

RL RF 50Ω AC	CORREC	SENSE:INT	#Avg Type: RMS	04:24:00 PM Jul 05, 2018 TRACE 1 2 3 4 5 0	Frequency
	PNO: Fast ++ IFGain:Low	Trig: Free Run Atten: 36 dB	Avg Hold: 100/100	DET A NNNNN	44.4
0 dB/div Ref 25.00 dBm			Mkr	1.780 000 GHz -28.253 dBm	Auto Tun
15.0					Center Free 1.780000000 GH
5 00 	·····	7			Start Fre 1.772000000 GH
15.0 25.0		h. 1_		GL1 -13.00 dBm	Stop Fre 1.788000000 GH
45.0					CF Ste 1.600000 MF Auto Ma
50					Freq Offs 01
					Scale Typ
enter 1.780000 GHz Res BW 200 kHz	#VBW	620 kHz*	Sweep	Span 16.00 MHz .000 ms (1001 pts)	

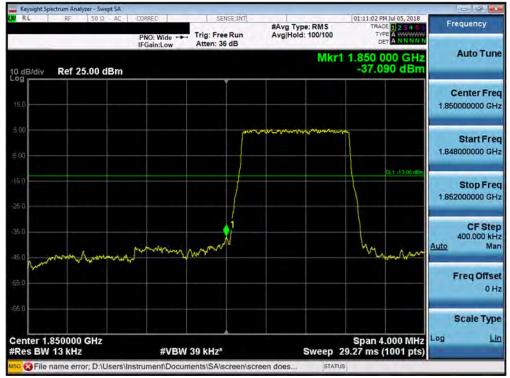
Plot 7-271. Upper Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)



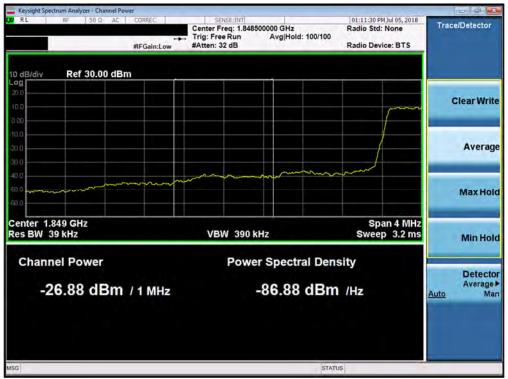
Plot 7-272. Upper Extended Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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Plot 7-273. Lower Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



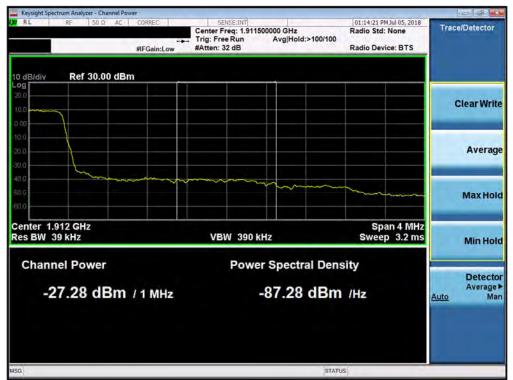
Plot 7-274. Lower Extended Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL	RF 50 \$	AC AC	CORREC	SENSE	INT		-		M Jul 05, 2018	Er	equency
			PNO: Wide ++	Trig: Free R Atten: 36 dB		#Avg Type Avg Hold:		TRAC	PE A WANN N		
0 dB/div	Ref 25.00	dBm					Mkr1	1.910 (-39.1	000 GHz 48 dBm		Auto Tun
i5.0											Center Fre
5.00 5.00		hanne	and a second second							1.90	Start Fre
15 0									0L113.00 dBm	1.91	Stop Fre
15.0	mont			1	Linner	A. Jandy M.	man	m. Aur	-	Auto	CF Ste 400.000 ki M
55 0							BUTY	- wy	- March		Freq Offs 0 H
55.0	910000 GHz							Snon			Scale Typ
Res BW			#VBW	39 kHz*		;	Sweep 2	9.27 ms (.000 MHz (1001 pts)		_
so							STATUS			_	

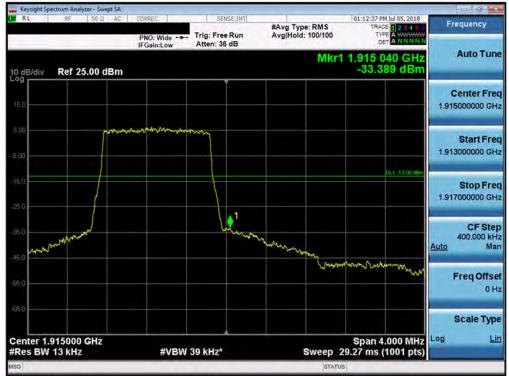
Plot 7-275. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-276. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 162 of 202	
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Plot 7-277. Upper Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)



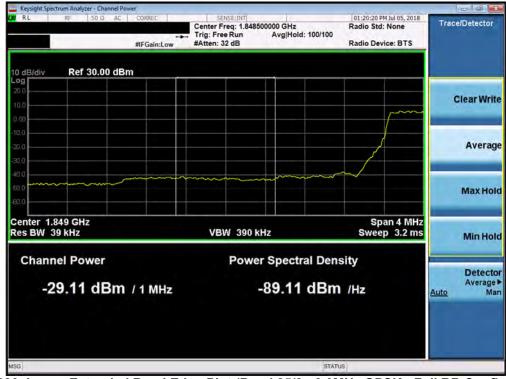
Plot 7-278. Upper Extended Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕞 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 164 of 202
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RL RF 50 Q AC	CORREC	SENSE:INT	#Avg Type: RMS	01:20:05 PM Jul 05, 2018 TRACE 1 2 3 4 5 0	Frequency
	PNO: Wide ++ IFGain:Low	Trig: Free Run Atten: 36 dB	Avg Hold: 100/100	DET A NNNNN	
0 dB/div Ref 25.00 dBm			Mkr1	1.850 000 GHz -25.703 dBm	Auto Tun
15,0					Center Fre 1.85000000 GF
5.00		\square	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	- marken and the	Start Fre 1.848000000 GF
15.0		¢.		OL1 -13.00 dBm	Stop Fre 1.852000000 GH
35.0	m	~			CF Ste 400.000 kł Auto Ma
55 0					Freq Offs 01
				Sport 4 000 MHz	Scale Typ
Center 1.850000 GHz #Res BW 30 kHz	#VBW	91 kHz*	Sweep 5	Span 4.000 MHz 5.533 ms (1001 pts)	

Plot 7-279. Lower Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)



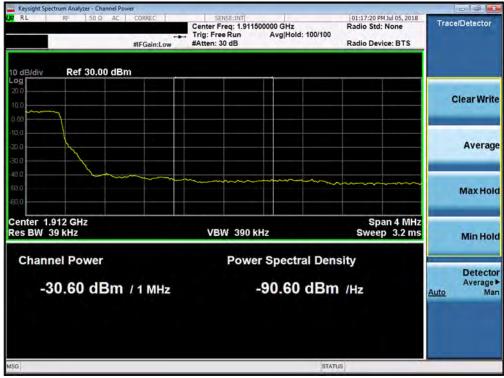
Plot 7-280. Lower Extended Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 165 of 202	
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RL RF 50Ω AC	CORREC	SENSE:INT	#Avg Type: RM	S TR	PM Jul 05, 2018 ACE 1 2 3 4 5 0	Frequency
	PNO: Wide IFGain:Low	Trig: Free Run Atten: 36 dB	Avg Hold: 100/1	00 1		-
0 dB/div Ref 25.00 dBm			N	lkr1 1.910 -25.	000 GHz 532 dBm	Auto Tuni
15.0						Center Fre 1.910000000 GH
5.00		m				Start Fre 1.908000000 GH
25.0		1			DL1 -13.00 dBm	Stop Fre 1.912000000 GH
35.0		1	human		- 6	CF Ste 400.000 kF Auto Ma
55 0				2		Freq Offs 0 F
56.0						Scale Typ
Center 1.910000 GHz Res BW 30 kHz	#VBW	91 kHz*	Swe	Span sp 5.533 ms	4.000 MHz (1001 pts)	
Res BW 30 KHZ	#VBW \$	31 KHZ*		status	(1001 pts)	-

Plot 7-281. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



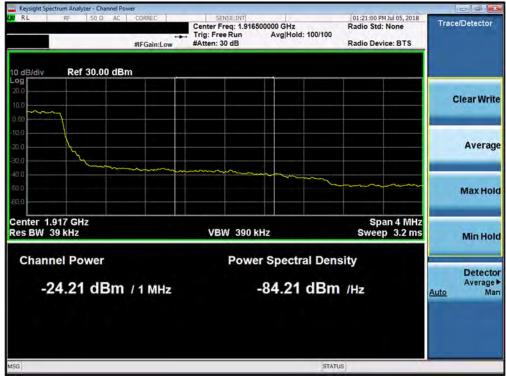
Plot 7-282. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 166 of 202	
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K RL RF 50 Q AC	PNO: Wide	SENSE:	#Avg T	Type: RMS old: 100/100	01:20:45 PM Jul 05, 2018 TRACE 2 3 4 5 0 TVPE A	Frequency
0 dB/div Ref 25.00 dBm	IFGain:Low	Atten: 36 dB		Mkr1 1	.915 000 GHz -25.484 dBm	Auto Tuni
15.0						Center Fre 1.915000000 GH
5.00	mm	m				Start Fre 1.913000000 GF
15.0					DL1 -13.00 dBm	Stop Fre 1.917000000 GH
35.0 45.0			mann	mm	monter	CF Ste 400.000 kf Auto Ma
55 0						Freq Offs 01
Center 1.915000 GHz Res BW 30 kHz	#VBW	91 kHz*		Sweep 5.5	Span 4.000 MHz 33 ms (1001 pts)	Scale Typ Log <u>L</u>

Plot 7-283. Upper Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)



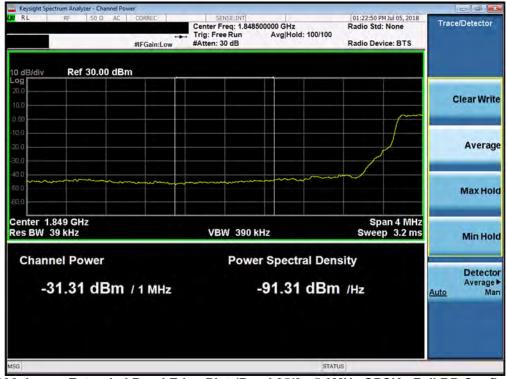
Plot 7-284. Upper Extended Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL RF 50Ω AC	CORREC	SENSE:INT	#Avg Type: RMS	01:22:33 PM Jul 05, 2018 TRACE 1 2 3 4 5 0	Frequency
	PNO: Wide IFGain:Low	Trig: Free Run Atten: 36 dB	Avg Hold: 100/100	DET A NNNNN	
10 dB/div Ref 25.00 dBm			Mkr	1 1.850 000 GHz -29.185 dBm	Auto Tun
15,0					Center Fre 1.850000000 GF
5.00		\int			Start Fre 1.848000000 GF
15 0		1		DL1 -13.00 dBm	Stop Fre 1.852000000 GH
35.0		\sim			CF Ste 400.000 kl Auto Mi
55 0					Freq Offs 01
66.0					Scale Typ
Center 1.850000 GHz #Res BW 51 kHz	#VBW	150 kHz*	Sweep	Span 4.000 MHz 1.933 ms (1001 pts)	Log L
ISG			STATU		

Plot 7-285. Lower Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



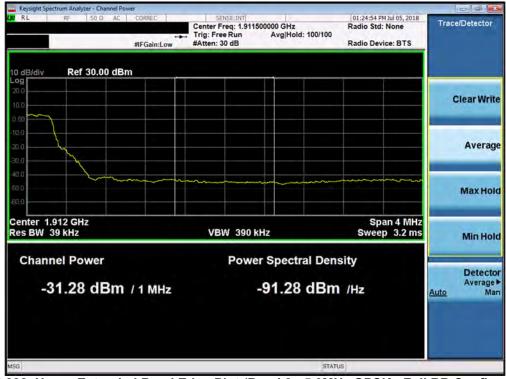
Plot 7-286. Lower Extended Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swept SA RL RF 50 Ω AC	CORREC	SENSE:INT			01:24:33 PM Jul 05, 20	
	PNO: Wide	Trig: Free Run Atten: 36 dB	#Avg Type: Avg Hold: 1	RMS 00/100	TRACE 2 3 4 TYPE A WARA DET A NNN	
0 dB/div Ref 25.00 dBm				Mkr1 1	.910 000 GI -27.633 dB	Hz Auto Tuno M
15.0						Center Free 1.910000000 GH
5 00		7				Start Fre 1.908000000 GH
15.0					DL1 -13.00	Stop Fre 1.912000000 GH
45.0			·····		······	CF Ste 400.000 kF Auto Ma
55 0						Freq Offse 0 H
center 1.910000 GHz					Span 4.000 M	Scale Typ
Res BW 51 kHz	#VBW	150 kHz*	S	status	33 ms (1001 p	ts)

Plot 7-287. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



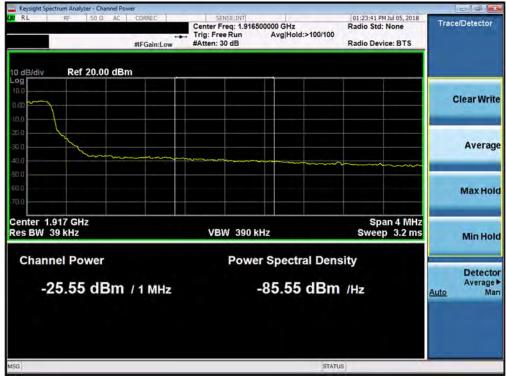
Plot 7-288. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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PNO: Wide +++ FGain:Low	Trig: Free Run Atten: 36 dB	#Avg Type: RMS Avg Hold: 100/100	TRACE 2 3 4 5 0 TYPE A WARMANN DET A NNNNN	Frequency
		Miles		
		WIKE	1.915 000 GHz -29.128 dBm	Auto Tune
				Center Free 1.915000000 GH
				Start Fre 1.913000000 GH
			0L1 -13.00 dBm	Stop Fre 1.917000000 GH
	ha			CF Ste 400.000 kH Auto Ma
				Freq Offso 0 H
				Scale Typ
#VBW	150 kHz*	Sweep	1.933 ms (1001 pts)	
	#VBW *	#VBW 150 kHz*		Span 4.000 MHz

Plot 7-289. Upper Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



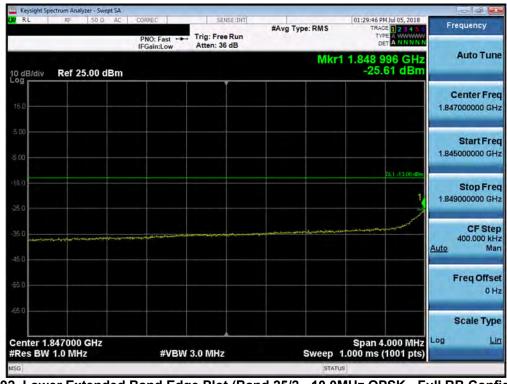
Plot 7-290. Upper Extended Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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RL RF 50Ω AC	CORREC	SENSE:INT	#Avg Type: RMS Avg Hold: 100/100	01:29:28 PM Jul 05, 2018 TRACE 2 3 4 5 0 TYPE A	Frequency
	PNO: Wide IFGain:Low	Atten: 36 dB	Avginola. Toorioo	DET A NNNNN	and another
10 dB/div Ref 25.00 dBm			Mkr1	1.850 000 GHz -30.672 dBm	Auto Tun
15,0					Center Fre 1.850000000 GH
5.00		(~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Start Fre 1.846000000 GF
				CL1 -13.00 dBm	Stop Fre 1.854000000 GH
35.0	~~~~~				CF Ste 800.000 kH Auto Ma
55 0					Freq Offs 0 F
65.0 Center 1.850000 GHz				Span 8.000 MHz	Scale Typ
Res BW 100 kHz	#VBW	300 kHz*	Sweep	1.000 ms (1001 pts)	

Plot 7-291. Lower Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-292. Lower Extended Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL RF 50Ω AC	CORREC	SENSE:INT	#Avg Type: RMS	01:26:45 PM Jul 05, 2018 TRACE 1 2 3 4 5 0	Frequency
	PNO: Wide ++	Trig: Free Run Atten: 36 dB	Avg Hold: 100/100	DET A NNNNN	and some
dB/div Ref 25.00 dBm			Mkr1	1.910 000 GHz -30.324 dBm	Auto Tuni
5.0					Center Free 1.910000000 GH
.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	γ			Start Fre 1.906000000 GH
50				CL1 -13.00 dBm	Stop Fre 1.914000000 GH
50			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m	CF Ste 800.000 kH Auto Ma
50					Freq Offs 0 F
					Scale Typ
enter 1.910000 GHz Res BW 100 kHz	#VBW :	300 kHz*	Sweep	Span 8.000 MHz 1.000 ms (1001 pts)	

Plot 7-293. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-294. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 170 of 202	
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RL RF		CORREC	SENSE:INT	#Avg Type: RMS	01:30:31 PM Jul 05, 2018 TRACE 1 2 3 4 5 0	Frequency
Center Freq 1.9	15000000	PNO: Wide IFGain:Low	Trig: Free Run Atten: 36 dB	Avg Hold: 100/100		
10 dB/div Ref 25.00 dBm -28.384 dBm						
15.0						Center Free 1.915000000 GH
5.00		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Start Fre 1.911000000 GH
25.0			- L		CL1 -13.00 dBm	Stop Fre 1.919000000 GH
35.0					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	CF Ste 800.000 kH Auto Ma
55 0						Freq Offs 0 F
cs.0 Center 1.915000	GHz				Span 8.000 MHz	Scale Typ
Res BW 100 kH	z	#VBW	300 kHz*	Sweep	1.000 ms (1001 pts)	

Plot 7-295. Upper Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-296. Upper Extended Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Frequency	01:34:17 PM Jul 05, 2018 TRACE 1 2 3 4 5 0 TYPE A WWWWW DET A N N N N N	#Avg Type: RMS	SENSE:INT Trig: Free Run Atten: 36 dB		RF 50 Ω AC	RL
Auto Tur	1.850 000 GHz -29.535 dBm	Mkr1		I Galit.com	Ref 25.00 dBm	10 dB/div
Center Fre 1.850000000 GF						15.0
Start Fre 1.844000000 GF		an a	ſ			5.00
Stop Fre 1.856000000 GH	DL1 -13.00 dBm		12			150
CF Ste 1.200000 MF Auto Mi			~/	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-	35.0
Freq Offs 0 F						-55 0
Scale Typ	Span 12.00 MHz				850000 GHz	
	1.000 ms (1001 pts)	Sweep f	70 kHz	#VBW 4	150 kHz	Res BW

Plot 7-297. Lower Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-298. Lower Extended Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL RF 50Ω AC	CORREC	SENSE:INT	#Avg Type: RMS	01:39:35 PM Jul 05, 2018 TRACE 1 2 3 4 5 0	Frequency
	PNO: Wide +++	Trig: Free Run Atten: 36 dB	Avg Hold: 100/100	DET A NN NN N	
0 dB/div Ref 25.00 dBm			Mkr	1.910 000 GHz -32.360 dBm	Auto Tuni
15.0					Center Fre 1.910000000 GH
5.00 5.00	mmm	7			Start Fre 1.904000000 GH
15.0				DL1 -13.00 dBm	Stop Fre 1.916000000 GH
95.0 45.0		Mr. 1	mannemen	han when	CF Ste 1.200000 MH Auto Ma
55 0					Freq Offs 01
Center 1.910000 GHz				Span 12.00 MHz	Scale Typ
Res BW 51 kHz	#VBW	160 kHz*	Sweep :	5.733 ms (1001 pts)	

Plot 7-299. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-300. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL RF 50 Q AC	CORREC	SENSE:INT	#Avg Type: RMS	01:37:53 PM Jul 05, 2018 TRACE 1 2 3 4 5 0	Frequency
6	PNO: Wide	Trig: Free Run Atten: 36 dB	Avg Hold: 100/100		
0 dB/div Ref 25.00 dBm			Mkr	1 1.915 000 GHz -32.263 dBm	Auto Tun
15.0					Center Fre 1.915000000 GH
5.00 	mmmm	h			Start Fre 1.909000000 GH
15.0 25.0				0L1 -13.00 dBm	Stop Fre 1.921000000 GH
35.0 45.0		Muran J	manna	monomination	CF Ste 1.200000 MF Auto Ma
55 0					Freq Offs 0 H
65.0					Scale Typ
Center 1.915000 GHz Res BW 51 kHz	#VBW	160 kHz*	Sweep	Span 12.00 MHz 5.733 ms (1001 pts)	Log <u>L</u>
so			STAT	US	

Plot 7-301. Upper Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-302. Upper Extended Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL RF 50 Q AC	PNO: Fast	SENSE:INT	#Avg Type: RMS Avg Hold: 100/100	01:43:40 PM Jul 05, 2018 TRACE 2 3 4 5 0 TYPE A	Frequency
odB/div Ref 25.00 dBm	IFGain:Low	Atten: 36 dB	Mkr1	1.849 968 GHz -30.657 dBm	Auto Tun
15.0					Center Fre 1.850000000 GH
5.00		ſ			Start Fre 1.842000000 GH
15.0		1,00		DL1-13.00 dBm	Stop Fre 1.858000000 GH
35.0 45.0	www.	~~~~			CF Ste 1.600000 MF Auto Ma
65 Q					Freq Offs 0 F
Center 1.850000 GHz					Scale Typ
Res BW 200 kHz	#VBW (620 kHz*	Sweep 1	.000 ms (1001 pts)	

Plot 7-303. Lower Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-304. Lower Extended Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL RF 50Ω AC	CORREC	SENSE:INT	#Avg Type: RMS	01:41:15 PM Jul 05, 2018 TRACE 1 2 3 4 5 0	Frequency
	PNO: Fast	Trig: Free Run Atten: 36 dB	Avg Hold: 100/100	DET A NN NN N	
0 dB/div Ref 25.00 dBm			Mkr	1 1.910 960 GHz -27.056 dBm	Auto Tuni
15.0					Center Free 1.910000000 GH
5 00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	7			Start Fre 1.902000000 GH
15.0		h. 1		DL1 -13.00 dEm	Stop Fre 1.918000000 GH
36 0 45 0		hurrin			CF Ste 1.600000 MH Auto Ma
55 0					Freq Offs 0 F
65.0					Scale Typ
Center 1.910000 GHz #Res BW 200 kHz	#VBW	520 kHz*	Sweep	Span 16.00 MHz 1.000 ms (1001 pts)	Log <u>Li</u>
50			STATL		-

Plot 7-305. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-306. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL RF 50Ω AC	PNO: Fast	SENSE:INT	#Avg Type: RMS Avg Hold: 100/100	01:44:18 PM Jul 05, 2018 TRACE 2 3 4 5 0 TYPE A	Frequency
-	IFGain:Low	Atten: 36 dB	And a subscription	1.915 000 GHz	Auto Tun
0 dB/div Ref 25.00 dBm				-26.852 dBm	
15.0					Center Fre 1.915000000 GH
5.00	menteren	7			Start Fre 1.907000000 GH
i5 0				DL1 -13 00 dBm	Stop Fre
45.0		higher	manuna antina	man	CF Ste 1.600000 MF Auto Ma
					Freq Offs 01
center 1.915000 GHz				Span 16.00 MHz	Scale Typ
Res BW 200 kHz	#VBW	620 kHz*	Sweep	.000 ms (1001 pts)	

Plot 7-307. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-308. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Band 30



Plot 7-309. Lower Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-310. Lower Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL	RF 50 Ω	AC COF	REC	SEN	(SE:INT	-			M Jun 26, 2018	Freq	uency
			IO: Wide 🔸	Trig: Free Atten: 36		#Avg Typ	e: RMS	TY	E 1 2 3 4 5 0 PE A WWWWW A NNNNN		
0 dB/div	Ref 25.00 c	IBm					Mkr	1 2.315 -30.3	00 GHz 64 dBm	A	uto Tun
15.0											nter Fre 00000 GH
5.00	man	marrow	-varno-	m							tart Fre
150					i —				061-13.00 dBm		top Fre
45.0					have					1.00 <u>Auto</u>	CF Ste
45.0 55.0						and a start of the	and the second s	a-man	en han han han han han han han han han ha	Fre	e q Offs 0 H
	315000 GHz 47 kHz		#VBW	150 kHz			Sweep 5	Span 1 .600 ms	0.00 MHz 1001 pts)		ale Typ
Center 2. #Res BW			#VBW	150 kHz			Sweep 5	.600 ms (0.00 MHz 1001 pts)	Log	

Plot 7-311. Upper Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-312. Upper Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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RL RF 50Ω AC	CORREC	SENSE:INT	#Avg Type: RMS	11:58:20 AM Jun 26, 2018 TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide IFGain:Low	Trig: Free Run Atten: 36 dB		DET A NNNNN	6.7.6
10 dB/div Ref 25.00 dBm			Mkr	1 2.305 000 GHz -32.353 dBm	Auto Tun
15.0					Center Fre 2.305000000 GH
5.00		ſ		- lr	Start Fre 2.301000000 GH
-15.0				DL1 -13.00 dBm	Stop Fre 2.309000000 GH
35.0	~~~~	~~~			CF Ste 800.000 kF Auto Ma
55 0					Freq Offs 0 F
Center 2.305000 GHz				Span 8.000 MHz	Scale Typ
#Res BW 100 kHz	#VBW :	300 kHz	Sweep	1.000 ms (1001 pts)	

Plot 7-313. Lower Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-314. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 182 of 202	
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X RL RF 50Ω AC	PNO: Wide	SENSE:INT Trig: Free Run Atten: 36 dB	#Avg Type: RMS	12:02:21 PM Jun 26, 2018 TRACE 2 3 4 5 0 TYPE A WANN N N	Frequency
o dB/div Ref 25.00 dBm	IF Gall.LOW		Mk	r1 2.315 00 GHz -31.906 dBm	Auto Tun
15.0					Center Fre 2.315000000 GH
5.00	manne	γ			Start Fre 2.310000000 GF
15.0				DL1 -13.00 dBm	Stop Fre 2.320000000 GH
45.0			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		CF Ste 1.000000 Mi <u>Auto</u> Mi
55 0					Freq Offs 01
Center 2.315000 GHz Res BW 100 kHz	#VBW :	300 kHz	Sweep	Span 10.00 MHz 1.267 ms (1001 pts)	Scale Typ Log <u>L</u>

Plot 7-315. Upper Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



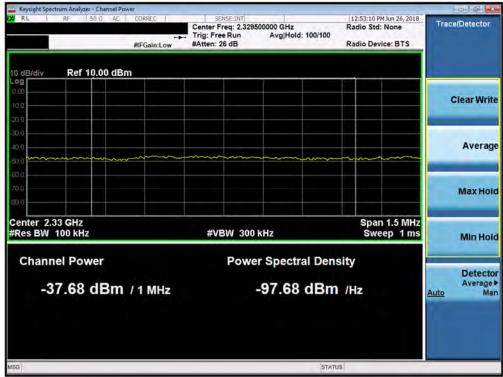
Plot 7-316. Upper Extended Band Edge Plot A (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzes - Channe						- 6 - ×
10 dB/div Ref -14.00	#IFGain:Low		SENSE:UT] Center Freq: 2.328500000 GHz - Trig: Free Run Avg Hold: 100/100 #Atten: 20 dB		Jun 26, 2018 None ce: BTS	Trace/Detector
10 asyaw Ref -14.00						Clear Write
54.0 64.0 74.0						Average
94.0						Max Hold
Center 2.329 GHz #Res BW 100 kHz		#VBW 3001		Swee	1.5 MHz ep 1 ms	Min Hol
Channel Power -38.31 dBr	m / 1 MHz	Power Spectral Density -98.31 dBm /Hz			Detecto Average I <u>Auto</u> Mar	
tSG			STATI	us		

Plot 7-317. Upper Extended Band Edge Plot B (Band 30 - 10.0MHz QPSK - Full RB Configuration)



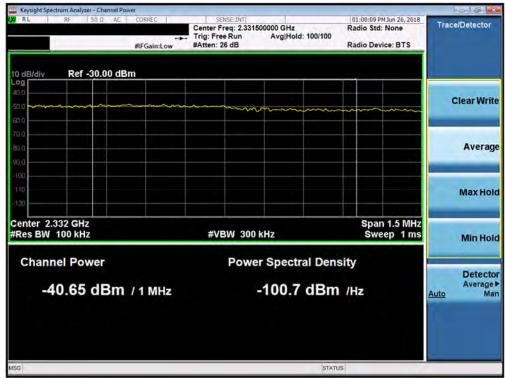
Plot 7-318. Upper Extended Band Edge Plot C (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzes - Channel Power			6 6
RL RF 50 Ω AC CORREC #FGain:Low	SENSE:INT Center Freq: 2.330500000 GHz Trig: Free Run Avg Hold: 100/100 #Atten: 26 dB	12:56:34 PM Jun 26, 2018 Radio Std: None Radio Device: BTS	Trace/Detector
45.00			Clear Write
36.0 46.0 56.0			Averag
86 0 76 0 86 0			Max Hol
Center 2.331 GHz #Res BW 100 kHz	#VBW 300 kHz	Span 1.5 MHz Sweep 1 ms	Min Hol
Channel Power -38.16 dBm / 1 MHz	Power Spectral Density -98.16 dBm /Hz		Detecto Average <u>Auto</u> Ma
ISG	STA	rus	

Plot 7-319. Upper Extended Band Edge Plot D (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-320. Upper Extended Band Edge Plot E (Band 30 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Approved by: Quality Manager
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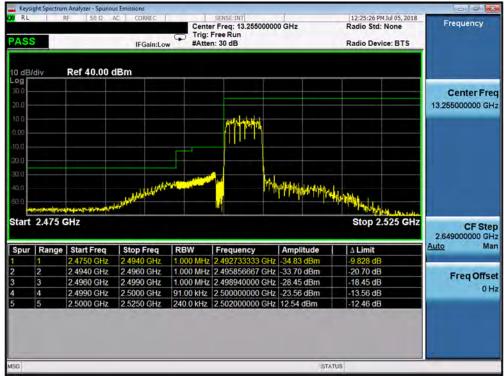


Plot 7-321. Upper Extended Band Edge Plot F (Band 30 - 10.0MHz QPSK - Full RB Configuration)

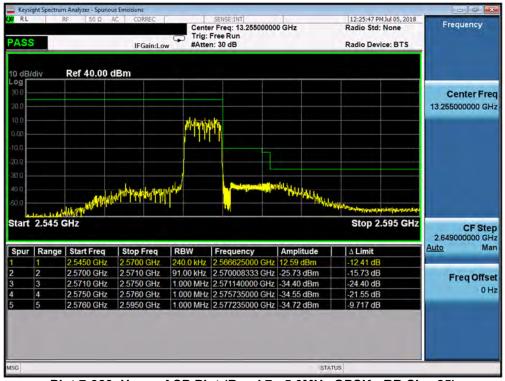
FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Band 7



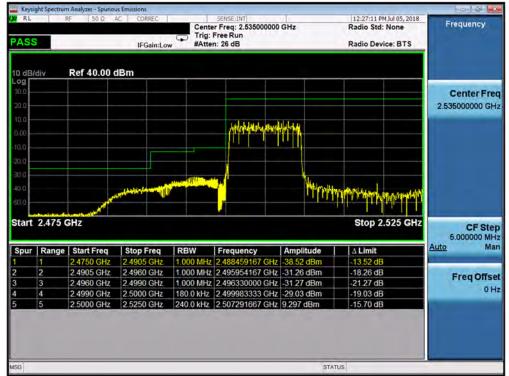
Plot 7-322. Lower ACP Plot (Band 7 - 5.0MHz QPSK - RB Size 25)



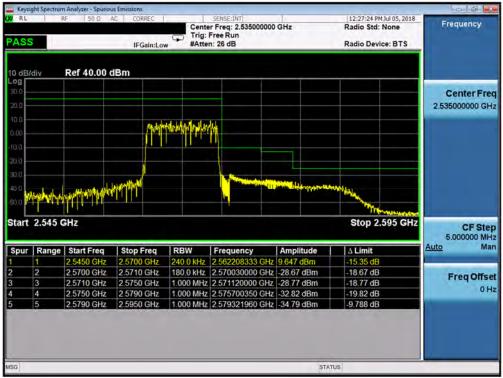
Plot 7-323. Upper ACP Plot (Band 7 - 5.0MHz QPSK - RB Size 25)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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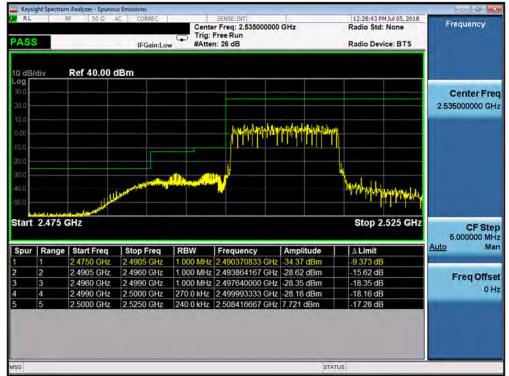
Plot 7-324. Lower ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 50)



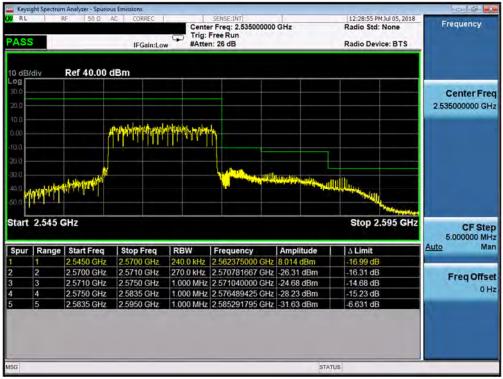
Plot 7-325. Upper ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 50)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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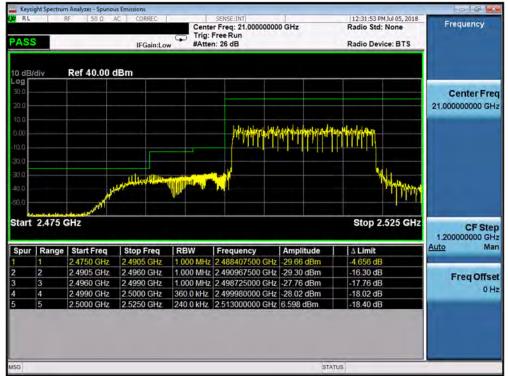
Plot 7-326. Lower ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 75)



Plot 7-327. Upper ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 75)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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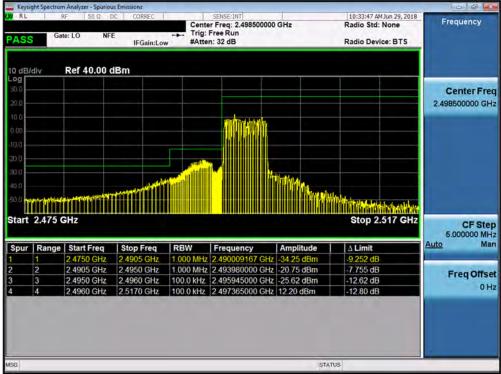
Plot 7-328. Lower ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 100)



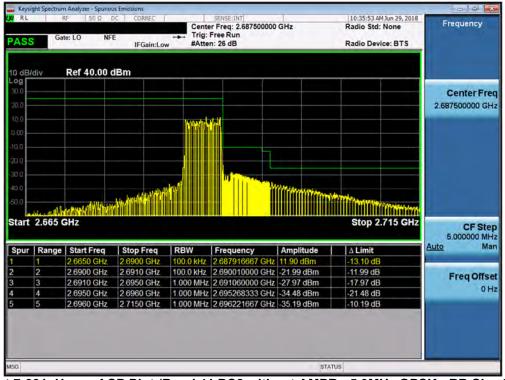
Plot 7-329. Upper ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 100)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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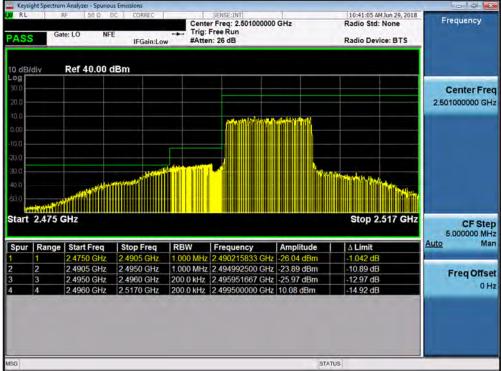
Plot 7-330. Lower ACP Plot at 2496 MHz (Band 41 PC2 without AMPR - 5.0MHz QPSK - RB Size 25)



Plot 7-331. Upper ACP Plot (Band 41 PC2 without AMPR - 5.0MHz QPSK - RB Size 25)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Plot 7-332. Lower ACP Plot at 2496 MHz (Band 41 PC2 without AMPR - 10.0MHz QPSK - RB Size 50)



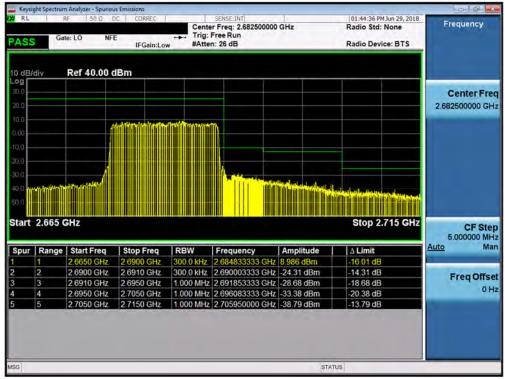
Plot 7-333. Upper ACP Plot (Band 41 PC2 without AMPR - 10.0MHz QPSK - RB Size 50)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Plot 7-334. Lower ACP Plot at 2496 MHz (Band 41 PC2 without AMPR - 15.0MHz QPSK - RB Size 75)



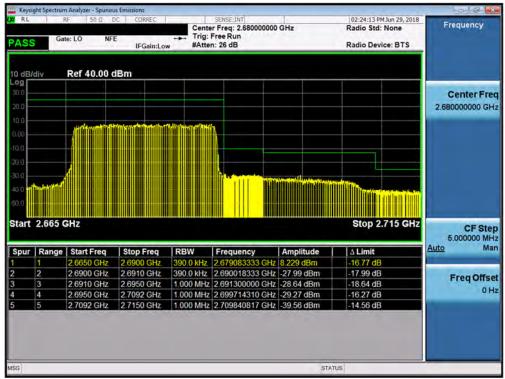
Plot 7-335. Upper ACP Plot (Band 41 PC2 without AMPR - 15.0MHz QPSK - RB Size 75)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Plot 7-336. Lower ACP Plot at 2496 MHz (Band 41 PC2 without AMPR - 20.0MHz QPSK - RB Size 100)



Plot 7-337. Upper ACP Plot (Band 41 PC2 without AMPR- 20.0MHz QPSK - RB Size 100)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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7.5 Peak-Average Ratio

Test Overview

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

Test Procedure Used

KDB 971168 D01 v03r01 - Section 5.7.1

Test Settings

- 1. The signal analyzer's CCDF measurement profile is enabled
- 2. Frequency = carrier center frequency
- 3. Measurement BW > Emission bandwidth of signal
- 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. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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



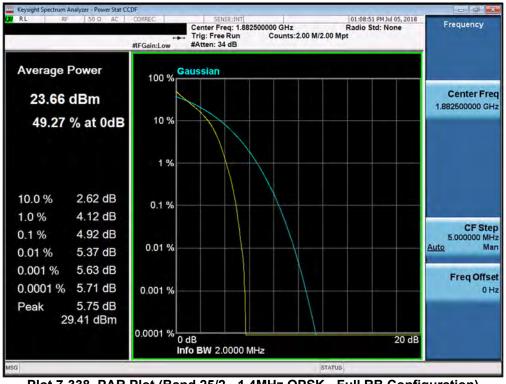
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

None.

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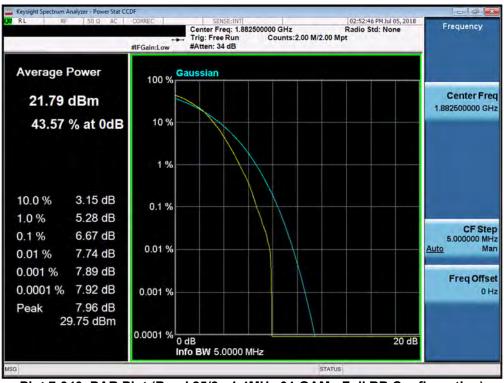


Plot 7-338. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

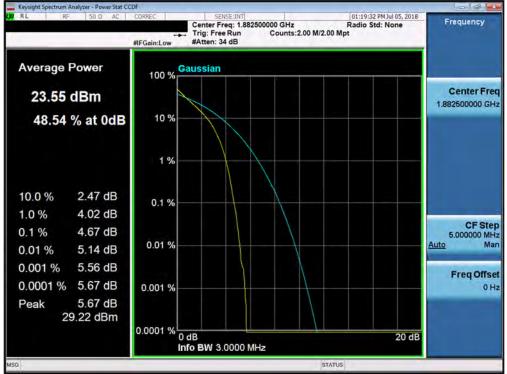


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Plot 7-340. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)



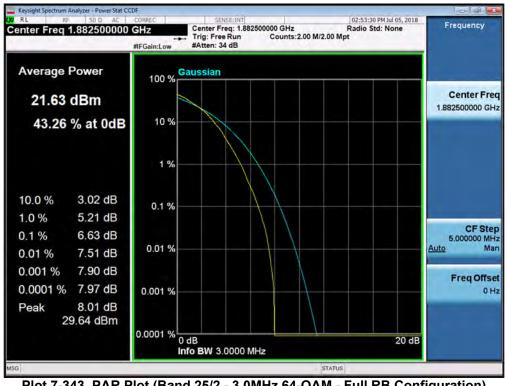
Plot 7-341. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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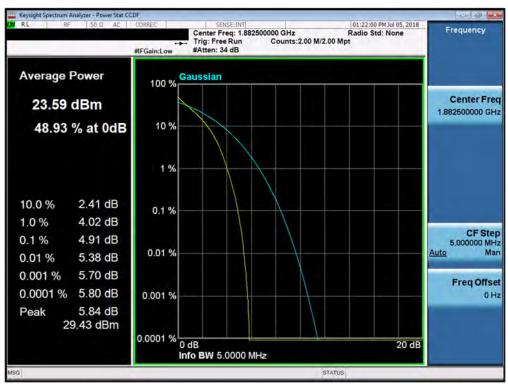
Plot 7-342. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)



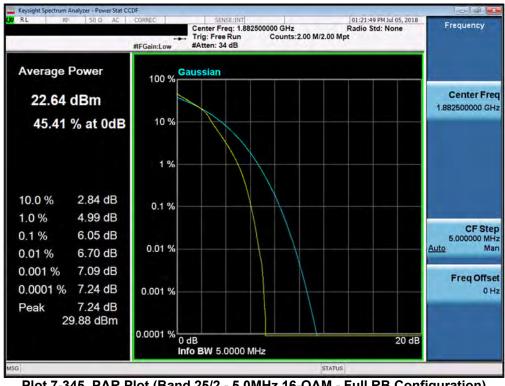
Plot 7-343. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager						
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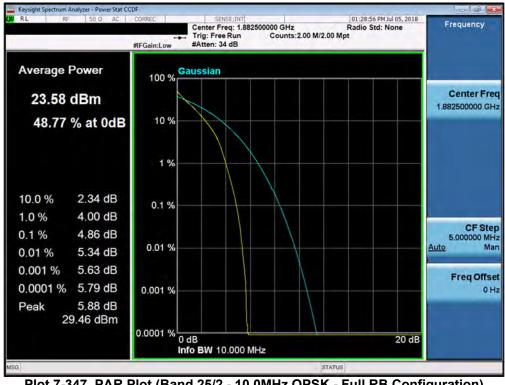
Plot 7-345. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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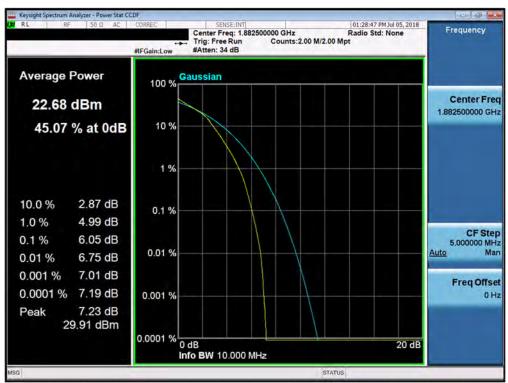




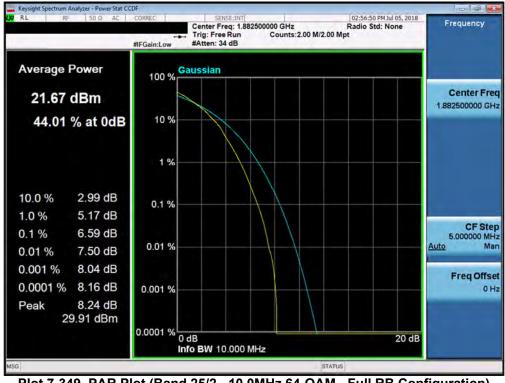
Plot 7-347. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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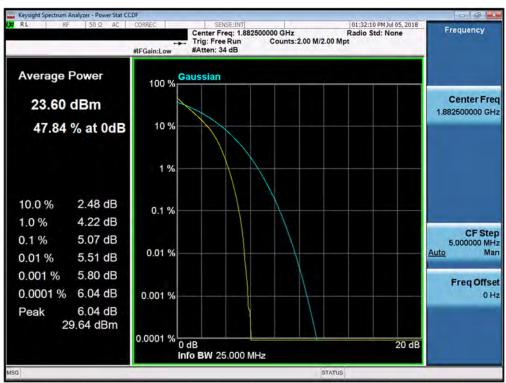


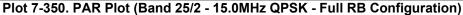


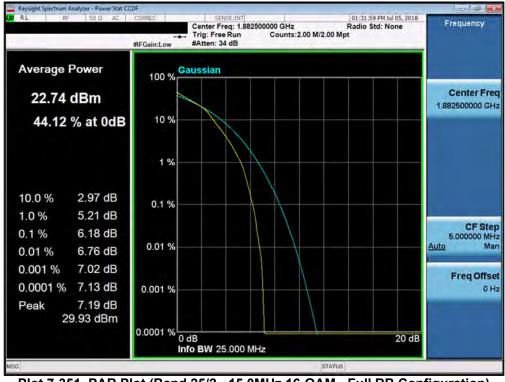
Plot 7-349. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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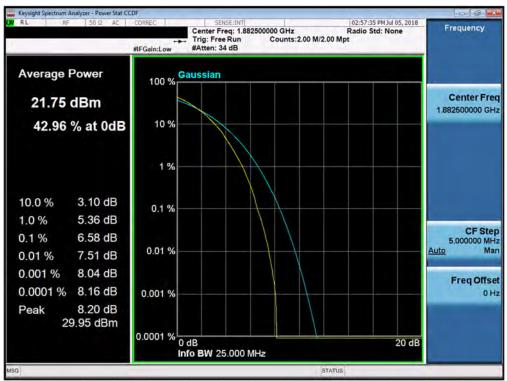




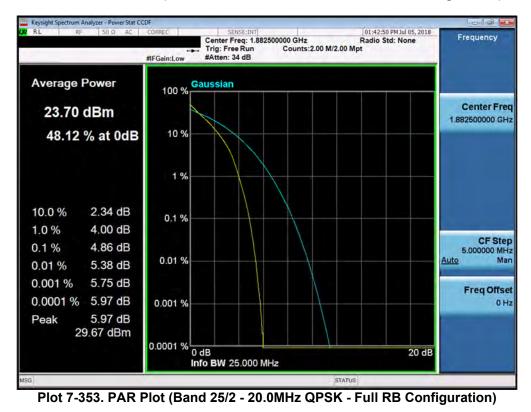
Plot 7-351. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager						
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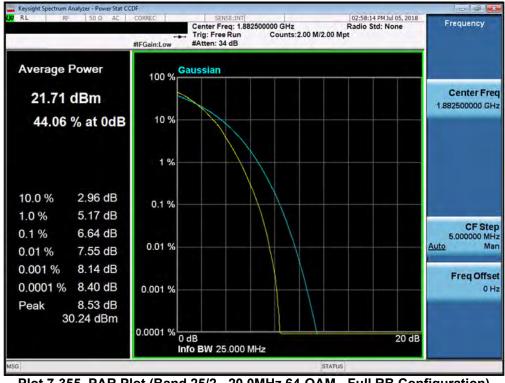


PCTEST Approved by: MEASUREMENT REPORT l-) LG FCC ID: ZNFV405UA (CERTIFICATION) Quality Manager Test Report S/N: Test Dates: EUT Type: Page 203 of 292 1M1806200130-03-R2.ZNF 6/20/2018-8/2/2018 Portable Handset © 2018 PCTEST Engineering Laboratory, Inc. V 8.2 06/14/2018









Plot 7-355. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

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7.6 Additional Maximum Power Reduction (A-MPR) §2.1046

Test Overview

A-MPR is implemented in this device when operating at Power Class 2 in LTE Band 41 per the A-MPR specification in 3GPP TS 36.101. The conducted powers are shown herein to cover the different A-MPR levels specified in the standard. Measurement equipment was set up with triggering/gating on the spectrum analyzer such that powers were measured only during the on-time of the signal.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 5.2.2

Test Settings

- 1. Span = $2 \times OBW$ to $3 \times OBW$
- 2. RBW = 1% to 5% of the OBW
- 3. Number of measurement points in sweep $\geq 2 \times \text{span} / \text{RBW}$
- 4. Sweep = auto-couple (less than transmission burst duration)
- 5. Detector = RMS (power)
- 6. Trigger was set to enable power measurements only on full power bursts
- 7. Trace was allowed to stabilize
- 8. Spectrum analyzer's "Channel Power" function was used to compute the power by integrating the spectrum across the OBW of the signal

Test Setup

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



Figure 7-5. Test Instrument & Measurement Setup

Test Notes

None.

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Test Case	NS	MCC	MNC	Channel BW [MHz]	Channel Number	Channel Frequency [MHz]	Modulation	RB Size	RB Offset	MPR [dB]	MPR [dB]	A-MPR [dB]	A-MPR [dB]	Measured Power [dBm]	Lowest Typical Power [dBm]	Delta [dB]	
							QPSK			0	0		3	24.24	23.7	0.54	
1				5	39675	2498.5	16-QAM	1	0	≤ 1	1	≤3	3	23.23	22.7	0.53	
							64-QAM			≤2	2		3	22.05	21.7	0.35	
0				-	20675	0400 5	QPSK 16 OAM	4	0	0	0		0	27.32	26.7	0.62	
2				5	39675	2498.5	16-QAM 64-QAM	1	9	≤ 1 ≤ 2	2	0	0	26.30 25.01	25.7 24.7	0.60	
							QPSK	1	0	0	0		5	22.43	24.7	0.31	
3				10	39700	2501	16-QAM	1	0	 ≤ 1	1	≤5	5	21.85	20.7	1.15	
-							64-QAM	1	0	≤ 2	2	1	5	19.73	19.7	0.03	
							QPSK	20	0	0	1		2	24.35	23.7	0.65	
4				10	39700	2501	16-QAM	20	0	≤1	2	≤2	2	23.46	22.7	0.76	
							64-QAM	20	0	≤2	3		2	22.32	21.7	0.62	
							QPSK	50	0	0	1	1	3	23.24	22.7	0.54	
5				10	39700	2501	16-QAM	50	0	≤ 1	2	≤3	3	22.34	21.7	0.64	
							64-QAM	50	0	≤2	3		3	21.30	20.7	0.60	
0				10	20700	0504	QPSK 46 OAM	25	20	0	1		1	25.23	24.7	0.53	
6				10	39700	2501	16-QAM 64-QAM	25 25	20 20	≤ 1 ≤ 2	3	≤1	1	24.28 23.22	23.7 22.7	0.58	
							QPSK	 1	36	0	0		0	23.22	22.7	0.52	
7				10	39700	2501	16-QAM	1	36	 ≤ 1	1	0	0	25.92	25.7	0.48	
'				10	33700	2501	64-QAM	1	36	≤ 2	2		0	23.92	24.7	0.22	
							QPSK	1	0	0	0		5	24.32	24.7	0.22	
8				15	39725	2503.5	16-QAM	1	0	 ≤1	1	≤5	5	21.50	20.7	0.80	
-							64-QAM	1	0	≤2	2		5	19.99	19.7	0.29	
							QPSK	20	0	0	1		2	24.37	23.7	0.67	
9	01	312	530	15	39725	2503.5	16-QAM	20	0	≤ 1	2	≤ 2	2	23.24	22.7	0.54	
							64-QAM	20	0	≤2	3		2	22.31	21.7	0.61	
								QPSK	75	0	0	1		4	22.16	21.7	0.46
10				15	39725	2503.5	16-QAM	75	0	≤ 1	2	≤ 4	4	21.27	20.7	0.57	
					64-QAM 75 0 ≤2 3		4	20.29	19.7	0.59							
				45	00705	0500 5	QPSK	50	15	0	1		3	23.23	22.7	0.53	
11				15	39725	2503.5	16-QAM 64-QAM	<u>50</u> 50	15 15	≤1 ≤2	2	≤3	3	22.30 21.29	<u>21.7</u> 20.7	0.60	
							QPSK	1	60	<u>≤</u> 2	3 0		3	21.29	20.7	0.59	
12				15	39725	2503.5	16-QAM	1	60	 ≤1	1	0	0	26.79	25.7	0.09	
12				15	33723	2000.0	64-QAM	1	60	≤ 2	2		0	20.29	23.7	0.59	
							QPSK	1	0	0	0		5	22.40	21.7	0.70	
13				20	39750	2506	16-QAM	1	0	<u> </u>	1	≤ 5	5	21.76	20.7	1.06	
-							64-QAM	1	0	≤ 2	2	1	5	19.99	19.7	0.29	
							QPSK	20	0	0	1		2	24.37	23.7	0.67	
14				20	39750	2506	16-QAM	20	0	≤ 1	2	≤ 2	2	23.48	22.7	0.78	
							64-QAM	20	0	≤ 2	3		2	22.44	21.7	0.74	
							QPSK	100	0	0	1		4	22.27	21.7	0.57	
15				20	39750	2506	16-QAM	100	0	≤ 1	2	≤ 4	4	21.33	20.7	0.63	
							64-QAM	100	0	≤2	3		4	20.33	19.7	0.63	
10					00750	0500	QPSK	75	24	0	1		3	23.15	22.7	0.45	
16				20	39750	2506	16-QAM 64-QAM	75 75	24 24	≤ 1 ≤ 2	2	≤3	3	22.26 21.33	21.7 20.7	0.56	
							QPSK	1	<u></u> 77	<u>≤</u> 2	3 0		0	21.33	20.7	0.63	
17				20	39750	2506	16-QAM	1	77	 ≤1	1	0	0	26.36	25.7	0.06	
17				20	33130	2000	64-QAM	1	77	≤ 2	2		0	20.30	24.7	0.08	
							QPSK	I	11	<u> </u>	2		3	24.78	23.7	0.08	
18	01	311	490	5	39675	2498.5	16-QAM	1	0	 ≤ 1	1	≤ 3	3	23.43	23.7	0.81	
10		511	430	5	33073	2430.3	64-QAM	1	U	≤ 2	2	20	3	23.43	22.7	0.00	
							QPSK			0	0		0	27.32	26.7	0.62	
19	01	001	01	5	39675	2498.5	16-QAM	1	0	 ≤ 1	1	0	0	26.85	25.7	1.15	
		001			00010	2700.0	64-QAM		v	≤ 2	2	1 V	0	25.32	24.7	0.62	

Table 7-3. A-MPR Conducted Power Measurements

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7.7 Uplink Carrier Aggregation §27.53(m)

Test Overview

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

For Band 38/41, the minimum permissible attenuation level of any spurious emission is 55 + log₁₀(P_[Watts]).

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

Test Settings

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

Test Setup

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



Figure 7-6. Test Instrument & Measurement Setup

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- 1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 3.
- 2. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-503 and 7-504 below, with both carriers set to transmit using 1RB.
- 3. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

				PCC							SCC				Power
Power State	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B5	5	20425	826.50	QPSK	1	24	LTE B5	10	20497	833.7	QPSK	1	0	24.81
Max	LTE B5	5	20525	831.60	QPSK	1	24	LTE B5	10	20548	838.8	QPSK	1	0	24.99
Max	LTE B5	5	20625	836.8	QPSK	1	24	LTE B5	10	20600	844	QPSK	1	0	25.25
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	5	20522	836.20	QPSK	1	0	24.88
Max	LTE B5	10	20600	831.6	QPSK	1	49	LTE B5	5	20548	838.80	QPSK	1	0	24.85
Max	LTE B5	10	20550	839	QPSK	1	49	LTE B5	5	20622	846.2	QPSK	1	0	25.24
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.28
Max	LTE B5	10	20600	831.6	QPSK	1	49	LTE B5	10	20575	841.5	QPSK	1	0	25.18
Max	LTE B5	10	20501	834.1	QPSK	1	49	LTE B5	10	20600	844	QPSK	1	0	24.90

Table 7-4. Conducted Powers (B5 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

	PCC SCC						Power								
Power State	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B5	10	20450	829	QPSK	1	0	LTE B5	10	20549	838.9	QPSK	1	49	20.66
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.28
Max	LTE B5	10	20450	829	QPSK	50	0	LTE B5	10	20549	838.9	QPSK	50	0	23.67
Max	LTE B5	10	20450	829	16-QAM	50	0	LTE B5	10	20549	838.9	16-QAM	50	0	22.84
Max	LTE B5	10	20450	829	64-QAM	50	0	LTE B5	10	20549	838.9	64-QAM	50	0	22.82

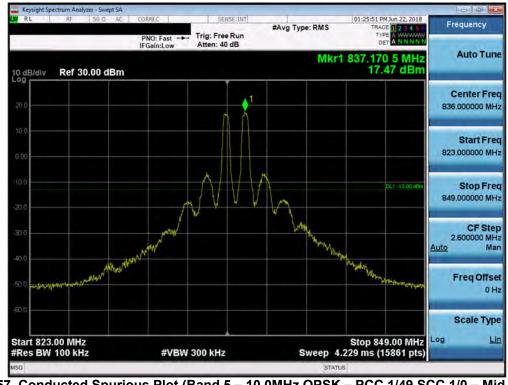
Table 7-5. Conducted Powers (B5 with Various Combinations for 10MHz Channel Bandwidth)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swept S			- 6 -
α RL RF 50Ω A	PNO: Fast	01:23:05 PM Jun 22, 2018 #Avg Type: RMS TRACE 22 4 5 T TVPE 0 DET ANTONIO	Frequency
IO dB/div Ref 20.00 dBr	n	Mkr1 822.35 MHz -57.25 dBm	Auto Tuno
10.0			Center Free 426.500000 MH
10.0		0L1 -13,00 (Be	Start Fre 30.000000 MH
20.0			Stop Fre 823.000000 MF
40.0			CF Ste 79.300000 MH Auto Ma
			Freq Offs 0 F
500 Start 30.0 MHz #Res BW 100 kHz	#VBW 300 kHz	Stop 823.0 MHz Sweep 98.33 ms (15861 pts)	Scale Typ Log <u>L</u>
ISG		STATUS	

Plot 7-356. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)



Plot 7-357. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

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Keysight Spectrum Analyzer - Swept SA			- 6 ×
XI RL RF 50Ω AC	PNO: Fast +++ Trig: Free Run IFGain:Low Atten: 30 dB	01:23:15 PM Jun 22, 2018 #Avg Type: RMS TRACE 23 4 51 TYPE CALL AND DET A NUMBER	Frequency
10 dB/div Ref 20.00 dBm		Mkr1 852.15 MHz -59.74 dBm	Auto Tune
10.0			Center Fred 924.500000 MHz
:10.0		0L1 -1300 eBe	Start Fred 849.000000 MH
-20.0			Stop Fred 1.000000000 GH:
40.0			CF Step 15.100000 MH Auto Mar
68.0 1	an a sharan a sharan a sharan a sharan a sharan a sharan a	ารี เสร็จกระทำสุดเหรี่ พระการสะทำสารสะทำให้สุดทางสะทั่งสารสะทั่งสุด กละสะทั่งสุดไหญ่ การสะการสะการสะ	Freq Offse 0 H
5100 Start 0.84900 GHz #Res BW 100 kHz	#VBW 300 kHz	Stop 1.00000 GHz Sweep 18.72 ms (3021 pts)	Scale Type
MSG		STATUS	

Plot 7-358. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)



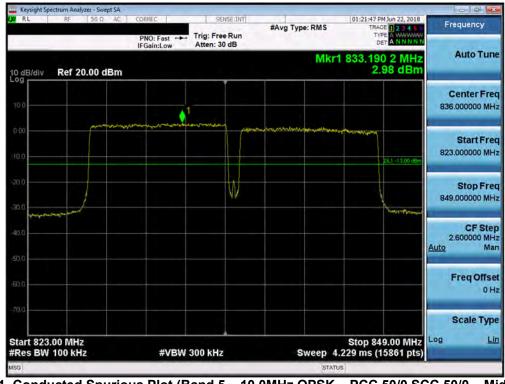
Plot 7-359. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

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Keysight Spectrum Analyzer - Swept SA	CORREC	SENSE:INT		01:18:58 PM Jun 22, 2018	
	PNO: Fast	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 C TYPE A	Frequency
10 dB/div Ref 20.00 dBm			MI	kr1 822.45 MHz -30.39 dBm	Auto Tune
10.0					Center Free 426.500000 MH
10.0				DL1 -13,00 dBm	Start Fre 30.000000 MH
30.0				1	Stop Fre 823.000000 M⊦
40.0					CF Ste 79.300000 MH Auto Ma
50.0		ningini dan manangan te	niky kanadish ni sahalu kana a mana samu		Freq Offs 0 F
70.0 Start 30.0 MHz				Stop 823.0 MHz	Scale Typ
#Res BW 100 kHz	#VBW 3	JU KHZ	Sweep 98	.33 ms (15861 pts)	

Plot 7-360. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - PCC 50/0 SCC 50/0 - Mid Channel)



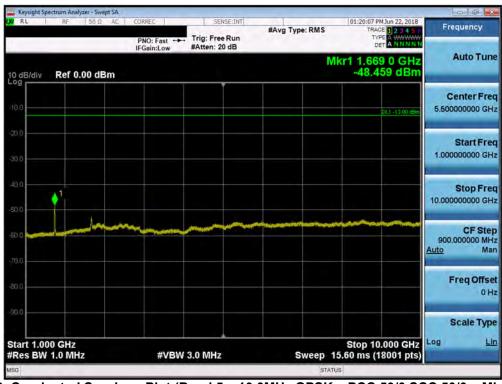
Plot 7-361. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - PCC 50/0 SCC 50/0 - Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕞 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swept SA		SENSE:INT		01:19:11 PM Jun 22, 2018	- 6 -
NC Nº 30.12 At	PNO: Fast	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	TRACE Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	Frequency
0 dB/div Ref 20.00 dBn	n		M	kr1 849.20 MHz -31.50 dBm	Auto Tuno
10 0					Center Fre 924.500000 MH
0.00				DL1 -13,00 eBm	Start Fre 849.000000 MH
30.0 1 30.0 1					Stop Fre 1.000000000 GF
10.0 50.0					CF Ste 15.100000 MH Auto Ma
50.0	⁴ 3444-9444-9444 ⁴ 5-6-944-944-944-944-94	the against stage and so that and so	alite again ete site and guine geologication	n de padro en antes fregorias de la compositionada (Freq Offse 0 F
70.0 Start 0.84900 GHz Res BW 100 kHz	#VBW 3	300 kHz	Sweep	Stop 1.00000 GHz 18.72 ms (3021 pts)	Scale Typ
SG			STATU		

Plot 7-362. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - PCC 50/0 SCC 50/0 - Mid Channel)



Plot 7-363. Conducted Spurious Plot (Band 5 - 10.0MHz QPSK - PCC 50/0 SCC 50/0 - Mid Channel)

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Keysight Spectrum Analyzer - Swept SA RL RF 50 02 4C	CORREC	SENSE:INT		12:29:54 PM Jun 22, 2018	
	PNO: Fast	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 2 3 4 5 0 TYPE A WWWWW DET A NNNNN	Frequency
O dB/div Ref 25.00 dBm			М	kr1 822.68 MHz -27.61 dBm	Auto Tun
15,0					Center Fre 824.000000 MH
5.00			man market	un and a second	Start Fre 809.000000 MH
160 260		•1		DL1-13.00 mBn	Stop Fre 839.000000 MH
15 0	ter and the second	munderstand			CF Ste 3.000000 MH Auto Ma
55.0					Freq Offs 0 F
Center 824.00 MHz Res BW 150 kHz	#VBW	470 kHz	Sweep 1	Span 30.00 MHz .667 ms (1001 pts)	Scale Typ
sg			STATUS		

Plot 7-364. Lower Band Edge Plot (Band 5 - QPSK – PCC:5 MHz SCC:10 MHz – Full RB)



Plot 7-365. Upper Band Edge Plot (Band 5 - QPSK - PCC:10 MHz SCC:5 MHz - Full RB)

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20 RL RF 50Ω AC	PNO: Fast Trig: Fr IFGain:Low Atten:		#Avg Type: RMS	01:07:50 PM Jun 22, 2018 TRACE 2 3 4 5 0 TYPE A WWWWW DET A NNNNN	Frequency
10 dB/div Ref 25.00 dBm			N	/kr1 824.00 MHz -29.034 dBm	Auto Tune
15.0					Center Free 824.000000 MH
500		- Marine Ma Marine Marine Mari	when we we have the	and and a start and a start and a start and a start a st	Start Fre 804.000000 MH
-16.0		1	W	DL1 -13.00 (JB)n	Stop Fre 844.000000 MH
35 0					CF Ster 4.000000 MH Auto Ma
.55.0					Freq Offse 0 H
65.0 Center 824.00 MHz				Span 40.00 MHz	Scale Type
#Res BW 150 kHz	#VBW 470 kH	z	Sweep	2.200 ms (1001 pts)	(ja

Plot 7-366. Lower Band Edge Plot (Band 5 - QPSK – PCC:10 MHz SCC:10 MHz – Full RB)



Plot 7-367. Upper Band Edge Plot (Band 5 - QPSK – PCC:10 MHz SCC:10 MHz – Full RB)

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				PCC							SCC				Power
Power State	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B41	10	39700	2501	QPSK	1	49	LTE B41	20	39844	2515.4	QPSK	1	0	24.88
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	20	40764	2607.4	QPSK	1	0	24.82
Max	LTE B41	20	41396	2670.6	QPSK	1	99	LTE B41	10	41540	2685	QPSK	1	0	24.53
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	15	39875	2518.5	QPSK	1	0	24.09
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	20	39896	2520.6	QPSK	1	0	24.29
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	15	40770	2608	QPSK	1	0	24.76
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	20	40791	2610.1	QPSK	1	0	24.58
Max	LTE B41	15	41365	2667.5	QPSK	1	74	LTE B41	15	41515	2682.5	QPSK	1	0	25.07
Max	LTE B41	20	41344	2665.4	QPSK	1	99	LTE B41	15	41515	2682.5	QPSK	1	0	25.19
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	10	39894	2520.4	QPSK	1	0	24.51
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	15	39921	2523.1	QPSK	1	0	24.44
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.59
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	10	40764	2607.4	QPSK	1	0	24.68
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	15	40791	2610.1	QPSK	1	0	24.30
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	24.28
Max	LTE B41	10	41346	2665.6	QPSK	1	49	LTE B41	20	41490	2680	QPSK	1	0	24.87
Max	LTE B41	15	41319	2662.9	QPSK	1	74	LTE B41	20	41490	2680	QPSK	1	0	25.61
Max	LTE B41	20	41292	2660.2	QPSK	1	99	LTE B41	20	41490	2680	QPSK	1	0	24.91

 Table 7-6. Conducted Powers (B41 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

				PCC							SCC				Power
Power State	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	0	19.07
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	99	20.02
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	99	15.03
Max	LTE B41	20	39750	2506	QPSK	1	50	LTE B41	20	39948	2525.8	QPSK	1	50	19.67
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.59
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	22.48
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	21.42
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	20.36

Table 7-7. Conducted Powers (B41 with Various Combinations for 20MHz Channel Bandwidth)

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RL RF 50 Ω	AC CORREC SENSE:INT	#Avg Type: RMS	TRACE 2 3 4 5 0	Frequency
Gate: LO	PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB	morg type. Kind	DET A NNNNN	
dB/div Ref 20.00 dB	m	Mkr1	2.311 0 GHz -45.66 dBm	Auto Tun
0.0				Center Free 1.263000000 GH
0.0				Start Fre 30.000000 MH
0.0			DL1 -25 00 aBm	Stop Fre 2.49600000 GH
0.0		a ser e se composer a como como como de la como	are aire although	CF Ste 246.600000 MH Auto Ma
D.C				Freq Offse 0 H
tart 0.030 GHz			Stop 2.496 GHz	Scale Typ
Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 1.00	0 ms (4933 pts)	

Table 7-368. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

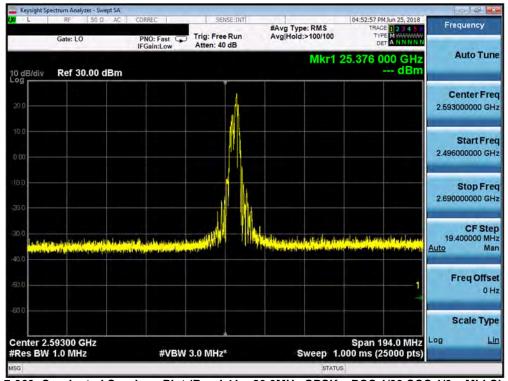


Table 7-369. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL RL	RF 50 Q		SENSE:INT		04:56:19	PM Jun 25, 2018	6 8
	Gate: LO	PNO: Fast 😱	Trig: Free Run Atten: 30 dB	#Avg Type: R	MS TR		Frequency
10 dB/div	Ref 20.00 dB	IFGain:Low	Atten. 30 dB		Mkr1 14.40 -40	61 0 GHz).15 dBm	Auto Tune
10.0							Center Free 8.845000000 GH
0.00							Start Fre 2,69000000 GH
-30.0						01,1 -25 00 d 01	Stop Fre 15.00000000 GF
-40.0	lin sile - Lanker, weeks			and my history of the state	en mandrasia internet anticipie		CF Ste 1.231000000 GH Auto Ma
60.0							Freq Offse 0 H
5tart 2.69		#\/BW	3.0 MHz	Swa	Stop 1 ep 1.000 ms (5.000 GHz	Scale Typ
ISG	1011112	# 4 D 44	0.0 10112	OWC	STATUS	EroEr p(s)	

Table 7-370. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

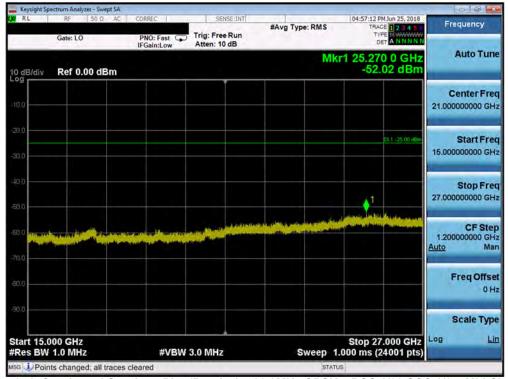


Table 7-371. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swept		04:45:44 PM Jun 25, 2018	00
Gate: LO	PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB	#Avg Type: RMS TRACE 2 2 4 5 CTP	Frequency
IO dB/div Ref 20.00 dE	3m	Mkr1 2.496 0 GHz -44.59 dBm	Auto Tun
10.0			Center Fre 1.263000000 GH
0,0			Start Fre 30.000000 Mi
20.0		0L1 -25 00 dBm	Stop Fr 2.496000000 G
40.0		1	CF Ste 246.600000 Mi <u>Auto</u> Mi
50.0 60.0	nen han fan han fer linne fer fer fer fer fer fer fer fer fer fe		Freq Offs 01
78.0 Start 0.030 GHz		Stop 2.496 GHz	Scale Typ
#Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 1.000 ms (4933 pts)	

Table 7-372. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

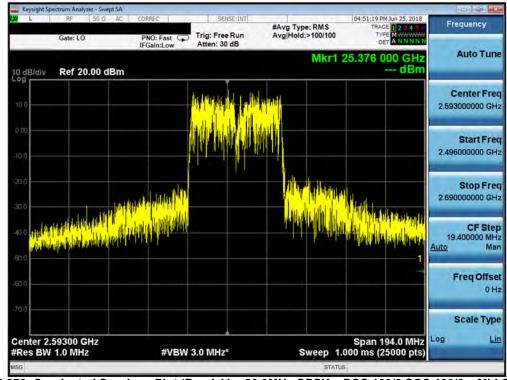


Table 7-373. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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RL RF 50 Ω AC	CORREC	SENSE:INT		04:46:21 PM Jun 25, 2018	Frequency
Gate: LO		Trig: Free Run Atten: 30 dB	#Avg Type: RMS	TYPE MWWWWW DET A NNNN	Frequency
0 dB/div Ref 20.00 dBm			Mk	1 14.693 5 GHz -39.40 dBm	Auto Tune
10.0					Center Free 8.845000000 GH
0.00					Start Fre 2,690000000 GH
0.0				0L1 -25 00 dBm	Stop Fre 15.00000000 GF
	145 million de familie.	. ///			CF Ste 1.231000000 GH Auto Ma
50.0					Freq Offso 0 H
tart 2.690 GHz				Stop 15.000 GHz	Scale Typ
Res BW 1.0 MHz	#VBW 3.	0 MHz	Sweep 1.	000 ms (24621 pts)	

Table 7-374. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

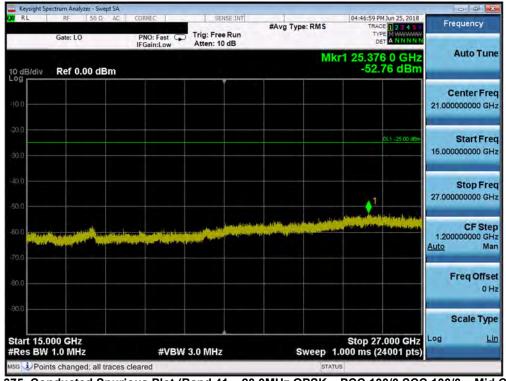


Table 7-375. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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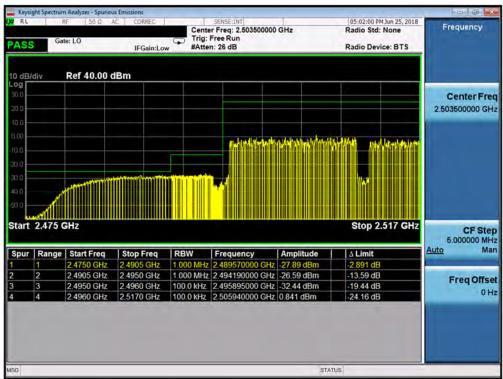


Table 7-376. Lower ACP Plot (Band 41 QPSK – PCC:15 MHz SCC:20 MHz – Full RB)

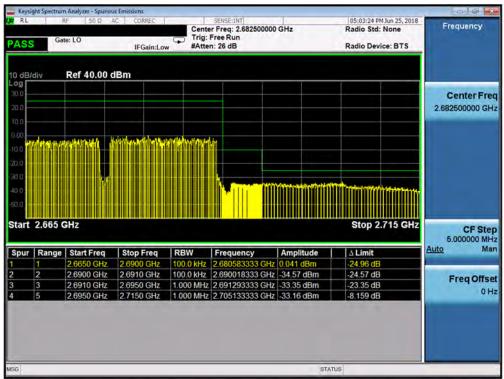


Table 7-377. Upper ACP Plot (Band 41 QPSK – PCC:15 MHz SCC:20 MHz – Full RB)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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PASS	RF 50 Ω Gate: LO	AC CORREC	Trig:	SENSE:INT er Freq: 2.506000000 Free Run n: 26 dB	GHz	04:58:47 PM Jun 25, 2011 Radio Std: None Radio Device: BTS	8 Frequency
10 dB/di	Ref 40.00	dBm					
30.0							Center Free 2.506000000 GH
0.00 10.0				jineite dei	er hat hirer	nyarita ni ang	
20.0 30.0	Lawren and The			1.4			
40.0							
50.0							
and the second	2.475 GHz					Stop 2.517 GH	5.000000 MH
start 2	2.475 GHz Range Start Freq	Stop Freq	RBW	Frequency	Amplitude	Stop 2.517 GH	CF SIE
Start 2	Range Start Freq 1 2.4750 GHz	2.4905 GHz	1.000 MHz	2.488898333 GHz	-27.74 dBm	Δ Limit -2.744 dB	5.000000 MH
Start 2	Range Start Freq 1 2.4750 GHz 2 2.4905 GHz	2.4905 GHz 2.4950 GHz	1.000 MHz 1.000 MHz	2.488898333 GHz 2.490597500 GHz	-27.74 dBm -26.89 dBm	Δ Limit -2.744 dB -13.89 dB	5.00000 MH Auto Ma
Start 2	Range Start Freq 1 2.4750 GHz 2 2.4905 GHz 3 2.4950 GHz	2.4905 GHz 2.4950 GHz 2.4960 GHz	1.000 MHz 1.000 MHz 100.0 kHz	2.488898333 GHz	-27.74 dBm -26.89 dBm -28.78 dBm	Δ Limit -2.744 dB	5.000000 MH

Table 7-378. Lower ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

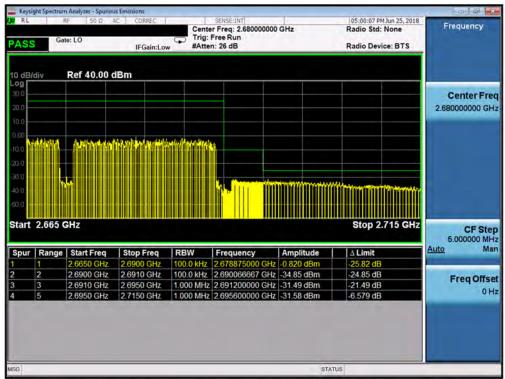


Table 7-379. Upper ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

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7.8 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

- Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW \geq 3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points \geq 2 x span / RBW
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

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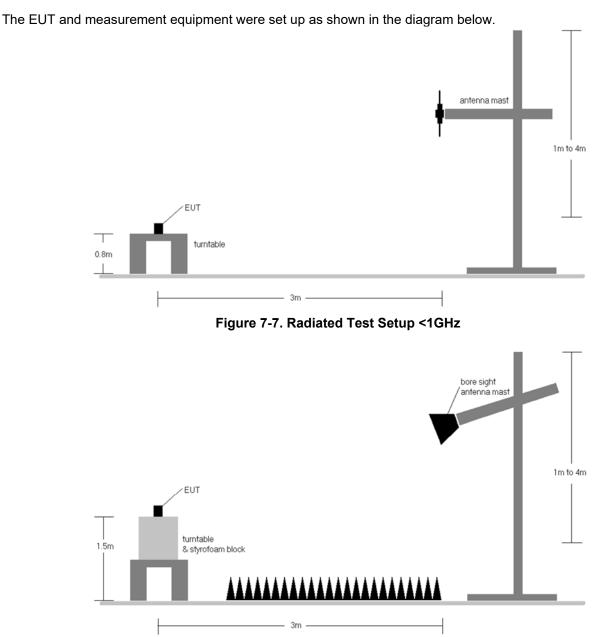


Figure 7-8. Radiated Test Setup >1GHz

Test Notes

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

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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]
665.50	5	QPSK	Н	150	7	1 / 0	17.18	1.10	16.13	0.041	34.77	-18.64
680.50	5	QPSK	н	150	80	1 / 0	18.17	1.10	17.12	0.052	34.77	-17.65
695.50	5	QPSK	Н	150	33	1 / 0	18.47	1.10	17.42	0.055	34.77	-17.35
695.50	5	16-QAM	Н	150	33	1 / 0	17.84	1.10	16.79	0.048	34.77	-17.98
695.50	5	64-QAM	Н	150	33	1 / 0	16.61	1.10	15.56	0.036	34.77	-19.21
668.00	10	QPSK	Н	150	8	1 / 0	16.78	1.10	15.73	0.037	34.77	-19.04
680.50	10	QPSK	Н	150	81	1 / 0	18.21	1.10	17.16	0.052	34.77	-17.61
693.00	10	QPSK	Н	150	335	1 / 0	17.87	1.10	16.82	0.048	34.77	-17.95
680.50	10	16-QAM	н	150	81	1 / 0	17.37	1.10	16.32	0.043	34.77	-18.45
680.50	10	64-QAM	н	150	81	1 / 0	16.50	1.10	15.45	0.035	34.77	-19.32
670.50	15	QPSK	Н	150	9	1 / 0	17.00	1.10	15.95	0.039	34.77	-18.82
680.50	15	QPSK	Н	150	83	1 / 0	17.58	1.10	16.53	0.045	34.77	-18.24
690.50	15	QPSK	Н	150	330	1 / 0	17.71	1.10	16.66	0.046	34.77	-18.11
690.50	15	16-QAM	Н	150	330	1 / 0	16.71	1.10	15.66	0.037	34.77	-19.11
690.50	15	64-QAM	Н	150	330	1 / 0	15.82	1.10	14.77	0.030	34.77	-20.00
673.00	20	QPSK	Н	150	12	1 / 0	16.78	1.10	15.73	0.037	34.77	-19.04
683.00	20	QPSK	Н	150	81	1 / 0	16.79	1.10	15.74	0.037	34.77	-19.03
688.00	20	QPSK	Н	150	325	1/0	17.75	1.10	16.70	0.047	34.77	-18.07
688.00	20	16-QAM	Н	150	325	1/0	16.98	1.10	15.93	0.039	34.77	-18.84
688.00	20	64-QAM	Н	150	325	1 / 0	16.09	1.10	15.04	0.032	34.77	-19.73
695.50	5	QPSK	V	150	238	1/0	16.50	1.10	15.45	0.035	34.77	-19.32
695.50	5 (WCP)	QPSK	н	150	25	1/0	18.24	1.10	17.19	0.052	34.77	-17.58

Table 7-8. ERP Data (Band 71)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	н	150	35	1/0	17.59	1.10	16.54	0.045	34.77	-18.23	18.69	0.074	36.99	-18.30
707.50	1.4	QPSK	н	150	24	1/0	17.87	1.13	16.85	0.048	34.77	-17.92	19.00	0.079	36.99	-17.99
715.30	1.4	QPSK	н	150	18	1/0	18.21	1.16	17.22	0.053	34.77	-17.55	19.37	0.087	36.99	-17.62
715.30	1.4	16-QAM	н	150	18	1/0	17.14	1.16	16.15	0.041	34.77	-18.62	18.30	0.068	36.99	-18.69
715.30	1.4	64-QAM	н	150	18	1/0	16.28	1.16	15.29	0.034	34.77	-19.48	17.44	0.055	36.99	-19.55
700.50	3	QPSK	н	150	21	1/0	17.42	1.10	16.37	0.043	34.77	-18.40	18.52	0.071	36.99	-18.47
707.50	3	QPSK	н	150	32	1/0	17.64	1.13	16.62	0.046	34.77	-18.15	18.77	0.075	36.99	-18.22
714.50	3	QPSK	н	150	18	1/0	18.21	1.16	17.22	0.053	34.77	-17.55	19.37	0.086	36.99	-17.62
714.50	3	16-QAM	н	150	18	1/0	17.13	1.16	16.14	0.041	34.77	-18.63	18.29	0.067	36.99	-18.70
714.50	3	64-QAM	н	150	18	1/0	16.26	1.16	15.27	0.034	34.77	-19.50	17.42	0.055	36.99	-19.57
715.30	1.4	QPSK	V	150	20	1/0	16.80	1.16	15.81	0.038	34.77	-18.96	17.96	0.063	36.99	-19.03
715.30	1.4 (WCP)	QPSK	н	150	26	1/0	17.45	1.16	16.46	0.044	34.77	-18.31	18.61	0.073	36.99	-18.38

Table 7-9. 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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
701.50	5	QPSK	н	150	23	1/0	17.58	1.11	16.54	0.045	34.77	-18.24	18.69	0.074	36.99	-18.30
707.50	5	QPSK	н	150	31	1/0	17.29	1.13	16.27	0.042	34.77	-18.50	18.42	0.070	36.99	-18.57
713.50	5	QPSK	н	150	23	1/0	17.92	1.15	16.92	0.049	34.77	-17.85	19.07	0.081	36.99	-17.92
713.50	5	16-QAM	н	150	23	1/0	17.02	1.15	16.02	0.040	34.77	-18.75	18.17	0.066	36.99	-18.82
713.50	5	64-QAM	н	150	23	1/0	16.12	1.15	15.12	0.033	34.77	-19.65	17.27	0.053	36.99	-19.72
704.00	10	QPSK	н	150	28	1/0	17.65	1.12	16.62	0.046	34.77	-18.15	18.77	0.075	36.99	-18.22
707.50	10	QPSK	н	150	264	1/0	17.56	1.13	16.54	0.045	34.77	-18.23	18.69	0.074	36.99	-18.30
711.00	10	QPSK	н	150	87	1/0	17.84	1.14	16.83	0.048	34.77	-17.94	18.98	0.079	36.99	-18.01
711.00	10	16-QAM	н	150	87	1/0	17.16	1.14	16.15	0.041	34.77	-18.62	18.30	0.068	36.99	-18.69
711.00	10	64-QAM	н	150	87	1/0	16.03	1.14	15.02	0.032	34.77	-19.75	17.17	0.052	36.99	-19.82

Table 7-10. ERP Data (Band 12/17)

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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
779.50	5	QPSK	н	150	17	1/0	17.91	1.32	17.08	0.051	34.77	-17.69	19.23	0.084	36.99	-17.76
782.00	5	QPSK	н	150	25	1/0	17.85	1.33	17.03	0.050	34.77	-17.74	19.18	0.083	36.99	-17.81
784.50	5	QPSK	н	150	239	1/0	17.32	1.34	16.51	0.045	34.77	-18.26	18.66	0.073	36.99	-18.33
782.00	5	16-QAM	н	150	25	1/0	17.50	1.33	16.68	0.047	34.77	-18.09	18.83	0.076	36.99	-18.16
782.00	5	64-QAM	н	150	25	1/0	16.71	1.33	15.89	0.039	34.77	-18.88	18.04	0.064	36.99	-18.95
782.00	10	QPSK	н	150	273	1/0	18.34	1.33	17.52	0.056	34.77	-17.25	19.67	0.093	36.99	-17.32
782.00	10	16-QAM	н	150	273	1/0	17.19	1.33	16.37	0.043	34.77	-18.40	18.52	0.071	36.99	-18.47
782.00	10	64-QAM	н	150	273	1/0	16.00	1.33	15.18	0.033	34.77	-19.59	17.33	0.054	36.99	-19.66
782.00	10	QPSK	v	150	28	1/0	14.65	1.33	13.83	0.024	34.77	-20.94	15.98	0.040	36.99	-21.01
782.00	10 (WCP)	QPSK	н	150	17	1/0	18.00	1.33	17.18	0.052	34.77	-17.59	19.33	0.086	36.99	-17.66
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Table 7-11. ERP Data (Band 13)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 225 of 202
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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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	Н	150	28	1/0	17.06	1.50	16.41	0.044	38.45	-22.04	18.56	0.072	40.61	-22.05
836.50	1.4	QPSK	Н	150	25	1/0	17.43	1.50	16.78	0.048	38.45	-21.67	18.93	0.078	40.61	-21.68
848.30	1.4	QPSK	Н	150	18	1/0	17.70	1.50	17.05	0.051	38.45	-21.40	19.20	0.083	40.61	-21.41
836.50	1.4	16-QAM	Н	150	25	1/0	17.02	1.50	16.37	0.043	38.45	-22.08	18.52	0.071	40.61	-22.09
836.50	1.4	64-QAM	Н	150	25	1/0	15.96	1.50	15.31	0.034	38.45	-23.14	17.46	0.056	40.61	-23.15
825.50	3	QPSK	н	150	28	1/0	16.69	1.50	16.04	0.040	38.45	-22.41	18.19	0.066	40.61	-22.42
836.50	3	QPSK	Н	150	25	1/0	17.85	1.50	17.20	0.052	38.45	-21.25	19.35	0.086	40.61	-21.26
847.50	3	QPSK	н	150	18	1/0	17.66	1.50	17.01	0.050	38.45	-21.44	19.16	0.082	40.61	-21.45
836.50	3	16-QAM	н	150	25	1/0	17.07	1.50	16.42	0.044	38.45	-22.03	18.57	0.072	40.61	-22.04
836.50	3	64-QAM	н	150	25	1/0	16.04	1.50	15.39	0.035	38.45	-23.06	17.54	0.057	40.61	-23.07
826.50	5	QPSK	н	150	28	1/0	17.22	1.50	16.57	0.045	38.45	-21.88	18.72	0.074	40.61	-21.89
836.50	5	QPSK	Н	150	25	1/0	18.04	1.50	17.39	0.055	38.45	-21.06	19.54	0.090	40.61	-21.07
846.50	5	QPSK	н	150	18	1/0	17.70	1.50	17.05	0.051	38.45	-21.40	19.20	0.083	40.61	-21.41
836.50	5	16-QAM	н	150	25	1/0	17.17	1.50	16.52	0.045	38.45	-21.93	18.67	0.074	40.61	-21.94
836.50	5	64-QAM	Н	150	25	1/0	16.15	1.50	15.50	0.035	38.45	-22.95	17.65	0.058	40.61	-22.96
829.00	10	QPSK	н	150	12	1/0	17.37	1.50	16.72	0.047	38.45	-21.73	18.87	0.077	40.61	-21.74
836.50	10	QPSK	н	150	10	1 / 49	18.46	1.50	17.81	0.060	38.45	-20.64	19.96	0.099	40.61	-20.65
844.00	10	QPSK	Н	150	20	1/0	17.59	1.50	16.94	0.049	38.45	-21.51	19.09	0.081	40.61	-21.52
836.50	10	16-QAM	Н	150	10	1/0	17.39	1.50	16.74	0.047	38.45	-21.71	18.89	0.077	40.61	-21.72
836.50	10	64-QAM	Н	150	10	1/0	16.50	1.50	15.85	0.038	38.45	-22.60	18.00	0.063	40.61	-22.61
836.50	10	QPSK	V	150	23	1 / 49	15.36	1.50	14.71	0.030	38.45	-23.74	16.86	0.049	40.61	-23.75
836.50	10 (WCP)	QPSK	Н	150	205	1 / 49	18.05	1.50	17.40	0.055	38.45	-21.05	19.55	0.090	40.61	-21.06

Table 7-12. ERP Data (Band 5/26)

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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
15	QPSK	н	150	0	1/0	17.40	1.50	16.75	0.047	38.45	-21.70	18.90	0.078	40.61	-21.71
15	QPSK	Н	150	25	1/0	17.82	1.50	17.17	0.052	38.45	-21.28	19.32	0.086	40.61	-21.29
15	QPSK	н	150	13	1/0	17.94	1.50	17.29	0.054	38.45	-21.16	19.44	0.088	40.61	-21.17
15	16-QAM	н	150	25	1/0	17.35	1.50	16.70	0.047	38.45	-21.75	18.85	0.077	40.61	-21.76
15	64-QAM	Н	150	13	1/0	16.49	1.50	15.84	0.038	38.45	-22.61	17.99	0.063	40.61	-22.62

Table 7-13. ERP Data (Band 26)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	н	150	23	1 / 0	16.70	5.56	22.26	0.168	30.00	-7.74
1745.00	1.4	QPSK	Н	150	34	1 / 0	17.72	5.32	23.04	0.201	30.00	-6.96
1779.30	1.4	QPSK	Н	150	21	1 / 0	18.74	5.09	23.83	0.242	30.00	-6.17
1779.30	1.4	16-QAM	Н	150	21	1 / 0	17.61	5.09	22.70	0.186	30.00	-7.30
1779.30	1.4	64-QAM	н	150	21	1 / 0	16.61	5.09	21.70	0.148	30.00	-8.30
1711.50	3	QPSK	Н	150	356	1/0	16.87	5.55	22.42	0.175	30.00	-7.58
1745.00	3	QPSK	Н	150	175	1 / 14	19.27	5.32	24.59	0.288	30.00	-5.41
1778.50	3	QPSK	н	150	176	1 / 0	19.31	5.10	24.41	0.276	30.00	-5.59
1778.50	3	16-QAM	Н	150	176	1 / 14	18.71	5.10	23.81	0.240	30.00	-6.19
1778.50	3	64-QAM	н	150	176	1 / 14	17.38	5.10	22.48	0.177	30.00	-7.52
1712.50	5	QPSK	Н	150	354	1 / 24	17.93	5.55	23.48	0.223	30.00	-6.52
1745.00	5	QPSK	н	150	185	1 / 24	19.13	5.32	24.45	0.279	30.00	-5.55
1777.50	5	QPSK	н	150	138	1 / 0	19.74	5.10	24.84	0.305	30.00	-5.16
1777.50	5	16-QAM	н	150	138	1 / 0	18.77	5.10	23.87	0.244	30.00	-6.13
1777.50	5	64-QAM	Н	150	138	1 / 0	17.97	5.10	23.07	0.203	30.00	-6.93
1715.00	10	QPSK	н	150	358	1 / 49	18.39	5.53	23.92	0.246	30.00	-6.08
1745.00	10	QPSK	Н	150	186	1 / 49	19.36	5.32	24.68	0.294	30.00	-5.32
1775.00	10	QPSK	н	150	347	1 / 49	19.71	5.12	24.83	0.304	30.00	-5.17
1775.00	10	16-QAM	н	150	347	1 / 49	18.67	5.12	23.79	0.239	30.00	-6.21
1775.00	10	64-QAM	н	150	347	1 / 49	17.94	5.12	23.06	0.202	30.00	-6.94
1717.50	15	QPSK	Н	150	352	1 / 74	18.75	5.51	24.26	0.267	30.00	-5.74
1745.00	15	QPSK	н	150	191	1 / 74	19.56	5.32	24.88	0.308	30.00	-5.12
1772.50	15	QPSK	н	150	239	1 / 74	19.38	5.14	24.52	0.283	30.00	-5.48
1745.00	15	16-QAM	н	150	191	1 / 74	18.41	5.32	23.73	0.236	30.00	-6.27
1745.00	15	64-QAM	Н	150	191	1 / 74	17.28	5.32	22.60	0.182	30.00	-7.40
1720.00	20	QPSK	н	150	238	1 / 99	17.89	5.49	23.38	0.218	30.00	-6.62
1745.00	20	QPSK	Н	150	176	100 / 0	18.45	5.32	23.77	0.238	30.00	-6.23
1770.00	20	QPSK	Н	150	28	1 / 99	18.70	5.15	23.85	0.243	30.00	-6.15
1720.00	20	16-QAM	Н	150	238	1 / 99	16.70	5.49	22.19	0.166	30.00	-7.81
1720.00	20	64-QAM	Н	150	238	1 / 99	15.20	5.49	20.69	0.117	30.00	-9.31
1745.00	20	64-QAM	Н	150	176	1 / 99	15.14	5.32	20.46	0.111	30.00	-9.54
1745.00	15	QPSK	V	150	35	1 / 74	13.99	5.32	19.31	0.085	30.00	-10.69
1745.00	15 (WCP)	QPSK	Н	150	171	1 / 74	19.28	5.32	24.60	0.289	30.00	-5.40

Table 7-14. EIRP Data (Band 4/66)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	Н	150	262	1 / 0	18.18	4.82	23.00	0.199	33.01	-10.01
1882.50	1.4	QPSK	Н	150	235	1 / 0	18.42	4.73	23.15	0.207	33.01	-9.86
1914.30	1.4	QPSK	Н	150	23	1 / 0	17.48	4.68	22.16	0.164	33.01	-10.85
1882.50	1.4	16-QAM	Н	150	235	1 / 0	17.26	4.73	21.99	0.158	33.01	-11.02
1850.70	1.4	64-QAM	н	150	262	1 / 0	16.12	4.82	20.94	0.124	33.01	-12.07
1851.50	3	QPSK	н	150	263	1 / 0	18.36	4.82	23.18	0.208	33.01	-9.83
1882.50	3	QPSK	Н	150	269	1 / 0	18.05	4.73	22.78	0.190	33.01	-10.23
1913.50	3	QPSK	Н	150	84	1 / 0	18.89	4.68	23.57	0.227	33.01	-9.44
1913.50	3	16-QAM	Н	150	269	1 / 0	17.78	4.73	22.51	0.178	33.01	-10.50
1913.50	3	64-QAM	Н	150	269	1 / 0	17.07	4.73	21.80	0.151	33.01	-11.21
1852.50	5	QPSK	н	150	265	1 / 0	19.25	4.81	24.06	0.255	33.01	-8.95
1882.50	5	QPSK	Н	150	238	1 / 0	19.44	4.73	24.17	0.261	33.01	-8.84
1912.50	5	QPSK	Н	150	239	1/0	17.92	4.68	22.60	0.182	33.01	-10.41
1882.50	5	16-QAM	Н	150	238	1/0	17.93	4.73	22.66	0.185	33.01	-10.35
1882.50	5	64-QAM	Н	150	238	1 / 0	17.18	4.73	21.91	0.155	33.01	-11.10
1855.00	10	QPSK	Н	150	270	1 / 0	18.92	4.81	23.73	0.236	33.01	-9.28
1882.50	10	QPSK	Н	150	267	1/0	18.26	4.73	22.99	0.199	33.01	-10.02
1910.00	10	QPSK	Н	150	269	1/0	17.92	4.68	22.60	0.182	33.01	-10.41
1882.50	10	16-QAM	Н	150	267	1/0	17.84	4.73	22.57	0.181	33.01	-10.44
1882.50	10	64-QAM	Н	150	267	1/0	17.11	4.73	21.84	0.153	33.01	-11.17
1857.50	15	QPSK	Н	150	235	1/0	20.29	4.80	25.09	0.323	33.01	-7.92
1882.50	15	QPSK	н	150	267	1/0	19.48	4.73	24.21	0.264	33.01	-8.80
1907.50	15	QPSK	н	150	328	1/0	19.07	4.68	23.75	0.237	33.01	-9.26
1882.50	15	16-QAM	н	150	267	1/0	17.91	4.73	22.64	0.184	33.01	-10.37
1882.50	15	64-QAM	н	150	267	1 / 0	17.10	4.73	21.83	0.153	33.01	-11.18
1860.00	20	QPSK	Н	150	270	1 / 0	20.13	4.79	24.92	0.311	33.01	-8.09
1882.50	20	QPSK	Н	150	269	1 / 0	19.59	4.73	24.32	0.271	33.01	-8.69
1905.00	20	QPSK	Н	150	23	1 / 0	19.21	4.68	23.89	0.245	33.01	-9.12
1882.50	20	16-QAM	Н	150	269	1 / 0	17.80	4.73	22.53	0.179	33.01	-10.48
1882.50	20	64-QAM	Н	150	269	1 / 0	16.93	4.73	21.66	0.147	33.01	-11.35
1857.50	15	QPSK	V	150	29	1 / 0	18.50	4.80	23.30	0.214	33.01	-9.71
1857.50	15 (WCP)	QPSK	н	150	167	1/0	20.47	4.80	25.27	0.336	33.01	-7.74

Table 7-15. EIRP Data (Band 2/25)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	V	150	7	1/0	16.58	5.74	22.32	0.171	23.98	-1.66
2312.50	5	QPSK	V	150	15	1 / 24	16.43	5.74	22.17	0.165	23.98	-1.81
2312.50	5	16-QAM	V	150	15	1 / 24	15.88	5.74	21.62	0.145	23.98	-2.36
2312.50	5	64-QAM	V	150	15	1 / 24	14.72	5.74	20.46	0.111	23.98	-3.52
2310.00	10	QPSK	V	150	312	1/0	16.45	5.74	22.19	0.165	23.98	-1.79
2310.00	10	16-QAM	V	150	312	1/0	15.72	5.74	21.46	0.140	23.98	-2.52
2310.00	10	64-QAM	V	150	312	1/0	14.88	5.74	20.62	0.115	23.98	-3.36
2307.50	5	QPSK	Н	150	210	1/0	14.73	5.74	20.47	0.111	23.98	-3.51
2307.50	5 (WCP)	QPSK	Н	150	210	1/0	14.17	5.74	19.91	0.098	23.98	-4.07

Table 7-16. EIRP Data (Band 30)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	Н	150	350	1/0	14.14	5.74	19.88	0.097	33.01	-13.13
2535.00	5	QPSK	Н	150	9	1/0	15.28	5.86	21.14	0.130	33.01	-11.87
2567.50	5	QPSK	Н	150	355	1/0	14.64	5.98	20.62	0.115	33.01	-12.39
2535.00	5	16-QAM	Н	150	9	1 / 24	14.48	5.86	20.34	0.108	33.01	-12.67
2535.00	5	64-QAM	Н	150	9	1 / 0	13.40	5.86	19.26	0.084	33.01	-13.75
2505.00	10	QPSK	Н	150	2	1 / 49	14.33	5.75	20.08	0.102	33.01	-12.93
2535.00	10	QPSK	Н	150	4	1 / 0	15.12	5.86	20.98	0.125	33.01	-12.03
2565.00	10	QPSK	Н	150	359	1 / 0	15.31	5.97	21.28	0.134	33.01	-11.73
2565.00	10	16-QAM	Н	150	359	1 / 0	14.52	5.97	20.49	0.112	33.01	-12.52
2565.00	10	64-QAM	Н	150	359	1 / 0	13.21	5.97	19.18	0.083	33.01	-13.83
2507.50	15	QPSK	Н	150	353	1 / 74	14.66	5.76	20.42	0.110	33.01	-12.59
2535.00	15	QPSK	Н	150	7	1 / 74	15.05	5.86	20.91	0.123	33.01	-12.10
2562.50	15	QPSK	Н	150	3	1 / 0	15.44	5.96	21.40	0.138	33.01	-11.61
2562.50	15	16-QAM	Н	150	3	1 / 0	14.78	5.96	20.74	0.119	33.01	-12.27
2562.50	15	64-QAM	Н	150	3	1 / 0	13.56	5.96	19.52	0.090	33.01	-13.49
2510.00	20	QPSK	Н	150	5	1 / 99	13.91	5.77	19.68	0.093	33.01	-13.33
2535.00	20	QPSK	н	150	3	1 / 99	15.26	5.86	21.12	0.129	33.01	-11.89
2560.00	20	QPSK	Н	150	8	1 / 0	15.44	5.95	21.39	0.138	33.01	-11.62
2560.00	20	16-QAM	Н	150	8	1 / 0	14.55	5.95	20.50	0.112	33.01	-12.51
2560.00	20	64-QAM	Н	150	8	1 / 0	13.73	5.95	19.68	0.093	33.01	-13.33
2562.50	15	QPSK	V	150	239	1 / 0	16.11	5.96	22.07	0.161	33.01	-10.94
2562.50	15 (WCP)	QPSK	Н	150	21	1/0	16.36	5.96	22.32	0.171	33.01	-10.69

Table 7-17. EIRP Data (Band 7)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	н	150	179	1 / 0	20.29	5.73	26.02	0.400	33.01	-6.99
2593.00	5	QPSK	Н	150	175	1 / 0	20.20	6.07	26.27	0.424	33.01	-6.74
2687.50	5	QPSK	н	150	14	1 / 24	17.78	6.48	24.26	0.267	33.01	-8.75
2498.50	5	16-QAM	Н	150	179	1 / 0	19.43	5.73	25.16	0.328	33.01	-7.85
2593.00	5	64-QAM	Н	150	175	1 / 0	18.21	6.07	24.28	0.268	33.01	-8.73
2501.00	10	QPSK	Н	150	185	1 / 0	18.92	5.73	24.65	0.292	33.01	-8.36
2593.00	10	QPSK	Н	150	190	1 / 49	19.28	6.07	25.35	0.343	33.01	-7.66
2685.00	10	QPSK	Н	150	18	1 / 0	17.38	6.47	23.85	0.243	33.01	-9.16
2593.00	10	16-QAM	Н	150	190	1 / 49	18.72	6.07	24.79	0.301	33.01	-8.22
2593.00	10	64-QAM	Н	150	190	1 / 49	17.61	6.07	23.68	0.233	33.01	-9.33
2503.50	15	QPSK	Н	150	189	1 / 0	19.85	5.74	25.59	0.363	33.01	-7.42
2593.00	15	QPSK	Н	150	69	1 / 0	20.47	6.07	26.54	0.451	33.01	-6.47
2682.50	15	QPSK	Н	150	68	1 / 0	18.62	6.46	25.08	0.322	33.01	-7.93
2503.50	15	16-QAM	Н	150	189	1 / 0	17.77	5.74	23.51	0.225	33.01	-9.50
2503.50	15	64-QAM	Н	150	189	1 / 0	17.22	5.74	22.96	0.198	33.01	-10.05
2506.00	20	QPSK	Н	150	750	1 / 99	20.04	5.75	25.79	0.380	33.01	-7.22
2593.00	20	QPSK	Н	150	67	1 / 0	21.07	6.07	27.14	0.518	33.01	-5.87
2680.00	20	QPSK	Н	150	35	1/0	16.92	6.45	23.37	0.217	33.01	-9.64
2593.00	20	16-QAM	Н	150	67	1 / 0	18.76	6.07	24.83	0.304	33.01	-8.18
2593.00	20	64-QAM	Н	150	67	1 / 0	17.49	6.07	23.56	0.227	33.01	-9.45
2593.00	20	QPSK	V	150	29	1 / 0	19.92	6.07	25.99	0.397	33.01	-7.02
2593.00	20 (WCP)	QPSK	Н	150	35	1 / 0	20.25	6.07	26.32	0.429	33.01	-6.69
2593.00	20 (PC3)	QPSK	Н	150	28	1 / 99	17.52	6.07	23.59	0.229	33.01	-9.42

Table 7-18. EIRP Data (Band 41 PC2)

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7.9 Radiated Spurious Emissions Measurements

Test Overview

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

Test Procedures Used

KDB 971168 D01 v03r01 - Section 5.8

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

Test Settings

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

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EUT turntable styrofoam block 3m

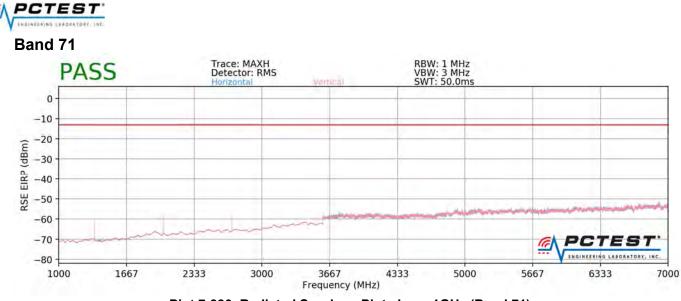
The EUT and measurement equipment were set up as shown in the diagram below.

Figure 7-9. 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.

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Plot 7-380. Radiated Spurious Plot above 1GHz (Band 71)

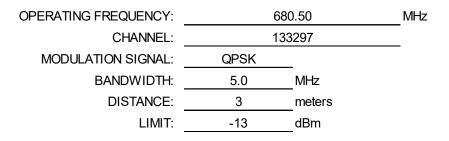
OPERATING FREQUENCY:	66	5.50 Mł	Ηz
CHANNEL:	133	3147	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
1331.00	Н	163	120	-56.51	3.73	-52.78	-39.8
1996.50	Н	297	94	-61.85	4.62	-57.23	-44.2
2662.00	Н	121	100	-64.29	6.37	-57.92	-44.9
3327.50	Н	-	-	-71.78	7.88	-63.89	-50.9

Table 7-19. Radiated Spurious Data with WCP (Band 71 – Low Channel)

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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Antonna Gain	Spurious Emission Level [dBm]	Margin [dB]
1361.00	Н	199	199	-59.15	4.00	-55.14	-42.1
2041.50	Н	135	90	-56.29	4.89	-51.41	-38.4
2722.00	Н	154	100	-64.58	6.64	-57.94	-44.9
3402.50	Н	-	-	-71.29	7.99	-63.30	-50.3

Table 7-20. Radiated Spurious Data with WCP (Band 71 – Mid Channel)

OPERATING FREQUENCY:	69	MHz	
CHANNEL:	13	_	
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]
1391.00	Н	133	199	-65.05	4.27	-60.78	-47.8
2086.50	Н	244	87	-55.68	5.17	-50.51	-37.5
2782.00	Н	204	93	-70.98	6.90	-64.08	-51.1
3477.50	Н	-	-	-72.57	8.40	-64.17	-51.2

Table 7-21. Radiated Spurious Data with WCP (Band 71 – High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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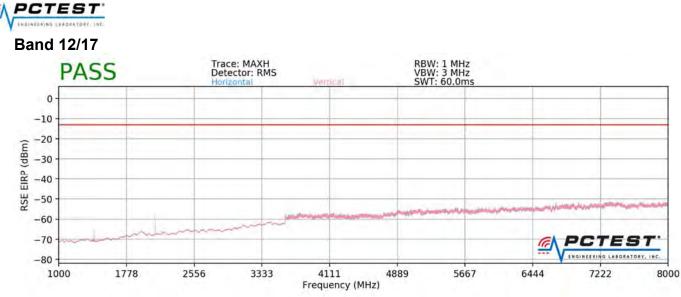


OPERATING FREQUENCY:	695	5.50 MH	łz
CHANNEL:	133447		
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
1391.00	Н	117	316	-70.52	4.27	-66.25	-53.2
2086.50	Н	149	148	-64.49	5.17	-59.32	-46.3
2782.00	Н	115	188	-71.22	6.90	-64.32	-51.3
3477.50	н	-	-	-73.35	8.40	-64.95	-52.0

Table 7-22. Radiated Spurious Data (Band 71 - High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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OPERATING FREQUENCY:	70	1.50	MHz
CHANNEL:	23		
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]
1403.00	Н	310	289	-75.17	4.35	-70.82	-57.8
2104.50	Н	125	92	-68.79	5.25	-63.54	-50.5
2806.00	Н	-	-	-74.77	6.97	-67.80	-54.8

Table 7-23. Radiated Spurious Data (Band 12/17 – Low Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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OPERATING FREQUENCY:	707	7.50 MHz
CHANNEL:	230	095
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]	Antonna Gain	Spurious Emission Level [dBm]	Margin [dB]
1415.00	Н	191	207	-76.50	4.56	-71.94	-58.9
2122.50	Н	232	94	-69.79	5.31	-64.49	-51.5
2830.00	н	-	-	-74.47	7.02	-67.45	-54.5

Table 7-24. Radiated Spurious Data (Band 12/17 – Mid Channel)

OPERATING FREQUENCY:	71	3.50	MHz
CHANNEL:	23	155	
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	380	243	-76.74	4.77	-71.98	-59.0
2140.50	Н	256	82	-71.63	5.36	-66.28	-53.3
2854.00	Н	-	-	-74.86	7.06	-67.80	-54.8

Table 7-25. Radiated Spurious Data (Band 12/17 – High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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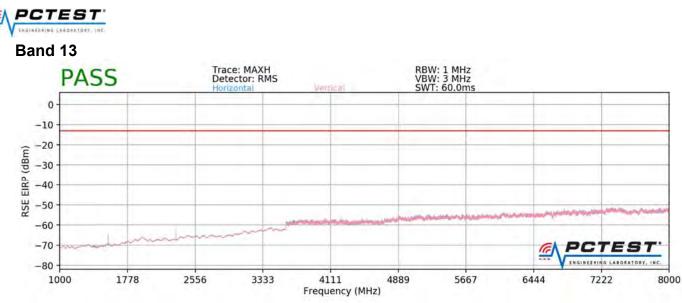


OPERATING FREQUENCY:	715	5.30 MHz
CHANNEL:	23	173
MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

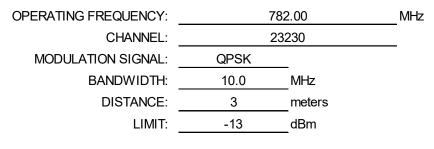
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Antonna Gain	Spurious Emission Level [dBm]	Margin [dB]
1430.60	Н	131	207	-73.72	4.77	-68.96	-56.0
2145.90	Н	172	15	-62.07	5.36	-56.72	-43.7
2861.20	Н	-	-	-75.14	7.06	-68.08	-55.1

Table 7-26. Radiated Spurious Data with WCP (Band 12/17 – High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Plot 7-382. 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]
2346.00	Н	186	14	-59.51	5.72	-53.79	-40.8
3128.00	Н	-	-	-69.53	6.93	-62.60	-49.6

Table 7-27. Radiated Spurious Data (Band 13 – Mid Channel)

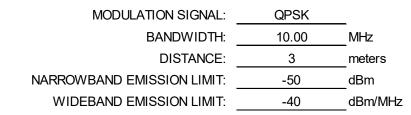
FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

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]
1564.00	Н	191	202	-80.87	5.88	-74.99	-35.0

Table 7-28. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)



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]
1564.00	Н	158	116	-80.91	5.88	-75.03	-35.0

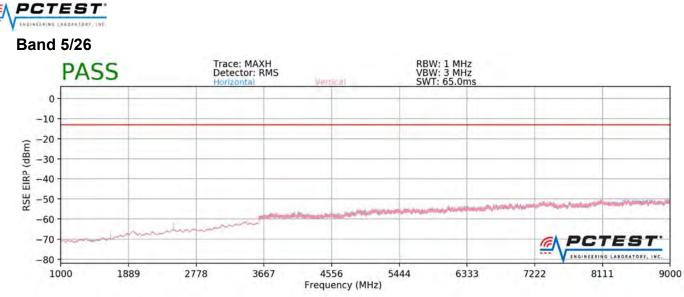
Table 7-29. Radiated Spurious Data with WCP (Band 13 – 1559-1610MHz Band)

OPERATING FREQUENCY:	782	2.00	MHz
CHANNEL:	23	230	
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]
2346.00	Н	241	220	-66.64	5.72	-60.92	-47.9
3128.00	Н	-	-	-70.30	6.93	-63.37	-50.4

Table 7-30. Radiated Spurious Data with WCP (Band 13 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager					
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Plot 7-383. Radiated Spurious Plot above 1GHz (Band 5/26)

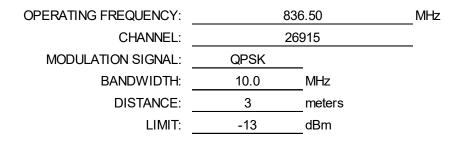
82	9.00	MHz
26	840	_
QPSK	_	
10.0	MHz	
3	meters	
-13	dBm	
	26 QPSK 10.0 3	10.0 MHz 3 meters

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	V	181	189	-71.70	5.78	-65.92	-52.9
2487.00	V	321	347	-70.73	5.73	-65.00	-52.0
3316.00	V	-	-	-72.51	7.87	-64.64	-51.6

Table 7-31. Radiated Spurious Data (Band 5/26 – Low Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager			
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	V	144	177	-71.63	5.73	-65.90	-52.9
2509.50	V	381	348	-70.19	5.77	-64.42	-51.4
3346.00	V	-	-	-72.39	7.91	-64.49	-51.5

Table 7-32. Radiated Spurious Data (Band 5/26 – Mid Channel)

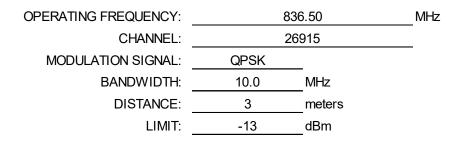
OPERATING FREQUENCY:	844	4.00 MHz		
CHANNEL:	26990			
MODULATION SIGNAL:	QPSK	_		
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	-13	dBm		

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	V	204	15	-71.82	5.67	-66.15	-53.1
2532.00	V	139	354	-70.79	5.85	-64.94	-51.9
3376.00	V	-	-	-72.81	7.94	-64.86	-51.9

Table 7-33. Radiated Spurious Data (Band 5/26 – High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dago 242 of 202
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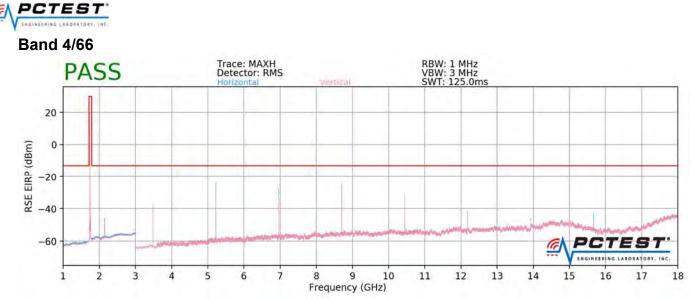




Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	Н	153	28	-73.91	5.73	-68.18	-55.2
2509.50	Н	-	-	-72.59	5.77	-66.82	-53.8

Table 7-34. Radiated Spurious Data with WCP (Band 5/26 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 244 of 202
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Plot 7-384. Radiated Spurious Plot above 1GHz (Band 4/66)

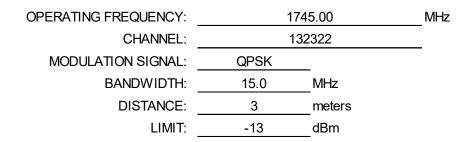
OPERATING FREQUENCY:	171	7.50	MHz
CHANNEL:	132	2047	_
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	15.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
3435.00	Н	112	8	-44.88	8.17	-36.71	-23.7
5152.50	Н	141	230	-36.46	10.25	-26.21	-13.2
6870.00	Н	128	345	-43.65	11.37	-32.27	-19.3
8587.50	Н	113	26	-48.21	13.04	-35.16	-22.2
10305.00	Н	112	23	-48.77	13.11	-35.66	-22.7
12022.50	Н	116	42	-58.35	13.12	-45.22	-32.2
13740.00	Н	113	15	-58.31	14.57	-43.74	-30.7
15457.50	Н	114	74	-58.81	14.15	-44.66	-31.7

Table 7-35. Radiated Spurious Data (Band 4/66 – Low Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	Ì	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 245 of 202	
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	Н	117	323	-45.93	8.46	-37.47	-24.5
5235.00	Н	124	153	-37.98	10.28	-27.69	-14.7
6980.00	Н	126	345	-44.71	11.47	-33.24	-20.2
8725.00	Н	113	231	-47.62	13.12	-34.50	-21.5
10470.00	Н	115	23	-45.01	13.14	-31.86	-18.9
12215.00	Н	116	154	-55.16	13.16	-42.01	-29.0
13960.00	Н	114	24	-57.33	14.66	-42.67	-29.7
15705.00	Н	114	296	-60.58	13.84	-46.73	-33.7

Table 7-36. Radiated Spurious Data (Band 4/66 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕞 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 246 of 202
1M1806200130-03-R2.ZNF	6/20/2018-8/2/2018	8 Portable Handset		Page 246 of 292
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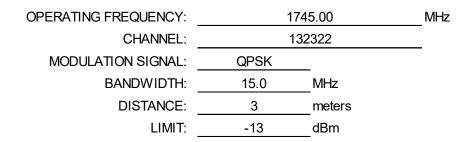
OPERATING FREQUENCY:	177	2.50	MHz
CHANNEL:	132	2597	_
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	15.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
3545.00	Н	133	322	-45.80	8.52	-37.29	-24.3
5317.50	Н	125	250	-39.86	10.33	-29.53	-16.5
7090.00	Н	129	342	-45.22	11.59	-33.63	-20.6
8862.50	Н	114	231	-45.01	13.16	-31.84	-18.8
10635.00	Н	212	99	-42.88	13.11	-29.77	-16.8
12407.50	Н	113	236	-56.24	13.29	-42.96	-30.0
14180.00	Н	133	276	-60.36	14.49	-45.87	-32.9
15952.50	Н	111	48	-58.71	13.72	-44.99	-32.0

Table 7-37. Radiated Spurious Data (Band 4/66 – High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 247 of 202
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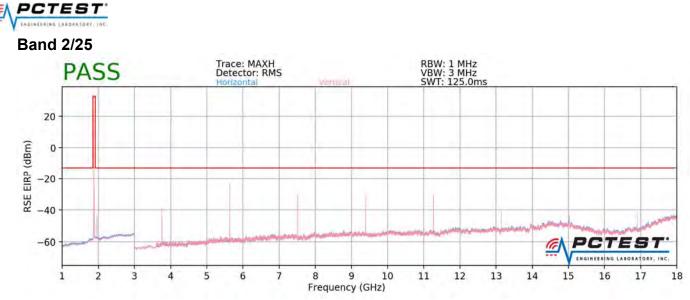




Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	Н	114	119	-46.85	8.46	-38.39	-25.4
5235.00	Н	112	50	-38.62	10.28	-28.33	-15.3
6980.00	Н	134	184	-49.30	11.47	-37.83	-24.8
8725.00	Н	126	30	-46.46	13.12	-33.34	-20.3
10470.00	Н	112	165	-45.61	13.14	-32.46	-19.5
12215.00	Н	319	355	-57.35	13.16	-44.20	-31.2
13960.00	Н	321	253	-58.14	14.66	-43.48	-30.5
15705.00	Н	114	287	-62.81	13.84	-48.96	-36.0

Table 7-38. Radiated Spurious Data with WCP (Band 4/66 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 248 of 202
1M1806200130-03-R2.ZNF	6/20/2018-8/2/2018	3-8/2/2018 Portable Handset		Page 248 of 292
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Plot 7-385. Radiated Spurious Plot above 1GHz (Band 2/25)

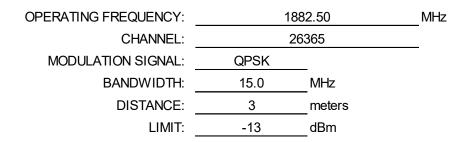
OPERATING FREQUENCY:	185	7.50 MHz	
CHANNEL:	26	115	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	15.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
3715.00	Н	119	26	-43.01	8.34	-34.68	-21.7
5572.50	Н	126	43	-39.95	10.56	-29.39	-16.4
7430.00	Н	123	358	-41.13	11.96	-29.16	-16.2
9287.50	Н	113	8	-39.02	13.40	-25.62	-12.6
11145.00	Н	112	349	-44.02	13.41	-30.60	-17.6
13002.50	Н	398	321	-54.24	13.45	-40.79	-27.8
14860.00	Н	116	347	-60.36	14.06	-46.31	-33.3
16717.50	Н	274	67	-56.95	13.04	-43.91	-30.9

Table 7-39. Radiated Spurious Data (Band 2/25 – Low Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 240 of 202
1M1806200130-03-R2.ZNF	6/20/2018-8/2/2018	Portable Handset		Page 249 of 292
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	Н	112	31	-40.90	8.47	-32.43	-19.4
5647.50	Н	151	24	-39.31	10.60	-28.71	-15.7
7530.00	Н	118	3	-41.96	12.11	-29.85	-16.8
9412.50	Н	111	2	-38.30	13.34	-24.96	-12.0
11295.00	Н	115	347	-45.10	13.43	-31.68	-18.7
13177.50	Н	386	310	-54.85	13.77	-41.08	-28.1
15060.00	Н	114	347	-61.21	14.08	-47.14	-34.1
16942.50	Н	289	64	-54.52	13.05	-41.47	-28.5

Table 7-40. Radiated Spurious Data (Band 2/25 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 250 of 202	
1M1806200130-03-R2.ZNF	6/20/2018-8/2/2018	018-8/2/2018 Portable Handset		Page 250 of 292	
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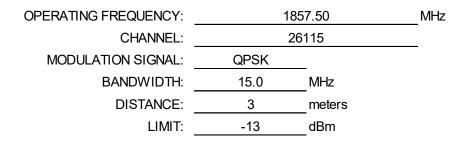
OPERATING FREQUENCY:	190	MHz	
CHANNEL:	26	615	_
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	15.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
3815.00	Н	165	27	-39.60	8.56	-31.04	-18.0
5722.50	Н	118	306	-38.15	10.63	-27.52	-14.5
7630.00	Н	142	0	-43.58	12.18	-31.39	-18.4
9537.50	Н	112	355	-48.36	13.29	-35.07	-22.1
11445.00	Н	114	351	-46.70	13.47	-33.23	-20.2
13352.50	Н	342	34	-54.83	13.83	-41.00	-28.0
15260.00	Н	390	328	-59.86	14.05	-45.81	-32.8
17167.50	Н	300	338	-55.64	13.48	-42.15	-29.2

Table 7-41. Radiated Spurious Data (Band 2/25 – High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 251 of 202	
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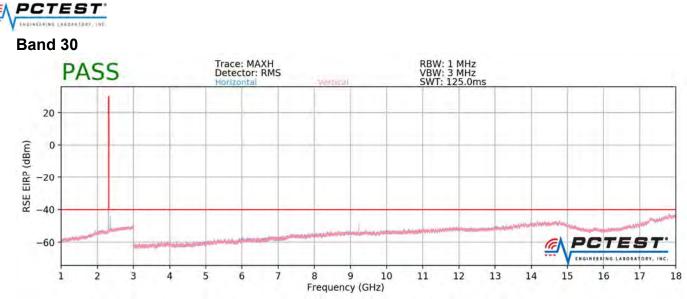




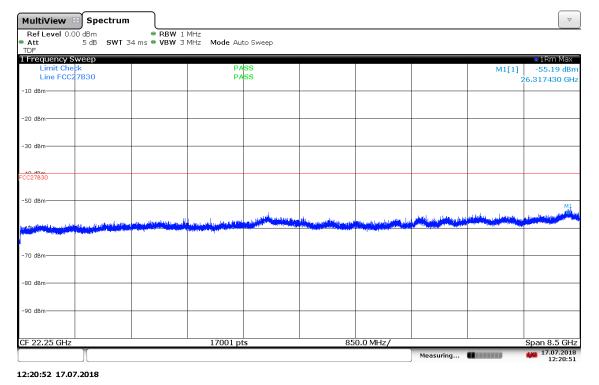
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3715.00	Н	160	319	-43.85	8.34	-35.52	-22.5
5572.50	Н	309	6	-39.22	10.56	-28.66	-15.7
7430.00	Н	112	162	-45.66	11.96	-33.69	-20.7
9287.50	Н	346	33	-46.77	13.40	-33.37	-20.4
11145.00	Н	117	133	-50.51	13.41	-37.09	-24.1
13002.50	Н	360	348	-59.62	13.45	-46.17	-33.2
14860.00	Н	337	247	-59.97	14.06	-45.92	-32.9
16717.50	Н	232	63	-61.23	13.04	-48.19	-35.2

Table 7-42. Radiated Spurious Data with WCP (Band 2/25 – Low Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 252 of 202	
1M1806200130-03-R2.ZNF	6/20/2018-8/2/2018	Portable Handset		Page 252 of 292	
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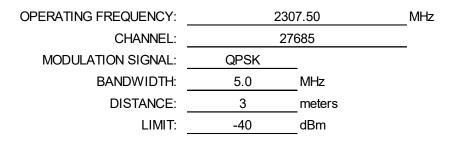






FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 252 of 202	
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	V	-	-	-72.92	9.41	-63.51	-23.5
6922.50	V	396	15	-70.83	11.41	-59.42	-19.4
9230.00	V	389	7	-59.01	13.41	-45.60	-5.6
11537.50	V	129	17	-66.61	13.44	-53.17	-13.2
13845.00	V	-	-	-63.85	14.62	-49.24	-9.2

Table 7-43. Radiated Spurious Data (Band 30 – Low Channel)

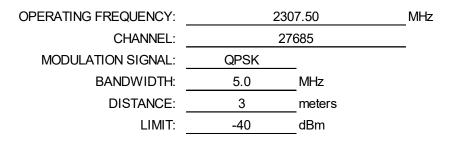
OPERATING FREQUENCY:	2		MHz	
CHANNEL:	27735			_
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	-40	dBm		

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]
4625.00	V	355	253	-72.57	9.43	-63.15	-23.1
6937.50	V	114	336	-71.15	11.43	-59.73	-19.7
9250.00	V	400	7	-60.17	13.41	-46.76	-6.8
11562.50	V	207	19	-65.42	13.44	-51.99	-12.0
13875.00	V	-	-	-65.27	14.65	-50.62	-10.6

Table 7-44. Radiated Spurious Data (Band 30 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 254 of 202
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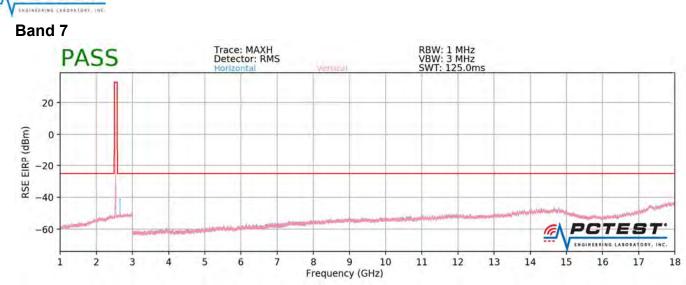




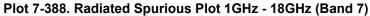
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	V	155	178	-67.07	9.41	-57.66	-17.7
6922.50	V	146	134	-70.76	11.41	-59.35	-19.4
9230.00	V	358	164	-60.01	13.41	-46.60	-6.6
11537.50	V	-	-	-67.14	13.44	-53.70	-13.7

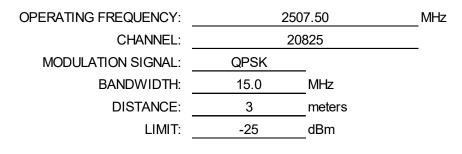
Table 7-45. Radiated Spurious Data with WCP (Band 30 – Low Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 255 of 202
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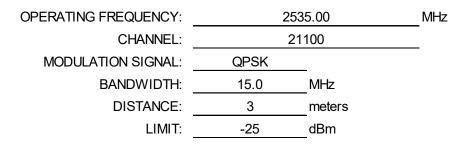


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5015.00	Н	-	-	-72.66	10.10	-62.56	-37.6
7522.50	Н	-	-	-70.04	12.11	-57.94	-32.9

Table 7-46. Radiated Spurious Data (Band 7 – Low Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 256 of 202
1M1806200130-03-R2.ZNF	6/20/2018-8/2/2018	Portable Handset		Page 256 of 292
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	Н	-	-	-72.59	10.18	-62.41	-37.4
7605.00	Н	-	-	-70.13	12.15	-57.98	-33.0

Table 7-47. Radiated Spurious Data (Band 7 – Mid Channel)

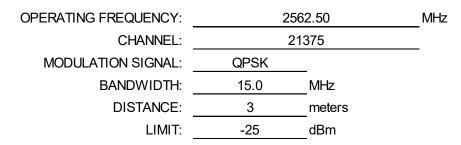
OPERATING FREQUENCY:	256	2.50 MHz
CHANNEL:	213	375
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

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]
5125.00	Н	-	-	-72.38	10.23	-62.15	-37.1
7687.50	Н	-	-	-70.48	12.27	-58.21	-33.2

Table 7-48. Radiated Spurious Data (Band 7 – High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 257 of 202
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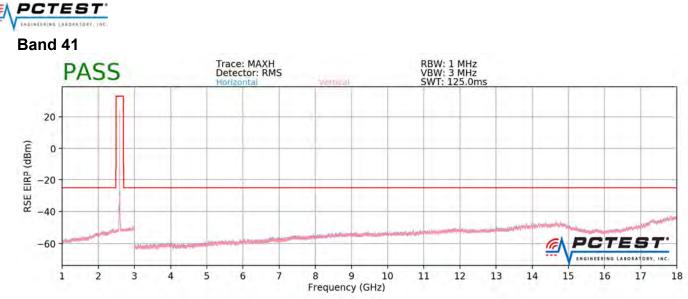




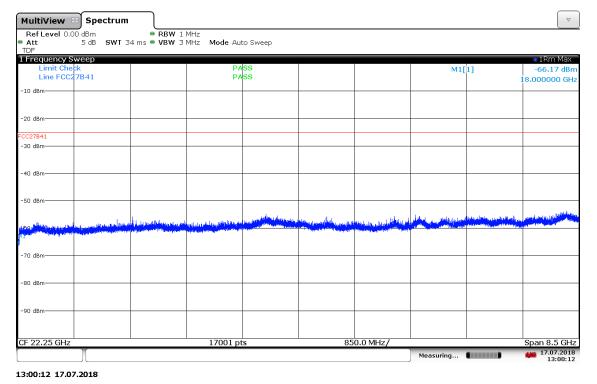
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5125.00	Н	-	-	-72.42	10.23	-62.19	-37.2
7687.50	Н	-	-	-70.72	12.27	-58.45	-33.5

Table 7-49. Radiated Spurious Data with WCP (Band 7 – High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dage 258 of 202
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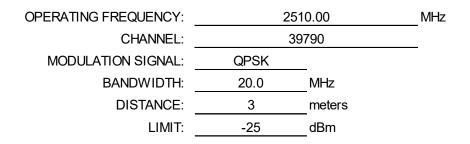






FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 250 of 202	
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	V	161	38	-72.11	10.11	-62.00	-37.0
7530.00	V	400	0	-69.80	12.11	-57.69	-32.7
10040.00	V	-	-	-68.35	13.16	-55.19	-30.2

Table 7-50. Radiated Spurious Data (Band 41 PC2– Low Channel)

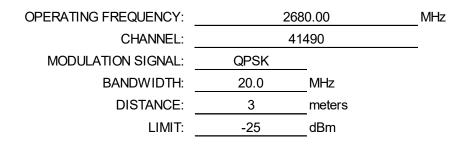
OPERATING FREQUENCY:	259	3.00 MHz
CHANNEL:	400	620
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

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]
5186.00	V	393	323	-71.02	10.27	-60.76	-35.8
7779.00	V	400	348	-69.52	12.28	-57.23	-32.2
10372.00	V	-	-	-68.51	13.12	-55.39	-30.4

Table 7-51. Radiated Spurious Data (Band 41 PC2 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 260 of 202	
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	115	315	-69.36	10.40	-58.96	-34.0
8040.00	V	129	332	-69.52	12.55	-56.96	-32.0
10720.00	V	-	-	-67.69	13.11	-54.58	-29.6

Table 7-52. Radiated Spurious Data (Band 41 PC2– High Channel)

OPERATING FREQUENCY:	268	80.00	MHz
CHANNEL:	41	490	_
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]
5360.00	V	325	271	-71.18	10.40	-60.78	-35.8
8040.00	V	398	103	-68.89	12.55	-56.33	-31.3
10720.00	V	-	-	-67.47	13.11	-54.36	-29.4

Table 7-53. Radiated Spurious Data with WCP (Band 41 PC2–High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 261 of 202	
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OPERATING FREQUENCY:	2680.00		MHz
CHANNEL:	41490		
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]
5360.00	V	143	340	-71.90	10.27	-61.64	-36.6
7953.00	V	123	31	-70.62	12.28	-58.33	-33.3
10546.00	V	-	-	-68.59	13.12	-55.47	-30.5

Table 7-54. Radiated Spurious Data (Band 41 PC3- High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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7.10 Uplink Carrier Aggregation Radiated Measurements §2.1053, §27.53(m)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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. All measurements are performed as peak 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 v02r02 - Section 5.8

ANSI/TIA-603-D-2010 - Section 2.2.12

Test Settings

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

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕞 LG	Approved by: Quality Manager
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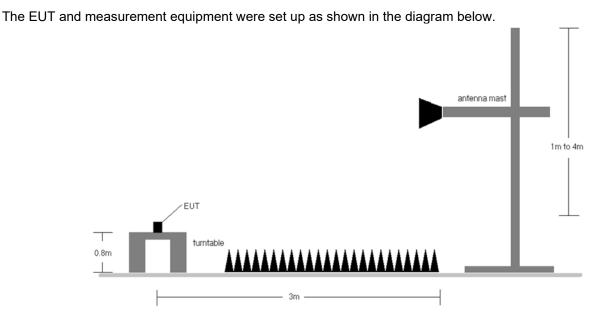


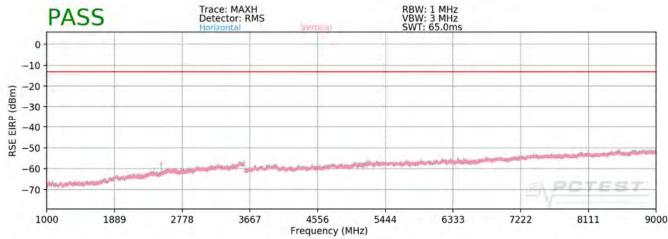
Figure 7-10. Test Instrument & Measurement Setup

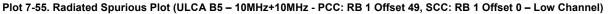
Test Notes

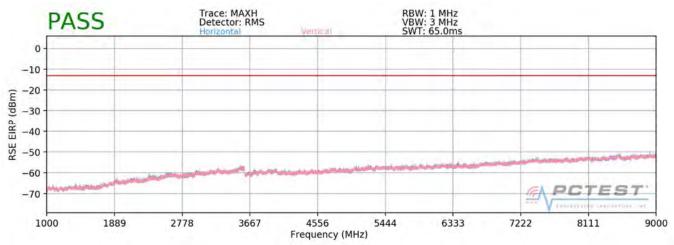
- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) 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.
- 6) No significant emissions were found as a result of two uplink carriers operating contiguously.

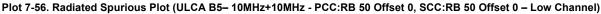
FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 264 of 202	
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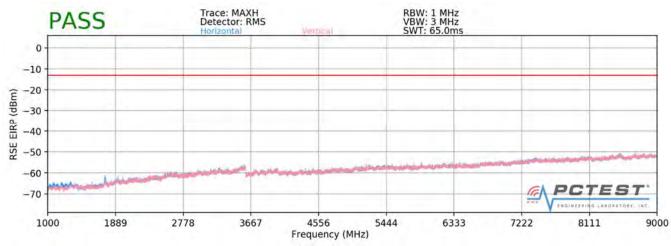








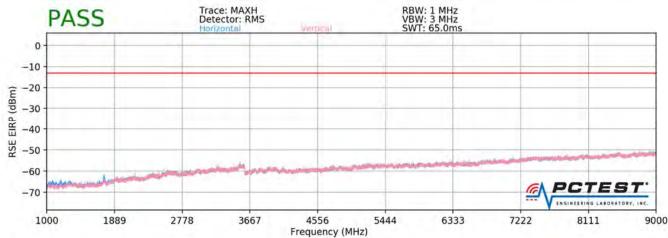


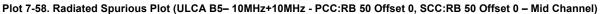


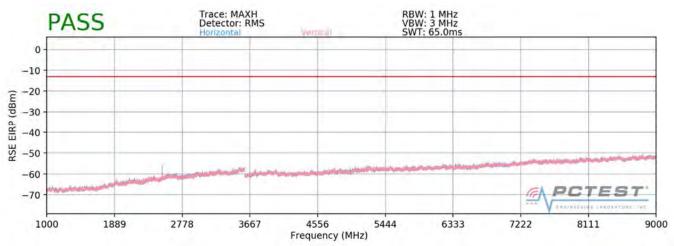
Plot 7-57. Radiated Spurious Plot (ULCA B5 - 10MHz+10MHz - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 - Mid Channel)

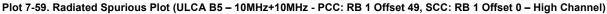
FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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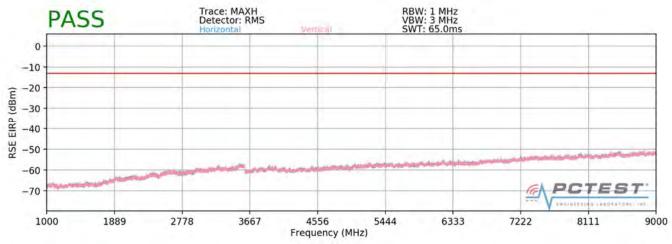








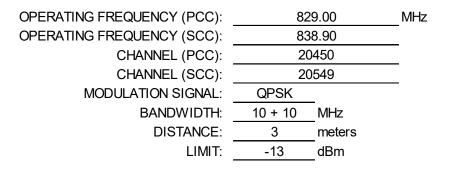




Plot 7-60. Radiated Spurious Plot (ULCA B5- 10MHz+10MHz - PCC:RB 50 Offset 0, SCC:RB 50 Offset 0 - High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	Н	166	217	-75.27	5.78	-69.49	-56.5
2487.00	Н	152	142	-62.11	5.73	-56.38	-43.4
3316.00	Н	-	-	-73.38	7.87	-65.51	-52.5

Table 7-61. Radiated Spurious Data (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)

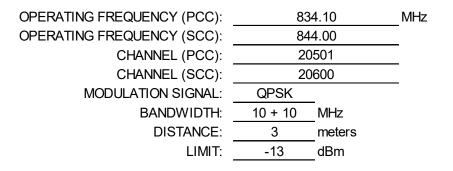
MHz	1.50	83	OPERATING FREQUENCY (PCC):
_	1.50	84	OPERATING FREQUENCY (SCC):
_)600	20	CHANNEL (PCC):
_)575	20	CHANNEL (SCC):
-		QPSK	MODULATION SIGNAL:
	MHz	10 + 10	BANDWIDTH:
	meters	3	DISTANCE:
	dBm	-13	LIMIT:
	_		

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]
1663.00	Н	261	320	-72.99	5.76	-67.23	-54.2
2494.50	Н	339	319	-66.97	5.75	-61.22	-48.2
3326.00	Н	-	-	-72.05	7.91	-64.15	-51.1

Table 7-62. Radiated Spurious Data (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 - Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1668.20	Н	141	211	-75.48	5.74	-69.74	-56.7
2502.30	Н	150	144	-62.25	5.74	-56.51	-43.5
3336.40	Н	-	-	-73.69	7.89	-65.80	-52.8

Table 7-63. Radiated Spurious Data (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – High Channel)

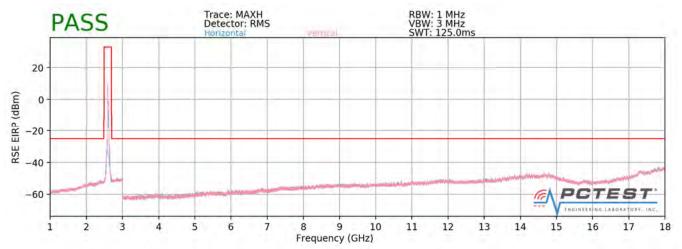
OPERATING FREQUENCY (PCC):	83	1.50	MHz
OPERATING FREQUENCY (SCC):	84	1.50	
CHANNEL (PCC):	20		
CHANNEL (SCC):	20		
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10 + 10	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
1663.00	Н	255	243	-74.01	5.76	-68.25	-55.2
2494.50	Н	126	339	-71.37	5.75	-65.62	-52.6
3326.00	н	-	-	-72.05	7.91	-64.15	-51.1

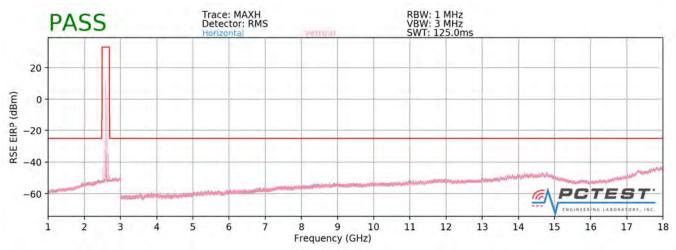
Table 7-64. Radiated Spurious Data with WCP (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager	
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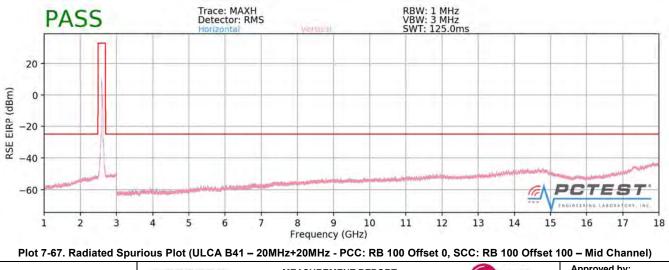




Plot 7-65. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 100 Offset 0, SCC: RB 100 Offset 100 – Low Channel)

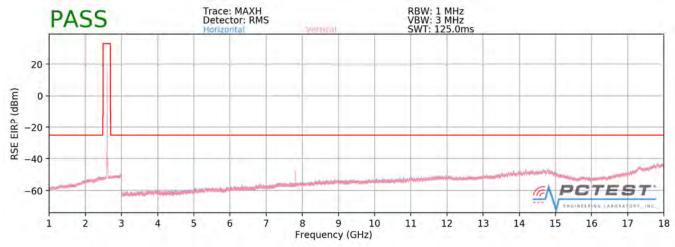




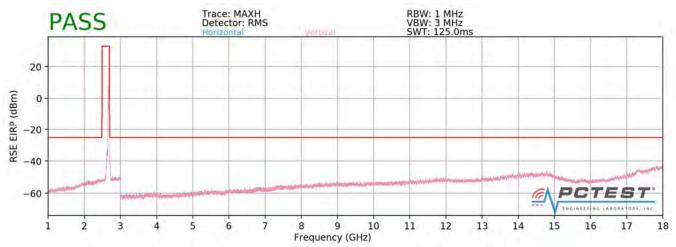


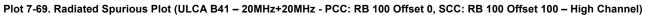
FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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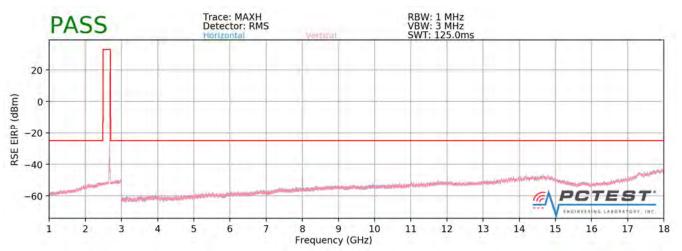




Plot 7-68. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)







Plot 7-70. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 270 of 202	
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OPERATING FREQUENCY (PCC):	25	MHz	
OPERATING FREQUENCY (SCC):	25		
CHANNEL (PCC):	39750		
CHANNEL (SCC):	39948		
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	20 +20	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]
5012.00	V	132	337	-68.12	10.11	-58.01	-33.0
7518.00	V	112	321	-64.42	12.11	-52.31	-27.3
10024.00	V	-	-	-67.05	13.16	-53.89	-28.9

Plot 7-71. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Low channel)

OPERATING FREQUENCY (PCC): _____ OPERATING FREQUENCY (SCC): _____ CHANNEL (PCC): _____ CHANNEL (SCC): _____ MODULATION SIGNAL: ____ BANDWIDTH: ____ DISTANCE: _____ LIMIT: ____

25	2593.00					
26	12.80					
40	40620					
40	40818					
QPSK						
20 +20	MHz					
3	meters					
-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]
5186.00	V	277	169	-69.10	10.27	-58.84	-33.8
7779.00	V	364	327	-62.87	12.28	-50.58	-25.6
10372.00	V	-	-	-69.31	13.12	-56.19	-31.2

Plot 7-72. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 - Mid Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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OPERATING FREQUENCY (PCC):	26	MHz	
OPERATING FREQUENCY (SCC):	26		
CHANNEL (PCC):	4		
CHANNEL (SCC):	4		
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20 +20	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]
5320.40	V	114	184	-66.59	10.40	-56.19	-31.2
7980.60	V	378	317	-58.79	12.55	-46.23	-21.2
10640.80	V	-	-	-66.48	13.11	-53.37	-28.4

Plot 7-73. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Mid Channel)

OPERATING FREQUENCY (PCC): ____ OPERATING FREQUENCY (SCC): ____ CHANNEL (PCC): ____ CHANNEL (SCC): ____ MODULATION SIGNAL: ____ BANDWIDTH: ____ DISTANCE: ____ LIMIT: ____

C):	259	MHz					
C):	26 ⁻	12.80	_				
C):	40	40620					
C):	40						
۱L:	QPSK						
H:	20 +20	MHz					
E:	3	meters					
IT:	-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]
5186.00	V	115	238	-69.79	10.27	-59.53	-34.5
7779.00	V	147	28	-66.00	12.28	-53.71	-28.7
10372.00	V	-	-	-67.13	13.12	-54.01	-29.0

Plot 7-74. Radiated Spurious Data with WCP (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 - Low Channel)

FCC ID: ZNFV405UA		MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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7.11 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 $\pm 0.00025\%$ (± 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

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Band 71 Frequency Stability Measurements

OPERATING FREQUENCY:	680,500,000	Hz
CHANNEL:	133297	_
REFERENCE VOLTAGE:	4.20	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.20	+ 20 (Ref)	680,500,072	72	0.0000106
100 %		- 30	680,499,715	-285	-0.0000419
100 %		- 20	680,499,762	-238	-0.0000350
100 %		- 10	680,500,175	175	0.0000257
100 %		0	680,500,309	309	0.0000454
100 %		+ 10	680,499,760	-240	-0.0000353
100 %		+ 20	680,500,157	157	0.0000231
100 %		+ 30	680,500,089	89	0.0000131
100 %		+ 40	680,500,351	351	0.0000516
100 %		+ 50	680,499,762	-238	-0.0000350
BATT. ENDPOINT	3.54	+ 20	680,499,995	-5	-0.0000007

 Table 7-75. Frequency Stability Data (Band 71)

Note:

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

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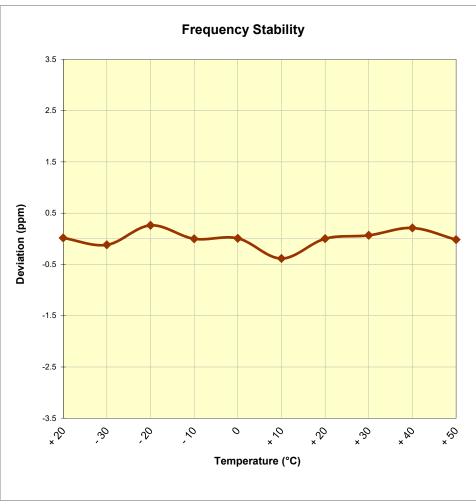


Figure 7-11. Frequency Stability Graph (Band 71)

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Band 12/17 Frequency Stability Measurements

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23790	_
REFERENCE VOLTAGE:	4.20	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.20	+ 20 (Ref)	707,500,011	11	0.0000016
100 %		- 30	707,499,916	-84	-0.0000119
100 %		- 20	707,500,185	185	0.0000261
100 %		- 10	707,499,999	-1	-0.0000001
100 %		0	707,500,006	6	0.000008
100 %		+ 10	707,499,727	-273	-0.0000386
100 %		+ 20	707,500,001	1	0.0000001
100 %		+ 30	707,500,047	47	0.0000066
100 %		+ 40	707,500,149	149	0.0000211
100 %		+ 50	707,499,988	-12	-0.0000017
	3.54	+ 20	707,500,173	173	0.0000245

 Table 7-76. 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.

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Band 12/17 Frequency Stability Measurements

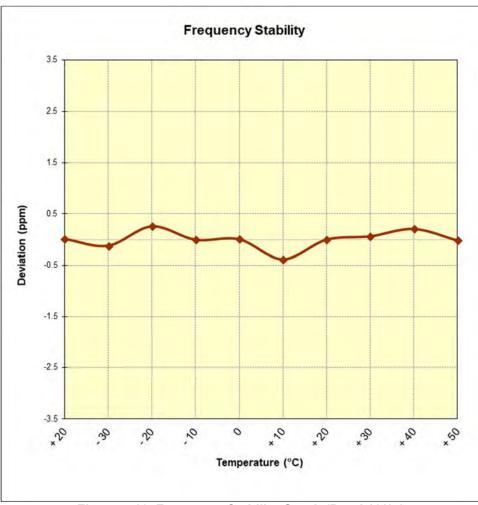


Figure 7-12. Frequency Stability Graph (Band 12/17)

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Band 13 Frequency Stability Measurements

OPERATING FREQUENCY:	782,000,000	Hz
CHANNEL:	23230	_
REFERENCE VOLTAGE:	4.20	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.20	+ 20 (Ref)	781,999,976	-24	-0.0000031
100 %		- 30	781,999,880	-120	-0.0000153
100 %		- 20	781,999,796	-204	-0.0000261
100 %		- 10	782,000,269	269	0.0000344
100 %		0	781,999,675	-325	-0.0000416
100 %		+ 10	781,999,782	-218	-0.0000279
100 %		+ 20	781,999,839	-161	-0.0000206
100 %		+ 30	782,000,211	211	0.0000270
100 %		+ 40	782,000,213	213	0.0000272
100 %		+ 50	781,999,977	-23	-0.0000029
BATT. ENDPOINT	3.54	+ 20	781,999,938	-62	-0.0000079

 Table 7-77. 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.

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