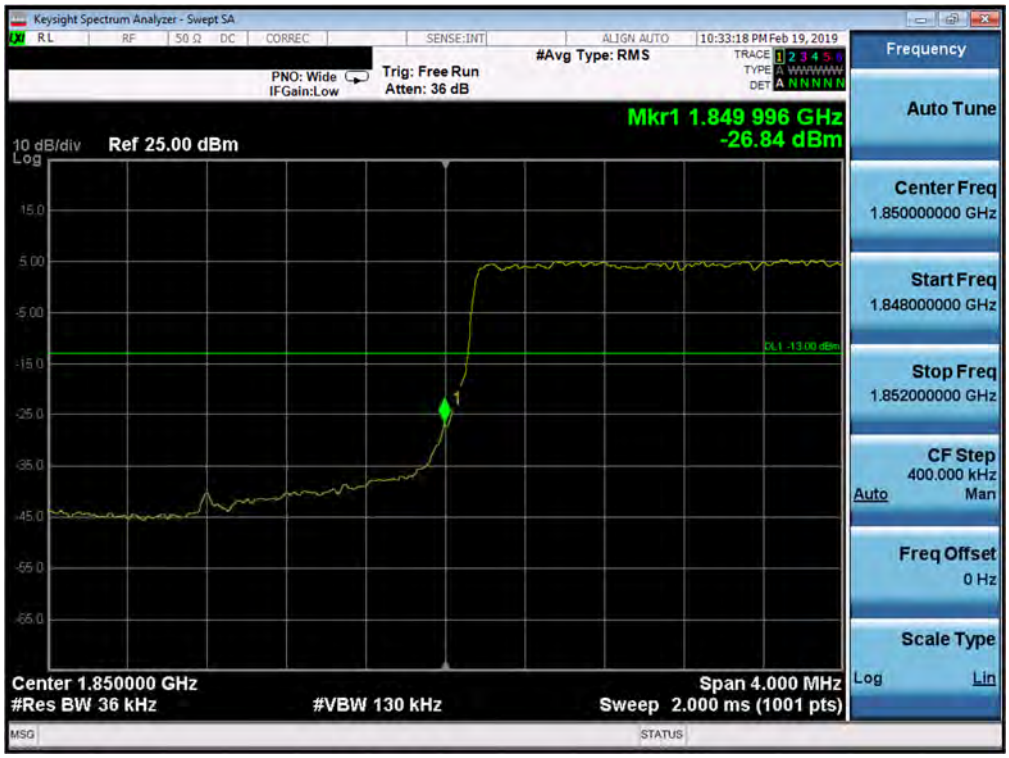
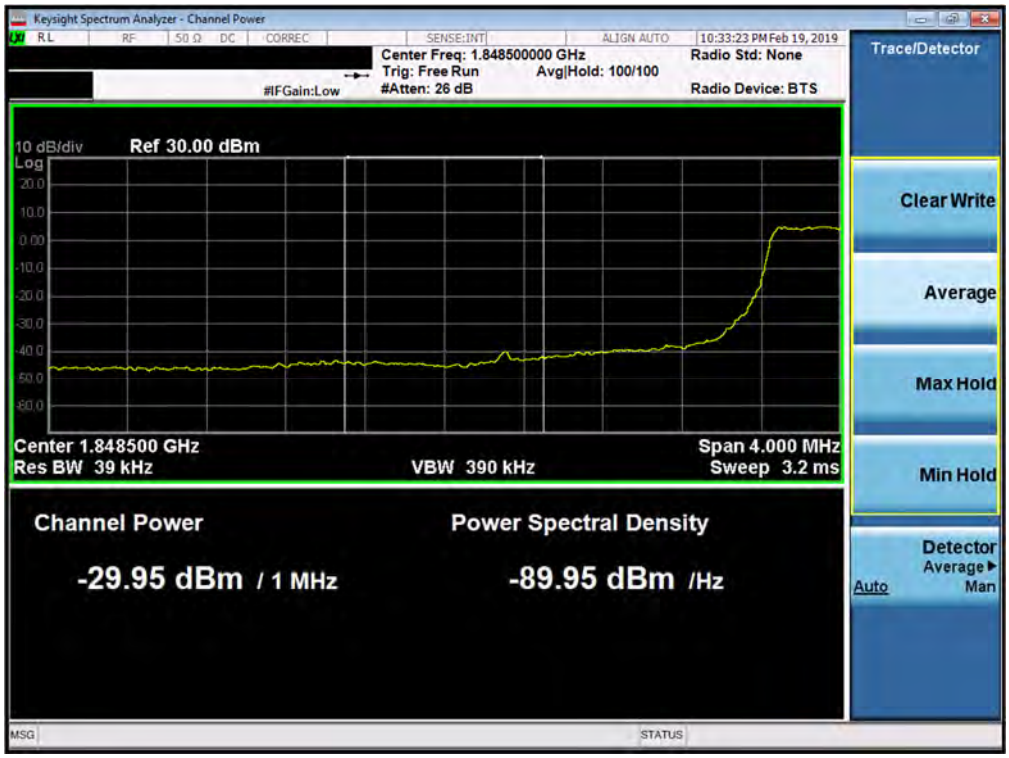
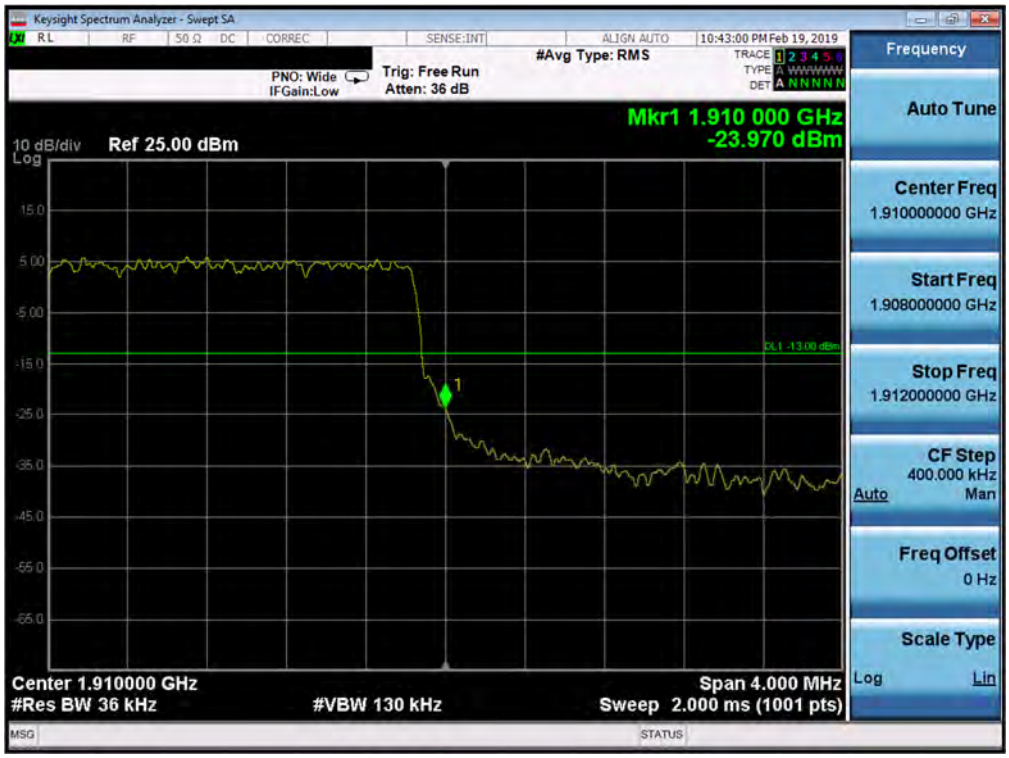


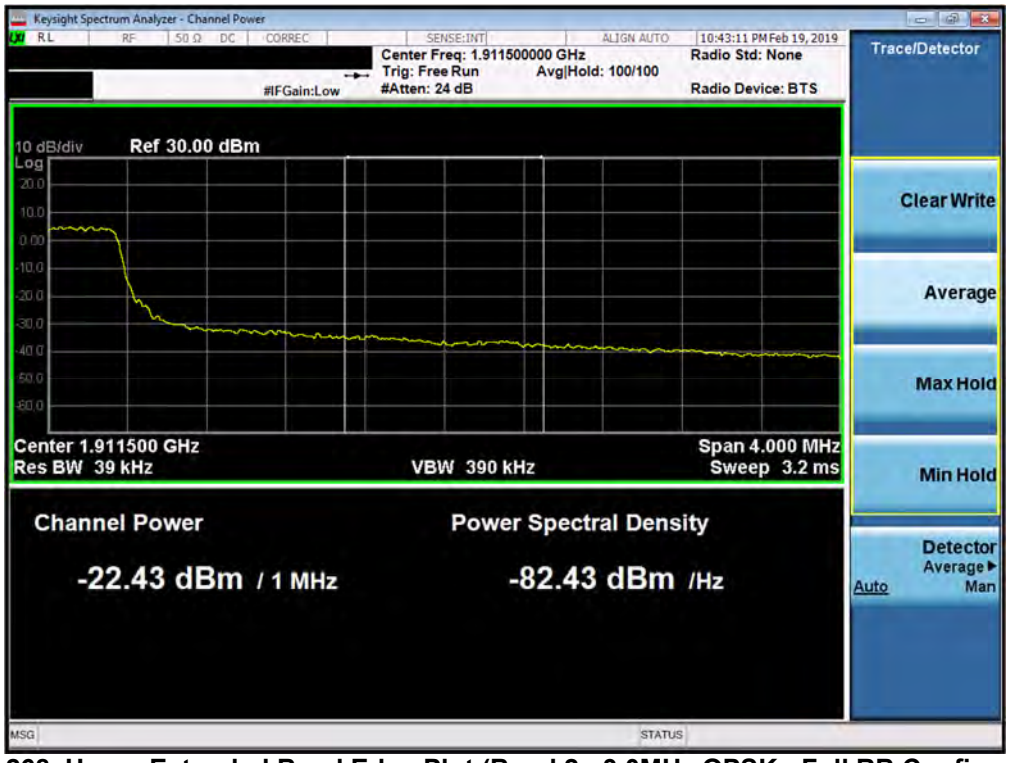
Plot 7-265. Lower Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



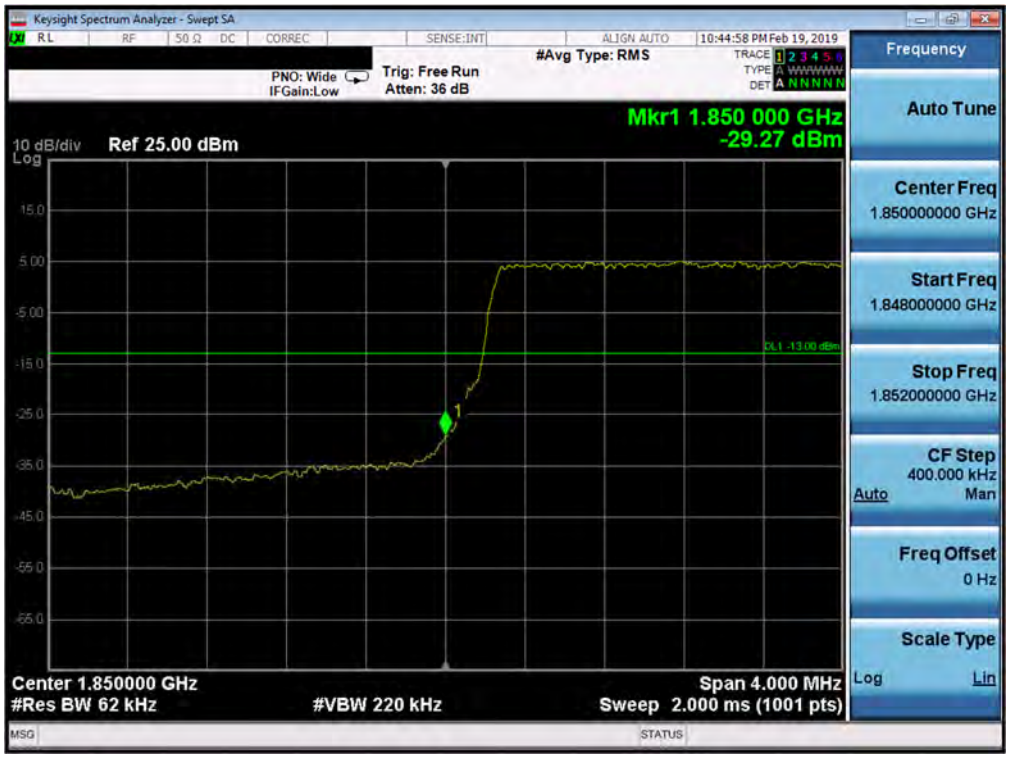
Plot 7-266. Lower Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



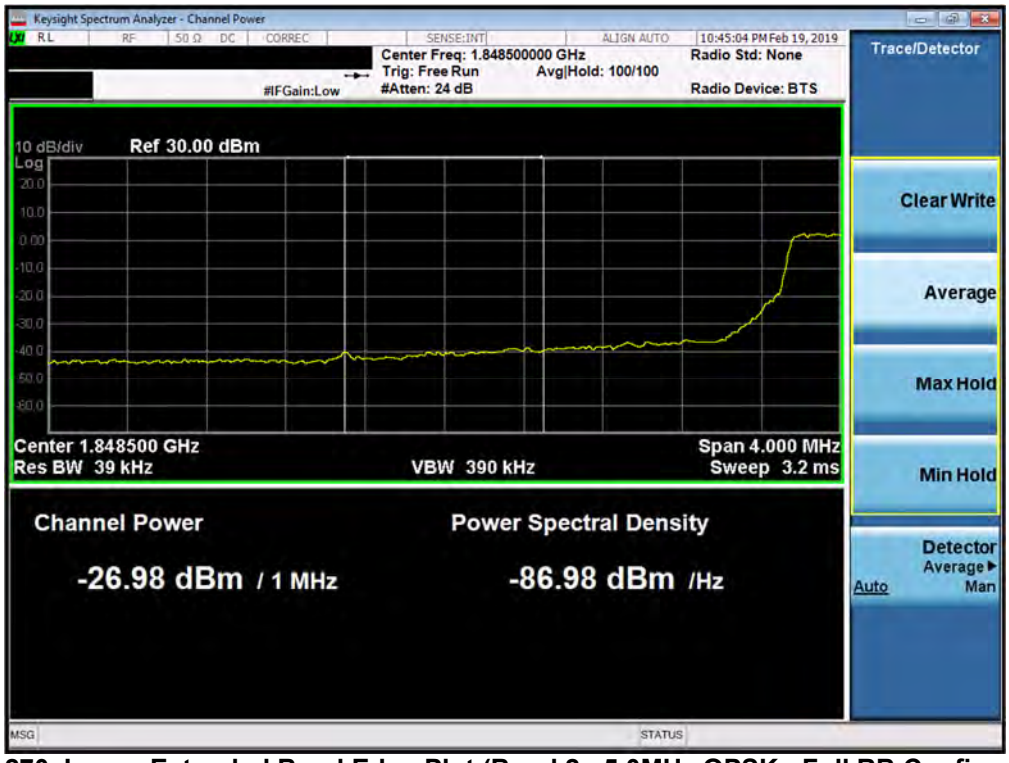
Plot 7-267. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



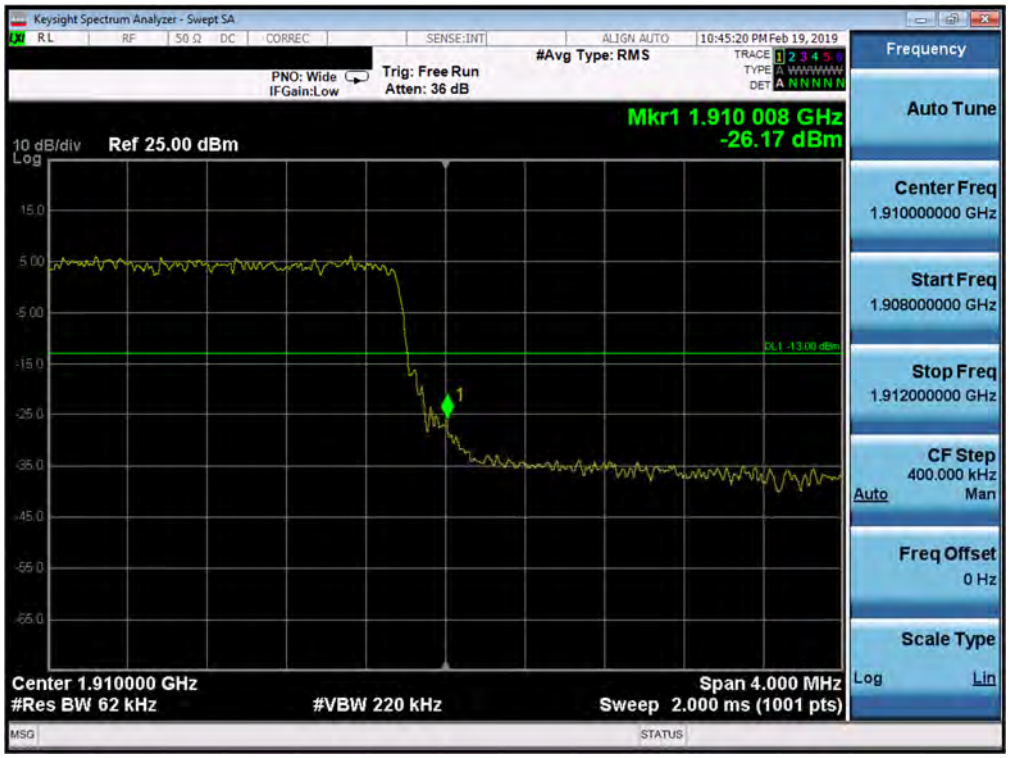
Plot 7-268. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



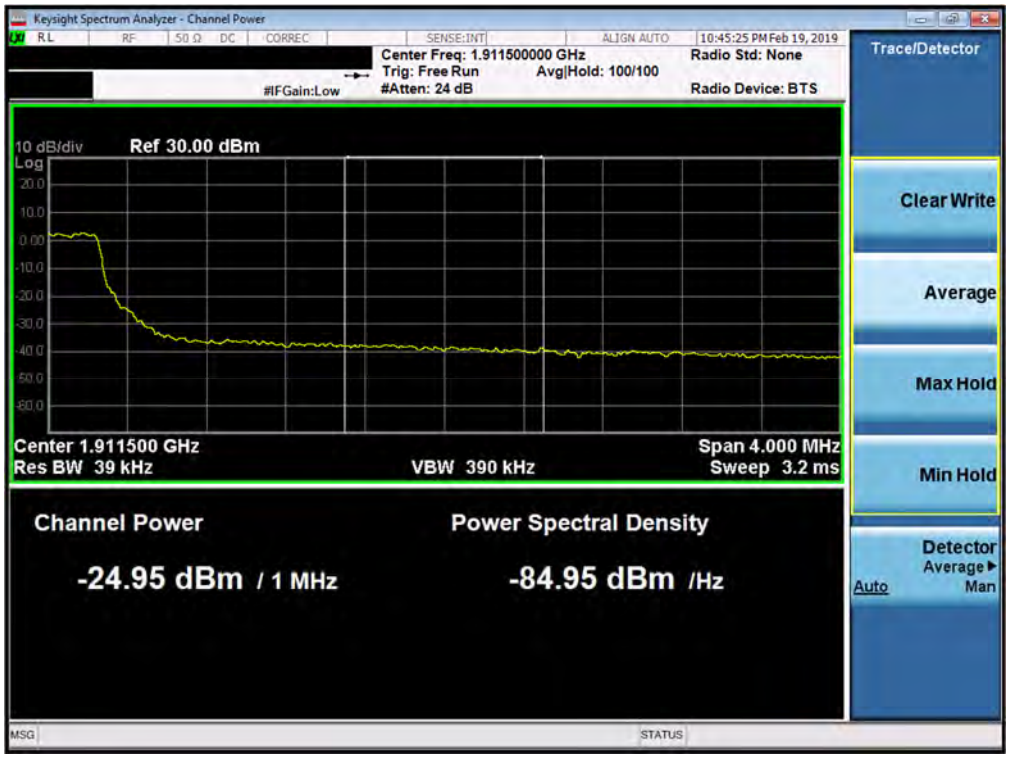
Plot 7-269. Lower Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



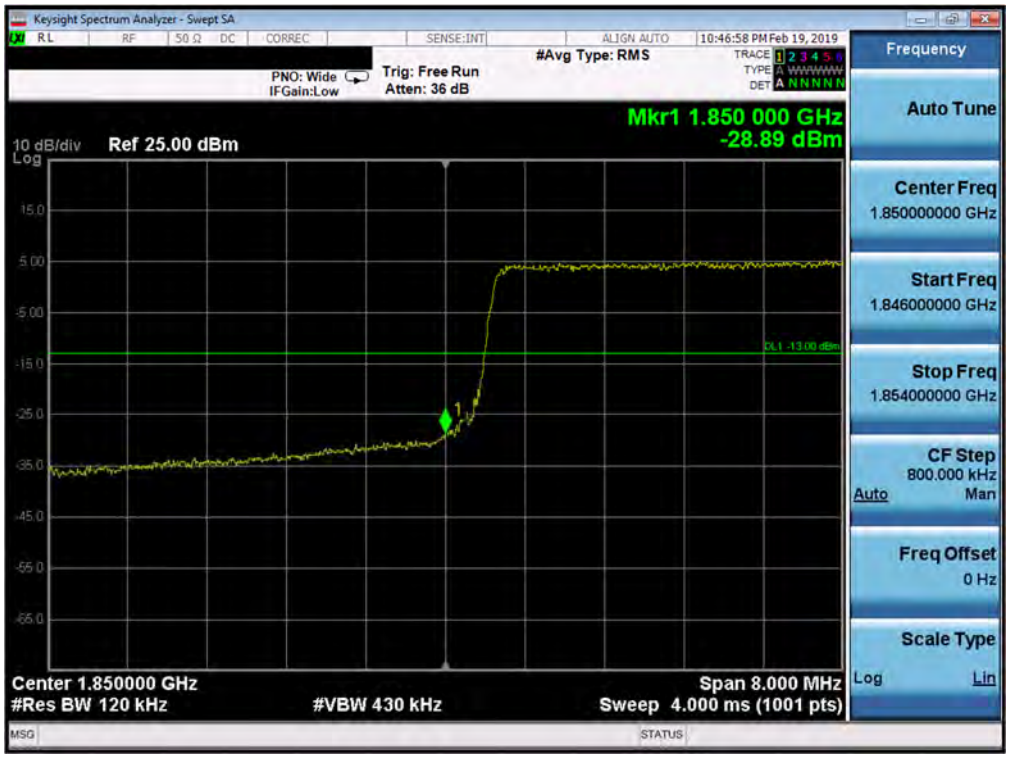
Plot 7-270. Lower Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



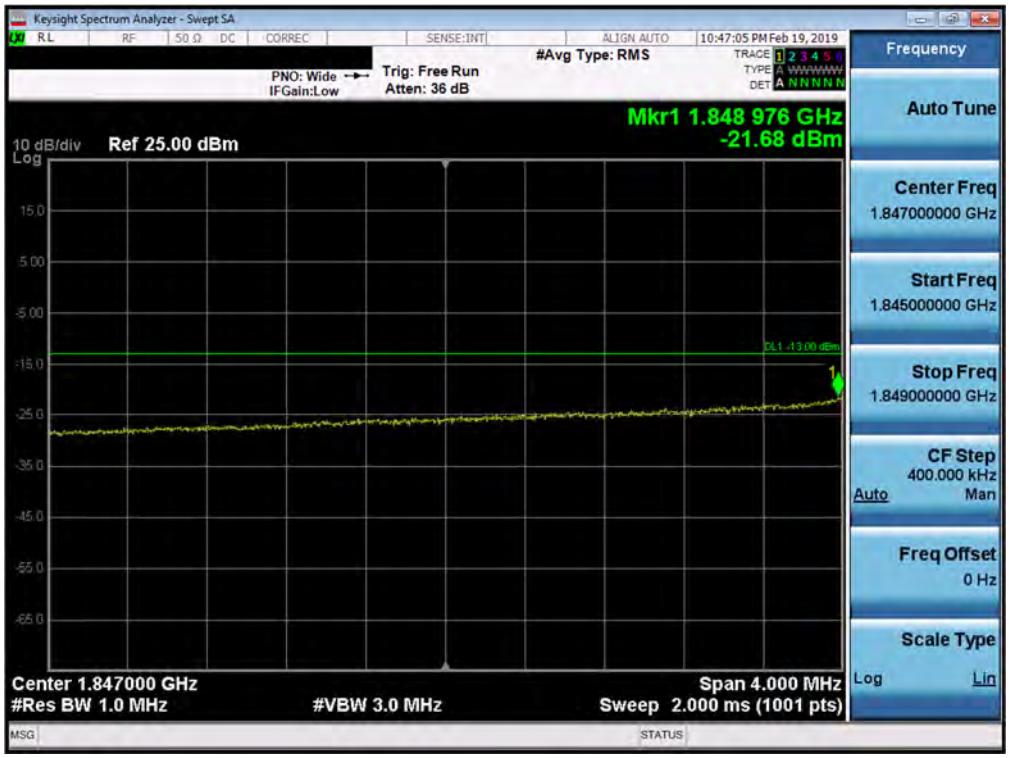
Plot 7-271. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



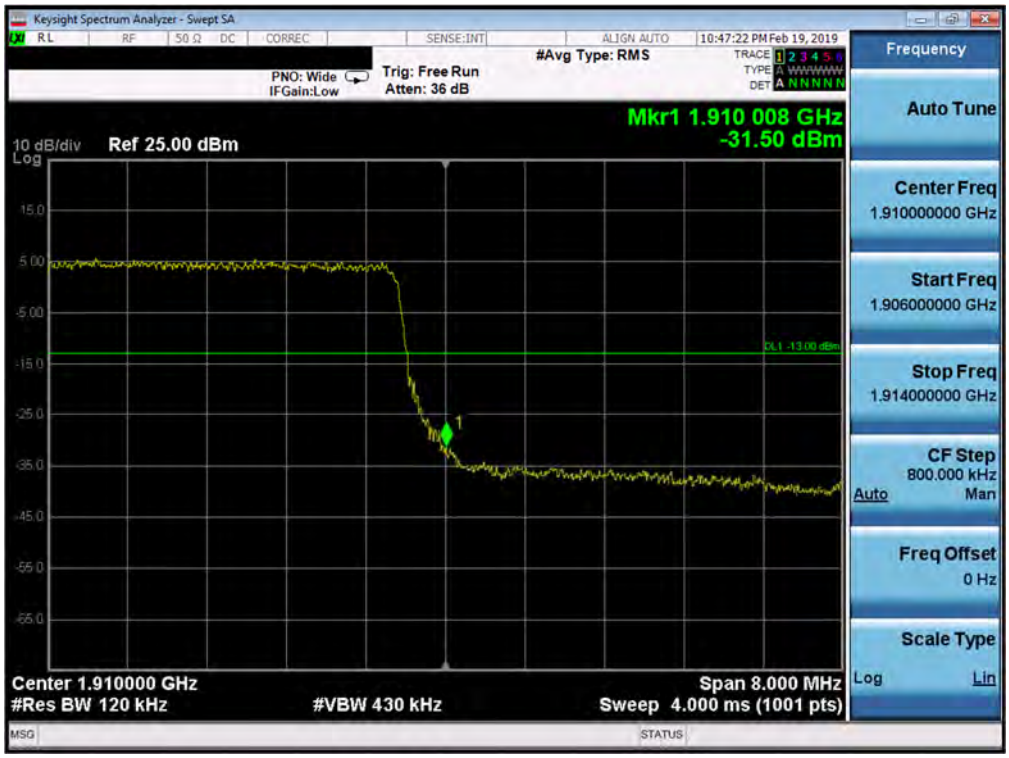
Plot 7-272. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



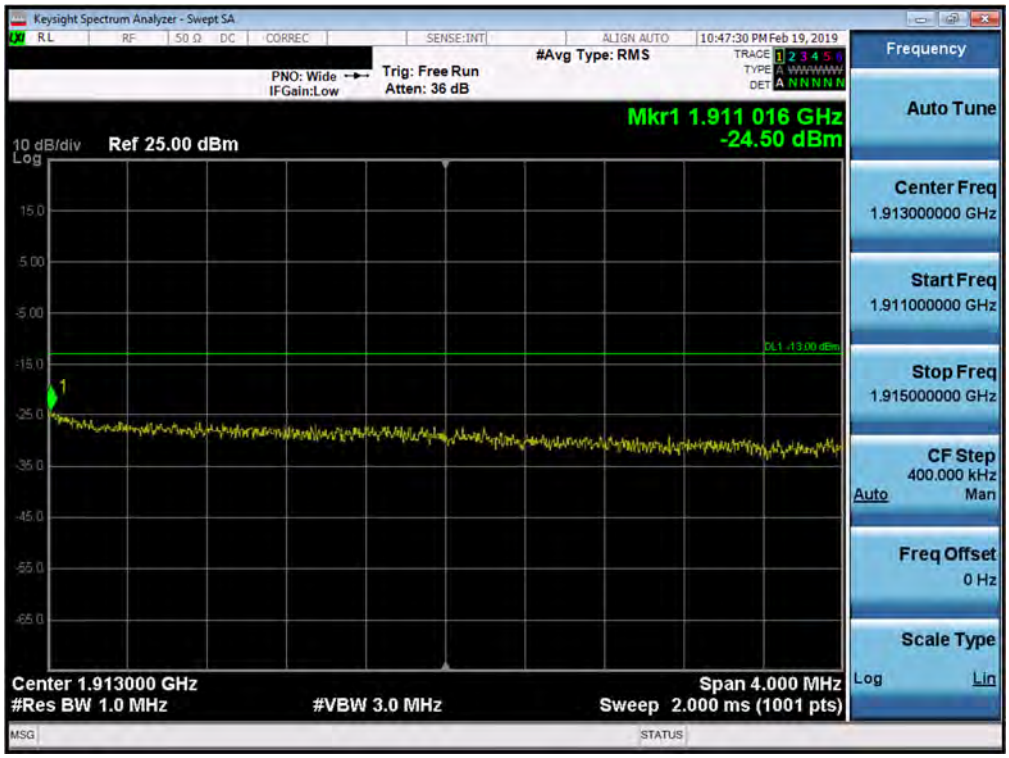
Plot 7-273. Lower Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



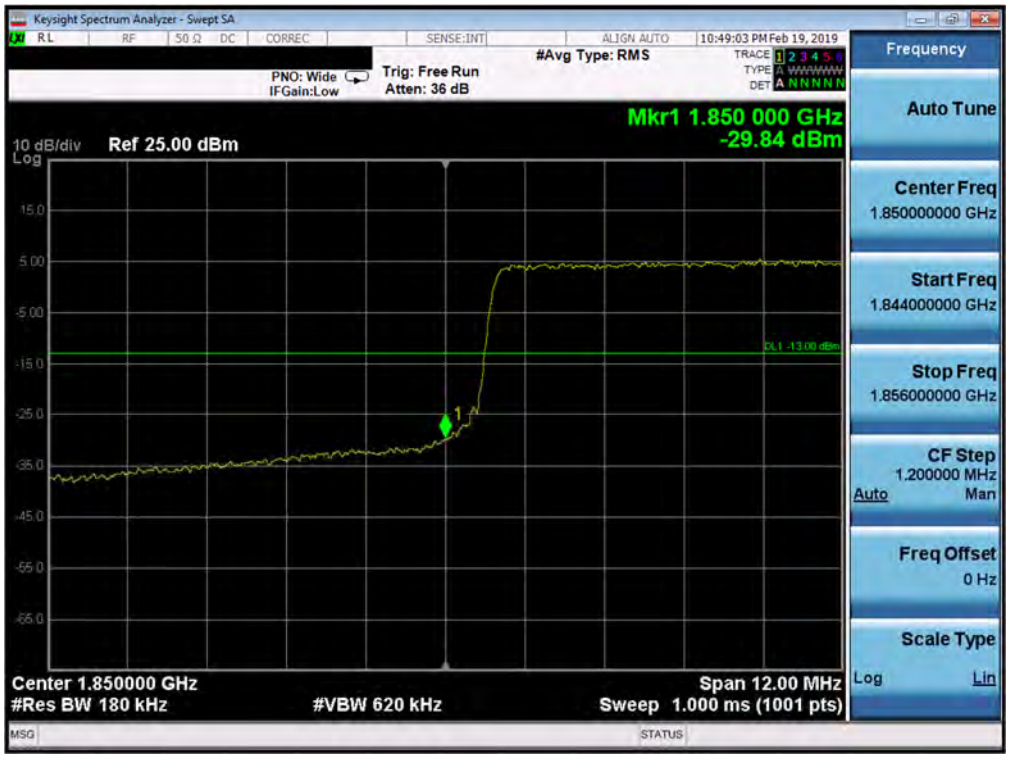
Plot 7-274. Lower Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



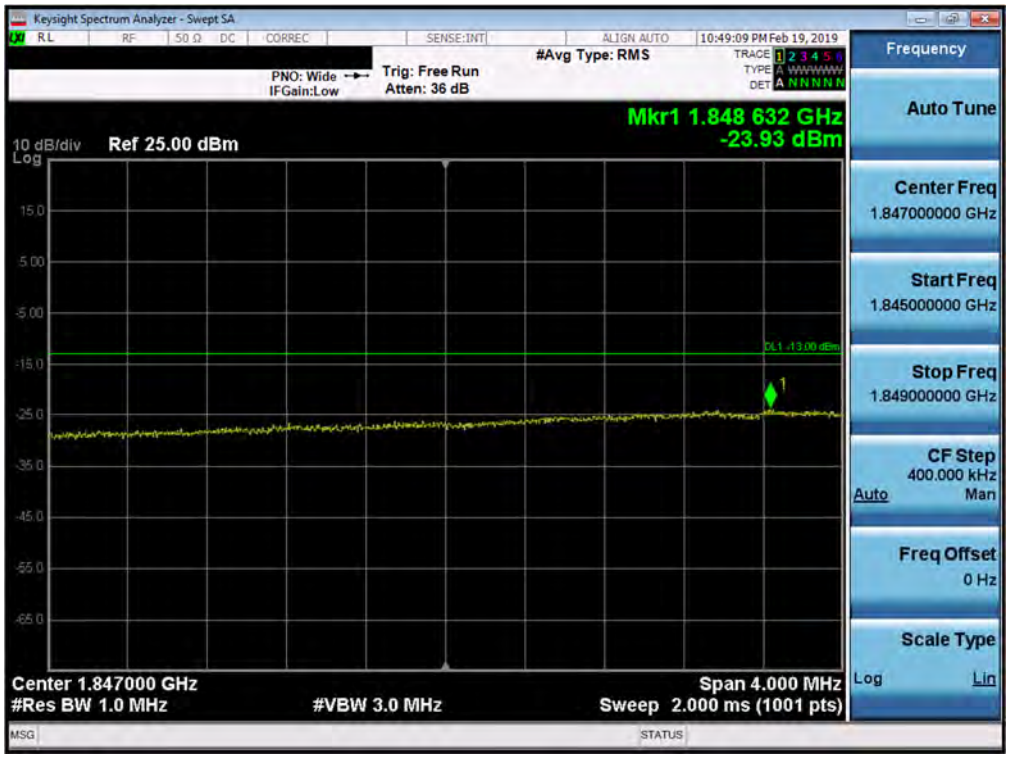
Plot 7-275. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



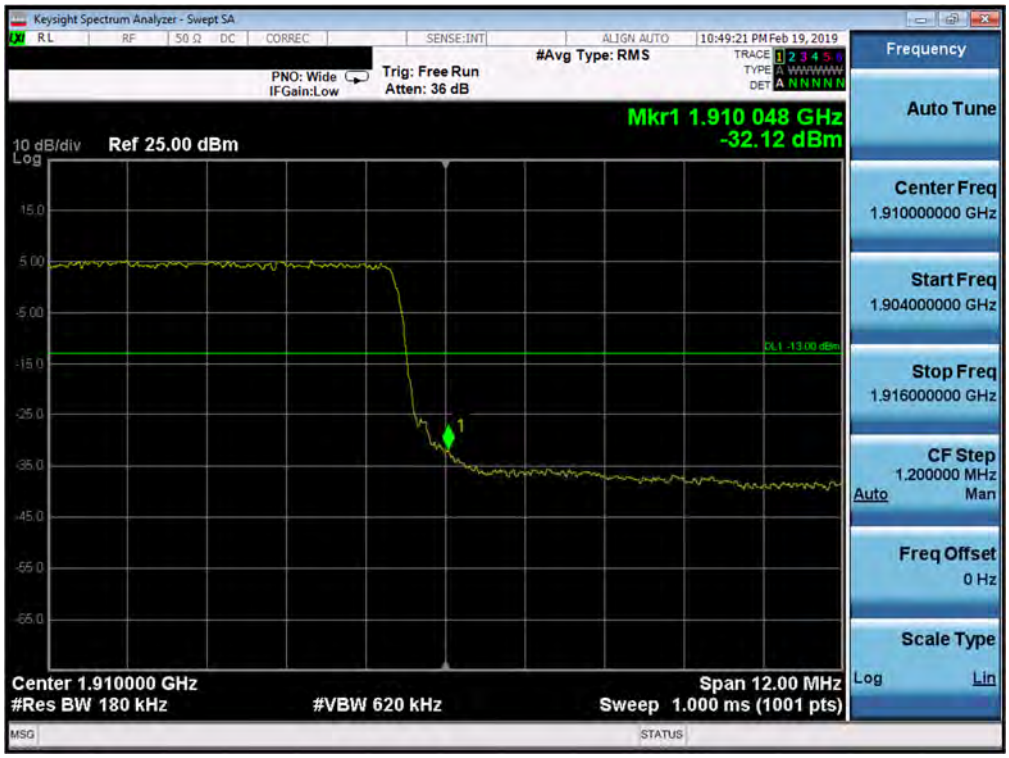
Plot 7-276. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



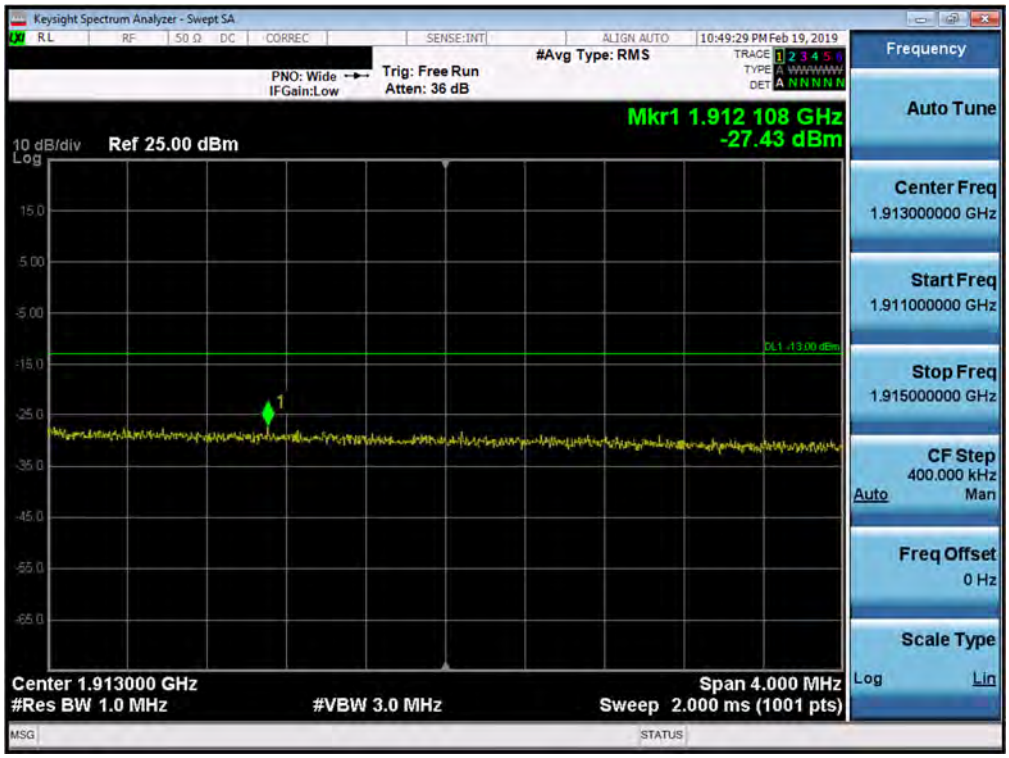
Plot 7-277. Lower Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



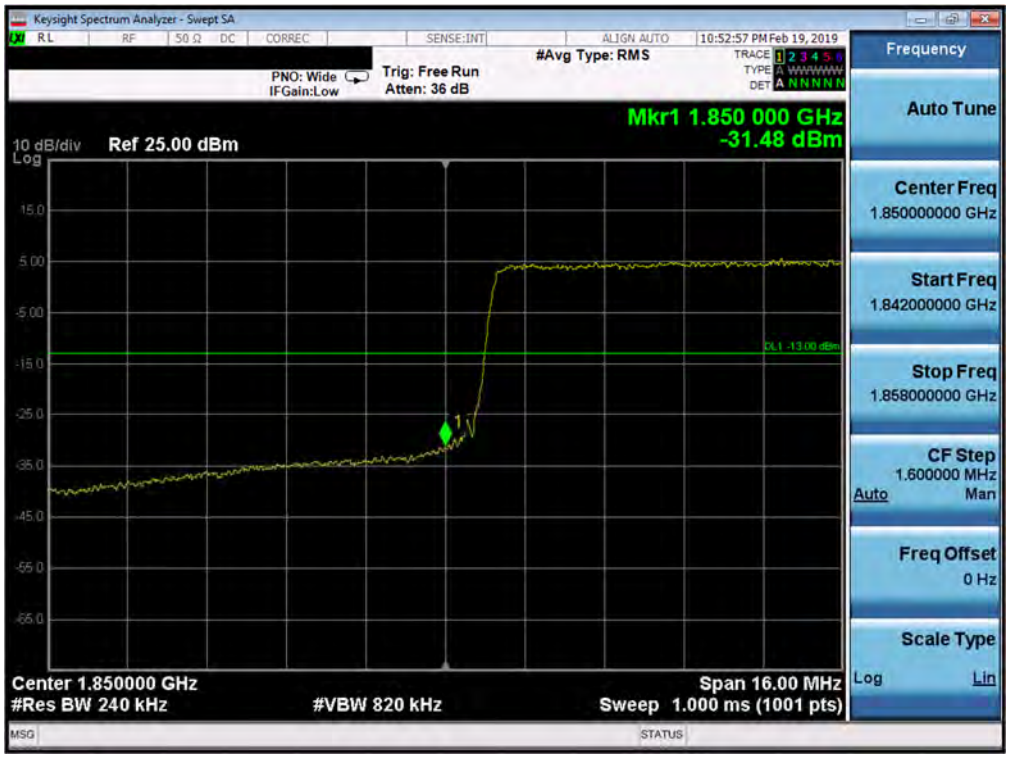
Plot 7-278. Lower Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



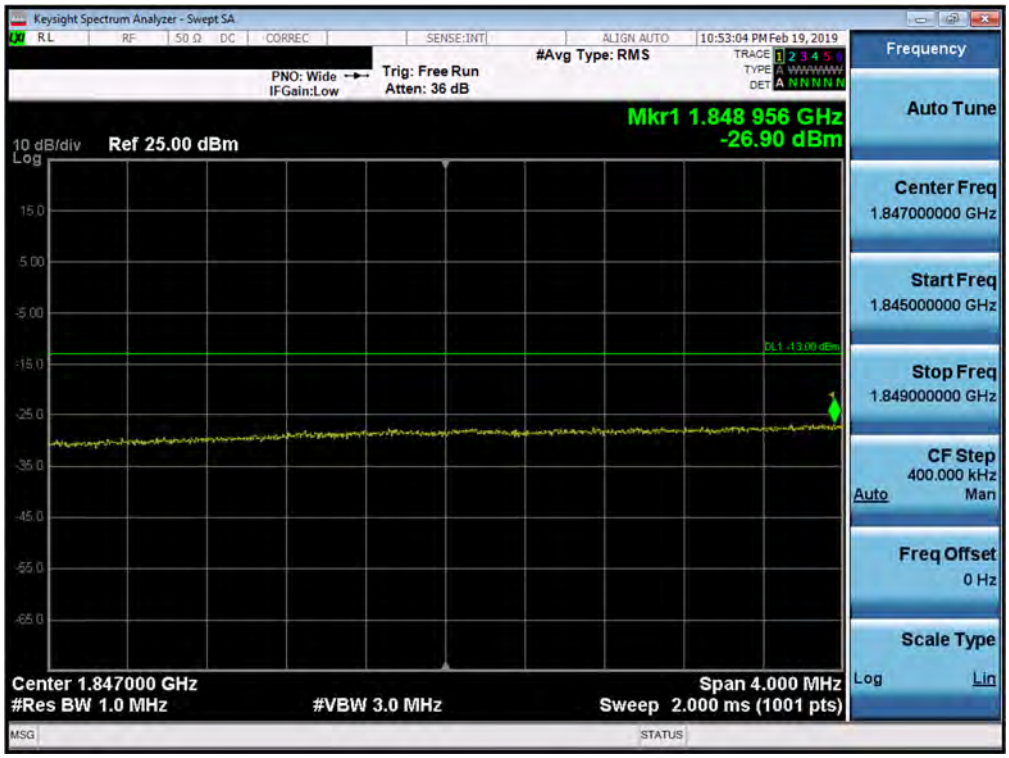
Plot 7-279. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



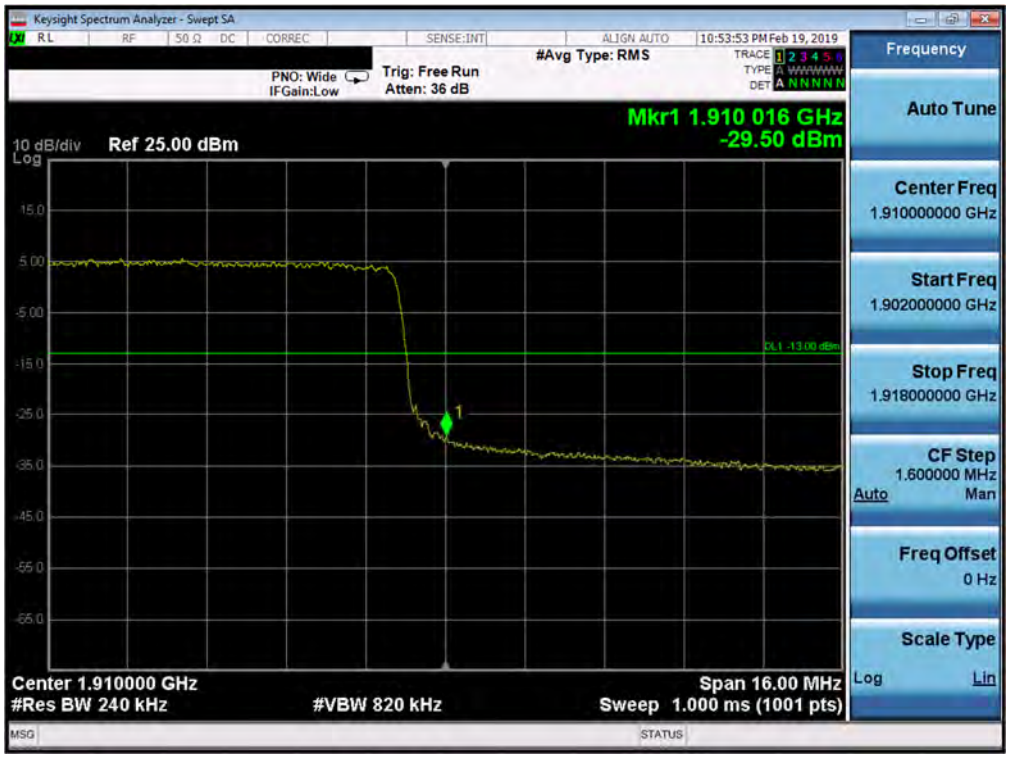
Plot 7-280. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



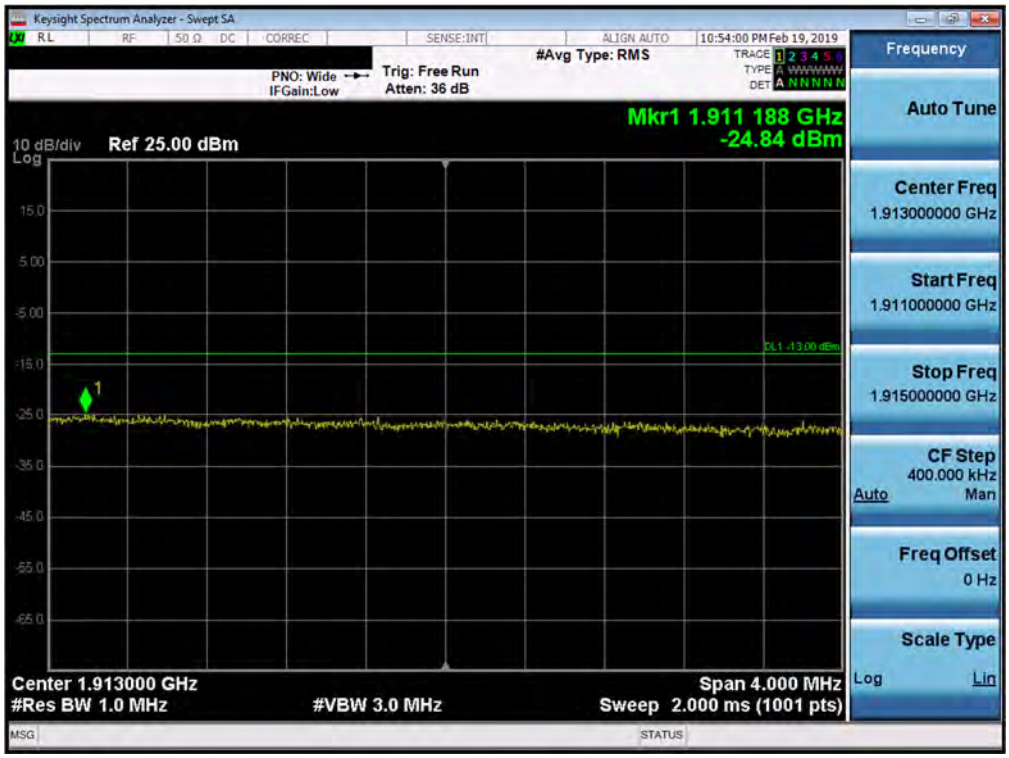
Plot 7-281. Lower Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-282. Lower Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

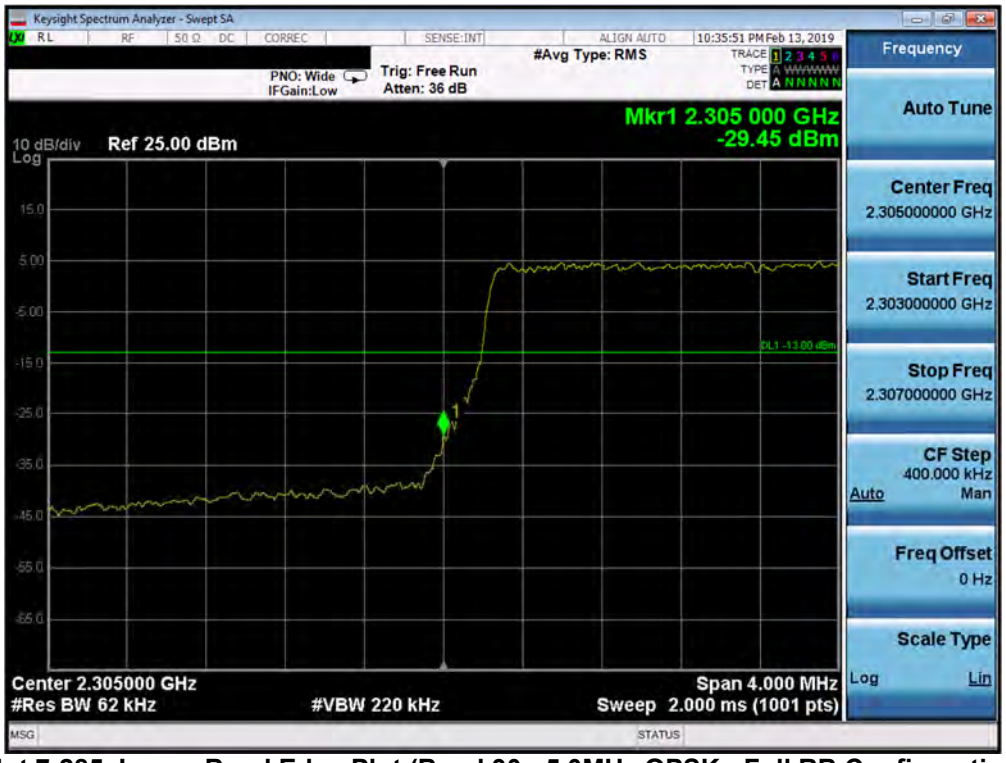


Plot 7-283. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



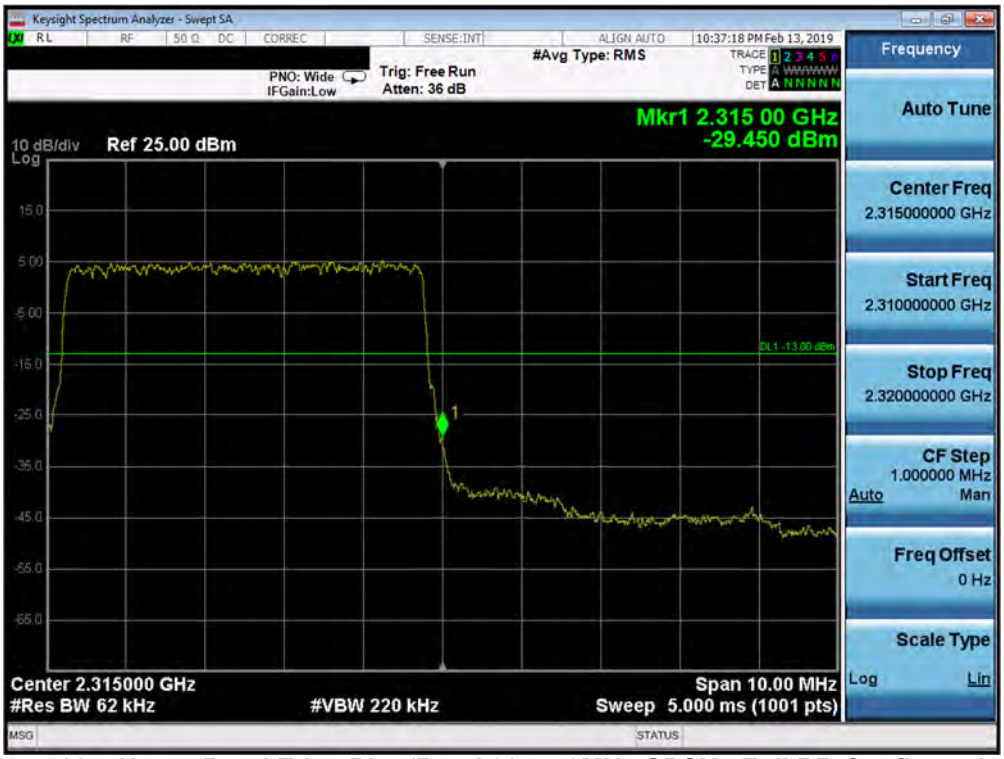
Plot 7-284. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

Band 30

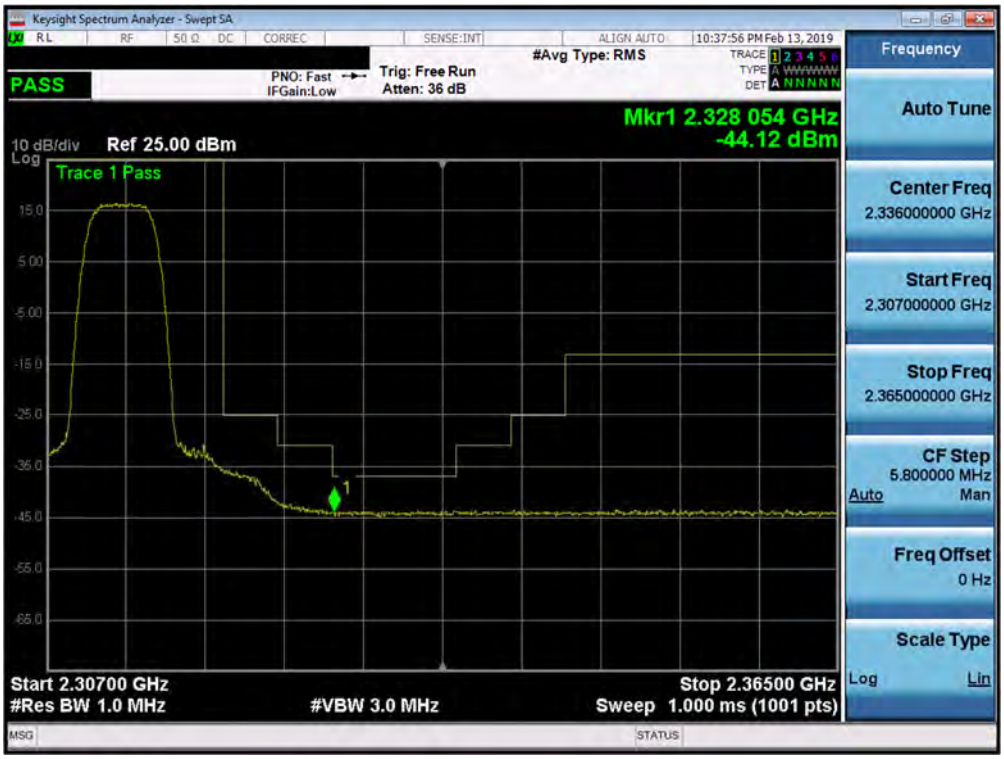


Plot 7-285. Lower Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

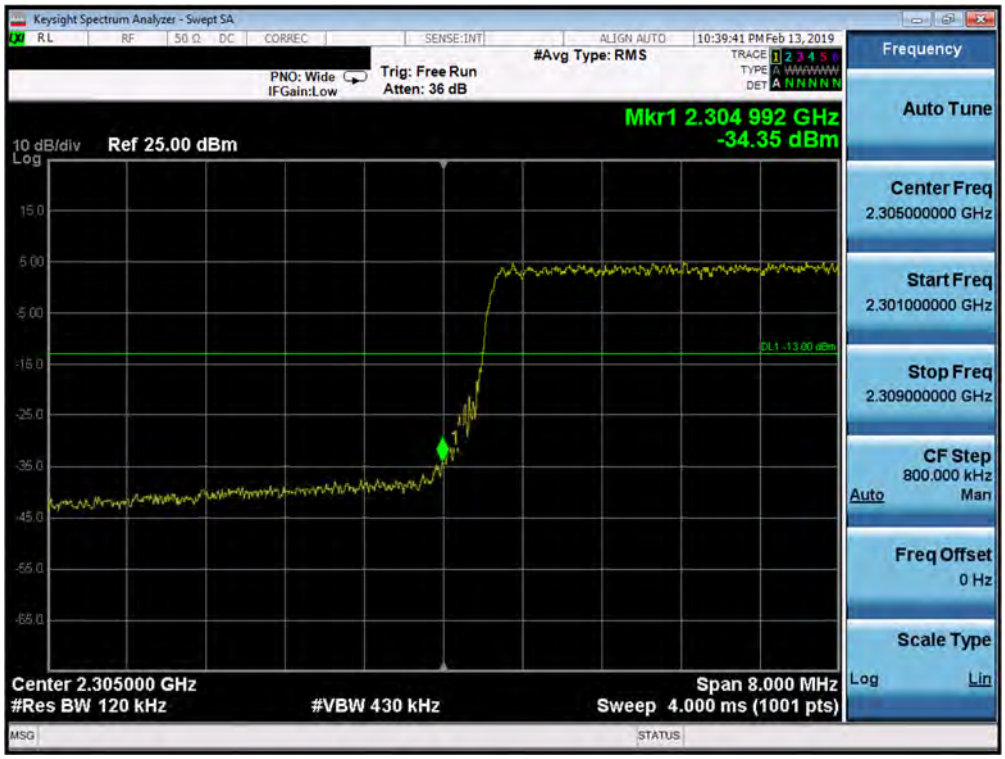
Plot 7-286. Lower Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



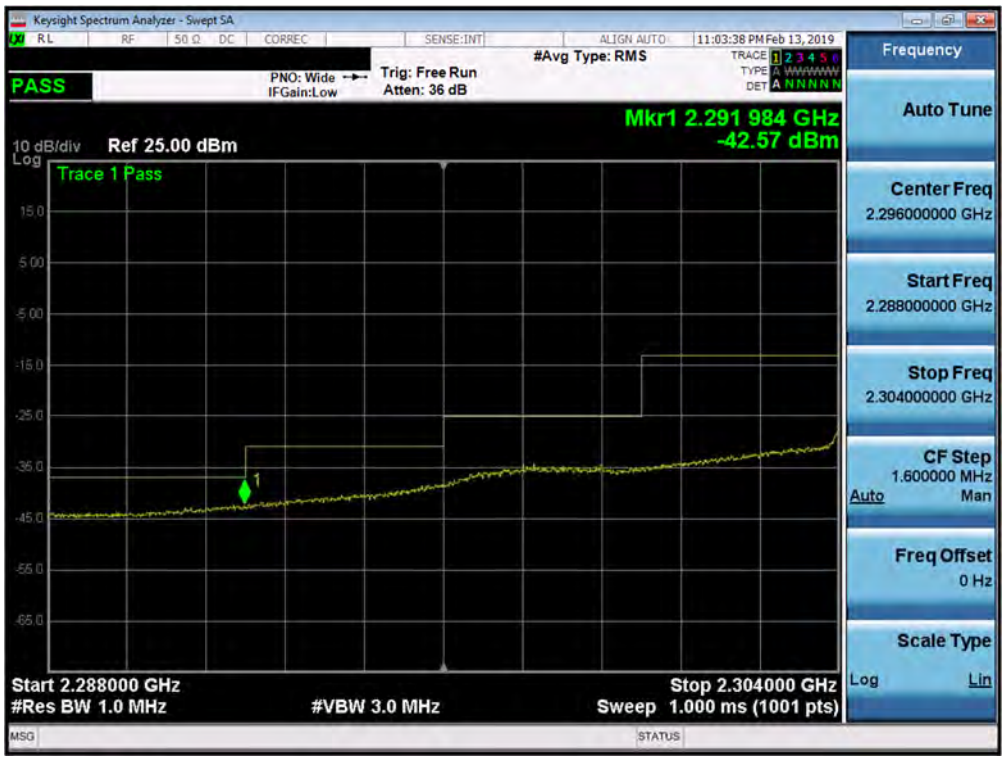
Plot 7-287. Upper Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



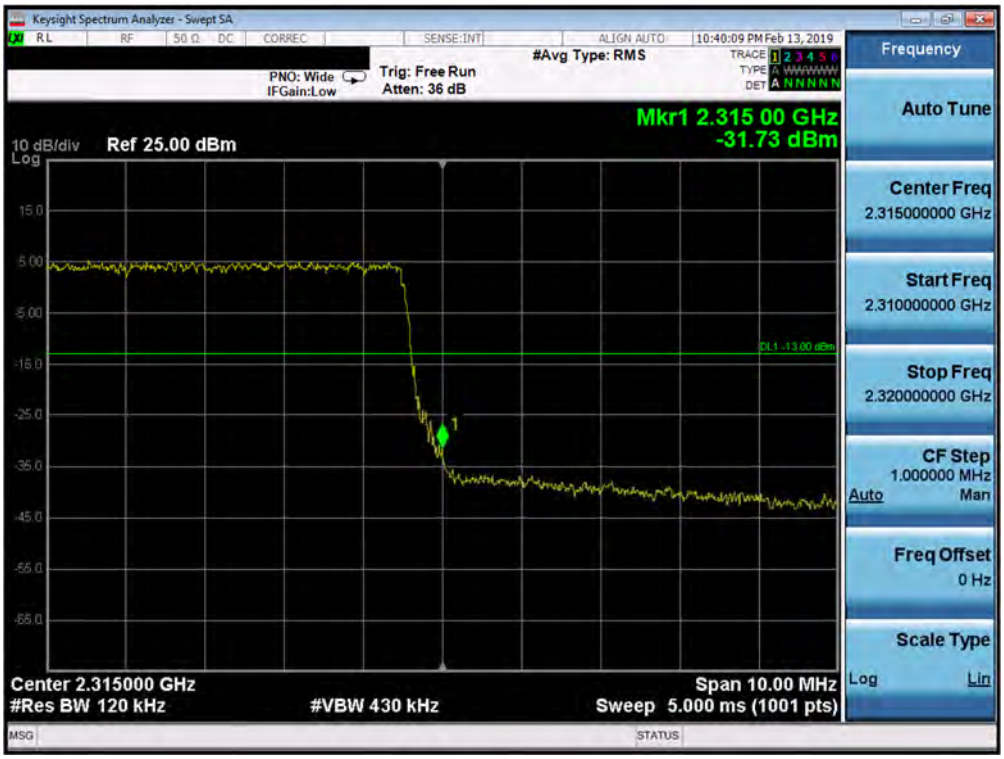
Plot 7-288. Upper Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-289. Lower Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-290. Lower Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

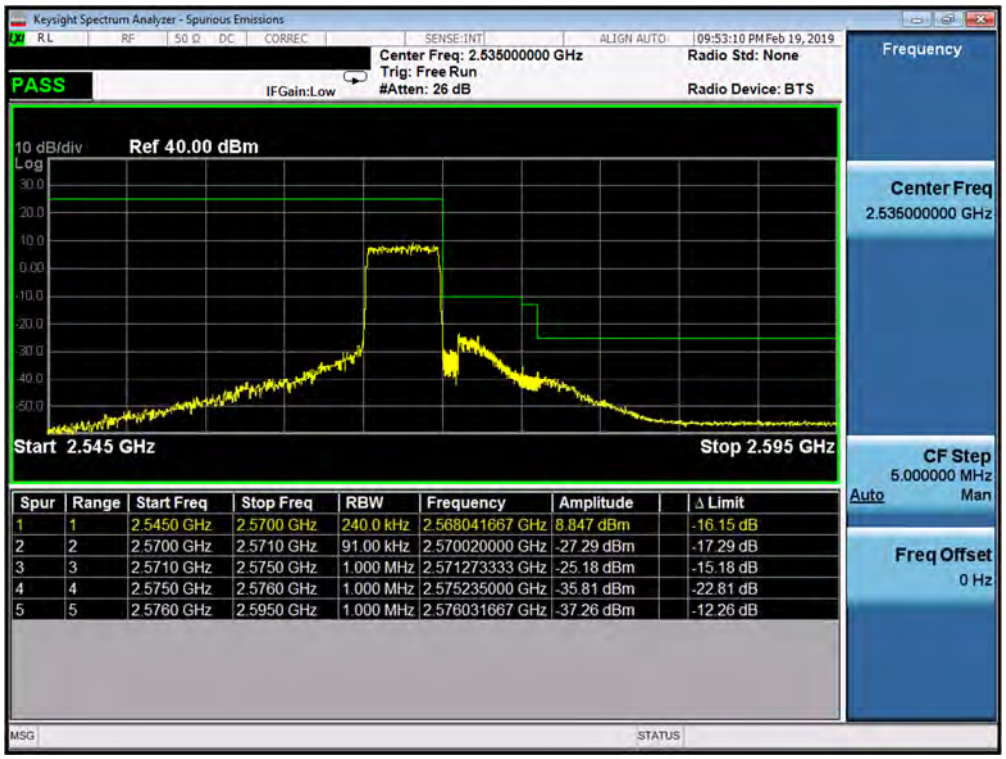


Plot 7-291. Upper Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

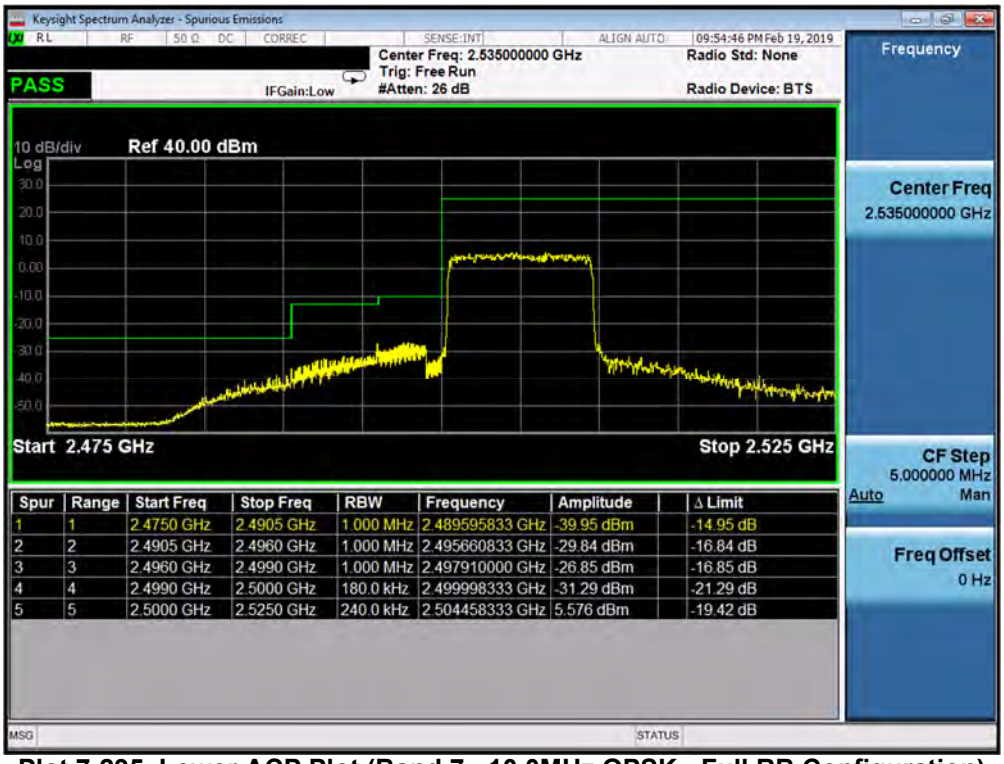
Plot 7-292. Upper Extended Band Edge Plot (Band 30 - 10.0MHz QPSK - Full RB Configuration)

Band 7

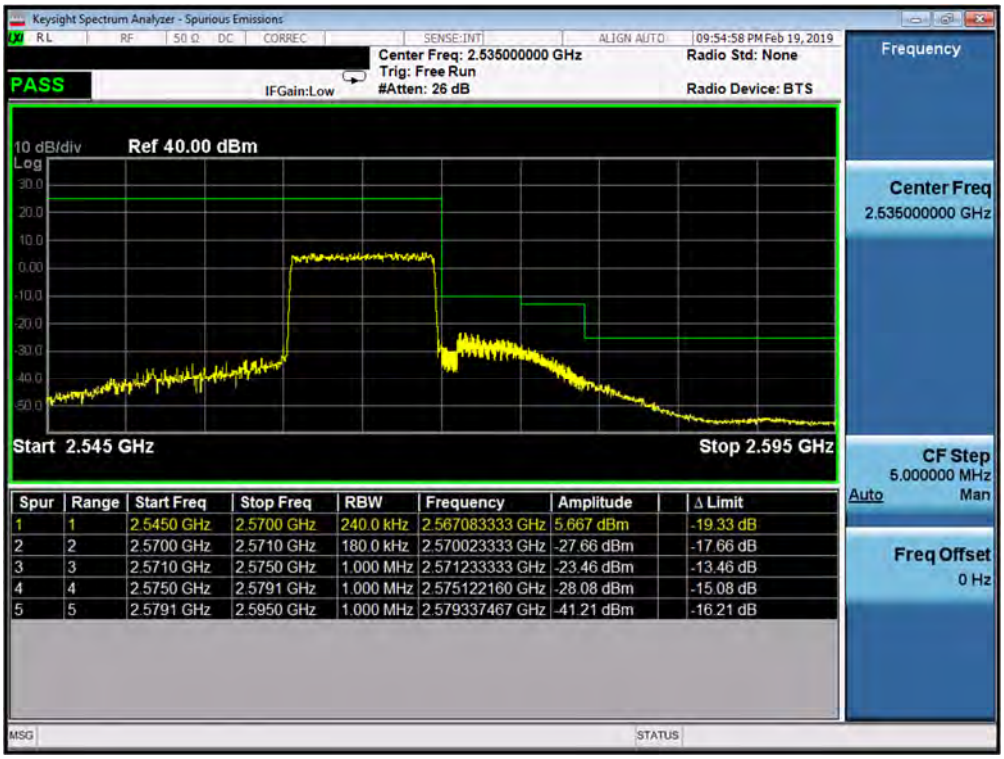
Plot 7-293. Lower ACP Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)



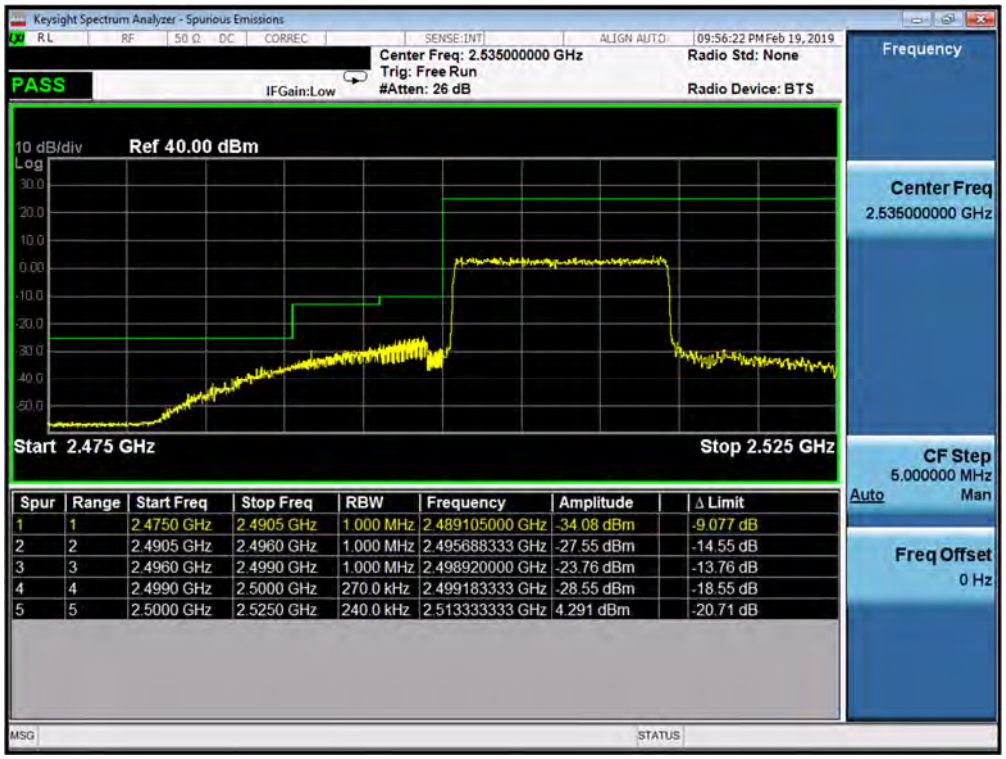
Plot 7-294. Upper ACP Plot (Band 7 - 5.0MHz QPSK - Full RB Configuration)



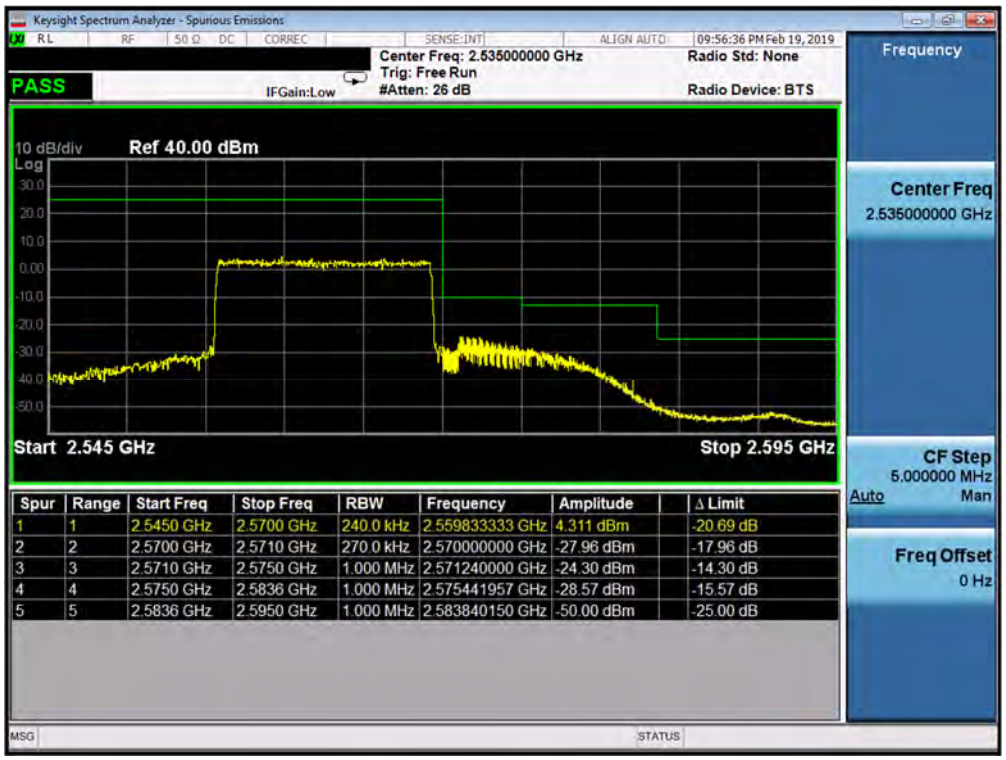
Plot 7-295. Lower ACP Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)



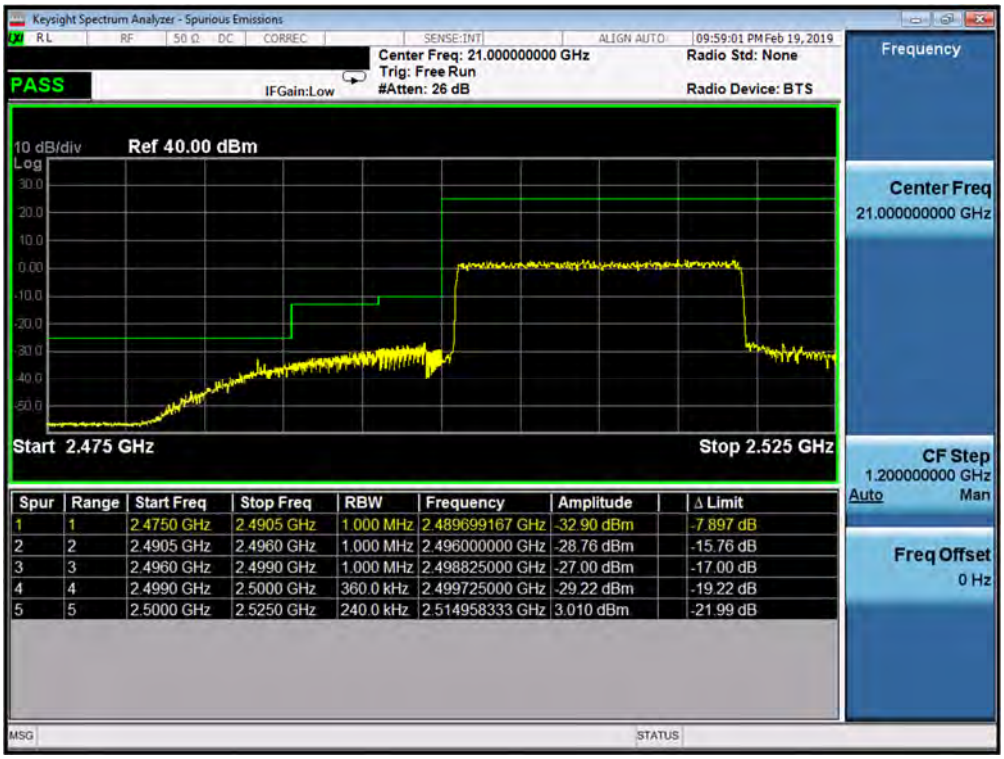
Plot 7-296. Upper ACP Plot (Band 7 - 10.0MHz QPSK - Full RB Configuration)



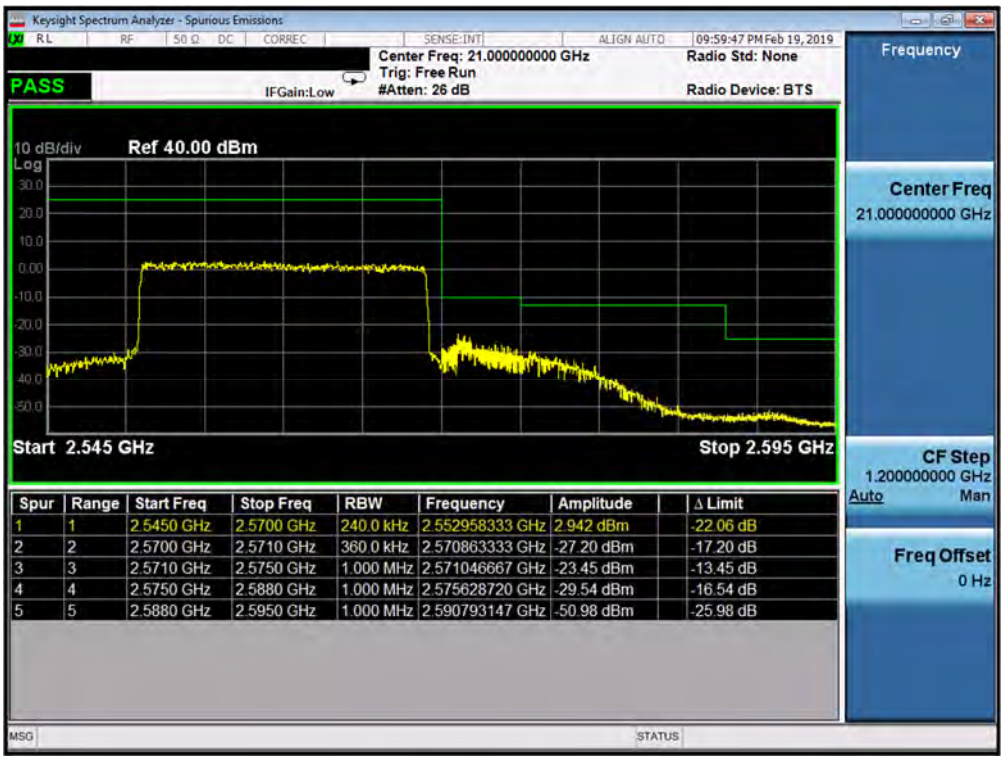
Plot 7-297. Lower ACP Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-298. Upper ACP Plot (Band 7 - 15.0MHz QPSK - Full RB Configuration)

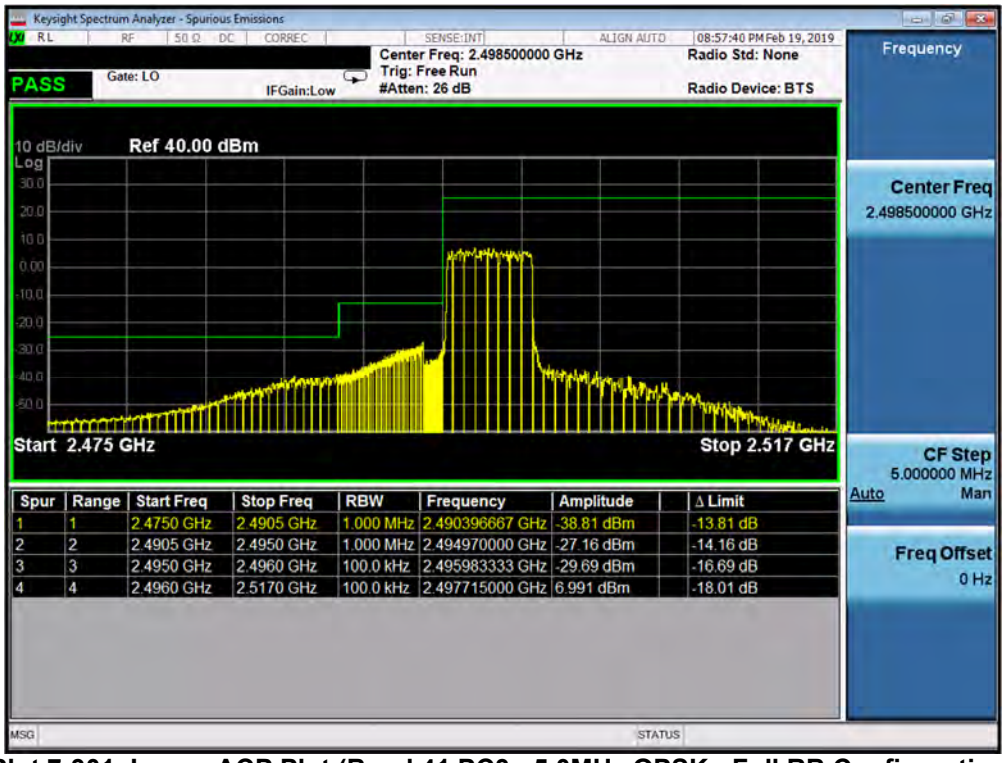


Plot 7-299. Lower ACP Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)



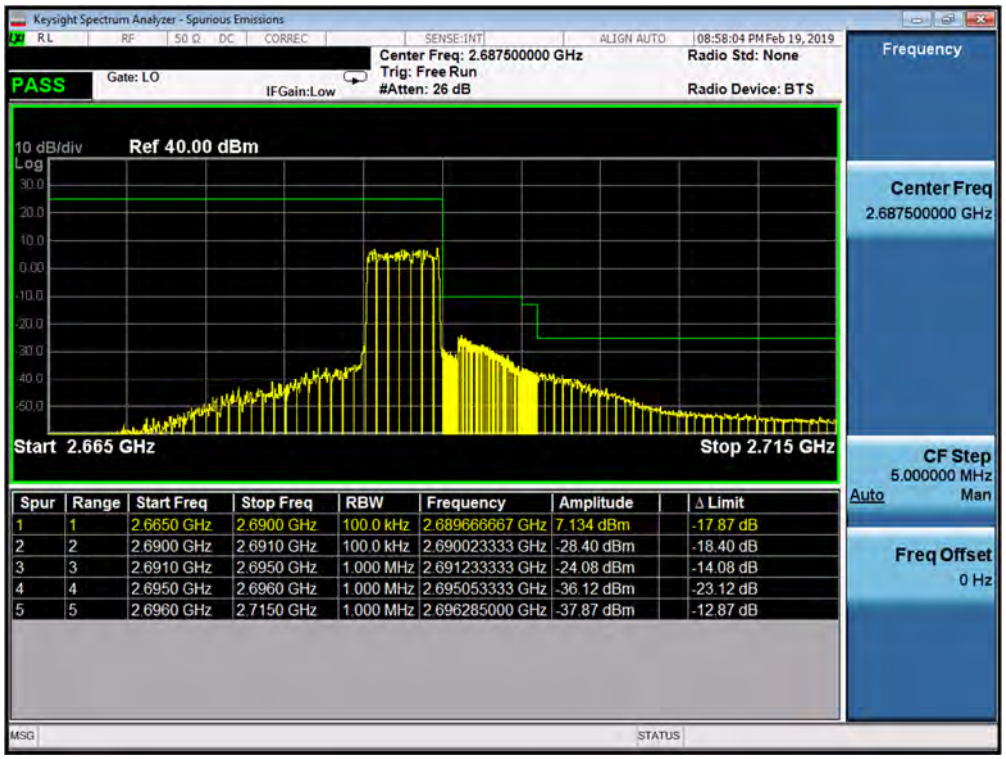
Plot 7-300. Upper ACP Plot (Band 7 - 20.0MHz QPSK - Full RB Configuration)

Band 41 (PC3)



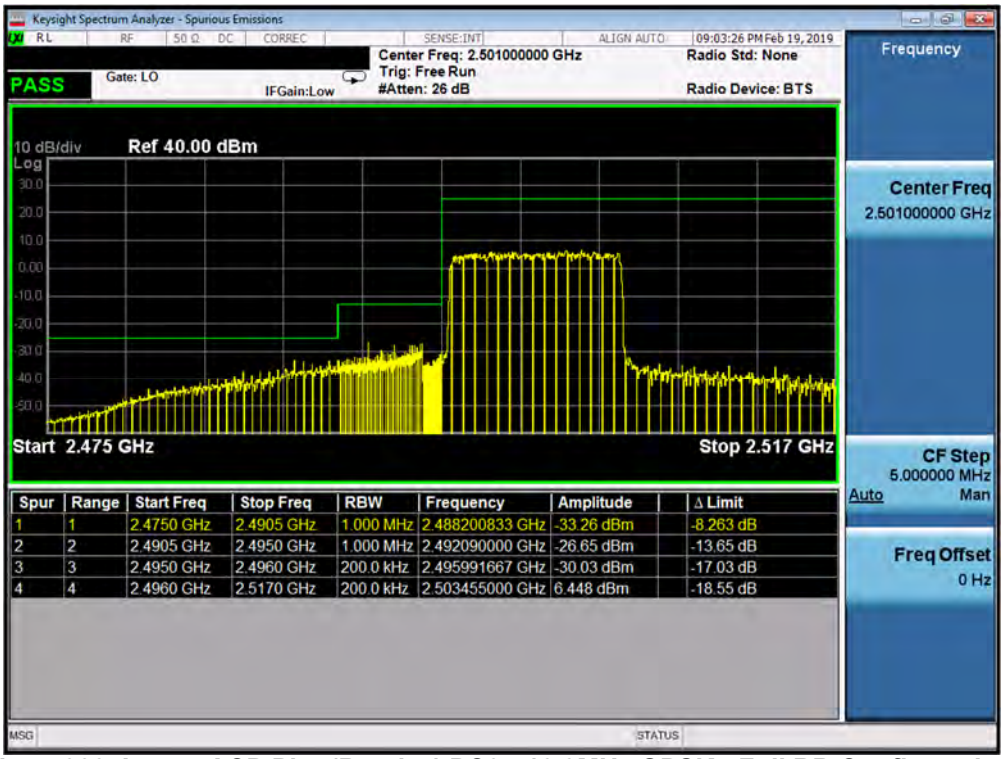
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490396667 GHz	-38.81 dBm	-13.81 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494970000 GHz	-27.16 dBm	-14.16 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.495983333 GHz	-29.69 dBm	-16.69 dB
4	4	2.4960 GHz	2.5170 GHz	100.0 kHz	2.497715000 GHz	6.991 dBm	-18.01 dB

Plot 7-301. Lower ACP Plot (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)



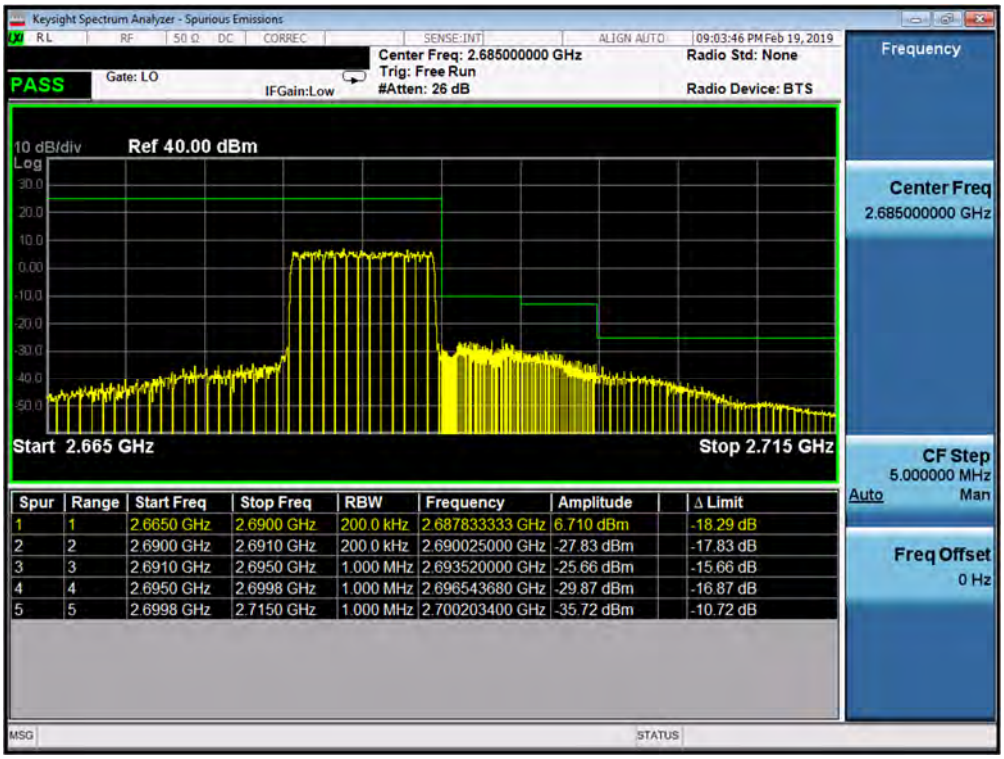
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	100.0 kHz	2.689666667 GHz	7.134 dBm	-17.87 dB
2	2	2.6900 GHz	2.6910 GHz	100.0 kHz	2.690023333 GHz	-28.40 dBm	-18.40 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691233333 GHz	-24.08 dBm	-14.08 dB
4	4	2.6950 GHz	2.6960 GHz	1.000 MHz	2.695053333 GHz	-36.12 dBm	-23.12 dB
5	5	2.6960 GHz	2.7150 GHz	1.000 MHz	2.696285000 GHz	-37.87 dBm	-12.87 dB

Plot 7-302. Upper ACP Plot (Band 41 PC3 - 5.0MHz QPSK - Full RB Configuration)



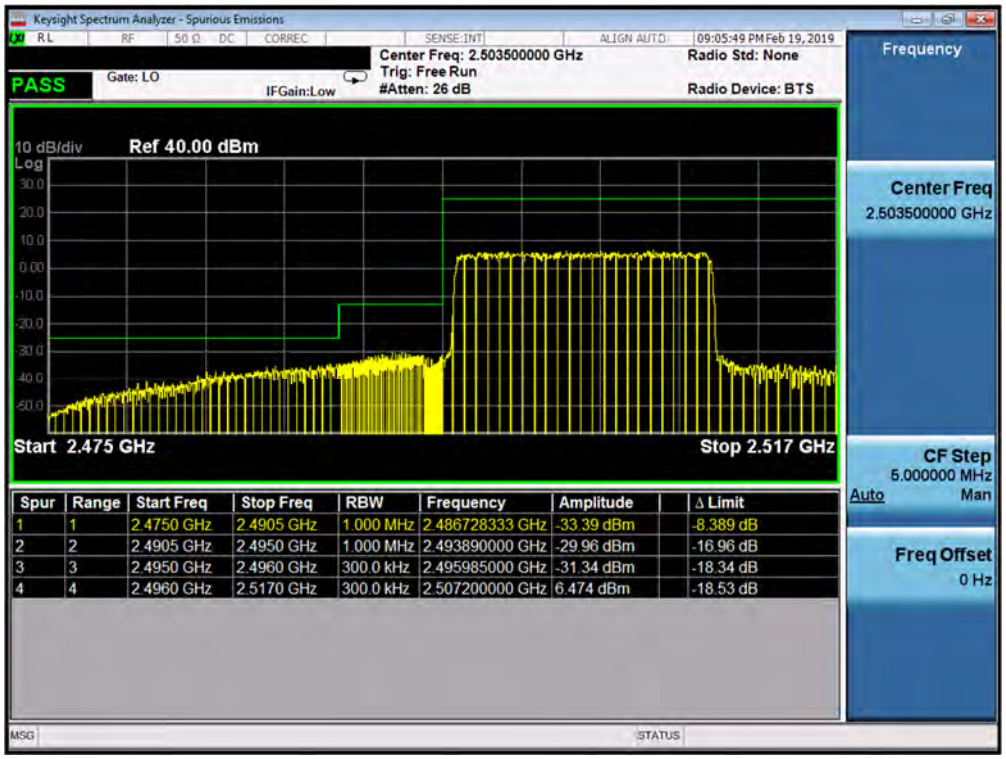
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.488200833 GHz	-33.26 dBm	-8.263 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.492090000 GHz	-26.65 dBm	-13.65 dB
3	3	2.4950 GHz	2.4960 GHz	200.0 kHz	2.495991667 GHz	-30.03 dBm	-17.03 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.503455000 GHz	6.448 dBm	-18.55 dB

Plot 7-303. Lower ACP Plot (Band 41 PC3 - 10.0MHz QPSK - Full RB Configuration)

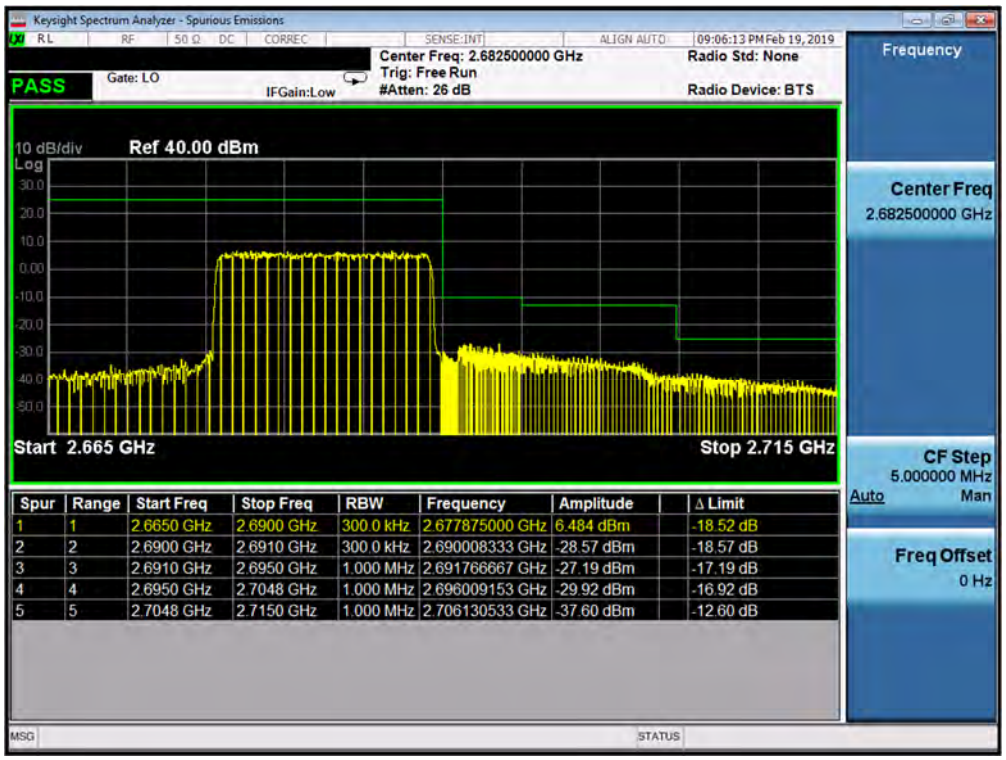


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	200.0 kHz	2.687833333 GHz	6.710 dBm	-18.29 dB
2	2	2.6900 GHz	2.6910 GHz	200.0 kHz	2.690025000 GHz	-27.83 dBm	-17.83 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.693520000 GHz	-25.66 dBm	-15.66 dB
4	4	2.6950 GHz	2.6998 GHz	1.000 MHz	2.696543680 GHz	-29.87 dBm	-16.87 dB
5	5	2.6998 GHz	2.7150 GHz	1.000 MHz	2.700203400 GHz	-35.72 dBm	-10.72 dB

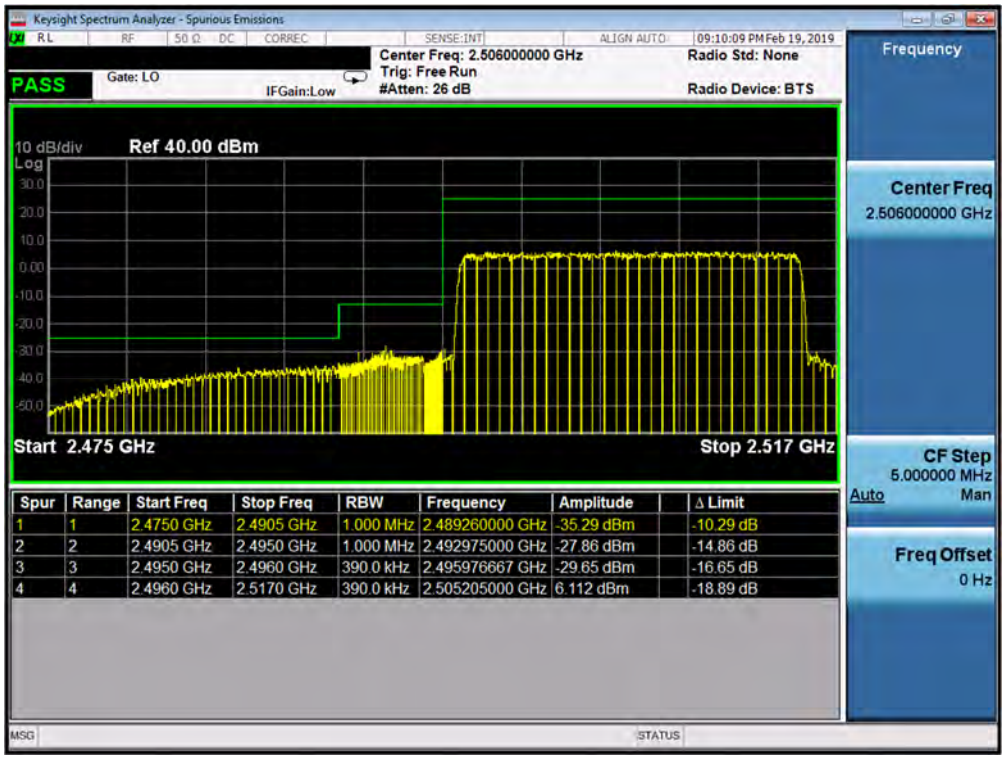
Plot 7-304. Upper ACP Plot (Band 41 PC3 - 10.0MHz QPSK - Full RB Configuration)



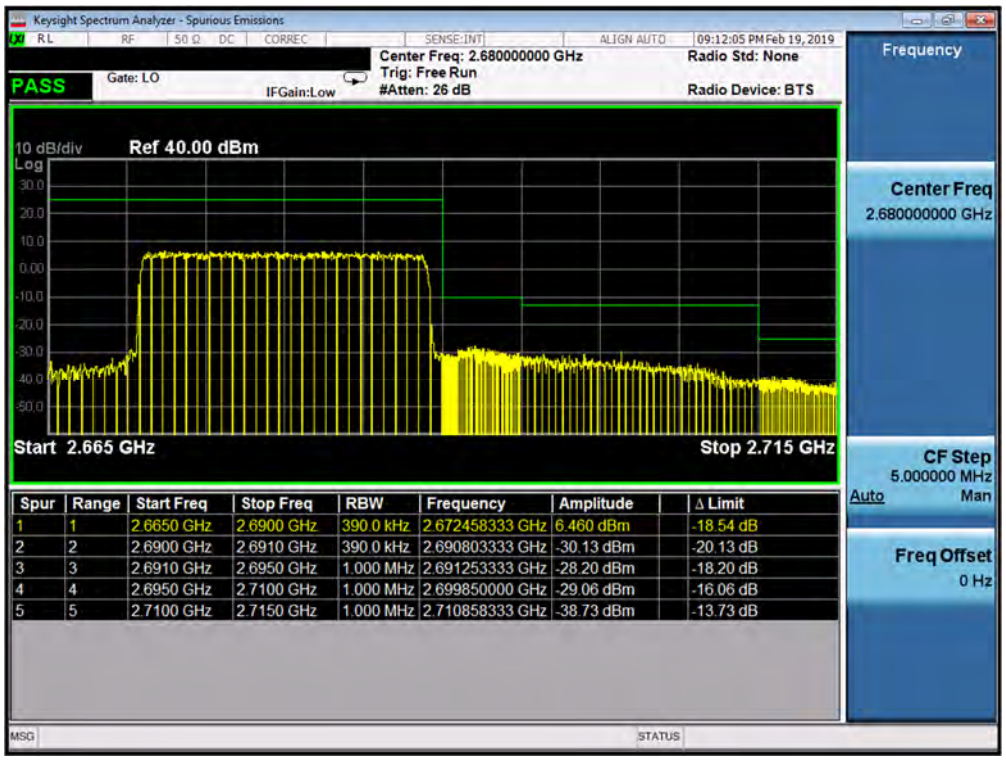
Plot 7-305. Lower ACP Plot (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)



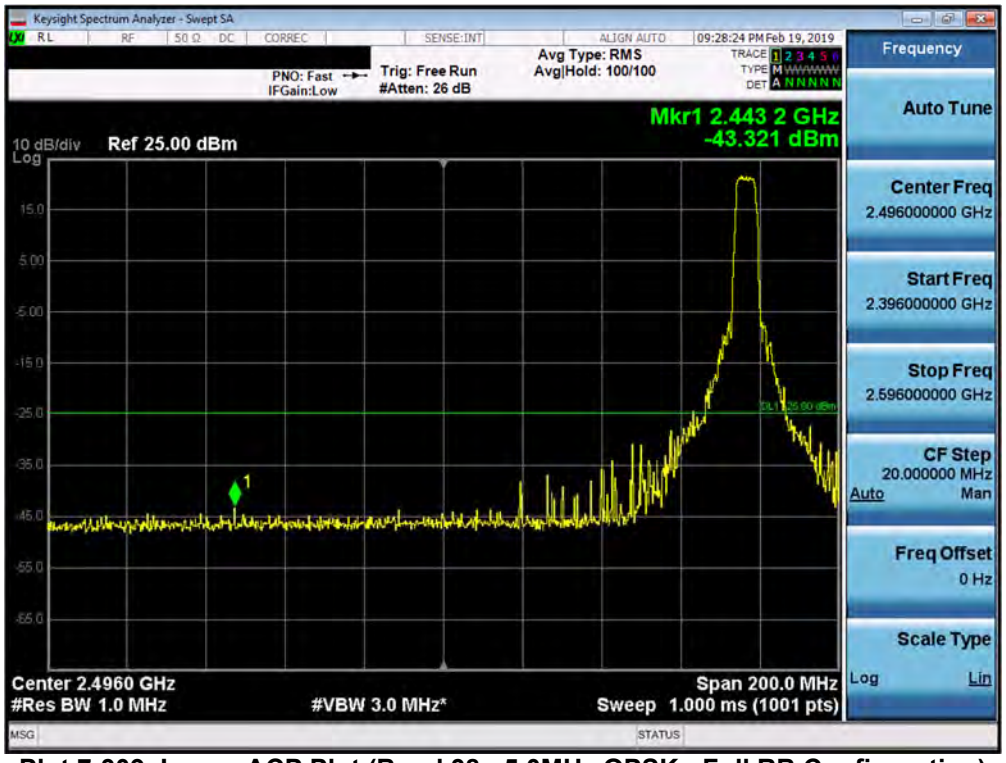
Plot 7-306. Upper ACP Plot (Band 41 PC3 - 15.0MHz QPSK - Full RB Configuration)



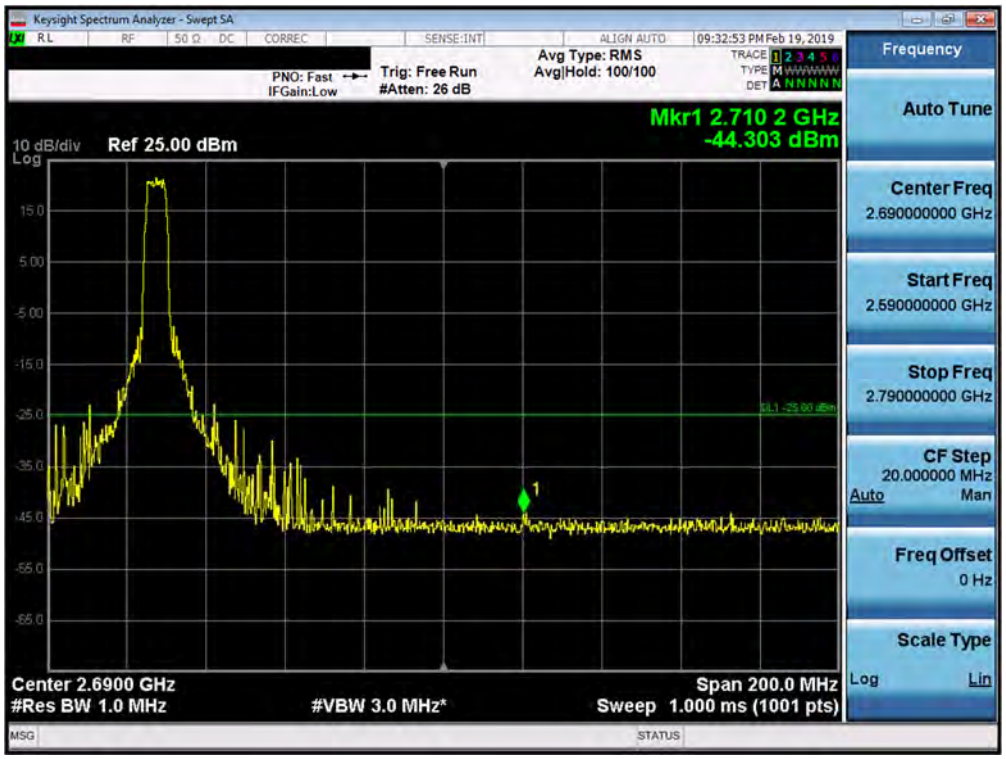
Plot 7-307. Lower ACP Plot (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-308. Upper ACP Plot (Band 41 PC3 - 20.0MHz QPSK - Full RB Configuration)

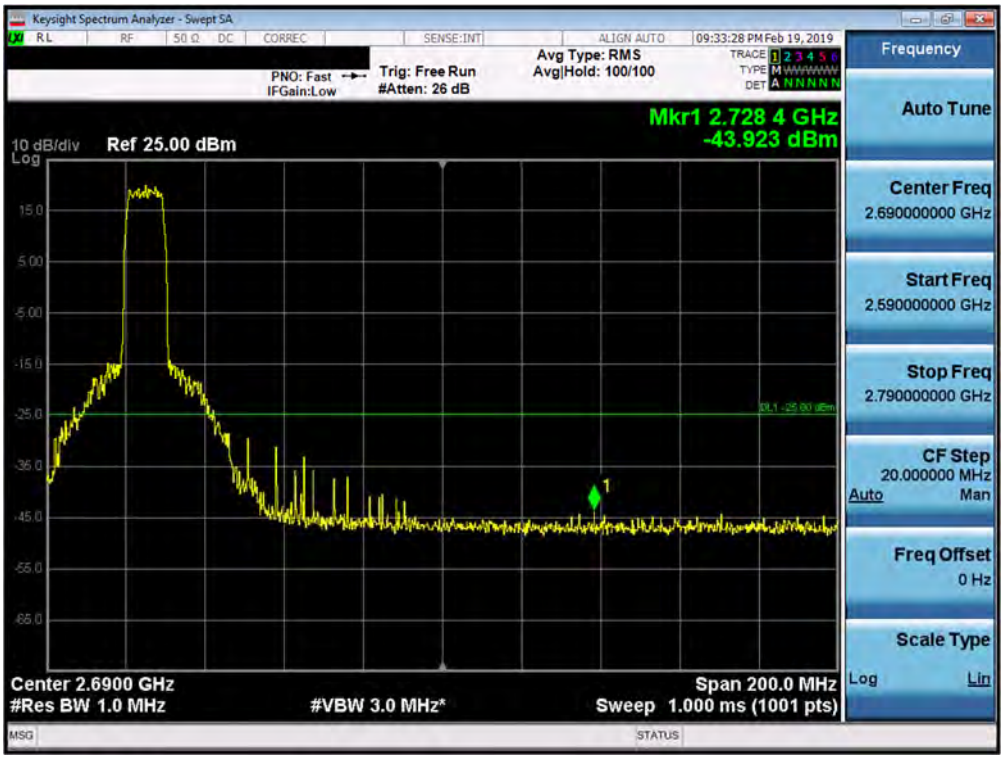


Plot 7-309. Lower ACP Plot (Band 38 - 5.0MHz QPSK - Full RB Configuration)



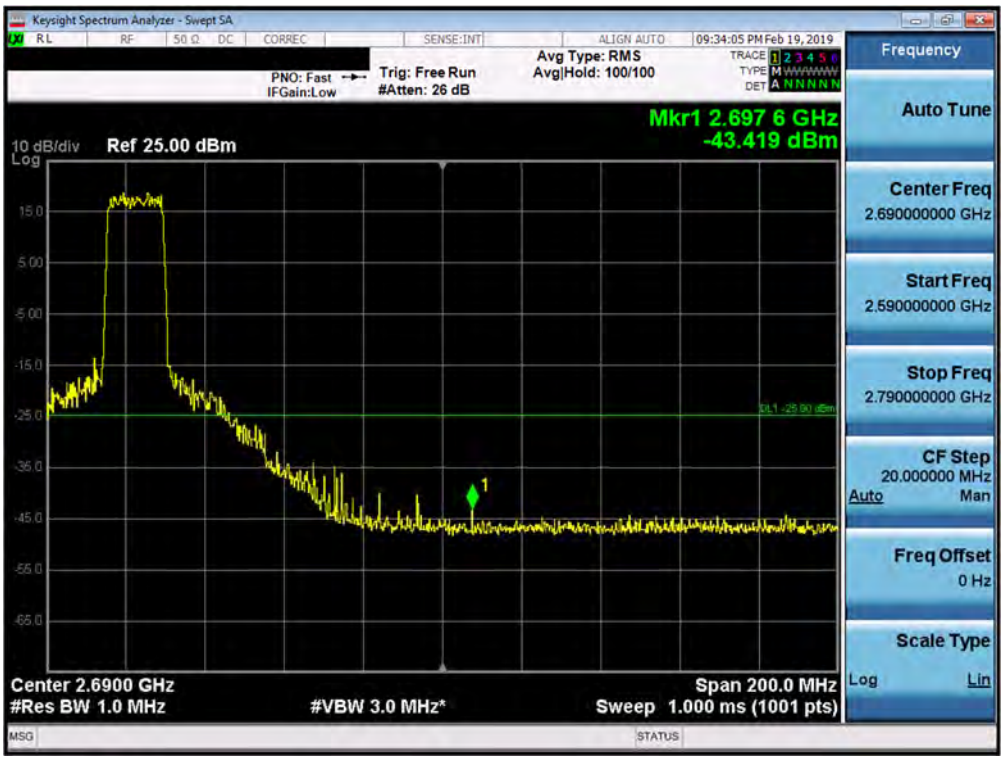
Plot 7-310. Upper ACP Plot (Band 38 - 5.0MHz QPSK - Full RB Configuration)

Plot 7-311. Lower ACP Plot (Band 38 - 10.0MHz QPSK - Full RB Configuration)

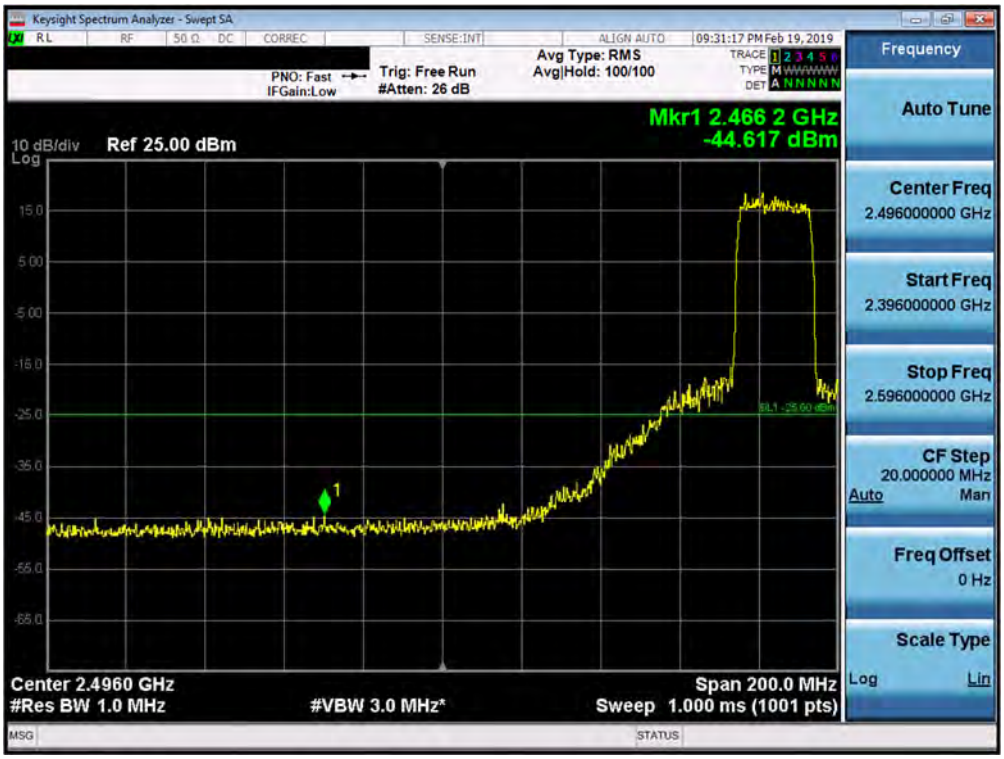


Plot 7-312. Upper ACP Plot (Band 38 - 10.0MHz QPSK - Full RB Configuration)

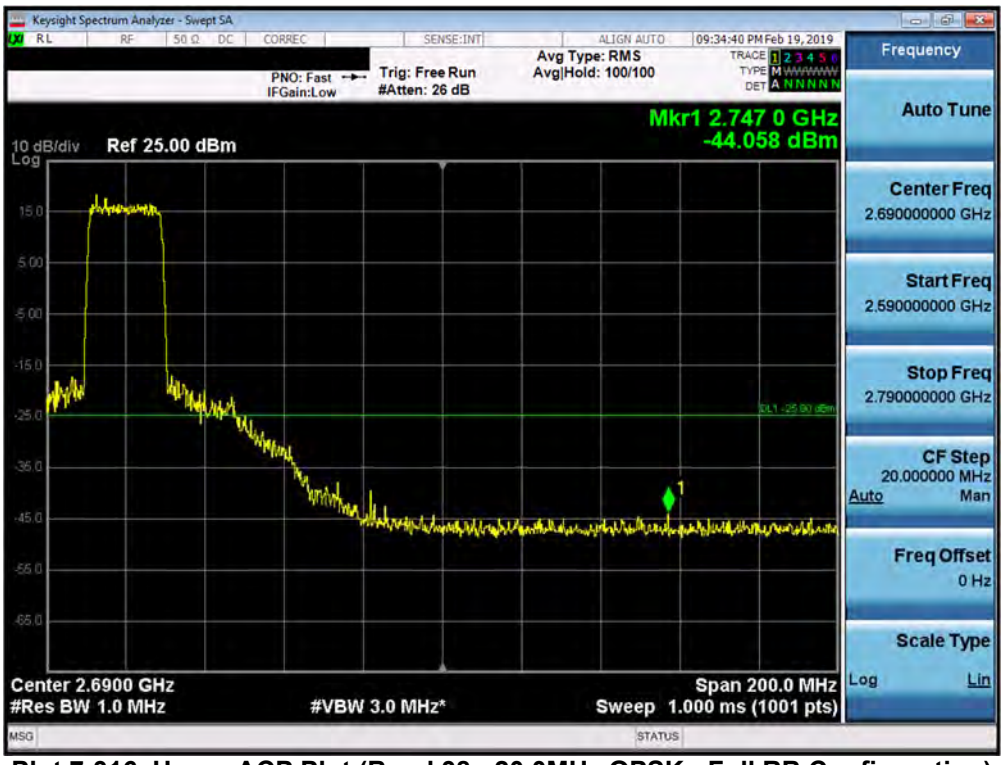
Plot 7-313. Lower ACP Plot (Band 38 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-314. Upper ACP Plot (Band 38 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-315. Lower ACP Plot (Band 38 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-316. Upper ACP Plot (Band 38 - 20.0MHz QPSK - Full RB Configuration)

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 ≥ OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.

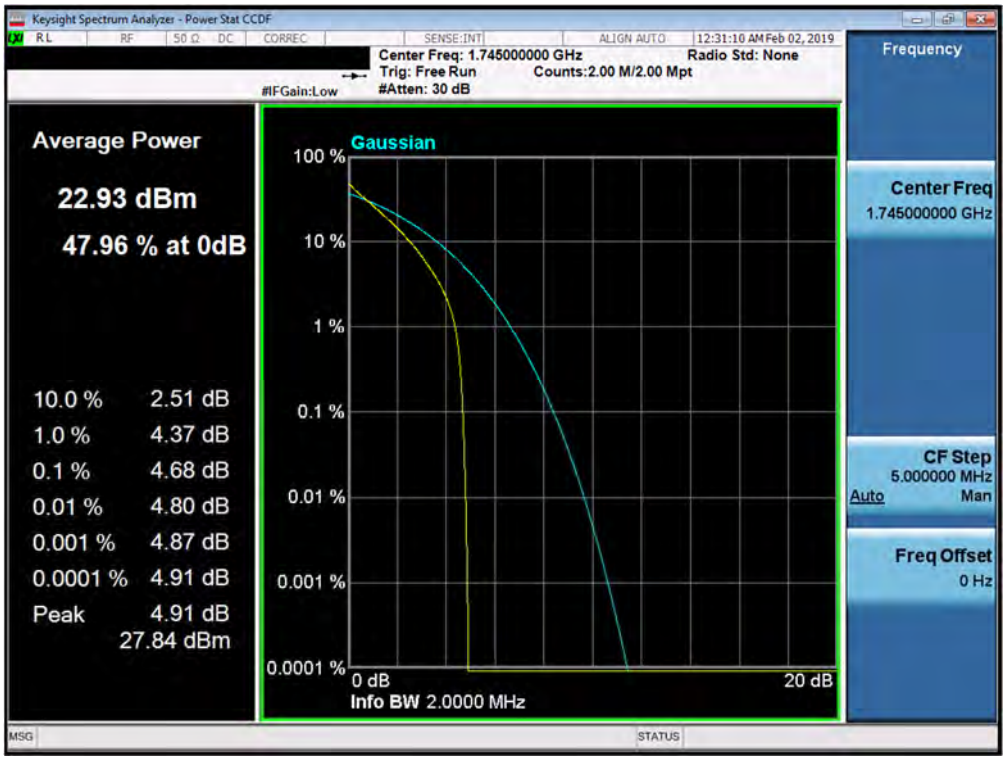
Test Setup

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

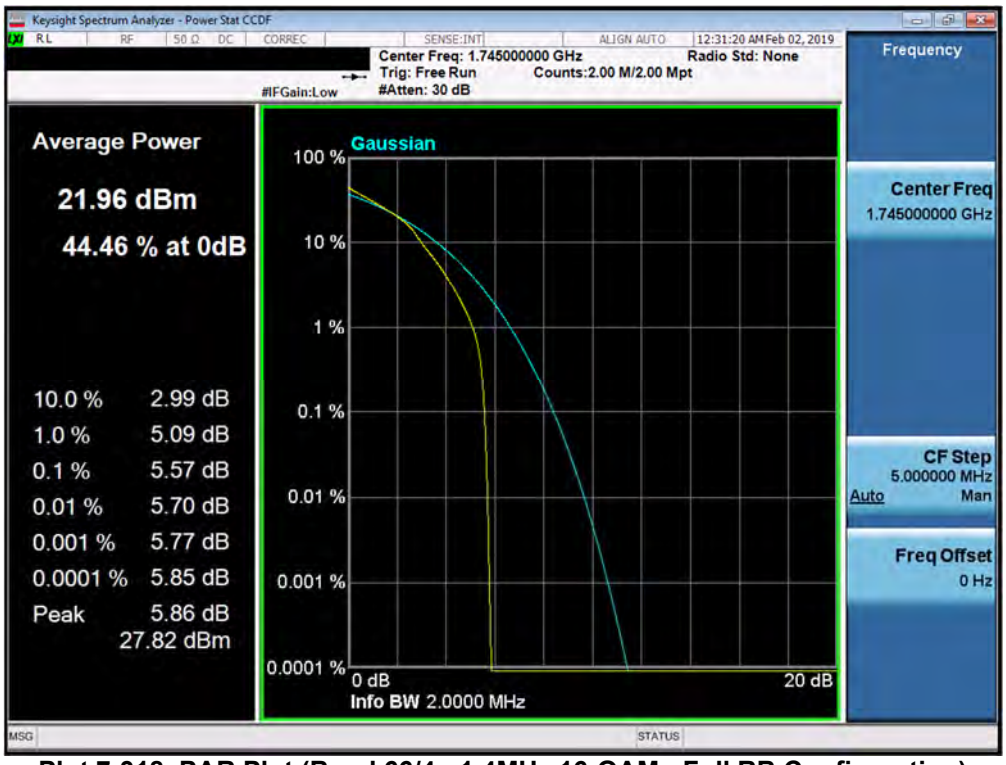
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

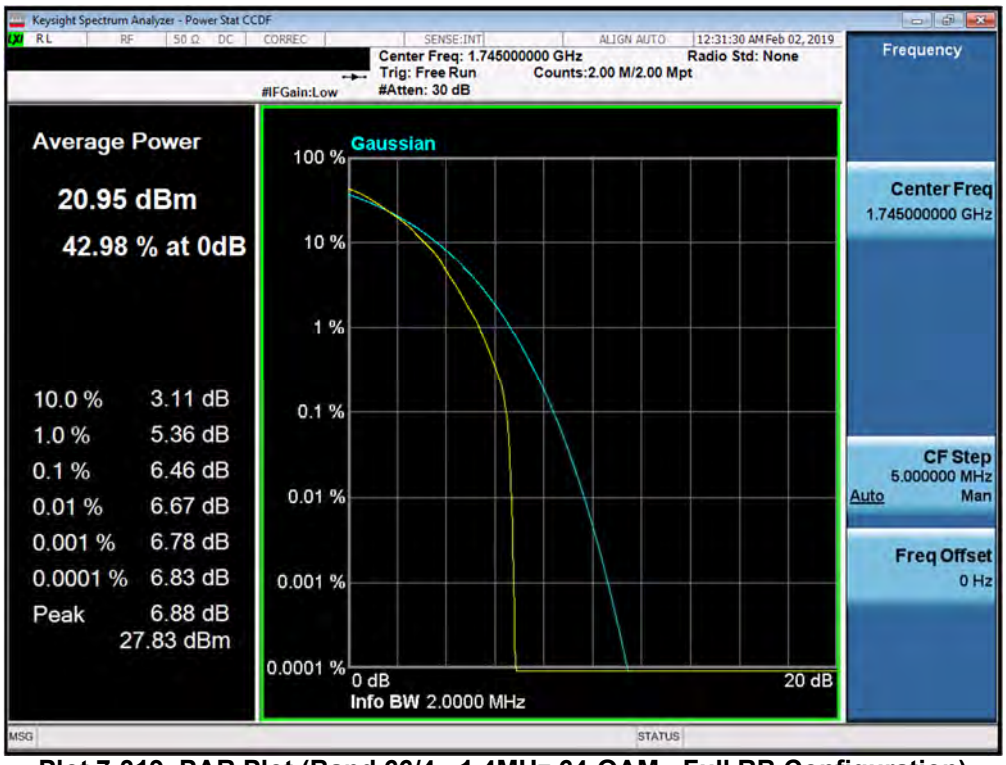
None.



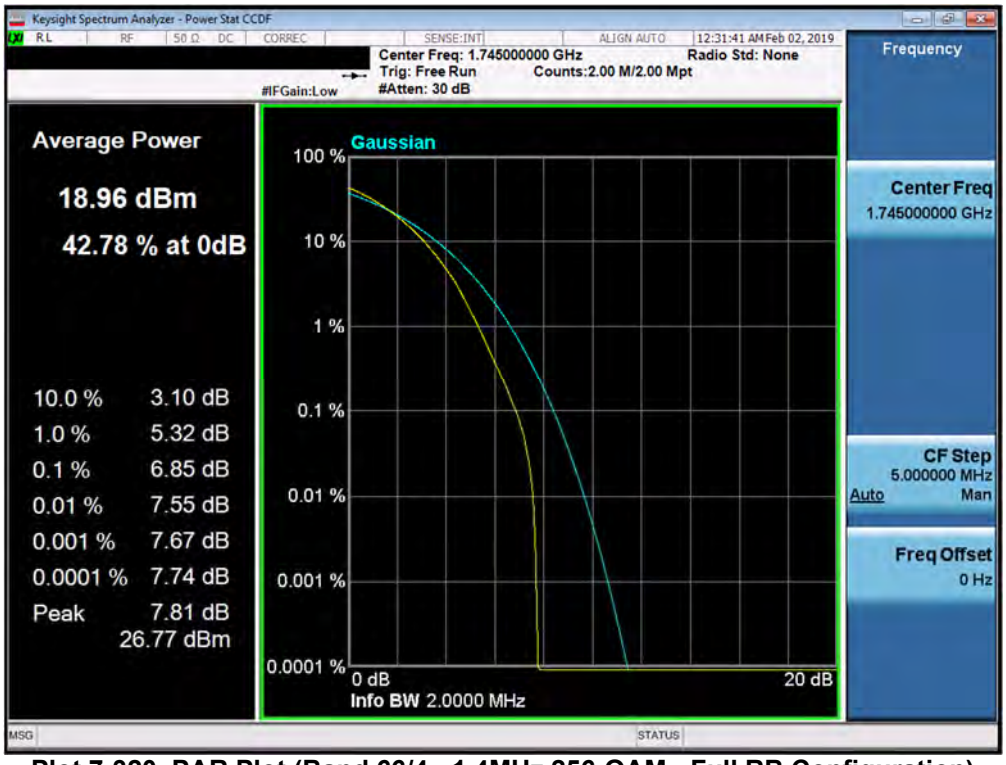
Plot 7-317. PAR Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



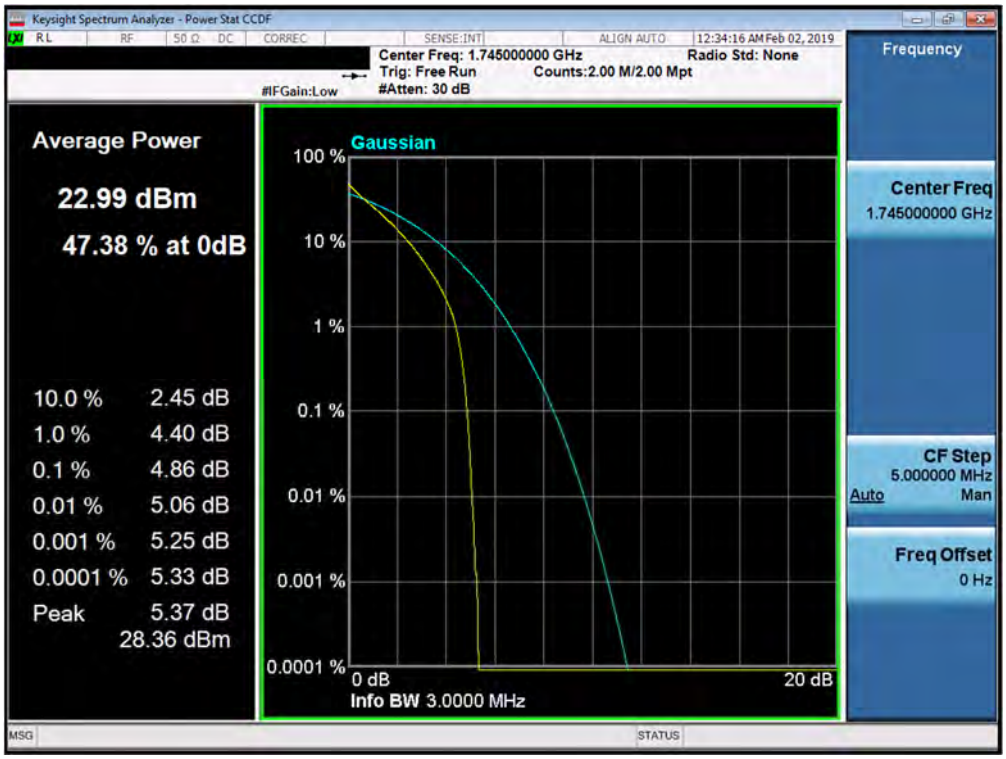
Plot 7-318. PAR Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)



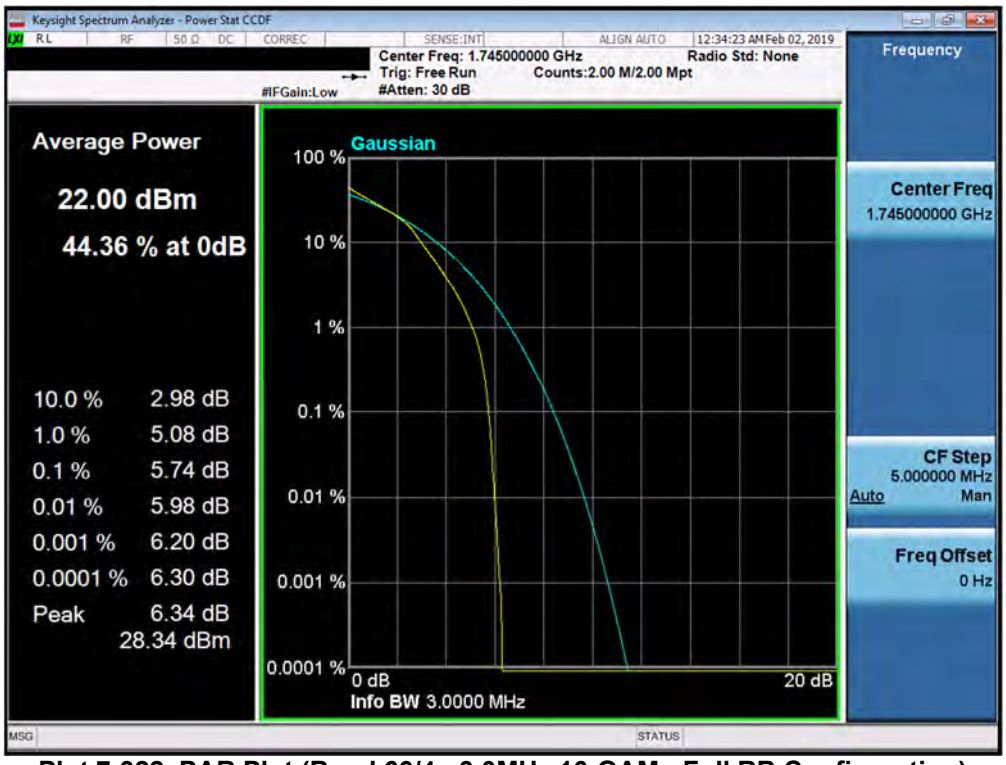
Plot 7-319. PAR Plot (Band 66/4 - 1.4MHz 64-QAM - Full RB Configuration)



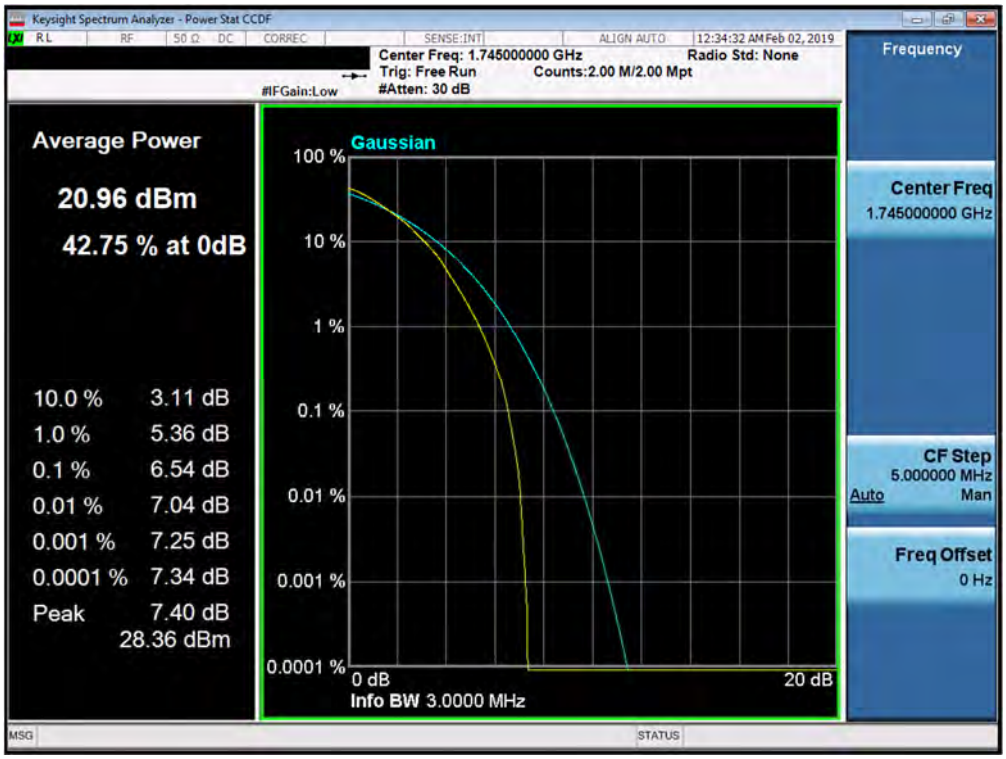
Plot 7-320. PAR Plot (Band 66/4 - 1.4MHz 256-QAM - Full RB Configuration)



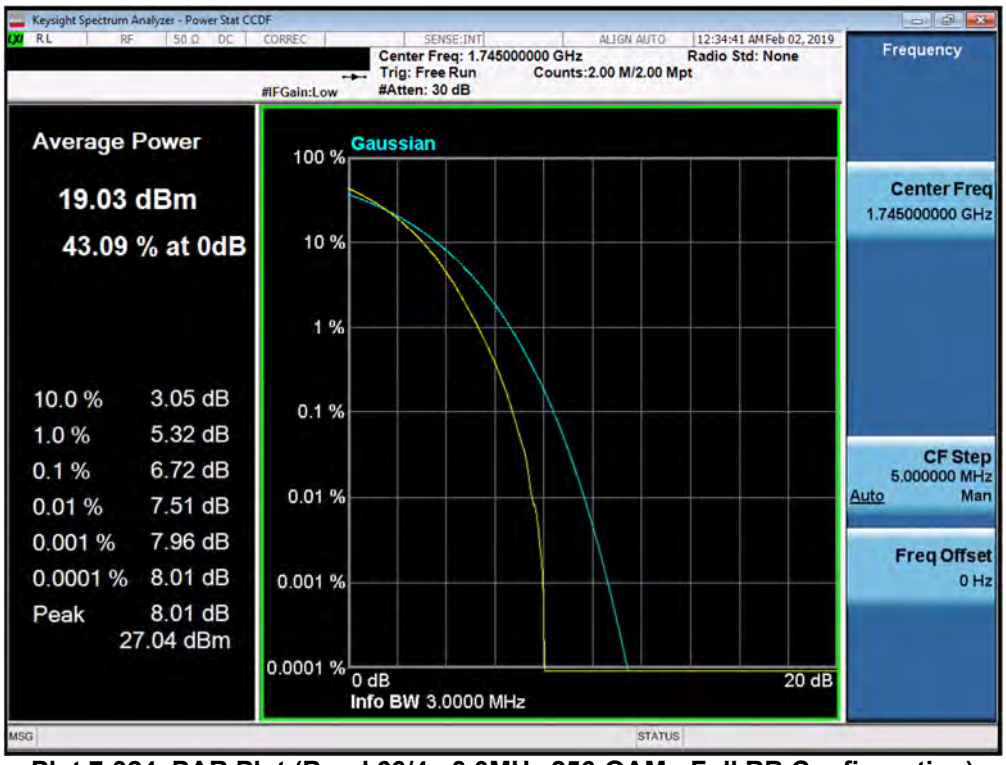
Plot 7-321. PAR Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



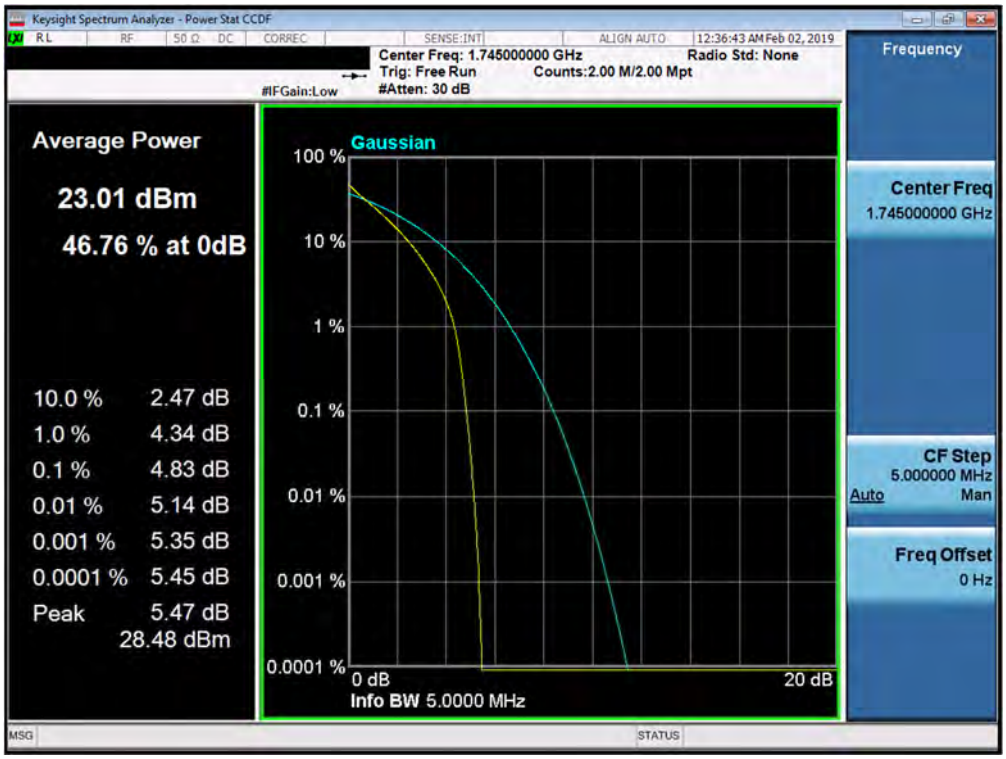
Plot 7-322. PAR Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)



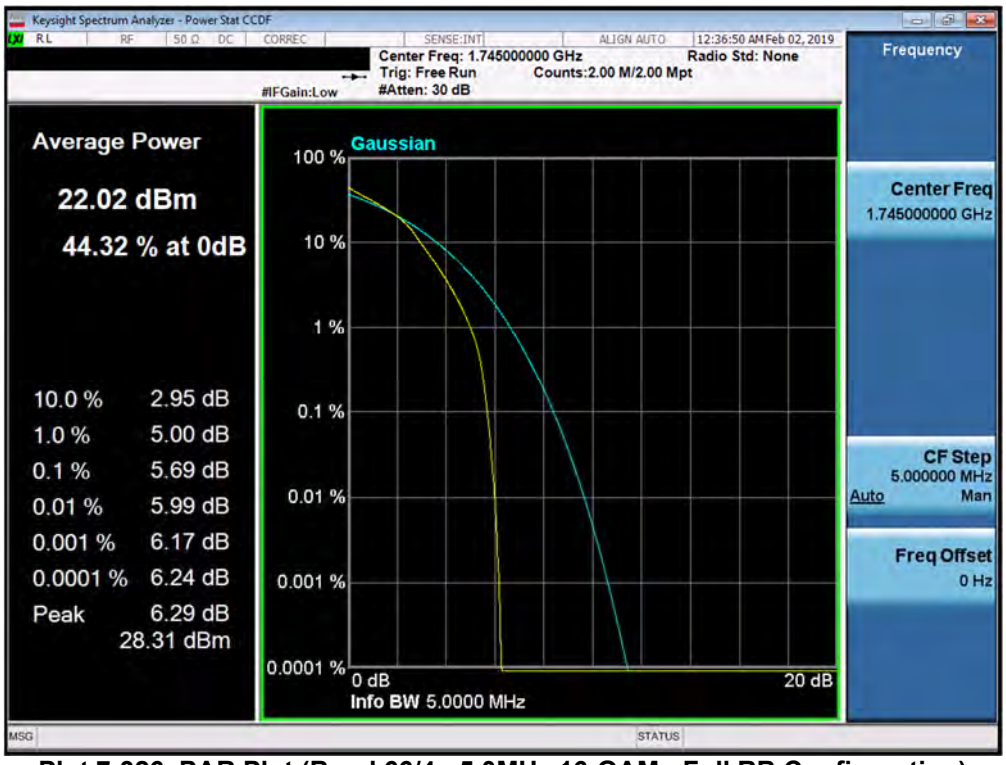
Plot 7-323. PAR Plot (Band 66/4 - 3.0MHz 64-QAM - Full RB Configuration)



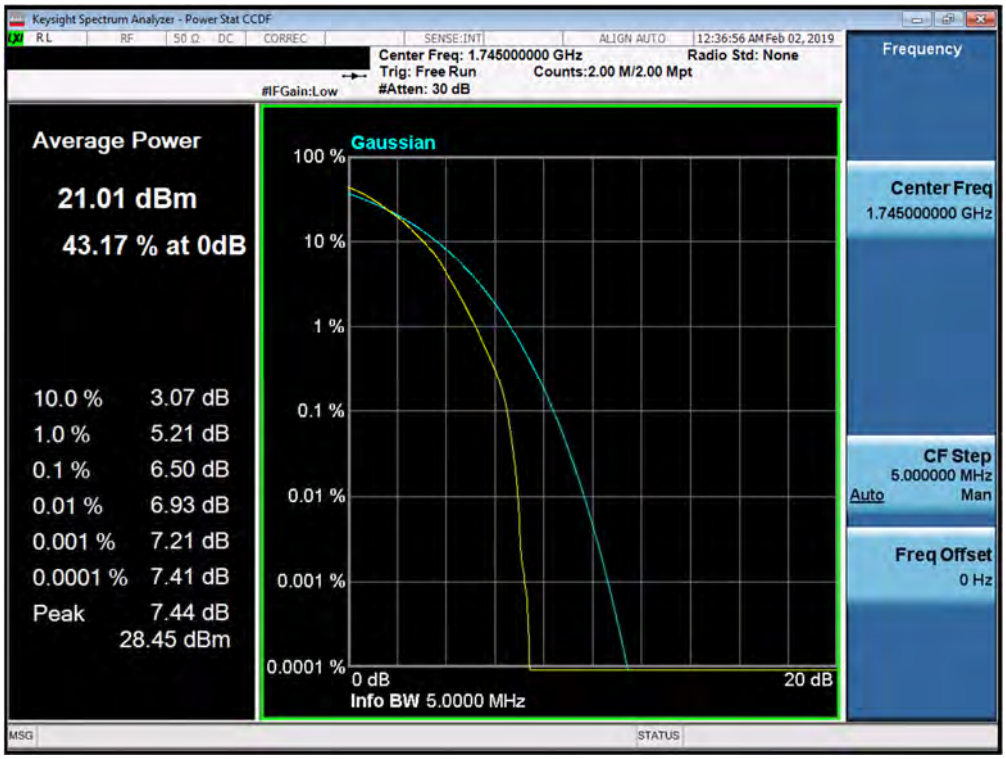
Plot 7-324. PAR Plot (Band 66/4 - 3.0MHz 256-QAM - Full RB Configuration)



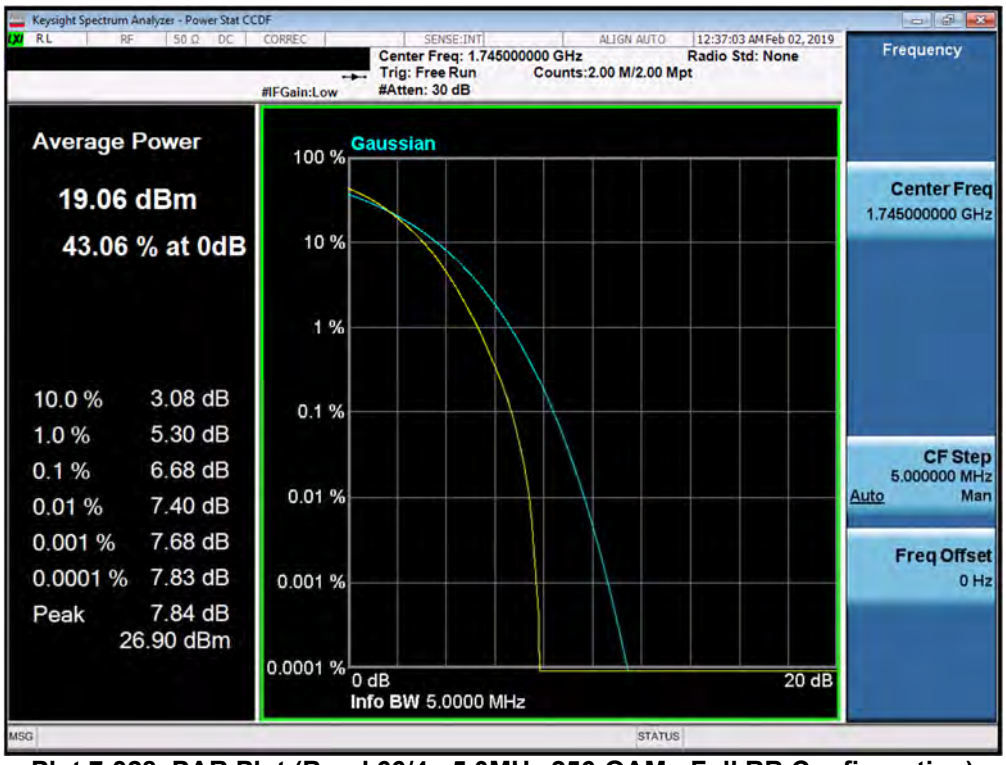
Plot 7-325. PAR Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



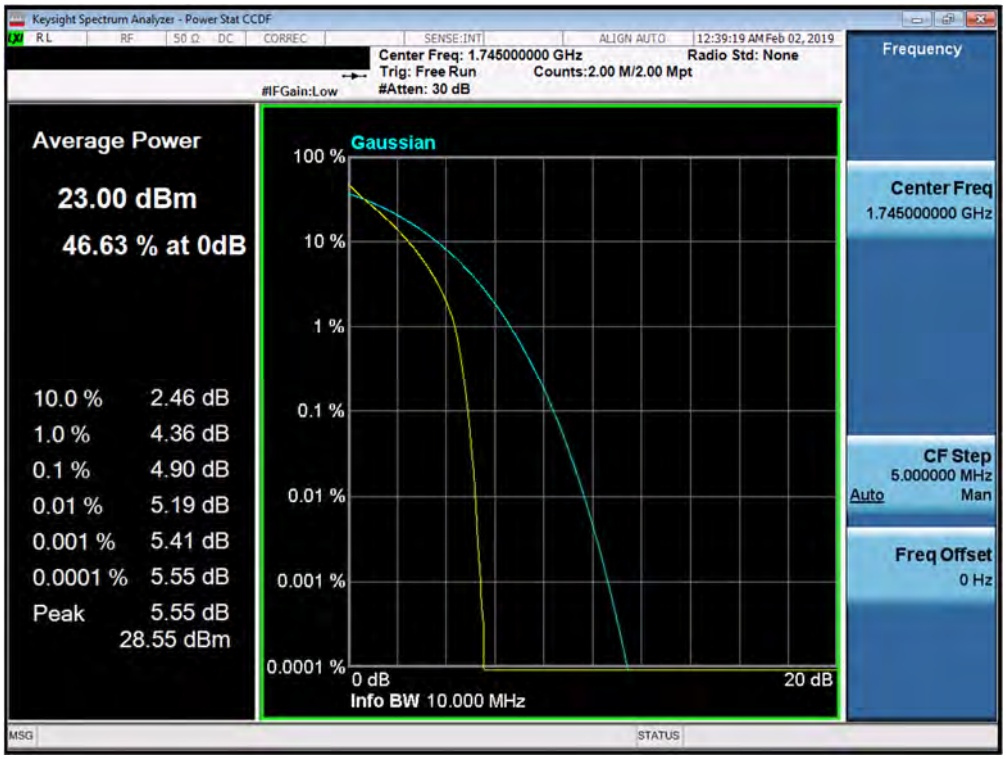
Plot 7-326. PAR Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)



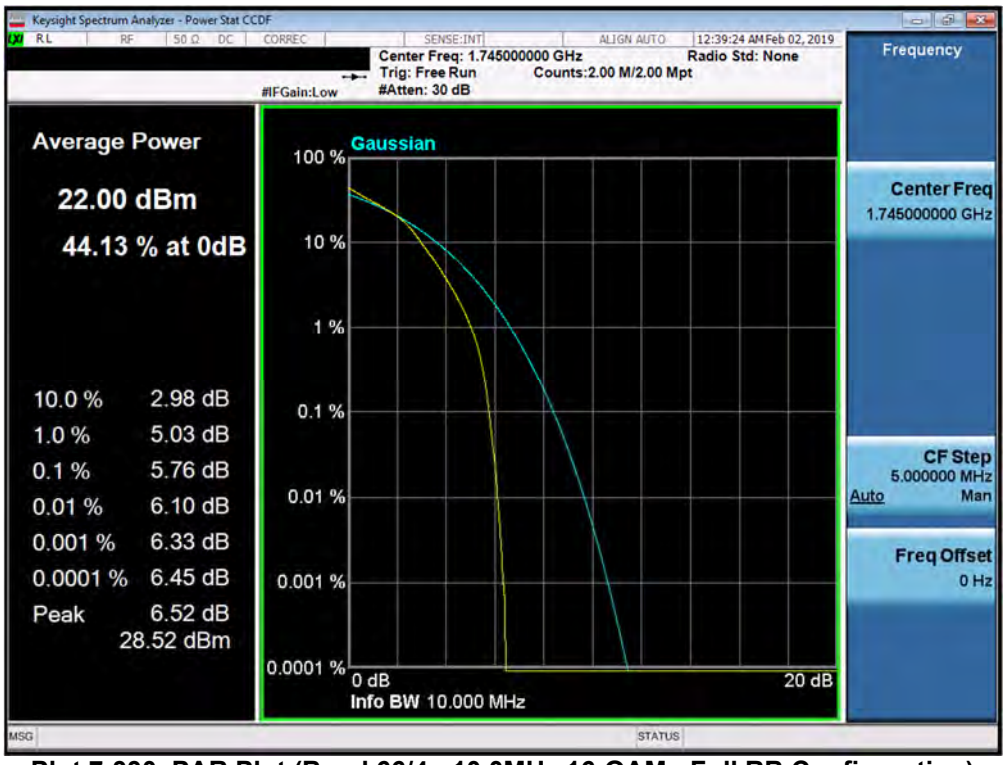
Plot 7-327. PAR Plot (Band 66/4 - 5.0MHz 64-QAM - Full RB Configuration)



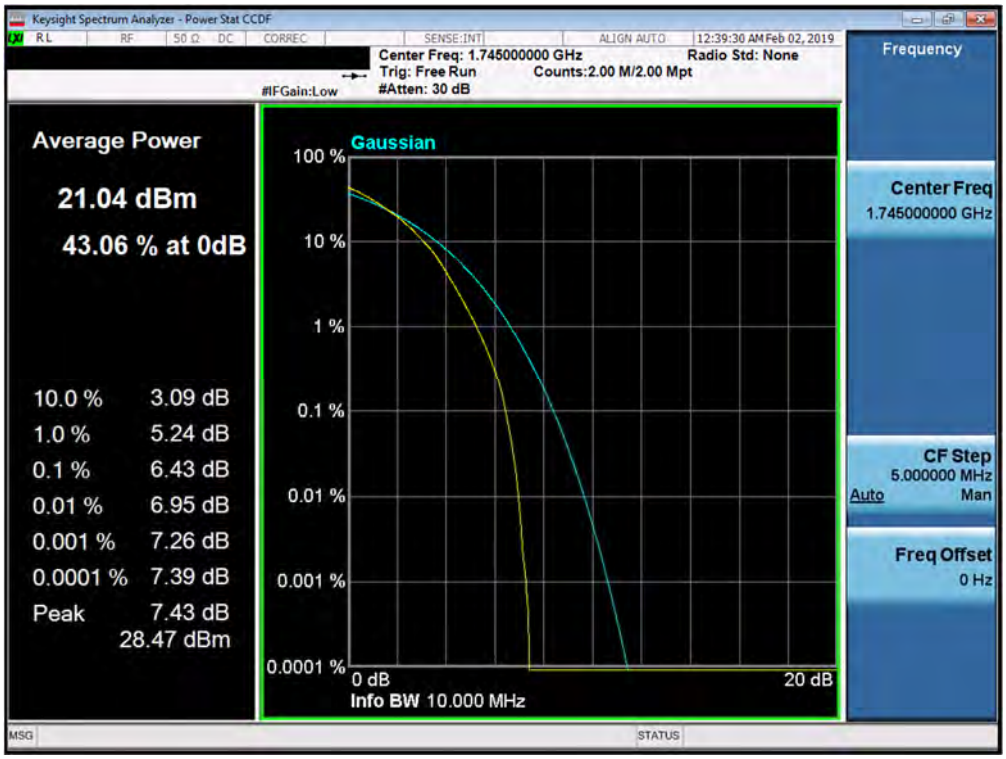
Plot 7-328. PAR Plot (Band 66/4 - 5.0MHz 256-QAM - Full RB Configuration)



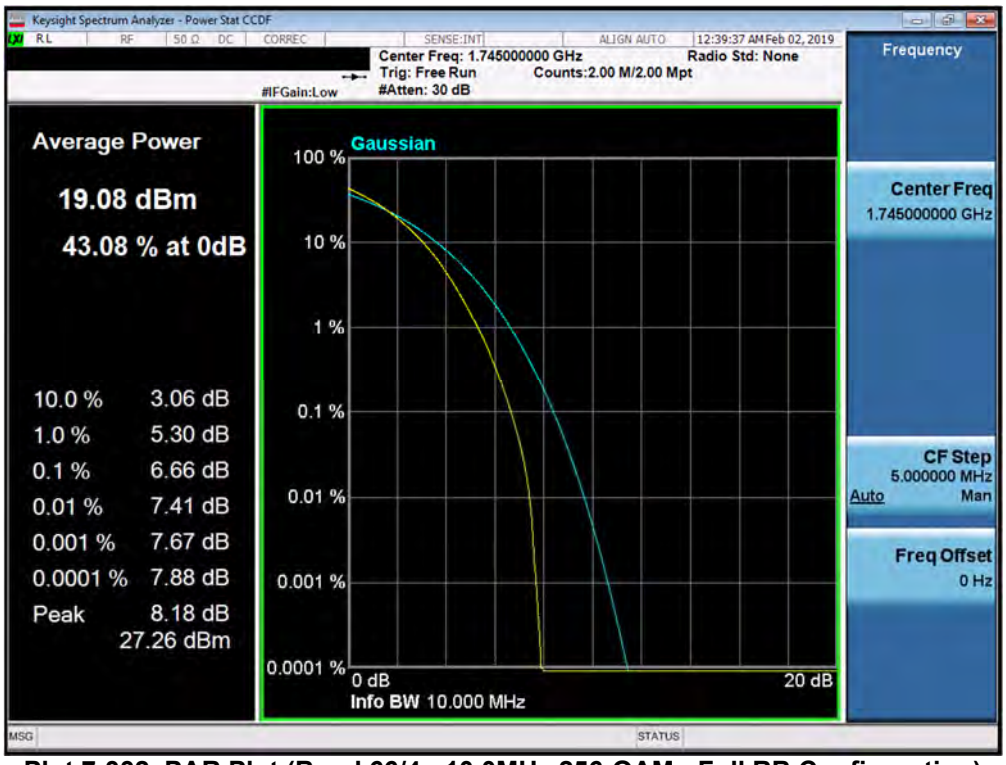
Plot 7-329. PAR Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



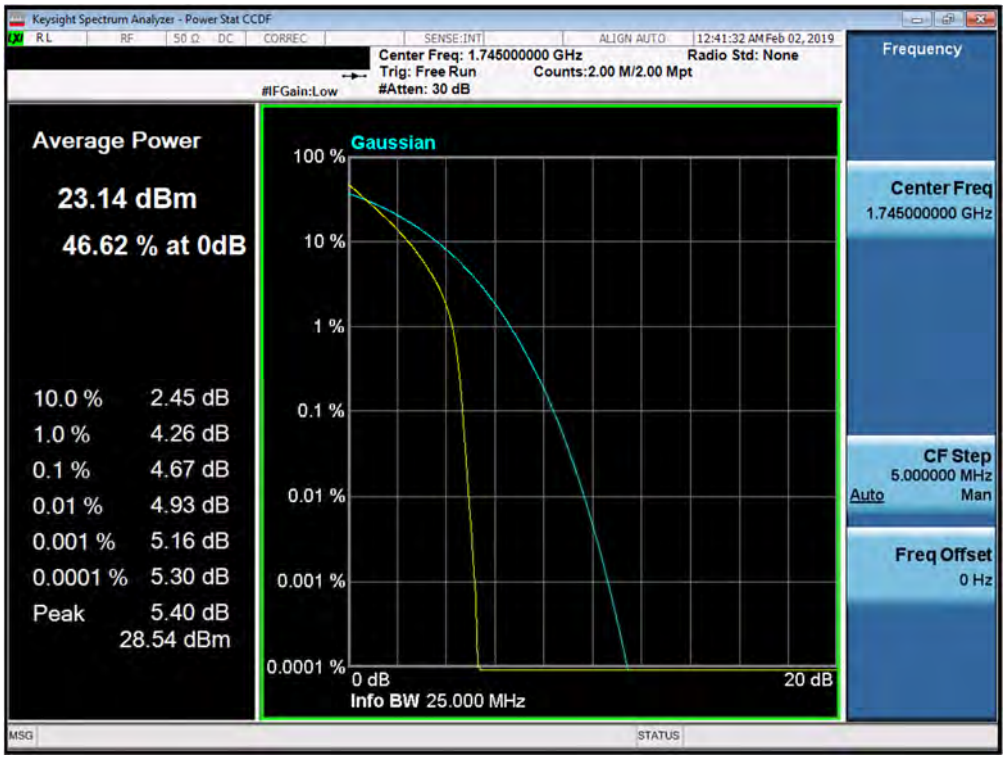
Plot 7-330. PAR Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)



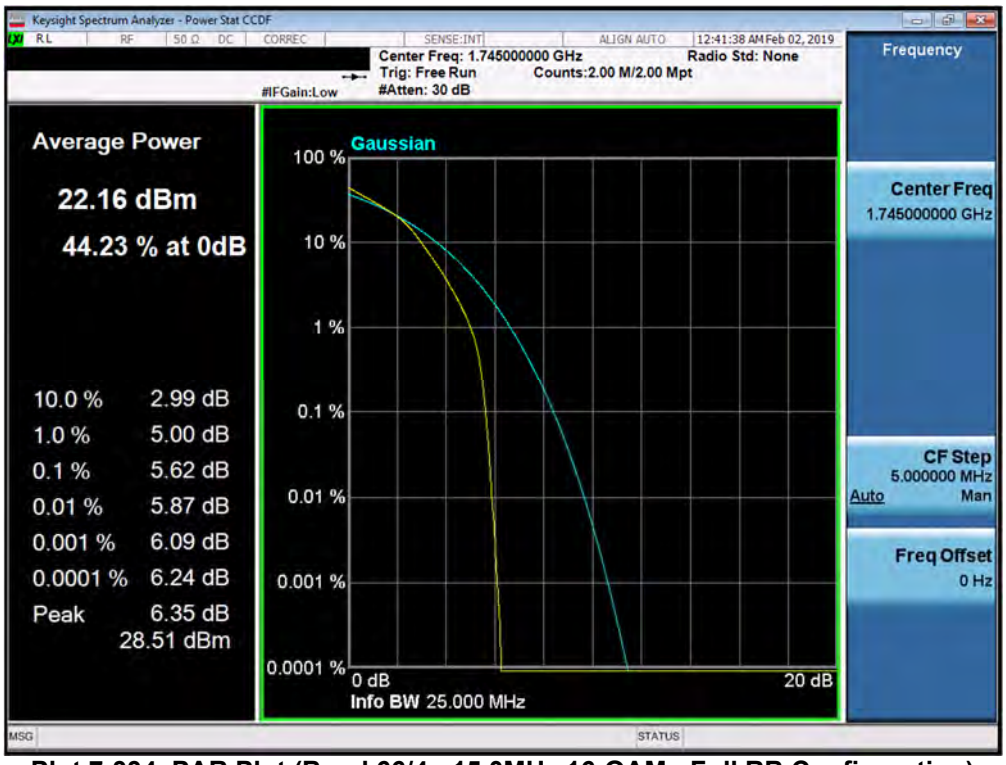
Plot 7-331. PAR Plot (Band 66/4 - 10.0MHz 64-QAM - Full RB Configuration)



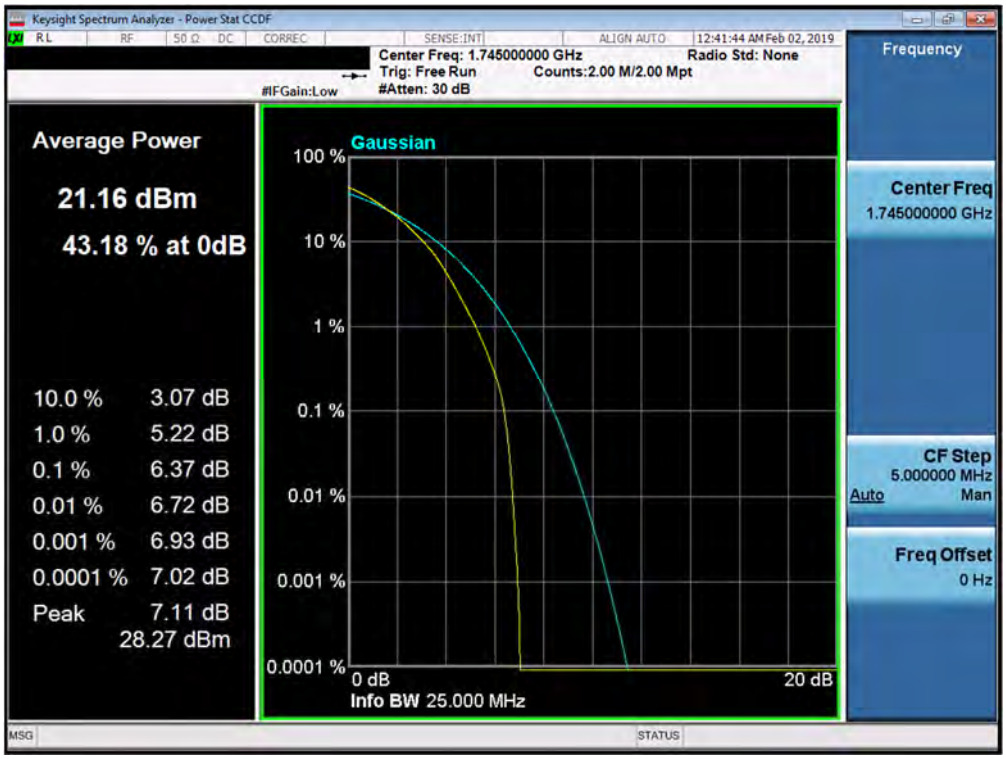
Plot 7-332. PAR Plot (Band 66/4 - 10.0MHz 256-QAM - Full RB Configuration)



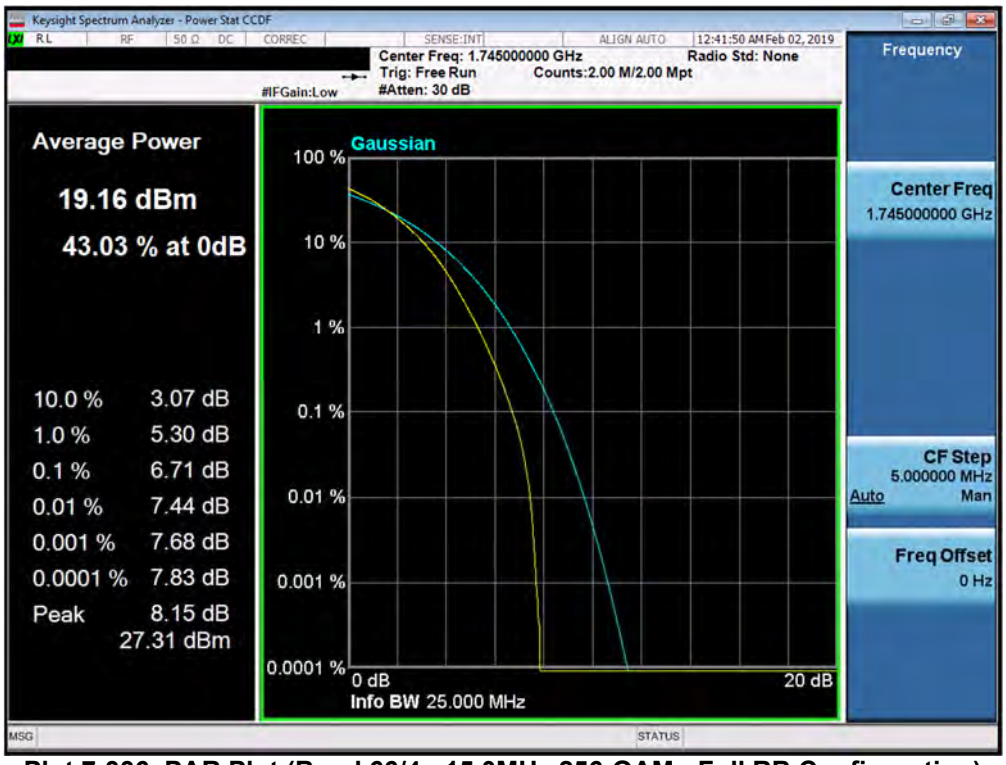
Plot 7-333. PAR Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



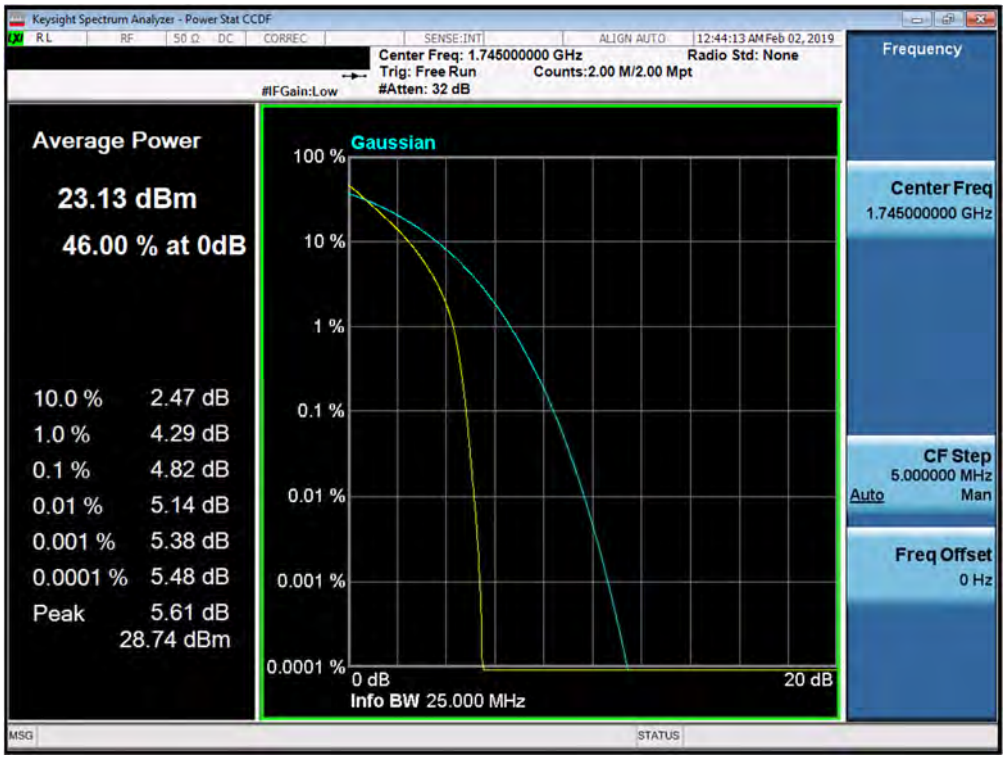
Plot 7-334. PAR Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)



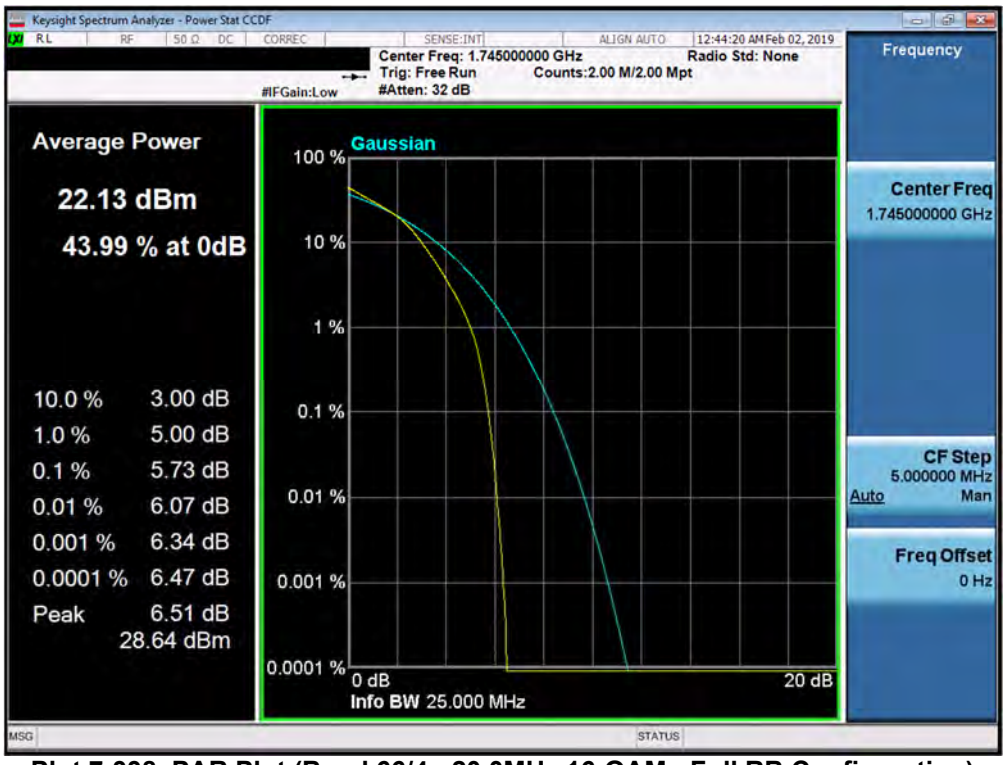
Plot 7-335. PAR Plot (Band 66/4 - 15.0MHz 64-QAM - Full RB Configuration)



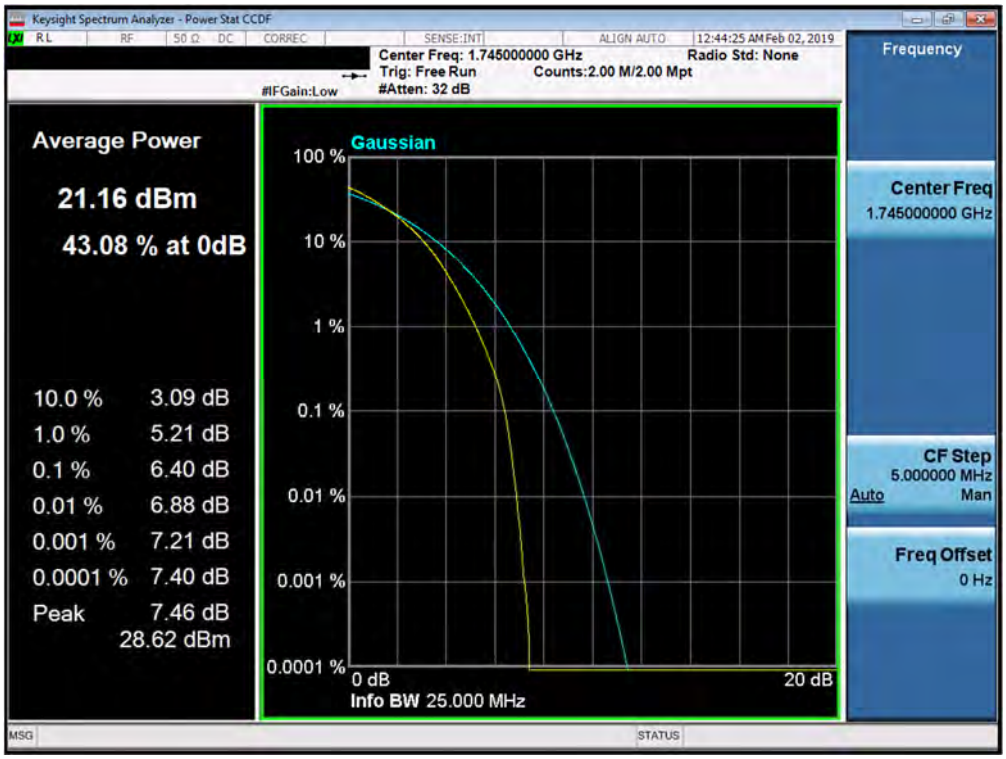
Plot 7-336. PAR Plot (Band 66/4 - 15.0MHz 256-QAM - Full RB Configuration)



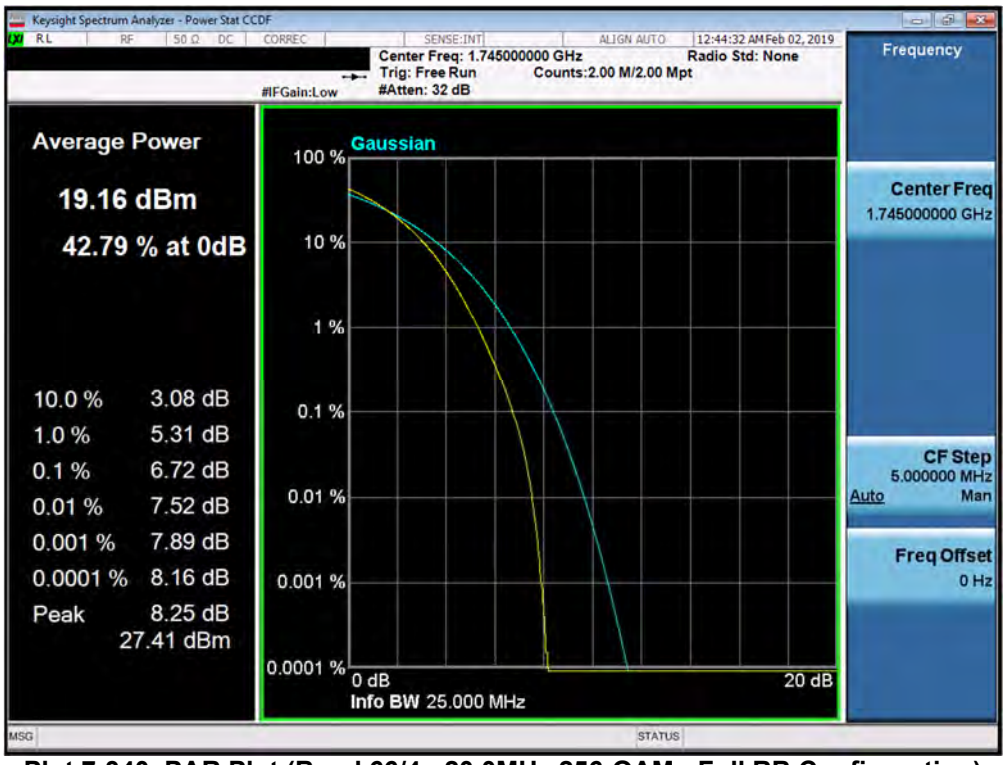
Plot 7-337. PAR Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-338. PAR Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)

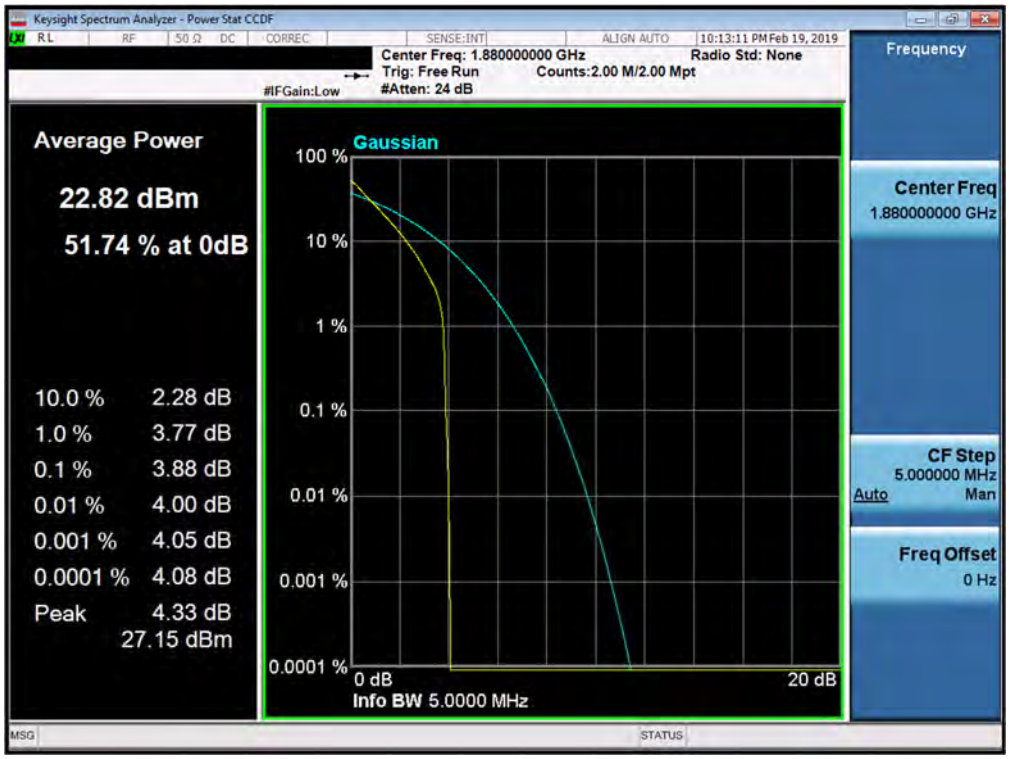


Plot 7-339. PAR Plot (Band 66/4 - 20.0MHz 64-QAM - Full RB Configuration)

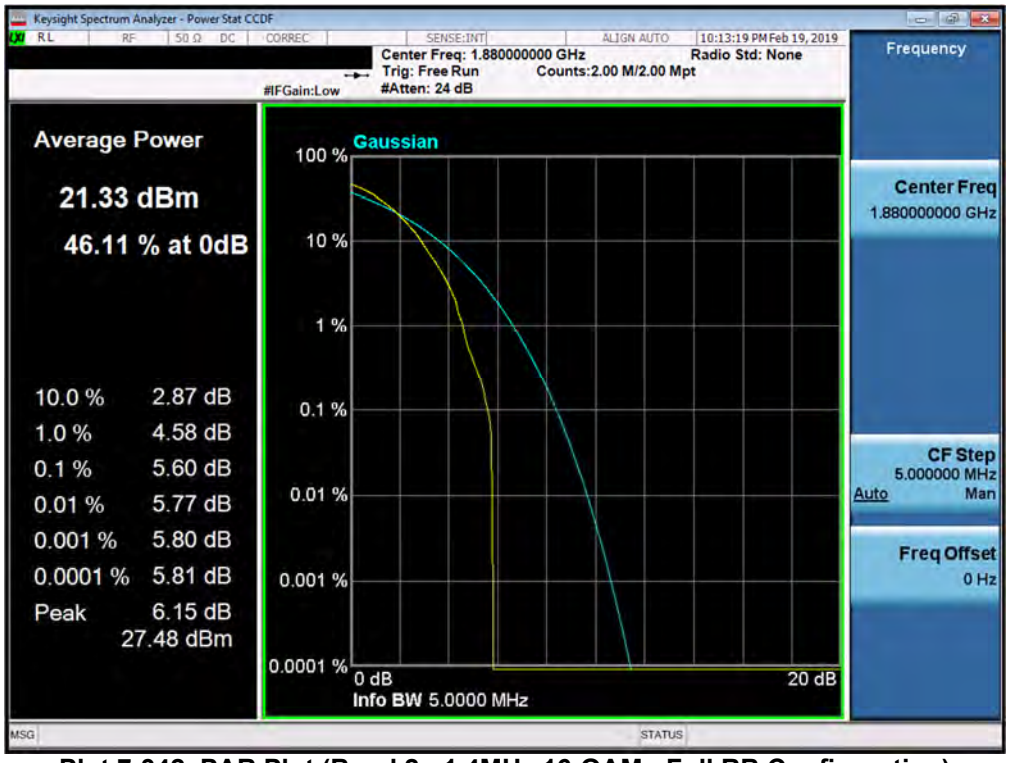


Plot 7-340. PAR Plot (Band 66/4 - 20.0MHz 256-QAM - Full RB Configuration)

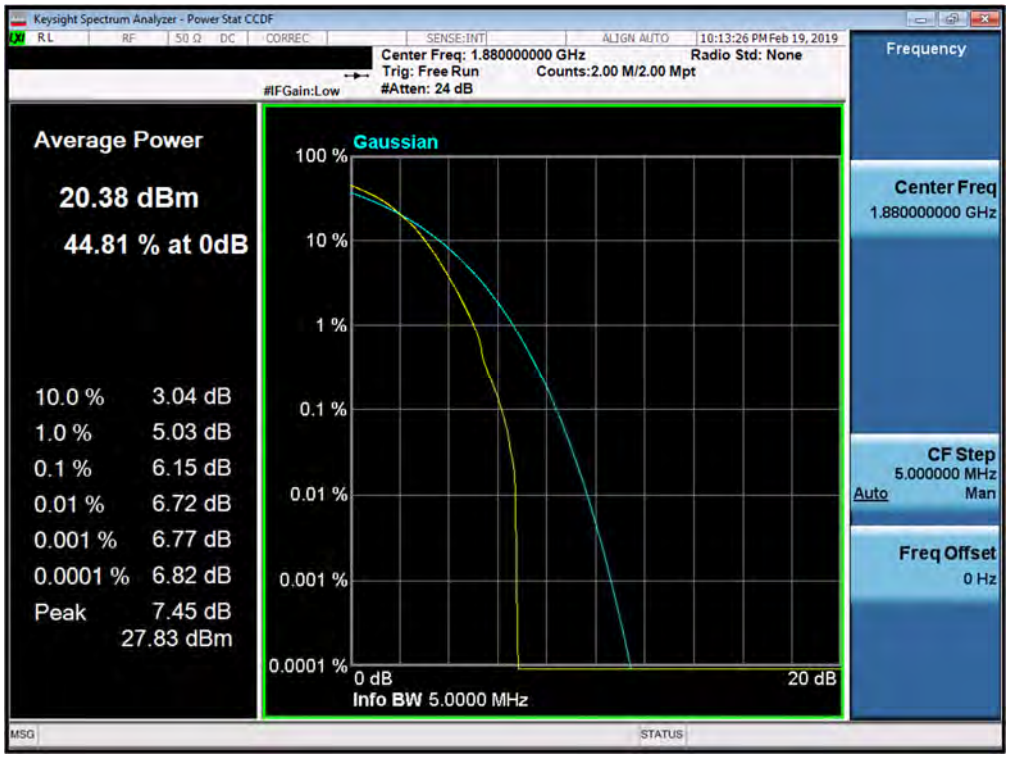
Band 2



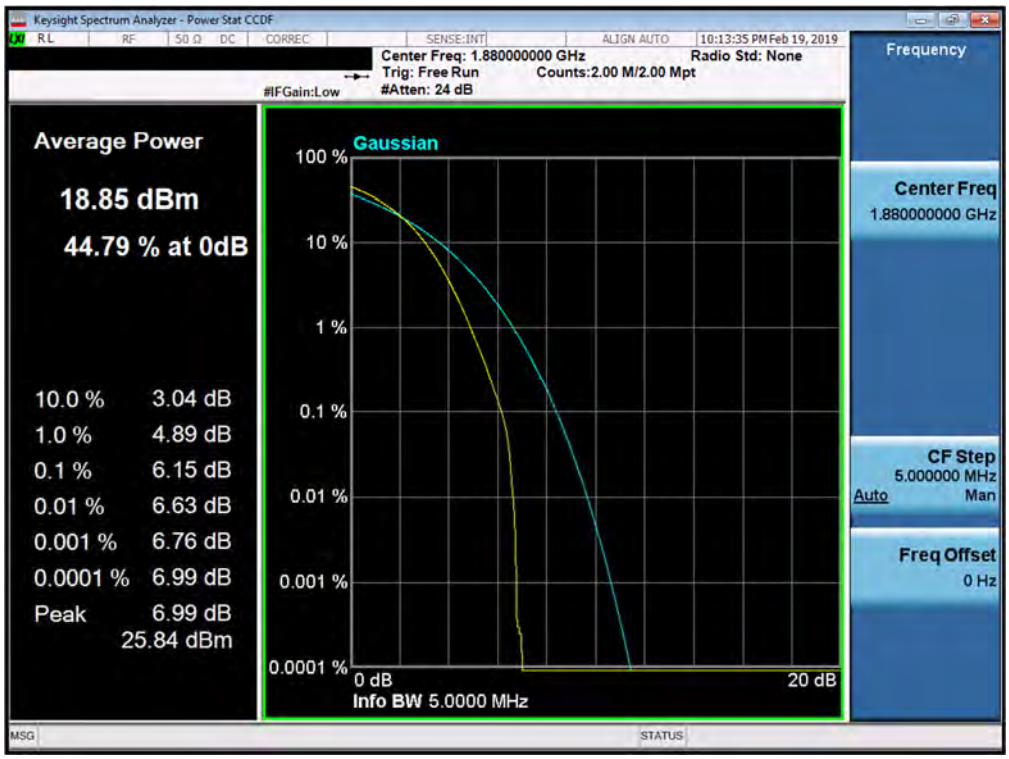
Plot 7-341. PAR Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



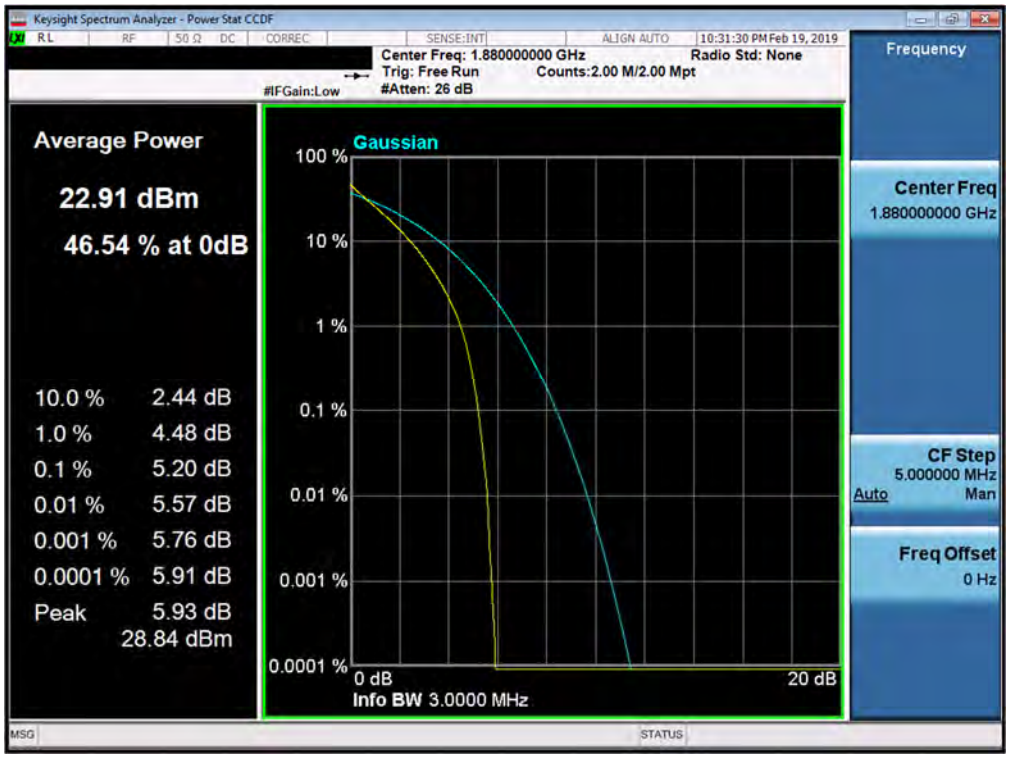
Plot 7-342. PAR Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)



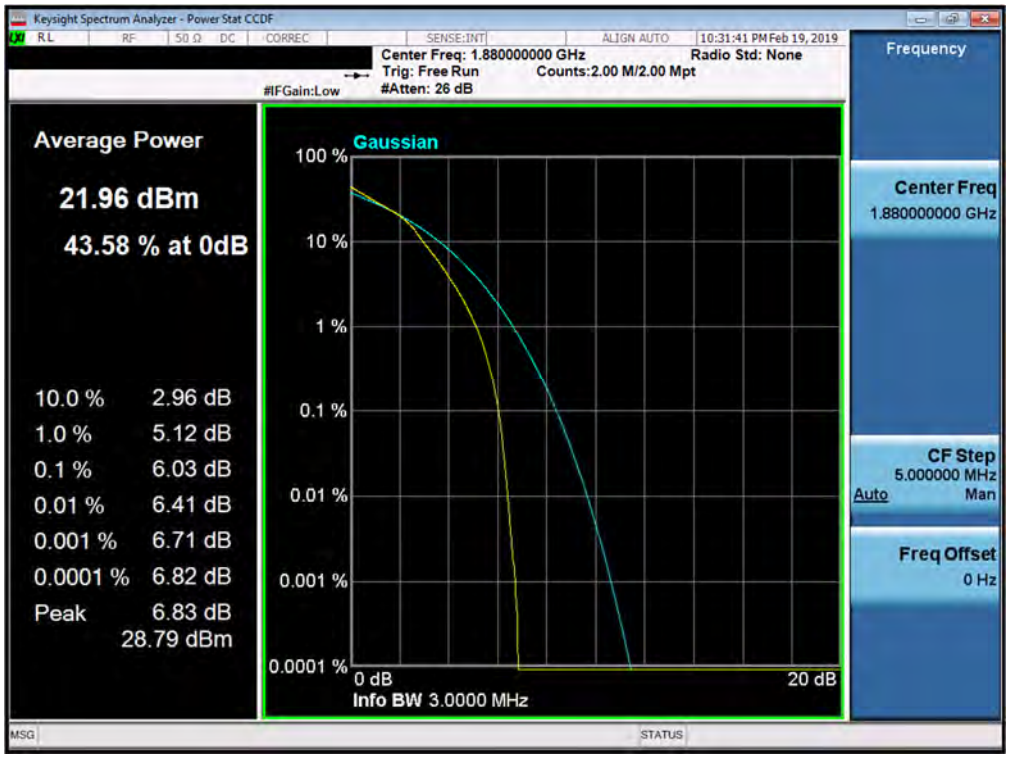
Plot 7-343. PAR Plot (Band 2 - 1.4MHz 64-QAM - Full RB Configuration)



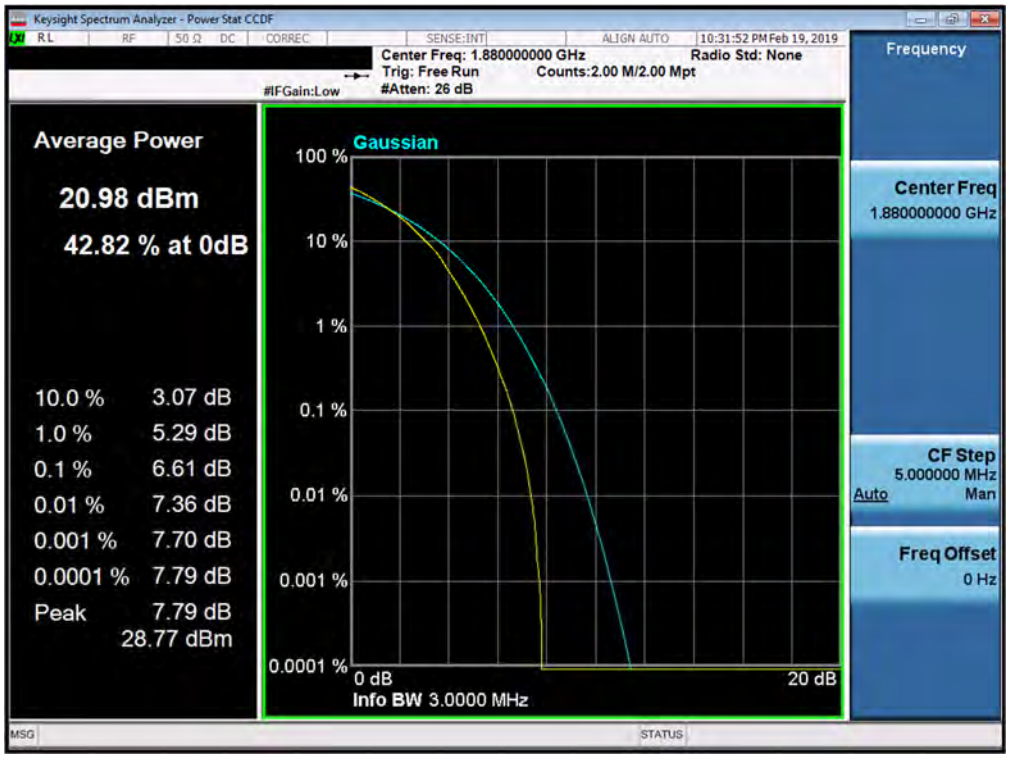
Plot 7-344. PAR Plot (Band 2 - 1.4MHz 256-QAM - Full RB Configuration)



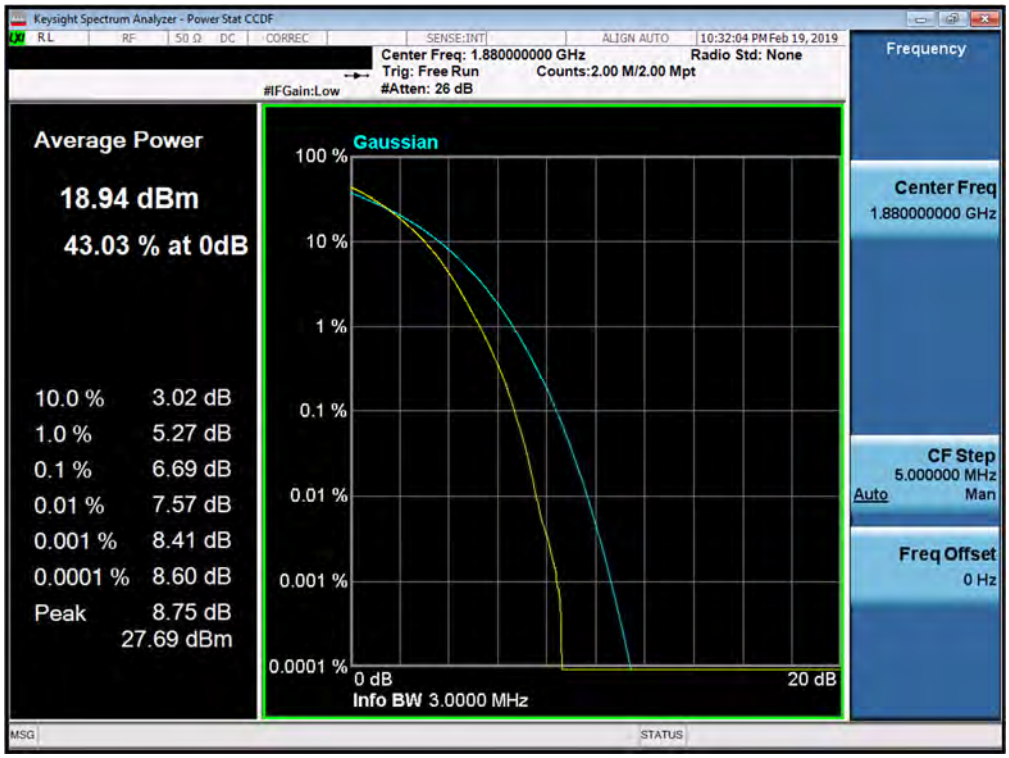
Plot 7-345. PAR Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



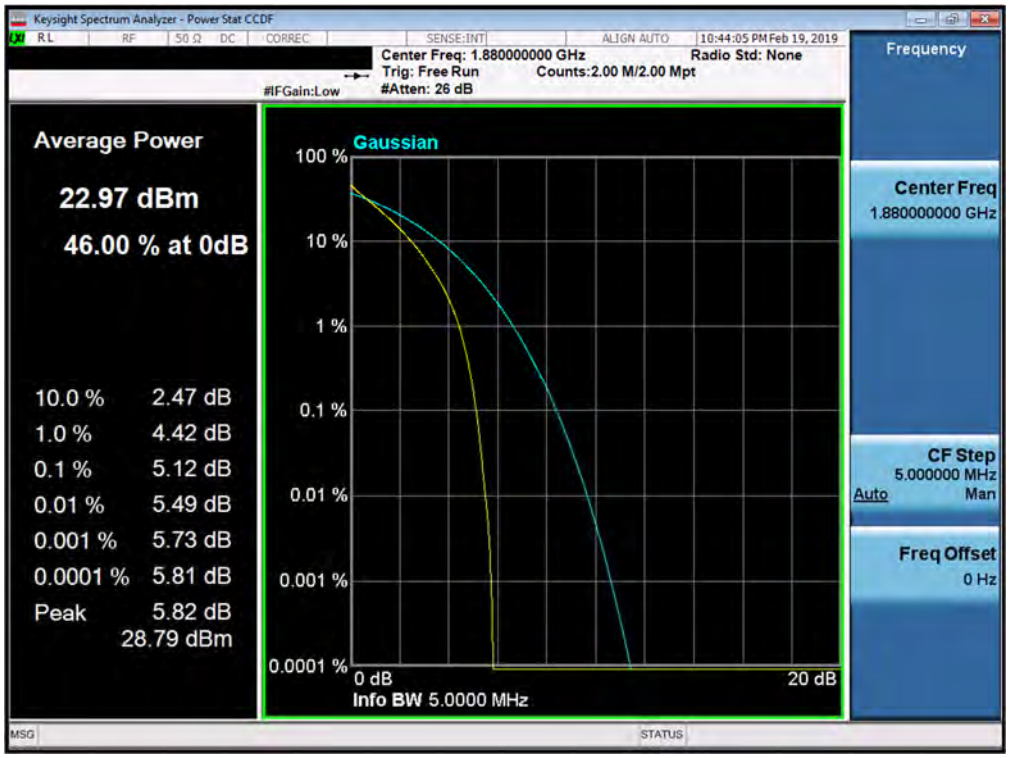
Plot 7-346. PAR Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)



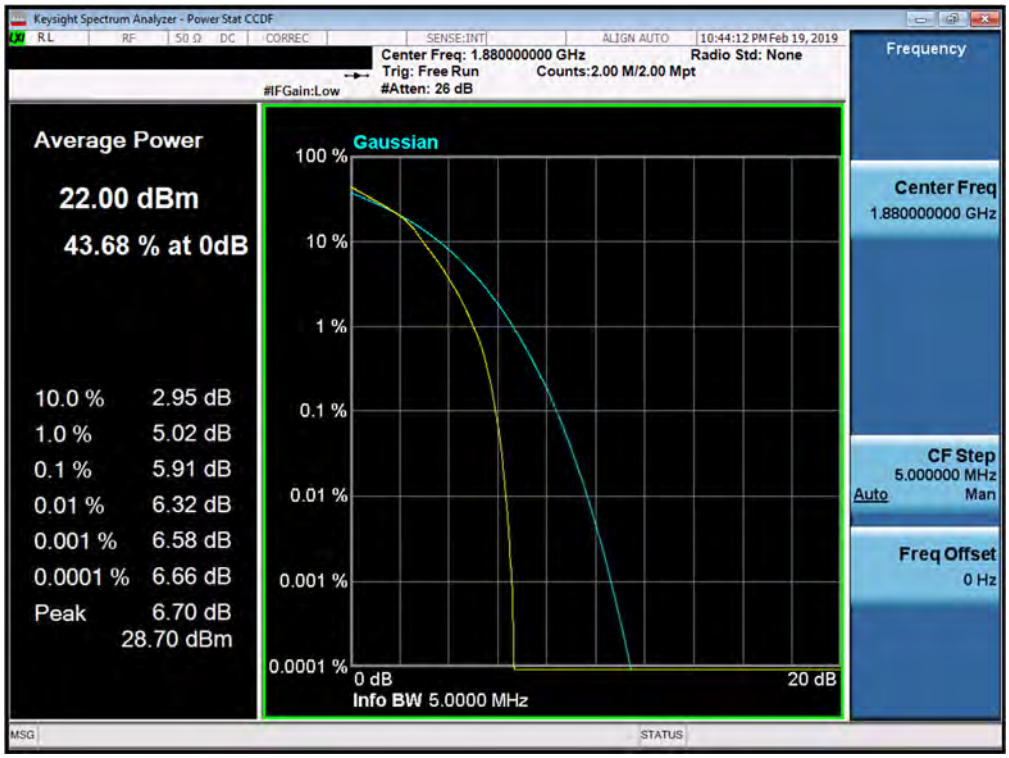
Plot 7-347. PAR Plot (Band 2 - 3.0MHz 64-QAM - Full RB Configuration)



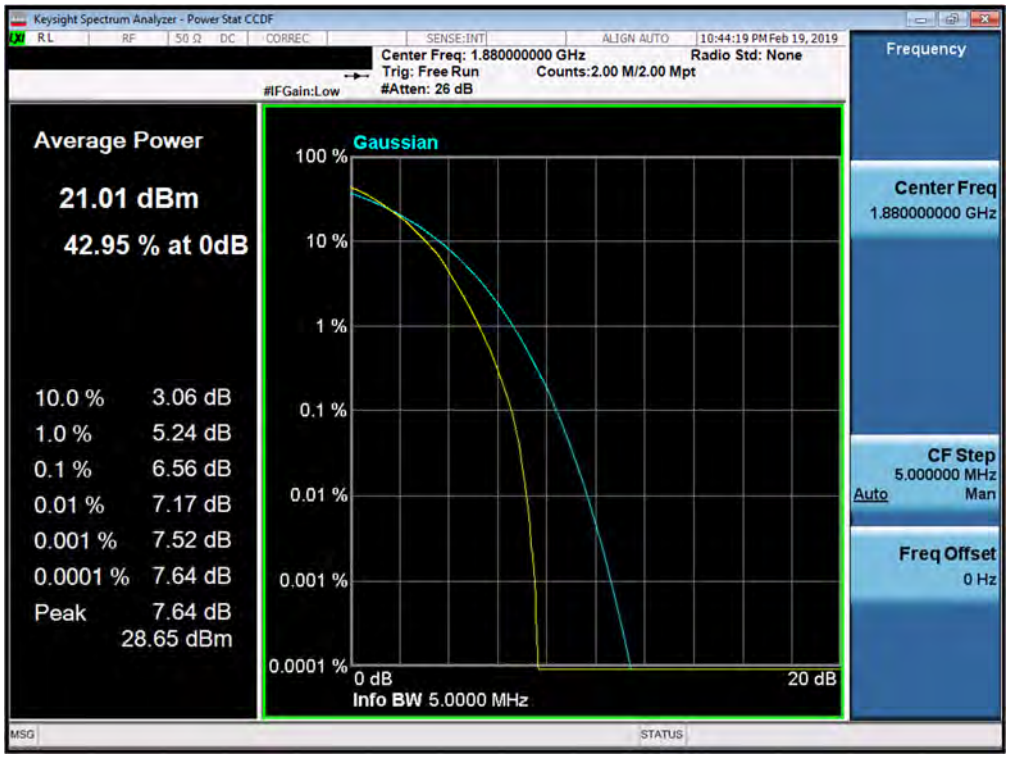
Plot 7-348. PAR Plot (Band 2 - 3.0MHz 256-QAM - Full RB Configuration)



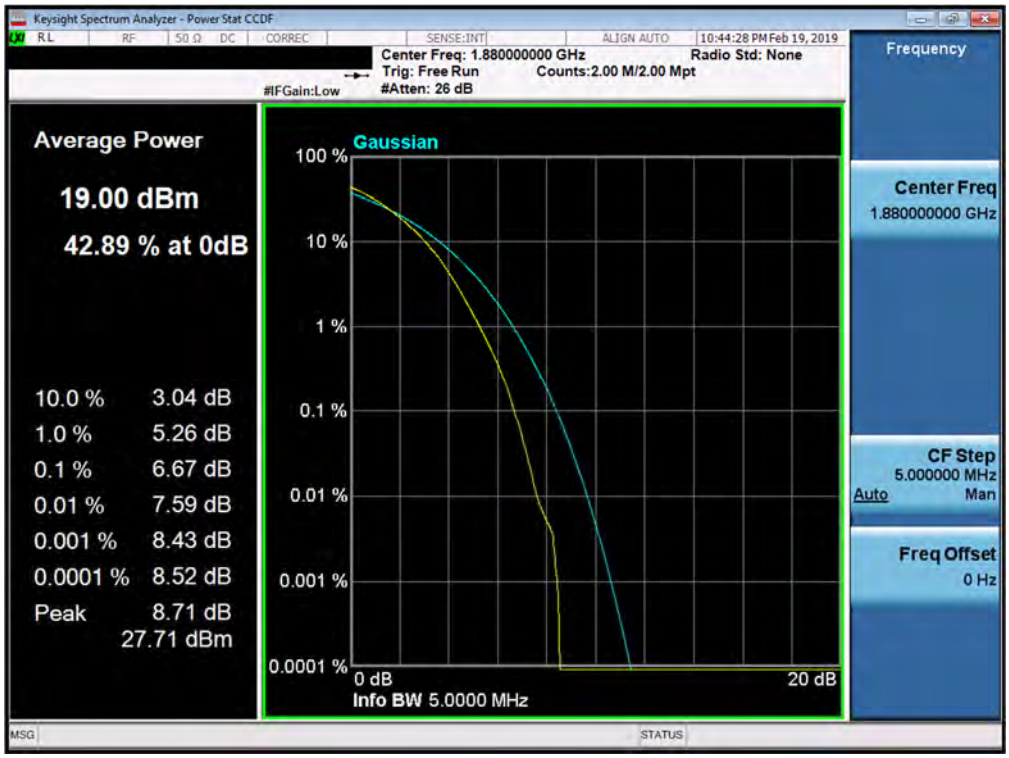
Plot 7-349. PAR Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



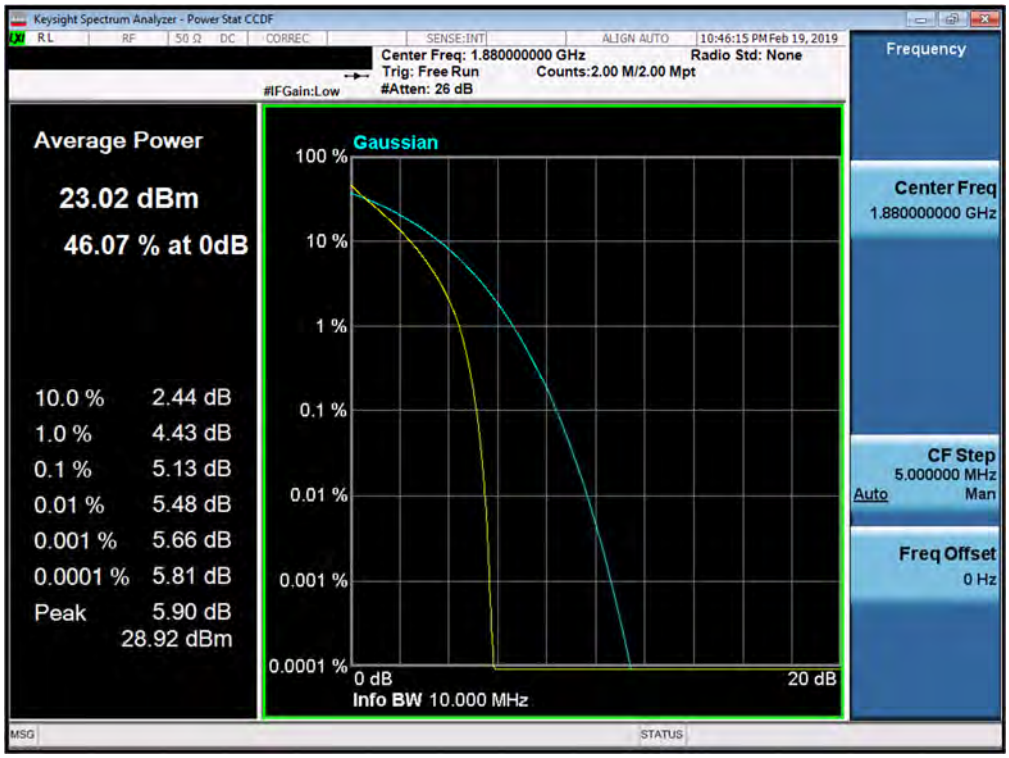
Plot 7-350. PAR Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)



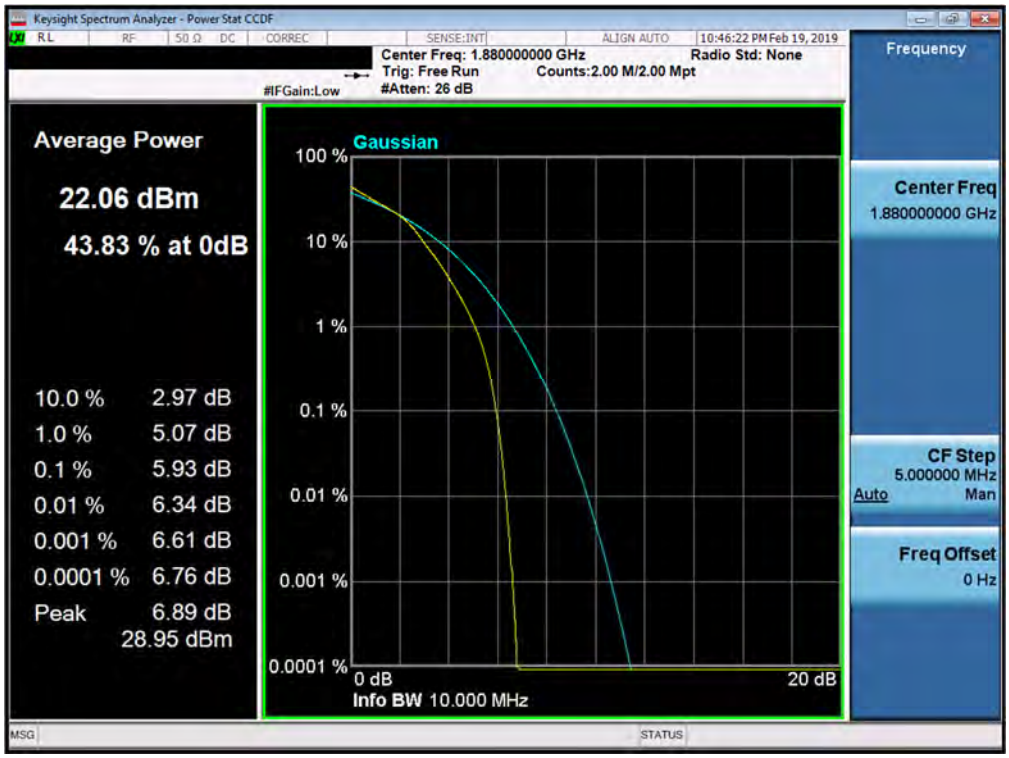
Plot 7-351. PAR Plot (Band 2 - 5.0MHz 64-QAM - Full RB Configuration)



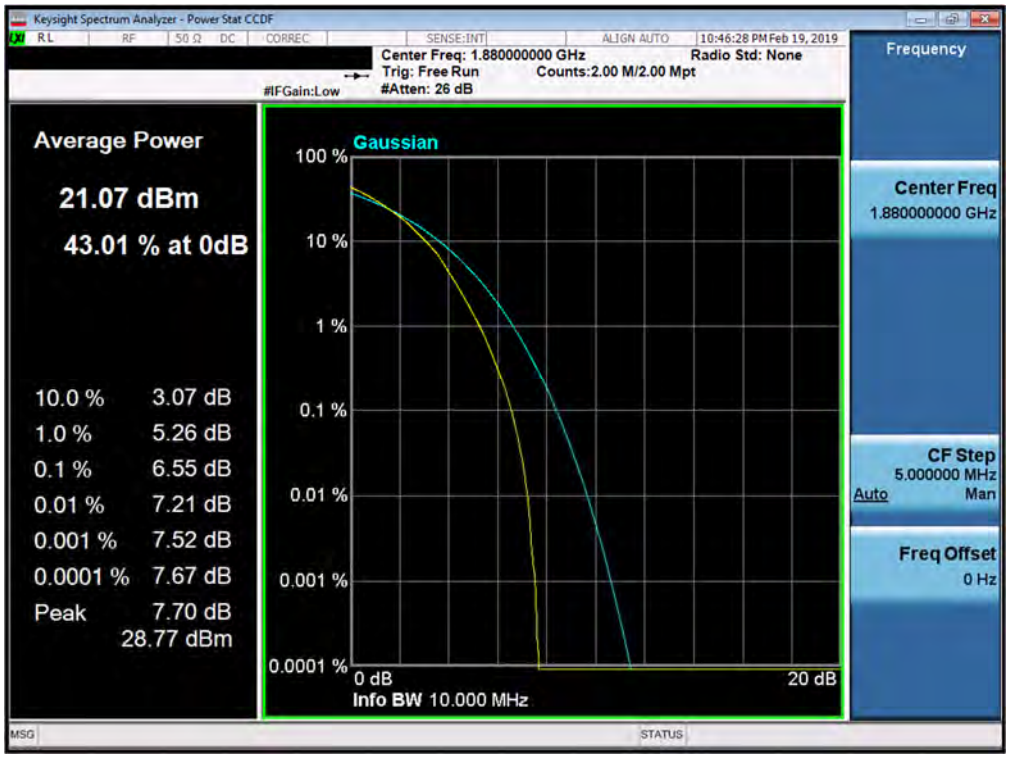
Plot 7-352. PAR Plot (Band 2 - 5.0MHz 256-QAM - Full RB Configuration)



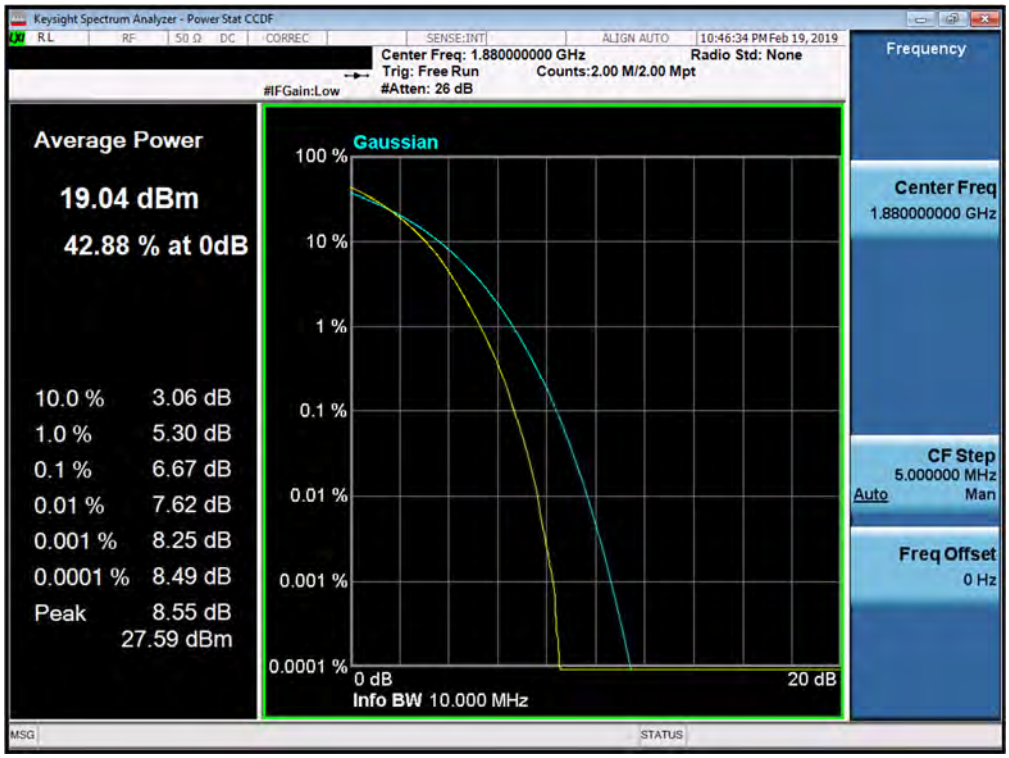
Plot 7-353. PAR Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



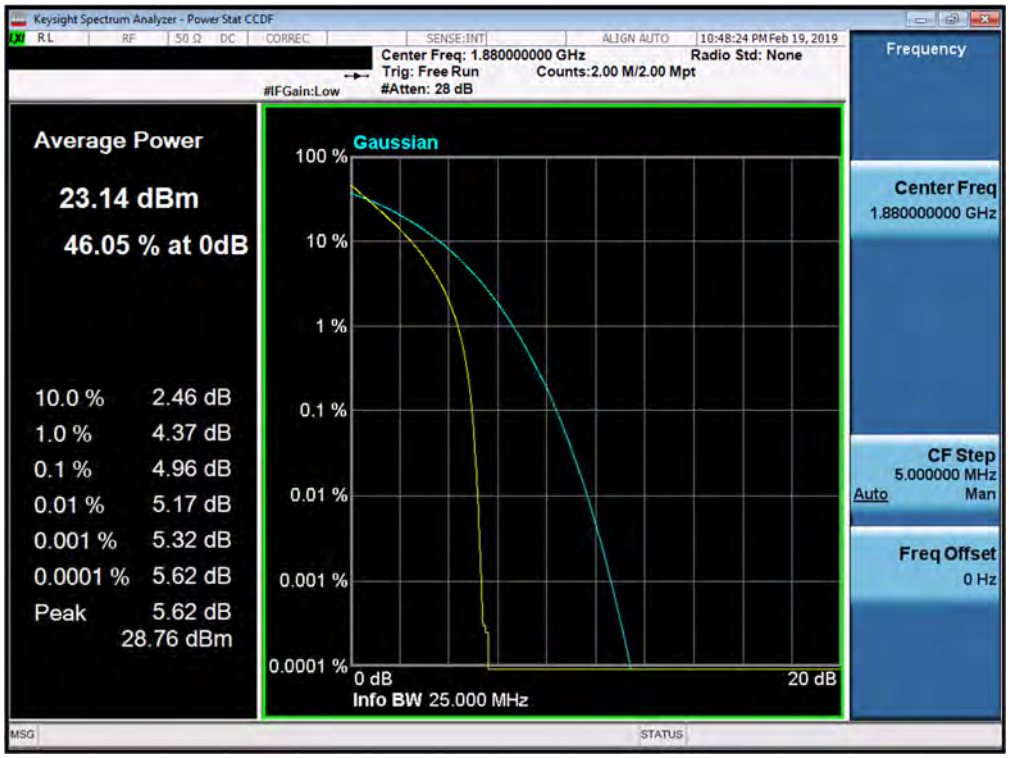
Plot 7-354. PAR Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)



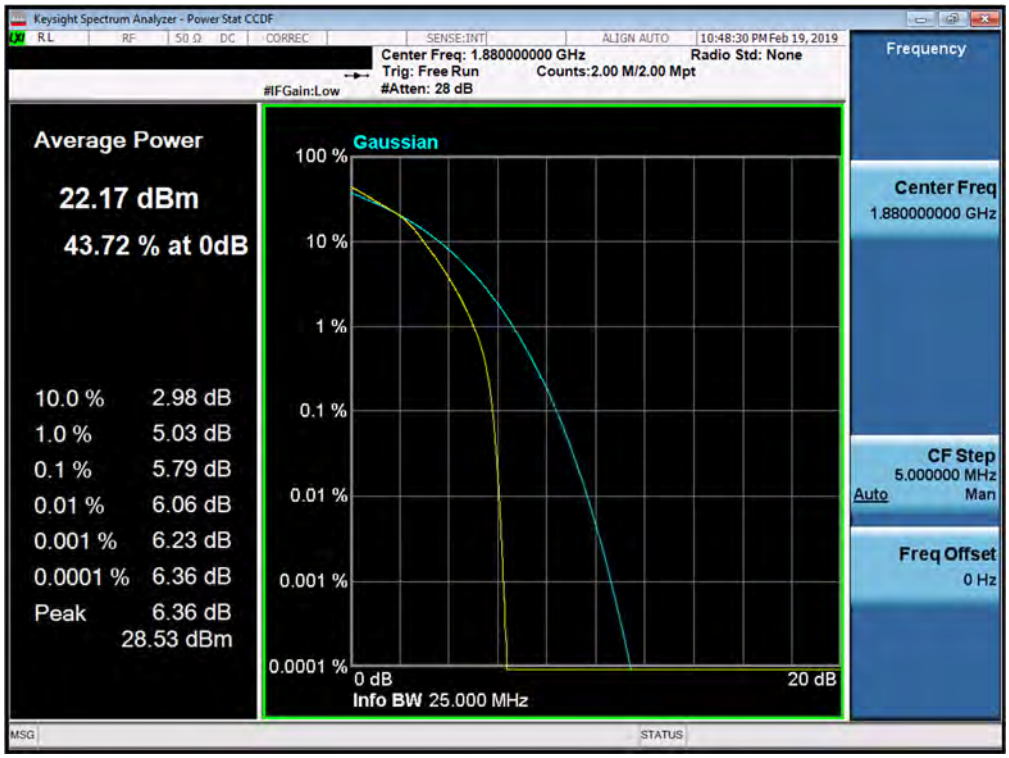
Plot 7-355. PAR Plot (Band 2 - 10.0MHz 64-QAM - Full RB Configuration)



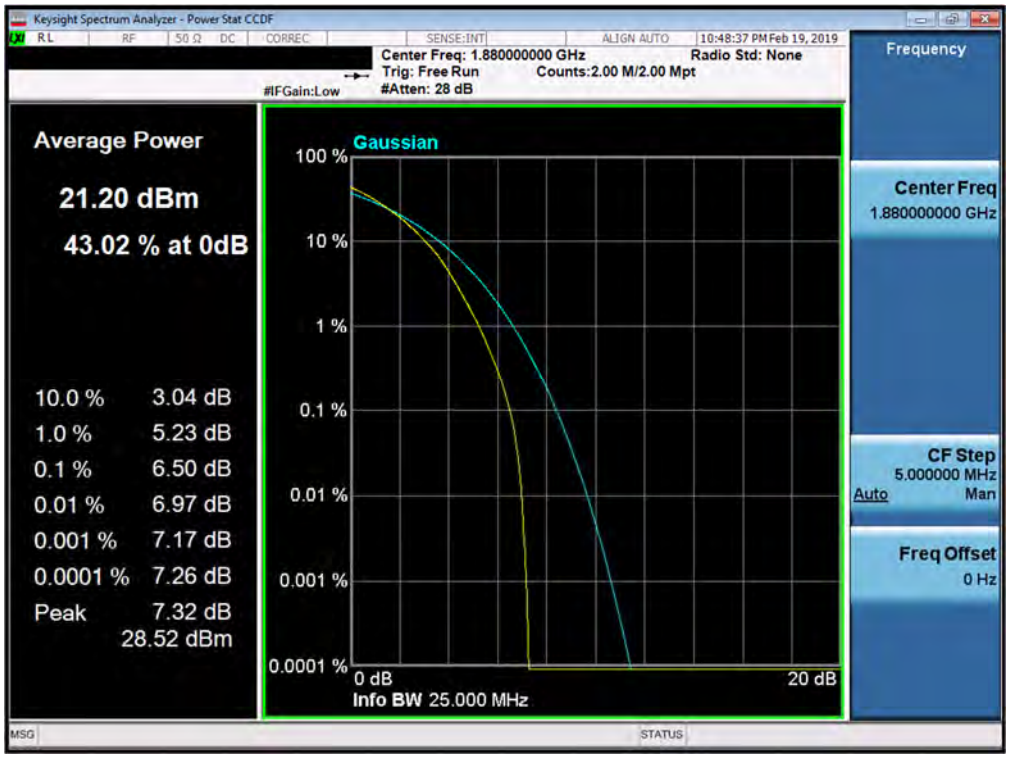
Plot 7-356. PAR Plot (Band 2 - 10.0MHz 256-QAM - Full RB Configuration)



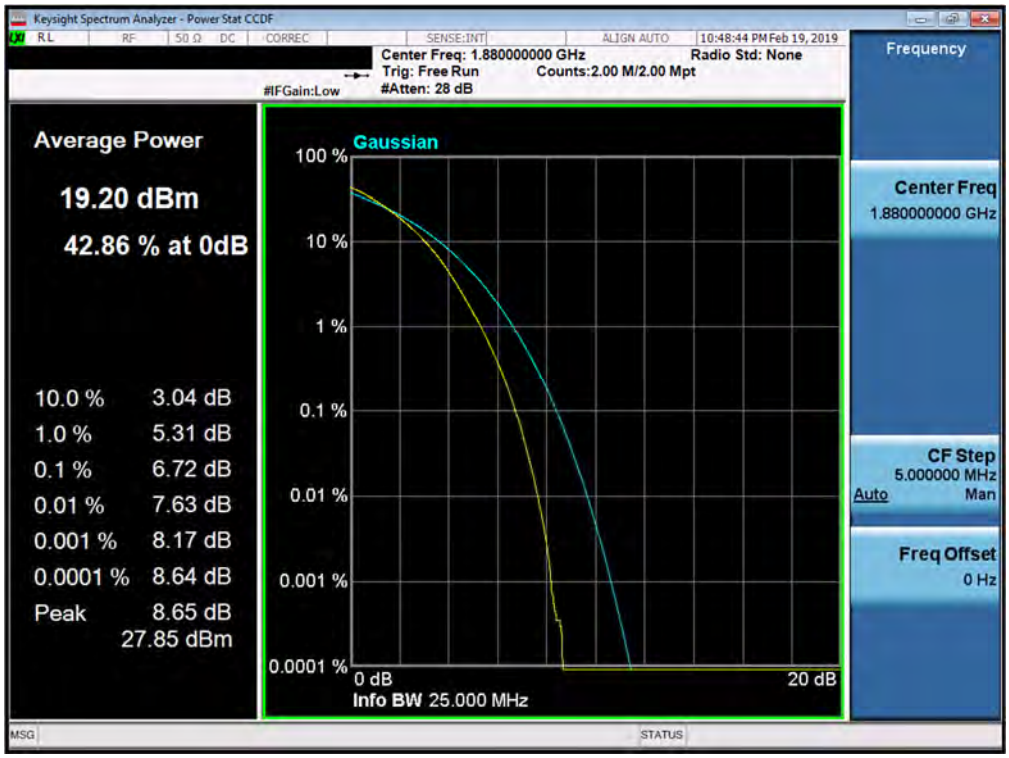
Plot 7-357. PAR Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



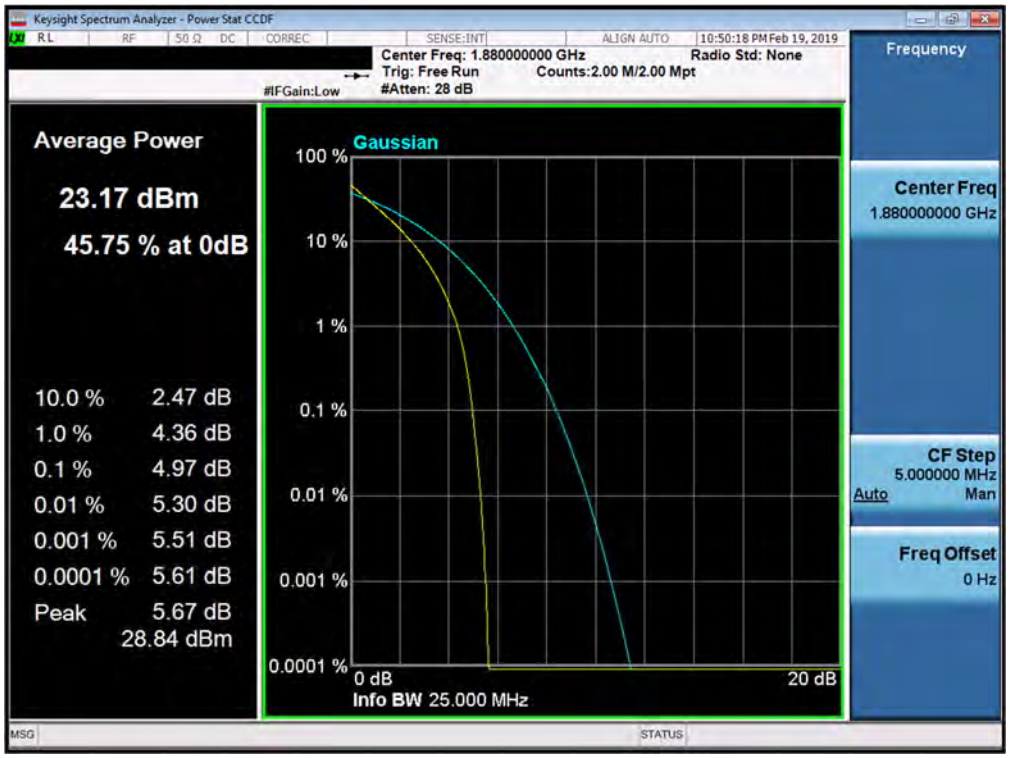
Plot 7-358. PAR Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)



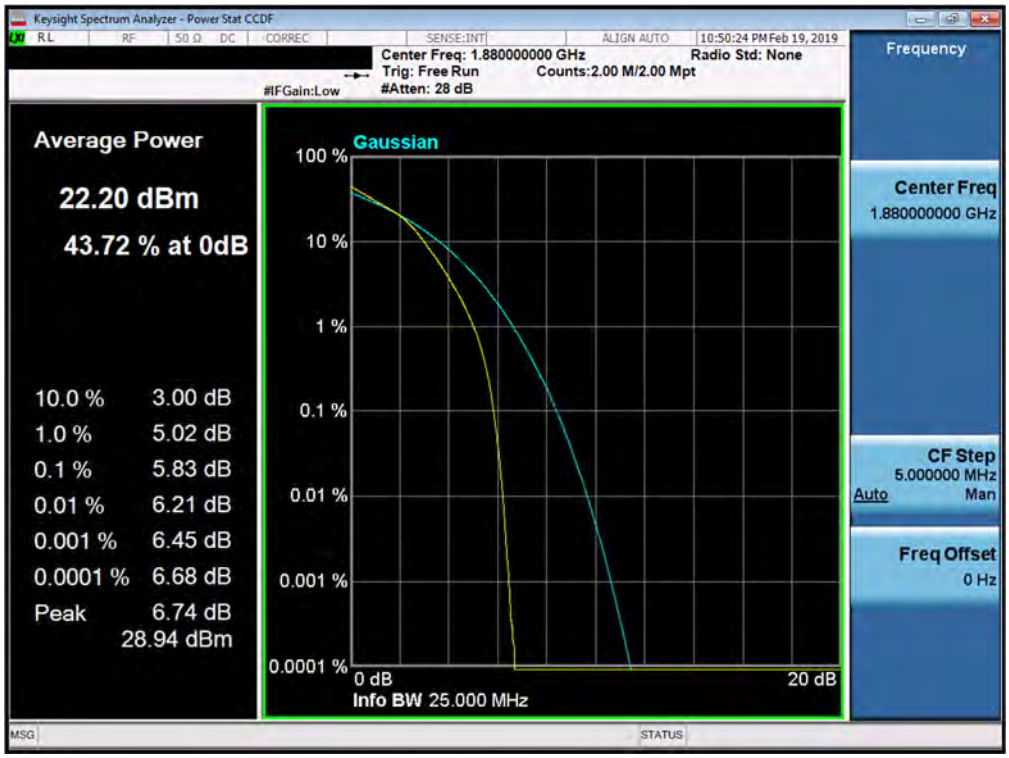
Plot 7-359. PAR Plot (Band 2 - 15.0MHz 64-QAM - Full RB Configuration)



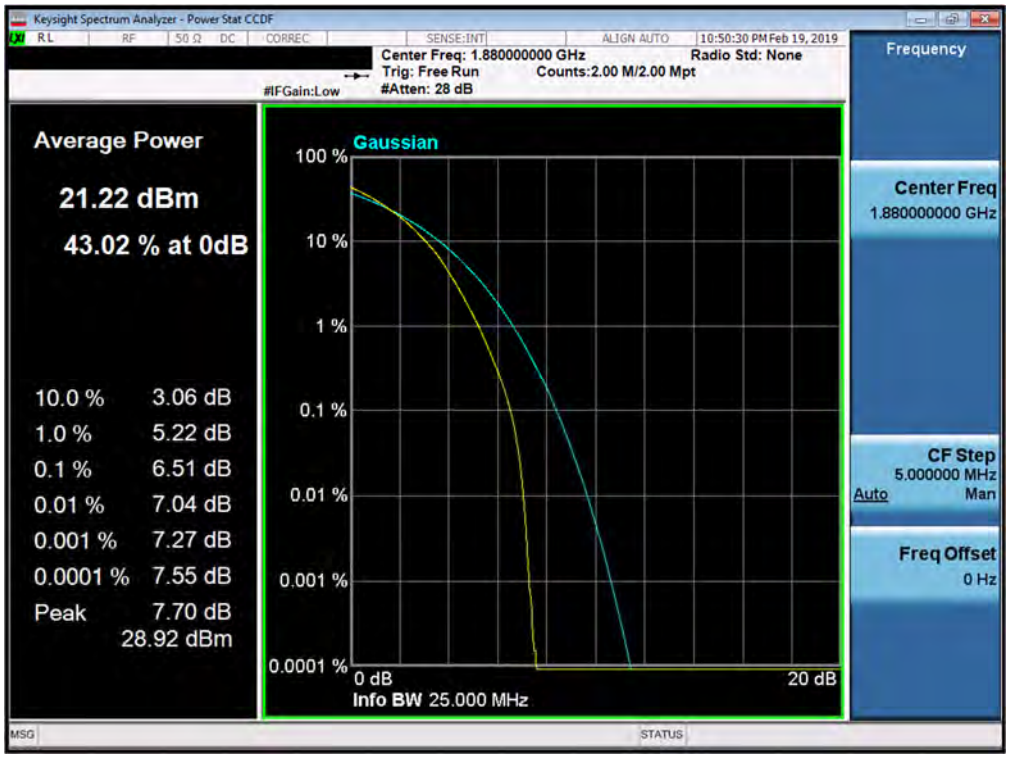
Plot 7-360. PAR Plot (Band 2 - 15.0MHz 256-QAM - Full RB Configuration)



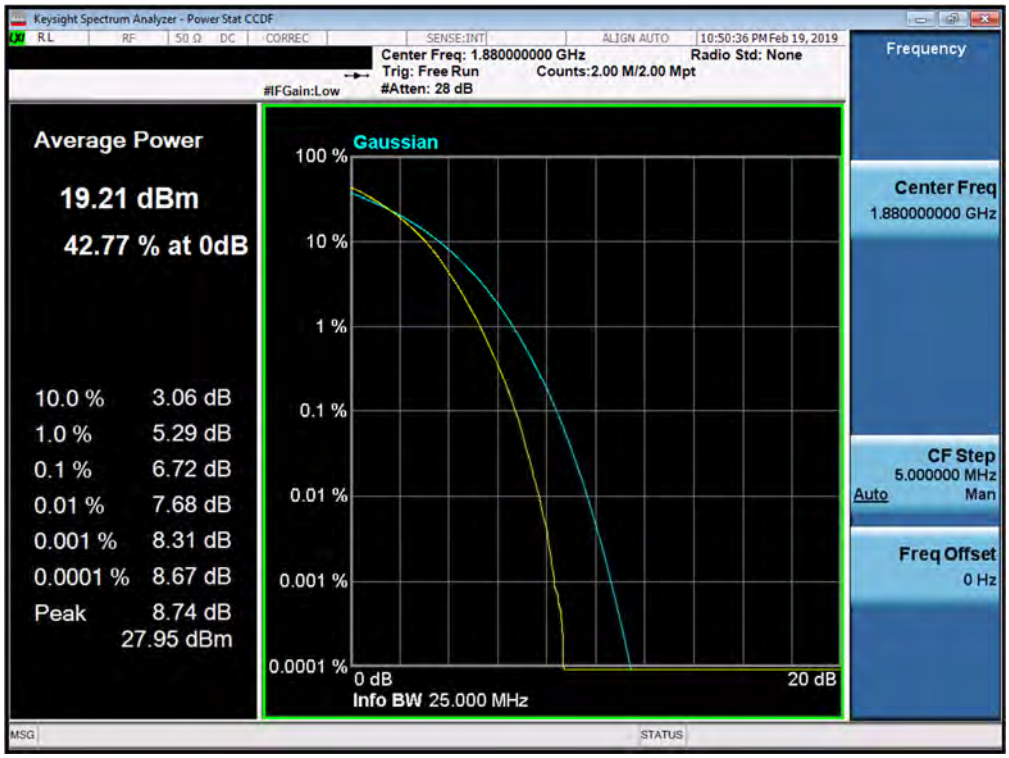
Plot 7-361. PAR Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-362. PAR Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-363. PAR Plot (Band 2 - 20.0MHz 64-QAM - Full RB Configuration)



Plot 7-364. PAR Plot (Band 2 - 20.0MHz 256-QAM - Full RB Configuration)

7.6 Uplink Carrier Aggregation

§22.917(a) §27.53(h)

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

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 7-5. Test Instrument & Measurement Setup

Test Notes

1. Uplink carrier aggregation is only supported in this EUT for LTE Band 5 and Band 66.

2. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-3, 7-4, 7-5. 7-6, 7-7 and 7-8 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.

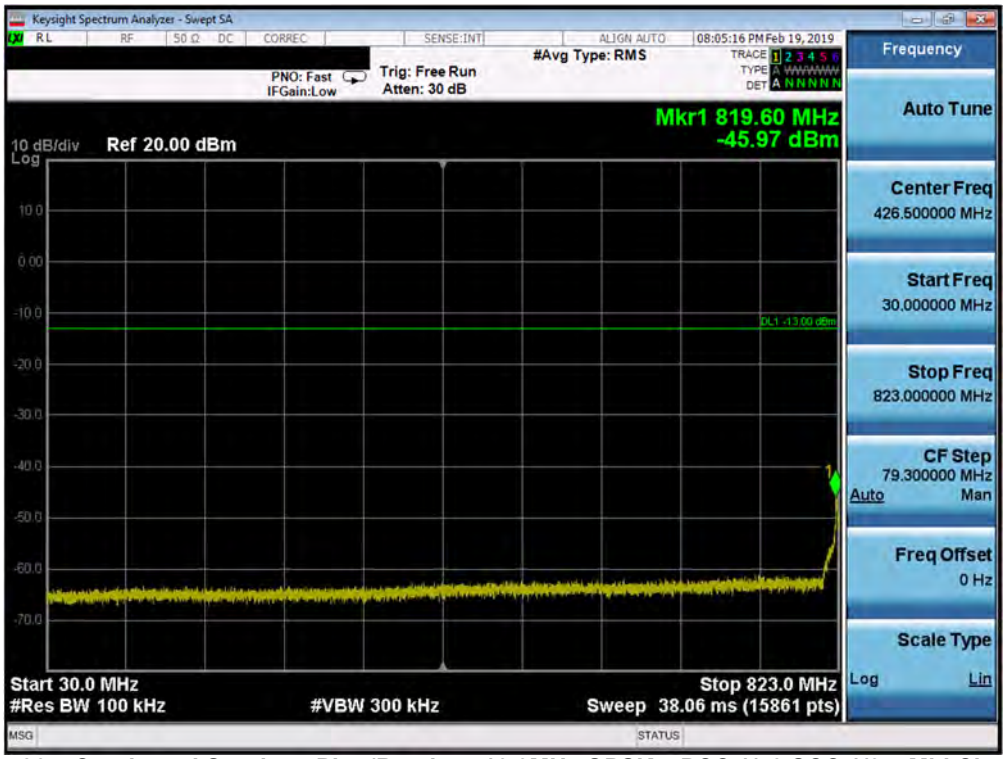
Uplink CA Configuration 5B

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 B5	3	20415	825.5	QPSK	1	14	LTE B5	5	20454	829.4	QPSK	1	0	24.13
Max	LTE B5	5	20425	826.5	QPSK	1	24	LTE B5	3	20464	830.4	QPSK	1	0	25.03
Max	LTE B5	5	20425	826.5	QPSK	1	24	LTE B5	10	20497	833.7	QPSK	1	0	25.24
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	5	20522	836.2	QPSK	1	0	25.23
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.35
Max	LTE B5	3	20525	836.5	QPSK	1	14	LTE B5	5	20564	840.4	QPSK	1	0	24.05
Max	LTE B5	5	20525	836.5	QPSK	1	24	LTE B5	3	20564	840.4	QPSK	1	0	24.24
Max	LTE B5	5	20525	836.5	QPSK	1	24	LTE B5	10	20597	843.7	QPSK	1	0	25.23
Max	LTE B5	10	20525	836.5	QPSK	1	49	LTE B5	5	20597	843.7	QPSK	1	0	25.33
Max	LTE B5	3	20635	847.5	QPSK	1	0	LTE B5	5	20596	843.6	QPSK	1	24	24.07
Max	LTE B5	5	20625	846.5	QPSK	1	0	LTE B5	3	20586	842.6	QPSK	1	14	24.18
Max	LTE B5	5	20625	846.5	QPSK	1	0	LTE B5	10	20553	839.3	QPSK	1	49	25.13
Max	LTE B5	10	20600	844	QPSK	1	0	LTE B5	5	20528	836.8	QPSK	1	24	25.28
Max	LTE B5	10	20600	844	QPSK	1	0	LTE B5	10	20501	834.1	QPSK	1	49	25.29

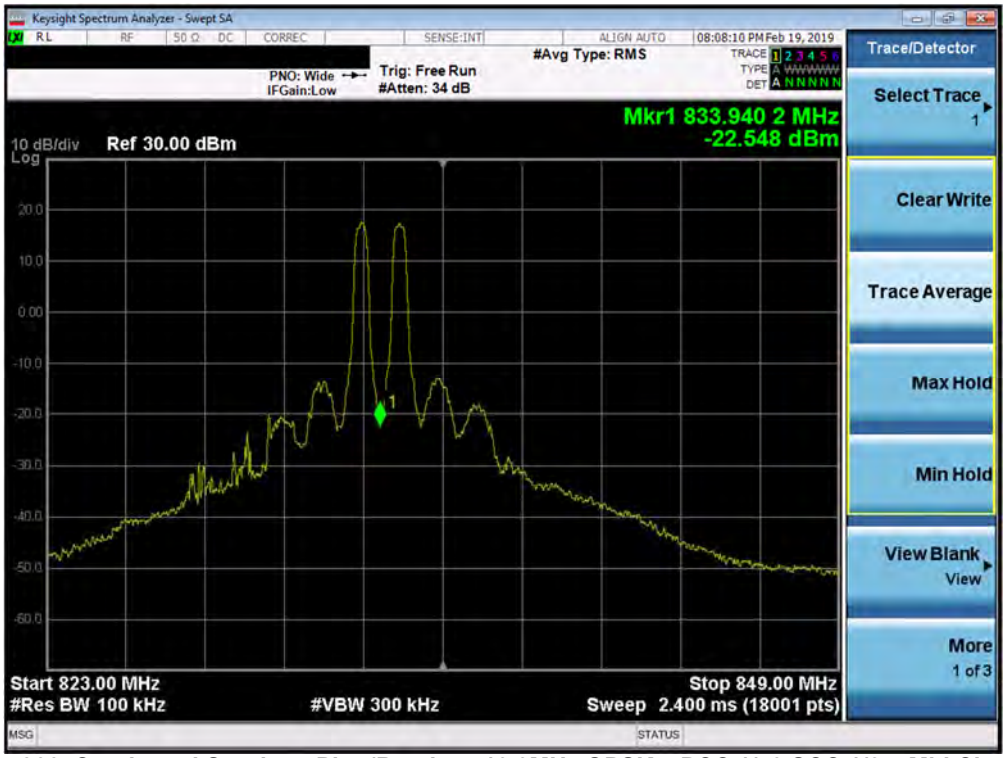
Table 7-3. Conducted Powers (B5 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

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	PCC UL# RB	PCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B5	10	20450	829	QPSK	1	0	LTE B5	10	20549	838.9	QPSK	1	0	14.66
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	49	15.29
Max	LTE B5	10	20450	829	QPSK	1	0	LTE B5	10	20549	838.9	QPSK	1	49	14.56
Max	LTE B5	10	20450	829	QPSK	1	25	LTE B5	10	20549	838.9	QPSK	1	25	15.07
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.35
Max	LTE B5	10	20450	829	QPSK	50	0	LTE B5	10	20549	838.9	QPSK	50	0	23.44
Max	LTE B5	10	20450	829	16-QAM	50	0	LTE B5	10	20549	838.9	16-QAM	50	0	22.47
Max	LTE B5	10	20450	829	64-QAM	50	0	LTE B5	10	20549	838.9	64-QAM	50	0	22.18
Max	LTE B5	10	20450	829	256-QAM	50	0	LTE B5	10	20549	838.9	256-QAM	50	0	20.14

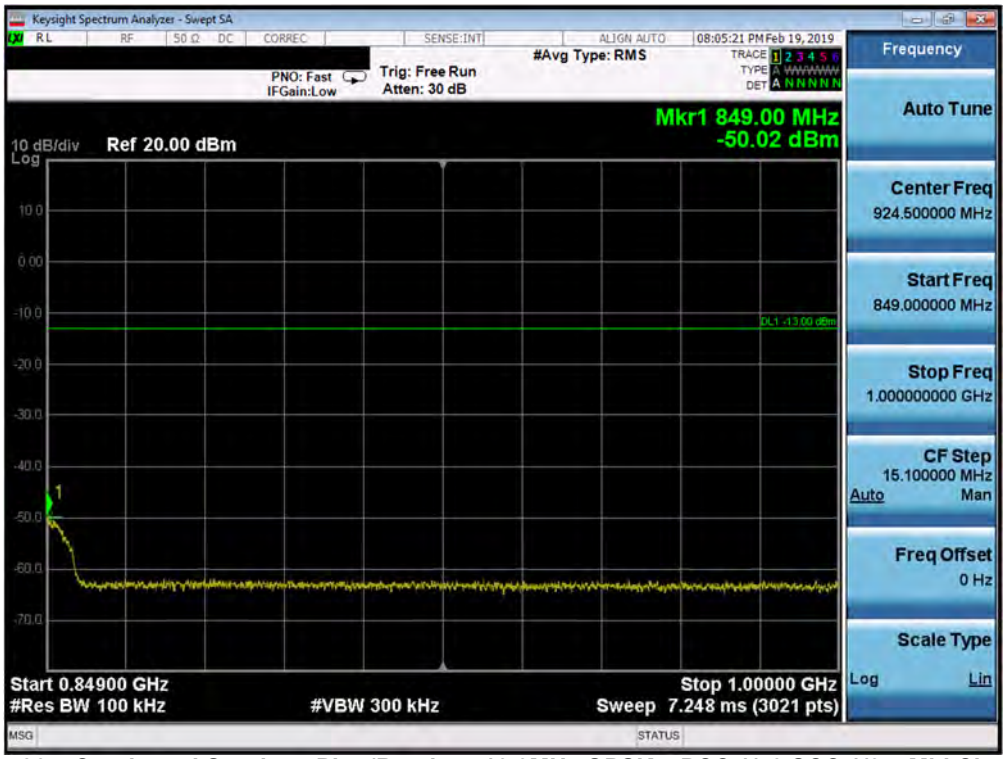
Table 7-4. Conducted Powers (B5 with Various Combinations for 10MHz Channel Bandwidth)



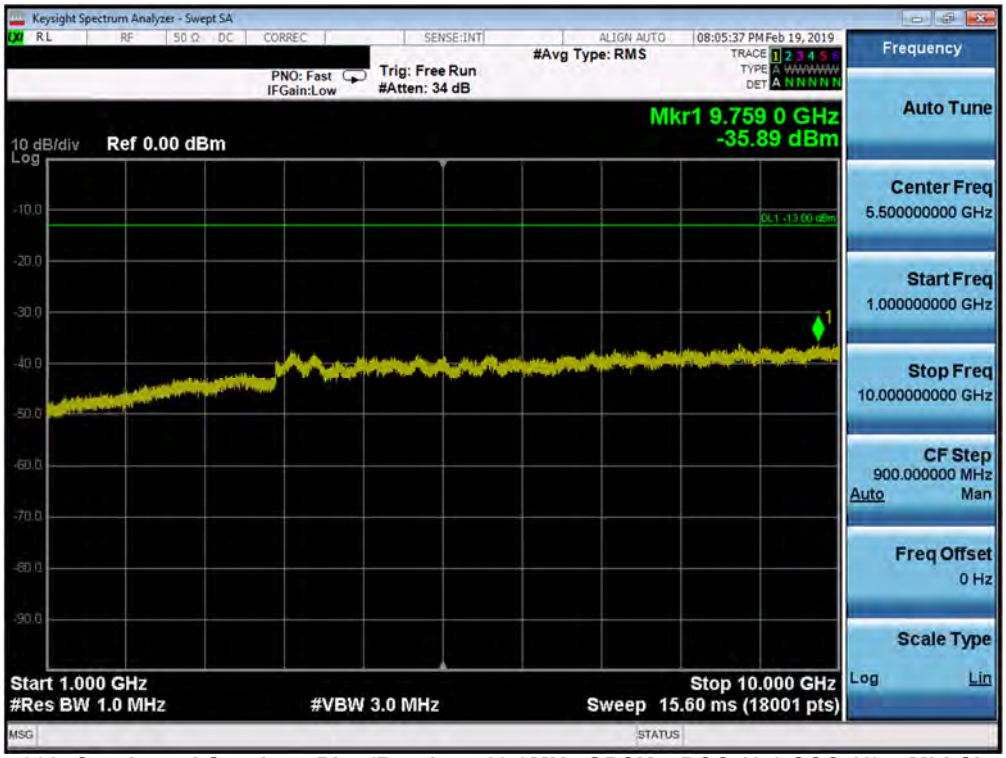
Plot 7-365. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)



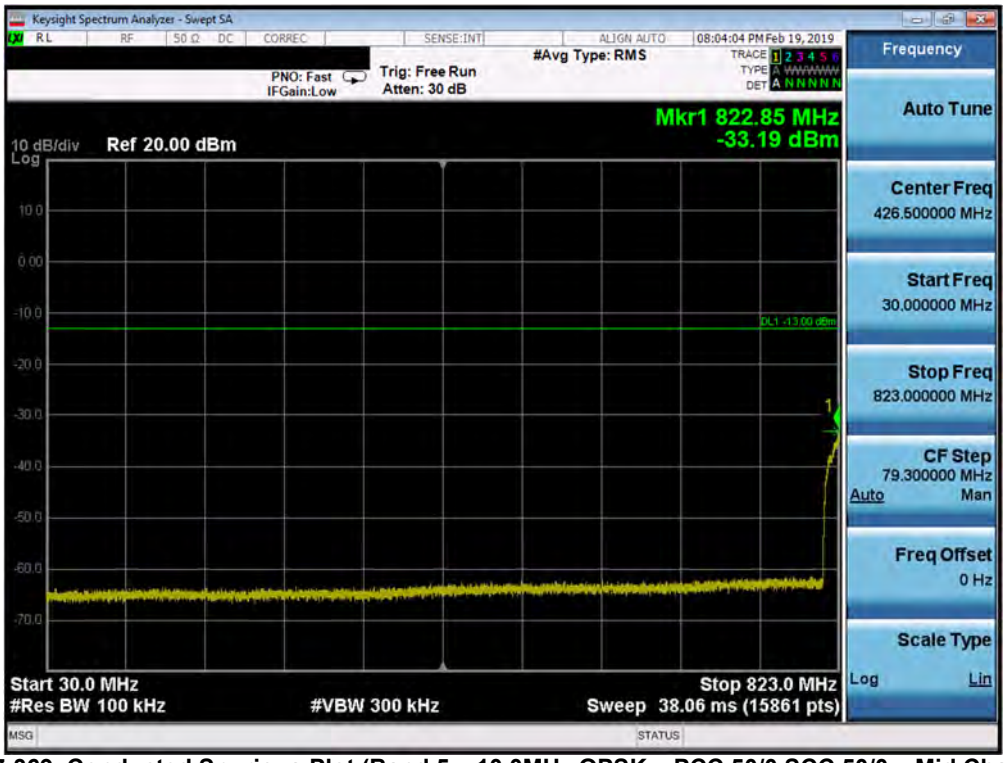
Plot 7-366. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)



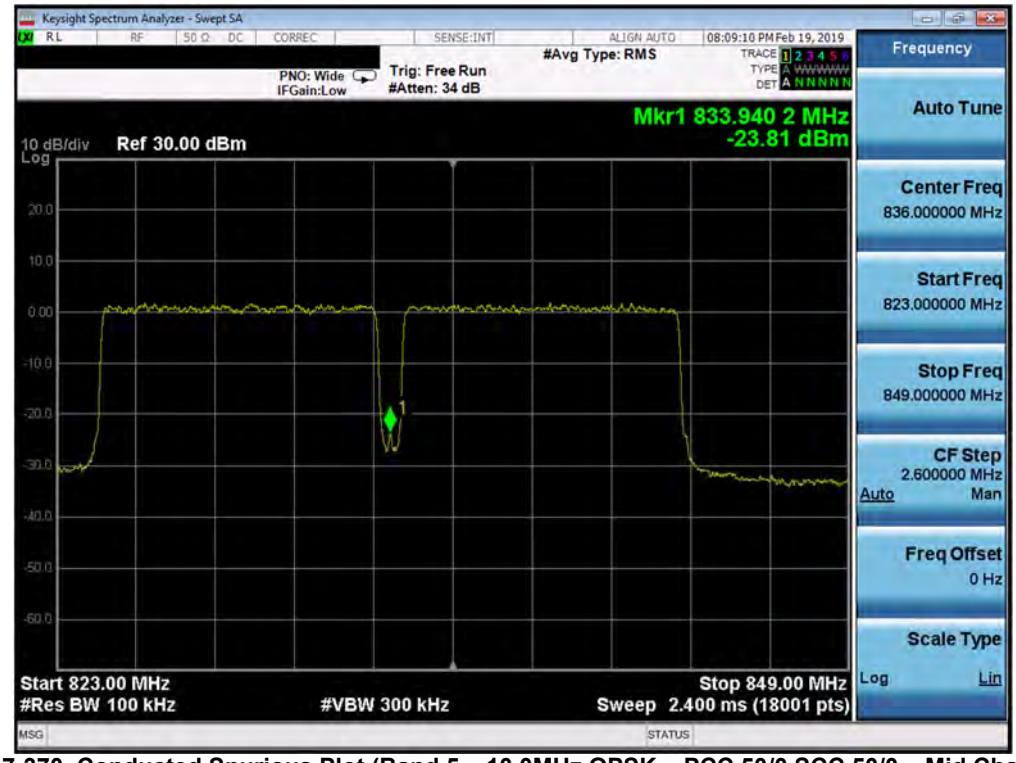
Plot 7-367. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)



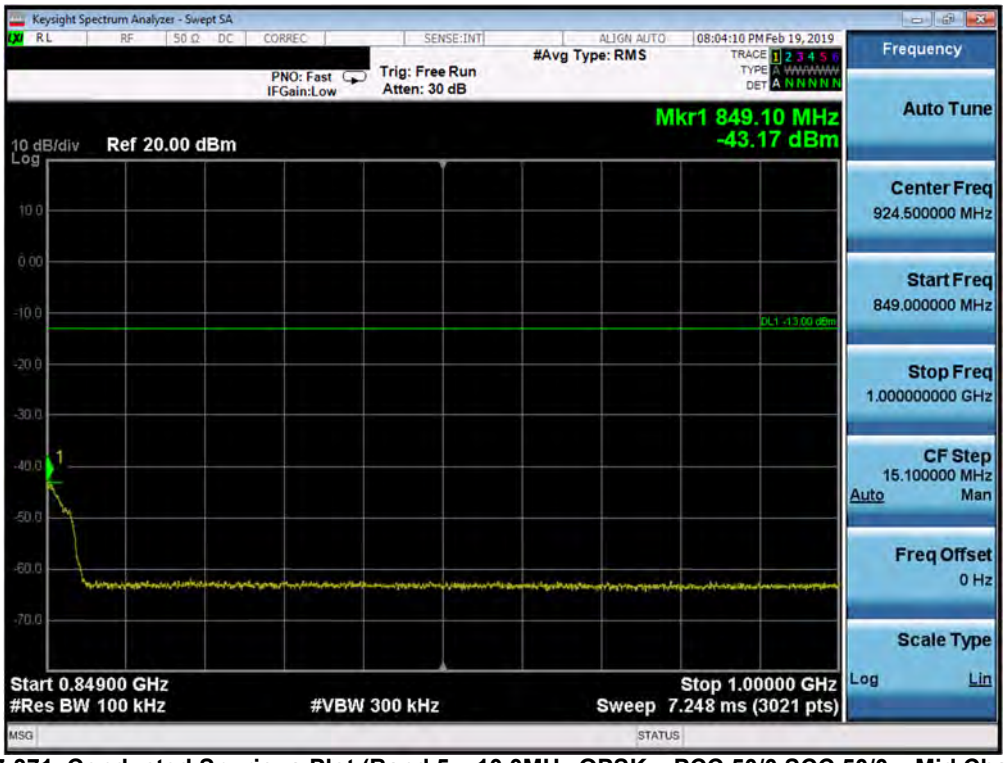
Plot 7-368. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 1/49 SCC 1/0 – Mid Channel)



Plot 7-369. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)



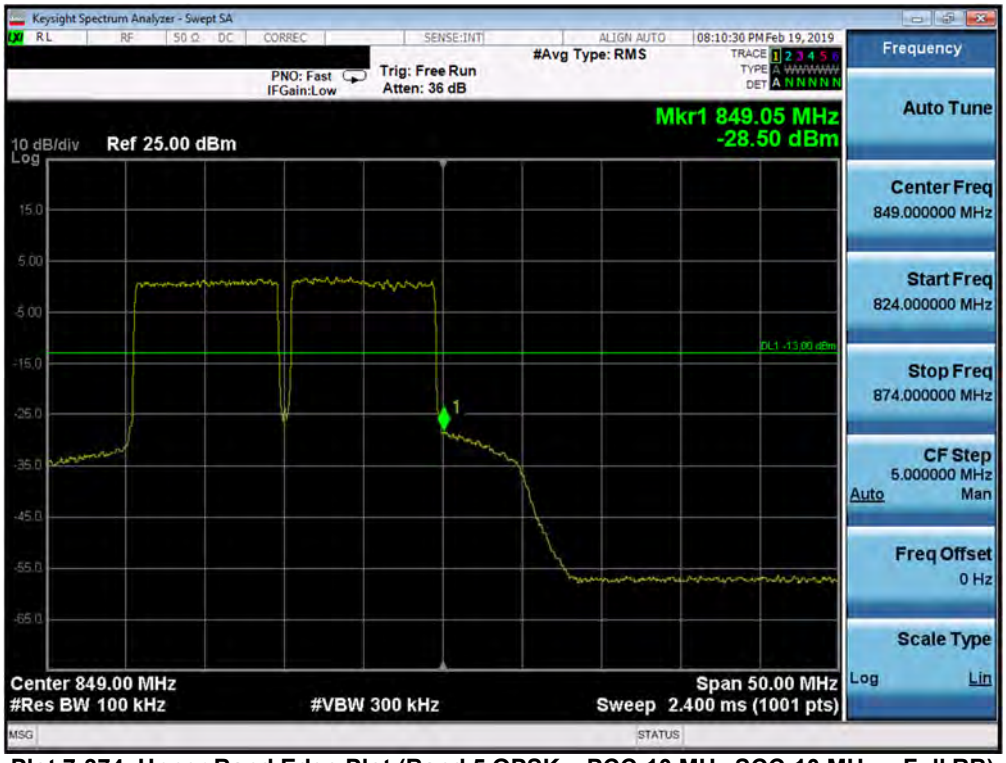
Plot 7-370. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)



Plot 7-371. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

Plot 7-372. Conducted Spurious Plot (Band 5 – 10.0MHz QPSK – PCC 50/0 SCC 50/0 – Mid Channel)

Plot 7-373. Lower Band Edge Plot (Band 5 QPSK – PCC:10 MHz SCC:10 MHz – Full RB)



Plot 7-374. Upper Band Edge Plot (Band 5 QPSK – PCC:10 MHz SCC:10 MHz – Full RB)

Uplink CA Configuration 66B/C

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 B66	5	131997	1712.5	QPSK	1	24	LTE B66	5	132045	1717.3	QPSK	1	0	23.53
Max	LTE B66	5	131997	1712.5	QPSK	1	24	LTE B66	10	132069	1719.7	QPSK	1	0	24.34
Max	LTE B66	5	131997	1712.5	QPSK	1	24	LTE B66	15	132090	1721.8	QPSK	1	0	24.44
Max	LTE B66	10	132022	1715	QPSK	1	49	LTE B41	5	132094	1722.2	QPSK	1	0	24.76
Max	LTE B66	10	132022	1715	QPSK	1	49	LTE B41	10	132121	1724.9	QPSK	1	0	24.72
Max	LTE B66	15	132047	1717.5	QPSK	1	74	LTE B66	5	132140	1726.8	QPSK	1	0	24.80
Max	LTE B66	5	132322	1745	QPSK	1	24	LTE B66	5	132370	1749.8	QPSK	1	0	23.91
Max	LTE B66	5	132322	1745	QPSK	1	24	LTE B66	10	132394	1752.2	QPSK	1	0	24.22
Max	LTE B66	5	132322	1745	QPSK	1	24	LTE B66	15	132415	1754.3	QPSK	1	0	23.90
Max	LTE B66	10	132322	1745	QPSK	1	49	LTE B66	5	132394	1752.2	QPSK	1	0	24.56
Max	LTE B66	10	132322	1745	QPSK	1	49	LTE B66	10	132421	1754.9	QPSK	1	0	24.63
Max	LTE B66	15	132322	1745	QPSK	1	74	LTE B66	5	132415	1754.3	QPSK	1	0	24.64
Max	LTE B66	5	132647	1777.5	QPSK	1	0	LTE B66	5	132599	1772.7	QPSK	1	24	23.47
Max	LTE B66	5	132647	1777.5	QPSK	1	0	LTE B66	10	132575	1770.3	QPSK	1	49	24.44
Max	LTE B66	5	132647	1777.5	QPSK	1	0	LTE B66	15	132554	1768.2	QPSK	1	74	24.30
Max	LTE B66	10	132622	1775	QPSK	1	0	LTE B66	5	132550	1767.8	QPSK	1	24	24.45
Max	LTE B66	10	132622	1775	QPSK	1	0	LTE B66	10	132523	1765.1	QPSK	1	49	24.31
Max	LTE B66	15	132597	1772.5	QPSK	1	0	LTE B66	5	132504	1763.2	QPSK	1	24	24.56

Table 7-5. Conducted Powers (B66B – 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 B66	15	132047	1717.5	QPSK	1	0	LTE B66	5	132140	1726.8	QPSK	1	0	14.92
Max	LTE B66	15	132047	1717.5	QPSK	1	73	LTE B66	5	132140	1726.8	QPSK	1	24	14.69
Max	LTE B66	15	132047	1717.5	QPSK	1	0	LTE B66	5	132140	1726.8	QPSK	1	24	14.89
Max	LTE B66	15	132047	1717.5	QPSK	1	38	LTE B66	5	132140	1726.8	QPSK	1	13	14.78
Max	LTE B66	15	132047	1717.5	QPSK	1	73	LTE B66	5	132140	1726.8	QPSK	1	0	24.80
Max	LTE B66	15	132047	1717.5	QPSK	75	0	LTE B66	5	132140	1726.8	QPSK	25	0	22.77
Max	LTE B66	15	132047	1717.5	16-QAM	75	0	LTE B66	5	132140	1726.8	16-QAM	25	0	21.93
Max	LTE B66	15	132047	1717.5	64-QAM	75	0	LTE B66	5	132140	1726.8	64-QAM	25	0	21.08
Max	LTE B66	15	132047	1717.5	256-QAM	75	0	LTE B66	5	132140	1726.8	256-QAM	25	0	18.94

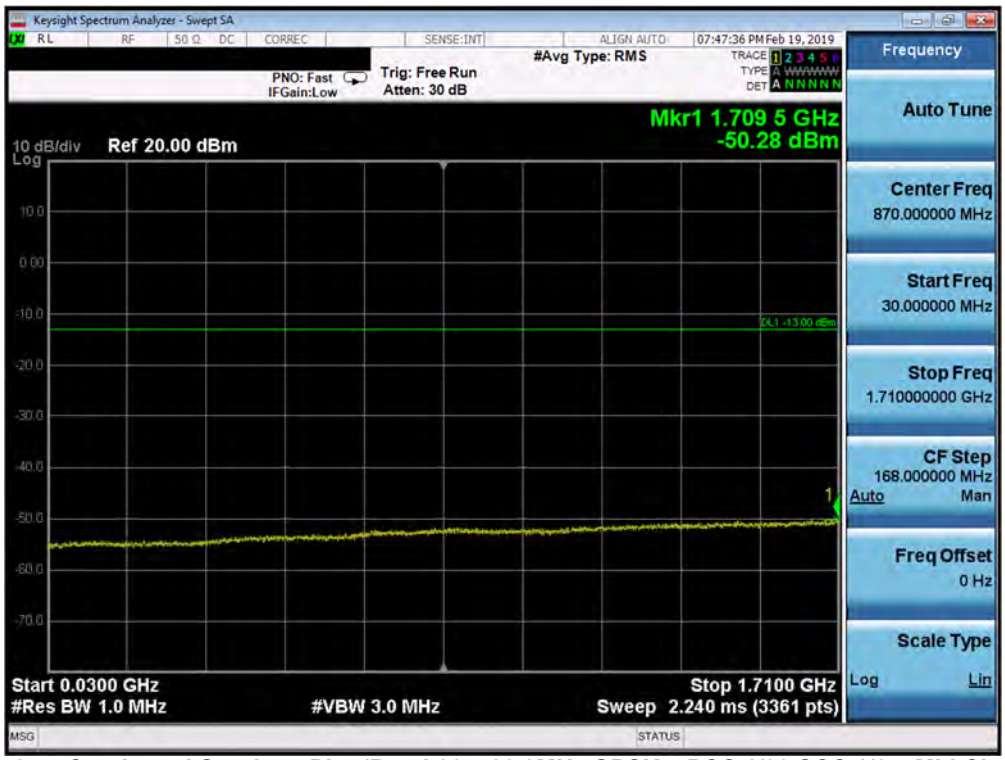
Table 7-6. Conducted Powers (B66B with Various Combinations for 15MHz + 5MHz Channel Bandwidth)

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 B66	5	131997	1712.5	QPSK	1	24	LTE B66	20	132114	1724.2	QPSK	1	0	24.35
Max	LTE B66	10	132022	1715	QPSK	1	49	LTE B66	15	132142	1727	QPSK	1	0	24.91
Max	LTE B66	10	132022	1715	QPSK	1	49	LTE B66	20	132166	1729.4	QPSK	1	0	24.93
Max	LTE B66	15	132047	1717.5	QPSK	1	74	LTE B66	10	132167	1729.5	QPSK	1	0	24.94
Max	LTE B66	15	132047	1717.5	QPSK	1	74	LTE B66	15	132197	1732.5	QPSK	1	0	24.94
Max	LTE B66	15	132047	1717.5	QPSK	1	74	LTE B66	20	132218	1734.6	QPSK	1	0	24.96
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	5	132189	1731.7	QPSK	1	0	24.85
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	10	132216	1734.4	QPSK	1	0	24.84
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	15	132243	1737.1	QPSK	1	0	24.89
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	20	132270	1739.8	QPSK	1	0	24.99
Max	LTE B66	5	132322	1745	QPSK	1	24	LTE B66	20	132439	1756.7	QPSK	1	0	24.40
Max	LTE B66	10	132322	1745	QPSK	1	49	LTE B66	15	132442	1757	QPSK	1	0	24.87
Max	LTE B66	10	132322	1745	QPSK	1	49	LTE B66	20	132466	1759.4	QPSK	1	0	24.93
Max	LTE B66	15	132322	1745	QPSK	1	74	LTE B66	10	132442	1757	QPSK	1	0	24.94
Max	LTE B66	15	132322	1745	QPSK	1	74	LTE B66	15	132472	1760	QPSK	1	0	24.95
Max	LTE B66	15	132322	1745	QPSK	1	74	LTE B66	20	132493	1762.1	QPSK	1	0	24.87
Max	LTE B66	20	132322	1745	QPSK	1	99	LTE B66	5	132439	1756.7	QPSK	1	0	24.53
Max	LTE B66	20	132322	1745	QPSK	1	99	LTE B66	10	132466	1759.4	QPSK	1	0	24.95
Max	LTE B66	20	132322	1745	QPSK	1	99	LTE B66	15	132493	1762.1	QPSK	1	0	24.92
Max	LTE B66	20	132322	1745	QPSK	1	99	LTE B66	20	132520	1764.8	QPSK	1	0	24.71
Max	LTE B66	5	132647	1777.5	QPSK	1	0	LTE B66	20	132530	1765.8	QPSK	1	99	24.28
Max	LTE B66	10	132622	1775	QPSK	1	0	LTE B66	15	132502	1763	QPSK	1	74	24.85
Max	LTE B66	10	132622	1775	QPSK	1	0	LTE B66	20	132478	1760.6	QPSK	1	99	24.83
Max	LTE B66	15	132597	1772.5	QPSK	1	0	LTE B66	10	132477	1760.5	QPSK	1	49	24.96
Max	LTE B66	15	132597	1772.5	QPSK	1	0	LTE B66	15	132447	1757.5	QPSK	1	74	24.95
Max	LTE B66	15	132597	1772.5	QPSK	1	0	LTE B66	20	132426	1755.4	QPSK	1	99	24.97
Max	LTE B66	20	132572	1770	QPSK	1	0	LTE B66	5	132455	1758.3	QPSK	1	24	24.83
Max	LTE B66	20	132572	1770	QPSK	1	0	LTE B66	10	132428	1755.6	QPSK	1	49	24.86
Max	LTE B66	20	132572	1770	QPSK	1	0	LTE B66	15	132401	1752.9	QPSK	1	74	24.95
Max	LTE B66	20	132572	1770	QPSK	1	0	LTE B66	20	132374	1750.2	QPSK	1	99	24.98

Table 7-7. Conducted Powers (B66C – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

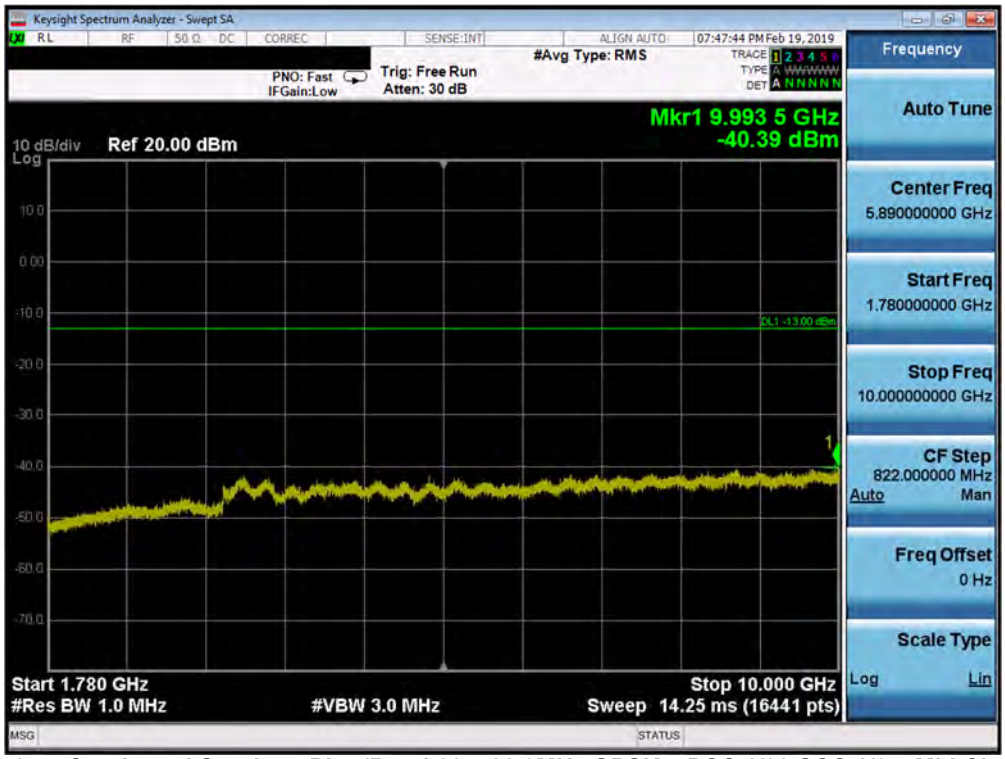
Power State	PCC							SCC							Power
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	ULCA Tx.Power (dBm)
Max	LTE B66	20	132072	1720	QPSK	1	0	LTE B66	20	132270	1739.8	QPSK	1	0	19.32
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	20	132270	1739.8	QPSK	1	99	19.02
Max	LTE B66	20	132072	1720	QPSK	1	0	LTE B66	20	132270	1739.8	QPSK	1	99	16.63
Max	LTE B66	20	132072	1720	QPSK	1	50	LTE B66	20	132270	1739.8	QPSK	1	50	20.51
Max	LTE B66	20	132072	1720	QPSK	1	99	LTE B66	20	132270	1739.8	QPSK	1	0	24.99
Max	LTE B66	20	132072	1720	QPSK	100	0	LTE B66	20	132270	1739.8	QPSK	100	0	22.41
Max	LTE B66	20	132072	1720	16-QAM	100	0	LTE B66	20	132270	1739.8	16-QAM	100	0	21.50
Max	LTE B66	20	132072	1720	64-QAM	100	0	LTE B66	20	132270	1739.8	64-QAM	100	0	21.36
Max	LTE B66	20	132072	1720	64-QAM	100	0	LTE B66	20	132270	1739.8	256-QAM	100	0	19.39

Table 7-8. Conducted Powers (B66C with Various Combinations for 20MHz + 20MHz Channel Bandwidth)

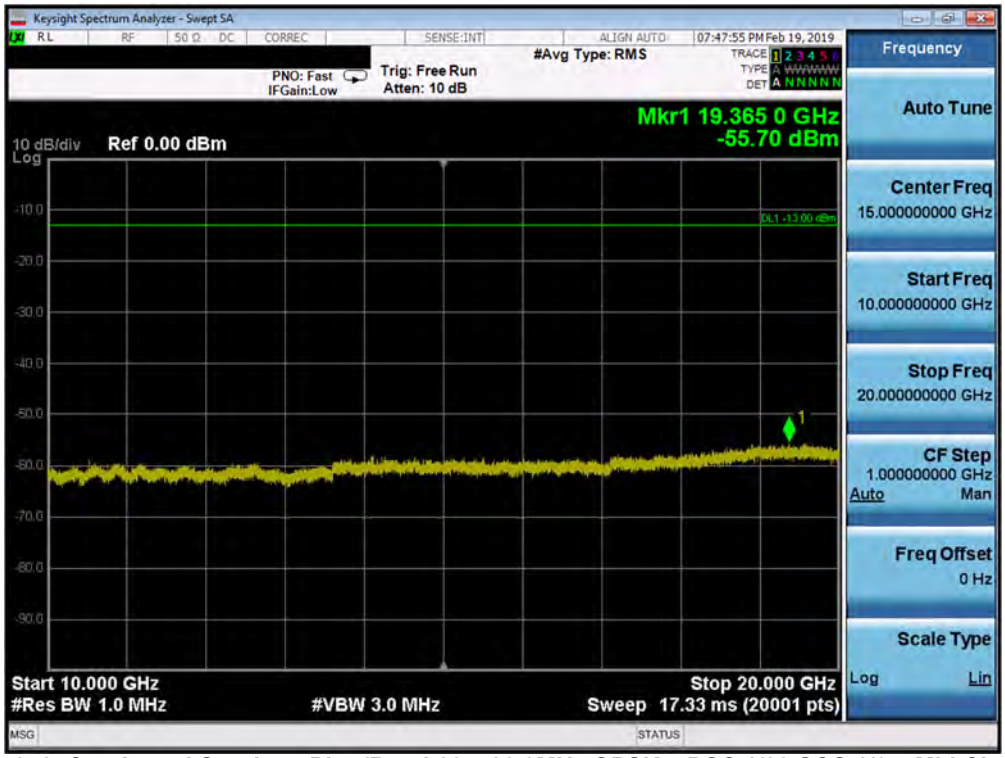


Plot 7-375. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

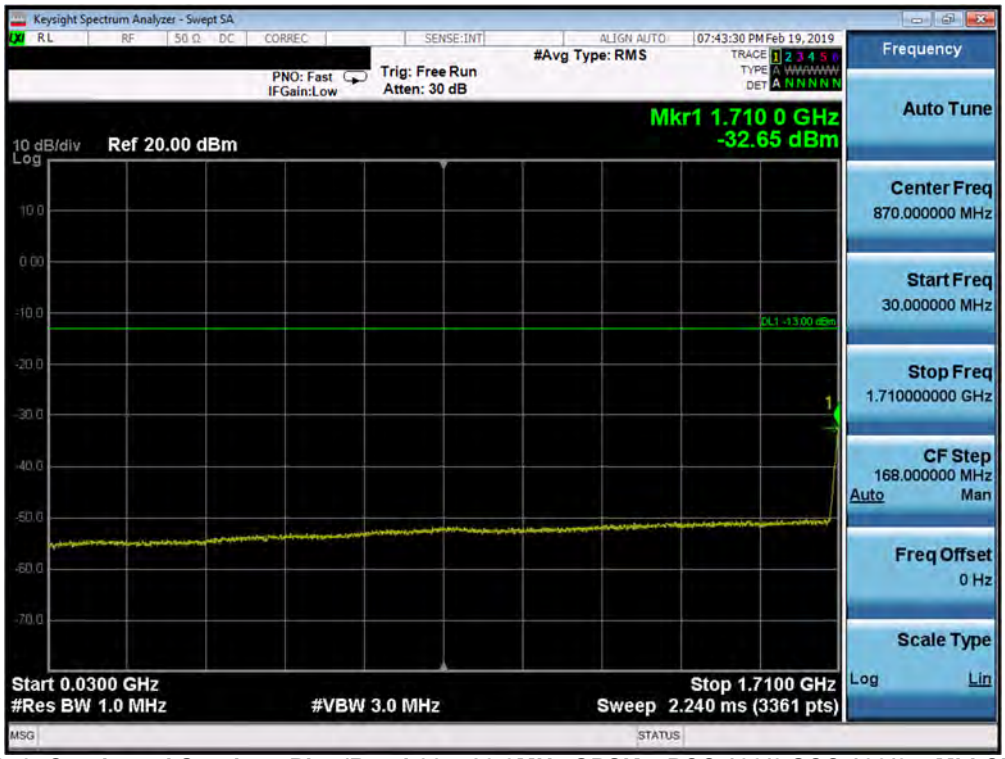
Plot 7-376. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)



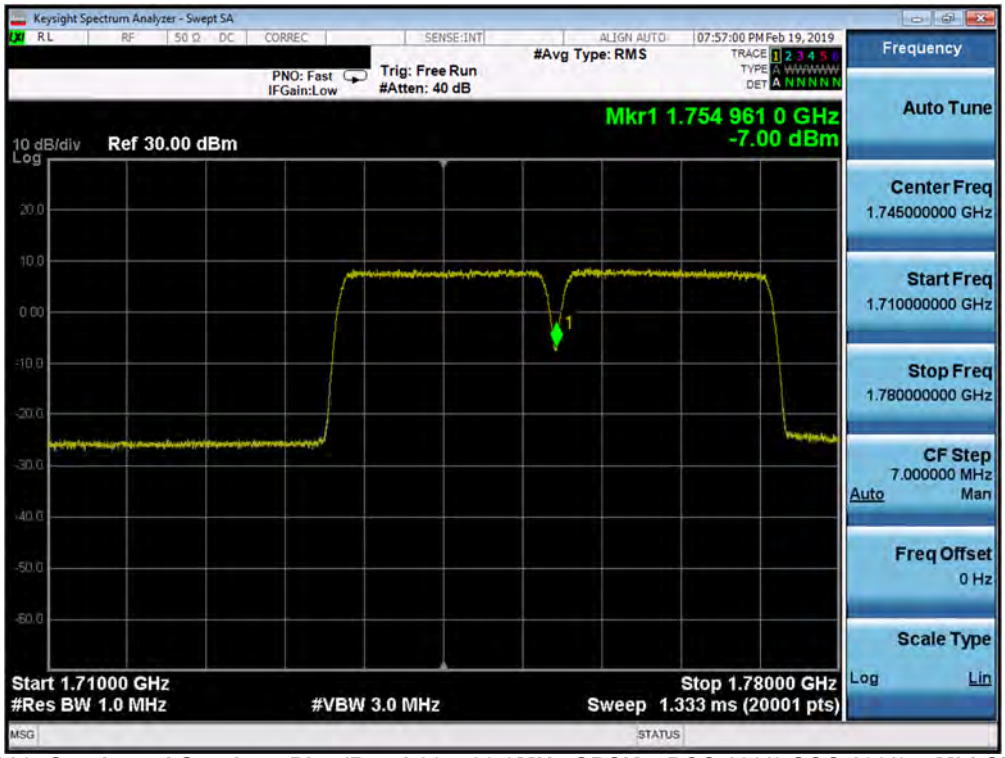
Plot 7-377. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)



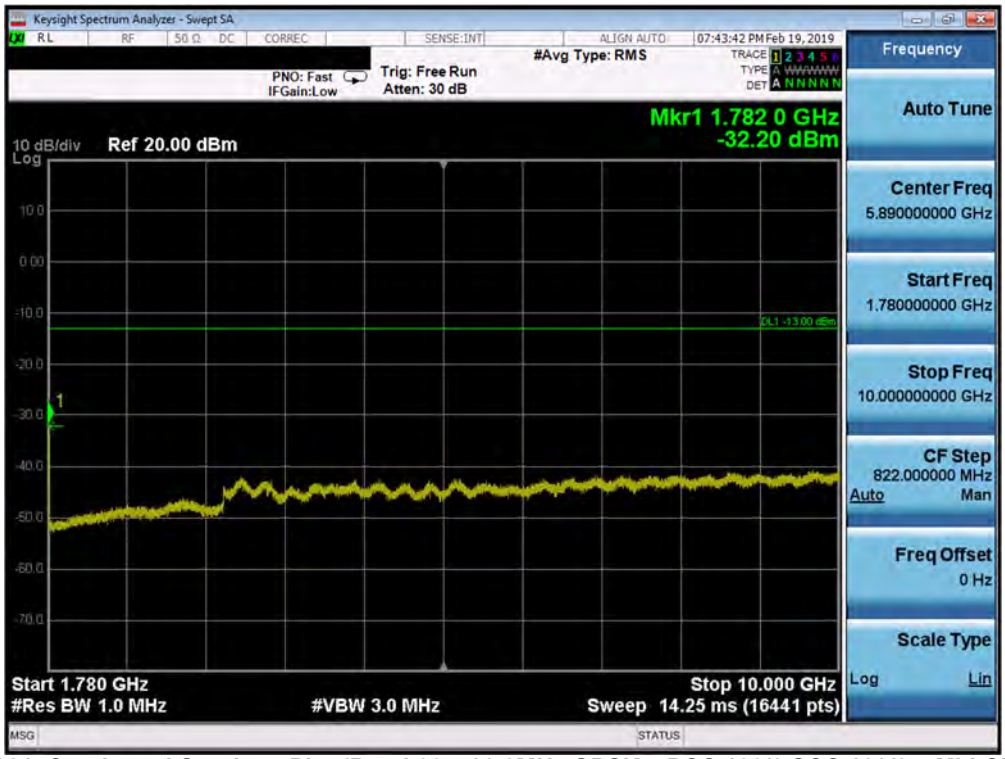
Plot 7-378. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)



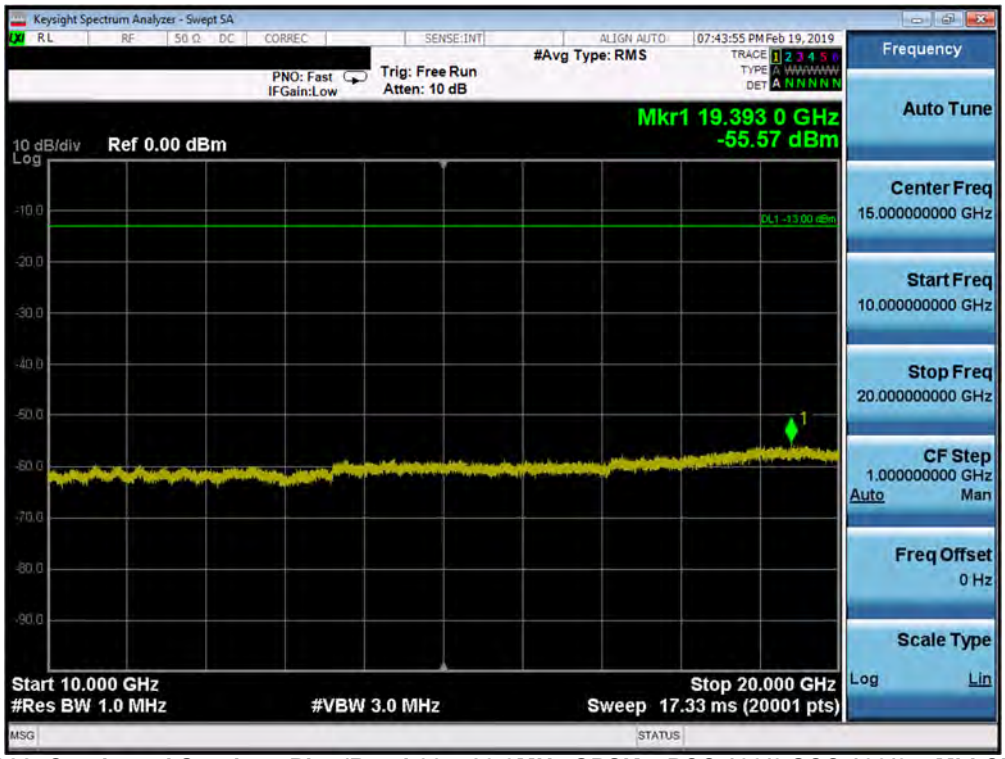
Plot 7-379. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-380. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

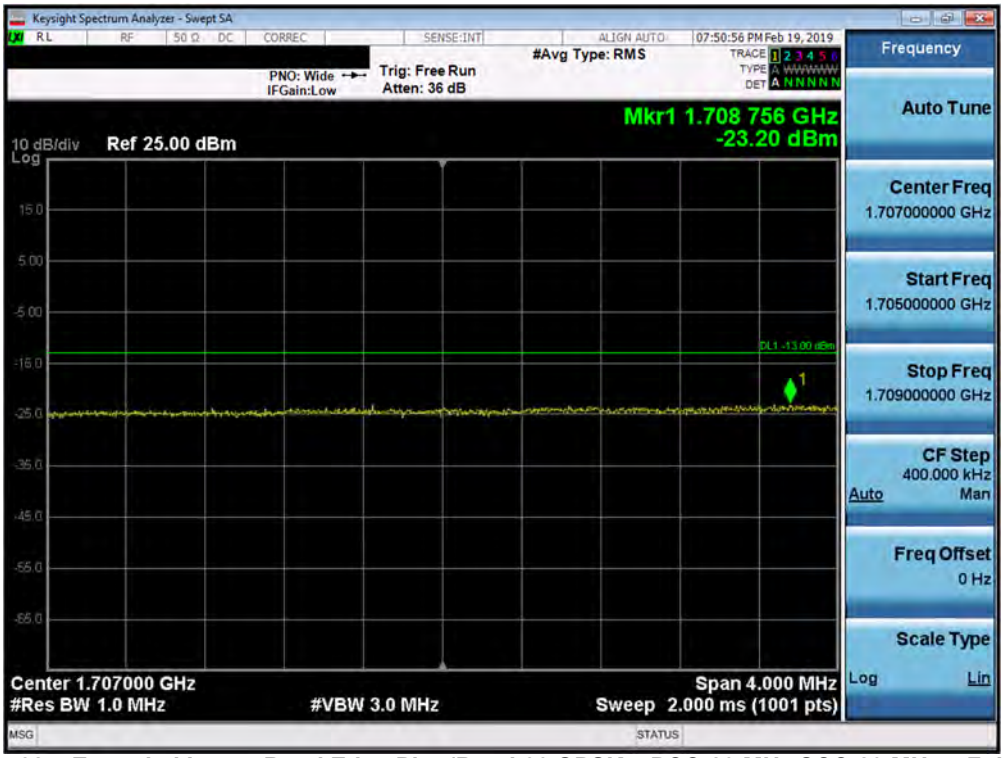


Plot 7-381. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



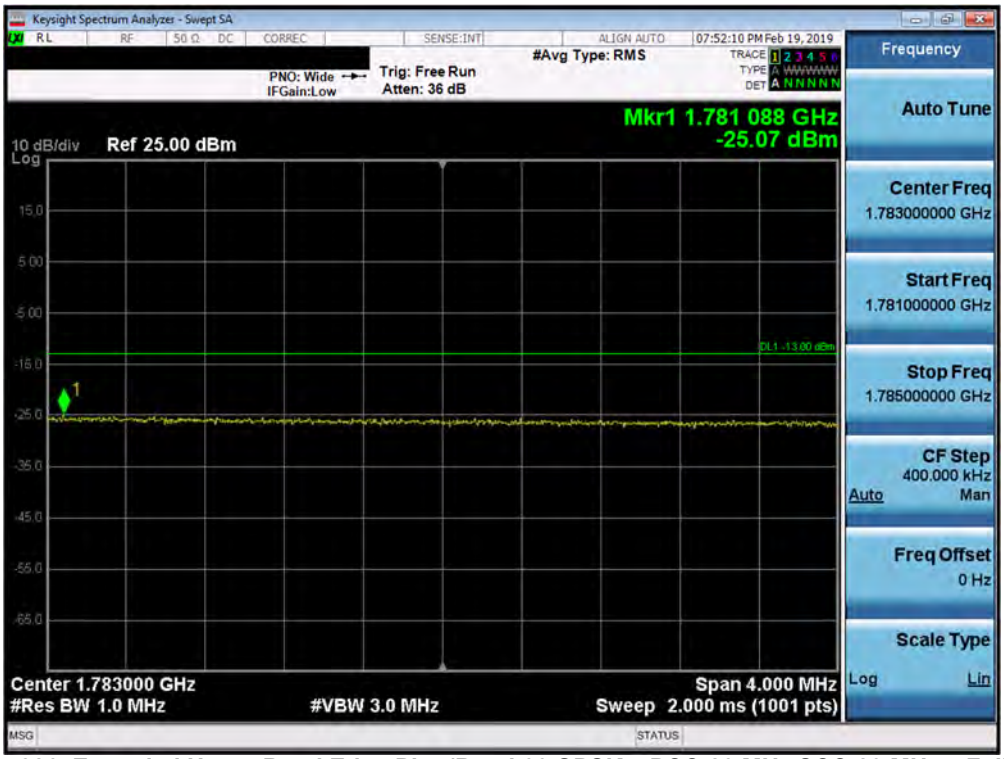
Plot 7-382. Conducted Spurious Plot (Band 66 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

Plot 7-383. Lower Band Edge Plot (Band 66 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)



Plot 7-384. Extended Lower Band Edge Plot (Band 66 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

Plot 7-385. Upper Band Edge Plot (Band 66 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)



Plot 7-386. Extended Upper Band Edge Plot (Band 66 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

7.7 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.
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".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
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.

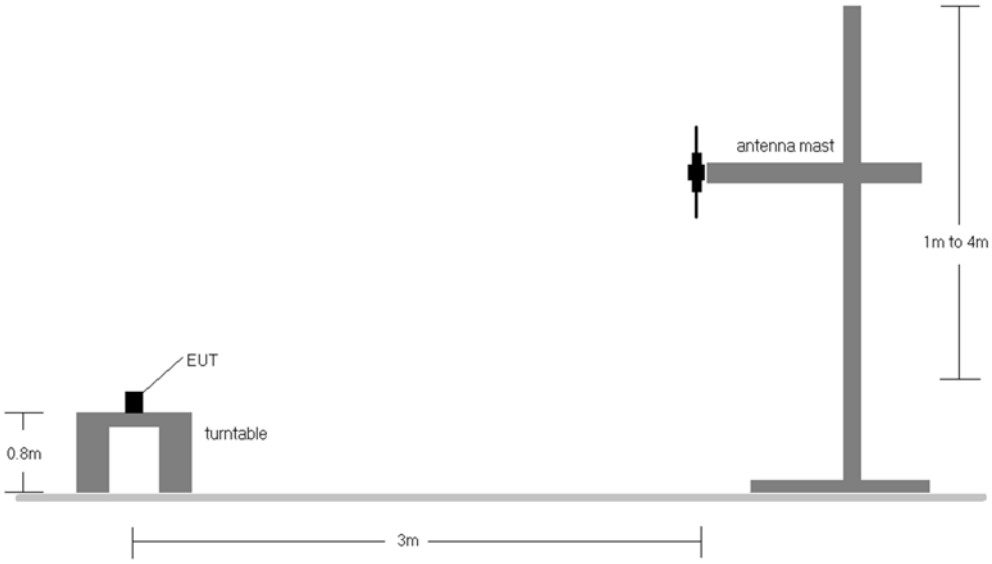


Figure 7-6. Radiated Test Setup <1GHz

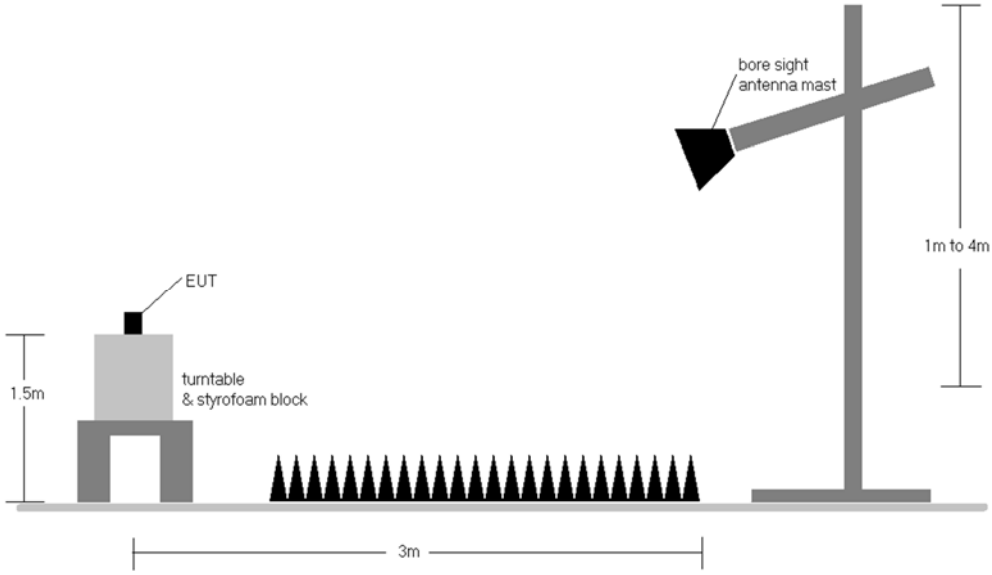


Figure 7-7. Radiated Test Setup >1GHz

Test Notes

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

2) This unit was tested with its standard battery.

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]
699.70	1.4	QPSK	H	156	100	1 / 5	17.43	4.00	19.28	0.085	34.77	-15.49
707.50	1.4	QPSK	H	166	98	1 / 5	17.61	4.22	**19.68**	0.093	34.77	-15.10
715.30	1.4	QPSK	H	169	88	1 / 0	16.90	4.44	19.19	0.083	34.77	-15.58
707.50	1.4	16-QAM	H	166	98	1 / 5	16.89	4.22	**18.96**	0.079	34.77	-15.82
707.50	1.4	64-QAM	H	166	98	1 / 0	15.85	4.22	**17.92**	0.062	34.77	-16.86
707.50	1.4	256-QAM	H	166	98	1 / 0	13.82	4.22	**15.89**	**0.039**	34.77	-18.89
700.50	3	QPSK	H	163	101	1 / 14	17.94	4.01	19.80	0.096	34.77	-14.97
707.50	3	QPSK	H	165	102	1 / 14	18.05	4.22	**20.12**	0.103	34.77	-14.66
714.50	3	QPSK	H	158	108	1 / 14	17.83	4.41	20.09	0.102	34.77	-14.68
707.50	3	16-QAM	H	165	102	1 / 0	16.98	4.22	**19.05**	0.080	34.77	-15.73
707.50	3	64-QAM	H	165	102	1 / 14	15.90	4.22	**17.97**	0.063	34.77	-16.81
707.50	3	256-QAM	H	165	102	1 / 14	13.87	4.22	**15.94**	**0.039**	34.77	-18.84
701.50	5	QPSK	H	157	96	1 / 0	19.05	4.04	20.94	0.124	34.77	-13.83
707.50	5	QPSK	H	157	96	1 / 0	18.91	4.22	20.98	0.125	34.77	-13.80
713.50	5	QPSK	H	157	96	1 / 0	18.76	4.39	**21.00**	0.126	34.77	-13.77
707.50	5	16-QAM	H	157	96	1 / 0	18.09	4.22	**20.16**	0.104	34.77	-14.62
707.50	5	64-QAM	H	157	96	1 / 24	16.92	4.22	**18.99**	0.079	34.77	-15.79
707.50	5	256-QAM	H	157	96	1 / 24	14.89	4.22	**16.96**	**0.050**	34.77	-17.82
704.00	10	QPSK	H	280	92	1 / 49	18.82	4.12	20.79	0.120	34.77	-13.99
707.50	10	QPSK	H	280	92	1 / 0	18.80	4.22	20.87	0.122	34.77	-13.91
711.00	10	QPSK	H	280	92	1 / 0	18.88	4.32	**21.05**	**0.127**	34.77	-13.73
711.00	10	16-QAM	H	280	92	1 / 0	17.79	4.32	**19.96**	0.099	34.77	-14.82
711.00	10	64-QAM	H	280	92	1 / 0	16.69	4.32	**18.86**	0.077	34.77	-15.92
711.00	10	256-QAM	H	280	92	1 / 0	14.66	4.32	**16.83**	**0.048**	34.77	-17.95
711.00	10	QPSK	V	300	125	1 / 0	15.28	4.32	17.45	0.056	34.77	-17.33
711.00	10 (WCP)	QPSK	H	201	48	1 / 0	15.61	4.32	17.78	0.060	34.77	-17.00

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]
779.50	5	QPSK	H	260	97	1 / 24	17.25	6.18	21.28	0.134	34.77	-13.50
782.00	5	QPSK	H	248	98	1 / 24	17.29	6.24	**21.38**	**0.137**	34.77	-13.39
784.50	5	QPSK	H	255	106	1 / 0	17.14	6.30	21.29	0.135	34.77	-13.48
782.00	5	16-QAM	H	248	98	1 / 24	16.39	6.24	**20.48**	0.112	34.77	-14.29
782.00	5	64-QAM	H	248	98	1 / 24	15.34	6.24	**19.43**	0.088	34.77	-15.34
782.00	5	256-QAM	H	248	98	1 / 24	13.38	6.24	**17.47**	**0.056**	34.77	-17.30
782.00	10	QPSK	H	242	106	1 / 49	16.97	6.24	**21.06**	0.128	34.77	-13.71
782.00	10	16-QAM	H	242	106	1 / 49	15.81	6.24	**19.90**	0.098	34.77	-14.87
782.00	10	64-QAM	H	242	106	1 / 49	14.79	6.24	**18.88**	0.077	34.77	-15.89
782.00	10	256-QAM	H	242	106	1 / 49	12.83	6.24	**16.92**	**0.049**	34.77	-17.85
782.00	5	QPSK	V	173	265	1 / 24	15.78	6.24	19.87	0.097	34.77	-14.90
782.00	5 (WCP)	QPSK	H	186	220	1 / 24	13.06	6.24	17.15	0.052	34.77	-17.62

Table 7-10. 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]
824.70	1.4	QPSK	V	264	239	1 / 5	12.90	6.75	17.50	0.056	38.45	-20.95
836.50	1.4	QPSK	V	264	239	1 / 5	14.67	6.78	**19.30**	0.085	38.45	-19.16
848.30	1.4	QPSK	V	264	239	1 / 5	13.87	6.80	18.52	0.071	38.45	-19.93
836.50	1.4	16-QAM	V	264	239	1 / 0	13.41	6.78	**18.04**	0.064	38.45	-20.42
836.50	1.4	64-QAM	V	264	239	1 / 5	12.53	6.78	**17.16**	0.052	38.45	-21.30
836.50	1.4	256-QAM	V	264	239	1 / 5	10.13	6.78	**14.76**	**0.030**	38.45	-23.70
825.50	3	QPSK	V	264	253	1 / 14	14.14	6.75	18.74	0.075	38.45	-19.71
836.50	3	QPSK	V	264	253	1 / 0	14.39	6.78	**19.02**	0.080	38.45	-19.44
847.50	3	QPSK	V	264	253	1 / 0	14.27	6.80	18.92	0.078	38.45	-19.53
836.50	3	16-QAM	V	264	253	1 / 14	13.63	6.78	**18.26**	0.067	38.45	-20.20
836.50	3	64-QAM	V	264	253	1 / 14	12.36	6.78	**16.99**	0.050	38.45	-21.47
836.50	3	256-QAM	V	264	253	1 / 14	10.29	6.78	**14.92**	**0.031**	38.45	-23.54
826.50	5	QPSK	V	243	250	1 / 0	14.31	6.76	18.92	0.078	38.45	-19.54
836.50	5	QPSK	V	248	256	1 / 24	15.13	6.78	**19.76**	**0.095**	38.45	-18.70
846.50	5	QPSK	V	249	264	1 / 0	14.42	6.80	19.07	0.081	38.45	-19.39
836.50	5	16-QAM	V	248	256	1 / 24	13.63	6.78	**18.26**	0.067	38.45	-20.20
836.50	5	64-QAM	V	248	256	1 / 0	13.10	6.78	**17.73**	0.059	38.45	-20.73
836.50	5	256-QAM	V	248	256	1 / 0	11.21	6.78	**15.84**	**0.038**	38.45	-22.62
829.00	10	QPSK	V	251	265	1 / 49	14.11	6.76	18.72	0.074	38.45	-19.73
836.50	10	QPSK	V	250	268	1 / 49	14.30	6.78	**18.93**	0.078	38.45	-19.53
844.00	10	QPSK	V	252	272	1 / 0	14.23	6.79	18.87	0.077	38.45	-19.58
836.50	10	16-QAM	V	250	268	1 / 0	13.66	6.78	**18.29**	0.067	38.45	-20.17
836.50	10	64-QAM	V	250	268	1 / 0	12.12	6.78	**16.75**	0.047	38.45	-21.71
836.50	10	256-QAM	V	250	268	1 / 49	10.34	6.78	**14.97**	**0.031**	38.45	-23.49
836.50	5	QPSK	H	204	281	1 / 24	13.20	6.78	17.83	0.061	38.45	-20.63
836.50	5 (WCP)	QPSK	V	183	234	1 / 24	10.34	6.78	14.97	0.031	38.45	-23.49

Table 7-11. ERP Data (Band 26/5)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
831.50	15	QPSK	V	238	240	1 / 74	14.13	6.77	18.75	0.075	38.45	-19.71
836.50	15	QPSK	V	245	241	1 / 0	13.93	6.78	18.56	0.072	38.45	-19.90
841.50	15	QPSK	V	246	231	1 / 0	14.44	6.79	**19.08**	**0.081**	38.45	-19.38
841.50	15	16-QAM	V	246	231	1 / 0	13.59	6.79	**18.23**	0.066	38.45	-20.23
841.50	15	64-QAM	V	246	231	1 / 0	12.34	6.79	**16.98**	0.050	38.45	-21.48
841.50	15	256-QAM	V	246	231	1 / 0	9.54	6.79	**14.18**	**0.026**	38.45	-24.28

Table 7-12. 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	V	117	338	1 / 0	14.05	8.16	22.21	0.166	30.00	-7.79
1745.00	1.4	QPSK	V	131	328	1 / 0	14.51	8.19	**22.70**	0.186	30.00	-7.30
1779.30	1.4	QPSK	V	123	342	1 / 0	13.65	8.25	21.90	0.155	30.00	-8.10
1745.00	1.4	16-QAM	V	131	328	1 / 0	13.90	8.19	**22.09**	0.162	30.00	-7.91
1745.00	1.4	64-QAM	V	131	328	1 / 0	12.75	8.19	**20.94**	0.124	30.00	-9.06
1745.00	1.4	256-QAM	V	131	328	1 / 0	9.61	8.19	**17.80**	**0.060**	30.00	-12.20
1711.50	3	QPSK	V	116	342	1 / 0	14.11	8.16	22.27	0.169	30.00	-7.73
1745.00	3	QPSK	V	129	328	1 / 0	14.55	8.19	**22.74**	0.188	30.00	-7.26
1778.50	3	QPSK	V	120	344	1 / 0	13.94	8.25	22.19	0.166	30.00	-7.81
1745.00	3	16-QAM	V	129	328	1 / 0	13.86	8.19	**22.05**	0.160	30.00	-7.95
1745.00	3	64-QAM	V	129	328	1 / 0	12.79	8.19	**20.98**	0.125	30.00	-9.02
1745.00	3	256-QAM	V	129	328	1 / 0	9.73	8.19	**17.92**	**0.062**	30.00	-12.08
1712.50	5	QPSK	V	113	338	1 / 0	14.56	8.16	22.72	0.187	30.00	-7.28
1745.00	5	QPSK	V	128	324	1 / 0	14.87	8.19	**23.06**	0.203	30.00	-6.94
1777.50	5	QPSK	V	127	340	1 / 0	14.10	8.25	22.35	0.172	30.00	-7.65
1745.00	5	16-QAM	V	128	324	1 / 0	14.10	8.19	**22.29**	0.170	30.00	-7.71
1745.00	5	64-QAM	V	128	324	1 / 0	12.96	8.19	**21.15**	0.130	30.00	-8.85
1745.00	5	256-QAM	V	128	324	1 / 0	10.17	8.19	**18.36**	**0.069**	30.00	-11.64
1715.00	10	QPSK	V	134	344	1 / 0	14.16	8.16	22.32	0.171	30.00	-7.68
1745.00	10	QPSK	V	130	330	1 / 0	14.86	8.19	**23.05**	0.202	30.00	-6.95
1775.00	10	QPSK	V	127	340	1 / 0	14.63	8.24	22.87	0.194	30.00	-7.13
1745.00	10	16-QAM	V	130	330	1 / 0	14.16	8.19	**22.35**	0.172	30.00	-7.65
1745.00	10	64-QAM	V	130	330	1 / 0	13.05	8.19	**21.24**	0.133	30.00	-8.76
1745.00	10	256-QAM	V	130	330	1 / 0	10.52	8.19	**18.71**	**0.074**	30.00	-11.29
1717.50	15	QPSK	V	143	320	1 / 0	14.13	8.16	22.29	0.170	30.00	-7.71
1745.00	15	QPSK	V	137	326	1 / 0	14.95	8.19	**23.14**	0.206	30.00	-6.86
1772.50	15	QPSK	V	130	334	1 / 0	14.43	8.24	22.67	0.185	30.00	-7.33
1745.00	15	16-QAM	V	137	326	1 / 0	14.32	8.19	**22.51**	0.178	30.00	-7.49
1745.00	15	64-QAM	V	137	326	1 / 0	13.17	8.19	**21.36**	0.137	30.00	-8.64
1745.00	15	256-QAM	V	137	326	1 / 0	10.82	8.19	**19.01**	**0.080**	30.00	-10.99
1720.00	20	QPSK	V	144	335	1 / 0	14.05	8.17	22.22	0.167	30.00	-7.78
1745.00	20	QPSK	V	130	321	1 / 0	15.00	8.19	**23.19**	**0.209**	30.00	-6.81
1770.00	20	QPSK	V	131	349	1 / 0	14.18	8.23	22.41	0.174	30.00	-7.59
1745.00	20	16-QAM	V	130	321	1 / 0	14.29	8.19	**22.48**	0.177	30.00	-7.52
1745.00	20	64-QAM	V	130	321	1 / 0	13.12	8.19	**21.31**	0.135	30.00	-8.69
1745.00	20	256-QAM	V	130	321	1 / 0	10.44	8.19	**18.63**	**0.073**	30.00	-11.37
1745.00	20	QPSK	H	100	359	1 / 0	13.67	8.19	21.86	0.154	30.00	-8.14
1745.00	20 (WCP)	QPSK	V	117	36	1 / 0	10.31	8.19	18.50	0.071	30.00	-11.50

Table 7-13. EIRP Data (Band 66/4)

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	189	334	1 / 5	14.56	8.37	**22.93**	0.196	33.01	-10.08
1880.00	1.4	QPSK	H	183	347	1 / 5	14.48	8.41	22.89	0.195	33.01	-10.12
1909.30	1.4	QPSK	H	178	344	1 / 5	13.48	8.46	21.94	0.156	33.01	-11.07
1850.70	1.4	16-QAM	H	189	334	1 / 5	13.86	8.37	**22.23**	0.167	33.01	-10.78
1850.70	1.4	64-QAM	H	189	334	1 / 5	12.75	8.37	**21.12**	0.129	33.01	-11.89
1850.70	1.4	256-QAM	H	189	334	1 / 5	10.20	8.37	**18.57**	**0.072**	33.01	-14.44
1851.50	3	QPSK	H	180	335	1 / 14	14.71	8.37	**23.08**	0.203	33.01	-9.93
1880.00	3	QPSK	H	180	348	1 / 14	14.49	8.41	22.90	0.195	33.01	-10.11
1908.50	3	QPSK	H	195	336	1 / 14	13.66	8.46	22.12	0.163	33.01	-10.89
1851.50	3	16-QAM	H	180	335	1 / 14	13.94	8.37	**22.31**	0.170	33.01	-10.70
1851.50	3	64-QAM	H	180	335	1 / 14	12.84	8.37	**21.21**	0.132	33.01	-11.80
1851.50	3	256-QAM	H	180	335	1 / 14	10.20	8.37	**18.57**	**0.072**	33.01	-14.44
1852.50	5	QPSK	H	184	335	1 / 24	14.85	8.37	**23.22**	0.210	33.01	-9.79
1880.00	5	QPSK	H	184	349	1 / 24	14.62	8.41	23.03	0.201	33.01	-9.98
1907.50	5	QPSK	H	190	337	1 / 24	13.57	8.46	22.03	0.160	33.01	-10.98
1852.50	5	16-QAM	H	184	335	1 / 24	14.12	8.37	**22.49**	0.177	33.01	-10.52
1852.50	5	64-QAM	H	184	335	1 / 24	12.93	8.37	**21.30**	0.135	33.01	-11.71
1852.50	5	256-QAM	H	184	335	1 / 24	10.37	8.37	**18.74**	**0.075**	33.01	-14.27
1855.00	10	QPSK	H	198	331	1 / 49	14.81	8.37	**23.18**	0.208	33.01	-9.83
1880.00	10	QPSK	H	185	345	1 / 49	14.23	8.41	22.64	0.184	33.01	-10.37
1905.00	10	QPSK	H	183	341	1 / 49	13.59	8.45	22.04	0.160	33.01	-10.97
1855.00	10	16-QAM	H	198	331	1 / 49	13.95	8.37	**22.32**	0.171	33.01	-10.69
1855.00	10	64-QAM	H	198	331	1 / 49	13.06	8.37	**21.43**	0.139	33.01	-11.58
1855.00	10	256-QAM	H	198	331	1 / 49	10.30	8.37	**18.67**	**0.074**	33.01	-14.34
1857.50	15	QPSK	H	193	337	1 / 74	14.82	8.38	**23.20**	0.209	33.01	-9.81
1880.00	15	QPSK	H	186	349	1 / 74	14.60	8.41	23.01	0.200	33.01	-10.00
1902.50	15	QPSK	H	194	336	1 / 74	13.66	8.45	22.11	0.163	33.01	-10.90
1857.50	15	16-QAM	H	193	337	1 / 74	14.10	8.38	**22.48**	0.177	33.01	-10.53
1857.50	15	64-QAM	H	193	337	1 / 74	12.99	8.38	**21.37**	0.137	33.01	-11.64
1857.50	15	256-QAM	H	193	337	1 / 74	10.18	8.38	**18.56**	**0.072**	33.01	-14.45
1860.00	20	QPSK	H	209	333	1 / 0	14.81	8.38	23.19	0.209	33.01	-9.82
1880.00	20	QPSK	H	195	345	1 / 0	15.05	8.41	**23.46**	**0.222**	33.01	-9.55
1900.00	20	QPSK	H	196	338	1 / 0	13.86	8.45	22.31	0.170	33.01	-10.70
1880.00	20	16-QAM	H	195	345	1 / 0	14.22	8.41	**22.63**	0.183	33.01	-10.38
1880.00	20	64-QAM	H	195	345	1 / 0	13.39	8.41	**21.80**	0.152	33.01	-11.21
1880.00	20	256-QAM	H	195	345	1 / 0	11.23	8.41	**19.64**	**0.092**	33.01	-13.37
1880.00	20	QPSK	V	155	335	1 / 0	14.59	8.41	23.00	0.200	33.01	-10.01
1880.00	20 (WCP)	QPSK	H	102	221	1 / 0	13.78	8.41	22.19	0.166	33.01	-10.82

Table 7-14. EIRP Data (Band 2)

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	287	305	1 / 0	12.92	9.07	21.99	0.158	23.98	-1.99
2312.50	5	QPSK	V	288	307	1 / 0	13.33	9.06	**22.39**	**0.174**	23.98	-1.59
2312.50	5	16-QAM	V	288	307	1 / 0	12.48	9.06	**21.54**	0.143	23.98	-2.44
2312.50	5	64-QAM	V	288	307	1 / 0	11.62	9.06	**20.68**	0.117	23.98	-3.30
2312.50	5	256-QAM	V	288	307	1 / 0	9.25	9.06	**18.31**	**0.068**	23.98	-5.67
2310.00	10	QPSK	V	286	309	1 / 0	13.24	9.07	**22.31**	0.170	23.98	-1.67
2310.00	10	16-QAM	V	286	309	1 / 0	12.25	9.07	**21.32**	0.135	23.98	-2.66
2310.00	10	64-QAM	V	286	309	1 / 0	11.20	9.07	**20.27**	0.106	23.98	-3.71
2310.00	10	256-QAM	V	286	309	1 / 0	8.45	9.07	**17.52**	**0.056**	23.98	-6.46
2312.50	5	QPSK	H	225	176	1 / 0	11.72	9.06	20.78	0.120	23.98	-3.20
2312.50	5 (WCP)	QPSK	V	122	265	1 / 0	12.55	9.06	21.61	0.145	23.98	-2.37

Table 7-15. EIRP Data (Band 30 Ant A)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	H	113	227	1 / 24	14.86	7.90	**22.76**	**0.189**	23.98	-1.22
2312.50	5	QPSK	H	113	226	1 / 0	14.77	7.90	22.67	0.185	23.98	-1.31
2307.50	5	16-QAM	H	113	227	1 / 24	14.13	7.90	**22.03**	0.160	23.98	-1.95
2307.50	5	64-QAM	H	113	227	1 / 24	12.87	7.90	**20.77**	0.119	23.98	-3.21
2307.50	5	256-QAM	H	113	227	1 / 24	10.70	7.90	**18.60**	**0.072**	23.98	-5.38
2310.00	10	QPSK	H	132	216	1 / 0	14.56	7.90	**22.46**	0.176	23.98	-1.52
2310.00	10	16-QAM	H	132	216	1 / 0	13.81	7.90	**21.71**	0.148	23.98	-2.27
2310.00	10	64-QAM	H	132	216	1 / 0	12.76	7.90	**20.66**	0.116	23.98	-3.32
2310.00	10	256-QAM	H	132	216	1 / 0	10.27	7.90	**18.17**	**0.066**	23.98	-5.81
2307.50	5	QPSK	V	226	313	1 / 24	13.10	7.90	21.00	0.126	23.98	-2.98
2307.50	5 (WCP)	QPSK	H	123	230	1 / 24	13.71	7.90	21.61	0.145	23.98	-2.37

Table 7-16. EIRP Data (Band 30 Ant B)

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	147	224	1 / 24	13.75	7.89	**21.64**	0.146	33.01	-11.37
2535.00	5	QPSK	H	147	228	1 / 0	13.29	7.83	21.12	0.129	33.01	-11.89
2567.50	5	QPSK	H	145	231	1 / 24	13.05	7.76	20.81	0.121	33.01	-12.20
2502.50	5	16-QAM	H	147	224	1 / 24	12.85	7.89	**20.74**	0.119	33.01	-12.27
2502.50	5	64-QAM	H	147	224	1 / 24	11.78	7.89	**19.67**	0.093	33.01	-13.34
2502.50	5	256-QAM	H	147	224	1 / 24	8.83	7.89	**16.72**	**0.047**	33.01	-16.29
2505.00	10	QPSK	H	149	222	1 / 0	13.59	7.89	21.48	0.141	33.01	-11.53
2535.00	10	QPSK	H	147	236	1 / 0	13.51	7.83	21.34	0.136	33.01	-11.67
2565.00	10	QPSK	H	138	228	1 / 49	13.78	7.77	**21.55**	0.143	33.01	-11.46
2565.00	10	16-QAM	H	138	228	1 / 49	13.02	7.77	**20.79**	0.120	33.01	-12.22
2565.00	10	64-QAM	H	138	228	1 / 49	12.00	7.77	**19.77**	0.095	33.01	-13.24
2565.00	10	256-QAM	H	138	228	1 / 49	9.60	7.77	**17.37**	**0.055**	33.01	-15.64
2507.50	15	QPSK	H	144	218	1 / 0	13.36	7.88	21.24	0.133	33.01	-11.77
2535.00	15	QPSK	H	144	222	1 / 0	13.68	7.83	21.51	0.141	33.01	-11.50
2562.50	15	QPSK	H	142	226	1 / 74	14.00	7.77	**21.77**	0.150	33.01	-11.24
2562.50	15	16-QAM	H	142	226	1 / 74	13.14	7.77	**20.91**	0.123	33.01	-12.10
2562.50	15	64-QAM	H	142	226	1 / 74	12.30	7.77	**20.07**	0.102	33.01	-12.94
2562.50	15	256-QAM	H	142	226	1 / 74	9.74	7.77	**17.51**	**0.056**	33.01	-15.50
2510.00	20	QPSK	H	146	222	1 / 0	13.94	7.88	21.82	0.152	33.01	-11.19
2535.00	20	QPSK	H	144	223	1 / 99	13.90	7.83	21.73	0.149	33.01	-11.28
2560.00	20	QPSK	H	144	225	1 / 0	14.19	7.78	**21.97**	**0.157**	33.01	-11.04
2560.00	20	16-QAM	H	144	225	1 / 0	13.42	7.78	**21.20**	0.132	33.01	-11.81
2560.00	20	64-QAM	H	144	225	1 / 0	12.27	7.78	**20.05**	0.101	33.01	-12.96
2560.00	20	256-QAM	H	144	225	1 / 0	9.89	7.78	**17.67**	**0.058**	33.01	-15.34
2560.00	20	QPSK	V	100	272	1 / 0	11.74	7.78	19.52	0.089	33.01	-13.49
2560.00	20 (WCP)	QPSK	H	148	227	1 / 0	13.33	7.78	21.11	0.129	33.01	-11.90

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	100	324	1 / 24	15.87	7.90	**23.77**	0.238	33.01	-9.24
2593.00	5	QPSK	H	102	317	1 / 24	15.15	7.71	22.86	0.193	33.01	-10.15
2687.50	5	QPSK	H	144	327	1 / 24	15.20	7.52	22.72	0.187	33.01	-10.29
2498.50	5	16-QAM	H	100	324	1 / 24	14.83	7.90	**22.73**	0.187	33.01	-10.28
2498.50	5	64-QAM	H	100	324	1 / 24	13.69	7.90	**21.59**	0.144	33.01	-11.42
2498.50	5	256-QAM	H	100	324	1 / 24	10.24	7.90	**18.14**	**0.065**	33.01	-14.87
2501.00	10	QPSK	H	100	322	1 / 0	15.04	7.90	22.94	0.197	33.01	-10.07
2593.00	10	QPSK	H	108	332	1 / 49	15.98	7.71	**23.69**	0.234	33.01	-9.32
2685.00	10	QPSK	H	133	329	1 / 49	15.57	7.53	23.10	0.204	33.01	-9.91
2593.00	10	16-QAM	H	108	332	1 / 49	15.22	7.71	**22.93**	0.196	33.01	-10.08
2593.00	10	64-QAM	H	108	332	1 / 49	13.83	7.71	**21.54**	0.143	33.01	-11.47
2593.00	10	256-QAM	H	108	332	1 / 49	10.99	7.71	**18.70**	**0.074**	33.01	-14.31
2503.50	15	QPSK	H	100	325	1 / 0	16.15	7.89	**24.04**	**0.254**	33.01	-8.97
2593.00	15	QPSK	H	100	316	1 / 74	15.50	7.71	23.21	0.209	33.01	-9.80
2682.50	15	QPSK	H	142	323	1 / 74	15.20	7.53	22.73	0.188	33.01	-10.28
2503.50	15	16-QAM	H	100	325	1 / 0	15.12	7.89	**23.01**	0.200	33.01	-10.00
2503.50	15	64-QAM	H	100	325	1 / 0	13.97	7.89	**21.86**	0.154	33.01	-11.15
2503.50	15	256-QAM	H	100	325	1 / 0	11.08	7.89	**18.97**	**0.079**	33.01	-14.04
2506.00	20	QPSK	H	119	315	1 / 0	14.06	7.89	21.95	0.157	33.01	-11.06
2593.00	20	QPSK	H	115	328	1 / 99	15.89	7.71	**23.60**	0.229	33.01	-9.41
2680.00	20	QPSK	H	101	326	1 / 99	15.28	7.54	22.82	0.191	33.01	-10.20
2593.00	20	16-QAM	H	115	328	1 / 99	14.56	7.71	**22.27**	0.169	33.01	-10.74
2593.00	20	64-QAM	H	115	328	1 / 99	13.52	7.71	**21.23**	0.133	33.01	-11.78
2593.00	20	256-QAM	H	115	328	1 / 99	10.78	7.71	**18.49**	**0.071**	33.01	-14.52
2503.50	15	QPSK	V	115	271	1 / 0	14.71	7.89	22.60	0.182	33.01	-10.41
2503.50	15 (WCP)	QPSK	H	117	209	1 / 0	14.86	7.89	22.75	0.188	33.01	-10.26

Table 7-18. EIRP Data (Band 41 PC3)

7.8 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.

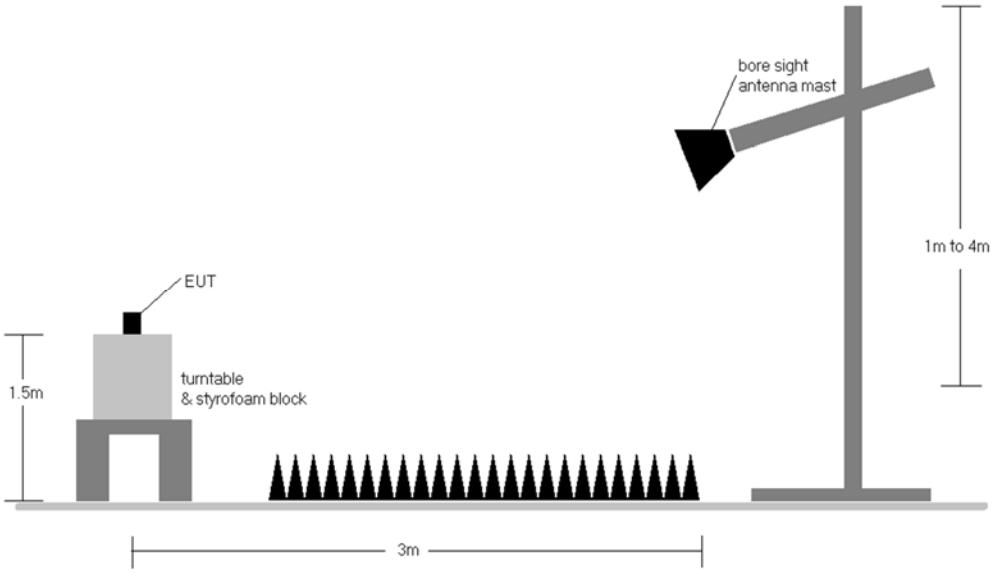


Figure 7-8. Test Instrument & Measurement Setup

Test Notes

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

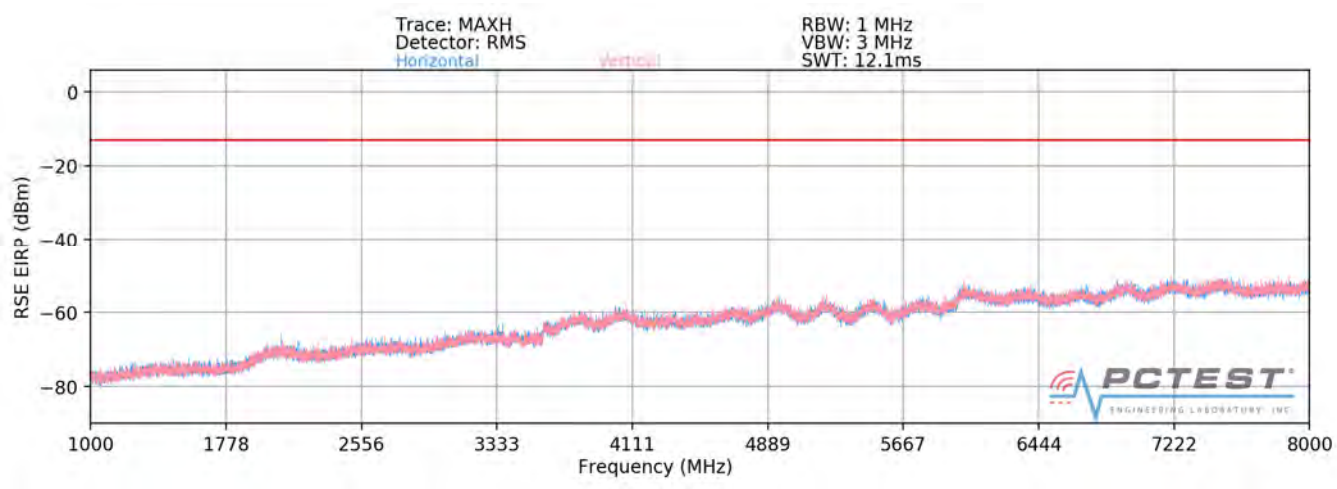
2) This unit was tested with its standard battery.

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

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

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

Band 12



Plot 7-387. Radiated Spurious Plot above 1GHz (Band 12)

OPERATING FREQUENCY:	704.00	MHz
CHANNEL:	23060	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	V	135	256	-66.40	8.07	-58.32	-45.3
2112.00	V	-	-	-75.66	8.28	-67.39	-54.4
2816.00	V	-	-	-73.45	7.29	-66.16	-53.2

Table 7-19. Radiated Spurious Data (Band 12 – Low Channel)

OPERATING FREQUENCY:	707.50	MHz
CHANNEL:	23095	
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]
1415.00	V	142	304	-65.71	8.06	-57.65	-44.6
2122.50	V	400	28	-75.04	8.25	-66.79	-53.8
2830.00	V	-	-	-73.34	7.27	-66.07	-53.1
3537.50	V	-	-	-69.90	6.71	-63.19	-50.2

Table 7-20. Radiated Spurious Data (Band 12 – Mid Channel)

OPERATING FREQUENCY:	711.00	MHz
CHANNEL:	23130	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	V	158	305	-70.26	8.05	-62.21	-49.2
2133.00	V	-	-	-75.67	8.22	-67.46	-54.5
2844.00	V	-	-	-73.00	7.25	-65.75	-52.8

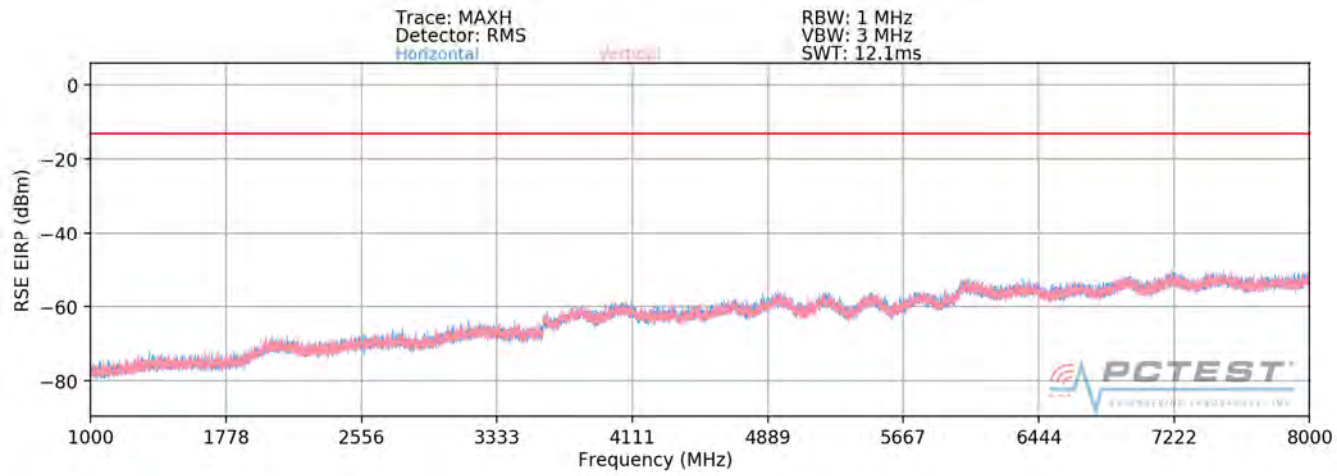
Table 7-21. Radiated Spurious Data (Band 12 – High Channel)

OPERATING FREQUENCY:	707.50	MHz
CHANNEL:	23095	
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]
1415.00	V	190	69	-68.75	8.06	-60.69	-47.7
2122.50	V	-	-	-75.55	8.25	-67.30	-54.3
2830.00	V	-	-	-73.34	7.27	-66.07	-53.1

Table 7-22. Radiated Spurious Data with WCP (Band 12 – Mid Channel)

Band 13



Plot 7-388. Radiated Spurious Plot above 1GHz (Band 13)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2338.50	H	-	-	-71.71	7.90	-63.81	-50.8
3118.00	H	-	-	-69.43	7.00	-62.43	-49.4

Table 7-23. Radiated Spurious Data (Band 13 – Low Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	161	193	-71.55	7.90	-63.65	-50.7
3128.00	H	-	-	-69.53	7.00	-62.53	-49.5
3910.00	H	-	-	-66.66	5.16	-61.49	-48.5

Table 7-24. Radiated Spurious Data (Band 13 – Mid Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2353.50	H	116	200	-71.20	7.90	-63.30	-50.3
3138.00	H	-	-	-69.68	7.00	-62.68	-49.7
3922.50	H	-	-	-66.66	5.16	-61.49	-48.5

Table 7-25. Radiated Spurious Data (Band 13 – High Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1559.00	H	-	-	-74.97	7.98	-66.99	-27.0
1564.00	H	100	149	-74.10	7.98	-66.12	-26.1
1569.00	H	224	168	-73.59	7.98	-65.61	-25.6

Table 7-26. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	H	-	-	-71.68	7.90	-63.78	-50.8
3128.00	H	-	-	-69.61	7.00	-62.61	-49.6

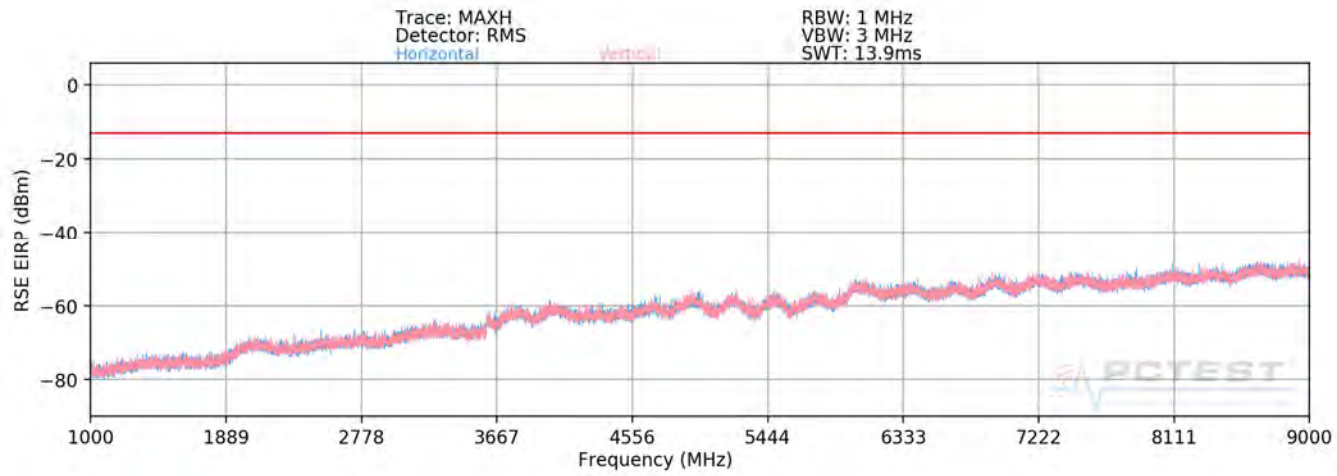
Table 7-27. Radiated Spurious Data with WCP (Band 13 – Mid Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	123	4	-73.74	7.98	-65.76	-25.8

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

Band 26/5



Plot 7-389. Radiated Spurious Plot above 1GHz (Band 26/5)

OPERATING FREQUENCY:	826.50	MHz
CHANNEL:	20425	
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]
1653.00	H	106	180	-73.72	8.09	-65.63	-52.6
2479.50	H	-	-	-71.18	7.90	-63.28	-50.3
3306.00	H	-	-	-69.74	7.00	-62.74	-49.7

Table 7-29. Radiated Spurious Data (Band 26/5 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz
CHANNEL:	20525	
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]
1673.00	H	145	146	-73.14	8.11	-65.02	-52.0
2509.50	H	-	-	-71.12	7.88	-63.24	-50.2
3346.00	H	-	-	-69.12	7.00	-62.12	-49.1

Table 7-30. Radiated Spurious Data (Band 26/5 – Mid Channel)

OPERATING FREQUENCY:	846.50	MHz
CHANNEL:	20625	
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]
1693.00	H	144	167	-72.70	8.14	-64.56	-51.6
2539.50	H	-	-	-70.47	7.82	-62.65	-49.6
3386.00	H	-	-	-69.22	7.00	-62.22	-49.2

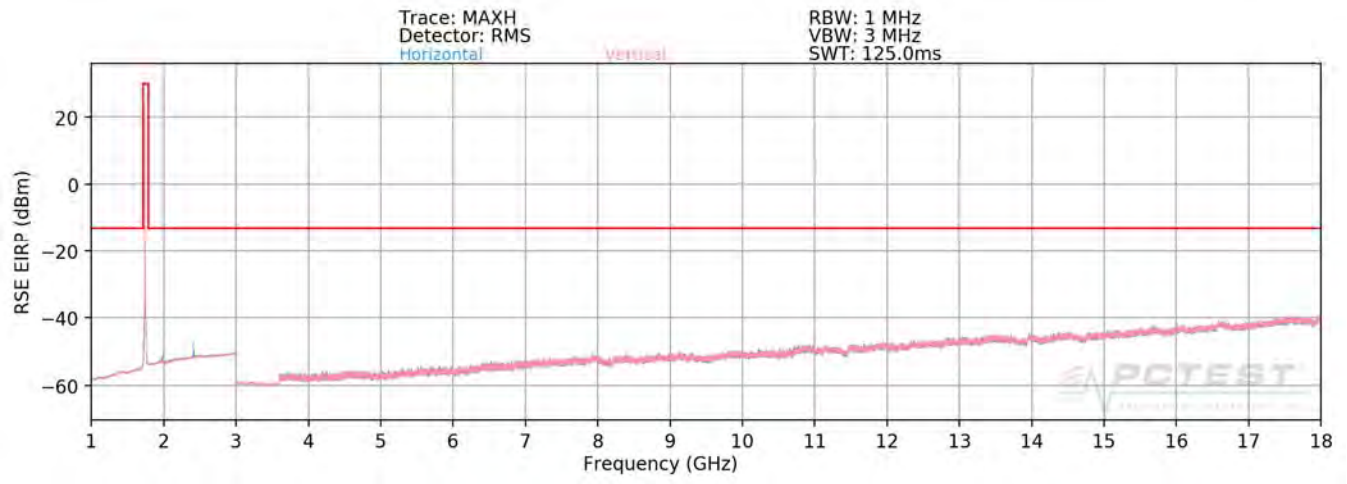
Table 7-31. Radiated Spurious Data (Band 26/5 – High Channel)

OPERATING FREQUENCY:	846.50	MHz
CHANNEL:	20625	
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]
1693.00	H	200	293	-73.69	8.14	-65.55	-52.6
2539.50	H	-	-	-70.39	7.82	-62.57	-49.6
3386.00	H	-	-	-69.22	7.00	-62.22	-49.2

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

Band 66/4



Plot 7-390. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY:	1720.00	MHz
CHANNEL:	132072	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	H	108	334	-71.25	7.00	-64.25	-51.2
5160.00	H	-	-	-73.71	8.61	-65.10	-52.1
6880.00	H	-	-	-73.23	9.85	-63.37	-50.4

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

OPERATING FREQUENCY:	1745.00	MHz
CHANNEL:	132322	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	H	115	323	-72.69	7.00	-65.69	-52.7
5235.00	H	-	-	-73.60	8.44	-65.17	-52.2
6980.00	H	-	-	-73.69	9.89	-63.80	-50.8

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

OPERATING FREQUENCY:	1770.00	MHz
CHANNEL:	132572	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	H	119	331	-72.11	6.69	-65.43	-52.4
5310.00	H	-	-	-73.89	8.62	-65.27	-52.3
7080.00	H	-	-	-73.66	9.84	-63.83	-50.8

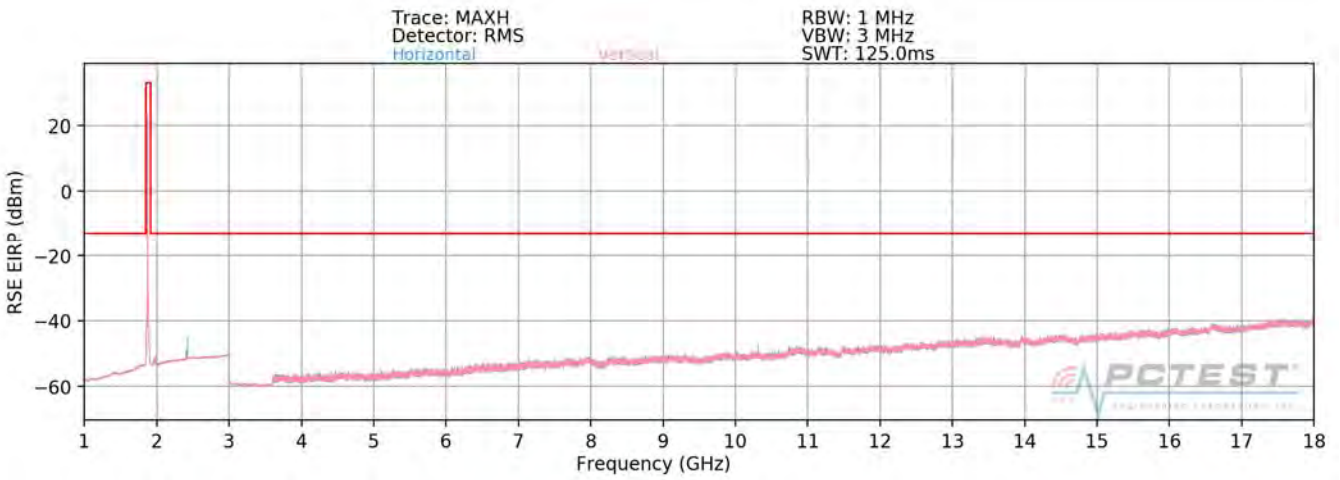
Table 7-35. Radiated Spurious Data (Band 66/4 – High Channel)

OPERATING FREQUENCY:	1720.00	MHz
CHANNEL:	132072	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	H	152	200	-72.37	7.00	-65.37	-52.4
5160.00	H	-	-	-73.43	8.44	-65.00	-52.0
6880.00	H	-	-	-72.91	9.89	-63.01	-50.0

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

Band 2



Plot 7-391. Radiated Spurious Plot above 1GHz (Band 2)

OPERATING FREQUENCY:	1860.00	MHz
CHANNEL:	18700	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3720.00	V	-	-	-71.87	9.51	-62.36	-49.4
5580.00	V	-	-	-71.60	10.99	-60.61	-47.6
7440.00	V	353	328	-65.16	10.99	-54.17	-41.2
9300.00	V	-	-	-66.76	11.61	-55.16	-42.2
11160.00	V	135	38	-64.59	12.73	-51.86	-38.9
13020.00	V	339	344	-63.62	13.23	-50.39	-37.4
14880.00	V	-	-	-61.71	12.62	-49.10	-36.1

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

OPERATING FREQUENCY:	1880.00	MHz
CHANNEL:	18900	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	V	-	-	-71.59	9.37	-62.22	-49.2
5640.00	V	-	-	-71.45	11.17	-60.28	-47.3
7520.00	V	225	351	-52.10	11.11	-40.99	-28.0
9400.00	V	-	-	-66.33	11.57	-54.76	-41.8
11280.00	V	122	34	-63.06	12.72	-50.35	-37.3
13160.00	V	133	321	-64.41	13.15	-51.27	-38.3
15040.00	V	-	-	-63.28	13.52	-49.76	-36.8

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

OPERATING FREQUENCY:	1900.00	MHz
CHANNEL:	19100	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3800.00	V	-	-	-72.20	9.28	-62.92	-49.9
5700.00	V	-	-	-72.33	11.31	-61.03	-48.0
7600.00	V	125	322	-67.12	11.24	-55.88	-42.9
9500.00	V	-	-	-66.86	11.67	-55.18	-42.2
11400.00	V	142	32	-66.60	12.84	-53.76	-40.8
13300.00	V	111	326	-63.65	12.81	-50.83	-37.8
15200.00	V	-	-	-65.68	14.68	-51.00	-38.0

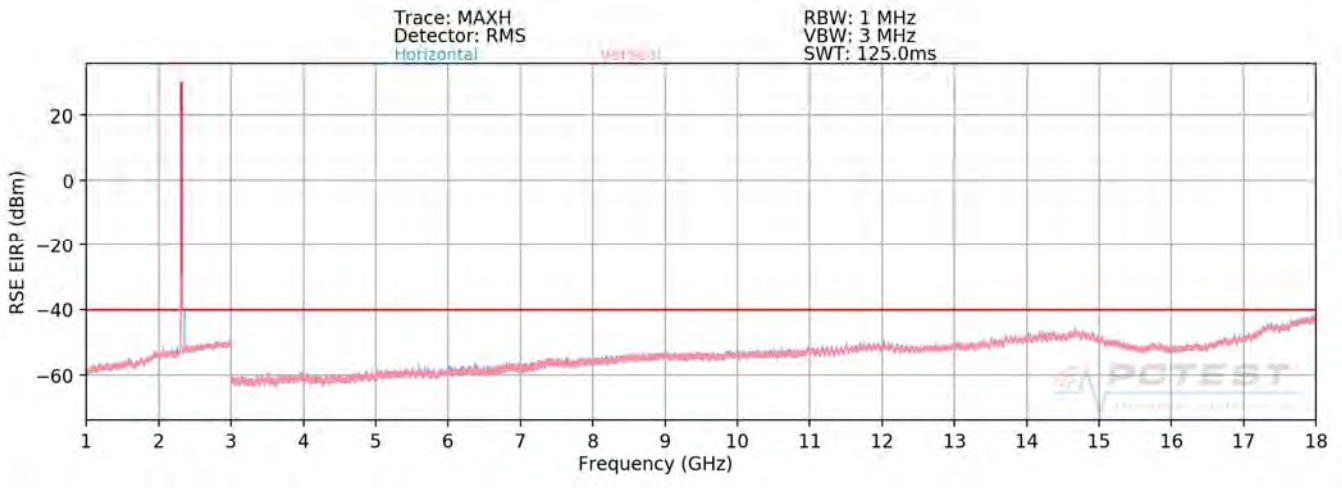
Table 7-39. Radiated Spurious Data (Band 2 – High Channel)

OPERATING FREQUENCY:	1880.00	MHz
CHANNEL:	18900	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	V	-	-	-71.54	9.37	-62.17	-49.2
5640.00	V	-	-	-71.36	11.17	-60.19	-47.2
7520.00	V	114	44	-54.01	11.11	-42.90	-29.9
9400.00	V	-	-	-66.40	11.57	-54.83	-41.8
11280.00	V	113	47	-64.79	12.72	-52.08	-39.1
13160.00	V	-	-	-65.05	13.15	-51.91	-38.9
15040.00	V	-	-	-63.29	13.52	-49.77	-36.8

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

Band 30 (Ant A)



Plot 7-392. Radiated Spurious Plot above 1GHz (Band 30 Ant A)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4615.00	H	117	132	-64.45	8.25	-56.20	-16.2
6922.50	H	125	353	-64.24	8.72	-55.52	-15.5
9230.00	H	-	-	-63.74	9.52	-54.22	-14.2
11537.50	H	-	-	-60.65	9.19	-51.46	-11.5

Table 7-41. Radiated Spurious Data (Band 30 – Ant A – 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	H	299	66	-65.48	8.27	-57.21	-17.2
6937.50	H	264	62	-62.36	8.71	-53.65	-13.6
9250.00	H	-	-	-63.90	9.47	-54.43	-14.4
11562.50	H	-	-	-60.54	9.20	-51.34	-11.3

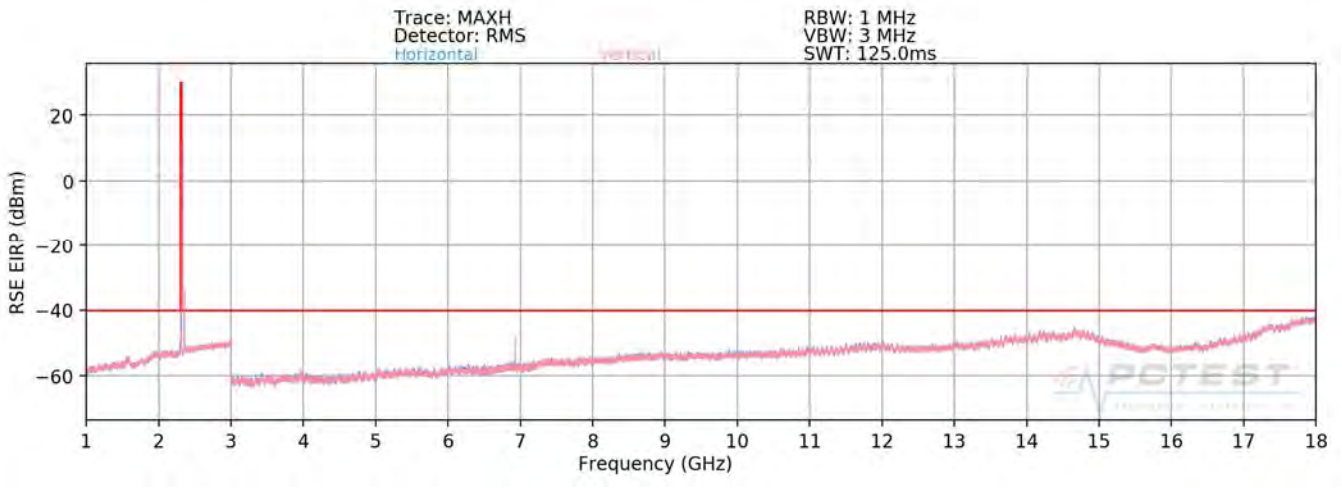
Table 7-42. Radiated Spurious Data (Band 30 – Ant A – High Channel)

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	H	102	258	-62.38	8.27	-54.11	-14.1
6932.50	H	-	-	-64.79	8.71	-56.08	-16.1
9240.00	H	-	-	-63.84	9.47	-54.37	-14.4

Table 7-43. Radiated Spurious Data with WCP (Band 30 Ant A – High Channel)

Band 30 (Ant B)



Plot 7-393. Radiated Spurious Plot above 1GHz (Band 30 Ant B)

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	H	347	64	-72.49	10.91	-61.58	-21.6
6922.50	H	105	9	-63.15	8.72	-54.43	-14.4
9230.00	H	-	-	-67.23	11.61	-55.62	-15.6
11537.50	H	-	-	-67.31	12.72	-54.58	-14.6

Table 7-44. Radiated Spurious Data (Band 30 – Ant B – 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	H	400	72	-72.94	10.92	-62.02	-22.0
6937.50	H	-	-	-70.85	11.75	-59.10	-19.1
9250.00	H	-	-	-67.48	11.63	-55.85	-15.8

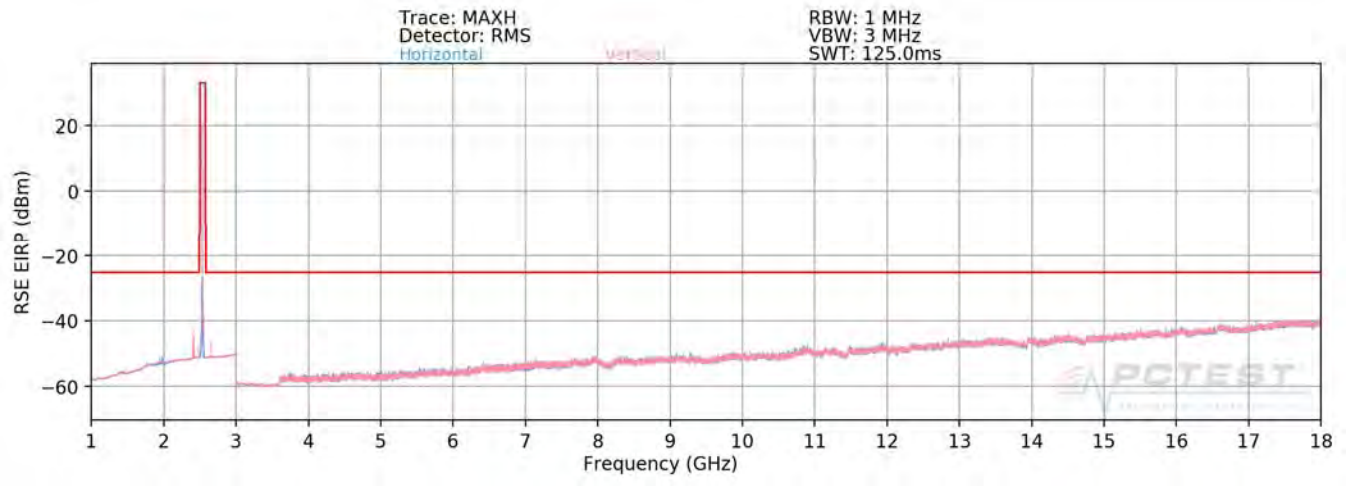
Table 7-45. Radiated Spurious Data (Band 30 – Ant B – High Channel)

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	H	-	-	-73.33	10.91	-62.42	-22.4
6922.50	H	-	-	-70.83	11.73	-59.10	-19.1

Table 7-46. Radiated Spurious Data with WCP (Band 30 Ant B – Low Channel)

Band 7



Plot 7-394. Radiated Spurious Plot above 1GHz (Band 7)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	116	318	-68.53	10.88	-57.65	-32.7
7530.00	H	357	335	-56.83	11.13	-45.70	-20.7
10040.00	H	-	-	-66.97	11.99	-54.99	-30.0
12550.00	H	-	-	-65.76	13.56	-52.20	-27.2

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

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5070.00	H	111	318	-66.89	10.75	-56.14	-31.1
7605.00	H	398	328	-59.57	11.25	-48.32	-23.3
10140.00	H	-	-	-66.62	12.07	-54.55	-29.6
12675.00	H	-	-	-65.72	13.66	-52.06	-27.1

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

OPERATING FREQUENCY:	2560.00	MHz
CHANNEL:	21350	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5120.00	H	115	317	-67.69	10.68	-57.01	-32.0
7680.00	H	386	326	-61.37	11.39	-49.98	-25.0
10240.00	H	-	-	-66.71	12.18	-54.52	-29.5
12800.00	H	-	-	-65.57	13.50	-52.07	-27.1

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

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5020.00	H	305	268	-70.92	10.88	-60.04	-35.0
7530.00	H	176	54	-57.75	11.13	-46.62	-21.6
10040.00	H	-	-	-66.99	11.99	-55.01	-30.0
12550.00	H	-	-	-65.76	13.56	-52.20	-27.2

Table 7-50. Radiated Spurious Data with WCP (Band 7 – Mid Channel)