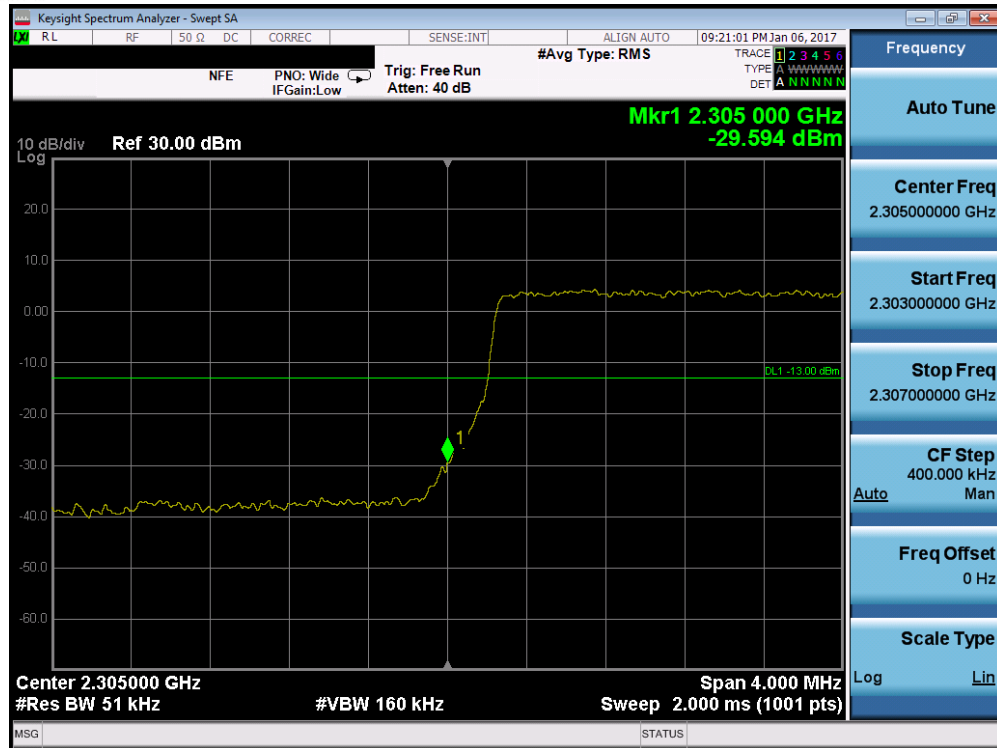
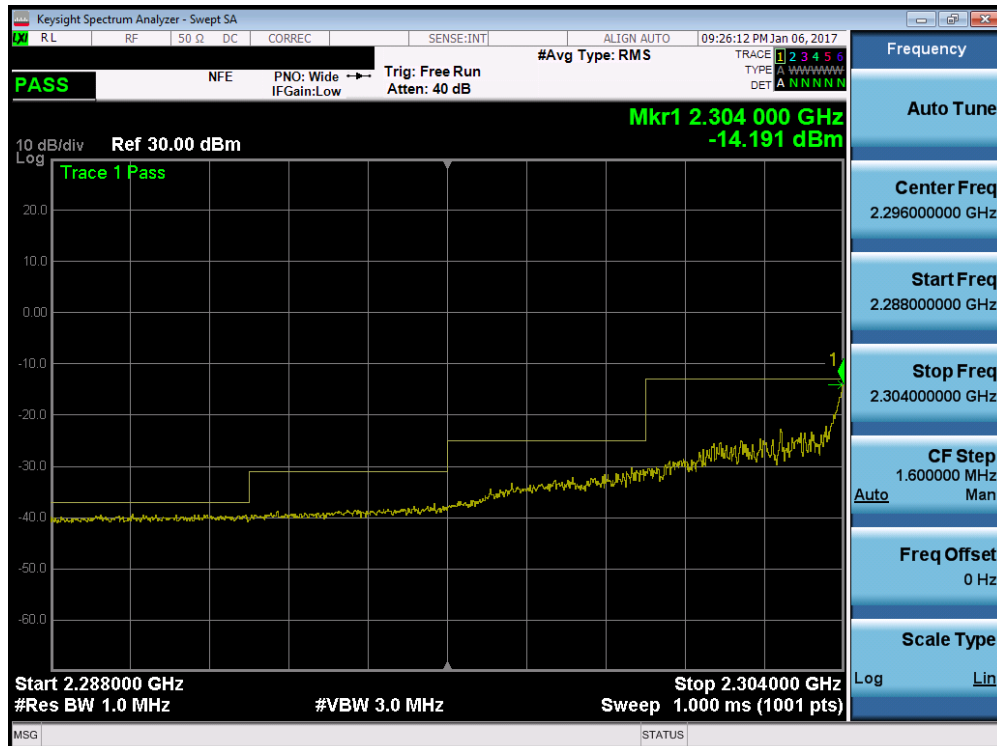




Plot 7-219. Lower Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

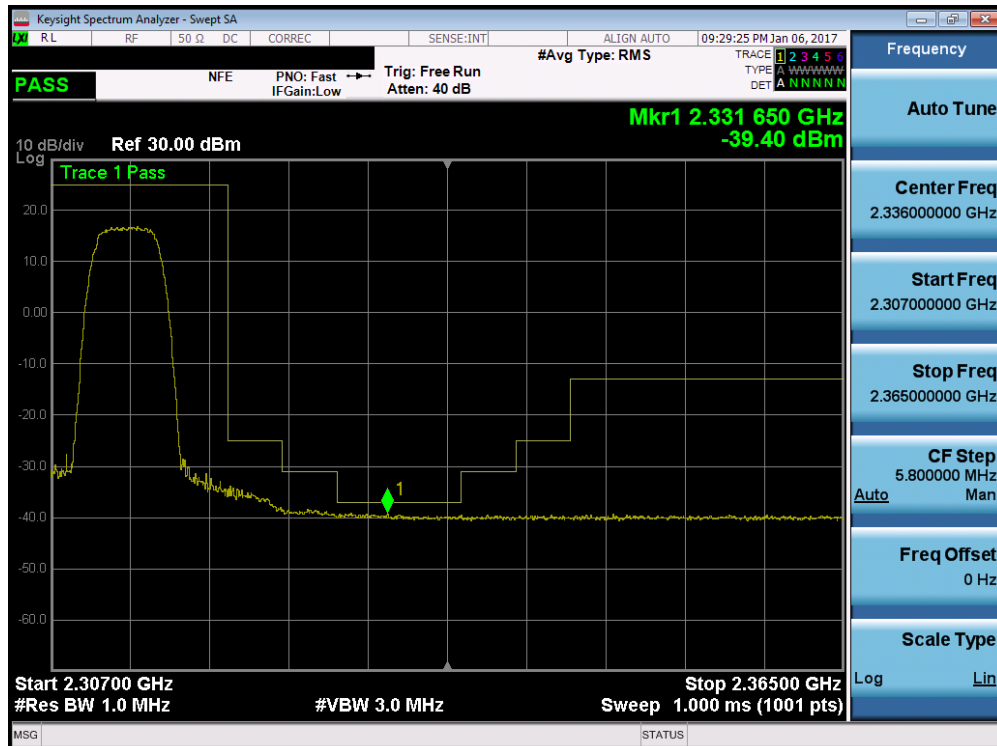


Plot 7-220. Lower Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 130 of 198

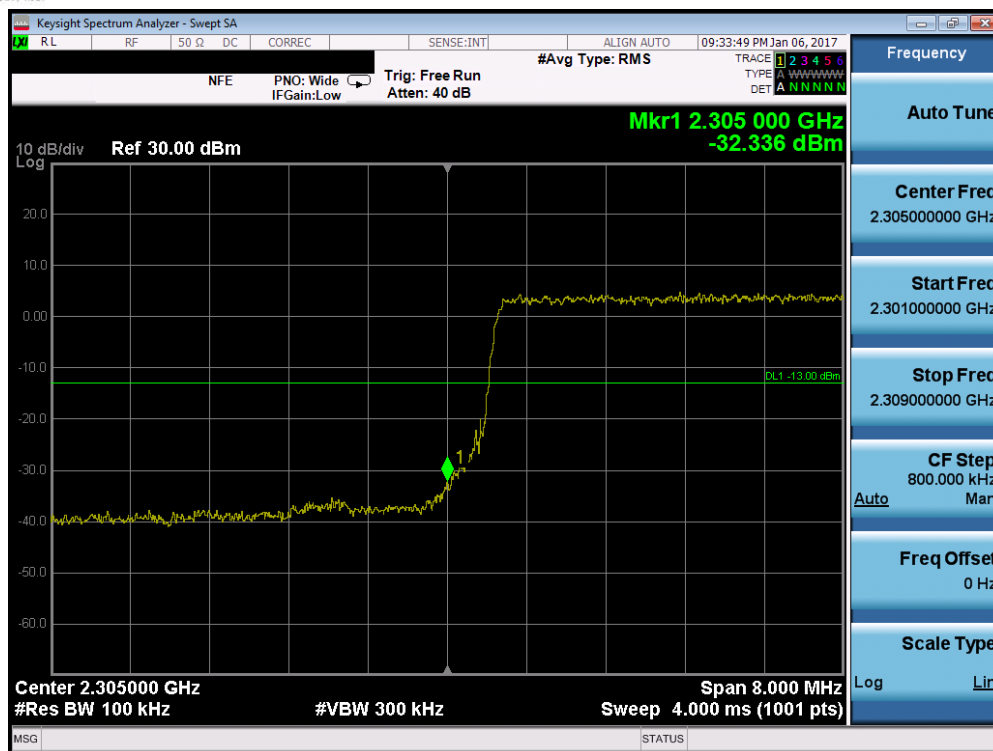


Plot 7-221. Upper Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

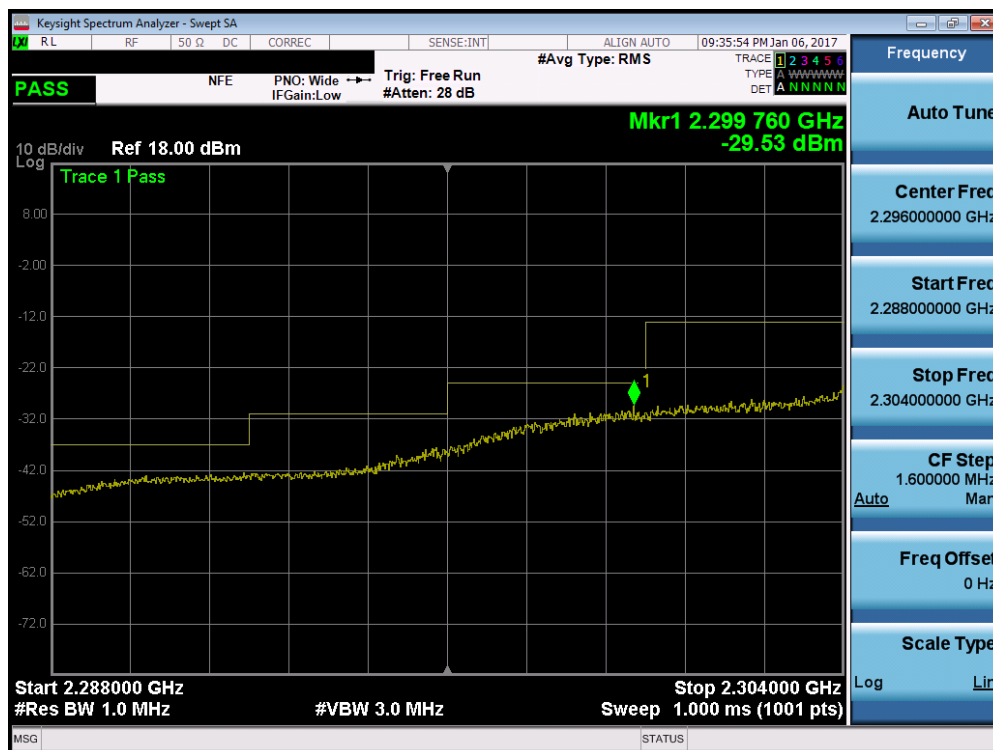


Plot 7-222. Upper Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 131 of 198



Plot 7-223. Lower Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)



Plot 7-224. Lower Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

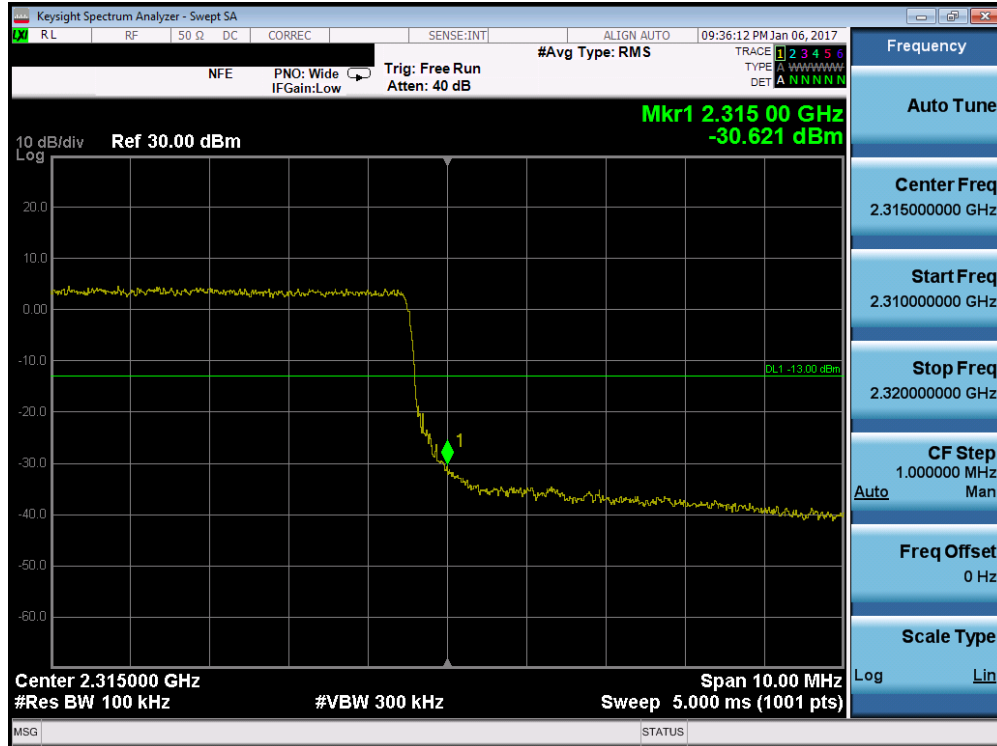
FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 132 of 198

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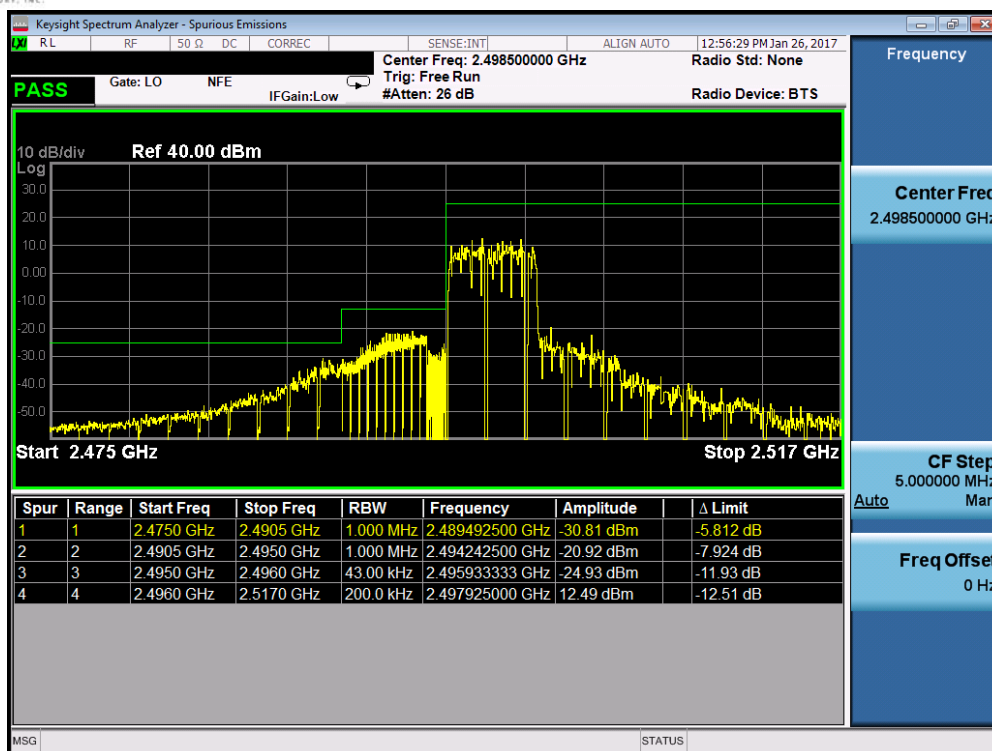


Plot 7-225. Upper Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

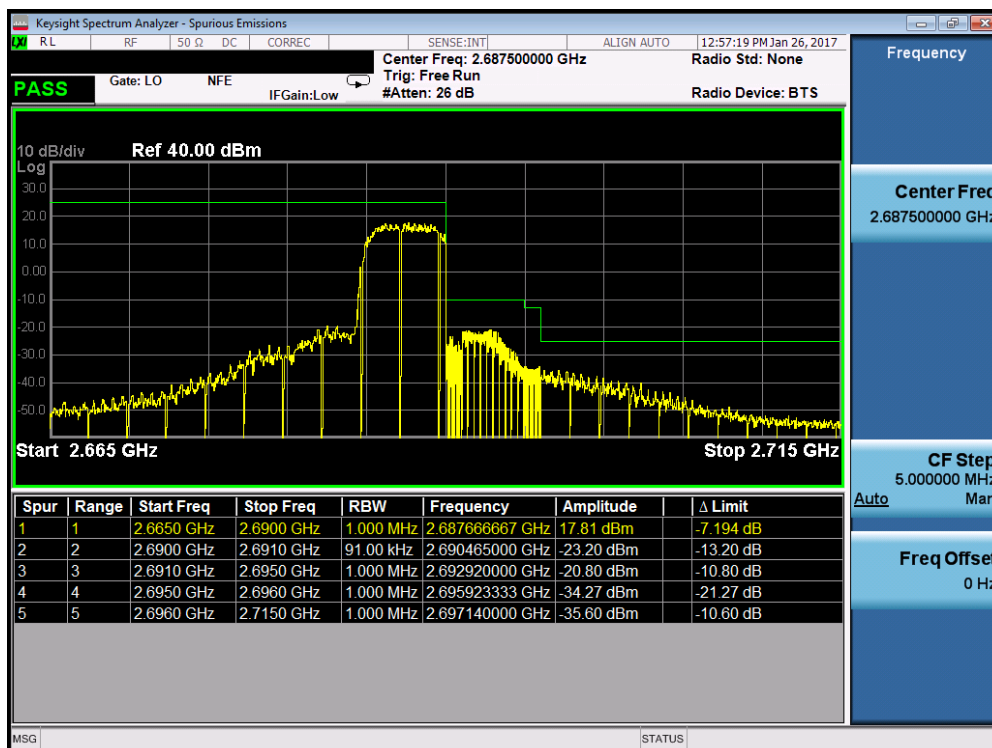


Plot 7-226. Upper Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 133 of 198

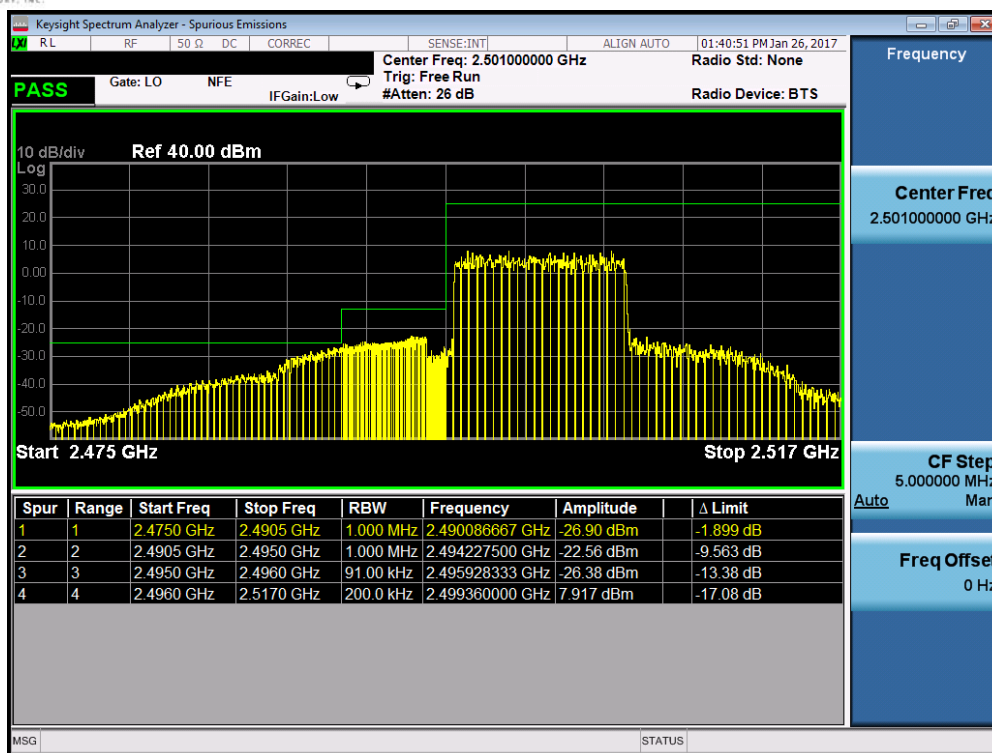


Plot 7-227. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

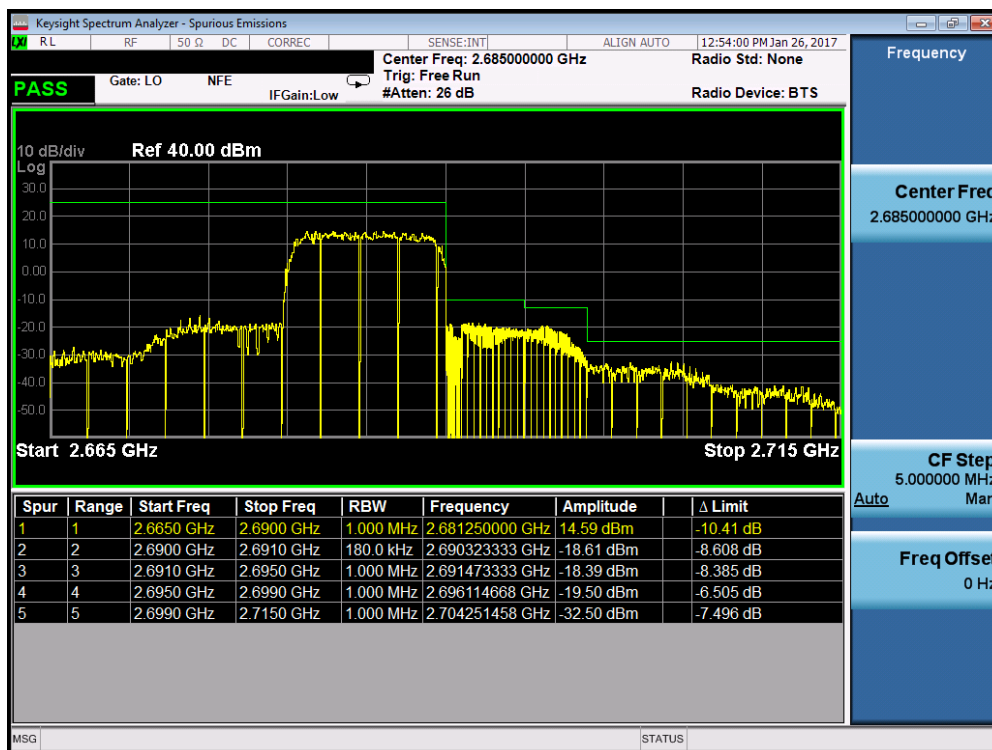


Plot 7-228. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 134 of 198

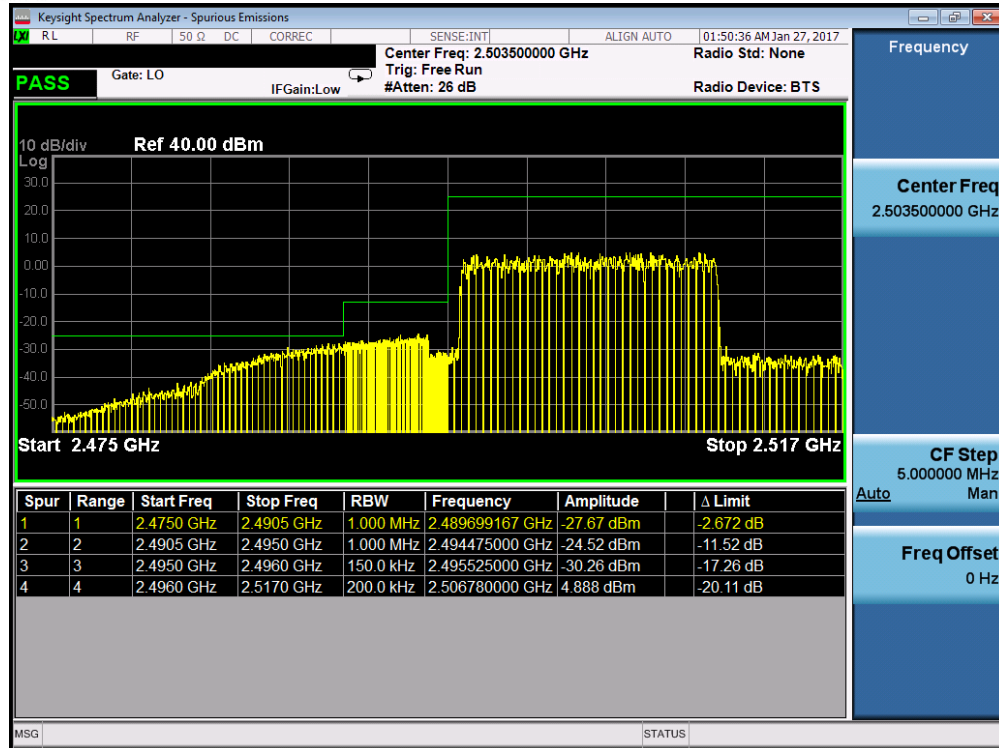


Plot 7-229. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

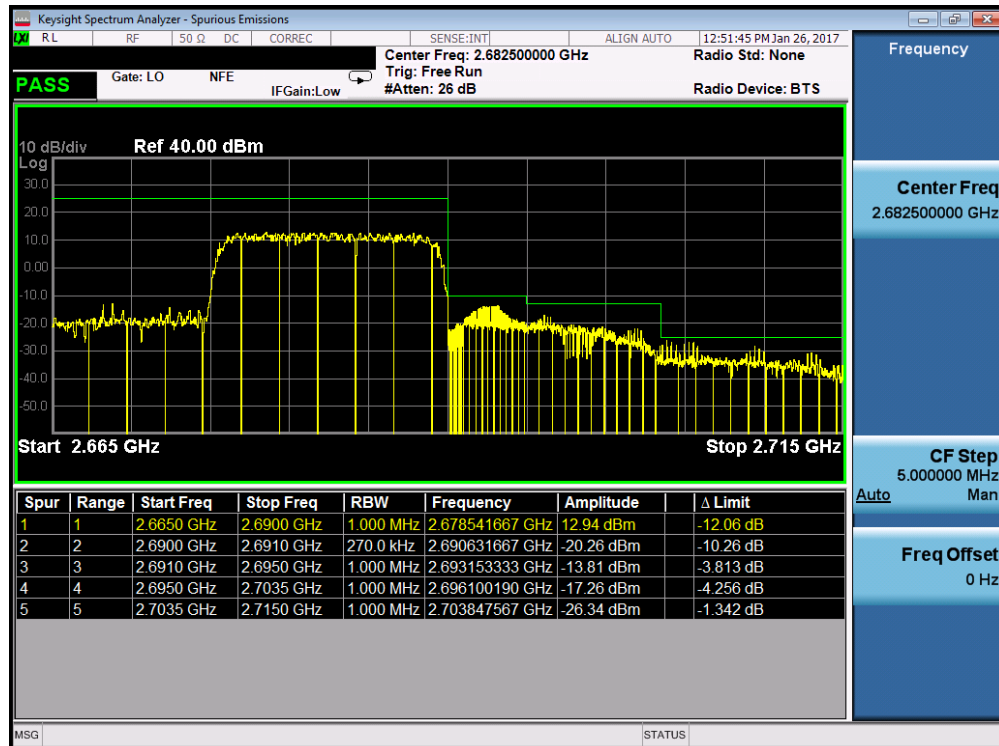


Plot 7-230. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG955U			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset	Page 135 of 198		

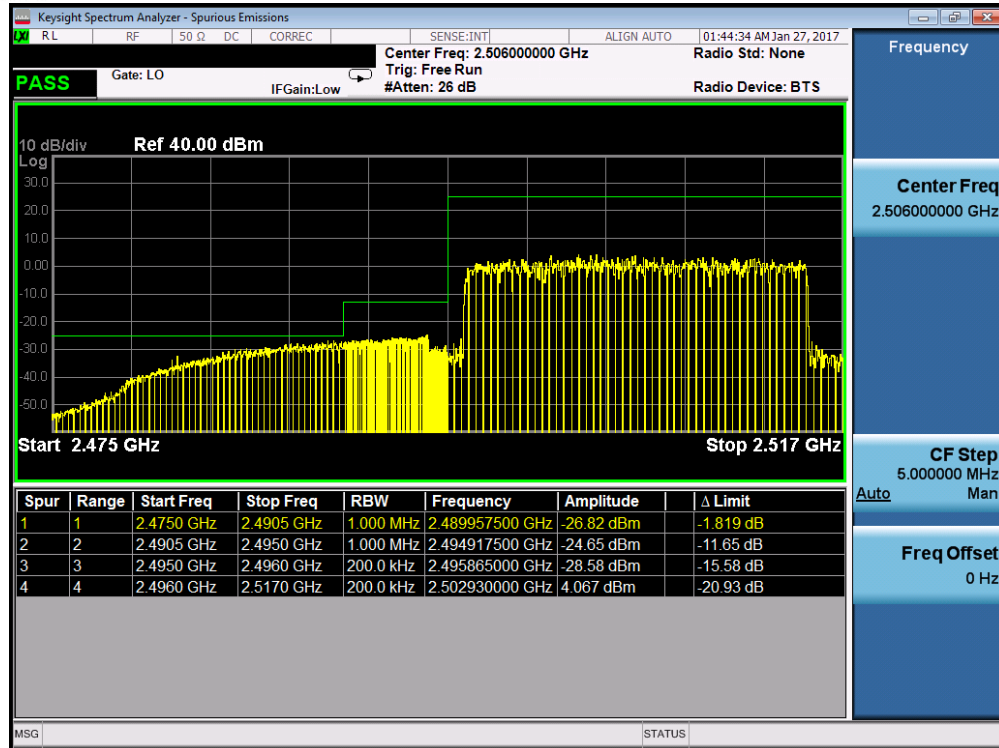


Plot 7-231. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

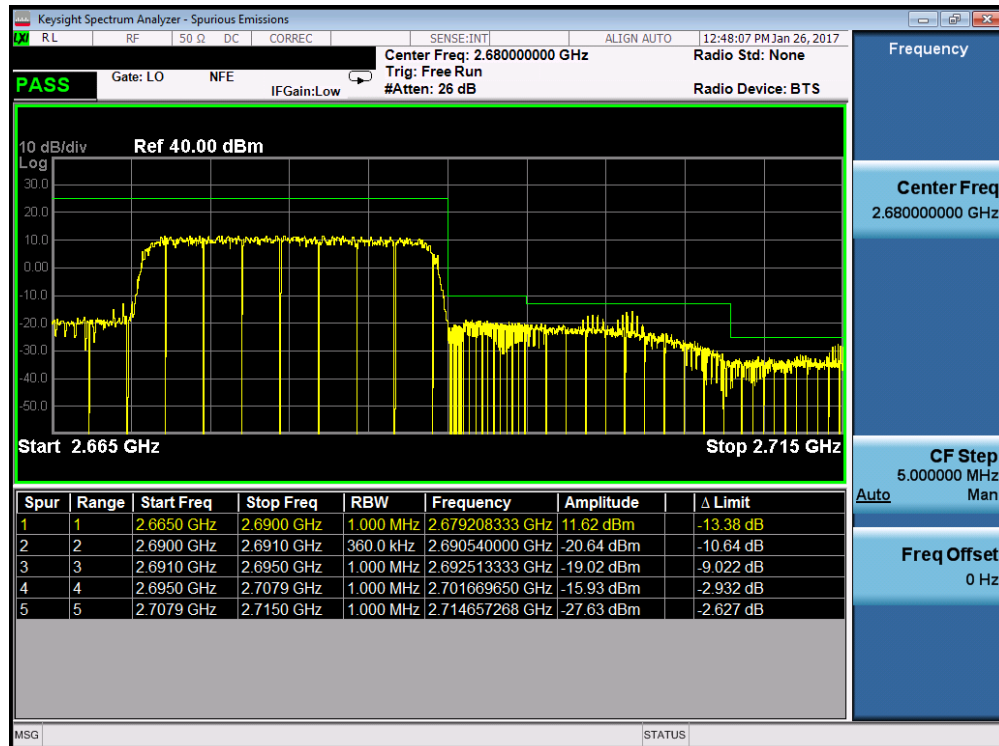


Plot 7-232. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 136 of 198



Plot 7-233. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)



Plot 7-234. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 137 of 198

7.5 Uplink Carrier Aggregation

§27.53(m)

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 10th 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 $55 + \log_{10}(P_{\text{Watts}})$.

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.

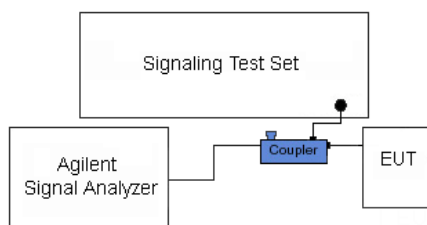


Figure 7-4. Test Instrument & Measurement Setup

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset	Page 138 of 198	

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.

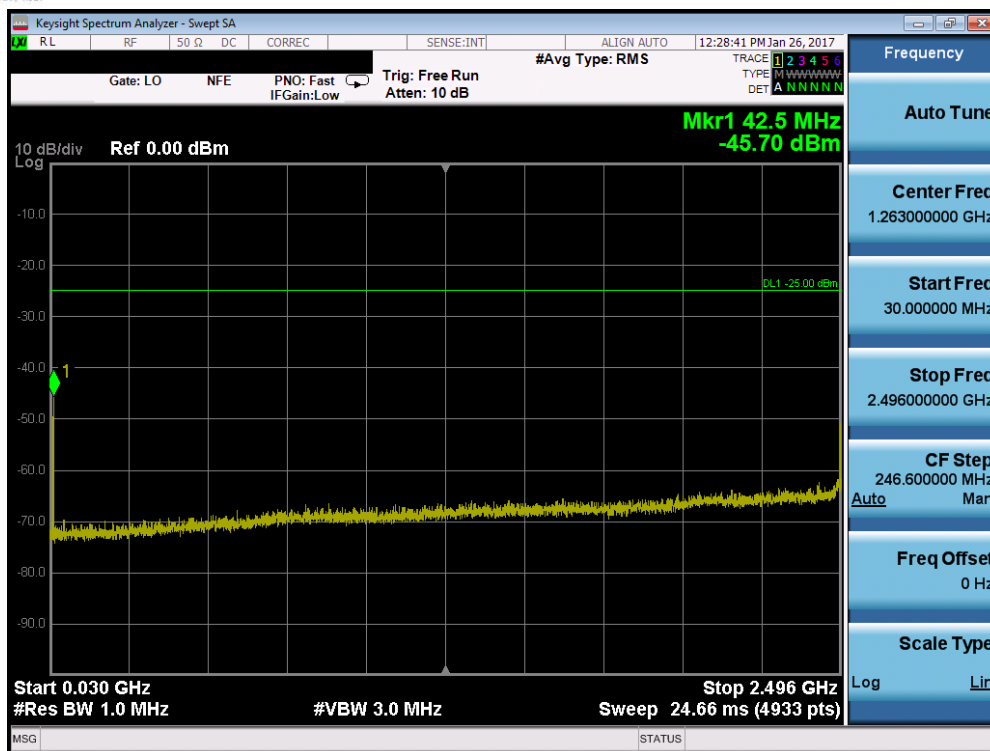
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	15	40740	2605	QPSK	1	0	24.24
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	20	40764	2607.4	QPSK	1	0	24.96
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	15	40770	2608	QPSK	1	0	23.25
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	20	40791	2610.1	QPSK	1	0	23.42
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	10	40764	2607.4	QPSK	1	0	23.72
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	15	40791	2610.1	QPSK	1	0	23.72
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	23.58

Table 7-2. Conducted Powers (B41 – PCC: RB Size 1, Offset Max and SCC: RB Size 1, Offset 0)

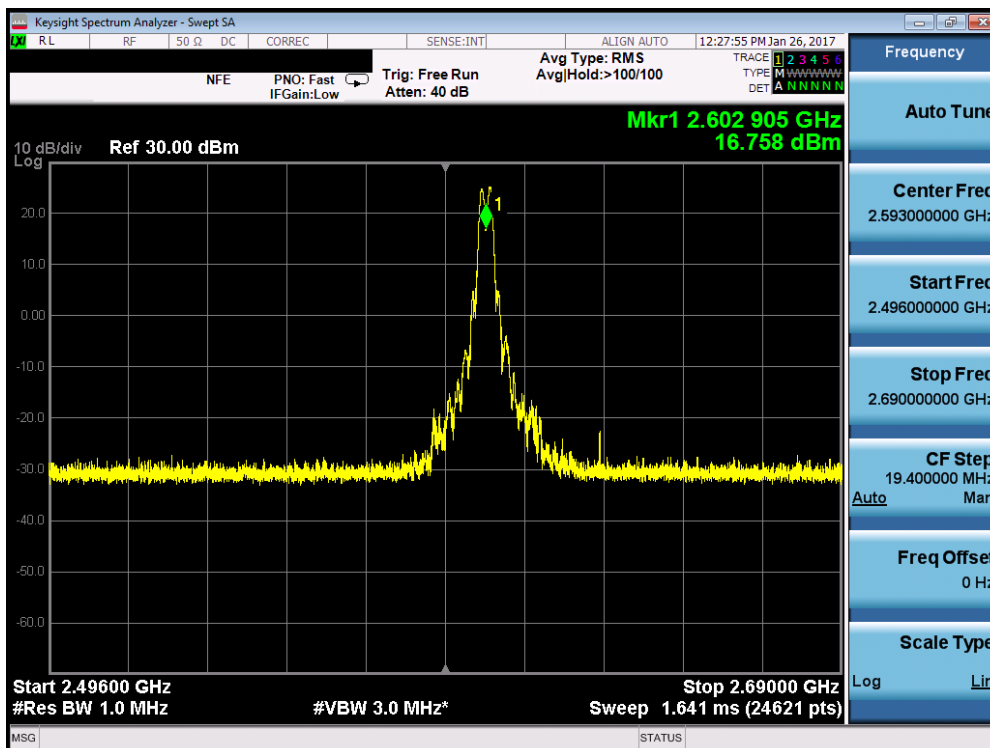
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	0	19.75
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	99	19.85
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	99	15.51
Max	LTE B41	20	39750	2506	QPSK	1	50	LTE B41	20	39948	2525.8	QPSK	1	50	19.97
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	23.85
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	22.65
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	21.67
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	20.72

Table 7-3. Conducted Powers (B41 with Various Combinations for 20MHz Channel Bandwidth)

FCC ID: A3LSMG955U			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset			Page 139 of 198

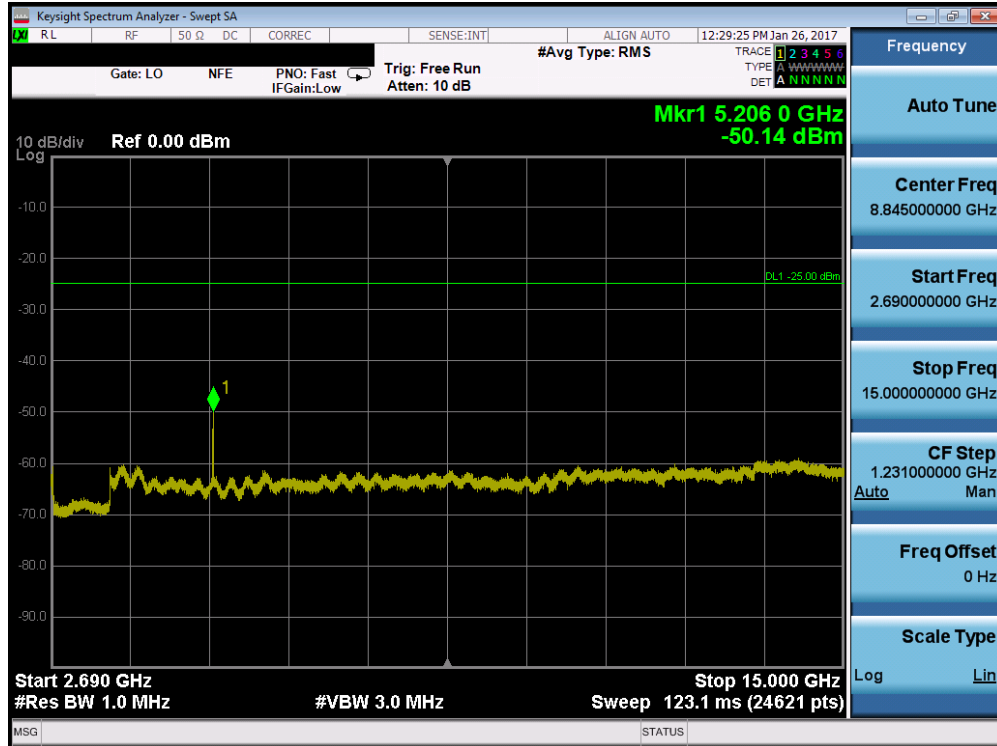


Plot 7-235. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

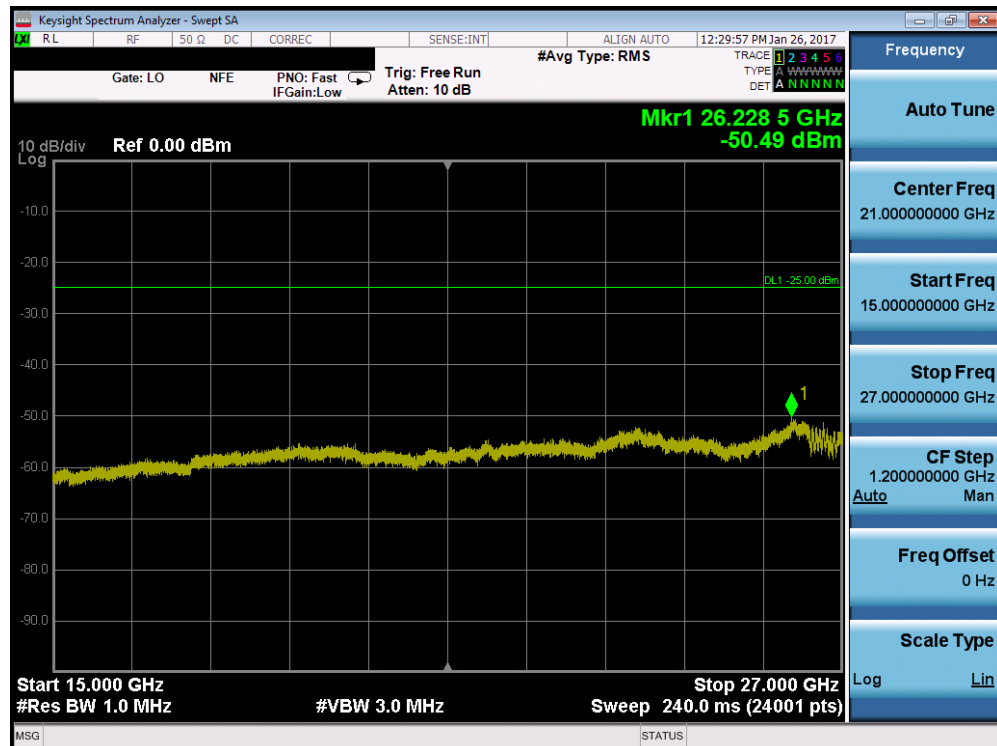


Plot 7-236. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 140 of 198

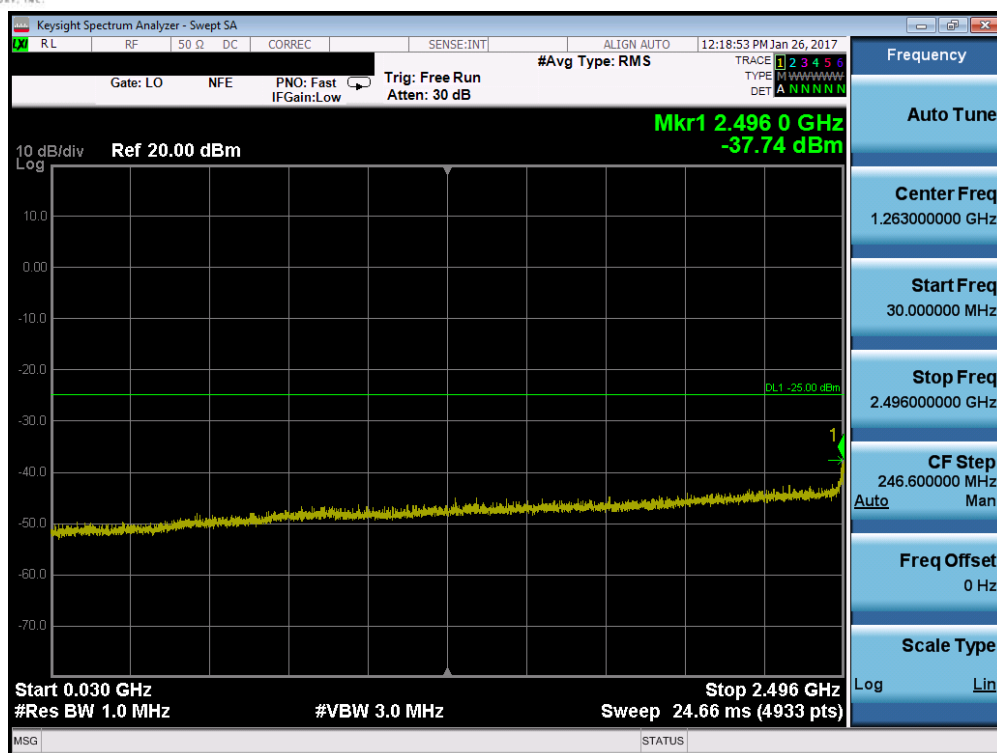


Plot 7-237. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 ,SCC 1/0 – Mid Channel)

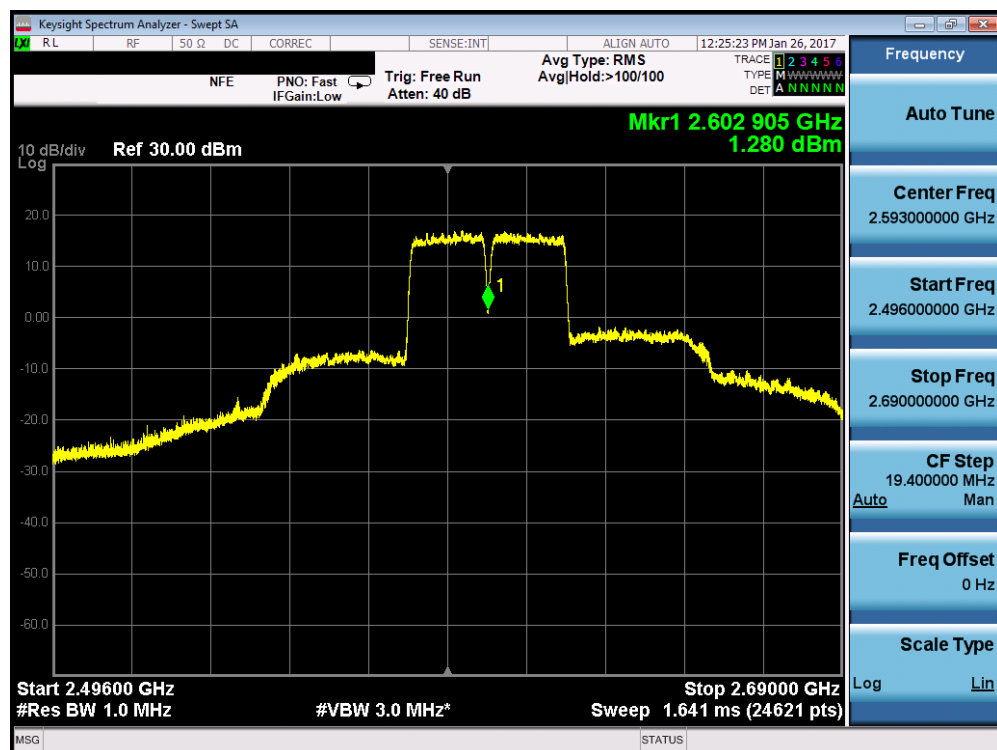


Plot 7-238. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 ,SCC 1/0 – Mid Channel)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 141 of 198

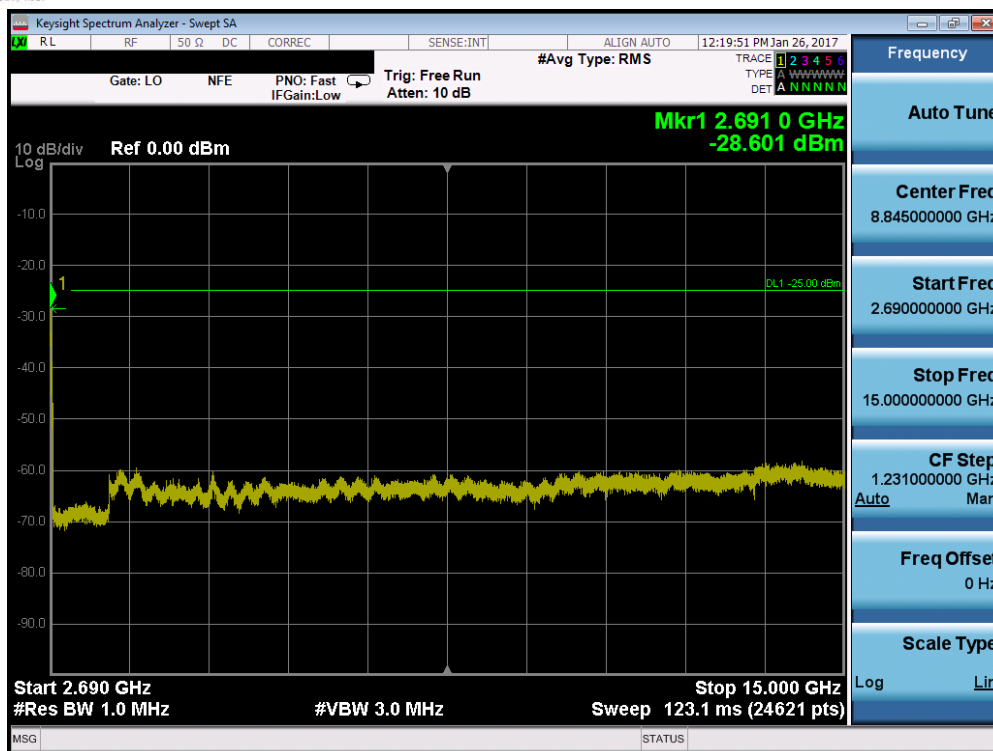


Plot 7-239. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0, SCC 100/0 – Mid Channel)

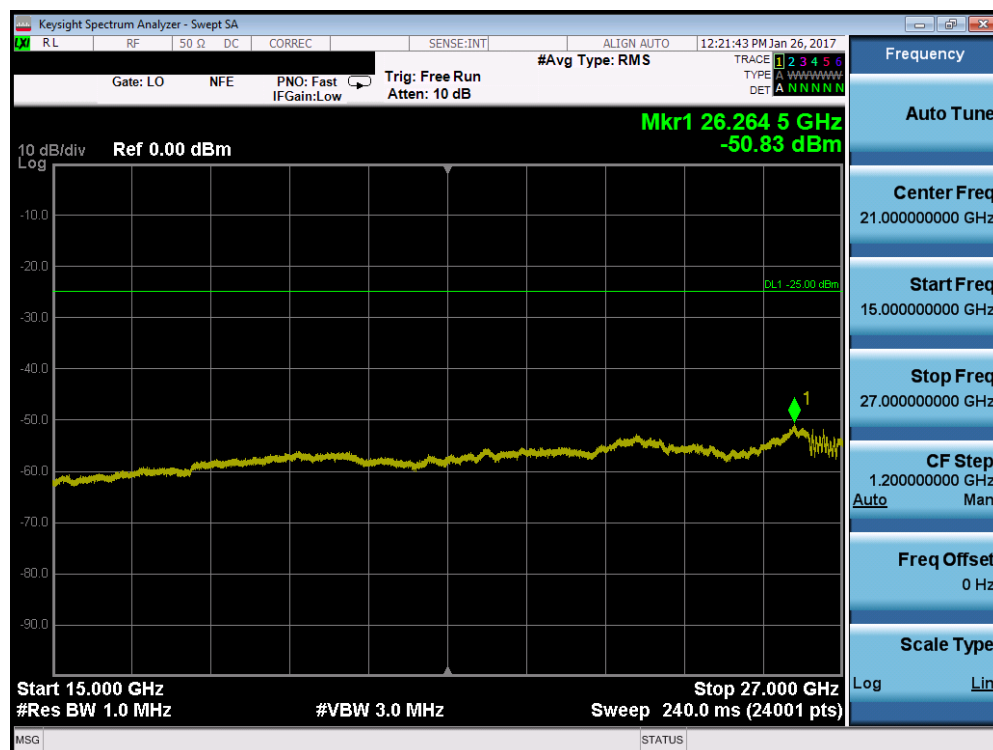


Plot 7-240. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0, SCC 100/0 – Mid Channel)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 142 of 198



Plot 7-241. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0, SCC 100/0 – Mid Channel)



Plot 7-242. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0, SCC 100/0 – Mid Channel)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 143 of 198

7.6 Peak-Average Ratio

§24.232(d)

Test Overview

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

Test Procedure Used

KDB 971168 D01 v02r02 – Section 5.7.1

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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

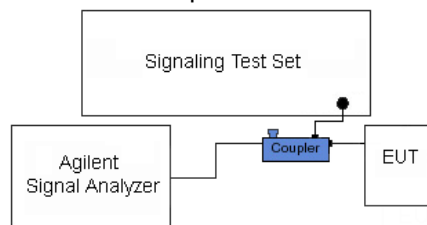
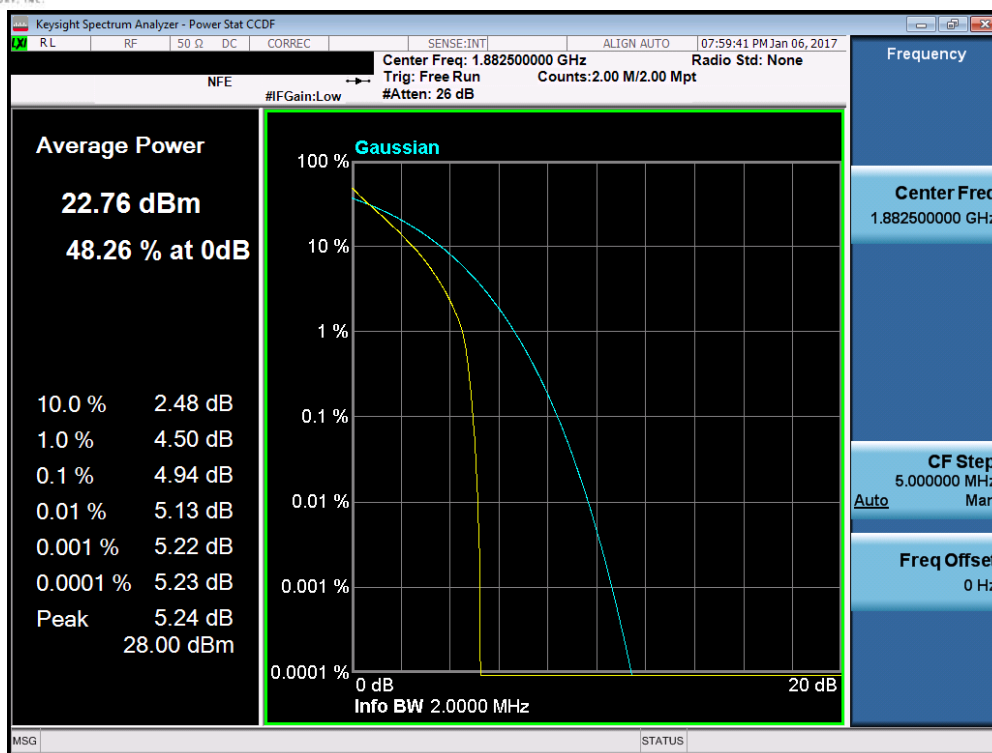


Figure 7-5. Test Instrument & Measurement Setup

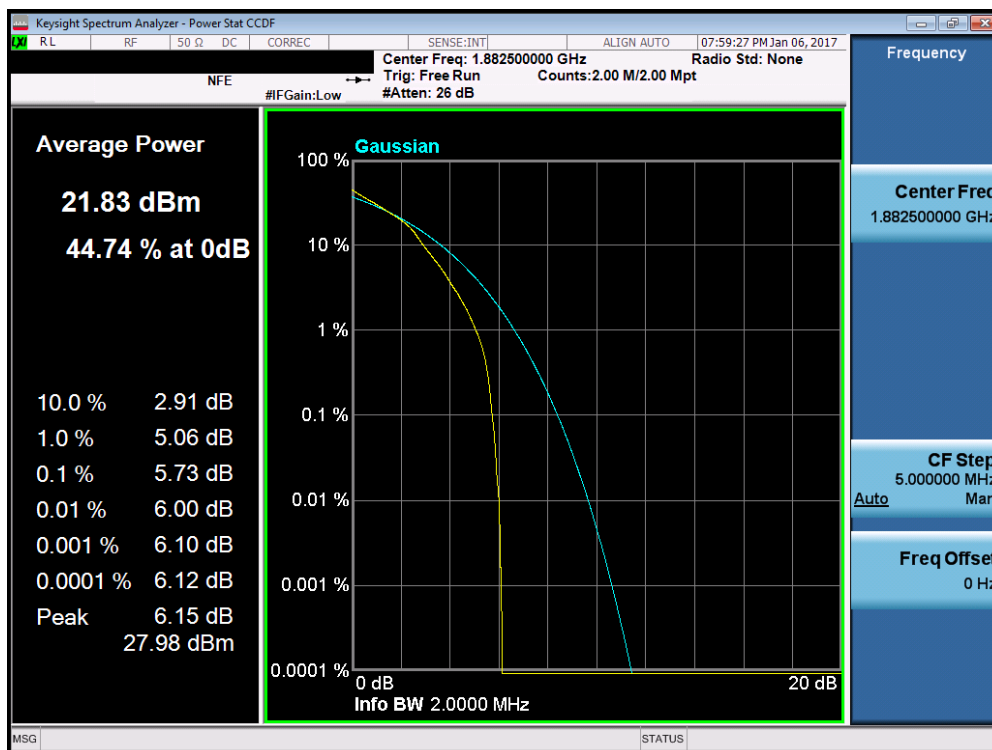
Test Notes

None.

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset	Page 144 of 198	



Plot 7-243. PAR Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)



Plot 7-244. PAR Plot (Band 2/25 – 1.4MHz 16-QAM – RB Size 6)

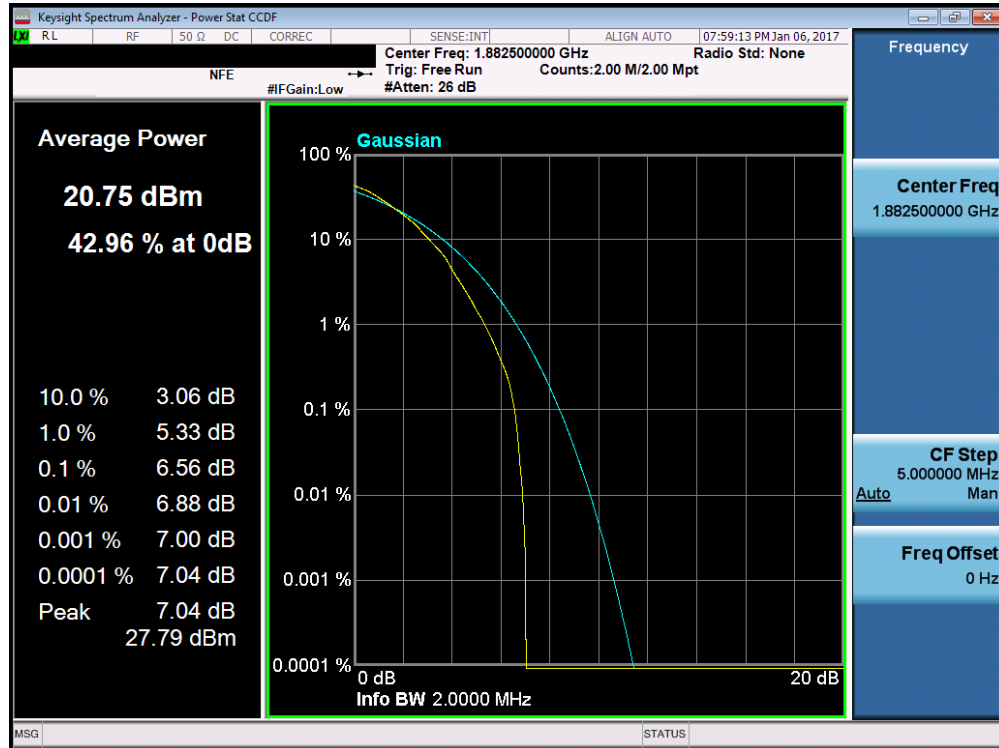
FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 145 of 198

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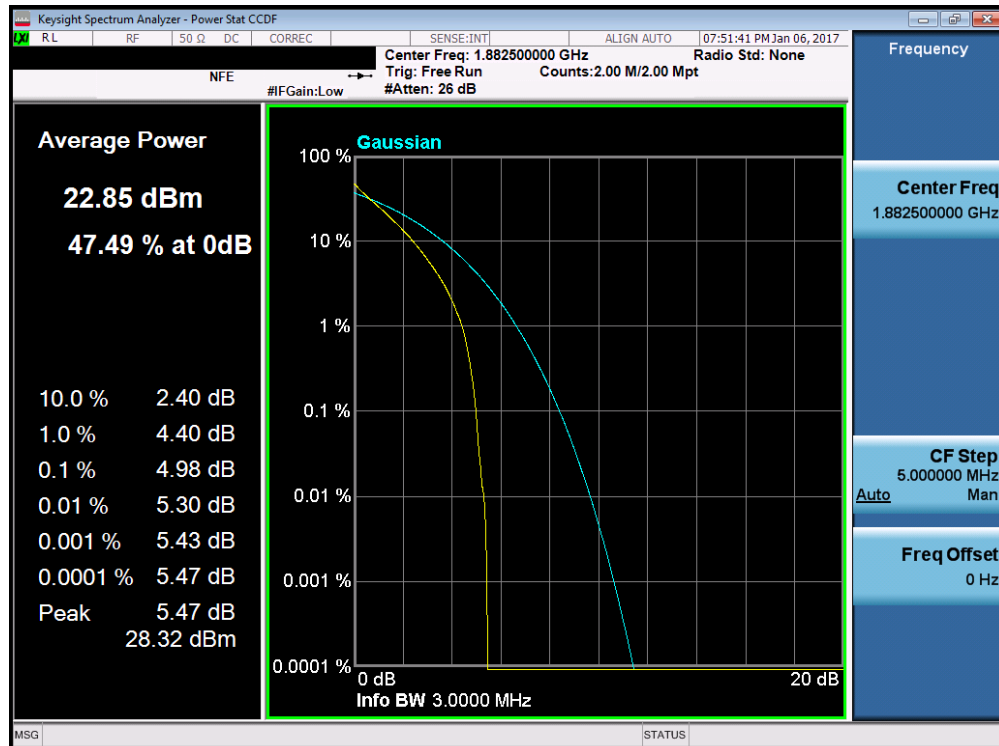
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Plot 7-245. PAR Plot (Band 2/25 – 1.4MHz 64-QAM – RB Size 6)



Plot 7-246. PAR Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

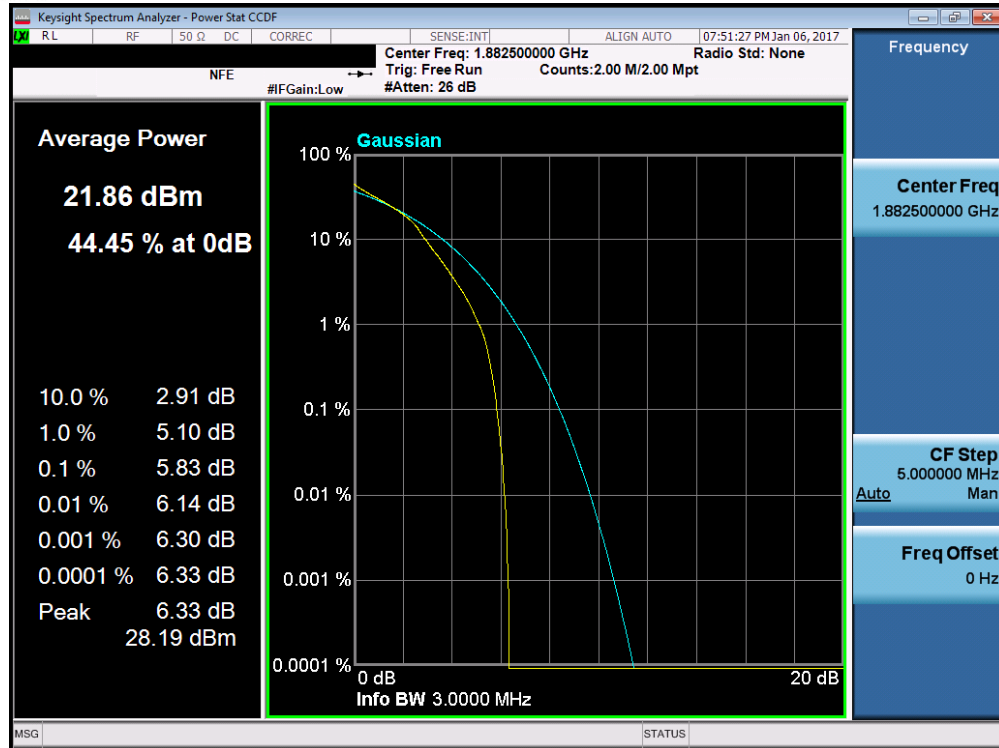
FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 146 of 198

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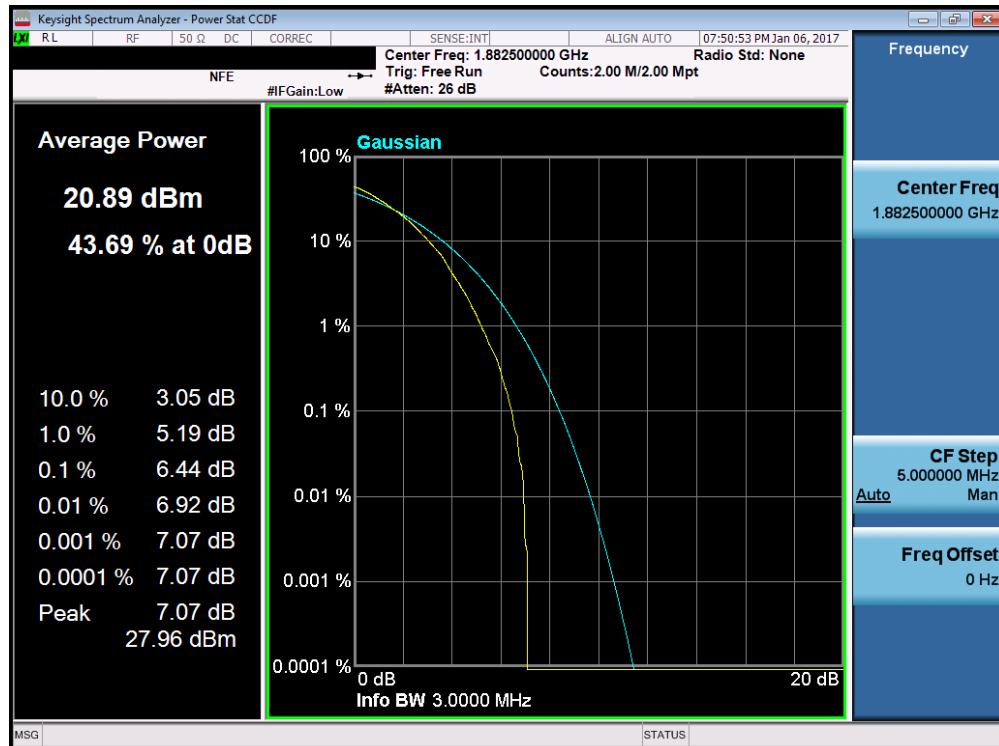
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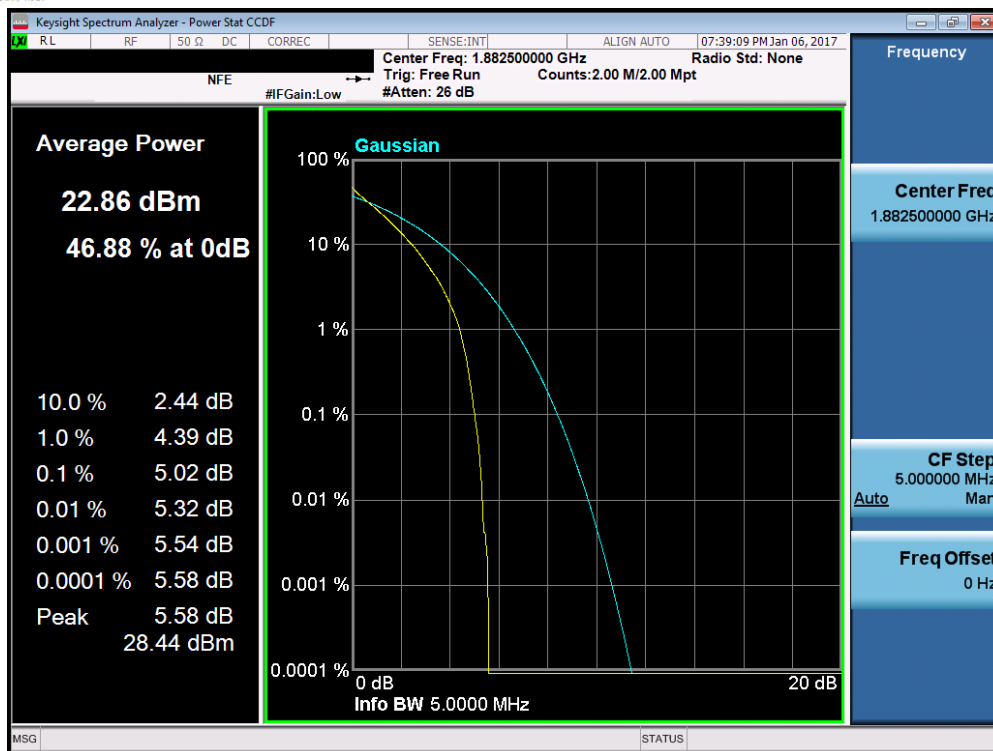


Plot 7-247. PAR Plot (Band 2/25 – 3.0MHz 16-QAM – RB Size 15)

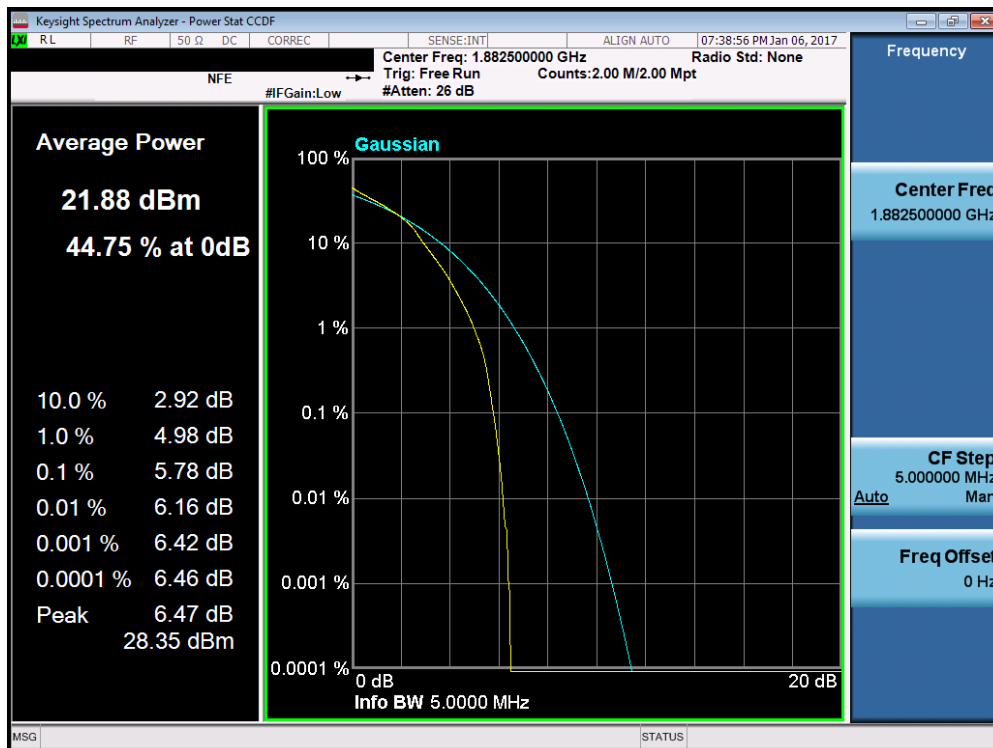


Plot 7-248. PAR Plot (Band 2/25 – 3.0MHz 64-QAM – RB Size 15)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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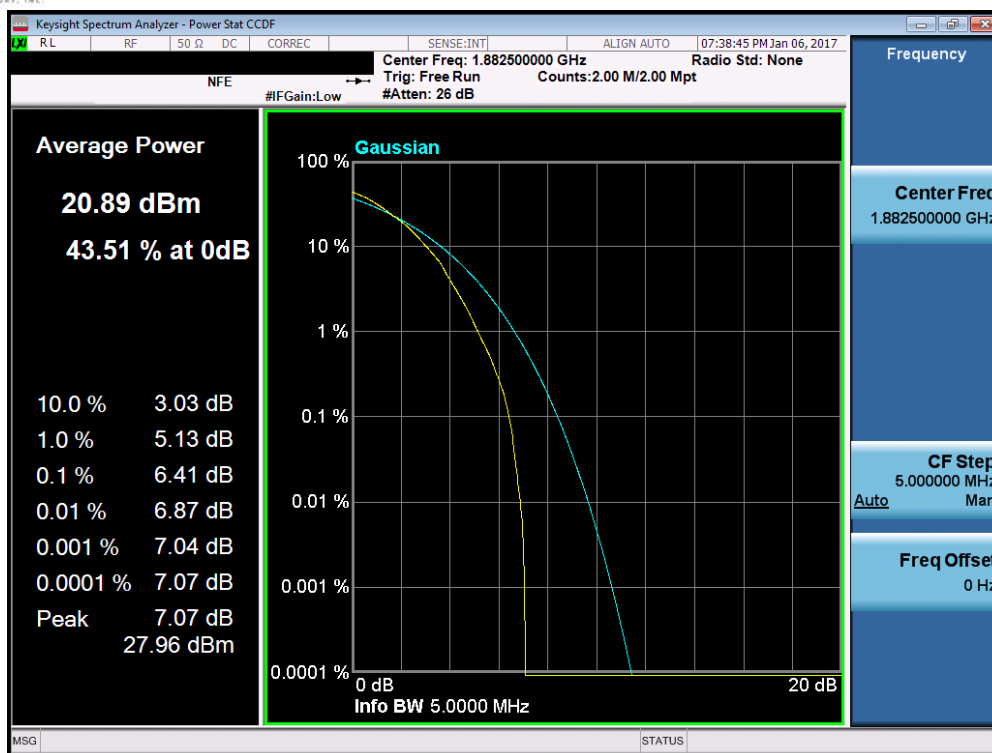


Plot 7-249. PAR Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

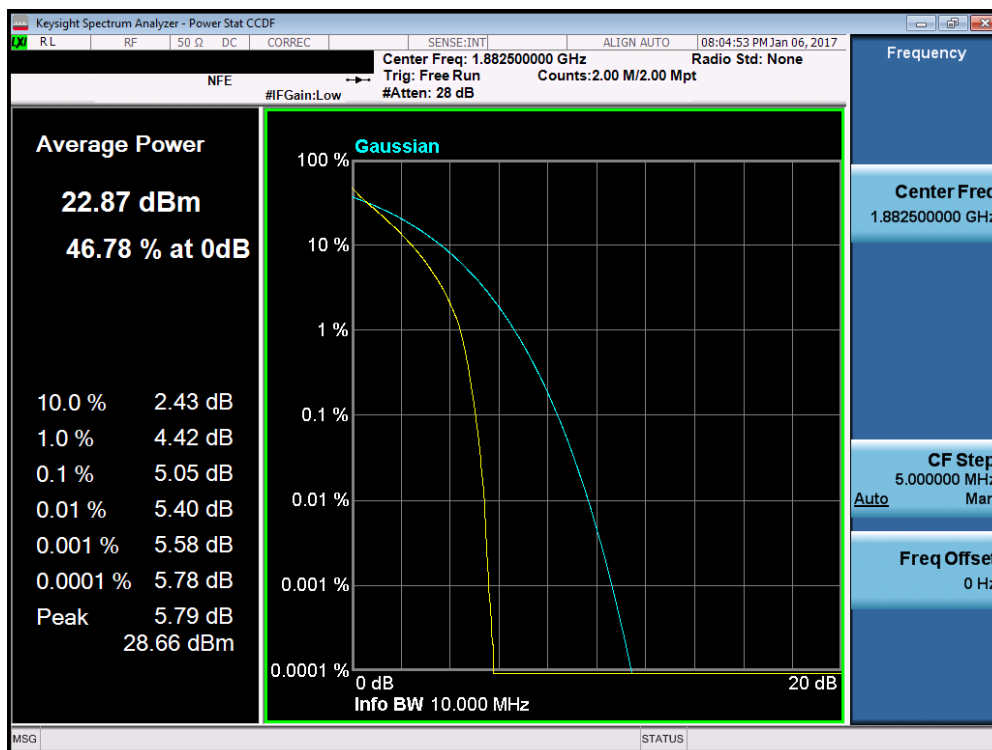


Plot 7-250. PAR Plot (Band 2/25 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: A3LSMG955U			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-251. PAR Plot (Band 2/25 – 5.0MHz 64-QAM – RB Size 25)



Plot 7-252. PAR Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

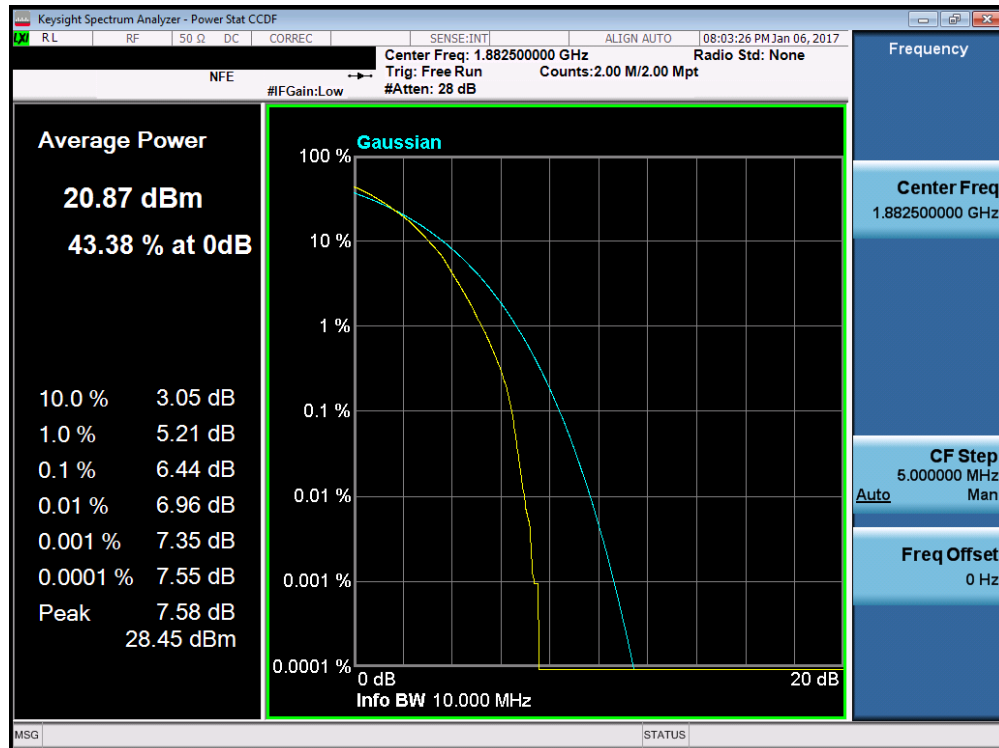
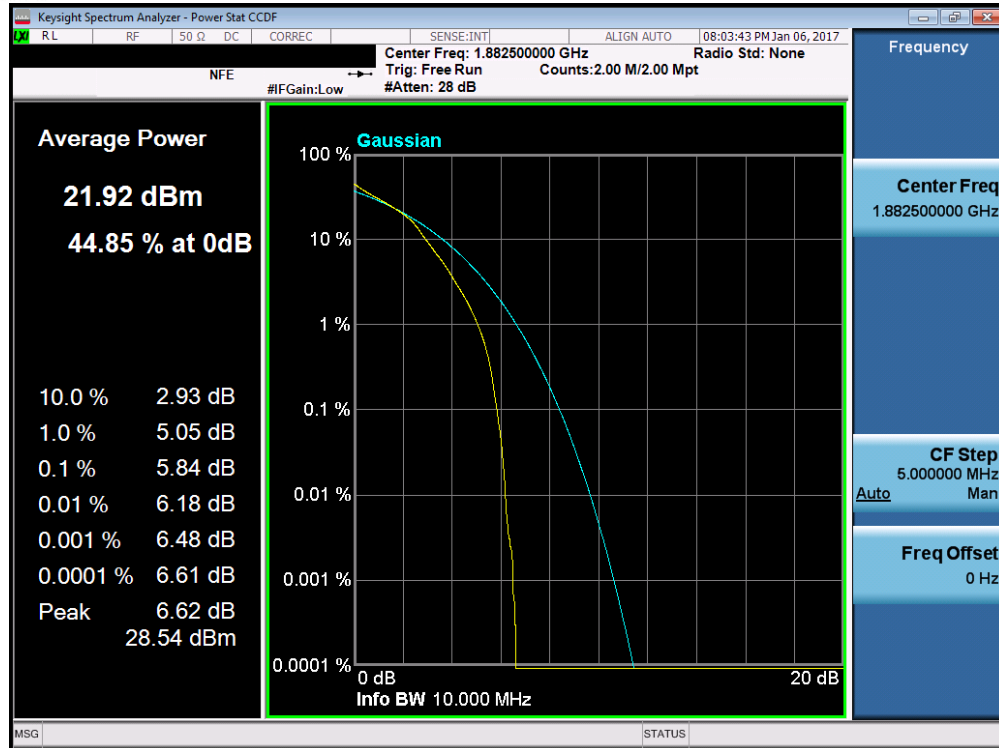
FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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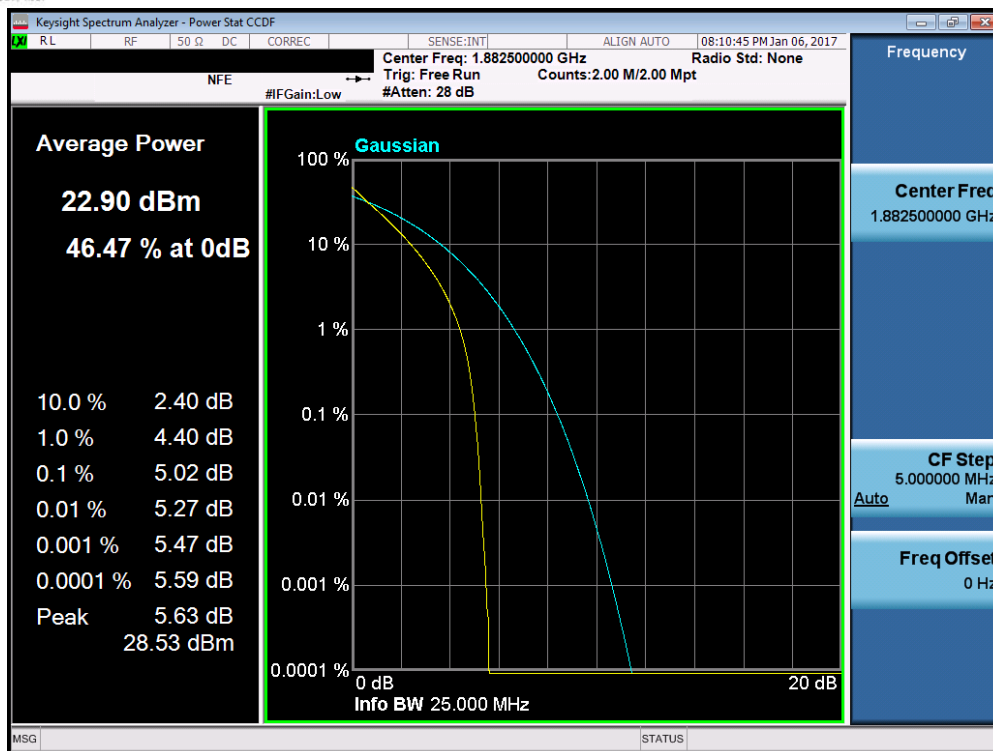
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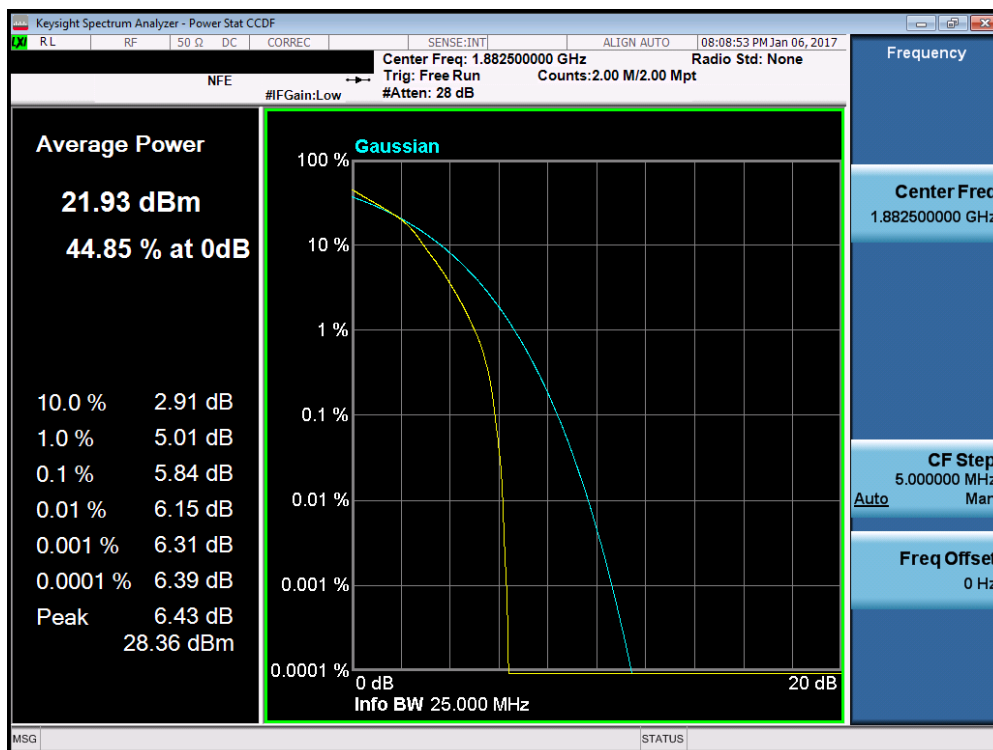
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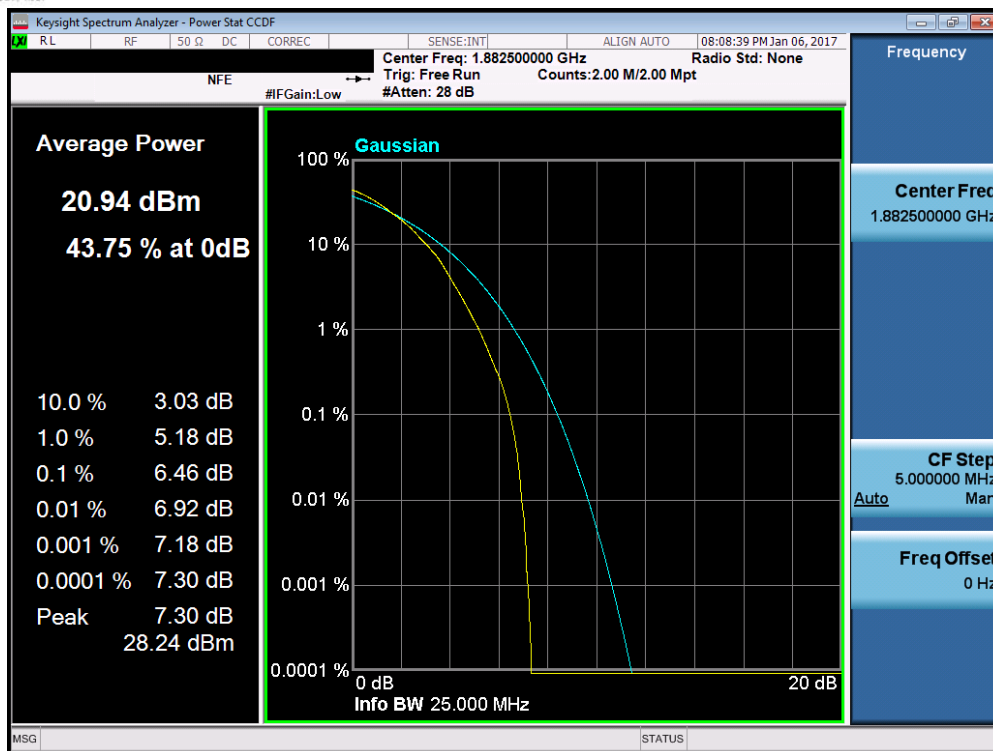


Plot 7-255. PAR Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

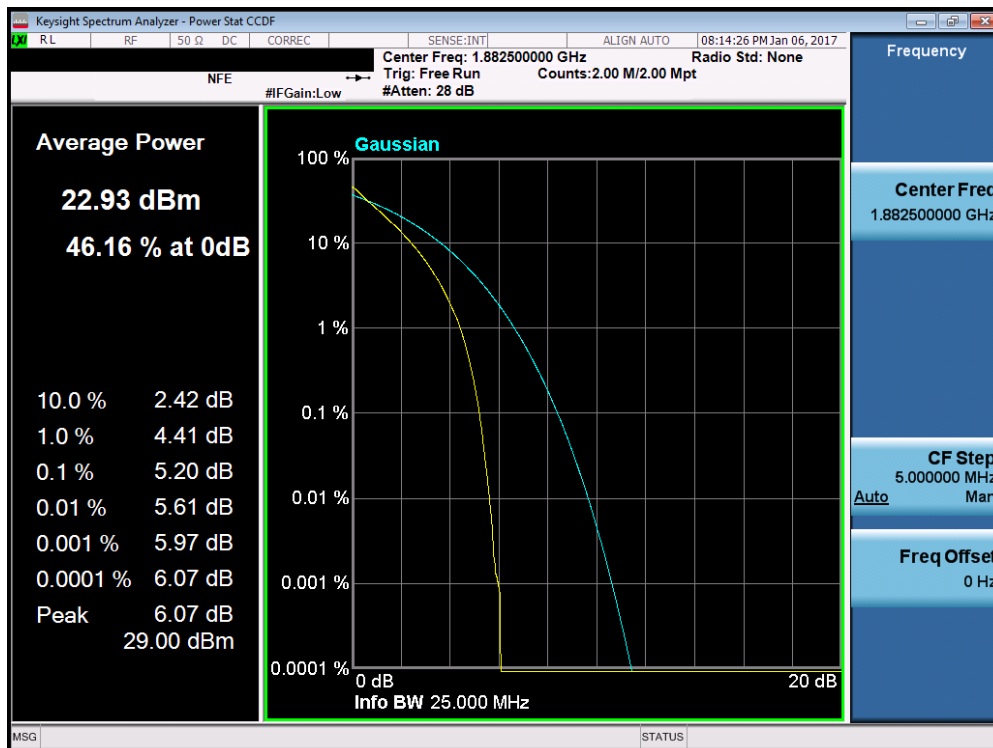


Plot 7-256. PAR Plot (Band 2/25 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: A3LSMG955U			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-257. PAR Plot (Band 2/25 – 15.0MHz 64-QAM – RB Size 75)



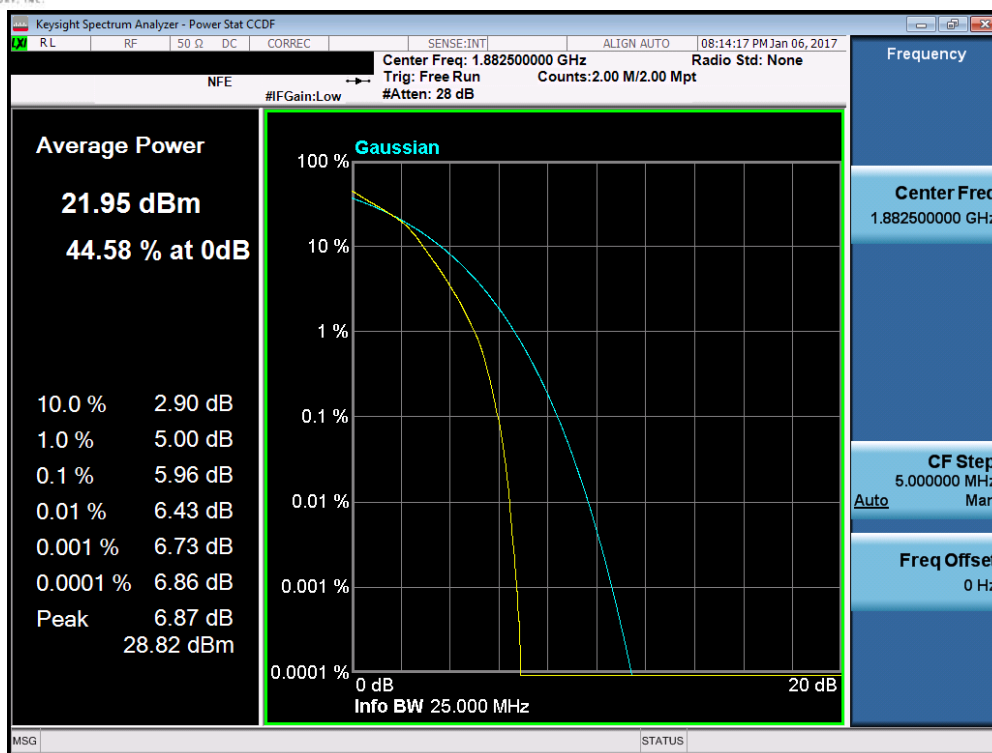
Plot 7-258. PAR Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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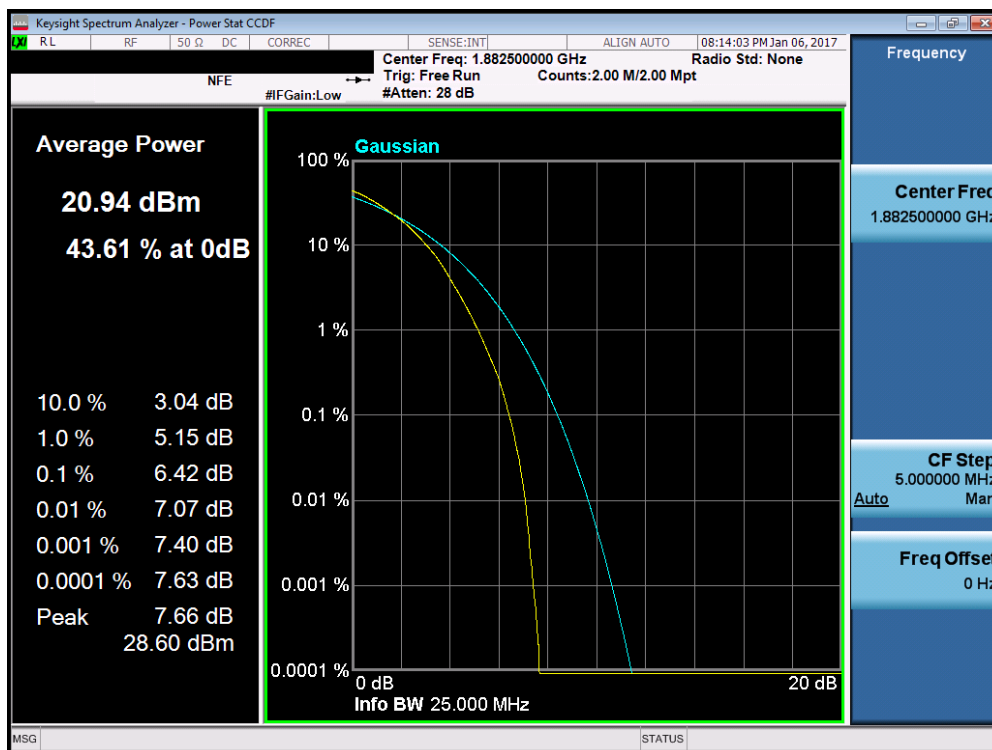
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Plot 7-259. PAR Plot (Band 2/25 – 20.0MHz 16-QAM – RB Size 100)



Plot 7-260. PAR Plot (Band 2/25 – 20.0MHz 64-QAM – RB Size 100)

FCC ID: A3LSMG955U	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
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7.7 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-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.2.1

ANSI/TIA-603-D-2010 – Section 2.2.17

Test Settings

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

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Test Setup

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

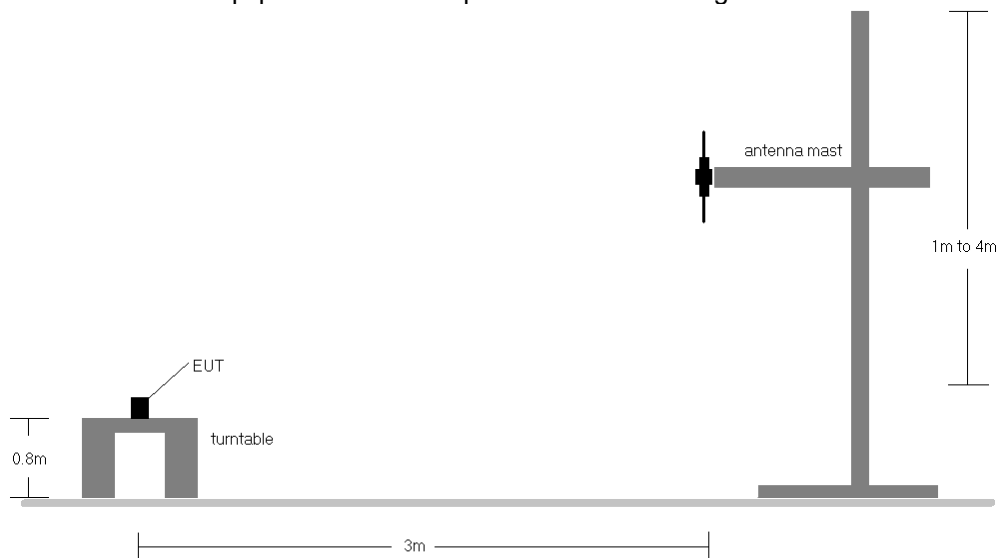


Figure 7-6. Radiated Test Setup <1GHz

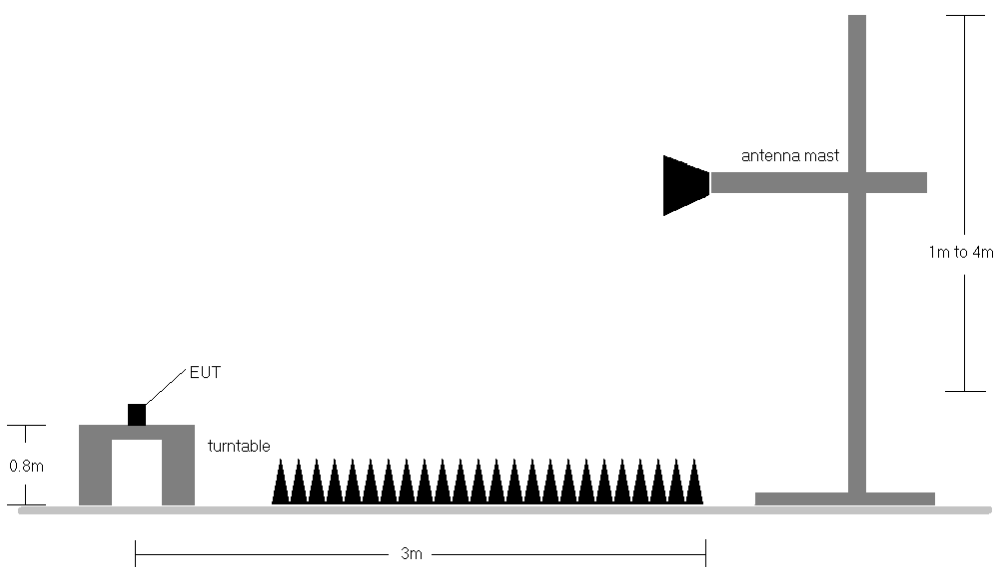


Figure 7-7. Radiated Test Setup >1GHz

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 [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	150	89	3 / 2	18.74	-1.05	17.69	34.77	-17.08
707.50	1.4	QPSK	H	150	87	3 / 2	19.22	-1.02	18.20	34.77	-16.57
715.30	1.4	QPSK	H	150	89	1 / 0	19.25	-0.99	18.26	34.77	-16.51
715.30	1.4	16-QAM	H	150	89	1 / 0	18.57	-0.99	17.58	34.77	-17.19
715.30	1.4	64-QAM	H	150	89	1 / 0	17.55	-0.99	16.56	34.77	-18.21
700.50	3	QPSK	H	150	87	1 / 14	18.89	-1.05	17.84	34.77	-16.93
707.50	3	QPSK	H	150	87	1 / 14	19.37	-1.02	18.35	34.77	-16.42
714.50	3	QPSK	H	150	87	1 / 0	19.83	-0.99	18.84	34.77	-15.93
714.50	3	16-QAM	H	150	87	1 / 0	19.08	-0.99	18.09	34.77	-16.68
714.50	3	64-QAM	H	150	87	1 / 0	18.11	-0.99	17.12	34.77	-17.65

Table 7-4. ERP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
701.50	5	QPSK	H	150	0	1 / 24	19.66	-1.04	18.62	34.77	-16.15
707.50	5	QPSK	H	150	0	1 / 24	20.12	-1.02	19.10	34.77	-15.67
713.50	5	QPSK	H	150	0	1 / 24	20.19	-1.00	19.19	34.77	-15.58
713.50	5	16-QAM	H	150	0	1 / 24	19.47	-1.00	18.47	34.77	-16.30
713.50	5	64-QAM	H	150	0	1 / 24	18.42	-1.00	17.42	34.77	-17.35
704.00	10	QPSK	H	150	94	1 / 49	20.36	-1.03	19.33	34.77	-15.44
707.50	10	QPSK	H	150	103	1 / 49	19.48	-1.02	18.46	34.77	-16.31
711.00	10	QPSK	H	150	94	1 / 0	19.60	-1.01	18.59	34.77	-16.18
711.00	10	16-QAM	H	150	94	1 / 0	18.81	-1.01	17.80	34.77	-16.97
711.00	10	64-QAM	H	150	94	1 / 0	17.83	-1.01	16.82	34.77	-17.95
704.00	10	QPSK	V	150	96	1 / 0	19.62	-1.03	18.59	34.77	-16.18
704.00	10 (WCP)	QPSK	H	150	97	1 / 0	18.73	-1.03	17.70	34.77	-17.07

Table 7-5. ERP Data (Band 12/17)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)					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 [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	150	90	1 / 24	21.17	-0.83	20.34	34.77	-14.43
782.00	5	QPSK	H	150	91	1 / 24	21.33	-0.82	20.51	34.77	-14.26
784.50	5	QPSK	H	150	90	1 / 0	21.34	-0.81	20.53	34.77	-14.24
784.50	5	16-QAM	H	150	90	1 / 0	20.57	-0.81	19.76	34.77	-15.01
784.50	5	64-QAM	H	150	90	1 / 0	19.64	-0.81	18.83	34.77	-15.94
782.00	10	QPSK	H	150	90	1 / 49	21.17	-0.83	20.34	34.77	-14.43
782.00	10	16-QAM	H	150	90	1 / 49	20.43	-0.82	19.61	34.77	-15.16
782.00	10	64-QAM	H	150	90	1 / 49	19.48	-0.81	18.67	34.77	-16.10
784.50	5	QPSK	V	150	55	1 / 74	18.56	-0.81	17.75	34.77	-17.02
784.50	5 (WCP)	QPSK	H	150	87	1 / 49	21.22	-0.81	20.41	34.77	-14.36

Table 7-6. ERP Data (Band 13)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		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 [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	150	86	3 / 2	18.91	-0.65	18.26	38.45	-20.19
836.50	1.4	QPSK	H	150	86	3 / 2	19.41	-0.65	18.76	38.45	-19.69
848.30	1.4	QPSK	H	150	86	1 / 0	19.47	-0.65	18.82	38.45	-19.63
848.30	1.4	16-QAM	H	150	86	1 / 0	18.73	-0.65	18.08	38.45	-20.37
848.30	1.4	64-QAM	H	150	86	1 / 0	18.11	-0.65	17.46	38.45	-20.99
825.50	3	QPSK	H	150	85	1 / 14	18.99	-0.65	18.34	38.45	-20.11
836.50	3	QPSK	H	150	85	1 / 14	19.42	-0.65	18.77	38.45	-19.68
847.50	3	QPSK	H	150	85	1 / 0	19.63	-0.65	18.98	38.45	-19.47
847.50	3	16-QAM	H	150	85	1 / 0	18.90	-0.65	18.25	38.45	-20.20
847.50	3	64-QAM	H	150	85	1 / 0	18.25	-0.65	17.60	38.45	-20.85
826.50	5	QPSK	H	150	93	1 / 24	19.10	-0.65	18.45	38.45	-20.00
836.50	5	QPSK	H	150	93	1 / 24	19.37	-0.65	18.72	38.45	-19.73
846.50	5	QPSK	H	150	93	1 / 0	19.65	-0.65	19.00	38.45	-19.45
846.50	5	16-QAM	H	150	93	1 / 0	18.93	-0.65	18.28	38.45	-20.17
846.50	5	64-QAM	H	150	93	1 / 0	18.32	-0.65	17.67	38.45	-20.78
829.00	10	QPSK	H	150	97	1 / 49	19.21	-0.65	18.56	38.45	-19.89
836.50	10	QPSK	H	150	97	1 / 0	19.27	-0.65	18.62	38.45	-19.83
844.00	10	QPSK	H	150	97	1 / 0	19.41	-0.65	18.76	38.45	-19.69
844.00	10	16-QAM	H	150	97	1 / 0	18.66	-0.65	18.01	38.45	-20.44
844.00	10	64-QAM	H	150	97	1 / 0	18.05	-0.65	17.40	38.45	-21.05
846.50	5	QPSK	V	150	76	1 / 74	19.60	-0.65	18.95	38.45	-19.50
846.50	5 (WCP)	QPSK	H	150	93	1 / 99	18.22	-0.65	17.57	38.45	-20.88

Table 7-7. ERP 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 [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
831.50	15	QPSK	H	150	78	1 / 74	19.17	-0.65	18.52	38.45	-19.93
836.50	15	QPSK	H	150	78	1 / 74	19.32	-0.65	18.67	38.45	-19.78
841.50	15	QPSK	H	150	78	1 / 0	19.41	-0.65	18.76	38.45	-19.69
841.50	15	16-QAM	H	150	78	1 / 0	18.67	-0.65	18.02	38.45	-20.43
841.50	15	64-QAM	H	150	78	1 / 0	18.13	-0.65	17.48	38.45	-20.97

Table 7-8. ERP Data (Band 26)

FCC ID: A3LSMG955U	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 			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 Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	115	66	3 / 2	14.17	9.62	23.79	30.00	-6.21
1745.00	1.4	QPSK	H	104	65	3 / 2	13.80	9.43	23.23	30.00	-6.77
1779.30	1.4	QPSK	H	105	70	3 / 2	13.06	9.25	22.31	30.00	-7.69
1710.70	1.4	16-QAM	H	115	66	3 / 2	13.60	9.62	23.22	30.00	-6.78
1710.70	1.4	64-QAM	H	115	66	3 / 2	12.55	9.62	22.17	30.00	-7.83
1711.50	3	QPSK	H	112	66	1 / 0	14.60	9.62	24.22	30.00	-5.78
1745.00	3	QPSK	H	104	59	1 / 0	14.04	9.43	23.47	30.00	-6.53
1778.50	3	QPSK	H	100	53	1 / 0	12.98	9.26	22.24	30.00	-7.76
1711.50	3	16-QAM	H	112	66	1 / 0	13.89	9.62	23.51	30.00	-6.49
1711.50	3	64-QAM	H	112	66	1 / 0	12.82	9.62	22.44	30.00	-7.56
1712.50	5	QPSK	H	102	267	1 / 0	14.82	9.61	24.43	30.00	-5.57
1745.00	5	QPSK	H	101	99	1 / 0	14.46	9.43	23.89	30.00	-6.11
1777.50	5	QPSK	H	214	259	1 / 0	14.24	9.26	23.50	30.00	-6.50
1712.50	5	16-QAM	H	102	267	1 / 0	14.13	9.61	23.74	30.00	-6.26
1745.00	5	64-QAM	H	101	99	1 / 0	12.94	9.43	22.37	30.00	-7.63
1715.00	10	QPSK	H	113	63	1 / 0	13.21	9.60	22.81	30.00	-7.19
1745.00	10	QPSK	H	108	59	1 / 49	12.99	9.43	22.42	30.00	-7.58
1775.00	10	QPSK	H	112	51	1 / 0	12.81	9.28	22.09	30.00	-7.91
1715.00	10	16-QAM	H	113	63	1 / 0	12.50	9.60	22.10	30.00	-7.90
1715.00	10	64-QAM	H	113	63	1 / 0	11.33	9.60	20.93	30.00	-9.07
1717.50	15	QPSK	H	100	270	1 / 0	14.57	9.58	24.15	30.00	-5.85
1745.00	15	QPSK	H	103	268	1 / 0	14.00	9.43	23.43	30.00	-6.57
1772.50	15	QPSK	H	103	268	1 / 0	13.26	9.29	22.55	30.00	-7.45
1717.50	15	16-QAM	H	100	270	1 / 0	13.80	9.58	23.38	30.00	-6.62
1717.50	15	64-QAM	H	100	270	1 / 0	12.75	9.58	22.33	30.00	-7.67
1720.00	20	QPSK	H	108	69	1 / 0	13.62	9.57	23.19	30.00	-6.81
1745.00	20	QPSK	H	110	56	1 / 0	14.11	9.43	23.54	30.00	-6.46
1770.00	20	QPSK	H	110	56	1 / 0	13.45	9.30	22.75	30.00	-7.25
1745.00	20	16-QAM	H	110	56	1 / 0	13.35	9.43	22.78	30.00	-7.22
1745.00	20	64-QAM	H	110	56	1 / 0	12.30	9.43	21.73	30.00	-8.27
1712.50	5	QPSK	V	123	327	1 / 0	12.65	9.43	22.08	30.00	-7.92
1712.50	5 (WCP)	QPSK	H	100	0	1 / 0	17.27	5.55	22.82	30.00	-7.18

Table 7-9. EIRP Data (Band 4/66)

FCC ID: A3LSMG955U	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			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 Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	V	113	339	3 / 2	14.33	8.52	22.85	33.01	-10.16
1882.50	1.4	QPSK	V	116	333	1 / 0	13.38	8.35	21.73	33.01	-11.28
1914.30	1.4	QPSK	V	111	339	3 / 2	14.12	8.31	22.43	33.01	-10.58
1850.70	1.4	16-QAM	V	113	339	3 / 2	13.36	8.52	21.88	33.01	-11.13
1850.70	1.4	64-QAM	V	113	339	3 / 2	12.55	8.52	21.07	33.01	-11.94
1851.50	3	QPSK	V	110	283	1 / 0	13.25	8.52	21.77	33.01	-11.24
1882.50	3	QPSK	V	110	262	1 / 0	14.15	8.35	22.50	33.01	-10.51
1913.50	3	QPSK	V	110	339	1 / 0	14.21	8.30	22.51	33.01	-10.50
1913.50	3	16-QAM	V	110	339	1 / 0	13.41	8.30	21.71	33.01	-11.30
1913.50	3	64-QAM	V	110	339	1 / 0	12.64	8.30	20.94	33.01	-12.07
1852.50	5	QPSK	V	110	339	1 / 0	14.17	8.51	22.68	33.01	-10.33
1882.50	5	QPSK	V	109	261	1 / 0	14.21	8.35	22.56	33.01	-10.45
1912.50	5	QPSK	V	110	335	1 / 0	14.10	8.30	22.40	33.01	-10.61
1852.50	5	16-QAM	V	110	339	1 / 0	13.44	8.51	21.95	33.01	-11.06
1852.50	5	64-QAM	v	110	339	1 / 0	12.65	8.51	21.16	33.01	-11.85
1855.00	10	QPSK	V	116	342	1 / 0	14.48	8.50	22.98	33.01	-10.03
1882.50	10	QPSK	V	109	261	1 / 0	14.37	8.35	22.72	33.01	-10.29
1910.00	10	QPSK	V	110	336	1 / 0	13.98	8.29	22.27	33.01	-10.74
1855.00	10	16-QAM	V	116	342	1 / 0	13.83	8.50	22.33	33.01	-10.68
1855.00	10	64-QAM	V	116	342	1 / 0	13.00	8.50	21.50	33.01	-11.51
1857.50	15	QPSK	V	117	343	1 / 0	14.31	8.48	22.79	33.01	-10.22
1882.50	15	QPSK	V	110	260	1 / 0	14.18	8.35	22.53	33.01	-10.48
1907.50	15	QPSK	V	109	336	1 / 74	13.96	8.28	22.24	33.01	-10.77
1857.50	15	16-QAM	V	117	343	1 / 0	13.57	8.48	22.05	33.01	-10.96
1857.50	15	64-QAM	V	117	343	1 / 0	12.77	8.48	21.25	33.01	-11.76
1860.00	20	QPSK	V	118	346	1 / 0	14.12	8.47	22.59	33.01	-10.42
1882.50	20	QPSK	V	110	260	1 / 0	14.18	8.35	22.53	33.01	-10.48
1905.00	20	QPSK	V	110	335	1 / 0	14.21	8.27	22.48	33.01	-10.53
1860.00	20	16-QAM	V	118	346	1 / 0	13.42	8.47	21.89	33.01	-11.12
1860.00	20	64-QAM	V	118	346	1 / 0	12.62	8.47	21.09	33.01	-11.92
1855.00	10	QPSK	H	109	310	1 / 0	12.58	8.26	20.84	33.01	-12.17
1855.00	10 (WCP)	QPSK	H	109	310	1 / 0	12.49	8.26	20.75	33.01	-12.26

Table 7-10. EIRP Data (Band 2/25)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset	Page 160 of 198	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	H	150	106	1 / 24	17.83	5.74	23.57	23.98	-0.41
2310.00	5	QPSK	H	150	106	1 / 24	17.85	5.74	23.59	23.98	-0.39
2312.50	5	QPSK	H	150	106	1 / 0	17.80	5.74	23.54	23.98	-0.44
2310.00	5	16-QAM	H	150	106	1 / 24	17.03	5.74	22.77	23.98	-1.21
2310.00	5	64-QAM	H	150	106	1 / 24	16.15	5.74	21.89	23.98	-2.09
2310.00	10	QPSK	H	150	105	1 / 49	17.91	5.74	23.65	23.98	-0.33
2310.00	10	16-QAM	H	150	105	1 / 49	16.96	5.74	22.70	23.98	-1.28
2310.00	10	64-QAM	H	150	105	1 / 49	15.98	5.74	21.72	23.98	-2.26
2310.00	10	QPSK	V	150	49	1/24	17.10	5.73	22.83	23.98	-1.15
2310.00	10 (WCP)	QPSK	H	150	183	1 / 99	17.67	5.74	23.41	23.98	-0.57

Table 7-11. EIRP Data (Band 30)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset	Page 161 of 198	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	H	124	301	1 / 0	20.80	5.73	26.53	33.01	-6.48
2593.00	5	QPSK	H	113	282	1 / 24	19.45	6.07	25.52	33.01	-7.49
2687.50	5	QPSK	H	110	297	1 / 0	19.80	6.48	26.28	33.01	-6.73
2498.50	5	16-QAM	H	124	301	1 / 0	19.93	5.73	25.66	33.01	-7.35
2498.50	5	64-QAM	H	124	301	1 / 0	19.06	5.73	24.79	33.01	-8.22
2501.00	10	QPSK	H	124	300	1 / 0	20.36	5.73	26.09	33.01	-6.92
2593.00	10	QPSK	H	116	282	1 / 0	19.55	6.07	25.62	33.01	-7.39
2685.00	10	QPSK	H	112	299	1 / 49	19.36	6.47	25.83	33.01	-7.18
2501.00	10	16-QAM	H	124	300	1 / 0	19.41	5.73	25.14	33.01	-7.87
2501.00	10	64-QAM	H	124	300	1 / 0	18.52	5.73	24.25	33.01	-8.76
2503.50	15	QPSK	H	123	298	1 / 0	19.70	5.74	25.44	33.01	-7.57
2593.00	15	QPSK	H	110	283	1 / 0	18.97	6.07	25.04	33.01	-7.97
2682.50	15	QPSK	H	114	300	1 / 0	19.56	6.46	26.02	33.01	-6.99
2682.50	15	16-QAM	H	114	300	1 / 0	19.46	6.46	25.92	33.01	-7.09
2682.50	15	64-QAM	H	114	300	1 / 0	18.88	6.46	25.34	33.01	-7.67
2506.00	20	QPSK	H	120	301	1 / 0	20.67	5.75	26.42	33.01	-6.59
2593.00	20	QPSK	H	118	295	1 / 0	19.24	6.07	25.31	33.01	-7.70
2680.00	20	QPSK	H	110	297	1 / 0	17.62	6.45	24.07	33.01	-8.94
2506.00	20	16-QAM	H	120	301	1 / 0	19.72	5.75	25.47	33.01	-7.54
2506.00	20	64-QAM	H	120	301	1 / 0	18.96	5.75	24.71	33.01	-8.30
2498.50	5	QPSK	V	110	2	1 / 0	17.25	8.73	25.98	33.01	-7.03
2498.50	5 (WCP)	QPSK	H	110	301	1 / 99	16.59	8.46	25.05	33.01	-7.96

Table 7-12. EIRP Data (Band 41)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.8 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-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ 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.

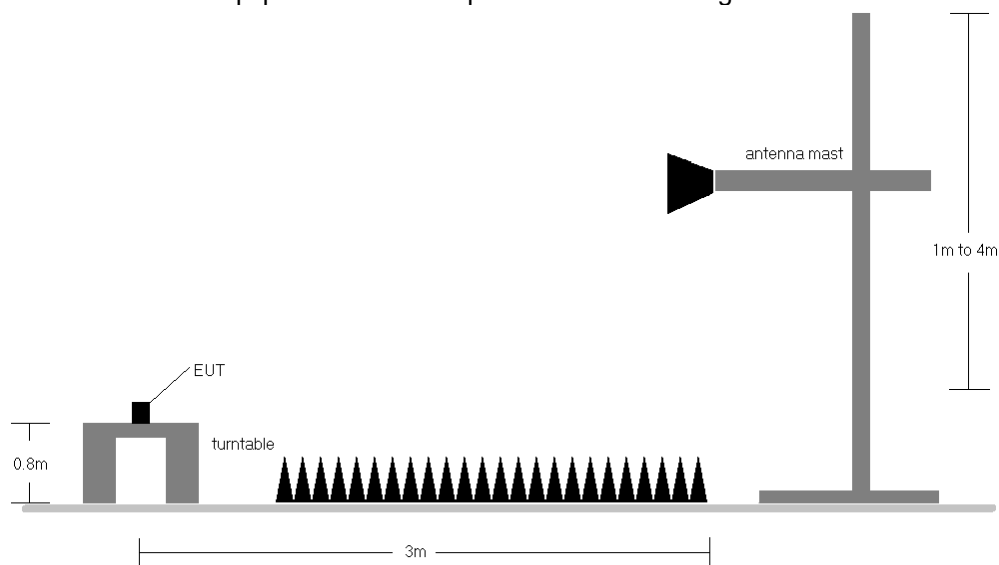


Figure 7-8. Test Instrument & Measurement Setup

Test Notes

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

FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Radiated Spurious Emission Measurements

OPERATING FREQUENCY: 704.00 MHz
 CHANNEL: 23060
 MEASURED OUTPUT POWER: 19.33 dBm = 0.086 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.33 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1408.00	H	155	241	-73.79	5.60	-68.19	87.5
2112.00	H	119	259	-58.13	6.67	-51.45	70.8
2816.00	H	-	-	-72.23	7.92	-64.31	83.6

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

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 MEASURED OUTPUT POWER: 18.46 dBm = 0.070 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 31.46 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1415.00	H	225	146	-73.11	5.69	-67.41	85.9
2122.50	H	159	354	-62.95	6.75	-56.20	74.7
2830.00	H	-	-	-71.78	7.90	-63.88	82.3

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

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 711.00 MHz
 CHANNEL: 23130
 MEASURED OUTPUT POWER: 18.59 dBm = 0.072 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 31.59 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1422.00	H	208	330	-74.11	5.79	-68.32	86.9
2133.00	H	164	315	-67.50	6.82	-60.68	79.3
2844.00	H	-	-	-71.48	7.88	-63.60	82.2

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

OPERATING FREQUENCY: 704.00 MHz
 CHANNEL: 23060
 MEASURED OUTPUT POWER: 17.70 dBm = 0.059 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 30.70 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1408.00	H	-	-	-76.49	5.79	-70.70	88.4
2112.00	H	110	326	-72.58	6.82	-65.76	83.5
2816.00	H	-	-	-73.75	7.88	-65.87	83.6

Table 7-16. Radiated Spurious Data with WCP (Band 12/17 – Low Channel)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 779.50 MHz
 CHANNEL: 23205
 MEASURED OUTPUT POWER: 20.34 dBm = 0.108 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.34 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2338.50	H	127	342	-74.43	7.35	-67.08	87.4
3118.00	H	-	-	-71.73	7.19	-64.54	84.9

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

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 20.51 dBm = 0.112 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.51 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2346.00	H	135	278	-72.81	7.33	-65.49	86.0
3128.00	H	-	-	-70.06	7.20	-62.86	83.4

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

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 784.50 MHz
 CHANNEL: 23255
 MEASURED OUTPUT POWER: 20.53 dBm = 0.113 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.53 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2353.50	H	144	158	-71.52	7.30	-64.22	84.7
3138.00	H	-	-	-69.52	7.21	-62.31	82.8

Table 7-19. Radiated Spurious Data (Band 13 – High Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Margin [dB]
1559.00	H	153	336	-76.19	6.55	-69.63	-29.6
1564.00	H	146	355	-74.63	6.57	-68.06	-28.1
1569.00	H	137	327	-74.04	6.59	-67.45	-27.5

Table 7-20. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 784.50 MHz
 CHANNEL: 23255
 MEASURED OUTPUT POWER: 20.41 dBm = 0.110 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.41 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2353.50	H	-	-	-73.16	7.33	-65.84	86.2
3138.00	H	-	-	-69.47	7.20	-62.27	82.7

Table 7-21. Radiated Spurious Data with WCP (Band 13 – High Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Margin [dB]
1569.00	H	-	-	-75.99	6.57	-69.42	-29.4

Table 7-22. Radiated Spurious Data with WCP (Band 13 – 1559-1610MHz Band)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 826.50 MHz
 CHANNEL: 26815
 MEASURED OUTPUT POWER: 18.45 dBm = 0.070 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 31.45 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
1653.00	H	185	267	-76.36	6.70	-69.66	88.1
2479.50	H	-	-	-75.81	7.52	-68.30	86.7

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

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 MEASURED OUTPUT POWER: 18.72 dBm = 0.074 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 31.72 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	H	184	351	-77.15	6.70	-70.46	89.2
2509.50	H	-	-	-75.14	7.63	-67.51	86.2

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

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 846.50 MHz
 CHANNEL: 27015
 MEASURED OUTPUT POWER: 19.00 dBm = 0.079 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 32.00 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1693.00	H	190	346	-75.44	6.70	-68.74	87.7
2539.50	H	-	-	-75.57	7.60	-67.97	87.0

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

OPERATING FREQUENCY: 846.50 MHz
 CHANNEL: 27015
 MEASURED OUTPUT POWER: 17.57 dBm = 0.057 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 30.57 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1693.00	H	-	-	-77.74	6.70	-71.04	88.6
2539.50	H	-	-	-74.91	7.52	-67.40	85.0

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

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701030005-03.A3L	Test Dates: 12/27/2016-2/6/2017	EUT Type: Portable Handset		Page 171 of 198

OPERATING FREQUENCY: 1712.50 MHz
 CHANNEL: 131997
 MEASURED OUTPUT POWER: 24.43 dBm = 0.277 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 37.43 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3425.00	H	160	85	-65.05	9.87	-55.18	79.6
5137.50	H	-	-	-66.89	10.76	-56.14	80.6

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

OPERATING FREQUENCY: 1745.00 MHz
 CHANNEL: 132422
 MEASURED OUTPUT POWER: 23.89 dBm = 0.245 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 36.89 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3490.00	H	110	62	-65.86	9.94	-55.93	79.8
5235.00	H	-	-	-64.67	10.72	-53.95	77.8

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

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1777.50 MHz
 CHANNEL: 132647
 MEASURED OUTPUT POWER: 23.50 dBm = 0.224 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 36.50 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3555.00	H	130	90	-66.39	9.96	-56.43	79.9
5332.50	H	-	-	-65.63	10.72	-54.92	78.4

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

OPERATING FREQUENCY: 1712.50 MHz
 CHANNEL: 131997
 MEASURED OUTPUT POWER: 22.82 dBm = 0.191 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 35.82 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3425.00	H	1100	2	-69.69	9.87	-59.82	82.6
5137.50	H	-	-	-66.49	10.76	-55.74	78.6

Table 7-30. Radiated Spurious Data with WCP (Band 4/66 – Low Channel)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1855.00 MHz
 CHANNEL: 26090
 MEASURED OUTPUT POWER: 22.98 dBm = 0.198 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 35.98 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3710.00	H	-	-	-68.03	9.52	-58.51	81.5
5565.00	H	-	-	-66.37	11.03	-55.34	78.3

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

OPERATING FREQUENCY: 1882.50 MHz
 CHANNEL: 26365
 MEASURED OUTPUT POWER: 22.72 dBm = 0.187 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 35.72 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3765.00	H	-	-	-67.57	9.37	-58.20	80.9
5647.50	H	-	-	-66.71	11.23	-55.48	78.2

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

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1910.00 MHz
 CHANNEL: 26640
 MEASURED OUTPUT POWER: 22.27 dBm = 0.169 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 35.27 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3820.00	H	-	-	-67.27	9.33	-57.93	80.2
5730.00	H	-	-	-66.03	11.39	-54.64	76.9

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

OPERATING FREQUENCY: 1855.00 MHz
 CHANNEL: 26090
 MEASURED OUTPUT POWER: 20.75 dBm = 0.119 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 33.75 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3710.00	H	-	-	-67.07	9.33	-57.73	78.5
5565.00	H	-	-	-66.14	11.39	-54.75	75.5

Table 7-34. Radiated Spurious Data with WCP (Band 2/25 – Low Channel)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2310.00 MHz
 CHANNEL: 27710
 MEASURED OUTPUT POWER: 23.65 dBm = 0.232 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10} (W) =$ 63.65 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4620.00	H	-	-	-66.70	10.98	-55.73	79.4
6930.00	H	-	-	-59.44	11.76	-47.68	71.3
9240.00	H	-	-	-54.70	11.52	-43.18	66.8

Table 7-35. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY: 2310.00 MHz
 CHANNEL: 27710
 MEASURED OUTPUT POWER: 23.41 dBm = 0.219 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10} (W) =$ 63.41 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4620.00	H	-	-	-66.89	10.98	-55.92	79.3
6930.00	H	-	-	-59.63	11.76	-47.87	71.3
9240.00	H	-	-	-54.59	11.52	-43.07	66.5

Table 7-36. Radiated Spurious Data with WCP (Band 30 – Mid Channel)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2498.50 MHz
 CHANNEL: 39675
 MEASURED OUTPUT POWER: 26.53 dBm = 0.450 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 51.53 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4997.00	H	-	-	-65.82	10.93	-54.89	81.4
7495.50	H	-	-	-57.28	11.05	-46.23	72.8

Table 7-37. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 MEASURED OUTPUT POWER: 25.52 dBm = 0.357 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 50.52 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5186.00	H	131	244	-57.59	10.75	-46.84	72.4
7779.00	H	110	75	-57.16	11.40	-45.76	71.3
10372.00	H	-	-	-55.34	12.59	-42.75	68.3

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

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2687.50 MHz
 CHANNEL: 41565
 MEASURED OUTPUT POWER: 26.28 dBm = 0.425 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 51.28 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5375.00	H	122	328	-57.50	10.76	-46.74	73.0
8062.50	H	-	-	-55.95	11.15	-44.80	71.1

Table 7-39. Radiated Spurious Data (Band 41 – High Channel)

OPERATING FREQUENCY: 2498.50 MHz
 CHANNEL: 39675
 MEASURED OUTPUT POWER: 25.05 dBm = 0.320 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 50.05 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4997.00	H	110	241	-59.94	10.93	-49.01	74.1
7495.50	H	-	-	-57.42	11.05	-46.37	71.4

Table 7-40. Radiated Spurious Data with WCP (Band 41 – Low Channel)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.9 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 $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
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Test Setup

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

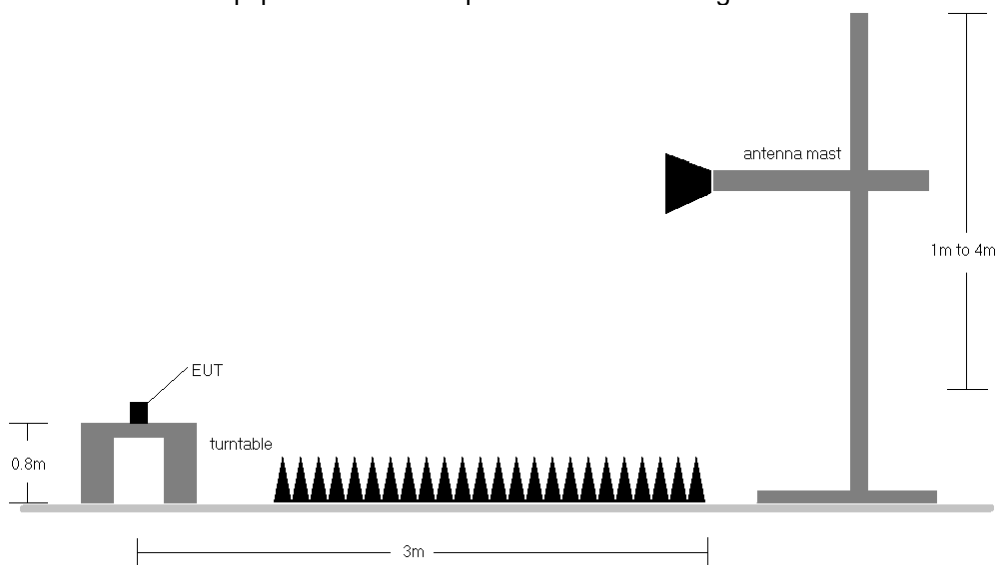
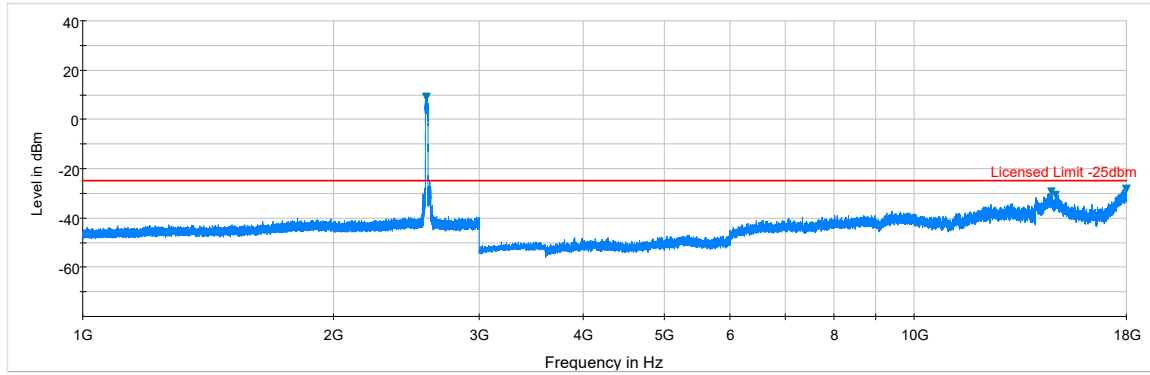


Figure 7-9. Test Instrument & Measurement Setup

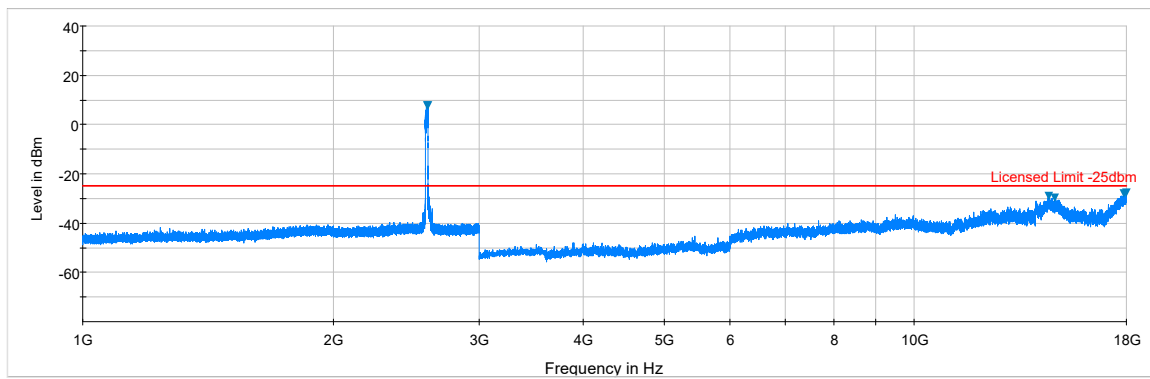
Test Notes

- 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) 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.

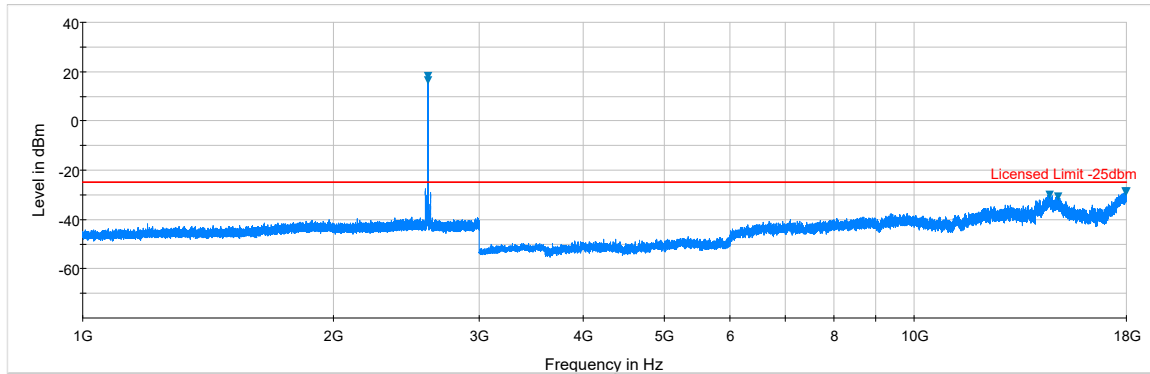
FCC ID: A3LSMG955U	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-41. Radiated Spurious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0, Ant. Pol. H)

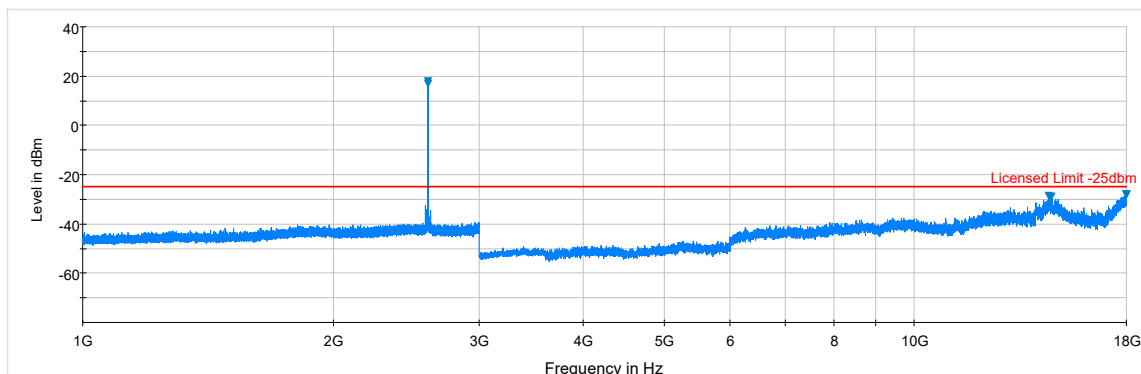


Plot 7-42. Radiated Spurious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0, Ant. Pol. V)



Plot 7-43. Radiated Spurious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0, Ant. Pol. H)

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Plot 7-44. Radiated Spurious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0, Ant. Pol. V)

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7.10 Frequency Stability / Temperature Variation

\$2.1055 \$22.355 \$24.235 \$27.54

Test Overview and Limit

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

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

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

Test Procedure Used

ANSI/TIA-603-D-2010

Test Settings

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

Test Setup

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

Test Notes

None

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Band 12/17 Frequency Stability Measurements

\$2.1055 \$27.54

OPERATING FREQUENCY: 707,500,000 Hz

CHANNEL: 23790

REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	707,499,802	-198	-0.0000280
100 %		- 30	707,499,971	-29	-0.0000041
100 %		- 20	707,500,210	210	0.0000297
100 %		- 10	707,499,826	-174	-0.0000246
100 %		0	707,499,967	-33	-0.0000047
100 %		+ 10	707,500,027	27	0.0000038
100 %		+ 20	707,499,874	-126	-0.0000178
100 %		+ 30	707,499,901	-99	-0.0000140
100 %		+ 40	707,499,933	-67	-0.0000095
100 %		+ 50	707,499,670	-330	-0.0000466
BATT. ENDPOINT	3.40	+ 20	707,499,776	-224	-0.0000317

Table 7-45. Frequency Stability Data (Band 12/17)

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Band 12/17 Frequency Stability Measurements **§2.1055 §27.54**

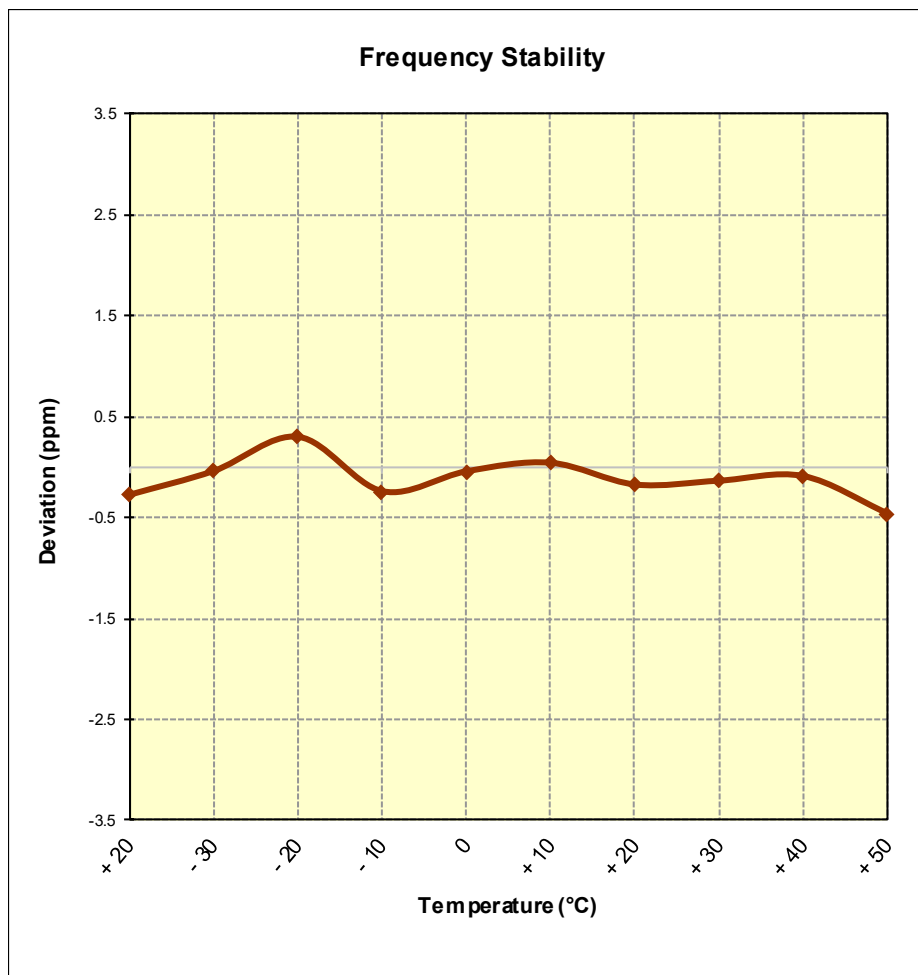


Figure 7-10. Frequency Stability Graph (Band 12/17)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			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: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	781,999,802	-198	-0.0000253
100 %		- 30	781,999,997	-3	-0.0000004
100 %		- 20	782,000,069	69	0.0000088
100 %		- 10	782,000,235	235	0.0000301
100 %		0	781,999,900	-100	-0.0000128
100 %		+ 10	781,999,896	-104	-0.0000133
100 %		+ 20	781,999,963	-37	-0.0000047
100 %		+ 30	782,000,224	224	0.0000286
100 %		+ 40	781,999,893	-107	-0.0000137
100 %		+ 50	782,000,083	83	0.0000106
BATT. ENDPOINT	3.40	+ 20	781,999,945	-55	-0.0000070

Table 7-46. Frequency Stability Data (Band 13)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 13 Frequency Stability Measurements

§2.1055 §27.54

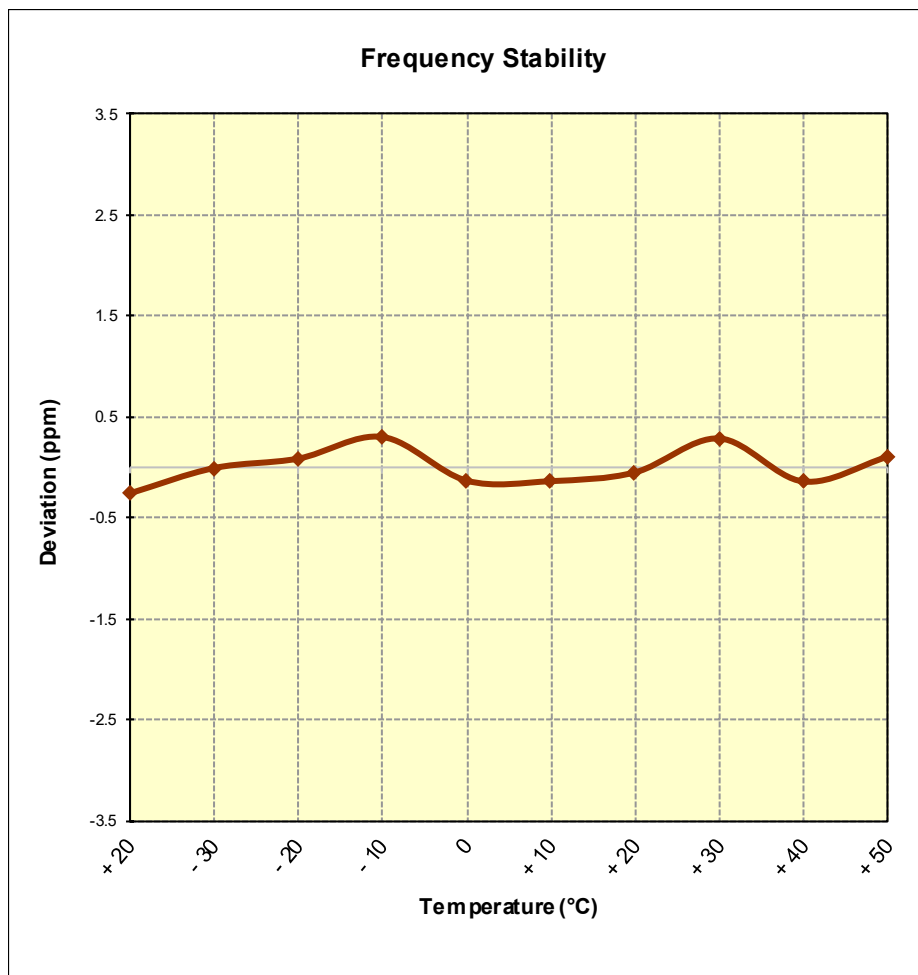


Figure 7-11. Frequency Stability Graph (Band 13)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			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: 3.80 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	831,500,275	275	0.0000331
100 %		- 30	831,500,010	10	0.0000012
100 %		- 20	831,500,090	90	0.0000108
100 %		- 10	831,499,814	-186	-0.0000224
100 %		0	831,499,877	-123	-0.0000148
100 %		+ 10	831,499,928	-72	-0.0000087
100 %		+ 20	831,499,988	-12	-0.0000014
100 %		+ 30	831,500,117	117	0.0000141
100 %		+ 40	831,499,783	-217	-0.0000261
100 %		+ 50	831,499,910	-90	-0.0000108
BATT. ENDPOINT	3.40	+ 20	831,500,230	230	0.0000277

Table 7-47. Frequency Stability Data (Band 5/26)

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Band 5/26 Frequency Stability Measurements **§2.1055 §22.355**

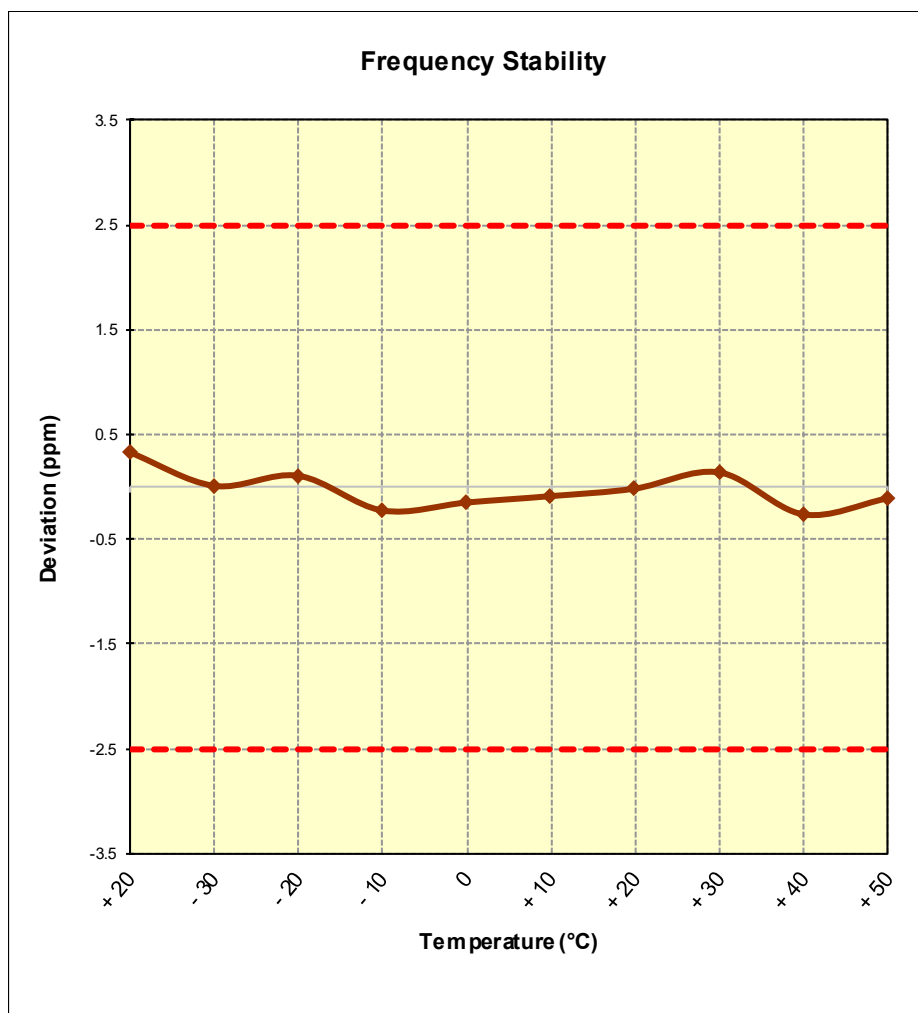


Figure 7-12. Frequency Stability Graph (Band 5/26)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
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Band 4/66 Frequency Stability Measurements

\$2.1055 \$27.54

OPERATING FREQUENCY: 1,745,000,000 Hz
 CHANNEL: 132322
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,744,999,998	-2	-0.0000001
100 %		- 30	1,745,000,177	177	0.0000101
100 %		- 20	1,745,000,198	198	0.0000113
100 %		- 10	1,745,000,028	28	0.0000016
100 %		0	1,744,999,732	-268	-0.0000154
100 %		+ 10	1,745,000,139	139	0.0000080
100 %		+ 20	1,745,000,085	85	0.0000049
100 %		+ 30	1,744,999,857	-143	-0.0000082
100 %		+ 40	1,744,999,936	-64	-0.0000037
100 %		+ 50	1,744,999,793	-207	-0.0000119
BATT. ENDPOINT	3.40	+ 20	1,744,999,974	-26	-0.0000015

Table 7-48. Frequency Stability Data (Band 4/66)

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 4/66 Frequency Stability Measurements
§2.1055 §§27.54

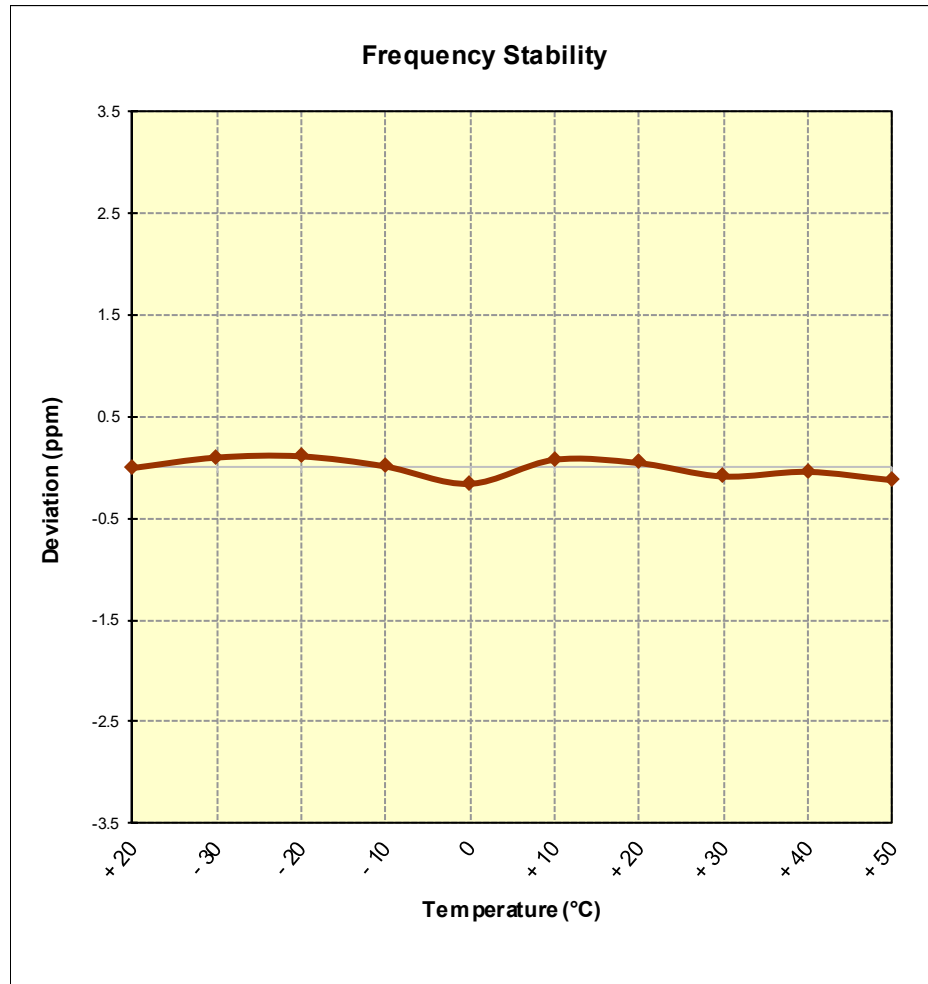


Figure 7-13. Frequency Stability Graph (Band 4/66)

FCC ID: A3LSMG955U			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	 Approved by: Quality Manager
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Band 2/25 Frequency Stability Measurements

§2.1055 §24.235

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,882,500,217	217	0.0000115
100 %		- 30	1,882,500,041	41	0.0000022
100 %		- 20	1,882,499,693	-307	-0.0000163
100 %		- 10	1,882,500,301	301	0.0000160
100 %		0	1,882,500,133	133	0.0000071
100 %		+ 10	1,882,500,214	214	0.0000114
100 %		+ 20	1,882,499,884	-116	-0.0000062
100 %		+ 30	1,882,499,976	-24	-0.0000013
100 %		+ 40	1,882,499,631	-369	-0.0000196
100 %		+ 50	1,882,500,158	158	0.0000084
BATT. ENDPOINT	3.40	+ 20	1,882,500,098	98	0.0000052

Table 7-49. Frequency Stability Data (Band 2/25)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain 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: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 2/25 Frequency Stability Measurements **§2.1055 §24.235**

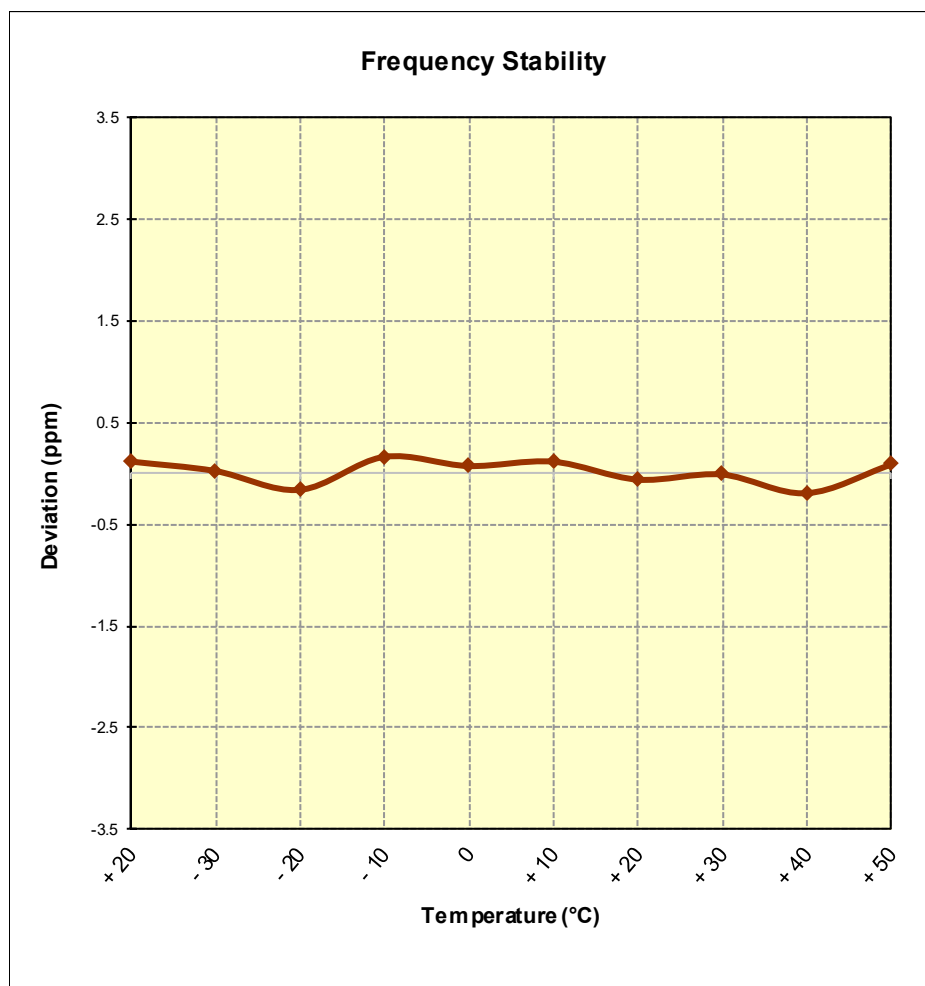


Figure 7-14. Frequency Stability Graph (Band 2/25)

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			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: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	2,310,000,034	34	0.0000015
100 %		- 30	2,309,999,757	-243	-0.0000105
100 %		- 20	2,310,000,096	96	0.0000042
100 %		- 10	2,310,000,200	200	0.0000087
100 %		0	2,309,999,898	-102	-0.0000044
100 %		+ 10	2,309,999,983	-17	-0.0000007
100 %		+ 20	2,310,000,363	363	0.0000157
100 %		+ 30	2,309,999,884	-116	-0.0000050
100 %		+ 40	2,310,000,217	217	0.0000094
100 %		+ 50	2,309,999,948	-52	-0.0000023
BATT. ENDPOINT	3.40	+ 20	2,309,999,789	-211	-0.0000091

Table 7-50. 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

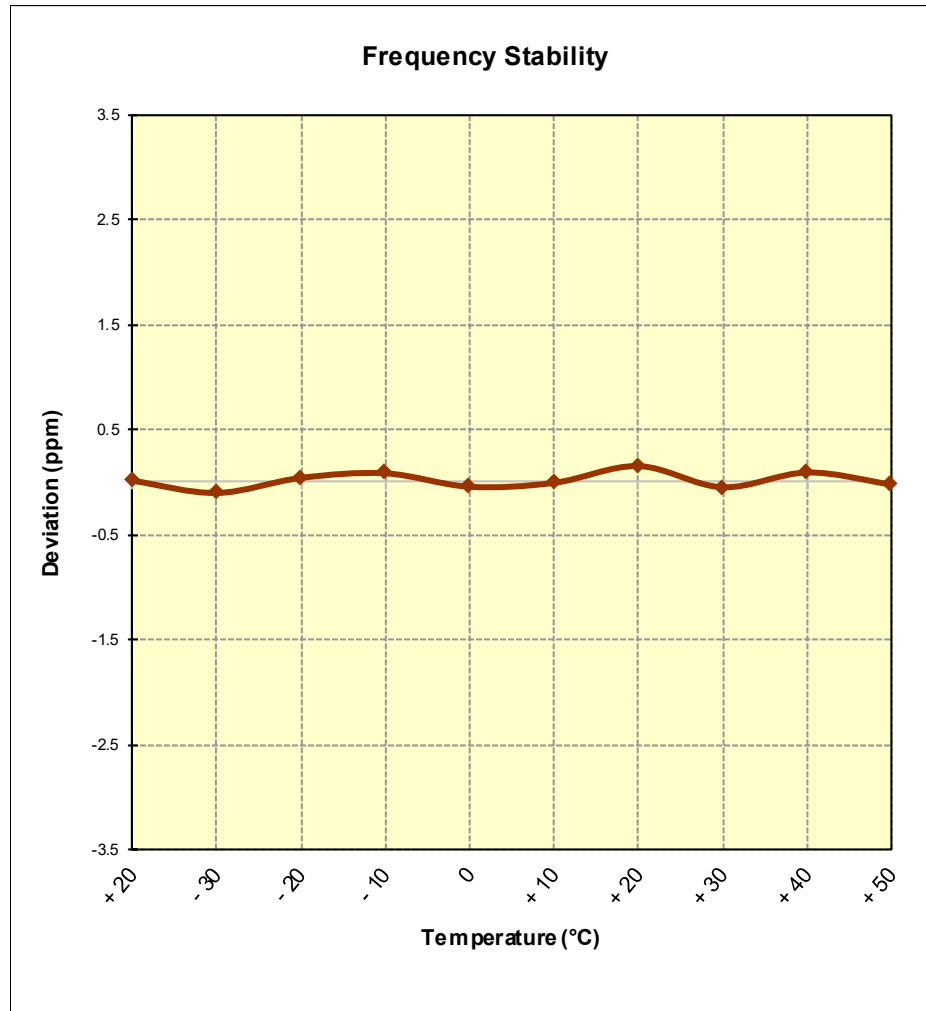


Figure 7-15. Frequency Stability Graph (Band 30)

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Band 41 Frequency Stability Measurements

\$2.1055 \$27.54

OPERATING FREQUENCY: 2,593,000,000 Hz

CHANNEL: 40620

REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	2,592,999,640	-360	-0.0000139
100 %		- 30	2,593,000,009	9	0.0000003
100 %		- 20	2,593,000,079	79	0.0000030
100 %		- 10	2,592,999,992	-8	-0.0000003
100 %		0	2,592,999,908	-92	-0.0000035
100 %		+ 10	2,593,000,411	411	0.0000159
100 %		+ 20	2,592,999,923	-77	-0.0000030
100 %		+ 30	2,593,000,095	95	0.0000037
100 %		+ 40	2,593,000,087	87	0.0000034
100 %		+ 50	2,592,999,824	-176	-0.0000068
BATT. ENDPOINT	3.40	+ 20	2,593,000,379	379	0.0000146

Table 7-51. Frequency Stability Data (Band 41)

Note:

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

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Band 41 Frequency Stability Measurements

§2.1055 §27.54

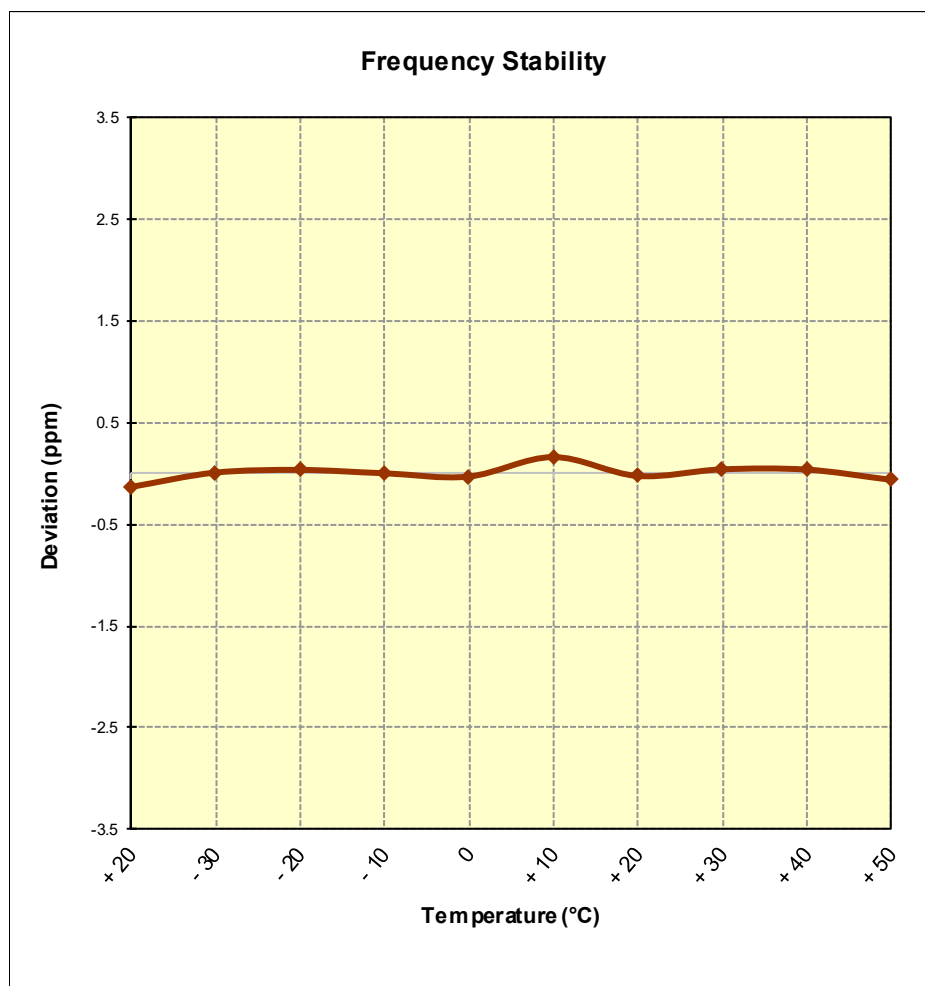


Figure 7-16. Frequency Stability Graph (Band 41)

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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: A3LSMG955U** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

FCC ID: A3LSMG955U		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
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