

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

Test Overview

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

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

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

Test Procedure Used

KDB 971168 D01 v02r02 - Section 6.0

Test Settings

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

<u>Test Setup</u>

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

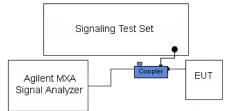


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

Per 22.917(b) 24.238(a) 27.53(h) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Page 64 of 148		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset				
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3		



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

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



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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Demo CE of 149				
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset	Page 65 of 148					
© 2017 PCTEST Engineering	0 2017 PCTEST Engineering Laboratory, Inc.							



Keysight Specific Keysight	ectrum Analyzer -	Swept SA									
l)XI	RF 50	Ω AC	CORREC	, Trig: Free		#Avg Typ Avg Hold:		TRAC	M Jun 03, 2016 DE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	F	requency
10 dB/div	Ref 25.0	0 dBm	IFGain:Low	#Atten: 36	6 dB		Mk	r1 697.8	40 MHz 20 dBm		Auto Tune
15.0											Center Frec 5.900000 MHz
-5.00										69	Start Fred 3.900000 MH:
-15.0									-13.00 dBm	69	Stop Fred 7.900000 MH:
-35.0					norman	m		M		<u>Auto</u>	CF Step 400.000 kH: Mar
	m		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	······							Freq Offse 0 H
-65.0	5.900 MHz							Span 4	.000 MHz	Log	Scale Type
#Res BW			#VBV	/ 300 kHz*	¢.			.000 ms ((1001 pts)		
ISG							STATU	S			

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



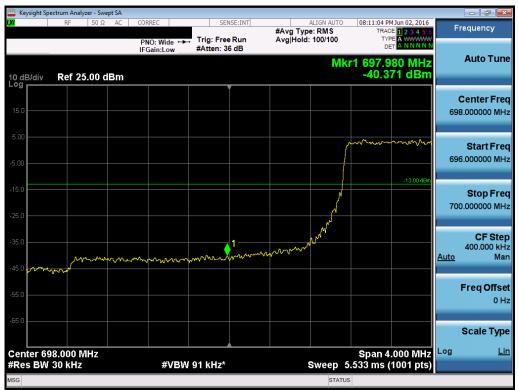
Plot 7-98. Upper Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dage 66 of 149			
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 66 of 148			
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.						



Keysight Sp	ectrum Analy											_	
0	RF	50 Ω		ORREC P <mark>NO: Wi</mark> FGain:L				#Avg Typ Avg Hold	ALIGN AUTO De: RMS I: 100/100	TRAC	M Jun 03, 2016 CE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	F	requency
0 dB/div	Ref 25	.00 dE		Guinte					Mk	r1 716.1 -21.7	00 MHz 75 dBm		Auto Tun
15.0													Center Fre 8.100000 M⊢
5.00												71	Start Fre 6.100000 M⊦
5.0 1											-13.00 dBm	72	Stop Fre 0.100000 MH
5.0		~~~	ww	~~~~	\sim	- M	~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				<u>Auto</u>	CF Ste 400.000 kH Ma
5.0									ann an		`` ```		Freq Offs 0 F
	18.100 M									Span 4	.000 MHz	Log	Scale Typ
Res BW	100 kHz	Z		#	VBW	300 kHz	*		Sweep 1	.000 ms (1001 pts)		
G									STATU	S			

Plot 7-99. Upper Extended Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



Plot 7-100. Lower Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dege 67 of 149		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 67 of 148		
© 2017 PCTEST Engineering Laboratory, Inc.						



Keysight Spe	ctrum Analyzer - Swept S					- 7
anker 1	RF 50 Ω A 697.73600000		SENSE:INT Trig: Free Run #Atten: 36 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 100/100	08:13:56 PM Jun 02, 2016 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Peak Search
0 dB/div	Ref 25.00 dBr			Mk	r1 697.736 MHz -34.236 dBm	Next Pea
15.0						Next Pk Righ
5.00						Next Pk Le
25.0					-13.00 dBm	Marker Delt
5.0			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	¹	Mkr→C
5.0						Mkr→RefL
enter 69	5.900 MHz	#\/B\M	300 kHz*	Sween 1	Span 4.000 MHz .000 ms (1001 pts)	Moi 1 of
G		#VDVV	500 KH2	Sweep		

Plot 7-101. Lower Extended Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)



Plot 7-102. Upper Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Demo 69 of 149		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset	Page 68 of 148			
0 2017 PCTEST Engineering Laboratory, Inc.						



Keysight Sp	pectrum Analyzer - Swept SA					
<u>u</u>	RF 50 Ω AC	PNO: Wide ↔→ IFGain:Low	SENSE:INT Trig: Free Run #Atten: 36 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 100/100	08:27:25 PM Jun 02, 2016 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNN	Frequency
10 dB/div _og	Ref 25.00 dBm			Mk	r1 716.116 MHz -23.358 dBm	Auto Tune
15.0						Center Free 718.100000 MH
5.00						Start Fre 716.100000 MH
15.0					13.00 dBm	Stop Fre 720.100000 M⊦
35.0			·····	Mann		CF Ste 400.000 kF Auto Ma
55.0						Freq Offs 0 ⊦
65.0	18.100 MHz					Scale Typ
	18.100 MHz 100 kHz	#VBW	300 kHz*	Sweep 1	Span 4.000 MHz I.000 ms (1001 pts)	
ISG				STATU	s	

Plot 7-103. Upper Extended Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)



Plot 7-104. Lower Band Edge Plot (Band 12/17 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dege 60 of 149	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 69 of 148	
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3	



🚾 Keysight Spectrum Ar	· · · ·								
RF RF	50 Ω AC	PNO: Wide ↔	SENSE:INT Trig: Free Run #Atten: 36 dB	#Avg Typ Avg Hold:		TRAC	MJun 03, 2016 DE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	F	requency
10 dB/div Ref	25.00 dBm				Mki	1 697.4 -33.6	56 MHz 03 dBm		Auto Tune
15.0									Center Fred 5.900000 MH:
-5.00								69	Start Fre 3.900000 MH
-15.0							-13.00 dBm	69	Stop Free 7.900000 MH
35.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·····	4	~~~ \	1	<u>Auto</u>	CF Ste 400.000 kH Ma
45.0 55.0 									Freq Offse 0 ⊢
65.0									Scale Typ
Center 695.900 #Res BW 100 k		#VBW	300 kHz*	:	Sweep 1	9 Span 000 ms (.000 MHz (1001 pts)	Log	Li
/ISG					STATUS				

Plot 7-105. Lower Extended Band Edge Plot (Band 12/17 – 5.0MHz QPSK – RB Size 25)



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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dega 70 of 149		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset	Page 70 of 148			
2017 PCTEST Engineering Laboratory, Inc.						



Keysight Spectrum Analyzer	- Swept SA				
RF 5	0Ω AC CORREC PNO:Wide ← IFGain:Low	SENSE:INT	ALIGN AUTO #Avg Type: RMS Avg Hold: 100/100	12:15:23 PM Jun 03, 2016 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNNN	Frequency
0 dB/div Ref 25.0		Writen. 00 dB	Mkı	1 716.152 MHz -25.498 dBm	Auto Tune
15.0					Center Fred 718.100000 MHz
5.00					Start Free 716.100000 MH:
15.0 25.0 1 25.0 1				13.00 dBm	Stop Free 720.100000 MH:
35.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mun	- marine and the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	CF Step 400.000 kH <u>Auto</u> Mar
55.0					Freq Offse 0 H
65.0	7			Span 4.000 MHz	Scale Type
Res BW 100 kHz		N 300 kHz*	Sweep 1	.000 ms (1001 pts)	

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



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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 71 of 149	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 71 of 148	
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3	



Keysight Sp	pectrum Analyzer - Swep					
<mark>XI</mark>	RF 50 Ω	AC CORREC	. Trig: Free Run #Atten: 36 dB	ALIGN AUTO #Avg Type: RMS Avg Hold: 100/100	12:37:08 PM Jun 03, 2016 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N	Frequency
10 dB/div Log	Ref 25.00 d			Mk	r1 695.076 MHz -37.028 dBm	Auto Tune
15.0						Center Freq 695.900000 MHz
-5.00						Start Fred 693.900000 MHz
-15.0					13.00 dBm	Stop Frec 697.900000 MH
-35.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1				CF Step 400.000 kH <u>Auto</u> Mar
55.0						Freq Offse 0 H
-65.0						Scale Type
	95.900 MHz / 100 kHz	#VBW	300 kHz*	Sweep 1	Span 4.000 MHz .000 ms (1001 pts)	
/ISG				STATUS	6	



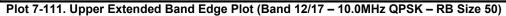
Plot 7-109. Lower Extended Band Edge Plot (Band 12/17 – 10.0MHz QPSK – RB Size 50)

Plot 7-110. Upper Band Edge Plot (Band 12/17 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 70 of 149	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 72 of 148	
© 2017 PCTEST Engineering	Laboratory, Inc.	•		V 6.3	



O dB/div Ref 15.0	 50 Ω AC f 25.00 dBm 	PNO: Wide ↔ IFGain:Low	SENS Trig: Free I #Atten: 36		#Avg Type Avg Hold:	: 100/100	TRACE TYPE DE 1 716.1	35 dBm	C 718	equency Auto Tune center Freq .100000 MHz Start Freq .100000 MHz
og 15.0 5.00 15.0 15.0 15.0 15.0	f 25.00 dBm	IFGain:Low	#Atten: 36			Mkr	1 716.1	88 MHz 35 dBm	C 718	enter Freq 100000 MHz Start Freq
5.00									718	.100000 MH2 Start Fred
5.00 15.0 25.0 1									716	
25.0										
35.0								-13.00 dBm	720	Stop Fre .100000 MH
5.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~	~~~~~	<u>Auto</u>	CF Ste 400.000 kH Ma
5.0									F	Freq Offs 0 H
enter 718.10							Span 4.	000 101112	Log	Scale Typ L
Res BW 100		#VBW	300 kHz*		\$	Sweep 1.	000 ms (1	1001 pts)		





Plot 7-112. Lower Band Edge Plot (Band 5/26 - 1.4MHz QPSK - RB Size 6)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 73 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 75 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3





Plot 7-113. Upper Band Edge Plot (Band 5/26 – 1.4MHz QPSK – RB Size 6)



Plot 7-114. Lower Band Edge Plot (Band 5/26 - 3.0MHz QPSK - RB Size 15)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 74 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 74 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3



	ectrum Analyz												
K/RL	RF	50 Ω A	AC C	ORREC		SE	NSE:INT	#Ava T	ALIGN AUTO ype: RMS		PM Jun 08, 2016	F	requency
				PNO: Wide FGain:Lov		Trig: Fre Atten: 3			,,	T' I			
				I Guill.201					М	kr1 849.	000 MHz		Auto Tun
10 dB/div	Ref 25	.00 dBi	m							-17	.61 dBm		
- ^{og}							Ĭ						Center Fre
15.0													9.000000 MH
~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~				~~							
5.00						$\rightarrow$							Start Fre
5.00												84	7.000000 MH
0.00											-13.00 dBm		
-15.0							<u>↓</u> 1				-13.00 dB/i		Stop Fre
							h.					85	1.000000 MI
25.0							VI VI						
35.0							M	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~~	$\sim$		CF Ste
00.0												Auto	400.000 kł Ma
45.0													
													Freq Offs
-55.0													01
-65.0													
													Scale Typ
Center 9/	19.000 M	Hz								Snap	4.000 MHz	Log	L
	100 kHz			#V	BW 3	00 kHz			Sweep	1.000 ms	(1001 pts)		
SG									STAT				

Plot 7-115. Upper Band Edge Plot (Band 5/26 – 3.0MHz QPSK – RB Size 15)



FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 75 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 75 of 148
Q 0047 DOTEOT En sin a sin a	Laboratem, bas			100

© 2017 PCTEST Engineering Laboratory, Inc.



Keysight Spectrum Analyzer - Swept SA           R L         RF         50 Ω         AC	CORREC	SENSE:INT			29:52 PM Jun 08, 2016	Frequency
	PNO: Wide 😱 IFGain:Low	Trig: Free Run Atten: 36 dB	#Avg Type: F	awis	TRACE <b>1 2 3 4 5 6</b> TYPE A WWWW DET <b>A N N N N N</b>	
dB/div Ref 25.00 dBm				Mkr1 8	49.028 MHz -22.37 dBm	Auto Tun
						Center Fre 849.000000 M⊦
	~~~~~					Start Fre 847.000000 Mi
0		Mn 1			-13.00 dBm	Stop Fre 851.000000 Mi
0		"how many	un n	~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	CF Sto 400.000 k <u>Auto</u> M
0						Freq Offs
0						Scale Ty
nter 849.000 MHz es BW 100 kHz	#VBW	300 kHz	Sw	S veep 1.000	oan 4.000 MHz ms (1001 pts)	Log <u>l</u>

Plot 7-117. Upper Band Edge Plot (Band 5/26 – 5.0MHz QPSK – RB Size 25)



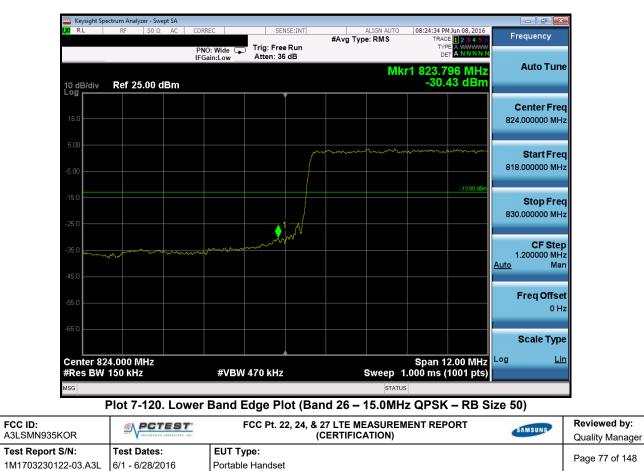
FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 76 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 76 of 148
© 2017 DCTEST Engineering	Laboratory Inc			V63

© 2017 PCTEST Engineering Laboratory, Inc.



Keysight Spectrum Analyzer - Swept SA					
RL RF 50Ω AC	CORREC PNO: Wide CP	SENSE:INT	ALIGN AU #Avg Type: RMS		6 Frequency
D dB/div Ref 25.00 dBm	II Guilleow			Mkr1 849.024 MH -27.67 dBn	
5 .0					Center Fre 849.000000 Mi
5.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Start Fr 845.000000 M
5.0				-13.00 dB	Stop Fr 853.000000 M
15.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		·····	CF Sto 800.000 k Auto M
5.0					Freq Offs 0
5.0					Scale Ty
enter 849.000 MHz Res BW 100 kHz	#VBW 3	30 kHz	Swee	Span 8.000 MH p 1.000 ms (1001 pts	z Log <u>i</u>

Plot 7-119. Upper Band Edge Plot (Band 5/26 – 10.0MHz QPSK – RB Size 50)



© 2017 PCTEST Engineering Laboratory, Inc.



RL	Spectrum Anal RF	50 Ω		CORREC		SEI	NSE:INT		ALIGN AUTO	08:25:23 F	M Jun 08, 2016		
				PNO: Wide		Trig: Fre		#Avg Typ	be:RMS	TRA TY	CE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	F	requency
				IFGain:Low	·	Atten: 36	6 dB						Auto Tur
0 dB/div	Ref 2	5.00 de	Зm						Mk	r1 849.1 -30.	120 MHz .38 dBm		Auto Tu
°g 🔽							Í						Center Fre
15.0													9.000000 MI
													0.0000000
5.00													
~~~		~~~~~	ᡔᡣᢪᡃᡳᠬᡳᢧᡘᢇᡃᢤ		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								Start Fr
5.00						_						84	3.000000 M
											-13.00 dBm		
5.0													Stop Fr
												85	5.000000 M
25.0						*Vh	<b>↓</b> ¹ ──						
35.0							Mun	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					CF Ste
.0.0									~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m			1.200000 M
15.0										~~~	m	<u>Auto</u>	М
0.0											- Maria		
5.0													Freq Offs
													0
i5.0													
													Scale Ty
enter 8	49.000 I	VIH7								Snan '	12.00 MHz	Log	L
	V 150 kH			#V	BW 4	70 kHz			Sweep 1	.000 ms	(1001 pts)		
G									STATU	_			

Plot 7-121. Upper Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 50)



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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 79 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 78 of 148
© 2017 PCTEST Engineering	Laboratory Inc	•		V 6 3

2017 PCTEST Engineering Laboratory, Inc.





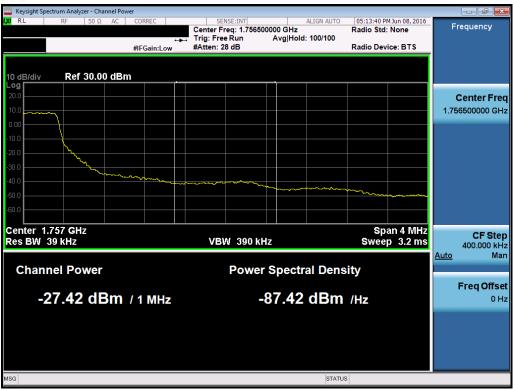
Plot 7-123. Lower Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



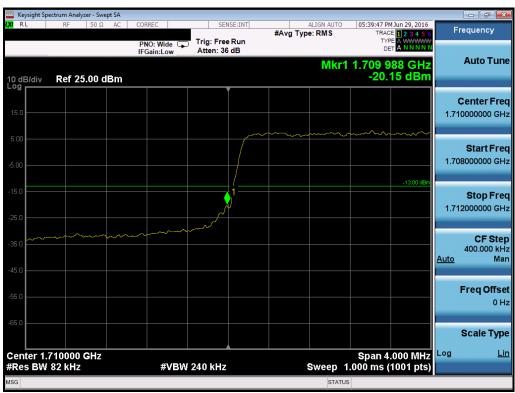
Plot 7-124. Upper Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 70 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 79 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3





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



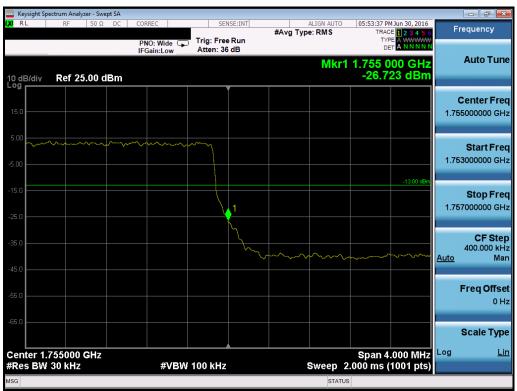
Plot 7-126. Lower Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 80 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 60 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3



	eysight Spec	ctrum Analy	/zer - Cha	innel Pow	er											
l <mark>XI</mark> I	RL	RF	50 Ω	AC	CORREC				NSE:INT req: 1.708	05000		ALIGN AUTO	05:40:03 P Radio Std	M Jun 29, 2016	Trac	e/Detector
							. Tr	ig: Fre	e Run			: 100/100	Raulo Stu	. None		
					#IFGain:	Low	#A	tten: 2	8 dB				Radio Dev	vice: BTS		
	dB/div	Ref	30.00	0 dBn	<u>ا</u>											
Log 20.0																
10.0															(	Clear Write
0.00												j				
-10.0																A
-20.0												~				Average
-30.0							<u> </u>	~~~~			<i>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</i>					
-40.0																
-50.0	·															Max Hold
-60.0	) <b> </b>															
Ce	nter 1.7	700 CH	7										Sn	an 4 MHz		
	s BW 3		12					٧BI	N 390	kHz				p 3.2 ms		Min Hold
																MIT HOIG
	Chann	el Po	wer						Pow	er S	nectr	al Dens	itv			
	Jincann										0000		illy illy			Detector
	2			2m	/ 1 MI					01		dBm	/11-			Average►
	-2	0.34	i u E			٦Z				-0(	1.34	ubili	/HZ		<u>Auto</u>	Man
MSG												STATUS	3			
			_	_		_	_	_		_						

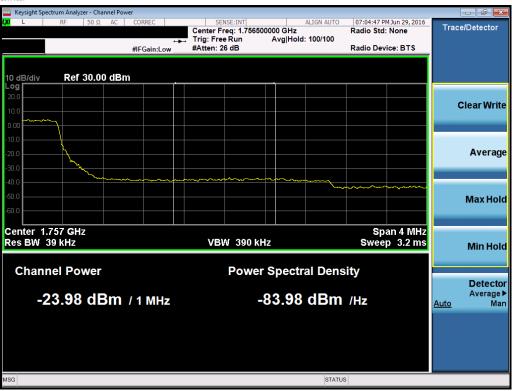
Plot 7-127. Lower Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



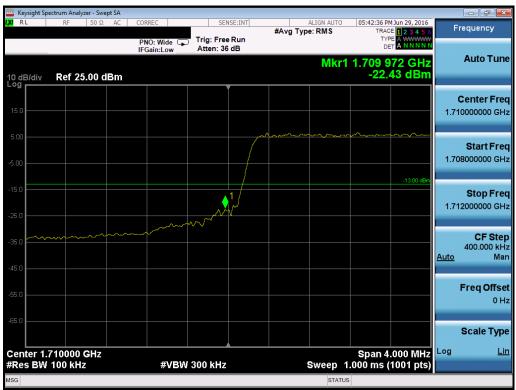
Plot 7-128. Upper Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 81 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page of 01 140
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3





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



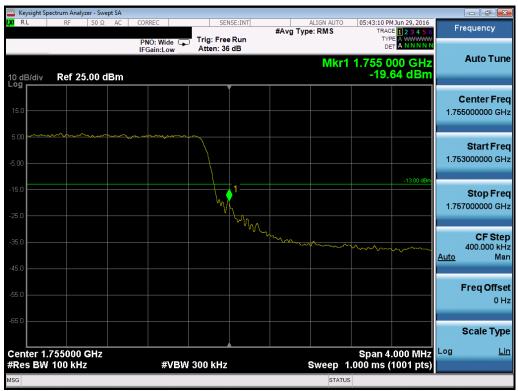
Plot 7-130. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 82 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 62 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3





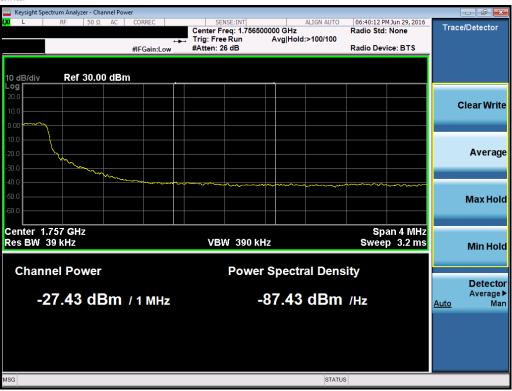
Plot 7-131. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



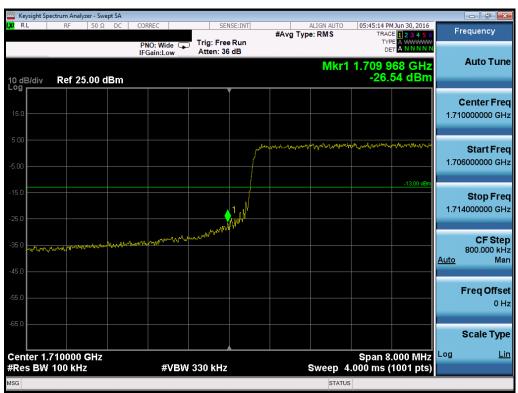
Plot 7-132. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 83 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 03 01 140
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3





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



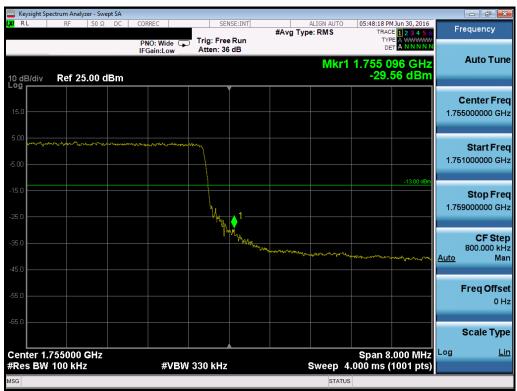
Plot 7-134. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 84 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 64 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3



	ectrum Analyz	er - Swep	ot SA										
RL	RF	50 Ω	AC	CORREC	:		SENSE:INT		ALIGN AUTO		M Jun 08, 2016		requency
				PNO: IFGain	Fast ↔		ree Run : 36 dB	#Avg T	ype: RMS	TY	CE 1 2 3 4 5 6 PE A WWWWW ET A NNNNN		
0 dB/div	Ref 25	.00 di	Зm						Mkr	1 1.708 9 -24.	72 GHz 36 dBm		Auto Tun
15.0													<b>Center Fre</b> 07000000 G⊦
5.00												1.70	<b>Start Fr</b> 05000000 G
5.0											-13.00 dBm	1.70	<b>Stop Fr</b> 09000000 G
5.0	en an	****	ዺኯ _፝ ኯኯኯኯ ^{ጟኯቜ}		_{end} ing particular	d-up-v-date		har an	ang ang ting the second se	Angente State of the State of t	ndeen min flasher	<u>Auto</u>	CF St 400.000 k N
5.0													Freq Offs 0
5.0													Scale Ty
	707000 ( 1.0 MHz				#VBV	V 3.0 MI	Hz		Sweep	Span 4 1.000 ms (	.000 MHz (1001 pts)	Log	L
SG									STAT	IS			

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



Plot 7-136. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 95 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 85 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3



Keysight Spectrum Ana	lyzer - Swept SA						
RL RF	50 Ω AC	CORREC	SENSE:		ALIGN AUTO	04:46:23 PM Jun 08, 2016	Frequency
		PNO: Fast +++	Trig: Free Ru Atten: 36 dB	in T	Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWW DET A NNNN	
0 dB/div Ref 2	5.00 dBm				Mkr1	1.756 068 GHz -23.64 dBm	Auto Tur
15.0							Center Fre
5.00							
5.00							<b>Start Fr</b> 1.756000000 G
5.0						-13.00 dBm	
							<b>Stop Fr</b> 1.760000000 G
5.0	hannen an	mater man	and the second and a	MARS CONTRACTOR OF THE STATE	<mark>∙™</mark> ≁∿∕≁€≁∞≁⊓d≁ar-Ag	and the construction of the	CF St
5.0							400.000 k <u>Auto</u> N
5.0							Freq Offs
5.0							0
5.0							Scale Ty
enter 1.758000 Res BW 1.0 MH	GHz Iz	#VBW	3.0 MHz		Sweep 1	Span 4.000 MHz .000 ms (1001 pts)	Log <u>I</u>
G					STATUS	3	

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



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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 86 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 60 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3



Keysight Spectrum	Analyzer - Swept SA					- ē 🗾
URL R	F 50 Ω AC	CORREC	SENSE:INT	ALIGN AU #Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWWW	
0 dB/div Re	f 25.00 dBm	IFGain:Low	Atten: 36 dB	M	сг1 1.708 988 GHz -26.48 dBm	Auto Tun
15.0						Center Fre 1.707000000 GF
5.00						<b>Start Fro</b> 1.705000000 GI
25.0					-13.00 dBm	<b>Stop Fr</b> 1.709000000 G
5.0	A. J. B. Const		۲۵ - ۲۵ - ۲۵ - ۲۵ - ۲۵ - ۲۵ - ۲۵ - ۲۵ -		nan managan ni kang nga kang kang kang kang kang kang	CF Sto 400.000 k <u>Auto</u> M
5.0						Freq Offs 0
5.0						Scale Ty
enter 1.7070 Res BW 1.0		#VBW	3.0 MHz		Span 4.000 MHz 1.000 ms (1001 pts)	Log <u>L</u>

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



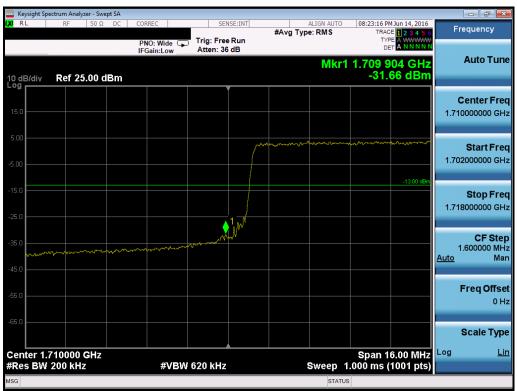
Plot 7-140. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dege 97 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 87 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	•		V 6.3



	ectrum Analyze	er - Swept S	5A										
RL	RF	50 Ω A	AC C	ORREC		SE	NSE:INT		ALIGN AUTO		4 Jun 08, 2016		requency
			1	PNO: Fas FGain:Lo	st ⊶⊷ w	Trig: Fre Atten: 3		#Avg Ty	vpe: RMS	TYP	E 1 2 3 4 5 6 E A WWWW T A N N N N N		
) dB/div	Ref 25.	.00 dBi	m						Mkr1	1.756 0 -26.	84 GHz 00 dBm		Auto Tun
5.0													Center Fre
5.00												1.70	5500000 GI
.00												1.75	Start Fre
5.0											-13.00 dBm		
5.0												1.76	<b>Stop Fr</b> 50000000 G
5.0 <b></b>	wywellow watch a benyg	maa	<b>√₽</b> ∼₽~₽~₽~₽	there are an	www.l.rw	na white many	al a management of the second	****	مواليو الهرستان ^ي مواليو مريد موجوم م	. Alan an a	and when a first start star		CF Ste
												<u>Auto</u>	400.000 k M
5.0													Freq Offs
5.0													0
5.0													Scale Ty
	758000 Q 1.0 MHz			#	VBW	3.0 MHz			Sweep 1	Span 4 .000 ms (	.000 MHz 1001 pts)	Log	L
G									STATUS	_	,,	_	

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



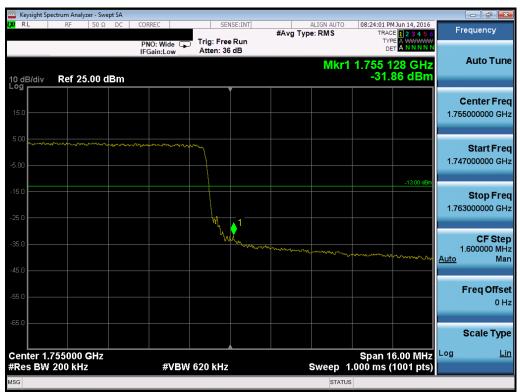
Plot 7-142. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 99 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 88 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3



	ectrum Analyzer - S	wept SA									
X/RL	RF 50 9	ΩDC	CORREC	SEN	SE:INT	#Avg Typ	ALIGN AUTO		Jun 14, 2016	F	requency
			PNO: Wide ↔ IFGain:Low	. Trig: Free Atten: 36		#Avg iyp	e: RWS	TYP	E 1 2 3 4 5 6 E A WWWWW T A N N N N N		
10 dB/div Log	Ref 25.00	dBm					Mkr1	1.708 9 -27.6	72 GHz 60 dBm		Auto Tune
15.0											Center Free 7000000 GH
-5.00										1.70	<b>Start Fre</b> 05000000 GH
-15.0									-13.00 dBm	1.70	<b>Stop Fre</b> 99000000 G⊢
35.0	~4.~The last of the second s	an a	and the second	and a state of the second	p			and a second second	~~~~	<u>Auto</u>	<b>CF Ste</b> 400.000 kH Ma
45.0 55.0											Freq Offs 0 H
-65.0											Scale Typ
Center 1.7 #Res BW	707000 GHz 1.0 MHz	2	#VBW	/ 3.0 MHz			Sweep 2	Span 4. .000 ms (′	.000 MHz 1001 pts)	Log	L
ISG							STATUS				

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



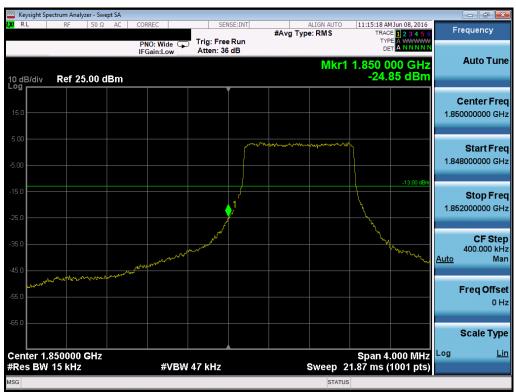
Plot 7-144. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 90 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 89 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	•		V 6.3



Keysight Spectrum Ana	alyzer - Swept SA					- 6
RL RF	50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO		Frequency
		PNO: Wide ↔→ IFGain:Low	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	
0 dB/div Ref 2	25.00 dBm			Mkr	1 1.756 100 GHz -28.56 dBm	Auto Tur
						Center Fre
15.0						1.758000000 G
.00						Start Fr
.00						1.756000000 G
5.0					-13.00 dBm	Stop Fr
5.0 1						1.760000000 G
	and and a state of the state of	allerydd yn gener ollfrydd yn orae			and the new golf to prove the glad the party where	CF St
5.0						400.000 k Auto N
5.0						
5.0						Freq Offs 0
5.0						
						Scale Ty
enter 1.758000 Res BW 1.0 MI	0 GHz Hz	#VBW	3.0 MHz	Sweep	Span 4.000 MHz 2.000 ms (1001 pts)	Log
G				STAT		

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



Plot 7-146. Lower Band Edge Plot (Band 25 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 00 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 90 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	•		V 6.3



🔤 Keysight Spectrum Analyzer - Channel Power			
	SENSE:INT ALIGN AU Center Freq: 1.848950000 GHz Trig: Free Run Avg Hold: 100/100	Radio Std: None	Trace/Detector
10 dB/div Ref 25.00 dBm Log	#Atten: 28 dB	Radio Device: BTS	Clear Write
5.00 -5.00 -15.0 -25.0			Average
-35.0 -45.0 -65.0			Max Hold
Center 1.849 GHz Res BW 39 kHz	VBW 390 kHz	Span 4 MHz Sweep 3.2 ms	Min Hold
Channel Power -26.52 dBm / 1 MHz	Power Spectral De -86.52 dBi	Detector Average ► <u>Auto</u> Man	
MSG	ST	ATUS	

Plot 7-147. Lower Extended Band Edge Plot (Band 25 – 1.4MHz QPSK – RB Size 6)



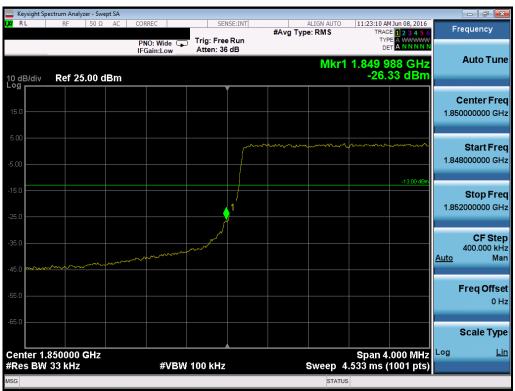
Plot 7-148. Upper Band Edge Plot (Band 25 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 91 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 91 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3



Keysight Spect	trum Analy	zer - Chai	nnel Pow	er										
I <mark>XI</mark> RL	RF	50 Ω	AC	CORREC		Cente	SENSE:INT	050000 (		ALIGN AUTO	11:16:57 A Radio Std	M Jun 08, 2016	Trac	e/Detector
					+	, Trig:	Free Run			100/100				
				#IFGain:	low	#Atter	n: 26 dB				Radio Dev	vice: BTS		
10 dB/div	Ref	30.00	) dBm											
20.0														
10.0													(	Clear Write
0.00		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~												
-10.0			5											Average
-20.0			L'AN	_										Average
-30.0					~~~~~	h.,								
-40.0						~~~	~~~~~	~						
-50.0										~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~			Max Hold
-60.0														
Center 1.9	16 GH	7									Sn	an 4 MHz		
Res BW 3						VBW 390 kHz						p 3.2 ms		Min Hold
														Minthold
Chann	el Po	wer					Powe	er Sp	ectra	al Dens	itv			
											,			Detector
_2	5 92	de	Rm	/ 1 Mi	-			_25	92	dBm	/山			Average►
	0.02				12			-00.	<b>U</b> 2	uDiii	/82		<u>Auto</u>	Man
MSG										STATUS	6			

Plot 7-149. Upper Extended Band Edge Plot (Band 25 – 1.4MHz QPSK – RB Size 6)



Plot 7-150. Lower Band Edge Plot (Band 25 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 02 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 92 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	•		V 6.3



datata	Keysigh	t Spectrun	n Analy	/zer - Cha	annel Pov	ver											
<mark>LXI</mark>	RL	1	RF	50 Ω	AC	CORR	EC		Center Fi	NSE:INT reg: 1.8489		0 GHz	ALIGN AUTO	11:23:24 A Radio Std	M Jun 08, 2016 : None	Trac	e/Detector
						#IFGa	ain:Low	v	Trig: Fre #Atten: 2		A	vg Hold:	: 100/100	Radio Dev	ice: BTS		
10 Lo	dB/di g <b>[</b>	V	Ref	30.0	0 dBr	n											
20	.0																Clear Write
10	.0																
0.0	10														·····		
-10	.0												/				
-20													کر				Average
-30												~	الممسمر				
-40			سر م	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<b>~~~</b>	~~~~~	~~~~~~							
-50		~~~~															Max Hold
-60																	
		1.849		z											an 4 MHz		
Rŧ	IS BV	V 391	KHZ						VBI	N 390 k	(HZ			Swee	p 3.2 ms		Min Hold
	Cha	innel								Deuve	- 0	n o ofizi	al Dana	ite e			
	Clia	innei	P0	wer						Powe	r ə	pecur	al Dens	ity			Detector
		-27	2/		2m	14					_07	224	dBm	/1.1-			Average ►
		-21	.24		2111	/ 1 1					-07	.24	uDilli	/82		<u>Auto</u>	Man
MSG													STATUS				

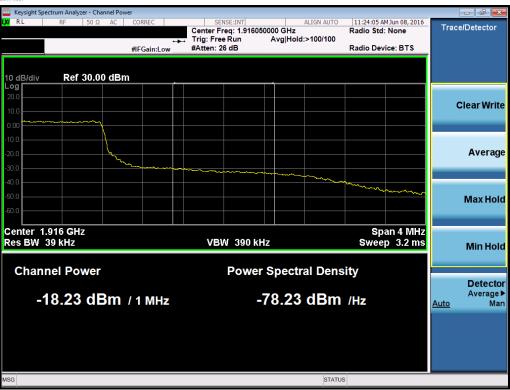
Plot 7-151. Lower Extended Band Edge Plot (Band 25 – 3.0MHz QPSK – RB Size 15)



Plot 7-152. Upper Band Edge Plot (Band 25 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 93 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 95 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3





Plot 7-153. Upper Extended Band Edge Plot (Band 25 – 3.0MHz QPSK – RB Size 15)



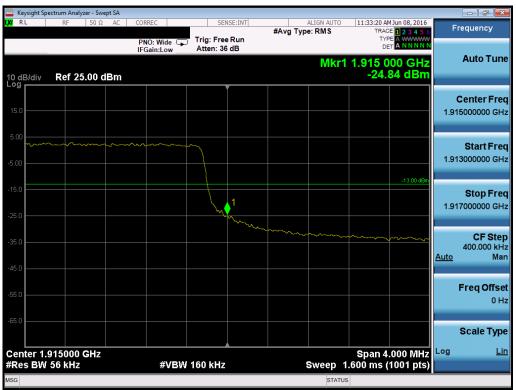
Plot 7-154. Lower Band Edge Plot (Band 25 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 94 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 94 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3



🔤 Keysight Spectrum Analyzer - Channel Power			- 5 -
KX RL RF 50Ω AC CORREC #IFGain:Low_	SENSE:INT ALIGN AUTO Center Freq: 1.848950000 GHz Trig: Free Run Avg Hold: 100/100 #Atten: 26 dB	11:31:39 AM Jun 08, 2016 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm			
10.0			Clear Write
-10.0			Average
-40.0 -50.0 -60.0			Max Hold
Center 1.849 GHz Res BW 39 kHz	VBW 390 kHz	Span 4 MHz Sweep  3.2 ms	Min Hold
Channel Power -27.05 dBm / 1 MHz	Power Spectral Der -87.05 dBn		Detector Average ► <u>Auto</u> Man
MSG	STA	rus	

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



Plot 7-156. Upper Band Edge Plot (Band 25 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 95 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 95 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3



💼 Keys	ight Spectr	rum Analy	/zer - Cha	annel Pow	er									
L <mark>XI</mark> RL		RF	50 Ω	AC	CORREC			NSE:INT	50000 GH	ALIGN AUTO	11:33:27 A	M Jun 08, 2016 None	Trac	e/Detector
					#IFGain:L	.ow	Trig: Fre #Atten: 2		Avg H	lold: 100/100	Radio Dev	ice: BTS		
10 dB	/div	Ref	30.0	0 dBn	1									
Log 20.0														
10.0														Clear Write
0.00		~~~~												
-10.0			-+											
-20.0			\	m.										Average
-30.0 -					~~~~	~~~~								
-40.0														
-50.0 -60.0														Max Hold
	er 1.9 [.] 3W 39		z				VR	W 390 k	47			an 4 MHz p   3.2 ms		
Kes I	<b>JVV</b> JS	7 KHZ					¥D	99 JSOK	12		OWCC	5 J.Z III5		Min Hold
Cł	nanne	el Po	wer					Powe	r Spe	ctral Dens	sity			
														Detector
	-2(	0.14	dE	3m	/ 1 MF	z			80.1	4 dBm	/Hz		Auto	Average ► Man
MSG										STATU	s			

Plot 7-157. Upper Extended Band Edge Plot (Band 25 – 5.0MHz QPSK – RB Size 25)



Plot 7-158. Lower Band Edge Plot (Band 25 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 96 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 90 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3





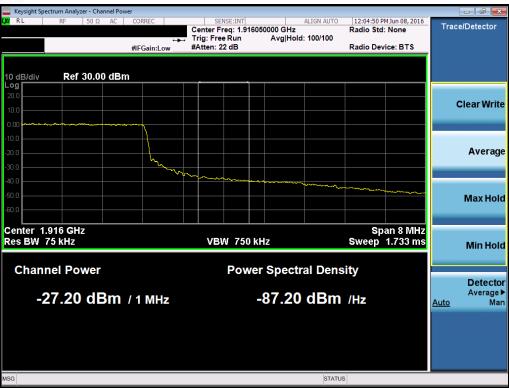
Plot 7-159. Lower Extended Band Edge Plot (Band 25 – 10.0MHz QPSK – RB Size 50)



Plot 7-160. Upper Band Edge Plot (Band 25 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 07 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 97 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	•		V 6.3





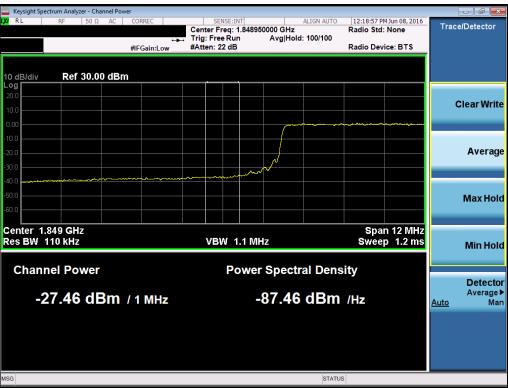
Plot 7-161. Upper Extended Band Edge Plot (Band 25 – 10.0MHz QPSK – RB Size 50)



Plot 7-162. Lower Band Edge Plot (Band 25 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 98 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 96 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3





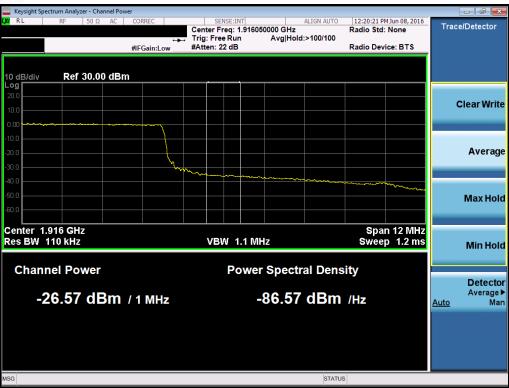
Plot 7-163. Lower Extended Band Edge Plot (Band 25 – 15.0MHz QPSK – RB Size 75)



Plot 7-164. Upper Band Edge Plot (Band 25 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 00 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 99 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	•		V 6.3





Plot 7-165. Upper Extended Band Edge Plot (Band 25 – 15.0MHz QPSK – RB Size 75)



Plot 7-166. Lower Band Edge Plot (Band 25 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Page 100 of 148		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 100 01 146		
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.					



	trum Analyzer - Sv									_	
X/ RL	RF 50 \$	Ω DC	CORREC	Trig: Free		#Avg Typ	ALIGN AUTO e: RMS	TRAC	MJun 14, 2016 E 1 2 3 4 5 6 PE A WWWW A N N N N N	F	requency
10 dB/div Log	Ref 25.00	dBm	IFGain:Low	Atten: 36	6 dB		Mkr1	1.845 3	44 GHz 05 dBm		Auto Tune
15.0											Center Fred 7000000 GH
5.00										1.84	Start Free 5000000 GH
25.0									-13.00 dBm	1.84	<b>Stop Fre</b> 9000000 GH
35.0				وي مراجع من	mar maragen.	- ministration	langer for strangers	nghangean maank	nan ang pangang kalawar t	<u>Auto</u>	<b>CF Ste</b> 400.000 kH Ma
15.0 <u> </u>											Freq Offs
65.0											Scale Typ
Center 1.84 Res BW 1			#VB	W 3.0 MHz			Sweep 2	Span 4 000 ms (	.000 MHz 1001 pts)	Log	Li
ISG							STATUS	6			

Plot 7-167. Lower Extended Band Edge Plot (Band 25 – 20.0MHz QPSK – RB Size 100)



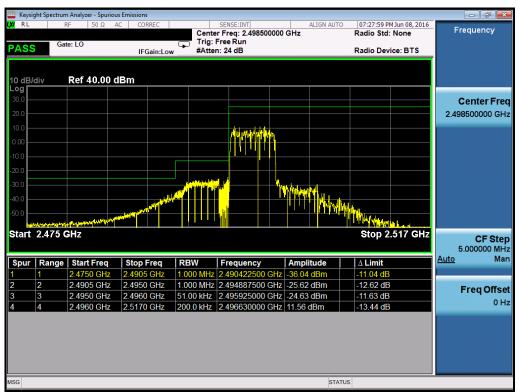
Plot 7-168. Upper Band Edge Plot (Band 25 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Daga 101 of 149		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 101 of 148		
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.					



	trum Analyzer - Swe									_	
X/RL	RF 50 Ω	DC	CORREC PNO: Wide ↔			#Avg Type	ALIGN AUTO e: RMS	TRAC	4 Jun 14, 2016 E 1 2 3 4 5 6 PE A WWWW T A N N N N N	F	requency
10 dB/div	Ref 25.00 d	lBm	IFGain:Low	Atten: 50 G	10		Mkr1	1.916 4 -28.	52 GHz 68 dBm		Auto Tune
15.0											Center Free 8000000 GH:
5.00										1.91	<b>Start Fre</b> 6000000 GH
25.0	1								-13.00 dBm	1.92	<b>Stop Fre</b> 0000000 GH
45.0	en egen de la comme				4 <u>0</u> 144	te demonstration	**************************************	-infreinghing	dana kata kata	<u>Auto</u>	CF Ste 400.000 k⊢ Ma
55.0											Freq Offs 0 F
65.0											Scale Typ
Center 1.9 Res BW 1	18000 GHz .0 MHz		#VBV	V 3.0 MHz		ę	Sweep 2	Span 4 .000 ms (	.000 MHz 1001 pts)	Log	Li
ISG							STATUS				

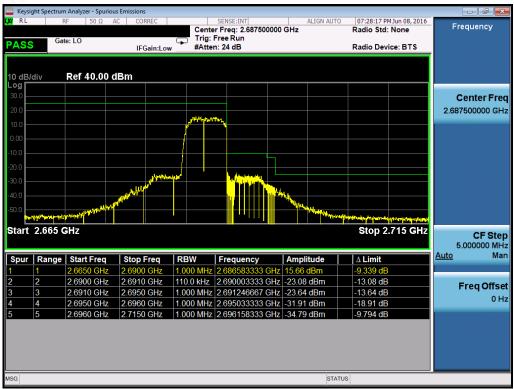
Plot 7-169. Upper Extended Band Edge Plot (Band 25 – 20.0MHz QPSK – RB Size 100)



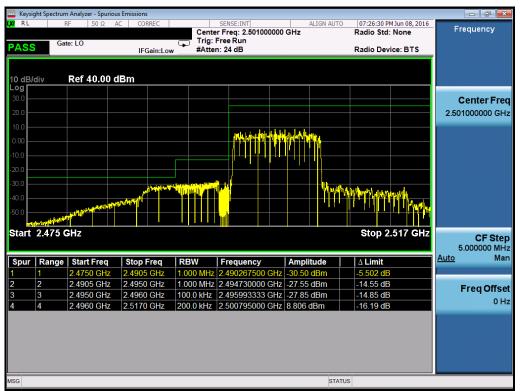
Plot 7-170. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dega 102 of 149		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 102 of 148		
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.					





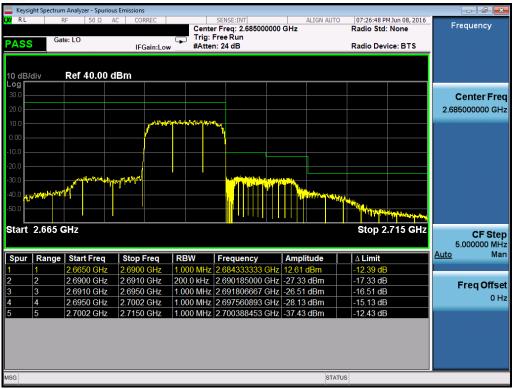
Plot 7-171. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)



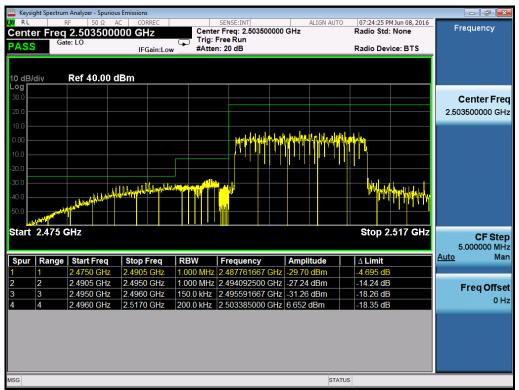
Plot 7-172. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dega 102 of 149		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 103 of 148		
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.					





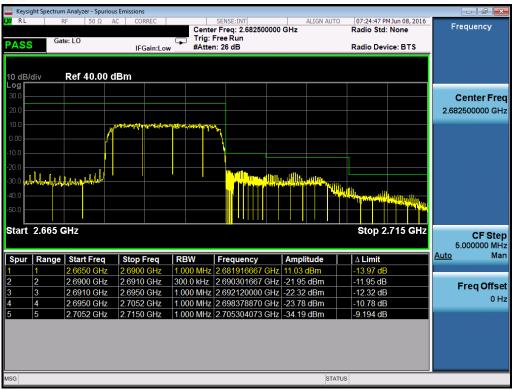
Plot 7-173. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)



Plot 7-174. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 404 af 440
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 104 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3





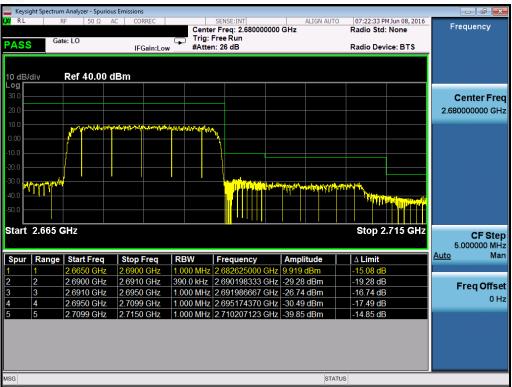
Plot 7-175. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)



Plot 7-176. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dega 105 of 149		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 105 of 148		
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.					





Plot 7-177. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Daga 106 of 149		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 106 of 148		
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.					



# 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. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

## <u>Test Setup</u>

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

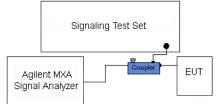


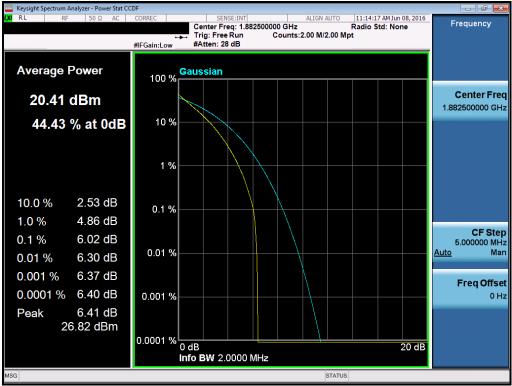
Figure 7-4. Test Instrument & Measurement Setup

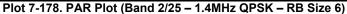
# Test Notes

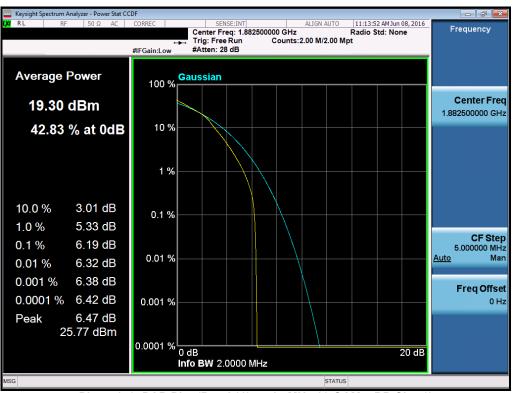
None.

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dega 107 of 149			
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 107 of 148			
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.						





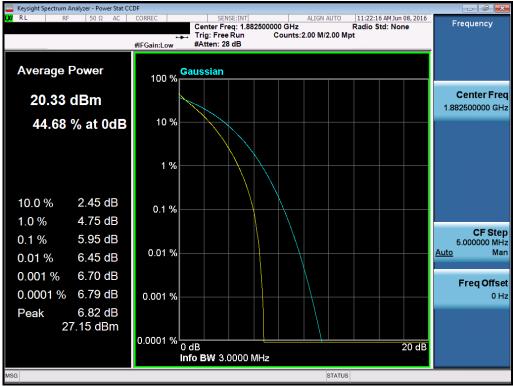




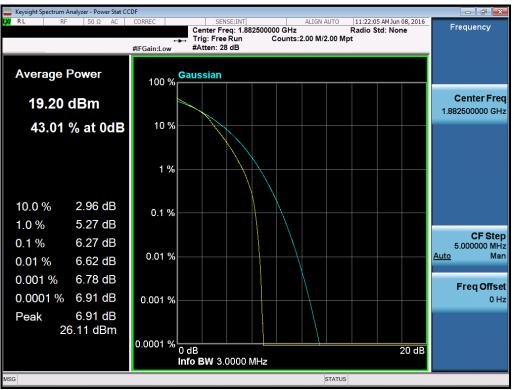
Plot 7-179. PAR Plot (Band 2/25 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Page 108 of 148		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 106 01 146		
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.					





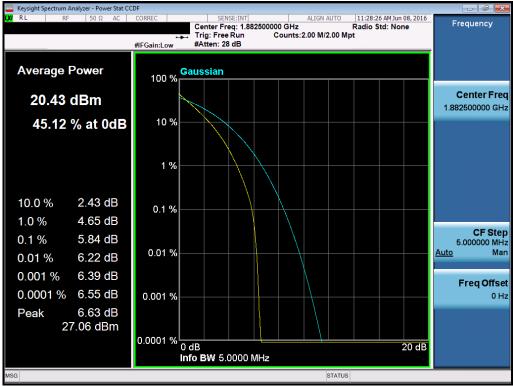
Plot 7-180. PAR Plot (Band 2/25 - 3.0MHz QPSK - RB Size 15)

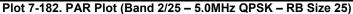


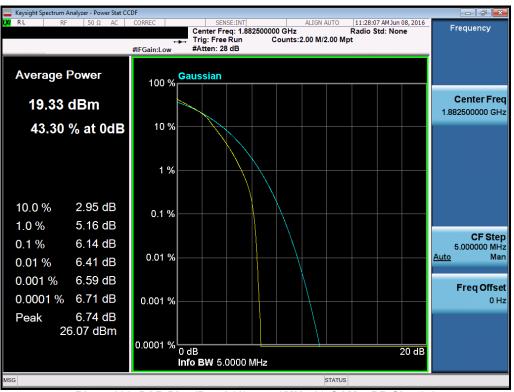
Plot 7-181. PAR Plot (Band 2/25 – 3.0MHz 16-QAM – RB Size 15)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dega 100 of 149		
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 109 of 148		
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.					





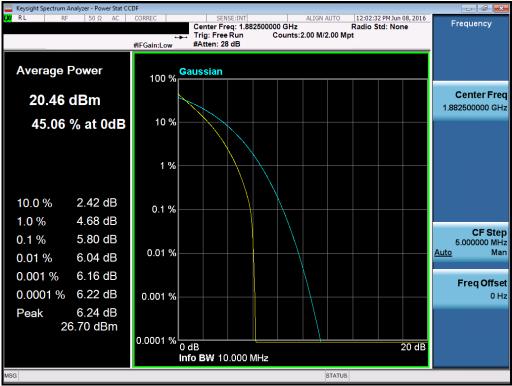


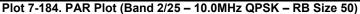


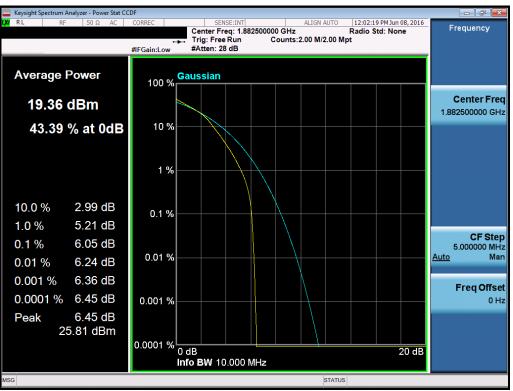
Plot 7-183. PAR Plot (Band 2/25 - 5.0MHz 16-QAM - RB Size 25)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 110 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 110 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3





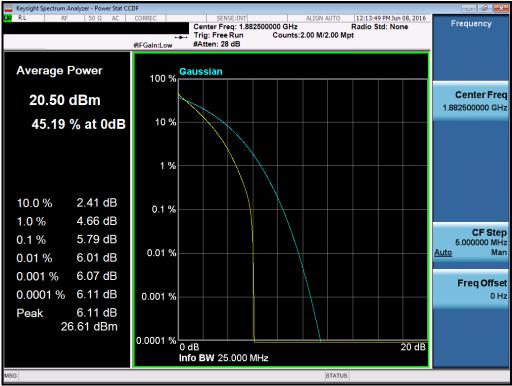


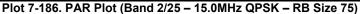


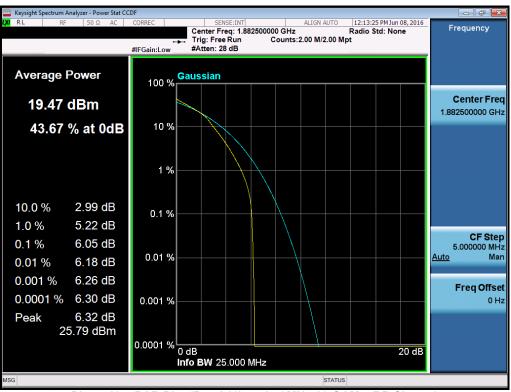
Plot 7-185. PAR Plot (Band 2/25 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 111 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 111 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3





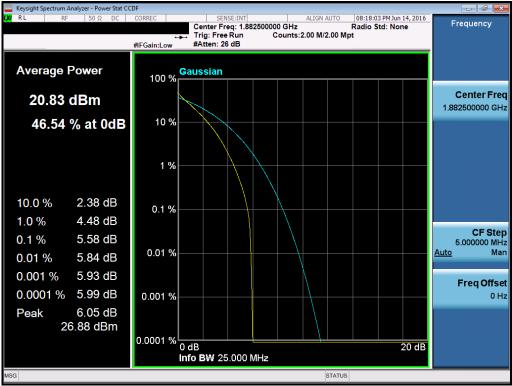


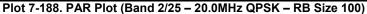


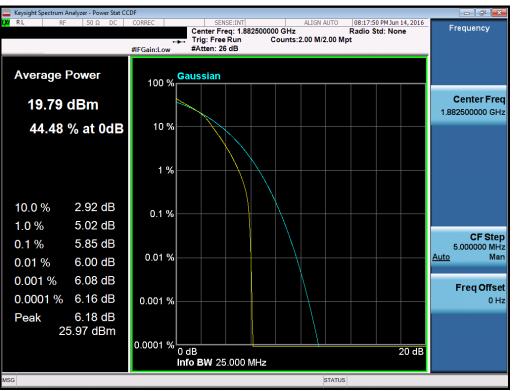
Plot 7-187. PAR Plot (Band 2/25 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Degra 110 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset	Page 112 of 148	
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3









Plot 7-189. PAR Plot (Band 2/25 - 20.0MHz 16-QAM - RB Size 100)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 112 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 113 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3



# 7.6 Radiated Power (ERP/EIRP) §22.913(a.2) §24.232(c.2) §27.50(h.2) §27.50(c.10) §27.50(d.4)

## **Test Overview**

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

## Test Procedures Used

KDB 971168 D01 v02r02 - Section 5.2.1

ANSI/TIA-603-D-2010 - Section 2.2.17

## Test Settings

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Deg 114 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset	Page 114 of 148	
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3



# Test Setup

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

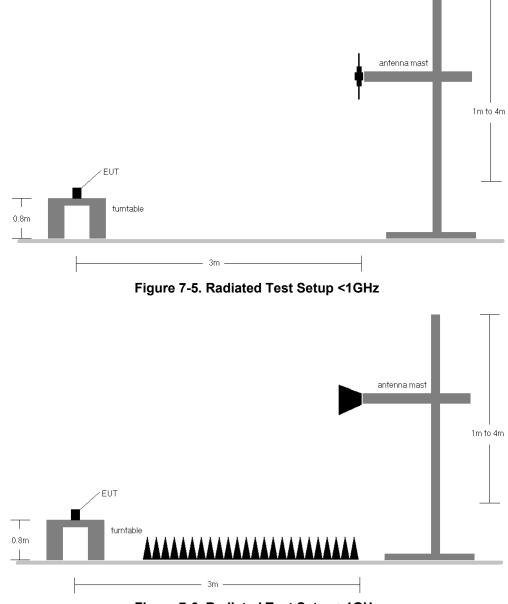


Figure 7-6. Radiated Test Setup >1GHz

## 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.

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 115 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 115 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3



# 7.6.1 Antenna A 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	Н	291	11	1/5	12.95	2.12	15.07	34.77	-19.70
707.50	1.4	QPSK	Н	267	10	1 / 5	12.73	2.31	15.04	34.77	-19.73
715.30	1.4	QPSK	Н	297	32	1 / 5	12.10	2.50	14.60	34.77	-20.17
699.70	1.4	16-QAM	н	291	11	1 / 5	11.61	2.12	13.73	34.77	-21.04
707.50	1.4	16-QAM	н	267	10	1 / 5	11.65	2.31	13.96	34.77	-20.81
715.30	1.4	16-QAM	Н	297	32	1 / 5	11.13	2.50	13.63	34.77	-21.14
700.50	3	QPSK	н	265	19	1 / 0	13.36	2.12	15.48	34.77	-19.29
707.50	3	QPSK	н	266	22	1 / 14	13.63	2.31	15.94	34.77	-18.83
714.50	3	QPSK	н	275	26	1 / 0	12.49	2.50	14.99	34.77	-19.78
700.50	3	16-QAM	н	265	19	1 / 0	12.15	2.12	14.27	34.77	-20.50
707.50	3	16-QAM	н	266	22	1 / 14	12.02	2.31	14.33	34.77	-20.44
714.50	3	16-QAM	н	275	26	1 / 0	11.48	2.50	13.98	34.77	-20.79
707.50	3	QPSK	V	266	22	1 / 74	11.63	2.31	13.94	34.77	-20.83
707.50	3 (WCP)	QPSK	Н	266	22	1 / 74	11.37	2.31	13.68	34.77	-21.09

Table 7-2. ERP Data (Band 12)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 116 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 116 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3



Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
701.50	5	QPSK	н	265	195	1 / 0	11.67	2.15	13.82	34.77	-20.95
707.50	5	QPSK	н	273	202	1 / 24	12.22	2.31	14.53	34.77	-20.24
713.50	5	QPSK	н	271	216	1 / 0	11.98	2.48	14.46	34.77	-20.31
701.50	5	16-QAM	н	265	195	1 / 0	10.49	2.15	12.64	34.77	-22.13
707.50	5	16-QAM	н	273	202	1 / 24	10.98	2.31	13.29	34.77	-21.48
713.50	5	16-QAM	н	271	216	1 / 0	11.03	2.48	13.51	34.77	-21.26
704.00	10	QPSK	н	267	25	1 / 0	12.96	2.22	15.18	34.77	-19.59
707.50	10	QPSK	н	272	37	1 / 49	12.43	2.31	14.74	34.77	-20.03
711.00	10	QPSK	н	273	0	1 / 0	12.54	2.41	14.95	34.77	-19.82
704.00	10	16-QAM	н	267	25	1 / 0	12.09	2.22	14.31	34.77	-20.46
707.50	10	16-QAM	н	272	37	1 / 49	11.62	2.31	13.93	34.77	-20.84
711.00	10	16-QAM	н	273	0	1/0	11.49	2.41	13.90	34.77	-20.87

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 117 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 117 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3



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	187	194	3 / 2	13.69	5.01	18.70	38.45	-19.75
836.50	1.4	QPSK	н	187	194	3 / 2	13.90	5.16	19.06	38.45	-19.39
848.30	1.4	QPSK	н	187	194	1 / 0	12.04	5.30	17.34	38.45	-21.11
824.70	1.4	16-QAM	н	187	194	3 / 2	13.42	5.01	18.43	38.45	-20.02
836.50	1.4	16-QAM	н	187	194	1 / 0	12.95	5.16	18.11	38.45	-20.34
848.30	1.4	16-QAM	н	187	194	1 / 0	10.79	5.30	16.09	38.45	-22.36
825.50	3	QPSK	н	208	267	1 / 0	12.74	5.02	17.76	38.45	-20.69
836.50	3	QPSK	н	208	267	1 / 0	12.66	5.16	17.82	38.45	-20.63
847.50	3	QPSK	н	208	267	1 / 0	12.45	5.29	17.74	38.45	-20.71
825.50	3	16-QAM	н	208	267	1 / 14	11.61	5.02	16.63	38.45	-21.82
836.50	3	16-QAM	н	208	267	1 / 0	11.90	5.16	17.06	38.45	-21.39
847.50	3	16-QAM	н	208	267	1 / 0	11.32	5.29	16.61	38.45	-21.84
826.50	5	QPSK	н	222	276	1 / 0	13.16	5.03	18.19	38.45	-20.26
836.50	5	QPSK	н	222	276	1 / 0	12.51	5.16	17.67	38.45	-20.78
846.50	5	QPSK	н	222	276	1 / 0	12.80	5.28	18.08	38.45	-20.37
826.50	5	16-QAM	н	222	276	1 / 0	13.27	5.03	18.30	38.45	-20.15
836.50	5	16-QAM	н	222	276	1 / 0	11.99	5.16	17.15	38.45	-21.30
846.50	5	16-QAM	н	222	276	1 / 0	11.80	5.28	17.08	38.45	-21.37
829.00	10	QPSK	н	208	260	1 / 49	13.80	5.06	18.86	38.45	-19.59
836.50	10	QPSK	н	208	260	1 / 0	13.45	5.16	18.61	38.45	-19.84
844.00	10	QPSK	н	208	260	1 / 49	13.02	5.25	18.27	38.45	-20.18
829.00	10	16-QAM	н	208	260	1 / 49	12.53	5.06	17.59	38.45	-20.86
836.50	10	16-QAM	н	208	260	1 / 0	12.72	5.16	17.88	38.45	-20.57
844.00	10	16-QAM	н	208	260	1 / 0	11.87	5.25	17.12	38.45	-21.33
831.50	15	QPSK	н	191	110	1 / 74	12.81	5.16	17.97	38.45	-20.48
836.50	15	QPSK	н	191	110	1 / 74	12.97	5.16	18.13	38.45	-20.32
841.50	15	QPSK	н	191	110	1/0	12.74	4.97	17.71	38.45	-20.74
831.50	15	16-QAM	н	191	110	1 / 74	11.69	4.97	16.66	38.45	-21.79
836.50	15	16-QAM	н	191	110	1 / 74	12.09	5.16	17.25	38.45	-21.20
841.50	15	16-QAM	н	191	110	1/0	11.75	5.22	16.97	38.45	-21.48
836.50	1.4	QPSK	V	187	194	36 / 18	12.63	5.16	17.79	38.45	-20.66
836.50	1.4 (WCP)	QPSK	н	187	194	1/0	12.59	5.16	17.75	38.45	-20.70

# Table 7-4. ERP Data (Band 5/26)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 119 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset	Page 118 of 148	
@ 2017 DOTECT Engineering	Laboratom ( Inc	•		Vea

© 2017 PCTEST Engineering Laboratory, Inc.



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	V	163	10	1 / 5	9.81	9.66	19.47	30.00	-10.53
1732.50	1.4	QPSK	V	168	11	1 / 0	10.30	9.61	19.91	30.00	-10.09
1754.30	1.4	QPSK	V	159	10	1 / 0	10.33	9.57	19.90	30.00	-10.10
1710.70	1.4	16-QAM	V	163	10	1 / 5	8.62	9.66	18.28	30.00	-11.72
1732.50	1.4	16-QAM	V	168	11	1 / 0	9.27	9.61	18.88	30.00	-11.12
1754.30	1.4	16-QAM	V	159	10	1 / 0	9.02	9.57	18.59	30.00	-11.41
1711.50	3	QPSK	V	163	10	1 / 7	9.86	9.65	19.51	30.00	-10.49
1732.50	3	QPSK	V	171	11	1 / 0	10.19	9.61	19.80	30.00	-10.20
1753.50	3	QPSK	V	157	7	1 / 7	10.63	9.57	20.20	30.00	-9.80
1711.50	3	16-QAM	V	163	10	1 / 7	8.96	9.65	18.61	30.00	-11.39
1732.50	3	16-QAM	V	171	11	1 / 0	9.28	9.61	18.89	30.00	-11.11
1753.50	3	16-QAM	V	157	7	1/7	9.67	9.57	19.24	30.00	-10.76
1712.50	5	QPSK	V	163	10	1 / 0	9.92	9.65	19.57	30.00	-10.43
1732.50	5	QPSK	V	170	11	1 / 0	10.23	9.61	19.84	30.00	-10.16
1752.50	5	QPSK	V	162	10	1 / 0	10.68	9.57	20.25	30.00	-9.75
1712.50	5	16-QAM	V	163	10	1 / 0	8.90	9.65	18.55	30.00	-11.45
1732.50	5	16-QAM	V	170	11	1/0	9.35	9.61	18.96	30.00	-11.04
1752.50	5	16-QAM	V	162	10	1 / 0	9.79	9.57	19.36	30.00	-10.64
1715.00	10	QPSK	V	165	12	1 / 25	10.07	9.65	19.72	30.00	-10.28
1732.50	10	QPSK	V	169	10	1 / 0	10.01	9.61	19.62	30.00	-10.38
1750.00	10	QPSK	V	157	10	1 / 49	10.33	9.58	19.91	30.00	-10.09
1715.00	10	16-QAM	V	165	12	1 / 25	9.15	9.65	18.80	30.00	-11.20
1732.50	10	16-QAM	V	169	10	1 / 0	9.09	9.61	18.70	30.00	-11.30
1750.00	10	16-QAM	V	157	10	1 / 49	9.41	9.58	18.99	30.00	-11.01
1717.50	15	QPSK	V	174	11	1 / 0	9.96	9.64	19.60	30.00	-10.40
1732.50	15	QPSK	V	159	7	1 / 0	9.89	9.61	19.50	30.00	-10.50
1747.50	15	QPSK	V	165	10	1 / 74	10.26	9.58	19.84	30.00	-10.16
1717.50	15	16-QAM	V	174	11	1 / 0	9.07	9.64	18.71	30.00	-11.29
1732.50	15	16-QAM	V	159	7	1 / 0	9.13	9.61	18.74	30.00	-11.26
1747.50	15	16-QAM	V	165	10	1 / 74	9.38	9.58	18.96	30.00	-11.04
1720.00	20	QPSK	V	168	14	1/0	9.83	9.64	19.47	30.00	-10.53
1732.50	20	QPSK	v	160	10	1 / 0	9.86	9.61	19.47	30.00	-10.53
1745.00	20	QPSK	v	160	10	1 / 99	10.21	9.59	19.80	30.00	-10.20
1720.00	20	16-QAM	v	168	14	1/0	9.04	9.64	18.68	30.00	-11.32
1732.50	20	16-QAM	V	160	10	1/0	9.05	9.61	18.66	30.00	-11.34
1745.00	20	16-QAM	v	160	10	1 / 99	9.23	9.59	18.82	30.00	-11.18
1752.50	5	QPSK	н	102	271	1 / 99	8.92	9.57	18.49	30.00	-11.51
1752.50	5 (WCP)	QPSK	v	162	10	1 / 99	8.37	9.57	17.94	30.00	-12.06

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 110 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 119 of 148
© 2017 PCTEST Engineering	aboratory Inc	•		V 6 3

© 2017 PCTEST Engineering Laboratory, Inc.



1880.70         1.4         QPSK         H         100         305         3.7.2         10.4         9.36         3.3.0         1.3.25           1882.50         1.4         QPSK         H         100         314         3.7.2         10.8         9.27         19.45         3.0.0         14.3.9           1914.30         1.4         QPSK         H         100         305         3.7.2         9.36         9.27         18.4         3.0.0         14.12           1882.50         1.4         16-0.4M         H         100         316         3.7.2         9.54         9.27         18.4         3.0.0         14.27           1914.30         1.4         16-0.4M         H         100         316         1/14         10.57         2.7         0.24         3.00         12.7           1915.50         3.3         OPSK         H         100         315         1/14         10.5         9.25         3.00         13.0         14.70           1915.50         3.3         16-0.4M         H         100         315         1/14         9.00         9.25         8.3.0         14.75           1915.50         JS.5         OPSK         H	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]
14.         15.         1         10.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.         37.	1850.70	1.4	QPSK	н	100	305	3 / 2	10.41	9.35	19.76	33.01	-13.25
14.4         16.Aad         H         100         36.5         3.7.2         9.5.4         9.5.5         18.69         3.0.1         14.1.2           18250         1.4.1         16.Aad         H         100         314         3.7.2         9.5.4         9.7.7         18.01         3.0.0         14.20           1914.30         1.4.1         16.Aad         H         100         300         1/1.4         11.5.0         9.27         2.0.4         3.0.0         12.12           18250         3.0         QPSK         H         100         315         1/14         10.07         9.27         2.0.4         3.0.0         12.12           18250         3.0         16.AAM         H         100         315         1/1.4         9.05         9.27         19.2         3.0.0         13.0           18250         3.0         16.AAM         H         100         315         1/14         9.05         9.27         19.2         3.0.0         13.72           19150         3.0         16.AAM         H         100         313         1/124         10.17         9.27         19.4         3.0.0         13.72           191250         5.5         16.A	1882.50	1.4	QPSK	н	100	314	3 / 2	10.18	9.27	19.45	33.01	-13.56
182.50         1.4         16-QAM         H         100         314         3/2         9.54         9.27         18.81         33.01         1.4.20           1914.30         1.4         16-QAM         H         100         300         3/2         8.49         9.26         17.75         33.01         15.28           185.50         3.3         QPSK         H         100         308         1/14         10.77         9.72         2.0.2         33.01         12.12           185.50         3.3         QPSK         H         100         315         1/14         9.76         9.27         19.22         33.01         13.09           185.50         3.3         16-QAM         H         100         315         1/14         9.60         9.27         19.22         3.01         1.3.09           185.50         3.3         16-QAM         H         100         313         1/24         11.13         9.27         2.040         3.01         1.4.76           192.50         5.5         QPSK         H         100         313         1/24         10.02         3.01         1.3.05           192.50         5.5         16-QAM         H	1914.30	1.4	QPSK	н	100	310	3 / 2	9.36	9.26	18.62	33.01	-14.39
114         1-0-A         H         100         301         3/2         8.49         9.26         17.75         33.01         15.26           185.100         3         QPSK         H         100         300         1/14         11.54         9.35         20.89         33.01         12.12           182.50         3         QPSK         H         100         315         1/14         9.76         9.27         20.24         33.01         13.19           1913.50         3         QPSK         H         100         315         1/14         9.76         9.27         19.22         33.01         13.19           1913.50         3         16-QAM         H         100         315         1/14         9.60         9.27         19.22         33.01         13.179           1913.50         3         16-QAM         H         100         313         1/24         11.03         9.27         20.40         33.01         14.75           182.50         5         16-QAM         H         100         313         1/24         10.02         12.7         19.44         33.01         13.72           1912.50         5         16-QAM         H </td <td>1850.70</td> <td>1.4</td> <td>16-QAM</td> <td>н</td> <td>100</td> <td>305</td> <td>3 / 2</td> <td>9.54</td> <td>9.35</td> <td>18.89</td> <td>33.01</td> <td>-14.12</td>	1850.70	1.4	16-QAM	н	100	305	3 / 2	9.54	9.35	18.89	33.01	-14.12
1891.50         3.3         QPSK         H         100         300         1/14         11.54         9.35         20.80         33.01         1.212           1825.50         3.3         QPSK         H         1000         316         1/141         10.97         9.27         20.24         33.01         -12.77           1913.50         3.3         QPSK         H         1000         316         1/141         10.60         9.25         19.02         33.01         -13.09           1825.00         3.3         16-QAM         H         100         318         1/141         9.00         9.26         18.22         33.01         -13.79           1913.00         3.3         16-QAM         H         100         313         1/124         9.04         2.04         33.01         -14.76           1913.00         3.5         15.7         17.92         0.45         1.00         313         1/124         10.03         2.04         33.01         -13.07           1912.00         5.5         16-QAM         H         100         313         1/124         10.02         31.01         1.124         10.27         1.84         33.01         -13.27	1882.50	1.4	16-QAM	н	100	314	3 / 2	9.54	9.27	18.81	33.01	-14.20
B82.50         3         OPSK         H         100         318         1/14         10.97         9.27         20.24         33.01         -12.77           1913.50         3         OPSK         H         100         315         1/14         9.76         9.26         19.02         33.01         -13.99           1851.50         3         16-OAM         H         100         309         1/14         10.60         9.55         19.52         33.01         -13.79           1913.50         3         16-OAM         H         100         315         1/14         9.05         9.27         19.22         33.01         -14.75           1913.50         3         16-OAM         H         100         315         1/124         11.03         9.27         20.40         33.01         -14.75           192.50         5         OPSK         H         100         313         1/24         10.03         9.26         19.29         3.01         -13.72           192.50         5         IGAM         H         100         313         1/24         10.01         9.26         18.25         3.01         -14.76           192.5         IGAM         <	1914.30	1.4	16-QAM	н	100	310	3 / 2	8.49	9.26	17.75	33.01	-15.26
1913.50         3         OPSK         H         100         315         1/14         9.76         9.26         19.02         33.01         -13.99           1861.50         3         16-QAM         H         100         309         1/14         10.00         9.35         19.95         33.01         -13.06           1862.50         3         16-QAM         H         100         318         1/14         9.95         9.27         19.22         33.01         -13.79           1913.50         3         16-QAM         H         100         313         1/14         9.00         9.26         18.26         33.01         -14.70           1852.50         5         QPSK         H         100         313         1/124         11.13         9.27         2.040         33.01         -13.72           1852.50         5         16-QAM         H         100         313         1/124         10.02         9.34         19.96         33.01         -14.76           1852.50         15         16-QAM         H         100         313         1/12         10.17         9.25         33.01         -14.76           1855.50         10         QPSK	1851.50	3	QPSK	н	100	309	1 / 14	11.54	9.35	20.89	33.01	-12.12
1861.60         3         16-QAM         H         100         309         1/14         10.60         9.35         19.95         3.01         -1.3.06           1882.60         3         16-QAM         H         100         318         1/14         9.95         9.27         19.22         3.01         -13.79           1913.50         3         16-QAM         H         100         315         1/14         9.00         9.26         18.26         3.01         -14.75           1882.50         5         QPSK         H         100         315         1/24         11.13         9.27         20.40         3.01         -13.72           1882.50         5         QPSK         H         100         313         1/24         10.03         9.26         18.25         3.01         -13.72           1882.50         5         16-QAM         H         100         313         1/24         10.17         9.27         19.44         3.01         -13.72           1882.50         5         16-QAM         H         100         313         1/24         8.99         9.26         18.25         3.01         -13.42           1885.00         10	1882.50	3	QPSK	н	100	318	1 / 14	10.97	9.27	20.24	33.01	-12.77
1882.50         3         16-QAM         H         100         318         1/14         9.95         9.27         19.22         3.01         -1.3.79           1913.50         3         16-QAM         H         100         315         1/14         9.00         5.26         18.26         3.01         -14.75           1852.50         5         QPSK         H         100         313         1/24         11.72         9.34         21.06         3.01         -14.75           1882.50         5         QPSK         H         100         313         1/24         10.33         9.26         18.29         3.01         -13.72           1882.50         5         QPSK         H         100         313         1/24         10.02         9.44         9.40         3.01         -13.79           1912.50         5         16-QAM         H         100         313         1/24         8.99         9.26         18.25         3.01         -14.76           185.50         10         QPSK         H         100         313         1/0         10.32         9.27         19.59         3.01         -13.42           1910.00         10         16	1913.50	3	QPSK	н	100	315	1 / 14	9.76	9.26	19.02	33.01	-13.99
1913.50         3         16-QAM         H         100         315         1/14         9.00         9.26         18.26         3.01         -14.75           1855.50         5         QPSK         H         100         313         1/24         11.72         9.34         21.06         33.01         -14.75           1882.50         5         QPSK         H         100         313         1/24         11.13         9.27         20.40         33.01         -13.72           1882.50         5         QPSK         H         100         313         1/24         10.02         9.26         19.29         33.01         -13.72           1852.50         5         16-QAM         H         100         313         1/24         10.07         9.26         18.25         3.01         -13.65           1852.50         10         QPSK         H         100         313         1/24         8.99         9.26         18.25         3.01         -13.42           1855.00         10         QPSK         H         100         313         1/0         9.38         9.25         19.23         3.01         -13.42           190.00         10	1851.50	3	16-QAM	н	100	309	1 / 14	10.60	9.35	19.95	33.01	-13.06
1882.50         5         OPSK         H         100         313         1/24         11.72         9.34         21.06         33.01         -11.95           1882.50         5         OPSK         H         100         315         1/24         11.13         9.27         20.40         33.01         -12.61           1912.50         5         OPSK         H         100         313         1/24         10.03         9.26         19.29         33.01         -13.72           1852.50         5         16-QAM         H         100         313         1/24         10.62         9.34         19.96         33.01         -13.72           1852.50         5         16-QAM         H         100         313         1/24         8.99         9.26         18.25         33.01         -14.76           1855.00         10         OPSK         H         100         313         1/0         9.34         9.25         19.23         33.01         -13.42           1910.00         10         OPSK         H         100         313         1/0         9.25         19.26         33.01         -13.42           1910.00         16-QAM         H	1882.50	3	16-QAM	н	100	318	1 / 14	9.95	9.27	19.22	33.01	-13.79
1882.50         5         QPSK         H         100         315         1/24         11.13         9.27         20.40         33.01         -12.61           1912.50         5         QPSK         H         100         313         1/24         10.03         9.26         19.29         33.01         -13.72           1852.50         5         16-QAM         H         100         313         1/24         10.62         9.34         19.96         33.01         -13.72           1852.50         5         16-QAM         H         100         313         1/24         10.62         9.34         19.36         33.01         -13.72           1912.50         5         16-QAM         H         100         313         1/24         8.99         9.26         18.25         33.01         -14.46           1885.00         10         QPSK         H         100         313         1/0         9.34         9.25         19.23         33.01         -13.42           1910.00         10         QPSK         H         100         313         1/0         9.34         9.25         18.64         33.01         -14.40           1910.00         16<-QAM	1913.50	3	16-QAM	н	100	315	1 / 14	9.00	9.26	18.26	33.01	-14.75
1912.50         5         QPSK         H         100         313         1/24         1003         9.26         19.29         33.01         -13.72           1852.50         5         16-QAM         H         100         313         1/24         10.62         9.4         19.96         33.01         -13.72           1852.50         5         16-QAM         H         100         315         1/24         10.17         9.27         19.44         33.01         -14.76           1852.50         5         16-QAM         H         100         313         1/24         8.99         9.26         18.25         33.01         -14.46           1855.00         10         QPSK         H         100         313         1/0         9.98         9.25         19.23         33.01         -13.42           1910.00         10         QPSK         H         100         313         1/0         9.98         9.25         19.23         33.01         -13.42           1910.00         10         QPSK         H         100         313         1/0         9.24         18.61         3.01         -14.40           1910.00         16-QAM         H         <	1852.50	5	QPSK	н	100	313	1 / 24	11.72	9.34	21.06	33.01	-11.95
1852.50         5         16-QAM         H         1000         313         1 / 24         1062         9.34         19.96         33.01         -13.05           1882.50         5         16-QAM         H         1000         315         1 / 24         10.17         9.27         19.44         33.01         -13.57           1912.50         5         16-QAM         H         1000         313         1 / 24         8.99         9.26         18.25         33.01         -14.46           1885.00         100         QPSK         H         1000         313         1 / 0         9.34         20.57         33.01         -13.42           1910.00         101         QPSK         H         1000         313         1 / 0         9.34         9.25         19.23         33.01         -13.42           1910.00         10         QPSK         H         1000         313         1 / 0         9.34         9.25         19.23         33.01         -13.66           1882.50         10         16-QAM         H         1000         313         1 / 0         9.34         9.25         18.64         33.01         -14.40           190.00         16	1882.50	5	QPSK	н	100	315	1 / 24	11.13	9.27	20.40	33.01	-12.61
1882.50         5         16-QAM         H         100         315         1 / 24         10.17         9.27         19.44         33.01         -13.57           1912.50         5         16-QAM         H         100         313         1 / 24         8.99         9.26         18.25         33.01         -14.76           1885.00         10         QPSK         H         100         313         1 / 49         11.23         9.34         20.57         33.01         -13.42           1882.50         10         QPSK         H         100         313         1 / 0         9.98         9.25         19.23         33.01         -13.42           1910.00         10         QPSK         H         100         313         1 / 0         9.98         9.25         19.23         33.01         -13.42           1910.00         10         16-QAM         H         100         313         1 / 0         9.34         9.27         18.61         33.01         -14.40           1910.00         10         16-QAM         H         100         313         1 / 0         9.33         19.59         33.01         -14.40           1910.00         15         Q	1912.50	5	QPSK	н	100	313	1 / 24	10.03	9.26	19.29	33.01	-13.72
1912.50         5         16-QAM         H         100         313         1/24         8.99         9.26         18.25         33.01         -14.76           1855.00         10         QPSK         H         100         313         1/24         8.99         9.26         18.25         33.01         -14.76           1855.00         10         QPSK         H         100         313         1/0         10.32         9.27         19.59         33.01         -13.42           1910.00         10         QPSK         H         100         313         1/0         9.98         9.25         19.23         33.01         -13.42           1910.00         10         16-QAM         H         100         313         1/0         9.34         19.35         33.01         -13.42           1855.00         10         16-QAM         H         100         313         1/0         9.34         9.27         18.61         33.01         -14.40           1910.00         10         16-QAM         H         100         313         1/0         9.24         18.64         33.01         -14.40           1910.00         10         16-QAM         H	1852.50	5	16-QAM	н	100	313	1 / 24	10.62	9.34	19.96	33.01	-13.05
1855.00         10         QPSK         H         100         311         1/49         11.23         9.34         20.57         33.01         -12.44           1882.50         10         QPSK         H         100         313         1/0         10.32         9.27         19.59         33.01         -13.42           1910.00         10         QPSK         H         100         313         1/0         9.88         9.25         19.23         33.01         -13.78           1855.00         10         16-QAM         H         100         311         1/49         10.01         9.34         19.35         33.01         -13.78           1882.50         10         16-QAM         H         100         313         1/0         9.34         9.27         18.61         33.01         -14.40           1910.00         10         16-QAM         H         100         313         1/0         9.24         18.61         33.01         -14.40           1910.00         15         QPSK         H         148         2         1/0         9.73         9.27         18.61         33.01         -14.42           1807.50         15         QPSK	1882.50	5	16-QAM	н	100	315	1 / 24	10.17	9.27	19.44	33.01	-13.57
1882.50         10         QPSK         H         100         313         1/0         10.32         9.7         19.59         33.01         -13.42           1910.00         10         QPSK         H         100         313         1/0         9.98         9.25         19.23         33.01         -13.78           1855.00         10         16-QAM         H         100         313         1/0         9.98         9.25         19.23         33.01         -13.66           1882.50         10         16-QAM         H         100         313         1/0         9.34         9.27         18.61         33.01         -14.40           1910.00         10         16-QAM         H         100         313         1/0         9.27         18.61         33.01         -14.40           1910.00         10         16-QAM         H         100         313         1/0         9.27         18.61         33.01         -14.40           182.50         15         QPSK         H         148         2         1/0         9.77         19.00         33.01         -14.42           182.50         15         QPSK         H         148         2 <td>1912.50</td> <td>5</td> <td>16-QAM</td> <td>н</td> <td>100</td> <td>313</td> <td>1 / 24</td> <td>8.99</td> <td>9.26</td> <td>18.25</td> <td>33.01</td> <td>-14.76</td>	1912.50	5	16-QAM	н	100	313	1 / 24	8.99	9.26	18.25	33.01	-14.76
1910.00         10         QPSK         H         100         313         1/0         9.98         9.25         19.23         33.01         -13.78           1855.00         10         16-QAM         H         100         311         1/49         10.01         9.34         19.35         33.01         -13.66           1882.50         10         16-QAM         H         100         313         1/0         9.34         9.27         18.61         33.01         -14.40           1910.00         10         16-QAM         H         100         313         1/0         9.21         9.25         18.46         33.01         -14.40           1910.00         10         16-QAM         H         100         313         1/0         9.21         9.25         18.46         33.01         -14.40           1900.00         15         QPSK         H         148         2         1/0         9.33         19.59         33.01         -14.01           1907.50         15         QPSK         H         145         359         1/0         9.76         9.27         18.03         33.01         -14.92           1807.50         15         16-QAM	1855.00	10	QPSK	н	100	311	1 / 49	11.23	9.34	20.57	33.01	-12.44
1855.00         10         16-QAM         H         100         311         1/49         10.01         9.34         19.35         33.01         -13.66           1882.50         10         16-QAM         H         100         313         1/0         9.34         9.27         18.61         33.01         -14.40           1910.00         10         16-QAM         H         100         313         1/0         9.21         9.25         18.61         33.01         -14.55           1857.50         15         QPSK         H         154         1         1/0         10.26         9.33         19.59         33.01         -14.55           1857.50         15         QPSK         H         148         2         1/0         9.73         9.27         19.00         33.01         -14.01           1807.50         15         QPSK         H         148         2         1/0         9.70         9.24         18.94         33.01         -14.07           1807.50         15         16-QAM         H         145         359         1/0         8.76         9.27         18.03         33.01         -14.42           182.50         15	1882.50	10	QPSK	н	100	313	1 / 0	10.32	9.27	19.59	33.01	-13.42
1882.50         10         16-QAM         H         100         313         1/0         9.34         9.27         18.61         33.01         -14.40           1910.00         10         16-QAM         H         100         313         1/0         9.21         9.25         18.61         33.01         -14.55           1857.50         15         QPSK         H         154         1         1/0         9.26         9.33         19.59         33.01         -14.55           1857.50         15         QPSK         H         148         2         1/0         9.73         9.27         19.00         33.01         -14.07           1907.50         15         QPSK         H         148         2         1/0         9.70         9.24         18.94         33.01         -14.07           1857.50         15         16-QAM         H         145         359         1/0         9.70         9.24         18.94         33.01         -14.02           1857.50         15         16-QAM         H         148         2         1/0         8.76         9.27         18.03         33.01         -14.98           1907.50         15         16-Q	1910.00	10	QPSK	н	100	313	1 / 0	9.98	9.25	19.23	33.01	-13.78
1910.00         10         16-QAM         H         100         313         1/0         9.21         9.25         18.46         33.01         -14.55           1857.50         15         QPSK         H         154         1         1/0         10.26         9.33         19.59         33.01         -14.55           1882.50         15         QPSK         H         148         2         1/0         9.73         9.27         19.00         33.01         -14.01           1907.50         15         QPSK         H         145         359         1/0         9.70         9.24         18.94         33.01         -14.07           1857.50         15         16-QAM         H         145         359         1/0         9.70         9.24         18.94         33.01         -14.42           1882.50         15         16-QAM         H         148         2         1/0         8.76         9.27         18.03         33.01         -14.98           1907.50         15         16-QAM         H         145         359         1/0         8.81         9.24         18.05         33.01         -14.96           1806.00         20         Q	1855.00	10	16-QAM	н	100	311	1 / 49	10.01	9.34	19.35	33.01	-13.66
1857.50         15         QPSK         H         154         1         1/0         10.26         9.33         19.59         33.01         -13.42           1882.50         15         QPSK         H         148         2         1/0         9.73         9.27         19.00         33.01         -14.01           1907.50         15         QPSK         H         145         359         1/0         9.70         9.24         18.94         33.01         -14.01           1857.50         15         16-QAM         H         145         1         1/0         9.70         9.24         18.94         33.01         -14.07           1857.50         15         16-QAM         H         145         1         1/0         9.26         9.33         18.59         33.01         -14.42           1882.50         15         16-QAM         H         148         2         1/0         8.76         9.27         18.03         33.01         -14.42           1800.00         20         QPSK         H         145         359         1/0         8.81         9.24         18.05         33.01         -14.40           1860.00         20         QPSK <td>1882.50</td> <td>10</td> <td>16-QAM</td> <td>н</td> <td>100</td> <td>313</td> <td>1 / 0</td> <td>9.34</td> <td>9.27</td> <td>18.61</td> <td>33.01</td> <td>-14.40</td>	1882.50	10	16-QAM	н	100	313	1 / 0	9.34	9.27	18.61	33.01	-14.40
1882.50         15         QPSK         H         148         2         1/0         9.73         9.27         19.00         33.01         -14.01           1907.50         15         QPSK         H         145         359         1/0         9.70         9.24         18.94         33.01         -14.01           1807.50         15         16-QAM         H         145         1         1/0         9.76         9.24         18.94         33.01         -14.07           1857.50         15         16-QAM         H         154         1         1/0         9.26         9.33         18.59         33.01         -14.07           1857.50         15         16-QAM         H         148         2         1/0         8.76         9.27         18.03         33.01         -14.98           1907.50         15         16-QAM         H         145         359         1/0         8.81         9.24         18.05         33.01         -14.96           1860.00         20         QPSK         H         147         2         1/0         9.53         9.24         18.51         33.01         -14.50           1905.00         20         16-QAM	1910.00	10	16-QAM	н	100	313	1 / 0	9.21	9.25	18.46	33.01	-14.55
1907.50         15         QPSK         H         145         359         1/0         9.70         9.24         18.94         33.01         -14.07           1857.50         15         16-QAM         H         154         1         1/0         9.26         9.33         18.59         33.01         -14.42           1882.50         15         16-QAM         H         148         2         1/0         8.76         9.27         18.03         33.01         -14.42           1882.50         15         16-QAM         H         148         2         1/0         8.76         9.27         18.03         33.01         -14.42           1800.00         15         16-QAM         H         145         359         1/0         8.81         9.27         18.05         33.01         -14.98           1800.00         20         QPSK         H         145         359         1/0         9.53         9.24         18.91         33.01         -14.96           1882.50         20         QPSK         H         144         358         1/99         9.53         9.24         18.77         33.01         -14.24           1860.00         20         1	1857.50	15	QPSK	н	154	1	1 / 0	10.26	9.33	19.59	33.01	-13.42
1857.50         15         16-QAM         H         154         1         1/0         9.26         9.33         18.59         33.01         -14.42           1882.50         15         16-QAM         H         148         2         1/0         8.76         9.27         18.03         33.01         -14.42           1882.50         15         16-QAM         H         148         2         1/0         8.76         9.27         18.03         33.01         -14.98           1907.50         15         16-QAM         H         145         359         1/0         8.81         9.24         18.05         33.01         -14.98           1860.00         20         QPSK         H         153         2         1/0         9.59         9.32         18.91         33.01         -14.10           1882.50         20         QPSK         H         147         2         1/0         9.24         9.27         18.51         33.01         -14.20           1905.00         20         QPSK         H         144         358         1/99         9.53         9.24         18.77         33.01         -14.24           1860.00         20         16-QA	1882.50	15	QPSK	н	148	2	1 / 0	9.73	9.27	19.00	33.01	-14.01
1882.50         15         16-QAM         H         148         2         1/0         8.76         9.27         18.03         33.01         -14.98           1907.50         15         16-QAM         H         145         359         1/0         8.81         9.27         18.03         33.01         -14.98           1907.50         15         16-QAM         H         145         359         1/0         8.81         9.24         18.05         33.01         -14.96           1860.00         20         QPSK         H         153         2         1/0         9.59         9.32         18.91         33.01         -14.96           1882.50         20         QPSK         H         147         2         1/0         9.24         9.27         18.51         33.01         -14.50           1905.00         20         QPSK         H         144         358         1/99         9.53         9.24         18.77         33.01         -14.50           1860.00         20         16-QAM         H         153         2         1/0         8.69         9.32         18.01         33.01         -15.00           1882.50         20         16-	1907.50	15	QPSK	н	145	359	1/0	9.70	9.24	18.94	33.01	-14.07
1907.50         15         16-QAM         H         145         359         1/0         8.81         9.24         18.05         33.01         -14.96           1860.00         20         QPSK         H         153         2         1/0         9.59         9.32         18.91         33.01         -14.96           1882.50         20         QPSK         H         147         2         1/0         9.59         9.27         18.51         33.01         -14.96           1882.50         20         QPSK         H         147         2         1/0         9.59         9.27         18.51         33.01         -14.90           1905.00         20         QPSK         H         144         358         1/99         9.53         9.24         18.77         33.01         -14.24           1860.00         20         GPSK         H         144         358         1/99         9.53         9.24         18.01         33.01         -14.24           1860.00         20         16-QAM         H         147         2         1/0         8.69         9.27         18.01         33.01         -15.36           1882.50         20         16-QAM	1857.50	15	16-QAM	н	154	1	1/0	9.26	9.33	18.59	33.01	-14.42
1860.00         20         QPSK         H         153         2         1/0         9.59         9.32         18.91         33.01         -14.10           1882.50         20         QPSK         H         147         2         1/0         9.24         9.27         18.91         33.01         -14.50           1905.00         20         QPSK         H         144         358         1/99         9.53         9.24         18.71         33.01         -14.50           1905.00         20         QPSK         H         144         358         1/99         9.53         9.24         18.77         33.01         -14.50           1860.00         20         16-QAM         H         153         2         1/0         8.69         9.32         18.01         33.01         -15.00           1882.50         20         16-QAM         H         147         2         1/0         8.38         9.27         17.65         33.01         -15.36           1905.00         20         16-QAM         H         144         358         1/99         8.53         9.24         17.77         33.01         -15.24           1852.50         5         QPSK	1882.50	15	16-QAM	н	148	2	1/0	8.76	9.27	18.03	33.01	-14.98
1882.50         20         QPSK         H         147         2         1/0         9.24         9.27         18.51         33.01         -14.50           1905.00         20         QPSK         H         144         358         1/99         9.53         9.24         18.77         33.01         -14.24           1860.00         20         GPSK         H         144         358         1/99         9.53         9.24         18.77         33.01         -14.24           1860.00         20         16-QAM         H         153         2         1/0         8.69         9.32         18.01         33.01         -15.00           1882.50         20         16-QAM         H         147         2         1/0         8.38         9.27         17.65         33.01         -15.36           1905.00         20         16-QAM         H         144         358         1/99         8.53         9.24         17.77         33.01         -15.36           1905.00         20         16-QAM         H         144         358         1/99         8.53         9.24         17.77         33.01         -15.24           1852.50         5 <td< td=""><td>1907.50</td><td>15</td><td>16-QAM</td><td>н</td><td>145</td><td>359</td><td>1/0</td><td>8.81</td><td>9.24</td><td>18.05</td><td>33.01</td><td>-14.96</td></td<>	1907.50	15	16-QAM	н	145	359	1/0	8.81	9.24	18.05	33.01	-14.96
1905.00         20         QPSK         H         144         358         1/99         9.53         9.24         18.77         33.01         -14.24           1860.00         20         16-QAM         H         153         2         1/0         8.69         9.32         18.01         33.01         -15.00           1882.50         20         16-QAM         H         147         2         1/0         8.38         9.27         17.65         33.01         -15.00           1882.50         20         16-QAM         H         147         2         1/0         8.38         9.27         17.65         33.01         -15.20           1905.00         20         16-QAM         H         144         358         1/99         8.53         9.24         17.77         33.01         -15.24           1852.50         5         QPSK         V         131         276         1/99         8.01         9.34         17.35         33.01         -15.24	1860.00	20	QPSK	н	153	2	1/0	9.59	9.32	18.91	33.01	-14.10
1860.00         20         16-QAM         H         153         2         1/0         8.69         9.2         18.01         33.01         -15.00           1882.50         20         16-QAM         H         147         2         1/0         8.38         9.27         17.65         33.01         -15.36           1905.00         20         16-QAM         H         144         358         1/99         8.53         9.24         17.77         33.01         -15.24           1852.50         5         QPSK         V         131         276         1/99         8.01         9.34         17.35         33.01         -15.66	1882.50	20	QPSK	н	147	2	1/0	9.24	9.27	18.51	33.01	-14.50
1882.50       20       16-QAM       H       147       2       1 / 0       8.38       9.27       17.65       33.01       -15.36         1905.00       20       16-QAM       H       144       358       1 / 99       8.53       9.24       17.77       33.01       -15.24         1852.50       5       QPSK       V       131       276       1 / 99       8.01       9.34       17.35       33.01       -15.66	1905.00	20	QPSK	н	144	358	1 / 99	9.53	9.24	18.77	33.01	-14.24
1905.00         20         16-QAM         H         144         358         1/99         8.53         9.24         17.77         33.01         -15.24           1852.50         5         QPSK         V         131         276         1/99         8.01         9.34         17.35         33.01         -15.66	1860.00	20	16-QAM	н	153	2	1/0	8.69	9.32	18.01	33.01	-15.00
1852.50 5 QPSK V 131 276 1/99 8.01 9.34 17.35 33.01 -15.66	1882.50	20	16-QAM	н	147	2	1/0	8.38	9.27	17.65	33.01	-15.36
	1905.00	20	16-QAM	н	144	358	1 / 99	8.53	9.24	17.77	33.01	-15.24
1852.50 5 (WCP) QPSK H 139 0 1/99 8.85 9.34 18.19 33.01 -14.82	1852.50	5	QPSK	V	131	276	1 / 99	8.01	9.34	17.35	33.01	-15.66
	1852.50	5 (WCP)	QPSK	н	139	0	1 / 99	8.85	9.34	18.19	33.01	-14.82

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 120 of 148
© 2017 PCTEST Engineering	aboratory Inc	•		V 6 3

© 2017 PCTEST Engineering Laboratory, Inc.



Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	Н	245	338	1 / 0	14.39	8.60	22.99	33.01	-10.02
2593.00	5	QPSK	н	224	335	1 / 24	15.90	8.53	24.43	33.01	-8.58
2687.50	5	QPSK	н	245	338	1 / 24	14.49	8.79	23.28	33.01	-9.73
2498.50	5	16-QAM	н	245	338	1 / 0	12.59	8.60	21.19	33.01	-11.82
2593.00	5	16-QAM	н	224	335	1 / 24	12.72	8.53	21.25	33.01	-11.76
2687.50	5	16-QAM	н	245	338	1 / 24	12.15	8.79	20.94	33.01	-12.07
2501.00	10	QPSK	Н	239	356	1 / 49	14.52	8.60	23.12	33.01	-9.89
2593.00	10	QPSK	н	224	335	1 / 49	14.21	8.53	22.74	33.01	-10.27
2685.00	10	QPSK	н	218	332	1 / 49	13.99	8.78	22.77	33.01	-10.24
2501.00	10	16-QAM	н	239	356	1 / 49	12.20	8.60	20.80	33.01	-12.21
2593.00	10	16-QAM	н	224	335	1 / 49	12.61	8.53	21.14	33.01	-11.87
2685.00	10	16-QAM	н	218	332	1 / 49	11.81	8.78	20.59	33.01	-12.42
2503.50	15	QPSK	Н	246	335	1 / 0	14.42	8.59	23.01	33.01	-10.00
2593.00	15	QPSK	н	224	335	1 / 74	15.73	8.53	24.26	33.01	-8.75
2682.50	15	QPSK	н	217	336	1 / 74	12.70	8.77	21.47	33.01	-11.54
2503.50	15	16-QAM	Н	246	335	1 / 0	12.31	8.59	20.90	33.01	-12.11
2593.00	15	16-QAM	н	224	335	1 / 74	14.28	8.53	22.81	33.01	-10.20
2682.50	15	16-QAM	н	217	336	1 / 0	11.76	8.77	20.53	33.01	-12.48
2506.00	20	QPSK	н	246	335	1 / 0	14.20	8.59	22.79	33.01	-10.22
2593.00	20	QPSK	н	224	335	50 / 25	14.91	8.53	23.44	33.01	-9.57
2680.00	20	QPSK	н	217	336	1 / 99	14.72	8.77	23.49	33.01	-9.52
2506.00	20	16-QAM	н	246	335	50 / 25	13.29	8.59	21.88	33.01	-11.13
2593.00	20	16-QAM	н	224	335	50 / 25	14.27	8.53	22.80	33.01	-10.21
2680.00	20	16-QAM	н	217	336	1 / 99	10.64	8.77	19.41	33.01	-13.60
2593.00	5	QPSK	V	224	335	1 / 99	10.83	8.53	19.36	33.01	-13.65
2593.00	5 (WCP)	QPSK	Н	335	335	1/0	11.36	8.53	19.89	33.01	-13.12

Table 7-7. EIRP Data (Band 41)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Dega 101 of 149				
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 121 of 148				
© 2017 PCTEST Engineering Laboratory, Inc. V 6.3								

Engineering Laboratory,



# 7.6.2 Antenna B 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]
824.70	1.4	QPSK	V	140	237	3/2	9.10	5.01	14.12	38.45	-24.34
836.50	1.4	QPSK	V	140	282	3/2	8.99	5.16	14.15	38.45	-24.30
848.30	1.4	QPSK	V	143	284	3/2	7.58	5.30	12.89	38.45	-25.56
824.70	1.4	16-QAM	V	140	237	3/2	9.19	5.01	14.20	38.45	-24.25
836.50	1.4	16-QAM	V	140	282	3/2	8.87	5.16	14.02	38.45	-24.43
848.30	1.4	16-QAM	V	143	284	1 / 0	7.22	5.30	12.52	38.45	-25.93
825.50	3	QPSK	V	140	237	1 / 14	9.00	5.02	14.02	38.45	-24.43
836.50	3	QPSK	V	140	282	1 / 0	9.23	5.16	14.39	38.45	-24.06
847.50	3	QPSK	V	143	284	1 / 0	8.68	5.29	13.97	38.45	-24.48
825.50	3	16-QAM	V	140	237	1 / 14	8.61	5.02	13.63	38.45	-24.82
836.50	3	16-QAM	V	140	282	1 / 0	8.63	5.16	13.79	38.45	-24.66
847.50	3	16-QAM	V	143	284	1 / 0	7.28	5.29	12.57	38.45	-25.88
826.50	5	QPSK	V	140	237	1 / 24	10.27	5.03	15.31	38.45	-23.15
836.50	5	QPSK	V	140	282	1 / 0	9.80	5.16	14.96	38.45	-23.49
846.50	5	QPSK	V	143	284	1 / 0	8.57	5.28	13.85	38.45	-24.60
826.50	5	16-QAM	V	140	237	1 / 24	9.80	5.03	14.84	38.45	-23.61
836.50	5	16-QAM	V	140	282	1 / 0	9.45	5.16	14.61	38.45	-23.84
846.50	5	16-QAM	V	143	284	1 / 0	8.62	5.28	13.90	38.45	-24.55
829.00	10	QPSK	V	140	237	1 / 49	9.55	5.06	14.62	38.45	-23.83
836.50	10	QPSK	V	140	282	1 / 0	9.40	5.16	14.55	38.45	-23.90
844.00	10	QPSK	V	143	284	1 / 0	9.16	5.25	14.41	38.45	-24.04
829.00	10	16-QAM	V	140	237	1 / 49	9.12	5.06	14.19	38.45	-24.26
836.50	10	16-QAM	V	140	282	1 / 0	9.15	5.16	14.30	38.45	-24.15
844.00	10	16-QAM	V	143	284	1 / 0	8.84	5.25	14.09	38.45	-24.36
826.50	5	QPSK	Н	140	237	1 / 74	8.95	5.03	13.98	38.45	-24.47
826.50	5 (WCP)	QPSK	Н	140	237	1 / 99	5.81	5.03	10.84	38.45	-27.61

#### Table 7-8. ERP Data (Band 5)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dama 400 af 440
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 122 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3

© 2017 PCTEST Engineering Laboratory, Ir



# 7.7 Radiated Spurious Emissions Measurements §2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h) §27.53(m)

## **Test Overview**

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized 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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Degra 102 of 149			
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 123 of 148			
© 2017 PCTEST Engineering Laboratory, Inc. V 6							



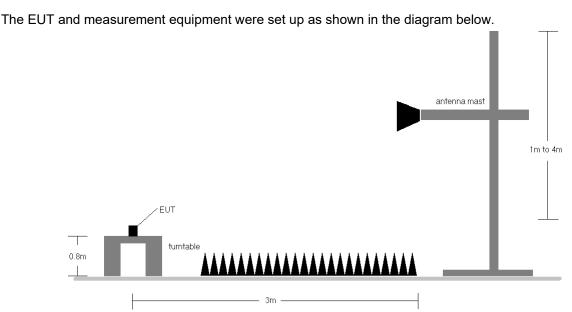


Figure 7-7. Test Instrument & Measurement Setup

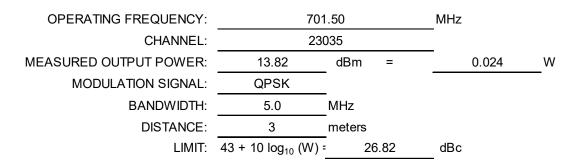
## Test Notes

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Dega 124 of 149				
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 124 of 148				
© 2017 PCTEST Engineering Laboratory, Inc. V 6.3								



# 7.7.1 Antenna A 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	217	213	-57.01	2.36	-54.65	68.5
2104.50	Н	219	11	-55.84	3.46	-52.38	66.2
2806.00	Н	-	-	-58.27	4.74	-53.52	67.3

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

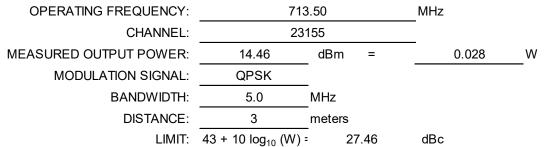
OPERATING FREQUENCY:	707	.50	MHz
CHANNEL:	230	)95	
MEASURED OUTPUT POWER:	14.53	dBm =	0.028 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	27.53	dBc

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	309	290	-58.51	2.54	-55.96	70.5
2122.50	Н	316	156	-57.21	3.42	-53.80	68.3
2830.00	Н	316	302	-57.30	4.85	-52.45	67.0
3537.50	Н	-	-	-57.56	6.26	-51.29	65.8

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

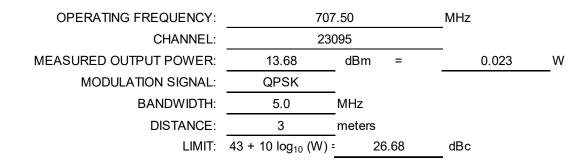
FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 125 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 125 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3





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	130	182	-53.86	2.72	-51.13	65.6
2140.50	Н	261	4	-54.16	3.37	-50.79	65.2
2854.00	Н	183	190	-57.87	4.96	-52.90	67.4
3567.50	Н	-	-	-57.84	6.31	-51.52	66.0

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

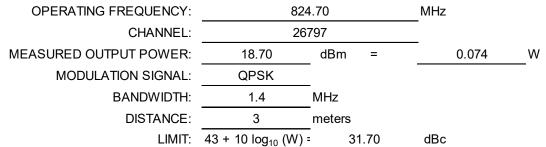


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1415.00	Н	222	101	-59.61	2.54	-57.06	70.7
2122.50	Н	213	107	-58.94	3.42	-55.53	69.2
2830.00	Н	-	-	-60.52	4.85	-55.67	69.3

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 106 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 126 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3





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]
1649.40	Н	344	112	-58.39	3.64	-54.74	73.4
2474.10	Н	277	65	-53.42	3.57	-49.86	68.6

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

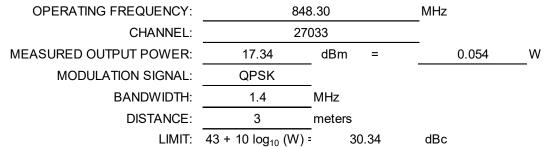
OPERATING FREQUENCY:	830	6.50	MHz
CHANNEL:	26	915	
MEASURED OUTPUT POWER:	19.06	dBm =	0.081 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	1.4	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W)	= 32.06	dBc

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]
1673.00	Н	102	181	-54.48	3.52	-50.96	70.0
2509.50	Н	301	215	-55.43	3.59	-51.84	70.9

Table 7-14. Radiated Spurious Data (Band 5/26 – Mid Channel)

FCC ID: A3LSMN935KOR	PCTEST	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 107 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 127 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3





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]
1696.60	Н	134	138	-56.27	3.40	-52.88	70.2
2544.90	Н	100	137	-52.31	3.74	-48.57	65.9

Table 7-15. Radiated Spurious Data (Band 5/26 – High Channel)

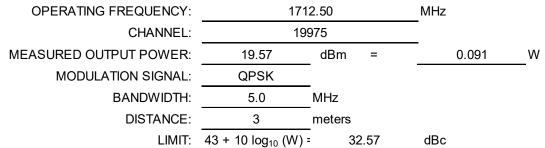
OPERATING FREQUENCY:	836	6.50	MHz
CHANNEL:	269	915	
MEASURED OUTPUT POWER:	17.75	dBm =	0.060 W
MODULATION SIGNAL:	QPSK	-	
BANDWIDTH:	1.4	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W)	30.75	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	Н	159	126	-56.29	3.52	-52.77	70.5
2509.50	Н	220	359	-52.97	3.59	-49.38	67.1

Table 7-16. Radiated Spurious Data with WCP (Band 5/26 – Mid Channel)

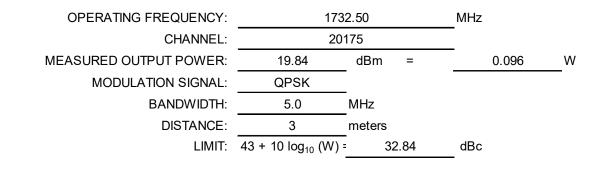
FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 100 of 140
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 128 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3





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]
3425.00	Н	-	-	-61.59	9.87	-51.72	71.3
5137.50	Н	100	0	-57.15	10.76	-46.39	66.0
6850.00	Н	-	-	-58.56	11.67	-46.89	66.5

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

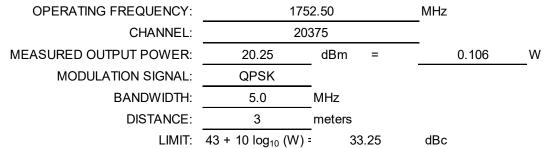


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3465.00	Н	-	-	-61.18	9.91	-51.27	71.1
5197.50	Н	100	346	-57.02	10.75	-46.28	66.1
6930.00	Н	-	-	-58.60	11.76	-46.84	66.7

Table 7-18. Radiated Spurious Data (Band 4 – Mid Channel)

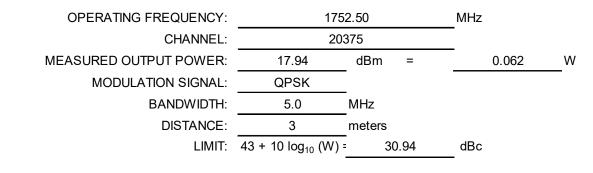
FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Degra 100 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 129 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3





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]
3505.00	Н	-	-	-61.48	9.95	-51.53	71.8
5257.50	Н	100	350	-56.52	10.71	-45.81	66.1
7010.00	Н	-	-	-59.30	11.83	-47.47	67.7

Table 7-19. Radiated Spurious Data (Band 4 – High Channel)

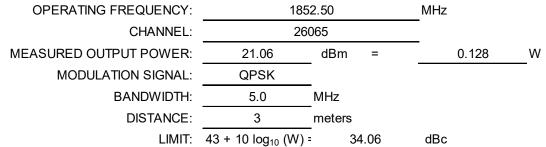


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3505.00	Н	-	-	-61.62	9.95	-51.67	69.6
5257.50	Н	-	-	-56.12	10.71	-45.41	63.4
7010.00	Н	-	-	-58.93	11.83	-47.10	65.0

Table 7-20. Radiated Spurious Data with WCP (Band 4 – High Channel)

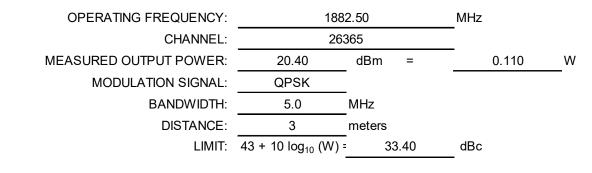
FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Dega 120 of 149				
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 130 of 148				
© 2017 PCTEST Engineering	© 2017 PCTEST Engineering Laboratory, Inc.							





Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3705.00	Н	-	-	-58.17	9.52	-48.65	69.7
5557.50	Н	100	0	-56.54	11.03	-45.51	66.6
7410.00	Н	-	-	-55.84	10.95	-44.89	65.9

Table 7-21. Radiated Spurious Data (Band 2/25 – Low Channel)

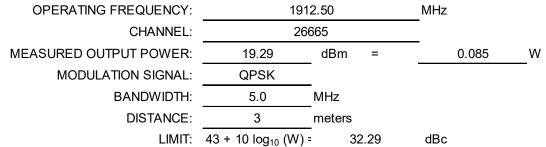


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3765.00	Н	-	-	-55.71	9.37	-46.34	66.7
5647.50	Н	100	0	-56.42	11.23	-45.19	65.6
7530.00	Н	-	-	-59.13	11.13	-48.00	68.4

Table 7-22. Radiated Spurious Data (Band 2/25 – Mid Channel)

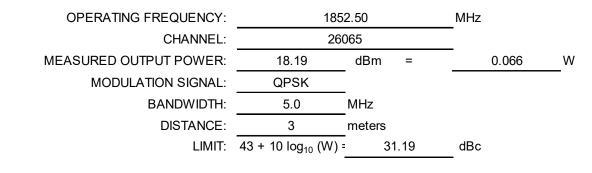
FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 121 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 131 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3





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]
3825.00	Н	100	0	-55.24	9.33	-45.90	65.2
5737.50	Н	100	0	-56.35	11.39	-44.96	64.3
7650.00	Н	-	-	-58.34	11.34	-47.00	66.3

Table 7-23. Radiated Spurious Data (Band 2/25 – High Channel)

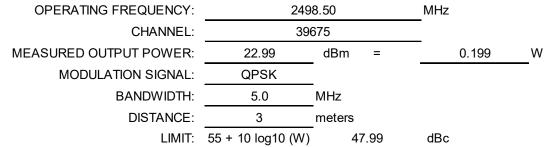


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3705.00	Н	-	-	-58.06	9.52	-48.54	66.7
5557.50	Н	-	-	-56.51	11.03	-45.48	63.7
7410.00	Н	-	-	-57.54	10.95	-46.59	64.8

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 122 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 132 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.	·		V 6.3





	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4997.00	Н	-	-	-56.18	10.14	-46.04	69.0

Table 7-25. Radiated Spurious Data (Band 41 – Low Channel)

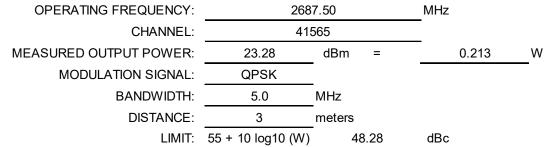
OPERATING FREQUENCY:	259	3.00	MHz
CHANNEL:	406	520	_
MEASURED OUTPUT POWER:	24.43	dBm =	0.278 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	55 + 10 log10 (W)	49.43	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5186.00	Η	136	0	-54.20	10.40	-43.80	68.2
7779.00	Н	-	-	-55.52	12.24	-43.28	67.7

Table 7-26. Radiated Spurious Data (Band 41 – Mid Channel)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 122 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 133 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3





Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5375.00	Н	-	-	-55.03	10.38	-44.65	67.9

Table 7-27. Radiated Spurious Data (Band 41 – High Channel)

OPERATING FREQUENCY:	259	3.00	MHz
CHANNEL:	406	620	_
MEASURED OUTPUT POWER:	19.89	dBm =	0.097 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	55 + 10 log10 (W)	44.89	dBc

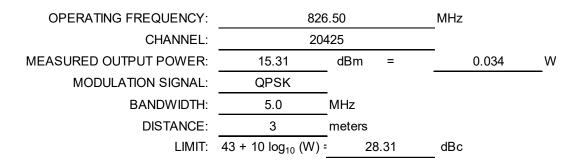
Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5186.00	Н	100	326	-47.82	10.40	-37.41	57.3
7779.00	Н	100	171	-53.47	12.24	-41.23	61.1
10372.00	Н	-	-	-53.75	13.13	-40.62	60.5

Table 7-28. Radiated Spurious Data with WCP (Band 41 – Mid Channel)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 124 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 134 of 148
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3



# 7.7.2 Antenna B Radiated Spurious Emissions Measurements



Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1653.00	Н	-	-	-59.87	3.62	-56.25	71.6
2479.50	Н	-	-	-55.79	3.56	-52.23	67.5
3306.00	Н	-	-	-56.47	5.83	-50.64	65.9

Table 7-29. Radiated Spurious Data (Band 5 – Low Channel)

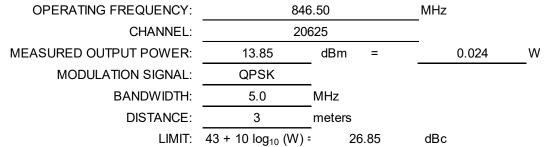
OPERATING FREQUENCY:	836	.50	MHz
CHANNEL:	205	525	
MEASURED OUTPUT POWER:	14.96	dBm =	0.031 W
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	43 + 10 log ₁₀ (W) =	27.96	dBc

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	Н	-	-	-59.28	3.52	-55.76	70.7
2509.50	Н	-	-	-53.91	3.59	-50.32	65.3
3346.00	Н	-	-	-57.21	5.87	-51.34	66.3

Table 7-30. Radiated Spurious Data (Band 5 – Mid Channel)

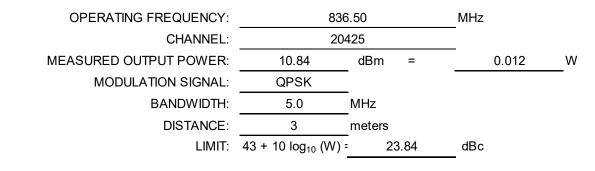
FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 135 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		
© 2017 PCTEST Engineering Laboratory, Inc.				V 6.3





Frequen [MHz]	cy Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1693.00	ЭН	-	-	-58.65	3.42	-55.23	69.1
2539.50	ЭН	-	-	-56.55	3.72	-52.83	66.7
3386.00	) Н	-	-	-56.48	5.91	-50.57	64.4

Table 7-31. Radiated Spurious Data (Band 5 – High Channel)



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	Н	258	331	-56.57	3.52	-53.05	63.9
2509.50	Н	322	330	-56.16	3.59	-52.57	63.4
3346.00	Н	-	-	-56.65	5.87	-50.78	61.6

Table 7-32. Radiated Spurious Data with WCP (Band 5 – Mid Channel)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 136 of 148	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 136 01 146	
© 2017 PCTEST Engineering Laboratory, Inc.					



### 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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Degra 127 of 149	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 137 of 148	
© 2017 PCTEST Engineering Laboratory, Inc.					



# Band 12 Frequency Stability Measurements §2.1055 §27.54

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23790	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	707,500,158	158	0.0000223
100 %		- 30	707,500,118	118	0.0000167
100 %		- 20	707,500,004	4	0.0000006
100 %		- 10	707,500,419	419	0.0000592
100 %		0	707,499,890	-110	-0.0000155
100 %		+ 10	707,499,896	-104	-0.0000147
100 %		+ 20	707,500,386	386	0.0000546
100 %		+ 30	707,499,914	-86	-0.0000122
100 %		+ 40	707,499,874	-126	-0.0000178
100 %		+ 50	707,499,880	-120	-0.0000170
BATT. ENDPOINT	3.40	+ 20	707,500,140	140	0.0000198

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 129 of 149	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 138 of 148	
© 2017 PCTEST Engineering Laboratory, Inc.					



### Band 12 Frequency Stability Measurements §2.1055 §27.54

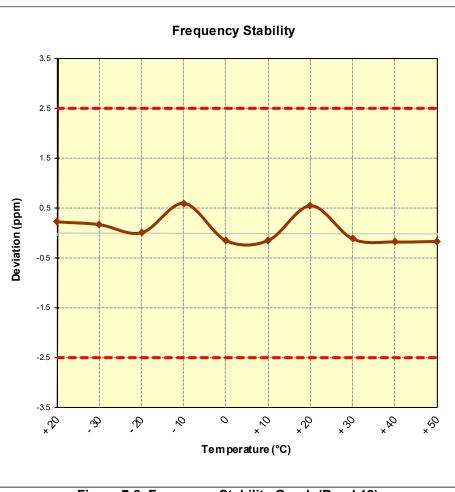


Figure 7-8. Frequency Stability Graph (Band 12)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 139 of 148	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 139 01 146	
© 2017 PCTEST Engineering Laboratory, Inc.					



# Band 26 Frequency Stability Measurements §22.1055 §22.355

OPERATING FREQUENCY:	831,500,000	Hz
CHANNEL:	26865	_
REFERENCE VOLTAGE:	3.80	VDC
<b>DEVIATION LIMIT</b> :	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	831,500,073	73	0.000088
100 %		- 30	831,500,361	361	0.0000434
100 %		- 20	831,499,742	-258	-0.0000310
100 %		- 10	831,499,901	-99	-0.0000119
100 %		0	831,500,090	90	0.0000108
100 %		+ 10	831,499,869	-131	-0.0000158
100 %		+ 20	831,500,378	378	0.0000455
100 %		+ 30	831,499,923	-77	-0.0000093
100 %		+ 40	831,499,942	-58	-0.0000070
100 %		+ 50	831,499,900	-100	-0.0000120
BATT. ENDPOINT	3.40	+ 20	831,499,987	-13	-0.0000016

Table 7-34. Frequency Stability Data (Band 26)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 140 of 148	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 140 01 146	
© 2017 PCTEST Engineering Laboratory, Inc.					



### Band 26 Frequency Stability Measurements §2.1055 §22.355

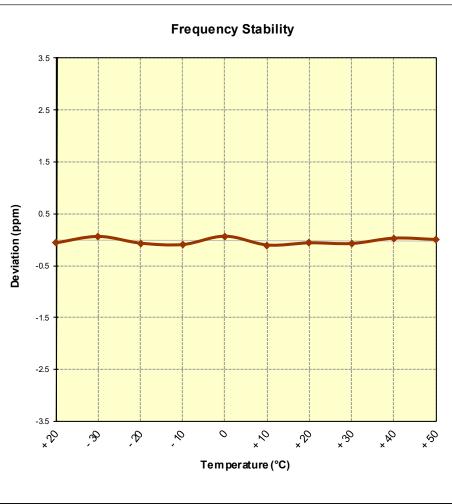


Figure 7-9. Frequency Stability Graph (Band 26)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 141 of 149	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 141 of 148	
© 2017 PCTEST Engineering Laboratory, Inc.					



# Band 4 Frequency Stability Measurements §2.1055 §§27.54

OPERATING FREQUENCY:	1,732,500,000	Hz
CHANNEL:	20175	-
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,732,499,894	-106	-0.0000061
100 %		- 30	1,732,500,103	103	0.0000059
100 %		- 20	1,732,499,879	-121	-0.0000070
100 %		- 10	1,732,499,836	-164	-0.0000095
100 %		0	1,732,500,111	111	0.0000064
100 %		+ 10	1,732,499,820	-180	-0.0000104
100 %		+ 20	1,732,499,890	-110	-0.0000063
100 %		+ 30	1,732,499,870	-130	-0.0000075
100 %		+ 40	1,732,500,046	46	0.0000027
100 %		+ 50	1,732,500,002	2	0.0000001
BATT. ENDPOINT	3.40	+ 20	1,732,500,212	212	0.0000122

Table 7-35. Frequency Stability Data (Band 4)

### Note:

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 142 of 148	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 142 01 146	
© 2017 PCTEST Engineering	© 2017 PCTEST Engineering Laboratory, Inc.				



### **Band 4 Frequency Stability Measurements** §2.1055 §§27.54

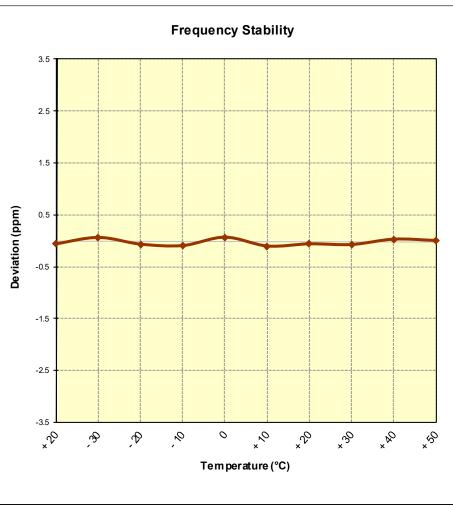


Figure 7-10. Frequency Stability Graph (Band 4)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 142 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 143 of 148
© 2017 PCTEST Engineering Laboratory, Inc.				V 6.3



## Band 25 Frequency Stability Measurements §2.1055 §24.235

OPERATING FREQUENCY:	1,882,500,000	Hz
CHANNEL:	26365	_
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,882,500,006	6	0.000003
100 %		- 30	1,882,499,852	-148	-0.0000079
100 %		- 20	1,882,500,370	370	0.0000197
100 %		- 10	1,882,499,739	-261	-0.0000139
100 %		0	1,882,499,682	-318	-0.0000169
100 %		+ 10	1,882,500,280	280	0.0000149
100 %		+ 20	1,882,500,008	8	0.0000004
100 %		+ 30	1,882,499,968	-32	-0.0000017
100 %		+ 40	1,882,499,811	-189	-0.0000100
100 %		+ 50	1,882,500,278	278	0.0000148
BATT. ENDPOINT	3.40	+ 20	1,882,499,897	-103	-0.0000055

Table 7-36. Frequency Stability Data (Band 25)

### Note:

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 144 of 148	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 144 01 146	
© 2017 PCTEST Engineering	2017 PCTEST Engineering Laboratory, Inc.				



### Band 25 Frequency Stability Measurements §2.1055 §24.235

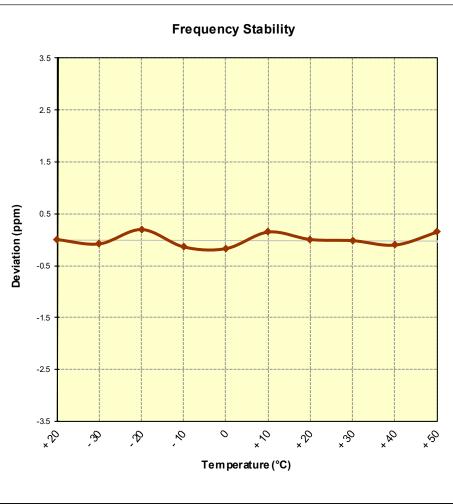


Figure 7-11. Frequency Stability Graph (Band 25)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 145 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 145 of 148
© 2017 PCTEST Engineering	© 2017 PCTEST Engineering Laboratory, Inc.			



# Band 41 Frequency Stability Measurements §2.1055 §27.54

OPERATING FREQUENCY:	2,593,000,000	Hz
CHANNEL:	40620	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	2,593,000,184	184	0.0000071
100 %		- 30	2,593,000,174	174	0.0000067
100 %		- 20	2,593,000,159	159	0.0000061
100 %		- 10	2,592,999,862	-138	-0.0000053
100 %		0	2,592,999,905	-95	-0.0000037
100 %		+ 10	2,593,000,230	230	0.000089
100 %		+ 20	2,592,999,979	-21	-0.0000008
100 %		+ 30	2,593,000,153	153	0.0000059
100 %		+ 40	2,593,000,141	141	0.0000054
100 %		+ 50	2,593,000,208	208	0.0000080
BATT. ENDPOINT	3.40	+ 20	2,593,000,096	96	0.0000037

Table 7-37. Frequency Stability Data (Band 41)

### Note:

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

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 146 of 148	
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 146 01 146	
© 2017 PCTEST Engineering	© 2017 PCTEST Engineering Laboratory, Inc.				



## Band 41 Frequency Stability Measurements §2.1055 §27.54

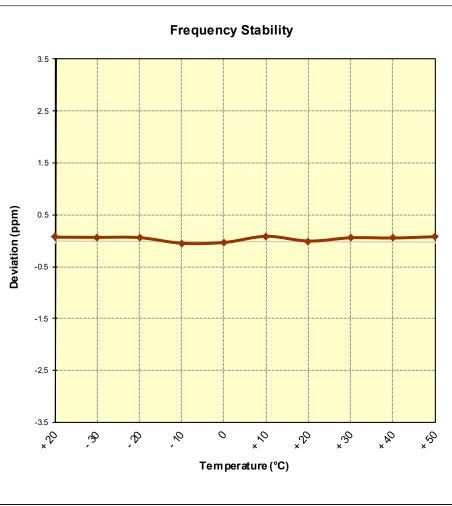


Figure 7-12. Frequency Stability Graph (Band 41)

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	<b>Reviewed by:</b> Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 147 of 148
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 147 01 146
© 2017 PCTEST Engineering	Laboratory, Inc.			V 6.3



### 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMN935KOR** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

FCC ID: A3LSMN935KOR		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 149 of 149
1M1703230122-03.A3L	6/1 - 6/28/2016	Portable Handset		Page 148 of 148
© 2017 PCTEST Engineering Laboratory, Inc.				V 6.3