

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 $55 + \log_{10}(P_{[Watts]})$.

Test Procedure Used

KDB 971168 D01 v03 – 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.

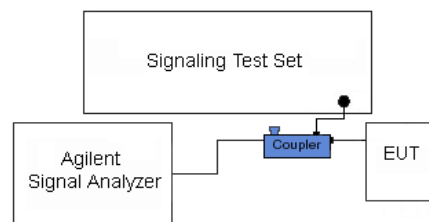


Figure 7-4. Test Instrument & Measurement Setup

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 144 of 237

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 and 7-4 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.
4. Conducted spurious emissions measurements were performed on the worst case 20MHz + 20MHz mode with 1 RB and all RBs active.

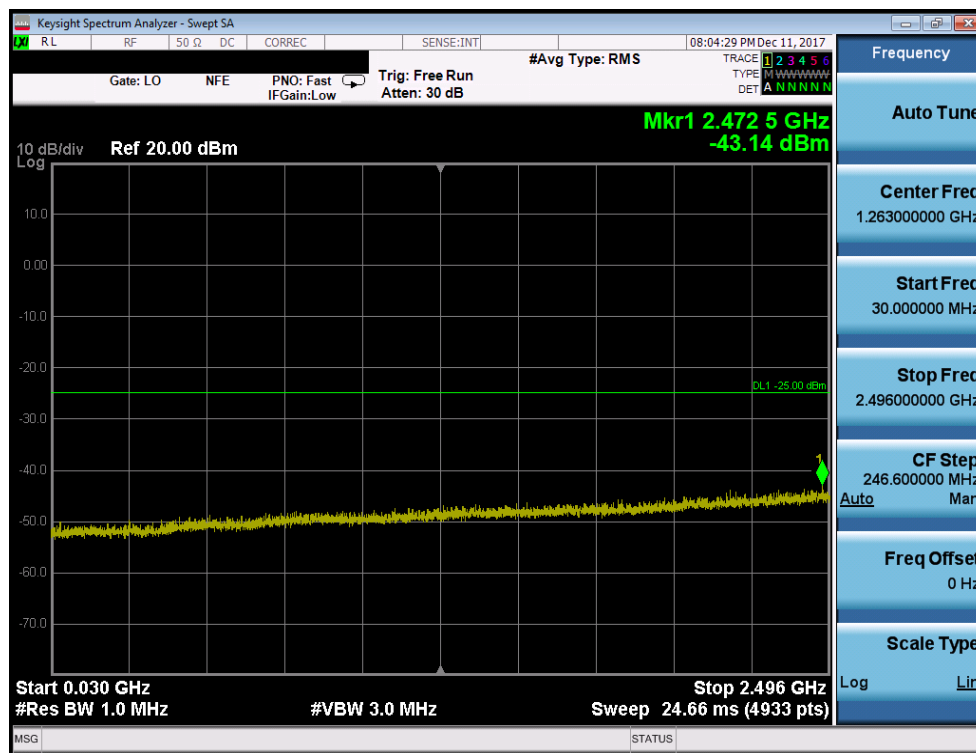
Power State	PCC							SCC							Power ULCA Tx Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	10	39700	2501	QPSK	1	49	LTE B41	20	39844	2515.4	QPSK	1	0	23.58
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	20	40764	2607.4	QPSK	1	0	23.93
Max	LTE B41	20	41396	2670.6	QPSK	1	99	LTE B41	10	41540	2685	QPSK	1	0	23.91
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	15	39875	2518.5	QPSK	1	0	23.72
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	20	39896	2520.6	QPSK	1	0	23.70
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	15	40770	2608	QPSK	1	0	23.53
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	20	40791	2610.1	QPSK	1	0	23.75
Max	LTE B41	15	41365	2667.5	QPSK	1	74	LTE B41	15	41515	2682.5	QPSK	1	0	23.81
Max	LTE B41	20	41344	2665.4	QPSK	1	99	LTE B41	15	41515	2682.5	QPSK	1	0	23.85
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	10	39894	2520.4	QPSK	1	0	23.72
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	15	39921	2523.1	QPSK	1	0	23.74
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	23.75
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	10	40764	2607.4	QPSK	1	0	23.93
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	15	40791	2610.1	QPSK	1	0	23.95
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	23.99
Max	LTE B41	10	41346	2665.6	QPSK	1	49	LTE B41	20	41490	2680	QPSK	1	0	23.91
Max	LTE B41	15	41319	2662.9	QPSK	1	74	LTE B41	20	41490	2680	QPSK	1	0	23.97
Max	LTE B41	20	41292	2660.2	QPSK	1	99	LTE B41	20	41490	2680	QPSK	1	0	23.96

Table 7-3. Conducted Powers (B41 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 145 of 237

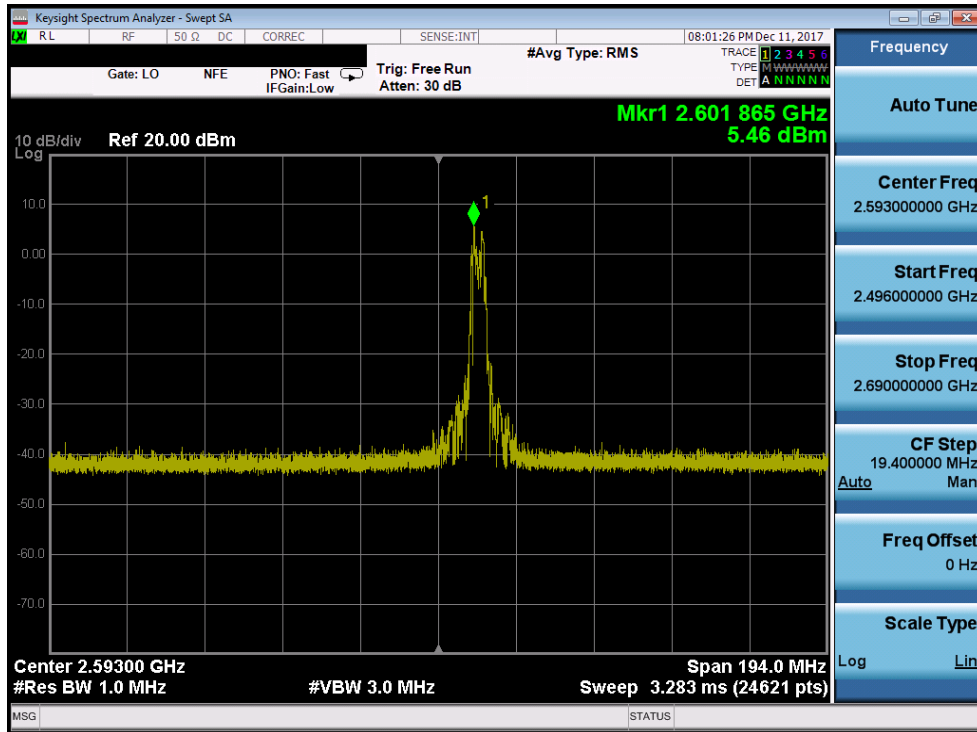
Power State	PCC							SCC							Power
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	0	19.81
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	99	19.83
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	99	15.72
Max	LTE B41	20	39750	2506	QPSK	1	50	LTE B41	20	39948	2525.8	QPSK	1	50	19.84
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	23.75
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	22.53
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	21.57
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	21.22

Table 7-4. Conducted Powers (B41 with Various Combinations for 20MHz + 20MHz Channel Bandwidth)

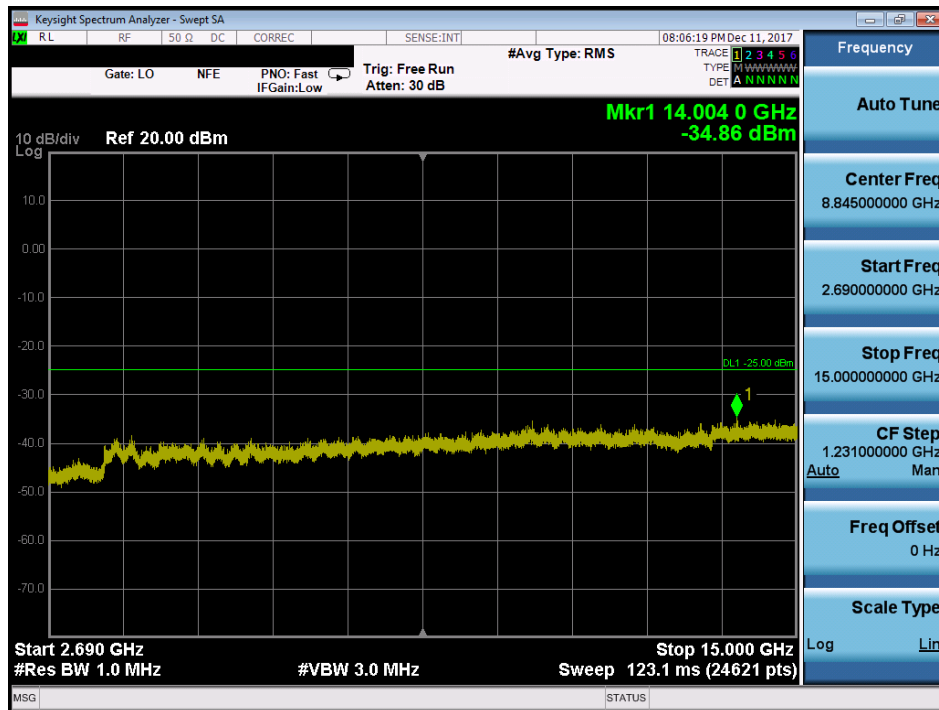


Plot 7-242. Conducted Spurious Plot (Band 41 – 20MHz + 20MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG9600	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 146 of 237

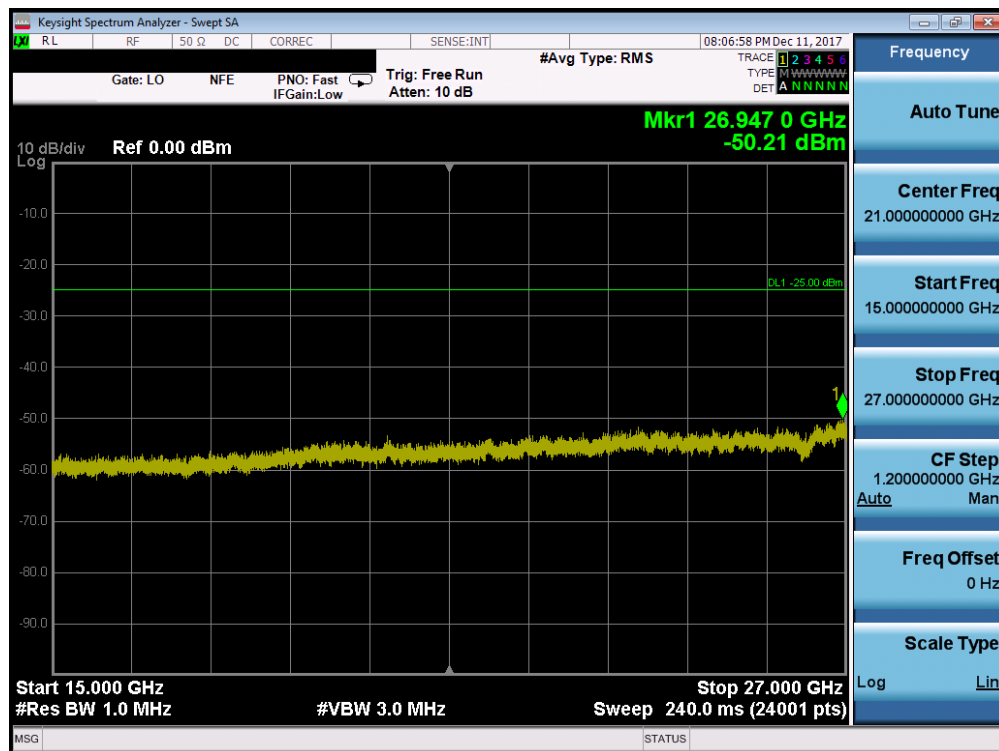


Plot 7-243. Conducted Spurious Plot (Band 41 – 20MHz + 20MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

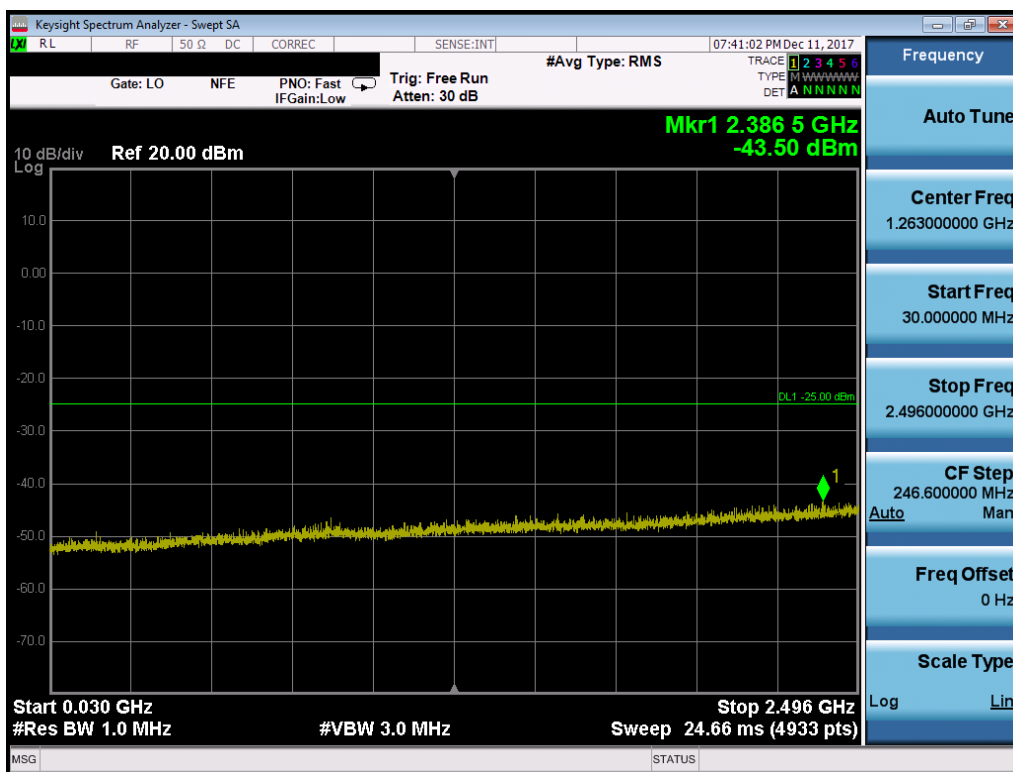


Plot 7-244. Conducted Spurious Plot (Band 41 – 20MHz + 20MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 147 of 237

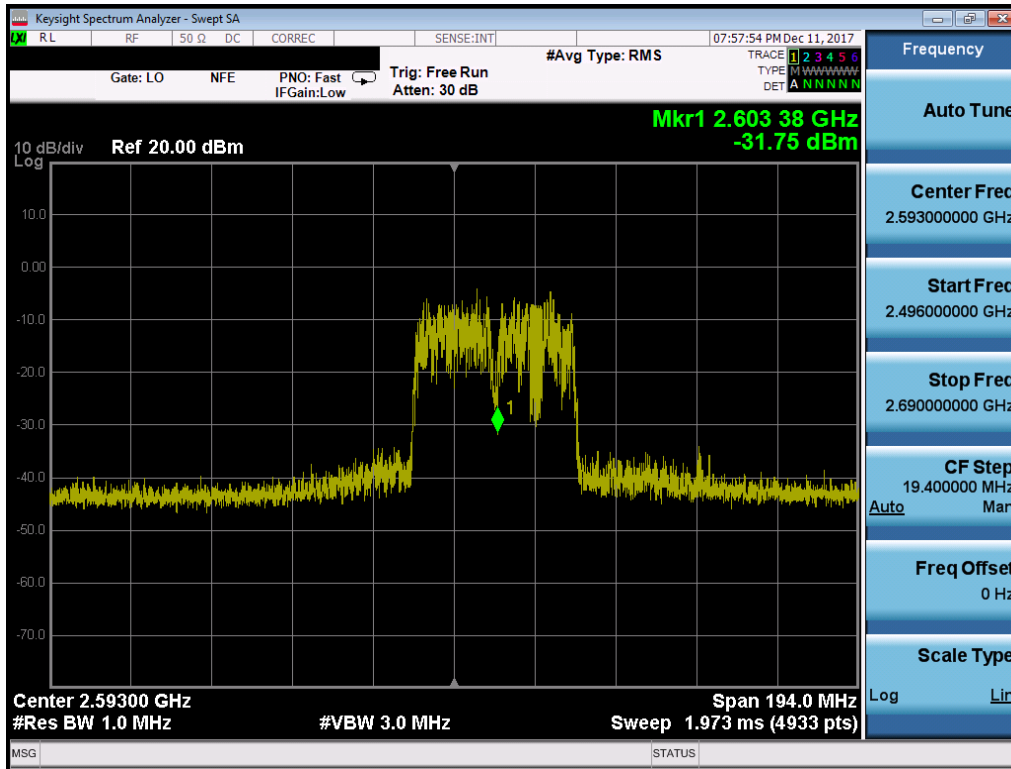


Plot 7-245. Conducted Spurious Plot (Band 41 – 20MHz + 20MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

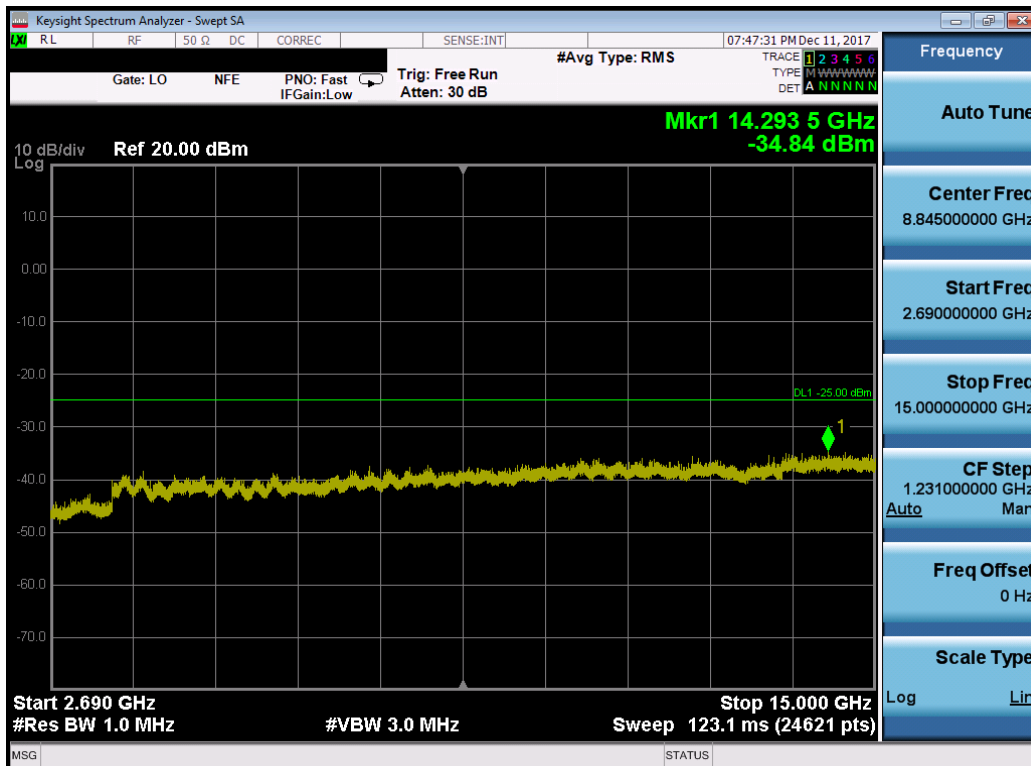


Plot 7-246. Conducted Spurious Plot (Band 41 – 20MHz + 20MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 148 of 237

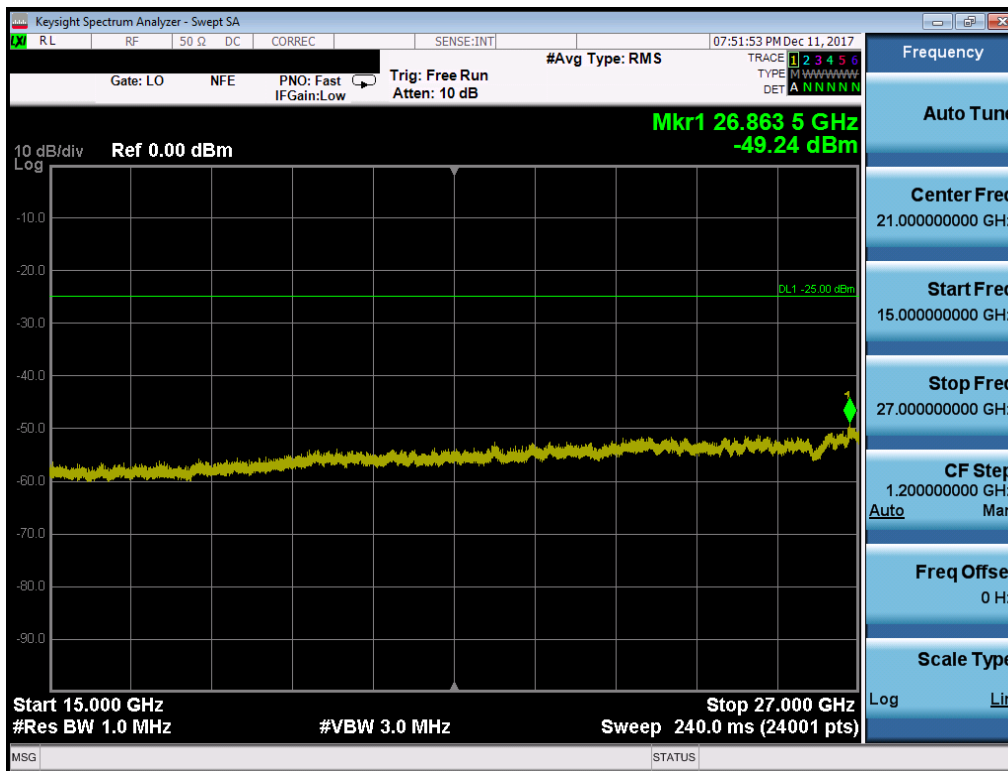


Plot 7-247. Conducted Spurious Plot (Band 41 – 20MHz + 20MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

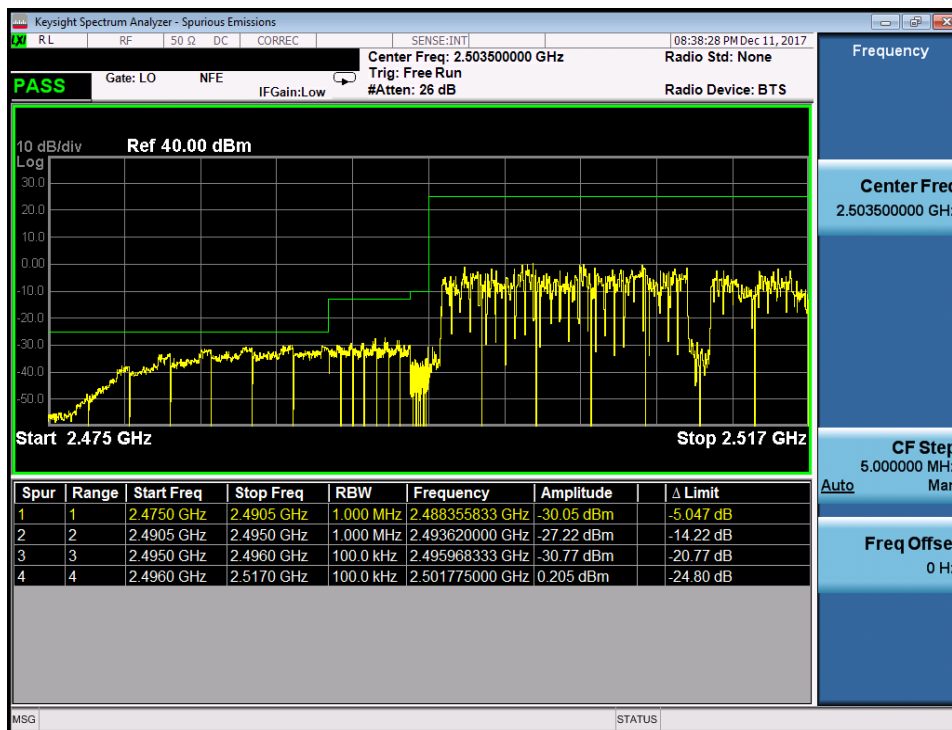


Plot 7-248. Conducted Spurious Plot (Band 41 – 20MHz + 20MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSMG9600	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 149 of 237

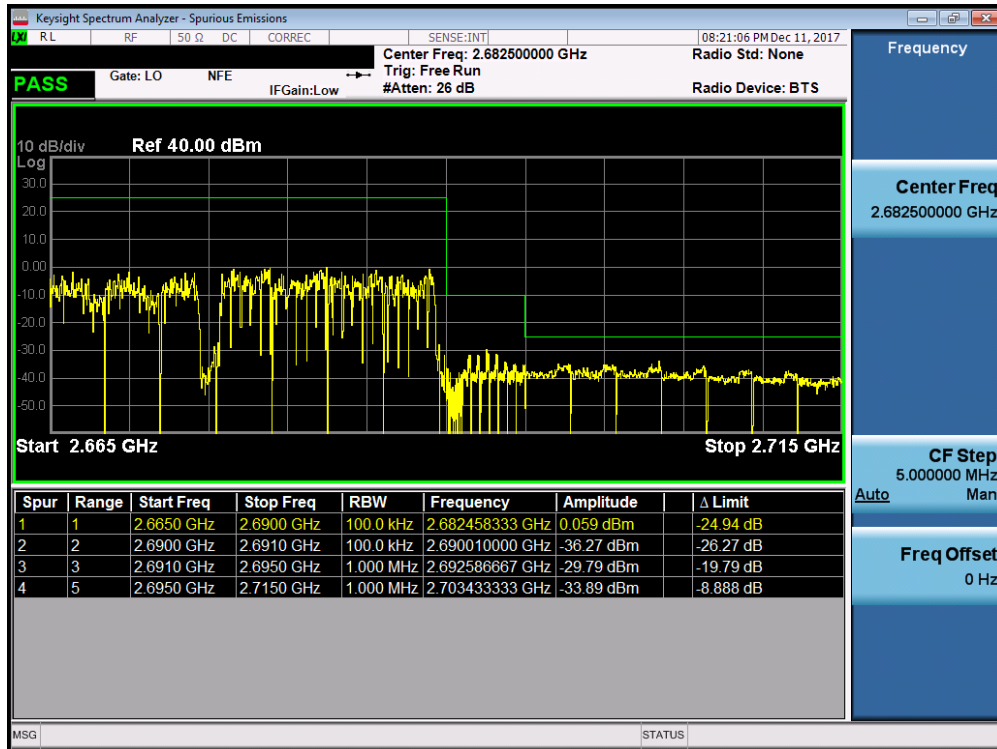


Plot 7-249. Conducted Spurious Plot (Band 41 – 20MHz + 20MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-250. Lower ACP Plot (Band 41 QPSK – PCC:15 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 150 of 237



Plot 7-251. Upper ACP Plot (Band 41 QPSK – PCC:15 MHz SCC:20 MHz – Full RB)

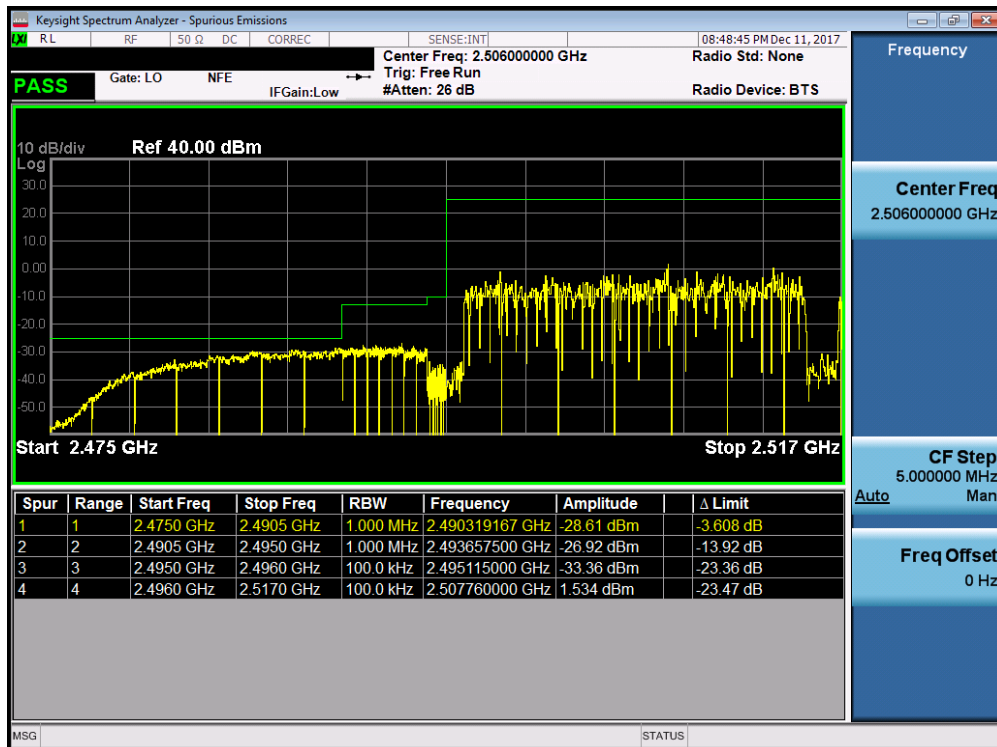
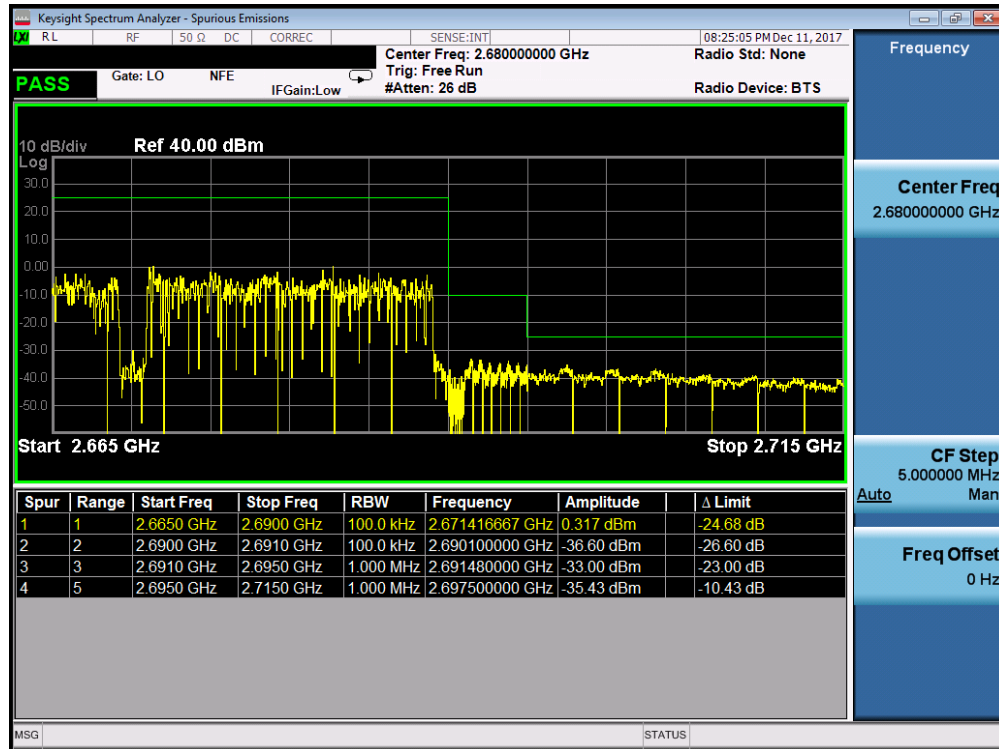


Table 7-252. Lower ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 151 of 237



Plot 7-253. Upper ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 152 of 237

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7.6 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. No. of sweep points $\geq 2 \times$ span / RBW
4. Detector = RMS
5. Trace mode = Max Hold
6. The trace was allowed to stabilize

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 153 of 237

Test Setup

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

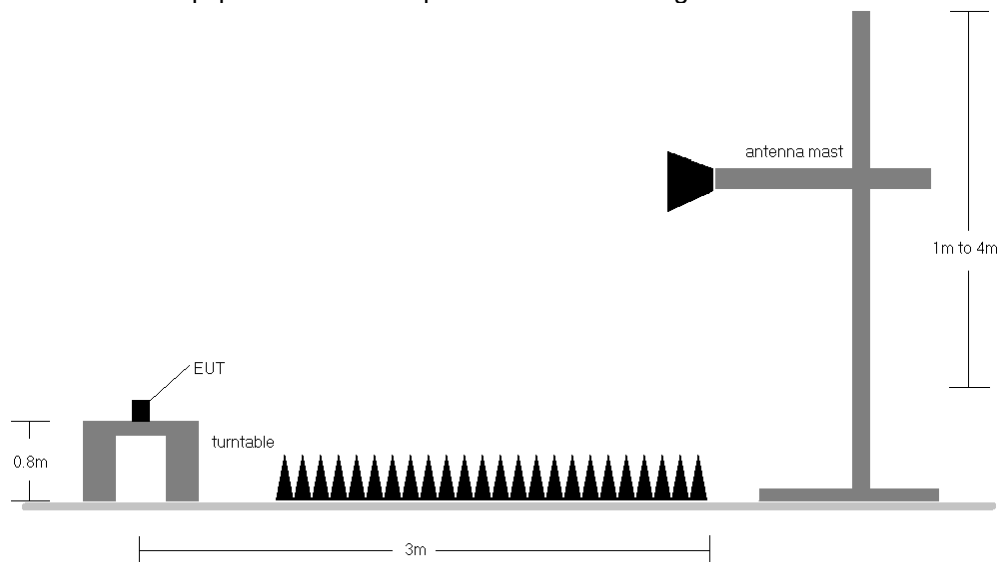
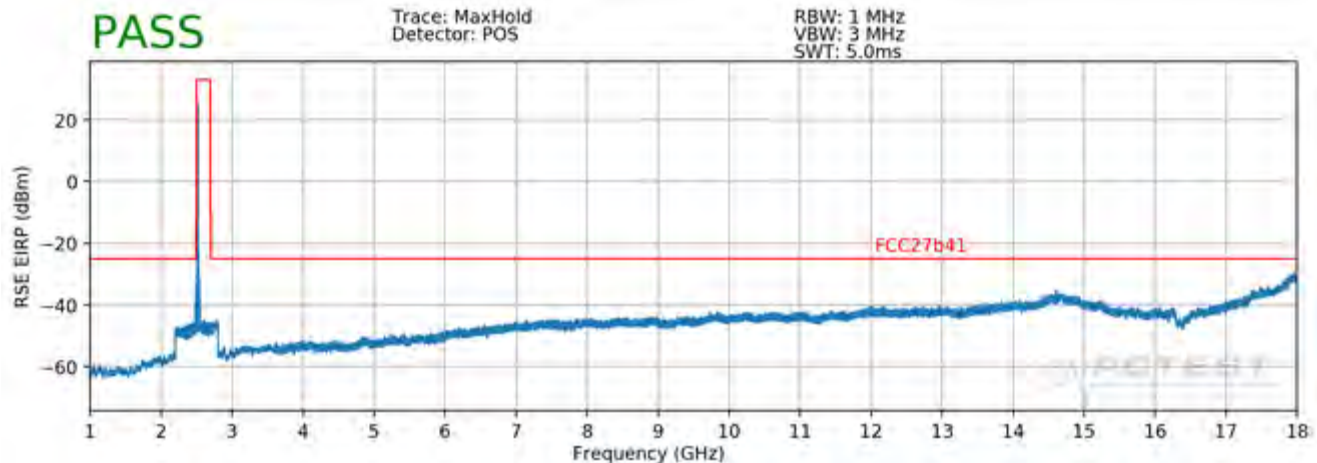


Figure 7-5. Test Instrument & Measurement Setup

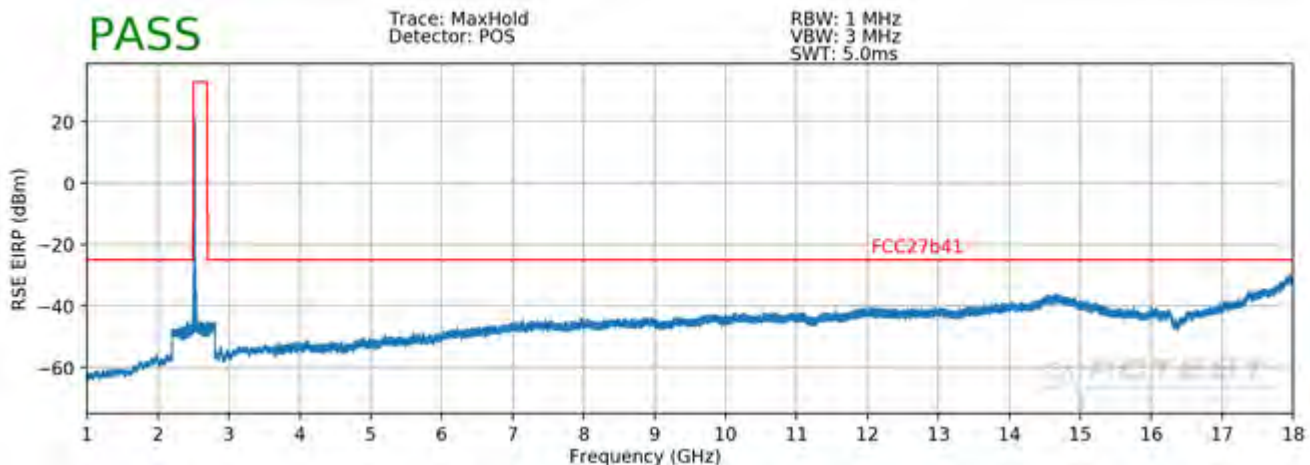
Test Notes

- 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 and emissions were investigated with the unit powered by an extended 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.
- 7) Radiated spurious emissions measurements were performed on the worst case 20MHz + 20MHz mode for all channels with 1 RB and all RBs active.

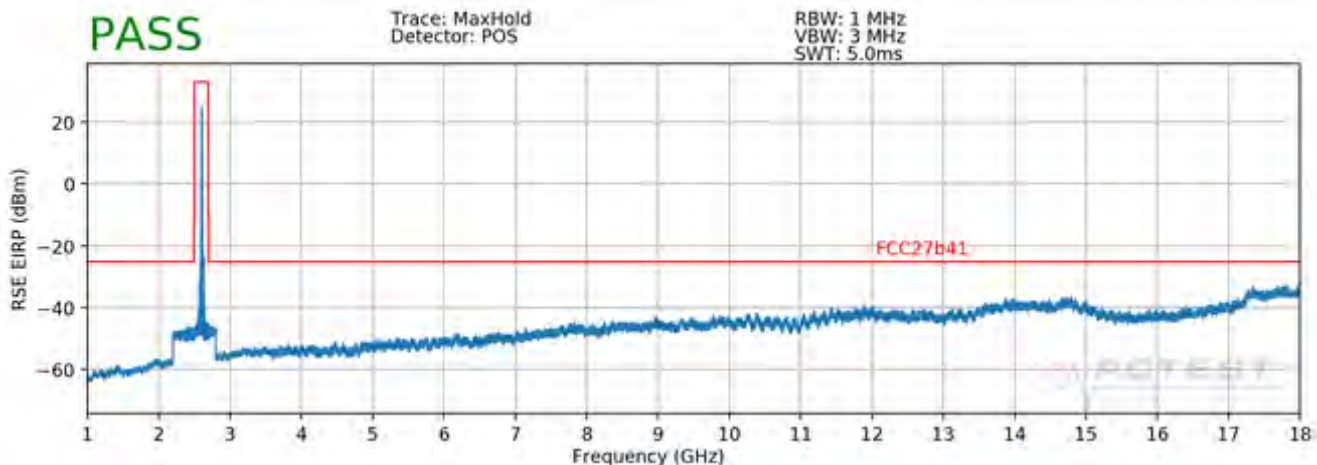
FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 154 of 237



Plot 7-254. Radiated Spurious Plot (ULCA B41 – 20MHz + 20MHz QPSK – PCC 1/99 SCC 1/0, Ant.Pol. H – Low Channel)

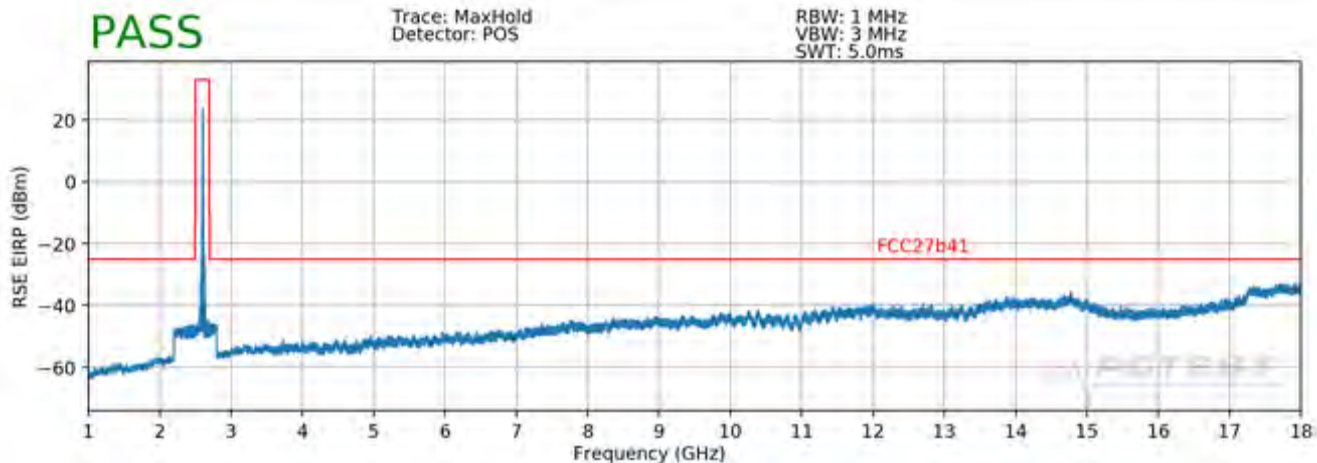


Plot 7-255. Radiated Spurious Plot (ULCA B41 – 20MHz + 20MHz QPSK – PCC 1/99 SCC 1/0, Ant.Pol. V – Low Channel)

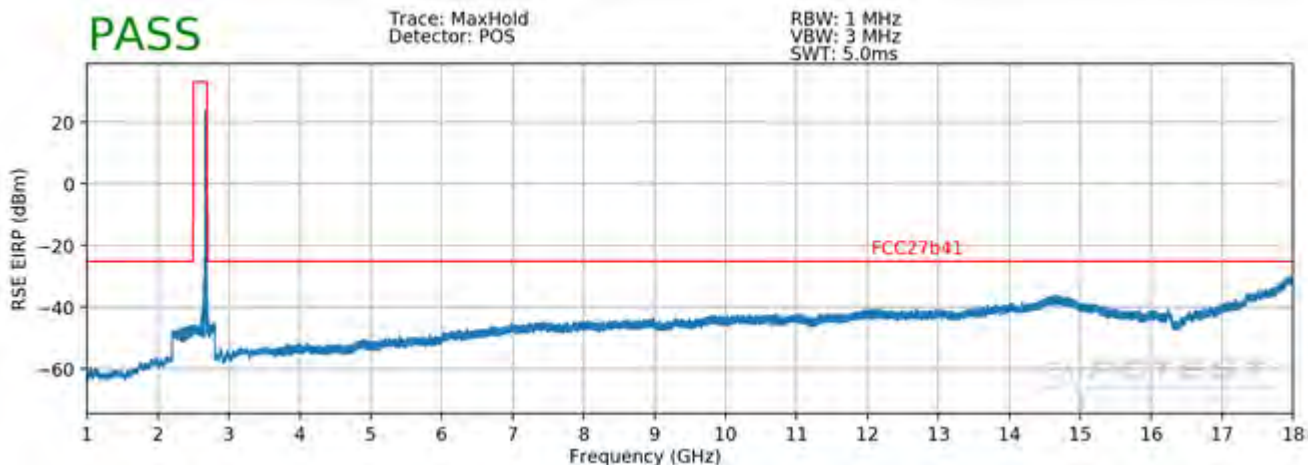


Plot 7-256. Radiated Spurious Plot (ULCA B41 – 20MHz + 20MHz QPSK – PCC 1/99 SCC 1/0, Ant.Pol. H – Mid Channel)

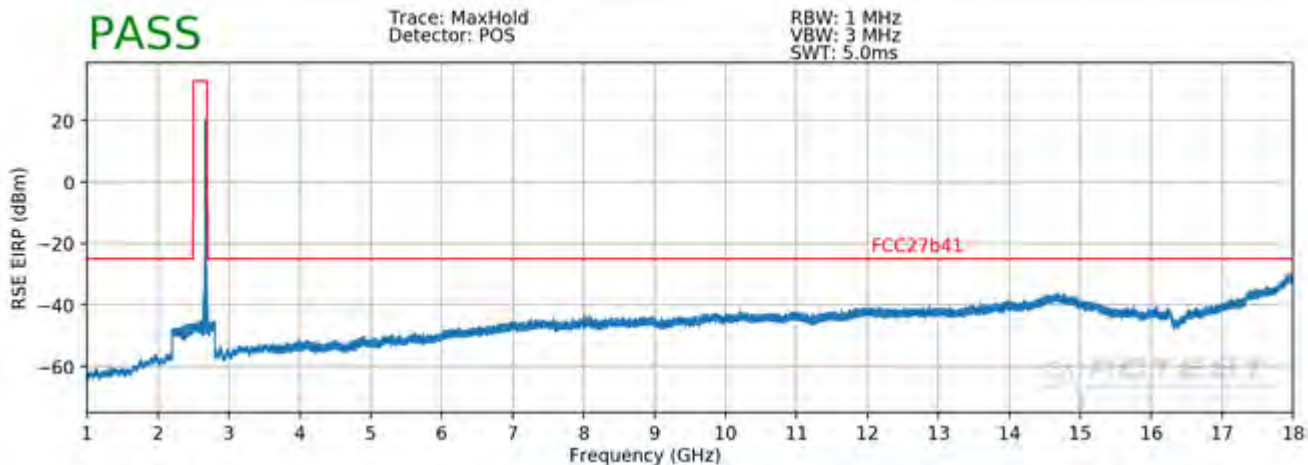
FCC ID: A3LSMG9600	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 155 of 237



Plot 7-257. Radiated Spurious Plot (ULCA B41 – 20MHz + 20MHz QPSK – PCC 1/99 SCC 1/0, Ant.Pol. V – Mid Channel)

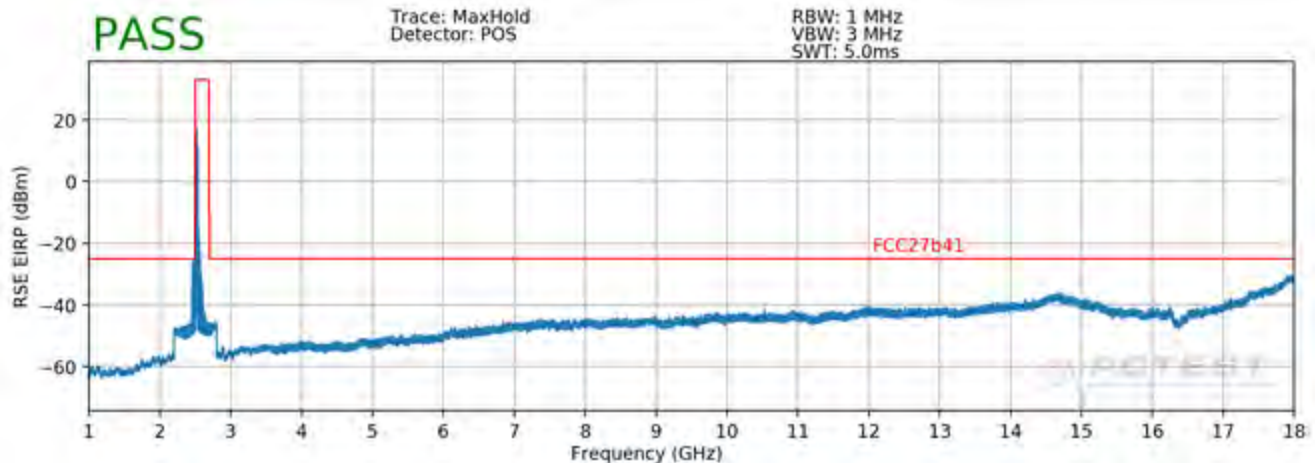


Plot 7-258. Radiated Spurious Plot (ULCA B41 – 20MHz + 20MHz QPSK – PCC 1/0 SCC 1/99, Ant.Pol.H – High Channel)

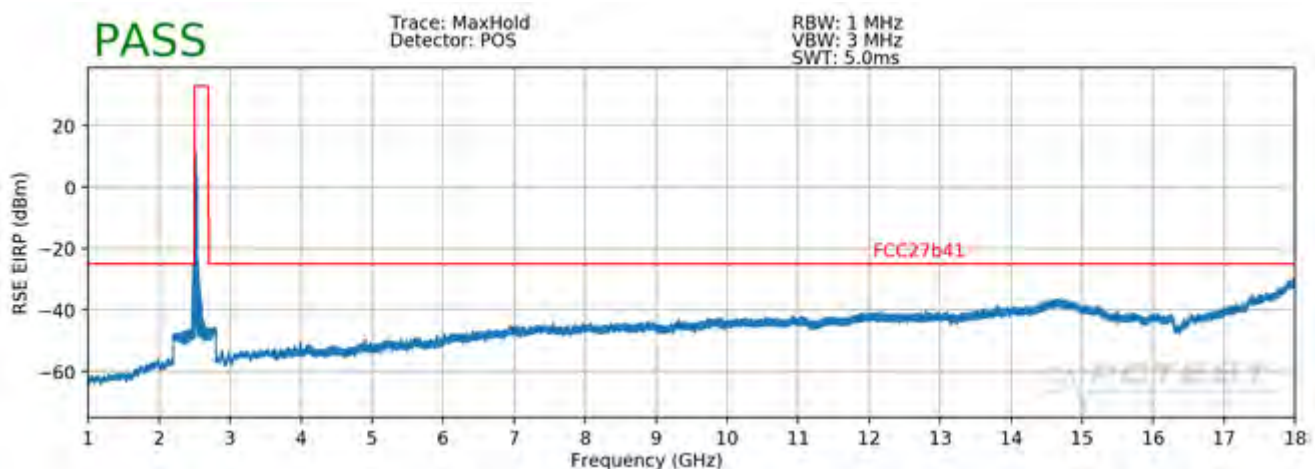


Plot 7-259. Radiated Spurious Plot (ULCA B41 – 20MHz + 20MHz QPSK – PCC 1/0 SCC 1/99, Ant.Pol.V – High Channel)

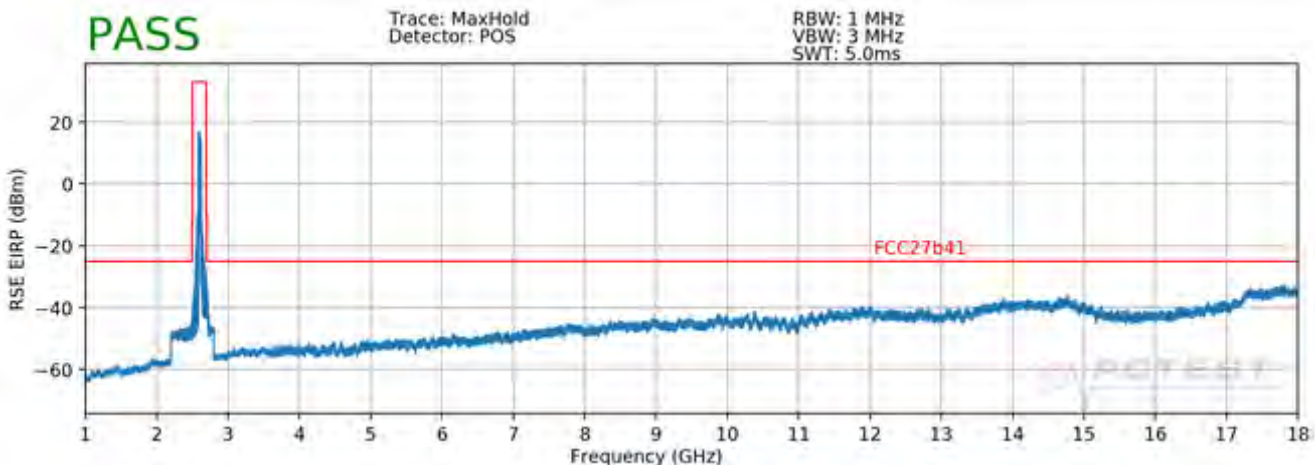
FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 156 of 237



Plot 7-260.Radiated Spurious Plot (ULCA B41- 20MHz + 20MHz QPSK - PCC 100/0 SCC 100/0, Ant.Pol.H- Low Channel)

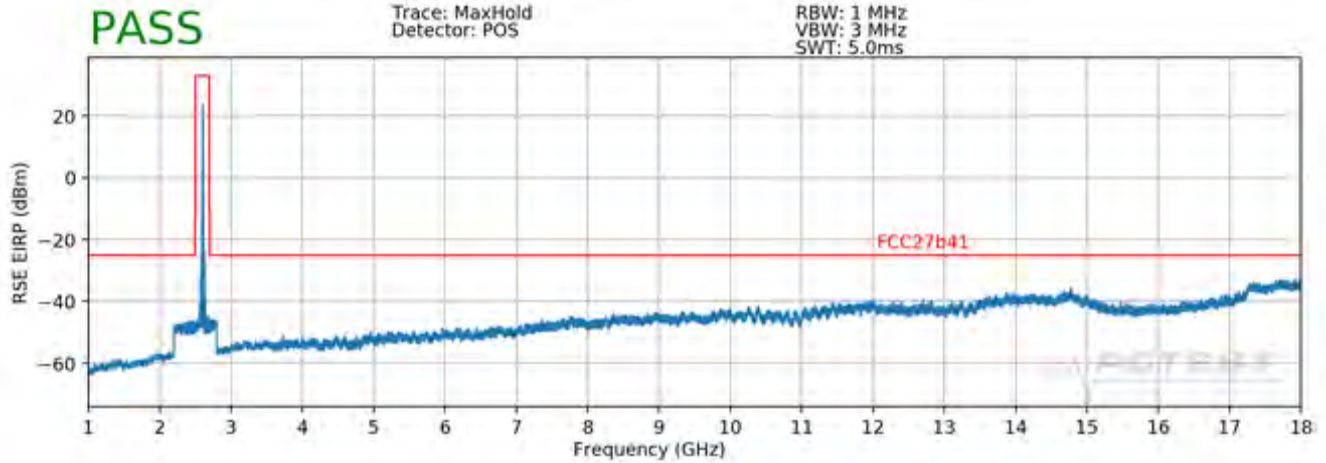


Plot 7-261.Radiated Spurious Plot (ULCA B41- 20MHz + 20MHz QPSK - PCC 100/0 SCC 100/0, Ant.Pol.V- Low Channel)

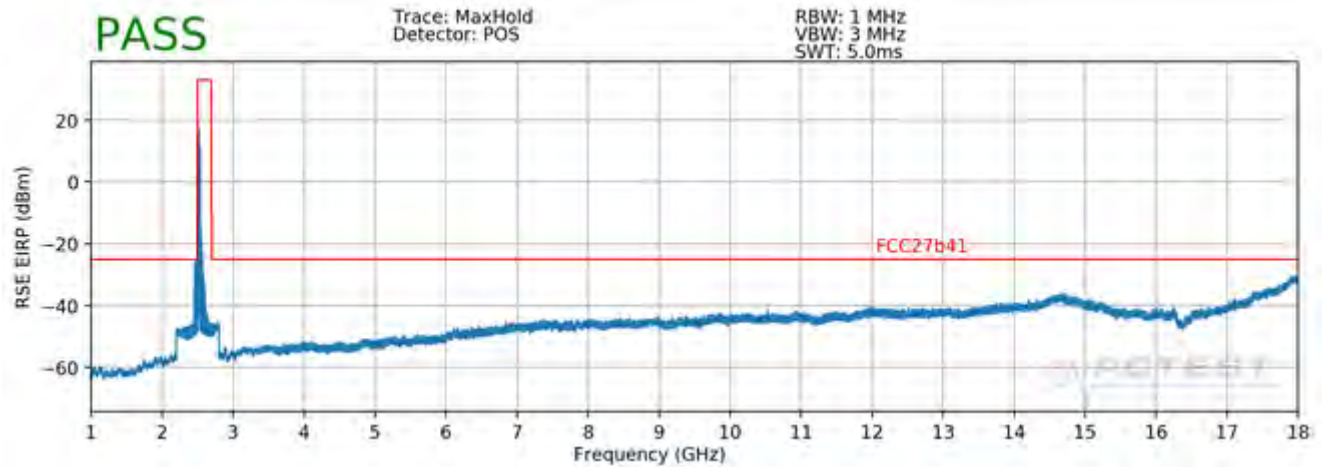


Plot 7-262.Radiated Spurious Plot (ULCA B41- 20MHz + 20MHz QPSK - PCC 100/0 SCC 100/0, Ant.Pol.H - Mid Channel)

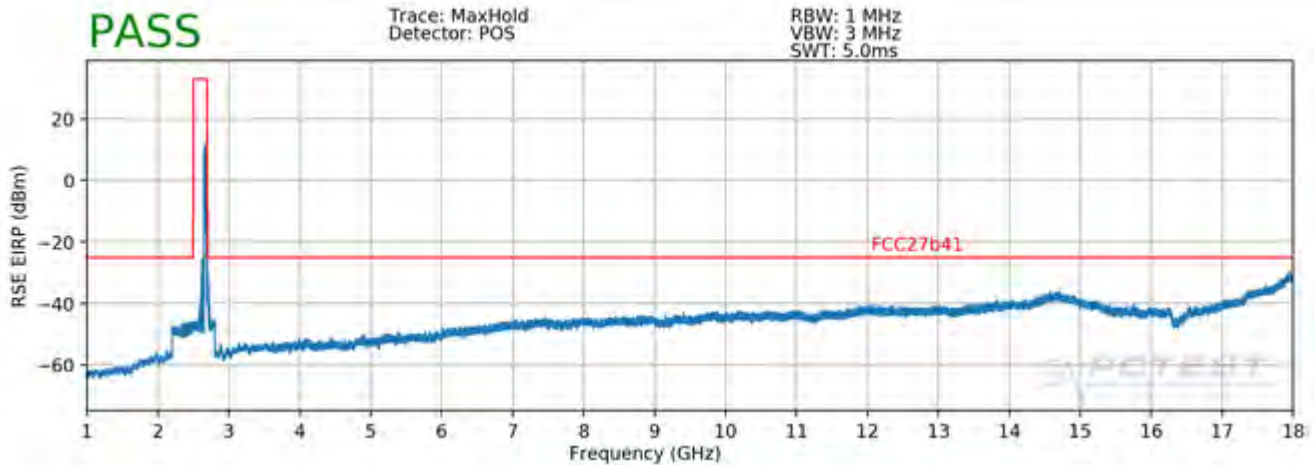
FCC ID: A3LSMG9600	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 157 of 237



Plot 7-263.Radiated Spurious Plot (ULCA B41- 20MHz + 20MHz QPSK - PCC 100/0 SCC 100/0, Ant.Pol.V - Mid Channel)



Plot 7-264.Radiated Spurious Plot (ULCA B41- 20MHz + 20MHz QPSK - PCC 100/0 SCC 100/0, Ant.Pol.H- High Channel)



Plot 7-265.Radiated Spurious Plot (ULCA B41- 20MHz + 20MHz QPSK - PCC 100/0 SCC 100/0, Ant.Pol.V-High Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 158 of 237

OPERATING FREQUENCY (PCC): 2506.00 MHz
 OPERATING FREQUENCY (SCC): 2525.80
 CHANNEL (PCC): 39750
 CHANNEL (SCC): 39948
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20 + 20 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	H	121	166	-66.19	11.13	-55.06	-30.1
7518.00	H	107	304	-57.46	11.02	-46.44	-21.4
10024.00	H	-	-	-63.93	12.16	-51.77	-26.8

Table 7-5. (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Low Channel)

OPERATING FREQUENCY (PCC): 2593.00 MHz
 OPERATING FREQUENCY (SCC): 2573.00
 CHANNEL (PCC): 40620
 CHANNEL (SCC): 40422
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20 + 20 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	H	111	316	-67.22	10.75	-56.47	-31.5
7779.00	H	336	29	-53.36	11.40	-41.96	-17.0
10372.00	H	-	-	-66.94	12.59	-54.35	-29.3

Table 7-6. (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Mid Channel)

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 159 of 237

OPERATING FREQUENCY (SCC): 2680.00 MHz
 OPERATING FREQUENCY (PCC): 2660.20
 CHANNEL (SCC): 41490
 CHANNEL (PCC): 41292
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20 + 20 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]
5360.00	H	204	173	-55.62	11.02	-44.59	-19.6
8040.00	H	126	235	-51.35	11.39	-39.96	-15.0
10720.00	H	-	-	-63.80	12.82	-50.98	-26.0

Table 7-7. (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 160 of 237

7.7 Peak-Average Ratio

§24.232(d) RSS-130(4.4) RSS-132(5.4) RSS-133(6.4) RSS-139(6.5)

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.

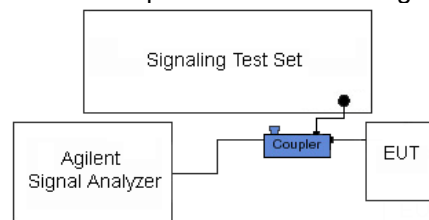


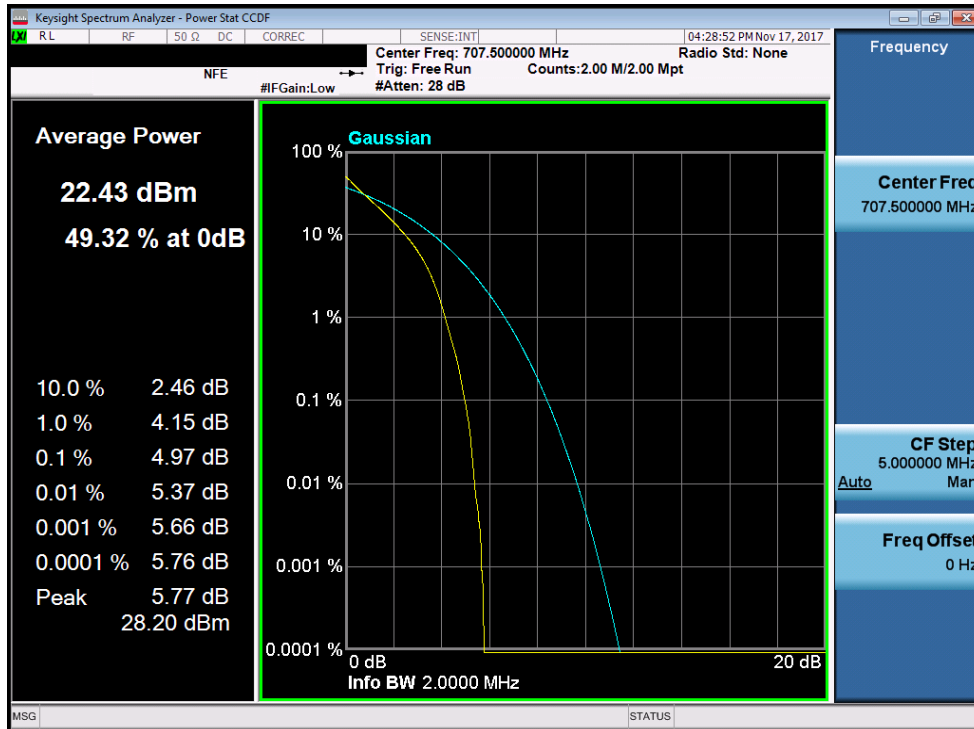
Figure 7-6. Test Instrument & Measurement Setup

Test Notes

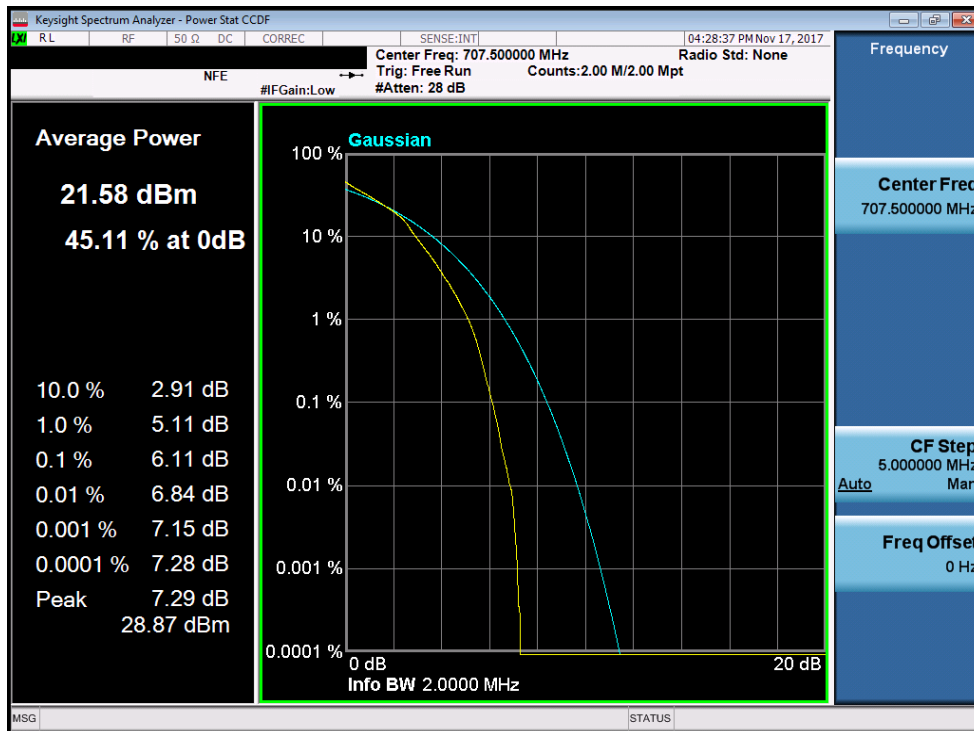
None.

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 161 of 237

Band 12/17

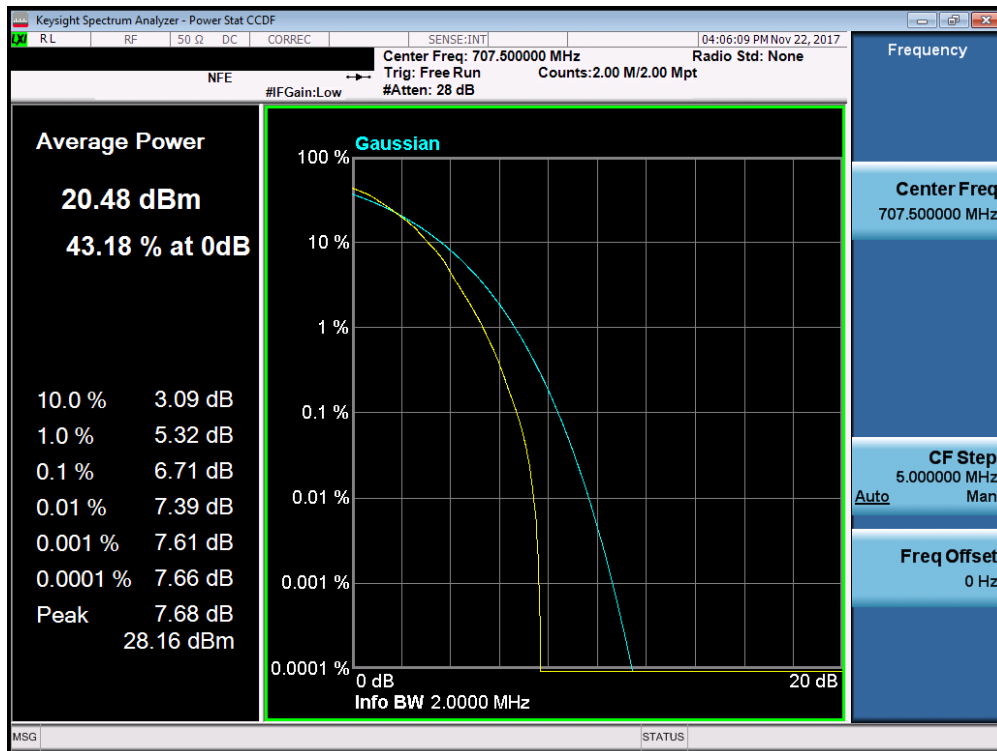


Plot 7-266. PAR Plot (Band 12/17 - 1.4MHz QPSK - Full RB Configuration)

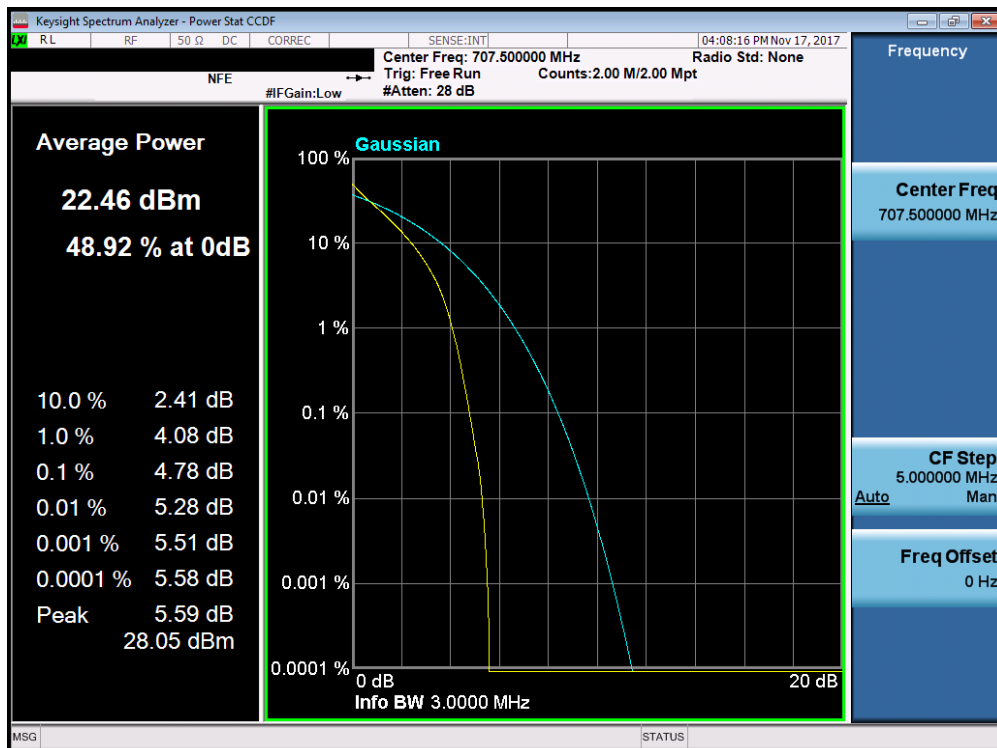


Plot 7-267. PAR Plot (Band 12/17 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 162 of 237

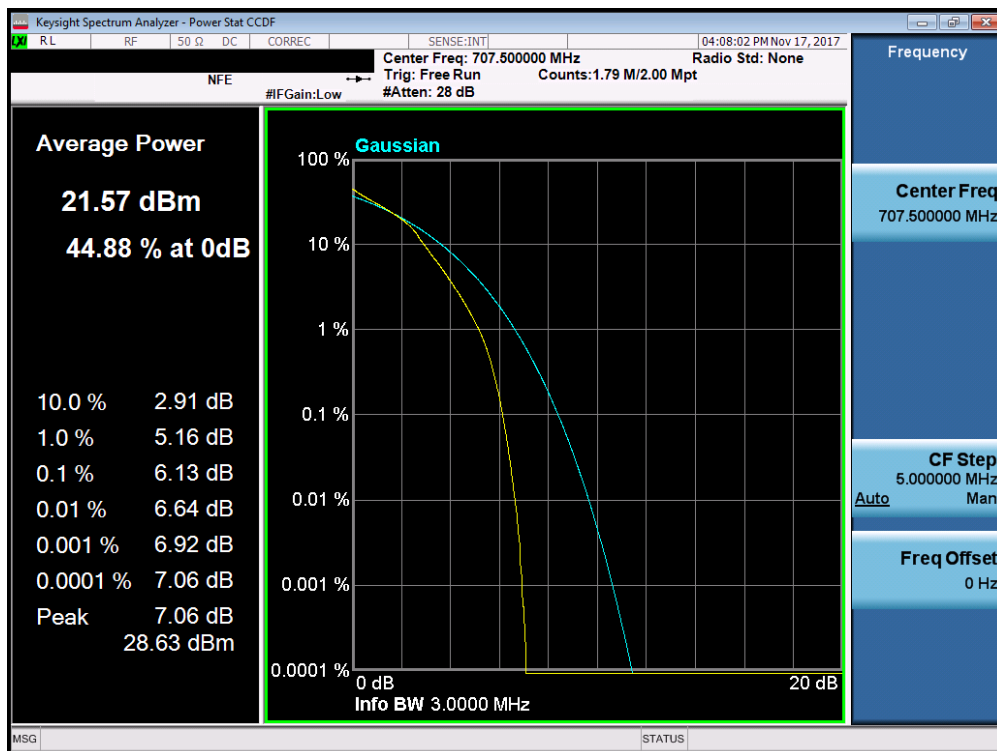


Plot 7-268. PAR Plot (Band 12/17 - 1.4MHz 64-QAM - Full RB Configuration)

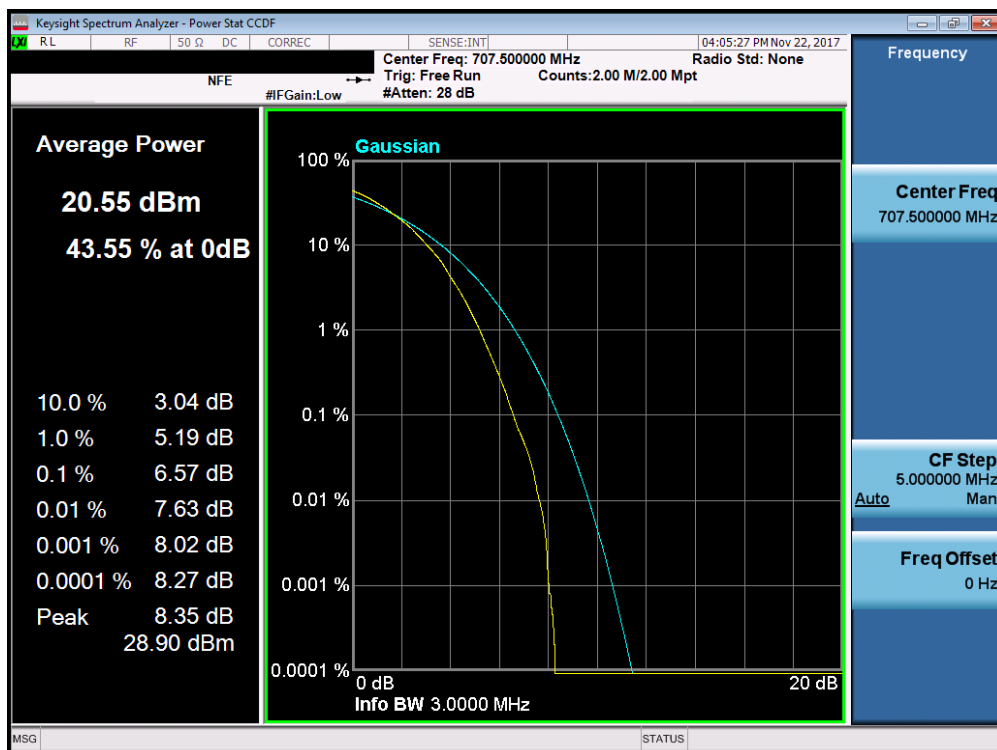


Plot 7-269. PAR Plot (Band 12/17 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 163 of 237

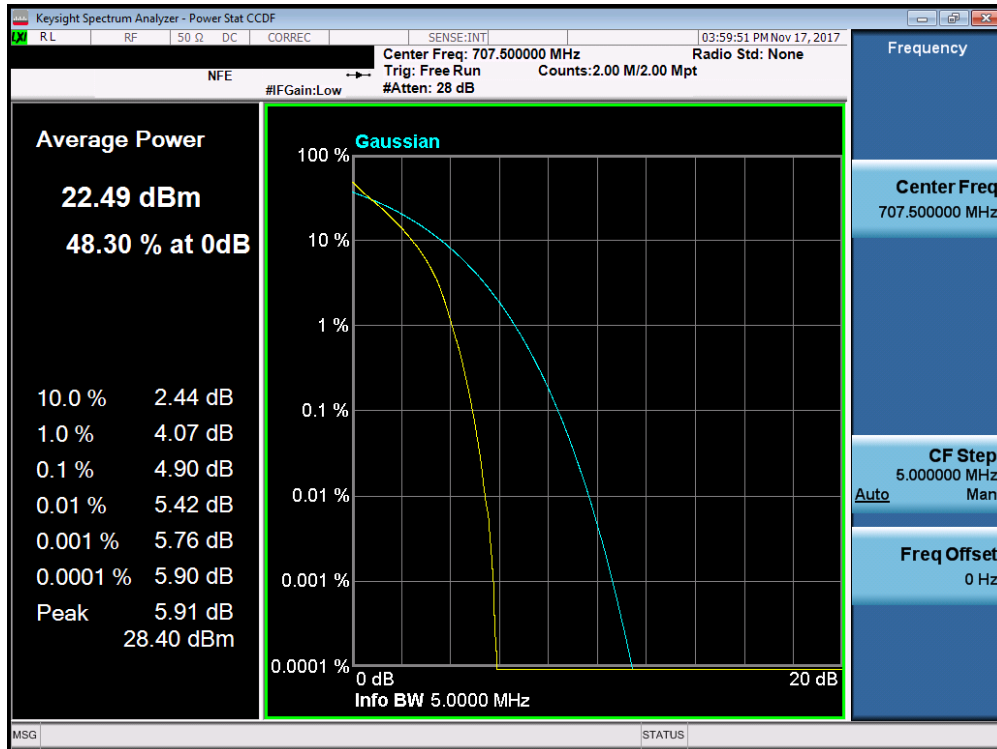


Plot 7-270. PAR Plot (Band 12/17 - 3.0MHz 16-QAM - Full RB Configuration)

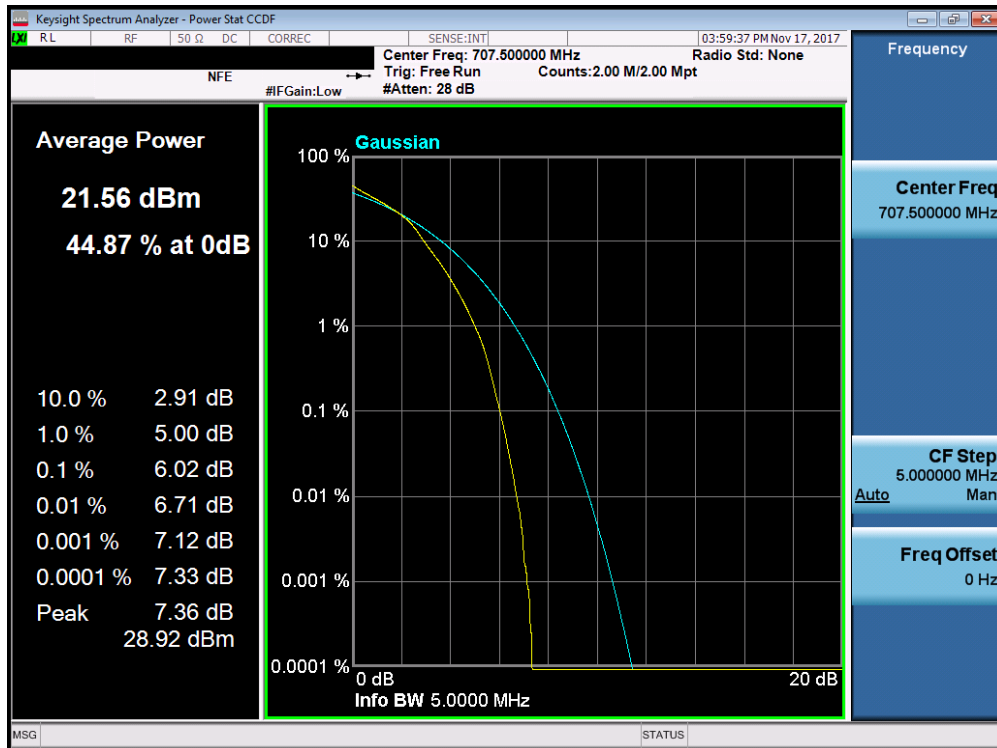


Plot 7-271. PAR Plot (Band 12/17 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 164 of 237

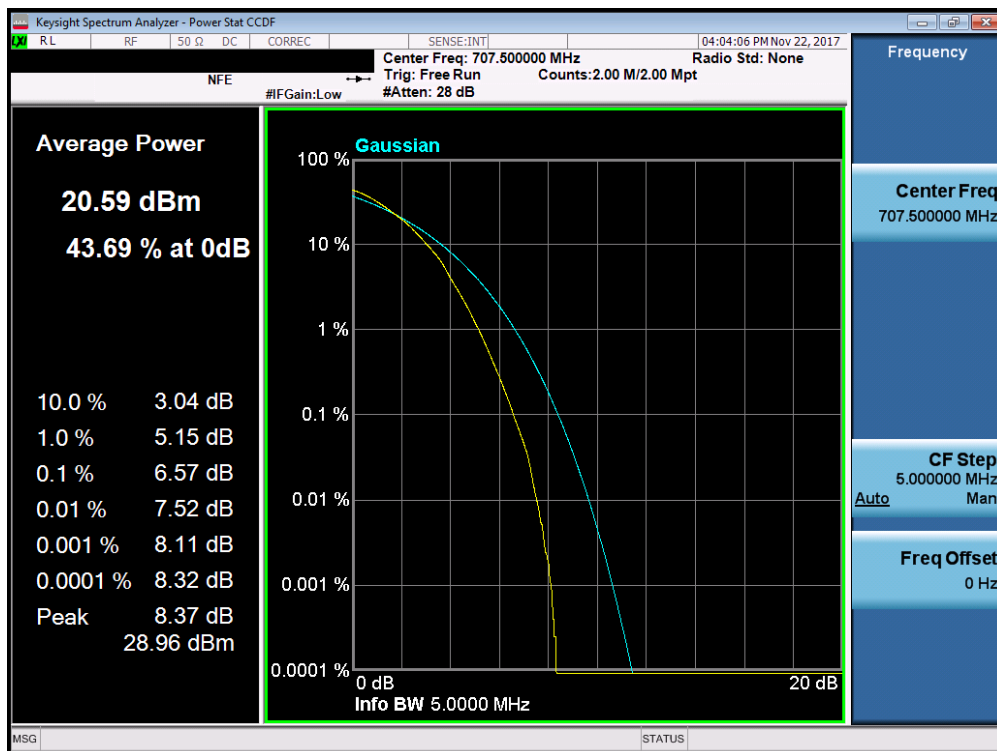


Plot 7-272. PAR Plot (Band 12/17 - 5.0MHz QPSK - Full RB Configuration)

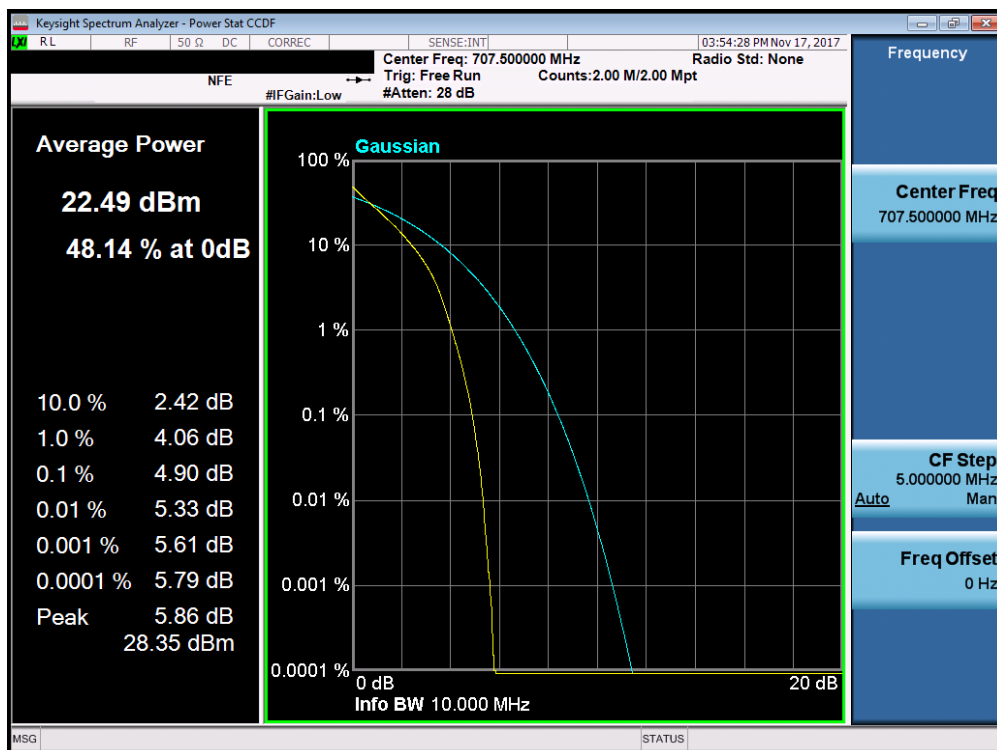


Plot 7-273. PAR Plot (Band 12/17 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 165 of 237

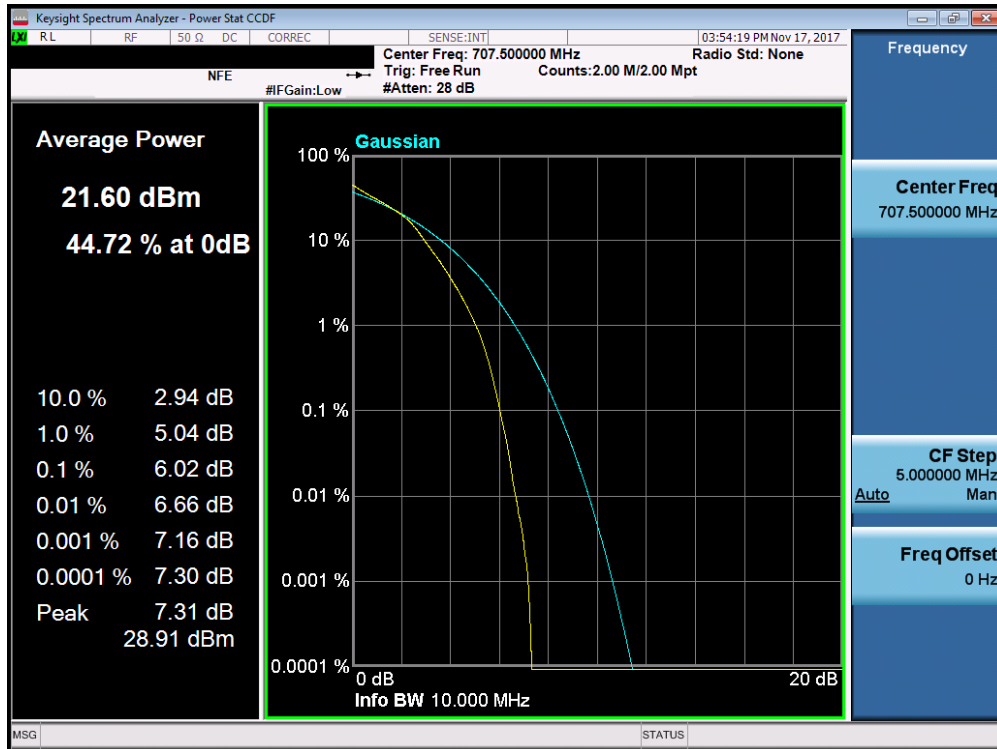


Plot 7-274. PAR Plot (Band 12/17 - 5.0MHz 64-QAM - Full RB Configuration)

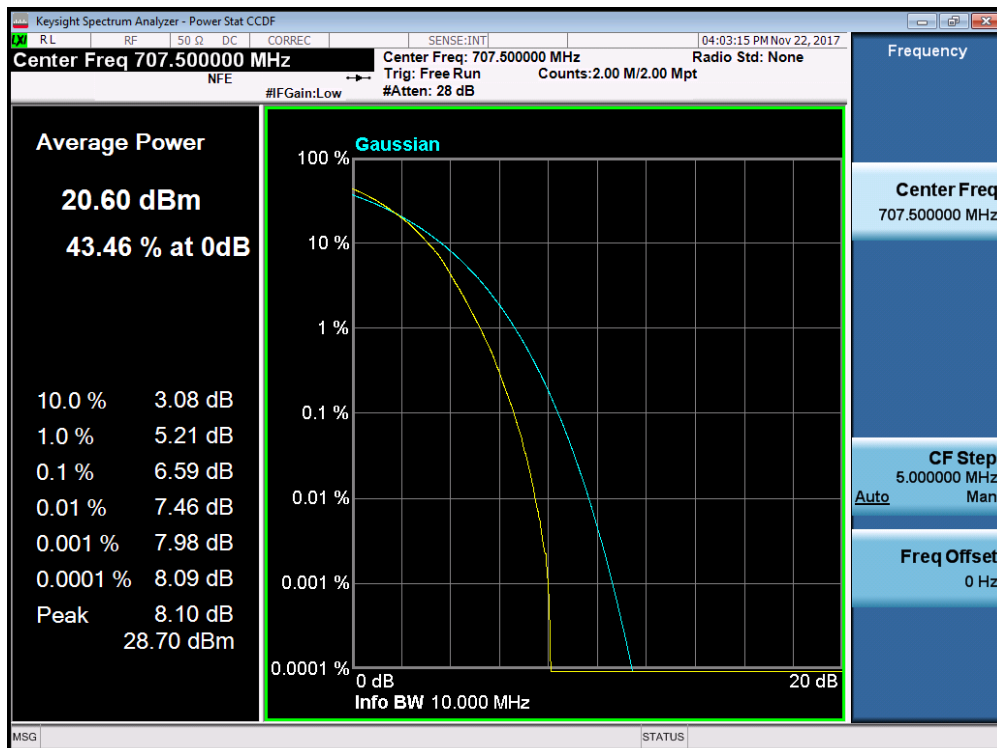


Plot 7-275. PAR Plot (Band 12/17 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 166 of 237



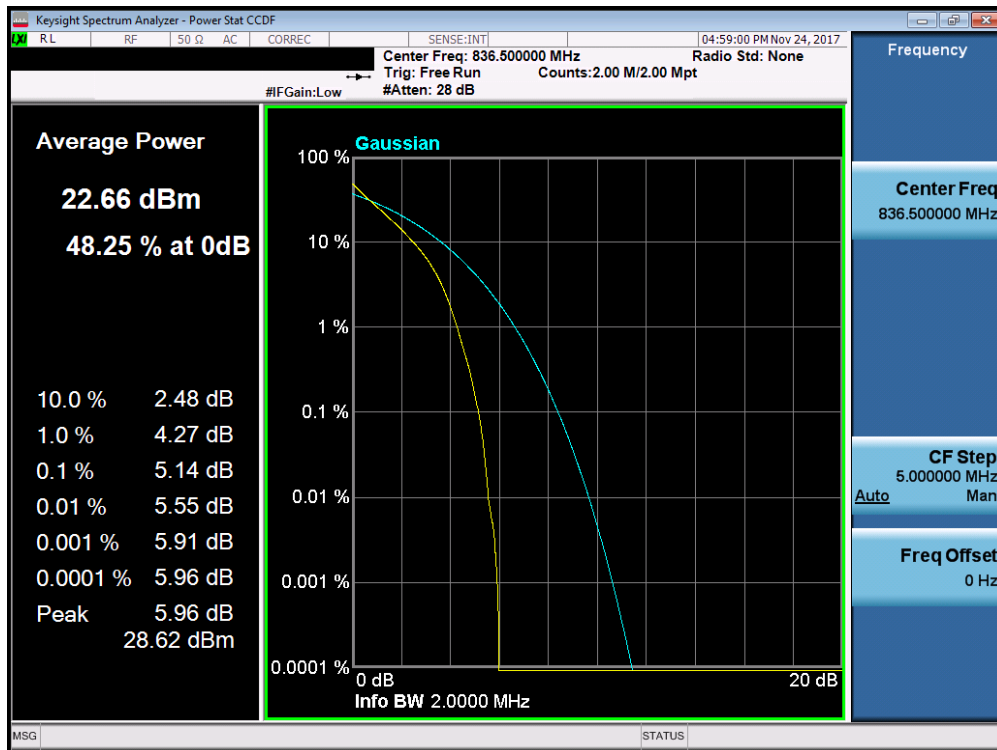
Plot 7-276. PAR Plot (Band 12/17 - 10.0MHz 16-QAM - Full RB Configuration)



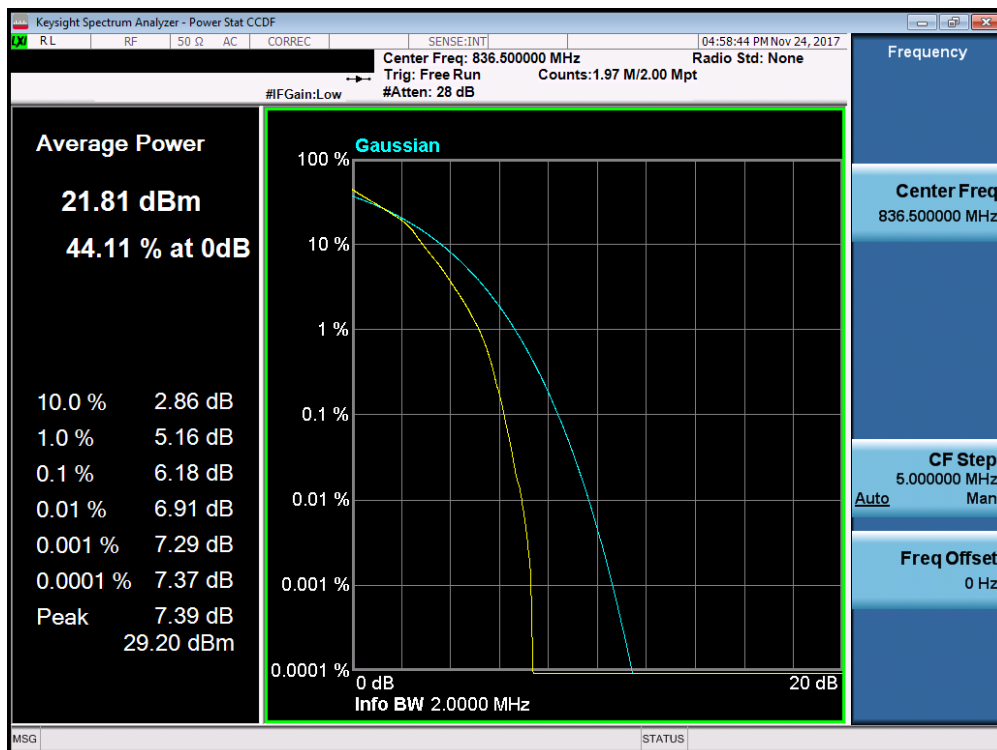
Plot 7-277. PAR Plot (Band 12/17 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 167 of 237

Band 26/5

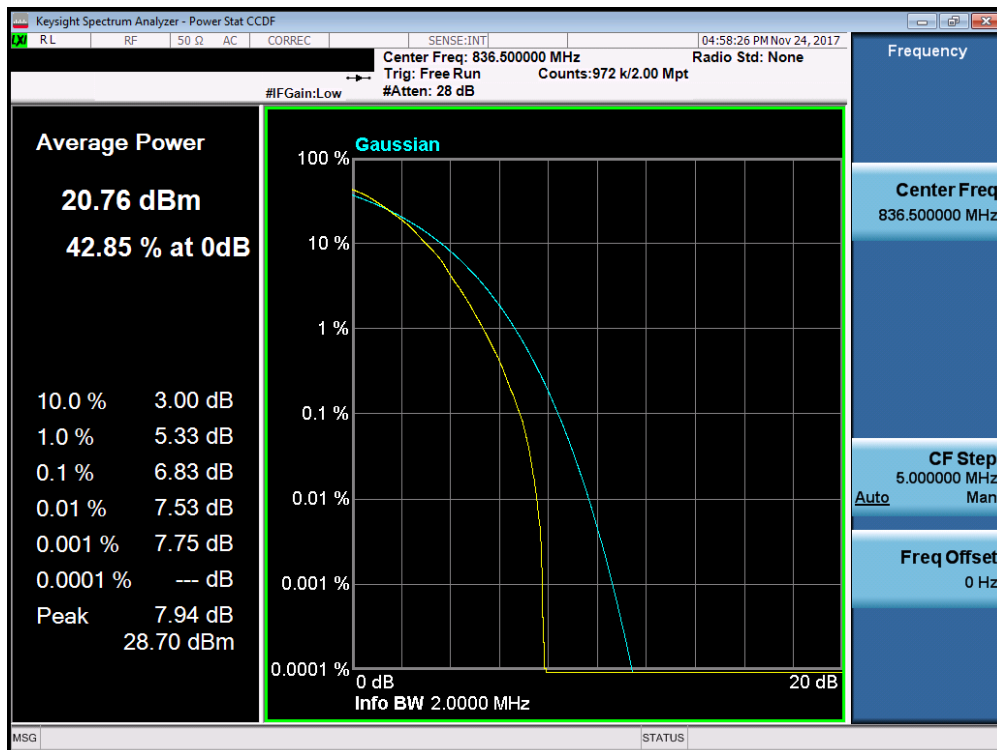


Plot 7-278. PAR Plot (Band 26/5 - 1.4MHz QPSK - Full RB Configuration)

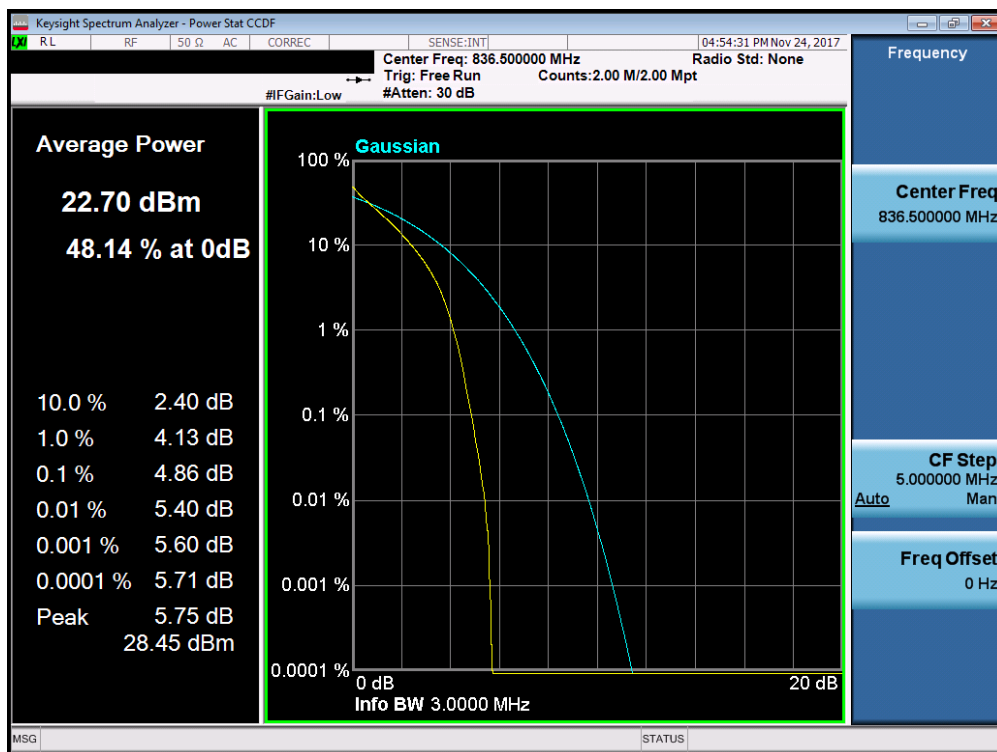


Plot 7-279. PAR Plot (Band 26/5 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 168 of 237

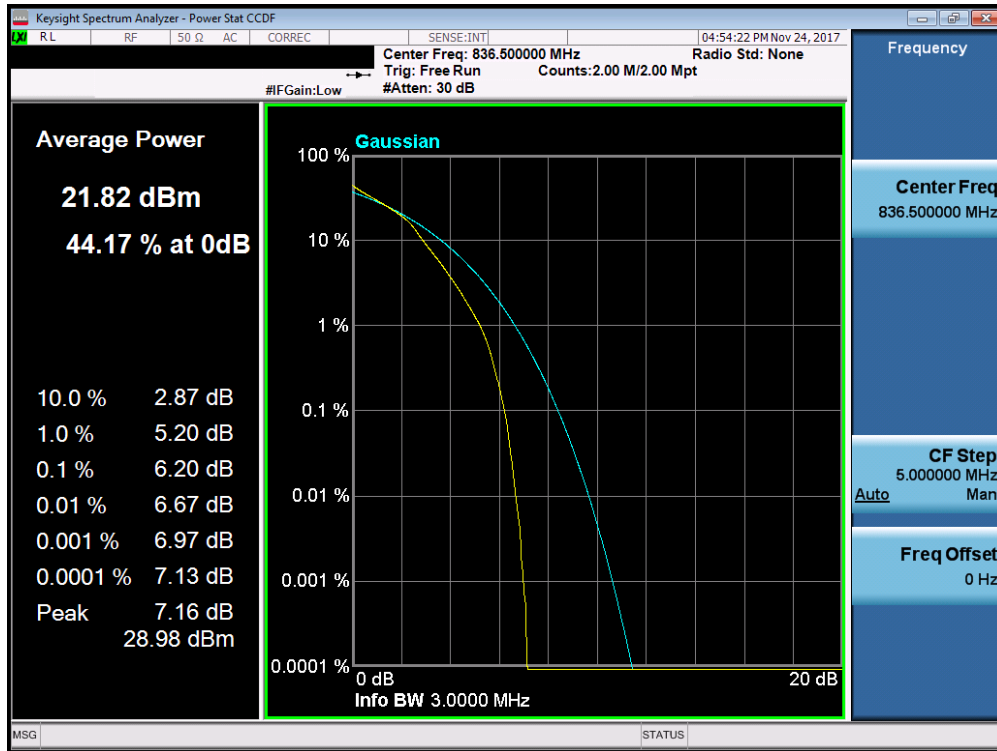


Plot 7-280. PAR Plot (Band 26/5 - 1.4MHz 64-QAM - Full RB Configuration)

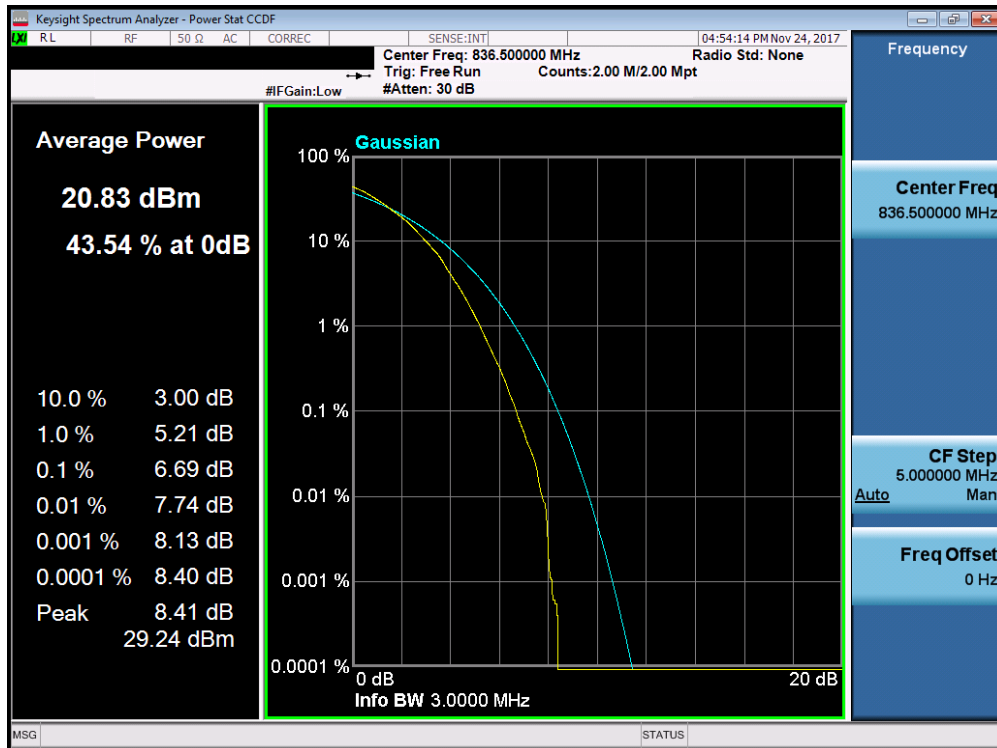


Plot 7-281. PAR Plot (Band 26/5 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 169 of 237

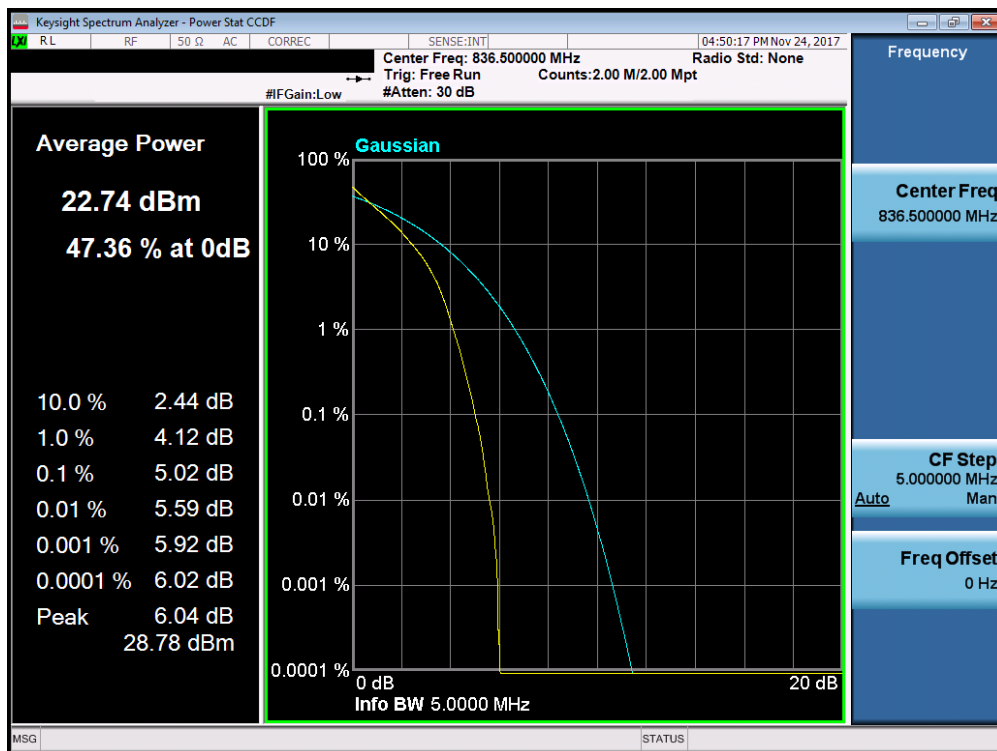


Plot 7-282. PAR Plot (Band 26/5 - 3.0MHz 16-QAM - Full RB Configuration)

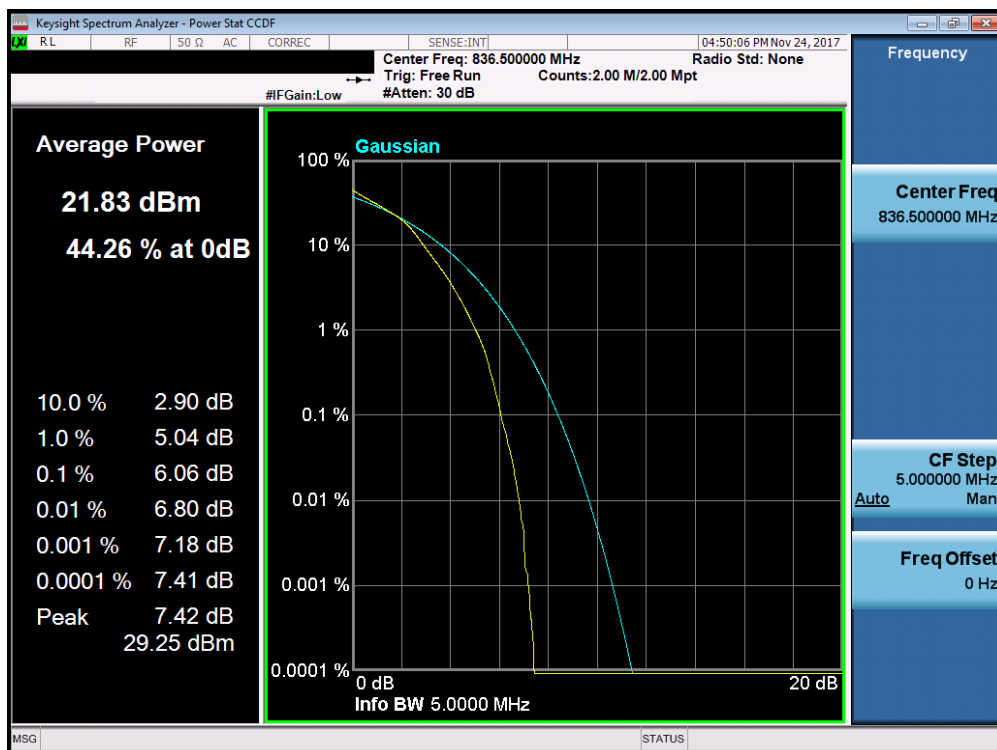


Plot 7-283. PAR Plot (Band 26/5 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 170 of 237

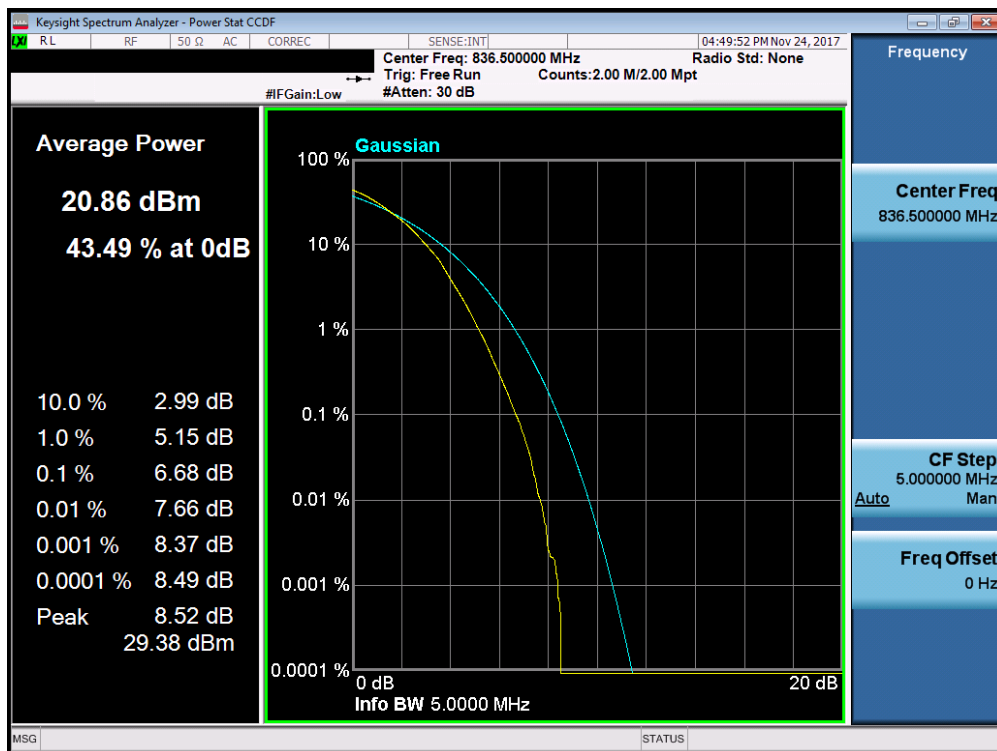


Plot 7-284. PAR Plot (Band 26/5 - 5.0MHz QPSK - Full RB Configuration)

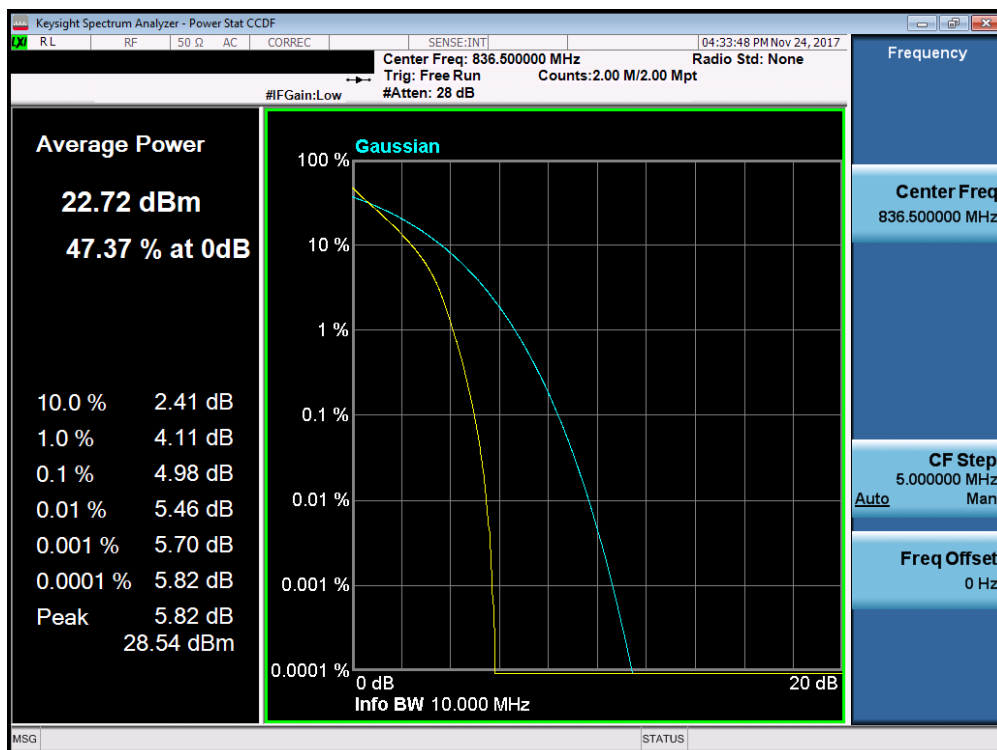


Plot 7-285. PAR Plot (Band 26/5 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 171 of 237

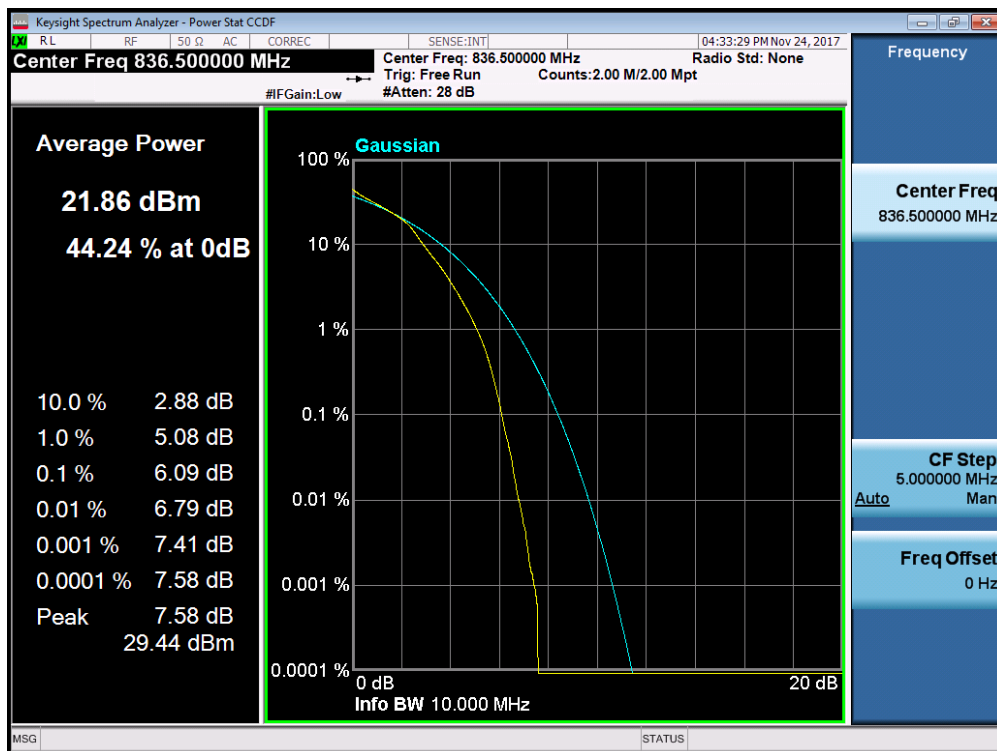


Plot 7-286. PAR Plot (Band 26/5 - 5.0MHz 64-QAM - Full RB Configuration)

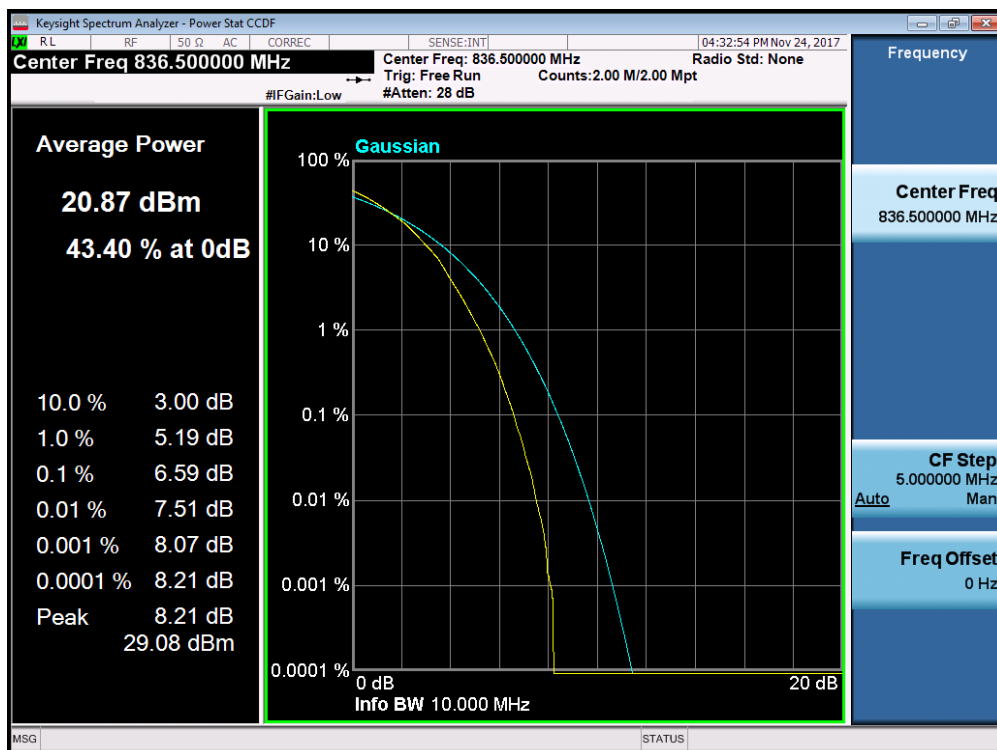


Plot 7-287. PAR Plot (Band 26/5 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 172 of 237

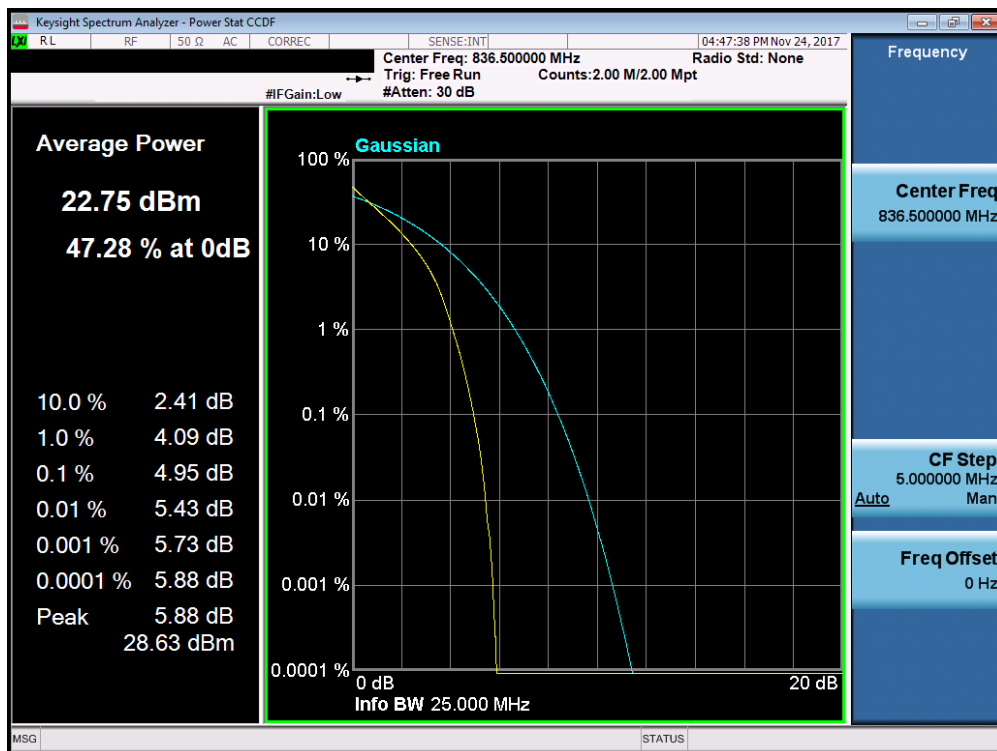


Plot 7-288. PAR Plot (Band 26/5 - 10.0MHz 16-QAM - Full RB Configuration)

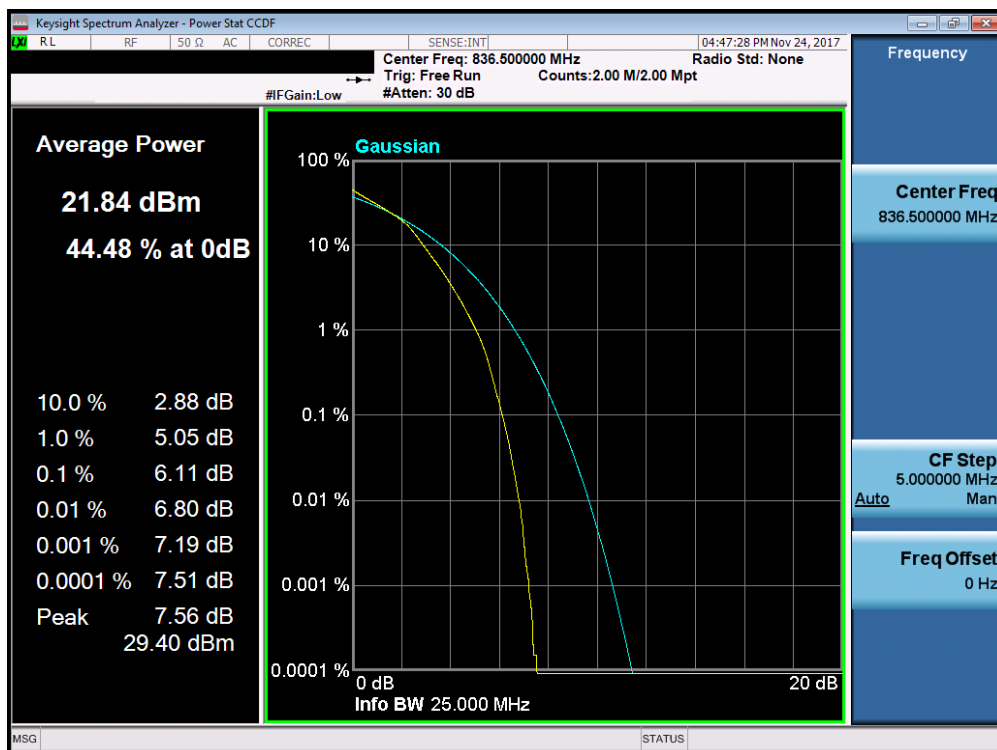


Plot 7-289. PAR Plot (Band 26/5 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 173 of 237

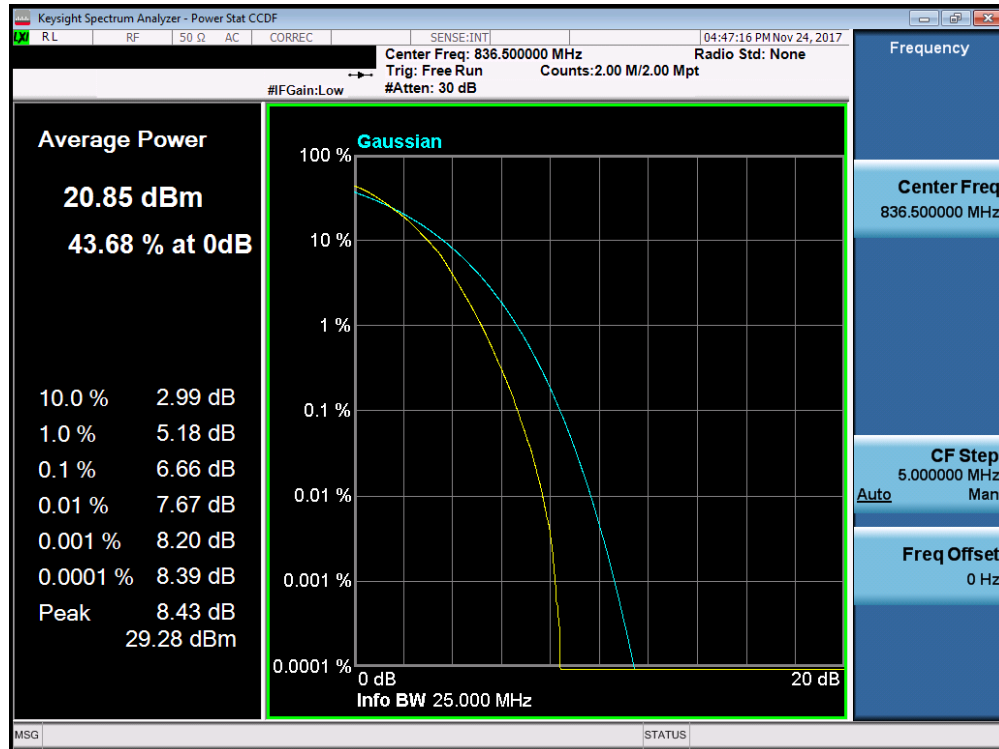


Plot 7-290. PAR Plot (Band 26 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-291. PAR Plot (Band 26 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 174 of 237



Plot 7-292. PAR Plot (Band 26 - 15.0MHz 64-QAM - Full RB Configuration)

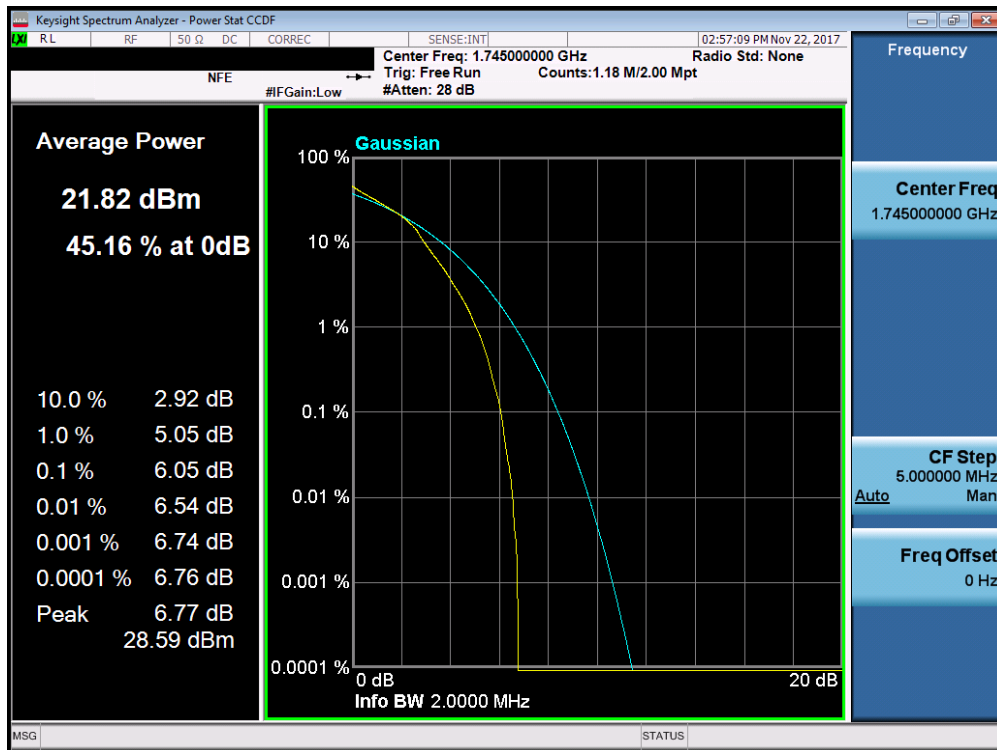
FCC ID: A3LSMG9600	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 175 of 237

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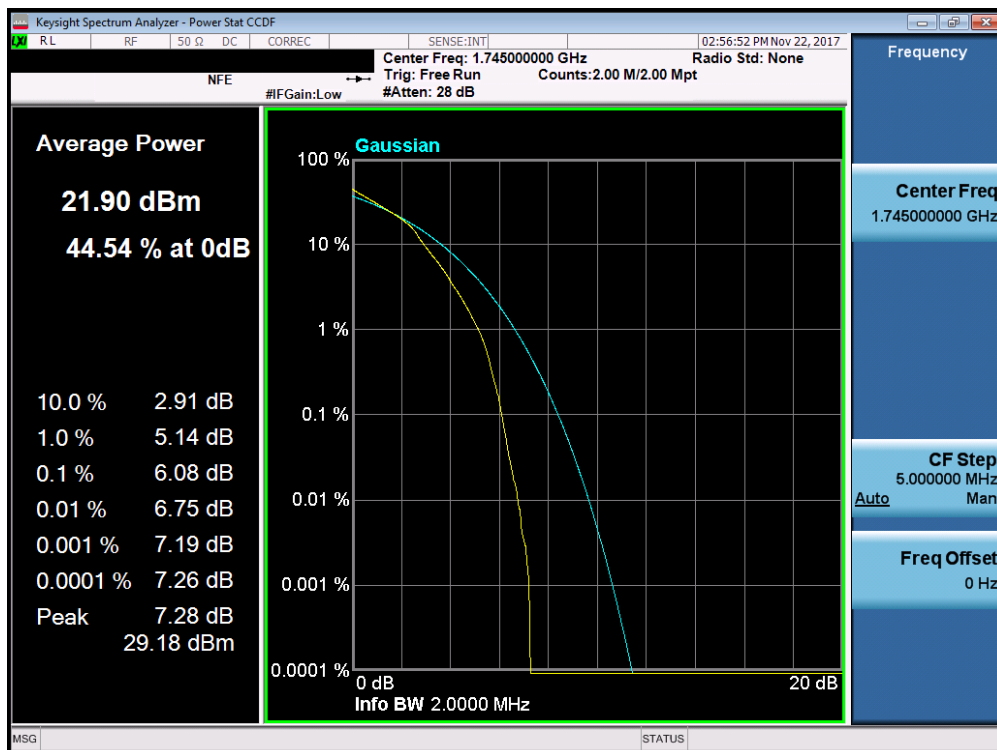
V 7.1

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Band 66/4

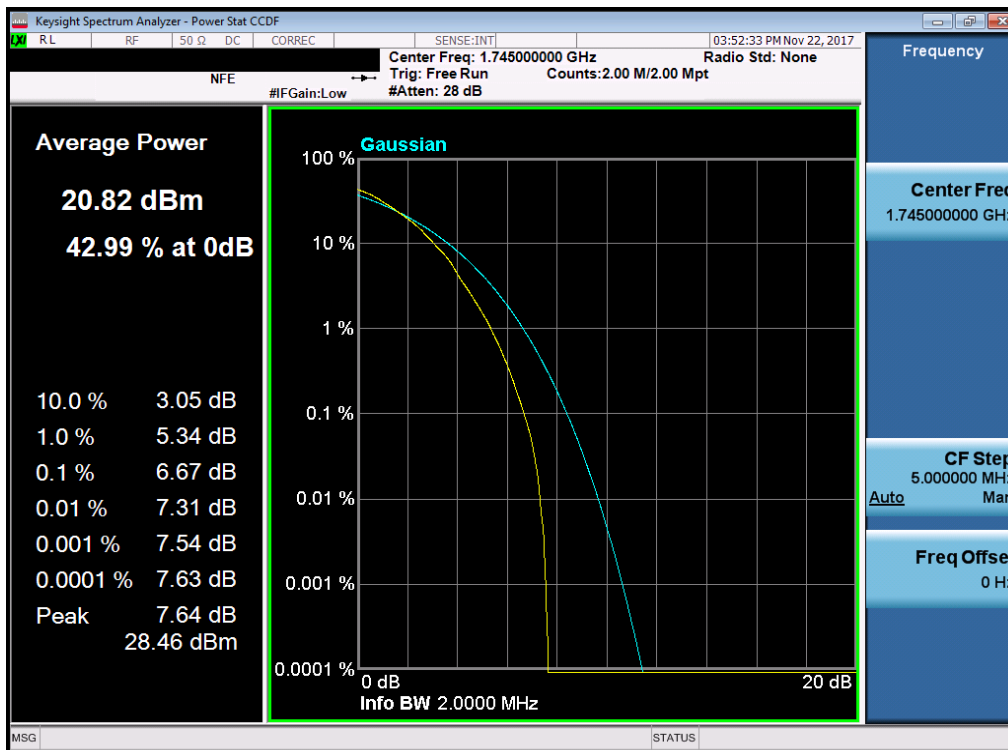


Plot 7-293. PAR Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

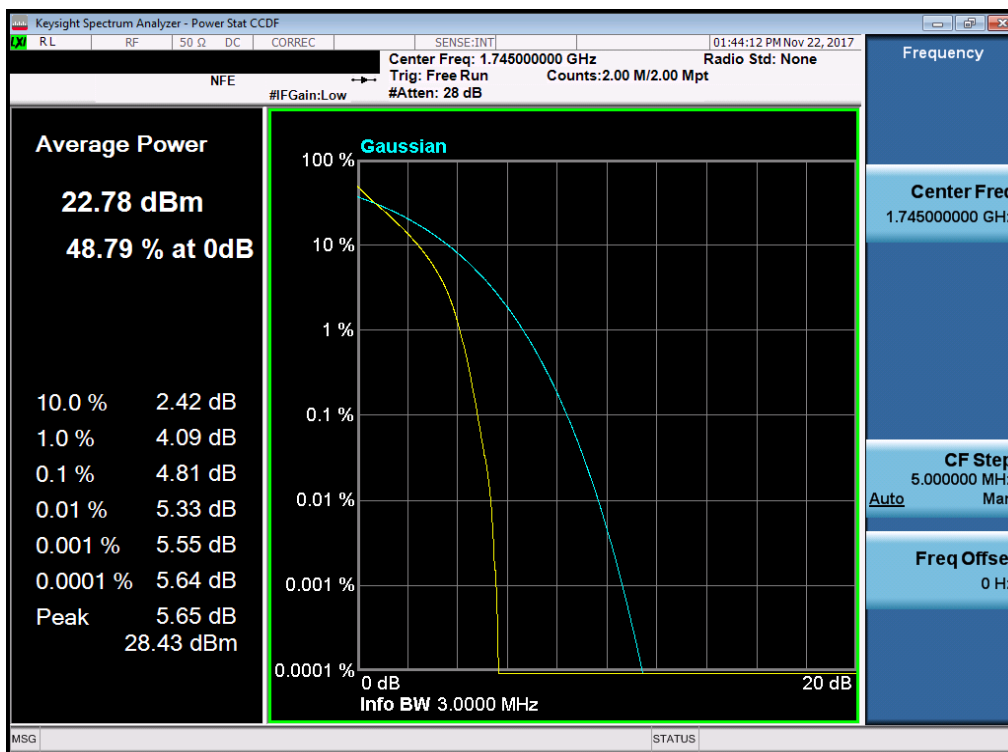


Plot 7-294. PAR Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 176 of 237

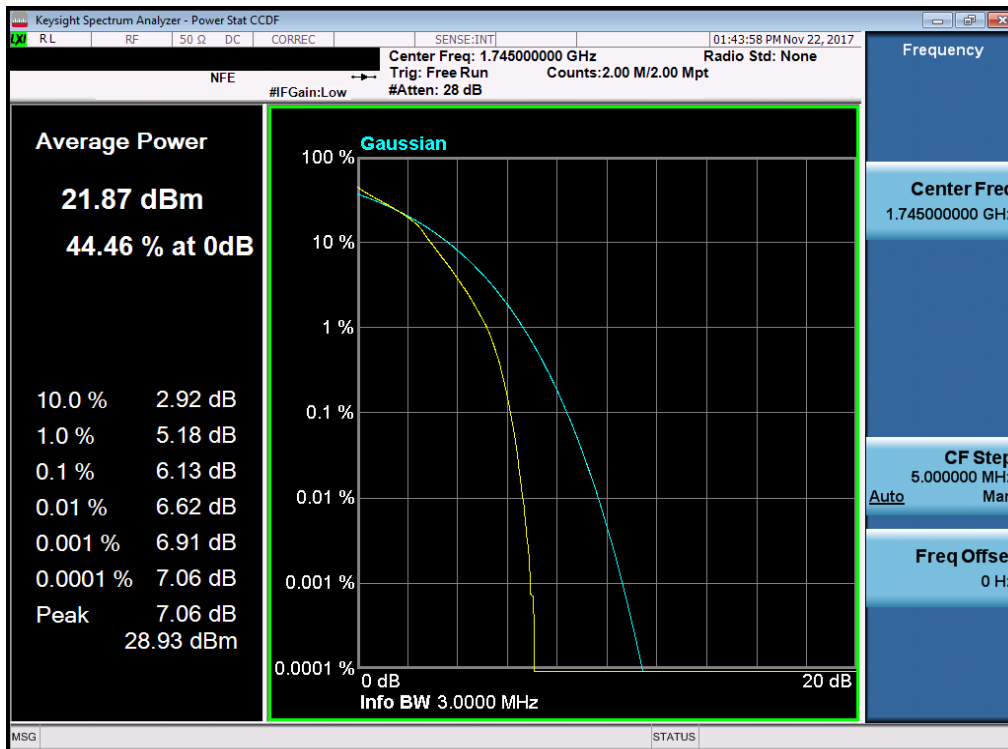


Plot 7-295. PAR Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)

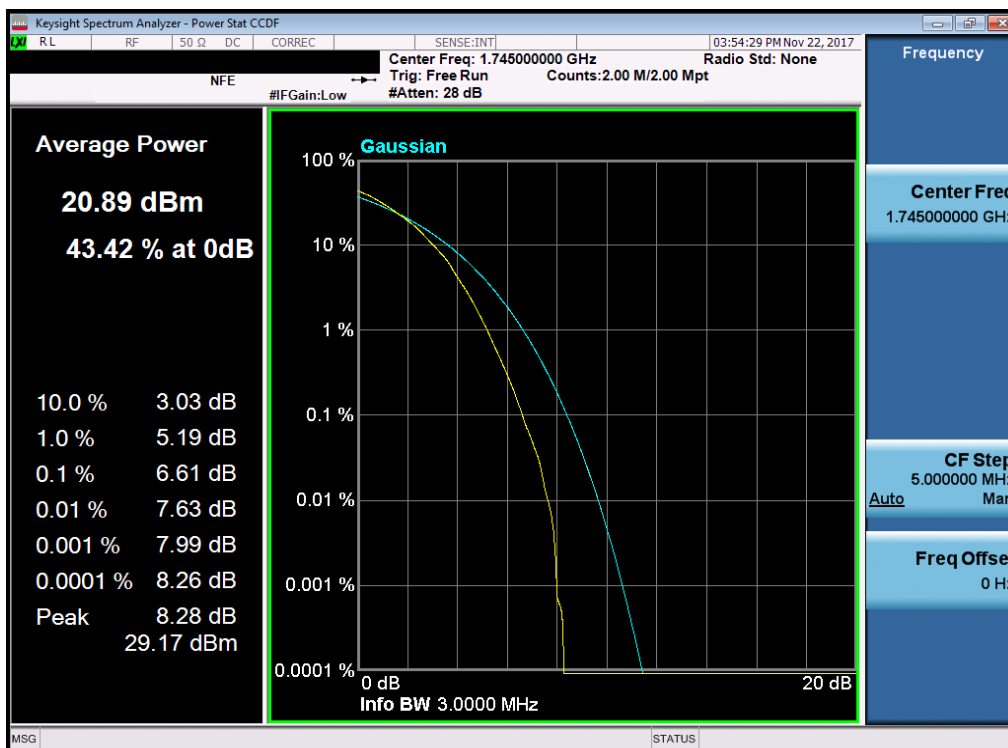


Plot 7-296. PAR Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 177 of 237

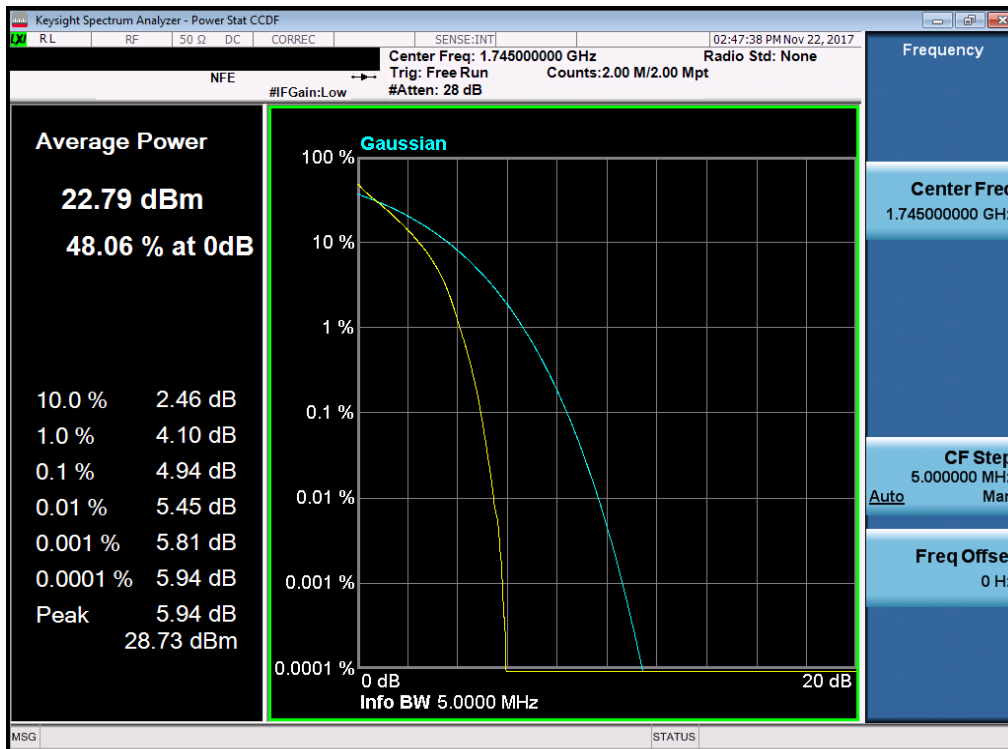


Plot 7-297. PAR Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

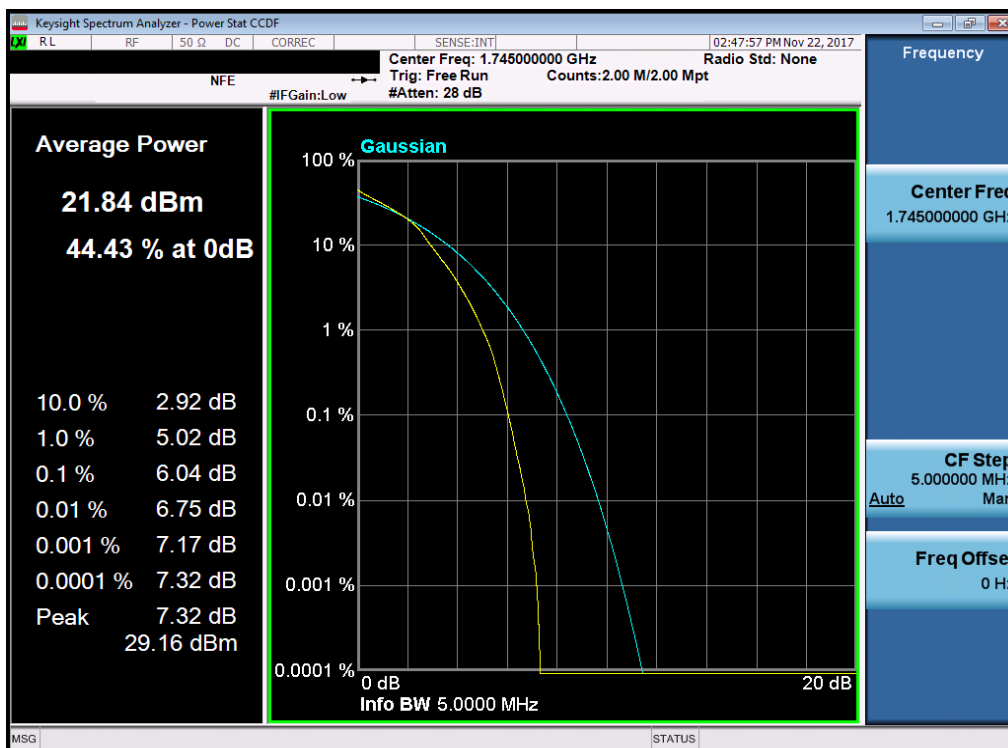


Plot 7-298. PAR Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 178 of 237

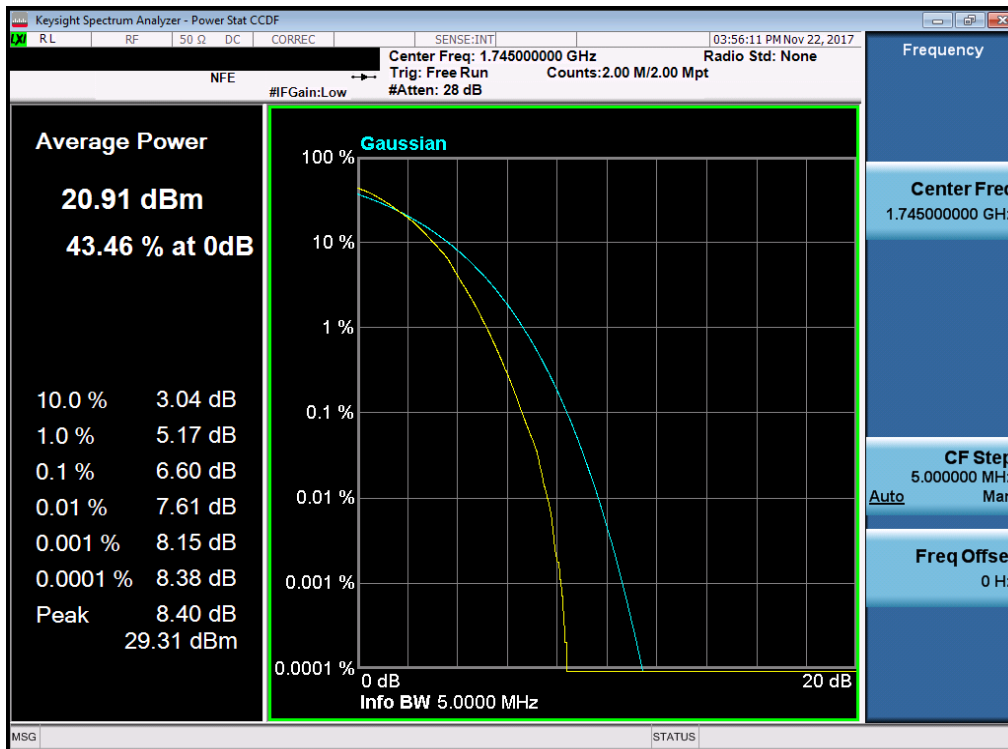


Plot 7-299. PAR Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

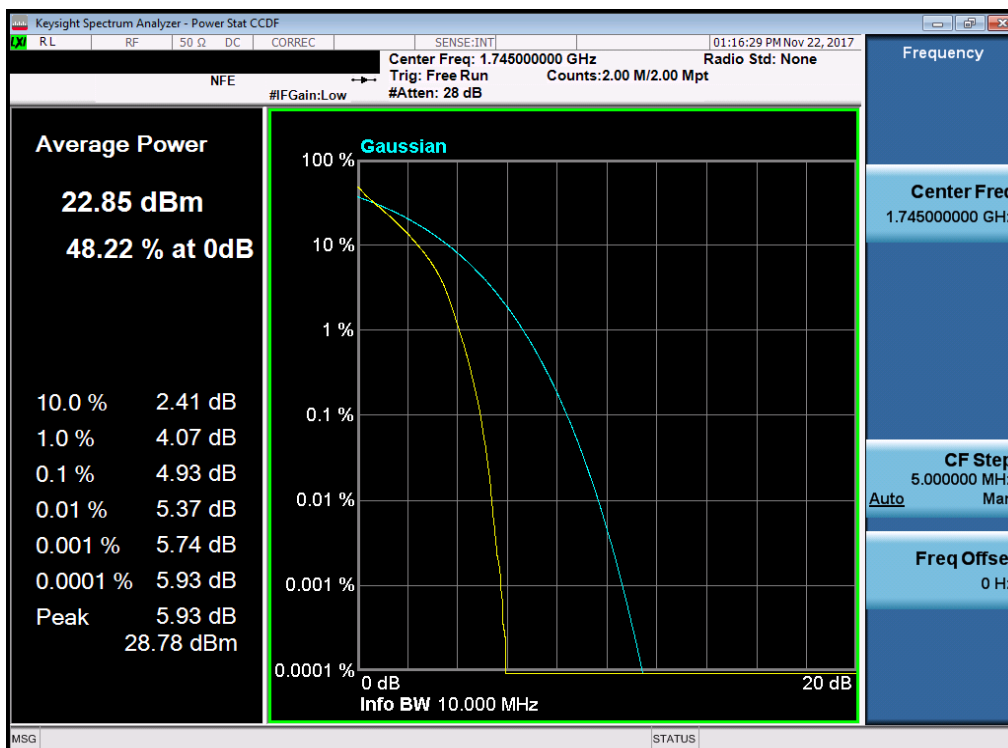


Plot 7-300. PAR Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 179 of 237

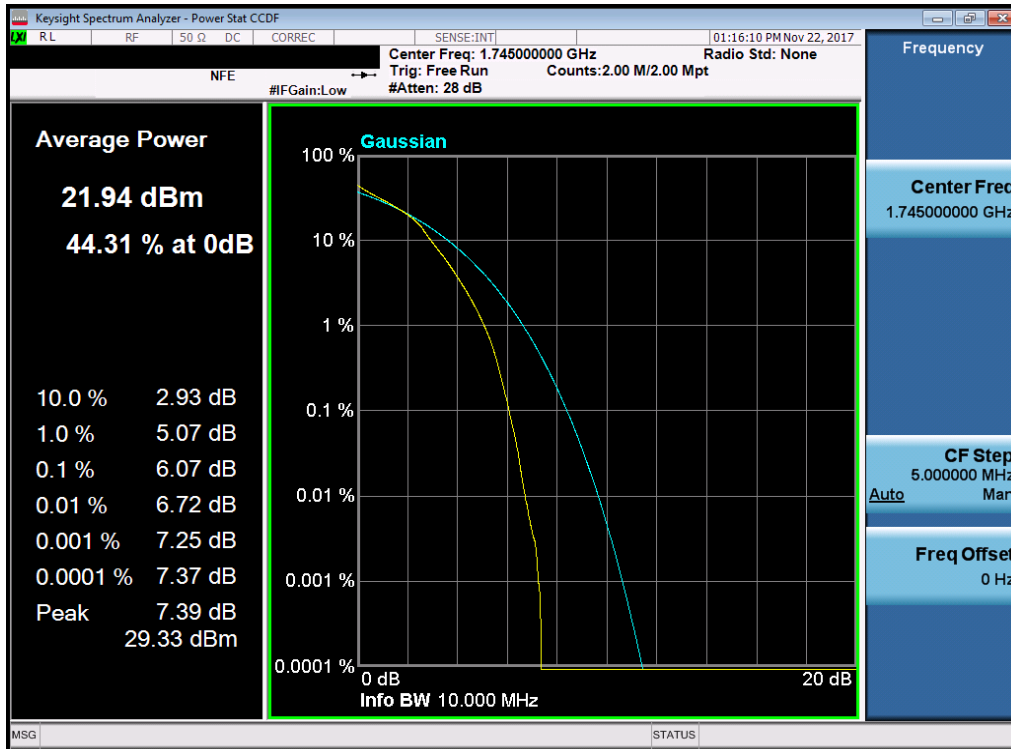


Plot 7-301. PAR Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)

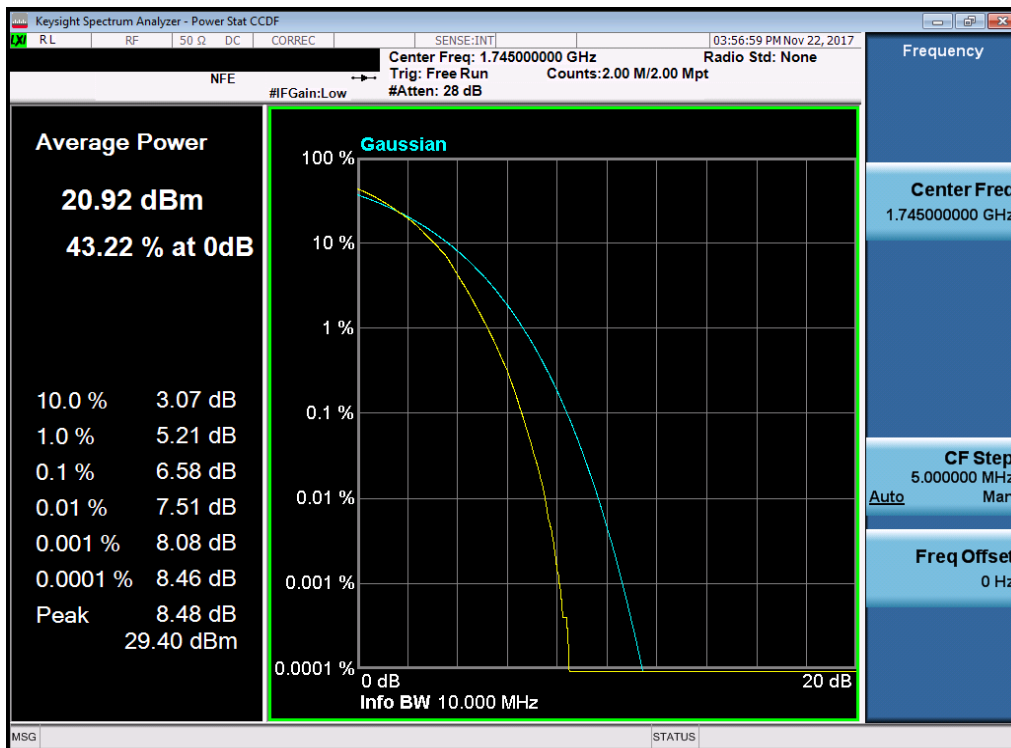


Plot 7-302. PAR Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 180 of 237

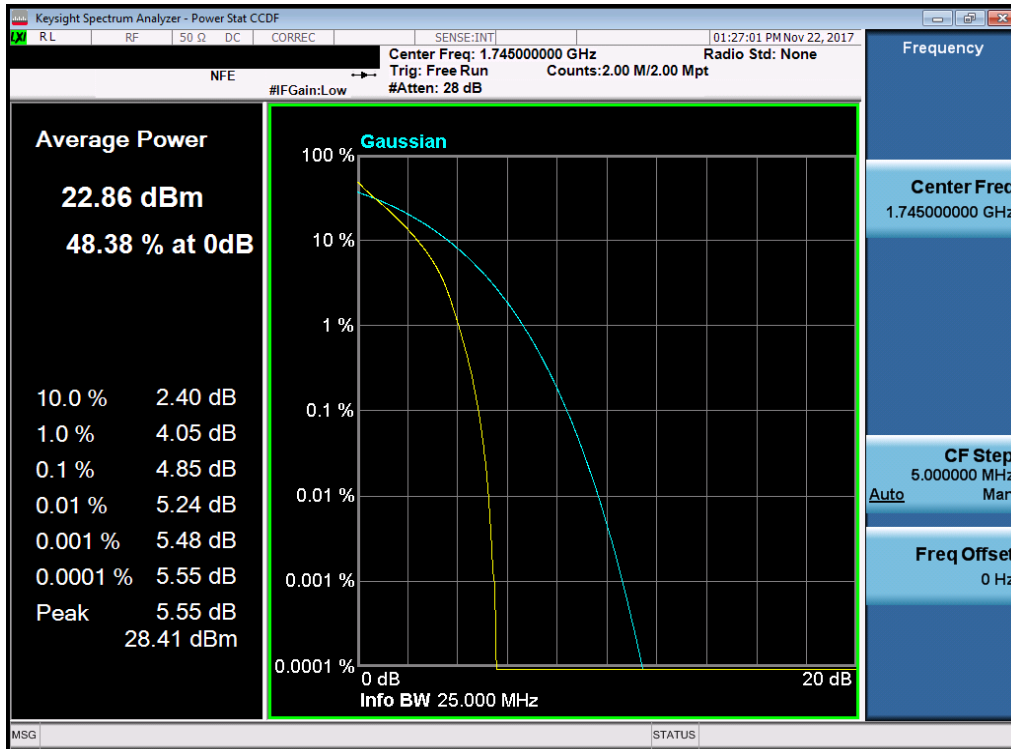


Plot 7-303. PAR Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

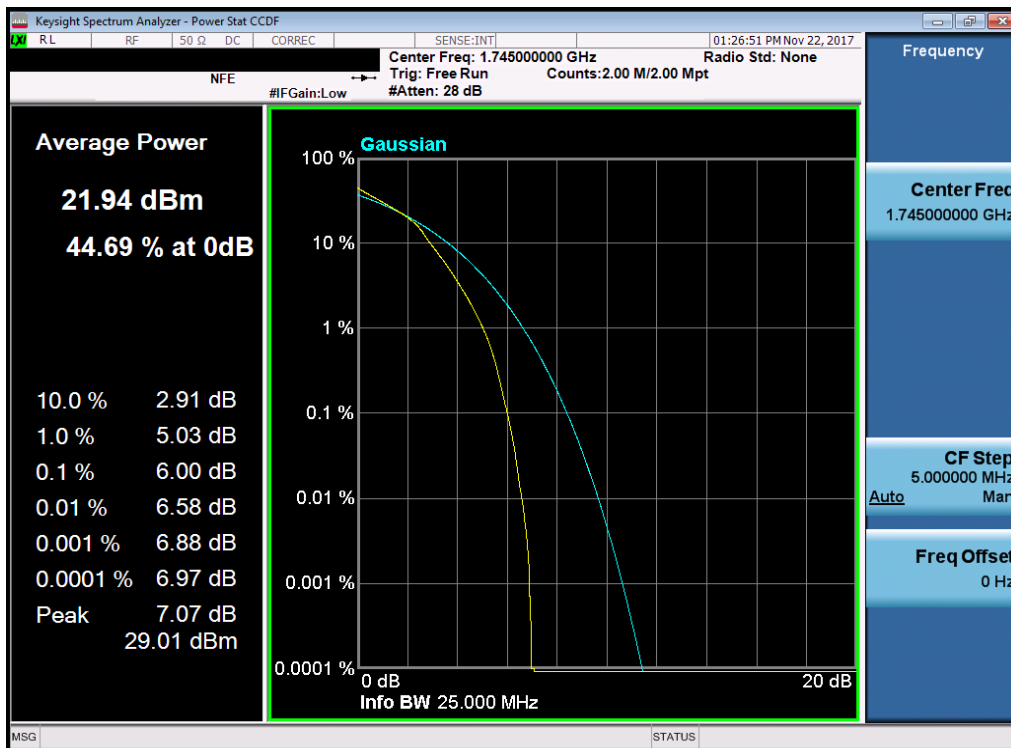


Plot 7-304. PAR Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 181 of 237

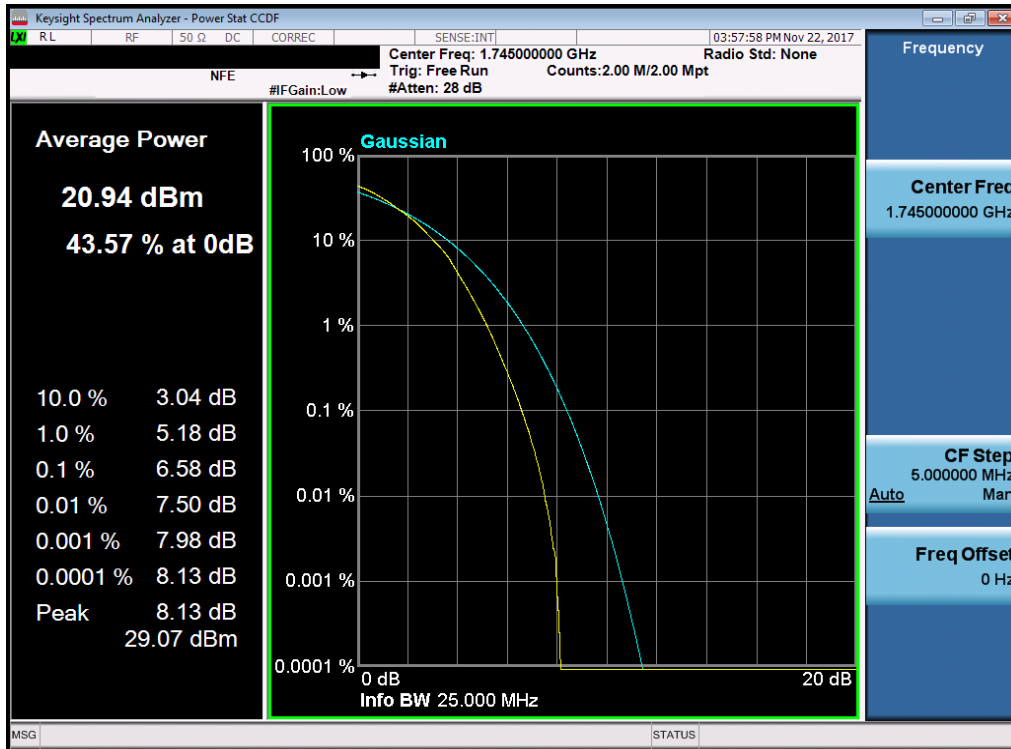


Plot 7-305. PAR Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

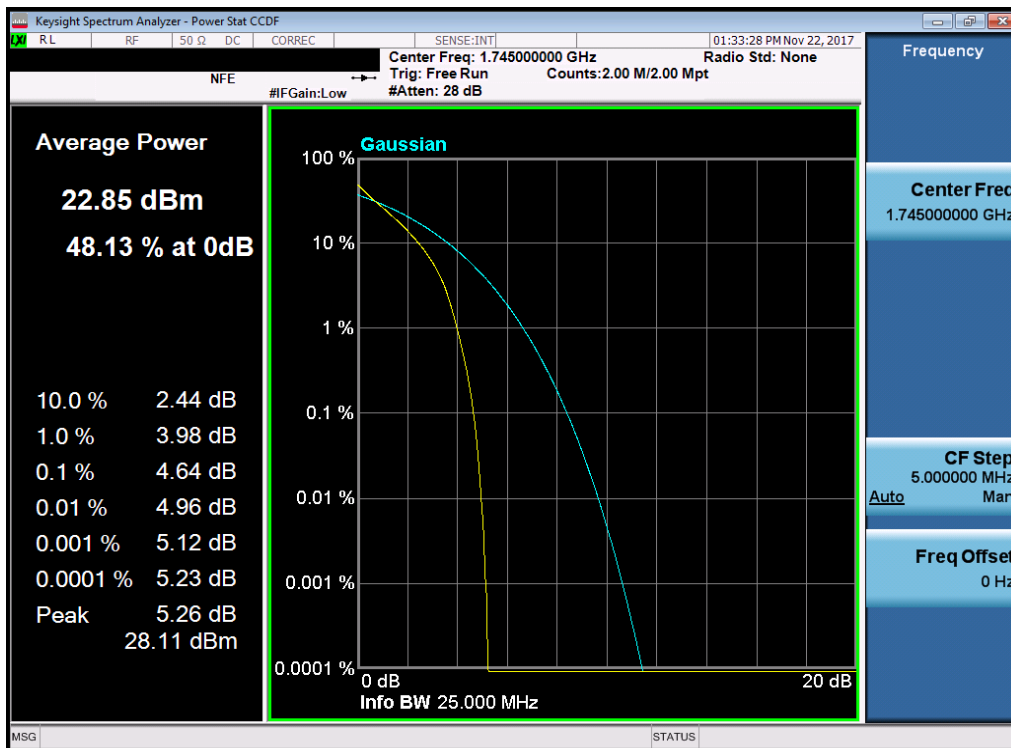


Plot 7-306. PAR Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 182 of 237

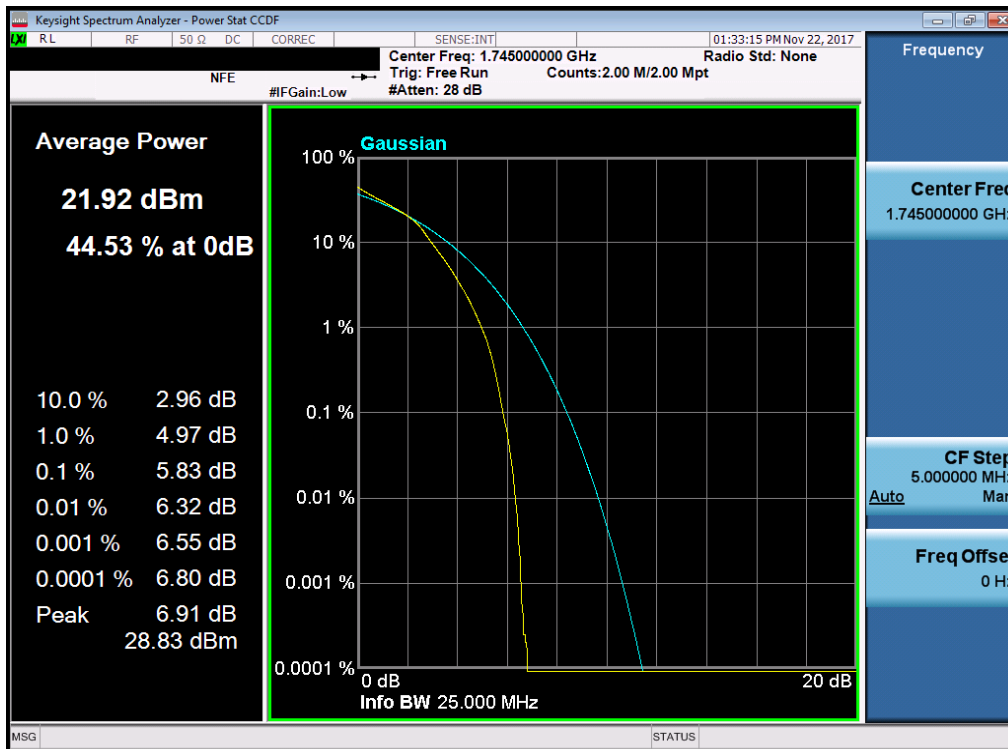


Plot 7-307. PAR Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)

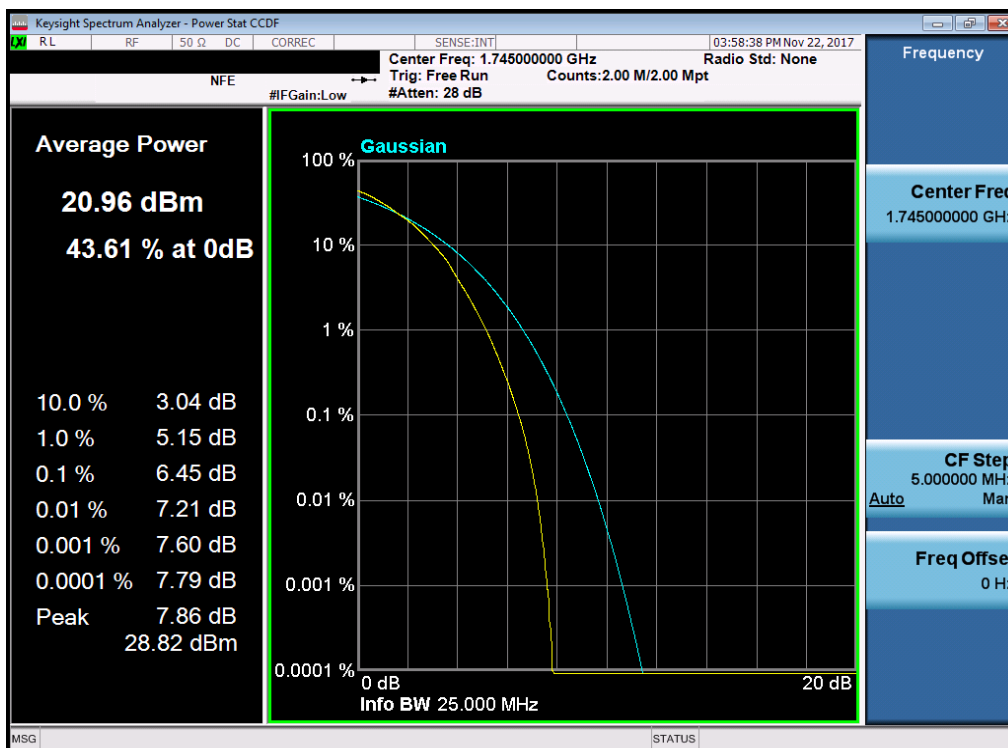


Plot 7-308. PAR Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 183 of 237



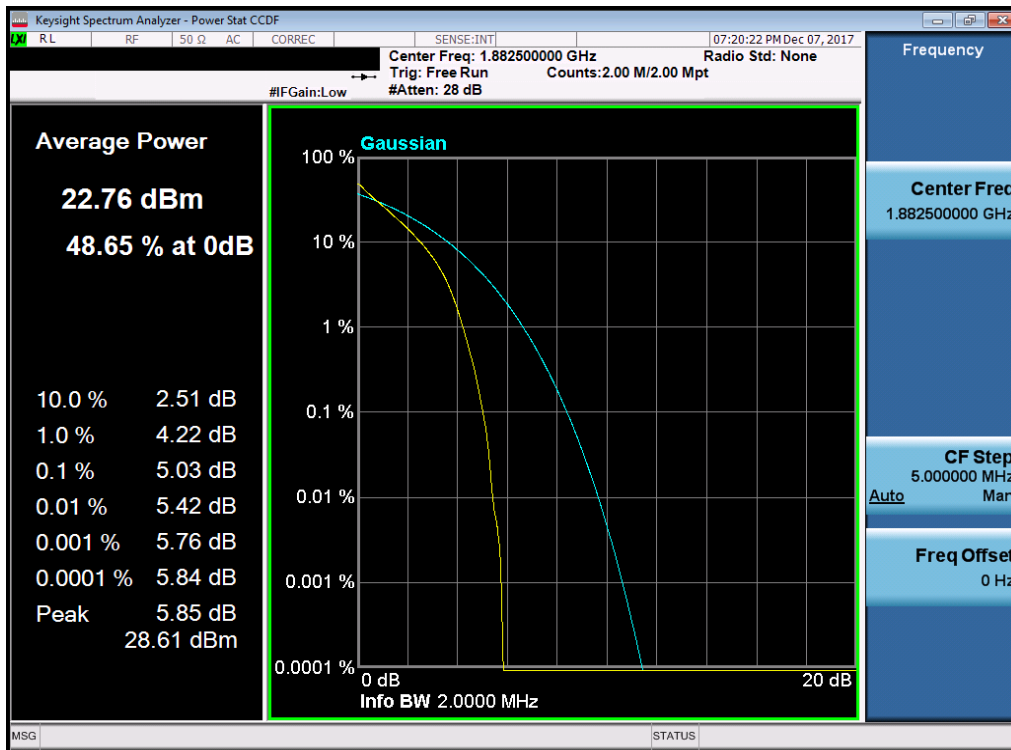
Plot 7-309. PAR Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)



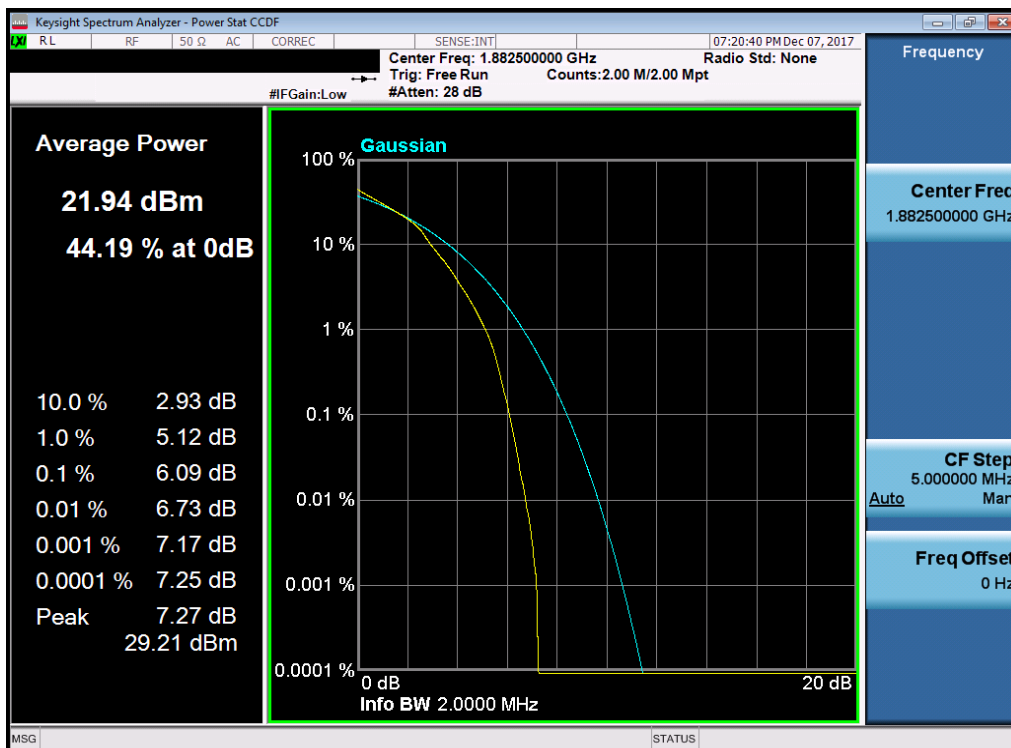
Plot 7-310. PAR Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 184 of 237

Band 25/2

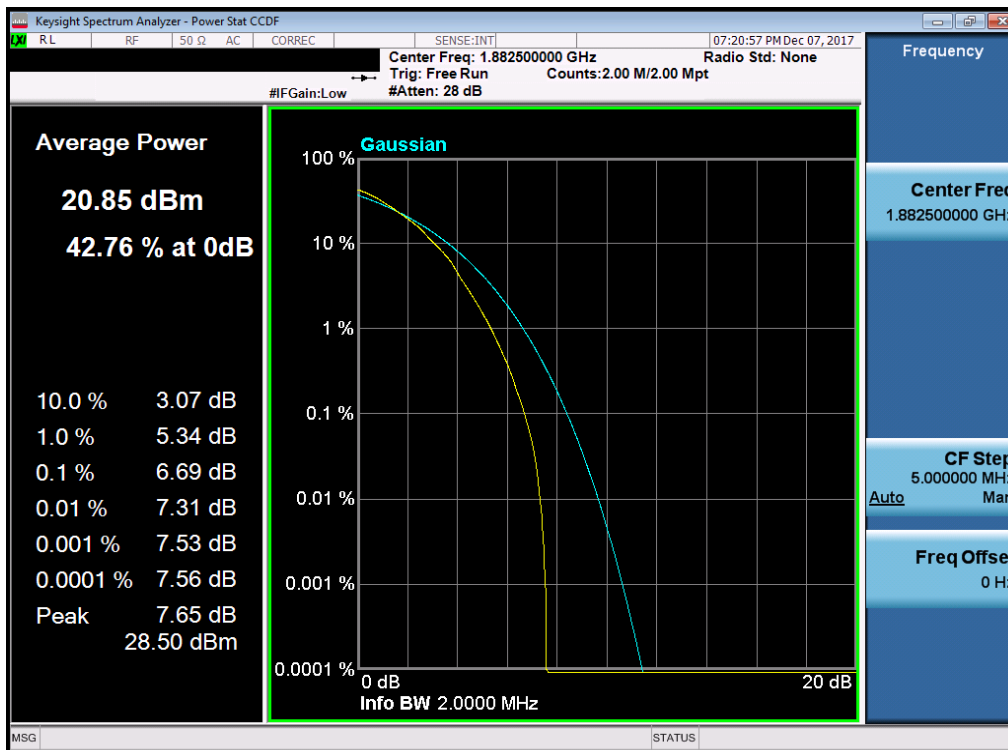


Plot 7-311. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

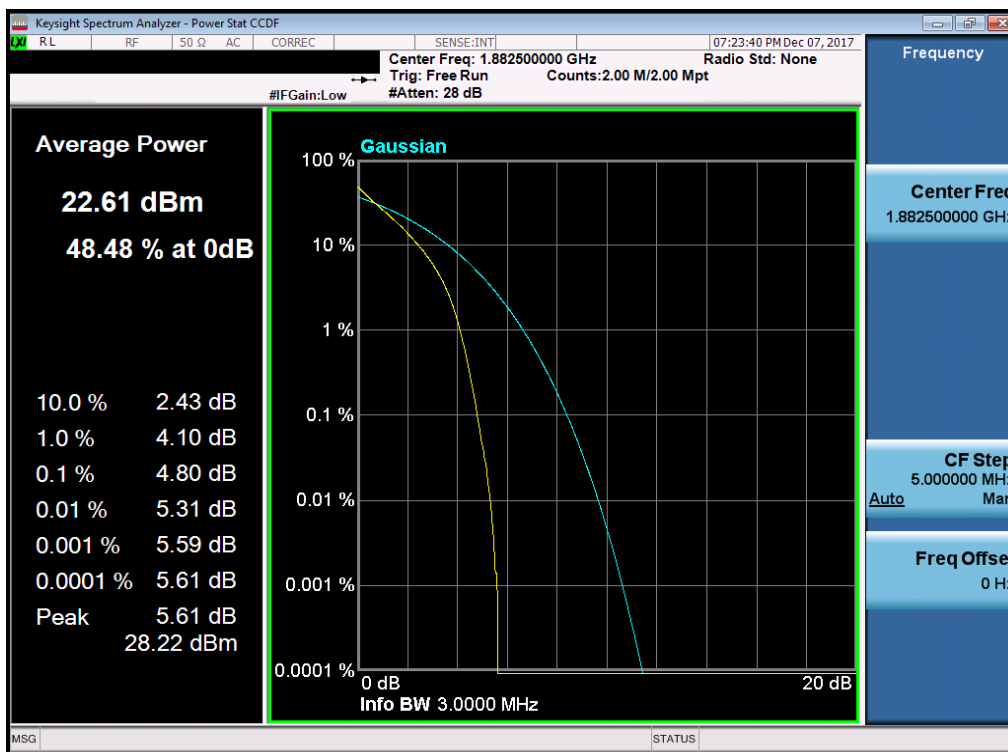


Plot 7-312. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 185 of 237

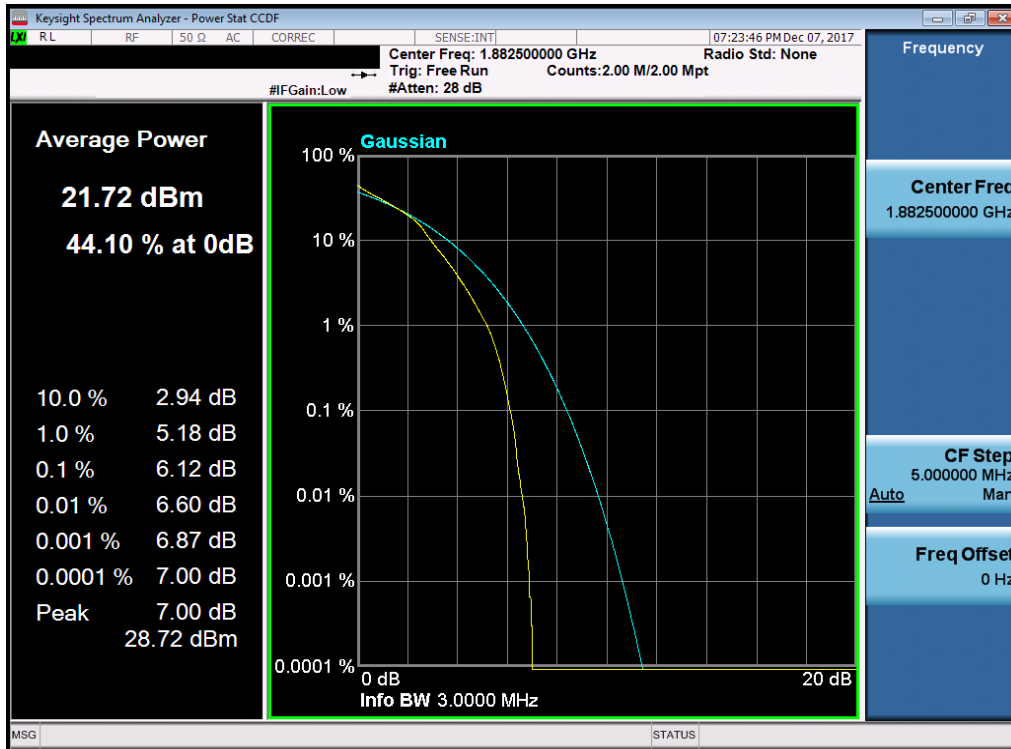


Plot 7-313. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

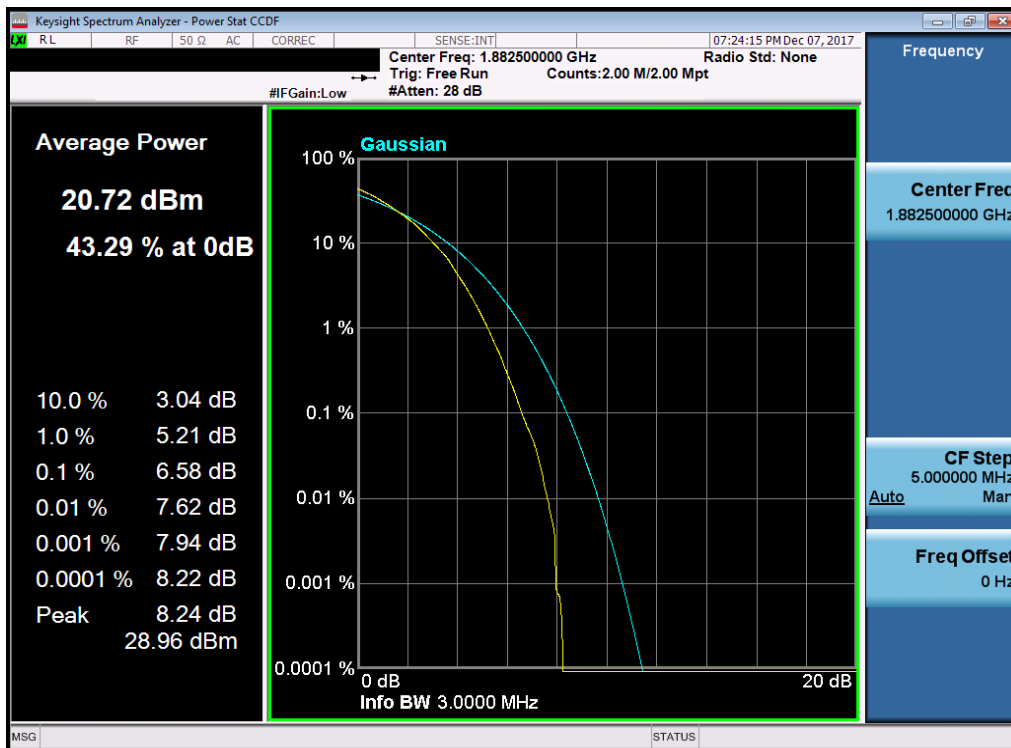


Plot 7-314. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 186 of 237

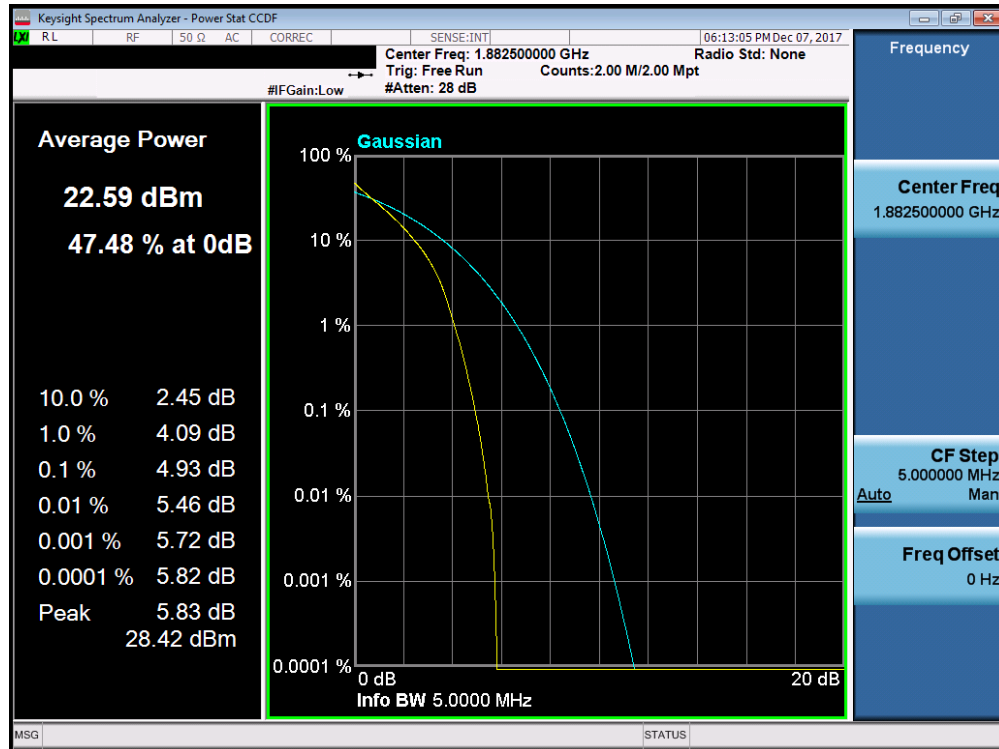


Plot 7-315. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

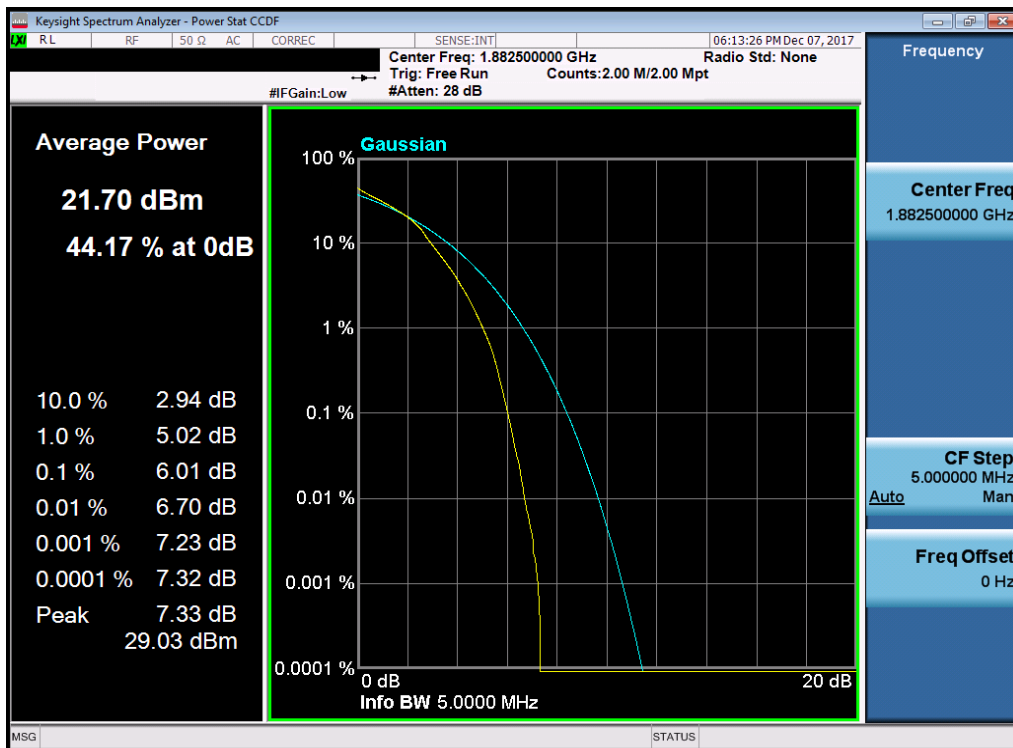


Plot 7-316. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 187 of 237

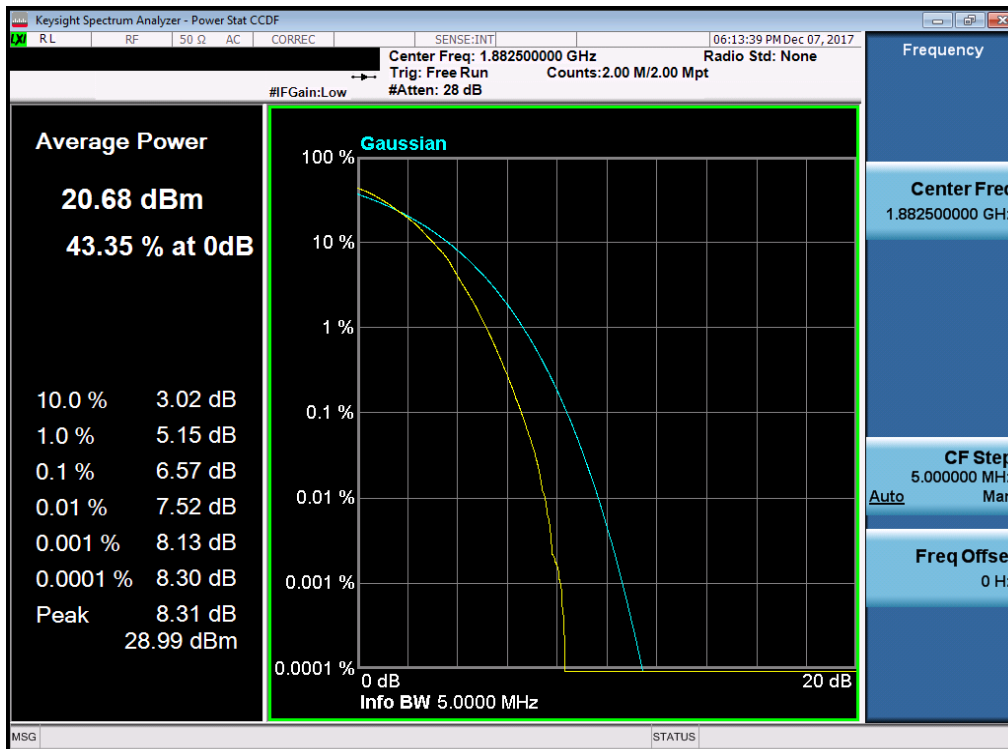


Plot 7-317. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

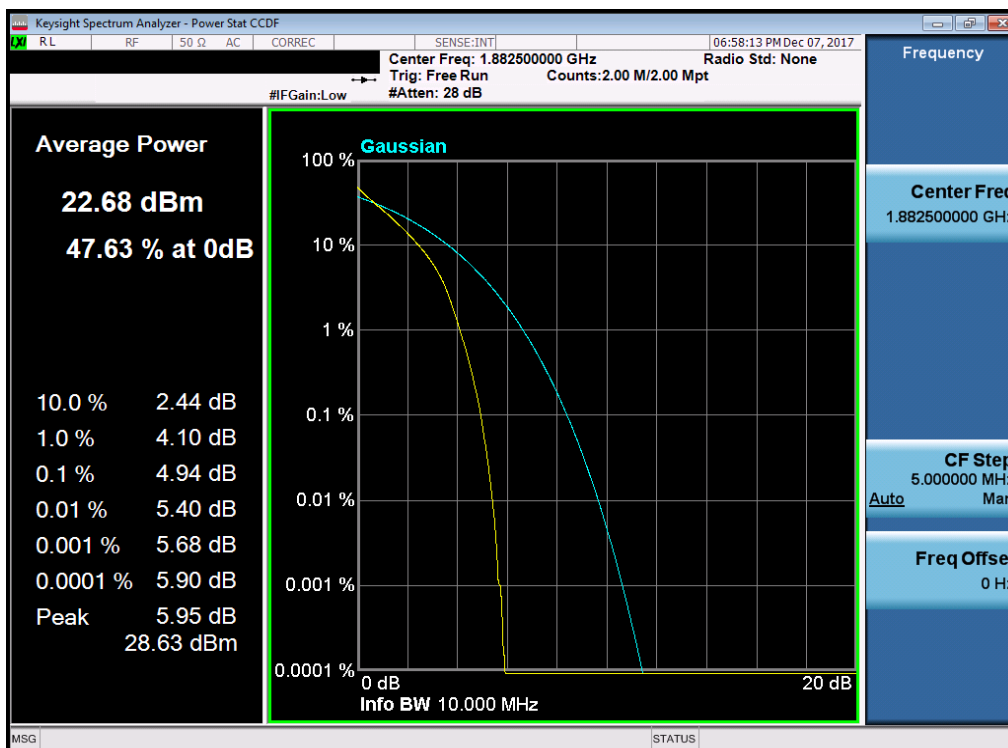


Plot 7-318. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 188 of 237

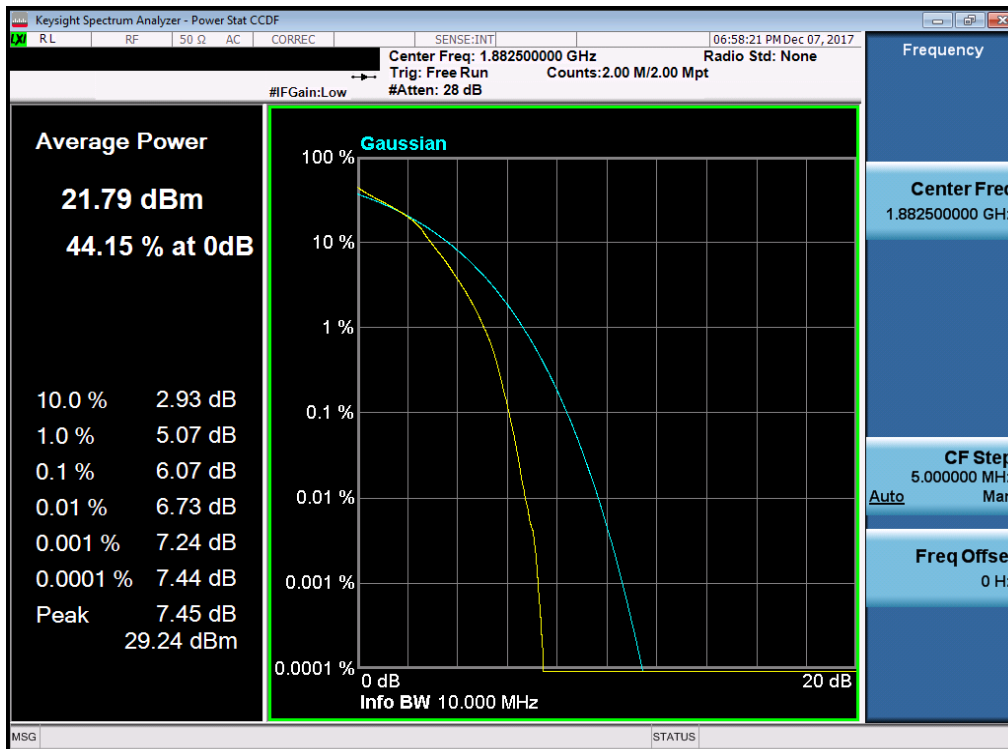


Plot 7-319. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

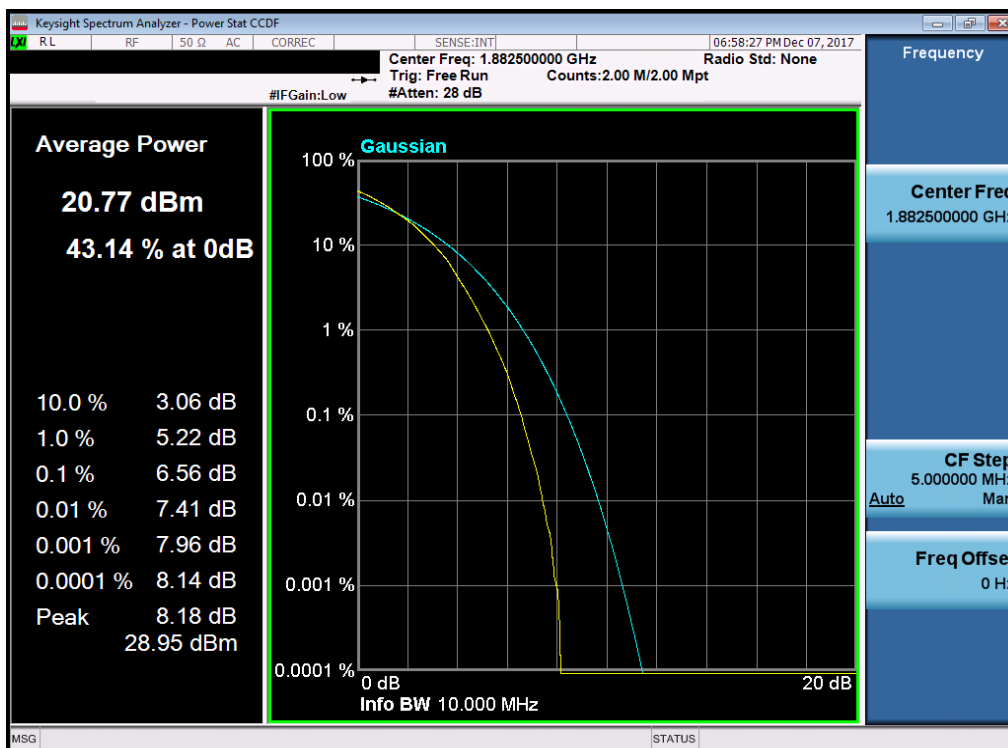


Plot 7-320. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 189 of 237

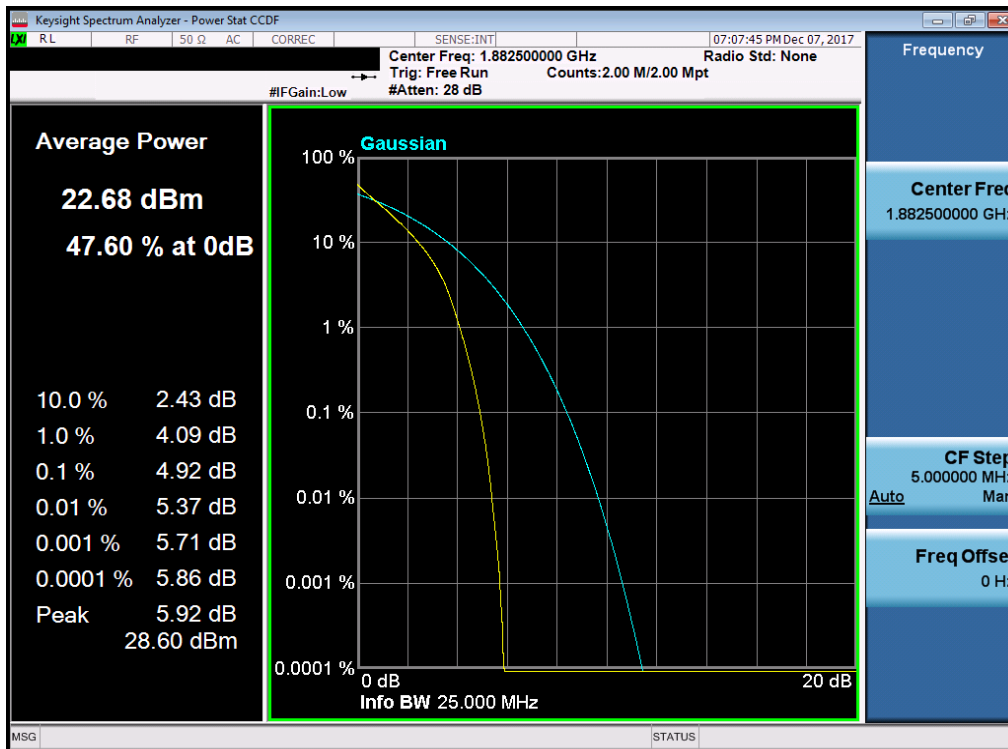


Plot 7-321. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

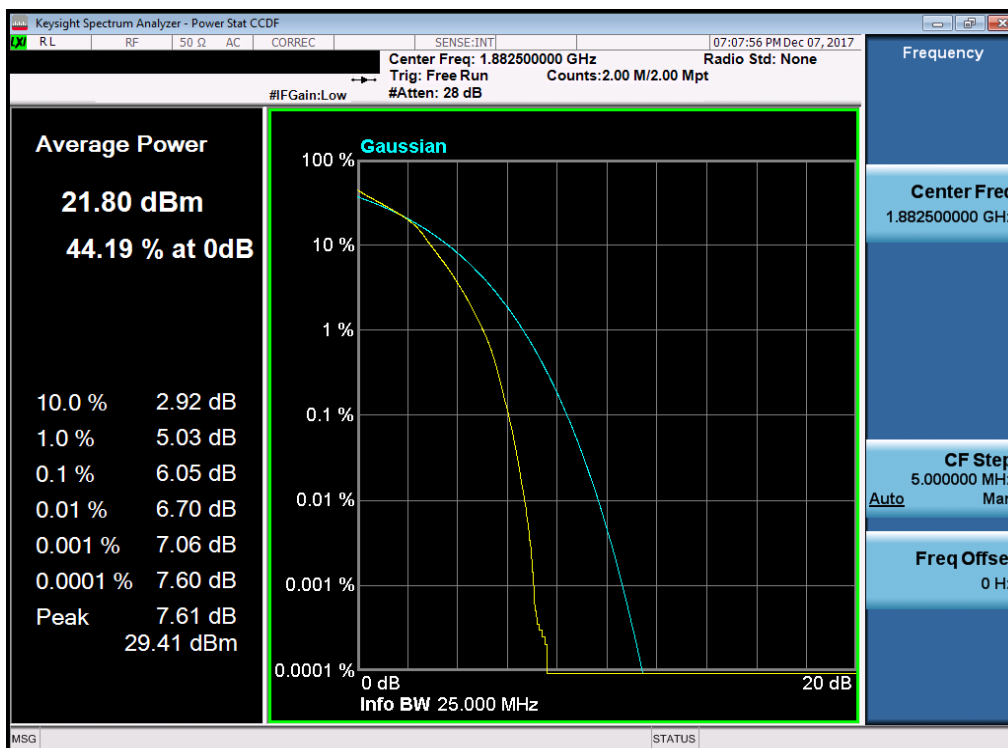


Plot 7-322. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 190 of 237

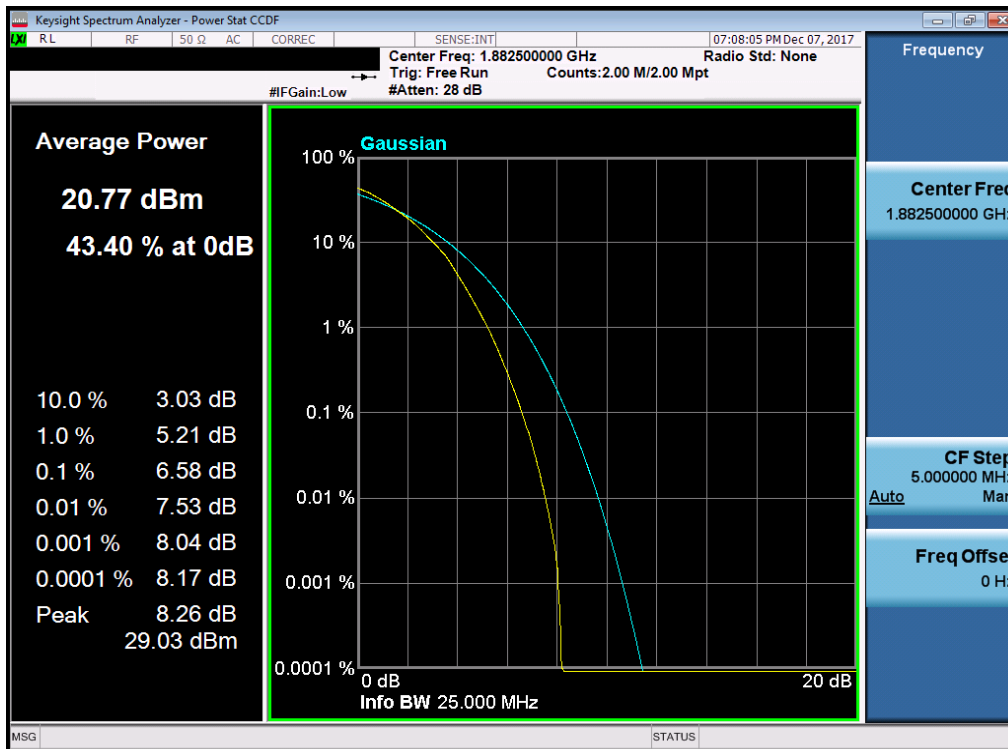


Plot 7-323. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

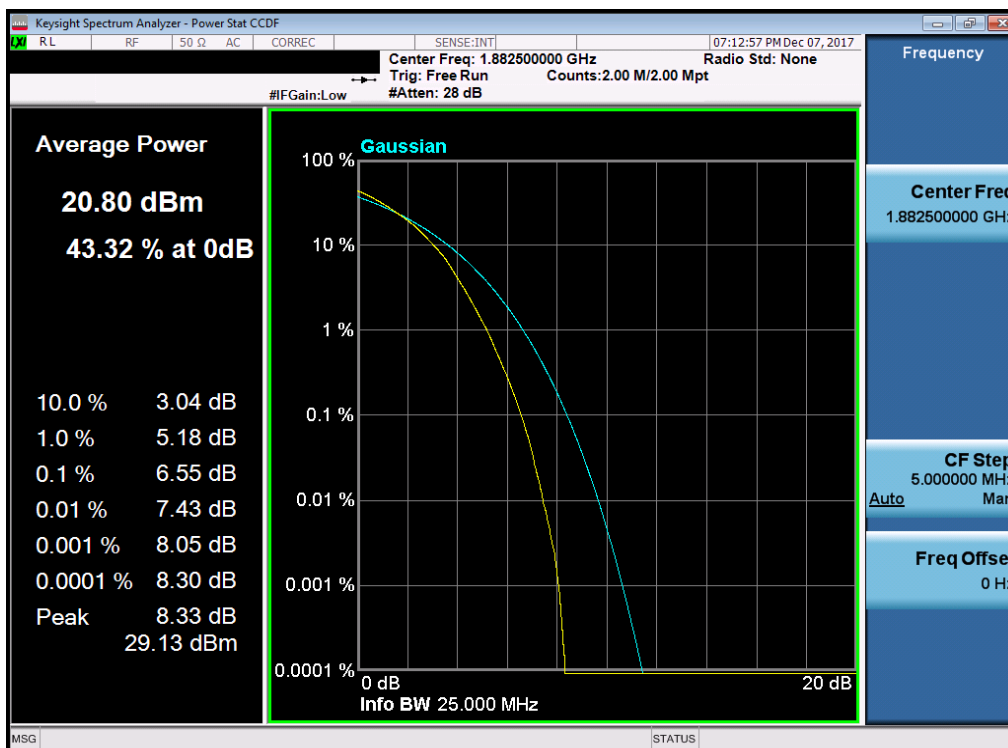


Plot 7-324. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 191 of 237

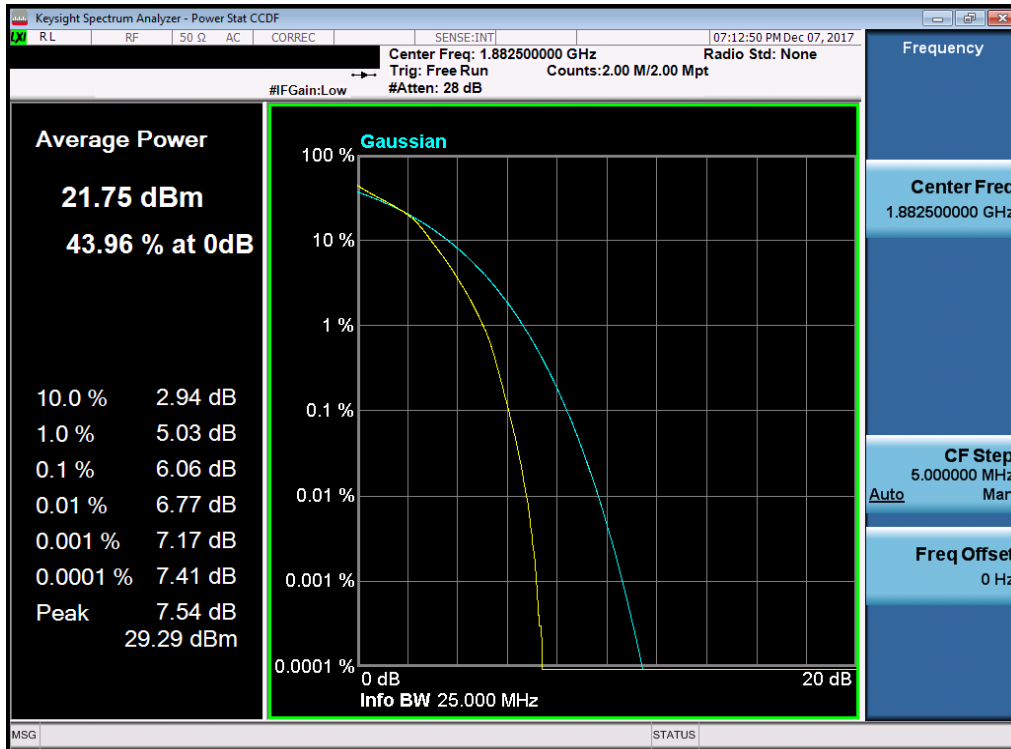


Plot 7-325. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

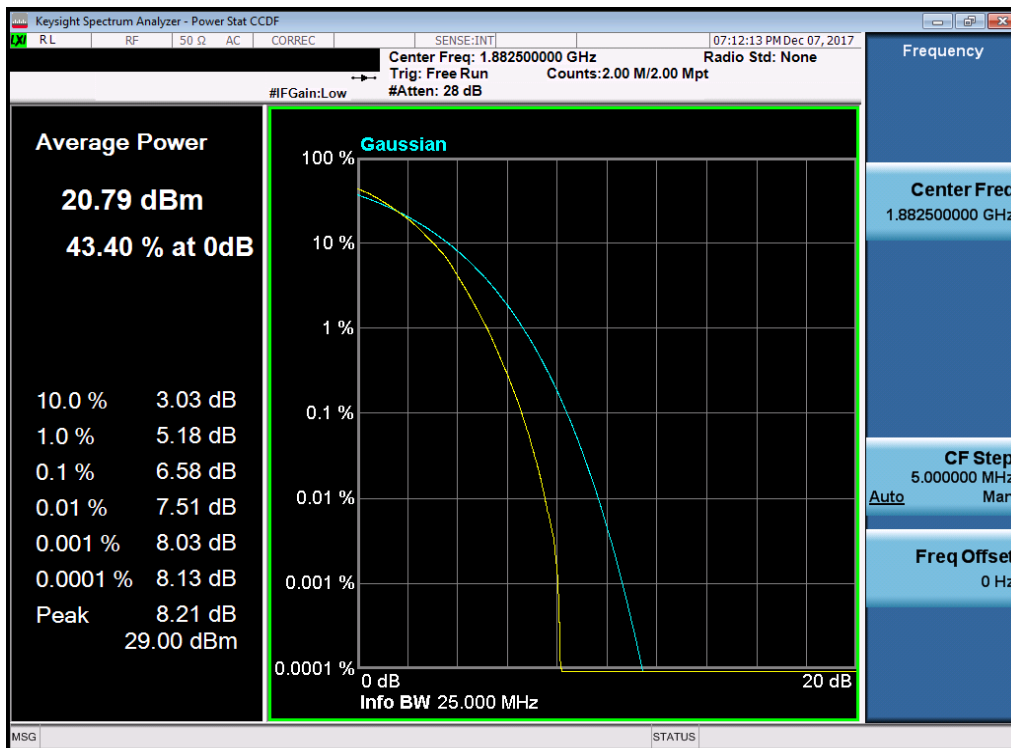


Plot 7-326. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 192 of 237



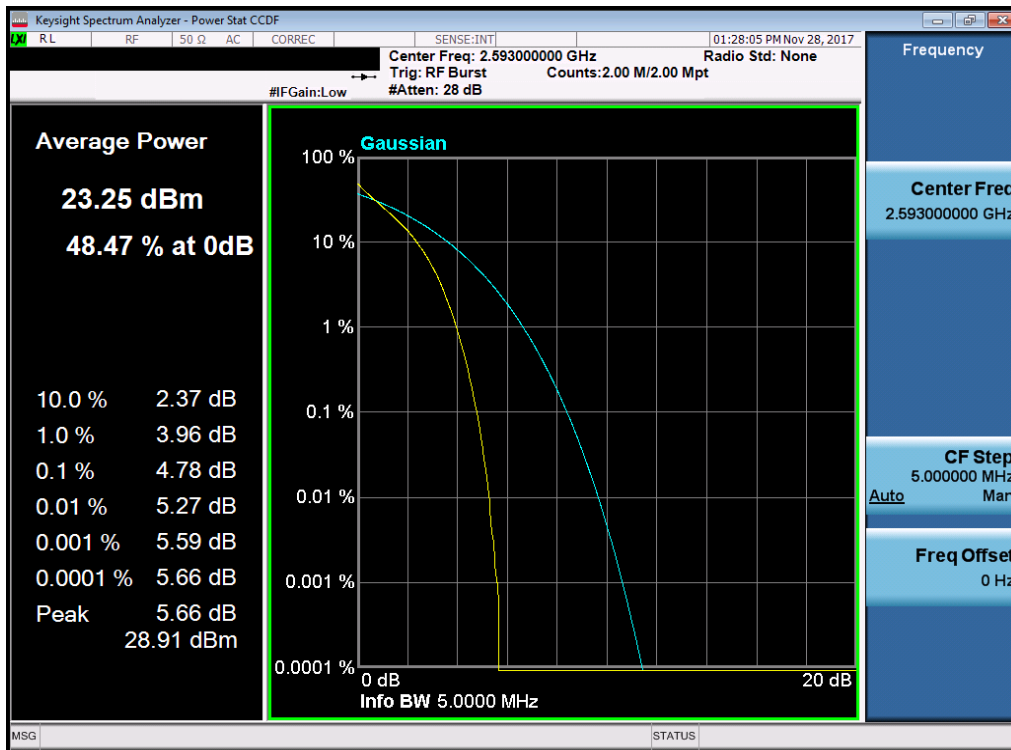
Plot 7-327. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



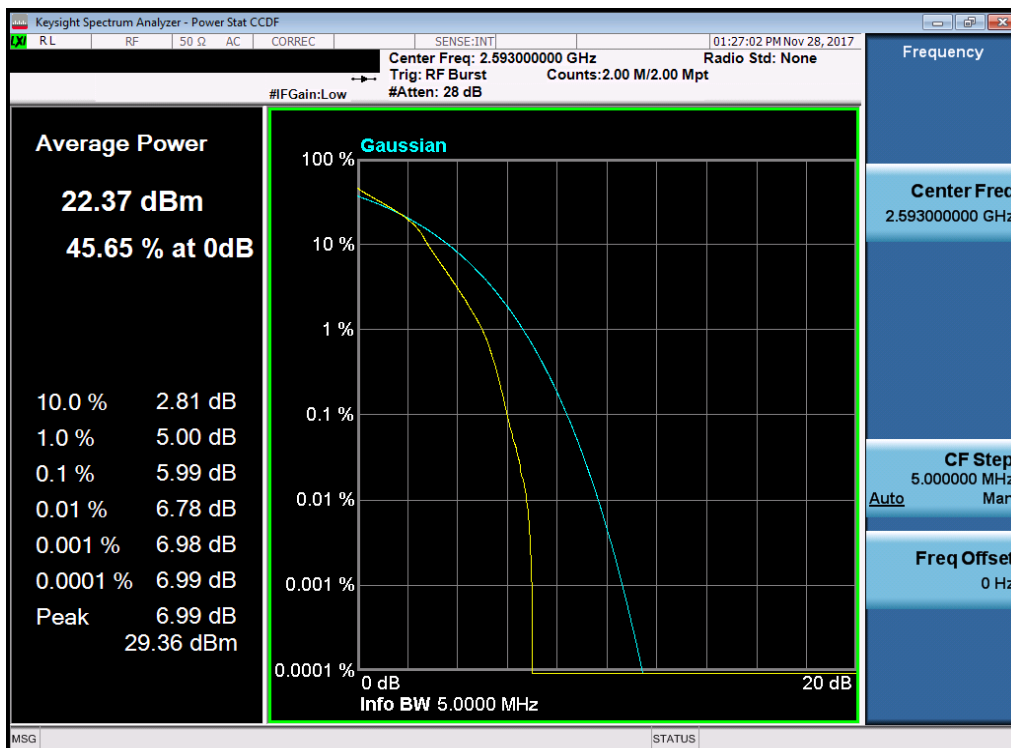
Plot 7-328. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 193 of 237

Band 41

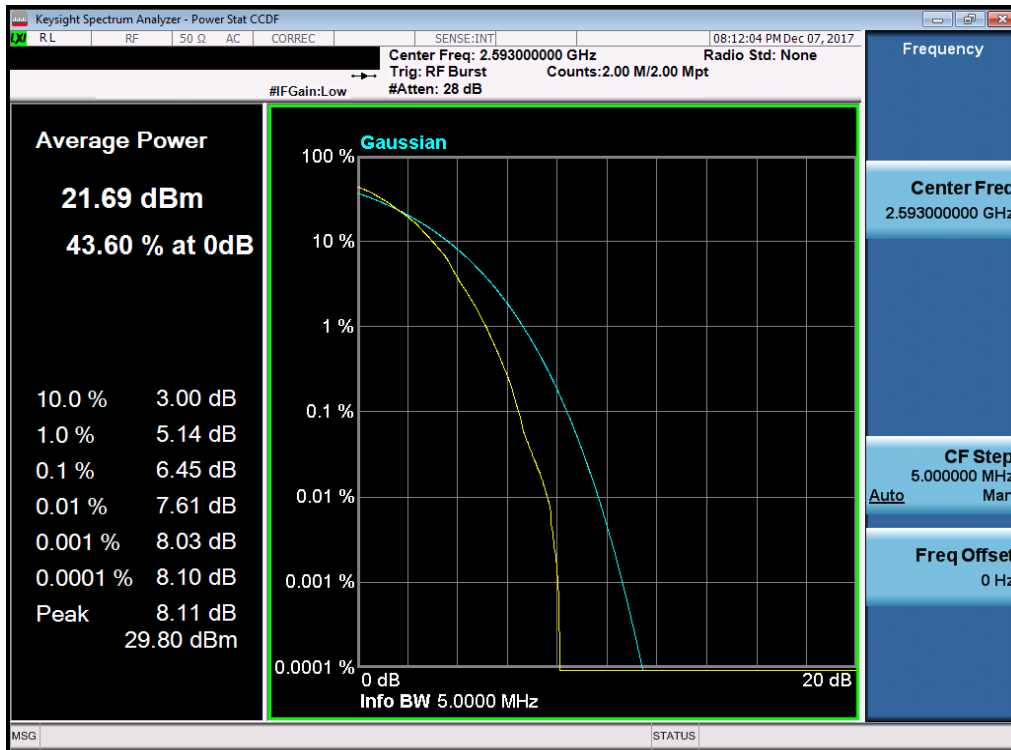


Plot 7-329. PAR Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)

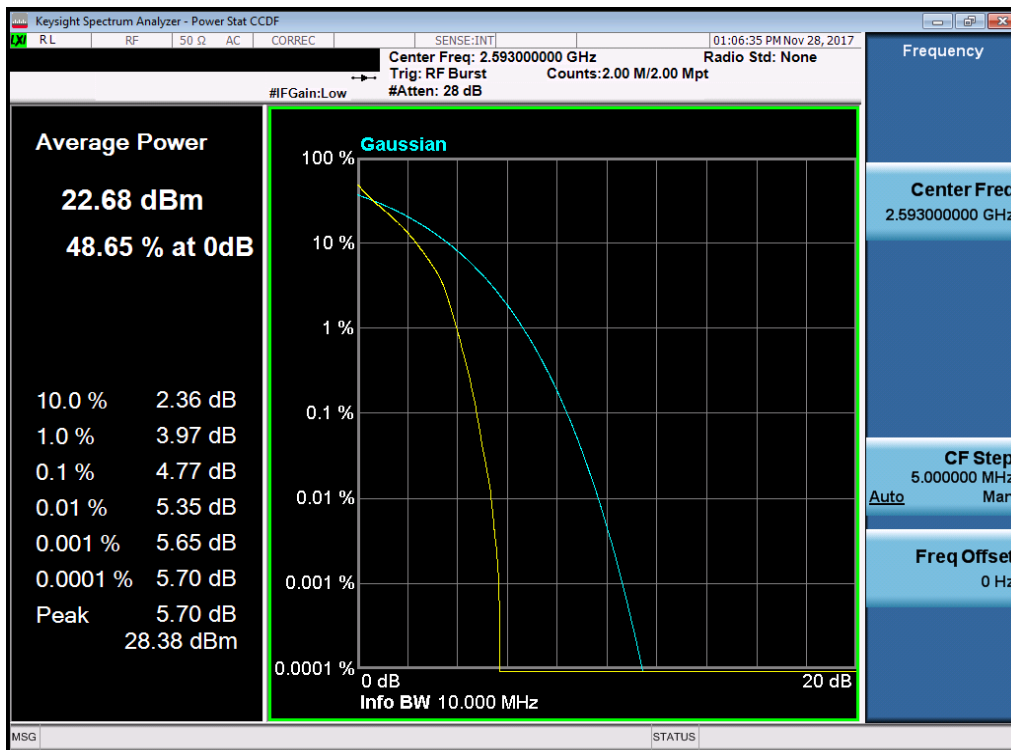


Plot 7-330. PAR Plot (Band 41 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 194 of 237

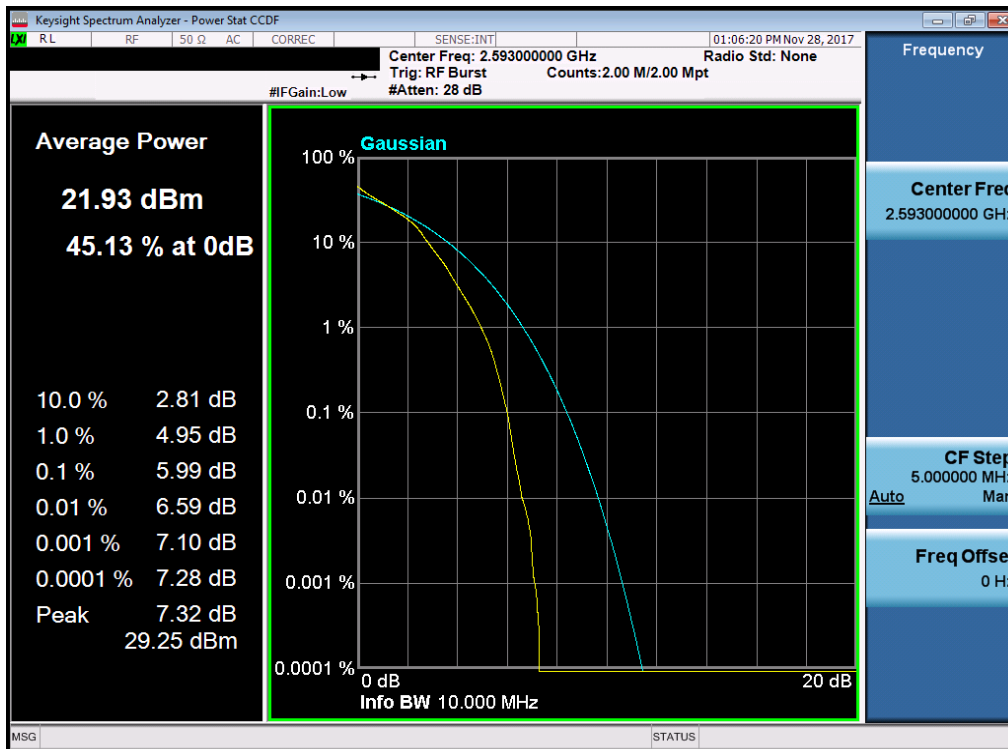


Plot 7-331. PAR Plot (Band 41 - 5.0MHz 64-QAM - Full RB Configuration)

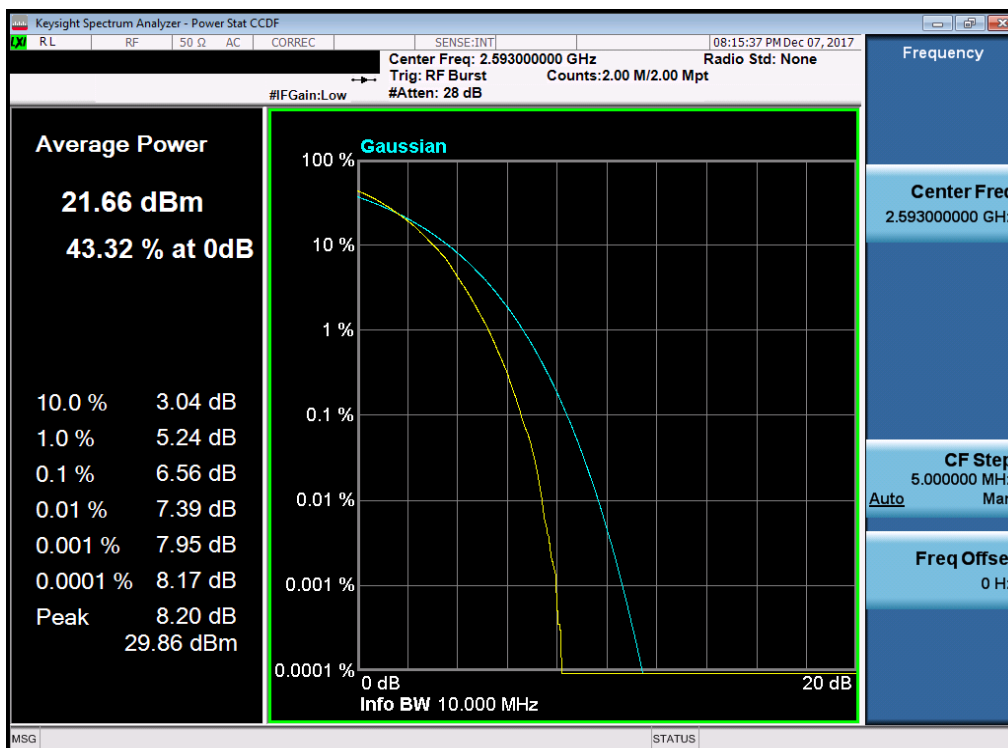


Plot 7-332. PAR Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 195 of 237

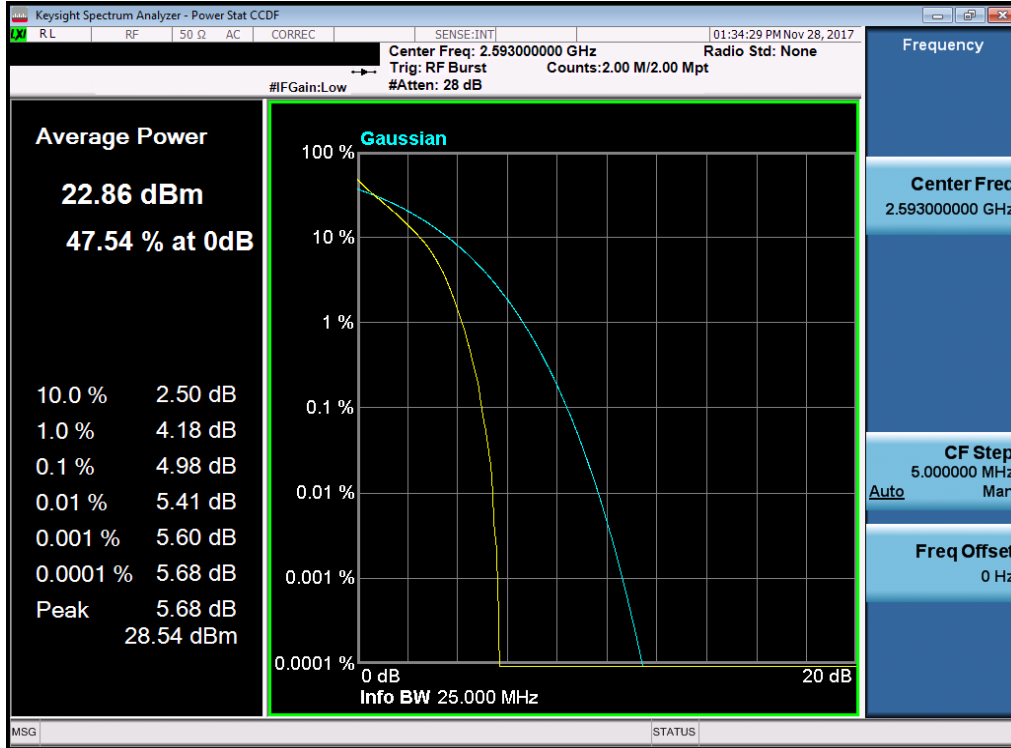


Plot 7-333. PAR Plot (Band 41 - 10.0MHz 16-QAM - Full RB Configuration)

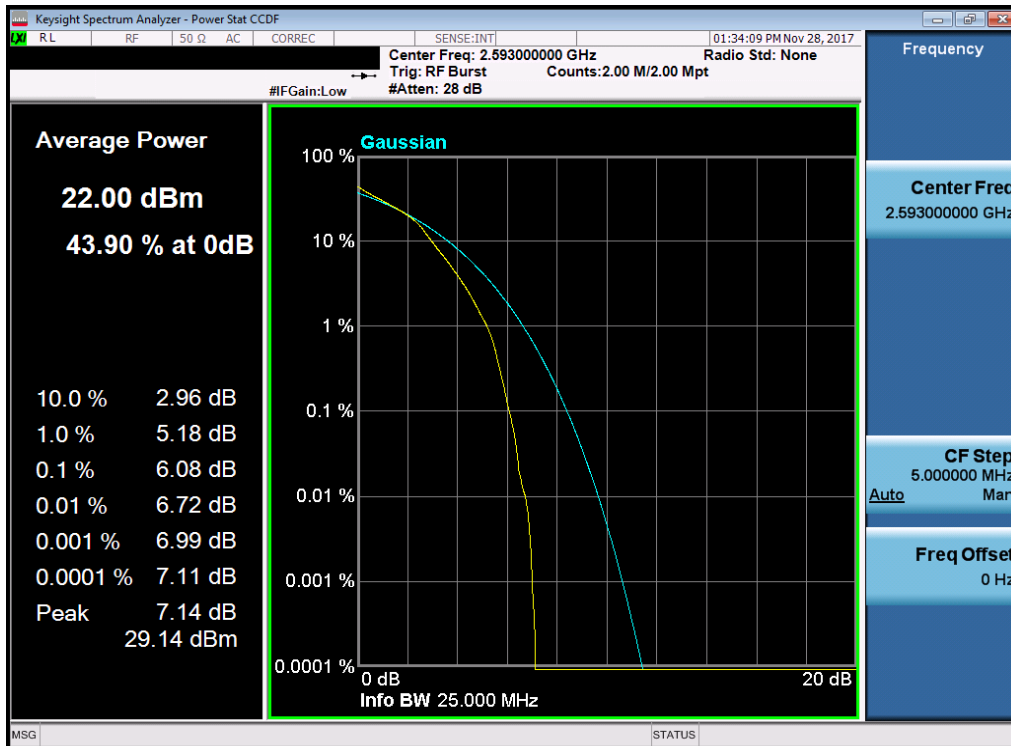


Plot 7-334. PAR Plot (Band 41 - 10.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 196 of 237

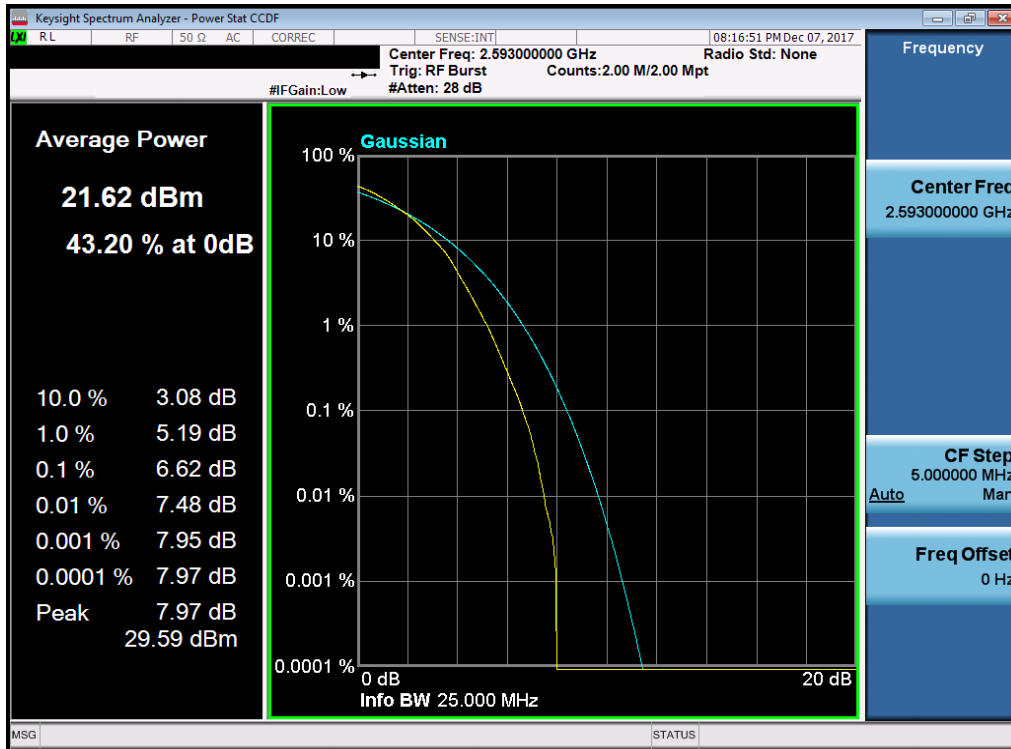


Plot 7-335. PAR Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)

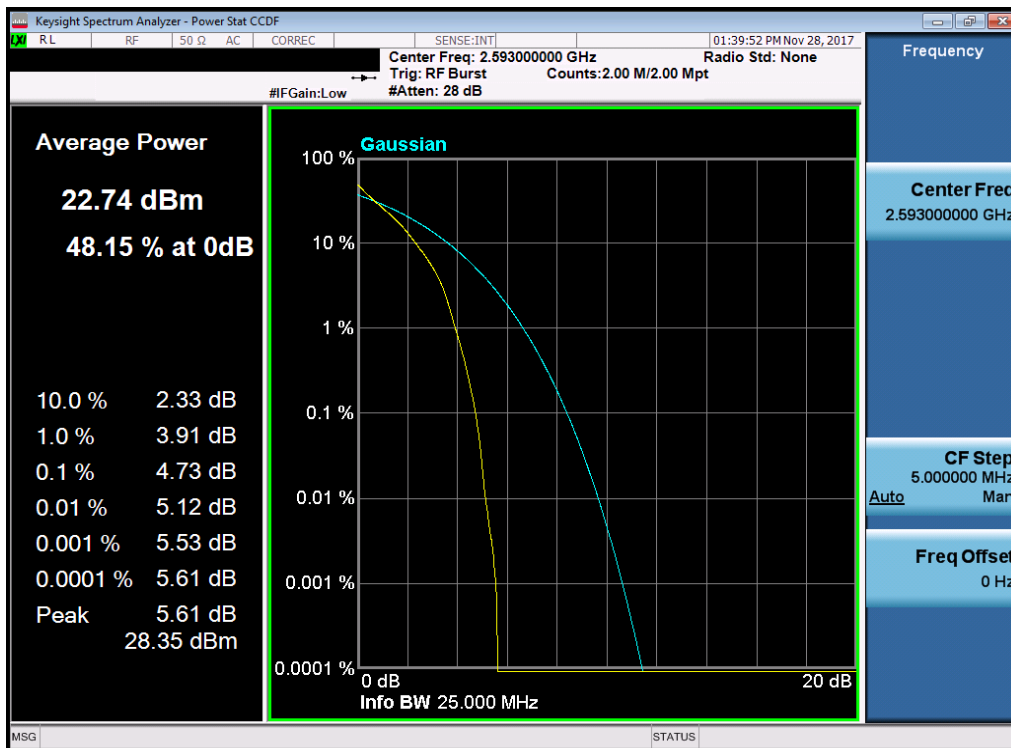


Plot 7-336. PAR Plot (Band 41 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 197 of 237

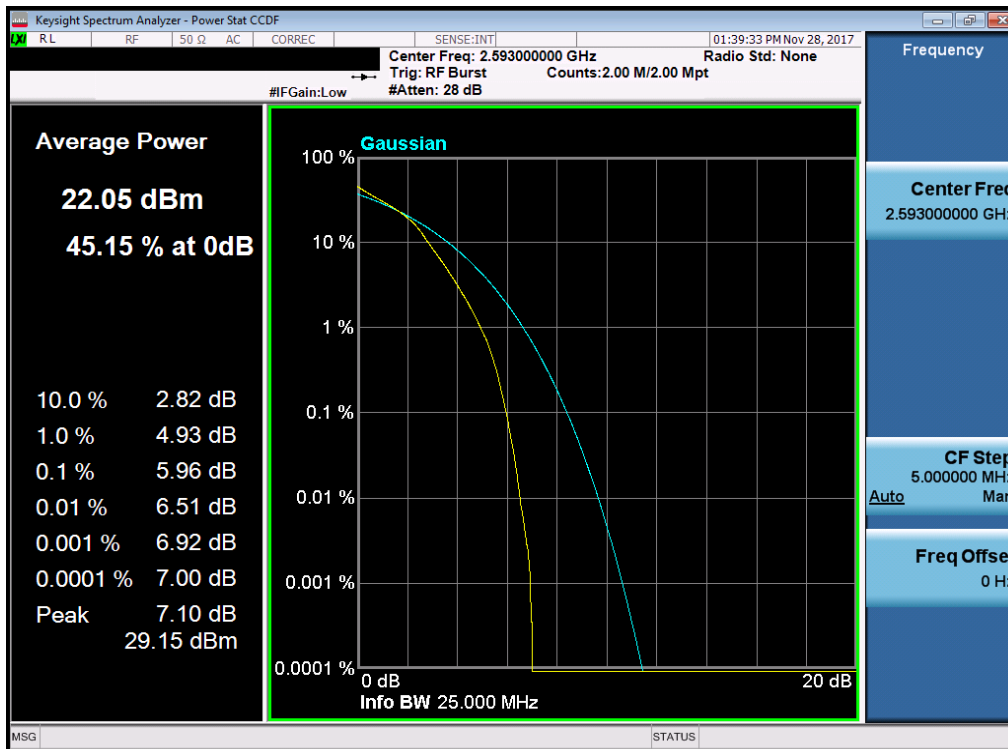


Plot 7-337. PAR Plot (Band 41 - 15.0MHz 64-QAM - Full RB Configuration)

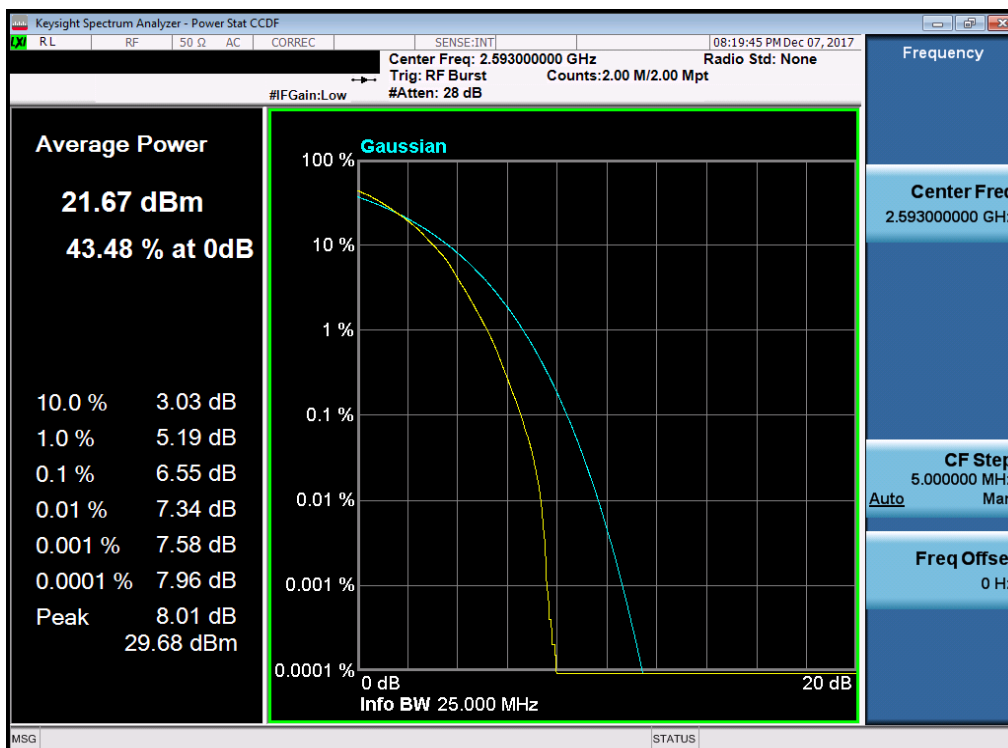


Plot 7-338. PAR Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 198 of 237



Plot 7-339. PAR Plot (Band 41 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-340. PAR Plot (Band 41 - 20.0MHz 64-QAM - Full RB Configuration)

FCC ID: A3LSMG9600	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 199 of 237

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) RSS-130(4.4) RSS-132(5.4) RSS-133(6.4) RSS-139(6.5) RSS-199(4.4)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-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. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. 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 $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ 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.

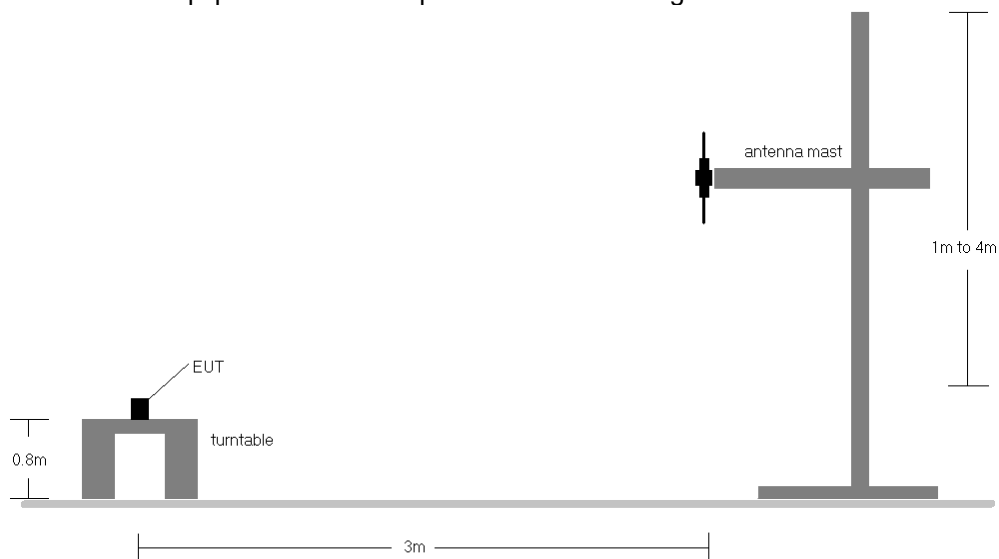


Figure 7-7. Radiated Test Setup <1GHz

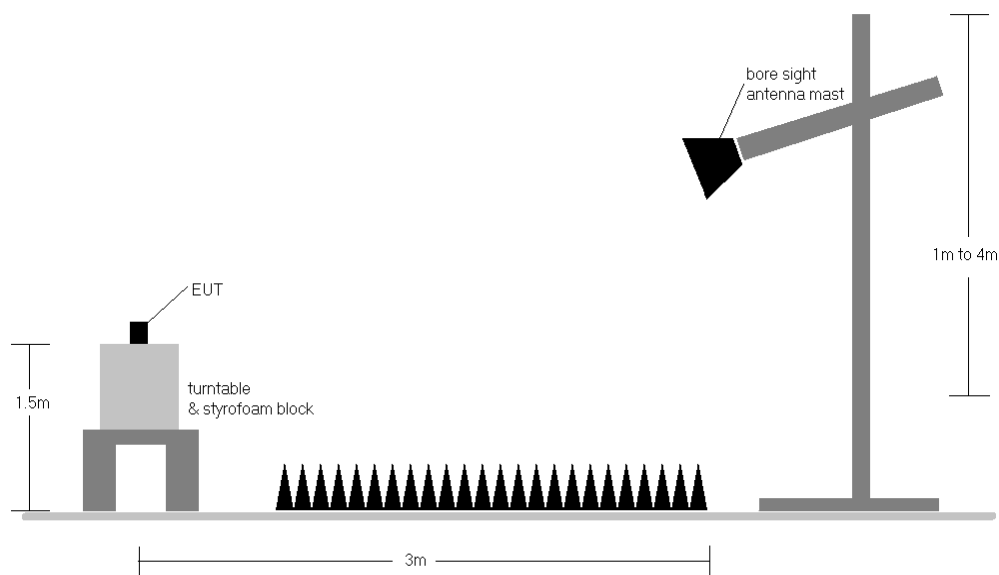


Figure 7-8. Radiated Test Setup >1GHz

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 and emissions were investigated with the unit powered by an extended battery.

FCC ID: A3LSMG9600		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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	150	247	1 / 0	17.88	1.10	16.83	0.048	34.77	-17.94	18.98	0.079	36.99	-18.01
707.50	1.4	QPSK	H	150	257	3 / 2	17.72	1.13	16.70	0.047	34.77	-18.07	18.85	0.077	36.99	-18.14
715.30	1.4	QPSK	H	150	255	1 / 0	18.38	1.16	17.39	0.055	34.77	-17.38	19.54	0.090	36.99	-17.45
707.50	1.4	16-QAM	H	150	257	1 / 0	16.48	1.13	15.46	0.035	34.77	-19.31	17.61	0.058	36.99	-19.38
707.50	1.4	64-QAM	H	150	257	1 / 0	15.78	1.13	14.76	0.030	34.77	-20.01	16.91	0.049	36.99	-20.08
700.50	3	QPSK	H	150	243	1 / 0	18.38	1.10	17.33	0.054	34.77	-17.44	19.48	0.089	36.99	-17.51
707.50	3	QPSK	H	150	251	1 / 0	18.28	1.13	17.26	0.053	34.77	-17.51	19.41	0.087	36.99	-17.58
714.50	3	QPSK	H	150	254	1 / 0	18.38	1.16	17.39	0.055	34.77	-17.38	19.54	0.090	36.99	-17.45
707.50	3	16-QAM	H	150	251	1 / 0	17.48	1.13	16.46	0.044	34.77	-18.31	18.61	0.073	36.99	-18.38
707.50	3	64-QAM	H	150	251	1 / 0	16.48	1.13	15.46	0.035	34.77	-19.31	17.61	0.058	36.99	-19.38
701.50	5	QPSK	H	150	357	1 / 24	18.38	1.11	17.34	0.054	34.77	-17.44	19.49	0.089	36.99	-17.50
707.50	5	QPSK	H	150	252	1 / 24	18.28	1.13	17.26	0.053	34.77	-17.51	19.41	0.087	36.99	-17.58
713.50	5	QPSK	H	150	256	1 / 24	18.18	1.15	17.18	0.052	34.77	-17.59	19.33	0.086	36.99	-17.66
713.50	5	16-QAM	H	150	256	1 / 24	17.78	1.15	16.78	0.048	34.77	-17.99	18.93	0.078	36.99	-18.06
713.50	5	64-QAM	H	150	256	1 / 24	16.98	1.15	15.98	0.040	34.77	-18.79	18.13	0.065	36.99	-18.86
704.00	10	QPSK	H	150	353	1 / 49	18.38	1.12	17.35	0.054	34.77	-17.42	19.50	0.089	36.99	-17.49
707.50	10	QPSK	H	150	239	1 / 0	17.48	1.13	16.46	0.044	34.77	-18.31	18.61	0.073	36.99	-18.38
711.00	10	QPSK	H	150	245	1 / 0	17.58	1.14	16.57	0.045	34.77	-18.20	18.72	0.075	36.99	-18.27
707.50	10	16-QAM	H	150	239	1 / 0	17.68	1.13	16.66	0.046	34.77	-18.11	18.81	0.076	36.99	-18.18
707.50	10	64-QAM	H	150	239	1 / 0	16.88	1.13	15.86	0.039	34.77	-18.91	18.01	0.063	36.99	-18.98
715.30	1.4	QPSK	V	150	5	1 / 5	16.32	1.16	15.33	0.034	34.77	-19.44	17.48	0.056	36.99	-19.51
715.30	1.4 (WCP)	QPSK	V	150	334	1 / 0	17.38	1.16	16.39	0.044	34.77	-18.38	18.54	0.071	36.99	-18.45

Table 7-8. 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]	EIRP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	150	352	1 / 24	20.87	1.32	20.04	0.101	34.77	-14.73	22.19	0.166	36.99	-14.80
782.00	5	QPSK	H	150	352	1 / 24	21.41	1.33	20.59	0.115	34.77	-14.18	22.74	0.188	36.99	-14.25
784.50	5	QPSK	H	150	350	1 / 24	21.54	1.34	20.73	0.118	34.77	-14.04	22.88	0.194	36.99	-14.11
784.50	5	16-QAM	H	150	350	1 / 24	21.17	1.34	20.36	0.109	34.77	-14.41	22.51	0.178	36.99	-14.48
782.00	5	64-QAM	H	150	352	1 / 24	19.54	1.33	18.72	0.074	34.77	-16.05	20.87	0.122	36.99	-16.12
782.00	10	QPSK	H	150	349	1 / 49	21.48	1.33	20.66	0.116	34.77	-14.11	22.81	0.191	36.99	-14.18
782.00	10	16-QAM	H	150	349	1 / 49	20.77	1.33	19.95	0.099	34.77	-14.82	22.10	0.162	36.99	-14.89
782.00	10	64-QAM	H	150	349	1 / 49	19.62	1.33	18.80	0.076	34.77	-15.97	20.95	0.124	36.99	-16.04
784.50	5	QPSK	V	150	16	1 / 74	19.29	1.33	18.47	0.070	34.77	-16.30	20.62	0.115	36.99	-16.37
784.50	5 (WCP)	QPSK	H	150	264	1 / 0	20.79	1.33	19.97	0.099	34.77	-14.80	22.12	0.163	36.99	-14.87

Table 7-9. ERP/EIRP Data (Band 13)

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 202 of 237

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	150	19	1 / 0	20.34	1.50	19.69	0.093	38.45	-18.76	21.84	0.153	40.61	-18.77
836.50	1.4	QPSK	H	150	19	1 / 0	20.09	1.50	19.44	0.088	38.45	-19.01	21.59	0.144	40.61	-19.02
848.30	1.4	QPSK	H	150	14	1 / 0	19.61	1.50	18.96	0.079	38.45	-19.49	21.11	0.129	40.61	-19.50
824.70	1.4	16-QAM	H	150	19	1 / 0	19.71	1.50	19.06	0.081	38.45	-19.39	21.21	0.132	40.61	-19.40
824.70	1.4	64-QAM	H	150	19	1 / 0	18.43	1.50	17.78	0.060	38.45	-20.67	19.93	0.098	40.61	-20.68
825.50	3	QPSK	H	150	18	1 / 0	20.54	1.50	19.89	0.097	38.45	-18.56	22.04	0.160	40.61	-18.57
836.50	3	QPSK	H	150	22	1 / 0	20.39	1.50	19.74	0.094	38.45	-18.71	21.89	0.155	40.61	-18.72
847.50	3	QPSK	H	150	21	1 / 0	19.82	1.50	19.17	0.083	38.45	-19.28	21.32	0.136	40.61	-19.29
825.50	3	16-QAM	H	150	18	1 / 0	20.22	1.50	19.57	0.091	38.45	-18.88	21.72	0.149	40.61	-18.89
825.50	3	64-QAM	H	150	18	1 / 0	18.74	1.50	18.09	0.064	38.45	-20.36	20.24	0.106	40.61	-20.37
826.50	5	QPSK	H	150	19	1 / 0	20.63	1.50	19.98	0.100	38.45	-18.47	22.13	0.163	40.61	-18.48
836.50	5	QPSK	H	150	21	1 / 0	20.41	1.50	19.76	0.095	38.45	-18.69	21.91	0.155	40.61	-18.70
846.50	5	QPSK	H	150	19	1 / 0	20.06	1.50	19.41	0.087	38.45	-19.04	21.56	0.143	40.61	-19.05
836.50	5	16-QAM	H	150	21	1 / 0	19.94	1.50	19.29	0.085	38.45	-19.16	21.44	0.139	40.61	-19.17
836.50	5	64-QAM	H	150	21	1 / 0	18.89	1.50	18.24	0.067	38.45	-20.21	20.39	0.109	40.61	-20.22
829.00	10	QPSK	H	150	19	1 / 0	20.64	1.50	19.99	0.100	38.45	-18.46	22.14	0.164	40.61	-18.47
836.50	10	QPSK	H	150	16	1 / 0	20.37	1.50	19.72	0.094	38.45	-18.73	21.87	0.154	40.61	-18.74
844.00	10	QPSK	H	150	23	1 / 0	20.32	1.50	19.67	0.093	38.45	-18.78	21.82	0.152	40.61	-18.79
829.00	10	16-QAM	H	150	19	1 / 0	19.99	1.50	19.34	0.086	38.45	-19.11	21.49	0.141	40.61	-19.12
829.00	10	64-QAM	H	150	19	1 / 0	18.72	1.50	18.07	0.064	38.45	-20.38	20.22	0.105	40.61	-20.39

Table 7-10. ERP/EIRP Data (Band 26/5)

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]
831.50	15	QPSK	H	150	23	1 / 0	20.67	1.50	20.02	0.100	38.45	-18.43	22.17	0.165	40.61	-18.44
836.50	15	QPSK	H	150	21	1 / 0	20.70	1.50	20.05	0.101	38.45	-18.40	22.20	0.166	40.61	-18.41
841.50	15	QPSK	H	150	15	1 / 0	20.29	1.50	19.64	0.092	38.45	-18.81	21.79	0.151	40.61	-18.82
831.50	15	16-QAM	H	150	23	1 / 0	20.02	1.50	19.37	0.086	38.45	-19.08	21.52	0.142	40.61	-19.09
836.50	15	64-QAM	H	150	21	1 / 0	19.08	1.50	18.43	0.070	38.45	-20.02	20.58	0.114	40.61	-20.03
836.50	15	QPSK	V	150	18	1 / 0	18.39	1.50	17.74	0.059	38.45	-20.71	19.89	0.097	40.61	-20.72
836.50	15 (WCP)	QPSK	V	150	335	1 / 0	14.44	1.50	13.79	0.024	38.45	-24.66	15.94	0.039	40.61	-24.67

Table 7-11. ERP/EIRP Data (Band 26)

FCC ID: A3LSMG9600	 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 [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	150	18	1 / 5	17.63	5.65	23.28	0.213	30.00	-6.72
1745.00	1.4	QPSK	H	150	13	1 / 5	18.15	5.27	23.42	0.220	30.00	-6.58
1779.30	1.4	QPSK	H	150	13	1 / 5	17.77	4.90	22.67	0.185	30.00	-7.33
1745.00	1.4	16-QAM	H	150	13	1 / 5	17.48	5.27	22.75	0.188	30.00	-7.25
1745.00	1.4	64-QAM	H	150	13	1 / 5	16.39	5.27	21.66	0.147	30.00	-8.34
1711.50	3	QPSK	H	150	13	1 / 14	17.60	5.64	23.24	0.211	30.00	-6.76
1745.00	3	QPSK	H	150	13	1 / 14	18.15	5.27	23.42	0.220	30.00	-6.58
1778.50	3	QPSK	H	150	13	1 / 14	17.81	4.91	22.72	0.187	30.00	-7.28
1745.00	3	16-QAM	H	150	13	1 / 14	17.60	5.27	22.87	0.194	30.00	-7.13
1711.50	3	64-QAM	H	150	13	1 / 14	16.38	5.64	22.02	0.159	30.00	-7.98
1712.50	5	QPSK	H	150	15	1 / 24	17.61	5.63	23.24	0.211	30.00	-6.76
1745.00	5	QPSK	H	150	5	1 / 24	17.97	5.27	23.24	0.211	30.00	-6.76
1777.50	5	QPSK	H	150	13	1 / 24	17.72	4.92	22.64	0.184	30.00	-7.36
1712.50	5	16-QAM	H	150	15	1 / 24	17.23	5.63	22.86	0.193	30.00	-7.14
1745.00	5	64-QAM	H	150	5	1 / 24	16.35	5.27	21.62	0.145	30.00	-8.38
1715.00	10	QPSK	H	150	18	1 / 49	17.50	5.60	23.10	0.204	30.00	-6.90
1745.00	10	QPSK	H	150	15	1 / 49	18.08	5.27	23.35	0.216	30.00	-6.65
1775.00	10	QPSK	H	150	13	1 / 49	17.67	4.95	22.62	0.183	30.00	-7.38
1745.00	10	16-QAM	H	150	15	1 / 49	17.39	5.27	22.66	0.185	30.00	-7.34
1745.00	10	64-QAM	H	150	15	1 / 49	16.13	5.27	21.40	0.138	30.00	-8.60
1717.50	15	QPSK	H	150	13	1 / 74	17.66	5.57	23.23	0.210	30.00	-6.77
1745.00	15	QPSK	H	150	16	1 / 74	18.14	5.27	23.41	0.219	30.00	-6.59
1772.50	15	QPSK	H	150	12	1 / 74	18.06	4.97	23.03	0.201	30.00	-6.97
1745.00	15	16-QAM	H	150	16	1 / 74	17.40	5.27	22.67	0.185	30.00	-7.33
1745.00	15	64-QAM	H	150	16	1 / 74	16.35	5.27	21.62	0.145	30.00	-8.38
1720.00	20	QPSK	H	150	17	1 / 99	17.67	5.54	23.21	0.210	30.00	-6.79
1745.00	20	QPSK	H	150	11	1 / 99	17.94	5.27	23.21	0.209	30.00	-6.79
1770.00	20	QPSK	H	150	15	1 / 99	17.91	5.00	22.91	0.196	30.00	-7.09
1720.00	20	16-QAM	H	150	17	1 / 99	17.07	5.54	22.61	0.183	30.00	-7.39
1720.00	20	64-QAM	H	150	17	1 / 99	16.12	5.54	21.66	0.147	30.00	-8.34
1745.00	1.4	QPSK	V	150	271	1 / 0	15.93	5.27	21.20	0.132	30.00	-8.80
1745.00	1.4 (WCP)	QPSK	H	150	181	1 / 99	16.64	5.27	21.91	0.155	30.00	-8.09

Table 7-12. EIRP Data (Band 66/4)

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2-A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset	Page 204 of 237

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	H	150	353	1 / 0	19.16	4.82	23.98	0.250	33.01	-9.03
1882.50	1.4	QPSK	H	150	358	1 / 0	19.85	4.73	24.58	0.287	33.01	-8.43
1914.30	1.4	QPSK	H	150	358	1 / 0	18.71	4.68	23.39	0.218	33.01	-9.62
1882.50	1.4	16-QAM	H	150	358	1 / 0	19.09	4.73	23.82	0.241	33.01	-9.19
1882.50	1.4	64-QAM	H	150	358	1 / 0	18.20	4.73	22.93	0.197	33.01	-10.08
1851.50	3	QPSK	H	150	10	1 / 0	19.98	4.82	24.80	0.302	33.01	-8.21
1882.50	3	QPSK	H	150	10	1 / 0	19.36	4.73	24.09	0.257	33.01	-8.92
1913.50	3	QPSK	H	150	9	1 / 0	19.87	4.68	24.55	0.285	33.01	-8.46
1851.50	3	16-QAM	H	150	10	1 / 0	19.32	4.82	24.14	0.259	33.01	-8.87
1851.50	3	64-QAM	H	150	10	1 / 0	18.36	4.82	23.18	0.208	33.01	-9.83
1852.50	5	QPSK	H	150	10	1 / 0	20.16	4.81	24.97	0.314	33.01	-8.04
1882.50	5	QPSK	H	150	10	1 / 0	19.40	4.73	24.13	0.259	33.01	-8.88
1912.50	5	QPSK	H	150	10	1 / 0	19.75	4.68	24.43	0.277	33.01	-8.58
1852.50	5	16-QAM	H	150	10	1 / 0	19.36	4.81	24.17	0.261	33.01	-8.84
1852.50	5	64-QAM	H	150	10	1 / 0	18.48	4.81	23.29	0.213	33.01	-9.72
1855.00	10	QPSK	H	150	0	1 / 0	20.74	4.81	25.55	0.359	33.01	-7.46
1882.50	10	QPSK	H	150	358	1 / 0	20.09	4.73	24.82	0.304	33.01	-8.19
1910.00	10	QPSK	H	150	8	1 / 0	19.78	4.68	24.46	0.279	33.01	-8.55
1855.00	10	16-QAM	H	150	0	1 / 0	20.21	4.81	25.02	0.317	33.01	-7.99
1855.00	10	64-QAM	H	150	0	1 / 0	19.19	4.81	24.00	0.251	33.01	-9.01
1857.50	15	QPSK	H	150	8	1 / 0	20.18	4.80	24.98	0.315	33.01	-8.03
1882.50	15	QPSK	H	150	0	1 / 0	19.83	4.73	24.56	0.286	33.01	-8.45
1907.50	15	QPSK	H	150	8	1 / 0	19.67	4.68	24.35	0.272	33.01	-8.66
1857.50	15	16-QAM	H	150	8	1 / 0	19.50	4.80	24.30	0.269	33.01	-8.71
1857.50	15	64-QAM	H	150	8	1 / 0	18.54	4.80	23.34	0.216	33.01	-9.67
1860.00	20	QPSK	H	150	9	1 / 0	20.47	4.79	25.26	0.336	33.01	-7.75
1882.50	20	QPSK	H	150	10	1 / 0	19.92	4.73	24.65	0.292	33.01	-8.36
1905.00	20	QPSK	H	150	10	1 / 0	19.73	4.68	24.41	0.276	33.01	-8.60
1860.00	20	16-QAM	H	150	9	1 / 0	19.88	4.79	24.67	0.293	33.01	-8.34
1860.00	20	64-QAM	H	150	9	1 / 0	18.65	4.79	23.44	0.221	33.01	-9.57
1855.00	10	QPSK	V	150	4	1 / 99	16.80	4.81	21.61	0.145	33.01	-11.40
1855.00	10 (WCP)	QPSK	H	150	183	1 / 0	17.37	4.81	22.18	0.165	33.01	-10.83

Table 7-13. EIRP Data (Band 25/2)

FCC ID: A3LSMG9600	 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 [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	V	150	15	12 / 6	13.47	5.73	19.20	0.083	33.01	-13.81
2593.00	5	QPSK	V	150	10	1 / 0	12.12	6.07	18.19	0.066	33.01	-14.82
2687.50	5	QPSK	V	150	11	1 / 0	12.29	6.48	18.77	0.075	33.01	-14.24
2687.50	5	16-QAM	V	150	11	1 / 0	11.97	6.48	18.45	0.070	33.01	-14.56
2498.50	5	64-QAM	V	150	15	12 / 6	10.92	5.73	16.65	0.046	33.01	-16.36
2501.00	10	QPSK	V	150	14	1 / 0	12.91	5.73	18.64	0.073	33.01	-14.37
2593.00	10	QPSK	V	150	7	50 / 0	13.87	6.07	19.94	0.099	33.01	-13.07
2685.00	10	QPSK	V	150	356	1 / 0	12.67	6.47	19.14	0.082	33.01	-13.87
2593.00	10	16-QAM	V	150	7	1 / 0	12.35	6.07	18.42	0.070	33.01	-14.59
2593.00	10	64-QAM	V	150	7	1 / 0	11.86	6.07	17.93	0.062	33.01	-15.08
2503.50	15	QPSK	V	150	18	1 / 0	12.50	5.74	18.24	0.067	33.01	-14.77
2593.00	15	QPSK	V	150	8	1 / 0	15.73	6.07	21.80	0.151	33.01	-11.21
2682.50	15	QPSK	V	150	1	1 / 0	11.66	6.46	18.12	0.065	33.01	-14.89
2593.00	15	16-QAM	V	150	8	1 / 0	14.52	6.07	20.59	0.115	33.01	-12.42
2593.00	15	64-QAM	V	150	8	1 / 0	12.95	6.07	19.02	0.080	33.01	-13.99
2506.00	20	QPSK	V	150	16	1 / 0	11.98	5.75	17.73	0.059	33.01	-15.28
2593.00	20	QPSK	V	150	8	1 / 0	13.69	6.07	19.76	0.095	33.01	-13.25
2680.00	20	QPSK	V	150	8	1 / 0	13.47	6.45	19.92	0.098	33.01	-13.09
2680.00	20	16-QAM	V	150	8	1 / 0	13.39	6.45	19.84	0.096	33.01	-13.17
2593.00	20	64-QAM	V	150	8	1 / 0	11.24	6.07	17.31	0.054	33.01	-15.70
2593.00	15	QPSK	H	150	298	1 / 0	15.70	6.07	21.77	0.150	33.01	-11.24
2593.00	15 (WCP)	QPSK	V	150	358	1 / 0	12.86	6.07	18.93	0.078	33.01	-14.08

Table 7-14. EIRP Data (Band 41)

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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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) RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6) RSS-199(4.5)

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 $\geq 3 \times$ 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.

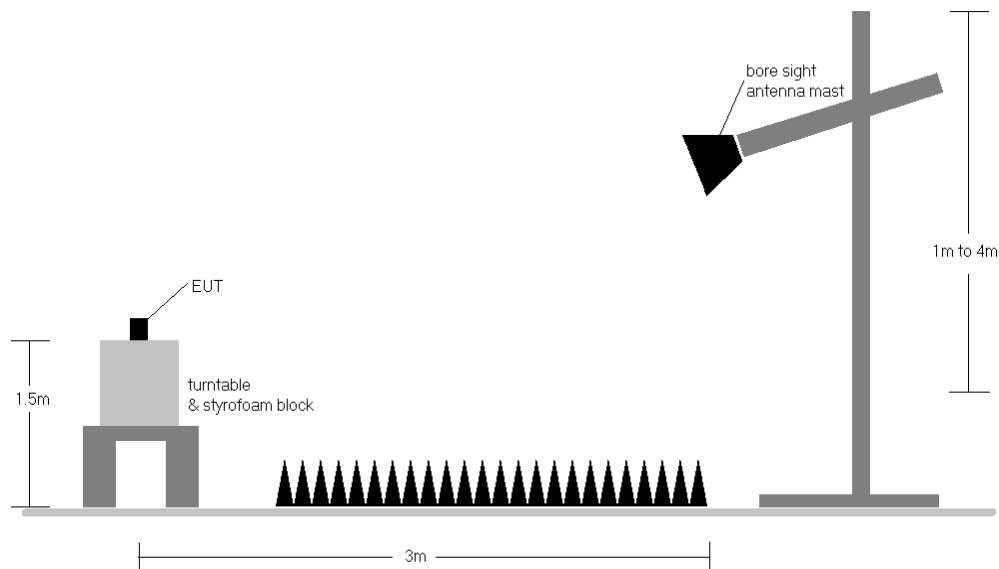


Figure 7-9. Test Instrument & Measurement Setup

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 and emissions were investigated with the unit powered by an extended 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 12/17

OPERATING FREQUENCY: 700.50 MHz
 CHANNEL: 23025
 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]
1401.00	H	161	175	-63.54	7.73	-55.80	-42.8
2101.50	H	111	233	-72.85	8.81	-64.04	-51.0
2802.00	H	-	-	-78.35	10.07	-68.28	-55.3

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

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 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]
1415.00	H	227	186	-67.80	7.84	-59.96	-47.0
2122.50	H	128	57	-76.48	8.90	-67.58	-54.6
2830.00	H	-	-	-77.98	10.05	-67.94	-54.9

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

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 209 of 237

OPERATING FREQUENCY: 714.50 MHz
CHANNEL: 23165
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]
1429.00	H	144	198	-67.29	7.95	-59.33	-46.3
2143.50	H	145	225	-73.40	8.98	-64.42	-51.4
2858.00	H	-	-	-77.57	10.02	-67.55	-54.5

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

OPERATING FREQUENCY: 707.50 MHz
CHANNEL: 23095
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]
1415.00	H	159	262	-66.75	7.84	-58.91	-45.9
2122.50	H	157	163	-73.45	8.90	-64.55	-51.5
2830.00	H	-	-	-77.99	10.05	-67.95	-54.9

Table 7-18. Radiated Spurious Data with WCP (Band 12/17 – Mid Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-11/10/18	EUT Type: Portable Handset		Page 210 of 237

Band 13

OPERATING FREQUENCY: 779.50 MHz
 CHANNEL: 23205
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2338.50	H	-	-	-78.80	9.52	-69.29	-56.3

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

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	-	-	-78.99	9.49	-69.50	-56.5

Table 7-20. Radiated Spurious Data (Band 13 – Mid Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 784.50 MHz
 CHANNEL: 23255
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2353.50	H	-	-	-79.10	9.45	-69.65	-56.6

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

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1559.00	H	-	-	-80.50	8.72	-71.77	-31.8
1564.00	H	-	-	-80.64	8.73	-71.91	-31.9
1569.00	H	-	-	-80.85	8.74	-72.11	-32.1

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

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-11/10/18	EUT Type: Portable Handset		Page 212 of 237

OPERATING FREQUENCY: 784.50 MHz
CHANNEL: 23255
MODULATION SIGNAL: QPSK
BANDWIDTH: 5.0 MHz
DISTANCE: 3 meters
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2353.50	H	-	-	-79.14	9.45	-69.69	-56.7

Table 7-23. Radiated Spurious Data with WCP (Band 13 – High Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1569.00	H	-	-	-80.96	8.74	-72.22	-32.2

Table 7-24. Radiated Spurious Data with WCP (Band 13 – 1559-1610MHz Band)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1711080292-03-R2.A3L	Test Dates: 11/1/17-1/10/18	EUT Type: Portable Handset		Page 213 of 237

Band 5

OPERATING FREQUENCY: 829.00 MHz
CHANNEL: 20450
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]
1658.00	H	170	209	-74.68	8.85	-65.83	-52.8
2487.00	H	130	154	-74.14	9.73	-64.41	-51.4
3316.00	H	-	-	-75.16	9.57	-65.60	-52.6

Table 7-25. Radiated Spurious Data (Band 5 – Low Channel)

OPERATING FREQUENCY: 836.50 MHz
CHANNEL: 20525
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]
1673.00	H	147	340	-72.20	8.85	-63.35	-50.4
2509.50	H	139	311	-72.53	9.78	-62.76	-49.8
3346.00	H	-	-	-74.63	9.66	-64.96	-52.0

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

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 844.00 MHz
 CHANNEL: 20600
 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]
1688.00	H	-	-	-79.71	8.85	-70.86	-57.9
2532.00	H	-	-	-78.14	9.76	-68.39	-55.4

Table 7-27. Radiated Spurious Data (Band 5 – High Channel)

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 20525
 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]
1673.00	H	144	86	-74.95	8.85	-66.10	-53.1
2509.50	H	370	248	-78.29	9.78	-68.52	-55.5

Table 7-28. Radiated Spurious Data with WCP (Band 5 – Mid Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 26

OPERATING FREQUENCY: 831.50 MHz
 CHANNEL: 26865
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1663.00	H	160	177	-75.65	8.92	-66.73	-53.7
2494.50	H	-	-	-76.57	9.13	-67.44	-54.4

Table 7-29. Radiated Spurious Data (Band 26 – Low Channel)

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	100	173	-74.70	8.85	-65.85	-52.9
2509.50	H	-	-	-76.92	9.17	-67.75	-54.8

Table 7-30. Radiated Spurious Data (Band 26 – Mid Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 841.50 MHz
 CHANNEL: 26965
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1683.00	H	146	182	-76.81	8.78	-68.04	-55.0
2524.50	H	-	-	-76.73	9.21	-67.52	-54.5

Table 7-31. Radiated Spurious Data (Band 26 – High Channel)

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	154	103	-76.24	8.85	-67.39	-54.4
2509.50	H	-	-	-77.34	9.17	-68.17	-55.2

Table 7-32. Radiated Spurious Data with WCP (Band 26 – Mid Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 66/4

OPERATING FREQUENCY: 1710.70 MHz
 CHANNEL: 131979
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3421.40	H	103	322	-65.16	9.51	-55.65	-42.6
5132.10	H	114	7	-73.21	10.82	-62.40	-49.4
6842.80	H	-	-	-68.69	10.84	-57.85	-44.9

Table 7-33. Radiated Spurious Data (Band 66/4 – Low Channel)

OPERATING FREQUENCY: 1745.00 MHz
 CHANNEL: 132322
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	114	322	-66.07	9.65	-56.42	-43.4
5235.00	H	-	-	-73.14	10.93	-62.21	-49.2

Table 7-34. Radiated Spurious Data (Band 66/4 – Mid Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1779.30 MHz
 CHANNEL: 132665
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3558.60	H	110	322	-67.07	9.72	-57.35	-44.4
5337.90	H	-	-	-73.32	11.00	-62.32	-49.3

Table 7-35. Radiated Spurious Data (Band 66/4 – High Channel)

OPERATING FREQUENCY: 1745.00 MHz
 CHANNEL: 132322
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	224	399	-68.61	9.65	-58.96	-46.0
5235.00	H	-	-	-73.19	10.93	-62.26	-49.3

Table 7-36. Radiated Spurious Data with WCP (Band 66/4 – Mid Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 25/2

OPERATING FREQUENCY: 1855.00 MHz
 CHANNEL: 26090
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3710.00	H	107	44	-72.13	9.70	-62.43	-49.4
5565.00	H	-	-	-72.62	11.00	-61.61	-48.6

Table 7-37. Radiated Spurious Data (Band 25/2 – Low Channel)

OPERATING FREQUENCY: 1882.50 MHz
 CHANNEL: 26365
 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]
3765.00	H	103	48	-71.31	9.48	-61.83	-48.8
5647.50	H	-	-	-72.90	11.18	-61.72	-48.7

Table 7-38. Radiated Spurious Data (Band 25/2 – Mid Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1910.00 MHz
 CHANNEL: 26640
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3820.00	H	117	212	-71.72	9.29	-62.43	-49.4
5730.00	H	-	-	-73.34	11.34	-62.01	-49.0

Table 7-39. Radiated Spurious Data (Band 25/2 – High Channel)

OPERATING FREQUENCY: 1855.00 MHz
 CHANNEL: 26090
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3710.00	H	103	248	-72.80	9.70	-63.10	-50.1
5565.00	H	-	-	-72.49	11.00	-61.48	-48.5

Table 7-40. Radiated Spurious Data with WCP (Band 25/2 – Low Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 41

OPERATING FREQUENCY: 2507.50 MHz
 CHANNEL: 39765
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 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]
5015.00	H	113	140	-64.55	11.14	-53.41	-28.4
7522.50	H	121	399	-59.79	11.02	-48.78	-23.8
10030.00	H	-	-	-65.60	12.15	-53.44	-28.4

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

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 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	H	107	129	-66.81	10.82	-55.99	-31.0
7779.00	H	267	203	-50.42	11.45	-38.96	-14.0
10372.00	H	-	-	-66.42	12.53	-53.88	-28.9

Table 7-42. Radiated Spurious Data (Band 41 – Mid Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2682.50 MHz
 CHANNEL: 41515
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 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]
5365.00	H	100	148	-69.21	11.04	-58.17	-33.2
8047.50	H	100	203	-50.70	11.40	-39.30	-14.3
10730.00	H	-	-	-67.06	12.85	-54.20	-29.2

Table 7-43. Radiated Spurious Data (Band 41 – High Channel)

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 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	H	277	6	-68.62	11.14	-57.48	-32.5
7779.00	H	110	366	-64.60	11.02	-53.59	-28.6
10372.00	H	-	-	-66.32	12.15	-54.16	-29.2

Table 7-44. Radiated Spurious Data with WCP (Band 41 – Mid Channel)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.10 Frequency Stability / Temperature Variation

\$2.1055 \$22.355 \$24.235 \$27.54 RSS-130(4.3) RSS-132(5.3) RSS-133(6.3) RSS-139(6.3) RSS-195(5.4) RSS-199(4.3)

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, RSS-132 and RSS-133, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency. For Part 24, Part 27, RSS-130, RSS-139 and RSS-199, 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

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 12/17 Frequency Stability Measurements

\$2.1055 \$27.54 RSS-130(4.3)

OPERATING FREQUENCY: 707,500,000 Hz

CHANNEL: 23790

REFERENCE VOLTAGE: 4.30 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	+ 20 (Ref)	707,499,984	-16	-0.0000023
100 %		- 30	707,499,971	-29	-0.0000041
100 %		- 20	707,499,878	-122	-0.0000173
100 %		- 10	707,499,808	-192	-0.0000271
100 %		0	707,499,937	-63	-0.0000089
100 %		+ 10	707,499,946	-54	-0.0000076
100 %		+ 20	707,499,987	-13	-0.0000019
100 %		+ 30	707,499,998	-2	-0.0000003
100 %		+ 40	707,499,826	-174	-0.0000246
100 %		+ 50	707,499,820	-180	-0.0000254
BATT. ENDPOINT	3.70	+ 20	707,499,935	-65	-0.0000092

Table 7-45. 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: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 12/17 Frequency Stability Measurements
\$2.1055 \$27.54 RSS-130(4.3)

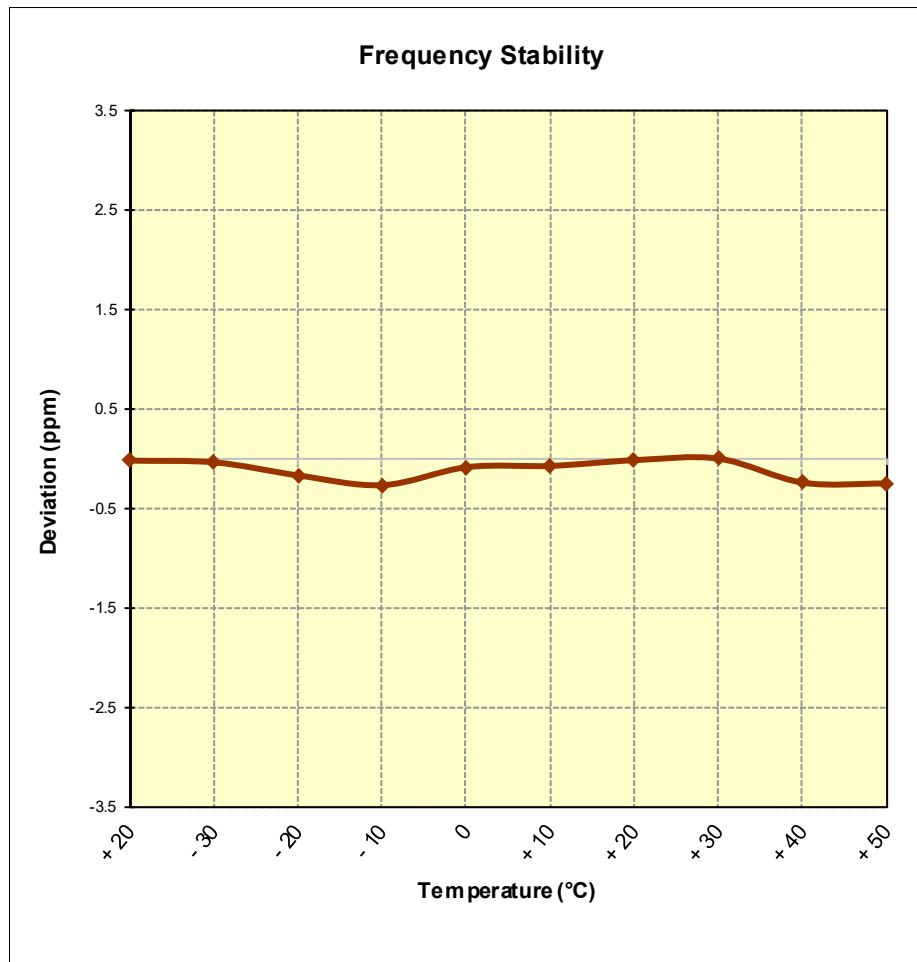


Figure 7-10. Frequency Stability Graph (Band 12/17)

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 13 Frequency Stability Measurements

§2.1055 §27.54 RSS-130(4.3)

OPERATING FREQUENCY: 782,000,000 Hz

CHANNEL: 23230

REFERENCE VOLTAGE: 4.30 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	+ 20 (Ref)	781,999,836	-164	-0.0000210
100 %		- 30	781,999,866	-134	-0.0000172
100 %		- 20	781,999,851	-149	-0.0000190
100 %		- 10	781,999,807	-193	-0.0000247
100 %		0	781,999,859	-141	-0.0000180
100 %		+ 10	781,999,951	-49	-0.0000062
100 %		+ 20	781,999,914	-86	-0.0000110
100 %		+ 30	781,999,963	-37	-0.0000048
100 %		+ 40	781,999,940	-60	-0.0000077
100 %		+ 50	781,999,883	-117	-0.0000149
BATT. ENDPOINT	3.70	+ 20	781,999,850	-150	-0.0000192

Table 7-46. 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.

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 13 Frequency Stability Measurements **\$2.1055 \$27.54 RSS-130(4.3)**

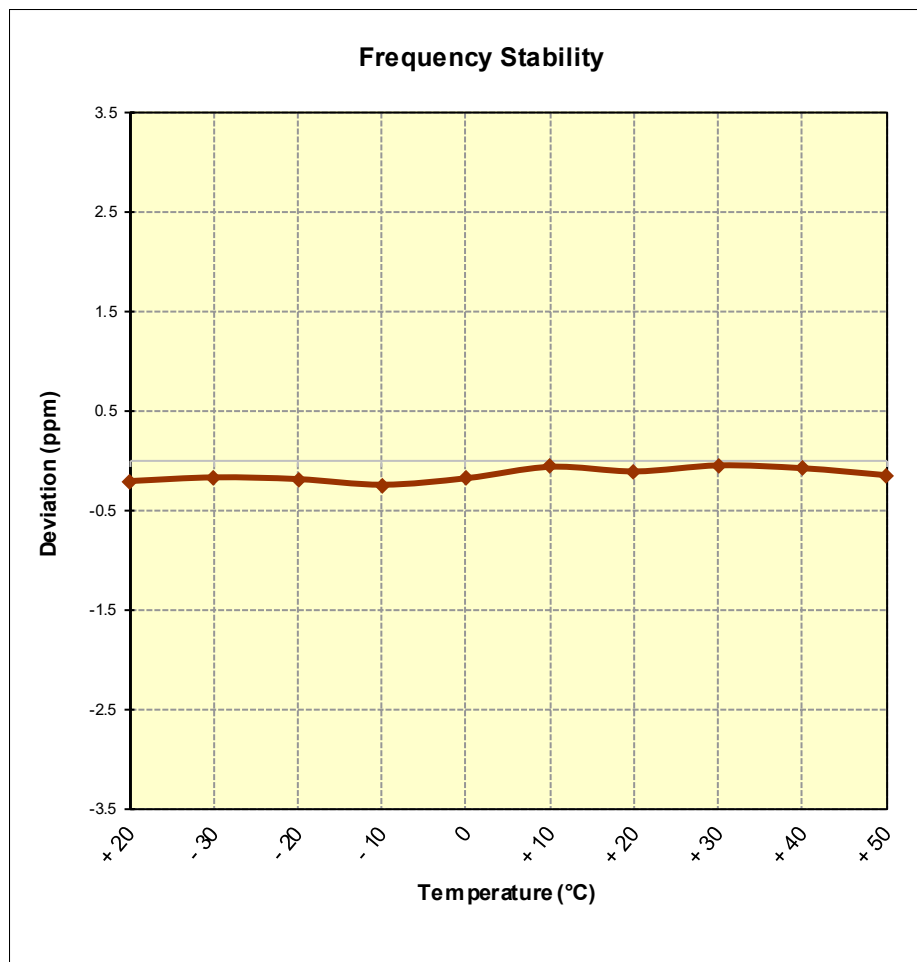


Figure 7-11. Frequency Stability Graph (Band 13)

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 26/5 Frequency Stability Measurements

§2.1055 §22.355 RSS-132(5.3)

OPERATING FREQUENCY: 831,500,000 Hz

CHANNEL: 26865

REFERENCE VOLTAGE: 4.30 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	+ 20 (Ref)	831,499,911	-89	-0.0000107
100 %		- 30	831,499,897	-103	-0.0000124
100 %		- 20	831,499,903	-97	-0.0000117
100 %		- 10	831,499,981	-19	-0.0000023
100 %		0	831,499,803	-197	-0.0000237
100 %		+ 10	831,500,000	0	0.0000000
100 %		+ 20	831,499,833	-167	-0.0000201
100 %		+ 30	831,499,822	-178	-0.0000214
100 %		+ 40	831,499,857	-143	-0.0000172
100 %		+ 50	831,499,916	-84	-0.0000100
BATT. ENDPOINT	3.70	+ 20	831,499,912	-88	-0.0000106

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

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 26/5 Frequency Stability Measurements
§2.1055 §22.355 RSS-132(5.3)

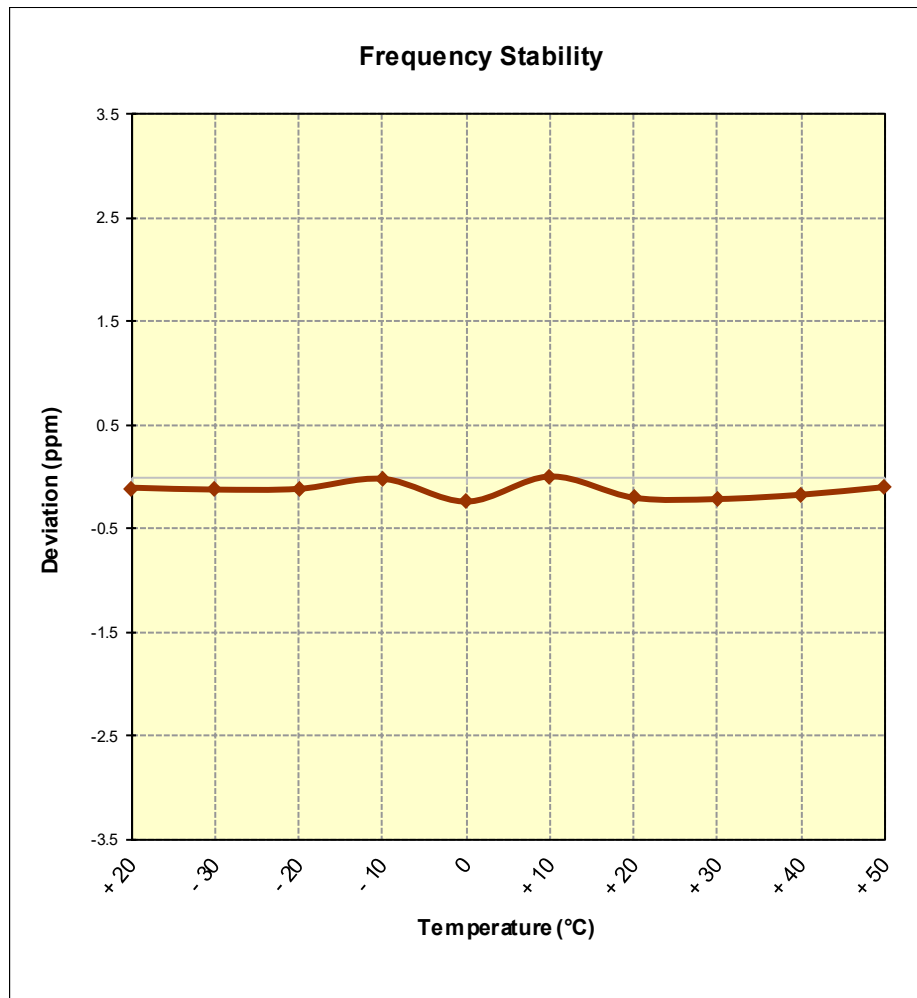


Figure 7-12. Frequency Stability Graph (Band 26/5)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 66/4 Frequency Stability Measurements

§2.1055 §27.54 RSS-139(6.4)

OPERATING FREQUENCY: 1,745,000,000 Hz
 CHANNEL: 132322
 REFERENCE VOLTAGE: 4.30 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	+ 20 (Ref)	1,744,999,958	-42	-0.0000024
100 %		- 30	1,744,999,831	-169	-0.0000097
100 %		- 20	1,744,999,953	-47	-0.0000027
100 %		- 10	1,744,999,933	-67	-0.0000038
100 %		0	1,744,999,946	-54	-0.0000031
100 %		+ 10	1,744,999,985	-15	-0.0000008
100 %		+ 20	1,744,999,881	-119	-0.0000068
100 %		+ 30	1,744,999,867	-133	-0.0000076
100 %		+ 40	1,744,999,939	-61	-0.0000035
100 %		+ 50	1,744,999,879	-121	-0.0000070
BATT. ENDPOINT	3.70	+ 20	1,744,999,921	-79	-0.0000045

Table 7-48. 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.

FCC ID: A3LSMG9600	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 66/4 Frequency Stability Measurements
§2.1055 §§27.54 RSS-139(6.4)

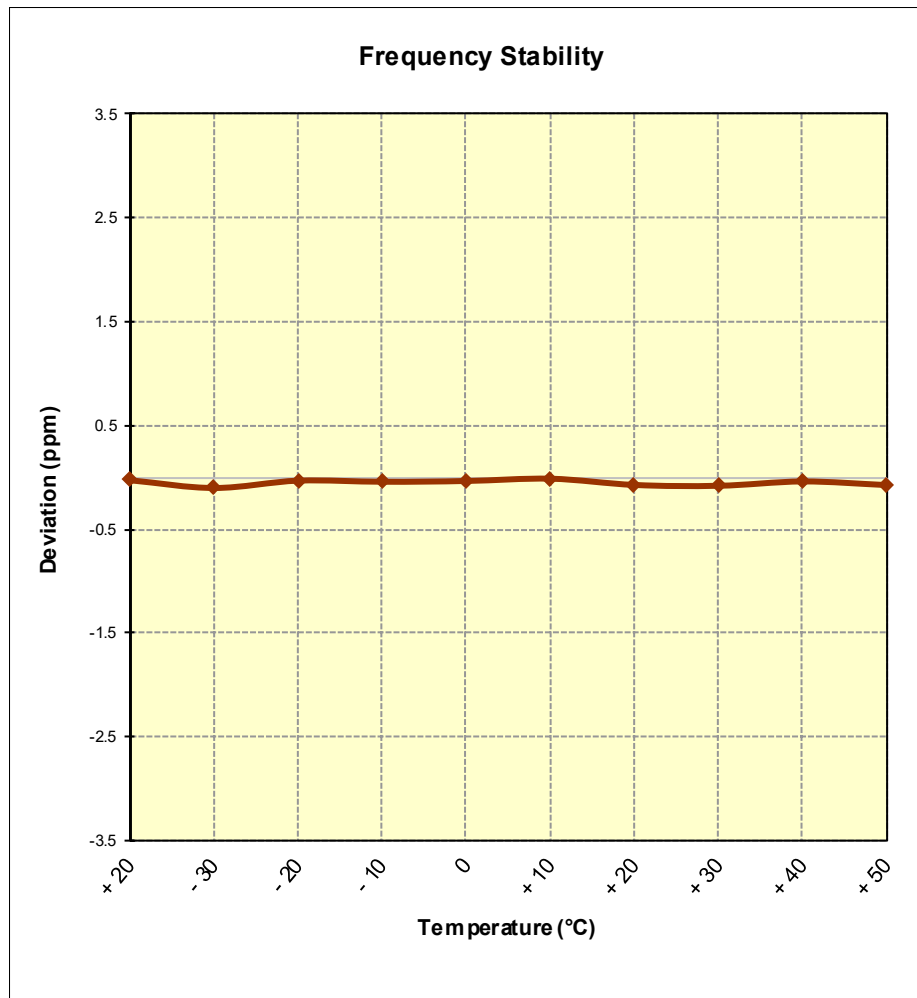


Figure 7-13. Frequency Stability Graph (Band 66/4)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 25/2 Frequency Stability Measurements

§2.1055 §24.235 RSS-133(6.3)

OPERATING FREQUENCY: 1,882,500,000 Hz

CHANNEL: 26365

REFERENCE VOLTAGE: 4.30 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	+ 20 (Ref)	1,882,499,835	-165	-0.0000087
100 %		- 30	1,882,499,995	-5	-0.0000002
100 %		- 20	1,882,499,939	-61	-0.0000032
100 %		- 10	1,882,499,839	-161	-0.0000086
100 %		0	1,882,499,803	-197	-0.0000104
100 %		+ 10	1,882,499,995	-5	-0.0000003
100 %		+ 20	1,882,499,880	-120	-0.0000064
100 %		+ 30	1,882,499,868	-132	-0.0000070
100 %		+ 40	1,882,499,986	-14	-0.0000008
100 %		+ 50	1,882,499,877	-123	-0.0000065
BATT. ENDPOINT	3.70	+ 20	1,882,499,949	-51	-0.0000027

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

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 25/2 Frequency Stability Measurements
§2.1055 §24.235 RSS-133(6.3)

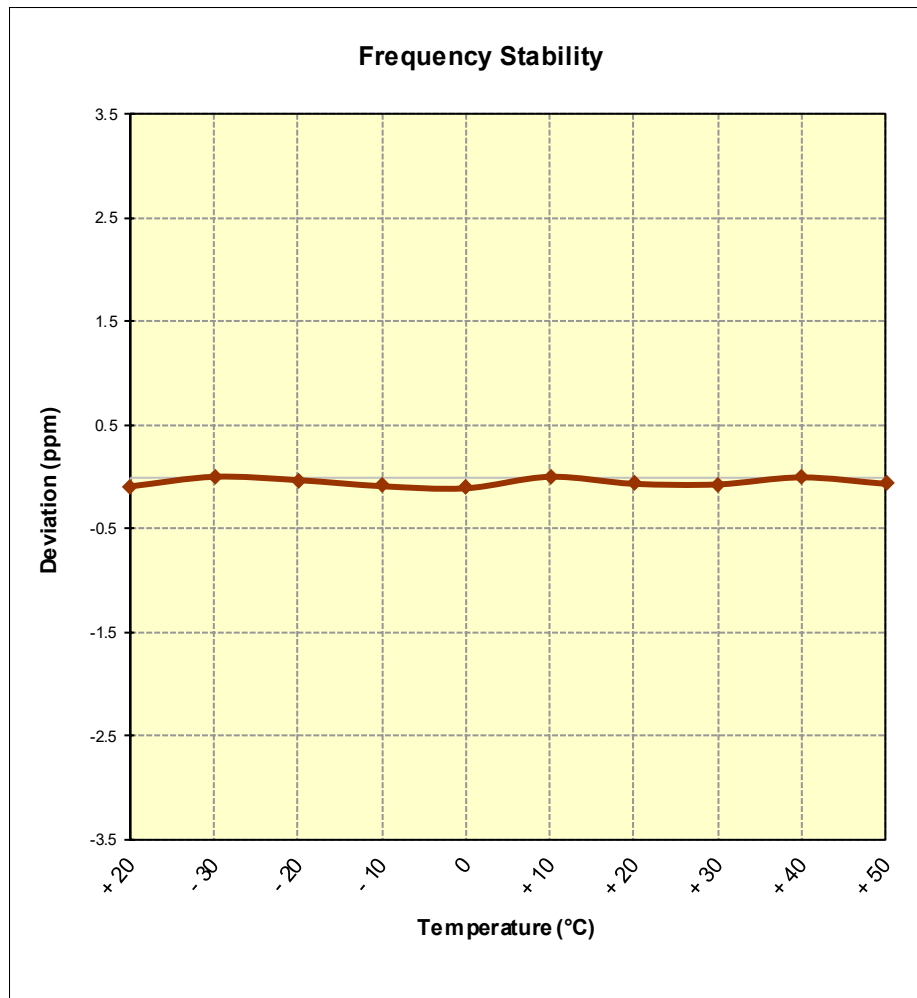


Figure 7-14. Frequency Stability Graph (Band 25/2)

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

\$2.1055 \$27.54 RSS-199(4.3)

OPERATING FREQUENCY: 2,593,000,000 Hz

CHANNEL: 40620

REFERENCE VOLTAGE: 4.30 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.30	+ 20 (Ref)	2,592,999,894	-106	-0.0000041
100 %		- 30	2,592,999,912	-88	-0.0000034
100 %		- 20	2,592,999,868	-132	-0.0000051
100 %		- 10	2,592,999,929	-71	-0.0000027
100 %		0	2,592,999,851	-149	-0.0000057
100 %		+ 10	2,592,999,888	-112	-0.0000043
100 %		+ 20	2,592,999,909	-91	-0.0000035
100 %		+ 30	2,592,999,982	-18	-0.0000007
100 %		+ 40	2,592,999,948	-52	-0.0000020
100 %		+ 50	2,592,999,862	-138	-0.0000053
BATT. ENDPOINT	3.70	+ 20	2,592,999,992	-8	-0.0000003

Table 7-50. 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.

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 41 Frequency Stability Measurements

§2.1055 §27.54 RSS-199(4.3)

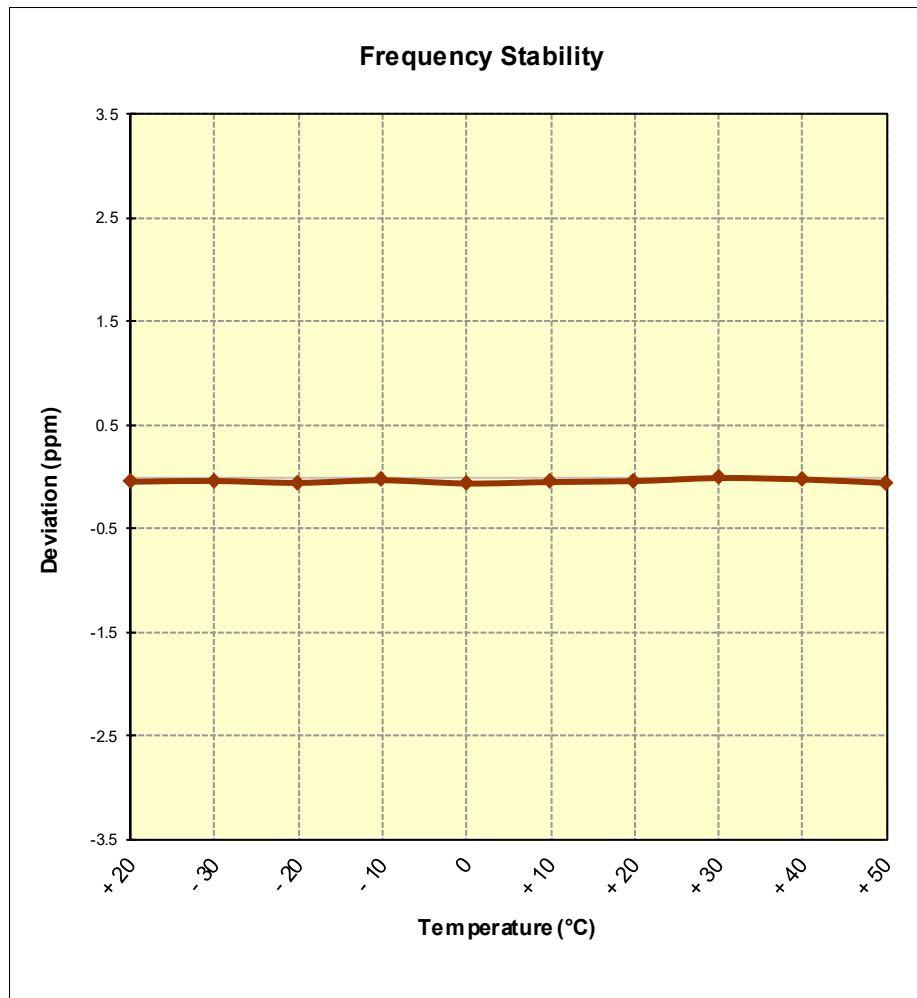


Figure 7-15. Frequency Stability Graph (Band 41)

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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: A3LSMG9600** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

FCC ID: A3LSMG9600		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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