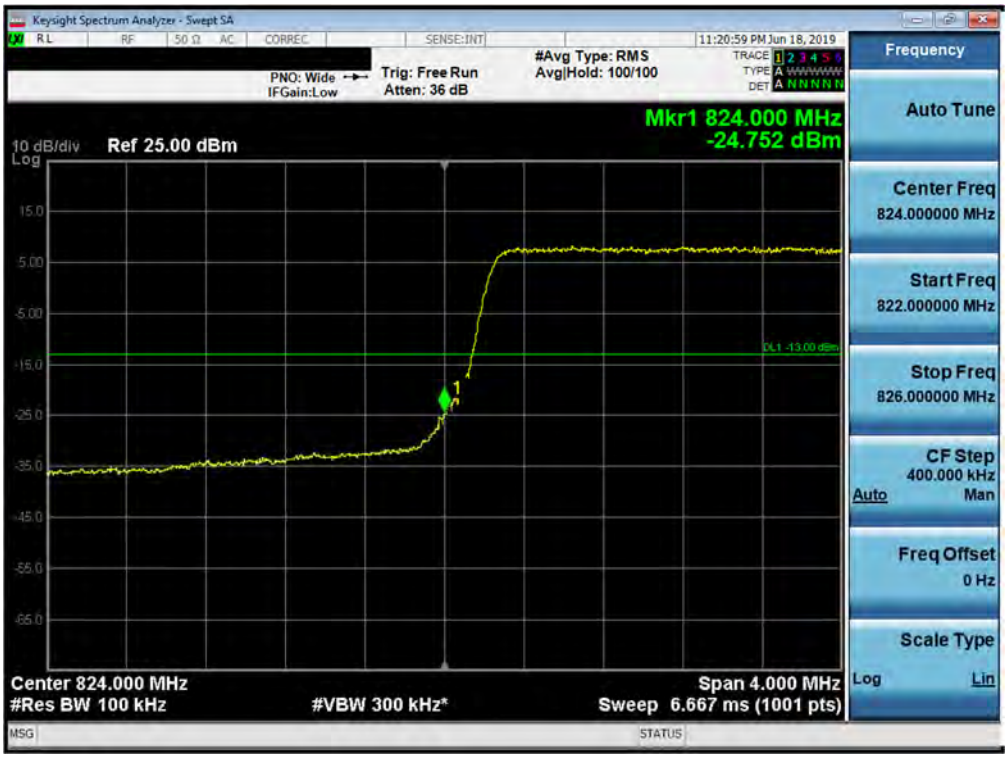
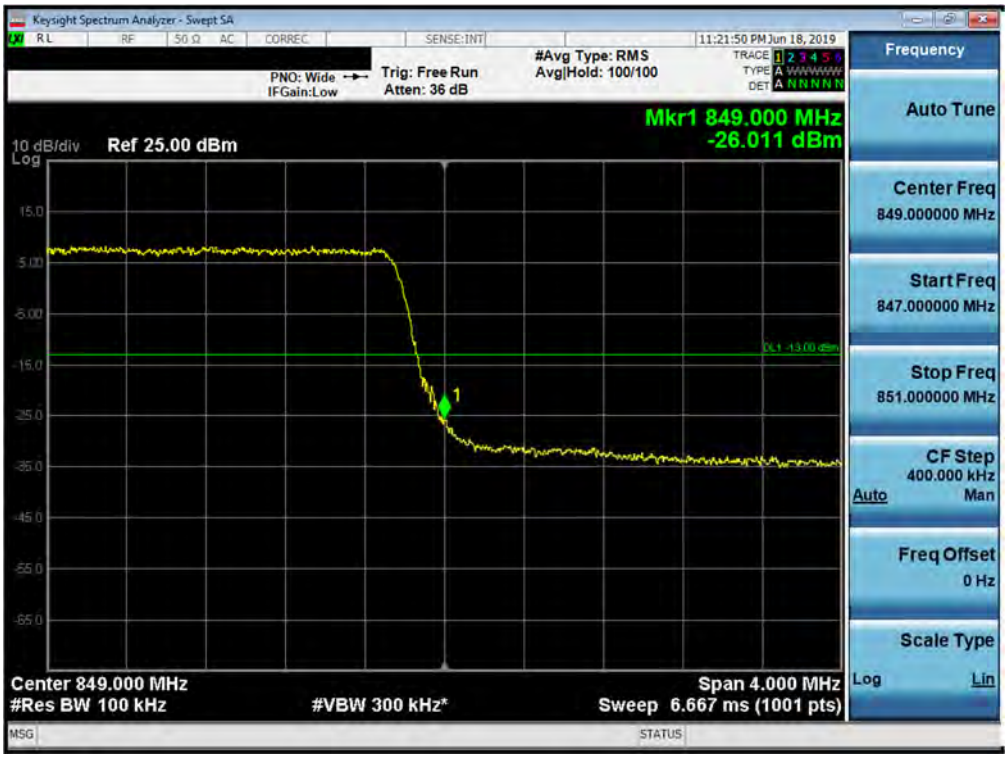
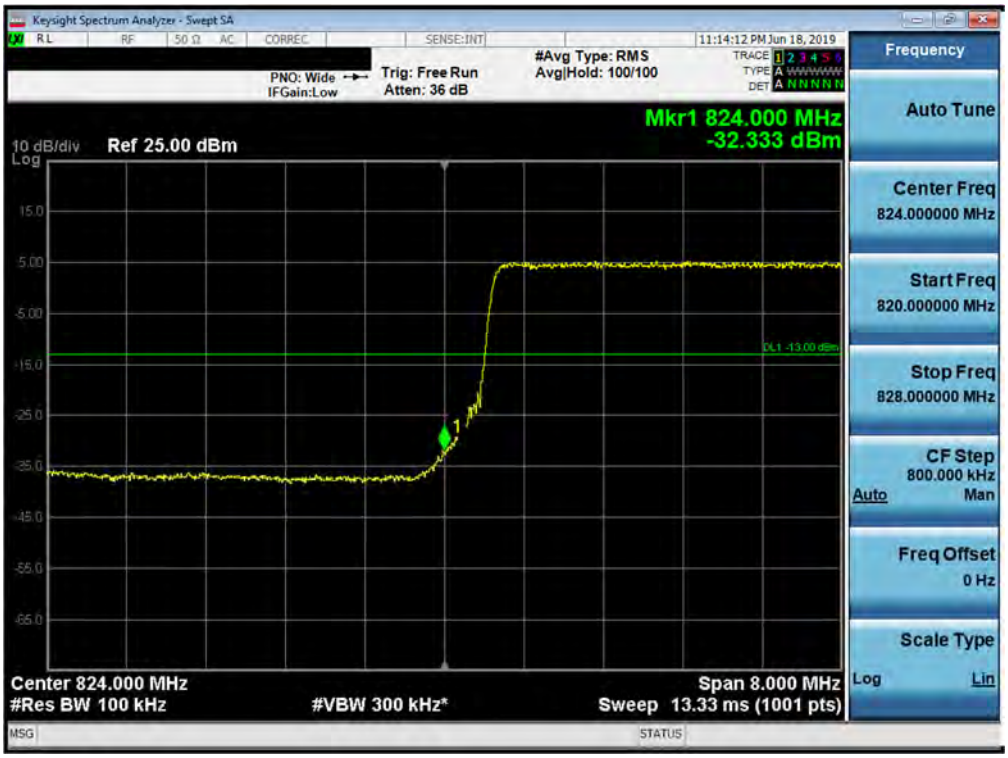


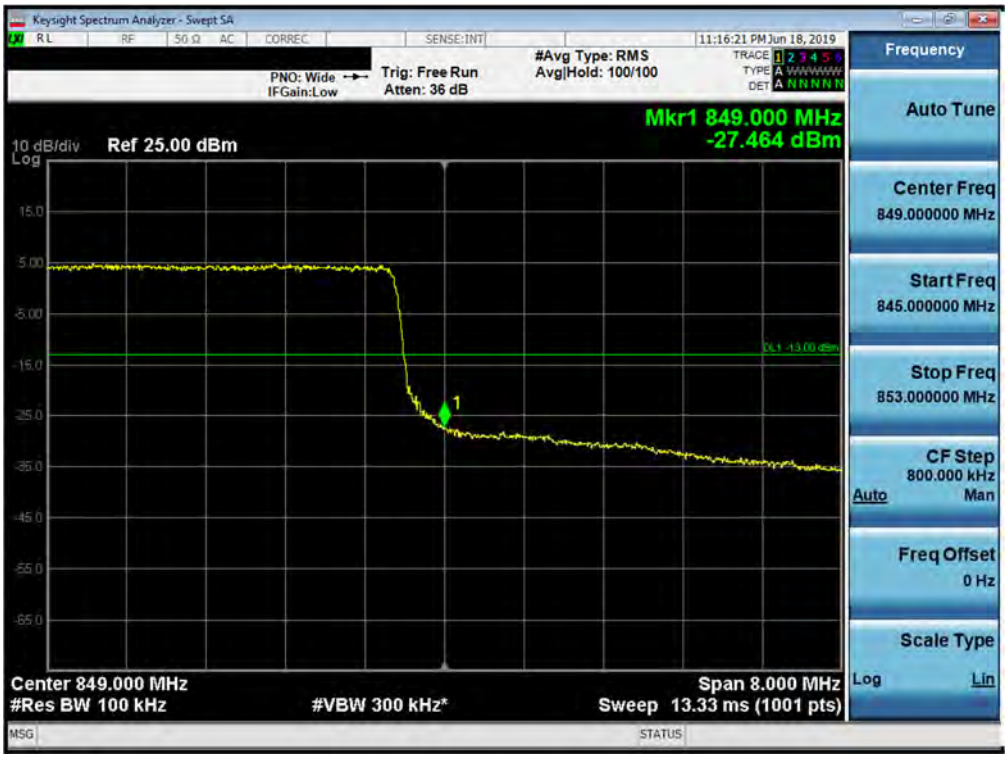
Plot 7-152. Lower Band Edge Plot (Band 26/5 - 5.0MHz QPSK - Full RB Configuration)



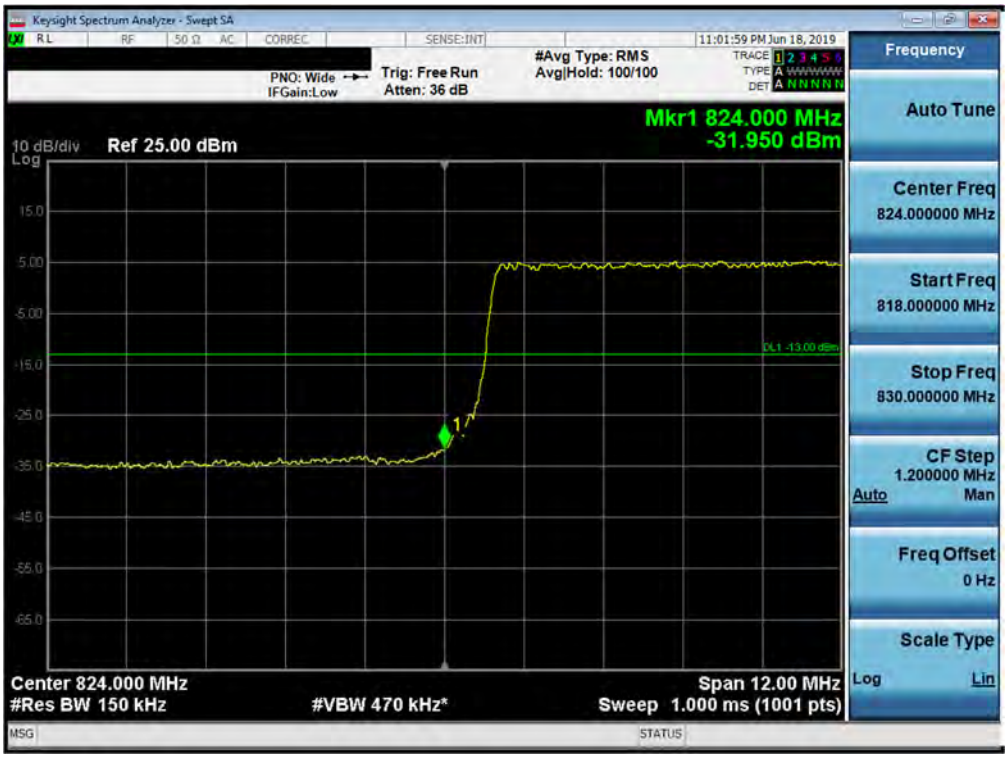
Plot 7-153. Upper Band Edge Plot (Band 26/5 - 5.0MHz QPSK - Full RB Configuration)



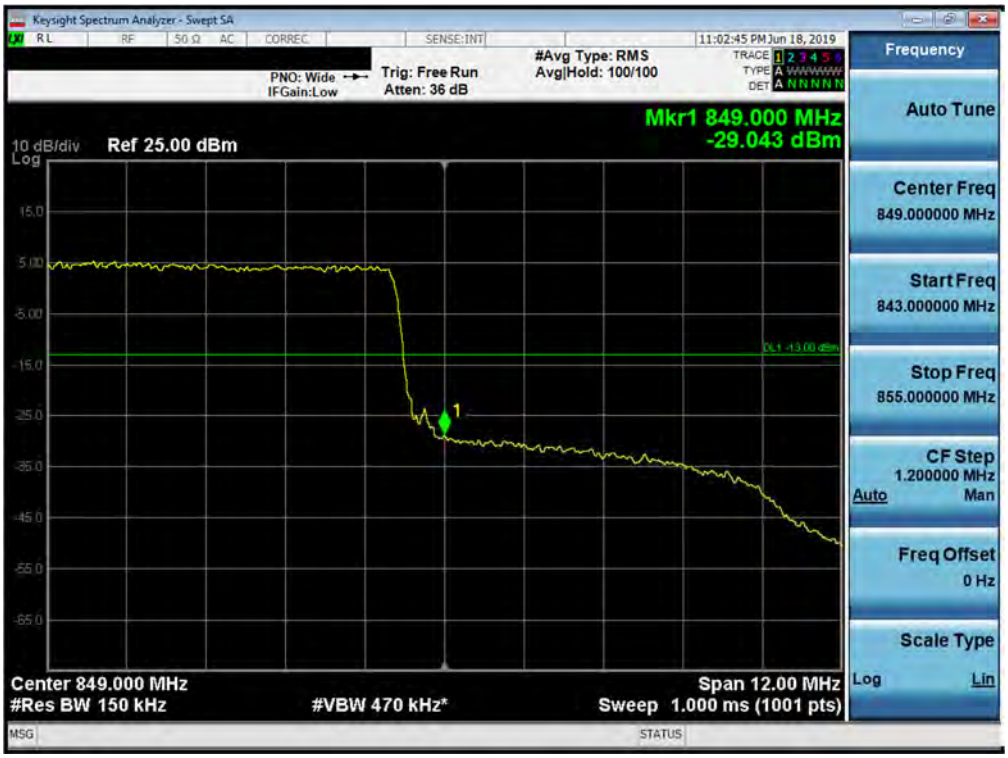
Plot 7-154. Lower Band Edge Plot (Band 26/5 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-155. Upper Band Edge Plot (Band 26/5 - 10.0MHz QPSK - Full RB Configuration)

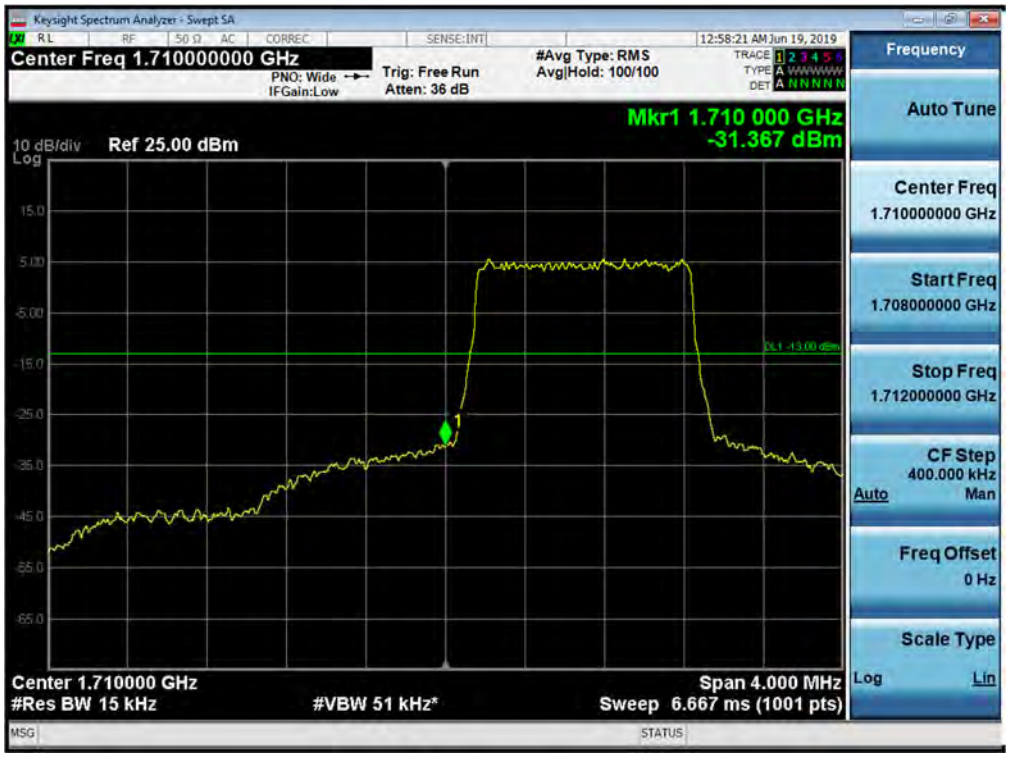


Plot 7-156. Lower Band Edge Plot (Band 26 - 15.0MHz QPSK - Full RB Configuration)

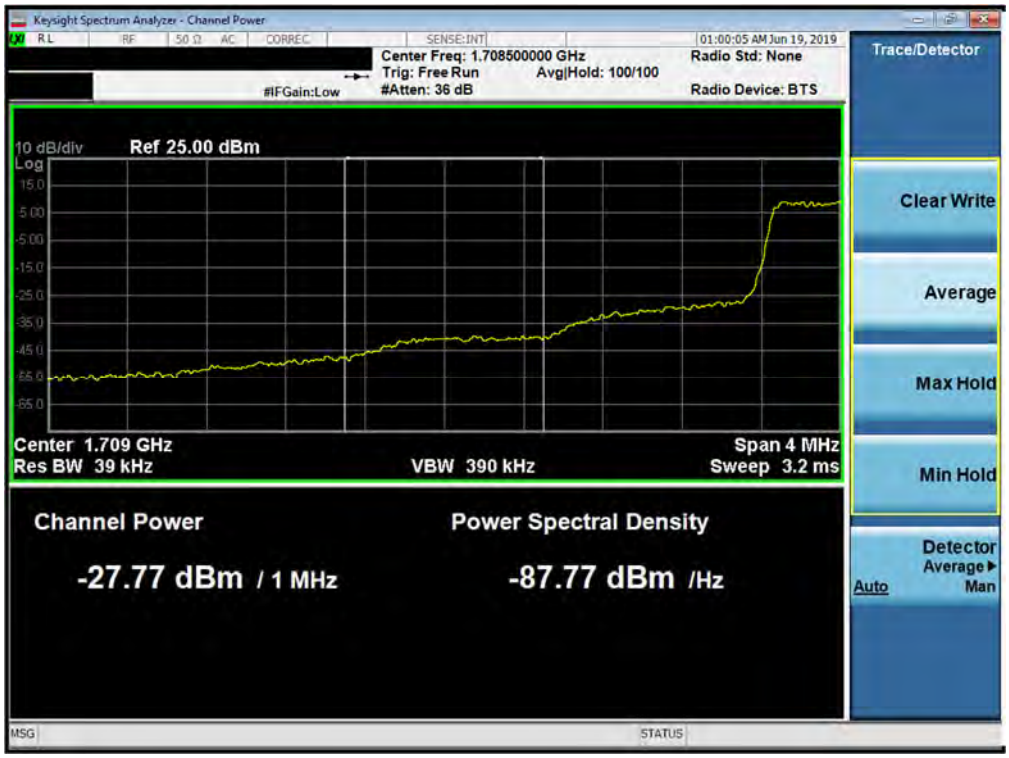


Plot 7-157. Upper Band Edge Plot (Band 26 - 15.0MHz QPSK - Full RB Configuration)

Band 66/4

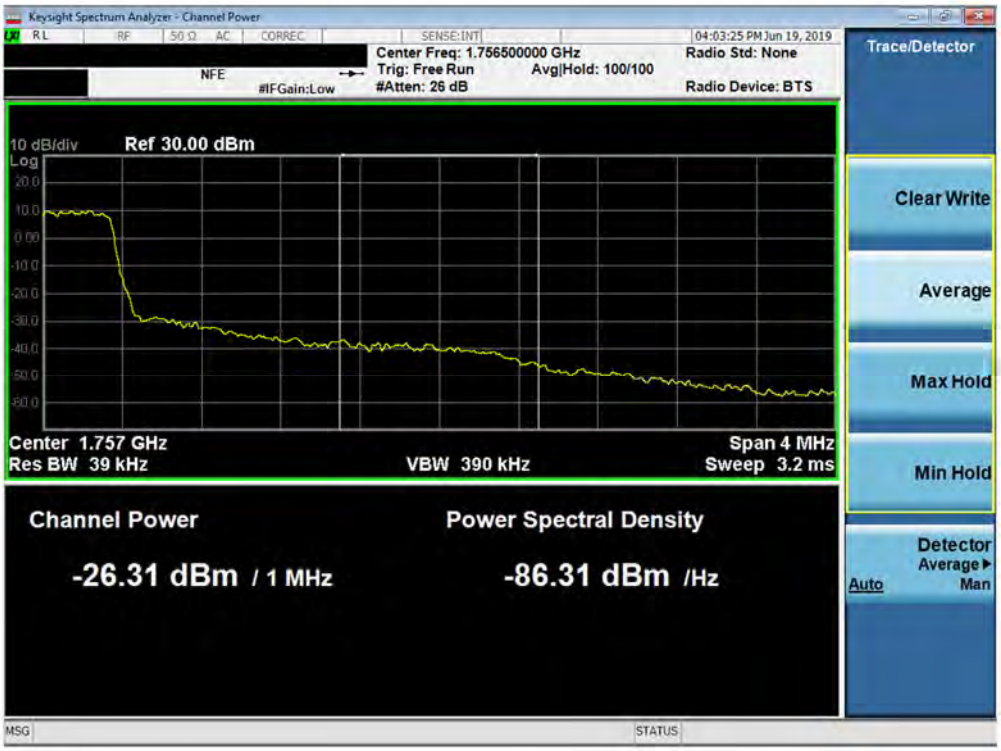


Plot 7-158. Lower Band Edge Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

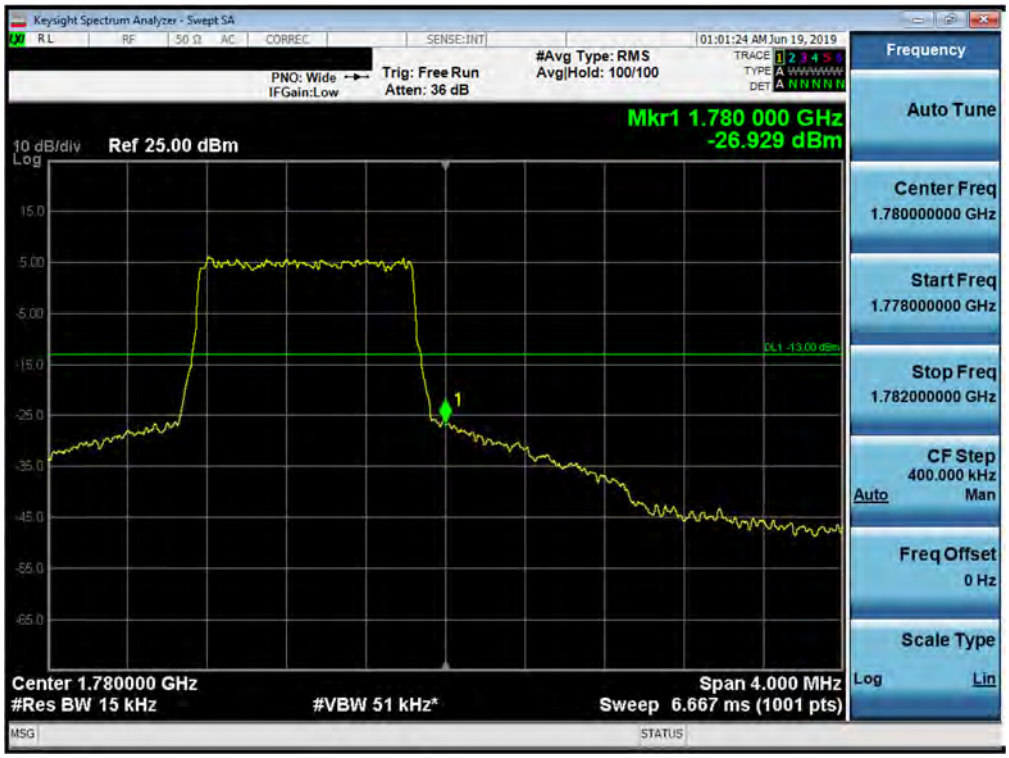


Plot 7-159. Lower Extended Band Edge Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)

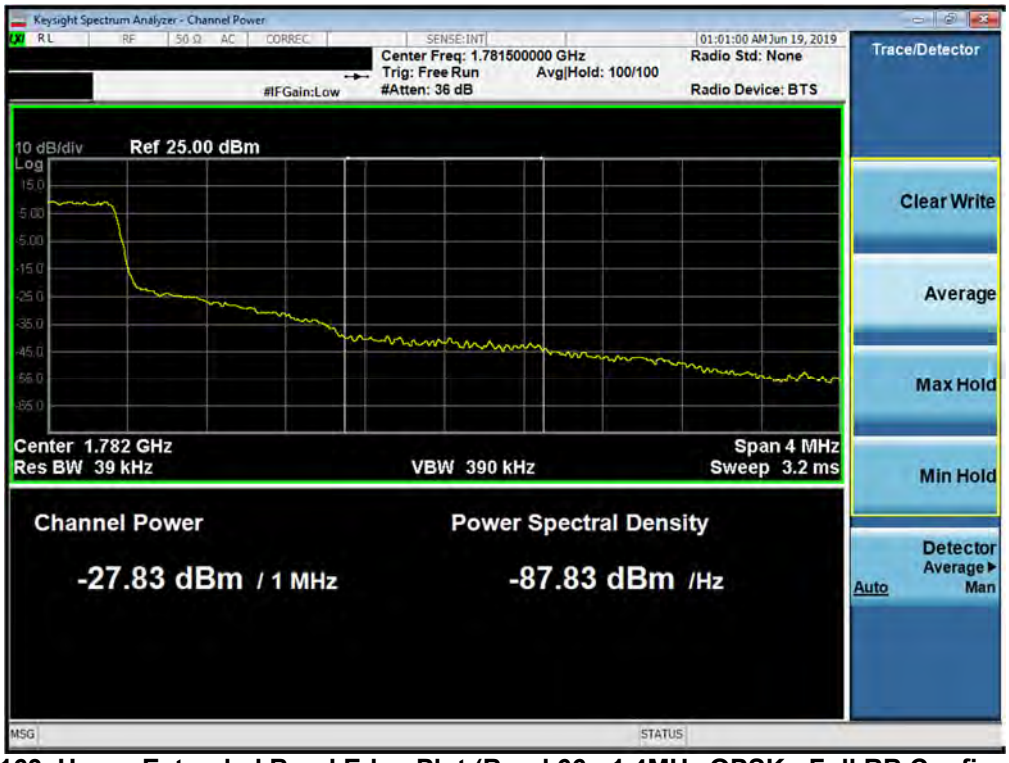
Plot 7-160. Upper Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)



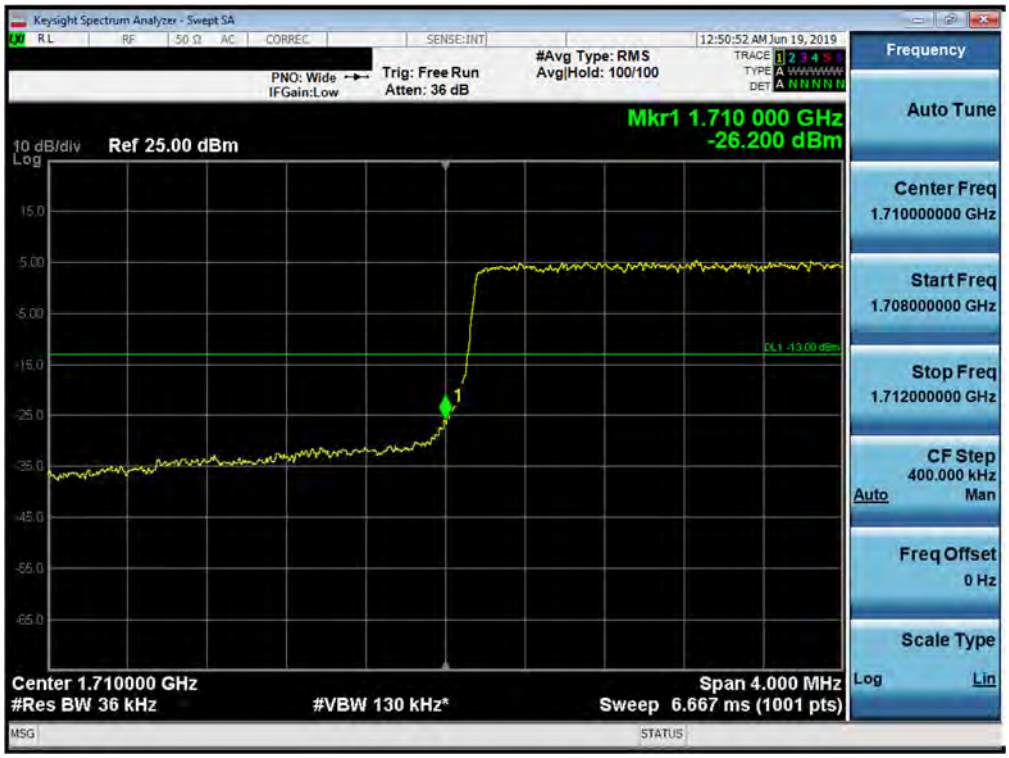
Plot 7-161. Upper Extended Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)



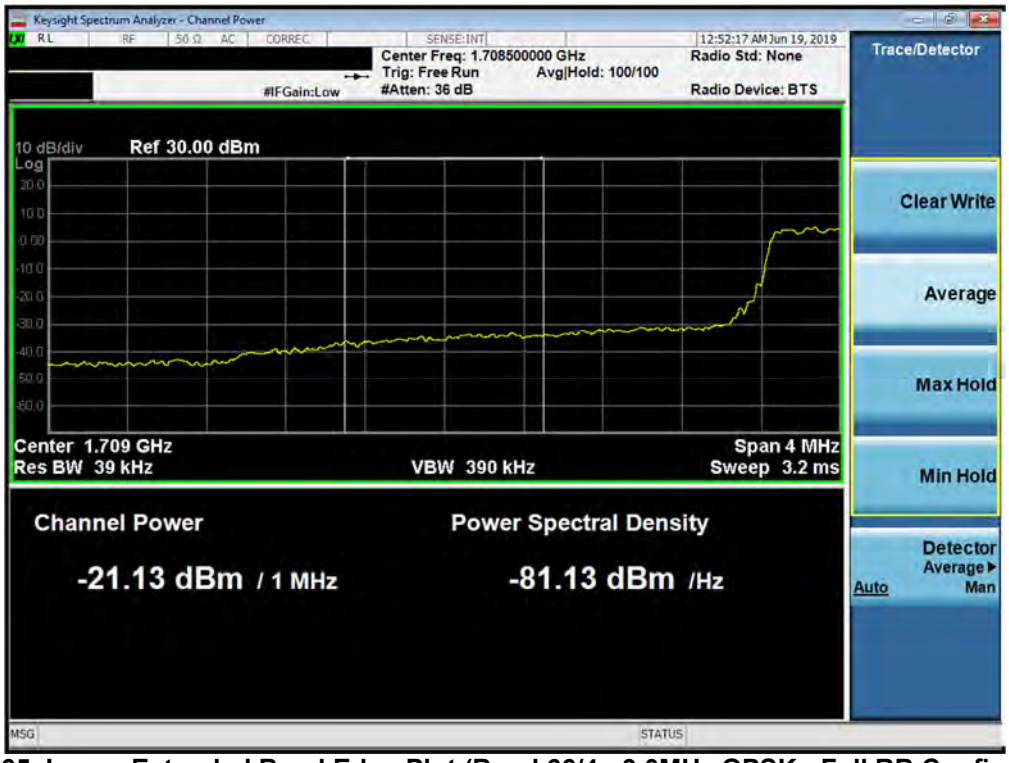
Plot 7-162. Upper Band Edge Plot (Band 66 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-163. Upper Extended Band Edge Plot (Band 66 - 1.4MHz QPSK - Full RB Configuration)

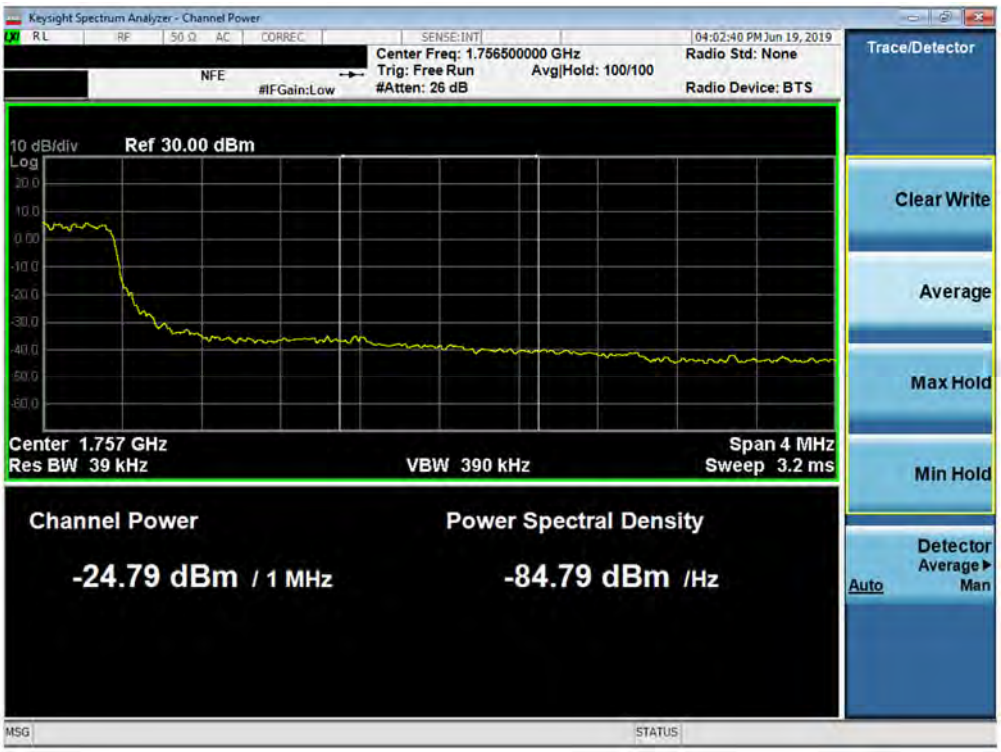


Plot 7-164. Lower Band Edge Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

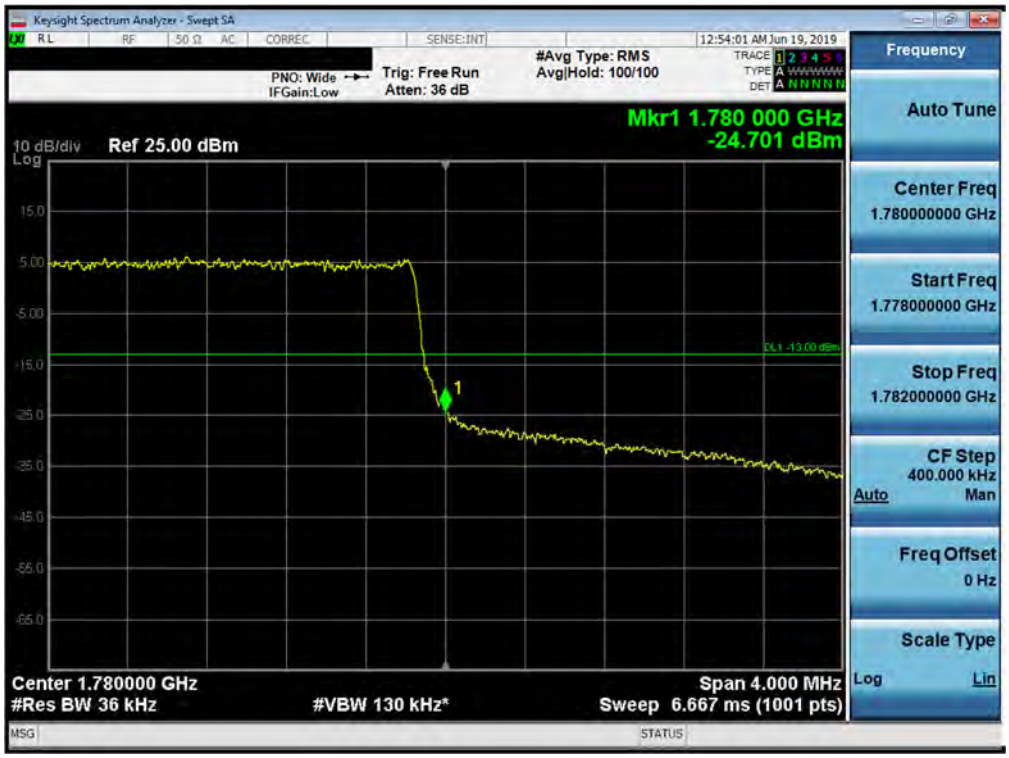


Plot 7-165. Lower Extended Band Edge Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)

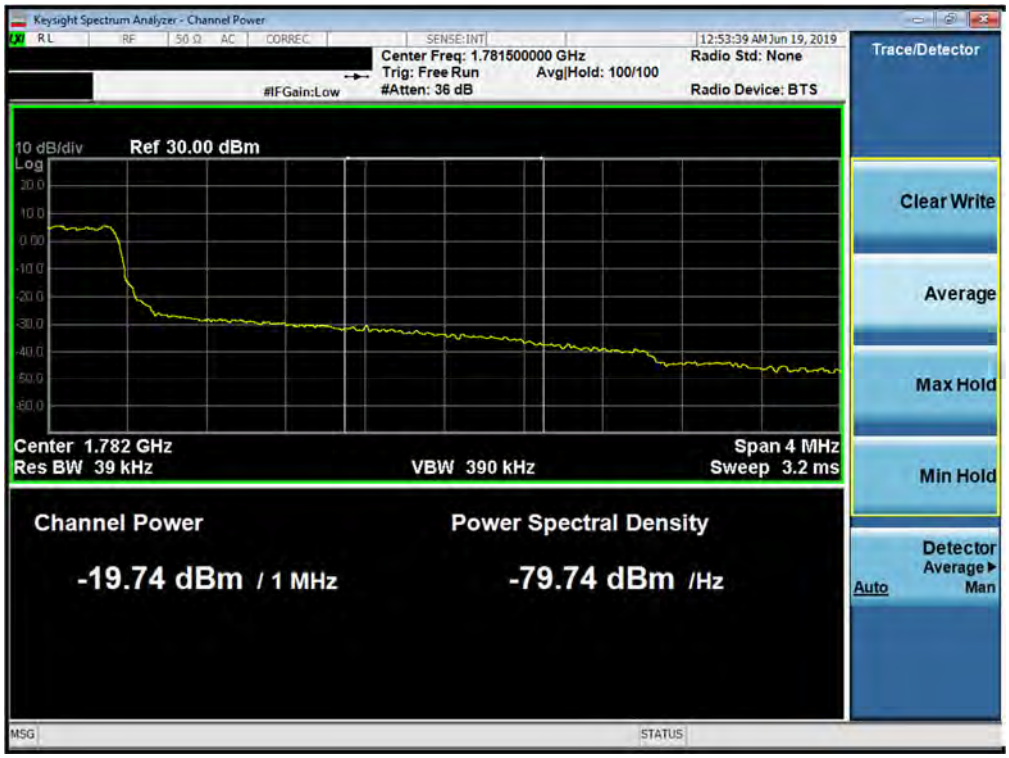
Plot 7-166. Upper Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)



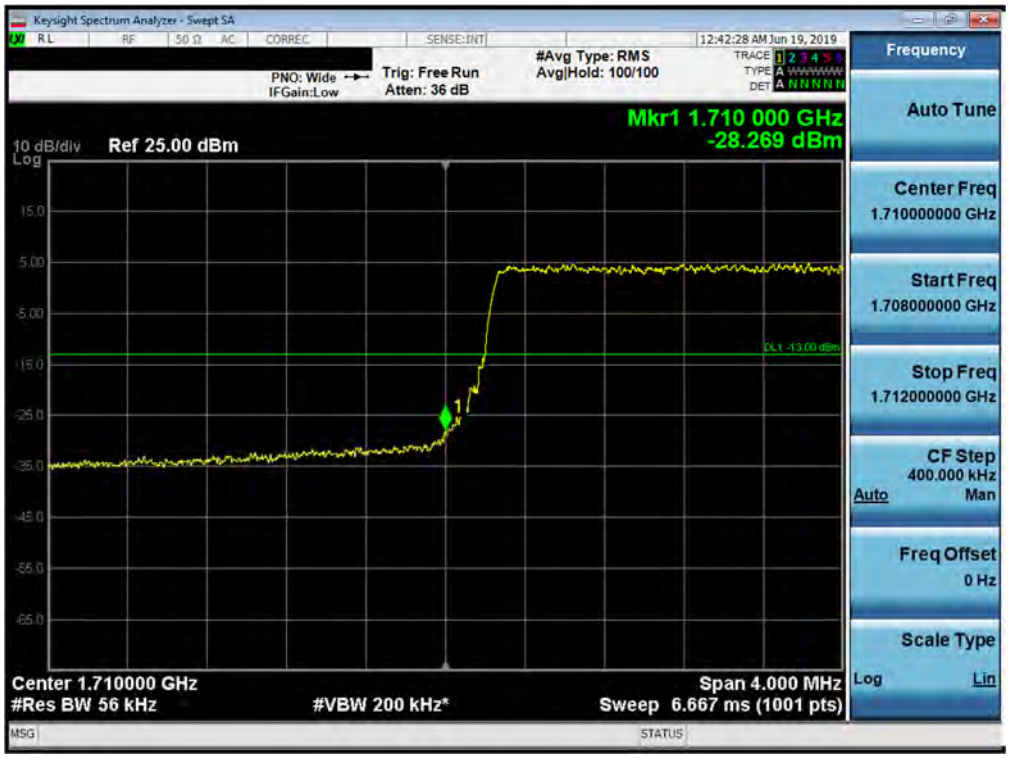
Plot 7-167. Upper Extended Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)



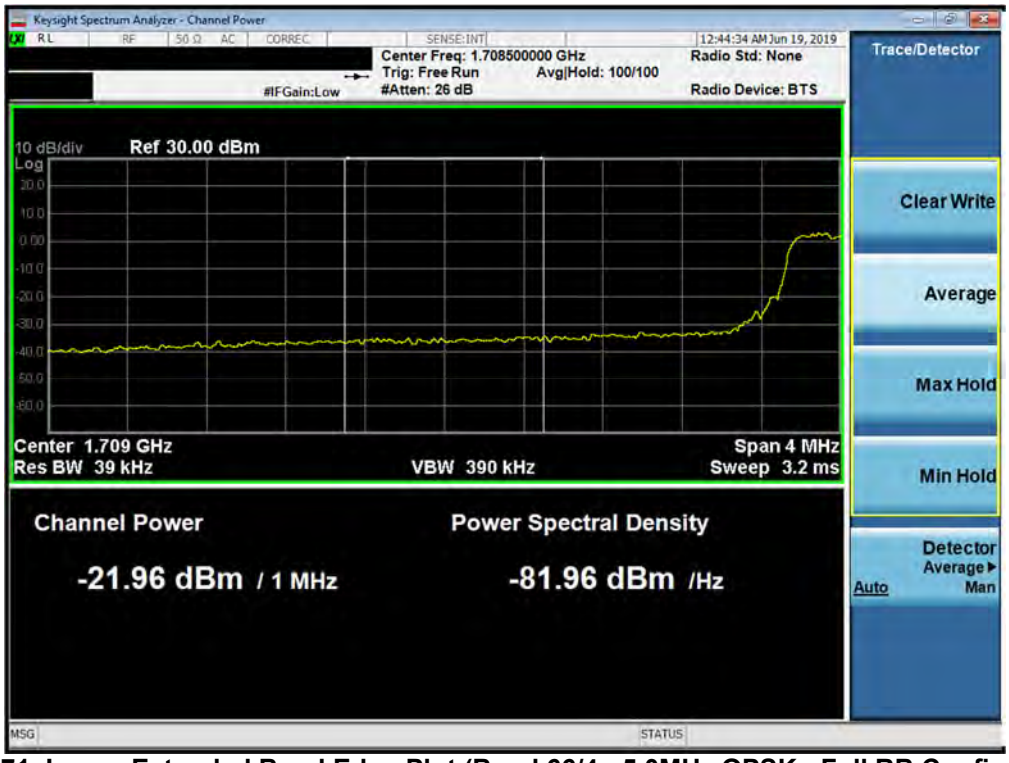
Plot 7-168. Upper Band Edge Plot (Band 66 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-169. Upper Extended Band Edge Plot (Band 66 - 3.0MHz QPSK - Full RB Configuration)

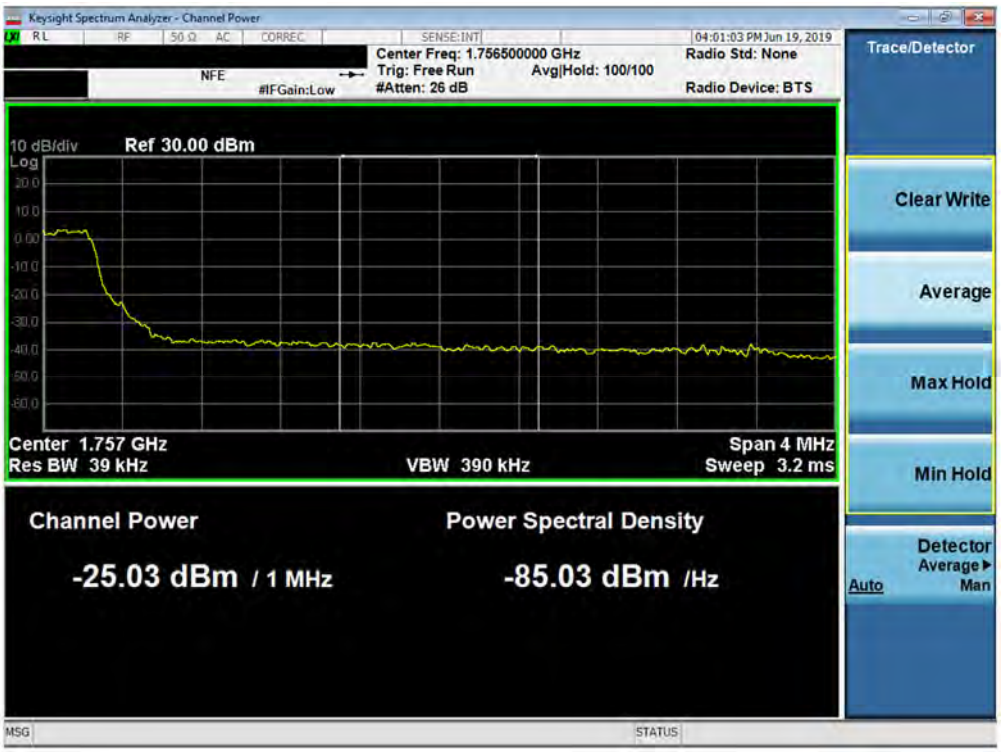


Plot 7-170. Lower Band Edge Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

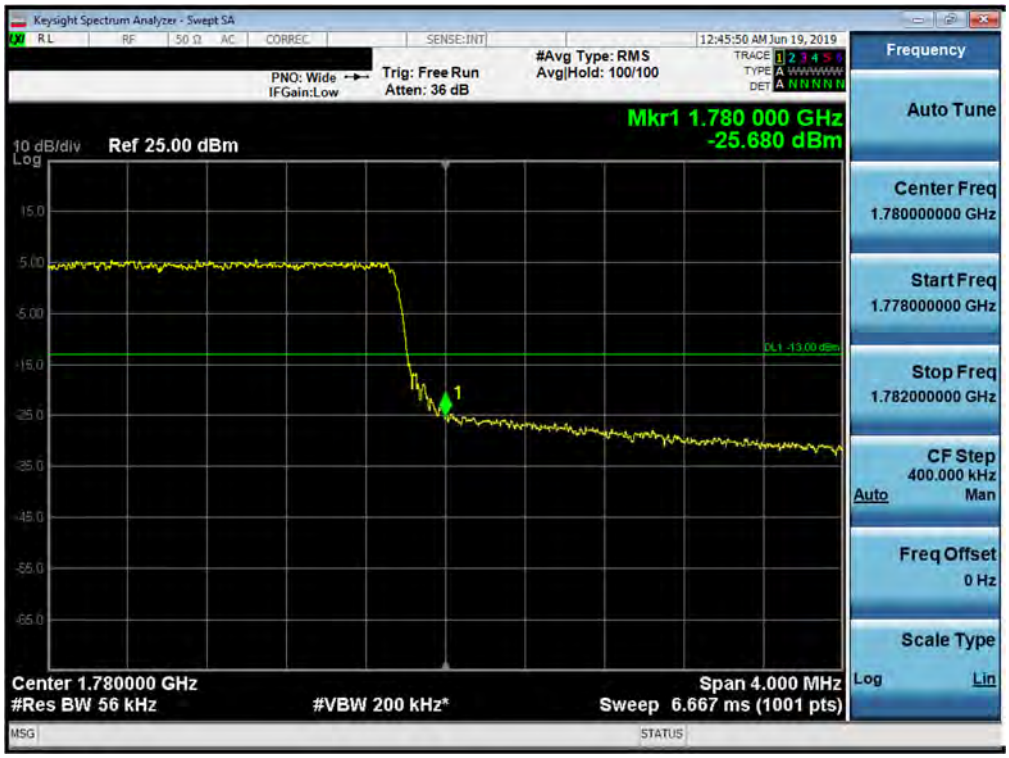


Plot 7-171. Lower Extended Band Edge Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

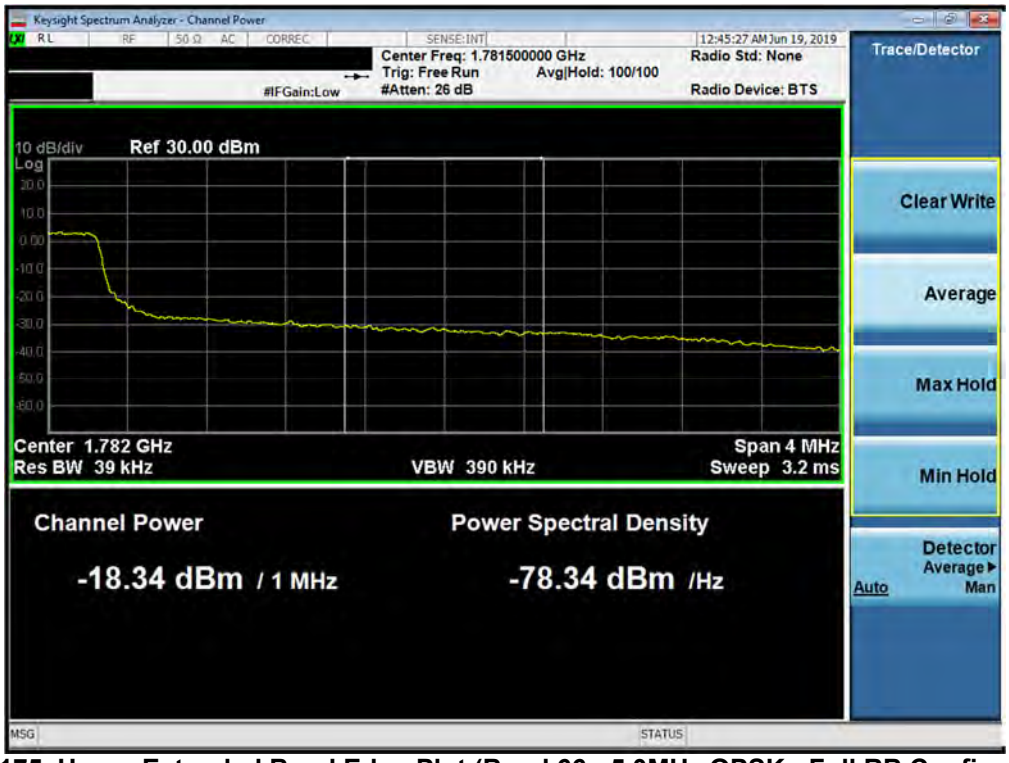
Plot 7-172. Upper Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)



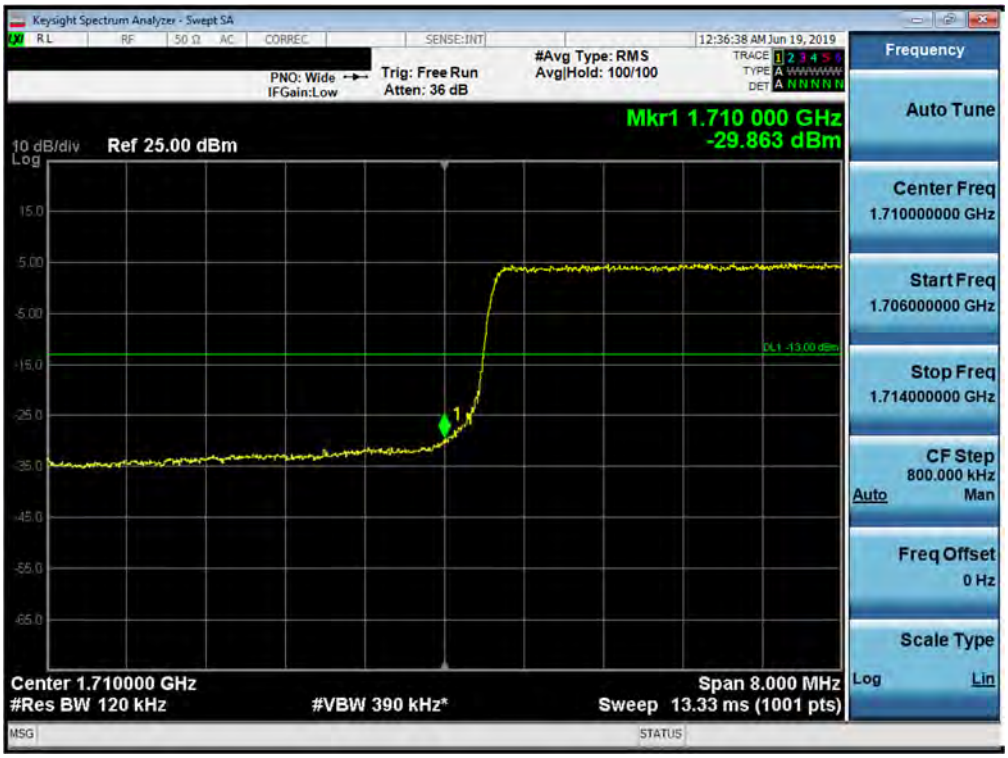
Plot 7-173. Upper Extended Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)



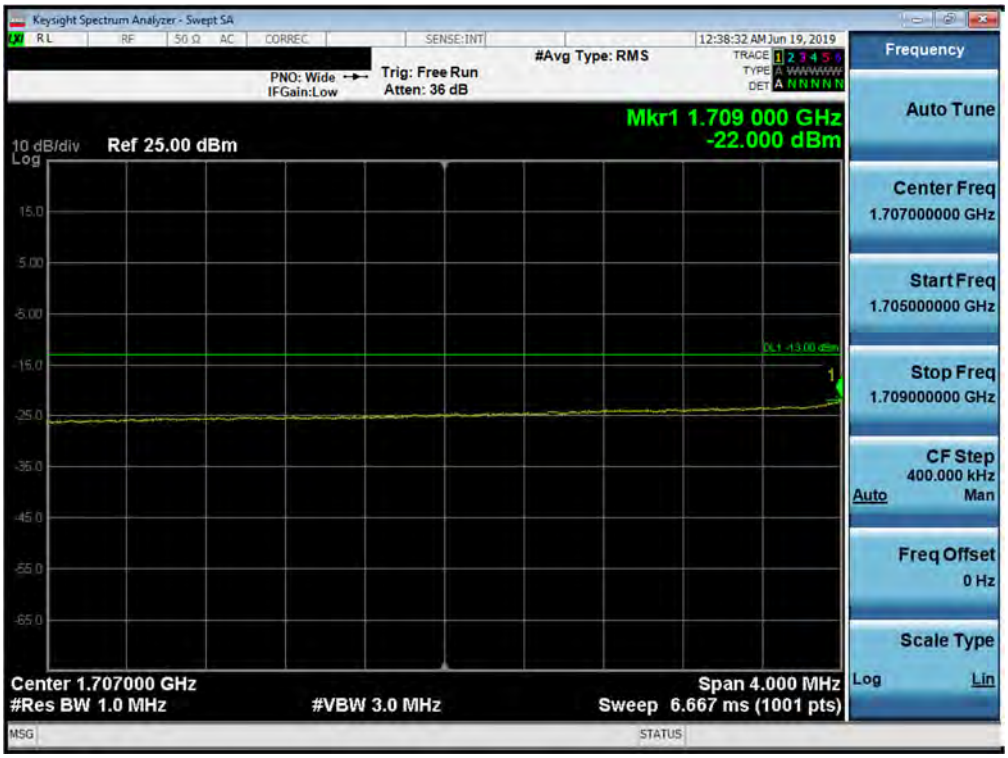
Plot 7-174. Upper Band Edge Plot (Band 66 - 5.0MHz QPSK - Full RB Configuration)



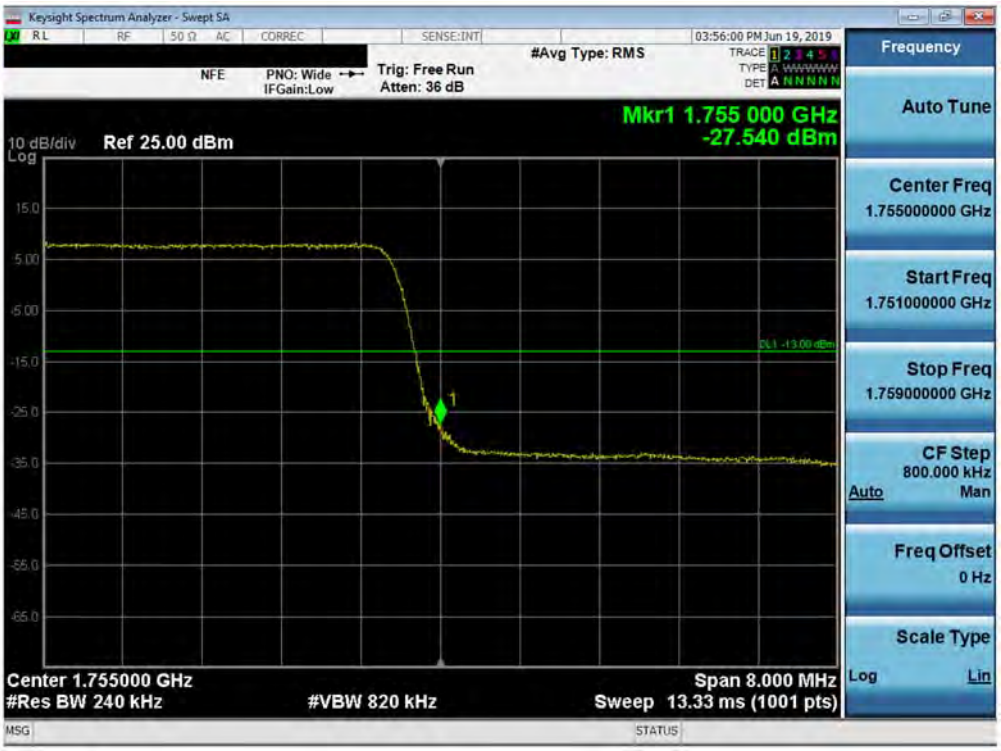
Plot 7-175. Upper Extended Band Edge Plot (Band 66 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-176. Lower Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

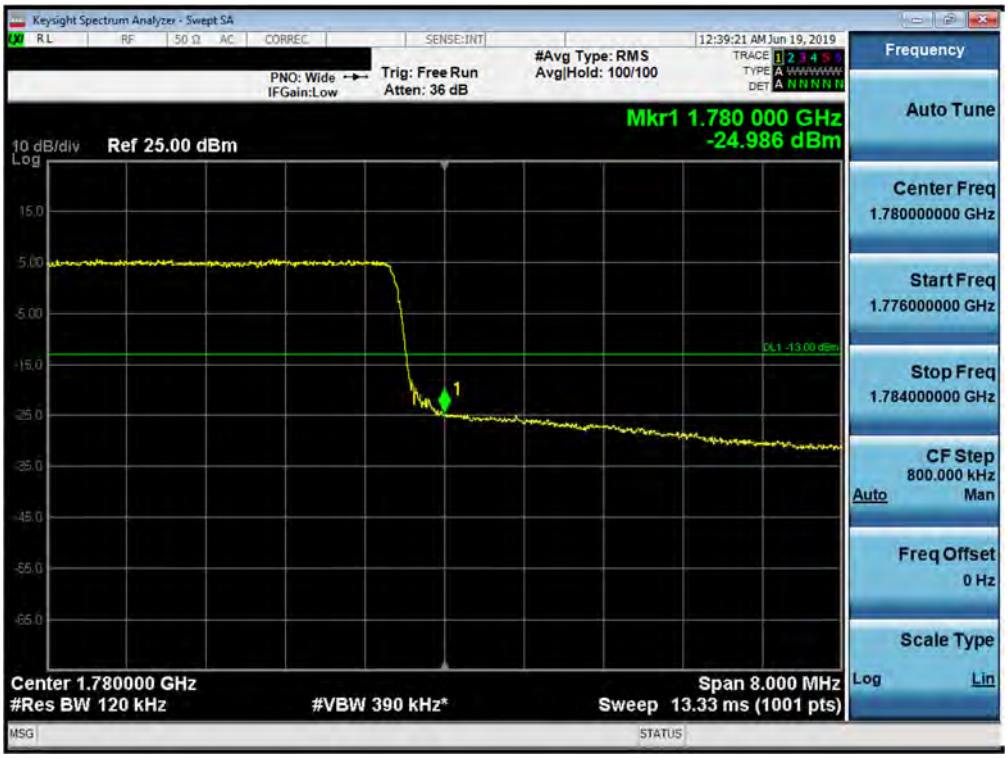


Plot 7-177. Lower Extended Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

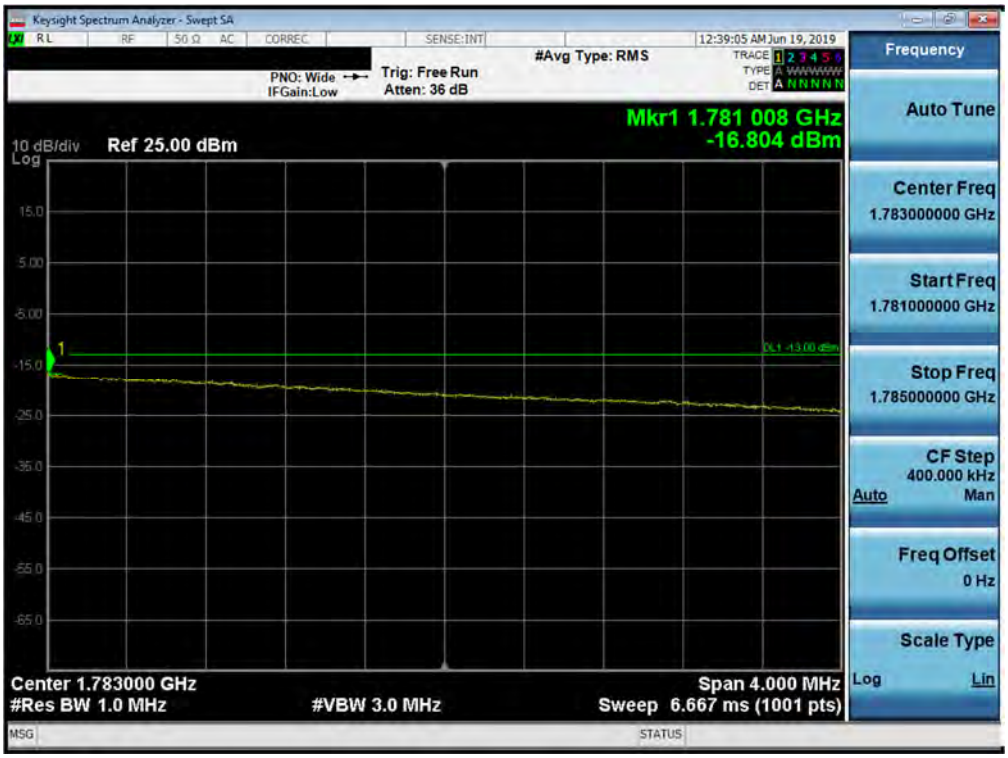


Plot 7-178. Upper Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

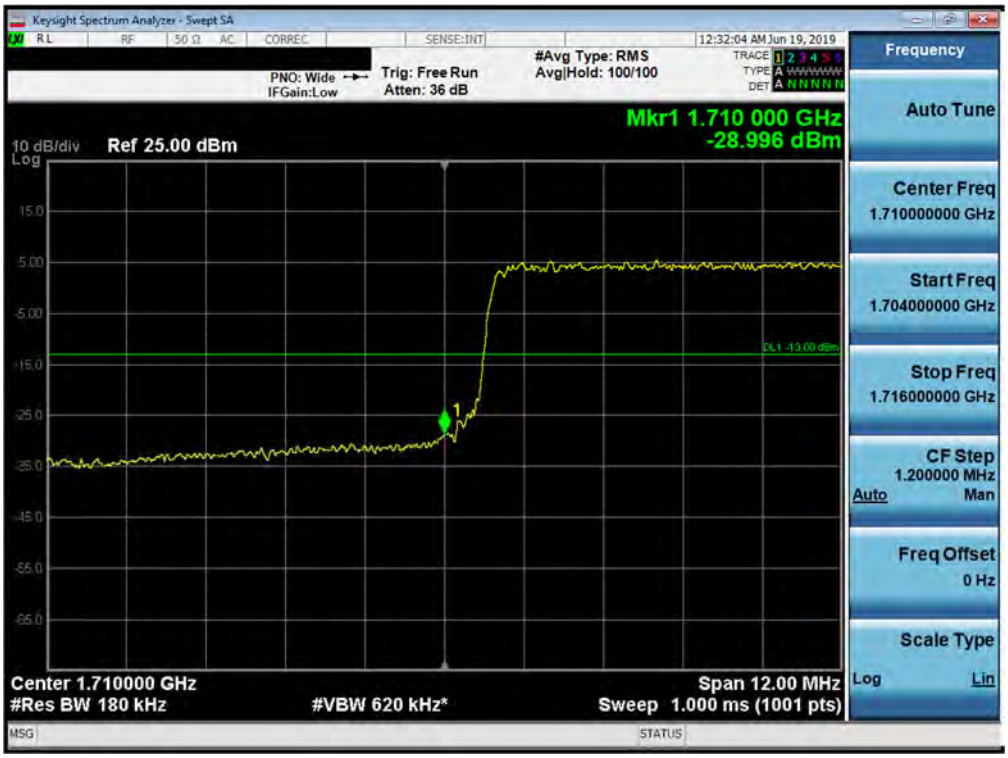
Plot 7-179. Upper Extended Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)



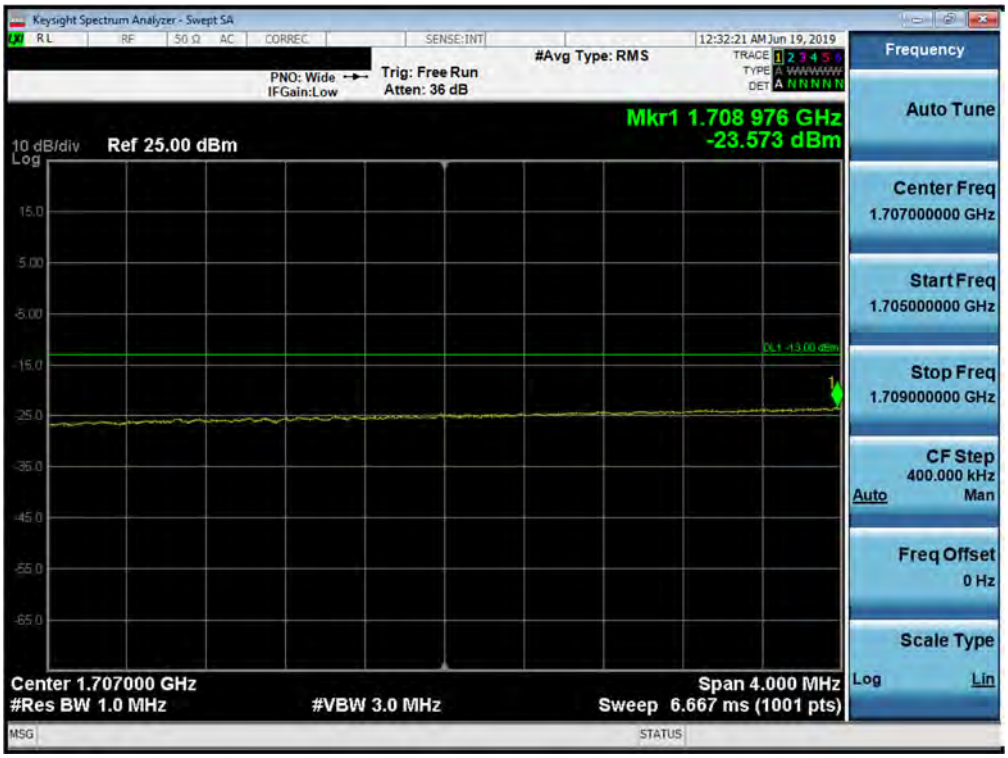
Plot 7-180. Upper Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-181. Upper Extended Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)



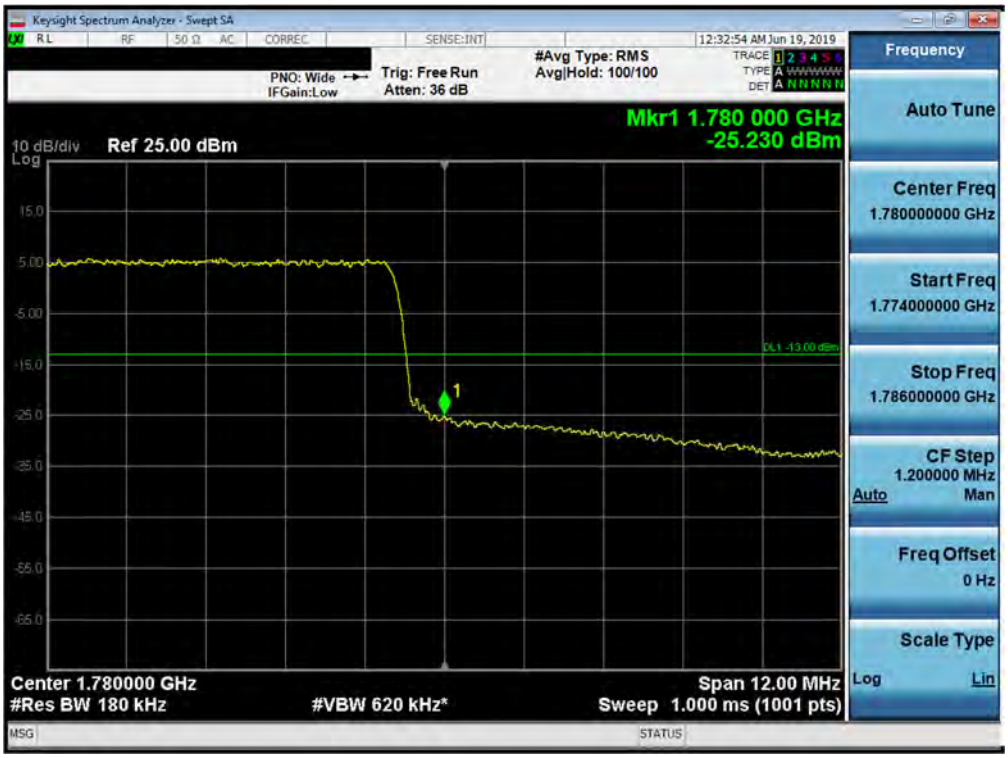
Plot 7-182. Lower Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



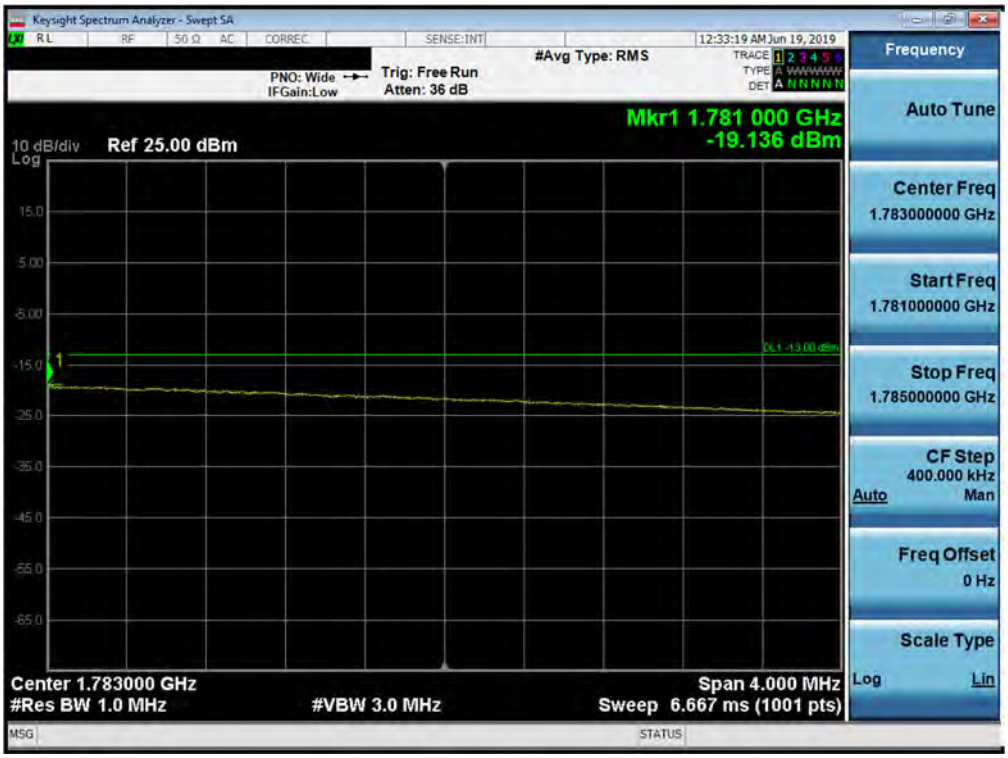
Plot 7-183. Lower Extended Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)

Plot 7-184. Upper Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)

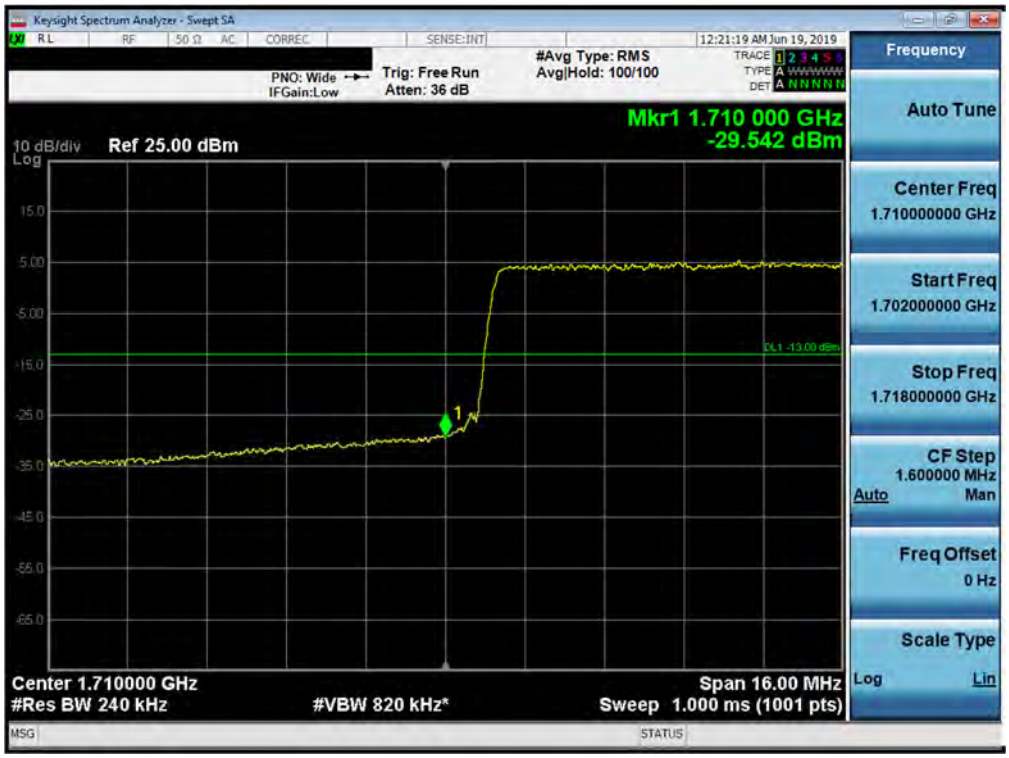
Plot 7-185. Upper Extended Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)



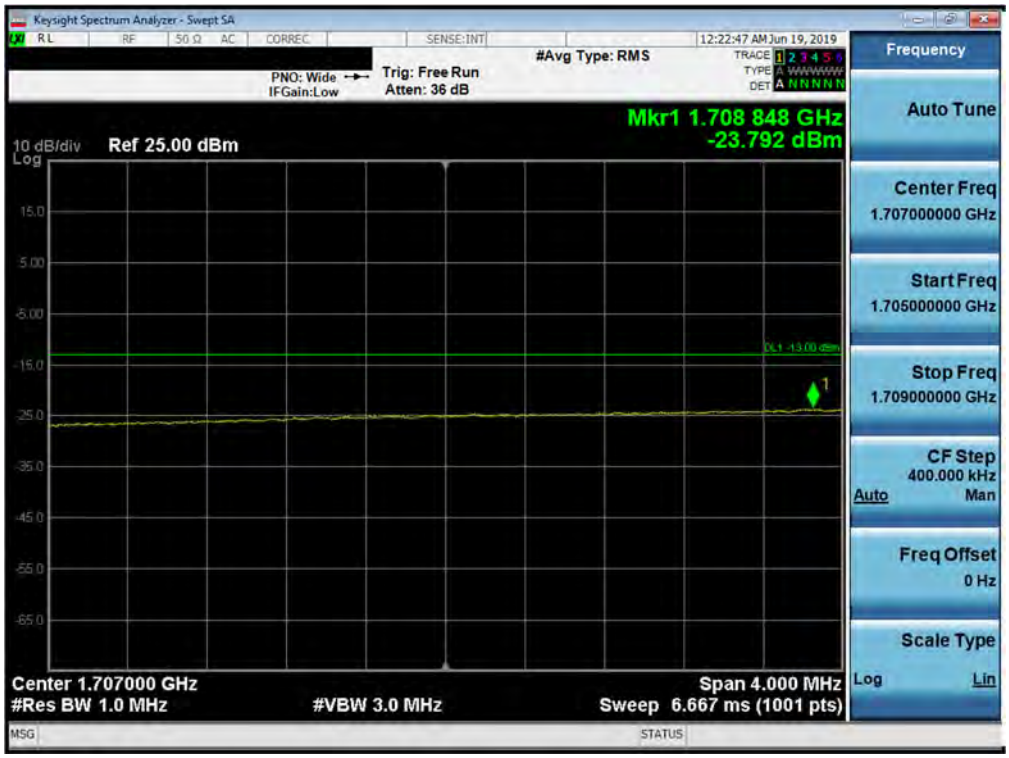
Plot 7-186. Upper Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-187. Upper Extended Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)



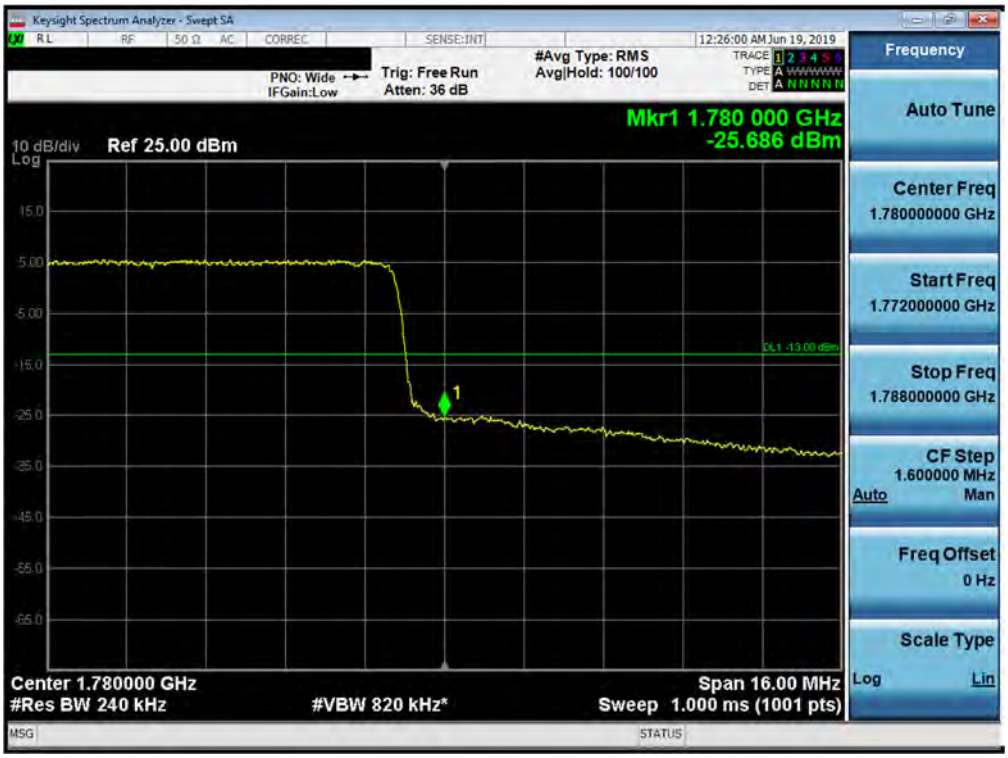
Plot 7-188. Lower Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



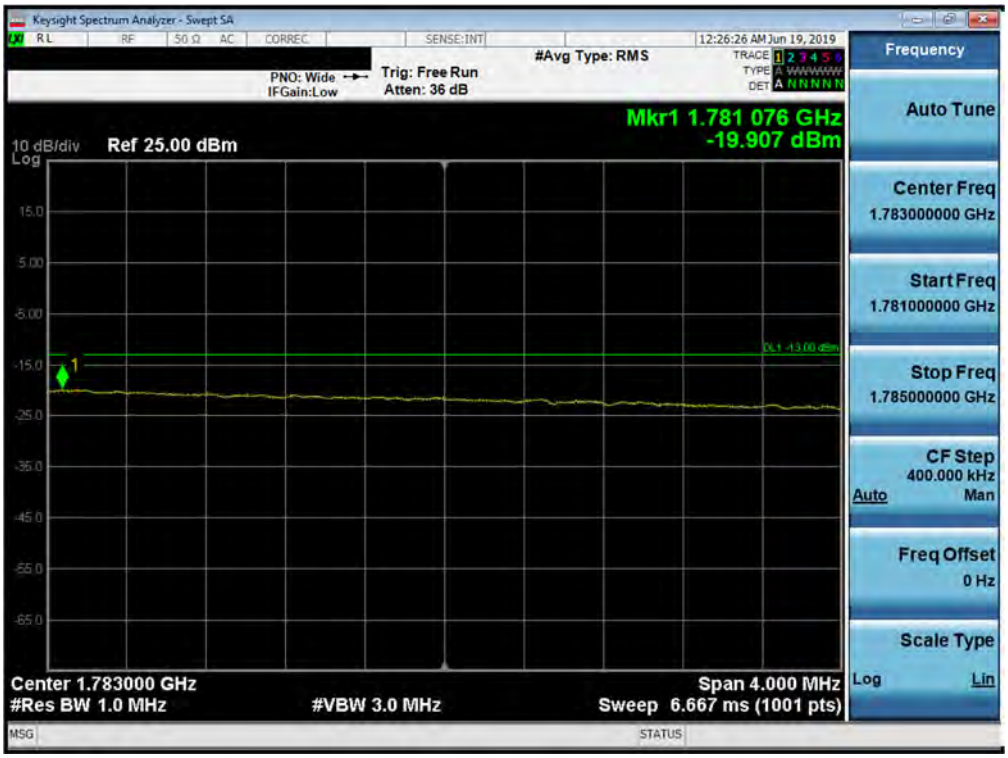
Plot 7-189. Lower Extended Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)

Plot 7-190. Upper Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

Plot 7-191. Upper Extended Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)



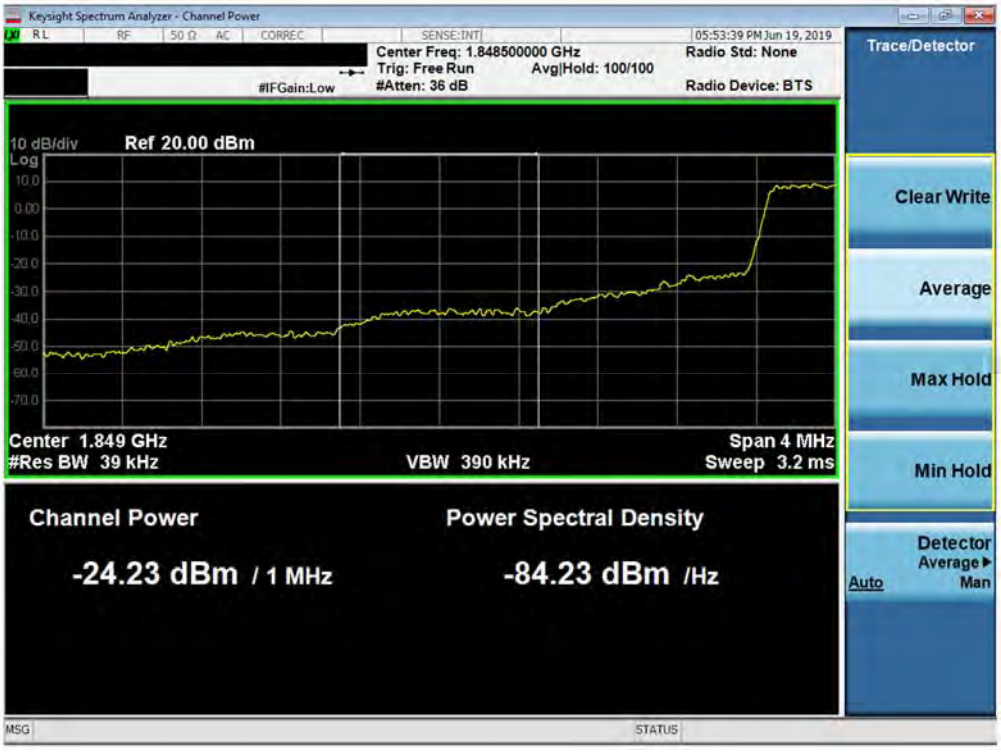
Plot 7-192. Upper Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-193. Upper Extended Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

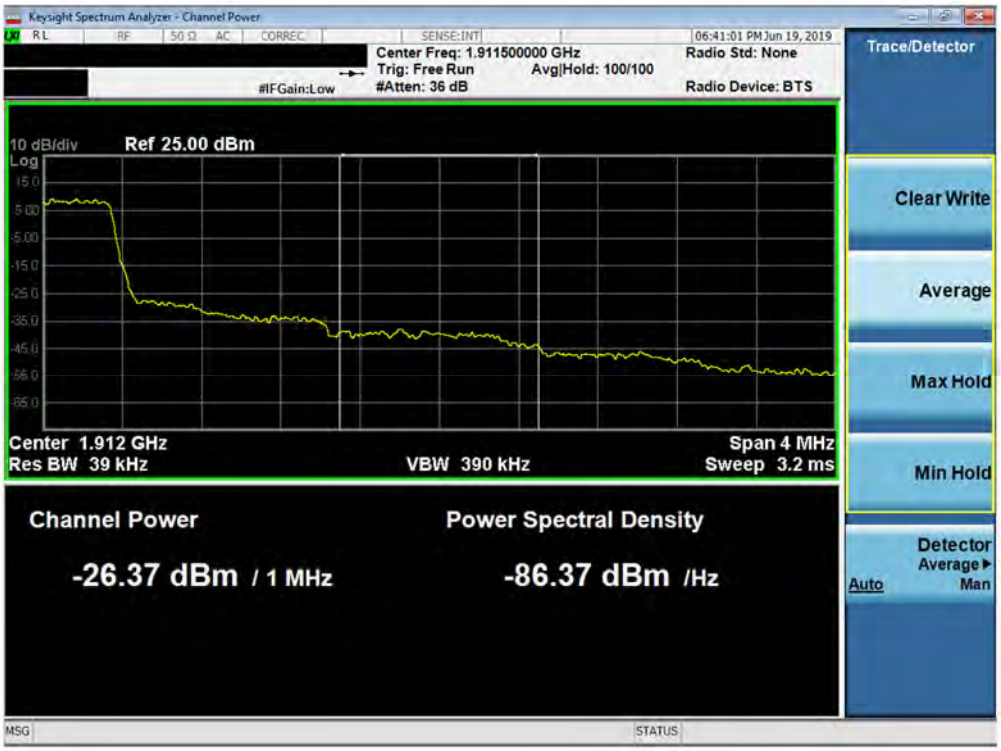
Band 25/2

Plot 7-194. Lower Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



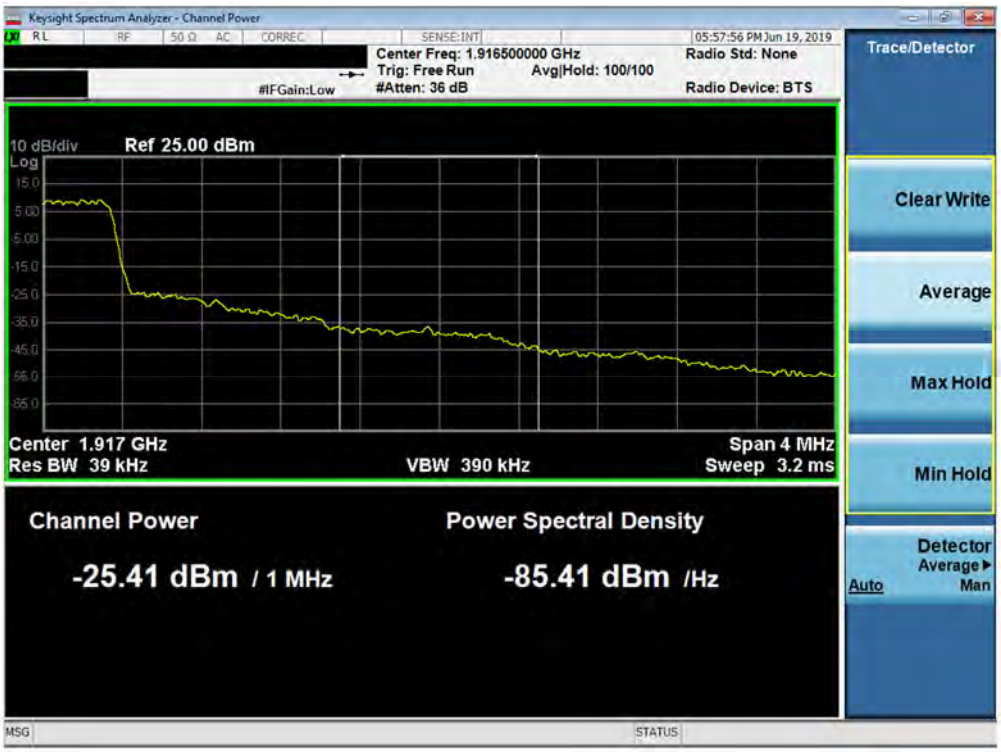
Plot 7-195. Lower Extended Band Edge Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)

Plot 7-196. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

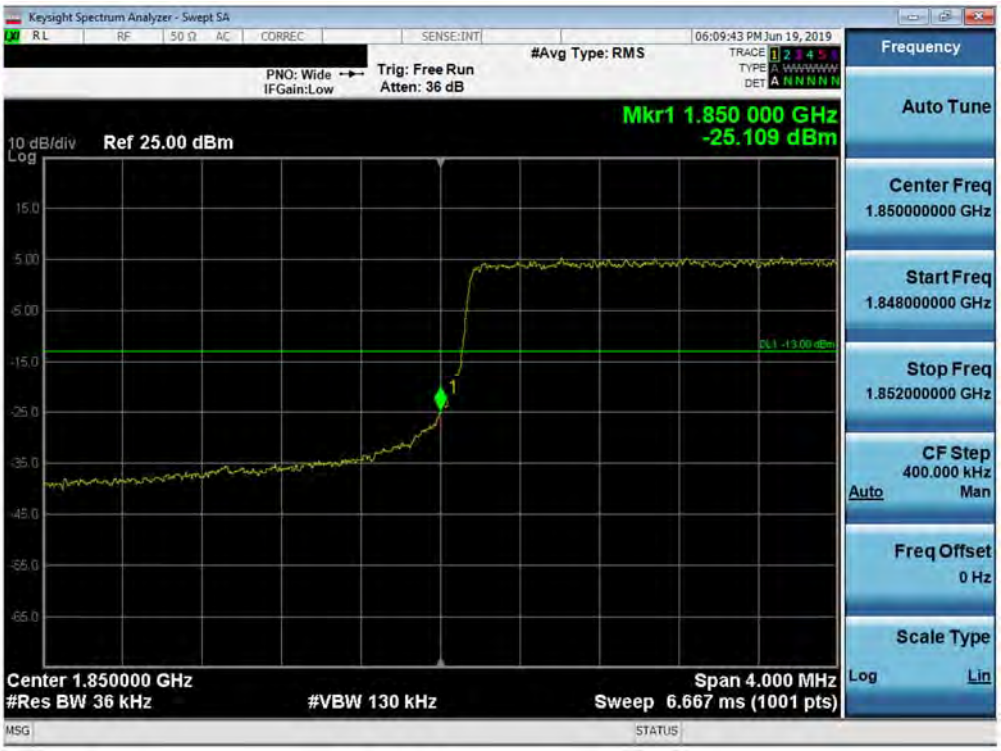


Plot 7-197. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

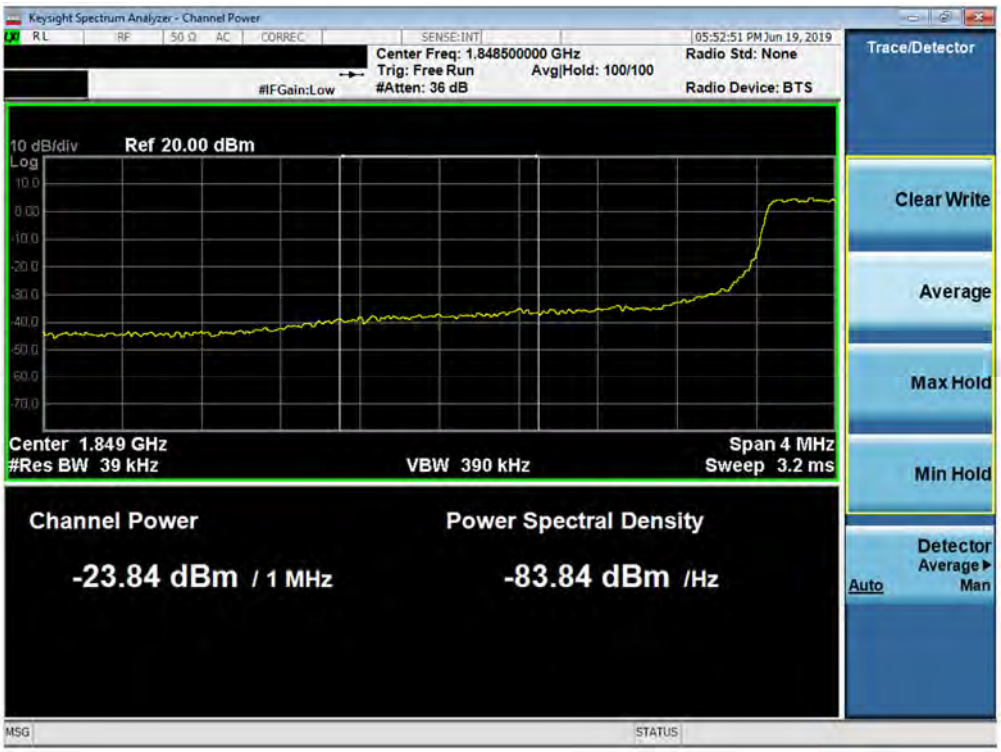
Plot 7-198. Upper Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)



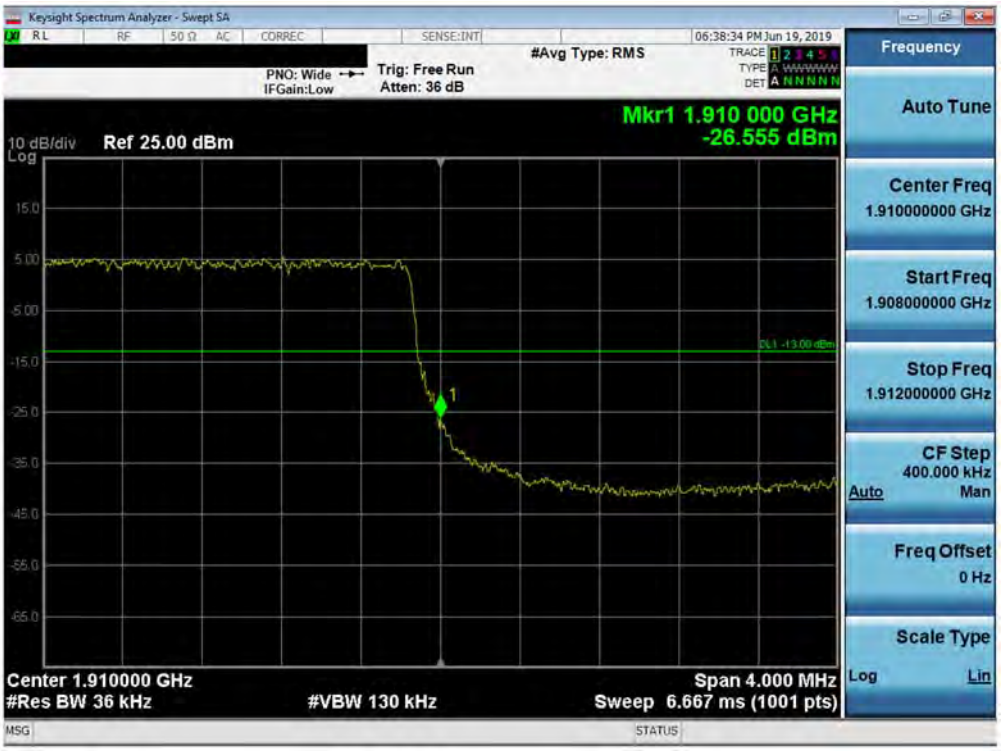
Plot 7-199. Upper Extended Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)



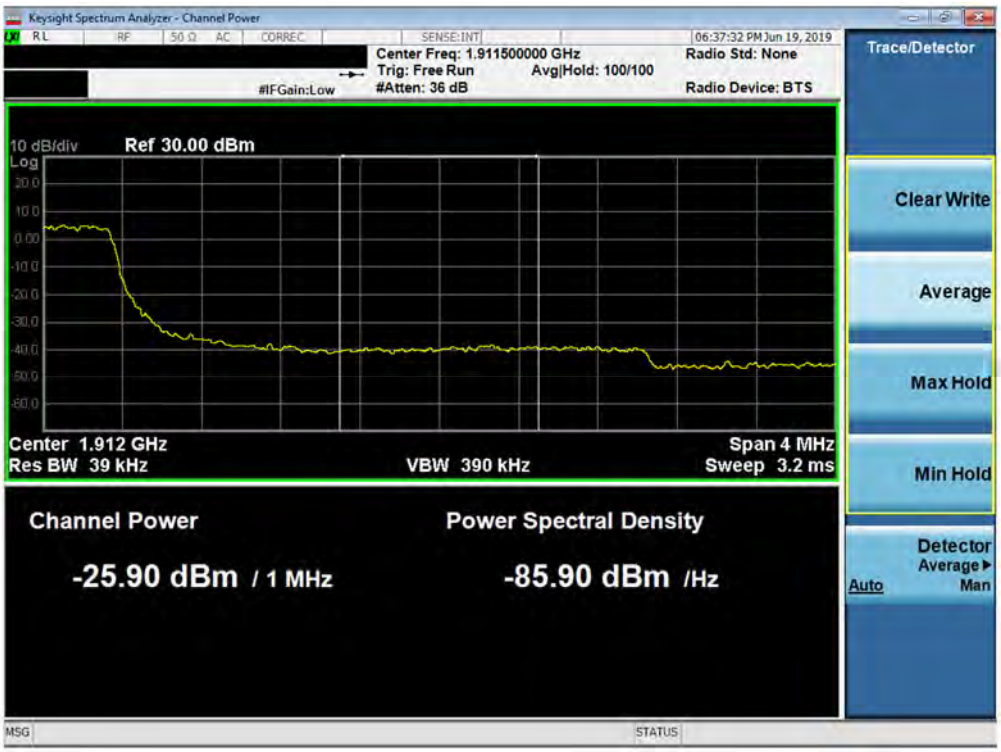
Plot 7-200. Lower Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-201. Lower Extended Band Edge Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)

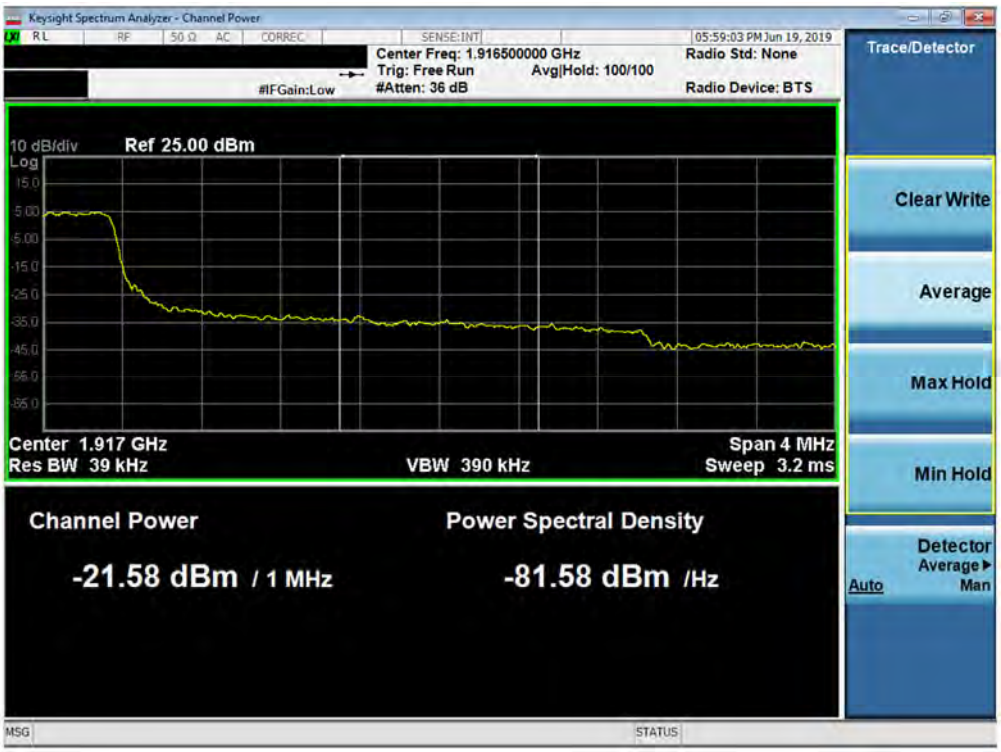


Plot 7-202. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



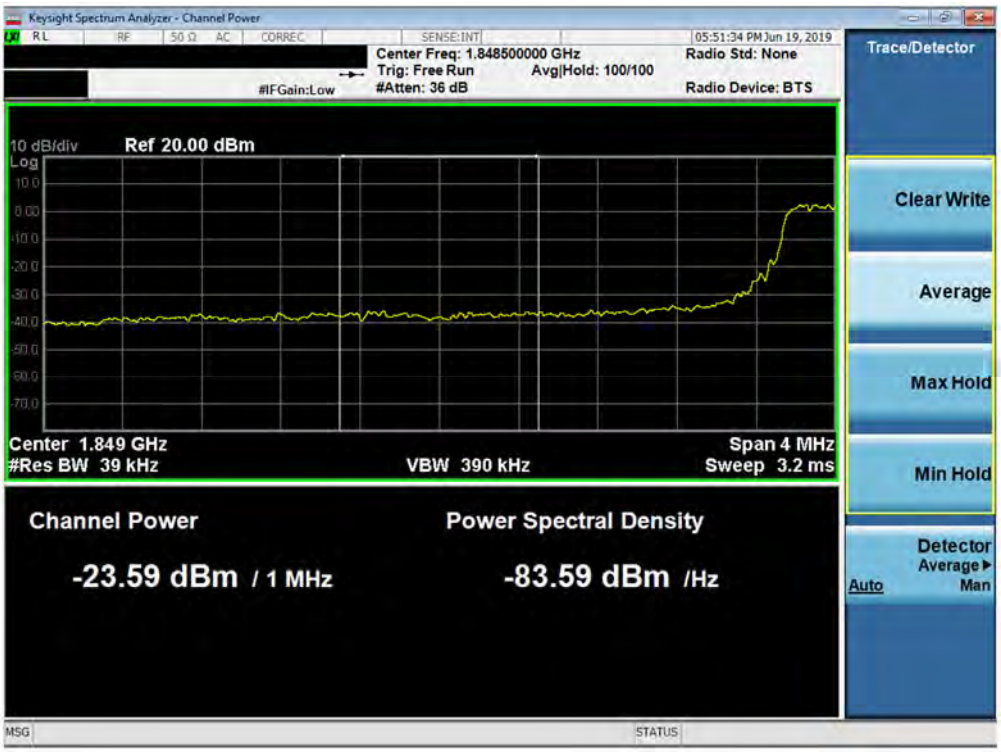
Plot 7-203. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

Plot 7-204. Upper Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)



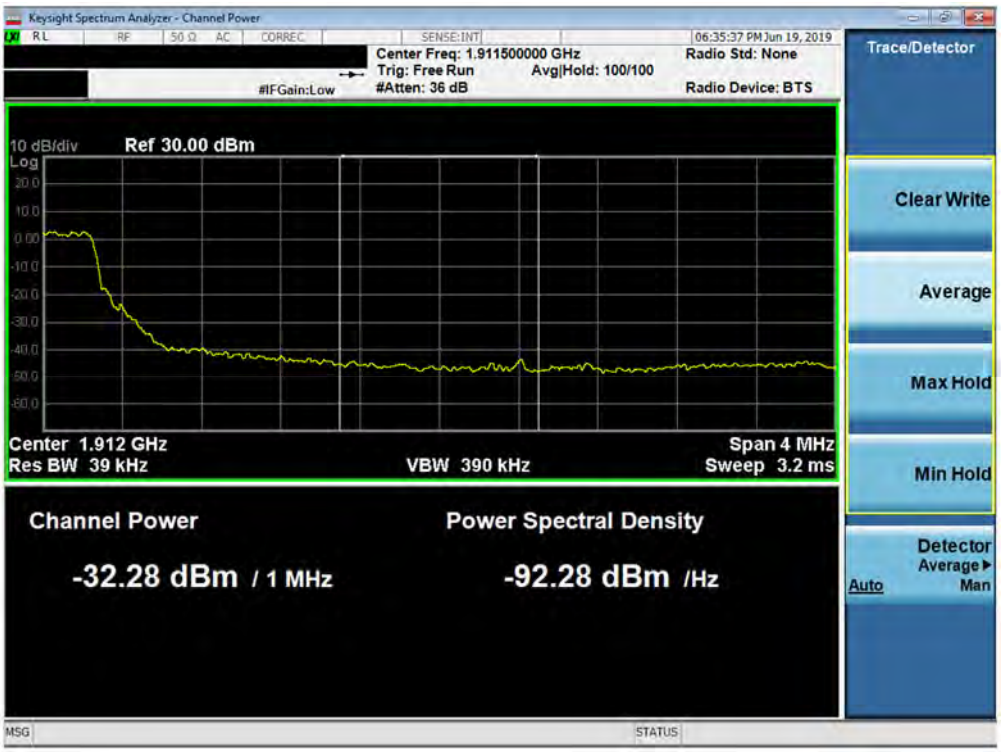
Plot 7-205. Upper Extended Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)

Plot 7-206. Lower Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

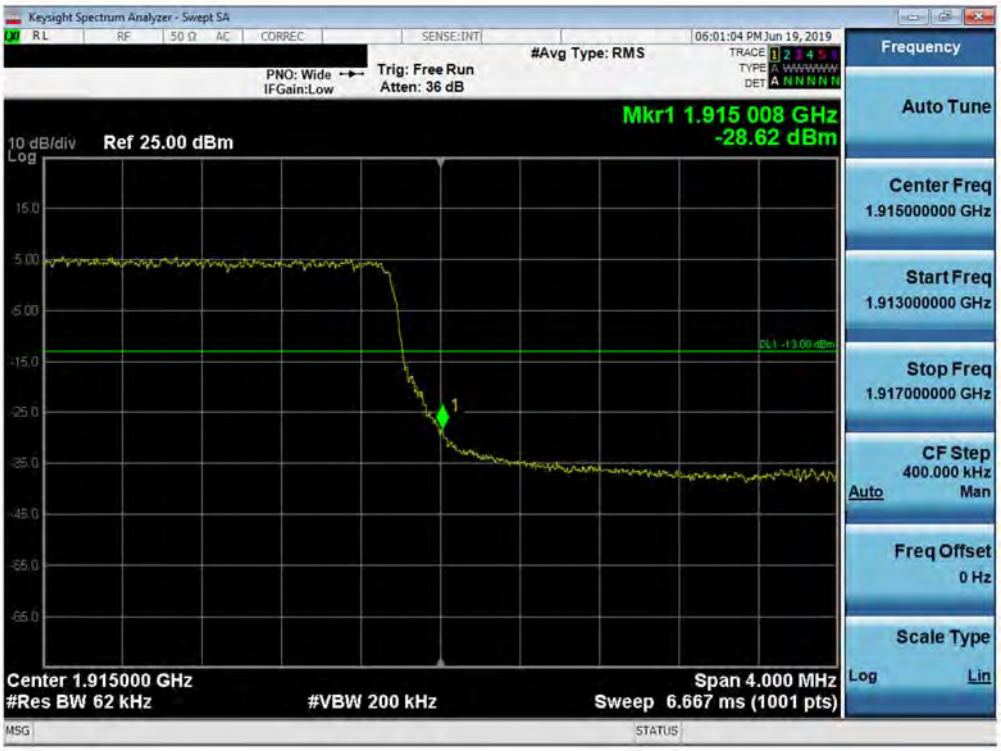


Plot 7-207. Lower Extended Band Edge Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)

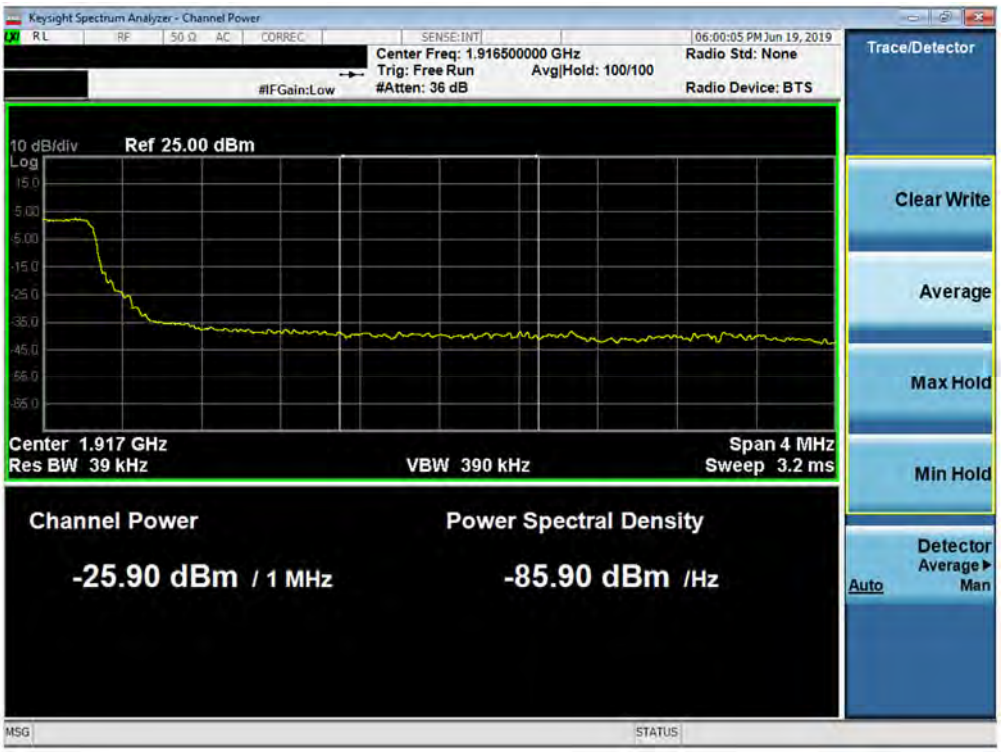
Plot 7-208. Upper Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



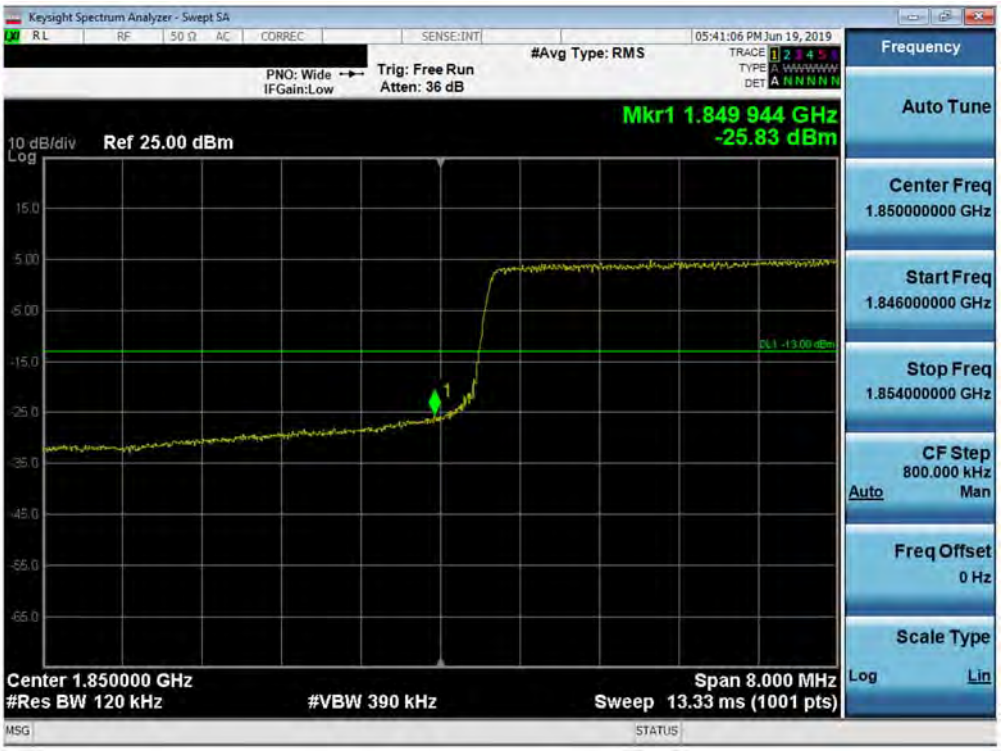
Plot 7-209. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



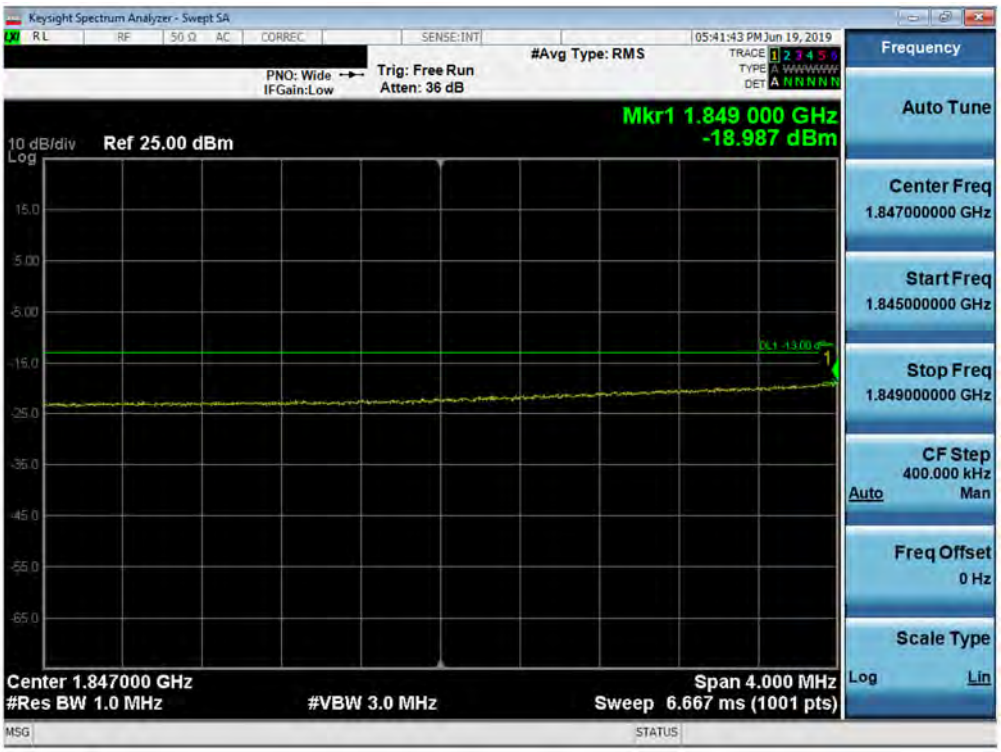
Plot 7-210. Upper Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-211. Upper Extended Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



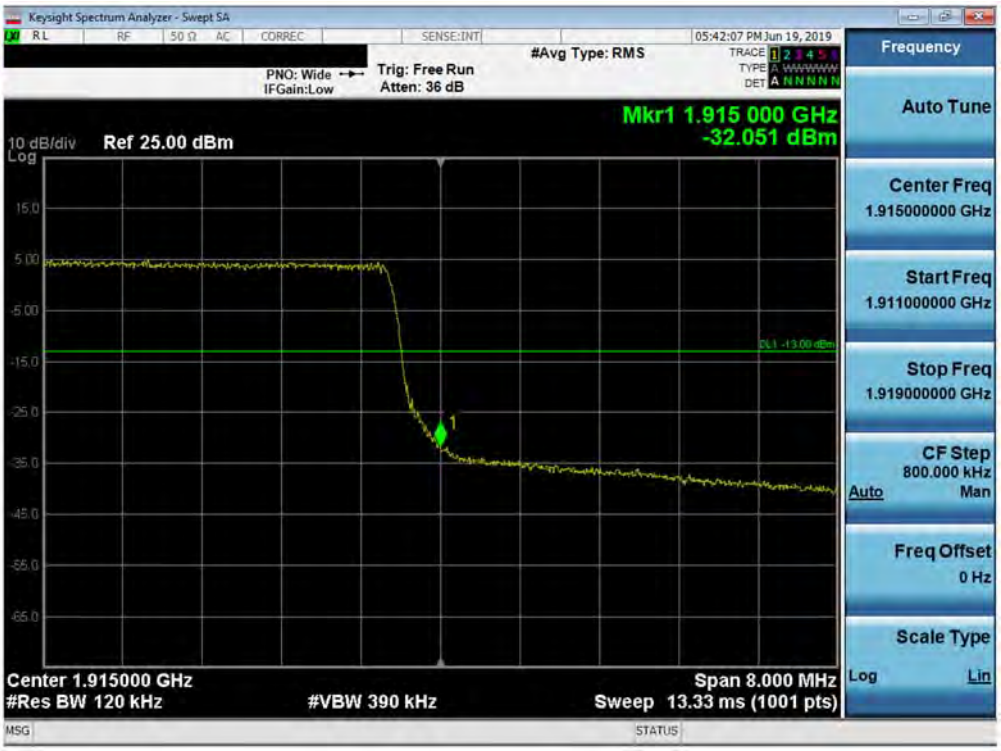
Plot 7-212. Lower Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-213. Lower Extended Band Edge Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)

Plot 7-214. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

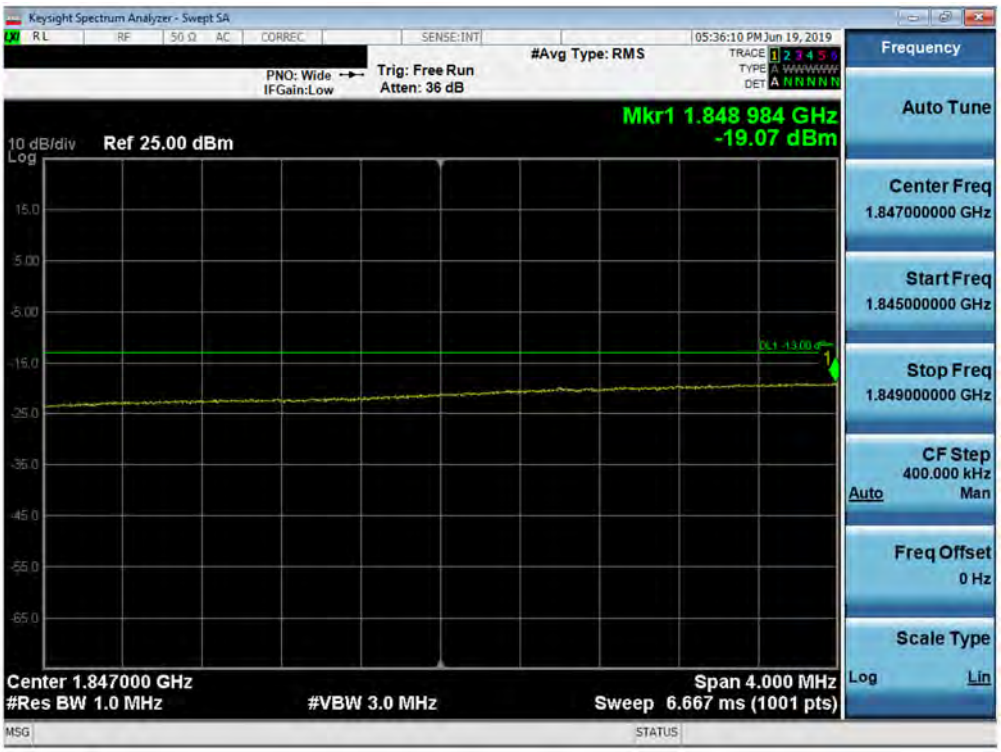
Plot 7-215. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-216. Upper Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

Plot 7-217. Upper Extended Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)

Plot 7-218. Lower Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



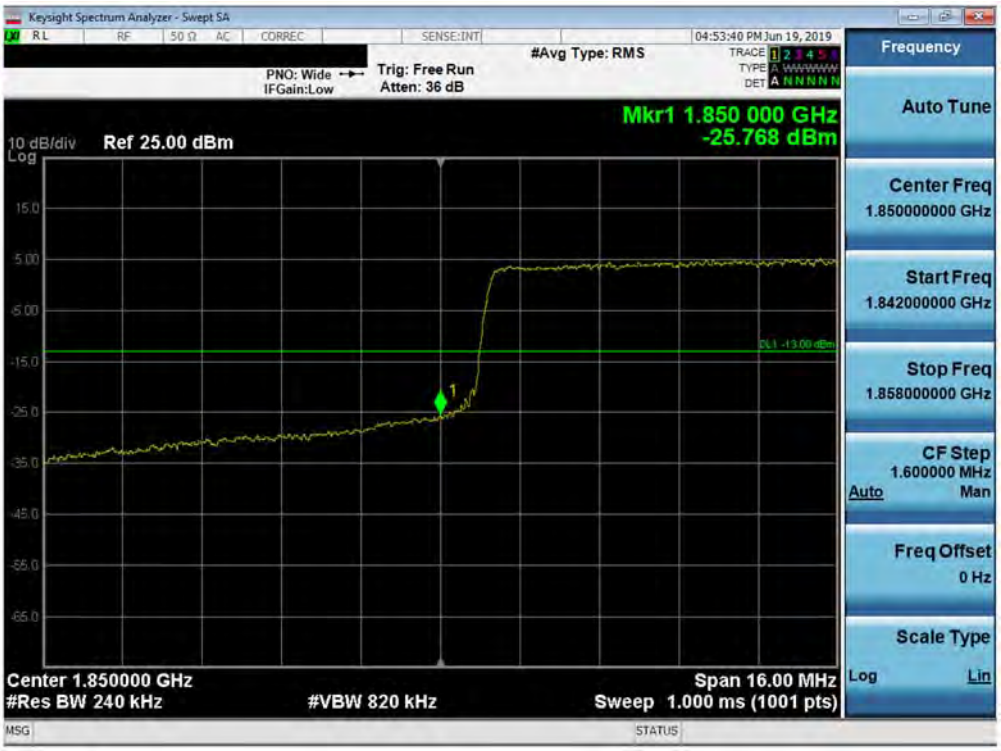
Plot 7-219. Lower Extended Band Edge Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)

Plot 7-220. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

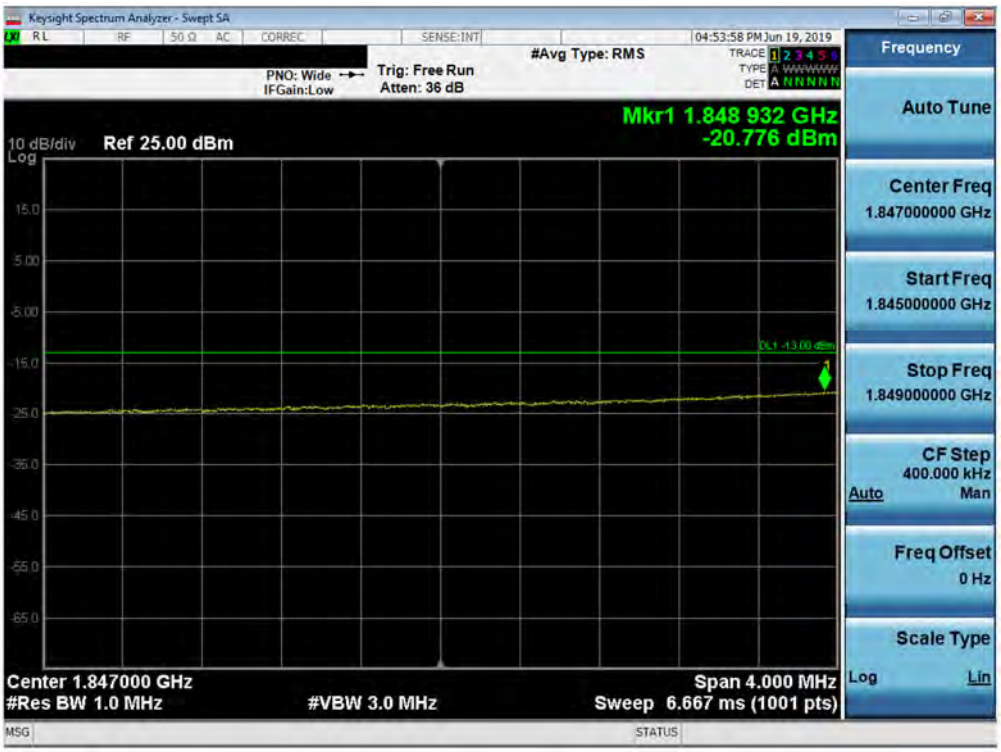
Plot 7-221. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)

Plot 7-222. Upper Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

Plot 7-223. Upper Extended Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-224. Lower Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

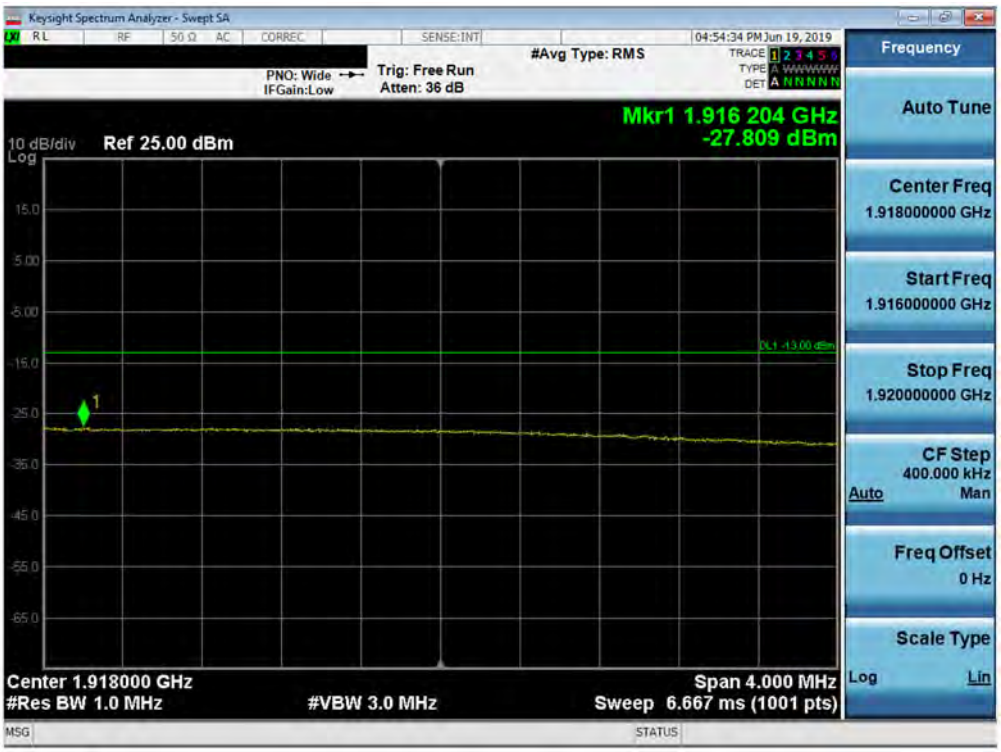


Plot 7-225. Lower Extended Band Edge Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)

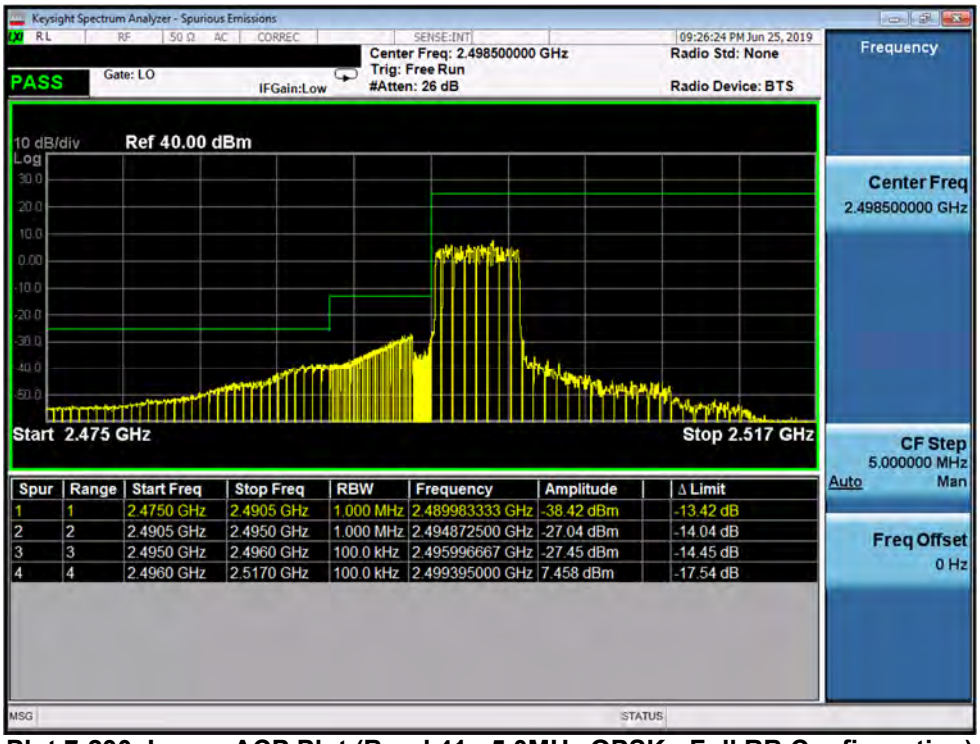
Plot 7-226. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

Plot 7-227. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

Plot 7-228. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)

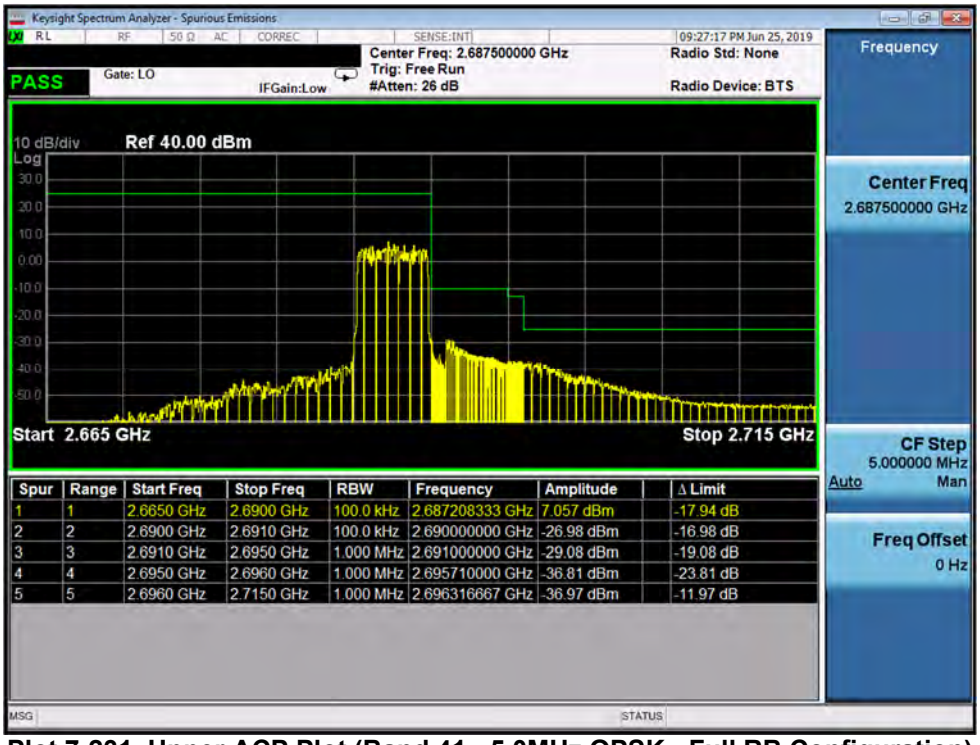


Plot 7-229. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489983333 GHz	-38.42 dBm	-13.42 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494872500 GHz	-27.04 dBm	-14.04 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.495996667 GHz	-27.45 dBm	-14.45 dB
4	4	2.4960 GHz	2.5170 GHz	100.0 kHz	2.499395000 GHz	7.458 dBm	-17.54 dB

Plot 7-230. Lower ACP Plot (Band 41 - 5.0MHz QPSK - Full RB Configuration)

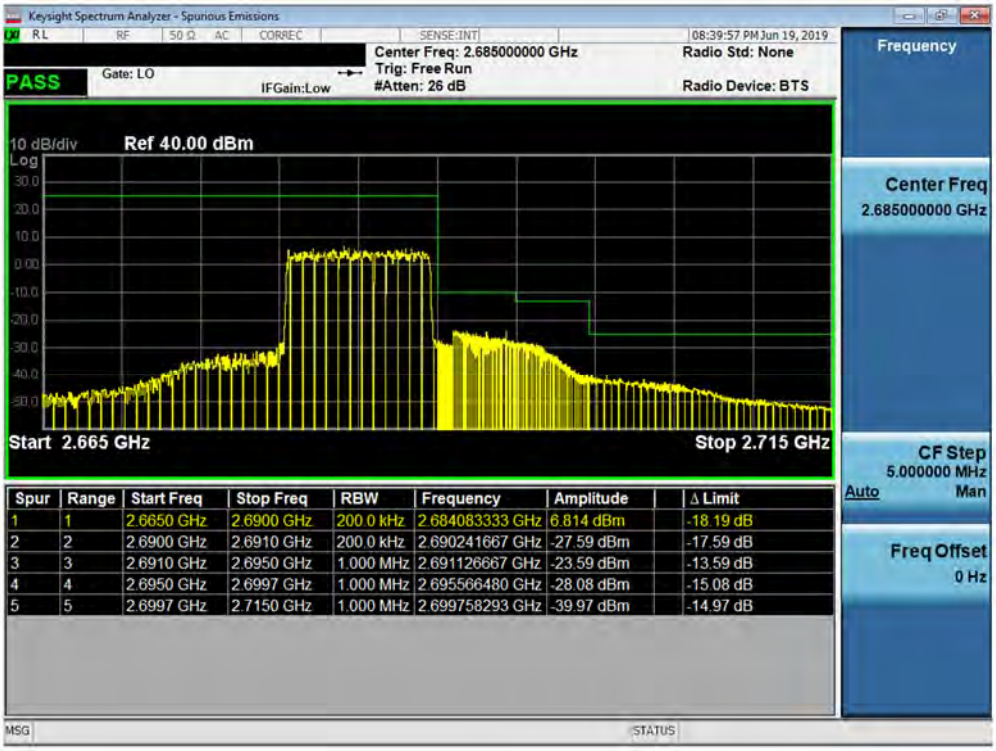


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	100.0 kHz	2.687208333 GHz	7.057 dBm	-17.94 dB
2	2	2.6900 GHz	2.6910 GHz	100.0 kHz	2.690000000 GHz	-26.98 dBm	-16.98 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691000000 GHz	-29.08 dBm	-19.08 dB
4	4	2.6950 GHz	2.6960 GHz	1.000 MHz	2.695710000 GHz	-36.81 dBm	-23.81 dB
5	5	2.6960 GHz	2.7150 GHz	1.000 MHz	2.696316667 GHz	-36.97 dBm	-11.97 dB

Plot 7-231. Upper ACP Plot (Band 41 - 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	2.490500000 GHz	-34.93 dBm	-9.926 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.493320000 GHz	-27.08 dBm	-14.08 dB
3	3	2.4950 GHz	2.4960 GHz	200.0 kHz	2.495970000 GHz	-32.52 dBm	-19.52 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.502335000 GHz	6.532 dBm	-18.47 dB

Plot 7-232. Lower ACP Plot (Band 41 - 10.0MHz QPSK - Full RB Configuration)

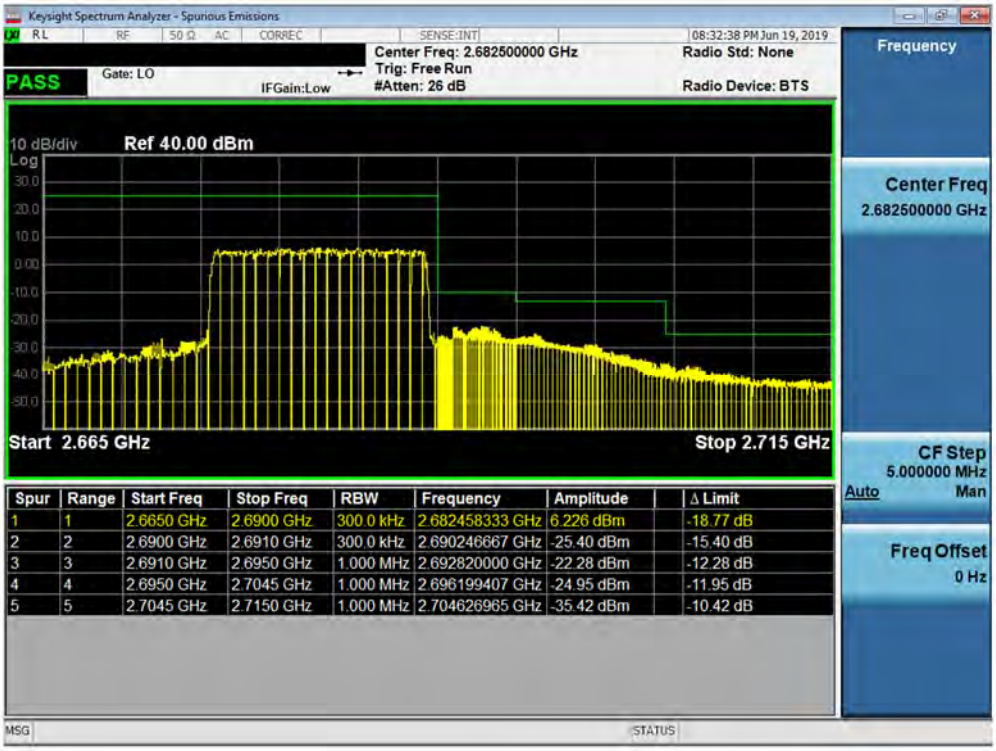


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	200.0 kHz	2.684083333 GHz	6.814 dBm	-18.19 dB
2	2	2.6900 GHz	2.6910 GHz	200.0 kHz	2.690241667 GHz	-27.59 dBm	-17.59 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691126667 GHz	-23.59 dBm	-13.59 dB
4	4	2.6950 GHz	2.6997 GHz	1.000 MHz	2.695566480 GHz	-28.08 dBm	-15.08 dB
5	5	2.6997 GHz	2.7150 GHz	1.000 MHz	2.699758293 GHz	-39.97 dBm	-14.97 dB

Plot 7-233. Upper ACP Plot (Band 41 - 10.0MHz 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	2.490190000 GHz	-37.81 dBm	-12.81 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.493822500 GHz	-24.46 dBm	-11.46 dB
3	3	2.4950 GHz	2.4960 GHz	300.0 kHz	2.496000000 GHz	-33.60 dBm	-20.60 dB
4	4	2.4960 GHz	2.5170 GHz	300.0 kHz	2.499360000 GHz	6.213 dBm	-18.79 dB

Plot 7-234. Lower ACP Plot (Band 41 - 15.0MHz QPSK - Full RB Configuration)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	300.0 kHz	2.682458333 GHz	6.226 dBm	-18.77 dB
2	2	2.6900 GHz	2.6910 GHz	300.0 kHz	2.690246667 GHz	-25.40 dBm	-15.40 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.692820000 GHz	-22.28 dBm	-12.28 dB
4	4	2.6950 GHz	2.7045 GHz	1.000 MHz	2.696199407 GHz	-24.95 dBm	-11.95 dB
5	5	2.7045 GHz	2.7150 GHz	1.000 MHz	2.704626965 GHz	-35.42 dBm	-10.42 dB

Plot 7-235. Upper ACP Plot (Band 41 - 15.0MHz 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	2.489311667 GHz	-36.80 dBm	-11.80 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494437500 GHz	-28.88 dBm	-15.88 dB
3	3	2.4950 GHz	2.4960 GHz	390.0 kHz	2.495110000 GHz	-30.53 dBm	-17.53 dB
4	4	2.4960 GHz	2.5170 GHz	390.0 kHz	2.508985000 GHz	6.217 dBm	-18.78 dB

Plot 7-236. Lower ACP Plot (Band 41 - 20.0MHz QPSK - Full RB Configuration)

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	390.0 kHz	2.682375000 GHz	6.505 dBm	-18.49 dB
2	2	2.6900 GHz	2.6910 GHz	390.0 kHz	2.690090000 GHz	-30.09 dBm	-20.09 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.694560000 GHz	-28.26 dBm	-18.26 dB
4	4	2.6950 GHz	2.7093 GHz	1.000 MHz	2.697046513 GHz	-28.94 dBm	-15.94 dB
5	5	2.7093 GHz	2.7150 GHz	1.000 MHz	2.710851550 GHz	-43.12 dBm	-18.12 dB

Plot 7-237. 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 ≥ 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. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

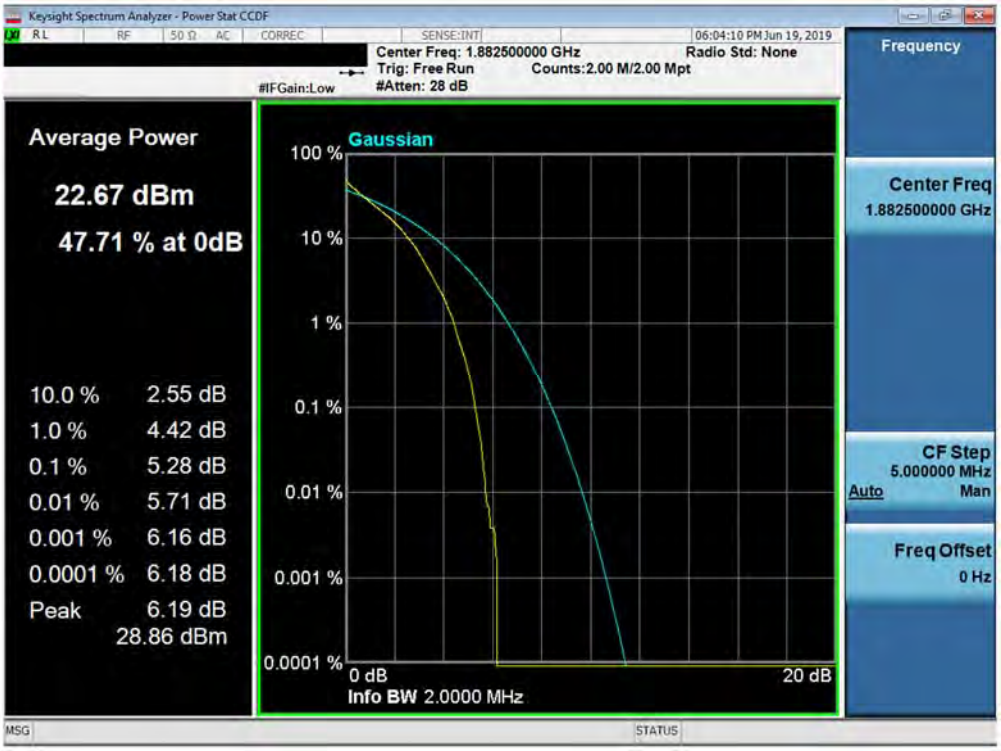
Test Setup

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

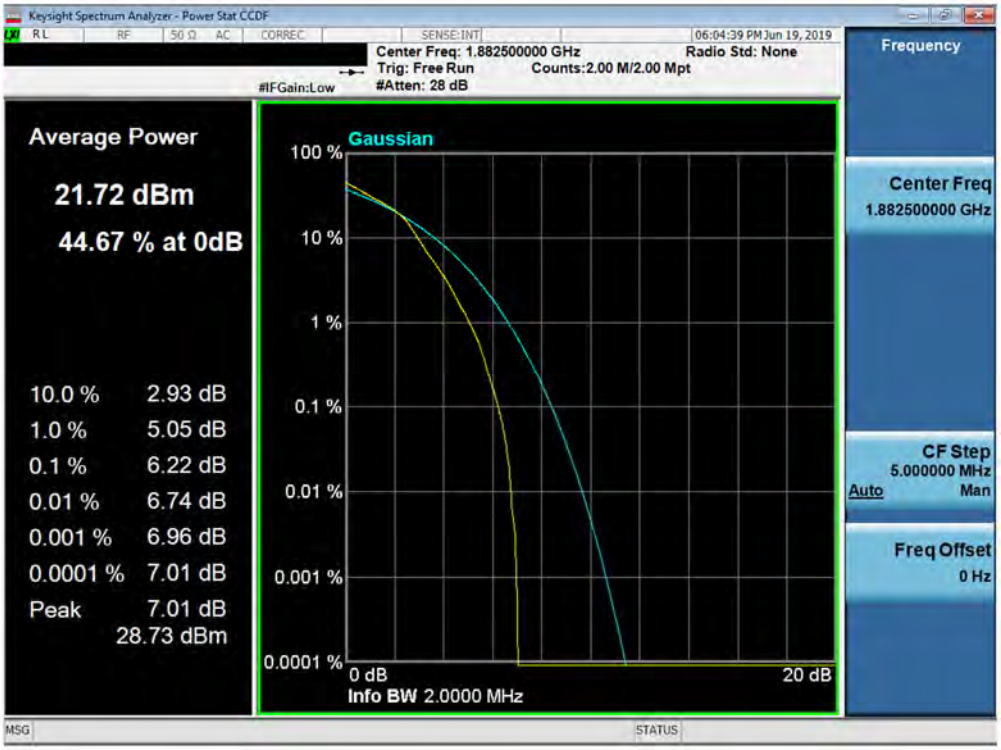
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

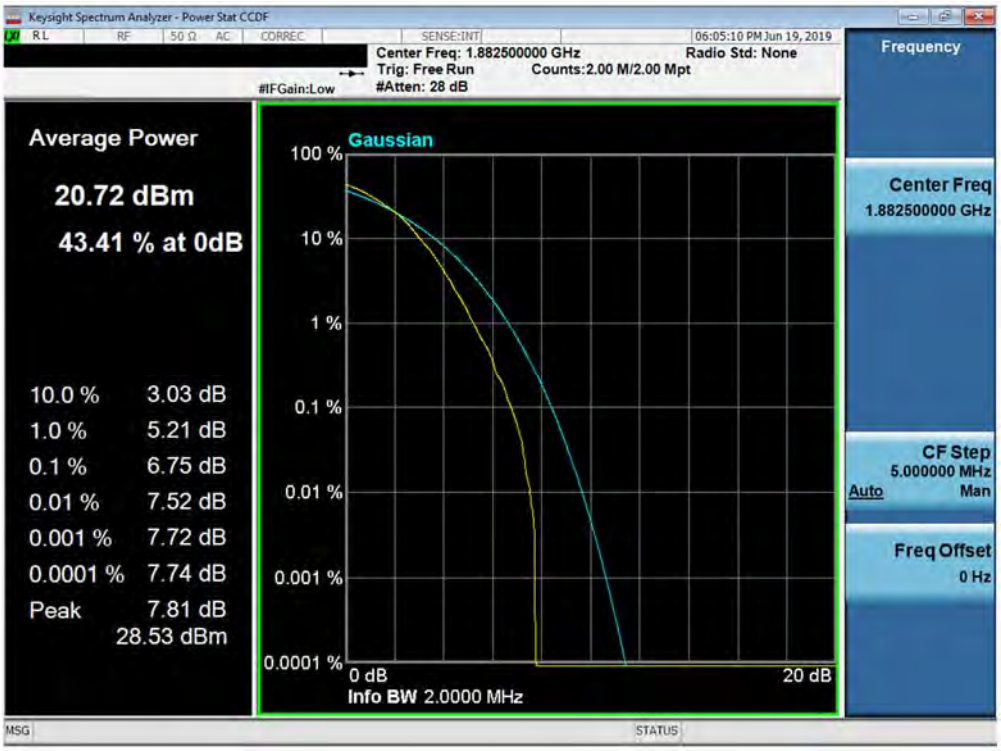
None.



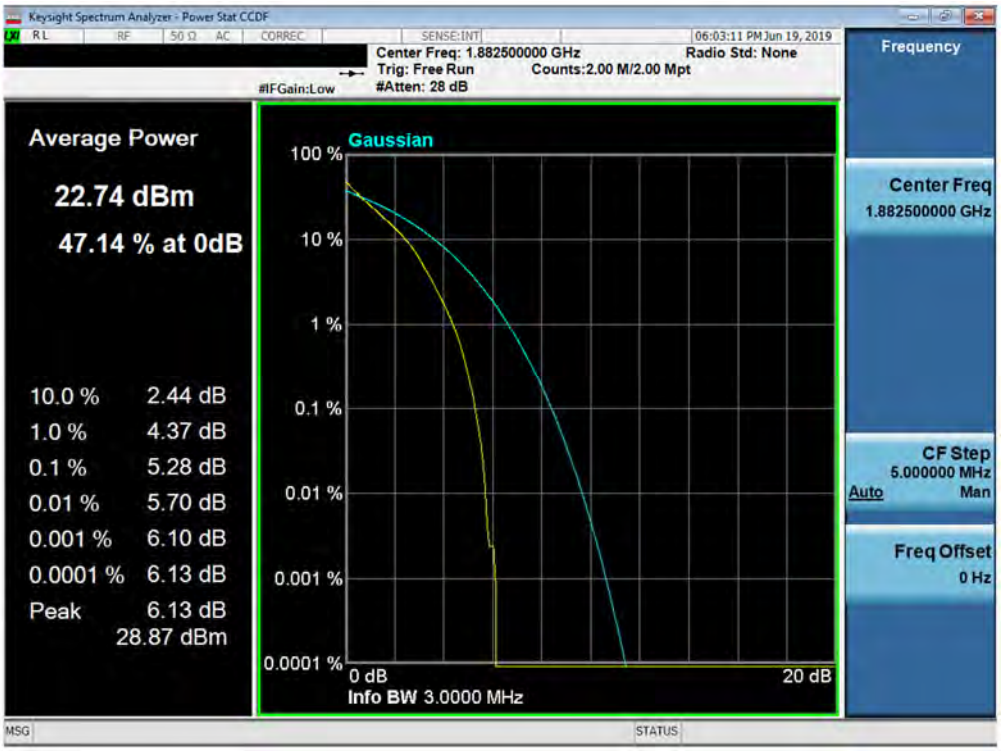
Plot 7-238. PAR Plot (Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



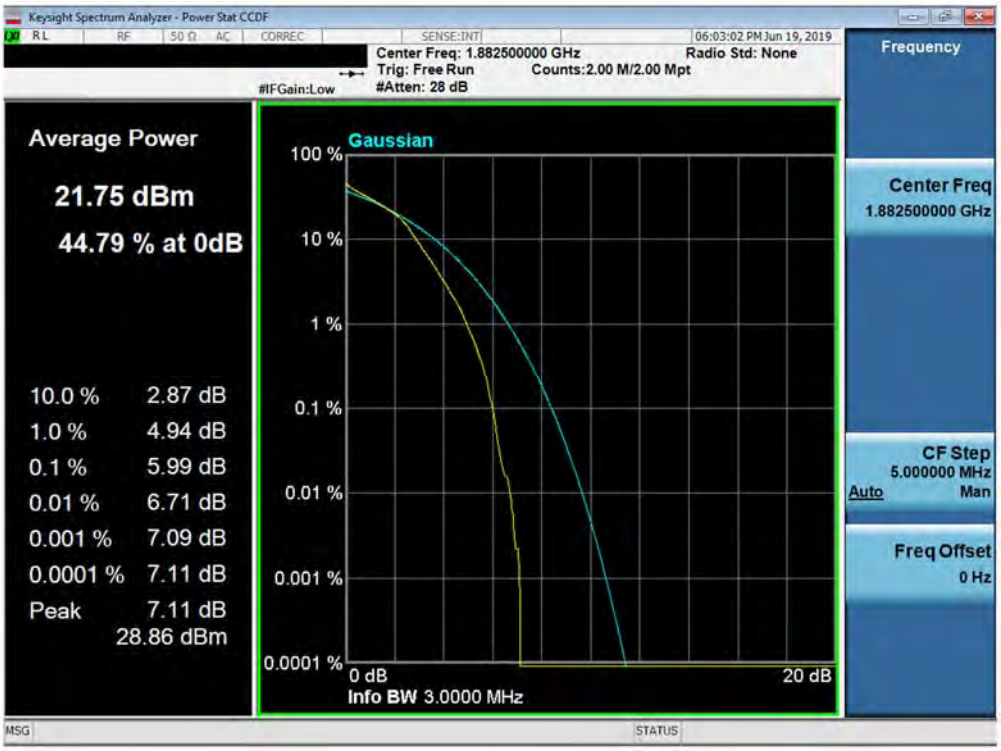
Plot 7-239. PAR Plot (Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)



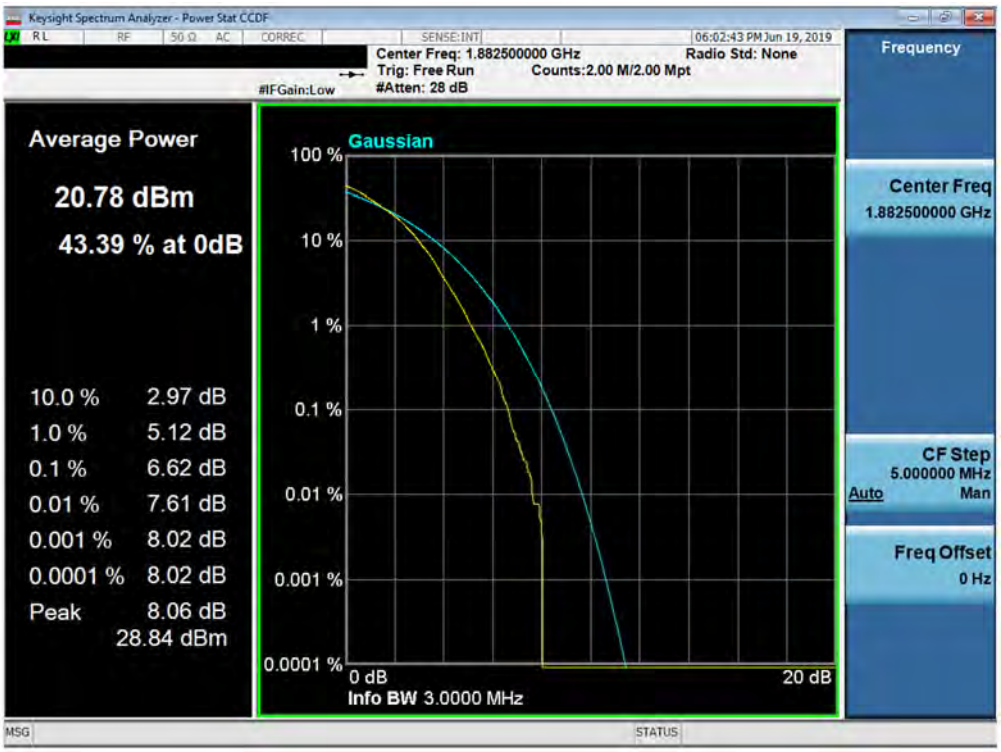
Plot 7-240. PAR Plot (Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)



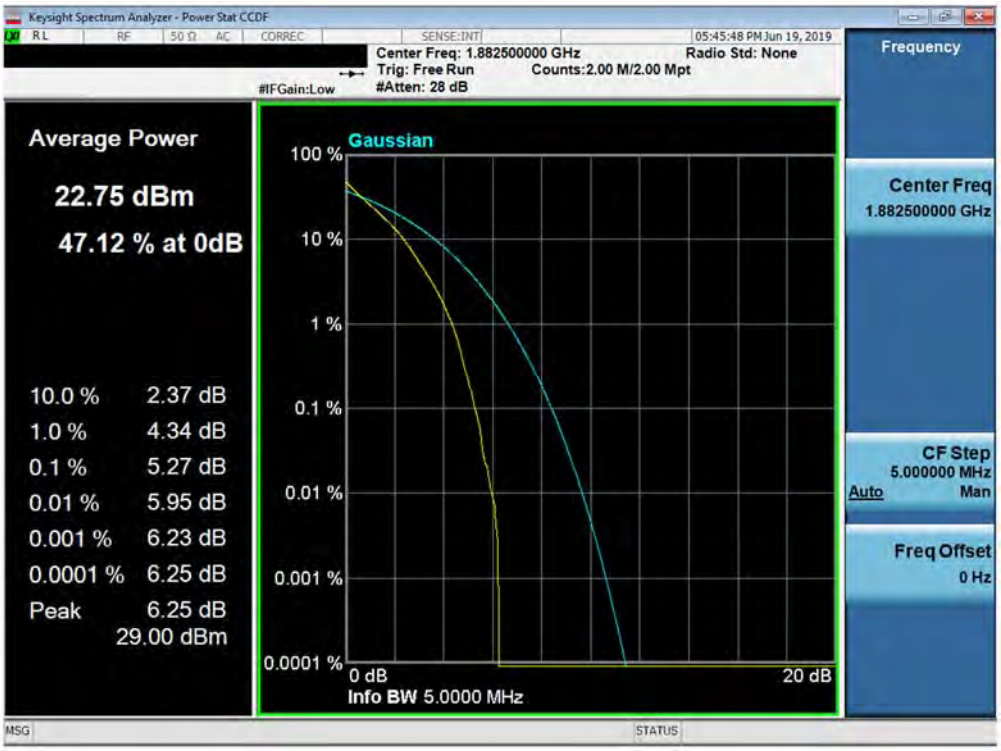
Plot 7-241. PAR Plot (Band 25/2 - 3.0MHz QPSK - Full RB Configuration)



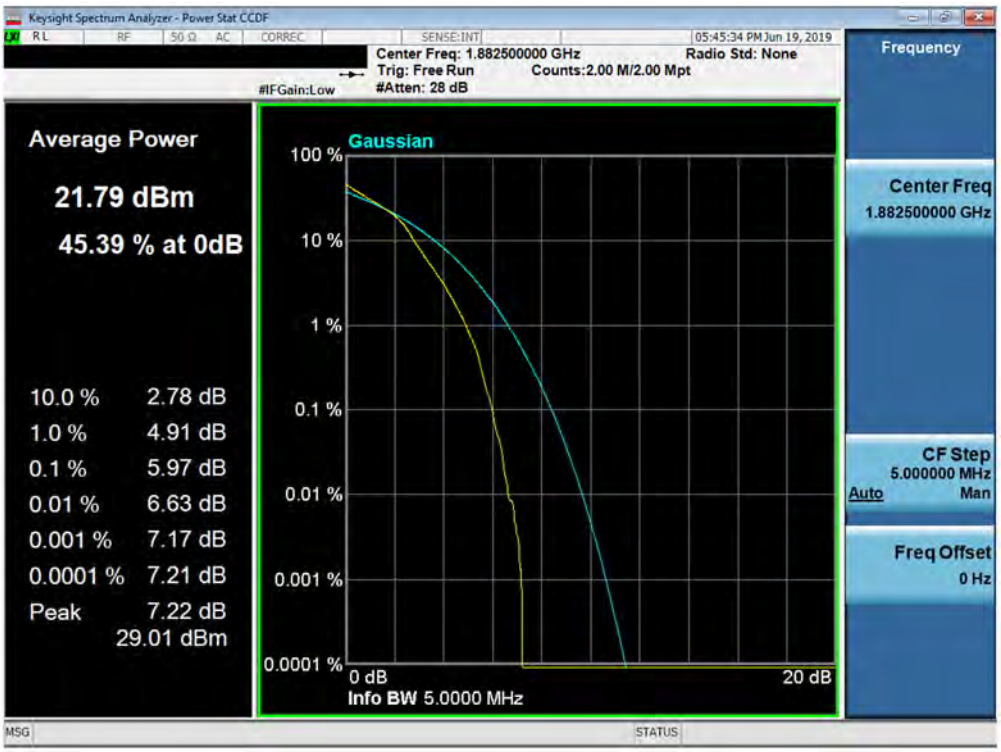
Plot 7-242. PAR Plot (Band 25/2 - 3.0MHz 16-QAM - Full RB Configuration)



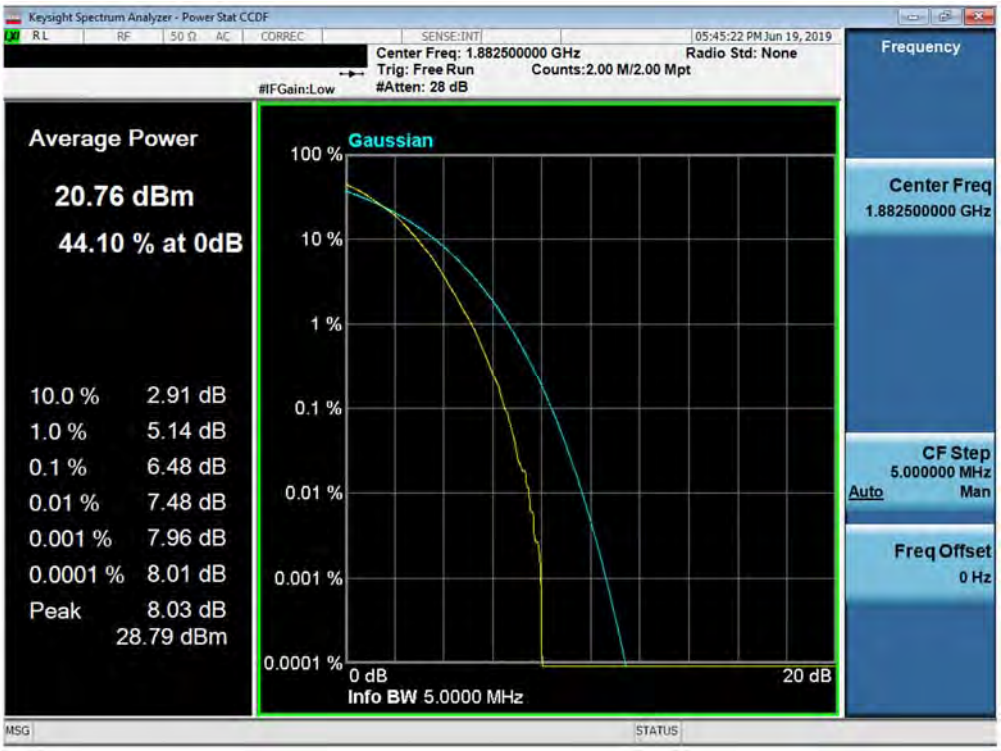
Plot 7-243. PAR Plot (Band 25/2 - 3.0MHz 64-QAM - Full RB Configuration)



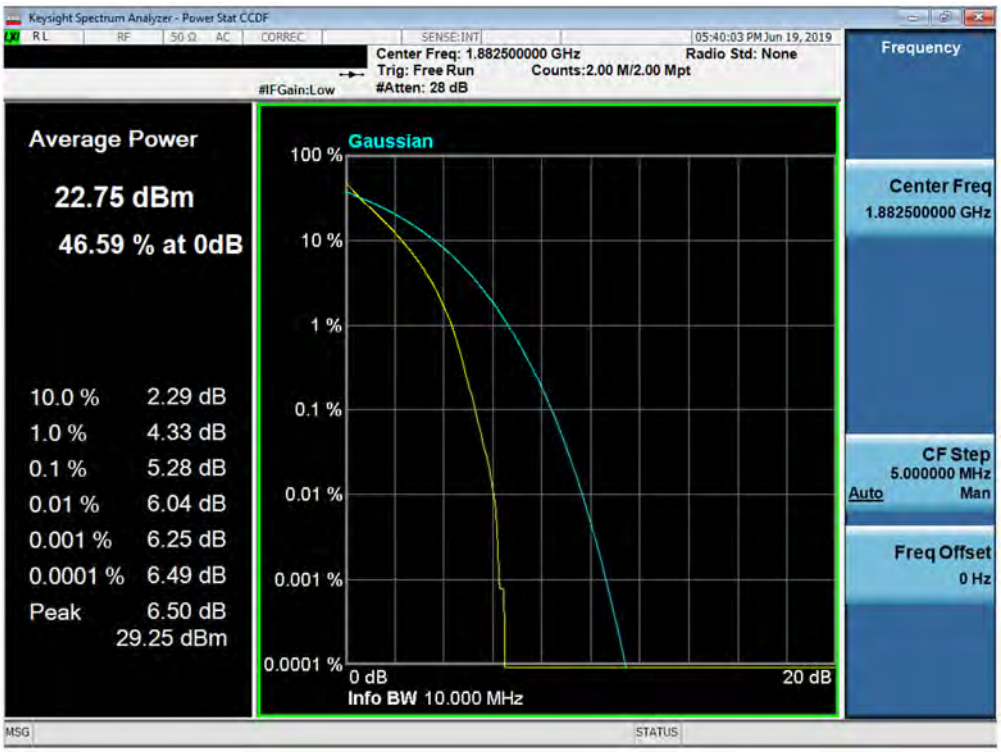
Plot 7-244. PAR Plot (Band 25/2 - 5.0MHz QPSK - Full RB Configuration)



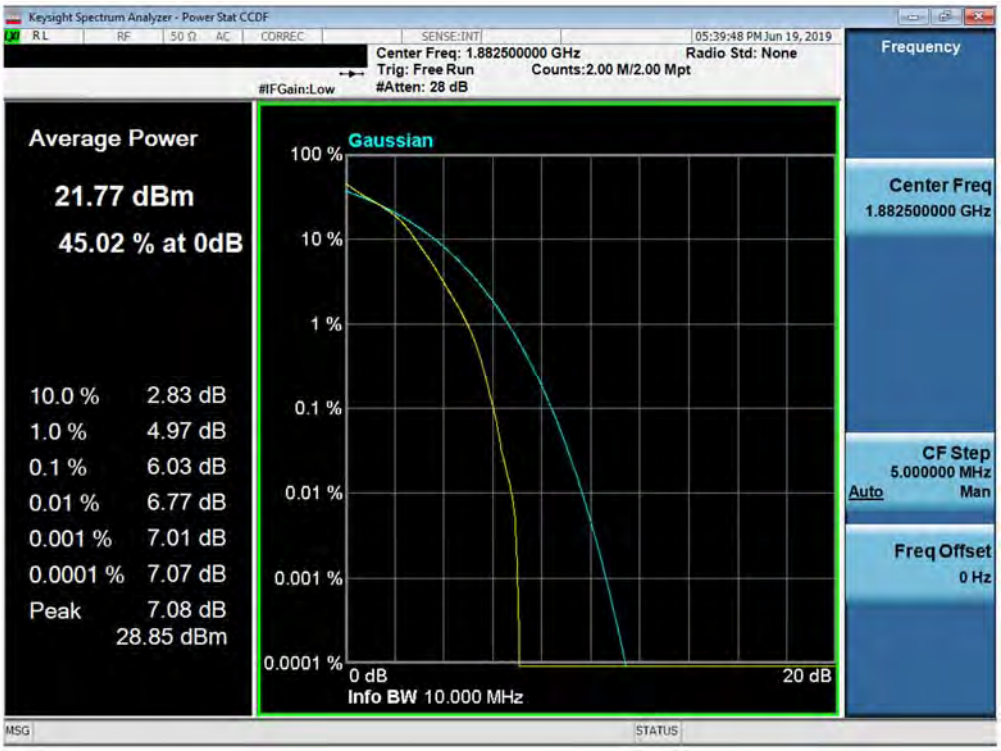
Plot 7-245. PAR Plot (Band 25/2 - 5.0MHz 16-QAM - Full RB Configuration)



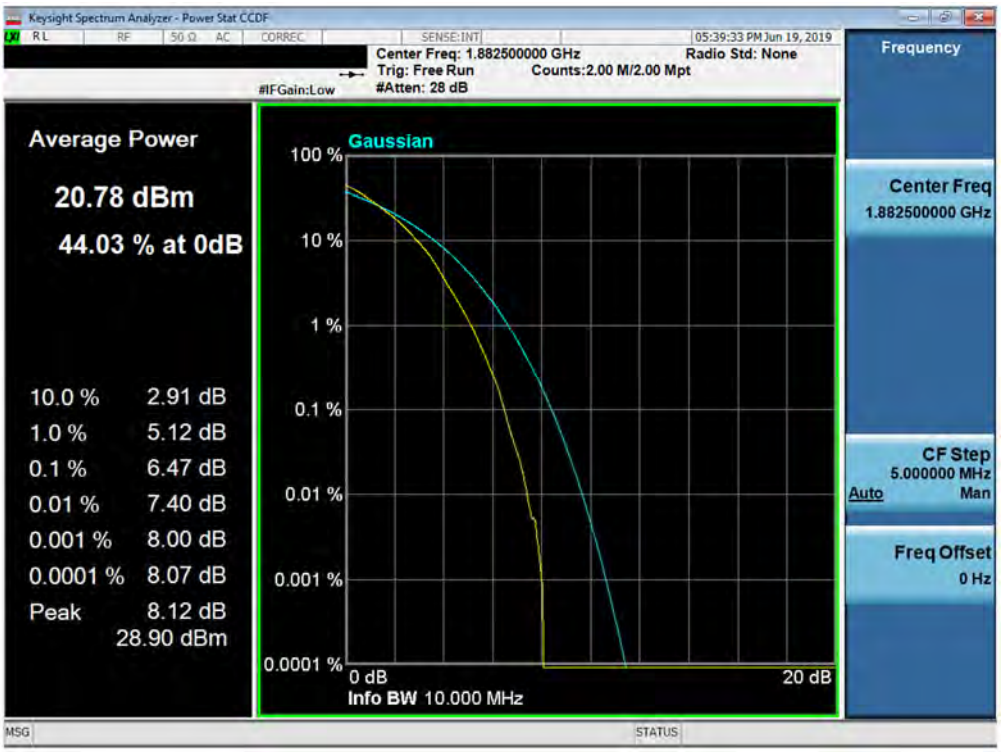
Plot 7-246. PAR Plot (Band 25/2 - 5.0MHz 64-QAM - Full RB Configuration)



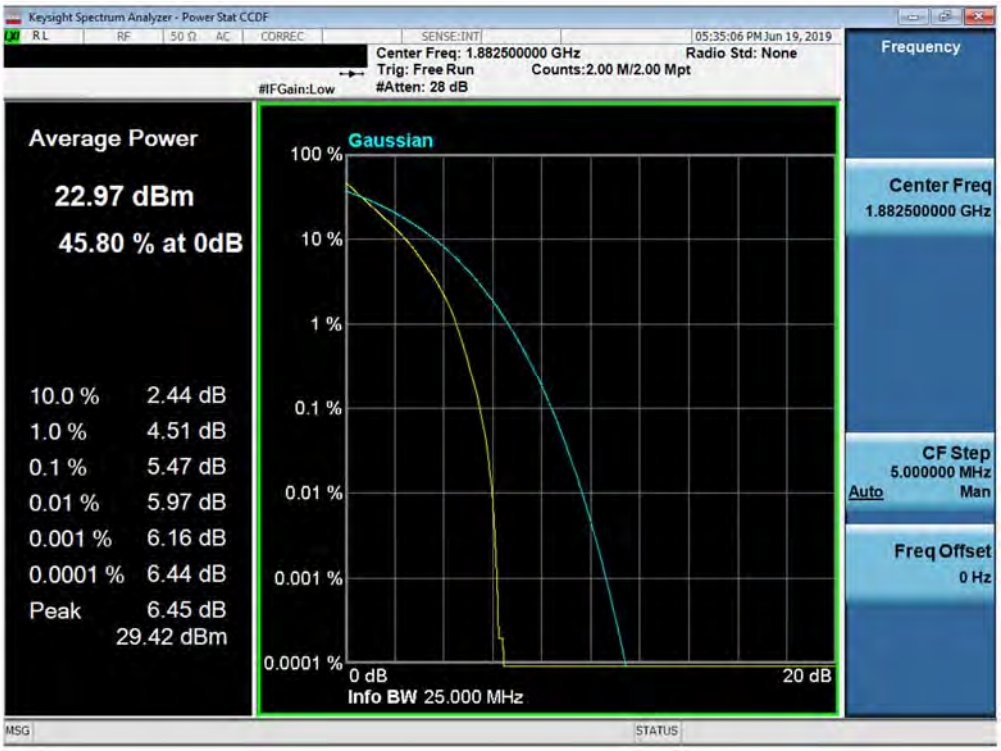
Plot 7-247. PAR Plot (Band 25/2 - 10.0MHz QPSK - Full RB Configuration)



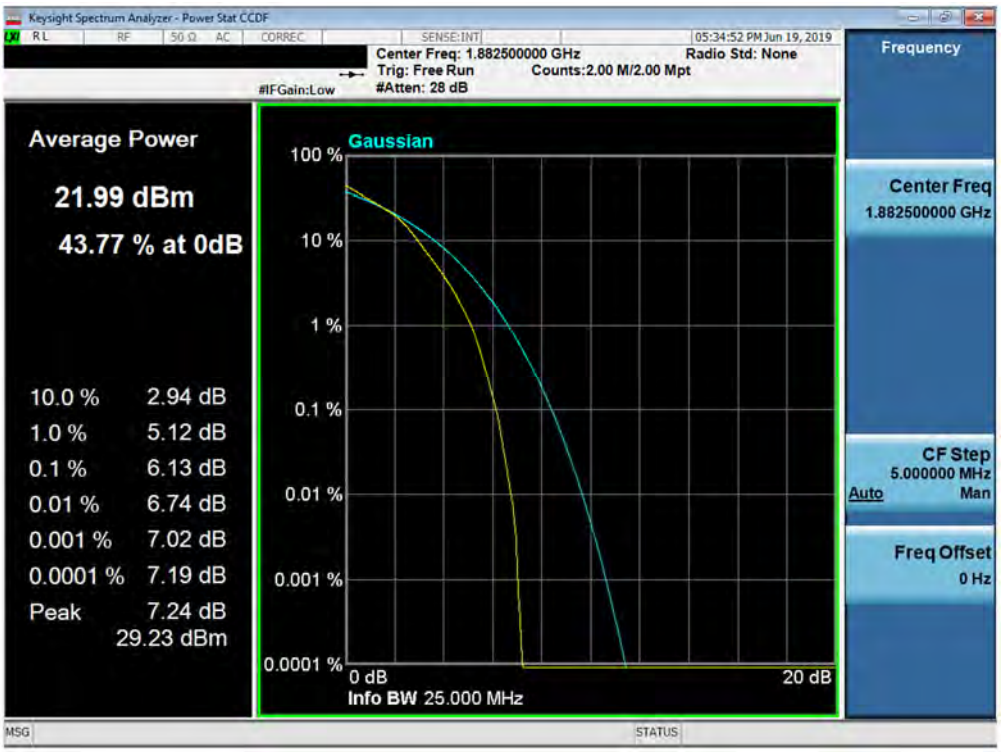
Plot 7-248. PAR Plot (Band 25/2 - 10.0MHz 16-QAM - Full RB Configuration)



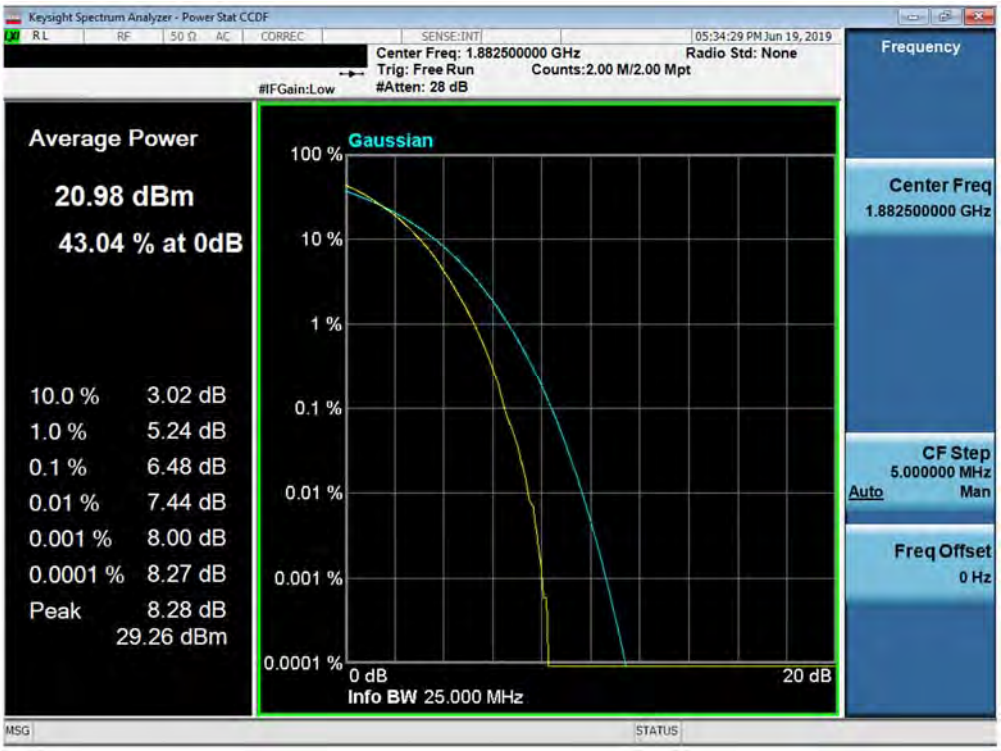
Plot 7-249. PAR Plot (Band 25/2 - 10.0MHz 64-QAM - Full RB Configuration)



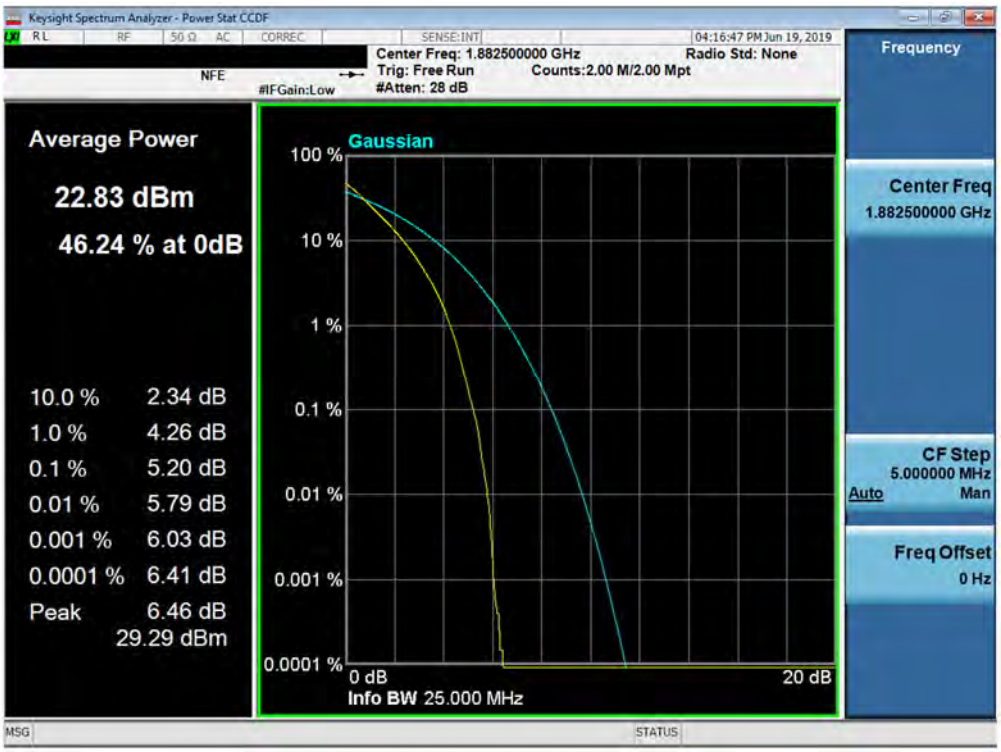
Plot 7-250. PAR Plot (Band 25/2 - 15.0MHz QPSK - Full RB Configuration)



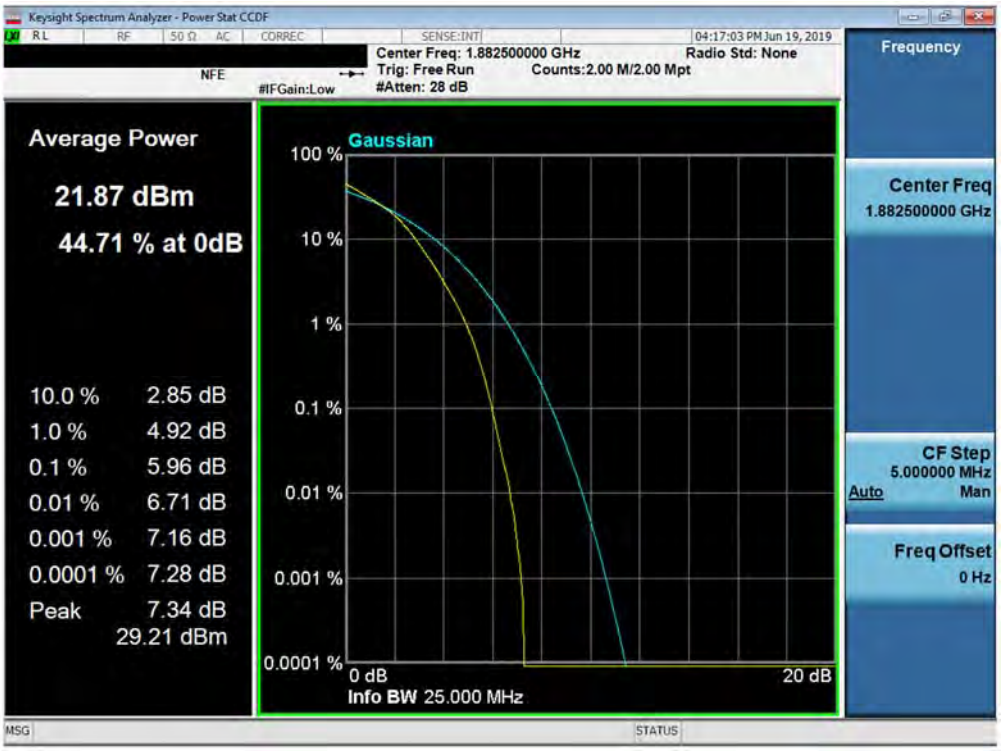
Plot 7-251. PAR Plot (Band 25/2 - 15.0MHz 16-QAM - Full RB Configuration)



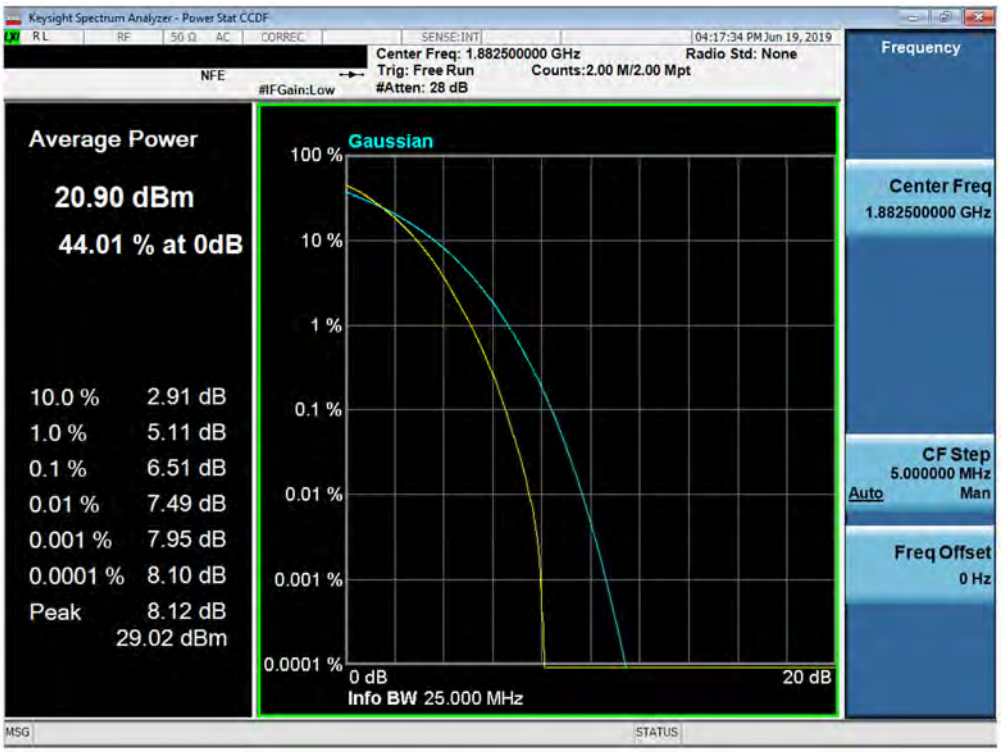
Plot 7-252. PAR Plot (Band 25/2 - 15.0MHz 64-QAM - Full RB Configuration)



Plot 7-253. PAR Plot (Band 25/2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-254. PAR Plot (Band 25/2 - 20.0MHz 16-QAM - Full RB Configuration)



Plot 7-255. PAR Plot (Band 25/2 - 20.0MHz 64-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

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Setup

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

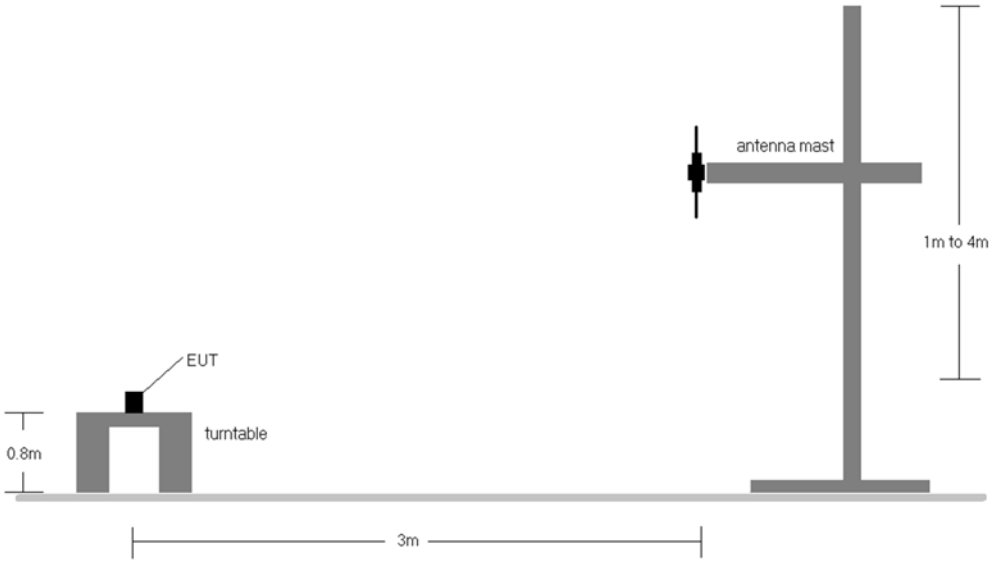


Figure 7-5. Radiated Test Setup <1GHz

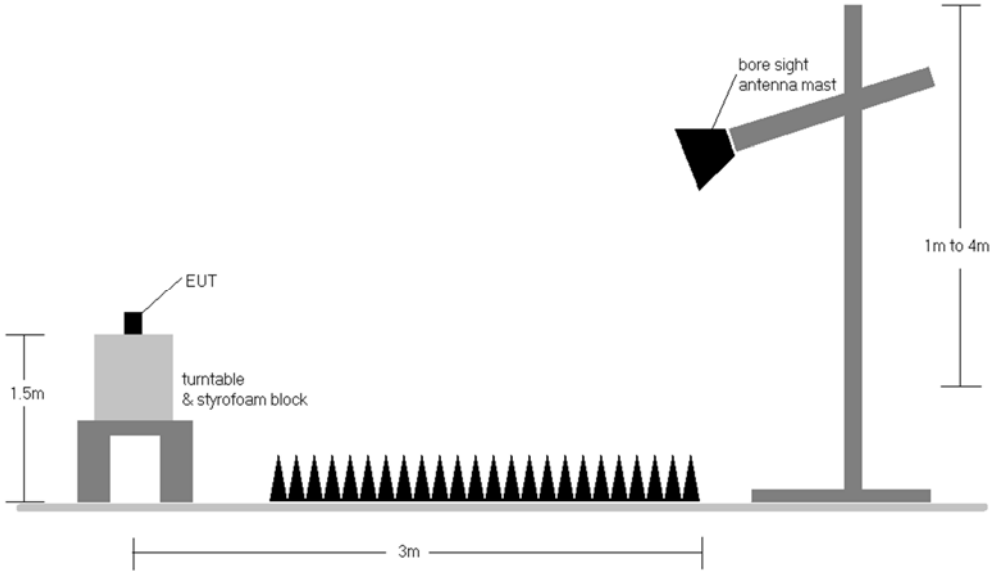


Figure 7-6. Radiated Test Setup >1GHz

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	190	24	1 / 3	14.01	5.14	17.00	0.050	34.77	-17.77
707.50	1.4	QPSK	H	188	25	1 / 0	14.28	5.19	**17.32**	0.054	34.77	-17.45
715.30	1.4	QPSK	H	343	34	1 / 3	13.93	5.26	17.04	0.051	34.77	-17.73
707.50	1.4	16-QAM	H	188	25	1 / 0	13.57	5.19	**16.61**	0.046	34.77	-18.16
707.50	1.4	64-QAM	H	188	25	1 / 0	12.66	5.19	**15.70**	0.037	34.77	-19.07
700.50	3	QPSK	H	190	24	1 / 7	14.02	5.14	17.01	0.050	34.77	-17.76
707.50	3	QPSK	H	188	25	1 / 0	14.33	5.19	**17.37**	**0.055**	34.77	-17.40
714.50	3	QPSK	H	343	34	1 / 7	13.85	5.25	16.95	0.050	34.77	-17.82
707.50	3	16-QAM	H	188	25	1 / 0	13.54	5.19	**16.58**	0.045	34.77	-18.19
707.50	3	64-QAM	H	188	25	1 / 0	12.78	5.19	**15.82**	0.038	34.77	-18.95
701.50	5	QPSK	H	190	24	1 / 12	14.07	5.15	17.07	0.051	34.77	-17.70
707.50	5	QPSK	H	188	25	1 / 0	14.32	5.19	**17.36**	0.054	34.77	-17.41
713.50	5	QPSK	H	343	34	1 / 12	13.88	5.24	16.97	0.050	34.77	-17.80
707.50	5	16-QAM	H	188	25	1 / 0	13.63	5.19	**16.67**	0.046	34.77	-18.10
707.50	5	64-QAM	H	188	25	1 / 0	12.76	5.19	**15.80**	0.038	34.77	-18.97
704.00	10	QPSK	H	190	24	1 / 25	13.95	5.17	16.97	0.050	34.77	-17.80
707.50	10	QPSK	H	188	25	1 / 0	14.20	5.19	**17.24**	0.053	34.77	-17.53
711.00	10	QPSK	H	343	34	1 / 25	13.86	5.22	16.93	0.049	34.77	-17.84
707.50	10	16-QAM	H	188	25	1 / 0	13.41	5.19	**16.45**	0.044	34.77	-18.32
707.50	10	64-QAM	H	188	25	1 / 0	12.46	5.19	15.50	0.035	34.77	-19.27
707.50	3	QPSK	V	306	247	1 / 0	14.23	5.19	17.27	0.053	34.77	-17.50

Table 7-3. ERP Data (Band 12/17)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	140	178	1 / 24	13.50	6.09	17.44	0.055	34.77	-17.33
782.00	5	QPSK	H	140	178	1 / 24	13.50	6.13	**17.48**	0.056	34.77	-17.29
784.50	5	QPSK	H	140	178	1 / 24	13.35	6.18	17.38	0.055	34.77	-17.39
782.00	5	16-QAM	H	140	178	1 / 24	12.87	6.13	**16.85**	0.048	34.77	-17.92
782.00	5	64-QAM	H	140	178	1 / 24	11.95	6.13	**15.93**	0.039	34.77	-18.84
782.00	10	QPSK	H	140	178	1 / 49	13.74	6.13	**17.72**	**0.059**	34.77	-17.05
782.00	10	16-QAM	H	140	178	1 / 49	13.03	6.13	**17.01**	0.050	34.77	-17.76
782.00	10	64-QAM	H	140	178	1 / 49	11.89	6.13	**15.87**	0.039	34.77	-18.90
782.00	10	QPSK	H	322	255	1 / 49	13.56	6.13	17.54	0.057	34.77	-17.23

Table 7-4. 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	H	188	180	1 / 5	11.03	6.89	15.77	0.038	38.45	-22.68
836.50	1.4	QPSK	H	127	179	1 / 5	12.60	7.08	**17.53**	0.057	38.45	-20.92
848.30	1.4	QPSK	H	201	177	1 / 5	12.17	7.28	17.30	0.054	38.45	-21.15
836.50	1.4	16-QAM	H	127	179	1 / 5	11.97	7.08	**16.90**	0.049	38.45	-21.55
836.50	1.4	64-QAM	H	127	179	1 / 5	11.34	7.08	**16.27**	0.042	38.45	-22.18
825.50	3	QPSK	H	188	180	1 / 14	11.02	6.90	15.77	0.038	38.45	-22.68
836.50	3	QPSK	H	127	179	1 / 14	12.86	7.08	**17.79**	**0.060**	38.45	-20.66
847.50	3	QPSK	H	201	177	1 / 14	12.25	7.26	17.36	0.054	38.45	-21.09
836.50	3	16-QAM	H	127	179	1 / 14	11.90	7.08	**16.83**	0.048	38.45	-21.62
836.50	3	64-QAM	H	127	179	1 / 14	11.30	7.08	**16.23**	0.042	38.45	-22.22
826.50	5	QPSK	H	188	180	1 / 24	11.04	6.92	15.81	0.038	38.45	-22.64
836.50	5	QPSK	H	127	179	1 / 24	12.52	7.08	**17.45**	0.056	38.45	-21.00
846.50	5	QPSK	H	201	177	1 / 24	12.26	7.25	17.36	0.054	38.45	-21.09
836.50	5	16-QAM	H	127	179	1 / 24	11.88	7.08	**16.81**	0.048	38.45	-21.64
836.50	5	64-QAM	H	127	179	1 / 24	11.29	7.08	**16.22**	0.042	38.45	-22.23
829.00	10	QPSK	H	188	180	1 / 49	11.02	6.96	15.83	0.038	38.45	-22.62
836.50	10	QPSK	H	127	179	1 / 49	12.57	7.08	**17.50**	0.056	38.45	-20.95
844.00	10	QPSK	H	201	177	1 / 49	12.29	7.21	17.35	0.054	38.45	-21.10
836.50	10	16-QAM	H	127	179	1 / 49	11.98	7.08	**16.91**	0.049	38.45	-21.54
836.50	10	64-QAM	H	127	179	1 / 49	11.30	7.08	**16.23**	0.042	38.45	-22.22
831.50	15	QPSK	H	188	180	1 / 74	11.05	7.00	15.90	0.039	38.45	-22.55
836.50	15	QPSK	H	127	179	1 / 74	12.47	7.08	**17.40**	0.055	38.45	-21.05
841.50	15	QPSK	H	201	177	1 / 74	12.18	7.17	17.20	0.052	38.45	-21.25
836.50	15	16-QAM	H	127	179	1 / 74	11.78	7.08	**16.71**	0.047	38.45	-21.74
836.50	15	64-QAM	H	127	179	1 / 74	11.10	7.08	**16.03**	0.040	38.45	-22.42
836.50	3	QPSK	V	329	224	1 / 14	12.62	7.08	17.55	0.057	38.45	-20.90

Table 7-5. 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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	165	98	1 / 0	11.65	9.63	**21.28**	0.134	30.00	-8.72
1745.00	1.4	QPSK	V	118	100	1 / 0	11.44	9.54	20.98	0.125	30.00	-9.02
1779.30	1.4	QPSK	V	155	118	1 / 5	11.13	9.45	20.58	0.114	30.00	-9.42
1710.70	1.4	16-QAM	V	165	98	1 / 0	10.33	9.63	19.96	0.099	30.00	-10.04
1710.70	1.4	64-QAM	V	165	98	1 / 0	9.60	9.63	**19.23**	0.084	30.00	-10.77
1711.50	3	QPSK	V	165	98	1 / 0	11.71	9.62	**21.33**	0.136	30.00	-8.67
1745.00	3	QPSK	V	118	100	1 / 0	11.43	9.54	20.97	0.125	30.00	-9.03
1778.50	3	QPSK	V	155	118	1 / 14	11.14	9.45	20.60	0.115	30.00	-9.40
1711.50	3	16-QAM	V	165	98	1 / 0	10.49	9.62	**20.11**	0.103	30.00	-9.89
1711.50	3	64-QAM	V	165	98	1 / 0	9.72	9.62	**19.34**	0.086	30.00	-10.66
1712.50	5	QPSK	V	165	98	1 / 0	11.78	9.62	**21.40**	0.138	30.00	-8.60
1745.00	5	QPSK	V	118	100	1 / 0	11.51	9.54	21.05	0.127	30.00	-8.95
1777.50	5	QPSK	V	155	118	1 / 24	11.16	9.46	20.62	0.115	30.00	-9.38
1712.50	5	16-QAM	V	165	98	1 / 0	10.54	9.62	20.16	0.104	30.00	-9.84
1712.50	5	64-QAM	V	165	98	1 / 0	9.79	9.62	**19.41**	0.087	30.00	-10.59
1715.00	10	QPSK	V	165	98	1 / 0	11.79	9.61	**21.40**	0.138	30.00	-8.60
1745.00	10	QPSK	V	118	100	1 / 0	11.40	9.54	20.94	0.124	30.00	-9.06
1775.00	10	QPSK	V	155	118	1 / 49	11.09	9.47	20.56	0.114	30.00	-9.44
1715.00	10	16-QAM	V	165	98	1 / 0	10.54	9.61	**20.15**	0.104	30.00	-9.85
1715.00	10	64-QAM	V	165	98	1 / 0	9.75	9.61	**19.36**	0.086	30.00	-10.64
1717.50	15	QPSK	V	165	98	1 / 0	11.89	9.60	**21.49**	0.141	30.00	-8.51
1745.00	15	QPSK	V	118	100	1 / 0	11.57	9.54	21.11	0.129	30.00	-8.89
1772.50	15	QPSK	V	155	118	1 / 74	11.35	9.48	20.83	0.121	30.00	-9.17
1717.50	15	16-QAM	V	165	98	1 / 0	10.71	9.60	**20.31**	0.107	30.00	-9.69
1717.50	15	64-QAM	V	165	98	1 / 0	9.92	9.60	**19.52**	0.090	30.00	-10.48
1720.00	20	QPSK	V	165	98	1 / 0	12.11	9.59	**21.70**	0.148	30.00	-8.30
1745.00	20	QPSK	V	118	100	1 / 0	11.85	9.54	21.39	0.138	30.00	-8.61
1770.00	20	QPSK	V	155	118	1 / 99	11.25	9.49	20.74	0.118	30.00	-9.26
1720.00	20	16-QAM	V	165	98	1 / 0	10.94	9.59	**20.53**	0.113	30.00	-9.47
1720.00	20	64-QAM	V	165	98	1 / 0	10.09	9.59	19.68	0.093	30.00	-10.32
1720.00	20	QPSK	H	212	228	1 / 0	10.04	9.59	19.63	0.092	30.00	-10.37

Table 7-6. 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	V	142	93	1 / 5	11.21	9.07	20.28	0.107	33.01	-12.73
1882.50	1.4	QPSK	V	131	100	1 / 3	11.40	9.15	**20.55**	0.114	33.01	-12.46
1914.30	1.4	QPSK	V	101	100	1 / 0	10.75	9.27	20.02	0.101	33.01	-12.99
1882.50	1.4	16-QAM	V	131	100	1 / 3	9.01	9.15	18.16	0.066	33.01	-14.85
1882.50	1.4	64-QAM	V	131	100	1 / 3	8.20	9.15	17.35	0.054	33.01	-15.66
1851.50	3	QPSK	V	142	93	1 / 14	11.22	9.07	20.29	0.107	33.01	-12.72
1882.50	3	QPSK	V	131	100	1 / 7	11.35	9.15	**20.50**	0.112	33.01	-12.51
1913.50	3	QPSK	V	101	100	1 / 0	10.72	9.26	19.98	0.100	33.01	-13.03
1882.50	3	16-QAM	V	131	100	1 / 7	9.02	9.15	18.17	0.066	33.01	-14.84
1882.50	3	64-QAM	V	131	100	1 / 7	8.23	9.15	17.38	0.055	33.01	-15.63
1852.50	5	QPSK	V	142	93	1 / 24	11.17	9.07	20.24	0.106	33.01	-12.77
1882.50	5	QPSK	V	131	100	1 / 12	11.39	9.15	**20.54**	0.113	33.01	-12.47
1912.50	5	QPSK	V	101	100	1 / 0	10.77	9.26	20.02	0.101	33.01	-12.99
1882.50	5	16-QAM	V	131	100	1 / 12	9.02	9.15	18.17	0.066	33.01	-14.84
1882.50	5	64-QAM	V	131	100	1 / 12	8.24	9.15	17.39	0.055	33.01	-15.62
1855.00	10	QPSK	V	142	93	1 / 49	11.18	9.08	20.26	0.106	33.01	-12.75
1882.50	10	QPSK	V	131	100	1 / 25	11.39	9.15	**20.54**	0.113	33.01	-12.47
1910.00	10	QPSK	V	101	100	1 / 0	10.87	9.24	20.11	0.103	33.01	-12.90
1882.50	10	16-QAM	V	131	100	1 / 25	8.98	9.15	18.13	0.065	33.01	-14.88
1882.50	10	64-QAM	V	131	100	1 / 25	8.25	9.15	17.40	0.055	33.01	-15.61
1857.50	15	QPSK	V	142	93	1 / 74	11.23	9.08	20.31	0.107	33.01	-12.70
1882.50	15	QPSK	V	131	100	1 / 37	11.30	9.15	**20.45**	0.111	33.01	-12.56
1907.50	15	QPSK	V	101	100	1 / 0	10.86	9.22	20.08	0.102	33.01	-12.93
1882.50	15	16-QAM	V	131	100	1 / 37	9.41	9.15	18.56	0.072	33.01	-14.45
1882.50	15	64-QAM	V	131	100	1 / 37	8.54	9.15	17.69	0.059	33.01	-15.32
1860.00	20	QPSK	V	142	93	1 / 99	11.26	9.09	20.35	0.108	33.01	-12.66
1882.50	20	QPSK	V	131	100	1 / 50	11.35	9.15	**20.50**	0.112	33.01	-12.51
1905.00	20	QPSK	V	101	100	1 / 0	11.10	9.20	20.30	0.107	33.01	-12.71
1882.50	20	16-QAM	V	131	100	1 / 50	9.01	9.15	18.16	0.066	33.01	-14.85
1882.50	20	64-QAM	V	131	100	1 / 50	8.30	9.15	17.45	0.056	33.01	-15.56
1882.50	1.4	QPSK	H	205	244	1 / 99	9.13	9.15	18.28	0.067	33.01	-14.73

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

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]
2498.50	5	QPSK	H	100	41	1 / 12	14.35	8.35	22.69	0.186	33.01	-10.32
2593.00	5	QPSK	H	100	50	1 / 12	14.91	8.04	**22.94**	0.197	33.01	-10.07
2687.50	5	QPSK	H	100	51	1 / 24	14.95	7.94	22.88	0.194	33.01	-10.13
2593.00	5	16-QAM	H	100	50	1 / 12	14.36	8.04	**22.39**	0.174	33.01	-10.62
2593.00	5	64-QAM	H	100	50	1 / 12	13.48	8.04	**21.51**	0.142	33.01	-11.50
2501.00	10	QPSK	H	100	41	1 / 25	14.33	8.34	22.67	0.185	33.01	-10.34
2593.00	10	QPSK	H	100	50	1 / 25	14.80	8.04	22.83	0.192	33.01	-10.18
2685.00	10	QPSK	H	100	51	1 / 49	14.94	7.93	**22.86**	0.193	33.01	-10.15
2685.00	10	16-QAM	H	100	51	1 / 49	14.34	7.93	22.26	0.168	33.01	-10.75
2685.00	10	64-QAM	H	100	51	1 / 49	13.51	7.93	21.43	0.139	33.01	-11.58
2503.50	15	QPSK	H	100	41	1 / 37	14.36	8.34	22.69	0.186	33.01	-10.32
2593.00	15	QPSK	H	100	50	1 / 37	14.86	8.04	22.89	0.195	33.01	-10.12
2682.50	15	QPSK	H	100	51	1 / 74	15.10	7.92	**23.01**	**0.200**	33.01	-10.00
2682.50	15	16-QAM	H	100	51	1 / 74	14.45	7.92	22.36	0.172	33.01	-10.65
2682.50	15	64-QAM	H	100	51	1 / 74	13.64	7.92	**21.55**	0.143	33.01	-11.46
2506.00	20	QPSK	H	100	41	1 / 50	14.19	8.33	22.52	0.179	33.01	-10.49
2593.00	20	QPSK	H	100	50	1 / 50	14.73	8.04	22.76	0.189	33.01	-10.25
2680.00	20	QPSK	H	100	51	1 / 99	14.97	7.91	**22.88**	0.194	33.01	-10.13
2593.00	20	16-QAM	H	100	50	1 / 50	13.96	8.04	21.99	0.158	33.01	-11.02
2593.00	20	64-QAM	H	100	50	1 / 50	13.03	8.04	**21.06**	0.128	33.01	-11.95
2682.50	15	QPSK	V	205	171	1 / 74	12.70	7.92	20.62	0.115	33.01	-12.39

Table 7-8. 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.

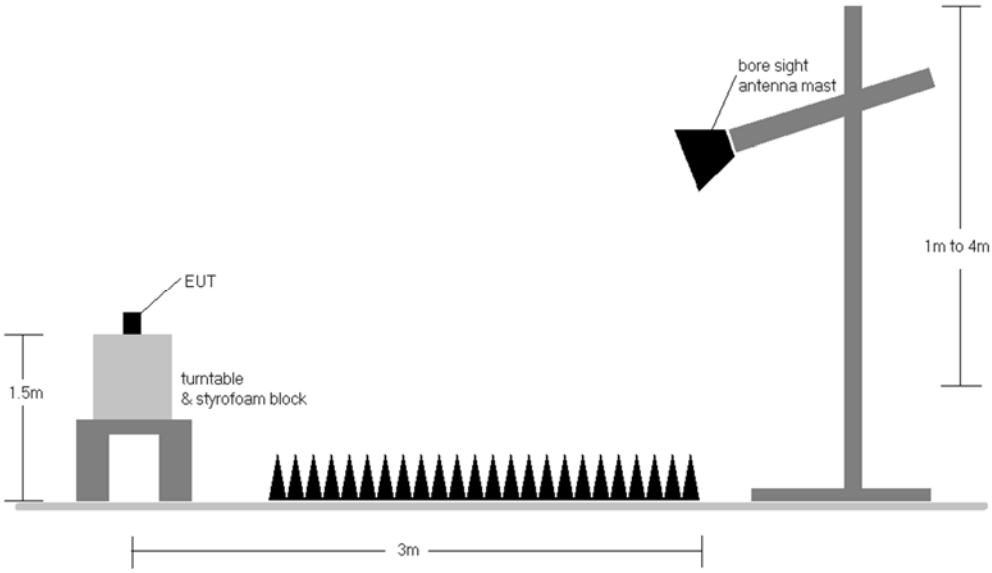


Figure 7-7. Test Instrument & Measurement Setup

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.

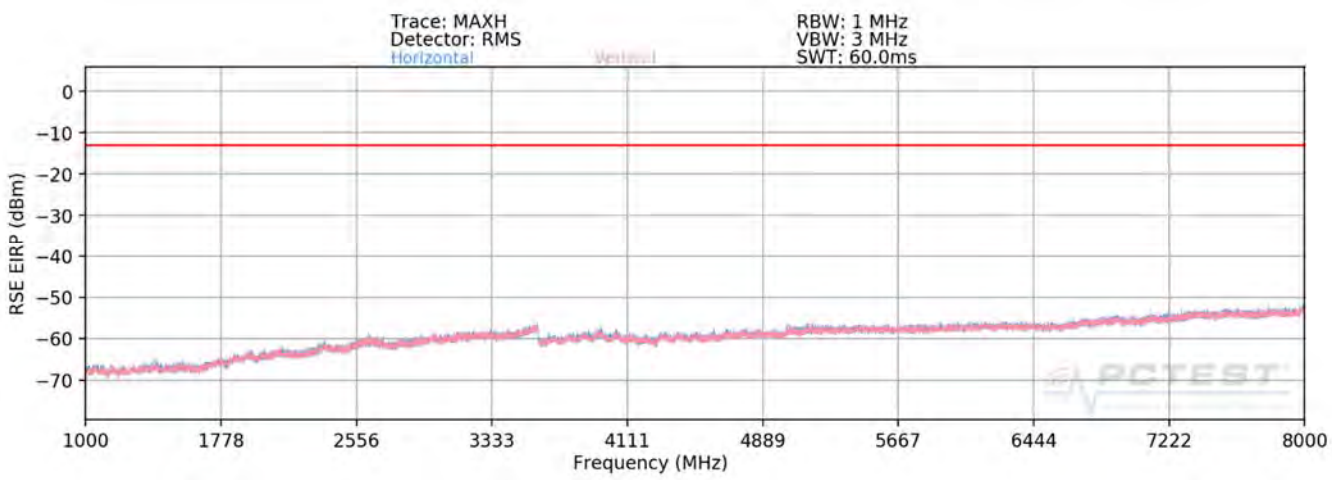
2) This unit was tested with its standard battery.

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 12/17



Plot 7-256. Radiated Spurious Plot above 1GHz (Band 12/17)

OPERATING FREQUENCY:	704.00	MHz
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	155	340	-69.25	8.64	-60.62	-47.6
2112.00	V	316	147	-60.32	8.92	-51.41	-38.4
2816.00	V	-	-	-64.63	8.10	-56.53	-43.5

Table 7-9. Radiated Spurious Data (Band 12/17 – Low Channel)

OPERATING FREQUENCY:	707.50	MHz
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	141	333	-68.61	8.63	-59.98	-47.0
2122.50	V	327	155	-57.95	8.92	-49.02	-36.0
2830.00	V	-	-	-64.18	8.05	-56.14	-43.1

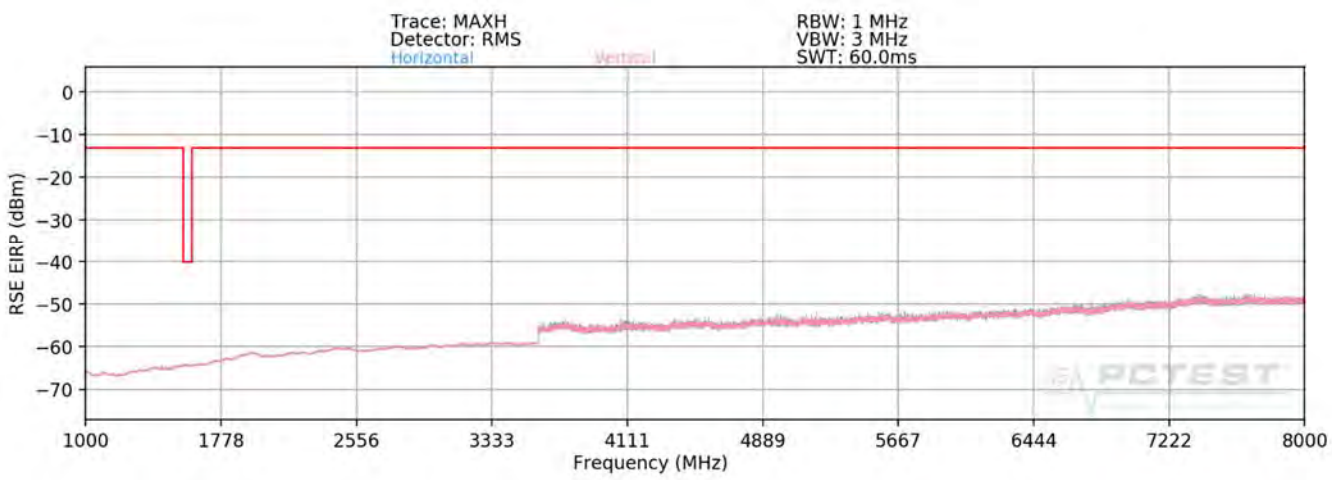
Table 7-10. Radiated Spurious Data (Band 12/17 – Mid Channel)

OPERATING FREQUENCY:	711.00	MHz
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	139	330	-69.22	8.62	-60.60	-47.6
2133.00	V	323	168	-59.03	8.93	-50.10	-37.1
2844.00	V	-	-	-63.03	7.99	-55.05	-42.0

Table 7-11. Radiated Spurious Data (Band 12/17 – High Channel)

Band 13



Plot 7-257. Radiated Spurious Plot above 1GHz (Band 13)

OPERATING FREQUENCY:	782.00	MHz
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	261	156	-43.04	8.76	-34.28	-21.3
3128.00	V	-	-	-64.01	8.42	-55.59	-42.6

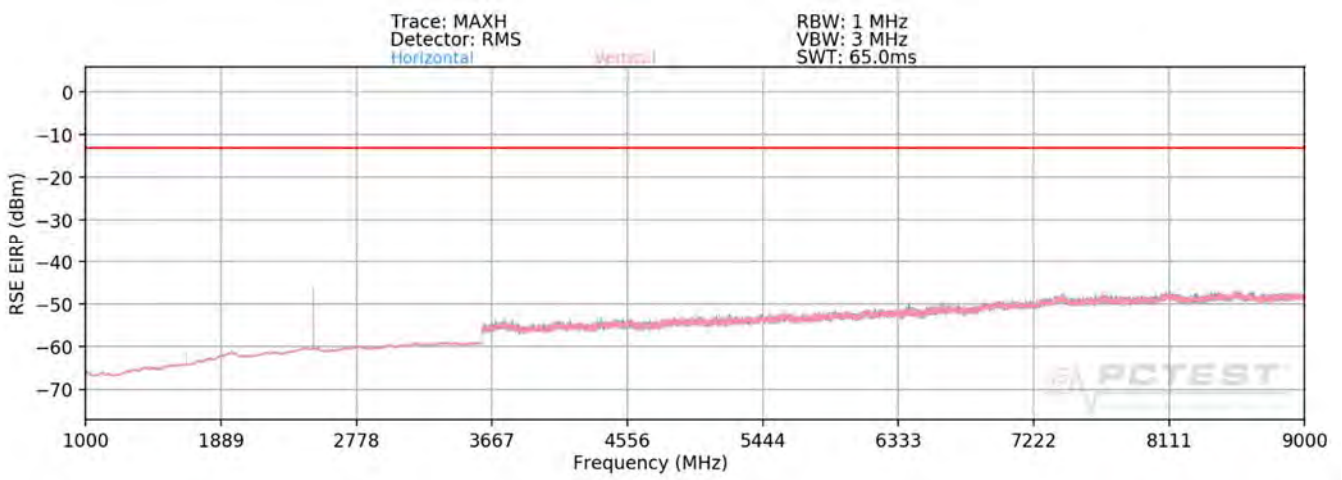
Table 7-12. Radiated Spurious Data (Band 13 – Mid Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	258	208	-65.02	8.80	-56.22	-16.2

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

Band 26/5



Plot 7-258. Radiated Spurious Plot above 1GHz (Band 26/5)

OPERATING FREQUENCY:	825.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	3.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1651.00	V	207	359	-67.51	9.47	-58.04	-45.0
2476.50	V	100	153	-53.36	8.45	-44.91	-31.9
3302.00	V	-	-	-63.31	8.15	-55.16	-42.2

Table 7-14. Radiated Spurious Data (Band 26/5 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	3.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	V	215	4	-67.14	9.56	-57.58	-44.6
2509.50	V	108	75	-55.75	8.33	-47.43	-34.4
3346.00	V	-	-	-63.69	8.59	-55.10	-42.1

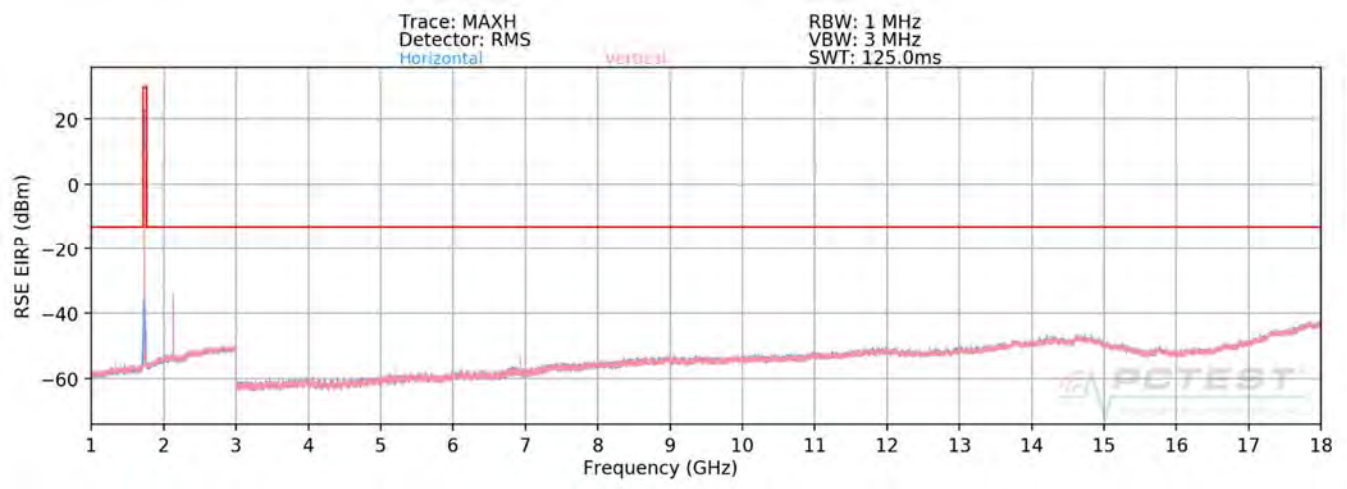
Table 7-15. Radiated Spurious Data (Band 26/5 – Mid Channel)

OPERATING FREQUENCY:	847.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	3.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1695.00	V	218	2	-68.57	9.65	-58.92	-45.9
2542.50	V	157	155	-57.72	8.27	-49.45	-36.5
3390.00	V	-	-	-63.70	8.84	-54.86	-41.9

Table 7-16. Radiated Spurious Data (Band 26/5 – High Channel)

Band 66/4



Plot 7-259. Radiated Spurious Plot above 1GHz (Band 66/4)

OPERATING FREQUENCY:	1720.00	MHz
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	122	317	-60.89	9.14	-51.74	-38.7
5160.00	H	-	-	-66.10	12.59	-53.51	-40.5
6880.00	H	-	-	-60.09	10.47	-49.62	-36.6

Table 7-17. Radiated Spurious Data (Band 66/4 – Low Channel)

OPERATING FREQUENCY:	1745.00	MHz
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	138	59	-60.92	9.19	-51.73	-38.7
5235.00	H	394	341	-65.72	12.75	-52.97	-40.0
6980.00	H	-	-	-60.26	10.28	-49.98	-37.0

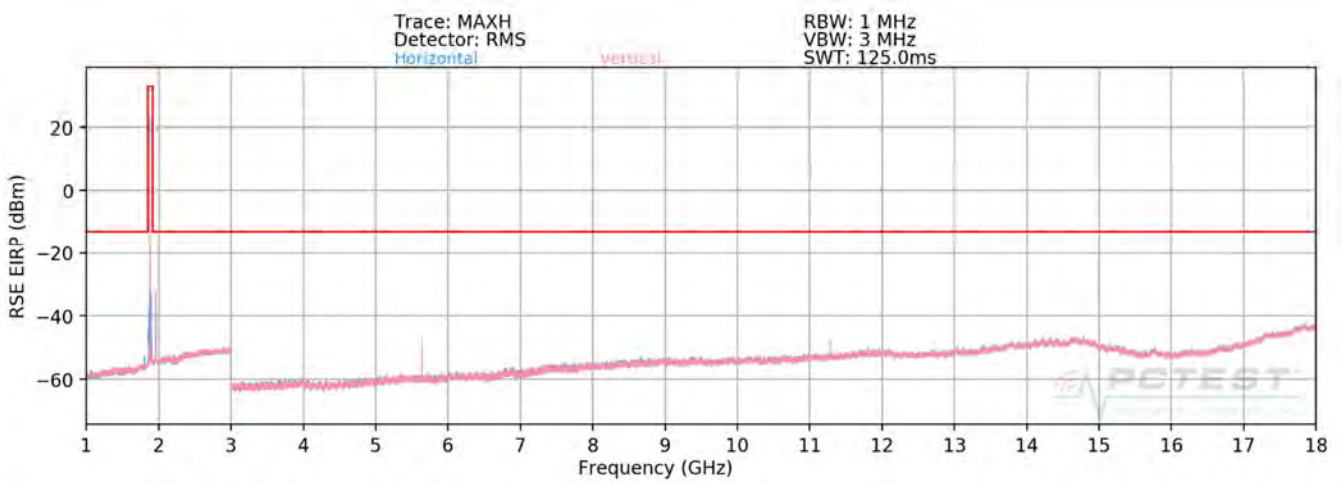
Table 7-18. Radiated Spurious Data (Band 66/4 – Mid Channel)

OPERATING FREQUENCY:	1770.00	MHz
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	100	310	-60.03	9.16	-50.86	-37.9
5310.00	H	135	180	-65.73	12.92	-52.80	-39.8
7080.00	H	-	-	-60.02	10.18	-49.84	-36.8

Table 7-19. Radiated Spurious Data (Band 66/4 – High Channel)

Band 25/2



Plot 7-260. Radiated Spurious Plot above 1GHz (Band 25/2)

OPERATING FREQUENCY:	1860.00	MHz
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	-	-	-63.21	8.87	-54.34	-41.3
5580.00	H	100	209	-60.26	13.05	-47.21	-34.2
7440.00	H	-	-	-58.15	10.47	-47.68	-34.7

Table 7-20. Radiated Spurious Data (Band 25/2 – Low Channel)

OPERATING FREQUENCY:	1882.50	MHz
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	H	-	-	-63.56	9.14	-54.42	-41.4
5647.50	H	105	199	-58.75	13.14	-45.62	-32.6
7530.00	H	-	-	-58.20	10.65	-47.55	-34.6

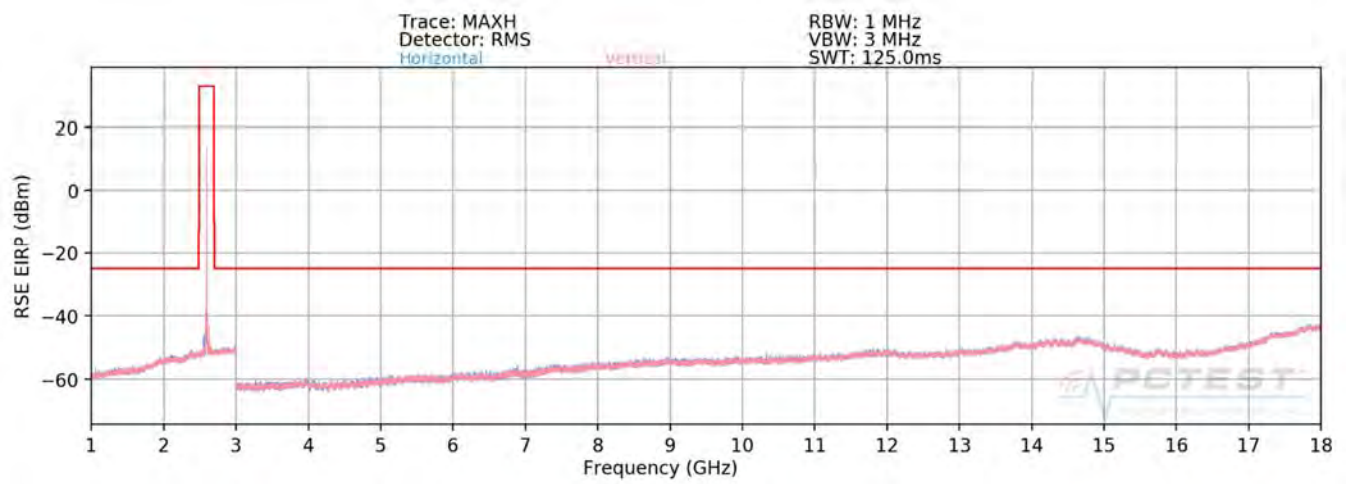
Table 7-21. Radiated Spurious Data (Band 25/2 – Mid Channel)

OPERATING FREQUENCY:	1905.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	20.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

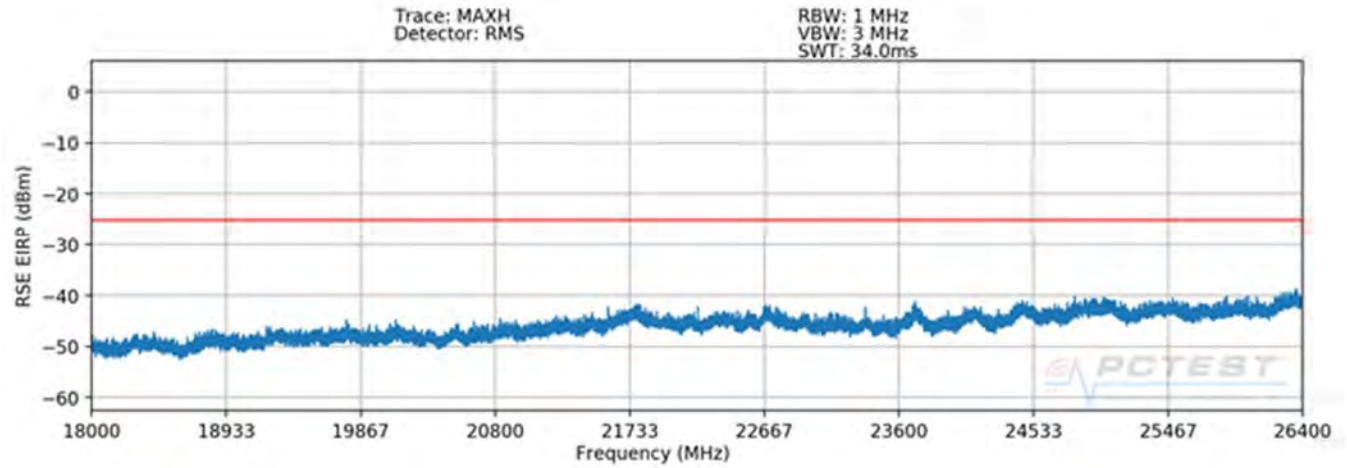
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3810.00	H	-	-	-63.66	9.27	-54.39	-41.4
5715.00	H	112	221	-60.32	13.13	-47.19	-34.2
7620.00	H	-	-	-57.96	10.74	-47.23	-34.2

Table 7-22. Radiated Spurious Data (Band 25/2 – High Channel)

Band 41



Plot 7-261. Radiated Spurious Plot 1GHz - 18GHz (Band 41)



Plot 7-262. Radiated Spurious Plot 18GHz – 26.5GHz (Band 41)

OPERATING FREQUENCY:	2507.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5015.00	H	381	284	-72.48	11.89	-60.59	-35.6
7522.50	H	291	171	-65.28	10.66	-54.62	-29.6
10030.00	H	-	-	-65.96	12.02	-53.94	-28.9

Table 7-23. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	H	100	4	-70.28	12.70	-57.58	-32.6
7779.00	H	100	357	-63.07	10.67	-52.40	-27.4
10372.00	H	-	-	-66.43	12.02	-54.41	-29.4

Table 7-24. Radiated Spurious Data (Band 41 – Mid Channel)

OPERATING FREQUENCY:	2682.50	MHz
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-25	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5365.00	H	122	334	-72.70	13.08	-59.62	-34.6
8047.50	H	100	76	-67.48	11.70	-55.78	-30.8
10730.00	H	-	-	-64.43	12.02	-52.41	-27.4

Table 7-25. 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 12/17 Frequency Stability Measurements

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23790	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	707,500,208	208	0.0000294
100 %		- 20	707,499,896	-104	-0.0000147
100 %		- 10	707,499,732	-268	-0.0000379
100 %		0	707,499,707	-293	-0.0000414
100 %		+ 10	707,500,170	170	0.0000240
100 %		+ 20	707,500,371	371	0.0000524
100 %		+ 30	707,499,752	-248	-0.0000351
100 %		+ 40	707,499,637	-363	-0.0000513
100 %		+ 50	707,500,216	216	0.0000305
BATT. ENDPOINT	3.16	+ 20	707,499,890	-110	-0.0000155

Table 7-26. Frequency Stability Data (Band 12/17)

Note:

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

Band 12/17 Frequency Stability Measurements

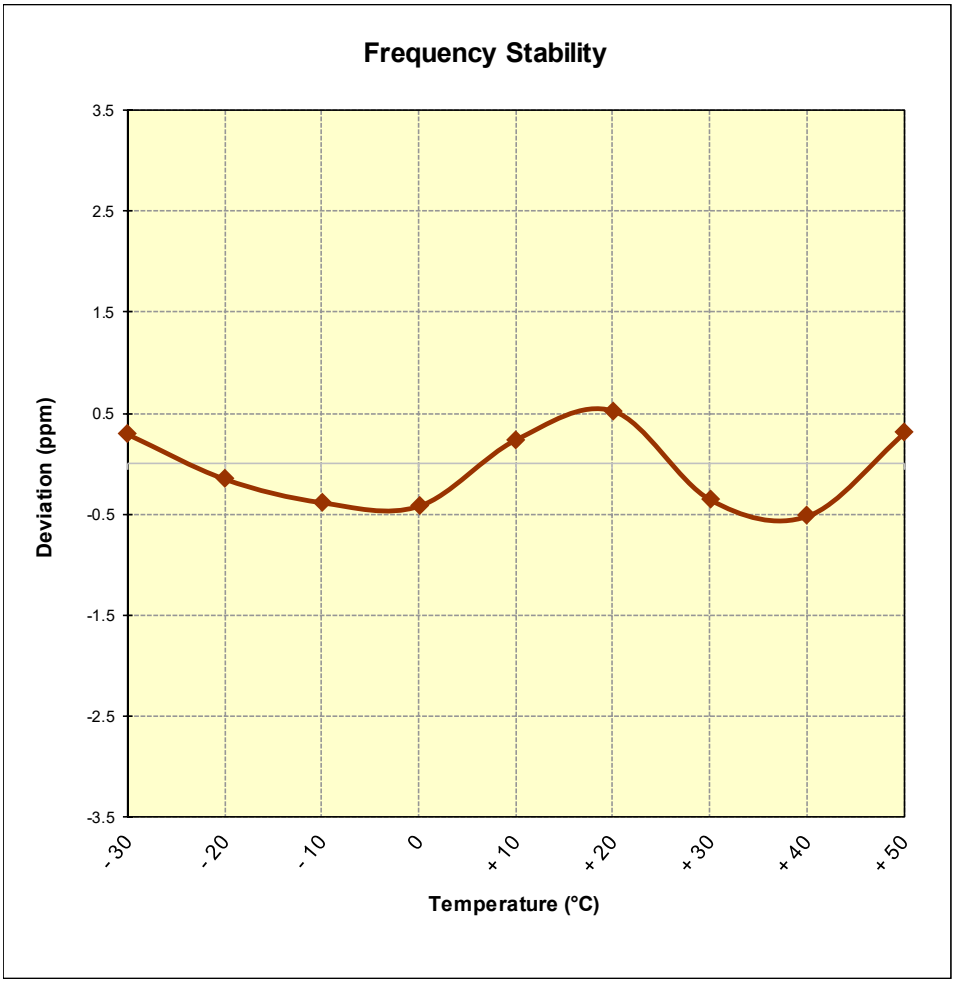


Figure 7-8. Frequency Stability Graph (Band 12/17)

Band 13 Frequency Stability Measurements

OPERATING FREQUENCY:	782,000,000	Hz
CHANNEL:	23230	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	782,000,225	225	0.0000288
100 %		- 20	782,000,063	63	0.0000081
100 %		- 10	782,000,079	79	0.0000101
100 %		0	781,999,915	-85	-0.0000109
100 %		+ 10	782,000,089	89	0.0000114
100 %		+ 20	782,000,070	70	0.0000090
100 %		+ 30	782,000,201	201	0.0000257
100 %		+ 40	781,999,819	-181	-0.0000231
100 %		+ 50	781,999,870	-130	-0.0000166
BATT. ENDPOINT	3.16	+ 20	782,000,242	242	0.0000309

Table 7-27. 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

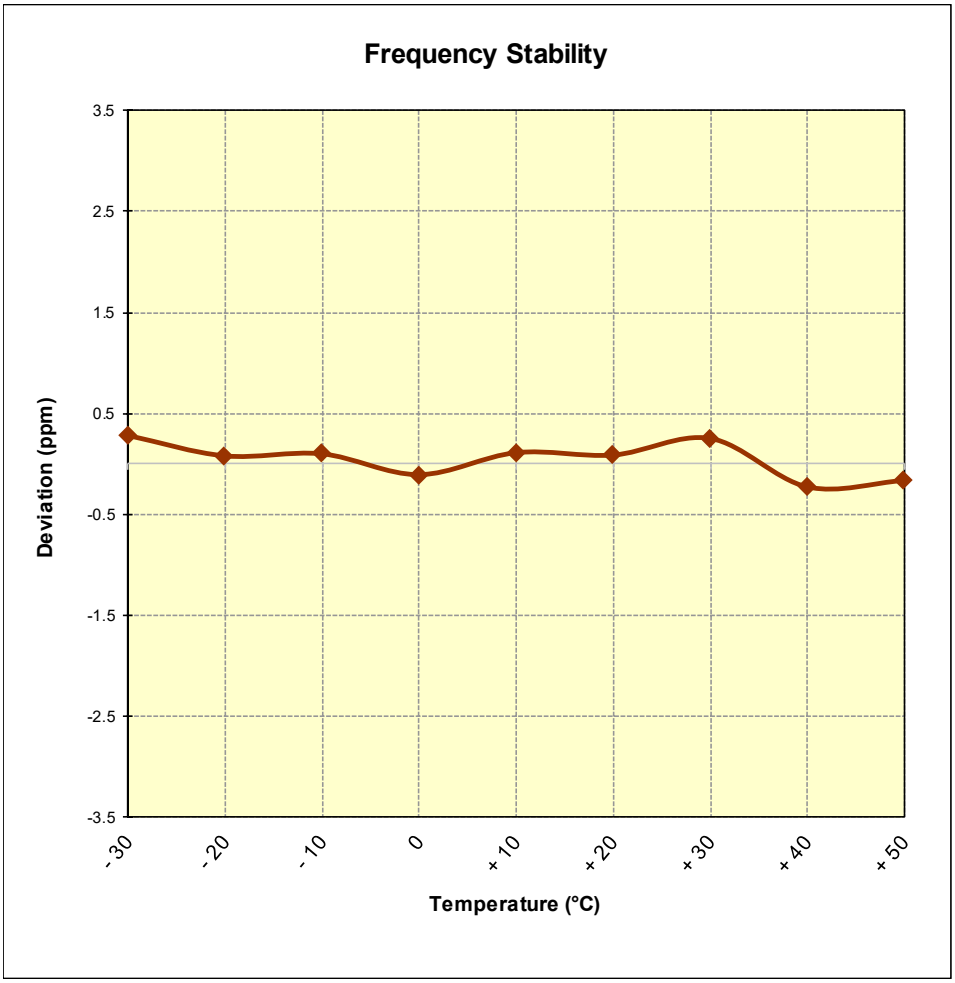


Figure 7-9. Frequency Stability Graph (Band 13)

Band 26/5 Frequency Stability Measurements

OPERATING FREQUENCY:	831,500,000	Hz
CHANNEL:	26865	
REFERENCE VOLTAGE:	3.85	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	831,500,356	356	0.0000428
100 %		- 20	831,500,114	114	0.0000137
100 %		- 10	831,500,107	107	0.0000129
100 %		0	831,500,193	193	0.0000232
100 %		+ 10	831,500,117	117	0.0000141
100 %		+ 20	831,500,254	254	0.0000305
100 %		+ 30	831,500,139	139	0.0000167
100 %		+ 40	831,499,823	-177	-0.0000213
100 %		+ 50	831,499,919	-81	-0.0000097
BATT. ENDPOINT	3.16	+ 20	831,499,830	-170	-0.0000204

Table 7-28. Frequency Stability Data (Band 26/5)

Band 26/5 Frequency Stability Measurements

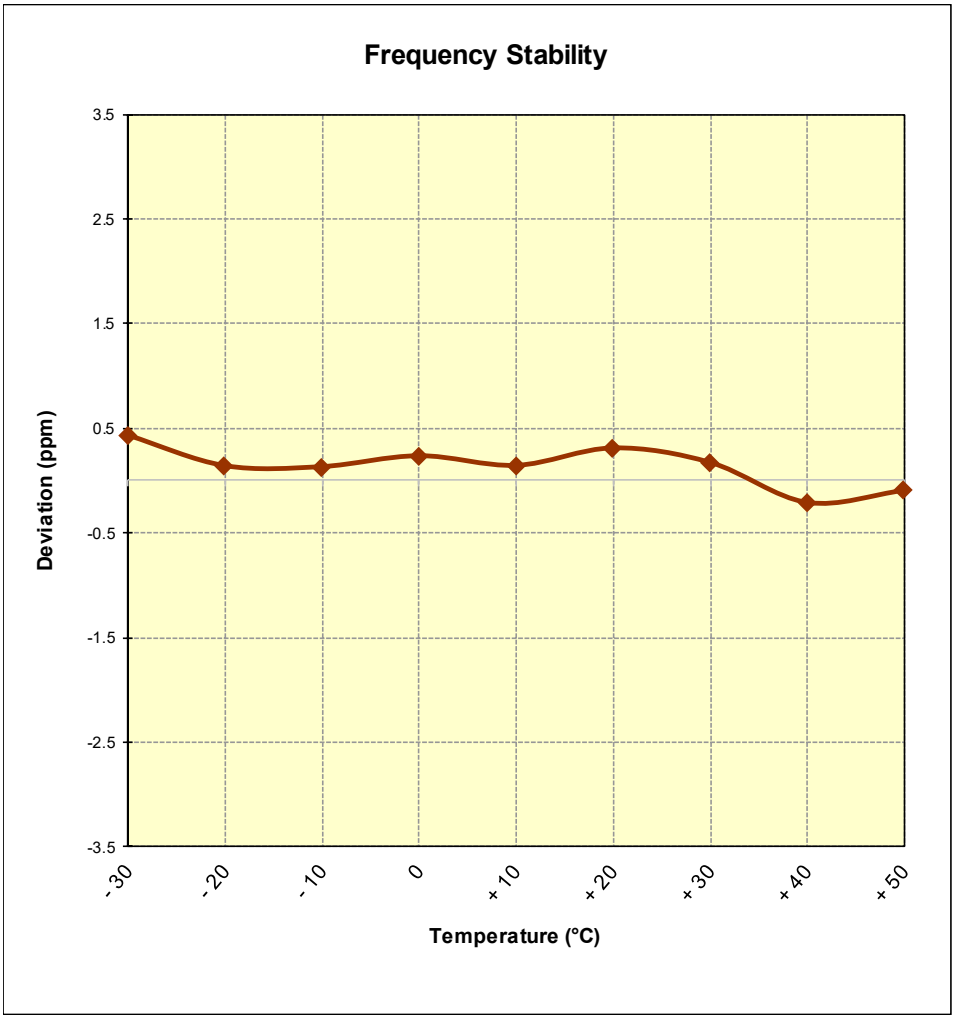


Figure 7-10. Frequency Stability Graph (Band 26/5)

Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY:	1,745,000,000	Hz
CHANNEL:	132322	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	1,745,000,323	323	0.0000185
100 %		- 20	1,745,000,060	60	0.0000034
100 %		- 10	1,744,999,957	-43	-0.0000025
100 %		0	1,744,999,851	-149	-0.0000085
100 %		+ 10	1,745,000,029	29	0.0000017
100 %		+ 20	1,744,999,999	-1	-0.0000001
100 %		+ 30	1,745,000,010	10	0.0000006
100 %		+ 40	1,744,999,803	-197	-0.0000113
100 %		+ 50	1,744,999,706	-294	-0.0000168
BATT. ENDPOINT	3.16	+ 20	1,745,000,021	21	0.0000012

Table 7-29. Frequency Stability Data (Band 66/4)

Note:

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

Band 66/4 Frequency Stability Measurements

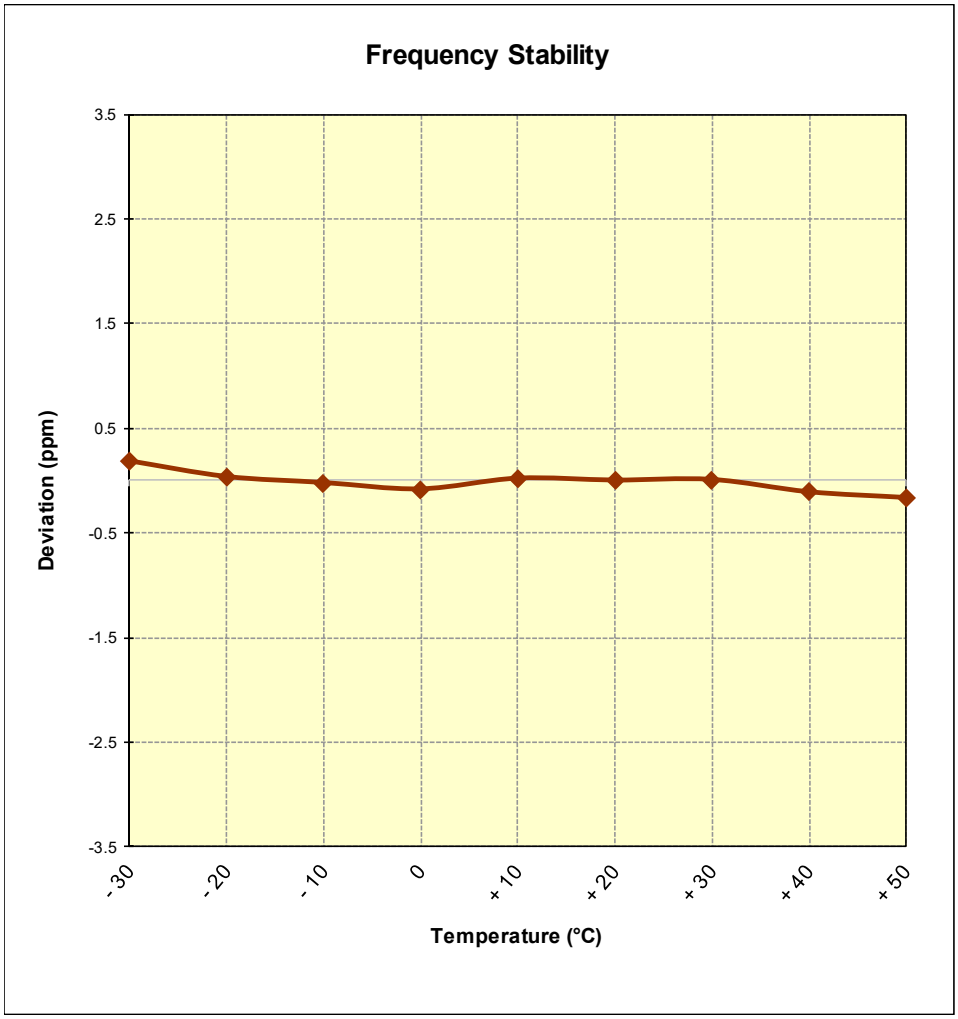


Figure 7-11. Frequency Stability Graph (Band 66/4)

Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY:	1,882,500,000	Hz
CHANNEL:	26365	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	1,882,499,627	-373	-0.0000198
100 %		- 20	1,882,499,714	-286	-0.0000152
100 %		- 10	1,882,500,002	2	0.0000001
100 %		0	1,882,500,341	341	0.0000181
100 %		+ 10	1,882,499,757	-243	-0.0000129
100 %		+ 20	1,882,500,248	248	0.0000132
100 %		+ 30	1,882,499,999	-1	-0.0000001
100 %		+ 40	1,882,499,957	-43	-0.0000023
100 %		+ 50	1,882,499,752	-248	-0.0000132
BATT. ENDPOINT	3.16	+ 20	1,882,500,186	186	0.0000099

Table 7-30. Frequency Stability Data (Band 25/2)

Band 25/2 Frequency Stability Measurements

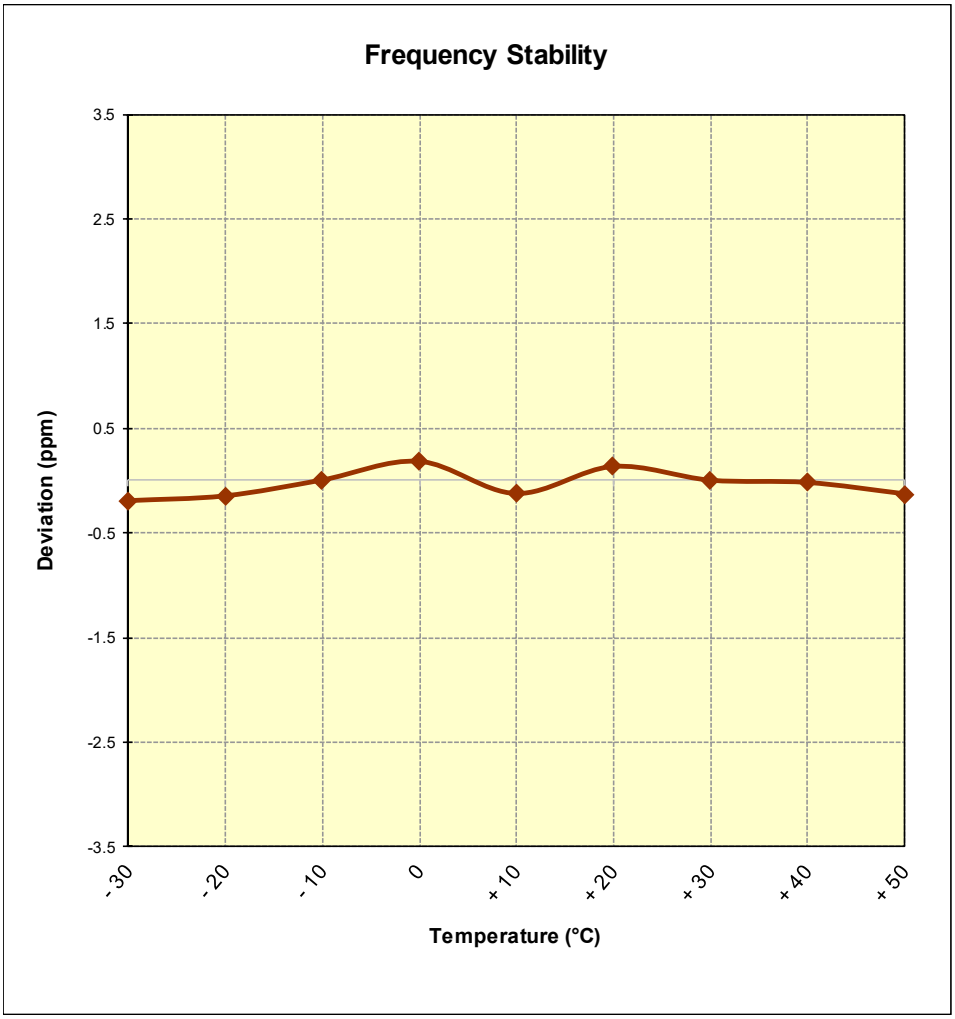


Figure 7-12. Frequency Stability Graph (Band 25/2)

Band 41 Frequency Stability Measurements

OPERATING FREQUENCY:	2,593,000,000	Hz
CHANNEL:	40620	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	2,593,000,256	256	0.0000099
100 %		- 20	2,593,000,103	103	0.0000040
100 %		- 10	2,593,000,401	401	0.0000155
100 %		0	2,593,000,237	237	0.0000091
100 %		+ 10	2,593,000,098	98	0.0000038
100 %		+ 20	2,592,999,944	-56	-0.0000022
100 %		+ 30	2,592,999,803	-197	-0.0000076
100 %		+ 40	2,593,000,176	176	0.0000068
100 %		+ 50	2,592,999,959	-41	-0.0000016
BATT. ENDPOINT	3.16	+ 20	2,593,000,101	101	0.0000039

Table 7-31. 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

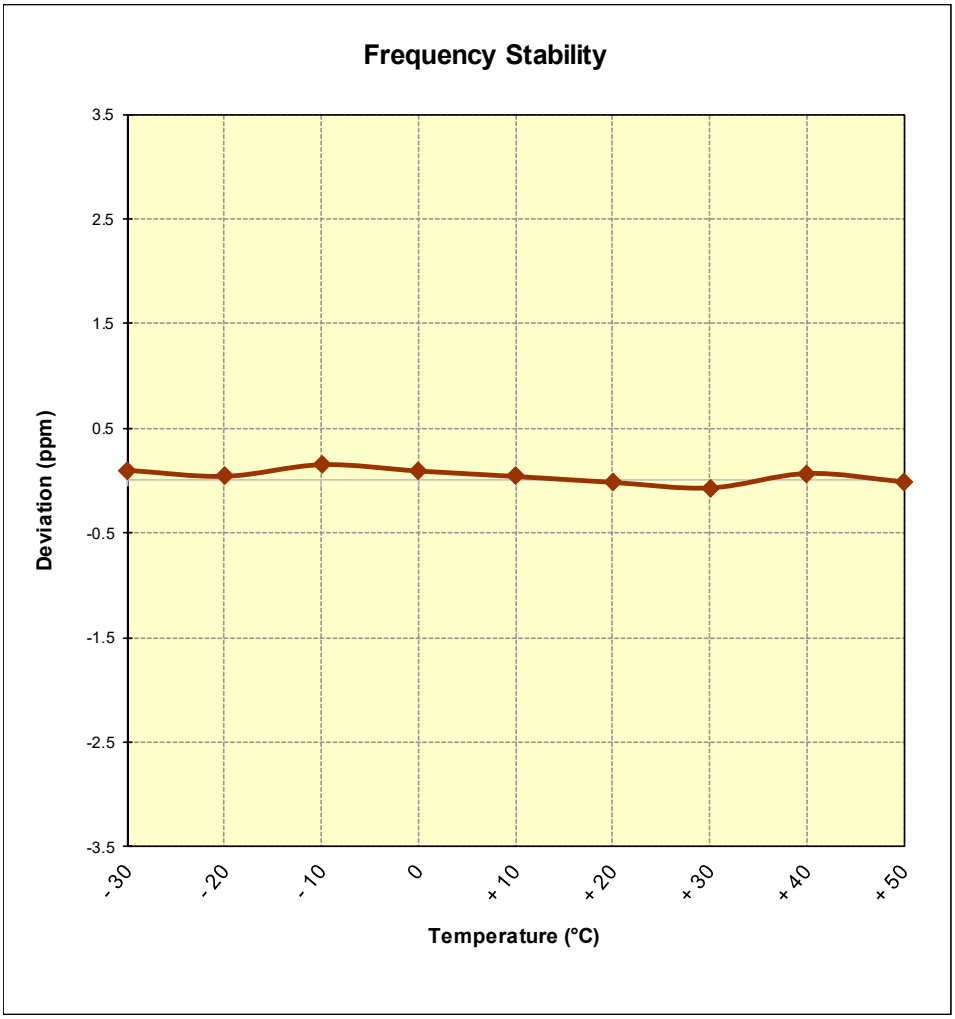


Figure 7-13. Frequency Stability Graph (Band 41)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Tablet FCC ID: A3LSMT865** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.