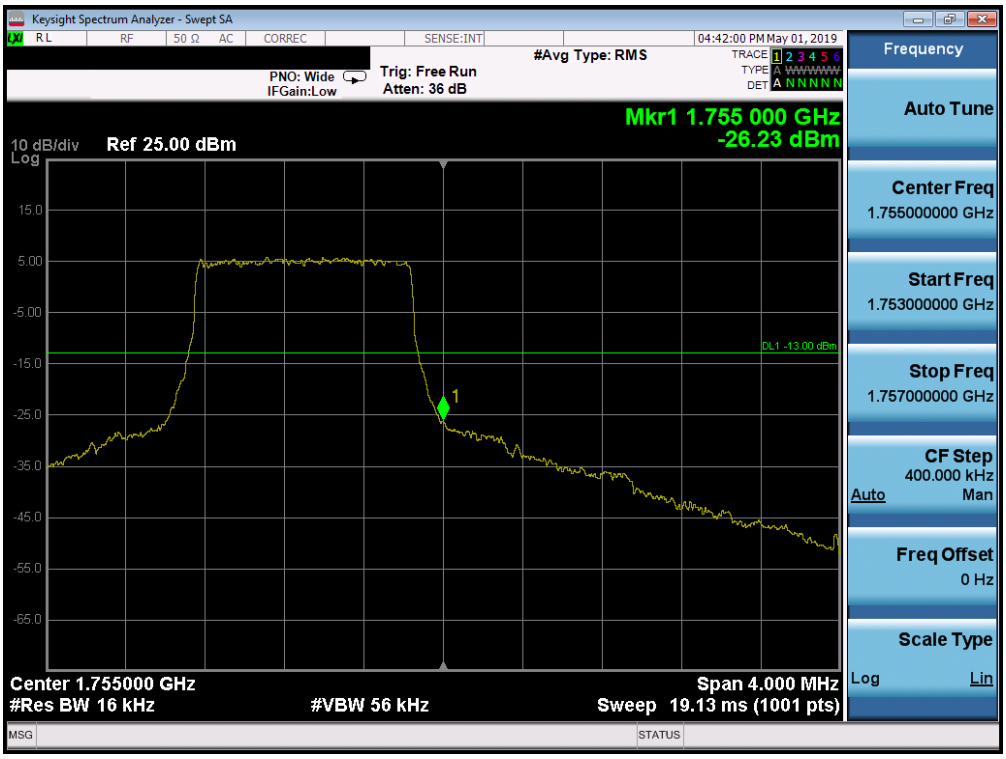
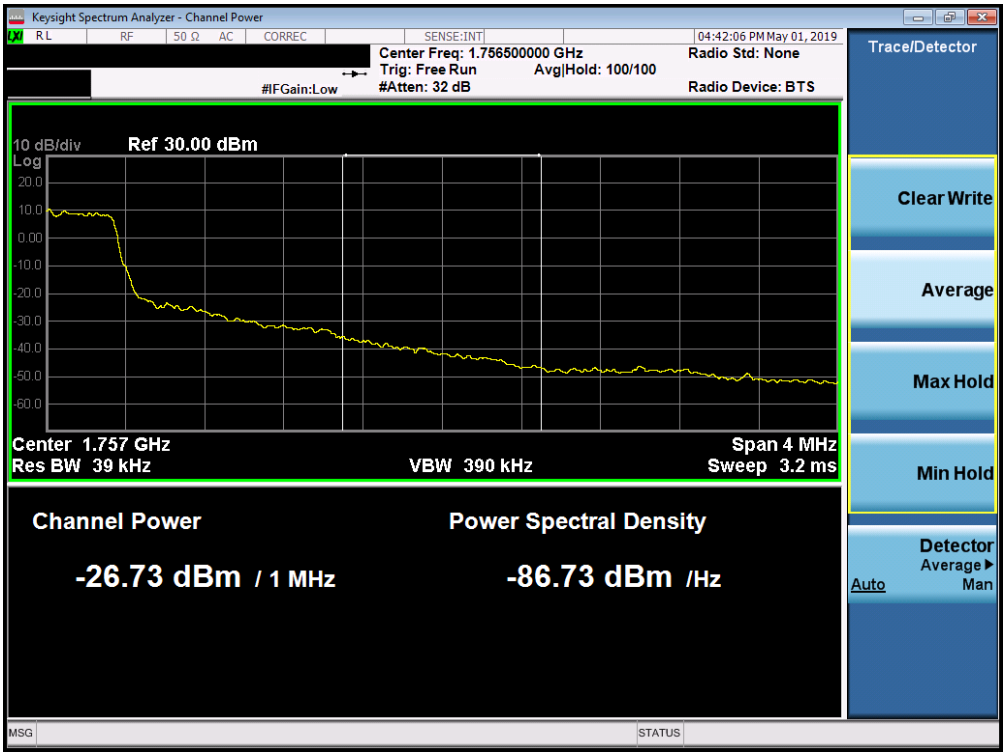
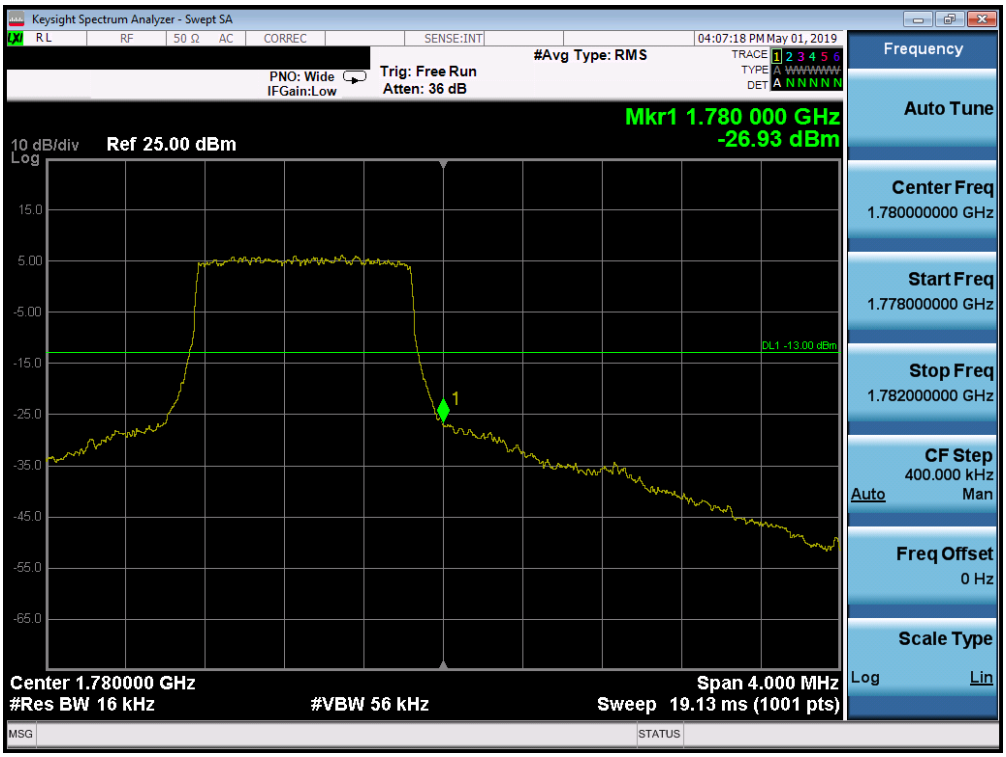


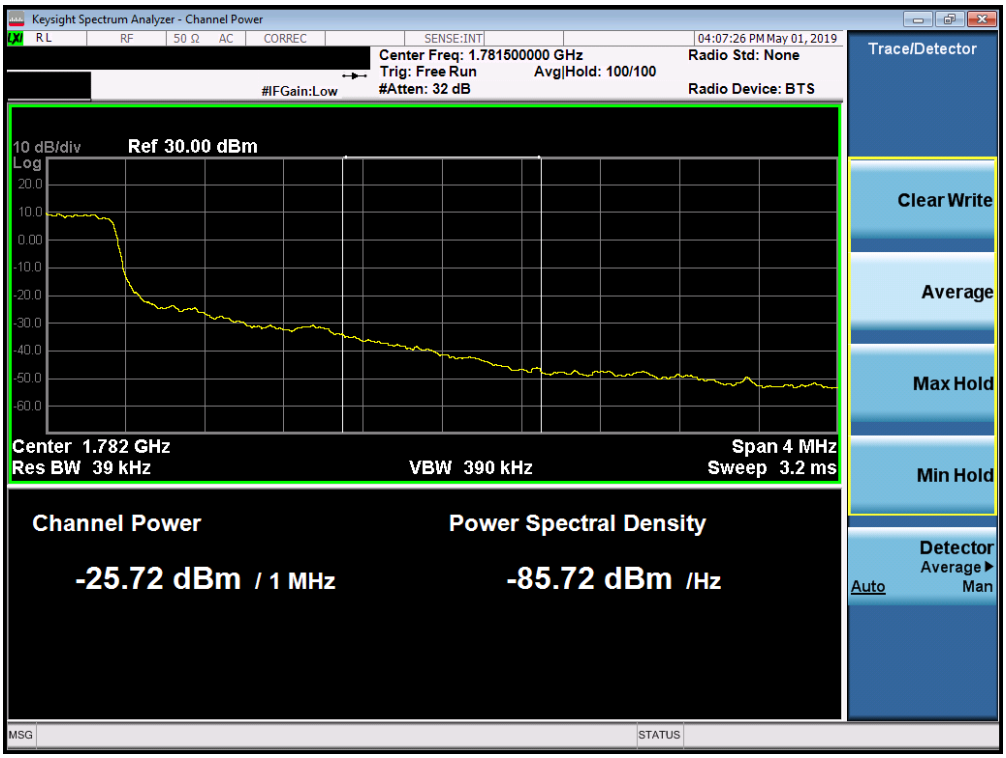
Plot 7-102. Upper Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)



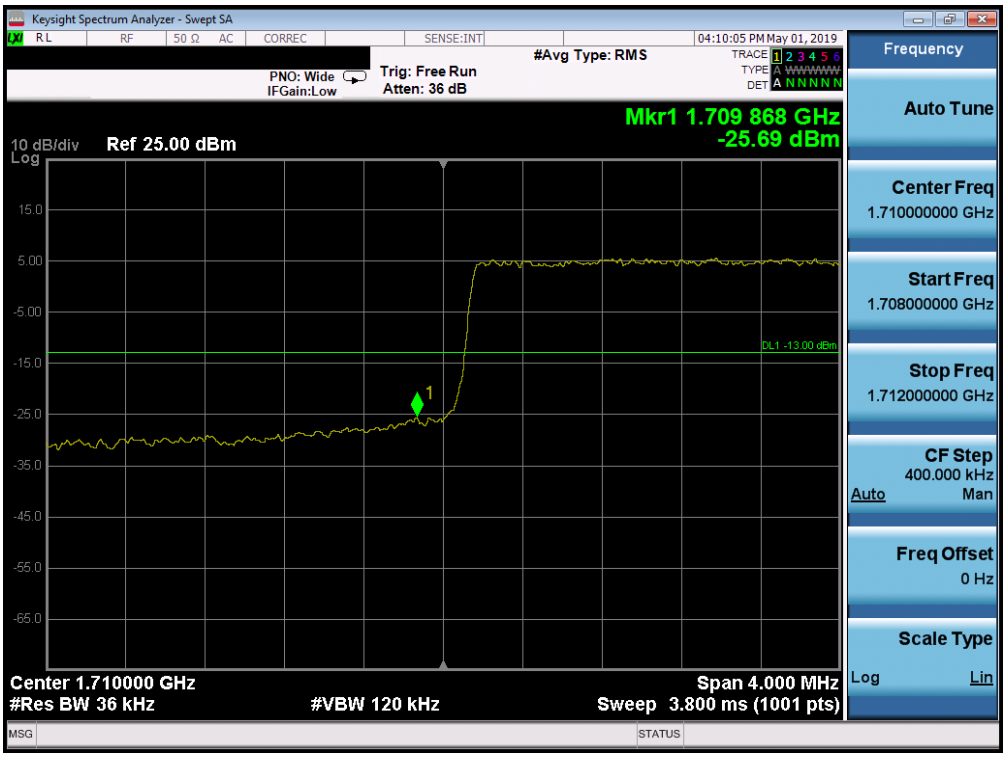
Plot 7-103. Upper Extended Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)



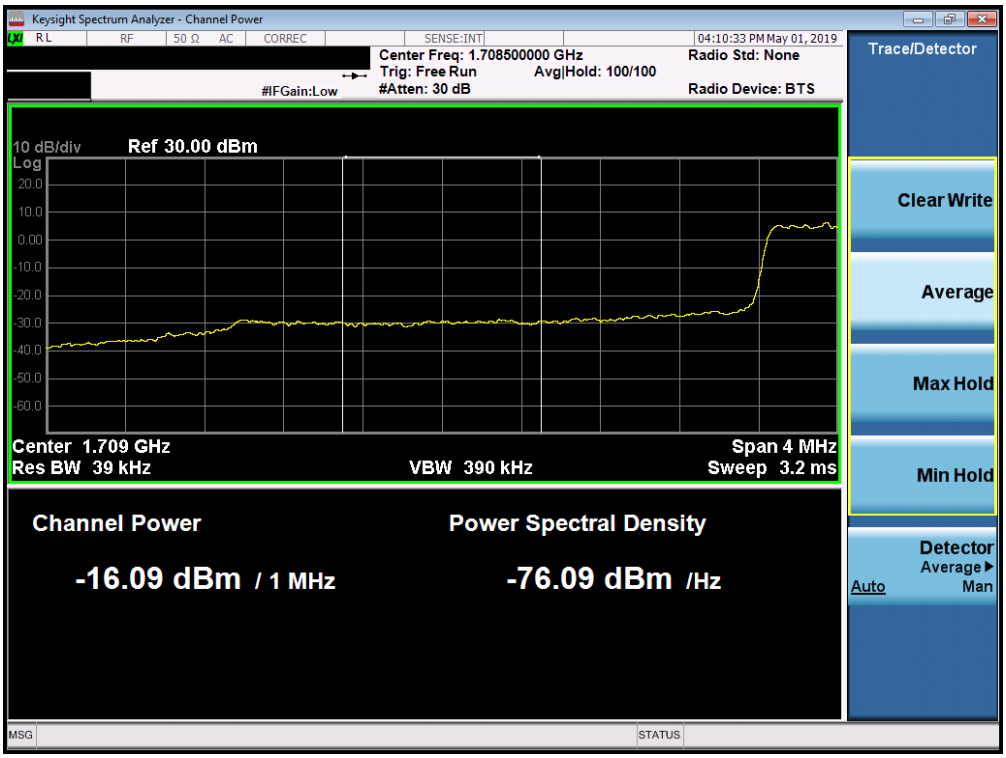
Plot 7-104. Upper Band Edge Plot (Band 66 - 1.4MHz QPSK - Full RB Configuration)



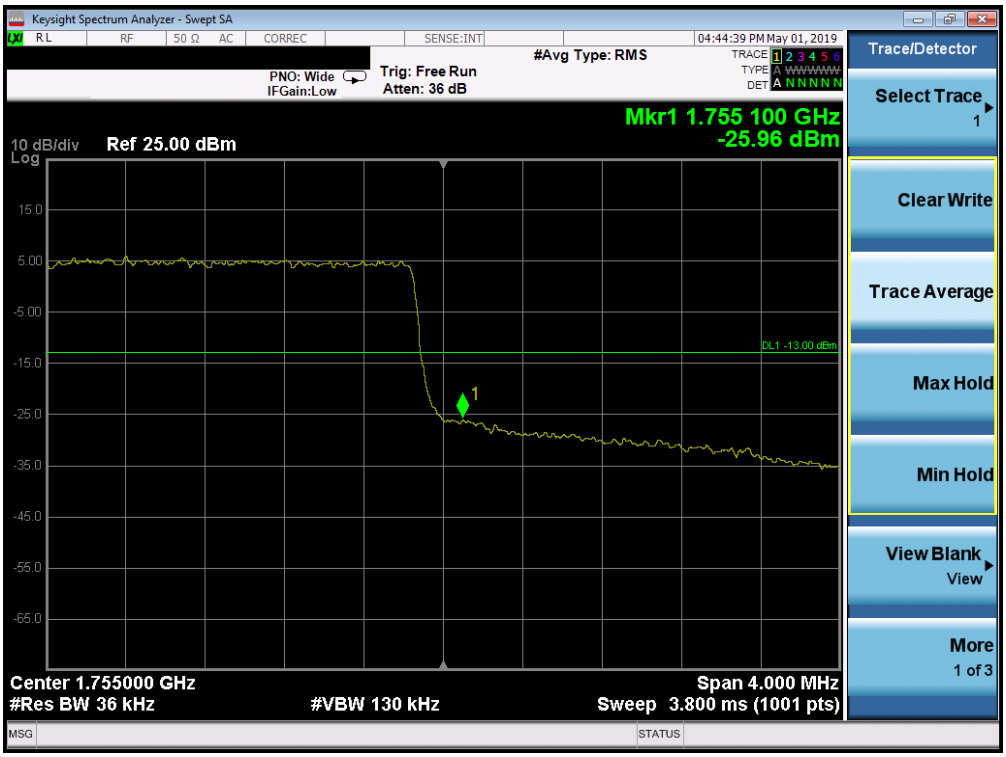
Plot 7-105. Upper Extended Band Edge Plot (Band 66 - 1.4MHz QPSK - Full RB Configuration)



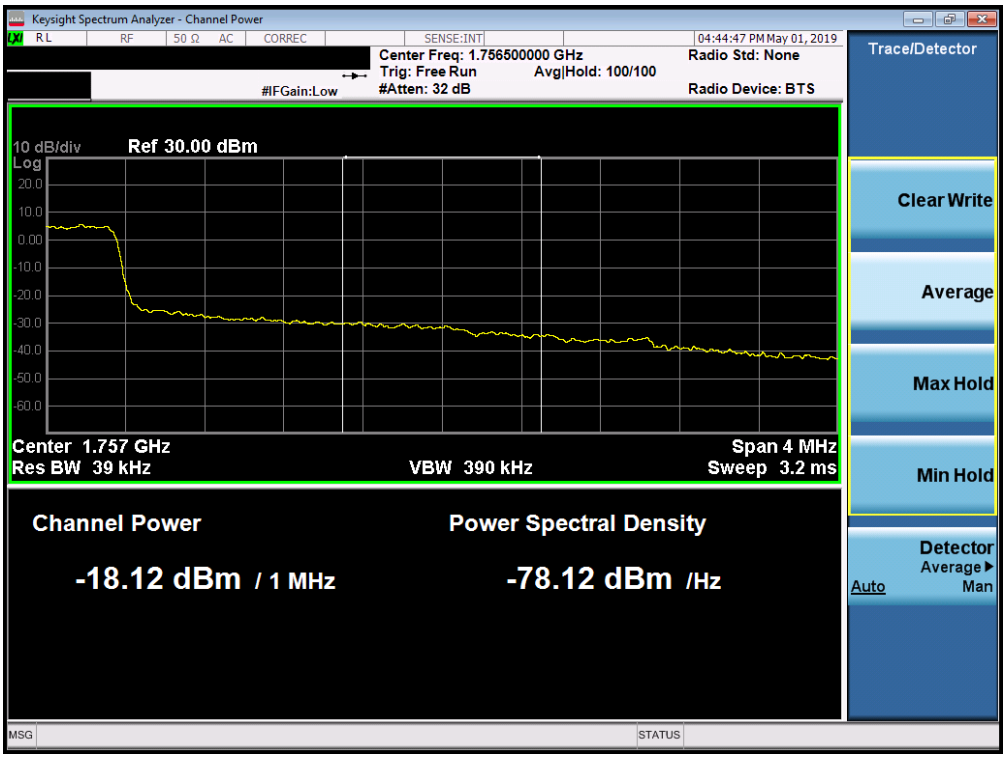
Plot 7-106. Lower Band Edge Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



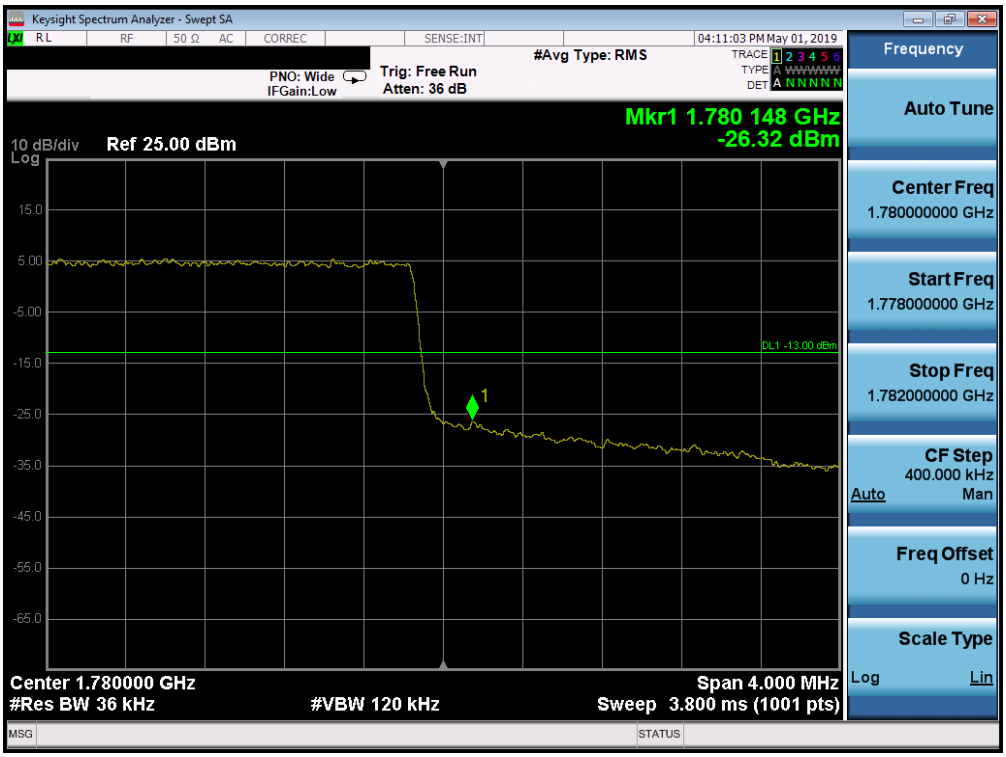
Plot 7-107. Lower Extended Band Edge Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



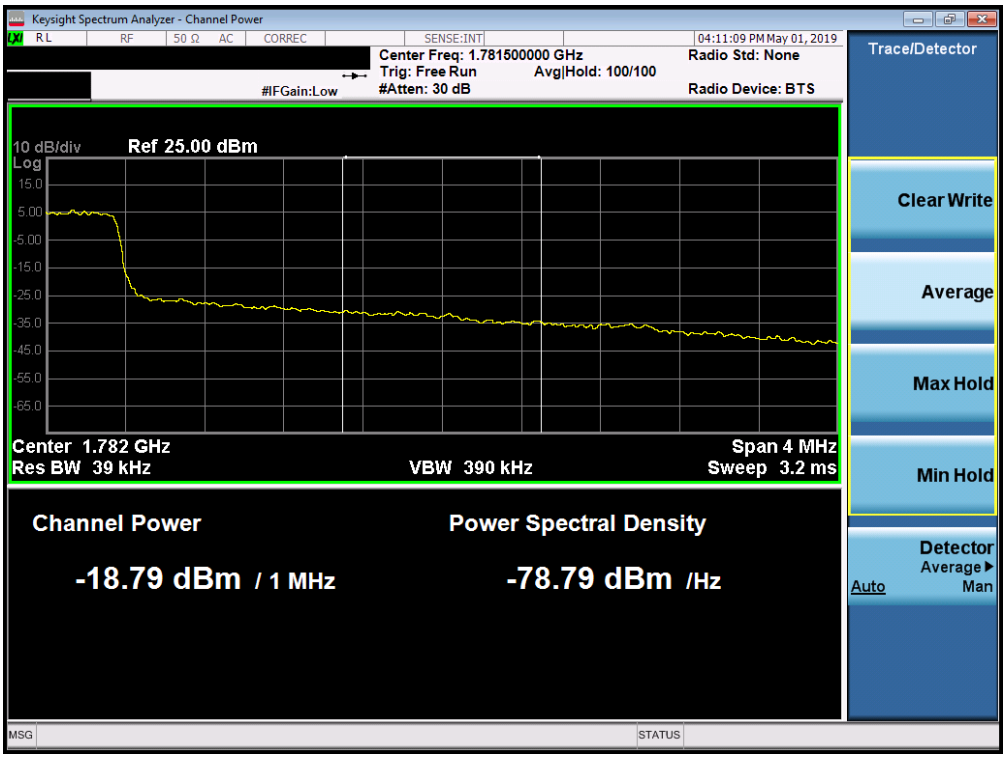
Plot 7-108. Upper Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)



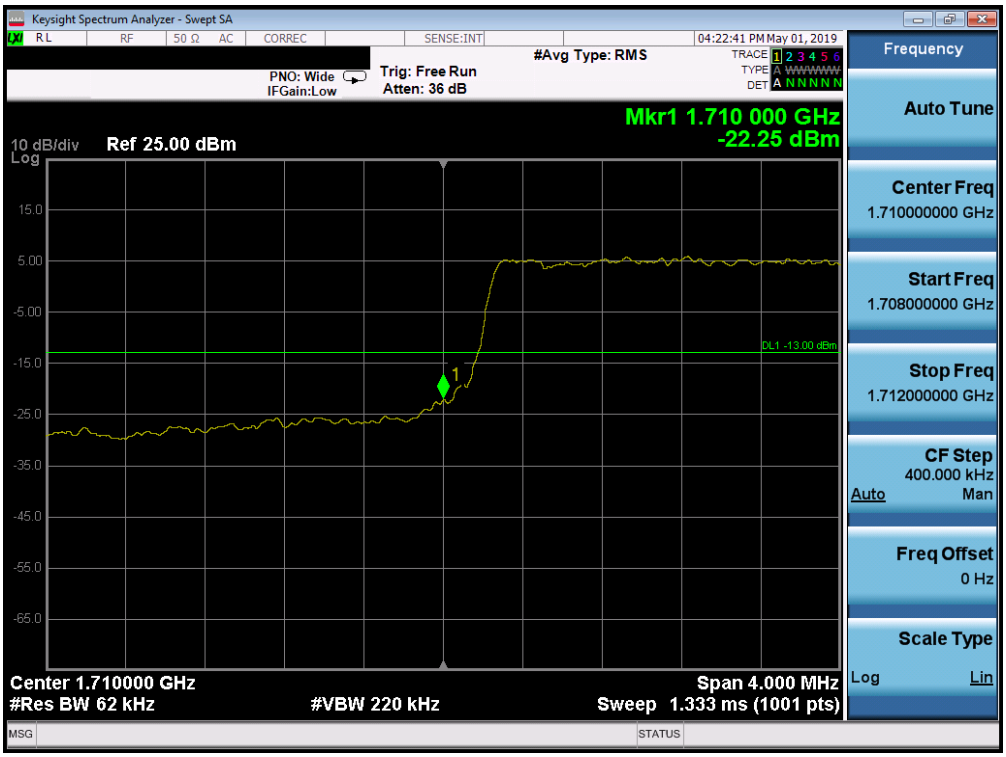
Plot 7-109. Upper Extended Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)



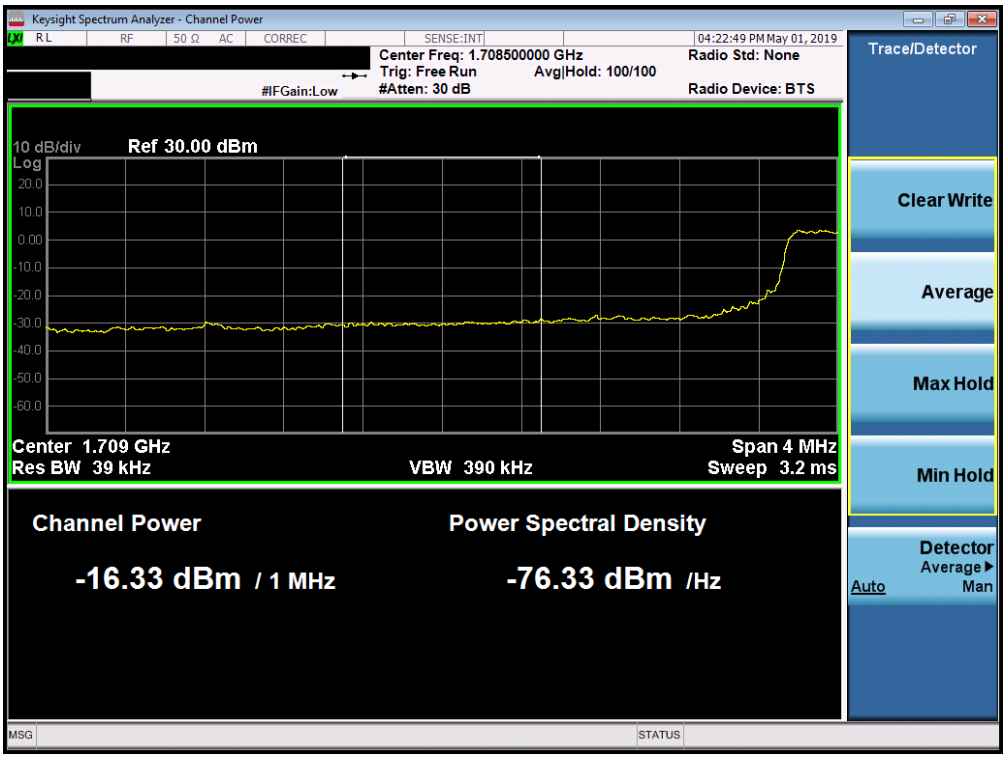
Plot 7-110. Upper Band Edge Plot (Band 66 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-111. Upper Extended Band Edge Plot (Band 66 - 3.0MHz QPSK - Full RB Configuration)

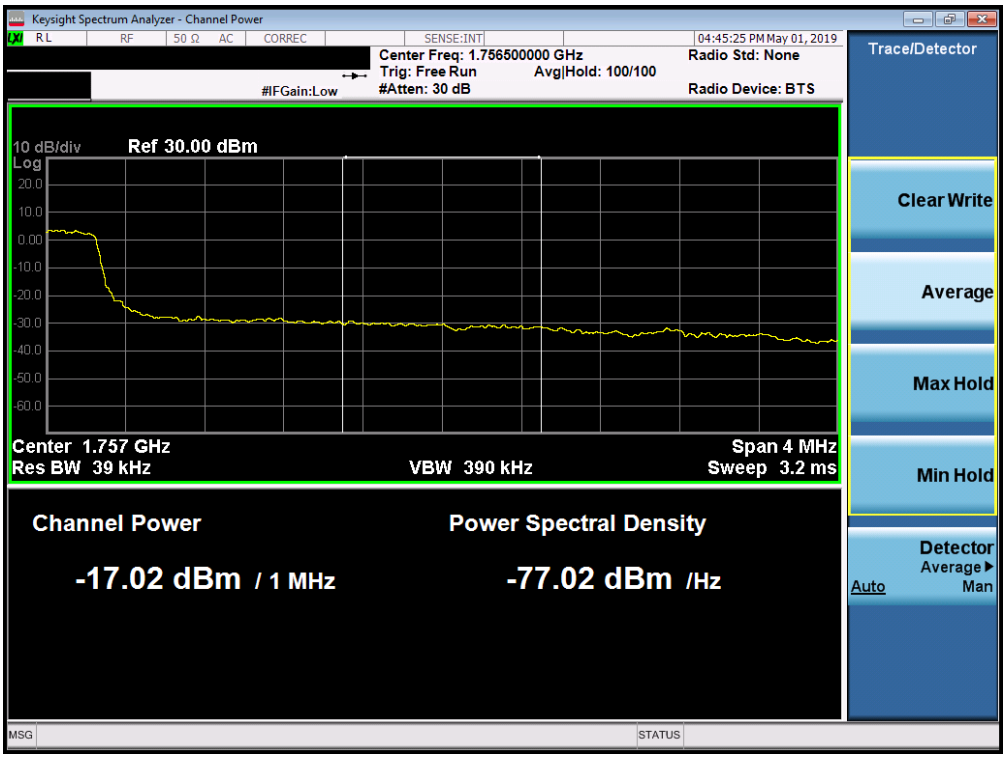


Plot 7-112. Lower Band Edge Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

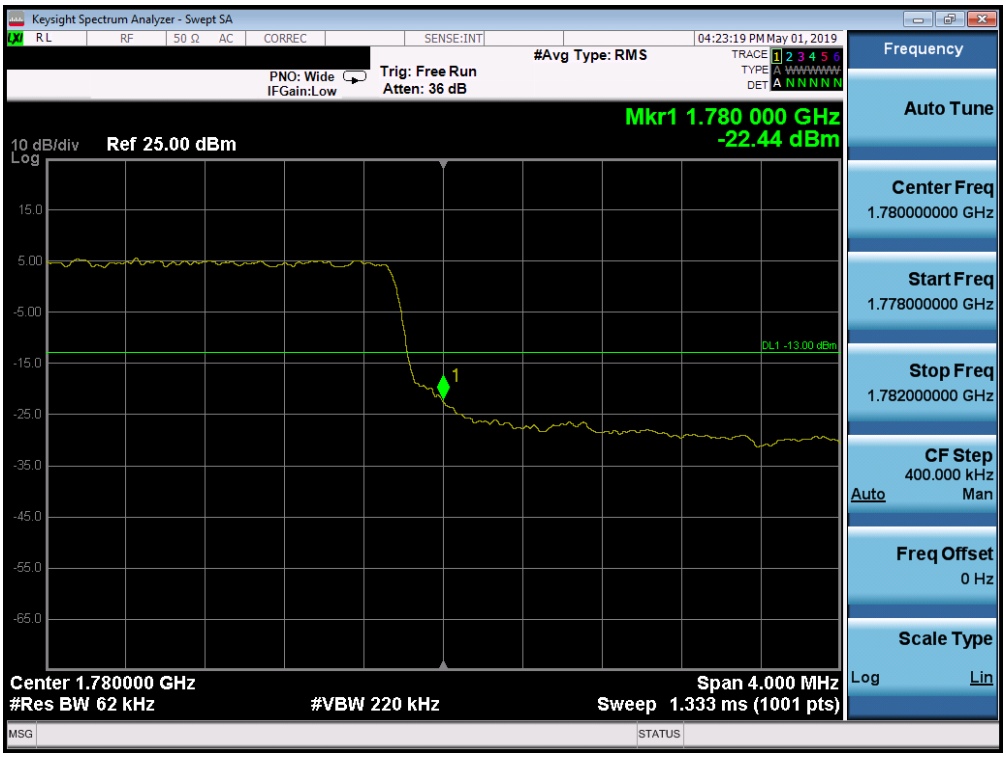


Plot 7-113. Lower Extended Band Edge Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)

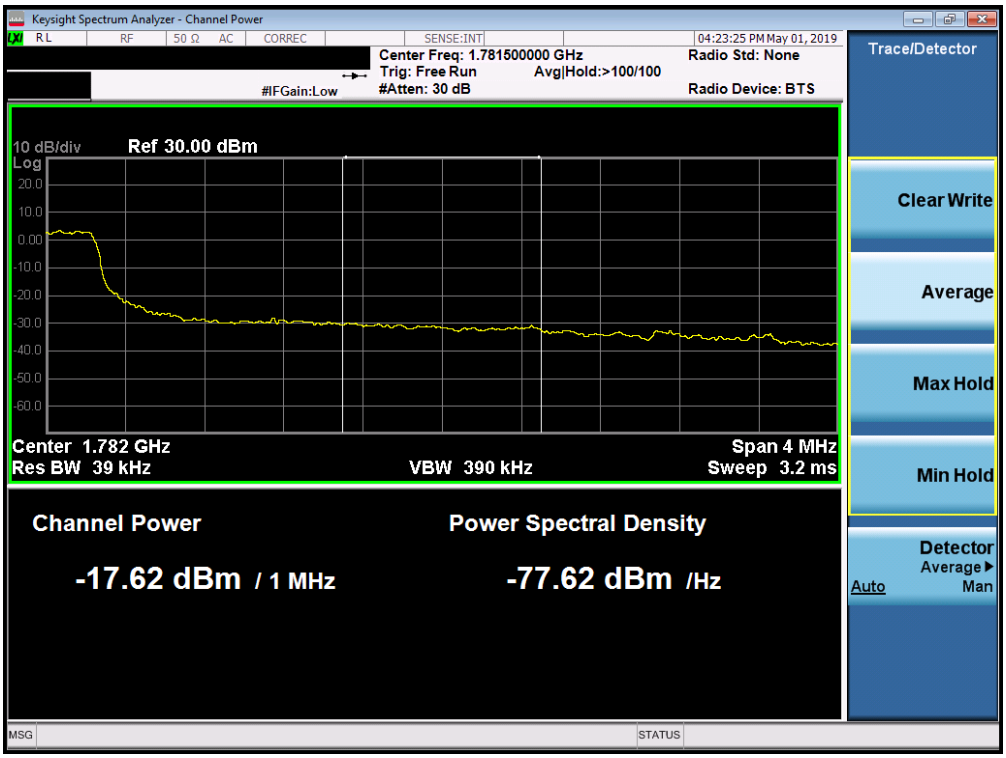
Plot 7-114. Upper Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)



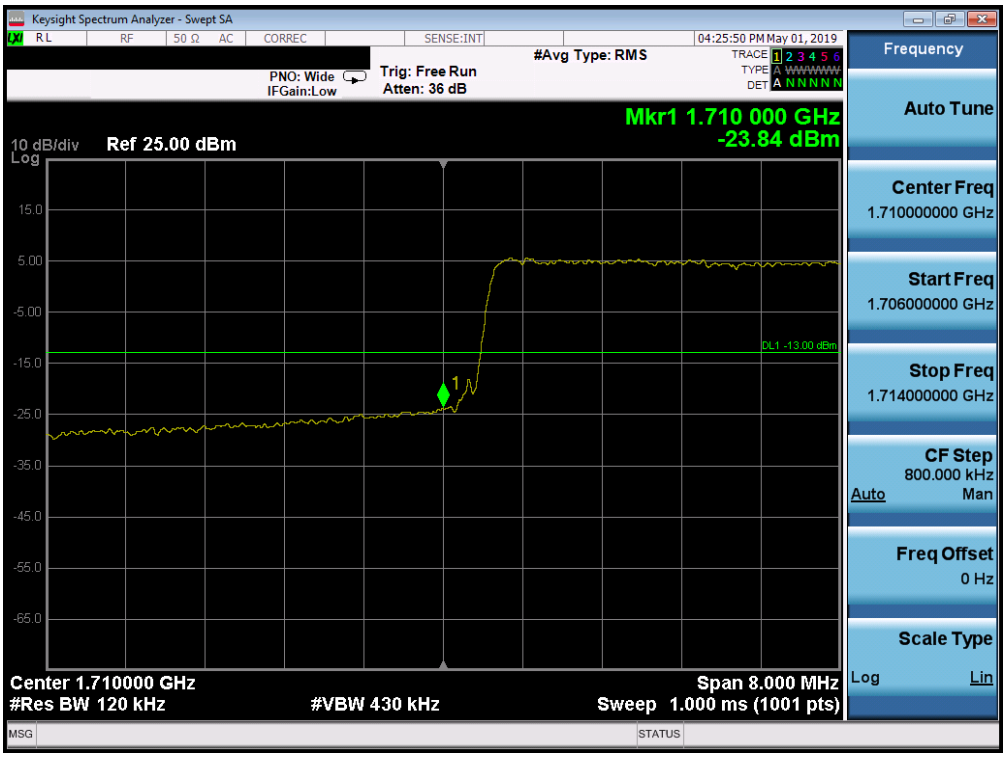
Plot 7-115. Upper Extended Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)



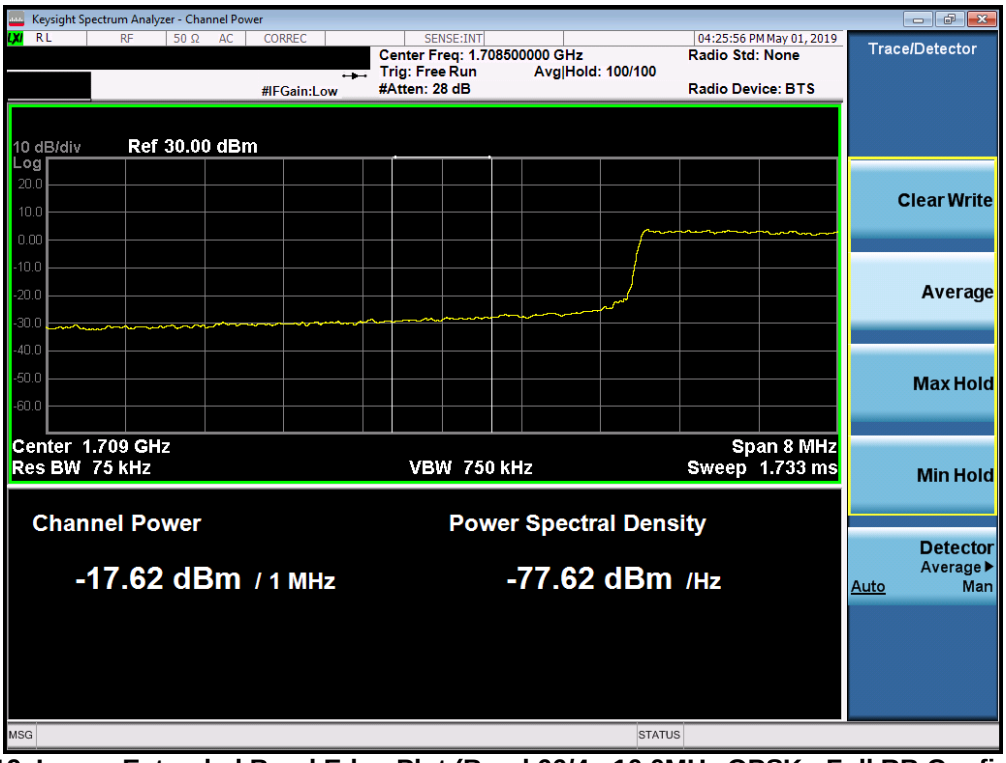
Plot 7-116. Upper Band Edge Plot (Band 66 - 5.0MHz QPSK - Full RB Configuration)



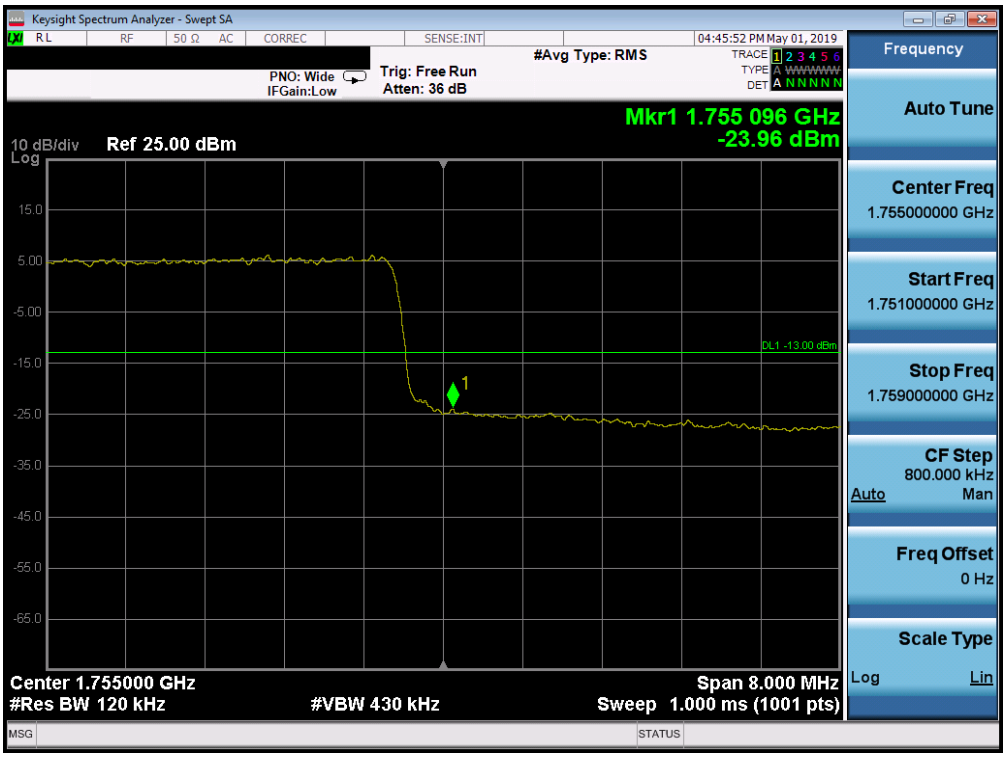
Plot 7-117. Upper Extended Band Edge Plot (Band 66 - 5.0MHz QPSK - Full RB Configuration)



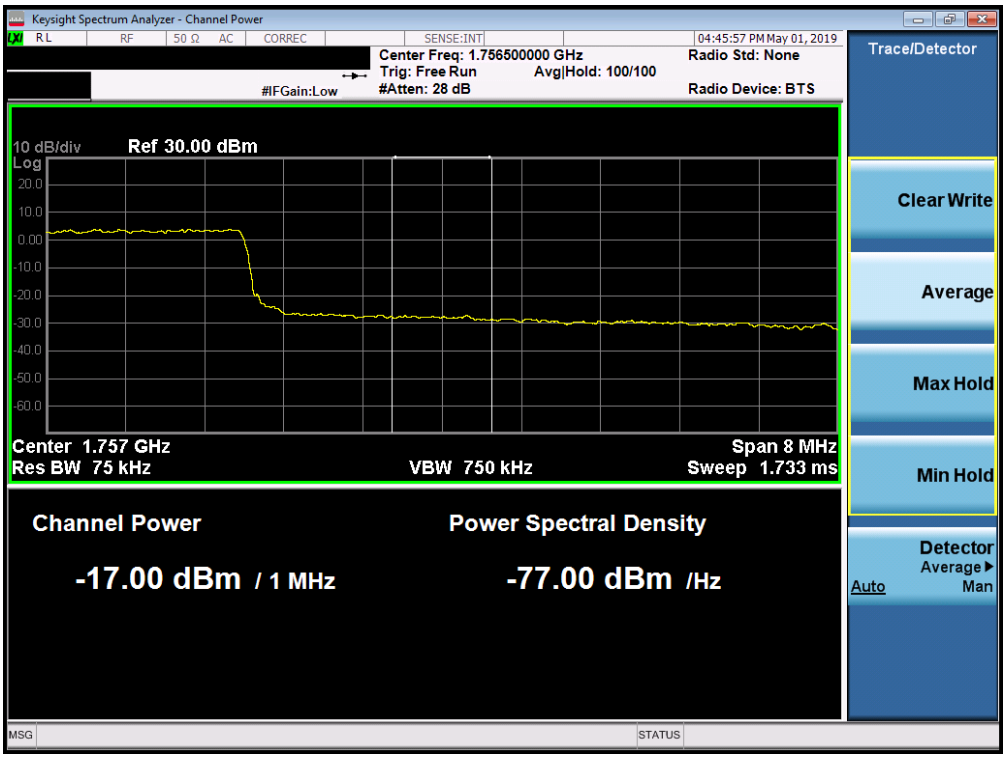
Plot 7-118. Lower Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-119. Lower Extended Band Edge Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)

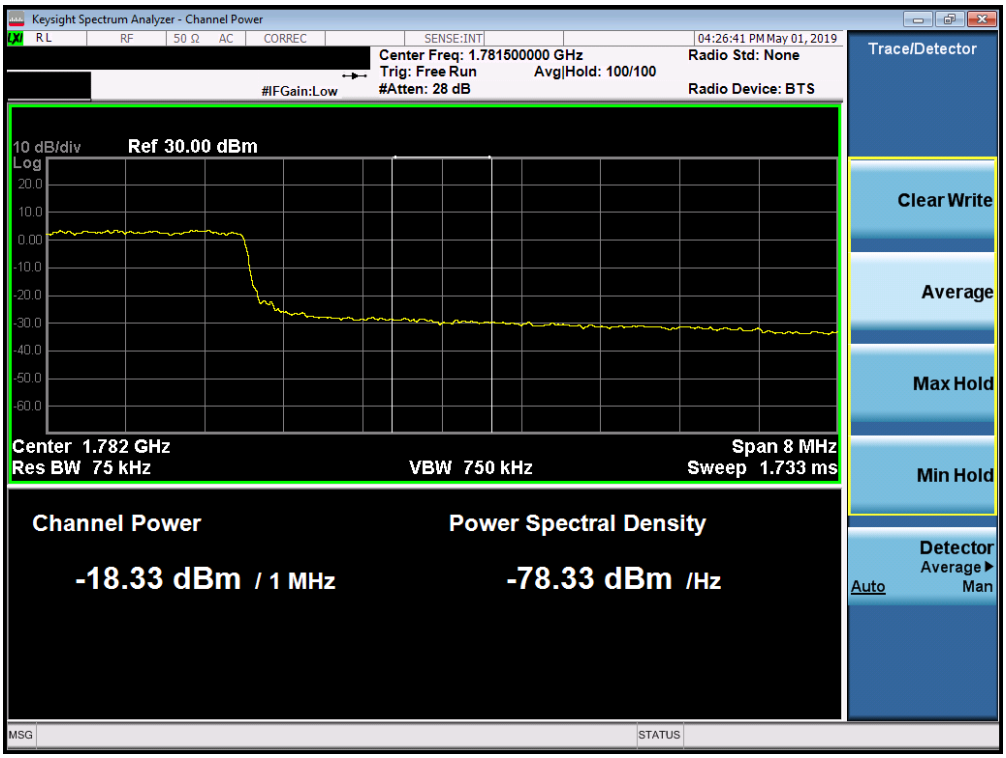


Plot 7-120. Upper Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

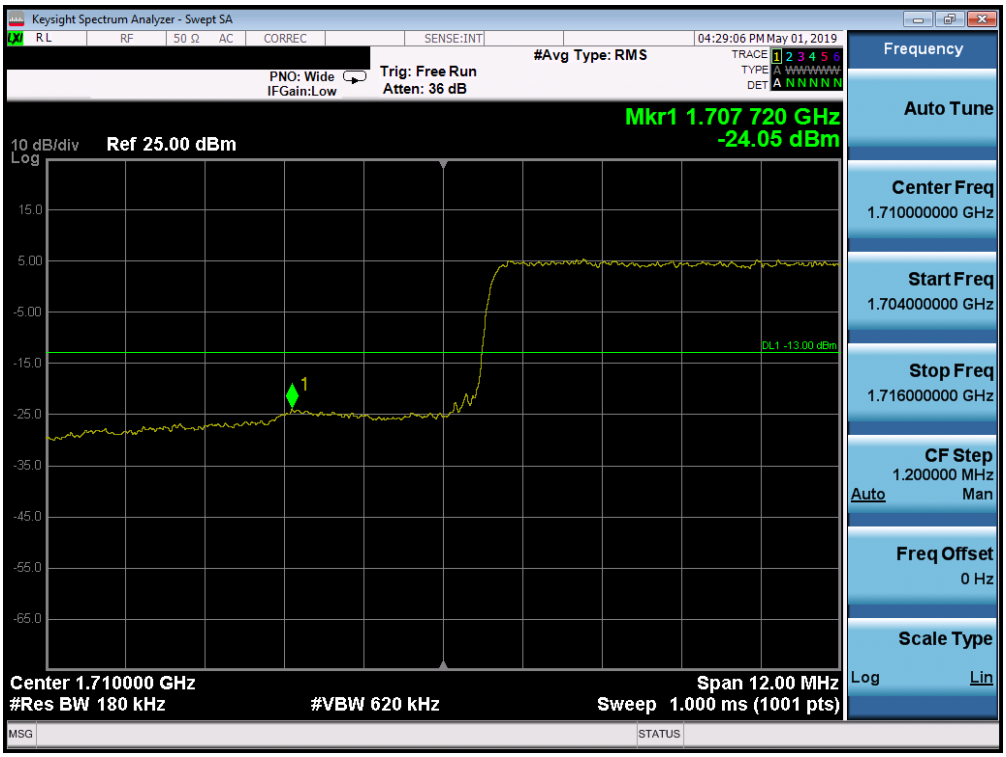


Plot 7-121. Upper Extended Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

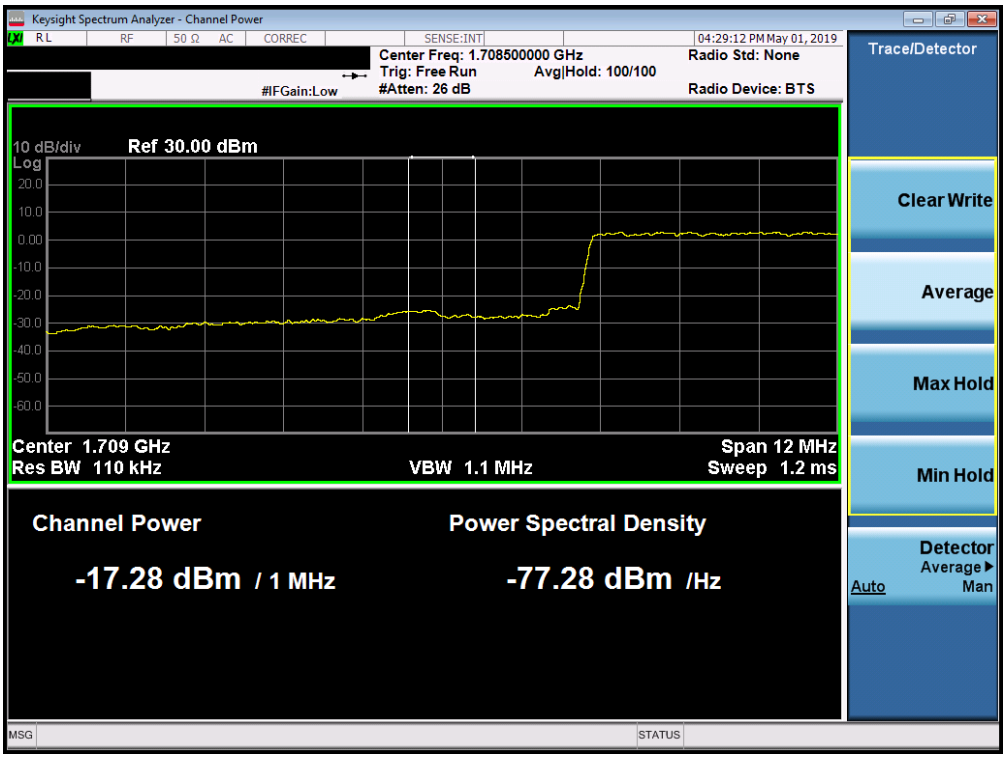
Plot 7-122. Upper Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)



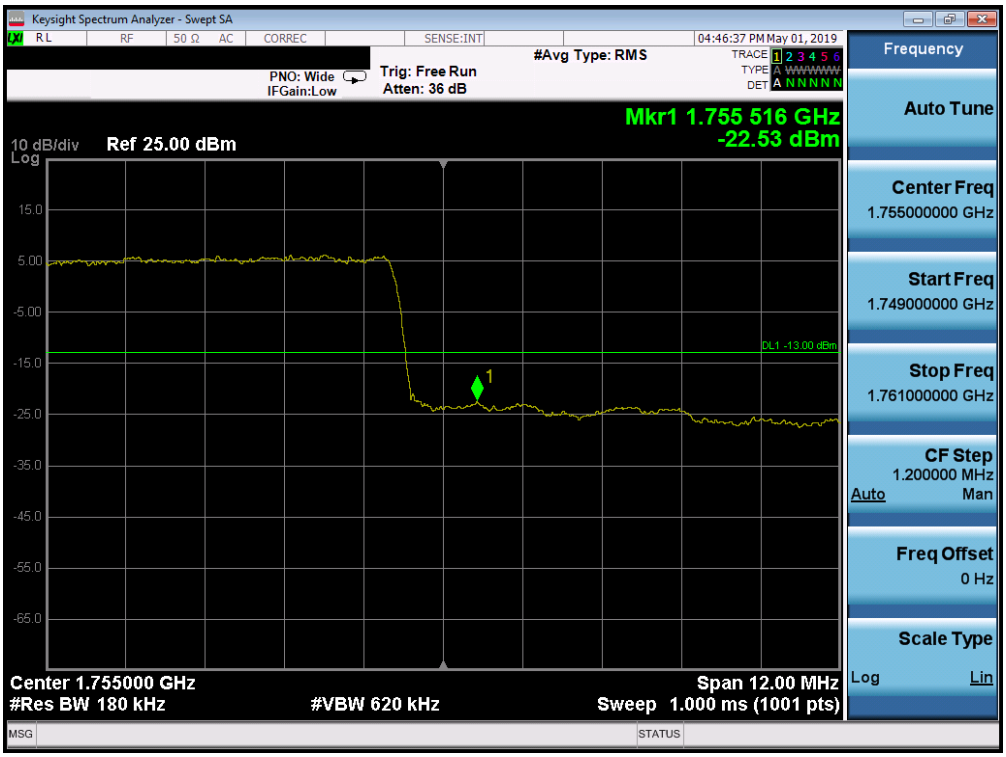
Plot 7-123. Upper Extended Band Edge Plot (Band 66 - 10.0MHz QPSK - Full RB Configuration)



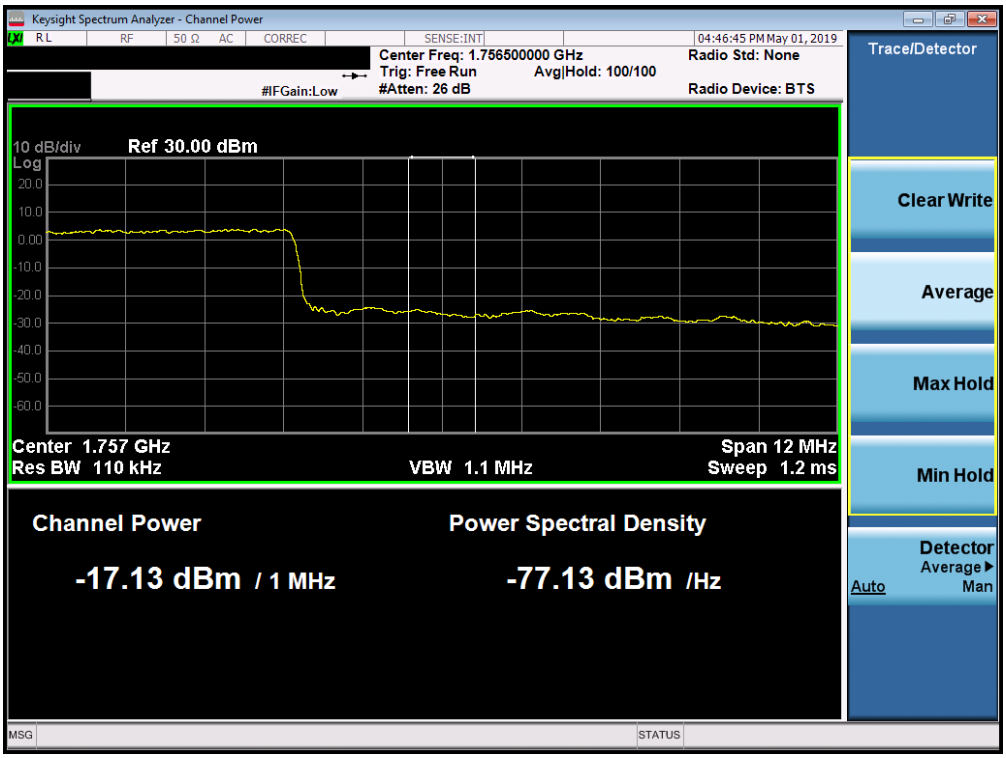
Plot 7-124. Lower Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



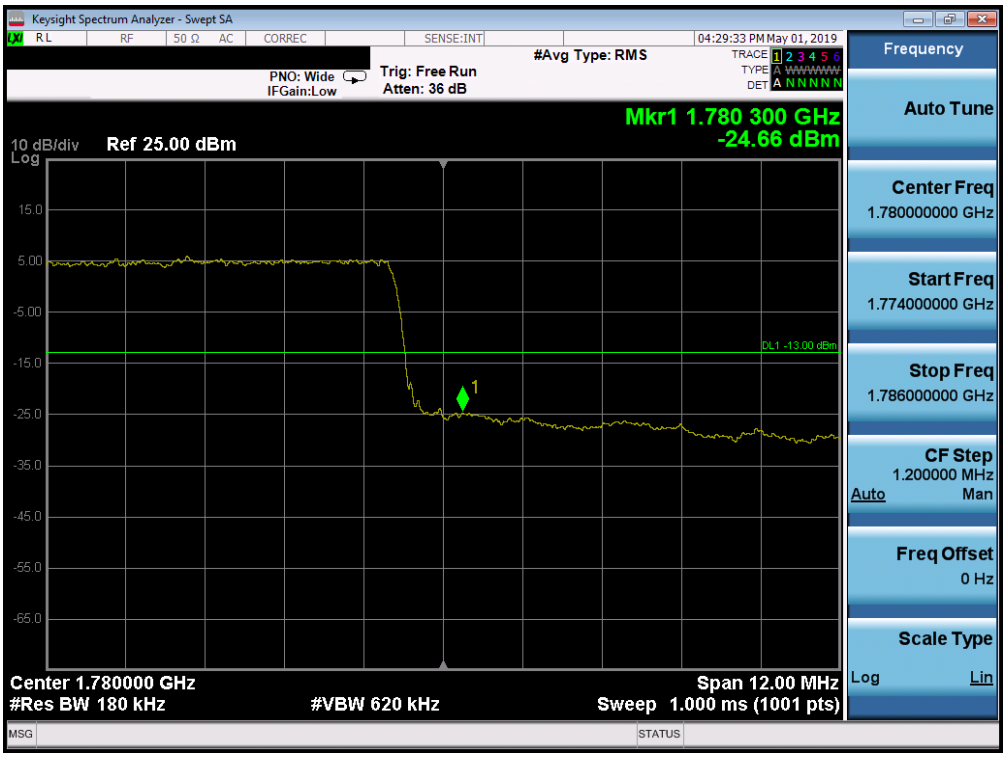
Plot 7-125. Lower Extended Band Edge Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



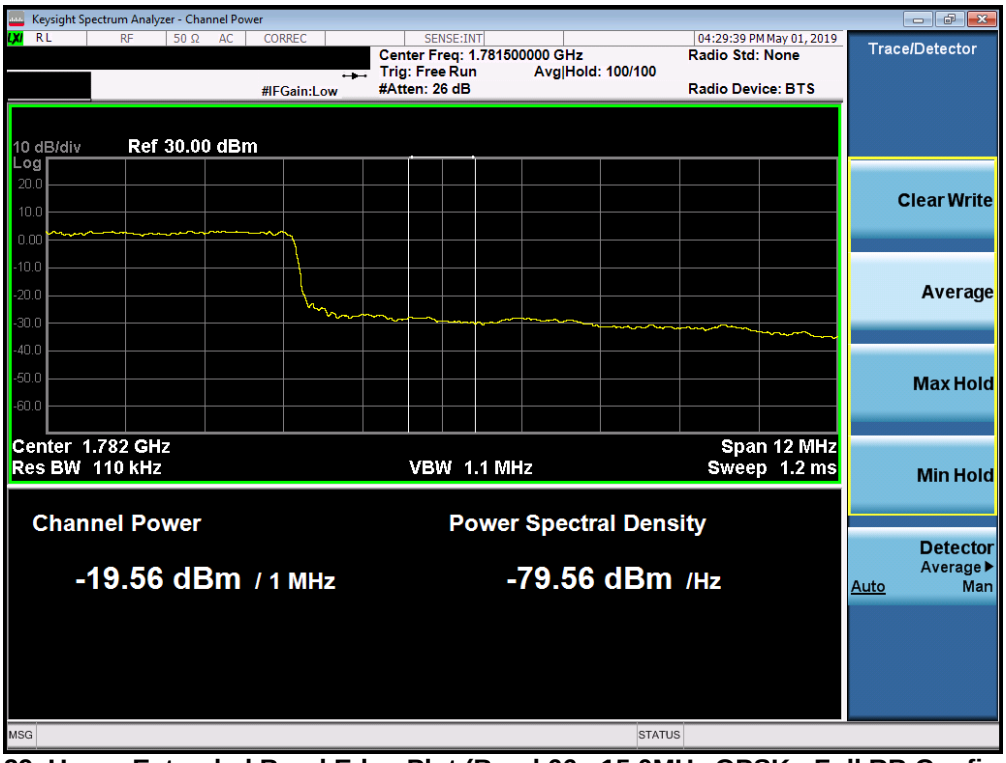
Plot 7-126. Upper Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)



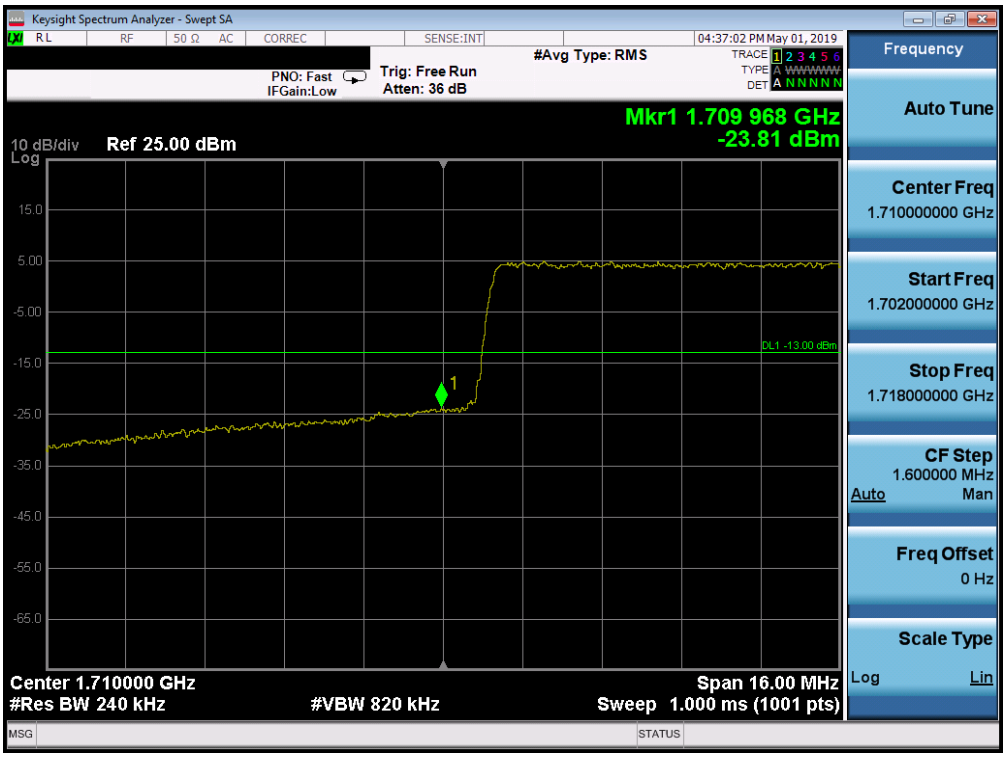
Plot 7-127. Upper Extended Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)



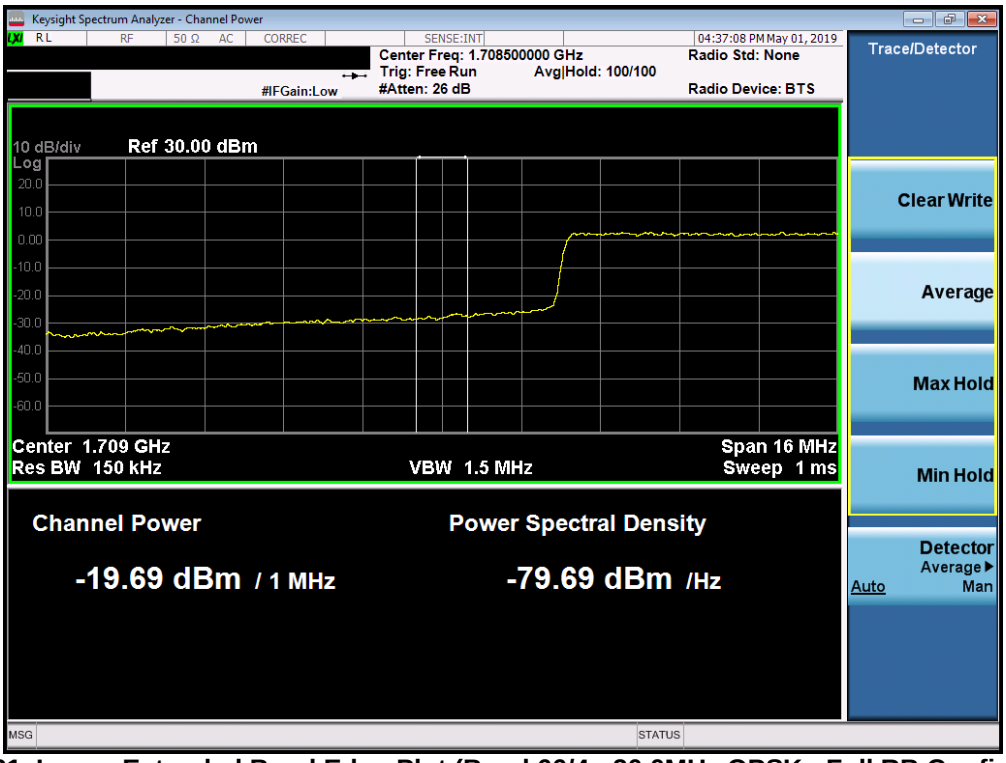
Plot 7-128. Upper Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)



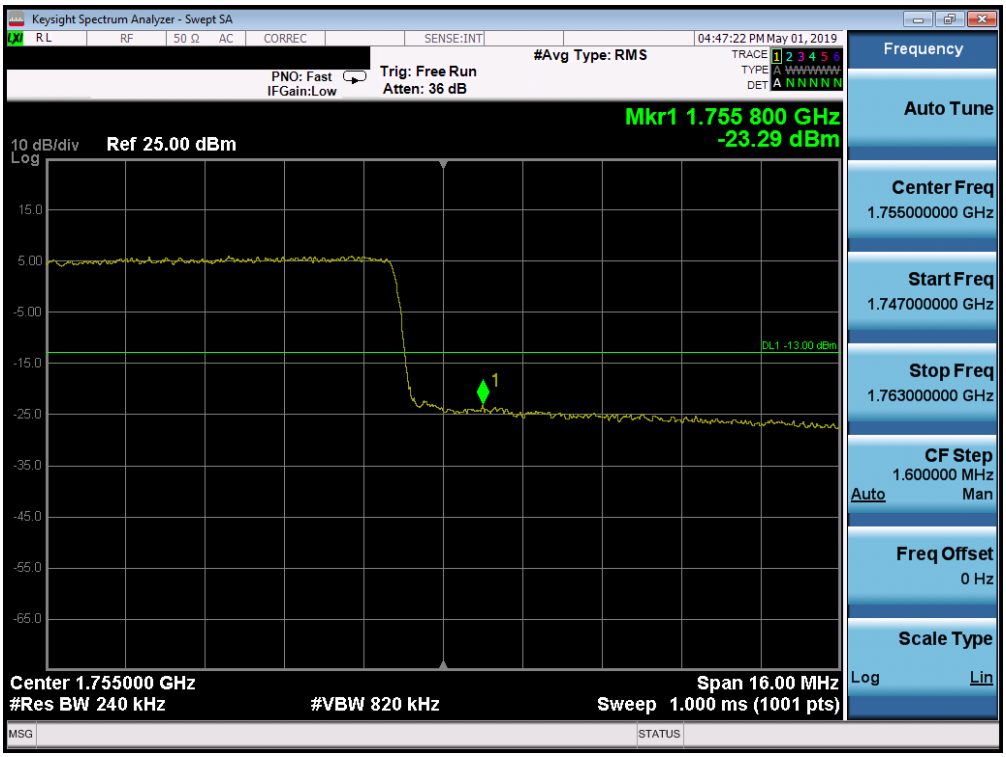
Plot 7-129. Upper Extended Band Edge Plot (Band 66 - 15.0MHz QPSK - Full RB Configuration)



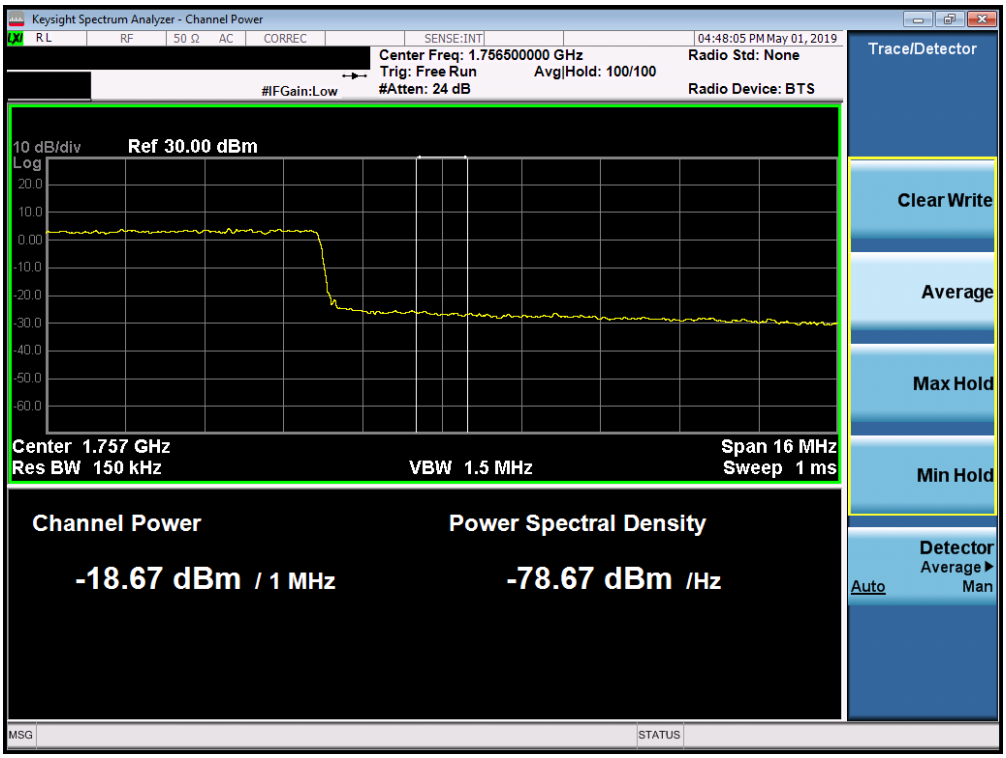
Plot 7-130. Lower Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



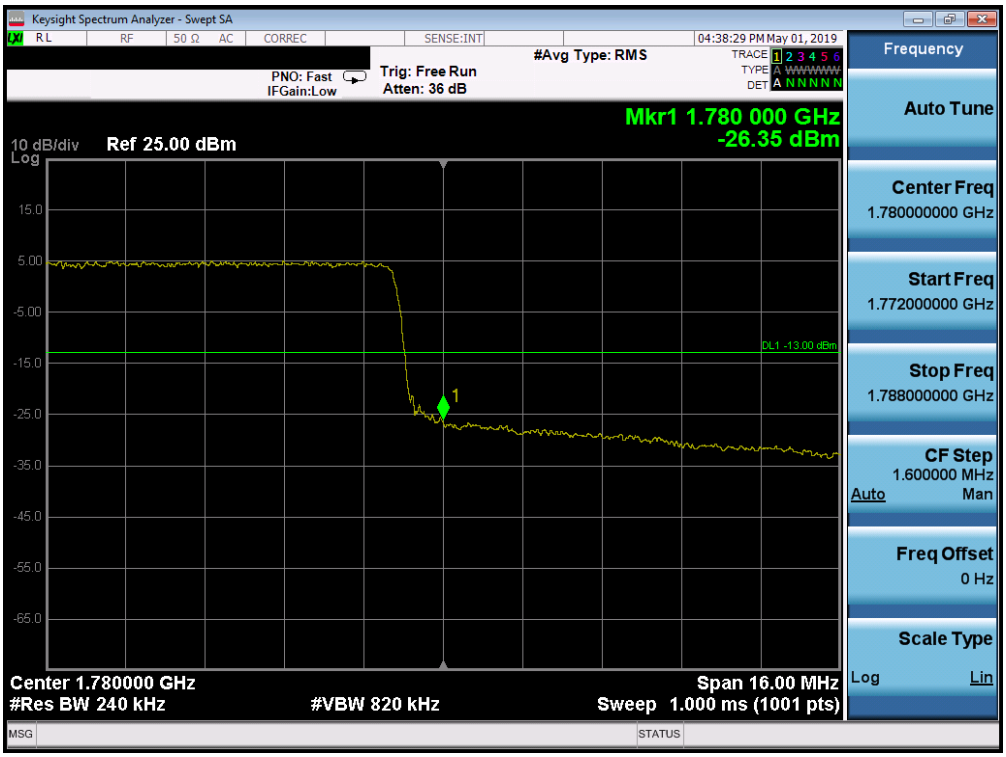
Plot 7-131. Lower Extended Band Edge Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



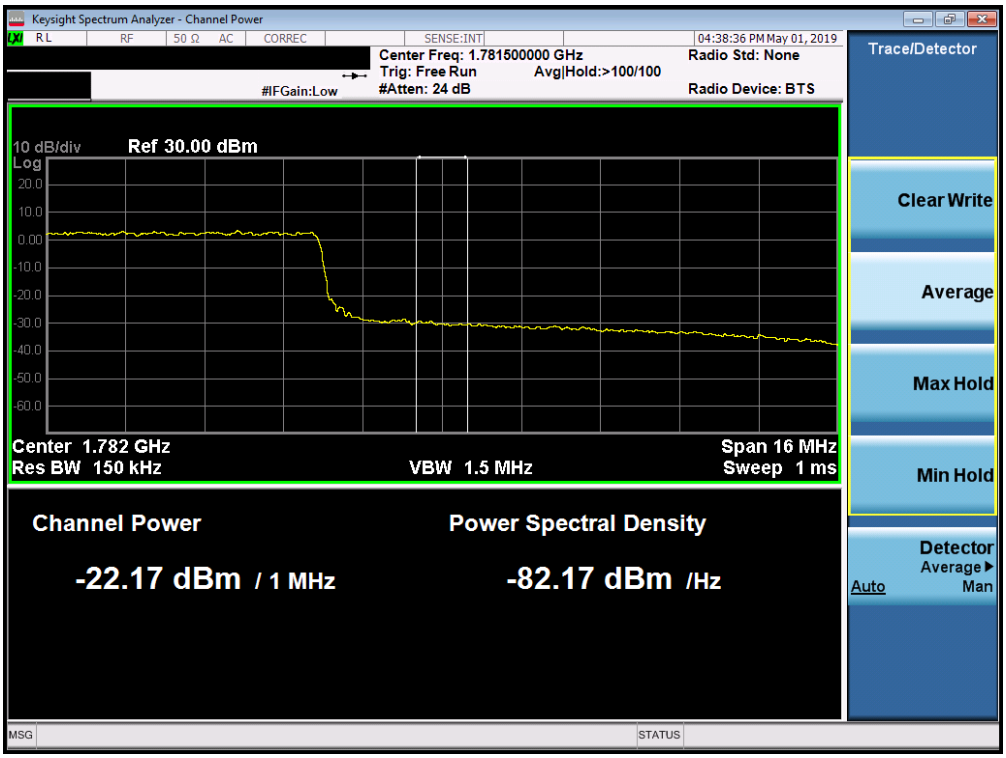
Plot 7-132. Upper Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-133. Upper Extended Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

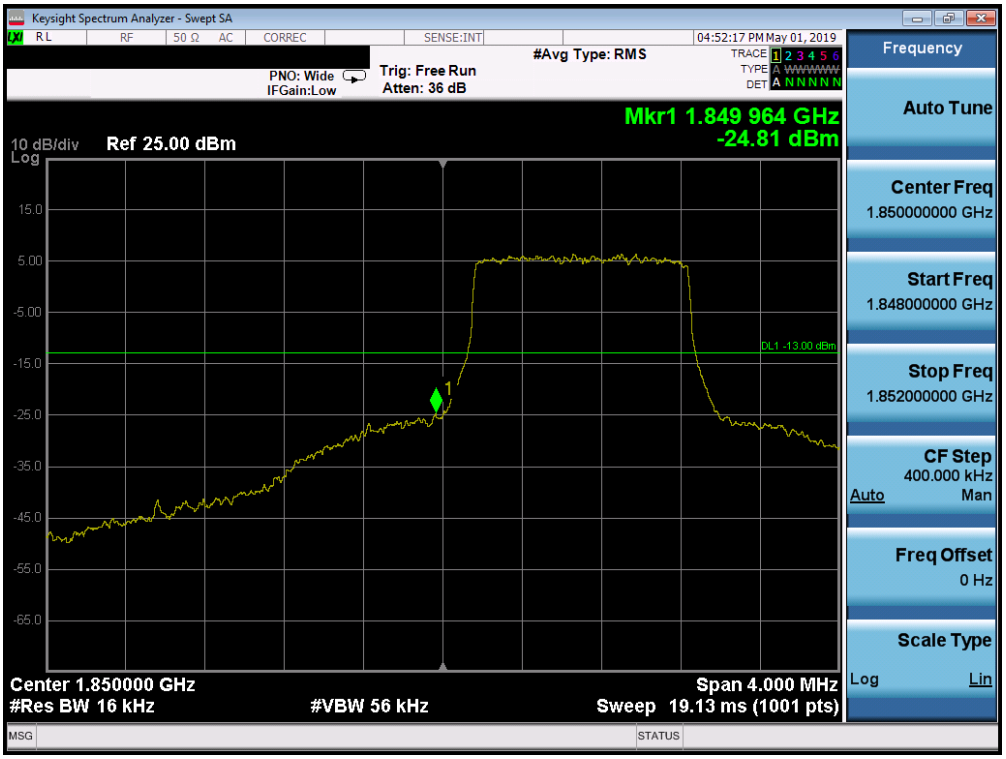


Plot 7-134. Upper Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

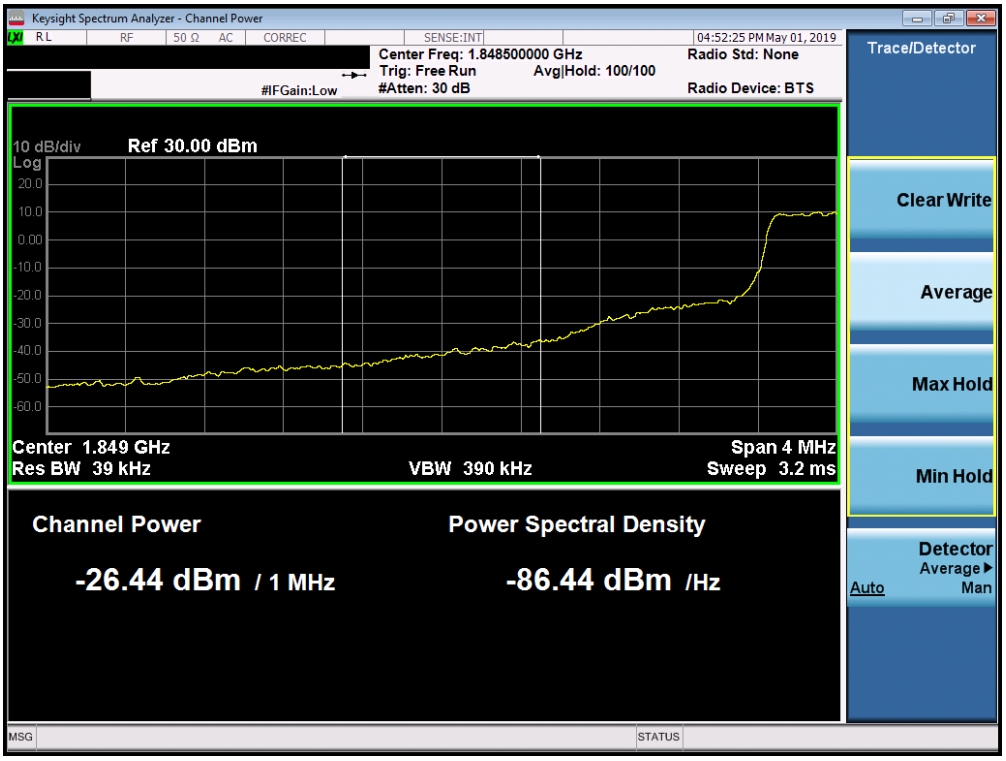


Plot 7-135. Upper Extended Band Edge Plot (Band 66 - 20.0MHz QPSK - Full RB Configuration)

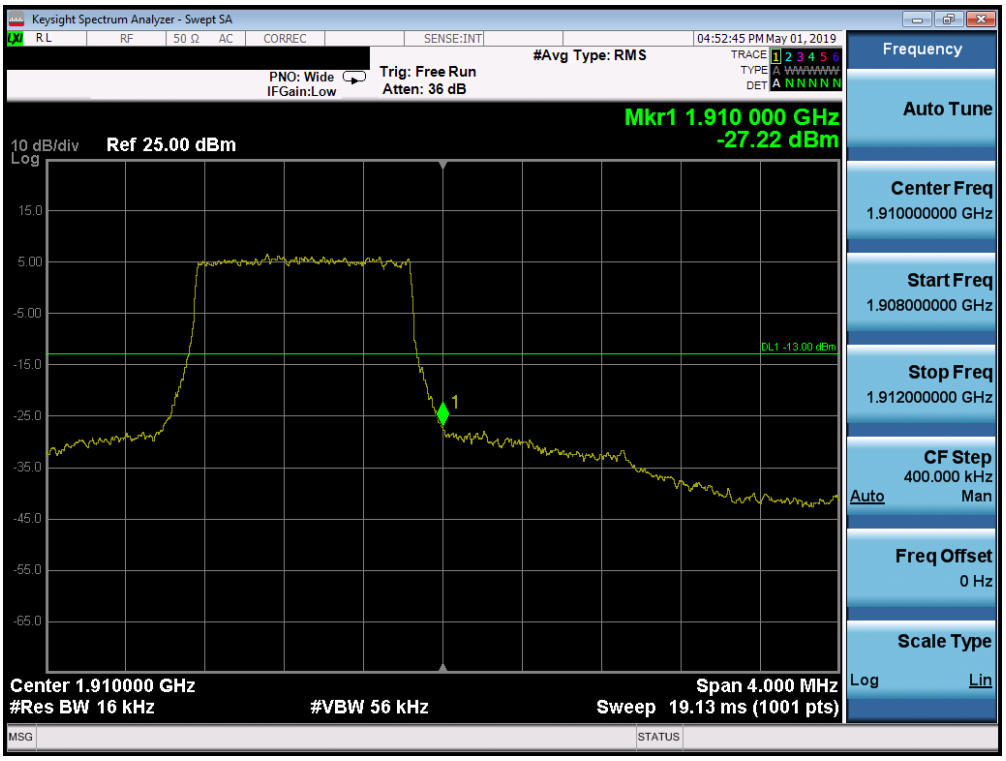
Band 2



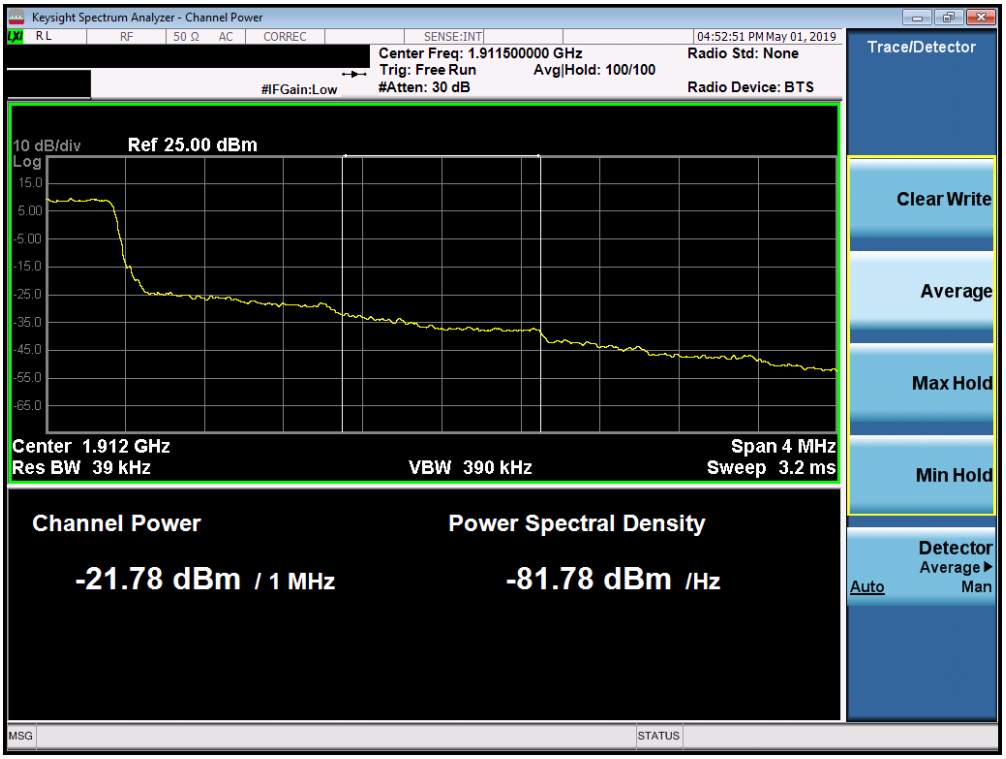
Plot 7-136. Lower Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



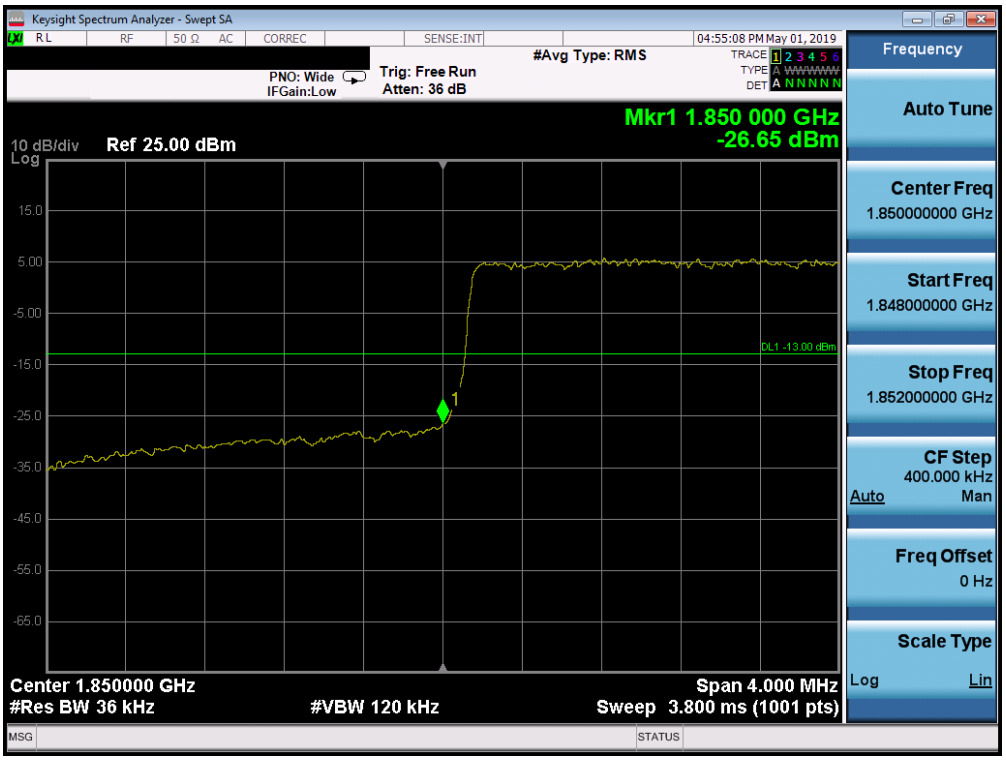
Plot 7-137. Lower Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



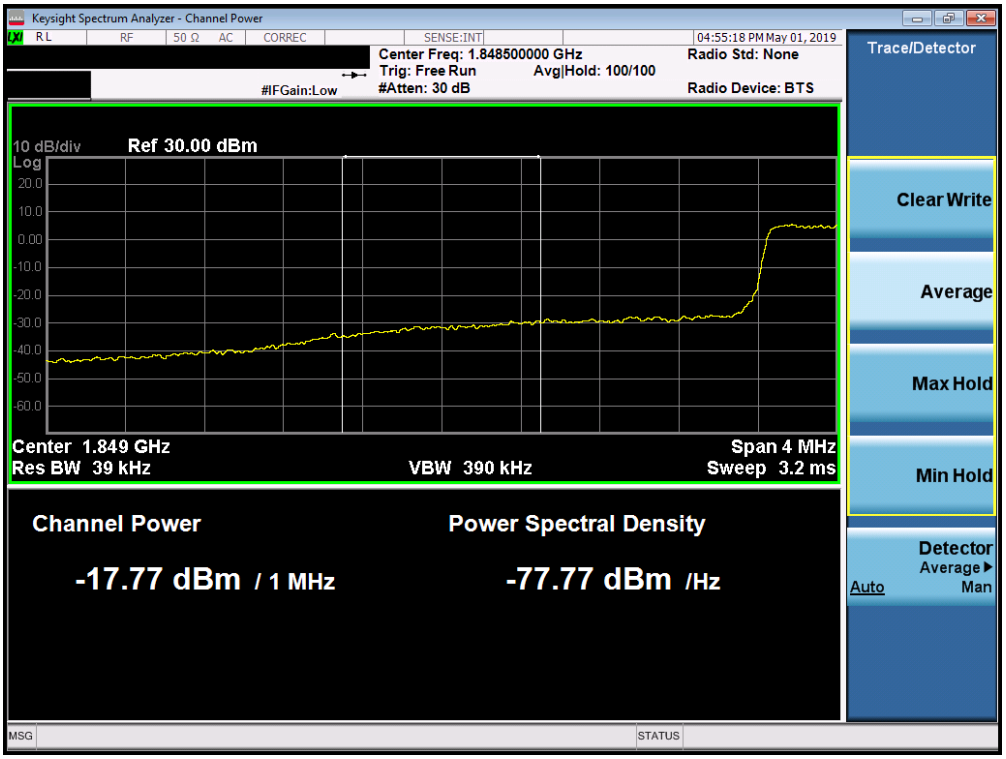
Plot 7-138. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



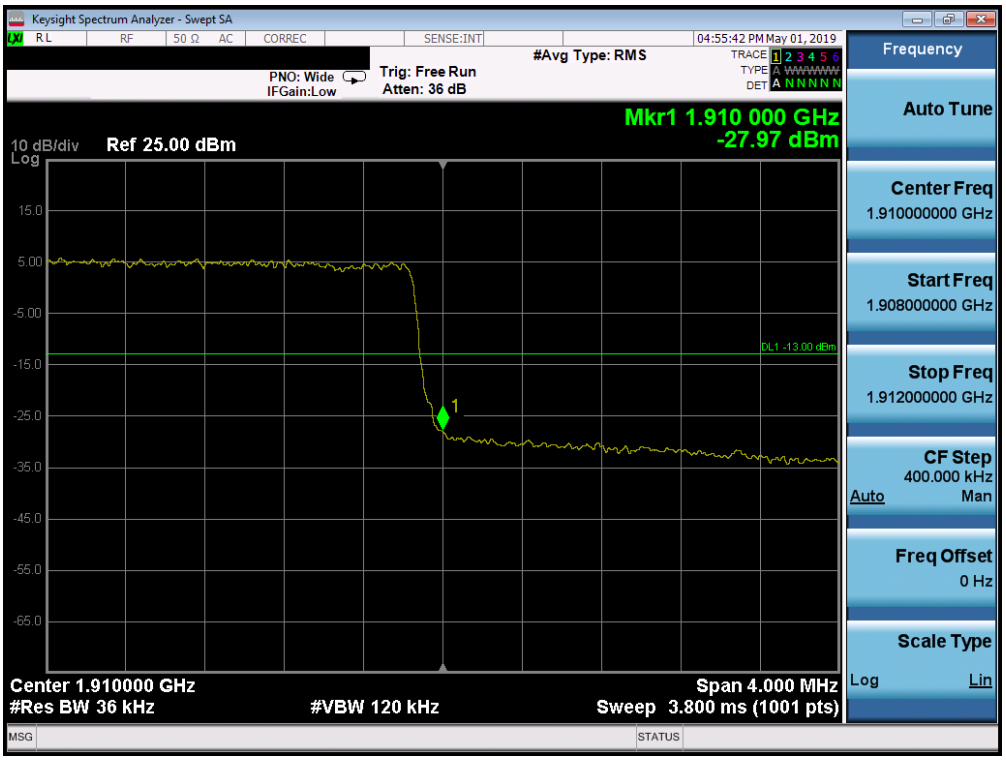
Plot 7-139. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



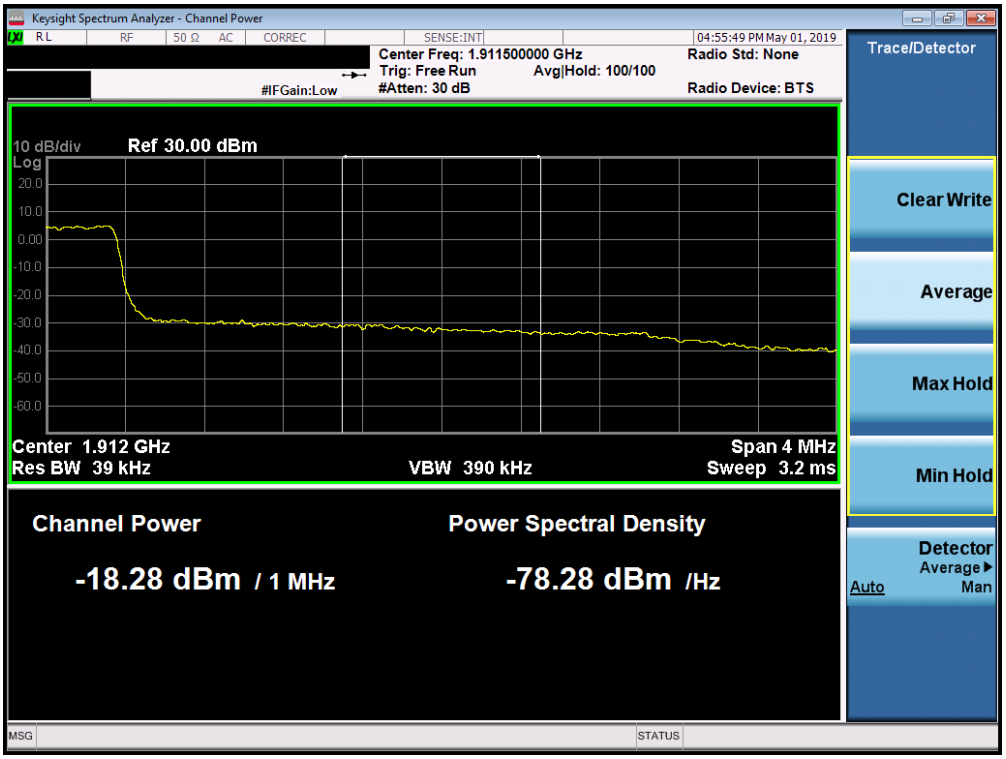
Plot 7-140. Lower Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



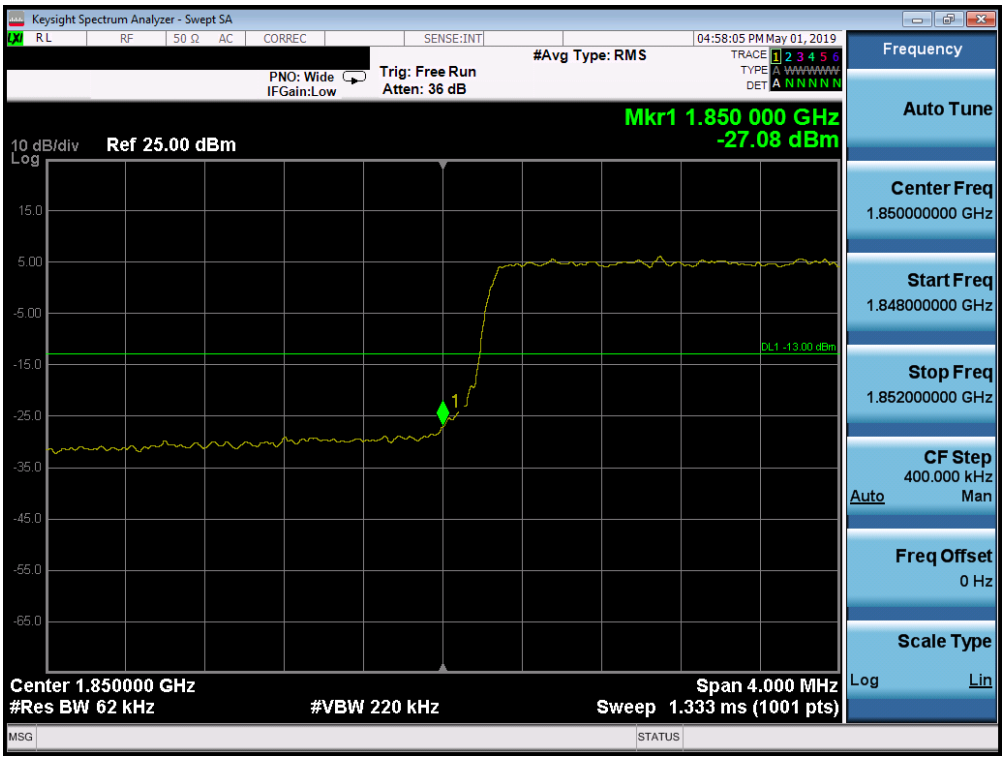
Plot 7-141. Lower Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



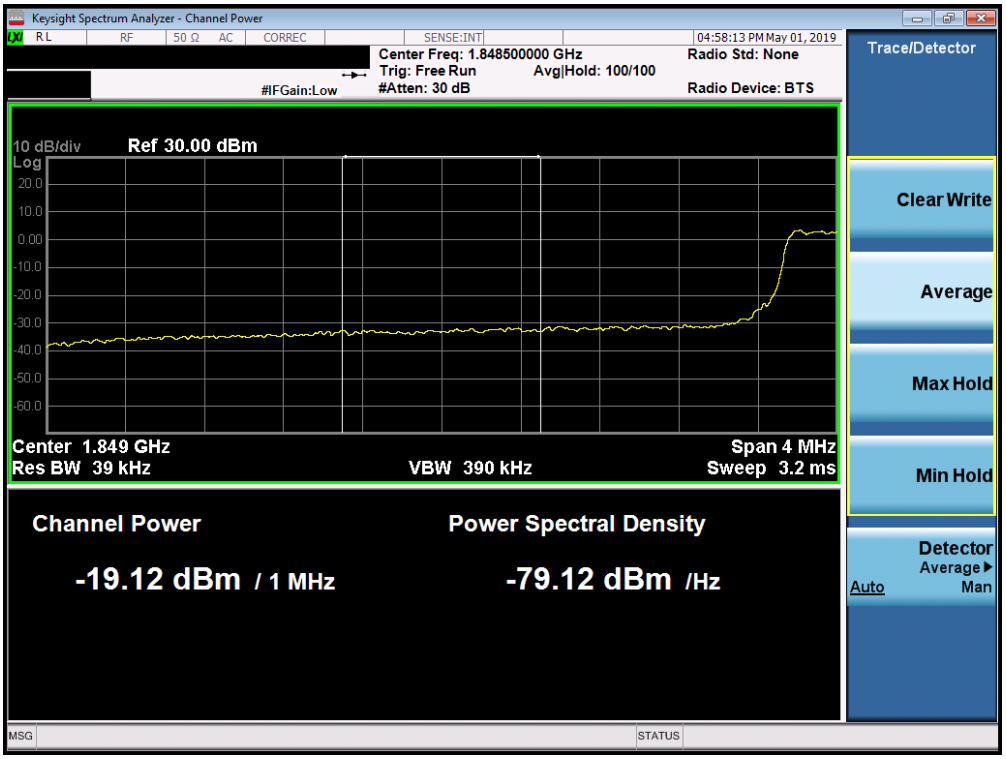
Plot 7-142. Upper Band Edge Plot (Band 2 – 3.0MHz QPSK - Full RB Configuration)



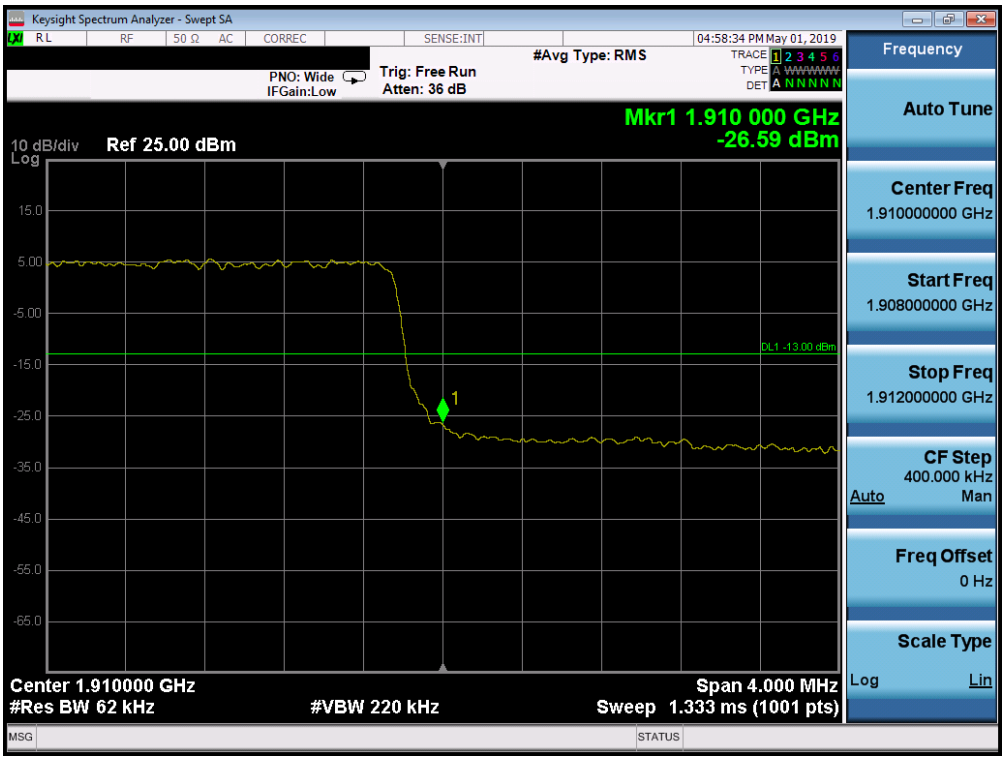
Plot 7-143. Upper Extended Band Edge Plot (Band 2 – 3.0MHz QPSK - Full RB Configuration)



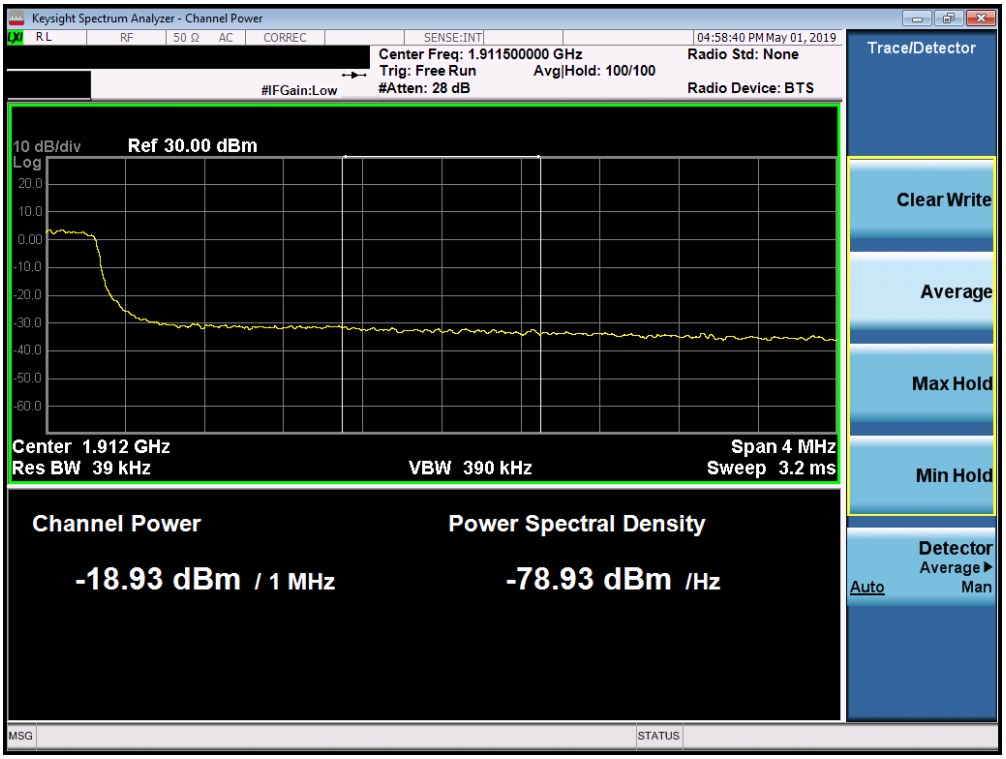
Plot 7-144. Lower Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



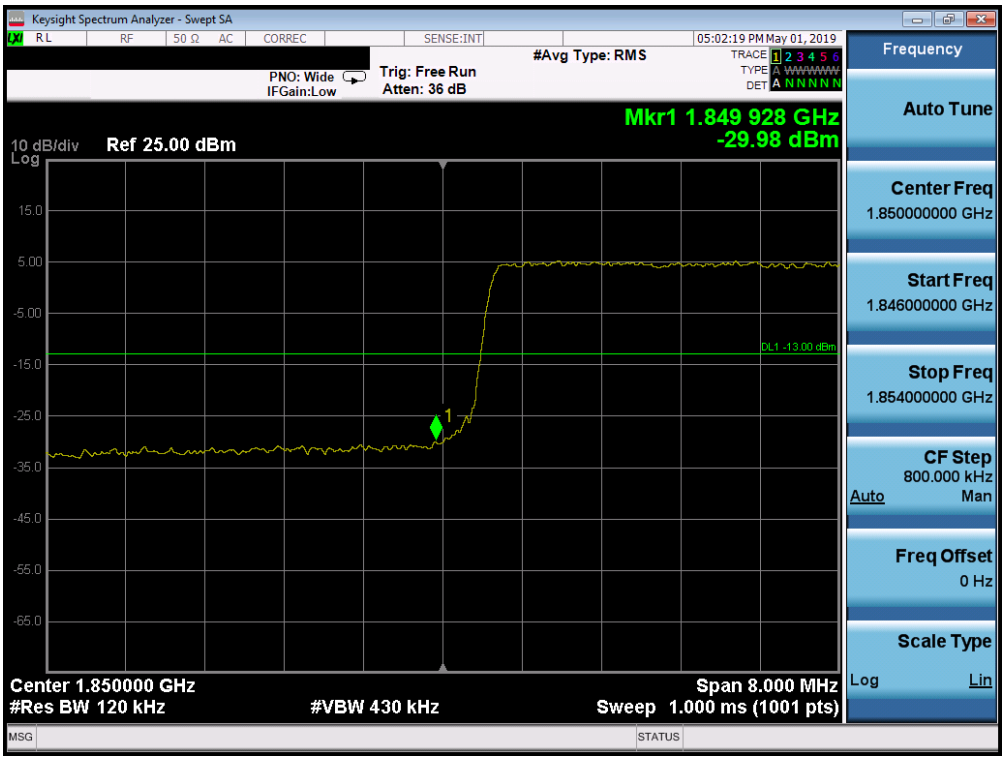
Plot 7-145. Lower Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



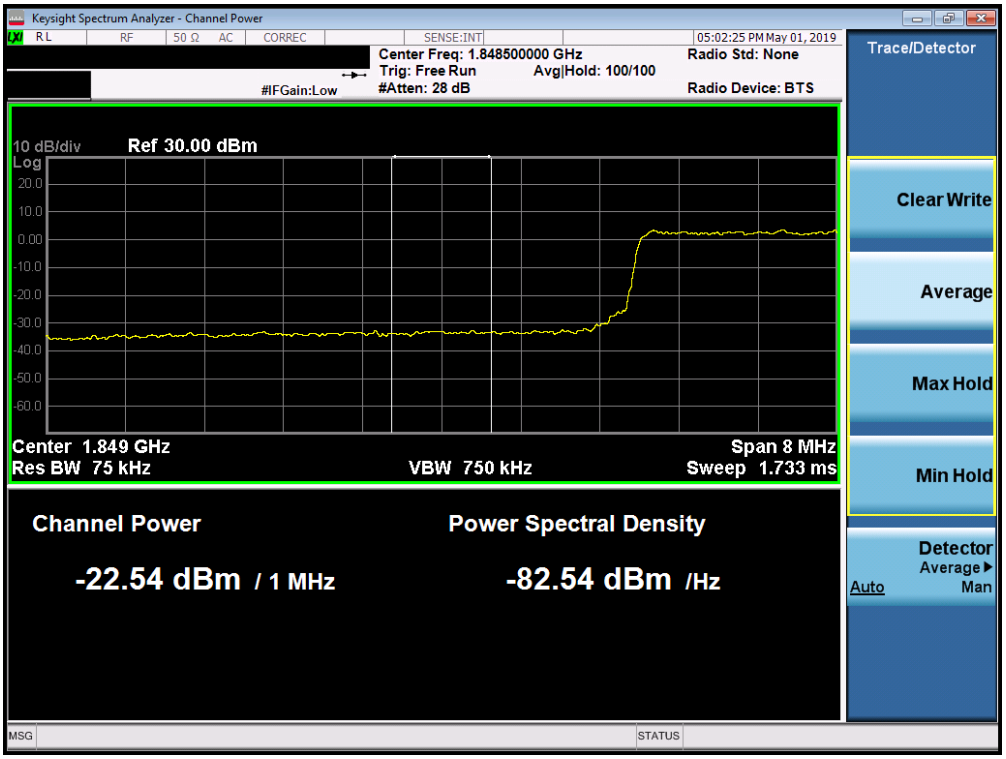
Plot 7-146. Upper Band Edge Plot (Band 2 – 5.0MHz QPSK - Full RB Configuration)



Plot 7-147. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK - Full RB Configuration)

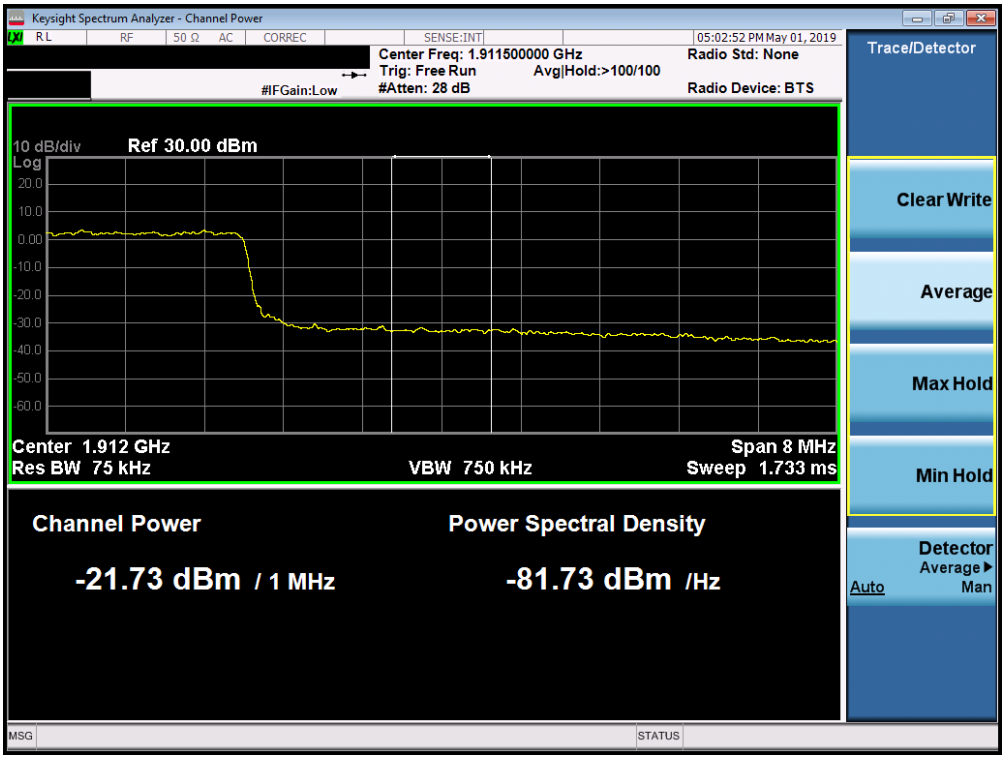


Plot 7-148. Lower Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

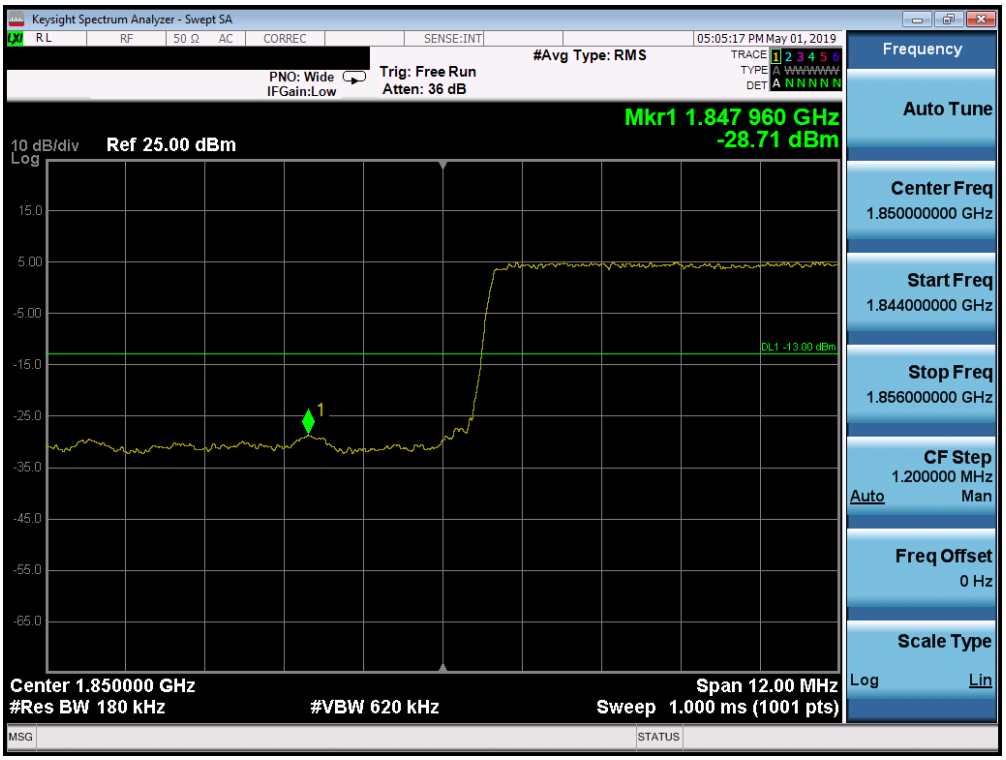


Plot 7-149. Lower Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)

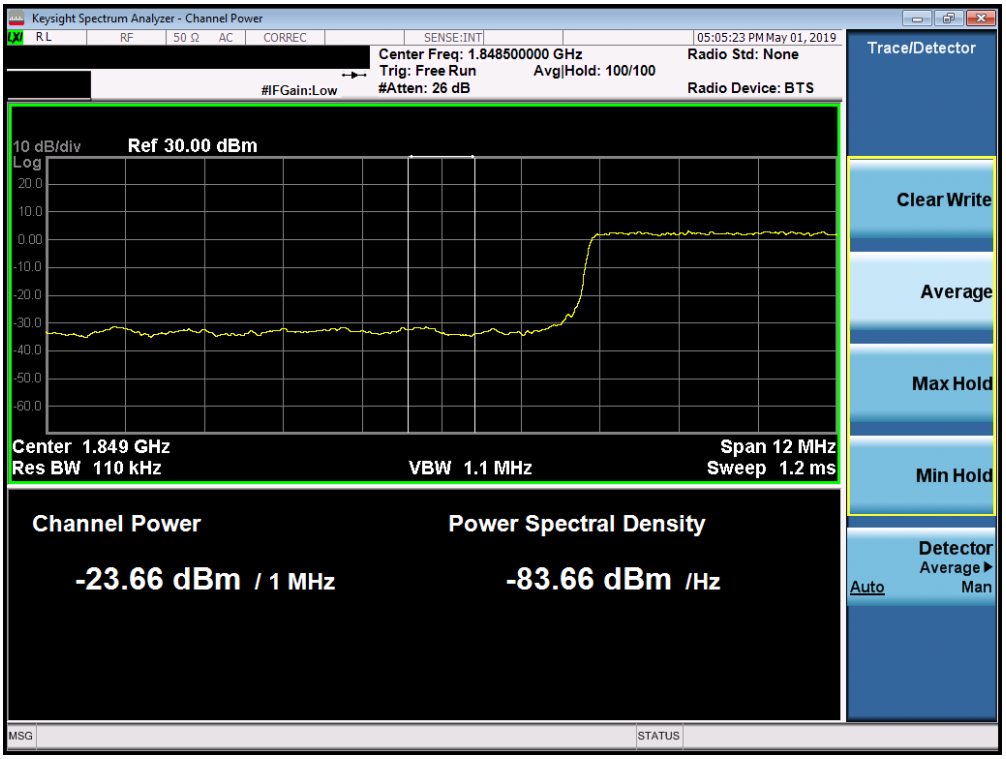
Plot 7-150. Upper Band Edge Plot (Band 2 – 10.0MHz QPSK - Full RB Configuration)



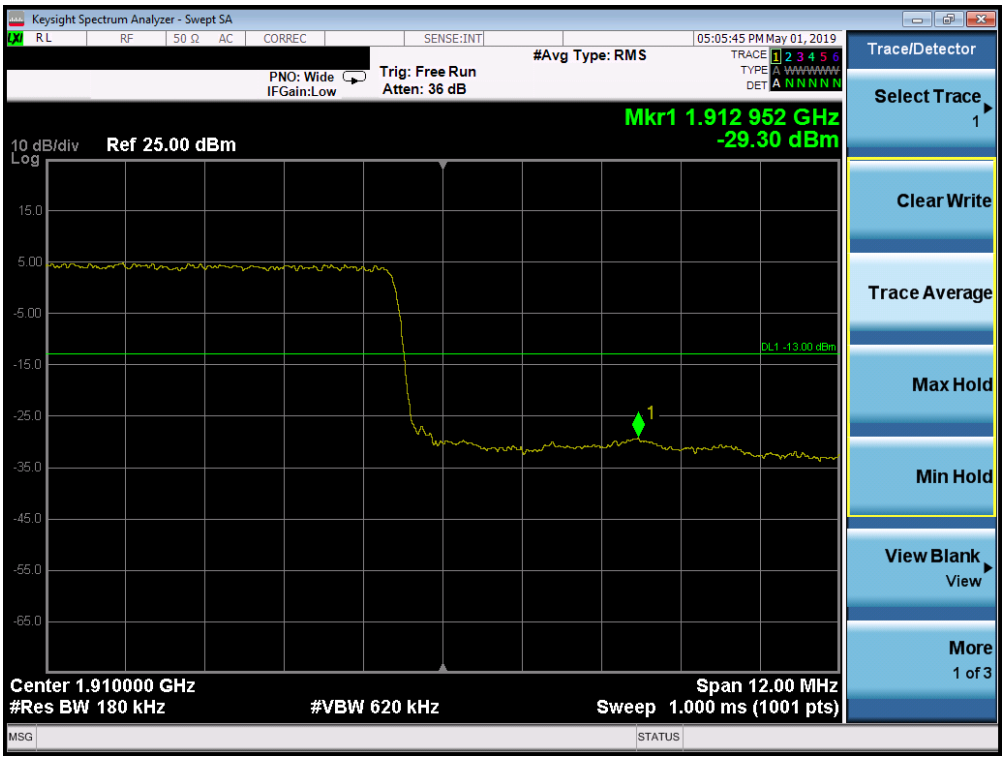
Plot 7-151. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK - Full RB Configuration)



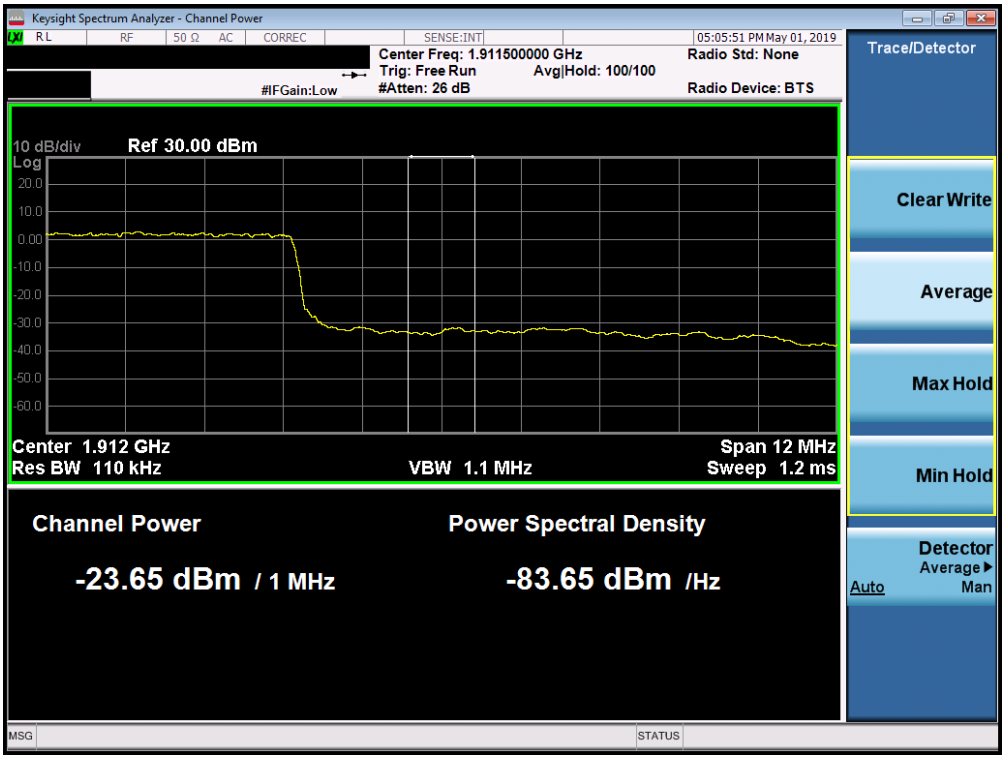
Plot 7-152. Lower Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



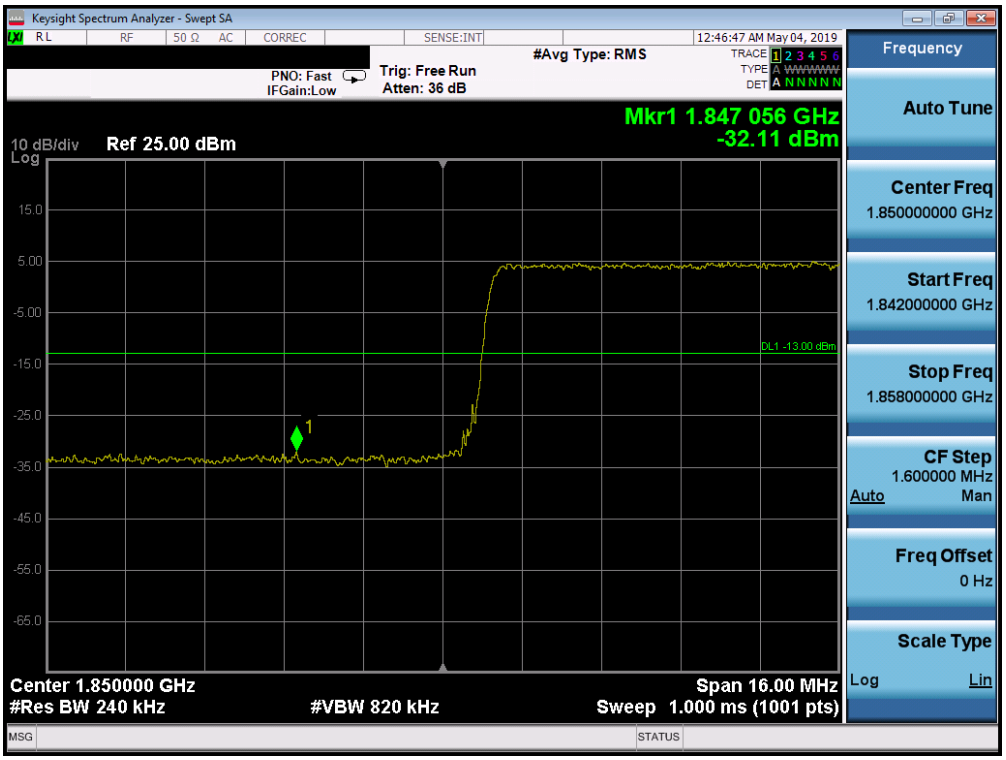
Plot 7-153. Lower Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



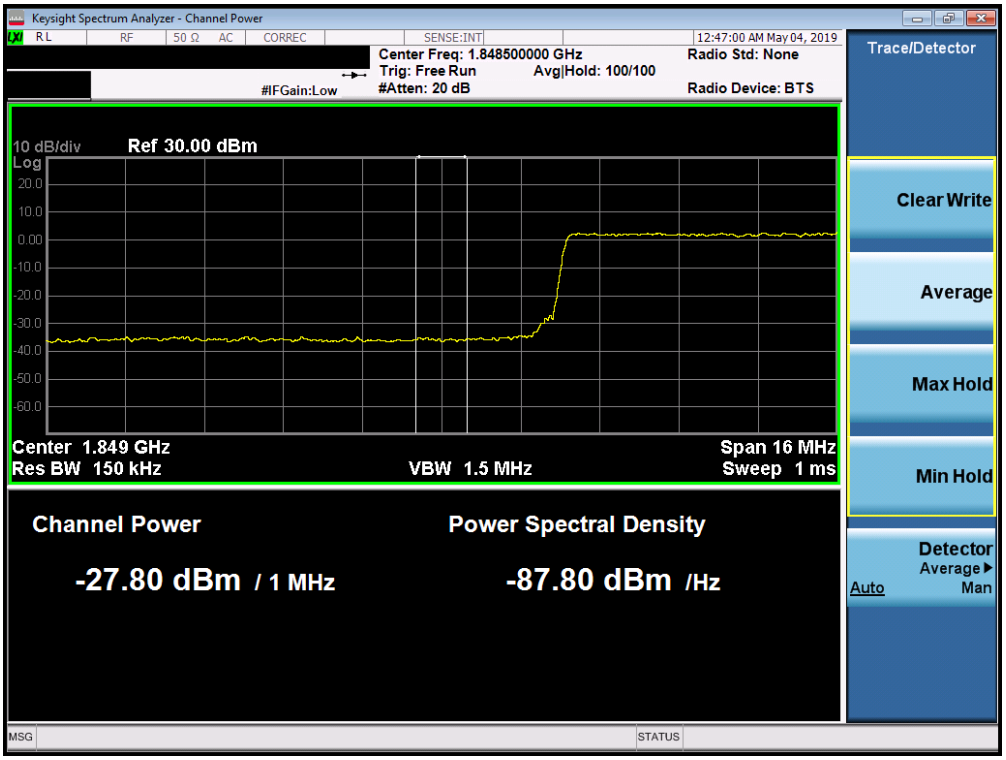
Plot 7-154. Upper Band Edge Plot (Band 2 – 15.0MHz QPSK - Full RB Configuration)



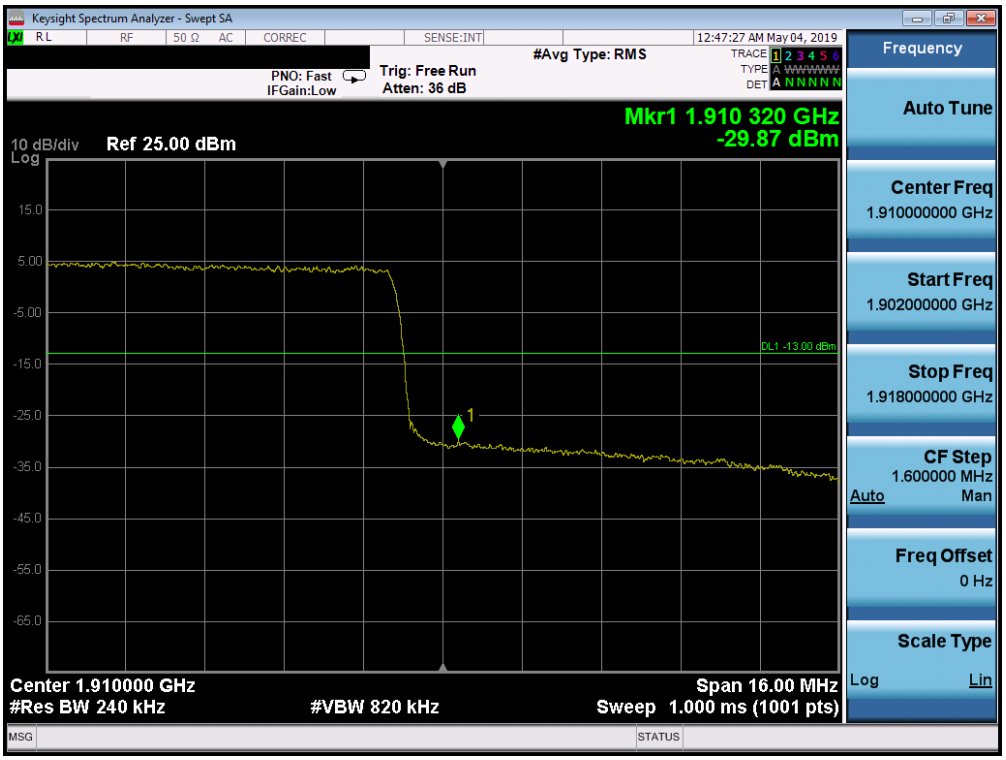
Plot 7-155. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK - Full RB Configuration)



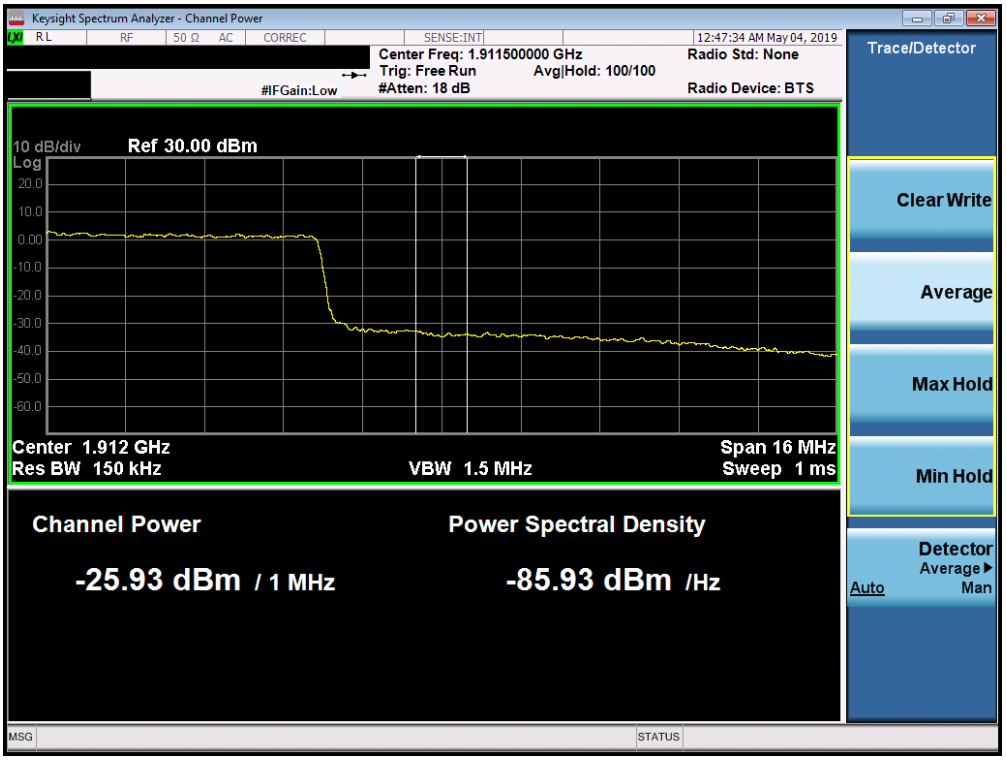
Plot 7-156. Lower Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-157. Lower Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

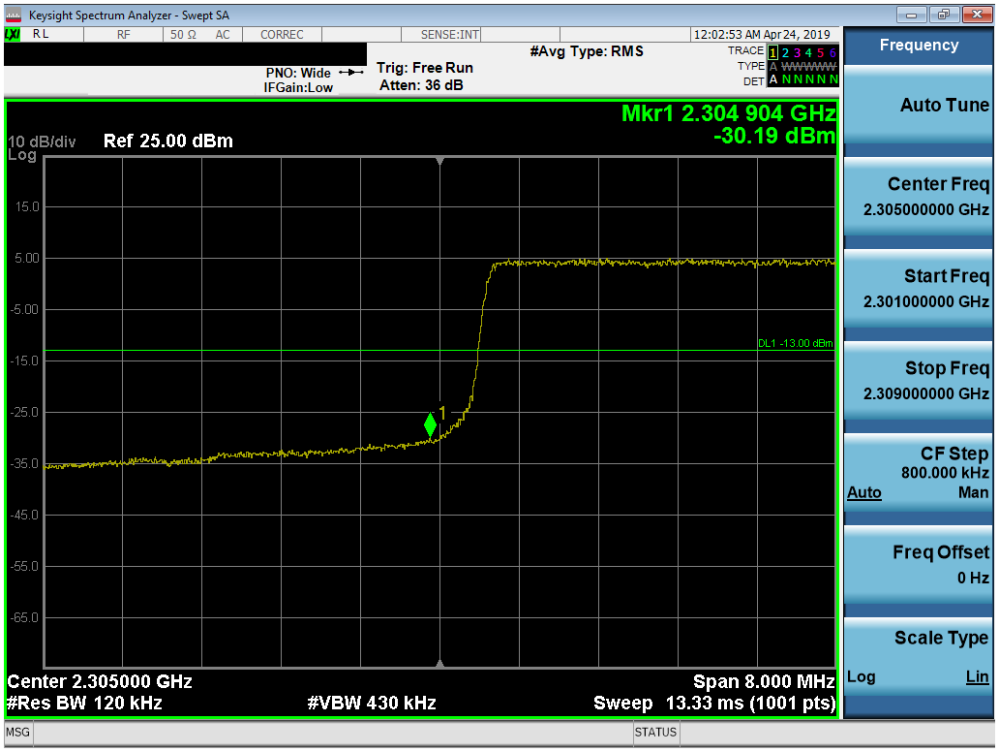


Plot 7-158. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK - Full RB Configuration)



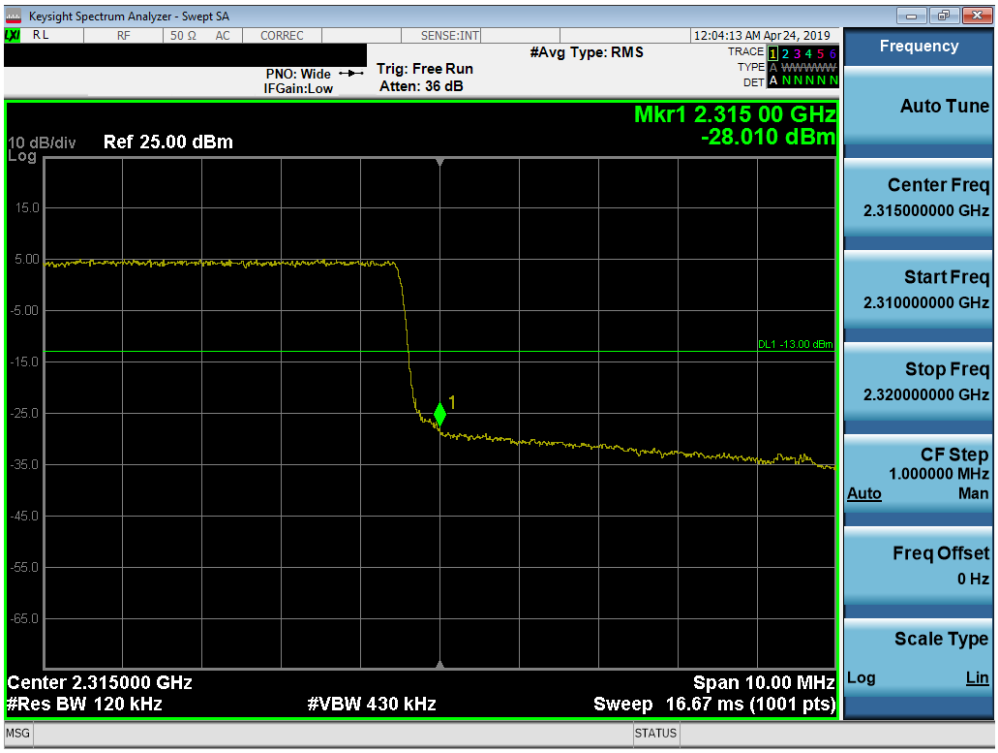
Plot 7-159. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK - Full RB Configuration)

Band 30

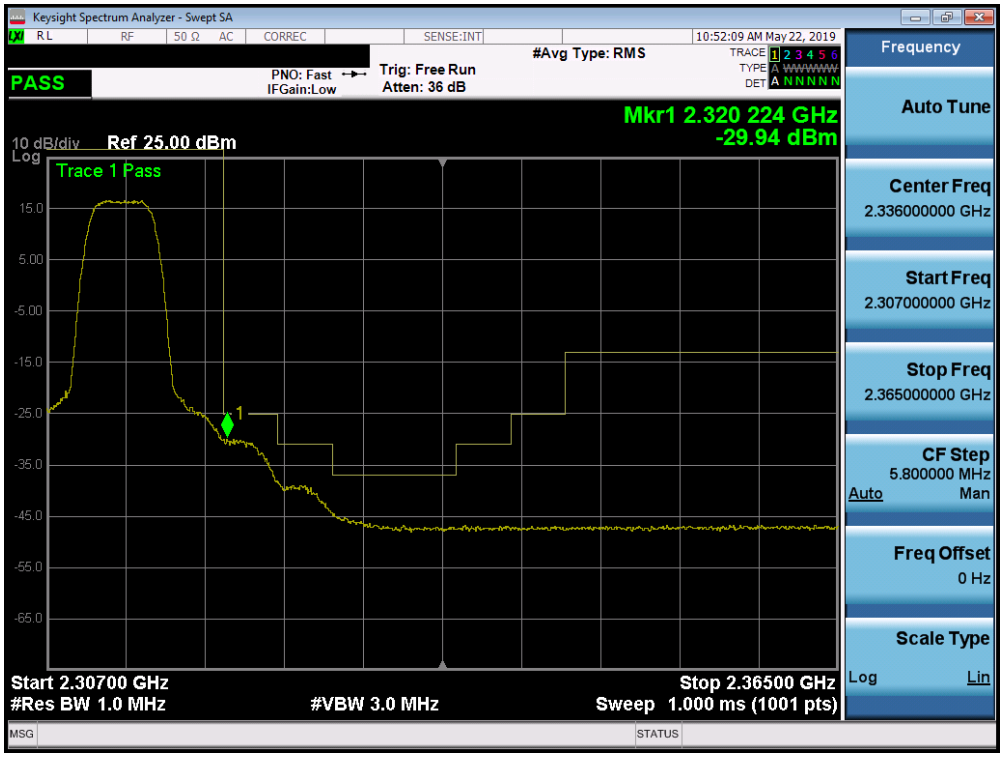


Plot 7-160. Lower Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)

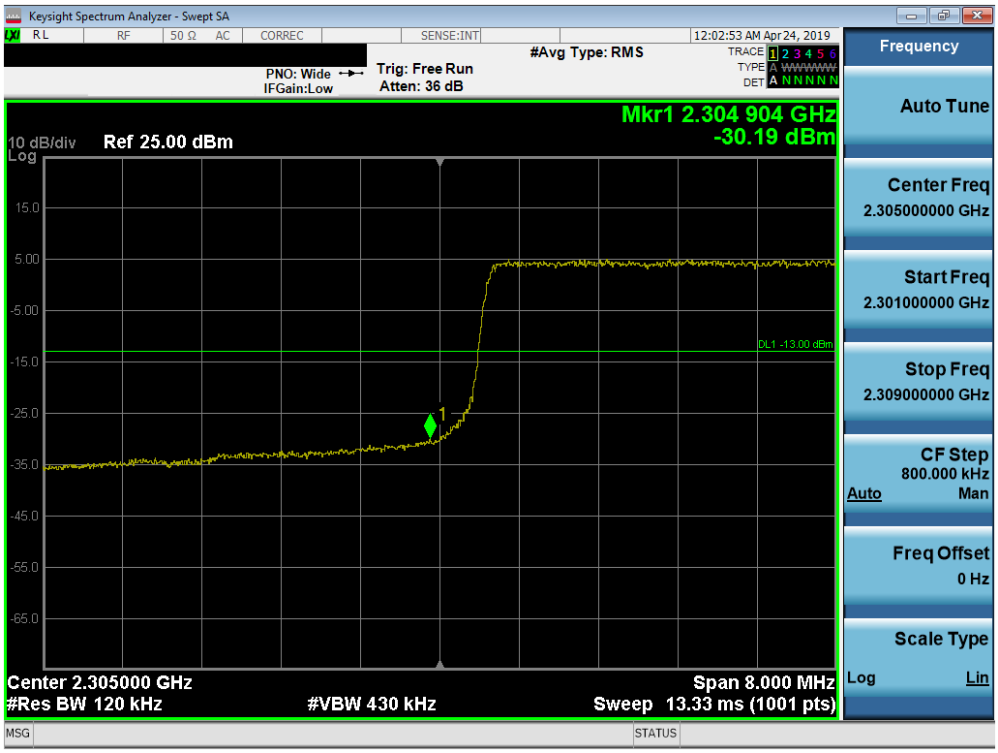
Plot 7-161. Lower Extended Band Edge Plot (Band 30 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-162. Upper Band Edge Plot (Band 30– 5.0MHz QPSK - Full RB Configuration)

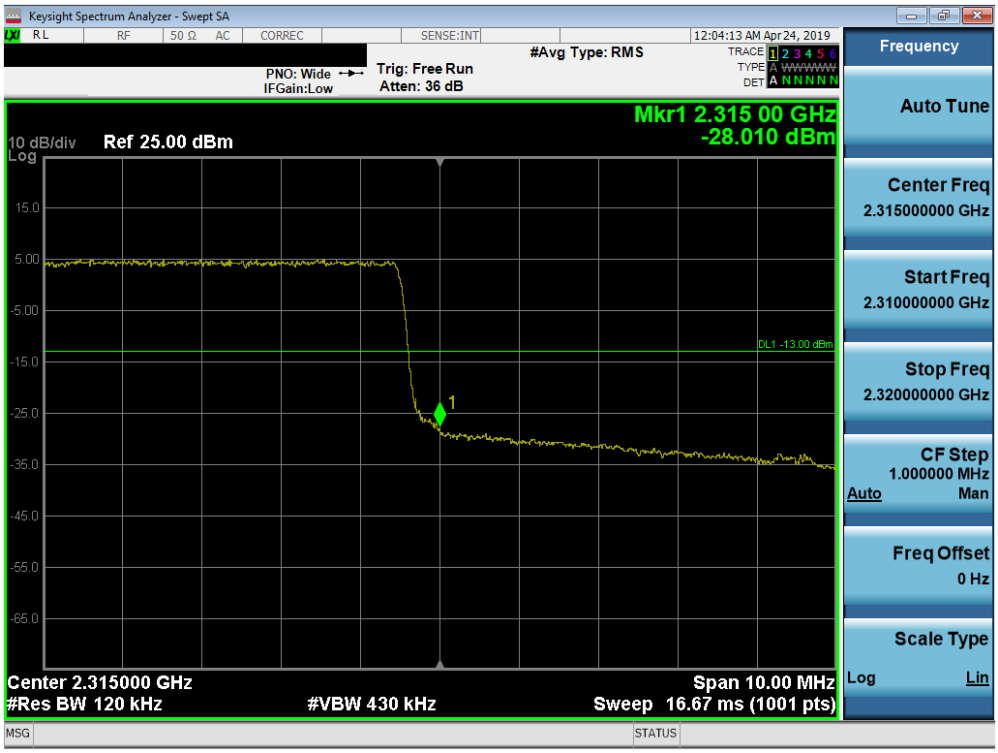


Plot 7-163. Upper Extended Band Edge Plot (Band 30– 5.0MHz QPSK - Full RB Configuration)



Plot 7-164. Lower Band Edge Plot (Band 30- 10.0MHz QPSK - Full RB Configuration)

Plot 7-165. Lower Extended Band Edge Plot (Band 30- 10.0MHz QPSK - Full RB Configuration)



Plot 7-166. Upper Band Edge Plot (Band 30- 10.0MHz QPSK - Full RB Configuration)

Plot 7-167. Upper Extended Band Edge Plot (Band 30- 10.0MHz QPSK - Full RB Configuration)

7.5 Peak-Average Ratio

Test Overview

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

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7.1

Test Settings

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

Test Setup

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

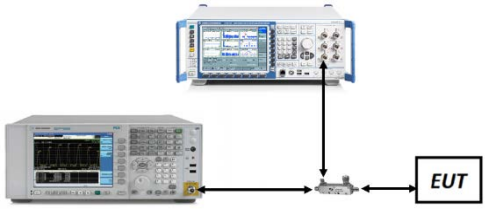
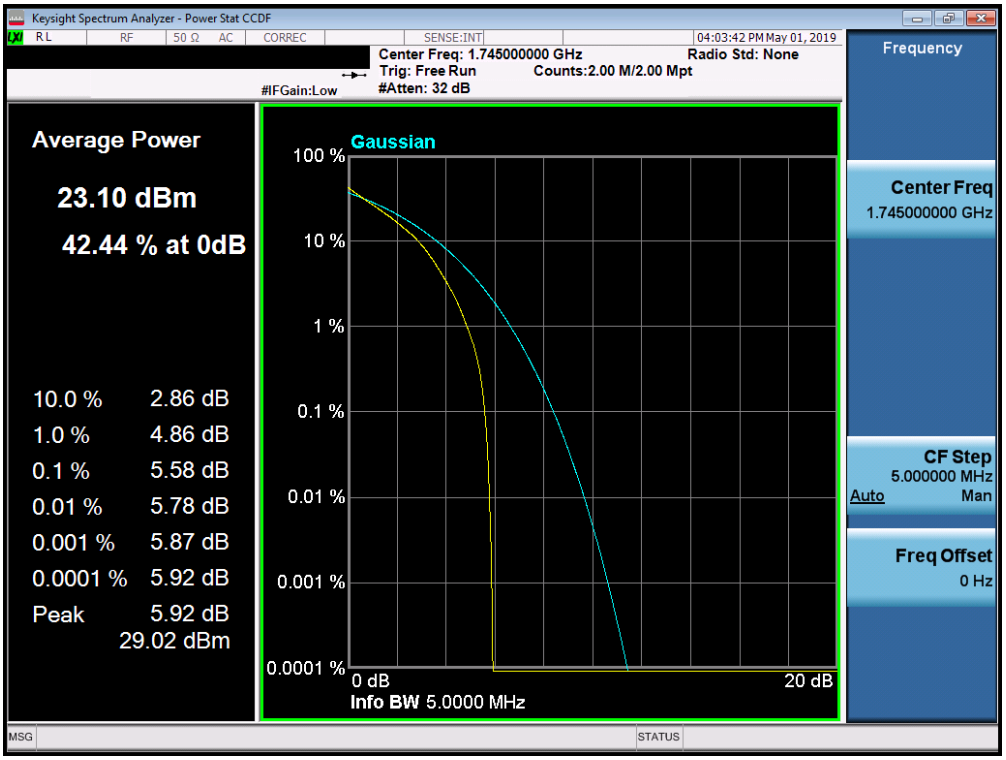


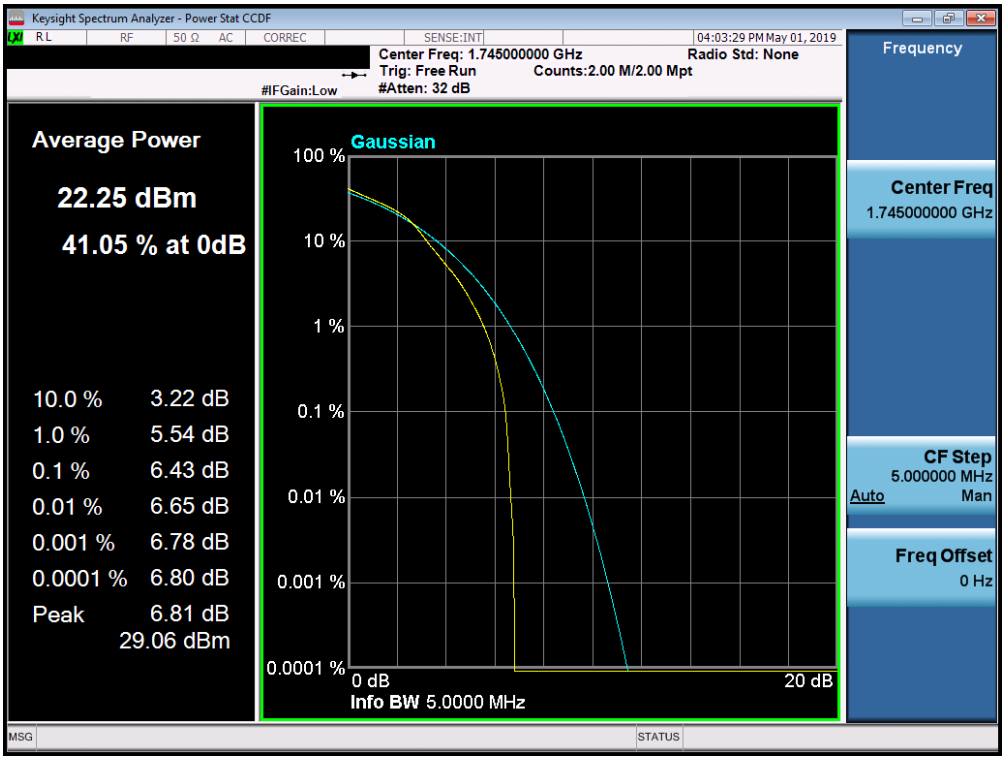
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

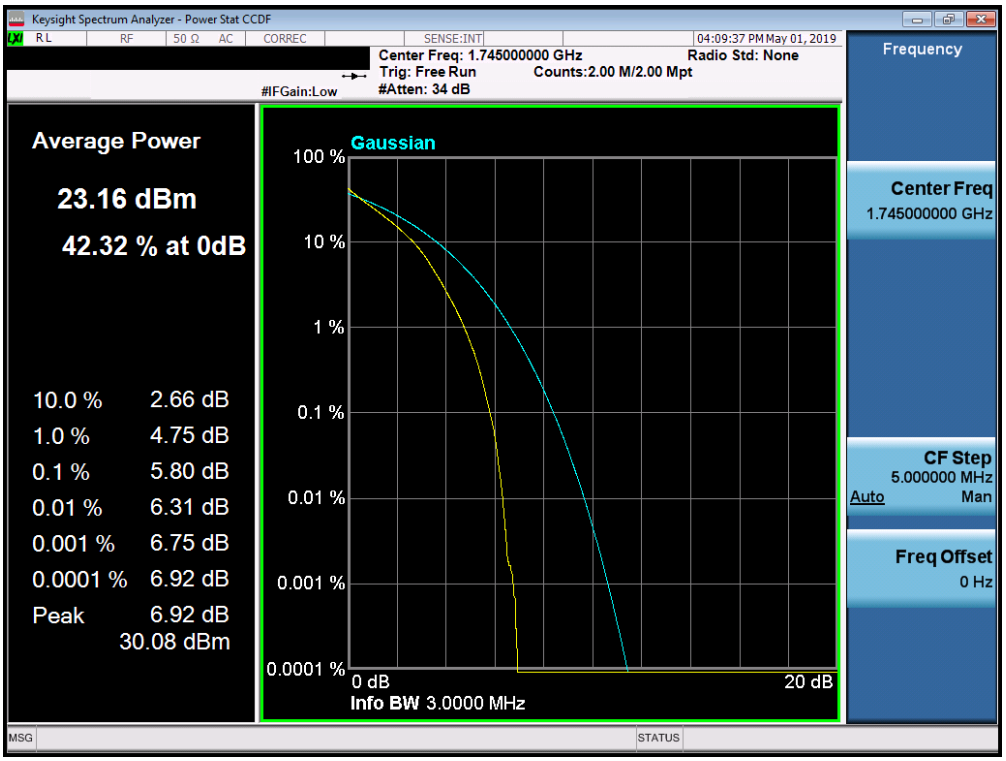
None.



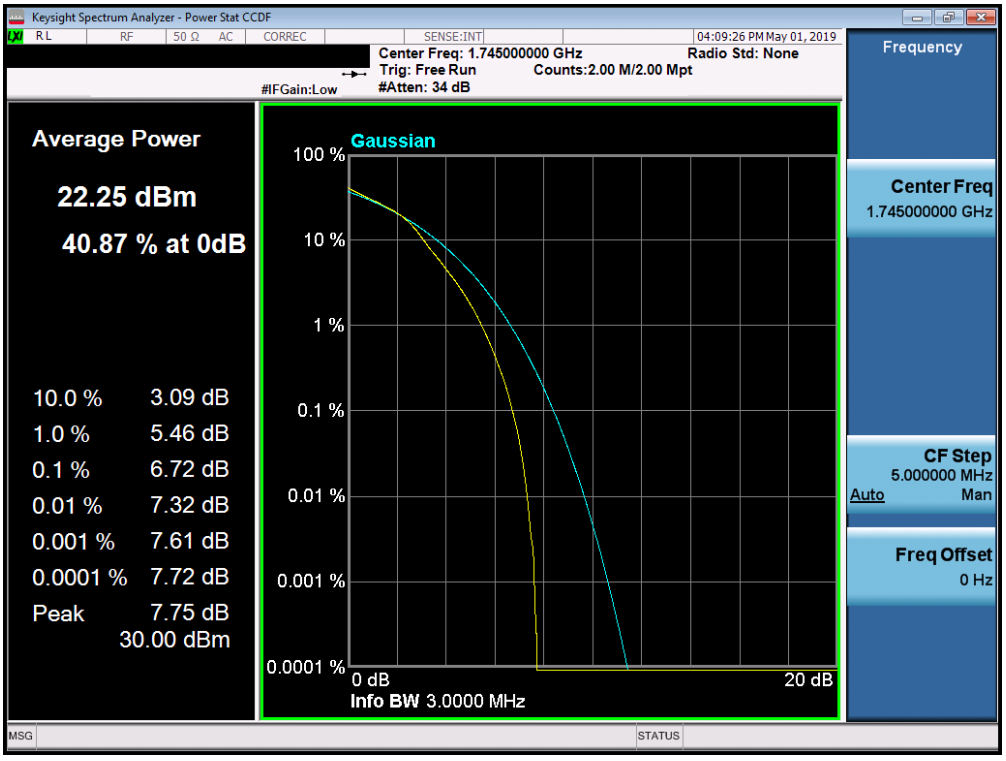
Plot 7-168. PAR Plot (Band 66/4 - 1.4MHz QPSK - Full RB Configuration)



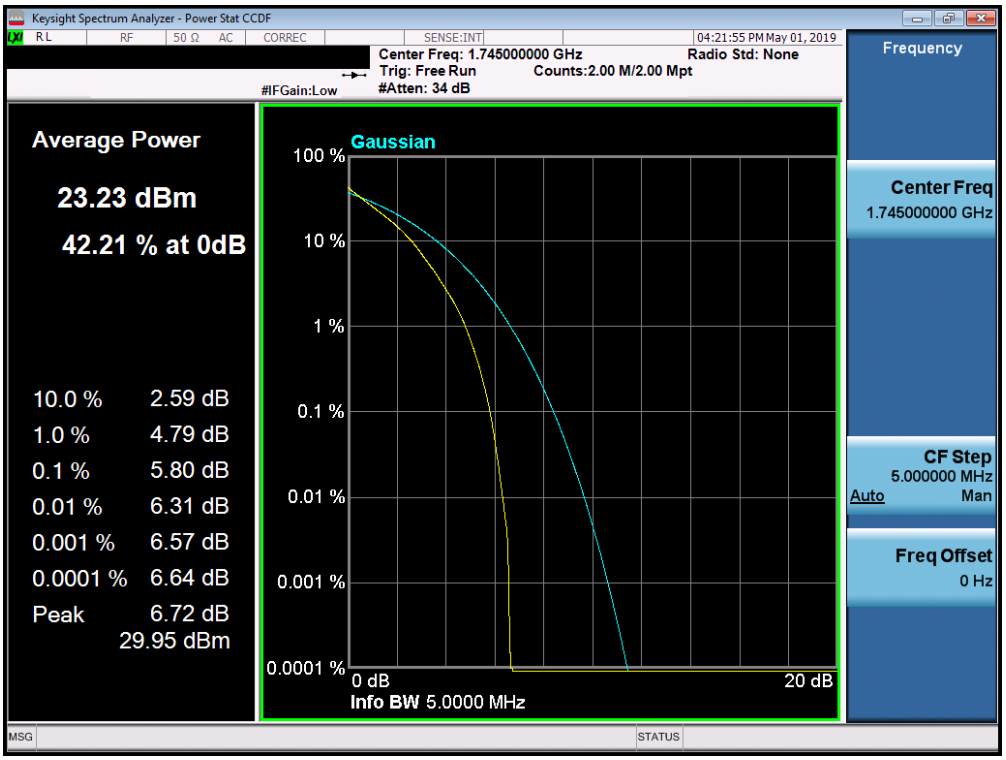
Plot 7-169. PAR Plot (Band 66/4 - 1.4MHz 16-QAM - Full RB Configuration)



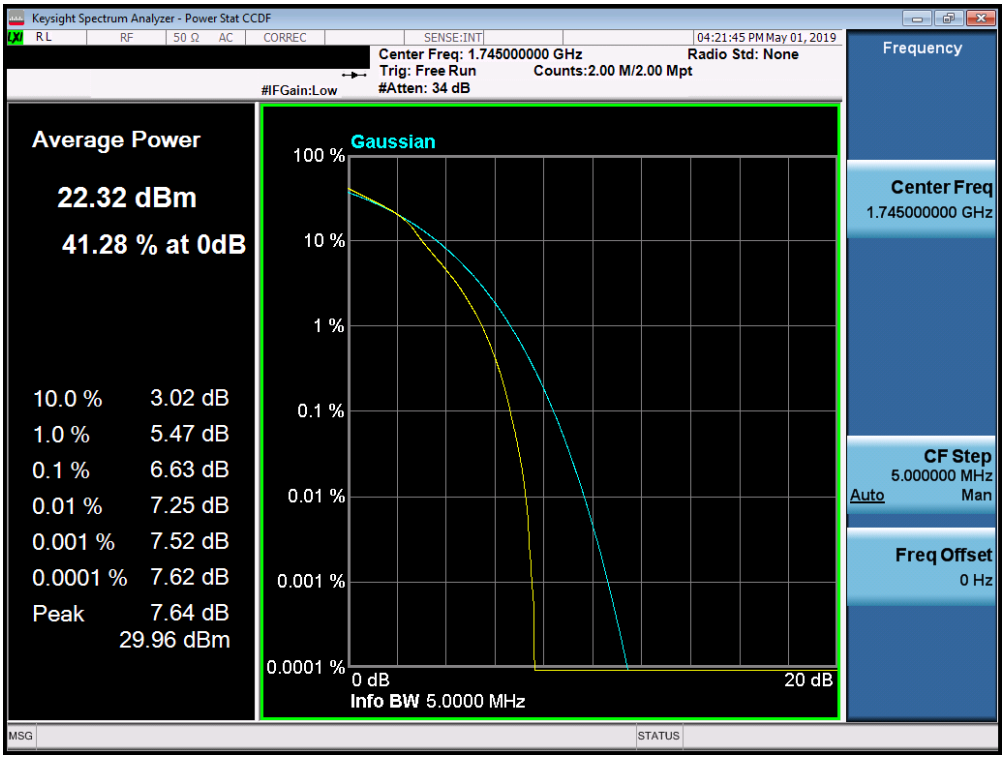
Plot 7-170. PAR Plot (Band 66/4 - 3.0MHz QPSK - Full RB Configuration)



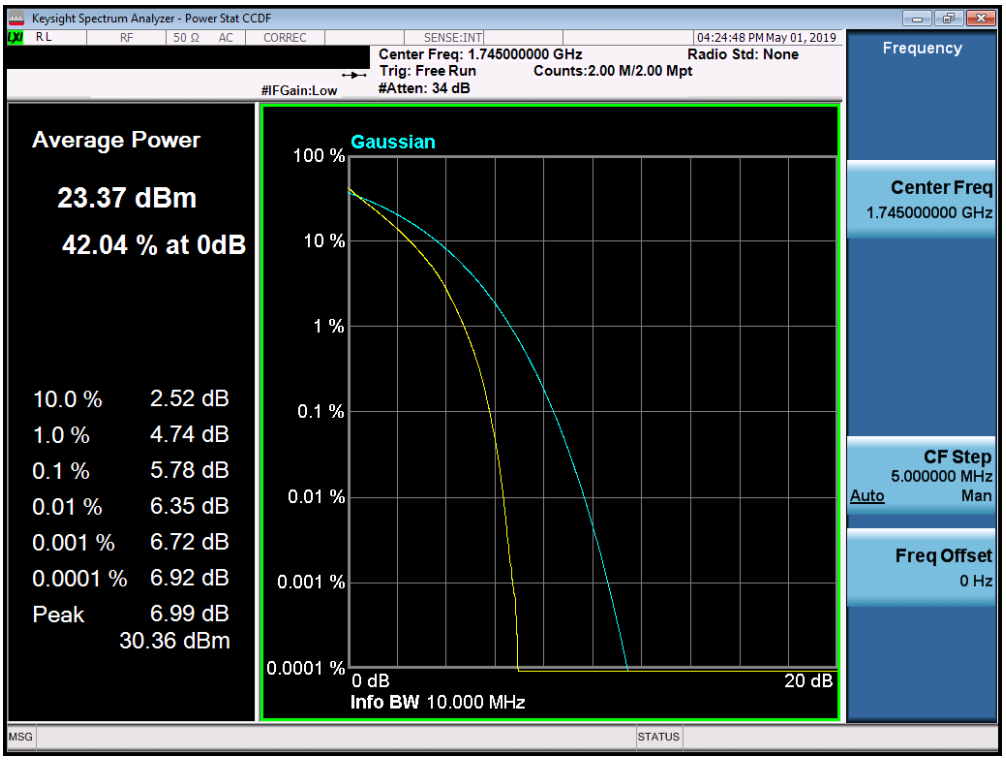
Plot 7-171. PAR Plot (Band 66/4 - 3.0MHz 16-QAM - Full RB Configuration)



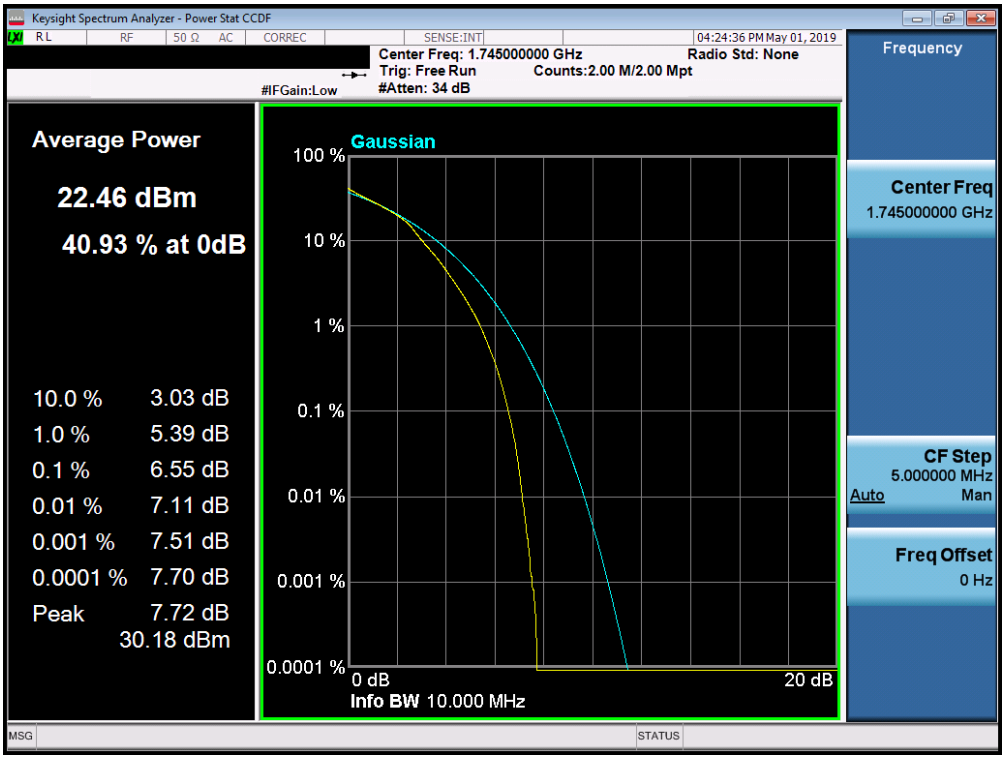
Plot 7-172. PAR Plot (Band 66/4 - 5.0MHz QPSK - Full RB Configuration)



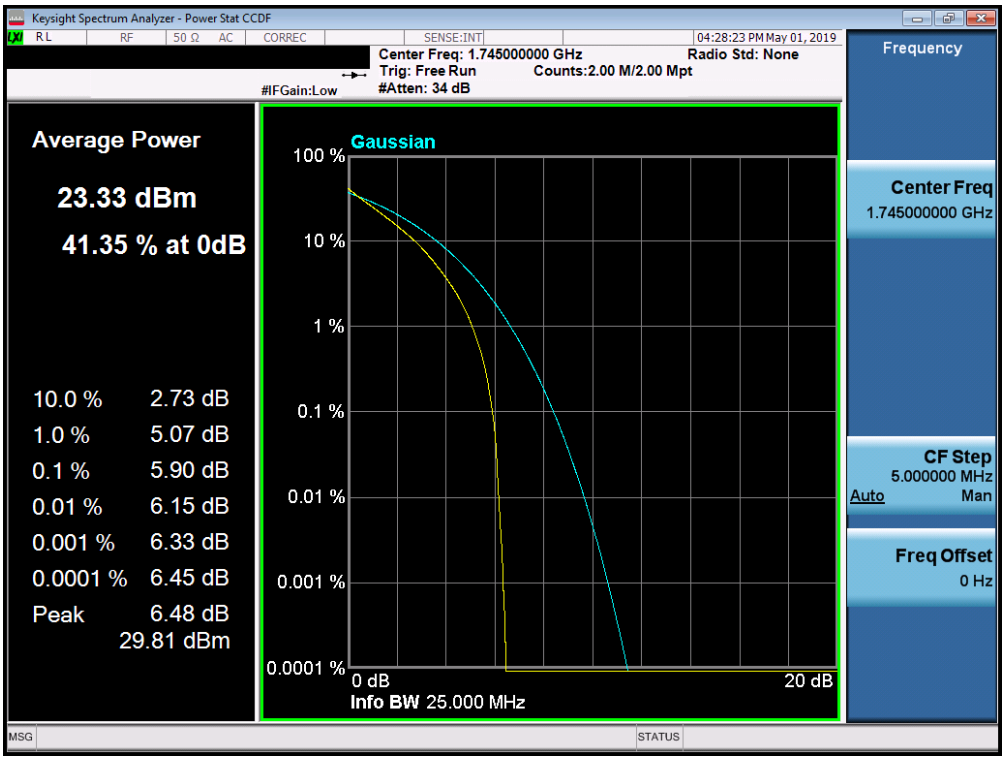
Plot 7-173. PAR Plot (Band 66/4 - 5.0MHz 16-QAM - Full RB Configuration)



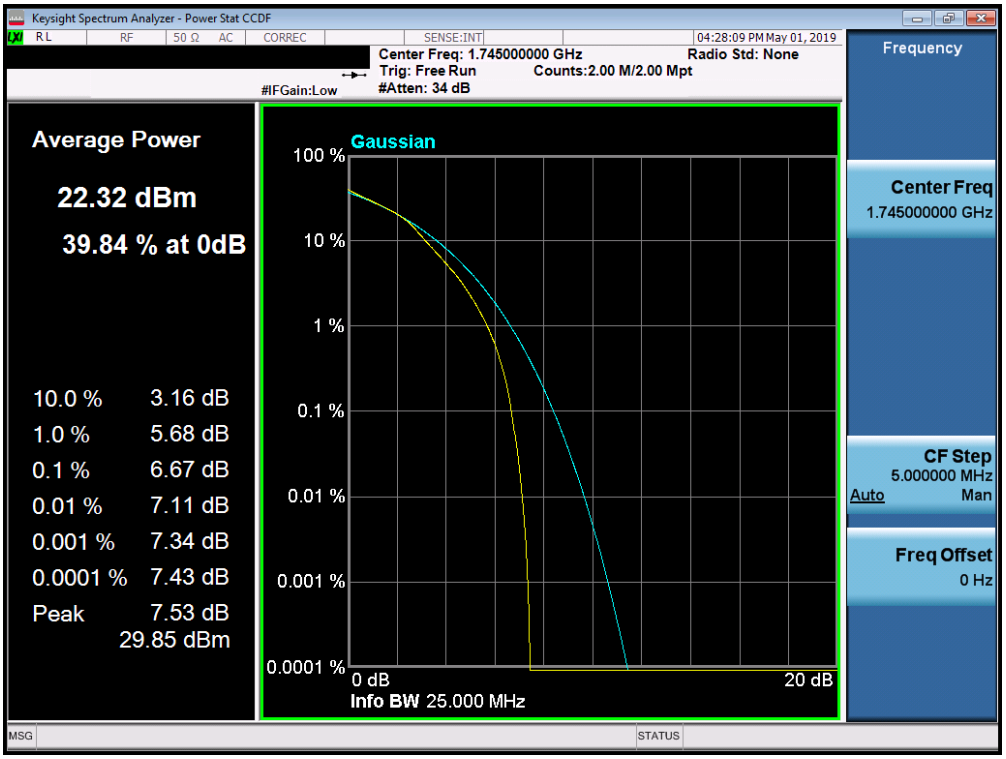
Plot 7-174. PAR Plot (Band 66/4 - 10.0MHz QPSK - Full RB Configuration)



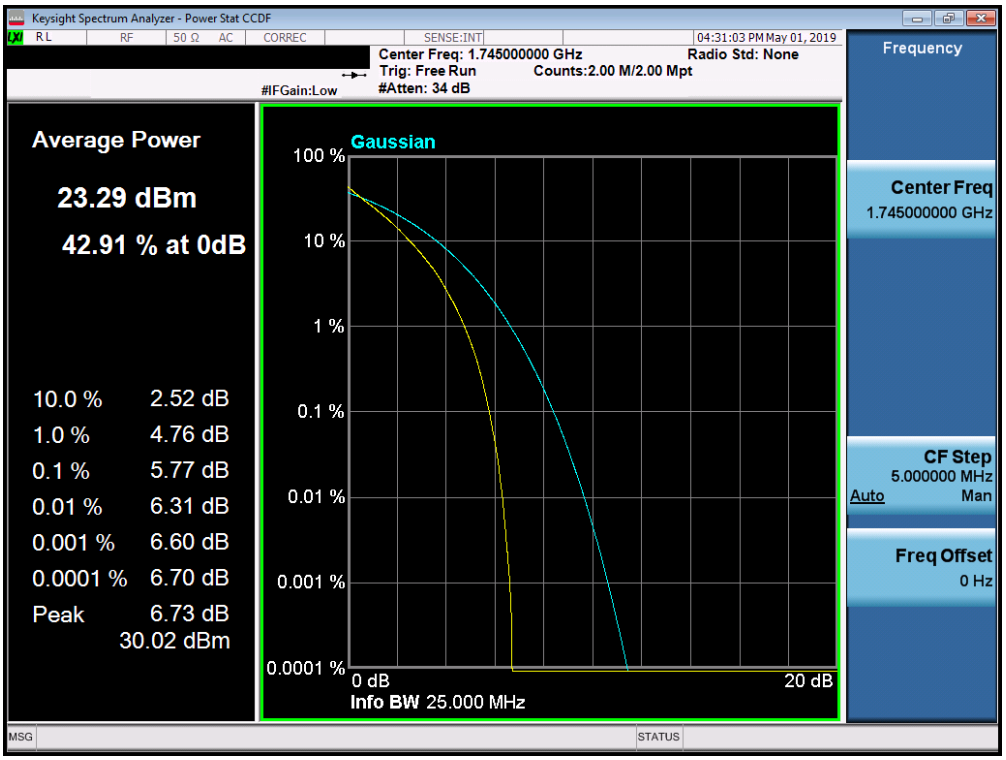
Plot 7-175. PAR Plot (Band 66/4 - 10.0MHz 16-QAM - Full RB Configuration)



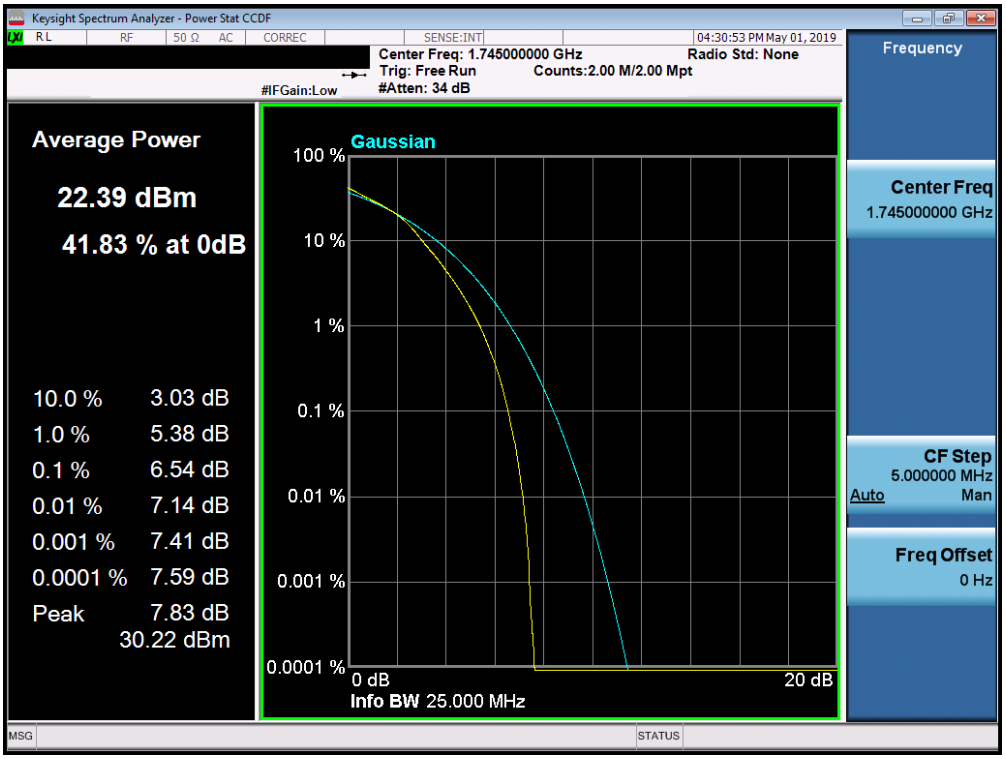
Plot 7-176. PAR Plot (Band 66/4 - 15.0MHz QPSK - Full RB Configuration)



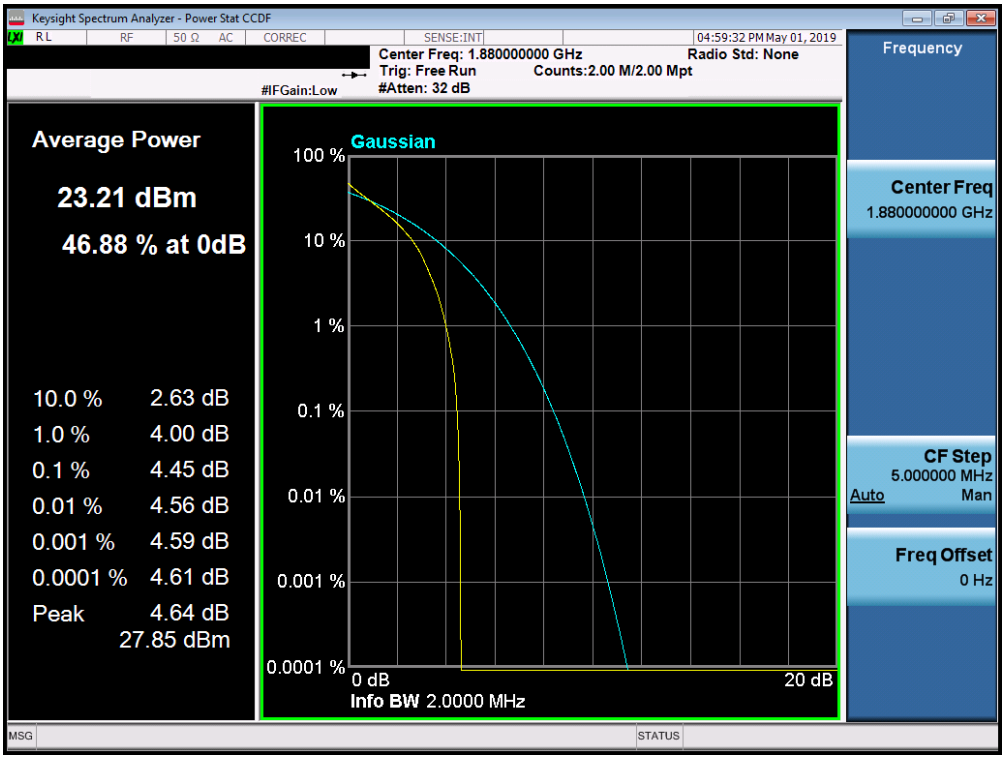
Plot 7-177. PAR Plot (Band 66/4 - 15.0MHz 16-QAM - Full RB Configuration)



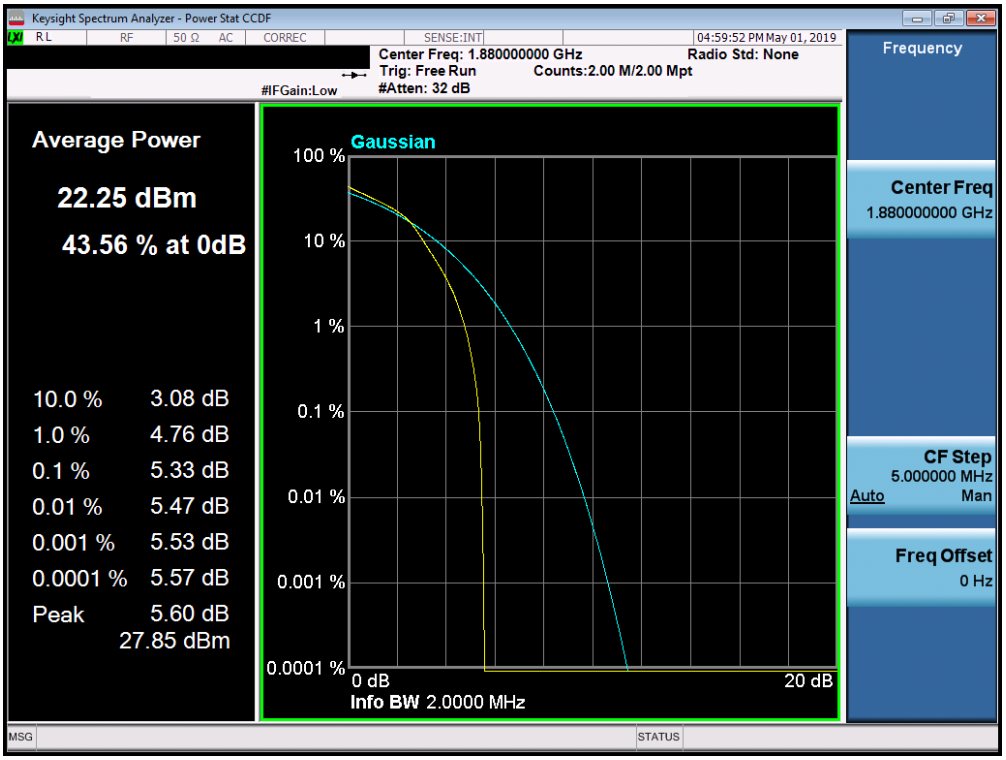
Plot 7-178. PAR Plot (Band 66/4 - 20.0MHz QPSK - Full RB Configuration)



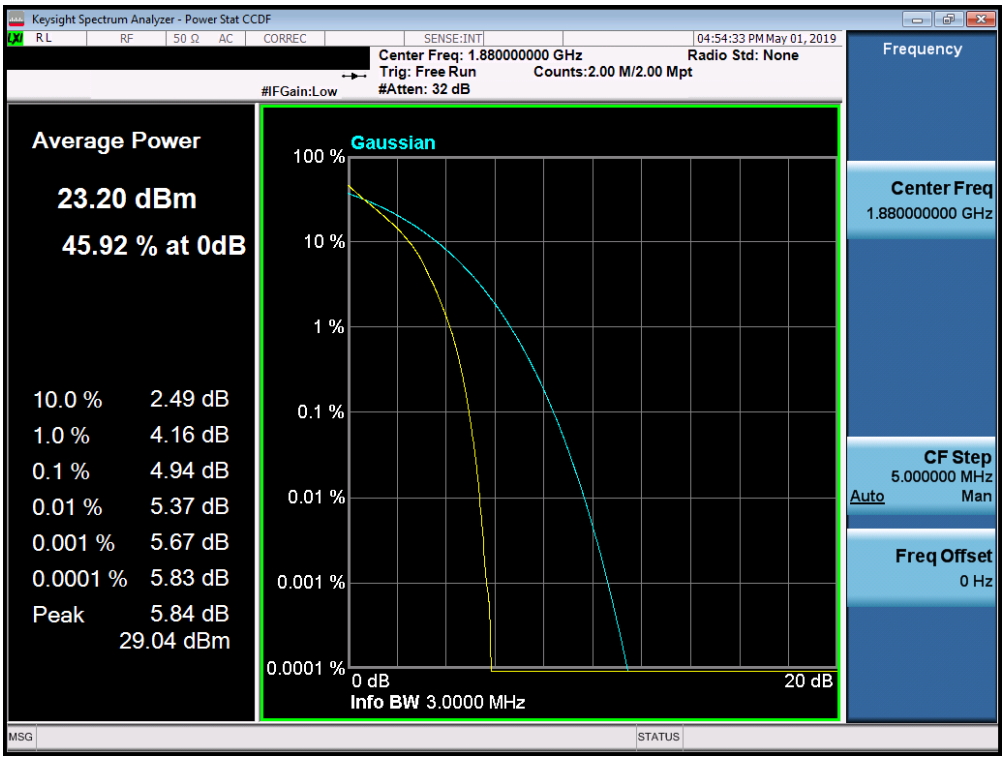
Plot 7-179. PAR Plot (Band 66/4 - 20.0MHz 16-QAM - Full RB Configuration)



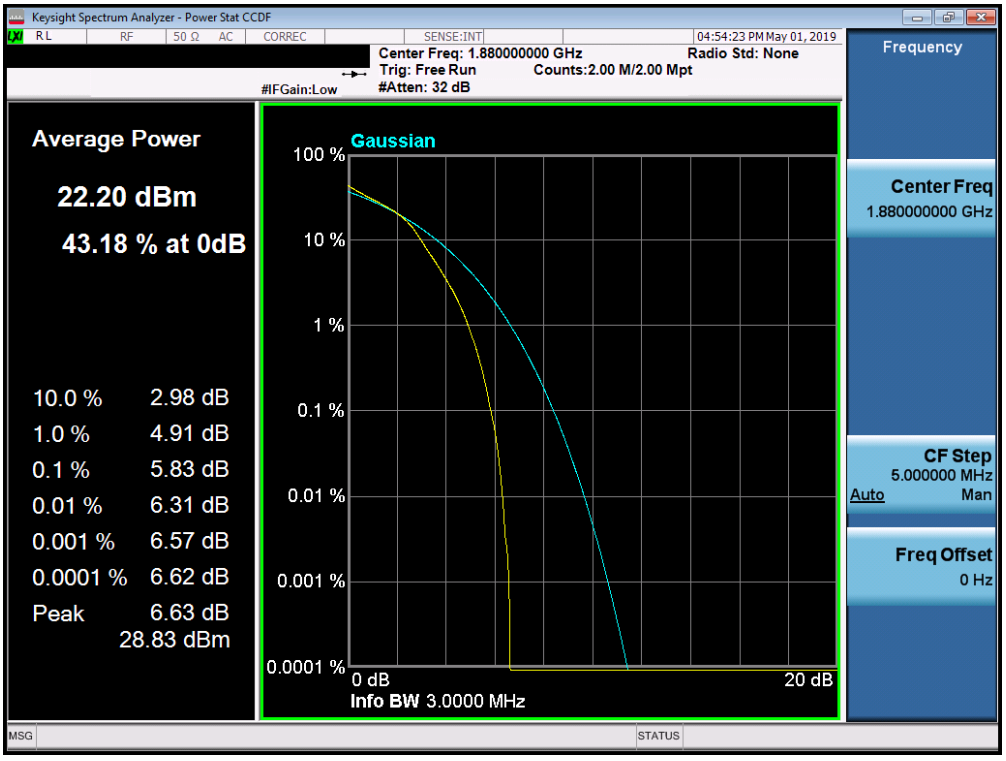
Plot 7-180. PAR Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



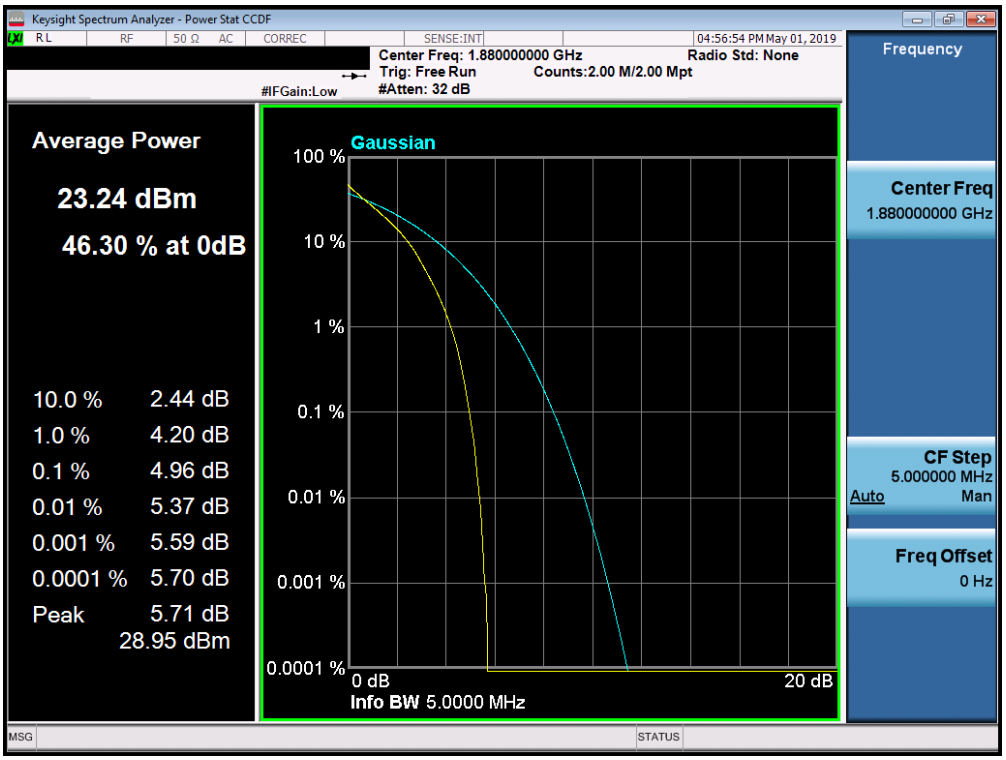
Plot 7-181. PAR Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)



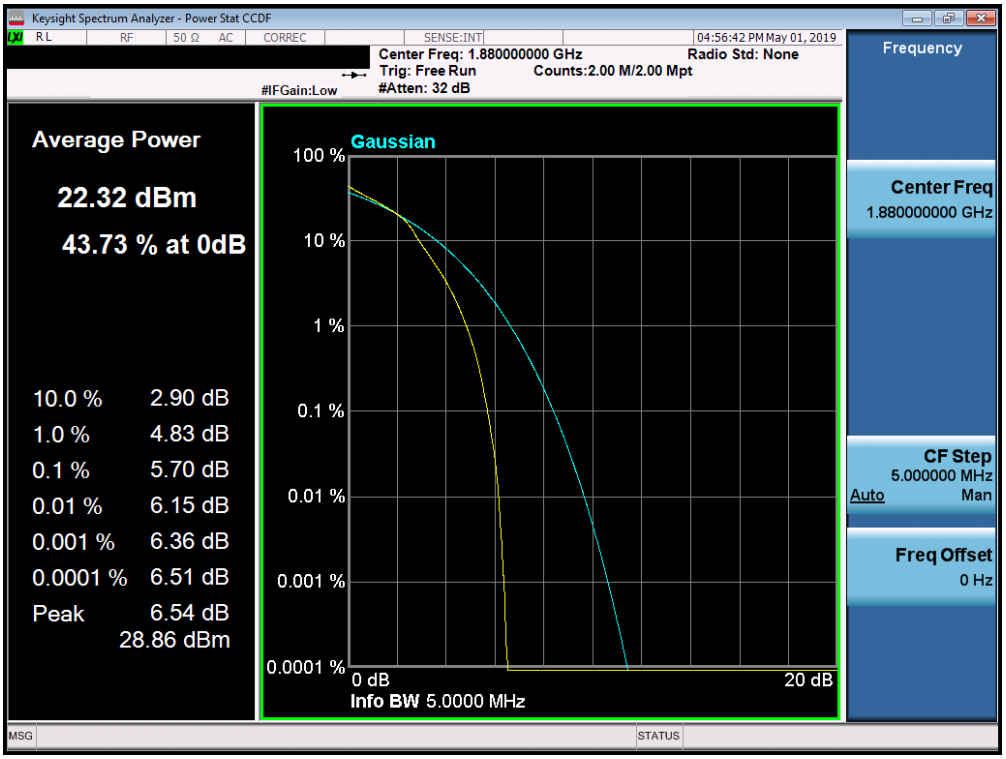
Plot 7-182. PAR Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



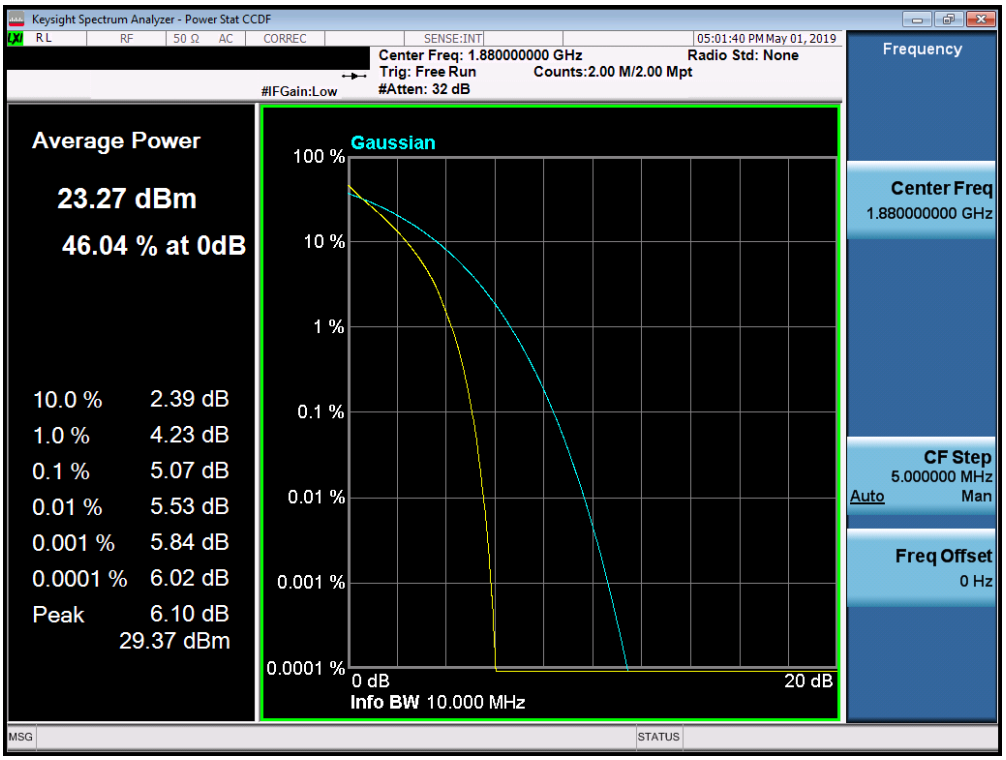
Plot 7-183. PAR Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)



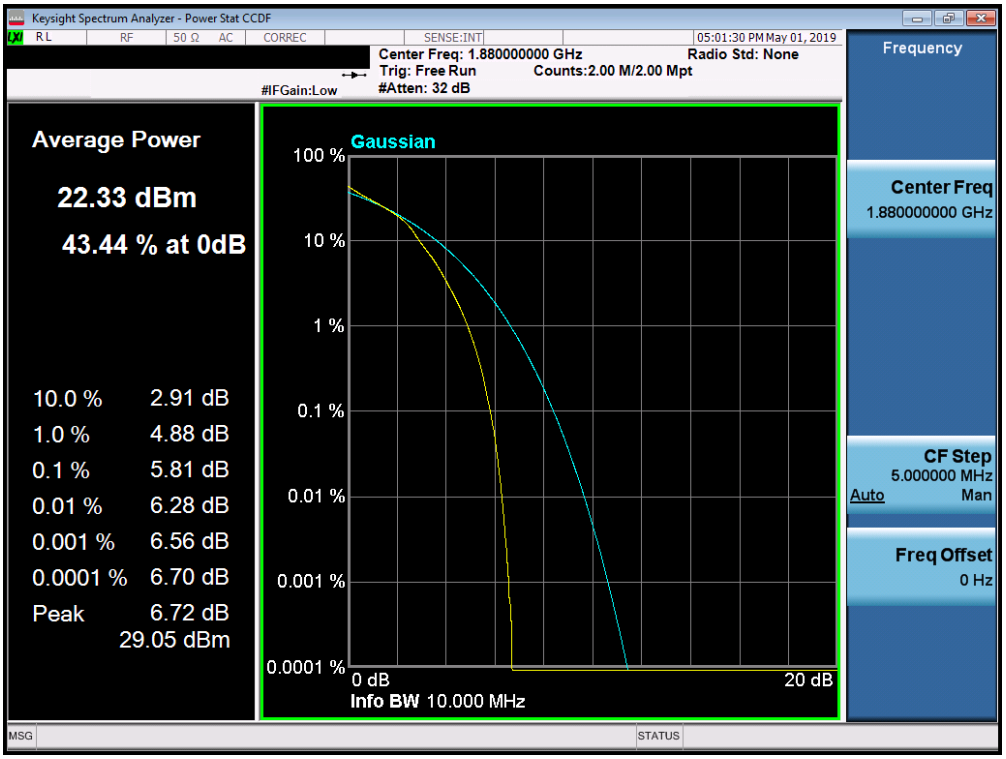
Plot 7-184. PAR Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



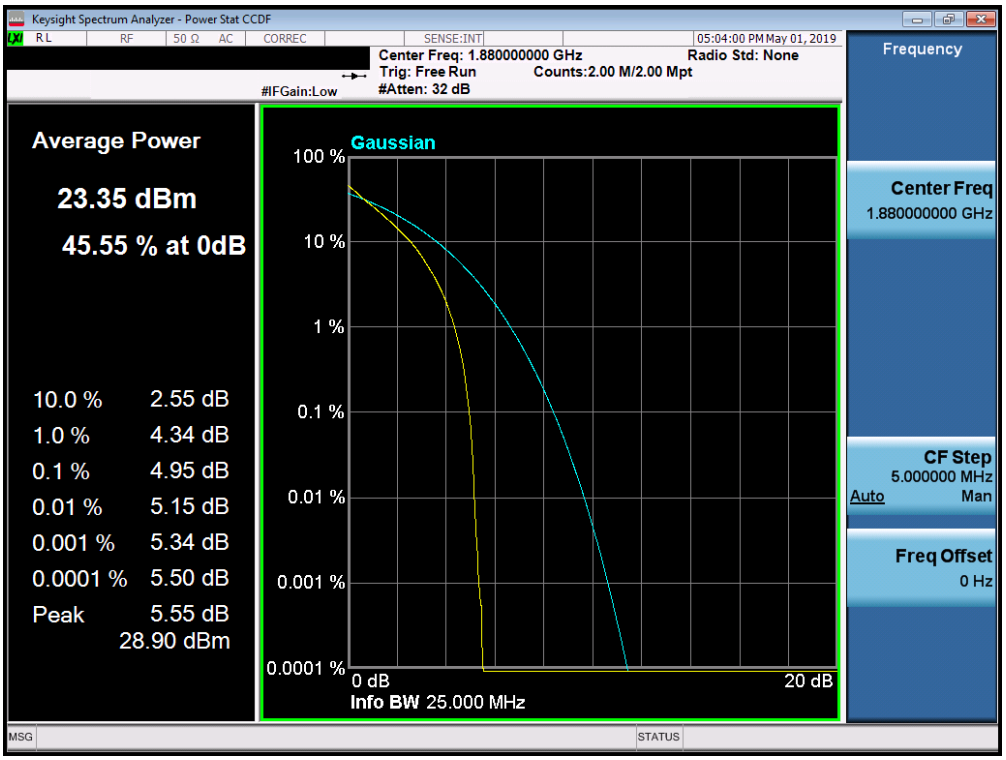
Plot 7-185. PAR Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)



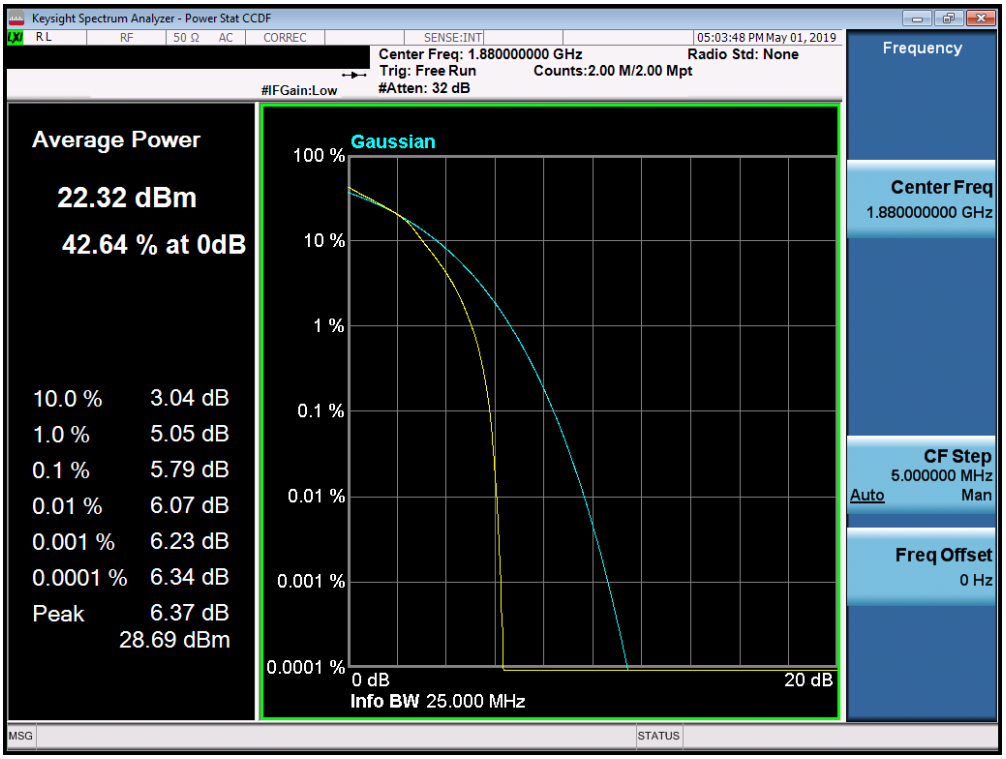
Plot 7-186. PAR Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



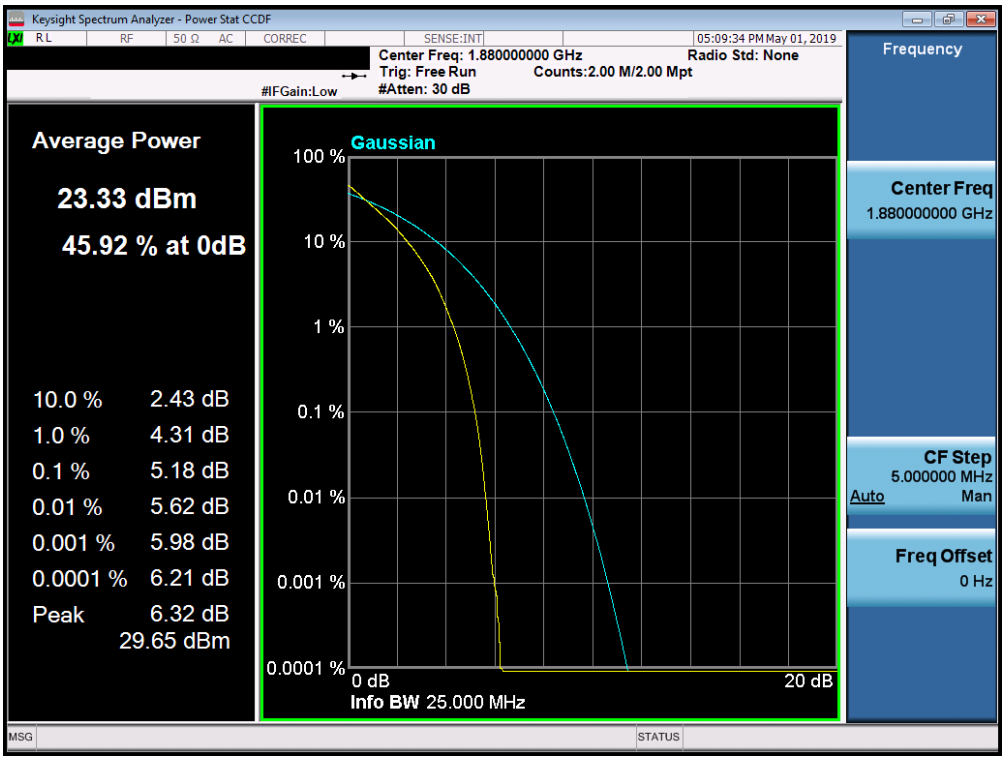
Plot 7-187. PAR Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)



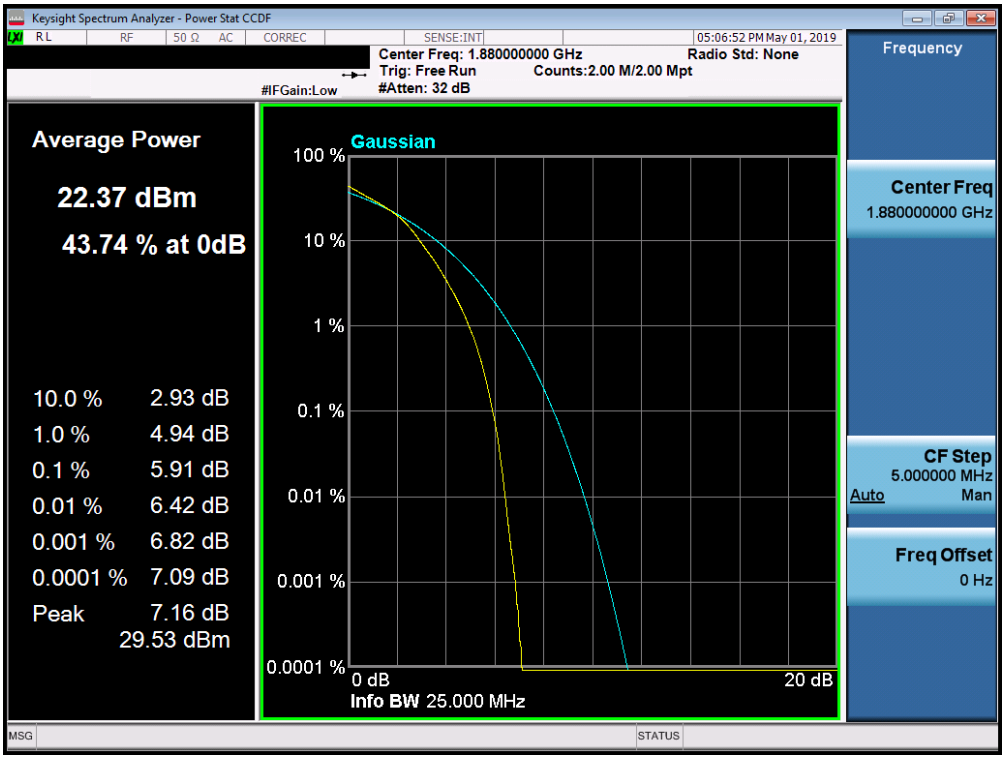
Plot 7-188. PAR Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-189. PAR Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)



Plot 7-190. PAR Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-191. 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

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Setup

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

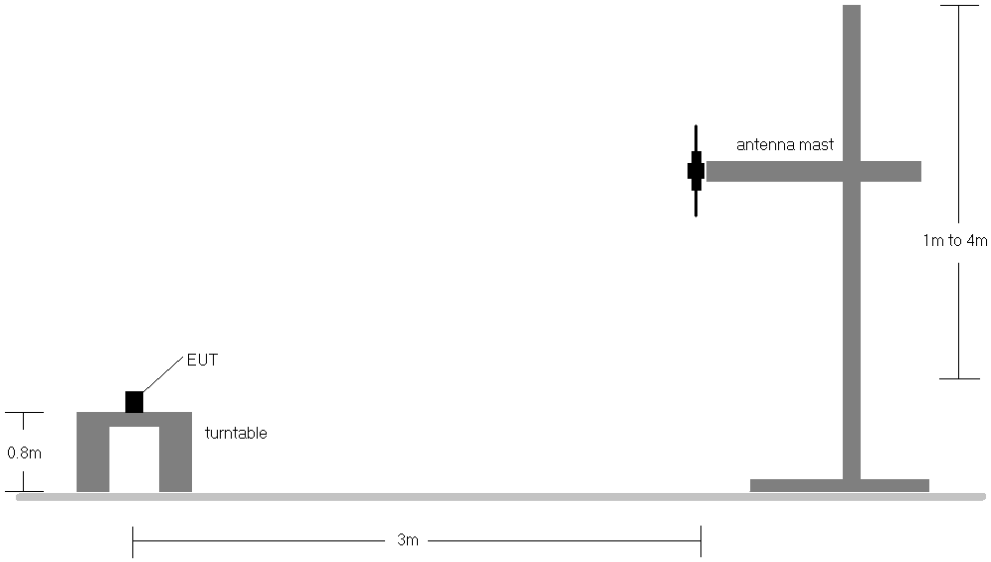


Figure 7-5. Radiated Test Setup <1GHz

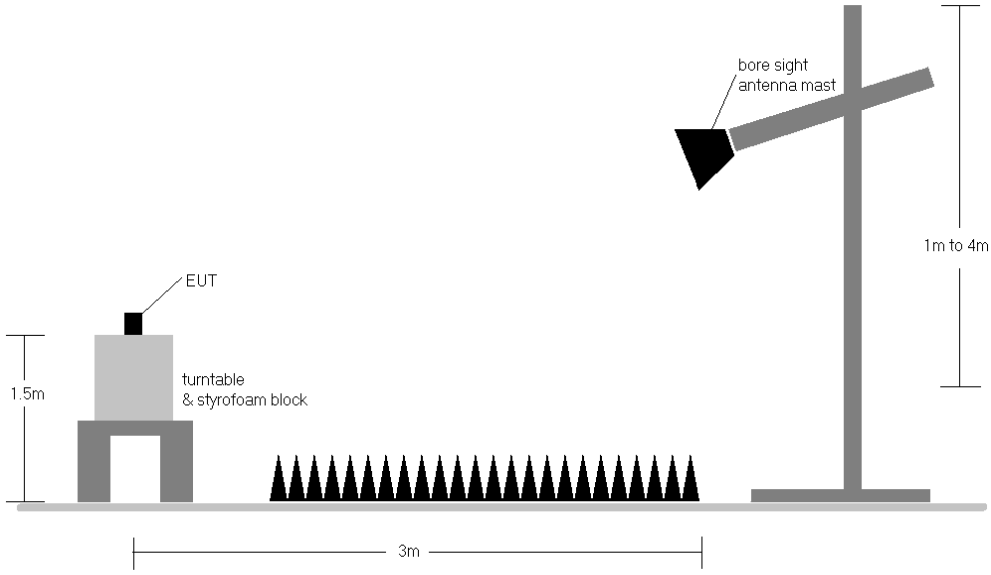


Figure 7-6. Radiated Test Setup >1GHz

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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	135	280	3 / 2	18.72	3.40	19.97	0.099	34.77	-14.80	22.12	0.163	36.99	-14.87
707.50	1.4	QPSK	H	134	276	3 / 2	18.67	3.65	20.17	0.104	34.77	-14.60	22.32	0.171	36.99	-14.67
715.30	1.4	QPSK	H	130	288	3 / 2	18.77	3.70	**20.32**	0.108	34.77	-14.45	**22.47**	0.177	36.99	-14.52
715.30	1.4	16-QAM	H	130	288	3 / 2	17.86	3.70	**19.41**	0.087	34.77	-15.36	**21.56**	0.143	36.99	-15.43
700.50	3	QPSK	H	135	283	1 / 0	18.70	3.40	19.95	0.099	34.77	-14.82	22.10	0.162	36.99	-14.89
707.50	3	QPSK	H	142	274	1 / 0	18.62	3.65	20.12	0.103	34.77	-14.65	22.27	0.169	36.99	-14.72
714.50	3	QPSK	H	134	289	1 / 0	18.65	3.70	**20.20**	0.105	34.77	-14.57	**22.35**	0.172	36.99	-14.64
714.50	3	16-QAM	H	134	289	1 / 0	18.03	3.70	**19.58**	0.091	34.77	-15.19	**21.73**	0.149	36.99	-15.26
701.50	5	QPSK	H	140	281	1 / 0	18.62	3.40	19.87	0.097	34.77	-14.90	22.02	0.159	36.99	-14.97
707.50	5	QPSK	H	139	278	1 / 0	18.62	3.65	20.12	0.103	34.77	-14.65	22.27	0.169	36.99	-14.72
713.50	5	QPSK	H	136	291	1 / 0	18.62	3.70	**20.17**	0.104	34.77	-14.60	**22.32**	0.171	36.99	-14.67
707.50	5	16-QAM	H	139	278	1 / 0	17.84	3.65	**19.34**	0.086	34.77	-15.43	**21.49**	0.141	36.99	-15.50
704.00	10	QPSK	H	137	285	1 / 49	19.00	3.50	20.35	0.108	34.77	-14.42	22.50	0.178	36.99	-14.49
707.50	10	QPSK	H	139	276	1 / 49	19.03	3.65	20.53	0.113	34.77	-14.24	22.68	0.185	36.99	-14.31
711.00	10	QPSK	H	132	290	1 / 49	18.99	3.70	**20.54**	**0.113**	34.77	-14.23	**22.69**	**0.186**	36.99	-14.30
711.00	10	16-QAM	H	132	290	1 / 49	18.11	3.70	**19.66**	0.092	34.77	-15.11	**21.81**	0.152	36.99	-15.18
711.00	10	QPSK	V	169	177	1 / 49	18.09	4.60	20.54	0.113	34.77	-14.23	22.69	0.186	36.99	-14.30

Table 7-3. ERP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	132	263	3 / 2	15.67	6.89	20.41	0.110	38.45	-18.04	22.56	0.180	40.61	-18.05
836.50	1.4	QPSK	H	120	280	3 / 2	15.73	7.08	20.66	0.117	38.45	-17.79	22.81	0.191	40.61	-17.79
848.30	1.4	QPSK	H	110	293	3 / 2	15.64	7.28	**20.77**	0.119	38.45	-17.68	**22.92**	0.196	40.61	-17.69
848.30	1.4	16-QAM	H	110	293	3 / 2	14.89	7.28	**20.02**	0.100	38.45	-18.43	**22.17**	0.165	40.61	-18.44
825.50	3	QPSK	H	134	283	1 / 0	15.61	6.90	20.36	0.109	38.45	-18.09	22.51	0.178	40.61	-18.10
836.50	3	QPSK	H	122	299	1 / 14	15.59	7.08	20.52	0.113	38.45	-17.93	22.67	0.185	40.61	-17.93
847.50	3	QPSK	H	112	300	1 / 14	15.61	7.26	**20.72**	0.118	38.45	-17.73	**22.87**	0.194	40.61	-17.73
825.50	3	16-QAM	H	134	283	1 / 0	15.25	6.90	**20.00**	0.100	38.45	-18.45	**22.15**	0.164	40.61	-18.46
826.50	5	QPSK	H	140	266	1 / 0	15.56	6.92	20.33	0.108	38.45	-18.12	22.48	0.177	40.61	-18.13
836.50	5	QPSK	H	123	278	1 / 0	15.58	7.08	20.51	0.113	38.45	-17.94	22.66	0.185	40.61	-17.94
846.50	5	QPSK	H	105	290	1 / 24	15.51	7.25	**20.61**	0.115	38.45	-17.84	**22.76**	0.189	40.61	-17.85
836.50	5	16-QAM	H	123	278	1 / 0	15.13	7.08	**20.06**	0.101	38.45	-18.39	**22.21**	0.166	40.61	-18.39
829.00	10	QPSK	H	136	267	1 / 0	16.08	6.96	**20.89**	**0.123**	38.45	-17.56	**23.04**	**0.201**	40.61	-17.57
836.50	10	QPSK	H	121	281	1 / 0	13.76	7.08	18.69	0.074	38.45	-19.76	20.84	0.121	40.61	-19.76
844.00	10	QPSK	H	108	296	1 / 0	14.26	7.21	19.32	0.085	38.45	-19.13	21.47	0.140	40.61	-19.14
829.00	10	16-QAM	H	136	267	1 / 0	15.24	6.96	**20.05**	0.101	38.45	-18.40	**22.20**	0.166	40.61	-18.41
829.00	10	QPSK	V	130	272	1 / 0	15.71	6.96	20.52	0.113	38.45	-17.93	22.67	0.185	40.61	-17.94

Table 7-4. ERP Data (Band 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	H	138	22	3 / 2	14.15	9.63	23.78	0.239	30.00	-6.22
1745.00	1.4	QPSK	H	243	8	3 / 2	14.43	9.49	23.92	0.246	30.00	-6.08
1779.30	1.4	QPSK	H	224	4	3 / 2	14.78	9.35	**24.13**	0.259	30.00	-5.87
1745.00	1.4	16-QAM	H	243	8	3 / 2	13.61	9.49	**23.10**	0.204	30.00	-6.90
1711.50	3	QPSK	H	135	14	1 / 14	14.27	9.62	23.89	0.245	30.00	-6.11
1745.00	3	QPSK	H	236	12	1 / 0	14.47	9.49	23.96	0.249	30.00	-6.04
1778.50	3	QPSK	H	227	5	1 / 14	14.84	9.35	**24.19**	0.263	30.00	-5.81
1745.00	3	16-QAM	H	236	12	1 / 0	13.85	9.49	**23.34**	0.216	30.00	-6.66
1712.50	5	QPSK	H	144	15	1 / 0	14.10	9.62	23.72	0.235	30.00	-6.28
1745.00	5	QPSK	H	235	13	1 / 0	14.26	9.49	23.75	0.237	30.00	-6.25
1777.50	5	QPSK	H	229	9	1 / 24	14.67	9.36	**24.03**	0.253	30.00	-5.97
1712.50	5	16-QAM	H	144	15	1 / 0	13.27	9.62	**22.89**	0.195	30.00	-7.11
1715.00	10	QPSK	H	135	21	1 / 49	14.25	9.61	23.86	0.243	30.00	-6.14
1745.00	10	QPSK	H	239	6	1 / 0	14.51	9.49	24.00	0.251	30.00	-6.00
1775.00	10	QPSK	H	231	6	1 / 49	14.86	9.37	**24.23**	**0.265**	30.00	-5.77
1745.00	10	16-QAM	H	239	6	1 / 49	13.45	9.49	**22.94**	0.197	30.00	-7.06
1717.50	15	QPSK	H	149	9	1 / 0	14.17	9.60	23.77	0.238	30.00	-6.23
1745.00	15	QPSK	H	240	11	1 / 74	14.51	9.49	24.00	0.251	30.00	-6.00
1772.50	15	QPSK	H	221	5	1 / 0	14.73	9.38	**24.11**	0.257	30.00	-5.89
1745.00	15	16-QAM	H	240	11	1 / 0	13.95	9.49	**23.44**	0.221	30.00	-6.56
1720.00	20	QPSK	H	142	16	1 / 99	13.99	9.59	23.58	0.228	30.00	-6.42
1745.00	20	QPSK	H	237	12	1 / 99	14.22	9.49	23.71	0.235	30.00	-6.29
1770.00	20	QPSK	H	226	10	1 / 0	14.58	9.39	**23.97**	0.249	30.00	-6.03
1745.00	20	16-QAM	H	237	12	1 / 99	13.56	9.49	**23.05**	0.202	30.00	-6.95
1775.00	10	QPSK	V	227	48	1 / 49	11.52	9.48	21.00	0.126	30.00	-9.00

Table 7-5. EIRP Data (Band 66/4)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	305	15	6 / 0	14.48	9.07	23.55	0.226	33.01	-9.47
1880.00	1.4	QPSK	H	107	5	6 / 0	15.75	9.15	24.90	0.309	33.01	-8.11
1909.30	1.4	QPSK	H	152	-2	6 / 0	15.65	9.27	**24.92**	0.310	33.01	-8.09
1909.30	1.4	16-QAM	H	152	-2	3 / 2	14.72	9.27	**23.99**	0.251	33.01	-9.02
1851.50	3	QPSK	H	301	22	1 / 0	14.31	9.07	23.38	0.218	33.01	-9.63
1880.00	3	QPSK	H	116	8	1 / 0	15.56	9.15	24.71	0.296	33.01	-8.30
1908.50	3	QPSK	H	153	10	1 / 14	15.62	9.26	**24.88**	0.308	33.01	-8.13
1908.50	3	16-QAM	H	153	10	1 / 14	14.84	9.26	**24.10**	0.257	33.01	-8.91
1852.50	5	QPSK	H	308	12	1 / 0	14.38	9.07	23.45	0.221	33.01	-9.56
1880.00	5	QPSK	H	113	16	1 / 0	15.53	9.15	24.68	0.294	33.01	-8.33
1907.50	5	QPSK	H	155	1	1 / 0	15.44	9.26	**24.70**	0.295	33.01	-8.31
1907.50	5	16-QAM	H	155	1	1 / 24	14.55	9.26	**23.81**	0.240	33.01	-9.20
1855.00	10	QPSK	H	304	17	1 / 0	14.38	9.08	23.46	0.222	33.01	-9.55
1880.00	10	QPSK	H	112	4	1 / 0	15.51	9.15	24.66	0.292	33.01	-8.35
1905.00	10	QPSK	H	153	7	1 / 49	15.54	9.24	**24.78**	0.301	33.01	-8.23
1905.00	10	16-QAM	H	153	7	1 / 49	14.50	9.24	**23.74**	0.237	33.01	-9.27
1857.50	15	QPSK	H	305	18	1 / 0	14.36	9.08	23.44	0.221	33.01	-9.57
1880.00	15	QPSK	H	116	16	1 / 74	15.62	9.15	24.77	0.300	33.01	-8.24
1902.50	15	QPSK	H	142	7	1 / 74	15.71	9.22	**24.93**	**0.311**	33.01	-8.08
1880.00	15	16-QAM	H	116	16	1 / 0	15.01	9.15	**24.16**	0.260	33.01	-8.85
1860.00	20	QPSK	H	302	16	1 / 99	14.21	9.09	23.30	0.214	33.01	-9.71
1880.00	20	QPSK	H	111	10	1 / 99	15.48	9.15	24.63	0.290	33.01	-8.38
1900.00	20	QPSK	H	148	3	1 / 0	15.43	9.20	**24.63**	0.291	33.01	-8.38
1900.00	20	16-QAM	H	148	3	1 / 0	14.66	9.20	**23.86**	0.243	33.01	-9.15
15.00	QPSK	H	V	142	52	1 / 74	14.20	9.09	23.29	0.213	33.01	-9.72

Table 7-6. EIRP Data (Band 2)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	H	112	334	1 / 24	11.03	8.71	19.74	0.094	23.98	-4.24
2312.50	5	QPSK	H	112	324	1 / 24	11.14	8.71	**19.85**	**0.097**	23.98	-4.13
2307.50	5	16-QAM	H	122	333	1 / 0	10.01	8.71	18.72	0.074	23.98	-5.26
2310.00	10	QPSK	H	115	330	1 / 0	11.14	8.71	**19.85**	0.097	23.98	-4.13
2310.00	10	16-QAM	H	115	330	1 / 0	10.18	8.71	18.89	0.077	23.98	-5.09
2312.50	5	QPSK	V	146	104	1 / 24	6.51	8.69	15.20	0.033	23.98	-8.78

Table 7-7. EIRP Data (Band 30)

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.

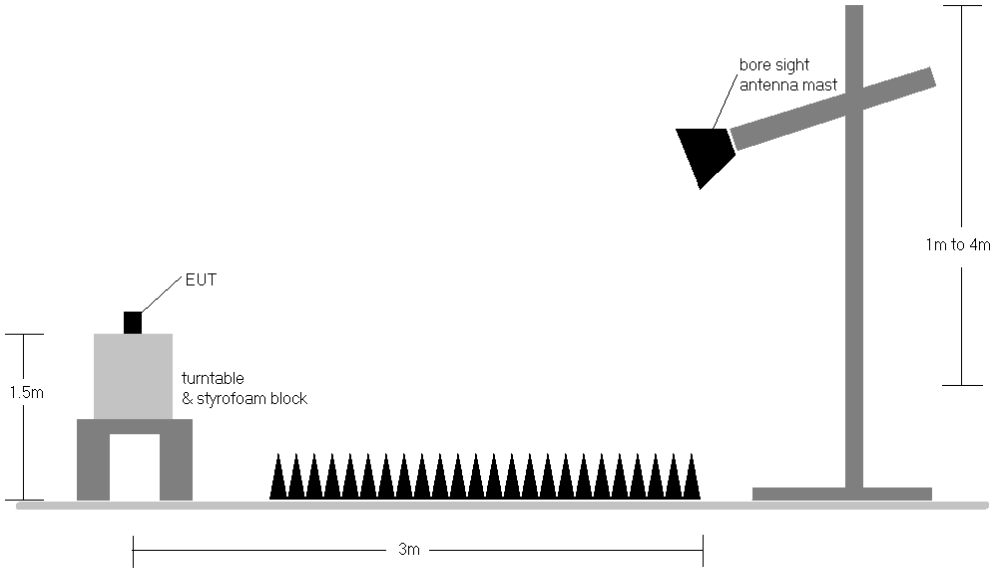


Figure 7-7. Test Instrument & Measurement Setup

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.

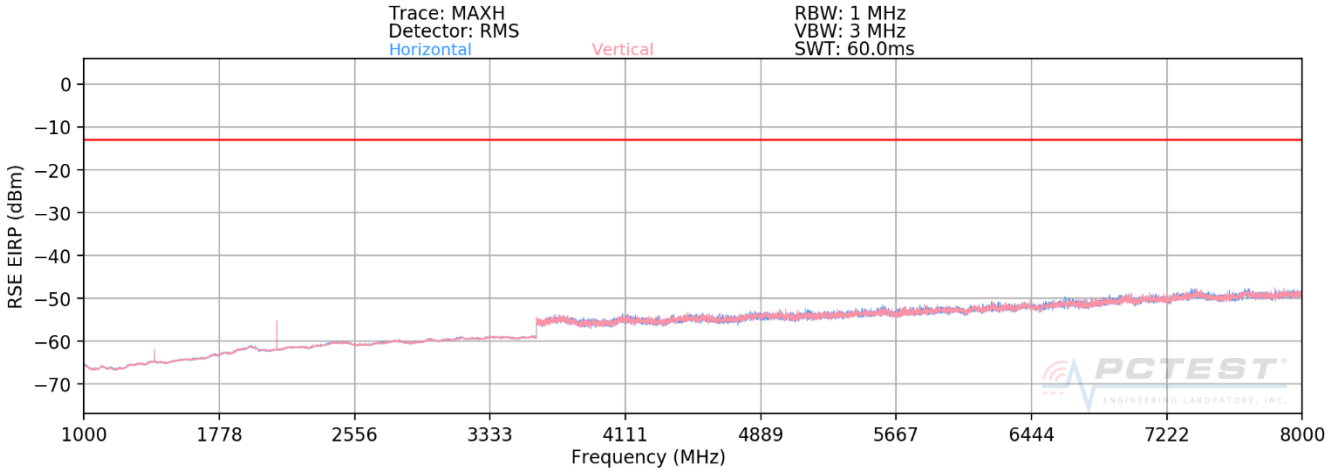
2) This unit was tested with its standard battery.

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



Plot 7-192. Radiated Spurious Plot above 1GHz (Band 12)

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	106	339	-67.10	2.30	-64.80	-51.8
2112.00	V	101	164	-61.65	3.12	-58.53	-45.5
2816.00	V	-	-	-67.63	4.82	-62.81	-49.8
3520.00	V	-	-	-68.49	6.48	-62.01	-49.0

Table 7-8. Radiated Spurious Data (Band 12 – 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	397	173	-65.13	2.39	-62.74	-49.7
2122.50	V	165	177	-60.54	3.14	-57.39	-44.4
2830.00	V	-	-	-67.54	4.87	-62.67	-49.7
3537.50	V	-	-	-68.08	6.45	-61.62	-48.6

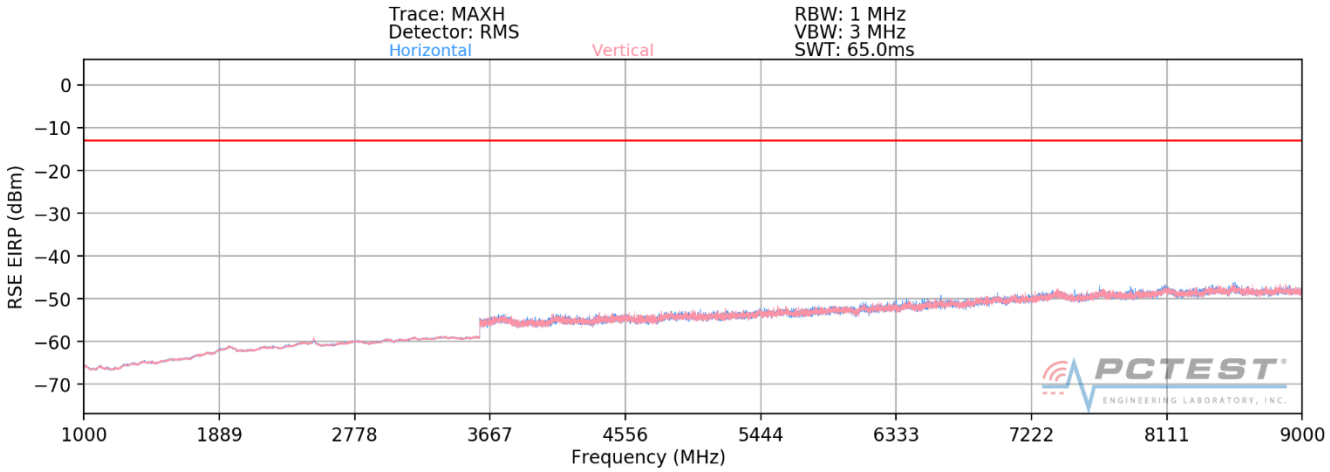
Table 7-9. Radiated Spurious Data (Band 12 – Mid Channel)

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	396	366	-66.71	2.53	-64.18	-51.2
2133.00	V	161	175	-59.16	3.11	-56.05	-43.1
2844.00	V	-	-	-68.06	4.91	-63.16	-50.2
3555.00	V	-	-	-67.50	6.46	-61.05	-48.0

Table 7-10. Radiated Spurious Data (Band 12 – High Channel)

Band 5



Plot 7-193. Radiated Spurious Plot above 1GHz (Band 5)

OPERATING FREQUENCY:	829.00	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]
1658.00	V	108	25	-64.54	3.12	-61.42	-48.4
2487.00	V	161	358	-62.00	3.87	-58.13	-45.1
3316.00	V	-	-	-68.69	6.01	-62.68	-49.7
4145.00	V	-	-	-69.50	7.77	-61.73	-48.7

Table 7-11. Radiated Spurious Data (Band 5 – Low Channel)

OPERATING FREQUENCY:	836.50	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]
1673.00	V	138	145	-63.32	3.10	-60.22	-47.2
2509.50	V	155	359	-63.09	4.02	-59.08	-46.1
3346.00	V	-	-	-68.21	6.03	-62.18	-49.2
4182.50	V	-	-	-69.24	7.79	-61.44	-48.4

Table 7-12. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY:	844.00	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]
1688.00	V	154	31	-63.69	3.18	-60.51	-47.5
2532.00	V	123	218	-61.13	4.10	-57.03	-44.0
3376.00	V	-	-	-67.92	6.15	-61.78	-48.8
4220.00	V	-	-	-70.22	7.88	-62.34	-49.3

Table 7-13. Radiated Spurious Data (Band 5 – High Channel)