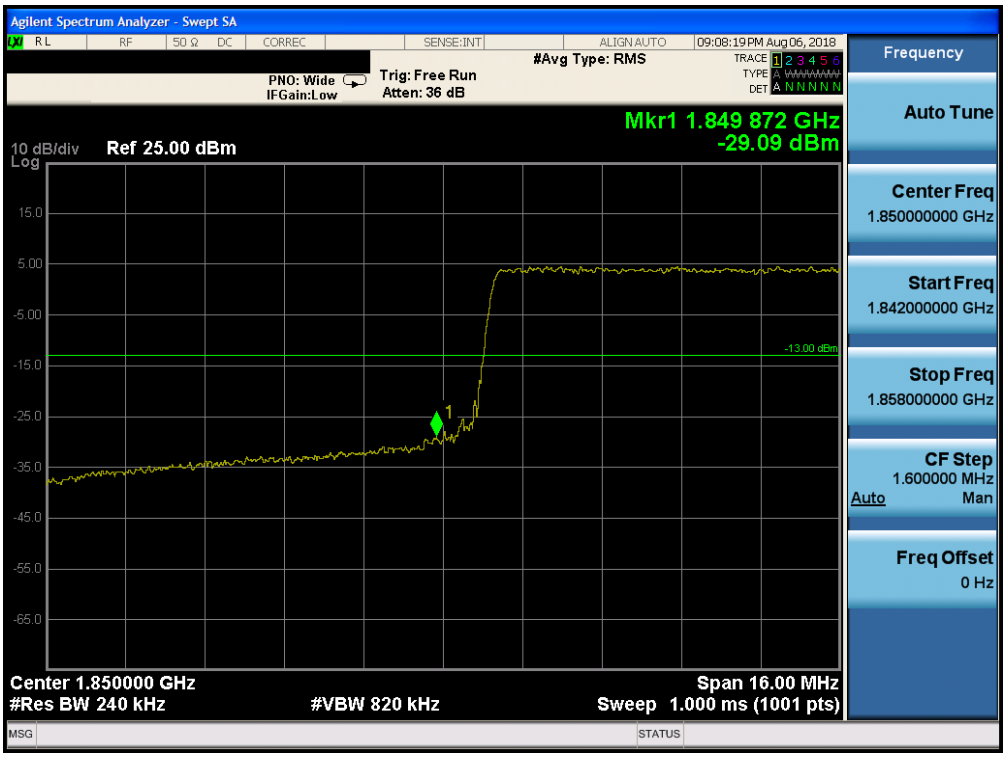
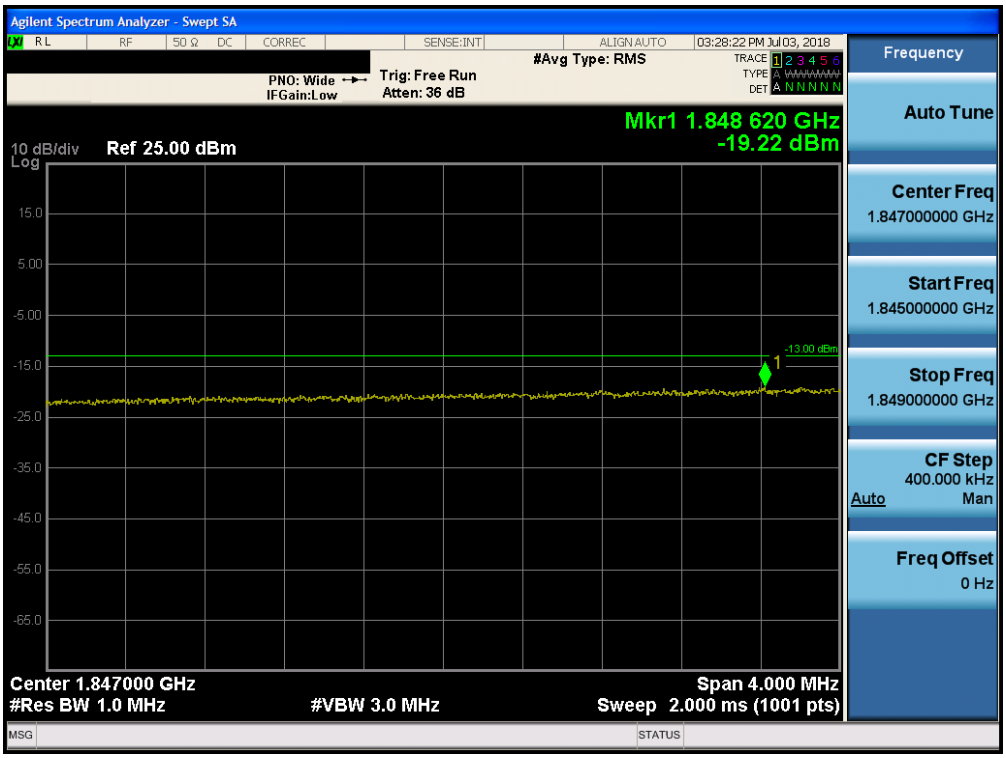
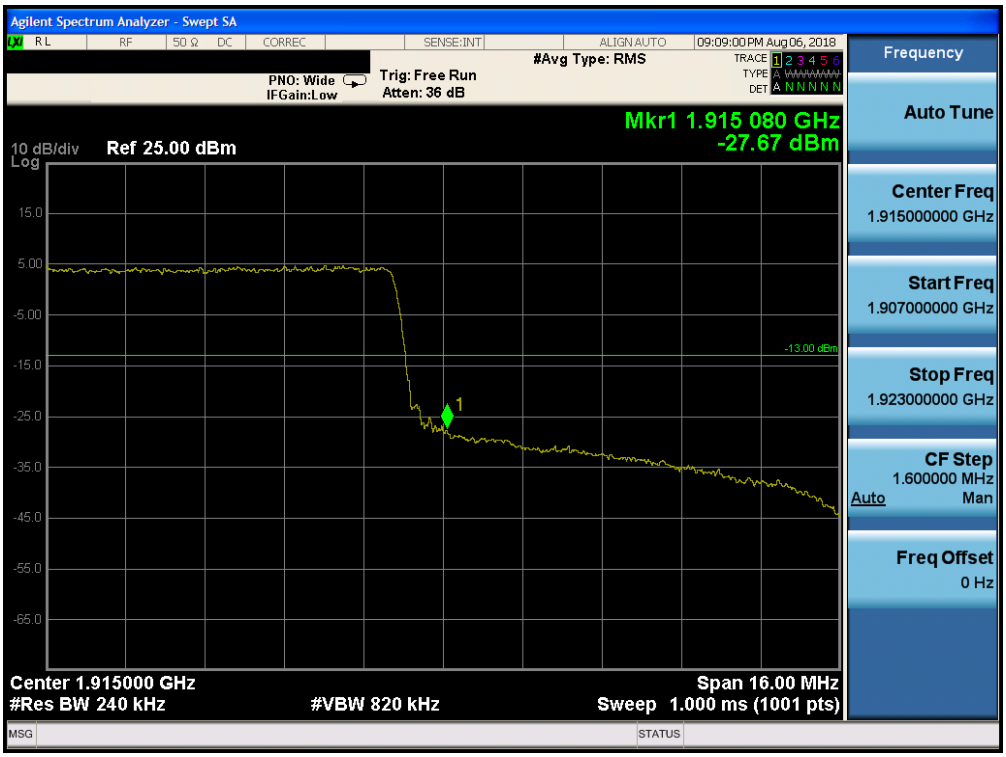


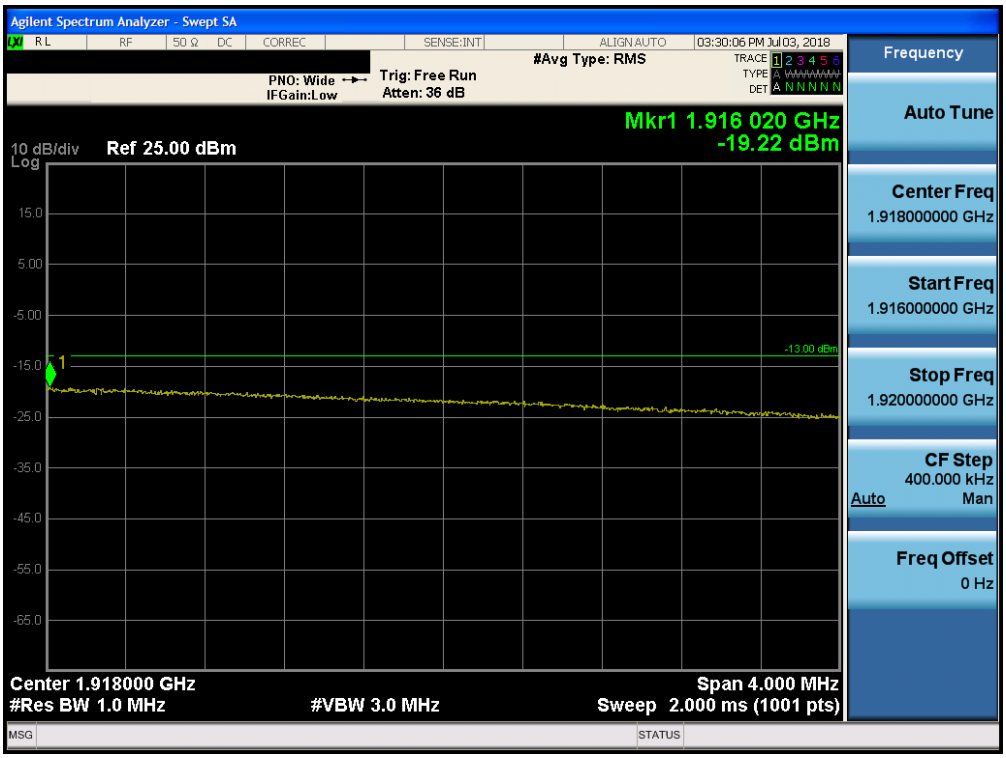
Plot 7-238. Lower Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-239. Lower Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

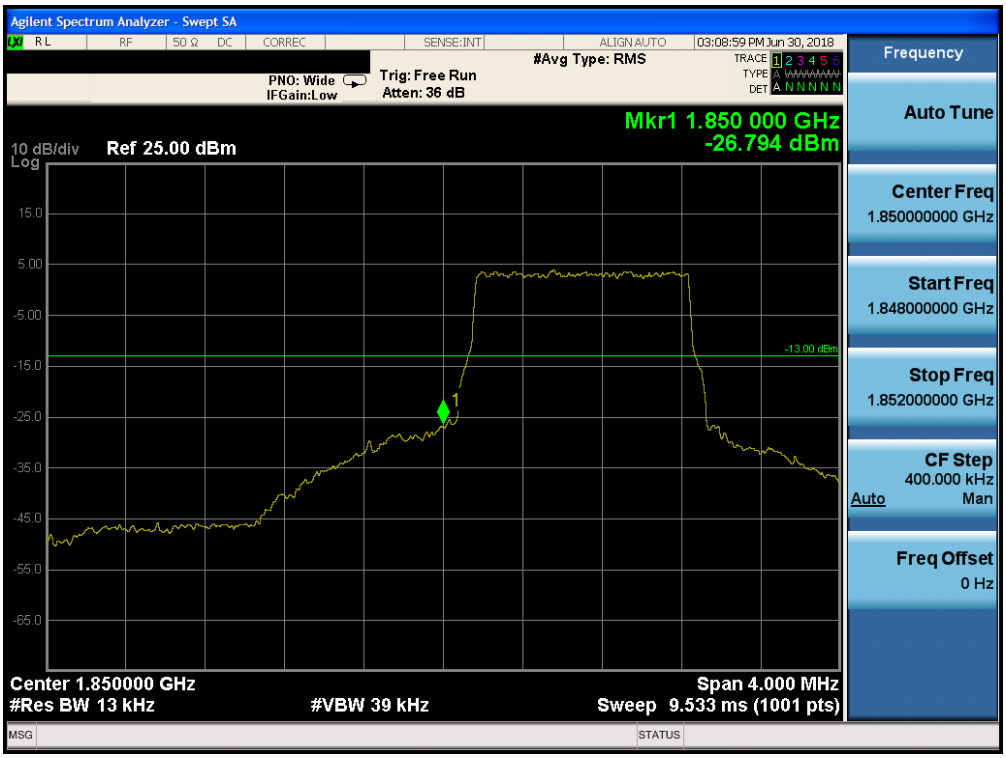


Plot 7-240. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

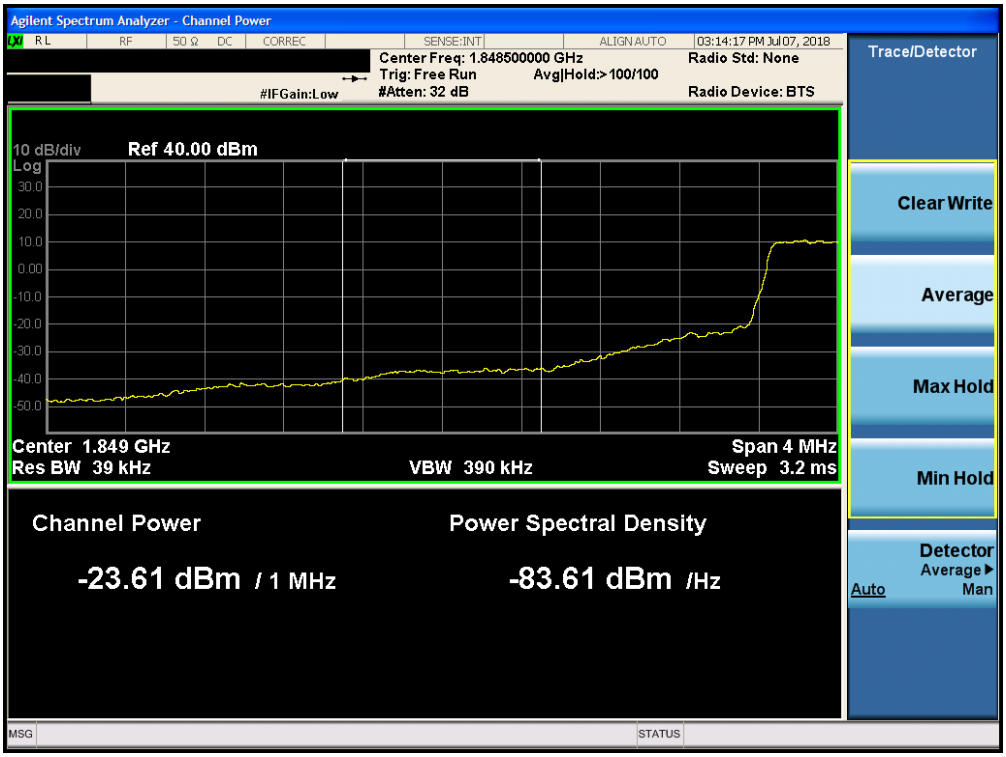


Plot 7-241. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

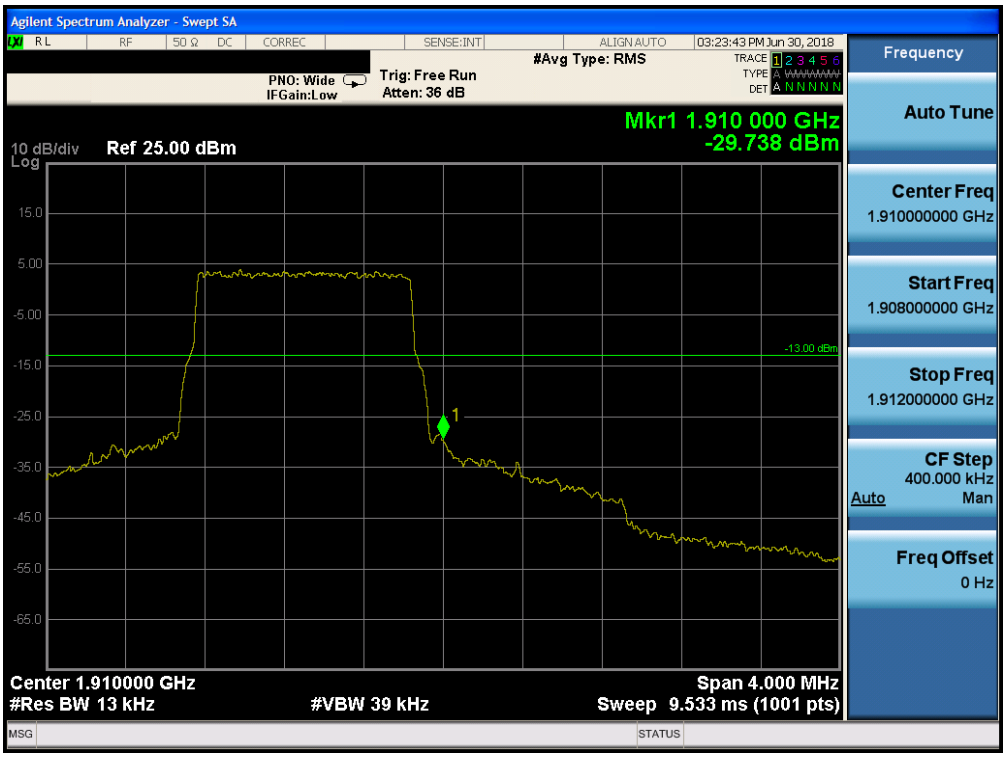
Band 2



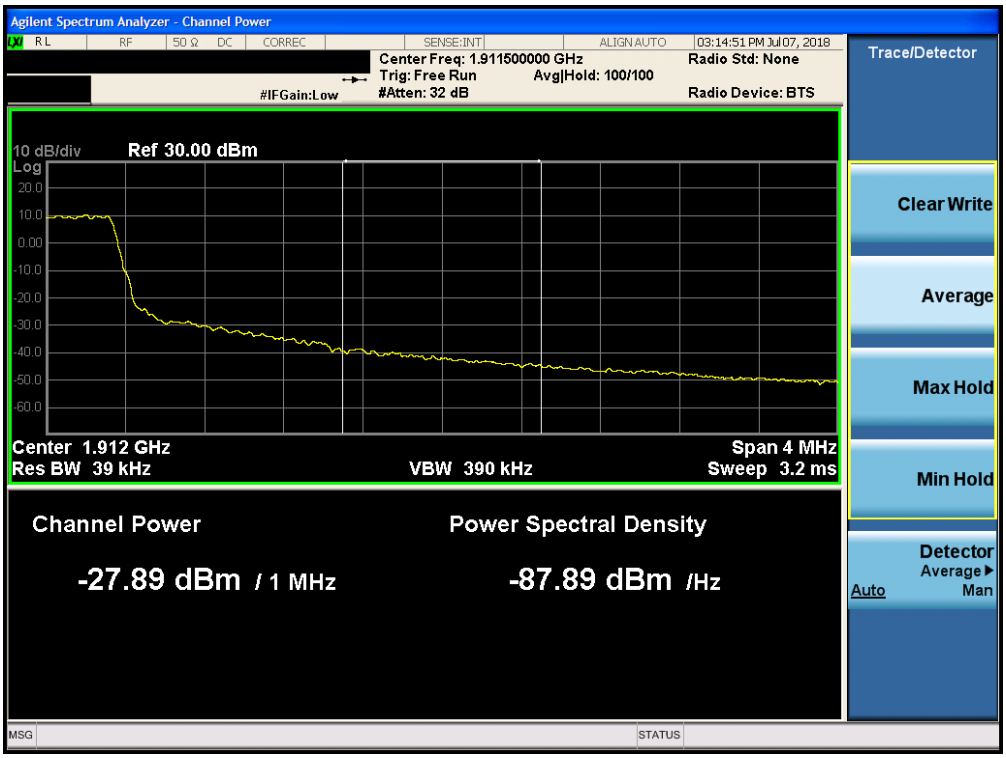
Plot 7-242. Lower Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



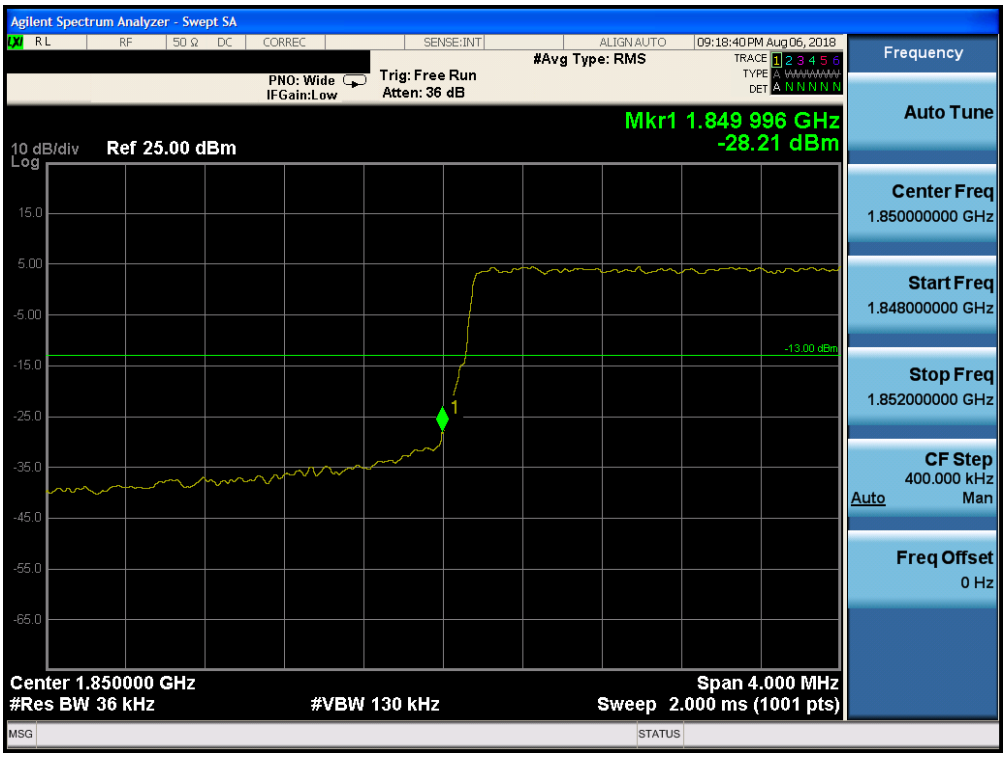
Plot 7-243. Lower Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



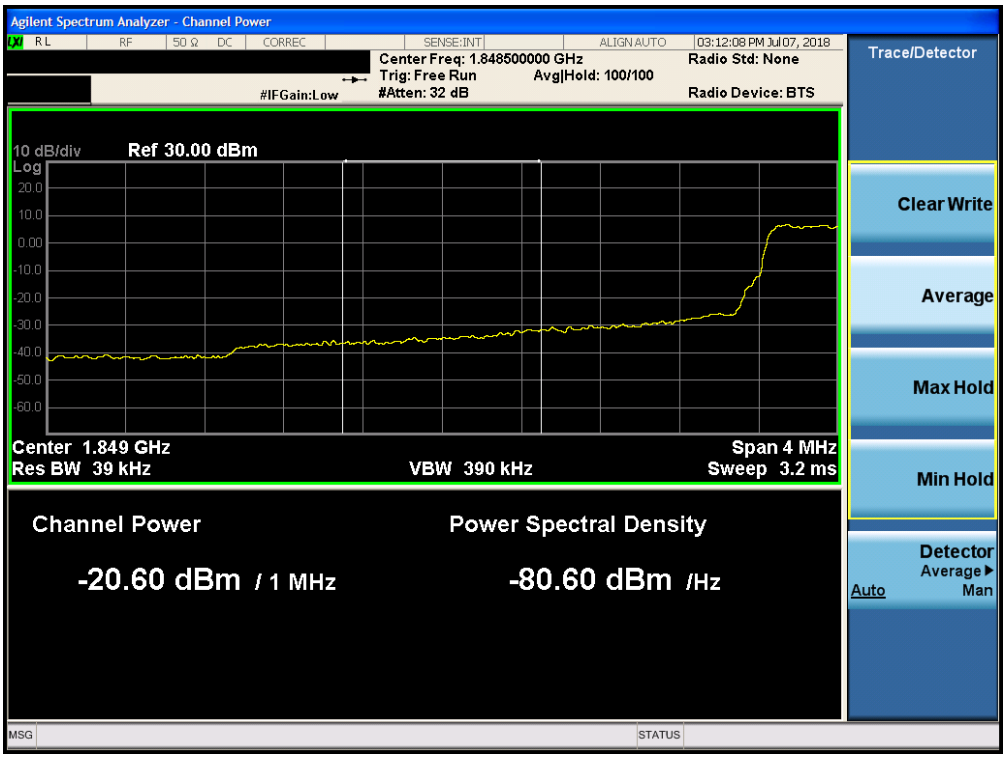
Plot 7-244. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



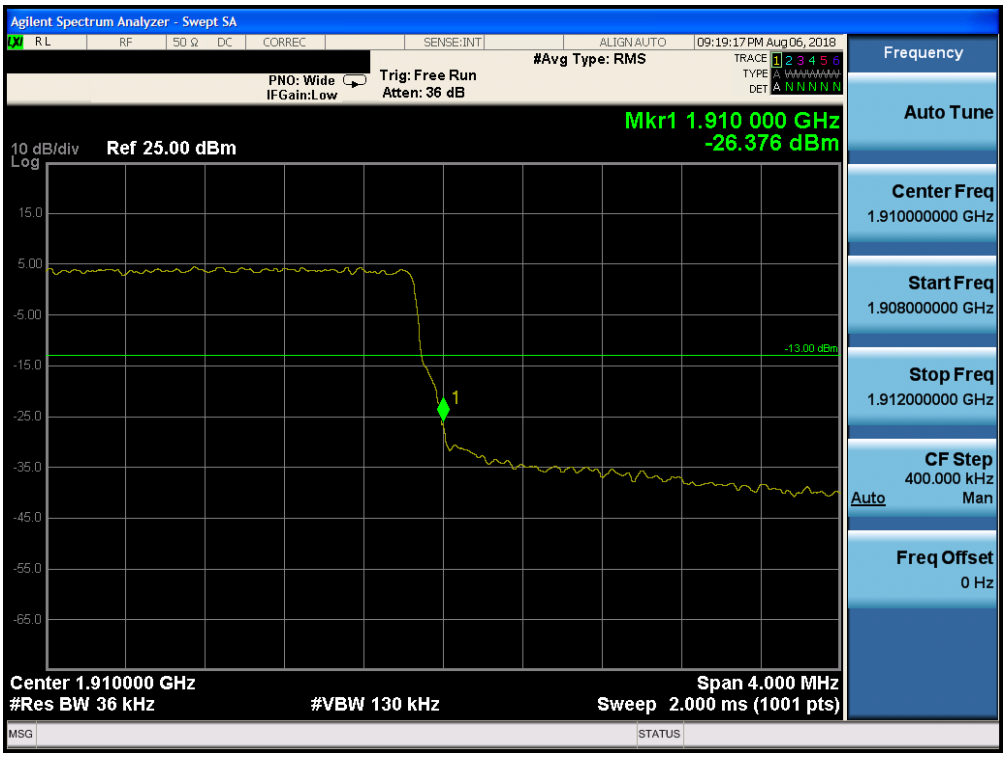
Plot 7-245. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



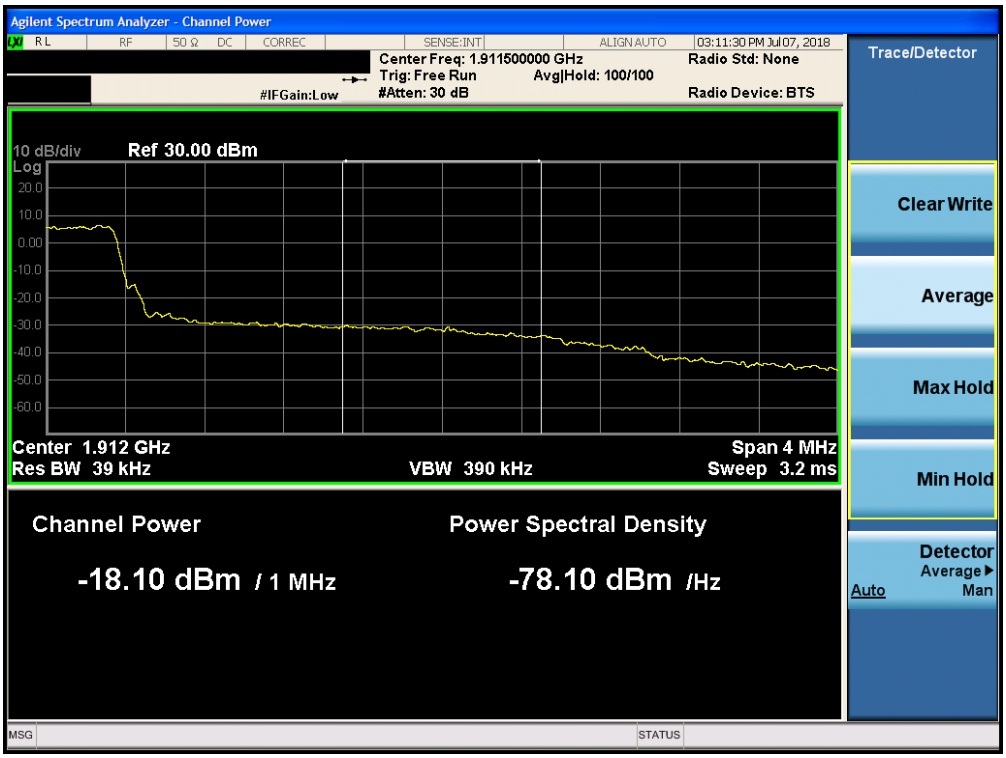
Plot 7-246. Lower Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



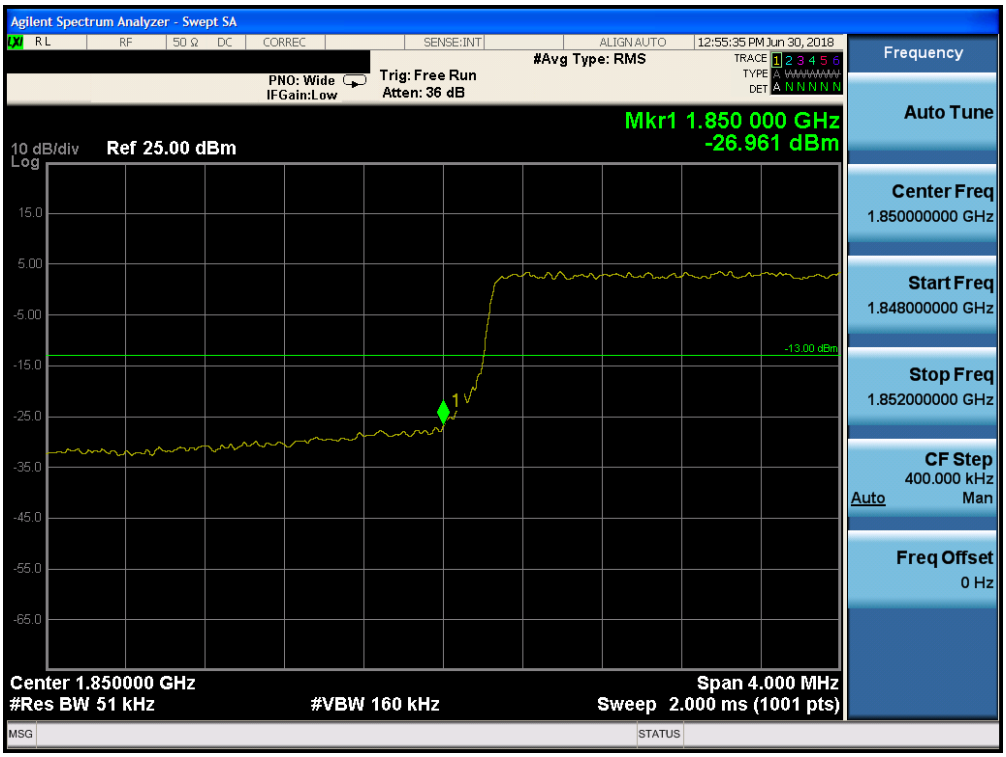
Plot 7-247. Lower Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



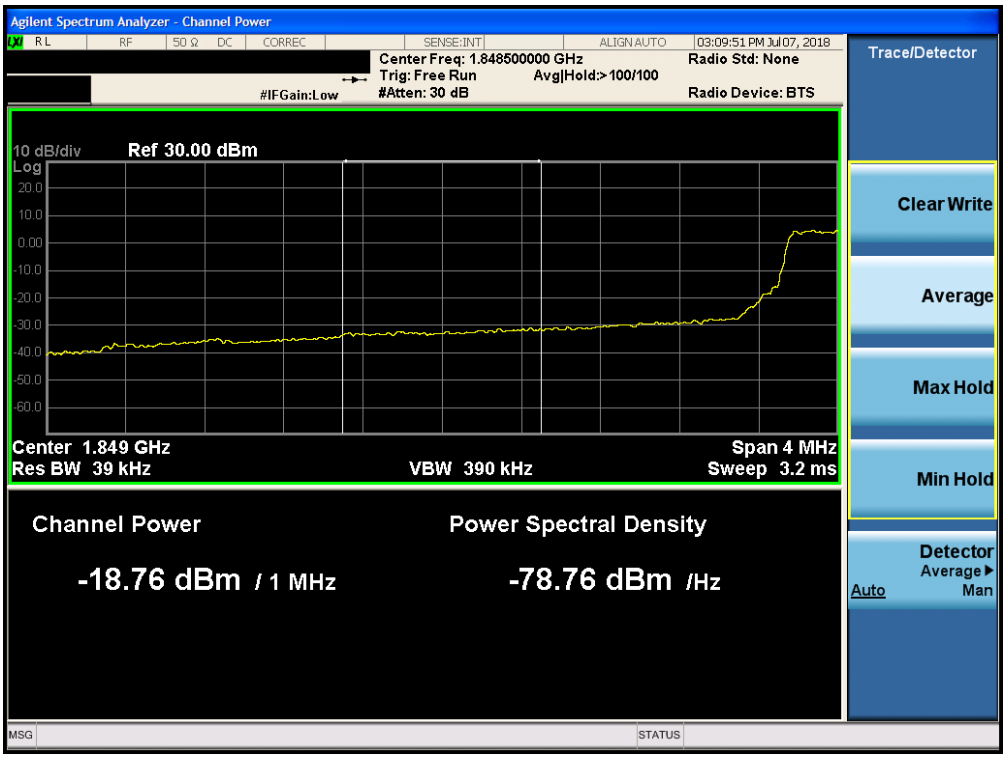
Plot 7-248. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



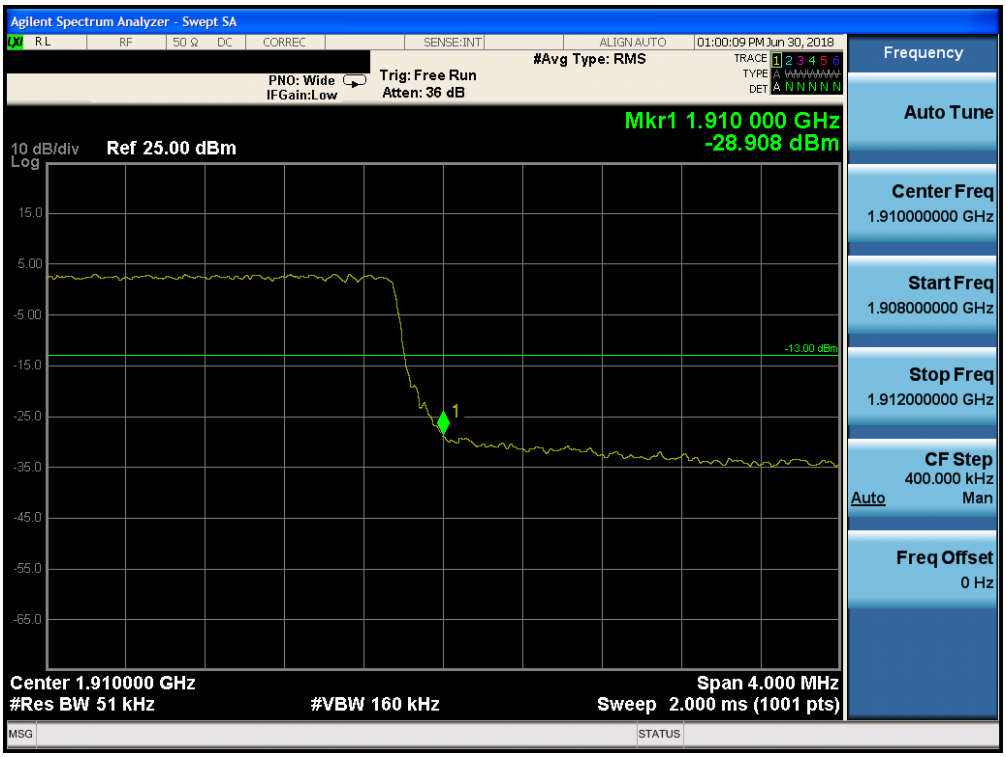
Plot 7-249. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



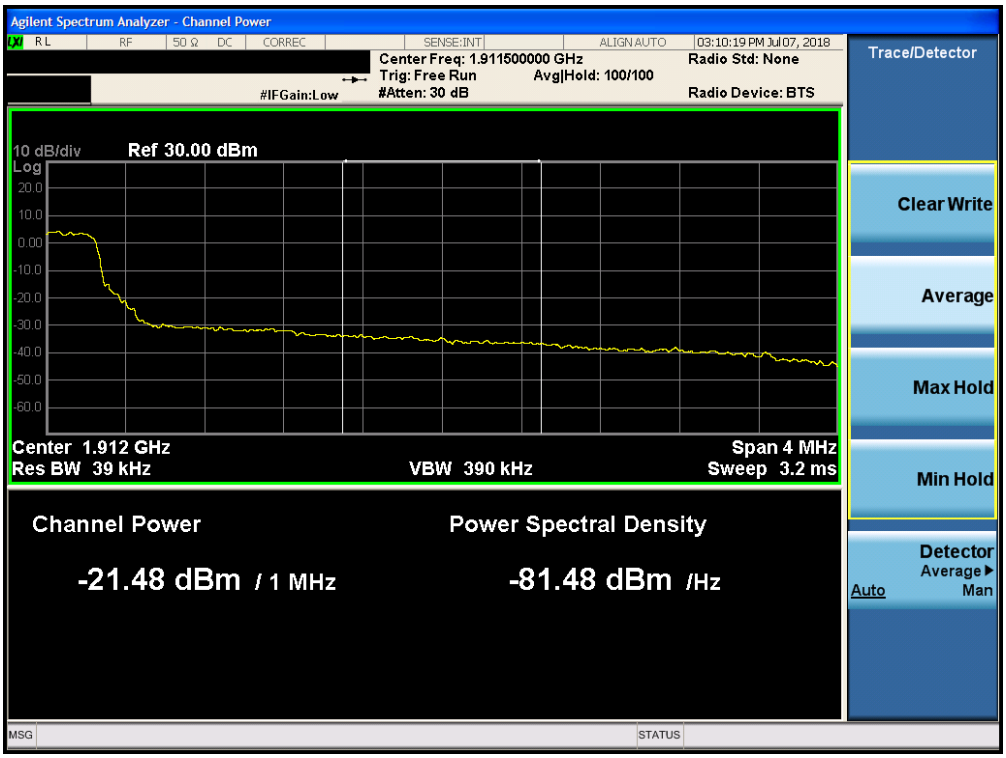
Plot 7-250. Lower Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



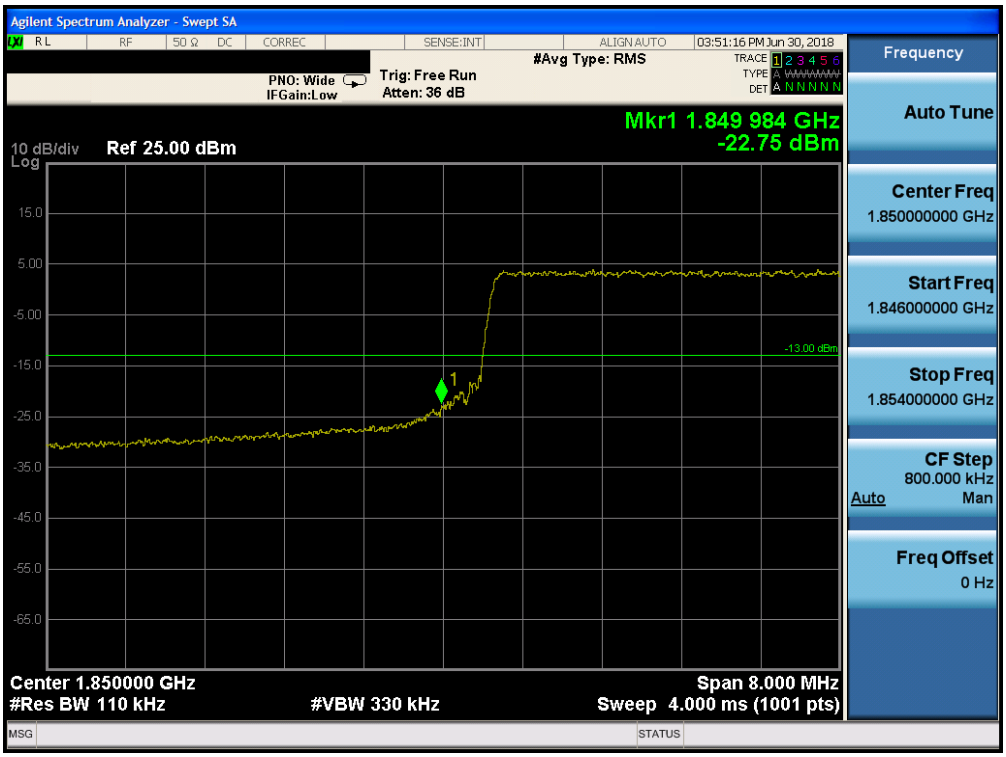
Plot 7-251. Lower Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



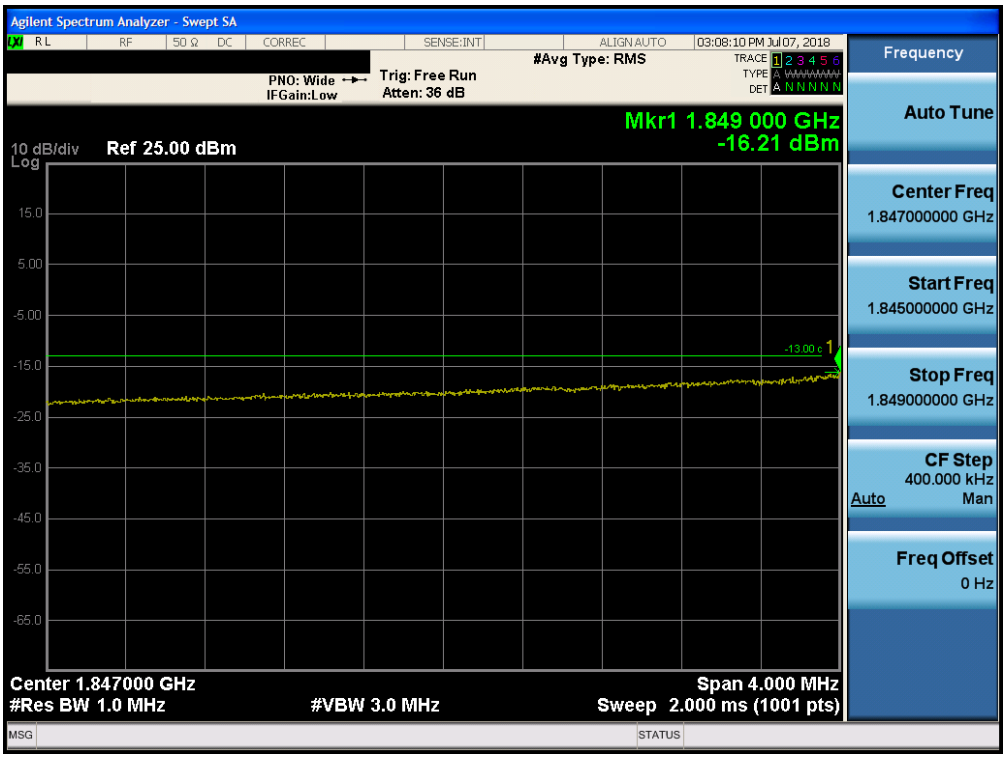
Plot 7-252. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



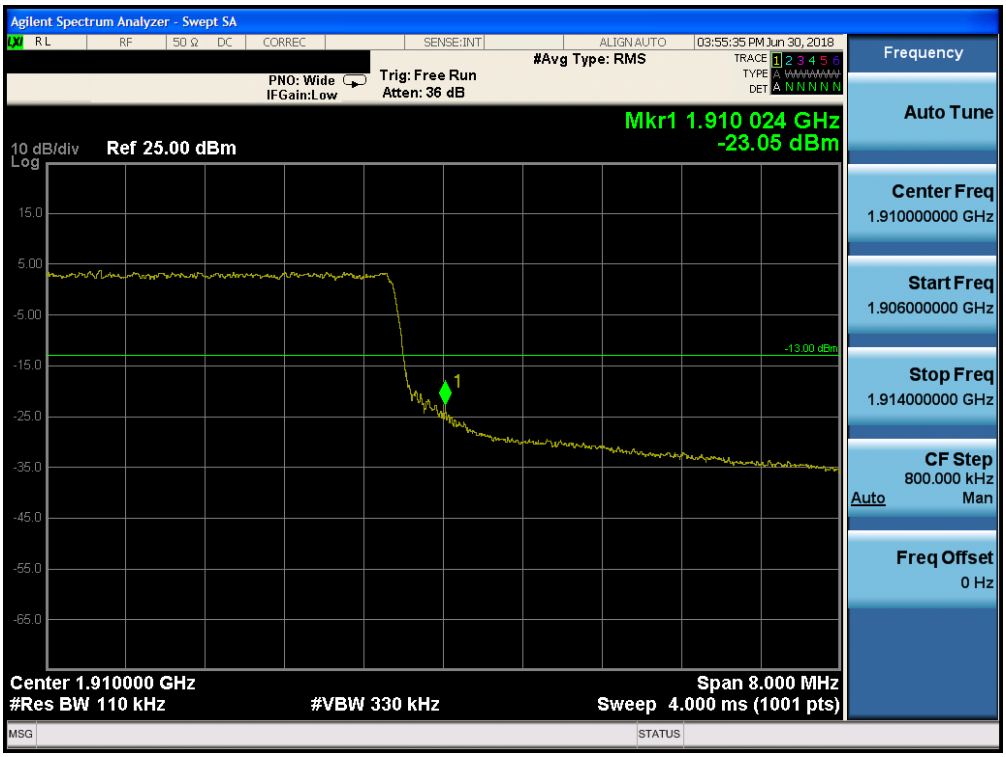
Plot 7-253. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



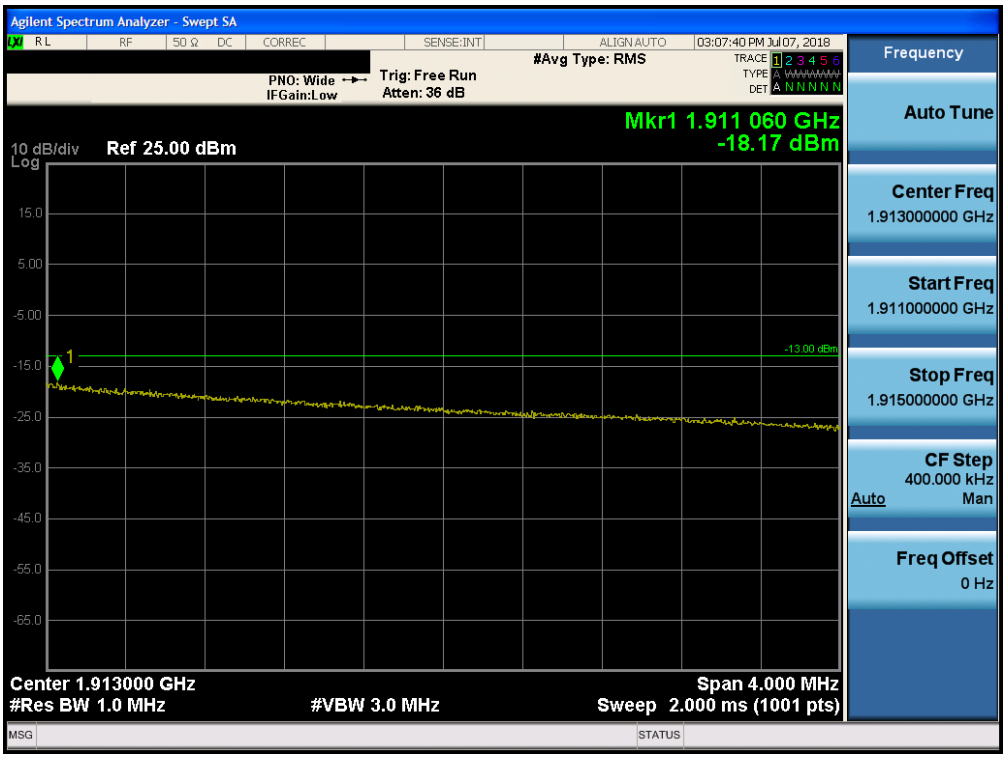
Plot 7-254. Lower Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



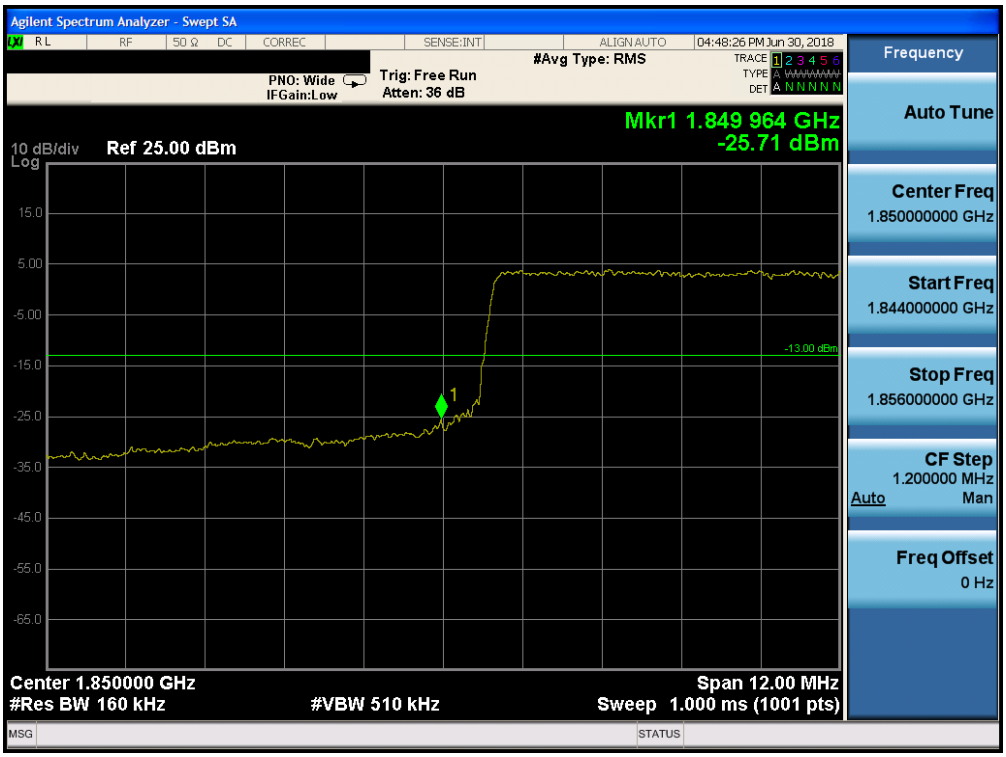
Plot 7-255. Lower Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



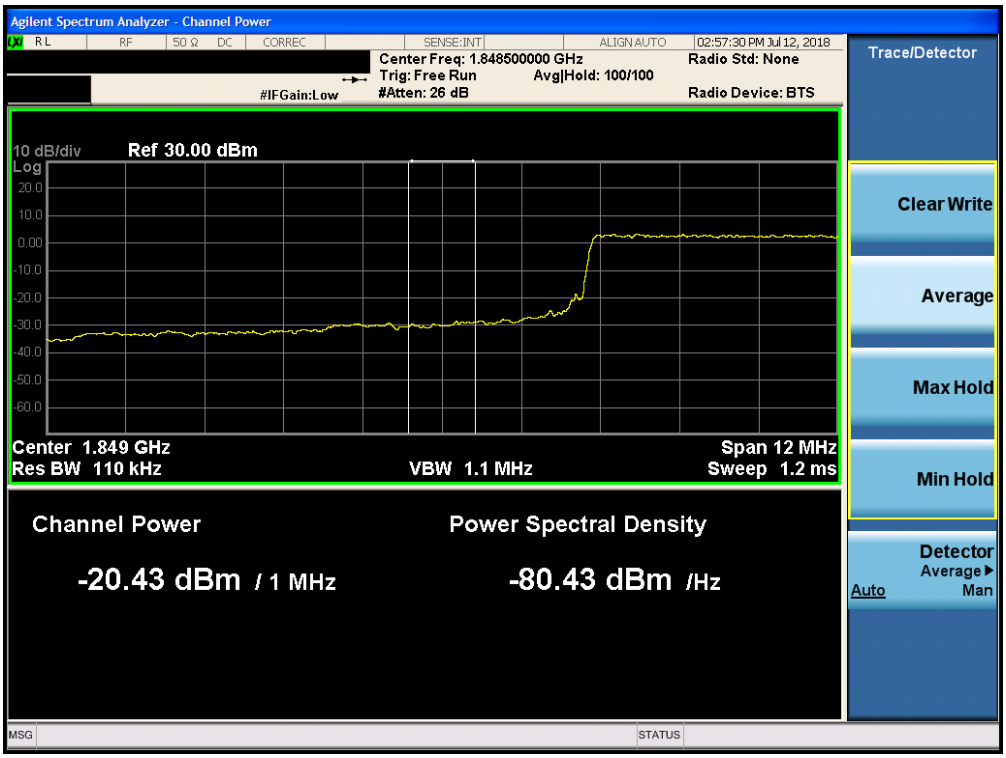
Plot 7-256. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



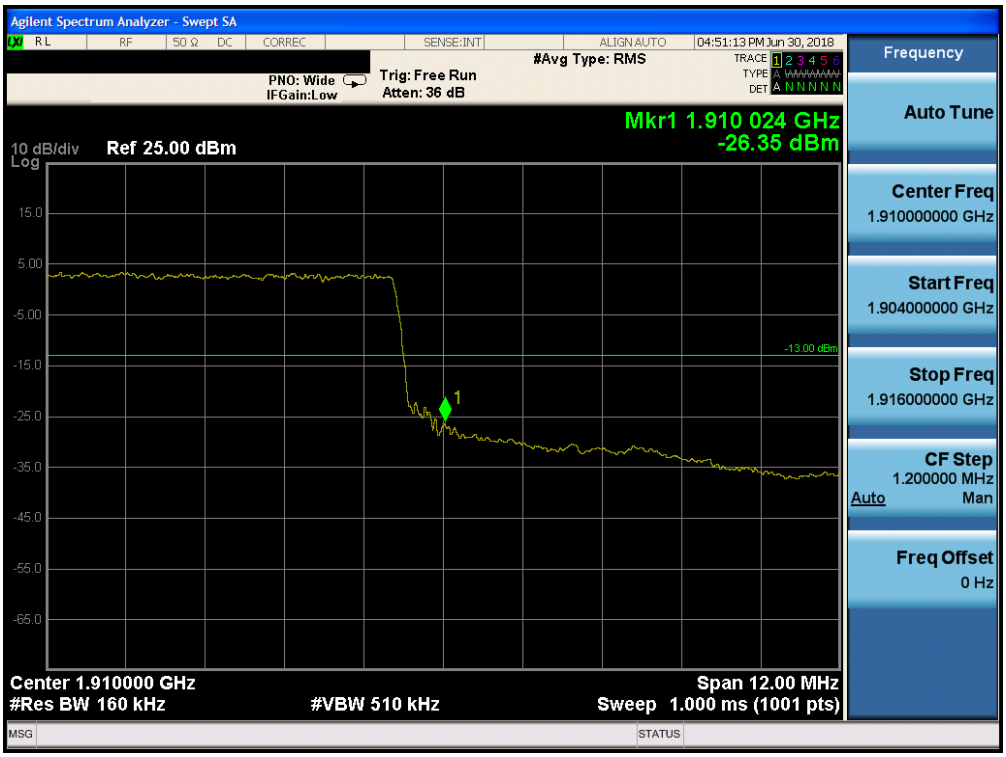
Plot 7-257. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



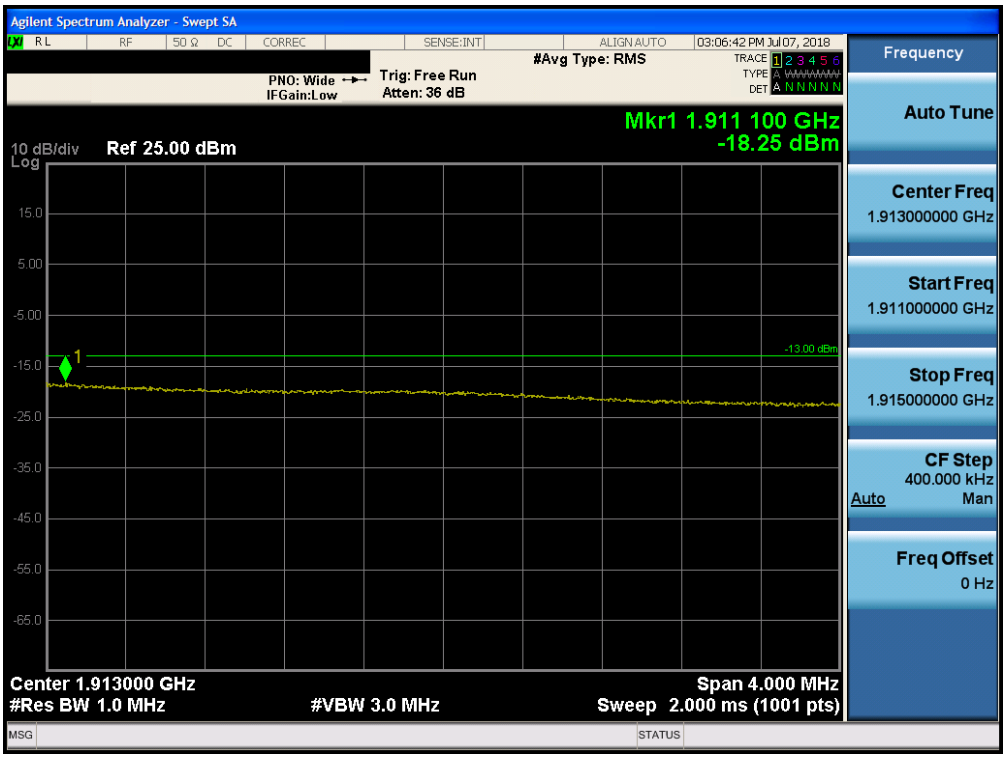
Plot 7-258. Lower Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



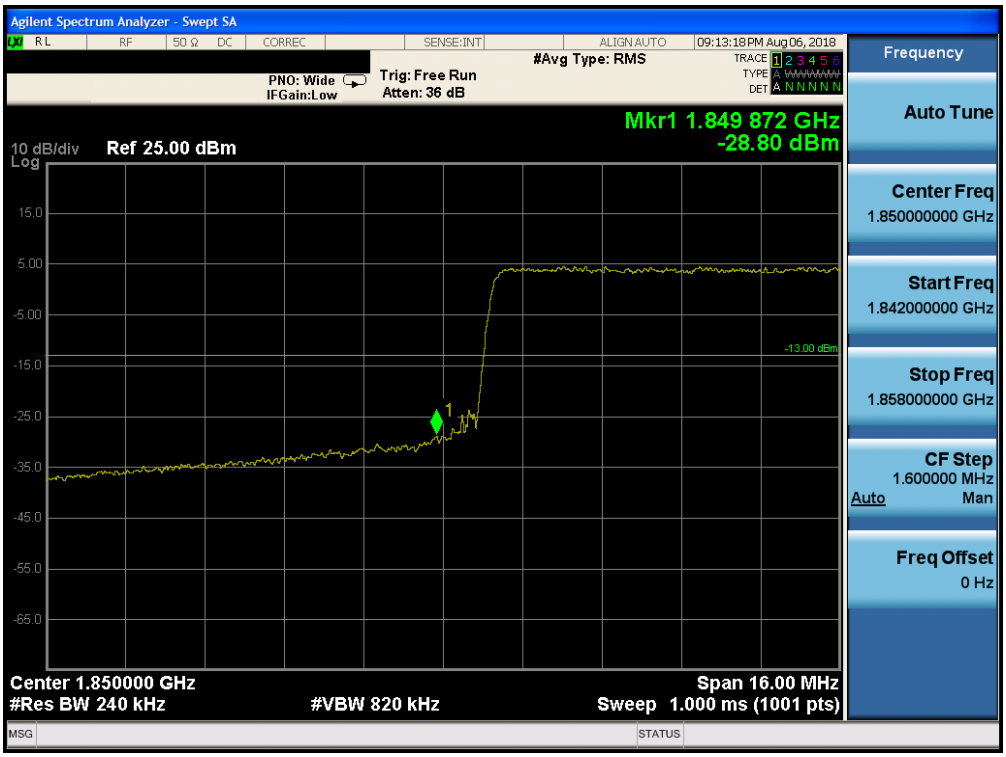
Plot 7-259. Lower Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



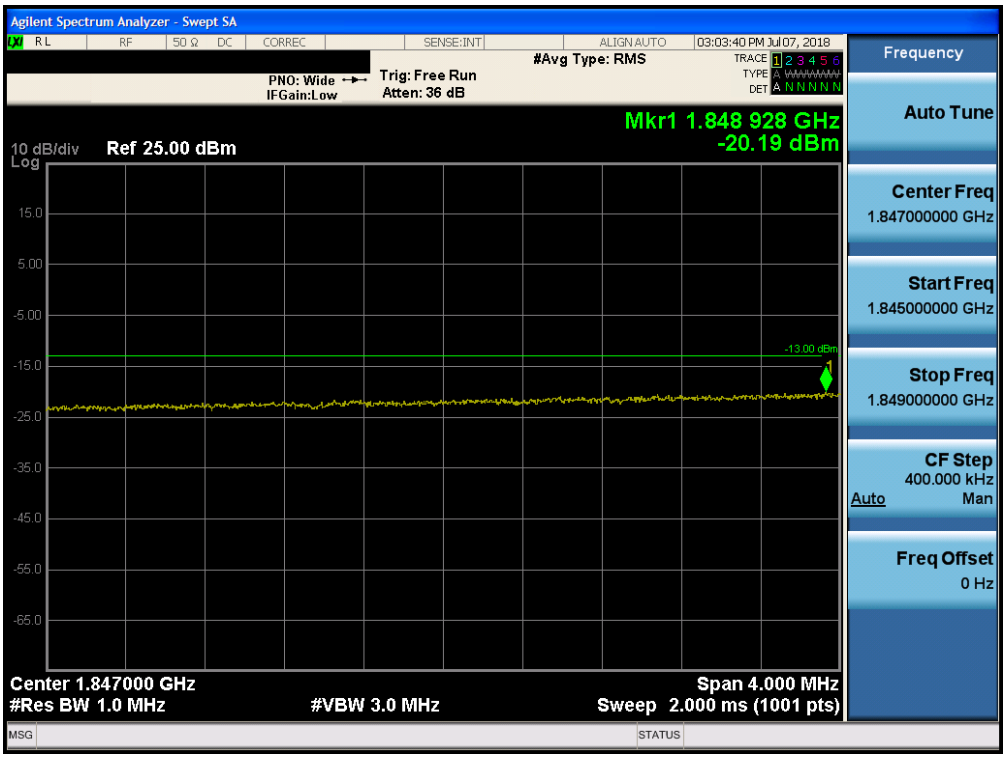
Plot 7-260. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



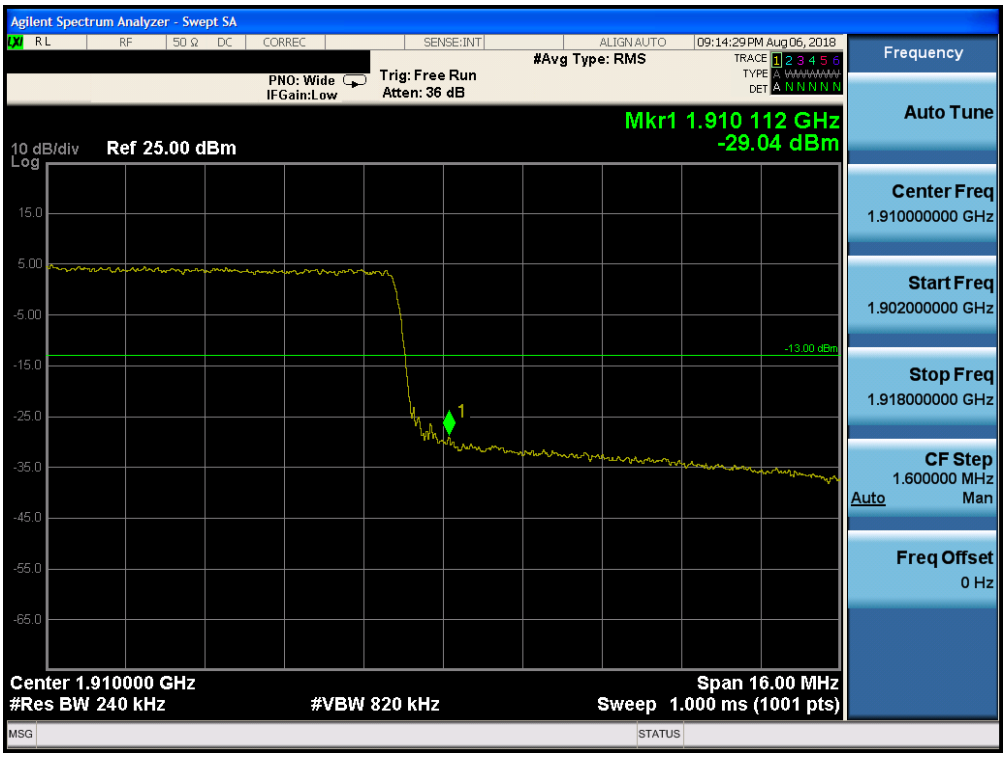
Plot 7-261. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



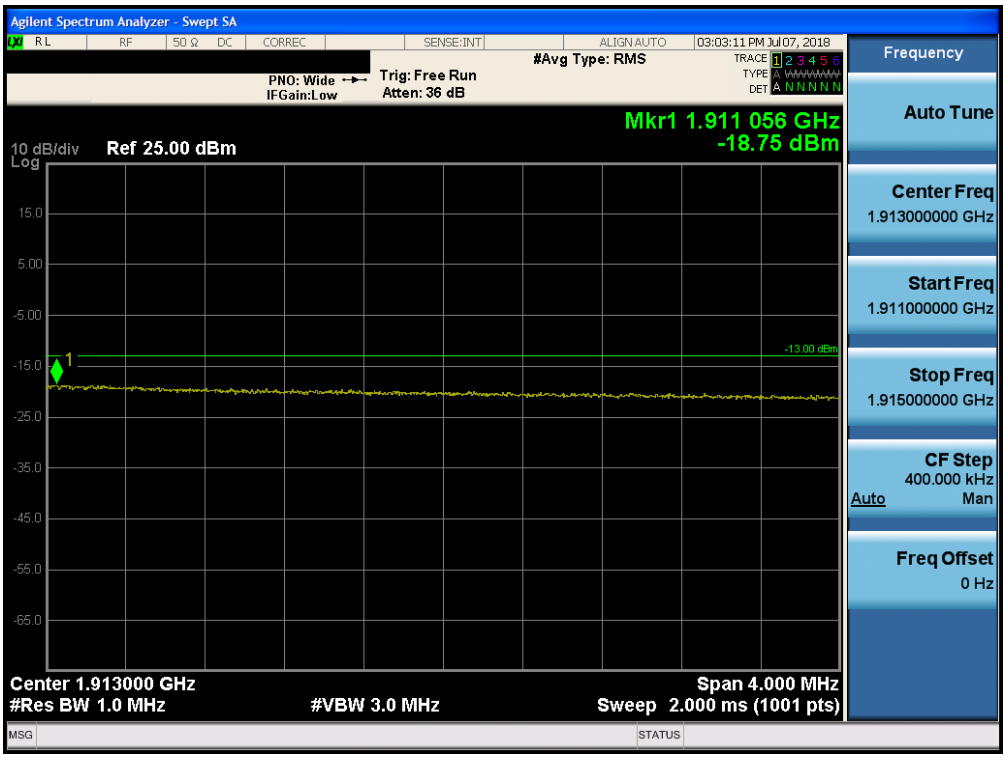
Plot 7-262. Lower Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-263. Lower Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

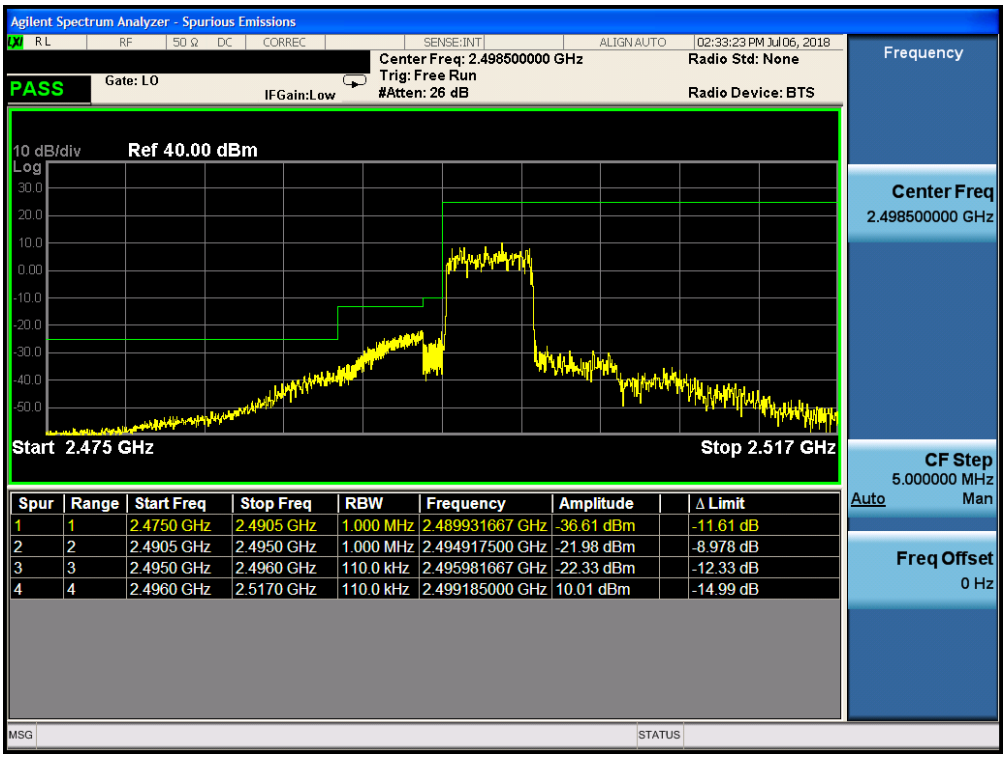


Plot 7-264. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



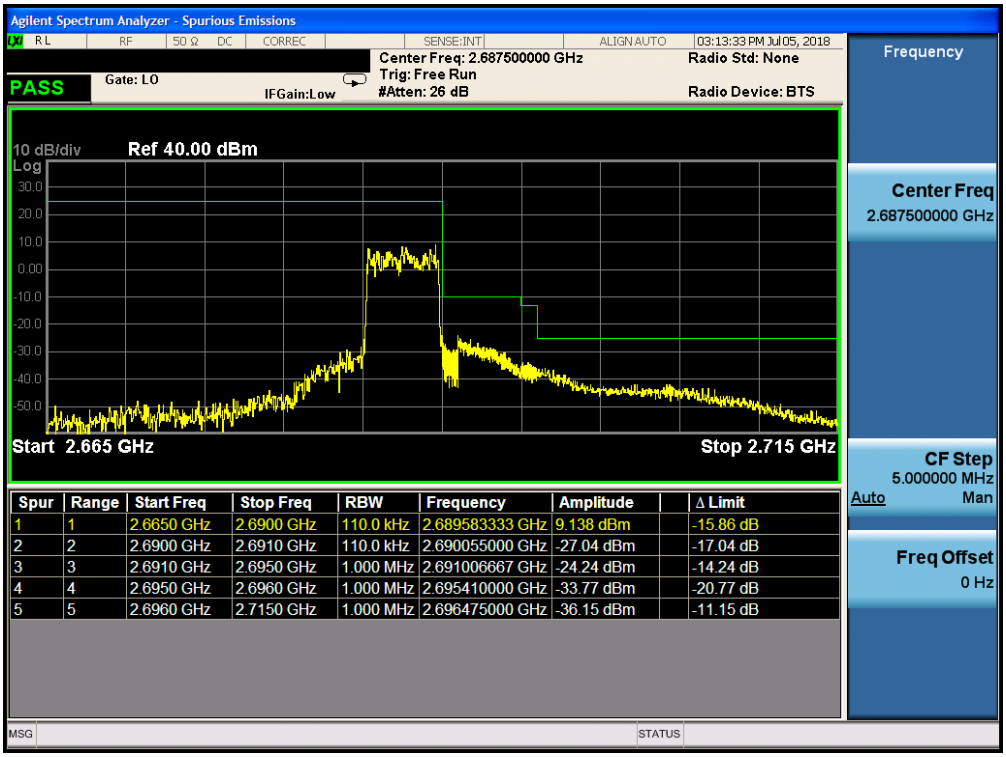
Plot 7-265. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

Band 41



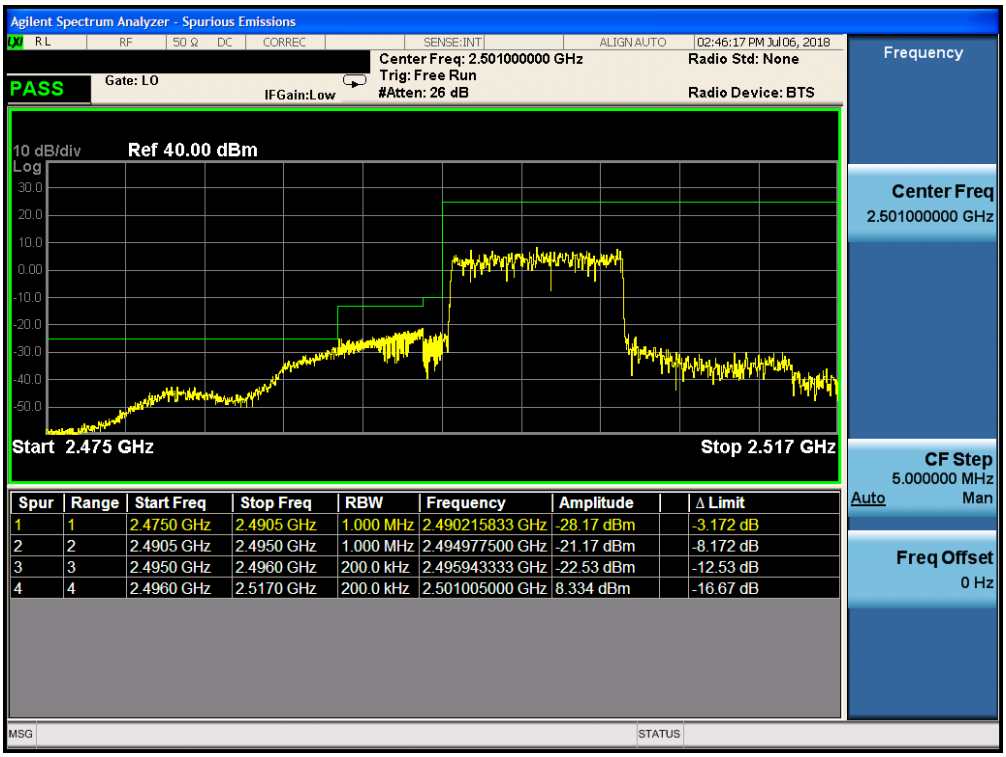
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489931667 GHz	-36.61 dBm	-11.61 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494917500 GHz	-21.98 dBm	-8.978 dB
3	3	2.4950 GHz	2.4960 GHz	110.0 kHz	2.495981667 GHz	-22.33 dBm	-12.33 dB
4	4	2.4960 GHz	2.5170 GHz	110.0 kHz	2.499185000 GHz	10.01 dBm	-14.99 dB

Plot 7-266. Lower ACP Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)

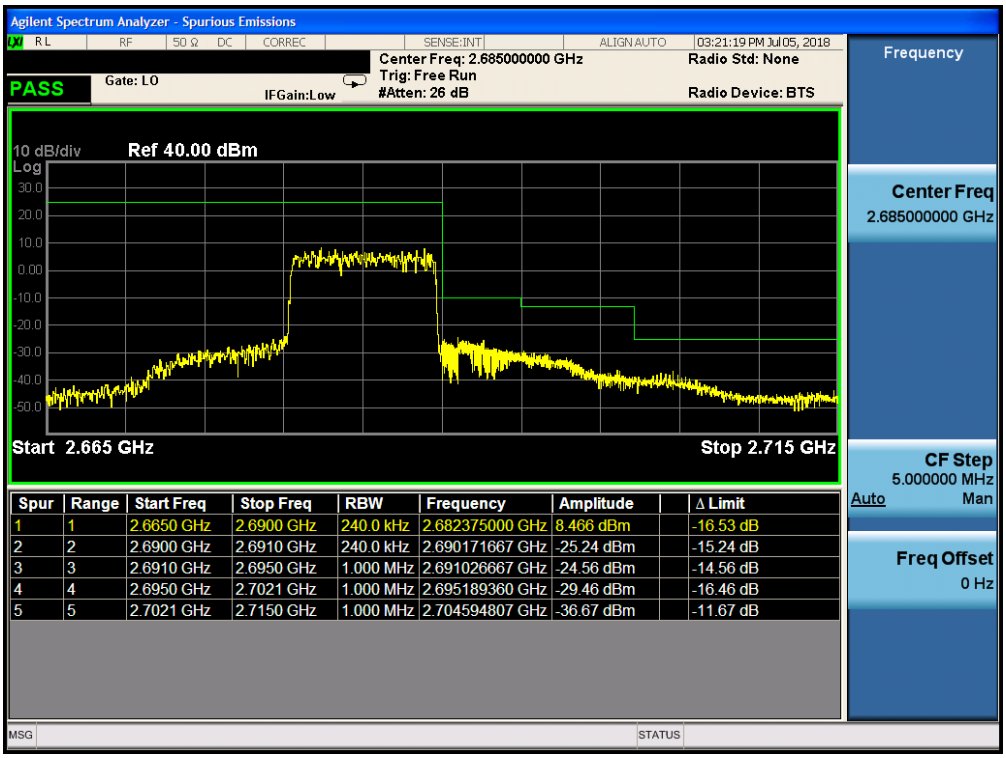


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	110.0 kHz	2.689583333 GHz	9.138 dBm	-15.86 dB
2	2	2.6900 GHz	2.6910 GHz	110.0 kHz	2.690055000 GHz	-27.04 dBm	-17.04 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691006667 GHz	-24.24 dBm	-14.24 dB
4	4	2.6950 GHz	2.6960 GHz	1.000 MHz	2.695410000 GHz	-33.77 dBm	-20.77 dB
5	5	2.6960 GHz	2.7150 GHz	1.000 MHz	2.696475000 GHz	-36.15 dBm	-11.15 dB

Plot 7-267. Upper ACP Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)



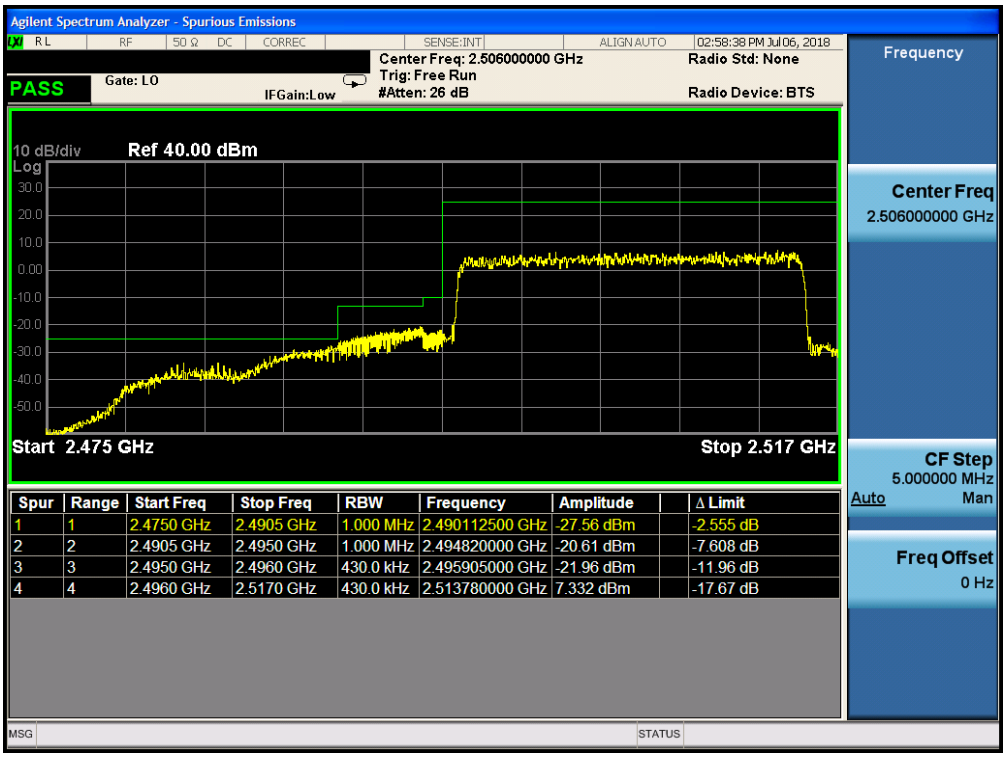
Plot 7-268. Lower ACP Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-269. Upper ACP Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

Plot 7-270. Lower ACP Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)

Plot 7-271. Upper ACP Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-272. Lower ACP Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)

Plot 7-273. Upper ACP Plot (Band 41 - 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 > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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

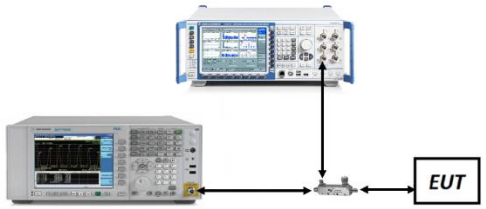
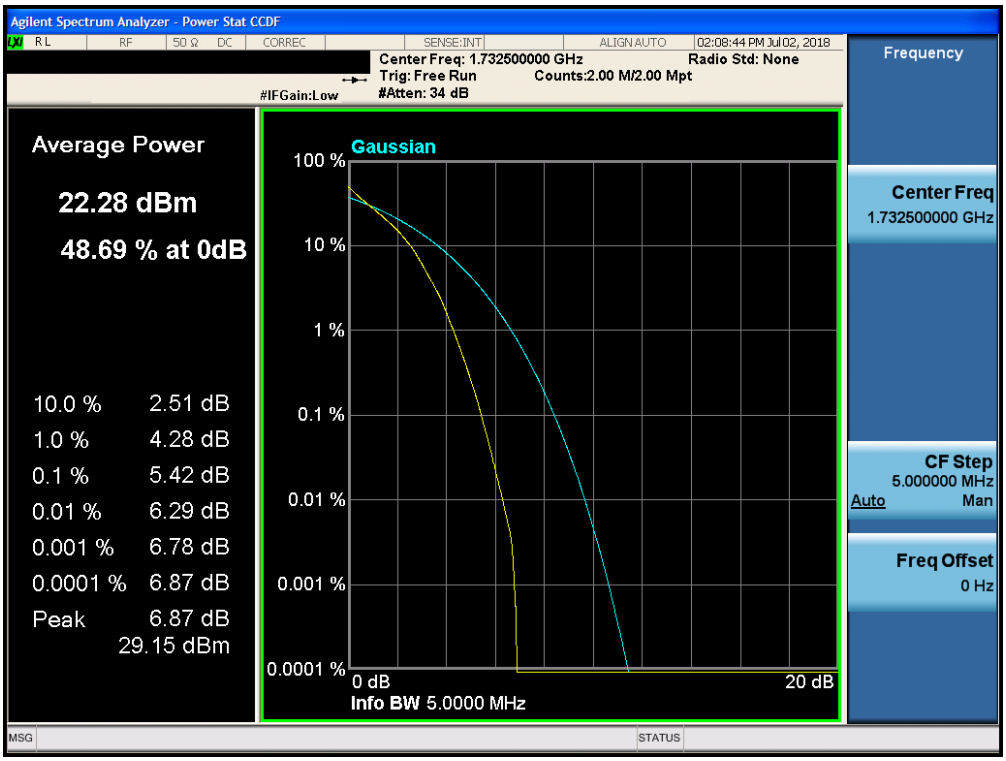


Figure 7-4. Test Instrument & Measurement Setup

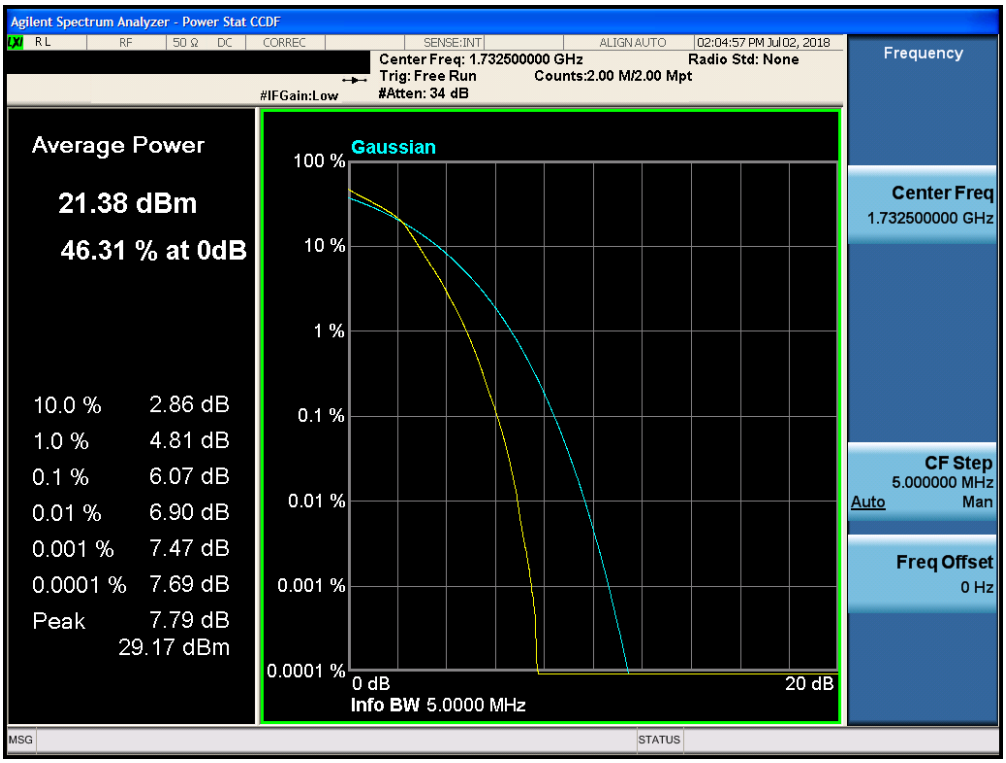
Test Notes

None.

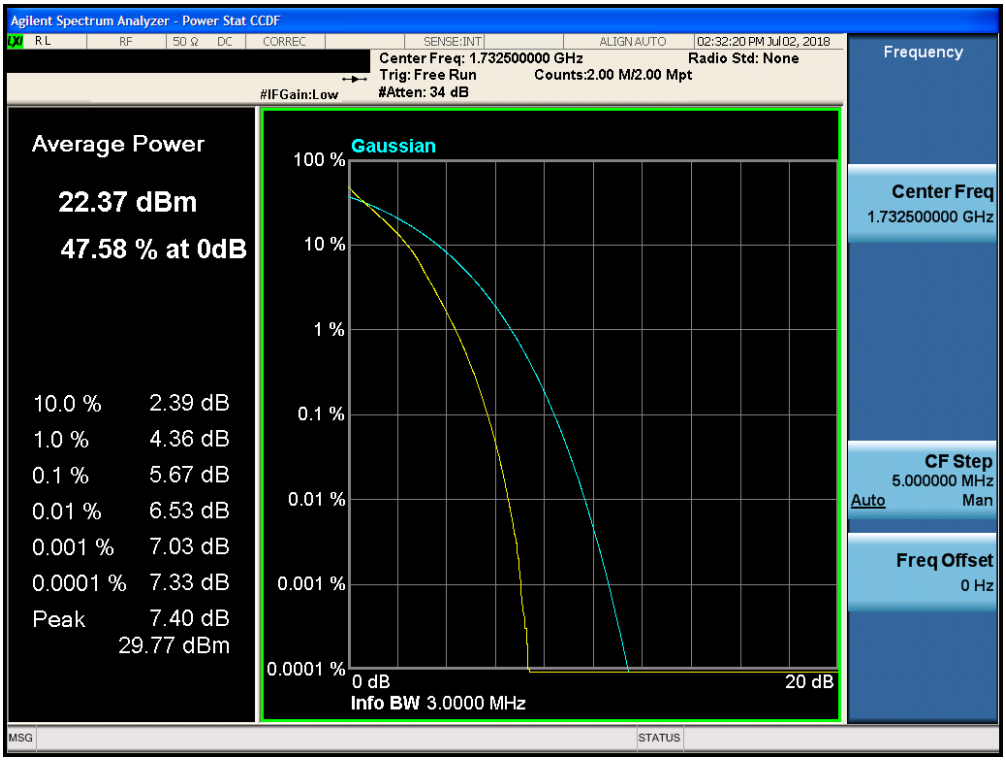
Band 4



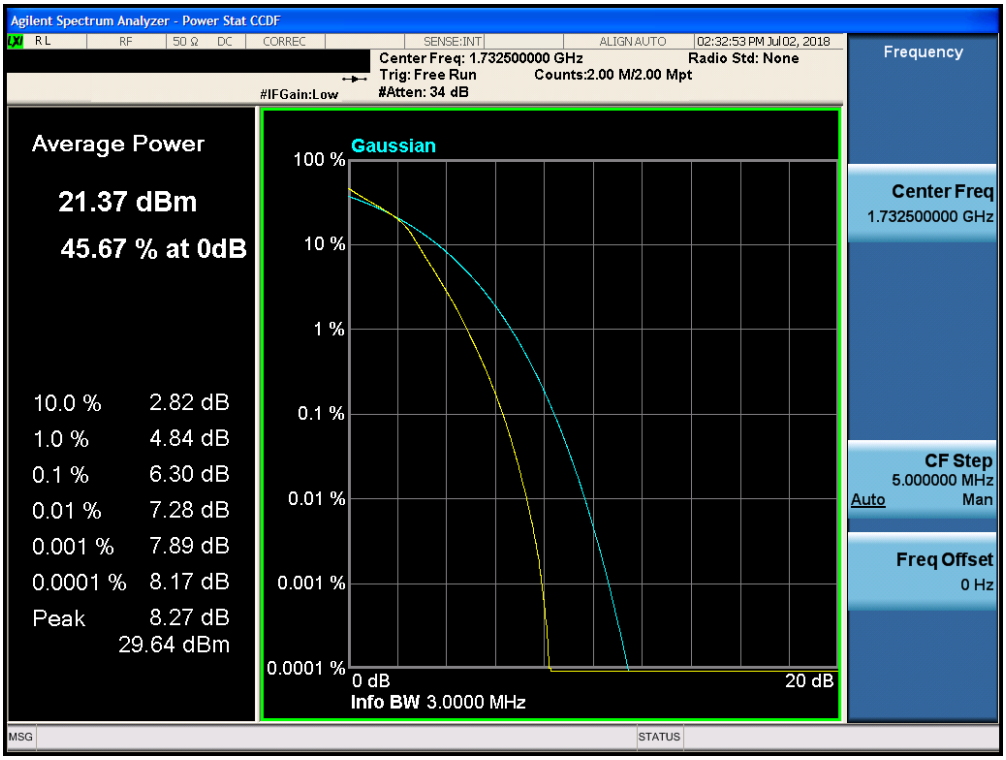
Plot 7-274. PAR Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)



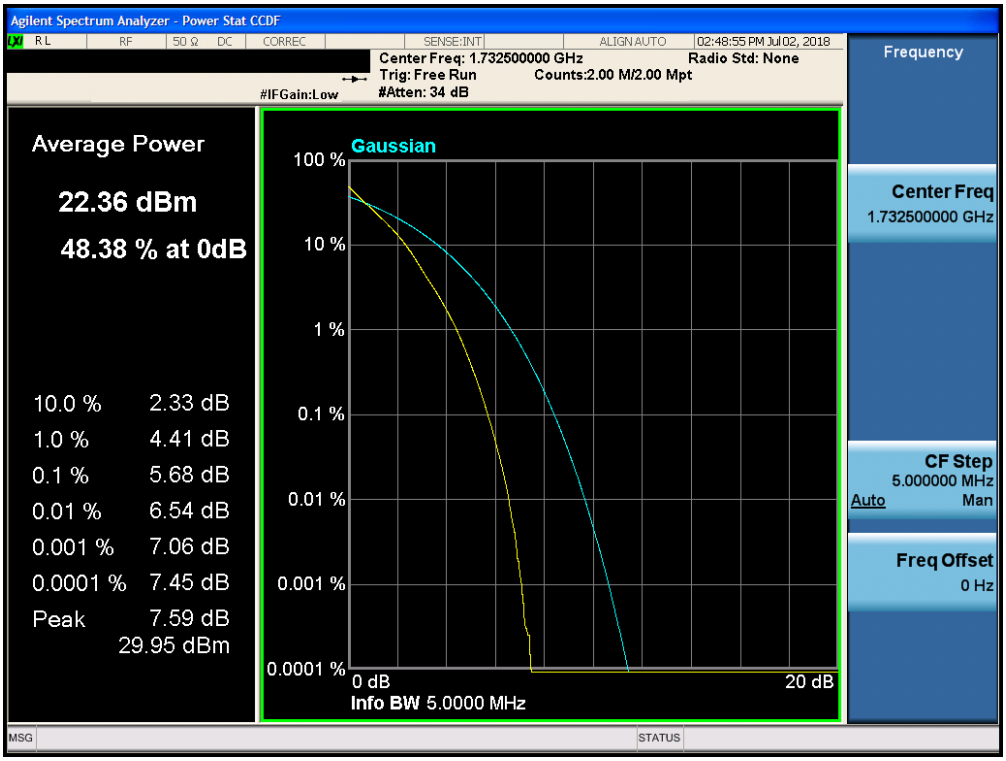
Plot 7-275. PAR Plot (Band 4 - 1.4MHz 16-QAM - Full RB Configuration)



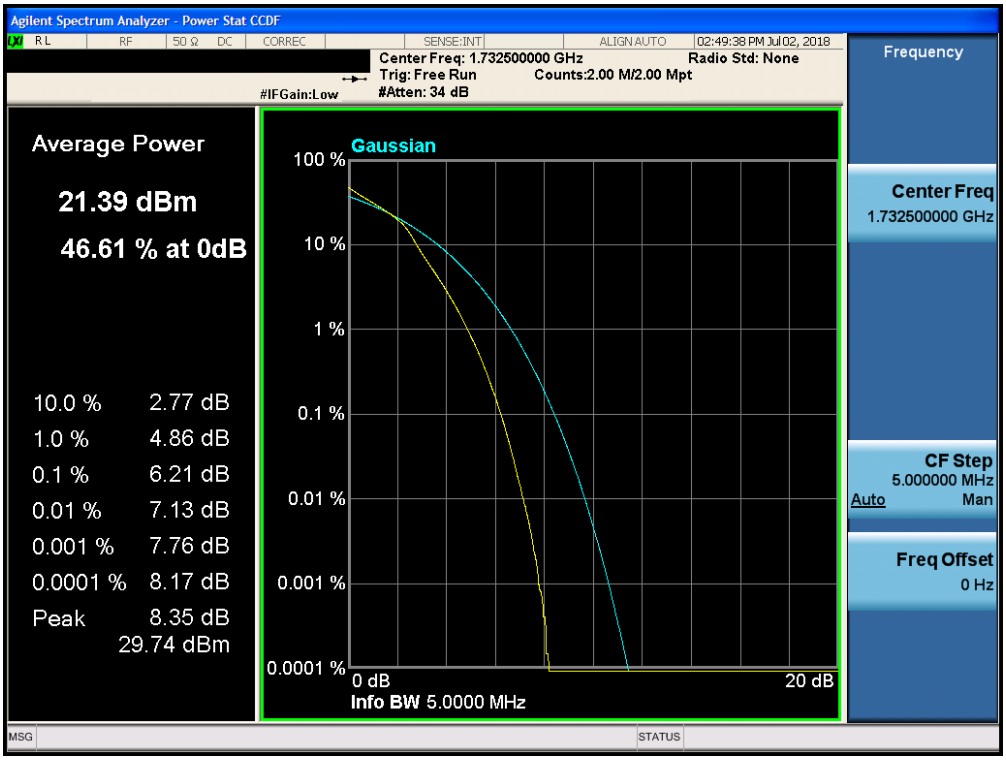
Plot 7-276. PAR Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)



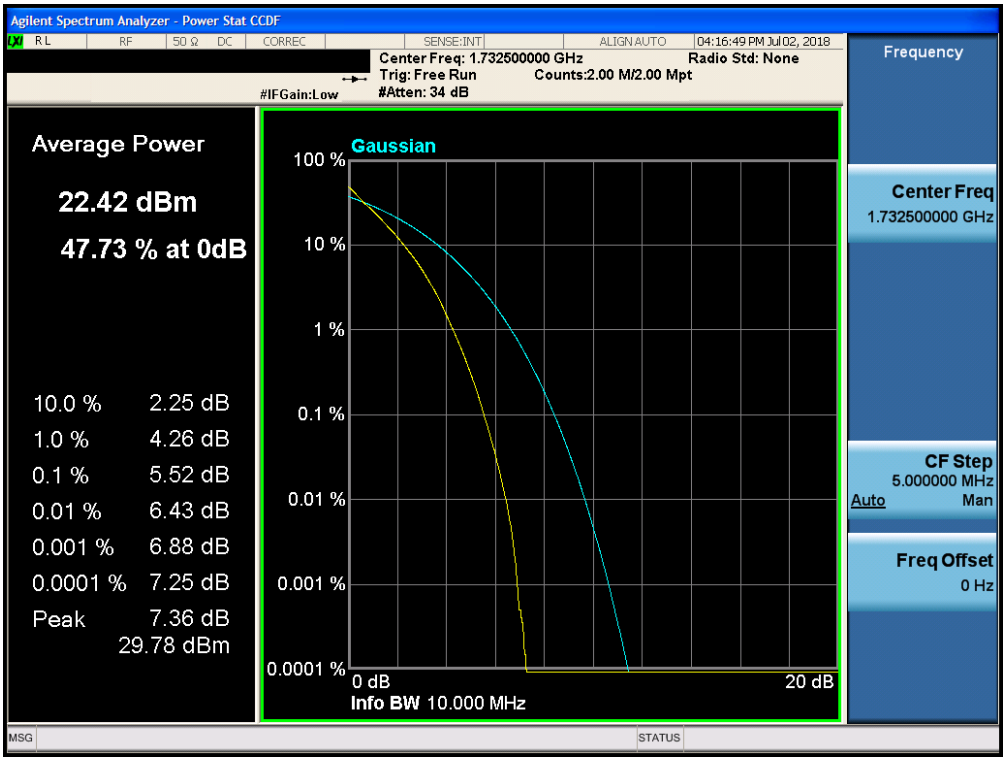
Plot 7-277. PAR Plot (Band 4 - 3.0MHz 16-QAM - Full RB Configuration)



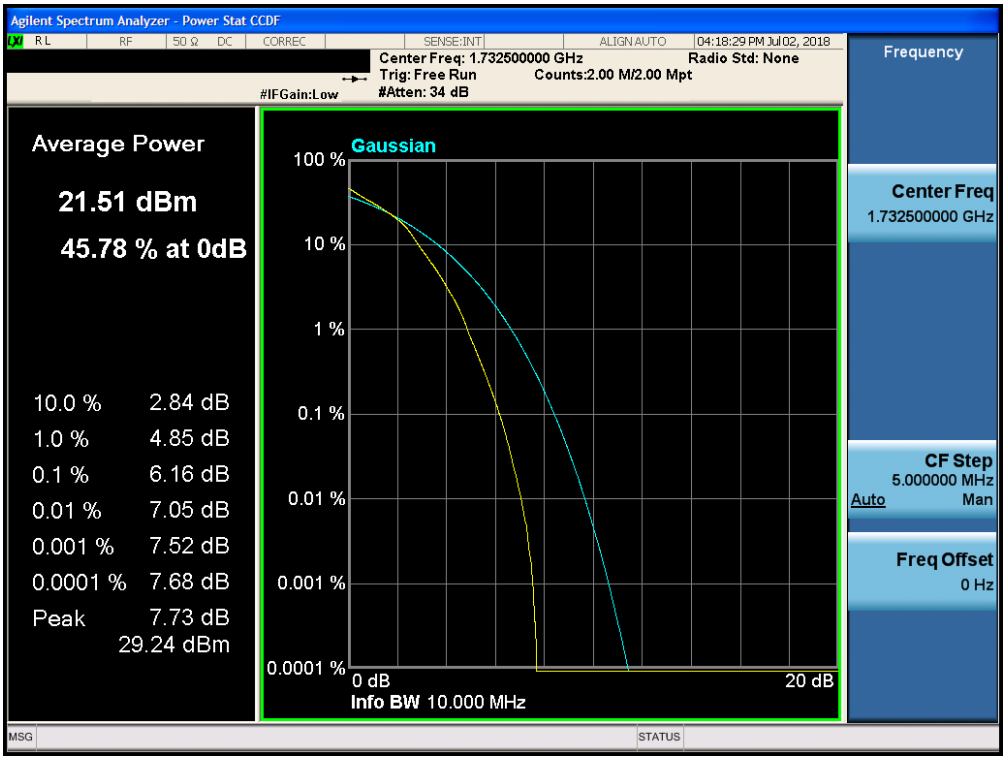
Plot 7-278. PAR Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)



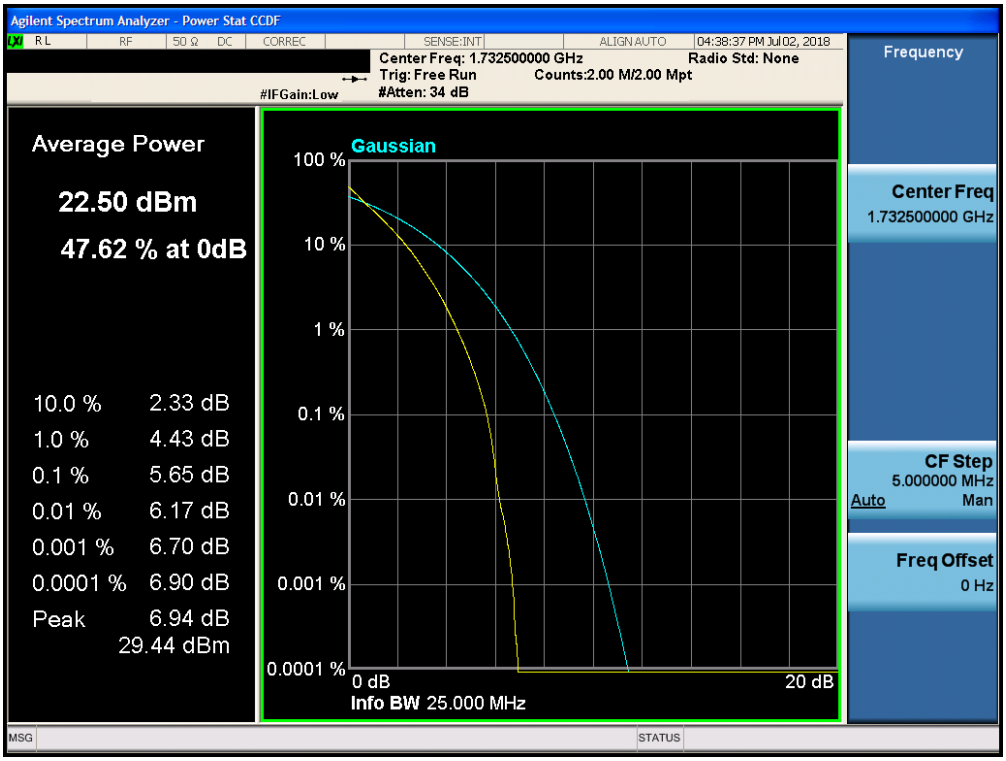
Plot 7-279. PAR Plot (Band 4 - 5.0MHz 16-QAM - Full RB Configuration)



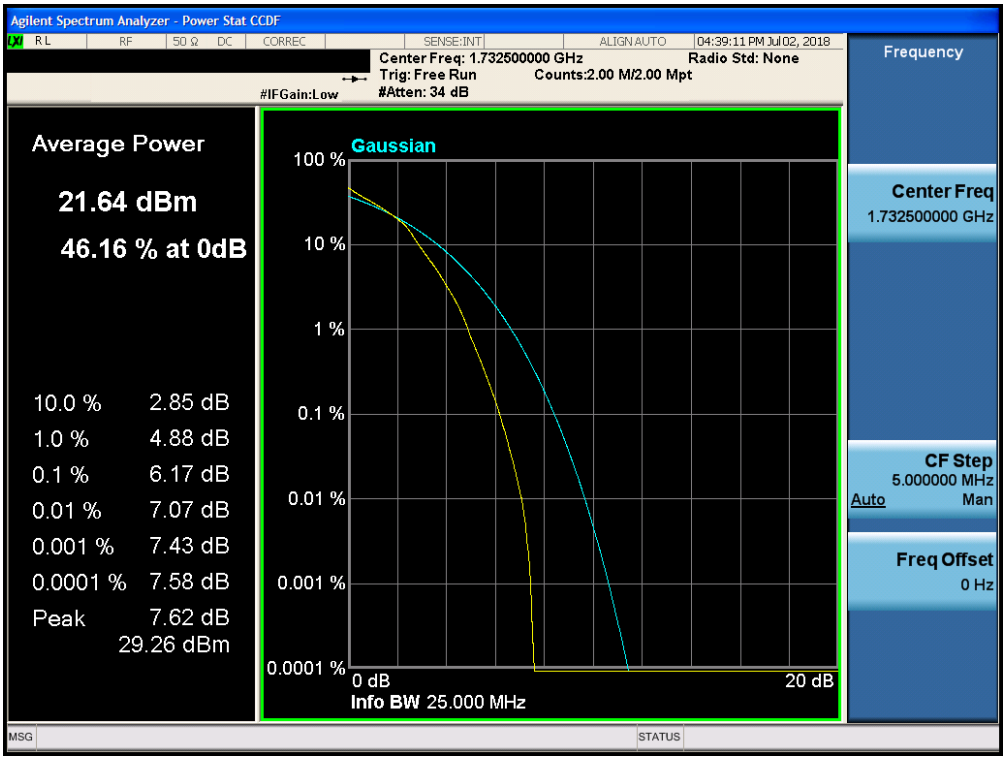
Plot 7-280. PAR Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)



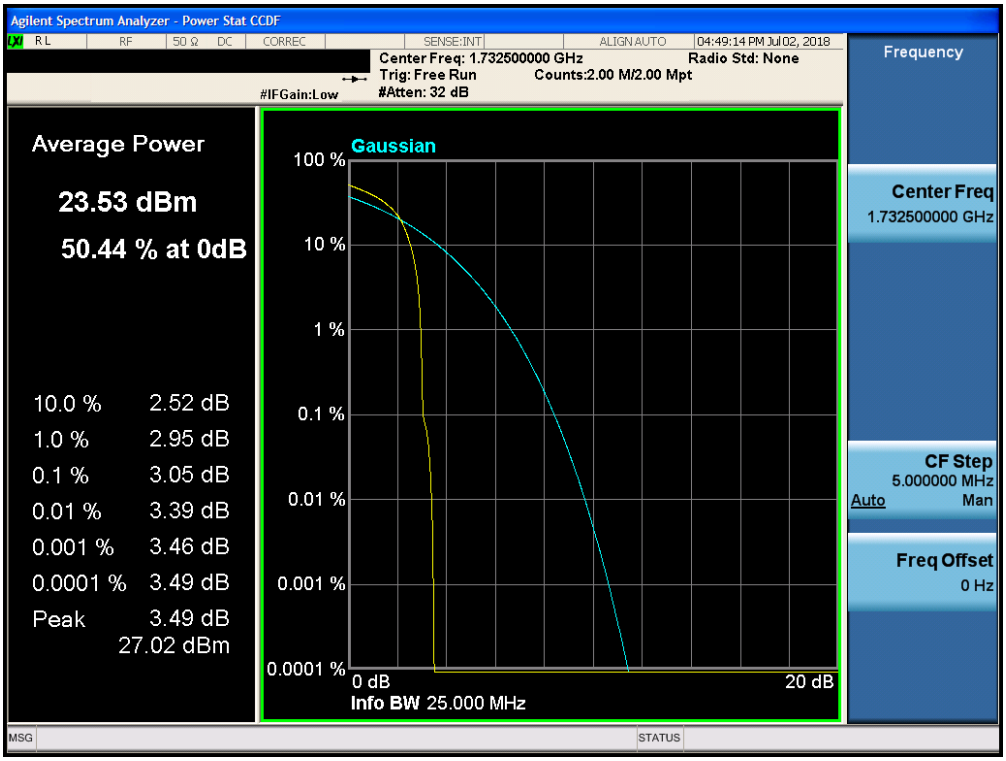
Plot 7-281. PAR Plot (Band 4 - 10.0MHz 16-QAM - Full RB Configuration)



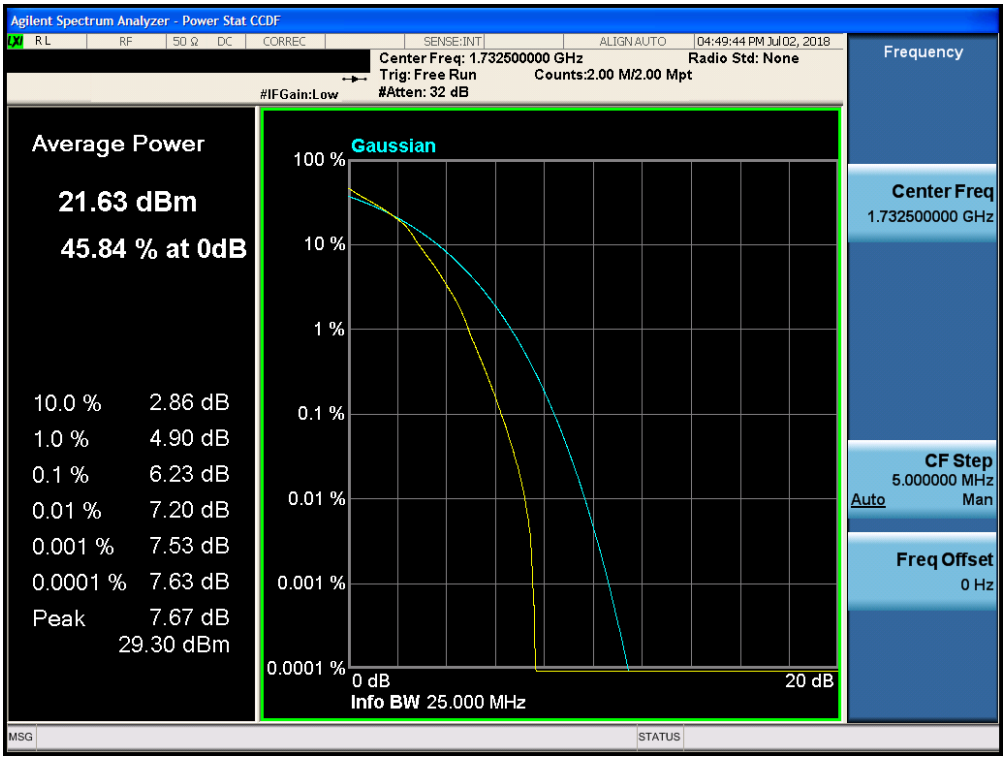
Plot 7-282. PAR Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-283. PAR Plot (Band 4 - 15.0MHz 16-QAM - Full RB Configuration)

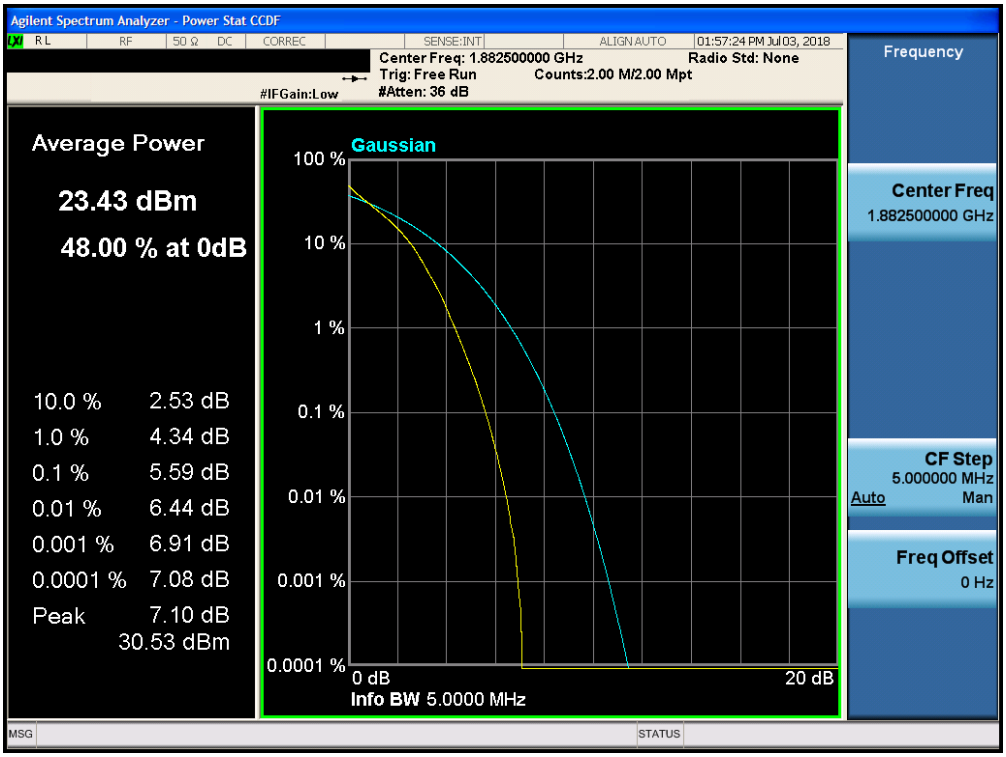


Plot 7-284. PAR Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

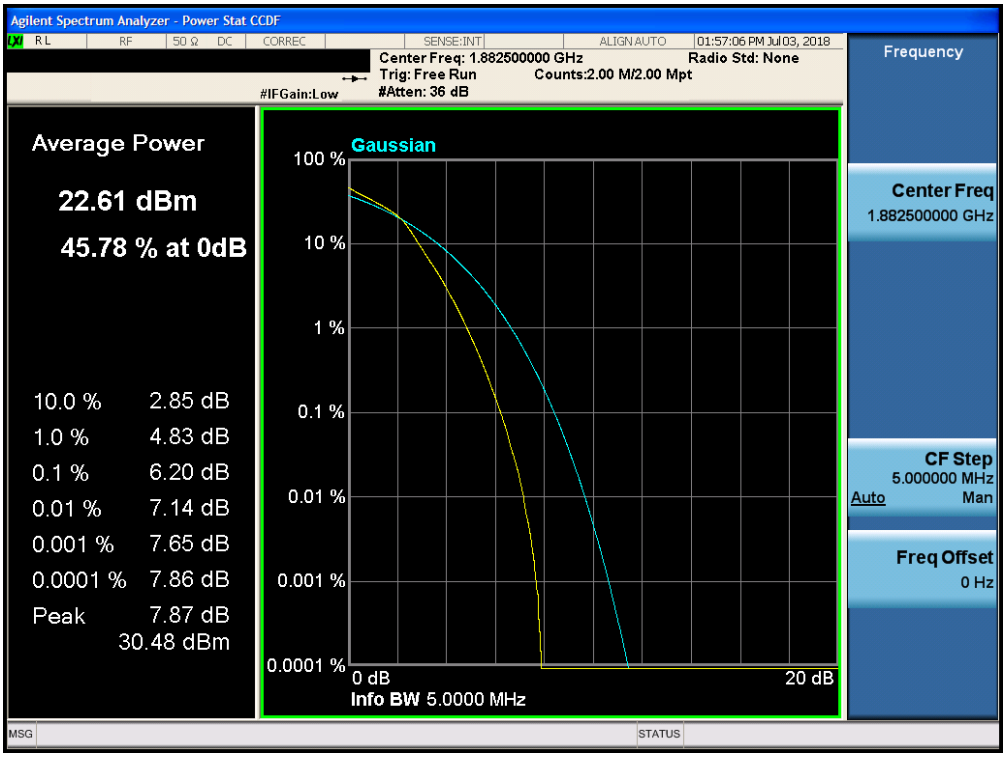


Plot 7-285. PAR Plot (Band 4 - 20.0MHz 16-QAM - Full RB Configuration)

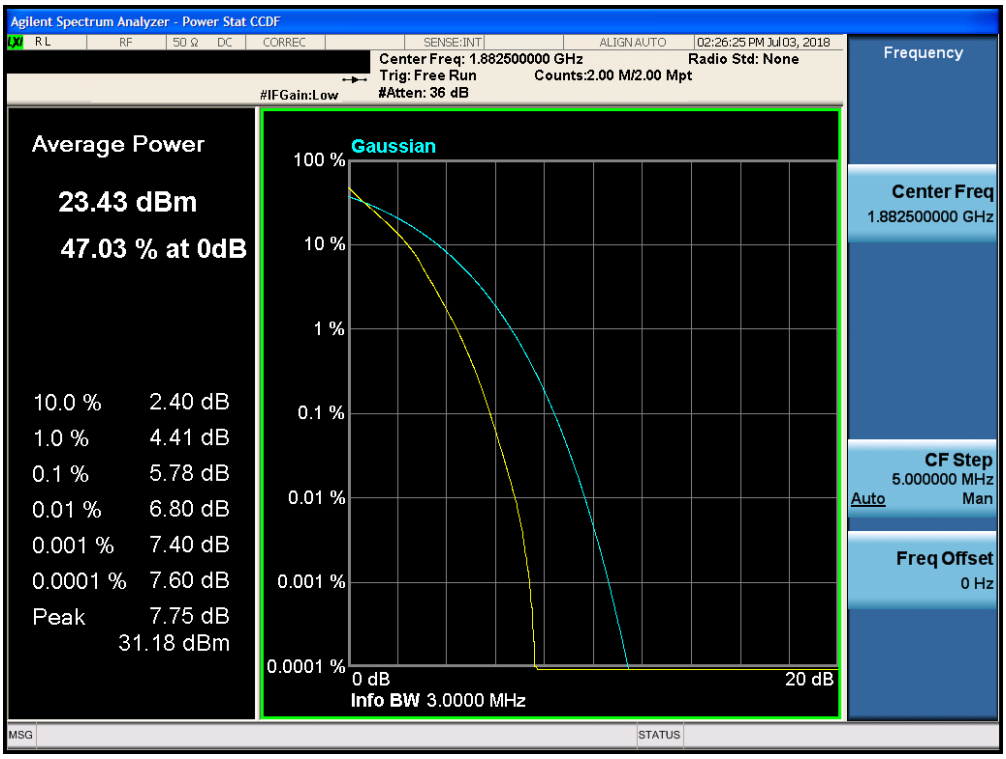
Band 25



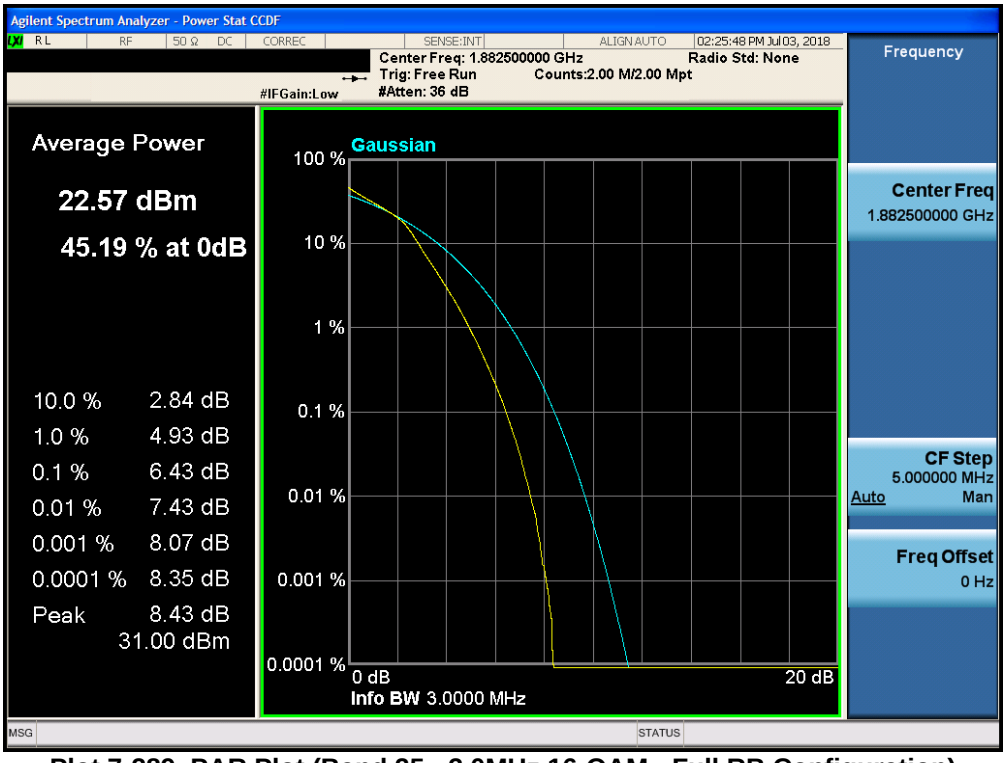
Plot 7-286. PAR Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)



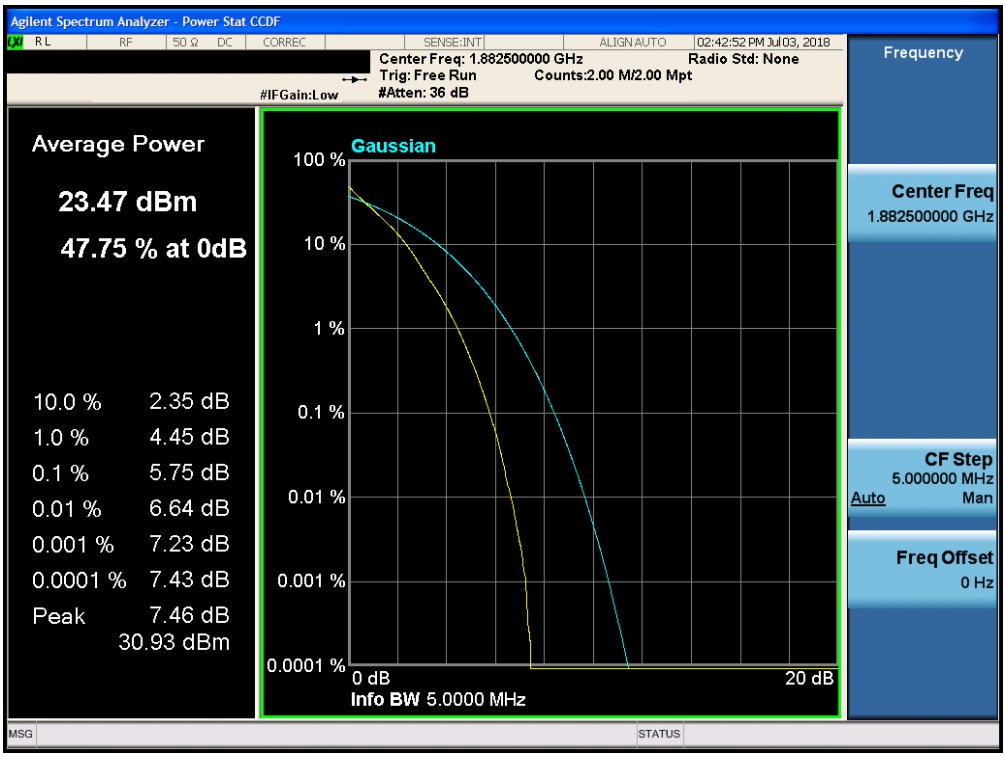
Plot 7-287. PAR Plot (Band 25 - 1.4MHz 16-QAM - Full RB Configuration)



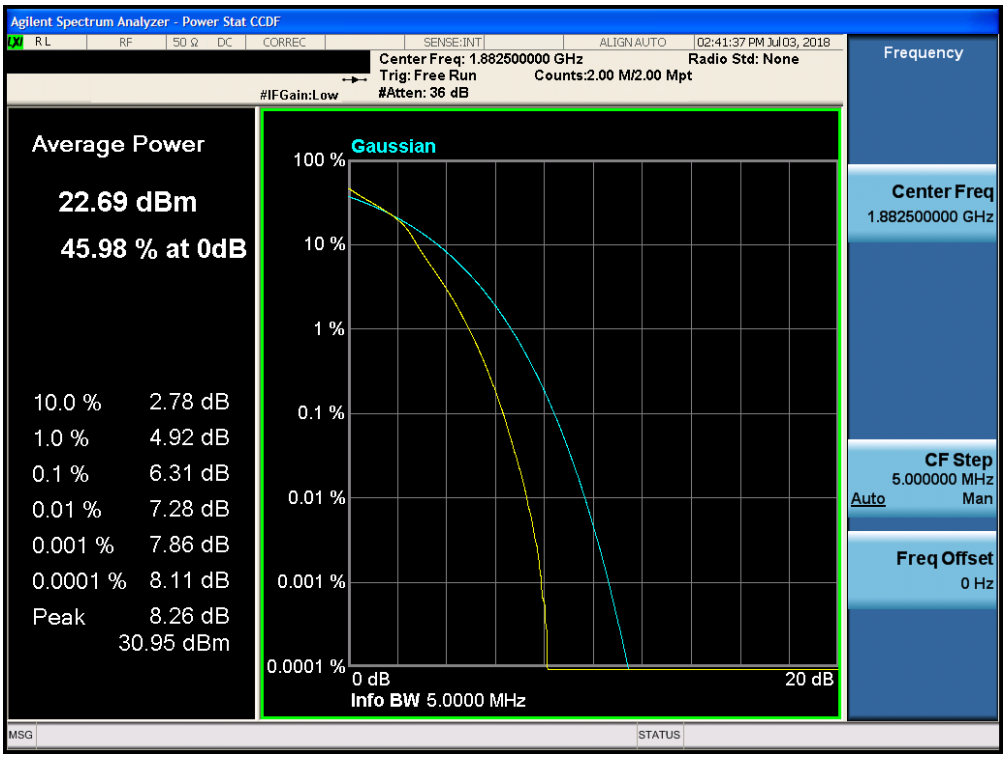
Plot 7-288. PAR Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)



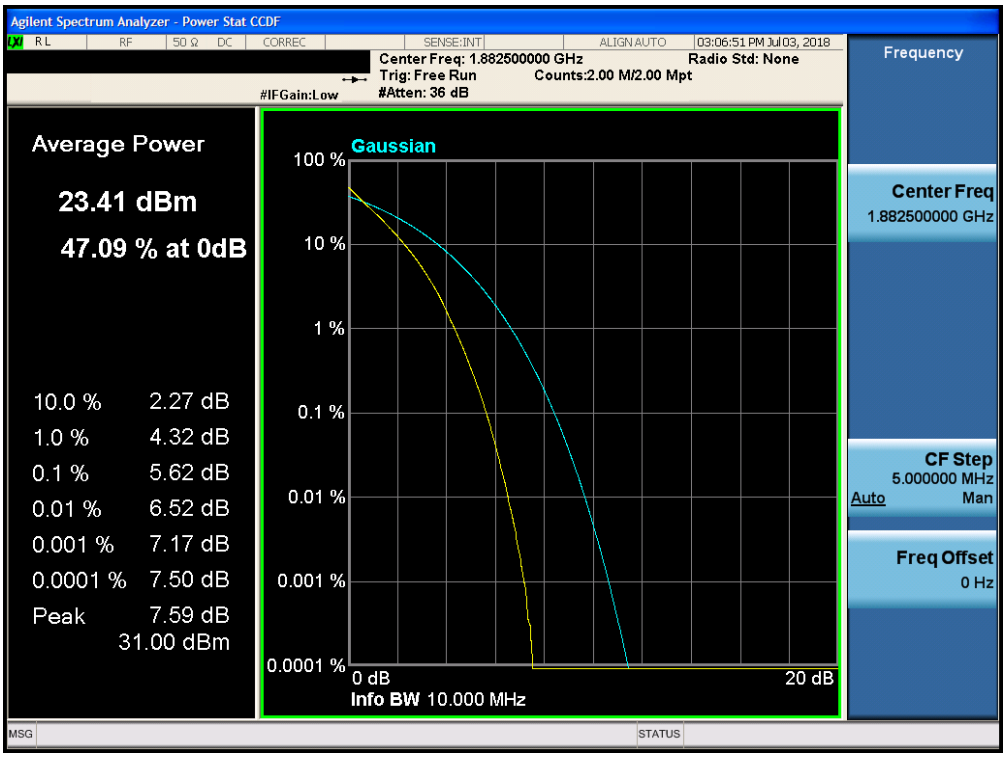
Plot 7-289. PAR Plot (Band 25 - 3.0MHz 16-QAM - Full RB Configuration)



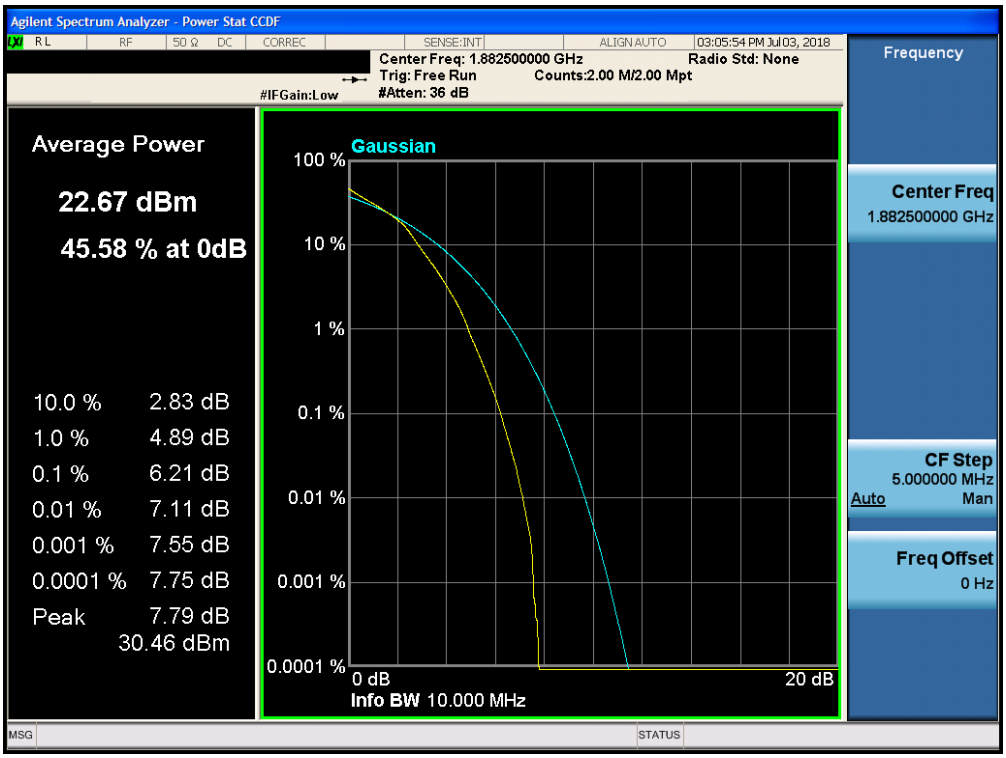
Plot 7-290. PAR Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



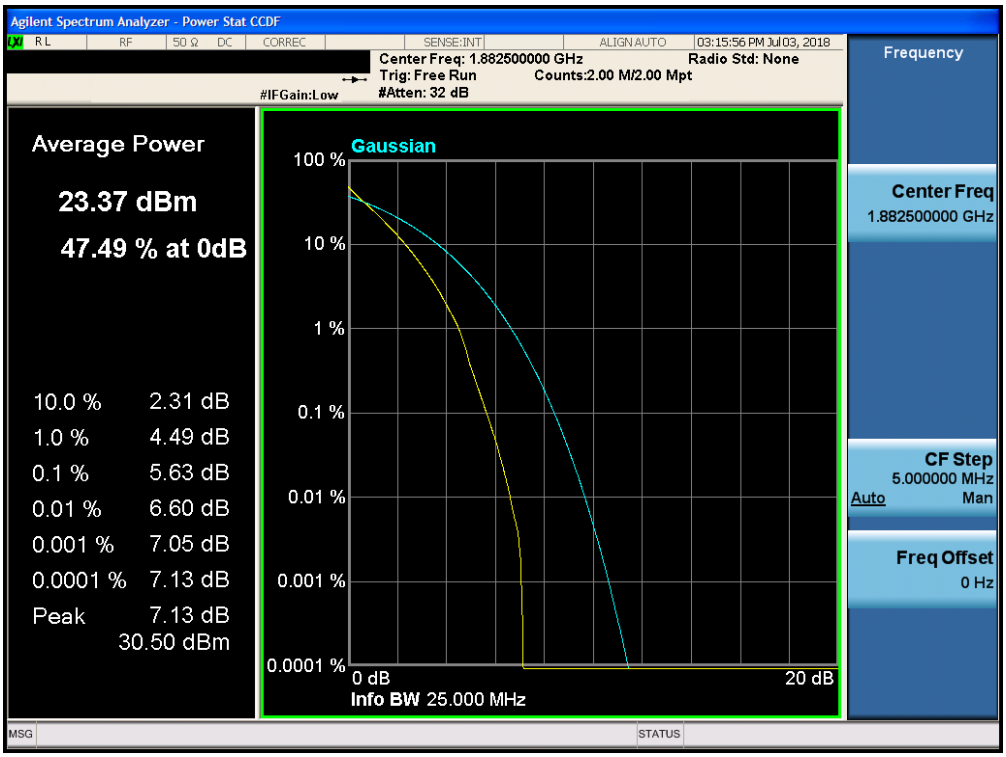
Plot 7-291. PAR Plot (Band 25 - 5.0MHz 16-QAM - Full RB Configuration)



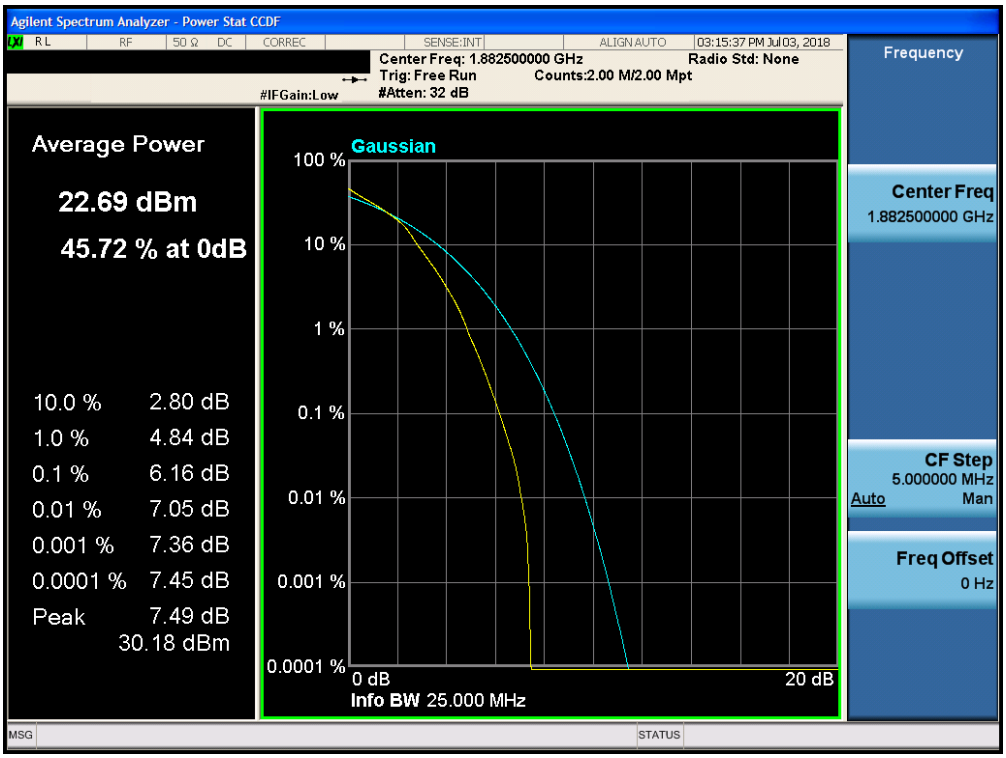
Plot 7-292. PAR Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)



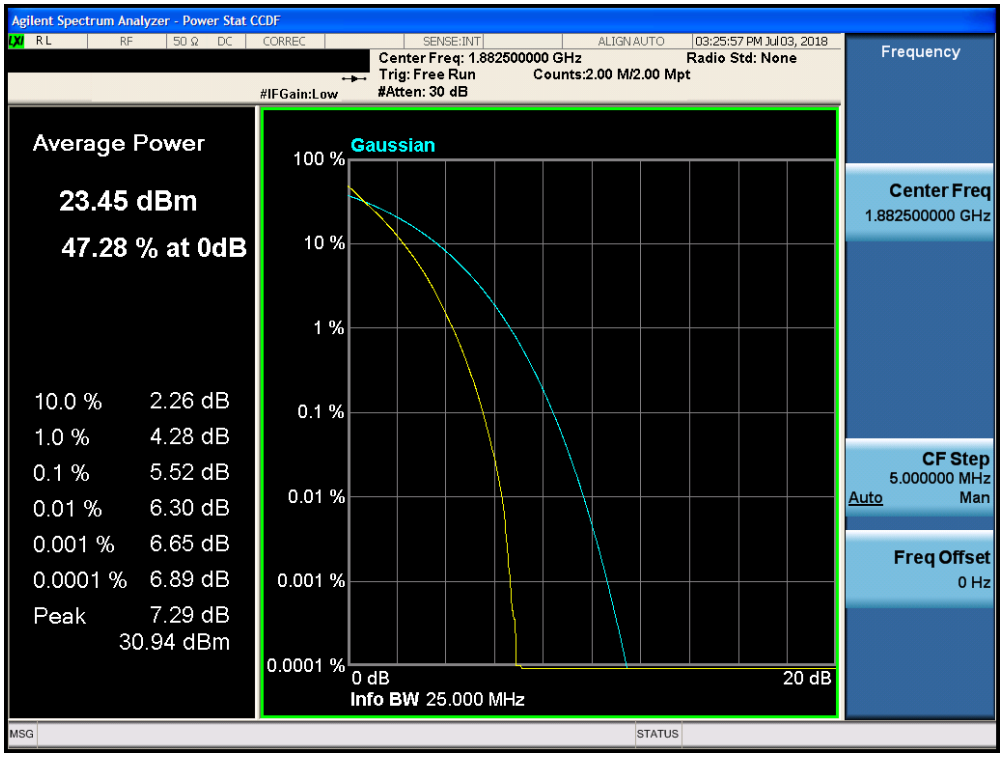
Plot 7-293. PAR Plot (Band 25 - 10.0MHz 16-QAM - Full RB Configuration)



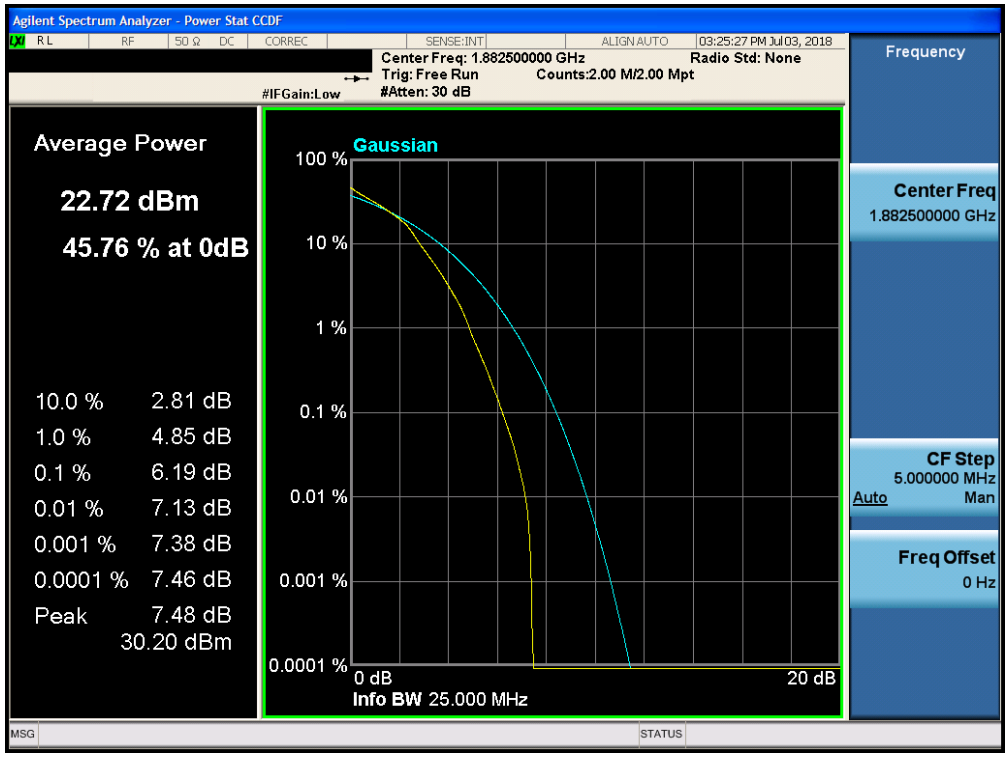
Plot 7-294. PAR Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-295. PAR Plot (Band 25 - 15.0MHz 16-QAM - Full RB Configuration)

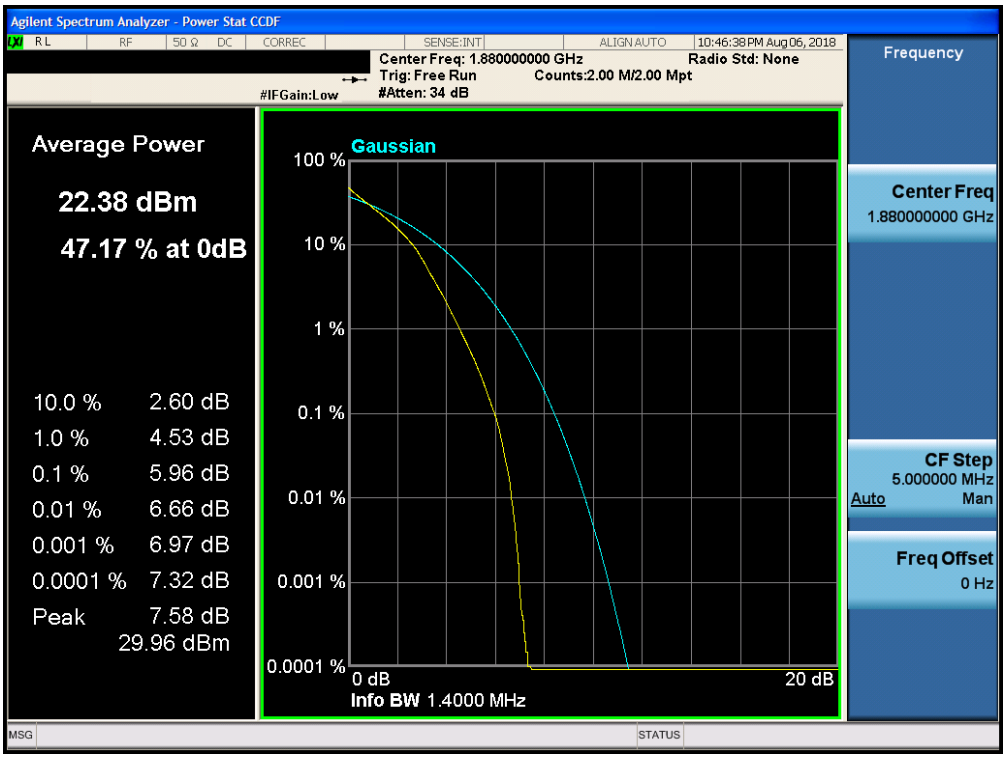


Plot 7-296. PAR Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

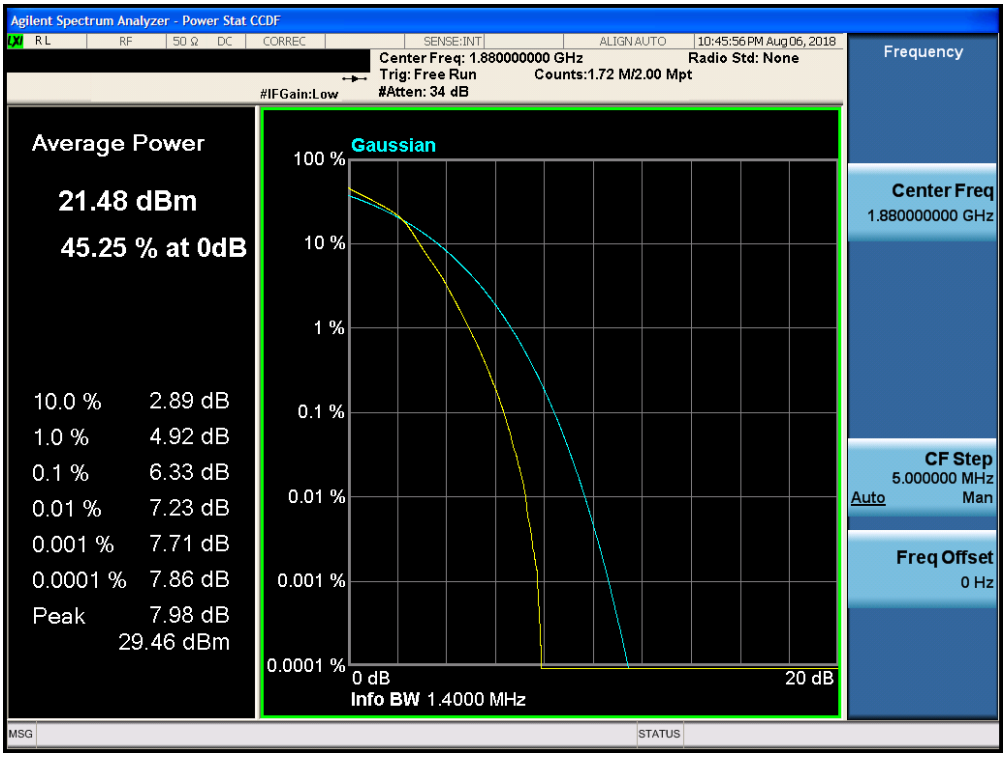


Plot 7-297. PAR Plot (Band 25 - 20.0MHz 16-QAM - Full RB Configuration)

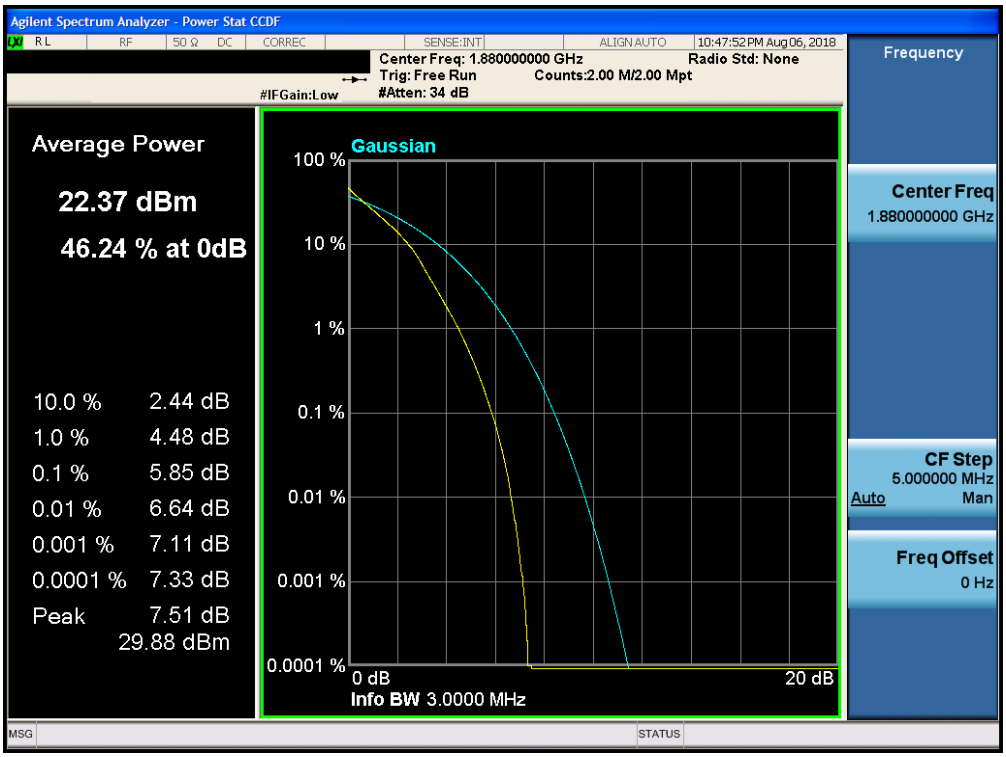
Band 2



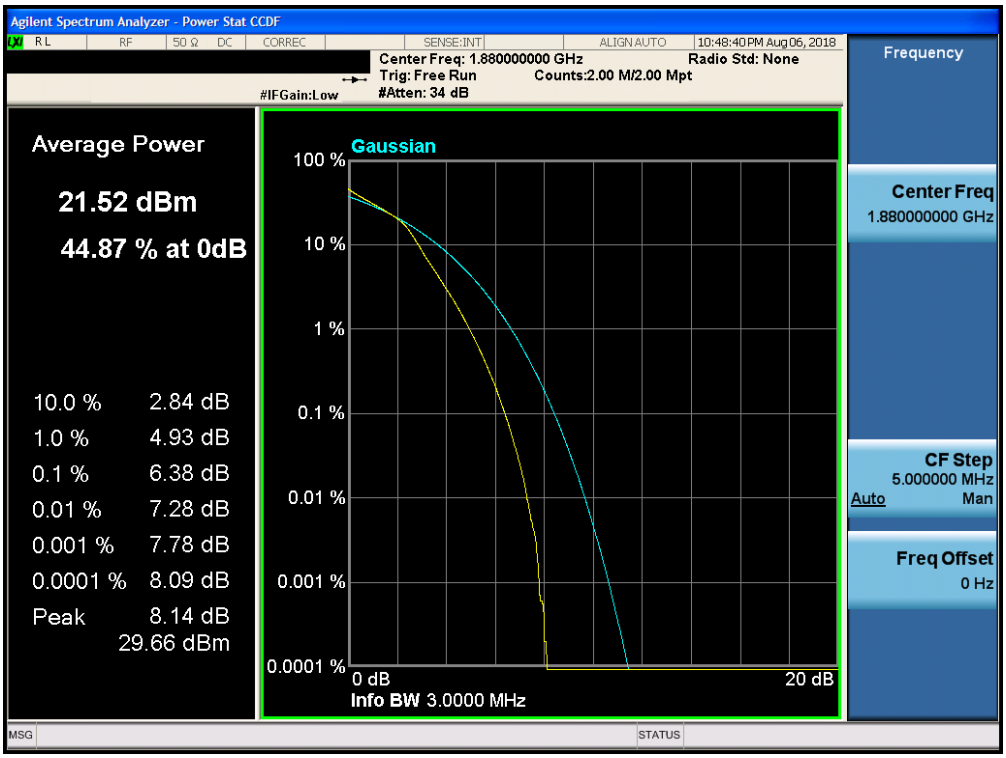
Plot 7-298. PAR Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



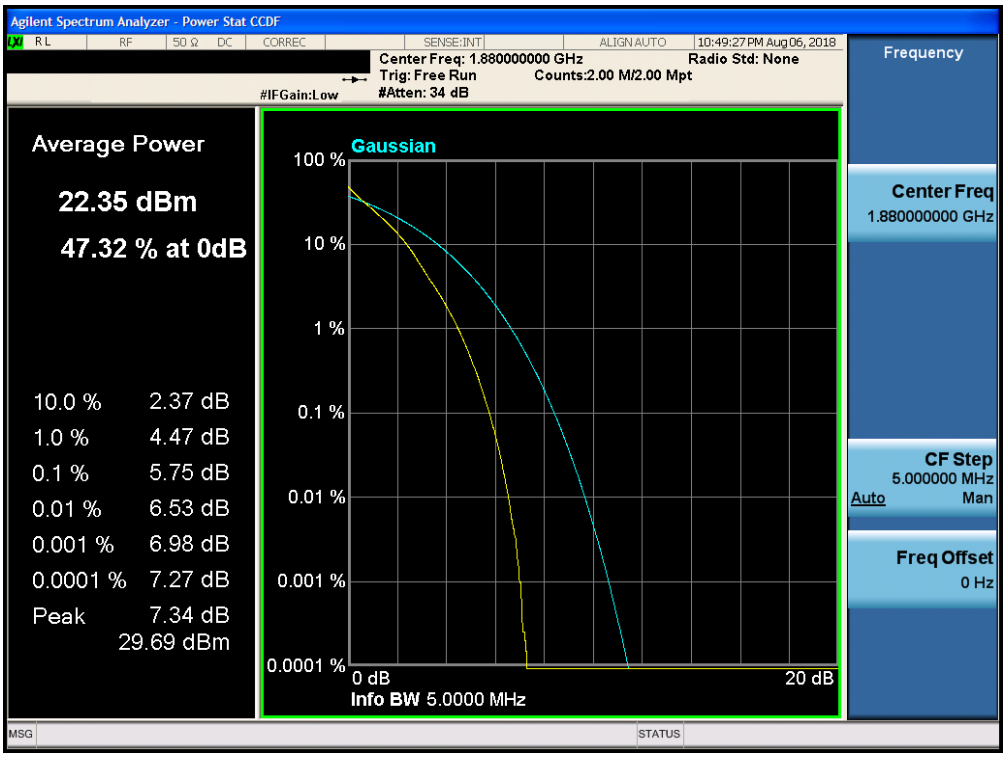
Plot 7-299. PAR Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)



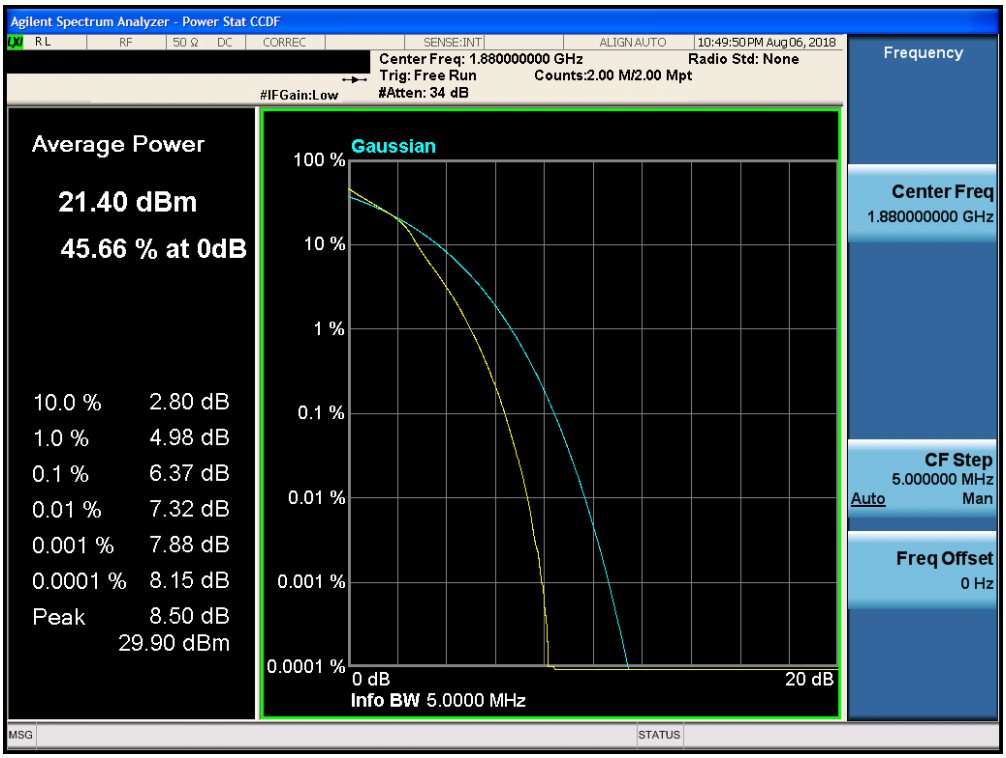
Plot 7-300. PAR Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



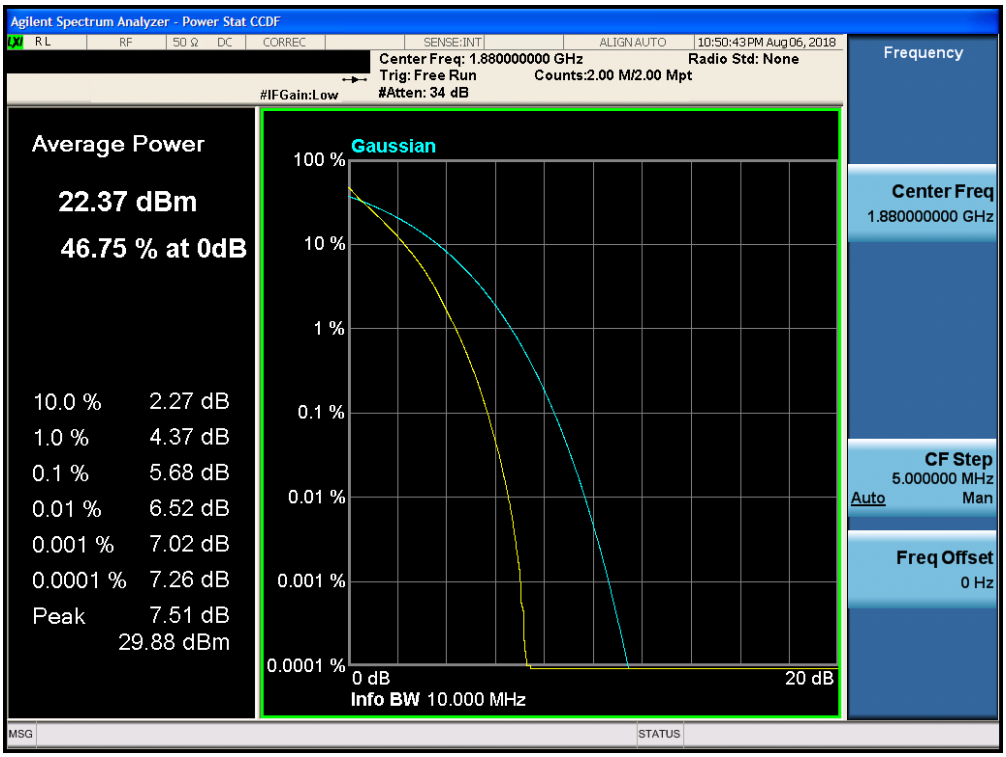
Plot 7-301. PAR Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)



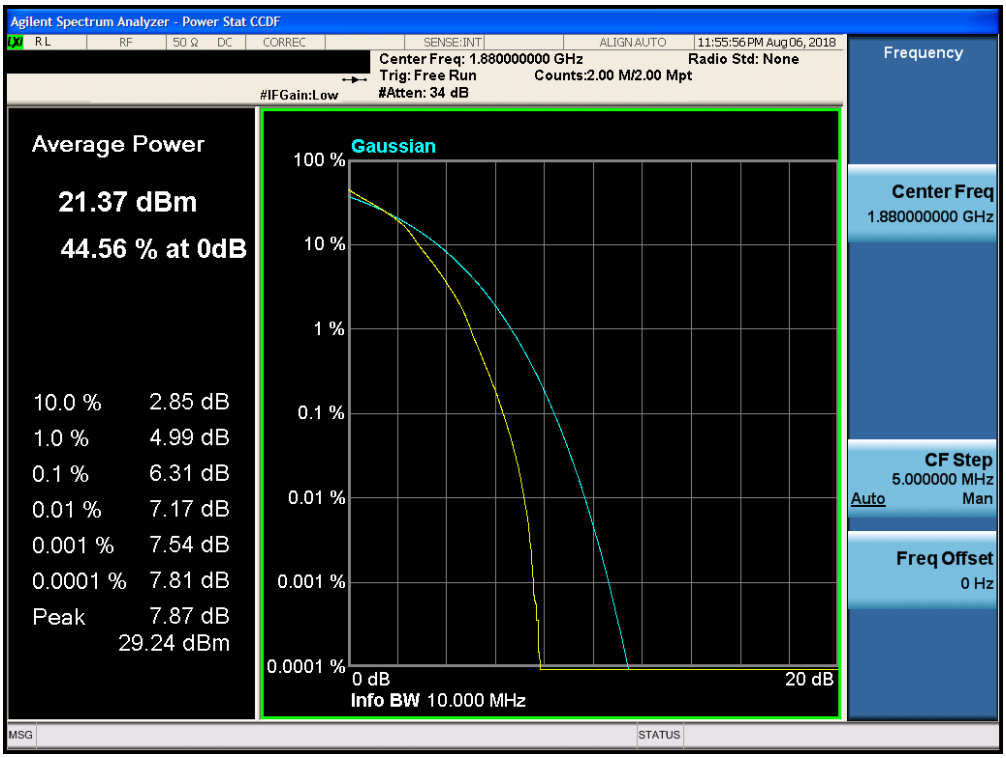
Plot 7-302. PAR Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



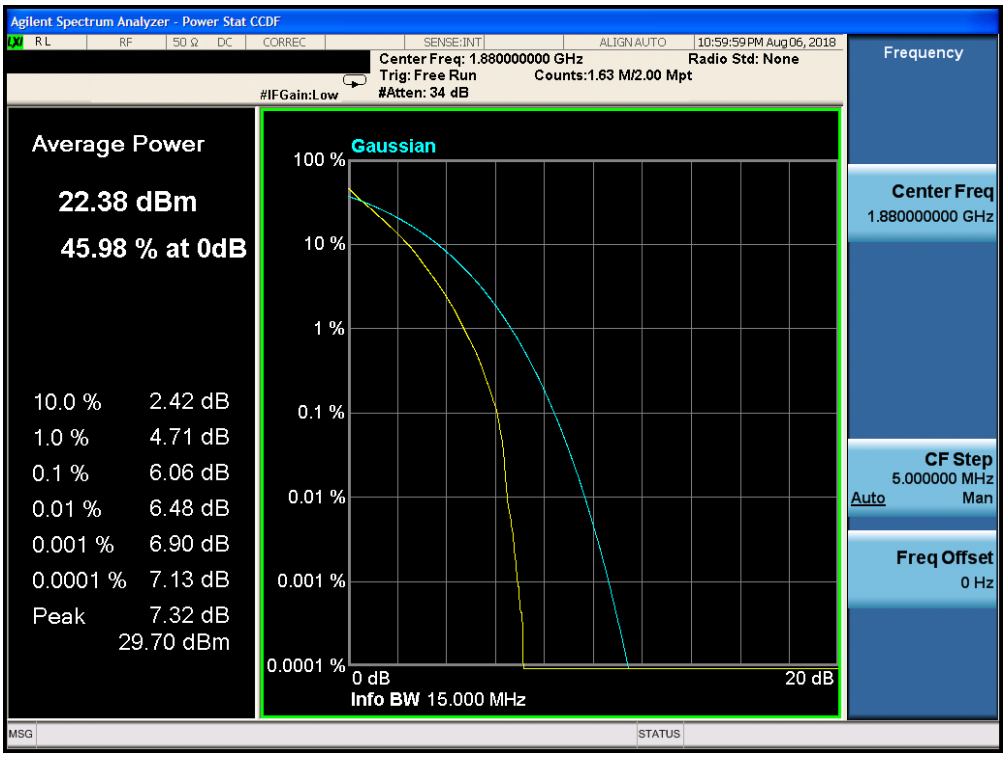
Plot 7-303. PAR Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)



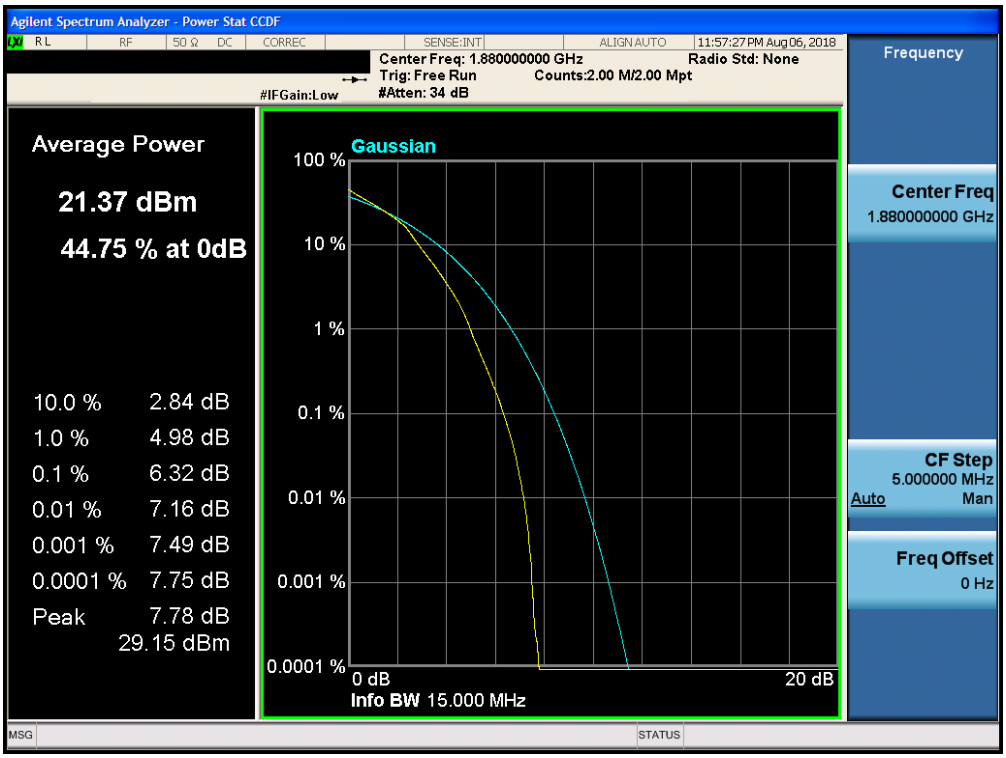
Plot 7-304. PAR Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



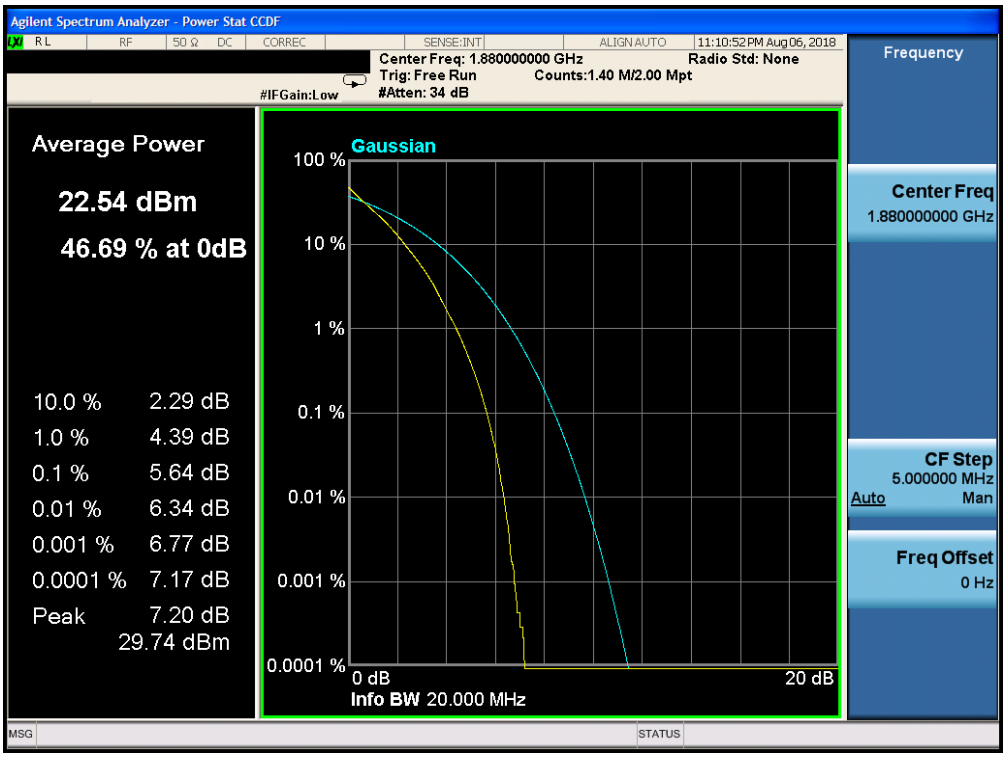
Plot 7-305. PAR Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)



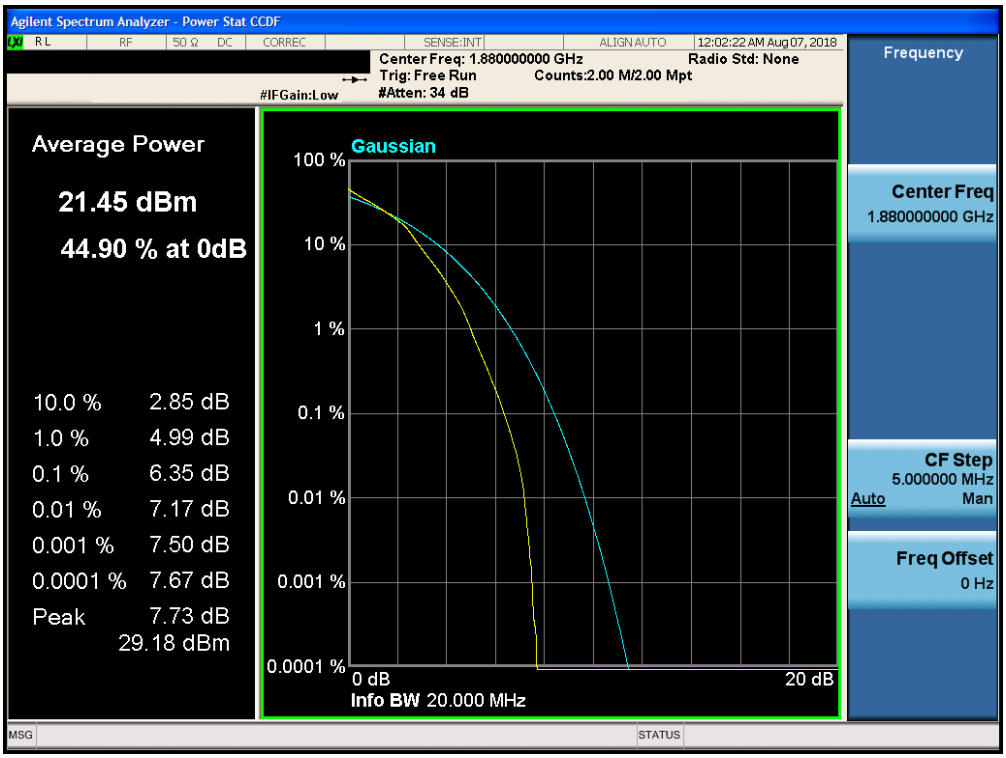
Plot 7-306. PAR Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-307. PAR Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)



Plot 7-308. PAR Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-309. PAR Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

7.6 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

The relevant equation for determining the ERP or EIRP from the conducted RF output power measured is:

ERP/EIRP = PMeas – LC + GT

Where:

ERP/EIRP = effective or equivalen radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm)

PMeas = measured transmitter output power or PSD, in dBW or dBm

LC = signal attenuation in the connecting cable between the transmitter and antenna in dB

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

Test Setup

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

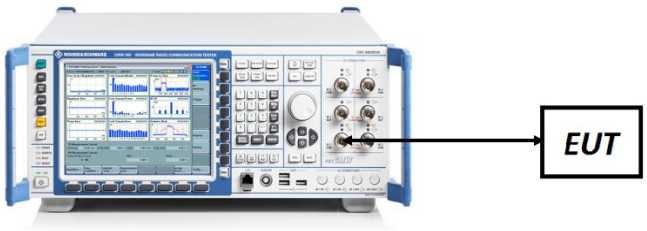


Figure 7-5. ERP/EIRP Measurement Setup

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 Level (dBm) readings in the table were taken with a correction table loaded into the base station simulator. The correction table was used to account for the signal attenuation in the connecting cable between the transmitter and antenna.

4) The Ant. Gains (GT) are listed in dBi.

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Conducted Power [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	1 / 5	25.00	-29.00	**-6.15**	**0.0002**	34.77	-40.92
707.50	1.4	QPSK	1 / 2	24.85	-29.00	-6.30	0.0002	34.77	-41.07
715.30	1.4	QPSK	1 / 0	24.76	-29.00	-6.39	0.0002	34.77	-41.16
715.30	1.4	16-QAM	1 / 0	23.94	-29.00	**-7.21**	0.0002	34.77	-41.98
700.50	3	QPSK	1 / 7	25.00	-29.00	**-6.15**	**0.0002**	34.77	-40.92
707.50	3	QPSK	1 / 14	24.73	-29.00	-6.42	0.0002	34.77	-41.19
714.50	3	QPSK	1 / 14	24.98	-29.00	-6.17	0.0002	34.77	-40.94
714.50	3	16-QAM	1 / 7	23.95	-29.00	**-7.20**	0.0002	34.77	-41.97
701.50	5	QPSK	1 / 12	25.00	-29.00	**-6.15**	**0.0002**	34.77	-40.92
707.50	5	QPSK	1 / 0	24.85	-29.00	-6.30	0.0002	34.77	-41.07
713.50	5	QPSK	1 / 12	24.52	-29.00	-6.63	0.0002	34.77	-41.40
713.50	5	16-QAM	1 / 0	23.98	-29.00	**-7.17**	0.0002	34.77	-41.94
704.00	10	QPSK	1 / 25	25.00	-29.00	**-6.15**	**0.0002**	34.77	-40.92
707.50	10	QPSK	1 / 0	25.00	-29.00	**-6.15**	**0.0002**	34.77	-40.92
711.00	10	QPSK	1 / 0	24.96	-29.00	-6.19	0.0002	34.77	-40.96
707.50	10	16-QAM	1 / 0	23.83	-29.00	**-7.32**	0.0002	34.77	-42.09

Table 7-3. ERP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Conducted Power [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
706.50	5	QPSK	1 / 0	24.98	-29.30	**-6.47**	**0.0002**	34.77	-41.24
710.00	5	QPSK	1 / 12	24.67	-29.30	-6.78	0.0002	34.77	-41.55
713.50	5	QPSK	1 / 0	24.88	-29.30	-6.57	0.0002	34.77	-41.34
713.50	5	16-QAM	1 / 0	23.93	-29.30	**-7.52**	0.0002	34.77	-42.29
709.00	10	QPSK	1 / 0	24.98	-29.30	**-6.47**	**0.0002**	34.77	-41.24
710.00	10	QPSK	1 / 49	24.75	-29.30	-6.70	0.0002	34.77	-41.47
711.00	10	QPSK	1 / 0	24.67	-29.30	-6.78	0.0002	34.77	-41.55
710.00	10	16-QAM	1 / 27	23.92	-29.30	**-7.53**	0.0002	34.77	-42.30

Table 7-4. ERP Data (Band 17)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Conducted Power [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	1 / 24	25.00	-29.90	**-7.05**	**0.0002**	34.77	-41.82
782.00	5	QPSK	1 / 12	25.00	-29.90	**-7.05**	**0.0002**	34.77	-41.82
784.50	5	QPSK	1 / 0	24.57	-29.90	-7.48	0.0002	34.77	-42.25
779.50	5	16-QAM	1 / 24	24.05	-29.90	-8.00	0.0002	34.77	-42.77
782.00	5	16-QAM	1 / 0	23.89	-29.90	-8.16	0.0002	34.77	-42.93
784.50	5	16-QAM	1 / 0	24.59	-29.90	**-7.46**	0.0002	34.77	-42.23
782.00	10	QPSK	1 / 0	24.75	-29.90	**-7.30**	0.0002	34.77	-42.07
782.00	10	16-QAM	1 / 25	23.96	-29.90	**-8.09**	0.0002	34.77	-42.86

Table 7-5. ERP Data (Band 13)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Conducted Power [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	1 / 0	24.53	-28.40	-6.02	0.0003	38.45	-44.47
836.50	1.4	QPSK	1 / 5	24.75	-28.40	**-5.80**	0.0003	38.45	-44.25
848.30	1.4	QPSK	1 / 0	24.59	-28.40	-5.96	0.0003	38.45	-44.41
824.70	1.4	16-QAM	1 / 5	23.91	-28.40	**-6.64**	0.0002	38.45	-45.09
825.50	3	QPSK	1 / 7	24.77	-28.40	**-5.78**	0.0003	38.45	-44.23
836.50	3	QPSK	1 / 7	24.22	-28.40	-6.33	0.0002	38.45	-44.78
847.50	3	QPSK	1 / 7	24.20	-28.40	-6.35	0.0002	38.45	-44.80
825.50	3	16-QAM	1 / 14	23.89	-28.40	**-6.66**	0.0002	38.45	-45.11
826.50	5	QPSK	1 / 24	24.91	-28.40	**-5.64**	0.0003	38.45	-44.09
836.50	5	QPSK	1 / 0	24.30	-28.40	-6.25	0.0002	38.45	-44.70
846.50	5	QPSK	1 / 12	24.29	-28.40	-6.26	0.0002	38.45	-44.71
826.50	5	16-QAM	1 / 24	23.97	-28.40	**-6.58**	0.0002	38.45	-45.03
829.00	10	QPSK	1 / 49	24.68	-28.40	-5.87	0.0003	38.45	-44.32
836.50	10	QPSK	1 / 0	25.00	-28.40	**-5.55**	**0.0003**	38.45	-44.00
844.00	10	QPSK	1 / 25	24.50	-28.40	-6.05	0.0002	38.45	-44.50
829.00	10	16-QAM	1 / 27	24.07	-28.40	**-6.48**	0.0002	38.45	-44.93

Table 7-6. ERP Data (Band 5)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Conducted Power [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	1 / 0	24.75	-28.40	**-5.80**	0.0003	38.45	-44.25
836.50	1.4	QPSK	1 / 0	24.59	-28.40	-5.96	0.0003	38.45	-44.41
848.30	1.4	QPSK	1 / 5	24.51	-28.40	-6.04	0.0002	38.45	-44.49
836.50	1.4	16-QAM	1 / 2	23.87	-28.40	**-6.68**	0.0002	38.45	-45.13
825.50	3	QPSK	1 / 0	24.72	-28.40	-5.83	0.0003	38.45	-44.28
836.50	3	QPSK	1 / 7	24.65	-28.40	-5.90	0.0003	38.45	-44.35
847.50	3	QPSK	1 / 7	24.75	-28.40	**-5.80**	0.0003	38.45	-44.25
825.50	3	16-QAM	1 / 7	23.94	-28.40	**-6.61**	0.0002	38.45	-45.06
826.50	5	QPSK	1 / 0	24.76	-28.40	**-5.79**	0.0003	38.45	-44.24
836.50	5	QPSK	1 / 0	24.66	-28.40	-5.89	0.0003	38.45	-44.34
846.50	5	QPSK	1 / 12	24.36	-28.40	-6.19	0.0002	38.45	-44.64
836.50	5	16-QAM	1 / 12	23.88	-28.40	**-6.67**	0.0002	38.45	-45.12
829.00	10	QPSK	1 / 25	24.75	-28.40	**-5.80**	0.0003	38.45	-44.25
836.50	10	QPSK	1 / 49	24.61	-28.40	-5.94	0.0003	38.45	-44.39
844.00	10	QPSK	1 / 49	24.61	-28.40	-5.94	0.0003	38.45	-44.39
829.00	10	16-QAM	1 / 0	23.93	-28.40	**-6.62**	0.0002	38.45	-45.07
831.50	15	QPSK	1 / 0	24.64	-28.40	-5.91	0.0003	38.45	-44.36
836.50	15	QPSK	1 / 36	24.74	-28.40	**-5.81**	0.0003	38.45	-44.26
841.50	15	QPSK	1 / 0	24.53	-28.40	-6.02	0.0003	38.45	-44.47
836.50	15	16-QAM	1 / 15	23.72	-28.40	**-6.83**	0.0002	38.45	-45.28

Table 7-7. ERP Data (Band 26)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Conducted Power [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	1 / 5	23.26	-14.40	8.86	0.008	30.00	-21.14
1732.50	1.4	QPSK	1 / 2	23.32	-14.40	8.92	0.008	30.00	-21.08
1754.30	1.4	QPSK	1 / 5	23.35	-14.40	**8.95**	0.008	30.00	-21.05
1710.70	1.4	16-QAM	1 / 5	22.71	-14.40	**8.31**	0.007	30.00	-21.69
1711.50	3	QPSK	1 / 14	23.34	-14.40	**8.94**	0.008	30.00	-21.06
1732.50	3	QPSK	1 / 7	23.31	-14.40	8.91	0.008	30.00	-21.09
1753.50	3	QPSK	1 / 7	23.18	-14.40	8.78	0.008	30.00	-21.22
1711.50	3	16-QAM	1 / 7	22.63	-14.40	**8.23**	0.007	30.00	-21.77
1712.50	5	QPSK	1 / 0	23.38	-14.40	**8.98**	**0.008**	30.00	-21.02
1732.50	5	QPSK	1 / 0	23.29	-14.40	8.89	0.008	30.00	-21.11
1752.50	5	QPSK	1 / 24	23.26	-14.40	8.86	0.008	30.00	-21.14
1712.50	5	16-QAM	1 / 24	22.71	-14.40	**8.31**	0.007	30.00	-21.69
1715.00	10	QPSK	1 / 25	23.28	-14.40	8.88	0.008	30.00	-21.12
1732.50	10	QPSK	1 / 0	23.35	-14.40	**8.95**	0.008	30.00	-21.05
1750.00	10	QPSK	1 / 0	23.31	-14.40	8.91	0.008	30.00	-21.09
1732.50	10	16-QAM	1 / 0	22.90	-14.40	**8.50**	0.007	30.00	-21.50
1717.50	15	QPSK	1 / 36	23.28	-14.40	8.88	0.008	30.00	-21.12
1732.50	15	QPSK	1 / 0	23.38	-14.40	**8.98**	**0.008**	30.00	-21.02
1747.50	15	QPSK	1 / 0	23.29	-14.40	8.89	0.008	30.00	-21.11
1732.50	15	16-QAM	1 / 0	22.81	-14.40	**8.41**	0.007	30.00	-21.59
1720.00	20	QPSK	1 / 99	23.31	-14.40	8.91	0.008	30.00	-21.09
1732.50	20	QPSK	1 / 0	23.35	-14.40	**8.95**	0.008	30.00	-21.05
1745.00	20	QPSK	1 / 0	23.22	-14.40	8.82	0.008	30.00	-21.18
1732.50	20	16-QAM	1 / 0	23.02	-14.40	**8.62**	0.007	30.00	-21.38

Table 7-8. EIRP Data (Band 4)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Conducted Power [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	1 / 2	23.25	-14.30	8.95	0.008	33.01	-24.06
1880.00	1.4	QPSK	1 / 2	23.35	-14.30	**9.05**	0.008	33.01	-23.96
1909.30	1.4	QPSK	1 / 0	23.35	-14.30	**9.05**	0.008	33.01	-23.96
1850.70	1.4	16-QAM	1 / 5	22.40	-14.30	**8.10**	0.006	33.01	-24.91
1851.50	3	QPSK	1 / 7	23.27	-14.30	8.97	0.008	33.01	-24.04
1880.00	3	QPSK	1 / 0	23.30	-14.30	9.00	0.008	33.01	-24.01
1908.50	3	QPSK	1 / 0	23.40	-14.30	**9.10**	0.008	33.01	-23.91
1851.50	3	16-QAM	1 / 7	22.41	-14.30	**8.11**	0.006	33.01	-24.90
1852.50	5	QPSK	1 / 0	23.40	-14.30	**9.10**	0.008	33.01	-23.91
1880.00	5	QPSK	1 / 0	23.39	-14.30	9.09	0.008	33.01	-23.92
1907.50	5	QPSK	1 / 24	23.21	-14.30	8.91	0.008	33.01	-24.10
1852.50	5	16-QAM	1 / 0	22.49	-14.30	**8.19**	0.007	33.01	-24.82
1855.00	10	QPSK	1 / 0	23.39	-14.30	**9.09**	0.008	33.01	-23.92
1880.00	10	QPSK	1 / 0	23.35	-14.30	9.05	0.008	33.01	-23.96
1905.00	10	QPSK	1 / 0	23.25	-14.30	8.95	0.008	33.01	-24.06
1855.00	10	16-QAM	1 / 27	22.50	-14.30	**8.20**	0.007	33.01	-24.81
1857.50	15	QPSK	1 / 74	23.37	-14.30	9.07	0.008	33.01	-23.94
1880.00	15	QPSK	1 / 36	23.38	-14.30	9.08	0.008	33.01	-23.93
1902.50	15	QPSK	1 / 0	23.41	-14.30	**9.11**	0.008	33.01	-23.90
1880.00	15	16-QAM	1 / 0	22.61	-14.30	**8.31**	0.007	33.01	-24.70
1860.00	20	QPSK	1 / 50	23.18	-14.30	8.88	0.008	33.01	-24.13
1880.00	20	QPSK	1 / 0	23.44	-14.30	**9.14**	**0.008**	33.01	-23.87
1900.00	20	QPSK	1 / 0	23.21	-14.30	8.91	0.008	33.01	-24.10
1860.00	20	16-QAM	1 / 27	22.51	-14.30	8.21	0.007	33.01	-24.80
1880.00	20	16-QAM	15 / 0	22.67	-14.30	**8.37**	0.007	33.01	-24.64
1900.00	20	16-QAM	1 / 15	22.54	-14.30	8.24	0.007	33.01	-24.77

Table 7-9. EIRP Data (Band 2)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Conducted Power [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	1 / 2	23.45	-14.30	9.15	0.008	33.01	-23.86
1882.50	1.4	QPSK	1 / 5	23.47	-14.30	**9.17**	0.008	33.01	-23.84
1914.30	1.4	QPSK	1 / 0	23.44	-14.30	9.14	0.008	33.01	-23.87
1850.70	1.4	16-QAM	1 / 0	22.45	-14.30	**8.15**	0.007	33.01	-24.86
1851.50	3	QPSK	1 / 7	23.48	-14.30	**9.18**	0.008	33.01	-23.83
1882.50	3	QPSK	1 / 7	23.46	-14.30	9.16	0.008	33.01	-23.85
1913.50	3	QPSK	1 / 7	23.44	-14.30	9.14	0.008	33.01	-23.87
1851.50	3	16-QAM	1 / 7	22.36	-14.30	**8.06**	0.006	33.01	-24.95
1852.50	5	QPSK	1 / 0	23.50	-14.30	**9.20**	**0.008**	33.01	-23.81
1882.50	5	QPSK	1 / 0	23.47	-14.30	9.17	0.008	33.01	-23.84
1912.50	5	QPSK	1 / 12	23.47	-14.30	9.17	0.008	33.01	-23.84
1852.50	5	16-QAM	1 / 0	22.41	-14.30	**8.11**	0.006	33.01	-24.90
1855.00	10	QPSK	1 / 49	23.50	-14.30	**9.20**	**0.008**	33.01	-23.81
1882.50	10	QPSK	1 / 0	23.46	-14.30	9.16	0.008	33.01	-23.85
1910.00	10	QPSK	1 / 25	23.42	-14.30	9.12	0.008	33.01	-23.89
1882.50	10	16-QAM	1 / 0	22.52	-14.30	**8.22**	0.007	33.01	-24.79
1857.50	15	QPSK	1 / 36	23.50	-14.30	**9.20**	**0.008**	33.01	-23.81
1882.50	15	QPSK	1 / 0	23.46	-14.30	9.16	0.008	33.01	-23.85
1907.50	15	QPSK	1 / 36	23.46	-14.30	9.16	0.008	33.01	-23.85
1857.50	15	16-QAM	1 / 15	22.49	-14.30	**8.19**	0.007	33.01	-24.82
1860.00	20	QPSK	1 / 0	23.50	-14.30	**9.20**	**0.008**	33.01	-23.81
1882.50	20	QPSK	1 / 0	23.49	-14.30	9.19	0.008	33.01	-23.82
1905.00	20	QPSK	1 / 0	23.50	-14.30	**9.20**	**0.008**	33.01	-23.81
1860.00	20	16-QAM	1 / 0	22.54	-14.30	**8.24**	0.007	33.01	-24.77

Table 7-10. EIRP Data (Band 25)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	RB Size/Offset	Conducted Power [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	1 / 0	22.10	-12.10	10.00	0.010	33.01	-23.01
2593.00	5	QPSK	1 / 0	22.67	-12.10	**10.57**	0.011	33.01	-22.44
2687.50	5	QPSK	1 / 0	22.60	-12.10	10.50	0.011	33.01	-22.51
2593.00	5	16-QAM	1 / 0	22.20	-12.10	**10.10**	0.010	33.01	-22.91
2501.00	10	QPSK	1 / 0	22.10	-12.10	10.00	0.010	33.01	-23.01
2593.00	10	QPSK	1 / 0	22.66	-12.10	**10.56**	0.011	33.01	-22.45
2685.00	10	QPSK	1 / 0	22.58	-12.10	10.48	0.011	33.01	-22.53
2593.00	10	16-QAM	1 / 0	22.24	-12.10	**10.14**	0.010	33.01	-22.87
2503.50	15	QPSK	1 / 0	22.10	-12.10	10.00	0.010	33.01	-23.01
2593.00	15	QPSK	1 / 0	22.60	-12.10	**10.50**	0.011	33.01	-22.51
2682.50	15	QPSK	1 / 0	22.40	-12.10	10.30	0.011	33.01	-22.71
2593.00	15	16-QAM	1 / 0	22.25	-12.10	**10.15**	0.010	33.01	-22.86
2506.00	20	QPSK	1 / 0	22.10	-12.10	10.00	0.010	33.01	-23.01
2593.00	20	QPSK	1 / 0	22.75	-12.10	**10.65**	**0.012**	33.01	-22.36
2680.00	20	QPSK	1 / 0	22.72	-12.10	10.62	0.012	33.01	-22.39
2593.00	20	16-QAM	1 / 15	22.50	-12.10	**10.40**	0.011	33.01	-22.61

Table 7-11. EIRP Data (Band 41)

7.7 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.

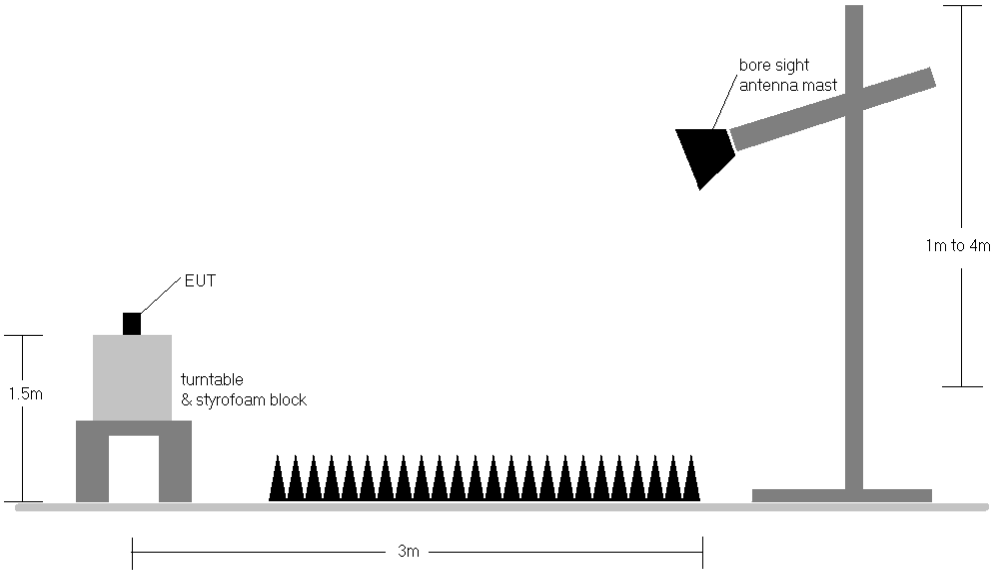


Figure 7-6. Test Instrument & Measurement Setup

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

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	122	338	-42.51	4.77	-37.73	-24.7
2112.00	V	121	365	-40.68	4.91	-35.77	-22.8
2816.00	V	-	-	-40.62	6.59	-34.03	-21.0
3520.00	V	-	-	-43.38	7.68	-35.70	-22.7
4224.00	V	-	-	-43.80	8.40	-35.40	-22.4

Table 7-12. 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	191	348	-41.58	4.84	-36.75	-23.7
2122.50	V	174	288	-37.65	4.92	-32.73	-19.7
2830.00	V	-	-	-41.48	6.61	-34.87	-21.9
3537.50	V	-	-	-42.66	7.68	-34.98	-22.0
4245.00	V	-	-	-43.69	8.41	-35.28	-22.3

Table 7-13. 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	X	-	-	-42.63	4.90	-37.73	-24.7
2133.00	X	-	-	-38.68	4.94	-33.74	-20.7
2844.00	X	-	-	-39.53	6.63	-32.89	-19.9

Table 7-14. Radiated Spurious Data (Band 12 – High Channel)

Band 17

OPERATING FREQUENCY:	709.00	MHz
CHANNEL:	23780	
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]
1418.00	V	179	306	-41.75	4.86	-36.88	-23.9
2127.00	V	170	299	-36.31	4.93	-31.38	-18.4
2836.00	V	-	-	-40.69	6.62	-34.07	-21.1
3545.00	V	-	-	-42.12	7.68	-34.44	-21.4
4254.00	V	-	-	-42.64	8.42	-34.22	-21.2

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

OPERATING FREQUENCY:	710.00	MHz
CHANNEL:	23790	
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]
1420.00	V	195	171	-41.91	4.88	-37.03	-24.0
2130.00	V	102	266	-37.24	4.93	-32.31	-19.3
2840.00	V	-	-	-40.65	6.62	-34.03	-21.0
3550.00	V	-	-	-42.03	7.68	-34.35	-21.3
4260.00	V	-	-	-42.86	8.42	-34.44	-21.4

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

OPERATING FREQUENCY:	711.00	MHz
CHANNEL:	23800	
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	268	102	-42.49	4.90	-37.59	-24.6
2133.00	V	134	312	-36.75	4.94	-31.81	-18.8
2844.00	V	-	-	-40.87	6.63	-34.23	-21.2
3555.00	V	-	-	-42.01	7.66	-34.35	-21.3
4266.00	V	-	-	-42.75	8.43	-34.32	-21.3

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

Band 13

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
2346.00	V	150	200	-67.01	5.47	-61.54	-48.5
3128.00	V	-	-	-68.70	6.67	-62.03	-49.0
3910.00	V	-	-	-69.37	7.75	-61.63	-48.6

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

Band 5

OPERATING FREQUENCY:	829.00	MHz
CHANNEL:	20450	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	V	-	-	-71.98	5.27	-66.71	-53.7
2487.00	V	125	220	-64.72	5.42	-59.29	-46.3
3316.00	V	-	-	-69.68	7.21	-62.47	-49.5

Table 7-19. Radiated Spurious Data (Band 5 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz
CHANNEL:	20525	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	V	-	-	-71.32	5.16	-66.16	-53.2
2509.50	V	150	264	-63.76	5.39	-58.37	-45.4
3346.00	V	-	-	-69.90	7.31	-62.59	-49.6
4182.50	V	-	-	-70.09	8.40	-61.69	-48.7
5019.00	V	-	-	-70.20	9.79	-60.41	-47.4

Table 7-20. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY:	844.00	MHz
CHANNEL:	20600	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	V	-	-	-71.47	5.05	-66.41	-53.4
2532.00	V	-	-	-70.01	5.36	-64.66	-51.7
3376.00	V	-	-	-69.72	7.40	-62.33	-49.3

Table 7-21. Radiated Spurious Data (Band 5 – High Channel)

Band 26

OPERATING FREQUENCY:	819.00	MHz
CHANNEL:	26740	
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]
1638.00	V	-	-	-64.49	5.36	-59.13	-46.1
2457.00	V	-	-	-59.31	5.46	-53.85	-40.9
3276.00	V	-	-	-60.66	7.10	-53.56	-40.6

Table 7-22. Radiated Spurious Data (Band 26 – Low Channel)

OPERATING FREQUENCY:	831.50	MHz
CHANNEL:	26865	
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]
1663.00	V	-	-	-71.96	5.23	-66.73	-53.7
2494.50	V	-	-	-65.31	5.41	-59.90	-46.9
3326.00	V	-	-	-70.34	7.24	-63.09	-50.1

Table 7-23. Radiated Spurious Data (Band 26 – Mid Channel)

OPERATING FREQUENCY:	841.50	MHz
CHANNEL:	26990	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1683.00	V	-	-	-70.75	5.05	-65.69	-52.7
2524.50	V	138	251	-61.95	5.36	-56.60	-43.6
3366.00	V	-	-	-69.79	7.40	-62.40	-49.4
4207.50	V	-	-	-70.21	8.40	-61.81	-48.8
5049.00	V	-	-	-70.15	9.82	-60.33	-47.3

Table 7-24. Radiated Spurious Data (Band 26 – High Channel)

Band 4

OPERATING FREQUENCY:	1720.00	MHz
CHANNEL:	20050	
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	V	-	-	-42.98	7.57	-35.41	-22.4
5160.00	V	100	300	-43.25	9.78	-33.47	-20.5
6880.00	V	-	-	-44.19	11.00	-33.19	-20.2
8600.00	V	-	-	-45.22	12.50	-32.72	-19.7
10320.00	V	-	-	-36.76	12.22	-24.54	-11.5

Table 7-25. Radiated Spurious Data (Band 4 – Low Channel)

OPERATING FREQUENCY:	1732.50	MHz
CHANNEL:	20175	
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]
3465.00	V	129	172	-41.08	7.62	-33.46	-20.5
5197.50	V	106	193	-43.95	9.75	-34.20	-21.2
6930.00	V	-	-	-37.22	11.05	-26.18	-13.2
8662.50	V	-	-	-38.84	12.48	-26.36	-13.4
10395.00	V	-	-	-37.17	12.23	-24.94	-11.9

Table 7-26. Radiated Spurious Data (Band 4 – Mid Channel)

OPERATING FREQUENCY:	1745.00	MHz
CHANNEL:	20300	
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	V	-	-	-41.98	7.66	-34.32	-21.3
5235.00	V	100	300	-41.93	9.74	-32.20	-19.2
6980.00	V	-	-	-44.95	11.07	-33.87	-20.9
8725.00	V	-	-	-44.06	12.46	-31.60	-18.6
10470.00	V	106	368	-36.73	12.25	-24.48	-11.5

Table 7-27. Radiated Spurious Data (Band 4 – High Channel)

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	120	120	-39.73	7.09	-32.64	-19.6
5580.00	V	180	180	-35.40	10.06	-25.33	-12.3
7440.00	V	-	-	-45.19	11.63	-33.57	-20.6
9300.00	V	-	-	-44.89	12.44	-32.46	-19.5

Table 7-28. 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	-	-	-41.02	7.10	-33.92	-20.9
5640.00	V	-	-	-44.48	10.04	-34.43	-21.4
7520.00	V	-	-	-44.79	11.68	-33.11	-20.1

Table 7-29. 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	350	360	-40.97	7.21	-33.76	-20.8
5700.00	V	-	-	-44.42	10.05	-34.36	-21.4
7600.00	V	-	-	-45.11	11.72	-33.39	-20.4

Table 7-30. Radiated Spurious Data (Band 2 – High Channel)

Band 25

OPERATING FREQUENCY:	1860.00	MHz
CHANNEL:	26140	
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	H	-	-	-41.22	7.09	-34.13	-21.1
5580.00	H	-	-	-43.70	10.06	-33.63	-20.6
7440.00	H	-	-	-43.76	11.63	-32.14	-19.1

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

OPERATING FREQUENCY:	1882.50	MHz
CHANNEL:	26365	
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]
3765.00	Y	130	181	-38.57	7.12	-31.45	-18.5
5647.50	Y	-	-	-45.27	10.04	-35.23	-22.2
7530.00	Y	-	-	-36.90	11.68	-25.22	-12.2
9412.50	Y	292	10	-43.74	12.35	-31.39	-18.4
11295.00	Y	-	-	-42.19	12.52	-29.68	-16.7
13177.50	Y	-	-	-41.05	13.21	-27.84	-14.8
15060.00	Y	-	-	-39.22	12.40	-26.82	-13.8

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

OPERATING FREQUENCY:	1905.00	MHz
CHANNEL:	26590	
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]
3810.00	H	-	-	-41.48	7.26	-34.22	-21.2
5715.00	H	-	-	-43.90	10.05	-33.85	-20.9
7620.00	H	-	-	-43.53	11.74	-31.79	-18.8

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

Band 41

OPERATING FREQUENCY:	2506.00	MHz
CHANNEL:	39790	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Duty Cycle Correction Factor [dB]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	H	329	47	4.02	-65.34	9.78	-55.56	-30.6
7518.00	H	106	273	4.02	-67.46	11.68	-55.78	-30.8
10024.00	H	-	-	4.02	-66.64	12.21	-54.43	-29.4
12530.00	H	-	-	4.02	-63.76	12.62	-51.14	-26.1
15036.00	H	-	-	4.02	-60.95	12.43	-48.52	-23.5
17542.00	H	-	-	4.02	-57.23	11.92	-45.31	-20.3

Table 7-34. Radiated Spurious Data (Band 41 – Low Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Duty Cycle Correction Factor [dB]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	325	15	4.02	-69.03	9.76	-59.27	-34.3
7779.00	V	276	323	4.02	-67.89	11.87	-56.02	-31.0
10372.00	H	313	136	4.02	-64.68	12.23	-52.45	-27.5
12965.00	H	-	-	4.02	-63.35	12.89	-50.46	-25.5
15558.00	H	-	-	4.02	-60.41	12.58	-47.83	-22.8

Table 7-35. Radiated Spurious Data (Band 41 – Mid Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Duty Cycle Correction Factor [dB]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	H	-	-	4.02	-70.18	9.86	-60.32	-35.3
8040.00	H	106	12	4.02	-66.74	12.09	-54.65	-29.6
10720.00	H	-	-	4.02	-64.74	12.29	-52.45	-27.4
13400.00	H	-	-	4.02	-63.49	13.34	-50.15	-25.1
16080.00	H	-	-	4.02	-60.06	12.44	-47.62	-22.6

Table 7-36. Radiated Spurious Data (Band 41 – High Channel)

7.8 Frequency Stability / Temperature Variation

Test Overview and Limit

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

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

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

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

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings

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

Test Setup

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

Test Notes

None

Band 12 Frequency Stability Measurements

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23,790	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20	707,500,004	4	0.0000006
100 %		- 30	707,500,004	4	0.0000006
100 %		- 20	707,500,006	6	0.0000009
100 %		- 10	707,500,005	5	0.0000008
100 %		0	707,500,006	6	0.0000008
100 %		+ 10	707,500,004	4	0.0000005
100 %		+ 20	707,500,004	4	0.0000005
100 %		+ 30	707,500,005	5	0.0000006
100 %		+ 40	707,499,994	-6	-0.0000008
100 %		+ 50	707,500,005	5	0.0000007
BATT. ENDPOINT	3.40	+ 20	707,500,004	4	0.0000006

Table 7-37. Frequency Stability Data (Band 12)

Note:

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

Band 12 Frequency Stability Measurements

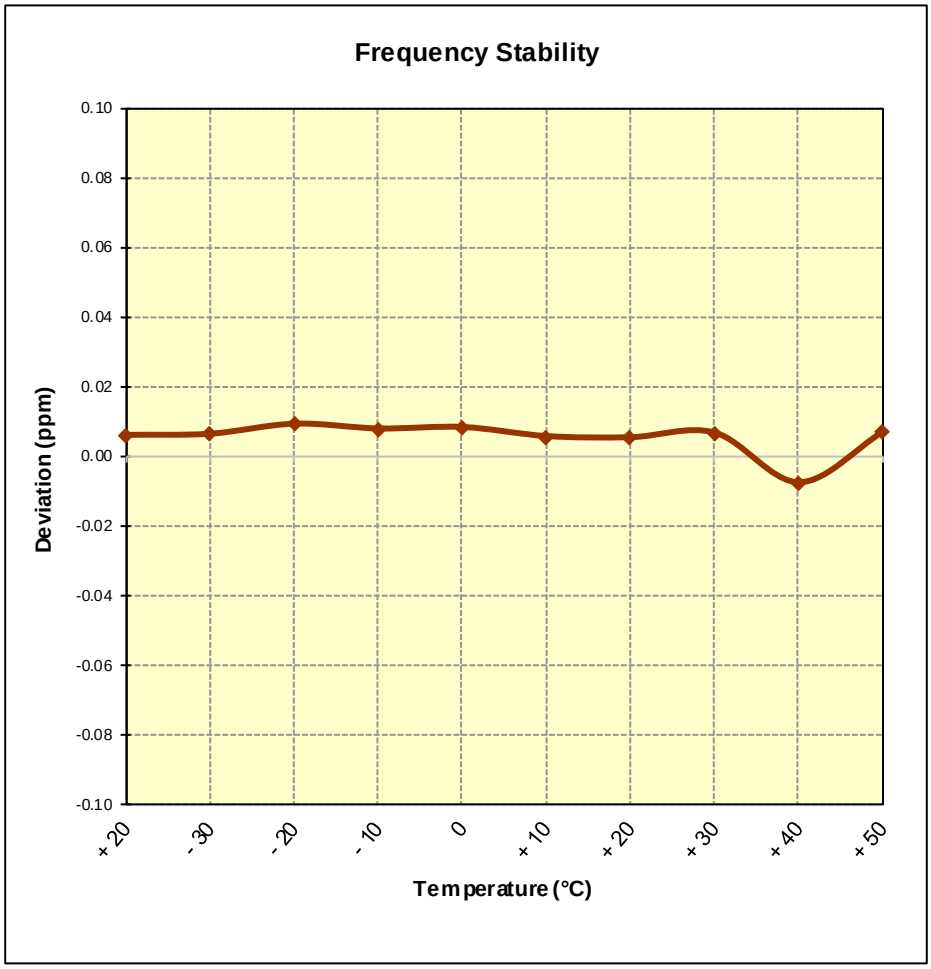


Figure 7-7. Frequency Stability Graph (Band 12)

Band 17 Frequency Stability Measurements

OPERATING FREQUENCY:	710,000,000	Hz
CHANNEL:	23,090	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20	710,000,005	5	0.0000006
100 %		- 30	710,000,005	5	0.0000007
100 %		- 20	710,000,005	5	0.0000007
100 %		- 10	710,000,004	4	0.0000006
100 %		0	710,000,004	4	0.0000006
100 %		+ 10	710,000,005	5	0.0000007
100 %		+ 20	710,000,005	5	0.0000007
100 %		+ 30	710,000,005	5	0.0000008
100 %		+ 40	710,000,004	4	0.0000006
100 %		+ 50	710,000,004	4	0.0000006
BATT. ENDPOINT	3.40	+ 20	710,000,005	5	0.0000007

Table 7-38. Frequency Stability Data (Band 17)

Note:

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

Band 17 Frequency Stability Measurements

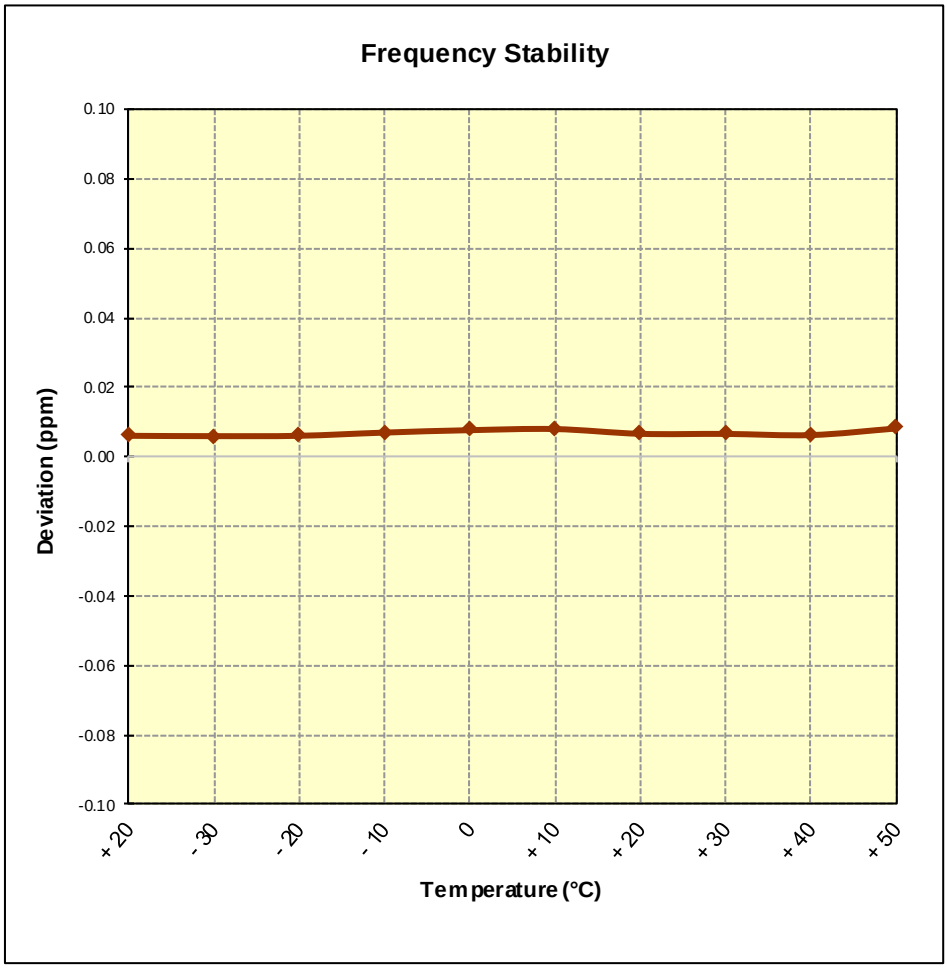


Figure 7-8. Frequency Stability Graph (Band 17)

Band 13 Frequency Stability Measurements

OPERATING FREQUENCY:	782,000,000	Hz
CHANNEL:	23230	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20	782,000,004	4	0.0000005
100 %		- 30	782,000,005	5	0.0000007
100 %		- 20	782,000,005	5	0.0000007
100 %		- 10	782,000,005	5	0.0000007
100 %		0	782,000,006	6	0.0000007
100 %		+ 10	782,000,005	5	0.0000006
100 %		+ 20	782,000,006	6	0.0000007
100 %		+ 30	782,000,004	4	0.0000005
100 %		+ 40	782,000,006	6	0.0000008
100 %		+ 50	782,000,006	6	0.0000008
BATT. ENDPOINT	3.40	+ 20	782,000,004	4	0.0000005

Table 7-39. Frequency Stability Data (Band 13)

Note:

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

Band 13 Frequency Stability Measurements

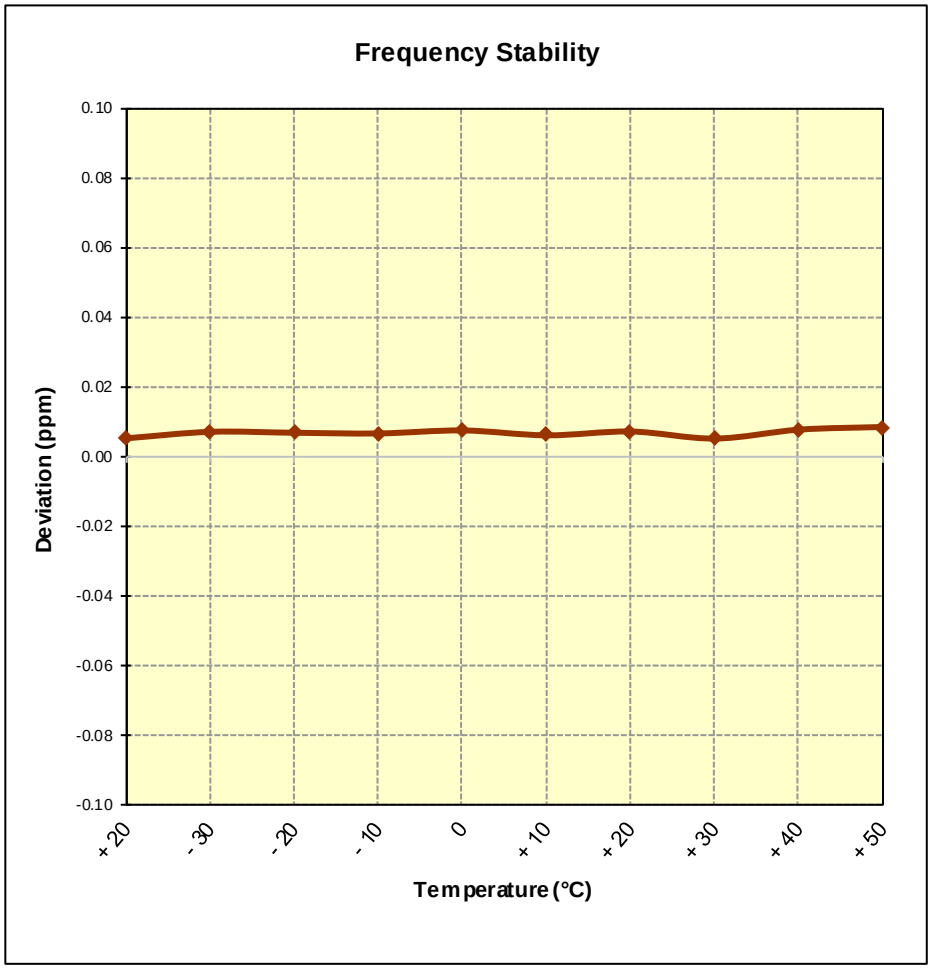


Figure 7-9. Frequency Stability Graph (Band 13)

Band 5/26 Frequency Stability Measurements

OPERATING FREQUENCY:	836,500,000	Hz
CHANNEL:	20525	
REFERENCE VOLTAGE:	3.80	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20	836,500,004	4	0.0000005
100 %		- 30	836,500,004	4	0.0000005
100 %		- 20	836,500,005	5	0.0000006
100 %		- 10	836,499,995	-5	-0.0000006
100 %		0	836,500,004	4	0.0000005
100 %		+ 10	836,500,004	4	0.0000005
100 %		+ 20	836,500,004	4	0.0000005
100 %		+ 30	836,500,006	6	0.0000007
100 %		+ 40	836,500,006	6	0.0000007
100 %		+ 50	836,500,005	5	0.0000006
BATT. ENDPOINT	3.40	+ 20	836,500,005	5	0.0000006

Table 7-40. Frequency Stability Data (Band 5/26)

Band 5/26 Frequency Stability Measurements

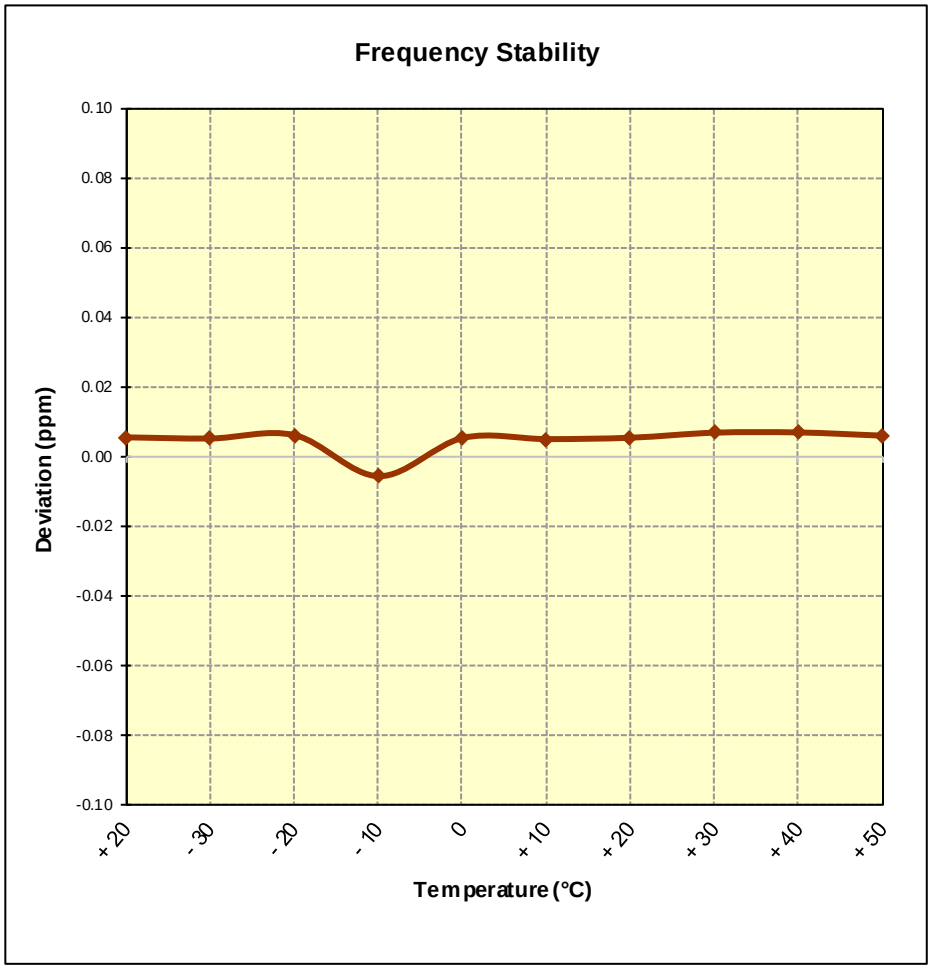


Figure 7-10. Frequency Stability Graph (Band 5/26)

Band 4 Frequency Stability Measurements

OPERATING FREQUENCY:	1,732,500,000	Hz
CHANNEL:	20175	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20	1,732,500,011	11	0.0000006
100 %		- 30	1,732,500,008	8	0.0000004
100 %		- 20	1,732,500,008	8	0.0000005
100 %		- 10	1,732,500,007	7	0.0000004
100 %		0	1,732,499,992	-8	-0.0000005
100 %		+ 10	1,732,500,008	8	0.0000005
100 %		+ 20	1,732,500,014	14	0.0000008
100 %		+ 30	1,732,500,017	17	0.0000010
100 %		+ 40	1,732,500,021	21	0.0000012
100 %		+ 50	1,732,500,018	18	0.0000010
BATT. ENDPOINT	3.40	+ 20	1,732,500,011	11	0.0000006

Table 7-41. Frequency Stability Data (Band 4)

Note:

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

Band 4 Frequency Stability Measurements

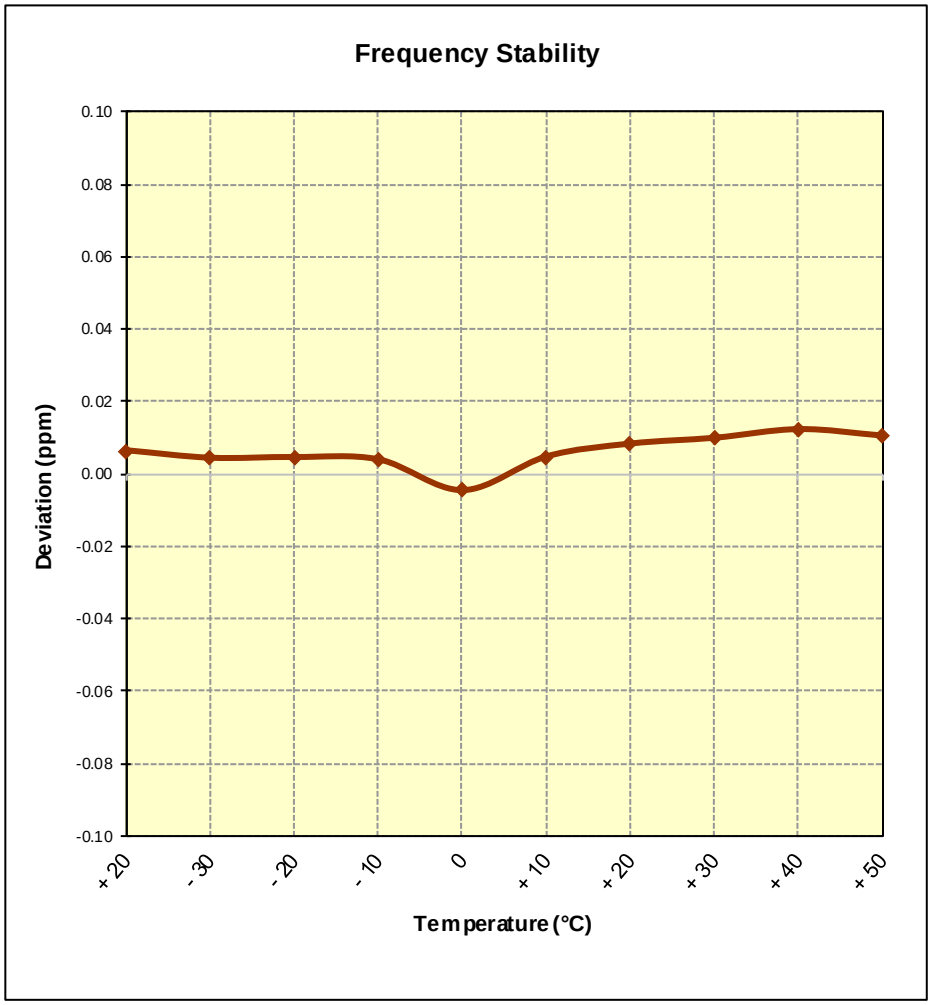


Figure 7-11. Frequency Stability Graph (Band 4)

Band 2 Frequency Stability Measurements

OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	18900	
REFERENCE VOLTAGE:	3.80	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20	1,880,000,013	13	0.0000007
100 %		- 30	1,880,000,007	7	0.0000004
100 %		- 20	1,880,000,009	9	0.0000005
100 %		- 10	1,879,999,992	-8	-0.0000004
100 %		0	1,880,000,007	7	0.0000004
100 %		+ 10	1,880,000,006	6	0.0000003
100 %		+ 20	1,880,000,021	21	0.0000011
100 %		+ 30	1,880,000,019	19	0.0000010
100 %		+ 40	1,880,000,018	18	0.0000010
100 %		+ 50	1,880,000,022	22	0.0000011
BATT. ENDPOINT	3.40	+ 20	1,880,000,014	14	0.0000008

Table 7-42. Frequency Stability Data (Band 2)

Band 2 Frequency Stability Measurements

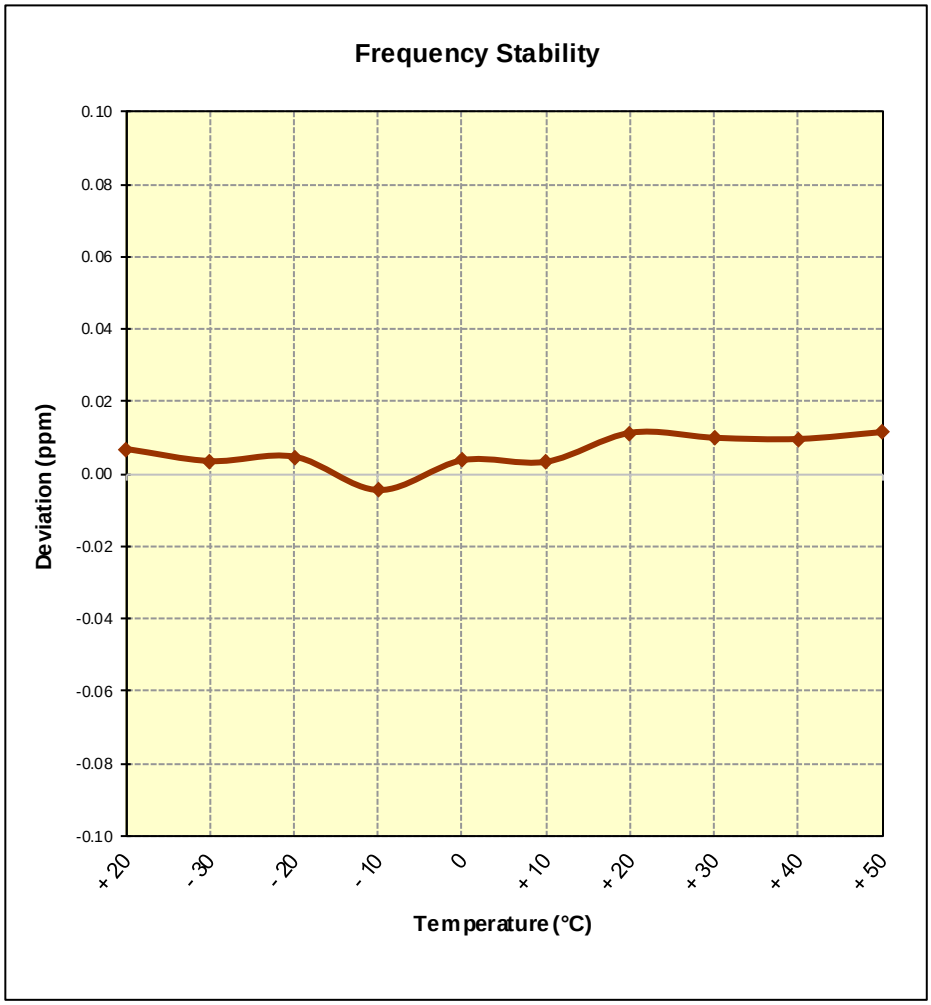


Figure 7-12. Frequency Stability Graph (Band 2)

Band 25 Frequency Stability Measurements

OPERATING FREQUENCY:	1,882,500,000	Hz
CHANNEL:	26365	
REFERENCE VOLTAGE:	3.80	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20	1,882,500,017	17	0.0000009
100 %		- 30	1,882,500,009	9	0.0000005
100 %		- 20	1,882,500,010	10	0.0000005
100 %		- 10	1,882,499,994	-6	-0.0000003
100 %		0	1,882,500,009	9	0.0000005
100 %		+ 10	1,882,500,008	8	0.0000004
100 %		+ 20	1,882,500,019	19	0.0000010
100 %		+ 30	1,882,500,019	19	0.0000010
100 %		+ 40	1,882,500,025	25	0.0000013
100 %		+ 50	1,882,500,023	23	0.0000012
BATT. ENDPOINT	3.40	+ 20	1,882,500,016	16	0.0000009

Table 7-43. Frequency Stability Data (Band 25)

Band 25 Frequency Stability Measurements

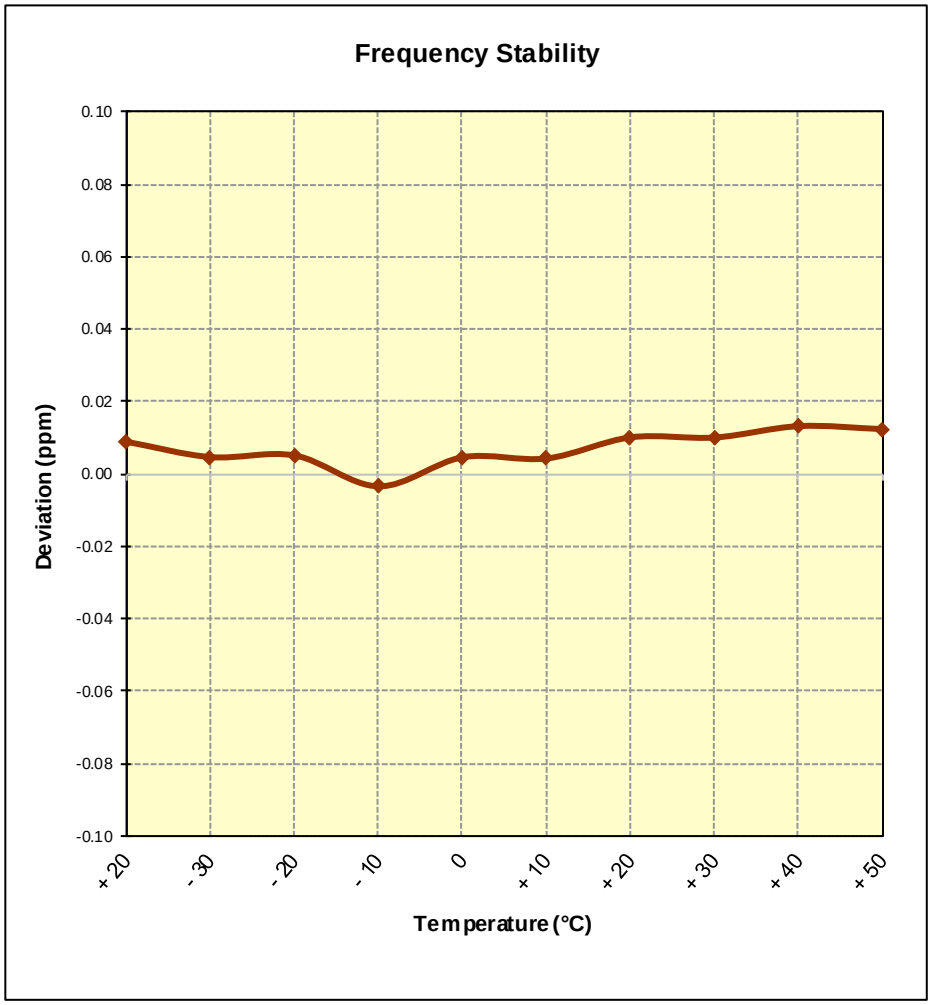


Figure 7-13. Frequency Stability Graph (Band 25)

Band 41 Frequency Stability Measurements

OPERATING FREQUENCY:	2,593,000,000	Hz
CHANNEL:	40620	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20	2,593,000,036	36	0.0000014
100 %		- 30	2,593,000,033	33	0.0000013
100 %		- 20	2,593,000,023	23	0.0000009
100 %		- 10	2,593,000,034	34	0.0000013
100 %		0	2,593,000,029	29	0.0000011
100 %		+ 10	2,593,000,030	30	0.0000012
100 %		+ 20	2,593,000,033	33	0.0000013
100 %		+ 30	2,593,000,035	35	0.0000013
100 %		+ 40	2,593,000,030	30	0.0000012
100 %		+ 50	2,593,000,031	31	0.0000012
BATT. ENDPOINT	3.40	+ 20	2,593,000,036	36	0.0000014

Table 7-44. Frequency Stability Data (Band 41)

Note:

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

Band 41 Frequency Stability Measurements

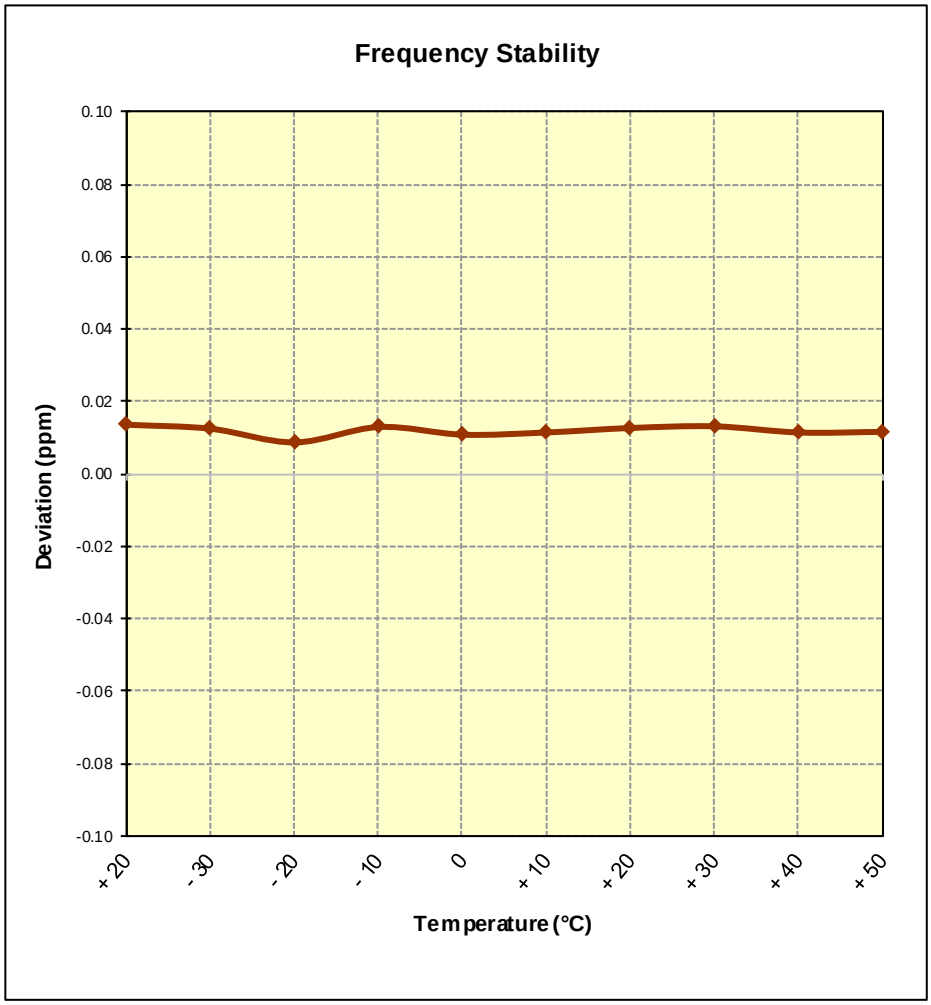


Figure 7-14. Frequency Stability Graph (Band 41)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Apple Watch FCC ID: BCG-A1975** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.