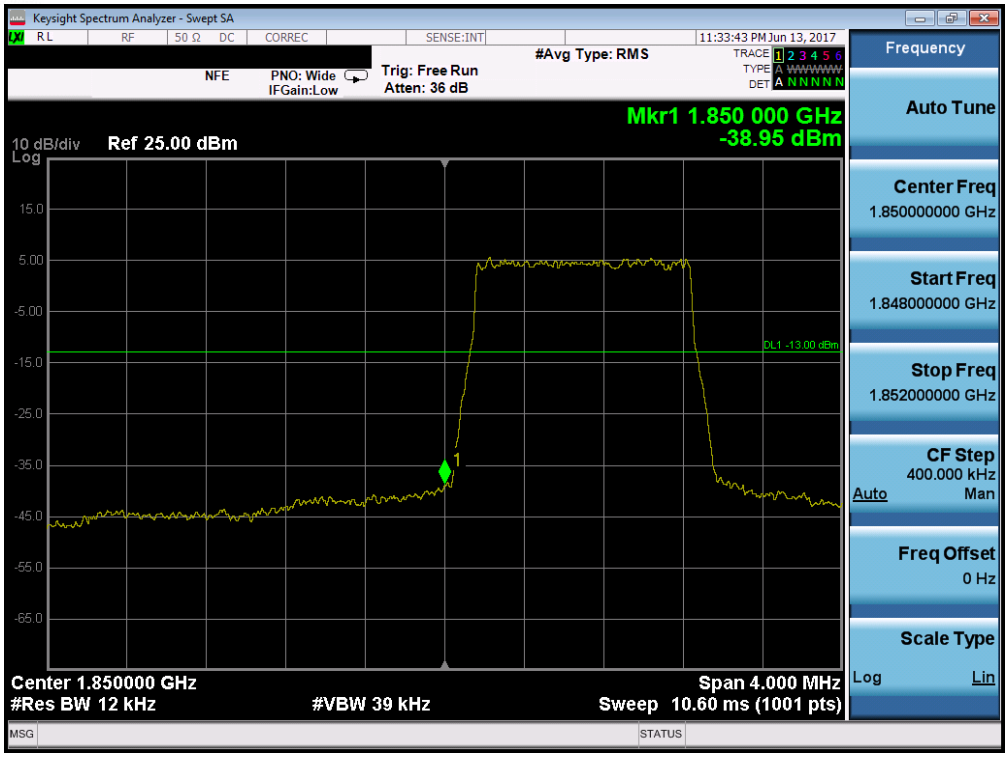
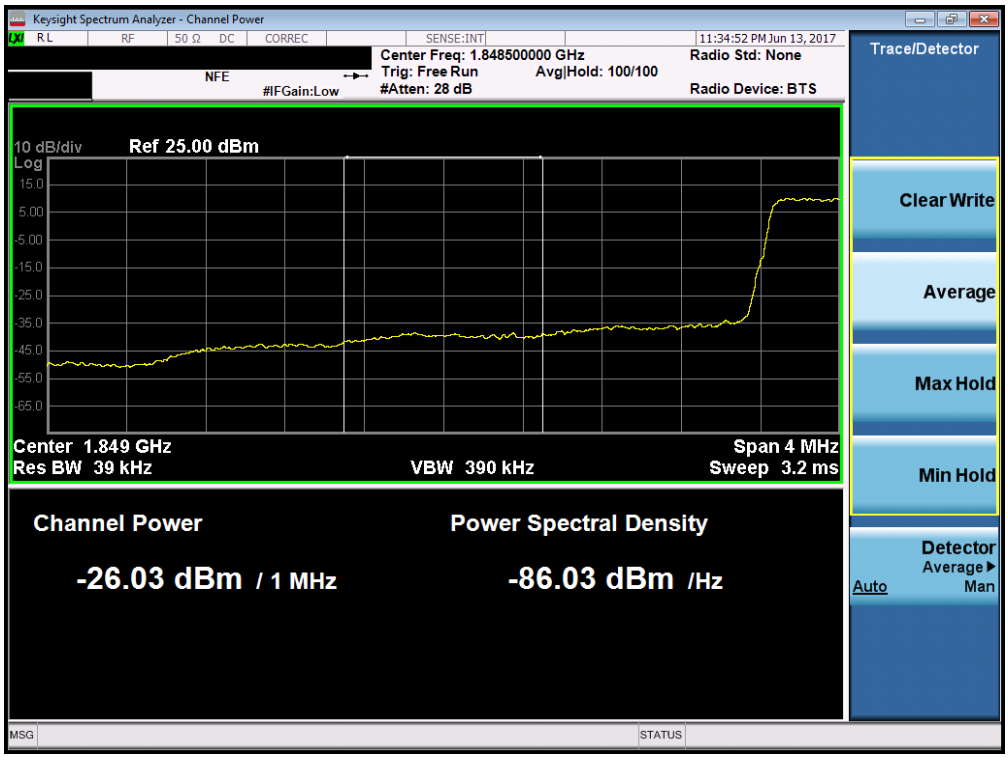


Plot 7-225. Lower Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)



Plot 7-226. Lower Extended Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

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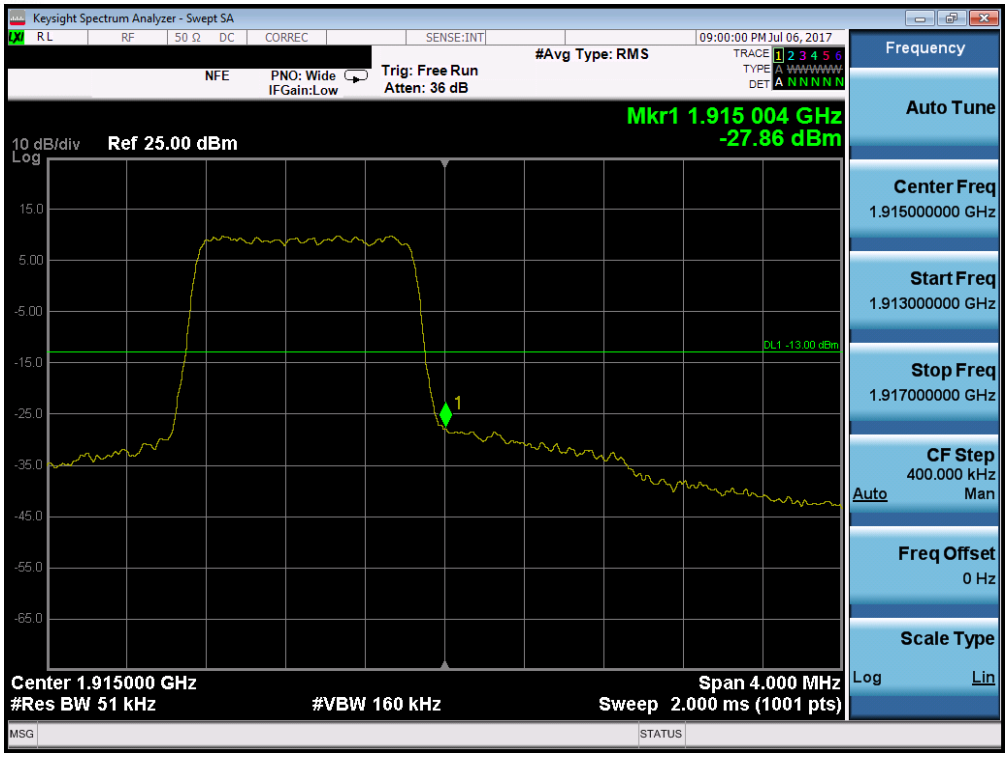
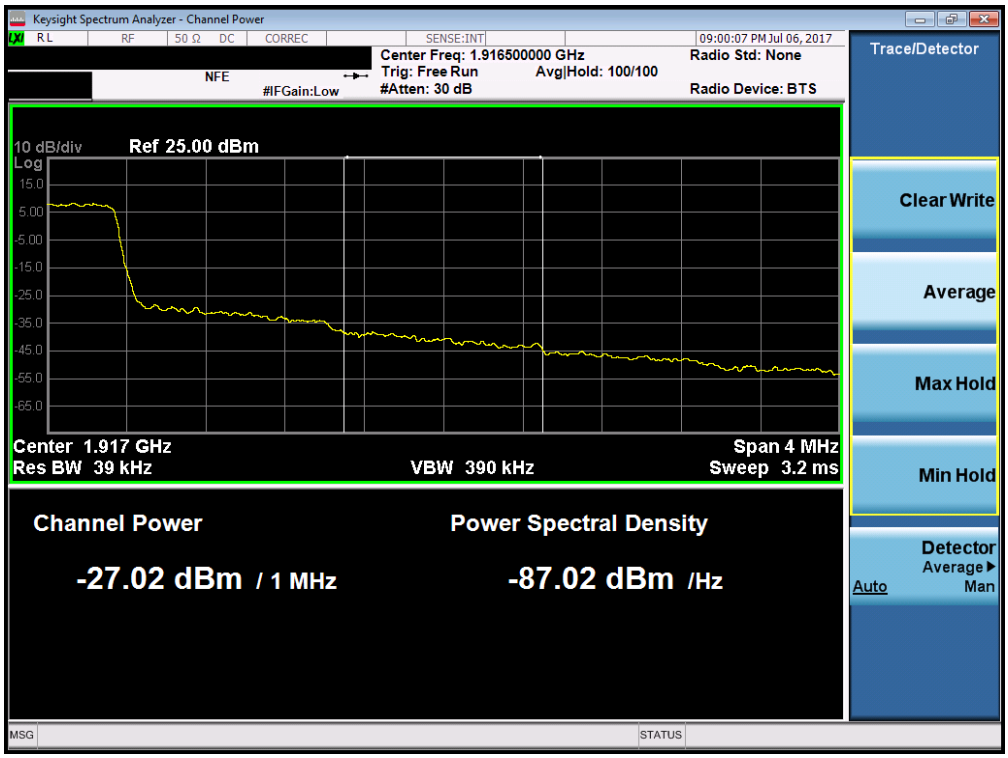


Plot 7-227. Upper Band Edge Plot (Band 25 – 1.4MHz QPSK – RB Size 6)



Plot 7-228. Upper Extended Band Edge Plot (Band 25 – 1.4MHz QPSK – RB Size 6)

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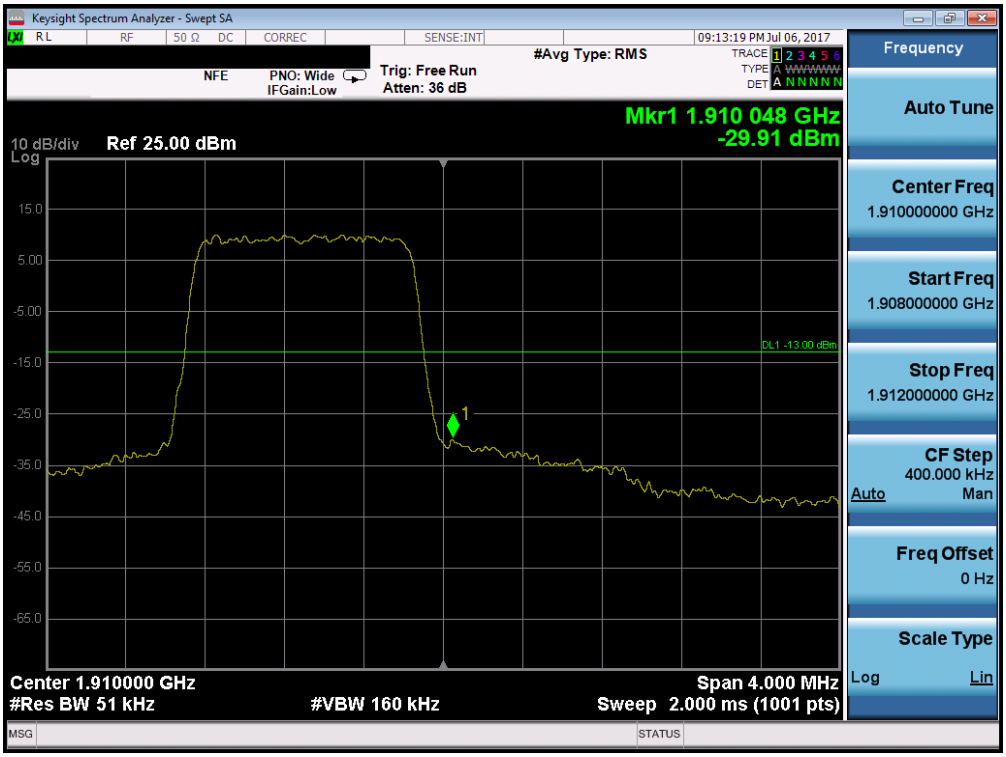
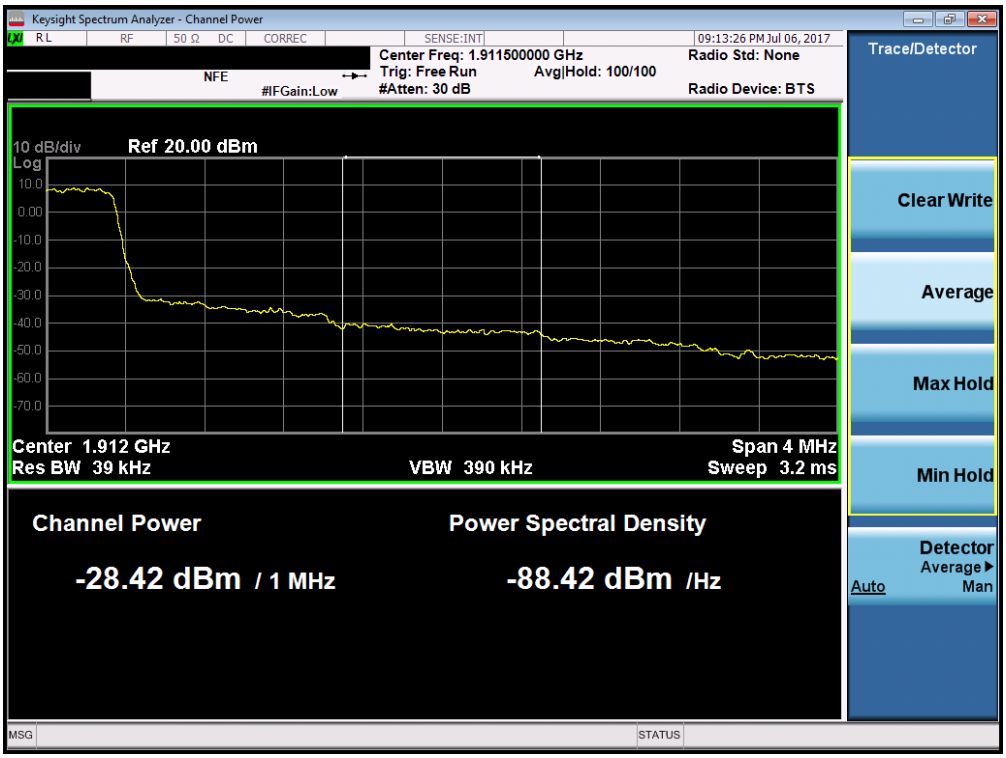


Plot 7-229. Upper Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



Plot 7-230. Upper Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

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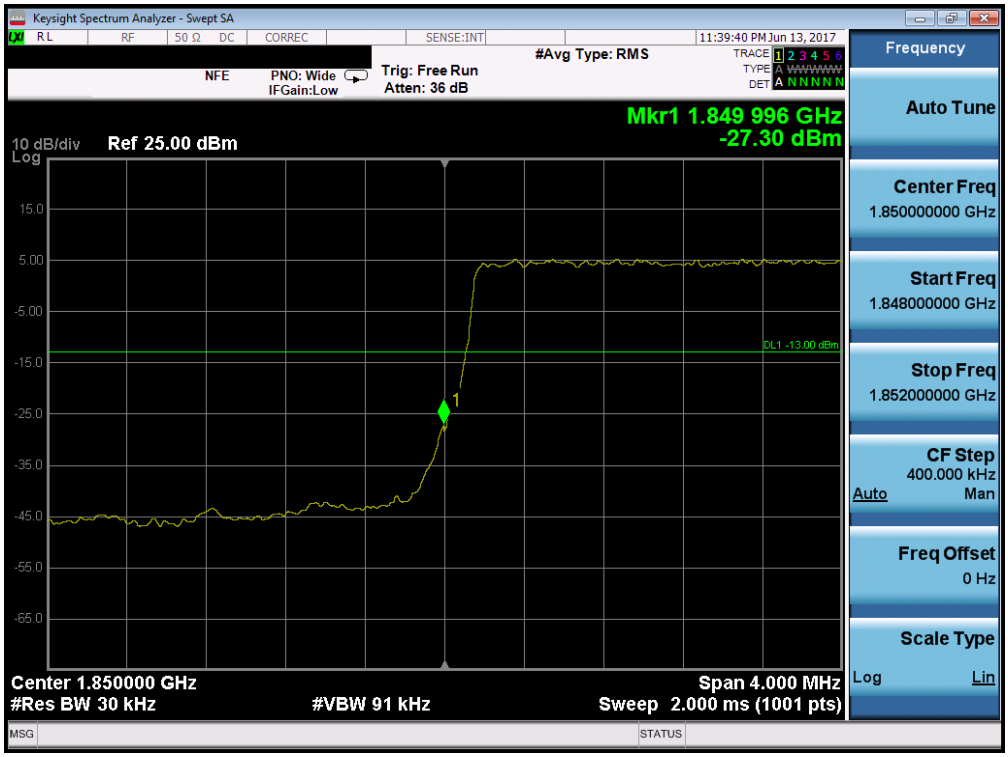
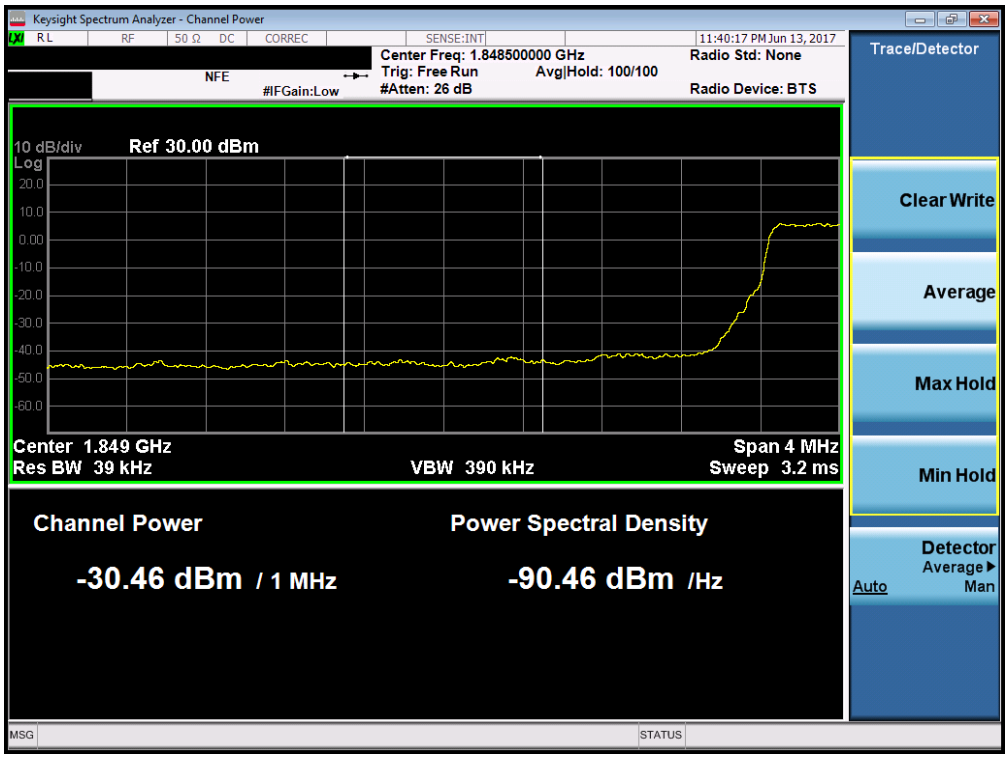


Plot 7-231. Lower Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)



Plot 7-232. Lower Extended Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

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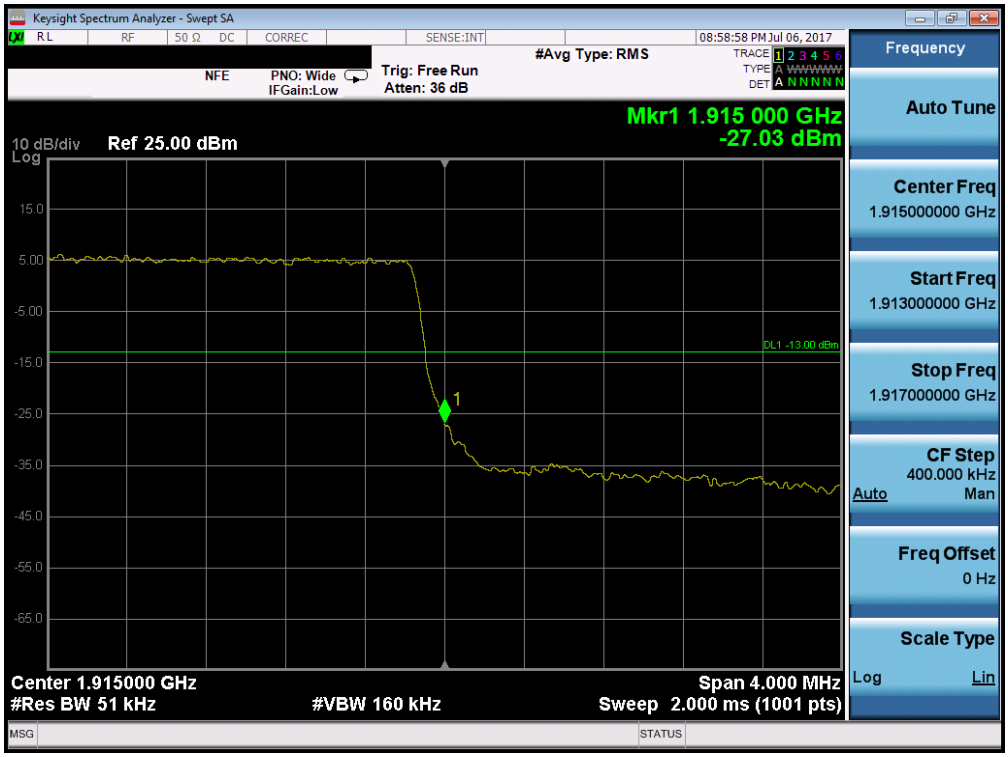
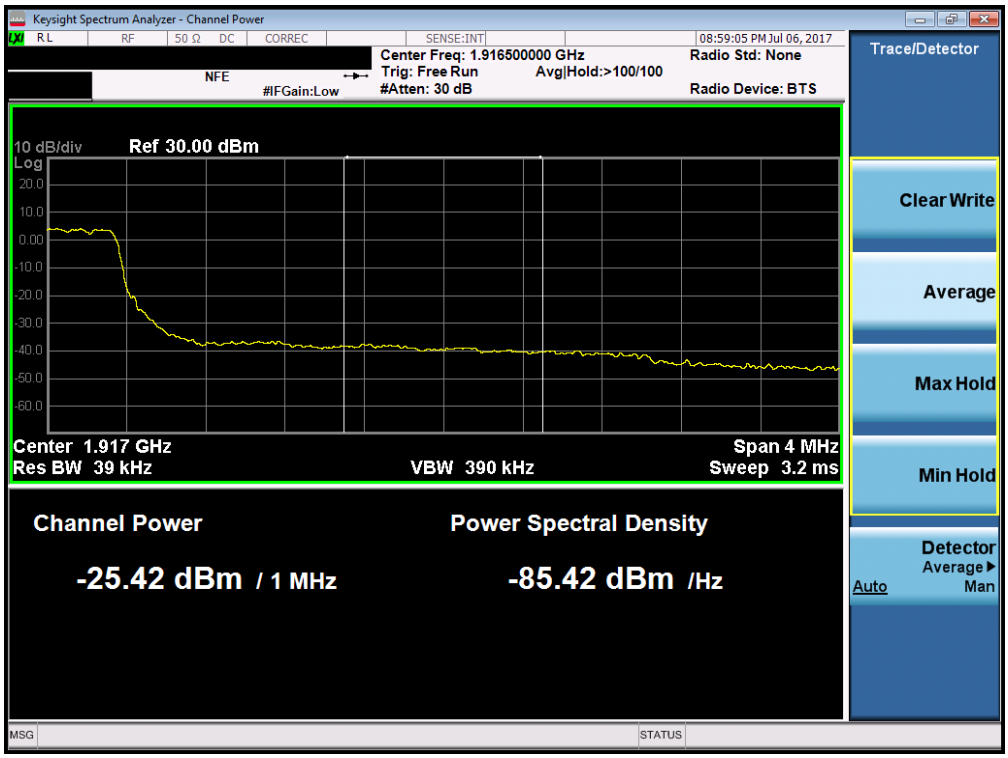


Plot 7-233. Upper Band Edge Plot (Band 25 – 3.0MHz QPSK – RB Size 15)



Plot 7-234. Upper Extended Band Edge Plot (Band 25 – 3.0MHz QPSK – RB Size 15)

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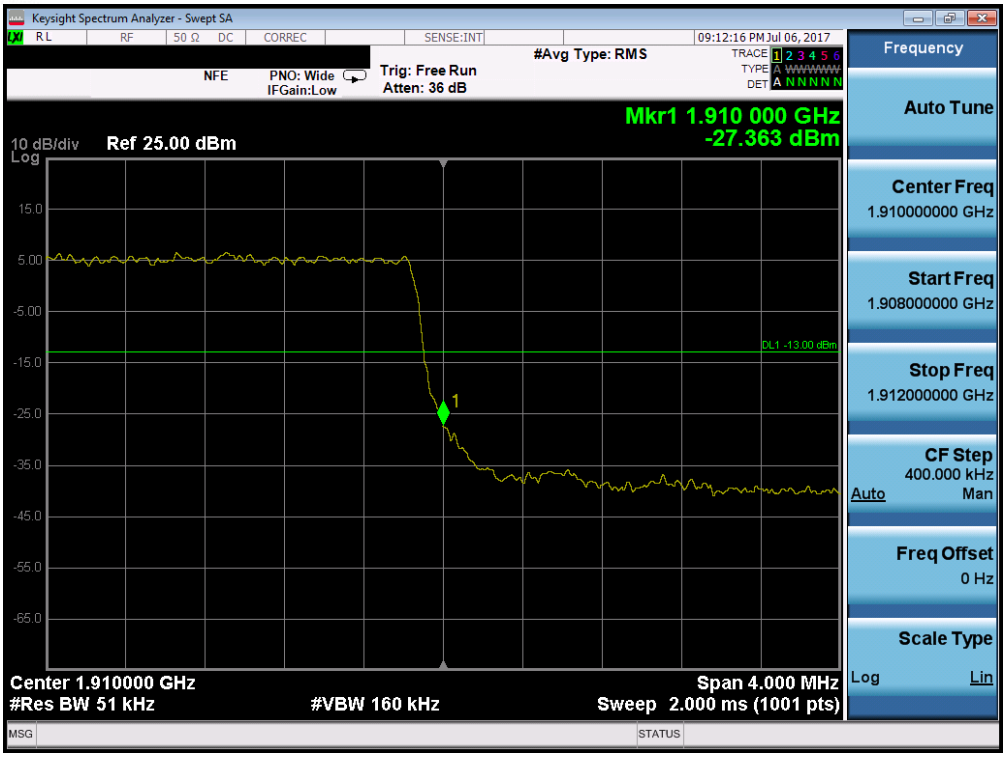
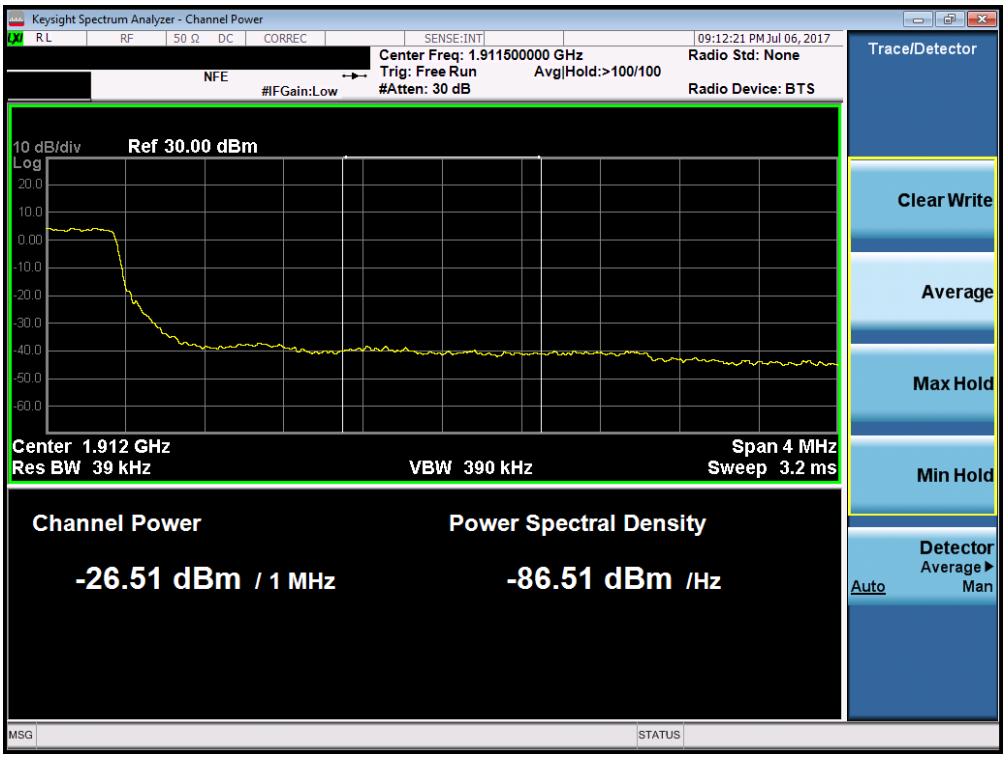


Plot 7-235. Upper Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)



Plot 7-236. Upper Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

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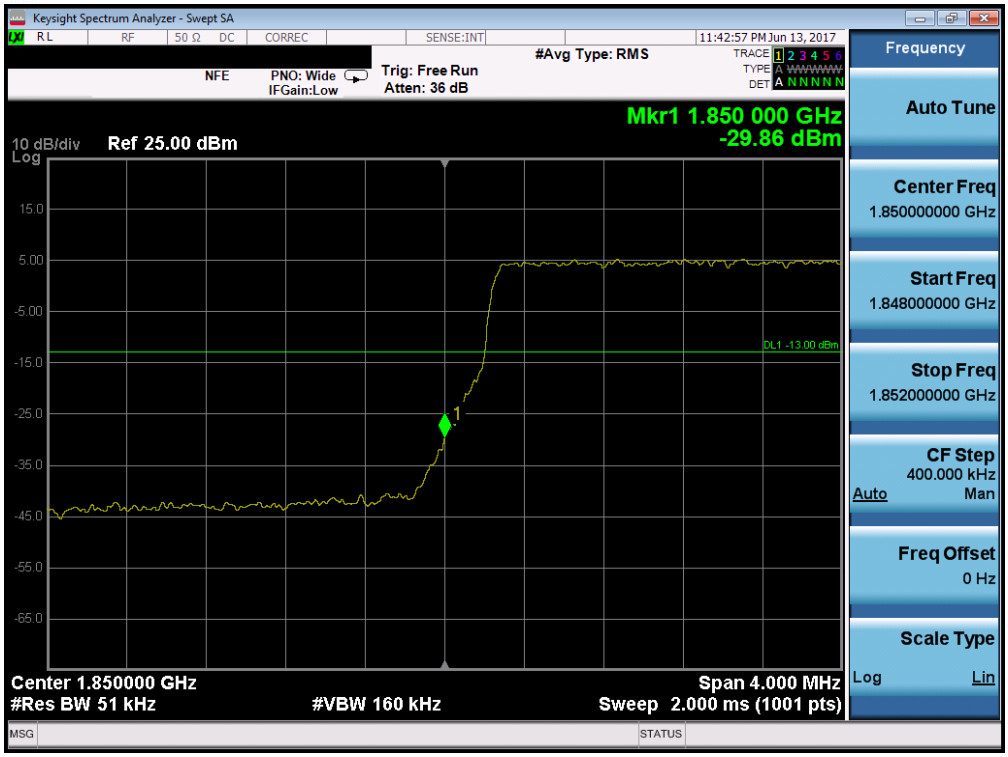
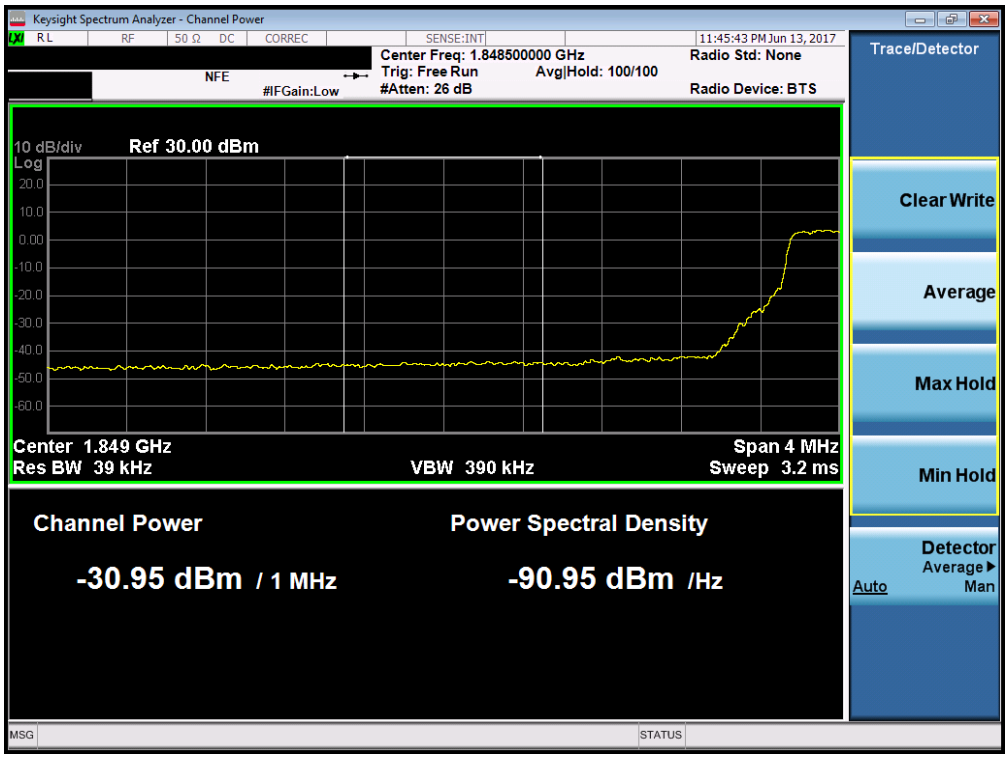


Plot 7-237. Lower Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)



Plot 7-238. Lower Extended Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

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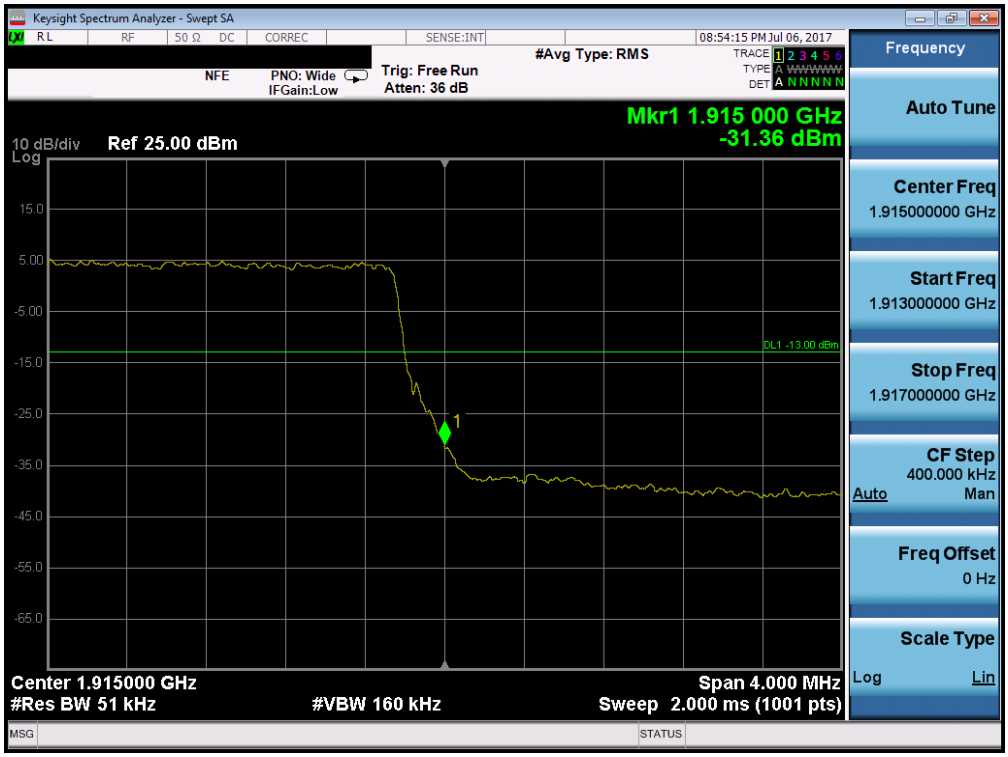
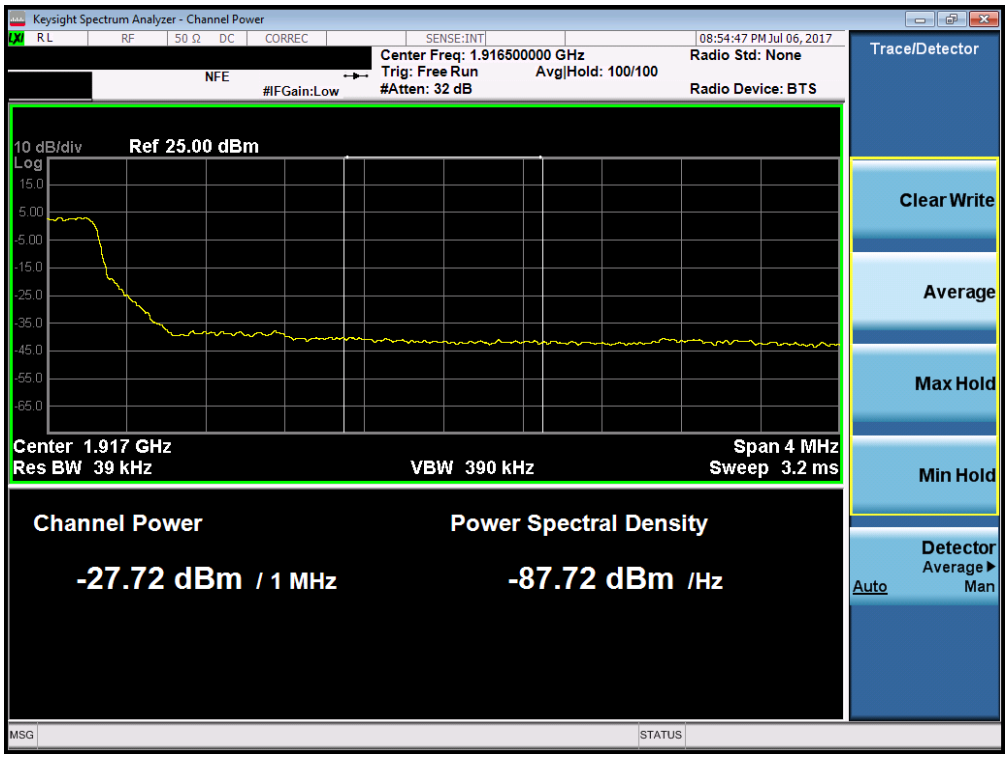


Plot 7-239. Upper Band Edge Plot (Band 25 – 5.0MHz QPSK – RB Size 25)



Plot 7-240. Upper Extended Band Edge Plot (Band 25 – 5.0MHz QPSK – RB Size 25)

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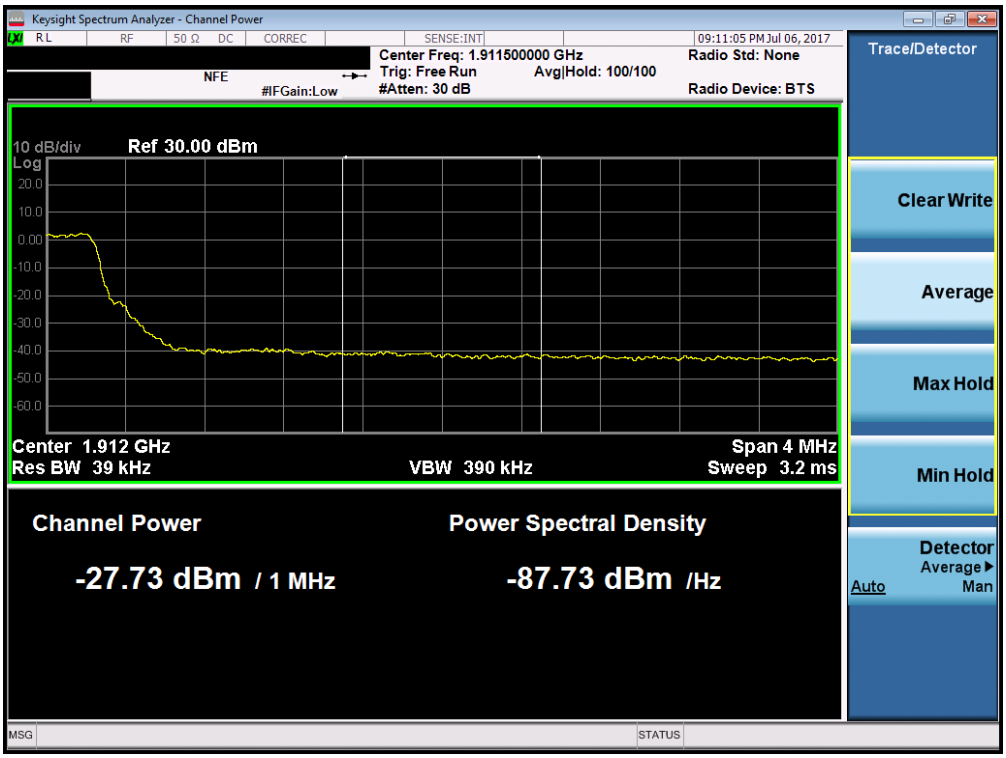
Plot 7-241. Upper Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



Plot 7-242. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

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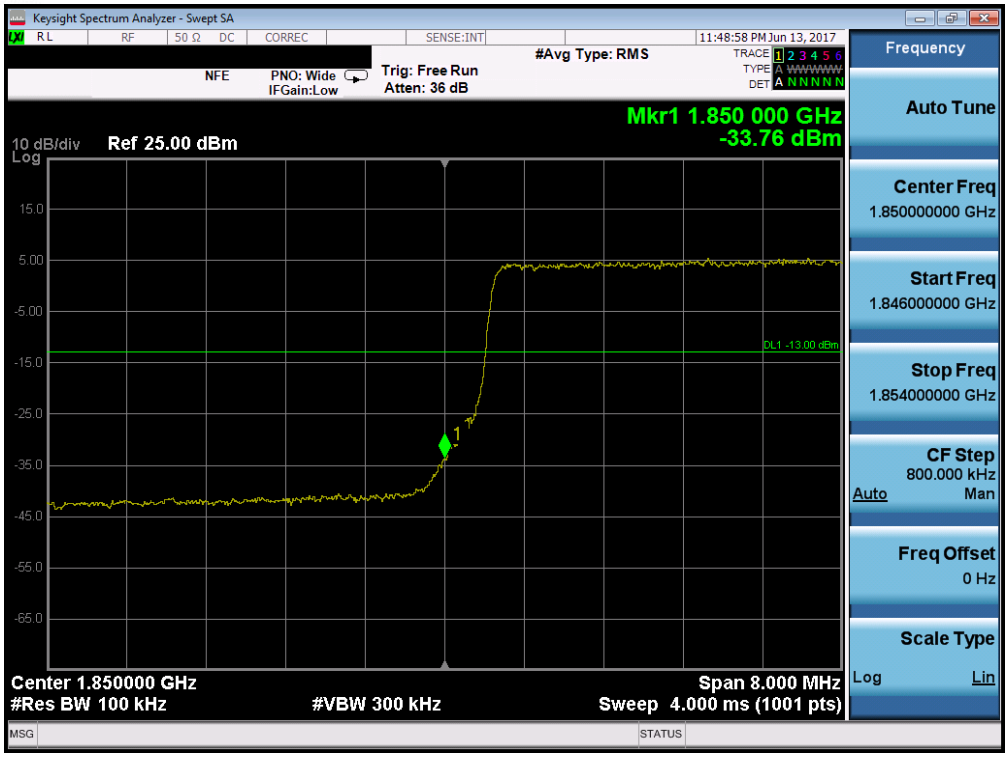
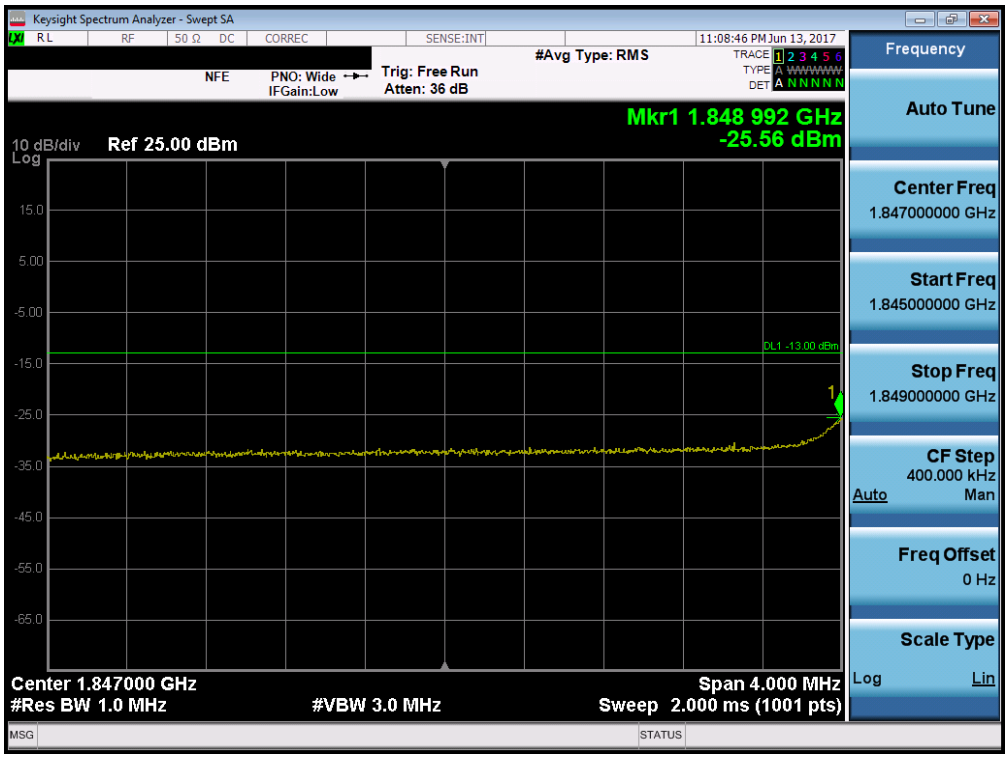


Plot 7-243. Lower Band Edge Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)



Plot 7-244. Lower Extended Band Edge Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

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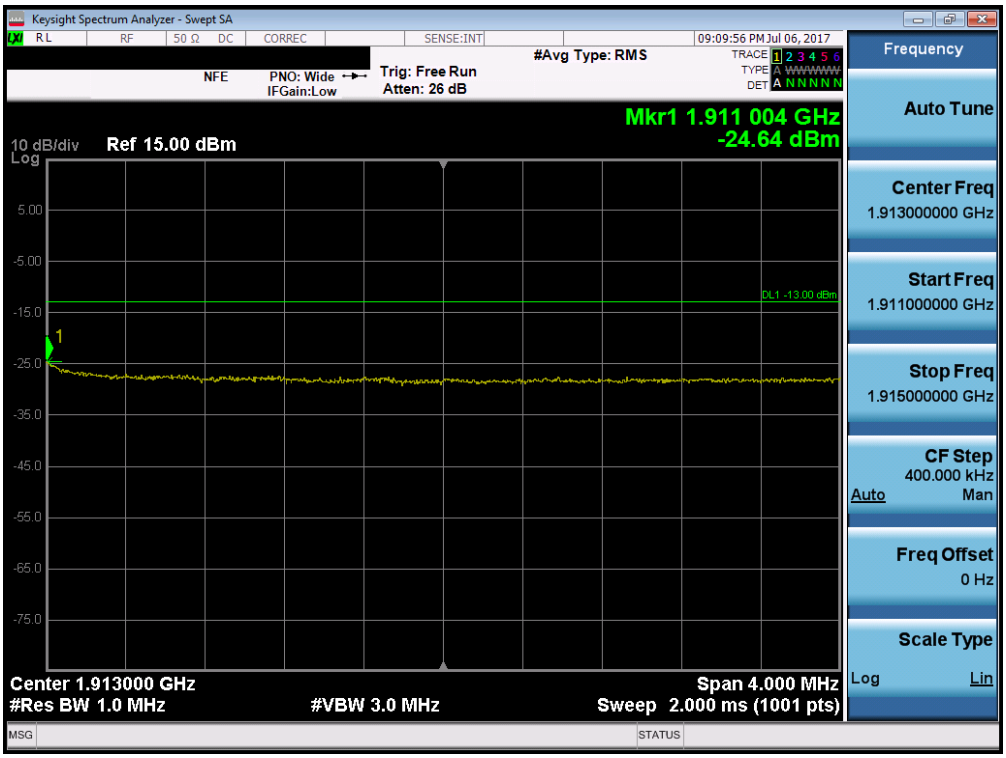
Plot 7-245. Upper Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



Plot 7-246. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

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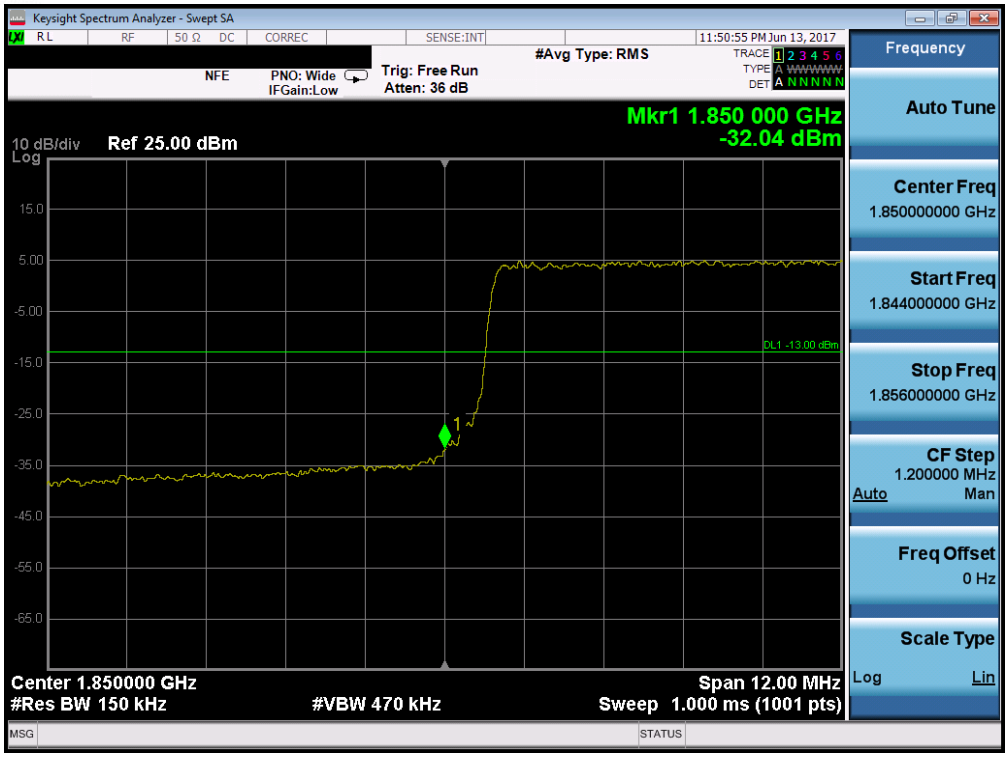

Plot 7-247. Lower Band Edge Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

Plot 7-248. Lower Extended Band Edge Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

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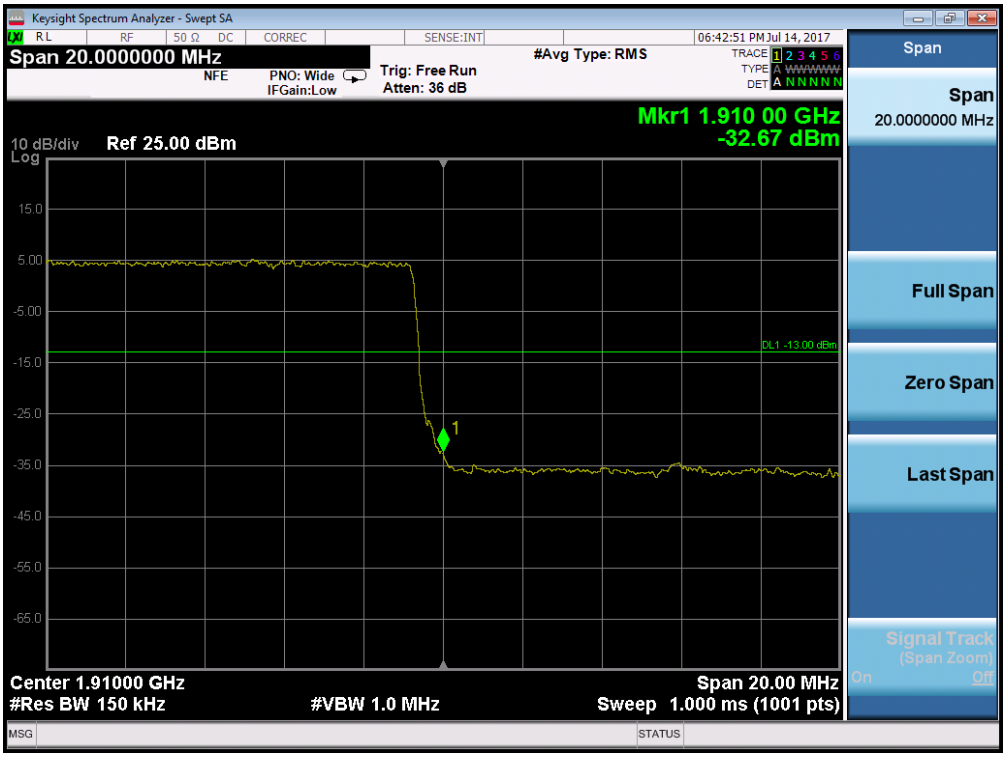
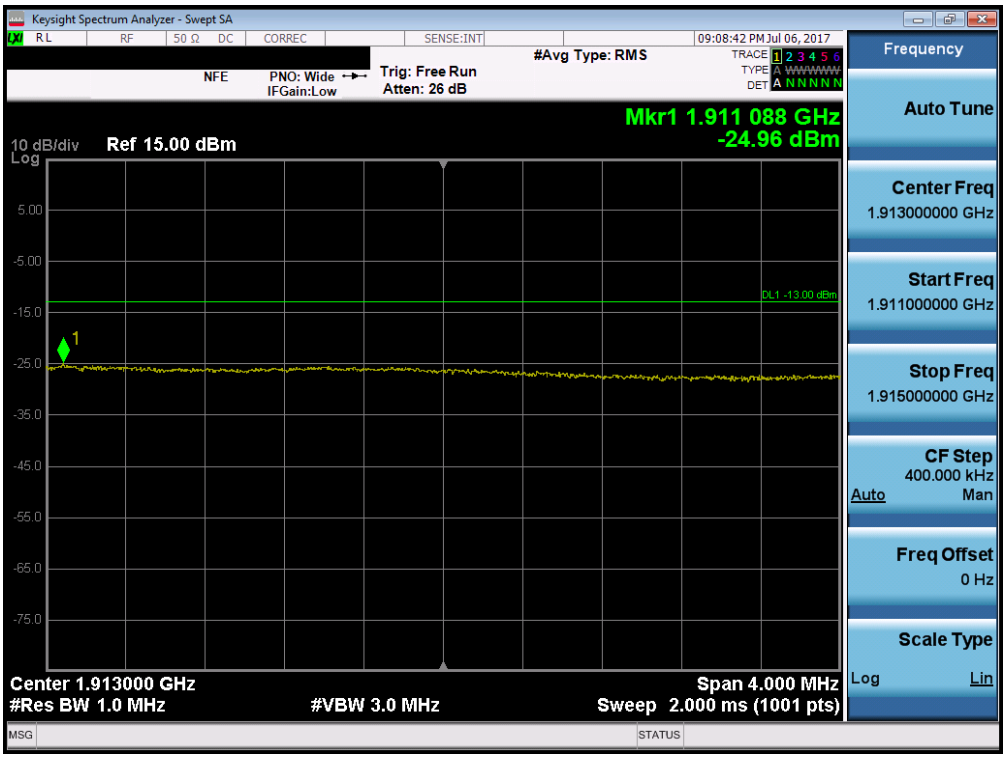


Plot 7-249. Upper Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 7-250. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

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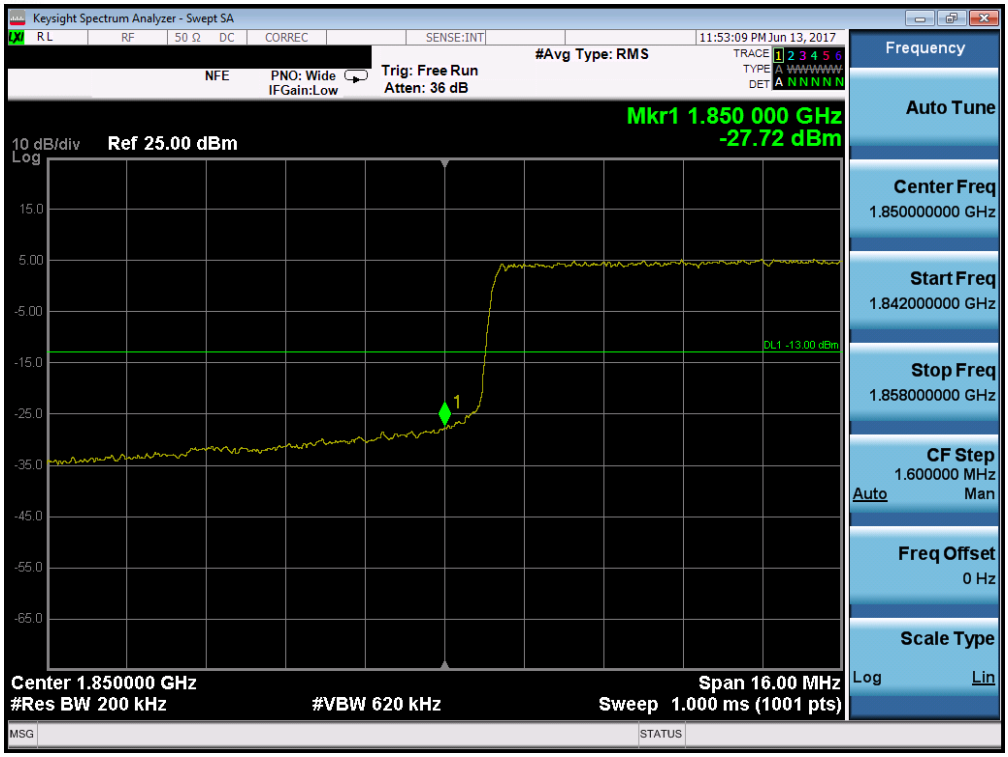
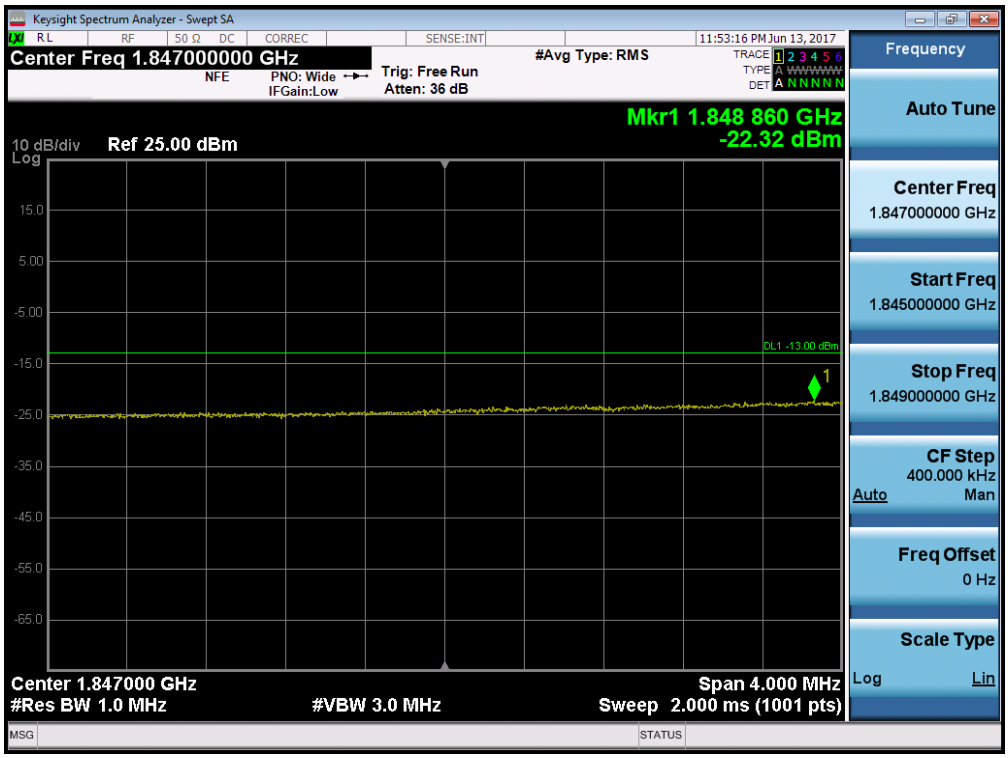


Plot 7-251. Lower Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)



Plot 7-252. Lower Extended Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

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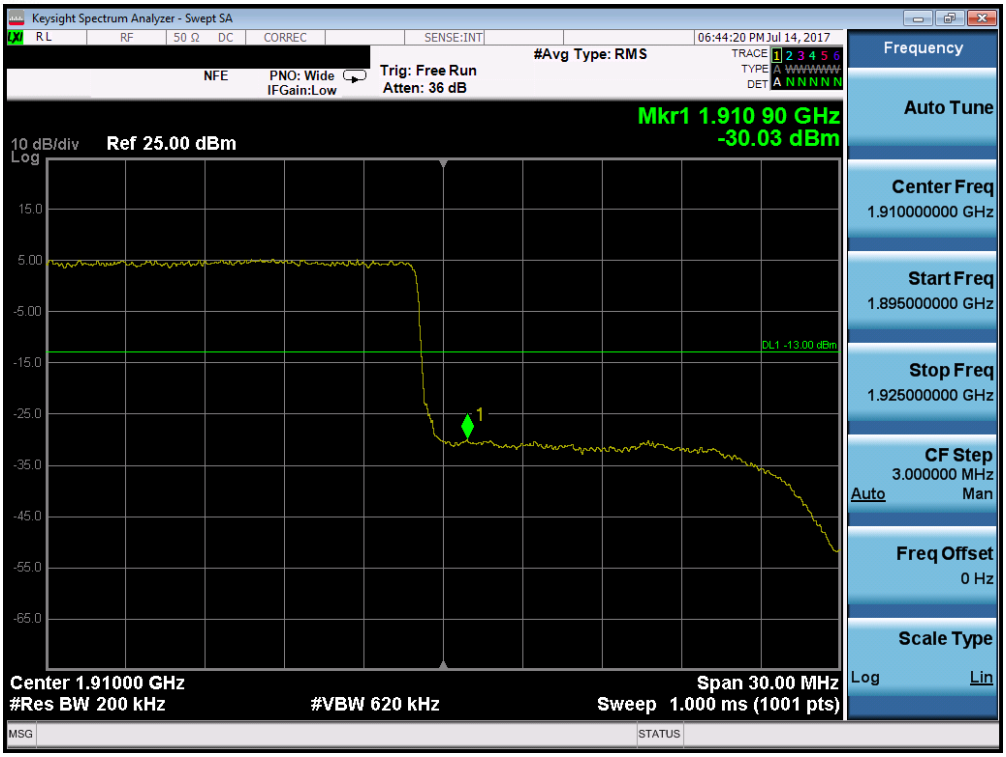
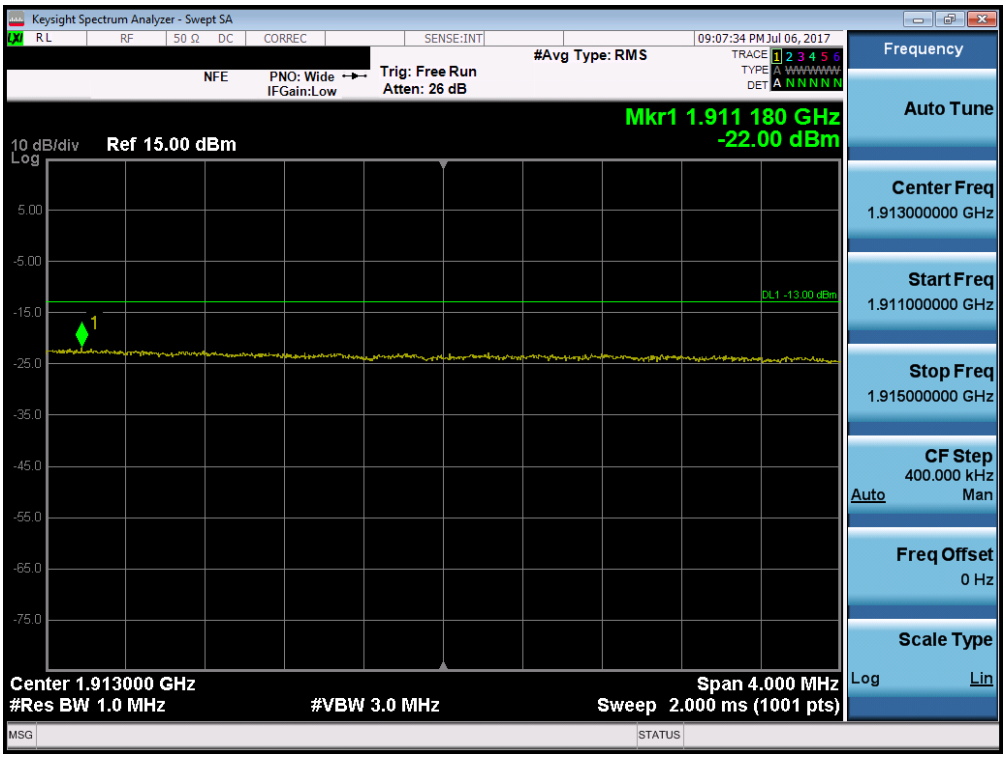


Plot 7-253. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-254. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

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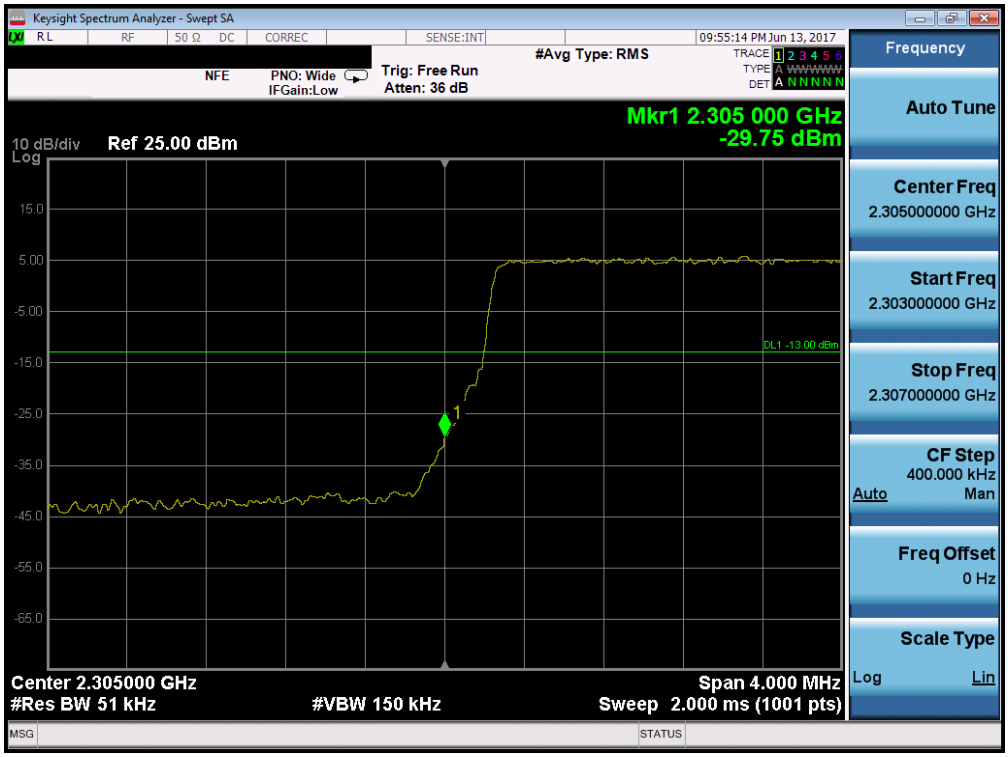

Plot 7-255. Lower Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

Plot 7-256. Lower Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

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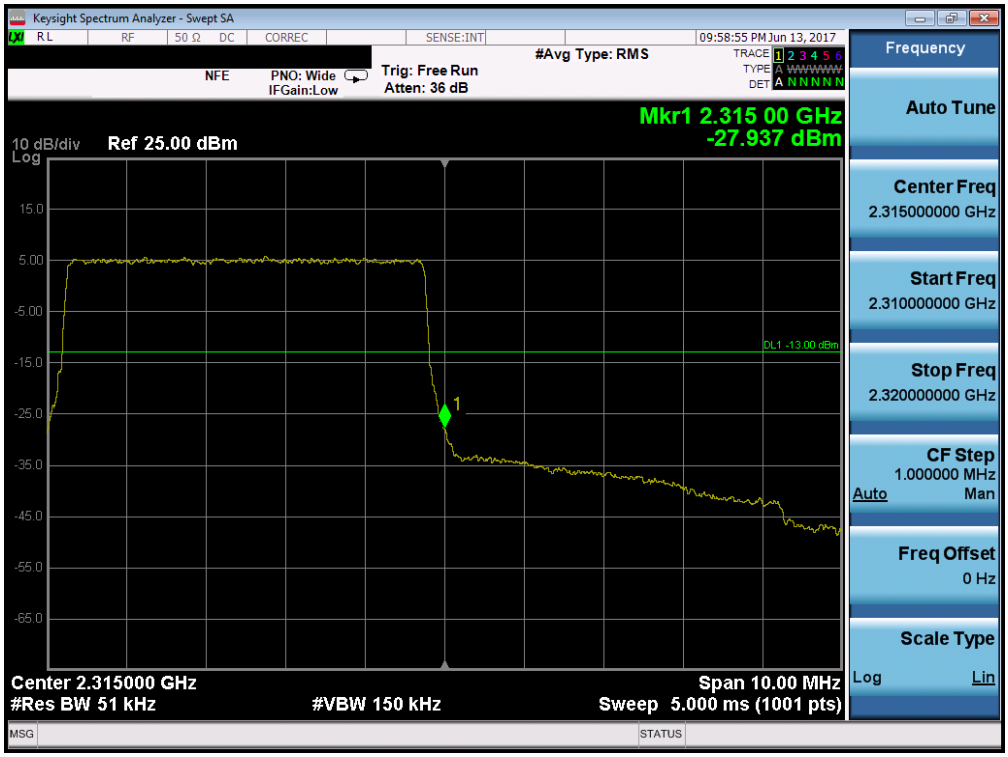
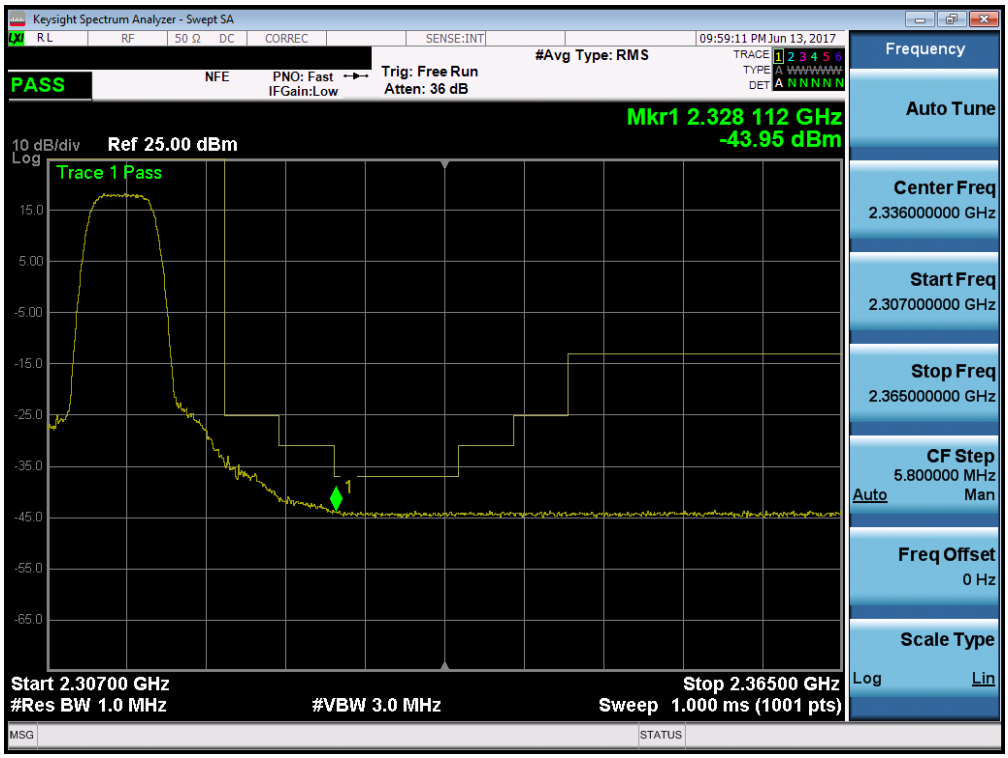


Plot 7-257. Upper Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)



Plot 7-258. Upper Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

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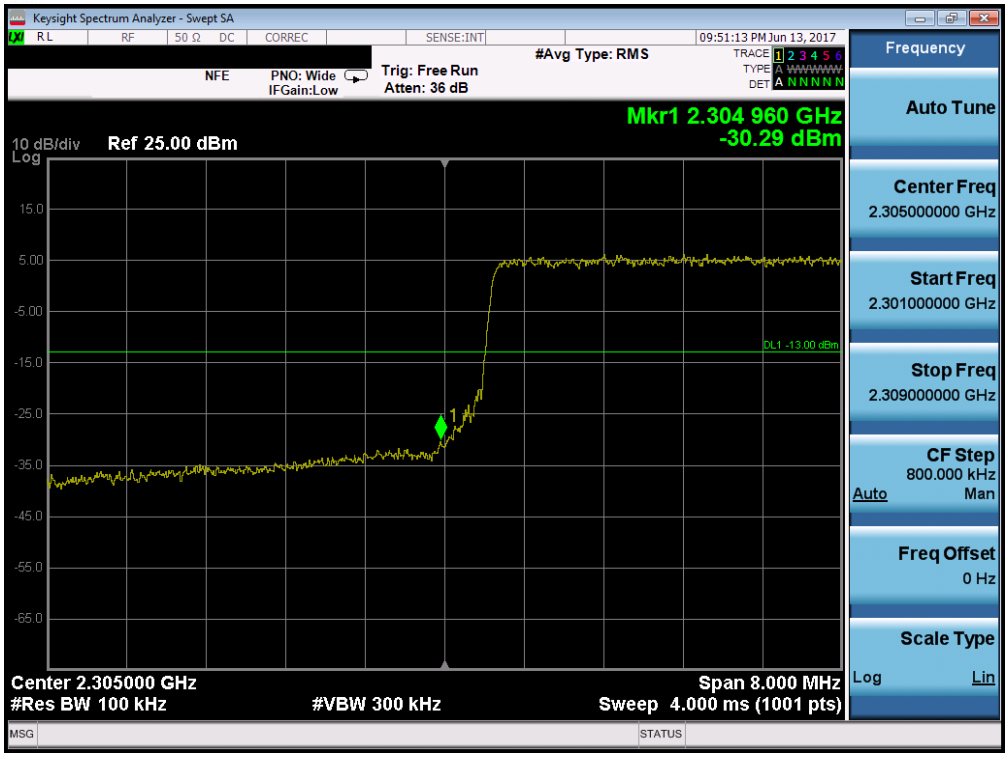
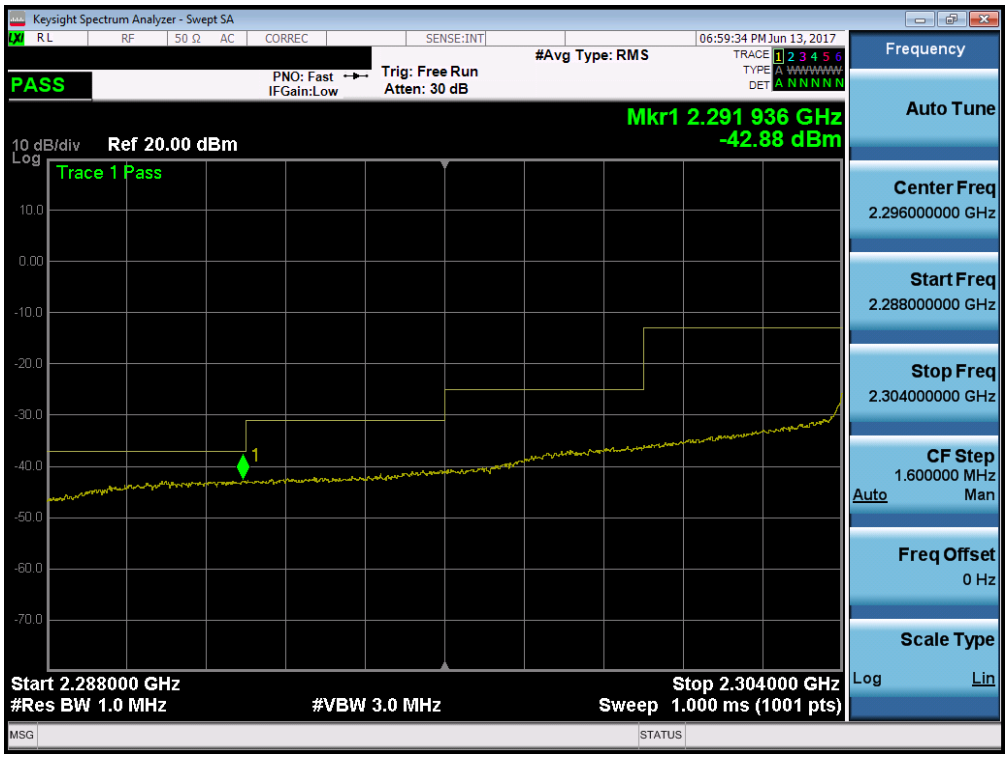


Plot 7-259. Lower Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)



Plot 7-260. Lower Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

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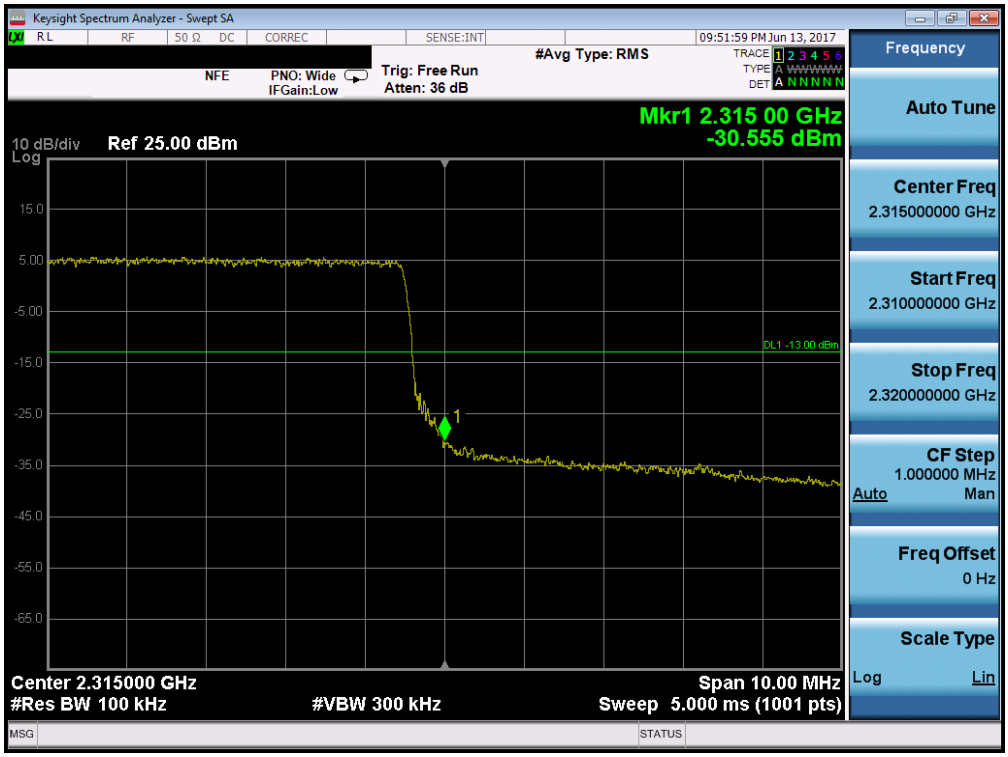

Plot 7-261. Upper Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

Plot 7-262. Upper Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

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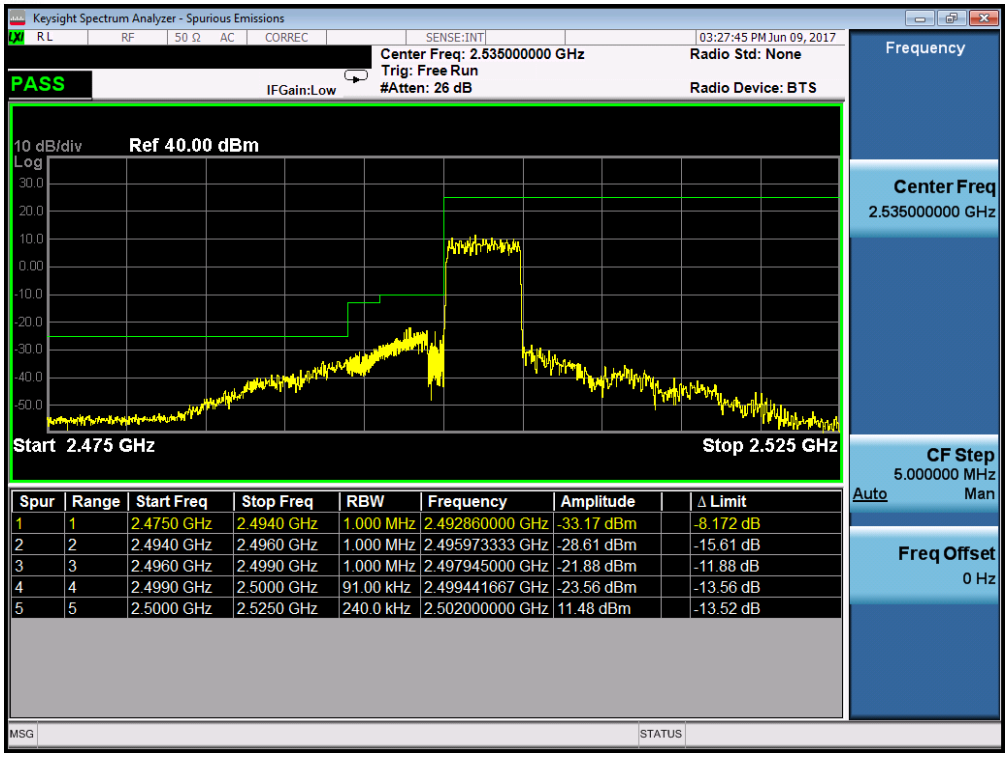
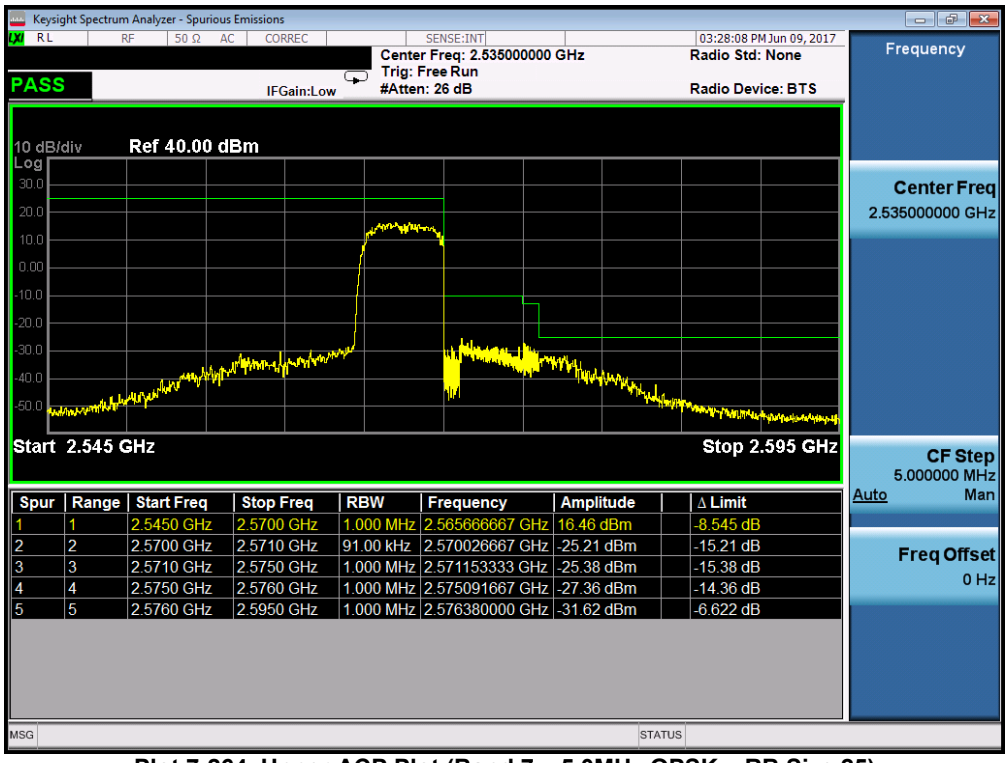


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4940 GHz	1.000 MHz	2.492860000 GHz	-33.17 dBm	-8.172 dB
2	2	2.4940 GHz	2.4960 GHz	1.000 MHz	2.495973333 GHz	-28.61 dBm	-15.61 dB
3	3	2.4960 GHz	2.4990 GHz	1.000 MHz	2.497945000 GHz	-21.88 dBm	-11.88 dB
4	4	2.4990 GHz	2.5000 GHz	91.00 kHz	2.499441667 GHz	-23.56 dBm	-13.56 dB
5	5	2.5000 GHz	2.5250 GHz	240.0 kHz	2.502000000 GHz	11.48 dBm	-13.52 dB

Plot 7-263. Lower ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5450 GHz	2.5700 GHz	1.000 MHz	2.565666667 GHz	16.46 dBm	-8.545 dB
2	2	2.5700 GHz	2.5710 GHz	91.00 kHz	2.570026667 GHz	-25.21 dBm	-15.21 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571153333 GHz	-25.38 dBm	-15.38 dB
4	4	2.5750 GHz	2.5760 GHz	1.000 MHz	2.575091667 GHz	-27.36 dBm	-14.36 dB
5	5	2.5760 GHz	2.5950 GHz	1.000 MHz	2.576380000 GHz	-31.62 dBm	-6.622 dB

Plot 7-264. Upper ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)

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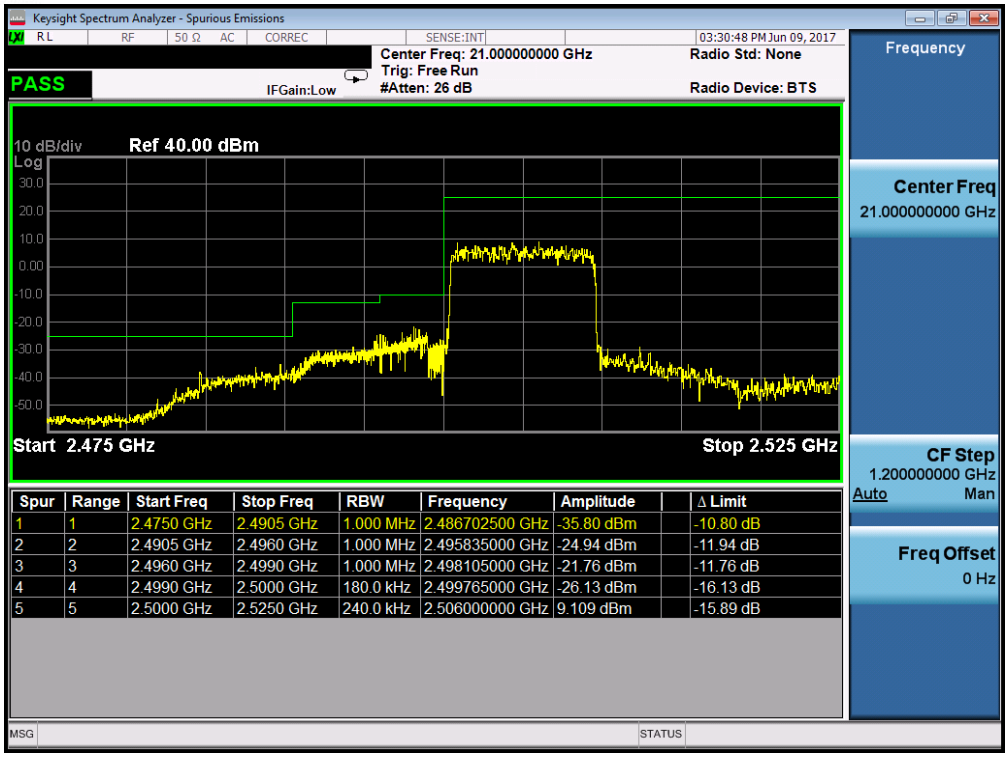
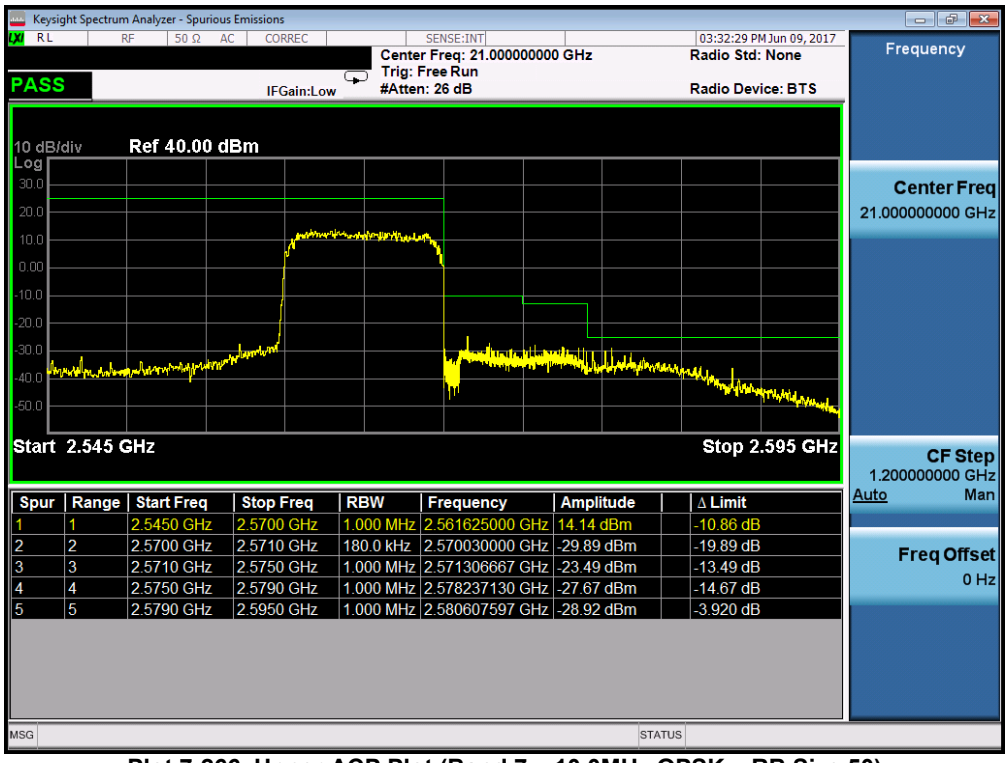


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.486702500 GHz	-35.80 dBm	-10.80 dB
2	2	2.4905 GHz	2.4960 GHz	1.000 MHz	2.495835000 GHz	-24.94 dBm	-11.94 dB
3	3	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498105000 GHz	-21.76 dBm	-11.76 dB
4	4	2.4990 GHz	2.5000 GHz	180.0 kHz	2.499765000 GHz	-26.13 dBm	-16.13 dB
5	5	2.5000 GHz	2.5250 GHz	240.0 kHz	2.506000000 GHz	9.109 dBm	-15.89 dB

Plot 7-265. Lower ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5450 GHz	2.5700 GHz	1.000 MHz	2.561625000 GHz	14.14 dBm	-10.86 dB
2	2	2.5700 GHz	2.5710 GHz	180.0 kHz	2.570030000 GHz	-29.89 dBm	-19.89 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571306667 GHz	-23.49 dBm	-13.49 dB
4	4	2.5750 GHz	2.5790 GHz	1.000 MHz	2.578237130 GHz	-27.67 dBm	-14.67 dB
5	5	2.5790 GHz	2.5950 GHz	1.000 MHz	2.580607597 GHz	-28.92 dBm	-3.920 dB

Plot 7-266. Upper ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)

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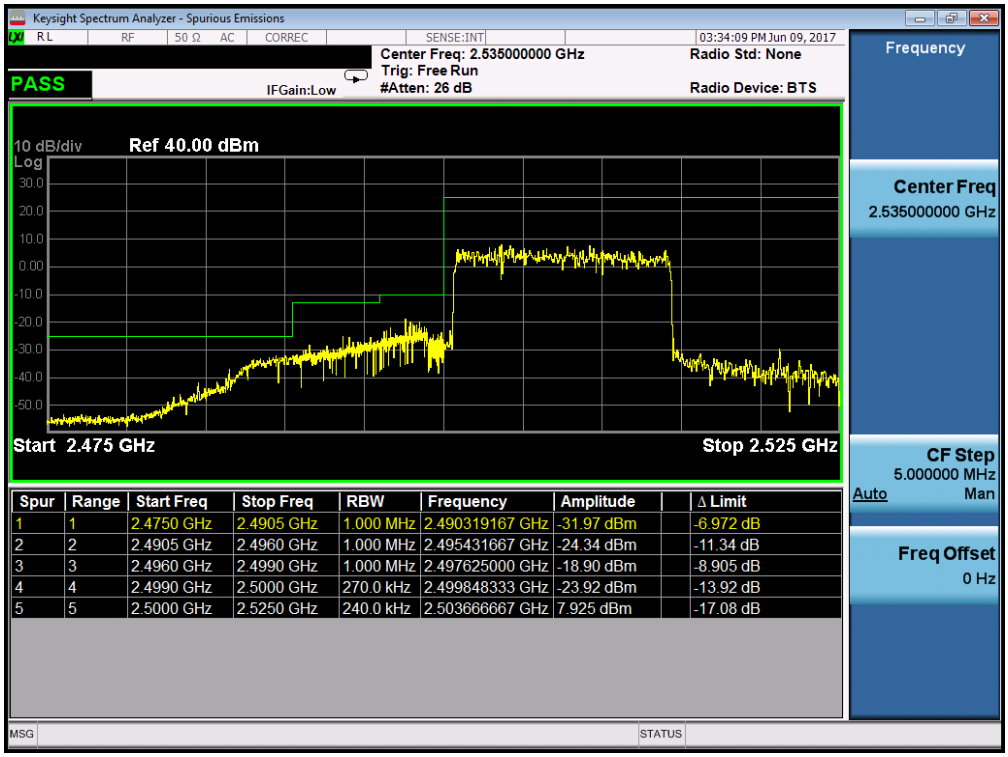

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490319167 GHz	-31.97 dBm	-6.972 dB
2	2	2.4905 GHz	2.4960 GHz	1.000 MHz	2.495431667 GHz	-24.34 dBm	-11.34 dB
3	3	2.4960 GHz	2.4990 GHz	1.000 MHz	2.497625000 GHz	-18.90 dBm	-8.905 dB
4	4	2.4990 GHz	2.5000 GHz	270.0 kHz	2.499848333 GHz	-23.92 dBm	-13.92 dB
5	5	2.5000 GHz	2.5250 GHz	240.0 kHz	2.503666667 GHz	7.925 dBm	-17.08 dB

Plot 7-267. Lower ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5450 GHz	2.5700 GHz	1.000 MHz	2.561916667 GHz	11.80 dBm	-13.20 dB
2	2	2.5700 GHz	2.5710 GHz	270.0 kHz	2.570161667 GHz	-31.11 dBm	-21.11 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.572413333 GHz	-25.33 dBm	-15.33 dB
4	4	2.5750 GHz	2.5835 GHz	1.000 MHz	2.579138137 GHz	-28.44 dBm	-15.44 dB
5	5	2.5835 GHz	2.5950 GHz	1.000 MHz	2.585087640 GHz	-31.78 dBm	-6.784 dB

Plot 7-268. Upper ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)

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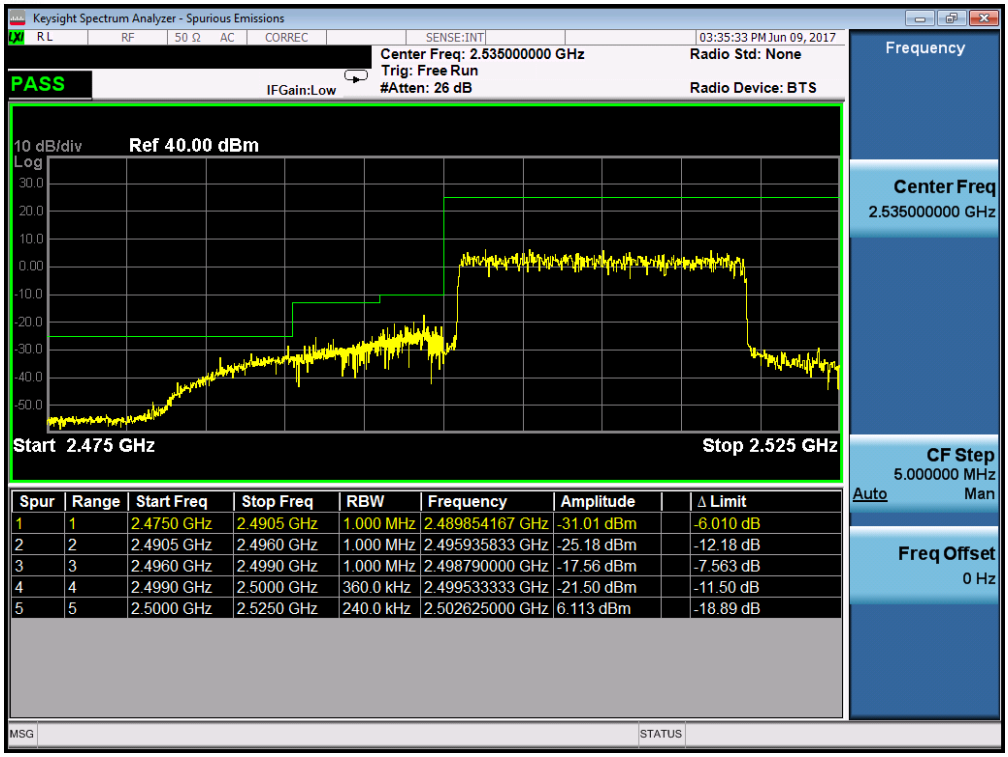

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489854167 GHz	-31.01 dBm	-6.010 dB
2	2	2.4905 GHz	2.4960 GHz	1.000 MHz	2.495935833 GHz	-25.18 dBm	-12.18 dB
3	3	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498790000 GHz	-17.56 dBm	-7.563 dB
4	4	2.4990 GHz	2.5000 GHz	360.0 kHz	2.499533333 GHz	-21.50 dBm	-11.50 dB
5	5	2.5000 GHz	2.5250 GHz	240.0 kHz	2.502625000 GHz	6.113 dBm	-18.89 dB

Plot 7-269. Lower ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5450 GHz	2.5700 GHz	1.000 MHz	2.560000000 GHz	10.95 dBm	-14.05 dB
2	2	2.5700 GHz	2.5710 GHz	360.0 kHz	2.570046667 GHz	-27.64 dBm	-17.64 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.572793333 GHz	-27.33 dBm	-17.33 dB
4	4	2.5750 GHz	2.5879 GHz	1.000 MHz	2.580976275 GHz	-28.54 dBm	-15.54 dB
5	5	2.5879 GHz	2.5950 GHz	1.000 MHz	2.588979733 GHz	-34.73 dBm	-9.733 dB

Plot 7-270. Upper ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)

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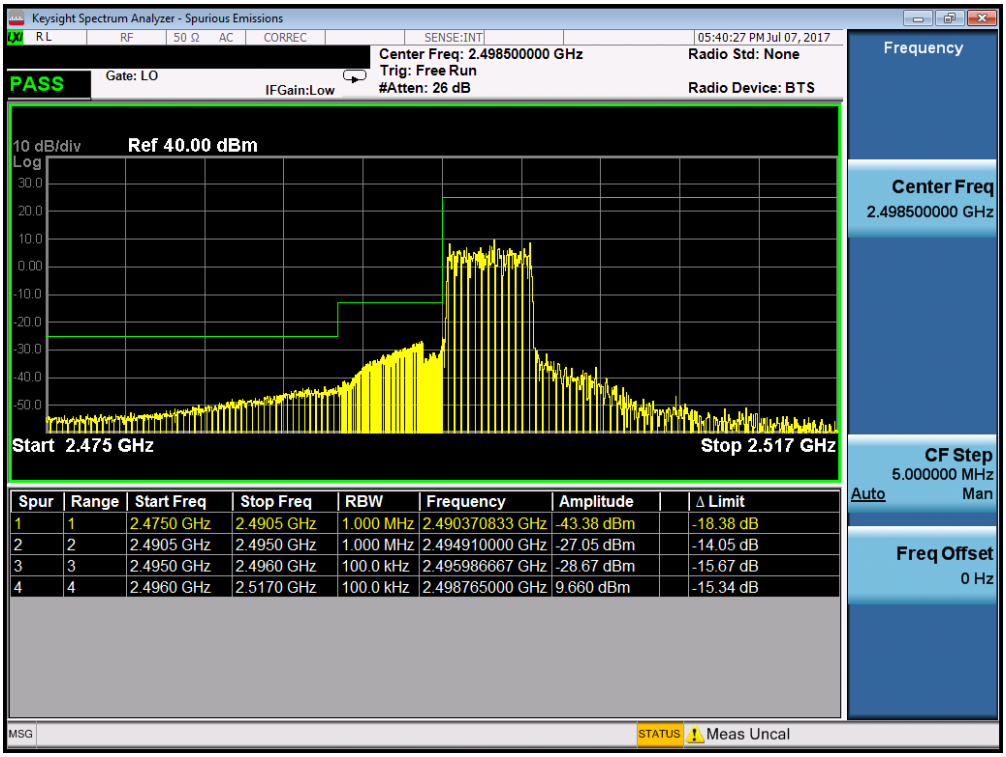
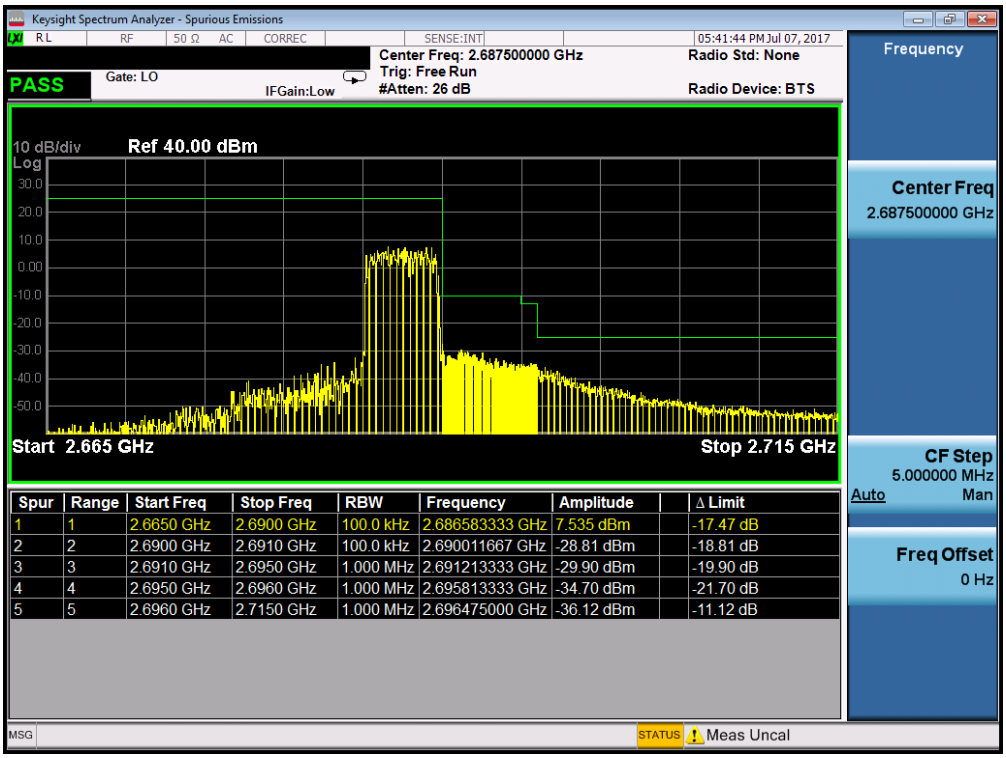


Plot 7-271. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)



Plot 7-272. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

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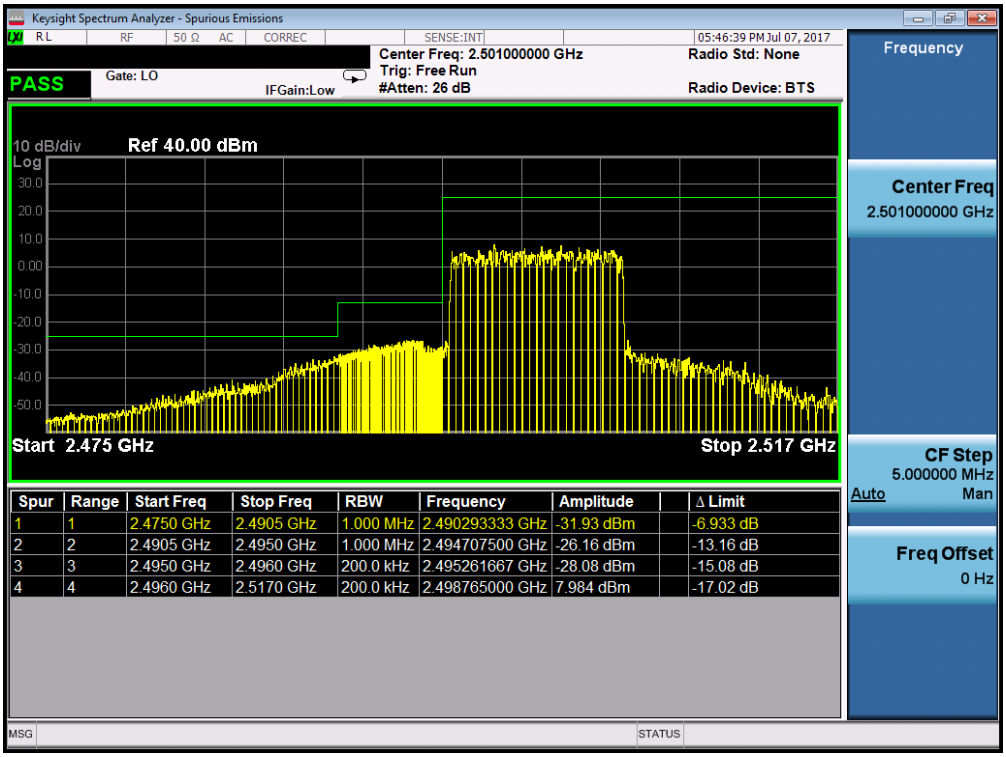
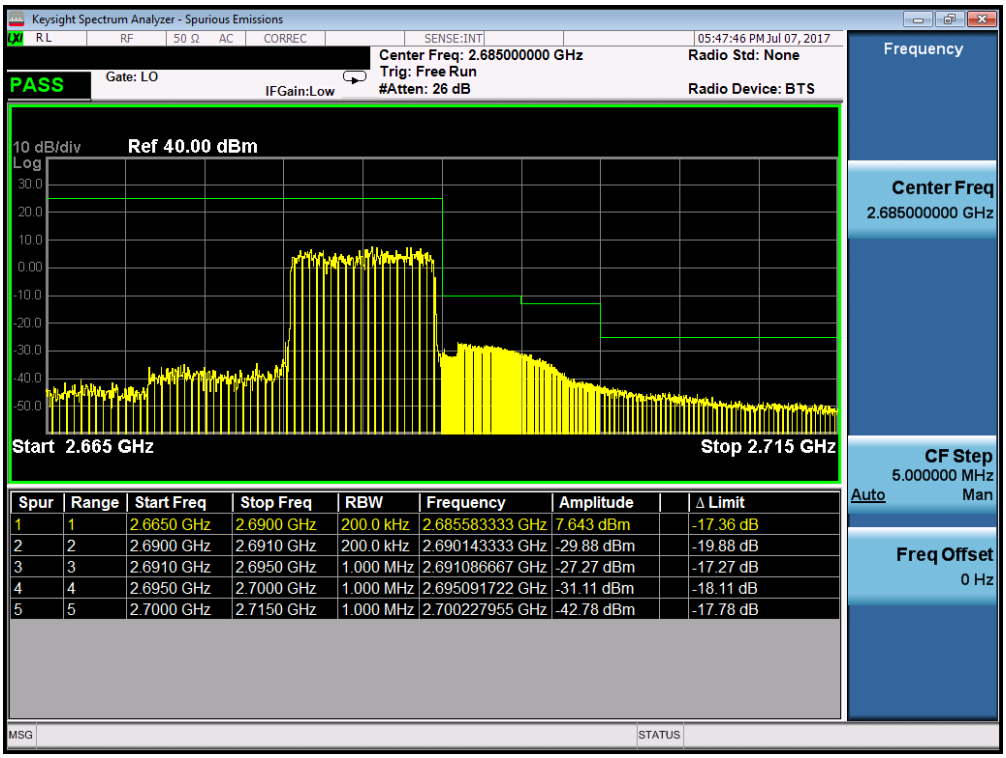


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490293333 GHz	-31.93 dBm	-6.933 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494707500 GHz	-26.16 dBm	-13.16 dB
3	3	2.4950 GHz	2.4960 GHz	200.0 kHz	2.495261667 GHz	-28.08 dBm	-15.08 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.498765000 GHz	7.984 dBm	-17.02 dB

Plot 7-273. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	200.0 kHz	2.685583333 GHz	7.643 dBm	-17.36 dB
2	2	2.6900 GHz	2.6910 GHz	200.0 kHz	2.690143333 GHz	-29.88 dBm	-19.88 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691086667 GHz	-27.27 dBm	-17.27 dB
4	4	2.6950 GHz	2.7000 GHz	1.000 MHz	2.695091722 GHz	-31.11 dBm	-18.11 dB
5	5	2.7000 GHz	2.7150 GHz	1.000 MHz	2.700227955 GHz	-42.78 dBm	-17.78 dB

Plot 7-274. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

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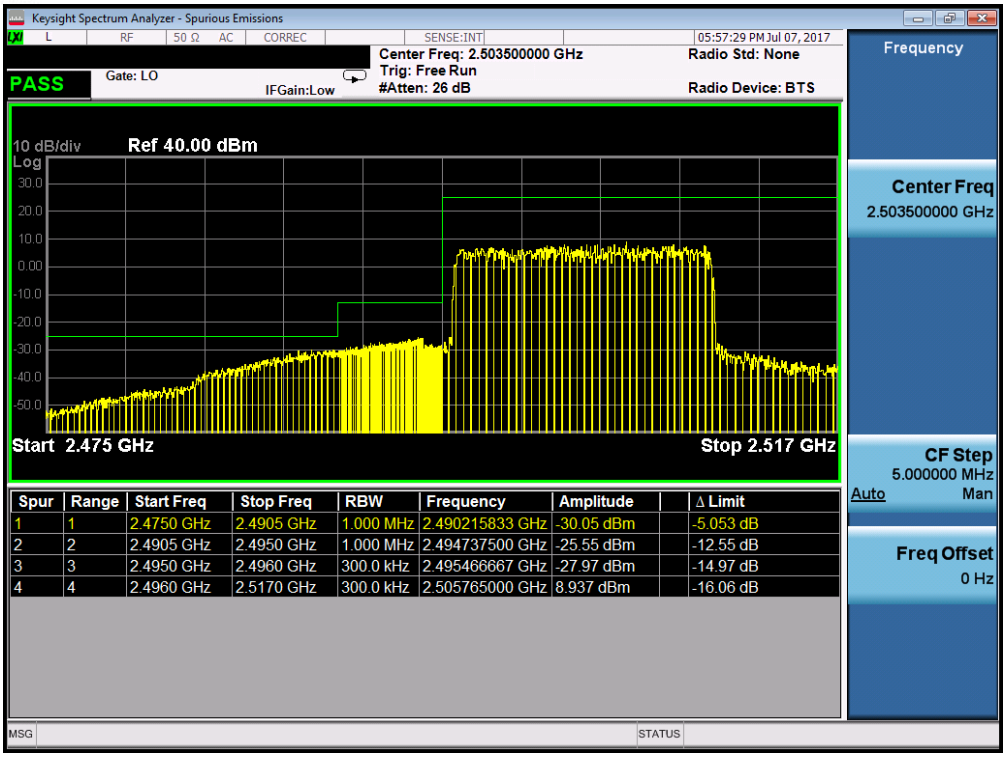
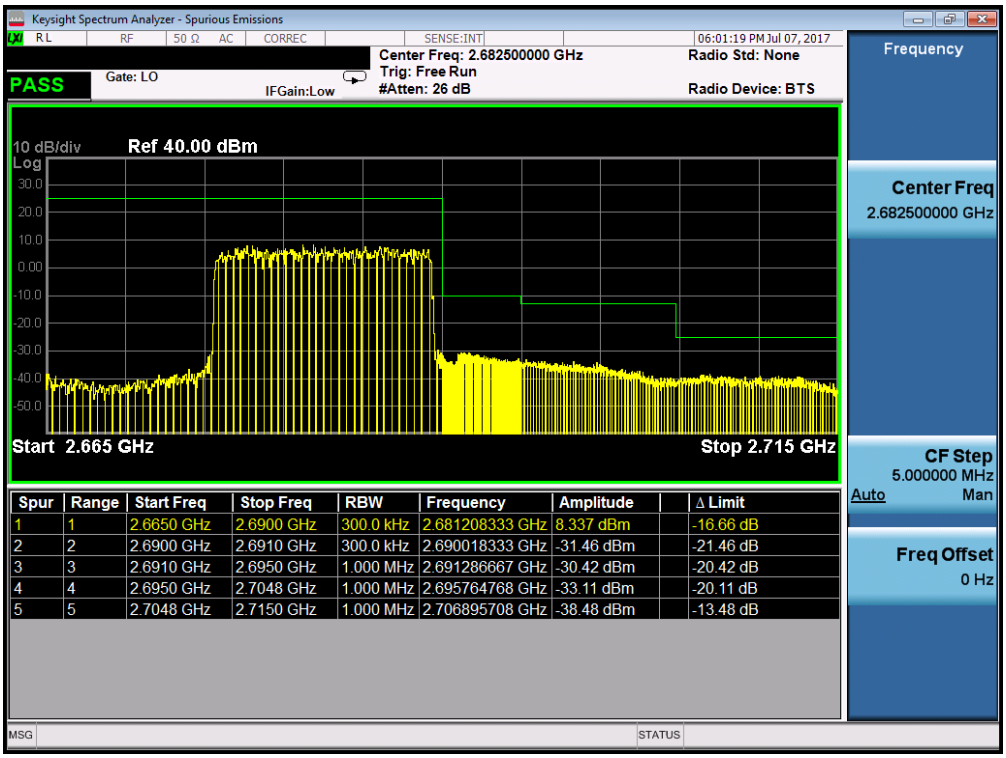


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490215833 GHz	-30.05 dBm	-5.053 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494737500 GHz	-25.55 dBm	-12.55 dB
3	3	2.4950 GHz	2.4960 GHz	300.0 kHz	2.495466667 GHz	-27.97 dBm	-14.97 dB
4	4	2.4960 GHz	2.5170 GHz	300.0 kHz	2.505765000 GHz	8.937 dBm	-16.06 dB

Plot 7-275. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	300.0 kHz	2.681208333 GHz	8.337 dBm	-16.66 dB
2	2	2.6900 GHz	2.6910 GHz	300.0 kHz	2.690018333 GHz	-31.46 dBm	-21.46 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691286667 GHz	-30.42 dBm	-20.42 dB
4	4	2.6950 GHz	2.7048 GHz	1.000 MHz	2.695764768 GHz	-33.11 dBm	-20.11 dB
5	5	2.7048 GHz	2.7150 GHz	1.000 MHz	2.706895708 GHz	-38.48 dBm	-13.48 dB

Plot 7-276. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

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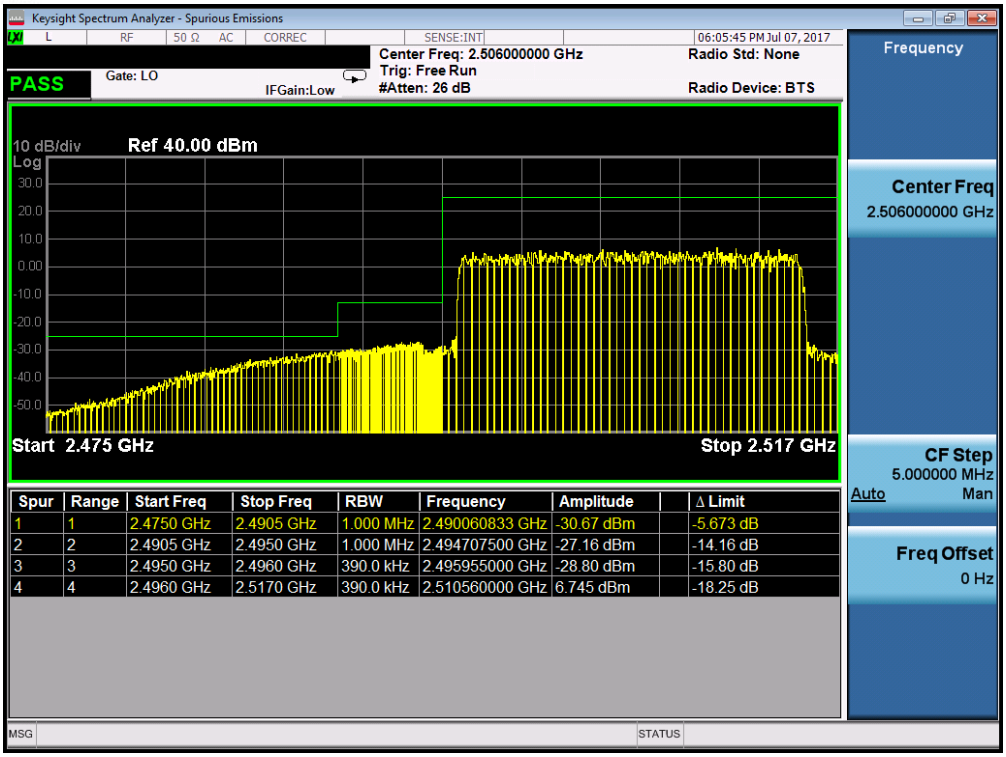
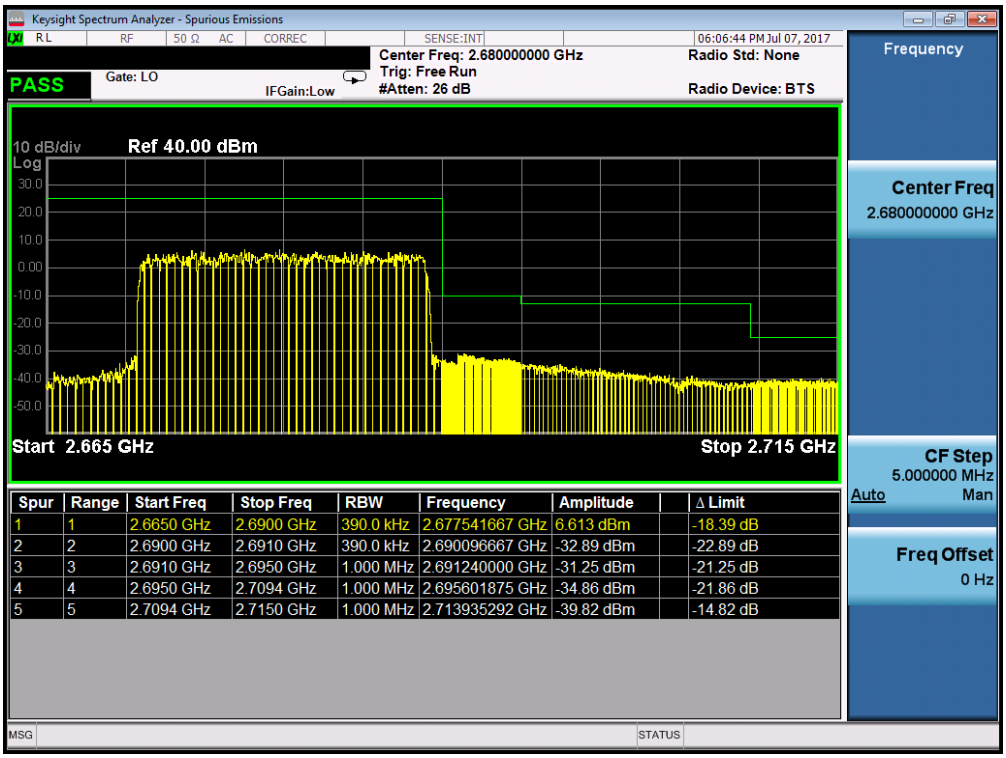


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490060833 GHz	-30.67 dBm	-5.673 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494707500 GHz	-27.16 dBm	-14.16 dB
3	3	2.4950 GHz	2.4960 GHz	390.0 kHz	2.495955000 GHz	-28.80 dBm	-15.80 dB
4	4	2.4960 GHz	2.5170 GHz	390.0 kHz	2.510560000 GHz	6.745 dBm	-18.25 dB

Plot 7-277. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	390.0 kHz	2.677541667 GHz	6.613 dBm	-18.39 dB
2	2	2.6900 GHz	2.6910 GHz	390.0 kHz	2.690096667 GHz	-32.89 dBm	-22.89 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691240000 GHz	-31.25 dBm	-21.25 dB
4	4	2.6950 GHz	2.7094 GHz	1.000 MHz	2.695601875 GHz	-34.86 dBm	-21.86 dB
5	5	2.7094 GHz	2.7150 GHz	1.000 MHz	2.713935292 GHz	-39.82 dBm	-14.82 dB

Plot 7-278. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

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7.5 Peak-Average Ratio

§24.232(d)

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 v02r02 – Section 5.7.1

Test Settings

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

Test Setup

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

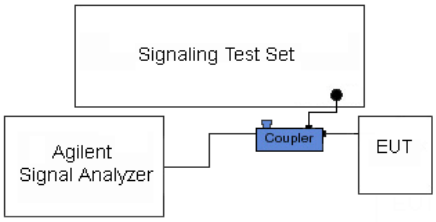

Figure 7-4. Test Instrument & Measurement Setup

Test Notes

None.

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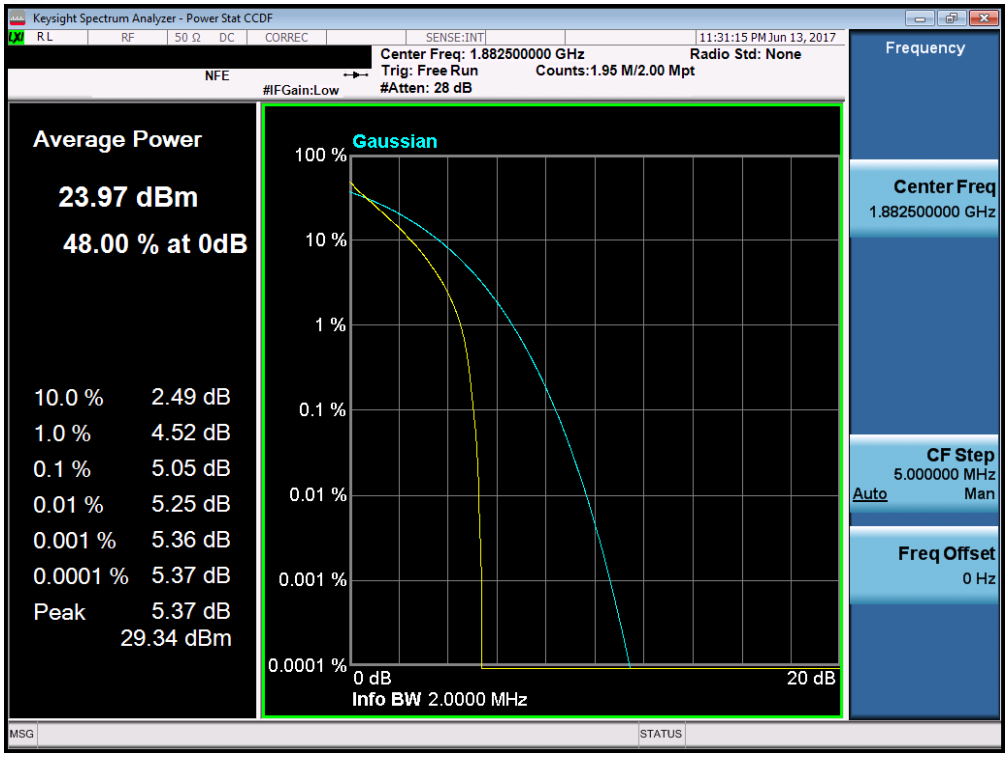
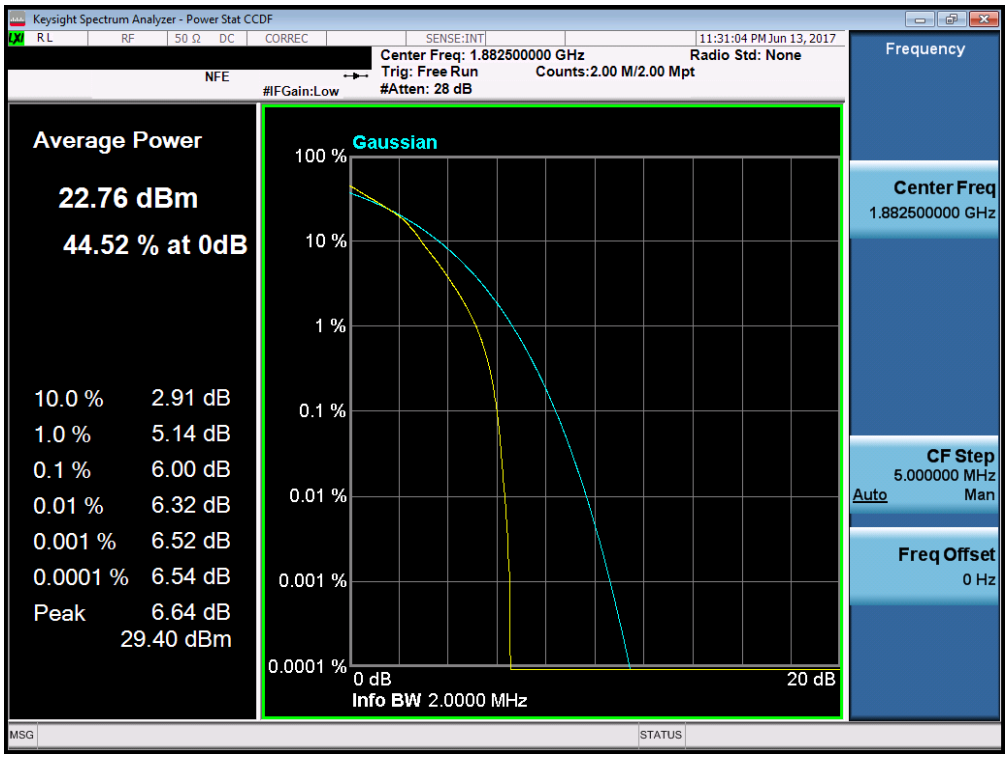


Plot 7-279. PAR Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)



Plot 7-280. PAR Plot (Band 2/25 – 1.4MHz 16-QAM – RB Size 6)

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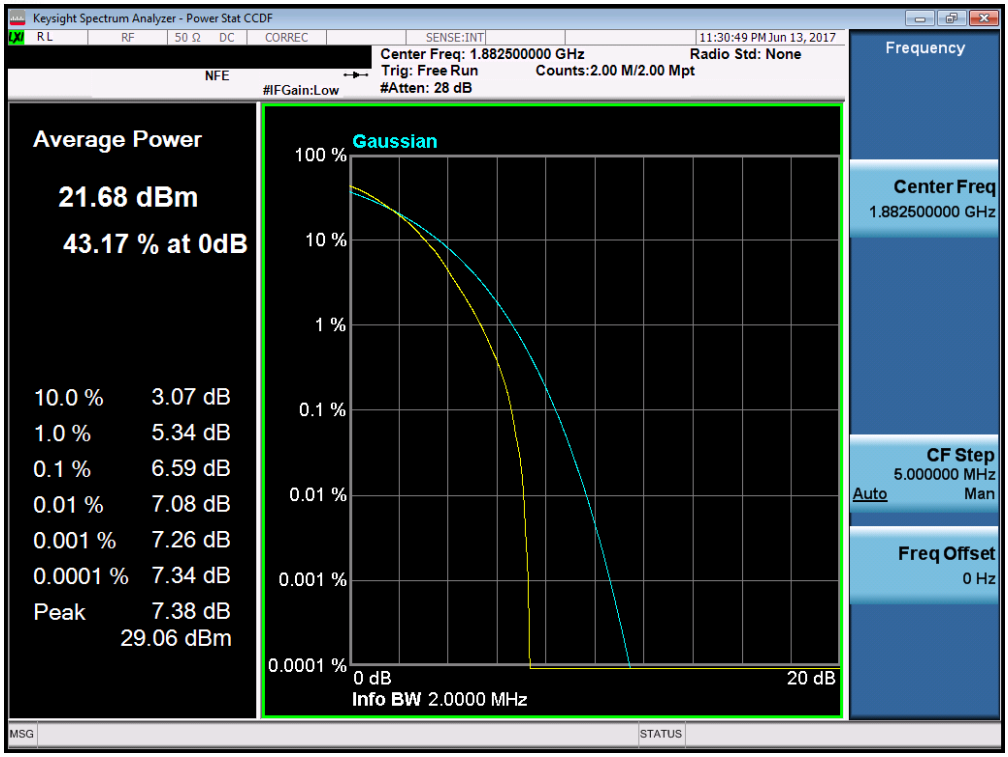
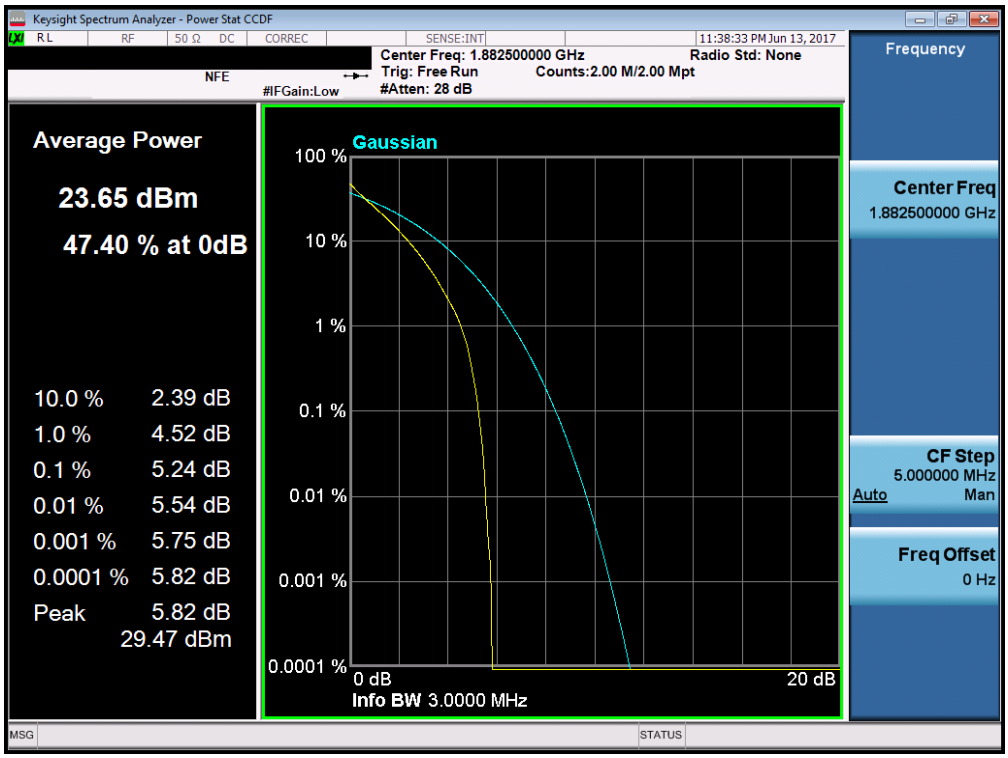


Plot 7-281. PAR Plot (Band 2/25 – 1.4MHz 64-QAM – RB Size 6)



Plot 7-282. PAR Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

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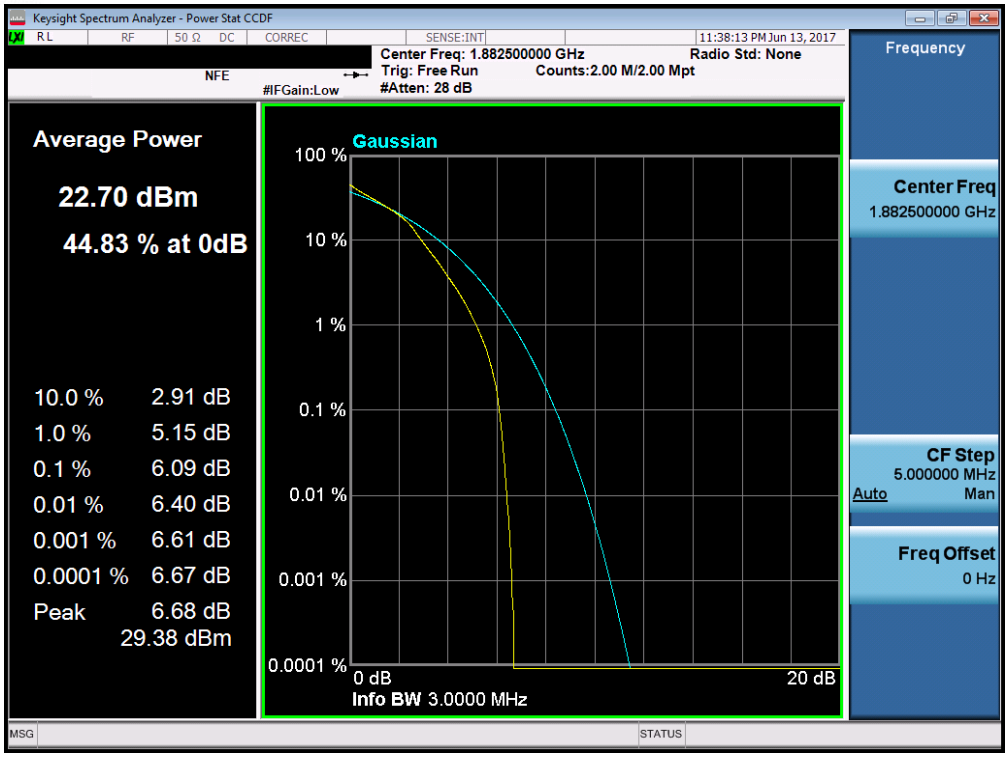
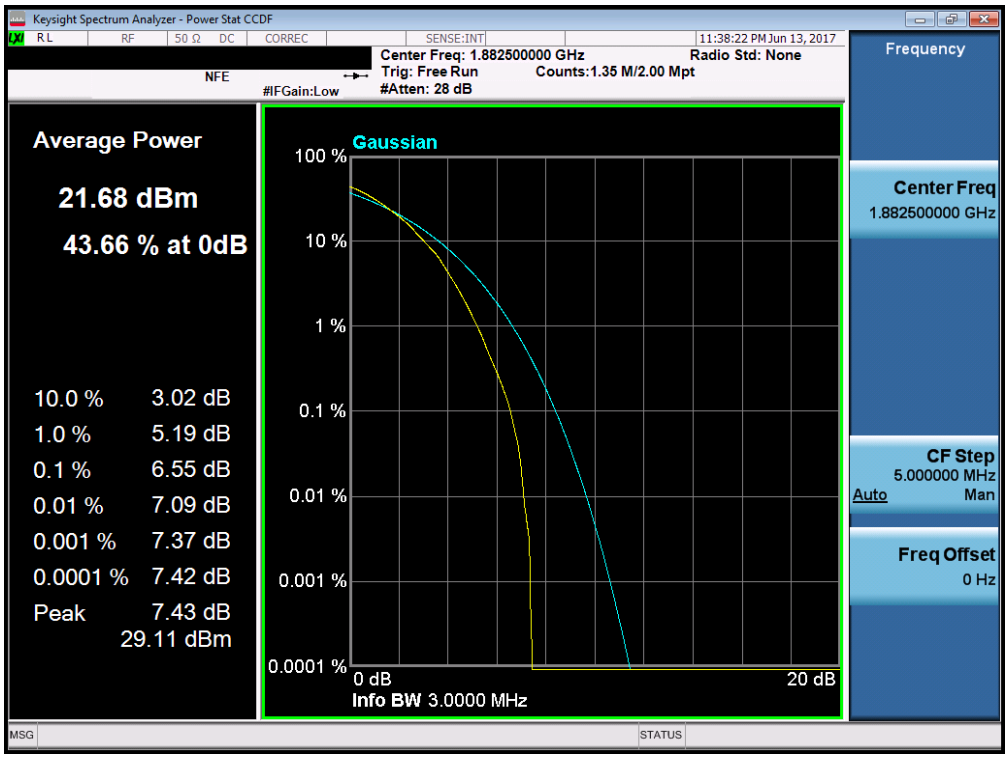


Plot 7-283. PAR Plot (Band 2/25 – 3.0MHz 16-QAM – RB Size 15)



Plot 7-284. PAR Plot (Band 2/25 – 3.0MHz 64-QAM – RB Size 15)

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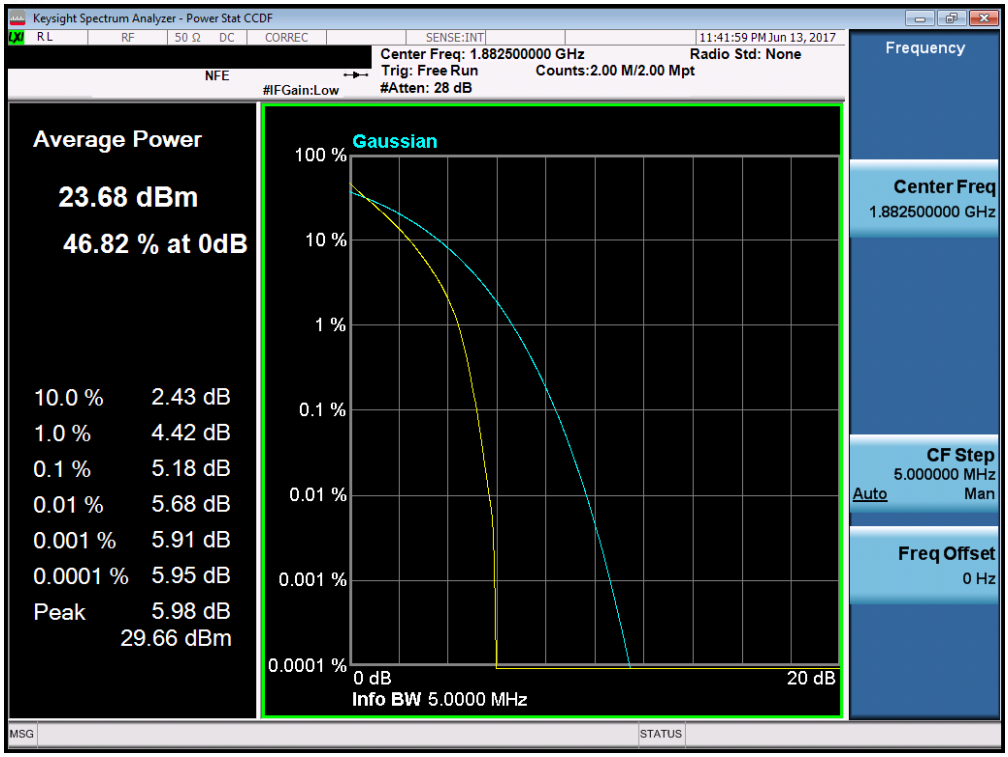
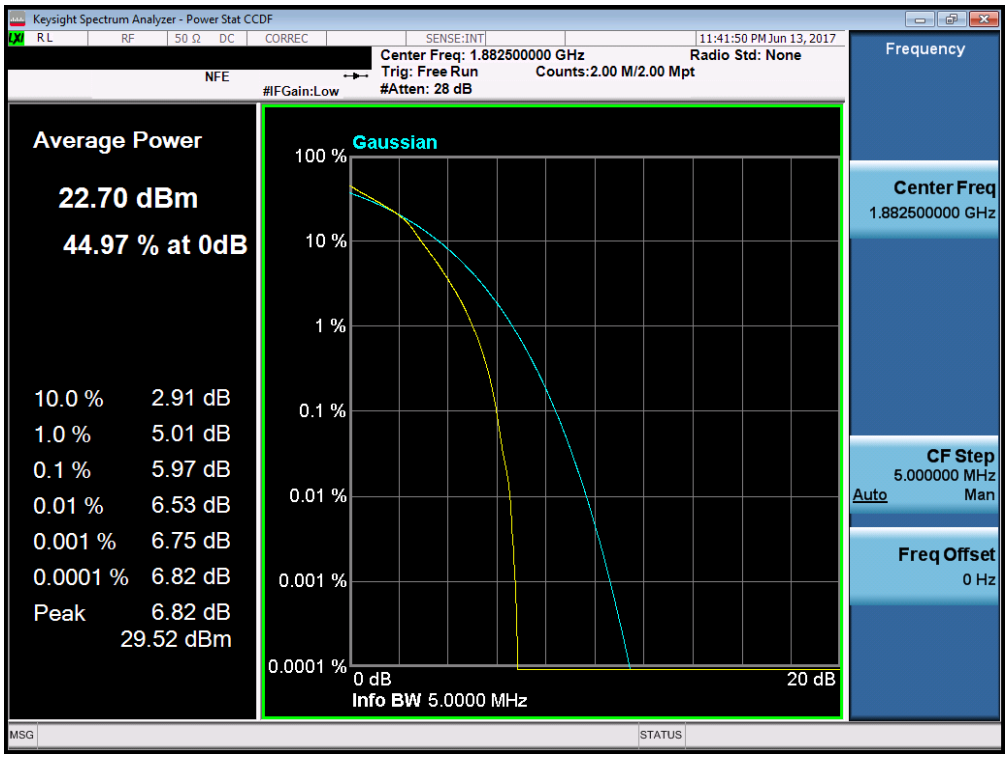


Plot 7-285. PAR Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)



Plot 7-286. PAR Plot (Band 2/25 – 5.0MHz 16-QAM – RB Size 25)

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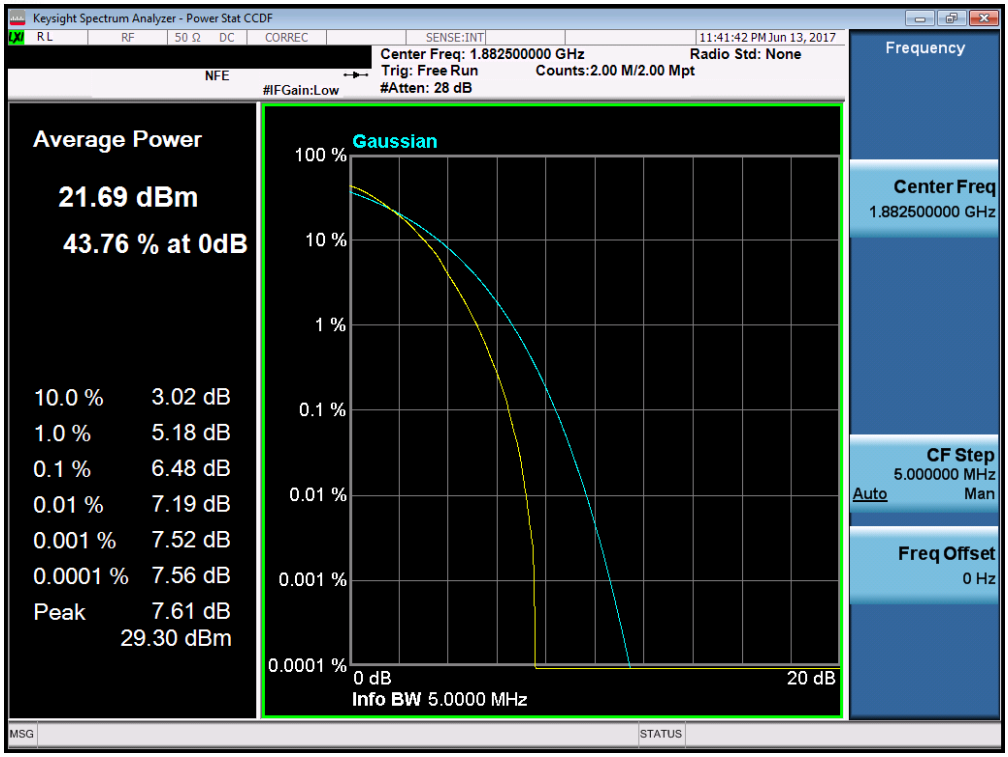
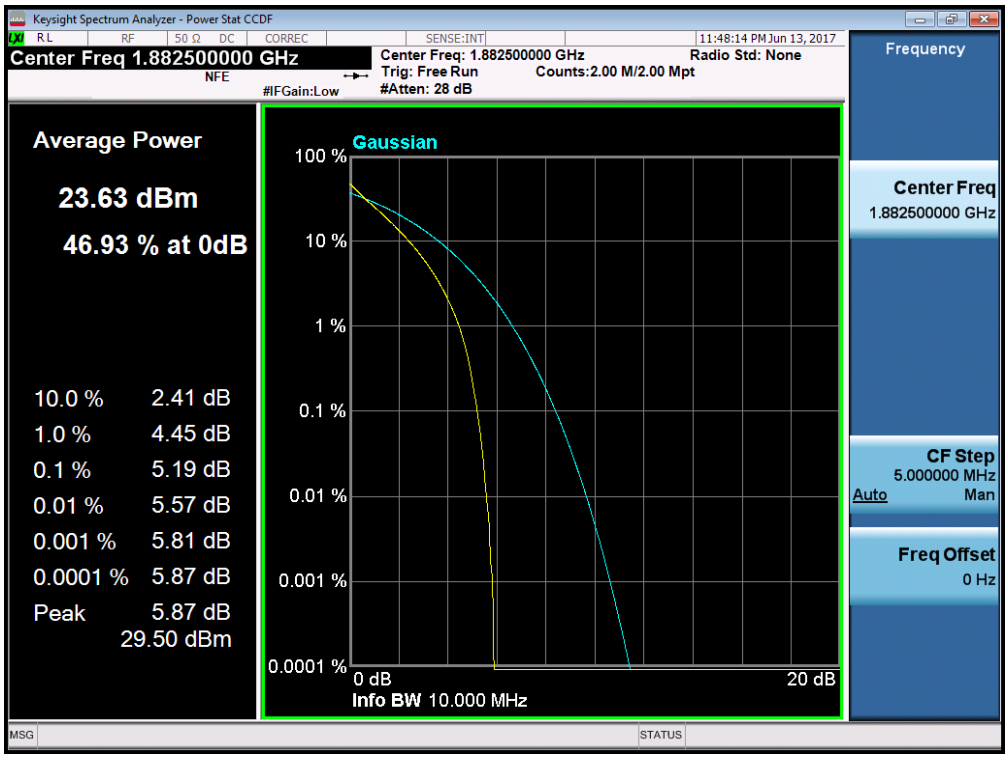


Plot 7-287. PAR Plot (Band 2/25 – 5.0MHz 64-QAM – RB Size 25)



Plot 7-288. PAR Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

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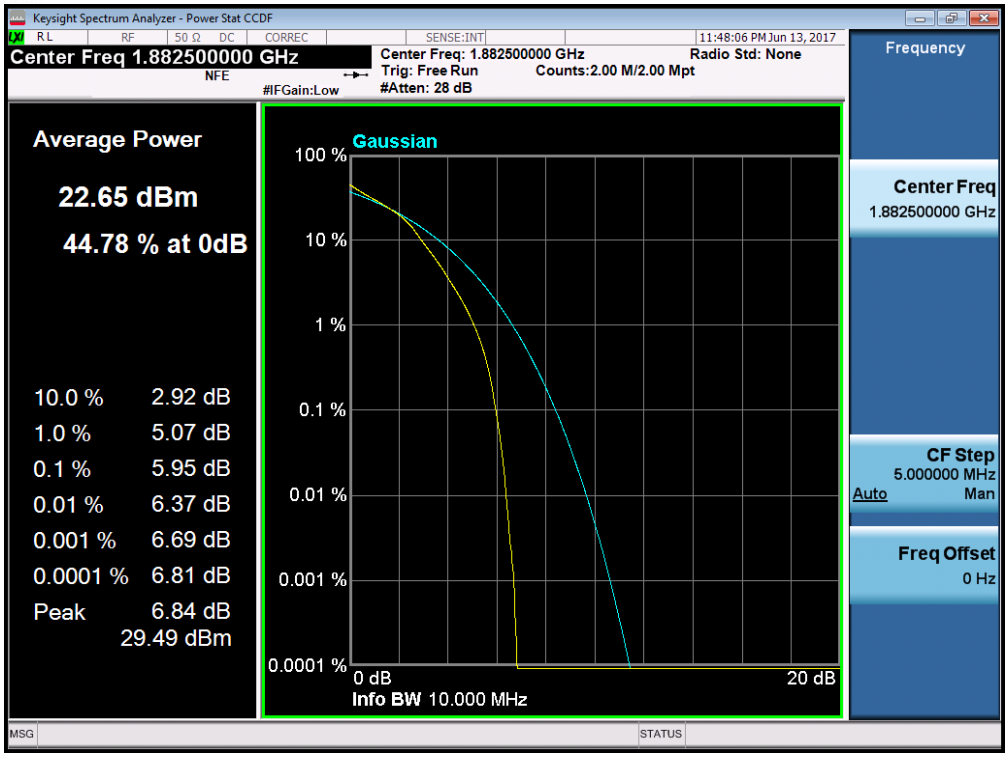
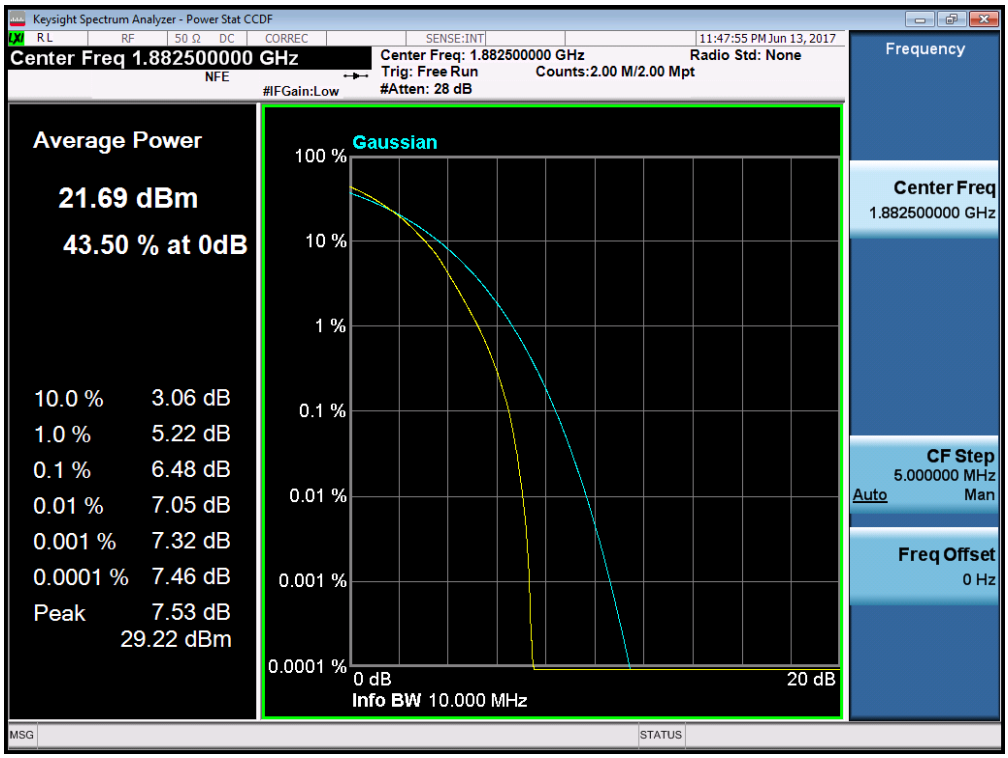


Plot 7-289. PAR Plot (Band 2/25 – 10.0MHz 16-QAM – RB Size 50)



Plot 7-290. PAR Plot (Band 2/25 – 10.0MHz 64-QAM – RB Size 50)

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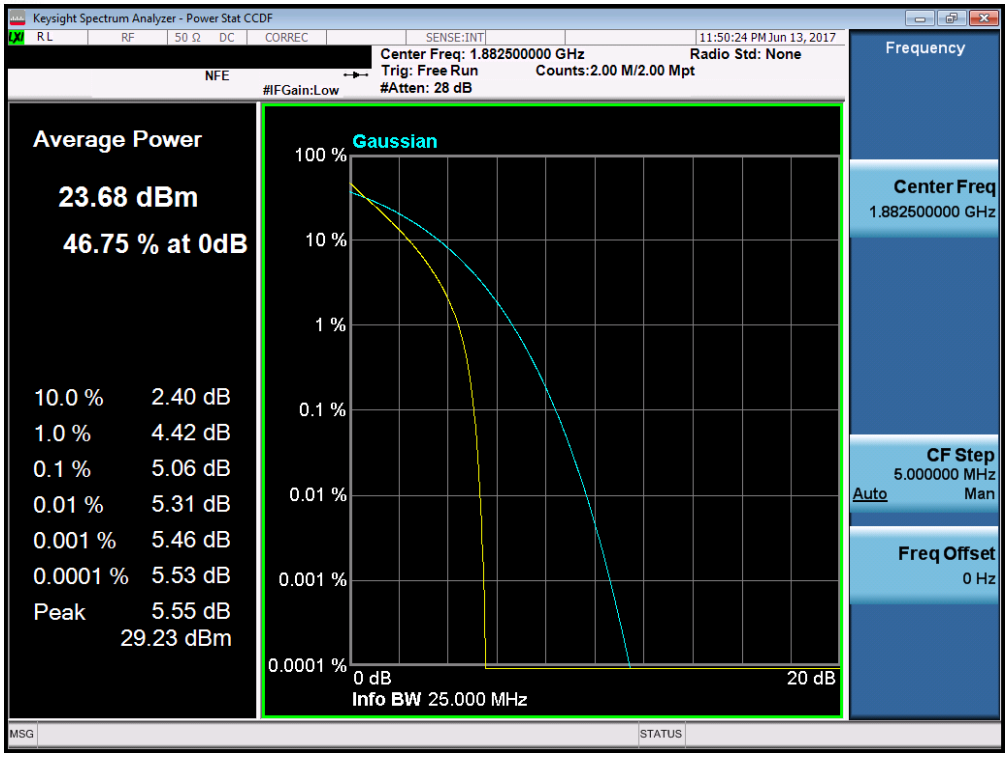
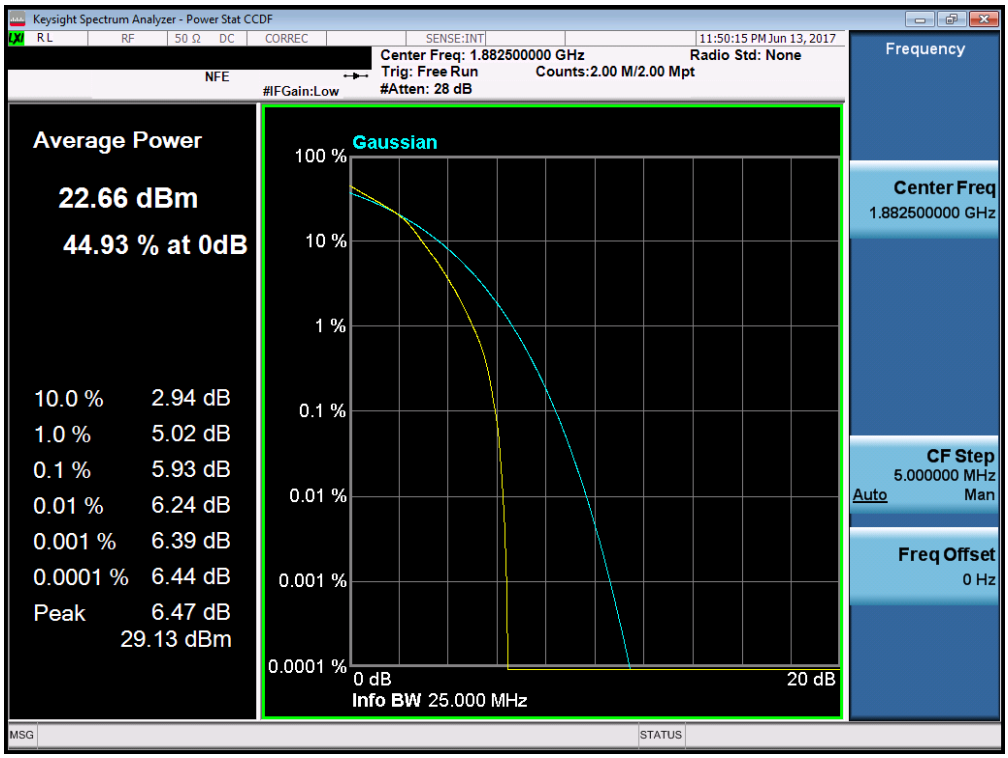


Plot 7-291. PAR Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)



Plot 7-292. PAR Plot (Band 2/25 – 15.0MHz 16-QAM – RB Size 75)

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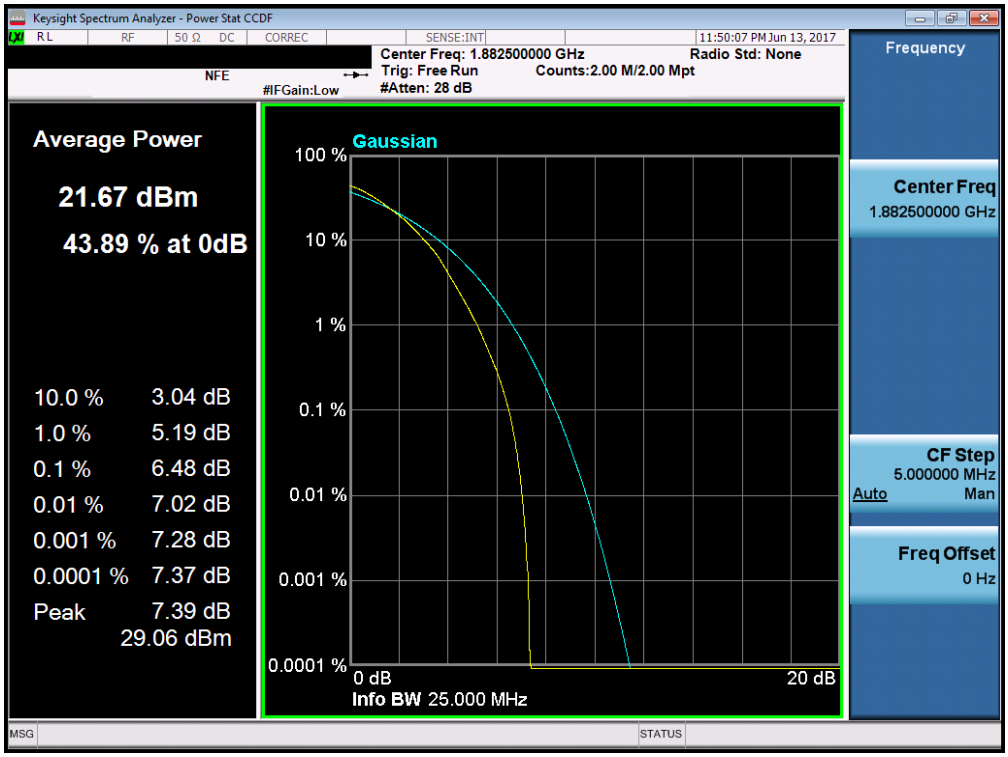
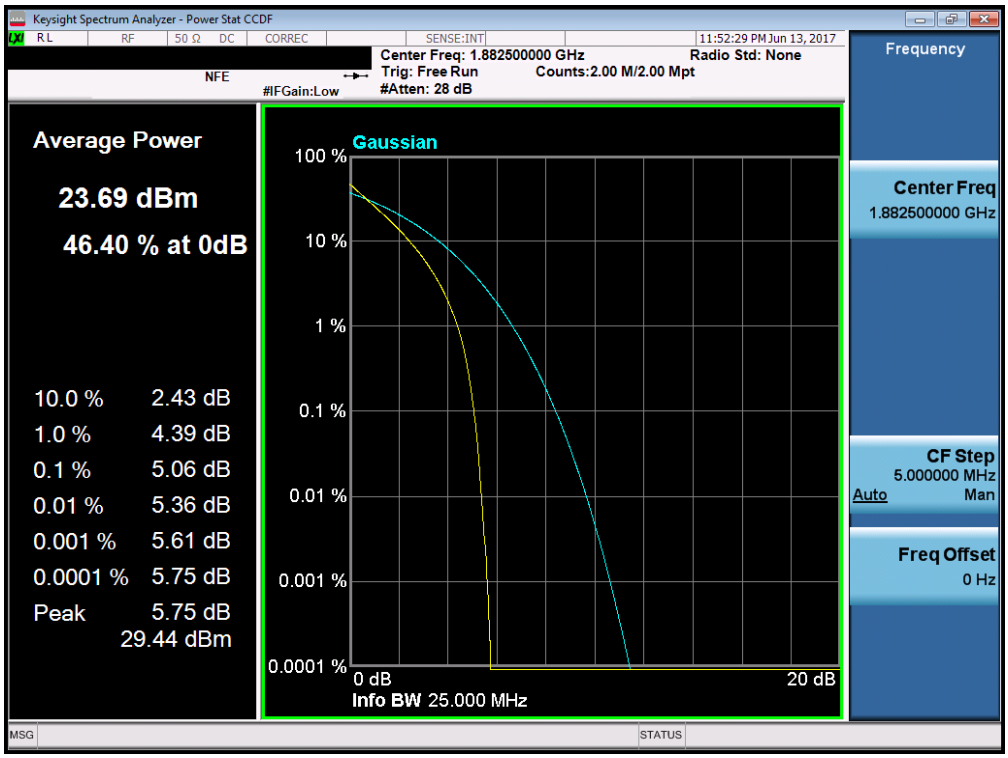


Plot 7-293. PAR Plot (Band 2/25 – 15.0MHz 64-QAM – RB Size 75)



Plot 7-294. PAR Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

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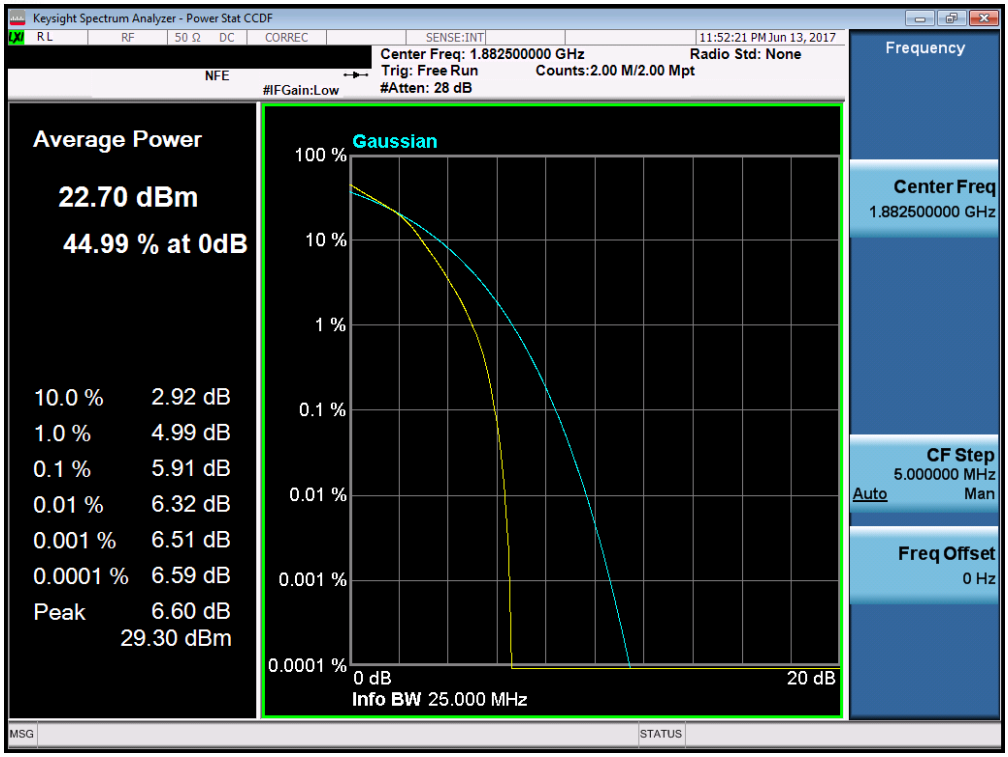
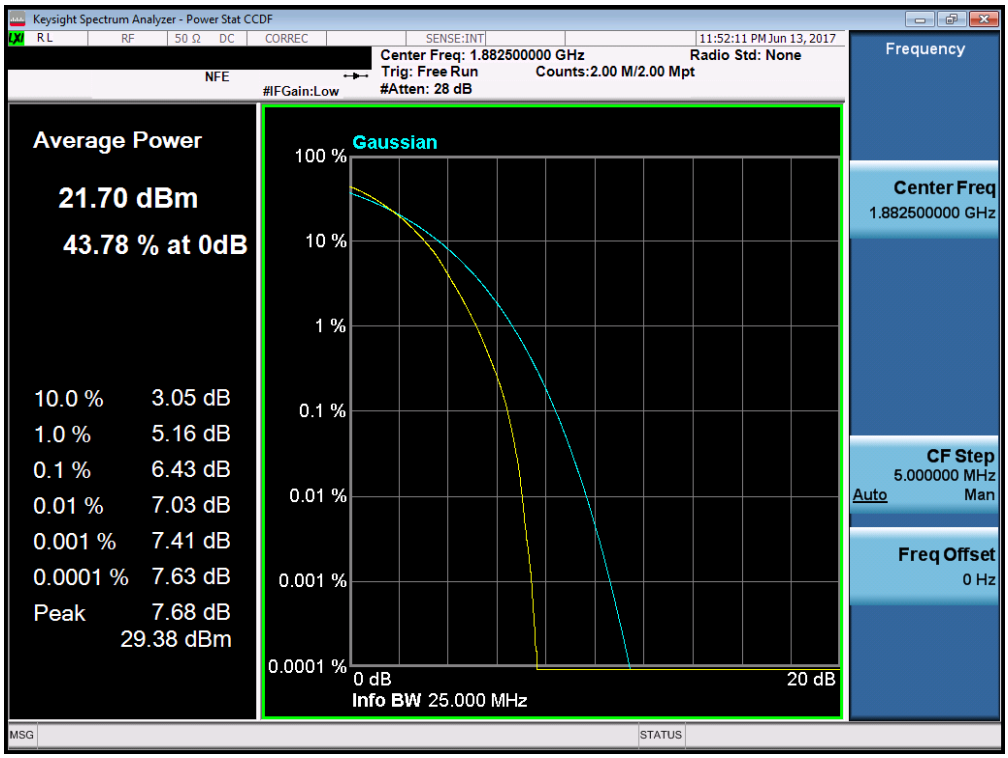


Plot 7-295. PAR Plot (Band 2/25 – 20.0MHz 16-QAM – RB Size 100)



Plot 7-296. PAR Plot (Band 2/25 – 20.0MHz 64-QAM – RB Size 100)

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7.6 Radiated Power (ERP/EIRP)

§22.913(a.2) §24.232(c.2) §27.50(h.2) §27.50(b.10) §27.50(c.10) §27.50(d.4) §27.50(a.3)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as 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 v02r02 – Section 5.2.1

ANSI/TIA-603-D-2010 – 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

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Test Setup

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

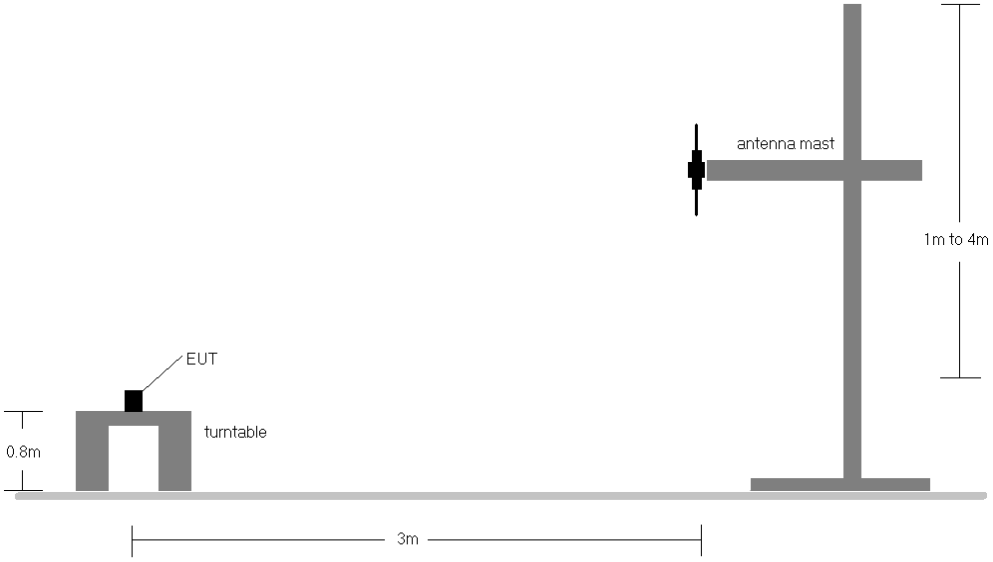

Figure 7-5. Radiated Test Setup <1GHz

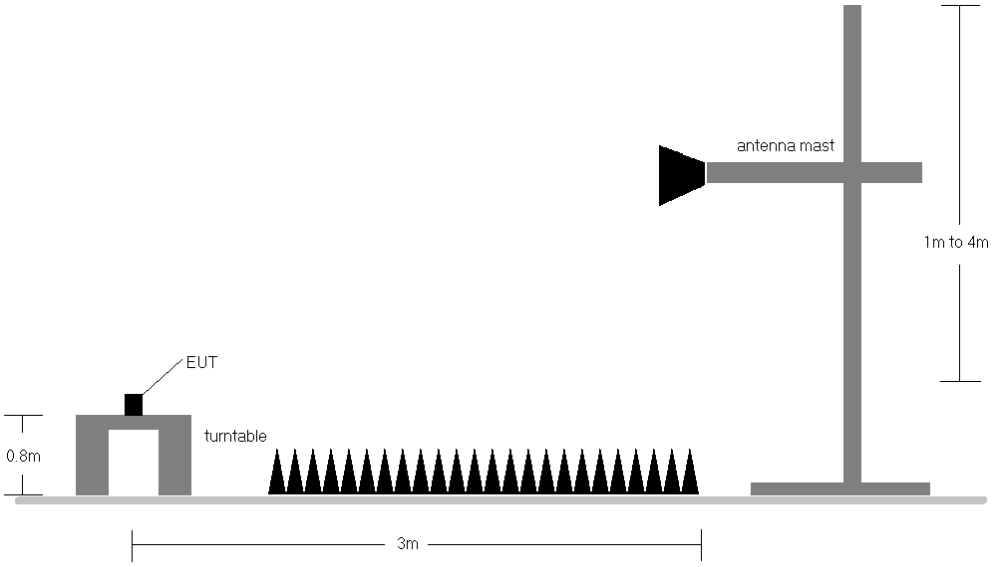

Figure 7-6. Radiated Test Setup >1GHz

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.

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	150	176	1 / 5	17.28	-1.05	16.23	34.77	-18.54
707.50	1.4	QPSK	H	150	175	1 / 5	17.81	-1.02	16.79	34.77	-17.98
715.30	1.4	QPSK	H	150	175	1 / 5	18.22	-0.99	17.23	34.77	-17.54
715.30	1.4	16-QAM	H	150	175	1 / 5	17.40	-0.99	16.41	34.77	-18.36
715.30	1.4	64-QAM	H	150	175	1 / 5	16.44	-0.99	15.45	34.77	-19.32
700.50	3	QPSK	H	150	171	1 / 14	17.74	-1.05	16.69	34.77	-18.08
707.50	3	QPSK	H	150	173	1 / 0	18.11	-1.02	17.09	34.77	-17.68
714.50	3	QPSK	H	150	174	1 / 14	18.31	-0.99	17.32	34.77	-17.45
714.50	3	16-QAM	H	150	174	1 / 14	17.59	-0.99	16.60	34.77	-18.17
714.50	3	64-QAM	H	150	174	1 / 14	16.52	-0.99	15.53	34.77	-19.24

Table 7-2. 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 [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
701.50	5	QPSK	H	150	174	1 / 24	17.83	-1.04	16.79	34.77	-17.99
707.50	5	QPSK	H	150	174	1 / 0	18.19	-1.02	17.17	34.77	-17.60
713.50	5	QPSK	H	150	174	1 / 24	18.41	-1.00	17.41	34.77	-17.36
713.50	5	16-QAM	H	150	174	1 / 24	17.58	-1.00	16.58	34.77	-18.19
713.50	5	64-QAM	H	150	174	1 / 24	16.61	-1.00	15.61	34.77	-19.16
704.00	10	QPSK	H	150	175	1 / 49	18.15	-1.03	17.12	34.77	-17.65
707.50	10	QPSK	H	150	176	1 / 0	18.09	-1.02	17.07	34.77	-17.70
711.00	10	QPSK	H	150	176	1 / 49	18.25	-1.01	17.24	34.77	-17.53
711.00	10	16-QAM	H	150	176	1 / 49	17.46	-1.01	16.45	34.77	-18.32
711.00	10	64-QAM	H	150	176	1 / 49	16.42	-1.01	15.41	34.77	-19.36
713.50	5	QPSK	V	150	352	1 / 0	15.86	-1.00	14.86	34.77	-19.91
713.50	5 (WCP)	QPSK	H	150	197	1 / 0	13.88	-1.00	12.88	34.77	-21.89

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

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
779.50	5	QPSK	H	150	190	1 / 24	19.47	-0.83	18.64	34.77	-16.13
782.00	5	QPSK	H	150	189	1 / 0	19.49	-0.82	18.67	34.77	-16.10
784.50	5	QPSK	H	150	191	1 / 24	18.98	-0.81	18.17	34.77	-16.60
782.00	5	16-QAM	H	150	189	1 / 0	18.89	-0.82	18.07	34.77	-16.70
782.00	5	64-QAM	H	150	189	1 / 0	17.92	-0.82	17.10	34.77	-17.67
782.00	10	QPSK	H	150	188	1 / 49	19.20	-0.82	18.38	34.77	-16.39
782.00	10	16-QAM	H	150	188	1 / 49	18.54	-0.82	17.72	34.77	-17.05
782.00	10	64-QAM	H	150	188	1 / 49	17.63	-0.82	16.81	34.77	-17.96
782.00	5	QPSK	V	150	333	1 / 0	17.05	-0.82	16.23	34.77	-18.54
782.00	5 (WCP)	QPSK	H	150	165	1 / 0	17.62	-0.82	16.80	34.77	-17.97

Table 7-4. ERP Data (Band 13)

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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	150	181	1 / 5	17.93	-0.65	17.28	38.45	-21.17
836.50	1.4	QPSK	H	150	181	1 / 0	17.96	-0.65	17.31	38.45	-21.14
848.30	1.4	QPSK	H	150	183	1 / 5	16.71	-0.65	16.06	38.45	-22.39
836.50	1.4	16-QAM	H	150	181	1 / 0	17.06	-0.65	16.41	38.45	-22.04
836.50	1.4	64-QAM	H	150	181	1 / 0	15.96	-0.65	15.31	38.45	-23.14
825.50	3	QPSK	H	150	178	1 / 0	17.84	-0.65	17.19	38.45	-21.26
836.50	3	QPSK	H	150	183	1 / 14	17.87	-0.65	17.22	38.45	-21.23
847.50	3	QPSK	H	150	183	1 / 0	17.01	-0.65	16.36	38.45	-22.09
836.50	3	16-QAM	H	150	183	1 / 14	17.02	-0.65	16.37	38.45	-22.08
836.50	3	64-QAM	H	150	183	1 / 14	15.99	-0.65	15.34	38.45	-23.11
826.50	5	QPSK	H	150	182	1 / 24	17.92	-0.65	17.27	38.45	-21.18
836.50	5	QPSK	H	150	182	1 / 0	17.85	-0.65	17.20	38.45	-21.25
846.50	5	QPSK	H	150	182	1 / 0	17.44	-0.65	16.79	38.45	-21.66
826.50	5	16-QAM	H	150	182	1 / 24	17.11	-0.65	16.46	38.45	-21.99
826.50	5	64-QAM	H	150	182	1 / 24	16.01	-0.65	15.36	38.45	-23.09
829.00	10	QPSK	H	150	180	1 / 49	17.97	-0.65	17.32	38.45	-21.13
836.50	10	QPSK	H	150	183	1 / 0	17.86	-0.65	17.21	38.45	-21.24
844.00	10	QPSK	H	150	183	1 / 0	17.78	-0.65	17.13	38.45	-21.32
836.50	10	16-QAM	H	150	183	1 / 0	17.26	-0.65	16.61	38.45	-21.84
836.50	10	64-QAM	H	150	183	1 / 0	16.11	-0.65	15.46	38.45	-22.99
829.00	10	QPSK	V	150	322	1 / 0	15.19	-0.65	14.54	38.45	-23.91
829.00	10 (WCP)	QPSK	H	150	6	1 / 0	15.44	-0.65	14.79	38.45	-23.66

Table 7-5. ERP Data (Band 5)

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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 Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	150	350	1 / 0	21.08	5.56	26.64	30.00	-3.36
1745.00	1.4	QPSK	H	150	349	1 / 0	20.54	5.32	25.86	30.00	-4.14
1779.30	1.4	QPSK	H	150	350	1 / 0	20.48	5.09	25.57	30.00	-4.43
1710.70	1.4	16-QAM	H	150	350	1 / 0	20.13	5.56	25.69	30.00	-4.31
1710.70	1.4	64-QAM	H	150	350	1 / 0	19.28	5.56	24.84	30.00	-5.16
1711.50	3	QPSK	H	150	347	1 / 14	20.95	5.55	26.50	30.00	-3.50
1745.00	3	QPSK	H	150	348	1 / 14	20.70	5.32	26.02	30.00	-3.98
1778.50	3	QPSK	H	150	348	1 / 14	20.24	5.10	25.34	30.00	-4.66
1711.50	3	16-QAM	H	150	347	1 / 14	20.03	5.55	25.58	30.00	-4.42
1711.50	3	64-QAM	H	150	347	1 / 14	19.20	5.55	24.75	30.00	-5.25
1712.50	5	QPSK	H	150	342	1 / 0	21.39	5.55	26.94	30.00	-3.06
1745.00	5	QPSK	H	150	340	1 / 0	21.53	5.32	26.85	30.00	-3.15
1777.50	5	QPSK	H	150	341	1 / 24	20.62	5.10	25.72	30.00	-4.28
1712.50	5	16-QAM	H	150	342	1 / 0	20.96	5.55	26.51	30.00	-3.49
1712.50	5	64-QAM	H	150	342	1 / 0	20.21	5.55	25.76	30.00	-4.24
1715.00	10	QPSK	H	150	342	1 / 49	21.46	5.53	26.99	30.00	-3.01
1745.00	10	QPSK	H	150	342	1 / 0	21.52	5.32	26.84	30.00	-3.16
1775.00	10	QPSK	H	150	344	1 / 0	20.77	5.12	25.89	30.00	-4.11
1715.00	10	16-QAM	H	150	342	1 / 49	20.63	5.53	26.16	30.00	-3.84
1715.00	10	64-QAM	H	150	342	1 / 49	19.94	5.53	25.47	30.00	-4.53
1717.50	15	QPSK	H	150	340	1 / 74	21.44	5.51	26.95	30.00	-3.05
1745.00	15	QPSK	H	150	340	1 / 0	21.63	5.32	26.95	30.00	-3.05
1772.50	15	QPSK	H	150	343	1 / 0	21.03	5.14	26.17	30.00	-3.83
1717.50	15	16-QAM	H	150	340	1 / 74	21.00	5.51	26.51	30.00	-3.49
1717.50	15	64-QAM	H	150	340	1 / 74	19.97	5.51	25.48	30.00	-4.52
1720.00	20	QPSK	H	150	340	1 / 0	21.47	5.49	26.96	30.00	-3.04
1745.00	20	QPSK	H	150	340	1 / 0	20.93	5.32	26.25	30.00	-3.75
1770.00	20	QPSK	H	150	342	1 / 0	21.16	5.15	26.31	30.00	-3.69
1720.00	20	16-QAM	H	150	340	1 / 0	20.96	5.49	26.45	30.00	-3.55
1720.00	20	64-QAM	H	150	340	1 / 0	19.55	5.49	25.04	30.00	-4.96
1715.00	10	QPSK	V	150	259	1 / 99	17.67	5.32	22.99	30.00	-7.01
1715.00	10 (WCP)	QPSK	H	150	9	1 / 0	21.04	5.53	26.57	30.00	-3.43

Table 7-6. EIRP Data (Band 4/66)

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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 Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	150	350	1 / 0	20.56	4.82	25.38	33.01	-7.63
1882.50	1.4	QPSK	H	150	349	1 / 5	20.03	4.73	24.76	33.01	-8.25
1914.30	1.4	QPSK	H	150	353	1 / 0	20.38	4.68	25.06	33.01	-7.95
1850.70	1.4	16-QAM	H	150	350	1 / 0	19.88	4.82	24.70	33.01	-8.31
1850.70	1.4	64-QAM	H	150	350	1 / 0	18.73	4.82	23.55	33.01	-9.46
1851.50	3	QPSK	H	150	348	1 / 0	20.61	4.82	25.43	33.01	-7.58
1882.50	3	QPSK	H	150	351	1 / 14	20.04	4.73	24.77	33.01	-8.24
1913.50	3	QPSK	H	150	352	1 / 0	20.46	4.68	25.14	33.01	-7.87
1851.50	3	16-QAM	H	150	348	1 / 0	19.69	4.82	24.51	33.01	-8.50
1851.50	3	64-QAM	H	150	348	1 / 0	18.65	4.82	23.47	33.01	-9.54
1852.50	5	QPSK	H	150	348	1 / 0	20.79	4.81	25.60	33.01	-7.41
1882.50	5	QPSK	H	150	349	1 / 0	19.95	4.73	24.68	33.01	-8.33
1912.50	5	QPSK	H	150	352	1 / 24	20.34	4.68	25.02	33.01	-7.99
1852.50	5	16-QAM	H	150	348	1 / 0	19.99	4.81	24.80	33.01	-8.21
1852.50	5	64-QAM	H	150	348	1 / 0	18.60	4.81	23.41	33.01	-9.60
1855.00	10	QPSK	H	150	349	1 / 0	20.89	4.81	25.70	33.01	-7.31
1882.50	10	QPSK	H	150	351	1 / 0	20.23	4.73	24.96	33.01	-8.05
1910.00	10	QPSK	H	150	348	1 / 0	20.43	4.68	25.11	33.01	-7.90
1855.00	10	16-QAM	H	150	349	1 / 0	19.98	4.81	24.79	33.01	-8.22
1855.00	10	64-QAM	H	150	349	1 / 0	19.20	4.81	24.01	33.01	-9.00
1857.50	15	QPSK	H	150	351	1 / 0	20.72	4.80	25.52	33.01	-7.49
1882.50	15	QPSK	H	150	350	1 / 0	20.37	4.73	25.10	33.01	-7.91
1907.50	15	QPSK	H	150	348	1 / 74	20.45	4.68	25.13	33.01	-7.88
1857.50	15	16-QAM	H	150	351	1 / 0	19.93	4.80	24.73	33.01	-8.28
1857.50	15	64-QAM	H	150	351	1 / 0	18.80	4.80	23.60	33.01	-9.41
1860.00	20	QPSK	H	150	350	1 / 0	20.92	4.79	25.71	33.01	-7.30
1882.50	20	QPSK	H	150	350	1 / 0	20.05	4.73	24.78	33.01	-8.23
1905.00	20	QPSK	H	150	348	1 / 0	20.24	4.68	24.92	33.01	-8.09
1860.00	20	16-QAM	H	150	350	1 / 0	20.34	4.79	25.13	33.01	-7.88
1860.00	20	64-QAM	H	150	350	1 / 0	19.09	4.79	23.88	33.01	-9.13
1860.00	20	QPSK	V	150	251	100 / 0	16.65	4.85	21.50	33.01	-11.51
1860.00	20 (WCP)	QPSK	H	150	55	1 / 0	20.42	4.79	25.21	33.01	-7.80

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

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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 Limit [dBm]	Margin [dB]
2307.50	5	QPSK	H	112	197	1 / 24	8.76	8.72	17.48	23.98	-6.50
2312.50	5	QPSK	H	113	200	1 / 24	9.06	8.74	17.80	23.98	-6.18
2312.50	5	16-QAM	H	113	200	1 / 24	8.99	8.74	17.73	23.98	-6.25
2312.50	5	64-QAM	H	113	200	1 / 24	7.66	8.74	16.40	23.98	-7.58
2310.00	10	QPSK	H	112	187	1 / 0	9.18	8.73	17.91	23.98	-6.07
2310.00	10	16-QAM	H	112	187	1 / 49	8.96	8.73	17.69	23.98	-6.29
2310.00	10	64-QAM	H	112	187	1 / 0	7.34	8.73	16.07	23.98	-7.91
2310.00	10	QPSK	V	235	23	1 / 0	9.10	8.73	17.83	23.98	-6.15
2310.00	10	QPSK	H	101	334	1 / 0	4.26	8.73	12.99	23.98	-10.99

Table 7-8. EIRP Data (Band 30)

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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 Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	150	12	1 / 24	13.23	5.74	18.97	33.01	-14.04
2535.00	5	QPSK	H	150	11	1 / 24	15.14	5.86	21.00	33.01	-12.01
2567.50	5	QPSK	H	150	11	1 / 0	15.15	5.98	21.13	33.01	-11.88
2567.50	5	16-QAM	H	150	11	1 / 24	15.07	5.98	21.05	33.01	-11.96
2567.50	5	64-QAM	H	150	11	1 / 0	13.80	5.98	19.78	33.01	-13.23
2505.00	10	QPSK	H	150	10	1 / 49	13.85	5.75	19.60	33.01	-13.41
2535.00	10	QPSK	H	150	11	1 / 0	14.83	5.86	20.69	33.01	-12.32
2565.00	10	QPSK	H	150	14	1 / 49	15.32	5.97	21.29	33.01	-11.72
2565.00	10	16-QAM	H	150	14	1 / 49	15.20	5.97	21.17	33.01	-11.84
2565.00	10	64-QAM	H	150	14	1 / 49	13.97	5.97	19.94	33.01	-13.07
2507.50	15	QPSK	H	150	11	1 / 74	14.62	5.76	20.38	33.01	-12.63
2535.00	15	QPSK	H	150	12	1 / 0	15.26	5.86	21.12	33.01	-11.89
2562.50	15	QPSK	H	150	12	1 / 0	15.70	5.96	21.66	33.01	-11.35
2562.50	15	16-QAM	H	150	12	1 / 0	15.25	5.96	21.21	33.01	-11.80
2562.50	15	64-QAM	H	150	12	1 / 0	14.34	5.96	20.30	33.01	-12.71
2510.00	20	QPSK	H	150	12	1 / 99	14.75	5.77	20.52	33.01	-12.49
2535.00	20	QPSK	H	150	10	1 / 99	15.33	5.86	21.19	33.01	-11.82
2560.00	20	QPSK	H	150	13	1 / 0	15.56	5.95	21.51	33.01	-11.50
2560.00	20	16-QAM	H	150	13	1 / 0	15.40	5.95	21.35	33.01	-11.66
2560.00	20	64-QAM	H	150	13	1 / 0	14.25	5.95	20.20	33.01	-12.81
2562.50	15	QPSK	V	150	240	1 / 0	14.46	6.03	20.49	33.01	-12.52
2562.50	15 (WCP)	QPSK	H	150	19	1 / 0	14.96	5.96	20.92	33.01	-12.09

Table 7-9. EIRP Data (Band 7)

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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 Limit [dBm]	Margin [dB]
2498.50	5	QPSK	H	100	164	1 / 0	9.84	8.42	18.26	33.01	-14.75
2593.00	5	QPSK	H	155	163	1 / 24	9.18	8.65	17.83	33.01	-15.18
2687.50	5	QPSK	H	121	162	1 / 0	10.83	8.44	19.27	33.01	-13.74
2687.50	5	16-QAM	H	121	162	1 / 0	9.81	8.44	18.25	33.01	-14.76
2687.50	5	64-QAM	H	121	162	1 / 0	8.92	8.44	17.36	33.01	-15.65
2501.00	10	QPSK	H	128	152	1 / 49	9.99	8.41	18.40	33.01	-14.61
2593.00	10	QPSK	H	124	157	1 / 0	9.71	8.65	18.36	33.01	-14.65
2685.00	10	QPSK	H	121	162	1 / 0	11.16	8.45	19.61	33.01	-13.40
2685.00	10	16-QAM	H	121	162	1 / 0	10.51	8.45	18.96	33.01	-14.05
2685.00	10	64-QAM	H	121	162	1 / 0	9.45	8.45	17.90	33.01	-15.11
2503.50	15	QPSK	H	102	343	1 / 0	10.11	8.42	18.53	33.01	-14.48
2593.00	15	QPSK	H	100	333	1 / 0	10.39	8.65	19.04	33.01	-13.97
2682.50	15	QPSK	H	105	343	1 / 0	10.55	8.46	19.01	33.01	-14.00
2593.00	15	16-QAM	H	100	333	1 / 0	9.73	8.65	18.38	33.01	-14.63
2593.00	15	64-QAM	H	100	333	1 / 0	7.97	8.65	16.62	33.01	-16.39
2506.00	20	QPSK	H	100	0	1 / 99	10.50	8.42	18.92	33.01	-14.09
2593.00	20	QPSK	H	124	157	1 / 99	10.40	8.65	19.05	33.01	-13.96
2680.00	20	QPSK	H	100	124	1 / 99	8.30	8.46	16.76	33.01	-16.25
2593.00	20	16-QAM	H	124	157	1 / 99	9.30	8.65	17.95	33.01	-15.06
2593.00	20	64-QAM	H	124	157	1 / 99	8.21	8.65	16.86	33.01	-16.15
2685.00	10	QPSK	V	100	334	1 / 99	10.33	8.45	18.78	33.01	-14.23
2685.00	10 (WCP)	QPSK	H	208	207	1 / 0	10.55	8.45	19.00	33.01	-14.01

Table 7-10. EIRP Data (Band 41)

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7.7 Radiated Spurious Emissions Measurements

§2.1053 §22.917(a) §24.238(a) §27.53(c) §27.53(f) §27.53(g) §27.53(h) §27.53(m) §27.53(a.4)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. 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

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Test Setup

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

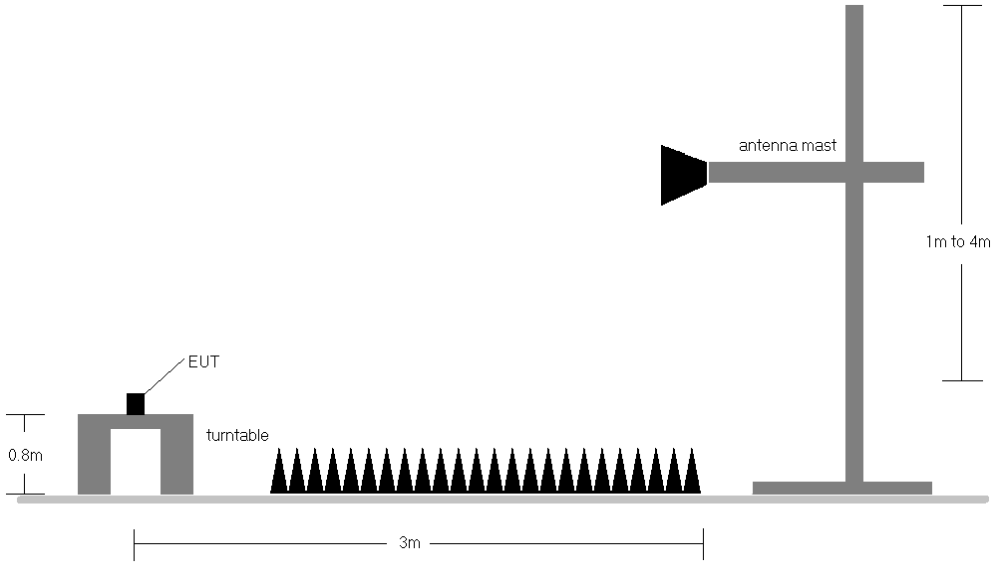

Figure 7-7. Test Instrument & Measurement Setup

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.

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OPERATING FREQUENCY:	701.50	MHz		
CHANNEL:	23035			
MEASURED OUTPUT POWER:	16.79	dBm	=	0.048 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	29.79	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1403.00	H	105	187	-74.10	5.92	-68.18	85.0
2104.50	H	112	350	-63.16	6.80	-56.36	73.1
2806.00	H	-	-	-71.53	8.12	-63.41	80.2

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

OPERATING FREQUENCY:	707.50	MHz		
CHANNEL:	23095			
MEASURED OUTPUT POWER:	17.17	dBm	=	0.052 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.17	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1415.00	H	137	0	-74.09	5.96	-68.12	85.3
2122.50	H	267	179	-57.75	6.84	-50.90	68.1
2830.00	H	-	-	-71.84	8.13	-63.71	80.9

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

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OPERATING FREQUENCY:	713.50	MHz		
CHANNEL:	23155			
MEASURED OUTPUT POWER:	17.41	dBm	=	0.055 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.41	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1427.00	H	-	-	-75.18	6.01	-69.17	86.6
2140.50	H	210	168	-70.65	6.89	-63.76	81.2
2854.00	H	-	-	-71.78	8.15	-63.63	81.0

Table 7-13. Radiated Spurious Data (Band 12/17 – High Channel)

OPERATING FREQUENCY:	713.50	MHz		
CHANNEL:	23155			
MEASURED OUTPUT POWER:	12.88	dBm	=	0.019 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	25.88	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1427.00	H	103	155	-72.72	6.01	-66.71	79.6
2140.50	H	107	58	-66.22	6.89	-59.33	72.2
2854.00	H	-	-	-73.96	8.15	-65.81	78.7

Table 7-14. Radiated Spurious Data with WCP (Band 12/17 – High Channel)

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OPERATING FREQUENCY:	779.50	MHz		
CHANNEL:	23205			
MEASURED OUTPUT POWER:	18.64	dBm	=	0.073 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	31.64	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2338.50	H	100	349	-67.52	7.01	-60.50	79.1
3118.00	H	-	-	-71.29	7.23	-64.06	82.7

Table 7-15. Radiated Spurious Data (Band 13 – Low Channel)

OPERATING FREQUENCY:	782.00	MHz		
CHANNEL:	23230			
MEASURED OUTPUT POWER:	18.67	dBm	=	0.074 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	31.67	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2346.00	H	107	351	-59.70	7.00	-52.70	71.4
3128.00	H	-	-	-68.90	7.21	-61.69	80.4

Table 7-16. Radiated Spurious Data (Band 13 – Mid Channel)

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OPERATING FREQUENCY:	784.50	MHz		
CHANNEL:	23255			
MEASURED OUTPUT POWER:	18.17	dBm	=	0.066 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	31.17	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2353.50	H	100	351	-62.40	6.99	-55.41	73.6
3138.00	H	-	-	-68.60	7.20	-61.40	79.6

Table 7-17. Radiated Spurious Data (Band 13 – High Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Margin [dB]
1559.00	H	142	182	-60.37	6.40	-53.98	-14.0
1564.00	H	129	353	-57.19	6.41	-50.78	-10.8
1569.00	H	124	345	-62.02	6.42	-55.60	-15.6

Table 7-18. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

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OPERATING FREQUENCY:	782.00	MHz		
CHANNEL:	23230			
MEASURED OUTPUT POWER:	16.80	dBm	=	0.048 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	29.80	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2346.00	H	105	130	-58.13	7.00	-51.13	67.9
3128.00	H	-	-	-69.19	7.21	-61.98	78.8

Table 7-19. Radiated Spurious Data with WCP (Band 13 – Mid Channel)

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	H	107	23	-54.25	6.41	-47.84	-7.8

Table 7-20. Radiated Spurious Data with WCP (Band 13 – 1559-1610MHz Band)

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OPERATING FREQUENCY:	829.00	MHz		
CHANNEL:	20450			
MEASURED OUTPUT POWER:	17.32	dBm	=	0.054 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.32	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1658.00	H	117	354	-68.55	6.26	-62.28	79.6
2487.00	H	105	157	-65.37	6.84	-58.53	75.9
3316.00	H	-	-	-68.41	7.17	-61.24	78.6

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

OPERATING FREQUENCY:	836.50	MHz		
CHANNEL:	20525			
MEASURED OUTPUT POWER:	17.21	dBm	=	0.053 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.21	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	H	122	352	-67.88	6.21	-61.67	78.9
2509.50	H	122	331	-61.48	6.86	-54.62	71.8
3346.00	H	-	-	-68.53	7.26	-61.26	78.5

Table 7-22. Radiated Spurious Data (Band 5 – Mid Channel)

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OPERATING FREQUENCY:	844.00	MHz		
CHANNEL:	20600			
MEASURED OUTPUT POWER:	17.13	dBm	=	0.052 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.13	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1688.00	H	112	353	-70.11	6.15	-63.96	81.1
2532.00	H	117	336	-61.19	6.93	-54.27	71.4
3376.00	H	-	-	-68.65	7.35	-61.30	78.4

Table 7-23. Radiated Spurious Data (Band 5 – High Channel)

OPERATING FREQUENCY:	829.00	MHz		
CHANNEL:	20450			
MEASURED OUTPUT POWER:	14.79	dBm	=	0.030 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	27.79	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1658.00	H	127	28	-61.36	6.26	-55.10	69.9
2487.00	H	112	21	-60.65	6.84	-53.81	68.6
3316.00	H	-	-	-68.46	7.17	-61.29	76.1

Table 7-24. Radiated Spurious Data with WCP (Band 5 – Low Channel)

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OPERATING FREQUENCY:	1715.00	MHz		
CHANNEL:	132022			
MEASURED OUTPUT POWER:	26.99	dBm	=	0.500 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	39.99	dBc	

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]	[dBc]
3430.00	H	-	-	-68.76	9.68	-59.08	86.1
5145.00	H	129	354	-63.89	10.93	-52.96	79.9
6860.00	H	-	-	-60.99	10.82	-50.17	77.2

Table 7-25. Radiated Spurious Data (Band 4/66 – Low Channel)

OPERATING FREQUENCY:	1745.00	MHz		
CHANNEL:	132322			
MEASURED OUTPUT POWER:	26.84	dBm	=	0.483 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	39.84	dBc	

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]	[dBc]
3490.00	H	-	-	-68.69	9.89	-58.80	85.6
5235.00	H	132	10	-63.75	10.88	-52.87	79.7
6980.00	H	-	-	-60.61	11.05	-49.55	76.4

Table 7-26. Radiated Spurious Data (Band 4/66 – Mid Channel)

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OPERATING FREQUENCY:	1775.00	MHz		
CHANNEL:	132622			
MEASURED OUTPUT POWER:	25.89	dBm	=	0.388 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	38.89	dBc	

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]	[dBc]
3550.00	H	120	0	-69.35	10.02	-59.33	85.2
5325.00	H	159	344	-64.11	11.06	-53.05	78.9
7100.00	H	-	-	-61.07	11.12	-49.95	75.8

Table 7-27. Radiated Spurious Data (Band 4/66 – High Channel)

OPERATING FREQUENCY:	1715.00	MHz		
CHANNEL:	132022			
MEASURED OUTPUT POWER:	26.57	dBm	=	0.454 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	39.57	dBc	

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]	[dBc]
3430.00	H	110	174	-67.31	9.68	-57.63	84.2
5145.00	H	154	328	-67.10	10.93	-56.17	82.7
6860.00	H	-	-	-60.89	10.82	-50.07	76.6

Table 7-28. Radiated Spurious Data with WCP (Band 4/66 – Low Channel)

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OPERATING FREQUENCY:	1860.00	MHz		
CHANNEL:	26140			
MEASURED OUTPUT POWER:	25.71	dBm	=	0.373 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	38.71	dBc	

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]	[dBc]
3720.00	V	164	193	-68.83	9.99	-58.84	84.6
5580.00	V	142	270	-66.36	11.27	-55.08	80.8
7440.00	V	-	-	-60.72	10.98	-49.73	75.4

Table 7-29. Radiated Spurious Data (Band 2/25 – Low Channel)

OPERATING FREQUENCY:	1882.50	MHz		
CHANNEL:	26365			
MEASURED OUTPUT POWER:	24.78	dBm	=	0.301 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.78	dBc	

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]	[dBc]
3765.00	V	150	128	-67.29	9.78	-57.51	82.3
5647.50	V	150	357	-60.56	11.38	-49.17	74.0
7530.00	V	150	296	-54.76	11.27	-43.50	68.3

Table 7-30. Radiated Spurious Data (Band 2/25 – Mid Channel)

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OPERATING FREQUENCY:	1905.00	MHz		
CHANNEL:	26590			
MEASURED OUTPUT POWER:	24.92	dBm	=	0.311 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.92	dBc	

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]	[dBc]
3810.00	V	208	331	-67.25	9.58	-57.67	82.6
5715.00	V	129	309	-58.45	11.45	-46.99	71.9
7620.00	V	117	292	-60.42	11.50	-48.92	73.8
9525.00	V	-	-	-60.50	12.38	-48.12	73.0

Table 7-31. Radiated Spurious Data (Band 2/25 – High Channel)

OPERATING FREQUENCY:	1860.00	MHz		
CHANNEL:	26140			
MEASURED OUTPUT POWER:	25.21	dBm	=	0.332 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	38.21	dBc	

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]	[dBc]
3720.00	H	178	318	-64.69	9.99	-54.69	79.9
5580.00	H	159	308	-66.54	11.27	-55.27	80.5
7440.00	H	-	-	-60.35	10.98	-49.37	74.6

Table 7-32. Radiated Spurious Data with WCP (Band 2/25 – Low Channel)

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OPERATING FREQUENCY:	2310.00	MHz		
CHANNEL:	27710			
MEASURED OUTPUT POWER:	17.91	dBm	=	0.062 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	70 + 10 $\log_{10}$ (W) =	57.91	dBc	

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]	[dBc]
4620.00	H	123	24	-69.03	10.98	-58.05	76.0
6930.00	H	115	309	-60.85	11.76	-49.09	67.0
9240.00	H	-	-	-57.87	11.52	-46.35	64.3

Table 7-33. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY:	2310.00	MHz		
CHANNEL:	27710			
MEASURED OUTPUT POWER:	12.99	dBm	=	0.020 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	-40.00	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]	[dBc]
4620.00	H	161	213	-69.57	10.98	-58.59	71.6
6930.00	H	154	50	-60.88	11.76	-49.12	62.1
9240.00	H	-	-	-59.11	11.52	-47.59	60.6

Table 7-34. Radiated Spurious Data with WCP (Band 30 – Mid Channel)

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OPERATING FREQUENCY:	2507.50	MHz		
CHANNEL:	20825			
MEASURED OUTPUT POWER:	20.38	dBm	=	0.109 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	45.38	dBc	

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]	[dBc]
5015.00	H	142	118	-67.15	11.15	-56.00	76.4
7522.50	H	119	292	-58.52	11.25	-47.27	67.6
10030.00	H	-	-	-59.68	12.59	-47.10	67.5

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

OPERATING FREQUENCY:	2535.00	MHz		
CHANNEL:	21100			
MEASURED OUTPUT POWER:	21.12	dBm	=	0.129 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	46.12	dBc	

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]	[dBc]
5070.00	H	137	353	-65.35	11.04	-54.31	75.4
7605.00	H	137	285	-58.52	11.47	-47.05	68.2
10140.00	H	-	-	-60.50	12.67	-47.83	68.9

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

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OPERATING FREQUENCY:	2562.50	MHz		
CHANNEL:	21375			
MEASURED OUTPUT POWER:	21.66	dBm	=	0.147 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	46.66	dBc	

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]	[dBc]
5125.00	H	117	2	-66.01	10.94	-55.07	76.7
7687.50	H	139	17	-58.16	11.54	-46.62	68.3
10250.00	H	-	-	-60.65	12.74	-47.91	69.6

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

OPERATING FREQUENCY:	2562.50	MHz		
CHANNEL:	21375			
MEASURED OUTPUT POWER:	20.92	dBm	=	0.124 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	45.92	dBc	

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]	[dBc]
5125.00	H	110	30	-66.09	10.94	-55.15	76.1
7687.50	H	110	360	-60.59	11.54	-49.05	70.0
10250.00	H	-	-	-60.34	12.74	-47.60	68.5

Table 7-38. Radiated Spurious Data with WCP (Band 7 – High Channel)

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OPERATING FREQUENCY:	2501.00	MHz		
CHANNEL:	39700			
MEASURED OUTPUT POWER:	18.40	dBm	=	0.069 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	43.40	dBc	

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]	[dBc]
5002.00	V	-	-	-63.94	11.20	-52.74	71.1
7503.00	V	-	-	-57.33	11.18	-46.15	64.6

Table 7-39. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz		
CHANNEL:	40620			
MEASURED OUTPUT POWER:	18.36	dBm	=	0.069 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	43.36	dBc	

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]	[dBc]
5186.00	V	-	-	-62.94	10.84	-52.10	70.5
7779.00	V	-	-	-56.09	11.61	-44.48	62.8

Table 7-40. Radiated Spurious Data (Band 41 – Mid Channel)

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OPERATING FREQUENCY:	2685.00	MHz		
CHANNEL:	41540			
MEASURED OUTPUT POWER:	19.61	dBm	=	0.091 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	44.61	dBc	

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]	[dBc]
5370.00	V	-	-	-64.16	11.12	-53.04	72.6
8055.00	V	-	-	-57.86	11.56	-46.31	65.9

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

OPERATING FREQUENCY:	2685.00	MHz		
CHANNEL:	41540			
MEASURED OUTPUT POWER:	19.00	dBm	=	0.079 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	44.00	dBc	

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]	[dBc]
5370.00	H	-	-	-63.73	11.12	-52.61	71.6
8055.00	H	-	-	-57.47	11.56	-45.92	64.9

Table 7-42. Radiated Spurious Data with WCP (Band 41 – High Channel)

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7.8 Frequency Stability / Temperature Variation

§2.1055 §22.355 §24.235 §27.54

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. 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 and 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-D-2010

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

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Band 12/17 Frequency Stability Measurements

§2.1055 §27.54

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	+ 20 (Ref)	707,500,150	150	0.0000212
100 %		- 30	707,499,830	-170	-0.0000240
100 %		- 20	707,499,970	-30	-0.0000042
100 %		- 10	707,499,814	-186	-0.0000263
100 %		0	707,499,876	-124	-0.0000175
100 %		+ 10	707,499,889	-111	-0.0000157
100 %		+ 20	707,500,320	320	0.0000452
100 %		+ 30	707,499,832	-168	-0.0000237
100 %		+ 40	707,500,004	4	0.0000006
100 %		+ 50	707,499,688	-312	-0.0000441
BATT. ENDPOINT	3.45	+ 20	707,499,678	-322	-0.0000455

Table 7-43. Frequency Stability Data (Band 12/17)

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Band 12/17Frequency Stability Measurements

§2.1055 §27.54

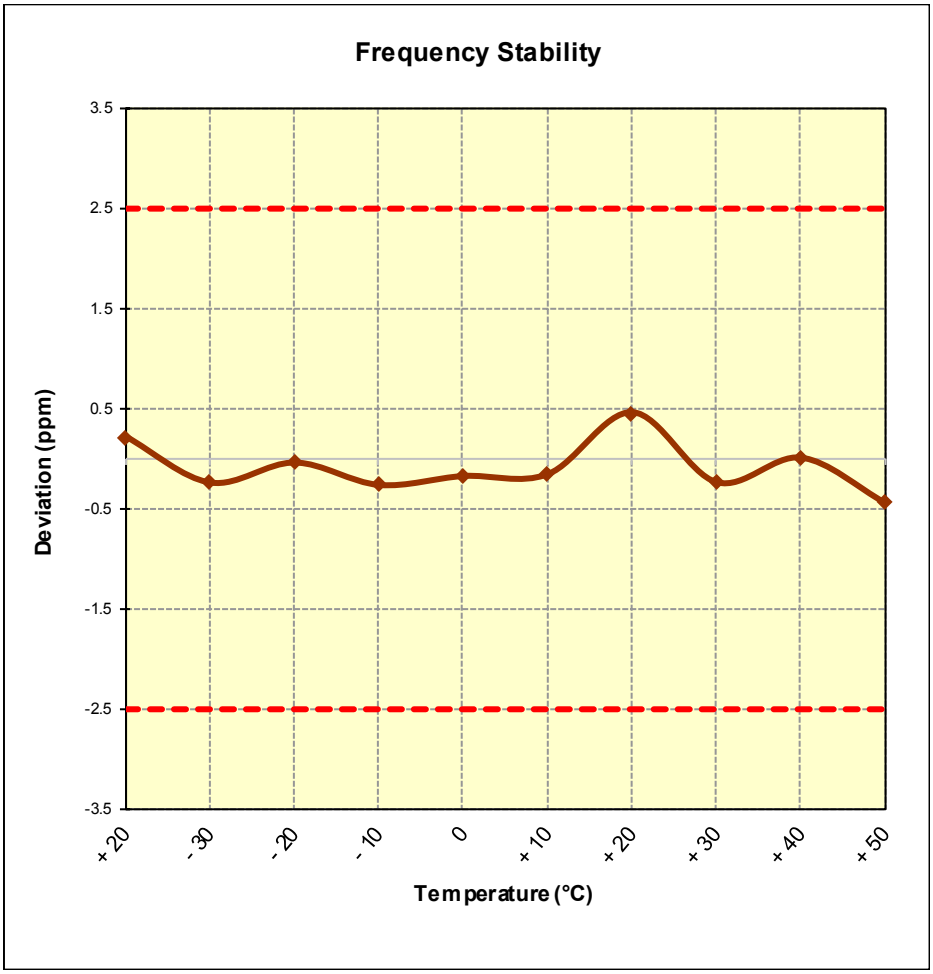

Figure 7-8. Frequency Stability Graph (Band 12/17)

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Band 13 Frequency Stability Measurements

§2.1055 §27.54

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	+ 20 (Ref)	782,000,266	266	0.0000340
100 %		- 30	782,000,003	3	0.0000004
100 %		- 20	782,000,011	11	0.0000014
100 %		- 10	782,000,030	30	0.0000038
100 %		0	781,999,977	-23	-0.0000029
100 %		+ 10	781,999,796	-204	-0.0000261
100 %		+ 20	782,000,106	106	0.0000136
100 %		+ 30	782,000,041	41	0.0000052
100 %		+ 40	781,999,909	-91	-0.0000116
100 %		+ 50	782,000,013	13	0.0000017
BATT. ENDPOINT	3.45	+ 20	781,999,892	-108	-0.0000138

Table 7-44. Frequency Stability Data (Band 13)

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Band 13 Frequency Stability Measurements

§2.1055 §27.54

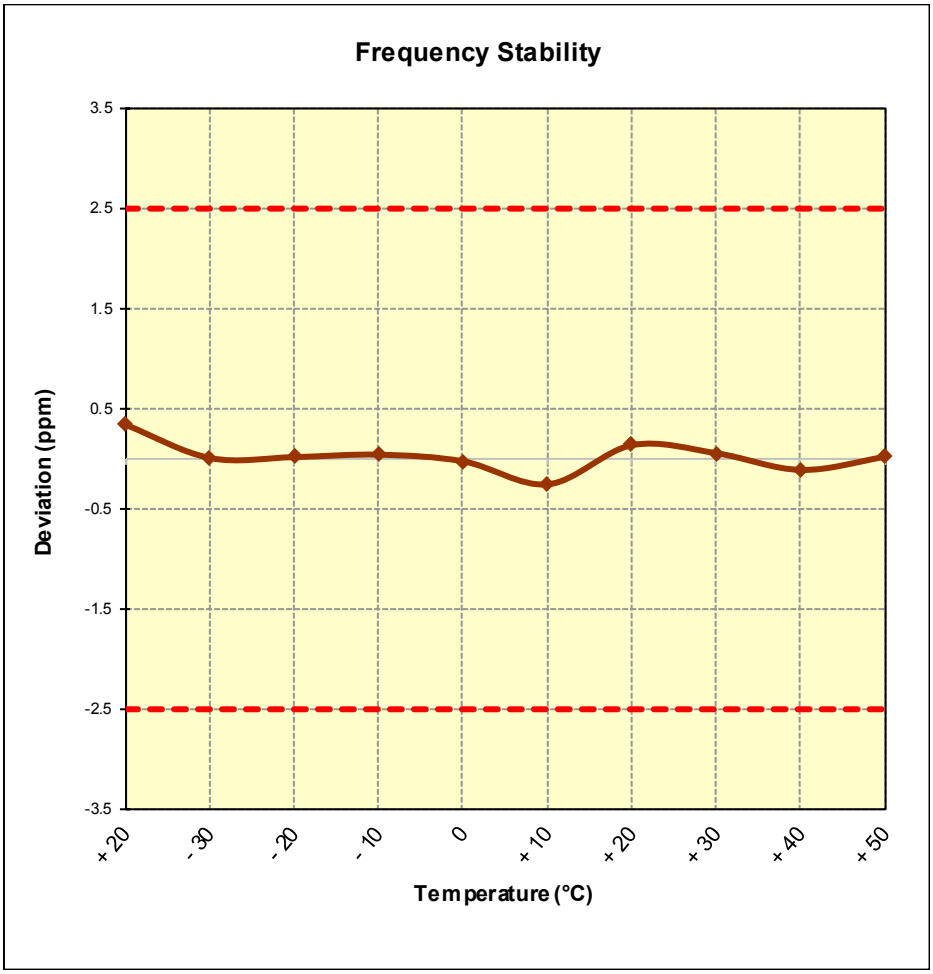

Figure 7-9. Frequency Stability Graph (Band 13)

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Band 5 Frequency Stability Measurements

§2.1055 §22.355

OPERATING FREQUENCY:	836,500,000	Hz
CHANNEL:	20525	
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	+ 20 (Ref)	836,500,068	68	0.0000081
100 %		- 30	836,500,036	36	0.0000043
100 %		- 20	836,500,117	117	0.0000140
100 %		- 10	836,499,915	-85	-0.0000102
100 %		0	836,500,157	157	0.0000188
100 %		+ 10	836,499,935	-65	-0.0000078
100 %		+ 20	836,500,309	309	0.0000369
100 %		+ 30	836,500,293	293	0.0000350
100 %		+ 40	836,499,614	-386	-0.0000461
100 %		+ 50	836,499,981	-19	-0.0000023
BATT. ENDPOINT	3.45	+ 20	836,500,106	106	0.0000127

Table 7-45. Frequency Stability Data (Band 5)

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Band 5 Frequency Stability Measurements

§2.1055 §22.355

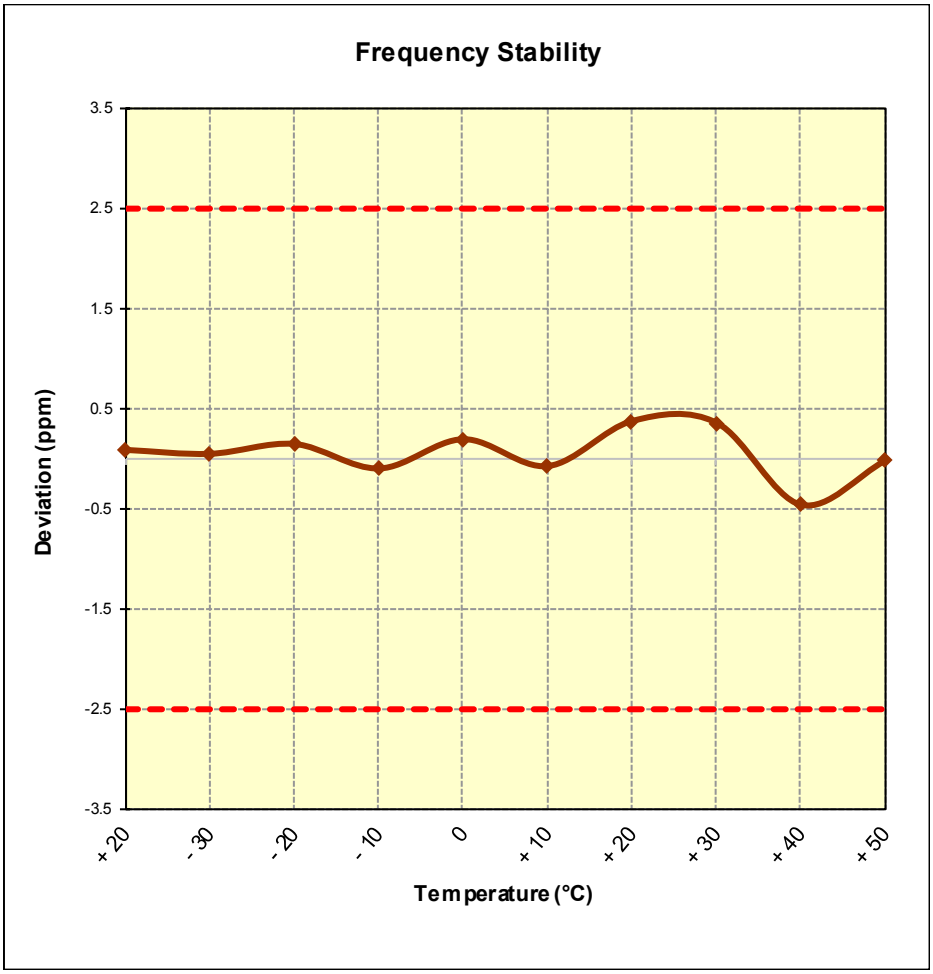

Figure 7-10. Frequency Stability Graph (Band 5)

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Band 4/66 Frequency Stability Measurements

§2.1055 §§27.54

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	+ 20 (Ref)	1,745,000,095	95	0.0000054
100 %		- 30	1,745,000,059	59	0.0000034
100 %		- 20	1,745,000,461	461	0.0000264
100 %		- 10	1,745,000,031	31	0.0000018
100 %		0	1,745,000,007	7	0.0000004
100 %		+ 10	1,744,999,973	-27	-0.0000015
100 %		+ 20	1,744,999,980	-20	-0.0000011
100 %		+ 30	1,745,000,087	87	0.0000050
100 %		+ 40	1,745,000,086	86	0.0000049
100 %		+ 50	1,744,999,904	-96	-0.0000055
BATT. ENDPOINT	3.45	+ 20	1,745,000,040	40	0.0000023

Table 7-46. Frequency Stability Data (Band 4/66)

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.

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Band 4/66 Frequency Stability Measurements

§2.1055 §§27.54

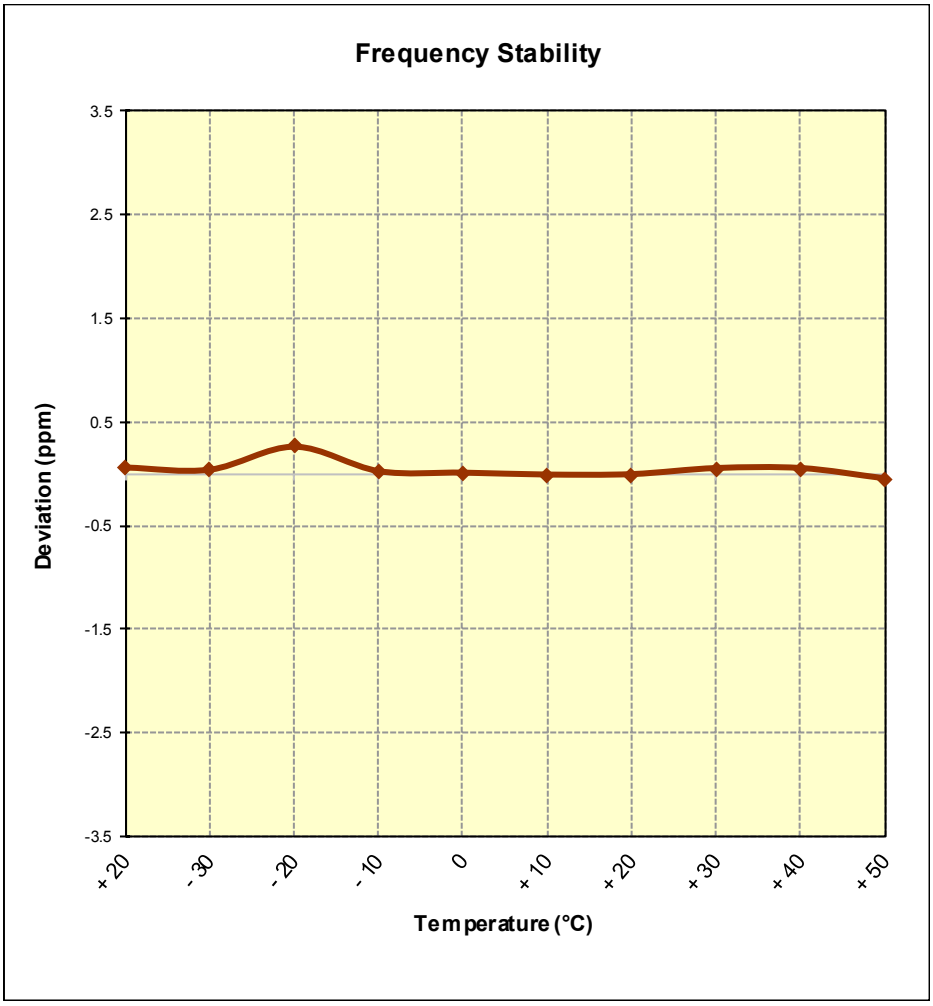

Figure 7-11. Frequency Stability Graph (Band 4/66)

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Band 2/25 Frequency Stability Measurements

§2.1055 §24.235

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	+ 20 (Ref)	1,882,500,121	121	0.0000064
100 %		- 30	1,882,499,720	-280	-0.0000149
100 %		- 20	1,882,500,164	164	0.0000087
100 %		- 10	1,882,500,058	58	0.0000031
100 %		0	1,882,499,647	-353	-0.0000188
100 %		+ 10	1,882,500,036	36	0.0000019
100 %		+ 20	1,882,499,956	-44	-0.0000023
100 %		+ 30	1,882,499,979	-21	-0.0000011
100 %		+ 40	1,882,500,186	186	0.0000099
100 %		+ 50	1,882,499,809	-191	-0.0000101
BATT. ENDPOINT	3.45	+ 20	1,882,500,143	143	0.0000076

Table 7-47. Frequency Stability Data (Band 2/25)

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.

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Band 2/25 Frequency Stability Measurements

§2.1055 §24.235

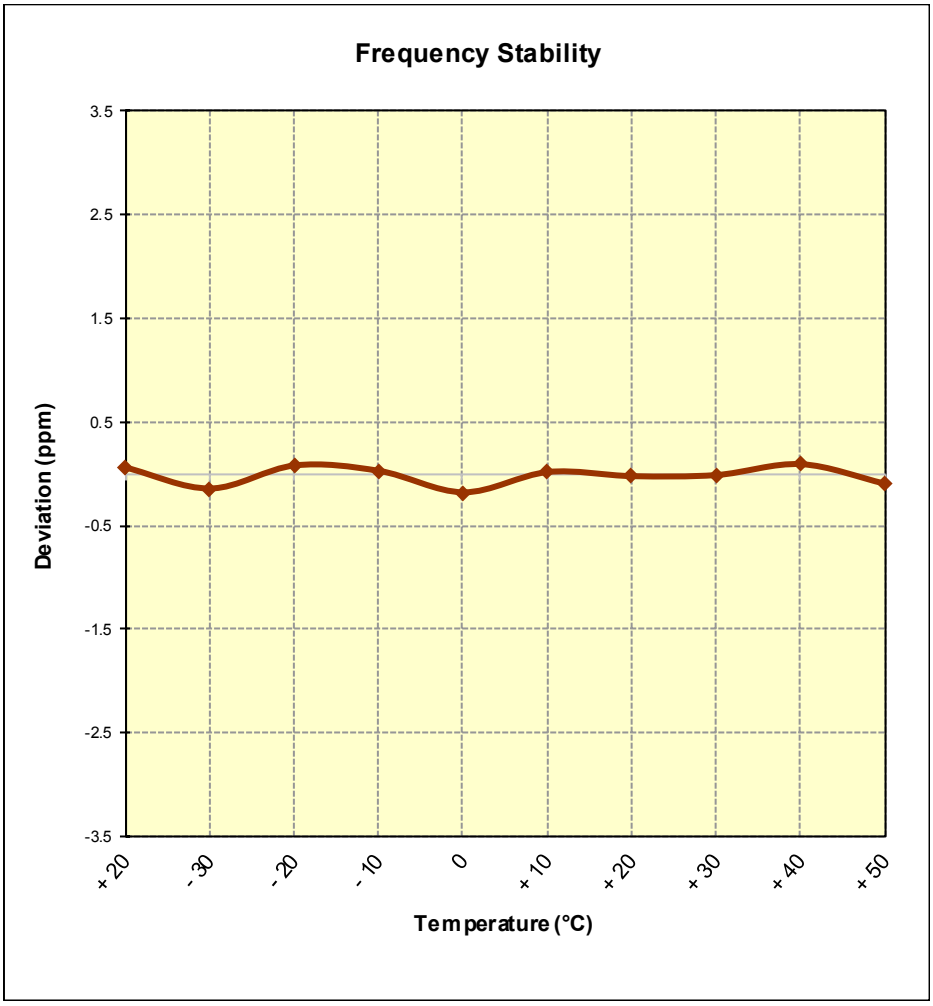

Figure 7-12. Frequency Stability Graph (Band 2/25)

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Band 30 Frequency Stability Measurements

§2.1055 §24.235

OPERATING FREQUENCY:	2,310,000,000	Hz
CHANNEL:	27710	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,309,999,988	-12	-0.0000005
100 %		- 30	2,310,000,121	121	0.0000052
100 %		- 20	2,309,999,617	-383	-0.0000166
100 %		- 10	2,310,000,052	52	0.0000023
100 %		0	2,309,999,923	-77	-0.0000033
100 %		+ 10	2,309,999,956	-44	-0.0000019
100 %		+ 20	2,310,000,259	259	0.0000112
100 %		+ 30	2,310,000,006	6	0.0000003
100 %		+ 40	2,309,999,841	-159	-0.0000069
100 %		+ 50	2,310,000,340	340	0.0000147
BATT. ENDPOINT	3.45	+ 20	2,310,000,075	75	0.0000032

Table 7-48. Frequency Stability Data (Band 30)

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.

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Band 30 Frequency Stability Measurements

§2.1055 §24.235

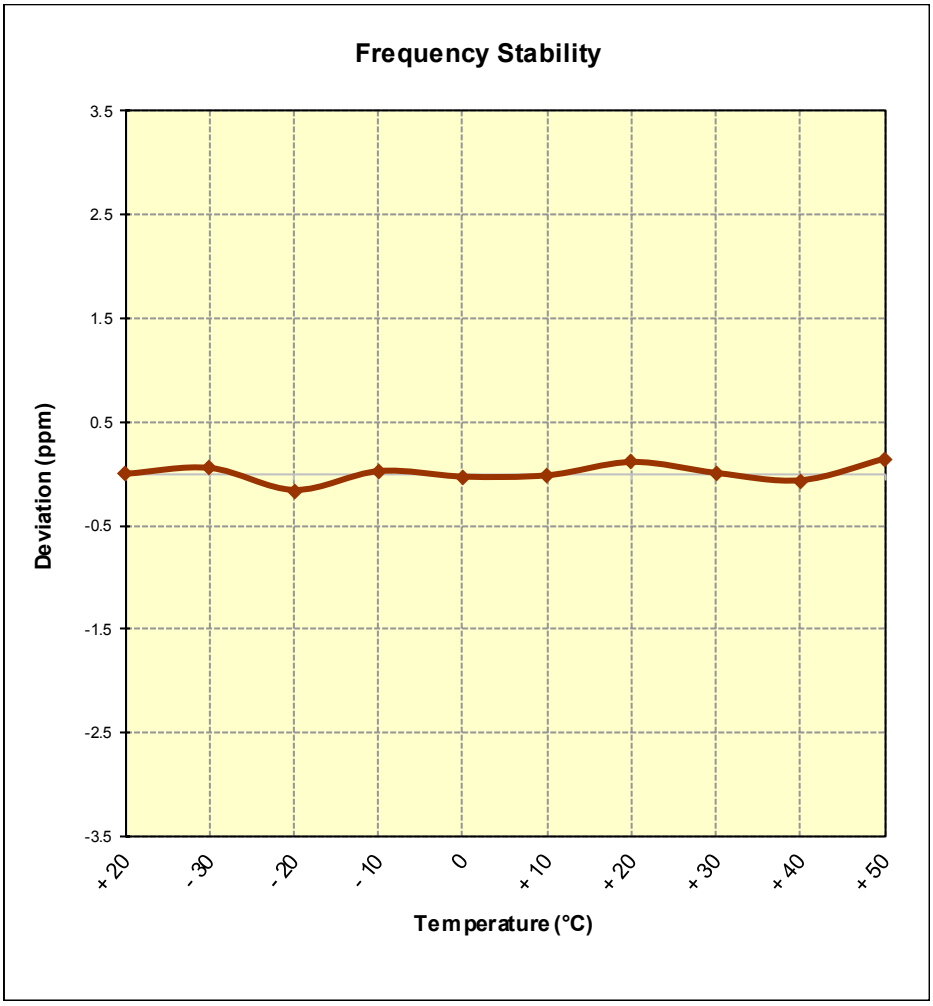

Figure 7-13. Frequency Stability Graph (Band 30)

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Band 7 Frequency Stability Measurements
§2.1055 §27.54

OPERATING FREQUENCY:	2,535,000,000	Hz
CHANNEL:	21100	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,535,000,060	60	0.0000024
100 %		- 30	2,534,999,812	-188	-0.0000074
100 %		- 20	2,535,000,063	63	0.0000025
100 %		- 10	2,535,000,364	364	0.0000144
100 %		0	2,535,000,067	67	0.0000026
100 %		+ 10	2,534,999,860	-140	-0.0000055
100 %		+ 20	2,535,000,127	127	0.0000050
100 %		+ 30	2,534,999,701	-299	-0.0000118
100 %		+ 40	2,534,999,693	-307	-0.0000121
100 %		+ 50	2,534,999,987	-13	-0.0000005
BATT. ENDPOINT	3.45	+ 20	2,535,000,280	280	0.0000110

Table 7-49. Frequency Stability Data (Band 7)

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.

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Band 7 Frequency Stability Measurements

§2.1055 §27.54

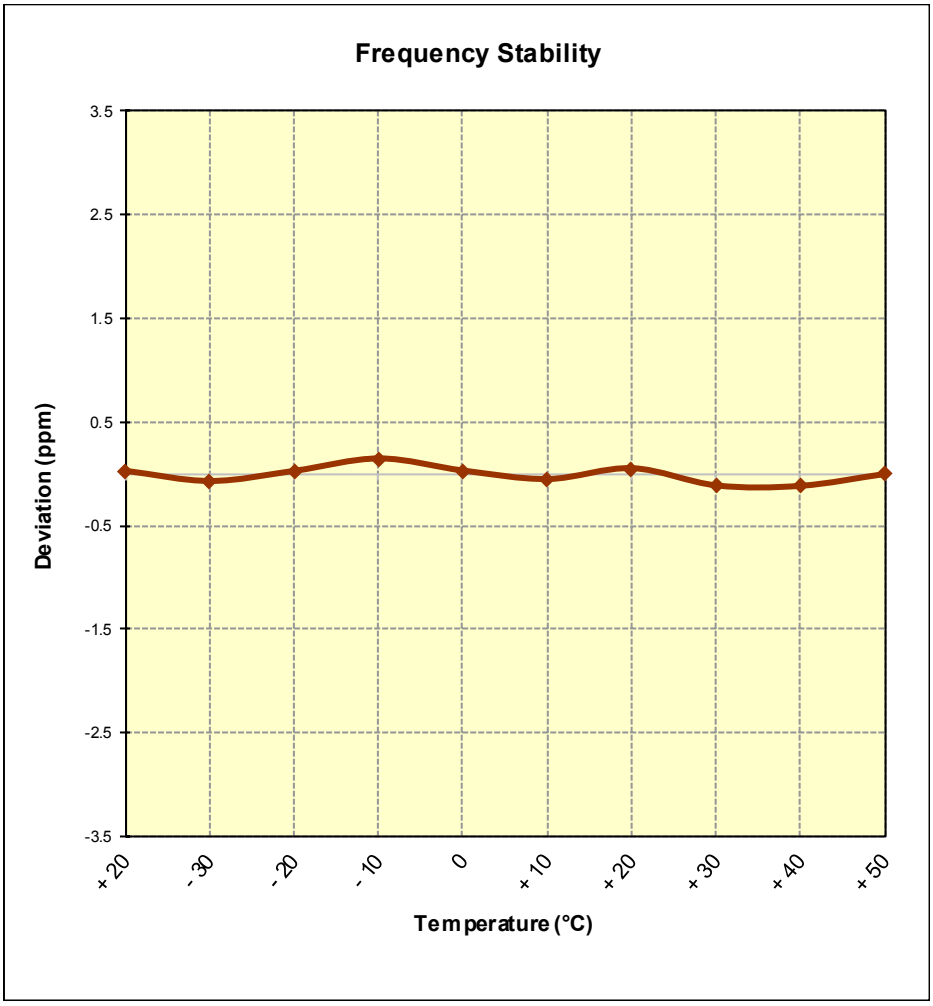

Figure 7-14. Frequency Stability Graph (Band 7)

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Band 41 Frequency Stability Measurements

§2.1055 §27.54

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	+ 20 (Ref)	2,592,999,901	-99	-0.0000038
100 %		- 30	2,593,000,341	341	0.0000132
100 %		- 20	2,593,000,176	176	0.0000068
100 %		- 10	2,593,000,086	86	0.0000033
100 %		0	2,593,000,143	143	0.0000055
100 %		+ 10	2,592,999,642	-358	-0.0000138
100 %		+ 20	2,592,999,609	-391	-0.0000151
100 %		+ 30	2,592,999,828	-172	-0.0000066
100 %		+ 40	2,592,999,650	-350	-0.0000135
100 %		+ 50	2,592,999,984	-16	-0.0000006
BATT. ENDPOINT	3.45	+ 20	2,592,999,767	-233	-0.0000090

Table 7-50. 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.

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Band 41 Frequency Stability Measurements

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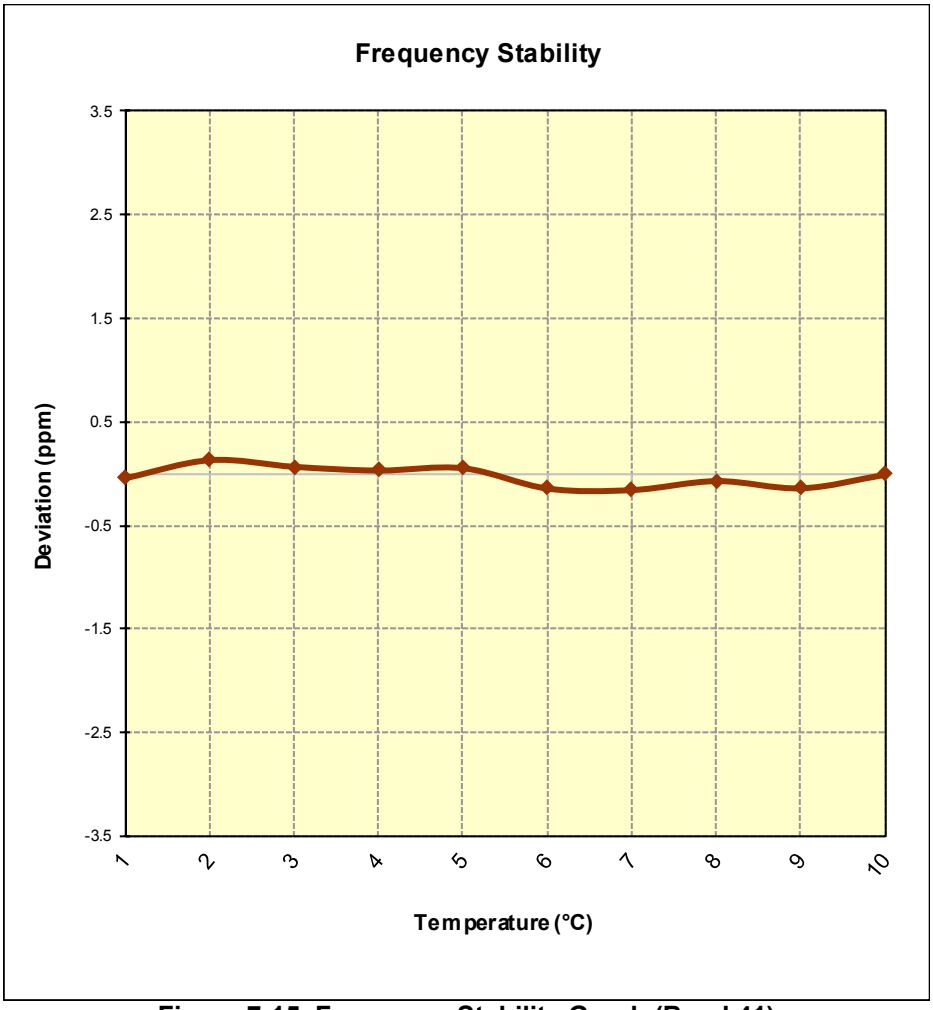

Figure 7-15. Frequency Stability Graph (Band 41)

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFV30A** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

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