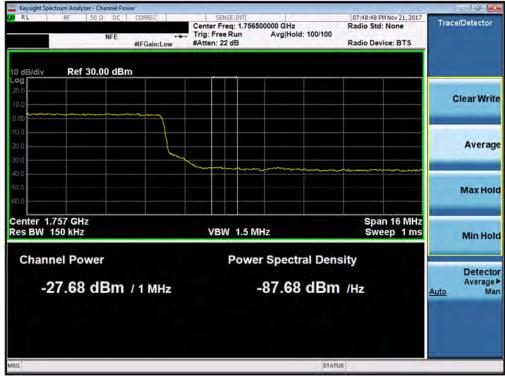


RL RF 56Ω DC	PNO: Wide	SENSE:INT Trig: Free Run Atten: 36 dB	#Avg Type: RMS	07:48:42 PMNov 21, 2017 TRACE 2 3 4 5.6 TYPE & WWWWW DET A NNNNN	Frequency
O dB/div Ref 25.00 dBm			Mkr1	1.755 000 GHz -35.58 dBm	Auto Tune
15.0					Center Fred 1.755000000 GH
5.00					Start Free 1.747000000 GH
25.0				0L1 -13:00 dBn	Stop Fre 1.763000000 GH
96.0		h 2	Maker and a straight of the	mmention	CF Ste 1.600000 MH <u>Auto</u> Ma
55.0					Freq Offse 0 H
65 0 Center 1.755000 GHz #Res BW 51 kHz	#VBW	160 kHz	Sweep 2	Span 16.00 MHz 2.533 ms (1001 pts)	Scale Type Log <u>Li</u>

Plot 7-285. Upper Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)



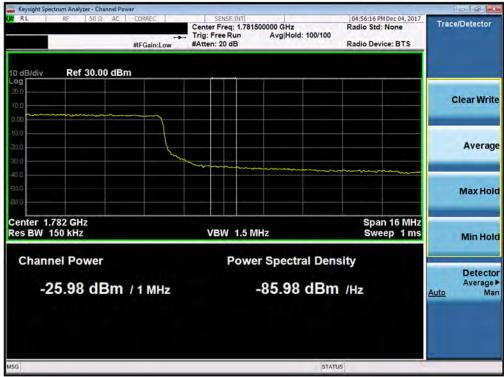
Plot 7-286. Upper Extended Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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α RL RF 50Ω AC	PNO: Fast	SENSE:INT Trig: Free Run Atten: 36 dB	#Avg Type: RMS	04:56:08 PM Dec 04, 2017 TRACE 2 3 4 5 6 TYPE A WANNEN DET A NNNN	Frequency
0 dB/div Ref 25.00 dBm			Mkr1	1.780 000 GHz -28.67 dBm	Auto Tune
15,0					Center Fred 1.780000000 GH
5.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				Start Free 1.772000000 GH
16.0		1_		0L1 -13.00 dBm	Stop Fre 1.788000000 GH
36.0		him	minanimana	and the second	CF Ste 1.600000 MH <u>Auto</u> Ma
55.0					Freq Offse 0 H
66 0 Center 1.780000 GHz #Res BW 200 kHz	#VBW (	320 kHz	Sween 1	Span 16.00 MHz .000 ms (1001 pts)	Scale Typ Log <u>Li</u>

Plot 7-287. Upper Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-288. Upper Extended Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

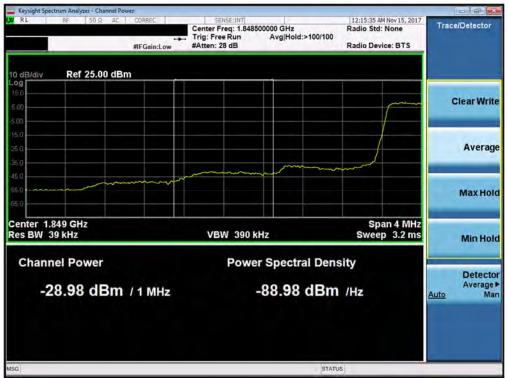
FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Degs 171 of 205
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# Band 25/2



Plot 7-289. Lower Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



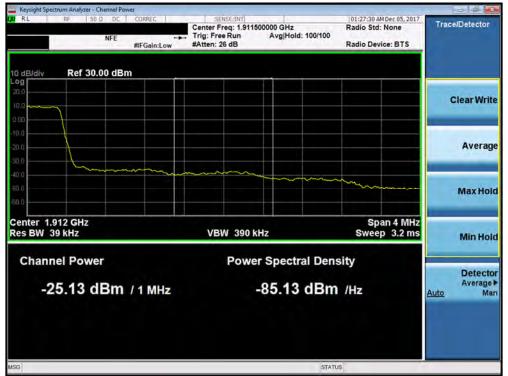
Plot 7-290. Lower Extended Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dego 172 of 205
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RL RF S0.0 DC 0	CORREC	SENSE:INT	#Avg Type: RMS	01:27:20 AM Dec 05, 2017 TRACE 1 2 3 4 5 6	Frequency
NFE	PNO: Wide 😱 IFGain:Low	Trig: Free Run Atten: 36 dB		DET A NNNNN	Lan Julian
0 dB/div Ref 25.00 dBm			Mkr	1.910 008 GHz -37.59 dBm	Auto Tun
5.0					Center Fre 1.910000000 GF
00	en na ann a chai	-			Start Fre 1.908000000 G
5.0				0L1 -13.00 dBm	Stop Fr 1.912000000 G
5.0		1 min	munn	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	CF Sta 400.000 k <u>Auto</u> M
5.0					Freq Offs 0
enter 1.910000 GHz	#VBW	13 kHz	Sween	opan 4.000 Minz	Scale Tyj Log <u>L</u>
Center 1.910000 GHz Res BW 15 kHz	#VBW	43 kHz	Sweep	7.467 ms (1001 pts)	Log

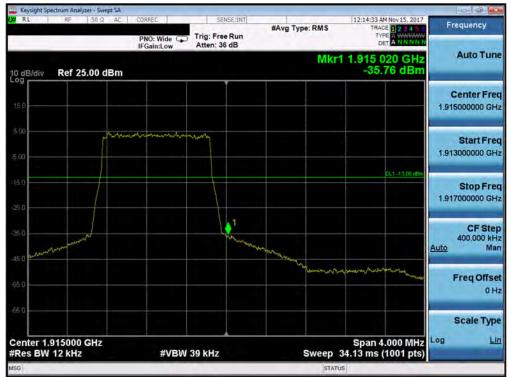
Plot 7-291. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-292. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 172 of 205	
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Plot 7-293. Upper Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)



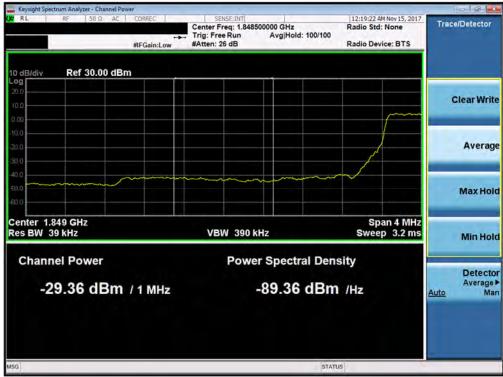
Plot 7-294. Upper Extended Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 174 of 205	
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RL RF 50Ω AC	CORREC	SENSE:INT		12:19:15 AM Nov 15, 2017	Frequency
<b>F</b>	PNO: Wide 😱	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Frequency
O dB/div Ref 25.00 dBm			Mkr1	1.850 000 GHz -27.86 dBm	Auto Tune
15.0					Center Fred 1.850000000 GH:
5.00		ſ	minmun	m man	Start Free 1.848000000 GH
15.0				СС1 -13.00 аВт	Stop Fre 1.852000000 GH
35.0	m	$\sim$			CF Ste 400.000 kH Auto Ma
65 D					Freq Offse 0 H
© 0 Center 1.850000 GHz #Res BW 30 kHz	#VBW 9	4 64-	6	Span 4.000 MHz 533 ms (1001 pts)	Scale Typ Log <u>Li</u>

Plot 7-295. Lower Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

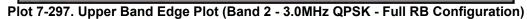


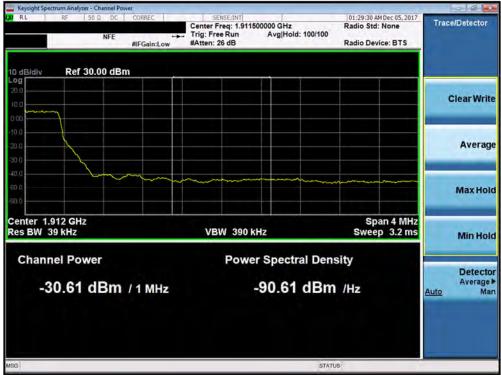
Plot 7-296. Lower Extended Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	G	Approved by: Quality Manager
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RL RF 50 Ω DC	CORREC	SENSE:INT	La construction de la constructi	01:29:21 AM Dec 05, 2017	Frequency
NFE	PNO: Wide C	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 2 3 4 5 6 TYPE A WWWWW DET A NNNNN	Frequency
0 dB/div Ref 25.00 dBm		Haten. oo ab	Mki	1 1.910 000 GHz -26.581 dBm	Auto Tune
og 15.0					Center Fred 1.910000000 GHz
5.00		$\sim$			Start Free 1.908000000 GH:
150 150		t		0L1-13.00 dBm	Stop Fred 1.912000000 GH:
150		Ju	mm		CF Step 400.000 kH Auto Mar
55.0					Freq Offse 0 H
enter 1.910000 GHz				Span 4.000 MHz	Scale Type
Res BW 30 kHz	#VBW	91 KHZ	Sweep	2.000 ms (1001 pts)	





Plot 7-298. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 176 of 205	
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KI RF S0Ω AC	PNO: Wide	SENSE:INT Trig: Free Run Atten: 36 dB	#Avg Type: RMS	12:19:53 AM Nov 15, 2017 TRACE 1 2 3 4 5 6 TYPE A WASHING DET A N N N N N	Frequency
0 dB/div Ref 25.00 dBm	I Gameow		Mkr1	1.915 000 GHz -26.62 dBm	Auto Tune
15.0					Center Fred 1.915000000 GH
5.00		$\gamma$			Start Free 1.913000000 GH
15.0 25.0		1		0L1 -13.00 dBm	Stop Free 1.917000000 GH
36.0		from	munit	m	CF Stej 400.000 kH <u>Auto</u> Ma
55.0					Freq Offse 0 H
66 0 Center 1.915000 GHz #Res BW 30 kHz	#VBW	01 kHz	Sween	Span 4.000 MHz 5.533 ms (1001 pts)	Scale Type Log <u>Lir</u>

Plot 7-299. Upper Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)



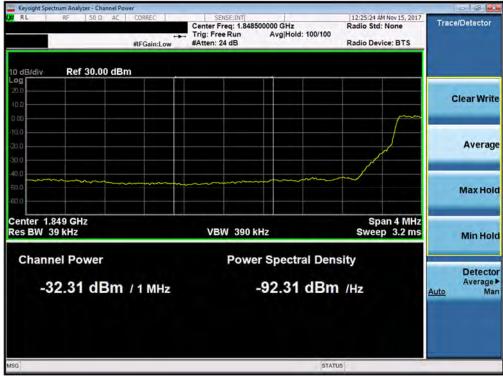
Plot 7-300. Upper Extended Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:	Daga 177 of 205				
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XIRL RF 50Ω AC	PNO: Wide	SENSE:INT Trig: Free Run Atten: 36 dB	#Avg Type: RMS	12:25:16 AM Nov 15, 2017 TRACE 1 2 3 4 5 6 TYPE & WWWWW DET A NNNNN	Frequency
10 dB/div Ref 25.00 dBm			Mkr1	1.850 000 GHz -30.48 dBm	Auto Tune
15.0					Center Fred 1.85000000 GH;
5.00				······	Start Free 1.848000000 GH
15.0		,/		0L1 -13.00 dBm	Stop Free 1.852000000 GH
35.0		~			CF Ste 400.000 kH Auto Ma
55 0					Freq Offse 0 H
66 0 Center 1.850000 GHz #Res BW 51 kHz	#\/B)M	160 kHz	Swaan	Span 4.000 MHz .933 ms (1001 pts)	Scale Type

Plot 7-301. Lower Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



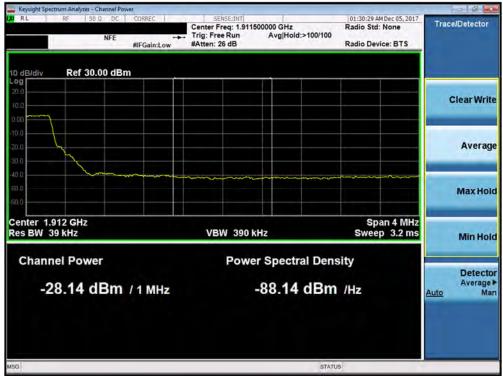
Plot 7-302. Lower Extended Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dega 179 of 205			
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RL RF 50 Ω	DC	CORREC	SEI	SE:INT				AM Dec 05, 2017	E	equency
,		PNO: Wide 😱	Trig: Free Atten: 36		#Avg Typ	e: RMS	T	ACE 123456 VPE A WARMANN DET A NNNNN		equency
O dB/div Ref 25.00 d		I Gam.cow				Mkr	1 1.910 -26.2	000 GHz 243 dBm		Auto Tune
15.0										Center Free
00 <del></del>	hund	ann	J						1.90	Start Free 8000000 GH
50 			ha	1				(DL1 -13.00 dem	1.91	Stop Fre 2000000 GH
5.0				him	man	Amy	-mmm	man	Auto	CF Ste 400.000 kH Ma
5.0										Freq Offse 0 H
enter 1.910000 GHz							Span	4.000 MHz	Log	Scale Typ
Res BW 51 kHz		#VBW	160 kHz	4 I		Sweep	2.000 ms	(1001 pts)	-	and the second second

Plot 7-303. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-304. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 179 of 295
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α RL RF 50Ω AC	PNO: Wide	SENSE:INT Trig: Free Run Atten: 36 dB	#Avg Type: RMS	12:26:08 AM Nov 15, 2017 TRACE 2 3 4 5.6 TYPE A WAWAWAY DET A N N N N N	Frequency
IO dB/div Ref 25.00 dBm			Mkr1	1.915 000 GHz -28.97 dBm	Auto Tune
15.0					Center Fred 1.915000000 GH
5 00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	7			Start Fre 1.913000000 GH
25.0		,		0L1 -13.00 dBm	Stop Fre 1.917000000 GH
15.0					CF Ste 400.000 kF <u>Auto</u> Ma
55.0.					Freq Offse 0 H
66 0 Center 1.915000 GHz #Res BW 51 kHz	#VBW ?	160 kHz	Sweep 1	Span 4.000 MHz .933 ms (1001 pts)	Scale Typ Log <u>Li</u>

Plot 7-305. Upper Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



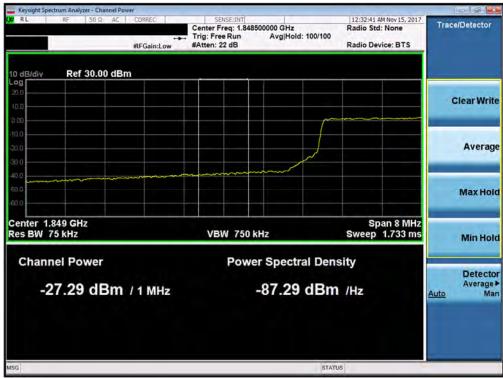
Plot 7-306. Upper Extended Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager				
Test Report S/N:	Test Dates:	EUT Type:		Dogo 190 of 205				
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RL RF 50 Q AC	CORREC	SENSE:INT		12:32:30 AM Nov 15, 2017	Frequency
	PNO: Wide 😱 IFGain:Low	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 2345.6 TYPE A WANNIN DET A NNNNN	
0 dB/div Ref 25.00 dBm			Mkr	1.850 000 GHz -33.16 dBm	Auto Tune
15,0					Center Fred 1.850000000 GH
5.00		F	and the second	mana	Start Fre 1.846000000 GH
15.0				ÜL1 -13.00 dВm	Stop Fre 1.854000000 GH
25.0	man				CF Ste 800.000 kH <u>Auto</u> Ma
55.0					Freq Offse 0 H
65 0 Center 1.850000 GHz Res BW 51 kHz	#\/P\A(	160 kHz	Swaan	Span 8.000 MHz 3.800 ms (1001 pts)	Scale Typ

Plot 7-307. Lower Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)



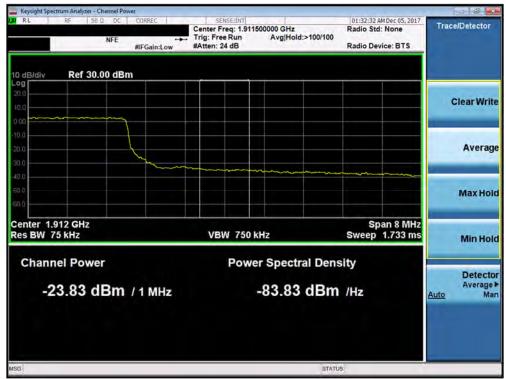
Plot 7-308. Lower Extended Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Dage 191 of 205			
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RL RF 50 Ω	DC CORREC	SENSE:INT	and the second sec	01:32:20 AM Dec 05, 2017	Provincial
NF	E PNO: Wide G	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 23456 TYPE A WARMAN DET A NNNNN	Frequency
dB/div Ref 25.00 dB	m		Mkr	1 1.910 016 GHz -29.03 dBm	Auto Tun
5.0					Center Fre 1.910000000 GH
00	anges destriction and and	~			Start Fre 1.906000000 GH
5.0		44 1		DL1 -13.00 dBm	Stop Fre 1.914000000 GF
50		1 ment	- Marine and a second sec		CF Ste 800.000 kH <u>Auto</u> Ma
5.0 \					Freq Offse 0 H
enter 1.910000 GHz Res BW 100 kHz		300 kHz		Span 8.000 MHz 4.000 ms (1001 pts)	Scale Typ

Plot 7-309. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



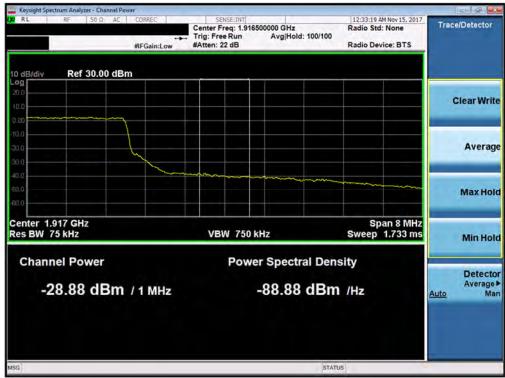
Plot 7-310. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
Test Report S/N:	Test Dates:	EUT Type:		Page 182 of 295			
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RL RF 50Ω AC	PNO: Wide	SENSE:INT Trig: Free Run Atten: 36 dB	#Avg Type: RMS	12:33:12 AM Nov 15, 2017 TRACE 2 3 4 5.6 TYPE A WWWWW DET A N N N N N	Frequency
0 dB/div Ref 25.00 dBm			Mkr1	1.915 000 GHz -31.72 dBm	Auto Tune
15.0					Center Fre 1.915000000 GH
5.00	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	7			Start Fre 1.911000000 GH
15.0				0L1 -13:00 dBm	Stop Fre 1.919000000 GH
45.0		- Y	mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	munner	CF Ste 800.000 kH Auto Ma
55.0					Freq Offse 0 H
66 0 Center 1.915000 GHz #Res BW 51 kHz	#VBW <sup>/</sup>	160 kHz	Sween 3	Span 8.000 MHz 800 ms (1001 pts)	Scale Type Log <u>Li</u>

Plot 7-311. Upper Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)



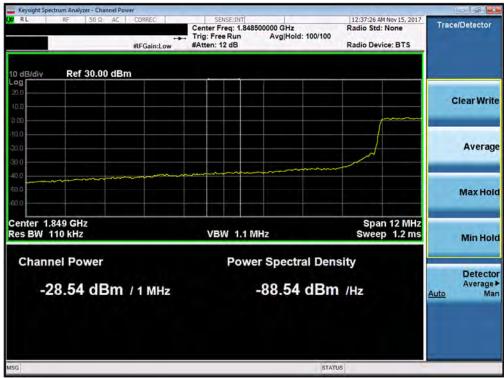
Plot 7-312. Upper Extended Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 192 of 205	
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RL RF 50Ω AC	PNO: Wide Trig: Free Run IFGain:Low Atten: 36 dB	#Avg Type: RMS	12:37:19 AM Nov 15, 2017 TRACE 2 3 4 5 6 TYPE A WARMAN DET A NNNNN	Frequency
ID dB/div Ref 25.00 dBm		Mkr1	1.849 136 GHz -35.05 dBm	Auto Tune
15.0				Center Fre 1.850000000 GH
5.00		(**	nonomin	Start Fre 1.844000000 GH
15.0			DL1 -13.00 dBm	Stop Fre 1.856000000 GH
35.0 45.0		munnet		CF Ste 1.200000 MH Auto Ma
55 0				Freq Offse 0 H
65 0 Center 1.850000 GHz #Res BW 150 kHz	#VBW 470 kHz		Span 12.00 MHz 000 ms (1001 pts)	Scale Typ

Plot 7-313. Lower Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



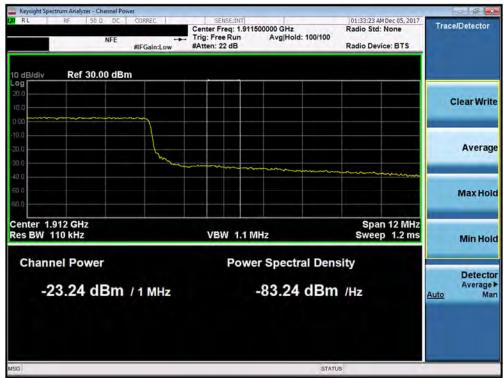
Plot 7-314. Lower Extended Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 194 of 205	
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RL RF 50 Ω	DC	CORREC	SENS				AM Dec 05, 2017	E
	NFE	PNO: Wide 🖵 IFGain:Low	Trig: Free F Atten: 36 d	un	Type: RMS	TRA T	ACE 1 2 3 4 5 6 YPE A WANNANN DET A NNNNN	Frequency
OdB/div Ref 25.00	dBm				Mkr	1 1.910 -29	036 GHz .25 dBm	Auto Tune
5,0								Center Fred 1.910000000 GH
00		m	$\gamma$					Start Free 1.904000000 GH
5.0							01.1 -13.00 dem	Stop Fre 1.916000000 GH
50				umum	no-man	mana	*******	CF Ste 1.200000 MH Auto Ma
5.0								Freq Offse 0 H
enter 1.910000 GHz Res BW 150 kHz			470 kHz			Span	12.00 MHz (1001 pts)	Scale Typ Log <u>Li</u>

Plot 7-315. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



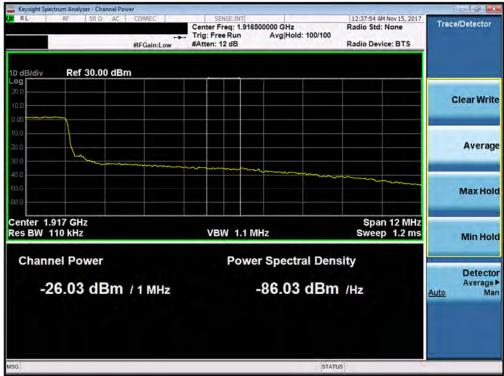
Plot 7-316. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 195 of 205
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RL RF 50 Ω	AC CORREC	SENSE:INT		12:37:48 AM Nov 15, 2017	
	PNO: Wide C	Trig: Free Run Atten: 36 dB	#Avg Type: RMS	TRACE 123456 TYPE A WWWWW DET A NNNN	Frequency
0 dB/div Ref 25.00 dE	3m		Mkr	1 1.915 324 GHz -32.04 dBm	Auto Tune
15.0					Center Fre 1.915000000 GH
5.00					Start Fre 1.909000000 GH
25.0				DL1 -13 60 dBm	Stop Fre 1.921000000 GF
36.0	minin	m	win	m	CF Ste 1.200000 MF <u>Auto</u> Ma
55.0					Freq Offs 0 H
© 0 Center 1.915000 GHz Res BW 150 kHz	#VBW	470 kHz	Sweep	Span 12.00 MHz 1.000 ms (1001 pts)	Scale Typ

Plot 7-317. Upper Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)



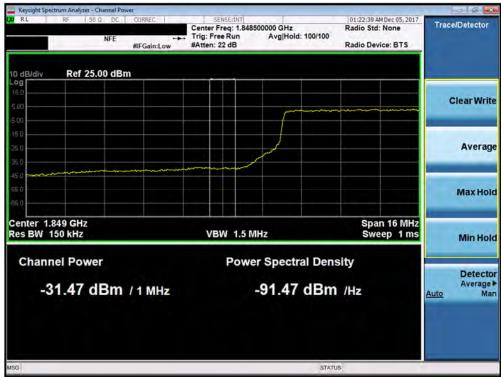
Plot 7-318. Upper Extended Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 186 of 295
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Plot 7-319. Lower Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



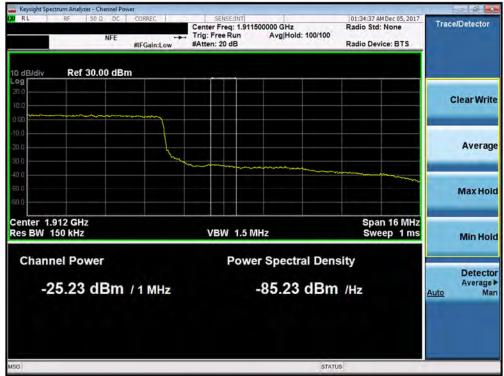
Plot 7-320. Lower Extended Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 197 of 205	
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RL RF SO	NFE	PNO: Wide	SENSE:INT Trig: Free Run Atten: 36 dB	#Avg Type: RMS	01:34:32 AM Dec 05, 2017 TRACE 2 3 4 5 6 TYPE A WWWWW DET A N N N N N	Frequency
0 dB/div Ref 25.00	dBm			M	r1 1.910 000 GHz -29.999 dBm	Auto Tune
15,0						Center Fred 1.910000000 GH
5.00 <b></b>	·····	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	7			Start Free 1.902000000 GH
15.0					DL1 -13.00 dēm	Stop Free 1.918000000 GH
35.0			×		and the second second	CF Ste 1.600000 MH <u>Auto</u> Ma
55.0						Freq Offse 0 H
65 0 Center 1.910000 GH2 #Res BW 200 kHz	2		620 kHz		Span 16.00 MHz 0 1.000 ms (1001 pts)	Scale Type

Plot 7-321. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



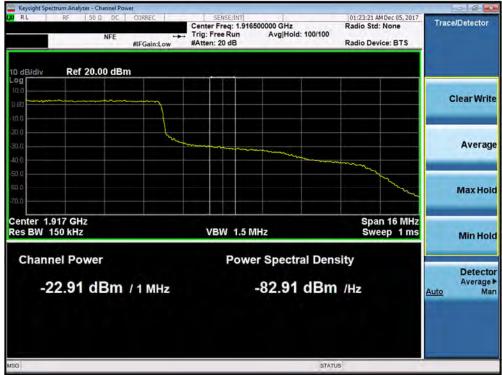
Plot 7-322. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 199 of 205	
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Plot 7-323. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-324. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Degs 190 of 205
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#### Band 30 – Antenna A



Plot 7-325. Lower Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration – Antenna A)



Plot 7-326. Lower Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration – Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 205
1M1711060289-03-R4.A3L	11/6-12/19/2017	Portable Handset		Page 190 of 295
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Plot 7-327. Upper Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration – Antenna A)



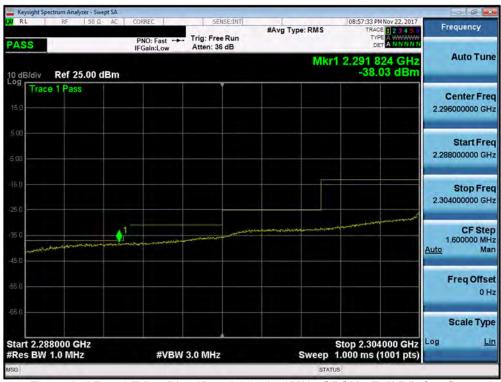
Plot 7-328. Upper Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration – Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Daga 101 of 205	
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Plot 7-329. Lower Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration – Antenna A)



Plot 7-330. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration-Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 102 of 205
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Plot 7-331. Upper Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration – Antenna A)



Plot 7-332. Upper Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration-Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSIING		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 102 of 205		
1M1711060289-03-R4.A3L	11/6-12/19/2017	Portable Handset		Page 193 of 295		
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#### Band 30 – Antenna B



Plot 7-333. Lower Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration – Antenna B)



Plot 7-334. Lower Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration – Antenna B)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 104 of 205	
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Plot 7-335. Upper Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration – Antenna B)



Plot 7-336. Upper Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration – Antenna B)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 105 of 205
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Plot 7-337. Lower Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration - Antenna B)



Plot 7-338. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration-Antenna B)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 106 of 205	
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Plot 7-339. Upper Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration – Antenna B)

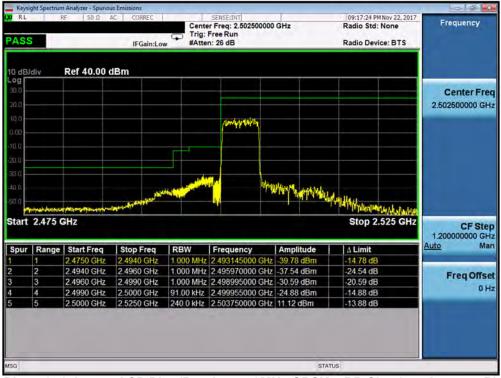


Plot 7-340. Upper Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration–Antenna B)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 197 of 295		
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## Band 7 – Antenna A



Plot 7-341. Lower ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25 – Antenna B)



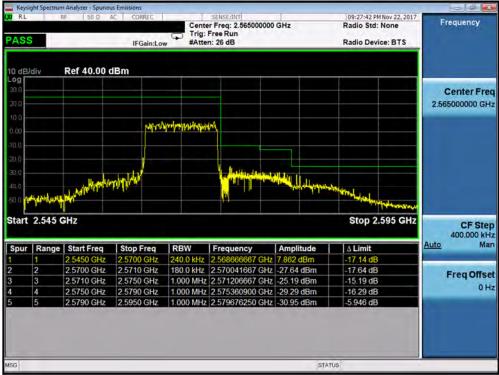
Plot 7-342. Upper ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25 – Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dega 109 of 205	
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PASS		¥F 50 Ω		Gain:Lov	Trig:	er Fr Free	ISE:INT eq: 2.505000000 Run 6 dB	GHz		Radio St	PM Nov 22, 2017 d: None evice: BTS	Frequency
10 dB/	div	Ref 40.00	dBm									
- <b>og</b> 30.0 20.0												Center Free 2.505000000 GH
10 0 0,00 10.0							northall by the study proved	anthan				
20.0 30.0 40.0					والمرال والمجارين	Ϋų.			Marthard	literatural		
50.0	2.475 (		-	is to be		M			Ad. a.	Ston	2.525 GHz	
otart	2.415	5112								Gtop	2.020 0112	CF Ster 1.20000000 GH
Spur	Range	Start Freq	Stop	Freq	RBW	Fr	equency	Ampl	itude	∆ Limit		Auto Mar
1	1	2.4750 GHz	2.490				90190000 GHz	_		-20.56 c		
2	2	2.4905 GHz	2.496				94625000 GHz			-17.37 0		Freq Offse
3	3	2.4960 GHz	2.499				98615000 GHz			-18.22 0		0 H:
4 5	4	2.4990 GHz	2.500				99983333 GHz			-16.22 0		011.
	3	2.5000 GHz	2.525	orghz	240.0 KH2	20	08791667 GHz	0.001	ubm	-16.17 c		

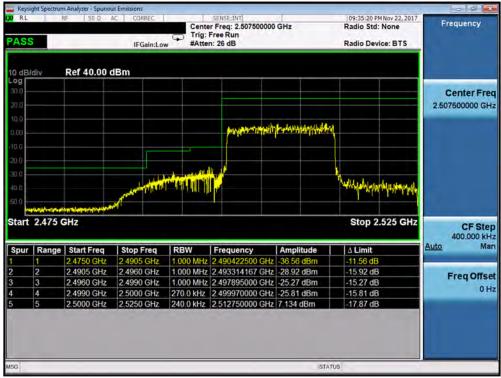




Plot 7-344. Upper ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50 – Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 100 of 205
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Plot 7-345. Lower ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75 – Antenna A)



Plot 7-346. Upper ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75 – Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 200 of 205
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PASS	В	Analyzer - Spurio F   S0 Ω		Trig:	SENSE:INT Freq: 2.510000000 Free Run n: 26 dB	) GHz	09:41:48 PM Nov 22, 2017 Radio Std: None Radio Device: BTS	Frequency	
10 dB/di	iv	Ref 40.00	dBm				, <u>, , , , , , , , , , , , , , , , , , </u>		
30.0								Center Free 2.510000000 GH	
0.00					Antonipitalis	benes for all holes and a	Aleranalitikan		
-20.0 -30.0 -40.0			المعيوليولل		<b>**</b>		horewalana		
-50.0		Hz	ALLAN	1.141			Stop 2.525 GHz	CF Step	
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	∆ Limit	400.000 kH Auto Mar	
	1	2.4750 GHz	2.4905 GHz		2.490500000 GHz		-10.60 dB		
2 2	2	2.4905 GHz	2.4960 GHz		2.495495833 GHz		-15.15 dB	Eron Offen	
3 3	3	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498475000 GHz	-26.39 dBm	-16.39 dB	Freq Offse	
	4	2.4990 GHz	2.5000 GHz		2.499911667 GHz		-16.22 dB	0 H:	
-	5	2.5000 GHz	2.5250 GHz	240.0 kHz	2.513250000 GHz	5.400 dBm	-19.60 dB		

Plot 7-347. Lower ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100 – Antenna A)



Plot 7-348. Upper ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100 – Antenna A)

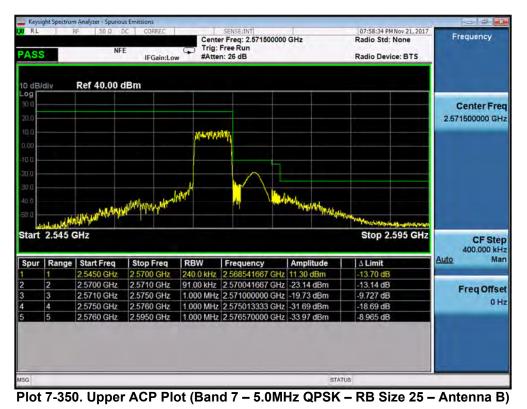
FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 201 of 205
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### Band 7 – Antenna B

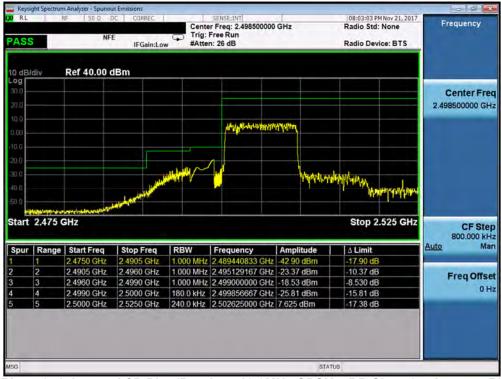
PASS	R	F   50 Ω [		Trig:	SENSE:INT r Freq: 2.4985000 Free Run n: 26 dB	000 GHz	07:57:48 PM Nov 21, 201 Radio Std: None Radio Device: BTS	7 Frequency
10 dB/div	v	Ref 40.00 (	dBm					
30.0 20.0								Center Free 2.498500000 GH
10.0					home			
10.0								
20.0 30.0					- \	Withows.		
40.0 50.0	dicenter			man of b	Y <mark>ar</mark>	THE HALLEN AND THE	Stop 2.525 GH	
Start 2	.475 G	Hz					Stop 2.525 GH:	2 CF Ster 400.000 kH
Spur   F	Range	Start Freq	Stop Freg	RBW	Frequency	Amplitude	∆ Limit	Auto Mar
e prest		2.4750 GHz	2.4940 GHz	1.000 MHz	2.493588333 G	Hz -39.58 dBm	-14.58 dB	2
1		2.4940 GHz	2.4960 GHz	1.000 MHz	2.495796667 G	Hz -31.83 dBm	-18.83 dB	Freq Offse
1 1 2 2				1 000 1411-	2 497165000 G	Hz -21.35 dBm	-11.35 dB	ricgonac
1 1 2 2 3 3	}	2.4960 GHz	2.4990 GHz					0.14
1 1 2 2	} 	2.4960 GHz 2.4990 GHz 2.5000 GHz	2.4990 GHz 2.5000 GHz 2.5250 GHz	91.00 kHz	2.499930000 G 2.502833333 G	Hz -23.56 dBm	-13.56 dB -13.67 dB	0 H

Plot 7-349. Lower ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25 – Antenna B)

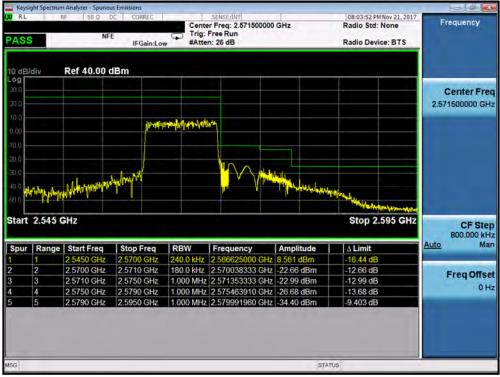


PCTEST Approved by: MEASUREMENT REPORT SAMSUNG FCC ID: A3LSMG965U (CERTIFICATION) **Quality Manager** EUT Type: Test Report S/N: Test Dates: Page 202 of 295 1M1711060289-03-R4.A3L 11/6-12/19/2017 Portable Handset © 2018 PCTEST Engineering Laboratory, Inc. V 7.1 10/25/2017





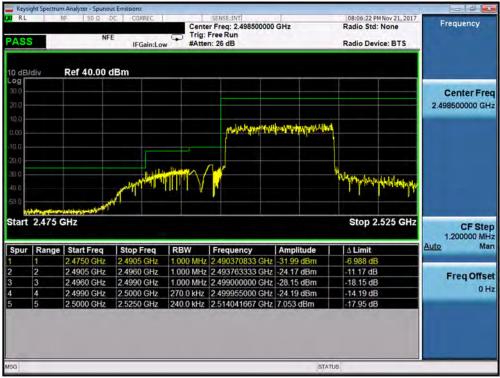
Plot 7-351. Lower ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50 – Antenna B)

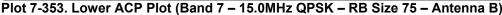


Plot 7-352. Upper ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50 – Antenna B)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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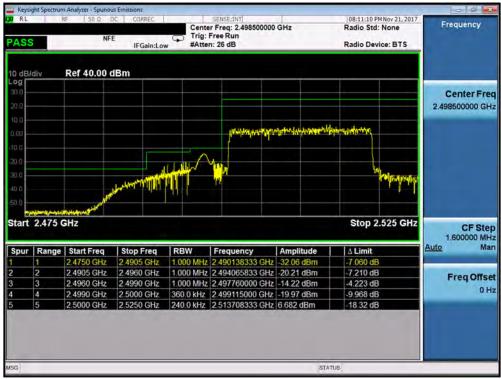




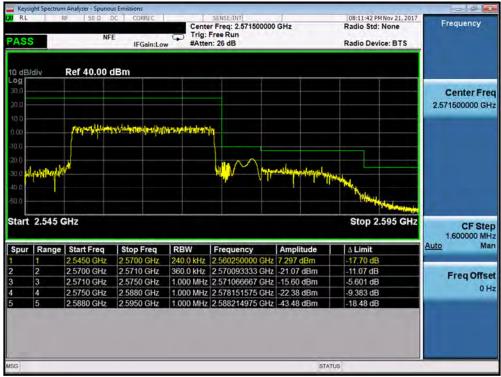
Plot 7-354. Upper ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75 – Antenna B)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	UNG	Approved by: Quality Manager
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Plot 7-355. Lower ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100 – Antenna B)

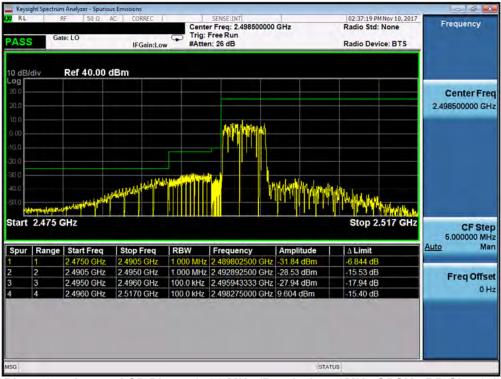


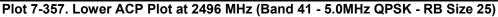
Plot 7-356. Upper ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100 – Antenna B)

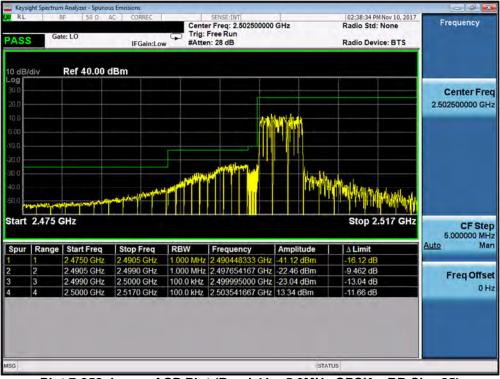
FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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# Band 41



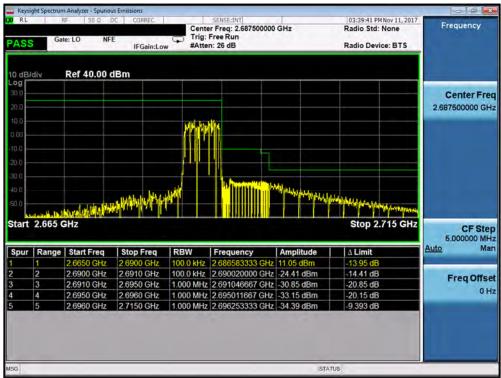




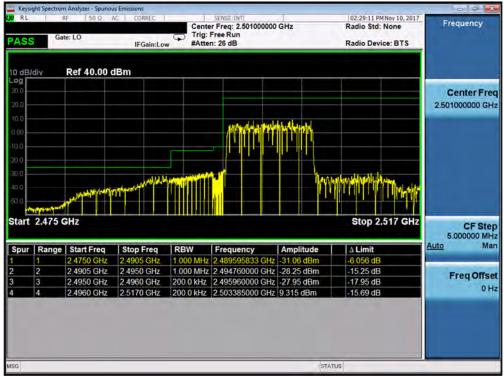
Plot 7-358. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
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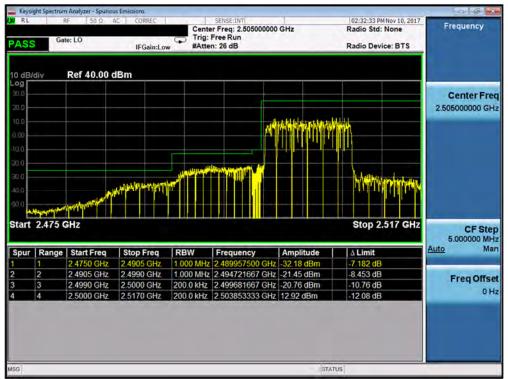
Plot 7-359. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)



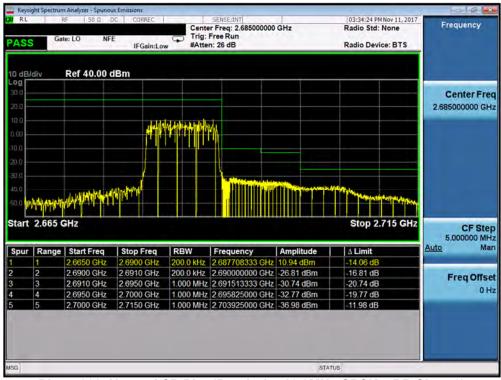
Plot 7-360. Lower ACP Plot at 2496 MHz (Band 41 - 10.0MHz QPSK - RB Size 25)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG		Approved by: Quality Manager
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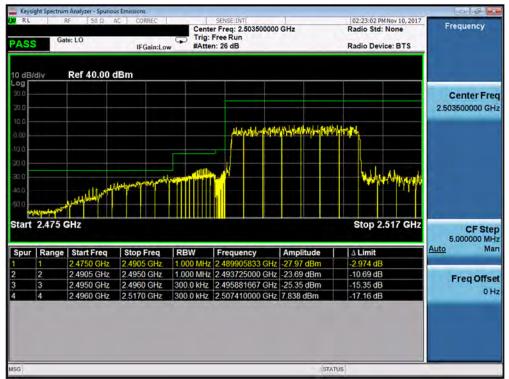
Plot 7-361. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)



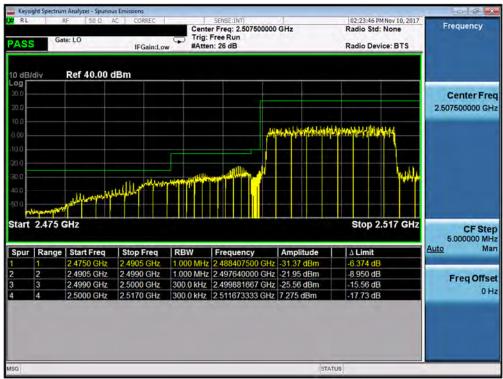
Plot 7-362. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSIING		Approved by: Quality Manager
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Plot 7-363. Lower ACP Plot at 2496 MHz (Band 41 - 15.0MHz QPSK - RB Size 25)



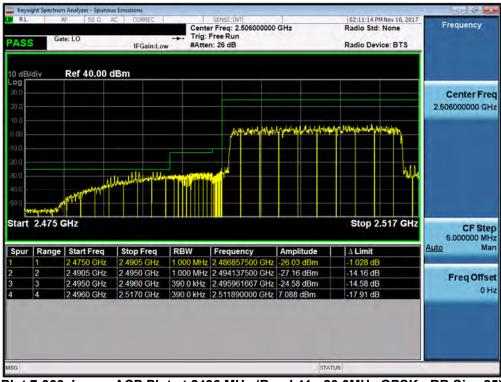
Plot 7-364. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 200 of 205		
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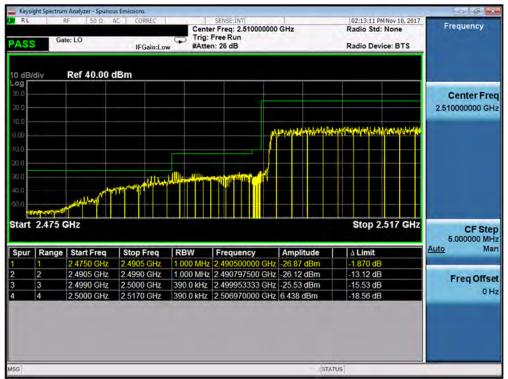
Plot 7-365. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)



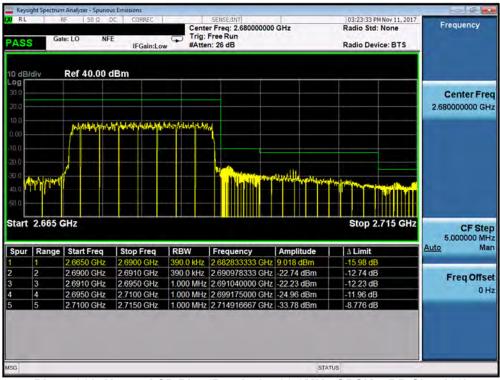
Plot 7-366. Lower ACP Plot at 2496 MHz (Band 41 - 20.0MHz QPSK - RB Size 25)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG		Approved by: Quality Manager
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Plot 7-367. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

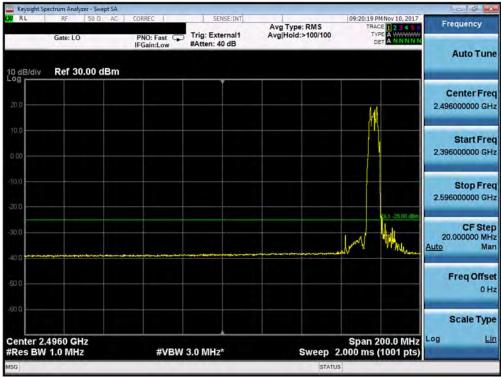


Plot 7-368. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

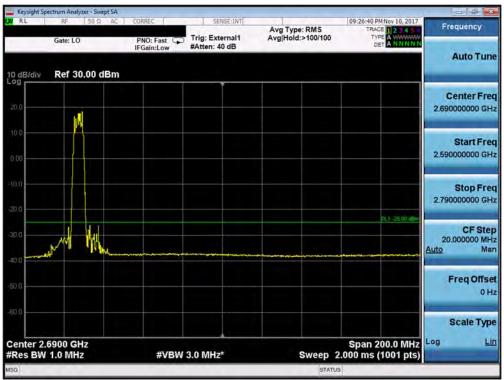
FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
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# Band 41



Plot 7-369. Lower ACP Plot (Band 38 – 5.0MHz QPSK – RB Size 25)



### Plot 7-370. Upper ACP Plot (Band 38 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSIING		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dega 212 of 205		
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Plot 7-371. Lower ACP Plot (Band 38 – 10.0MHz QPSK – RB Size 50)



Plot 7-372. Upper ACP Plot (Band 38 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:		Dage 212 of 205	
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RL	RF	50 Ω A0	CORR	EC	SE	NSE:INT				58 PM Nov 10, 201	7	Frequency
	Gate: LO			D: Fast 🗭 in:Low	Trig: Ext #Atten: 4		Avg Type: Avg Hold:>			TYPE A		Los and
0 dB/div	Ref 30	.00 dBn	n									Auto Tune
20.0											2.4	Center Fred
10.0										himin .		Start Fred
0.00											2.5	39600000 GH:
20.0											2.	Stop Free 596000000 GH
90.0								duu	white		Auto	CF Step 20.000000 MH
10.0		-marine			******		**********************	Wednesd a land all				Freq Offse
50.0												OH
50.Q												Scale Type
enter 2.4 Res BW				#VBW	3.0 MHz	*	s	weep 2	Spa .000 m	n 200.0 MH is (1001 pts	z Log	Lir
3G	-							STATUS	5	-		

Plot 7-373. Lower ACP Plot (Band 38 – 15.0MHz QPSK – RB Size 75)



Plot 7-374. Upper ACP Plot (Band 38 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG				Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 214 of 205				
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Plot 7-375. Lower ACP Plot (Band 38 – 20.0MHz QPSK – RB Size 100)



Plot 7-376. Upper ACP Plot (Band 38 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 215 of 205
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# 7.5 Peak-Average Ratio §24.232(d)

### **Test Overview**

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

### **Test Procedure Used**

KDB 971168 D01 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.

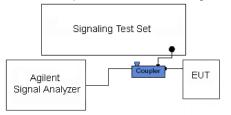


Figure 7-4. Test Instrument & Measurement Setup

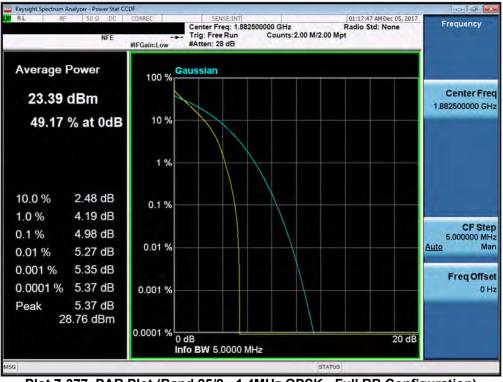
### **Test Notes**

None.

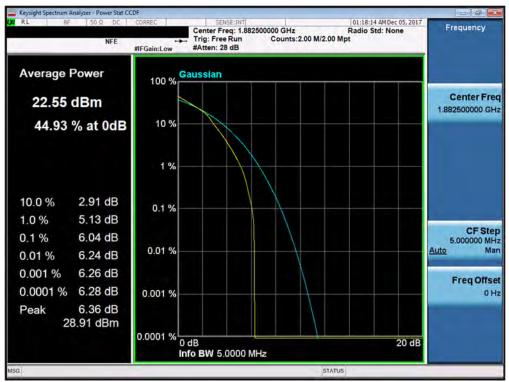
FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 216 of 295		
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# Band 25/2



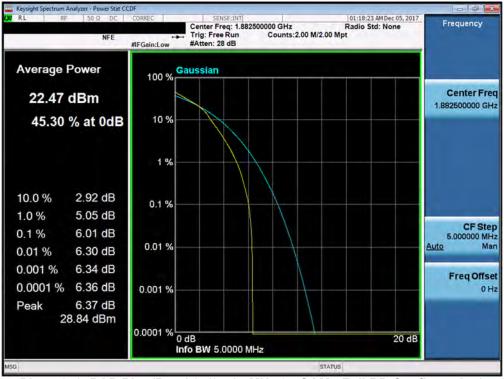
Plot 7-377. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



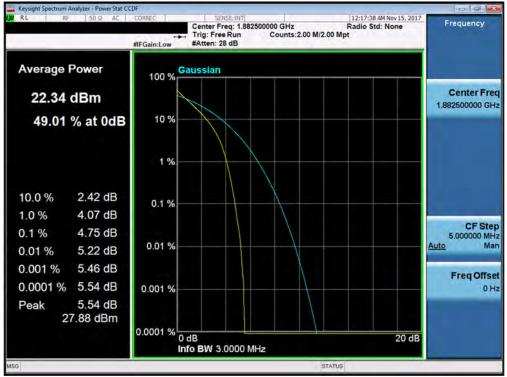
### Plot 7-378. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager	
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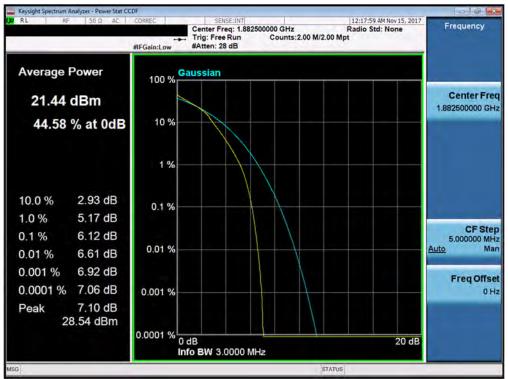




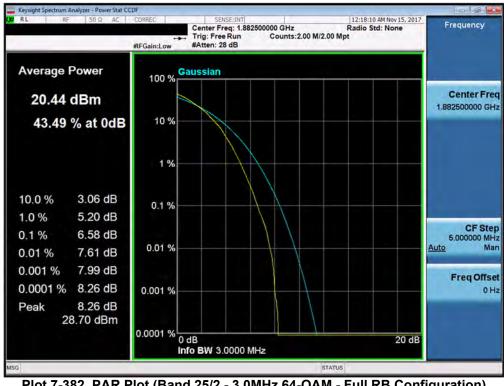
Plot 7-380. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 218 of 295
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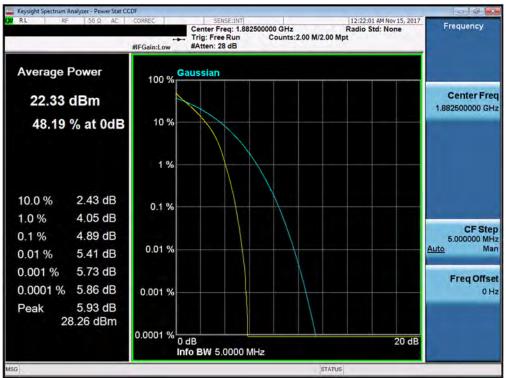




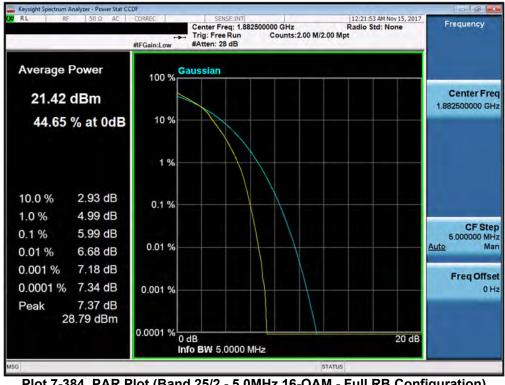
Plot 7-382. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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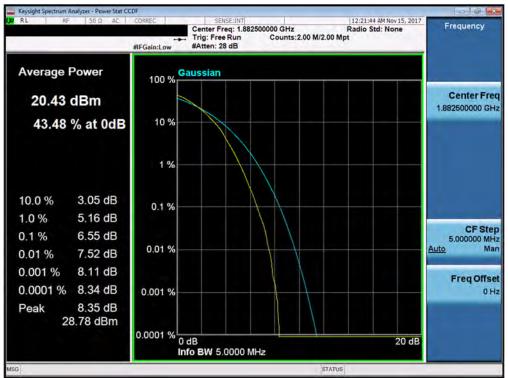




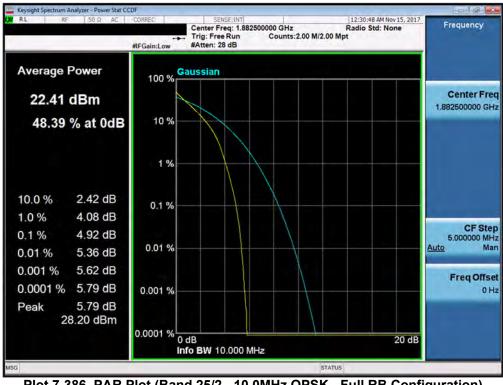
Plot 7-384. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 220 of 205		
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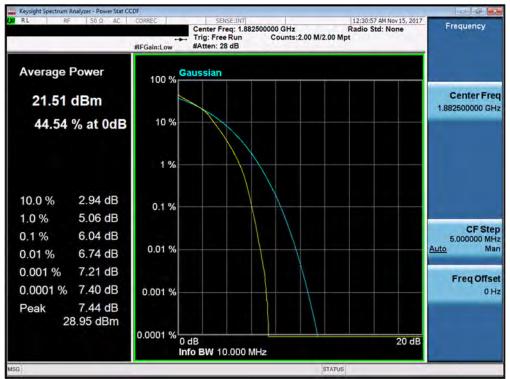




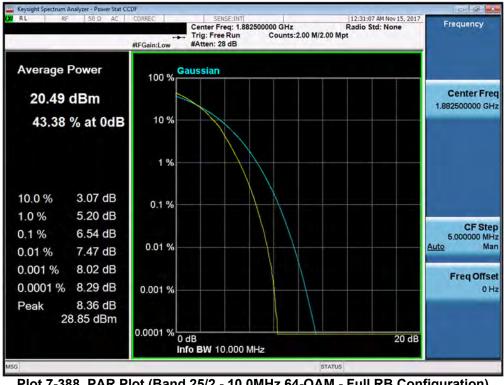
Plot 7-386. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG965U		SAMSUNG		Approved by: Quality Manager
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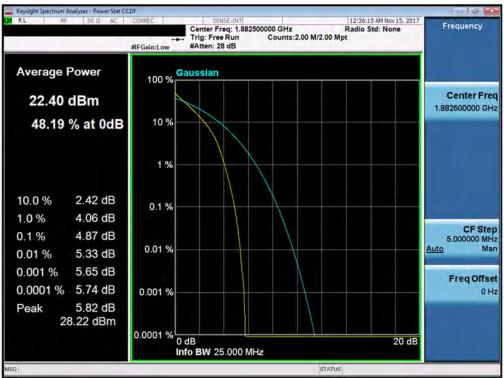


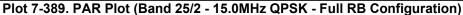


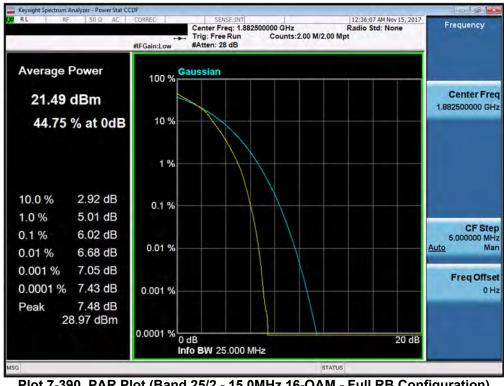
Plot 7-388. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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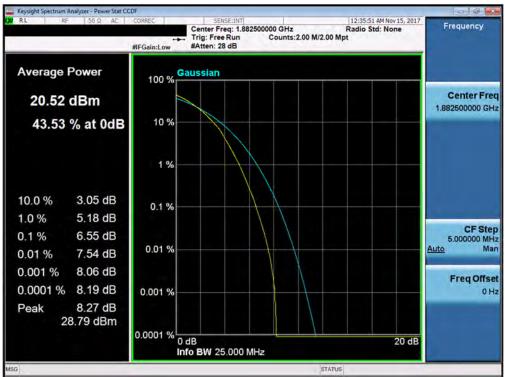


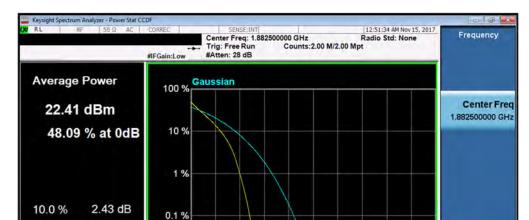


Plot 7-390. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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CF Step 5.000000 MHz

**Freq Offset** 

Auto

20 dB

STATUS

Man

0 Hz

4.00 dB

4.80 dB

5.25 dB

5.53 dB

5.81 dB

28.22 dBm

0.01 %

0.001 %

0.0001 % 0 dB

1.0 %

0.1 %

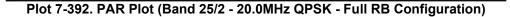
0.01 %

Peak

0.001 %

0.0001 % 5.73 dB

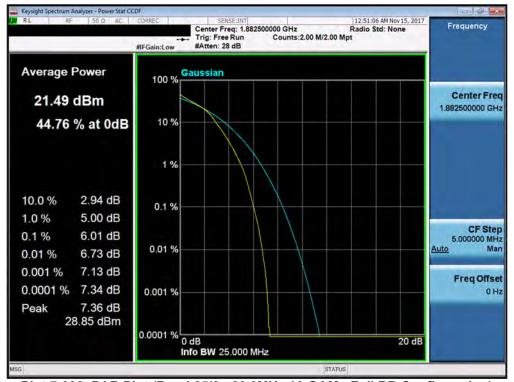
Plot 7-391. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)



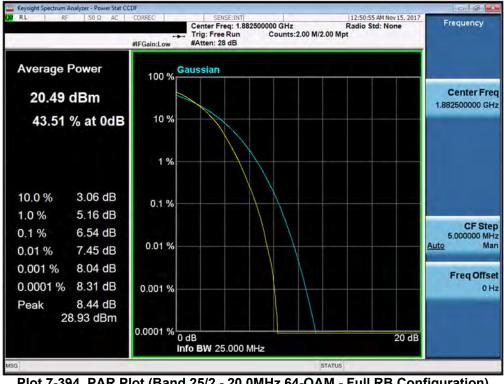
Info BW 25.000 MHz

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG		Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 224 of 205		
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Plot 7-394. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 225 of 205
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### 7.6 Additional Maximum Power Reduction (A-MPR) §2.1046

### **Test Overview**

A-MPR is implemented in this device when operating at Power Class 2 in LTE Band 41 per the A-MPR specification in 3GPP TS 36.101. The conducted powers are shown herein to cover the different A-MPR levels specified in the standard. Measurement equipment was set up with triggering/gating on the spectrum analyzer such that powers were measured only during the on-time of the signal.

### **Test Procedure Used**

KDB 971168 D01 v03 - Section 5.2.2

### **Test Settings**

- 6. Span = 2 x OBW to 3 x OBW
- 7. RBW = 1% to 5% of the OBW
- 8. Number of measurement points in sweep > 2 x span / RBW
- 9. Sweep = auto-couple (less than transmission burst duration)
- 10. Detector = RMS (power)
- 11. Trigger was set to enable power measurements only on full power bursts
- 12. Trace was allowed to stabilize
- 13. Spectrum analyzer's "Channel Power" function was used to compute the power by integrating the spectrum across the OBW of the signal

### Test Setup

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

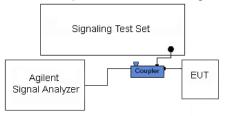


Figure 7-5. Test Instrument & Measurement Setup

### **Test Notes**

None.

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Test Case	NS	МСС	MNC	Channel BW [MHz]	Channel Number	Channel Frequency [MHz]	Modulation	RB Size	RB Offset	MPR [dB]	A-MPR [dB]	Measured Power [dBm]
							QPSK			0		23.94
1				5	39675	2498.5	16-QAM	1	0	<u>≤</u> 1	<u>≤</u> 3	23.25
							64-QAM			<u>≤</u> 2		21.95
							QPSK			0		26.97
2				5	39675	2498.5	16-QAM	1	9	<u>≤</u> 1	0	26.11
							64-QAM			≤ 2		25.38
							QPSK	1	0	0		21.96
3				10	39700	2501	16-QAM	1	0	≤ 1	≤ 5	21.29
							64-QAM	1	0	≤ 2		20.00
							QPSK	20	0	0		23.84
4				10	39700	2501	16-QAM	20	0	<u>≤</u> 1	≤ 2	22.91
							64-QAM	20	0	<u>≤</u> 2		21.53
							QPSK	50	0	0		23.05
5				10	39700	2501	16-QAM	50	0	<u>≤</u> 1	≤3	22.11
							64-QAM	50	0	<u>≤</u> 2		21.38
-							QPSK	25	20	0		24.77
6				10	39700	2501	16-QAM	25	20	<u>≤</u> 1	≤ 1	24.07
							64-QAM	25	20	≤2		23.23
							QPSK	1	36	0		26.78
7				10	39700	2501	16-QAM	1	36	≤ 1	0	26.13
							64-QAM	1	36	≤ 2		24.96
							QPSK	1	0	0		22.02
8				15	39725	2503.5	16-QAM	1	0	<u>≤</u> 1	≤ 5	21.32
							64-QAM	1	0	≤ 2		20.17
	01	312	530				QPSK	20	0	0		23.73
9	01	312	530	15	39725	2503.5	16-QAM	20	0	<u>≤</u> 1	≤ 2	22.81
							64-QAM	20	0	<u>≤</u> 2		21.91
10				15	39725	2503.5	QPSK	75	0	0	- 4	22.03
10				15	39725	2505.5	16-QAM 64-QAM	75 75	0	<u>≤</u> 1	≤ 4	21.10
							QPSK	75 50	15	<u>≤</u> 2 0		20.49 23.03
11				15	39725	2503.5	16-QAM	50	15	0 _≤ 1	<u>≤</u> 3	23.03
				15	00720	2000.0	64-QAM	50	15	<u>≤</u> 1 ≤2	20	22.10
							QPSK	1	60	0		26.87
12				15	39725	2503.5	16-QAM	1	60	 ≤ 1	0	26.13
				10	00720	2000.0	64-QAM	1	60 60	<u>≤</u> 2	Ŭ	24.92
							QPSK	1	0	0		22.04
13				20	39750	2506	16-QAM	1	0	 ≤ 1	≤ 5	21.39
					00100	2000	64-QAM	1	0	≤2		20.39
						-	QPSK	20	0	0		24.07
14				20	39750	2506	16-QAM	20	0	<u>≤</u> 1	≤ 2	23.42
							64-QAM	20	0		Ì	22.00
							QPSK	100	0	0		21.98
15				20	39750	2506	16-QAM	100	0	<u>≤</u> 1	≤ 4	20.99
							64-QAM	100	0	_ ≤ 2	İ	19.59
							QPSK	75	24	0		22.95
16				20	39750	2506	16-QAM	75	24	≤ 1	<u>≤</u> 3	22.03
							64-QAM	75	24	<u>≤</u> 2		20.62
							QPSK	1	77	0		27.31
17				20	39750	2506	16-QAM	1	77	<u>≤</u> 1	0	26.46
							64-QAM	1	77	≤2		24.71
						o. ( c	QPSK			0		24.00
18	01	311	490	5	39675	2498.5	16-QAM	1	0	<u>≤</u> 1	<u>≤</u> 3	23.21
							64-QAM			<u>≤</u> 2		22.48
10	04	004	04	F	20675	0400 F	QPSK	4	_	0	_	26.93
19	01	001	01	5	39675	2498.5	16-QAM	1	0	<u>≤</u> 1	0	26.29
			Ta	bla 7 0			64-QAM			<u>≤</u> 2	<u> </u>	24.93

### Table 7-3. A-MPR Conducted Power Measurements

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager		
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# 7.7 Uplink Carrier Aggregation

<u>§27.53(m)</u>

### **Test Overview**

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<sup>th</sup> harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

### For Band 41, the minimum permissible attenuation level of any spurious emission is 55 + log<sub>10</sub>(P<sub>[Watts]</sub>).

### Test Procedure Used

KDB 971168 D01 v02r02 - Section 6.0

### **Test Settings**

- 1. Start frequency was set to 30MHz and stop frequency was set to at least 10 \* the fundamental frequency (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

### Test Setup

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

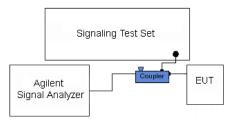


Figure 7-6. Test Instrument & Measurement Setup

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 220 of 205
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### Test Notes

- 1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 3.
- 2. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-3 below, with both carriers set to transmit using 1RB.
- 3. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

				PCC							SCC				Power
Power State	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	20	40764	2607.4	QPSK	1	0	24.28
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	15	40770	2608	QPSK	1	0	24.35
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	20	40791	2610.1	QPSK	1	0	23.71
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	10	40764	2607.4	QPSK	1	0	24.52
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	15	40791	2610.1	QPSK	1	0	24.38
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	23.94

Table 7-395. Conducted Powers (B41 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

				PCC							SCC				Po	ower
Power State	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	ULCA Tx.Power (dBm)	LTE Rel. 8 PCC Tx.Power (dBm)
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	0	20.27	24.17
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	99	20.15	23.96
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	99	15.59	24.17
Max	LTE B41	20	39750	2506	QPSK	1	50	LTE B41	20	39948	2525.8	QPSK	1	50	20.18	23.98
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.60	23.96
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	22.64	23.01
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	21.63	22.10
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	21.29	21.11

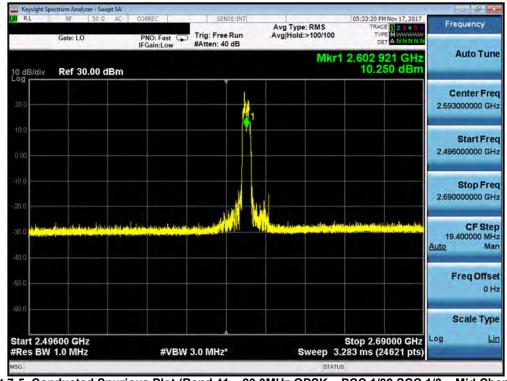
 Table 7-396. Conducted Powers (B41 with Various Combinations for 20MHz Channel Bandwidth)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-4. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)



Plot 7-5. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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RL	RF 50 Ω 4	AC CORREC	SENSE:INT	and the second se	05:37:51 PM Nov 17, 2017	
	Gate: LO	PNO: Fast 😱 IFGain:Low	Trig: Free Run #Atten: 20 dB	Avg Type: RMS Avg Hold:>100/100	TRACE 23456 TYPE MWWWWW DET ANNNNN	Frequency
0 dB/div	Ref 10.00 dB	m		Mkr1	14.637 5 GHz -45.078 dBm	Auto Tune
0.00						Center Free 8.845000000 GH
20.0					01.1 -25.00 dBm	Start Fre 2.690000000 GH
30.0 40.0					1	Stop Fre 15.000000000 GH
50.0 50.0	الم المنافق ال			a and data a distinguish and design	Construction of the second	CF Ste 1.231000000 GH Auto Ma
70.0						Freq Offs 0 H
start 2.69	00 GHz 1.0 MHz		3.0 MHz*		Stop 15.000 GHz .1 ms (24621 pts)	Scale Typ

Plot 7-6. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)



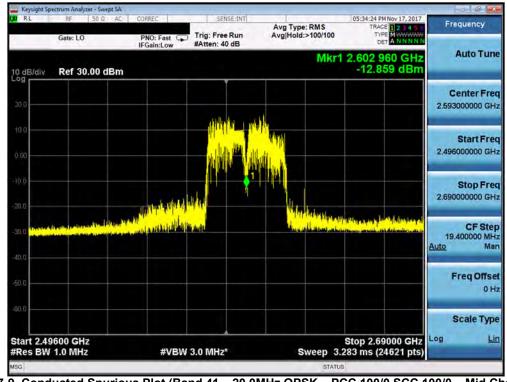
Plot 7-7. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spe RL	RF 50 Ω AC	CORREC	SENSE:INT	the second second	05:30:17 PM Nov 17, 2017	Participation of the local division of the l
	Gate: LO	PNO: Fast 😱	Trig: Free Run #Atten: 20 dB	Avg Type: RMS Avg Hold:>100/100	TYPE M	Frequency
0 dB/div	Ref 10.00 dBm			M	49.436 dBm	Auto Tun
0.00						Center Fre 1.263000000 GH
20.0					01.1 -25.00 dBm	Start Fre 30,000000 M⊦
30.0 40.0						Stop Fre 2:496000000 GH
50.0 50.0	an hall and an in second second second	and and and printing of	and the state of the	a <u>a na sana sa ka</u> na ka di na mangan sa ka ka	and the second	CF Ste 246.600000 MH Auto Ma
70.0						Freq Offs 0 I
start 0.03					Stop 2.450 GHZ	Scale Typ Log <u>L</u>
Res BW		#VBW	3.0 MHz*	Sweep 2	4.66 ms (4933 pts)	

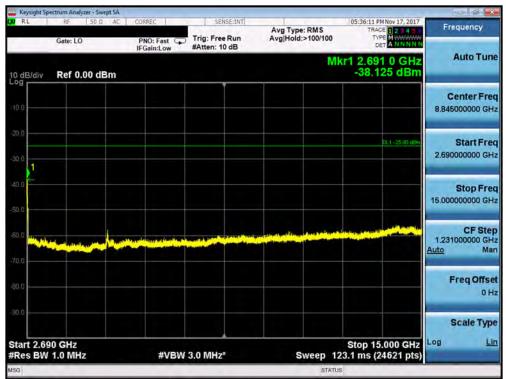
Plot 7-8. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-9. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-10. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-11. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	Radio Std: Non	GHz	SENSE:INT Freq: 2.506000000 Free Run		AC CORREC	8F 50 Ω A	Gat	RL
#Atten: 26 dB Radio Device: BTS Ri	Radio Device: B		n: 26 dB	#Atte	IFGain:Low	IE. 20	S	ASS
<u>On</u>					iBm	Ref 40.00 d	idiv	0 dB
Start								og 10.0
2.49600000								0.0
								0.0
prover the second and participation of the providence of the second	Mary mining an mo	the hadron the state	Mary and a state of the state o	STILL.				0,00
Stop 2,52600000								0.0
2.52600000								0.0
		l l l l l l l l l l l l l l l l l l l		AWAY .	math and a property of	14 march and		0.0
Res					االوه		برایم. از ایم	0.0
390.0 Auto							North	0.0
					ي تر ک			10.0
Stop 2.526 GHz Video	Stop 2.526					GHz	2.475 0	tart
VIGCO								
1.2000				-				-
Auto	∆ Limit	Amplitude	Frequency	RBW	Stop Freq	Start Freq	Range	Spur
Auto					Stop Freq 2.4905 GHz	2.4750 GHz	Range	Spur
/         Frequency         Amplitude         Δ Limit.         Auto           MHz         2.486211667 GHz         -26.10 dBm         -1.103 dB         -1.103 dB           MHz         2.486211667 GHz         -26.10 dBm         -1.103 dB         -1.103 dB	-1.103 dB	-26.10 dBm	2.486211667 GHz	1.000 MHz			_	Spur
V         Frequency         Amplitude         ∆ Limit         Auto           MHz         2.486211667 GHz         -26.10 dBm         -1.103 dB         -1.103 dB	-1.103 dB -11.15 dB	-26.10 dBm -24.15 dBm	2.486211667 GHz 2.492457500 GHz	1.000 MHz 1.000 MHz	2.4905 GHz	2.4750 GHz	1	

Plot 7-12. Lower ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:10 MHz – Full RB)



Plot 7-13. Upper ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:10 MHz – Full RB)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-14. Lower ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)



Plot 7-15. Upper ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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### 7.8 Radiated Power (ERP/EIRP) §22.913(a)(2) §24.232(c.2) §27.50(h)(2) §27.50(b)(10) §27.50(c)(10) §27.50(d)(4) §27.50(a)(3)

### Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-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 tuned 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

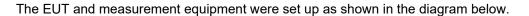
### **Test Settings**

- 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



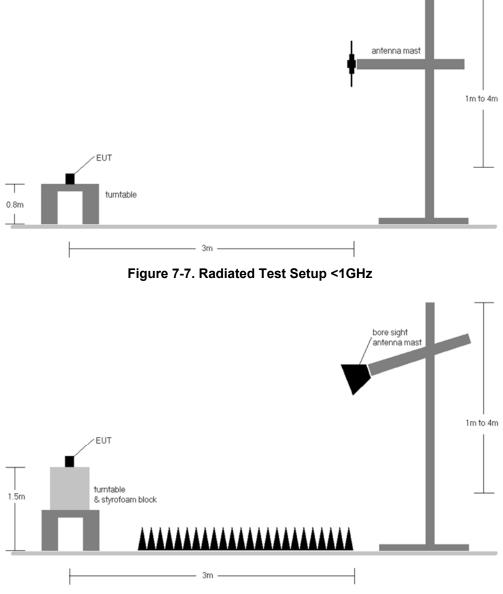


Figure 7-8. Radiated Test Setup >1GHz

### 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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
665.50	5	QPSK	н	100	151	1 / 24	15.89	3.84	17.58	0.057	34.77	-17.20	19.73	0.094	40.61	-20.88
680.50	5	QPSK	н	100	161	1/0	16.96	3.91	18.72	0.074	34.77	-16.05	20.87	0.122	40.61	-19.74
695.50	5	QPSK	н	100	164	1/0	13.52	3.98	15.35	0.034	34.77	-19.42	17.50	0.056	40.61	-23.11
680.50	5	16-QAM	Н	100	161	1/0	16.06	3.91	17.82	0.061	34.77	-16.95	19.97	0.099	40.61	-20.64
680.50	5	64-QAM	Н	100	161	1/0	15.05	3.91	16.81	0.048	34.77	-17.96	18.96	0.079	40.61	-21.65
668.00	10	QPSK	H	100	158	1 / 0	15.41	3.85	17.11	0.051	34.77	-17.66	19.26	0.084	40.61	-21.35
680.50	10	QPSK	H	100	162	1/0	16.90	3.91	18.66	0.073	34.77	-16.11	20.81	0.120	40.61	-19.80
693.00	10	QPSK	Н	100	163	1/0	15.82	3.97	17.64	0.058	34.77	-17.13	19.79	0.095	40.61	-20.82
680.50	10	16-QAM	н	100	162	1/0	15.88	3.91	17.64	0.058	34.77	-17.13	19.79	0.095	40.61	-20.82
680.50	10	64-QAM	н	100	162	1/0	14.72	3.91	16.48	0.044	34.77	-18.29	18.63	0.073	40.61	-21.98
670.50	15	QPSK	Н	100	158	1 / 74	17.26	3.86	18.97	0.079	34.77	-15.80	21.12	0.129	40.61	-19.49
680.50	15	QPSK	н	100	160	1/0	16.82	3.91	18.58	0.072	34.77	-16.19	20.73	0.118	40.61	-19.88
690.50	15	QPSK	H	100	162	1 / 0	17.14	3.96	18.95	0.078	34.77	-15.83	21.10	0.129	40.61	-19.51
670.50	15	16-QAM	H	100	158	1 / 74	16.22	3.86	17.93	0.062	34.77	-16.84	20.08	0.102	40.61	-20.53
670.50	15	64-QAM	н	100	158	1 / 74	15.26	3.86	16.97	0.050	34.77	-17.80	19.12	0.082	40.61	-21.49
673.00	20	QPSK	H	100	160	1 / 99	17.08	3.87	18.80	0.076	34.77	-15.97	20.95	0.125	40.61	-19.65
680.50	20	QPSK	H	100	161	1/0	16.50	3.91	18.26	0.067	34.77	-16.51	20.41	0.110	40.61	-20.20
688.00	20	QPSK	Н	100	162	1/0	17.50	3.94	19.29	0.085	34.77	-15.48	21.44	0.139	40.61	-19.16
688.00	20	16-QAM	Н	100	162	1/0	16.43	3.94	18.22	0.066	34.77	-16.55	20.37	0.109	40.61	-20.23
688.00	20	64-QAM	Н	100	162	1/0	15.18	3.94	16.97	0.050	34.77	-17.80	19.12	0.082	40.61	-21.48
688.00	20	QPSK	V	231	94	1/0	14.94	3.64	16.43	0.044	34.77	-18.34	18.58	0.072	40.61	-22.02
688 (WCP)	20	QPSK	Н	171	8	1/0	17.44	3.94	19.23	0.084	34.77	-15.54	21.38	0.138	40.61	-19.22

Table 7-16. ERP/EIRP Data (Band 71)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
699.70	1.4	QPSK	V	150	246	1 / 5	18.73	1.10	17.68	0.059	34.77	-17.09	19.83	0.096	-20.78
707.50	1.4	QPSK	V	150	258	1 / 0	19.76	1.13	18.74	0.075	34.77	-16.03	20.89	0.123	-19.72
715.30	1.4	QPSK	V	150	246	1 / 0	20.03	1.16	19.04	0.080	34.77	-15.73	21.19	0.132	-19.42
715.30	1.4	16-QAM	V	150	246	1 / 0	19.32	1.16	18.33	0.068	34.77	-16.44	20.48	0.112	-20.13
715.30	1.4	64-QAM	V	150	246	1 / 0	19.12	1.16	18.13	0.065	34.77	-16.64	20.28	0.107	-20.33
700.50	3	QPSK	V	150	353	1 / 14	18.81	1.10	17.76	0.060	34.77	-17.01	19.91	0.098	-20.69
707.50	3	QPSK	V	150	358	1 / 14	19.39	1.13	18.37	0.069	34.77	-16.40	20.52	0.113	-20.09
714.50	3	QPSK	V	150	3	1 / 0	19.44	1.16	18.45	0.070	34.77	-16.32	20.60	0.115	-20.01
714.50	3	16-QAM	V	150	3	1 / 0	18.82	1.16	17.83	0.061	34.77	-16.94	19.98	0.100	-20.63
714.50	3	64-QAM	V	150	3	1/0	18.60	1.16	17.61	0.058	34.77	-17.16	19.76	0.095	-20.85

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

FCC ID: A3LSMG965U		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]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
701.50	5	QPSK	V	150	252	1 / 24	19.22	1.11	18.18	0.066	34.77	-16.60	20.33	0.108	-20.28
707.50	5	QPSK	V	150	251	1 / 24	19.43	1.13	18.41	0.069	34.77	-16.36	20.56	0.114	-20.05
713.50	5	QPSK	V	150	262	1 / 0	19.87	1.15	18.87	0.077	34.77	-15.90	21.02	0.127	-19.58
713.50	5	16-QAM	V	150	262	1 / 24	19.29	1.15	18.29	0.068	34.77	-16.48	20.44	0.111	-20.16
713.50	5	64-QAM	V	150	262	1 / 24	19.16	1.15	18.16	0.066	34.77	-16.61	20.31	0.108	-20.29
704.00	10	QPSK	V	150	260	1 / 49	19.68	1.12	18.65	0.073	34.77	-16.12	20.80	0.120	-19.81
707.50	10	QPSK	V	150	257	1 / 49	19.81	1.13	18.79	0.076	34.77	-15.98	20.94	0.124	-19.67
711.00	10	QPSK	V	150	255	1 / 49	20.23	1.14	19.22	0.084	34.77	-15.55	21.37	0.137	-19.23
707.50	10	16-QAM	V	150	257	1 / 49	19.38	1.13	18.36	0.069	34.77	-16.41	20.51	0.112	-20.10
711.00	10	64-QAM	V	150	255	1 / 49	19.13	1.14	18.12	0.065	34.77	-16.65	20.27	0.107	-20.33
711.00	10	QPSK	н	150	301	1 / 74	17.58	1.14	16.57	0.045	34.77	-18.20	18.72	0.075	-21.88
711 (WCP)	10	QPSK	V	150	260	1 / 0	14.54	1.14	13.53	0.023	34.77	-21.24	15.68	0.037	-24.92

Table 7-18. ERP/EIRP Data (Band 12/17)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
779.50	5	QPSK	н	150	294	1 / 0	19.99	1.32	19.16	0.082	34.77	-15.61	21.31	0.135	-19.30
782.00	5	QPSK	н	150	288	1 / 0	19.74	1.33	18.92	0.078	34.77	-15.85	21.07	0.128	-19.54
784.50	5	QPSK	н	150	309	1 / 0	20.00	1.34	19.19	0.083	34.77	-15.58	21.34	0.136	-19.27
779.50	5	16-QAM	н	150	294	1 / 0	19.35	1.32	18.52	0.071	34.77	-16.25	20.67	0.117	-19.94
782.00	5	64-QAM	н	150	288	1 / 0	18.42	1.33	17.60	0.058	34.77	-17.17	19.75	0.094	-20.86
782.00	10	QPSK	н	150	301	1 / 0	20.26	1.33	19.44	0.088	34.77	-15.33	21.59	0.144	-19.02
782.00	10	16-QAM	н	150	301	1 / 0	19.64	1.33	18.82	0.076	34.77	-15.95	20.97	0.125	-19.64
782.00	10	64-QAM	н	150	301	1 / 0	18.61	1.33	17.79	0.060	34.77	-16.98	19.94	0.099	-20.67
782.00	10	QPSK	V	150	5	1 / 74	19.30	1.33	18.48	0.070	34.77	-16.29	20.63	0.116	-19.98
782 (WCP)	10	QPSK	н	150	251	1 / 0	12.49	1.33	11.67	0.015	34.77	-23.10	13.82	0.024	-26.79

Table 7-19. ERP/EIRP Data (Band 13)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 220 of 205
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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]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
824.70	1.4	QPSK	н	150	363	1 / 5	18.16	1.50	17.51	0.056	38.45	-20.94	19.66	0.092	-17.33
836.50	1.4	QPSK	Н	150	353	1/5	19.04	1.50	18.39	0.069	38.45	-20.06	20.54	0.113	-16.45
848.30	1.4	QPSK	н	150	0	1 / 0	19.57	1.50	18.92	0.078	38.45	-19.53	21.07	0.128	-15.92
848.30	1.4	16-QAM	н	150	0	1 / 0	18.85	1.50	18.20	0.066	38.45	-20.25	20.35	0.108	-16.64
848.30	1.4	64-QAM	н	150	0	1 / 0	17.75	1.50	17.10	0.051	38.45	-21.35	19.25	0.084	-17.74
825.50	3	QPSK	Н	150	357	1 / 14	18.70	1.50	18.05	0.064	38.45	-20.40	20.20	0.105	-16.79
836.50	3	QPSK	н	150	355	1 / 14	19.48	1.50	18.83	0.076	38.45	-19.62	20.98	0.125	-16.01
847.50	3	QPSK	Н	150	359	1/0	19.82	1.50	19.17	0.083	38.45	-19.28	21.32	0.136	-15.67
847.50	3	16-QAM	Н	150	359	1/0	19.16	1.50	18.51	0.071	38.45	-19.94	20.66	0.116	-16.33
847.50	3	64-QAM	н	150	359	1 / 0	17.88	1.50	17.23	0.053	38.45	-21.22	19.38	0.087	-17.61
826.50	5	QPSK	н	150	353	1 / 24	18.47	1.50	17.82	0.061	38.45	-20.63	19.97	0.099	-17.02
836.50	5	QPSK	н	150	0	1 / 24	19.02	1.50	18.37	0.069	38.45	-20.08	20.52	0.113	-16.47
846.50	5	QPSK	н	150	0	1/0	19.59	1.50	18.94	0.078	38.45	-19.51	21.09	0.129	-15.90
846.50	5	16-QAM	н	150	0	1/0	18.67	1.50	18.02	0.063	38.45	-20.43	20.17	0.104	-16.82
846.50	5	64-QAM	н	150	0	1 / 0	17.67	1.50	17.02	0.050	38.45	-21.43	19.17	0.083	-17.82
829.00	10	QPSK	н	105	0	1 / 49	19.28	1.50	18.63	0.073	38.45	-19.82	20.78	0.120	-16.21
836.50	10	QPSK	н	150	0	1 / 49	19.55	1.50	18.90	0.078	38.45	-19.55	21.05	0.127	-15.94
844.00	10	QPSK	Н	150	7	1/0	19.19	1.50	18.54	0.071	38.45	-19.91	20.69	0.117	-16.30
836.50	10	16-QAM	н	150	0	1 / 49	18.53	1.50	17.88	0.061	38.45	-20.57	20.03	0.101	-16.96
836.50	10	64-QAM	н	150	0	1 / 49	17.62	1.50	16.97	0.050	38.45	-21.48	19.12	0.082	-17.87
847.50	3	QPSK	V	150	274	1/0	19.24	1.50	18.59	0.072	38.45	-19.86	20.74	0.119	-16.25
847.5 (WCP)	3	QPSK	н	150	281	1 / 0	16.73	1.50	16.08	0.041	38.45	-22.37	18.23	0.067	-18.76

Table 7-20. ERP/EIRP Data (Band 5/26)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	Margin [dB]
831.50	15	QPSK	Н	150	0	1 / 74	19.18	1.50	18.53	0.071	38.45	-19.92	20.68	0.117	-16.31
836.50	15	QPSK	н	150	0	1 / 74	19.62	1.50	18.97	0.079	38.45	-19.48	21.12	0.129	-15.87
841.50	15	QPSK	Н	150	8	1 / 74	19.32	1.50	18.67	0.074	38.45	-19.78	20.82	0.121	-16.17
836.50	15	16-QAM	Н	150	0	1 / 74	19.11	1.50	18.46	0.070	38.45	-19.99	20.61	0.115	-16.38
831.50	15	64-QAM	Н	150	0	1 / 74	18.00	1.50	17.35	0.054	38.45	-21.10	19.50	0.089	-17.49

Table 7-21. ERP/EIRP Data (Band 26)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 240 of 205
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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	20	3 / 2	17.85	5.56	23.41	0.219	30.00	-6.59
1745.00	1.4	QPSK	Н	150	18	3 / 2	17.93	5.32	23.25	0.211	30.00	-6.75
1779.30	1.4	QPSK	Н	150	15	3 / 2	18.83	5.09	23.92	0.247	30.00	-6.08
1779.30	1.4	16-QAM	Н	150	15	1 / 5	18.06	5.09	23.15	0.207	30.00	-6.85
1779.30	1.4	64-QAM	Н	150	15	3 / 2	17.04	5.09	22.13	0.163	30.00	-7.87
1711.50	3	QPSK	Н	150	13	1 / 0	17.54	5.55	23.09	0.204	30.00	-6.91
1745.00	3	QPSK	Н	150	11	1 / 0	18.10	5.32	23.42	0.220	30.00	-6.58
1778.50	3	QPSK	Н	150	15	1 / 0	18.87	5.10	23.97	0.249	30.00	-6.03
1778.50	3	16-QAM	Н	150	15	1 / 14	18.07	5.10	23.17	0.207	30.00	-6.83
1778.50	3	64-QAM	Н	150	15	1 / 0	17.11	5.10	22.21	0.166	30.00	-7.79
1712.50	5	QPSK	н	150	20	1 / 0	18.02	5.55	23.57	0.227	30.00	-6.43
1745.00	5	QPSK	Н	150	18	1 / 24	18.21	5.32	23.53	0.226	30.00	-6.47
1777.50	5	QPSK	Н	150	22	1 / 24	18.49	5.10	23.59	0.229	30.00	-6.41
1745.00	5	16-QAM	Н	150	18	1 / 24	17.56	5.32	22.88	0.194	30.00	-7.12
1712.50	5	64-QAM	Н	150	20	1 / 0	16.45	5.55	22.00	0.158	30.00	-8.00
1715.00	10	QPSK	Н	150	11	1 / 49	17.79	5.53	23.32	0.215	30.00	-6.68
1745.00	10	QPSK	Н	150	9	1 / 49	18.53	5.32	23.85	0.243	30.00	-6.15
1775.00	10	QPSK	Н	150	13	1 / 49	18.85	5.12	23.97	0.249	30.00	-6.03
1745.00	10	16-QAM	Н	150	9	1 / 49	18.22	5.32	23.54	0.226	30.00	-6.46
1745.00	10	64-QAM	Н	150	9	1 / 49	16.95	5.32	22.27	0.169	30.00	-7.73
1717.50	15	QPSK	Н	150	20	1 / 74	18.45	5.51	23.96	0.249	30.00	-6.04
1745.00	15	QPSK	Н	150	18	1 / 74	19.03	5.32	24.35	0.272	30.00	-5.65
1772.50	15	QPSK	Н	150	15	1 / 0	19.03	5.14	24.17	0.261	30.00	-5.83
1745.00	15	16-QAM	Н	150	18	1 / 74	18.35	5.32	23.67	0.233	30.00	-6.33
1772.50	15	64-QAM	н	150	15	1 / 0	17.42	5.14	22.56	0.180	30.00	-7.44
1720.00	20	QPSK	н	150	13	1 / 99	18.54	5.49	24.03	0.253	30.00	-5.97
1745.00	20	QPSK	Н	150	11	1 / 99	19.10	5.32	24.42	0.277	30.00	-5.58
1770.00	20	QPSK	Н	150	15	1/0	19.17	5.15	24.32	0.271	30.00	-5.68
1745.00	20	16-QAM	Н	150	11	1 / 99	18.62	5.32	23.94	0.248	30.00	-6.06
1770.00	20	64-QAM	н	150	15	1/0	17.52	5.15	22.67	0.185	30.00	-7.33
1745.00	20	QPSK	V	150	307	1/0	17.18	5.27	22.45	0.176	30.00	-7.55
1745 (WCP)	20	QPSK	н	150	8	1 / 99	18.16	5.27	23.43	0.220	30.00	-6.57

### Table 7-22. EIRP Data (Band 66/4)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: Test Dates:		EUT Type:	Dogo 241 of 205	
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	V	150	318	1/0	18.54	4.79	23.33	0.215	33.01	-9.68
1882.50	1.4	QPSK	V	150	323	1 / 0	18.19	4.85	23.04	0.201	33.01	-9.97
1914.30	1.4	QPSK	V	150	333	1 / 5	17.71	4.85	22.56	0.180	33.01	-10.45
1850.70	1.4	16-QAM	V	150	318	1 / 0	17.70	4.79	22.49	0.177	33.01	-10.52
1850.70	1.4	64-QAM	V	150	318	1 / 0	16.66	4.79	21.45	0.140	33.01	-11.56
1851.50	3	QPSK	V	150	315	1 / 0	18.56	4.79	23.35	0.216	33.01	-9.66
1882.50	3	QPSK	V	150	314	1 / 0	17.53	4.85	22.38	0.173	33.01	-10.63
1913.50	3	QPSK	V	150	330	1 / 0	17.00	4.85	21.85	0.153	33.01	-11.16
1851.50	3	16-QAM	V	150	315	1 / 0	17.80	4.79	22.59	0.181	33.01	-10.42
1851.50	3	64-QAM	V	150	315	1 / 0	17.10	4.79	21.89	0.154	33.01	-11.12
1852.50	5	QPSK	V	150	318	1 / 24	18.67	4.79	23.46	0.222	33.01	-9.55
1882.50	5	QPSK	V	150	315	1 / 0	17.48	4.85	22.33	0.171	33.01	-10.68
1912.50	5	QPSK	V	150	328	1 / 0	17.10	4.85	21.95	0.157	33.01	-11.06
1852.50	5	16-QAM	V	150	318	1 / 24	18.11	4.79	22.90	0.195	33.01	-10.11
1852.50	5	64-QAM	V	150	318	1 / 24	16.75	4.79	21.54	0.143	33.01	-11.47
1855.00	10	QPSK	V	150	325	1 / 49	18.66	4.80	23.46	0.222	33.01	-9.55
1882.50	10	QPSK	V	150	315	1 / 0	18.25	4.85	23.10	0.204	33.01	-9.91
1910.00	10	QPSK	V	150	335	1 / 0	17.70	4.86	22.56	0.180	33.01	-10.45
1882.50	10	16-QAM	V	150	315	1 / 0	17.76	4.85	22.61	0.182	33.01	-10.40
1855.00	10	64-QAM	V	150	325	1 / 49	16.60	4.80	21.40	0.138	33.01	-11.61
1857.50	15	QPSK	V	150	316	1 / 0	18.48	4.80	23.28	0.213	33.01	-9.73
1882.50	15	QPSK	V	150	313	1 / 0	17.83	4.85	22.68	0.185	33.01	-10.33
1907.50	15	QPSK	V	150	331	1 / 0	17.65	4.87	22.52	0.178	33.01	-10.49
1857.50	15	16-QAM	V	150	316	1 / 0	17.58	4.80	22.38	0.173	33.01	-10.63
1857.50	15	64-QAM	V	150	316	1 / 0	16.44	4.80	21.24	0.133	33.01	-11.77
1860.00	20	QPSK	V	150	320	1 / 0	18.66	4.81	23.47	0.222	33.01	-9.55
1882.50	20	QPSK	V	150	310	1/0	17.80	4.85	22.65	0.184	33.01	-10.36
1905.00	20	QPSK	V	150	330	1/0	17.77	4.87	22.64	0.184	33.01	-10.37
1860.00	20	16-QAM	V	150	320	1/0	17.86	4.81	22.67	0.185	33.01	-10.35
1860.00	20	64-QAM	V	150	320	1/0	17.19	4.81	22.00	0.158	33.01	-11.02
1860.00	20	QPSK	н	150	14	1 / 0	18.30	4.81	23.11	0.204	33.01	-9.91
1860 (WCP)	20	QPSK	V	150	52	1 / 99	11.89	4.81	16.70	0.047	33.01	-16.32

## Table 7-23. EIRP Data (Band 25/2)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 242 of 205
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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]
2307.50	5	QPSK	Н	150	325	1 / 0	16.64	5.74	22.38	0.173	23.98	-1.60
2312.50	5	QPSK	Н	150	319	1 / 24	15.84	5.74	21.58	0.144	23.98	-2.40
2307.50	5	16-QAM	Н	150	325	1 / 0	15.96	5.74	21.70	0.148	23.98	-2.28
2307.50	5	64-QAM	н	150	325	1 / 0	14.98	5.74	20.72	0.118	23.98	-3.26
2310.00	10	QPSK	Н	150	325	1/0	16.56	5.74	22.30	0.170	23.98	-1.68
2310.00	10	16-QAM	Н	150	325	1 / 0	15.95	5.74	21.69	0.147	23.98	-2.29
2310.00	10	64-QAM	н	150	325	1 / 0	14.90	5.74	20.64	0.116	23.98	-3.34
2307.50	5	QPSK	V	150	257	1/0	15.85	5.56	21.41	0.138	23.98	-2.57
2307.5 (WCP)	5	QPSK	V	150	80	1/0	13.44	5.74	19.18	0.083	23.98	-4.80

Table 7-24. EIRP Data (Band 30 – Antenna A)

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]
2307.50	5	QPSK	V	150	100	1 / 0	15.44	5.56	21.00	0.126	23.98	-2.98
2312.50	5	QPSK	V	150	101	1 / 24	14.50	5.59	20.09	0.102	23.98	-3.89
2307.50	5	16-QAM	V	150	100	1 / 0	14.25	5.56	19.81	0.096	23.98	-4.17
2307.50	5	64-QAM	V	150	100	1 / 0	13.26	5.56	18.82	0.076	23.98	-5.16
2310.00	10	QPSK	V	150	99	1 / 0	15.35	5.57	20.92	0.124	23.98	-3.06
2310.00	10	16-QAM	V	150	99	1 / 0	14.95	5.57	20.52	0.113	23.98	-3.46
2310.00	10	64-QAM	V	150	99	1 / 0	14.88	5.57	20.45	0.111	23.98	-3.53
2307.50	5	QPSK	Н	150	0	1/0	14.84	5.59	20.43	0.110	23.98	-3.55
2307.5 (WCP)	5	QPSK	V	150	195	1/0	13.99	5.59	19.58	0.091	23.98	-4.40

Table 7-25. EIRP Data (Band 30 – Antenna B)

FCC ID: A3LSMG965U		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	286	1/0	14.54	5.61	20.15	0.103	33.01	-12.86
2535.00	5	QPSK	V	150	285	1/0	15.40	5.85	21.25	0.133	33.01	-11.76
2567.50	5	QPSK	V	150	295	1 / 24	16.40	6.09	22.49	0.177	33.01	-10.52
2567.50	5	16-QAM	V	150	295	1 / 24	15.96	6.09	22.05	0.160	33.01	-10.96
2567.50	5	64-QAM	V	150	295	1 / 24	15.01	6.09	21.10	0.129	33.01	-11.91
2505.00	10	QPSK	V	150	280	1 / 0	14.20	5.63	19.83	0.096	33.01	-13.18
2535.00	10	QPSK	V	150	282	1/0	16.15	5.85	22.00	0.158	33.01	-11.01
2565.00	10	QPSK	V	150	288	1 / 49	16.58	6.07	22.65	0.184	33.01	-10.36
2565.00	10	16-QAM	V	150	288	1 / 49	16.04	6.07	22.11	0.163	33.01	-10.90
2565.00	10	64-QAM	V	150	288	1 / 49	14.95	6.07	21.02	0.126	33.01	-11.99
2507.50	15	QPSK	V	150	283	1 / 0	15.14	5.64	20.78	0.120	33.01	-12.23
2535.00	15	QPSK	V	150	280	1 / 0	16.93	5.85	22.78	0.190	33.01	-10.23
2562.50	15	QPSK	V	150	288	1 / 0	17.63	6.05	23.68	0.233	33.01	-9.33
2562.50	15	16-QAM	V	150	288	1/0	17.25	6.05	23.30	0.214	33.01	-9.71
2562.50	15	64-QAM	V	150	288	1/0	16.28	6.05	22.33	0.171	33.01	-10.68
2510.00	20	QPSK	V	150	284	1 / 99	16.23	5.66	21.89	0.155	33.01	-11.12
2535.00	20	QPSK	V	150	286	1 / 0	17.32	5.85	23.17	0.207	33.01	-9.84
2560.00	20	QPSK	V	150	290	1 / 0	17.97	6.03	24.00	0.251	33.01	-9.01
2560.00	20	16-QAM	V	150	290	1/0	17.47	6.03	23.50	0.224	33.01	-9.51
2560.00	20	64-QAM	V	150	290	1/0	16.36	6.03	22.39	0.174	33.01	-10.62
2560.00	20	QPSK	Н	150	32	1/0	17.49	5.95	23.44	0.221	33.01	-9.57
2560 (WCP)	20	QPSK	V	150	15	1/0	14.46	6.03	20.49	0.112	33.01	-12.52

Table 7-26. EIRP Data (Band 7 – Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 244 of 205
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	Н	150	228	1 / 24	16.58	5.74	22.32	0.171	33.01	-10.69
2535.00	5	QPSK	Н	150	225	1 / 24	15.78	5.86	21.64	0.146	33.01	-11.37
2567.50	5	QPSK	Н	150	228	1 / 0	16.62	5.98	22.60	0.182	33.01	-10.41
2567.50	5	16-QAM	Н	150	228	1 / 0	15.73	5.98	21.71	0.148	33.01	-11.30
2567.50	5	64-QAM	Н	150	228	1 / 0	14.71	5.98	20.69	0.117	33.01	-12.32
2505.00	10	QPSK	Н	150	230	1 / 0	16.78	5.75	22.53	0.179	33.01	-10.48
2535.00	10	QPSK	Н	150	230	1 / 0	15.99	5.86	21.85	0.153	33.01	-11.16
2565.00	10	QPSK	Н	150	233	1 / 0	16.83	5.97	22.80	0.191	33.01	-10.21
2565.00	10	16-QAM	Н	150	233	1 / 0	16.01	5.97	21.98	0.158	33.01	-11.03
2565.00	10	64-QAM	Н	150	233	1 / 0	14.74	5.97	20.71	0.118	33.01	-12.30
2507.50	15	QPSK	Н	150	224	1 / 74	16.67	5.76	22.43	0.175	33.01	-10.58
2535.00	15	QPSK	Н	150	229	1 / 74	16.47	5.86	22.33	0.171	33.01	-10.68
2562.50	15	QPSK	Н	150	229	1 / 74	16.58	5.96	22.54	0.180	33.01	-10.47
2507.50	15	16-QAM	Н	150	224	1 / 74	16.18	5.76	21.94	0.156	33.01	-11.07
2562.50	15	64-QAM	Н	150	229	1 / 74	14.76	5.96	20.72	0.118	33.01	-12.29
2510.00	20	QPSK	Н	150	232	1 / 0	16.99	5.77	22.76	0.189	33.01	-10.25
2535.00	20	QPSK	Н	150	229	1 / 99	16.34	5.86	22.20	0.166	33.01	-10.81
2560.00	20	QPSK	Н	150	235	1 / 99	16.45	5.95	22.40	0.174	33.01	-10.61
2560.00	20	16-QAM	Н	150	235	1 / 99	15.83	5.95	21.78	0.151	33.01	-11.23
2510.00	20	64-QAM	Н	150	232	1/0	14.82	5.77	20.59	0.114	33.01	-12.42
2565.00	10	QPSK	V	150	267	1 / 99	16.76	5.97	22.73	0.188	33.01	-10.28
2565 (WCP)	10	QPSK	Н	150	219	1 / 99	15.80	5.97	21.77	0.150	33.01	-11.24

Table 7-27. EIRP Data (Band 7 – Antenna B)

FCC ID: A3LSMG965U		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	267	1 / 24	18.58	5.59	24.17	0.261	33.01	-8.84
2502.50	5	QPSK	V	150	270	1 / 0	20.73	5.61	26.34	0.430	33.01	-6.67
2593.00	5	QPSK	V	150	293	1 / 24	20.91	6.27	27.18	0.523	33.01	-5.83
2687.50	5	QPSK	V	150	185	1 / 24	19.27	6.47	25.74	0.375	33.01	-7.27
2593.00	5	16-QAM	V	150	293	1 / 24	20.32	6.27	26.59	0.456	33.01	-6.42
2593.00	5	64-QAM	V	150	293	1 / 24	19.97	6.27	26.24	0.421	33.01	-6.77
2501.00	10	QPSK	V	150	201	1 / 0	18.62	5.60	24.22	0.264	33.01	-8.79
2505.00	10	QPSK	V	150	185	1 / 49	21.41	5.63	27.04	0.505	33.01	-5.97
2593.00	10	QPSK	V	150	88	1 / 0	20.59	6.27	26.86	0.486	33.01	-6.15
2685.00	10	QPSK	V	150	206	1 / 0	19.77	6.46	26.23	0.420	33.01	-6.78
2505.00	10	16-QAM	V	150	185	1 / 49	20.38	5.63	26.01	0.399	33.01	-7.00
2505.00	10	64-QAM	V	150	185	1 / 49	19.17	5.63	24.80	0.302	33.01	-8.21
2503.50	15	QPSK	V	150	266	1 / 74	20.36	5.61	25.97	0.396	33.01	-7.04
2507.50	15	QPSK	V	150	266	1 / 74	21.84	5.64	27.48	0.560	33.01	-5.53
2593.00	15	QPSK	V	150	293	1 / 74	21.15	6.27	27.42	0.553	33.01	-5.59
2682.50	15	QPSK	V	150	270	1 / 74	18.99	6.46	25.45	0.351	33.01	-7.56
2593.00	15	16-QAM	V	150	293	1 / 74	20.74	6.27	27.01	0.503	33.01	-6.00
2593.00	15	64-QAM	V	150	293	1 / 74	19.71	6.27	25.98	0.397	33.01	-7.03
2506.00	20	QPSK	V	150	292	1 / 0	19.48	5.63	25.11	0.325	33.01	-7.90
2510.00	20	QPSK	V	150	292	1 / 0	19.42	5.66	25.08	0.322	33.01	-7.93
2593.00	20	QPSK	V	150	293	1 / 0	21.72	6.27	27.99	0.630	33.01	-5.02
2680.00	20	QPSK	V	150	303	1 / 0	19.77	6.46	26.23	0.419	33.01	-6.78
2593.00	20	16-QAM	V	150	293	1/0	20.70	6.27	26.97	0.498	33.01	-6.04
2593.00	20	64-QAM	V	150	293	1/0	19.74	6.27	26.01	0.399	33.01	-7.00
2593.00	20	QPSK	Н	150	206	1/0	21.18	6.27	27.45	0.556	33.01	-5.56
2593 (WCP)	20	QPSK	V	150	297	1/0	15.71	6.27	21.98	0.158	33.01	-11.03

Table 7-28. EIRP Data (Band 41 – PC2)

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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	308	1 / 0	16.26	5.61	21.87	0.154	33.01	-11.14
2593.00	5	QPSK	V	150	286	1 / 0	18.89	6.27	25.16	0.328	33.01	-7.85
2687.50	5	QPSK	V	150	313	1 / 0	17.15	6.47	23.62	0.230	33.01	-9.39
2593.00	5	16-QAM	V	150	286	1 / 0	17.88	6.27	24.15	0.260	33.01	-8.86
2593.00	5	64-QAM	V	150	286	1 / 0	17.22	6.27	23.49	0.224	33.01	-9.52
2505.00	10	QPSK	V	150	271	1 / 0	16.88	5.63	22.51	0.178	33.01	-10.50
2593.00	10	QPSK	V	150	288	1 / 0	18.74	6.27	25.01	0.317	33.01	-8.00
2685.00	10	QPSK	V	150	283	1 / 0	17.40	6.46	23.86	0.243	33.01	-9.15
2593.00	10	16-QAM	V	150	288	1 / 0	18.44	6.27	24.71	0.296	33.01	-8.30
2593.00	10	64-QAM	V	150	288	1 / 0	17.31	6.27	23.58	0.228	33.01	-9.43
2507.50	15	QPSK	V	150	266	1 / 0	16.86	5.64	22.50	0.178	33.01	-10.51
2593.00	15	QPSK	V	150	293	1 / 0	19.35	6.27	25.62	0.365	33.01	-7.39
2682.50	15	QPSK	V	150	309	1 / 0	16.73	6.46	23.19	0.208	33.01	-9.82
2593.00	15	16-QAM	V	150	293	1 / 0	18.32	6.27	24.59	0.288	33.01	-8.42
2593.00	15	64-QAM	V	150	293	1 / 0	17.27	6.27	23.54	0.226	33.01	-9.47
2510.00	20	QPSK	V	150	287	1 / 0	16.83	5.66	22.49	0.178	33.01	-10.52
2593.00	20	QPSK	V	150	292	1 / 0	19.18	6.27	25.45	0.351	33.01	-7.56
2680.00	20	QPSK	V	150	305	1 / 0	17.29	6.46	23.75	0.237	33.01	-9.26
2593.00	20	16-QAM	V	150	292	1 / 0	18.38	6.27	24.65	0.292	33.01	-8.36
2593.00	20	64-QAM	V	150	292	1 / 0	17.42	6.27	23.69	0.234	33.01	-9.32
2593.00	15	QPSK	Н	150	206	1 / 0	18.54	6.07	24.61	0.289	33.01	-8.40
2593 (WCP)	15	QPSK	V	150	69	1 / 0	16.23	6.27	22.50	0.178	33.01	-10.51

Table 7-29. EIRP Data (Band 38/41 – PC3)

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## 7.9 Radiated Spurious Emissions Measurements §2.1053 §22.917(a) §24.238(a) §27.53(c) §27.53(f) §27.53(g) §27.53(h) §27.53(m) §27.53(a)(4)

### Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-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

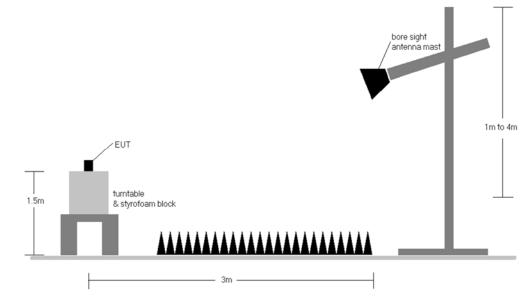
#### **Test Settings**

- 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  $\geq$  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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## Test Setup



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

Figure 7-9. 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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## Band 71

OPERATING FREQUENCY:	673.00		MHz
CHANNEL:	133222		
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1346.00	V	139	306	-76.16	7.90	-68.26	-55.3
2019.00	V	369	310	-77.72	8.65	-69.07	-56.1
2692.00	V	-	-	-76.58	9.55	-67.03	-54.0

Table 7-30. Radiated Spurious Data (Band 71 – Low Channel)

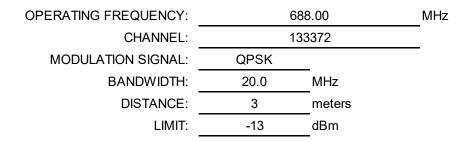
OPERATING FREQUENCY:	68	0.50	MHz
CHANNEL:	13	3297	
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	
		_	

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]
1361.00	V	147	259	-72.25	8.02	-64.23	-51.2
2041.50	V	128	340	-76.78	8.81	-67.97	-55.0
2722.00	V	-	-	-77.28	9.72	-67.56	-54.6

Table 7-31. Radiated Spurious Data (Band 71 – Mid Channel)

FCC ID: A3LSMG965U		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]
1376.00	V	146	140	-79.39	8.14	-71.25	-58.2
2064.00	V	103	344	-75.69	8.90	-66.79	-53.8
2752.00	V	-	-	-76.68	9.93	-66.75	-53.7

Table 7-32. Radiated Spurious Data (Band 71 – High Channel)

OPERATING FREQUENCY:	68	MHz	
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]
1376.00	V	400	28	-80.37	8.14	-72.23	-59.2
2064.00	V	127	300	-76.50	8.90	-67.60	-54.6
2752.00	V	-	-	-76.53	9.93	-66.60	-53.6

Table 7-33. Radiated Spurious Data with WCP (Band 71 – High Channel)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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## Band 12/17

OPERATING FREQUENCY:	70	4.00	MHz
CHANNEL:	23	3060	
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	Н	255	96	-75.56	7.79	-67.77	-54.8
2112.00	Н	369	180	-73.82	8.85	-64.97	-52.0
2816.00	Н	155	182	-73.35	10.06	-63.29	-50.3
3520.00	Н	-	-	-71.36	9.95	-61.41	-48.4

Table 7-34. Radiated Spurious Data (Band 12/17 - Low Channel)

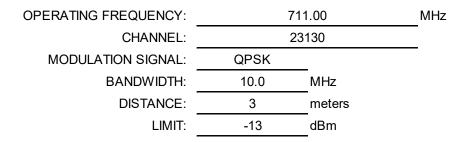
OPERATING FREQUENCY:	707	7.50 MHz
CHANNEL:	23	095
MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	Н	324	170	-74.49	7.84	-66.65	-53.6
2122.50	Н	253	181	-73.38	8.90	-64.48	-51.5
2830.00	Н	-	-	-73.92	10.05	-63.88	-50.9

Table 7-35. Radiated Spurious Data (Band 12/17 – Mid Channel)

FCC ID: A3LSMG965U		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]
1422.00	Н	158	175	-74.63	7.90	-66.73	-53.7
2133.00	Н	158	164	-73.37	8.94	-64.43	-51.4
2844.00	Н	-	-	-73.86	10.03	-63.82	-50.8

Table 7-36. Radiated Spurious Data (Band 12/17 – High Channel)

OPERATING FREQUENCY:	711	(WCP)	MHz
CHANNEL:	23	3130	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	Н	128	335	-66.29	7.90	-58.39	-45.4
2133.00	Н	-	-	-69.48	8.94	-60.54	-47.5
2844.00	Н	-	-	-68.18	10.03	-58.14	-45.1

Table 7-37. Radiated Spurious Data with WCP (Band 12/17 – High Channel)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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## Band 13

OPERATING FREQUENCY:	782	MHz	
CHANNEL:	23	230	_
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]
2346.00	Н	-	-	-74.59	9.48	-65.11	-52.1
3128.00	Н	-	-	-71.61	9.35	-62.26	-49.3

Table 7-38. Radiated Spurious Data (Band 13 – Mid Channel)

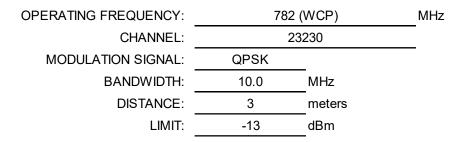
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz
-		

[MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	Н	-	-	-76.98	8.72	-68.26	-28.3

Table 7-39. Radiated Spurious Data (Band 13 - 1559-1610MHz Band)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	Н	-	-	-69.33	9.48	-59.85	-46.9
3128.00	Н	-	-	-66.68	9.35	-57.33	-44.3

Table 7-40. Radiated Spurious Data with WCP (Band 13 – Mid Channel)

QPSK	
10.00	MHz
3	meters
-50	dBm
-40	dBm/MHz
	10.00 3 -50

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	Н	-	-	-72.36	8.72	-63.64	-23.6

Table 7-41. Radiated Spurious Data with WCP (Band 13 - 1559-1610MHz Band)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
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## Band 5/26

OPERATING FREQUENCY:	825	5.50 MHz
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	-	-	-76.32	8.85	-67.47	-54.5
2476.50	Н	-	-	-75.08	9.68	-65.40	-52.4

Table 7-42. Radiated Spurious Data (Band 5/26 – Low Channel)

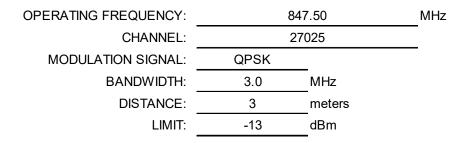
OPERATING FREQUENCY:	836	6.50	MHz
CHANNEL:	26	_	
MODULATION SIGNAL:	QPSK	_	-
BANDWIDTH:	3.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	Н	-	-	-77.19	8.85	-68.34	-55.3
2509.50	Н	-	-	-74.76	9.78	-64.99	-52.0

Table 7-43. Radiated Spurious Data (Band 5/26 – Mid Channel)

FCC ID: A3LSMG965U		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]
1695.00	Н	-	-	-76.67	8.85	-67.82	-54.8
2542.50	Н	-	-	-74.12	9.75	-64.37	-51.4

Table 7-44. Radiated Spurious Data (Band 5/26 – High Channel)

OPERATING FREQUENCY:	847.5	(WCP)	MHz
CHANNEL:	27	025	
MODULATION SIGNAL:	QPSK	_	_
BANDWIDTH:	3.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1695.00	Н	-	-	-71.48	8.85	-62.63	-49.6
2542.50	Н	-	-	-68.79	9.75	-59.04	-46.0

Table 7-45. Radiated Spurious Data with WCP (Band 5/26 – High Channel)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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## Band 66/4

172	20.00 MHz	
13	2072	
QPSK	_	
20.0	MHz	
3	meters	
-13	dBm	
	13 QPSK 20.0 3	132072           QPSK           20.0         MHz           3         meters

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	-	-	-69.37	9.54	-59.83	-46.8
5160.00	V	-	-	-68.20	10.79	-57.40	-44.4

Table 7-46. Radiated Spurious Data (Band 66/4 – Low Channel)

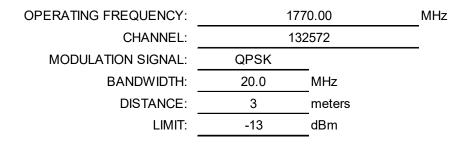
OPERATING FREQUENCY:	174	45.00	MHz
CHANNEL:	13	2322	
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

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]
3490.00	V	121	10	-68.93	9.65	-59.28	-46.3
5235.00	V	-	-	-68.76	10.93	-57.83	-44.8

Table 7-47. Radiated Spurious Data (Band 66/4 – Mid Channel)

FCC ID: A3LSMG965U		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]
3540.00	V	-	-	-69.04	9.69	-59.34	-46.3
5310.00	V	-	-	-68.77	10.97	-57.81	-44.8

Table 7-48. Radiated Spurious Data (Band 66/4 – High Channel)

OPERATING FREQUENCY:	1745	(WCP)	MHz
CHANNEL:	13	2322	
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-13	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	V	-	-	-67.47	9.62	-57.86	-44.9
5235.00	V	-	-	-67.01	10.90	-56.11	-43.1

Table 7-49. Radiated Spurious Data with WCP (Band 66/4 – Mid Channel)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	1	Approved by: Quality Manager
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## Band 25/2

OPERATING FREQUENCY:	186	60.00 MHz
CHANNEL:	26	6140
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]
3720.00	V	-	-	-69.27	9.77	-59.50	-46.5
5580.00	V	-	-	-67.90	11.01	-56.89	-43.9

Table 7-50. Radiated Spurious Data (Band 25/2 – Low Channel)

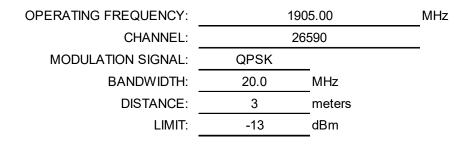
OPERATING FREQUENCY:	188	2.50 MHz
CHANNEL:	26	365
MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

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]
3765.00	V	-	-	-68.90	9.59	-59.31	-46.3
5647.50	V	-	-	-68.14	11.14	-57.00	-44.0

Table 7-51. Radiated Spurious Data (Band 25/2 – Mid Channel)

FCC ID: A3LSMG965U		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]
3810.00	V	-	-	-67.55	9.28	-58.27	-45.3
5715.00	V	-	-	-68.19	11.28	-56.91	-43.9

Table 7-52. Radiated Spurious Data (Band 25/2 – High Channel)

OPERATING FREQUENCY:	1860	(WCP)	MHz
CHANNEL:	26	140	_
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]
3660.00	V	-	-	-67.30	9.77	-57.53	-44.5
5520.00	V	206	236	-64.54	11.01	-53.53	-40.5
7380.00	V	-	-	-61.01	10.82	-50.19	-37.2

Table 7-53. Radiated Spurious Data with WCP (Band 25/2 – Low Channel)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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## Band 30 – Antenna A

OPERATING FREQUENCY:	2307.50		MHz
CHANNEL:	27685		
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-40	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	Н	-	-	-71.74	11.22	-60.52	-20.5
6922.50	Н	-	-	-65.39	10.89	-54.50	-14.5

 Table 7-54. Radiated Spurious Data (Band 30 – Low Channel – Antenna A)

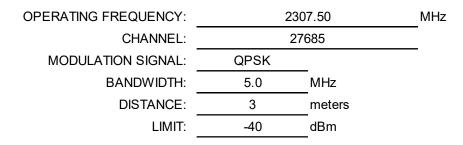
OPERATING FREQUENCY:	2312.50		MHz
CHANNEL:	27735		
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-40	dBm	

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]
4625.00	Н	-	-	-71.81	11.23	-60.58	-20.6
6937.50	Н	-	-	-65.29	10.91	-54.38	-14.4

Table 7-55. Radiated Spurious Data (Band 30 – High Channel – Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	Н	-	-	-71.77	11.23	-60.54	-20.5
6927.50	Н	-	-	-65.19	10.91	-54.28	-14.3

Table 7-56. Radiated Spurious Data with WCP (Band 30 – Low Channel – Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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## Band 30 – Antenna B

230	7.50 MHz
27	685
QPSK	_
5.0	MHz
3	meters
-40	dBm
	27 QPSK 5.0 3

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	Н	124	64	-64.10	11.22	-52.88	-12.9
6922.50	Н	196	356	-65.69	10.89	-54.80	-14.8
9230.00	Н	-	-	-68.00	12.29	-55.71	-15.7

 Table 7-57. Radiated Spurious Data (Band 30 – Low Channel – Antenna B)

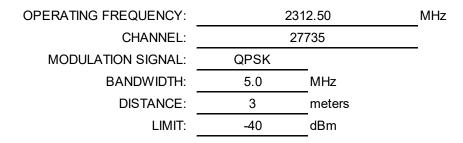
OPERATING FREQUENCY:	231	2.50 M	IHz
CHANNEL:	27	735	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	5.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-40	dBm	

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]
4625.00	Н	316	75	-64.09	11.23	-52.86	-12.9
6937.50	н	182	6	-64.45	10.91	-53.54	-13.5
9250.00	Н	-	-	-68.27	12.28	-55.98	-16.0

Table 7-58. Radiated Spurious Data (Band 30 – High Channel – Antenna B)

FCC ID: A3LSMG965U		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]
4625.00	Н	306	307	-65.48	11.23	-54.25	-14.3
6937.50	Н	245	281	-65.82	10.91	-54.91	-14.9
9250.00	Н	-	-	-68.28	12.28	-55.99	-16.0

Table 7-59. Radiated Spurious Data with WCP (Band 30 – High Channel – Antenna B)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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## Band 7 – Antenna A

OPERATING FREQUENCY:	2510.00	MHz
CHANNEL:	20850	
MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	Н	-	-	-69.05	10.90	-58.15	-33.2
7525.00	Н	-	-	-64.49	11.11	-53.38	-28.4

Table 7-60. Radiated Spurious Data (Band 7 – Low Channel – Antenna A)

OPERATING FREQUENCY:	2535.00		MHz
CHANNEL:	21100		
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	Н	112	326	-67.47	10.81	-56.66	-31.7
7605.00	Н	-	-	-64.77	11.30	-53.47	-28.5

Table 7-61. Radiated Spurious Data (Band 7 – Mid Channel – Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY:	2560.00		MHz
CHANNEL:	21350		
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	Н	-	-	-68.56	10.76	-57.81	-32.8
7685.00	Н	-	-	-65.03	11.38	-53.65	-28.7

 Table 7-62. Radiated Spurious Data (Band 7 – High Channel – Antenna A)

OPERATING FREQUENCY:	2560	(WCP)	MHz
CHANNEL:	21	350	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	dBm	
		-	

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	Н	169	308	-67.95	10.76	-57.20	-32.2
7680.00	Н	-	-	-64.92	11.38	-53.54	-28.5

Table 7-63. Radiated Spurious Data with WCP (Band 7 – High Channel – Antenna A)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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## Band 7 – Antenna B

OPERATING FREQUENCY:	250	05.00 MHz
CHANNEL:	20	800
MODULATION SIGNAL:	QPSK	_
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5010.00	V	114	21	-58.92	11.12	-47.80	-22.8
7515.00	V	368	62	-63.08	10.99	-52.08	-27.1
10020.00	V	-	-	-62.36	12.15	-50.20	-25.2
12525.00	V	-	-	-61.40	12.75	-48.64	-23.6

 Table 7-64. Radiated Spurious Data (Band 7 – Low Channel – Antenna B)

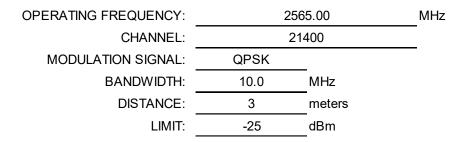
OPERATING FREQUENCY:	253	5.00	MHz
CHANNEL:	21	100	
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	V	104	9	-63.62	10.93	-52.68	-27.7
7605.00	V	114	0	-63.28	11.22	-52.06	-27.1
10140.00	V	-	-	-62.67	12.31	-50.36	-25.4
12675.00	V	-	-	-61.14	12.95	-48.19	-23.2

Table 7-65. Radiated Spurious Data (Band 7 – Mid Channel – Antenna B)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	AMSUNG	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]
5130.00	V	104	284	-60.81	10.77	-50.05	-25.0
7695.00	V	370	10	-64.03	11.39	-52.65	-27.6
10260.00	V	-	-	-62.45	12.47	-49.98	-25.0
12825.00	V	-	-	-60.80	12.88	-47.92	-22.9

Table 7-66. Radiated Spurious Data (Band 7 – High Channel – Antenna B)

OPERATING FREQUENCY:	2565	(WCP)	MHz
CHANNEL:	21	1400	
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	10.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Height	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5130.00	V	103	235	-61.48	10.77	-50.72	-25.7
7695.00	V	-	-	-62.09	11.39	-50.71	-25.7
10260.00	V	-	-	-60.61	12.47	-48.14	-23.1

Table 7-67. Radiated Spurious Data with WCP (Band 7 – High Channel – Antenna B)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager			
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## Band 41

OPERATING FREQUENCY:	250	06.00 MHz	
CHANNEL:	39	750	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	Н	326	320	-45.63	8.35	-37.28	-12.3
7518.00	Н	63	33	-53.04	8.45	-44.59	-19.6
10024.00	Н	-	-	-53.30	9.84	-43.46	-18.5

Table 7-68. Radiated Spurious Data (Band 41 – Low Channel)

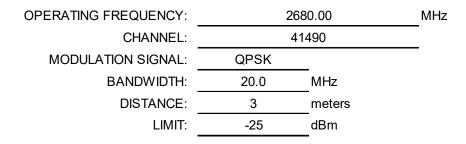
OPERATING FREQUENCY:	259	3.00 MHz	z
CHANNEL:	40	620	
MODULATION SIGNAL:	QPSK	_	
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	Н	324	321	-46.24	8.45	-37.79	-12.8
7779.00	Н	-	-	-54.09	8.75	-45.35	-20.3
10372.00	Н	-	-	-52.73	9.73	-43.01	-18.0

Table 7-69. Radiated Spurious Data (Band 41 – Mid Channel)

FCC ID: A3LSMG965U		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]
5360.00	Н	326	320	-47.00	8.40	-38.60	-13.6
8040.00	Н	-	-	-55.23	9.19	-46.05	-21.0

Table 7-70. Radiated Spurious Data (Band 41 – High Channel)

OPERATING FREQUENCY:	2593	(WCP)	MHz
CHANNEL:	40	620	
MODULATION SIGNAL:	QPSK		
BANDWIDTH:	20.0	MHz	
DISTANCE:	3	meters	
LIMIT:	-25	dBm	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	Н	122	230	-60.52	10.75	-49.77	-24.8
7779.00	Н	277	53	-61.90	11.40	-50.50	-25.5
10372.00	Н	-	-	-60.65	12.59	-48.06	-23.1

Table 7-71. Radiated Spurious Data with WCP (Band 41 – Mid Channel)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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## 7.10 Uplink Carrier Aggregation Radiated Measurements §2.1053, §27.53(m)

### Test Overview

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

#### **Test Procedures Used**

KDB 971168 D01 v02r02 - Section 5.8

ANSI/TIA-603-D-2010 - Section 2.2.12

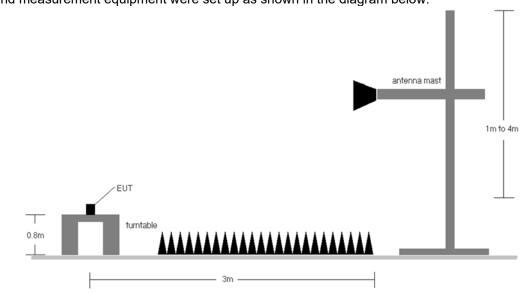
#### **Test Settings**

- 1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
- 2. VBW  $\ge$  3 x RBW
- 3. No. of sweep points > 2 x span / RBW
- 4. Detector = RMS
- 5. Trace mode = Max Hold
- 6. 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.

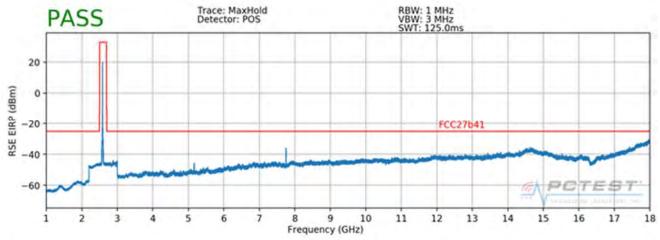
Figure 7-10. Test Instrument & Measurement Setup

## Test Notes

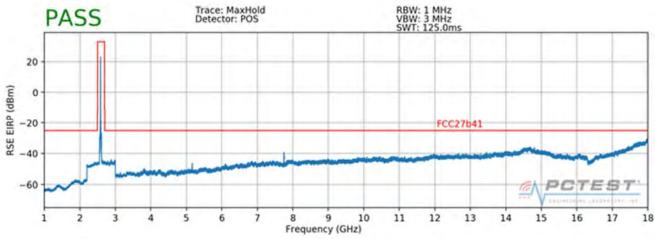
- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) 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.
- 6) No significant emissions were found as a result of two uplink carriers operating contiguously.

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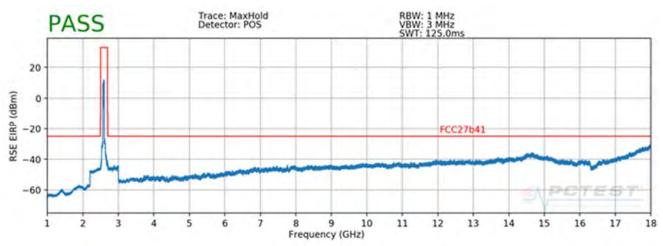




Plot 7-72. Radiated Spruious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0, Ant. Pol. H)



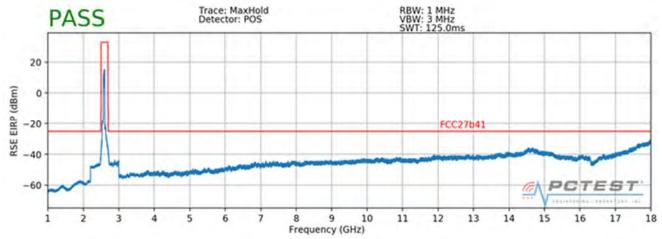




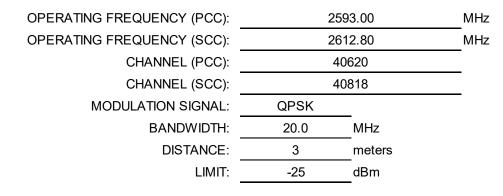
Plot 7-74. Radiated Spruious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0, Ant. Pol. H)

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Plot 7-75. Radiated Spruious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0, Ant. Pol. V)



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]
5186.00	Н	100	117	-58.47	10.82	-47.65	-22.6
7779.00	Н	100	318	-47.98	11.45	-36.52	-11.5
10372.00	Н	234	290	-61.39	12.53	-48.85	-23.9
12965.00	Н	-	-	-60.02	12.70	-47.32	-22.3
15558.00	Н	-	-	-62.45	15.04	-47.41	-22.4

Plot 7-76. Radiated Spruious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99)

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## 7.11 Frequency Stability / Temperature Variation §2.1055 §22.355 §24.235 §27.54

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

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

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

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

#### Test Procedure Used

ANSI/TIA-603-E-2016

#### Test Settings

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

#### Test Setup

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

#### Test Notes

None

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# Band 71 Frequency Stability Measurements §2.1055 §27.54

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

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( <sup>°</sup> С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	680,500,072	72	0.0000106
100 %		- 30	680,500,015	15	0.0000022
100 %		- 20	680,500,020	20	0.000029
100 %		- 10	680,499,803	-197	-0.0000289
100 %		0	680,500,095	95	0.0000140
100 %		+ 10	680,499,828	-172	-0.0000253
100 %		+ 20	680,500,273	273	0.0000401
100 %		+ 30	680,499,992	-8	-0.0000012
100 %		+ 40	680,500,358	358	0.0000526
100 %		+ 50	680,500,192	192	0.0000282
BATT. ENDPOINT	3.45	+ 20	680,499,915	-85	-0.0000125

 Table 7-77. Frequency Stability Data (Band 71)

## Note:

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

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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#### Band 71 Frequency Stability Measurements §2.1055 §27.54

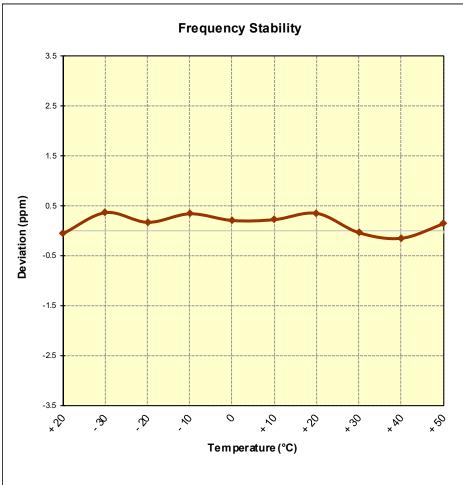


Figure 7-11. Frequency Stability Graph (Band 71)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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### Band 12/17 Frequency Stability Measurements §2.1055 §27.54

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

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( <sup>°</sup> С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	707,499,958	-42	-0.0000059
100 %		- 30	707,500,257	257	0.0000363
100 %		- 20	707,500,118	118	0.0000167
100 %		- 10	707,500,240	240	0.0000339
100 %		0	707,500,144	144	0.0000204
100 %		+ 10	707,500,157	157	0.0000222
100 %		+ 20	707,500,246	246	0.0000348
100 %		+ 30	707,499,969	-31	-0.0000044
100 %		+ 40	707,499,891	-109	-0.0000154
100 %		+ 50	707,500,098	98	0.0000139
BATT. ENDPOINT	3.45	+ 20	707,500,033	33	0.0000047

 Table 7-78. 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.

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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# Band 12/17 Frequency Stability Measurements §2.1055 §27.54

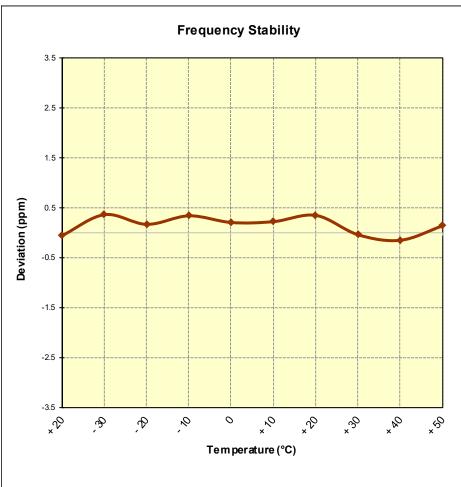


Figure 7-12. Frequency Stability Graph (Band 12/17)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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### Band 13 Frequency Stability Measurements §2.1055 §27.54

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

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( <sup>°</sup> С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	781,999,701	-299	-0.0000382
100 %		- 30	782,000,351	351	0.0000449
100 %		- 20	781,999,985	-15	-0.0000019
100 %		- 10	781,999,991	-9	-0.0000012
100 %		0	781,999,578	-422	-0.0000540
100 %		+ 10	782,000,023	23	0.0000029
100 %		+ 20	781,999,862	-138	-0.0000176
100 %		+ 30	782,000,307	307	0.0000393
100 %		+ 40	782,000,070	70	0.0000090
100 %		+ 50	782,000,034	34	0.0000043
BATT. ENDPOINT	3.45	+ 20	782,000,395	395	0.0000505

 Table 7-79. 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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## Band 13 Frequency Stability Measurements §2.1055 §27.54

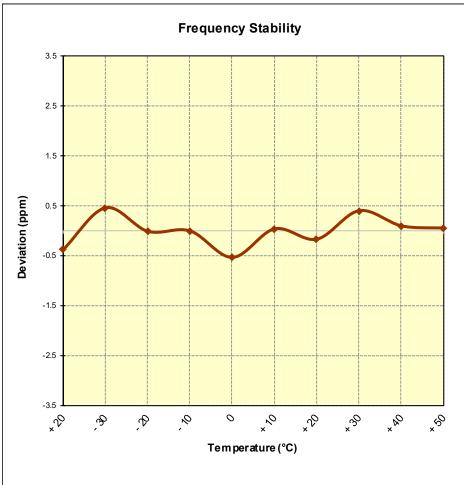


Figure 7-13. Frequency Stability Graph (Band 13)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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## Band 5/26 Frequency Stability Measurements §2.1055 §22.355

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

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( <sup>°</sup> С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	831,500,201	201	0.0000242
100 %		- 30	831,500,402	402	0.0000483
100 %		- 20	831,499,889	-111	-0.0000133
100 %		- 10	831,500,052	52	0.0000063
100 %		0	831,499,677	-323	-0.0000388
100 %		+ 10	831,500,201	201	0.0000242
100 %		+ 20	831,500,149	149	0.0000179
100 %		+ 30	831,500,019	19	0.0000023
100 %		+ 40	831,500,056	56	0.0000067
100 %		+ 50	831,499,782	-218	-0.0000262
BATT. ENDPOINT	3.45	+ 20	831,499,768	-232	-0.0000279

Table 7-80. Frequency Stability Data (Band 5/26)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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# Band 5/26 Frequency Stability Measurements §2.1055 §22.355

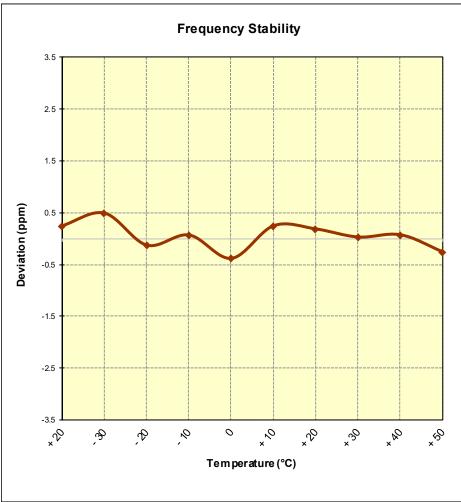


Figure 7-14. Frequency Stability Graph (Band 5/26)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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### Band 66/4 Frequency Stability Measurements §2.1055 §§27.54

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

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( <sup>°</sup> С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,744,999,993	-7	-0.0000004
100 %		- 30	1,744,999,823	-177	-0.0000101
100 %		- 20	1,744,999,901	-99	-0.0000057
100 %		- 10	1,744,999,804	-196	-0.0000112
100 %		0	1,745,000,013	13	0.0000007
100 %		+ 10	1,744,999,847	-153	-0.000088
100 %		+ 20	1,745,000,119	119	0.000068
100 %		+ 30	1,745,000,313	313	0.0000179
100 %		+ 40	1,745,000,039	39	0.0000022
100 %		+ 50	1,745,000,313	313	0.0000179
BATT. ENDPOINT	3.45	+ 20	1,745,000,014	14	0.000008

Table 7-81. 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 §2.1055 §§27.54

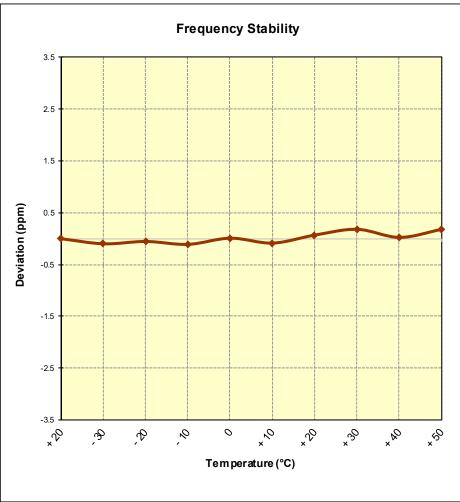


Figure 7-15. Frequency Stability Graph (Band 66/4)

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## Band 25/2 Frequency Stability Measurements §2.1055 §24.235

OPERATING FREQUENCY:	1,882,500,000	Hz
CHANNEL:	26365	_
REFERENCE VOLTAGE:	3.85	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	_

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( <sup>°</sup> С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,882,500,158	158	0.0000084
100 %		- 30	1,882,499,657	-343	-0.0000182
100 %		- 20	1,882,500,126	126	0.0000067
100 %		- 10	1,882,500,242	242	0.0000129
100 %		0	1,882,500,214	214	0.0000114
100 %		+ 10	1,882,499,814	-186	-0.0000099
100 %		+ 20	1,882,499,796	-204	-0.0000108
100 %		+ 30	1,882,500,367	367	0.0000195
100 %		+ 40	1,882,499,880	-120	-0.0000064
100 %		+ 50	1,882,499,999	-1	-0.0000001
BATT. ENDPOINT	3.45	+ 20	1,882,500,077	77	0.0000041

Table 7-82. Frequency Stability Data (Band 25/2)

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## Band 25/2 Frequency Stability Measurements §2.1055 §24.235

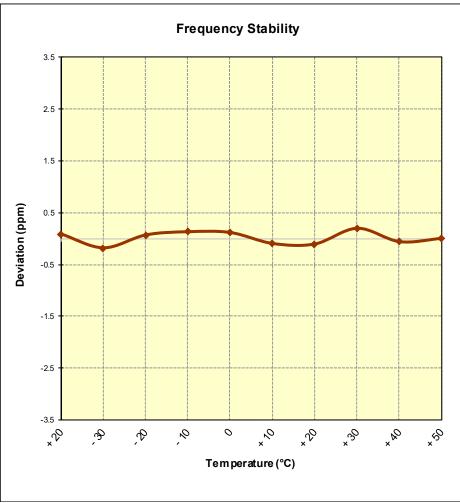


Figure 7-16. Frequency Stability Graph (Band 25/2)

FCC ID: A3LSMG965U		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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### Band 30 Frequency Stability Measurements §2.1055 §24.235

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

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( <sup>°</sup> С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,309,999,847	-153	-0.0000066
100 %		- 30	2,309,999,980	-20	-0.0000009
100 %		- 20	2,309,999,572	-428	-0.0000185
100 %		- 10	2,310,000,157	157	0.0000068
100 %		0	2,310,000,379	379	0.0000164
100 %		+ 10	2,310,000,262	262	0.0000113
100 %		+ 20	2,310,000,341	341	0.0000148
100 %		+ 30	2,309,999,869	-131	-0.0000057
100 %		+ 40	2,309,999,869	-131	-0.0000057
100 %		+ 50	2,309,999,778	-222	-0.0000096
BATT. ENDPOINT	3.45	+ 20	2,310,000,150	150	0.0000065

 Table 7-83. Frequency Stability Data (Band 30)

#### Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain 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 30 Frequency Stability Measurements §2.1055 §24.235

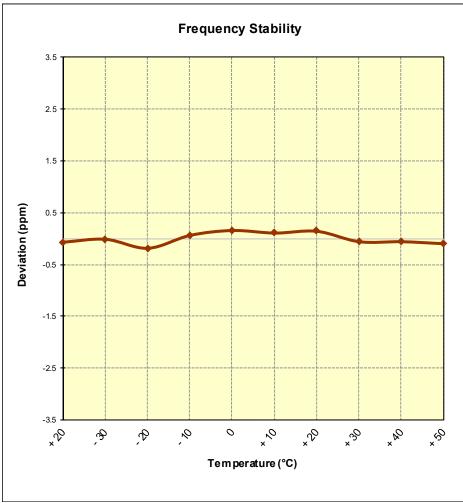


Figure 7-17. Frequency Stability Graph (Band 30)

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### Band 7 Frequency Stability Measurements §2.1055 §27.54

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

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( <sup>°</sup> С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,535,000,097	97	0.000038
100 %		- 30	2,534,999,865	-135	-0.0000053
100 %		- 20	2,535,000,034	34	0.0000013
100 %		- 10	2,534,999,917	-83	-0.0000033
100 %		0	2,534,999,885	-115	-0.0000045
100 %		+ 10	2,535,000,015	15	0.000006
100 %		+ 20	2,534,999,952	-48	-0.0000019
100 %		+ 30	2,534,999,779	-221	-0.000087
100 %		+ 40	2,535,000,050	50	0.0000020
100 %		+ 50	2,534,999,991	-9	-0.0000004
BATT. ENDPOINT	3.45	+ 20	2,535,000,061	61	0.0000024

 Table 7-84. Frequency Stability Data (Band 7)

#### Note:

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

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## Band 7 Frequency Stability Measurements §2.1055 §27.54

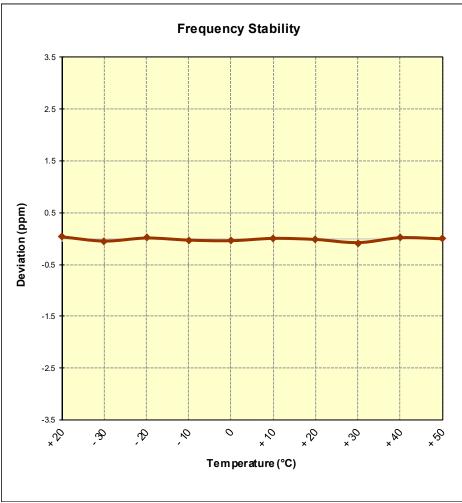


Figure 7-18. Frequency Stability Graph (Band 7)

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### Band 38/41 Frequency Stability Measurements §2.1055 §27.54

OPERATING FREQUENCY:	2,593,000,000	Hz
CHANNEL:	40620	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	<b>ТЕМР</b> ( <sup>°</sup> С)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,592,999,745	-255	-0.000098
100 %		- 30	2,592,999,674	-326	-0.0000126
100 %		- 20	2,592,999,871	-129	-0.0000050
100 %		- 10	2,593,000,199	199	0.0000077
100 %		0	2,593,000,357	357	0.0000138
100 %		+ 10	2,593,000,277	277	0.0000107
100 %		+ 20	2,593,000,016	16	0.000006
100 %		+ 30	2,592,999,926	-74	-0.0000029
100 %		+ 40	2,593,000,115	115	0.0000044
100 %		+ 50	2,592,999,986	-14	-0.0000005
BATT. ENDPOINT	3.45	+ 20	2,592,999,866	-134	-0.0000052

Table 7-85. Frequency Stability Data (Band 38/41)

#### Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain 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 38/41 Frequency Stability Measurements §2.1055 §27.54

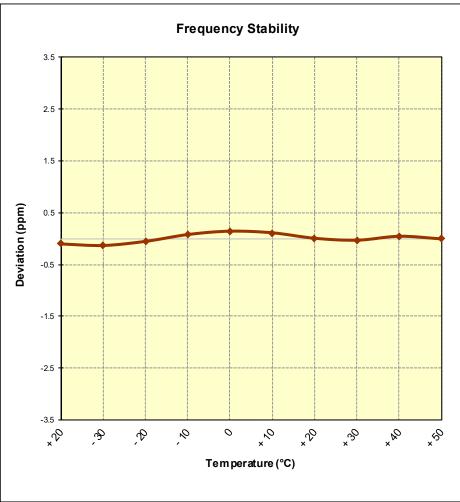


Figure 7-19. Frequency Stability Graph (Band 38/41)

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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: A3LSMG965U** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

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