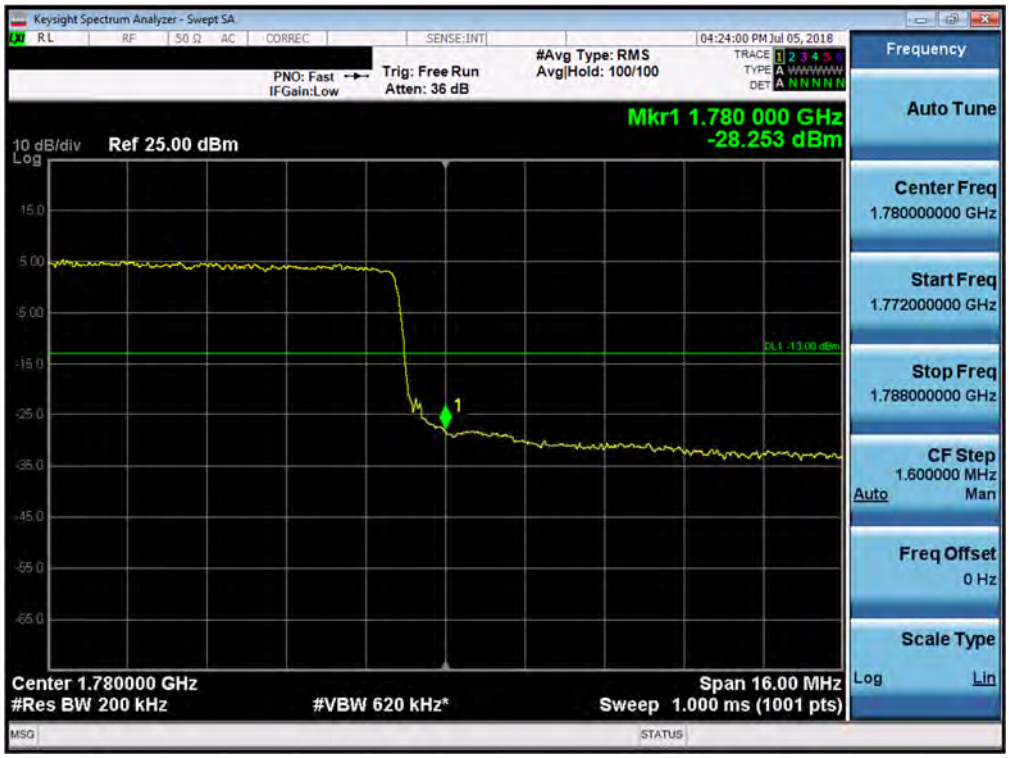
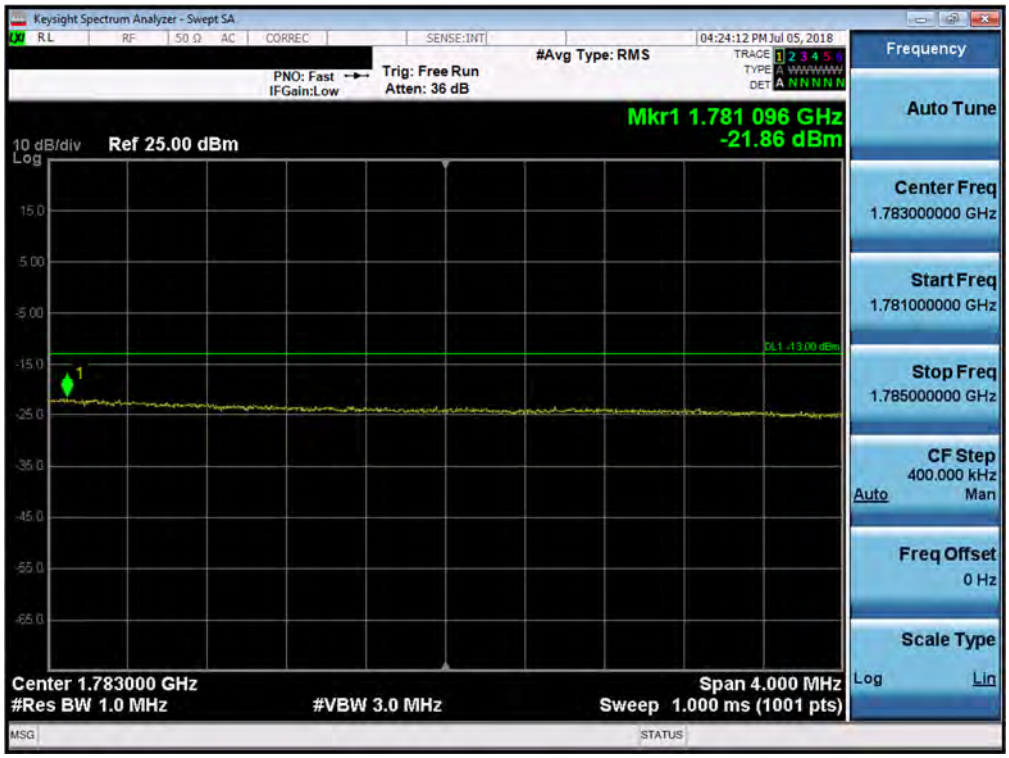
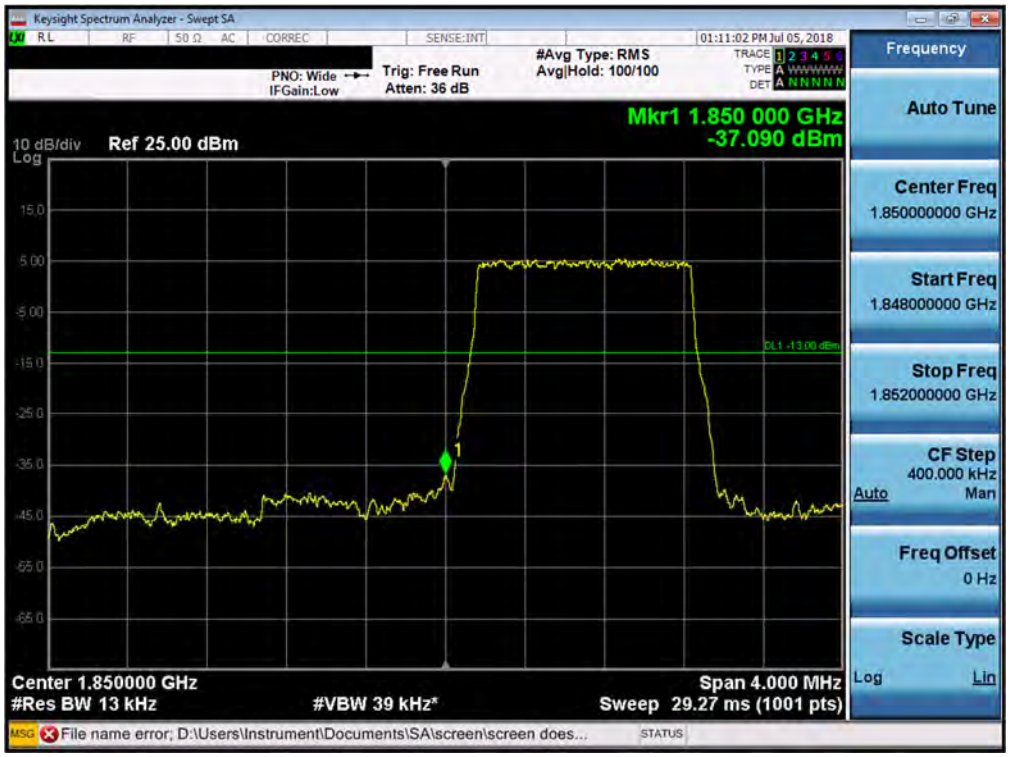


Plot 7-271. Upper Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

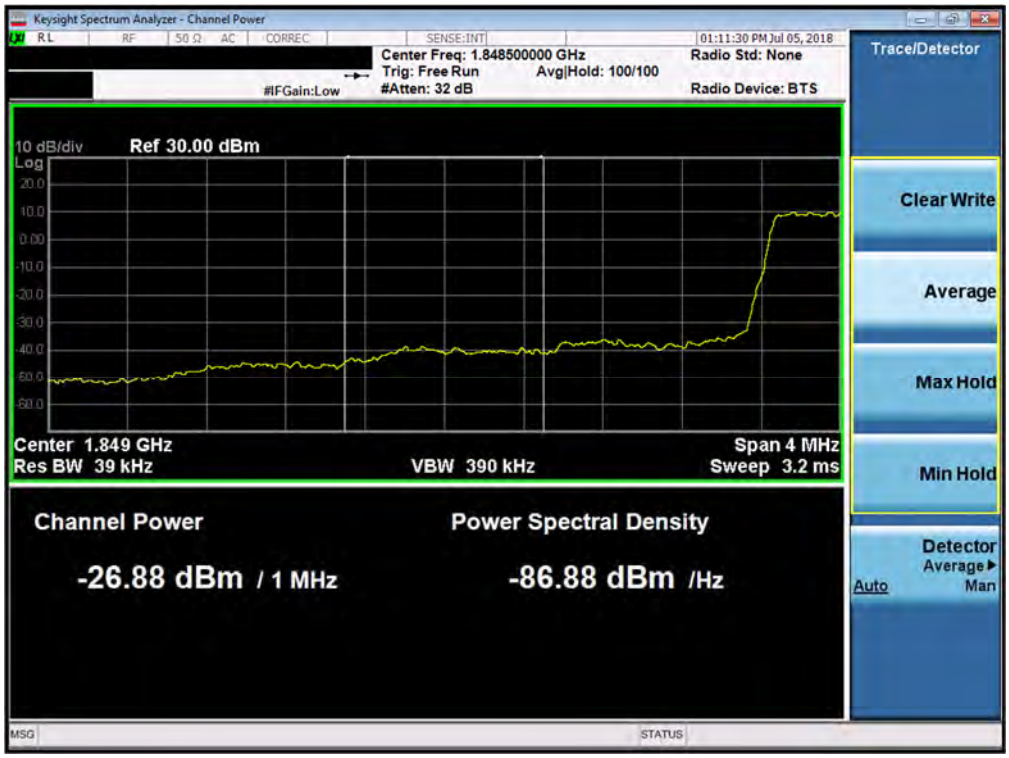


Plot 7-272. Upper Extended Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

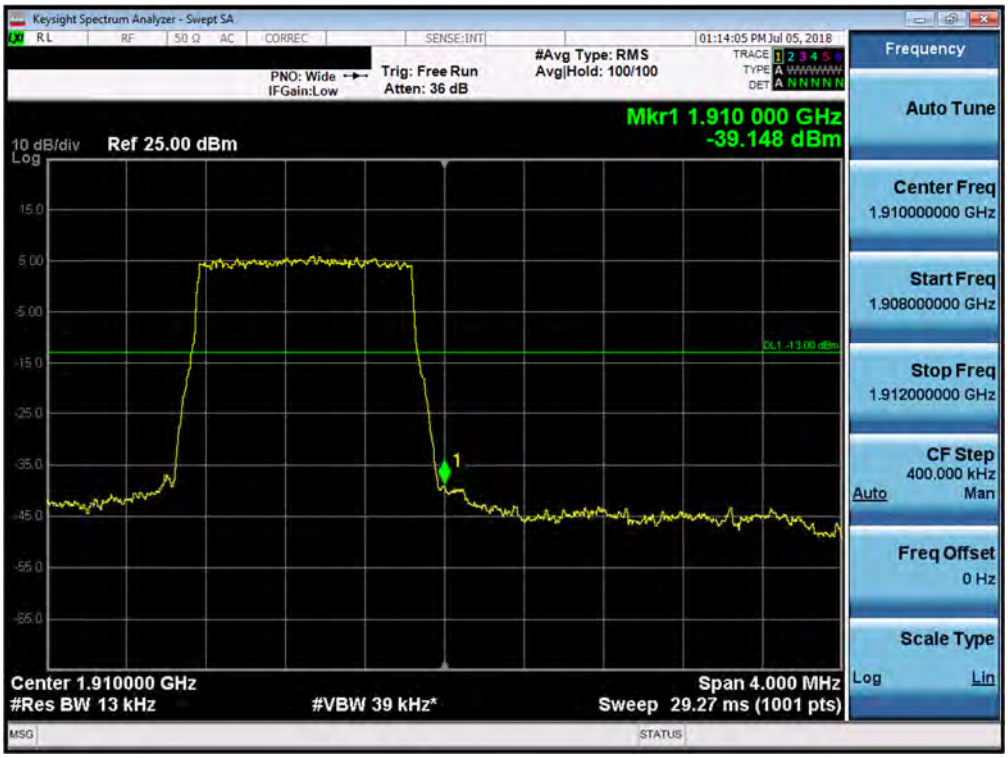
Band 25/2



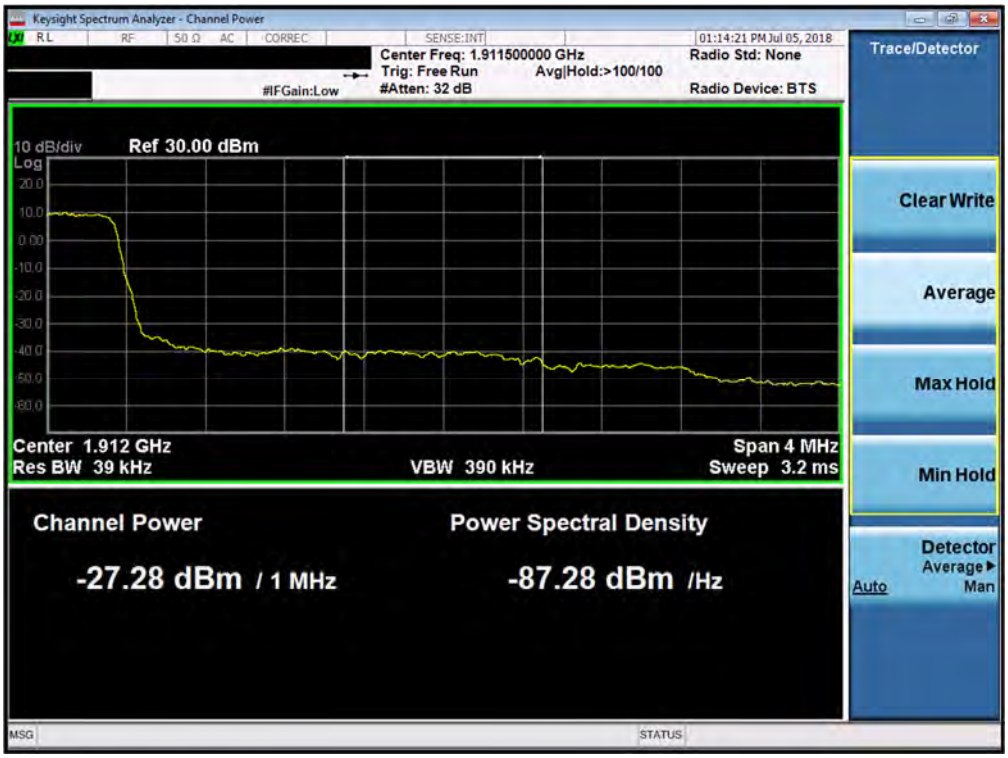
Plot 7-273. Lower Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



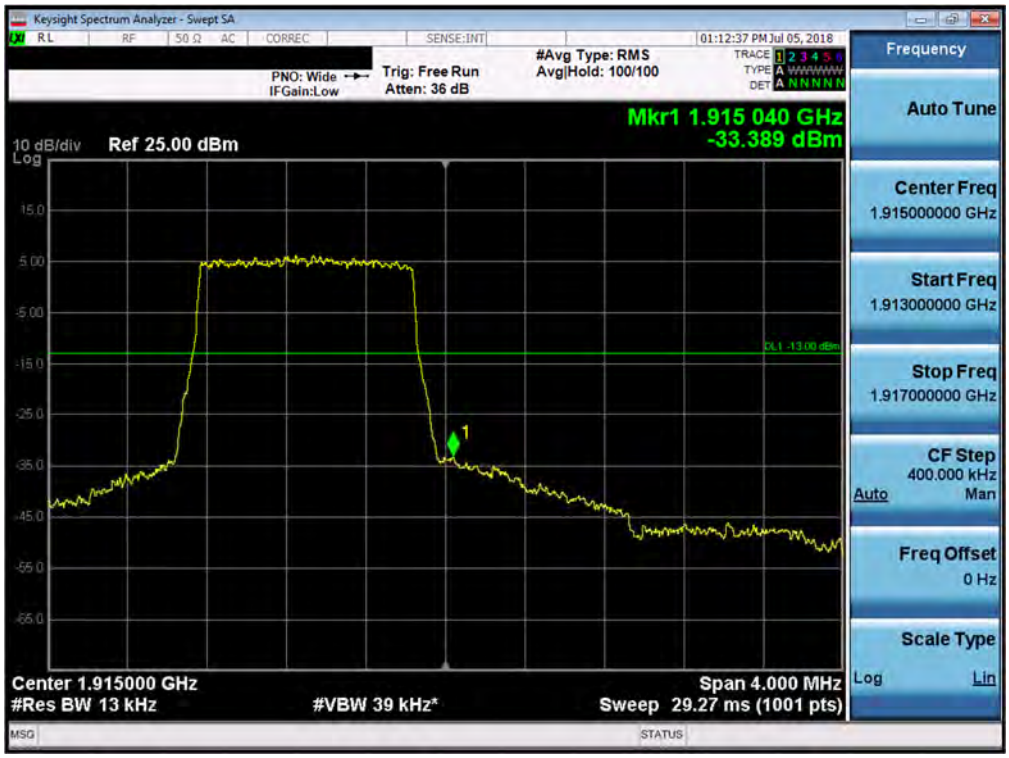
Plot 7-274. Lower Extended Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



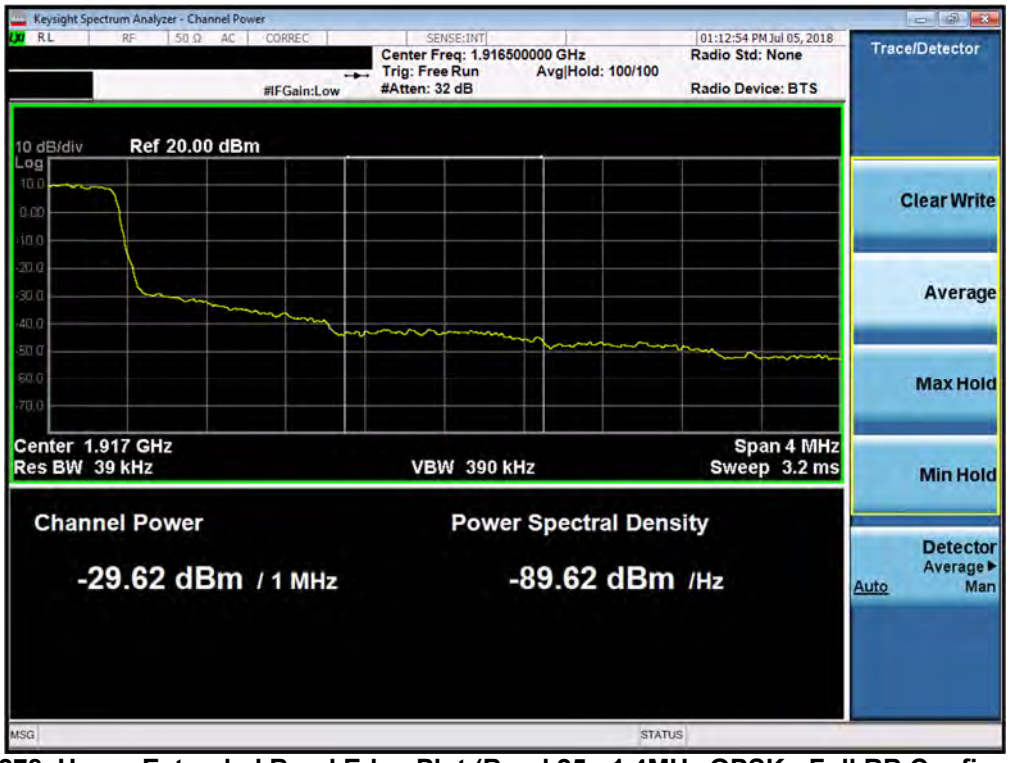
Plot 7-275. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



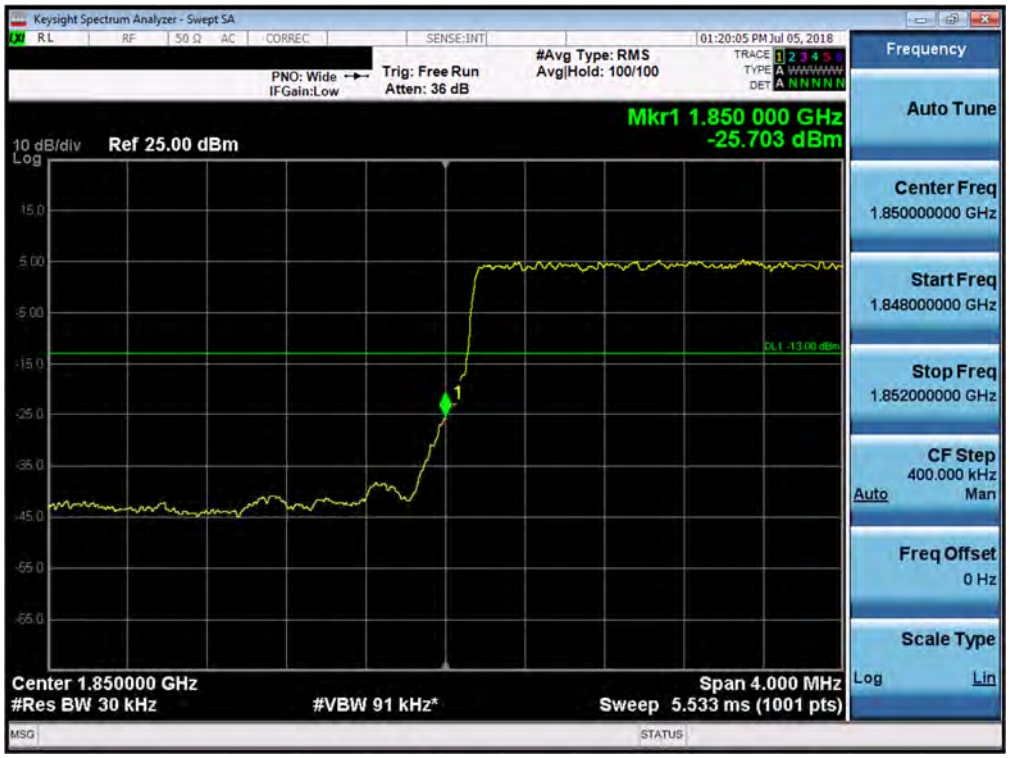
Plot 7-276. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



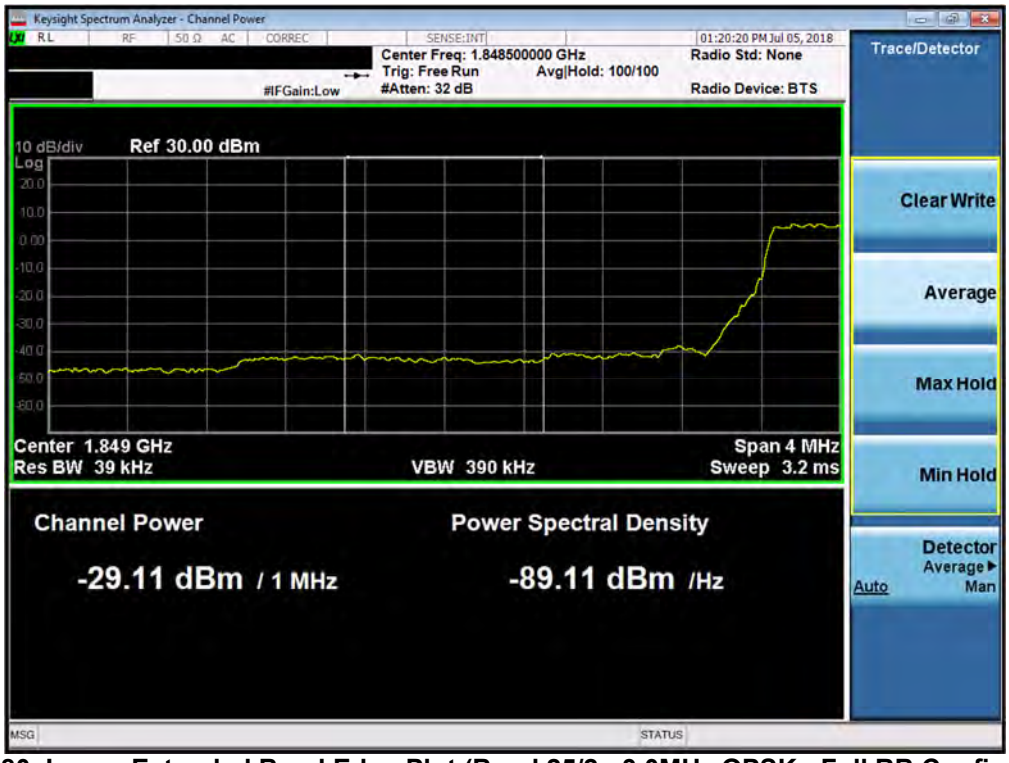
Plot 7-277. Upper Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-278. Upper Extended Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)

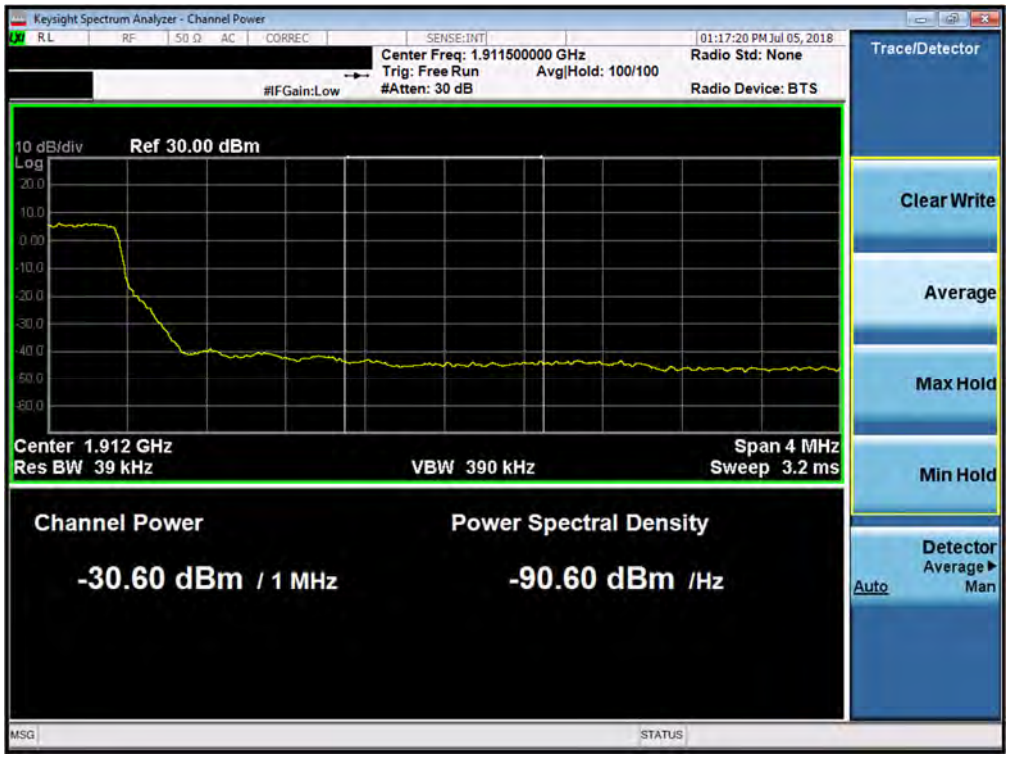


Plot 7-279. Lower Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)



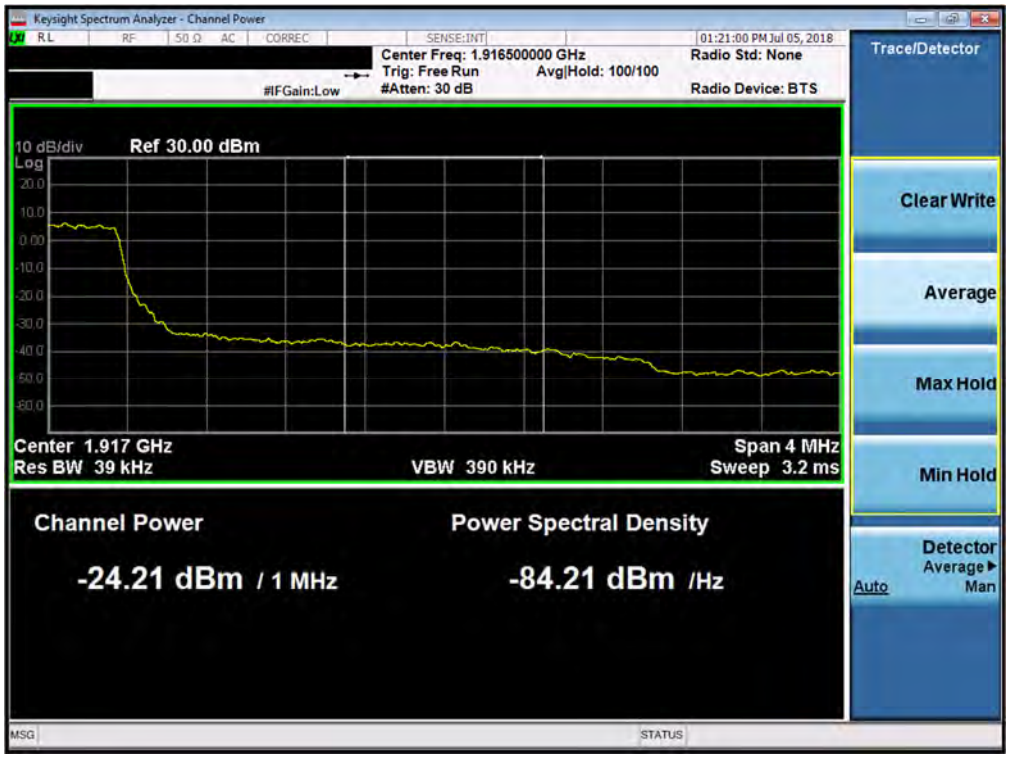
Plot 7-280. Lower Extended Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

Plot 7-281. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

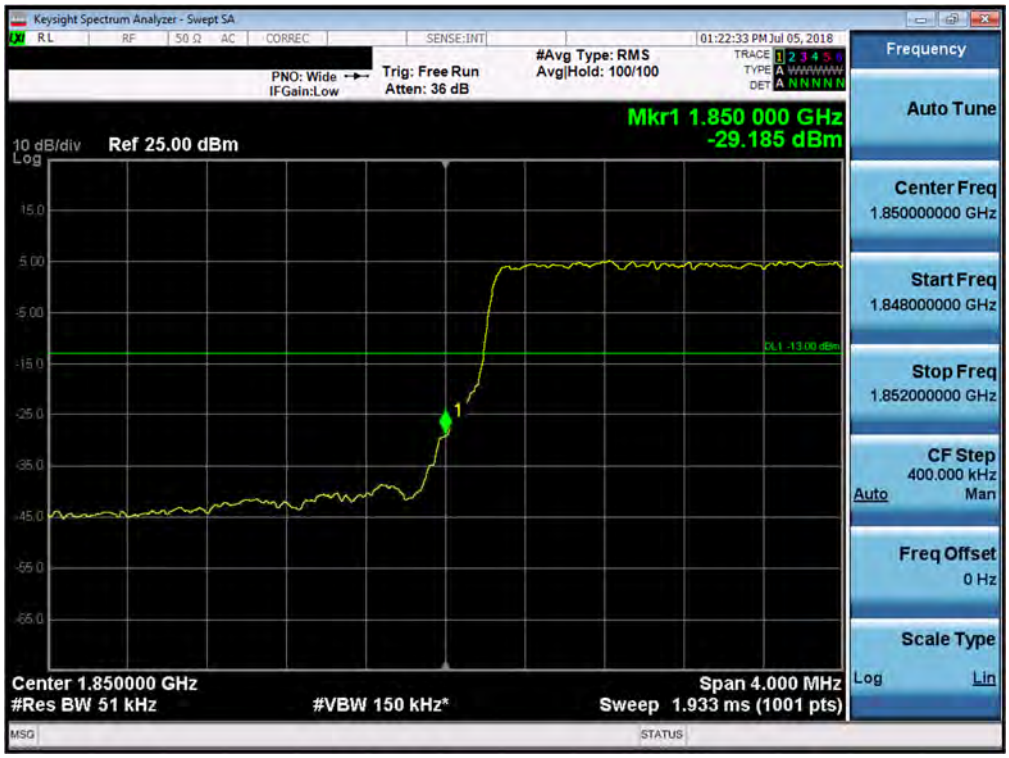


Plot 7-282. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

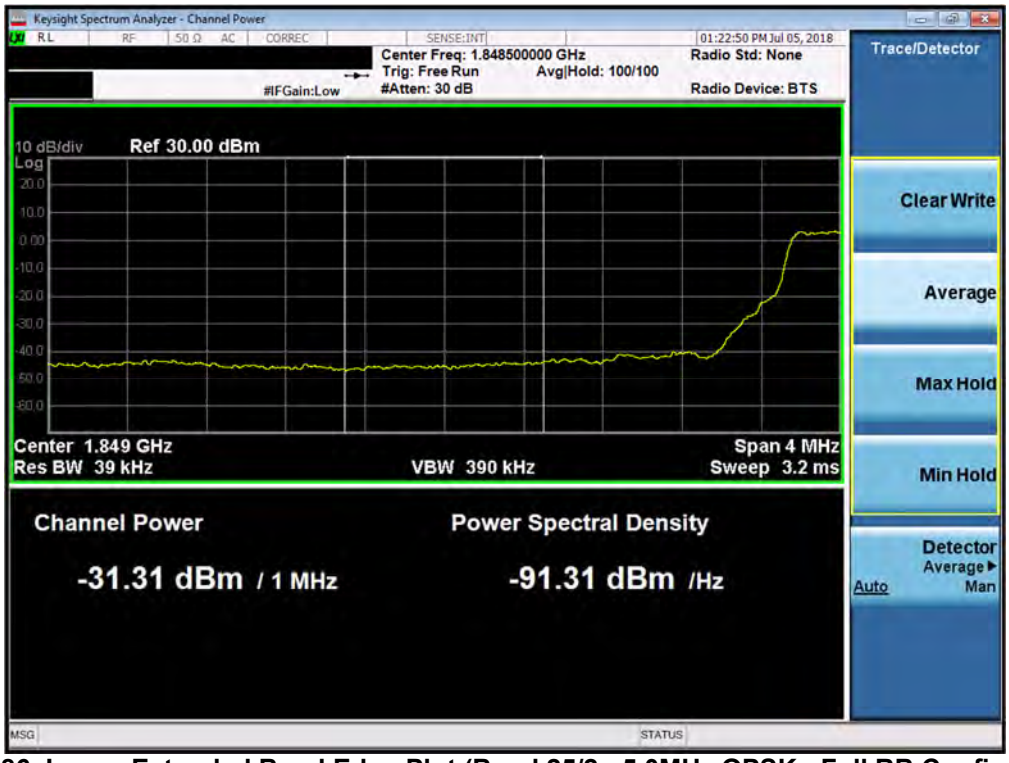
Plot 7-283. Upper Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-284. Upper Extended Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)

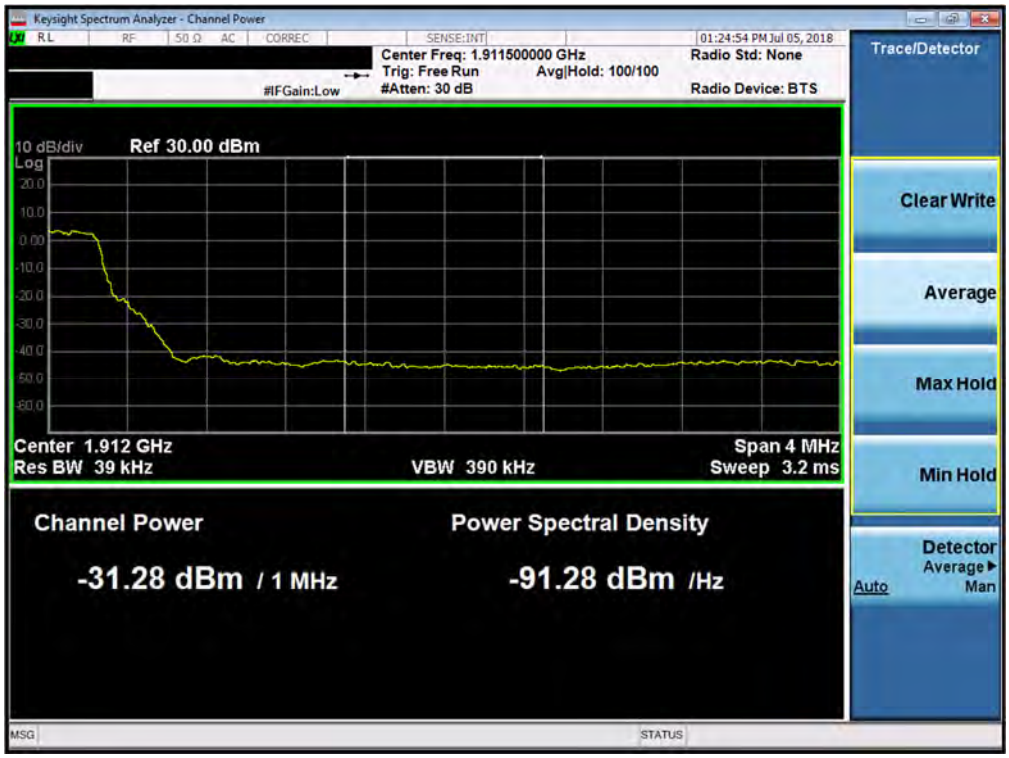


Plot 7-285. Lower Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



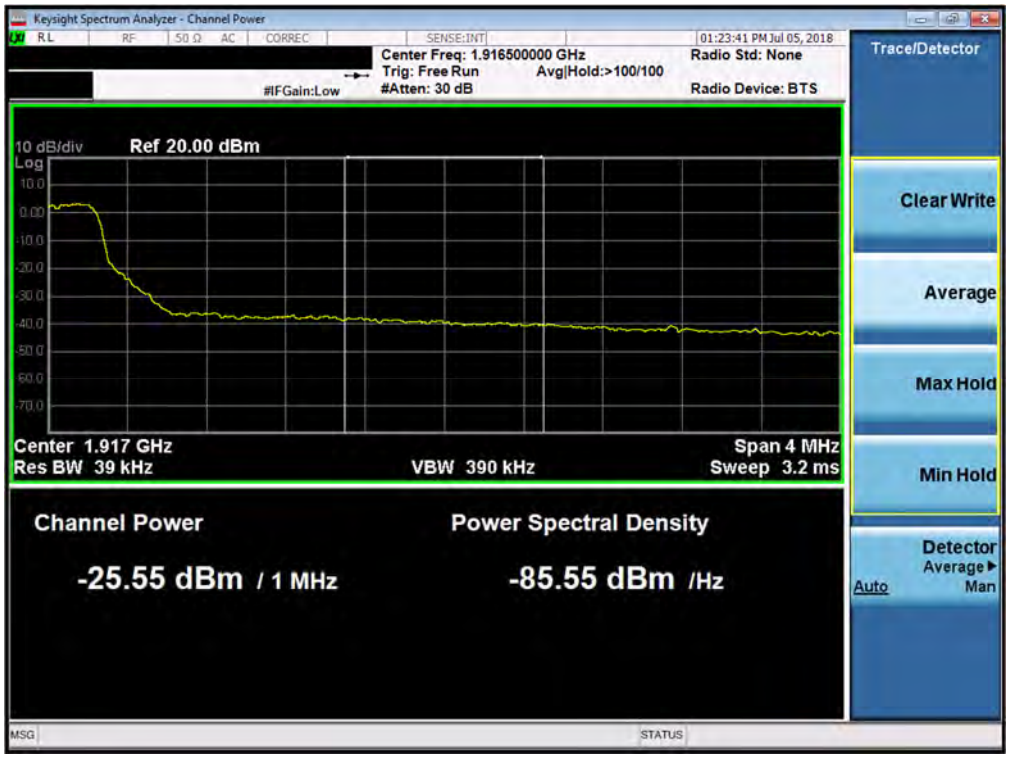
Plot 7-286. Lower Extended Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

Plot 7-287. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

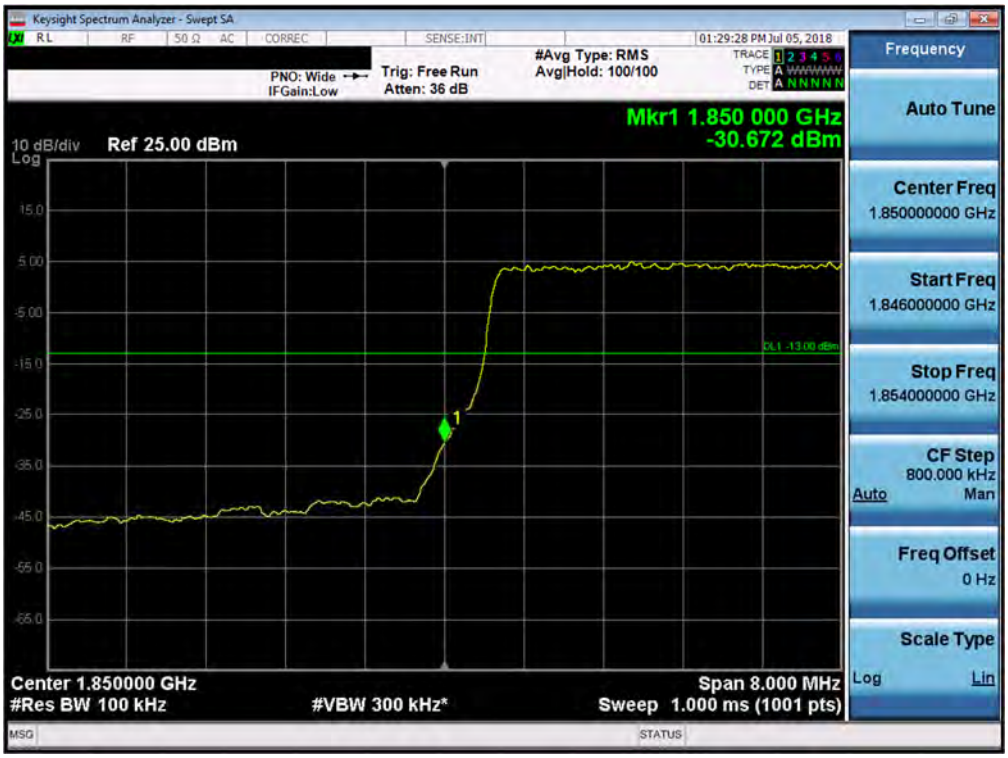


Plot 7-288. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

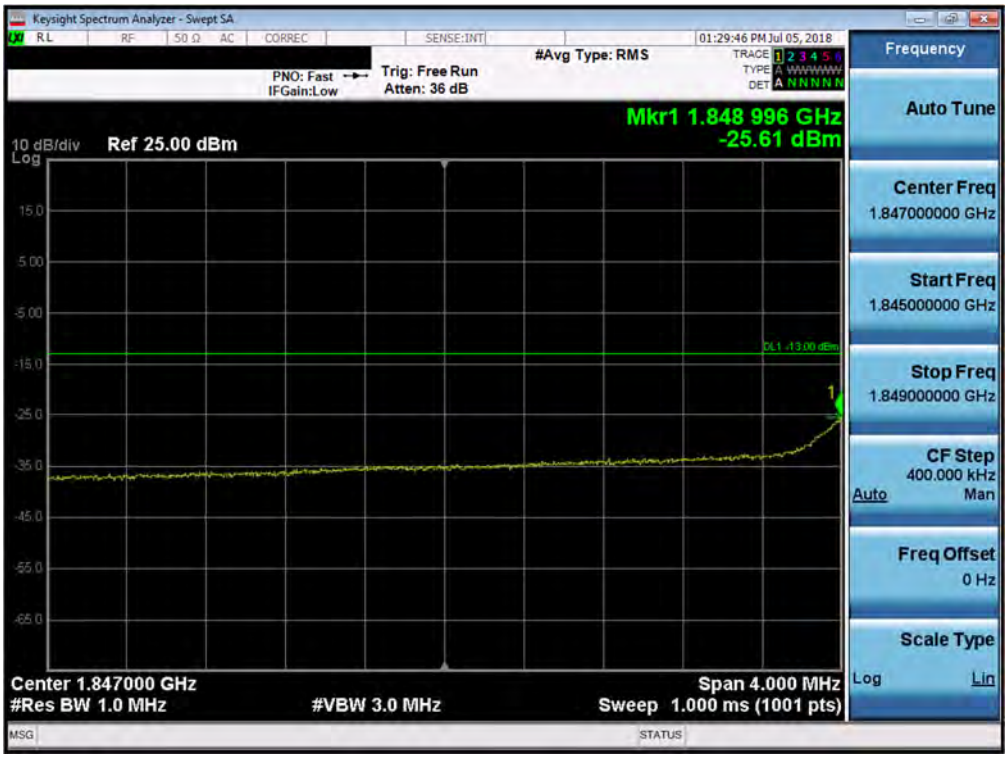
Plot 7-289. Upper Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



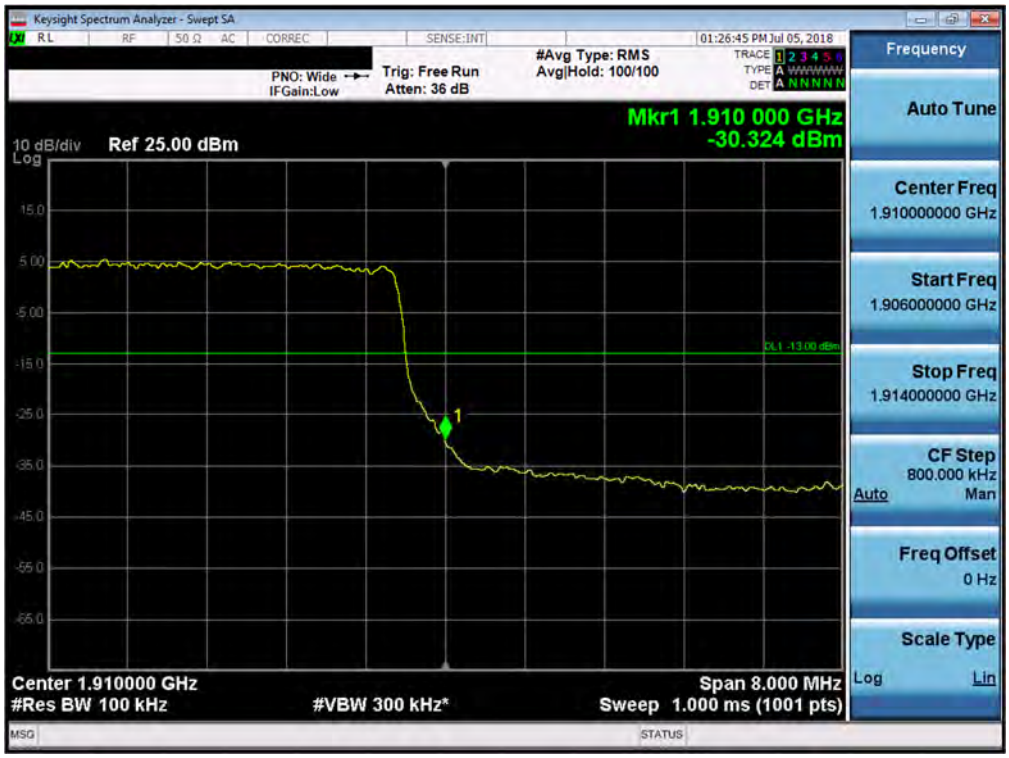
Plot 7-290. Upper Extended Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-291. Lower Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)



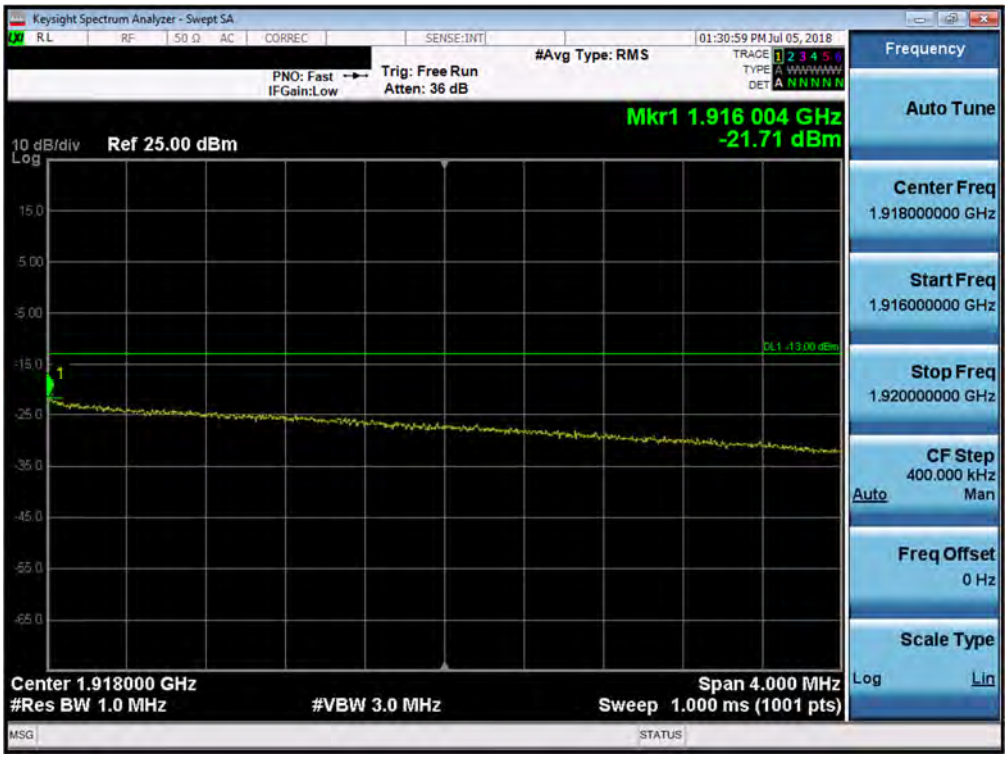
Plot 7-292. Lower Extended Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)



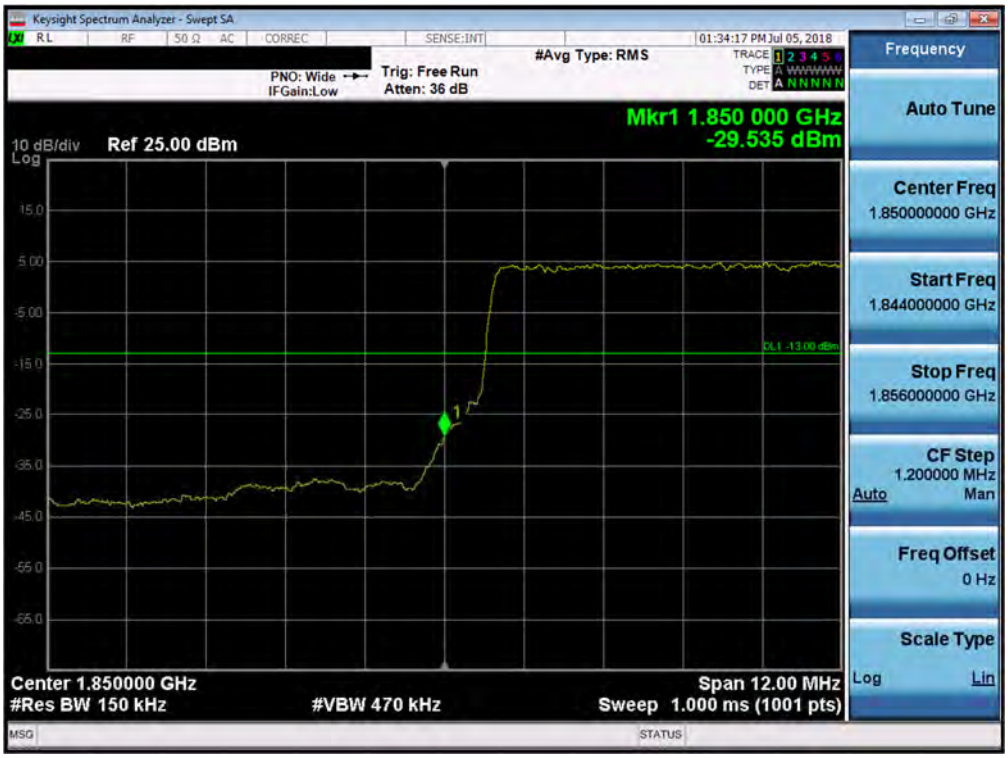
Plot 7-293. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

Plot 7-294. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

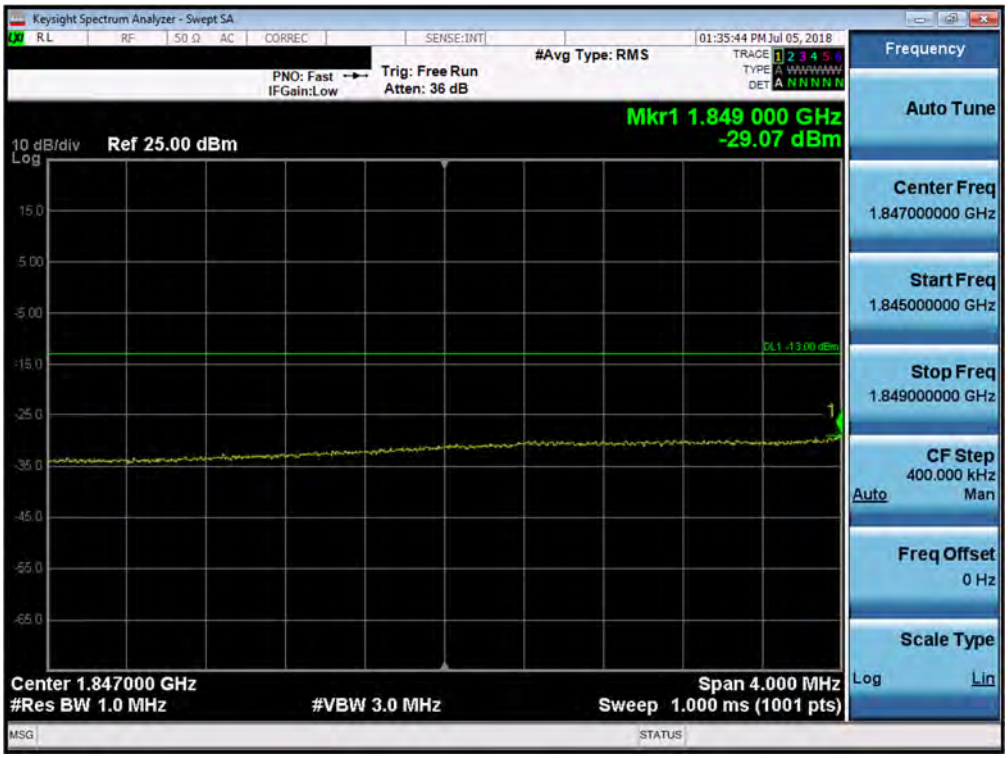
Plot 7-295. Upper Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-296. Upper Extended Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

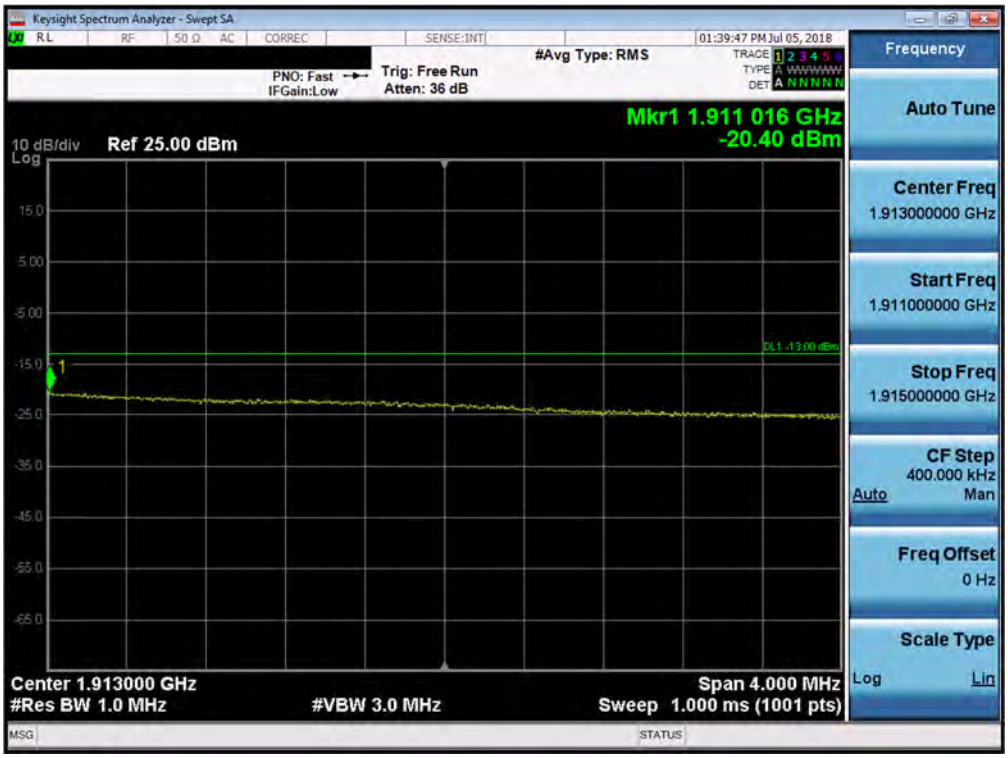


Plot 7-297. Lower Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



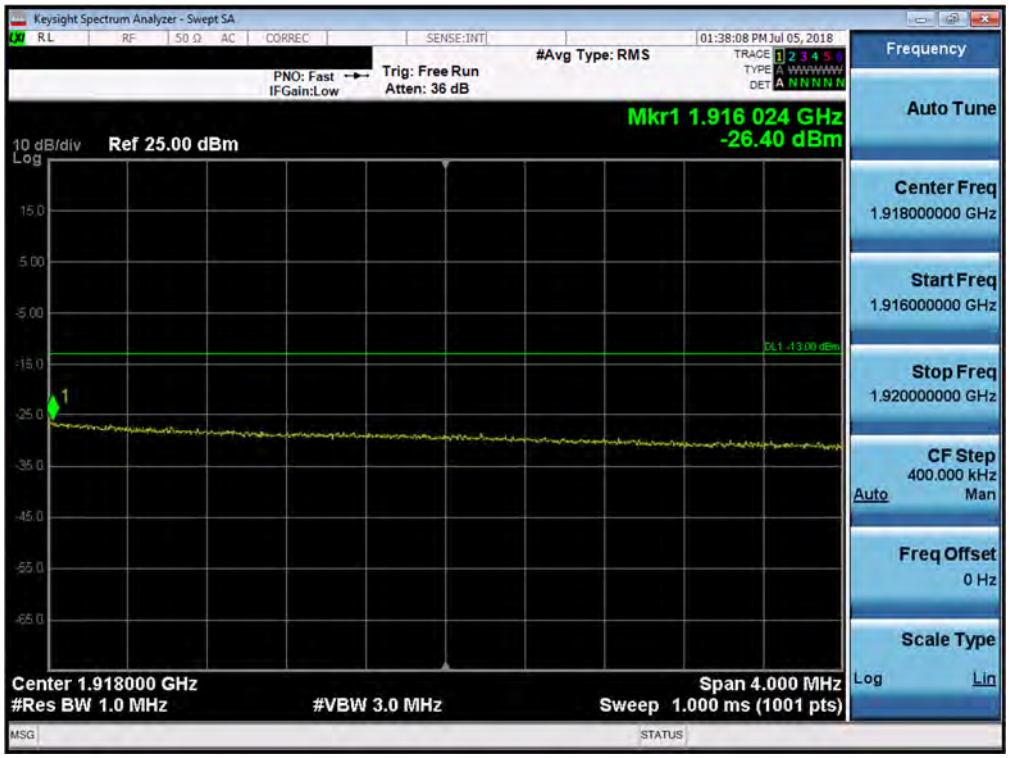
Plot 7-298. Lower Extended Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

Plot 7-299. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

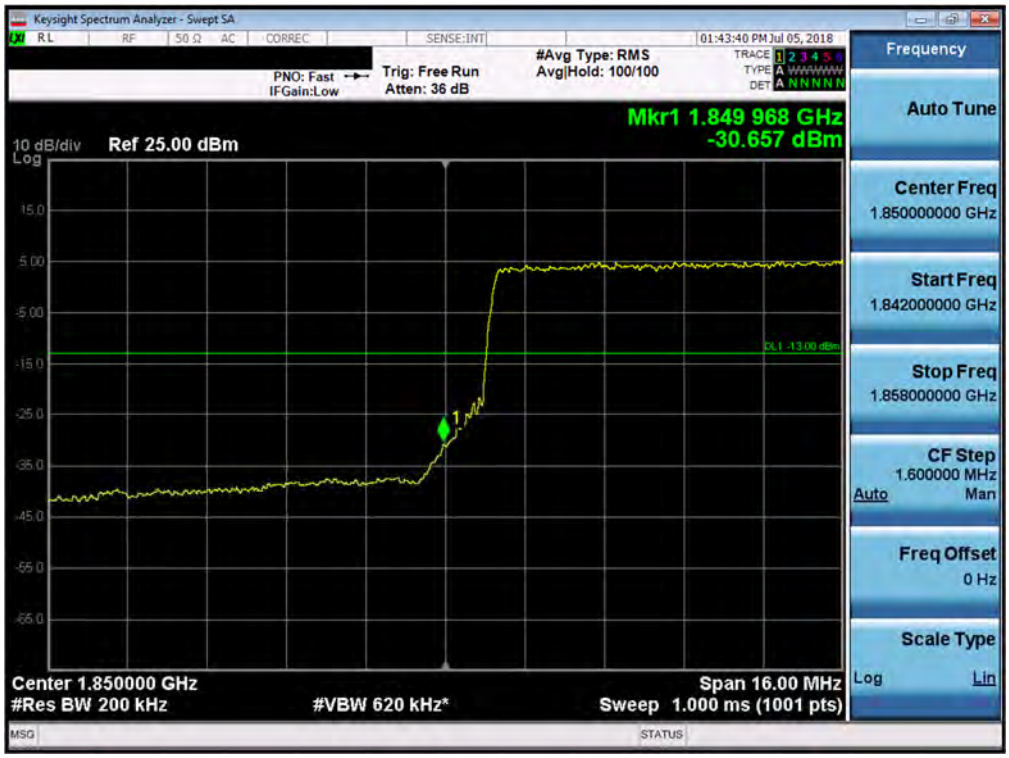


Plot 7-300. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

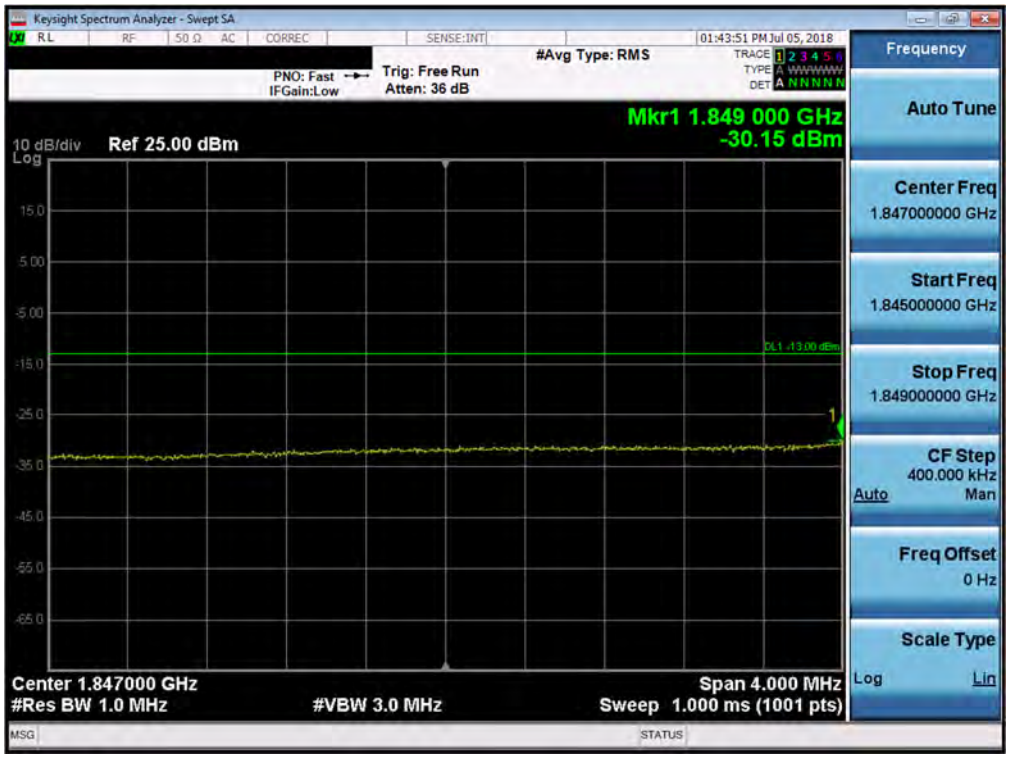
Plot 7-301. Upper Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)



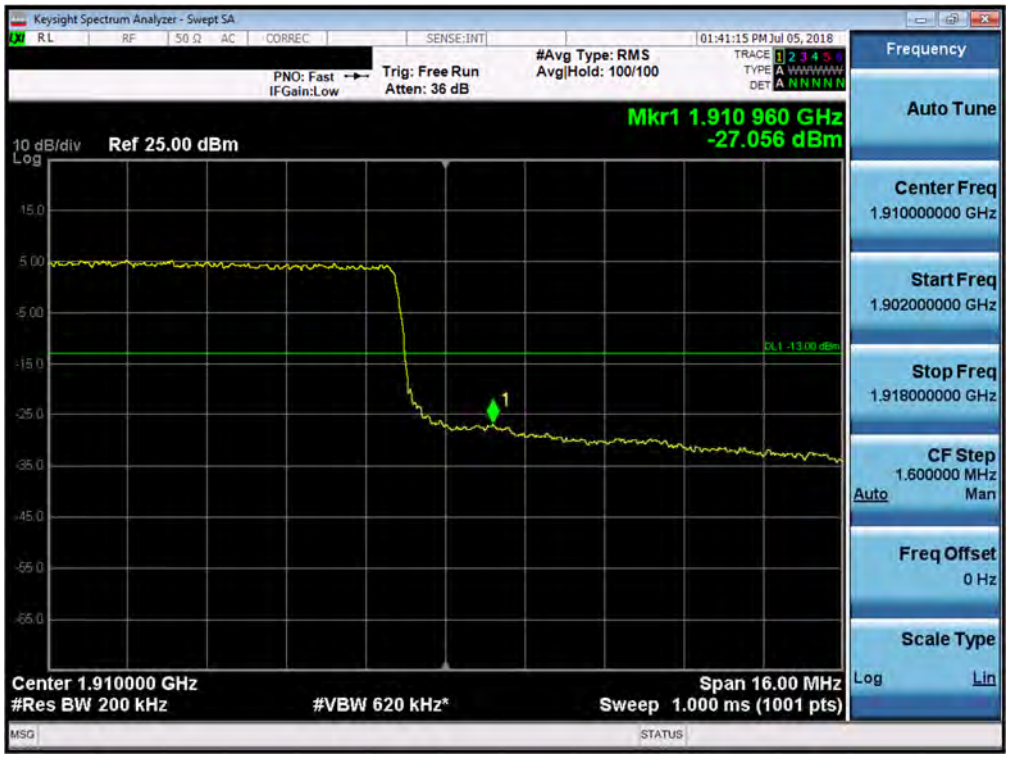
Plot 7-302. Upper Extended Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)



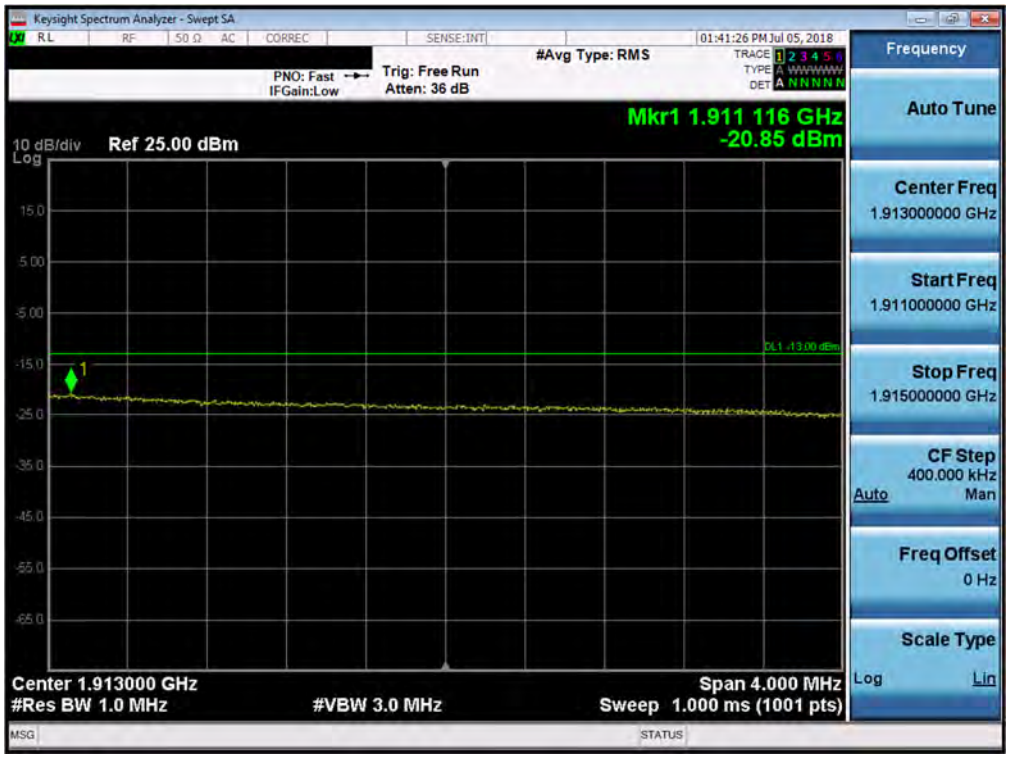
Plot 7-303. Lower Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



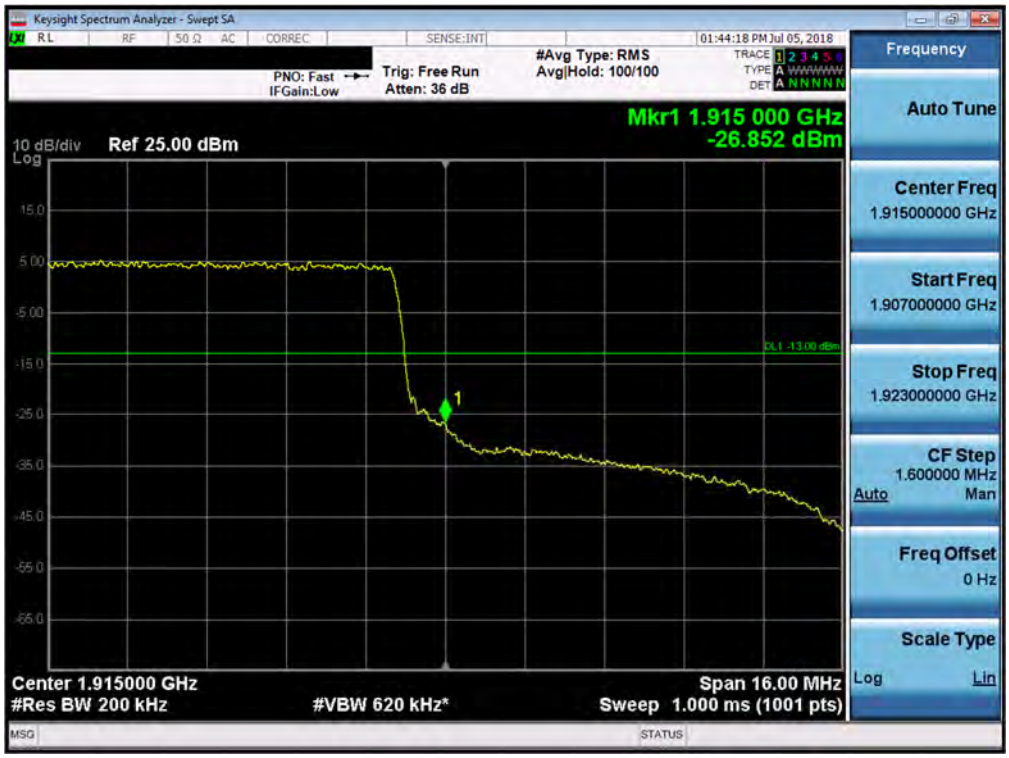
Plot 7-304. Lower Extended Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



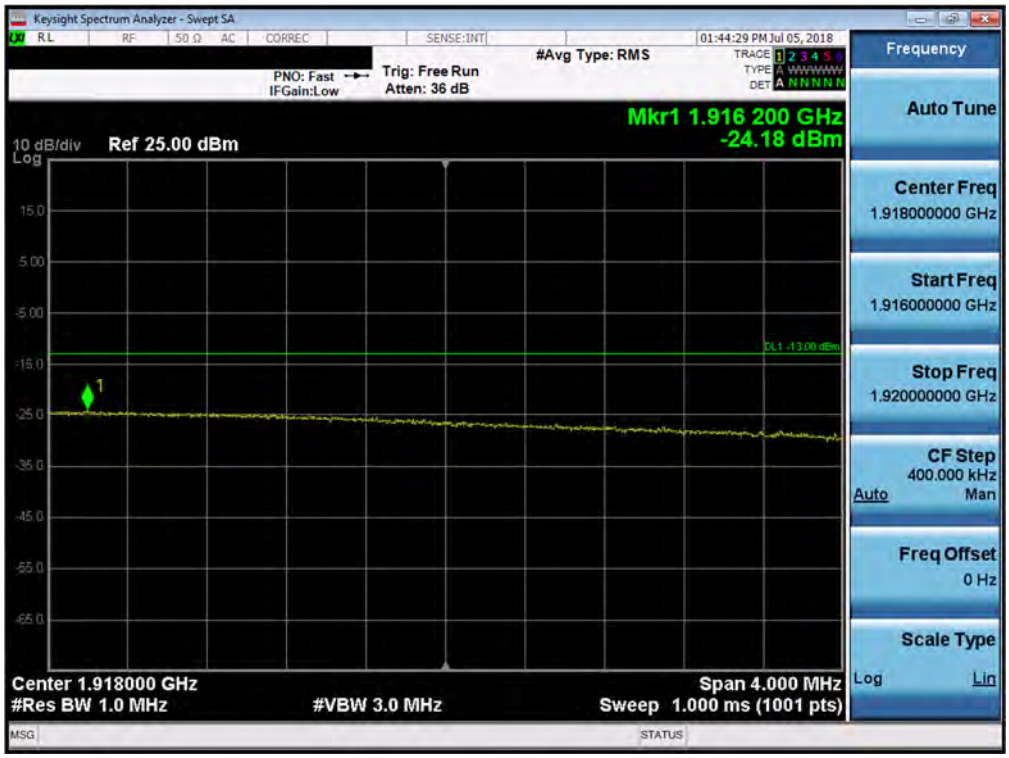
Plot 7-305. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-306. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

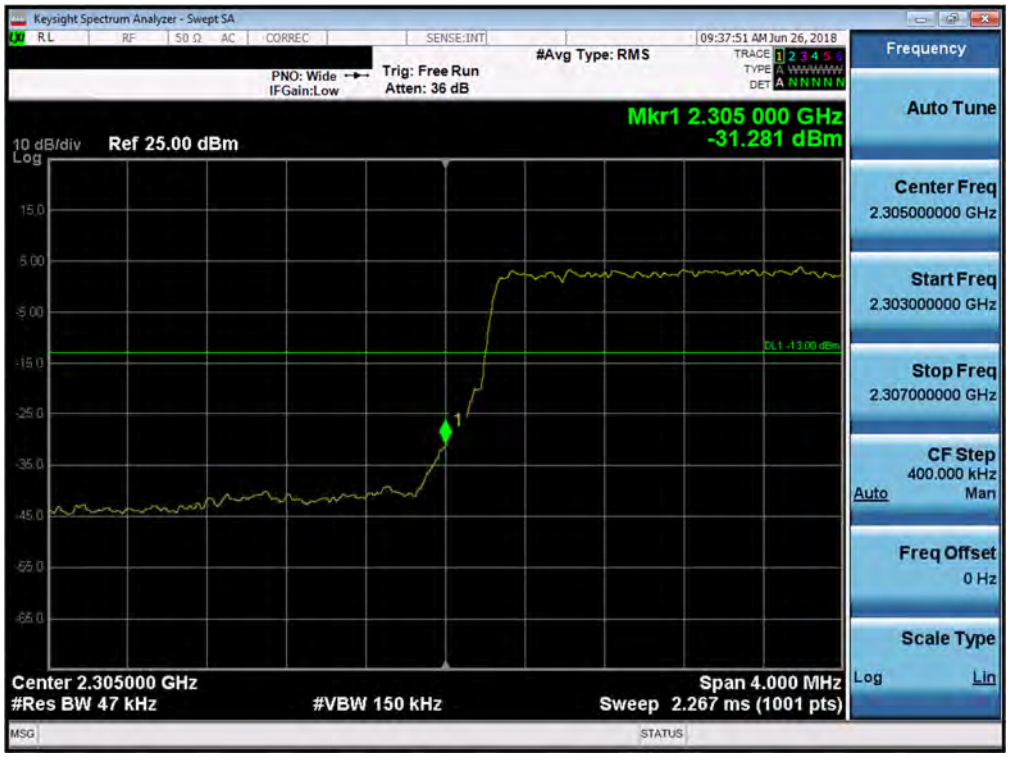


Plot 7-307. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



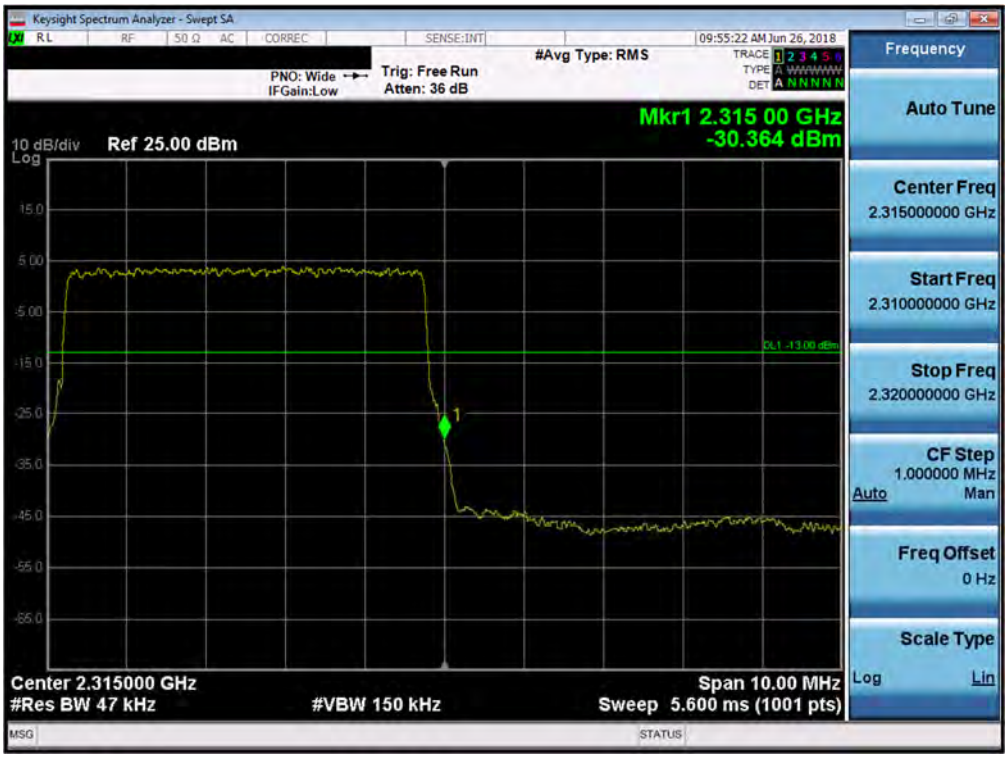
Plot 7-308. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

Band 30

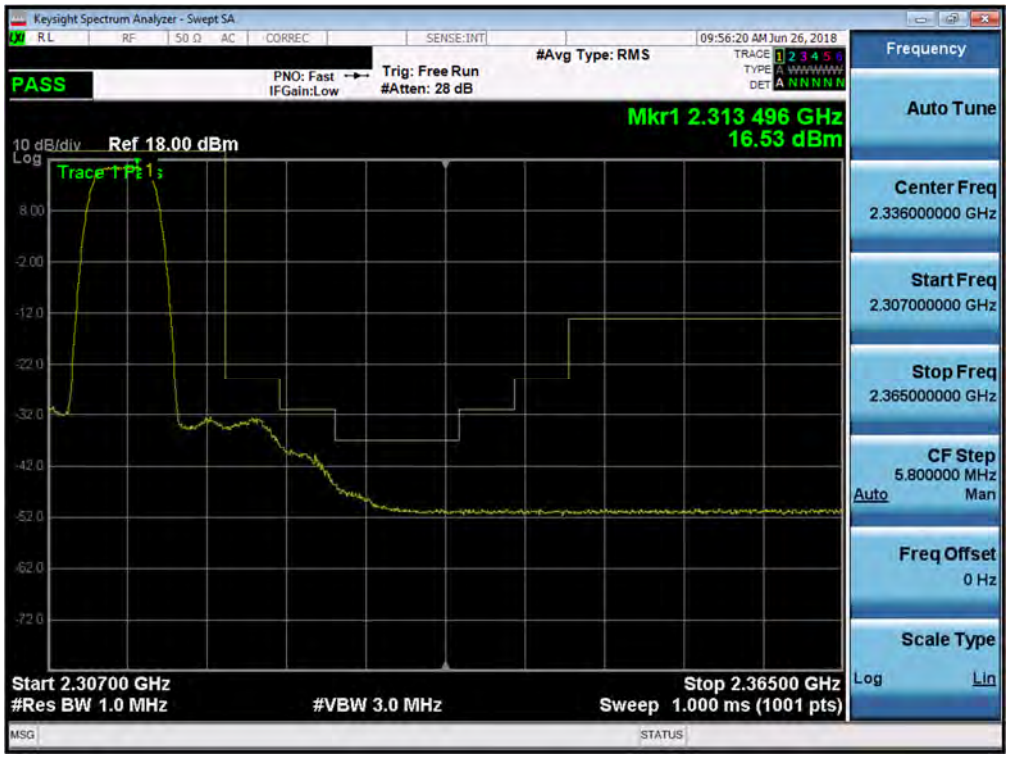


Plot 7-309. Lower Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

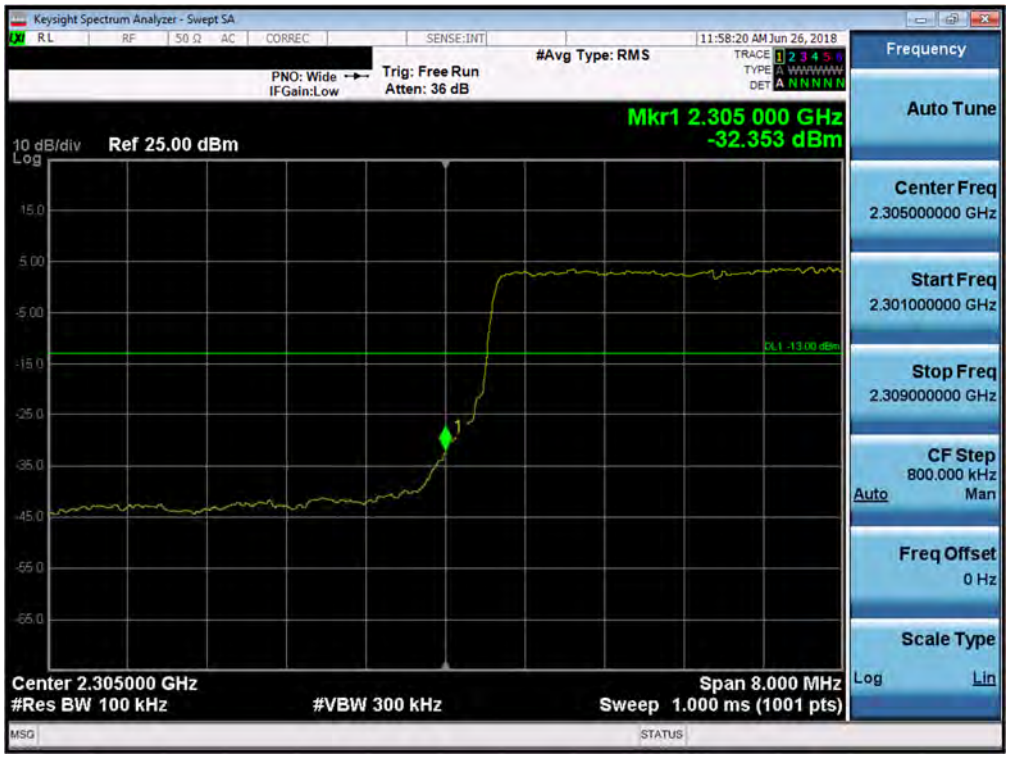
Plot 7-310. Lower Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



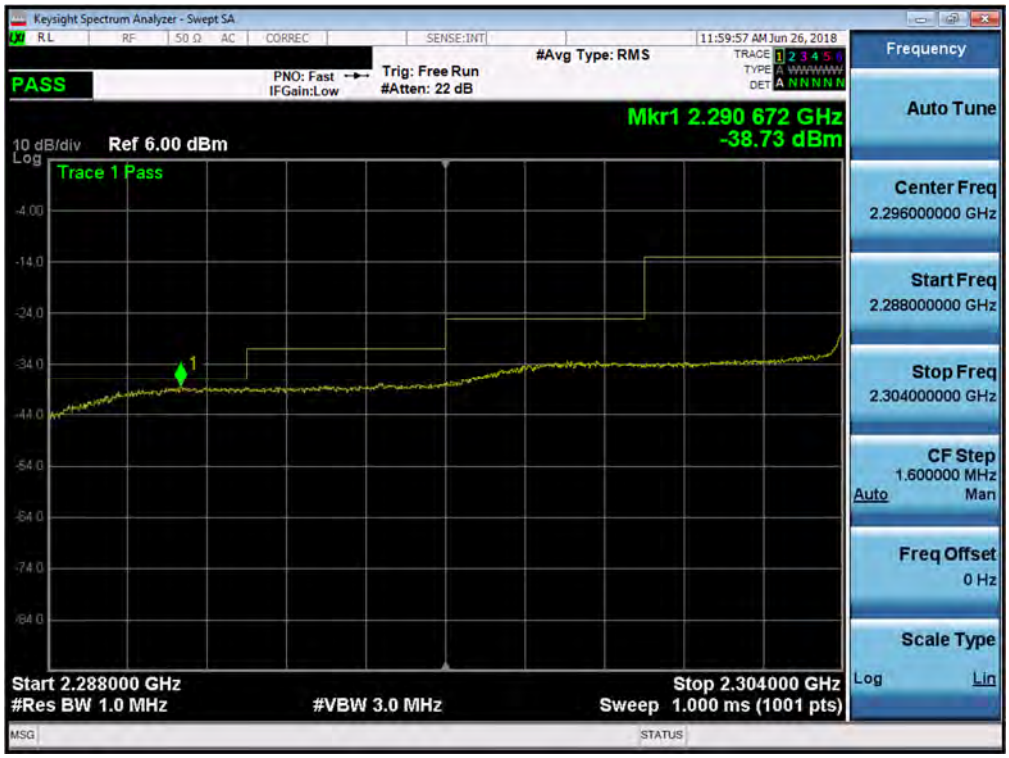
Plot 7-311. Upper Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



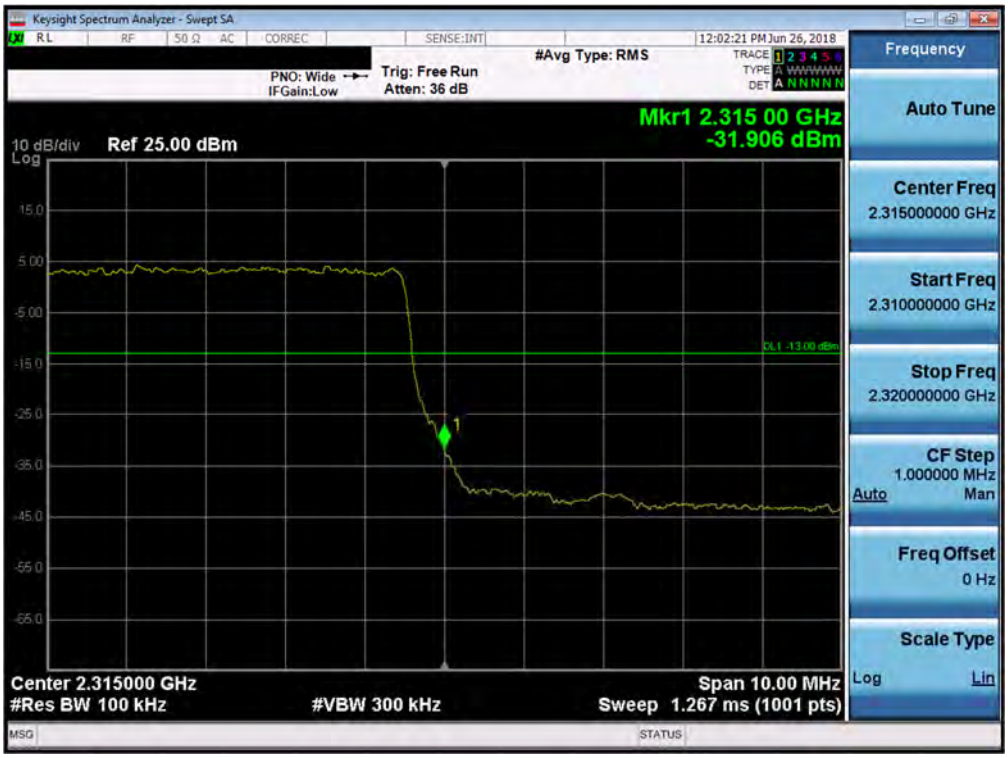
Plot 7-312. Upper Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-313. Lower Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

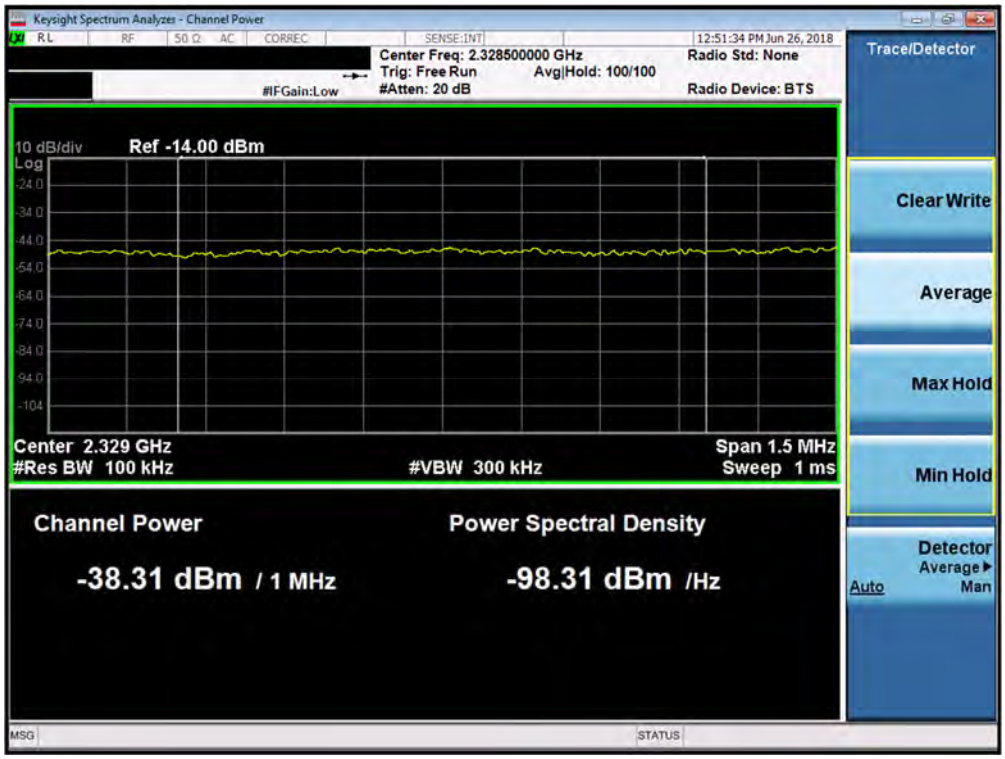


Plot 7-314. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

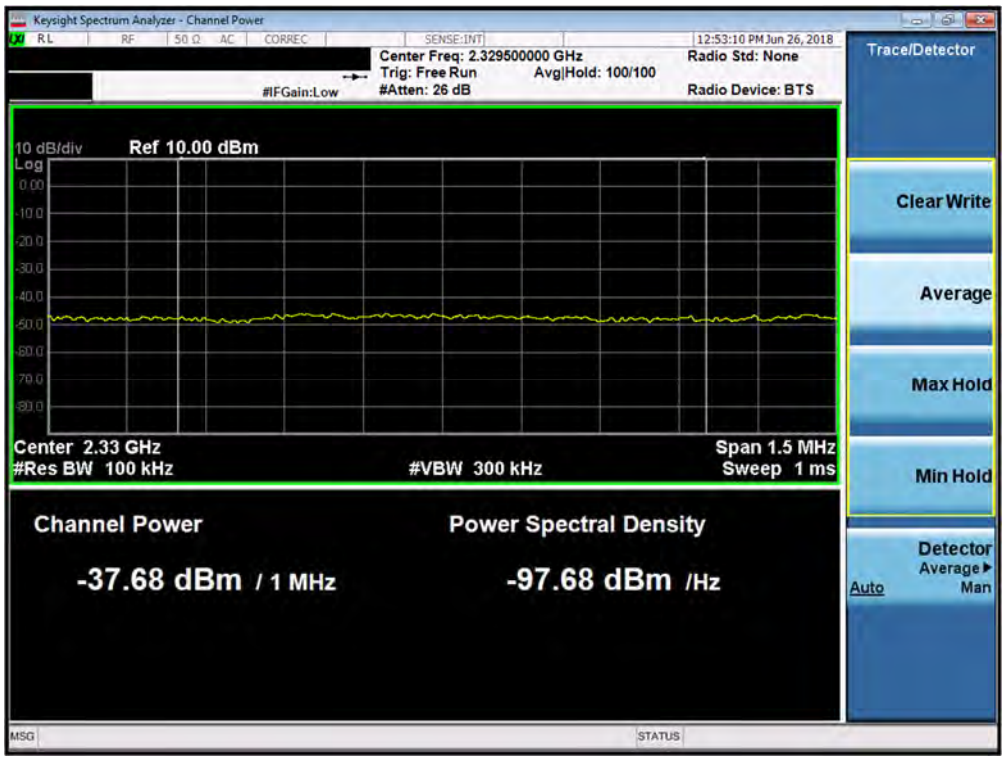


Plot 7-315. Upper Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

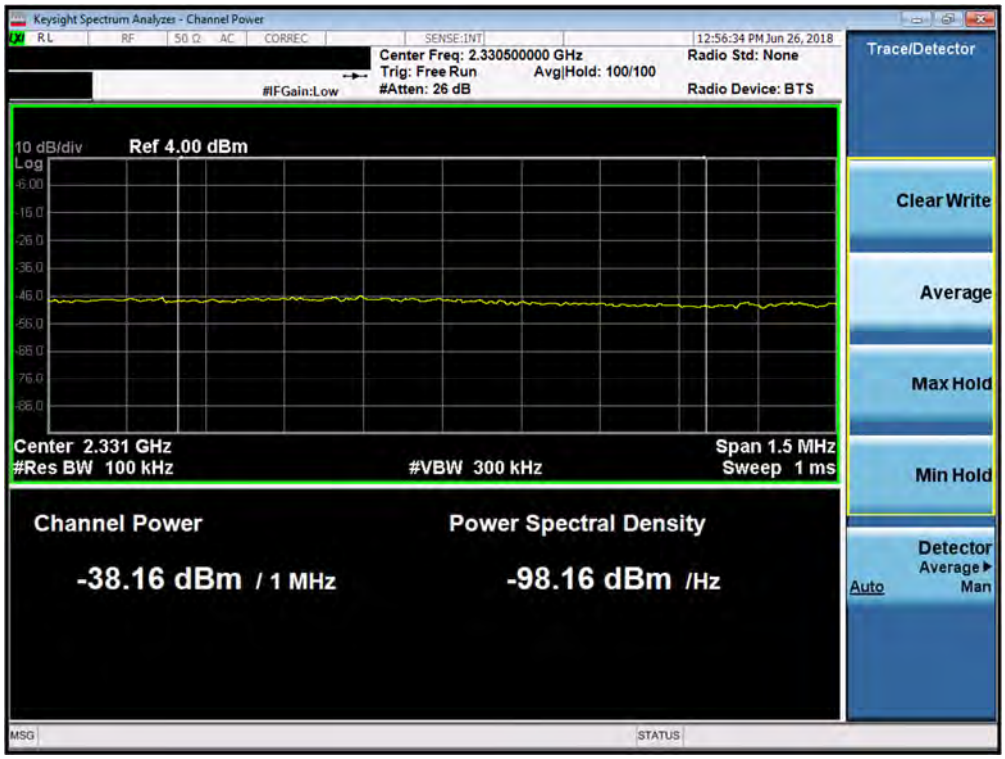
Plot 7-316. Upper Extended Band Edge Plot A (Band 30 - 10.0MHz QPSK - Full RB Configuration)



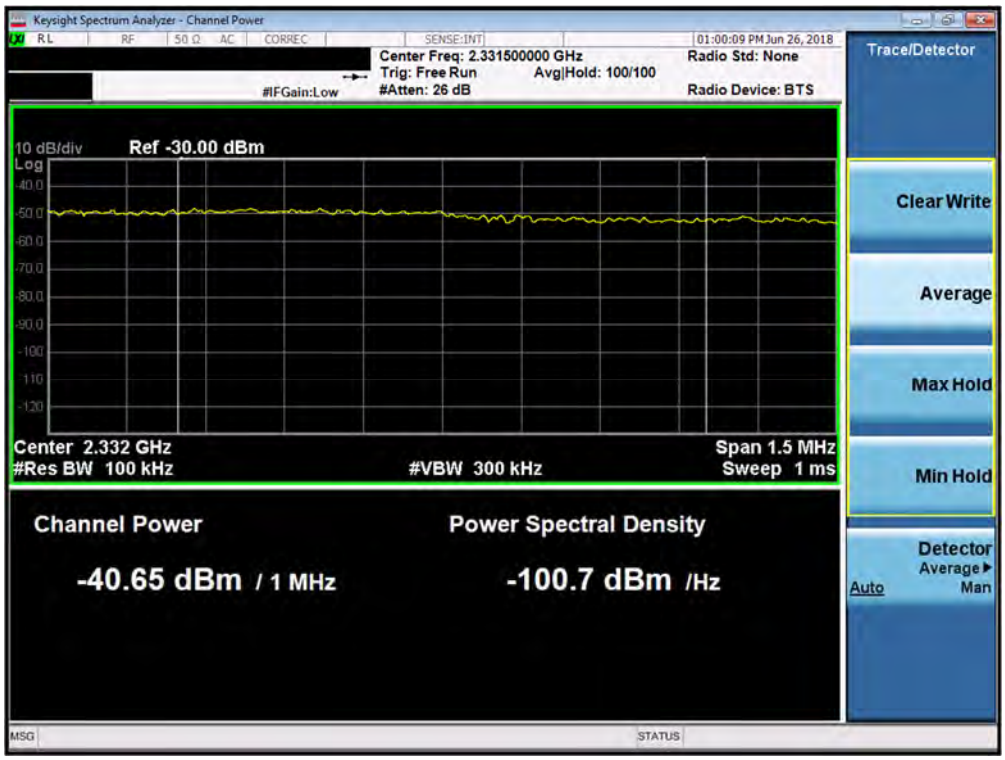
Plot 7-317. Upper Extended Band Edge Plot B (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-318. Upper Extended Band Edge Plot C (Band 30 - 10.0MHz QPSK - Full RB Configuration)



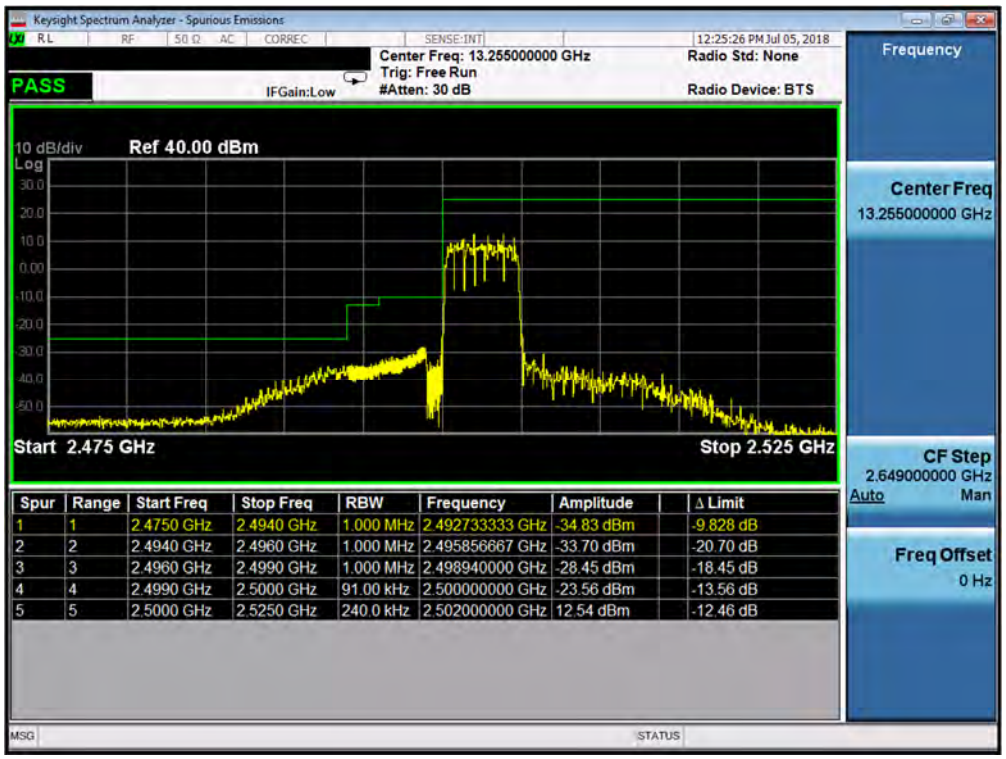
Plot 7-319. Upper Extended Band Edge Plot D (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-320. Upper Extended Band Edge Plot E (Band 30 - 10.0MHz QPSK - Full RB Configuration)

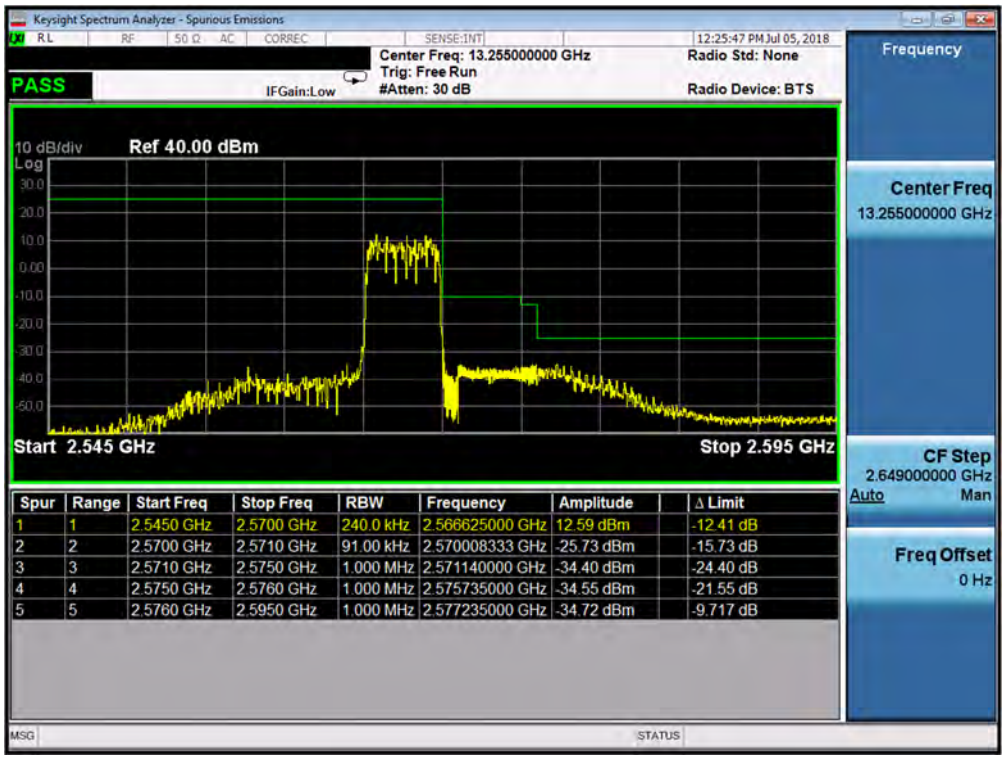
Plot 7-321. Upper Extended Band Edge Plot F (Band 30 - 10.0MHz QPSK - Full RB Configuration)

Band 7



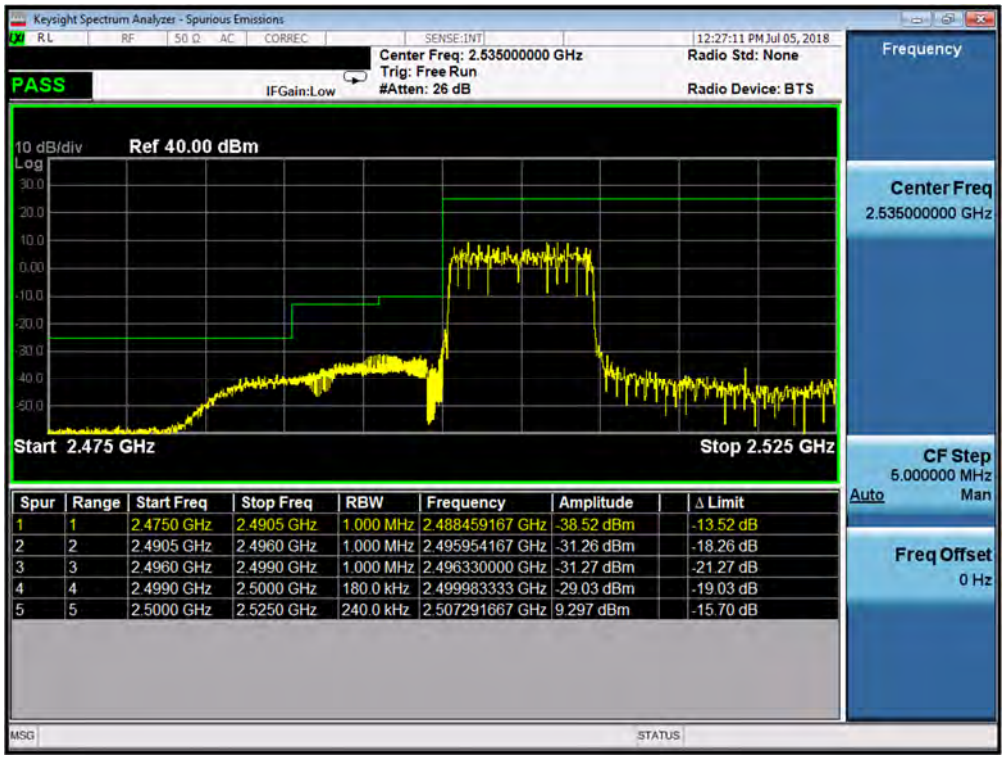
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4940 GHz	1.000 MHz	2.492733333 GHz	-34.83 dBm	-9.828 dB
2	2	2.4940 GHz	2.4960 GHz	1.000 MHz	2.495856667 GHz	-33.70 dBm	-20.70 dB
3	3	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498940000 GHz	-28.45 dBm	-18.45 dB
4	4	2.4990 GHz	2.5000 GHz	91.00 kHz	2.500000000 GHz	-23.56 dBm	-13.56 dB
5	5	2.5000 GHz	2.5250 GHz	240.0 kHz	2.502000000 GHz	12.54 dBm	-12.46 dB

Plot 7-322. Lower ACP Plot (Band 7 - 5.0MHz QPSK - RB Size 25)



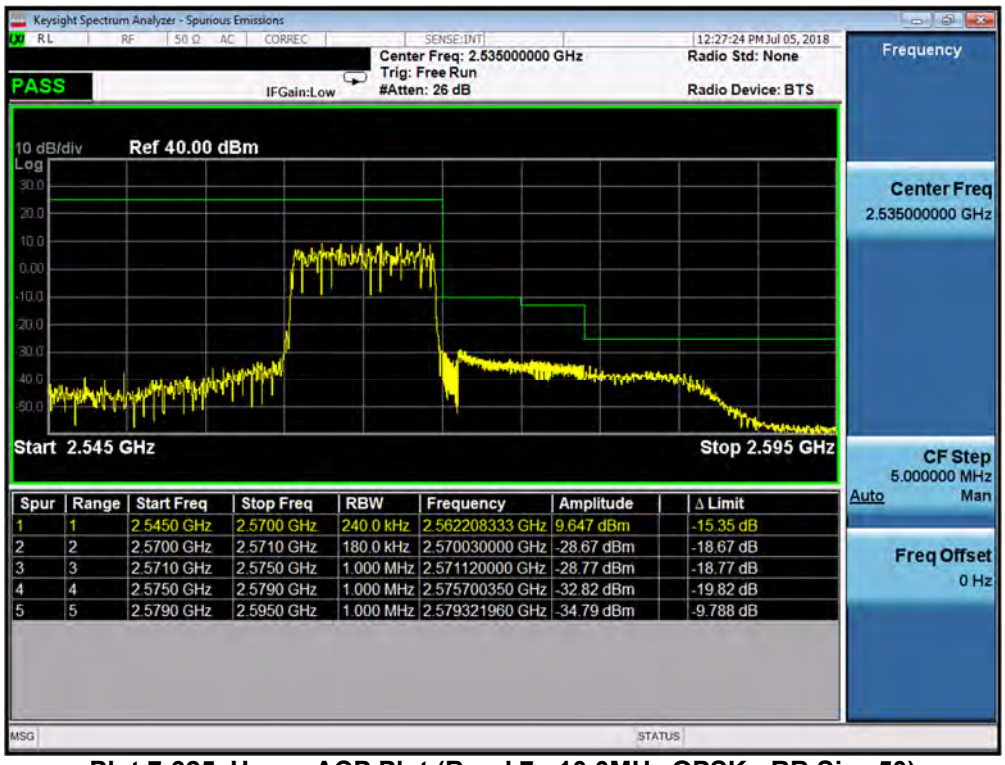
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5450 GHz	2.5700 GHz	240.0 kHz	2.566625000 GHz	12.59 dBm	-12.41 dB
2	2	2.5700 GHz	2.5710 GHz	91.00 kHz	2.570008333 GHz	-25.73 dBm	-15.73 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571140000 GHz	-34.40 dBm	-24.40 dB
4	4	2.5750 GHz	2.5760 GHz	1.000 MHz	2.575735000 GHz	-34.55 dBm	-21.55 dB
5	5	2.5760 GHz	2.5950 GHz	1.000 MHz	2.577235000 GHz	-34.72 dBm	-9.717 dB

Plot 7-323. Upper ACP Plot (Band 7 - 5.0MHz QPSK - RB Size 25)



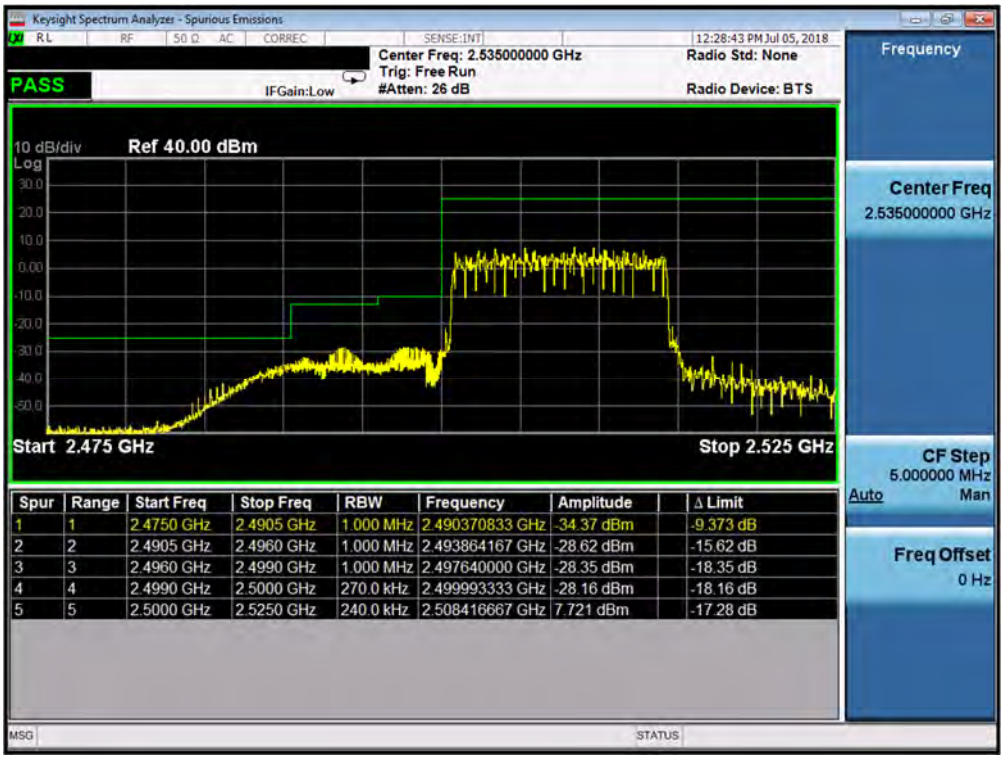
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.488459167 GHz	-38.52 dBm	-13.52 dB
2	2	2.4905 GHz	2.4960 GHz	1.000 MHz	2.495954167 GHz	-31.26 dBm	-18.26 dB
3	3	2.4960 GHz	2.4990 GHz	1.000 MHz	2.496330000 GHz	-31.27 dBm	-21.27 dB
4	4	2.4990 GHz	2.5000 GHz	180.0 kHz	2.499983333 GHz	-29.03 dBm	-19.03 dB
5	5	2.5000 GHz	2.5250 GHz	240.0 kHz	2.507291667 GHz	9.297 dBm	-15.70 dB

Plot 7-324. Lower ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 50)



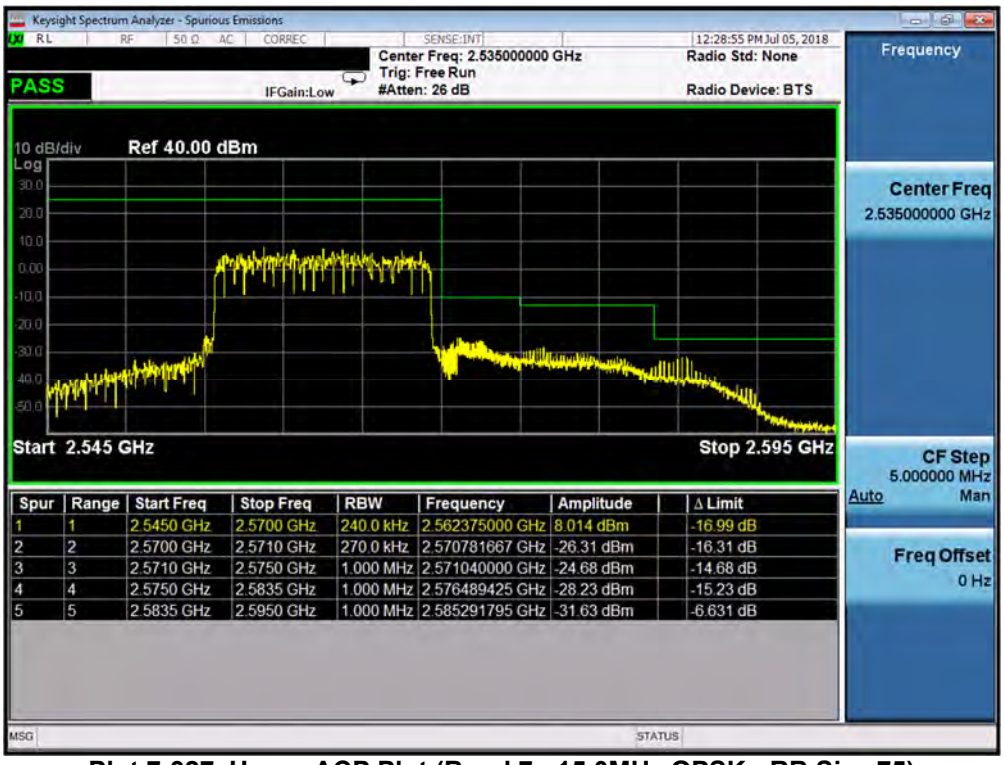
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5450 GHz	2.5700 GHz	240.0 kHz	2.562208333 GHz	9.647 dBm	-15.35 dB
2	2	2.5700 GHz	2.5710 GHz	180.0 kHz	2.570030000 GHz	-28.67 dBm	-18.67 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571120000 GHz	-28.77 dBm	-18.77 dB
4	4	2.5750 GHz	2.5790 GHz	1.000 MHz	2.575700350 GHz	-32.82 dBm	-19.82 dB
5	5	2.5790 GHz	2.5950 GHz	1.000 MHz	2.579321960 GHz	-34.79 dBm	-9.788 dB

Plot 7-325. Upper ACP Plot (Band 7 - 10.0MHz QPSK - RB Size 50)



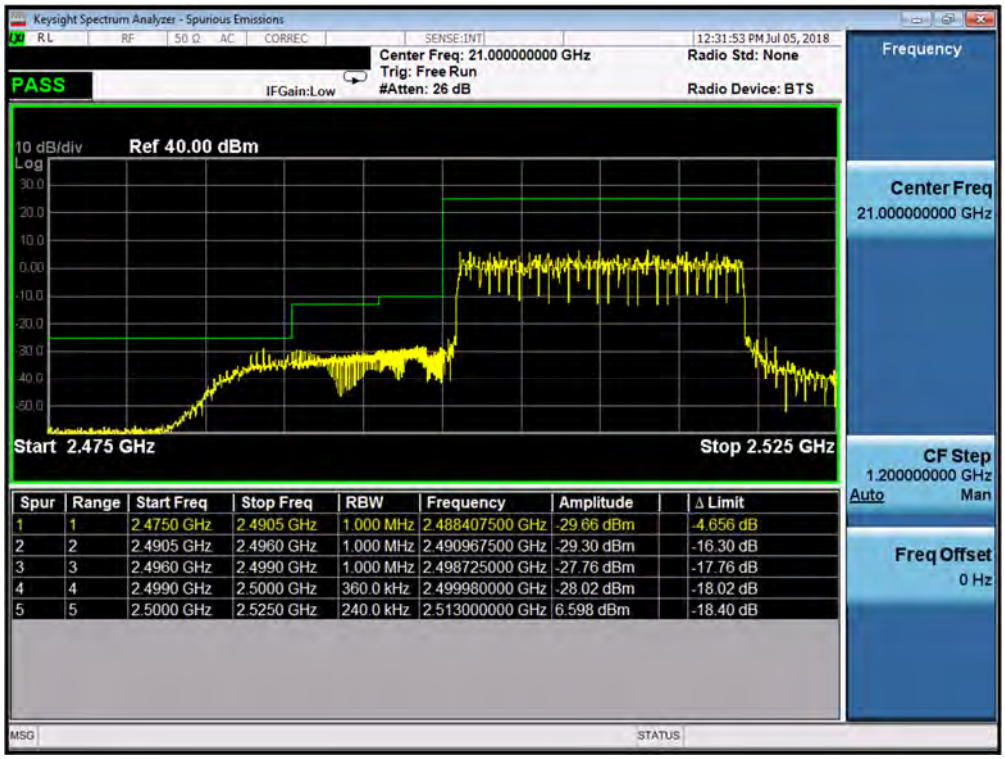
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490370833 GHz	-34.37 dBm	-9.373 dB
2	2	2.4905 GHz	2.4960 GHz	1.000 MHz	2.493864167 GHz	-28.62 dBm	-15.62 dB
3	3	2.4960 GHz	2.4990 GHz	1.000 MHz	2.497640000 GHz	-28.35 dBm	-18.35 dB
4	4	2.4990 GHz	2.5000 GHz	270.0 kHz	2.499993333 GHz	-28.16 dBm	-18.16 dB
5	5	2.5000 GHz	2.5250 GHz	240.0 kHz	2.508416667 GHz	7.721 dBm	-17.28 dB

Plot 7-326. Lower ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 75)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5450 GHz	2.5700 GHz	240.0 kHz	2.562375000 GHz	8.014 dBm	-16.99 dB
2	2	2.5700 GHz	2.5710 GHz	270.0 kHz	2.570781667 GHz	-26.31 dBm	-16.31 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571040000 GHz	-24.68 dBm	-14.68 dB
4	4	2.5750 GHz	2.5835 GHz	1.000 MHz	2.576489425 GHz	-28.23 dBm	-15.23 dB
5	5	2.5835 GHz	2.5950 GHz	1.000 MHz	2.585291795 GHz	-31.63 dBm	-6.631 dB

Plot 7-327. Upper ACP Plot (Band 7 - 15.0MHz QPSK - RB Size 75)

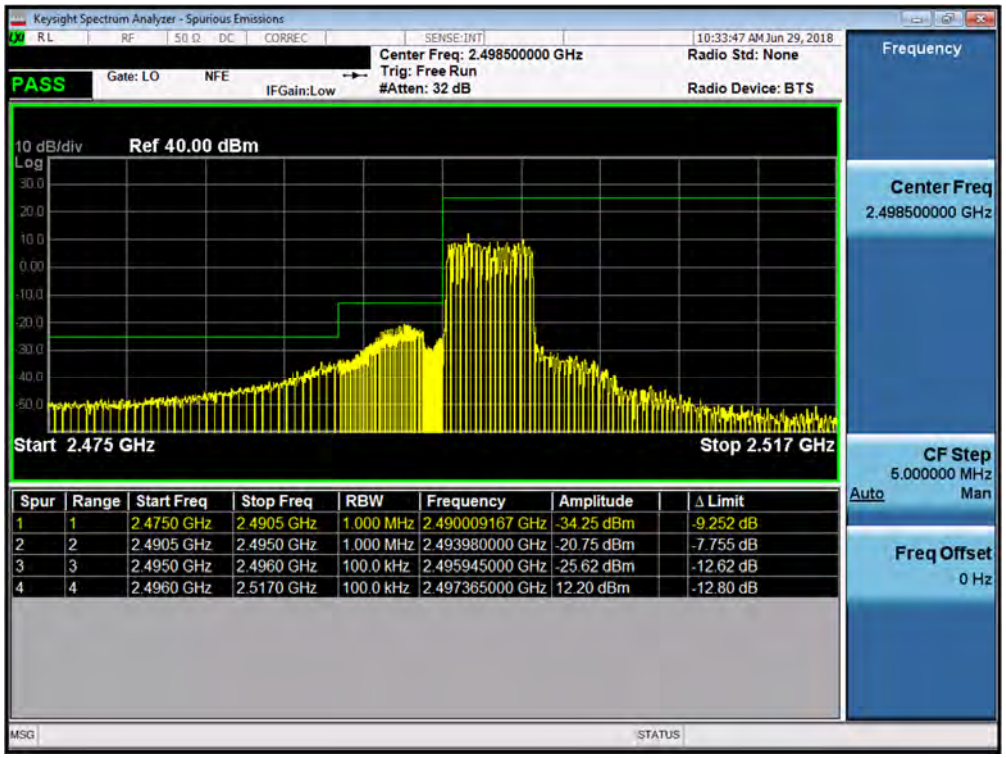


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.488407500 GHz	-29.66 dBm	-4.656 dB
2	2	2.4905 GHz	2.4960 GHz	1.000 MHz	2.490967500 GHz	-29.30 dBm	-16.30 dB
3	3	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498725000 GHz	-27.76 dBm	-17.76 dB
4	4	2.4990 GHz	2.5000 GHz	360.0 kHz	2.499980000 GHz	-28.02 dBm	-18.02 dB
5	5	2.5000 GHz	2.5250 GHz	240.0 kHz	2.513000000 GHz	6.598 dBm	-18.40 dB

Plot 7-328. Lower ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 100)

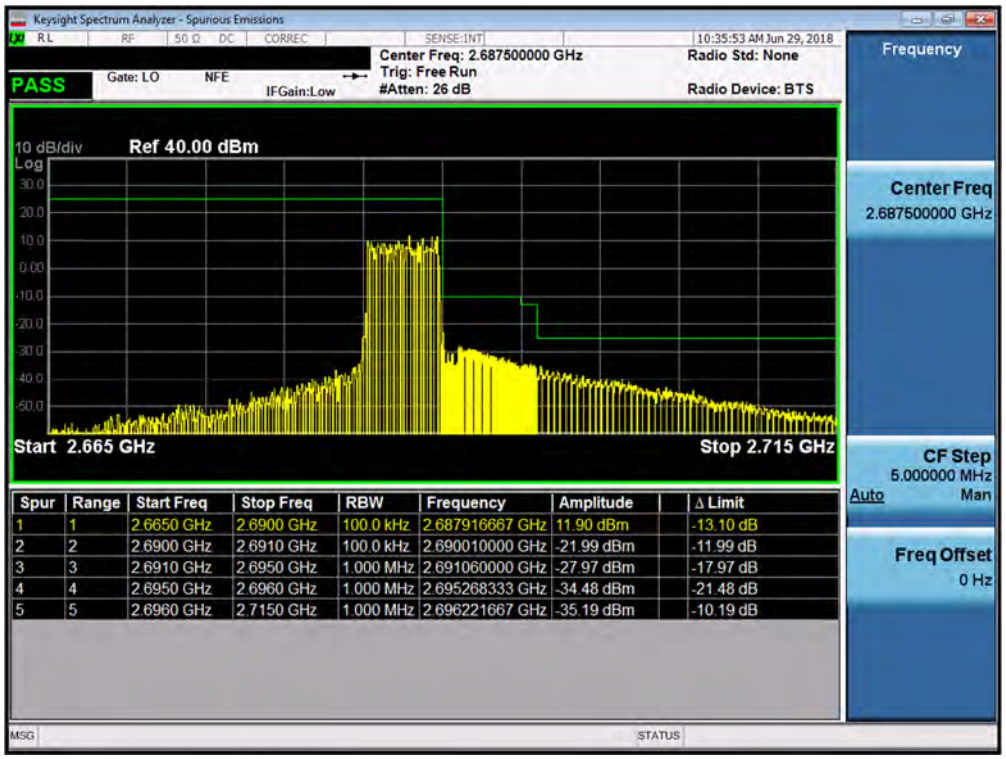
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5450 GHz	2.5700 GHz	240.0 kHz	2.557791667 GHz	7.041 dBm	-17.96 dB
2	2	2.5700 GHz	2.5710 GHz	360.0 kHz	2.570341667 GHz	-26.47 dBm	-16.47 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571246667 GHz	-27.17 dBm	-17.17 dB
4	4	2.5750 GHz	2.5880 GHz	1.000 MHz	2.575367540 GHz	-31.10 dBm	-18.10 dB
5	5	2.5880 GHz	2.5950 GHz	1.000 MHz	2.587995427 GHz	-43.74 dBm	-18.74 dB

Plot 7-329. Upper ACP Plot (Band 7 - 20.0MHz QPSK - RB Size 100)



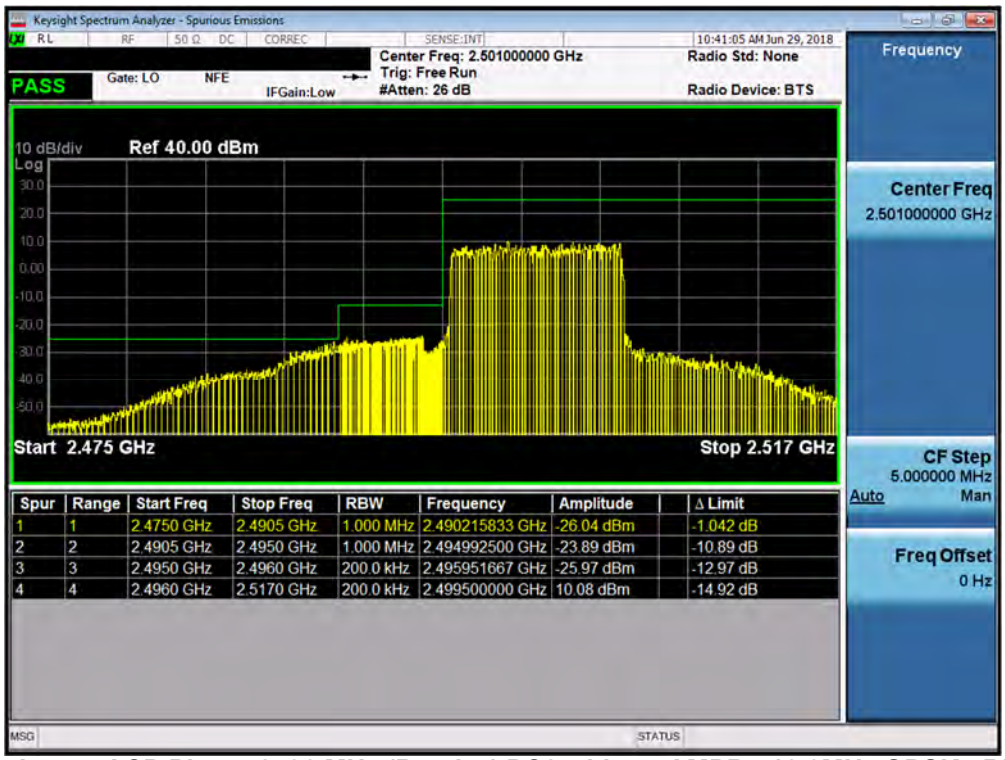
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490009167 GHz	-34.25 dBm	-9.252 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.493980000 GHz	-20.75 dBm	-7.755 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.495945000 GHz	-25.62 dBm	-12.62 dB
4	4	2.4960 GHz	2.5170 GHz	100.0 kHz	2.497365000 GHz	12.20 dBm	-12.80 dB

Plot 7-330. Lower ACP Plot at 2496 MHz (Band 41 PC2 without AMPR - 5.0MHz QPSK - RB Size 25)

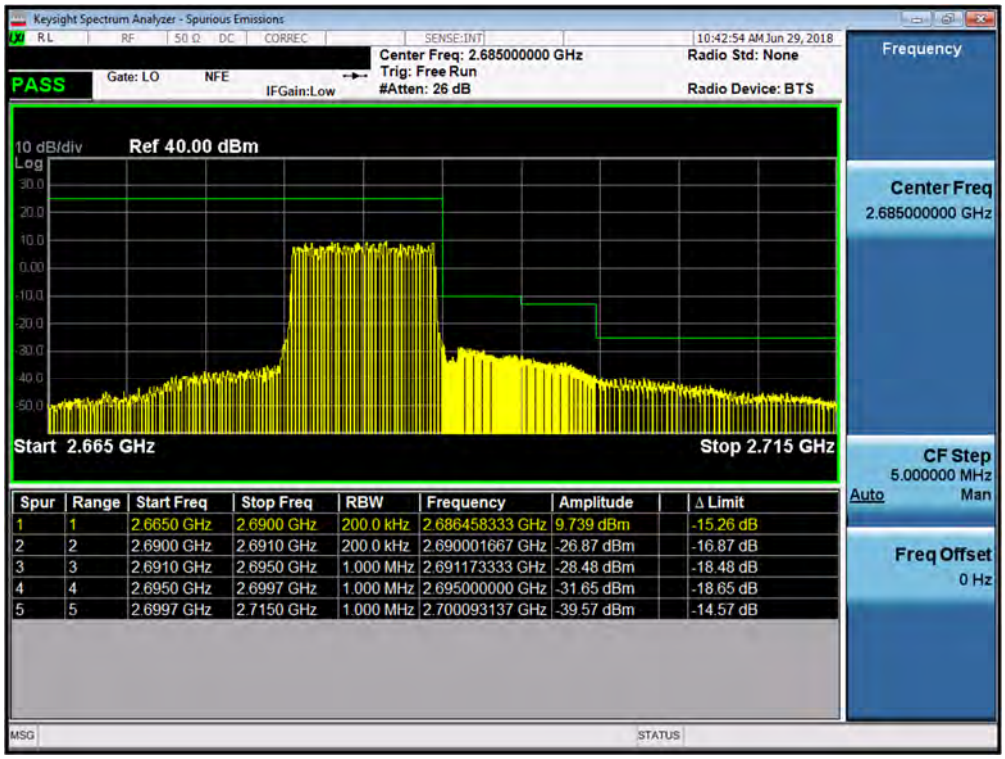


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	100.0 kHz	2.687916667 GHz	11.90 dBm	-13.10 dB
2	2	2.6900 GHz	2.6910 GHz	100.0 kHz	2.690010000 GHz	-21.99 dBm	-11.99 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691060000 GHz	-27.97 dBm	-17.97 dB
4	4	2.6950 GHz	2.6960 GHz	1.000 MHz	2.695268333 GHz	-34.48 dBm	-21.48 dB
5	5	2.6960 GHz	2.7150 GHz	1.000 MHz	2.696221667 GHz	-35.19 dBm	-10.19 dB

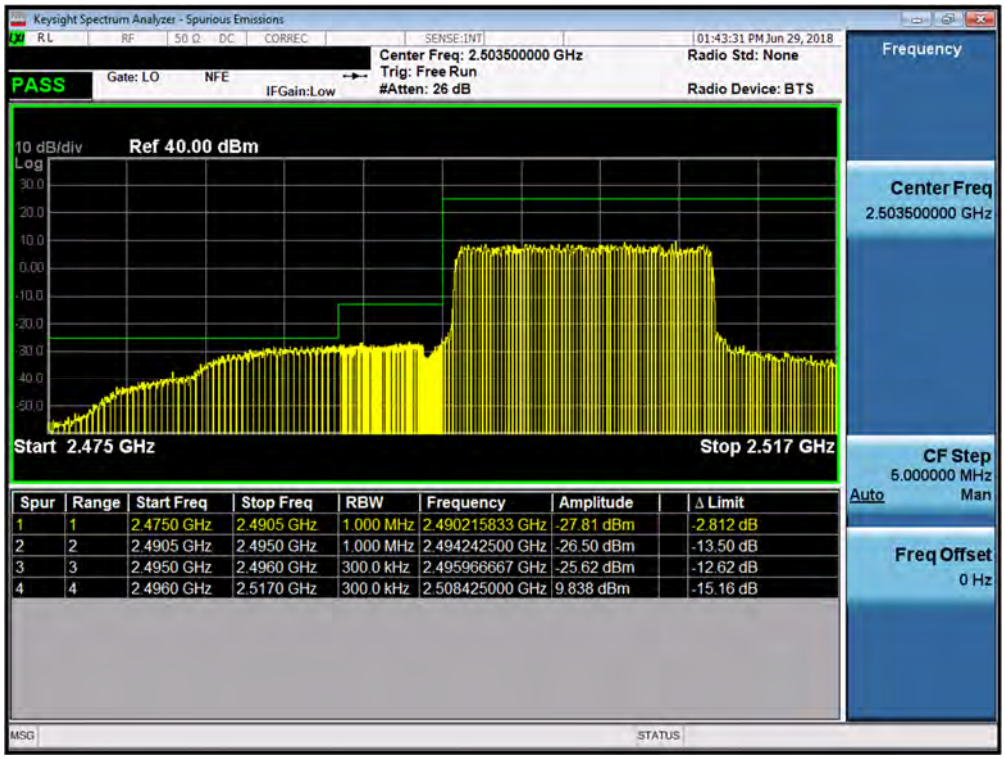
Plot 7-331. Upper ACP Plot (Band 41 PC2 without AMPR - 5.0MHz QPSK - RB Size 25)



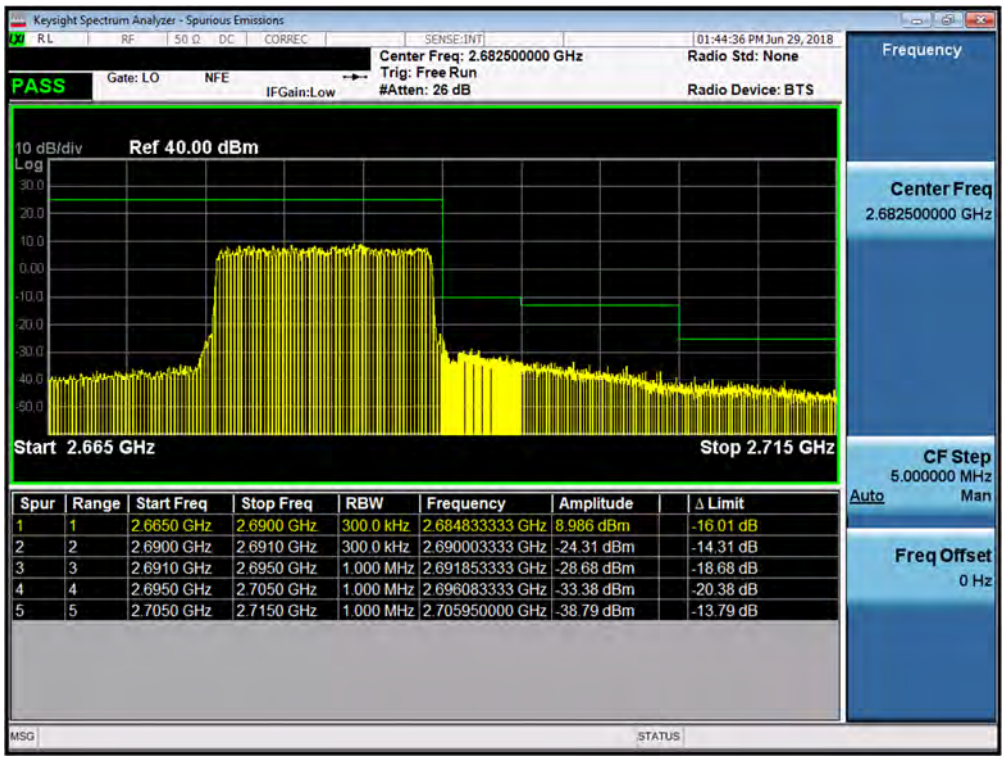
Plot 7-332. Lower ACP Plot at 2496 MHz (Band 41 PC2 without AMPR - 10.0MHz QPSK - RB Size 50)



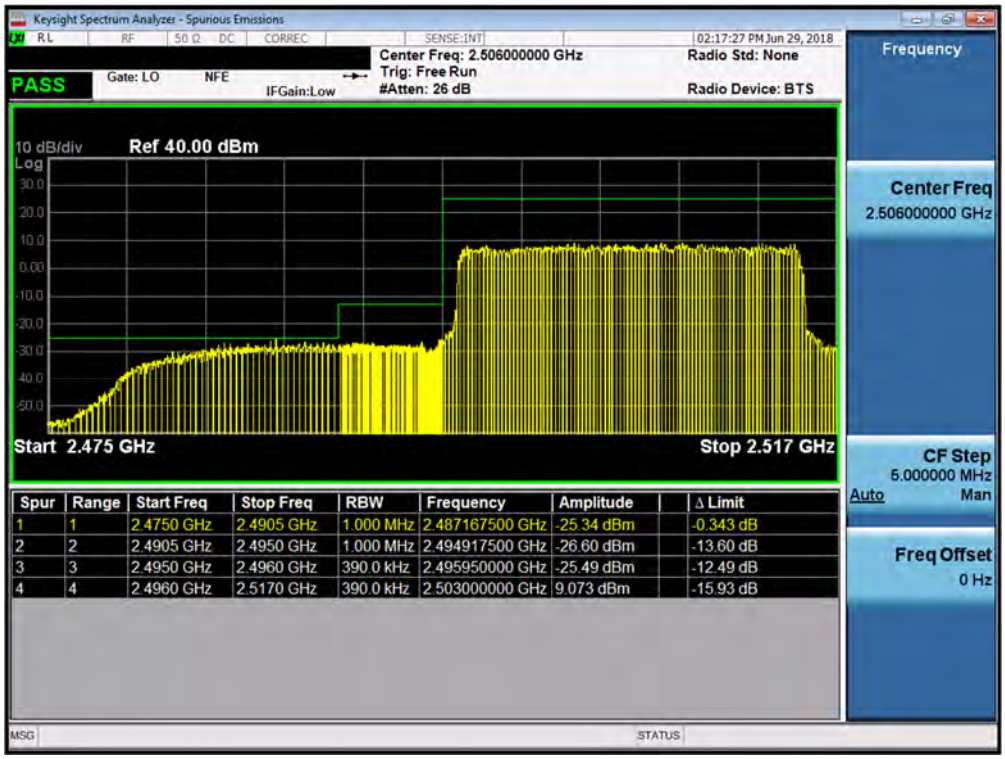
Plot 7-333. Upper ACP Plot (Band 41 PC2 without AMPR - 10.0MHz QPSK - RB Size 50)



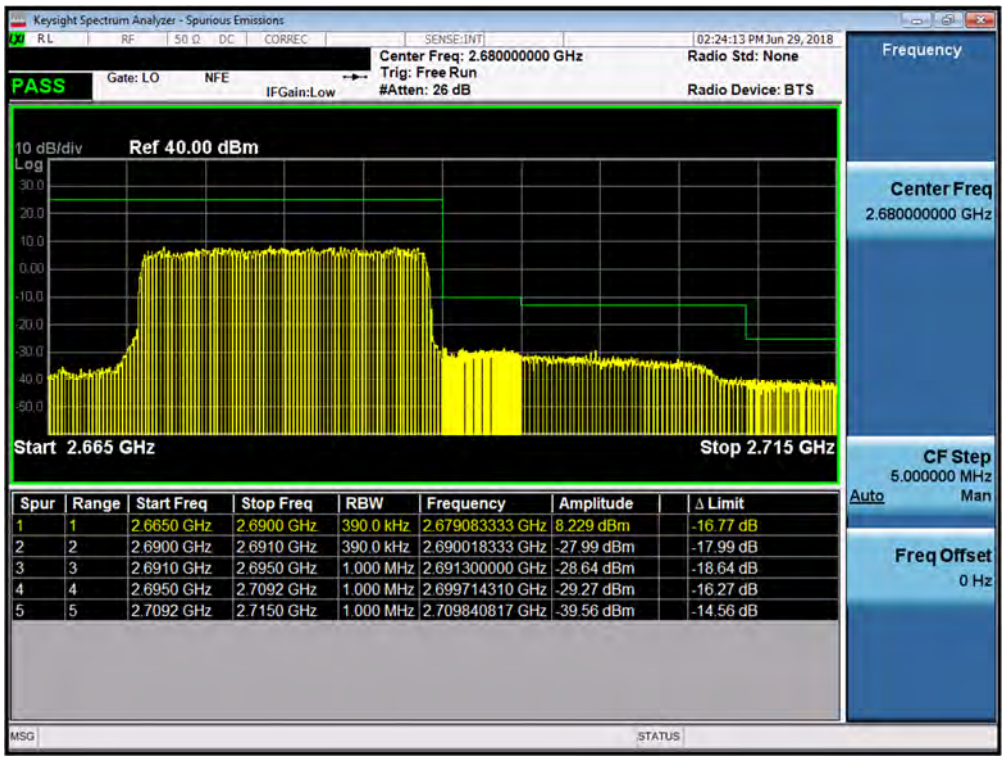
Plot 7-334. Lower ACP Plot at 2496 MHz (Band 41 PC2 without AMPR - 15.0MHz QPSK - RB Size 75)



Plot 7-335. Upper ACP Plot (Band 41 PC2 without AMPR - 15.0MHz QPSK - RB Size 75)



Plot 7-336. Lower ACP Plot at 2496 MHz (Band 41 PC2 without AMPR - 20.0MHz QPSK - RB Size 100)



Plot 7-337. Upper ACP Plot (Band 41 PC2 without AMPR- 20.0MHz QPSK - RB Size 100)

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

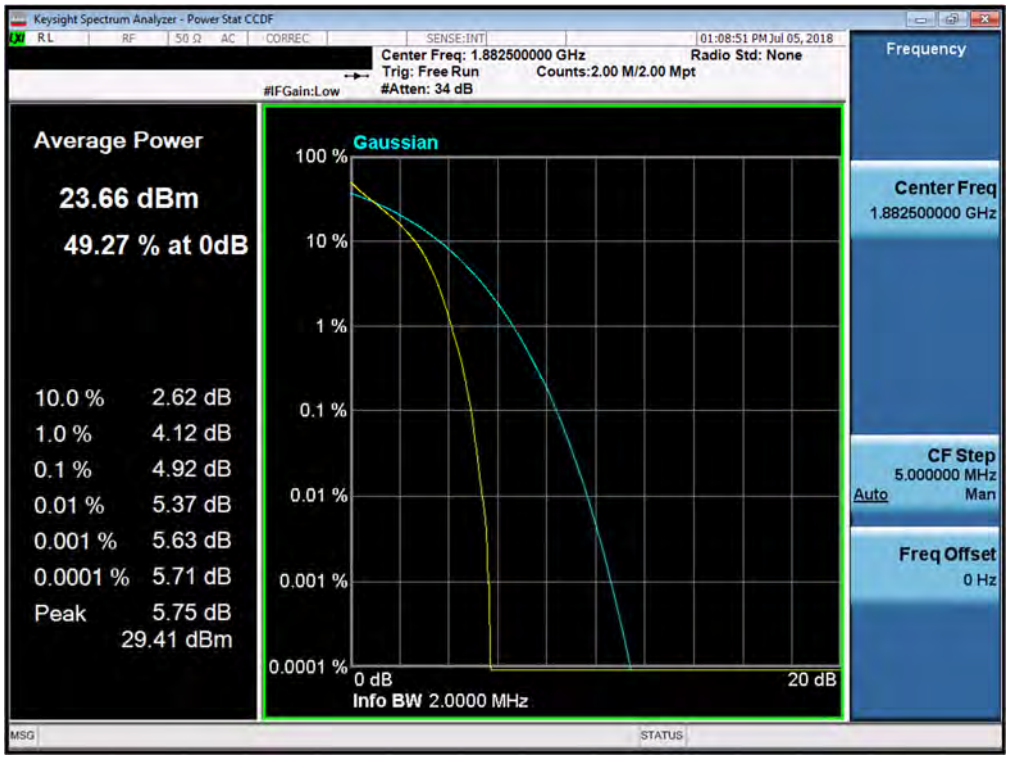
Test Setup

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

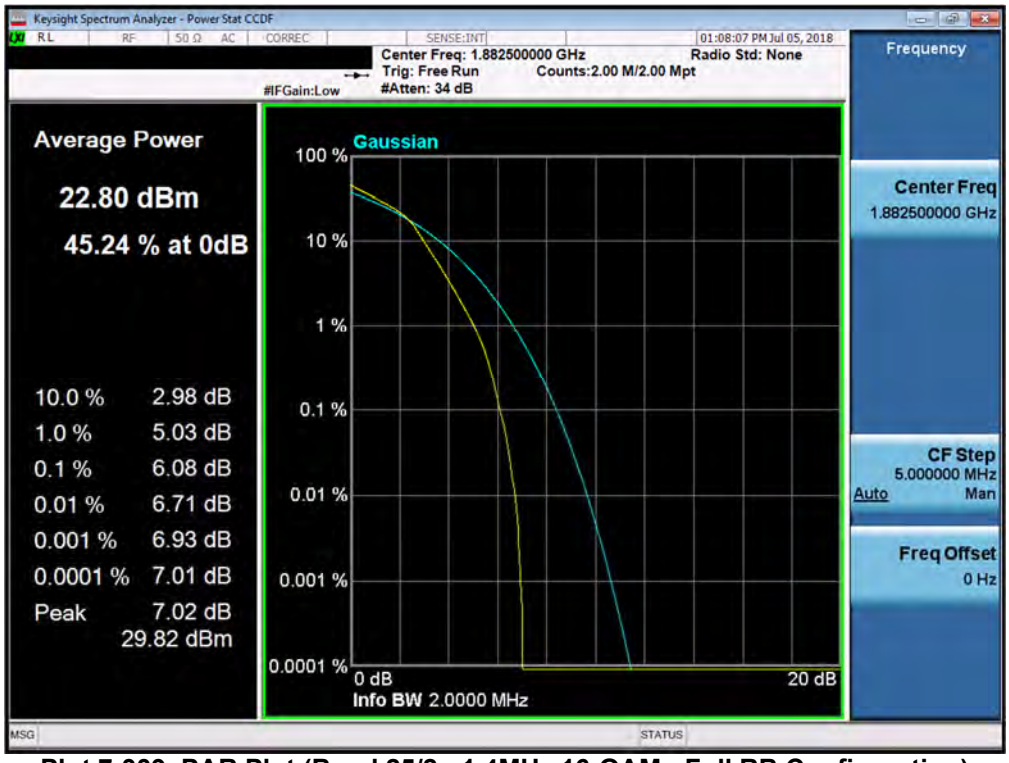
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

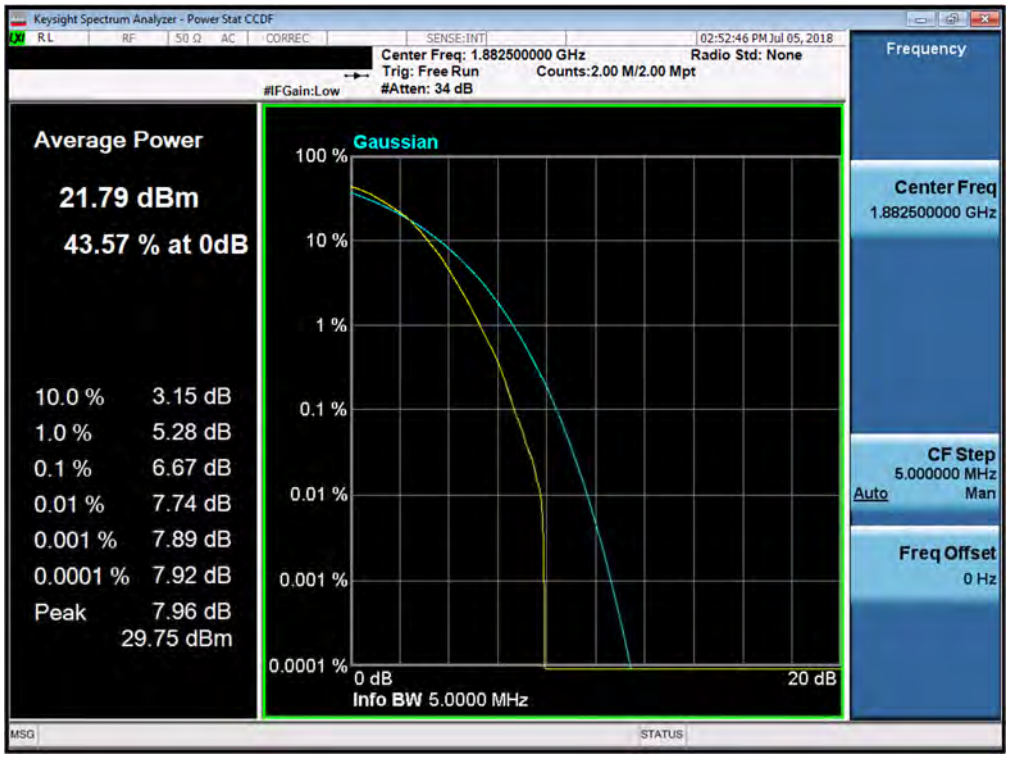
None.



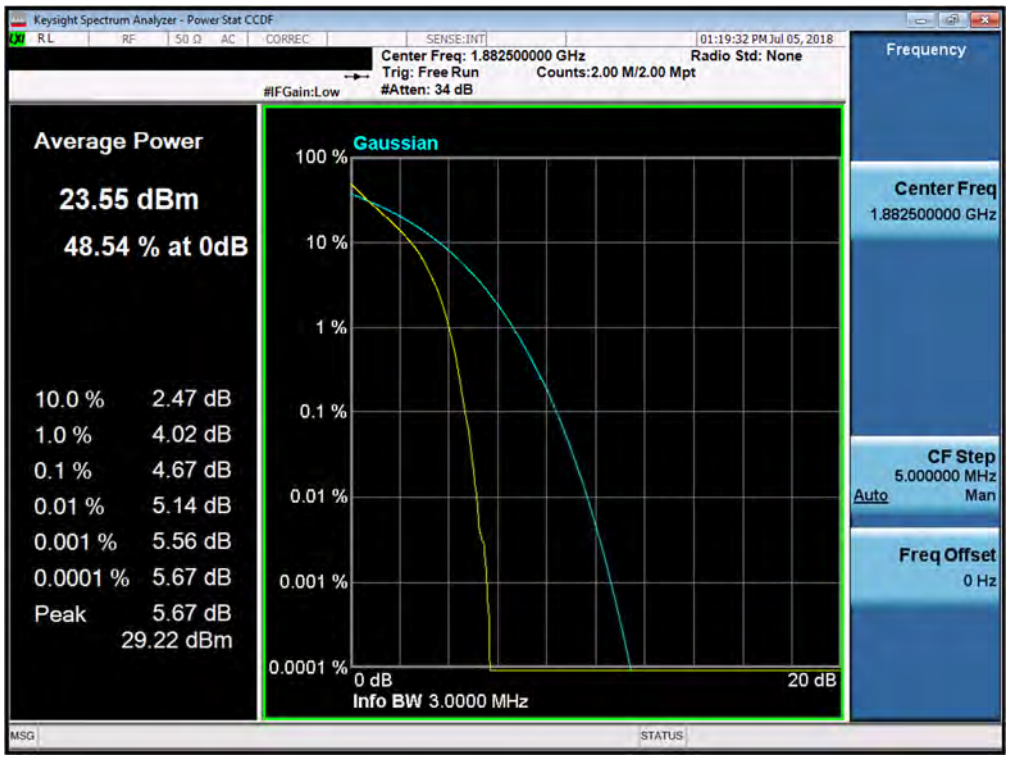
Plot 7-338. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



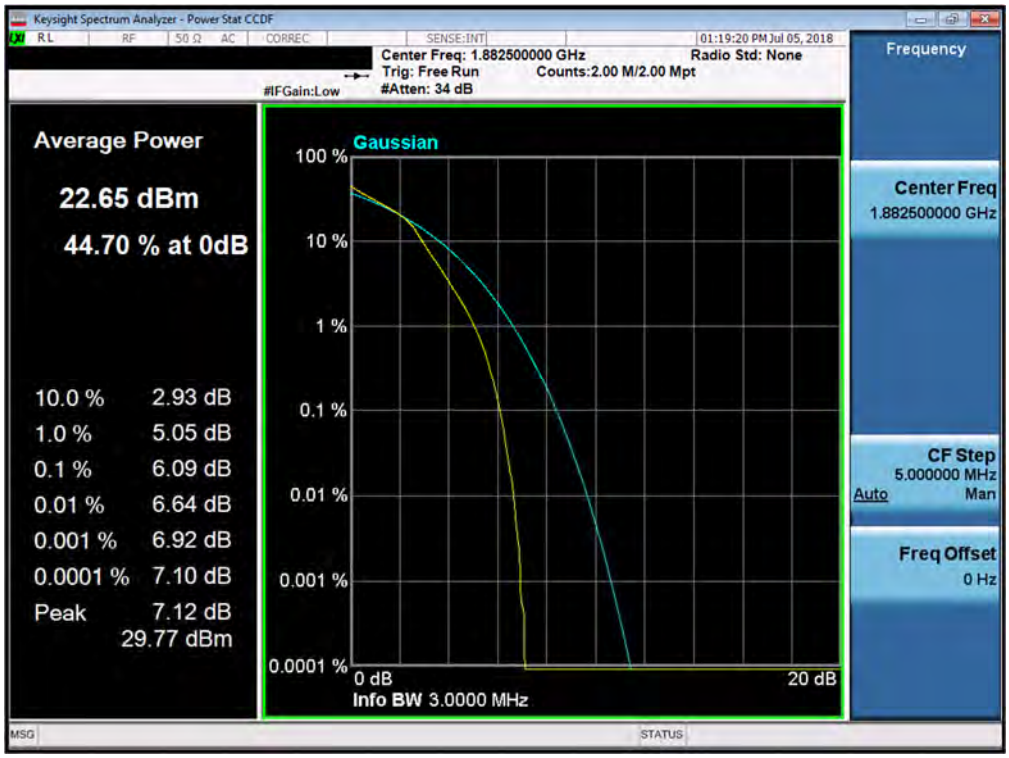
Plot 7-339. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)



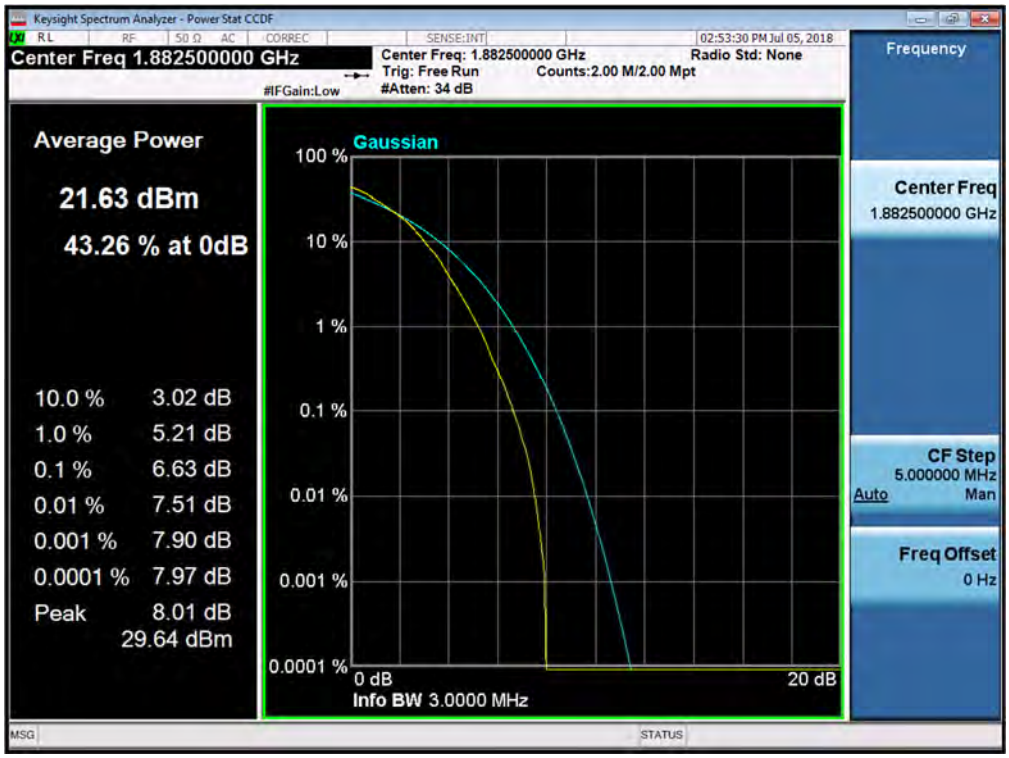
Plot 7-340. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)



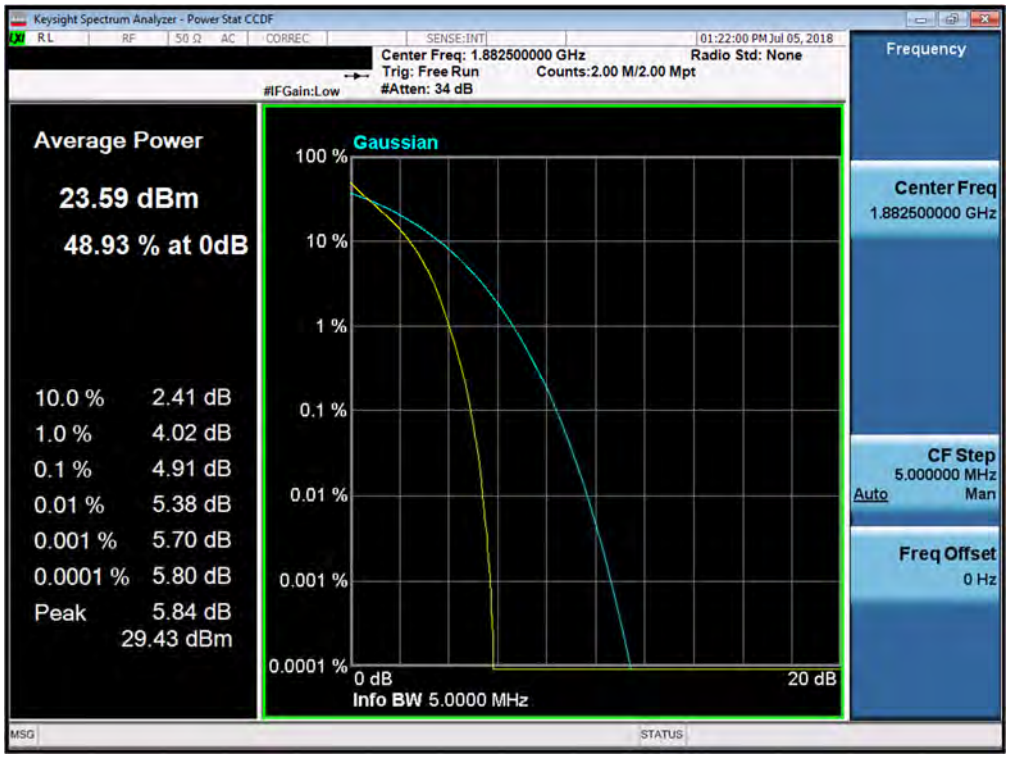
Plot 7-341. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)



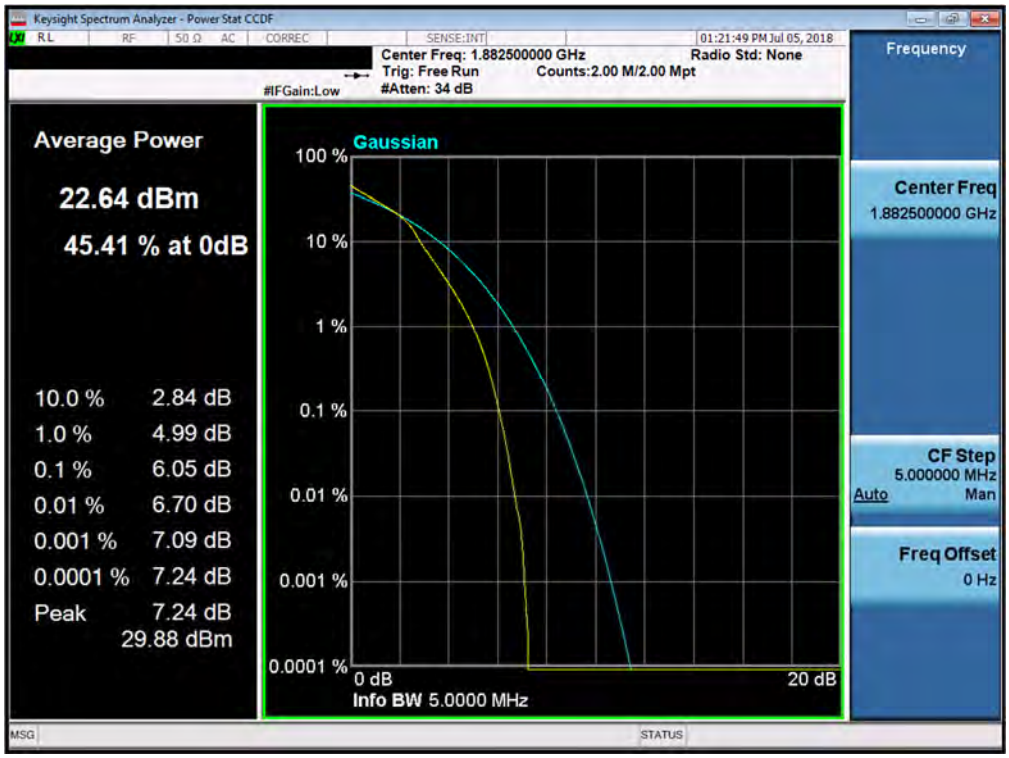
Plot 7-342. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)



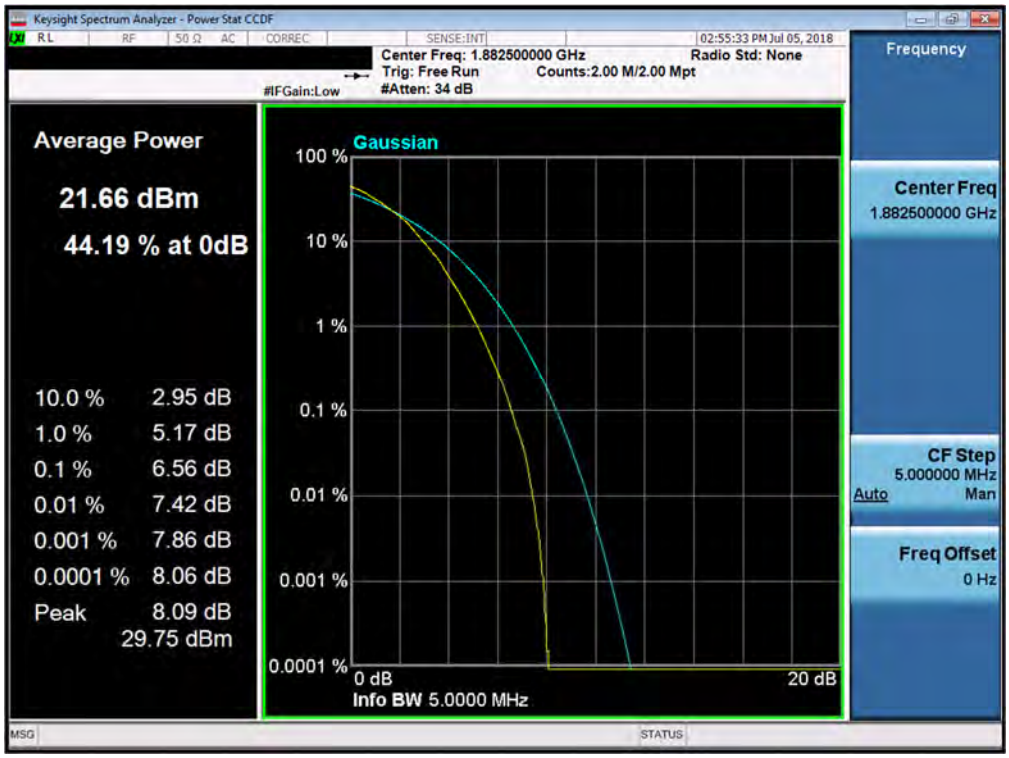
Plot 7-343. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)



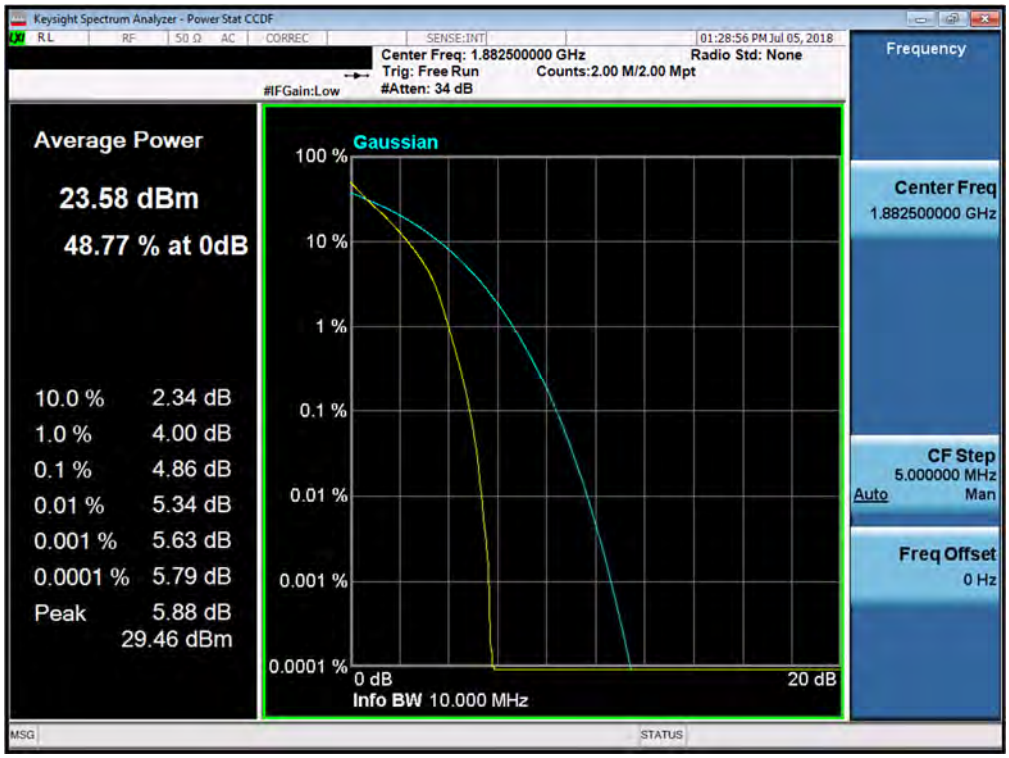
Plot 7-344. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



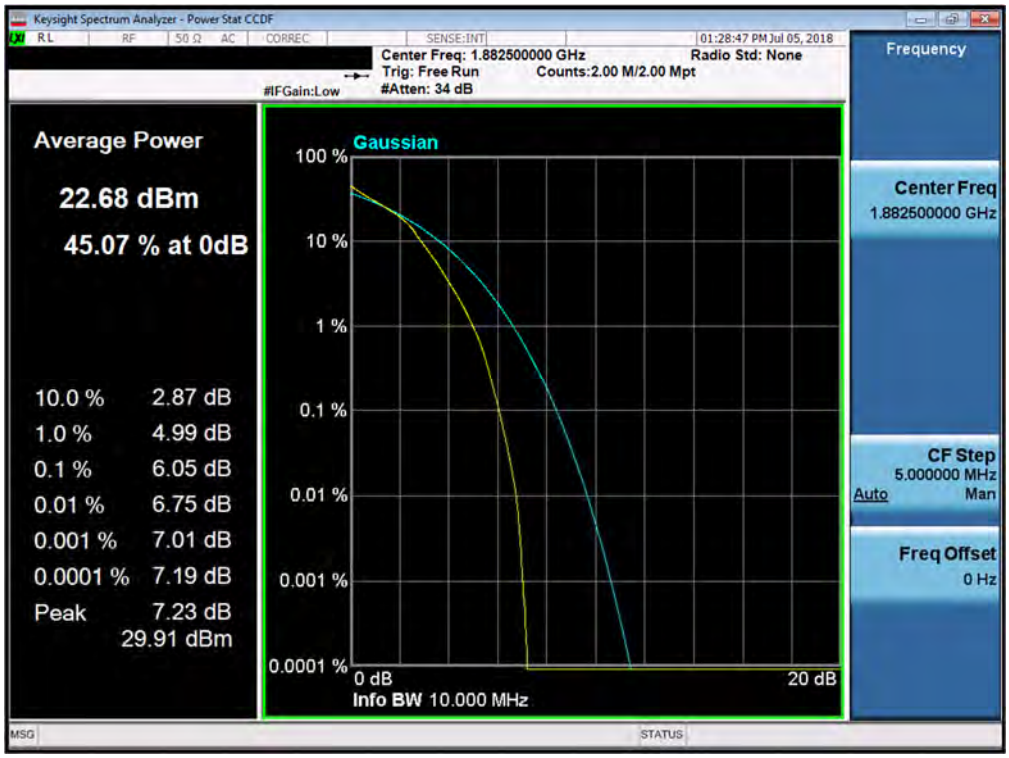
Plot 7-345. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)



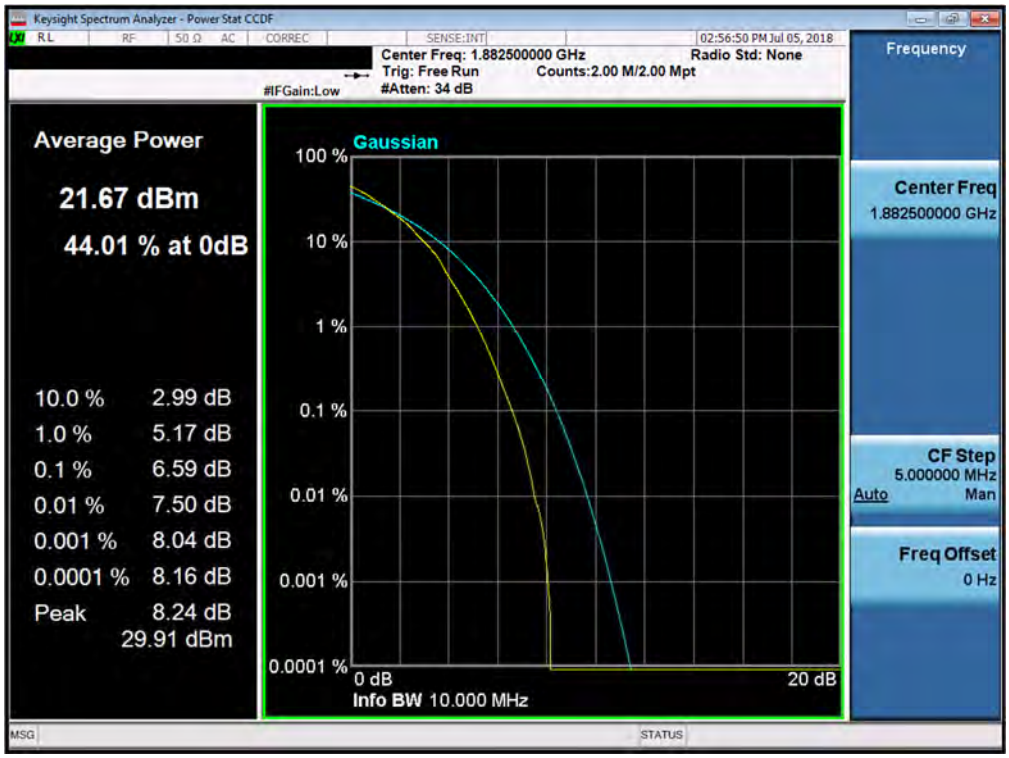
Plot 7-346. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)



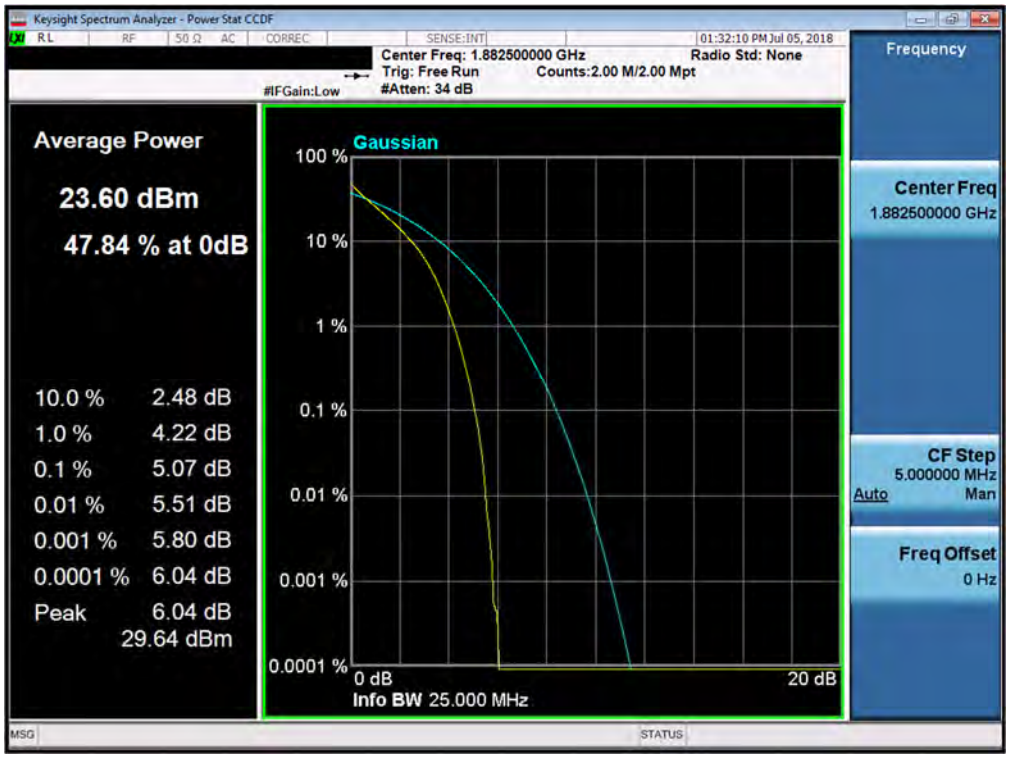
Plot 7-347. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)



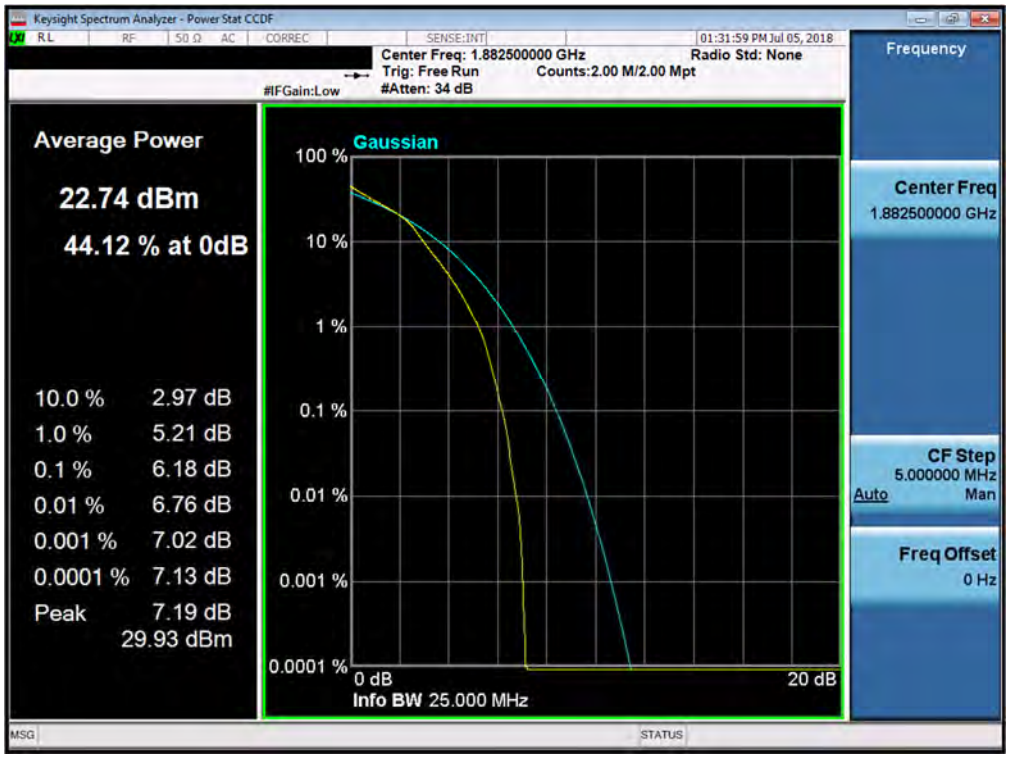
Plot 7-348. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)



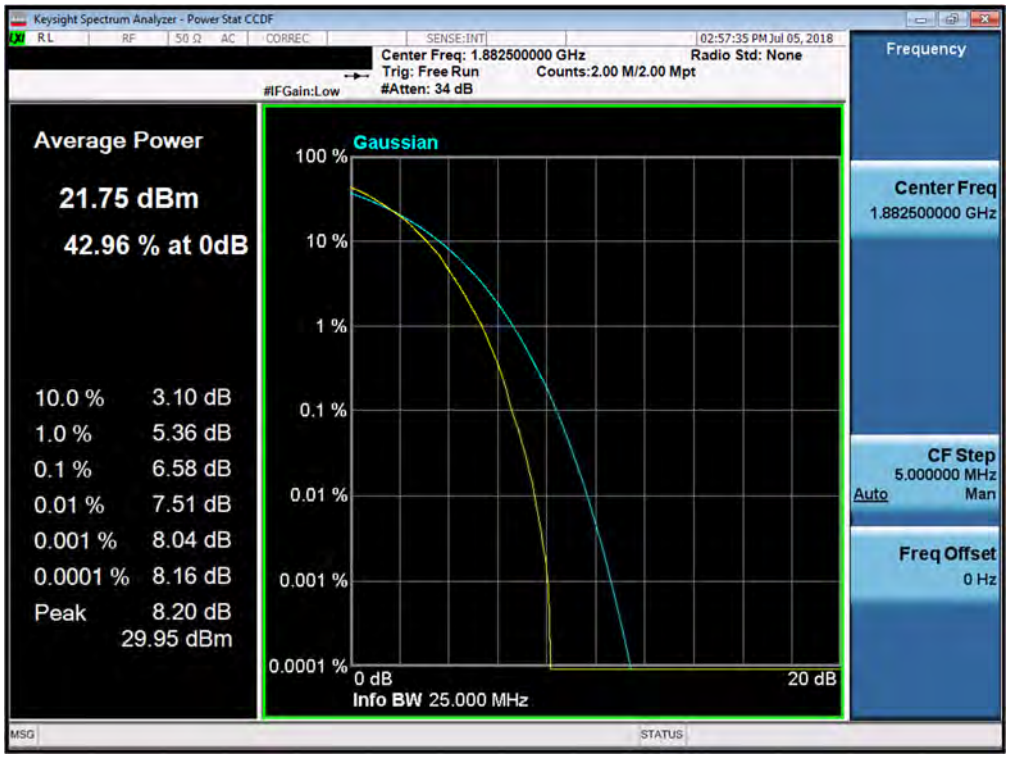
Plot 7-349. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)



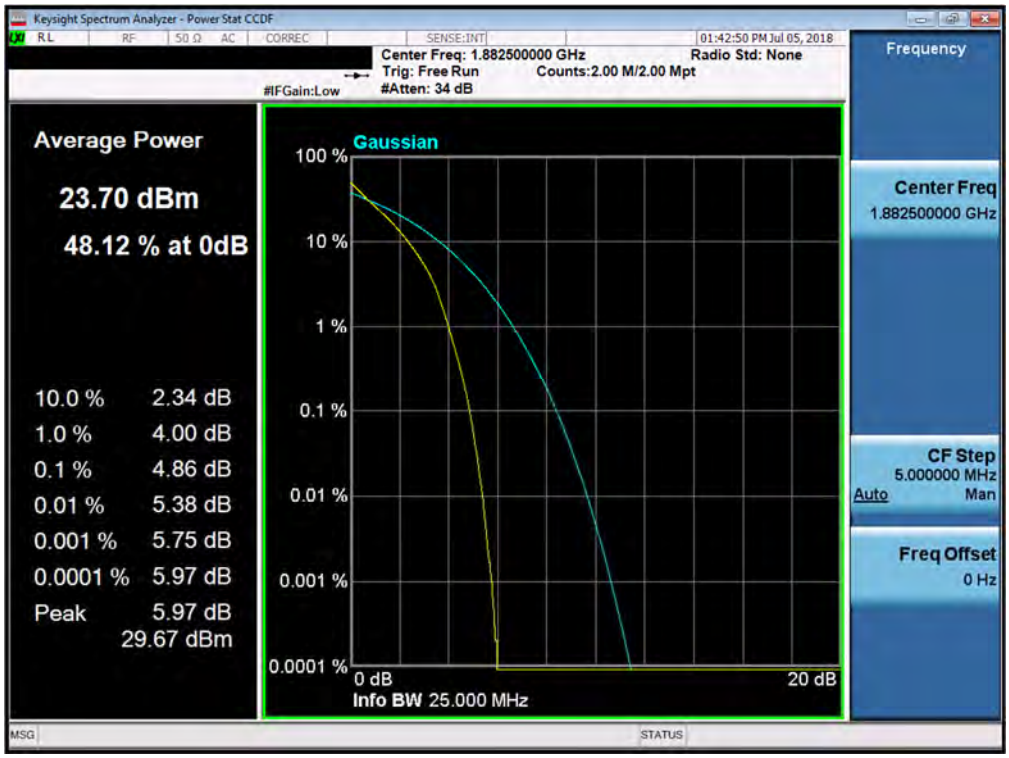
Plot 7-350. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



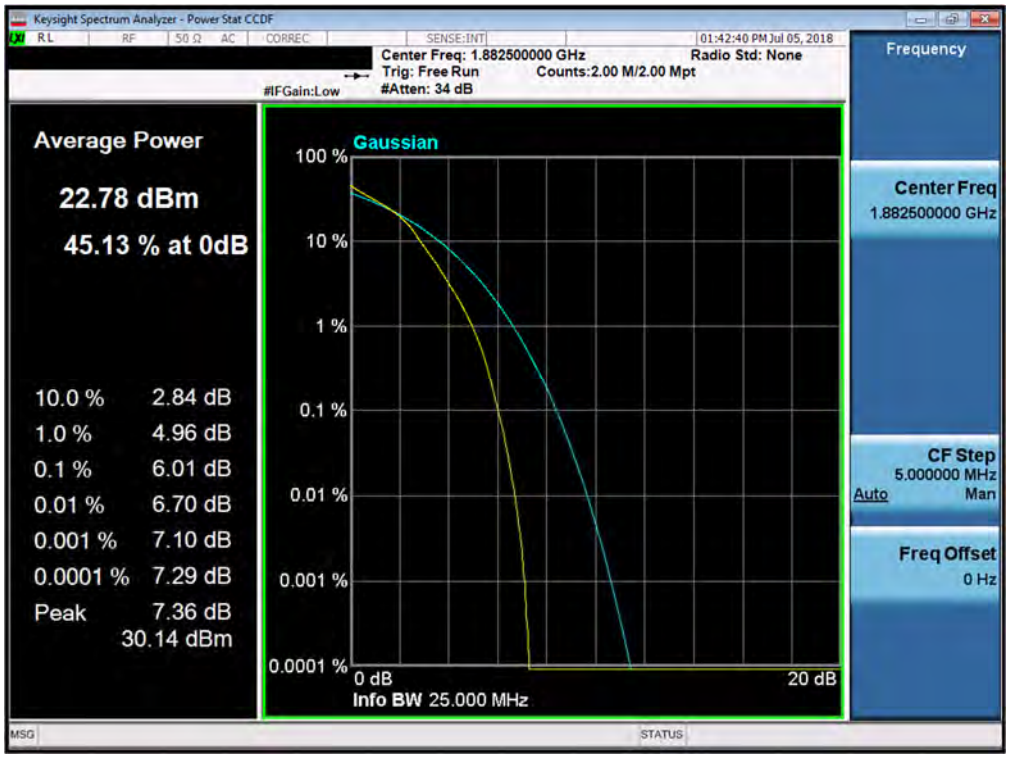
Plot 7-351. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)



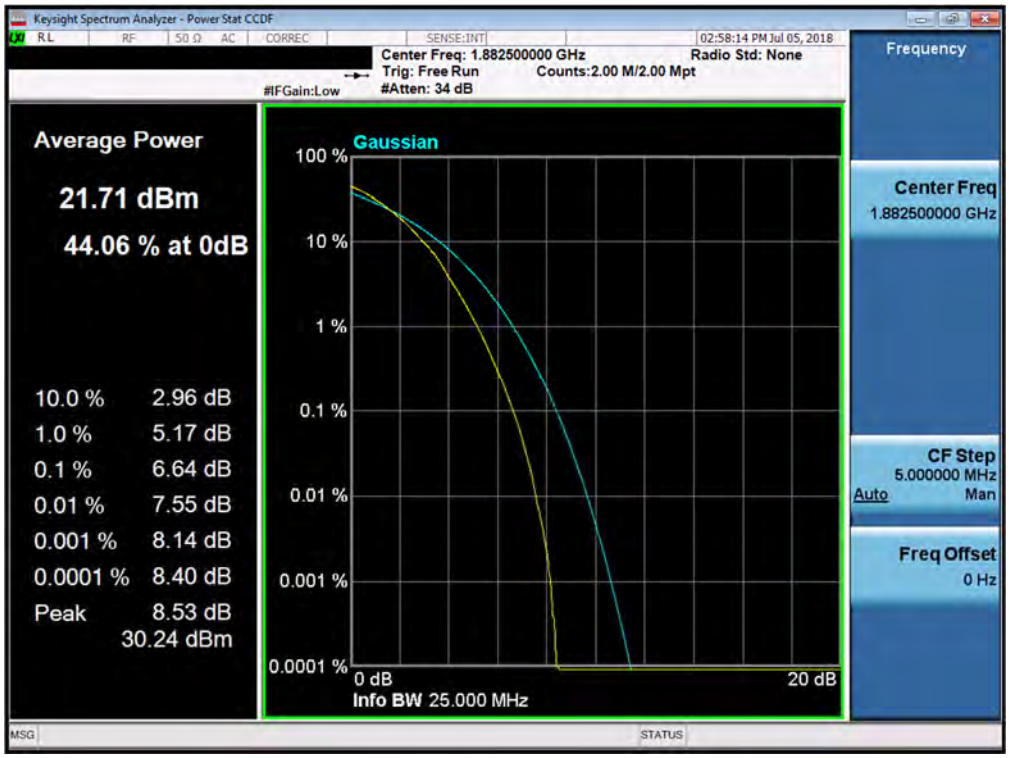
Plot 7-352. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-353. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-354. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-355. PAR Plot (Band 25/2 - 20.0MHz 64-QAM - Full RB Configuration)

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 ≥ 2 x span / 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.

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]	A-MPR [dB]	Measured Power [dBm]	Lowest Typical Power [dBm]	Delta [dB]
1	01	312	530	5	39675	2498.5	QPSK	1	0	0	0	≤ 3	3	24.24	23.7	**0.54**
							16-QAM			≤ 1	1		3	23.23	22.7	**0.53**
							64-QAM			≤ 2	2		3	22.05	21.7	**0.35**
2				5	39675	2498.5	QPSK	1	9	0	0	0	0	27.32	26.7	**0.62**
							16-QAM			≤ 1	1		0	26.30	25.7	**0.60**
							64-QAM			≤ 2	2		0	25.01	24.7	**0.31**
3				10	39700	2501	QPSK	1	0	0	0	≤ 5	5	22.43	21.7	**0.73**
							16-QAM	1	0	≤ 1	1		5	21.85	20.7	**1.15**
							64-QAM	1	0	≤ 2	2		5	19.73	19.7	**0.03**
4				10	39700	2501	QPSK	20	0	0	1	≤ 2	2	24.35	23.7	**0.65**
							16-QAM	20	0	≤ 1	2		2	23.46	22.7	**0.76**
							64-QAM	20	0	≤ 2	3		2	22.32	21.7	**0.62**
5				10	39700	2501	QPSK	50	0	0	1	≤ 3	3	23.24	22.7	**0.54**
							16-QAM	50	0	≤ 1	2		3	22.34	21.7	**0.64**
							64-QAM	50	0	≤ 2	3		3	21.30	20.7	**0.60**
6				10	39700	2501	QPSK	25	20	0	1	≤ 1	1	25.23	24.7	**0.53**
							16-QAM	25	20	≤ 1	2		1	24.28	23.7	**0.58**
							64-QAM	25	20	≤ 2	3		1	23.22	22.7	**0.52**
7				10	39700	2501	QPSK	1	36	0	0	0	0	27.18	26.7	**0.48**
							16-QAM	1	36	≤ 1	1		0	25.92	25.7	**0.22**
							64-QAM	1	36	≤ 2	2		0	24.92	24.7	**0.22**
8				15	39725	2503.5	QPSK	1	0	0	0	≤ 5	5	21.71	21.7	**0.01**
							16-QAM	1	0	≤ 1	1		5	21.50	20.7	**0.80**
							64-QAM	1	0	≤ 2	2		5	19.99	19.7	**0.29**
9				15	39725	2503.5	QPSK	20	0	0	1	≤ 2	2	24.37	23.7	**0.67**
							16-QAM	20	0	≤ 1	2		2	23.24	22.7	**0.54**
							64-QAM	20	0	≤ 2	3		2	22.31	21.7	**0.61**
10				15	39725	2503.5	QPSK	75	0	0	1	≤ 4	4	22.16	21.7	**0.46**
							16-QAM	75	0	≤ 1	2		4	21.27	20.7	**0.57**
							64-QAM	75	0	≤ 2	3		4	20.29	19.7	**0.59**
11				15	39725	2503.5	QPSK	50	15	0	1	≤ 3	3	23.23	22.7	**0.53**
							16-QAM	50	15	≤ 1	2		3	22.30	21.7	**0.60**
							64-QAM	50	15	≤ 2	3		3	21.29	20.7	**0.59**
12				15	39725	2503.5	QPSK	1	60	0	0	0	0	26.79	26.7	**0.09**
							16-QAM	1	60	≤ 1	1		0	26.29	25.7	**0.59**
							64-QAM	1	60	≤ 2	2		0	24.83	24.7	**0.13**
13				20	39750	2506	QPSK	1	0	0	0	≤ 5	5	22.40	21.7	**0.70**
							16-QAM	1	0	≤ 1	1		5	21.76	20.7	**1.06**
							64-QAM	1	0	≤ 2	2		5	19.99	19.7	**0.29**
14				20	39750	2506	QPSK	20	0	0	1	≤ 2	2	24.37	23.7	**0.67**
							16-QAM	20	0	≤ 1	2		2	23.48	22.7	**0.78**
							64-QAM	20	0	≤ 2	3		2	22.44	21.7	**0.74**
15				20	39750	2506	QPSK	100	0	0	1	≤ 4	4	22.27	21.7	**0.57**
							16-QAM	100	0	≤ 1	2		4	21.33	20.7	**0.63**
							64-QAM	100	0	≤ 2	3		4	20.33	19.7	**0.63**
16				20	39750	2506	QPSK	75	24	0	1	≤ 3	3	23.15	22.7	**0.45**
							16-QAM	75	24	≤ 1	2		3	22.26	21.7	**0.56**
							64-QAM	75	24	≤ 2	3		3	21.33	20.7	**0.63**
17				20	39750	2506	QPSK	1	77	0	0	0	0	26.76	26.7	**0.06**
							16-QAM	1	77	≤ 1	1		0	26.36	25.7	**0.66**
							64-QAM	1	77	≤ 2	2		0	24.78	24.7	**0.08**
18	01	311	490	5	39675	2498.5	QPSK	1	0	0	0	≤ 3	3	24.31	23.7	**0.61**
							16-QAM			≤ 1	1		3	23.43	22.7	**0.73**
							64-QAM			≤ 2	2		3	21.70	21.7	**0.00**
19	01	001	01	5	39675	2498.5	QPSK	1	0	0	0	0	0	27.32	26.7	**0.62**
							16-QAM			≤ 1	1		0	26.85	25.7	**1.15**
							64-QAM			≤ 2	2		0	25.32	24.7	**0.62**

Table 7-3. A-MPR Conducted Power Measurements

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 38/41, the minimum permissible attenuation level of any spurious emission is 55 + $log_{10}(P_{[Watts]})$.

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

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 7-503 and 7-504 below, with both carriers set to transmit using 1RB.

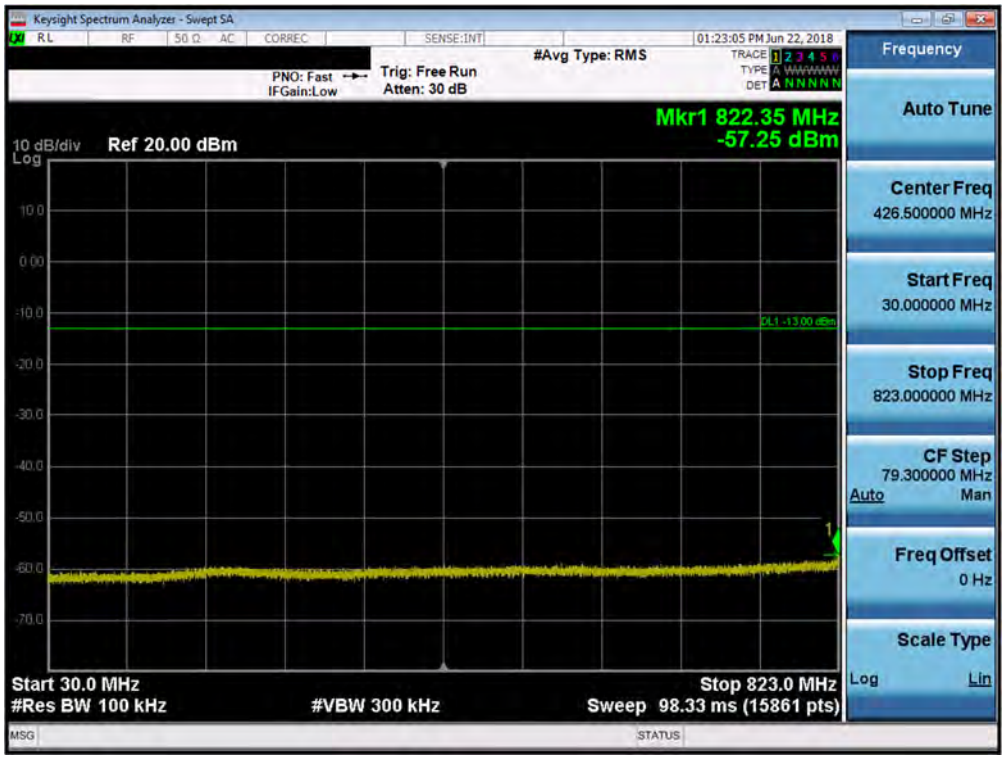
3. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Power State	PCC							SCC							Power
	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	SCC UL# RB	SCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B5	5	20425	826.50	QPSK	1	24	LTE B5	10	20497	833.7	QPSK	1	0	24.81
Max	LTE B5	5	20525	831.60	QPSK	1	24	LTE B5	10	20548	838.8	QPSK	1	0	24.99
Max	LTE B5	5	20625	836.8	QPSK	1	24	LTE B5	10	20600	844	QPSK	1	0	25.25
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	5	20522	836.20	QPSK	1	0	24.88
Max	LTE B5	10	20600	831.6	QPSK	1	49	LTE B5	5	20548	838.80	QPSK	1	0	24.85
Max	LTE B5	10	20550	839	QPSK	1	49	LTE B5	5	20622	846.2	QPSK	1	0	25.24
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.28
Max	LTE B5	10	20600	831.6	QPSK	1	49	LTE B5	10	20575	841.5	QPSK	1	0	**25.18**
Max	LTE B5	10	20501	834.1	QPSK	1	49	LTE B5	10	20600	844	QPSK	1	0	24.90

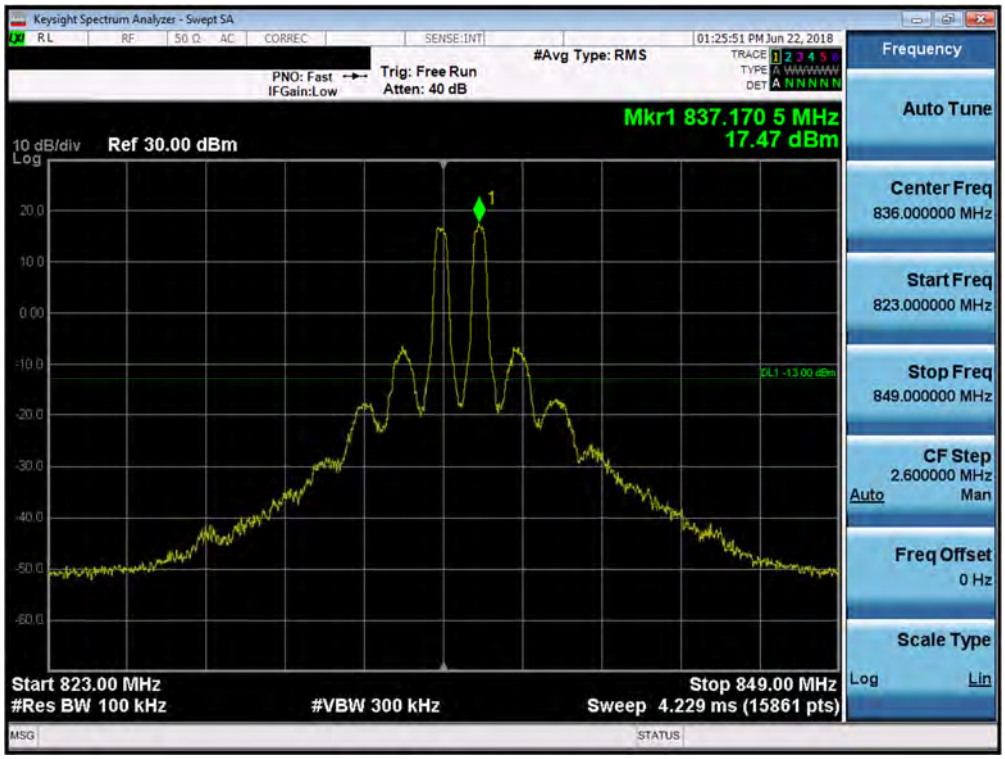
Table 7-4. Conducted Powers (B5 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

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	SCC UL# RB	SCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B5	10	20450	829	QPSK	1	0	LTE B5	10	20549	838.9	QPSK	1	49	20.66
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.28
Max	LTE B5	10	20450	829	QPSK	50	0	LTE B5	10	20549	838.9	QPSK	50	0	23.67
Max	LTE B5	10	20450	829	16-QAM	50	0	LTE B5	10	20549	838.9	16-QAM	50	0	22.84
Max	LTE B5	10	20450	829	64-QAM	50	0	LTE B5	10	20549	838.9	64-QAM	50	0	22.82

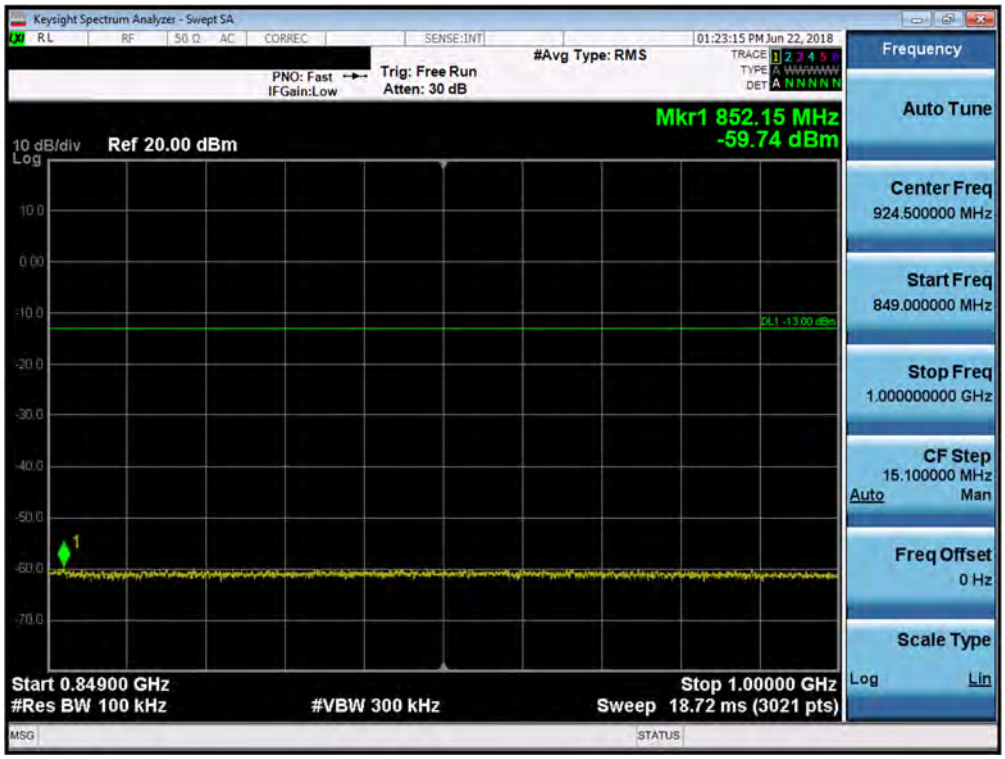
Table 7-5. Conducted Powers (B5 with Various Combinations for 10MHz Channel Bandwidth)



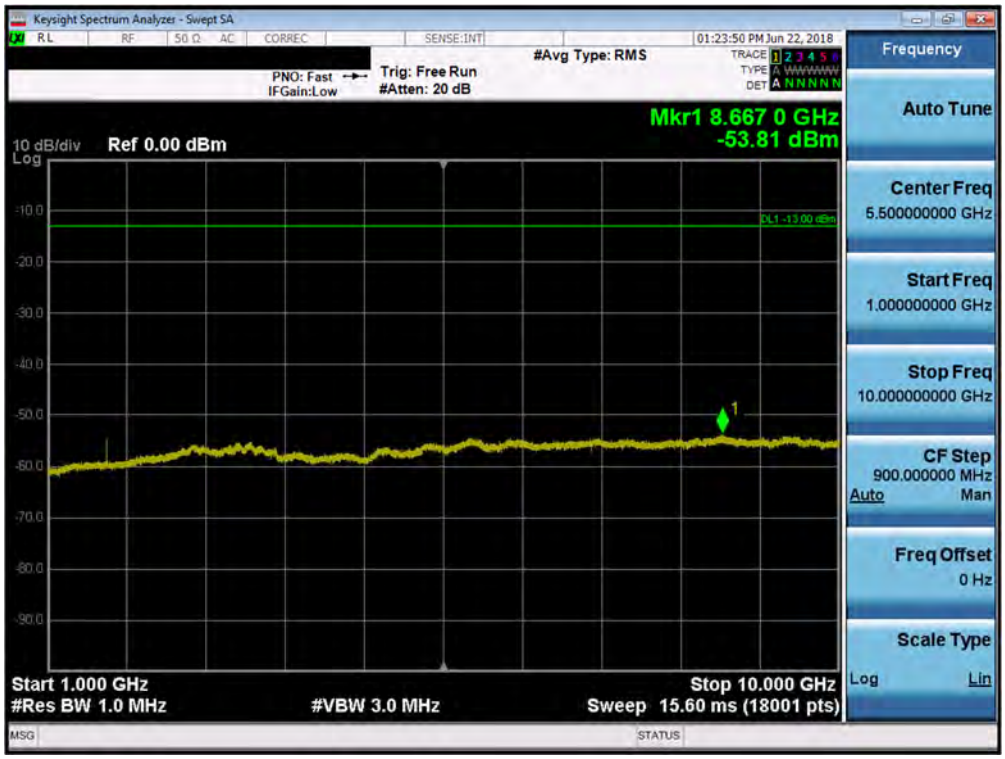
Plot 7-356. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)



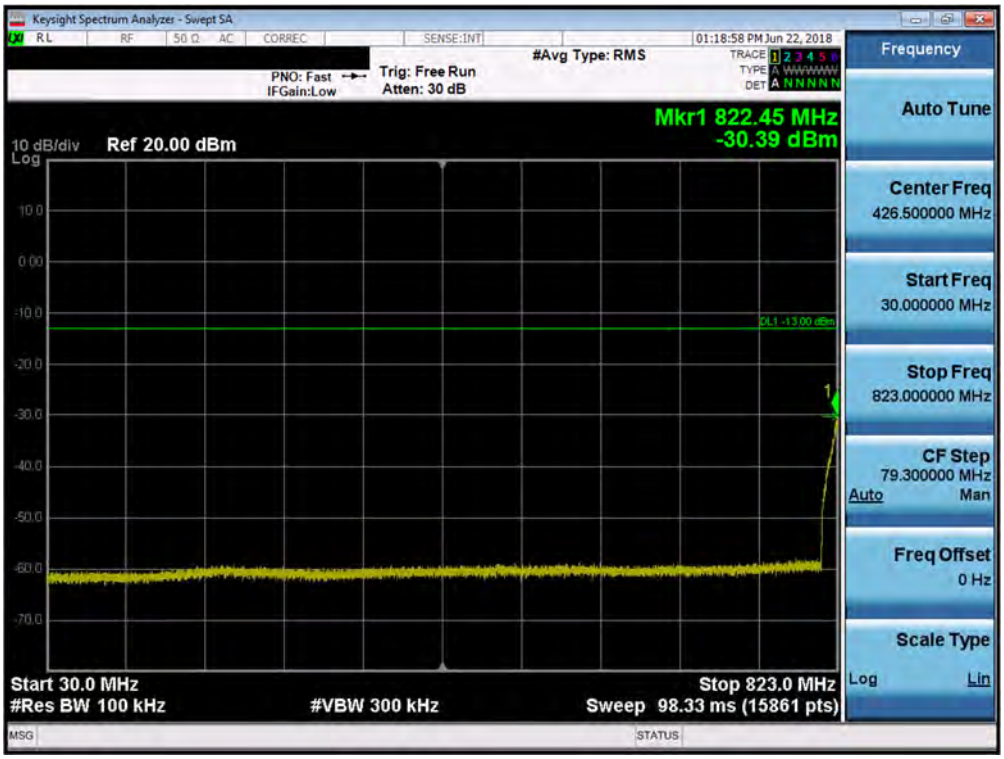
Plot 7-357. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)



Plot 7-358. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

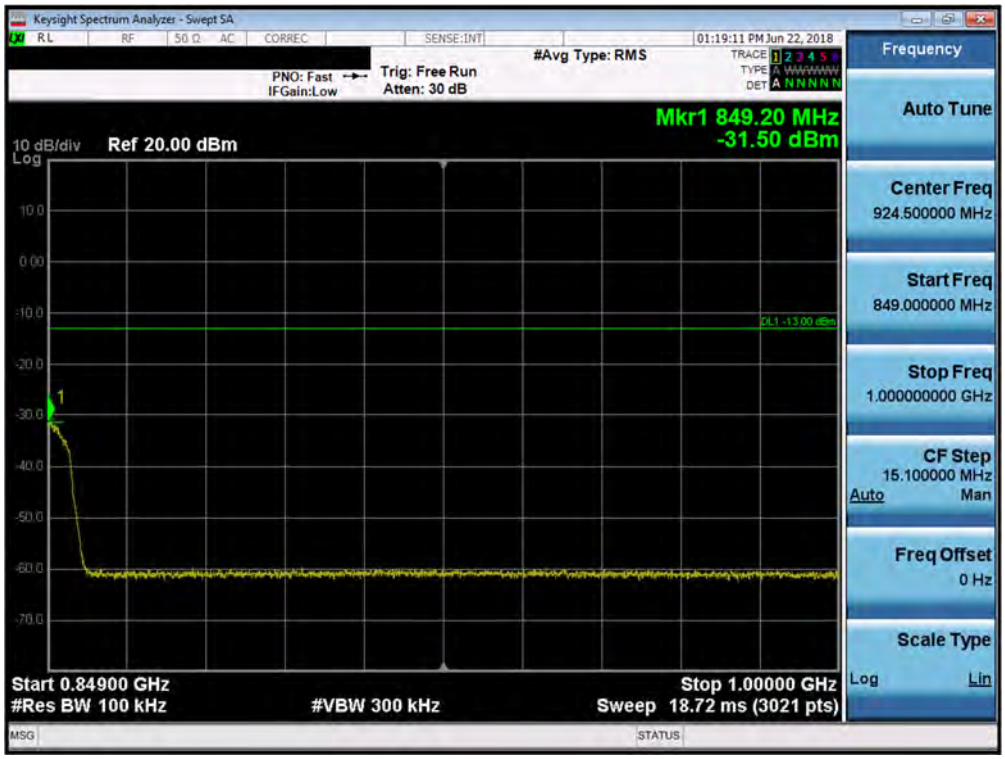


Plot 7-359. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)

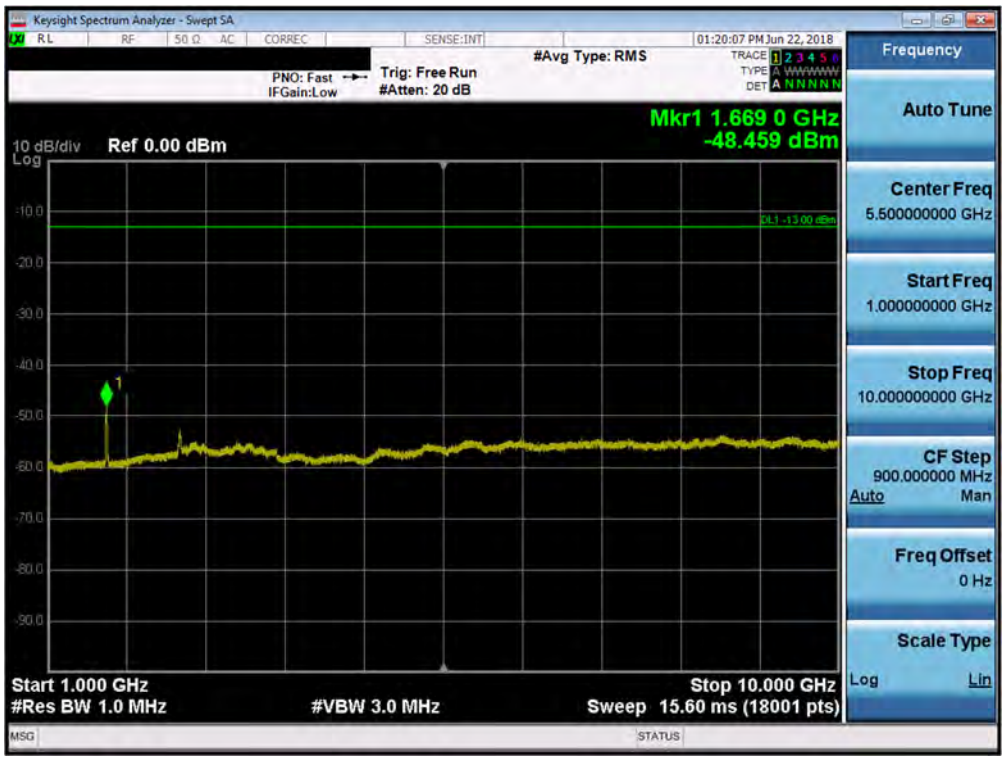


Plot 7-360. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

Plot 7-361. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)



Plot 7-362. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

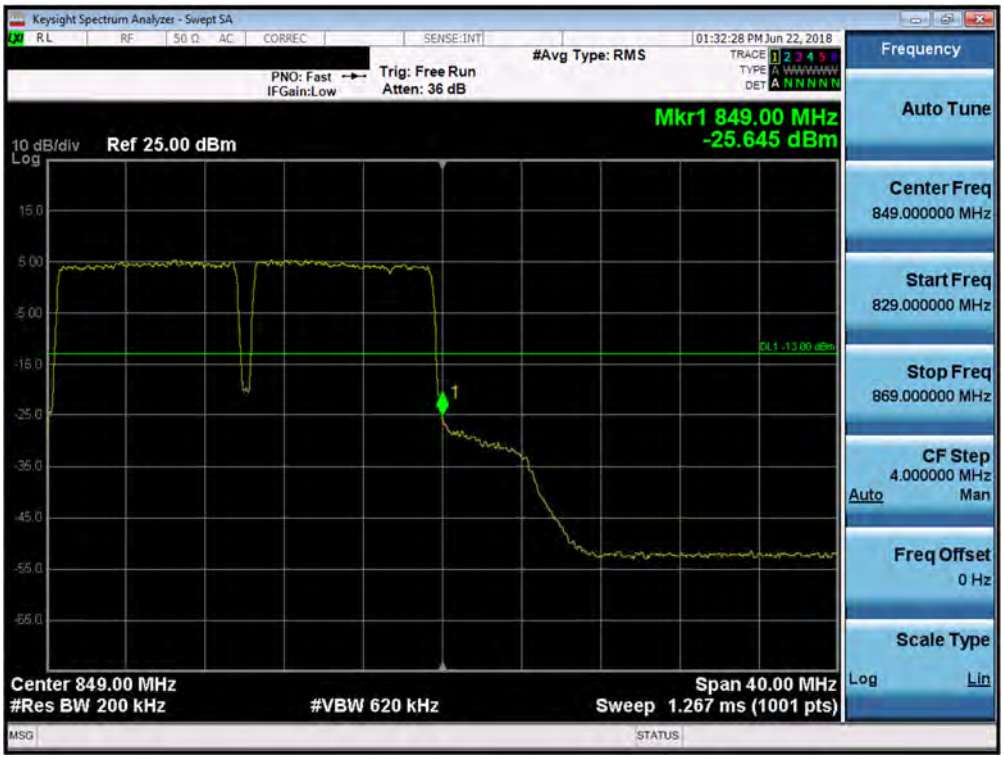


Plot 7-363. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

Plot 7-364. Lower Band Edge Plot (Band 5 - QPSK – PCC:5 MHz SCC:10 MHz – Full RB)

Plot 7-365. Upper Band Edge Plot (Band 5 - QPSK – PCC:10 MHz SCC:5 MHz – Full RB)

Plot 7-366. Lower Band Edge Plot (Band 5 - QPSK – PCC:10 MHz SCC:10 MHz – Full RB)



Plot 7-367. Upper Band Edge Plot (Band 5 - QPSK – PCC:10 MHz SCC:10 MHz – Full RB)

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	10	39700	2501	QPSK	1	49	LTE B41	20	39844	2515.4	QPSK	1	0	24.88
Max	LTE B41	10	40620	2593	QPSK	1	49	LTE B41	20	40764	2607.4	QPSK	1	0	24.82
Max	LTE B41	20	41396	2670.6	QPSK	1	99	LTE B41	10	41540	2685	QPSK	1	0	24.53
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	15	39875	2518.5	QPSK	1	0	24.09
Max	LTE B41	15	39725	2503.5	QPSK	1	74	LTE B41	20	39896	2520.6	QPSK	1	0	24.29
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	15	40770	2608	QPSK	1	0	24.76
Max	LTE B41	15	40620	2593	QPSK	1	74	LTE B41	20	40791	2610.1	QPSK	1	0	24.58
Max	LTE B41	15	41365	2667.5	QPSK	1	74	LTE B41	15	41515	2682.5	QPSK	1	0	25.07
Max	LTE B41	20	41344	2665.4	QPSK	1	99	LTE B41	15	41515	2682.5	QPSK	1	0	25.19
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	10	39894	2520.4	QPSK	1	0	24.51
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	15	39921	2523.1	QPSK	1	0	24.44
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.59
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	10	40764	2607.4	QPSK	1	0	24.68
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	15	40791	2610.1	QPSK	1	0	24.30
Max	LTE B41	20	40620	2593	QPSK	1	99	LTE B41	20	40818	2612.8	QPSK	1	0	**24.28**
Max	LTE B41	10	41346	2665.6	QPSK	1	49	LTE B41	20	41490	2680	QPSK	1	0	24.87
Max	LTE B41	15	41319	2662.9	QPSK	1	74	LTE B41	20	41490	2680	QPSK	1	0	25.61
Max	LTE B41	20	41292	2660.2	QPSK	1	99	LTE B41	20	41490	2680	QPSK	1	0	24.91

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

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	19.07
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	99	20.02
Max	LTE B41	20	39750	2506	QPSK	1	0	LTE B41	20	39948	2525.8	QPSK	1	99	15.03
Max	LTE B41	20	39750	2506	QPSK	1	50	LTE B41	20	39948	2525.8	QPSK	1	50	19.67
Max	LTE B41	20	39750	2506	QPSK	1	99	LTE B41	20	39948	2525.8	QPSK	1	0	24.59
Max	LTE B41	20	39750	2506	QPSK	100	0	LTE B41	20	39948	2525.8	QPSK	100	0	22.48
Max	LTE B41	20	39750	2506	16-QAM	100	0	LTE B41	20	39948	2525.8	16-QAM	100	0	21.42
Max	LTE B41	20	39750	2506	64-QAM	100	0	LTE B41	20	39948	2525.8	64-QAM	100	0	20.36

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

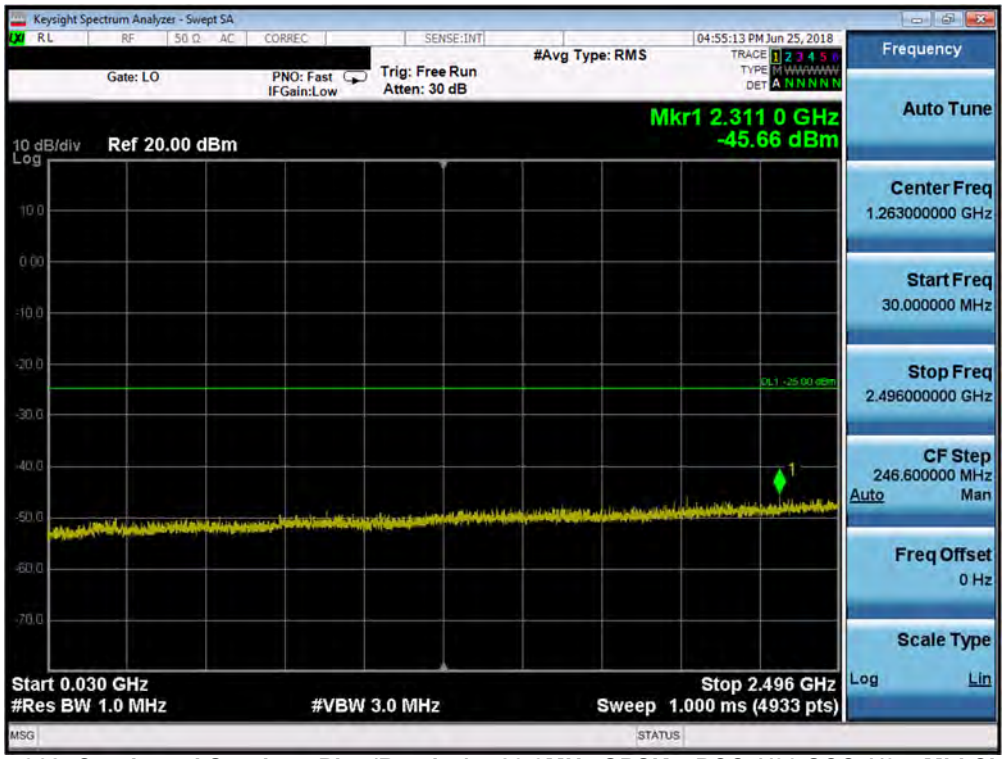


Table 7-368. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

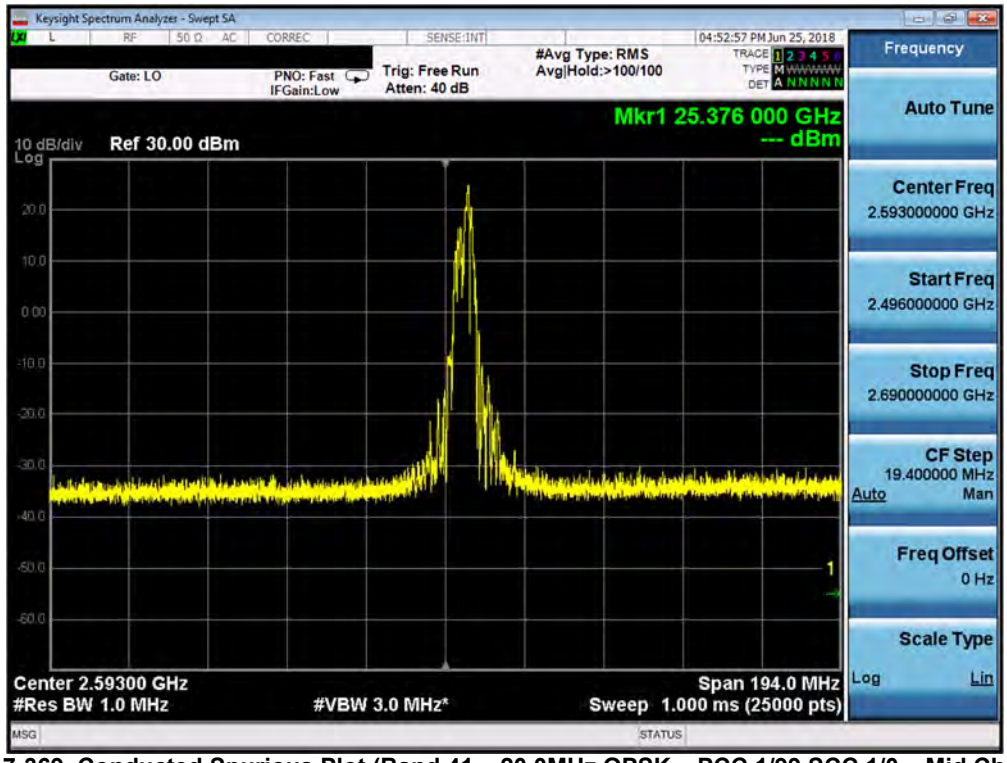


Table 7-369. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

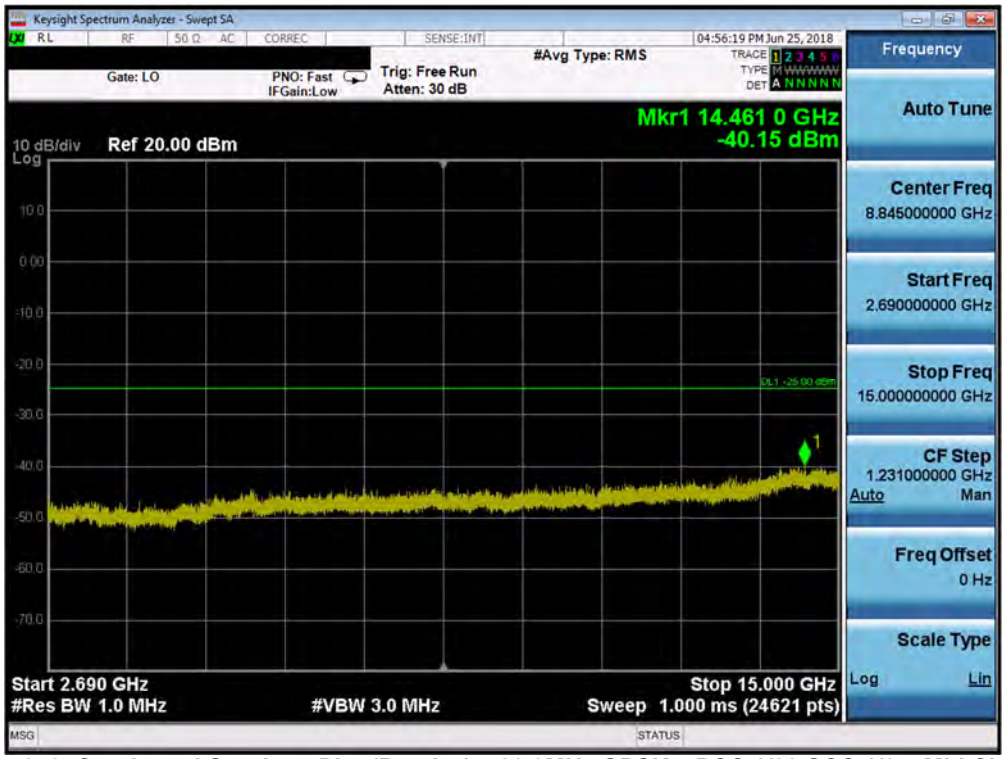


Table 7-370. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

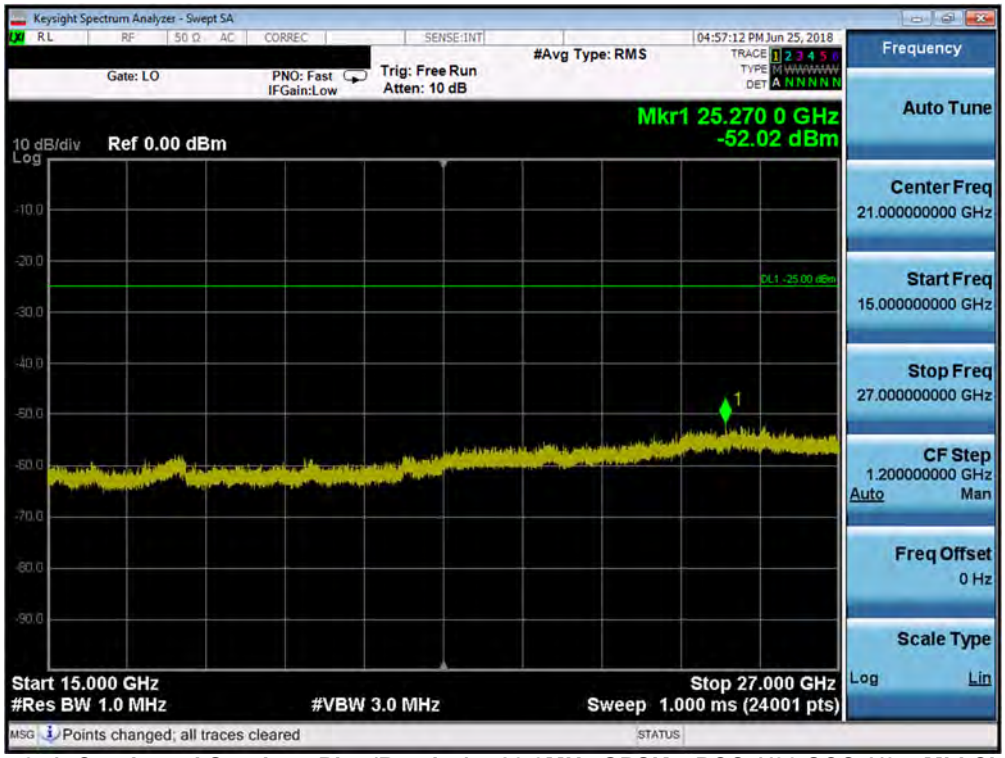


Table 7-371. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

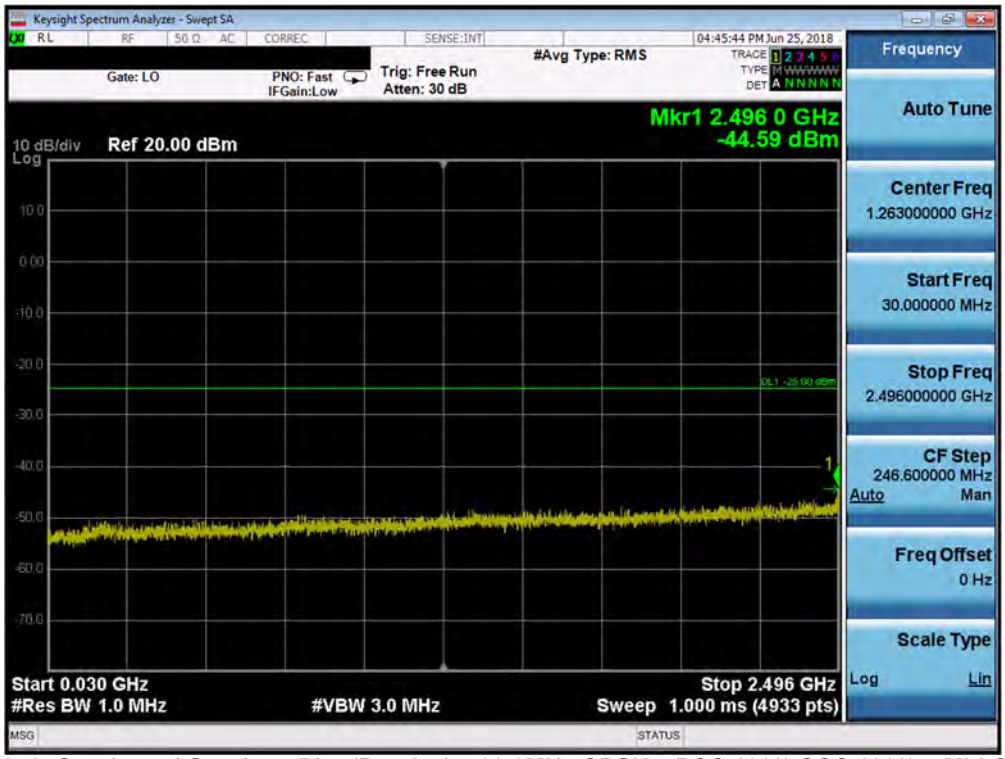


Table 7-372. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

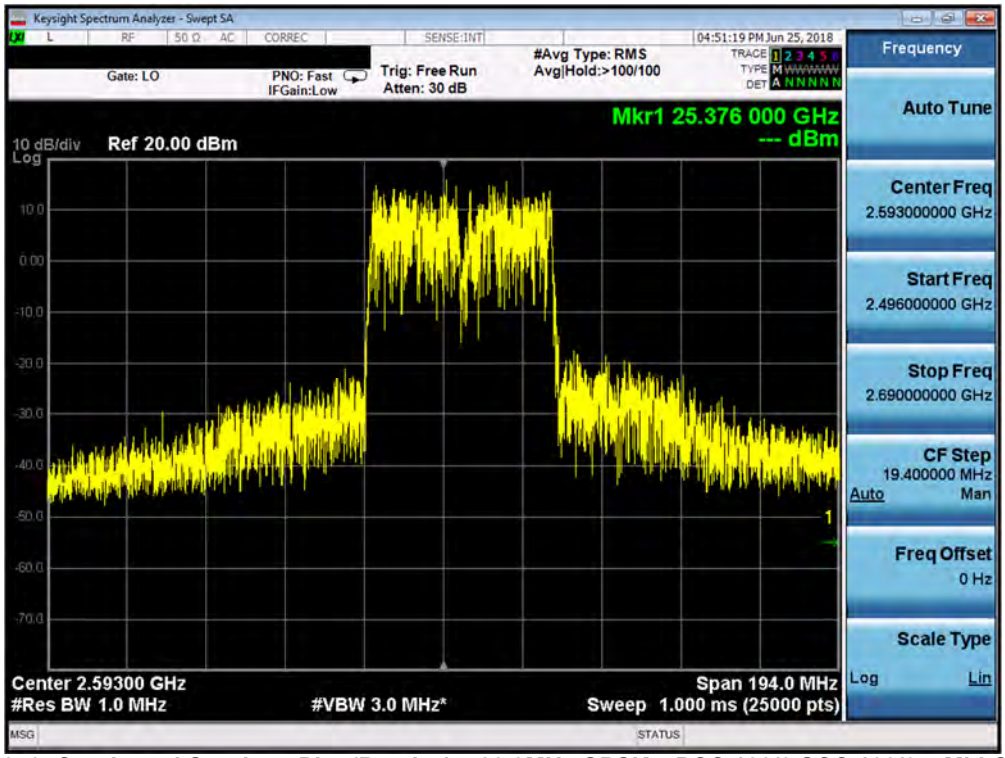


Table 7-373. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

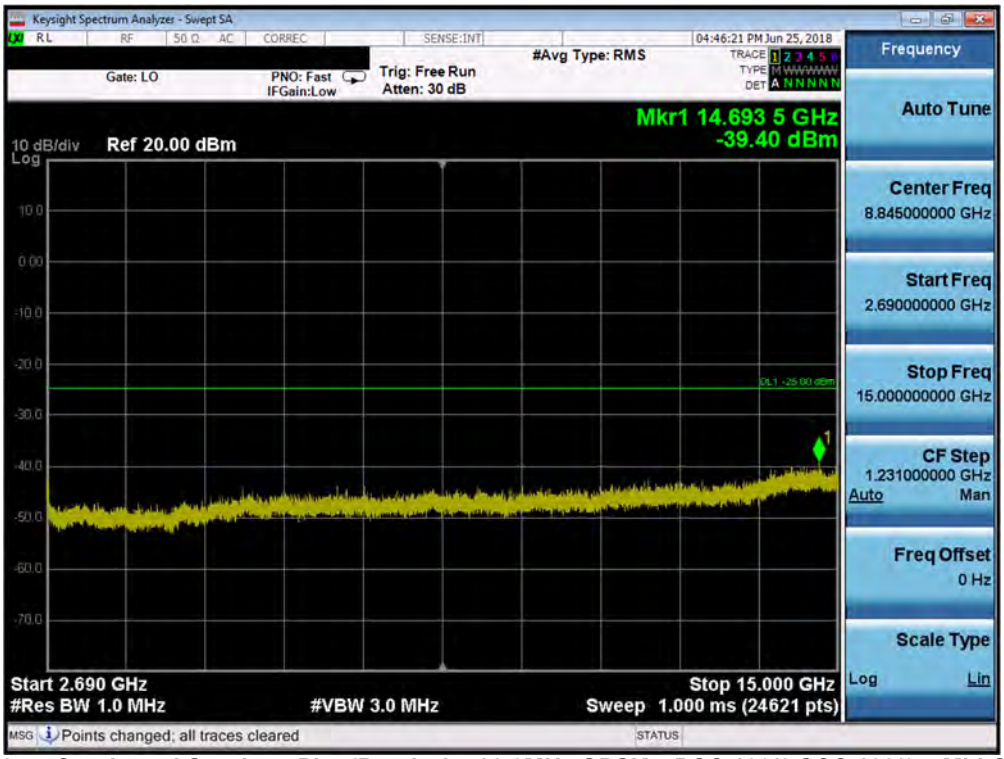


Table 7-374. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

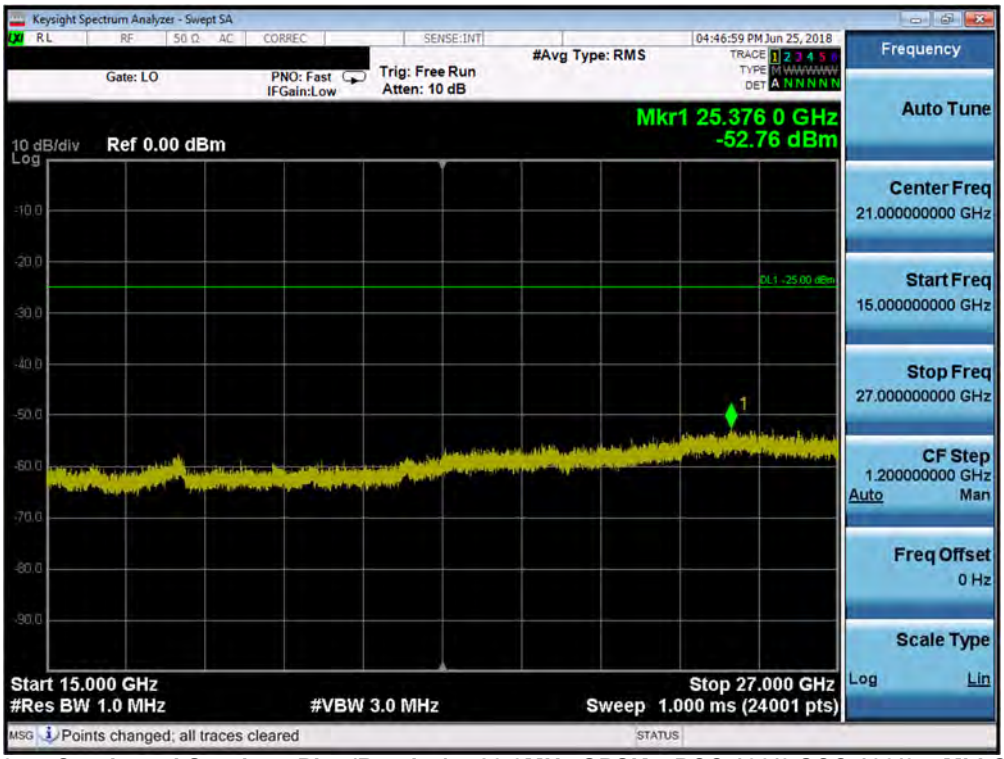
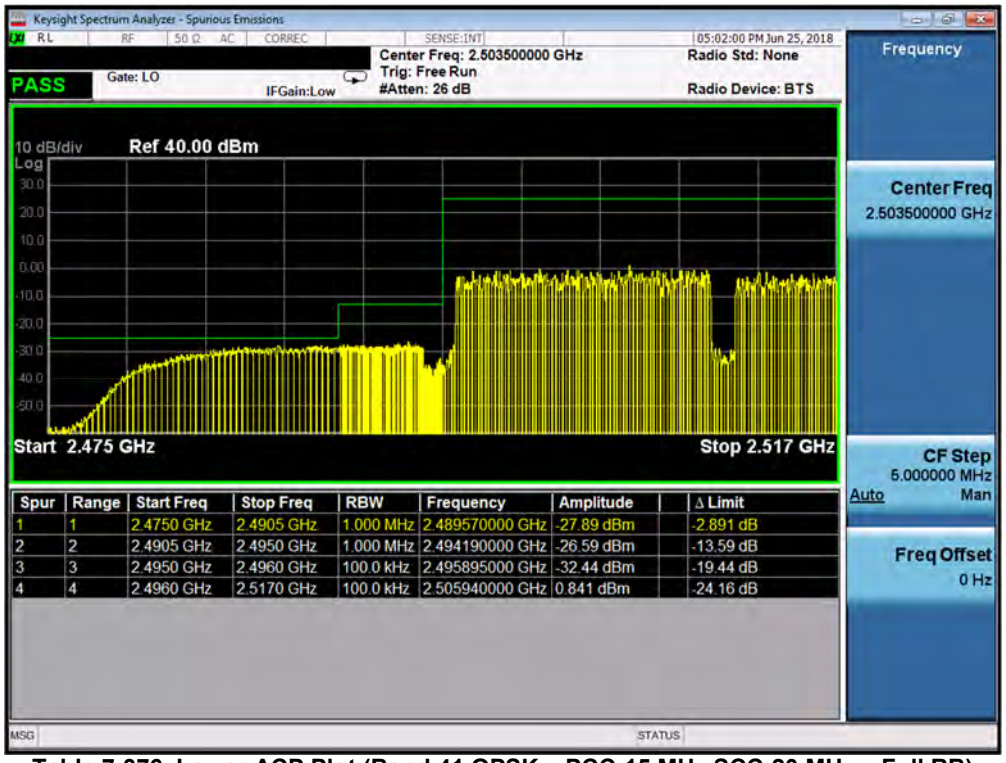
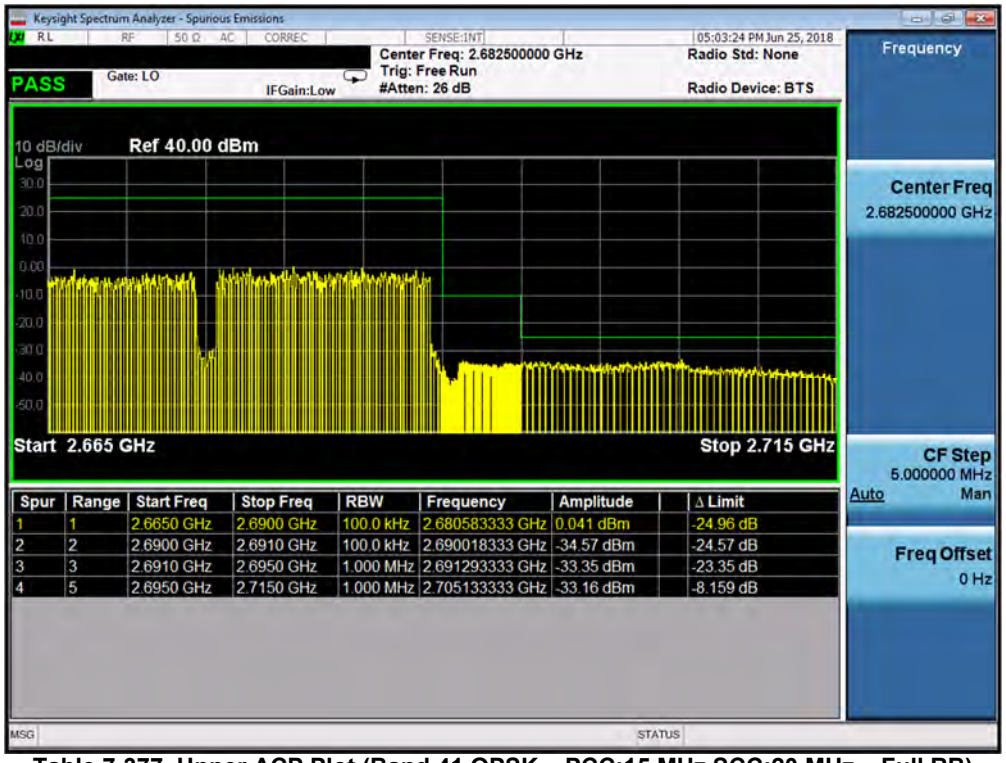


Table 7-375. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489570000 GHz	-27.89 dBm	-2.891 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494190000 GHz	-26.59 dBm	-13.59 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.495895000 GHz	-32.44 dBm	-19.44 dB
4	4	2.4960 GHz	2.5170 GHz	100.0 kHz	2.505940000 GHz	0.841 dBm	-24.16 dB

Table 7-376. Lower ACP Plot (Band 41 QPSK – PCC:15 MHz SCC:20 MHz – Full RB)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	100.0 kHz	2.680583333 GHz	0.041 dBm	-24.96 dB
2	2	2.6900 GHz	2.6910 GHz	100.0 kHz	2.690018333 GHz	-34.57 dBm	-24.57 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691293333 GHz	-33.35 dBm	-23.35 dB
4	5	2.6950 GHz	2.7150 GHz	1.000 MHz	2.705133333 GHz	-33.16 dBm	-8.159 dB

Table 7-377. Upper ACP Plot (Band 41 QPSK – PCC:15 MHz SCC:20 MHz – Full RB)

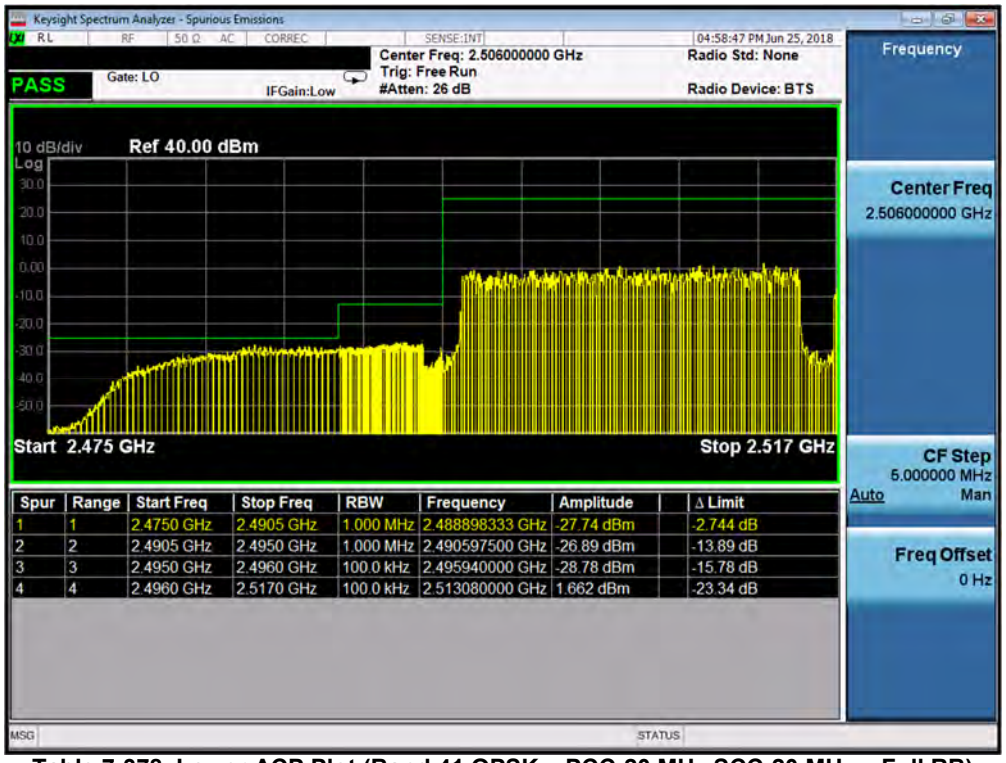


Table 7-378. Lower ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

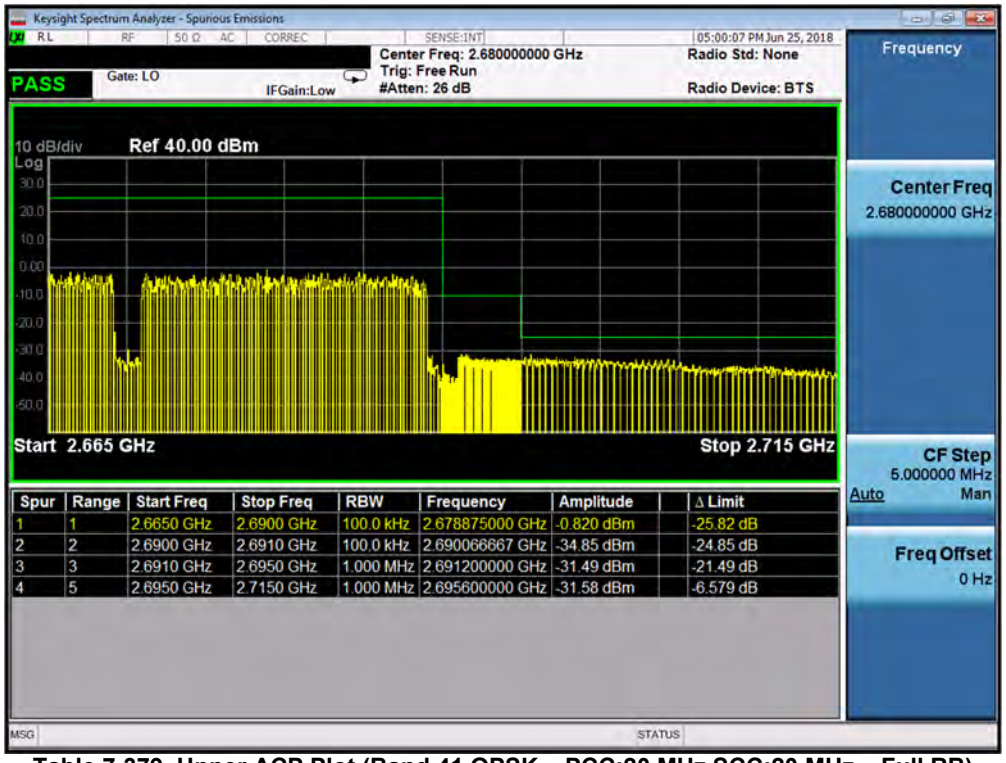


Table 7-379. Upper ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

7.8 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally 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 v03r01 – 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 ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Setup

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

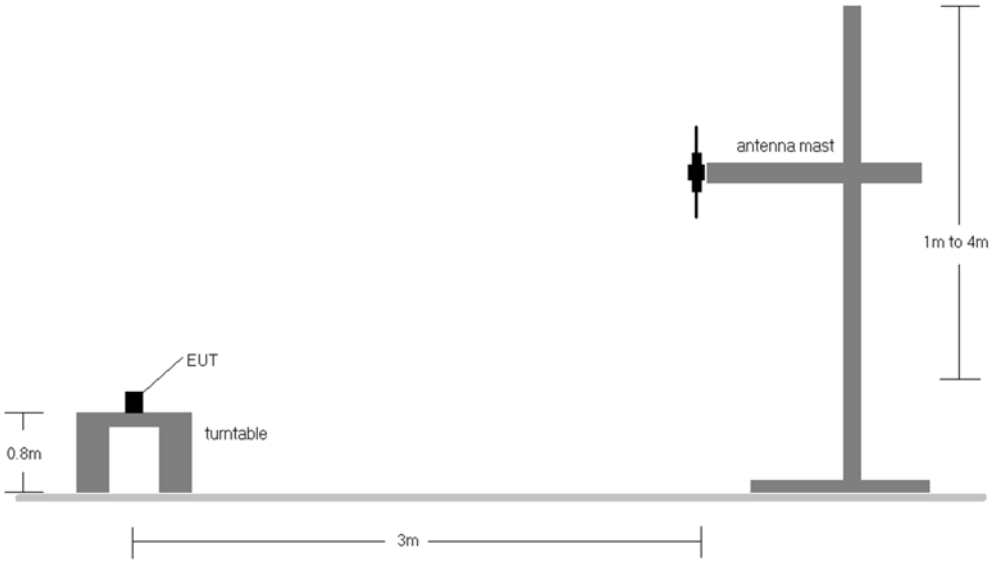


Figure 7-7. Radiated Test Setup <1GHz

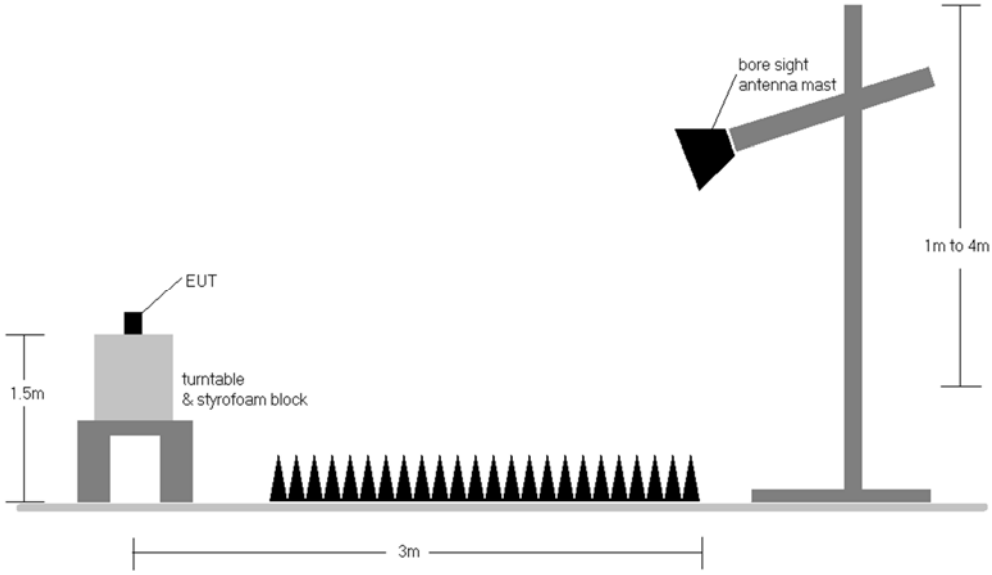


Figure 7-8. Radiated Test Setup >1GHz

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.

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]
665.50	5	QPSK	H	150	7	1 / 0	17.18	1.10	16.13	0.041	34.77	-18.64
680.50	5	QPSK	H	150	80	1 / 0	18.17	1.10	17.12	0.052	34.77	-17.65
695.50	5	QPSK	H	150	33	1 / 0	18.47	1.10	**17.42**	**0.055**	34.77	-17.35
695.50	5	16-QAM	H	150	33	1 / 0	17.84	1.10	**16.79**	0.048	34.77	-17.98
695.50	5	64-QAM	H	150	33	1 / 0	16.61	1.10	**15.56**	0.036	34.77	-19.21
668.00	10	QPSK	H	150	8	1 / 0	16.78	1.10	15.73	0.037	34.77	-19.04
680.50	10	QPSK	H	150	81	1 / 0	18.21	1.10	**17.16**	0.052	34.77	-17.61
693.00	10	QPSK	H	150	335	1 / 0	17.87	1.10	16.82	0.048	34.77	-17.95
680.50	10	16-QAM	H	150	81	1 / 0	17.37	1.10	**16.32**	0.043	34.77	-18.45
680.50	10	64-QAM	H	150	81	1 / 0	16.50	1.10	**15.45**	0.035	34.77	-19.32
670.50	15	QPSK	H	150	9	1 / 0	17.00	1.10	15.95	0.039	34.77	-18.82
680.50	15	QPSK	H	150	83	1 / 0	17.58	1.10	16.53	0.045	34.77	-18.24
690.50	15	QPSK	H	150	330	1 / 0	17.71	1.10	**16.66**	0.046	34.77	-18.11
690.50	15	16-QAM	H	150	330	1 / 0	16.71	1.10	15.66	0.037	34.77	-19.11
690.50	15	64-QAM	H	150	330	1 / 0	15.82	1.10	14.77	0.030	34.77	-20.00
673.00	20	QPSK	H	150	12	1 / 0	16.78	1.10	15.73	0.037	34.77	-19.04
683.00	20	QPSK	H	150	81	1 / 0	16.79	1.10	15.74	0.037	34.77	-19.03
688.00	20	QPSK	H	150	325	1 / 0	17.75	1.10	**16.70**	0.047	34.77	-18.07
688.00	20	16-QAM	H	150	325	1 / 0	16.98	1.10	**15.93**	0.039	34.77	-18.84
688.00	20	64-QAM	H	150	325	1 / 0	16.09	1.10	**15.04**	0.032	34.77	-19.73
695.50	5	QPSK	V	150	238	1 / 0	16.50	1.10	15.45	0.035	34.77	-19.32
695.50	5 (WCP)	QPSK	H	150	25	1 / 0	18.24	1.10	17.19	0.052	34.77	-17.58

Table 7-8. ERP Data (Band 71)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	150	35	1 / 0	17.59	1.10	16.54	0.045	34.77	-18.23	18.69	0.074	36.99	-18.30
707.50	1.4	QPSK	H	150	24	1 / 0	17.87	1.13	16.85	0.048	34.77	-17.92	19.00	0.079	36.99	-17.99
715.30	1.4	QPSK	H	150	18	1 / 0	18.21	1.16	**17.22**	**0.053**	34.77	-17.55	**19.37**	**0.087**	36.99	-17.62
715.30	1.4	16-QAM	H	150	18	1 / 0	17.14	1.16	**16.15**	0.041	34.77	-18.62	**18.30**	0.068	36.99	-18.69
715.30	1.4	64-QAM	H	150	18	1 / 0	16.28	1.16	**15.29**	0.034	34.77	-19.48	**17.44**	0.055	36.99	-19.55
700.50	3	QPSK	H	150	21	1 / 0	17.42	1.10	16.37	0.043	34.77	-18.40	18.52	0.071	36.99	-18.47
707.50	3	QPSK	H	150	32	1 / 0	17.64	1.13	16.62	0.046	34.77	-18.15	18.77	0.075	36.99	-18.22
714.50	3	QPSK	H	150	18	1 / 0	18.21	1.16	**17.22**	0.053	34.77	-17.55	**19.37**	0.086	36.99	-17.62
714.50	3	16-QAM	H	150	18	1 / 0	17.13	1.16	**16.14**	0.041	34.77	-18.63	**18.29**	0.067	36.99	-18.70
714.50	3	64-QAM	H	150	18	1 / 0	16.26	1.16	**15.27**	0.034	34.77	-19.50	**17.42**	0.055	36.99	-19.57
715.30	1.4	QPSK	V	150	20	1 / 0	16.80	1.16	15.81	0.038	34.77	-18.96	17.96	0.063	36.99	-19.03
715.30	1.4 (WCP)	QPSK	H	150	26	1 / 0	17.45	1.16	16.46	0.044	34.77	-18.31	18.61	0.073	36.99	-18.38

Table 7-9. ERP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
701.50	5	QPSK	H	150	23	1 / 0	17.58	1.11	16.54	0.045	34.77	-18.24	18.69	0.074	36.99	-18.30
707.50	5	QPSK	H	150	31	1 / 0	17.29	1.13	16.27	0.042	34.77	-18.50	18.42	0.070	36.99	-18.57
713.50	5	QPSK	H	150	23	1 / 0	17.92	1.15	**16.92**	0.049	34.77	-17.85	**19.07**	0.081	36.99	-17.92
713.50	5	16-QAM	H	150	23	1 / 0	17.02	1.15	**16.02**	0.040	34.77	-18.75	**18.17**	0.066	36.99	-18.82
713.50	5	64-QAM	H	150	23	1 / 0	16.12	1.15	**15.12**	0.033	34.77	-19.65	**17.27**	0.053	36.99	-19.72
704.00	10	QPSK	H	150	28	1 / 0	17.65	1.12	16.62	0.046	34.77	-18.15	18.77	0.075	36.99	-18.22
707.50	10	QPSK	H	150	264	1 / 0	17.56	1.13	16.54	0.045	34.77	-18.23	18.69	0.074	36.99	-18.30
711.00	10	QPSK	H	150	87	1 / 0	17.84	1.14	**16.83**	0.048	34.77	-17.94	**18.98**	0.079	36.99	-18.01
711.00	10	16-QAM	H	150	87	1 / 0	17.16	1.14	**16.15**	0.041	34.77	-18.62	**18.30**	0.068	36.99	-18.69
711.00	10	64-QAM	H	150	87	1 / 0	16.03	1.14	**15.02**	0.032	34.77	-19.75	**17.17**	0.052	36.99	-19.82

Table 7-10. ERP 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	17	1 / 0	17.91	1.32	**17.08**	0.051	34.77	-17.69	**19.23**	0.084	36.99	-17.76
782.00	5	QPSK	H	150	25	1 / 0	17.85	1.33	17.03	0.050	34.77	-17.74	19.18	0.083	36.99	-17.81
784.50	5	QPSK	H	150	239	1 / 0	17.32	1.34	16.51	0.045	34.77	-18.26	18.66	0.073	36.99	-18.33
782.00	5	16-QAM	H	150	25	1 / 0	17.50	1.33	**16.68**	0.047	34.77	-18.09	**18.83**	0.076	36.99	-18.16
782.00	5	64-QAM	H	150	25	1 / 0	16.71	1.33	**15.89**	0.039	34.77	-18.88	**18.04**	0.064	36.99	-18.95
782.00	10	QPSK	H	150	273	1 / 0	18.34	1.33	**17.52**	**0.056**	34.77	-17.25	**19.67**	**0.093**	36.99	-17.32
782.00	10	16-QAM	H	150	273	1 / 0	17.19	1.33	**16.37**	0.043	34.77	-18.40	**18.52**	0.071	36.99	-18.47
782.00	10	64-QAM	H	150	273	1 / 0	16.00	1.33	**15.18**	0.033	34.77	-19.59	**17.33**	0.054	36.99	-19.66
782.00	10	QPSK	V	150	28	1 / 0	14.65	1.33	13.83	0.024	34.77	-20.94	15.98	0.040	36.99	-21.01
782.00	10 (WCP)	QPSK	H	150	17	1 / 0	18.00	1.33	17.18	0.052	34.77	-17.59	19.33	0.086	36.99	-17.66

Table 7-11. ERP Data (Band 13)

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	28	1 / 0	17.06	1.50	16.41	0.044	38.45	-22.04	18.56	0.072	40.61	-22.05
836.50	1.4	QPSK	H	150	25	1 / 0	17.43	1.50	16.78	0.048	38.45	-21.67	18.93	0.078	40.61	-21.68
848.30	1.4	QPSK	H	150	18	1 / 0	17.70	1.50	**17.05**	0.051	38.45	-21.40	**19.20**	0.083	40.61	-21.41
836.50	1.4	16-QAM	H	150	25	1 / 0	17.02	1.50	**16.37**	0.043	38.45	-22.08	**18.52**	0.071	40.61	-22.09
836.50	1.4	64-QAM	H	150	25	1 / 0	15.96	1.50	**15.31**	0.034	38.45	-23.14	**17.46**	0.056	40.61	-23.15
825.50	3	QPSK	H	150	28	1 / 0	16.69	1.50	16.04	0.040	38.45	-22.41	18.19	0.066	40.61	-22.42
836.50	3	QPSK	H	150	25	1 / 0	17.85	1.50	**17.20**	0.052	38.45	-21.25	**19.35**	0.086	40.61	-21.26
847.50	3	QPSK	H	150	18	1 / 0	17.66	1.50	17.01	0.050	38.45	-21.44	19.16	0.082	40.61	-21.45
836.50	3	16-QAM	H	150	25	1 / 0	17.07	1.50	**16.42**	0.044	38.45	-22.03	**18.57**	0.072	40.61	-22.04
836.50	3	64-QAM	H	150	25	1 / 0	16.04	1.50	**15.39**	0.035	38.45	-23.06	**17.54**	0.057	40.61	-23.07
826.50	5	QPSK	H	150	28	1 / 0	17.22	1.50	16.57	0.045	38.45	-21.88	18.72	0.074	40.61	-21.89
836.50	5	QPSK	H	150	25	1 / 0	18.04	1.50	**17.39**	0.055	38.45	-21.06	**19.54**	0.090	40.61	-21.07
846.50	5	QPSK	H	150	18	1 / 0	17.70	1.50	17.05	0.051	38.45	-21.40	19.20	0.083	40.61	-21.41
836.50	5	16-QAM	H	150	25	1 / 0	17.17	1.50	**16.52**	0.045	38.45	-21.93	**18.67**	0.074	40.61	-21.94
836.50	5	64-QAM	H	150	25	1 / 0	16.15	1.50	**15.50**	0.035	38.45	-22.95	**17.65**	0.058	40.61	-22.96
829.00	10	QPSK	H	150	12	1 / 0	17.37	1.50	16.72	0.047	38.45	-21.73	18.87	0.077	40.61	-21.74
836.50	10	QPSK	H	150	10	1 / 49	18.46	1.50	**17.81**	**0.060**	38.45	-20.64	**19.96**	**0.099**	40.61	-20.65
844.00	10	QPSK	H	150	20	1 / 0	17.59	1.50	16.94	0.049	38.45	-21.51	19.09	0.081	40.61	-21.52
836.50	10	16-QAM	H	150	10	1 / 0	17.39	1.50	**16.74**	0.047	38.45	-21.71	**18.89**	0.077	40.61	-21.72
836.50	10	64-QAM	H	150	10	1 / 0	16.50	1.50	**15.85**	0.038	38.45	-22.60	**18.00**	0.063	40.61	-22.61
836.50	10	QPSK	V	150	23	1 / 49	15.36	1.50	14.71	0.030	38.45	-23.74	16.86	0.049	40.61	-23.75
836.50	10 (WCP)	QPSK	H	150	205	1 / 49	18.05	1.50	17.40	0.055	38.45	-21.05	19.55	0.090	40.61	-21.06

Table 7-12. ERP Data (Band 5/26)

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]
15	QPSK	H	150	0	1 / 0	17.40	1.50	16.75	0.047	38.45	-21.70	18.90	0.078	40.61	-21.71
15	QPSK	H	150	25	1 / 0	17.82	1.50	17.17	0.052	38.45	-21.28	19.32	0.086	40.61	-21.29
15	QPSK	H	150	13	1 / 0	17.94	1.50	**17.29**	0.054	38.45	-21.16	**19.44**	0.088	40.61	-21.17
15	16-QAM	H	150	25	1 / 0	17.35	1.50	**16.70**	0.047	38.45	-21.75	**18.85**	0.077	40.61	-21.76
15	64-QAM	H	150	13	1 / 0	16.49	1.50	**15.84**	0.038	38.45	-22.61	**17.99**	0.063	40.61	-22.62

Table 7-13. ERP Data (Band 26)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	150	23	1 / 0	16.70	5.56	22.26	0.168	30.00	-7.74
1745.00	1.4	QPSK	H	150	34	1 / 0	17.72	5.32	23.04	0.201	30.00	-6.96
1779.30	1.4	QPSK	H	150	21	1 / 0	18.74	5.09	**23.83**	0.242	30.00	-6.17
1779.30	1.4	16-QAM	H	150	21	1 / 0	17.61	5.09	**22.70**	0.186	30.00	-7.30
1779.30	1.4	64-QAM	H	150	21	1 / 0	16.61	5.09	**21.70**	0.148	30.00	-8.30
1711.50	3	QPSK	H	150	356	1 / 0	16.87	5.55	22.42	0.175	30.00	-7.58
1745.00	3	QPSK	H	150	175	1 / 14	19.27	5.32	**24.59**	0.288	30.00	-5.41
1778.50	3	QPSK	H	150	176	1 / 0	19.31	5.10	24.41	0.276	30.00	-5.59
1778.50	3	16-QAM	H	150	176	1 / 14	18.71	5.10	**23.81**	0.240	30.00	-6.19
1778.50	3	64-QAM	H	150	176	1 / 14	17.38	5.10	**22.48**	0.177	30.00	-7.52
1712.50	5	QPSK	H	150	354	1 / 24	17.93	5.55	23.48	0.223	30.00	-6.52
1745.00	5	QPSK	H	150	185	1 / 24	19.13	5.32	24.45	0.279	30.00	-5.55
1777.50	5	QPSK	H	150	138	1 / 0	19.74	5.10	**24.84**	0.305	30.00	-5.16
1777.50	5	16-QAM	H	150	138	1 / 0	18.77	5.10	**23.87**	0.244	30.00	-6.13
1777.50	5	64-QAM	H	150	138	1 / 0	17.97	5.10	**23.07**	0.203	30.00	-6.93
1715.00	10	QPSK	H	150	358	1 / 49	18.39	5.53	23.92	0.246	30.00	-6.08
1745.00	10	QPSK	H	150	186	1 / 49	19.36	5.32	24.68	0.294	30.00	-5.32
1775.00	10	QPSK	H	150	347	1 / 49	19.71	5.12	**24.83**	0.304	30.00	-5.17
1775.00	10	16-QAM	H	150	347	1 / 49	18.67	5.12	23.79	0.239	30.00	-6.21
1775.00	10	64-QAM	H	150	347	1 / 49	17.94	5.12	23.06	0.202	30.00	-6.94
1717.50	15	QPSK	H	150	352	1 / 74	18.75	5.51	24.26	0.267	30.00	-5.74
1745.00	15	QPSK	H	150	191	1 / 74	19.56	5.32	**24.88**	**0.308**	30.00	-5.12
1772.50	15	QPSK	H	150	239	1 / 74	19.38	5.14	24.52	0.283	30.00	-5.48
1745.00	15	16-QAM	H	150	191	1 / 74	18.41	5.32	**23.73**	0.236	30.00	-6.27
1745.00	15	64-QAM	H	150	191	1 / 74	17.28	5.32	**22.60**	0.182	30.00	-7.40
1720.00	20	QPSK	H	150	238	1 / 99	17.89	5.49	23.38	0.218	30.00	-6.62
1745.00	20	QPSK	H	150	176	100 / 0	18.45	5.32	23.77	0.238	30.00	-6.23
1770.00	20	QPSK	H	150	28	1 / 99	18.70	5.15	**23.85**	0.243	30.00	-6.15
1720.00	20	16-QAM	H	150	238	1 / 99	16.70	5.49	**22.19**	0.166	30.00	-7.81
1720.00	20	64-QAM	H	150	238	1 / 99	15.20	5.49	**20.69**	0.117	30.00	-9.31
1745.00	20	64-QAM	H	150	176	1 / 99	15.14	5.32	20.46	0.111	30.00	-9.54
1745.00	15	QPSK	V	150	35	1 / 74	13.99	5.32	19.31	0.085	30.00	-10.69
1745.00	15 (WCP)	QPSK	H	150	171	1 / 74	19.28	5.32	24.60	0.289	30.00	-5.40

Table 7-14. EIRP Data (Band 4/66)

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	262	1 / 0	18.18	4.82	23.00	0.199	33.01	-10.01
1882.50	1.4	QPSK	H	150	235	1 / 0	18.42	4.73	**23.15**	0.207	33.01	-9.86
1914.30	1.4	QPSK	H	150	23	1 / 0	17.48	4.68	22.16	0.164	33.01	-10.85
1882.50	1.4	16-QAM	H	150	235	1 / 0	17.26	4.73	**21.99**	0.158	33.01	-11.02
1850.70	1.4	64-QAM	H	150	262	1 / 0	16.12	4.82	**20.94**	0.124	33.01	-12.07
1851.50	3	QPSK	H	150	263	1 / 0	18.36	4.82	23.18	0.208	33.01	-9.83
1882.50	3	QPSK	H	150	269	1 / 0	18.05	4.73	22.78	0.190	33.01	-10.23
1913.50	3	QPSK	H	150	84	1 / 0	18.89	4.68	**23.57**	0.227	33.01	-9.44
1913.50	3	16-QAM	H	150	269	1 / 0	17.78	4.73	**22.51**	0.178	33.01	-10.50
1913.50	3	64-QAM	H	150	269	1 / 0	17.07	4.73	**21.80**	0.151	33.01	-11.21
1852.50	5	QPSK	H	150	265	1 / 0	19.25	4.81	24.06	0.255	33.01	-8.95
1882.50	5	QPSK	H	150	238	1 / 0	19.44	4.73	**24.17**	0.261	33.01	-8.84
1912.50	5	QPSK	H	150	239	1 / 0	17.92	4.68	22.60	0.182	33.01	-10.41
1882.50	5	16-QAM	H	150	238	1 / 0	17.93	4.73	**22.66**	0.185	33.01	-10.35
1882.50	5	64-QAM	H	150	238	1 / 0	17.18	4.73	**21.91**	0.155	33.01	-11.10
1855.00	10	QPSK	H	150	270	1 / 0	18.92	4.81	**23.73**	0.236	33.01	-9.28
1882.50	10	QPSK	H	150	267	1 / 0	18.26	4.73	22.99	0.199	33.01	-10.02
1910.00	10	QPSK	H	150	269	1 / 0	17.92	4.68	22.60	0.182	33.01	-10.41
1882.50	10	16-QAM	H	150	267	1 / 0	17.84	4.73	**22.57**	0.181	33.01	-10.44
1882.50	10	64-QAM	H	150	267	1 / 0	17.11	4.73	**21.84**	0.153	33.01	-11.17
1857.50	15	QPSK	H	150	235	1 / 0	20.29	4.80	**25.09**	0.323	33.01	-7.92
1882.50	15	QPSK	H	150	267	1 / 0	19.48	4.73	24.21	0.264	33.01	-8.80
1907.50	15	QPSK	H	150	328	1 / 0	19.07	4.68	23.75	0.237	33.01	-9.26
1882.50	15	16-QAM	H	150	267	1 / 0	17.91	4.73	**22.64**	0.184	33.01	-10.37
1882.50	15	64-QAM	H	150	267	1 / 0	17.10	4.73	**21.83**	0.153	33.01	-11.18
1860.00	20	QPSK	H	150	270	1 / 0	20.13	4.79	**24.92**	0.311	33.01	-8.09
1882.50	20	QPSK	H	150	269	1 / 0	19.59	4.73	24.32	0.271	33.01	-8.69
1905.00	20	QPSK	H	150	23	1 / 0	19.21	4.68	23.89	0.245	33.01	-9.12
1882.50	20	16-QAM	H	150	269	1 / 0	17.80	4.73	**22.53**	0.179	33.01	-10.48
1882.50	20	64-QAM	H	150	269	1 / 0	16.93	4.73	**21.66**	0.147	33.01	-11.35
1857.50	15	QPSK	V	150	29	1 / 0	18.50	4.80	23.30	0.214	33.01	-9.71
1857.50	15 (WCP)	QPSK	H	150	167	1 / 0	20.47	4.80	25.27	**0.336**	33.01	-7.74

Table 7-15. EIRP Data (Band 2/25)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	V	150	7	1 / 0	16.58	5.74	**22.32**	**0.171**	23.98	-1.66
2312.50	5	QPSK	V	150	15	1 / 24	16.43	5.74	22.17	0.165	23.98	-1.81
2312.50	5	16-QAM	V	150	15	1 / 24	15.88	5.74	**21.62**	0.145	23.98	-2.36
2312.50	5	64-QAM	V	150	15	1 / 24	14.72	5.74	20.46	0.111	23.98	-3.52
2310.00	10	QPSK	V	150	312	1 / 0	16.45	5.74	**22.19**	0.165	23.98	-1.79
2310.00	10	16-QAM	V	150	312	1 / 0	15.72	5.74	21.46	0.140	23.98	-2.52
2310.00	10	64-QAM	V	150	312	1 / 0	14.88	5.74	20.62	0.115	23.98	-3.36
2307.50	5	QPSK	H	150	210	1 / 0	14.73	5.74	20.47	0.111	23.98	-3.51
2307.50	5 (WCP)	QPSK	H	150	210	1 / 0	14.17	5.74	19.91	0.098	23.98	-4.07

Table 7-16. EIRP Data (Band 30)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	150	350	1 / 0	14.14	5.74	19.88	0.097	33.01	-13.13
2535.00	5	QPSK	H	150	9	1 / 0	15.28	5.86	**21.14**	0.130	33.01	-11.87
2567.50	5	QPSK	H	150	355	1 / 0	14.64	5.98	20.62	0.115	33.01	-12.39
2535.00	5	16-QAM	H	150	9	1 / 24	14.48	5.86	**20.34**	0.108	33.01	-12.67
2535.00	5	64-QAM	H	150	9	1 / 0	13.40	5.86	**19.26**	0.084	33.01	-13.75
2505.00	10	QPSK	H	150	2	1 / 49	14.33	5.75	20.08	0.102	33.01	-12.93
2535.00	10	QPSK	H	150	4	1 / 0	15.12	5.86	20.98	0.125	33.01	-12.03
2565.00	10	QPSK	H	150	359	1 / 0	15.31	5.97	**21.28**	0.134	33.01	-11.73
2565.00	10	16-QAM	H	150	359	1 / 0	14.52	5.97	**20.49**	0.112	33.01	-12.52
2565.00	10	64-QAM	H	150	359	1 / 0	13.21	5.97	**19.18**	0.083	33.01	-13.83
2507.50	15	QPSK	H	150	353	1 / 74	14.66	5.76	20.42	0.110	33.01	-12.59
2535.00	15	QPSK	H	150	7	1 / 74	15.05	5.86	20.91	0.123	33.01	-12.10
2562.50	15	QPSK	H	150	3	1 / 0	15.44	5.96	**21.40**	0.138	33.01	-11.61
2562.50	15	16-QAM	H	150	3	1 / 0	14.78	5.96	**20.74**	0.119	33.01	-12.27
2562.50	15	64-QAM	H	150	3	1 / 0	13.56	5.96	**19.52**	0.090	33.01	-13.49
2510.00	20	QPSK	H	150	5	1 / 99	13.91	5.77	19.68	0.093	33.01	-13.33
2535.00	20	QPSK	H	150	3	1 / 99	15.26	5.86	21.12	0.129	33.01	-11.89
2560.00	20	QPSK	H	150	8	1 / 0	15.44	5.95	**21.39**	0.138	33.01	-11.62
2560.00	20	16-QAM	H	150	8	1 / 0	14.55	5.95	**20.50**	0.112	33.01	-12.51
2560.00	20	64-QAM	H	150	8	1 / 0	13.73	5.95	**19.68**	0.093	33.01	-13.33
2562.50	15	QPSK	V	150	239	1 / 0	16.11	5.96	22.07	0.161	33.01	-10.94
2562.50	15 (WCP)	QPSK	H	150	21	1 / 0	16.36	5.96	22.32	**0.171**	33.01	-10.69

Table 7-17. EIRP Data (Band 7)

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	H	150	179	1 / 0	20.29	5.73	26.02	0.400	33.01	-6.99
2593.00	5	QPSK	H	150	175	1 / 0	20.20	6.07	**26.27**	0.424	33.01	-6.74
2687.50	5	QPSK	H	150	14	1 / 24	17.78	6.48	24.26	0.267	33.01	-8.75
2498.50	5	16-QAM	H	150	179	1 / 0	19.43	5.73	**25.16**	0.328	33.01	-7.85
2593.00	5	64-QAM	H	150	175	1 / 0	18.21	6.07	**24.28**	0.268	33.01	-8.73
2501.00	10	QPSK	H	150	185	1 / 0	18.92	5.73	24.65	0.292	33.01	-8.36
2593.00	10	QPSK	H	150	190	1 / 49	19.28	6.07	**25.35**	0.343	33.01	-7.66
2685.00	10	QPSK	H	150	18	1 / 0	17.38	6.47	23.85	0.243	33.01	-9.16
2593.00	10	16-QAM	H	150	190	1 / 49	18.72	6.07	**24.79**	0.301	33.01	-8.22
2593.00	10	64-QAM	H	150	190	1 / 49	17.61	6.07	**23.68**	0.233	33.01	-9.33
2503.50	15	QPSK	H	150	189	1 / 0	19.85	5.74	25.59	0.363	33.01	-7.42
2593.00	15	QPSK	H	150	69	1 / 0	20.47	6.07	**26.54**	0.451	33.01	-6.47
2682.50	15	QPSK	H	150	68	1 / 0	18.62	6.46	25.08	0.322	33.01	-7.93
2503.50	15	16-QAM	H	150	189	1 / 0	17.77	5.74	**23.51**	0.225	33.01	-9.50
2503.50	15	64-QAM	H	150	189	1 / 0	17.22	5.74	**22.96**	0.198	33.01	-10.05
2506.00	20	QPSK	H	150	750	1 / 99	20.04	5.75	25.79	0.380	33.01	-7.22
2593.00	20	QPSK	H	150	67	1 / 0	21.07	6.07	**27.14**	**0.518**	33.01	-5.87
2680.00	20	QPSK	H	150	35	1 / 0	16.92	6.45	23.37	0.217	33.01	-9.64
2593.00	20	16-QAM	H	150	67	1 / 0	18.76	6.07	**24.83**	0.304	33.01	-8.18
2593.00	20	64-QAM	H	150	67	1 / 0	17.49	6.07	23.56	0.227	33.01	-9.45
2593.00	20	QPSK	V	150	29	1 / 0	19.92	6.07	25.99	0.397	33.01	-7.02
2593.00	20 (WCP)	QPSK	H	150	35	1 / 0	20.25	6.07	26.32	0.429	33.01	-6.69
2593.00	20 (PC3)	QPSK	H	150	28	1 / 99	17.52	6.07	23.59	**0.229**	33.01	-9.42

Table 7-18. EIRP Data (Band 41 PC2)

7.9 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

Test Procedures Used

KDB 971168 D01 v03r01 – 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 ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points ≥ 2 x span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

Test Setup

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

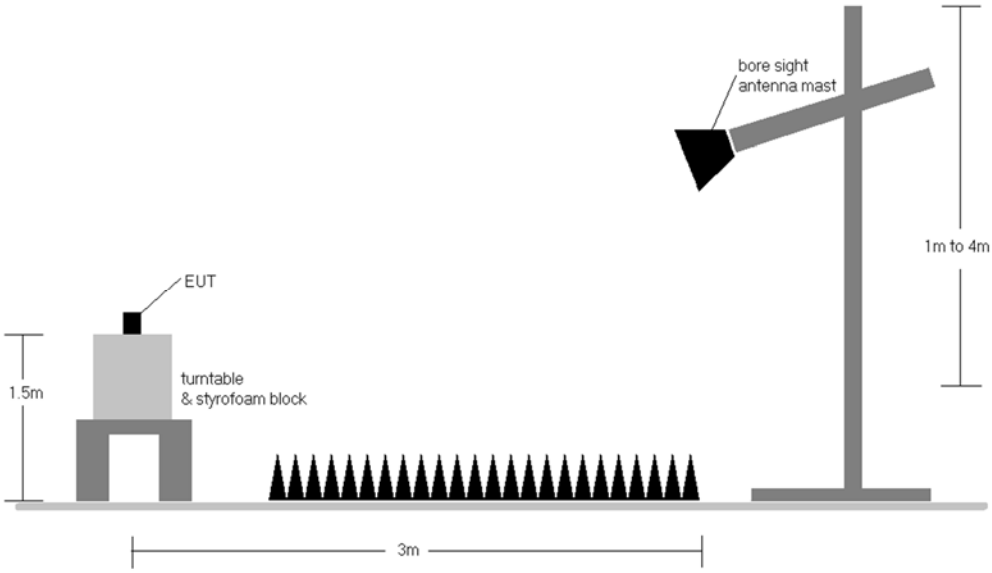


Figure 7-9. Test Instrument & Measurement Setup

Test Notes

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

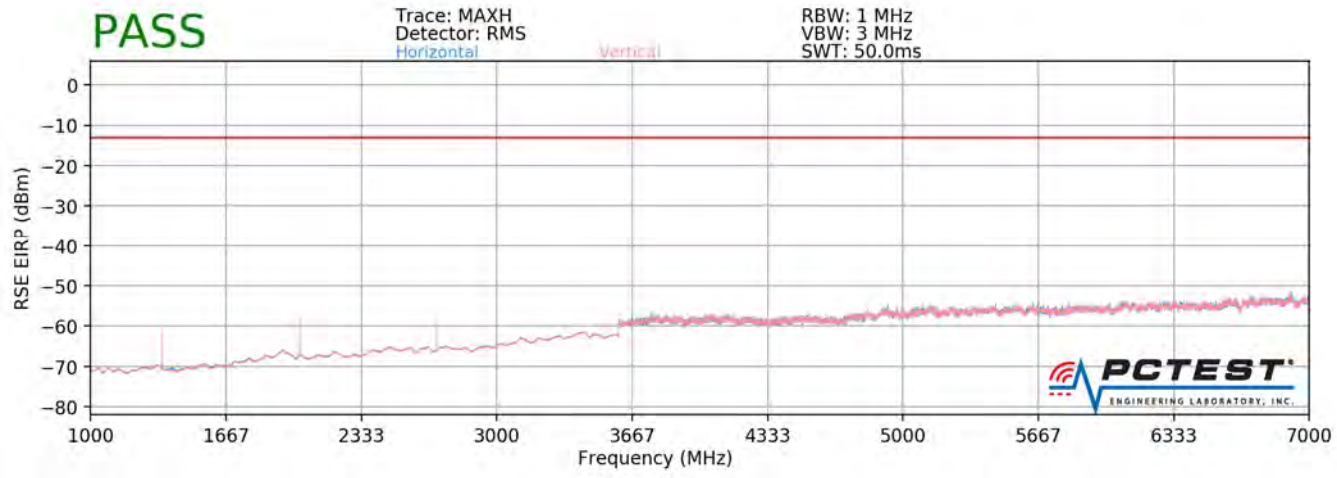
2) This unit was tested with its standard battery.

3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Band 71



Plot 7-380. Radiated Spurious Plot above 1GHz (Band 71)

OPERATING FREQUENCY:	665.50	MHz
CHANNEL:	133147	
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]
1331.00	H	163	120	-56.51	3.73	-52.78	-39.8
1996.50	H	297	94	-61.85	4.62	-57.23	-44.2
2662.00	H	121	100	-64.29	6.37	-57.92	-44.9
3327.50	H	-	-	-71.78	7.88	-63.89	-50.9

Table 7-19. Radiated Spurious Data with WCP (Band 71 – Low Channel)

OPERATING FREQUENCY:	680.50	MHz
CHANNEL:	133297	
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]
1361.00	H	199	199	-59.15	4.00	-55.14	-42.1
2041.50	H	135	90	-56.29	4.89	-51.41	-38.4
2722.00	H	154	100	-64.58	6.64	-57.94	-44.9
3402.50	H	-	-	-71.29	7.99	-63.30	-50.3

Table 7-20. Radiated Spurious Data with WCP (Band 71 – Mid Channel)

OPERATING FREQUENCY:	695.50	MHz
CHANNEL:	133447	
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]
1391.00	H	133	199	-65.05	4.27	-60.78	-47.8
2086.50	H	244	87	-55.68	5.17	-50.51	-37.5
2782.00	H	204	93	-70.98	6.90	-64.08	-51.1
3477.50	H	-	-	-72.57	8.40	-64.17	-51.2

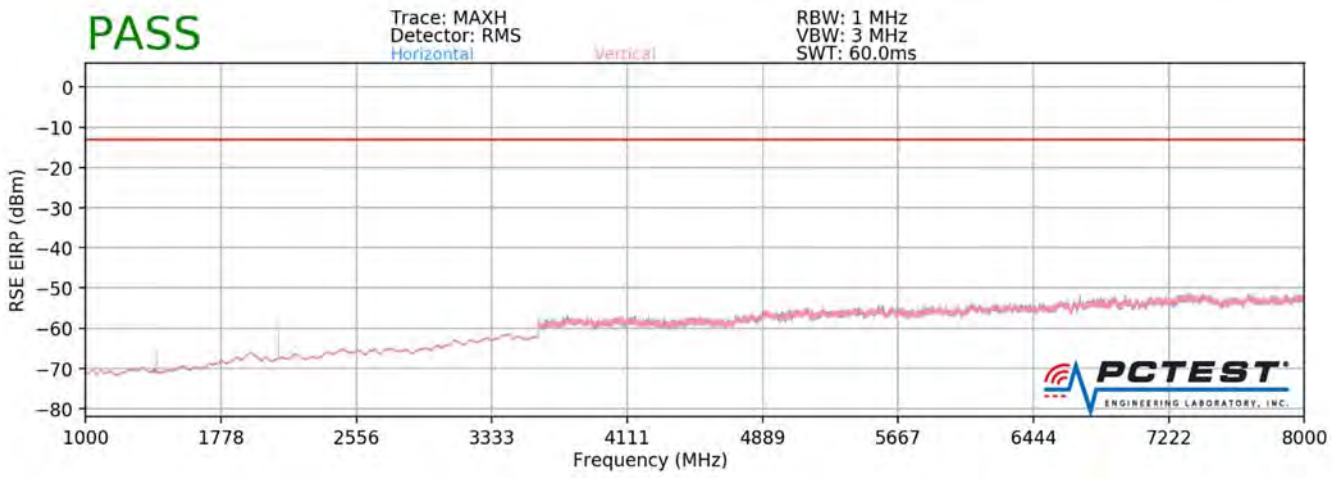
Table 7-21. Radiated Spurious Data with WCP (Band 71 – High Channel)

OPERATING FREQUENCY:	695.50	MHz
CHANNEL:	133447	
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]
1391.00	H	117	316	-70.52	4.27	-66.25	-53.2
2086.50	H	149	148	-64.49	5.17	-59.32	-46.3
2782.00	H	115	188	-71.22	6.90	-64.32	-51.3
3477.50	H	-	-	-73.35	8.40	-64.95	-52.0

Table 7-22. Radiated Spurious Data (Band 71 - High Channel)

Band 12/17



Plot 7-381. Radiated Spurious Plot above 1GHz (Band 12/17)

OPERATING FREQUENCY:	701.50	MHz
CHANNEL:	23035	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1403.00	H	310	289	-75.17	4.35	-70.82	-57.8
2104.50	H	125	92	-68.79	5.25	-63.54	-50.5
2806.00	H	-	-	-74.77	6.97	-67.80	-54.8

Table 7-23. Radiated Spurious Data (Band 12/17 – Low Channel)

OPERATING FREQUENCY:	707.50	MHz
CHANNEL:	23095	
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]
1415.00	H	191	207	-76.50	4.56	-71.94	-58.9
2122.50	H	232	94	-69.79	5.31	-64.49	-51.5
2830.00	H	-	-	-74.47	7.02	-67.45	-54.5

Table 7-24. Radiated Spurious Data (Band 12/17 – Mid Channel)

OPERATING FREQUENCY:	713.50	MHz
CHANNEL:	23155	
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]
1427.00	H	380	243	-76.74	4.77	-71.98	-59.0
2140.50	H	256	82	-71.63	5.36	-66.28	-53.3
2854.00	H	-	-	-74.86	7.06	-67.80	-54.8

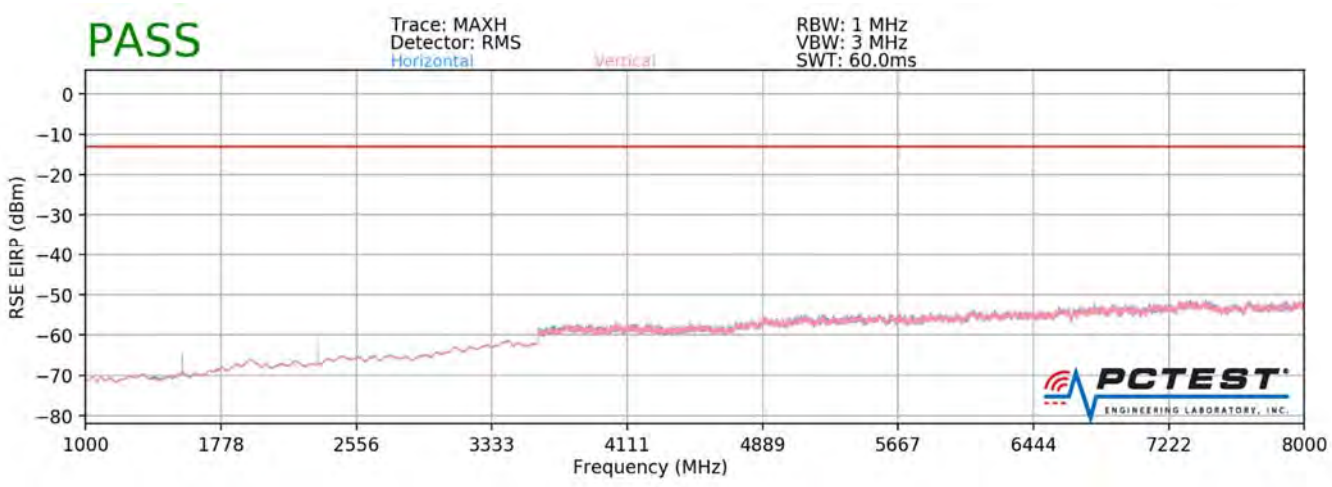
Table 7-25. Radiated Spurious Data (Band 12/17 – High Channel)

OPERATING FREQUENCY:	715.30	MHz
CHANNEL:	23173	
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]
1430.60	H	131	207	-73.72	4.77	-68.96	-56.0
2145.90	H	172	15	-62.07	5.36	-56.72	-43.7
2861.20	H	-	-	-75.14	7.06	-68.08	-55.1

Table 7-26. Radiated Spurious Data with WCP (Band 12/17 – High Channel)

Band 13



Plot 7-382. Radiated Spurious Plot above 1GHz (Band 13)

OPERATING FREQUENCY:	782.00	MHz
CHANNEL:	23230	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	186	14	-59.51	5.72	-53.79	-40.8
3128.00	H	-	-	-69.53	6.93	-62.60	-49.6

Table 7-27. Radiated Spurious Data (Band 13 – Mid Channel)

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

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]
1564.00	H	191	202	-80.87	5.88	-74.99	-35.0

Table 7-28. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	158	116	-80.91	5.88	-75.03	-35.0

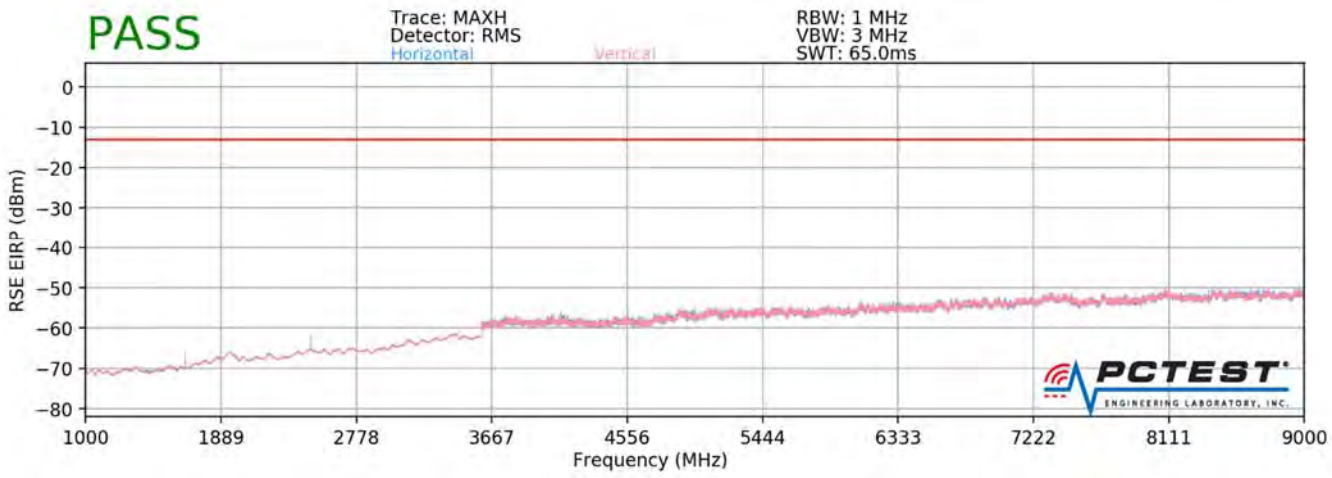
Table 7-29. Radiated Spurious Data with WCP (Band 13 – 1559-1610MHz Band)

OPERATING FREQUENCY:	782.00	MHz
CHANNEL:	23230	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	241	220	-66.64	5.72	-60.92	-47.9
3128.00	H	-	-	-70.30	6.93	-63.37	-50.4

Table 7-30. Radiated Spurious Data with WCP (Band 13 – Mid Channel)

Band 5/26



Plot 7-383. Radiated Spurious Plot above 1GHz (Band 5/26)

OPERATING FREQUENCY:	829.00	MHz
CHANNEL:	26840	
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	V	181	189	-71.70	5.78	-65.92	-52.9
2487.00	V	321	347	-70.73	5.73	-65.00	-52.0
3316.00	V	-	-	-72.51	7.87	-64.64	-51.6

Table 7-31. Radiated Spurious Data (Band 5/26 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz
CHANNEL:	26915	
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	V	144	177	-71.63	5.73	-65.90	-52.9
2509.50	V	381	348	-70.19	5.77	-64.42	-51.4
3346.00	V	-	-	-72.39	7.91	-64.49	-51.5

Table 7-32. Radiated Spurious Data (Band 5/26 – Mid Channel)

OPERATING FREQUENCY:	844.00	MHz
CHANNEL:	26990	
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	V	204	15	-71.82	5.67	-66.15	-53.1
2532.00	V	139	354	-70.79	5.85	-64.94	-51.9
3376.00	V	-	-	-72.81	7.94	-64.86	-51.9

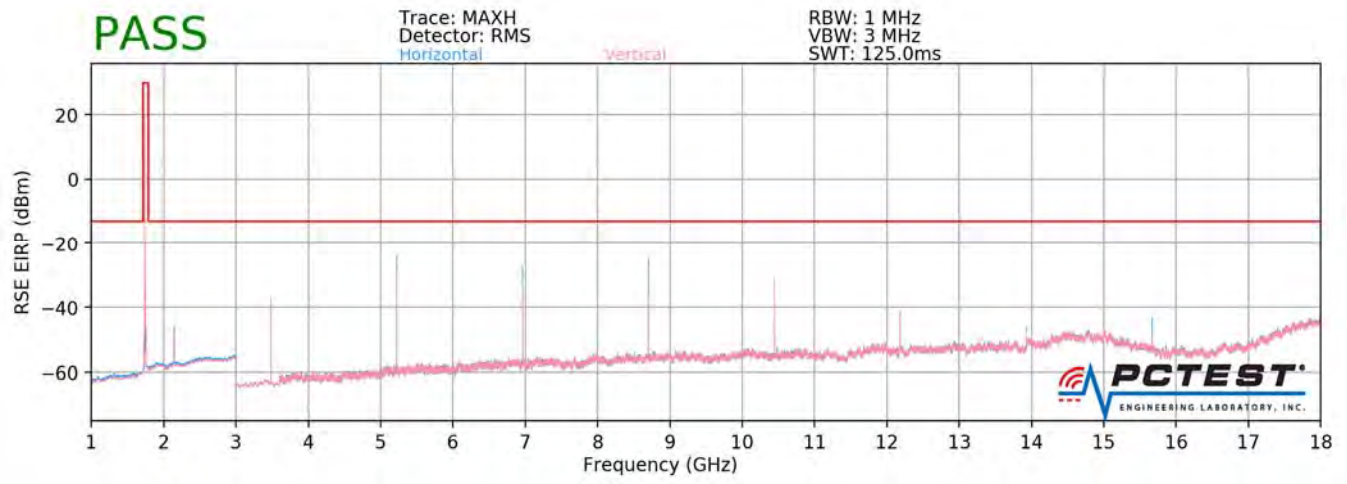
Table 7-33. Radiated Spurious Data (Band 5/26 – High Channel)

OPERATING FREQUENCY:	836.50	MHz
CHANNEL:	26915	
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	153	28	-73.91	5.73	-68.18	-55.2
2509.50	H	-	-	-72.59	5.77	-66.82	-53.8

Table 7-34. Radiated Spurious Data with WCP (Band 5/26 – Mid Channel)

Band 4/66



Plot 7-384. Radiated Spurious Plot above 1GHz (Band 4/66)

OPERATING FREQUENCY:	1717.50	MHz
CHANNEL:	132047	
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]
3435.00	H	112	8	-44.88	8.17	-36.71	-23.7
5152.50	H	141	230	-36.46	10.25	-26.21	-13.2
6870.00	H	128	345	-43.65	11.37	-32.27	-19.3
8587.50	H	113	26	-48.21	13.04	-35.16	-22.2
10305.00	H	112	23	-48.77	13.11	-35.66	-22.7
12022.50	H	116	42	-58.35	13.12	-45.22	-32.2
13740.00	H	113	15	-58.31	14.57	-43.74	-30.7
15457.50	H	114	74	-58.81	14.15	-44.66	-31.7

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

OPERATING FREQUENCY:	1745.00	MHz
CHANNEL:	132322	
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]
3490.00	H	117	323	-45.93	8.46	-37.47	-24.5
5235.00	H	124	153	-37.98	10.28	-27.69	-14.7
6980.00	H	126	345	-44.71	11.47	-33.24	-20.2
8725.00	H	113	231	-47.62	13.12	-34.50	-21.5
10470.00	H	115	23	-45.01	13.14	-31.86	-18.9
12215.00	H	116	154	-55.16	13.16	-42.01	-29.0
13960.00	H	114	24	-57.33	14.66	-42.67	-29.7
15705.00	H	114	296	-60.58	13.84	-46.73	-33.7

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

OPERATING FREQUENCY:	1772.50	MHz
CHANNEL:	132597	
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]
3545.00	H	133	322	-45.80	8.52	-37.29	-24.3
5317.50	H	125	250	-39.86	10.33	-29.53	-16.5
7090.00	H	129	342	-45.22	11.59	-33.63	-20.6
8862.50	H	114	231	-45.01	13.16	-31.84	-18.8
10635.00	H	212	99	-42.88	13.11	-29.77	-16.8
12407.50	H	113	236	-56.24	13.29	-42.96	-30.0
14180.00	H	133	276	-60.36	14.49	-45.87	-32.9
15952.50	H	111	48	-58.71	13.72	-44.99	-32.0

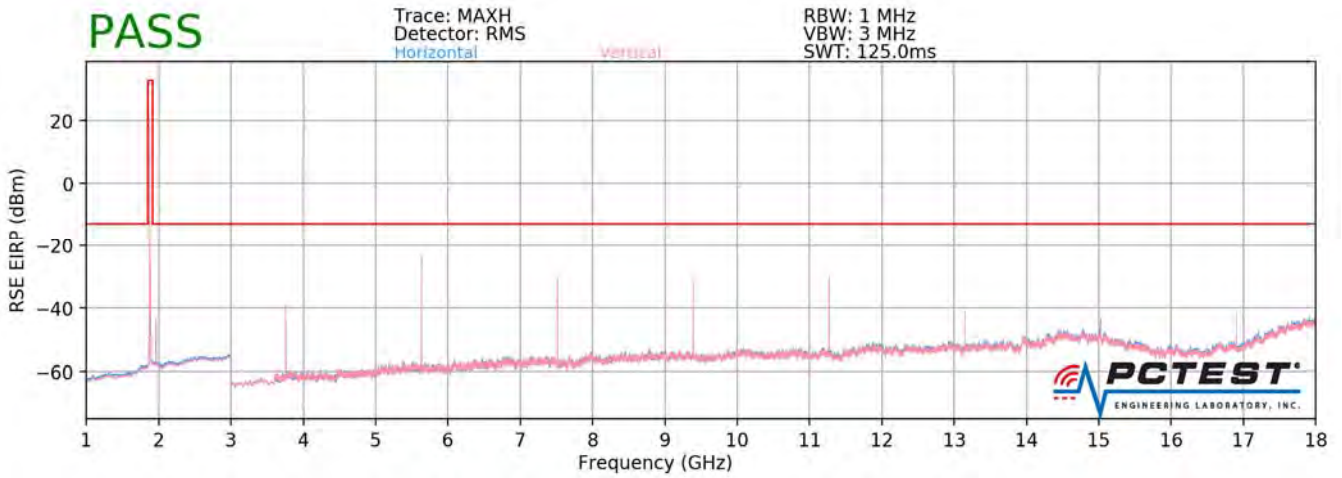
Table 7-37. Radiated Spurious Data (Band 4/66 – High Channel)

OPERATING FREQUENCY:	1745.00	MHz
CHANNEL:	132322	
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]
3490.00	H	114	119	-46.85	8.46	-38.39	-25.4
5235.00	H	112	50	-38.62	10.28	-28.33	-15.3
6980.00	H	134	184	-49.30	11.47	-37.83	-24.8
8725.00	H	126	30	-46.46	13.12	-33.34	-20.3
10470.00	H	112	165	-45.61	13.14	-32.46	-19.5
12215.00	H	319	355	-57.35	13.16	-44.20	-31.2
13960.00	H	321	253	-58.14	14.66	-43.48	-30.5
15705.00	H	114	287	-62.81	13.84	-48.96	-36.0

Table 7-38. Radiated Spurious Data with WCP (Band 4/66 – Mid Channel)

Band 2/25



Plot 7-385. Radiated Spurious Plot above 1GHz (Band 2/25)

OPERATING FREQUENCY:	1857.50	MHz
CHANNEL:	26115	
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]
3715.00	H	119	26	-43.01	8.34	-34.68	-21.7
5572.50	H	126	43	-39.95	10.56	-29.39	-16.4
7430.00	H	123	358	-41.13	11.96	-29.16	-16.2
9287.50	H	113	8	-39.02	13.40	-25.62	-12.6
11145.00	H	112	349	-44.02	13.41	-30.60	-17.6
13002.50	H	398	321	-54.24	13.45	-40.79	-27.8
14860.00	H	116	347	-60.36	14.06	-46.31	-33.3
16717.50	H	274	67	-56.95	13.04	-43.91	-30.9

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

OPERATING FREQUENCY:	1882.50	MHz
CHANNEL:	26365	
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]
3765.00	H	112	31	-40.90	8.47	-32.43	-19.4
5647.50	H	151	24	-39.31	10.60	-28.71	-15.7
7530.00	H	118	3	-41.96	12.11	-29.85	-16.8
9412.50	H	111	2	-38.30	13.34	-24.96	-12.0
11295.00	H	115	347	-45.10	13.43	-31.68	-18.7
13177.50	H	386	310	-54.85	13.77	-41.08	-28.1
15060.00	H	114	347	-61.21	14.08	-47.14	-34.1
16942.50	H	289	64	-54.52	13.05	-41.47	-28.5

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

OPERATING FREQUENCY:	1907.50	MHz
CHANNEL:	26615	
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]
3815.00	H	165	27	-39.60	8.56	-31.04	-18.0
5722.50	H	118	306	-38.15	10.63	-27.52	-14.5
7630.00	H	142	0	-43.58	12.18	-31.39	-18.4
9537.50	H	112	355	-48.36	13.29	-35.07	-22.1
11445.00	H	114	351	-46.70	13.47	-33.23	-20.2
13352.50	H	342	34	-54.83	13.83	-41.00	-28.0
15260.00	H	390	328	-59.86	14.05	-45.81	-32.8
17167.50	H	300	338	-55.64	13.48	-42.15	-29.2

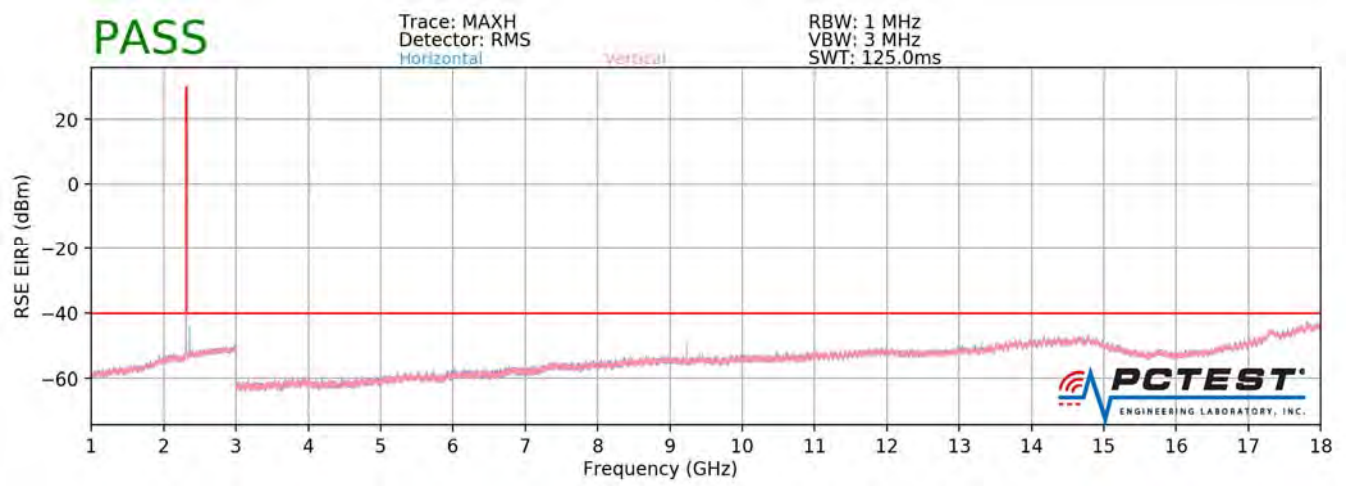
Table 7-41. Radiated Spurious Data (Band 2/25 – High Channel)

OPERATING FREQUENCY:	1857.50	MHz
CHANNEL:	26115	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

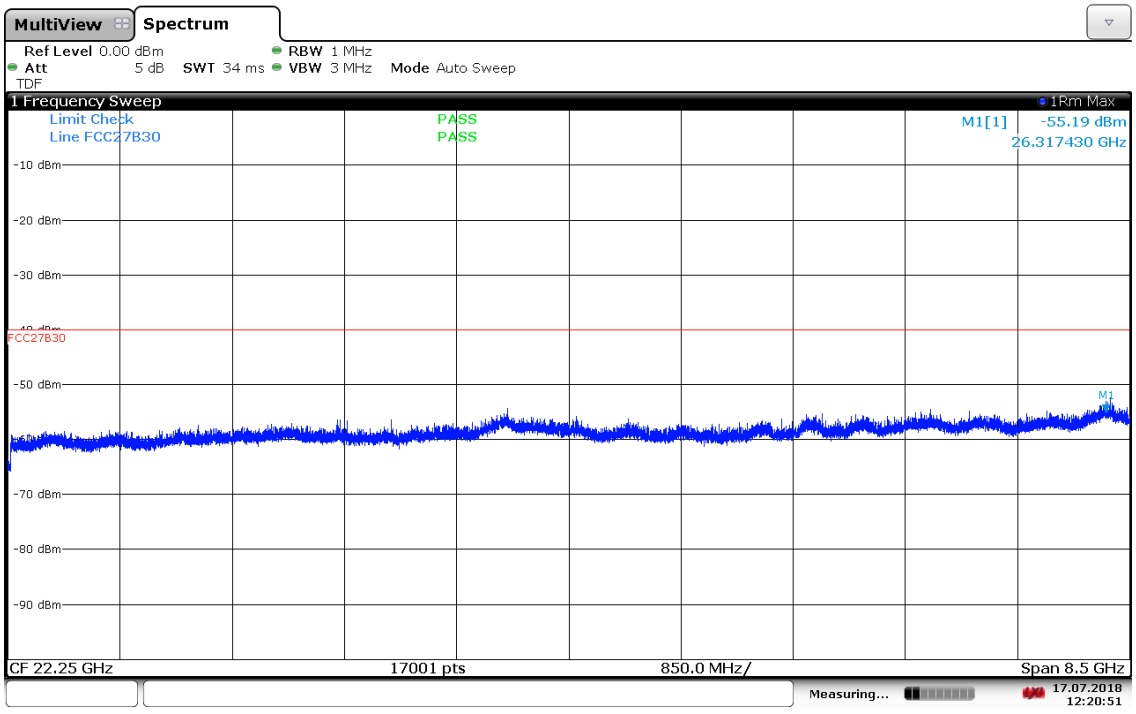
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3715.00	H	160	319	-43.85	8.34	-35.52	-22.5
5572.50	H	309	6	-39.22	10.56	-28.66	-15.7
7430.00	H	112	162	-45.66	11.96	-33.69	-20.7
9287.50	H	346	33	-46.77	13.40	-33.37	-20.4
11145.00	H	117	133	-50.51	13.41	-37.09	-24.1
13002.50	H	360	348	-59.62	13.45	-46.17	-33.2
14860.00	H	337	247	-59.97	14.06	-45.92	-32.9
16717.50	H	232	63	-61.23	13.04	-48.19	-35.2

Table 7-42. Radiated Spurious Data with WCP (Band 2/25 – Low Channel)

Band 30



Plot 7-386. Radiated Spurious Plot 1GHz - 18GHz (Band 30)



Plot 7-387. Radiated Spurious Plot 18GHz – 26.5GHz (Band 30)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	V	-	-	-72.92	9.41	-63.51	-23.5
6922.50	V	396	15	-70.83	11.41	-59.42	-19.4
9230.00	V	389	7	-59.01	13.41	-45.60	-5.6
11537.50	V	129	17	-66.61	13.44	-53.17	-13.2
13845.00	V	-	-	-63.85	14.62	-49.24	-9.2

Table 7-43. Radiated Spurious Data (Band 30 – Low Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4625.00	V	355	253	-72.57	9.43	-63.15	-23.1
6937.50	V	114	336	-71.15	11.43	-59.73	-19.7
9250.00	V	400	7	-60.17	13.41	-46.76	-6.8
11562.50	V	207	19	-65.42	13.44	-51.99	-12.0
13875.00	V	-	-	-65.27	14.65	-50.62	-10.6

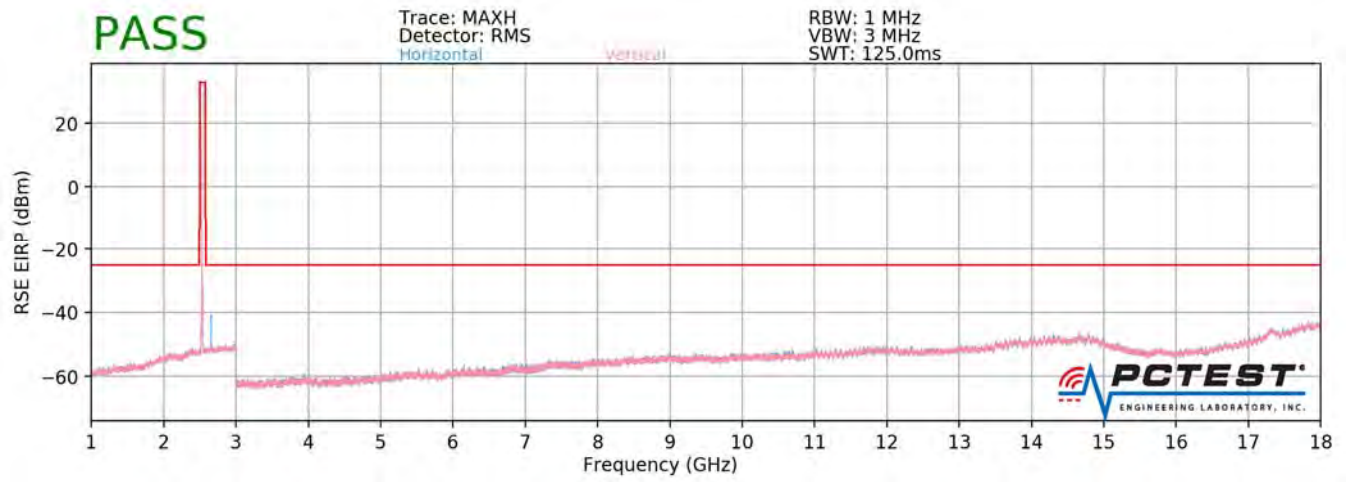
Table 7-44. Radiated Spurious Data (Band 30 – Mid Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	V	155	178	-67.07	9.41	-57.66	-17.7
6922.50	V	146	134	-70.76	11.41	-59.35	-19.4
9230.00	V	358	164	-60.01	13.41	-46.60	-6.6
11537.50	V	-	-	-67.14	13.44	-53.70	-13.7

Table 7-45. Radiated Spurious Data with WCP (Band 30 – Low Channel)

Band 7



Plot 7-388. Radiated Spurious Plot 1GHz - 18GHz (Band 7)

OPERATING FREQUENCY:	2507.50	MHz
CHANNEL:	20825	
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	-	-	-72.66	10.10	-62.56	-37.6
7522.50	H	-	-	-70.04	12.11	-57.94	-32.9

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

OPERATING FREQUENCY:	2535.00	MHz
CHANNEL:	21100	
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]
5070.00	H	-	-	-72.59	10.18	-62.41	-37.4
7605.00	H	-	-	-70.13	12.15	-57.98	-33.0

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

OPERATING FREQUENCY:	2562.50	MHz
CHANNEL:	21375	
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]
5125.00	H	-	-	-72.38	10.23	-62.15	-37.1
7687.50	H	-	-	-70.48	12.27	-58.21	-33.2

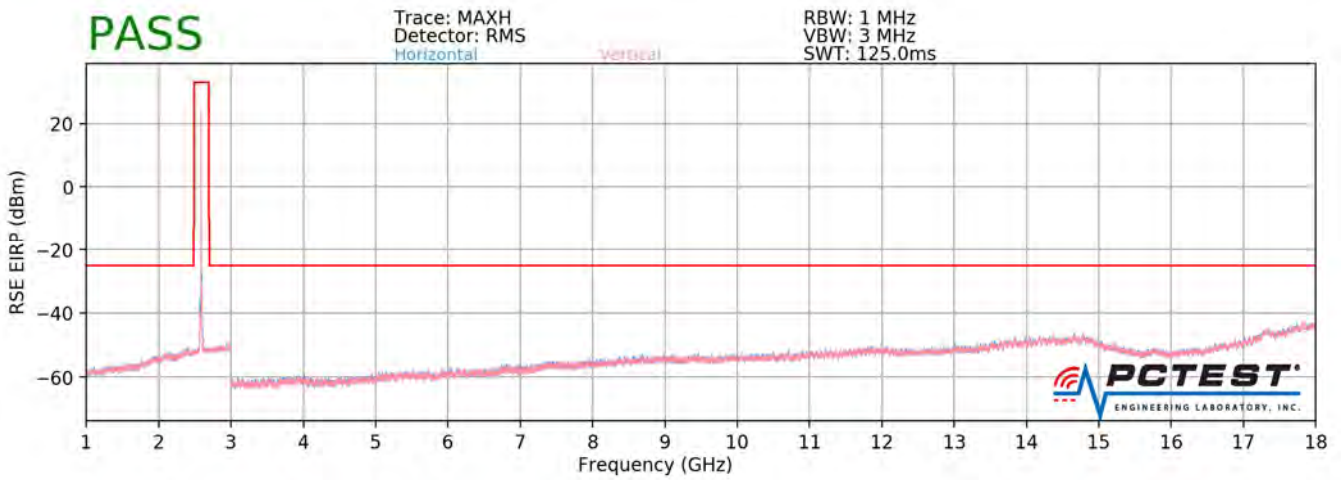
Table 7-48. Radiated Spurious Data (Band 7 – High Channel)

OPERATING FREQUENCY:	2562.50	MHz
CHANNEL:	21375	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

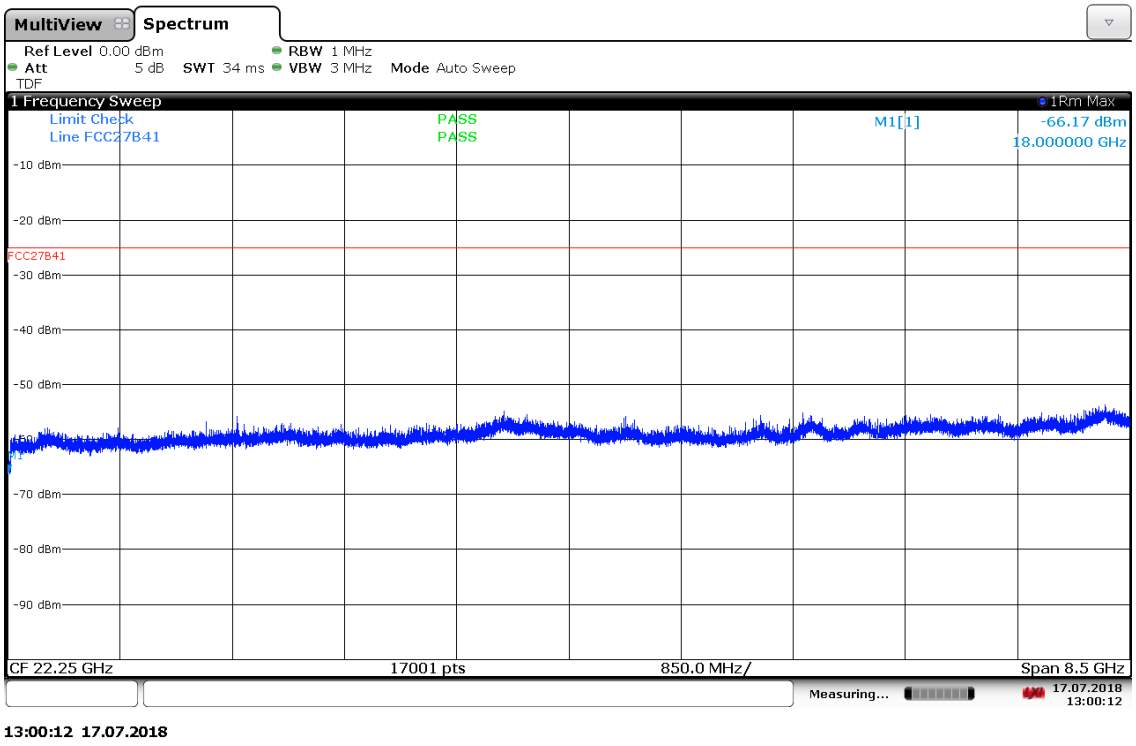
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5125.00	H	-	-	-72.42	10.23	-62.19	-37.2
7687.50	H	-	-	-70.72	12.27	-58.45	-33.5

Table 7-49. Radiated Spurious Data with WCP (Band 7 – High Channel)

Band 41



Plot 7-389. Radiated Spurious Plot 1GHz - 18GHz (Band 41)



Plot 7-390. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41)

OPERATING FREQUENCY:	2510.00	MHz
CHANNEL:	39790	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	V	161	38	-72.11	10.11	-62.00	-37.0
7530.00	V	400	0	-69.80	12.11	-57.69	-32.7
10040.00	V	-	-	-68.35	13.16	-55.19	-30.2

Table 7-50. Radiated Spurious Data (Band 41 PC2– Low Channel)

OPERATING FREQUENCY:	2593.00	MHz
CHANNEL:	40620	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	V	393	323	-71.02	10.27	-60.76	-35.8
7779.00	V	400	348	-69.52	12.28	-57.23	-32.2
10372.00	V	-	-	-68.51	13.12	-55.39	-30.4

Table 7-51. Radiated Spurious Data (Band 41 PC2 – Mid Channel)

OPERATING FREQUENCY:	2680.00	MHz
CHANNEL:	41490	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	115	315	-69.36	10.40	-58.96	-34.0
8040.00	V	129	332	-69.52	12.55	-56.96	-32.0
10720.00	V	-	-	-67.69	13.11	-54.58	-29.6

Table 7-52. Radiated Spurious Data (Band 41 PC2– High Channel)

OPERATING FREQUENCY:	2680.00	MHz
CHANNEL:	41490	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	325	271	-71.18	10.40	-60.78	-35.8
8040.00	V	398	103	-68.89	12.55	-56.33	-31.3
10720.00	V	-	-	-67.47	13.11	-54.36	-29.4

Table 7-53. Radiated Spurious Data with WCP (Band 41 PC2–High Channel)

OPERATING FREQUENCY:	2680.00	MHz
CHANNEL:	41490	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	143	340	-71.90	10.27	-61.64	-36.6
7953.00	V	123	31	-70.62	12.28	-58.33	-33.3
10546.00	V	-	-	-68.59	13.12	-55.47	-30.5

Table 7-54. Radiated Spurious Data (Band 41 PC3– High Channel)

7.10 Uplink Carrier Aggregation Radiated Measurements

§2.1053, §27.53(m)

Test Overview

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

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. No. of sweep points ≥ 2 x span / RBW
4. Detector = RMS
5. Trace mode = Average (Max Hold for pulsed emissions)
6. The trace was allowed to stabilize

Test Setup

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

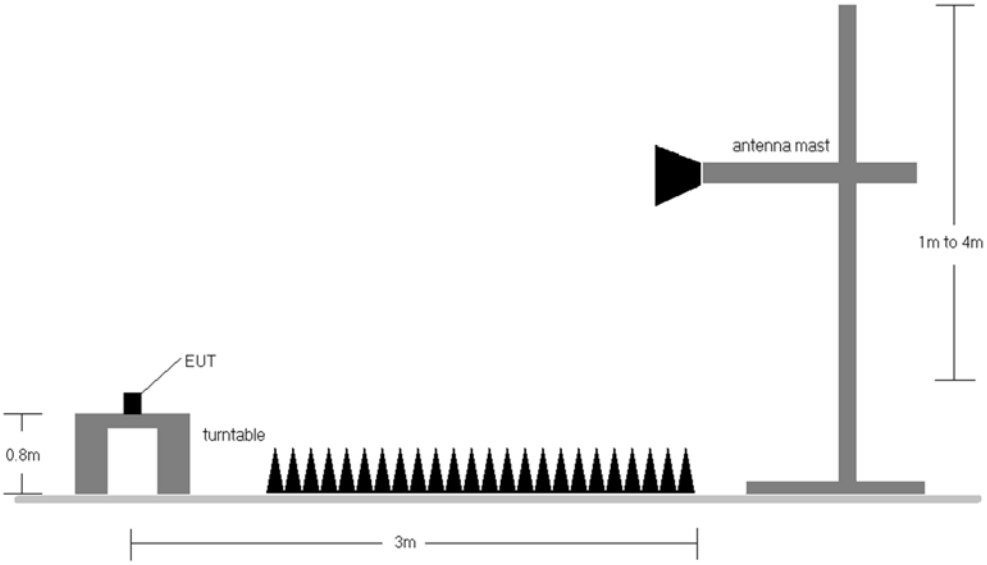


Figure 7-10. Test Instrument & Measurement Setup

Test Notes

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

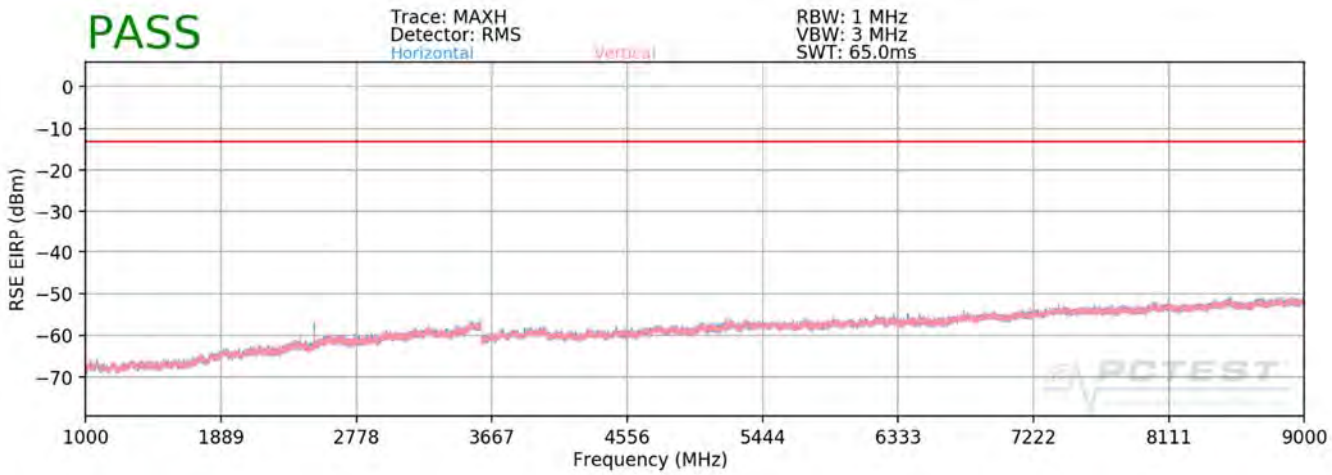
2) This unit was tested with its standard battery.

3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.

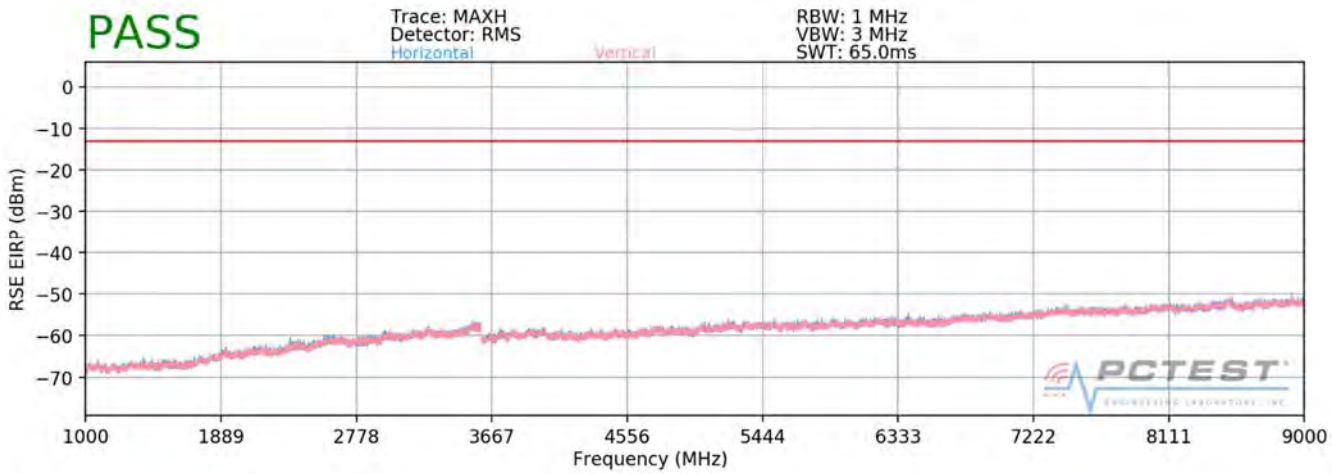
4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

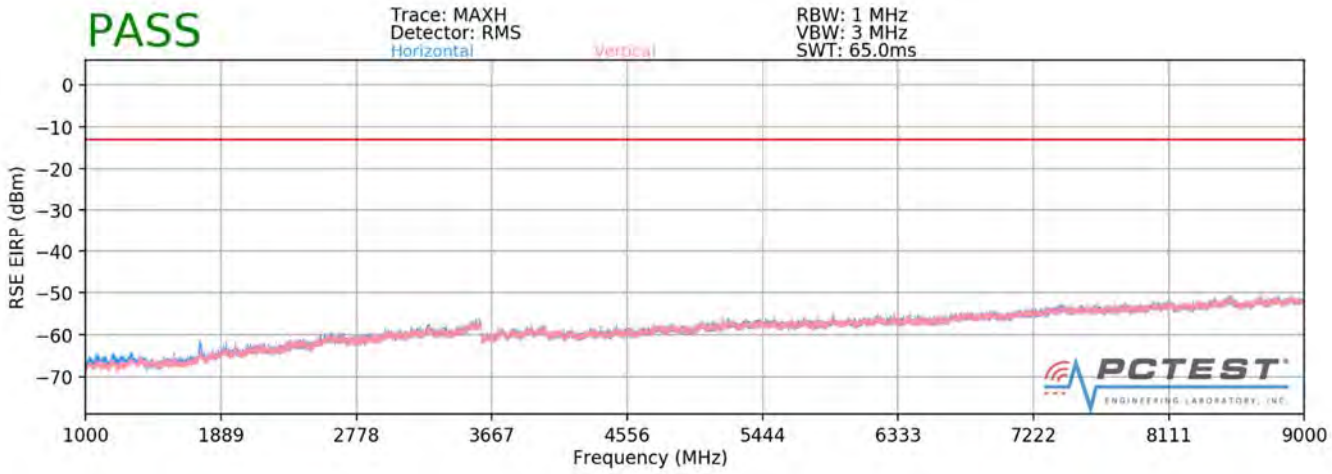
6) No significant emissions were found as a result of two uplink carriers operating contiguously.



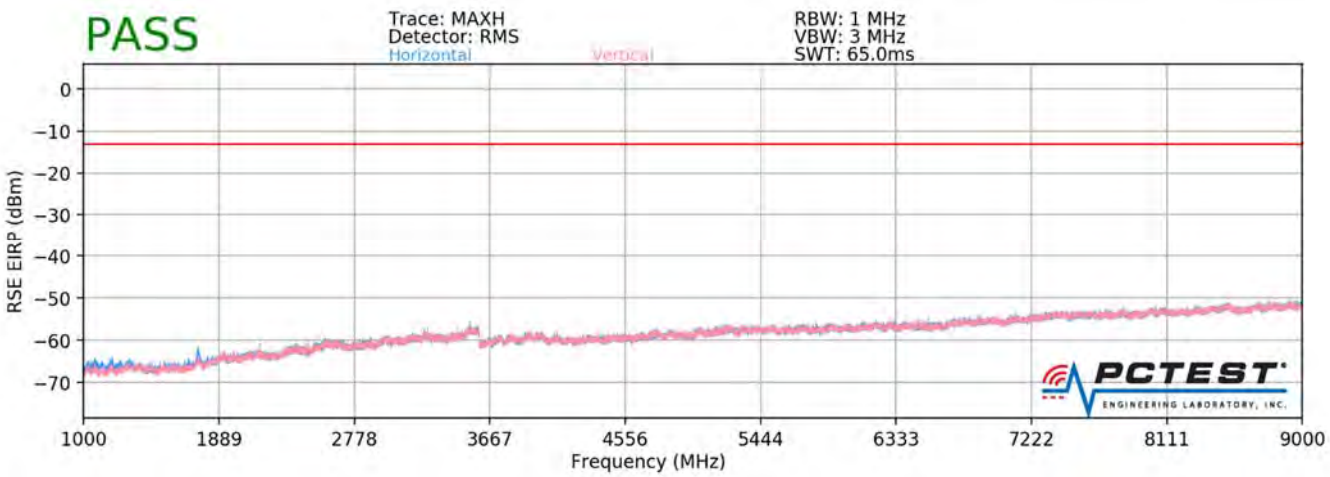
Plot 7-55. Radiated Spurious Plot (ULCA B5 – 10MHz+10MHz - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)



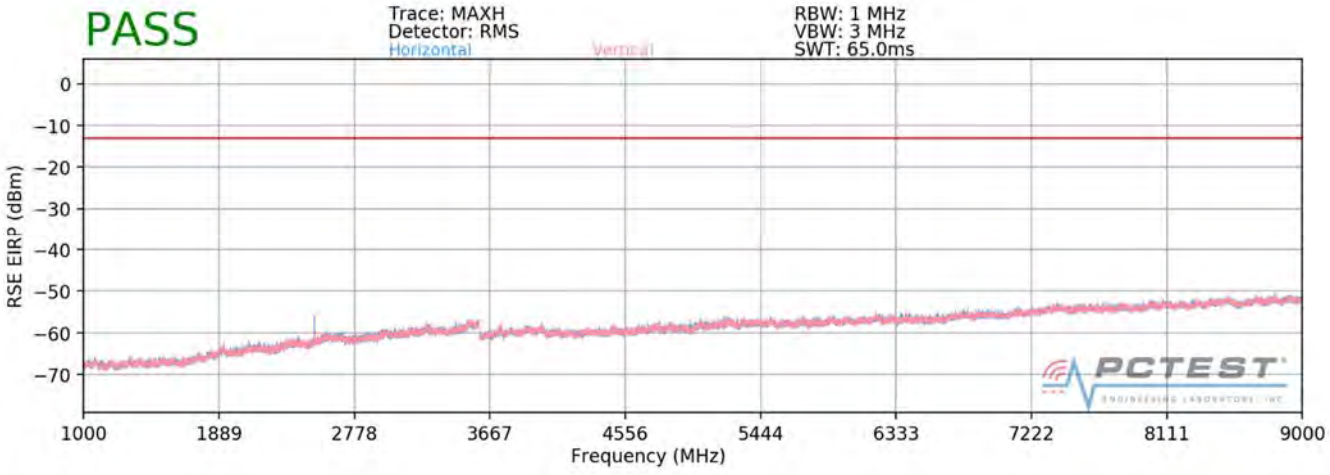
Plot 7-56. Radiated Spurious Plot (ULCA B5– 10MHz+10MHz - PCC:RB 50 Offset 0, SCC:RB 50 Offset 0 – Low Channel)



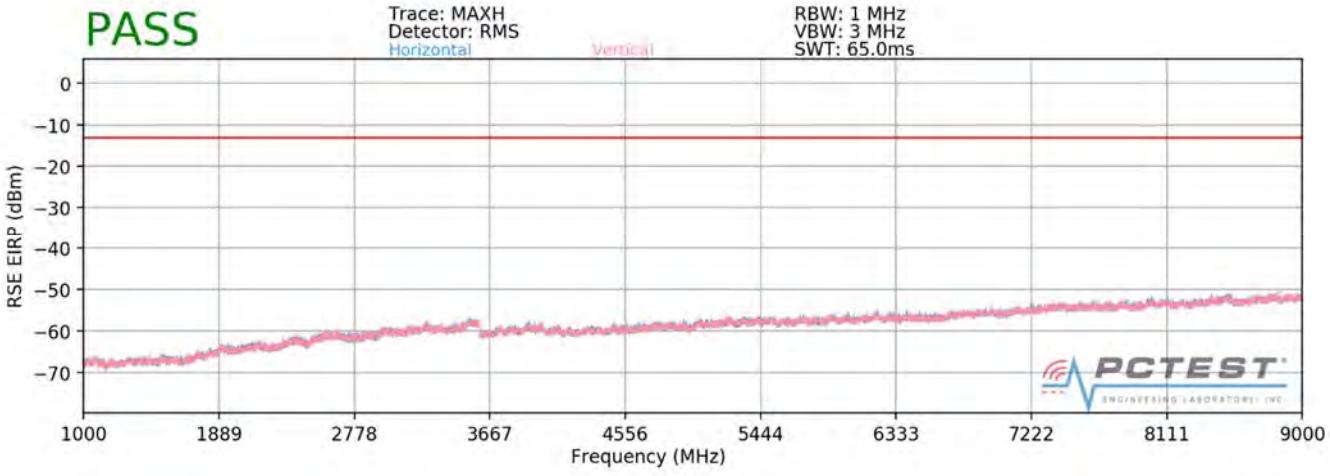
Plot 7-57. Radiated Spurious Plot (ULCA B5 – 10MHz+10MHz - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Mid Channel)



Plot 7-58. Radiated Spurious Plot (ULCA B5– 10MHz+10MHz - PCC:RB 50 Offset 0, SCC:RB 50 Offset 0 – Mid Channel)



Plot 7-59. Radiated Spurious Plot (ULCA B5 – 10MHz+10MHz - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – High Channel)



Plot 7-60. Radiated Spurious Plot (ULCA B5– 10MHz+10MHz - PCC:RB 50 Offset 0, SCC:RB 50 Offset 0 – High Channel)

OPERATING FREQUENCY (PCC):	829.00	MHz
OPERATING FREQUENCY (SCC):	838.90	
CHANNEL (PCC):	20450	
CHANNEL (SCC):	20549	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	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	166	217	-75.27	5.78	-69.49	-56.5
2487.00	H	152	142	-62.11	5.73	-56.38	-43.4
3316.00	H	-	-	-73.38	7.87	-65.51	-52.5

Table 7-61. Radiated Spurious Data (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC):	831.50	MHz
OPERATING FREQUENCY (SCC):	841.50	
CHANNEL (PCC):	20600	
CHANNEL (SCC):	20575	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	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	261	320	-72.99	5.76	-67.23	-54.2
2494.50	H	339	319	-66.97	5.75	-61.22	-48.2
3326.00	H	-	-	-72.05	7.91	-64.15	-51.1

Table 7-62. Radiated Spurious Data (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Mid Channel)

OPERATING FREQUENCY (PCC):	834.10	MHz
OPERATING FREQUENCY (SCC):	844.00	
CHANNEL (PCC):	20501	
CHANNEL (SCC):	20600	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

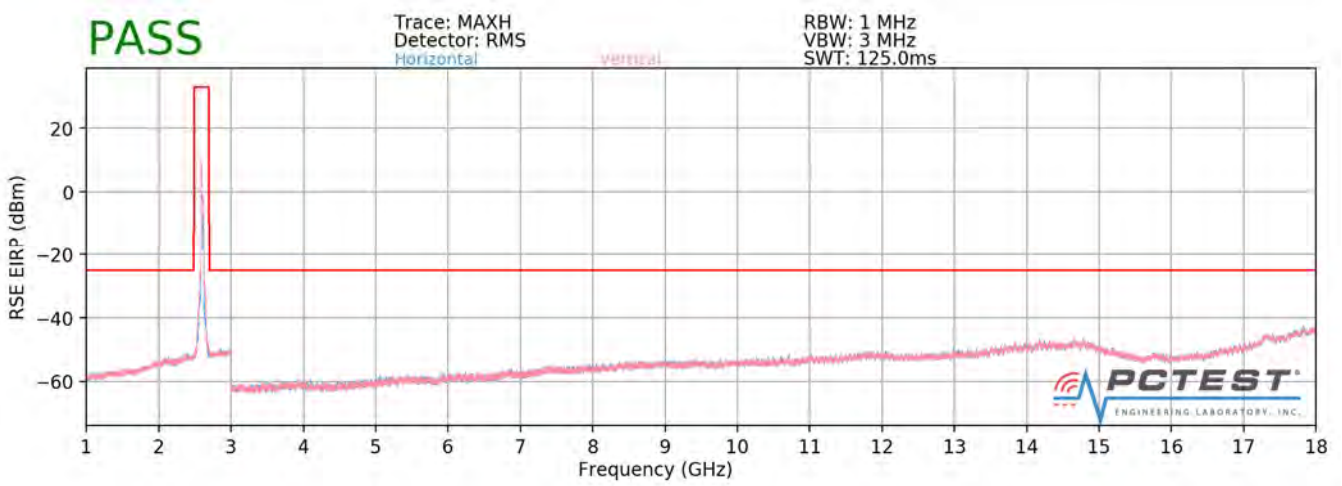
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1668.20	H	141	211	-75.48	5.74	-69.74	-56.7
2502.30	H	150	144	-62.25	5.74	-56.51	-43.5
3336.40	H	-	-	-73.69	7.89	-65.80	-52.8

Table 7-63. Radiated Spurious Data (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – High Channel)

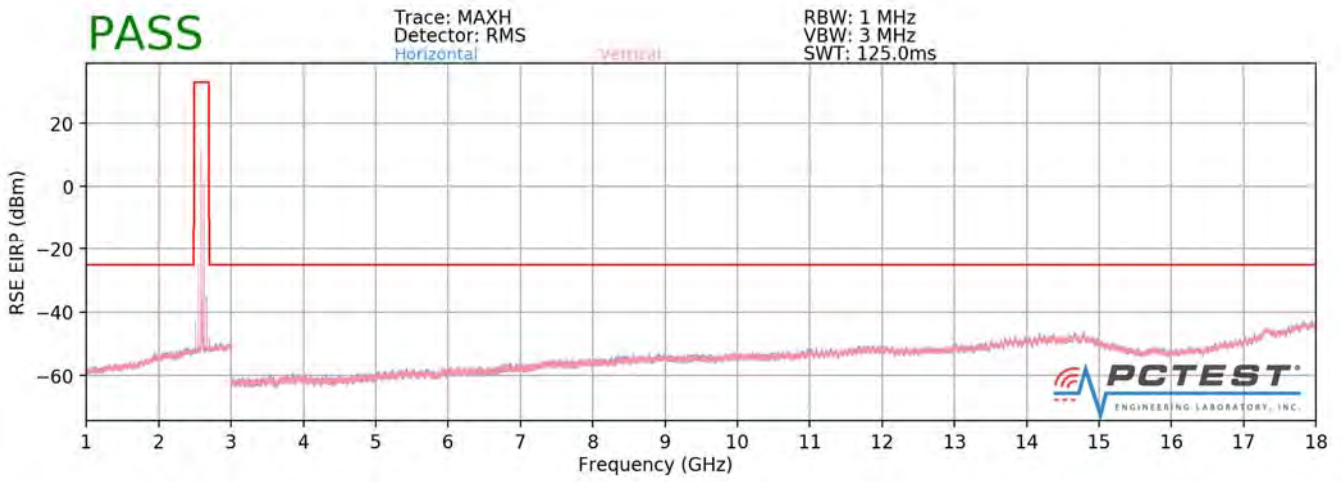
OPERATING FREQUENCY (PCC):	831.50	MHz
OPERATING FREQUENCY (SCC):	841.50	
CHANNEL (PCC):	20600	
CHANNEL (SCC):	20575	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10 + 10	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

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	255	243	-74.01	5.76	-68.25	-55.2
2494.50	H	126	339	-71.37	5.75	-65.62	-52.6
3326.00	H	-	-	-72.05	7.91	-64.15	-51.1

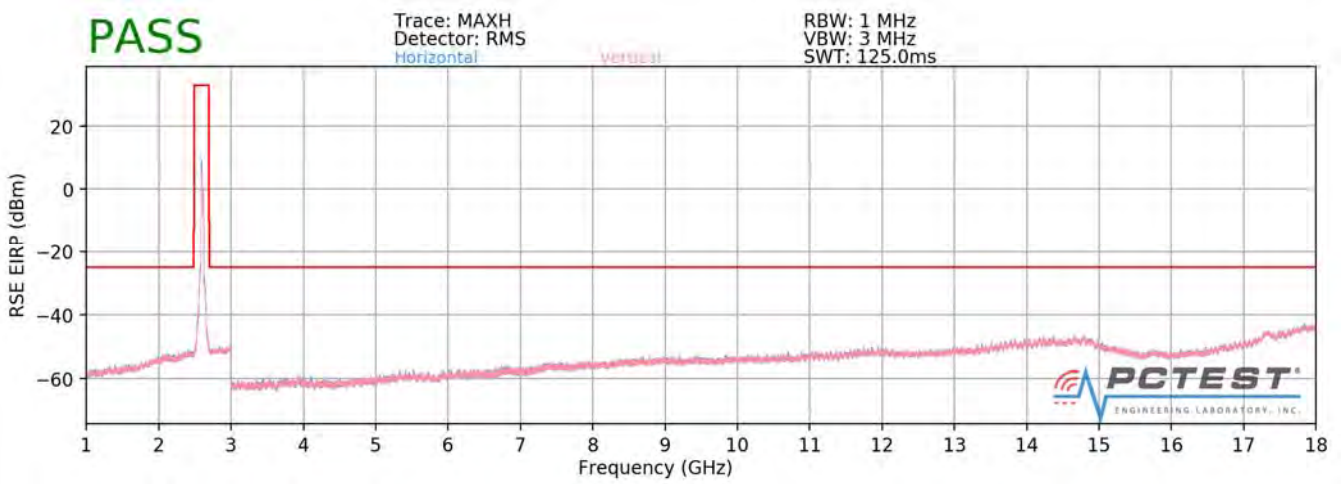
Table 7-64. Radiated Spurious Data with WCP (ULCA B5 - PCC: RB 1 Offset 49, SCC: RB 1 Offset 0 – Mid Channel)



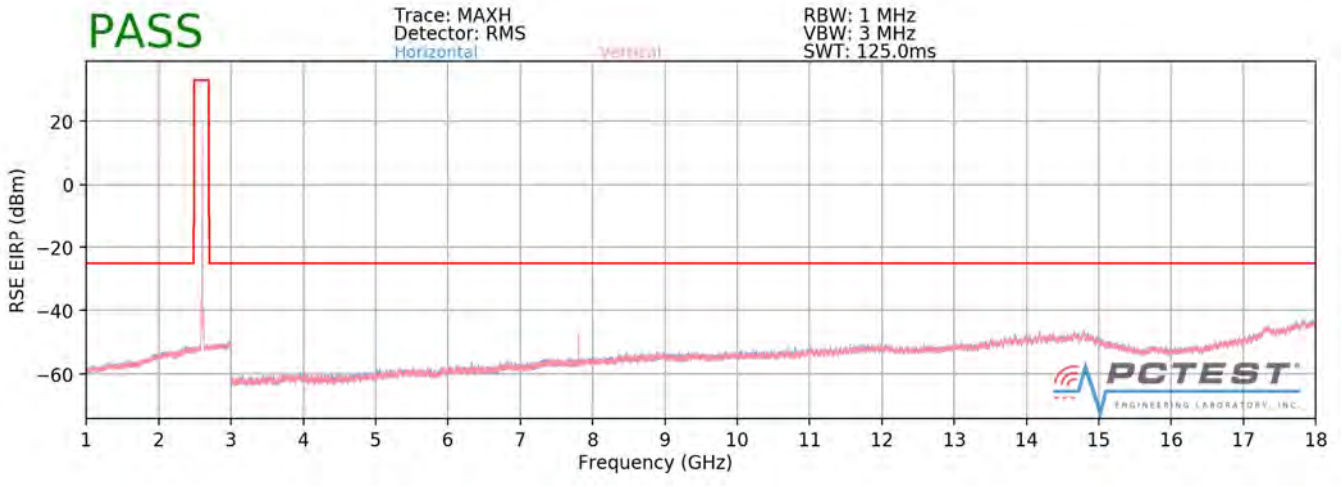
Plot 7-65. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 100 Offset 0, SCC: RB 100 Offset 100 – Low Channel)



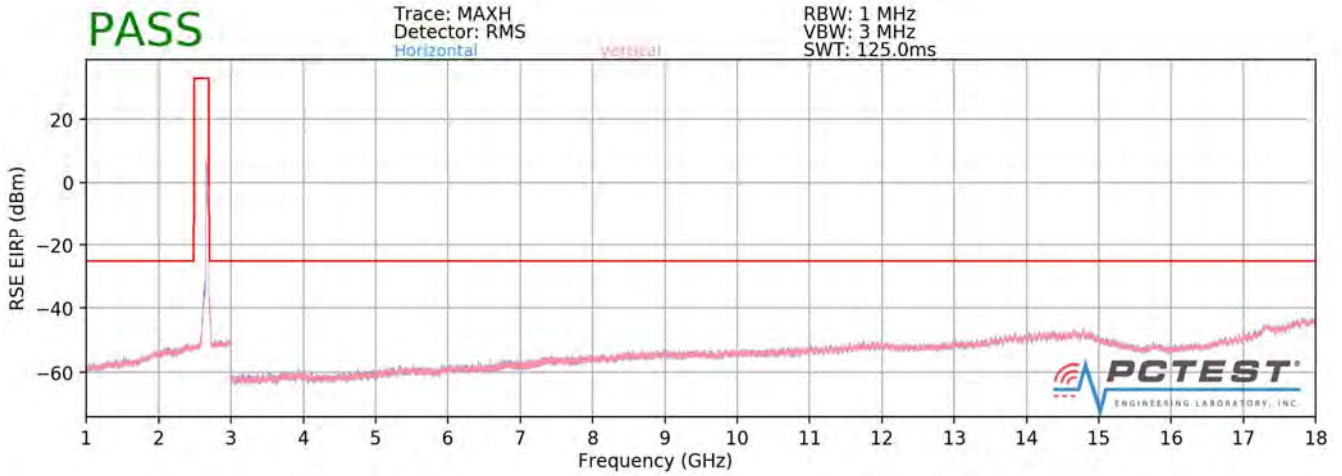
Plot 7-66. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)



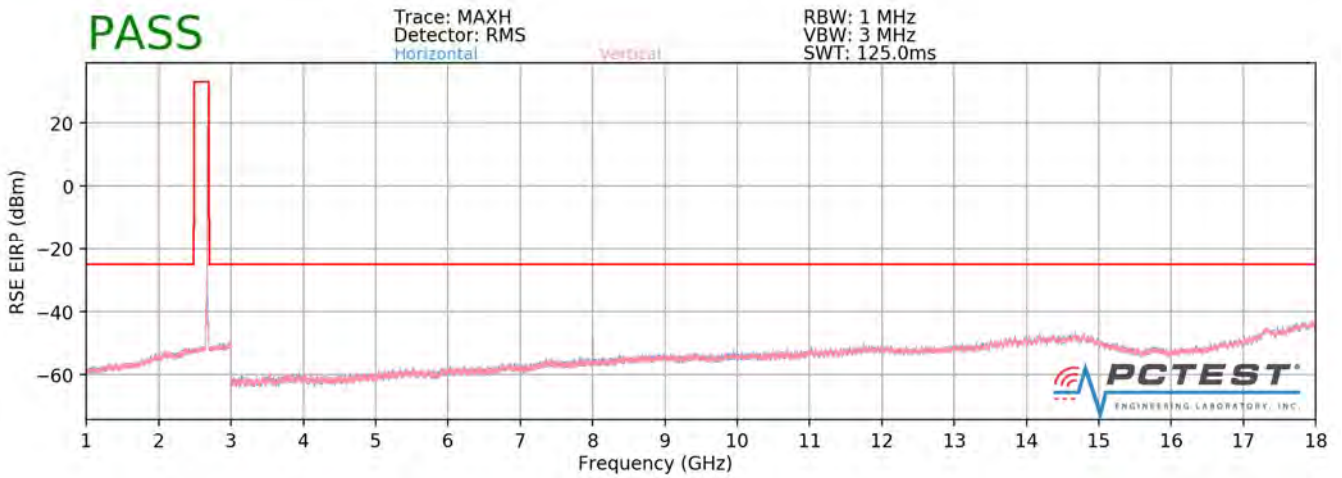
Plot 7-67. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 100 Offset 0, SCC: RB 100 Offset 100 – Mid Channel)



Plot 7-68. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)



Plot 7-69. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 100 Offset 0, SCC: RB 100 Offset 100 – High Channel)



Plot 7-70. Radiated Spurious Plot (ULCA B41 – 20MHz+20MHz - PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

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	V	132	337	-68.12	10.11	-58.01	-33.0
7518.00	V	112	321	-64.42	12.11	-52.31	-27.3
10024.00	V	-	-	-67.05	13.16	-53.89	-28.9

Plot 7-71. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Low channel)

OPERATING FREQUENCY (PCC):	2593.00	MHz
OPERATING FREQUENCY (SCC):	2612.80	
CHANNEL (PCC):	40620	
CHANNEL (SCC):	40818	
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	V	277	169	-69.10	10.27	-58.84	-33.8
7779.00	V	364	327	-62.87	12.28	-50.58	-25.6
10372.00	V	-	-	-69.31	13.12	-56.19	-31.2

Plot 7-72. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Mid Channel)

OPERATING FREQUENCY (PCC):	2660.20	MHz
OPERATING FREQUENCY (SCC):	2680.00	
CHANNEL (PCC):	41292	
CHANNEL (SCC):	41490	
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]
5320.40	V	114	184	-66.59	10.40	-56.19	-31.2
7980.60	V	378	317	-58.79	12.55	-46.23	-21.2
10640.80	V	-	-	-66.48	13.11	-53.37	-28.4

Plot 7-73. Radiated Spurious Data (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Mid Channel)

OPERATING FREQUENCY (PCC):	2593.00	MHz
OPERATING FREQUENCY (SCC):	2612.80	
CHANNEL (PCC):	40620	
CHANNEL (SCC):	40818	
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	V	115	238	-69.79	10.27	-59.53	-34.5
7779.00	V	147	28	-66.00	12.28	-53.71	-28.7
10372.00	V	-	-	-67.13	13.12	-54.01	-29.0

Plot 7-74. Radiated Spurious Data with WCP (ULCA B41 PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Low Channel)

7.11 Frequency Stability / Temperature Variation

Test Overview and Limit

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

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

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

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings

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

Test Setup

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

Test Notes

None

Band 71 Frequency Stability Measurements

OPERATING FREQUENCY:	680,500,000	Hz
CHANNEL:	133297	
REFERENCE VOLTAGE:	4.20	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.20	+ 20 (Ref)	680,500,072	72	0.0000106
100 %		- 30	680,499,715	-285	-0.0000419
100 %		- 20	680,499,762	-238	-0.0000350
100 %		- 10	680,500,175	175	0.0000257
100 %		0	680,500,309	309	0.0000454
100 %		+ 10	680,499,760	-240	-0.0000353
100 %		+ 20	680,500,157	157	0.0000231
100 %		+ 30	680,500,089	89	0.0000131
100 %		+ 40	680,500,351	351	0.0000516
100 %		+ 50	680,499,762	-238	-0.0000350
BATT. ENDPOINT	3.54	+ 20	680,499,995	-5	-0.0000007

Table 7-75. Frequency Stability Data (Band 71)

Note:

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

Band 71 Frequency Stability Measurements

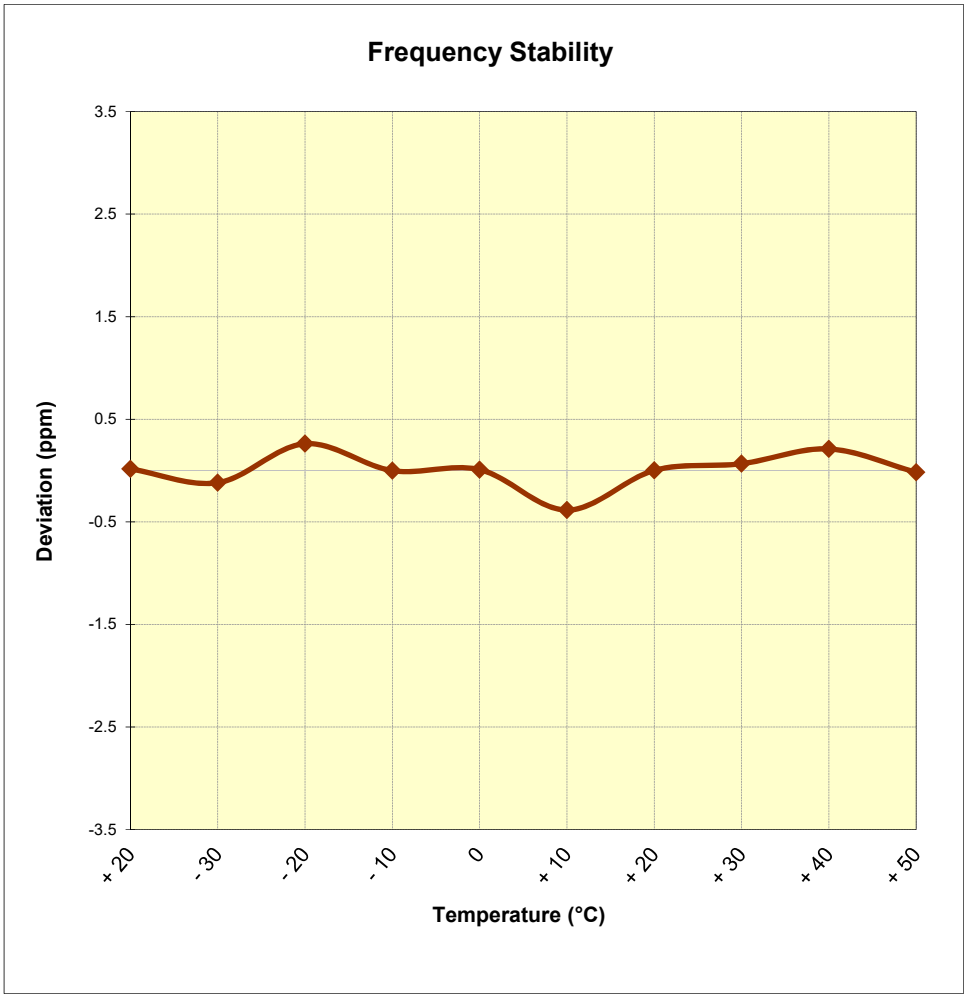


Figure 7-11. Frequency Stability Graph (Band 71)

Band 12/17 Frequency Stability Measurements

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23790	
REFERENCE VOLTAGE:	4.20	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.20	+ 20 (Ref)	707,500,011	11	0.0000016
100 %		- 30	707,499,916	-84	-0.0000119
100 %		- 20	707,500,185	185	0.0000261
100 %		- 10	707,499,999	-1	-0.0000001
100 %		0	707,500,006	6	0.0000008
100 %		+ 10	707,499,727	-273	-0.0000386
100 %		+ 20	707,500,001	1	0.0000001
100 %		+ 30	707,500,047	47	0.0000066
100 %		+ 40	707,500,149	149	0.0000211
100 %		+ 50	707,499,988	-12	-0.0000017
BATT. ENDPOINT	3.54	+ 20	707,500,173	173	0.0000245

Table 7-76. 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.

Band 12/17 Frequency Stability Measurements

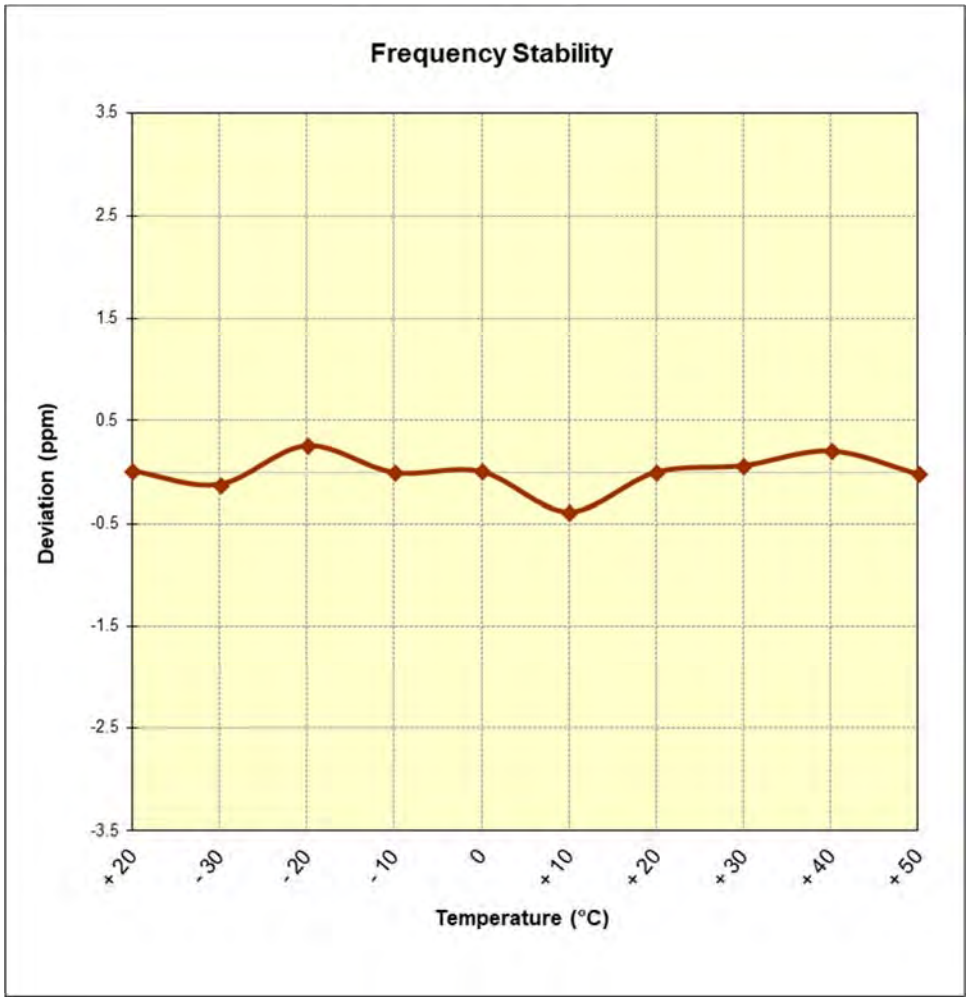


Figure 7-12. Frequency Stability Graph (Band 12/17)

Band 13 Frequency Stability Measurements

OPERATING FREQUENCY:	782,000,000	Hz
CHANNEL:	23230	
REFERENCE VOLTAGE:	4.20	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.20	+ 20 (Ref)	781,999,976	-24	-0.0000031
100 %		- 30	781,999,880	-120	-0.0000153
100 %		- 20	781,999,796	-204	-0.0000261
100 %		- 10	782,000,269	269	0.0000344
100 %		0	781,999,675	-325	-0.0000416
100 %		+ 10	781,999,782	-218	-0.0000279
100 %		+ 20	781,999,839	-161	-0.0000206
100 %		+ 30	782,000,211	211	0.0000270
100 %		+ 40	782,000,213	213	0.0000272
100 %		+ 50	781,999,977	-23	-0.0000029
BATT. ENDPOINT	3.54	+ 20	781,999,938	-62	-0.0000079

Table 7-77. 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.