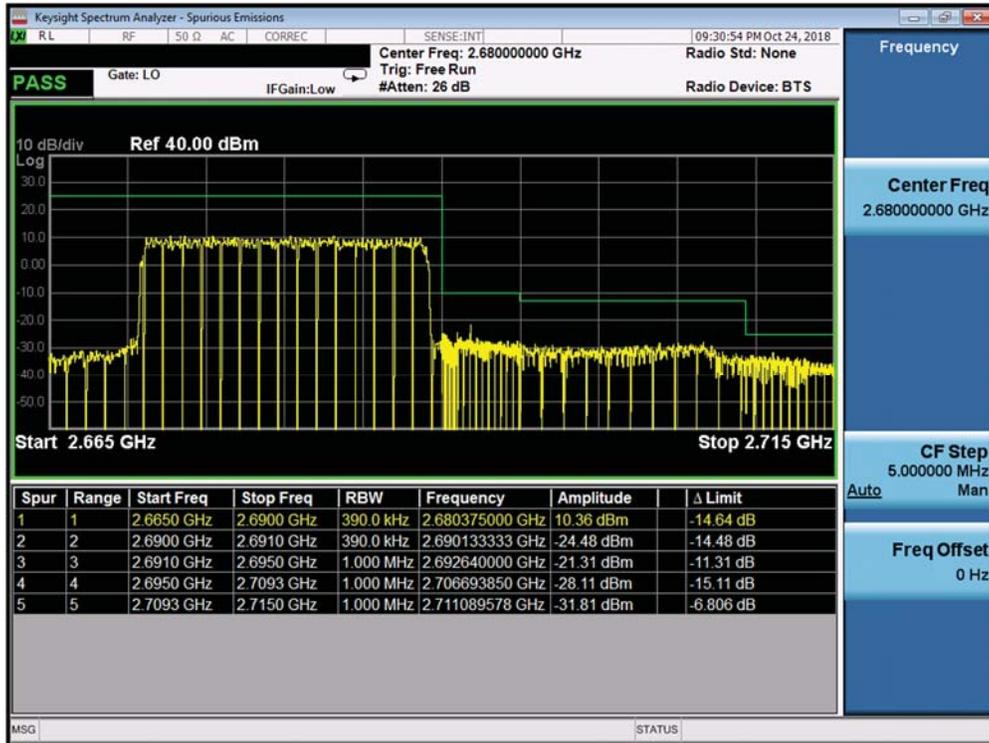


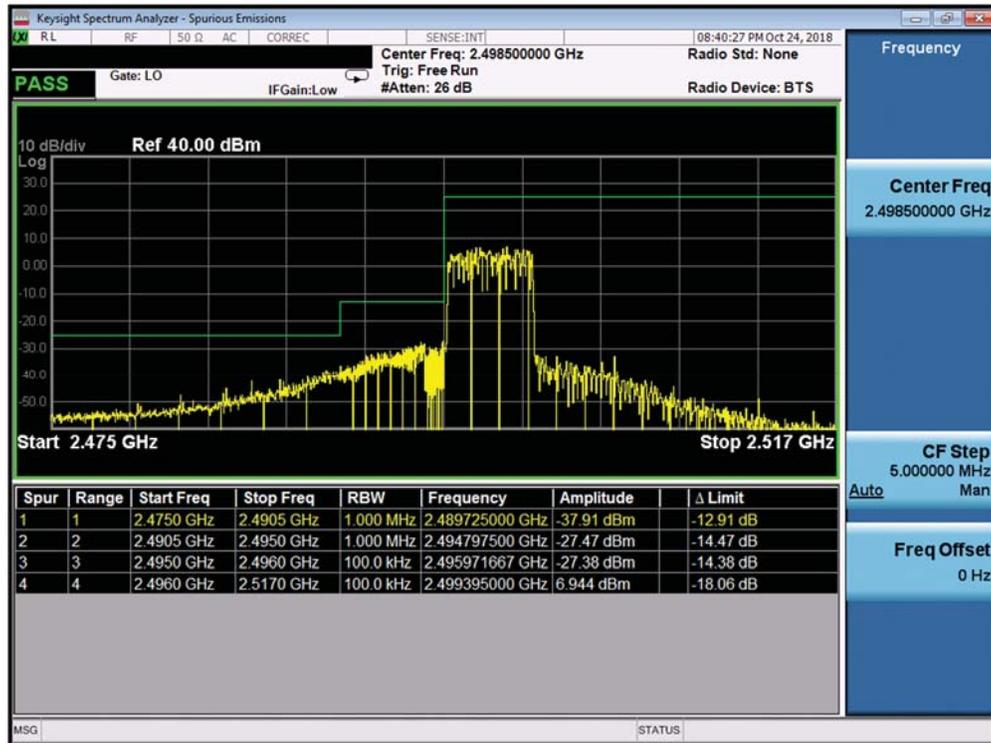
Plot 7-410. Lower ACP Plot (Band 41 PC2 - 20.0MHz QPSK - Full RB Configuration)



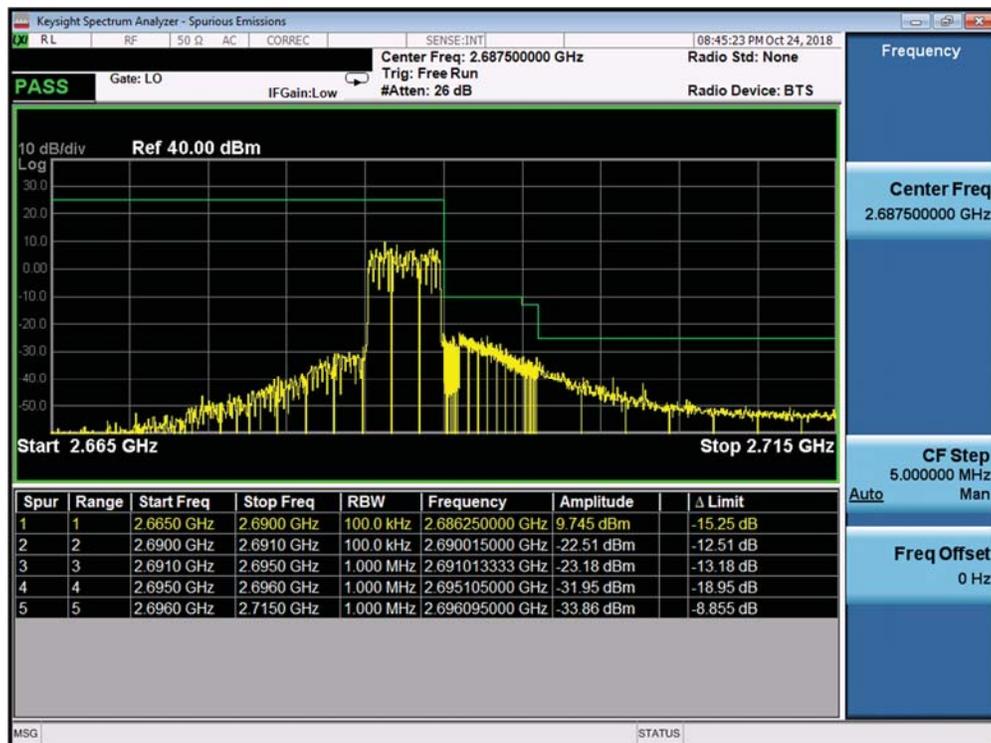
Plot 7-411. Upper ACP Plot (Band 41 PC2 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 231 of 391

Band 41 (PC3)

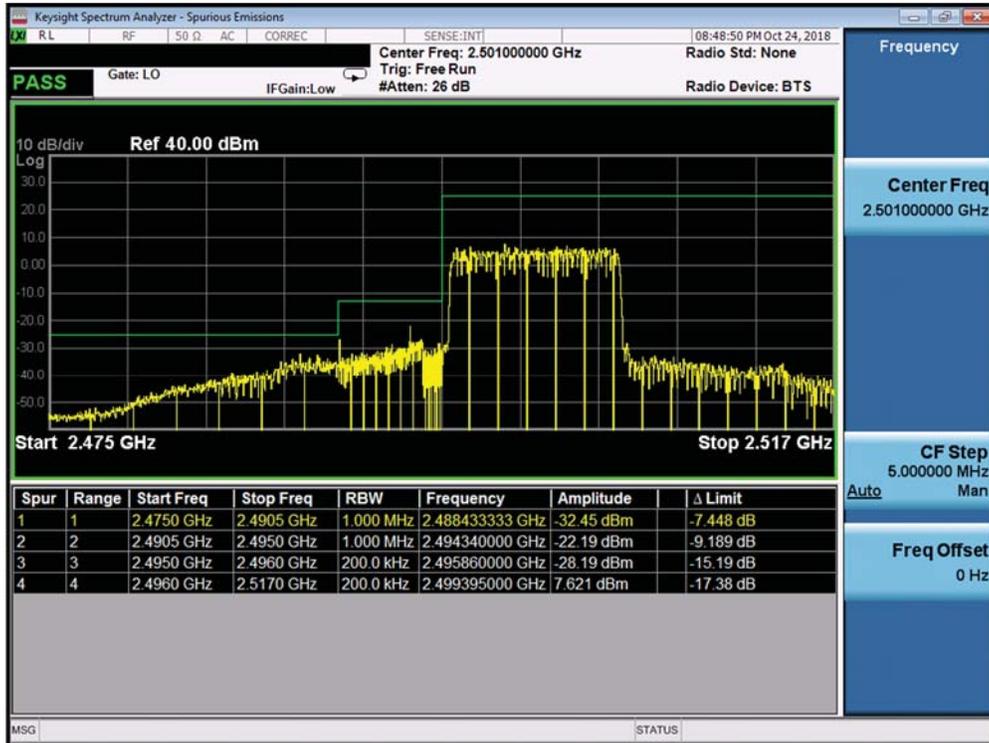


Plot 7-412. Lower ACP Plot (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)

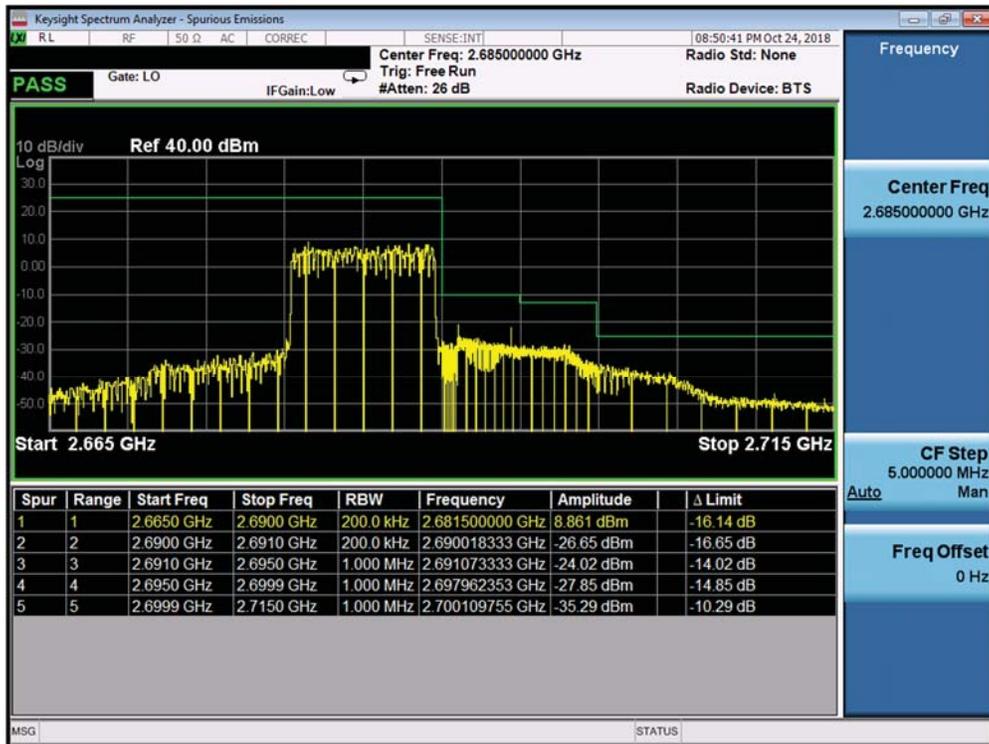


Plot 7-413. Upper ACP Plot (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 232 of 391



Plot 7-414. Lower ACP Plot (Band 41 PC3 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-415. Upper ACP Plot (Band 41 PC3 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 233 of 391



Plot 7-416. Lower ACP Plot (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-417. Upper ACP Plot (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 234 of 391



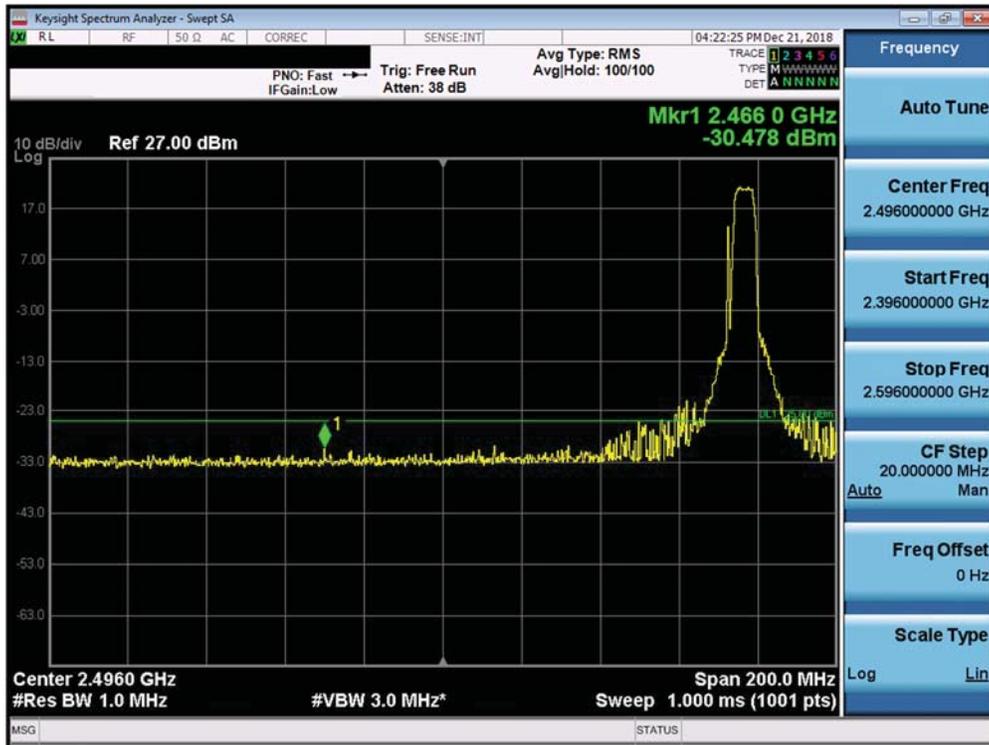
Plot 7-418. Lower ACP Plot (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)



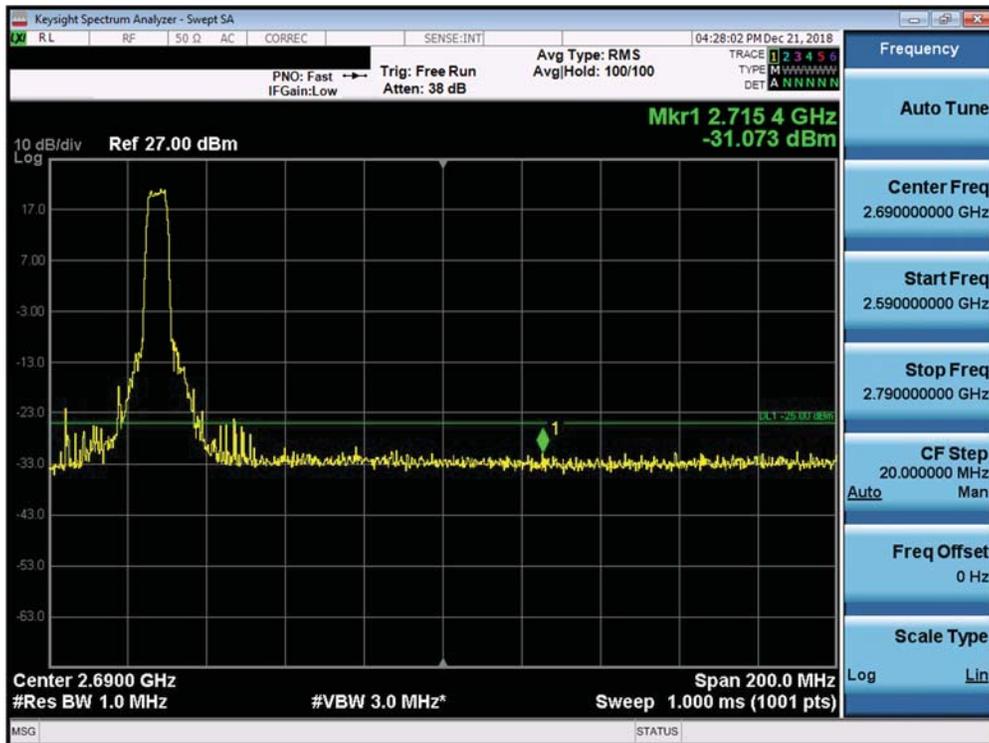
Plot 7-419. Upper ACP Plot (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 235 of 391

Band 38

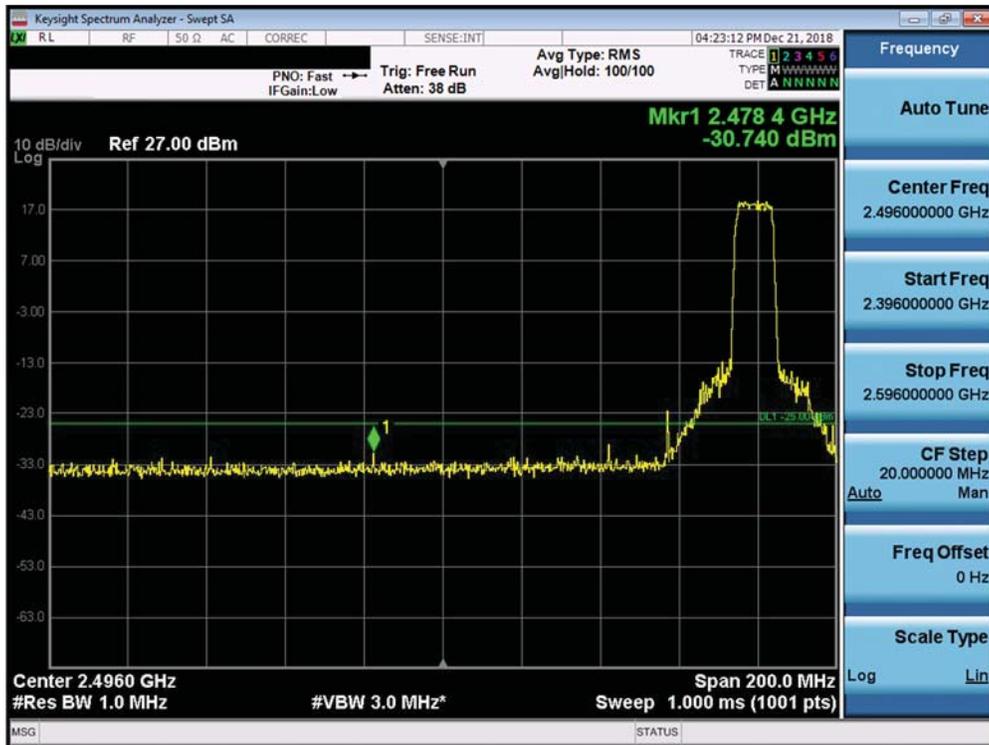


Plot 7-420. Lower ACP Plot (Band 38 - 5.0MHz QPSK - Full RB Configuration)

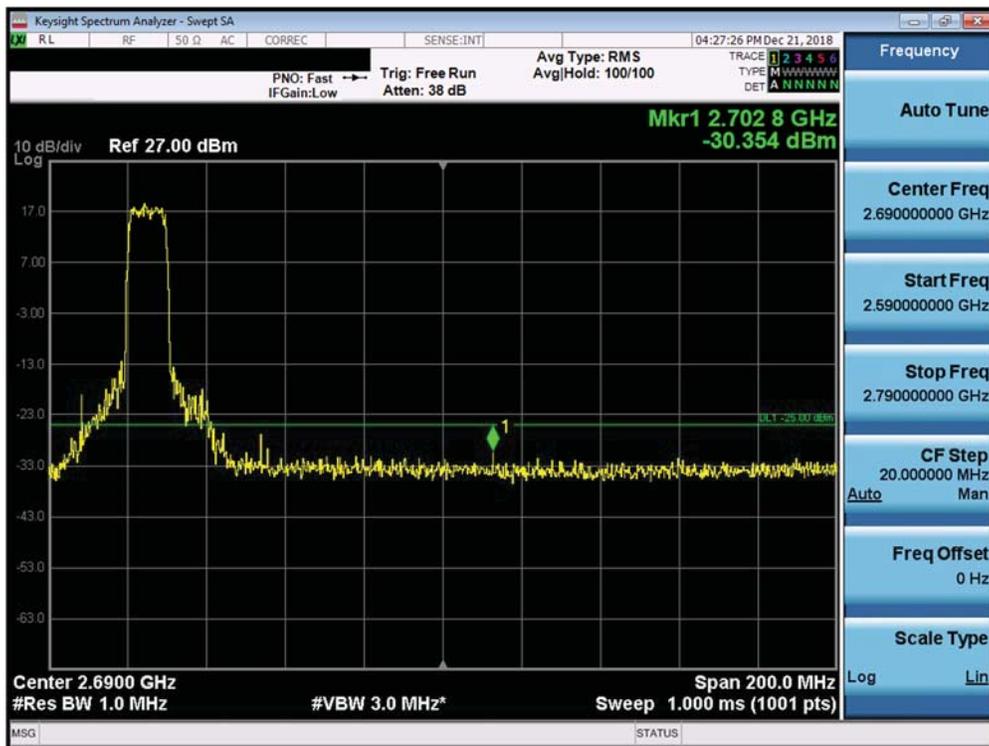


Plot 7-421. Upper ACP Plot (Band 38 - 5.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 236 of 391

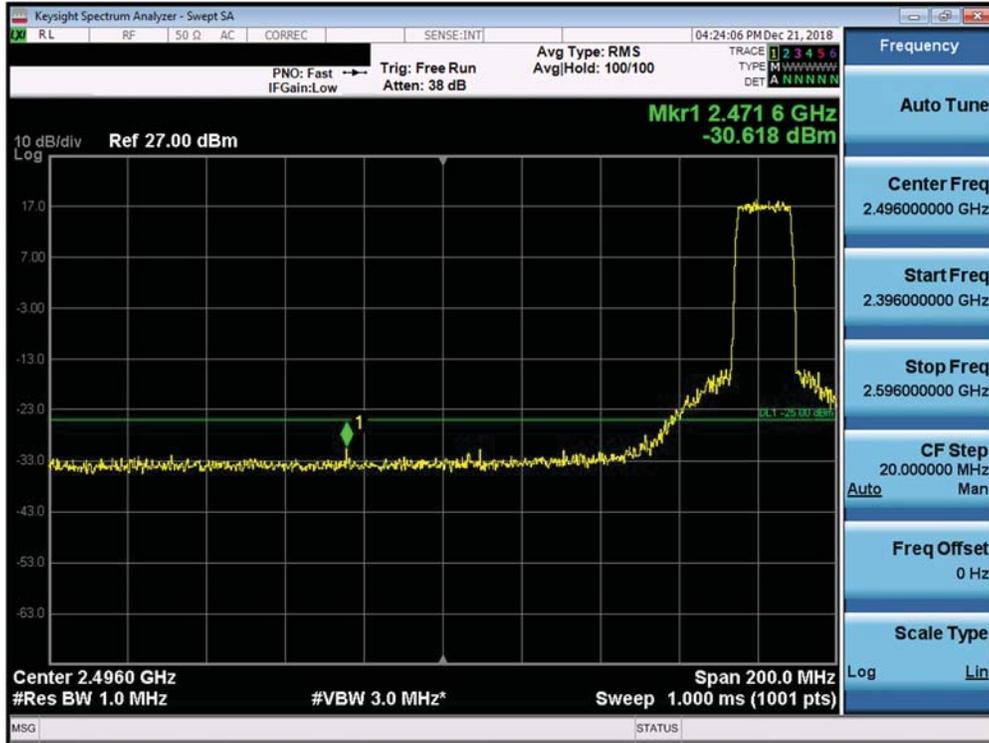


Plot 7-422. Lower ACP Plot (Band 38 - 10.0MHz QPSK - Full RB Configuration)

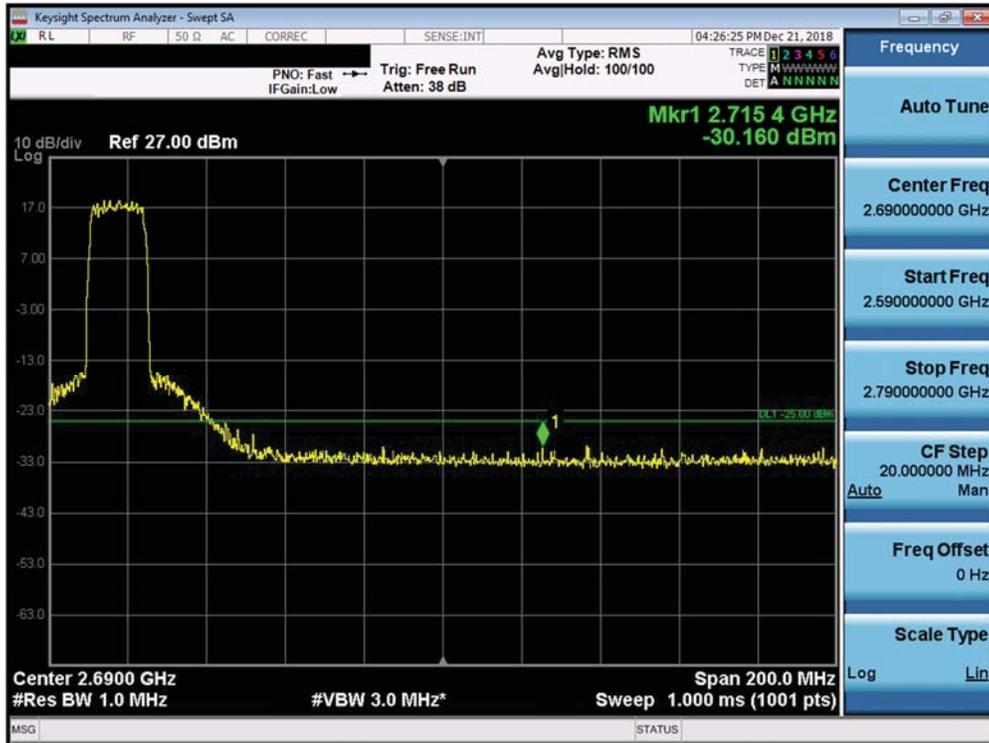


Plot 7-423. Upper ACP Plot (Band 38 - 10.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 237 of 391

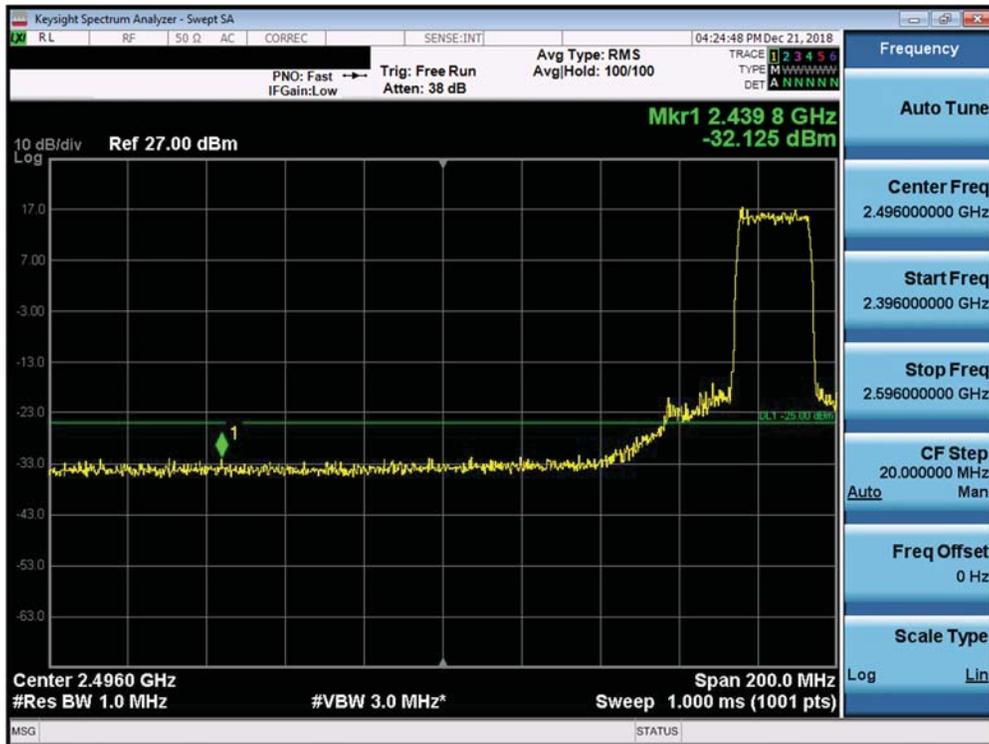


Plot 7-424. Lower ACP Plot (Band 38 - 15.0MHz QPSK - Full RB Configuration)

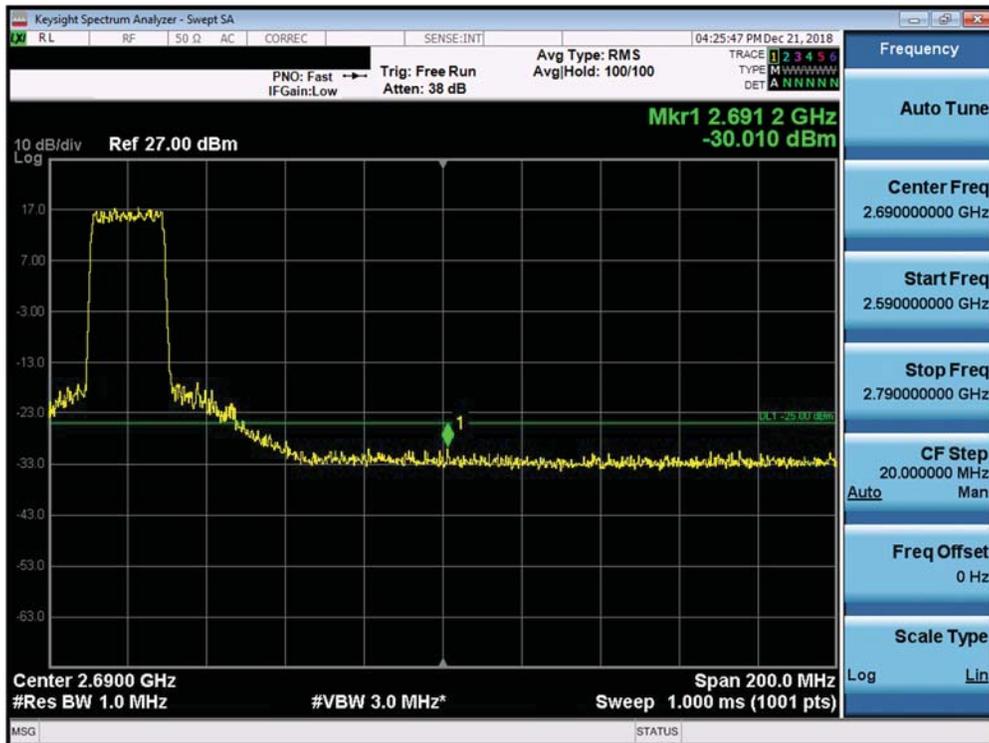


Plot 7-425. Upper ACP Plot (Band 38 - 15.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 238 of 391



Plot 7-426. Lower ACP Plot (Band 38 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-427. Upper ACP Plot (Band 38 - 20.0MHz QPSK - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 239 of 391

7.5 Peak-Average Ratio

Test Overview

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

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7.1

Test Settings

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

Test Setup

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

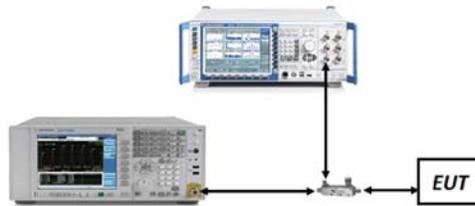


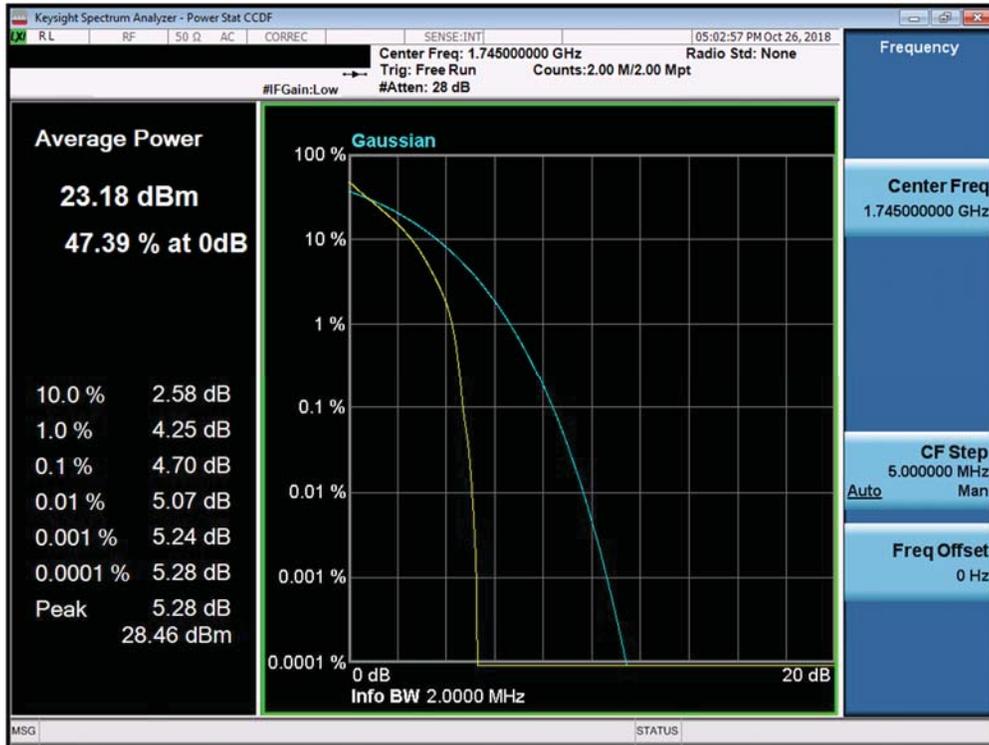
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

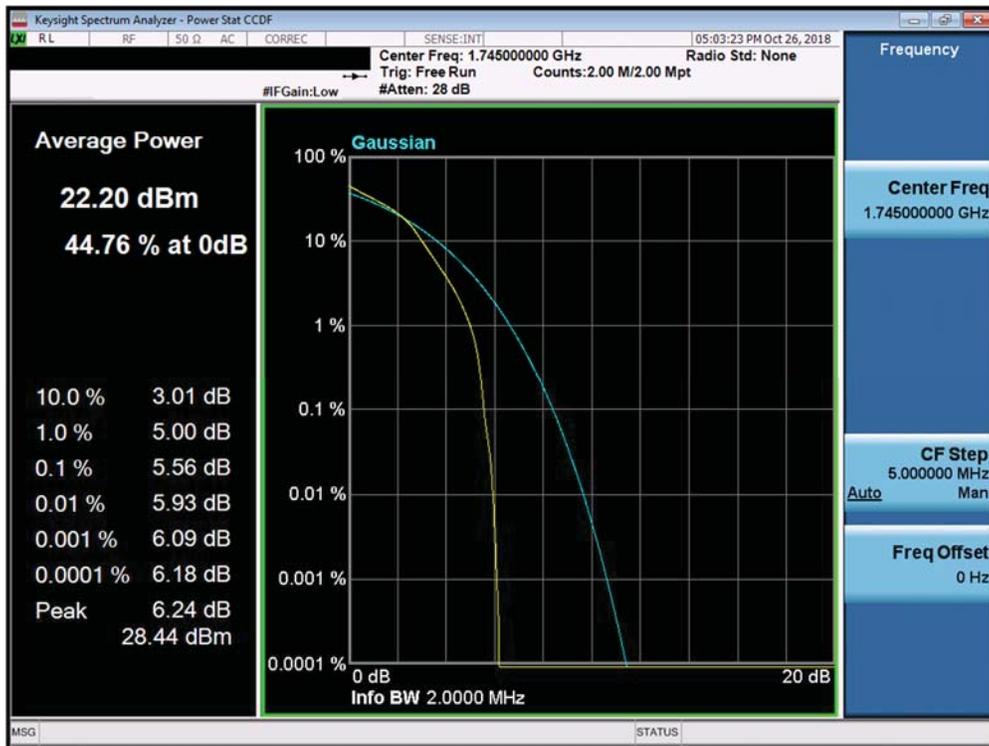
None.

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 240 of 391

Band 66/4

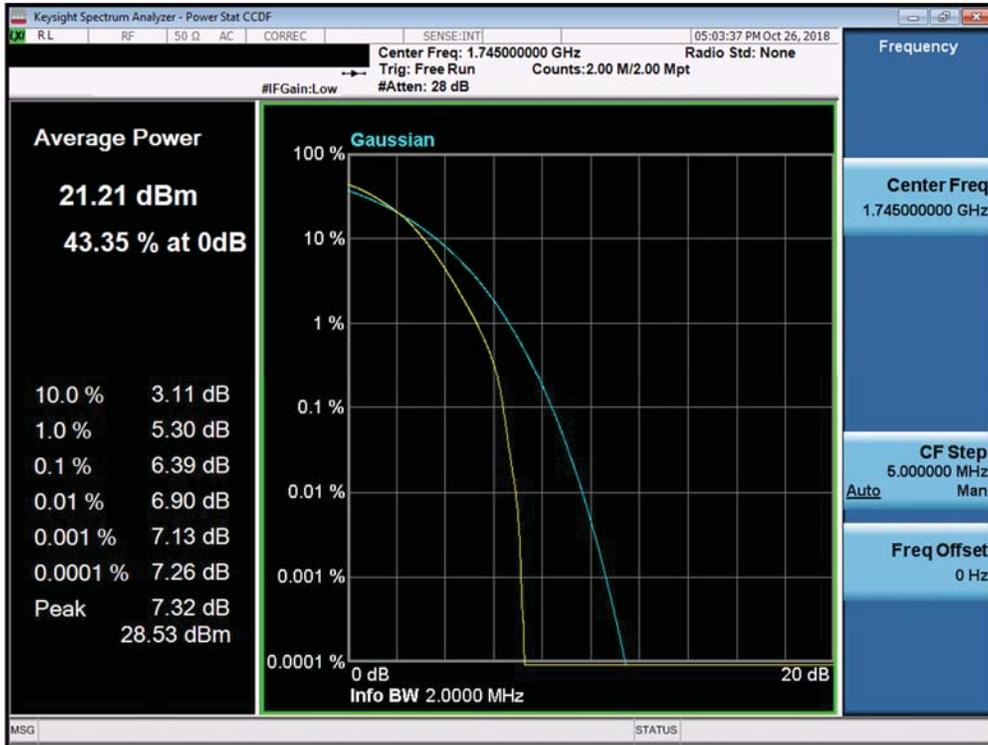


Plot 7-428. PAR Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

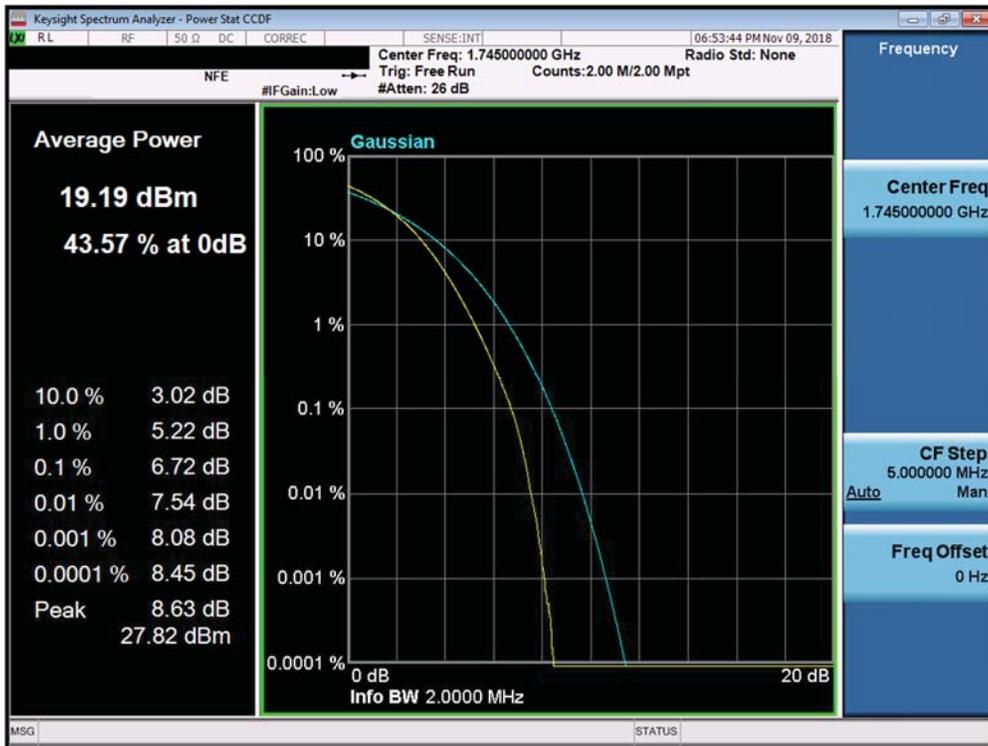


Plot 7-429. PAR Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 241 of 391

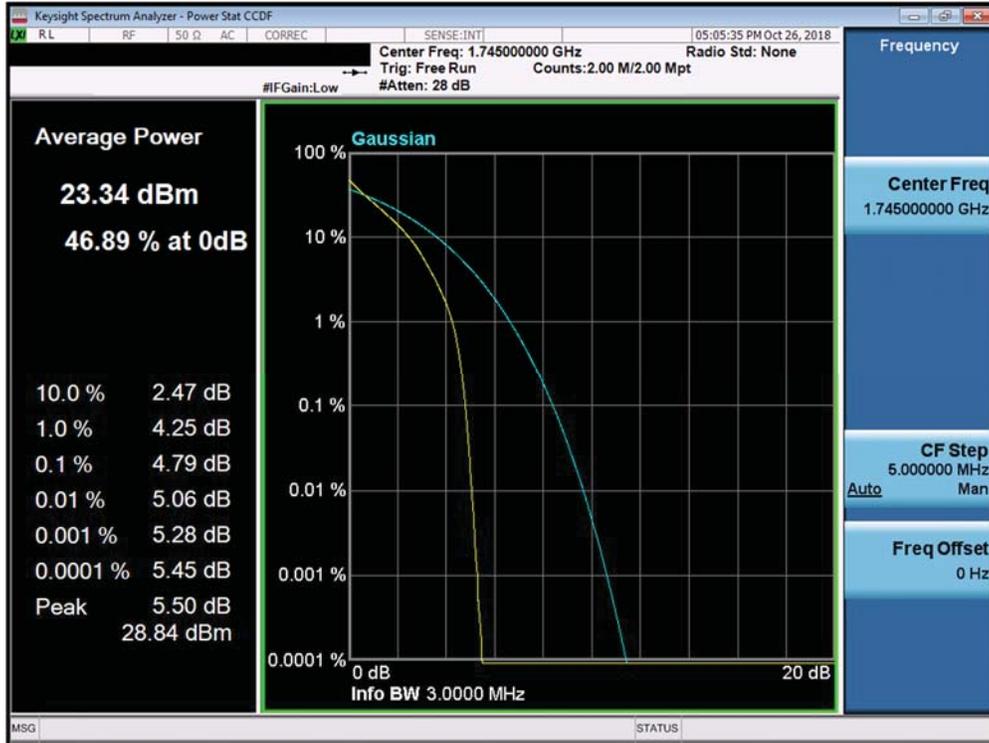


Plot 7-430. PAR Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)

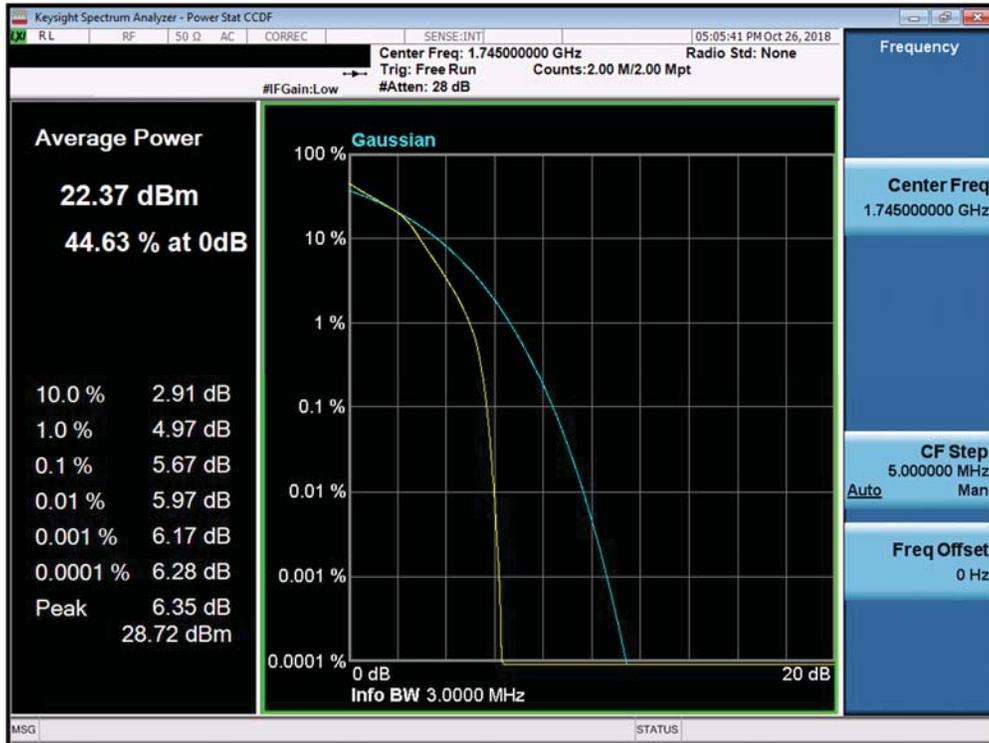


Plot 7-431. PAR Plot (Band 66/4 - 1.4MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 242 of 391

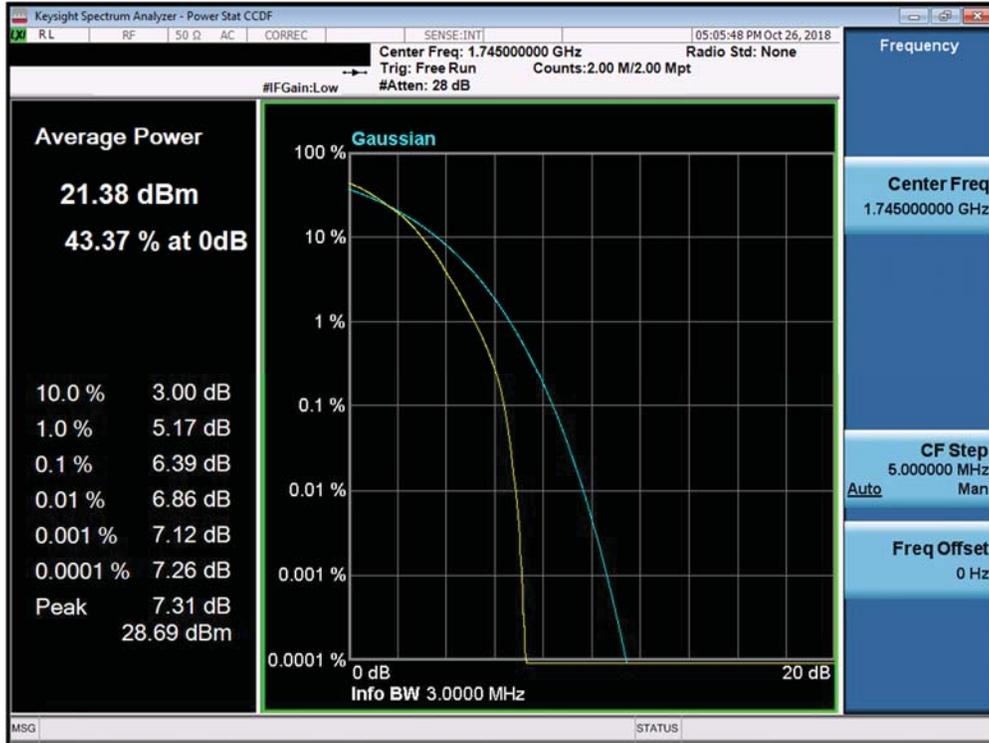


Plot 7-432. PAR Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

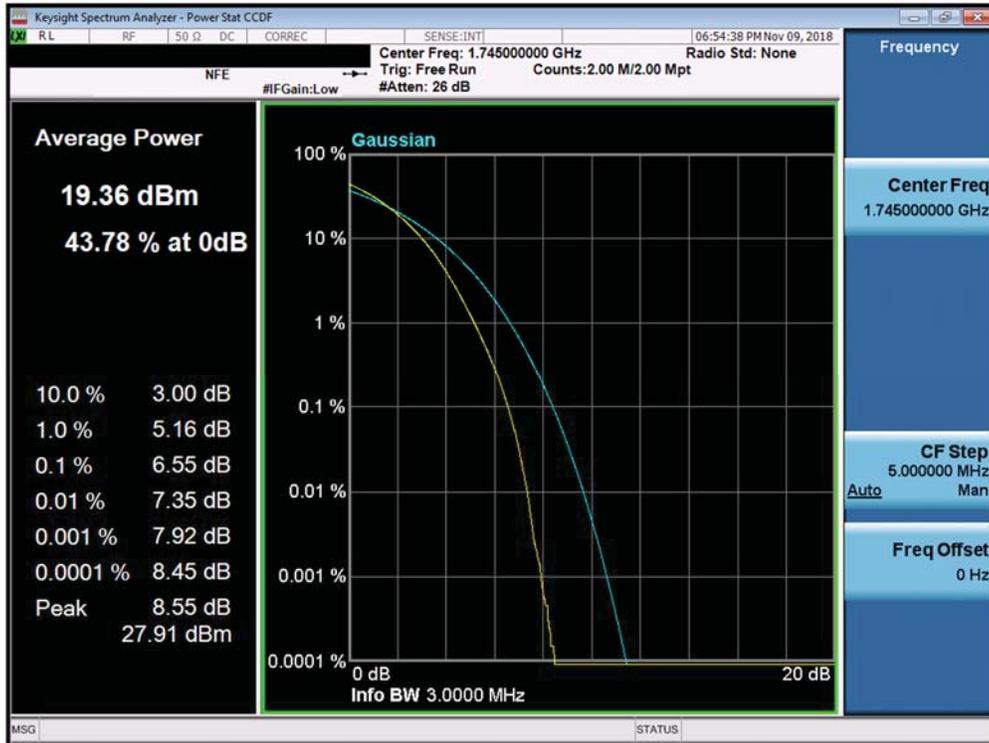


Plot 7-433. PAR Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 243 of 391

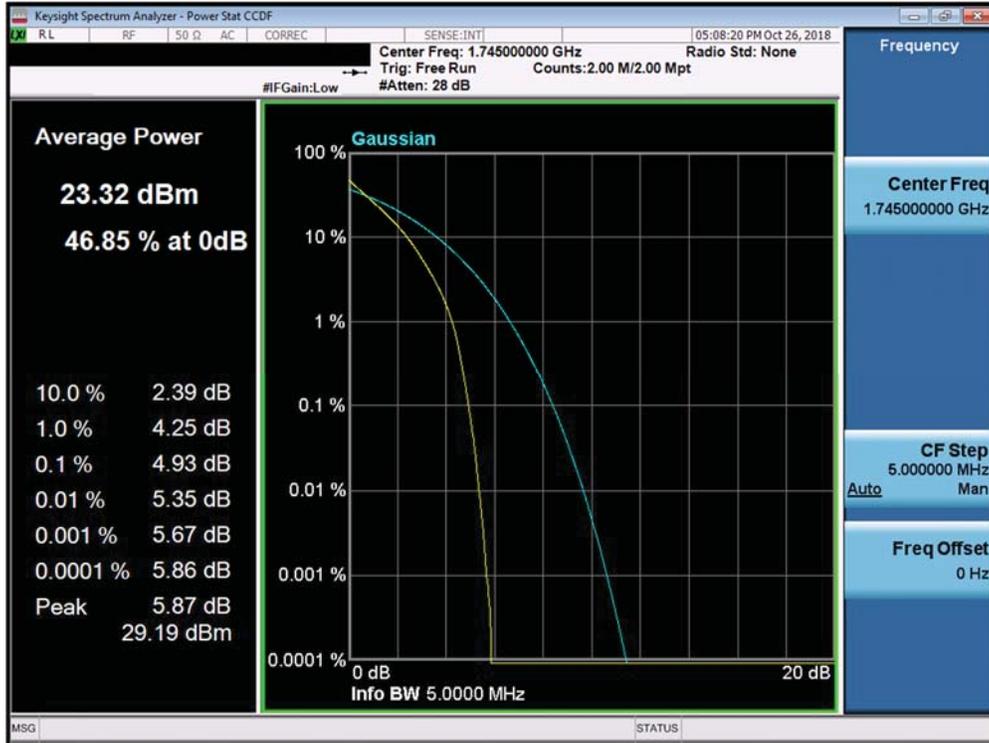


Plot 7-434. PAR Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)

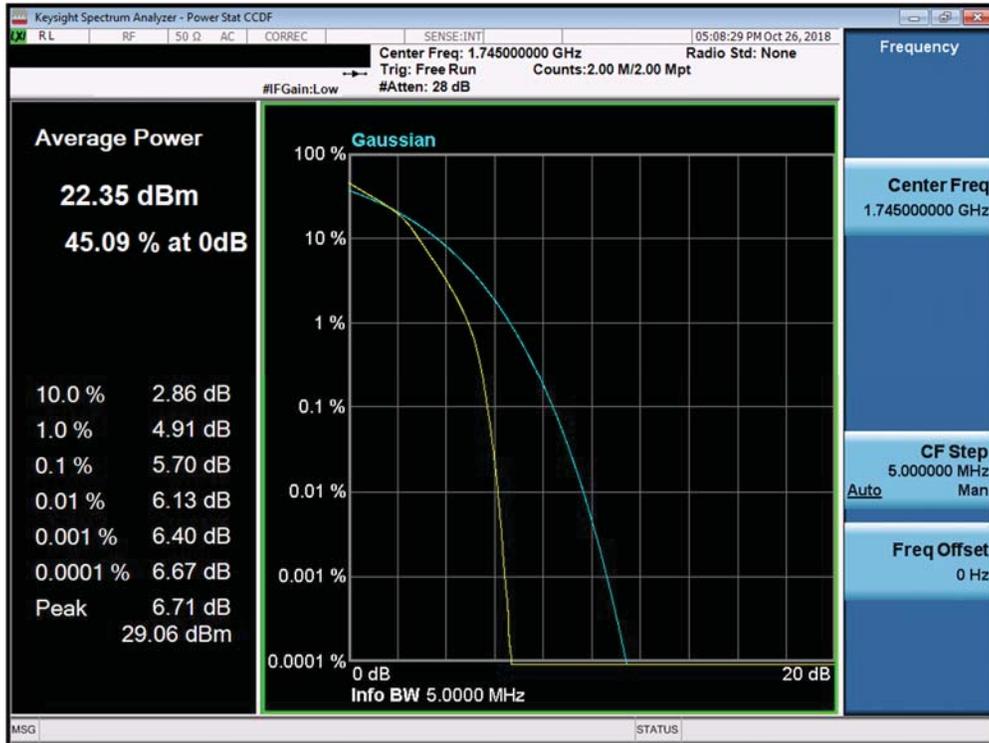


Plot 7-435. PAR Plot (Band 66/4 - 3.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 244 of 391

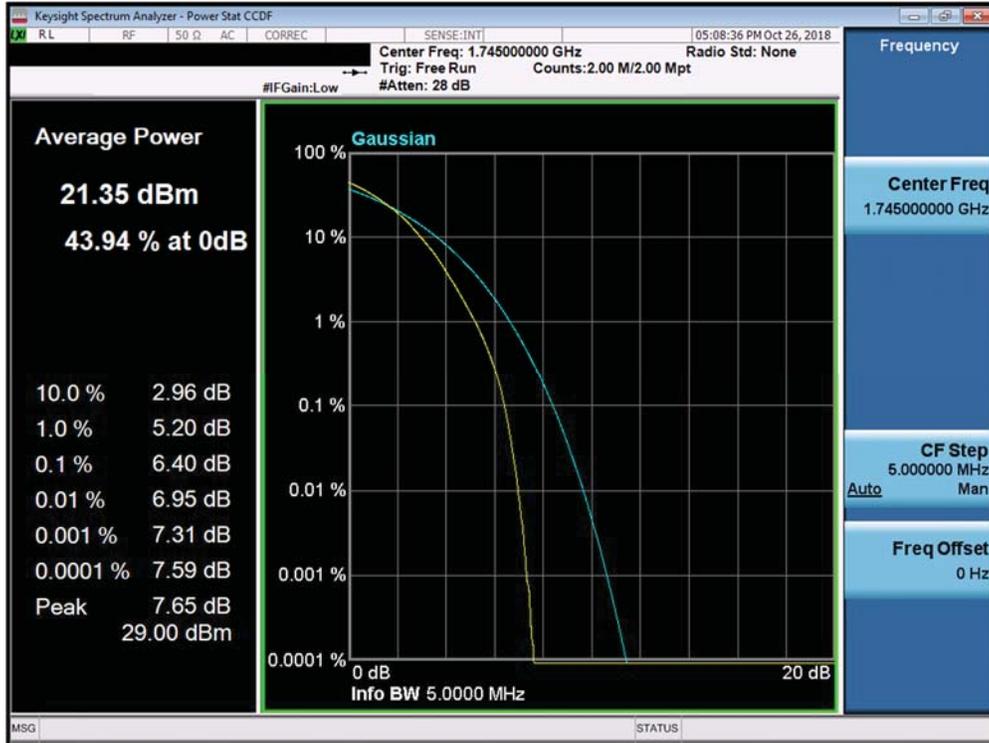


Plot 7-436. PAR Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

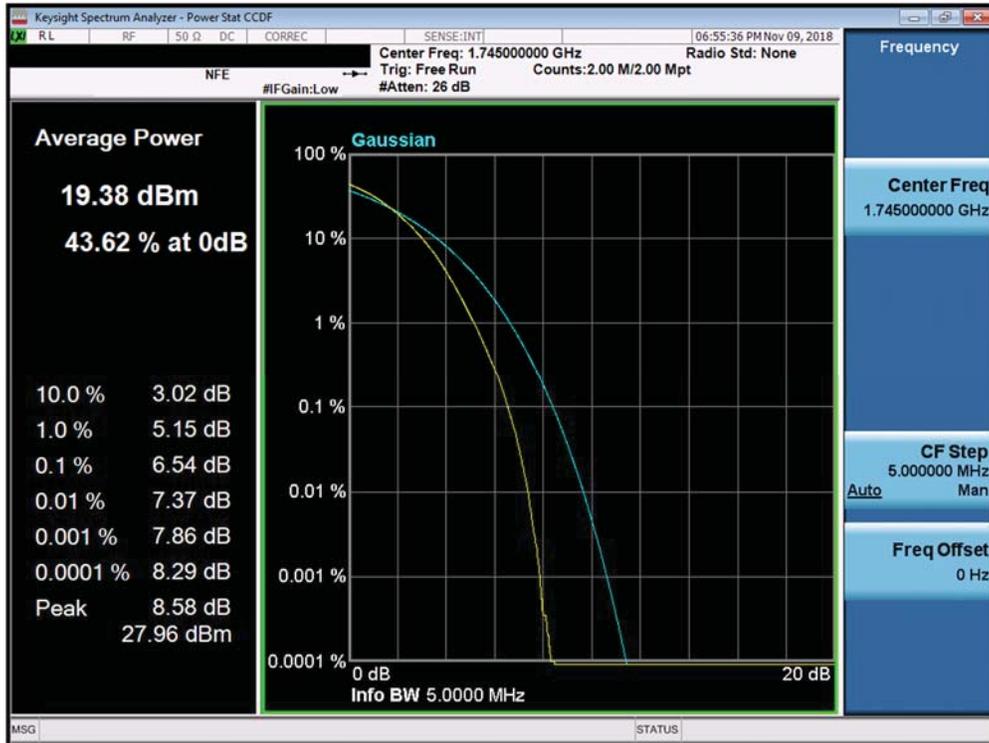


Plot 7-437. PAR Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 245 of 391

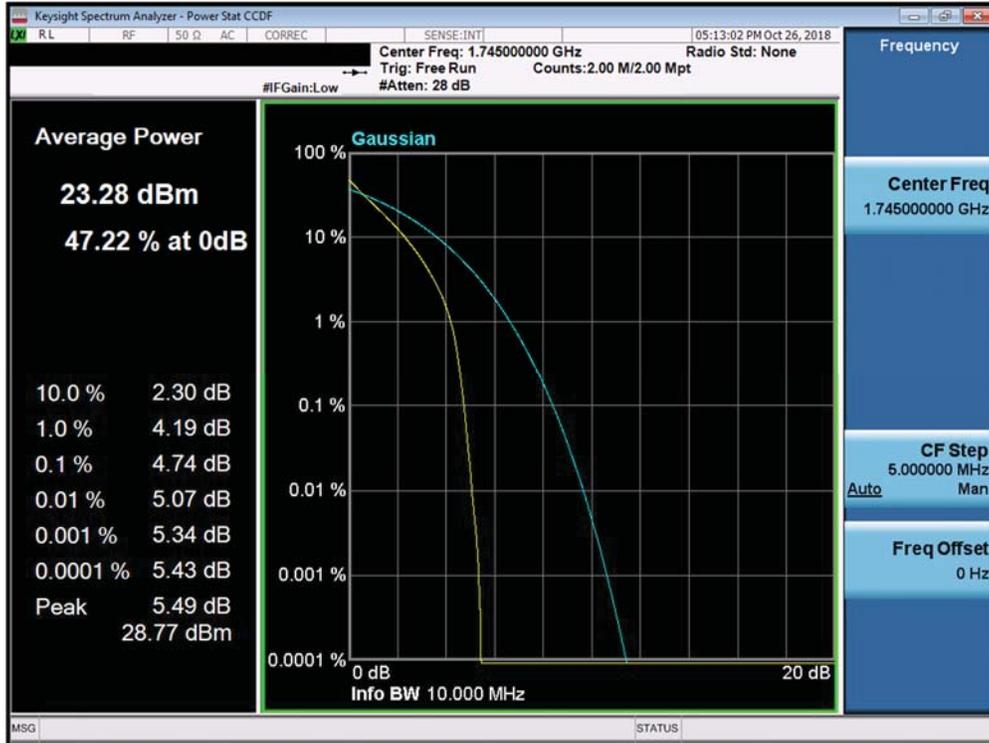


Plot 7-438. PAR Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)

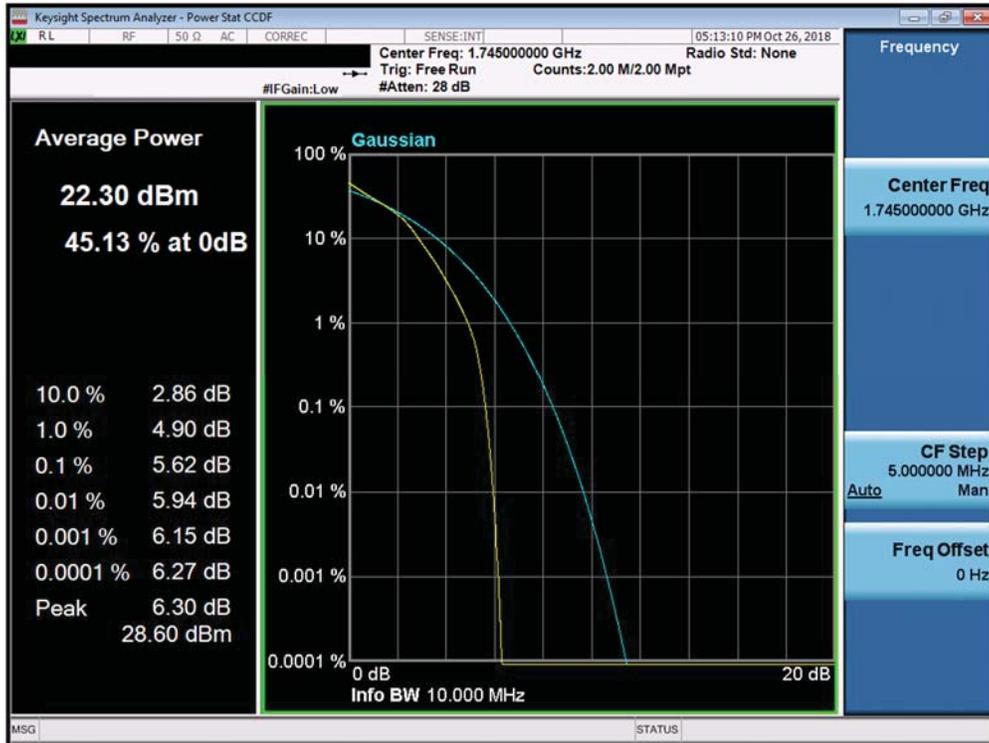


Plot 7-439. PAR Plot (Band 66/4 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 246 of 391

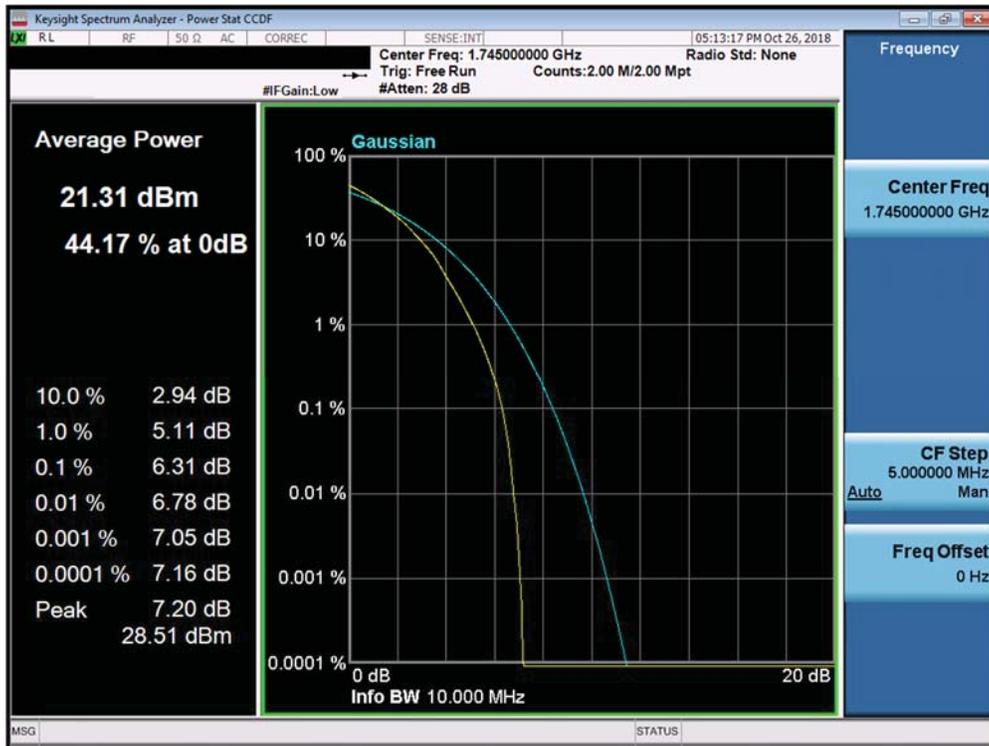


Plot 7-440. PAR Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

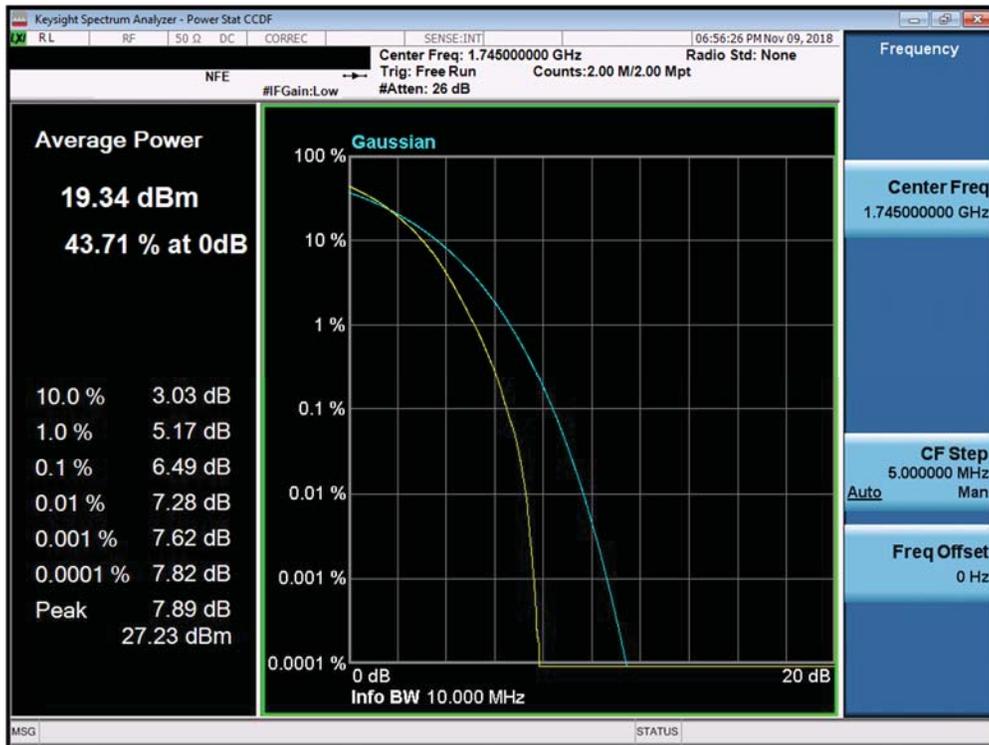


Plot 7-441. PAR Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 247 of 391

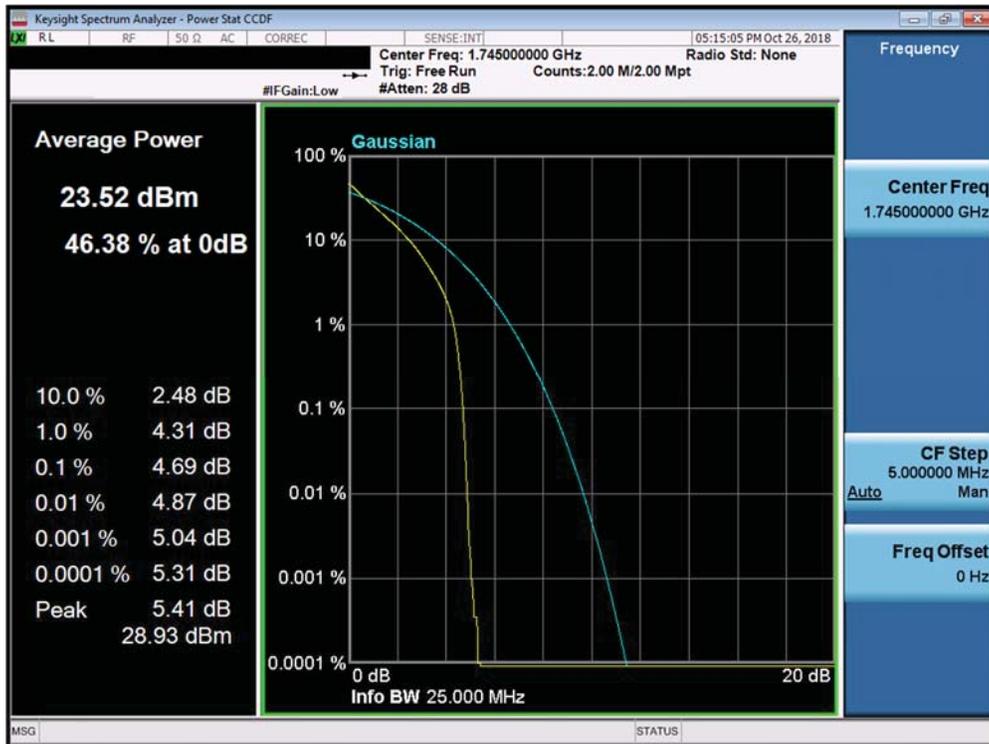


Plot 7-442. PAR Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)

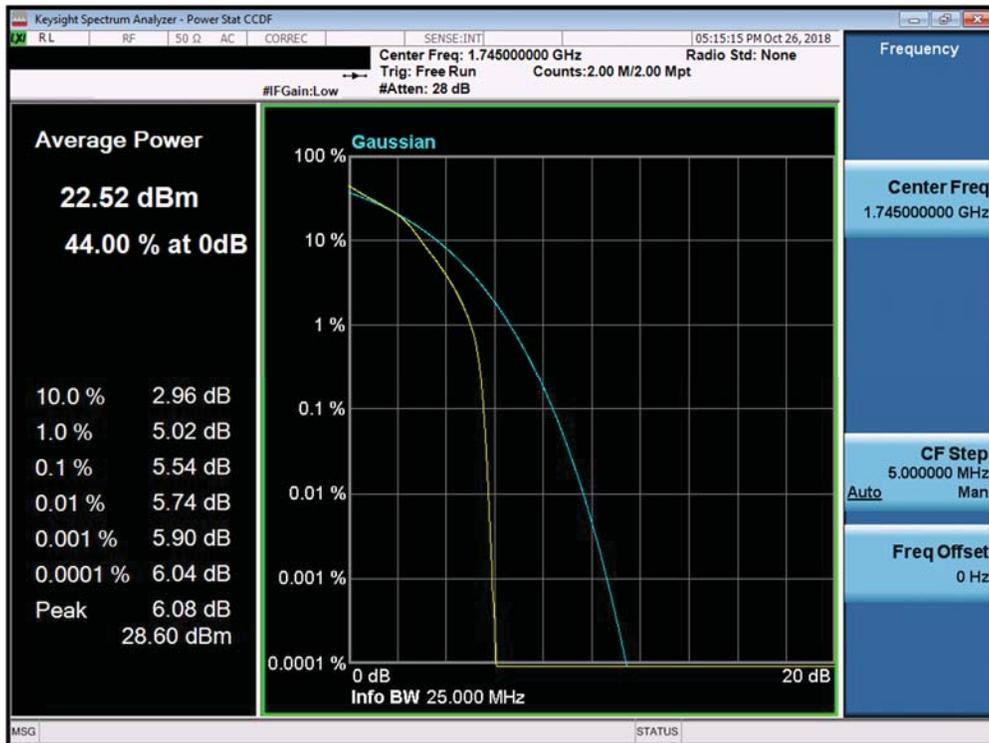


Plot 7-443. PAR Plot (Band 66/4 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 248 of 391

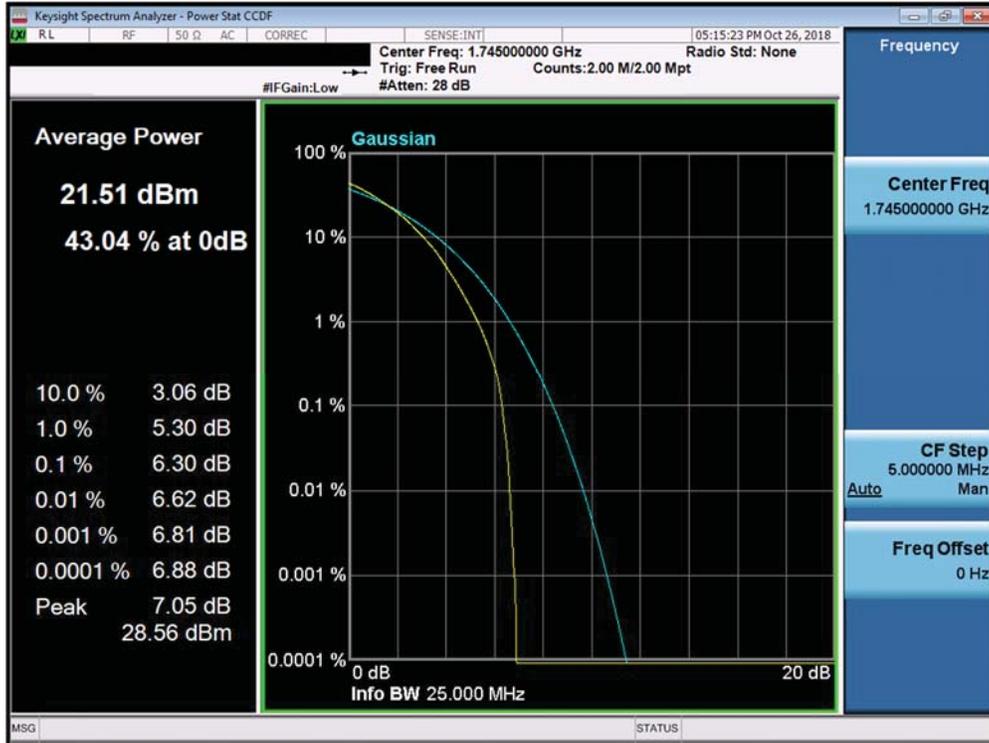


Plot 7-444. PAR Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

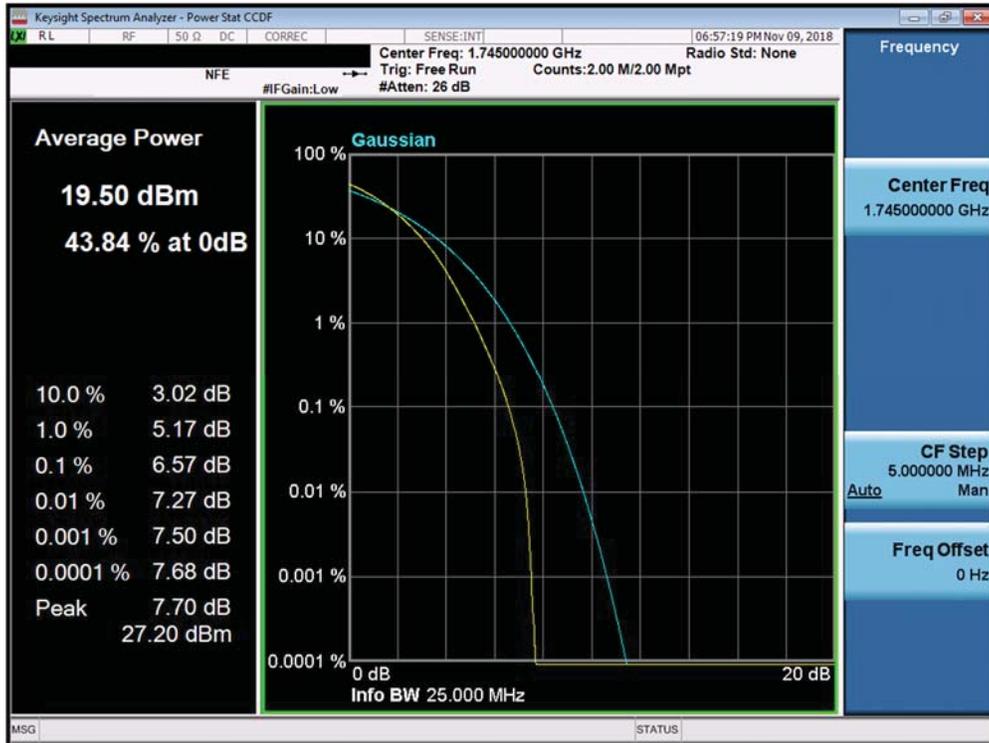


Plot 7-445. PAR Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 249 of 391

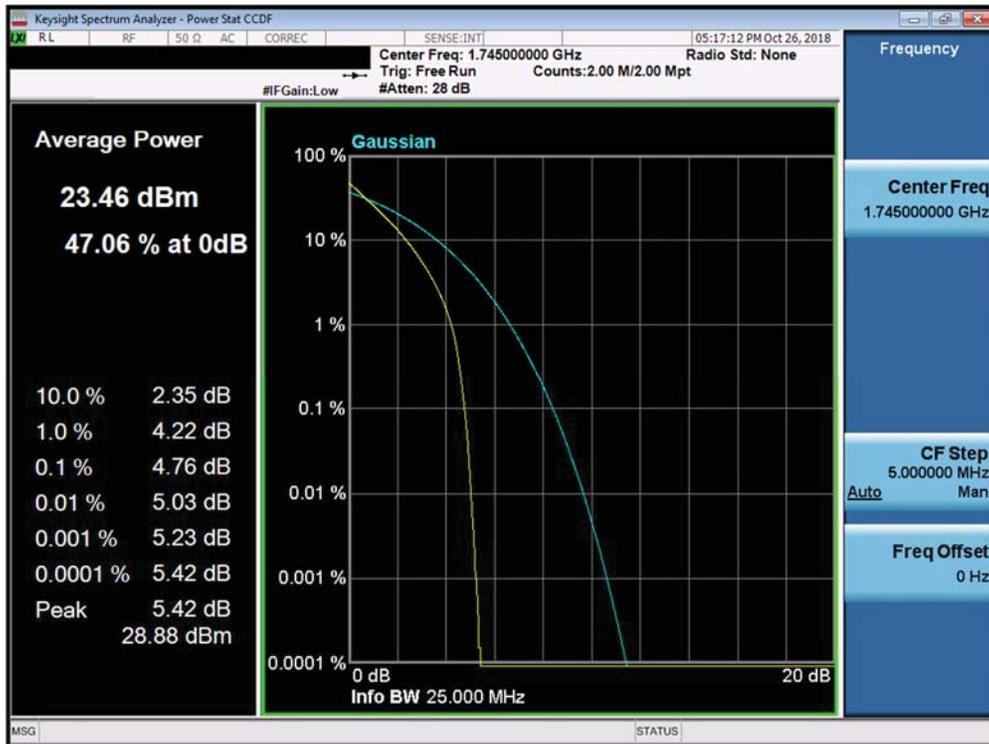


Plot 7-446. PAR Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)

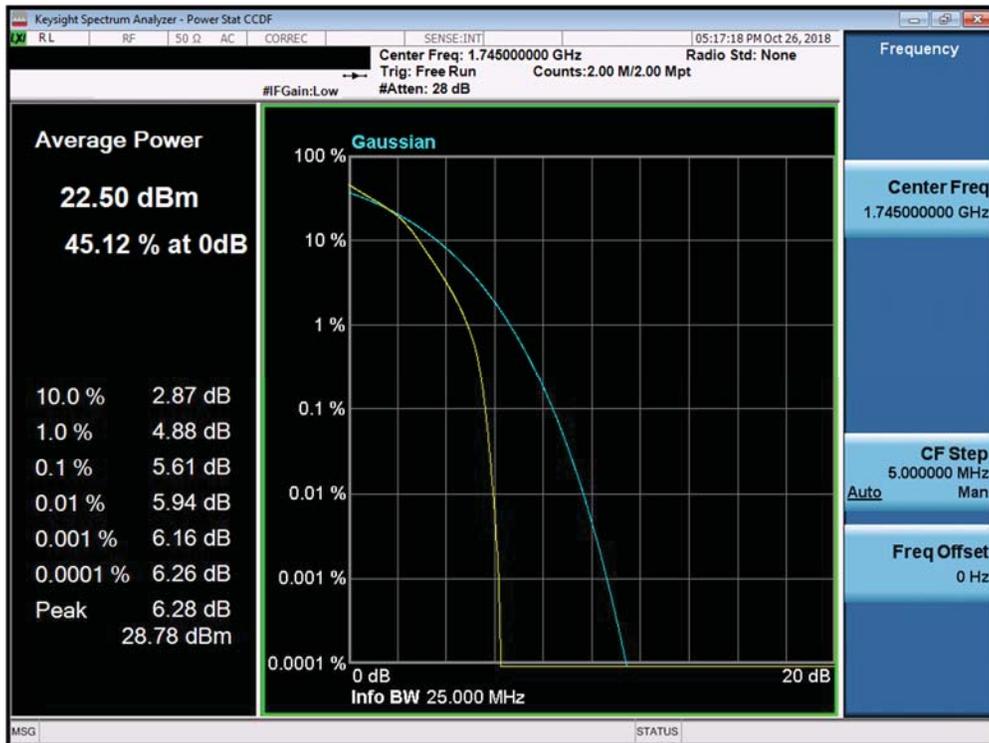


Plot 7-447. PAR Plot (Band 66/4 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 250 of 391

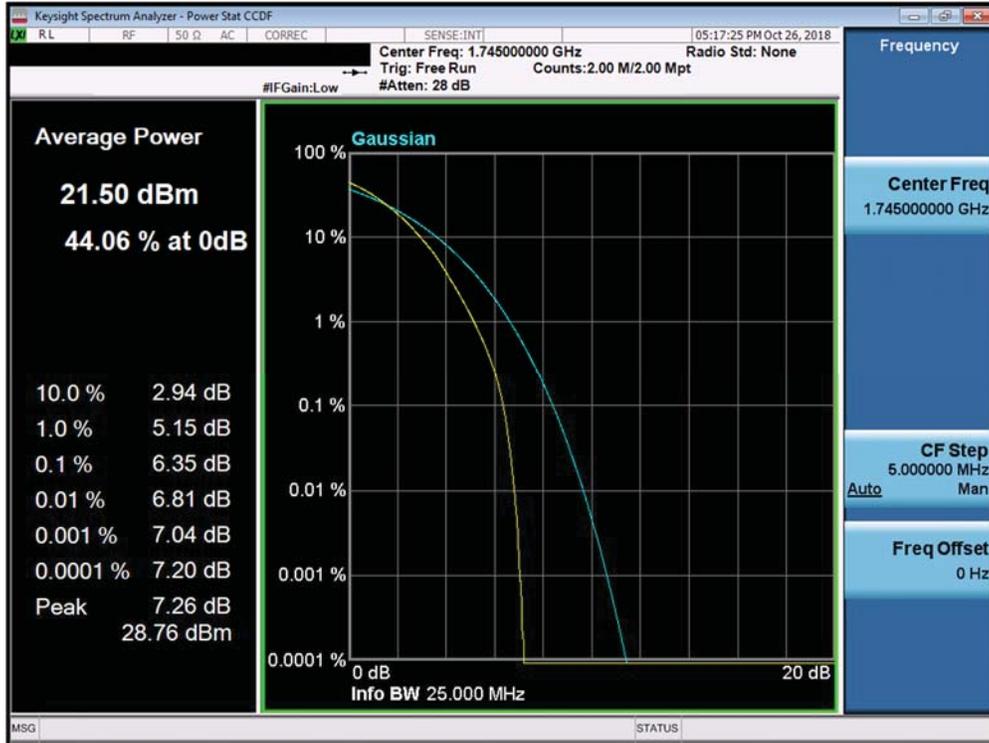


Plot 7-448. PAR Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

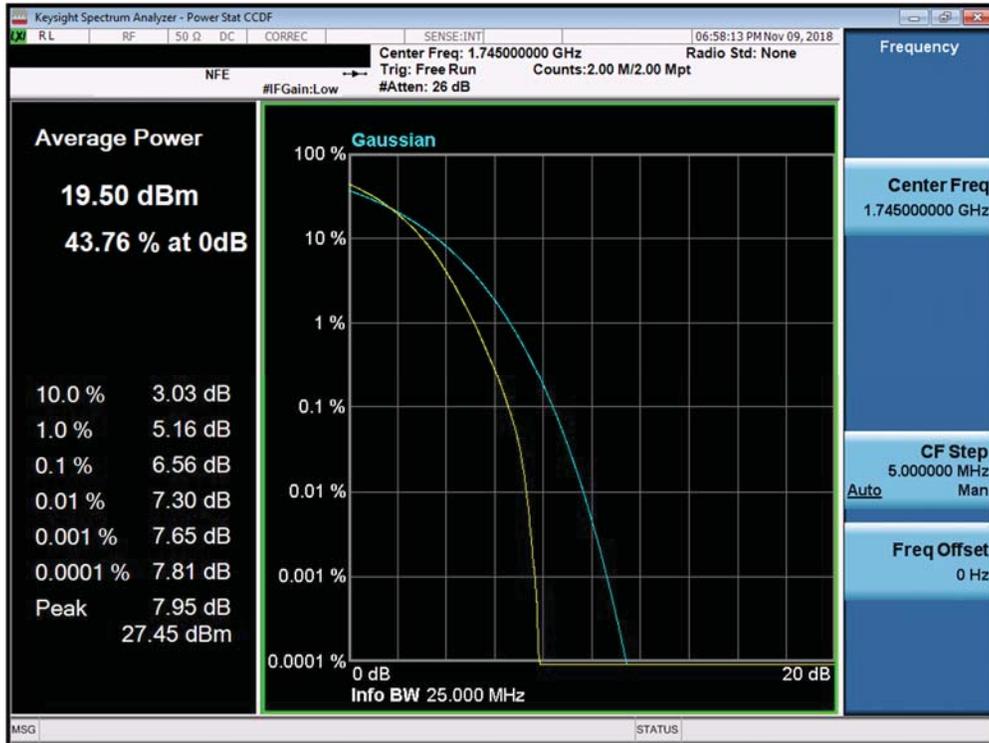


Plot 7-449. PAR Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 251 of 391



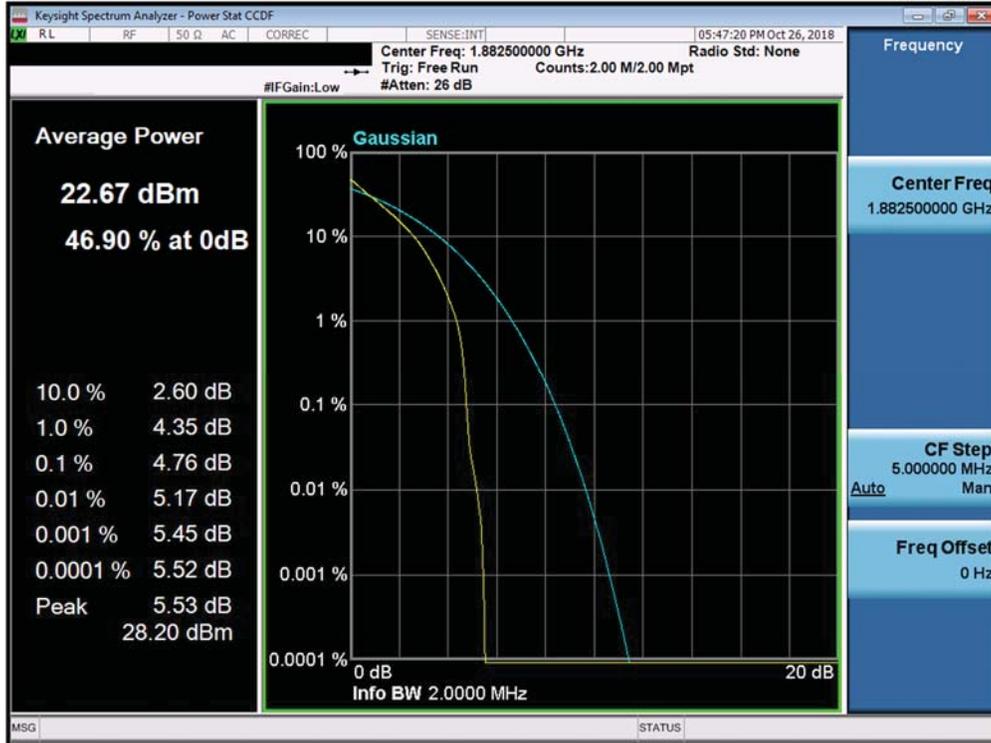
Plot 7-450. PAR Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)



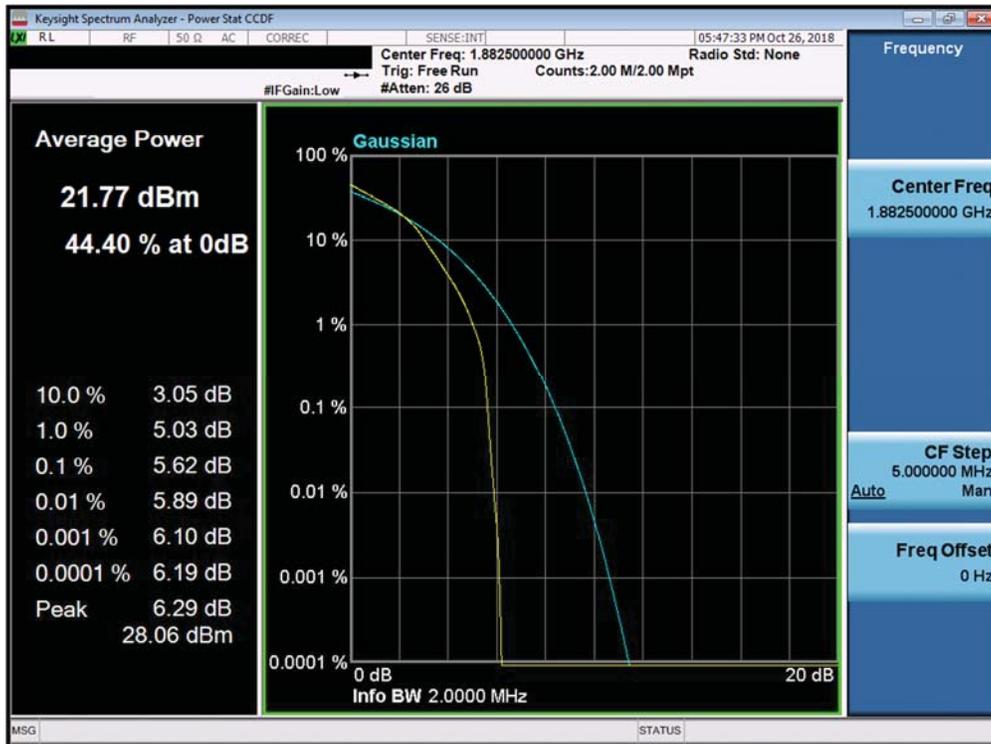
Plot 7-451. PAR Plot (Band 66/4 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 252 of 391

Band 25/2

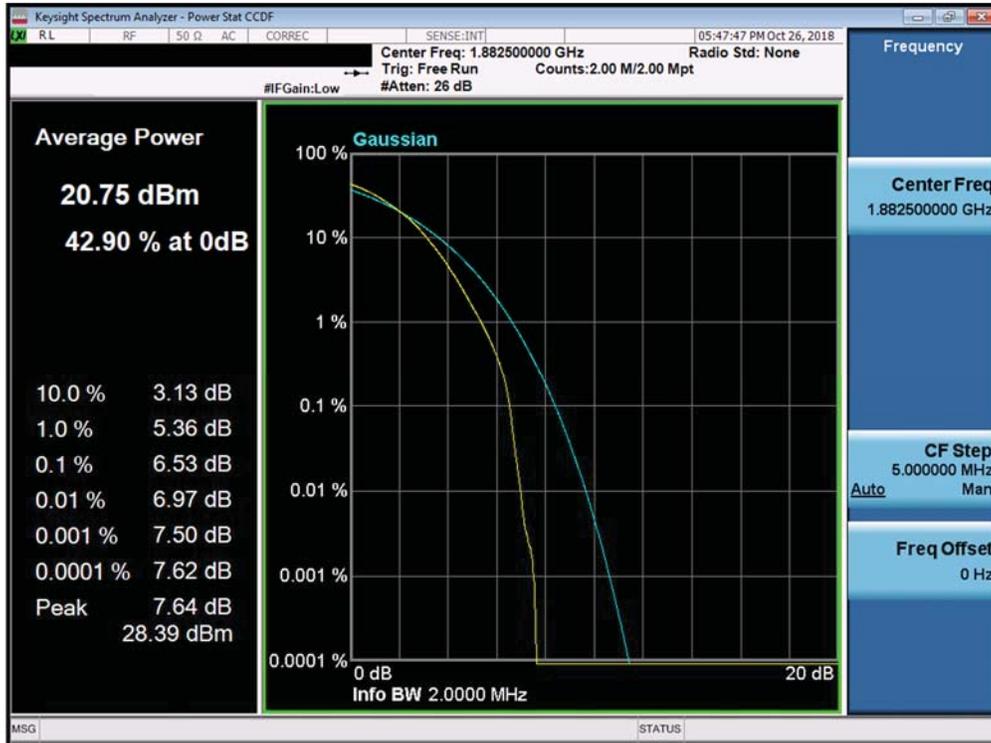


Plot 7-452. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

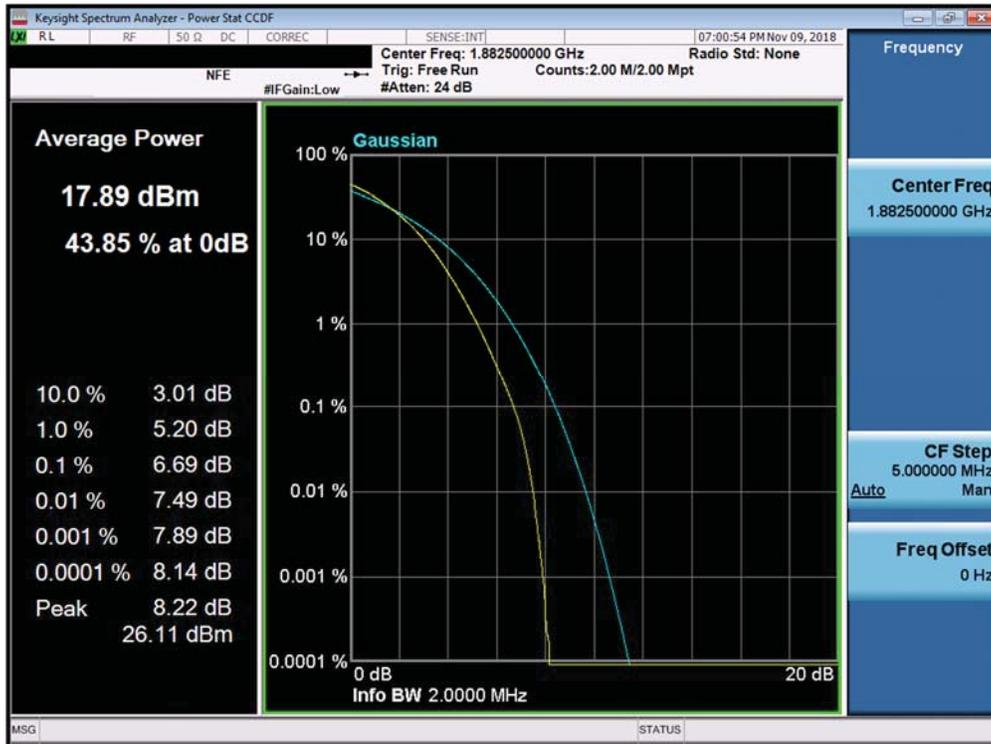


Plot 7-453. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 253 of 391

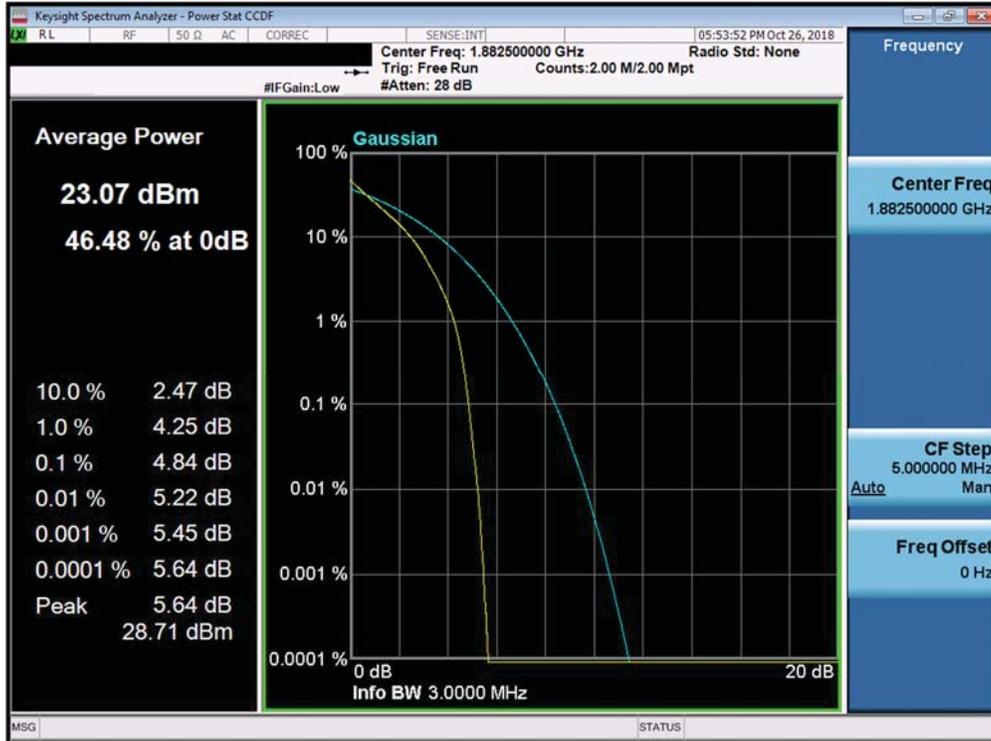


Plot 7-454. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

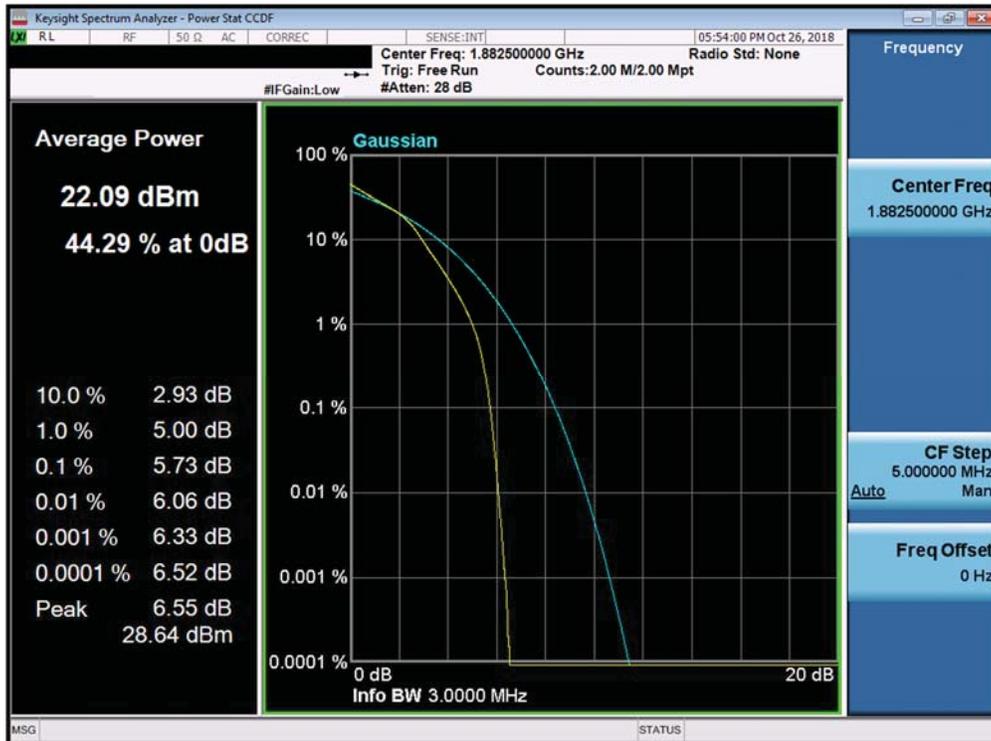


Plot 7-455. PAR Plot (Band 25/2 - 1.4MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 254 of 391

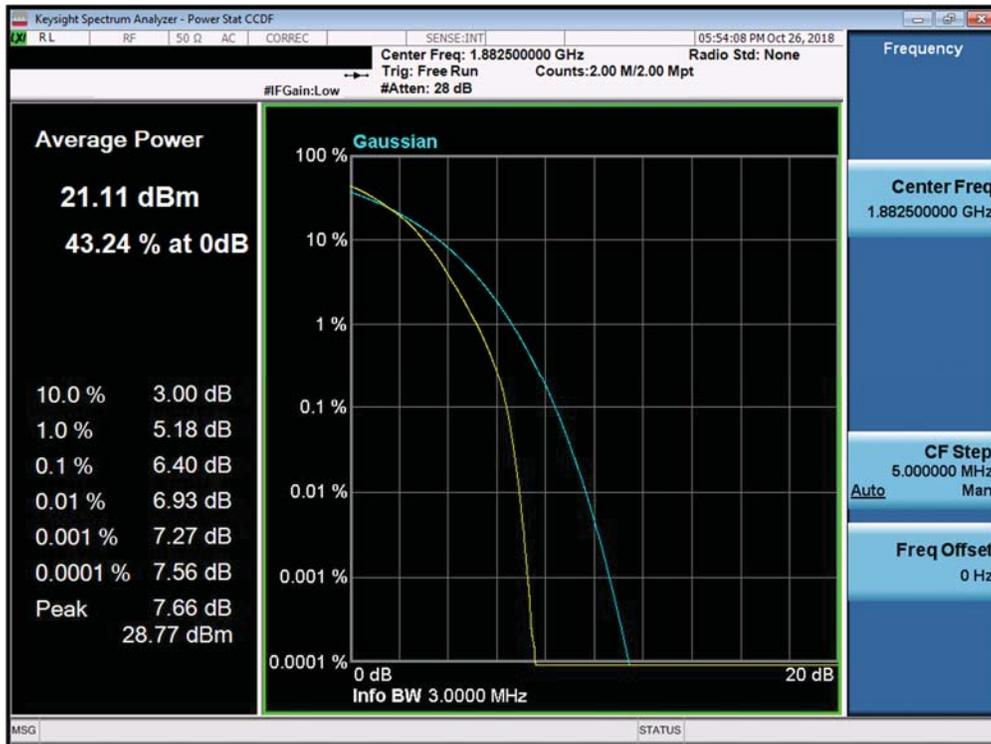


Plot 7-456. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

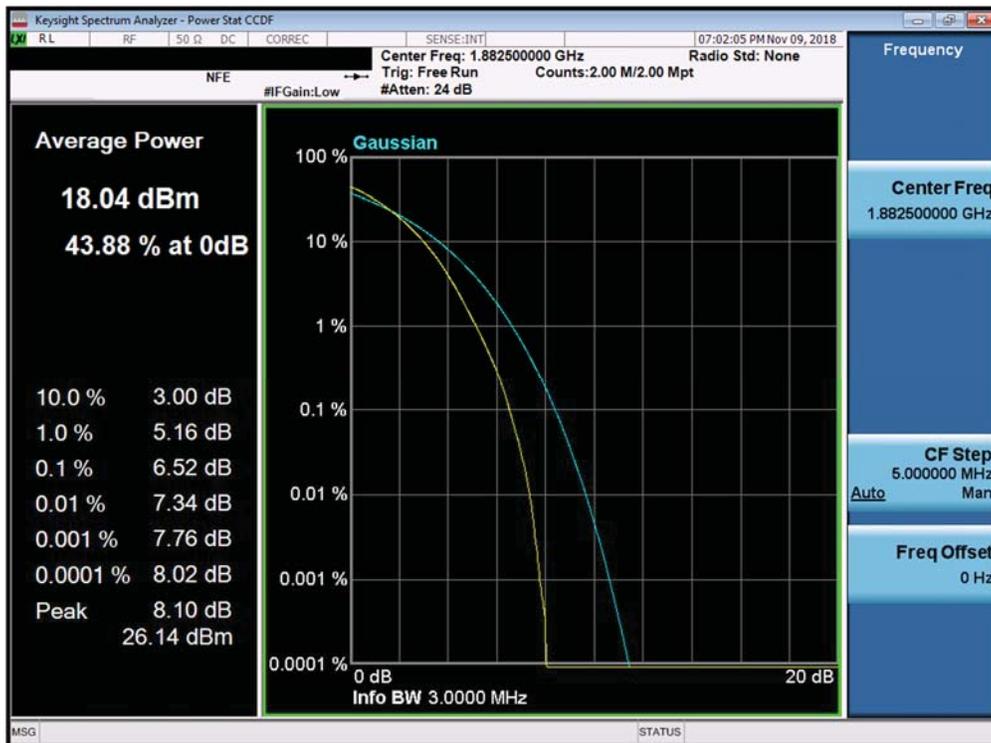


Plot 7-457. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 255 of 391

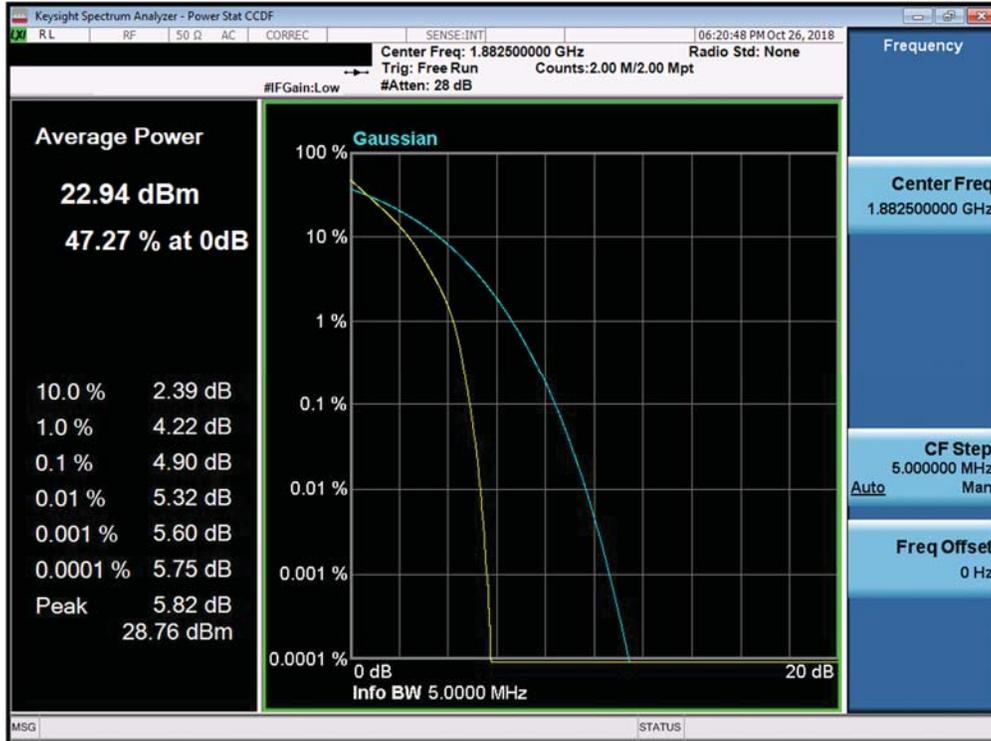


Plot 7-458. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)

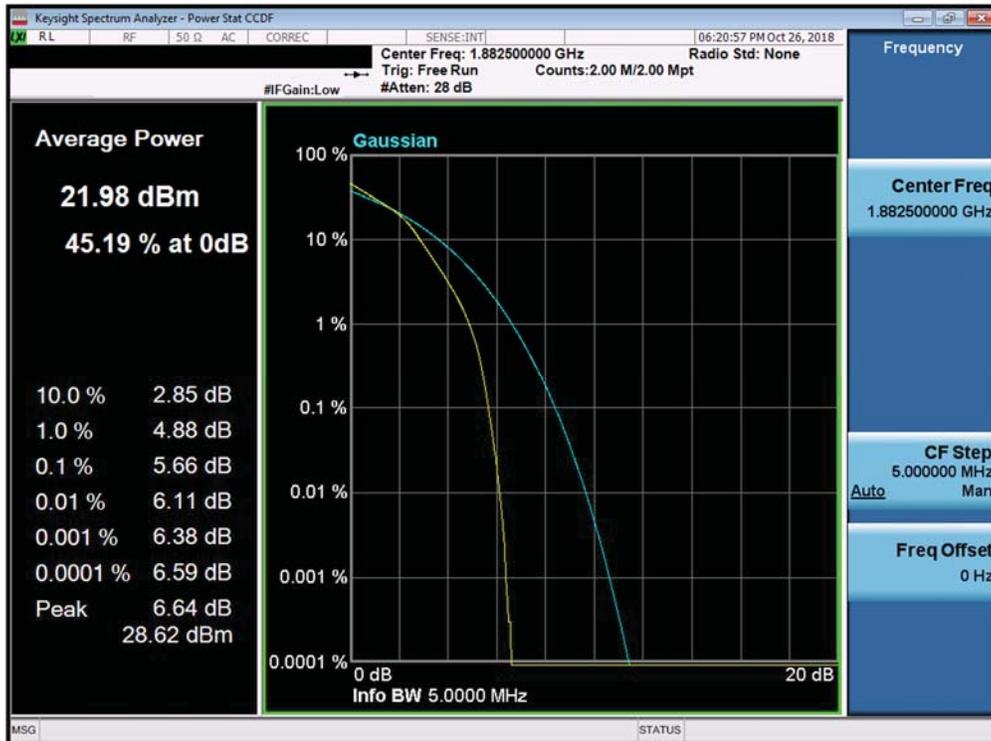


Plot 7-459. PAR Plot (Band 25/2 - 3.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 256 of 391

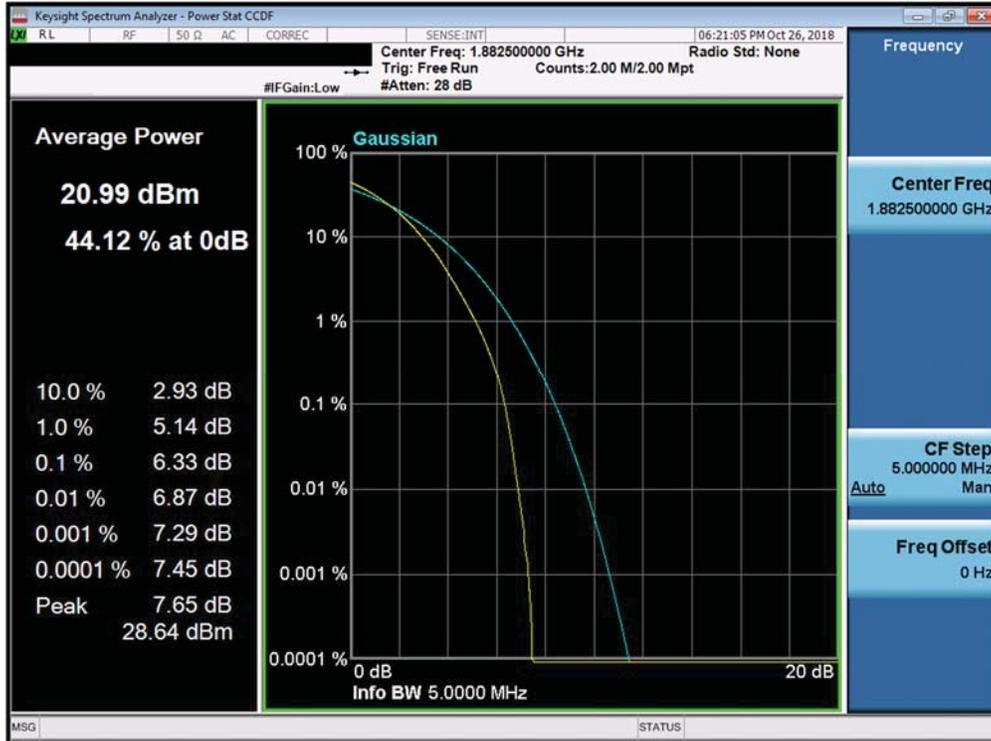


Plot 7-460. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

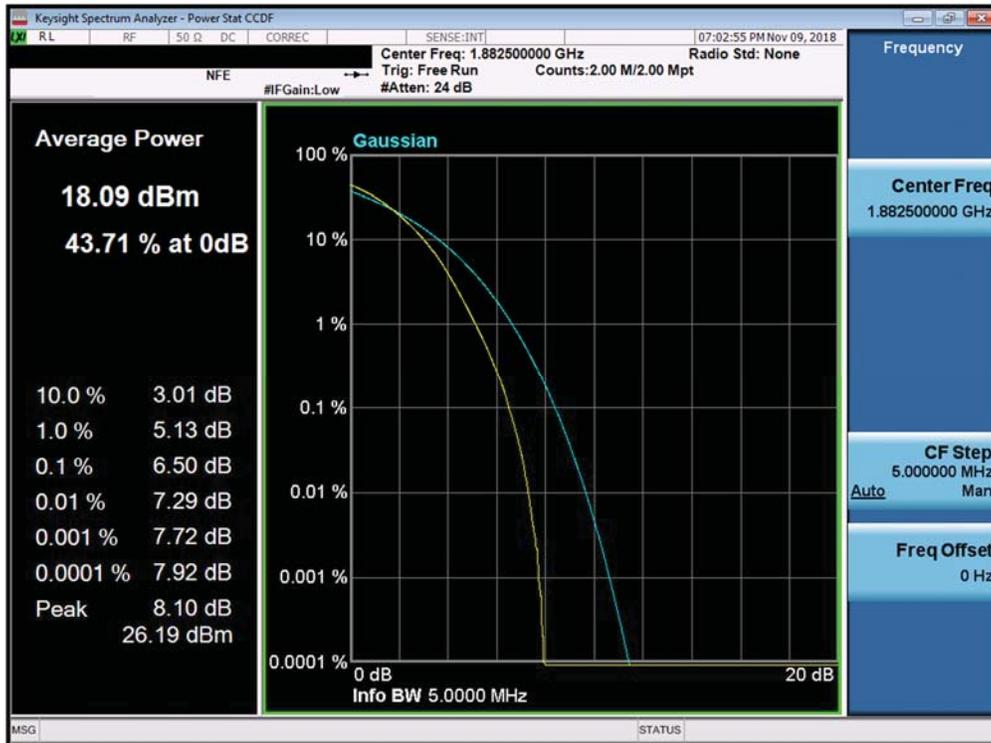


Plot 7-461. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 257 of 391

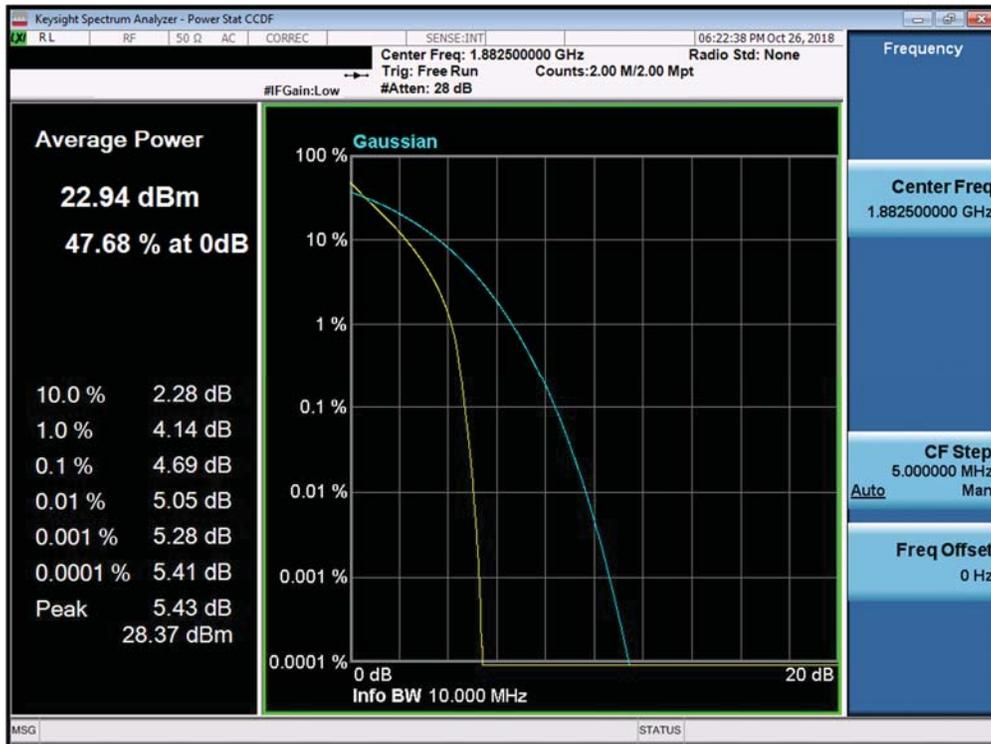


Plot 7-462. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)

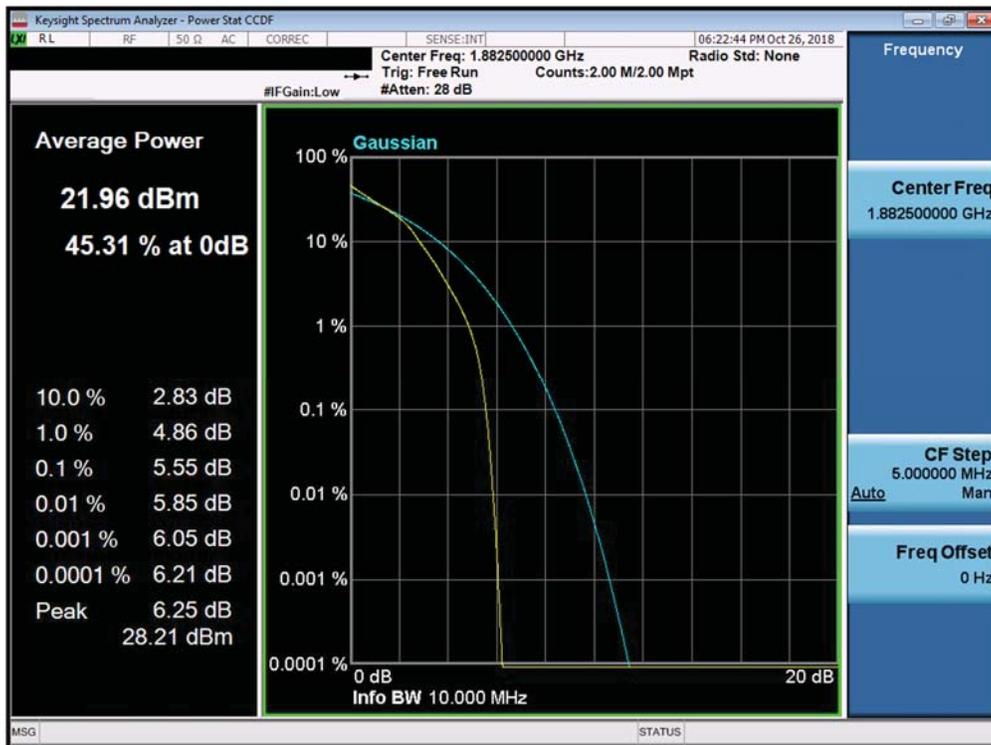


Plot 7-463. PAR Plot (Band 25/2 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 258 of 391

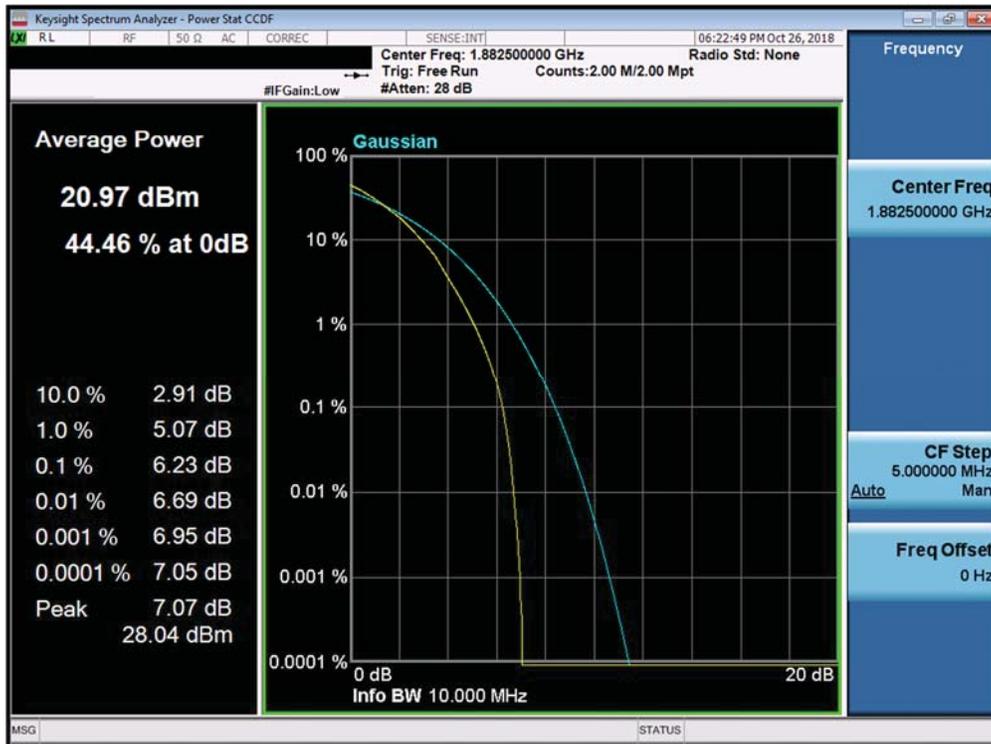


Plot 7-464. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

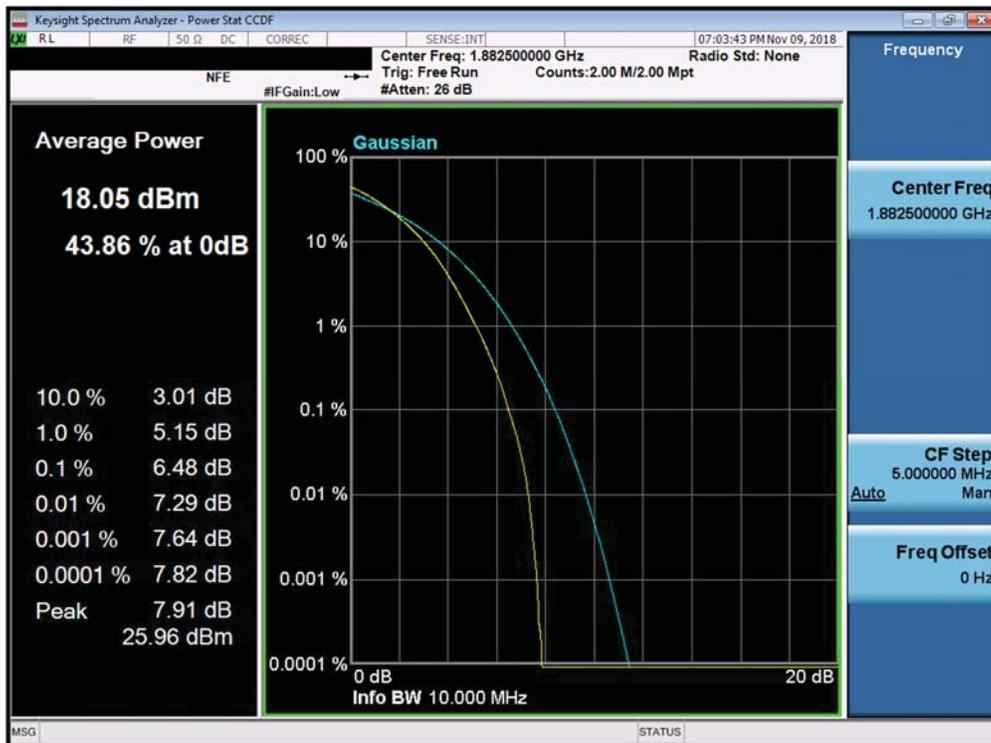


Plot 7-465. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 259 of 391

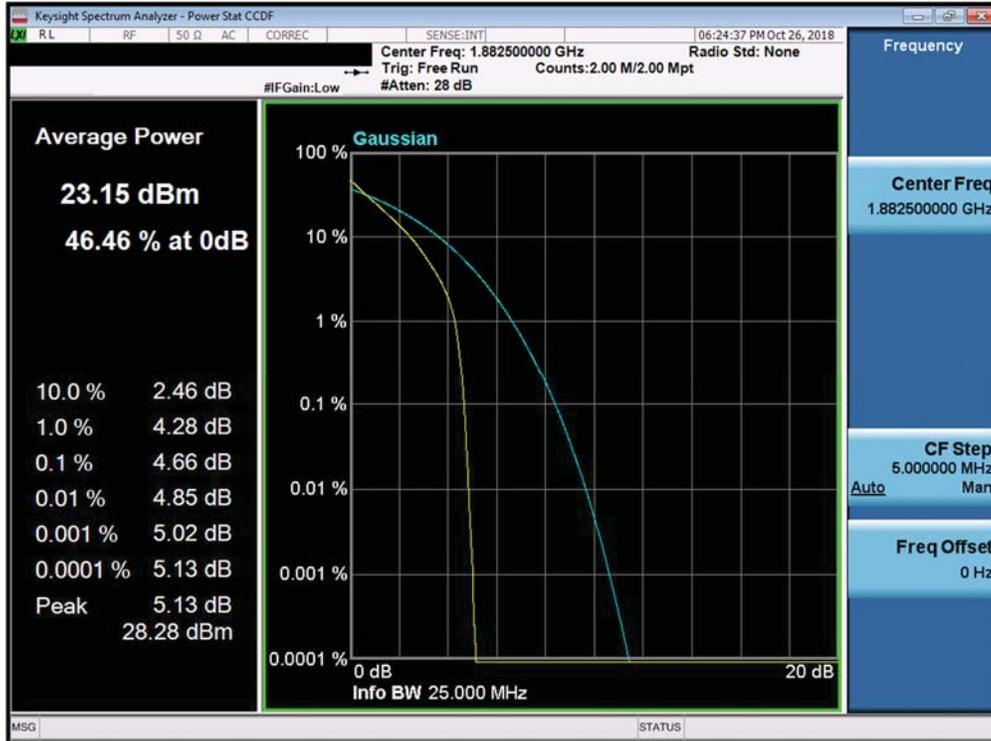


Plot 7-466. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)

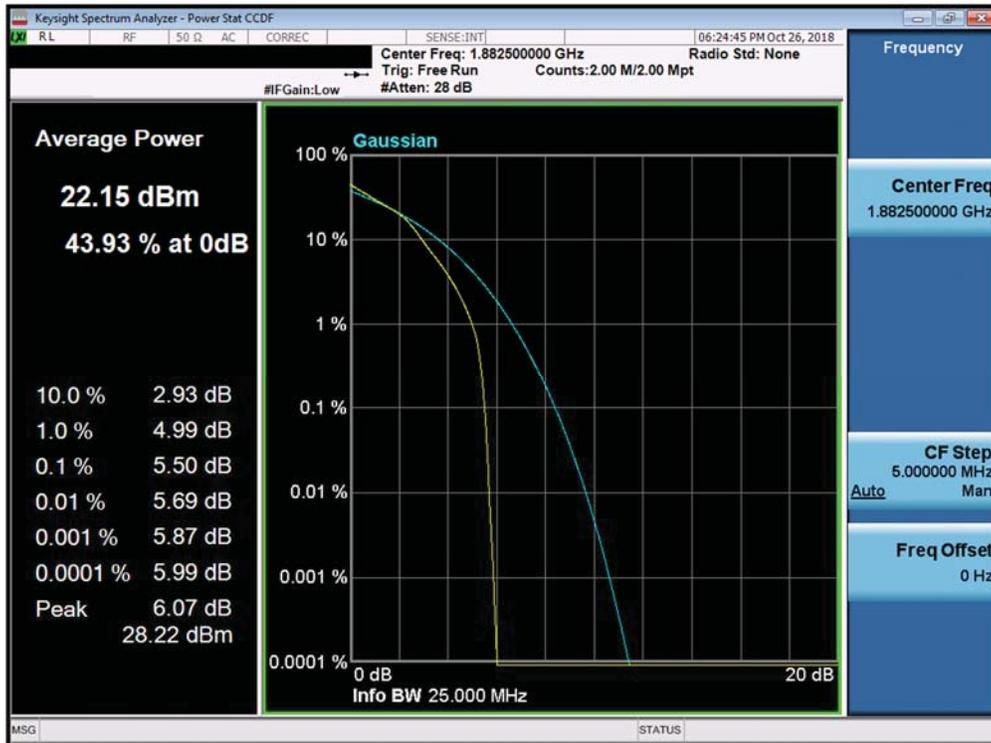


Plot 7-467. PAR Plot (Band 25/2 - 10.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 260 of 391

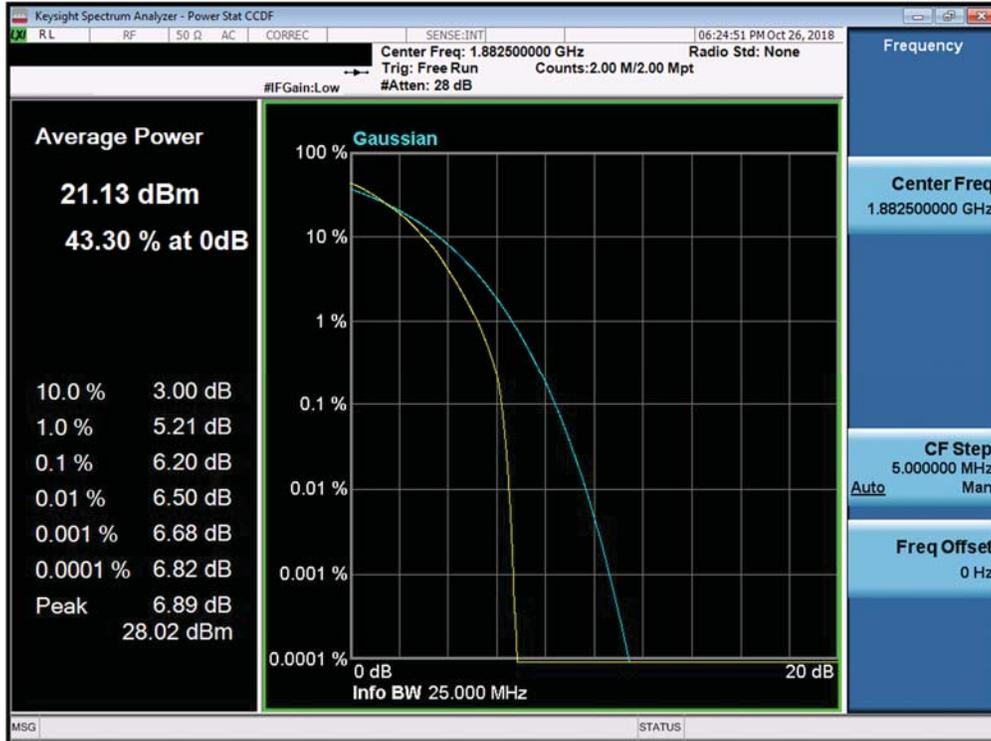


Plot 7-468. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

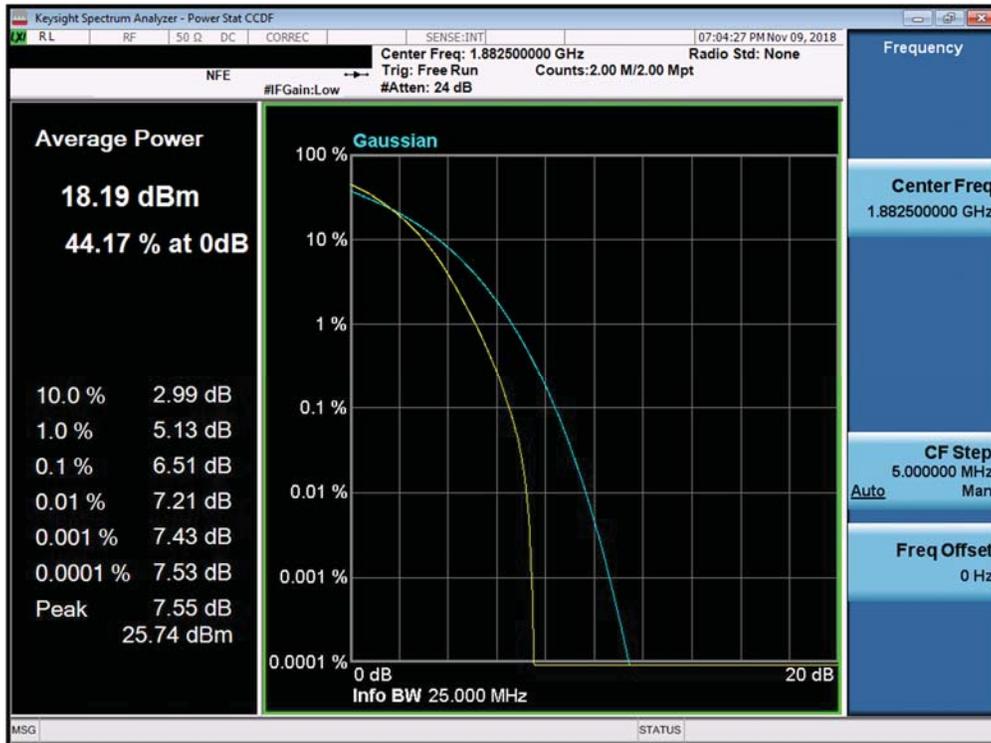


Plot 7-469. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 261 of 391

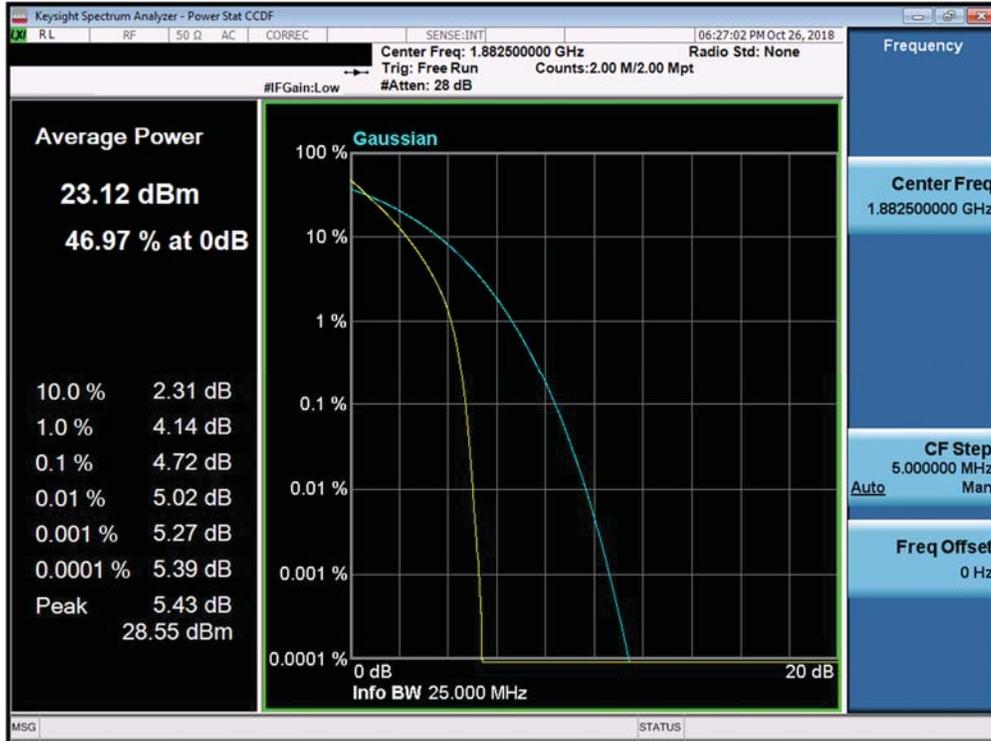


Plot 7-470. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)

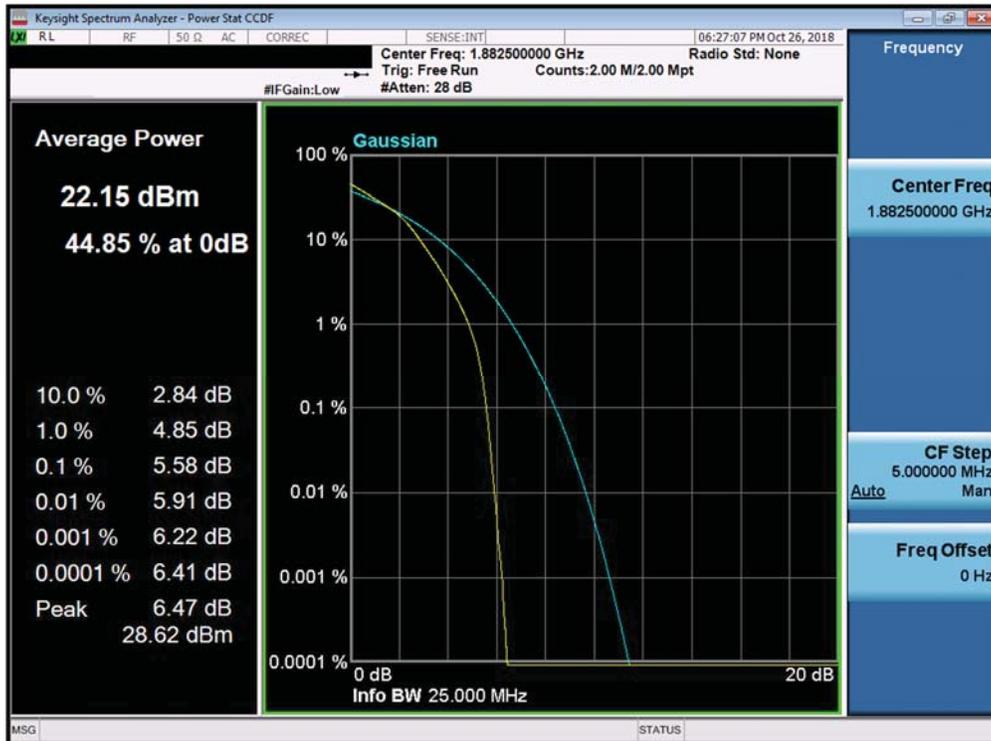


Plot 7-471. PAR Plot (Band 25/2 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 262 of 391

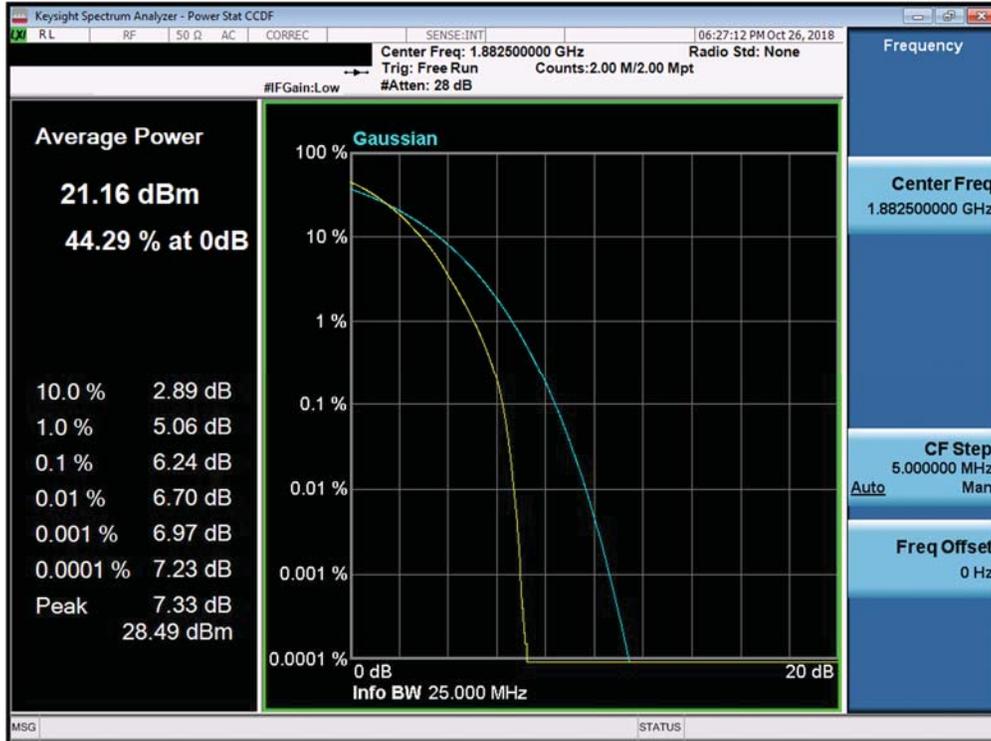


Plot 7-472. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

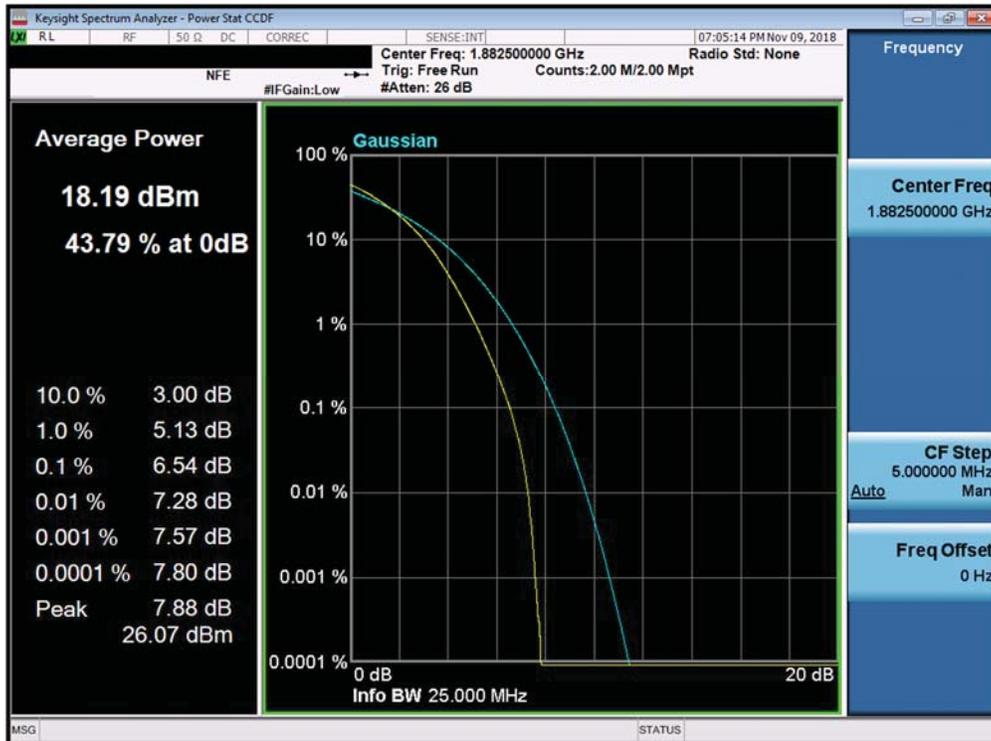


Plot 7-473. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 263 of 391



Plot 7-474. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)



Plot 7-475. PAR Plot (Band 25/2 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 264 of 391

7.6 Additional Maximum Power Reduction (A-MPR) §2.1046

Test Overview

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

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.2.2

Test Settings

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

Test Setup

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

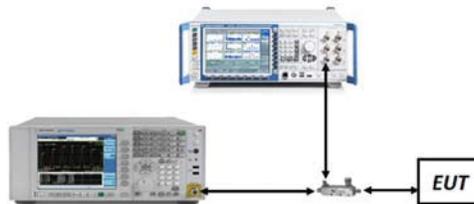


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

None.

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 265 of 391

Test Case	NS	MCC	MNC	Channel BW [MHz]	Channel Number	Channel Frequency [MHz]	Modulation	RB Size	RB Offset	MPR [dB]	MPR [dB]	A-MPR [dB]	Measured Power [dBm]
1	01	312	530	5	39675	2498.5	QPSK	1	0	0	0	≤ 3	23.71
							16-QAM	1	0	≤ 1	1		22.87
							64-QAM	1	0	≤ 2	2		21.86
							256-QAM	1	0	≤ 4	4		19.52
2				5	39675	2498.5	QPSK	1	9	0	0	0	26.66
							16-QAM	1	9	≤ 1	1		25.88
							64-QAM	1	9	≤ 2	2		24.79
							256-QAM	1	9	≤ 4	4		22.68
3				10	39700	2501	QPSK	1	0	0	0	≤ 5	26.93
							16-QAM	1	0	≤ 1	1		26.08
							64-QAM	1	0	≤ 2	2		24.98
							256-QAM	1	0	≤ 4	4		22.95
4				10	39700	2501	QPSK	20	0	0	1	≤ 2	24.22
							16-QAM	20	0	≤ 1	2		23.13
							64-QAM	20	0	≤ 2	3		22.22
							256-QAM	20	0	≤ 4	5		20.23
5				10	39700	2501	QPSK	50	0	0	1	≤ 3	23.22
	16-QAM	50	0				≤ 1	2	22.21				
	64-QAM	50	0				≤ 2	3	21.18				
	256-QAM	50	0				≤ 4	5	19.25				
6	10	39700	2501	QPSK	25	20	0	1	≤ 1	25.19			
				16-QAM	25	20	≤ 1	2		24.24			
				64-QAM	25	20	≤ 2	3		23.26			
				256-QAM	25	20	≤ 4	5		21.22			
7	10	39700	2501	QPSK	1	36	0	0	0	27.06			
				16-QAM	1	36	≤ 1	1		26.35			
				64-QAM	1	36	≤ 2	2		25.26			
				256-QAM	1	36	≤ 4	4		22.66			
8	15	39725	2503.5	QPSK	1	0	0	0	≤ 5	26.88			
				16-QAM	1	0	≤ 1	1		26.08			
				64-QAM	1	0	≤ 2	2		25.00			
				256-QAM	1	0	≤ 4	4		23.03			
9	15	39725	2503.5	QPSK	20	0	0	1	≤ 2	24.47			
				16-QAM	20	0	≤ 1	2		23.35			
				64-QAM	20	0	≤ 2	3		22.42			
				256-QAM	20	0	≤ 4	5		20.32			
10	15	39725	2503.5	QPSK	75	0	0	1	≤ 4	22.37			
				16-QAM	75	0	≤ 1	2		21.37			
				64-QAM	75	0	≤ 2	3		20.36			
				256-QAM	75	0	≤ 4	5		18.33			
11	15	39725	2503.5	QPSK	50	15	0	1	≤ 3	23.36			
				16-QAM	50	15	≤ 1	2		22.38			
				64-QAM	50	15	≤ 2	3		21.37			
				256-QAM	50	15	≤ 4	5		19.40			
12	15	39725	2503.5	QPSK	1	60	0	0	0	27.21			
				16-QAM	1	60	≤ 1	1		26.51			
				64-QAM	1	60	≤ 2	2		25.43			
				256-QAM	1	60	≤ 4	4		22.94			
13	20	39750	2506	QPSK	1	0	0	0	≤ 5	26.95			
				16-QAM	1	0	≤ 1	1		26.20			
				64-QAM	1	0	≤ 2	2		25.11			
				256-QAM	1	0	≤ 4	4		22.81			
14	20	39750	2506	QPSK	20	0	0	1	≤ 2	24.48			
				16-QAM	20	0	≤ 1	2		23.38			
				64-QAM	20	0	≤ 2	3		22.45			
				256-QAM	20	0	≤ 4	5		20.35			
15	20	39750	2506	QPSK	100	0	0	1	≤ 4	22.38			
				16-QAM	100	0	≤ 1	2		21.37			
				64-QAM	100	0	≤ 2	3		20.36			
				256-QAM	100	0	≤ 4	5		18.38			
16	20	39750	2506	QPSK	75	24	0	1	≤ 3	23.31			
				16-QAM	75	24	≤ 1	2		22.33			
				64-QAM	75	24	≤ 2	3		21.32			
				256-QAM	75	24	≤ 4	5		19.44			
17	20	39750	2506	QPSK	1	77	0	0	0	27.20			
				16-QAM	1	77	≤ 1	1		26.48			
				64-QAM	1	77	≤ 2	2		25.39			
				256-QAM	1	77	≤ 4	4		22.87			
19	01	001	01	5	39675	2498.5	QPSK	1	0	0	0	0	26.52
							16-QAM			≤ 1	1		25.63
							64-QAM			≤ 2	2		24.52
							256-QAM			≤ 4	4		22.51

Table 7-3. A-MPR Conducted Power Measurements

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 266 of 391

7.7 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 $55 + 10\log_{10}(P_{[Watts]})$.

For Band 5 and 66, the minimum permissible attenuation level of any spurious emission is $43 + 10\log_{10}(P_{[Watts]})$.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

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

Test Setup

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



Figure 7-6. Test Instrument & Measurement Setup

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 267 of 391

Test Notes

1. Uplink carrier aggregation is supported in this EUT while operating in Power Class 3 and Power Class 2.
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 7-4, 7-6, 7-8, and 7-10 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.

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 268 of 391

Uplink CA Cofiguration 41C (PC2)

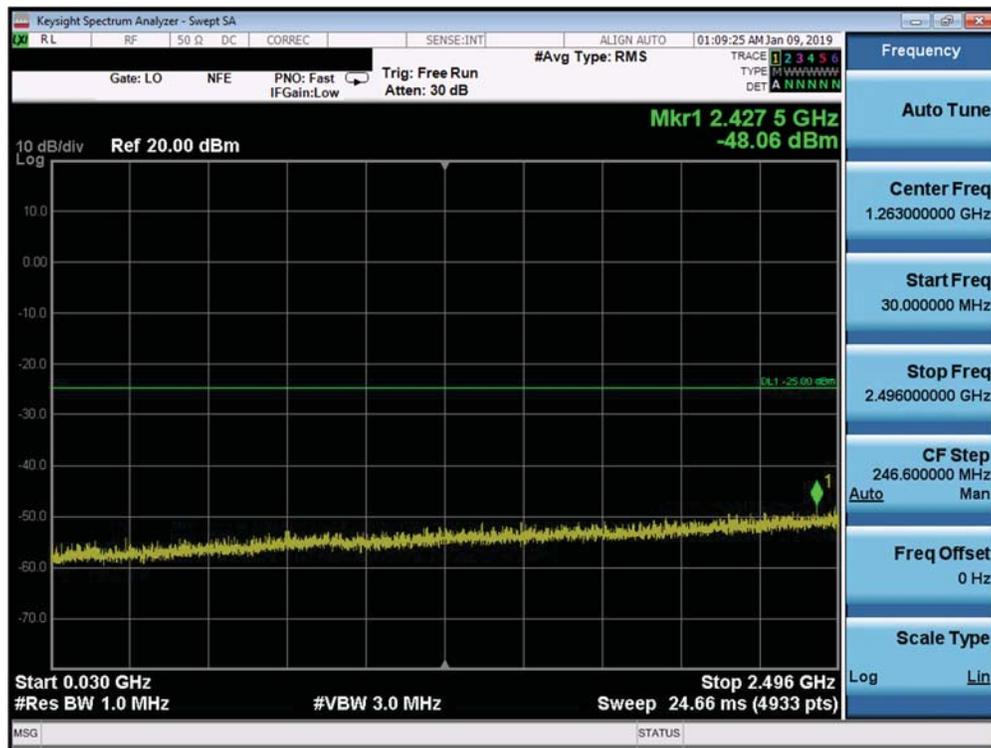
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	5	39675	2498.5	QPSK	1	24	LTE B41	20	39792	2510.2	QPSK	1	0	27.04
Max	LTE B41	10	39700	2501	QPSK	1	49	LTE B41	15	39820	2513	QPSK	1	0	27.15
Max	LTE B41	10	39700	2501	QPSK	1	49	LTE B41	20	39844	2515.4	QPSK	1	0	27.32
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	10	39845	2515.5	QPSK	1	0	27.26
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	15	39875	2518.5	QPSK	1	0	27.13
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	20	39896	2520.6	QPSK	1	0	27.14
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	5	39867	2517.7	QPSK	1	0	26.92
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	10	39894	2520.4	QPSK	1	0	26.98
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	15	39921	2523.1	QPSK	1	0	26.88
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	27.34
Max	LTE B41	5	40620	2593	QPSK	1	24	LTE B41	20	40737	2604.7	QPSK	1	0	26.61
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	15	40740	2605	QPSK	1	0	26.67
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	20	40764	2607.4	QPSK	1	0	26.71
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	10	40740	2605	QPSK	1	0	26.83
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	15	40770	2608	QPSK	1	0	26.51
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	20	40791	2610.1	QPSK	1	0	26.69
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	5	40737	2604.7	QPSK	1	0	26.68
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	10	40764	2607.4	QPSK	1	0	26.95
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	15	40791	2610.1	QPSK	1	0	26.70
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	26.84
Max	LTE B41	5	41565	2687.5	QPSK	1	0	LTE B41	20	41448	2675.8	QPSK	1	99	26.76
Max	LTE B41	10	41540	2685	QPSK	1	0	LTE B41	15	41420	2673	QPSK	1	74	27.02
Max	LTE B41	10	41540	2685	QPSK	1	0	LTE B41	20	41396	2670.6	QPSK	1	99	27.24
Max	LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	10	41395	2670.5	QPSK	1	49	26.86
Max	LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	15	41365	2667.5	QPSK	1	74	26.92
Max	LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	20	41344	2665.4	QPSK	1	99	27.05
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	5	41373	2668.3	QPSK	1	24	26.87
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	10	41346	2665.6	QPSK	1	49	26.92
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	15	41319	2662.9	QPSK	1	74	26.82
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	26.88

Table 7-4. Conducted Powers (B41 – PC2 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 269 of 391	

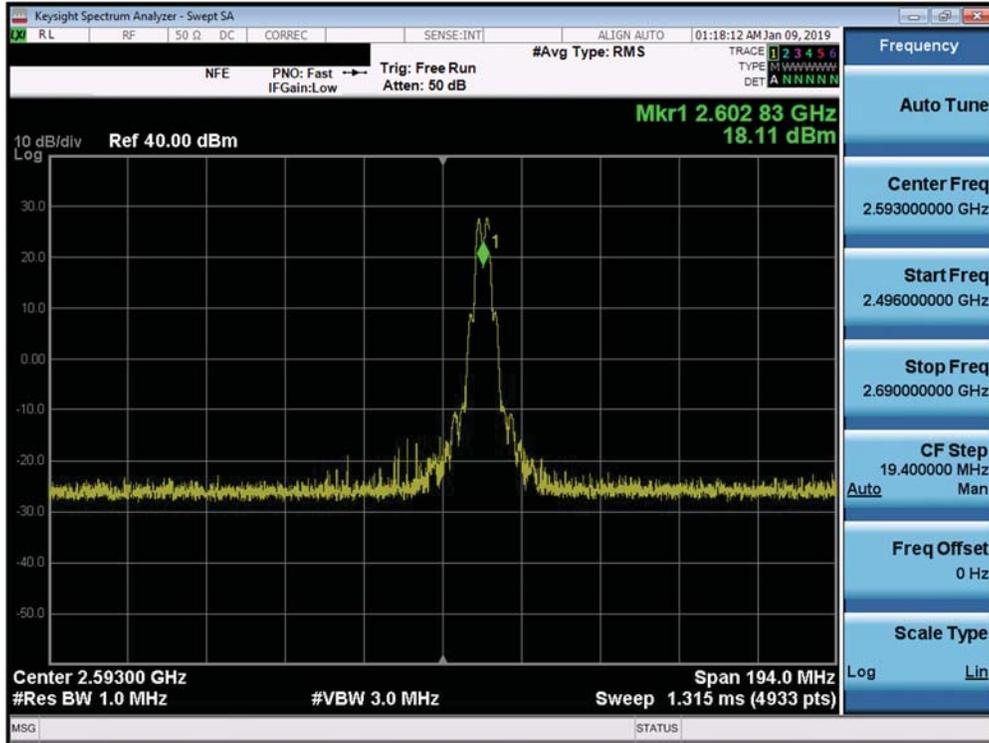
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	0	21.26
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	99	18.18
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	99	17.67
Max	LTE B41	20	39750	2506	QPSK	1	50	LTE B41	20	39948	2525.8	QPSK	1	50	22.40
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	27.34
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	24.78
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	23.86
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	22.98
Max	LTE B41	20	39750	2506	256-QAM	100	0	LTE B41	20	39948	2525.8	256-QAM	100	0	21.02

Table 7-5. Conducted Powers (B41 – PC2 with Various Combinations for 20MHz Channel Bandwidth)

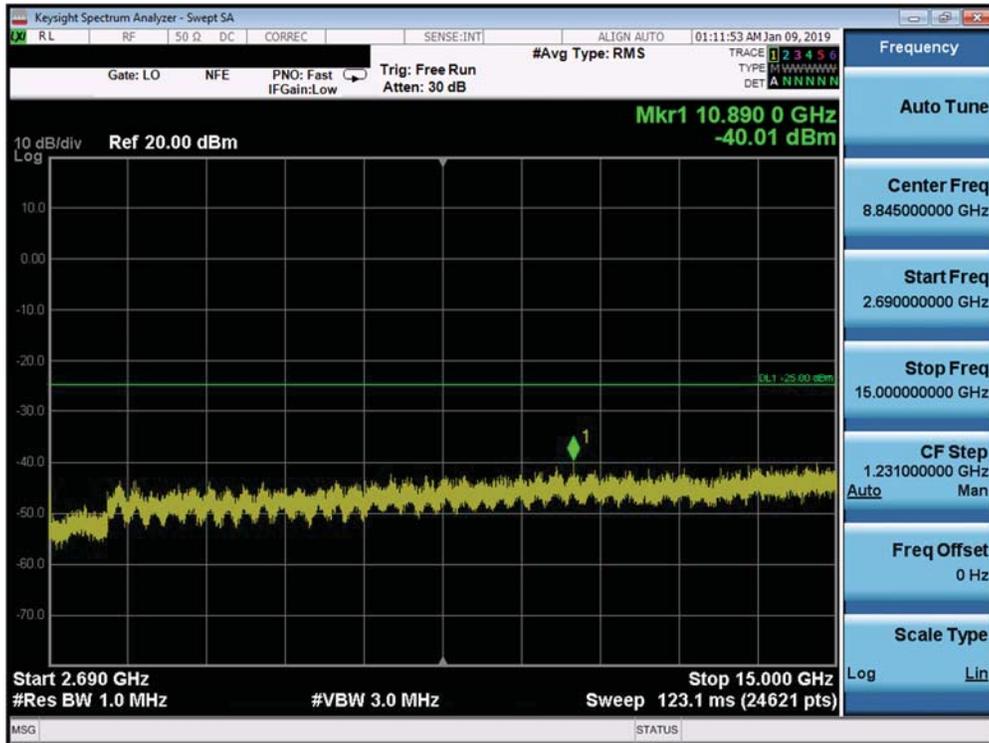


Plot 7-476. Conducted Spurious Plot (Band 41 – PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 270 of 391

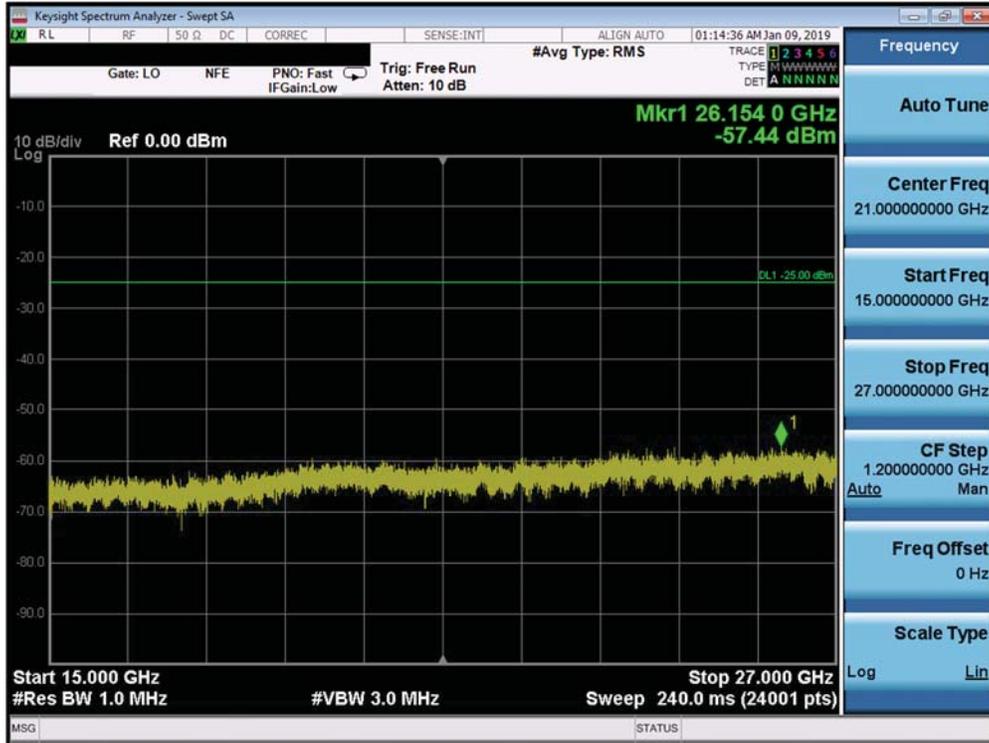


Plot 7-477. Conducted Spurious Plot (Band 41 – PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

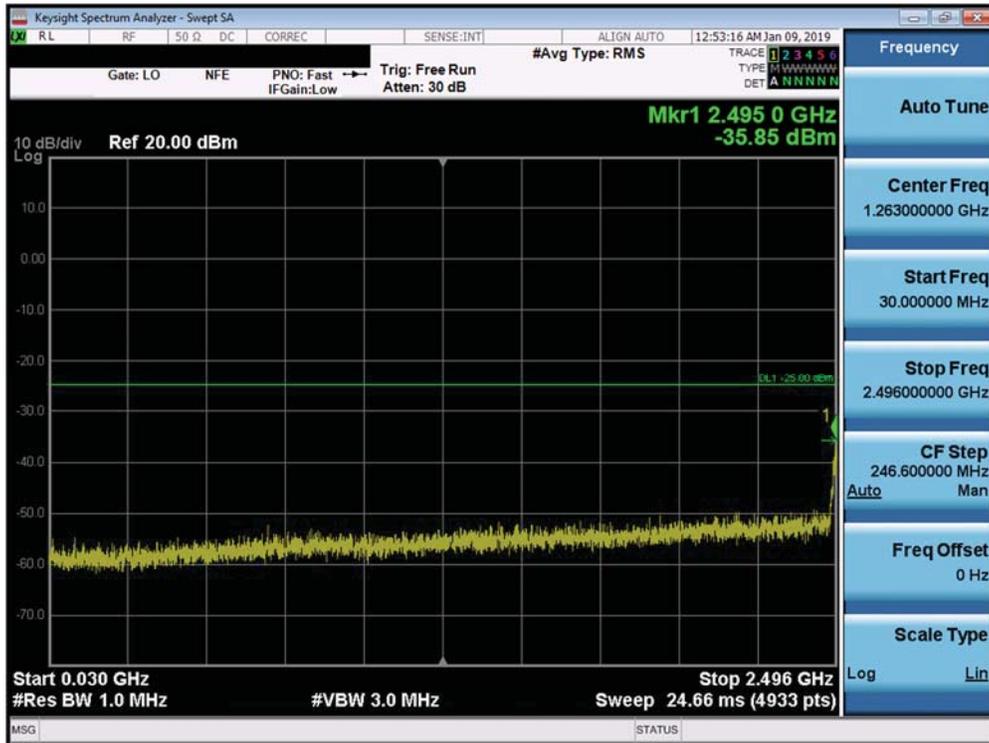


Plot 7-478. Conducted Spurious Plot (Band 41 – PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 271 of 391

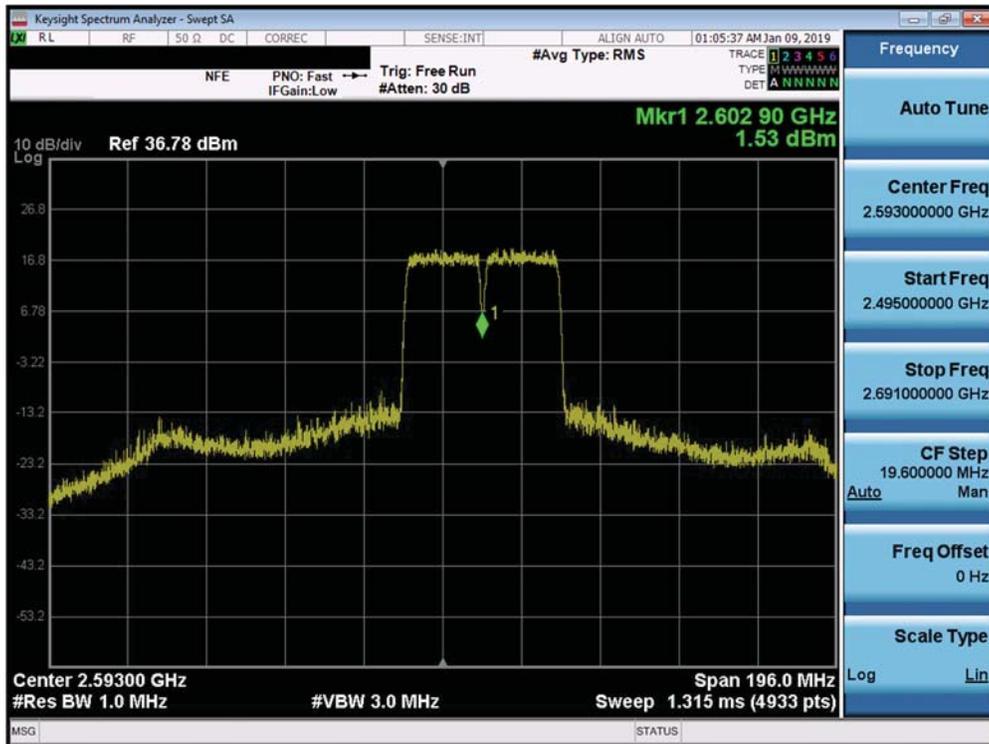


Plot 7-479. Conducted Spurious Plot (Band 41 – PC2 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

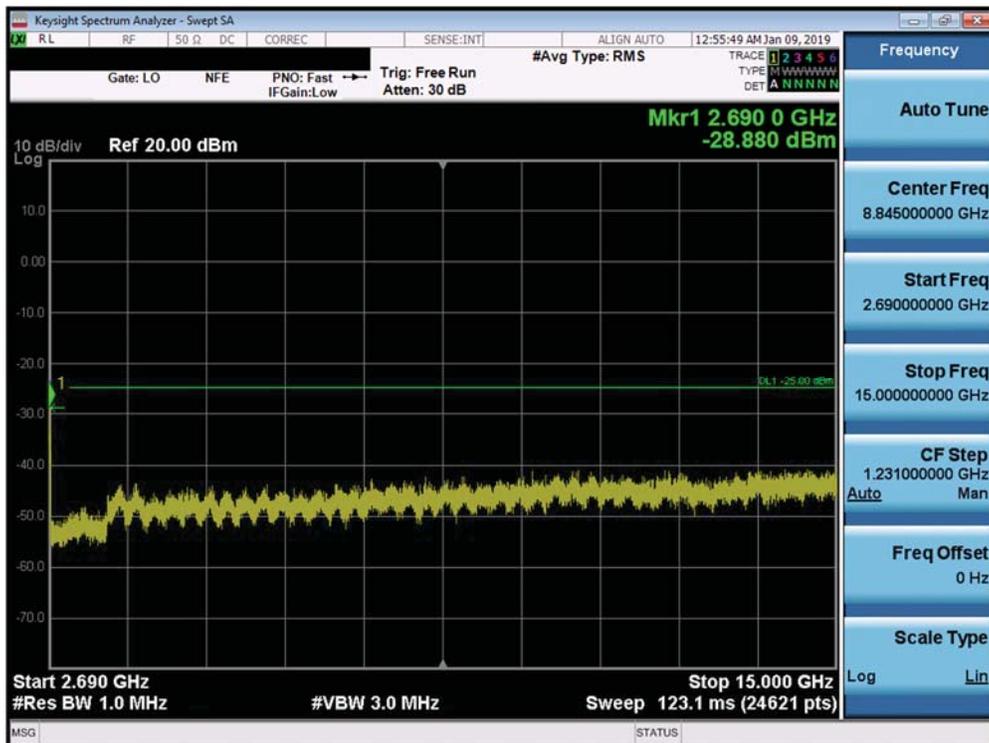


Plot 7-480. Conducted Spurious Plot (Band 41 – PC2 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 272 of 391

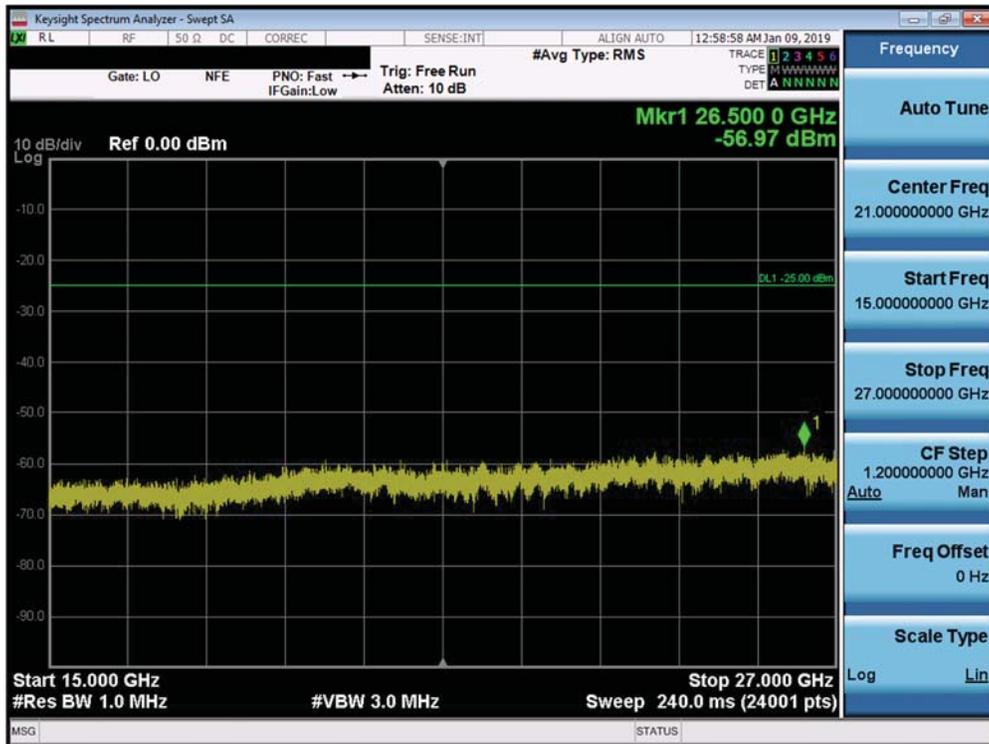


Plot 7-481. Conducted Spurious Plot (Band 41 – PC2 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

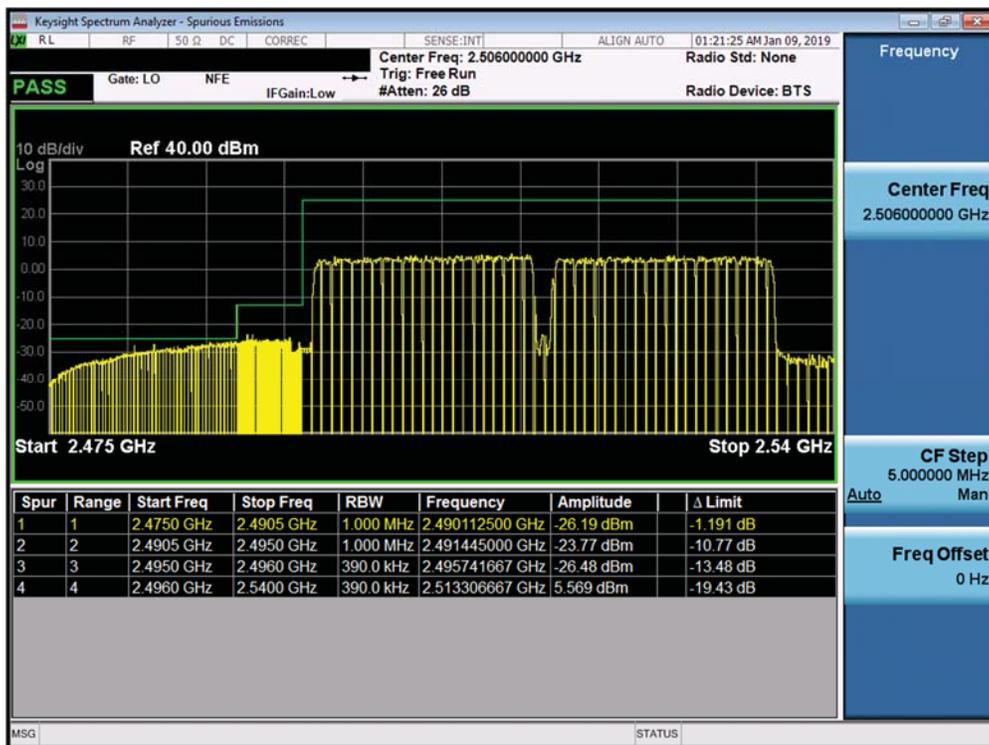


Plot 7-482. Conducted Spurious Plot (Band 41 – PC2 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 273 of 391



Plot 7-483. Conducted Spurious Plot (Band 41 – PC2 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-484. Lower Band Edge Plot (Band 41 QPSK – PC2 – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 274 of 391



Plot 7-485. Upper Band Edge Plot (Band 41 QPSK – PC2 – PCC:20 MHz SCC:20 MHz – Full RB)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 275 of 391

Uplink CA Cofiguration 41C (PC3)

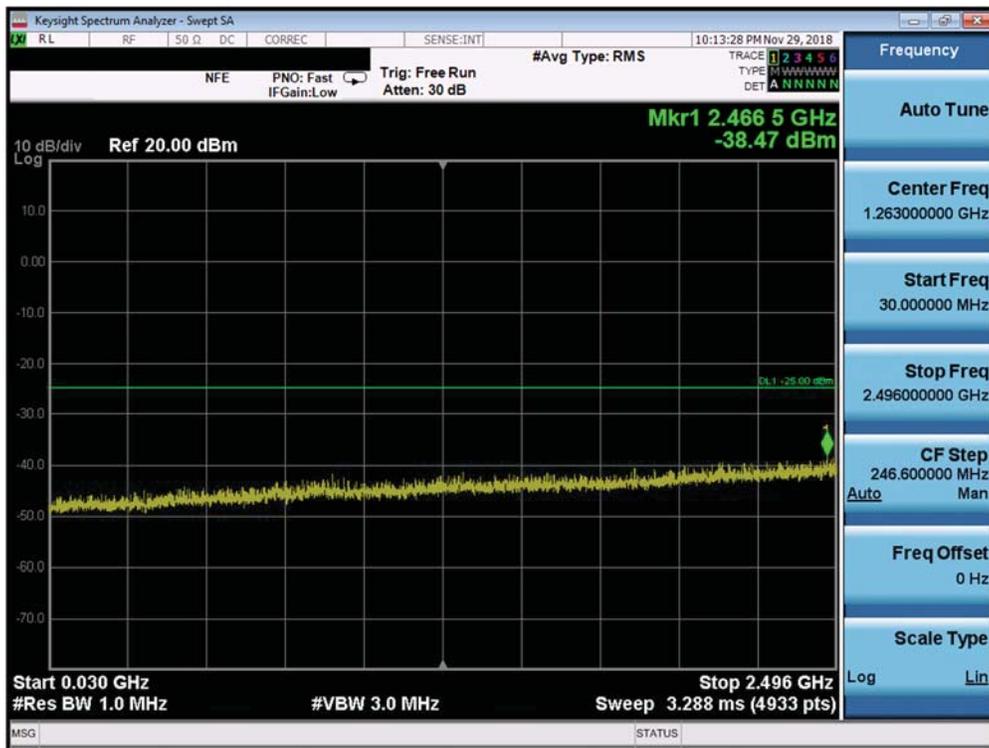
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	5	39675	2498.5	QPSK	1	24	LTE B41	20	39792	2510.2	QPSK	1	0	24.20
Max	LTE B41	10	39700	2501	QPSK	1	49	LTE B41	15	39820	2513	QPSK	1	0	23.55
Max	LTE B41	10	39700	2501	QPSK	1	49	LTE B41	20	39844	2515.4	QPSK	1	0	23.31
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	10	39845	2515.5	QPSK	1	0	24.40
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	15	39875	2518.5	QPSK	1	0	24.03
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	20	39896	2520.6	QPSK	1	0	23.85
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	5	39867	2517.7	QPSK	1	0	24.32
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	10	39894	2520.4	QPSK	1	0	23.88
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	15	39921	2523.1	QPSK	1	0	24.15
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.55
Max	LTE B41	5	40620	2593	QPSK	1	24	LTE B41	20	40737	2604.7	QPSK	1	0	23.50
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	15	40740	2605	QPSK	1	0	24.25
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	20	40764	2607.4	QPSK	1	0	23.89
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	10	40740	2605	QPSK	1	0	24.22
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	15	40770	2608	QPSK	1	0	23.51
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	20	40791	2610.1	QPSK	1	0	23.76
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	5	40737	2604.7	QPSK	1	0	24.58
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	10	40764	2607.4	QPSK	1	0	23.75
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	15	40791	2610.1	QPSK	1	0	23.54
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	24.68
Max	LTE B41	5	41565	2687.5	QPSK	1	0	LTE B41	20	41448	2675.8	QPSK	1	99	23.66
Max	LTE B41	10	41540	2685	QPSK	1	0	LTE B41	15	41420	2673	QPSK	1	74	24.25
Max	LTE B41	10	41540	2685	QPSK	1	0	LTE B41	20	41396	2670.6	QPSK	1	99	23.89
Max	LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	10	41395	2670.5	QPSK	1	49	24.29
Max	LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	15	41365	2667.5	QPSK	1	74	23.67
Max	LTE B41	15	41515	2682.5	QPSK	1	0	LTE B41	20	41344	2665.4	QPSK	1	99	23.77
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	5	41373	2668.3	QPSK	1	24	23.90
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	10	41346	2665.6	QPSK	1	49	23.79
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	15	41319	2662.9	QPSK	1	74	23.84
Max	LTE B41	20	41490	2680	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	24.51

Table 7-6. Conducted Powers (B41 – PC3 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset	Page 276 of 391	

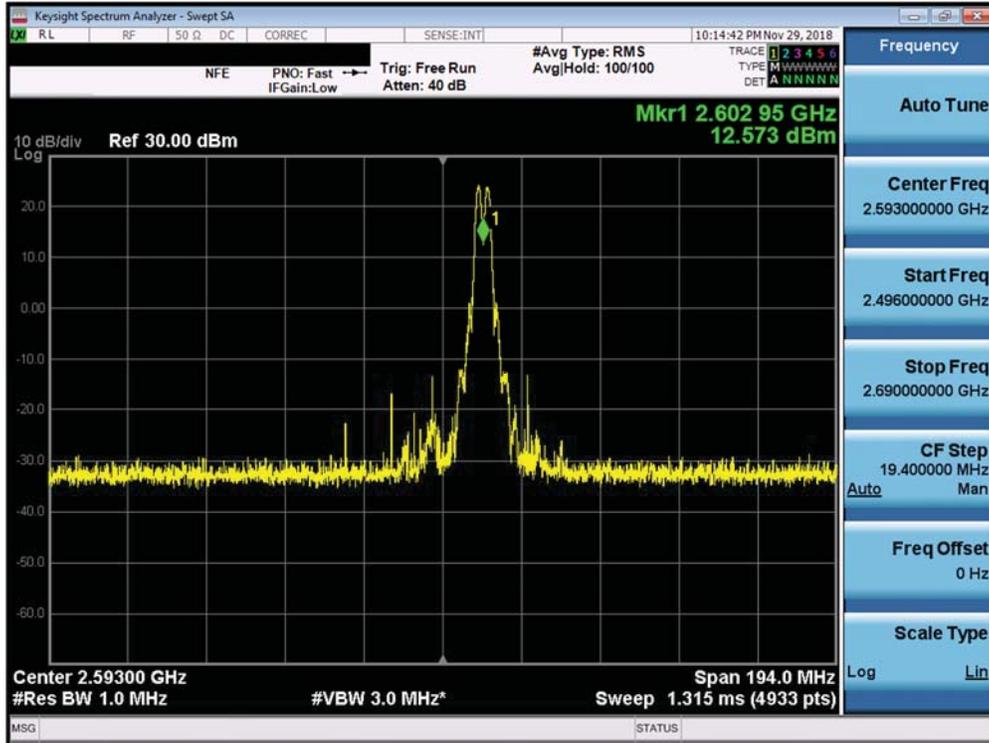
Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	0	22.11
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	99	18.94
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	99	19.25
Max	LTE B41	20	39750	2506	QPSK	1	50	LTE B41	20	39948	2525.8	QPSK	1	50	21.44
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.68
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	23.45
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	22.21
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	21.42
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	256-QAM	100	0	19.46

Table 7-7. Conducted Powers (B41 – PC3 with Various Combinations for 20MHz Channel Bandwidth)

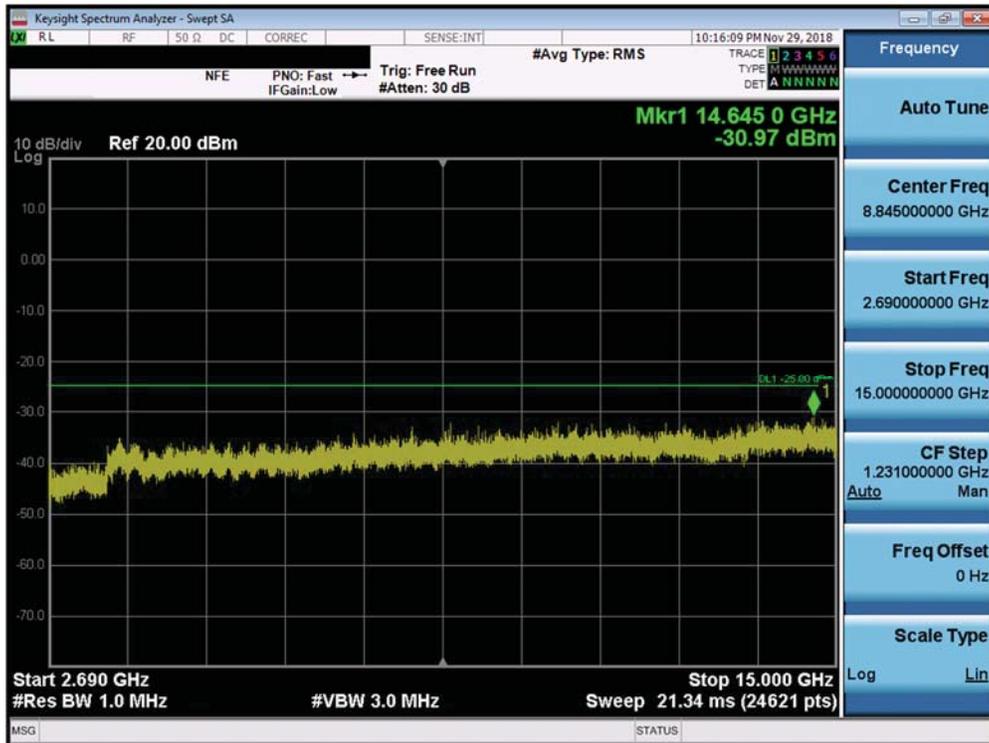


Plot 7-486. Conducted Spurious Plot (Band 41 – PC3 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 277 of 391



Plot 7-487. Conducted Spurious Plot (Band 41 – PC3 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)



Plot 7-488. Conducted Spurious Plot (Band 41 – PC3 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

FCC ID: A3LSMG970U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1810250193-03.A3L	Test Dates: 10/23/2018 - 1/18/2019	EUT Type: Portable Handset		Page 278 of 391