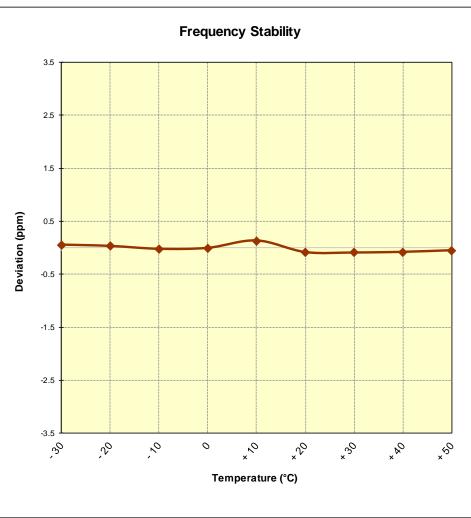


Figure 7-12. Frequency Stability Graph (Band 30)

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## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFQ720AM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

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