

7.4 Band Edge Emissions at Antenna Terminal §2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h) §27.53(m)

Test Overview

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

The minimum permissible attenuation level for Band 41 is as noted in the Test Notes on the following page.

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

Test Procedure Used

KDB 971168 D01 v02r02 - Section 6.0

Test Settings

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

<u>Test Setup</u>

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

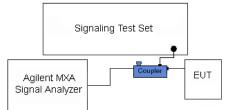


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

Per 22.917(b) 24.238(a) 27.53(h) 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 to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

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Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.



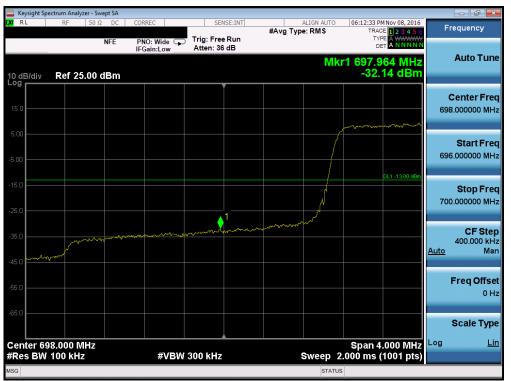
Plot 7-96. Lower Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

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	pectrum Analyzer	Swept S	A									
XI RL	RF 5	0Ω D		RREC		VSE:INT	#Avg Typ	ALIGN AUTO De: RMS	TRAC	Nov 08, 2016	F	requency
10 dB/div	Ref 25.0	NFE 0 dBr	IF	NO: Wide 🕞 Gain:Low	Trig: Fre Atten: 36			Mkı	•1 716.0	00 MHz 11 dBm		Auto Tune
15.0			mager Mayor	-	want -							Center Fre 5.000000 МН
5.00						1				DL1 -13.00 dBm	714	Start Fre 4.000000 M⊦
25.0	when when the					-	many				718	Stop Fre 3.000000 M⊦
45.0									and for the second	Mar	<u>Auto</u>	CF Ste 400.000 kH Ma
55.0												Freq Offs 0 H
65.0												Scale Typ
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ISG								STATUS				

Plot 7-97. Upper Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



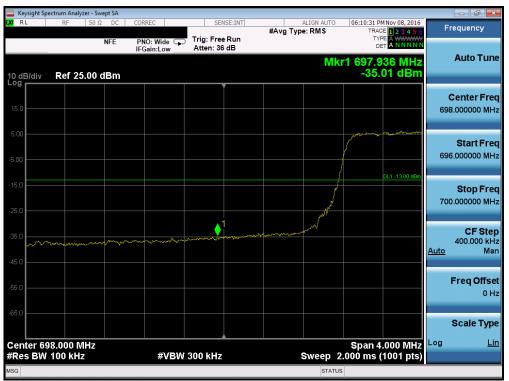
Plot 7-98. Lower Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

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Keysight Spectrum						- ē 🗾
X/ RL RF	50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	06:13:00 PM Nov 08, 2016 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Rel	NFE 5 25.00 dBm	PNO: Wide 🖵 IFGain:Low	Trig: Free Run Atten: 36 dB	Mk	r1 716.004 MHz -19.59 dBm	Auto Tun
15.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	untra france and the	~~~			Center Fre 716.000000 MH
5.00					0L1 -13.00 dBm	Start Fre 714.000000 M⊦
25.0			1			Stop Fre 718.000000 M⊦
35.0					Mussen	CF Ste 400.000 kH <u>Auto</u> Ma
45.0 55.0						Freq Offs 0 F
65.0						Scale Typ
Center 716.00 Res BW 100	0 MHz kHz	#VBW	300 kHz	Sweep 2	Span 4.000 MHz 2.000 ms (1001 pts)	Log <u>Li</u>
SG				STATU	5	

Plot 7-99. Upper Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)



Plot 7-100. Lower Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager		
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	Analyzer - Swept SA					
XIRL RF	50 Ω DC	CORREC PNO: Wide	SENSE:INT Trig: Free Run Atten: 36 dB	ALIGN AUTO #Avg Type: RMS	06:10:52 PM Nov 08, 2016 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Re	f 25.00 dBm	IFGain:Low	Atten: 30 dB	Mk	r1 716.008 MHz -23.81 dBm	Auto Tuno
15.0						Center Free 716.000000 MH
5.00		and the second				Start Fre 714.000000 MH
-25.0			Mu 1		DL1 -13.00 dBm	Stop Fre 718.000000 MH
45.0				and the second and the second s	mynana	CF Ste 400.000 k⊦ <u>Auto</u> Ma
55.0						Freq Offse 0 H
65.0						Scale Typ
Center 716.00 #Res BW 100		#VBW	300 kHz	Sweep 2	Span 4.000 MHz 2.000 ms (1001 pts)	Log <u>Li</u>
ISG				STATU	s	

Plot 7-101. Upper Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)



Plot 7-102. Lower Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)

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	ectrum Anal	/zer - Swept SA					- 6 -
RL	RF	50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO	06:08:50 PM Nov 08, 2016	Frequency
		NFE	PNO: Wide 🖵 IFGain:Low	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	
0 dB/div	Ref 2	5.00 dBm			Mł	r1 716.000 MHz -30.21 dBm	Auto Tur
15.0							Center Fre 716.000000 M⊦
5.00 	un an	warmun an	hy Maria (Marillong Egrap, Africana hy	why		DL1 -13.00 dBm	Start Fre 712.000000 MH
5.0							Stop Fre 720.000000 MH
5.0				Mar Warrawa	es philosocies and a floor when	wanter	CF Ste 800.000 kH <u>Auto</u> Ma
5.0							Freq Offs 0 F
6.0							Scale Typ
enter 71 Res BW	16.000 N 100 kH	/IHz z	#VBW	300 kHz	Sweep -	Span 8.000 MHz 4.000 ms (1001 pts)	Log <u>L</u>
iG					STATU	IS	

Plot 7-103. Upper Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)



Plot 7-104. Lower Band Edge Plot (Band 26/5 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	ectrum Analyze												
KI RL	RF	50 Ω N	DC FE	CORREC	ide 😱	Trig: Fre		#Avg Typ	ALIGN AUTO	TRAC	MNov 08, 2016 CE 1 2 3 4 5 6 PE A WWWW	F	requency
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25.0	mont						1	man wel				85	Stop Fre 1.000000 MF
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5.0													Freq Offs 0 I
65.0													Scale Typ
	49.000 MH 100 kHz	IZ		;	#VBW	300 kHz			Sweep 2	Span 4 .000 ms (.000 MHz (1001 pts)	Log	L
SG									STATUS				

Plot 7-105. Upper Band Edge Plot (Band 26/5 – 1.4MHz QPSK – RB Size 6)



Plot 7-106. Lower Band Edge Plot (Band 26/5 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Keysight Spectrum Ar						- 6 -
URL RF	50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	05:50:37 PM Nov 08, 2016 TRACE 1 2 3 4 5 6 TYPE A WWWWW	Frequency
0 dB/div Ref	NFE 25.00 dBm	PNO: Wide IFGain:Low	Atten: 36 dB	Mk	r1 849.000 MHz -18.66 dBm	Auto Tun
15.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~			Center Fre 849.000000 M⊦
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25.0			11			Stop Fre 851.000000 MH
5.0					man many	CF Ste 400.000 ki <u>Auto</u> Mi
5.0						Freq Offs 0
65.0						Scale Typ
enter 849.000 Res BW 100 k		#VBW	300 kHz	Sweep 2	Span 4.000 MHz 2.000 ms (1001 pts)	Log <u>L</u>
SG				STATU	3	

Plot 7-107. Upper Band Edge Plot (Band 26/5 – 3.0MHz QPSK – RB Size 15)



Plot 7-108. Lower Band Edge Plot (Band 26/5 - 5.0MHz QPSK - RB Size 25)

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	ectrum Analyz						
RL	RF	50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	05:47:23 PM Nov 08, 2016 TRACE 1 2 3 4 5 6	Frequency
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0 dB/div	Ref 25.	.00 dBm			Mk	r1 849.000 MHz -25.01 dBm	Auto Tun
.og							Center Fre 849.000000 MH
5.00			<u>~~~</u> ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			DL1 -13.00 dBm	Start Fre 847.000000 M⊦
25.0							Stop Fre 851.000000 M⊦
15.0				- Whender	munnanno	have a constant of the constan	CF Ste 400.000 kF <u>Auto</u> Ma
5.0							Freq Offs 0 F
65.0							Scale Typ
	49.000 M 100 kHz		#VB\	 V 300 kHz	Sweep 2	Span 4.000 MHz 2.000 ms (1001 pts)	Log <u>L</u> i
SG					STATU		

Plot 7-109. Upper Band Edge Plot (Band 26/5 – 5.0MHz QPSK – RB Size 25)



Plot 7-110. Lower Band Edge Plot (Band 26/5 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager		
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	pectrum Analyze	er - Swept SA						
U RL	RF	50 Ω DC	CORREC	SENSE:IN	#Avg T	ALIGN AUTO	05:45:44 PM Nov 08, 2016 TRACE 1 2 3 4 5 6	Frequency
	_	NFE	PNO: Wide 🖵 IFGain:Low	Trig: Free Run Atten: 36 dB	1			
0 dB/div	Ref 25.	00 dBm				Mk	r1 849.000 MHz -29.85 dBm	Auto Tun
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15.0							DL1 -13.00 dBm	
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								0 H
i5.0								Scale Typ
enter 8	49.000 MI	Hz					Span 8.000 MHz	Log <u>L</u>
	/ 100 kHz		#VBW	300 kHz		Sweep 4	.000 ms (1001 pts)	
G						STATUS		

Plot 7-111. Upper Band Edge Plot (Band 26/5 – 10.0MHz QPSK – RB Size 50)



Plot 7-112. Lower Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)

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NFE PNO: Wide Trig: Free Run Atten: 36 dB 150 150 150 150 150 150 150 150 150 150		um Analyzer - Swept SA					
In rotation Mkr1 849.000 MHz -32.95 dBm Auto 100 gB/div Ref 25.00 dBm Center 150 Image: Center 849.00000 500 Image: Center 843.00000 500 Image: Center 843.00000 500 Image: Center 843.00000 150 Image: Center 843.00000 150 Image: Center 843.00000 150 Image: Center 843.00000 150 Image: Center 843.00000 250 Image: Center 843.00000 250 Image: Center 843.00000 250 Image: Center 843.00000 260 Image: Center 843.00000	<mark>0</mark> RL	RF 50 Ω DC	PNO: Wide 🗔			TYPE A WWWWW	Frequency
150 Center 500 Conter	10 dB/div	Ref 25.00 dBm		Atten: 36 dB	Mk	r1 849.000 MHz -32.95 dBm	Auto Tune
5.00 0.1 - 13 00 dBm Start 15.0 0.1 - 13 00 dBm Stop 25.0 1 CF 35.0 1 CF 45.0 Freq O 65.0 Scale							Center Fre 849.000000 MH
15.0 1	~~~~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Start Fre 843.000000 MH
35.0 CF 15.0 Freq O 55.0 Scale						0L1 -13.00 abm	Stop Fre 855.000000 M⊦
55.0 Freq C				Mar Marine	The second second second	Man - 0	CF Ste 1.200000 MH Auto Ma
Scale						and a factor of the	Freq Offs 0 H
center 849 000 MHz Span 12 00 MHz Log							Scale Typ
Res BW 150 kHz #VBW 470 kHz Sweep 1.000 ms (1001 pts)			#VBW	470 kHz	Sweep 1	Span 12.00 MHz .000 ms (1001 pts)	Log <u>L</u>

Plot 7-113. Upper Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)



Plot 7-114. Lower Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

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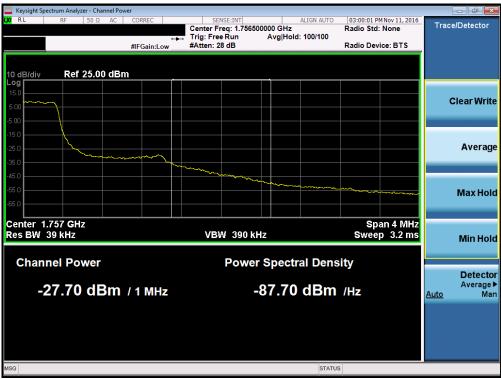
Plot 7-115. Lower Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



Plot 7-116. Upper Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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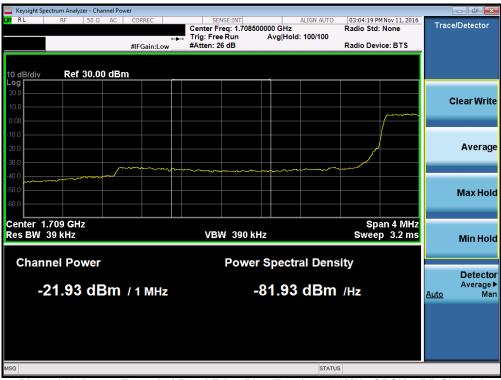
Plot 7-117. Upper Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



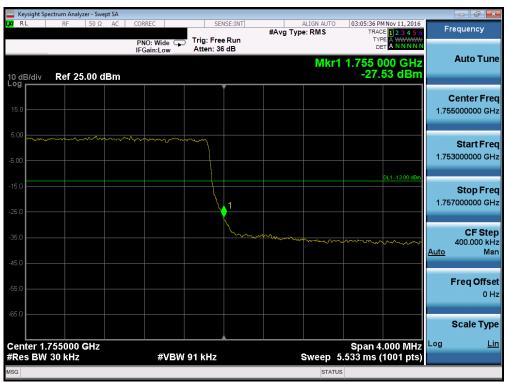
Plot 7-118. Lower Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

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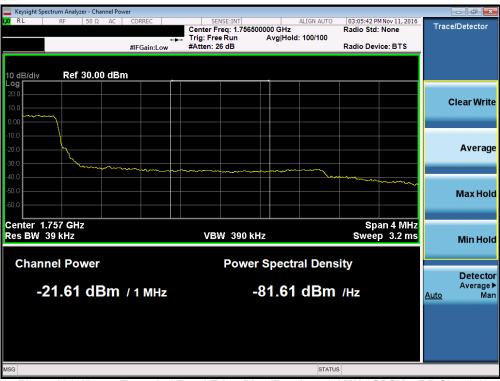
Plot 7-119. Lower Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



Plot 7-120. Upper Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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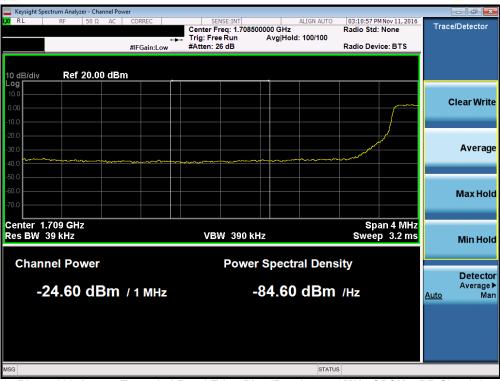
Plot 7-121. Upper Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



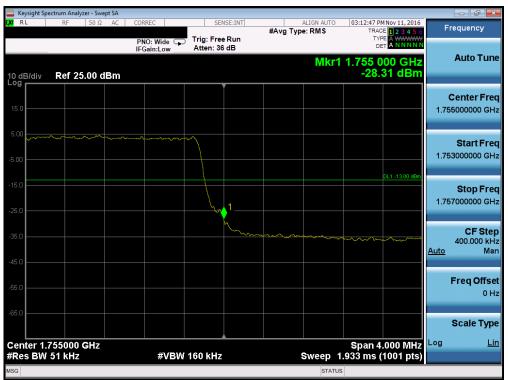
Plot 7-122. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

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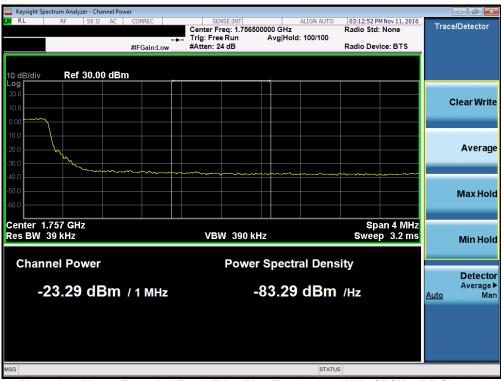
Plot 7-123. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 7-124. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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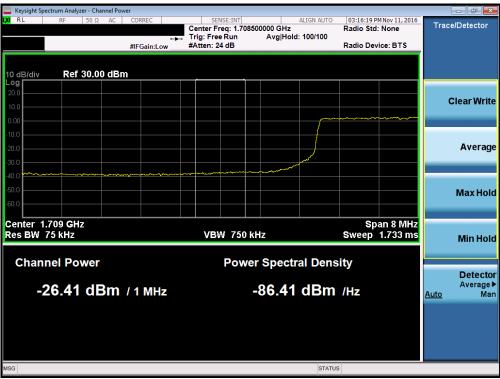
Plot 7-125. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 7-126. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

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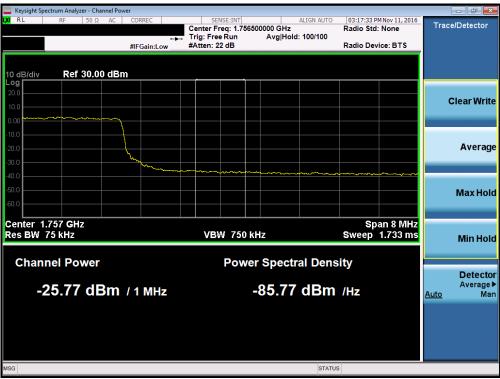
Plot 7-127. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



Plot 7-128. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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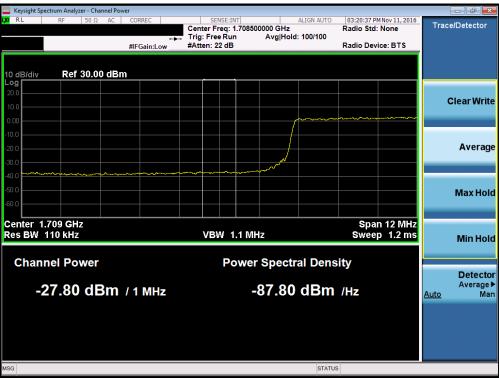
Plot 7-129. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



Plot 7-130. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

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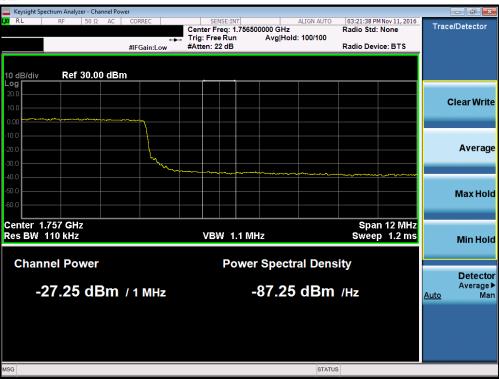
Plot 7-131. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 7-132. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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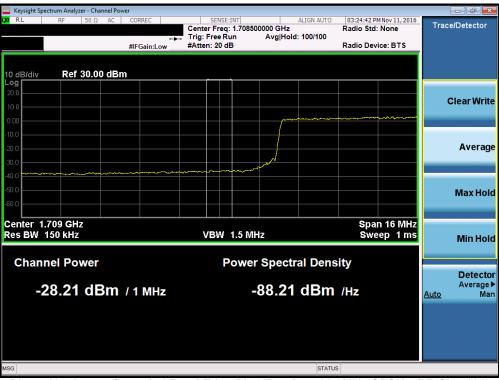
Plot 7-133. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



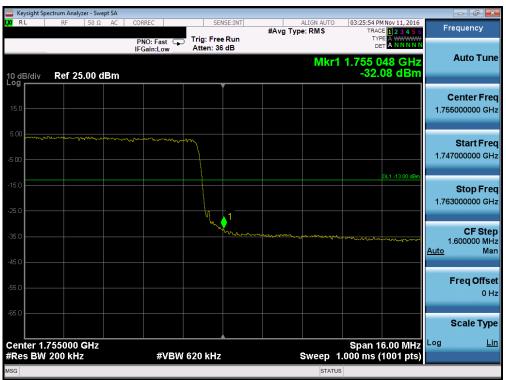
Plot 7-134. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 05 of 120
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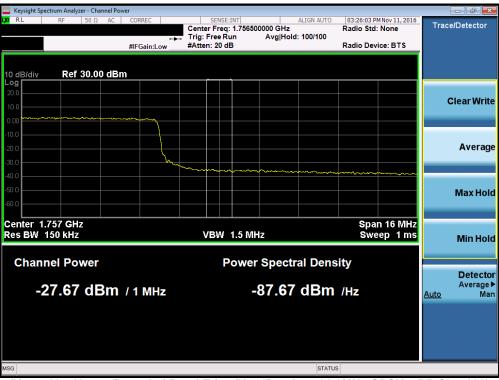
Plot 7-135. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



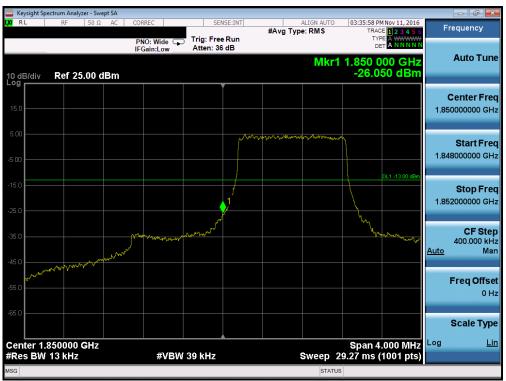
Plot 7-136. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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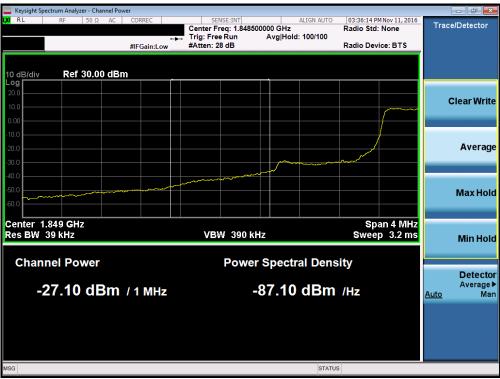
Plot 7-137. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



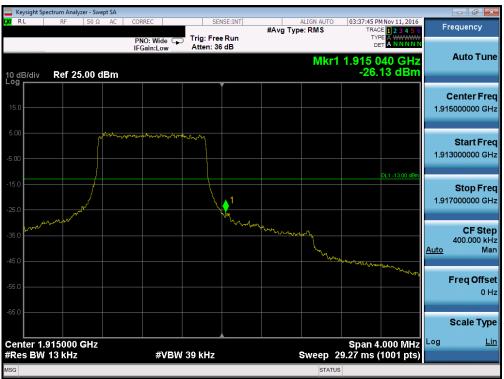
Plot 7-138. Lower Band Edge Plot (Band 25/2 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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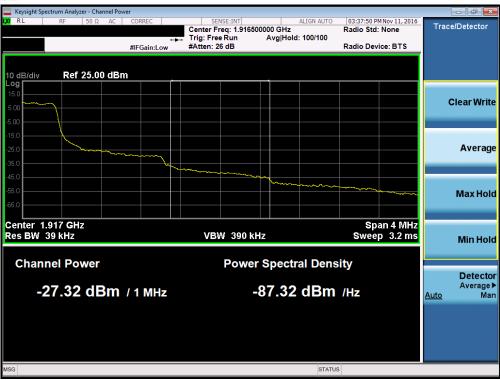
Plot 7-139. Lower Extended Band Edge Plot (Band 25/2 – 1.4MHz QPSK – RB Size 6)



Plot 7-140. Upper Band Edge Plot (Band 25/2 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 89 of 120
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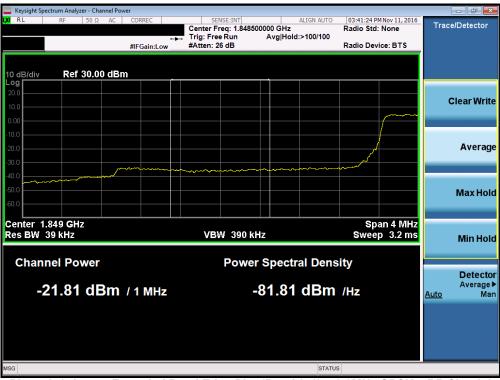
Plot 7-141. Upper Extended Band Edge Plot (Band 25/2 – 1.4MHz QPSK – RB Size 6)



Plot 7-142. Lower Band Edge Plot (Band 25/2 - 3.0MHz QPSK - RB Size 15)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 90 of 120
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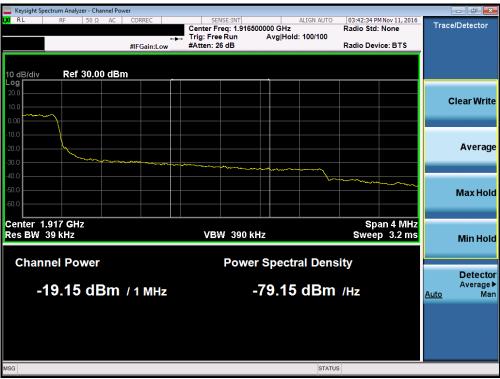
Plot 7-143. Lower Extended Band Edge Plot (Band 25/2 – 3.0MHz QPSK – RB Size 15)



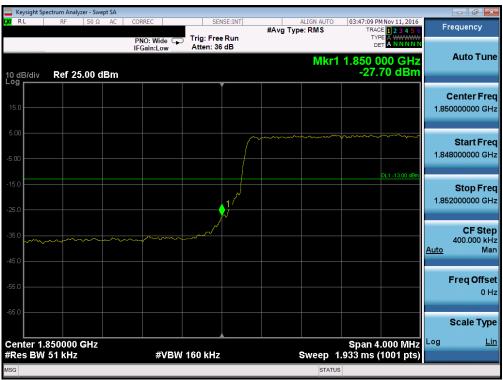
Plot 7-144. Upper Band Edge Plot (Band 25/2 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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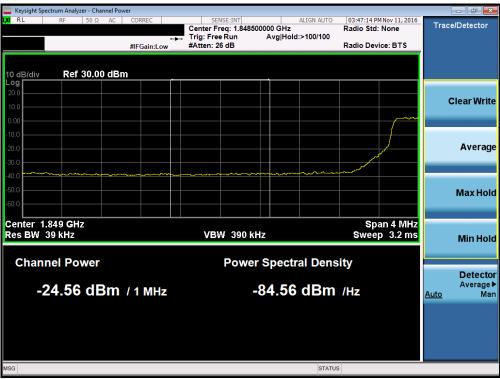
Plot 7-145. Upper Extended Band Edge Plot (Band 25/2 – 3.0MHz QPSK – RB Size 15)



Plot 7-146. Lower Band Edge Plot (Band 25/2 - 5.0MHz QPSK - RB Size 25)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-147. Lower Extended Band Edge Plot (Band 25/2 - 5.0MHz QPSK - RB Size 25)



Plot 7-148. Upper Band Edge Plot (Band 25/2 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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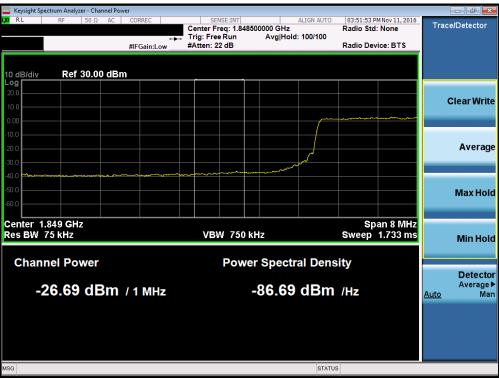
Plot 7-149. Upper Extended Band Edge Plot (Band 25/2 – 5.0MHz QPSK – RB Size 25)



Plot 7-150. Lower Band Edge Plot (Band 25/2 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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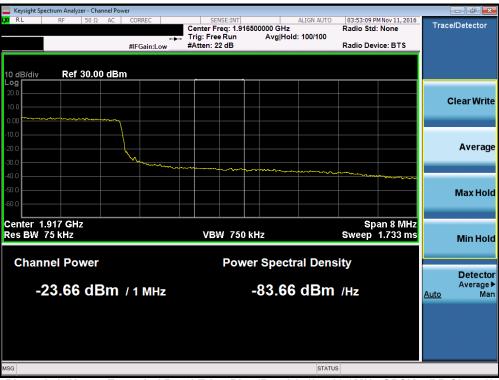
Plot 7-151. Lower Extended Band Edge Plot (Band 25/2 - 10.0MHz QPSK - RB Size 50)



Plot 7-152. Upper Band Edge Plot (Band 25/2 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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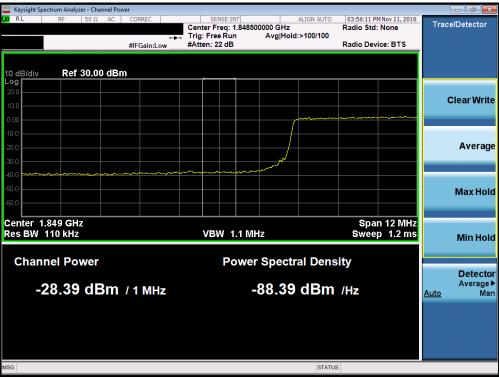
Plot 7-153. Upper Extended Band Edge Plot (Band 25/2 – 10.0MHz QPSK – RB Size 50)



Plot 7-154. Lower Band Edge Plot (Band 25/2 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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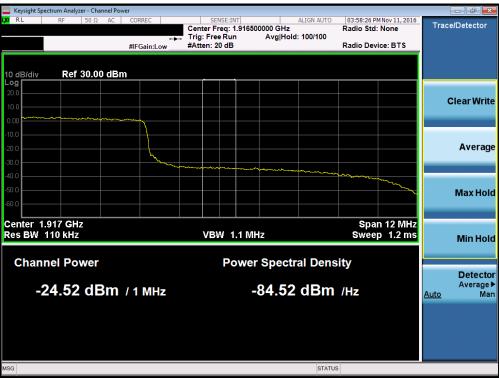
Plot 7-155. Lower Extended Band Edge Plot (Band 25/2 – 15.0MHz QPSK – RB Size 75)



Plot 7-156. Upper Band Edge Plot (Band 25/2 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 06 of 120
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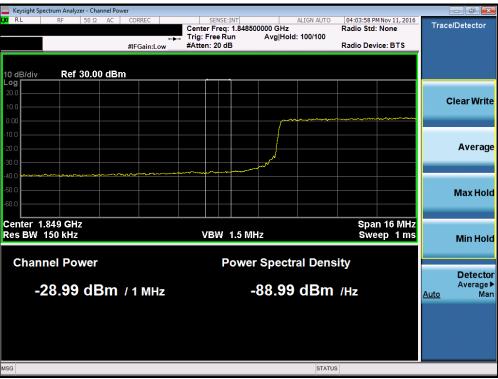
Plot 7-157. Upper Extended Band Edge Plot (Band 25/2 – 15.0MHz QPSK – RB Size 75)



Plot 7-158. Lower Band Edge Plot (Band 25/2 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 07 of 120
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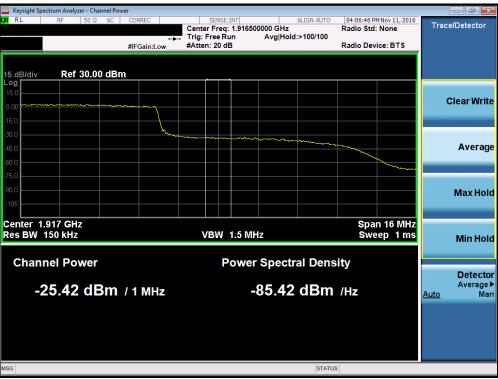
Plot 7-159. Lower Extended Band Edge Plot (Band 25/2 - 20.0MHz QPSK - RB Size 100)



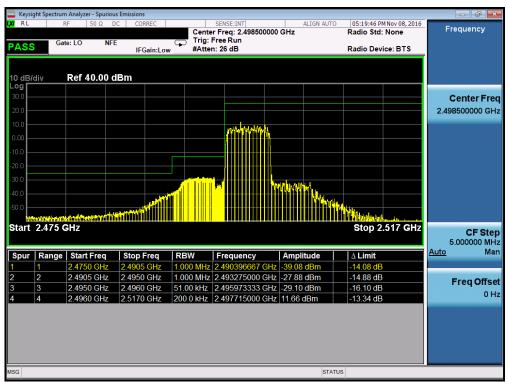
Plot 7-160. Upper Band Edge Plot (Band 25/2 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-161. Upper Extended Band Edge Plot (Band 25/2 – 20.0MHz QPSK – RB Size 100)



Plot 7-162. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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		Analyzer - Sp							
RL	Gat	F 50 S	DC	CORREC	Trig:	SENSE:INT Freq: 2.687500000 Free Run	GHz	05:22:51 PM Nov 08 Radio Std: None	
ASS	Gat	6. 20		IFGain:Lo		n: 26 dB		Radio Device: B	TS
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.og									
_									Center Fre
20.0					LONAL PROPERTY	lunder.			2.687500000 GH
10.0					<u> </u>	N N			
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50.0 111	2.665 G							Stop 2.715	GHz CF Ste 5.000000 MH
Start	2.665 G			Stop Freq	RBW	Frequency	Amplitude		GHz CF Step 5.000000 MH
Start Spur	2.665 G Range	Hz Start Fre 2.6650 Gl	q S tz 2.	6900 GHz	1.000 MHz	2.688291667 GHz	Amplitude 15.56 dBm	Stop 2.715	GHz CF Ste 5.000000 MH
Start Spur	2.665 G Range	Hz Start Fre 2.6650 GF 2.6900 GF	q S 1z 2. 1z 2.	6900 GHz 6910 GHz	1.000 MHz 100.0 kHz	2.688291667 GHz 2.690010000 GHz	Amplitude 15.56 dBm -25.06 dBm	Stop 2.715 Δ Limit -9.440 dB -15.06 dB	GHZ CF Stej 5.000000 MH Auto Ma
50.0 Start 2 Spur 1 2 3	Range 1 3	Start Fre 2.6650 GI 2.6900 GI 2.6910 GI	q S 1z 2. 1z 2. 1z 2. 1z 2.	6900 GHz 6910 GHz 6950 GHz	1.000 MHz 100.0 kHz 1.000 MHz	2.688291667 GHz 2.690010000 GHz 2.691126667 GHz	Amplitude 15.56 dBm -25.06 dBm -24.91 dBm	Stop 2.715 ▲ Limit -9.440 dB -15.06 dB -14.91 dB	GHz CF Stej 5.000000 MH Auto Ma Freq Offse
50.0 111 Start 2 Spur 2 2 3 3	Range 1 2 3 4	Start Fre 2.6650 GI 2.6900 GI 2.6910 GI 2.6950 GI	q S -1z 2. -1z 2. -1z 2. -1z 2. -1z 2.	6900 GHz 6910 GHz 6950 GHz 6960 GHz	1.000 MHz 100.0 kHz 1.000 MHz 1.000 MHz	2.688291667 GHz 2.690010000 GHz 2.691126667 GHz 2.695180000 GHz	Amplitude 15.56 dBm -25.06 dBm -24.91 dBm -33.46 dBm	Δ Limit -9.440 dB -15.06 dB -14.91 dB -20.46 dB	GHZ CF Stel 5.000000 MH Auto Ma
50.0 F Start 2 Start 2 Start 4	Range 1 2 3 4	Start Fre 2.6650 GI 2.6900 GI 2.6910 GI	q S -1z 2. -1z 2. -1z 2. -1z 2. -1z 2.	6900 GHz 6910 GHz 6950 GHz	1.000 MHz 100.0 kHz 1.000 MHz 1.000 MHz	2.688291667 GHz 2.690010000 GHz 2.691126667 GHz	Amplitude 15.56 dBm -25.06 dBm -24.91 dBm -33.46 dBm	Stop 2.715 ▲ Limit -9.440 dB -15.06 dB -14.91 dB	GHz CF St 5.000000 M Auto Freq Off
50.0 Fri	Range 1 2 3 4	Start Fre 2.6650 GI 2.6900 GI 2.6910 GI 2.6950 GI	q S -1z 2. -1z 2. -1z 2. -1z 2. -1z 2.	6900 GHz 6910 GHz 6950 GHz 6960 GHz	1.000 MHz 100.0 kHz 1.000 MHz 1.000 MHz	2.688291667 GHz 2.690010000 GHz 2.691126667 GHz 2.695180000 GHz	Amplitude 15.56 dBm -25.06 dBm -24.91 dBm -33.46 dBm	Δ Limit -9.440 dB -15.06 dB -14.91 dB -20.46 dB	GHz CF Ste 5.000000 M Auto M Freq Offs
spur	Range 1 2 3 4	Start Fre 2.6650 GI 2.6900 GI 2.6910 GI 2.6950 GI	q S -1z 2. -1z 2. -1z 2. -1z 2. -1z 2.	6900 GHz 6910 GHz 6950 GHz 6960 GHz	1.000 MHz 100.0 kHz 1.000 MHz 1.000 MHz	2.688291667 GHz 2.690010000 GHz 2.691126667 GHz 2.695180000 GHz	Amplitude 15.56 dBm -25.06 dBm -24.91 dBm -33.46 dBm	Δ Limit -9.440 dB -15.06 dB -14.91 dB -20.46 dB	GHZ CF Ste 5.000000 MH Auto Ma

Plot 7-163. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)



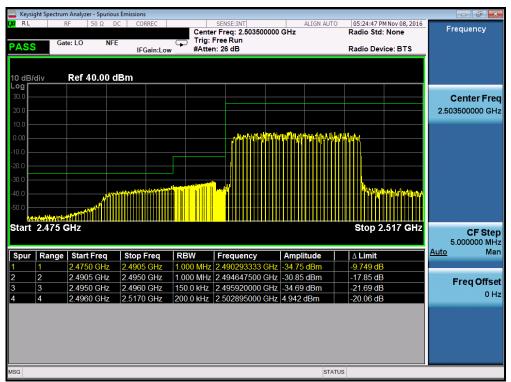
Plot 7-164. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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		m Analyzer - S							- P
M RL		RF 50	Ω DC	CORREC	Trig:	SENSE:INT Fr Freq: 2.685000 Free Run n: 26 dB	ALIGN A	UTO 05:09:13 PM No Radio Std: No Radio Device:	one Frequency
10 dB/d Log	div	Ref 40.	00 dBr	n					
30.0 20.0									Center Fre 2.685000000 GR
10.0				/////					
-20.0		ALC: NO.	and the state	nyut f					
-40.0 -50.0									
Start	2.665	GHz						Stop 2.71	15 GHz CF Ste 5.000000 Mi
Spur	Range	Start Fre	eq S	top Freq	RBW	Frequency	Amplitude	∆ Limit	Auto Ma
	1	2.6650 G		6900 GHz		2.686083333		-12.96 dB	
	2	2.6900 G		6910 GHz			Hz -27.88 dBm	-17.88 dB	Freq Offs
	3	2.6910 G		6950 GHz			Hz -27.33 dBm	-17.33 dB	01
	4	2.6950 G		7007 GHz			Hz -27.14 dBm	-14.14 dB	
5	5	2.7007 G	5Hz 2.	7150 GHz	1.000 MHz	2.701291200 G	Hz -36.94 dBm	-11.94 dB	
ISG							S	TATUS	

Plot 7-165. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)



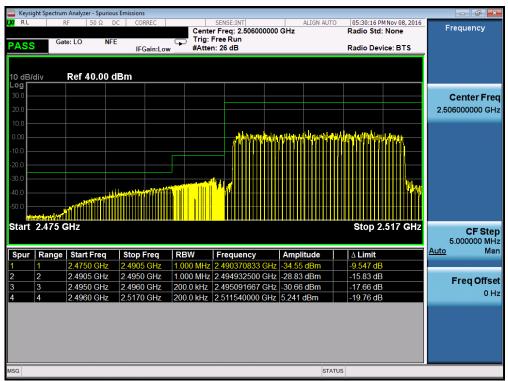
Plot 7-166. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-167. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)



Plot 7-168. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-169. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

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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 v02r02 - 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.

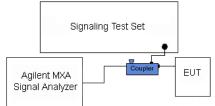


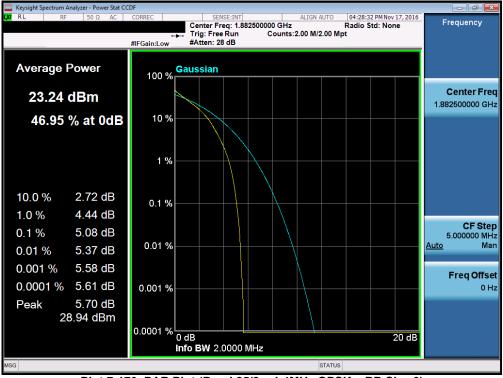
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

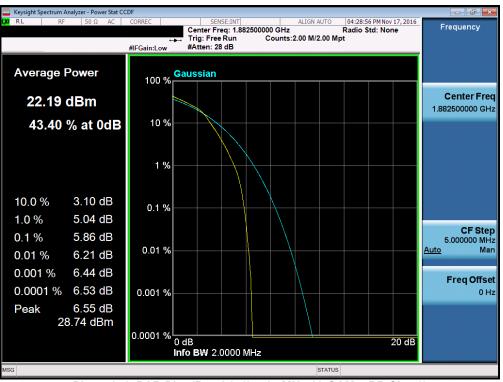
None.

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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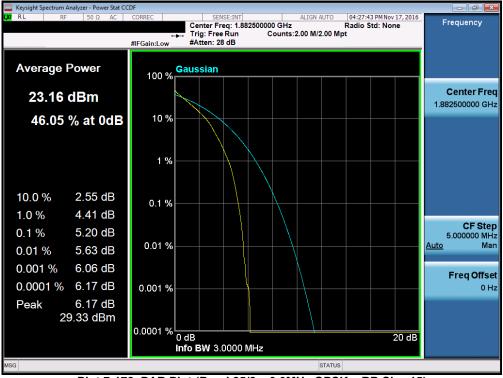
Plot 7-170. PAR Plot (Band 25/2 – 1.4MHz QPSK – RB Size 6)



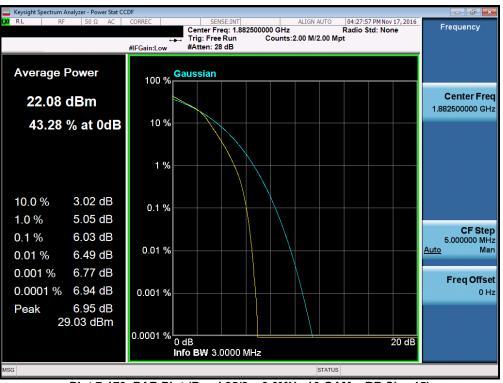
Plot 7-171. PAR Plot (Band 25/2 – 1.4MHz 16-QAM – RB Size 6)

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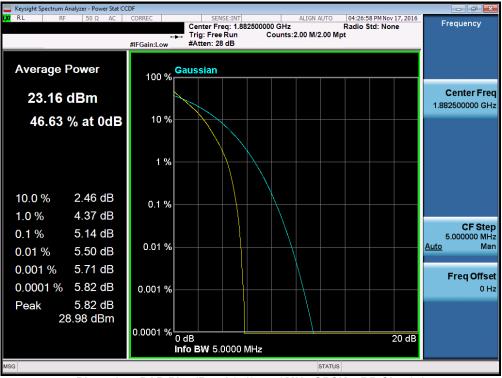
Plot 7-172. PAR Plot (Band 25/2 - 3.0MHz QPSK - RB Size 15)



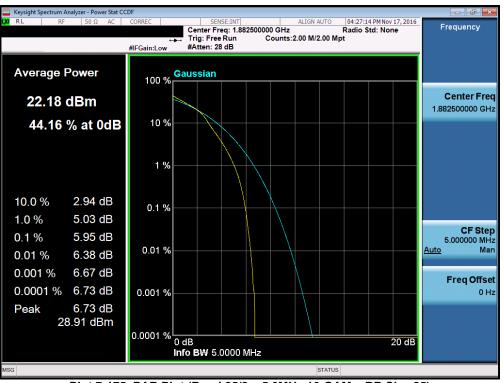
Plot 7-173. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - RB Size 15)

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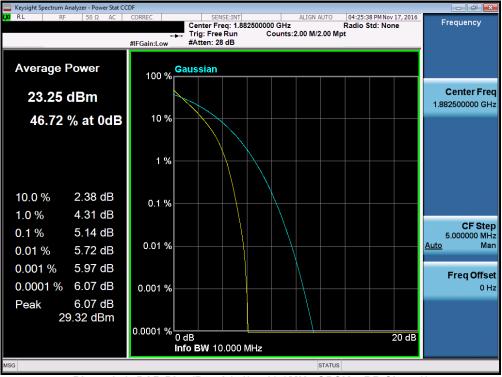
Plot 7-174. PAR Plot (Band 25/2 - 5.0MHz QPSK - RB Size 25)



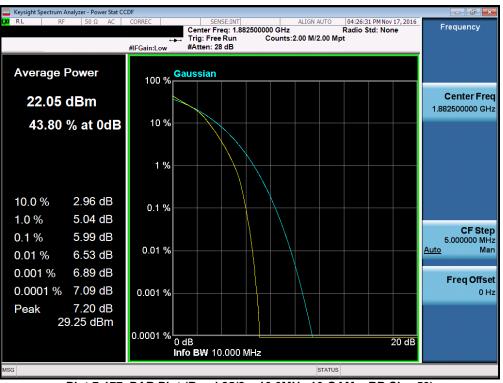
Plot 7-175. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - RB Size 25)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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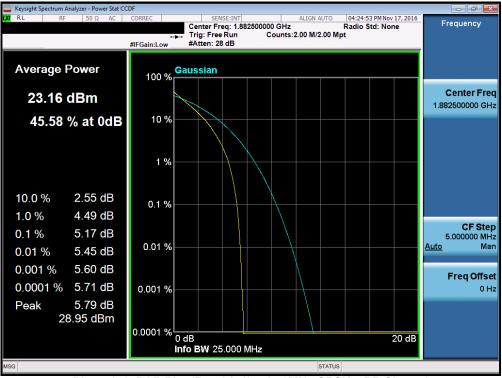
Plot 7-176. PAR Plot (Band 25/2 – 10.0MHz QPSK – RB Size 50)



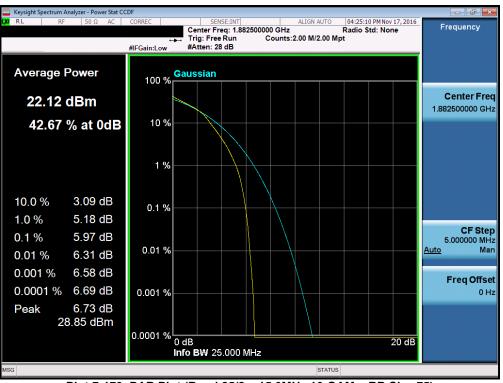
Plot 7-177. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - RB Size 50)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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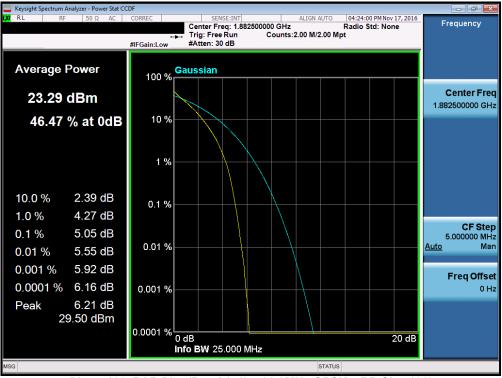
Plot 7-178. PAR Plot (Band 25/2 – 15.0MHz QPSK – RB Size 75)



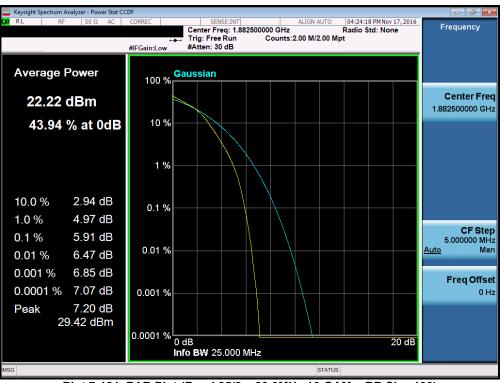
Plot 7-179. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - RB Size 75)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-180. PAR Plot (Band 25/2 – 20.0MHz QPSK – RB Size 100)



Plot 7-181. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - RB Size 100)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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7.6 Radiated Power (ERP/EIRP) §22.913(a.2) §24.232(c.2) §27.50(h.2) §27.50(c.10) §27.50(d.4)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) 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 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 v02r02 - Section 5.2.1

ANSI/TIA-603-D-2010 - 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 > 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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Test Setup

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

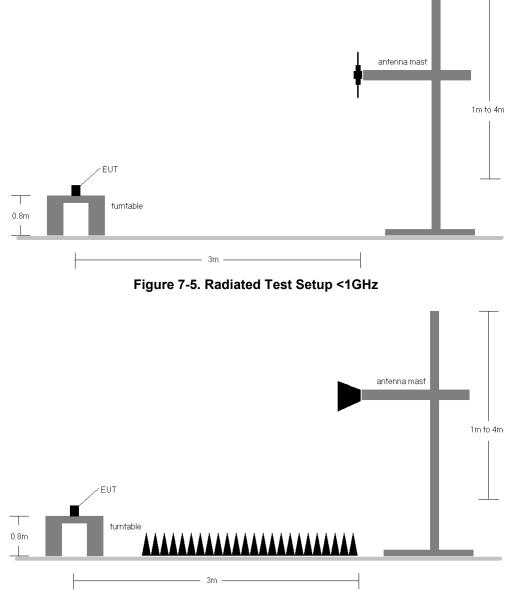


Figure 7-6. Radiated Test Setup >1GHz

Test Notes

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

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	Н	307	26	1 / 0	17.64	2.12	19.76	34.77	-15.01
707.50	1.4	QPSK	н	284	26	1 / 0	17.24	2.31	19.55	34.77	-15.22
715.30	1.4	QPSK	н	284	26	1 / 0	17.21	2.52	19.73	34.77	-15.04
699.70	1.4	16-QAM	Н	307	26	1 / 0	16.26	2.12	18.38	34.77	-16.39
707.50	1.4	16-QAM	Н	284	26	1 / 0	16.00	2.31	18.31	34.77	-16.46
715.30	1.4	16-QAM	н	284	26	1 / 0	16.17	2.52	18.69	34.77	-16.08
700.50	3	QPSK	н	281	25	1 / 14	17.30	2.12	19.42	34.77	-15.35
707.50	3	QPSK	н	284	28	1 / 14	17.57	2.31	19.88	34.77	-14.89
714.50	3	QPSK	н	288	15	1 / 0	17.95	2.50	20.45	34.77	-14.32
700.50	3	16-QAM	н	281	25	1 / 14	16.19	2.12	18.31	34.77	-16.46
707.50	3	16-QAM	н	284	28	1 / 14	16.48	2.31	18.79	34.77	-15.98
714.50	3	16-QAM	н	288	15	1 / 0	16.81	2.50	19.31	34.77	-15.46
701.50	5	QPSK	н	307	10	1 / 0	17.97	2.15	20.12	34.77	-14.65
707.50	5	QPSK	н	284	4	1 / 0	17.64	2.31	19.95	34.77	-14.82
713.50	5	QPSK	н	290	15	1 / 24	17.83	2.48	20.31	34.77	-14.47
701.50	5	16-QAM	Н	307	10	1 / 0	17.10	2.15	19.25	34.77	-15.52
707.50	5	16-QAM	н	284	4	1 / 0	16.53	2.31	18.84	34.77	-15.93
713.50	5	16-QAM	н	290	15	1 / 24	16.89	2.48	19.37	34.77	-15.41
704.00	10	QPSK	н	311	16	1 / 0	17.30	2.22	19.52	34.77	-15.26
707.50	10	QPSK	Н	311	20	1/0	17.70	2.31	20.01	34.77	-14.76
711.00	10	QPSK	н	287	12	1 / 49	17.56	2.41	19.97	34.77	-14.80
704.00	10	16-QAM	н	311	16	1/0	16.35	2.22	18.57	34.77	-16.21
707.50	10	16-QAM	н	311	20	1 / 0	16.83	2.31	19.14	34.77	-15.63
711.00	10	16-QAM	Н	287	12	1 / 49	16.45	2.41	18.86	34.77	-15.91
714.50	3	QPSK	V	103	6	1 / 74	16.01	3.04	19.05	34.77	-15.72

Table 7-2. ERP Data (Band 12)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed 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 [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	Н	194	165	1/0	14.56	5.01	19.57	38.45	-18.88
836.50	1.4	QPSK	н	208	159	3 / 2	14.67	5.16	19.83	38.45	-18.62
848.30	1.4	QPSK	Н	187	158	3/2	13.67	5.30	18.97	38.45	-19.48
824.70	1.4	16-QAM	Н	194	165	3 / 2	13.38	5.01	18.39	38.45	-20.06
836.50	1.4	16-QAM	Н	208	159	3/2	13.77	5.16	18.93	38.45	-19.52
848.30	1.4	16-QAM	Н	187	158	3/2	12.58	5.30	17.88	38.45	-20.57
825.50	3	QPSK	Н	221	20	1 / 14	16.34	5.02	21.36	38.45	-17.09
836.50	3	QPSK	Н	196	24	1 / 14	16.56	5.16	21.72	38.45	-16.73
847.50	3	QPSK	Н	211	39	1 / 14	15.96	5.29	21.25	38.45	-17.20
825.50	3	16-QAM	Н	221	20	1 / 14	15.24	5.02	20.26	38.45	-18.19
836.50	3	16-QAM	Н	196	24	1 / 14	15.41	5.16	20.57	38.45	-17.88
847.50	3	16-QAM	Н	211	39	1 / 14	14.98	5.29	20.27	38.45	-18.18
826.50	5	QPSK	Н	193	200	1 / 24	16.47	5.03	21.50	38.45	-16.95
836.50	5	QPSK	Н	202	216	1 / 24	16.81	5.16	21.97	38.45	-16.48
846.50	5	QPSK	Н	209	213	1 / 24	16.30	5.28	21.58	38.45	-16.87
826.50	5	16-QAM	Н	193	200	1 / 24	14.99	5.03	20.02	38.45	-18.43
836.50	5	16-QAM	н	202	216	1 / 24	15.60	5.16	20.76	38.45	-17.69
846.50	5	16-QAM	н	209	213	1 / 24	15.42	5.28	20.70	38.45	-17.75
829.00	10	QPSK	Н	220	29	1/0	16.13	5.06	21.19	38.45	-17.26
836.50	10	QPSK	н	220	32	1/0	16.48	5.16	21.64	38.45	-16.81
844.00	10	QPSK	Н	198	38	1/0	16.06	5.25	21.31	38.45	-17.14
829.00	10	16-QAM	Н	220	29	1/0	14.80	5.06	19.86	38.45	-18.59
836.50	10	16-QAM	н	220	32	1/0	15.43	5.16	20.59	38.45	-17.86
844.00	10	16-QAM	Н	198	38	1/0	14.94	5.25	20.19	38.45	-18.26
836.50	5	QPSK	V	147	213	1/0	15.17	5.00	20.17	38.45	-18.28

Table 7-3. ERP Data (Band 26/5)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
831.50	15	QPSK	н	198	19	1 / 74	15.99	5.10	21.09	38.45	-17.37
836.50	15	QPSK	н	198	37	1 / 0	15.94	5.16	21.10	38.45	-17.35
841.50	15	QPSK	н	198	37	1 / 0	15.44	5.22	20.66	38.45	-17.79
831.50	15	16-QAM	н	198	19	1 / 74	15.18	5.10	20.28	38.45	-18.18
836.50	15	16-QAM	н	198	37	1 / 0	15.13	5.16	20.29	38.45	-18.16
841.50	15	16-QAM	н	198	37	1 / 0	14.62	5.22	19.84	38.45	-18.61

Table 7-4. ERP Data (Band 26)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed 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 Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	н	245	293	3 / 2	14.50	9.66	24.16	30.00	-5.84
1732.50	1.4	QPSK	н	230	284	1 / 5	14.43	9.61	24.04	30.00	-5.96
1754.30	1.4	QPSK	н	235	280	3/2	14.60	9.57	24.17	30.00	-5.83
1710.70	1.4	16-QAM	н	245	293	3/2	13.79	9.66	23.45	30.00	-6.55
1732.50	1.4	16-QAM	н	230	284	1 / 5	13.10	9.61	22.71	30.00	-7.29
1754.30	1.4	16-QAM	н	235	280	3/2	13.18	9.57	22.75	30.00	-7.25
1711.50	3	QPSK	н	248	292	1 / 0	13.10	9.65	22.75	30.00	-7.25
1732.50	3	QPSK	Н	238	279	1 / 14	14.53	9.61	24.14	30.00	-5.86
1753.50	3	QPSK	Н	233	282	1 / 0	14.56	9.57	24.13	30.00	-5.87
1711.50	3	16-QAM	н	248	292	1 / 0	12.00	9.65	21.65	30.00	-8.35
1732.50	3	16-QAM	н	238	279	1 / 14	13.55	9.61	23.16	30.00	-6.84
1753.50	3	16-QAM	н	233	282	1 / 0	13.56	9.57	23.13	30.00	-6.87
1712.50	5	QPSK	н	106	131	1 / 0	13.81	9.65	23.46	30.00	-6.54
1732.50	5	QPSK	Н	150	127	1 / 24	14.79	9.61	24.40	30.00	-5.60
1752.50	5	QPSK	Н	104	133	1 / 24	14.82	9.57	24.39	30.00	-5.61
1712.50	5	16-QAM	Н	106	131	1 / 24	12.66	9.65	22.31	30.00	-7.69
1732.50	5	16-QAM	н	150	127	1 / 24	13.83	9.61	23.44	30.00	-6.56
1752.50	5	16-QAM	Н	104	133	1 / 24	13.88	9.57	23.45	30.00	-6.55
1715.00	10	QPSK	н	101	130	1 / 0	14.90	9.65	24.55	30.00	-5.45
1732.50	10	QPSK	н	101	132	1 / 0	14.88	9.61	24.49	30.00	-5.51
1750.00	10	QPSK	н	100	131	1 / 49	14.38	9.58	23.96	30.00	-6.04
1715.00	10	16-QAM	н	101	130	1 / 0	13.67	9.65	23.32	30.00	-6.68
1732.50	10	16-QAM	н	101	132	1 / 0	13.58	9.61	23.19	30.00	-6.81
1750.00	10	16-QAM	Н	100	131	1 / 49	13.40	9.58	22.98	30.00	-7.02
1717.50	15	QPSK	Н	101	129	1 / 0	14.06	9.64	23.70	30.00	-6.30
1732.50	15	QPSK	Н	100	137	1 / 74	13.00	9.61	22.61	30.00	-7.39
1747.50	15	QPSK	н	106	137	1 / 0	14.85	9.58	24.43	30.00	-5.57
1717.50	15	16-QAM	н	101	129	1 / 0	13.23	9.64	22.87	30.00	-7.13
1732.50	15	16-QAM	Н	100	137	1 / 74	12.96	9.61	22.57	30.00	-7.43
1747.50	15	16-QAM	Н	106	137	1/0	13.83	9.58	23.41	30.00	-6.59
1720.00	20	QPSK	н	106	128	1/0	14.44	9.64	24.08	30.00	-5.92
1732.50	20	QPSK	н	100	130	1/0	14.06	9.61	23.67	30.00	-6.33
1745.00	20	QPSK	н	111	133	1/0	14.53	9.59	24.12	30.00	-5.88
1720.00	20	16-QAM	н	106	128	1/0	13.20	9.64	22.84	30.00	-7.16
1732.50	20	16-QAM	н	100	130	1/0	13.26	9.61	22.87	30.00	-7.13
1745.00	20	16-QAM	н	111	133	1/0	13.44	9.59	23.03	30.00	-6.97
1715.00	10.0	QPSK	V	100	240	1 / 99	14.30	9.64	23.94	30.00	-6.06

Table 7-5. EIRP Data (Band 4)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed 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 Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	н	103	284	1 / 0	14.49	9.35	23.84	33.01	-9.17
1882.50	1.4	QPSK	н	101	284	3 / 2	15.54	9.27	24.81	33.01	-8.20
1914.30	1.4	QPSK	н	100	271	3 / 2	14.64	9.26	23.90	33.01	-9.11
1850.70	1.4	16-QAM	Н	103	284	1 / 0	13.41	9.35	22.76	33.01	-10.25
1882.50	1.4	16-QAM	Н	101	284	3 / 2	14.55	9.27	23.82	33.01	-9.19
1914.30	1.4	16-QAM	Н	100	271	3 / 2	13.35	9.26	22.61	33.01	-10.40
1851.50	3	QPSK	Н	105	284	1 / 0	15.27	9.35	24.62	33.01	-8.39
1882.50	3	QPSK	Н	107	204	1 / 14	15.64	9.27	24.91	33.01	-8.10
1913.50	3	QPSK	Н	100	273	1 / 14	15.30	9.26	24.56	33.01	-8.45
1851.50	3	16-QAM	н	105	284	1 / 0	14.21	9.35	23.56	33.01	-9.45
1882.50	3	16-QAM	н	107	204	1 / 14	14.21	9.27	23.48	33.01	-9.53
1913.50	3	16-QAM	н	100	273	1 / 14	14.12	9.26	23.38	33.01	-9.63
1852.50	5	QPSK	н	106	285	1 / 0	15.08	9.34	24.42	33.01	-8.59
1882.50	5	QPSK	Н	101	278	1 / 24	16.09	9.27	25.36	33.01	-7.65
1912.50	5	QPSK	н	100	274	1 / 24	15.11	9.26	24.37	33.01	-8.64
1852.50	5	16-QAM	Н	106	285	1 / 0	14.08	9.34	23.42	33.01	-9.59
1882.50	5	16-QAM	н	101	278	1 / 24	14.73	9.27	24.00	33.01	-9.01
1912.50	5	16-QAM	н	100	274	1 / 24	14.06	9.26	23.32	33.01	-9.69
1855.00	10	QPSK	н	106	281	1 / 0	15.13	9.34	24.47	33.01	-8.54
1882.50	10	QPSK	Н	107	279	1 / 49	15.78	9.27	25.05	33.01	-7.96
1910.00	10	QPSK	Н	100	271	1 / 49	14.58	9.25	23.83	33.01	-9.18
1855.00	10	16-QAM	Н	106	281	1/0	13.94	9.34	23.28	33.01	-9.73
1882.50	10	16-QAM	Н	107	279	1 / 49	14.66	9.27	23.93	33.01	-9.08
1910.00	10	16-QAM	н	100	271	1 / 49	13.56	9.25	22.81	33.01	-10.20
1857.50	15	QPSK	Н	108	282	1 / 74	14.21	9.33	23.54	33.01	-9.47
1882.50	15	QPSK	Н	101	277	1 / 0	14.60	9.27	23.87	33.01	-9.14
1907.50	15	QPSK	Н	100	272	1/0	13.78	9.24	23.02	33.01	-9.99
1857.50	15	16-QAM	Н	108	282	1 / 74	12.85	9.33	22.18	33.01	-10.83
1882.50	15	16-QAM	Н	101	277	1/0	13.62	9.27	22.89	33.01	-10.12
1907.50	15	16-QAM	Н	100	272	1/0	12.69	9.24	21.93	33.01	-11.08
1860.00	20	QPSK	Н	110	281	1 / 99	14.16	9.32	23.48	33.01	-9.53
1882.50	20	QPSK	Н	105	280	1 / 99	15.06	9.27	24.33	33.01	-8.68
1905.00	20	QPSK	н	100	275	1 / 99	15.19	9.24	24.43	33.01	-8.58
1860.00	20	16-QAM	н	110	281	1 / 99	13.18	9.32	22.50	33.01	-10.51
1882.50	20	16-QAM	Н	105	280	1 / 99	13.80	9.27	23.07	33.01	-9.94
1905.00	20	16-QAM	Н	100	275	1 / 99	13.64	9.24	22.88	33.01	-10.13
1882.50	5	QPSK	V	100	251	1/0	13.84	9.28	23.12	33.01	-9.89

Table 7-6. EIRP Data (Band 25/2)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 116 of 120
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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 Limit [dBm]	Margin [dB]
2498.50	5	QPSK	Н	295	267	1 / 24	15.78	8.60	24.38	33.01	-8.63
2593.00	5	QPSK	н	282	255	1 / 0	16.39	8.53	24.92	33.01	-8.09
2687.50	5	QPSK	н	216	242	1 / 24	14.61	8.79	23.40	33.01	-9.61
2498.50	5	16-QAM	н	295	267	1 / 24	14.03	8.60	22.63	33.01	-10.38
2593.00	5	16-QAM	Н	282	255	1 / 0	15.77	8.53	24.30	33.01	-8.71
2687.50	5	16-QAM	н	216	242	1 / 24	13.43	8.79	22.22	33.01	-10.79
2501.00	10	QPSK	н	245	269	1 / 49	16.19	8.60	24.79	33.01	-8.22
2593.00	10	QPSK	н	233	270	1 / 0	16.48	8.53	25.01	33.01	-8.00
2685.00	10	QPSK	н	264	251	1 / 0	12.94	8.78	21.72	33.01	-11.29
2501.00	10	16-QAM	н	245	269	1 / 49	14.22	8.60	22.82	33.01	-10.19
2593.00	10	16-QAM	Н	233	270	1 / 0	16.23	8.53	24.76	33.01	-8.25
2685.00	10	16-QAM	н	264	251	1 / 0	11.75	8.78	20.53	33.01	-12.48
2503.50	15	QPSK	н	275	260	1 / 0	14.88	8.59	23.47	33.01	-9.54
2593.00	15	QPSK	н	275	261	1 / 0	15.13	8.53	23.66	33.01	-9.35
2682.50	15	QPSK	н	263	255	1 / 0	13.70	8.77	22.47	33.01	-10.54
2503.50	15	16-QAM	Н	275	260	1 / 0	11.98	8.59	20.57	33.01	-12.44
2593.00	15	16-QAM	н	275	261	1 / 0	14.89	8.53	23.42	33.01	-9.59
2682.50	15	16-QAM	н	263	255	1 / 0	11.62	8.77	20.39	33.01	-12.62
2506.00	20	QPSK	н	275	258	1 / 0	15.17	8.59	23.76	33.01	-9.25
2593.00	20	QPSK	н	275	259	1 / 0	15.56	8.53	24.09	33.01	-8.92
2680.00	20	QPSK	Н	285	79	1 / 0	11.54	8.77	20.31	33.01	-12.70
2506.00	20	16-QAM	н	275	258	1 / 0	13.25	8.59	21.84	33.01	-11.17
2593.00	20	16-QAM	Н	275	259	1 / 0	13.77	8.53	22.30	33.01	-10.71
2680.00	20	16-QAM	Н	285	79	1 / 0	9.64	8.77	18.41	33.01	-14.60
2593.00	10	QPSK	V	101	334	1 / 99	14.80	8.93	23.73	33.01	-9.28

Table 7-7. EIRP Data (Band 41)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 117 of 120
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7.7 Radiated Spurious Emissions Measurements §2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h) §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 tuned dipole antennas. Measurements on signals operating above 1GHz 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. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x span / RBW
- 5. Detector = RMS
- 6. Trace mode = Average (Max Hold for pulsed emissions)
- 7. The trace was allowed to stabilize

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
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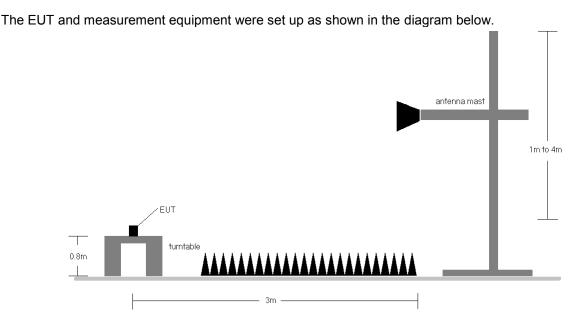


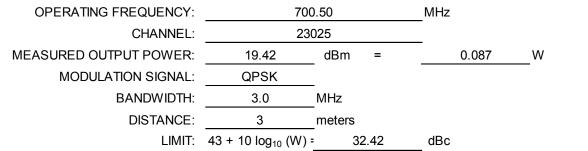
Figure 7-7. Test Instrument & Measurement Setup

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

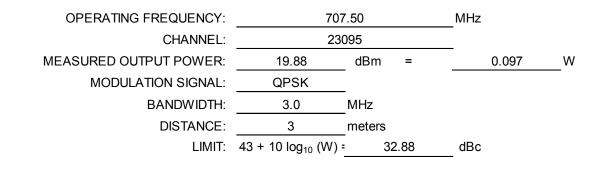
FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1401.00	Н	100	95	-66.46	2.36	-64.10	83.5
2101.50	Н	119	217	-52.99	3.46	-49.52	68.9
2802.00	Н	-	-	-66.19	4.74	-61.44	80.9

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

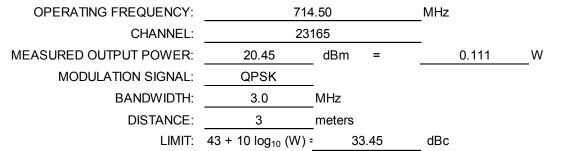


Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1415.00	Н	154	263	-69.02	2.54	-66.48	86.4
2122.50	Н	117	224	-50.76	3.42	-47.34	67.2
2830.00	Н	-	-	-66.11	4.85	-61.26	81.1

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

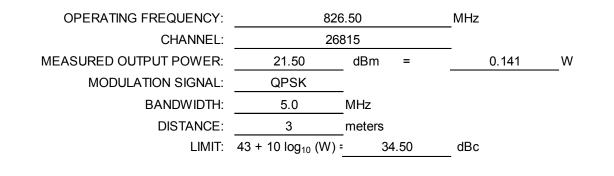
FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager		
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1429.00	Н	149	263	-64.39	2.72	-61.67	82.1
2143.50	Н	272	290	-66.56	3.37	-63.19	83.6
2858.00	Н	-	-	-66.16	4.96	-61.19	81.6

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

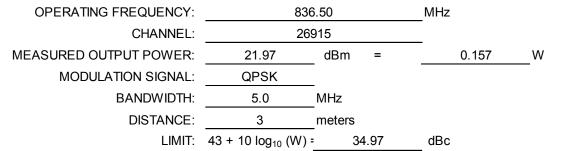


Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
1653.00	Н	-	-	-71.84	3.62	-68.22	89.7
2479.50	Н	240	300	-67.36	3.56	-63.80	85.3
3306.00	Н	-	-	-67.87	5.83	-62.05	83.6

Table 7-11. Radiated Spurious Data (Band 26/5 – Low Channel)

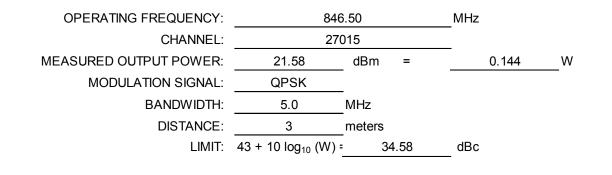
FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	Н	-	-	-71.82	3.52	-68.30	90.3
2509.50	Н	247	69	-64.71	3.59	-61.12	83.1
3346.00	Н	-	-	-67.80	5.87	-61.93	83.9

Table 7-12. Radiated Spurious Data (Band 26/5 – Mid Channel)

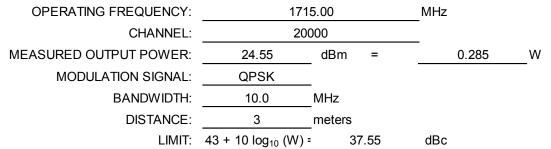


Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1693.00	Н	-	-	-71.53	3.42	-68.11	89.7
2539.50	Н	242	1	-64.18	3.72	-60.46	82.0
3386.00	Н	-	-	-67.68	5.91	-61.77	83.3

Table 7-13. Radiated Spurious Data (Band 26/5 – High Channel)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed 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]	[dBc]
3430.00	Н	100	175	-59.54	8.16	-51.38	75.9
5145.00	Н	-	-	-65.80	10.37	-55.42	80.0

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

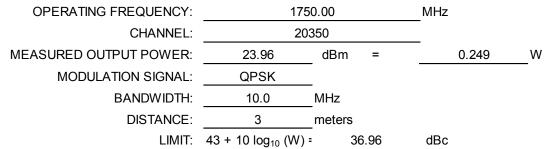
OPERATING FREQUENCY:	173	2.50	MHz
CHANNEL:	20^2	175	_
MEASURED OUTPUT POWER:	24.49	dBm =	0.281 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	37.49	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3465.00	Н	230	202	-62.46	8.26	-54.20	78.7
5197.50	Н	-	-	-66.09	10.41	-55.67	80.2

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

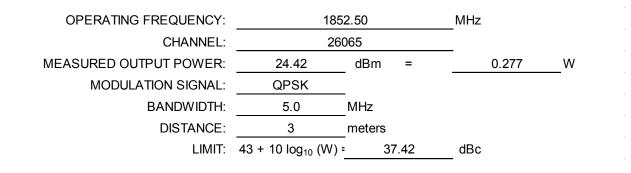
FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3500.00	Н	100	260	-61.53	8.35	-53.17	77.1
5250.00	Н	-	-	-65.47	10.36	-55.11	79.1

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

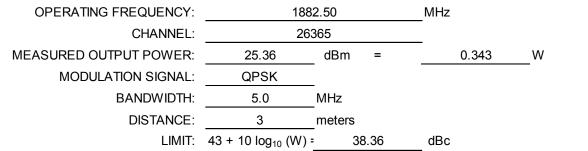


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3705.00	Н	-	-	-66.39	8.42	-57.97	82.4
5557.50	Н	-	-	-65.39	10.52	-54.87	79.3
7410.00	Н	-	-	-63.99	12.01	-51.98	76.4

Table 7-17. Radiated Spurious Data (Band 25/2 – Low Channel)

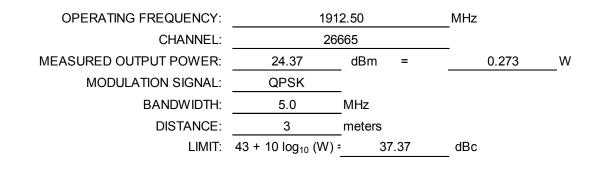
FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dega 124 of 120		
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3765.00	Н	-	-	-66.56	8.66	-57.90	83.3
5647.50	Н	-	-	-65.29	10.62	-54.66	80.0
7530.00	Н	-	-	-63.81	12.06	-51.75	77.1

Table 7-18. Radiated Spurious Data (Band 25/2 – Mid Channel)

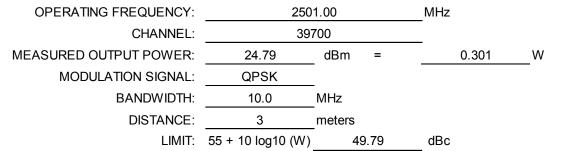


Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3825.00	Н	-	-	-66.53	8.76	-57.78	82.1
5737.50	Н	-	-	-65.31	10.72	-54.59	79.0
7650.00	Н	-	-	-64.39	12.18	-52.22	76.6

Table 7-19. Radiated Spurious Data (Band 25/2 – High Channel)

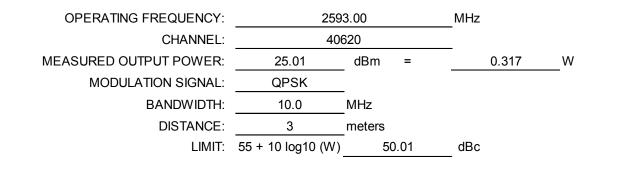
FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dage 105 of 120			
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Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5002.00	Н	-	-	-64.39	10.14	-54.24	79.0
7503.00	Н	-	-	-63.30	12.02	-51.28	76.1
10004.00	Н	-	-	-60.52	13.00	-47.52	72.3

 Table 7-20. Radiated Spurious Data (Band 41 – Low Channel)

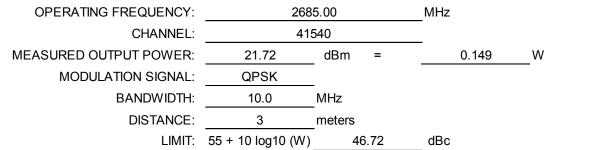


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5186.00	Н	230	157	-53.97	10.40	-43.57	68.6
7779.00	Н	119	189	-61.68	12.24	-49.44	74.5
10372.00	Н	-	-	-60.32	13.13	-47.19	72.2

Table 7-21. Radiated Spurious Data (Band 41 – Mid Channel)

FCC ID: ZNFLS777	ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed 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]	[dBc]
5370.00	Н	107	228	-47.72	10.37	-37.35	59.1
8055.00	Н	107	42	-51.38	12.54	-38.83	60.6
10740.00	Н	-	-	-58.76	13.00	-45.77	67.5

Table 7-22. Radiated Spurious Data (Band 41 – High Channel)

FCC ID: ZNFLS777		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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7.8 Frequency Stability / Temperature Variation §2.1055 §22.355 §24.235 §27.54

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. 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 and 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-D-2010

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 12 Frequency Stability Measurements §2.1055 §27.54

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23790	-
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	707,500,262	262	0.0000370
100 %		- 30	707,500,075	75	0.0000106
100 %		- 20	707,500,155	155	0.0000219
100 %		- 10	707,499,818	-182	-0.0000257
100 %		0	707,499,693	-307	-0.0000434
100 %		+ 10	707,500,037	37	0.0000052
100 %		+ 20	707,500,043	43	0.0000061
100 %		+ 30	707,499,701	-299	-0.0000423
100 %		+ 40	707,500,018	18	0.0000025
100 %		+ 50	707,500,055	55	0.0000078
BATT. ENDPOINT	3.45	+ 20	707,499,563	-437	-0.0000618

Table 7-23. Frequency Stability Data (Band 12)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain inband 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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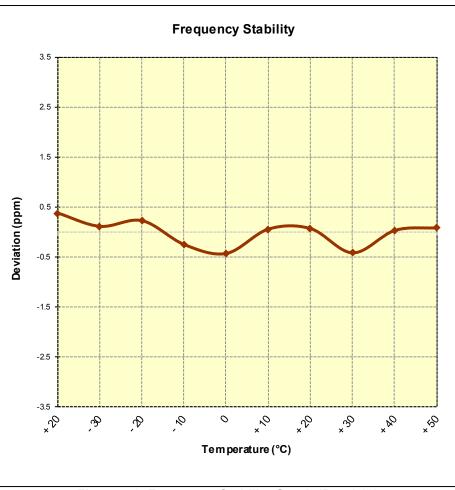


Figure 7-8. Frequency Stability Graph (Band 12)

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Band 26/5 Frequency Stability Measurements §2.1055 §22.355

OPERATING FREQUENCY:	831,500,000	Hz
CHANNEL:	26865	_
REFERENCE VOLTAGE:	3.85	VDC
DEVIATION LIMIT :	± 0.00025 % or 2.5 ppm	_

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	831,499,962	-38	-0.0000046
100 %		- 30	831,499,986	-14	-0.0000017
100 %		- 20	831,500,287	287	0.0000345
100 %		- 10	831,499,630	-370	-0.0000445
100 %		0	831,500,030	30	0.0000036
100 %		+ 10	831,499,964	-36	-0.0000043
100 %		+ 20	831,500,217	217	0.0000261
100 %		+ 30	831,500,004	4	0.0000005
100 %		+ 40	831,500,008	8	0.0000010
100 %		+ 50	831,499,846	-154	-0.0000185
BATT. ENDPOINT	3.45	+ 20	831,500,127	127	0.0000153

Table 7-24. Frequency Stability Data (Band 26/5)

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 inband 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 26/5 Frequency Stability Measurements §2.1055 §22.355

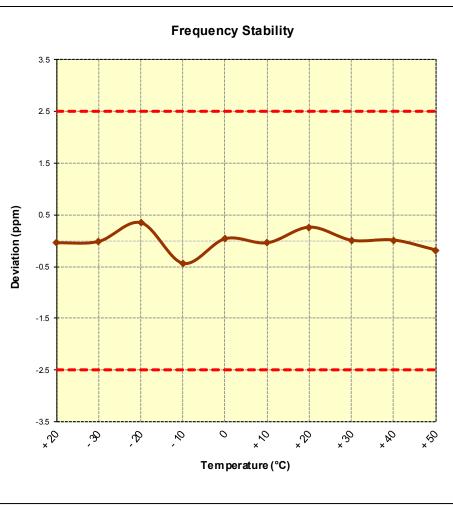


Figure 7-9. Frequency Stability Graph (Band 26/5)

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Band 4 Frequency Stability Measurements §2.1055 §§27.54

OPERATING FREQUENCY:	1,732,500,000	Hz
CHANNEL:	20175	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,732,500,398	398	0.0000230
100 %		- 30	1,732,500,104	104	0.0000060
100 %		- 20	1,732,500,035	35	0.0000020
100 %		- 10	1,732,500,147	147	0.0000085
100 %		0	1,732,500,307	307	0.0000177
100 %		+ 10	1,732,499,605	-395	-0.0000228
100 %		+ 20	1,732,499,991	-9	-0.0000005
100 %		+ 30	1,732,499,955	-45	-0.0000026
100 %		+ 40	1,732,500,116	116	0.0000067
100 %		+ 50	1,732,499,957	-43	-0.0000025
BATT. ENDPOINT	3.45	+ 20	1,732,499,918	-82	-0.0000047

Table 7-25. Frequency Stability Data (Band 4)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain inband 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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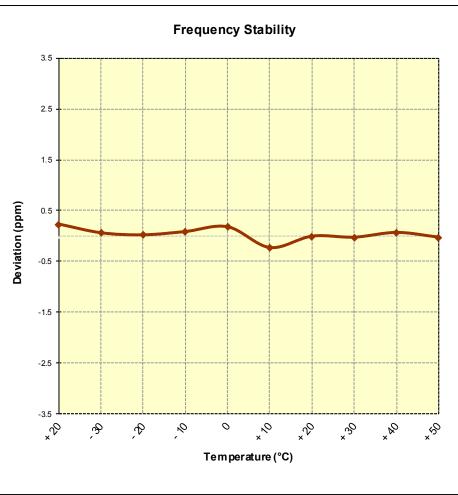


Figure 7-10. Frequency Stability Graph (Band 4)

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Band 25/2 Frequency Stability Measurements §2.1055 §24.235

OPERATING FREQUENCY:	1,882,500,000	Hz
CHANNEL:	26365	_
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,882,499,864	-136	-0.0000072
100 %		- 30	1,882,500,152	152	0.0000081
100 %		- 20	1,882,499,810	-190	-0.0000101
100 %		- 10	1,882,499,953	-47	-0.0000025
100 %		0	1,882,499,915	-85	-0.0000045
100 %		+ 10	1,882,500,398	398	0.0000211
100 %		+ 20	1,882,499,781	-219	-0.0000116
100 %		+ 30	1,882,500,098	98	0.0000052
100 %		+ 40	1,882,500,062	62	0.0000033
100 %		+ 50	1,882,499,835	-165	-0.0000088
BATT. ENDPOINT	3.45	+ 20	1,882,499,939	-61	-0.0000032

Table 7-26. Frequency Stability Data (Band 25/2)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain inband 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 25/2 Frequency Stability Measurements §2.1055 §24.235

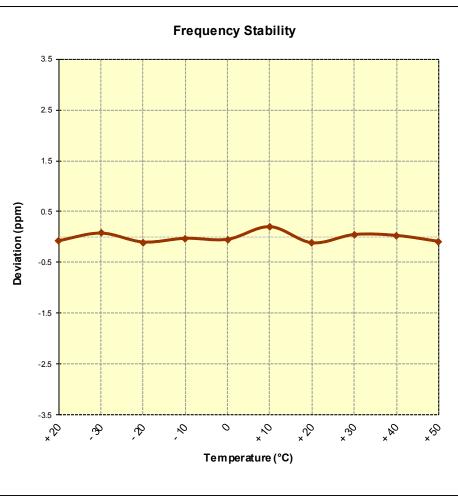


Figure 7-11. Frequency Stability Graph (Band 25/2)

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Band 41 Frequency Stability Measurements §2.1055 §27.54

OPERATING FREQUENCY:	2,593,000,000	Hz
CHANNEL:	40620	_
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,592,999,821	-179	-0.0000069
100 %		- 30	2,593,000,077	77	0.0000030
100 %		- 20	2,593,000,231	231	0.0000089
100 %		- 10	2,592,999,707	-293	-0.0000113
100 %		0	2,593,000,120	120	0.0000046
100 %		+ 10	2,592,999,842	-158	-0.0000061
100 %		+ 20	2,593,000,018	18	0.0000007
100 %		+ 30	2,592,999,995	-5	-0.0000002
100 %		+ 40	2,593,000,198	198	0.0000076
100 %		+ 50	2,593,000,063	63	0.0000024
BATT. ENDPOINT	3.45	+ 20	2,592,999,854	-146	-0.0000056

Table 7-27. Frequency Stability Data (Band 41)

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 inband 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 41 Frequency Stability Measurements §2.1055 §27.54

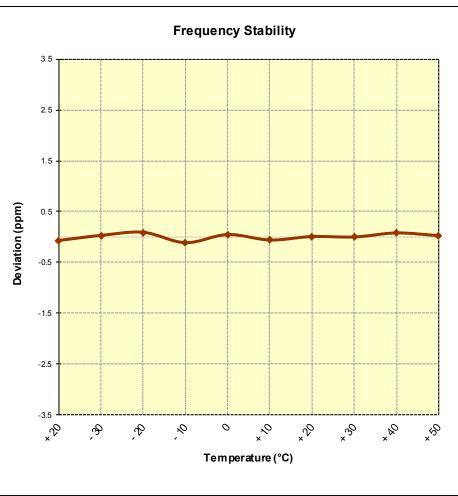


Figure 7-12. Frequency Stability Graph (Band 41)

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFLS777** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

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