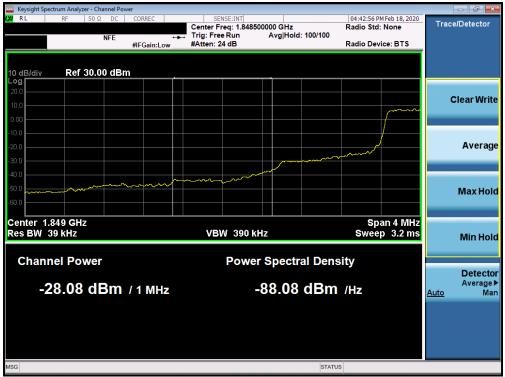


Band 25/2



Plot 7-170. Lower Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



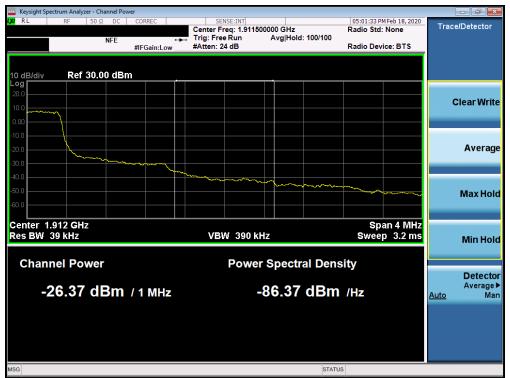
Plot 7-171. Lower Extended Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 100 of 100
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 108 of 182
© 2020 PCTEST	•			V 9.0 02/01/2019



XI RL RF	50 Ω DC	CORREC					
	NFE	PNO: Wide 🗔	SENSE:INT Trig: Free Run Atten: 36 dB	#Avg Type: RI	AS TRA TY	PM Feb 18, 2020 CE 1 2 3 4 5 6 (PE A WWWWW DET A N N N N N	Frequency
10 dB/div Ref	⁻ 25.00 dBm	IFGain:Low	Atten: 36 dB		Mkr1 1.910 (Auto Tun
15.0							Center Fre 1.910000000 GH
5.00		M	~~~			DL1 -13.00 dBm	Start Fre 1.908000000 GH
-15.0			1				Stop Fre 1.912000000 GH
35.0				mmm	myman	A	CF Stej 400.000 kH <u>Auto</u> Ma
55.0							Freq Offse 0 H
-65.0							Scale Typ
Center 1.9100 #Res BW 16 kl		#VBW	56 kHz	Swe	Span 4 ep 6.667 ms	1.000 1911 12	Log <u>Li</u>

Plot 7-172. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



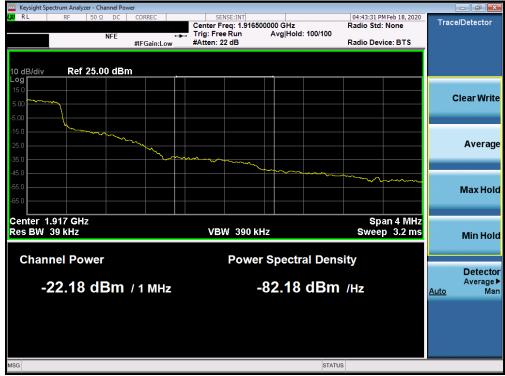
Plot 7-173. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 400 af 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 109 of 182
© 2020 PCTEST	·			V 9.0 02/01/2019



	ectrum Analy.											
XI RL	RF	50 Ω [DC C	ORREC		SE:INT	#Avg Typ	e: RMS	TRAC	M Feb 18, 2020	F	requency
10 dB/div	Ref 25	NFI	I	PNO: Wide 🕞 FGain:Low	Trig: Free Atten: 36			Mkr	DE 1 1.915 0	44 GHz 34 dBm		Auto Tune
15.0												Center Fre 5000000 GH
5.00		, in the second	m	www.						DL1 -13.00 dBm	1.91	Start Fre 3000000 GH
15.0 25.0 مرمهم	~~~~^^				- han	1 march	Mun			DET -13.00 0Bm	1.91	Stop Fre 7000000 GH
45.0							· `\	$\overline{\}$	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	why a r	<u>Auto</u>	CF Ste 400.000 kH Ma
55.0										···		Freq Offse 0 ⊢
65.0											Log	Scale Typ
enter 1. Res BW		GHZ		#VBV	/ 56 kHz			Sweep	Span 4 6.667 ms (.000 MHz (1001 pts)	LUg	Li
SG								STAT				

Plot 7-174. Upper Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)



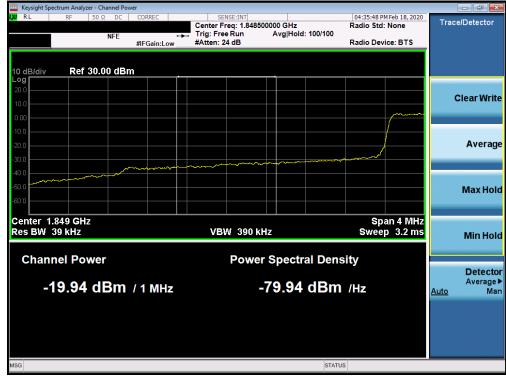
Plot 7-175. Upper Extended Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 440 af 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 110 of 182
© 2020 PCTEST		·		V 9.0 02/01/2019



		zer - Swept SA										
XI RL	RF	50 Ω DC	CORRE	C	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	M Feb 18, 2020	F	requency
		NFE		Wide 😱 n:Low	Trig: Free Atten: 36			Mkr				Auto Tune
10 dB/div _og	Ref 25	5.00 dBm							-28.	09 dBm		
												Center Free
15.0											1.8	50000000 GH
5.00						hunn	man	n. yum	hours	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Start Fre
5.00											1.8	48000000 GH
										DL1 -13.00 dBm		
15.0											1.0	Stop Fre
25.0						1					1.03	52000000 GH
35.0 	- m	www.www.www	mm	᠕᠕᠕᠕᠕	Www.and							CF Ste
35.U <mark>אקאיקיי</mark> 35.U											Auto	400.000 kH Ma
45.0												
55.0												Freq Offse
												0 H
65.0												Scale Typ
											1.00	
enter 1. Res BW		GHz		#VBW	120 kHz			Sweep	4 Span (6.667 ms	.000 MHz (1001 pts)	LUg	Li
SG								STATU				

Plot 7-176. Lower Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)



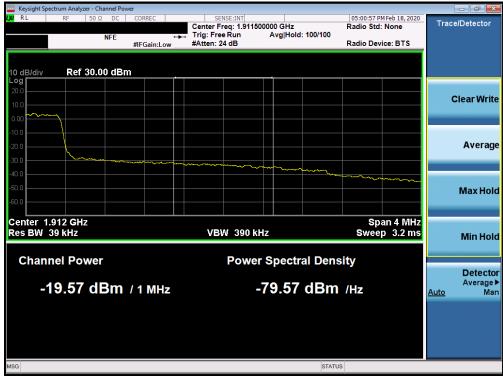
Plot 7-177. Lower Extended Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 111 of 100
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 111 of 182
© 2020 PCTEST	*	•		V 9.0 02/01/2019



		zer - Swept SA									
XI RL	RF	50 Ω DC	CORREC		ISE:INT	#Avg Typ	e: RMS	TRAC	4Feb 18, 2020 E 1 2 3 4 5 6	F	requency
		NFE	PNO: Wide 🖵 IFGain:Low	Trig: Free Atten: 30							
							Mkr	1 1.910 0	56 GHz		Auto Tune
10 dB/div Log	Ref 25	.00 dBm						-27.	98 dBm		
											Center Fred
15.0										1.91	0000000 GH
5.00											
and the second second	non	work Marine	wanne	month							Start Free
-5.00										1.90	8000000 GH
									DL1 -13.00 dBm		
15.0											Stop Free
-25.0					↓ ¹					1.91	2000000 GH
				۲	harry	uemen und	when when	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			CF Ste
35.0									~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		400.000 kH
45.0										<u>Auto</u>	Mai
45.5											
-55.0											Freq Offse 0 H
-65.0											Scale Type
										Log	Lii
Center 1. Res BW		GHZ	#VBW	130 kHz			Sweep	Span 4 6.667 ms (.000 MHz 1001 pts)	209	
sg							STATU				

Plot 7-178. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-179. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 440 at 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 112 of 182
© 2020 PCTEST	•	·		V 9.0 02/01/2019



	ectrum Analyzer - Sw										
LX/RL	RF 50 Ω	DC	CORREC		ISE:INT	#Avg Ty	pe: RMS	TRAC	4 Feb 18, 2020 E 1 2 3 4 5 6	F	requency
10 dB/div	Ref 25.00	NFE	PNO: Wide 😱 IFGain:Low	Trig: Free Atten: 36			Mkr	DE 1 1.915 0	08 GHz 45 dBm		Auto Tune
15.0				`							Center Freq 5000000 GHz
5.00	www.www.www.www.www.www.www.www.www.ww	www.	······································	man						1.91	Start Free 3000000 GHz
-15.0					1	m.	. And a dealer	m. Maria	DL1 -13.00 dBm	1.91	Stop Fred 7000000 GH2
.45.0									~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>Auto</u>	CF Step 400.000 kH: Mar
55.0											Freq Offse 0 H
-65.0	915000 GHz							Spand	.000 MHz		Scale Type Lir
#Res BW			#VBW	120 kHz			Sweep	5pan 4 6.667 ms (1001 pt <u>s)</u>		
//SG							STATU	JS			

Plot 7-180. Upper Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)



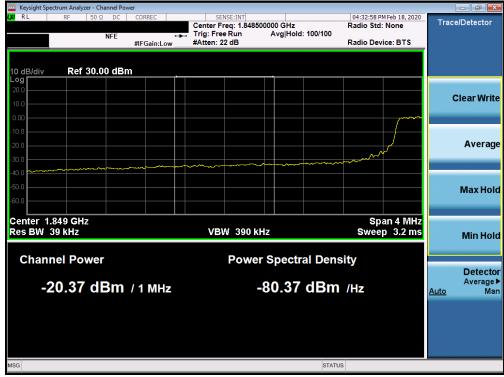
Plot 7-181. Upper Extended Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 440 af 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 113 of 182
© 2020 PCTEST	•	·		V 9.0 02/01/2019



	ectrum Analyzer -										
L <mark>XI</mark> RL	RF 5	0Ω DC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	HFeb 18, 2020	F	requency
10 dB/div	Ref 25.0	NFE 0 dBm	PNO: Wide IFGain:Low	Trig: Free Atten: 36			Mkr1	DE 1.850 0	00 GHz 46 dBm		Auto Tune
15.0											Center Freq 0000000 GHz
-5.00					(model)	yijtu en frank	in the second	at the second second	*****	1.84	Start Freq 8000000 GHz
-15.0					1 vr				DL1 -13.00 dBm	1.85	Stop Freq 2000000 GHz
-35.0	Mage well war	un entrand	un and an and a second and a	ayy / had again / hor -						<u>Auto</u>	CF Step 400.000 kHz Man
-55.0											Freq Offset 0 Hz
-65.0	850000 GH							Spop 4	.000 MHz	Log	Scale Type Lin
#Res BW		12	#VBW	220 kHz			Sweep 6	span 4 .667 ms (.000 MHZ 1001 pts)		201
MSG							STATUS				

Plot 7-182. Lower Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



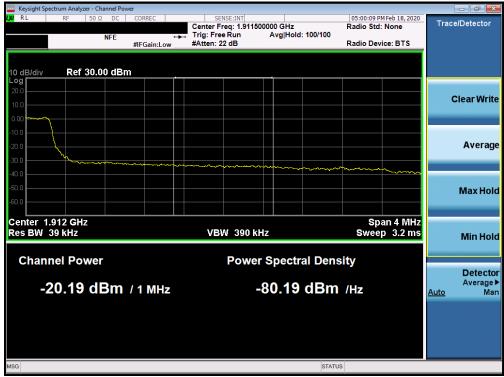
Plot 7-183. Lower Extended Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 114 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 114 of 182
© 2020 PCTEST				V 9.0 02/01/2019



og Center Fre 150 Center Fre 500 Curve			zer - Swept SA									
NFE PNO: Wide Trig: Free Run Atten: 36 dB Trig: Free Run Atten: 36 dB 0 dB/div Ref 25.00 dBm -28.92 dBm Auto Tun 0 dB/div Ref 25.00 dBm -28.92 dBm Center Fre 1.91000000 GF 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 0.01 - 130049 0.01 - 130049 Start Fre 5.00 <	X/RL	RF	50 Ω DC	CORREC	SEN	ISE:INT	#Ava Tvp	e: RMS			F	requency
WKKT 1: 910 012 CSH2 -28.92 dBm 0 -28.92 dBm 0 -28.92 dBm 150 -28.92 dBm 500 -28.92 dBm 510 -28.92 dBm <th></th> <th></th> <th>NFE</th> <th></th> <th></th> <th></th> <th>0 ,1</th> <th></th> <th>TYP De</th> <th></th> <th></th> <th></th>			NFE				0 ,1		TYP De			
150 Image: Center Free 150 Image: Center Free <td< th=""><th>10 dB/div</th><th>Ref 25</th><th>.00 dBm</th><th></th><th></th><th></th><th></th><th>Mkr</th><th>1.910 0 -28.</th><th>12 GHz 92 dBm</th><th></th><th>Auto Turk</th></td<>	10 dB/div	Ref 25	.00 dBm					Mkr	1.910 0 -28.	12 GHz 92 dBm		Auto Turk
500												Center Free
Start Free 500	15.0										1.91	0000000 GH
5.00 0.1.1300000 GH 5.00 0.1.1300000 GH 5.00 0.1.1300000 GH 5.00 0.1.1300000 GH 5.00 0.1.130000 GH	5.00	marchart		www.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							Start Fre
150 1	-5.00										1.90	
Stop Fre 1.91200000 GH CF Ste 400.00 kH Freq Offse Scale Typ Log										DL1 -13.00 dBm		
ising					h	1					1.91	Stop Fre 2000000 GH
55.0 Crost 400.000 kH 55.0 Freq Offse 0 H 55.0 Span 4.000 MHz Span 4.000 MHz	25.0				Why to	Lawler and the	mar and marked					
ISE IN THE INFORMATION OF INTERVIEW INTE	35.0							- armPda	المراجع والمراجع والم	kon an	Auto	CF Ste 400.000 kH Ma
tenter 1.910000 GHz Span 4.000 MHz Log L	45.0											
Eenter 1.910000 GHz Span 4.000 MHz	55.0											
Scale Typ Senter 1.910000 GHz Span 4.000 MHz	65.0											0 H
												Scale Typ
Res BW 62 KHz #VBW 220 KHz Sweep 6.667 ms (1001 pts)			GHz					_	Span 4	.000 10112		Li
SG STATUS		62 KHZ		#VBW	220 kHz					1001 pts)		

Plot 7-184. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



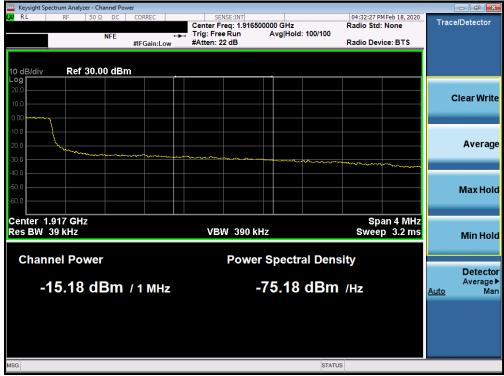
Plot 7-185. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 445 at 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 115 of 182
© 2020 PCTEST				V 9.0 02/01/2019



	ectrum Analy			000050			CHOC ANT			04.00.15.5		_	
RL	RF	50 Ω D		CORREC	de 🕞	Trig: Fi	ee Run	#Avg Ty	pe: RMS	TRAI TY	M Feb 18, 2020 CE 1 2 3 4 5 6 PE A WWWWW	F	requency
0 dB/div	Ref 2	5.00 dBi		IFGain:L	ow	Atten:	36 dB		Mkr	1 1.915 (008 GHz 27 dBm		Auto Tun
5.0													Center Fre 15000000 GH
i.00 .00	www.www	Mart Martin	****1	nan an	₩ ² ¶ ² ⁴ N→	my l					DL1 -13.00 dBm	1.9 [,]	Start Fre 13000000 G⊦
5.0						h.	1	Accession and said and the second	Norsentrangen	mal mar and prove the section of the		1.91	Stop Fre 17000000 GH
5.0												<u>Auto</u>	CF Ste 400.000 kl Ma
5.0													Freq Offs 0 F
enter 1.		GHz								Span 4	.000 MHz	Log	Scale Typ
Res BW	62 kHz			#	VBW	220 kH	Z		Sweep	6.667 ms	(1001 pts)		

Plot 7-186. Upper Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-187. Upper Extended Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 116 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 116 of 182
© 2020 PCTEST				V 9.0 02/01/2019



Keysight Spectrum Analyzer - Swept SA					
LX RL RF 50Ω DC	CORREC	SENSE:INT	#Avg Type: RMS	04:28:24 PM Feb 18, 2020 TRACE 1 2 3 4 5 6	Frequency
NFE 10 dB/div Ref 25.00 dBm	PNO: Wide 🖵 IFGain:Low	Trig: Free Run Atten: 36 dB	Mkr1	1.849 976 GHz -27.07 dBm	Auto Tune
15.0					Center Freq 1.850000000 GHz
-5.00				DL1 -13.00 dBm	Start Freq 1.846000000 GHz
-15.0		1 miles			Stop Freq 1.854000000 GHz
-35.0	al na final citan ang ang ang ang ang ang ang ang ang a				CF Step 800.000 kHz <u>Auto</u> Man
-55.0					Freq Offset 0 Hz
Center 1.850000 GHz	<i>4</i>) (B) (4)			Span 8.000 MHz	Scale Type Log <u>Lin</u>
#Res BW 120 kHz	#VBW	430 kHz	Sweep 1	3.33 ms (1001 pts)	

Plot 7-188. Lower Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)



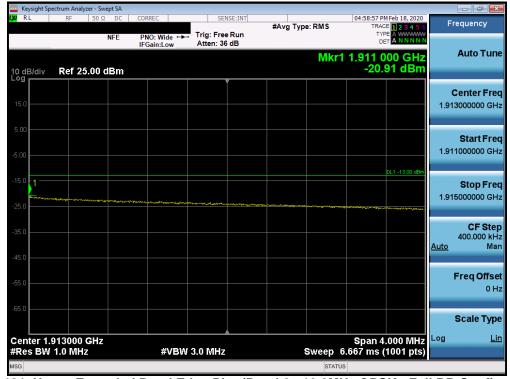
Plot 7-189. Lower Extended Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dava 447 - (400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 117 of 182
© 2020 PCTEST	•	·		V 9.0 02/01/2019



	ectrum Analyze									_	
RL	RF	50 Ω DC	CORREC		ISE:INT	#Avg Ty	pe: RMS	TRA	M Feb 18, 2020 CE 1 2 3 4 5 6	F	requency
		NFE	PNO: Wide 🖵	Trig: Free Atten: 36							
							Mkr	1 1.910 (000 GHz		Auto Tur
) dB/div og	Ref 25.	00 dBm						-29.1	68 dBm		
											Center Fre
5.0										1.91	0000000 GI
.00											
- ship	- marine and a second	renand dank on a star	-Arabalana and an	and and a second second							Start Fr
										1.90	6000000 G
									DL1 -13.00 dBm		
5.0											Stop Fr
5.0					1					1.91	4000000 G
				The contract	and the same name						
5.0						and a second where the	an here and a second second	-	Mar Martine		CF Ste 800.000 k
										<u>Auto</u>	M
5.0											
5.0											Freq Offs
											0
5.0									<u> </u>		
											Scale Ty
	910000 G	iHz						Span 8	3.000 MHz	Log	L
kes BW	120 kHz		#VBW	430 kHz			Sweep	13.33 ms	(1001 pts)		
G							STAT	US			

Plot 7-190. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-191. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dava 440 - (400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 118 of 182
© 2020 PCTEST	•	·		V 9.0 02/01/2019



	pectrum Analyz										
L <mark>XI</mark> RL	RF	50 Ω DC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	HFeb 18, 2020	F	requency
	B-6.05	NFE	PNO: Wide IFGain:Low	Trig: Free Atten: 36			Mkr	TYF DE 1 1.915 0			Auto Tune
10 dB/div Log 15.0	Ref 25	.00 dBm		`							Center Freq 5000000 GHz
5.00 	land generation	Julipersframford and an and a second and a se	MARAN AND AND AND AND AND AND AND AND AND A							1.91	Start Freq 1000000 GHz
-15.0				Hunger	1	and the second second			DL1 -13.00 dBm	1.91	Stop Freq 9000000 GHz
-35.0							an she she she she she		haddagerage ywerdd	<u>Auto</u>	CF Step 800.000 kH Mar
-55.0											Freq Offse 0 H:
-65.0	915000	2Hz						Snan 8	.000 MHz		Scale Type
#Res BW			#VBW	430 kHz			Sweep	13.33 ms (1001 pts)		
MSG							STATI	US			

Plot 7-192. Upper Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-193. Upper Extended Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 110 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 119 of 182
© 2020 PCTEST		·		V 9.0 02/01/2019



	pectrum Analyze										
KU/RL	RF	50 Ω DC	CORREC		ISE:INT	#Avg Typ	e: RMS	TRAC	M Feb 18, 2020	Freque	ency
		NFE	PNO: Wide 🖵 IFGain:Low	Trig: Free Atten: 36							
							Mkr1	1.849 4	96 GHz 26 dBm	Aut	to Tune
10 dB/div - ^{og} r	Ref 25.	00 dBm						-24.			
										Cent	ter Fre
15.0										1.850000	000 GH
5.00											
5.00					<i>(</i> ~~	mmmm	·····	h h h	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Sta	art Fre
-5.00										1.844000	000 GH
									DL1 -13.00 dBm		
15.0				. 1							op Fre
-25.0				<u> </u>	sol the					1.856000	000 GH
~~~~	www.	m	m www.		~						
35.0											CF Ste 000 M⊦
										Auto	Ma
45.0											
55.0										Free	qOffse
											0 H
65.0											
										Sca	іе Тур
	.850000 G	Hz						Span 1	2.00 MHz	Log	Li
Res BW	/ 180 kHz		#VBW	620 kHz			Sweep 1	.000 ms (	1001 pts)		
SG							STATUS	5			

Plot 7-194. Lower Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-195. Lower Extended Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 120 of 182
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 120 of 182
© 2020 PCTEST		·		V 9.0 02/01/2019



	ectrum Analyze										d X
X/RL	RF	50 Ω DC	CORREC		ISE:INT	#Avg Typ	e: RMS	TRAC	M Feb 18, 2020 CE 1 2 3 4 5 6	Frequ	ency
		NFE	PNO: Wide IFGain:Low	Trig: Free Atten: 36				TY	PE A WWWWW ET A NNNNN		
							Mkr	1 1.910 (	000 GHz	Au	to Tune
l0 dB/div _og ┏━━━	Ref 25.	00 dBm						-28.	04 dBm		
.09				,						Cent	er Fre
15.0										1.910000	
5.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mann.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	w						Sta	artFre
5.00										1.904000	000 GH
									DL1 -13.00 dBm		
15.0										St	op Fre
25.0					1					1.916000	000 GH
				m	m		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~.			
35.0								"Markengen	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		CF Ste 000 M⊦
										Auto	Ma
45.0											
55.0										Free	q Offse
											0 H
65.0										- Sea	іе Тур
											іе тур
	910000 0	Hz	-43 (P)147	coo 1-11-				Span 1	2.00 MHz	Log	Li
Res BW	180 kHz		#VBW	620 kHz			Sweep		(1001 pts)		

Plot 7-196. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-197. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 101 of 190
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 121 of 182
© 2020 PCTEST	•			V 9.0 02/01/2019



	ectrum Analyz										
LXI RL	RF	50 Ω DC	CORREC		ISE:INT	#Avg Typ	e: RMS	TRAC	M Feb 18, 2020	Frequ	ency
		NFE	PNO: Wide IFGain:Low	Trig: Free Atten: 36			Mkr1			Au	to Tune
10 dB/div Log	Ref 25	.00 dBm						-24.	52 dBm		
										Cen	ter Freg
15.0											0000 GHz
5.00											
5.00		m	www.	m							art Freq
-5.00										1.909000	0000 GHz
15.0									DL1 -13.00 dBm		
-15.0				have	<b>♦</b> ¹						<b>op Freq</b> 1000 GHz
-25.0					Plana and Physical Article	m	······	-	mm		
-35.0											OF Step 000 MHz Man
-45.0											
-55.0										Fre	q Offset
-33.0											0 Hz
-65.0										-	1
											le Type
Center 1.			-41/1314	620 141-			0	Span 1	2.00 MHz	Log	Lin
#Res BW	180 KHZ		#VBW	620 kHz			Sweep 1		1001 pts)		
100							STATU	3			

Plot 7-198. Upper Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-199. Upper Extended Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 100 of 100
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 122 of 182
© 2020 PCTEST				V 9.0 02/01/2019



Keysight Spectrum An										
XX RL RF	50 Ω DC	CORREC		SE:INT	#Avg Type	RMS	TRAC	4 Feb 18, 2020 E 1 2 3 4 5 6	Frequ	ency
AN IRLIN	NFE 25.00 dBm	PNO: Wide 🖵 IFGain:Low	Trig: Free Atten: 36			Mkr1	DE 1.849 3	12 GHz 32 dBm	Au	ito Tune
10 dB/div Ref : Log 15.0	25.00 dBm									<b>ter Freq</b> 0000 GHz
-5.00					an a	-Marsadan-I	agenternen en en			<b>art Freq</b> 0000 GHz
-15.0			1	- M				DL1 -13.00 dBm		o <b>p Freq</b> 0000 GHz
-35.0										CF Step 0000 MH: Mar
-55.0									Fre	<b>q Offse</b> 0 Ha
Center 1.85000 #Res BW 240 k		#\/B\M	820 kHz			Swoon 1	Span 1	6.00 MHz 1001 pts)	Log	ale Type <u>Lir</u>
MRES DW 240 K	.112	#VDVV	020 KH2			SWEEP		roor pis)		

Plot 7-200. Lower Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



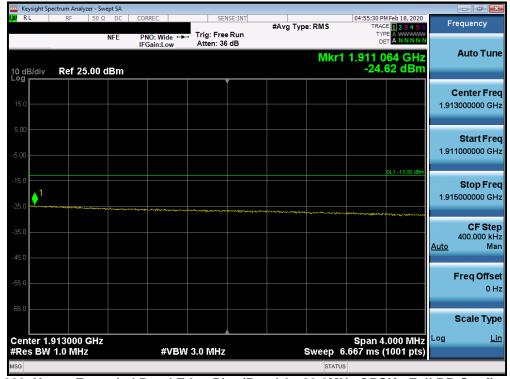
Plot 7-201. Lower Extended Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dava 400 -( 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 123 of 182
© 2020 PCTEST	· · ·	·		V 9.0 02/01/2019



	ectrum Analyzer - Swep			1				-			r x
XI RL	RF 50 Ω	DC CO	RREC		ISE:INT	#Avg Typ	e: RMS	TRAC	M Feb 18, 2020 DE 1 2 3 4 5 6	Frequ	ency
	N	FE P IF	NO: Wide 🖵 Gain:Low	Trig: Free Atten: 36			Mkr1	DI	12 GHz	Au	ito Tune
I0 dB/div	Ref 25.00 dB	3m						-30.	08 dBm		
										Cen	ter Free
15.0										1.91000	0000 GH
5.00											
and descent	moherman	manna									artFree
5.00										1.90200	0000 GH:
15.0									DL1 -13.00 dBm	-	
										1.91800	o <b>p Fre</b> 0000 GH
25.0					<u>∼</u> 1 ——						
35.0				- ~~~		were and the second	mmun	and the second s			CF Stej
								4	www.	1.600 <u>Auto</u>	0000 MH Mai
45.0											
55.0										Fre	q Offse
											0 H
65.0											ale Type
Center 1. ≇Res BW	910000 GHz		#\/RM	820 kHz			Sween	Span 1	6.00 MHz (1001 pts)	Log	Lir
ISG	240 KHZ		# V D VV	020 KH2			Sweep		noon pis)		

Plot 7-202. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-203. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 404 at 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 124 of 182
© 2020 PCTEST		·		V 9.0 02/01/2019



	ectrum Analyze										
L <mark>XI</mark> RL	RF	50 Ω DC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS		M Feb 18, 2020	Freque	ncy
		NFE	PNO: Wide 🖵 IFGain:Low	Trig: Free Atten: 36				1.915 0		Aut	o Tune
10 dB/div	Ref 25.	.00 dBm						-27.	69 dBm		
15.0										Cent 1.915000	e <b>r Freq</b> 000 GHz
-5.00	n www.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~						Sta 1.907000	r <b>t Freq</b> 000 GHz
-15.0					1				DL1 -13.00 dBm	<b>Sto</b> 1.923000	<b>p Freq</b> 000 GHz
-35.0				· m.	· ······	an a	mon	- holo - way	then the work		F Step 000 MHz Man
-45.0										Frec	I Offset 0 Hz
-65.0											le Type
Center 1. #Res BW			#VBW	820 kHz			Sweep 1	Span 1 .000 ms (	6.00 MHz 1001 pts)	Log	Lin
MSG							STATUS	5			

Plot 7-204. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-205. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 405 a( 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 125 of 182
© 2020 PCTEST	•	·		V 9.0 02/01/2019



## Band 30



Plot 7-206. Lower Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-207. Lower Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 106 of 100
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 126 of 182
© 2020 PCTEST		•		V 9 0 02/01/2019



	pectrum Analyzer -	Swept SA									
XV RL	RF 50	Ω DC	CORREC	SENS	E:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Feb 18, 2020	Fr	equency
			PNO: Wide IFGain:Low	Trig: Free Atten: 36				TYI Di			Auto Tune
10 dB/div Log	Ref 25.00	) dBm					Mkr	1 2.315 -28.1	00 GHz 64 dBm		Auto Tune
										C	Center Freq
15.0										2.31	5000000 GHz
5.00	Mary Marine and Marine	∿∕∿⊷⊷ <u>≁</u> ≁∿⊛≁≈₽≯	an and and and and and and and and and a	www.w.r							Start Freq
-5.00										2.31	0000000 GHz
-15.0									DL1 -13.00 dBm		Stop Freq
-25.0					1					2.32	0000000 GHz
-35.0					mm	maranter	manyan				CF Step
-45.0								and margaret and	man	1 <u>Auto</u>	.000000 MHz Mar
-45.0											Freq Offse
-55.0											0 Hz
-65.0											Scale Type
Center 2	.315000 GH	7						Snan 1	0.00 MHz	Log	Lin
#Res BW		-	#VBW	220 kHz			Sweep 5	.000 ms (	(1001 pts)		
MSG							STATUS				

Plot 7-208. Upper Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-209. Upper Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 107 of 100
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 127 of 182
© 2020 PCTEST		·		V 9.0 02/01/2019



🤤 Keysight Spectrum Analyzer - Swept SA 👘					
LXI RE 50Ω DC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	11:58:00 AM Feb 18, 2020 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 25.00 dBm	PNO: Wide 🖵 IFGain:Low	Trig: Free Run Atten: 36 dB		TYPE ANNNNN DET ANNNNN 1 2.305 000 GHz -30.644 dBm	Auto Tune
15.0					Center Freq 2.305000000 GHz
-5.00			and a second second second	DL1 -13.00 dBm	Start Freq 2.301000000 GHz
-15.0		1.1		UL 1-13.00 dbm	<b>Stop Freq</b> 2.309000000 GHz
-35.0 40,000	and the star of th	haun Ulauh manga f			CF Step 800.000 kHz <u>Auto</u> Man
-55.0					Freq Offset 0 Hz
-65.0 Center 2.305000 GHz				opun 0.000 minz	Scale Type
#Res BW 120 kHz	#VBW	430 kHz	Sweep	4.000 ms (1001 pts) Js	

Plot 7-210. Lower Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-211. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 108 of 182
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset	Page 128 of 182
© 2020 PCTEST			V 9.0 02/01/2019



🔤 Keysight Spectrur											
LXI RL	RF 50 Ω	DC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO e: RMS		M Feb 18, 2020	Frequ	ency
			PNO: Wide IFGain:Low	Trig: Free Atten: 36		0 71		r1 2.315		Au	ito Tune
10 dB/div R	ef 25.00 d	Bm		,				-29.1	38 aBm	Cen	ter Freq
15.0											0000 GHz
-5.00	an a	anna guran an a	Notestine of the second se	elinterry .							art Freq
-5.00									DL1 -13.00 dBm		_
-25.0				4	1						op Freq 0000 GHz
-35.0				PAL.	and the same	ษณารับการ์ มาสุรัญราช	along fall and a fall a	ustanya aya ang tang tang tang tang tang tang tang	An property and a		CF Step 0000 MHz Mar
-55.0										Fre	<b>q Offse</b> l 0 Hz
-65.0										Sca	ale Type
Center 2.315 #Res BW 120			#VBW	430 kHz			Sweep	Span 1 5.000 ms (	0.00 MHz (1001 pts)	Log	<u>Lin</u>
MSG							STAT	JS			

Plot 7-212. Upper Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-213. Upper Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 120 of 182
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 129 of 182
© 2020 PCTEST				V 9.0 02/01/2019



## Band 7



Plot 7-214. Lower ACP Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-215. Higher ACP Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 120 of 182
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 130 of 182
© 2020 PCTEST		•		V 9.0 02/01/2019



		n Analyzer - Sp								
X/RL	F	RF 50 Ω	Ω DC	CORREC	Cente	SENSE:INT r Freq: 2.53500000	) GHz	03:56:58 PM Radio Std:	Feb 18, 2020 None	Frequency
PASS			NFE		Trig:	Free Run				
ASC	<u> </u>			IFGain:Lo	w #Atter	n: 26 dB		Radio Devi	e: BTS	
10 dB/	div	Ref 40.0	00 dB	m						
Log 30.0										
										Center Fred
20.0										2.535000000 GH;
10.0										
0.00						May Manager Production	www.			
-10.0							]			
-20.0							ļ			
-30.0						_				
-40.0					and the second designed and th	1	Chronolan Land	were rightlast		
-50.0								A CONTRACTOR OF A CONTRACT	Mary Mary M	
Start	2.475 (	GHZ						Stop 2.	525 GHz	CF Step
										5.000000 MH
Spur	Range	Start Fre		Stop Freq	RBW	Frequency	Amplitude	∆ Limit		<u>Auto</u> Mar
1	1	2.4750 G		.4905 GHz		2.490448333 GHz		-18.70 dB		
2	2	2.4905 G		.4960 GHz		2.495899167 GHz		-25.59 dB		Freq Offse
3	3	2.4960 G		.4990 GHz		2.498970000 GHz		-25.12 dB		0 H
4	4	2.4990 G		.5000 GHz		2.499956667 GHz		-29.64 dB		UTI
5	5	2.5000 G	Hz 2	.5250 GHz	240.0 kHz	2.505208333 GHz	4.325 dBm	-20.67 dB		
SG							ST	ATUS		

Plot 7-216. Lower ACP Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)





FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Degs 121 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 131 of 182
© 2020 PCTEST				V 9.0 02/01/2019



		n Analyzer - Sp													
L <mark>XI</mark> RL	F	RF 50 Ω	2 DC	CORREC		Cente	SENSE:INT Freq: 2.53500	0000	GH7		_	03:52:18 Radio St	PM Feb 18, 2020	F	requency
_			NFE			Tries	Free Run	0000	GHZ			caulo St	u. None		
PASS	<u> </u>			IFGain:		#Atte	n: 26 dB				F	Radio De	vice: BTS		
10 dB/	/div	Ref 40.0	0 dBr	n											
Log															
30.0														(	Center Freq
20.0														2.53	5000000 GHz
10.0															
0.00							8-41-1914-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	-		had weathing	*				
											٦L				
-10.0															
-20.0								$\vdash$							
-30.0								-							
-40.0					-	-									
-50.0			Personal Party and	and the second second								with the sector	where the second second second		
- ⁻	and a stand of the second														
Start	2.475 0	GHz										Stop	2.525 GHz		CF Step
															5.000000 MHz
Spur	Range	Start Fre	a S	top Freg	I R	зw	Frequency		Ampli	tude		∆ Limit		<u>Auto</u>	Man
1	1	2.4750 G		4905 GH			2.489182500	GHz				-15.51 d	B		
2	2	2.4905 GI		4960 GH			2.491370833					-25.82 d			
3	3	2.4960 Gł	-lz 2.	4990 GH	z 1.0	00 MHz	2.498435000	GHz	-35.53	dBm		-25.53 d	В		Freq Offset
4	4	2.4990 Gł	-Iz 2.	5000 GH	z 27	0.0 kHz	2.499640000	GHz	-39.98	dBm		-29.98 d	В		0 Hz
5	5	2.5000 Gł	-Iz 2.	5250 GH	z 24	0.0 kHz	2.510125000	GHz	2.663	dBm		-22.34 d	В		
MSG	_			_				_		STA	TUS				
								_		514					

Plot 7-218. Lower ACP Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)



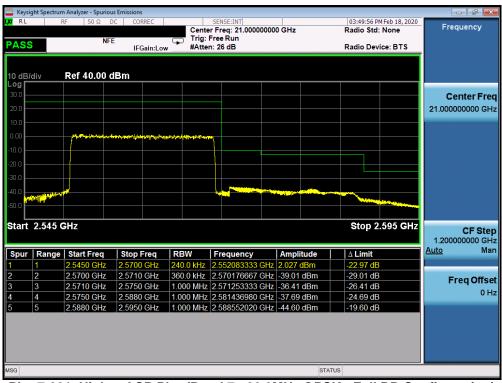
Plot 7-219. Higher ACP Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 122 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 132 of 182
© 2020 PCTEST	·			V 9.0 02/01/2019



	ignt spectrun	n Analyzer - Spurio						- d ×
X/ RL	F		DC CORREC		SENSE:INT r Freq: 21.00000000 Free Run	0 GHz	03:47:38 PM Feb 18, 2020 Radio Std: None	Frequency
PAS	S	NF	-E IFGain:Lov		: 26 dB		Radio Device: BTS	
10 dB	/div	Ref 40.00	dBm					
Log								
30.0								Center Fred
20.0								21.00000000 GH
10.0								
0.00					al representation	when we and the fact	and the state of the second	
10.0								
20.0								
-30.0								
-40.0							An Insequently writesteel	
50.0		and the second s						
		COMPANY OF THE OWNER.						
-								
-	2.475 0	GHz					Stop 2.525 GHz	1.200000000 GH
Start		GHZ	Stop Freq	RBW	Frequency	Amplitude	Stop 2.525 GHz	1.200000000 GH
start			Stop Freq 2.4905 GHz		Frequency 2.488407500 GHz			1.200000000 GH
Start Spur	Range	Start Freq	2.4905 GHz 2.4960 GHz	1.000 MHz 1.000 MHz	2.488407500 GHz 2.495963333 GHz	-42.78 dBm -40.50 dBm	Δ Limit -17.78 dB -27.50 dB	1.200000000 GH <u>Auto</u> Mar I
Start Spur 1 2 3	Range Range 2 3	Start Freq           2.4750 GHz           2.4905 GHz           2.4960 GHz	2.4905 GHz 2.4960 GHz 2.4990 GHz	1.000 MHz 1.000 MHz 1.000 MHz	2.488407500 GHz 2.495963333 GHz 2.498935000 GHz	-42.78 dBm -40.50 dBm -38.20 dBm	∆ Limit -17.78 dB -27.50 dB -28.20 dB	1.200000000 GH <u>Auto</u> Mar Freq Offse
Start	Range 1 2 3 4	Start Freq           2.4750 GHz           2.4905 GHz           2.4960 GHz           2.4990 GHz	2.4905 GHz 2.4960 GHz 2.4990 GHz 2.5000 GHz	1.000 MHz 1.000 MHz 1.000 MHz 360.0 kHz	2.488407500 GHz 2.495963333 GHz 2.498935000 GHz 2.499965000 GHz	-42.78 dBm -40.50 dBm -38.20 dBm -39.98 dBm	∆ Limit -17.78 dB -27.50 dB -28.20 dB -29.98 dB	CF Ster 1.20000000 GH; <u>Auto</u> Mar Freq Offse 0 H:
Start	Range Range 2 3	Start Freq           2.4750 GHz           2.4905 GHz           2.4960 GHz	2.4905 GHz 2.4960 GHz 2.4990 GHz	1.000 MHz 1.000 MHz 1.000 MHz 360.0 kHz	2.488407500 GHz 2.495963333 GHz 2.498935000 GHz	-42.78 dBm -40.50 dBm -38.20 dBm -39.98 dBm	∆ Limit -17.78 dB -27.50 dB -28.20 dB	1.20000000 GH <u>Auto</u> Ma <b>Freq Offse</b>
-	Range 1 2 3 4	Start Freq           2.4750 GHz           2.4905 GHz           2.4960 GHz           2.4990 GHz	2.4905 GHz 2.4960 GHz 2.4990 GHz 2.5000 GHz	1.000 MHz 1.000 MHz 1.000 MHz 360.0 kHz	2.488407500 GHz 2.495963333 GHz 2.498935000 GHz 2.499965000 GHz	-42.78 dBm -40.50 dBm -38.20 dBm -39.98 dBm	∆ Limit -17.78 dB -27.50 dB -28.20 dB -29.98 dB	1.200000000 GH <u>Auto</u> Mar Freq Offse
Start	Range 1 2 3 4	Start Freq           2.4750 GHz           2.4905 GHz           2.4960 GHz           2.4990 GHz	2.4905 GHz 2.4960 GHz 2.4990 GHz 2.5000 GHz	1.000 MHz 1.000 MHz 1.000 MHz 360.0 kHz	2.488407500 GHz 2.495963333 GHz 2.498935000 GHz 2.499965000 GHz	-42.78 dBm -40.50 dBm -38.20 dBm -39.98 dBm	∆ Limit -17.78 dB -27.50 dB -28.20 dB -29.98 dB	1.200000000 GH <u>Auto</u> Mar Freq Offse
Start	Range 1 2 3 4	Start Freq           2.4750 GHz           2.4905 GHz           2.4960 GHz           2.4990 GHz	2.4905 GHz 2.4960 GHz 2.4990 GHz 2.5000 GHz	1.000 MHz 1.000 MHz 1.000 MHz 360.0 kHz	2.488407500 GHz 2.495963333 GHz 2.498935000 GHz 2.499965000 GHz	-42.78 dBm -40.50 dBm -38.20 dBm -39.98 dBm	∆ Limit -17.78 dB -27.50 dB -28.20 dB -29.98 dB	1.200000000 GH <u>Auto</u> Mar Freq Offse
Start	Range 1 2 3 4	Start Freq           2.4750 GHz           2.4905 GHz           2.4960 GHz           2.4990 GHz	2.4905 GHz 2.4960 GHz 2.4990 GHz 2.5000 GHz	1.000 MHz 1.000 MHz 1.000 MHz 360.0 kHz	2.488407500 GHz 2.495963333 GHz 2.498935000 GHz 2.499965000 GHz	-42.78 dBm -40.50 dBm -38.20 dBm -39.98 dBm	∆ Limit -17.78 dB -27.50 dB -28.20 dB -29.98 dB	1.20000000 GH <u>Auto</u> Ma <b>Freq Offse</b>

Plot 7-220. Lower ACP Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-221. Higher ACP Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 122 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 133 of 182
© 2020 PCTEST	-	·		V 9.0 02/01/2019



## 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

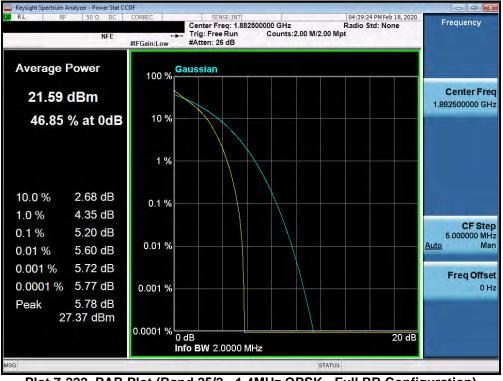
### Test Notes

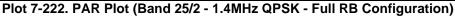
None.

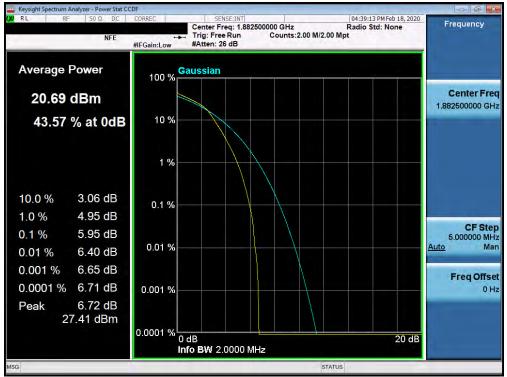
FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 404 at 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 134 of 182
© 2020 PCTEST				V 9.0 02/01/2019



## Band 25/2



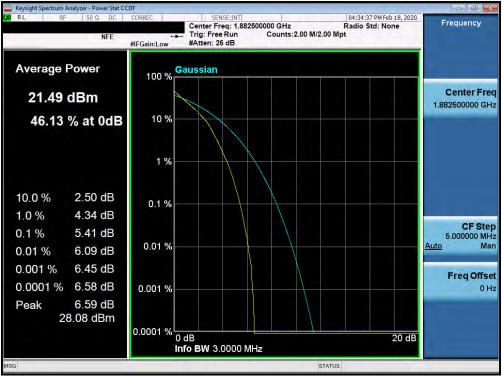




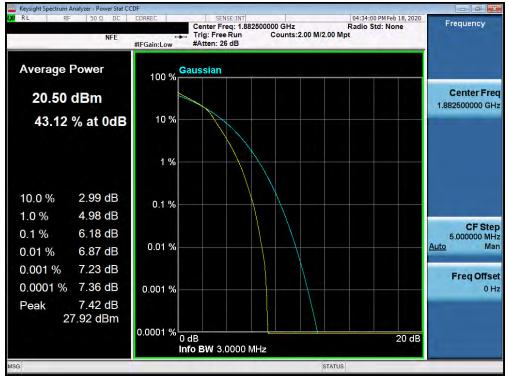
#### Plot 7-223. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕕 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 405 at 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 135 of 182
© 2020 PCTEST	•			V 9 0 02/01/2019





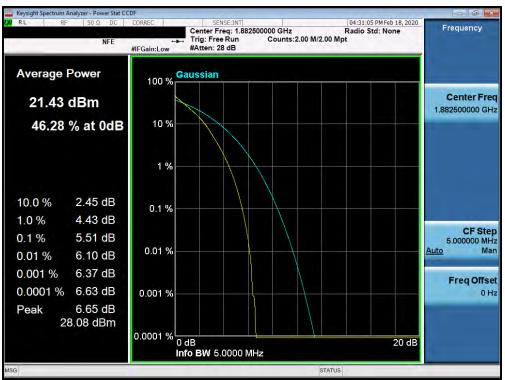
Plot 7-224. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-225. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 126 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 136 of 182
© 2020 PCTEST	<u>.</u>	·		V 9.0 02/01/2019





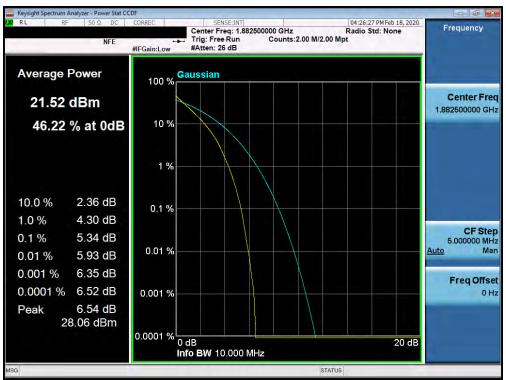
Plot 7-226. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



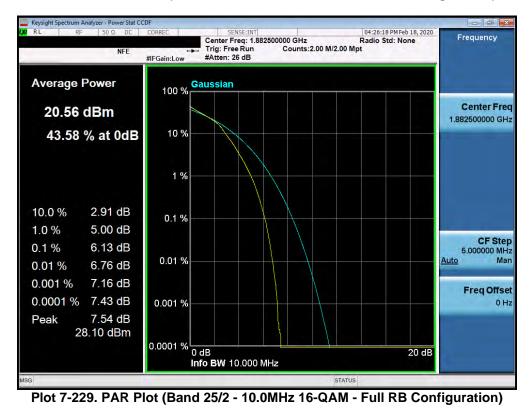
Plot 7-227. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 127 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 137 of 182
© 2020 PCTEST	•	•		V 9.0 02/01/2019



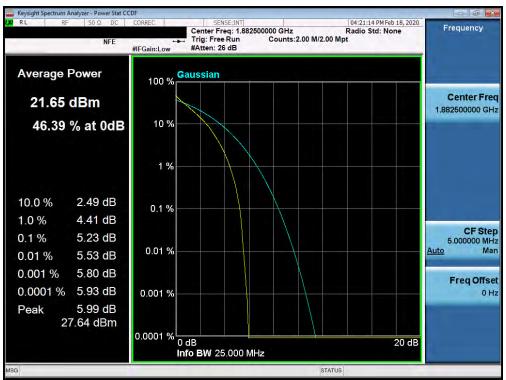


Plot 7-228. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

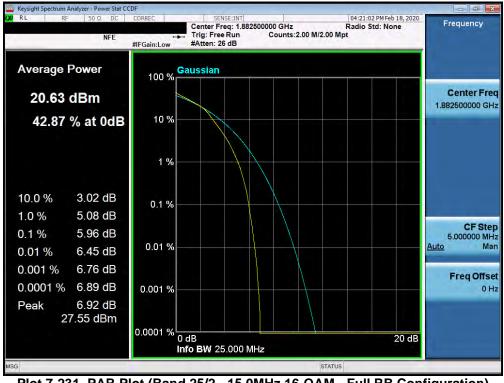


(e PCTEST MEASUREMENT REPORT Approved by: 🕒 LG FCC ID: ZNFQ630UM (CERTIFICATION) **Quality Manager** Test Report S/N: Test Dates: EUT Type: Page 138 of 182 1M2002110017-04.ZNF 02/12 - 03/13/2020 Portable Handset © 2020 PCTEST V 9.0 02/01/2019





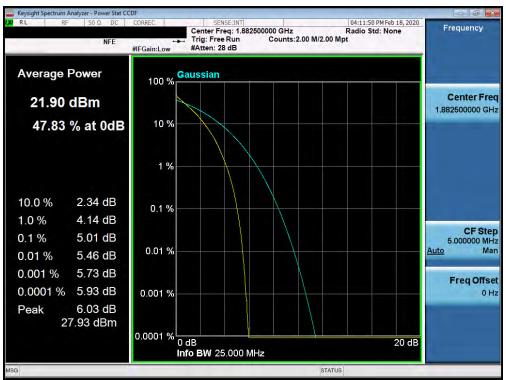


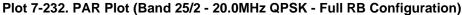


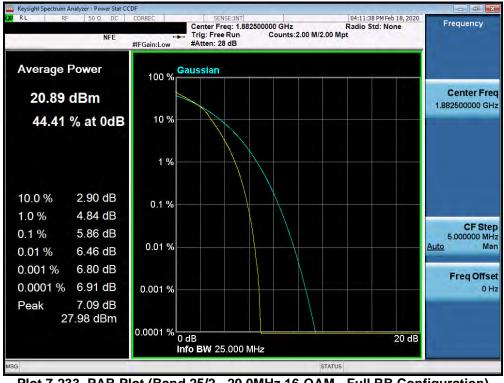
Plot 7-231. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 120 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 139 of 182
© 2020 PCTEST	•			V 9.0 02/01/2019









Plot 7-233. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 140 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 140 of 182
© 2020 PCTEST	•			V 9.0 02/01/2019



# 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  $\ge$  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: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 111 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 141 of 182
© 2020 PCTEST	•			V 9.0 02/01/2019



## Test Setup

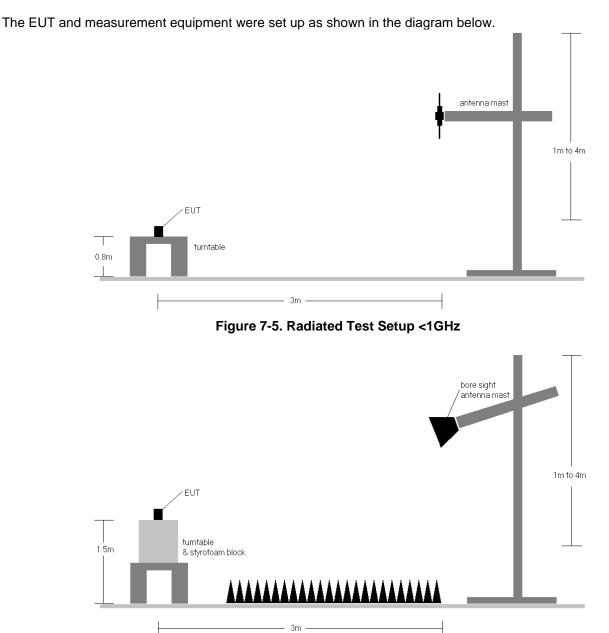


Figure 7-6. Radiated Test Setup >1GHz

## 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.

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 440 at 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 142 of 182
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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]
699.70	1.4	QPSK	V	161	9	1 / 3	15.87	4.50	18.22	0.066	34.77	-16.55
707.50	1.4	QPSK	V	172	6	1 / 3	15.43	4.60	17.88	0.061	34.77	-16.89
715.30	1.4	QPSK	V	174	6	1/3	14.59	4.63	17.07	0.051	34.77	-17.70
699.70	1.4	16-QAM	V	161	9	1/3	15.10	4.50	17.45	0.056	34.77	-17.32
700.50	3	QPSK	V	165	9	1 / 8	15.90	4.55	18.30	0.068	34.77	-16.47
707.50	3	QPSK	V	173	3	1 / 0	15.39	4.60	17.84	0.061	34.77	-16.93
714.50	3	QPSK	V	167	4	1 / 14	14.74	4.60	17.19	0.052	34.77	-17.58
700.50	3	16-QAM	V	165	9	1 / 8	15.03	4.55	17.43	0.055	34.77	-17.34

Table 7-3. ERP Data (Band 12)

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]
701.50	5	QPSK	V	166	12	1 / 12	15.75	4.60	18.20	0.066	34.77	-16.57
707.50	5	QPSK	V	177	15	1 / 0	15.09	4.60	17.54	0.057	34.77	-17.23
713.50	5	QPSK	V	173	5	1 / 0	14.60	4.60	17.05	0.051	34.77	-17.72
701.50	5	16-QAM	V	166	12	1 / 12	15.00	4.60	17.45	0.056	34.77	-17.32
704.00	10	QPSK	V	174	6	1 / 25	15.74	4.50	18.09	0.064	34.77	-16.68
707.50	10	QPSK	V	168	10	1 / 0	15.58	4.60	18.03	0.064	34.77	-16.74
711.00	10	QPSK	V	180	10	1 / 0	15.23	4.60	17.68	0.059	34.77	-17.09
704.00	10	16-QAM	V	174	6	1 / 25	14.83	4.50	17.18	0.052	34.77	-17.59
701.50	5	QPSK	Н	120	168	1 / 12	13.33	3.40	14.58	0.029	34.77	-20.19

Table 7-4. ERP Data (Band 12/17)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 142 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 143 of 182
© 2020 PCTEST				V 9.0 02/01/2019



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]
779.50	5	QPSK	V	143	188	1 / 24	14.50	5.70	18.05	0.064	34.77	-16.72
782.00	5	QPSK	V	152	183	1 / 12	14.73	5.80	18.38	0.069	34.77	-16.39
784.50	5	QPSK	V	151	187	1 / 12	14.97	5.80	18.62	0.073	34.77	-16.15
784.50	5	16-QAM	V	151	187	1 / 12	14.10	5.80	17.75	0.060	34.77	-17.02
782.00	10	QPSK	V	143	190	1 / 49	14.89	5.80	18.54	0.071	34.77	-16.23
782.00	10	16-QAM	V	143	190	1 / 49	14.05	5.80	17.70	0.059	34.77	-17.07
784.50	5	QPSK	Н	103	302	1 / 12	13.20	5.90	16.95	0.050	34.77	-17.82

Table 7-5. ERP Data (Band 13)

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	Н	235	309	1 / 3	12.79	6.70	17.34	0.054	38.45	-21.11
836.50	1.4	QPSK	Н	221	315	1 / 3	12.79	6.70	17.34	0.054	38.45	-21.11
848.30	1.4	QPSK	Н	227	314	1 / 3	13.27	6.70	17.82	0.061	38.45	-20.63
848.30	1.4	16-QAM	н	227	314	1 / 3	12.43	6.70	16.98	0.050	38.45	-21.47
825.50	3	QPSK	Н	224	315	1 / 0	12.49	6.70	17.04	0.051	38.45	-21.41
836.50	3	QPSK	Н	224	303	1 / 8	12.93	6.70	17.48	0.056	38.45	-20.97
847.50	3	QPSK	Н	227	311	1 / 8	13.26	6.65	17.76	0.060	38.45	-20.69
847.50	3	16-QAM	н	227	311	1 / 8	12.38	6.65	16.88	0.049	38.45	-21.57
826.50	5	QPSK	Н	233	312	1 / 12	12.56	6.70	17.11	0.051	38.45	-21.34
836.50	5	QPSK	Н	218	310	1 / 12	13.09	6.70	17.64	0.058	38.45	-20.81
846.50	5	QPSK	Н	231	308	1 / 12	13.62	6.60	18.07	0.064	38.45	-20.38
846.50	5	16-QAM	Н	231	308	1 / 12	12.89	6.60	17.34	0.054	38.45	-21.11
829.00	10	QPSK	Н	221	314	1 / 25	13.11	6.70	17.66	0.058	38.45	-20.79
836.50	10	QPSK	н	226	305	1 / 49	13.33	6.70	17.88	0.061	38.45	-20.57
844.00	10	QPSK	н	226	311	1 / 25	13.72	6.60	18.17	0.066	38.45	-20.28
844.00	10	16-QAM	Н	226	311	1 / 25	12.96	6.60	17.41	0.055	38.45	-21.04
844.00	10	QPSK	V	134	188	1 / 25	13.07	6.40	17.32	0.054	38.45	-21.13

Table 7-6. ERP Data (Band 5)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 111 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 144 of 182
© 2020 PCTEST				V 9 0 02/01/2019



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	Н	142	20	1 / 3	13.74	9.44	23.18	0.208	30.00	-6.82
1745.00	1.4	QPSK	Н	137	23	1 / 3	14.18	9.23	23.41	0.219	30.00	-6.59
1779.30	1.4	QPSK	Н	132	13	1 / 3	14.09	9.26	23.35	0.216	30.00	-6.65
1745.00	1.4	16-QAM	Н	137	23	1 / 3	13.24	9.23	22.47	0.177	30.00	-7.53
1711.50	3	QPSK	Н	138	17	1 / 8	13.60	9.44	23.04	0.201	30.00	-6.96
1745.00	3	QPSK	Н	138	21	1 / 8	14.11	9.23	23.34	0.216	30.00	-6.66
1778.50	3	QPSK	Н	138	17	1 / 0	14.20	9.26	23.46	0.222	30.00	-6.54
1778.50	3	16-QAM	Н	138	17	1 / 0	13.28	9.26	22.54	0.179	30.00	-7.46
1712.50	5	QPSK	Н	143	21	1 / 12	13.92	9.43	23.35	0.216	30.00	-6.65
1745.00	5	QPSK	Н	140	17	1 / 12	14.09	9.23	23.32	0.215	30.00	-6.68
1777.50	5	QPSK	Н	135	17	1 / 12	14.28	9.26	23.54	0.226	30.00	-6.46
1777.50	5	16-QAM	Н	135	17	1 / 12	13.38	9.26	22.64	0.183	30.00	-7.36
1715.00	10	QPSK	Н	146	24	1 / 25	14.15	9.42	23.57	0.227	30.00	-6.43
1745.00	10	QPSK	Н	141	28	1 / 25	14.09	9.23	23.32	0.215	30.00	-6.68
1775.00	10	QPSK	Н	140	15	1 / 25	14.50	9.25	23.75	0.237	30.00	-6.25
1775.00	10	16-QAM	Н	140	15	1 / 25	13.61	9.25	22.86	0.193	30.00	-7.14
1717.50	15	QPSK	Н	145	19	1 / 36	14.37	9.40	23.77	0.238	30.00	-6.23
1745.00	15	QPSK	Н	137	27	1 / 36	14.49	9.23	23.72	0.236	30.00	-6.28
1772.50	15	QPSK	Н	130	16	1 / 36	14.16	9.25	23.41	0.219	30.00	-6.59
1717.50	15	16-QAM	Н	145	19	1 / 36	13.59	9.40	22.99	0.199	30.00	-7.01
1720.00	20	QPSK	Н	114	22	1 / 50	14.73	9.38	24.11	0.258	30.00	-5.89
1745.00	20	QPSK	Н	101	18	1 / 50	15.50	9.23	24.73	0.297	30.00	-5.27
1770.00	20	QPSK	Н	129	19	1 / 50	14.55	9.24	23.79	0.239	30.00	-6.21
1745.00	20	16-QAM	Н	101	18	1 / 50	14.67	9.23	23.90	0.246	30.00	-6.10
1745.00	20	QPSK	V	129	71	1 / 50	14.17	9.11	23.28	0.213	30.00	-6.72

Table 7-7. EIRP Data (Band 66/4)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 145 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 145 of 182
© 2020 PCTEST				V 9.0 02/01/2019



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	267	16	1 / 3	15.16	9.48	24.64	0.291	33.01	-8.37
1882.50	1.4	QPSK	Н	259	15	1 / 3	14.22	9.94	24.16	0.260	33.01	-8.86
1914.30	1.4	QPSK	Н	244	20	1 / 3	13.85	10.29	24.14	0.260	33.01	-8.87
1850.70	1.4	16-QAM	Н	267	16	1 / 3	14.32	9.48	23.80	0.240	33.01	-9.21
1851.50	3	QPSK	Н	260	15	1 / 8	14.67	9.50	24.17	0.261	33.01	-8.84
1882.50	3	QPSK	Н	263	12	1 / 8	14.21	9.94	24.15	0.260	33.01	-8.87
1913.50	3	QPSK	Н	252	19	1 / 8	13.88	10.29	24.17	0.261	33.01	-8.85
1851.50	3	16-QAM	н	260	15	1 / 8	13.73	9.50	23.23	0.210	33.01	-9.78
1852.50	5	QPSK	Н	267	15	1 / 12	15.29	9.51	24.80	0.302	33.01	-8.21
1882.50	5	QPSK	Н	259	9	1 / 0	14.34	9.94	24.28	0.268	33.01	-8.74
1912.50	5	QPSK	Н	245	21	1 / 12	13.88	10.28	24.16	0.260	33.01	-8.85
1852.50	5	16-QAM	Н	267	15	1 / 12	14.41	9.51	23.92	0.247	33.01	-9.09
1855.00	10	QPSK	Н	267	19	1 / 25	14.96	9.55	24.51	0.282	33.01	-8.50
1882.50	10	QPSK	Н	259	10	1 / 25	14.36	9.94	24.30	0.269	33.01	-8.72
1910.00	10	QPSK	н	252	16	1 / 25	13.84	10.26	24.10	0.257	33.01	-8.91
1855.00	10	16-QAM	Н	267	19	1 / 25	14.01	9.55	23.56	0.227	33.01	-9.45
1857.50	15	QPSK	н	268	13	1 / 0	14.82	9.58	24.40	0.275	33.01	-8.61
1882.50	15	QPSK	Н	257	16	1 / 0	13.88	9.94	23.82	0.241	33.01	-9.20
1907.50	15	QPSK	Н	254	18	1 / 36	13.51	10.24	23.75	0.237	33.01	-9.26
1857.50	15	16-QAM	Н	268	13	1 / 0	13.90	9.58	23.48	0.223	33.01	-9.53
1860.00	20	QPSK	Н	251	21	1 / 50	14.15	9.62	23.77	0.238	33.01	-9.24
1882.50	20	QPSK	Н	259	14	1 / 50	14.66	9.94	24.60	0.288	33.01	-8.42
1905.00	20	QPSK	Н	237	15	1 / 99	13.65	10.22	23.87	0.244	33.01	-9.14
1882.50	20	16-QAM	Н	259	14	1 / 50	13.79	9.94	23.73	0.236	33.01	-9.29
1852.50	5	QPSK	V	138	125	1 / 12	13.85	9.89	23.74	0.237	33.01	-9.27

Table 7-8. EIRP Data (Band 25/2)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 146 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 146 of 182
© 2020 PCTEST	•	·		V 9.0 02/01/2019



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	112	164	1 / 12	11.21	10.31	21.52	0.142	23.98	-2.46
2312.50	5	QPSK	Н	107	171	1 / 24	10.97	10.31	21.28	0.134	23.98	-2.70
2307.50	5	16-QAM	Н	112	164	1 / 12	10.19	10.31	20.50	0.112	23.98	-3.48
2310.00	10	QPSK	Н	115	172	1 / 25	10.82	10.31	21.13	0.130	23.98	-2.85
2310.00	10	16-QAM	Н	115	172	1 / 25	9.90	10.31	20.21	0.105	23.98	-3.77
2307.50	5	QPSK	V	132	266	1 / 12	10.98	10.23	21.21	0.132	23.98	-2.77

Table 7-9. EIRP Data (Band 30)

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]
2502.50	5	QPSK	Н	155	223	1 / 12	10.61	9.43	20.04	0.101	33.01	-12.97
2535.00	5	QPSK	Н	152	232	1 / 12	11.36	9.39	20.75	0.119	33.01	-12.26
2567.50	5	QPSK	Н	144	225	1 / 12	11.60	9.45	21.05	0.127	33.01	-11.96
2567.50	5	16-QAM	Н	144	225	1 / 12	10.81	9.45	20.26	0.106	33.01	-12.75
2505.00	10	QPSK	н	152	218	1 / 25	10.66	9.43	20.09	0.102	33.01	-12.92
2535.00	10	QPSK	Н	152	229	1 / 25	11.42	9.39	20.81	0.121	33.01	-12.20
2565.00	10	QPSK	Н	141	229	1 / 25	11.86	9.44	21.30	0.135	33.01	-11.71
2565.00	10	16-QAM	Н	141	229	1 / 25	11.08	9.44	20.52	0.113	33.01	-12.49
2507.50	15	QPSK	Н	152	228	1 / 36	10.54	9.42	19.96	0.099	33.01	-13.05
2535.00	15	QPSK	Н	150	234	1 / 36	11.86	9.39	21.25	0.133	33.01	-11.76
2562.50	15	QPSK	Н	145	227	1 / 36	12.17	9.43	21.60	0.145	33.01	-11.41
2562.50	15	16-QAM	Н	145	227	1 / 36	11.39	9.43	20.82	0.121	33.01	-12.19
2510.00	20	QPSK	Н	153	223	1 / 50	11.13	9.42	20.55	0.114	33.01	-12.46
2535.00	20	QPSK	н	150	231	1 / 50	11.97	9.39	21.36	0.137	33.01	-11.65
2560.00	20	QPSK	Н	142	225	1 / 50	12.27	9.42	21.69	0.148	33.01	-11.32
2560.00	20	16-QAM	Н	142	225	1 / 50	11.54	9.42	20.96	0.125	33.01	-12.05
2560.00	20	QPSK	V	115	216	1 / 50	10.62	9.42	20.04	0.101	33.01	-12.97

Table 7-10. EIRP Data (Band 7)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	💽 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 147 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 147 of 182
© 2020 PCTEST	•	·		V 9.0 02/01/2019



## 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

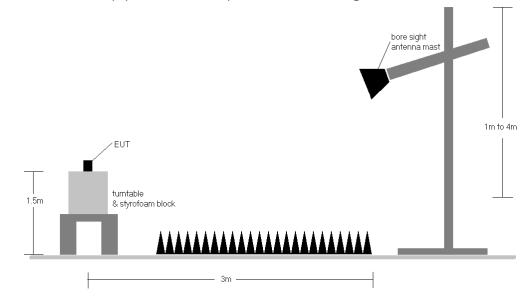
### Test Settings

- 1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
- 2. VBW  $\ge$  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: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:	Do ao 440 of 400				
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset	Page 148 of 182				
© 2020 PCTEST V 9.0 02/01/2019							



### Test Setup



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

Figure 7-7. Test Instrument & Measurement Setup

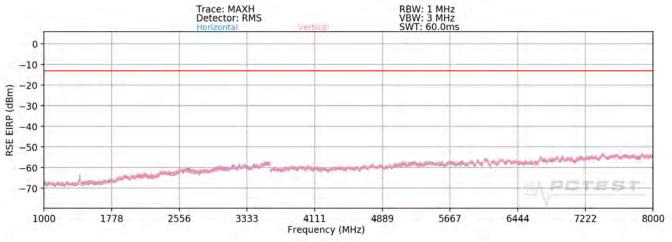
### Test Notes

- 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.

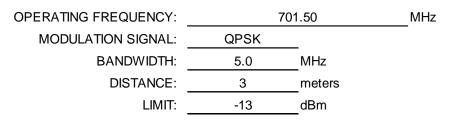
FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 140 of 182
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset	Page 149 of 182
© 2020 PCTEST			V 9.0 02/01/2019



# Band 12/17



Plot 7-234. Radiated Spurious Plot above 1GHz (Band 12/17)

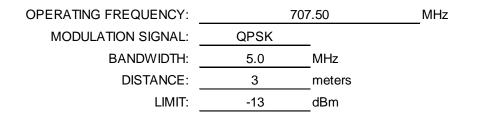


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1403.00	Н	149	326	-58.50	7.45	-51.05	-38.1
2104.50	Н	-	-	-72.36	8.84	-63.52	-50.5
2806.00	H	-	-	-72.86	10.14	-62.72	-49.7

Table 7-11. Radiated Spurious Data (Band 12/17 - Low Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		De 450
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 150 of 182
© 2020 PCTEST		·		V 9.0 02/01/2019





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	102	323	-59.47	7.63	-51.84	-38.8
2122.50	Н	-	-	-72.70	8.86	-63.84	-50.8
2830.00	Н	-	-	-72.08	10.10	-61.99	-49.0

Table 7-12. Radiated Spurious Data (Band 12/17 – Mid Channel)

OPERATING FREQUENCY:	713.50		
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

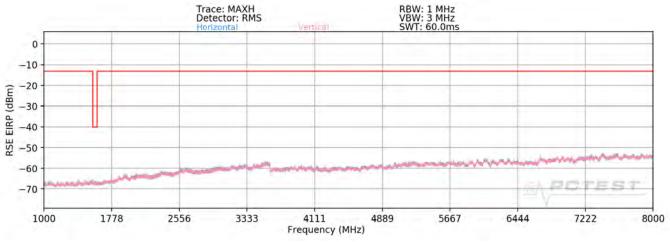
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1427.00	Н	102	320	-61.43	7.81	-53.61	-40.6
2140.50	Н	-	-	-72.50	8.88	-63.61	-50.6
2854.00	Н	-	-	-72.60	10.04	-62.56	-49.6

Table 7-13. Radiated Spurious Data (Band 12/17 – High Channel)

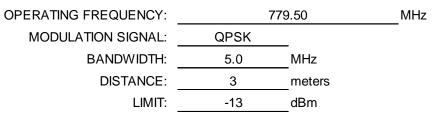
FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 151 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset	Page 151 of 182
© 2020 PCTEST			V 9.0 02/01/2019



# Band 13



### Plot 7-235. Radiated Spurious Plot above 1GHz (Band 13)

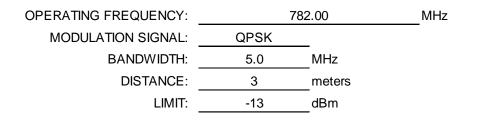


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2338.50	V	358	308	-72.14	9.47	-62.67	-49.7
3118.00	V	-	-	-71.11	9.35	-61.76	-48.8
3897.50	V	-	-	-70.89	9.35	-61.54	-48.5

Table 7-14. Radiated Spurious Data (Band 13 – Low Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 450 at 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 152 of 182
© 2020 PCTEST	•	•		V 9.0 02/01/2019





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]
2346.00	V	316	307	-72.46	9.43	-63.03	-50.0
3128.00	V	-	-	-71.20	9.34	-61.85	-48.9
3910.00	V	-	-	-70.52	9.37	-61.15	-48.1

Table 7-15. Radiated Spurious Data (Band 13 – Mid Channel)

OPERATING FREQUENCY:	784	4.50 N	/Hz
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	5.0	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]
2353.50	V	393	264	-71.67	9.41	-62.26	-49.3
3138.00	V	-	-	-71.14	9.33	-61.81	-48.8
3922.50	V	-	-	-70.57	9.40	-61.18	-48.2

Table 7-16. Radiated Spurious Data (Band 13 – High Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 152 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 153 of 182
© 2020 PCTEST				V 9.0 02/01/2019



MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	5.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

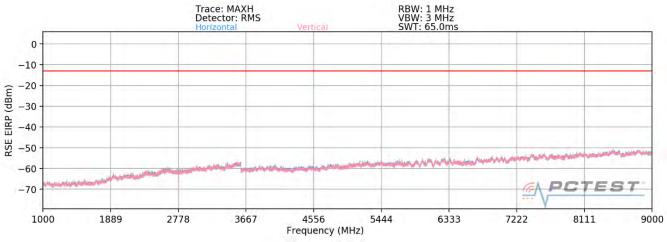
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1559.00	V	367	291	-71.79	8.51	-63.28	-23.3
1564.00	V	380	223	-71.78	8.53	-63.25	-23.3
1569.00	V	228	304	-72.87	8.55	-64.33	-24.3

Table 7-17. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 154 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 154 of 182
© 2020 PCTEST	·	·		V 9.0 02/01/2019



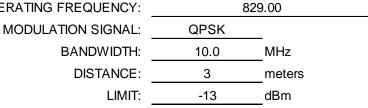






MHz

**OPERATING FREQUENCY:** 

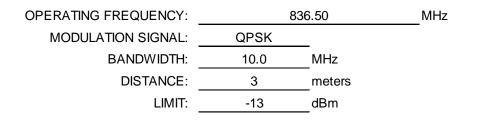


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	Н	168	206	-79.98	8.95	-71.03	-58.0
2487.00	Н	-	-	-78.50	9.70	-68.79	-55.8
3316.00	Н	-	-	-74.62	9.59	-65.03	-52.0

Table 7-18. Radiated Spurious Data (Band 5 – Low Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 155 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 155 of 182
© 2020 PCTEST	•			V 9.0 02/01/2019





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	Н	149	52	-79.58	8.95	-70.63	-57.6
2509.50	Н	-	-	-77.95	9.75	-68.20	-55.2
3346.00	Н	-	-	-75.23	9.60	-65.63	-52.6

Table 7-19. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY:	844	4.00 MHz
MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

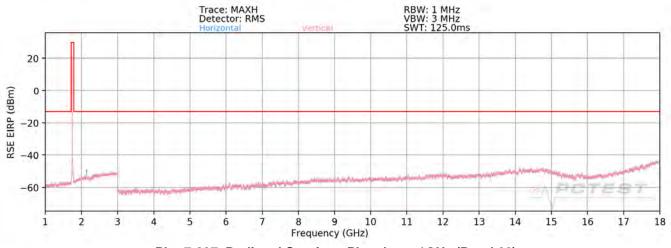
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	Н	255	8	-79.06	8.95	-70.10	-57.1
2532.00	Н	-	-	-77.36	9.75	-67.61	-54.6
3376.00	Н	-	-	-75.40	9.71	-65.70	-52.7

Table 7-20. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 150 of 190
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 156 of 182
© 2020 PCTEST				V 9.0 02/01/2019



Band 66





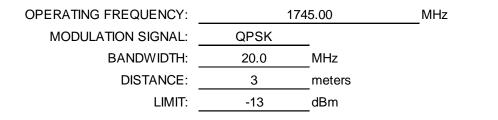
OPERATING FREQUENCY:	172	20.00	MHz
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	
		_	

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]
3440.00	Н	312	26	-71.97	9.84	-62.12	-49.1
5160.00	Н	-	-	-73.82	10.71	-63.11	-50.1
6880.00	Н	-	-	-71.59	11.68	-59.91	-46.9
8600.00	Н	-	-	-68.44	11.08	-57.36	-44.4

Table 7-21. Radiated Spurious Data (Band 66 – Low Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 157 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 157 of 182
© 2020 PCTEST		•		V 9.0 02/01/2019





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	Н	136	66	-69.21	9.91	-59.29	-46.3
5235.00	Н	-	-	-73.09	10.73	-62.36	-49.4
6980.00	Н	-	-	-72.39	11.82	-60.57	-47.6
8725.00	Н	-	-	-67.92	11.00	-56.92	-43.9

Table 7-22. Radiated Spurious Data (Band 66 – Mid Channel)

MHz

OPERATING FREQUENCY:	1770.00		
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

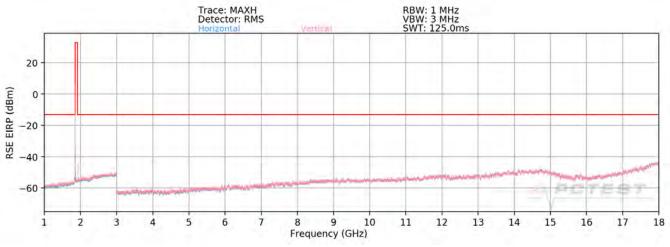
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	Н	301	139	-67.43	9.89	-57.54	-44.5
5310.00	Н	-	-	-73.39	10.69	-62.71	-49.7
7080.00	Н	-	-	-72.60	11.79	-60.82	-47.8
8850.00	Н	-	-	-67.65	11.00	-56.65	-43.7

Table 7-23. Radiated Spurious Data (Band 66 – High Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 159 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 158 of 182
© 2020 PCTEST	•			V 9.0 02/01/2019



# Band 25/2



Plot 7-238. Radiated Spurious Plot above 1GHz (Band 25/2)

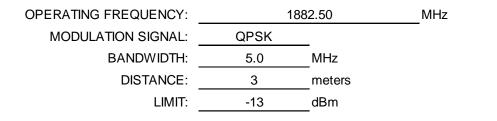
OPERATING FREQUENCY:	185	2.50	MHz
MODULATION SIGNAL:	QPSK	_	-
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
3705.00	Н	203	27	-73.25	9.57	-63.68	-50.7
5557.50	Н	136	322	-73.10	10.95	-62.14	-49.1
7410.00	Н	-	-	-69.20	10.96	-58.24	-45.2
9262.50	Н	-	-	-68.49	11.63	-56.86	-43.9

Table 7-24. Radiated Spurious Data (Band 25/2 – Low Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 159 of 182
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset	ndset	
© 2020 PCTEST	•	·		V 9.0 02/01/2019





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]
3765.00	Н	194	359	-72.33	9.36	-62.97	-50.0
5647.50	Н	-	-	-72.47	11.19	-61.27	-48.3
7530.00	Н	-	-	-69.67	11.13	-58.54	-45.5
9412.50	Н	-	-	-67.06	11.57	-55.49	-42.5

Table 7-25. Radiated Spurious Data (Band 25/2 - Mid Channel)

MHz

OPERATING FREQUENCY:	1912.50		
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	5.0	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]
3825.00	Н	137	31	-69.25	9.31	-59.94	-46.9
5737.50	Н	-	-	-73.94	11.41	-62.53	-49.5
7650.00	Н	-	-	-70.51	11.36	-59.15	-46.2
9562.50	Н	-	-	-66.33	11.81	-54.52	-41.5

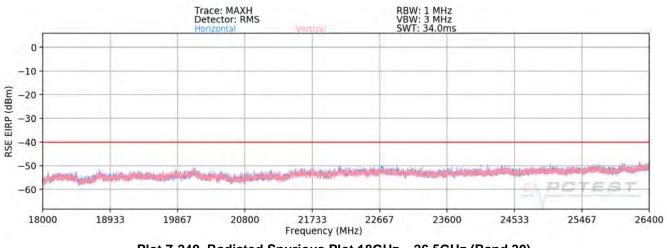
Table 7-26. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 160 of 182
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset	Page 160 of 182
© 2020 PCTEST			V 9.0 02/01/2019



## Band 30

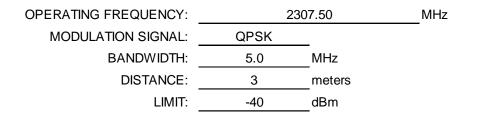




Plot 7-240. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dawa 404 af 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 161 of 182
© 2020 PCTEST				V 9.0 02/01/2019





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]
4615.00	Н	182	216	-74.41	10.91	-63.49	-23.5
6922.50	Н	115	26	-64.55	11.73	-52.81	-12.8
9230.00	Н	-	-	-68.05	11.61	-56.44	-16.4
11537.50	Н	-	-	-66.79	12.72	-54.07	-14.1

Table 7-27. Radiated Spurious Data (Band 30 – Low Channel)

MHz

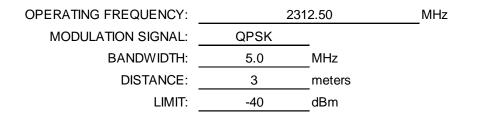
OPERATING FREQUENCY:	231	0.00
MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-40	dBm

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	229	153	-74.94	10.92	-64.02	-24.0
6930.00	Н	117	1	-60.02	11.74	-48.28	-8.3
9240.00	Н	-	-	-68.24	11.62	-56.62	-16.6
11550.00	Н	-	-	-66.96	12.72	-54.24	-14.2

Table 7-28. Radiated Spurious Data (Band 30 – Mid Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Degs 102 of 102
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 162 of 182
© 2020 PCTEST	•			V 9.0 02/01/2019





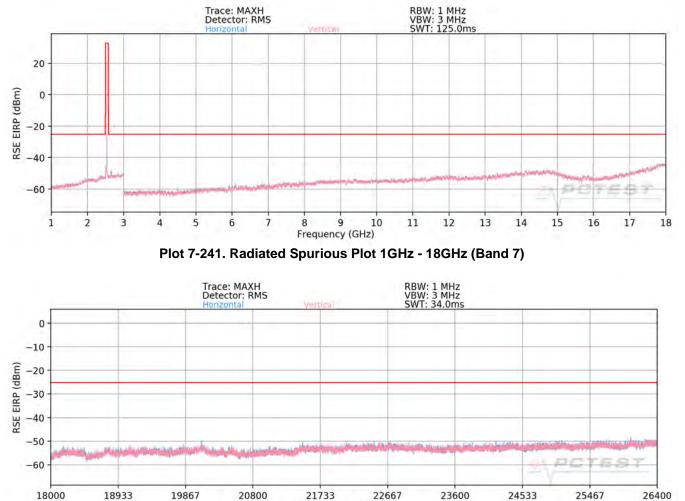
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4625.00	Н	159	218	-74.25	10.92	-63.33	-23.3
6937.50	Н	112	6	-66.85	11.75	-55.10	-15.1
9250.00	Н	-	-	-68.43	11.63	-56.80	-16.8
11562.50	Н	-	-	-67.14	12.71	-54.43	-14.4

Table 7-29. Radiated Spurious Data (Band 30 – High Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 162 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 163 of 182
© 2020 PCTEST	·			V 9.0 02/01/2019



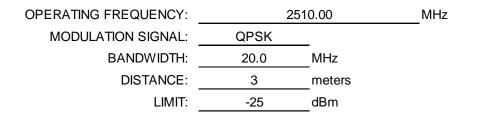




Frequency (MHz) Plot 7-242. Radiated Spurious Plot 18GHz – 26.5GHz (Band 7)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 404 af 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 164 of 182
© 2020 PCTEST				V 9.0 02/01/2019





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]
5020.00	V	157	267	-72.84	10.88	-61.95	-37.0
7530.00	V	322	28	-65.31	11.13	-54.18	-29.2
10040.00	V	-	-	-68.29	11.99	-56.31	-31.3
12550.00	V	-	-	-67.82	13.56	-54.26	-29.3

Table 7-30. Radiated Spurious Data (Band 7 – Low Channel)

MHz

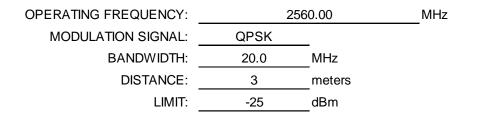
OPERATING FREQUENCY:	253	35.00
MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

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]
5070.00	V	292	141	-72.52	10.75	-61.77	-36.8
7605.00	V	306	38	-64.45	11.25	-53.20	-28.2
10140.00	V	-	-	-67.58	12.07	-55.51	-30.5
12675.00	V	-	-	-68.06	13.66	-54.40	-29.4

Table 7-31. Radiated Spurious Data (Band 7 – Mid Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 105 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 165 of 182
© 2020 PCTEST				V 9.0 02/01/2019





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]
5120.00	V	143	142	-72.05	10.68	-61.37	-36.4
7680.00	V	115	1	-66.04	11.39	-54.65	-29.6
10240.00	V	-	-	-68.06	12.18	-55.88	-30.9
12800.00	V	-	-	-67.35	13.50	-53.84	-28.8

Table 7-32. Radiated Spurious Data (Band 7 – High Channel)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 100 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 166 of 182
© 2020 PCTEST	-	•		V 9.0 02/01/2019



## 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 27, the 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: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 167 of 182
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset	Page 167 of 182
© 2020 PCTEST			V 9.0 02/01/2019



# **Band 12/17 Frequency Stability Measurements**

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23790	_
REFERENCE VOLTAGE:	4.30	VDC

VOLTAGE (%)	POWER (VDC)	<b>темр</b> (°С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	707,500,105	105	0.0000148
100 %		- 20	707,500,101	101	0.0000143
100 %		- 10	707,499,900	-100	-0.0000141
100 %		0	707,499,961	-39	-0.0000055
100 %		+ 10	707,500,139	139	0.0000196
100 %		+ 20	707,499,863	-137	-0.0000194
100 %		+ 30	707,499,841	-159	-0.0000225
100 %		+ 40	707,499,729	-271	-0.0000383
100 %		+ 50	707,499,649	-351	-0.0000496
BATT. ENDPOINT	3.57	+ 20	707,500,043	43	0.0000061

Table 7-33. Frequency Stability Data (Band 12/17)

### 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: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 400 at 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 168 of 182
© 2020 PCTEST	*			V 9.0 02/01/2019





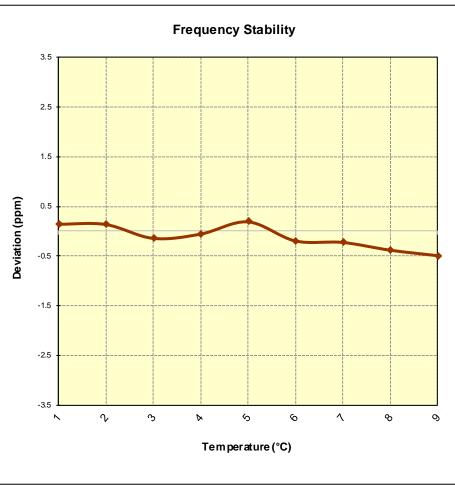


Figure 7-8. Frequency Stability Graph (Band 12/17)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 160 of 190
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 169 of 182
© 2020 PCTEST				V 9.0 02/01/2019



# **Band 13 Frequency Stability Measurements**

OPERATING FREQUENCY:	782,000,000	Hz
CHANNEL:	23230	_
REFERENCE VOLTAGE:	4.30	VDC

VOLTAGE (%)	POWER (VDC)	<b>темр</b> (°С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	782,000,275	275	0.0000352
100 %		- 20	781,999,897	-103	-0.0000132
100 %		- 10	781,999,892	-108	-0.0000138
100 %		0	781,999,627	-373	-0.0000477
100 %		+ 10	781,999,857	-143	-0.0000183
100 %		+ 20	781,999,916	-84	-0.0000107
100 %		+ 30	781,999,999	-1	-0.0000001
100 %		+ 40	781,999,997	-3	-0.0000004
100 %		+ 50	781,999,984	-16	-0.0000020
BATT. ENDPOINT	3.57	+ 20	782,000,030	30	0.0000038

Table 7-34. Frequency Stability Data (Band 13)

### 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: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 470 af 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 170 of 182
© 2020 PCTEST	*			V 9.0 02/01/2019





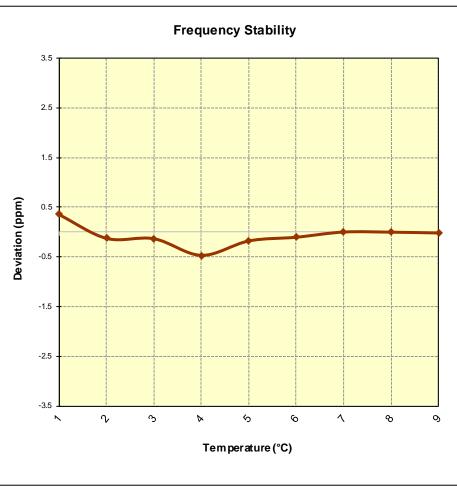


Figure 7-9. Frequency Stability Graph (Band 13)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 171 of 100
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 171 of 182
© 2020 PCTEST				V 9.0 02/01/2019



# **Band 5 Frequency Stability Measurements**

 OPERATING FREQUENCY:
 836,500,000
 Hz

 CHANNEL:
 20525

 REFERENCE VOLTAGE:
 4.30
 VDC

 DEVIATION LIMIT:
 ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	<b>темр</b> (°С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	836,500,216	216	0.0000258
100 %		- 20	836,500,355	355	0.0000424
100 %		- 10	836,500,244	244	0.0000292
100 %		0	836,500,226	226	0.0000270
100 %		+ 10	836,500,161	161	0.0000192
100 %		+ 20	836,499,903	-97	-0.0000116
100 %		+ 30	836,500,206	206	0.0000246
100 %		+ 40	836,500,027	27	0.0000032
100 %		+ 50	836,499,921	-79	-0.0000094
BATT. ENDPOINT	3.57	+ 20	836,500,362	362	0.0000433

Table 7-35. Frequency Stability Data (Band 5)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 172 of 182
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 172 of 182
© 2020 PCTEST	•	·		V 9.0 02/01/2019





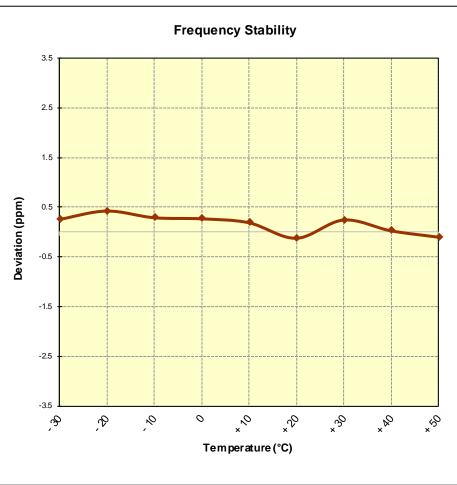


Figure 7-10. Frequency Stability Graph (Band 5)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 172 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 173 of 182
© 2020 PCTEST		·		V 9.0 02/01/2019



## **Band 66/4 Frequency Stability Measurements**

 OPERATING FREQUENCY:
 1,745,000,000
 Hz

 CHANNEL:
 132322

 REFERENCE VOLTAGE:
 4.30
 VDC

VOLTAGE (%)	POWER (VDC)	<b>темр</b> (°С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	1,744,999,936	-64	-0.0000037
100 %		- 20	1,744,999,658	-342	-0.0000196
100 %		- 10	1,745,000,368	368	0.0000211
100 %		0	1,745,000,095	95	0.0000054
100 %		+ 10	1,744,999,850	-150	-0.0000086
100 %		+ 20	1,745,000,114	114	0.0000065
100 %		+ 30	1,745,000,037	37	0.0000021
100 %		+ 40	1,744,999,740	-260	-0.0000149
100 %		+ 50	1,745,000,108	108	0.0000062
BATT. ENDPOINT	3.57	+ 20	1,745,000,045	45	0.0000026

Table 7-36. 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: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 474 af 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 174 of 182
© 2020 PCTEST		•		V 9.0 02/01/2019





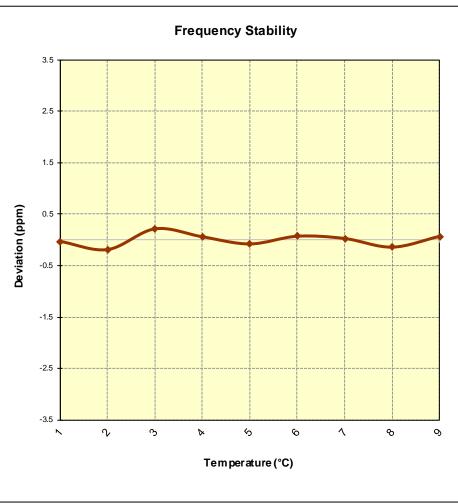


Figure 7-11. Frequency Stability Graph (Band 66/4)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 175 of 100
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 175 of 182
© 2020 PCTEST V 9.0 02/01/2019				



## **Band 25/2 Frequency Stability Measurements**

OPERATING FREQUENCY:	1,882,500,000	Hz
CHANNEL:	26365	_
REFERENCE VOLTAGE:	4.30	VDC

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( [°] С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	1,882,500,032	32	0.0000017
100 %		- 20	1,882,500,021	21	0.0000011
100 %		- 10	1,882,499,708	-292	-0.0000155
100 %		0	1,882,499,723	-277	-0.0000147
100 %		+ 10	1,882,499,905	-95	-0.0000050
100 %		+ 20	1,882,499,627	-373	-0.0000198
100 %		+ 30	1,882,500,218	218	0.0000116
100 %		+ 40	1,882,500,006	6	0.0000003
100 %		+ 50	1,882,500,085	85	0.0000045
BATT. ENDPOINT	3.57	+ 20	1,882,499,839	-161	-0.0000086

Table 7-37. Frequency Stability Data (Band 25/2)

### 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: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 470 at 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 176 of 182
© 2020 PCTEST V 9.0 02/01/2019				





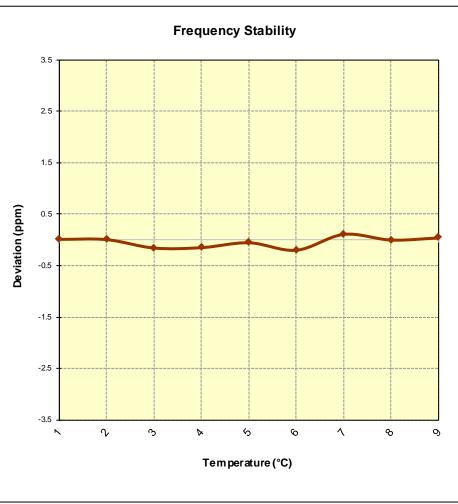


Figure 7-12. Frequency Stability Graph (Band 25/2)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕞 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 177 of 100
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 177 of 182
© 2020 PCTEST V 9.0 02/01/2019				



## **Band 30 Frequency Stability Measurements**

 OPERATING FREQUENCY:
 2,310,000,000
 Hz

 CHANNEL:
 27710

 REFERENCE VOLTAGE:
 4.30
 VDC

VOLTAGE (%)	POWER (VDC)	<b>темр</b> (°С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	2,310,000,297	297	0.0000129
100 %		- 20	2,309,999,997	-3	-0.0000001
100 %		- 10	2,310,000,238	238	0.0000103
100 %		0	2,310,000,103	103	0.0000045
100 %		+ 10	2,309,999,848	-152	-0.0000066
100 %		+ 20	2,309,999,777	-223	-0.0000097
100 %		+ 30	2,310,000,241	241	0.0000104
100 %		+ 40	2,309,999,847	-153	-0.0000066
100 %		+ 50	2,309,999,912	-88	-0.000038
BATT. ENDPOINT	3.57	+ 20	2,309,999,635	-365	-0.0000158

Table 7-38. 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.

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daria 470 at 400
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 178 of 182
© 2020 PCTEST V 9.0 02/01/2019				





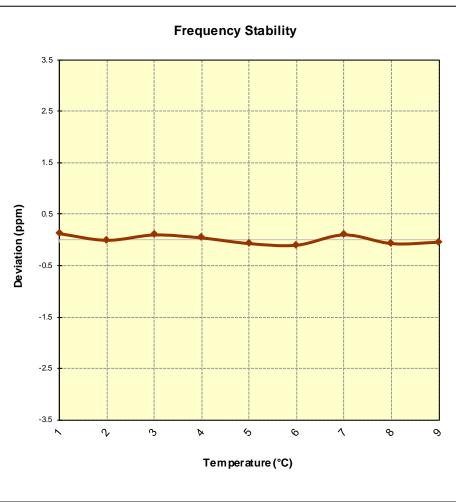


Figure 7-13. Frequency Stability Graph (Band 30)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕞 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 170 of 192
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 179 of 182
© 2020 PCTEST V 9.0 02/01/2019				



# **Band 7 Frequency Stability Measurements**

OPERATING FREQUENCY:	2,535,000,000	Hz
CHANNEL:	21100	
REFERENCE VOLTAGE:	4.30	VDC

VOLTAGE (%)	POWER (VDC)	<b>темр</b> (°С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	- 30	2,535,000,013	13	0.0000005
100 %		- 20	2,535,000,277	277	0.0000109
100 %		- 10	2,534,999,912	-88	-0.0000035
100 %		0	2,534,999,895	-105	-0.0000041
100 %		+ 10	2,535,000,300	300	0.0000118
100 %		+ 20	2,534,999,715	-285	-0.0000112
100 %		+ 30	2,534,999,812	-188	-0.0000074
100 %		+ 40	2,535,000,352	352	0.0000139
100 %		+ 50	2,535,000,182	182	0.0000072
BATT. ENDPOINT	3.57	+ 20	2,534,999,737	-263	-0.0000104

Table 7-39. Frequency Stability Data (Band 7)

#### 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: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 400 af 400	
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 180 of 182	
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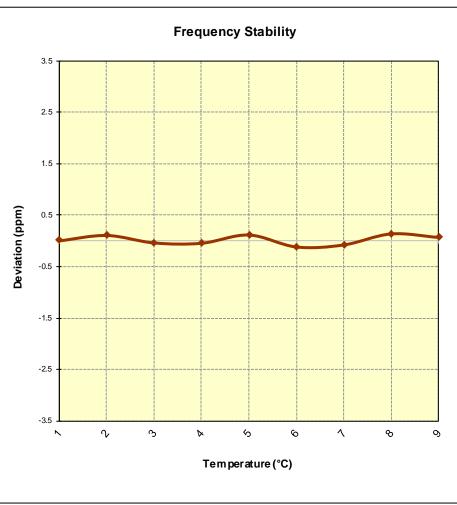


Figure 7-14. Frequency Stability Graph (Band 7)

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 101 of 100	
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset		Page 181 of 182	
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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: ZNFQ630UM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

FCC ID: ZNFQ630UM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Bage 182 of 182
1M2002110017-04.ZNF	02/12 - 03/13/2020	Portable Handset	Page 182 of 182
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