

## 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 <u>></u> 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points  $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

#### Test Setup

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

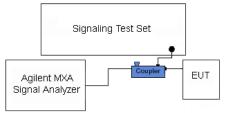


Figure 7-3. Test Instrument & Measurement Setup

#### Test Notes

Per 22.917(b) 24.238(a) 27.53(h) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the

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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.

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Plot 7-107. Lower Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



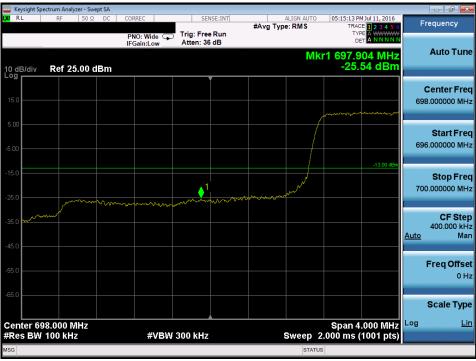


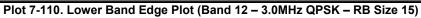
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	Spectrum Analyzer										
XI RL	RF	50 Ω DC	CORREC		Run	#Avg Typ	ALIGN AUTO e: RMS	TRAC TYP	1 Jul 11, 2016 E 1 2 3 4 5 6 E A WWWWW	F	equency
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25.0	mu mu								-13.00 dBm	720	<b>Stop Fre</b> 0.100000 MH
35.0		1 miles	mmm	munipung						Auto	CF Ste 400.000 kl M
45.0 <u> </u>					the way	www.	mm	m	mm young		Freq Offs 01
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SG							STATUS				

Plot 7-109. Upper Extended Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



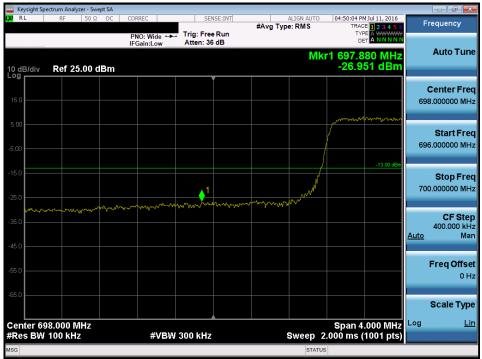


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ISG								STATUS	5			

Plot 7-111. Upper Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)



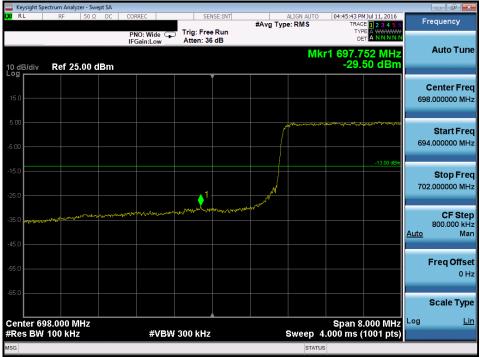
Plot 7-112. Lower Band Edge Plot (Band 12/17 – 5.0MHz QPSK – RB Size 25)

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Keysight Spectrum Analyzer - Sw					
XU RL RF 50 Ω	DC CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	04:50:33 PM Jul 11, 2016 TRACE 1 2 3 4 5 6	Frequency
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65.0					Scale Typ
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ISG			STATUS	5	

Plot 7-113. Upper Band Edge Plot (Band 12/17 – 5.0MHz QPSK – RB Size 25)



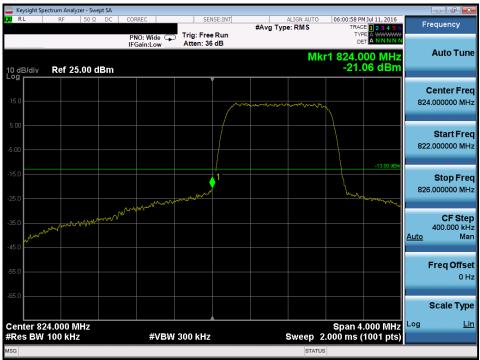
Plot 7-114. Lower Band Edge Plot (Band 12/17 – 10.0MHz QPSK – RB Size 50)

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Keysight Sp	RF 50 G	vept SA	CORREC	SENSE:	NT	ALIGN AUTO	04:46:43 PM Jul 11, 2016	
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-5.00							-13.00 dBm	
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65.0								Scale Typ
	16.000 MHz 100 kHz		#\/B)/	V 300 kHz		Sweep	Span 8.000 MHz .000 ms (1001 pts)	Log <u>L</u>
ISG	TOUKHZ		#707	V JOU KHZ		Sweep 4		

Plot 7-115. Upper Band Edge Plot (Band 12/17 – 10.0MHz QPSK – RB Size 50)



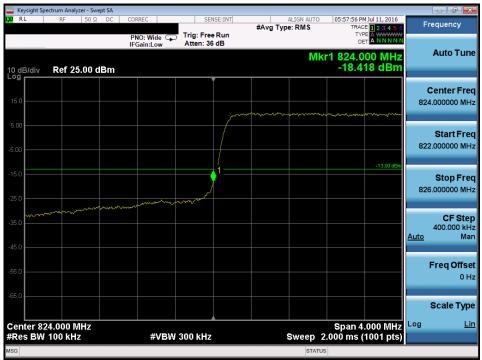
Plot 7-116. Lower Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Keysight S RL	Spectrum Analyzer - Swept RF 50 Ω	SA DC CORREC	SENSE:INT	ALIGN AUTO	06:01:50 PM Jul 11, 2016	
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	V 100 kHz	#VBW	300 kHz		2.000 ms (1001 pts)	
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Plot 7-117. Upper Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)



Plot 7-118. Lower Band Edge Plot (Band 5 – 3.0MHz QPSK – RB Size 15)

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Center 849.0 Res BW 100			#VB	W 300 kH	Iz		Sweep 2	Span 4. .000 ms (	000 MHz 1001 pts)	Log	Li
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	RF 50 Ω		RREC		SENSE:INT	#Avg Typ	ALIGN AUTO	TRAC	1 Jul 11, 2016 <b>1 2 3 4 5 6</b> E A WWWWW	Fr	equency

Plot 7-119. Upper Band Edge Plot (Band 5 – 3.0MHz QPSK – RB Size 15)



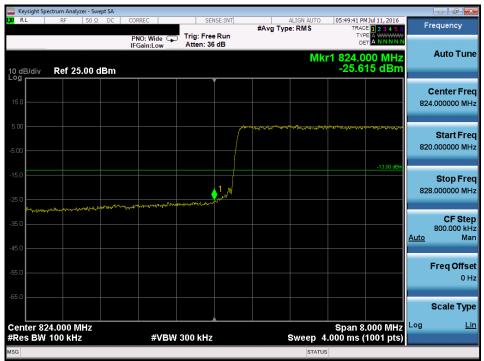
Plot 7-120. Lower Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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<mark>(</mark> RL	RF	50 Ω	DC	CORREC			SE:INT	#Avg Ty	ALIGN AUTO	TRA	MJul 11, 2016 CE 1 2 3 4 5 6	F	requency
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Plot 7-121. Upper Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)



Plot 7-122. Lower Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)

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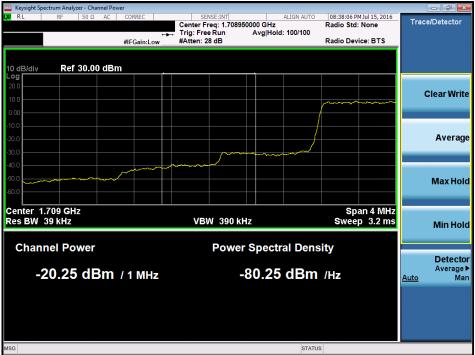
Plot 7-123. Upper Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)



Plot 7-124. Lower Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

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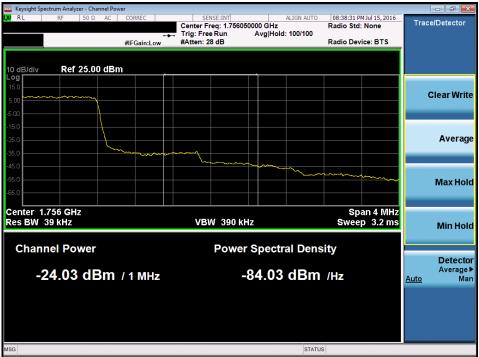
Plot 7-125. Lower Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



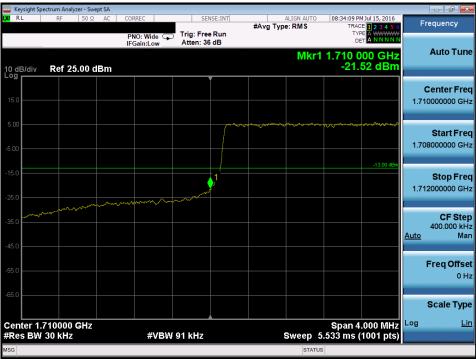
Plot 7-126. Upper Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

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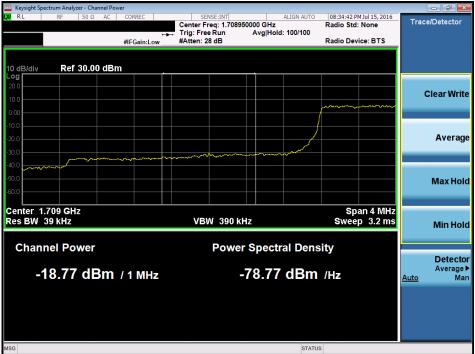
Plot 7-127. Upper Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)





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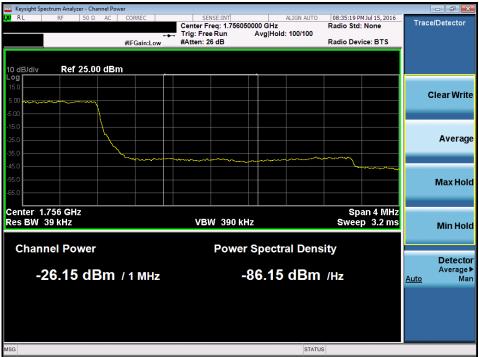
Plot 7-129. Lower Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



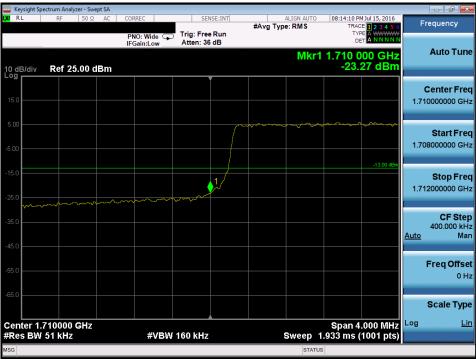


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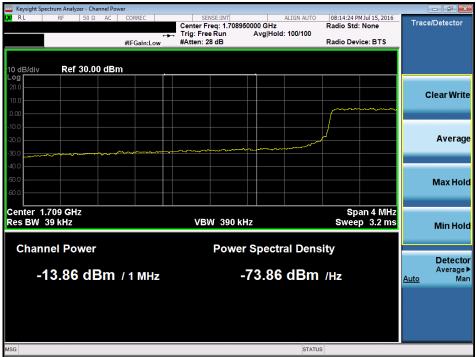
Plot 7-131. Upper Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



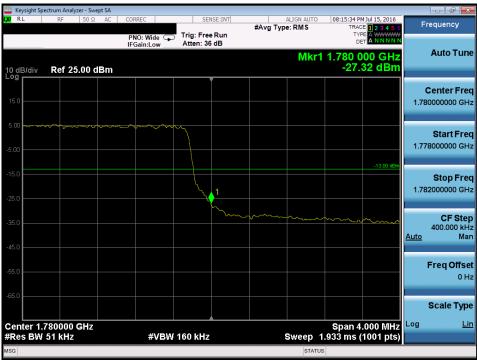


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Plot 7-133. Lower Extended Band Edge Plot (Band 4/66 – 5.0MHz QPSK – RB Size 25)



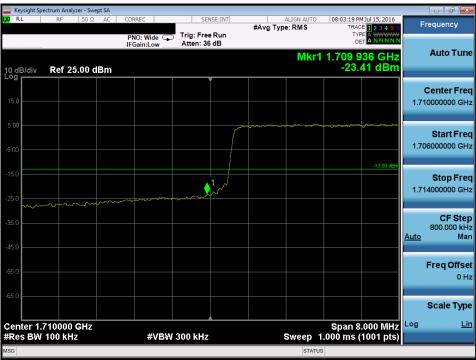


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Keysight Spectrum Analy:													- 6 💌
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Channel Po	wer					Powe	er Spe	ectral	Dens	ity			
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SG									STATUS				

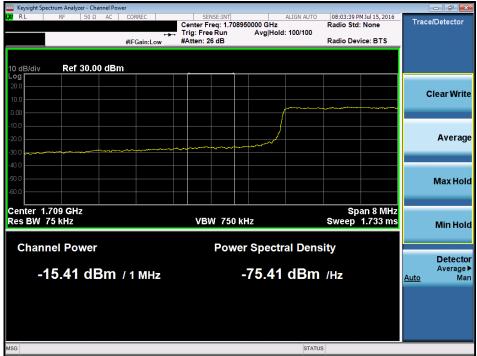
Plot 7-135. Upper Extended Band Edge Plot (Band 4/66 – 5.0MHz QPSK – RB Size 25)



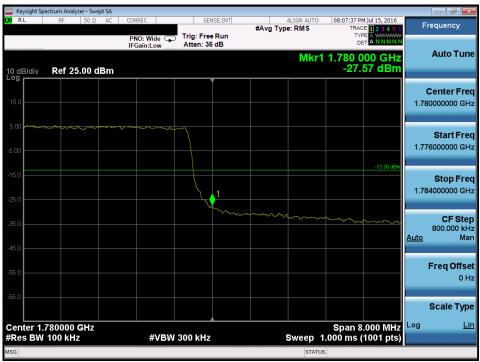


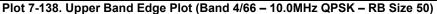
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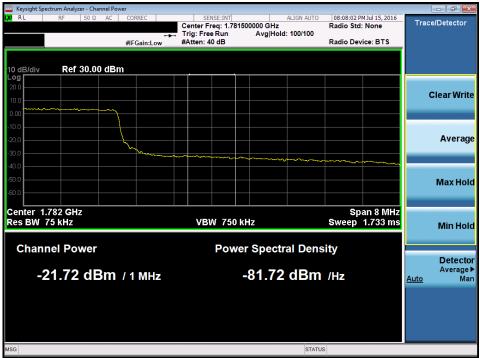
Plot 7-137. Lower Extended Band Edge Plot (Band 4/66 – 10.0MHz QPSK – RB Size 50)





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Plot 7-139. Upper Extended Band Edge Plot (Band 4/66 – 10.0MHz QPSK – RB Size 50)



Plot 7-140. Lower Band Edge Plot (Band 4/66 – 15.0MHz QPSK – RB Size 75)

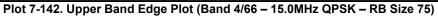
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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13:00	Frequency           Auto Tur           Center Fre           1.707000000 GF           Start Fre           1.705000000 GF           Stop Fre           1.709000000 GF
1 1.708 892 GHz -18.51 dBm	Center Fre 1.70700000 GH Start Fre 1.70500000 GH Stop Fre
-18.51 dBm	Center Fre 1.70700000 GH Start Fre 1.70500000 GH Stop Fre
-13.00 cm	1.707000000 GF Start Fre 1.705000000 GF Stop Fre
.13.00 (*)-	1.707000000 GH Start Fre 1.705000000 GH Stop Fre
-13.00 e***	1.705000000 GH
-13.00 e%	1.705000000 GI Stop Fre
-13.00 (%)	1.705000000 G
-13.00 cm	Stop Fr
-13.00 cm-	
	1.709000000
	CF St
	400.000 k
	Auto M
	Freq Offs
	0
	Out T
	Scale Ty
Span 4.000 MHz	Log j
1.000 ms (1001 pts)	
	Span 4.000 MHz 1.000 ms (1001 pts)

Plot 7-141. Lower Extended Band Edge Plot (Band 4/66 – 15.0MHz QPSK – RB Size 75)



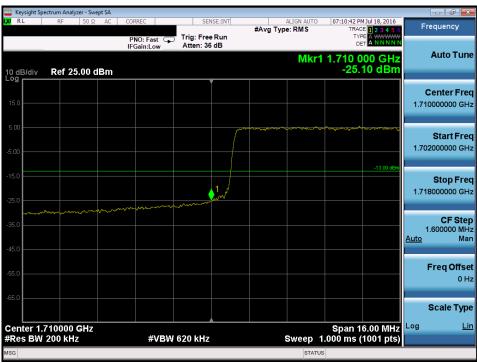


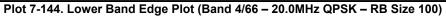
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 99 of 157
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Keysight Sp													
RL	RF	50 Ω	AC	CORRE			ENSE:INT	#Avg 1	ALIGN AUTO Type: RMS	TRA	M Jul 18, 2016 DE 1 2 3 4 5 6 PE A WWWWW	F	requency
0 dB/div	Ref 2	5.00 d	Bm	PNO: IFGair	Fast ↔ n:Low	Atten: 3			Mkı	□ • <b>1 1.783</b> 1			Auto Tun
15.0													Center Fre
5.00												1.78	<b>Start Fr</b> 33000000 G
5.0	Nertinia Marca alla -										-13.00 dBm	1.78	<b>Stop Fr</b> 37000000 G
5.0					алы, (, фоло арабаа —	**************************************	nduathaththathathatha	*****	neen of the state		alender gereiken konstanten ge	<u>Auto</u>	CF St 400.000 k N
5.0													Freq Offs 0
5.0	795000	CH2								Snap	.000 MHz	Log	Scale Ty
Res BW					#VBV	/ 3.0 MH	z		Sweep	5pan 4 1.000 ms	(1001 pts)		-
SG									STAT	rus			

Plot 7-143. Upper Extended Band Edge Plot (Band 4/66 – 15.0MHz QPSK – RB Size 75)



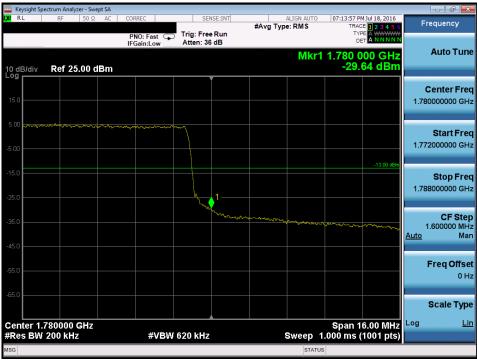


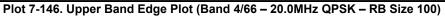
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	ectrum Anal										_	
RL	RF	50 Ω	AC	CORREC	SE	NSE:INT		ALIGN AUTO		MJul 18, 2016	F	requency
				PNO: Fast IFGain:Low	↔ Trig: Fre Atten: 3		#Avg Ty	/pe: RMS	TY	CE 1 2 3 4 5 6 PE A WWWW T A NNNN		
0 dB/div	Ref 2	5.00 d	Bm					Mkr	1 1.708 9 -19.	40 GHz 25 dBm		Auto Tur
- <sup>og</sup>						Ĭ						Center Fre
15.0											1.70	07000000 GH
5.00												Start Fre
5.00											1.70	)5000000 G
15.0										-13.00 dBm		Stop Fr
25.0	an		ېل پې د ممامستې	-,a,	www.paystage.com	**************	an a an	an a	๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛	and the stand of the	1.70	9000000 G
35.0												CF St
15.0											<u>Auto</u>	400.000 k N
												Freq Offs
55.0												0
i5.0												Scale Ty
enter 1.	707000	GHz								.000 10112	Log	Ĺ
Res BW	1.0 MH	z		#VI	3W 3.0 MHz			Sweep	1.000 ms (			

Plot 7-145. Lower Extended Band Edge Plot (Band 4/66 – 20.0MHz QPSK – RB Size 100)



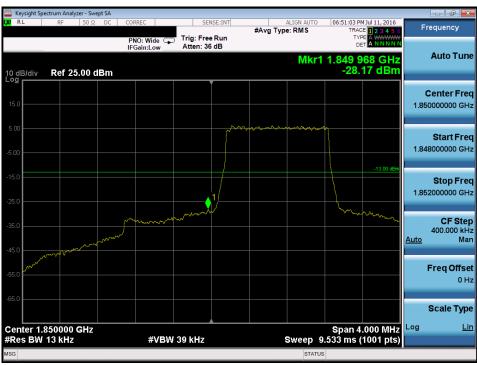


FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	rum Analyzer -	Swept SA								_	
XI RL	RF 50	Ω AC	CORREC		ISE:INT	#Avg Ty	ALIGN AUTO	TRA	M Jul 18, 2016 DE 1 2 3 4 5 6 PE A WWWWW	F	requency
			PNO: Fast ++ IFGain:Low	Trig: Free Atten: 36				D			
10 dB/div	Ref 25.00	) dBm					Mkr	1 1.781 4 -25.	192 GHz 47 dBm		Auto Tur
				`							Center Fre
15.0											33000000 GH
5.00											
											Start Fre
-5.00										1.78	31000000 G
15.0									-13.00 dBm		Stop Fr
	1									1.78	35000000 G
25.0	und and and and and and and and and and a	megori-19/wash	when a second and the second		www.aut.go	and the standard and th	hyterweiter	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
35.0											CF St 400.000 k
45.0										<u>Auto</u>	М
											Freq Offs
55.0											0
65.0											
											Scale Ty
Start 1.781								Stop 1.78	3000 GHZ	Log	L
Res BW 1	.0 MHz		#VBW	3.0 MHz			Sweep	1.000 ms	(1001 pts)		

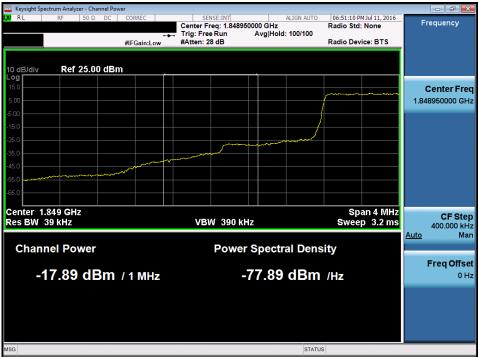
Plot 7-147. Upper Extended Band Edge Plot (Band 4/66 – 20.0MHz QPSK – RB Size 100)



Plot 7-148. Lower Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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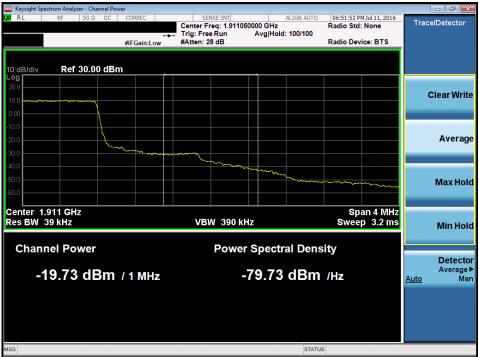
Plot 7-149. Lower Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



Plot 7-150. Upper Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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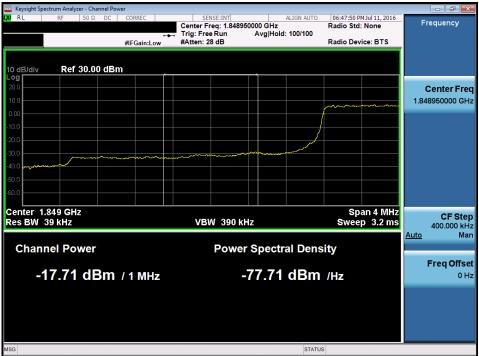
Plot 7-151. Upper Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



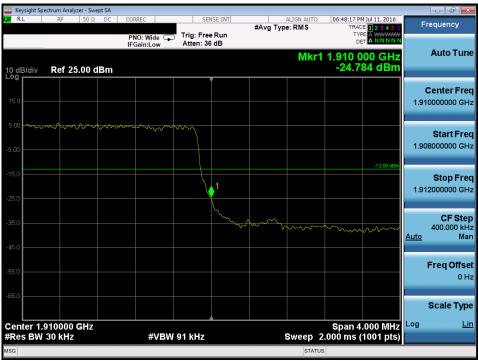


FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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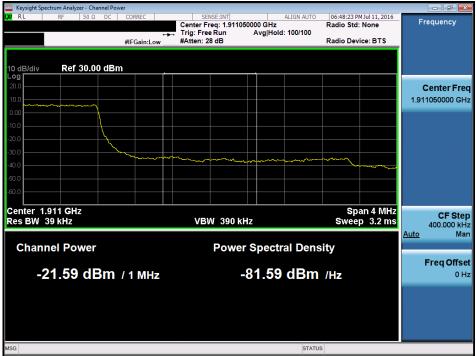
Plot 7-153. Lower Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)



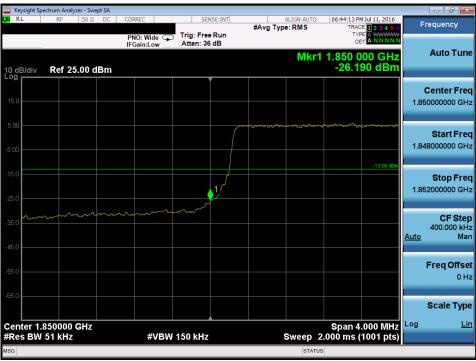


FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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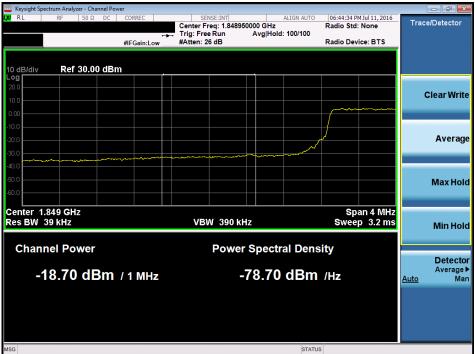
Plot 7-155. Upper Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)





FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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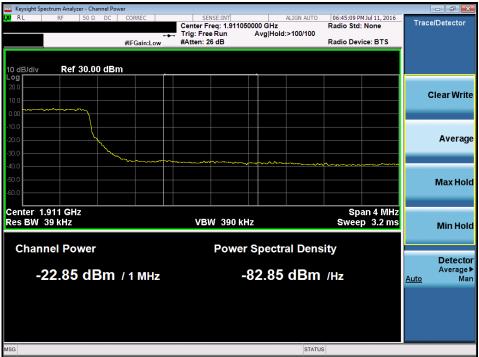
Plot 7-157. Lower Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



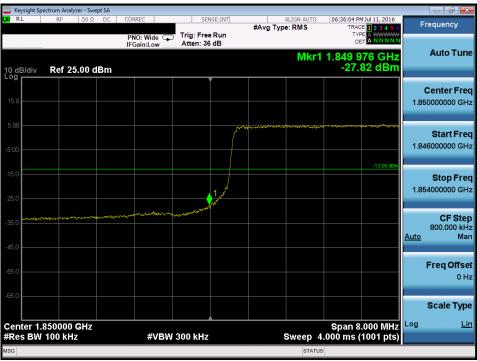


FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-159. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)





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	ectrum Analyzer	- Swept SA										
RL	RF 5	i0 Ω DC	CORF	EC	SEI	NSE:INT		ALIGN AUTO		M Jul 11, 2016	F	requency
				D:Wide ← ain:Low	Trig: Free Atten: 30		#Avg Ty	pe:RMS	TY	CE 1 2 3 4 5 6 PE A WWWWW ET A NNNN		
I0 dB/div	Ref 20.0	0 dBm	ì					Mkr	1 1.848 9 -20.	980 GHz 36 dBm		Auto Tune
10.0												Center Fred 17000000 GH:
10.00										-13.00 dBm	1.84	Start Free
-20.0		queen	garatur an fail at	1995-2891-8 <sup>9</sup> 999-87-2	algelitzethaderegen	an se ang panlos	Nin-Annalan-	kin and the second s		and the second second	1.84	<b>Stop Fre</b> 19000000 GH
40.0											<u>Auto</u>	<b>CF Ste</b> 400.000 kH Ma
60.0												Freq Offse 0 H
70.0												Scale Typ
	847000 GI	IZ						_		.000 10112	Log	<u>Lir</u>
#Res BW	1.0 MHz			#VB	W 3.0 MHz			Sweep	2.000 ms (	(1001 pts)		

Plot 7-161. Lower Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



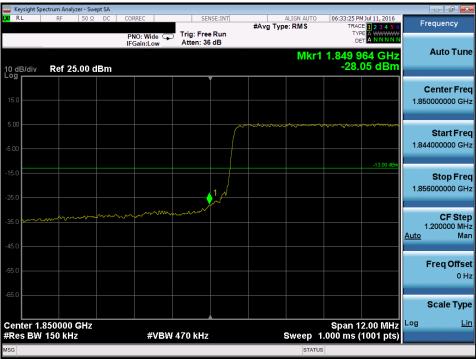


FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	ectrum Analyzer - Swej	ot SA									
RL	RF 50 Ω	DC COF	REC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO		4 Jul 11, 2016	F	requency
			IO: Wide ↔ Gain:Low	. Trig: Free Atten: 36		#AV9 191	JE. KWIJ	TYE			
I0 dB/div	Ref 25.00 d	Bm					Mkr1	1.911 0 -22.	00 GHz 42 dBm		Auto Tun
og				)							Center Fre
15.0										1.91	13000000 GH
5.00											Start Fre
5.00										1.91	1000000 GH
15.0									-13.00 dBm		Stop Fre
25.0										1.91	15000000 GI
25.0	ale and a feature of the second s	entrado NAMARAN	aller and a second second	- Jennergenge	yhip whether and the set	parantal providence	And the second		ծ.Շւ∩,®γ(]_դ,ումը^ու		CF Ste
35.0										Auto	400.000 kł Mi
45.0											Int
55.0											Freq Offs
65.0											01
											Scale Typ
enter 1.9 Res BW	913000 GHz		#\/B\A	/ 3.0 MHz			Sween	Span 4	.000 MHz 1001 pts)	Log	Ŀ
Res DW	1.0 10112		#VDV	5.0 WINZ			sweep z	.000 IIIS (	TOOT PLS)		

Plot 7-163. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)





FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	ectrum Analyz	er - Swept	SA									_	
X/RL	RF	50 Ω I		CORREC PNO: Wid		Trig: Free		#Avg Typ	ALIGN AUTO De: RMS	TRAC	M Jul 11, 2016 DE <b>1 2 3 4 5 6</b> PE A WWWWW FT A N N N N N	F	requency
10 dB/div	Ref 25	.00 dB		IFGain:Lo	W	Atten: 36	dB		Mkr	1 1.848 4			Auto Tun
15.0													Center Fre
-5.00												1.84	<b>Start Fre</b> 5000000 G⊦
25.0	grysg cargo romat <sup>in</sup> drik		1	Beaching a subject of the		surtent states	Carlinea to had		-	1 	-13.00 dBm	1.84	<b>Stop Fre</b> 9000000 GF
45.0												<u>Auto</u>	<b>CF Ste</b> 400.000 kl M
55.0													Freq Offs 01
65.0	847000 (	GHz								Span 4	.000 MHz	Log	Scale Typ
Res BW				#	VBW	3.0 MHz			Sweep	2.000 ms (	(1001 pts)		
SG									STATI	JS			

Plot 7-165. Lower Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



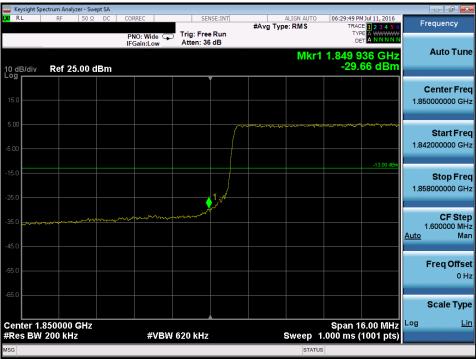


FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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RF 50 Ω	DC O	ORREC								
		PNO: Wide 🕶			#Avg Typ	ALIGN AUTO	TRAC	M Jul 11, 2016 CE 1 2 3 4 5 6 PE A WWWWW A N N N N N	F	requency
	, i	FGain:Low	Atten: 36							Auto Tun
Ref 25.00 di	Bm					Mkr	1 1.912 2 -26.	20 GHz 08 dBm		Auto Tun
										Center Fre
									1.91	3000000 GH
										Start Fre
									1.91	1000000 GI
								-13.00 dBm		Stop Fr
		1							1.91	5000000 G
where we are the second	મ/"~.અજ્યું, <b>નુક્ર</b> ન્સ્ટ્રમ્પ	homesalderstor	erthally and she	rhaven likeanfang	ngramment with master	v-Manuagetherela	her and the second	manyorpano		
										CF Ste 400.000 k
									<u>Auto</u>	М
										_
										Freq Offs
										Scale Ty
3000 GHz							Span 4	.000 MHz	Log	Ŀ
0 MHz		#VBW	3.0 MHz			Sweep 🔅	2.000 ms (	1001 pts)		
	3000 GHz	3000 GHz	1 2000 GHz	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			Ref 25.00 dBm         Image: State of the state of t	Ref 25.00 dBm     -26.	1         1300 dbm           1         1300 dbm </td <td>Ref 25.00 dBm       -26.08 dBm         1       1</td>	Ref 25.00 dBm       -26.08 dBm         1       1

Plot 7-167. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



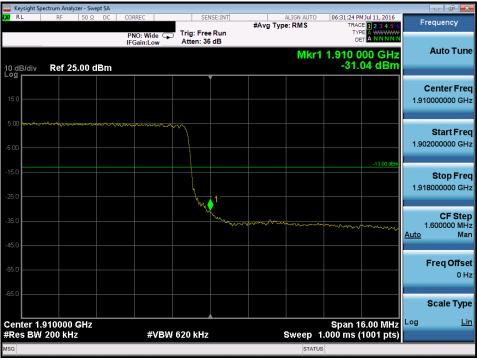


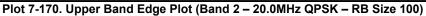
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)				Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 101 of 157		
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	ctrum Analyzer - Swep										
XU RL	RF 50 Ω	PN	O: Wide 🕶	Trig: Free		#Avg Typ	ALIGN AUTO e: RMS	TRAC	MJul 11, 2016 E 1 2 3 4 5 6 E A WWWW T A N N N N N	F	requency
10 dB/div	Ref 25.00 d		ain:Low	Atten: 36	dB		Mkr1	1.848 9	92 GHz 20 dBm		Auto Tun
15.0											Center Fre 17000000 G⊦
5.00										1.84	<b>Start Fre</b> 15000000 GH
25.0									-13.00 dBm	1.84	<b>Stop Fr</b> 19000000 G
5.0	and 100	an hag ng Anton Million a	haren metter balantar					******		<u>Auto</u>	CF Sto 400.000 k M
5.0											Freq Offs 0
5.0											Scale Ty
enter 1.8 Res BW	47000 GHz 1.0 MHz		#VBW	3.0 MHz			Sweep 2	59 Span 2.000 ms	.000 MHz 1001 pts)	LUg	Ĺ
5G							STATUS				

Plot 7-169. Lower Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)





FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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	Analyzer - Swept SA						
L <mark>XI</mark> RL R	F 50 Ω DC	CORREC PNO: Wide ↔→	SENSE:IN	#Avg Typ	ALIGN AUTO e: RMS	06:31:37 PM Jul 11, 2016 TRACE 1 2 3 4 5 TYPE A WWWW	6 W
10 dB/div Re	f 25.00 dBm	IFGain:Low	Atten: 36 dB		Mkr1	1.913 260 GH -27.95 dBr	z Auto Tune
15.0							Center Free 1.913000000 GH:
-5.00							<b>Start Fre</b> 1.911000000 GH
-15.0				1		-13.00 dE	<b>Stop Fre</b> 1.915000000 GH
-35.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	+#17-20-20-20-20-20-20-20-20-20-20-20-20-20-	mgenumumi uninguyullunuhi.	19-14-794-7 <u>8</u> -98-98-98-94-	International Contraction	CF Ste 400.000 kH <u>Auto</u> Ma
55.0							Freq Offs 0 H
-65.0 Center 1.9130						Span 4.000 MH	Scale Typ
#Res BW 1.0	MHz	#VBW	3.0 MHz		Sweep 2.	000 ms (1001 pt	5)

Plot 7-171. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-172. Lower Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

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Keysight Spe	ectrum Analyzer	- Swept SA								_	
LXI L	RF	50 Ω AC	CORREC		SE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRA	PM Jul 08, 2016 ACE 1 2 3 4 5 6 YPE A WWWWW	Fr	equency
PASS	Ref 30.0	NFE 00 dBm	PNO: Wide G IFGain:Low	Trig: Free Atten: 40			Mkr	1 2.301	470 GHz .94 dBm		Auto Tune
20.0	e 1 Pass										Center Frec 5500000 GH;
0.00										2.28	Start Free 8000000 GH
-10.0										2.30	<b>Stop Fre</b> 3000000 GH
-30.0						Me have	and and a second	white and the second second	and the set of the set	1 <u>Auto</u>	<b>CF Ste</b> 1.500000 MH Ma
	(Mh)(Mym)(imm	hereofter Vorterer Art	retychylpositetheterfelinis	herry Hurridena	hyper Harnes haven	Way Turning					Freq Offse 0 H
-60.0											Scale Type
Start 2.28 #Res BW		2	#VBW	3.0 MHz			Sweep	Stop 2.30 1.000 ms	3000 GHz (1001 pts)	Log	<u>Lir</u>
MSG							STAT	US			

Plot 7-173. Lower Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)





FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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🔤 Keysight Spectrur	m Analyzer - Swe	pt SA								
LXI L	RF 50 Ω	AC CO	RREC	SEN	NSE:INT	#Avg Typ	ALIGN AUTO		4 Jul 08, 2016	Frequency
PASS	1		NO: Fast 🖵 Gain:Low	Trig: Free #Atten: 4		#Avg Typ	e: RIVIS	TYP	E 1 2 3 4 5 6 E A WWWW T A NNNN	
10 dB/div R	ef 30.00 d	Bm					Mkr	2.332 7 -46.	'54 GHz 05 dBm	Auto Tu
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20.0	and									2.336000000 G
10.0										Start Fr
0.00										2.307000000 G
-10.0										Stop Fr
-20.0										2.365000000 G
hand	New York									CF St
-30.0		Wing								5.800000 M Auto M
-40.0		a My	where another provide	ngth lither way	www.	mudahan	an water	the state of the second state	Minimanhayahas	Freq Offs
-50.0										0
-60.0										Scale Ty
Start 2.3070									200 GHZ	Log <u>l</u>
#Res BW 1.0	MHz		#VBW	3.0 MHz			Sweep	1.000 ms (	1001 pts)	
MSG							STATU	IS		

Plot 7-175. Upper Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

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	equency
NFE PNO: Wide Trig: Free Run TYPE A WWWWW IEGain:Low Atten: 36 dB DET A NNNN	
	Auto Tune
	enter Frec 000000 GH
2.301	Start Fred 000000 GH:
	<b>Stop Fred</b> 0000000 GH:
Window Concernation of the	<b>CF Stej</b> 800.000 kH Ma
	F <b>req Offse</b> 0 H
	Scale Type
er 2.305000 GHz Span 8.000 MHz BW 300 kHz Sweep 4.000 ms (1001 pts)	Lir
STATUS	



FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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🔤 Keysight Sp	ectrum Analyzer - S	Swept SA								- 7	X
L <mark>XI</mark> L	RF 50	Ω AC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO e: RMS		M Jul 08, 2016 CE 1 2 3 4 5 6	Frequency	y
PASS		NFE	PNO: Wide G	Trig: Free #Atten: 4				TY D		A	
10 dB/div	Ref 30.00	dBm					Mkr	1 2.299 ( 27.	536 GHz .89 dBm	Auto T	une
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10.0										Start F 2.288000000	
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-20.0								mer when the dury and	alt worm on the	2.304000000 CF S	
-30.0	the for the former of the second s	nawel sprease of	planson and a sugar	المر معين مدر استين	and the second sec					1.600000	
-50.0	h hindrigh (Aller II ~ F									Freq Of	ffse 0 H
-60.0										Scale T	
Start 2.28 #Res BW	8000 GHz 1.0 MHz		#VBW	3.0 MHz			Sweep		4000 GHz (1001 pts)	Log	Lir
MSG							STAT	US			

Plot 7-177. Lower Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)



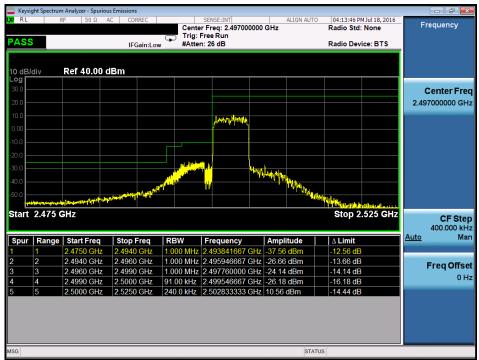


FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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🔤 Keysight Spe	ectrum Analyzer - Sv	wept SA									×
LXI L	RF 50 S	2 AC CO	RREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO		Jul 08, 2016	Frequency	v
PASS		NFE P IF	NO: Fast 🖵 Gain:Low	Trig: Free #Atten: 4		#Avg iyp	e: RIVIS	TYP	<b>1 2 3 4 5 6</b> A WWWWW A N N N N N		
10 dB/div	Ref 30.00	dBm					Mkr1	2.319 9 -28.	34 GHz 50 dBm	Auto T	fune
20.0 Trac	e 1 Pass									Center   2.336000000	
0.00										<b>Start I</b> 2.307000000	
-10.0										<b>Stop I</b> 2.365000000	
-20.0	how	ru volumery								CF \$ 5.800000 Auto	
-40.0			and a stand of the	Waysaphan		Unnorthelite	(hung) (hanger of h	eletterevereryeer		Freq O	ffsei 0 Ha
-60.0										Scale 1	
Start 2.30 #Res BW			#VBW	3.0 MHz			Sweep 1	Stop 2.36 .000 ms (*	500 GHz 1001 pts)	Log	Lin
MSG							STATU	S			

Plot 7-179. Upper Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)



Plot 7-180. Lower ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
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X/ RL		n Analyzer - Spu RF 50 Ω		ons CORREC		SENSE:INT		ALIGN AUTO	04-15-21.0	MJul 18, 2016	_	
	, F	1 20.35	AC (	ORREC		r Freq: 2.57300	00000 GHz	ALIGN AUTO	Radio Std		F	requency
PAS	S			IFGain:Lov	· · · · · ·	Free Run n: 28 dB			Radio Dev	vice: BTS		
				FGam:Lov	W WAtte	1. 20 00			Rudio Dev	ice. DTS		
		B-6 40 0										
10 dB _og <b>[</b>	s/div	Ref 40.00	U aBM									
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0.00												
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-20.0				Jes Platu	an <sup>ten</sup> t	a destroyed						
-30.0			J. Marker Wat	N.			Mara .					
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-50.0	المالي المديني وروانية	www.www.whw						A CONTRACTOR OF THE OWNER	William wardering	www.www.www.		
L Start	t 2.545 G	2117							Stop 2	.595 GHz		
otuni	. 2.345 0								0100 2			CF Stej 400.000 kH
Spur	Range	Start Fred	Sto	Fred	RBW	Frequency	Am	olitude			Auto	
Spur 1	r Range		_	p Freq 00 GHz	RBW	Frequency 2 567666667		9 dBm	∆ Limit		<u>Auto</u>	400.000 KH Ma
1	r Range 1 2	Start Freq 2.5450 GH	z 2.57	p Freq 00 GHz 10 GHz	1.000 MHz	Frequency 2.567666667 2.570431667	GHz 15.2	9 dBm	∆ Limit -9.705 dE -14.79 dE		<u>Auto</u>	Ma
1 2	1	2.5450 GH	z 2.57 z 2.57	00 GHz	1.000 MHz 91.00 kHz	2.567666667	GHz 15.2 GHz -24.7	9 dBm 79 dBm	-9.705 dE	3	<u>Auto</u>	Ma Freq Offse
<b>Spur</b> 1 2 3 4	1 2	2.5450 GH 2.5700 GH	z 2.57 z 2.57 z 2.57	00 GHz 10 GHz	1.000 MHz 91.00 kHz 1.000 MHz	2.567666667 2.570431667	GHz 15.2 GHz -24.7 GHz -19.6	9 dBm 79 dBm 64 dBm	-9.705 dE	3	<u>Auto</u>	Ma

Plot 7-181. Upper ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)



Plot 7-182. Lower ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-183. Upper ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)



Plot 7-184. Lower ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-185. Upper ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)



Plot 7-186. Lower ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-187. Upper ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)

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# 7.5 Peak-Average Ratio §24.232(d)

## 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.

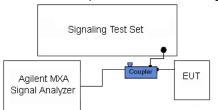


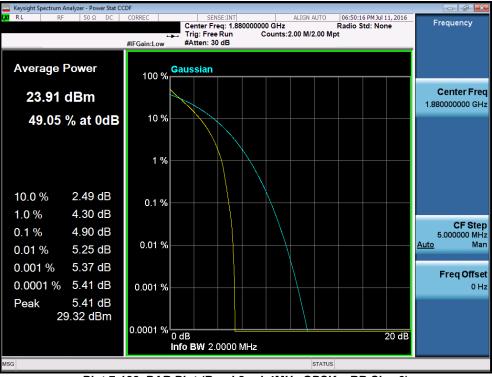
Figure 7-4. Test Instrument & Measurement Setup

## Test Notes

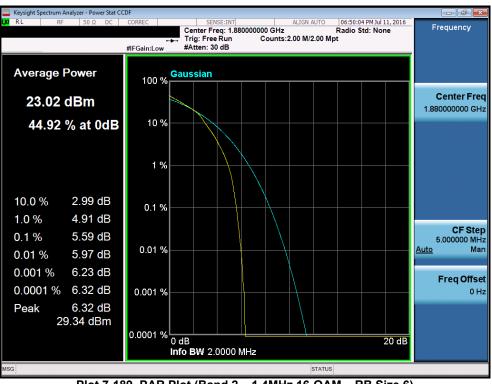
None.

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager
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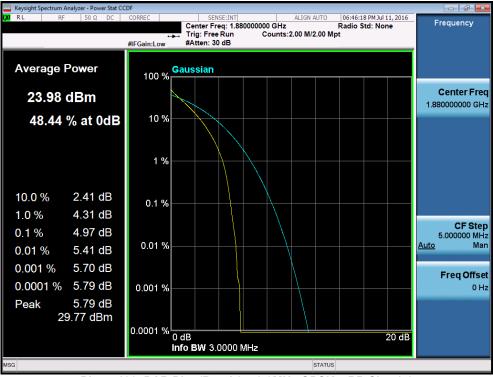
Plot 7-188. PAR Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



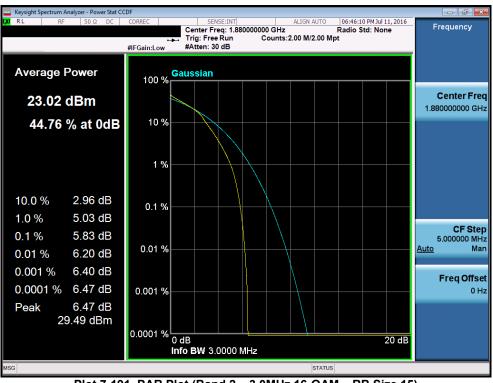
Plot 7-189. PAR Plot (Band 2 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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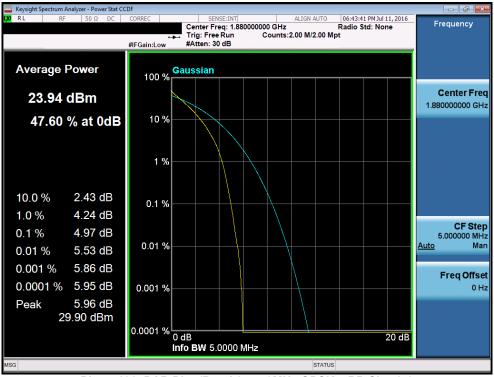
Plot 7-190. PAR Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

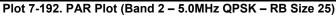


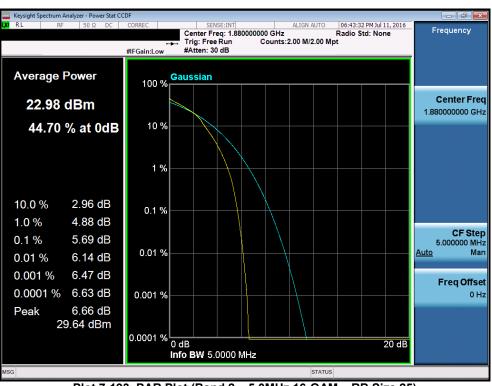
Plot 7-191. PAR Plot (Band 2 – 3.0MHz 16-QAM – RB Size 15)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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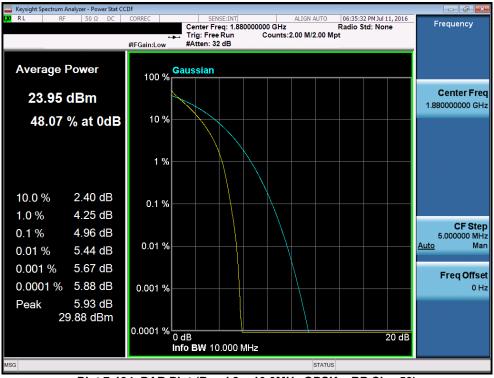


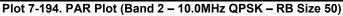


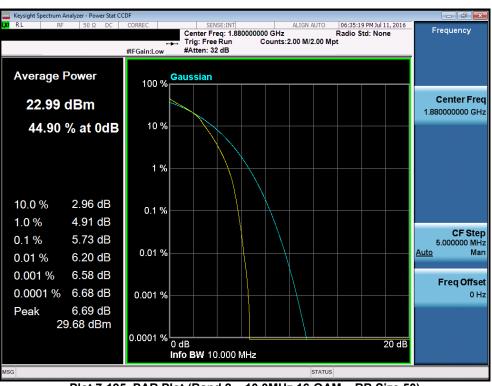
Plot 7-193. PAR Plot (Band 2 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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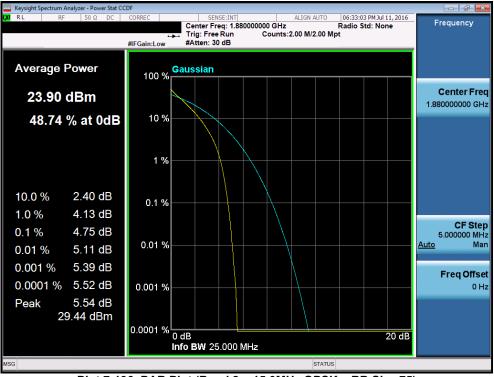




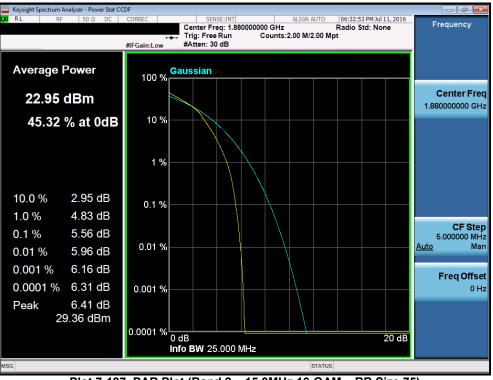
Plot 7-195. PAR Plot (Band 2 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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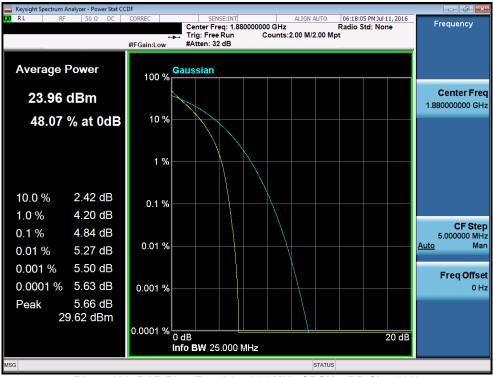


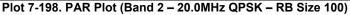


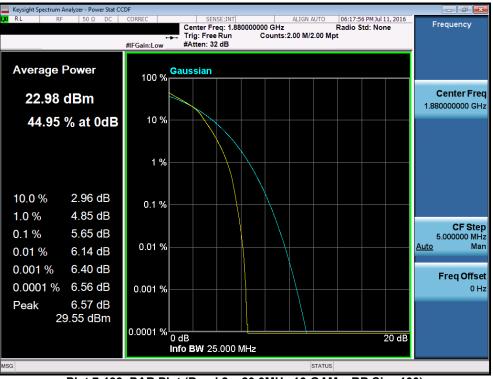
Plot 7-197. PAR Plot (Band 2 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Plot 7-199. PAR Plot (Band 2 – 20.0MHz 16-QAM – RB Size 100)

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# 7.6 Radiated Power (ERP/EIRP) §22.913(a.2) §24.232(c.2) §27.50(h.2) §27.50(c.10) §27.50(d.4) §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  $\ge$  3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points  $\geq$  2 x span / RBW
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
- 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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## Test Setup

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

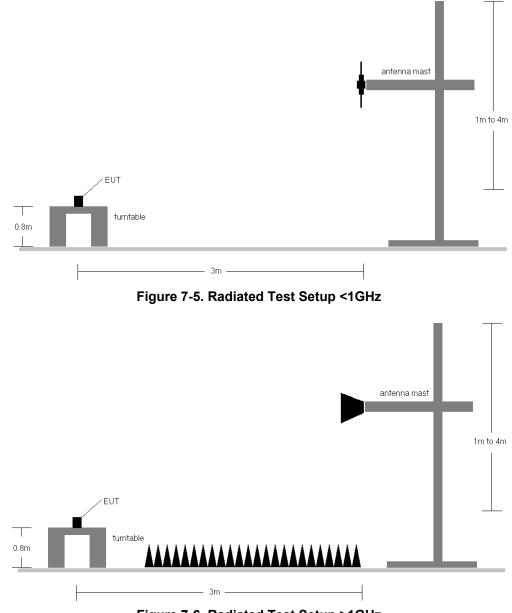


Figure 7-6. Radiated Test Setup >1GHz

## Test Notes

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

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# 7.6.1 Antenna-1 Radiated Power (ERP/EIRP)

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	V	165	185	1 / 0	15.62	2.88	18.50	34.77	-16.27
707.50	1.4	QPSK	V	171	189	3 / 2	15.90	2.88	18.78	34.77	-15.99
715.30	1.4	QPSK	V	170	193	1 / 5	17.12	3.06	20.18	34.77	-14.59
699.70	1.4	16-QAM	V	165	185	1 / 5	14.60	2.88	17.48	34.77	-17.29
707.50	1.4	16-QAM	V	171	189	1 / 5	14.85	2.88	17.73	34.77	-17.04
715.30	1.4	16-QAM	V	170	193	1 / 5	16.12	3.06	19.18	34.77	-15.59
700.50	3	QPSK	V	144	230	1 / 0	17.40	2.72	20.12	34.77	-14.65
707.50	3	QPSK	V	175	234	1 / 14	17.27	2.88	20.15	34.77	-14.62
714.50	3	QPSK	V	154	200	1 / 14	17.26	3.04	20.30	34.77	-14.47
700.50	3	16-QAM	V	144	230	1 / 0	16.39	2.72	19.11	34.77	-15.66
707.50	3	16-QAM	V	175	234	1 / 14	16.34	2.88	19.22	34.77	-15.55
714.50	3	16-QAM	V	154	200	1 / 0	16.25	3.04	19.29	34.77	-15.48

# 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	V	170	185	1/0	16.92	2.75	19.67	34.77	-15.10
707.50	5	QPSK	V	175	189	1 / 24	17.10	2.88	19.98	34.77	-14.79
713.50	5	QPSK	V	164	179	1 / 24	17.26	3.02	20.28	34.77	-14.49
701.50	5	16-QAM	V	170	185	1 / 24	16.02	2.75	18.77	34.77	-16.00
707.50	5	16-QAM	V	175	189	1 / 24	16.16	2.88	19.04	34.77	-15.73
713.50	5	16-QAM	V	164	179	1 / 0	16.30	3.02	19.32	34.77	-15.45
704.00	10	QPSK	V	180	180	1 / 49	16.71	2.80	19.51	34.77	-15.26
707.50	10	QPSK	V	183	189	1 / 49	16.99	2.88	19.87	34.77	-14.90
711.00	10	QPSK	V	164	134	1 / 49	16.99	2.96	19.95	34.77	-14.82
704.00	10	16-QAM	V	180	180	1 / 49	15.70	2.80	18.50	34.77	-16.27
707.50	10	16-QAM	V	183	189	1 / 49	15.90	2.88	18.78	34.77	-15.99
711.00	10	16-QAM	V	64	134	1 / 49	15.92	2.96	18.88	34.77	-15.89
714.50	3	QPSK	Н	293	187	1/0	16.77	3.02	19.79	34.77	-14.98

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

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	Н	209	153	1 / 5	13.44	4.95	18.39	38.45	-20.07
836.50	1.4	QPSK	Н	200	151	1 / 0	13.33	5.00	18.33	38.45	-20.12
848.30	1.4	QPSK	Н	200	151	1 / 0	13.46	5.05	18.51	38.45	-19.94
824.70	1.4	16-QAM	Н	209	153	1 / 5	12.39	4.95	17.34	38.45	-21.12
836.50	1.4	16-QAM	Н	200	151	1 / 0	12.24	5.00	17.24	38.45	-21.21
848.30	1.4	16-QAM	Н	200	151	1 / 0	12.45	5.05	17.50	38.45	-20.95
825.50	3	QPSK	Н	206	196	1 / 14	12.66	4.95	17.61	38.45	-20.84
836.50	3	QPSK	Н	355	338	1 / 0	13.43	5.00	18.43	38.45	-20.02
847.50	3	QPSK	Н	100	339	1 / 0	12.40	5.05	17.45	38.45	-21.00
825.50	3	16-QAM	Н	206	196	1 / 14	11.57	4.95	16.52	38.45	-21.93
836.50	3	16-QAM	Н	355	338	1 / 14	12.34	5.00	17.34	38.45	-21.11
847.50	3	16-QAM	Н	100	339	1 / 0	11.36	5.05	16.41	38.45	-22.04
826.50	5	QPSK	Н	312	34	1 / 24	13.15	4.95	18.10	38.45	-20.35
836.50	5	QPSK	Н	336	341	1 / 24	12.79	5.00	17.79	38.45	-20.66
846.50	5	QPSK	Н	100	340	1 / 24	12.62	5.04	17.66	38.45	-20.79
826.50	5	16-QAM	н	312	34	1 / 24	12.10	4.95	17.05	38.45	-21.40
836.50	5	16-QAM	Н	336	341	1 / 24	11.92	5.00	16.92	38.45	-21.53
846.50	5	16-QAM	Н	100	340	1 / 0	11.76	5.04	16.80	38.45	-21.65
829.00	10	QPSK	Н	225	10	1 / 49	12.45	4.96	17.41	38.45	-21.04
836.50	10	QPSK	Н	224	0	1 / 0	12.51	5.00	17.51	38.45	-20.94
844.00	10	QPSK	Н	221	15	1 / 0	11.80	5.03	16.83	38.45	-21.62
829.00	10	16-QAM	Н	100	340	1 / 49	12.61	4.96	17.57	38.45	-20.88
836.50	10	16-QAM	Н	224	0	1 / 0	11.46	5.00	16.46	38.45	-21.99
844.00	10	16-QAM	Н	221	15	1 / 49	11.45	5.03	16.48	38.45	-21.97
848.30	1.4	QPSK	V	139	323	1 / 74	10.72	5.05	15.77	38.45	-22.68

Table 7-4. ERP Data (Band 5)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	Н	131	234	1/0	15.29	9.67	24.96	30.00	-5.04
1732.50	1.4	QPSK	Н	116	242	1 / 0	14.30	9.53	23.83	30.00	-6.17
1754.30	1.4	QPSK	Н	121	239	1 / 0	14.83	9.39	24.22	30.00	-5.78
1710.70	1.4	16-QAM	Н	131	234	1 / 0	14.30	9.67	23.97	30.00	-6.03
1732.50	1.4	16-QAM	Н	116	242	1 / 0	13.34	9.53	22.87	30.00	-7.13
1754.30	1.4	16-QAM	Н	121	239	1 / 5	13.71	9.39	23.10	30.00	-6.90
1711.50	3	QPSK	Н	132	238	1 / 0	15.29	9.67	24.96	30.00	-5.04
1732.50	3	QPSK	Н	126	238	1 / 0	14.24	9.53	23.77	30.00	-6.23
1753.50	3	QPSK	Н	121	239	1 / 14	14.78	9.40	24.18	30.00	-5.82
1711.50	3	16-QAM	Н	132	238	1 / 0	14.29	9.67	23.96	30.00	-6.04
1732.50	3	16-QAM	Н	126	238	1 / 0	13.18	9.53	22.71	30.00	-7.29
1753.50	3	16-QAM	Н	121	239	1 / 14	13.78	9.40	23.18	30.00	-6.82

Table 7-5. EIRP Data (Band 4)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 102 of 157
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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]
1712.50	5	QPSK	Н	133	236	1 / 0	14.87	9.66	24.53	30.00	-5.47
1745.00	5	QPSK	Н	139	258	1 / 0	15.01	9.45	24.46	30.00	-5.54
1777.50	5	QPSK	Н	126	235	1 / 24	14.62	9.25	23.87	30.00	-6.13
1712.50	5	16-QAM	Н	133	236	1 / 24	14.27	9.66	23.93	30.00	-6.07
1745.00	5	16-QAM	Н	139	258	1 / 0	14.83	9.45	24.28	30.00	-5.72
1777.50	5	16-QAM	Н	126	235	1 / 24	14.06	9.25	23.31	30.00	-6.69
1715.00	10	QPSK	Н	132	233	1 / 0	15.19	9.64	24.83	30.00	-5.17
1745.00	10	QPSK	Н	110	242	1 / 0	14.97	9.45	24.42	30.00	-5.58
1775.00	10	QPSK	Н	124	234	1 / 49	14.70	9.26	23.96	30.00	-6.04
1715.00	10	16-QAM	Н	132	233	1 / 0	14.72	9.64	24.36	30.00	-5.64
1745.00	10	16-QAM	Н	110	242	1 / 0	13.97	9.45	23.42	30.00	-6.58
1775.00	10	16-QAM	Н	124	234	1 / 49	13.96	9.26	23.22	30.00	-6.78
1717.50	15	QPSK	Н	130	235	1 / 0	15.21	9.63	24.84	30.00	-5.16
1745.00	15	QPSK	Н	123	240	1 / 0	14.70	9.45	24.15	30.00	-5.85
1772.50	15	QPSK	Н	123	234	1 / 74	15.11	9.28	24.39	30.00	-5.61
1717.50	15	16-QAM	Н	130	235	1 / 0	14.24	9.63	23.87	30.00	-6.13
1745.00	15	16-QAM	Н	123	240	1 / 0	13.68	9.45	23.13	30.00	-6.87
1772.50	15	16-QAM	Н	123	234	1 / 74	14.63	9.28	23.91	30.00	-6.09
1720.00	20	QPSK	Н	128	239	1 / 0	14.98	9.61	24.59	30.00	-5.41
1745.00	20	QPSK	Н	120	239	1 / 0	14.33	9.45	23.78	30.00	-6.22
1770.00	20	QPSK	Н	128	235	1 / 0	15.50	9.29	24.79	30.00	-5.21
1720.00	20	16-QAM	Н	128	239	1 / 0	13.85	9.61	23.46	30.00	-6.54
1745.00	20	16-QAM	Н	120	239	1 / 99	13.51	9.45	22.96	30.00	-7.04
1770.00	20	16-QAM	Н	128	235	1 / 99	13.89	9.29	23.18	30.00	-6.82
1717.50	15	QPSK	V	110	200	1 / 0	13.96	9.63	23.59	30.00	-6.41

Table 7-6. EIRP Data (Band 4/66)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	Н	247	265	1 / 5	14.51	9.21	23.72	33.01	-9.29
1880.00	1.4	QPSK	Н	257	273	1/0	14.88	9.27	24.15	33.01	-8.86
1909.30	1.4	QPSK	Н	244	281	1 / 5	14.29	9.36	23.65	33.01	-9.36
1850.70	1.4	16-QAM	Н	247	265	1 / 5	13.23	9.21	22.44	33.01	-10.57
1880.00	1.4	16-QAM	Н	257	273	1 / 0	13.84	9.27	23.11	33.01	-9.90
1909.30	1.4	16-QAM	Н	244	281	1/0	12.56	9.36	21.92	33.01	-11.09
1851.50	3	QPSK	Н	220	167	1 / 14	14.97	9.21	24.18	33.01	-8.83
1880.00	3	QPSK	Н	261	180	1 / 14	15.29	9.27	24.56	33.01	-8.45
1908.50	3	QPSK	Н	255	181	1/0	14.67	9.36	24.03	33.01	-8.98
1851.50	3	16-QAM	Н	220	167	1 / 14	13.90	9.21	23.11	33.01	-9.90
1880.00	3	16-QAM	н	261	180	1 / 14	14.51	9.27	23.78	33.01	-9.23
1908.50	3	16-QAM	Н	255	181	1 / 0	13.68	9.36	23.04	33.01	-9.97
1852.50	5	QPSK	Н	247	164	1 / 24	14.58	9.22	23.80	33.01	-9.21
1880.00	5	QPSK	Н	259	179	1/0	15.22	9.27	24.49	33.01	-8.52
1907.50	5	QPSK	Н	240	131	1/0	13.65	9.35	23.00	33.01	-10.01
1852.50	5	16-QAM	Н	247	164	1 / 24	13.59	9.22	22.81	33.01	-10.20
1880.00	5	16-QAM	Н	259	179	1/0	14.21	9.27	23.48	33.01	-9.53
1907.50	5	16-QAM	Н	240	131	1/0	12.50	9.35	21.85	33.01	-11.16
1855.00	10	QPSK	Н	114	12	1/0	12.70	9.34	22.04	33.01	-10.97
1880.00	10	QPSK	н	100	0	1 / 49	12.68	9.27	21.95	33.01	-11.06
1905.00	10	QPSK	Н	108	15	1 / 49	13.75	9.24	22.99	33.01	-10.02
1855.00	10	16-QAM	Н	114	12	1/0	11.60	9.34	20.94	33.01	-12.07
1880.00	10	16-QAM	Н	100	0	1 / 49	11.64	9.27	20.91	33.01	-12.10
1905.00	10	16-QAM	н	108	15	1 / 49	12.70	9.24	21.94	33.01	-11.07
1857.50	15	QPSK	Н	114	12	1/0	15.94	9.33	25.27	33.01	-7.74
1880.00	15	QPSK	н	105	0	1 / 74	15.50	9.27	24.77	33.01	-8.24
1902.50	15	QPSK	н	260	6	1/0	15.84	9.23	25.07	33.01	-7.94
1857.50	15	16-QAM	н	114	12	1 / 0	14.71	9.33	24.04	33.01	-8.97
1880.00	15	16-QAM	н	105	0	1 / 74	14.56	9.27	23.83	33.01	-9.18
1902.50	15	16-QAM	Н	260	6	1/0	14.74	9.23	23.97	33.01	-9.04
1860.00	20	QPSK	Н	12	354	1/0	14.54	9.32	23.86	33.01	-9.15
1880.00	20	QPSK	Н	100	360	1/0	15.41	9.27	24.68	33.01	-8.33
1900.00	20	QPSK	н	334	347	1 / 99	14.70	9.22	23.92	33.01	-9.09
1860.00	20	16-QAM	Н	12	354	1/0	13.63	9.32	22.95	33.01	-10.06
1880.00	20	16-QAM	н	100	360	1/0	14.48	9.27	23.75	33.01	-9.26
1900.00	20	16-QAM	н	334	347	1 / 99	13.73	9.22	22.95	33.01	-10.06
			v	137			12.61	9.23	21.84	33.01	-11.17

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

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	Н	231	24	1 / 0	12.47	5.81	18.28	23.98	-5.70
2310.00	5	QPSK	Н	232	277	1 / 0	12.70	5.81	18.51	23.98	-5.47
2312.50	5	QPSK	Н	232	277	1 / 0	12.10	5.81	17.91	23.98	-6.07
2307.50	5	16-QAM	н	230	278	1 / 0	11.43	5.80	17.23	23.98	-6.75
2310.00	5	16-QAM	Н	231	24	1 / 0	11.77	5.81	17.58	23.98	-6.40
2312.50	5	16-QAM	Н	232	277	1 / 0	11.09	5.81	16.90	23.98	-7.08
2310.00	10	QPSK	Н	230	278	1 / 0	9.47	5.80	15.27	23.98	-8.71
2310.00	10	16-QAM	Н	100	222	1 / 0	8.45	5.81	14.26	23.98	-9.72
2310.00	5	QPSK	V	100	222	1 / 0	8.16	5.81	13.97	23.98	-10.01

Table 7-8. EIRP Data (Band 30)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	Н	229	154	1/0	11.71	8.59	20.30	33.01	-12.71
2535.00	5	QPSK	Н	229	154	1/0	12.91	8.57	21.48	33.01	-11.53
2567.50	5	QPSK	Н	229	154	1/0	12.04	8.55	20.59	33.01	-12.42
2502.50	5	16-QAM	Н	229	154	1 / 5	10.91	8.59	19.50	33.01	-13.51
2535.00	5	16-QAM	Н	229	154	1 / 5	12.15	8.57	20.72	33.01	-12.29
2567.50	5	16-QAM	Н	229	154	1/0	11.22	8.55	19.77	33.01	-13.24
2505.00	10	QPSK	Н	236	342	1 / 14	11.72	8.59	20.31	33.01	-12.70
2535.00	10	QPSK	Н	236	342	1/0	11.92	8.57	20.49	33.01	-12.52
2565.00	10	QPSK	Н	236	342	1/0	11.97	8.55	20.52	33.01	-12.49
2505.00	10	16-QAM	Н	236	342	1 / 14	10.79	8.59	19.38	33.01	-13.63
2535.00	10	16-QAM	Н	236	342	1/0	11.03	8.57	19.60	33.01	-13.41
2565.00	10	16-QAM	Н	236	342	1/0	11.08	8.55	19.63	33.01	-13.38
2507.50	15	QPSK	Н	242	143	1/0	11.85	8.59	20.44	33.01	-12.57
2535.00	15	QPSK	Н	242	143	1 / 24	11.05	8.57	19.62	33.01	-13.39
2562.50	15	QPSK	Н	242	143	1 / 24	10.71	8.55	19.26	33.01	-13.75
2507.50	15	16-QAM	Н	242	143	1/0	11.13	8.59	19.72	33.01	-13.29
2535.00	15	16-QAM	Н	242	143	1 / 24	10.08	8.57	18.65	33.01	-14.36
2562.50	15	16-QAM	Н	242	143	1 / 24	9.82	8.55	18.37	33.01	-14.64
2510.00	20	QPSK	Н	243	147	1/0	11.05	8.59	19.64	33.01	-13.37
2535.00	20	QPSK	Н	243	147	1 / 49	12.67	8.57	21.24	33.01	-11.77
2560.00	20	QPSK	Н	243	147	1/0	12.91	8.56	21.47	33.01	-11.54
2510.00	20	16-QAM	Н	243	147	1 / 49	10.17	8.59	18.76	33.01	-14.25
2535.00	20	16-QAM	Н	243	147	1 / 49	11.71	8.57	20.28	33.01	-12.73
2560.00	20	16-QAM	Н	243	147	1/0	12.03	8.56	20.59	33.01	-12.42
2502.50	5	QPSK	V	100	252	1 / 5	10.66	8.57	19.23	33.01	-13.78

Table 7-9. EIRP Data (Band 7)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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# 7.6.2 Antenna-2 Radiated Power (ERP)

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	V	247	9	1/0	12.20	2.88	15.08	34.77	-19.69
707.50	1.4	QPSK	V	246	0	1/0	11.47	2.88	14.35	34.77	-20.42
715.30	1.4	QPSK	V	240	7	1/0	12.19	3.06	15.25	34.77	-19.52
699.70	1.4	16-QAM	V	247	9	1/0	11.24	2.88	14.12	34.77	-20.65
707.50	1.4	16-QAM	V	246	0	1/0	10.59	2.88	13.47	34.77	-21.30
715.30	1.4	16-QAM	V	240	7	1/0	11.19	3.06	14.25	34.77	-20.52
700.50	3	QPSK	V	244	10	1 / 14	13.33	2.72	16.05	34.77	-18.72
707.50	3	QPSK	V	249	0	1 / 14	13.07	2.88	15.95	34.77	-18.82
714.50	3	QPSK	V	249	4	1/0	12.40	3.04	15.44	34.77	-19.33
700.50	3	16-QAM	V	244	10	1 / 14	12.24	2.72	14.96	34.77	-19.81
707.50	3	16-QAM	V	249	0	1 / 14	12.13	2.88	15.01	34.77	-19.76
714.50	3	16-QAM	V	249	4	1/0	11.47	3.04	14.51	34.77	-20.26
700.50	3	QPSK	Н	150	199	1 / 74	12.04	2.72	14.76	34.77	-20.01

Table 7-10. 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	V	238	1	1 / 0	13.30	2.75	16.05	34.77	-18.72
707.50	5	QPSK	V	257	2	1 / 24	13.10	2.88	15.98	34.77	-18.79
713.50	5	QPSK	V	253	9	1/0	12.85	3.02	15.87	34.77	-18.90
701.50	5	16-QAM	V	238	1	1/0	12.35	2.75	15.10	34.77	-19.67
707.50	5	16-QAM	V	257	2	1 / 24	12.14	2.88	15.02	34.77	-19.75
713.50	5	16-QAM	V	253	9	1/0	11.99	3.02	15.01	34.77	-19.76
704.00	10	QPSK	V	259	1	1/0	13.11	2.80	15.91	34.77	-18.86
707.50	10	QPSK	V	273	0	1 / 0	12.98	2.88	15.86	34.77	-18.91
711.00	10	QPSK	V	270	5	1/0	12.39	2.96	15.35	34.77	-19.42
704.00	10	16-QAM	V	259	1	1/0	12.15	2.80	14.95	34.77	-19.82
707.50	10	16-QAM	V	273	0	1/0	11.98	2.88	14.86	34.77	-19.91
711.00	10	16-QAM	V	270	5	1/0	11.50	2.96	14.46	34.77	-20.31

Table 7-11. ERP Data (Band 12/17)

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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	220	204	1 / 5	6.57	4.95	11.52	38.45	-26.94
836.50	1.4	QPSK	Н	217	210	1 / 0	6.55	5.00	11.55	38.45	-26.90
848.30	1.4	QPSK	Н	214	200	1 / 0	5.54	5.05	10.59	38.45	-27.86
824.70	1.4	16-QAM	Н	220	204	1 / 0	5.53	4.95	10.48	38.45	-27.98
836.50	1.4	16-QAM	н	217	210	1 / 5	5.47	5.00	10.47	38.45	-27.98
848.30	1.4	16-QAM	Н	214	200	1 / 0	4.59	5.05	9.64	38.45	-28.81
825.50	3	QPSK	Н	321	180	1 / 14	6.12	4.95	11.07	38.45	-27.38
836.50	3	QPSK	Н	365	197	1 / 14	6.60	5.00	11.60	38.45	-26.85
847.50	3	QPSK	Н	341	155	1 / 0	6.81	5.05	11.86	38.45	-26.59
825.50	3	16-QAM	Н	321	180	1 / 14	4.97	4.95	9.92	38.45	-28.53
836.50	3	16-QAM	Н	365	197	1 / 14	5.56	5.00	10.56	38.45	-27.89
847.50	3	16-QAM	Н	341	155	1 / 14	5.80	5.05	10.85	38.45	-27.60
826.50	5	QPSK	H	201	142	1 / 24	7.33	4.95	12.28	38.45	-26.17
836.50	5	QPSK	Н	207	206	1 / 0	7.16	5.00	12.16	38.45	-26.29
846.50	5	QPSK	Н	194	201	1 / 0	6.20	5.04	11.24	38.45	-27.21
826.50	5	16-QAM	Н	201	142	1 / 24	6.30	4.95	11.25	38.45	-27.20
836.50	5	16-QAM	Н	207	206	1 / 0	6.35	5.00	11.35	38.45	-27.10
846.50	5	16-QAM	H	194	201	1 / 0	5.31	5.04	10.35	38.45	-28.10
829.00	10	QPSK	Н	341	194	1 / 49	6.01	4.96	10.97	38.45	-27.48
836.50	10	QPSK	Н	365	204	1 / 49	6.53	5.00	11.53	38.45	-26.92
844.00	10	QPSK	Н	321	187	1 / 49	6.55	5.03	11.58	38.45	-26.87
829.00	10	16-QAM	Н	341	194	1 / 0	5.58	4.96	10.54	38.45	-27.91
836.50	10	16-QAM	Н	365	204	1 / 49	5.61	5.00	10.61	38.45	-27.84
844.00	10	16-QAM	Н	321	187	1 / 49	5.49	5.03	10.52	38.45	-27.93
826.50	5	QPSK	V	132	292	1 / 0	5.90	4.95	10.85	38.45	-27.60

Table 7-12. ERP Data (Band 5)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed 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 tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed 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 = Peak
- 6. Trace mode = max hold
- 7. The trace was allowed to stabilize

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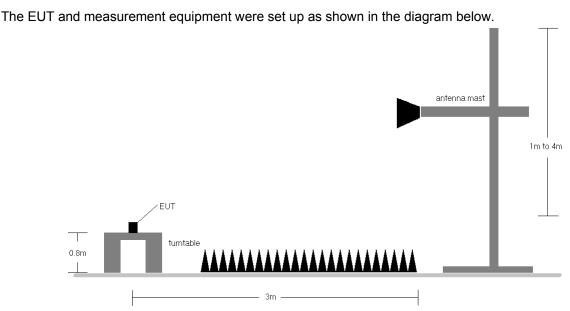


Figure 7-7. Test Instrument & Measurement Setup

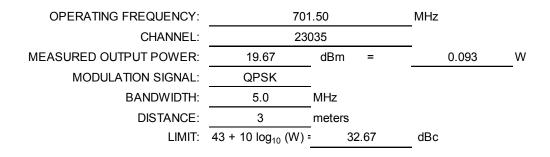
## Test Notes

- 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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# 7.7.1 Antenna-1 Radiated Spurious Emissions Measurements



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]
1403.00	Н	114	153	-55.06	2.39	-52.67	72.3
2104.50	Н	-	-	-55.87	3.46	-52.41	72.1
2806.00	Н	-	-	-55.35	4.76	-50.59	70.3

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

OPERATING FREQUENCY:	707	.50	MHz
CHANNEL:	230	)95	
MEASURED OUTPUT POWER:	19.98	dBm =	0.100 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	32.98	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	154	164	-54.49	2.54	-51.94	71.9
2122.50	Н	267	151	-53.42	3.42	-50.00	70.0
2830.00	Н	-	-	-55.82	4.85	-50.97	71.0

Table 7-14. Radiated Spurious Data (Band 12/17 – Mid Channel)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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OPERATING FREQUENCY:	713	MHz	
CHANNEL:	23	155	_
MEASURED OUTPUT POWER:	20.28	dBm =	0.107 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	33.28	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]
1427.00	Н	150	171	-55.59	2.70	-52.90	73.2
2140.50	Н	114	163	-52.99	3.38	-49.61	69.9
2854.00	Н	-	-	-55.66	4.95	-50.72	71.0

Table 7-15. Radiated Spurious Data (Band 12/17 – High Channel)

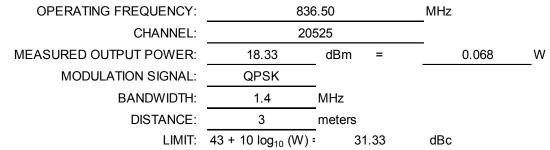
OPERATING FREQUENCY:	824	l.70	MHz
CHANNEL:	204	407	
MEASURED OUTPUT POWER:	18.39	dBm =	0.069 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	1.4	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	31.39	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1649.40	Н	-	-	-62.53	6.70	-55.83	74.2
2474.10	Н	-	-	-62.04	7.52	-54.52	72.9

Table 7-16. Radiated Spurious Data (Band 5 – Low Channel)

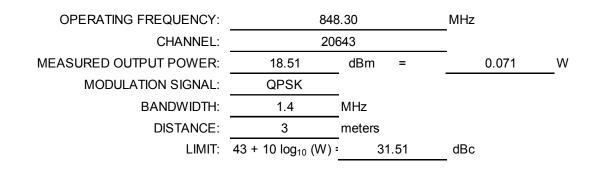
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager		
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Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	Н	-	-	-63.28	6.70	-56.58	74.9
2509.50	Н	-	-	-59.29	7.63	-51.67	70.0

Table 7-17. Radiated Spurious Data (Band 5 – Mid Channel)

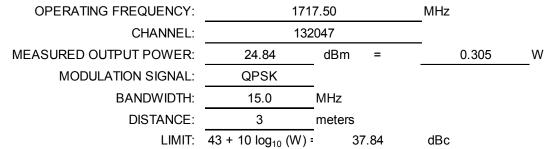


Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1696.60	Н	100	195	-61.28	6.70	-54.58	73.1
2544.90	Н	-	-	-59.80	7.60	-52.20	70.7

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

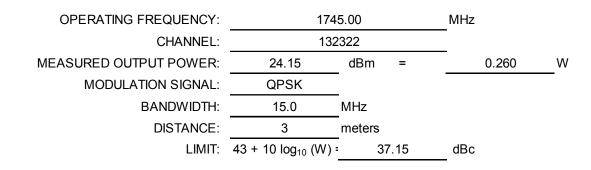
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3435.00	Н	-	-	-58.54	9.88	-48.67	73.5
5152.50	Н	-	-	-57.49	10.75	-46.74	71.6

Table 7-19. Radiated Spurious Data (Band 4/66 – Low Channel)

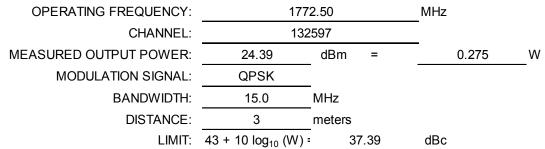


Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3490.00	Н	217	10	-55.82	9.94	-45.88	70.0
5235.00	Н	-	-	-56.15	10.72	-45.42	69.6

Table 7-20. Radiated Spurious Data (Band 4/66 – Mid Channel)

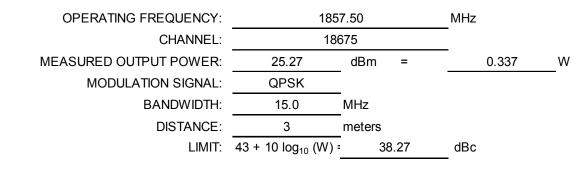
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager		
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3545.00	Н	165	10	-57.09	9.96	-47.13	71.5
5317.50	Н	207	253	-53.47	10.70	-42.78	67.2
7090.00	Н	-	-	-51.69	11.77	-39.92	64.3

Table 7-21. Radiated Spurious Data (Band 4/66 – High Channel)

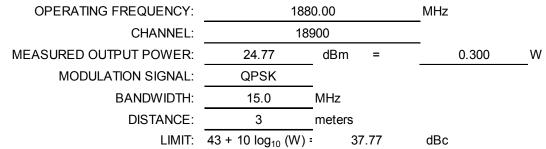


Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3715.00	Н	100	132	-50.27	8.46	-41.81	67.1
5572.50	Н	-	-	-51.28	10.54	-40.74	66.0

Table 7-22. Radiated Spurious Data (Band 2 – Low Channel)

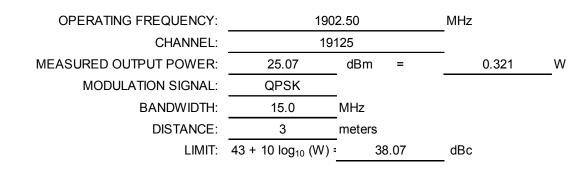
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3760.00	Н	100	146	-48.20	8.64	-39.56	64.3
5640.00	Н	-	-	-51.44	10.62	-40.83	65.6

Table 7-23. Radiated Spurious Data (Band 2 – Mid Channel)

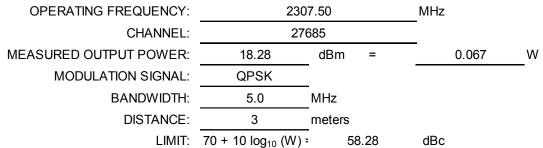


Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3805.00	Н	100	131	-51.42	8.79	-42.63	67.7
5707.50	Н	-	-	-52.36	10.69	-41.67	66.7

Table 7-24. Radiated Spurious Data (Band 2 – High Channel)

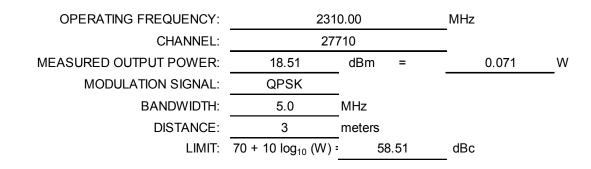
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager		
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4615.00	Н	173	103	-64.22	9.55	-54.67	72.9
6922.50	Н	100	55	-59.75	11.52	-48.23	66.5
9230.00	Н	100	12	-61.76	13.26	-48.50	66.8
11537.50	Н	-	-	-60.07	13.22	-46.85	65.1
13845.00	Н	-	-	-59.99	14.48	-45.51	63.8

Table 7-25. Radiated Spurious Data (Band 30 – Low Channel)

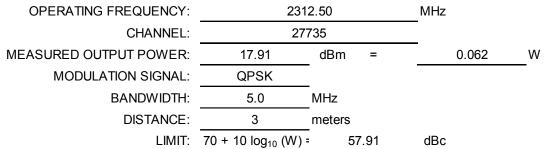


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4620.00	Н	177	96	-65.58	9.55	-56.03	74.5
6930.00	Н	100	280	-57.14	11.53	-45.61	64.1
9240.00	Н	100	299	-61.52	13.26	-48.26	66.8
11550.00	Н	100	244	-59.17	13.23	-45.94	64.4
13860.00	Н	-	-	-59.45	14.48	-44.97	63.5

 Table 7-26. Radiated Spurious Data (Band 30 – Mid Channel)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4625.00	Н	159	99	-64.86	9.55	-55.30	73.2
6937.50	Н	100	192	-60.61	11.53	-49.08	67.0
9250.00	Н	170	48	-61.74	13.27	-48.48	66.4
11562.50	Н	-	-	-59.97	13.24	-46.72	64.6
13875.00	Н	-	-	-59.53	14.49	-45.04	62.9

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

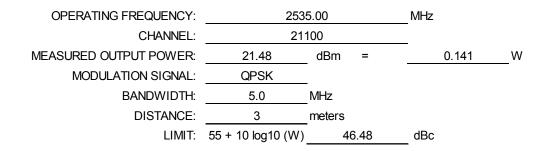
OPERATING FREQUENCY:	250	2.50	MHz
CHANNEL:	207	757	_
MEASURED OUTPUT POWER:	20.30	dBm =	0.107 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	55 + 10 log10 (W)	45.30	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5005.00	Н	110	290	-52.77	10.92	-41.84	62.1
7507.50	Н	129	7	-50.20	11.07	-39.13	59.4
10010.00	Н	128	348	-42.79	12.06	-30.73	51.0
12512.50	Н	-	-	-47.95	13.53	-34.42	54.7

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

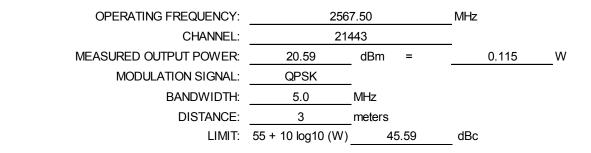
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5070.00	Н	203	293	-54.87	10.81	-44.06	65.5
7605.00	Н	205	113	-51.44	11.30	-40.14	61.6
10140.00	Н	204	291	-45.06	12.17	-32.89	54.4
12675.00	Н	-	-	-47.82	13.66	-34.16	55.6

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



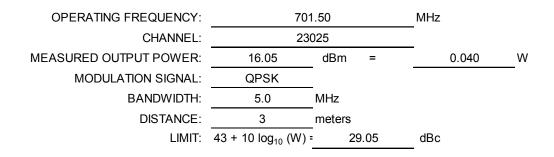
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5135.00	Н	123	303	-54.77	10.76	-44.01	64.6
7702.50	Н	120	89	-49.41	11.40	-38.01	58.6
10270.00	Н	110	95	-43.38	12.36	-31.02	51.6
12837.50	Н	-	-	-47.49	13.47	-34.02	54.6

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

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager		
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### 7.7.2 Antenna-2 Radiated Spurious Emissions Measurements



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]
1403.00	Н	-	-	-57.34	2.36	-54.98	71.0
2104.50	Н	218	228	-53.95	3.46	-50.49	66.5
2806.00	Н	-	-	-54.62	4.75	-49.87	65.9

Table 7-31. Radiated Spurious Data (Band 12/17 – Low Channel)

OPERATING FREQUENCY:	707	<b>7</b> .50	MHz
CHANNEL:	230	095	_
MEASURED OUTPUT POWER:	15.98	dBm =	0.040 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	28.98	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	-	-	-56.07	2.54	-53.52	69.5
2122.50	Н	275	321	-51.66	3.42	-48.24	64.2
2830.00	Н	-	-	-54.53	4.85	-49.68	65.7

Table 7-32. Radiated Spurious Data (Band 12/17 – Mid Channel)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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OPERATING FREQUENCY:	713	3.50	MHz
CHANNEL:	23	165	
MEASURED OUTPUT POWER:	15.87	dBm =	0.039 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	28.87	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]
1427.00	Н	-	-	-57.01	2.72	-54.29	70.2
2140.50	Н	268	303	-53.15	3.37	-49.78	65.6
2854.00	Н	-	-	-54.96	4.96	-50.01	65.9

Table 7-33. Radiated Spurious Data (Band 12/17 – High Channel)

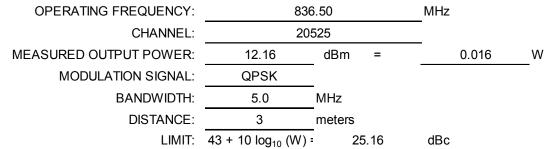
OPERATING FREQUENCY:	826	6.50	MHz
CHANNEL:	204	125	_
MEASURED OUTPUT POWER:	12.28	dBm =	0.017 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log <sub>10</sub> (W) =	25.28	dBc

Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1653.00	н	-	-	-63.73	6.70	-57.03	69.3
2477.70	Н	-	-	-57.30	7.53	-49.77	62.0

Table 7-34. Radiated Spurious Data (Band 5 – Low Channel)

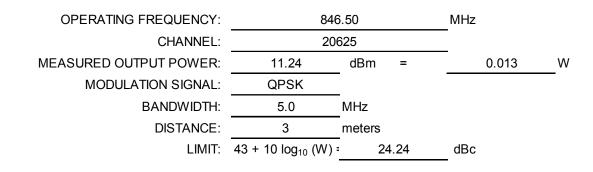
FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	Н	-	-	-61.68	6.70	-54.98	67.1
2509.50	Н	-	-	-59.33	7.63	-51.71	63.9

Table 7-35. Radiated Spurious Data (Band 5 – Mid Channel)



Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1693.00	Н	-	-	-63.09	6.70	-56.39	67.6
2541.30	Н	-	-	-59.74	7.60	-52.14	63.4

Table 7-36. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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#### 7.8 Frequency Stability / Temperature Variation §2.1055 §22.355 §24.235 §27.54

#### **Test Overview and Limit**

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. The frequency stability of the transmitter is measured by:

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

For Part 22, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  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 12/17 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)	707,499,757	-243	-0.0000343
100 %		- 30	707,500,186	186	0.0000263
100 %		- 20	707,500,419	419	0.0000592
100 %		- 10	707,499,686	-314	-0.0000444
100 %		0	707,500,052	52	0.0000073
100 %		+ 10	707,499,888	-112	-0.0000158
100 %		+ 20	707,500,012	12	0.0000017
100 %		+ 30	707,500,020	20	0.0000028
100 %		+ 40	707,500,154	154	0.0000218
100 %		+ 50	707,500,016	16	0.0000023
BATT. ENDPOINT	3.45	+ 20	707,499,635	-365	-0.0000516

Table 7-37. Frequency Stability Data (Band 12/17)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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## Band 12/17 Frequency Stability Measurements §2.1055 §27.54

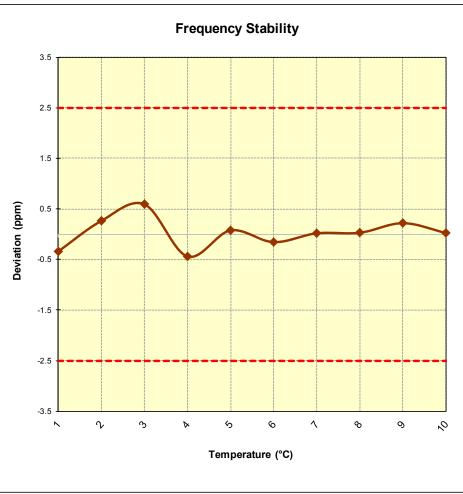


Figure 7-8. Frequency Stability Graph (Band 12/17)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed 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)	836,499,888	-112	-0.0000134
100 %		- 30	836,499,844	-156	-0.0000186
100 %		- 20	836,499,913	-87	-0.0000104
100 %		- 10	836,500,218	218	0.0000261
100 %		0	836,499,958	-42	-0.0000050
100 %		+ 10	836,500,069	69	0.0000082
100 %		+ 20	836,500,086	86	0.0000103
100 %		+ 30	836,500,009	9	0.0000011
100 %		+ 40	836,499,660	-340	-0.0000406
100 %		+ 50	836,500,096	96	0.0000115
BATT. ENDPOINT	3.45	+ 20	836,500,069	69	0.0000082

Table 7-38. Frequency Stability Data (Band 5)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager	
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## Band 5 Frequency Stability Measurements §2.1055 §22.355

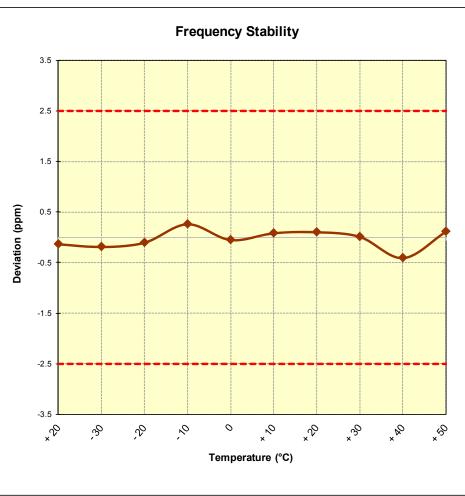


Figure 7-9. Frequency Stability Graph (Band 5)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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## Band 4/66 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)	1,732,499,659	-341	-0.0000197
100 %		- 30	1,732,499,788	-212	-0.0000122
100 %		- 20	1,732,499,671	-329	-0.0000190
100 %		- 10	1,732,499,627	-373	-0.0000215
100 %		0	1,732,499,820	-180	-0.0000104
100 %		+ 10	1,732,499,748	-252	-0.0000145
100 %		+ 20	1,732,500,065	65	0.0000038
100 %		+ 30	1,732,500,043	43	0.0000025
100 %		+ 40	1,732,499,977	-23	-0.0000013
100 %		+ 50	1,732,500,249	249	0.0000144
BATT. ENDPOINT	3.45	+ 20	1,732,499,714	-286	-0.0000165

Table 7-39. Frequency Stability Data (Band 4/66)

#### Note:

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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# Band 4/66 Frequency Stability Measurements §2.1055 §§27.54

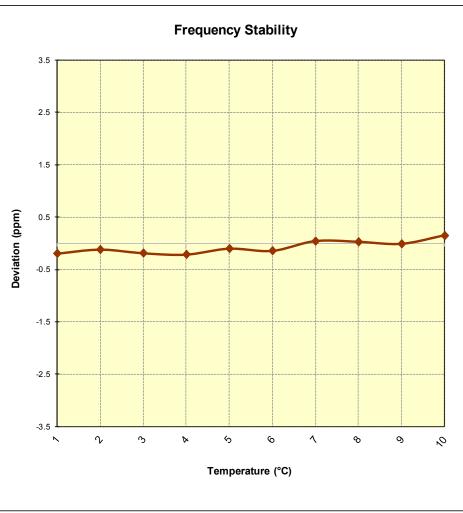


Figure 7-10. Frequency Stability Graph (Band 4/66)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🔁 LG	Reviewed by: Quality Manager
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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)	1,880,000,087	87	0.0000046
100 %		- 30	1,880,000,027	27	0.0000014
100 %		- 20	1,879,999,880	-120	-0.0000064
100 %		- 10	1,879,999,967	-33	-0.0000018
100 %		0	1,880,000,011	11	0.0000006
100 %		+ 10	1,880,000,009	9	0.0000005
100 %		+ 20	1,879,999,988	-12	-0.0000006
100 %		+ 30	1,879,999,986	-14	-0.0000007
100 %		+ 40	1,880,000,050	50	0.0000027
100 %		+ 50	1,880,000,067	67	0.0000036
BATT. ENDPOINT	3.45	+ 20	1,880,000,216	216	0.0000115

 Table 7-40. Frequency Stability Data (Band 2)

#### Note:

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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## Band 2 Frequency Stability Measurements §2.1055 §24.235

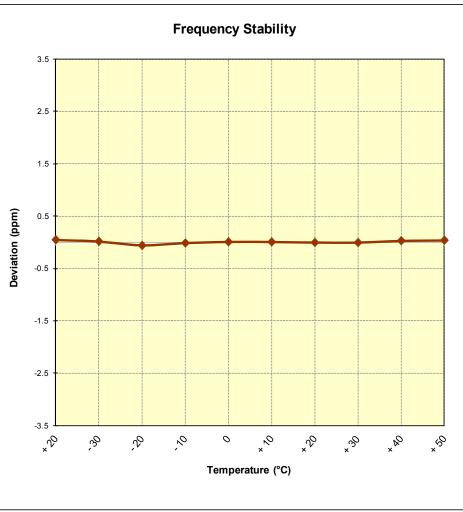


Figure 7-11. Frequency Stability Graph (Band 2)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed 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)	2,310,000,295	295	0.0000128
100 %		- 30	2,310,000,002	2	0.0000001
100 %		- 20	2,310,000,077	77	0.0000033
100 %		- 10	2,310,000,052	52	0.0000023
100 %		0	2,310,000,063	63	0.0000027
100 %		+ 10	2,310,000,312	312	0.0000135
100 %		+ 20	2,310,000,213	213	0.0000092
100 %		+ 30	2,309,999,850	-150	-0.0000065
100 %		+ 40	2,309,999,730	-270	-0.0000117
100 %		+ 50	2,309,999,915	-85	-0.0000037
BATT. ENDPOINT	3.45	+ 20	2,309,999,876	-124	-0.0000054

Table 7-41. Frequency Stability Data (Band 30)

#### Note:

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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## Band 30 Frequency Stability Measurements §2.1055 §24.235

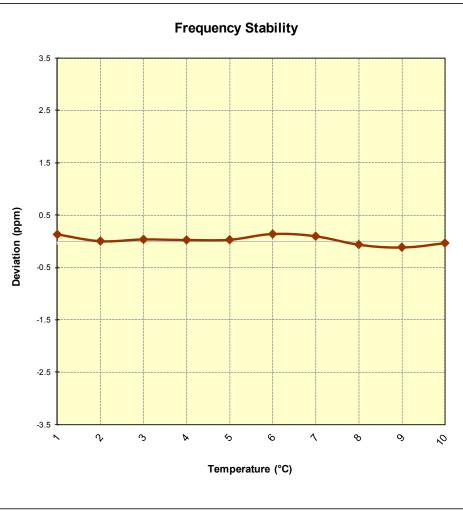


Figure 7-12. Frequency Stability Graph (Band 30)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed 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)	2,534,999,980	-20	-0.0000008
100 %		- 30	2,534,999,892	-108	-0.0000043
100 %		- 20	2,534,999,988	-12	-0.0000005
100 %		- 10	2,535,000,100	100	0.0000039
100 %		0	2,534,999,752	-248	-0.0000098
100 %		+ 10	2,535,000,206	206	0.0000081
100 %		+ 20	2,534,999,609	-391	-0.0000154
100 %		+ 30	2,534,999,872	-128	-0.0000050
100 %		+ 40	2,534,999,767	-233	-0.0000092
100 %		+ 50	2,535,000,143	143	0.0000056
BATT. ENDPOINT	3.45	+ 20	2,534,999,877	-123	-0.0000049

 Table 7-42. Frequency Stability Data (Band 7)

#### Note:

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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## Band 7 Frequency Stability Measurements §2.1055 §27.54

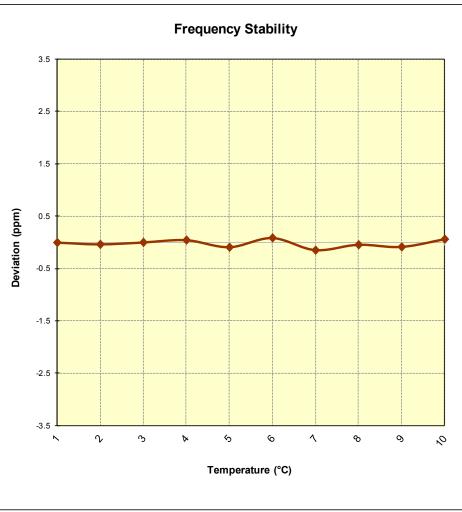


Figure 7-13. Frequency Stability Graph (Band 7)

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕒 LG	Reviewed by: Quality Manager
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## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFH910** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

FCC ID: ZNFH910		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	🕑 LG	Reviewed by: Quality Manager	
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