

7.4 Band Edge Emissions at Antenna Terminal

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

The minimum permissible attenuation level for Band 7 is as noted in the Test Notes on the following page.

Test Procedure Used

KDB 971168 D01 v03 – Section 6.0

Test Settings

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

Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

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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.

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.

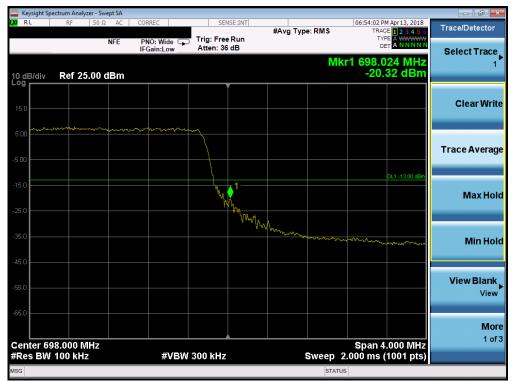
Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P) dB$ on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P) dB$ on all frequencies between 5 megahertz and X megahertz from the channel edge, 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.

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Plot 7-111. Lower Band Edge Plot (Band 71 - 5.0MHz QPSK - Full RB Configuration)



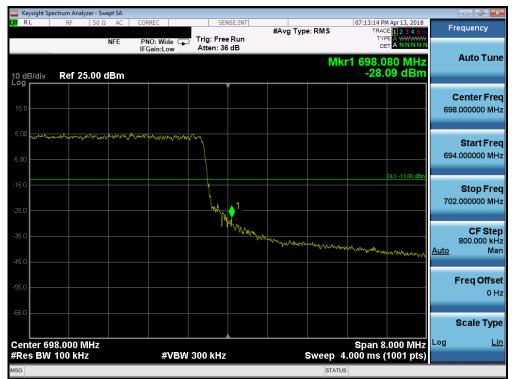
Plot 7-112. Upper Band Edge Plot (Band 71 - 5.0MHz QPSK - Full RB Configuration)

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Keysight Spectrum Analy RL RF	50 Ω AC	CORREC	SENSE:INT		07:11:50 PM Apr 13, 2018	
11	NFE	PNO: Wide	Trig: Free Run	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Frequency
		IFGain:Low	Atten: 36 dB			Auto Tur
0 dB/div Ref 25	.00 dBm			M	kr1 662.952 MHz -26.65 dBm	Auto Tu
						Center Fre
15.0						663.000000 MI
5.00			, N	and the strate of the section	Month and the second	Start Fr
5.00						659.000000 M
					DL1 -13.00 dBm	
5.0						Stop Fr
5.0			<u>1</u> <u></u> \			667.000000 M
			, AW			
5.0		Burnat	werter wert Prylipper			CF St 800.000 k
5.0	Mayour And age	white is a second se				<u>Auto</u> M
5.0						
i5.0						Freq Offs
						0
65.0						Scale Ty
enter 663.000 N Res BW 100 kHz		#\/D\A	/ 300 kHz	Curoon	Span 8.000 MHz 4.000 ms (1001 pts)	Log <u>l</u>
		#VBV	500 KHZ	Sweep		

Plot 7-113. Lower Band Edge Plot (Band 71 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-114. Upper Band Edge Plot (Band 71 - 10.0MHz QPSK - Full RB Configuration)

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	ectrum Analyz									_	
LXI RL	RF	50 Ω AC	CORREC		ISE:INT	#Avg Typ	e: RMS	TRAC	M Apr 13, 2018 E 1 2 3 4 5 6	Fr	equency
		NFE	PNO: Wide 🕞 IFGain:Low	Trig: Free Atten: 36							
							Mk	r1 663.0	00 MHz		Auto Tune
10 dB/div Log	Ref 25	.00 dBm						-29.1	15 dBm		
										c	enter Fred
15.0										663	.000000 MH:
5.00											
						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Start Free
-5.00										657	.000000 MH;
-15.0									DL1 -13.00 dBm		
-15.0										660	Stop Free
-25.0					1,7					009	.000000 1911
			m	m north and	W						CF Step
-35.0		m	~~~~							1 <u>Auto</u>	.200000 MH Ma
-45.0	ممرمم	~~								Auto	IVIAI
~~~~											Freq Offse
-55.0											0 H
-65.0											
										:	Scale Type
Center 66	3.000 M	Hz						Span 1		Log	Lir
#Res BW			#VBW	470 kHz			Sweep 1	1.000 ms (1001 pts)		
MSG							STATU	s			

Plot 7-115. Lower Band Edge Plot (Band 71 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-116. Upper Band Edge Plot (Band 71 - 15.0MHz QPSK - Full RB Configuration)

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Keysight Spectrum Analyzer - Swep					
LXI RL RF 50 Ω	AC CORREC	SENSE:INT	#Avg Type: RMS	06:27:12 PM Apr 13, 2018 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 25.00 dl	NFE PNO: Wide IFGain:Low	Trig: Free Run Atten: 36 dB	Mk	r1 663.000 MHz -31.07 dBm	Auto Tune
					Center Free 663.000000 MH
-5.00					Start Free 655.000000 MH
-15.0		1 7		DL1 -13.00 dBm	Stop Free 671.000000 MH
-35.0	- and the second second	W			CF Stej 1.600000 MH <u>Auto</u> Ma
-55.0					Freq Offse 0 H
-65.0					Scale Type
Center 663.000 MHz #Res BW 200 kHz	#VBW	620 kHz	Sweep 7	Span 16.00 MHz I.000 ms (1001 pts)	Log <u>Li</u> i
MSG			STATU	S	

Plot 7-117. Lower Band Edge Plot (Band 71 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-118. Upper Band Edge Plot (Band 71 - 20.0MHz QPSK - Full RB Configuration)

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Plot 7-119. Lower Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



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U RL	pectrum Analy RF	50 Ω	AC	CORREC		SEI	NSE:INT			11:46:30 P	M Mar 13, 2018	-	
		N	FE	PNO: Wi	le 🕟	Trig: Fre		#Avg Typ	e: RMS	TY	DE 1 2 3 4 5 6 PE A WWWW	F	requency
	_			IFGain:Lo	w _	Atten: 36	6 dB						Auto Tun
0 dB/div	Ref 2	5.00 dE	Вm						Mk	r1 697.9 -31.	20 MHz 88 dBm		Autoru
													Center Fre
15.0													8.000000 MH
5.00									1	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m		
5.00													Start Fre
5.00												69	6.000000 MH
											DL1 -13.00 dBm		
15.0									~			70	Stop Fre 0.000000 Mi
25.0									AN A			70	0.000000 Wif
		- Carlo and		m	mm	m	www.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					CF Ste
مسہرہ ا			100									Auto	400.000 kl
45.0												Auto	IVIA
													Freq Offs
55.0													0H
65.0													
													Scale Typ
	98.000 N									Span 4	.000 MHz	Log	L
Res BW	100 kH	z		#	VBW 3	300 kHz			Sweep 2	.000 ms ((1001 pts)		

Plot 7-121. Lower Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-122. Upper Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

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Keysight Spectrum						
IXI RL RF	50 Ω AC		SENSE:INT #Av ree Run	g Type: RMS	11:54:14 PM Mar 13, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWW	Frequency
10 dB/div Ref		IFGain:Low Atten:		Mk	r1 697.612 MHz -32.95 dBm	Auto Tune
15.0						Center Fre 698.000000 MH
5.00						Start Fre 696.000000 MH
-15.0				MMM	DL1 -13.00 dBm	Stop Fre 700.000000 MH
35.0	and the second	1	munnan	NANY		CF Ste 400.000 kH <u>Auto</u> Ma
55.0						Freq Offs 0 H
-65.0						Scale Typ
Center 698.00 #Res BW 100		#VBW 300 kł	lz	Sweep 2	Span 4.000 MHz 2.000 ms (1001 pts)	

Plot 7-123. Lower Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-124. Upper Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

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	ght Spect														
LXI RL		RF	50 :	Ω AC	CORF	REC			SE:INT	#Avg Typ	e: RMS	TRA	M Mar 14, 2018 CE <mark>1 2 3 4 5 6</mark>		Frequency
10 dB/e	div	Ref 2	25.00	NFE dBm	PN0 IFGa	D: Wide ain:Low		rig: Free Atten: 36			Mk	□ (r1 697.8	B56 MHz 46 dBm		Auto Tune
Log														6	Center Freq 98.000000 MHz
-5.00											Junnon	ha for the second se	DL1 -13.00 dBm	6	Start Freq 94.000000 MHz
-15.0 -										No. MM				70	Stop Freq 02.000000 MHz
-35.0	nurma	مرمور	enge fan Tyn	gaar oo gaalaa ah	- 	p.r.a.	sylv-rythese		and an and a star	MAN T				<u>Auto</u>	CF Step 800.000 kH: Mar
-55.0 —															Freq Offse 0 H:
-65.0												Span 8	3.000 MHz	Log	Scale Type Lir
#Res						#VE	3W 30	0 kHz				4.000 ms	(1001 pts)		
MSG											STATU	IS			

Plot 7-125. Lower Band Edge Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-126. Upper Band Edge Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

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Plot 7-127. Lower Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-128. Lower Extended Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

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Keysight RL	Spectrum Analyzer -	Swept SA	CORREC	SENSE:INT			10:26:25 PM	Mar 13, 2018	
	10 50	NFE	PNO: Wide G		#Avg Typ	e:RMS	TRACE	1 2 3 4 5 6 A WWWWW A N N N N N	Frequency
0 dB/div	Ref 25.00) dBm	IFGalli.LOW	Allen. oo ub		Mk	r1 849.00 -23.4	00 MHz 6 dBm	Auto Tur
og									Center Fre 849.000000 MH
i.oo ——			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						Start Fr 847.000000 Mi
5.0		/		1				1 <u>L1 -13.00 dBm</u>	Stop Fre 851.000000 Mi
15.0	man			~~~~,		-t	~		CF Ste 400.000 kł <u>Auto</u> Ma
5.0								m.	Freq Offs 0 1
i5.0									Scale Typ
	849.000 MHz W 15 kHz		#VBW	47 kHz		Sweep 7	Span 4.0 7.000 ms (1		Log <u>L</u>
G						STATU	s		

Plot 7-129. Upper Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-130. Upper Extended Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

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	Spectrum Analy										
RL	RF	50 Ω AC	PNO: Wid	le 👝 Trig: Fr		#Avg Typ	e: RMS	TRACE	Mar 13, 2018 1 2 3 4 5 6 A WWWWW A N N N N N	F	requency
0 dB/div	Ref 25	.00 dBm	IFGain:Lo	Atten: 3	36 dB		Mk	r1 823.9			Auto Tur
15.0						and we are a second and a second	mange	where have the	Man		Center Fre 4.000000 M⊦
5.00										822	Start Fr 2.000000 MI
5.0				mmen and	1				DL1 -13.00 dBm	826	Stop Fr 6.000000 M
35.0 	ng mangarangan ang mangan ang mang Ang mangan ang mangan an	and the second sec	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							<u>Auto</u>	CF Ste 400.000 kl M
5.0											Freq Offs 0
	324.000 N							Span <u>4</u> .	000 MHz	Log	Scale Typ
Res BV	V 100 kHz	2	#	VBW 300 kH	z		Sweep 2	.000 ms (1001 pts)		
G							STATUS	5			

Plot 7-131. Lower Band Edge Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-132. Upper Band Edge Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

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	pectrum Analyze										
X/RL	RF	50 Ω AC	CORREC		ISE:INT	#Avg Typ	e: RMS	TRAC	4 Mar 13, 2018 E 1 2 3 4 5 6	F	requency
		NFE	PNO: Wide IFGain:Low	Trig: Free Atten: 36				DE			
10 dB/div Log	Ref 25.	00 dBm					Mkı	1 823.9 -20.	92 MHz 17 dBm		Auto Tune
				Ì							Center Fre
15.0										82	4.000000 MH
5.00					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Serve and	$\sim n \sim n$	· · · · · · · · · · · · · · · · · · ·		Start Fre
5.00										82	Start Fre 2.000000 MH
-5.00									DL1 -13.00 dBm		
-15.0					1					82	Stop Fre 6.000000 MH
-25.0			www.	www.whyth						02	5.000000 Milli
-35.0	volume	······································	www.www.w								CF Ste
-35.0										Auto	400.000 kH Ma
-45.0										Mato	mo
											Freq Offse
-55.0											. он
-65.0											
											Scale Typ
	24.000 MI	Hz						Span 4	.000 MHz	Log	Li
#Res BW	100 kHz		#VBW	300 kHz			Sweep 2	.000 ms (1001 pts)		
ISG							STATUS				

Plot 7-133. Lower Band Edge Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-134. Upper Band Edge Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)

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	ectrum Analyz										
XI RL	RF	50 Ω AC	PNO: Wide		NSE:INT	#Avg Typ	e: RMS	TRAC	Mar 13, 2018 E 1 2 3 4 5 6 E A WWWWW T A N N N N N	F	requency
10 dB/div	Ref 25	.00 dBm	IFGain:Low	Atten: 36			Mki	1 823.9			Auto Tune
15.0											Center Fre 4.000000 MH
-5.00						Why more harding	₩ <i>₽</i> ₩₩₩₩			82	Start Fre 0.000000 MH
.15.0				Processor (1997)	1 w				DL1 -13.00 dBm	82	Stop Fre 8.000000 MH
35.0 ~~~~	Nor with	NE MARAM	enner allandard	North Martine Martine						<u>Auto</u>	CF Ste 800.000 kH Ma
55.0											Freq Offs 0 H
	24.000 M							Span 8.	000 MHz	Log	Scale Typ Li
Res BW	100 kHz		#VB	W 300 kHz			Sweep 4	.000 ms (1001 pts)		

Plot 7-135. Lower Band Edge Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)



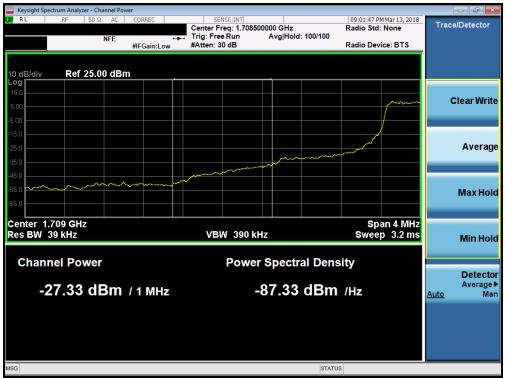
Plot 7-136. Upper Band Edge Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)

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Plot 7-137. Lower Band Edge Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-138. Lower Extended Band Edge Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

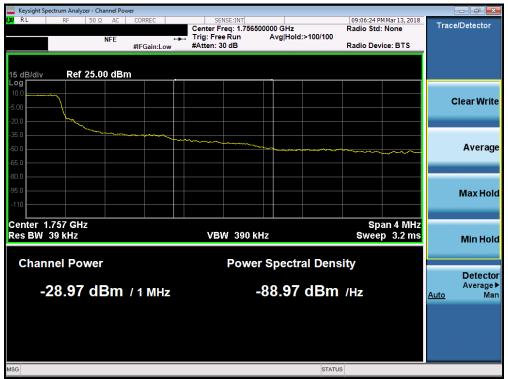
FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyze	50 Ω AC CORRE	EC SEI	NSE:INT	09:00	5:01 PM Mar 13, 2018	
	NFE PNO IFGa	: Wide Trig: Free in:Low Atten: 36	#Avg Type Run		TYPE A WWWW DET A NNNN	Frequency
dB/div Ref 25.	00 dBm			Mkr1 1.75	55 000 GHz 25.18 dBm	Auto Tu
5.0						Center Fr 1.755000000 G
						Start Fr 1.753000000 G
i.0			1		DL1 -13.00 dBm	Stop Fr 1.757000000 G
5.0				- Maria		CF Sto 400.000 k uto M
.0					Marine Marin	Freq Offs 0
5.0						Scale Ty
enter 1.755000 G Res BW 15 kHz	iHz	#VBW 47 kHz		Spa Sweep 7.000 i	an 4.000 MHz ms (1001 pts)	og <u>l</u>

Plot 7-139. Upper Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-140. Upper Extended Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)

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	Spectrum Analyz										
RL	RF	50 Ω AC	PNO: Wide			#Avg Typ	oe:RMS	TRA	PM Apr 16, 2018 CE 1 2 3 4 5 6 PE A WWWWW ET A NNNNN	Fr	equency
0 dB/div	Ref 25	.00 dBm	n Gam.Low				Mkr1	1.780 (-22.5	000 GHz 92 dBm		Auto Tun
15.0											Center Fre
5.00									DL1 -13.00 dBm	1.778	Start Fre 3000000 GH
25.0	ىر				1					1.782	Stop Fre 2000000 GH
35.0	mark				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		mm.		<u>Auto</u>	CF Ste 400.000 kH Ma
45.0 55.0 									when the second		F req Offs 0 H
65.0											Scale Typ
	I.780000 0 V 15 kHz	GHz	#VBV	V 47 kHz			Sweep	Span 4 7.000 ms	l.000 MHz (1001 pts)	Log	<u> </u>
SG							STATU	s			

Plot 7-141. Upper Band Edge Plot (Band 66 - 1.4MHz QPSK - Full RB Configuration)



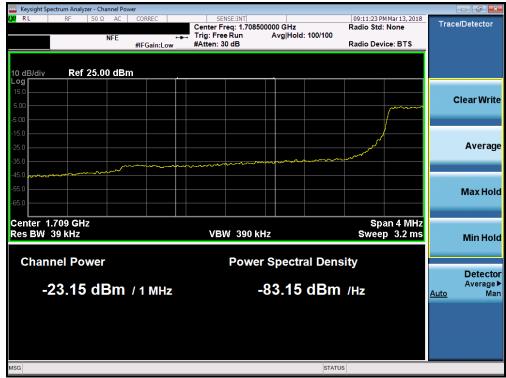
Plot 7-142. Upper Extended Band Edge Plot (Band 66 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 02 of 167
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	Spectrum Analy				_								
RL	RF		AC	CORREC PNO: W IFGain:L	ide 🖵	Trig: Fre Atten: 30		#Avg Ty	pe: RMS	TRA	M Mar 13, 2018 CE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	F	requency
0 dB/div og	Ref 2	5.00 dl	Bm	II Gam.					Mkr	1 1.709 § -23.	96 GHz 23 dBm		Auto Tun
15.0													Center Fre
5.00									~~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1.70	Start Fr 08000000 GI
5.0						(1				DL1 -13.00 dBm	1.71	Stop Fr 2000000 G
5.0	~~~~	~~~	$\sqrt{\sqrt{2}}$		~~~							<u>Auto</u>	CF Sto 400.000 k M
5.0													Freq Offs 0
enter 1	.710000	GHz								Span 4	.000 MHz	Log	Scale Typ
Res BW	V 30 kHz			\$	¢VB₩	100 kHz			Sweep :	2.000 ms	(1001 pts)		
G									STATU	JS			

Plot 7-143. Lower Band Edge Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



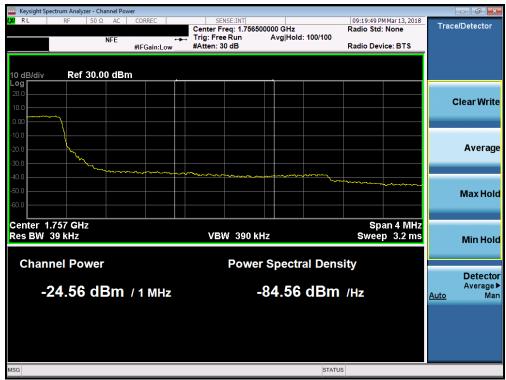
Plot 7-144. Lower Extended Band Edge Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 04 of 167
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NFE PNO: Wide IFGain:Low Trig: Free Run Atten: 36 dB #Avg Type: RMS TRACE D.28.4.5.6 D.28.4.5.6 Auto T DdB/div Ref 25.00 dBm	Keysigh RL	nt Spectrum				CORRE			CEN	CE-INT.			0.0	10.42.0	Mar 12, 2010	_	
Mkr1 1.755 000 GHz Auto T Mkr1 1.755 000 GHz Center F 1.75500000 Start F 1.75500000 Center F 1.75500000 CF S 400.000 Auto 50 CF S 60 CF S <tr< th=""><th>KL</th><th>K</th><th></th><th></th><th></th><th>PNO:</th><th>Wide 🗔</th><th></th><th>Free</th><th>Run</th><th>#Avg Ty</th><th>pe: RMS</th><th>05</th><th>TRAC</th><th>E 1 2 3 4 5 6</th><th>F</th><th>requency</th></tr<>	KL	K				PNO:	Wide 🗔		Free	Run	#Avg Ty	pe: RMS	05	TRAC	E 1 2 3 4 5 6	F	requency
5.0 Center F 5.0 Center F 00 Cut - 1300 dBt		iv Rel	f 25.0	00 de	3m	IFGair	Low	Alle	n. 30	ав		Mk	r1 1.3	755 0	00 GHz		Auto Tur
Start F 00 <td< td=""><td>15.0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Center Fre</td></td<>	15.0																Center Fre
50 50 50 50 50 50 50 50 50 50 50 50 50 5	.00			~~~	~~~	~~~	~~~~									1.7	Start Fr 53000000 G
400.000 Auto 50 50 50 50 50 50 50 50 50 50 50 50 50	5.0									1					DL1 -13.00 dBm	1.7	Stop Fr 57000000 G
50 Freq Of 50 Comparison of the second secon	5.0										~~~~~		~~~~	~~_~~_	~~~~	<u>Auto</u>	CF St 400.000 k M
enter 1.755000 GHz Span 4.000 MHz																	Freq Offs 0
Res BW 30 kHz #VBW 100 kHz Sweep 2.000 ms (1001 pts)	enter	1.7550	00 G	Hz									s	pan 4	.000 MHz		Scale Tyj
	Res B	30 k	Hz				#VBW	/ 100	٢Hz			Sweep	2.00	0 ms (1001 pts)		

Plot 7-145. Upper Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-146. Upper Extended Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 05 of 167
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	ectrum Analy											_	
KI RL	RF	50 Ω NF		CORREC	lide 🖵	Trig: Fre		#Avg Ty	pe:RMS	TRA	PM Apr 16, 2018 CE 1 2 3 4 5 6 PE A WWWWW ET A NNNNN	F	requency
0 dB/div	Ref 25	i.00 dB	m	IFGain:L	ow	Atten: 3	6 dB		Mkr	1 1.780 (Auto Tun
15.0													Center Fre
5.00 		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~		~~~~							1.77	Start Fr 8000000 GI
5.0						Ĺ	1				DL1 -13.00 dBm	1.78	Stop Fr 2000000 GI
5.0								~~~~		~~~~~	~~~~~	<u>Auto</u>	CF Ste 400.000 kl M
5.0													Freq Offs 0
enter 1.	780000	GHz								Span 4	I.000 MHz	Log	Scale Ty _i
Res BW				\$	#VBW	100 kHz			Sweep	2.000 ms	(1001 pts)		
SG									STAT	US			

Plot 7-147. Upper Band Edge Plot (Band 66 - 3.0MHz QPSK - Full RB Configuration)



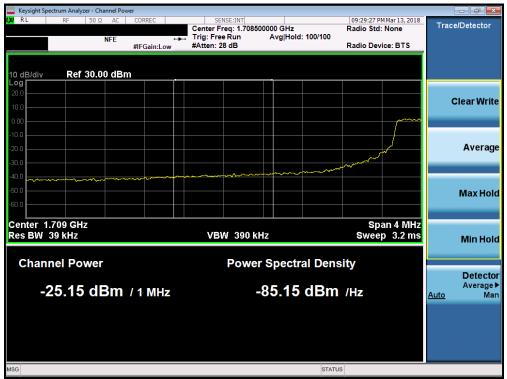
Plot 7-148. Upper Extended Band Edge Plot (Band 66 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 06 of 167
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RL RF 50 Ω AC	CORREC SEN	ISE:INT	09:29:14 PM Mar 13, 201	
NFE	PNO: Wide Trig: Free IFGain:Low Atten: 36		E: RMS TRACE 1 2 3 4 5 TYPE A WWWW DET A NNNN	
D dB/div Ref 25.00 dBm			Mkr1 1.709 996 GH -22.47 dBr	z Auto Tun n
5.0				Center Fre 1.710000000 G⊢
.00			murun	Start Fre
5.0		1,	DL1 -13.00 dB	Stop Fre 1.712000000 GF
5.0	man white at			CF Ste 400.000 kł <u>Auto</u> Ma
.5.0				Freq Offs 0 I
5.0				Scale Typ
enter 1.710000 GHz Res BW 56 kHz	#VBW 180 kHz		Span 4.000 MH Sweep 2.000 ms (1001 pts	IZ Log <u>L</u> S)

Plot 7-149. Lower Band Edge Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



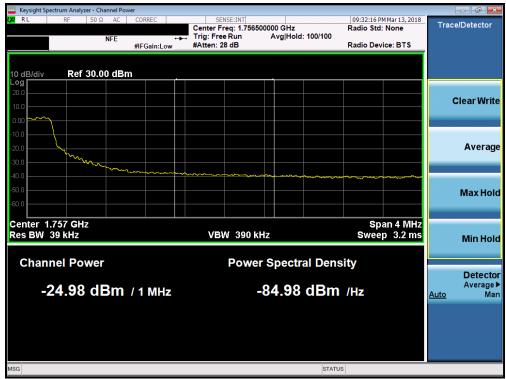
Plot 7-150. Lower Extended Band Edge Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 97 of 167
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	t Spectrum A															
RL	RF	5	0Ω NF		CORREC	Vide 🕞		: Free		#Avg Ty	/pe: RMS		TRA	M Mar 13, 2018 CE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	F	requency
0 dB/div	v Ref	25.0	0 dB	m	IFGain:	Low	Atte	en: 36	dB		Mk	r1 1	.755 (008 GHz 90 dBm		Auto Tun
15.0																Center Fre
5.00 	₩ <u>₽</u> ₩	nganan Larin	~~~~~	~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	N	n Marana ana									1.75	Start Fr 53000000 G
25.0								h. Shaya	1					DL1 -13.00 dBm	1.75	Stop Fr 57000000 G
15.0									and the former of the former o	and the second	and sound from	Vinana	~~hJuw~m~u	ndahananangy	<u>Auto</u>	CF Ste 400.000 k M
5.0																Freq Offs 0
epter	1.7550	00.04	17										Snan /	.000 MHz	Log	Scale Ty
	W 56 k		12			#VBW	/ 10 k	Hz			Sweep	7.2	00 ms	(1001 pts)		
SG												TUS				

Plot 7-151. Upper Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)



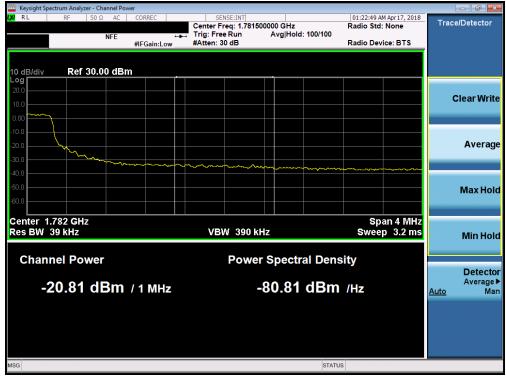
Plot 7-152. Upper Extended Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 09 of 167
1M1803150042-03-R1.A3L	3/8 - 4/17/2018	Portable Handset		Page 98 of 167
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	pectrum Analy											
<mark>u</mark> rl	RF	50 Ω A	PN	REC O:Wide C			#Avg Typ	e: RMS	TRA	M Apr 16, 2018 CE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	Fi	equency
0 dB/div	Ref 25	.00 dBr		ain:Low	Atten: 36	, ab		Mkr	1 1.780 (Auto Tun
15.0												Center Fre 0000000 G⊦
5.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		mmt								1.77	Start Fre 8000000 GH
25.0					- Ju	1 h				DL1 -13.00 dBm	1.78	Stop Fre 2000000 GH
15.0									www.	~~~~~	<u>Auto</u>	CF Ste 400.000 kł Ma
i5.0												Freq Offs 0 I
enter 1	.780000	GHz							Span 4	.000 MHz	Log	Scale Typ
	V 56 kHz			#VB۱	N 160 kHz			Sweep	2.000 ms	(1001 pts)		
SG								STATI	JS			

Plot 7-153. Upper Band Edge Plot (Band 66 - 5.0MHz QPSK - Full RB Configuration)



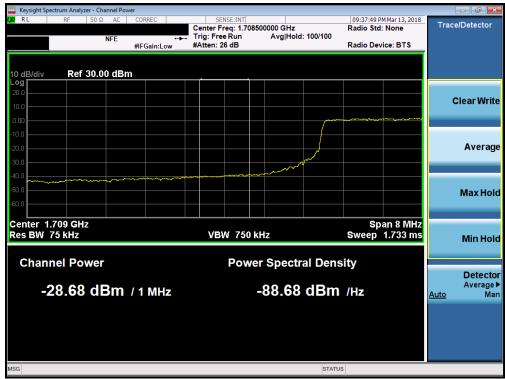
Plot 7-154. Upper Extended Band Edge Plot (Band 66 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 00 of 167
1M1803150042-03-R1.A3L	3/8 - 4/17/2018	Portable Handset		Page 99 of 167
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RF 50 :		CORREC	J	NSE:INT				4 Mar 13, 2018		
		PNO: Wide 🖵	Trig: Free Atten: 36		#Avg Typ	e:RMS	TRAC TYP	E 1 2 3 4 5 6 E A WWWW A N N N N N	Fr	equency
Ref 25.00		IFGain:Low	Atten: 36			Mkr1	1.709 9	68 GHz		Auto Tur
										Center Fre
				/ ma	analyse of the second sec	n janlohen an daa	ᡧᡁᡘᡅ᠆᠆ᠰᡁᠬᢦᠲᡁᢢᡅ	a an	1.70	Start Fr 6000000 GI
				1				DL1 -13.00 dBm	1.71	Stop Fr 4000000 G
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	maren marina	ed for the former	www.market	γr.					<u>Auto</u>	CF Ste 800.000 k M
										Freq Offs 0
0000 CH-							Snan 9	000 MH-		Scale Tyr
0000 GH2		#VBW	/ 330 kHz			Sweep 4.	.000 ms (	.000 IVIHZ		_
	0000 GH2	0000 GHz	0000 GHz	0000 GHz	0000 GHz		Ref 25.00 dBm	Ref 25.00 dBm     -29.1	Ref 25.00 dBm     -29.81 dBm       Image: Contract of the second s	Ref 25.00 dBm       -29.81 dBm

Plot 7-155. Lower Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



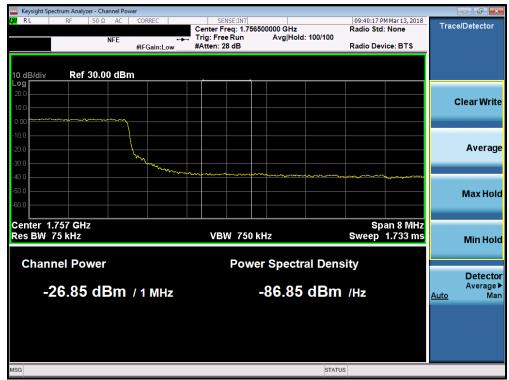
Plot 7-156. Lower Extended Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 100 of 167
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Keysight Spe RL	ectrum Analyz						78.177			00.40.555		_	
RL	RF	50 Ω A0	PN	O:Wide(		SENSE	un	#Avg Ty	pe: RMS	TRAC	M Mar 13, 2018 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 dBn		ain:Low _	Att	en: 36 d	8		Mkr1	1.755 (	)64 GHz 89 dBm		Auto Tun
15.0													Center Fre
i.00 i.00	~~~~~	m-untrad	en men	******								1.75	<b>Start Fr</b> 1000000 Gi
5.0							1				DL1 -13.00 dBm	1.75	<b>Stop Fr</b> 9000000 G
5.0						'WA	huppen and the second s	an Mr Marcan	M Martine Angulanting	╍┉╏╏┞╱╬╬╱┉╋┍╲ _╱ ┝╬ <u>┉</u>	Congler and an agen	<u>Auto</u>	<b>CF St</b> e 800.000 k M
5.0													Freq Offs 0
5.0	755000-0											Log	Scale Typ
	755000 ( 100 kHz			#VB	W 330	kHz			Sweep 4	span 8 .000 ms (	.000 MHz (1001 pts)	209	-
G G					000				STATUS	-	( <b>1</b> ,	-	

Plot 7-157. Upper Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)



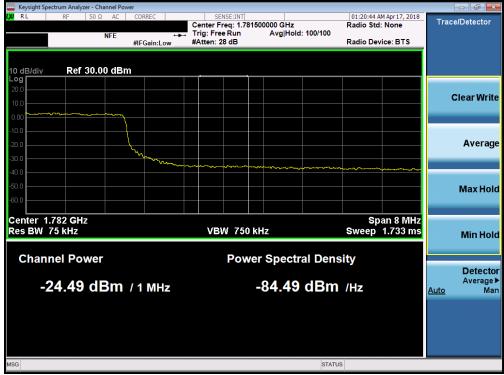
Plot 7-158. Upper Extended Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 101 of 167
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	Spectrum Anal										_	- 6
<mark>u</mark> RL	RF	50 Ω A	PNC	EC D:Wide ⊂⊾ ain:Low			#Avg Typ	e:RMS	TRAC	M Apr 16, 2018 E 1 2 3 4 5 6 E A WWWWW T A N N N N N	Fre	equency
I0 dB/div	Ref 2	5.00 dBr		am:Low	Atten: or			Mkr1	1.780 0 -25.	40 GHz 50 dBm		Auto Tun
- <b>og</b>												enter Fre 000000 G⊦
5.00	April and a	Ano-Andrea Page	And and a start of the start of	ᡣᡎ᠕ᡎᡧ							1.776	Start Fre
25.0					h _{uwa}	1				DL1 -13.00 dBm	1.784	<b>Stop Fre</b> 000000 Gi
15.0						14 muse	Marga Mar Marga Marga Marg	hoyan harry		and Ball and party	<u>Auto</u>	CF Ste 800.000 kl M
i5.0 ——											F	F <b>req Offs</b> 0
5.0	1 700000	011-							0.000 0	000 5411-	tog	Scale Typ
	1.780000 N 100 kH			#VBW	/ 330 kHz			Sweep 4	span 8 .000 ms (	.000 MHz 1001 pts)	209	-
SG								STATUS	;			

Plot 7-159. Upper Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)



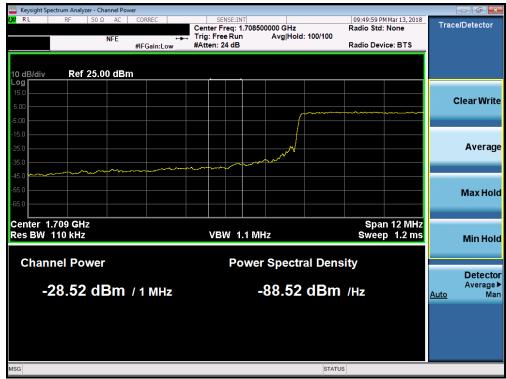
Plot 7-160. Upper Extended Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 102 of 167
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Keysight Spec	RF			CORREC		SEI	NSE:INT				M Mar 13, 2018	_	
		N	IFE	PNO: W IFGain:L		Trig: Fre Atten: 36		#Avg Typ	e: RMS	TRAC TY D	DE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	Fr	equency
0 dB/div	Ref 25.	00 dl	Bm						Mkr1	1.709 9 -29.	940 GHz 29 dBm		Auto Tur
og 15.0													enter Fre
5.00							ſ	·····		~~~~~~		1.704	<b>Start Fr</b> 1000000 GI
25.0							1				DL1 -13.00 dBm	1.716	<b>Stop Fr</b> 5000000 G
15.0	y man	~~~~~	nn	~~~~		and the second	w7 "					1 <u>Auto</u>	CF Ste 200000 M M
i5.0												i	F <b>req Offs</b> 0
65.0												: Log	Scale Ty
enter 1.7 Res BW 1		SHZ			AV/D14/	510 kHz			Sweep 1	Span 1	2.00 MHz	Lug	Ĺ

Plot 7-161. Lower Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



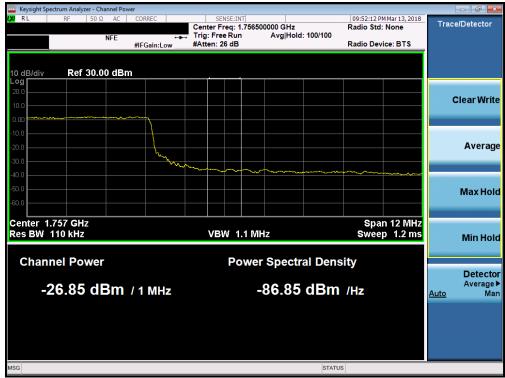
Plot 7-162. Lower Extended Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 102 of 167
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Keysight Spe	ctrum Analy: RF		AC AC	CORREC	_		SENSE:INT			00,52,02.0	M Mar 13, 2018	-	
KL.	NF		FE		/ide 🖵		ree Run	#Avg Ty	pe: RMS	TRA	CE 1 2 3 4 5 6 PE A WWWW ET A NNNN	Fi	requency
0 dB/div	Ref 25	.00 di	3m	IFGain:	Low	Atten.	30 08		Mkr	1 1.755 (	000 GHz 51 dBm		Auto Tur
og 15.0													Center Fre 5000000 GH
i.00 <b></b>	<b>~</b> ~~~~	~~~~	<del>مہر</del> می	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~						1.74	<b>Start Fr</b> 9000000 GI
5.0							1				DL1 -13.00 dBm	1.76	<b>Stop Fr</b> 1000000 G
5.0							Munn	and the second	<mark>∽.,</mark> _~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	be warden		Auto	CF Ste .200000 M M
5.0													Freq Offs 0
enter 1.7	255000	247								Snap 4	2.00 MHz	Log	Scale Typ
Res BW					#VBW	510 kł	z		Sweep	1.000 ms	(1001 pts)		_
G									STATU				

Plot 7-163. Upper Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)



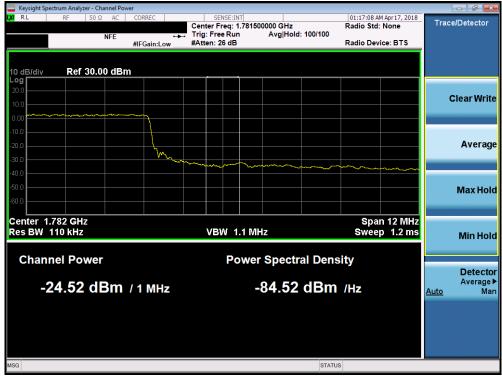
Plot 7-164. Upper Extended Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 104 of 167
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	pectrum Analy										
X/RL	RF	50 Ω AC NFE	PNO: Wide			#Avg Typ	e: RMS	TRAC	M Apr 16, 2018 CE 1 2 3 4 5 6 PE A WWWWWW ET A N N N N N	Fre	quency
I0 dB/div	Ref 25	5.00 dBm	IFGain:Low	Atten: 36	G		Mkr	1 1.780 1			Auto Tun
15.0											enter Fre 000000 GH
5.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	n	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm					DL1 -13.00 dBm		<b>Start Fre</b> 000000 G⊦
25.0					<b>↓</b> ¹				DL1 -13,00 dbm		<b>Stop Fre</b> 000000 G⊦
45.0					hund	- Marine Ma	~~~~~	m		1.: <u>Auto</u>	CF Ste 200000 MF Ma
55.0										F	req Offs 0 ⊦
65.0											cale Typ
	.780000 V 150 kH:		#VI	BW 470 kHz			Sweep	Span 1 1.000 ms (	2.00 MHz (1001 pts)	Log	L
ISG							STATU	JS			

Plot 7-165. Upper Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)



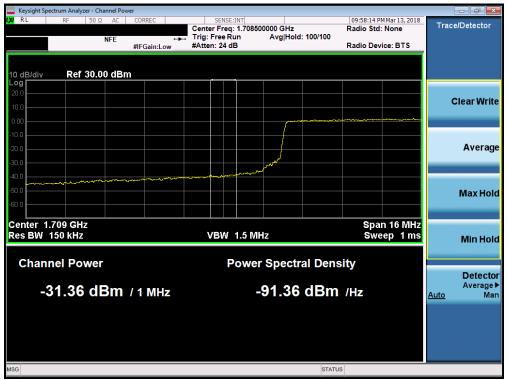
Plot 7-166. Upper Extended Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 105 of 167
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RL	RF 50 Ω AC	CORREC	SENSE:INT	#Ave Tunes DMC	09:58:06 PM Mar 13, 2018	Frequency
	NFE	PNO: Wide 🖵 IFGain:Low	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE <b>1 2 3 4 5 6</b> TYPE A WWWW DET <b>A N N N N N</b>	
0 dB/div	Ref 25.00 dBm			Mkr	1 1.709 952 GHz -33.64 dBm	Auto Tur
15.0						Center Fre 1.710000000 GF
5.00						<b>Start Fre</b> 1.702000000 GH
25.0					DL1 -13.00 dBm	<b>Stop Fre</b> 1.718000000 GF
35.0 15.0	man and the second s	manna	and the second s			CF Ste 1.600000 Mi <u>Auto</u> Ma
55.0						Freq Offs 0 I
65.0						Scale Typ
enter 1.71 Res BW 2	10000 GHz 00 kHz	#VBW (	i20 kHz	Sweep	Span 16.00 MHz 1.000 ms (1001 pts)	Log <u>L</u>

Plot 7-167. Lower Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



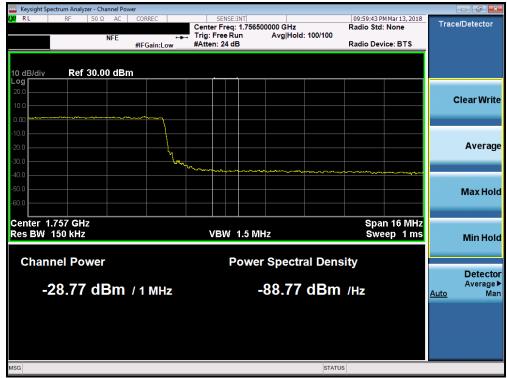
Plot 7-168. Lower Extended Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 106 of 167
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RL RL	RF 5	- Swept SA 50 Ω AC	CORREC	CEN	SE:INT			09:59:36 PM M	or 12 2019		- 6 -
KL.	NF J	NFE	PNO: Wide	- · · -	Run	#Avg Typ	e: RMS	TRACE	2 3 4 5 6 WWWWWW NNNNN	Fre	quency
0 dB/div	Ref 25.0	0 dBm	II Guill.EOW				Mkr1	1.755 00 -31.40	0 GHz ) dBm		Auto Tur
og 15.0											enter Fre
i.00			~~~^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								Start Fre
5.0					1				-13.00 dBm		<b>Stop Fr</b> 000000 G
5.0				· V _W	- Marallowe	nonnon	and the second	an and a second and	ᠰ᠆ᡔᢦᡗ᠆ᠰᢊ᠕ᢧᡜ	1.6 <u>Auto</u>	CF Ste 500000 M M
5.0										F	req Offs 0
enter 1.7	55000 C							Span 16.		S	cale Typ
Res BW 2		12	#VE	3W 620 kHz			Sweep 1	.000 ms (10			
G							STATUS				

Plot 7-169. Upper Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)



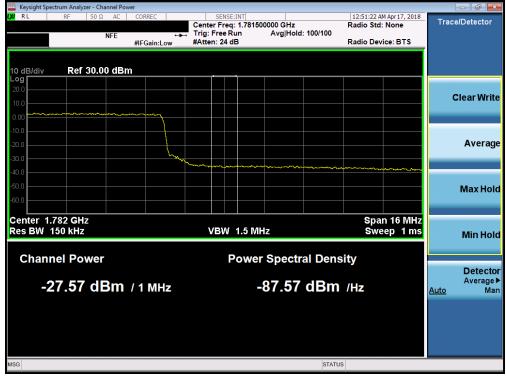
Plot 7-170. Upper Extended Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 107 of 167
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Keysight S RL	Spectrum Analy RF	zer - Swept SA	CORREC		CE-INT			00-12-50.0	MAna16, 2010		ð
KL	KF	50 Ω AC NFE	PNO: Wide			#Avg Typ	e:RMS	TRAC	M Apr 16, 2018 CE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	Frequ	iency
0 dB/div	Ref 2	5.00 dBm	IFGam:Low	Atten: 00			Mkr	1 1.780 ( -30.	)48 GHz 14 dBm	Αι	ito Tun
15.0										Cen 1.78000	i <b>ter Fre</b> 0000 G⊦
5.00	**************************************	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	www.							<b>Si</b> 1.77200	art Fre 0000 G⊦
25.0				- K.	1				DL1 -13.00 dBm	<b>Si</b> 1.78800	t <b>op Fre</b> 0000 GH
15.0				UL VI	m	Malmonduna	un sur	- Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mariana Mari	S. M. A. Aragan		CF Ste DOOO MH Ma
i5.0										Fre	<b>q Offs</b> 0 I
55.0											ale Typ
	1.780000 V 200 kH		#VBW	620 kHz			Sweep	Span 1 1.000 ms (	6.00 MHz (1001 pts)	Log	L
SG							STATU	JS			

Plot 7-171. Upper Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)



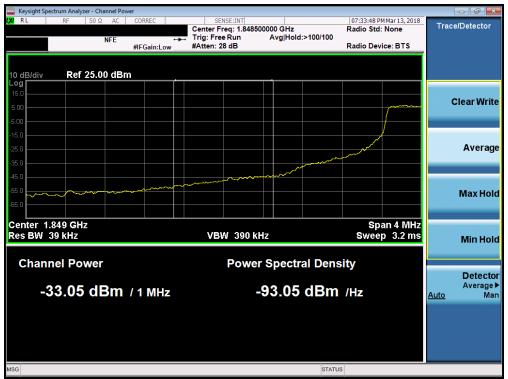
Plot 7-172. Upper Extended Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 109 of 167
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Plot 7-173. Lower Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



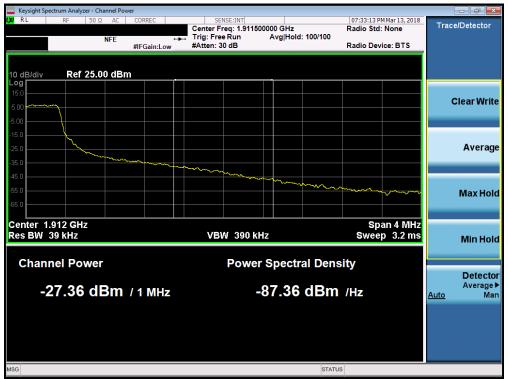
Plot 7-174. Lower Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	
Test Report S/N:	Test Dates:	EUT Type:		Daga 100 of 167
1M1803150042-03-R1.A3L	3150042-03-R1.A3L 3/8 - 4/17/2018 Portable Handset			Page 109 of 167
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Keysight: RL	Spectrum Analyzer - RF 5	Swept SA 0 Ω AC	CORREC	SENS	E:INT			07:13:33 P	M Mar 13, 2018		
		NFE	PNO: Wide G		Run	#Avg Typ	e: RMS	TRAC	DE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N		equency
0 dB/div	Ref 25.0	0 dBm					Mkr1	1.910 ( -24.	)08 GHz 86 dBm		Auto Tur
5.0											Center Fre
.00		f	, marine the second							1.908	<b>Start Fr</b> 3000000 G
5.0	لمر				1				DL1 -13.00 dBm	1.912	<b>Stop Fr</b> 2000000 G
5.0					My John	Annandary		m		<u>Auto</u>	<b>CF St</b> e 400.000 k M
5.0									and the second s	•	Freq Offs 0
5.0											Scale Ty
	1.910000 GH N 13 kHz	iz	#VB\	N 43 kHz			Sweep 8	Span 4 8.867 ms (	.000 MHz (1001 pts)	Log	L
G							STATUS	5			

Plot 7-175. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



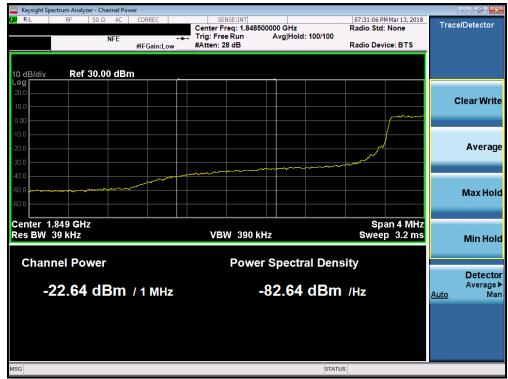
Plot 7-176. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 110 of 167	
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RE RL	Spectrum Anal		AC	CORREC		SEI	NSE:INT			07:26:37 P	M Mar 13, 2018	_	
	ru.		IFE		ide 🖵	Trig: Free Atten: 36	Run	#Avg Typ	e: RMS	TRAC	CE 1 2 3 4 5 6 PE A WWWW ET A NNNN	F	requency
0 dB/div	Ref 2	5.00 dl	Bm	IFGain:	LOW	Atten: or			Mkr'	1 1.850 0			Auto Tun
. <b>og</b>													Center Fre 0000000 G⊦
5.00									~~~~~			1.84	<b>Start Fre</b> 8000000 GH
25.0						(	1				DL1 -13.00 dBm	1.85	<b>Stop Fr</b> 2000000 GI
35.0	~~~~	<u> </u>	<u></u>									<u>Auto</u>	<b>CF Ste</b> 400.000 kl Ma
55.0													Freq Offs 0 I
enter 1	1.850000	GH7								Span 4	.000 MHz	Log	Scale Typ
	V 30 kHz				#VBW	100 kHz			Sweep 3	2.000 ms (	(1001 pts)		

Plot 7-177. Lower Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



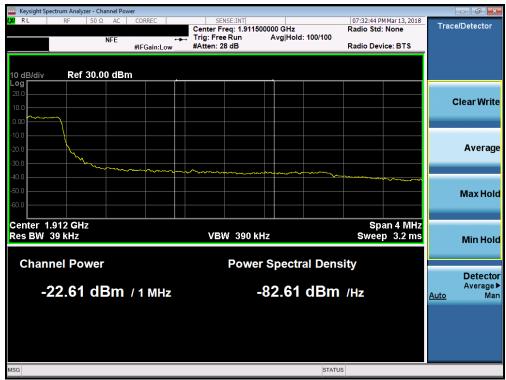
Plot 7-178. Lower Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 111 of 167	
M1803150042-03-R1.A3L 3/8 - 4/17/2018		Portable Handset	Page 111 of 167		
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	pectrum Analy												
RL	RF	50 Ω N	AC	CORREC	/ide 🕞	Trig: F	ree Run	#Avg Typ	e: RMS	TRA	MMar 13, 2018 CE 1 2 3 4 5 6 PE A WWWWW ET A N N N N N	F	requency
0 dB/div	Ref 2	5.00 dE	3m	IFGain:	Low	Atten:	36 dB		Mkr	1 1.910 (			Auto Tun
15.0													Center Fre 0000000 G⊦
5.00				~~~								1.90	<b>Start Fre</b> 8000000 GI
25.0							<b>↓</b> ¹				DL1 -13.00 dBm	1.91	<b>Stop Fr</b> 2000000 GI
35.0											~~~~	<u>Auto</u>	<b>CF Ste</b> 400.000 kl
i5.0													Freq Offs 0
65.0												Log	Scale Tyj
	.910000 30 kHz			-	#VBW	100 kH	z		Sweep	Span 4 2.000 ms	.000 MHz (1001 pts)		_
SG									STATU				

Plot 7-179. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



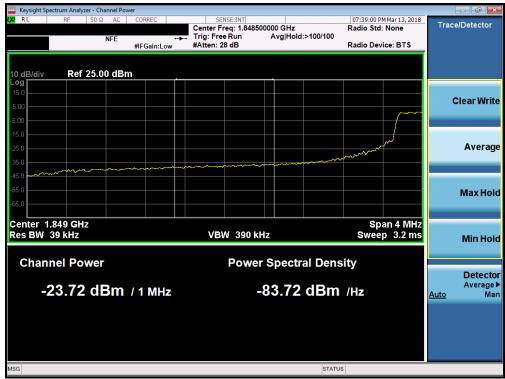
Plot 7-180. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 110 of 167
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	ectrum Analy												
KI RL	RF		AC	PNO: W	∣ /ide ⊊	Trig: Fr		#Avg Ty	pe: RMS	TRA	PM Mar 13, 2018 CE 1 2 3 4 5 6 (PE A WWWWW DET A NNNNN	F	requency
I0 dB/div	Ref 2	5.00 di	Bm	IFGain:	Low	Atten: 3	36 dB		Mkr	1 1.849	992 GHz .37 dBm		Auto Tun
15.0													<b>Center Fre</b> 60000000 G⊦
5.00								~~~~~	~~~~~	~~~~~		1.84	<b>Start Fre</b> 8000000 GH
25.0						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<b>,</b> 1, /				DL1 -13.00 dBm	1.85	<b>Stop Fre</b> 2000000 GF
15.0	~~~~~	~~~~~~	^ <i></i>	~~~	~~~							<u>Auto</u>	CF Ste 400.000 kl M
5.0													Freq Offs 01
enter 1. Res BW		GHz			#\/B\M	180 kH			Swoon	Span 4	4.000 MHz (1001 pts)	Log	Scale Tyr L
KG5 DW	50 KHZ				/ V E. VV	TOU KH			sweep	_	(100 Fpts)		

Plot 7-181. Lower Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-182. Lower Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 112 of 167
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Keysight S RL	Spectrum Analyz								07.40.00.0	4 Mar 13, 2018	_	
KL	RF	50 Ω Α( NFE	PNO:	Wide 🖵	Trig: Fre		#Avg Typ	e: RMS	TRAC	MMAR 13, 2018 E 1 2 3 4 5 6 E A WWWW T A N N N N N	F	requency
0 dB/div	Ref 25	.00 dBn	IFGair î	n:Low	Atten: 36	o dB		Mkr1	1.910 0	00 GHz 73 dBm		Auto Tur
15.0												Center Fre
.00	~~~^	~~~~		~~~~							1.90	<b>Start Fr</b> 8000000 G
5.0					- t	1				DL1 -13.00 dBm	1.91	<b>Stop Fr</b> 2000000 G
5.0						mun	hours	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>Auto</u>	CF St 400.000 k M
5.0												Freq Offs 0
5.0	1 0 1 0 0 0 0	011-							0		Log	Scale Ty
	1.910000 ( № 56 kHz	GHZ		#VBW	180 kHz			Sweep 2	span 4 .000 m <u>s (</u>	.000 MHz 1001 pts)	209	-
G								STATUS				

Plot 7-183. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



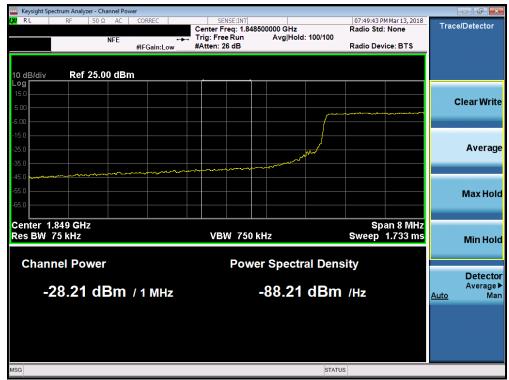
Plot 7-184. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 114 of 167
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	Spectrum Ana													
RL	RF	50 Ω	AC	CORREC	ide 🗔	Trig: Fre			#Avg Typ	e: RMS	TRA	MMar 13, 2018 DE <b>1 2 3 4 5 6</b> PE A WWWWW ET A N N N N N	F	requency
0 dB/div	Ref 2	5.00 d		IFGain:L	ow	Atten: 3	6 dB			Mkr1	1.849 9	976 GHz 98 dBm		Auto Tur
15.0														Center Fre
5.00								pm	fanoren porte	r	- all a second	m	1.84	<b>Start Fr</b> 46000000 GI
5.0							1					DL1 -13.00 dBm	1.85	<b>Stop Fr</b> 54000000 G
5.0		mbformerty	yntrond	mm	parastrands	Allin Marthalenana							<u>Auto</u>	<b>CF St</b> 800.000 k M
5.0														Freq Offs 0
enfer 1	1.850000	GH7									Span	.000 MHz	Log	Scale Typ
	N 100 kH			#	≠vbw	330 kHz				Sweep 4	.000 ms	(1001 pts)		
SG										STATU	s			

Plot 7-185. Lower Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



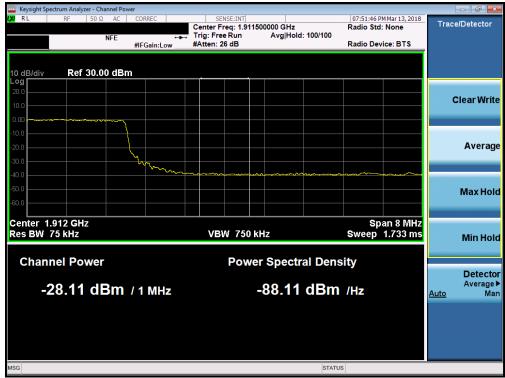
Plot 7-186. Lower Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 115 of 167
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	pectrum Analy										_	
RL	RF	50 Ω AC NFE	PNO: W		rig: Free		#Avg Typ	e: RMS	TRAC	M Mar 13, 2018 DE <b>1 2 3 4 5 6</b> PE A WWWWW T A N N N N N	F	requency
0 dB/div	Ref 25	.00 dBm	IFGain:	_ow /	Atten: 36	dB		Mkr1	1.910 1	20 GHz 24 dBm		Auto Tur
15.0												Center Fre 0000000 Gi
.00.	have all a failed	man n	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	ngarnen orden en e							1.90	<b>Start Fr</b> 6000000 G
5.0						<u>_1</u>				DL1 -13.00 dBm	1.91	<b>Stop Fr</b> 4000000 G
5.0					"	When the start	hafferhangssoullation	ᠬᡧᡊᢑᡘ᠇ᡶ᠇ᠮ᠅ᠴᡁᠬᢢᠬ	entropyonon and a	Jog Marine Marine A	<u>Auto</u>	CF Sto 800.000 k M
5.0												Freq Offs 0
5.0											Log	Scale Ty
	.910000 / 100 kHz			# <b>VBW</b> 33	0 kHz			Sween_4	Span 8 .000 ms.	.000 MHz (1001 pts)	LUg	L
G					- <b>- - - - - - - - - -</b>			STATU		(1001 p.(5)		

Plot 7-187. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



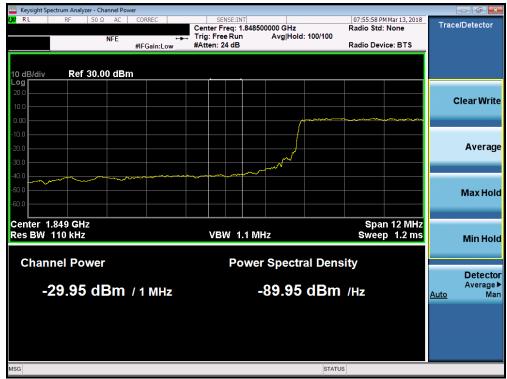
Plot 7-188. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight RL	Spectrum An RF			CORREC		0.00	ICE-INT			00.02.52.0	111-12 2010	_	
KL	RF	50 Ω	NFE	PNO: Wi		Trig: Free		#Avg Typ	pe: RMS	TRAC	Mar 13, 2018 E 1 2 3 4 5 6 PE A MANNN	F	requency
0 dB/div	Ref	25.00 (	dBm	IFGain:Lo	w	Atten: 36	dB		Mkr1	1.850 0	00 GHz 75 dBm		Auto Tun
15.0													Center Fre 0000000 GI
5.00							$\int$		·····		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1.84	<b>Start Fr</b> 4000000 Gi
5.0							1.7				DL1 -13.00 dBm	1.85	<b>Stop Fr</b> 6000000 G
15.0 15.0		~~~^	~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	- A A A	<mark>,</mark> V					Auto	<b>CF St</b> e 1.200000 M M
5.0													Freq Offs 0
senter 2	1.85000	0 GHz								Snap 1	2.00 MHz	Log	Scale Tyr
	V 160 k			#	VBW 5	10 kHz			Sweep 1	1.000 m <u>s (</u>	1001 pts)		
SG									STATU				

Plot 7-189. Lower Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



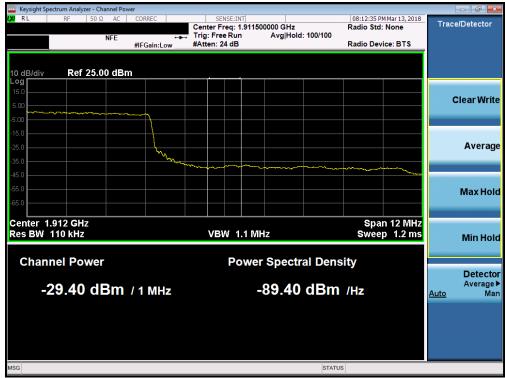
Plot 7-190. Lower Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	pectrum Analy:									-	- 0
RL	RF	50 Ω AC NFE	CORREC			#Avg Typ	e: RMS	TRAC	Mar 13, 2018 E 1 2 3 4 5 6 E A WWWWW T A N N N N N	Fre	quency
0 dB/div	Ref 25	.00 dBm	IFGain:Low	Atten: 36	dB		Mkr1	1.910 1		,	Auto Tur
15.0											enter Fre
5.00 <b>~~~~</b>			mm								Start Fre
5.0									DL1 -13.00 dBm		<b>Stop Fr</b> 000000 G
5.0				- Ju	mm	www	Journa Marina	·~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1.2 <u>Auto</u>	CF Sto 200000 M M
5.0										F	r <b>eq Offs</b> 0
i5.0											cale Ty
	.910000 ( / 160 kHz		#VBW	510 kHz			Sweep 1	(Span 1) () 000 ms.	2.00 MHz 1001 pts)	Log	L
G							STATUS		, proj		

Plot 7-191. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



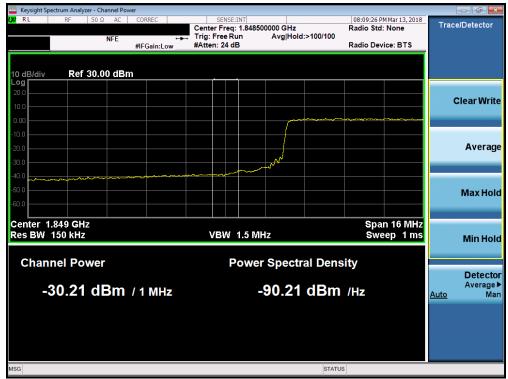
Plot 7-192. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 440 af 407	
1M1803150042-03-R1.A3L	3/8 - 4/17/2018	Portable Handset	Page 118 of 167		
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RL	RF 5	OΩ AC	CORREC	SEI	VSE:INT				
		NFE	PNO: Wide G		e Run	#Avg Typ	e: RMS	08:09:07 PM Mar 13, 2018 TRACE 1 2 3 4 5 TYPE A WWWW DET A N N N N	5 Frequency
	Ref 25.0	0 dBm	IPGalli.Low	, talen: oc			Mkr1	1.849 968 GH: -32.62 dBn	Auto Tur
15.0									Center Fre 1.85000000 GF
5.00							~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		<b>Start Fre</b> 1.842000000 GH
25.0					1.			DL1 -13.00 dBr	<b>Stop Fre</b> 1.858000000 GH
35.0 	Anon	y	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		J.				CF Ste 1.600000 Mł <u>Auto</u> Mł
5.0									Freq Offs 01
senter 1.8		łz						Span 16.00 MH	Scale Typ Log <u>L</u>
Res BW 2	00 kHz		#VBN	/ 620 kHz			Sweep 1	.000 ms (1001 pts	

Plot 7-193. Lower Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



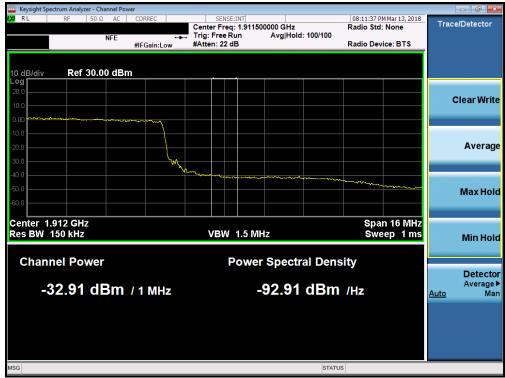
Plot 7-194. Lower Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	pectrum Analy:									_	- 0
RL	RF	50 Ω AC	PNO: Wide	Trig: Free		#Avg Typ	e: RMS	TRAC	Mar 13, 2018 E 1 2 3 4 5 6 E A WWWWW T A N N N N N	Fre	quency
0 dB/div	Ref 25	.00 dBm	IFGain:Low	Atten: 36	dB		Mkr1	1.910 1	44 GHz 49 dBm	,	Auto Tur
15.0											enter Fre
i.00 <b></b>		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm	a m							<b>Start Fr</b> 000000 Gi
5.0									DL1 -13.00 dBm		<b>Stop Fr</b> 000000 G
5.0				- huy	1 Marson	manana		mann	man	1.6 <u>Auto</u>	CF St 500000 M M
5.0										F	r <b>eq Offs</b> 0 I
65.0	.910000	047						Spap 1	6.00 MHz	S	cale Ty
	.910000 / 200 kHz		#VBV	V 620 kHz			Sweep 1	.000 ms (	1001 pts)		-
G							STATUS				

Plot 7-195. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

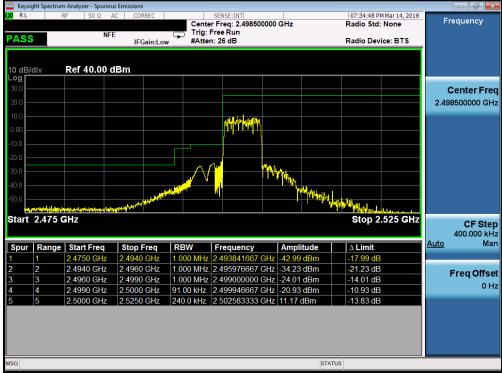


Plot 7-196. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

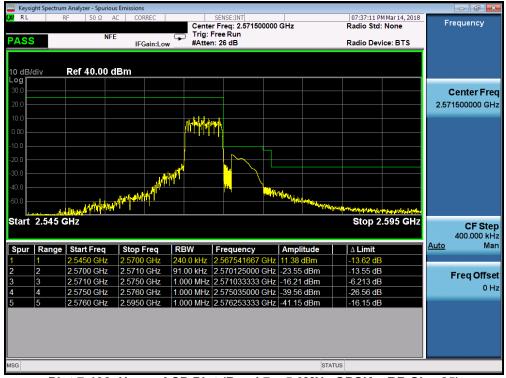
FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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### Band 7



Plot 7-197. Lower ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)



Plot 7-198. Upper ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 101 of 167
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RL			AC CORREC		SENSE:INT Freq: 2.4985000 Free Run	000 GHz		07:43:58 PM Radio Std:	Mar 14, 2018 None		quency
ASS	3	NF	E IFGain:Lov		n: 26 dB			Radio Devi	ce: BTS		
			ii Guineoi	•							
		D-5 40 00	1 <b>D</b>								
0 dB/ .og ┏	div	Ref 40.00 (	авт								
30.0										C	enter Fre
20.0											500000 GI
										2.490	500000 Gr
10.0					مطرحه والمالية فيتم أربع	While buildings					
0.00					AMANANANA	المليد الجمع ا					
10.0					[						
20.0											
30.0 L							Maria I.				
					l l			White			
40.0			in the second	r V					Wate		
50.0			La mader Wildow					, ytr	C. MARCHAR		
Né a sté		Abertie Antoine and its partiel						Oton 3	505 OU-		
start	2.475 (	BUITZ						Stop 2.	.525 GHz		CF Ste
										Auto	800.000 kł Mi
Spur	Range		Stop Freq	RBW	Frequency	Ampli		∆ Limit		Auto	IVIC
	1	2.4750 GHz	2.4905 GHz		2.490293333 GI			-20.41 dB			
2	2	2.4905 GHz	2.4960 GHz		2.495835000 GI			-17.01 dB		F	req Offs
3	3	2.4960 GHz	2.4990 GHz		2.499000000 GI			-10.01 dB -15.85 dB			. 01
1	4 5	2.4990 GHz 2.5000 GHz	2.5000 GHz 2.5250 GHz		2.499943333 GI 2.507708333 GI			-15.85 dB -16.58 dB			
	0	2.3000 GHZ	2.5250 GHZ	240.0 KHZ	2.307706333 GI	nz   0.423 (		-10.56 dB			
5											

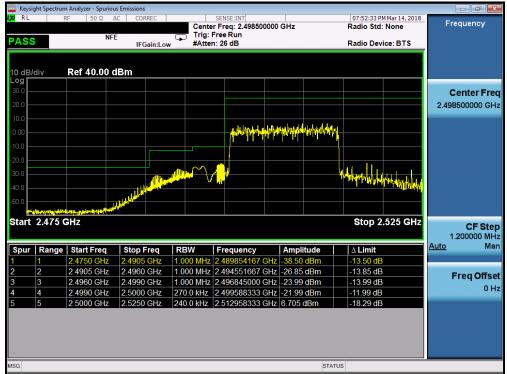




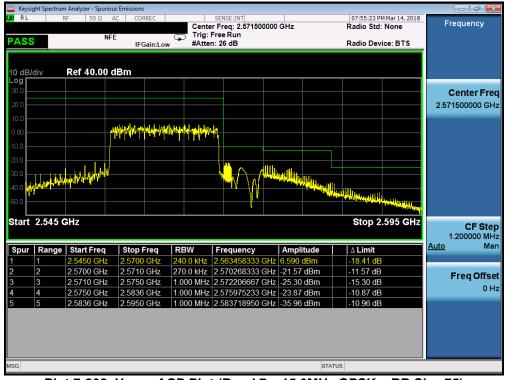
Plot 7-200. Upper ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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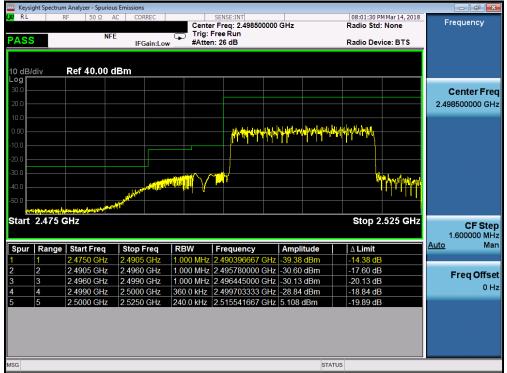
Plot 7-201. Lower ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 75)



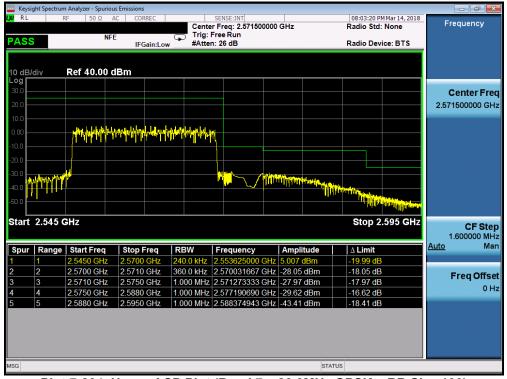
Plot 7-202. Upper ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-203. Lower ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 100)



Plot 7-204. Upper ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dama 404 af 407	
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# 7.5 Peak-Average Ratio

### **Test Overview**

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

### Test Procedure Used

KDB 971168 D01 v03 - Section 5.7.1

### **Test Settings**

- 1. The signal analyzer's CCDF measurement profile is enabled
- 2. Frequency = carrier center frequency
- 3. Measurement BW > Emission bandwidth of signal
- 4. The signal analyzer was set to collect one million samples to generate the CCDF curve
- 5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.

### Test Setup

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



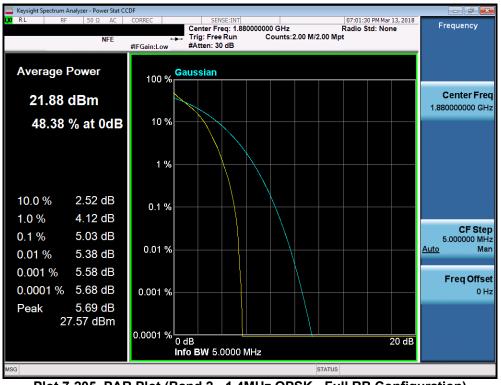
Figure 7-4. Test Instrument & Measurement Setup

### **Test Notes**

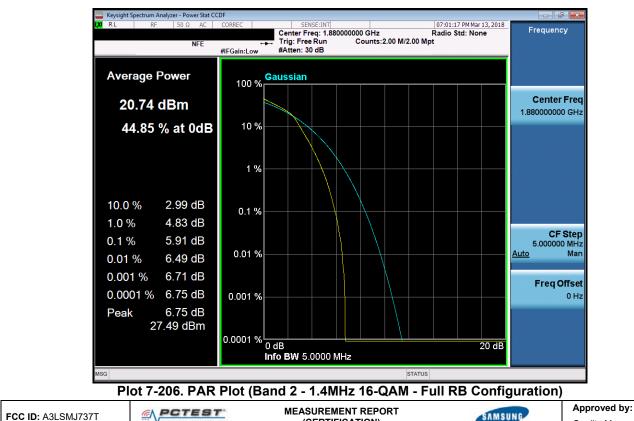
None.

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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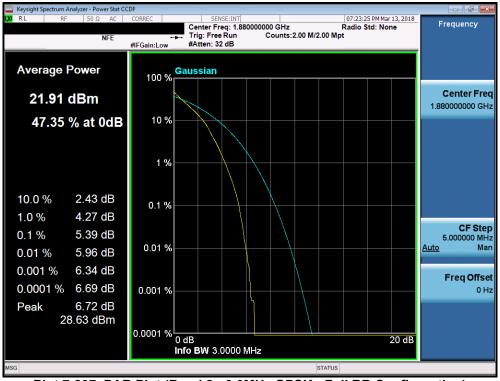




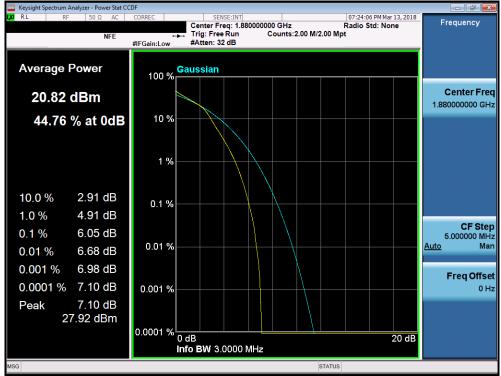
	TREISTING LARDRATORS, INC.	(CERTIFICATION)	Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 126 of 167
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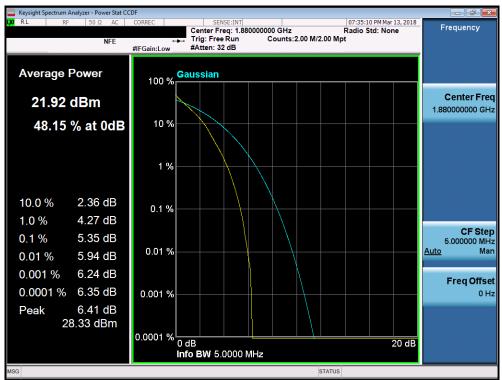




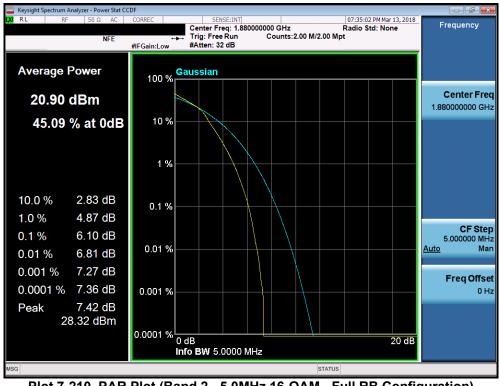
Plot 7-208. PAR Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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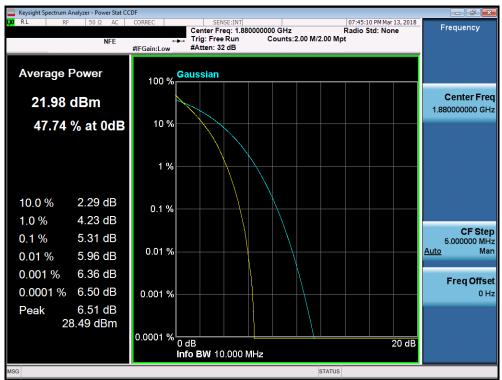




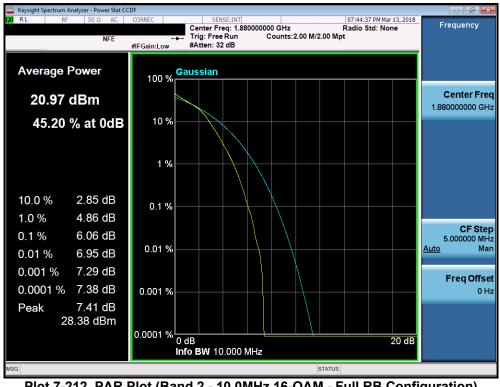
Plot 7-210. PAR Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 109 of 167
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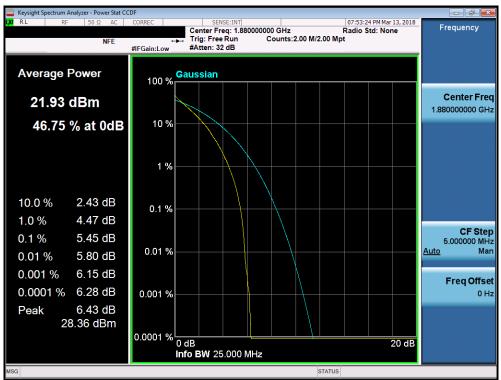




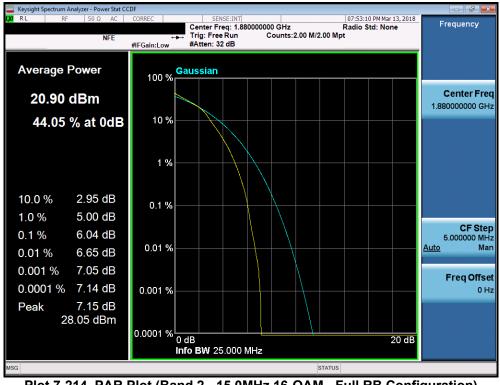
Plot 7-212. PAR Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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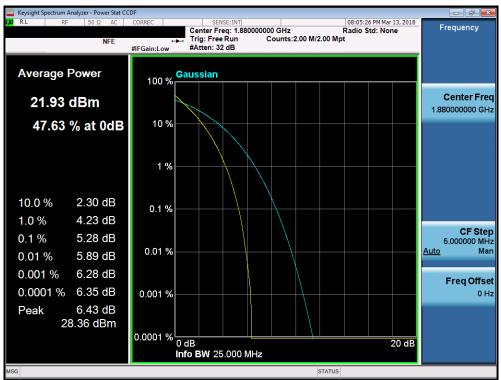




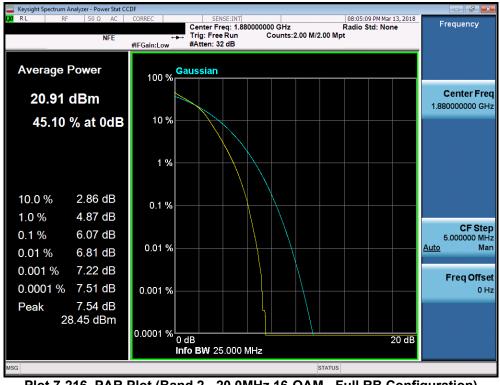
Plot 7-214. PAR Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-216. PAR Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

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# 7.6 Radiated Power (ERP/EIRP)

### **Test Overview**

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally 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 v03 - Section 5.2.1

ANSI/TIA-603-E-2016 - Section 2.2.17

### Test Settings

- 1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW  $\geq$  3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points  $\geq$  2 x span / RBW
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

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## Test Setup

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

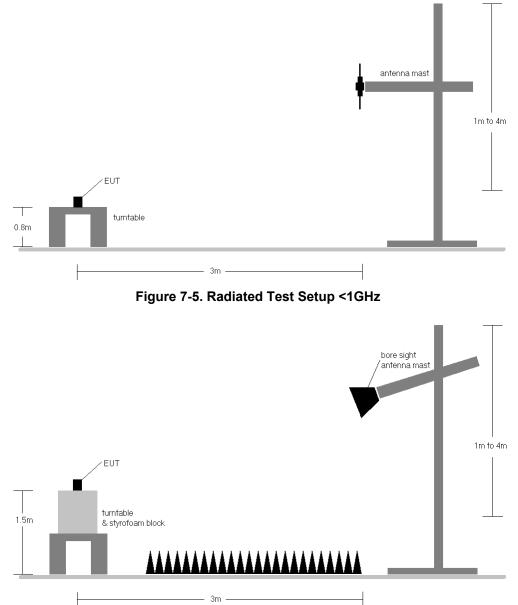


Figure 7-6. Radiated Test Setup >1GHz

## Test Notes

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

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
665.50	5	QPSK	н	150	200	1 / 24	17.00	1.10	15.95	0.039	34.77	-18.82
680.50	5	QPSK	н	150	200	1 / 24	18.51	1.10	17.46	0.056	34.77	-17.31
695.50	5	QPSK	н	150	200	1 / 24	18.73	1.10	17.68	0.059	34.77	-17.09
695.50	5	16-QAM	н	150	200	1 / 24	17.56	1.10	16.51	0.045	34.77	-18.26
668.00	10	QPSK	н	150	196	1 / 49	18.08	1.10	17.03	0.050	34.77	-17.74
680.50	10	QPSK	н	150	196	1 / 49	18.50	1.10	17.45	0.056	34.77	-17.32
693.00	10	QPSK	н	150	196	1 / 49	18.97	1.10	17.92	0.062	34.77	-16.85
693.00	10	16-QAM	н	150	196	1 / 49	17.77	1.10	16.72	0.047	34.77	-18.05
670.50	15	QPSK	н	150	195	1 / 74	18.40	1.10	17.35	0.054	34.77	-17.42
680.50	15	QPSK	н	150	195	1 / 74	18.42	1.10	17.37	0.055	34.77	-17.40
690.50	15	QPSK	н	150	195	1 / 74	18.79	1.10	17.74	0.059	34.77	-17.03
690.50	15	16-QAM	н	150	195	1 / 74	17.62	1.10	16.57	0.045	34.77	-18.20
673.00	20	QPSK	н	150	191	1 / 99	18.73	1.10	17.68	0.059	34.77	-17.09
680.50	20	QPSK	н	150	191	1 / 99	18.02	1.10	16.97	0.050	34.77	-17.80
688.00	20	QPSK	н	150	191	1 / 99	18.81	1.10	17.76	0.060	34.77	-17.01
688.00	20	16-QAM	н	150	191	1 / 99	17.72	1.10	16.67	0.046	34.77	-18.10
693.00	10	QPSK	V	150	341	1 / 99	18.59	1.10	17.54	0.057	34.77	-17.23

Table 7-3. ERP Data (Band 71)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Loval	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1.4	QPSK	V	150	13	3 / 2	20.32	1.10	19.27	0.085	34.77	-15.50	21.42	0.139	36.99	-15.57
1.4	QPSK	V	150	13	3 / 2	20.64	1.13	19.62	0.092	34.77	-15.15	21.77	0.150	36.99	-15.22
1.4	QPSK	V	150	13	3 / 2	20.78	1.16	19.79	0.095	34.77	-14.98	21.94	0.156	36.99	-15.05
1.4	16-QAM	V	150	13	3 / 2	20.07	1.16	19.08	0.081	34.77	-15.69	21.23	0.133	36.99	-15.76
3	QPSK	V	150	345	1 / 14	20.39	1.10	19.34	0.086	34.77	-15.43	21.49	0.141	36.99	-15.50
3	QPSK	V	150	345	1 / 14	20.75	1.13	19.73	0.094	34.77	-15.04	21.88	0.154	36.99	-15.11
3	QPSK	V	150	345	1 / 14	20.88	1.16	19.89	0.097	34.77	-14.88	22.04	0.160	36.99	-14.95
3	16-QAM	V	150	345	1 / 14	19.86	1.16	18.87	0.077	34.77	-15.90	21.02	0.126	36.99	-15.97
5	QPSK	V	150	357	1 / 24	20.42	1.11	19.38	0.087	34.77	-15.40	21.53	0.142	36.99	-15.46
5	QPSK	V	150	357	1 / 24	20.87	1.13	19.85	0.097	34.77	-14.92	22.00	0.159	36.99	-14.99
5	QPSK	V	150	357	1 / 24	20.85	1.15	19.85	0.097	34.77	-14.92	22.00	0.159	36.99	-14.99
5	16-QAM	V	150	357	1 / 24	19.94	1.15	18.94	0.078	34.77	-15.83	21.09	0.129	36.99	-15.90
10	QPSK	V	150	17	1 / 49	20.83	1.12	19.80	0.095	34.77	-14.97	21.95	0.157	36.99	-15.04
10	QPSK	V	150	17	1 / 49	20.97	1.13	19.95	0.099	34.77	-14.82	22.10	0.162	36.99	-14.89
10	QPSK	V	150	17	1 / 49	20.75	1.14	19.74	0.094	34.77	-15.03	21.89	0.155	36.99	-15.10
10	16-QAM	V	150	17	1 / 49	19.89	1.14	18.88	0.077	34.77	-15.89	21.03	0.127	36.99	-15.96
10	QPSK	Н	150	341	1 / 49	19.14	1.13	18.12	0.065	34.77	-16.65	20.27	0.106	36.99	-16.72
	Bandwidth [MHz] 1.4 1.4 1.4 1.4 3 3 3 3 3 5 5 5 5 5 5 10 10 10 10 10 10	Bandwidth [MHz]         Mod.           1.4         QPSK           1.4         QPSK           1.4         QPSK           1.4         QPSK           1.4         QPSK           3         QPSK           3         QPSK           3         QPSK           3         QPSK           5         QPSK           5         QPSK           5         QPSK           10         QPSK	Bandwidth [MHz]         Mod.         Pol. [H/V]           1.4         QPSK         V           3         QPSK         V           3         QPSK         V           3         QPSK         V           3         QPSK         V           5         QPSK         V           5         QPSK         V           5         QPSK         V           10         QPSK         V           10         QPSK         V           10         QPSK         V           10         QPSK         V	Bandwidth [MHz]         Mod.         Pol. [H/V]         Height (cm]           1.4         QPSK         V         150           3         QPSK         V         150           5         QPSK         V         150           5         QPSK         V         150           5         QPSK         V         150           5         QPSK         V         150           10         QPSK         V         150           10         QPSK         V         150           10         QPSK         V         150 </td <td>Bandwidth [MHz]Mod. [H·V]Peil [Cm]Azimuth (degree)1.4QPSKV1500131.4QPSKV1500131.4QPSKV1500131.4QPSKV1500131.4QPSKV1500131.4QPSKV15003453QPSKV15003453QPSKV15003453QPSKV15003453QPSKV15003455QPSKV15003575QPSKV15003575QPSKV150035710QPSKV15001710QPSKV15001710QPSKV1500171016-QAMV1500171016-QAMV150017</td> <td>Bandwidth [MHz]         Mod.         Pol. [H/V]         Height [cm]         Azimuth [degree]         RB Size/Offset           1.4         QPSK         V         150         13         3 / 2           1.4         GPSK         V         150         13         3 / 2           1.4         16-QAM         V         150         345         1 / 14           3         QPSK         V         150         345         1 / 14           3         QPSK         V         150         345         1 / 14           3         GPSK         V         150         345         1 / 14           5         QPSK         V         150         357         1 / 24           5         QPSK         V         150         357         1 / 24           5         QPSK         V         150         1</td> <td>Bandwidth [MHz]         Mod.         Pol. [H/V]         Height (cm]         Azimuth (degree)         RB Size/Offset         Level [dBm]           1.4         QPSK         V         150         13         3 / 2         20.32           1.4         QPSK         V         150         13         3 / 2         20.64           1.4         QPSK         V         150         13         3 / 2         20.64           1.4         QPSK         V         150         13         3 / 2         20.78           1.4         QPSK         V         150         13         3 / 2         20.78           1.4         16-QAM         V         150         13         3 / 2         20.78           3         QPSK         V         150         345         1 / 14         20.39           3         QPSK         V         150         345         1 / 14         20.39           3         QPSK         V         150         345         1 / 14         20.83           3         16-QAM         V         150         357         1 / 24         20.83           5         QPSK         V         150         357         1 / 24</td> <td>Bandwidth [MHz]         Mod.         Pol. [H/V]         Height [cm]         Azimuth [degree]         RB size/Offset         Level [dBm]         Gain [dBi]           1.4         QPSK         V         150         13         3 / 2         20.32         1.10           1.4         QPSK         V         150         13         3 / 2         20.64         1.13           1.4         QPSK         V         150         13         3 / 2         20.78         1.16           1.4         QPSK         V         150         13         3 / 2         20.78         1.16           1.4         DPSK         V         150         13         3 / 2         20.07         1.16           1.4         DeQK         V         150         345         1 / 14         20.39         1.10           3         QPSK         V         150         345         1 / 14         20.39         1.10           3         QPSK         V         150         345         1 / 14         20.88         1.16           3         16-QAM         V         150         357         1 / 24         20.87         1.13           5         QPSK         V</td> <td>Bandwidth [MHz]         Mod.         Pol. [H/V]         Height (cm]         Azimuth (degree)         RB Size/Offset         Level (dBm]         Gain (dBi)         ERP (dBm)           1.4         QPSK         V         150         13         3/2         20.32         1.10         19.27           1.4         QPSK         V         150         13         3/2         20.64         1.13         19.62           1.4         QPSK         V         150         13         3/2         20.78         1.16         19.79           1.4         QPSK         V         150         13         3/2         20.07         1.16         19.08           1.4         16-QAM         V         150         13         3/2         20.07         1.16         19.08           3         QPSK         V         150         345         1/14         20.39         1.10         19.34           3         QPSK         V         150         345         1/14         20.88         1.16         19.89           3         16-QAM         V         150         357         1/24         20.82         1.11         19.84           5         QPSK         V</td> <td>Bandwidth [MHz]         Mod.         Pol. [H/V]         Height (cm)         Azimuth (degree)         RB size/Offset         Level [dBm]         Gain [dBi]         ERP [dBm]         ERP [Watts]           1.4         QPSK         V         150         13         3 / 2         20.32         1.10         19.27         0.085           1.4         QPSK         V         150         13         3 / 2         20.32         1.10         19.27         0.092           1.4         QPSK         V         150         13         3 / 2         20.78         1.16         19.79         0.095           1.4         QPSK         V         150         13         3 / 2         20.07         1.16         19.08         0.081           1.4         I6-QAM         V         150         345         1 / 14         20.39         1.10         19.34         0.081           3         QPSK         V         150         345         1 / 14         20.39         1.10         19.34         0.097           3         GPSK         V         150         345         1 / 14         20.86         1.16         18.87         0.097           5         QPSK         V         &lt;</td> <td>Bandwidth [MHz]         Mod.         Pol. [H/V]         Height (cm]         Azimuth [degree]         Size/Offset Size/Offset         Level [dBm]         Gain (dBl)         ERP [dBm]         ERP [Watts]         Limit (dBm]           1.4         QPSK         V         150         13         3/2         20.32         1.10         19.27         0.085         34.77           1.4         QPSK         V         150         13         3/2         20.64         1.13         19.62         0.092         34.77           1.4         QPSK         V         150         13         3/2         20.78         1.16         19.79         0.095         34.77           1.4         QPSK         V         150         13         3/2         20.77         1.16         19.08         0.081         34.77           1.4         16-QAM         V         150         345         1/14         20.39         1.10         19.34         0.081         34.77           3         QPSK         V         150         345         1/14         20.88         1.16         19.89         0.097         34.77           3         16-QAM         V         150         357         1/24         20.</td> <td>Bandwidth [MHz]         Med. [HV]         Pol. (Composition         Height (Composition         Azimuth (Composition         RB Size/Offset         Level [CBm]         Gain (CBB]         ERP (CBm)         ERP (CBm)         Limit (CBB)         Margin (CBB)           1.4         QPSK         V         150         13         3/2         20.32         1.10         19.27         0.085         34.77         -15.50           1.4         QPSK         V         150         13         3/2         20.64         1.13         19.62         0.092         34.77         -15.50           1.4         QPSK         V         150         13         3/2         20.64         1.16         19.79         0.095         34.77         -15.50           1.4         QPSK         V         150         13         3/2         20.07         1.16         19.08         0.081         34.77         -15.90           3         QPSK         V         150         345         1/14         20.39         1.10         19.38         0.081         34.77         -15.43           3         GPSK         V         150         345         1/14         20.86         1.16         18.87         0.077         34.77</td> <td>Bandwidth [MHZ]         Mod.         Pol. [HV/]         Height [cm]         Azimuth (degree)         RB size/Offset (dBm]         Level (dBm]         Gain (dBl         ERP (dBm]         ERP (Watts)         Limit (dBm]         Margin (dB)         EIRP (dB)           1.4         QPSK         V         150         13         3/2         20.32         1.10         19.27         0.085         34.77         -15.50         21.42           1.4         QPSK         V         150         13         3/2         20.64         1.13         19.62         0.092         34.77         -15.60         21.94           1.4         QPSK         V         150         13         3/2         20.78         1.16         19.79         0.095         34.77         -14.98         21.94           1.4         16-QAM         V         150         345         1/14         20.39         1.10         19.34         0.086         34.77         -15.69         21.94           3         QPSK         V         150         345         1/14         20.89         1.10         19.34         0.087         34.77         -15.69         21.94           3         QPSK         V         150         345         &lt;</td> <td>Bandwidth [MH2]         Mod.         Pol. [HVV]         Heigh (cm)         Azimuth (degree)         RB size/Offset (dBm)         Level (dBm)         Gain (dBm)         ERP (dBm)         Limit (dBm)         Margn (BB)         EIRP (BB)         EIRP (dB)         Limit (dB)         Margn (BB)         EIRP (BB)         EIRP (BB)           144         QPSK         V         150         13         3/2         20.32         1.10         19.27         0.085         34.77         15.50         21.42         0.130           1.44         QPSK         V         150         133         3/2         20.78         1.16         19.79         0.095         34.77         14.98         21.94         0.150           1.44         16-QAM         V         150         133         3/2         20.07         1.16         19.78         0.086         34.77         14.98         21.49         0.141           1.4         16-QAM         V         150         345         1/14         20.39         1.10         19.34         0.086         34.77         15.04         21.49         0.141           3         QPSK         V         150         345         1/14         20.39         1.10         19.89         0.097</td> <td>Bandwidth (MHz)         Mod.         Pol. (HVV)         Height (cm)         Azimuth (size)         KB (size)         Level (dBm)         Gain (dBm)         ERP (dBm)         Limit (dBm)         Margin (dBm)         EIRP (dBm)         Gain (dBm)         EIRP (dBm)         EIRP (dBm)         Gain (dBm)         EIRP (dBm)         EIRP (dBm)         Gain (dBm)         Gain (dBm)           14.4         QPSK         V         150         133         3/2         20.07         1.16         19.08         0.081         34.77         15.08         21.49         0.143         36.99           34.14         16.04         20.07         1.14         20.37         1.16         <td< td=""></td<></td>	Bandwidth [MHz]Mod. [H·V]Peil [Cm]Azimuth (degree)1.4QPSKV1500131.4QPSKV1500131.4QPSKV1500131.4QPSKV1500131.4QPSKV1500131.4QPSKV15003453QPSKV15003453QPSKV15003453QPSKV15003453QPSKV15003455QPSKV15003575QPSKV15003575QPSKV150035710QPSKV15001710QPSKV15001710QPSKV1500171016-QAMV1500171016-QAMV150017	Bandwidth [MHz]         Mod.         Pol. [H/V]         Height [cm]         Azimuth [degree]         RB Size/Offset           1.4         QPSK         V         150         13         3 / 2           1.4         GPSK         V         150         13         3 / 2           1.4         16-QAM         V         150         345         1 / 14           3         QPSK         V         150         345         1 / 14           3         QPSK         V         150         345         1 / 14           3         GPSK         V         150         345         1 / 14           5         QPSK         V         150         357         1 / 24           5         QPSK         V         150         357         1 / 24           5         QPSK         V         150         1	Bandwidth [MHz]         Mod.         Pol. [H/V]         Height (cm]         Azimuth (degree)         RB Size/Offset         Level [dBm]           1.4         QPSK         V         150         13         3 / 2         20.32           1.4         QPSK         V         150         13         3 / 2         20.64           1.4         QPSK         V         150         13         3 / 2         20.64           1.4         QPSK         V         150         13         3 / 2         20.78           1.4         QPSK         V         150         13         3 / 2         20.78           1.4         16-QAM         V         150         13         3 / 2         20.78           3         QPSK         V         150         345         1 / 14         20.39           3         QPSK         V         150         345         1 / 14         20.39           3         QPSK         V         150         345         1 / 14         20.83           3         16-QAM         V         150         357         1 / 24         20.83           5         QPSK         V         150         357         1 / 24	Bandwidth [MHz]         Mod.         Pol. [H/V]         Height [cm]         Azimuth [degree]         RB size/Offset         Level [dBm]         Gain [dBi]           1.4         QPSK         V         150         13         3 / 2         20.32         1.10           1.4         QPSK         V         150         13         3 / 2         20.64         1.13           1.4         QPSK         V         150         13         3 / 2         20.78         1.16           1.4         QPSK         V         150         13         3 / 2         20.78         1.16           1.4         DPSK         V         150         13         3 / 2         20.07         1.16           1.4         DeQK         V         150         345         1 / 14         20.39         1.10           3         QPSK         V         150         345         1 / 14         20.39         1.10           3         QPSK         V         150         345         1 / 14         20.88         1.16           3         16-QAM         V         150         357         1 / 24         20.87         1.13           5         QPSK         V	Bandwidth [MHz]         Mod.         Pol. [H/V]         Height (cm]         Azimuth (degree)         RB Size/Offset         Level (dBm]         Gain (dBi)         ERP (dBm)           1.4         QPSK         V         150         13         3/2         20.32         1.10         19.27           1.4         QPSK         V         150         13         3/2         20.64         1.13         19.62           1.4         QPSK         V         150         13         3/2         20.78         1.16         19.79           1.4         QPSK         V         150         13         3/2         20.07         1.16         19.08           1.4         16-QAM         V         150         13         3/2         20.07         1.16         19.08           3         QPSK         V         150         345         1/14         20.39         1.10         19.34           3         QPSK         V         150         345         1/14         20.88         1.16         19.89           3         16-QAM         V         150         357         1/24         20.82         1.11         19.84           5         QPSK         V	Bandwidth [MHz]         Mod.         Pol. [H/V]         Height (cm)         Azimuth (degree)         RB size/Offset         Level [dBm]         Gain [dBi]         ERP [dBm]         ERP [Watts]           1.4         QPSK         V         150         13         3 / 2         20.32         1.10         19.27         0.085           1.4         QPSK         V         150         13         3 / 2         20.32         1.10         19.27         0.092           1.4         QPSK         V         150         13         3 / 2         20.78         1.16         19.79         0.095           1.4         QPSK         V         150         13         3 / 2         20.07         1.16         19.08         0.081           1.4         I6-QAM         V         150         345         1 / 14         20.39         1.10         19.34         0.081           3         QPSK         V         150         345         1 / 14         20.39         1.10         19.34         0.097           3         GPSK         V         150         345         1 / 14         20.86         1.16         18.87         0.097           5         QPSK         V         <	Bandwidth [MHz]         Mod.         Pol. [H/V]         Height (cm]         Azimuth [degree]         Size/Offset Size/Offset         Level [dBm]         Gain (dBl)         ERP [dBm]         ERP [Watts]         Limit (dBm]           1.4         QPSK         V         150         13         3/2         20.32         1.10         19.27         0.085         34.77           1.4         QPSK         V         150         13         3/2         20.64         1.13         19.62         0.092         34.77           1.4         QPSK         V         150         13         3/2         20.78         1.16         19.79         0.095         34.77           1.4         QPSK         V         150         13         3/2         20.77         1.16         19.08         0.081         34.77           1.4         16-QAM         V         150         345         1/14         20.39         1.10         19.34         0.081         34.77           3         QPSK         V         150         345         1/14         20.88         1.16         19.89         0.097         34.77           3         16-QAM         V         150         357         1/24         20.	Bandwidth [MHz]         Med. [HV]         Pol. (Composition         Height (Composition         Azimuth (Composition         RB Size/Offset         Level [CBm]         Gain (CBB]         ERP (CBm)         ERP (CBm)         Limit (CBB)         Margin (CBB)           1.4         QPSK         V         150         13         3/2         20.32         1.10         19.27         0.085         34.77         -15.50           1.4         QPSK         V         150         13         3/2         20.64         1.13         19.62         0.092         34.77         -15.50           1.4         QPSK         V         150         13         3/2         20.64         1.16         19.79         0.095         34.77         -15.50           1.4         QPSK         V         150         13         3/2         20.07         1.16         19.08         0.081         34.77         -15.90           3         QPSK         V         150         345         1/14         20.39         1.10         19.38         0.081         34.77         -15.43           3         GPSK         V         150         345         1/14         20.86         1.16         18.87         0.077         34.77	Bandwidth [MHZ]         Mod.         Pol. [HV/]         Height [cm]         Azimuth (degree)         RB size/Offset (dBm]         Level (dBm]         Gain (dBl         ERP (dBm]         ERP (Watts)         Limit (dBm]         Margin (dB)         EIRP (dB)           1.4         QPSK         V         150         13         3/2         20.32         1.10         19.27         0.085         34.77         -15.50         21.42           1.4         QPSK         V         150         13         3/2         20.64         1.13         19.62         0.092         34.77         -15.60         21.94           1.4         QPSK         V         150         13         3/2         20.78         1.16         19.79         0.095         34.77         -14.98         21.94           1.4         16-QAM         V         150         345         1/14         20.39         1.10         19.34         0.086         34.77         -15.69         21.94           3         QPSK         V         150         345         1/14         20.89         1.10         19.34         0.087         34.77         -15.69         21.94           3         QPSK         V         150         345         <	Bandwidth [MH2]         Mod.         Pol. [HVV]         Heigh (cm)         Azimuth (degree)         RB size/Offset (dBm)         Level (dBm)         Gain (dBm)         ERP (dBm)         Limit (dBm)         Margn (BB)         EIRP (BB)         EIRP (dB)         Limit (dB)         Margn (BB)         EIRP (BB)         EIRP (BB)           144         QPSK         V         150         13         3/2         20.32         1.10         19.27         0.085         34.77         15.50         21.42         0.130           1.44         QPSK         V         150         133         3/2         20.78         1.16         19.79         0.095         34.77         14.98         21.94         0.150           1.44         16-QAM         V         150         133         3/2         20.07         1.16         19.78         0.086         34.77         14.98         21.49         0.141           1.4         16-QAM         V         150         345         1/14         20.39         1.10         19.34         0.086         34.77         15.04         21.49         0.141           3         QPSK         V         150         345         1/14         20.39         1.10         19.89         0.097	Bandwidth (MHz)         Mod.         Pol. (HVV)         Height (cm)         Azimuth (size)         KB (size)         Level (dBm)         Gain (dBm)         ERP (dBm)         Limit (dBm)         Margin (dBm)         EIRP (dBm)         Gain (dBm)         EIRP (dBm)         EIRP (dBm)         Gain (dBm)         EIRP (dBm)         EIRP (dBm)         Gain (dBm)         Gain (dBm)           14.4         QPSK         V         150         133         3/2         20.07         1.16         19.08         0.081         34.77         15.08         21.49         0.143         36.99           34.14         16.04         20.07         1.14         20.37         1.16 <td< td=""></td<>

### Table 7-4. ERP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	н	150	11	1 / 0	20.11	1.50	19.46	0.088	38.45	-18.99	21.61	0.145	40.61	-19.00
836.50	1.4	QPSK	н	150	10	1/0	22.06	1.50	21.41	0.138	38.45	-17.04	23.56	0.227	40.61	-17.05
848.30	1.4	QPSK	н	150	10	1 / 0	22.93	1.50	22.28	0.169	38.45	-16.17	24.43	0.277	40.61	-16.18
848.30	1.4	16-QAM	н	150	10	1 / 0	21.72	1.50	21.07	0.128	38.45	-17.38	23.22	0.210	40.61	-17.39
825.50	3	QPSK	н	150	5	1 / 0	20.26	1.50	19.61	0.091	38.45	-18.84	21.76	0.150	40.61	-18.85
836.50	3	QPSK	н	150	5	1 / 0	21.96	1.50	21.31	0.135	38.45	-17.14	23.46	0.222	40.61	-17.15
847.50	3	QPSK	н	150	5	1 / 0	22.92	1.50	22.27	0.169	38.45	-16.18	24.42	0.277	40.61	-16.19
847.50	3	16-QAM	н	150	5	1 / 0	21.59	1.50	20.94	0.124	38.45	-17.51	23.09	0.204	40.61	-17.52
826.50	5	QPSK	н	150	3	1 / 0	19.99	1.50	19.34	0.086	38.45	-19.11	21.49	0.141	40.61	-19.12
836.50	5	QPSK	н	150	3	1 / 0	21.76	1.50	21.11	0.129	38.45	-17.34	23.26	0.212	40.61	-17.35
846.50	5	QPSK	н	15	3	1 / 0	22.45	1.50	21.80	0.151	38.45	-16.65	23.95	0.248	40.61	-16.66
846.50	5	16-QAM	н	15	3	1 / 0	21.09	1.50	20.44	0.111	38.45	-18.01	22.59	0.182	40.61	-18.02
829.00	10	QPSK	н	150	3	1 / 49	21.26	1.50	20.61	0.115	38.45	-17.84	22.76	0.189	40.61	-17.85
836.50	10	QPSK	н	150	3	1 / 49	21.84	1.50	21.19	0.132	38.45	-17.26	23.34	0.216	40.61	-17.27
844.00	10	QPSK	н	150	3	1 / 49	22.44	1.50	21.79	0.151	38.45	-16.66	23.94	0.248	40.61	-16.67
844.00	10	16-QAM	н	150	3	1 / 49	21.69	1.50	21.04	0.127	38.45	-17.41	23.19	0.208	40.61	-17.42
848.30	1.4	QPSK	V	150	359	1/0	19.87	1.50	19.22	0.084	38.45	-19.23	21.37	0.137	40.61	-19.24

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

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 125 of 167	
1M1803150042-03-R1.A3L	3/8 - 4/17/2018	Portable Handset		Page 135 of 167	
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	150	92	1/0	19.28	5.56	24.84	0.305	30.00	-5.16
1745.00	1.4	QPSK	V	150	92	6 / 0	19.84	5.32	25.16	0.328	30.00	-4.84
1779.30	1.4	QPSK	V	150	89	1 / 0	20.56	5.09	25.65	0.367	30.00	-4.35
1779.30	1.4	16-QAM	V	150	89	1 / 0	20.40	5.09	25.49	0.354	30.00	-4.51
1711.50	3	QPSK	V	150	94	1 / 0	19.33	5.55	24.88	0.308	30.00	-5.12
1745.00	3	QPSK	V	150	94	1/0	20.05	5.32	25.37	0.345	30.00	-4.63
1778.50	3	QPSK	V	150	94	1/0	20.49	5.10	25.59	0.362	30.00	-4.41
1778.50	3	16-QAM	V	150	94	1 / 0	20.24	5.10	25.34	0.342	30.00	-4.66
1712.50	5	QPSK	V	150	85	1 / 0	18.75	5.55	24.30	0.269	30.00	-5.70
1745.00	5	QPSK	V	150	85	1/0	19.55	5.32	24.87	0.307	30.00	-5.13
1777.50	5	QPSK	V	150	85	1/0	20.38	5.10	25.48	0.354	30.00	-4.52
1777.50	5	16-QAM	V	150	85	1 / 0	20.01	5.10	25.11	0.325	30.00	-4.89
1715.00	10	QPSK	V	150	93	1 / 0	19.51	5.53	25.04	0.319	30.00	-4.96
1745.00	10	QPSK	V	150	93	1/0	20.10	5.32	25.42	0.349	30.00	-4.58
1775.00	10	QPSK	V	150	93	1 / 0	20.26	5.12	25.38	0.345	30.00	-4.62
1745.00	10	16-QAM	V	150	93	1/0	19.89	5.32	25.21	0.332	30.00	-4.79
1717.50	15	QPSK	V	150	91	1/0	19.37	5.51	24.88	0.308	30.00	-5.12
1745.00	15	QPSK	V	150	91	1/0	19.77	5.32	25.09	0.323	30.00	-4.91
1772.50	15	QPSK	V	150	91	1 / 0	20.19	5.14	25.33	0.341	30.00	-4.67
1772.50	15	16-QAM	V	150	91	1/0	19.98	5.14	25.12	0.325	30.00	-4.88
1720.00	20	QPSK	V	150	92	1 / 99	19.51	5.49	25.00	0.316	30.00	-5.00
1745.00	20	QPSK	V	150	92	1 / 99	19.93	5.32	25.25	0.335	30.00	-4.75
1770.00	20	QPSK	V	150	92	1 / 99	20.71	5.15	25.86	0.386	30.00	-4.14
1770.00	20	16-QAM	V	150	92	1 / 99	20.20	5.15	25.35	0.343	30.00	-4.65
1770.00	20	QPSK	н	150	100	100 / 0	20.69	5.15	25.84	0.384	30.00	-4.16

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

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	V	150	360	1/0	18.03	4.82	22.85	0.193	33.01	-10.16
1880.00	1.4	QPSK	V	150	360	1/0	18.00	4.74	22.74	0.188	33.01	-10.27
1909.30	1.4	QPSK	V	150	360	1 / 0	17.95	4.68	22.63	0.183	33.01	-10.38
1850.70	1.4	16-QAM	V	150	360	1 / 0	17.17	4.82	21.99	0.158	33.01	-11.02
1851.50	3	QPSK	V	150	359	1 / 0	18.17	4.82	22.99	0.199	33.01	-10.02
1880.00	3	QPSK	V	150	359	1 / 0	18.02	4.74	22.76	0.189	33.01	-10.25
1908.50	3	QPSK	V	150	359	1/0	18.12	4.68	22.80	0.191	33.01	-10.21
1851.50	3	16-QAM	V	150	359	1 / 0	17.28	4.82	22.10	0.162	33.01	-10.91
1852.50	5	QPSK	V	150	1	1/0	18.16	4.81	22.97	0.198	33.01	-10.04
1880.00	5	QPSK	V	150	1	1 / 0	18.08	4.74	22.82	0.191	33.01	-10.19
1907.50	5	QPSK	V	150	1	1 / 0	17.95	4.68	22.63	0.183	33.01	-10.38
1907.50	5	16-QAM	V	150	1	1/0	16.87	4.68	21.55	0.143	33.01	-11.46
1855.00	10	QPSK	V	150	352	1 / 0	18.28	4.81	23.09	0.204	33.01	-9.92
1880.00	10	QPSK	V	150	352	1/0	18.15	4.74	22.89	0.195	33.01	-10.12
1905.00	10	QPSK	V	150	352	1 / 0	17.98	4.68	22.66	0.185	33.01	-10.35
1855.00	10	16-QAM	V	150	352	1 / 0	17.00	4.81	21.81	0.152	33.01	-11.20
1857.50	15	QPSK	V	150	360	1 / 0	18.97	4.80	23.77	0.238	33.01	-9.24
1880.00	15	QPSK	V	150	360	1 / 0	18.52	4.74	23.26	0.212	33.01	-9.75
1902.50	15	QPSK	V	150	360	1/0	18.20	4.69	22.89	0.194	33.01	-10.12
1857.50	15	16-QAM	V	150	360	1 / 0	17.70	4.80	22.50	0.178	33.01	-10.51
1860.00	20	QPSK	V	150	355	1 / 0	18.48	4.79	23.27	0.212	33.01	-9.74
1880.00	20	QPSK	V	150	355	1 / 0	18.25	4.74	22.99	0.199	33.01	-10.02
1900.00	20	QPSK	V	150	355	1 / 0	17.83	4.69	22.52	0.179	33.01	-10.49
1860.00	20	16-QAM	V	150	355	1 / 0	17.32	4.79	22.11	0.163	33.01	-10.90
1857.50	15	QPSK	н	150	247	1/0	18.16	4.80	22.96	0.198	33.01	-10.05

Table 7-7. EIRP Data (Band 2)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 127 of 167	
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	н	150	341	1 / 24	17.40	5.74	23.14	0.206	33.01	-9.87
2535.00	5	QPSK	Н	150	341	1 / 24	18.27	5.86	24.13	0.259	33.01	-8.88
2567.50	5	QPSK	Н	150	341	1 / 24	18.42	5.98	24.40	0.275	33.01	-8.61
2567.50	5	16-QAM	н	150	341	1 / 24	17.37	5.98	23.35	0.216	33.01	-9.66
2505.00	10	QPSK	Н	150	343	1 / 49	17.77	5.75	23.52	0.225	33.01	-9.49
2535.00	10	QPSK	Н	150	343	1 / 0	18.34	5.86	24.20	0.263	33.01	-8.81
2565.00	10	QPSK	н	150	343	1 / 49	18.35	5.97	24.32	0.270	33.01	-8.69
2565.00	10	16-QAM	Н	150	343	1 / 49	17.18	5.97	23.15	0.207	33.01	-9.86
2507.50	15	QPSK	н	150	341	1 / 74	17.78	5.76	23.54	0.226	33.01	-9.47
2535.00	15	QPSK	н	150	341	1 / 74	18.47	5.86	24.33	0.271	33.01	-8.68
2562.50	15	QPSK	н	150	341	1 / 74	18.61	5.96	24.57	0.287	33.01	-8.44
2562.50	15	16-QAM	н	150	341	1 / 74	17.16	5.96	23.12	0.205	33.01	-9.89
2510.00	20	QPSK	н	150	343	1 / 99	18.16	5.77	23.93	0.247	33.01	-9.08
2535.00	20	QPSK	н	150	343	1 / 99	18.63	5.86	24.49	0.281	33.01	-8.52
2560.00	20	QPSK	н	150	343	1 / 99	18.69	5.95	24.64	0.291	33.01	-8.37
2560.00	20	16-QAM	н	150	343	1 / 99	17.34	5.95	23.29	0.213	33.01	-9.72
2560.00	20	QPSK	V	150	58	1/0	13.92	5.95	19.87	0.097	33.01	-13.14

Table 7-8. EIRP Data (Band 7)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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# 7.7 Radiated Spurious Emissions Measurements

### **Test Overview**

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

### **Test Procedures Used**

KDB 971168 D01 v03 - Section 5.8

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

### **Test Settings**

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

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

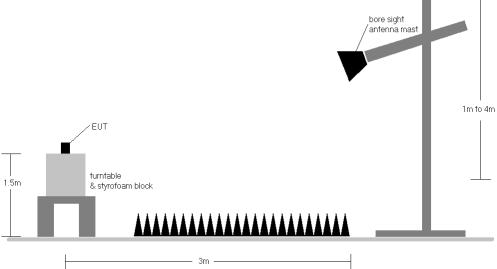
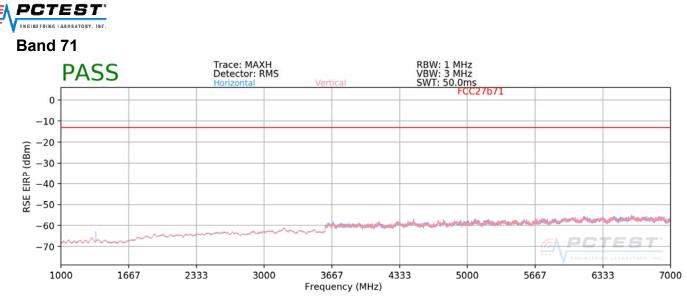


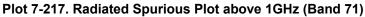
Figure 7-7. Test Instrument & Measurement Setup

## Test Notes

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

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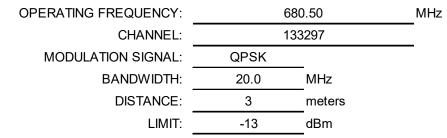
OPERATING FREQUENCY:	67	3.00	MHz
CHANNEL:	13	3222	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1346.00	Н	206	50	-63.70	3.87	-59.83	-46.8
2019.00	Н	395	157	-69.17	4.74	-64.43	-51.4
2692.00	Н	181	22	-69.63	6.50	-63.12	-50.1
3365.00	Н	-	-	-71.54	7.93	-63.61	-50.6
4038.00	Н	-	-	-71.95	9.07	-62.88	-49.9

Table 7-9. Radiated Spurious Data (Band 71 – Low Channel)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1361.00	Н	125	44	-64.76	4.00	-60.76	-47.8
2041.50	Н	11	2	-68.95	4.89	-64.06	-51.1
2722.00	Н	112	17	-70.42	6.64	-63.79	-50.8
3402.50	Н	-	-	-71.06	7.99	-63.07	-50.1
4083.00	Н	-	-	-72.03	9.05	-62.98	-50.0

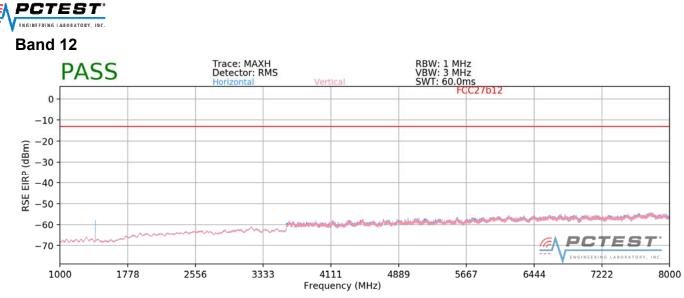
Table 7-10. Radiated Spurious Data (Band 71 – Mid Channel)

OPERATING FREQUENCY:	68	8.00 MF	Ηz
CHANNEL:	133	3372	
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1376.00	Н	172	47	-67.99	8.00	-59.99	-47.0
2064.00	Н	158	16	-69.69	8.75	-60.94	-47.9
2752.00	Н	104	39	-75.83	9.73	-66.10	-53.1
3440.00	Н	-	-	-74.06	9.48	-64.58	-51.6

Table 7-11. Radiated Spurious Data (Band 71 – High Channel)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 142 of 167
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### Plot 7-218. Radiated Spurious Plot above 1GHz (Band 12)

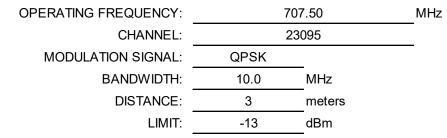
OPERATING FREQUENCY:	70-	4.00 M	Hz
CHANNEL:	23	060	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	
-		_	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	Н	149	135	-62.30	8.00	-54.29	-41.3
2112.00	Н	200	186	-73.96	8.89	-65.06	-52.1
2816.00	Н	-	-	-77.82	10.10	-67.72	-54.7

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

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	Н	153	132	-62.11	8.09	-54.02	-41.0
2122.50	Н	104	221	-74.24	8.88	-65.36	-52.4
2830.00	Н	173	211	-76.25	10.13	-66.12	-53.1
3537.50	Н	-	-	-74.41	9.69	-64.71	-51.7

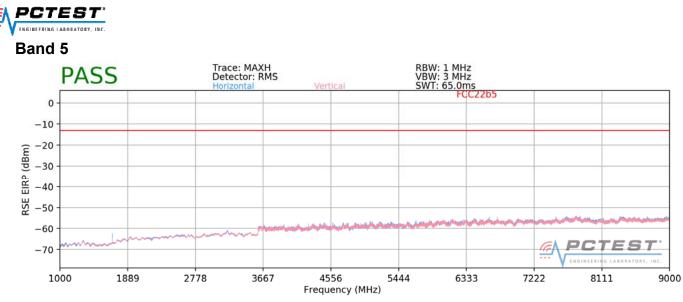
Table 7-13. Radiated Spurious Data (Band 12 – Mid Channel)

OPERATING FREQUENCY:	71	1.00 MHz	
CHANNEL:	23	130	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	Н	100	129	-60.87	8.17	-52.70	-39.7
2133.00	Н	188	188	-72.73	8.87	-63.86	-50.9
2844.00	Н	140	203	-75.97	10.16	-65.80	-52.8
3555.00	Н	-	-	-74.62	9.71	-64.91	-51.9

Table 7-14. Radiated Spurious Data (Band 12 – High Channel)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N: Test Dates:		EUT Type:		Dega 144 of 167	
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### Plot 7-219. Radiated Spurious Plot above 1GHz (Band 5)

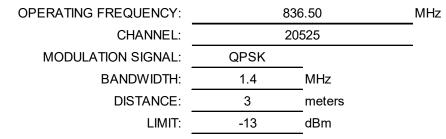
OPERATING FREQUENCY:	82	4.70	MHz
CHANNEL:	20	)407	_
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	1.4	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1649.40	Н	120	41	-73.39	9.01	-64.38	-51.4
2474.10	Н	113	50	-74.19	9.12	-65.07	-52.1
3298.80	Н	-	-	-74.93	9.37	-65.56	-52.6

Table 7-15. Radiated Spurious Data (Band 5 – Low Channel)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	Н	144	144	-73.57	8.85	-64.72	-51.7
2509.50	Н	139	52	-75.98	9.17	-66.81	-53.8
3346.00	Н	-	-	-75.24	9.36	-65.88	-52.9

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

OPERATING FREQUENCY:	84	8.30 MHz	Z
CHANNEL:	20	643	
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	1.4	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	
LIIVITT.	-13		

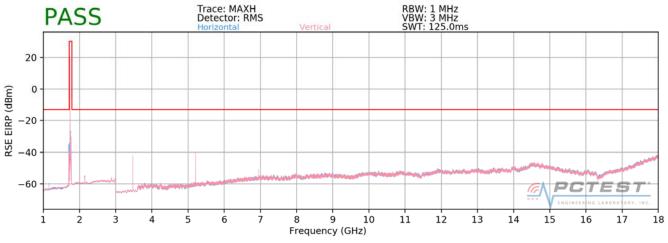
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1696.60	Н	177	147	-70.48	8.68	-61.80	-48.8
2544.90	Н	149	49	-76.32	9.27	-67.05	-54.0
3393.20	Н	-	-	-73.87	9.46	-64.41	-51.4

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

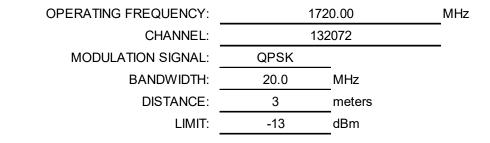
FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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#### FCC27b66







Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	Н	104	172	-45.52	9.54	-35.98	-23.0
5160.00	Н	113	38	-55.41	10.79	-44.61	-31.6
6880.00	Н	130	24	-57.45	10.86	-46.60	-33.6
8600.00	Н	104	185	-68.99	11.69	-57.30	-44.3
10320.00	Н	-	-	-68.38	12.49	-55.88	-42.9

Table 7-18. Radiated Spurious Data (Band 66/4 – Low Channel)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	174	15.00	MHz
CHANNEL:	132	2322	_
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	Н	131	172	-47.63	9.65	-37.98	-25.0
5235.00	Н	100	188	-49.26	10.93	-38.33	-25.3
6980.00	Н	100	22	-59.09	10.96	-48.13	-35.1
8725.00	Н	-	-	-69.01	11.83	-57.18	-44.2

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

OPERATING FREQUENCY:	177	70.00	MHz
CHANNEL:	13	2572	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

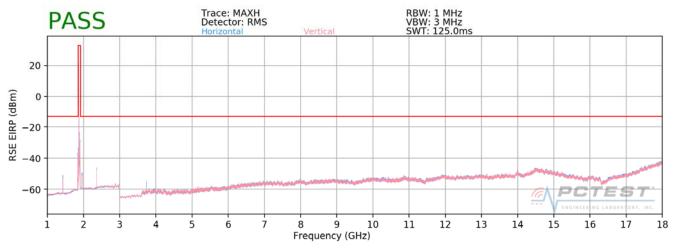
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	Н	130	173	-50.54	9.69	-40.84	-27.8
5310.00	Н	100	182	-44.92	10.97	-33.96	-21.0
7080.00	Н	104	312	-58.07	11.01	-47.06	-34.1
8850.00	Н	-	-	-68.95	11.95	-57.00	-44.0

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

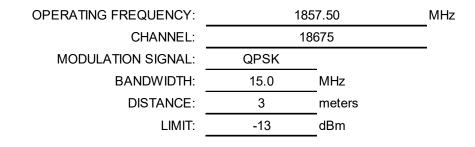
FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type: Portable Handset		Dage 149 of 167
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#### FCC24b2



Plot 7-221. Radiated Spurious Plot above 1GHz (Band 2)

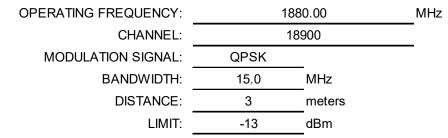


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3715.00	Н	120	38	-56.77	9.68	-47.09	-34.1
5572.50	Н	100	111	-66.68	11.02	-55.66	-42.7
7430.00	Н	107	141	-67.38	10.84	-56.55	-43.5
9287.50	Н	-	-	-69.76	12.29	-57.48	-44.5
11145.00	Н	-	-	-68.58	12.97	-55.61	-42.6

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

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 140 of 167
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	Н	104	38	-63.42	9.50	-53.92	-40.9
5640.00	Н	104	106	-69.47	11.16	-58.31	-45.3
7520.00	Н	256	155	-69.55	11.03	-58.52	-45.5
9400.00	Н	-	-	-70.44	12.19	-58.25	-45.3
11280.00	Н	-	-	-70.01	13.15	-56.86	-43.9

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

OPERATING FREQUENCY:	190	02.50 MH	z
CHANNEL:	19	125	
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	15.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

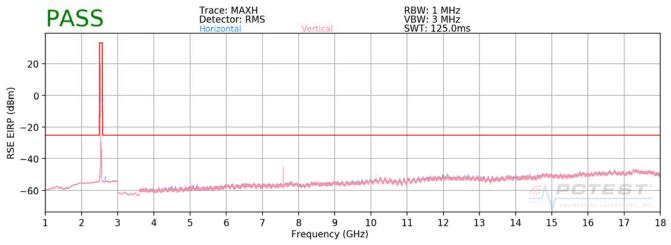
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3805.00	Н	100	38	-59.94	9.33	-50.60	-37.6
5707.50	Н	103	108	-72.00	11.31	-60.69	-47.7
7610.00	Н	-	-	-69.68	11.23	-58.45	-45.5
9512.50	Н	-	-	-69.64	12.21	-57.43	-44.4

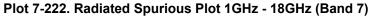
Table 7-23. Radiated Spurious Data (Band 2 – High Channel)

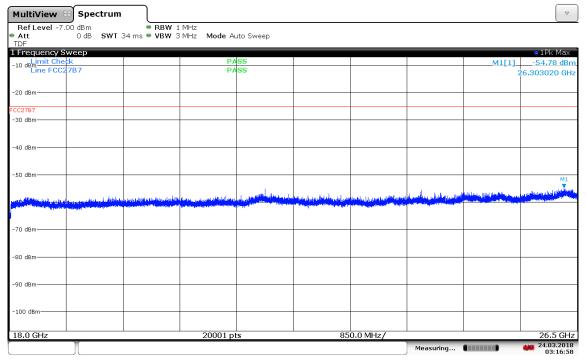
FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 150 of 167
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#### FCC27b7







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Att TDF		34 ms ➡ VBW 3	3 MHz Mode Au	uto Sweep					
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20 dBm									
CC27B7									
-30 dBm									
-40 dBm									
40 dbm									
-50 dBm		M1							
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MHz

OPERATING FREQUENCY: CHANNEL: MODULATION SIGNAL: BANDWIDTH:

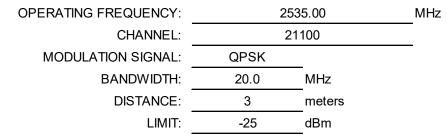
REQUENCY:2510.00CHANNEL:20850DN SIGNAL:QPSKANDWIDTH:20.0DISTANCE:3LIMIT:-25dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	V	115	355	-66.51	11.09	-55.42	-30.4
7530.00	V	100	318	-49.04	11.05	-37.99	-13.0
10040.00	V	394	7	-65.49	12.18	-53.31	-28.3
12550.00	V	-	-	-67.41	12.80	-54.61	-29.6

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

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	V	117	173	-68.58	10.91	-57.67	-32.7
7605.00	V	100	319	-50.11	11.22	-38.89	-13.9
10140.00	V	261	52	-67.51	12.28	-55.23	-30.2
12675.00	V	-	-	-66.61	12.91	-53.70	-28.7

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

OPERATING FREQUENCY:	256	60.00 MHz
CHANNEL:	21	350
MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	V	100	348	-71.32	10.84	-60.48	-35.5
7680.00	V	100	316	-53.11	11.34	-41.77	-16.8
10240.00	V	325	12	-65.78	12.42	-53.37	-28.4
12800.00	V	-	-	-66.90	12.91	-53.99	-29.0

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

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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### 7.8 Frequency Stability / Temperature Variation

### **Test Overview and Limit**

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

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

For Part 22, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency. For Part 24, Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### Test Procedure Used

ANSI/TIA-603-E-2016

### Test Settings

- 1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

### Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

### Test Notes

None

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### **Band 71 Frequency Stability Measurements**

OPERATING FREQUENCY:	680,500,000	Hz
CHANNEL:	133297	_
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( [°] С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	680,499,804	-196	-0.0000288
100 %		- 30	680,500,079	79	0.0000116
100 %		- 20	680,500,444	444	0.0000652
100 %		- 10	680,500,045	45	0.0000066
100 %		0	680,499,859	-141	-0.0000207
100 %		+ 10	680,499,892	-108	-0.0000159
100 %		+ 20	680,499,756	-244	-0.0000359
100 %		+ 30	680,500,165	165	0.0000242
100 %		+ 40	680,499,926	-74	-0.0000109
100 %		+ 50	680,499,898	-102	-0.0000150
BATT. ENDPOINT	3.45	+ 20	680,499,926	-74	-0.0000109

 Table 7-27. Frequency Stability Data (Band 71)

### Note:

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

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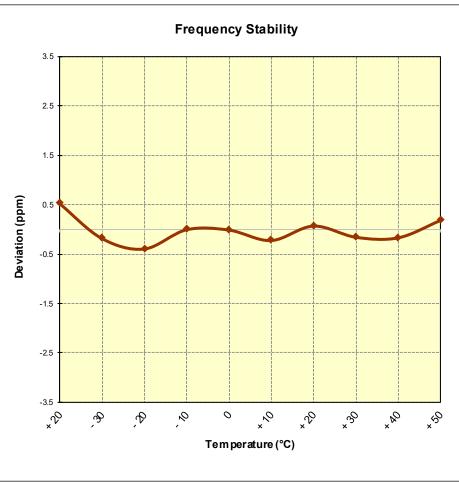


Figure 7-8. Frequency Stability Graph (Band 71)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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### **Band 12 Frequency Stability Measurements**

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

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( [°] С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	707,500,373	373	0.0000527
100 %		- 30	707,499,873	-127	-0.0000180
100 %		- 20	707,499,723	-277	-0.0000392
100 %		- 10	707,499,998	-2	-0.000003
100 %		0	707,499,994	-6	-0.000008
100 %		+ 10	707,499,844	-156	-0.0000220
100 %		+ 20	707,500,051	51	0.0000072
100 %		+ 30	707,499,891	-109	-0.0000154
100 %		+ 40	707,499,883	-117	-0.0000165
100 %		+ 50	707,500,130	130	0.0000184
BATT. ENDPOINT	3.45	+ 20	707,500,080	80	0.0000113

 Table 7-28. Frequency Stability Data (Band 12)

### Note:

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

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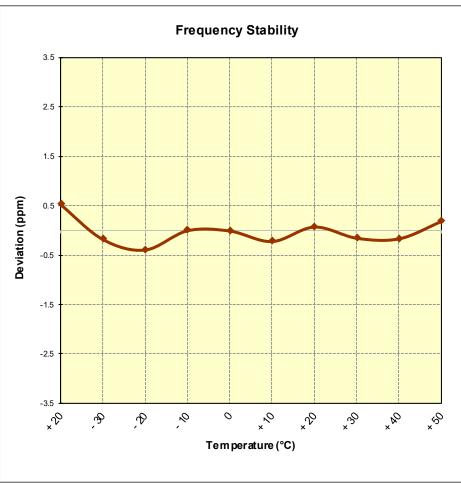


Figure 7-9. Frequency Stability Graph (Band 12)

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# **Band 5 Frequency Stability Measurements**

 OPERATING FREQUENCY:
 836,500,000
 Hz

 CHANNEL:
 20525

 REFERENCE VOLTAGE:
 3.85
 VDC

 DEVIATION LIMIT:
 ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( [°] С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	836,499,733	-267	-0.0000319
100 %		- 30	836,499,871	-129	-0.0000154
100 %		- 20	836,500,316	316	0.0000378
100 %		- 10	836,500,164	164	0.0000196
100 %		0	836,499,898	-102	-0.0000122
100 %		+ 10	836,499,940	-60	-0.0000072
100 %		+ 20	836,499,957	-43	-0.0000051
100 %		+ 30	836,500,044	44	0.0000053
100 %		+ 40	836,500,371	371	0.0000444
100 %		+ 50	836,499,948	-52	-0.0000062
BATT. ENDPOINT	3.45	+ 20	836,500,177	177	0.0000212

Table 7-29. Frequency Stability Data (Band 5)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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## **Band 5 Frequency Stability Measurements**

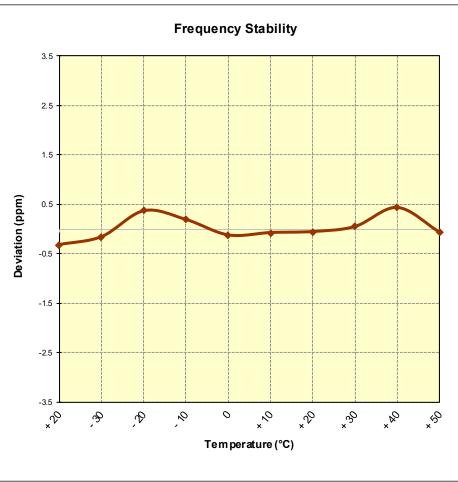


Figure 7-10. Frequency Stability Graph (Band 5)

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### **Band 66/4Frequency Stability Measurements**

OPERATING FREQUENCY:	1,745,000,000	Hz
CHANNEL:	132322	_
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( [°] С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,745,000,025	25	0.0000014
100 %		- 30	1,745,000,408	408	0.0000234
100 %		- 20	1,745,000,105	105	0.0000060
100 %		- 10	1,744,999,798	-202	-0.0000116
100 %		0	1,745,000,089	89	0.0000051
100 %		+ 10	1,745,000,407	407	0.0000233
100 %		+ 20	1,744,999,894	-106	-0.0000061
100 %		+ 30	1,744,999,867	-133	-0.0000076
100 %		+ 40	1,744,999,701	-299	-0.0000171
100 %		+ 50	1,744,999,711	-289	-0.0000166
	3.45	+ 20	1,745,000,106	106	0.0000061

 Table 7-30. Frequency Stability Data (Band 66/4)

### 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 in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

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**Band 66/4Frequency Stability Measurements** 

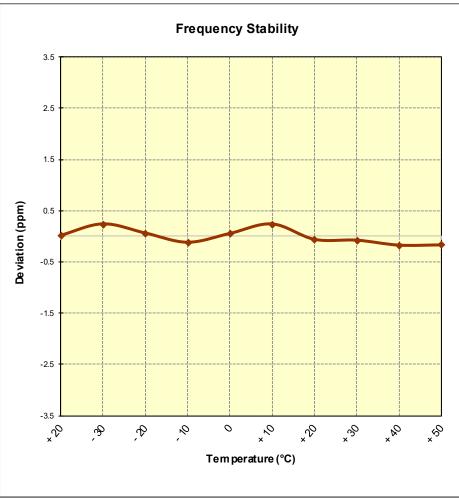


Figure 7-11. Frequency Stability Graph (Band 66/4)

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# **Band 2 Frequency Stability Measurements**

 OPERATING FREQUENCY:
 1,880,000,000
 Hz

 CHANNEL:
 18900

 REFERENCE VOLTAGE:
 3.85
 VDC

 DEVIATION LIMIT:
 ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( [°] С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,879,999,921	-79	-0.0000042
100 %		- 30	1,879,999,934	-66	-0.0000035
100 %		- 20	1,879,999,949	-51	-0.0000027
100 %		- 10	1,879,999,972	-28	-0.0000015
100 %		0	1,879,999,999	-1	-0.0000001
100 %		+ 10	1,879,999,752	-248	-0.0000132
100 %		+ 20	1,880,000,409	409	0.0000218
100 %		+ 30	1,880,000,019	19	0.0000010
100 %		+ 40	1,880,000,310	310	0.0000165
100 %		+ 50	1,879,999,969	-31	-0.0000016
BATT. ENDPOINT	3.45	+ 20	1,880,000,076	76	0.0000040

Table 7-31. Frequency Stability Data (Band 2)

FCC ID: A3LSMJ737T		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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**Band 2 Frequency Stability Measurements** 

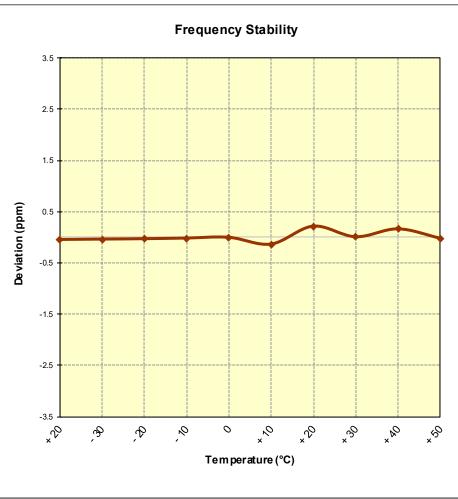


Figure 7-12. Frequency Stability Graph (Band 2)

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### **Band 7 Frequency Stability Measurements**

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

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( [°] С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,535,000,059	59	0.0000023
100 %		- 30	2,534,999,895	-105	-0.0000041
100 %		- 20	2,534,999,975	-25	-0.0000010
100 %		- 10	2,535,000,069	69	0.0000027
100 %		0	2,534,999,812	-188	-0.0000074
100 %		+ 10	2,534,999,822	-178	-0.0000070
100 %		+ 20	2,534,999,624	-376	-0.0000148
100 %		+ 30	2,534,999,953	-47	-0.0000019
100 %		+ 40	2,534,999,900	-100	-0.0000039
100 %		+ 50	2,535,000,041	41	0.0000016
BATT. ENDPOINT	3.45	+ 20	2,535,000,049	49	0.0000019

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

### Note:

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

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**Band 7 Frequency Stability Measurements** 

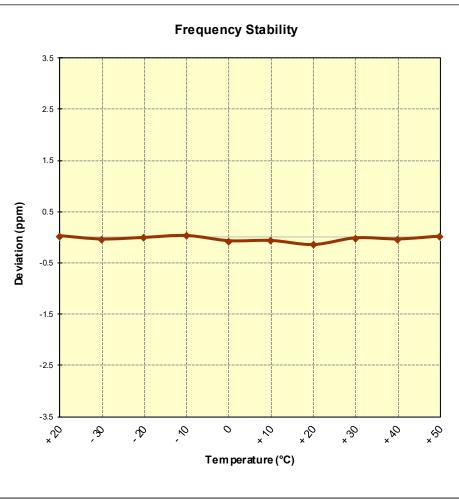


Figure 7-13. Frequency Stability Graph (Band 7)

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# 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMJ737T** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

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