

### 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) §27.53(a.4)

### **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 30 is > 43 + 10log10 (P[Watts] at 2300-2305MHz & 2345-2360MHz, > 55 + 10log10 (P[Watts]) at 2320-2324MHz & 2341-2345MHz, > 61 + 10log10 (P[Watts]) at 2324-2328MHz & 2337-2341MHz, > 67 + 10log10 (P[Watts]) at 2288-2292MHz & 2328-2337MHz, and > 70 + 10log10 (P[Watts]) at frequencies < 2288MHz & >2365MHz.

# The minimum permissible attenuation level for Band 7 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 > 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

#### Test Setup

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

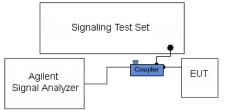


Figure 7-3. Test Instrument & Measurement Setup

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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.

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.

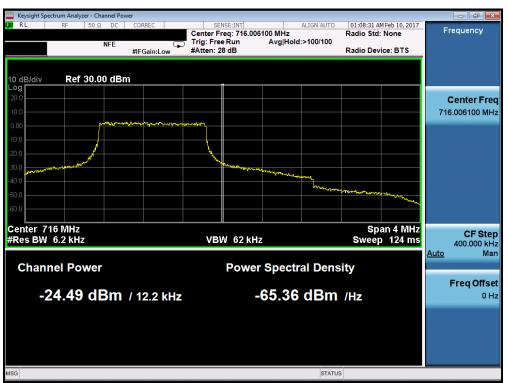
Per 27.53(a)(5) in the 1 MHz bands immediately outside and adjacent to the channel blocks at 2305, 2310, 2315, 2320, 2345, 2350, 2355, and 2360 MHz, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 1 MHz). 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 emissions are attenuated at least 26 dB below the transmitter power.

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.

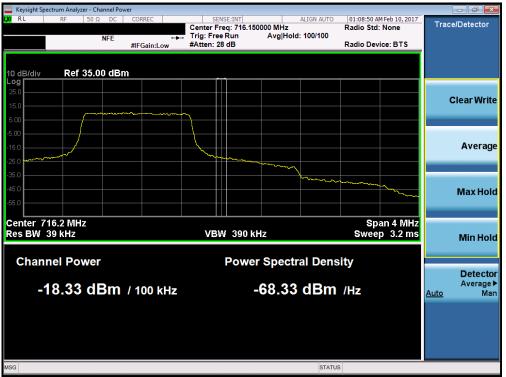
RL RF 50 Ω	AC CORREC PNO: Wide IFGain:Low	SENSE:INT Trig: Free Run Atten: 36 dB	ALIGN AUTO	07:57:48 PM Jan 17, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
0 dB/div Ref 25.00 dE			Mkr	1 697.992 MHz -35.05 dBm	Auto Tune
15.0				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Center Freq 698.000000 MHz
5.00					Start Freq 696.000000 MHz
25.0				DL1 -13.00 dBm	Stop Freq 700.000000 MHz
35.0	man manana and a second	~~~			CF Step 400.000 kHz <u>Auto</u> Man
55.0					<b>Freq Offset</b> 0 Hz
56.0					Scale Type
enter 698.000 MHz Res BW 100 kHz	#VBW (	300 kHz	Sweep 1.	Span 4.000 MHz .000 ms (1001 pts)	Log <u>Lin</u>
Blot 7 101	Lower Band F	dae Blot (Br	status and 12 – 1.4MH		

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Plot 7-102. Upper Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



Plot 7-103. Upper Extended Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

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	ectrum Analyze										
LXI RL	RF	50 Ω AC	CORREC	SEI	ISE:INT	#Avg Typ	ALIGN AUTO e: RMS		MJan 17, 2017 E <b>1 2 3 4 5 6</b>	F	requency
			PNO: Wie IFGain:Lo	le Trig: Free w Atten: 36				TYF De			
10 dB/div Log	Ref 25.	00 dBm					Mk	r1 697.9 -24.	52 MHz 52 dBm		Auto Tune
15.0											<b>Center Freq</b> 8.000000 MHz
-5.00										69	Start Freq 6.000000 MHz
-15.0					1				DL1 -13.00 dBm	70	<b>Stop Freq</b> 0.000000 MHz
-35.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								<u>Auto</u>	<b>CF Step</b> 400.000 kHz Man
-55.0											Freq Offset 0 Hz
-65.0											Scale Type
Center 69 #Res BW			#	VBW 300 kHz			Sweep 1	Span 4 .000 ms (	.000 MHz 1001 pts)	Log	<u>Lin</u>
MSG							STATUS	;		_	

Plot 7-104. Lower Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)



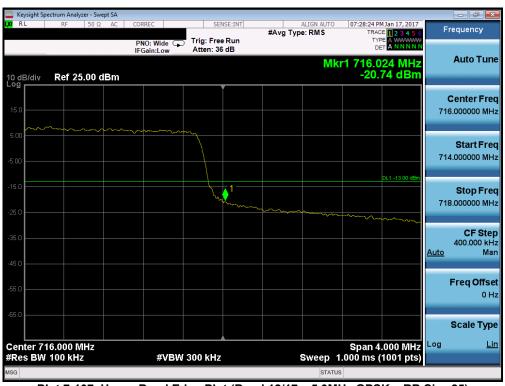
Plot 7-105. Upper Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

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Keysight Spectrum Analy								[	
X RL RF Center Freq 698	50 Ω AC 8.000000 N	CORREC	SENSE:INT Trig: Free Run Atten: 36 dB	ALI #Avg Type: I	GN AUTO RMS	07:27:03 PM Jar TRACE TYPE A DET A	17, 2017 2 3 4 5 6	Fre	quency
10 dB/div Ref 25	i.00 dBm	II Gam.Low			Mkr	1 697.956 -25.54	6 MHz dBm		Auto Tune
15.0									<b>enter Freq</b> 000000 MHz
-5.00					/				Start Freq 000000 MHz
-15.0			1	- the the second s	- And	DL1	-13.00 dBm		Stop Freq 000000 MHz
-35.0	······							Auto	<b>CF Step</b> 400.000 kHz Mar
-55.0								F	r <b>eq Offse</b> 0 Hz
-65.0								s	Scale Type
Center 698.000 M #Res BW 100 kH:		#VBW	300 kHz	Sv	veep 1.	Span 4.00 000 ms (10		Log	Lin
MSG					STATUS				

Plot 7-106. Lower Band Edge Plot (Band 12/17 – 5.0MHz QPSK – RB Size 25)



Plot 7-107. Upper Band Edge Plot (Band 12/17 – 5.0MHz QPSK – RB Size 25)

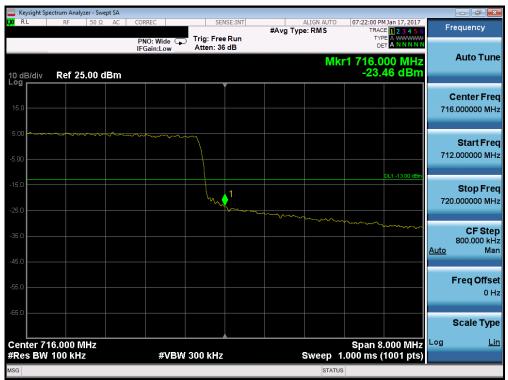
FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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01/09/2016



RL	RF	r - Swep 50 Ω	AC	CORREC		S	ENSE:INT		ALIGN AUTO	07:21:17 P	M Jan 17, 2017	_	
				PNO: W	/ide 🖵	Trig: Fr Atten:	ee Run	#Avg T	ype: RMS	TRA	CE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	F	requency
) dB/div	Ref 25.	00 dl	Зm	IFGain:	Low	Atten:	36 dB		Mk	r1 697.8	324 MHz 36 dBm		Auto Tun
5.0													Center Fre 8.000000 MH
.00											DL1 -13.00 dBm	69	<b>Start Fre</b> 4.000000 Mi
5.0							1	and the second				70	<b>Stop Fr</b> 2.000000 M
5.0	~~~~~		~~~~~		~~~~							<u>Auto</u>	<b>CF Ste</b> 800.000 kl M
5.0													Freq Offs 0
5.0													Scale Ty
	8.000 MH 100 kHz	łz			#VBW	300 kH	z		Sweep 1	Span 8 .000 ms	3.000 MHz (1001 pts)	Log	Ţ

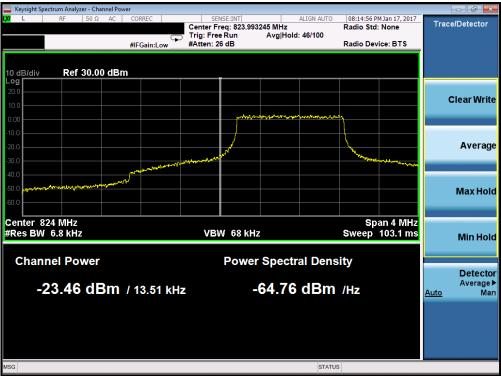
Plot 7-108. Lower Band Edge Plot (Band 12/17 – 10.0MHz QPSK – RB Size 50)



Plot 7-109. Upper Band Edge Plot (Band 12/17 – 10.0MHz QPSK – RB Size 50)

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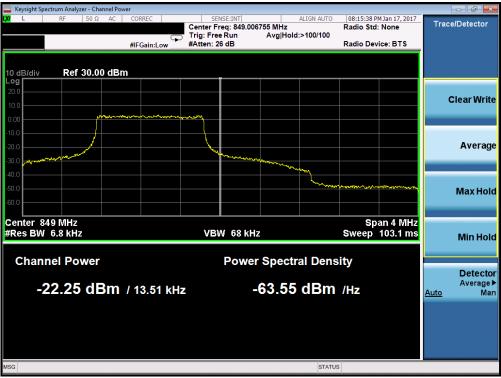
Plot 7-110. Lower Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)



Plot 7-111. Lower Extended Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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Plot 7-112. Upper Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)



Plot 7-113. Upper Extended Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)

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- • • •							pt SA	Analyzer - Swe	ight Spectrum	- Keys
08:22:38 PM Jan 17, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW		#Avg Type	SENSE:INT		Nide 🕶	CORREC	AC	50 Ω	RF	<mark>XI</mark> RL
	Mirst Of			Atten: 3		PNO: V IFGain:				
1 824.000 MHz -16.295 dBm	-1						Bm	f 25.00 d	div Re	10 dB Log r
Center Fre			Ĭ							
824.000000 MH		~~~~~								15.0
Start Fre										5.00
822.000000 MH										-5.00
DL1 - 13.00 dBm Stop Fre			_ <b>_</b> !							-15.0
826.000000 MH					~~~	~~~~	~~~~	www.www.www.		-25.0
CF Ste 400.000 kH										-35.0
Auto Ma										-45.0
Freq Offse										
0 H										-55.0 -
Scale Typ										-65.0
Span 4.000 MHz	Sp								er 824.00	
000 ms (1001 pts)	Sweep 1.000		IZ	300 kHz	#VBW			kHz	BW 100	#Res

Plot 7-114. Lower Band Edge Plot (Band 5 – 3.0MHz QPSK – RB Size 15)



Plot 7-115. Upper Band Edge Plot (Band 5 – 3.0MHz QPSK – RB Size 15)

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🔤 Keysight Spect							
LX/ RL	RF 5	OΩ AC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	08:28:20 PM Jan 17, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Log	Ref 25.0	0 dBm	IFGain:Low	Atten: 36 dB	Mł	r1 823.960 MHz -19.81 dBm	Auto Tune
15.0							Center Freq 824.000000 MHz
-5.00						DL1 -13.00 dBm	Start Fred 822.000000 MHz
-15.0	~~~~~	م مرم	mmm	1			Stop Freq 826.000000 MHz
-35.0							CF Step 400.000 kHz <u>Auto</u> Mar
-55.0							Freq Offse 0 H
-65.0							Scale Type
Center 824 #Res BW 1		Z	#VBW	300 kHz	Sweep	Span 4.000 MHz 1.000 ms (1001 pts)	Log <u>Lin</u>
MSG					STATU	s	

Plot 7-116. Lower Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)



Plot 7-117. Upper Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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	ectrum Analyzer										
LXI RL	RF 5	50 Ω AC	CORREC	SEN	SE:INT	#Avg Typ	ALIGN AUTO	08:37:04 PI	1 Jan 17, 2017 E <b>1 2 3 4 5 6</b>	F	requency
			PNO: Wide 😱	Trig: Free		ming 19P		TYP			
			IFGain:Low	Atten: 36	dВ						Auto Tune
	B-6050						INIK	r1 823.9 -23.9	92 MHZ		
10 dB/div	Ref 25.0	IV aBM					1	-20.			
											Center Freq
15.0										82	4.000000 MHz
5.00					$\sim$	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			~~~~~~		Otart English
											Start Freq 0.000000 MHz
-5.00										82	0.000000 IVIHZ
									DL1 -13.00 dBm		
-15.0					1						Stop Freq
				•	کہ ا					82	8.000000 MHz
-25.0				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							
-35.0											CF Step
-35.0											800.000 kHz
-45.0										<u>Auto</u>	Man
-40.0											
-55.0											Freq Offset
											0 Hz
-65.0											
											Scale Type
										Log	Lin
Center 82 #Res BW	24.000 MH	Z	#\(B)M	300 kHz			Swoon 1	8 Span . 000 ms (	.000 101112	LUg	Lin
	TOU KHZ		#VBW	300 KHZ					roo r pisj		
MSG							STATUS				

Plot 7-118. Lower Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)



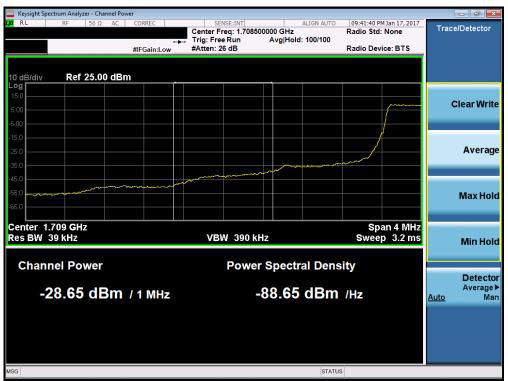
Plot 7-119. Upper Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Spe	ectrum Analyzei	r - Swept SA									
L <mark>XI</mark> RL	RF	50Ω AC	CORREC			#Avg Typ	ALIGN AUTO	TRAC	MJan 17, 2017 DE <b>1 2 3 4 5</b> 6 PE A WWWWW T A N N N N N	F	requency
10 dB/div Log	Ref 25.0	00 dBm	IFGain:Low	Atten: 36			Mkr1	1.710 (	000 GHz 72 dBm		Auto Tune
15.0											Center Freq 0000000 GHz
-5.00						ᡊ᠕ᢆᠴ᠆ᢣᡇᠬ᠋᠋᠘ᠺ᠕ᡣ᠇	and the second of the second o		DL1 -13.00 dBm	1.70	Start Freq 8000000 GHz
-15.0					1					1.71	<b>Stop Freq</b> 2000000 GHz
-35.0		all-states of a state	John Marine	work when the state				nur de la companya de	wanter	<u>Auto</u>	CF Step 400.000 kHz Man
-55.0	mont										Freq Offset 0 Hz
-65.0											Scale Type
Center 1.7 #Res BW		Hz	#VB	W 43 kHz			Sweep 2	Span 4 9.07 ms (	.000 MHz 1001 pts)	Log	Lin
MSG							STATUS				

Plot 7-120. Lower Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



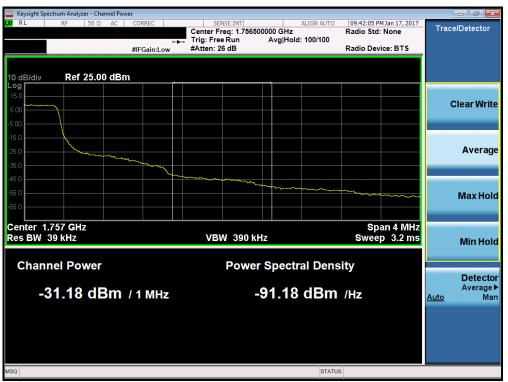
Plot 7-121. Lower Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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weysight Spectrum Analyzer - Swept SA				
LXV RL RF 50Ω AC	CORREC SENSE:IN	#Avg Type: RMS	09:41:59 PM Jan 17, 2017 TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide Trig: Free Run IFGain:Low Atten: 36 dB			Auto Tune
10 dB/div Ref 25.00 dBm		Mkr	1.755 000 GHz -26.564 dBm	
				Center Freq
15.0				1.755000000 GHz
5.00	marten			Start Freq
-5.00				1.753000000 GHz
-15.0			DL1 -13.00 dBm	Stop Freq
-25.0	\\\			1.757000000 GHz
-35.0		water and an and a second and a second and a second and a second a second a second a second a second a second a		CF Step
-45.0		many		400.000 kHz <u>Auto</u> Man
-45.0		and the second sec	mon many	Freq Offset
-55.0				0 Hz
-65.0				Scale Type
Center 1.755000 GHz			<b>3</b> Dall 4.000 Mil 12	Log <u>Lin</u>
#Res BW 13 kHz	#VBW 43 kHz	Sweep :	29.07 ms (1001 pts)	
MSG		STATU	S	

Plot 7-122. Upper Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



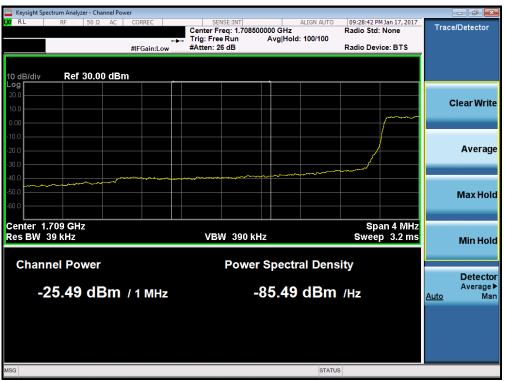
Plot 7-123. Upper Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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	ectrum Analyz	er - Swept SA									
LXI RL	RF	50 Ω AC	CORREC	SEN	SE:INT	#Avg Typ	ALIGN AUTO	09:28:24 PM J	an 17, 2017 1 2 3 4 5 6	F	equency
			PNO: Wide 🖵 IFGain:Low	Trig: Free Atten: 36		#7(18) JP		DET)	A WWWWW A N N N N N		
10 dB/div Log	Ref 25	.00 dBm					Mkr1	1.710 00 -29.13	0 GHz 5 dBm		Auto Tune
15.0											<b>Center Freq</b> 0000000 GHz
-5.00									.1 -13.00 dBm	1.70	Start Freq 8000000 GHz
-15.0					,1					1.71	Stop Freq 2000000 GHz
-35.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~						<u>Auto</u>	CF Step 400.000 kHz Man
-55.0											Freq Offset 0 Hz
-65.0											Scale Type
Center 1.		GHz		64 H.U.				Span 4.0	VV 14112	Log	Lin
#Res BW	30 KHZ		#VBW	91 kHz				.533 ms (1	001 pts)		
MSG							STATUS				

Plot 7-124. Lower Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



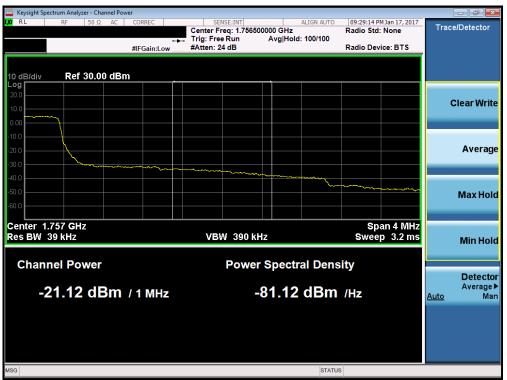
Plot 7-125. Lower Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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	ectrum Analyzer - S	wept SA									
LX/RL	RF 50	Ω AC	CORREC		SE:INT	#Avg Typ	ALIGN AUTO	09:29:07 PM TRACE	123456	F	requency
			PNO: Wide G	Trig: Free Atten: 36			Mkr1	1.755 0			Auto Tune
10 dB/div Log	Ref 25.00	dBm						-26.8	37 dBm		
15.0											Center Fred 5000000 GH:
-5.00	Verener	v.m.								1.75	Start Free 3000000 GH
-15.0					1				DL1 -13.00 dBm	1.75	<b>Stop Fre</b> 7000000 GH
-35.0					Y		and the second	waturn	manny.	<u>Auto</u>	<b>CF Ste</b> 400.000 kH Ma
-45.0											Freq Offse 0 H
-65.0											Scale Typ
Center 1. #Res BW	755000 GH: 30 kHz	Z	#VBV	/ 91 kHz			Sweep 5	Span 4. .533 ms (1		Log	Lii
MSG							STATUS				

Plot 7-126. Upper Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



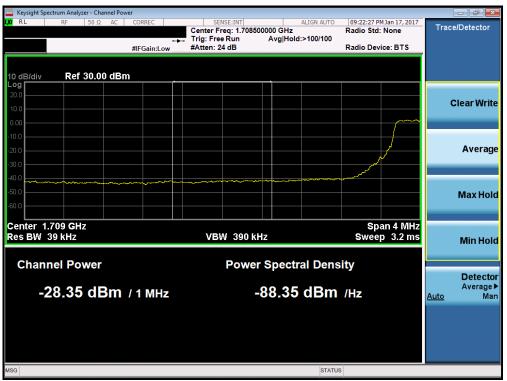
Plot 7-127. Upper Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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🔤 Keysight Spec		er - Swept											
LX/IRL	RF	50 Ω	AC	CORREC		S Trig: Fr	ENSE:INT	#Avg Ty	ALIGN AUTO pe: RMS	TRAC	M Jan 17, 2017 DE <b>1 2 3 4 5 6</b> PE A WWWWW ET A N N N N N	F	requency
10 dB/div	Ref 25	.00 dE	3m	IFGain:L	ow	Atten: 3			Mkr1	1.710 (	000 GHz 81 dBm		Auto Tune
15.0													Center Freq 0000000 GHz
-5.00									~~~~~		DL1 -13.00 dBm	1.70	Start Freq 08000000 GHz
-15.0												1.71	Stop Freq 2000000 GHz
-35.0		~~~~				m	r <sup>2</sup>					<u>Auto</u>	CF Step 400.000 kH: Mar
-55.0													Freq Offse 0 H
-65.0													Scale Type
Center 1.7 #Res BW {		GHz		#	VBW	150 kH	z		Sweep 1	Span 4 .933 ms (	.000 MHz (1001 pts)	Log	Lin
MSG									STATUS	3			

Plot 7-128. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



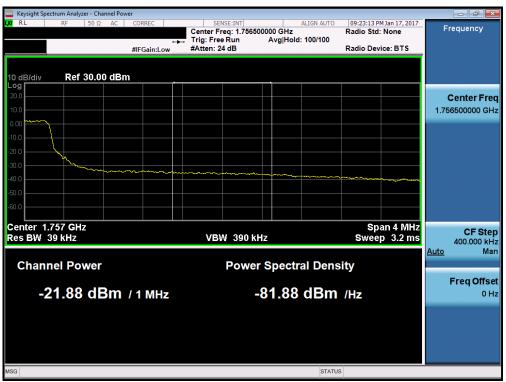
Plot 7-129. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 92 of 150
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	ectrum Analyzer - S										
XI RL	RF 50	Ω AC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO	09:23:00 PM	Jan 17, 2017	F	requency
			PNO: Wide G	Trig: Free Atten: 36		"····ə··)P			123456 A WWWWW A N N N N N		
10 dB/div Log	Ref 25.00	dBm					Mkr1	1.755 0 -26.3	04 GHz 2 dBm		Auto Tune
15.0											Center Fred 5000000 GHz
-5.00		~~~~~	-^							1.75	Start Fred 3000000 GHz
-15.0				- t	1				0L1 -13.00 dBm	1.75	<b>Stop Fred</b> 7000000 GHz
-35.0						·····				<u>Auto</u>	CF Step 400.000 kH Mar
-45.0											Freq Offse 0 H
-65.0											Scale Type
Center 1. #Res BW	755000 GH: 51 kHz	Z	#VBV	v 150 kHz			Sweep 1	Span 4. .933 ms (1	000 101112	Log	<u>Lir</u>
//SG							STATUS	;			

Plot 7-130. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 7-131. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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	ectrum Analyzer -	Swept SA									
L <mark>XI</mark> RL	RF 50	DΩ AC	CORREC		SE:INT	#Avg Typ	ALIGN AUTO e: RMS	08:55:37 PM	123456	Fi	requency
			PNO: Wide IFGain:Low	Atten: 36			Mkr1	DET			Auto Tune
10 dB/div Log	Ref 25.0	0 dBm						-32.3	8 dBm		
											Center Freq
15.0										1.71	0000000 GHz
5.00							~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Start Freq
-5.00										1.70	6000000 GHz
-15.0					_			D	L1 -13.00 dBm		Stop Freq
-25.0					1					1.71	4000000 GHz
-35.0					//						CF Step
	~~~~	~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						<u>Auto</u>	800.000 kHz Man
-45.0											Freq Offset
-55.0											0 Hz
-65.0											Scale Type
Center 1.7	710000 CH	17						Span 8.0	00 MHz	Log	Lin
#Res BW			#VBW	300 kHz			Sweep 1	.000 ms (1			
MSG							STATUS	3			

Plot 7-132. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

	ctrum Analyzer - S	wept SA									
L <mark>XI</mark> RL	RF 50	Ω AC	CORREC	SE	NSE:INT	#Avg Typ	ALIGN AUTO		M Jan 17, 2017 E <b>1 2 3 4 5 6</b>	F	requency
			PNO: Fast IFGain:Low	⊷⊷ Trig: Fre Atten: 36		#Avg iyi	Je. KIVIS	TY	PE A WWWWW T A NNNNN		
10 dB/div	Ref 25.00	dBm					Mkr	1 1.709 0 -25.	00 GHz 71 dBm		Auto Tune
15.0											<b>Center Freq</b> 17000000 GHz
-5.00										1.70	Start Freq 5000000 GHz
-15.0									<u>DL1 -13.00 dBm</u> 1	1.70	Stop Freq 9000000 GHz
-35.0	, J.,,	········		4710-0 <sup>4</sup> 9-0710-06-06-06-06-06-06-06-06-06-06-06-06-06	gentere and	~~^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	an - an	4/~/#~/#4//////////////////////////////		<u>Auto</u>	<b>CF Step</b> 400.000 kHz Man
-55.0											Freq Offset 0 Hz
-65.0											Scale Type
Center 1.7 #Res BW	707000 GHz 1.0 MHz	2	#VE	3W 3.0 MHz			Sweep	Span 4 1.000 ms (	.000 MHz 1001 pts)	Log	Lin
MSG							STATU	JS			

Plot 7-133. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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🔤 Keysight Sp	ectrum Analyzer -										
LXI RL	RF 50	Ω AC	CORREC		SE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	1 Jan 17, 2017 E 1 2 3 4 5 6	Fr	equency
			PNO: Wide 🖵	Trig: Free Atten: 36				TYF			
10 dB/div	Ref 25.00	) dBm					Mkr1	1.755 0 -31.	00 GHz 88 dBm		Auto Tune
15.0											<b>Center Freq</b> 5000000 GHz
5.00		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								
-5.00										1.75	Start Fred 1000000 GHz
-15.0									DL1 -13.00 dBm		Oton Eros
-25.0										1.75	Stop Fred 9000000 GH:
-35.0				M.	1 ~~~						CF Step
-45.0					~~~~	m		~~~~	~~~~~	<u>Auto</u>	800.000 kH Mar
-55.0											Freq Offse
-65.0											0 H:
											Scale Type
Center 1. #Res BW	755000 GH 100 kHz	Z	#VBW	300 kHz			Sweep_1	Span 8 .000 ms (	.000 MHz 1001 pts)	Log	Lir
MSG							STATUS				

Plot 7-134. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



Plot 7-135. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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<sup>01/09/2016</sup> 



	ectrum Analyz													
L <mark>XU</mark> RL	RF	50 Ω	AC	CORREC	ide 🖵		SENSE:INT	-	#Avg Typ	ALIGN AUTO e: RMS	TR	PM Jan 17, 2017 ACE 1 2 3 4 5 6 YPE A WWWWW DET A NNNNN	F	requency
10 dB/div	Ref 25	.00 dB	m	IFGain:I	ow	Atten	36 dB			Mkr'	1.709	976 GHz .05 dBm		Auto Tune
15.0														Center Fred 10000000 GH:
-5.00								$\int$		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		DL1 -13.00 dBm	1.70	Start Free 04000000 GH
-15.0							1.1						1.7	<b>Stop Fre</b> 16000000 GH
-35.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~	and and the second s	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~ <b>^</b> ~~~	~~~~~							<u>Auto</u>	CF Ste 1.200000 MH Ma
55.0														Freq Offse 0 H
-65.0 Center 1.											Span	12.00 MHz	Log	Scale Typ
#Res BW	150 kHz			;	#VBW	470 kl	lz			Sweep Statu	1.000 ms	(1001 pts)		

Plot 7-136. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

	ctrum Analyzer - Swept SA					
LXU RL	RF 50 Ω AC	PNO: Fast ↔→	SENSE:INT	ALIGN AUTO #Avg Type: RMS	09:12:45 PM Jan 17, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Log	Ref 25.00 dBm	IFGain:Low	Atten: 36 dB	Mkr1	1.709 000 GHz -29.15 dBm	Auto Tune
15.0						Center Freq 1.707000000 GHz
-5.00						Start Freq 1.705000000 GHz
-15.0					DL1 -13.00 dBm	<b>Stop Freq</b> 1.709000000 GHz
-35.0		and a second	مى مەلىرىكى مەلىرىكى مەلىرىكى مەلىرىكى مەلىرىكى مەلىرىكى مەلىكى مەلىكى مەلىكى مەلىكى مەلىكى مەلىكى مەلىكى مەلى مەلىرىكى مەلىرىكى مەلىكى مە	and the second of the frequency of the second of the secon	and the second se	CF Step 400.000 kHz <u>Auto</u> Man
-55.0						Freq Offset 0 Hz
-65.0						Scale Type
Center 1.7 #Res BW	707000 GHz 1.0 MHz	#VBW	3.0 MHz	Sweep 1	Span 4.000 MHz .000 ms (1001 pts)	Log <u>Lin</u>
MSG				STATUS	3	

Plot 7-137. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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🔤 Keysight Spectrum Analyzer - Swept SA 🚽				
LXX RL RF 50Ω AC	CORREC SENSE:INT PNO: Wide Trig: Free Run	ALIGN AUTO #Avg Type: RMS	09:13:20 PM Jan 17, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	Frequency
10 dB/div Ref 25.00 dBm	IFGain:Low Atten: 36 dB	Mkr1	1.755 036 GHz -31.66 dBm	Auto Tune
15.0				Center Freq 1.755000000 GHz
5.00			DL1 -13.00 dBm	Start Freq 1.749000000 GHz
-15.0				<b>Stop Freq</b> 1.761000000 GHz
-35.0		man and a contraction of the con	aaaaa ahaa ahaa ahaa ahaa ahaa ahaa ah	CF Step 1.200000 MHz <u>Auto</u> Mar
-55.0				Freq Offse 0 H:
-65.0				Scale Type
Center 1.755000 GHz #Res BW 150 kHz	#VBW 470 kHz	Sweep 1.	Span 12.00 MHz 000 ms (1001 pts)	Log <u>Lin</u>
MSG		STATUS		

Plot 7-138. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 7-139. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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	ectrum Analyz	er - Swep	ot SA											
LXI RL	RF	50 Ω	AC	CORREC		SEI	NSE:INT		#Avg Typ	ALIGN AUTO e: RMS	09:15:41 TRA	PM Jan 17, 2017 CE 1 2 3 4 5 6	F	requency
				PNO: F	ast 🖵	Trig: Free Atten: 36					T			
				IFGain:	Low	Atten. 30	o u D			Miced		984 GHz		Auto Tune
10 dB/div	Ref 25	.00 dl	Bm								-30	.49 dBm		
							Ĭ							o
15.0														Center Freq
15.0													1.71	1000000 GHZ
5.00														
								~~~		mm	man	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Start Freq
-5.00								<u> </u>					1.70	2000000 GHz
							, ,					DL1 -13.00 dBm		
-15.0														Stop Freq
													1.71	18000000 GHz
-25.0							1+							
							and the							CF Step
-35.0	m	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m	Pray provide									1.600000 MHz
													<u>Auto</u>	Man
-45.0														
-55.0														Freq Offset
-33.0														0 Hz
-65.0														
														Scale Type
													Log	Lin
Center 1.7 #Res BW					#\/R\A(	620 kHz				Sween_1	Span 000 me	16.00 MHz (1001 pts)	Lug	Lin
	200 KH2				#VDVV	020 KH2						(1001 pts)		
MSG										STATUS				

Plot 7-140. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 7-141. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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🔤 Keysight Sp	ectrum Analyzer - S										
LXI RL	RF 50 9	Ω AC	CORREC	SEN	SE:INT	#Avg Typ	ALIGN AUTO	09:16:56 P	M Jan 17, 2017 DE <mark>1 2 3 4 5 6</mark>	Fi	requency
			PNO: Fast 🕞	Trig: Free Atten: 36				TY D			
10 dB/div Log	Ref 25.00	dBm					Mkr1	1.755 ( -29.	00 GHz 97 dBm		Auto Tune
15.0											<b>Center Freq</b> 5000000 GHz
-5.00	and an and a second second		man man man an a						DL1 -13.00 dBm	1.74	Start Freq 7000000 GHz
-15.0					.1					1.76	Stop Freq 3000000 GHz
-35.0					man man	·····			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	, <u>Auto</u>	<b>CF Step</b> 1.600000 MHz Man
-45.0											Freq Offset 0 Hz
-65.0											Scale Type
Center 1. #Res BW	755000 GHz		#\/D\M	620 kU-			Purson_4	Span 1	6.00 MHz	Log	<u>Lin</u>
#Res BW	200 KHZ		#VBW	620 kHz			Sweep 1		(1001 pts)		
							JIAIOC				

Plot 7-142. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 7-143. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

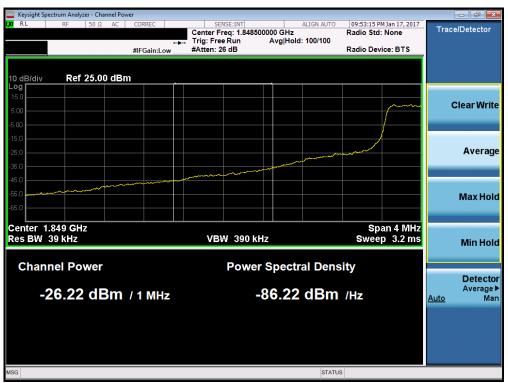
FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 00 of 150
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	ectrum Analyz	er - Swep	t SA										
LXI RL	RF	50 Ω	AC	CORREC			NSE:INT	#Avg Ty	ALIGN AUTO pe: RMS	TRA	M Jan 17, 2017 CE 1 2 3 4 5 6 PE A WWWWW	F	requency
10 dB/div Log r	Ref 25	.00 dE		PNO: Wi IFGain:L	ae 🖵 ow	Atten: 3			Mkr1		DOO GHZ		Auto Tune
15.0													Center Freq 60000000 GHz
-5.00								and mail all the set of	ne water and a second		DL1 -13.00 dBm	1.84	Start Freq 18000000 GHz
-15.0							1					1.85	Stop Freq 2000000 GHz
-35.0		ana	and the	yan araan	n www.ww	and the second					han you want	<u>Auto</u>	CF Step 400.000 kH: Mar
-55.0	and and a second se												Freq Offse 0 Hi
-65.0													Scale Type
Center 1.8 #Res BW		GHz		#	VBW	43 kHz			Sweep 2	Span 4 9.07 ms	l.000 MHz (1001 pts)	Log	Lin
MSG									STATUS	3			

Plot 7-144. Lower Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



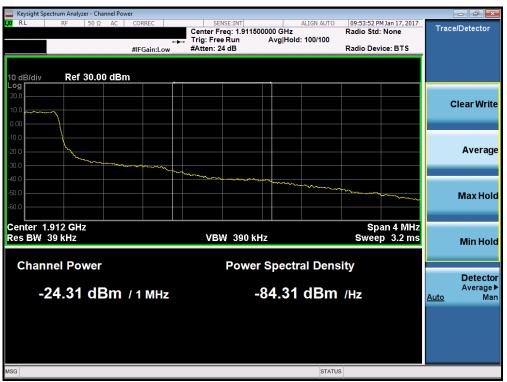
Plot 7-145. Lower Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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15.0       1.910000000         5.00       0.1.1300#m         5.00       0.1.1300#m         15.0       0.1.1300#m <td< th=""><th>Keysight Spectrum Analyzer - Swept Section 2018</th><th>SA</th><th></th><th></th><th></th></td<>	Keysight Spectrum Analyzer - Swept Section 2018	SA			
PNO: Wide         Trig: Free Run Atten: 36 dB         Trig: Free Run Atten: 36 dB         Auto Tu           10 dB/div         Ref 25.00 dBm         Center F         1.91000000 d           500         -27.679 dBm         -27.679 dBm         Start F           500         -0.01 d         -0.01 d         -0.01 d         -0.01 d           500         -0.01 d         -0.01 d         -0.01 d         -0.01 d           500         -0.01 d         -0.01 d         -0.01 d         -0.01 d           500         -0.01 d         -0.01 d         -0.01 d         -0.01 d           500         -0.01 d         -0.01 d         -0.01 d         -0.01 d           500         -0.01 d         -0.01 d         -0.01 d         -0.01 d           -500         -0.01 d         -0.01 d         -0.01 d         -0.01 d           -500         -0.01 d         -0.01 d         -0.01 d         -0.01 d           -500         -0.01 d         -0.01 d         -0.01 d         -0.01 d         -0.01 d           -500         -0.01 d         -0.01 d         -0.01 d         -0.01 d         -0.01 d         -0.01 d           -500         -0.01 d         -0.01 d         -0.01 d         -0.01 d         -0.01	<mark>(X)</mark> RL RF 50Ω	AC CORREC SE			
Indextal       Ref 25.00 dBm       Center F         15.0       -27.679 dBm       -27.679 dBm         15.0       -26.0       -27.679 dBm         15.0       -26.0       -27.679 dBm         25.0       -27.679 dBm       -27.679 dBm         15.0       -26.0       -27.679 dBm         25.0       -27.679 dBm       -27.679 dBm         26.0       -27.679 dBm       -27.679 dBm         26.0       -27.679 dBm       -27.679 dBm         26.0       -27.679 dBm       -27.679 dBm         27.0       -27.679 dBm       -27.679 dBm				TYPE DET	A WWWWW A N N N N N
150       Center F         500       Current F		m		Mkr1 1.910 00 -27.67	
-500     0.1.1300486       -150     0.1.1300486       -250     0.1.1300486       -350     0.1.1300486       -500     0.1.1300486 <td< td=""><td>15.0</td><td></td><td></td><td></td><td>Center Freq 1.910000000 GHz</td></td<>	15.0				Center Freq 1.910000000 GHz
-15.0     1     500     1     500     1    <		and a start and a start and a start and a start			Start Freq 1.908000000 GHz
.45.0     .45.0			1		Stop Freq 1.912000000 GHz
55.0 65.0 65.0			M. M	Ma Martin Martin Martin	CF Step 400.000 kHz <u>Auto</u> Man
Scale T					Freq Offset
Center 1 910000 GHz Span 4 000 MHz Log	-65.0				Scale Type
	Center 1.910000 GHz			Span 4.0	
#Res BW 13 kHz #VBW 43 kHz Sweep 29.07 ms (1001 pts)		#VBW 43 kHz	5		001 pts)

Plot 7-146. Upper Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



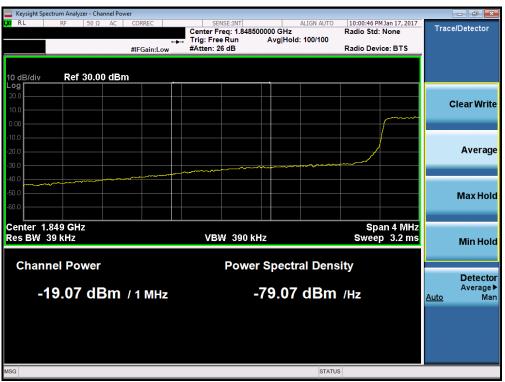
Plot 7-147. Upper Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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Keysight Speed	ctrum Analyz											
LX/IRL	RF	50 Ω A	C COR	REC		NSE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	Jan 17, 2017 E <mark>1 2 3 4 5</mark> 6	F	requency
				IO: Wide   ⊊ Sain:Low	Trig: Fre Atten: 3				TYP	E A WWWWW A N N N N N		
								Mkr1	1.850 0	00 GHz		Auto Tune
10 dB/div Log	Ref 25.	.00 dBn	n						-26.3	38 dBm		
						Ĭ						Center Freq
15.0												60000000 GHz
5.00						- m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	$\sim$		Start Freq
-5.00											1.84	8000000 GHz
										DL1 -13.00 dBm		
-15.0												Stop Freq
						1					1.85	2000000 GHz
-25.0						1						
-35.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·······							CF Step 400.000 kHz
- mar											Auto	400.000 KHZ Man
-45.0												
-55.0												Freq Offset
-30.0												0 Hz
-65.0												
												Scale Type
Center 1.8	50000 C	GHz							Span 4.	000 MHz	Log	Lin
#Res BW				#VBV	91 kHz			Sweep 5	.533 ms (	1001 pts)		
MSG								STATUS				

Plot 7-148. Lower Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)



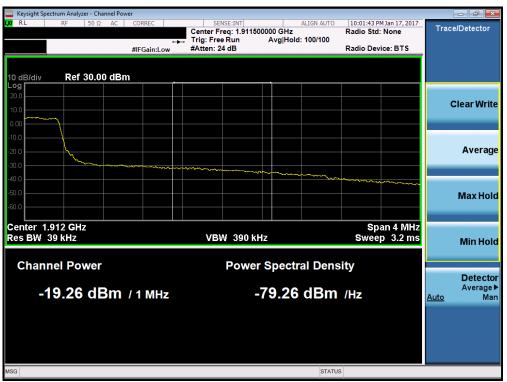
Plot 7-149. Lower Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 02 of 150
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	trum Analyzer - Swep										
LX/ RL	RF 50 Ω	AC CORF			NSE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Jan 17, 2017 CE <u>1 2 3 4 5 6</u> PE A WWWWW	Fr	equency
		PNG IFG	D: Wide 😱 ain:Low	Atten: 36							Auto Tune
10 dB/div Log	Ref 25.00 dl	Bm					WIKFT	-24.4	00 GHz 29 dBm		
					Í					(	Center Fred
15.0										1.91	0000000 GHz
5.00	mmm	$\sim$	~~~~~	m							Start Free
-5.00										1.90	8000000 GHz
-15.0									DL1 -13.00 dBm		Stop Free
-25.0				L L	1					1.91	2000000 GH:
-23.0					mm						CF Step
-35.0								man		Auto	400.000 kHz
-45.0											
-55.0											Freq Offse 0 Ha
-65.0											011
											Scale Type
	10000 GHz		#\/D\A/	01 11-			Purson -	Span 4	.000 MHz	Log	Lir
#Res BW 3	UKHZ		#VBW	91 kHz			Sweep o		1001 pts)		

Plot 7-150. Upper Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)



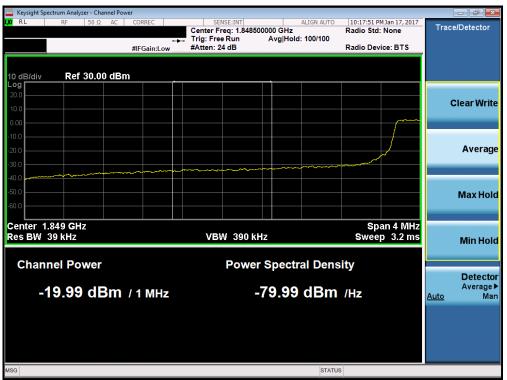
Plot 7-151. Upper Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 04 of 150
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🔤 Keysight Spe	ctrum Analyzei	- Swept SA									
LX/RL	RF	50 Ω AC	CORREC	SE	NSE:INT	A #Avg Type	LIGN AUTO	10:17:42 PM TRACE	Jan 17, 2017 1 2 3 4 5 6	F	requency
			PNO: Wide IFGain:Low	Trig: Fre				TYPE	A WWWWW A N N N N N		
			II Guill.201				Mkr1	1.850 00	00 GHz		Auto Tune
10 dB/div Log	Ref 25.0	00 dBm						-26.0	5 dBm		
					Ĭ						Center Freq
15.0											0000000 GHz
5.00					~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~~		Start Freq
-5.00										1.84	8000000 GHz
0.00									)L1 -13.00 dBm		
-15.0					$\models$				21 - 13.00 dbm		Stop Freq
					1,1					1.85	2000000 GHz
-25.0					a a f						
-35.0		~~~~	~~~~~~								CF Step
										Auto	400.000 kHz Man
-45.0											
55.0											Freq Offset
-55.0											0 Hz
-65.0											
											Scale Type
Center 1.8	50000 G	Hz			<b>A</b>			Span 4.	000 MHz	Log	Lin
#Res BW			#VI	3W 150 kHz		s	weep 1	.933 ms (1	001 pts)		
MSG							STATUS				

Plot 7-152. Lower Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



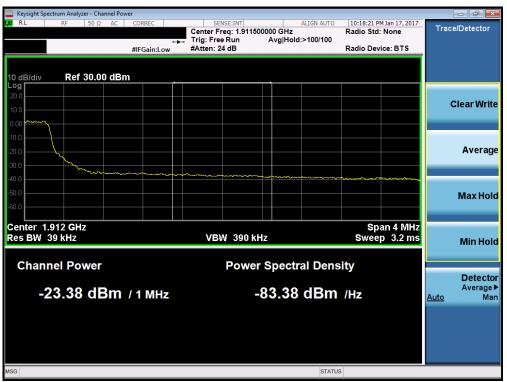
Plot 7-153. Lower Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 05 of 150
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	ectrum Analyzer - S									_	
X/RL	RF 50	Ω AC	CORREC		ISE:INT	#Avg Ty	ALIGN AUTO	10:18:14 PM TRACE	lan 17, 2017 1 2 3 4 5 6	Fi	requency
			PNO: Wide C	Trig: Free Atten: 36					1 2 3 4 5 6 A WWWW A NNNNN		<b>.</b>
10 dB/div Log	Ref 25.00	dBm					Mkr1	1.910 00 -27.3	00 GHz 2 dBm		Auto Tune
				Ì						(	Center Free
15.0										1.91	0000000 GH
5.00	~~~~~	~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~							Start Free
-5.00										1.90	8000000 GH
-15.0								D	L1 -13.00 dBm		
				L,	1					1.91	Stop Free 2000000 GH
-25.0					mana						
-35.0							~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		CF Stej 400.000 kH
-45.0										<u>Auto</u>	Mai
-55.0											Freq Offse
											0 H
-65.0											Scale Type
Center 1.9	910000 GH	z						Span 4.0	000 MHz	Log	<u>Lii</u>
#Res BW			#VBW	150 kHz			Sweep 1	.933 ms (1	001 pts)		
ISG							STATUS	5			

Plot 7-154. Upper Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



Plot 7-155. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 06 of 150
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					ectrum Analyzer - Swept SA	🔤 Keysight Sp
45.6 Frequency	10:29:53 PM Jan 17, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	ALIGN AUTO #Avg Type: RMS	SENSE:INT Trig: Free Run Atten: 36 dB	PNO: Wide	RF 50 Ω AC	XI RL
Hz Auto Tune	1.849 968 GHz -29.27 dBm	Mkr1	Atten: 36 dB	IFGain:Low	Ref 25.00 dBm	10 dB/div Log
Center Freq 1.850000000 GHz						15.0
Start Freq 1.846000000 GHz	DL1 -13.00 dBm	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				-5.00
1.854000000 GHz	UC1 -13.00 dem		1_/			-15.0
CF Step 800.000 kH <u>Auto</u> Mar			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			-35.0
Freq Offse 0 Hz						-55.0
Scale Type	Span 8.000 MHz				850000 GHz	
pts)	.000 ms (1001 pts)	Sweep 1	300 kHz	#VBW 3	100 kHz	#Res BW

Plot 7-156. Lower Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

	ctrum Analyzer	- Swept SA									
LXI RL	RF 5	0Ω AC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO		M Jan 17, 2017 DE <mark>1 2 3 4 5 6</mark>	F	requency
			PNO: Fast ++- IFGain:Low	Trig: Free Atten: 36		#Avg iyi	Je. KIVIS	TY	PE A WWWWW ET A NNNNN		
10 dB/div	Ref 25.0	0 dBm					Mkr	1 1.848 9 -21.	92 GHz 07 dBm		Auto Tune
15.0											<b>Center Freq</b> 17000000 GHz
-5.00									DL1 -13.00 dBm	1.84	Start Freq 15000000 GHz
-15.0	Are the factor of the second	and the state of the	1	مومادي عامره ورامي	ي. مەرەلىرا ئىروغان بىلىر	nd an eine state ter state and an	an advantation of the second states of		1. 	1.84	<b>Stop Freq</b> 19000000 GHz
-35.0										<u>Auto</u>	<b>CF Step</b> 400.000 kHz Man
-55.0											Freq Offset 0 Hz
-65.0											Scale Type
Center 1.8 #Res BW		lz	#VBW	3.0 MHz			Sweep	Span 4 1.000 ms (	.000 MHz (1001 pts)	Log	<u>Lin</u>
MSG							STATU	JS			

Plot 7-157. Lower Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dago 07 of 150
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	m Analyzer - Swe										
LXU RL	RF 50 Ω	AC	CORREC PNO: Wide	Trig: Fre		#Avg Typ	ALIGN AUTO	TRAC	I Jan 17, 2017 E 1 2 3 4 5 6 E A HINNNN T A NNNNN	Fr	equency
10 dB/div	ef 25.00 d	IBm	IFGain:Low	Atten: 3	6 dB		Mkr	1 1.910 0			Auto Tune
15.0					• 						Center Freq 0000000 GHz
-5.00		~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~					DL1 -13.00 dBm	1.90	Start Fred 6000000 GHz
-15.0					1				ULT - 13.00 dBm	1.91	Stop Free 4000000 GH
-35.0						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>Auto</u>	CF Step 800.000 kH Mar
-55.0											Freq Offse 0 H
-65.0									000 8411-		Scale Type
Center 1.910 #Res BW 10			#VB	W 300 kHz			Sweep	Span 8 1.000 ms (	.000 MHz 1001 pts)	Log	<u></u>
MSG							STATU	JS			

Plot 7-158. Upper Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



Plot 7-159. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 09 of 150
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Keysight Spectro											
(XI) RL	RF 5	DΩ AC	CORREC	SE	NSE:INT	#Avg Typ	ALIGN AUTO		I Jan 17, 2017 E <b>1 2 3 4 5</b> 6	F	equency
			PNO: Wide	😱 Trig: Fre		#rivg iyp	e. King	TYP			
			IFGain:Low	Atten: 3	6 dB						Auto Tune
							Mkr1	1.849 8 -28.9	80 GHz		Auto Tune
10 dB/div	Ref 25.0	0 dBm						-28.9	99 dBm		
					Ĭ						Center Freq
15.0											0000000 GHz
10.0										1.00	0000000 GH2
5.00											
0.00					r		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	ᡔᢇᠧᢧᠬᡊᢧᢂᢘᡎᢁᠬᡒ᠆ᠰ᠆		Start Freq
-5.00										1.84	4000000 GHz
0.00											
-15.0									DL1 -13.00 dBm		
10.0											Stop Freq
-25.0					1_/					1.85	6000000 GHz
20.0					- Marine Contraction						
-35.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								CF Step
										Auto	200000 MHz. I Man
-45.0										Auto	Iviari
-55.0											Freq Offset
											0 Hz
-65.0											
											Scale Type
Center 1.85		Z						Span 1	2.00 MHz	Log	Lin
#Res BW 1	OU KHZ		#VI	3W 470 kHz			sweep 1	.000 ms (	1001 pts)		
MSG							STATUS	5			

Plot 7-160. Lower Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 7-161. Lower Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 00 of 150	
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Keysight Specific Keysight	ectrum Analyz									
(XI RL	RF	50 Ω AC	CORREC		SENSE:INT	#Avg Ty	ALIGN AUTO	TRACI	Jan 17, 2017 E <mark>1 2 3 4 5</mark> 6	Frequency
			PNO: Wie IFGain:Lo		: Free Run en: 36 dB			TYP DE		
10 dB/div Log	Ref 25	.00 dBm					Mkr1	1.910 0 -31.4	12 GHz 11 dBm	Auto Tui
15.0										Center Fr 1.910000000 G
-5.00	ma and a second	~~~~	~~~~~						0L1 -13.00 dBm	<b>Start Fr</b> 1.904000000 G
-15.0					1					<b>Stop Fr</b> 1.916000000 G
-35.0					W.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-Andrean - Contraction - Contr	ᠪᢩᠰ᠆᠊ᢦᡁᢦᢧᡔᡅᠵ	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	CF Ste 1.200000 MI <u>Auto</u> M
-45.0										Freq Offs 0
-65.0										Scale Ty
Center 1.9 #Res BW			#	VBW 470	kHz		Sweep	Span 12 1.000 ms (*	2.00 MHz 1001 pts)	Log <u>L</u>
MSG							STATU	s		

Plot 7-162. Upper Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 7-163. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 100 of 150	
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🔤 Keysight Sp	ectrum Analyzer -										
LXI RL	RF 50	DΩ AC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO	10:40:31 PM TRAC	1 Jan 17, 2017 E <mark>1 2 3 4 5 6</mark>	Fr	equency
			PNO: Fast 🕞 IFGain:Low	Trig: Free Atten: 36				TYP	E A WWWWW T A N N N N N		
	<b>B</b> -6 05 0	0D					Mkr1	1.849 8	40 GHz 37 dBm		Auto Tune
10 dB/div	Ref 25.0	U dBm						-23.			
										(	Center Freq
15.0										1.85	0000000 GHz
5.00					~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	· ····································		mm		Start Freq
-5.00										1.84	2000000 GHz
-3.00											
-15.0									DL1 -13.00 dBm		Stop Freq
										1 85	8000000 GHz
-25.0				L	1					1.00	0000000000112
					كمهمم						CF Step
-35.0	m									1	1.600000 MHz
										<u>Auto</u>	Man
-45.0											
-55.0											Freq Offset
											0 Hz
-65.0											
											Scale Type
Center 1	850000 GH	7						Snan 1	6.00 MHz	Log	Lin
#Res BW			#VBW	620 kHz			Sweep 1	.000 ms (	1001 pts)		
MSG							STATUS				

Plot 7-164. Lower Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-165. Lower Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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	ectrum Analyze										
LXI RL	RF	50 Ω AC	CORREC		SE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Jan 17, 2017 E <mark>1 2 3 4 5</mark> 6	F	equency
			PNO: Fast G	Trig: Free Atten: 36							Auto Tune
10 dB/div Log	Ref 25.	00 dBm					WIKET	-29.	96 GHz 33 dBm		
										(	Center Freq
15.0										1.91	0000000 GHz
5.00 <b>Januar</b>	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	man	~~							Start Fred
-5.00										1.90	2000000 GHz
-15.0									DL1 -13.00 dBm		
-13.0										1.91	<b>Stop Freq</b> 8000000 GHz
-25.0				- Burney	1						
-35.0					- Winner		·····		**********		CF Step 1.600000 MH
-45.0										<u>Auto</u>	Mar
-55.0											Freq Offset
											0 Hz
-65.0											Scale Type
Center 1.	910000 <b>G</b>	Hz						Span 1	6.00 MHz	Log	<u>Lir</u>
#Res BW			#VBW	/ 620 kHz			Sweep 1	.000 ms (	1001 pts)		
MSG							STATUS	3			

Plot 7-166. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-167. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 102 of 150
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Keysight Spectrum Analyzer - Swept SA				
<mark>X</mark> RL RF 50ΩDC	CORREC SENSE	#Avg Type:	IGN AUTO 04:13:23 AM Jan 17, 2017 RMS TRACE 123456	Frequency
	PNO: Wide Trig: Free R IFGain:Low Atten: 36 d	un	TYPE A WWWW DET A NNNNN	
10 dB/div Ref 25.00 dBm			Mkr1 2.305 000 GHz -27.997 dBm	Auto Tun
15.0				Center Fre 2.305000000 GH
5.00				<b>Start Fre</b> 2.303000000 GH
25.0		,	DL1 -13.00 dBm	Stop Fre 2.307000000 G⊦
35.0				CF Ste 400.000 kł Auto Ma
55.0				Freq Offs 0 F
.65.0				Scale Typ
Center 2.305000 GHz Res BW 51 kHz	#VBW 150 kHz	Sv	Span 4.000 MHz veep 2.000 ms (1001 pts)	Log <u>L</u>
ISG			STATUS	

Plot 7-168. Lower Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)



Plot 7-169. Lower Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 102 of 150	
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Keysight Spectrum Analyzer - :					
0 RL RF 50	Ω DC CORREC		#Avg Type: RMS	04:14:26 AM Jan 17, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
0 dB/div Ref 25.00	IFGain:Lo ) dBm	w Atten: 36 dB	M	kr1 2.315 00 GHz -26.903 dBm	Auto Tur
15.0					Center Fro 2.315000000 GI
5.00 <b></b>	mann Martinen	with some			<b>Start Fr</b> 2.310000000 G
25.0		1		DL1 -13.00 dBm	<b>Stop Fr</b> 2.32000000 G
15.0			Mumanum	warmed why	CF Sto 1.000000 M Auto M
5.0				hours	Freq Offs 0
65.0					Scale Ty
enter 2.315000 GH Res BW 51 kHz		VBW 150 kHz	Sweep	Span 10.00 MHz 5.000 ms (1001 pts)	Log <u>l</u>
SG			STA	TUS	

Plot 7-170. Upper Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)



Plot 7-171. Upper Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 104 of 150
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Keysight Spectrum Analyzer - Swe					
RL RF 50 Ω	DC CORREC PNO: Wide	SENSE:INT	ALIGN AUTO #Avg Type: RMS	04:20:12 AM Jan 17, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Frequency
	IFGain:Low	Atten: 36 dB	Mkr1	2.304 952 GHz -28.99 dBm	Auto Tur
0 dB/div Ref 25.00 d	Bm			-20.99 UBIII	
15.0					Center Fre 2.305000000 GF
5.00				yh	<b>Start Fre</b> 2.301000000 GH
				DL1 -13.00 dBm	
15.0		.1.1			<b>Stop Fr</b> 2.309000000 Gi
25.0 35.0	Antonia and Antonia and Antonia	CARANTER CONTRACT			CF Ste 800.000 kł <u>Auto</u> Ma
56.0					Freq Offs 0 I
65.0					Scale Ty
enter 2.305000 GHz Res BW 100 kHz	#VBW	300 kHz	Sweep 4	Span 8.000 MHz .000 ms (1001 pts)	
G			STATUS		

Plot 7-172. Lower Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)



Plot 7-173. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - RB Size 50)

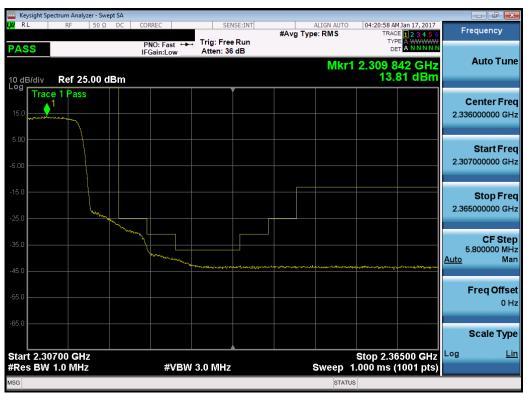
FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 105 of 150
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	pectrum Analyze											
<mark>X/</mark> RL	RF	50 Ω DC	CORREC			NSE:INT	#Avg Typ	ALIGN AUTO	TRAC	M Jan 17, 2017 DE <mark>1 2 3 4 5</mark> 6	F	equency
			PNO: N IFGain	Nide 😱 :Low	Trig: Fre Atten: 36							
10 dB/div	Ref 25.	00 dBm						Mkr	1 2.315 -28.	02 GHz 42 dBm		Auto Tun
						Í					(	Center Fre
15.0											2.31	5000000 GH
5.00	where and a second	- Jurge (prove	n <sup>a</sup> n shutakini rawa	ohn anaran in sinta	- D . D-							
5.00											2.31	Start Fre 0000000 GH
5.00										DL1 -13.00 dBm		
15.0												Stop Fre
25.0					<u>۲</u>	• <sup>1</sup>					2.32	0000000 GH
35.0						المعيني المعدر مع	www.www.	A Marale Mart Special	the state of the s			CF Ste
										a mandar mu	Auto	000000 Mi Mi
45.0												
55.0												Freq Offs ۱۱
65.0												
												Scale Typ
	.315000 G	Hz		#\/D\/	200 644			Cuusan E	Span 1	0.00 MHz	Log	L
Res BW	100 kHz			#VBW.	300 kHz			Sweep o		(1001 pts)		

Plot 7-174. Upper Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)



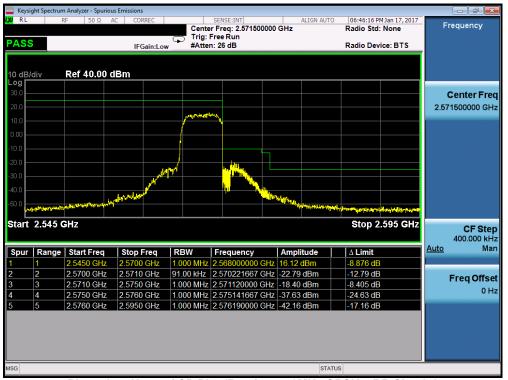
Plot 7-175. Upper Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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d RL		n Analyzer - Spurio						
PASS		RF 50 Ω	AC CORREC	Trig:	SENSE:INT er Freq: 2.497000000 Free Run n: 26 dB	GHz	06:41:49 PM Jan 17, 201 Radio Std: None Radio Device: BTS	Frequency
10 dB/ -09 <b>Г</b>	/div	Ref 40.00	dBm					
30.0 — 20.0 —								Center Fre 2.497000000 GH
10.0 -					pul-profit highly			
10.0 20.0 30.0					Haran Haran			
40.0				and the second second		No.		Į .
50.0	Laute and to a black	a na seta seta seta fatella della	and the state of the	ANN AND AND AND AND AND AND AND AND AND		" <sup>V</sup> "why why h	)[]	
<u>ب</u>	2.475 (	GHz	ayaayiiriye <sup>a</sup> ayidhigaayi			" <sup>V</sup> yorlohy"vijnyy	Stop 2.525 GH	CF Ste 400.000 k⊦
tart	2.475 (		میں بر میں	RBW	Frequency	Amplitude	Stop 2.525 GH	CF Ste
tart	2.475 (	GHz			Frequency 2.493873333 GHz	Amplitude	0100 2.020 011	CF Ste 400.000 kH
tart Spur	2.475 (	GHz   Start Freq	Stop Freq	1.000 MHz		Amplitude -42.95 dBm	△ Limit	CF Ste 400.000 kF <u>Auto</u> Ma
start Spur	2.475 ( Range	GHz Start Freq 2.4750 GHz	Stop Freq 2.4940 GHz	1.000 MHz 1.000 MHz	2.493873333 GHz	Amplitude -42.95 dBm -35.66 dBm	△ Limit -17.95 dB	CF Ste 400.000 kH Auto Ma
tart Spur	2.475 ( Range 1 2	GHz Start Freq 2.4750 GHz 2.4940 GHz	<b>Stop Freq</b> 2.4940 GHz 2.4960 GHz	1.000 MHz 1.000 MHz 1.000 MHz	2.493873333 GHz 2.495813333 GHz	Amplitude -42.95 dBm -35.66 dBm -21.31 dBm	Δ Limit -17.95 dB -22.66 dB	CF Ste 400.000 kH Auto Ma
Start	2.475 ( Range 1 2 3	GHz Start Freq 2.4750 GHz 2.4940 GHz 2.4960 GHz	<b>Stop Freq</b> 2.4940 GHz 2.4960 GHz 2.4990 GHz	1.000 MHz 1.000 MHz 1.000 MHz 91.00 KHz	2.493873333 GHz 2.495813333 GHz 2.498720000 GHz	Amplitude -42.95 dBm -35.66 dBm -21.31 dBm -23.17 dBm	△ Limit -17.95 dB -22.66 dB -11.31 dB	CF Ste 400.000 kH
tart Spur	2.475 ( Range 1 2 3 4	GHz Start Freq 2.4750 GHz 2.4940 GHz 2.4960 GHz 2.4990 GHz	<b>Stop Freq</b> 2.4940 GHz 2.4960 GHz 2.4990 GHz 2.5000 GHz	1.000 MHz 1.000 MHz 1.000 MHz 91.00 KHz	2.493873333 GHz 2.495813333 GHz 2.498720000 GHz 2.499900000 GHz	Amplitude -42.95 dBm -35.66 dBm -21.31 dBm -23.17 dBm	△ Limit -17.95 dB -22.66 dB -11.31 dB -13.17 dB	CF Ste 400.000 kH Auto Ma

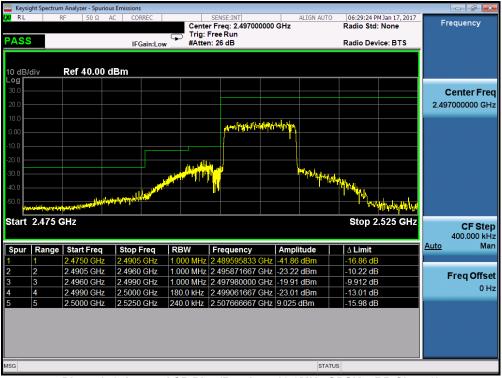
Plot 7-176. Lower ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)



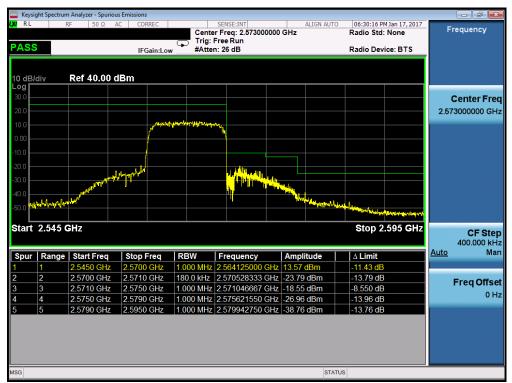
#### Plot 7-177. Upper ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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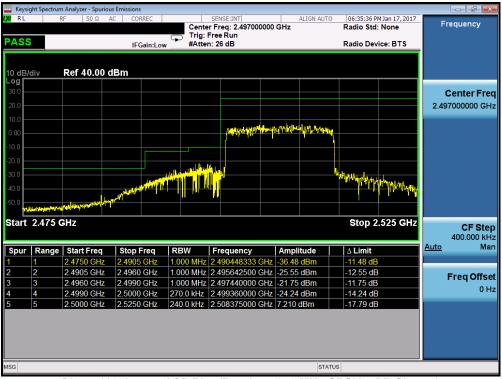
Plot 7-178. Lower ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)



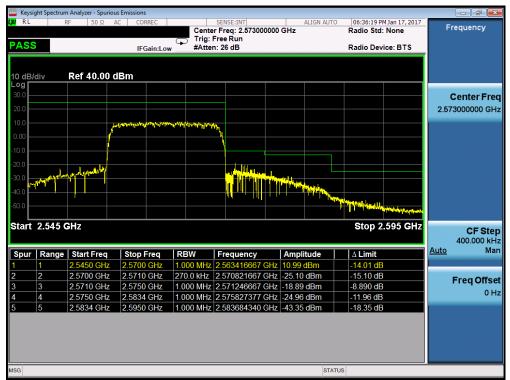
Plot 7-179. Upper ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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Plot 7-180. Lower ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)



Plot 7-181. Upper ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 100 of 150	
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RL	ectrum Analyzer											
	RF	50Ω A	IC C	ORREC		SENSE:INT er Freq: 2.4970 Free Run	00000 G	ALIGN AUT Hz		3 PM Jan 17, 2017 Std: None	F	requency
ASS			1	Gain:Lov		n: 26 dB			Radio I	evice: BTS		
0 d <u>B/div</u>	Ref 4	0.00 c	lBm									
. <b>og</b> :0.0												Center Fre
20.0											2.49	97000000 GH
10.0						li un otta si		madulation	الله فيصحف الم			
D.00						Physical Phy	WY MAY A	. izdat 1.1 dat	, fi the <b>Man</b> Anne			
20.0												
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40.0			Wallphad .							atter for any		
50.0	mangingunger		•									
itart 2.4	75 GHz								Stop	2.525 GHz		<b>CF Ste</b> 400.000 kH
Spur   Ra	nge   Start	Freq	Stop	Freq	RBW	Frequency	1	mplitude	∆ Lim	t	<u>Auto</u>	Ma
1	2.4750			5 GHz		2.490009167		34.69 dBm	-9.694			
2 2	2.4905			0 GHz		2.495752500			-12.18			Freq Offse
3 3	2.4960			0 GHz		2.498675000			-12.80			0 H
	2.4990			0 GHz	_	2.499473333			-15.12			011
4 5 5	2.5000			0 GHz		2.510666667	GH7 5	014 dBm	-19.09	AR		

Plot 7-182. Lower ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)



Plot 7-183. Upper ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE 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 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.

#### Test Setup

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

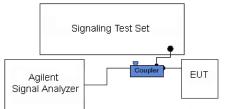


Figure 7-4. Test Instrument & Measurement Setup

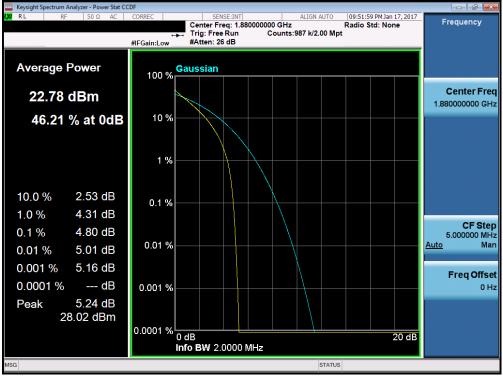
#### Test Notes

None.

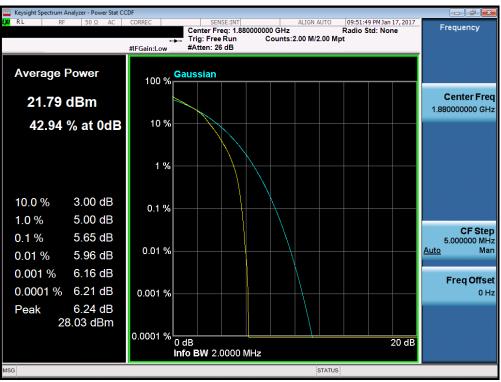
FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 111 of 150	
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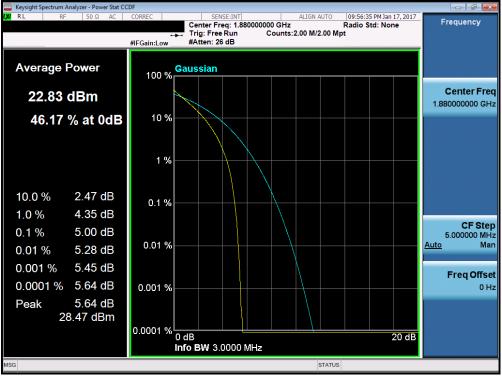
Plot 7-184. PAR Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

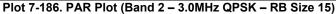


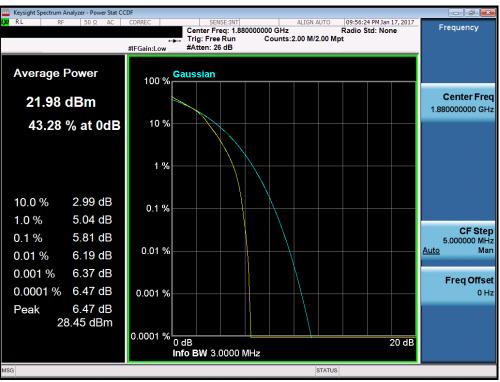
Plot 7-185. PAR Plot (Band 2 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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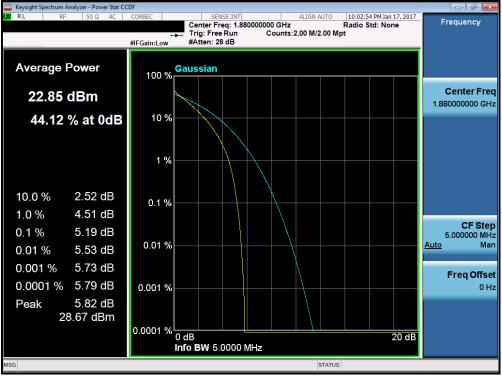


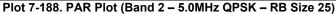


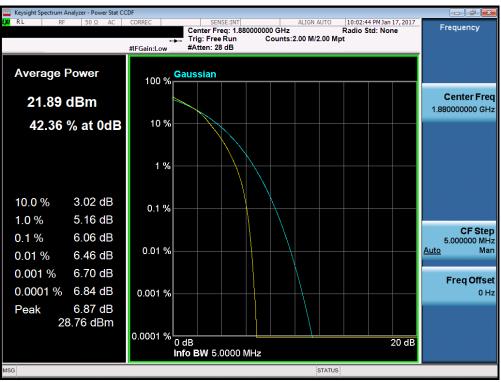
Plot 7-187. PAR Plot (Band 2 - 3.0MHz 16-QAM - RB Size 15)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager		
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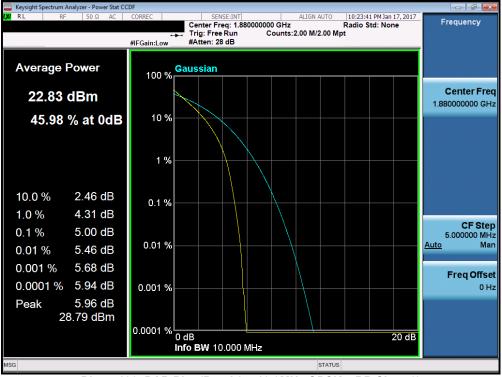




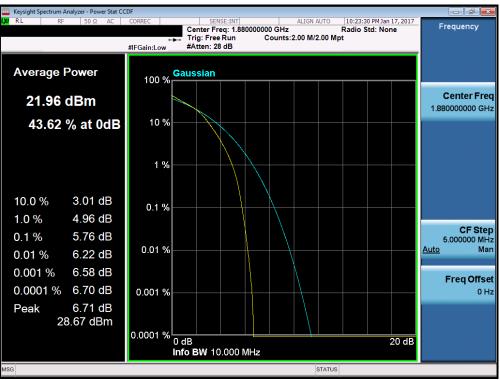
Plot 7-189. PAR Plot (Band 2 - 5.0MHz 16-QAM - RB Size 25)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager		
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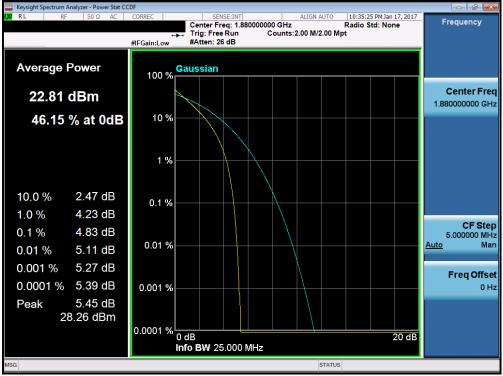




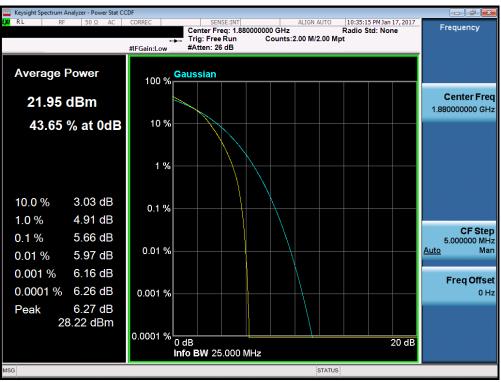
Plot 7-191. PAR Plot (Band 2 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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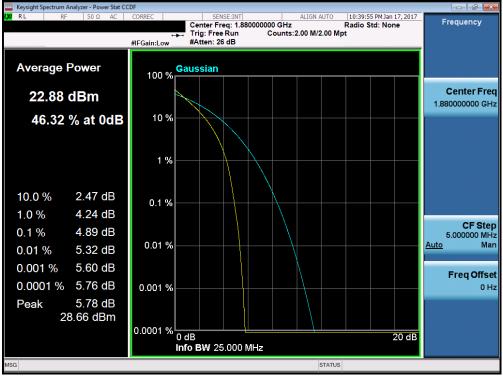


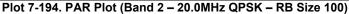


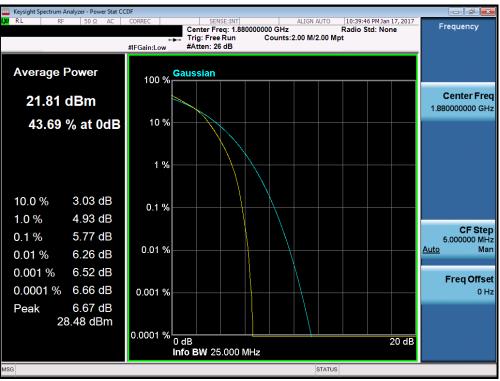
Plot 7-193. PAR Plot (Band 2 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager		
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Plot 7-195. PAR Plot (Band 2 - 20.0MHz 16-QAM - RB Size 100)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager		
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#### Radiated Power (ERP/EIRP) 7.6 §22.913(a.2) §24.232(c.2) §27.50(h.2) §27.50(c.10) §27.50(d.4) §27.50(a.3)

### **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

- 1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW  $\geq$  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".
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

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### <u>Test Setup</u>

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

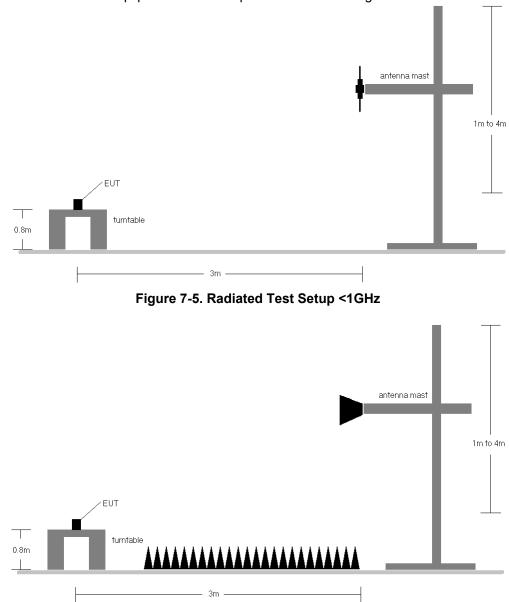


Figure 7-6. Radiated Test Setup >1GHz

#### **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	150	91	1 / 5	16.37	-1.05	15.32	34.77	-19.45
707.50	1.4	QPSK	Н	150	89	1 / 0	17.37	-1.02	16.35	34.77	-18.42
715.30	1.4	QPSK	Н	150	89	1 / 5	17.82	-0.99	16.83	34.77	-17.94
699.70	1.4	16-QAM	Н	150	91	1 / 5	15.68	-1.05	14.63	34.77	-20.14
707.50	1.4	16-QAM	Н	150	89	1 / 0	16.42	-1.02	15.40	34.77	-19.37
715.30	1.4	16-QAM	Н	150	89	1 / 5	16.24	-0.99	15.25	34.77	-19.52
700.50	3	QPSK	Н	150	94	1 / 14	17.52	-1.05	16.47	34.77	-18.30
707.50	3	QPSK	Н	150	89	1 / 14	18.22	-1.02	17.20	34.77	-17.57
714.50	3	QPSK	Н	150	89	1 / 14	18.55	-0.99	17.56	34.77	-17.21
700.50	3	16-QAM	Н	150	94	1 / 14	16.15	-1.05	15.10	34.77	-19.67
707.50	3	16-QAM	Н	150	89	1 / 14	16.82	-1.02	15.80	34.77	-18.97
714.50	3	16-QAM	Н	150	89	1 / 14	17.12	-0.99	16.13	34.77	-18.64
714.50	3	QPSK	V	150	64	1 / 0	18.43	-0.99	17.44	34.77	-17.33

Table 7-2. 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 [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
701.50	5	QPSK	Н	150	91	1 / 24	17.77	-1.05	16.72	34.77	-18.05
707.50	5	QPSK	н	150	90	1 / 24	18.16	-1.02	17.14	34.77	-17.63
713.50	5	QPSK	н	150	91	1 / 24	18.41	-0.99	17.42	34.77	-17.35
701.50	5	16-QAM	н	150	91	1 / 24	16.56	-1.05	15.51	34.77	-19.26
707.50	5	16-QAM	н	150	90	1 / 24	16.92	-1.02	15.90	34.77	-18.87
713.50	5	16-QAM	н	150	91	1 / 24	16.92	-0.99	15.93	34.77	-18.84
704.00	10	QPSK	н	150	87	1 / 49	18.18	-1.05	17.13	34.77	-17.64
707.50	10	QPSK	н	150	89	1 / 49	18.42	-1.02	17.40	34.77	-17.37
711.00	10	QPSK	н	150	86	1 / 49	18.03	-0.99	17.04	34.77	-17.73
704.00	10	16-QAM	н	150	87	1 / 49	16.97	-1.05	15.92	34.77	-18.85
707.50	10	16-QAM	Н	150	89	1 / 49	16.82	-1.02	15.80	34.77	-18.97
711.00	10	16-QAM	н	150	86	1 / 49	16.92	-0.99	15.93	34.77	-18.84

# Table 7-3. ERP Data (Band 12/17)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE 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 [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	Н	150	92	1 / 5	20.46	-0.65	19.81	38.45	-18.64
836.50	1.4	QPSK	Н	150	99	1 / 5	20.51	-0.65	19.86	38.45	-18.59
848.30	1.4	QPSK	Н	150	97	1 / 5	20.30	-0.65	19.65	38.45	-18.80
824.70	1.4	16-QAM	Н	150	92	1 / 5	19.30	-0.65	18.65	38.45	-19.80
836.50	1.4	16-QAM	Н	150	99	1 / 5	19.23	-0.65	18.58	38.45	-19.87
848.30	1.4	16-QAM	Н	150	97	1 / 5	18.75	-0.65	18.10	38.45	-20.35
825.50	3	QPSK	Н	150	90	1 / 0	20.90	-0.65	20.25	38.45	-18.20
836.50	3	QPSK	Н	150	84	1 / 0	21.05	-0.65	20.40	38.45	-18.05
847.50	3	QPSK	Н	150	95	1 / 0	20.66	-0.65	20.01	38.45	-18.44
825.50	3	16-QAM	Н	150	90	1 / 0	19.30	-0.65	18.65	38.45	-19.80
836.50	3	16-QAM	Н	150	84	1 / 0	19.60	-0.65	18.95	38.45	-19.50
847.50	3	16-QAM	Н	150	95	1 / 0	19.47	-0.65	18.82	38.45	-19.63
826.50	5	QPSK	Η	150	88	1 / 0	21.59	-0.65	20.94	38.45	-17.51
836.50	5	QPSK	Н	150	93	1 / 0	21.83	-0.65	21.18	38.45	-17.27
846.50	5	QPSK	Н	150	92	1 / 0	21.54	-0.65	20.89	38.45	-17.56
826.50	5	16-QAM	Н	150	88	1 / 0	20.05	-0.65	19.40	38.45	-19.05
836.50	5	16-QAM	Н	150	93	1 / 0	20.40	-0.65	19.75	38.45	-18.70
846.50	5	16-QAM	Н	150	92	1 / 0	19.95	-0.65	19.30	38.45	-19.15
829.00	10	QPSK	Н	150	88	1 / 49	21.76	-0.65	21.11	38.45	-17.34
836.50	10	QPSK	Н	150	92	1 / 49	21.80	-0.65	21.15	38.45	-17.30
844.00	10	QPSK	Н	150	91	1 / 49	21.35	-0.65	20.70	38.45	-17.75
829.00	10	16-QAM	Н	150	88	1 / 49	20.13	-0.65	19.48	38.45	-18.97
836.50	10	16-QAM	Н	150	92	1 / 49	20.10	-0.65	19.45	38.45	-19.00
844.00	10	16-QAM	Н	150	91	1 / 49	19.74	-0.65	19.09	38.45	-19.36
836.50	5	QPSK	V	150	337	1/0	18.86	-0.65	18.21	38.45	-20.24

Table 7-4. ERP Data (Band 5)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE 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 Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	н	150	46	1/0	17.43	5.56	22.99	30.00	-7.01
1732.50	1.4	QPSK	н	150	43	1/0	17.12	5.41	22.53	30.00	-7.47
1754.30	1.4	QPSK	н	150	43	1/0	16.77	5.26	22.03	30.00	-7.97
1710.70	1.4	16-QAM	Н	150	46	1/0	15.88	5.56	21.44	30.00	-8.56
1732.50	1.4	16-QAM	Н	150	43	1/0	15.75	5.41	21.16	30.00	-8.84
1754.30	1.4	16-QAM	Н	150	43	1 / 0	15.52	5.26	20.78	30.00	-9.22
1711.50	3	QPSK	Н	150	96	1 / 0	17.47	5.55	23.02	30.00	-6.98
1732.50	3	QPSK	Н	150	46	1/0	17.73	5.41	23.14	30.00	-6.86
1753.50	3	QPSK	н	150	94	1 / 14	17.15	5.26	22.41	30.00	-7.59
1711.50	3	16-QAM	н	150	96	1 / 0	15.58	5.55	21.13	30.00	-8.87
1732.50	3	16-QAM	н	150	46	1 / 0	16.18	5.41	21.59	30.00	-8.41
1753.50	3	16-QAM	Н	150	94	1 / 14	15.80	5.26	21.06	30.00	-8.94
1712.50	5	QPSK	н	150	44	1 / 24	18.36	5.55	23.91	30.00	-6.09
1732.50	5	QPSK	Н	150	44	1 / 24	18.45	5.41	23.86	30.00	-6.14
1752.50	5	QPSK	Н	150	91	1 / 24	17.80	5.27	23.07	30.00	-6.93
1712.50	5	16-QAM	н	150	44	1 / 24	16.56	5.55	22.11	30.00	-7.89
1732.50	5	16-QAM	н	150	44	1 / 24	16.52	5.41	21.93	30.00	-8.07
1752.50	5	16-QAM	н	150	91	1 / 24	16.28	5.27	21.55	30.00	-8.45
1715.00	10	QPSK	н	150	95	1 / 49	18.08	5.53	23.61	30.00	-6.39
1732.50	10	QPSK	н	150	47	1 / 49	18.76	5.41	24.17	30.00	-5.83
1750.00	10	QPSK	н	150	96	1 / 49	18.40	5.29	23.69	30.00	-6.31
1715.00	10	16-QAM	н	150	95	1 / 49	16.38	5.53	21.91	30.00	-8.09
1732.50	10	16-QAM	н	150	47	1 / 49	16.65	5.41	22.06	30.00	-7.94
1750.00	10	16-QAM	н	150	96	1 / 49	17.08	5.29	22.37	30.00	-7.63
1717.50	15	QPSK	н	150	97	1 / 74	18.14	5.51	23.65	30.00	-6.35
1732.50	15	QPSK	н	150	96	1/0	17.96	5.41	23.37	30.00	-6.63
1747.50	15	QPSK	н	150	98	1/0	18.11	5.31	23.42	30.00	-6.58
1717.50	15	16-QAM	н	150	97	1 / 74	16.68	5.51	22.19	30.00	-7.81
1732.50	15	16-QAM	н	150	96	1/0	16.56	5.41	21.97	30.00	-8.03
1747.50	15	16-QAM	н	150	98	1/0	18.20	5.31	23.51	30.00	-6.49
1720.00	20	QPSK	н	150	96	1/0	18.07	5.49	23.56	30.00	-6.44
1732.50	20	QPSK	Н	150	98	1 / 99	18.10	5.41	23.51	30.00	-6.49
1745.00	20	QPSK	н	150	93	1/0	18.07	5.32	23.39	30.00	-6.61
1720.00	20	16-QAM	н	150	96	1 / 99	16.48	5.49	21.97	30.00	-8.03
1732.50	20	16-QAM	н	150	98	1 / 99	16.42	5.41	21.83	30.00	-8.17
1745.00	20	16-QAM	н	150	93	1/0	16.64	5.32	21.96	30.00	-8.04
											L

#### Table 7-5. EIRP Data (Band 4)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE 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 Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	Н	150	93	1 / 0	16.68	4.82	21.50	33.01	-11.51
1880.00	1.4	QPSK	Н	150	93	1 / 5	16.77	4.74	21.51	33.01	-11.50
1909.30	1.4	QPSK	Н	150	97	1 / 5	17.19	4.68	21.87	33.01	-11.14
1850.70	1.4	16-QAM	Н	150	93	1/0	16.07	4.82	20.89	33.01	-12.12
1880.00	1.4	16-QAM	Н	150	93	1 / 5	16.27	4.74	21.01	33.01	-12.00
1909.30	1.4	16-QAM	Н	150	97	1 / 5	16.70	4.68	21.38	33.01	-11.63
1851.50	3	QPSK	Н	150	93	1 / 14	16.68	4.82	21.50	33.01	-11.51
1880.00	3	QPSK	Н	150	95	1 / 0	16.97	4.74	21.71	33.01	-11.30
1908.50	3	QPSK	Н	150	50	1 / 14	17.24	4.68	21.92	33.01	-11.09
1851.50	3	16-QAM	Н	150	93	1 / 14	16.12	4.82	20.94	33.01	-12.07
1880.00	3	16-QAM	Н	150	95	1 / 0	16.22	4.74	20.96	33.01	-12.05
1908.50	3	16-QAM	Н	150	50	1 / 14	16.65	4.68	21.33	33.01	-11.68
1852.50	5	QPSK	н	150	95	1 / 0	17.42	4.81	22.23	33.01	-10.78
1880.00	5	QPSK	н	150	94	12 / 6	17.57	4.74	22.31	33.01	-10.70
1907.50	5	QPSK	Н	150	98	1 / 24	17.57	4.68	22.25	33.01	-10.76
1852.50	5	16-QAM	Н	150	95	1 / 24	16.57	4.81	21.38	33.01	-11.63
1880.00	5	16-QAM	Н	150	94	1 / 0	16.87	4.74	21.61	33.01	-11.40
1907.50	5	16-QAM	Н	150	98	1 / 24	16.67	4.68	21.35	33.01	-11.66
1855.00	10	QPSK	Н	100	308	1 / 0	16.85	4.81	21.66	33.01	-11.35
1880.00	10	QPSK	Н	100	340	50 / 0	17.35	4.74	22.09	33.01	-10.92
1905.00	10	QPSK	н	103	343	1 / 0	17.45	4.68	22.13	33.01	-10.88
1855.00	10	16-QAM	Н	100	308	1 / 0	16.05	4.81	20.86	33.01	-12.15
1880.00	10	16-QAM	Н	100	340	1 / 49	16.75	4.74	21.49	33.01	-11.52
1905.00	10	16-QAM	н	103	343	1 / 0	16.65	4.68	21.33	33.01	-11.68
1857.50	15	QPSK	Н	150	91	75 / 0	17.25	4.80	22.05	33.01	-10.96
1880.00	15	QPSK	н	150	95	1 / 74	17.72	4.74	22.46	33.01	-10.55
1902.50	15	QPSK	н	150	93	1 / 0	17.38	4.69	22.07	33.01	-10.94
1857.50	15	16-QAM	Н	150	91	75 / 0	16.33	4.80	21.13	33.01	-11.88
1880.00	15	16-QAM	н	150	95	1 / 74	16.91	4.74	21.65	33.01	-11.36
1902.50	15	16-QAM	н	150	93	1/0	16.70	4.69	21.39	33.01	-11.62
1860.00	20	QPSK	Н	150	93	100 / 0	17.57	4.79	22.36	33.01	-10.65
1880.00	20	QPSK	н	150	93	50 / 25	17.69	4.74	22.43	33.01	-10.58
1900.00	20	QPSK	н	150	93	50 / 25	17.45	4.69	22.14	33.01	-10.87
1860.00	20	16-QAM	Н	150	93	100 / 0	16.49	4.79	21.28	33.01	-11.73
1880.00	20	16-QAM	н	150	93	50 / 25	17.70	4.74	22.44	33.01	-10.57
1900.00	20	16-QAM	н	150	93	1/0	16.79	4.69	21.48	33.01	-11.53
1880.00	15	QPSK	V	150	41	1/0	13.65	4.74	18.39	33.01	-14.62

### Table 7-6. EIRP Data (Band 2)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE 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 Limit [dBm]	Margin [dB]
2307.50	5	QPSK	Н	110	333	1 / 24	13.15	8.72	21.87	23.98	-2.11
2310.00	5	QPSK	Н	107	335	1 / 0	13.19	8.73	21.92	23.98	-2.06
2312.50	5	QPSK	Н	101	340	1 / 24	12.95	8.74	21.69	23.98	-2.29
2307.50	5	16-QAM	Н	110	333	1 / 24	12.55	8.72	21.27	23.98	-2.71
2310.00	5	16-QAM	Н	107	335	1 / 0	12.70	8.73	21.43	23.98	-2.55
2312.50	5	16-QAM	Н	101	340	1 / 24	12.68	8.74	21.42	23.98	-2.56
2310.00	10	QPSK	Н	107	338	25 / 12	13.27	8.73	22.00	23.98	-1.98
2310.00	10	16-QAM	Н	107	338	25 / 12	12.31	8.73	21.04	23.98	-2.94
1732.50	10	QPSK	V	124	271	1/0	11.88	9.50	21.38	23.98	-2.60

Table 7-7. EIRP Data (Band 30)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE 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 Limit [dBm]	Margin [dB]
2502.50	5	QPSK	Н	150	105	1 / 24	14.77	5.74	20.51	33.01	-12.50
2535.00	5	QPSK	Н	150	38	1 / 24	14.72	5.86	20.58	33.01	-12.43
2567.50	5	QPSK	Н	150	42	1 / 24	15.36	5.98	21.34	33.01	-11.67
2502.50	5	16-QAM	Н	150	105	1 / 24	13.67	5.74	19.41	33.01	-13.60
2535.00	5	16-QAM	Н	150	38	1 / 24	13.69	5.86	19.55	33.01	-13.46
2567.50	5	16-QAM	Н	150	42	1 / 24	14.47	5.98	20.45	33.01	-12.56
2505.00	10	QPSK	Н	150	106	1 / 49	15.72	5.75	21.47	33.01	-11.54
2535.00	10	QPSK	Н	150	102	1 / 49	14.85	5.86	20.71	33.01	-12.30
2565.00	10	QPSK	Н	150	102	1 / 49	14.78	5.97	20.75	33.01	-12.26
2505.00	10	16-QAM	Н	150	106	1 / 49	14.00	5.75	19.75	33.01	-13.26
2535.00	10	16-QAM	Н	150	102	1 / 49	13.75	5.86	19.61	33.01	-13.40
2565.00	10	16-QAM	Н	150	102	1 / 49	13.75	5.97	19.72	33.01	-13.29
2507.50	15	QPSK	Н	150	103	1 / 74	15.65	5.76	21.41	33.01	-11.60
2535.00	15	QPSK	Н	150	102	1 / 74	14.70	5.86	20.56	33.01	-12.45
2562.50	15	QPSK	Н	150	106	1 / 74	14.02	5.96	19.98	33.01	-13.03
2507.50	15	16-QAM	Н	150	103	1 / 74	14.10	5.76	19.86	33.01	-13.15
2535.00	15	16-QAM	Н	150	102	1 / 74	13.66	5.86	19.52	33.01	-13.49
2562.50	15	16-QAM	Н	150	106	1 / 74	13.12	5.96	19.08	33.01	-13.93
2510.00	20	QPSK	Н	150	105	1 / 99	15.39	5.77	21.16	33.01	-11.85
2535.00	20	QPSK	Н	150	105	100 / 0	14.62	5.86	20.48	33.01	-12.53
2560.00	20	QPSK	Н	150	105	1/0	14.87	5.95	20.82	33.01	-12.19
2510.00	20	16-QAM	Н	150	105	1 / 99	14.50	5.77	20.27	33.01	-12.74
2535.00	20	16-QAM	Н	150	105	100 / 0	13.64	5.86	19.50	33.01	-13.51
2560.00	20	16-QAM	Н	150	105	1/0	13.67	5.95	19.62	33.01	-13.39
2505.00	10	QPSK	V	150	323	1/0	12.79	5.75	18.54	33.01	-14.47

Table 7-8. EIRP Data (Band 7)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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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) §27.53(a.4)

### **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. Span = 1.5 times the OBW
- 4. No. of sweep points  $\geq$  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: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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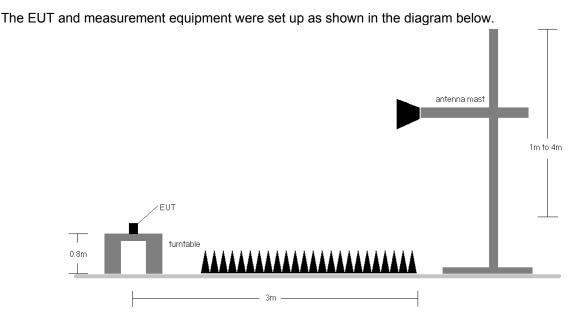


Figure 7-7. Test Instrument & Measurement Setup

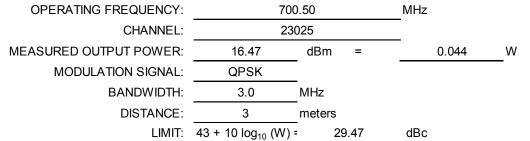
## Test Notes

- 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.

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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	270	-63.96	5.91	-58.05	74.5
2101.50	Н	120	189	-68.75	6.79	-61.96	78.4
2802.00	Н	-	-	-72.37	8.12	-64.25	80.7

Table 7-9. Radiated Spurious Data (Band 12/17 – Low Channel)

OPERATING FREQUENCY:	707	.50	MHz
CHANNEL:	230	)95	
MEASURED OUTPUT POWER:	17.20	dBm =	0.052 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	3.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	30.20	dBc

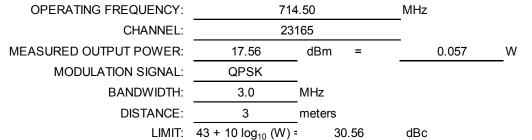
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1415.00	Н	120	200	-64.16	5.96	-58.19	75.4
2122.50	Н	180	150	-70.12	6.84	-63.27	80.5
2830.00	Н	-	-	-72.19	8.13	-64.06	81.3

Table 7-10. Radiated Spurious Data (Band 12/17 – Mid Channel)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE 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 [dBd]	Spurious Emission Level [dBm]	[dBc]
1429.00	Н	112	110	-64.92	6.02	-58.90	76.5
2143.50	Н	200	150	-71.21	6.90	-64.32	81.9
2858.00	Н	-	-	-72.10	8.15	-63.95	81.5

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

OPERATING FREQUENCY:	826	.50	MHz
CHANNEL:	204	125	
MEASURED OUTPUT POWER:	20.94	dBm =	0.124 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	33.94	dBc

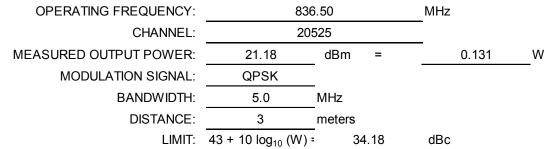
Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1653.00	Н	122	230	-74.47	6.28	-68.19	89.1
2479.50	Н	100	221	-68.38	6.84	-61.53	82.5
3306.00	Н	-	-	-68.74	7.14	-61.59	82.5

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

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager	
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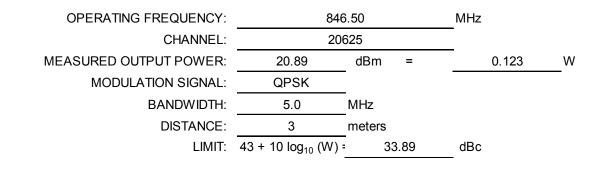
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Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	Н	134	69	-73.00	6.21	-66.79	88.0
2509.50	Н	100	124	-50.18	6.86	-43.32	64.5
3346.00	Н	-	-	-68.80	7.26	-61.53	82.7

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



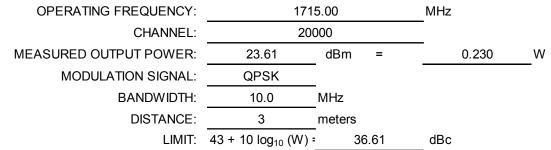
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1693.00	Н	112	150	-73.61	6.14	-67.47	88.4
2539.50	Н	200	100	-46.82	6.95	-39.87	60.8
3386.00	Н	-	-	-68.96	7.38	-61.58	82.5

Table 7-14. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved 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]
3430.00	Н	101	171	-67.17	9.67	-57.50	81.1
5145.00	Н	108	167	-64.03	10.90	-53.13	76.7

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

OPERATING FREQUENCY:	173	2.50	MHz
CHANNEL:	201	175	_
MEASURED OUTPUT POWER:	24.17	dBm =	0.261 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	37.17	dBc

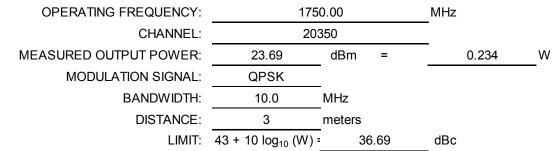
Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3465.00	Н	101	340	-66.98	9.77	-57.20	81.4
5197.50	Н	-	-	-66.99	10.81	-56.18	80.3

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

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Approved by: Quality Manager
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Frequenc [MHz]	y 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	-	-	-69.04	9.88	-59.16	82.8

Table 7-17. Radiated Spurious Data (Band 4 – High Channel)

185	7.50	MHz
180	675	_
22.05	dBm =	0.160 W
QPSK		
15.0	MHz	
3	meters	
43 + 10 log <sub>10</sub> (W) =	35.05	dBc
	186 22.05 QPSK 15.0 3	QPSK       15.0     MHz       3     meters

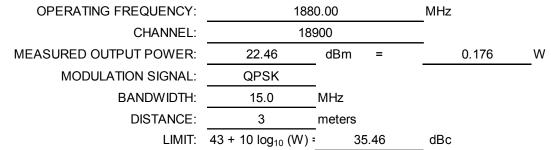
	Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
	3715.00	Н	112	270	-69.56	9.97	-59.59	81.6
ſ	5572.50	Н	-	-	-67.43	11.23	-56.20	78.2

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

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Approved 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]
3760.00	Н	110	215	-68.67	9.79	-58.88	81.3
5640.00	Н	-	-	-67.56	11.35	-56.21	78.7

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

OPERATING FREQUENCY:	190	2.50	MHz
CHANNEL:	191	125	_
MEASURED OUTPUT POWER:	22.07	dBm =	0.161 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	15.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	35.07	dBc

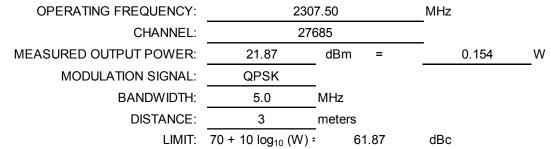
Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3805.00	Н	114	210	-67.42	9.61	-57.82	79.9
5707.50	Н	-	-	-67.61	11.43	-56.18	78.2

Table 7-20. Radiated Spurious Data (Band 2 – High Channel)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Approved 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]
4615.00	Н	-	-	-69.03	11.33	-57.70	79.6
6922.50	Н	-	-	-60.13	10.89	-49.25	71.1

Table 7-21. Radiated Spurious Data (Band 30 – Low Channel)

OPERATING FREQUENCY:	231	0.00	MHz
CHANNEL:	277	710	-
MEASURED OUTPUT POWER:	21.92	dBm =	0.156 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	70 + 10 log <sub>10</sub> (W) =	61.92	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]
4620.00	Н	-	-	-69.50	11.33	-58.17	80.1
6930.00	Н	-	-	-60.61	10.89	-49.73	71.7

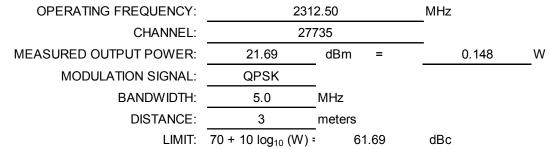
Table 7-22. Radiated Spurious Data (Band 30 – Mid Channel)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved 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]
4625.00	Н	-	-	-69.08	11.33	-57.75	79.4
6937.50	Н	-	-	-59.82	10.89	-48.94	70.6

Table 7-23. Radiated Spurious Data (Band 30 – High Channel)

OPERATING FREQUENCY:	250	5.00	MHz
CHANNEL:	208	300	_
MEASURED OUTPUT POWER:	21.47	dBm =	0.140 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	55 + 10 log10 (W)	46.47	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]
5010.00	Н	-	-	-69.27	11.17	-58.10	79.6

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

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Approved by: Quality Manager				
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OPERATING FREQUENCY:	2535.00		MHz
CHANNEL:	21	100	_
MEASURED OUTPUT POWER:	20.71	dBm =	0.118 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	55 + 10 log10 (W)	45.71	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]
5070.00	Н	100	127	-65.22	11.04	-54.18	74.9
7605.00	Н	-	-	-62.48	11.47	-51.01	71.7

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

OPERATING FREQUENCY:	256	5.00	MHz
CHANNEL:	214	400	_
MEASURED OUTPUT POWER:	20.75	dBm =	0.119 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	55 + 10 log10 (W)	45.75	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]
5130.00	Н	115	200	-65.72	10.92	-54.79	75.5
7695.00	Н	-	-	-61.63	11.55	-50.08	70.8

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

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager		
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#### Frequency Stability / Temperature Variation 7.8 §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:

- Temperature: The temperature is varied from -30°C to +50°C in 10°C increments using an a.) 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 ±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)	707,499,930	-70	-0.0000099
100 %		- 30	707,499,860	-140	-0.0000198
100 %		- 20	707,499,867	-133	-0.0000188
100 %		- 10	707,499,828	-172	-0.0000242
100 %		0	707,499,815	-185	-0.0000261
100 %		+ 10	707,499,999	-1	-0.0000001
100 %		+ 20	707,499,847	-153	-0.0000217
100 %		+ 30	707,499,901	-99	-0.0000140
100 %		+ 40	707,499,823	-177	-0.0000251
100 %		+ 50	707,499,920	-80	-0.0000113
BATT. ENDPOINT	3.45	+ 20	707,499,829	-171	-0.0000242

Table 7-27. Frequency Stability Data (Band 12)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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# Band 12 Frequency Stability Measurements §2.1055 §27.54

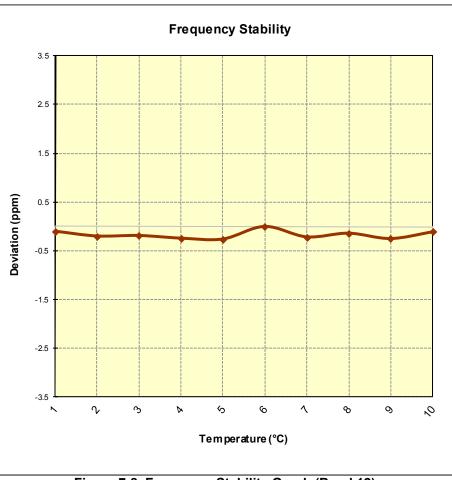


Figure 7-8. Frequency Stability Graph (Band 12)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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# Band 5 Frequency Stability Measurements §2.1055 §22.355

OPERATING FREQUENCY:	836,500,000	Hz
CHANNEL:	20525	_
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)	836,499,815	-185	-0.0000221
100 %		- 30	836,499,964	-36	-0.0000043
100 %		- 20	836,499,844	-156	-0.0000187
100 %		- 10	836,499,820	-180	-0.0000216
100 %		0	836,499,984	-16	-0.0000020
100 %		+ 10	836,499,971	-29	-0.0000035
100 %		+ 20	836,499,820	-180	-0.0000215
100 %		+ 30	836,499,827	-173	-0.0000207
100 %		+ 40	836,499,810	-190	-0.0000227
100 %		+ 50	836,499,972	-28	-0.0000034
BATT. ENDPOINT	3.45	+ 20	836,499,911	-89	-0.0000107

 Table 7-28. Frequency Stability Data (Band 5)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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# Band 5 Frequency Stability Measurements §2.1055 §22.355

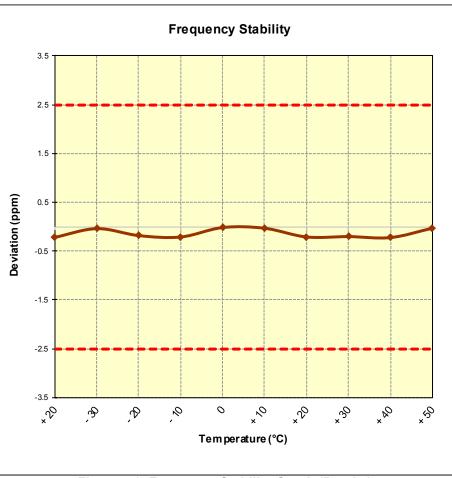


Figure 7-9. Frequency Stability Graph (Band 5)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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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)	1,732,499,807	-193	-0.0000111
100 %		- 30	1,732,499,939	-61	-0.0000035
100 %		- 20	1,732,499,962	-38	-0.0000022
100 %		- 10	1,732,499,812	-188	-0.0000108
100 %		0	1,732,499,858	-142	-0.0000082
100 %		+ 10	1,732,499,843	-157	-0.0000091
100 %		+ 20	1,732,499,944	-56	-0.0000032
100 %		+ 30	1,732,499,988	-12	-0.0000007
100 %		+ 40	1,732,499,809	-191	-0.0000110
100 %		+ 50	1,732,499,904	-96	-0.0000056
BATT. ENDPOINT	3.45	+ 20	1,732,499,977	-23	-0.0000013

Table 7-29. 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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# Band 4 Frequency Stability Measurements §2.1055 §§27.54

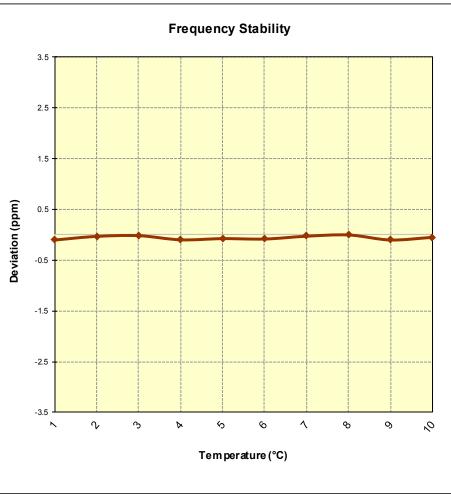


Figure 7-10. Frequency Stability Graph (Band 4)

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# Band 2 Frequency Stability Measurements §2.1055 §24.235

OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	18900	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,879,999,890	-110	-0.0000059
100 %		- 30	1,879,999,898	-102	-0.0000054
100 %		- 20	1,879,999,907	-93	-0.0000049
100 %		- 10	1,879,999,970	-30	-0.0000016
100 %		0	1,879,999,871	-129	-0.0000069
100 %		+ 10	1,879,999,872	-128	-0.0000068
100 %		+ 20	1,879,999,810	-190	-0.0000101
100 %		+ 30	1,879,999,978	-22	-0.0000012
100 %		+ 40	1,879,999,830	-170	-0.0000090
100 %		+ 50	1,879,999,877	-123	-0.0000065
BATT. ENDPOINT	3.45	+ 20	1,879,999,879	-121	-0.0000064

Table 7-30. Frequency Stability Data (Band 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 2 Frequency Stability Measurements §2.1055 §24.235

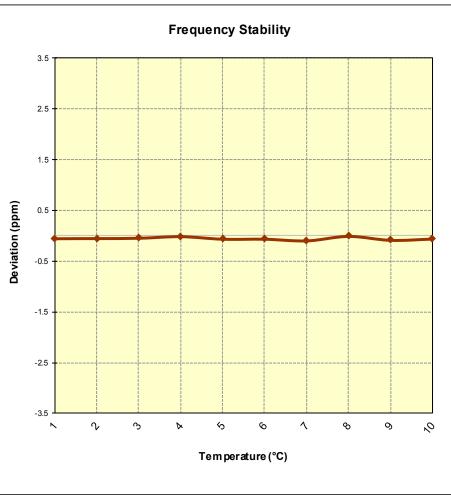


Figure 7-11. Frequency Stability Graph (Band 2)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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# Band 30 Frequency Stability Measurements §2.1055 §24.235

OPERATING FREQUENCY:	2,310,000,000	Hz
CHANNEL:	27710	_
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,309,999,976	-24	-0.0000011
100 %		- 30	2,309,999,908	-92	-0.0000040
100 %		- 20	2,309,999,990	-10	-0.0000004
100 %		- 10	2,309,999,861	-139	-0.0000060
100 %		0	2,309,999,999	-1	0.0000000
100 %		+ 10	2,309,999,866	-134	-0.0000058
100 %		+ 20	2,309,999,881	-119	-0.0000052
100 %		+ 30	2,309,999,926	-74	-0.0000032
100 %		+ 40	2,309,999,948	-52	-0.0000023
100 %		+ 50	2,309,999,925	-75	-0.0000032
BATT. ENDPOINT	3.45	+ 20	2,309,999,909	-91	-0.0000039

Table 7-31. Frequency Stability Data (Band 30)

#### Note:

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

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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# **Band 30 Frequency Stability Measurements** <u>§2.1055 §24.235</u>

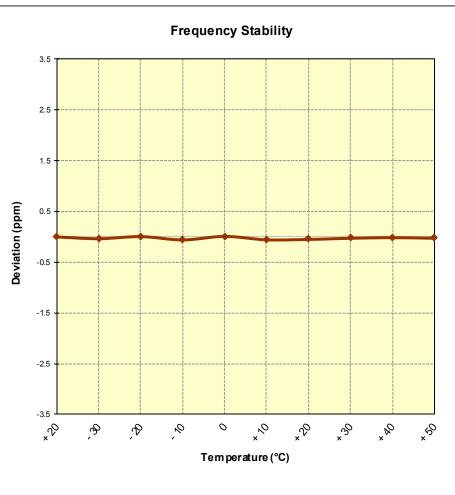


Figure 7-12. Frequency Stability Graph (Band 30)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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# Band 7 Frequency Stability Measurements §2.1055 §27.54

OPERATING FREQUENCY:	2,535,000,000	Hz
CHANNEL:	21100	_
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,534,999,883	-117	-0.0000046
100 %		- 30	2,534,999,991	-9	-0.0000004
100 %		- 20	2,534,999,853	-147	-0.0000058
100 %		- 10	2,534,999,932	-68	-0.0000027
100 %		0	2,534,999,839	-161	-0.0000064
100 %		+ 10	2,534,999,841	-159	-0.0000063
100 %		+ 20	2,534,999,988	-12	-0.0000005
100 %		+ 30	2,534,999,808	-192	-0.0000076
100 %		+ 40	2,534,999,914	-86	-0.0000034
100 %		+ 50	2,534,999,901	-99	-0.0000039
BATT. ENDPOINT	3.45	+ 20	2,534,999,803	-197	-0.0000078

 Table 7-32. Frequency Stability Data (Band 7)

## Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain 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 7 Frequency Stability Measurements §2.1055 §27.54

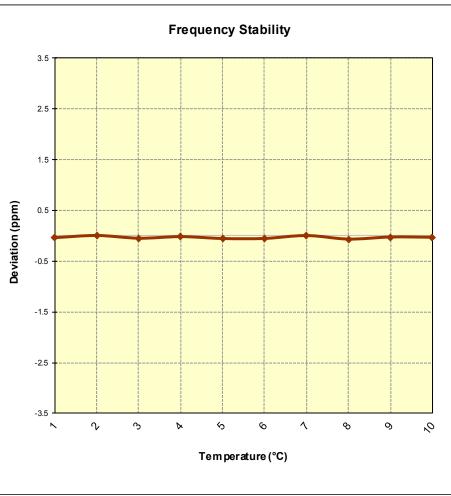


Figure 7-13. Frequency Stability Graph (Band 7)

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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# 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the LGE Portable Handset FCC ID: ZNFH700 complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

FCC ID: ZNFH700		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Approved by: Quality Manager
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