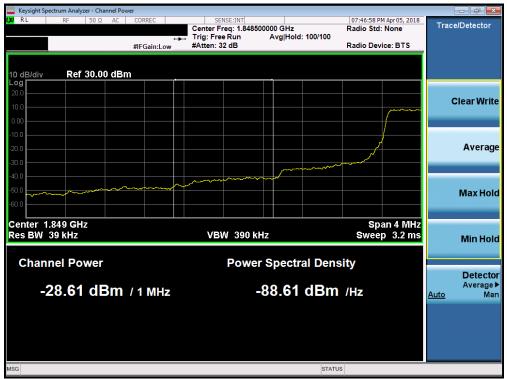




Plot 7-217. Lower Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



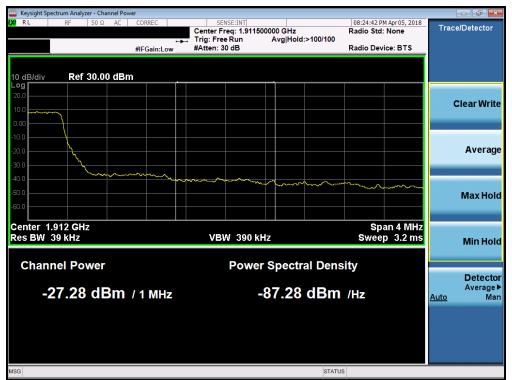
Plot 7-218. Lower Extended Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 122 of 224
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RL	RF 50 Ω AG		SENSE:INT	#Avg Type: RMS	08:24:37 PM Apr 05, 2018 TRACE 1 2 3 4 5 6	Frequency
		PNO: Wide C IFGain:Low	 Trig: Free Run Atten: 36 dB 		TYPE A WWWW DET A NNNNN	
0 dB/div	Ref 25.00 dBn	n		Mkr1	1.910 000 GHz -29.65 dBm	Auto Tui
5.0						Center Fr 1.910000000 Gi
.00		han an the second se				Start Fr 1.908000000 G
5.0			1		DL1 -13.00 dBm	Stop Fr 1.912000000 G
5.0 ~~~~ 5.0	num		wow	man from the second	in an Ara-mitin a	CF St 400.000 k <u>Auto</u> M
5.0						Freq Offs 0
5.0						Scale Ty
	910000 GHz 15 kHz	#VB	W 43 kHz	Sweep 2	Span 4.000 MHz 22.07 ms (1001 pts)	Log <u>l</u>

Plot 7-219. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



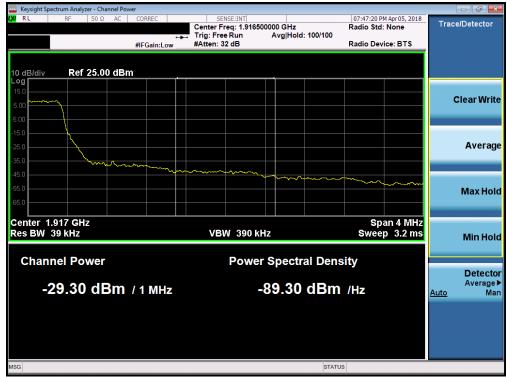
Plot 7-220. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dage 124 of 224			
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RL	Spectrum An RF	50 \$		CORREC		SEI	SE:INT				M Apr 05, 2018	-	
				PNO: Wi IFGain:L		Trig: Free Atten: 36		#Avg Typ	e: RMS	TY	CE 1 2 3 4 5 6 PE A WWWW ET A N N N N N		requency
0 dB/div	Ref	25.00	dBm	IFGain:L	.ow	Atten: 30			Mkr	1 1.915 (-30.4	000 GHz 97 dBm		Auto Tur
og													Center Fre
5.00			professional and a second	WWWWWW	erreller of the second s	46400						1.91	Start Fre 3000000 GF
5.0]					1				DL1 -13.00 dBm	1.91	Stop Fr 7000000 GI
15.0	NULLOW						hard and and and and and and and and and an	Marriant	a Hor. 86			<u>Auto</u>	CF Ste 400.000 kl
5.0									and the second	hannan Manut	women whe		Freq Offs 0
5.0													Scale Typ
	1.91500 N/13 kH			#	¢VBW 3	9 kHz			Sweep :	Span 4 29.27 ms	.000 MHz (1001 pts)	Log	Ĺ
G									STATU	JS			

Plot 7-221. Upper Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)



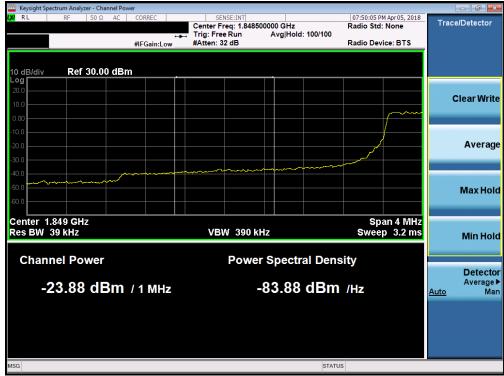
Plot 7-222. Upper Extended Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swept					- đ ×
X RL RF 50 Ω	AC CORREC	SENSE:INT	#Avg Type: RMS	07:49:57 PM Apr 05, 2018 TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide 😱 IFGain:Low	Trig: Free Run Atten: 36 dB		DET A WWWWW	
10 dB/div Ref 25.00 dB	m		Mkr1	1.850 000 GHz -25.65 dBm	Auto Tur
15.0					Center Fre 1.85000000 G⊦
5.00			- 	and and a second and a second and a second a se	Start Fre 1.848000000 GH
25.0		1		DL1 -13.00 dBm	Stop Fre 1.852000000 GF
35.0 45.0	mmmmm				CF Ste 400.000 kł <u>Auto</u> Ma
55.0					Freq Offs 0 F
65.0					Scale Typ
Center 1.850000 GHz #Res BW 30 kHz	#VBW	100 kHz	Sweep 5	Span 4.000 MHz 5.467 ms (1001 pts)	Log <u>L</u>
ISG			STATU	3	

Plot 7-223. Lower Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)



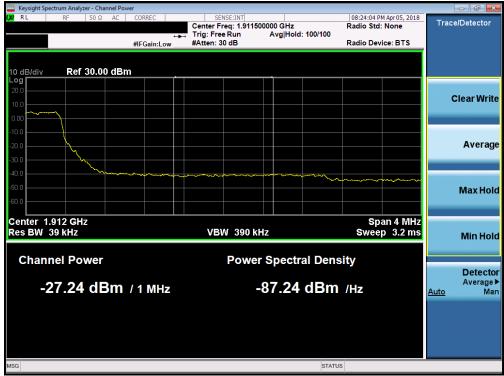
Plot 7-224. Lower Extended Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Dage 126 of 224				
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	Spectrum Analy	/zer - Swept SA	1								×
X/RL	RF	50 Ω AC	PNO: Wide	Trig: Fre		#Avg Typ	e: RMS	08:23:58 PM Ap TRACE TYPE	2 3 4 5 6	Frequency	/
10 dB/div	Ref 2	5.00 dBn	IFGain:Low	Atten: 36	3 dB		Mkr1	1.910 000 -24.63	0 GHz	Auto T	un
15.0										Center F 1.910000000	
5.00		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	man	m						Start F 1.908000000	
25.0					1			DL1	-13.00 dBm	Stop F 1.912000000	
15.0					North North	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~	CF S 400.000 <u>Auto</u>	
i5.0										Freq Of	ffs 0
65.0	1.910000							Spap 4-90		Scale T	ער] רע
	V 30 kHz		#VB	W 91 kHz			Sweep 5	Span 4.00 .533 ms (10			
SG							STATUS				

Plot 7-225. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



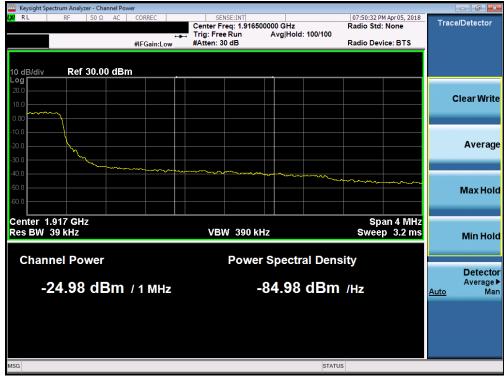
Plot 7-226. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Dage 127 of 224				
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	Spectrum														
<mark>(</mark> RL	R		50 Ω	AC	PNO	Wide C				#Avg Ty	pe:RMS	TRA	PM Apr 05, 2018 CE 1 2 3 4 5 6 (PE A WWWWW DET A NNNNN	F	requency
0 dB/div	/ Re	f 25.0	00 dl	Bm	IFGai	n:Low	Atte	en: ac	dB		Mkr	1 1.915	000 GHz .74 dBm		Auto Tun
. og															Center Fre
5.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	v^-	~~~	~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Second Second	www						DL1 -13.00 dBm	1.91	Start Fre 13000000 GI
25.0								t V	1					1.91	Stop Fr 17000000 G
15.0										~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	uton	· Man	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>Auto</u>	CF Ste 400.000 kl M
5.0															Freq Offs 0
enter			Hz									Span	4.000 MHz	Log	Scale Typ
Res B	W 30 k	Hz				#VB۱	W 100	kHz			Sweep	5.467 ms	(1001 pts)		

Plot 7-227. Upper Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)



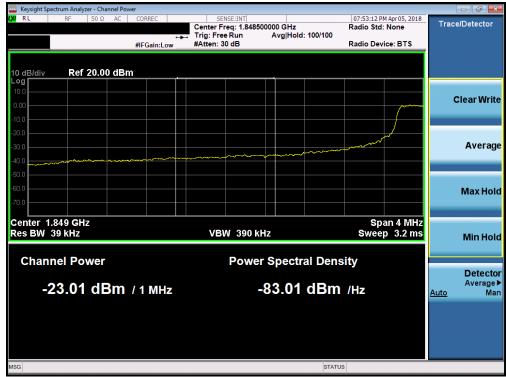
Plot 7-228. Upper Extended Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swept S					
<mark>೫</mark> RL RF 50Ω A	AC CORREC	SENSE:INT	#Avg Type: RMS	07:52:56 PM Apr 05, 2018 TRACE 1 2 3 4 5 6	Frequency
	PNO: Wide 😱 IFGain:Low	Trig: Free Run Atten: 36 dB		DET A WWWW	
10 dB/div Ref 25.00 dBi	m		Mkr1	1.849 996 GHz -24.65 dBm	Auto Tun
15.0					Center Fre 1.850000000 GH
5.00			in the second	·····	Start Fre 1.848000000 GH
25.0		1		DL1 -13.00 dBm	Stop Fre 1.852000000 G⊦
35.0	www.				CF Ste 400.000 k⊦ <u>Auto</u> Ma
55.0					Freq Offs 0 F
.65.0					Scale Typ
Center 1.850000 GHz #Res BW 56 kHz	#VBW 1	80 kHz	Sweep	Span 4.000 MHz .600 ms (1001 pts)	Log <u>Li</u>
ISG			STATU		

Plot 7-229. Lower Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



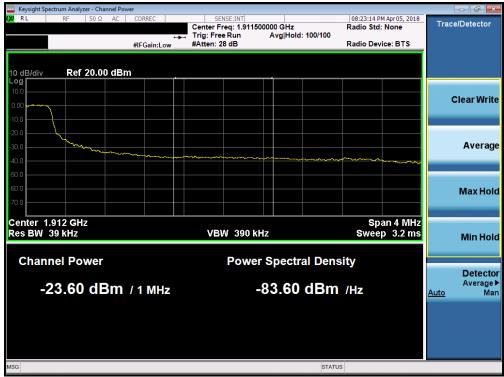
Plot 7-230. Lower Extended Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 120 of 224
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	ef 25.00 dB	IFGai	:Wide			#Avg Typ		TRAC TYP DE 1.910 0	M Apr 05, 2018 E 1 2:3 4:5 6 PE A WARWAY TANNINN 116 GHz 92 dBm	(1.91	Auto Tun Center Fre 0000000 G⊢ Start Fre 8000000 G⊢
og 15.0 5.00 5.00 15.0 15.0 25.0	ef 25.00 dB		in:Low	Atten: 36	dB		Mkr1	1.910 0	92 dBm	1.91	Center Fre 0000000 G⊦ Start Fre
5.00 5.00 15.0 15.0 25.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~						DI 1 13 00 //	1.91	0000000 G⊦ Start Fre
5.00 5.00 25.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~						011 13:00 dP-	1.90	
5.0											
5.0				J.	1				00,000,000	1.91	Stop Fr 2000000 G
5.0					m m		·····	~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>Auto</u>	CF St 400.000 k M
5.0											Freq Offs 0
enter 1.9100								Span 4	.000 MHz		Scale Tyj
Res BW 51 H	kHz		#VBW	160 kHz			Sweep 1		(1001 pts)		

Plot 7-231. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-232. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight RL	Spectrum Analy		CORREC	_		ENCE INT			07-52-20 0	M 4-+05 2010		
KL	RF	50 Ω	PNO: W	ide 🖵			#Avg Typ	e: RMS	TRAC	M Apr 05, 2018 CE 1 2 3 4 5 6 PE A WWWWW T A N N N N N	F	requency
0 dB/div og	Ref 2	5.00 dB	IFGain:L	.0W	Atten:	36 dB		Mkr1	1.915 0)64 GHz 95 dBm		Auto Tur
15.0												Center Fre 5000000 GH
5.00 .00	~~~~~			~~~~							1.91	Start Fr 3000000 GI
5.0					h					DL1 -13.00 dBm	1.91	Stop Fr 7000000 G
5.0										·····	<u>Auto</u>	CF Ste 400.000 k M
5.0												Freq Offs 0
enter	1.915000	GH7							Span 4	.000 MHz	Log	Scale Ty
	W 56 kHz		\$	¢v₿₩	180 kH	z		Sweep 1	.600 ms (1001 pts)		
SG								STATUS				

Plot 7-233. Upper Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-234. Upper Extended Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analyze									- F
URL	RF	50 Ω AC	CORREC	SEI	NSE:INT	#Avg Typ	e: RMS	08:13:58 PM TRACE	Apr 05, 2018	Frequency
			PNO: Wide G	Trig: Free Atten: 36				TYPE	A WWWWW A N N N N N	
0 dB/div	Ref 25.0	00 dBm					Mkr1	1.849 9 -25.5	68 GHz i1 dBm	Auto Tu
.09										Center Fr
15.0										1.850000000 G
5.00						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Otort Er
5.00										Start Fr 1.846000000 G
								c)L1 -13.00 dBm	
15.0					1					Stop Fr 1.854000000 G
25.0										1.85400000 G
35.0		<u></u>		- A A						CF St 800.000 k
										Auto M
45.0										ErogOffe
5.0										Freq Offs 0
i5.0										
										Scale Ty
enter 1.8 Res BW	850000 G	Hz	#VBV	V 330 kHz			Sween '	Span 8. 1.000 ms (1		Log <u>l</u>
SG	110 1112						STATU		ere i proj	

Plot 7-235. Lower Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-236. Lower Extended Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 142 of 224
1M1804040063-03.A3L	4/4-5/18/2018	Portable Handset		Page 142 of 224
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	Spectrum Anal											_	
RL	RF	50 Ω	AC	CORREC	/ide 😱	Trig: Free		#Avg Typ	e: RMS	TRAC	Apr 05, 2018 E 1 2 3 4 5 6 E A WWWW T A N N N N N	F	requency
0 dB/div og	Ref 2	5.00 di	Bm	IFGain:	Low	Atten: 36	6 dB		Mkr1	1.910 0	00 GHz 49 dBm		Auto Tun
15.0													Center Fre
5.00 <mark>~~</mark>		~~~~	~~~~		````	~						1.90	Start Fr 06000000 G
5.0						M	1				DL1 -13.00 dBm	1.91	Stop Fr 14000000 G
5.0							hhm			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~	<u>Auto</u>	CF St e 800.000 k M
5.0													Freq Offs 0
5.0	1.910000	CH2-								Snan 9	.000 MHz	Log	Scale Ty
	N 100 kH			-	#VBW	300 kHz			Sweep 1	.000 m <u>s (</u>	1001 pt <u>s)</u>		
G									STATUS				

Plot 7-237. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



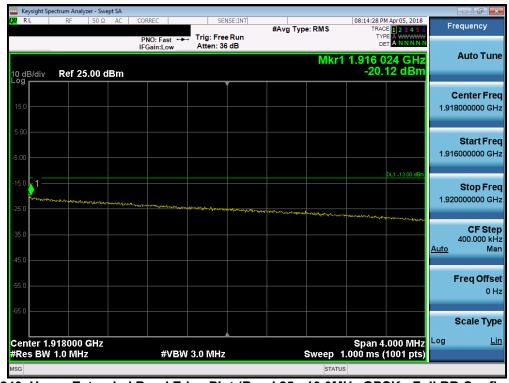
Plot 7-238. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 142 of 224
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Keysight Sp RL	ectrum Analy RF			000050	_		05110	-			00.44		_	
KL	KF	50 Ω	AC	PNO: W	/ide 🖵		Free		#Avg Ty	/pe: RMS		21 PM Apr 05, 2018 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	F	requency
0 dB/div	Ref 2	5.00 di	Bm	IFGain:	Low	Atte	en: 36 (ab		Mkı	1 1.91 -2	5 072 GHz 25.39 dBm		Auto Tur
15.0														Center Fre
5.00	~~~~~	,,	~~~~	~~~~	A.,	\sim						DL1 -13.00 dBm	1.9	Start Fr 11000000 G
5.0							L	1					1.9	Stop Fr 19000000 G
5.0								-~~~		·/····	·····	· ·····	<u>Auto</u>	CF Sto 800.000 k M
5.0														Freq Offs 0
enter 1	915000	GH7									Sna	n 8.000 MHz	Log	Scale Ty
	110 kH				#VBW	330	kHz			Sweep	1.000 m	ns (1001 pts)		
SG										STAT	US			

Plot 7-239. Upper Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-240. Upper Extended Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ht Spectrum										
KI RL	RF	50	Ω AC	CORREC	SE	ENSE:INT	#Avg Typ	e: RMS	08:17:33 PM A TRACE	pr05, 2018 1 2 3 4 5 6	Frequency
				PNO: Wide IFGain:Low	Trig: Fre Atten: 3				TYPE	A WWWWW A NNNNN	
0 dB/d	liv Rei	f 25.00	dBm					Mkr	1 1.849 92 -27.5	8 GHz) dBm	Auto Tu
15.0											Center Fr 1.850000000 G
5.00										1 -13.00 dBm	Start Fr 1.844000000 G
25.0						1					Stop Fr 1.856000000 G
^{35.0}	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	_^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	······································						CF St 1.200000 M <u>Auto</u> M
55.0 —											Freq Offs 0
65.0											Scale Ty
	r 1.8500 3W 150		2	#VE	3W 470 kH;			Sweep	Span 12. 1.000 ms (10		Log <u>I</u>
ISG								STATU	_		

Plot 7-241. Lower Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



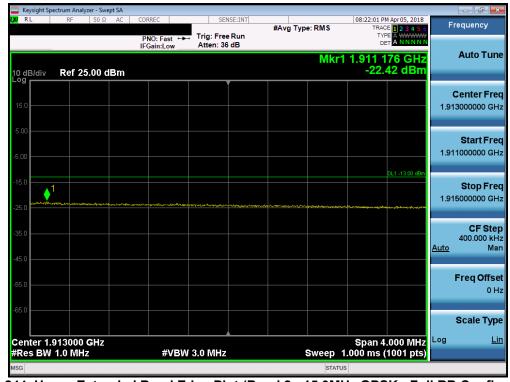
Plot 7-242. Lower Extended Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 145 of 224
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	ectrum Analyzer -										- 0
XI RL	RF 5	0Ω AC	CORREC	SEN	ISE:INT	#Avg Typ	e: RMS	TRAC	M Apr 05, 2018	Fr	equency
			PNO: Wide G	Trig: Free Atten: 36			Mkr1	TYF DE			Auto Tun
I0 dB/div	Ref 25.0	0 dBm						-28.	26 dBm		
										c	enter Fre
15.0										1.91	0000000 GH
5.00											
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m							Start Fre
-5.00										1.904	4000000 GH
15.0									DL1 -13.00 dBm		
.15.0										1 016	Stop Fre 5000000 GH
-25.0				- h.	¹					1.910	5000000 Gr
35.0				<u>М</u>	~~~~~		·····	when he had			CF Ste
35.0										1 Auto	.200000 Mi Ma
45.0											
55.0										1	Freq Offs
33,01											0 H
65.0											
										:	Scale Typ
	910000 GH	lz						Span 1	2.00 MHz	Log	L
Res BW	150 kHz		#VBN	i 470 kHz			Sweep 1		1001 pts)		

Plot 7-243. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



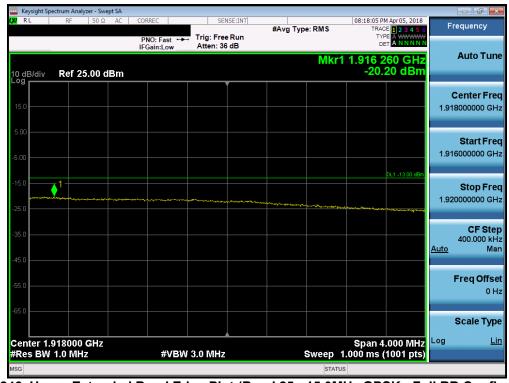
Plot 7-244. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	pectrum Anal											d 💌
X/RL	RF	50 Ω	AC	CORREC		SENSE:INT	#Avg Ty	pe: RMS		M Apr 05, 2018 CE 1 2 3 4 5 6	Freque	ncy
				PNO: Wide IFGain:Low		Free Run :: 36 dB		Mkr	TY D		Aut	o Tun
10 dB/div	Ref 2	5.00 dE	3m						-26.	79 dBm		_
											Cent	er Fre
15.0											1.9150000	000 GH
5.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								
5.00											1.9090000	n <b>rtFre</b> 000 G⊦
·3.00										DL1 -13.00 dBm		
15.0											Sto	p Fre
25.0					ų	1					1.9210000	000 GH
						and ment	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					F Ste
35.0										m	1.2000	000 MH
45.0											<u>Auto</u>	Ma
											Freq	Offs
-55.0												0 H
65.0												-
												е Тур
	.915000 V 150 kH			#\/E	3W 470 k	Hz		Sweep	Span 1	2.00 MHz (1001 pts)	Log	L
ISG	Y ISO NI	2				114		Sweep	_	(rour pis)		

Plot 7-245. Upper Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-246. Upper Extended Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Swept SA				
<b>X RL</b> RF 50 Ω AC	CORREC SENSI	#Avg Type	08:19:16 PM Apr 05, 2018 <b>:: RMS</b> TRACE 1 2 3 4 5 6 TYPE A WWWW	Frequency
10 dB/div Ref 25.00 dBm	PNO: Fast Trig: Free F IFGain:Low Atten: 36 d		Mkr1 1.849 808 GHz -30.12 dBm	Auto Tun
15.0				Center Fre 1.850000000 GH
5.00			DL1 -13.00 ulim	Start Fre 1.842000000 GH
25.0	1	d ^{rvA}	C 300 dem	<b>Stop Fre</b> 1.858000000 GF
35.0		ri		CF Ste 1.600000 MH <u>Auto</u> Ma
55.0				Freq Offs 0 F
65.0 Center 1.850000 GHz			Span 16.00 MHz	Scale Typ
≉Res BW 200 kHz	#VBW 620 kHz	\$	Sweep 1.000 ms (1001 pts)	
ISG			STATUS	

Plot 7-247. Lower Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-248. Lower Extended Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	ectrum Analy										d 🗾
X/RL	RF	50 Ω AC	CORREC		NSE:INT	#Avg Typ	e: RMS	TRAC	M Apr 05, 2018	Freque	ency
			PNO: Fast G	Trig: Free Atten: 36			Mkr4	TY D		Aut	o Tun
0 dB/div	Ref 25	.00 dBm						-26.	44 dBm		
					Ī						er Fre
15.0										1.910000	000 GH
5.00	, maria	v	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	- Mr.						01	
5.00										1.902000	art Fre 000 Gi
5.00									DL1 -13.00 dBm		
15.0											op Fre
25.0				M.	<b>∮</b> ¹					1.918000	000 GI
						m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mm			CF Ste
35.0											000 MI M
45.0											III
55.0										Free	Offs
											01
65.0										Sca	le Typ
	040000	011-						0	C 00 MU	Log	۰۰. ۲۰ ا
	910000 200 kHz		#VBW	/ 620 kHz			Sweep 1	span 1 .000 ms (	6.00 MHz (1001 pts)		
SG							STATUS	6			

Plot 7-249. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-250. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 140 of 224
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	pectrum Analy											- 6 🛃
X/RL	RF	50 Ω 4	AC CO	RREC	SE	NSE:INT	#Avg Typ	e: RMS		M Apr 05, 2018	Fre	quency
	_		P	NO:Fast ⊂ Gain:Low	Trig: Fre Atten: 3			Mkr	TY			Auto Tun
I0 dB/div	Ref 2	5.00 dBi	m						-26.	06 dBm		
-09											C	enter Fre
15.0											1.915	000000 GH
5.00			- 0 - 00014									
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~										Start Fre
-5.00											1.907	J00000 Gr
15.0										DL1 -13.00 dBm		Stop Fre
-25.0					۱ کر سر	≜ 1						000000 GH
-25.0					سرا	man	www	mm	~~~~~			
35.0									- mu	· Amaria		CF Ste 500000 MH
45.0											<u>Auto</u>	Ma
											F	req Offs
-55.0												0H
65.0											_	
												cale Typ
	.915000 / 200 kH:			#\/B)	N 620 kHz	,		Sween	Span 1	6.00 MHz (1001 pts)	Log	L
ISG	200 KH			#VD	N 020 MH2			Sweep		iou prs)		

Plot 7-251. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



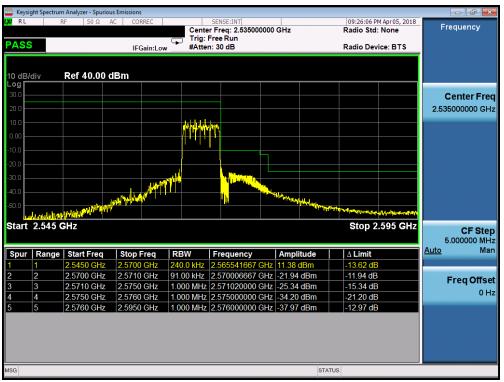
Plot 7-252. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Ref 40.00 (dBm		Anathirite and an			Center Fre
			NAME			
			Mangan Markara			
			Martin American			
			and the second sec			
			<u>// // // // // // // // // // // // // </u>			
		a dala linde di anti-		What have a starting		
	ALL		<mark>1/</mark>	John an Mit	hike a start	
	and March				The part of the second	<mark>httyl</mark> ,
SHz					Stop 2.525 G	5.000000 MH
Start Freq	Stop Freq	RBW	Frequency	Amplitude	∆ Limit	Auto Ma
2.4750 GHz	2.4905 GHz	1.000 MHz	2.490293333 (GHz -43.85 dBm	-18.85 dB	
2.4905 GHz	2.4960 GHz				-20.16 dB	Freq Offs
						01
2.5000 GHz	2.5250 GHz	240.0 kHz	2.504458333 (GHz 10.64 dBm	-14.36 dB	
	2.4750 GHz	Start Freq Stop Freq 2.4750 GHz 2.4905 GHz 2.4905 GHz 2.4960 GHz 2.4960 GHz 2.4990 GHz 2.4990 GHz 2.5000 GHz	Start Freq Stop Freq RBW 2.4750 GHz 2.4905 GHz 1.000 MHz 2.4905 GHz 2.4906 GHz 1.000 MHz 2.4960 GHz 2.4900 GHz 1.000 MHz 2.4960 GHz 2.4900 GHz 1.000 MHz 2.4900 GHz 2.5000 GHz 1.000 MHz	Start Freq Stop Freq RBW Frequency 2.4750 GHz 2.4905 GHz 1.000 MHz 2.490293333 2.4905 GHz 2.4906 GHz 1.000 MHz 2.490497500 (0000) 2.4960 GHz 2.4990 GHz 1.000 MHz 2.490477500 (0000) 2.4960 GHz 2.4990 GHz 1.000 MHz 2.499477500 (0000) 2.4960 GHz 2.4990 GHz 1.000 MHz 2.49990 (00000) 2.4990 GHz 2.5000 GHz 91.00 KHz 2.499983333 (00000)	Start Freq Stop Freq RBW Frequency Amplitude 2.4750 GHz 2.4905 GHz 1.000 MHz 2.490293333 GHz -43.85 dBm 2.4905 GHz 2.4906 GHz 1.000 MHz 2.494377500 GHz -33.16 dBm 2.4960 GHz 2.4990 GHz 1.000 MHz 2.498675000 GHz -33.16 dBm 2.4960 GHz 2.4990 GHz 1.000 MHz 2.498675000 GHz -24.11 dBm 2.4990 GHz 2.5000 GHz 91.00 kHz 2.499983333 GHz -24.91 dBm	Start Freq Stop Freq RBW Frequency Amplitude Δ Limit 2.4750 GHz 2.4905 GHz 1.000 MHz 2.490293333 GHz -43.85 dBm -18.85 dB 2.4905 GHz 2.4906 GHz 1.000 MHz 2.490293333 GHz -33.16 dBm -20.16 dB 2.4960 GHz 2.4990 GHz 1.000 MHz 2.498675000 GHz -24.11 dBm -14.11 dB 2.4990 GHz 2.5000 GHz 91.00 kHz 2.499983333 GHz -24.91 dBm -14.91 dB

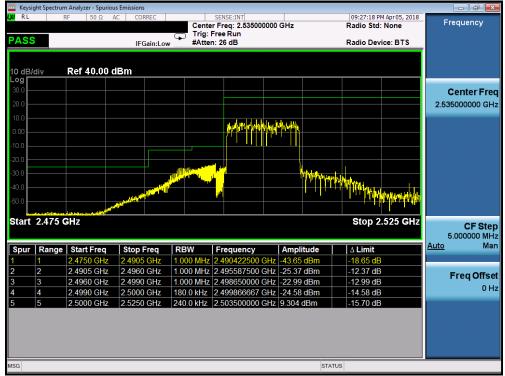
Plot 7-253. Lower ACP Plot (Band 7 - 5.0MHz QPSK - RB Size 25)



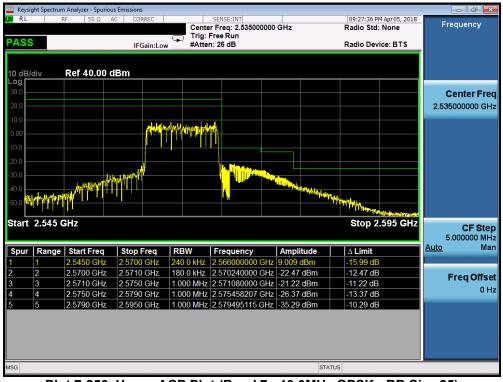
Plot 7-254. Upper ACP Plot (Band 7 - 5.0MHz QPSK - RB Size 25)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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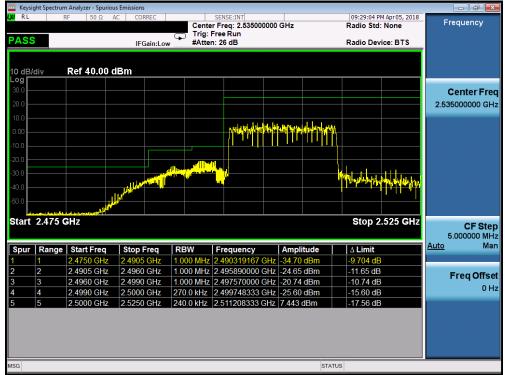
Plot 7-255. Lower ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 25)



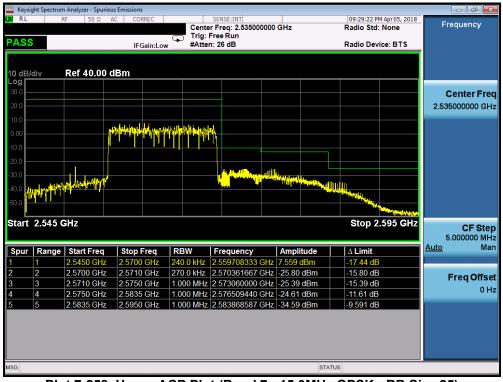
Plot 7-256. Upper ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 25)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-257. Lower ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 25)



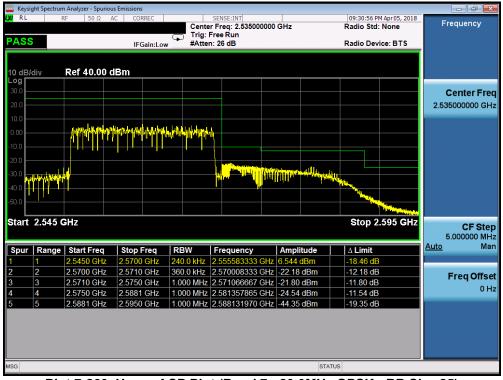
Plot 7-258. Upper ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 25)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	RF	50 Ω	AC CC	RREC	Cente	SENSE:INT r Freg: 2.5350	00000	GHz				PM Apr 05, 2018 d: None	Frequency	/
PASS			IF	Gain:Lo		Free Run n: 26 dB				Rac	lio De	vice: BTS		
10 d <u>B/div</u>	R	ef 40.00	dBm											
30.0													Center F	Fre
20.0													2.535000000	Gŀ
10.0						Leel with a stall	1 641	ad 1. d	ս հետ ա	d dura.	kas a			
0.00								a standay	en a fail a f	THANK				
10.0								+ + + +	· + +		+++			
20.0						*** *						.l		
40.0			وللبالم المعتدين		all had h	1. A 1						an a shirt way to be		
-50.0		Į,	h h h											
and to fail		The second second												
Start 2.4	175 GH	z								s	top	2.525 GHz	CF 9 5.000000	
Spur Ra	ange S	Start Freq	Stop	Freq	RBW	Frequency		Ampli	tude	Δ	imit		Auto	M
1 1	2	.4750 GHz	2.490	5 GHz	1.000 MHz	2.488614167	7 GHz	-28.67	dBm	-3.	667 d	В		
	2	4905 GHz	2.496	0 GHz	1.000 MHz	2.495981667	7 GHz	-23.77	dBm	-10	.77 d	В	Freq Of	ffe
2 2	2	4960 GHz	2.499	0 GHz	1.000 MHz	2.498830000) GHz	-22.56	dBm	-12	.56 d	В		01
2 2 3 3	_	1000 011-	2 500	0 GHz	360.0 kHz	2.499988333	3 GHz	-22.76	dBm	-12	.76 d	В		01
		.4990 GHz	2.000								.30 d			

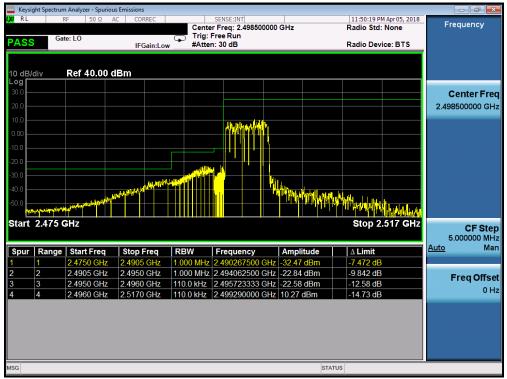
Plot 7-259. Lower ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 25)



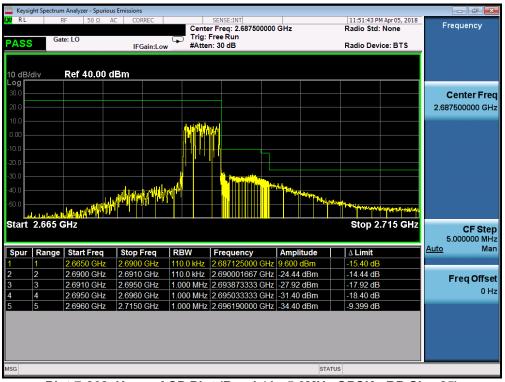
Plot 7-260. Upper ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 25)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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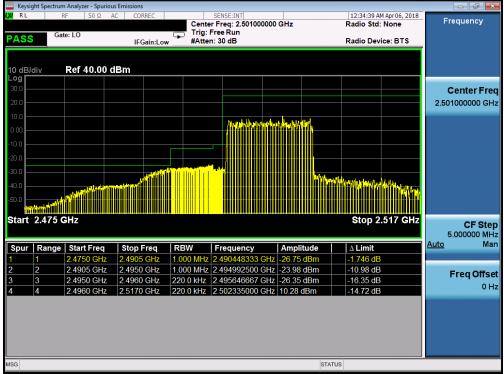
Plot 7-261. Lower ACP Plot at 2496 MHz (Band 41 - 5.0MHz QPSK - RB Size 25)

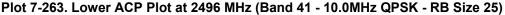


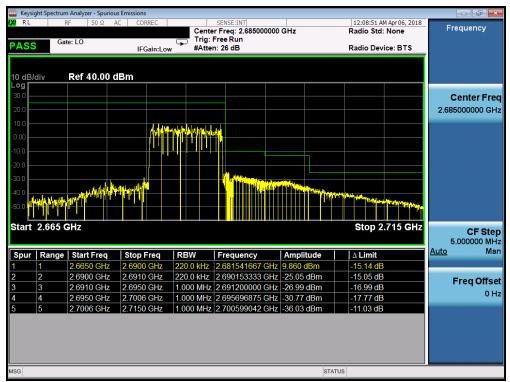
Plot 7-262. Upper ACP Plot (Band 41 - 5.0MHz QPSK - RB Size 25)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-264. Upper ACP Plot (Band 41 - 10.0MHz QPSK - RB Size 25)

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Plot 7-265. Lower ACP Plot at 2496 MHz (Band 41 - 15.0MHz QPSK - RB Size 25)



Plot 7-266. Upper ACP Plot (Band 41 - 15.0MHz QPSK - RB Size 25)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-267. Lower ACP Plot at 2496 MHz (Band 41 - 20.0MHz QPSK - RB Size 25)



Plot 7-268. Upper ACP Plot (Band 41 - 20.0MHz QPSK - RB Size 25)

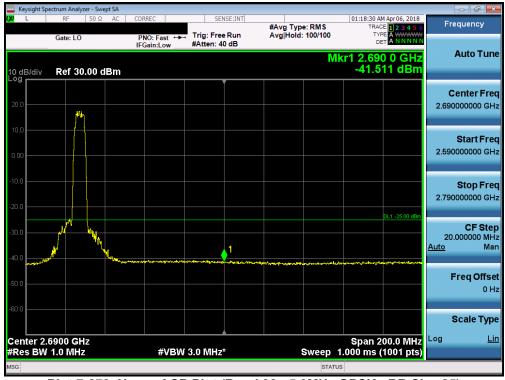
FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Band 38

Keysight Sp	RF 5	- Swept SA	CORREC	SENSE:INT		01-15-31	AM Apr 06, 2018	
-	Gate: LO		PNO: Fast ↔		#Avg Type: R Avg Hold: 10	MS TRA		Frequency
0 dB/div	Ref 30.0	0 dBm	IFGam:Low	#Atten: 40 dB		Mkr1 2.49 -42.7	6 0 GHz 37 dBm	Auto Tu
20.0						pt		Center Fr 2.496000000 G
0.0								Start Fr 2.396000000 G
0.0							0L1 -25.00 dBm	Stop Fr 2.596000000 G
0.0				1		A A A A A A A A A A A A A A A A A A A	M. Marco	CF St 20.000000 M <u>Auto</u> M
0.0			h ₂ 1-1j-n-slano-sla					Freq Off 0
:0.0								Scale Ty
	4960 GHz 1.0 MHz		#VBV	√ 3.0 MHz*	Sw	Span : eep 1.000 ms	200.0 MHz (1001 pts)	Log
ŝG						STATUS		

Plot 7-269. Lower ACP Plot (Band 38 - 5.0MHz QPSK - RB Size 25)



Plot 7-270. Upper ACP Plot (Band 38 - 5.0MHz QPSK - RB Size 25)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-271. Lower ACP Plot (Band 38 - 10.0MHz QPSK - RB Size 25)



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Plot 7-273. Lower ACP Plot (Band 38 - 15.0MHz QPSK - RB Size 25)



Plot 7-274. Upper ACP Plot (Band 38 - 15.0MHz QPSK - RB Size 25)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Keysight Sp	ectrum Analyzer - S						
LXI L	RF 50	Ω AC	CORREC	SENSE:INT	#Avg Type: RMS	01:17:05 AM Apr 06, 2018 TRACE 1 2 3 4 5 6	Frequency
	Gate: LO		PNO: Fast ++- IFGain:Low	Trig: Free Run #Atten: 40 dB	Avg Hold: 100/10		
10 dB/div Log	Ref 30.00	dBm				Mkr1 2.496 0 GHz -43.119 dBm	Auto Tune
20.0							Center Fred 2.496000000 GHz
10.0 0.00						Muhpfanilm	Start Freq 2.396000000 GHz
-10.0							Stop Fred 2.596000000 GHz
-30.0				1_	and and here and here we		CF Step 20.000000 MH <u>Auto</u> Mar
-50.0	Ale-de-Million (Constanting of the State of	4449	nafadaad maafaa kaymamad an Maa	handhel an ann an stan			Freq Offse 0 H
-00.0							Scale Type
Center 2. #Res BW	4960 GHz 1.0 MHz		#VBW	3.0 MHz*	Swee	Span 200.0 MHz p 1.000 ms (1001 pts)	Log <u>Lir</u>
MSG						TATUS	

Plot 7-275. Lower ACP Plot (Band 38 - 20.0MHz QPSK - RB Size 25)



Piol 7-276. Upper ACP Piol (Ballu 36 - 20.0Minz QPSK - KB Size 25)

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

Test Setup

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



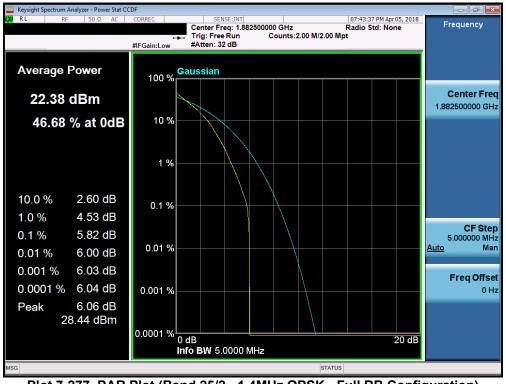
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

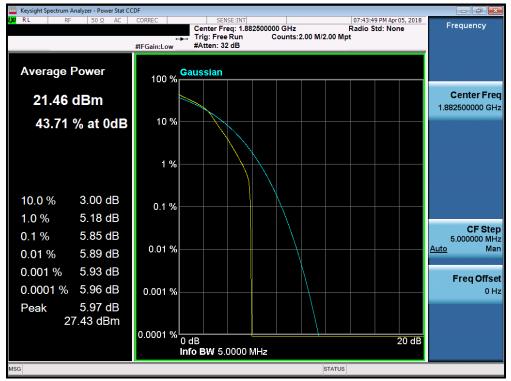
None.

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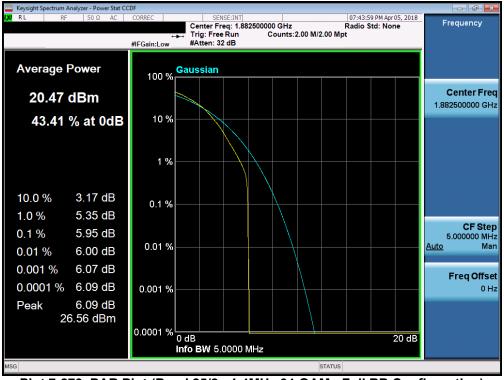
Plot 7-277. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



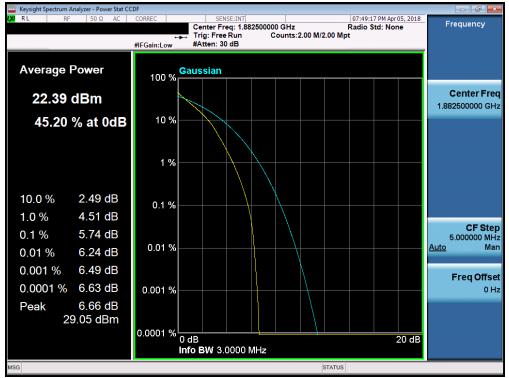
Plot 7-278. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-279. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)



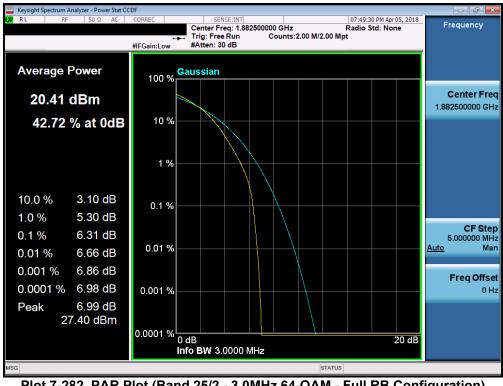
Plot 7-280. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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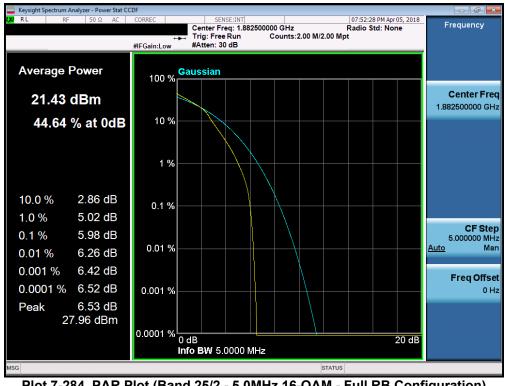
Plot 7-282. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

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Plot 7-283. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



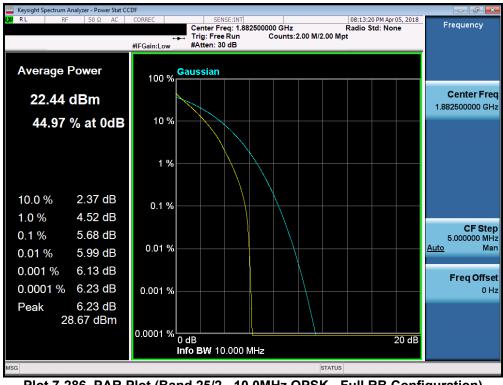
Plot 7-284. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

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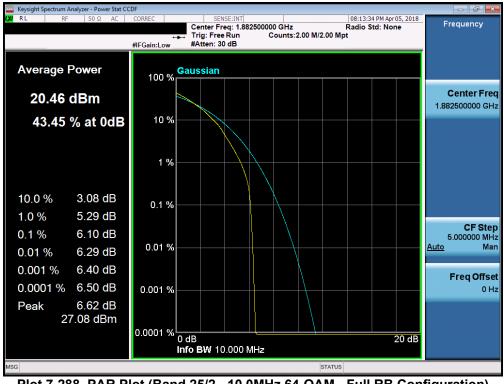
Plot 7-286. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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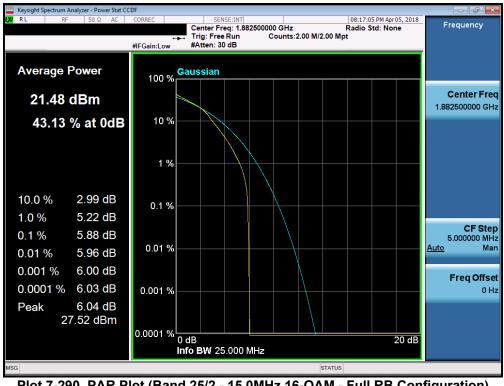
Plot 7-288. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-289. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



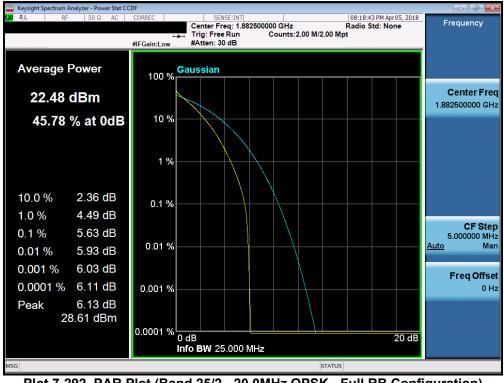
Plot 7-290. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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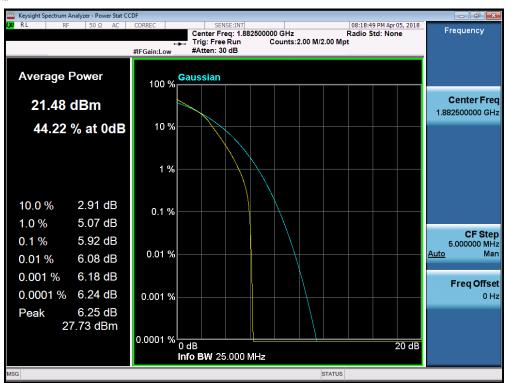




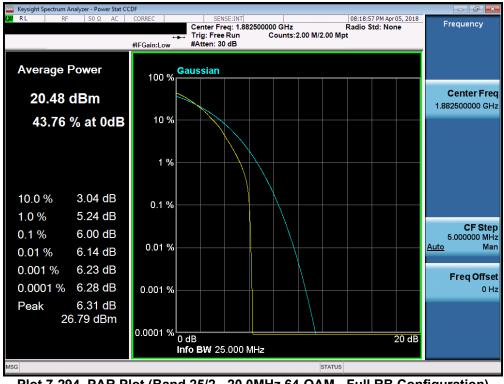
Plot 7-292. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

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Plot 7-294. PAR Plot (Band 25/2 - 20.0MHz 64-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

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

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Test Setup

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

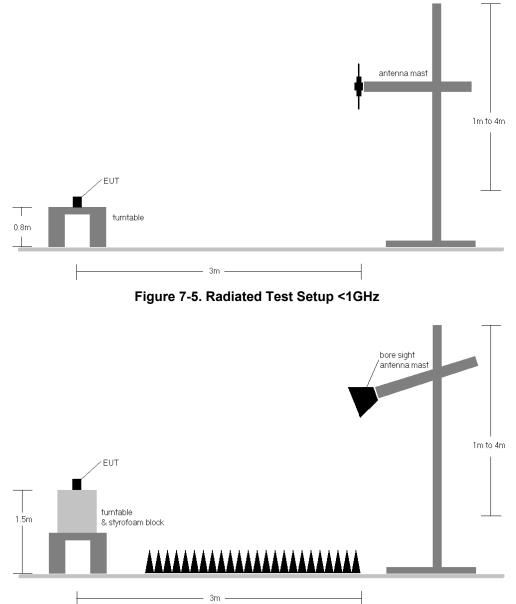


Figure 7-6. Radiated Test Setup >1GHz

Test Notes

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

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	V	150	232	1 / 5	14.95	1.10	13.90	0.025	34.77	-20.87
707.50	1.4	QPSK	V	150	234	1 / 5	15.35	1.13	14.33	0.027	34.77	-20.44
715.30	1.4	QPSK	V	150	243	1 / 5	15.73	1.16	14.74	0.030	34.77	-20.03
715.30	1.4	16-QAM	V	150	243	1 / 5	14.29	1.16	13.30	0.021	34.77	-21.47
715.30	1.4	64-QAM	V	150	243	1 / 5	13.18	1.16	12.19	0.017	34.77	-22.58
700.50	3	QPSK	V	150	238	1 / 14	14.99	1.10	13.94	0.025	34.77	-20.83
707.50	3	QPSK	V	150	245	1 / 14	15.30	1.13	14.28	0.027	34.77	-20.49
714.50	3	QPSK	V	150	236	1 / 14	15.74	1.16	14.75	0.030	34.77	-20.02
714.50	3	16-QAM	V	150	236	1 / 14	14.33	1.16	13.34	0.022	34.77	-21.43
714.50	3	64-QAM	V	150	236	1 / 14	13.25	1.16	12.26	0.017	34.77	-22.51
714.50	3	QPSK	Н	150	10	1 / 14	15.21	1.16	14.22	0.026	34.77	-20.55
714.50	3 (WCP)	QPSK	V	150	340	1 / 14	11.49	1.16	10.50	0.011	34.77	-24.27

Table 7-3. 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]
701.50	5	QPSK	V	150	235	1 / 24	15.27	1.11	14.23	0.026	34.77	-20.55
707.50	5	QPSK	V	150	230	1 / 24	15.31	1.13	14.29	0.027	34.77	-20.48
713.50	5	QPSK	V	150	240	1 / 24	15.63	1.15	14.63	0.029	34.77	-20.14
713.50	5	16-QAM	V	150	240	1 / 24	14.39	1.15	13.39	0.022	34.77	-21.38
713.50	5	64-QAM	V	150	240	1 / 24	13.33	1.15	12.33	0.017	34.77	-22.44
704.00	10	QPSK	V	150	241	1 / 49	15.44	1.12	14.41	0.028	34.77	-20.36
707.50	10	QPSK	V	150	239	1 / 49	15.66	1.13	14.64	0.029	34.77	-20.13
711.00	10	QPSK	V	150	226	1 / 49	15.52	1.14	14.51	0.028	34.77	-20.26
707.50	10	16-QAM	V	150	239	1 / 49	14.54	1.13	13.52	0.022	34.77	-21.25
707.50	10	64-QAM	V	150	239	1 / 49	13.30	1.13	12.28	0.017	34.77	-22.49

Table 7-4. ERP Data (Band 12/17)

FCC ID: A3LSMN960F		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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	V	150	245	1 / 24	17.64	1.32	16.81	0.048	34.77	-17.96
782.00	5	QPSK	V	150	247	1 / 24	17.44	1.33	16.62	0.046	34.77	-18.15
784.50	5	QPSK	V	150	239	1 / 24	17.28	1.34	16.47	0.044	34.77	-18.30
779.50	5	16-QAM	V	150	245	1 / 24	16.16	1.32	15.33	0.034	34.77	-19.44
779.50	5	64-QAM	V	150	245	1 / 24	15.26	1.32	14.43	0.028	34.77	-20.34
782.00	10	QPSK	V	150	244	1 / 0	17.56	1.33	16.74	0.047	34.77	-18.03
782.00	10	16-QAM	V	150	244	1 / 0	16.34	1.33	15.52	0.036	34.77	-19.25
782.00	10	64-QAM	V	150	244	1 / 0	15.27	1.33	14.45	0.028	34.77	-20.32
779.50	5	QPSK	н	150	271	1 / 24	15.49	1.32	14.66	0.029	34.77	-20.11
779.50	5 (WCP)	QPSK	V	150	339	1 / 24	14.57	1.32	13.74	0.024	34.77	-21.03

Table 7-5. ERP Data (Band 13)

FCC ID: A3LSMN960F		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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	Н	150	288	1 / 0	21.28	1.50	20.63	0.116	38.45	-17.82
836.50	1.4	QPSK	н	150	290	1 / 0	21.36	1.50	20.71	0.118	38.45	-17.74
848.30	1.4	QPSK	Н	150	288	1 / 0	20.59	1.50	19.94	0.099	38.45	-18.51
836.50	1.4	16-QAM	н	150	290	1 / 0	20.63	1.50	19.98	0.100	38.45	-18.47
824.70	1.4	64-QAM	Н	150	288	1 / 0	19.53	1.50	18.88	0.077	38.45	-19.57
825.50	3	QPSK	Н	150	293	1 / 14	21.46	1.50	20.81	0.121	38.45	-17.64
836.50	3	QPSK	Н	150	291	1 / 14	20.93	1.50	20.28	0.107	38.45	-18.17
847.50	3	QPSK	Н	150	292	1 / 14	20.64	1.50	19.99	0.100	38.45	-18.46
825.50	3	16-QAM	Н	150	293	1 / 14	20.63	1.50	19.98	0.100	38.45	-18.47
825.50	3	64-QAM	Н	150	293	1 / 14	19.41	1.50	18.76	0.075	38.45	-19.69
826.50	5	QPSK	Н	150	292	1 / 24	20.99	1.50	20.34	0.108	38.45	-18.11
836.50	5	QPSK	Н	150	287	1 / 24	20.82	1.50	20.17	0.104	38.45	-18.28
846.50	5	QPSK	Н	150	290	1 / 24	20.42	1.50	19.77	0.095	38.45	-18.68
826.50	5	16-QAM	Н	150	292	1 / 24	20.21	1.50	19.56	0.090	38.45	-18.89
826.50	5	64-QAM	Н	150	292	1 / 24	19.20	1.50	18.55	0.072	38.45	-19.90
829.00	10	QPSK	Н	150	287	1 / 49	20.72	1.50	20.07	0.102	38.45	-18.38
836.50	10	QPSK	Н	150	292	1 / 49	20.87	1.50	20.22	0.105	38.45	-18.23
844.00	10	QPSK	н	150	290	1 / 49	20.47	1.50	19.82	0.096	38.45	-18.63
836.50	10	16-QAM	н	150	292	1 / 49	20.33	1.50	19.68	0.093	38.45	-18.77
836.50	10	64-QAM	н	150	292	1 / 49	19.09	1.50	18.44	0.070	38.45	-20.01
825.50	3	QPSK	V	150	264	1 / 14	17.16	1.50	16.51	0.045	38.45	-21.94
825.50	3 (WCP)	QPSK	н	150	277	1 / 14	18.54	1.50	17.89	0.062	38.45	-20.56

Table 7-6. ERP Data (Band 26/5)

FCC ID: A3LSMN960F		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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
831.50	15	QPSK	Н	150	281	1 / 74	20.49	1.50	19.84	0.096	38.45	-18.61
836.50	15	QPSK	Н	150	286	1 / 74	20.65	1.50	20.00	0.100	38.45	-18.45
841.50	15	QPSK	Н	150	287	1 / 74	20.36	1.50	19.71	0.094	38.45	-18.74
836.50	15	16-QAM	н	150	286	1 / 74	19.85	1.50	19.20	0.083	38.45	-19.25
836.50	15	64-QAM	Н	150	286	1 / 74	18.85	1.50	18.20	0.066	38.45	-20.25

Table 7-7. ERP Data (Band 26)

FCC ID: A3LSMN960F		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]
1710.70	1.4	QPSK	н	150	337	1 / 0	17.98	5.56	23.54	0.226	30.00	-6.46
1745.00	1.4	QPSK	н	150	342	1 / 0	18.43	5.32	23.75	0.237	30.00	-6.25
1779.30	1.4	QPSK	Н	150	344	1 / 0	18.08	5.09	23.17	0.208	30.00	-6.83
1745.00	1.4	16-QAM	Н	150	342	1 / 0	17.66	5.32	22.98	0.199	30.00	-7.02
1745.00	1.4	64-QAM	Н	150	342	1 / 0	16.37	5.32	21.69	0.148	30.00	-8.31
1745.00	3	QPSK	Н	150	351	1 / 14	17.99	5.32	23.31	0.214	30.00	-6.69
1778.50	3	QPSK	Н	150	337	1 / 14	18.45	5.10	23.55	0.226	30.00	-6.45
1711.50	3	16-QAM	Н	150	339	1 / 14	17.38	5.55	22.93	0.196	30.00	-7.07
1711.50	3	64-QAM	Н	150	339	1 / 14	16.23	5.55	21.78	0.151	30.00	-8.22
1712.50	5	QPSK	Н	150	340	1 / 24	17.85	5.55	23.40	0.219	30.00	-6.60
1745.00	5	QPSK	н	150	355	1 / 24	17.56	5.32	22.88	0.194	30.00	-7.12
1777.50	5	QPSK	н	150	342	1 / 24	18.59	5.10	23.69	0.234	30.00	-6.31
1777.50	5	16-QAM	Н	150	342	1 / 24	17.88	5.10	22.98	0.199	30.00	-7.02
1777.50	5	64-QAM	н	150	342	1 / 24	16.77	5.10	21.87	0.154	30.00	-8.13
1715.00	10	QPSK	н	150	340	1 / 49	17.82	5.53	23.35	0.216	30.00	-6.65
1745.00	10	QPSK	н	150	345	1 / 49	18.40	5.32	23.72	0.236	30.00	-6.28
1775.00	10	QPSK	н	150	352	1 / 49	18.89	5.12	24.01	0.252	30.00	-5.99
1775.00	10	16-QAM	н	150	352	1 / 49	17.92	5.12	23.04	0.201	30.00	-6.96
1775.00	10	64-QAM	н	150	352	1 / 49	17.07	5.12	22.19	0.166	30.00	-7.81
1717.50	15	QPSK	н	150	342	1 / 74	17.98	5.51	23.49	0.223	30.00	-6.51
1745.00	15	QPSK	н	150	354	1 / 74	17.94	5.32	23.26	0.212	30.00	-6.74
1772.50	15	QPSK	н	150	344	1 / 74	18.52	5.14	23.66	0.232	30.00	-6.34
1772.50	15	16-QAM	н	150	344	1 / 74	17.77	5.14	22.91	0.195	30.00	-7.09
1772.50	15	64-QAM	н	150	344	1 / 74	16.79	5.14	21.93	0.156	30.00	-8.07
1720.00	20	QPSK	н	150	341	1 / 99	17.98	5.49	23.47	0.223	30.00	-6.53
1745.00	20	QPSK	н	150	343	1/0	17.73	5.32	23.05	0.202	30.00	-6.95
1770.00	20	QPSK	н	150	349	1 / 99	18.88	5.15	24.03	0.253	30.00	-5.97
1770.00	20	16-QAM	н	150	349	1 / 99	17.04	5.15	22.19	0.166	30.00	-7.81
1770.00	20	64-QAM	н	150	349	1 / 99	15.85	5.15	21.00	0.126	30.00	-9.00
1770.00	20	QPSK	V	150	132	1 / 99	15.06	5.15	20.21	0.105	30.00	-9.79
1770.00	20 (WCP)	QPSK	н	150	111	1 / 99	18.70	5.15	23.85	0.243	30.00	-6.15

Table 7-8. EIRP Data (Band 66/4)

FCC ID: A3LSMN960F		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	н	150	356	1 / 0	18.90	4.82	23.72	0.235	33.01	-9.29
1882.50	1.4	QPSK	Н	150	354	1 / 0	18.72	4.73	23.45	0.221	33.01	-9.56
1914.30	1.4	QPSK	Н	150	349	1 / 0	18.50	4.68	23.18	0.208	33.01	-9.83
1850.70	1.4	16-QAM	Н	150	356	1 / 0	18.00	4.82	22.82	0.191	33.01	-10.19
1850.70	1.4	64-QAM	Н	150	356	1 / 0	17.08	4.82	21.90	0.155	33.01	-11.11
1851.50	3	QPSK	Н	150	354	1 / 0	19.29	4.82	24.11	0.257	33.01	-8.90
1882.50	3	QPSK	Н	150	349	1 / 0	19.16	4.73	23.89	0.245	33.01	-9.12
1913.50	3	QPSK	Н	150	344	1 / 0	18.96	4.68	23.64	0.231	33.01	-9.37
1851.50	3	16-QAM	Н	150	354	1 / 0	18.59	4.82	23.41	0.219	33.01	-9.60
1851.50	3	64-QAM	Н	150	354	1 / 0	17.17	4.82	21.99	0.158	33.01	-11.02
1852.50	5	QPSK	Н	150	360	1 / 24	18.72	4.81	23.53	0.226	33.01	-9.48
1882.50	5	QPSK	Н	150	359	1 / 24	18.25	4.73	22.98	0.199	33.01	-10.03
1912.50	5	QPSK	Н	150	358	1 / 24	17.83	4.68	22.51	0.178	33.01	-10.50
1852.50	5	16-QAM	Н	150	360	1 / 24	17.94	4.81	22.75	0.188	33.01	-10.26
1852.50	5	64-QAM	Н	150	360	1 / 24	16.57	4.81	21.38	0.137	33.01	-11.63
1855.00	10	QPSK	Н	150	342	1 / 49	19.69	4.81	24.50	0.282	33.01	-8.51
1882.50	10	QPSK	н	150	343	1 / 49	19.42	4.73	24.15	0.260	33.01	-8.86
1910.00	10	QPSK	Н	150	341	1 / 49	19.17	4.68	23.85	0.243	33.01	-9.16
1855.00	10	16-QAM	н	150	342	1 / 49	18.86	4.81	23.67	0.233	33.01	-9.34
1855.00	10	64-QAM	Н	150	342	1 / 49	17.86	4.81	22.67	0.185	33.01	-10.34
1857.50	15	QPSK	Н	150	346	1 / 74	19.62	4.80	24.42	0.277	33.01	-8.59
1882.50	15	QPSK	Н	150	341	1 / 74	19.57	4.73	24.30	0.269	33.01	-8.71
1907.50	15	QPSK	н	150	336	1 / 74	19.14	4.68	23.82	0.241	33.01	-9.19
1857.50	15	16-QAM	Н	150	346	1 / 74	18.80	4.80	23.60	0.229	33.01	-9.41
1857.50	15	64-QAM	н	150	346	1 / 74	17.75	4.80	22.55	0.180	33.01	-10.46
1860.00	20	QPSK	Н	150	334	1 / 99	19.16	4.79	23.95	0.248	33.01	-9.06
1882.50	20	QPSK	Н	150	339	1 / 99	19.42	4.73	24.15	0.260	33.01	-8.86
1905.00	20	QPSK	Н	150	340	1 / 99	19.10	4.68	23.78	0.239	33.01	-9.23
1882.50	20	16-QAM	Н	150	339	1 / 99	18.75	4.73	23.48	0.223	33.01	-9.53
1882.50	20	64-QAM	Н	150	339	1 / 99	17.55	4.73	22.28	0.169	33.01	-10.73
1855.00	10	QPSK	V	150	285	1 / 49	16.73	4.81	21.54	0.142	33.01	-11.47
1855.00	10 (WCP)	QPSK	Н	150	351	1 / 49	19.28	4.81	24.09	0.256	33.01	-8.92

Table 7-9. EIRP Data (Band 25/2)

FCC ID: A3LSMN960F		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]
2502.50	5	QPSK	V	150	284	1/0	17.12	5.74	22.86	0.193	33.01	-10.15
2535.00	5	QPSK	V	150	284	1 / 0	17.84	5.86	23.70	0.234	33.01	-9.31
2567.50	5	QPSK	V	150	284	1/0	17.27	5.98	23.25	0.211	33.01	-9.76
2535.00	5	16-QAM	V	150	284	1 / 0	16.59	5.86	22.45	0.176	33.01	-10.56
2535.00	5	64-QAM	V	150	284	1 / 0	15.64	5.86	21.50	0.141	33.01	-11.51
2505.00	10	QPSK	V	150	273	1 / 0	17.45	5.75	23.20	0.209	33.01	-9.81
2535.00	10	QPSK	V	150	273	1 / 0	17.98	5.86	23.84	0.242	33.01	-9.17
2565.00	10	QPSK	V	150	273	1 / 0	17.70	5.97	23.67	0.233	33.01	-9.34
2535.00	10	16-QAM	V	150	273	1 / 0	16.63	5.86	22.49	0.177	33.01	-10.52
2535.00	10	64-QAM	V	150	273	1 / 0	15.72	5.86	21.58	0.144	33.01	-11.43
2507.50	15	QPSK	V	150	278	1 / 0	17.65	5.76	23.41	0.219	33.01	-9.60
2535.00	15	QPSK	V	150	278	1 / 0	17.95	5.86	23.81	0.240	33.01	-9.20
2562.50	15	QPSK	V	150	274	1 / 0	17.68	5.96	23.64	0.231	33.01	-9.37
2535.00	15	16-QAM	V	150	278	1 / 0	16.59	5.86	22.45	0.176	33.01	-10.56
2535.00	15	64-QAM	V	150	278	1 / 0	15.90	5.86	21.76	0.150	33.01	-11.25
2510.00	20	QPSK	V	150	275	1 / 0	17.57	5.77	23.34	0.216	33.01	-9.67
2535.00	20	QPSK	V	150	275	1 / 0	18.21	5.86	24.07	0.255	33.01	-8.94
2560.00	20	QPSK	V	150	275	1 / 0	17.74	5.95	23.69	0.234	33.01	-9.32
2535.00	20	16-QAM	V	150	276	1/0	16.78	5.86	22.64	0.184	33.01	-10.37
2535.00	20	64-QAM	V	150	276	1/0	15.82	5.86	21.68	0.147	33.01	-11.33
2535.00	20	QPSK	н	150	325	1/0	16.57	5.86	22.43	0.175	33.01	-10.58
2535.00	20 (WCP)	QPSK	V	150	276	1/0	13.53	5.86	19.39	0.087	33.01	-13.62

Table 7-10. EIRP Data (Band 7)

FCC ID: A3LSMN960F		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]
2498.50	5	QPSK	V	150	284	1 / 24	16.96	5.73	22.69	0.186	33.01	-10.32
2593.00	5	QPSK	V	150	276	1 / 0	18.23	6.07	24.30	0.269	33.01	-8.71
2687.50	5	QPSK	V	150	286	1 / 0	16.85	6.48	23.33	0.216	33.01	-9.68
2593.00	5	16-QAM	V	150	276	1 / 0	17.24	6.07	23.31	0.214	33.01	-9.70
2593.00	5	64-QAM	V	150	276	1 / 0	16.78	6.07	22.85	0.193	33.01	-10.16
2501.00	10	QPSK	V	150	287	1 / 0	18.39	5.73	24.12	0.258	33.01	-8.89
2593.00	10	QPSK	V	150	282	1 / 0	18.55	6.07	24.62	0.290	33.01	-8.39
2685.00	10	QPSK	V	150	285	1 / 0	17.92	6.47	24.39	0.275	33.01	-8.62
2593.00	10	16-QAM	V	150	282	1 / 0	17.52	6.07	23.59	0.229	33.01	-9.42
2593.00	10	64-QAM	V	150	282	1 / 0	16.58	6.07	22.65	0.184	33.01	-10.36
2503.50	15	QPSK	V	150	282	1 / 74	17.29	5.74	23.03	0.201	33.01	-9.98
2593.00	15	QPSK	V	150	277	1 / 74	18.50	6.07	24.57	0.287	33.01	-8.44
2682.50	15	QPSK	V	150	287	1 / 74	16.44	6.46	22.90	0.195	33.01	-10.11
2593.00	15	16-QAM	V	150	277	1 / 74	17.39	6.07	23.46	0.222	33.01	-9.55
2593.00	15	64-QAM	V	150	277	1 / 74	16.28	6.07	22.35	0.172	33.01	-10.66
2506.00	20	QPSK	V	150	290	1 / 0	17.17	5.75	22.92	0.196	33.01	-10.09
2593.00	20	QPSK	V	150	278	1 / 99	17.91	6.07	23.98	0.250	33.01	-9.03
2680.00	20	QPSK	V	150	288	1 / 0	16.77	6.45	23.22	0.210	33.01	-9.79
2593.00	20	16-QAM	V	150	278	1 / 99	16.84	6.07	22.91	0.196	33.01	-10.10
2506.00	20	64-QAM	V	150	290	1 / 0	15.58	5.75	21.33	0.136	33.01	-11.68
2593.00	10	QPSK	н	150	222	1 / 0	17.54	6.07	23.61	0.230	33.01	-9.40
2593.00	10 (WCP)	QPSK	V	150	280	1 / 0	15.25	6.07	21.32	0.136	33.01	-11.69

Table 7-11. EIRP Data (Band 41/38)

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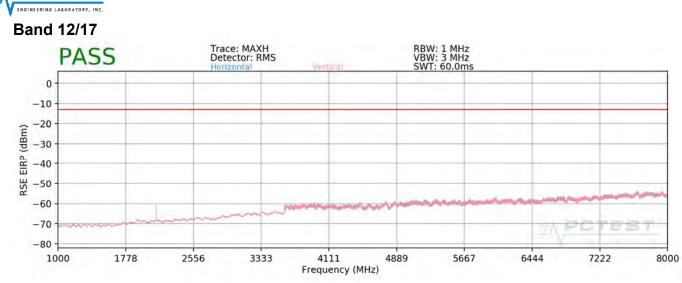
The EUT and measurement equipment were set up as shown in the diagram below.

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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Plot 7-295. Radiated Spurious Plot above 1GHz (Band 12/17)

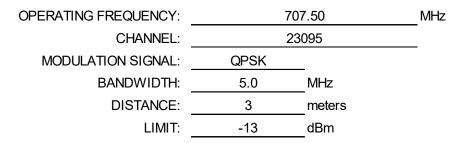
OPERATING FREQUENCY:	70	1.50	MHz
CHANNEL:	23	_	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
1403.00	Н	224	149	-71.95	4.39	-67.55	-54.6
2104.50	Н	109	169	-66.95	5.27	-61.69	-48.7
2806.00	Н	-	-	-74.99	6.98	-68.01	-55.0

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

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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	112	208	-72.64	4.56	-68.08	-55.1
2122.50	Н	110	128	-64.74	5.31	-59.43	-46.4
2830.00	Н	392	169	-74.25	7.02	-67.24	-54.2
3537.50	Н	-	-	-73.31	8.52	-64.79	-51.8

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

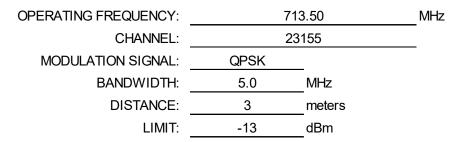
OPERATING FREQUENCY: 713.50 MHz CHANNEL: 23155 MODULATION SIGNAL: QPSK BANDWIDTH: 5.0 MHz 3 DISTANCE: meters LIMIT: -13 dBm

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]
1427.00	Н	394	132	-73.89	4.72	-69.17	-56.2
2140.50	Н	248	120	-63.83	5.35	-58.48	-45.5
2854.00	Н	-	-	-74.21	7.05	-67.16	-54.2

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

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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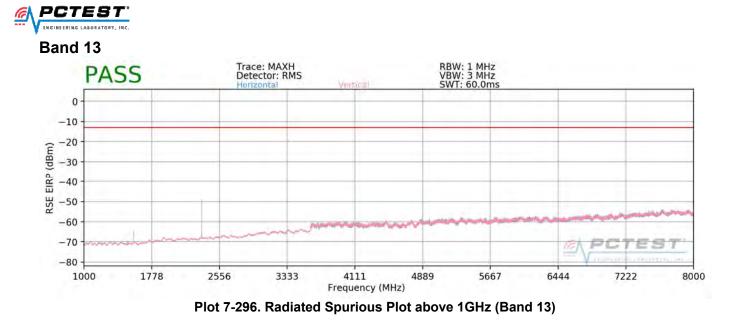




Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1427.00	Н	400	133	-73.95	4.72	-69.23	-56.2
2140.50	Н	166	187	-71.29	5.35	-65.94	-52.9
2854.00	Н	-	-	-74.41	7.05	-67.36	-54.4

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

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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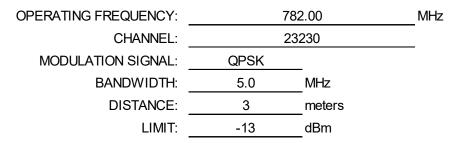
OPERATING FREQUENCY:	77	9.50	_MHz	
CHANNEL:	23205			
MODULATION SIGNAL:	QPSK	_		
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	-13	dBm		

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]
2338.50	Н	158	121	-54.15	5.73	-48.42	-35.4
3118.00	Н	-	-	-74.26	7.00	-67.26	-54.3
3897.50	Н	-	-	-72.21	8.55	-63.66	-50.7

Table 7-16. Radiated Spurious Data (Band 13 – Low Channel)

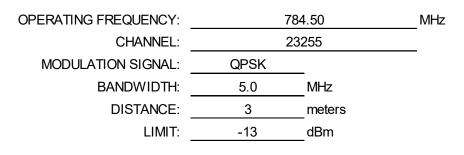
FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	Н	109	115	-54.24	5.72	-48.52	-35.5
3128.00	Н	-	-	-72.50	6.93	-65.58	-52.6
3910.00	Н	-	-	-72.44	8.60	-63.83	-50.8

Table 7-17. Radiated Spurious Data (Band 13 – Mid Channel)



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2353.50	Н	236	135	-55.26	5.72	-49.54	-36.5
3138.00	Н	-	-	-73.03	6.85	-66.18	-53.2
3922.50	Н	-	-	-72.41	8.67	-63.74	-50.7

Table 7-18. Radiated Spurious Data (Band 13 – High Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	5.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

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]
1559.00	Н	186	172	-71.42	5.86	-65.55	-25.6
1564.00	Н	183	36	-69.72	5.88	-63.84	-23.8
1569.00	Н	183	33	-68.60	5.90	-62.70	-22.7

Table 7-19. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

OPERATING FREQUENCY:	784	4.50 M	Hz
CHANNEL:	23	255	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	5.0	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]
2353.50	Н	325	111	-70.62	5.72	-64.90	-51.9
3138.00	Н	-	-	-72.77	6.85	-65.92	-52.9
3922.50	Н	-	-	-72.16	8.67	-63.49	-50.5

Table 7-20. Radiated Spurious Data with WCP (Band 13 – High Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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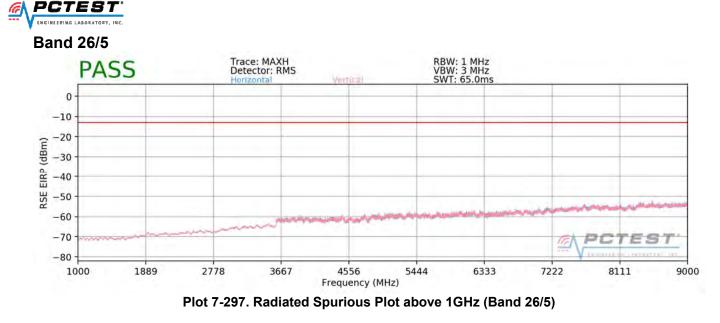


MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	5.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz
		_

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]
1569.00	Н	109	1	-72.41	5.90	-66.51	-26.5

Table 7-21. Radiated Spurious Data with WCP (Band 13 - 1559-1610MHz Band)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 101 of 201	
1M1804040063-03.A3L	4/4-5/18/2018	Portable Handset		Page 191 of 224	
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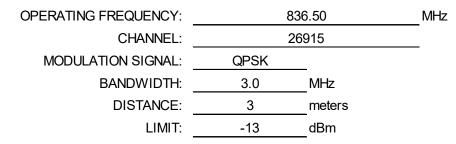
OPERATING FREQUENCY:	82	5.50 MH	z
CHANNEL:	26	805	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	3.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
1651.00	Н	360	14	-74.41	5.81	-68.61	-55.6
2476.50	Н	-	-	-70.60	5.72	-64.88	-51.9
3302.00	Н	-	-	-73.62	7.85	-65.77	-52.8

Table 7-22. Radiated Spurious Data with WCP (Band 26/5 – Low Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager		
Test Report S/N:	Test Dates:	EUT Type:		Dage 102 of 224		
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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	111	353	-74.85	5.73	-69.13	-56.1
2509.50	Н	126	242	-67.37	5.77	-61.60	-48.6
3346.00	Н	111	10	-71.90	7.91	-63.99	-51.0
4182.50	Н	-	-	-73.11	9.29	-63.82	-50.8

 Table 7-23. Radiated Spurious Data with WCP (Band 26/5 – Mid Channel)

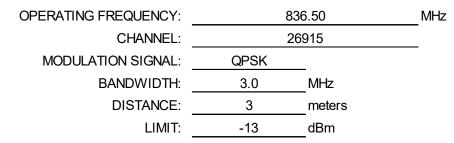
OPERATING FREQUENCY: 847.50 MHz CHANNEL: 27025 MODULATION SIGNAL: QPSK **BANDWIDTH:** 3.0 MHz DISTANCE: 3 meters LIMIT: -13 dBm

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]
1695.00	Н	274	181	-74.26	5.65	-68.61	-55.6
2542.50	Н	385	330	-69.29	5.89	-63.40	-50.4
3390.00	Н	-	-	-73.37	7.96	-65.40	-52.4

Table 7-24. Radiated Spurious Data with WCP (Band 26/5 – High Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 102 of 224	
1M1804040063-03.A3L	4/4-5/18/2018	Portable Handset		Page 193 of 224	
© 2018 PCTEST Engineering La	V 8.0 03/13/2018				

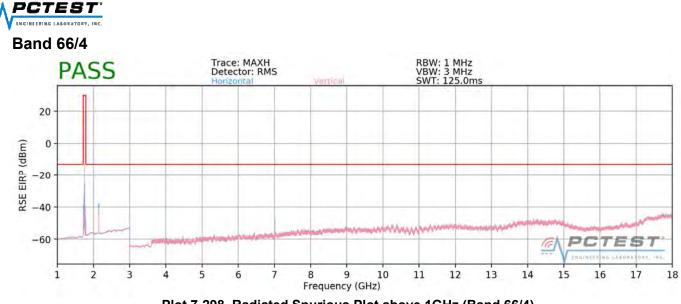




Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	Н	383	179	-76.78	5.73	-71.06	-58.1
2509.50	Н	393	330	-71.17	5.77	-65.40	-52.4
3346.00	Н	-	-	-72.34	7.91	-64.43	-51.4

Table 7-25. Radiated Spurious Data (Band 26/5 - Mid Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 104 of 224	
1M1804040063-03.A3L	4/4-5/18/2018	Portable Handset		Page 194 of 224	
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Plot 7-298. Radiated Spurious Plot above 1GHz (Band 66/4)

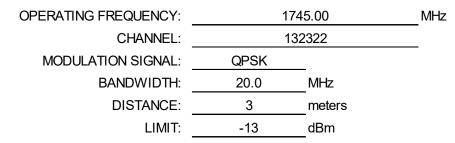
OPERATING FREQUENCY:	172	0.00 MHz	
CHANNEL:	132	2072	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
3440.00	V	117	137	-69.85	8.19	-61.65	-48.7
5160.00	V	109	132	-71.22	10.25	-60.97	-48.0
6880.00	V	111	90	-65.63	11.38	-54.26	-41.3
8600.00	V	-	-	-69.69	13.03	-56.66	-43.7

Table 7-26. Radiated Spurious Data (Band 66/4 – Low Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 105 of 224
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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]
3490.00	V	113	127	-66.16	8.46	-57.70	-44.7
5235.00	V	342	55	-71.96	10.28	-61.68	-48.7
6980.00	V	117	87	-61.30	11.47	-49.84	-36.8
8725.00	V	110	101	-66.79	13.12	-53.67	-40.7
10470.00	V	-	-	-70.40	13.14	-57.25	-44.3

Table 7-27. Radiated Spurious Data (Band 66/4 – Mid Channel)

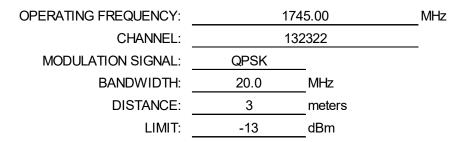
OPERATING FREQUENCY: 1770.00 MHz 132572 CHANNEL: MODULATION SIGNAL: **QPSK** BANDWIDTH: 20.0 MHz DISTANCE: 3 meters LIMIT: -13 dBm

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	V	110	295	-70.55	8.52	-62.03	-49.0
5310.00	V	112	177	-70.22	10.32	-59.90	-46.9
7080.00	V	111	85	-61.65	11.58	-50.07	-37.1
8850.00	V	-	-	-69.44	13.15	-56.28	-43.3

Table 7-28. Radiated Spurious Data (Band 66/4 – High Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dogo 106 of 224	
1M1804040063-03.A3L	4/4-5/18/2018	Portable Handset		Page 196 of 224	
© 2018 PCTEST Engineering La	boratory. Inc.	•		V 8.0 03/13/2018	

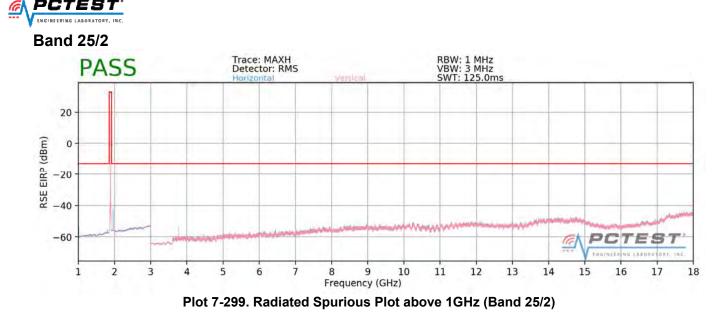




Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	Н	109	355	-64.69	8.46	-56.23	-43.2
5235.00	Н	115	221	-72.09	10.28	-61.81	-48.8
6980.00	Н	291	106	-62.98	11.47	-51.52	-38.5
8725.00	Н	311	81	-68.20	13.12	-55.08	-42.1
10470.00	Н	-	-	-70.43	13.14	-57.28	-44.3

Table 7-29. Radiated Spurious Data with WCP (Band 66/4 – Mid Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Page 197 of 224	
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Note:

Emission were investigated up through the 10th harmonic for this band. No significant emissions were found above 18GHz.

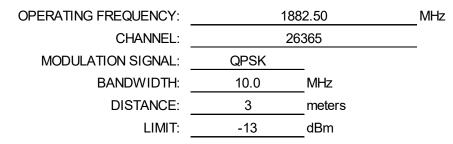
OPERATING FREQUENCY:	185	55.00	MHz
CHANNEL:	26	6090	_
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
3710.00	V	110	328	-60.56	8.33	-52.24	-39.2
5565.00	V	111	9	-70.85	10.55	-60.30	-47.3
7420.00	V	337	27	-65.63	11.94	-53.69	-40.7
9275.00	V	-	-	-70.77	13.41	-57.37	-44.4

Table 7-30. Radiated Spurious Data (Band 25/2 – Low Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 109 of 224
1M1804040063-03.A3L	4/4-5/18/2018	Portable Handset		Page 198 of 224
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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]
3765.00	V	111	329	-59.86	8.47	-51.39	-38.4
5647.50	V	338	35	-71.65	10.60	-61.06	-48.1
7530.00	V	110	179	-68.21	12.11	-56.10	-43.1
9412.50	V	-	-	-70.52	13.34	-57.18	-44.2

Table 7-31. Radiated Spurious Data (Band 25/2 – Mid Channel)

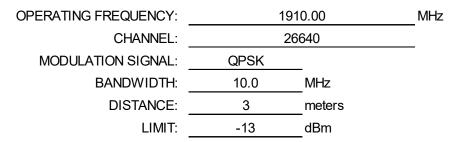
OPERATING FREQUENCY: 1910.00 MHz CHANNEL: 26640 MODULATION SIGNAL: **QPSK** BANDWIDTH: 10.0 MHz DISTANCE: 3 meters LIMIT: -13 dBm

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]
3820.00	V	109	333	-57.01	8.56	-48.46	-35.5
5730.00	V	313	168	-70.07	10.65	-59.43	-46.4
7640.00	V	335	23	-67.06	12.20	-54.86	-41.9
9550.00	V	-	-	-70.05	13.30	-56.75	-43.8

Table 7-32. Radiated Spurious Data (Band 25/2 – High Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 224	
1M1804040063-03.A3L	4/4-5/18/2018	Portable Handset		Page 199 of 224	
© 2018 PCTEST Engineering La	boratory. Inc.	•		V 8.0 03/13/2018	

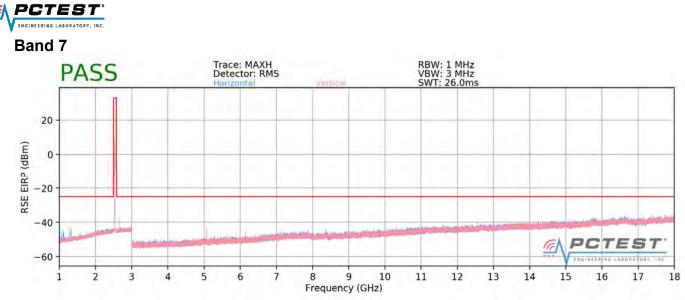


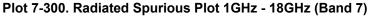


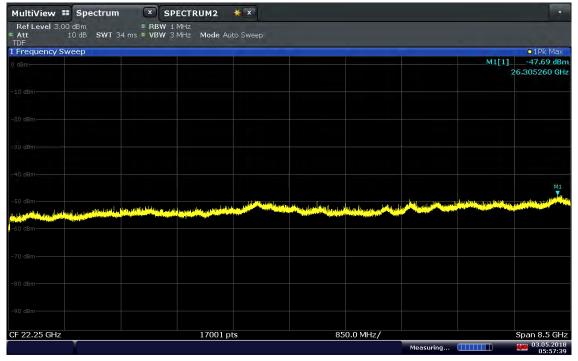
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3820.00	Н	378	250	-59.22	8.33	-50.90	-37.9
5730.00	Н	356	345	-69.42	10.55	-58.87	-45.9
7640.00	Н	115	349	-69.22	11.94	-57.28	-44.3
9550.00	Н	-	-	-71.37	13.41	-57.97	-45.0

Table 7-33. Radiated Spurious Data with WCP (Band 25/2 – High Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 200 of 224	
1M1804040063-03.A3L	4/4-5/18/2018	Portable Handset		Page 200 of 224	
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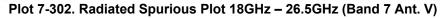
Plot 7-301. Radiated Spurious Plot 18GHz – 26.5GHz (Band 7 Ant. H)

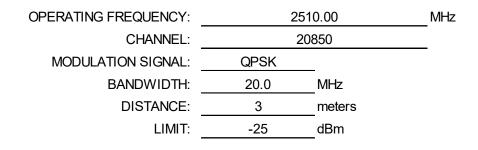
FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 201 of 224	
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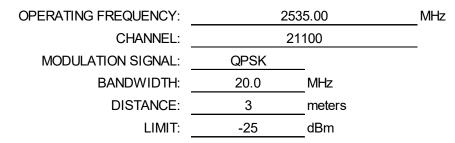


Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	V	150	320	-56.97	10.09	-46.88	-21.9
7530.00	V	150	338	-65.54	12.10	-53.44	-28.4
10040.00	V	-	-	-67.68	13.19	-54.49	-29.5

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

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 202 of 224
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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	150	31	-58.15	10.18	-47.97	-23.0
7605.00	V	150	349	-68.11	12.15	-55.96	-31.0
10140.00	V	-	-	-67.62	13.11	-54.51	-29.5

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

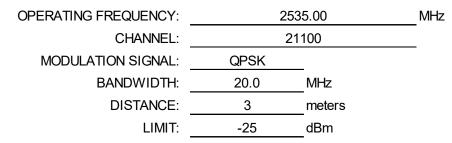
OPERATING FREQUENCY:	256	60.00	MHz
CHANNEL:	21	350	_
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	_dBm	
LIMIT:	-25	_dBm	

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	150	25	-61.21	10.24	-50.97	-26.0
7680.00	V	150	244	-67.57	12.28	-55.29	-30.3
10240.00	V	-	-	-67.79	13.11	-54.67	-29.7

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

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 202 of 224	
1M1804040063-03.A3L	4/4-5/18/2018	Portable Handset		Page 203 of 224	
© 2018 PCTEST Engineering La	V 8.0 03/13/2018				

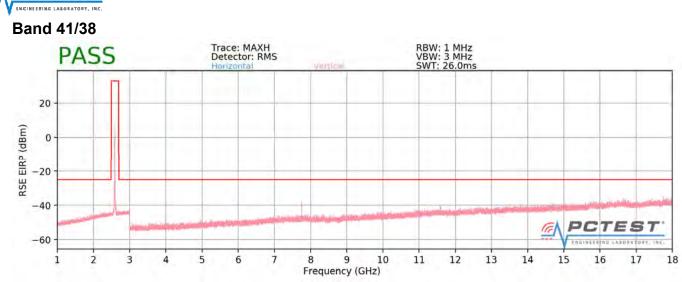




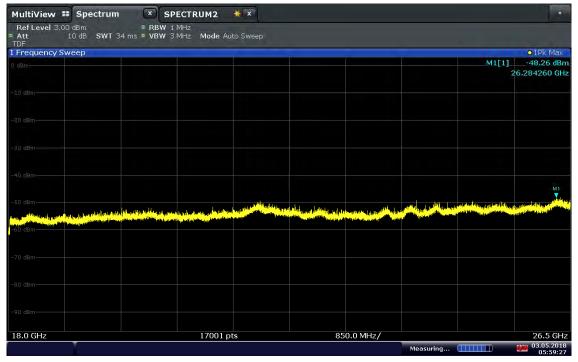
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	V	150	217	-66.67	10.24	-56.43	-31.4
7605.00	V	150	217	-62.30	12.28	-50.02	-25.0
10140.00	V	-	-	-68.39	13.11	-55.27	-30.3

Table 7-37. Radiated Spurious Data with WCP (Band 7 – Mid Channel)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 204 of 224	
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Plot 7-303. Radiated Spurious Plot 1GHz - 18GHz (Band 41/38)



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Plot 7-304. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41/38 Ant. H)

FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 205 of 224
1M1804040063-03.A3L	4/4-5/18/2018	Portable Handset		Page 205 of 224
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Plot 7-305. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41/38 Ant. V)

Note:

Emission were investigated up through the 10th harmonic for this band. No significant emissions were found above 26.5GHz.

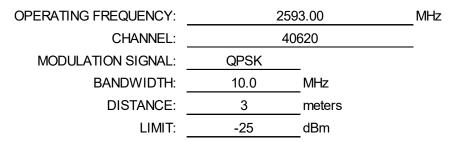
OPERATING FREQUENCY:	250	5.00 M	Hz
CHANNEL:	39	740	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	dBm	

Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5010.00	Н	150	32	-59.91	10.10	-49.81	-24.8
7515.00	Н	150	34	-49.83	12.11	-37.72	-12.7
10020.00	Н	-	-	-66.15	13.18	-52.98	-28.0

Table 7-38. Radiated Spurious Data (Band 41/38 – Low Channel)

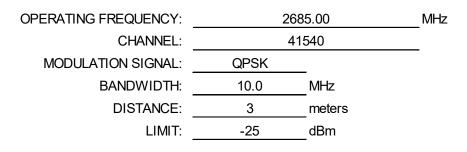
FCC ID: A3LSMN960F		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 206 of 224
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Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Antenna Gain	Spurious Emission Level [dBm]	Margin [dB]
5186.00	Н	150	230	-64.77	10.27	-54.50	-29.5
7779.00	Н	150	22	-52.52	12.28	-40.24	-15.2
10372.00	Н	-	-	-66.11	13.12	-52.99	-28.0

Table 7-39. Radiated Spurious Data (Band 41/38 – Mid Channel)



Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5370.00	Н	150	84	-63.46	10.42	-53.04	-28.0
8055.00	Н	150	46	-56.21	12.60	-43.61	-18.6
10740.00	Н	-	-	-63.97	13.12	-50.85	-25.9

Table 7-40. Radiated Spurious Data (Band 41/38 – High Channel)

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OPERATING FREQUENCY:	93.00	MHz	
CHANNEL:	40	620	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	dBm	

Frequency [MHz]	Ant. Pol. [H/V 1	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	Н	150	326	-62.44	10.27	-52.18	-27.2
7779.00	Н	150	117	-55.55	12.28	-43.27	-18.3
10372.00	Н	-	-	-65.87	13.12	-52.75	-27.8

Table 7-41. Radiated Spurious Data with WCP (Band 41/38 – Mid Channel)

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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 $\pm 0.00025\%$ (± 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 12/17 Frequency Stability Measurements

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

VOLTAGE (%)	POWER (VDC)	ТЕМР (°С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	707,499,783	-217	-0.0000307
100 %		- 30	707,500,121	121	0.0000171
100 %		- 20	707,500,008	8	0.0000011
100 %		- 10	707,500,004	4	0.0000006
100 %		0	707,500,239	239	0.0000338
100 %		+ 10	707,500,041	41	0.0000058
100 %		+ 20	707,500,134	134	0.0000189
100 %		+ 30	707,499,959	-41	-0.0000058
100 %		+ 40	707,500,027	27	0.0000038
100 %		+ 50	707,499,863	-137	-0.0000194
BATT. ENDPOINT	3.45	+ 20	707,499,866	-134	-0.0000189

Table 7-42. Frequency Stability Data (Band 12/17)

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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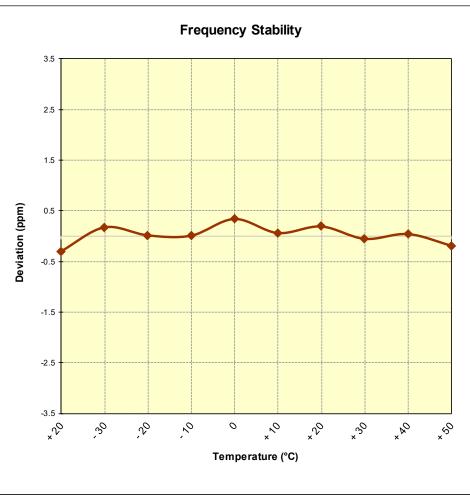


Figure 7-8. Frequency Stability Graph (Band 12/17)

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Band 13 Frequency Stability Measurements

OPERATING FREQUENCY:	782,000,000	Hz
CHANNEL:	23230	_
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	ТЕМР (°С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	782,000,234	234	0.0000299
100 %		- 30	781,999,882	-118	-0.0000151
100 %		- 20	781,999,986	-14	-0.0000018
100 %		- 10	782,000,241	241	0.0000308
100 %		0	781,999,921	-79	-0.0000101
100 %		+ 10	782,000,334	334	0.0000427
100 %		+ 20	781,999,663	-337	-0.0000431
100 %		+ 30	782,000,098	98	0.0000125
100 %		+ 40	782,000,052	52	0.0000066
100 %		+ 50	782,000,068	68	0.000087
BATT. ENDPOINT	3.45	+ 20	781,999,845	-155	-0.0000198

 Table 7-43. Frequency Stability Data (Band 13)

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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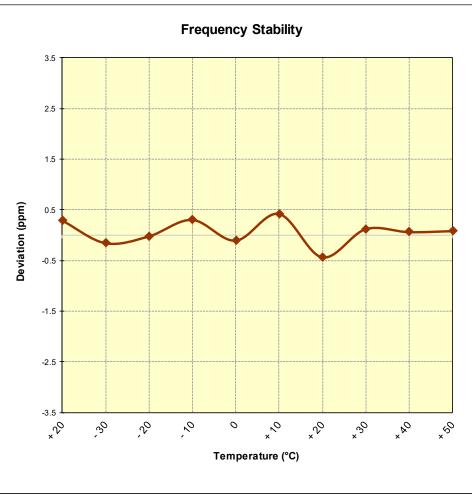


Figure 7-9. Frequency Stability Graph (Band 13)

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Band 26/5 Frequency Stability Measurements

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	831,500,092	92	0.0000111
100 %		- 30	831,499,882	-118	-0.0000142
100 %		- 20	831,499,886	-114	-0.0000137
100 %		- 10	831,499,818	-182	-0.0000219
100 %		0	831,499,889	-111	-0.0000133
100 %		+ 10	831,499,866	-134	-0.0000161
100 %		+ 20	831,499,900	-100	-0.0000120
100 %		+ 30	831,499,965	-35	-0.0000042
100 %		+ 40	831,499,928	-72	-0.000087
100 %		+ 50	831,499,985	-15	-0.0000018
BATT. ENDPOINT	3.45	+ 20	831,499,853	-147	-0.0000177

Table 7-44. Frequency Stability Data (Band 26/5)

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Band 26/5 Frequency Stability Measurements

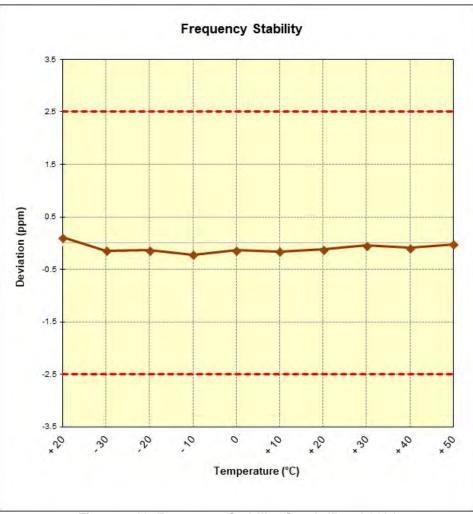


Figure 7-10. Frequency Stability Graph (Band 26/5)

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Band 66/4 Frequency Stability Measurements

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,744,999,597	-403	-0.0000231
100 %		- 30	1,744,999,847	-153	-0.0000088
100 %		- 20	1,745,000,087	87	0.0000050
100 %		- 10	1,745,000,014	14	0.0000008
100 %		0	1,744,999,830	-170	-0.0000097
100 %		+ 10	1,744,999,977	-23	-0.0000013
100 %		+ 20	1,745,000,010	10	0.0000006
100 %		+ 30	1,744,999,868	-132	-0.0000076
100 %		+ 40	1,745,000,037	37	0.0000021
100 %		+ 50	1,744,999,896	-104	-0.0000060
BATT. ENDPOINT	3.45	+ 20	1,745,000,112	112	0.0000064

Table 7-45. 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 66/4 Frequency Stability Measurements

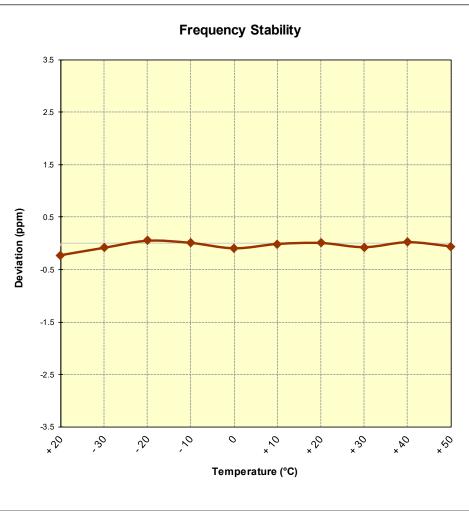


Figure 7-11. Frequency Stability Graph (Band 66/4)

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Band 25/2 Frequency Stability Measurements

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

VOLTAGE (%)	POWER (VDC)	ТЕМР (°С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,882,500,181	181	0.0000096
100 %		- 30	1,882,499,997	-3	-0.0000002
100 %		- 20	1,882,499,980	-20	-0.0000011
100 %		- 10	1,882,499,739	-261	-0.0000139
100 %		0	1,882,499,708	-292	-0.0000155
100 %		+ 10	1,882,499,747	-253	-0.0000134
100 %		+ 20	1,882,499,920	-80	-0.0000042
100 %		+ 30	1,882,500,158	158	0.0000084
100 %		+ 40	1,882,499,992	-8	-0.0000004
100 %		+ 50	1,882,499,777	-223	-0.0000118
BATT. ENDPOINT	3.45	+ 20	1,882,499,802	-198	-0.0000105

Table 7-46. Frequency Stability Data (Band 25/2)

Note:

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

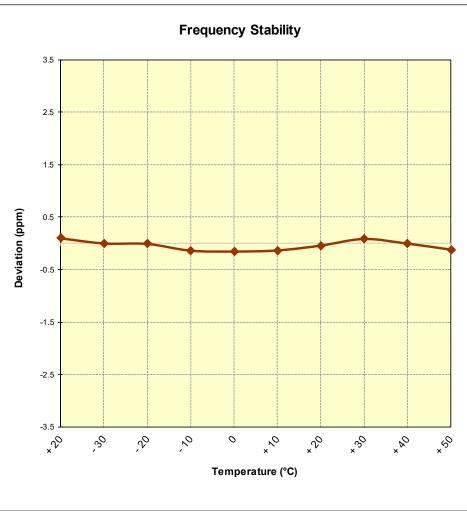


Figure 7-12. Frequency Stability Graph (Band 25/2)

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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)	ТЕМР ([°] С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,534,999,967	-33	-0.0000013
100 %		- 30	2,534,999,791	-209	-0.0000082
100 %		- 20	2,535,000,106	106	0.0000042
100 %		- 10	2,535,000,281	281	0.0000111
100 %		0	2,534,999,904	-96	-0.000038
100 %		+ 10	2,534,999,770	-230	-0.0000091
100 %		+ 20	2,534,999,744	-256	-0.0000101
100 %		+ 30	2,534,999,947	-53	-0.0000021
100 %		+ 40	2,535,000,144	144	0.0000057
100 %		+ 50	2,535,000,050	50	0.0000020
BATT. ENDPOINT	3.45	+ 20	2,535,000,018	18	0.000007

 Table 7-47. 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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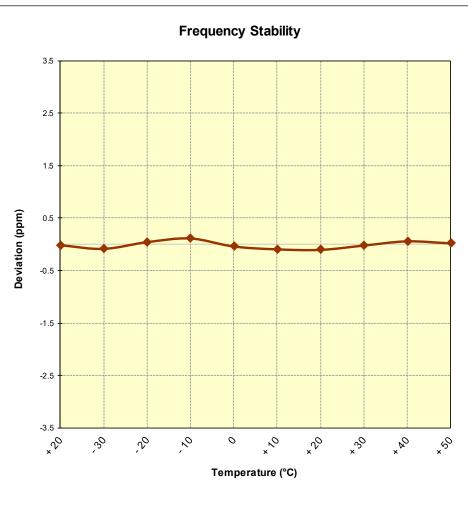
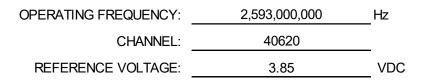


Figure 7-13. Frequency Stability Graph (Band 7)

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Band 41/38 Frequency Stability Measurements



VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,593,000,042	42	0.0000016
100 %		- 30	2,592,999,689	-311	-0.0000120
100 %		- 20	2,592,999,839	-161	-0.0000062
100 %		- 10	2,592,999,803	-197	-0.0000076
100 %		0	2,592,999,776	-224	-0.0000086
100 %		+ 10	2,593,000,148	148	0.0000057
100 %		+ 20	2,592,999,966	-34	-0.0000013
100 %		+ 30	2,593,000,117	117	0.0000045
100 %		+ 40	2,592,999,894	-106	-0.0000041
100 %		+ 50	2,592,999,811	-189	-0.0000073
BATT. ENDPOINT	3.45	+ 20	2,593,000,068	68	0.0000026

Table 7-48. Frequency Stability Data (Band 41/38)

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 41/38 Frequency Stability Measurements

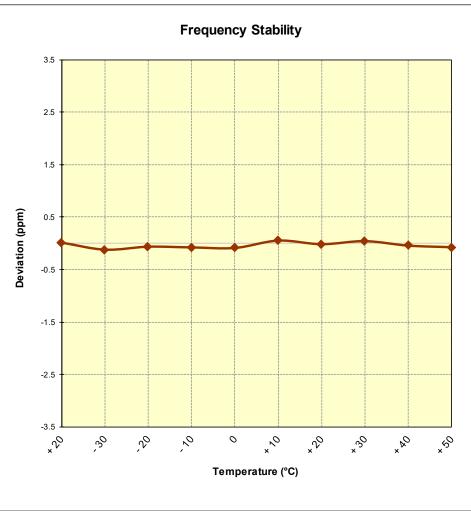


Figure 7-14. Frequency Stability Graph (Band 41/38)

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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: A3LSMN960F** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

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