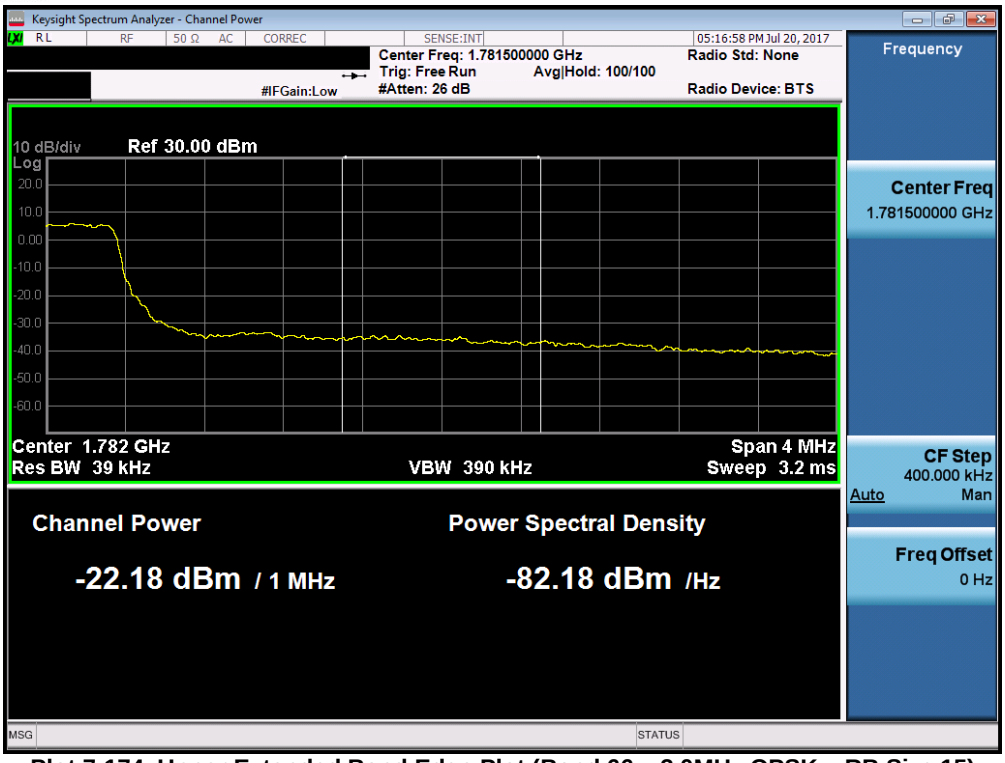
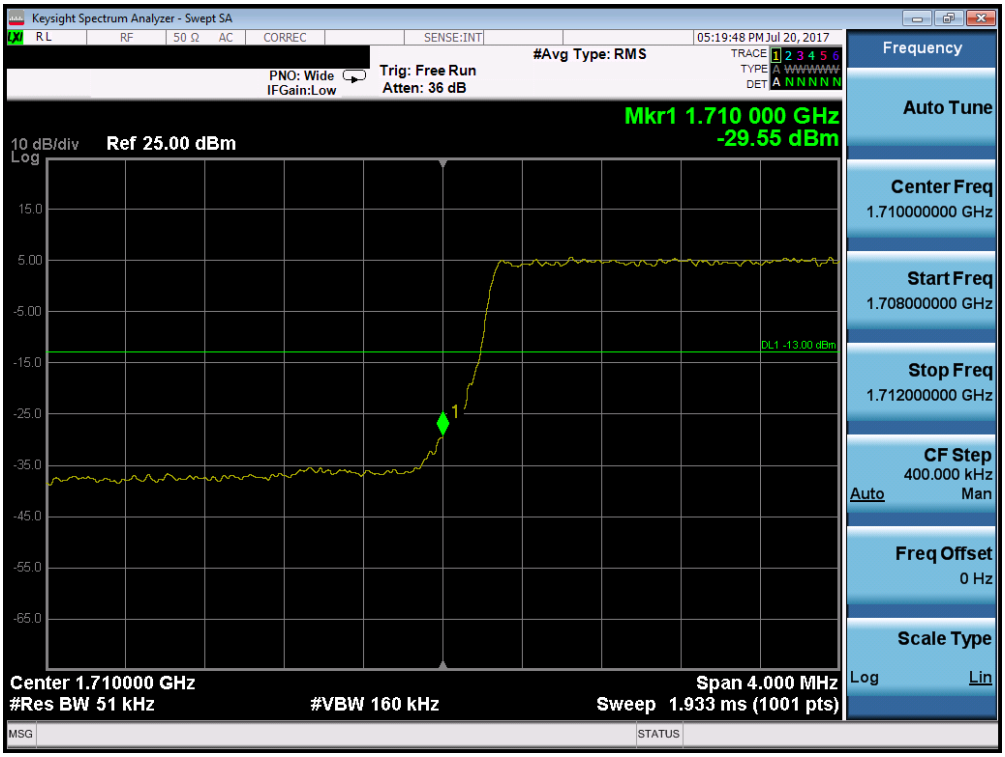



**Plot 7-174. Upper Extended Band Edge Plot (Band 66 – 3.0MHz QPSK – RB Size 15)**




**Plot 7-175. Lower Band Edge Plot (Band 4/66 – 5.0MHz QPSK – RB Size 25)**

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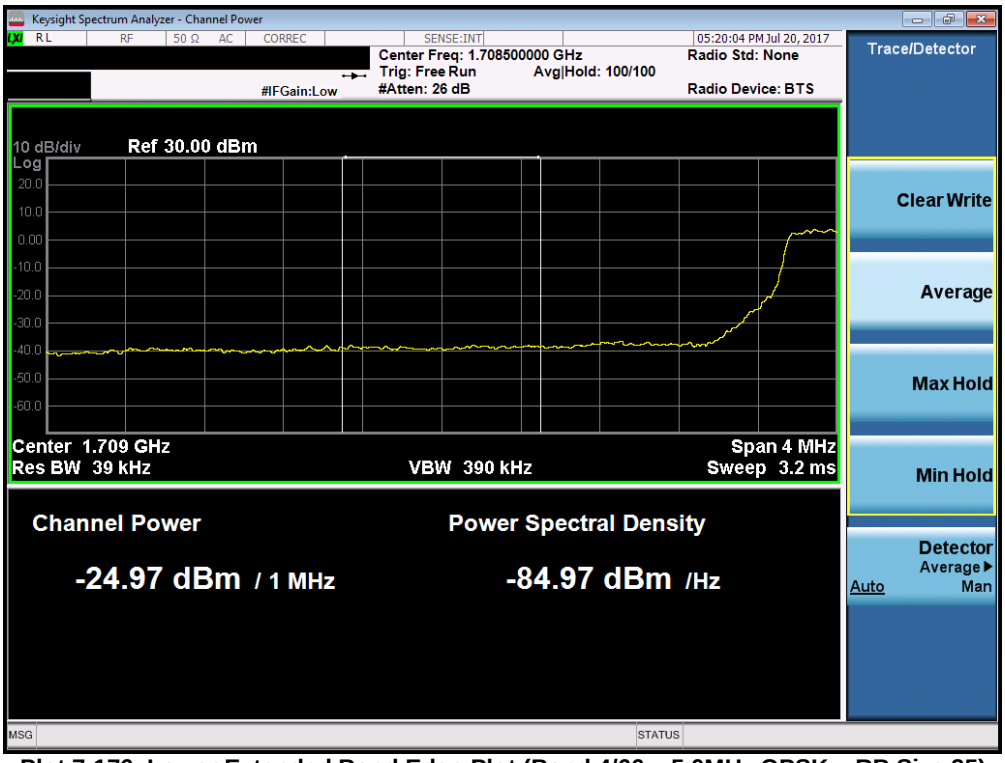
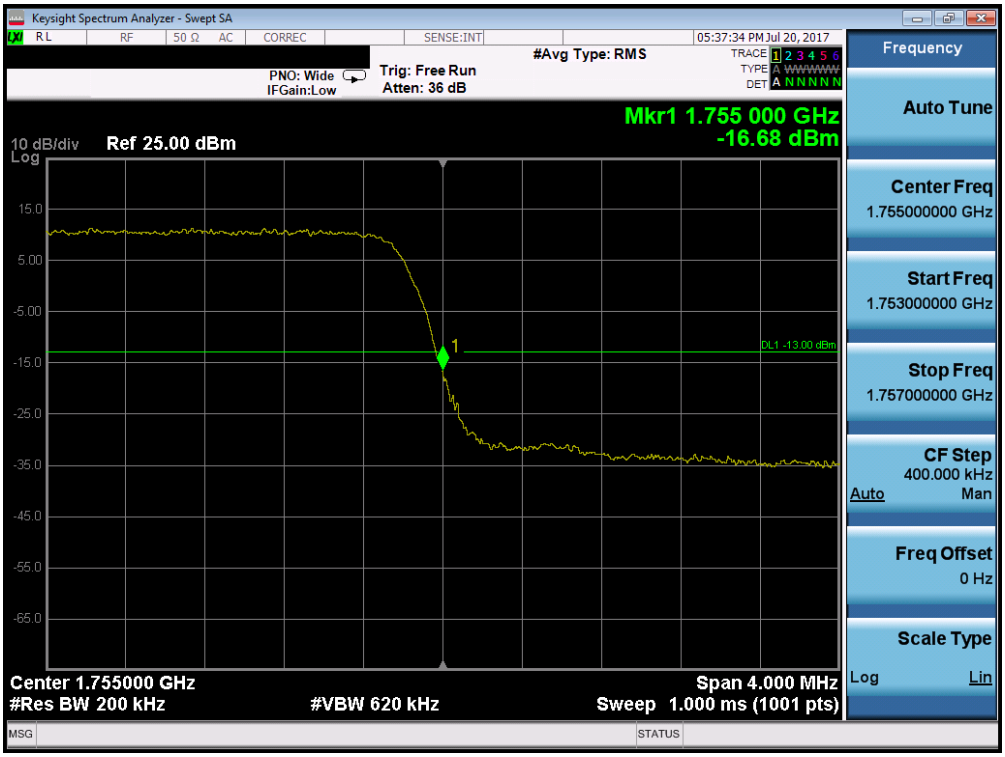



**Plot 7-176. Lower Extended Band Edge Plot (Band 4/66 – 5.0MHz QPSK – RB Size 25)**




**Plot 7-177. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)**

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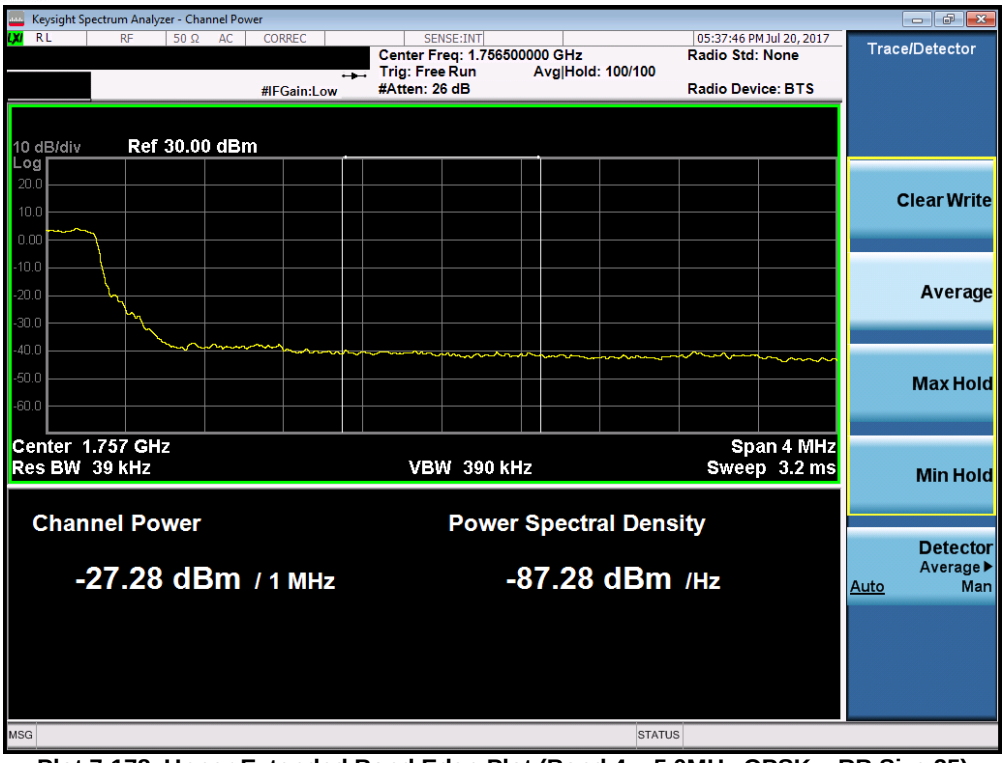
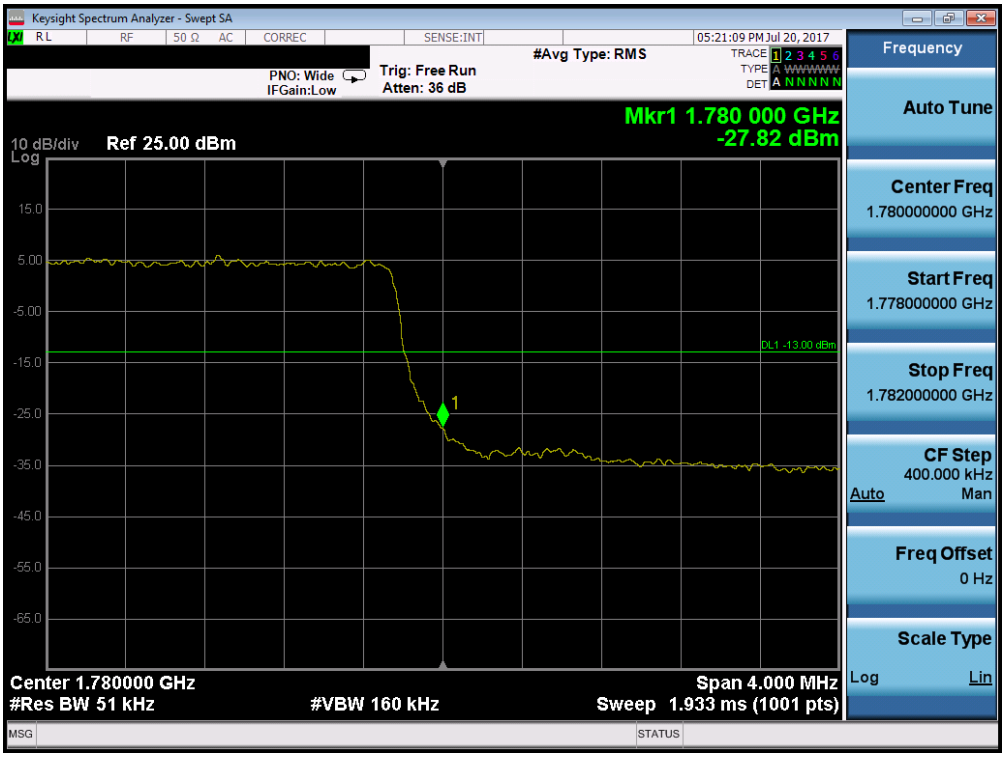



**Plot 7-178. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)**




**Plot 7-179. Upper Band Edge Plot (Band 66 – 5.0MHz QPSK – RB Size 25)**



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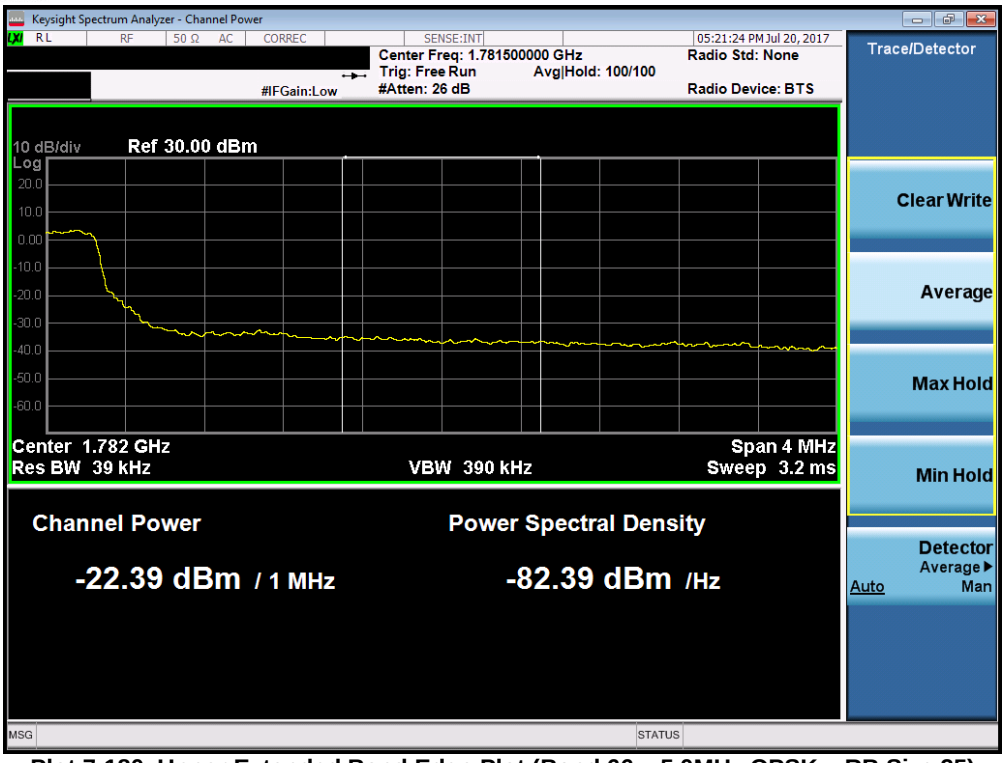
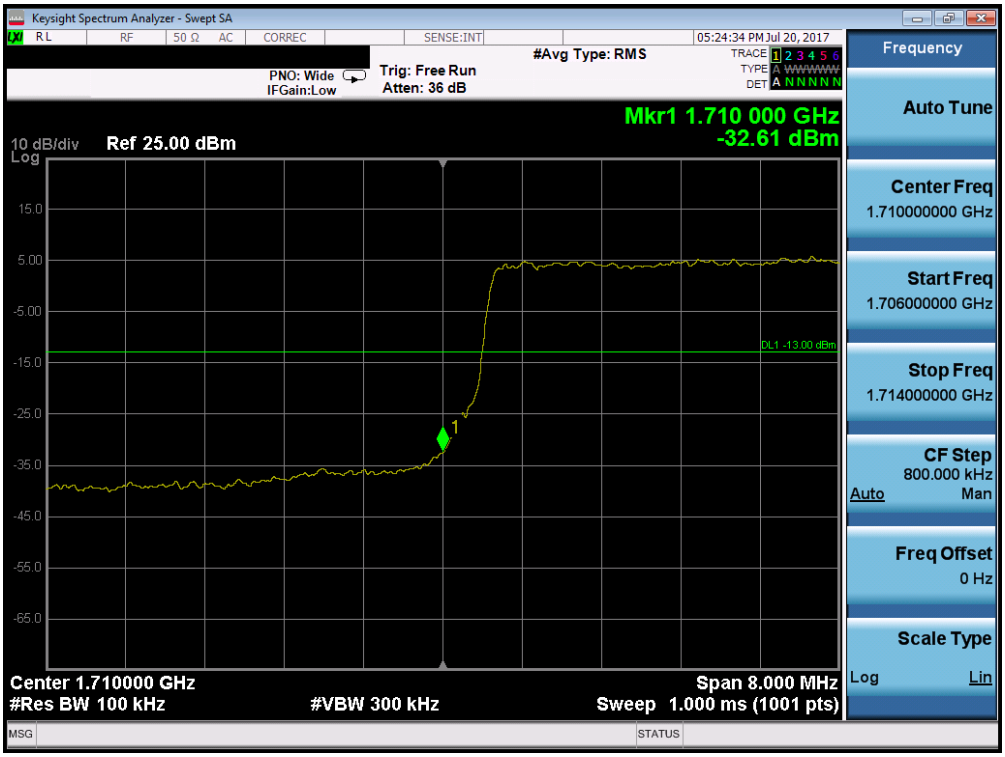



**Plot 7-180. Upper Extended Band Edge Plot (Band 66 – 5.0MHz QPSK – RB Size 25)**




**Plot 7-181. Lower Band Edge Plot (Band 4/66 – 10.0MHz QPSK – RB Size 50)**

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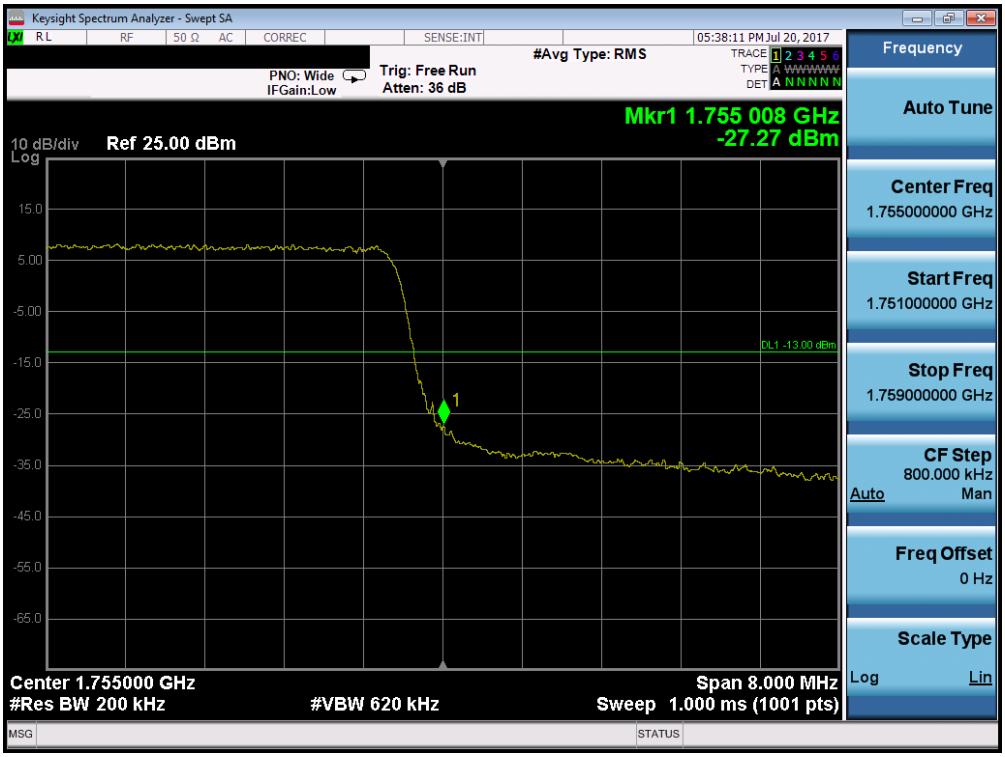
**Plot 7-182. Lower Extended Band Edge Plot (Band 4/66 – 10.0MHz QPSK – RB Size 50)**




**Plot 7-183. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)**

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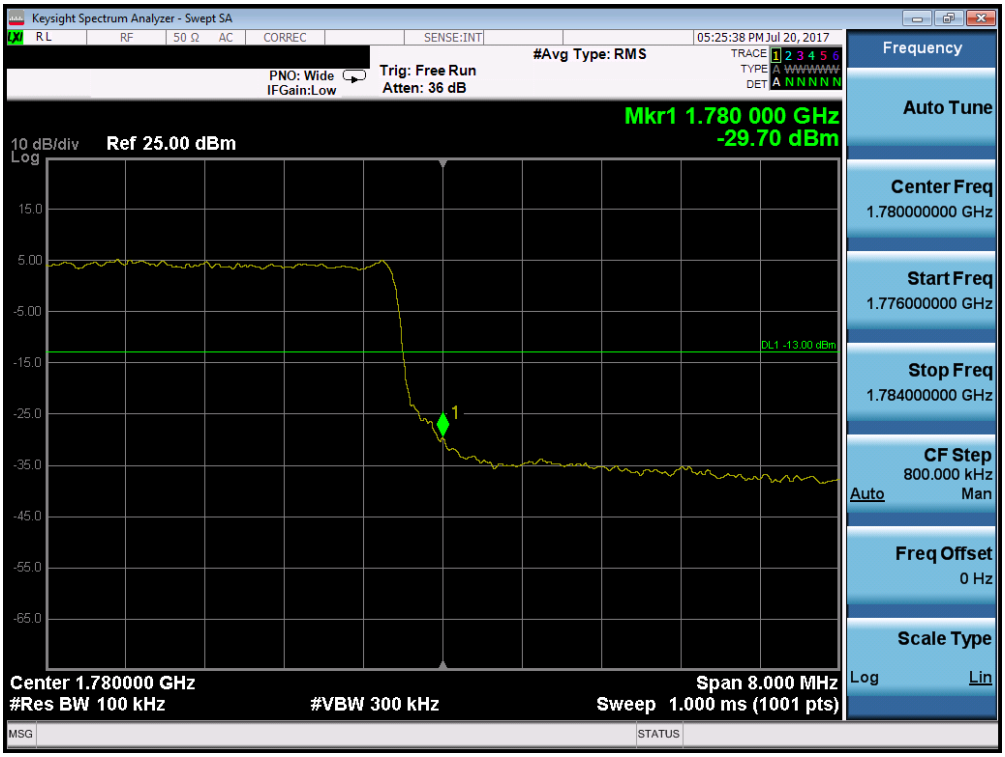
**Plot 7-184. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)**




**Plot 7-185. Upper Band Edge Plot (Band 66 – 10.0MHz QPSK – RB Size 50)**

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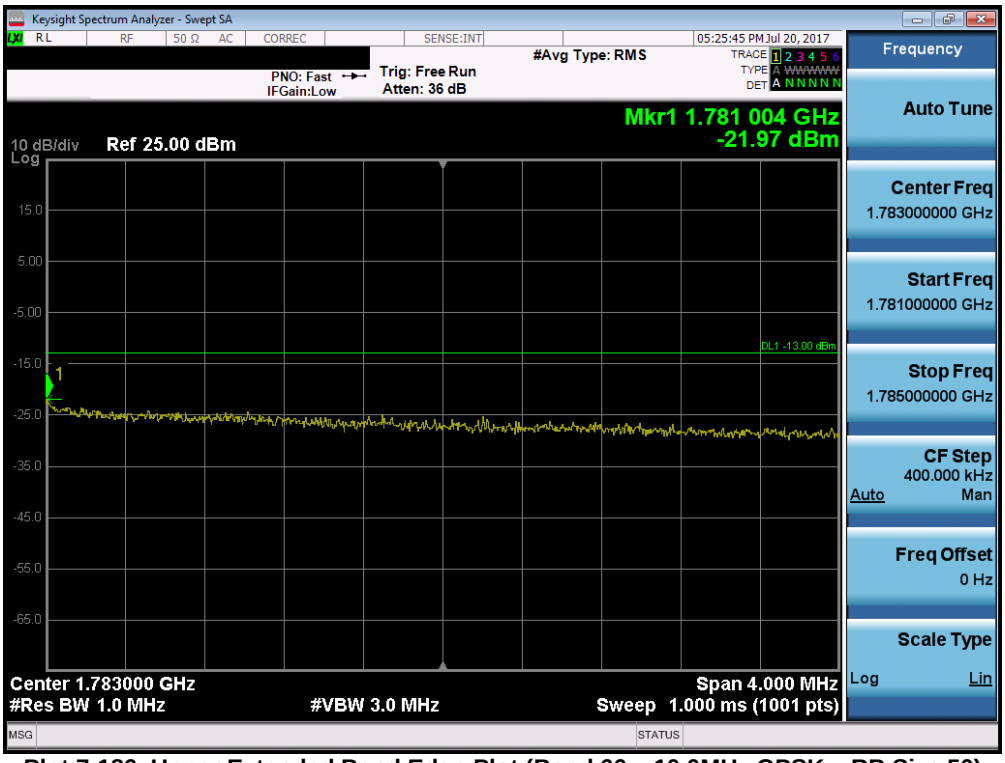
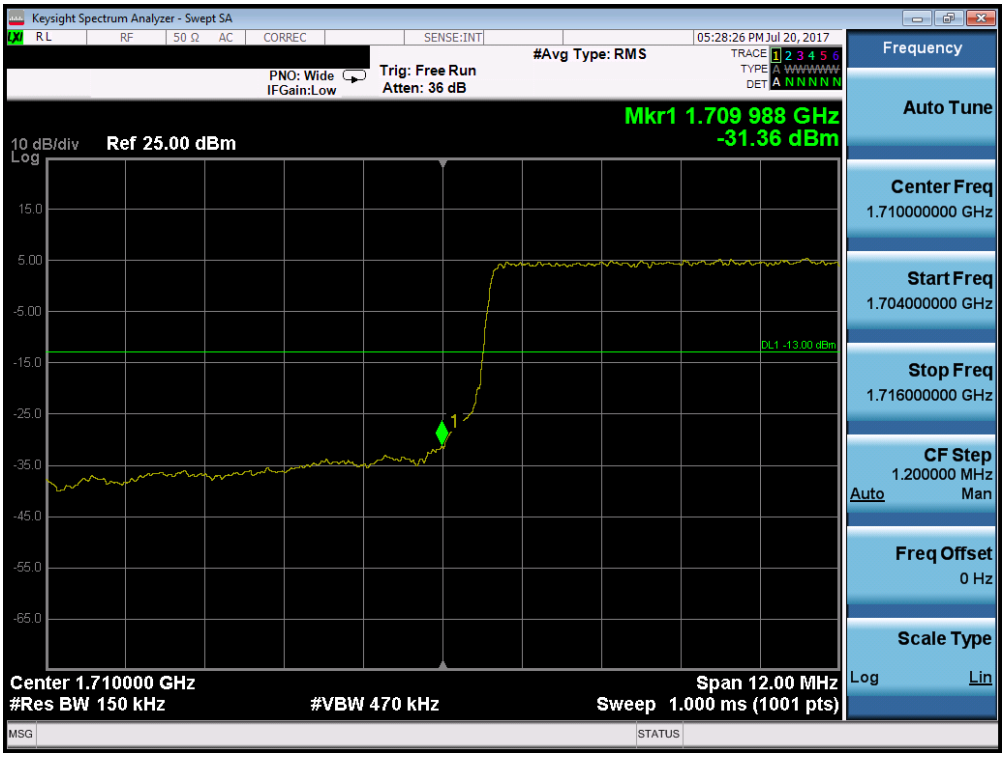



**Plot 7-186. Upper Extended Band Edge Plot (Band 66 – 10.0MHz QPSK – RB Size 50)**




**Plot 7-187. Lower Band Edge Plot (Band 4/66 – 15.0MHz QPSK – RB Size 75)**



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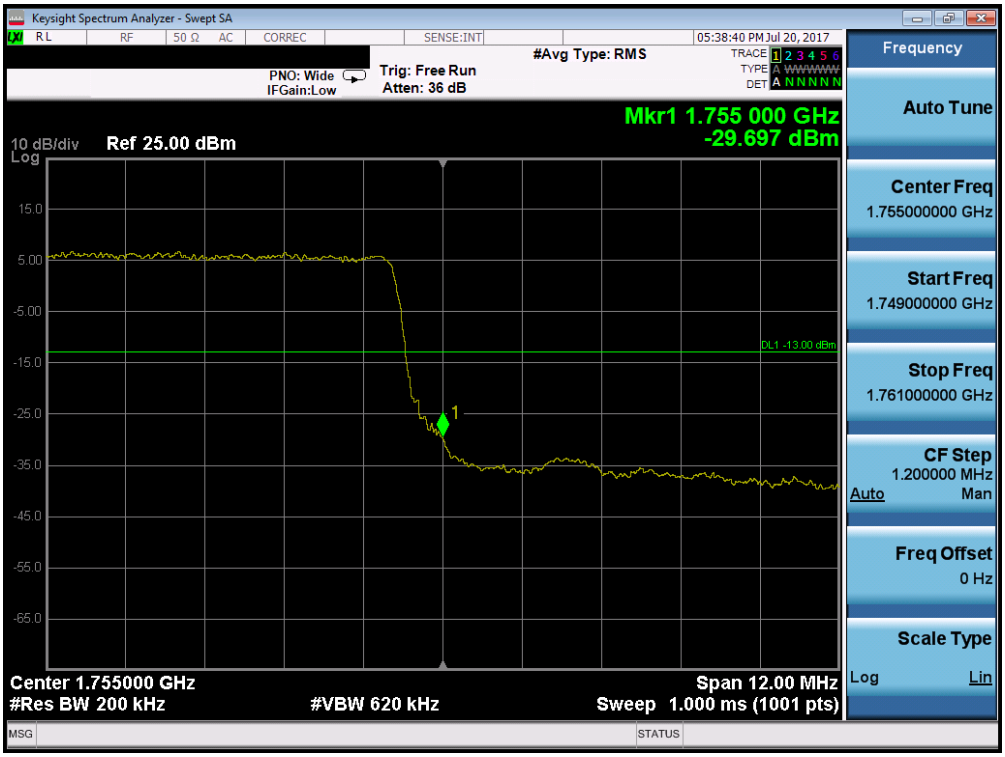
**Plot 7-188. Lower Extended Band Edge Plot (Band 4/66 – 15.0MHz QPSK – RB Size 75)**




**Plot 7-189. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)**

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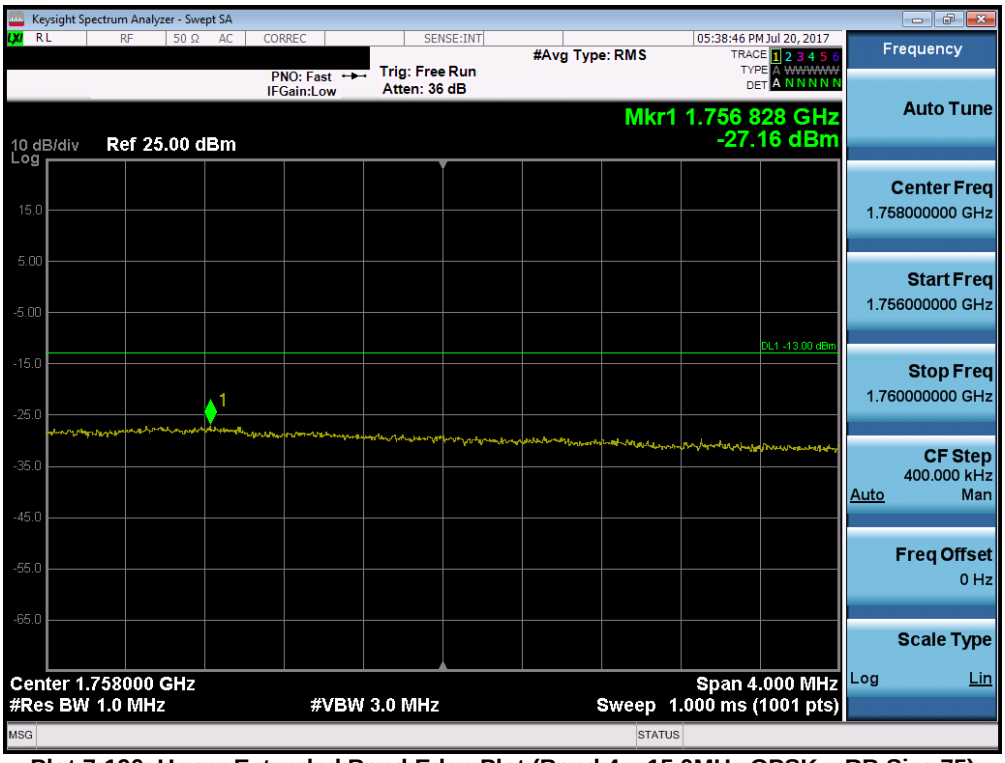


**Plot 7-190. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)**

**Plot 7-191. Upper Band Edge Plot (Band 66 – 15.0MHz QPSK – RB Size 75)**




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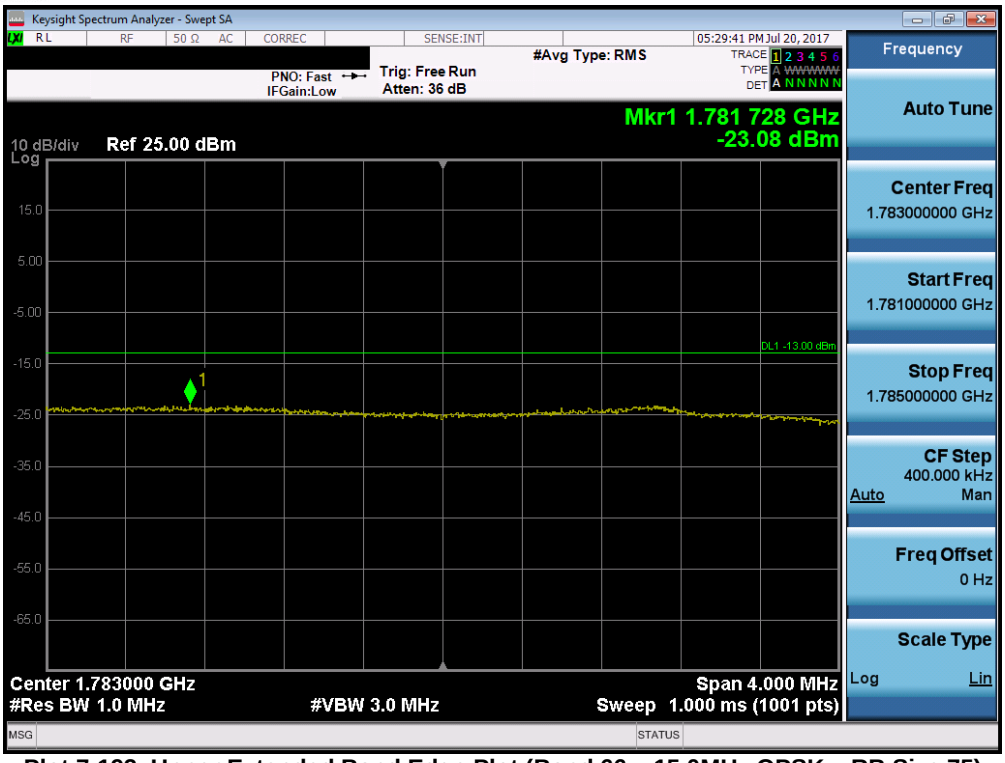
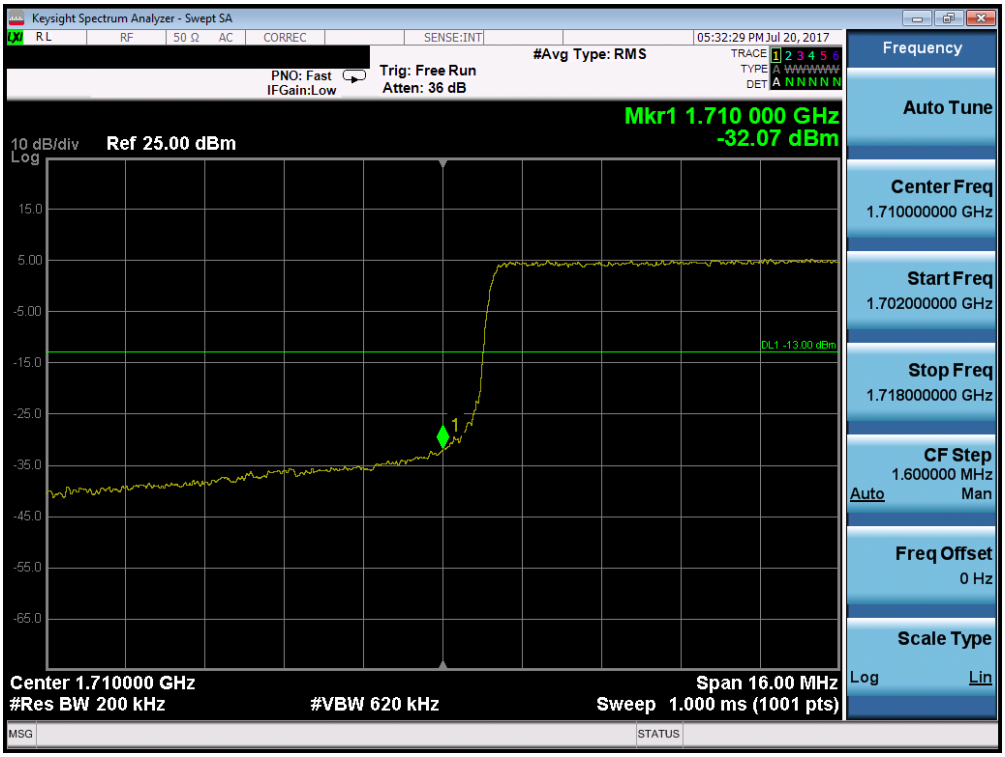



**Plot 7-192. Upper Extended Band Edge Plot (Band 66 – 15.0MHz QPSK – RB Size 75)**




**Plot 7-193. Lower Band Edge Plot (Band 4/66 – 20.0MHz QPSK – RB Size 100)**



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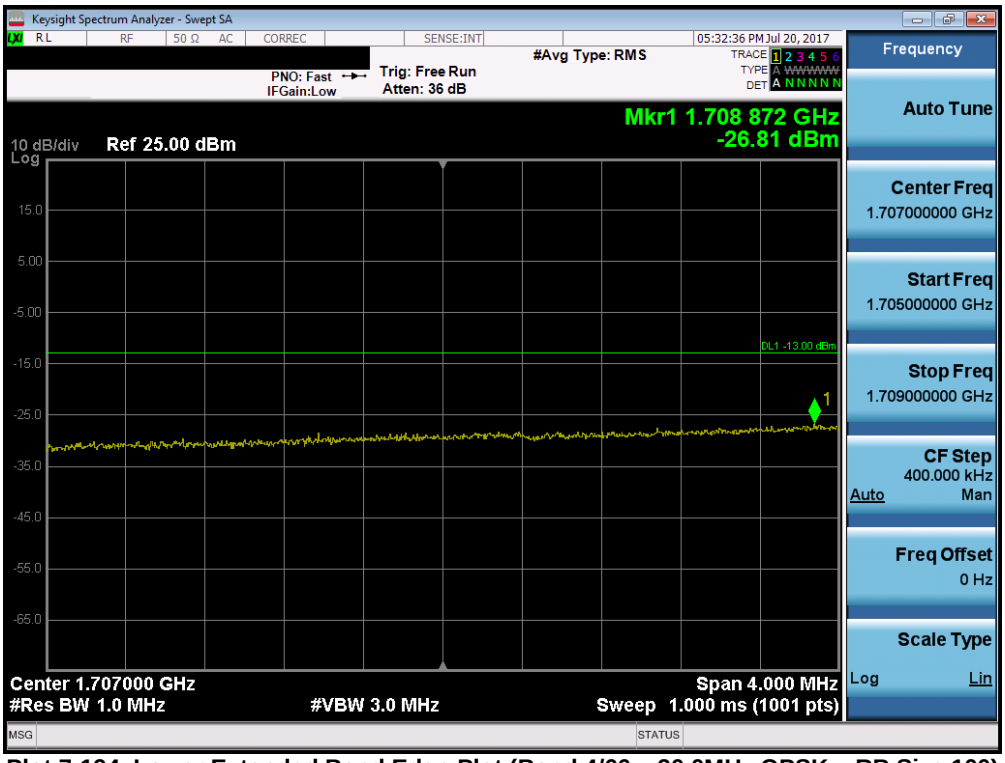
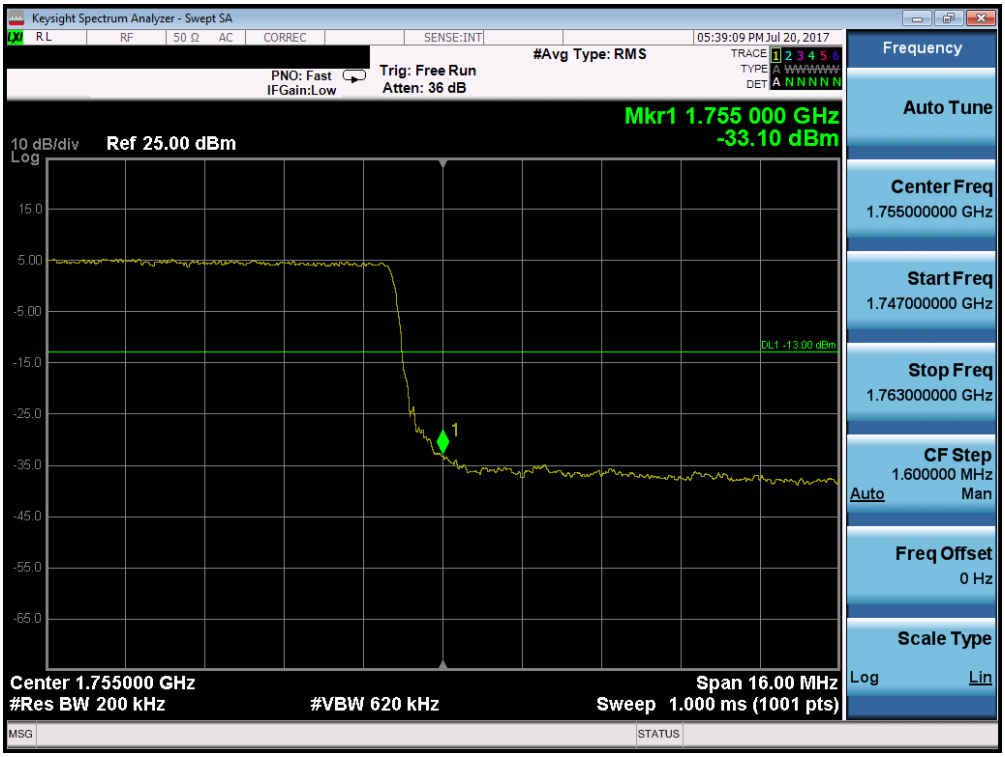



**Plot 7-194. Lower Extended Band Edge Plot (Band 4/66 – 20.0MHz QPSK – RB Size 100)**




**Plot 7-195. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)**

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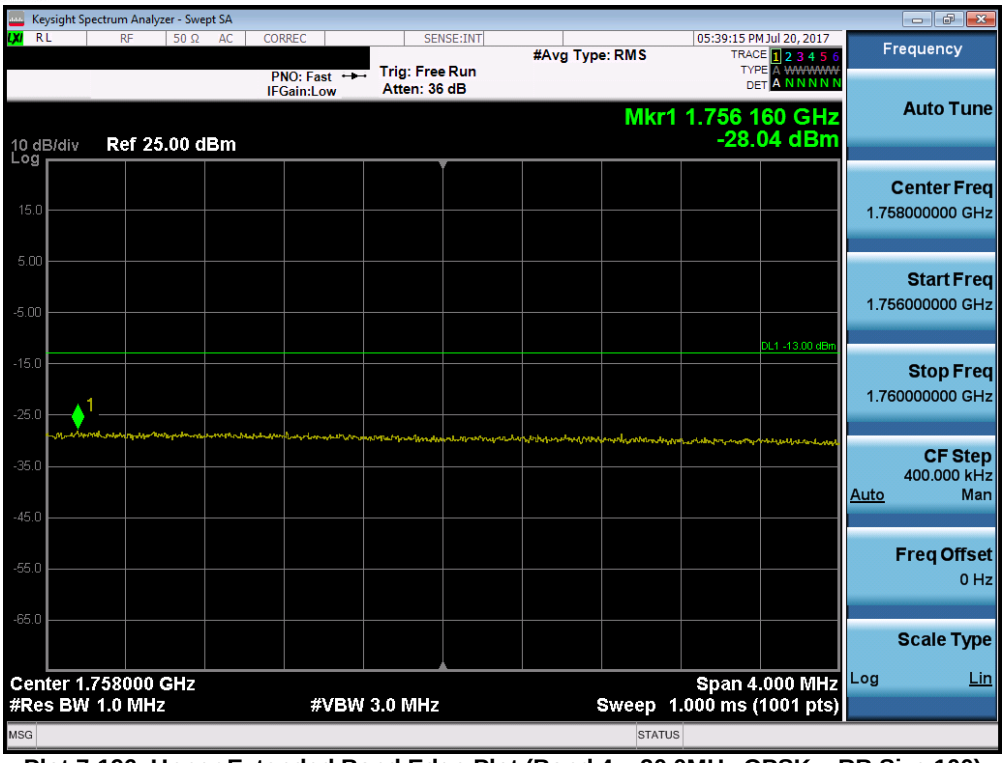


**Plot 7-196. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)**

**Plot 7-197. Upper Band Edge Plot (Band 66 – 20.0MHz QPSK – RB Size 100)**




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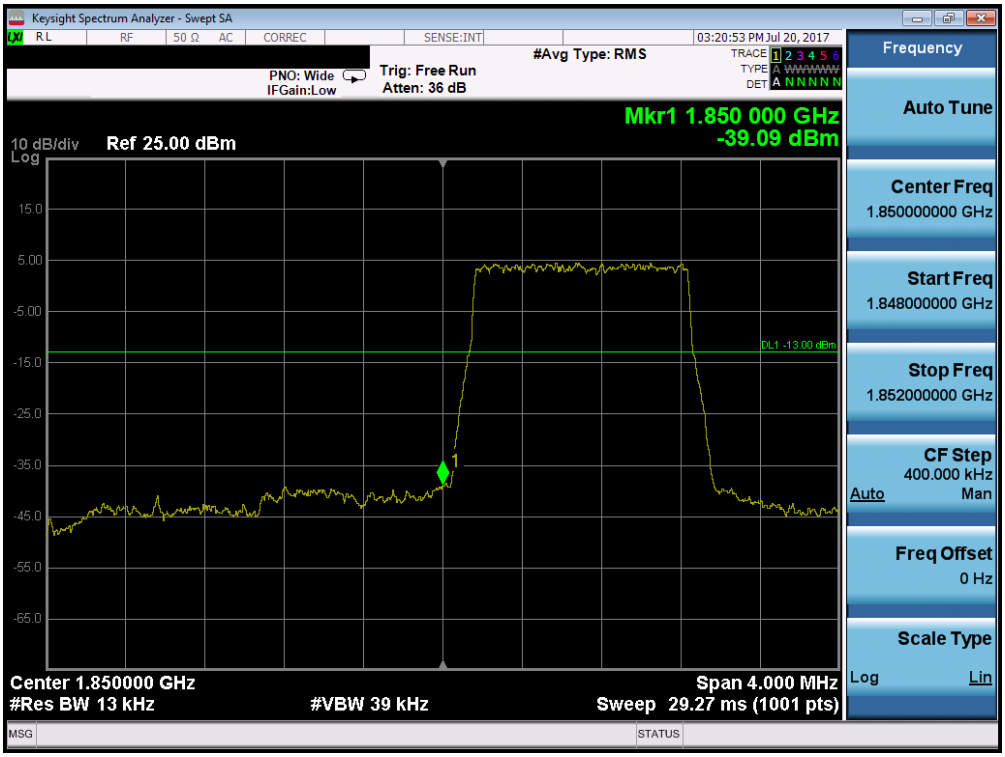
**Plot 7-198. Upper Extended Band Edge Plot (Band 66 – 20.0MHz QPSK – RB Size 100)**




**Plot 7-199. Lower Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)**

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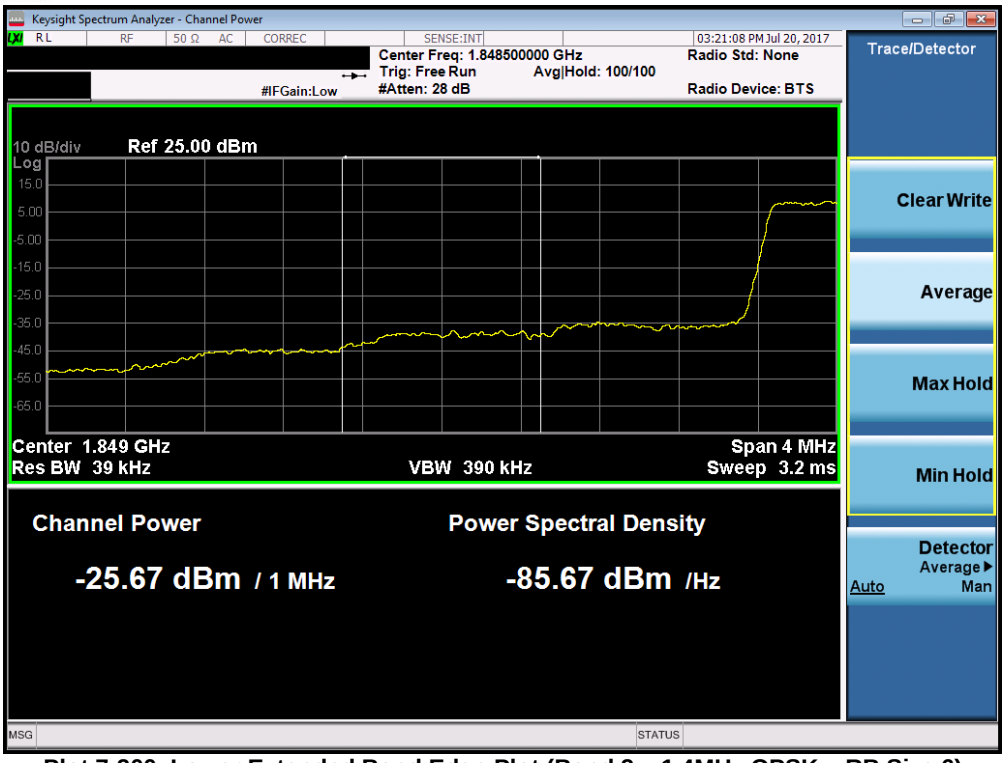
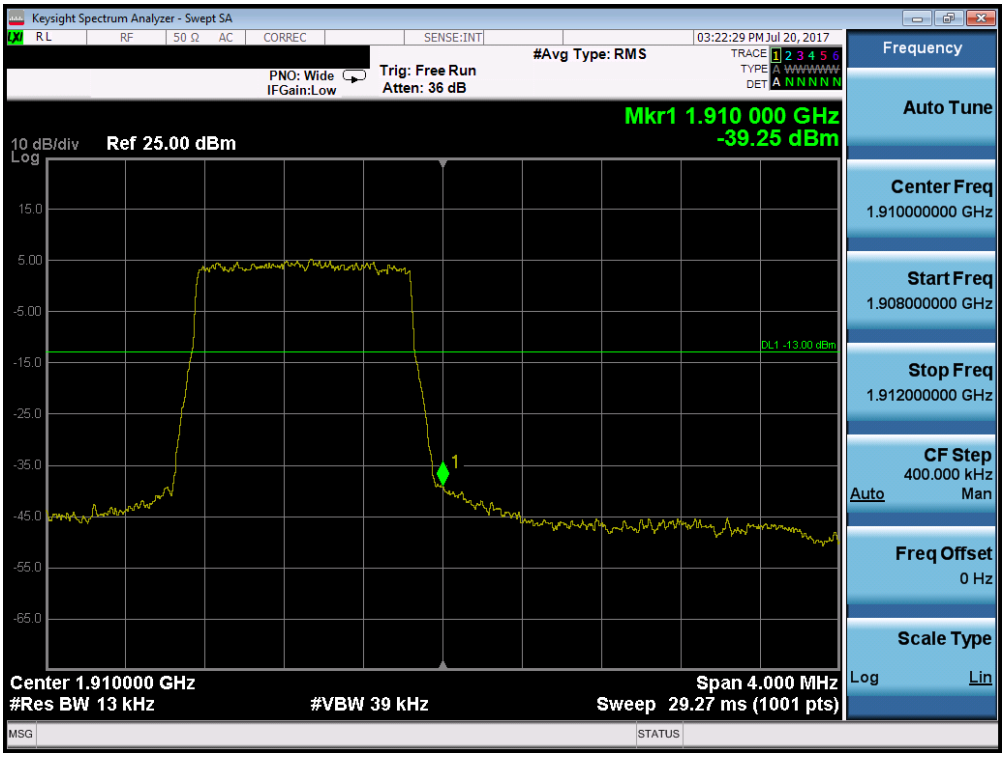



**Plot 7-200. Lower Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)**




**Plot 7-201. Upper Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)**

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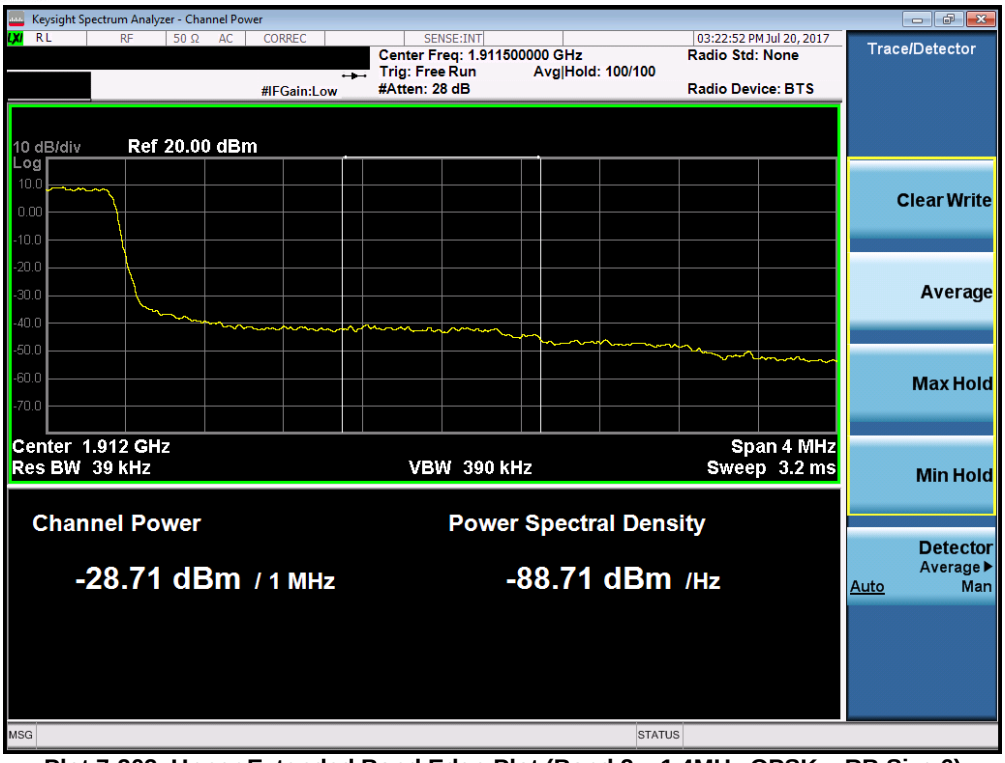
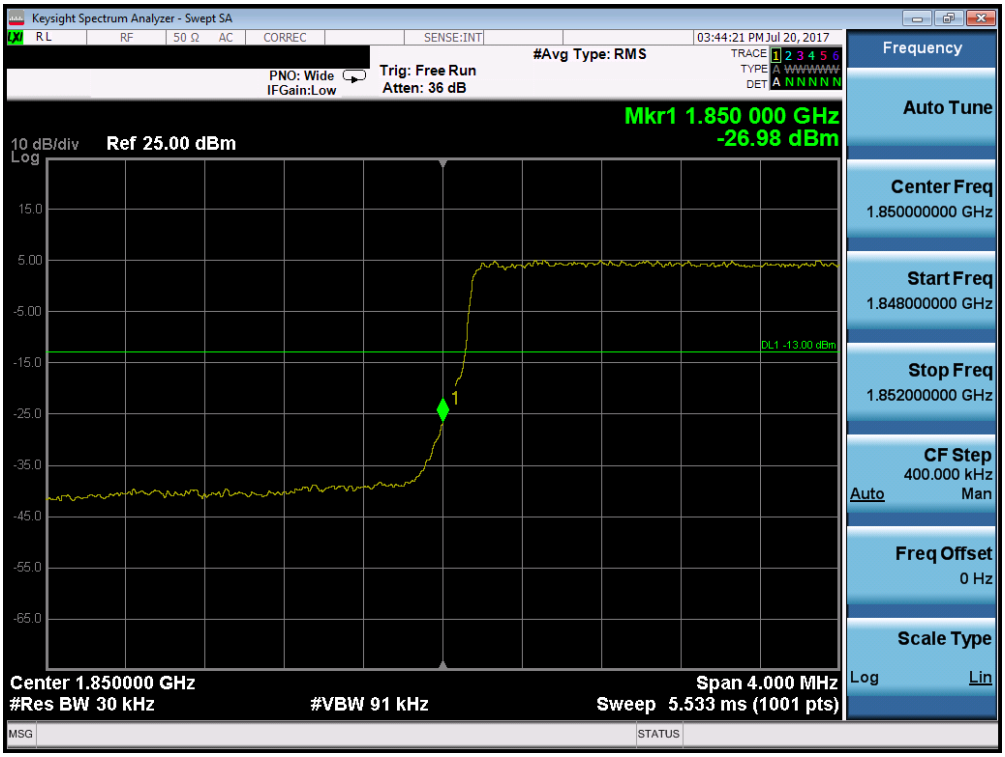



**Plot 7-202. Upper Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)**




**Plot 7-203. Lower Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)**

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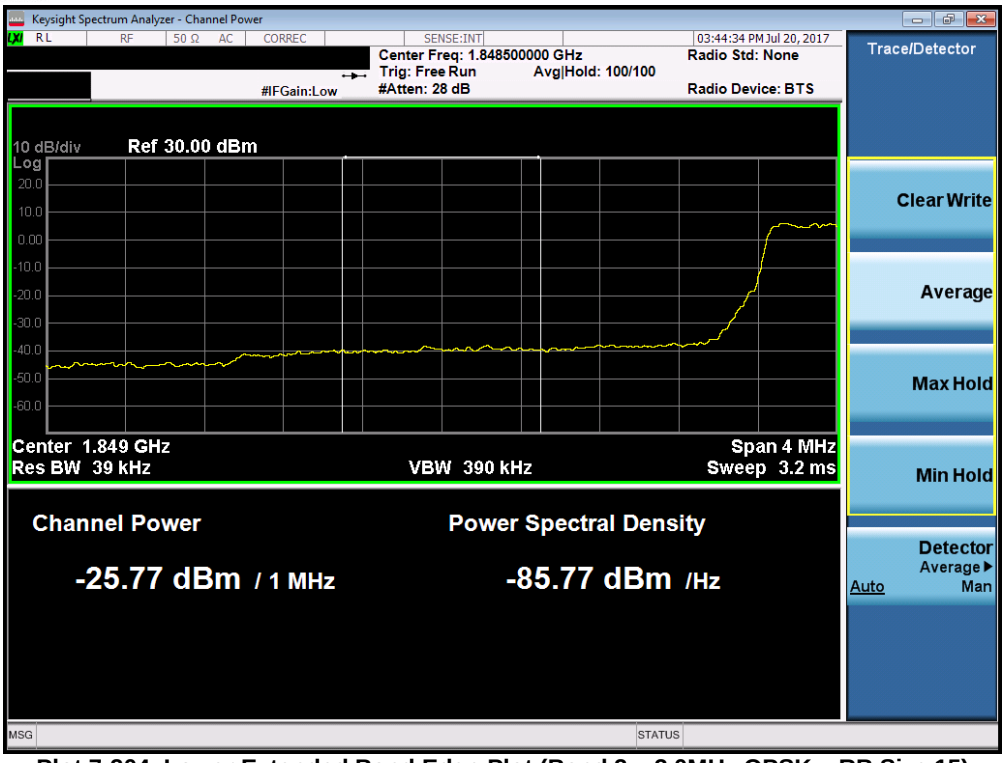
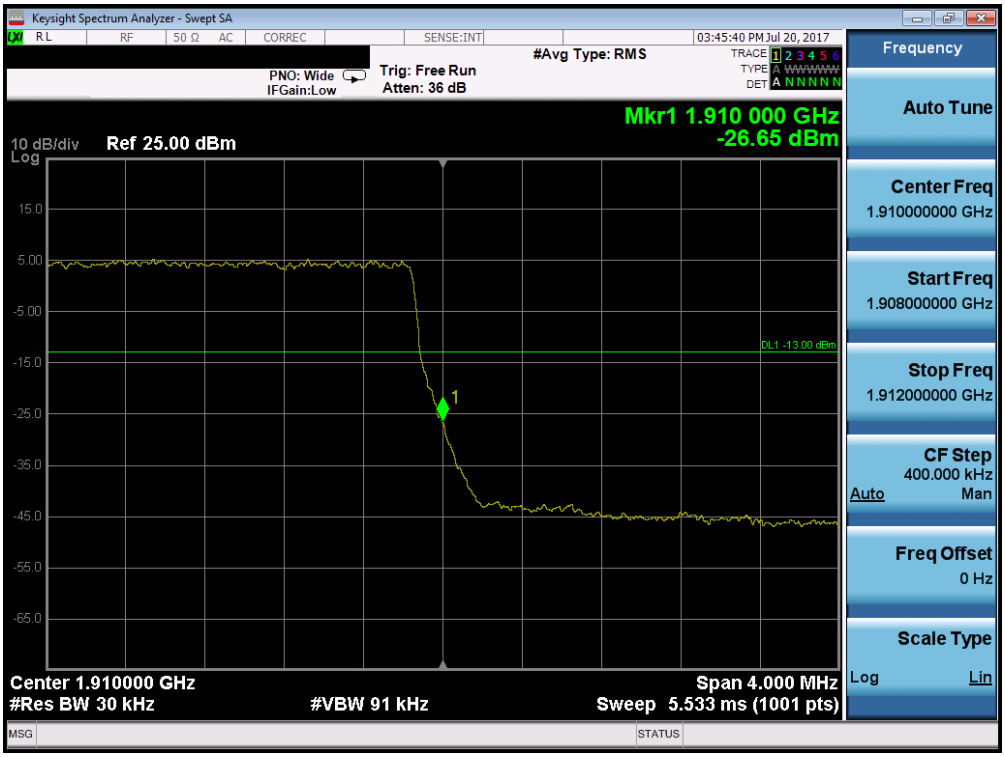



**Plot 7-204. Lower Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)**




**Plot 7-205. Upper Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)**

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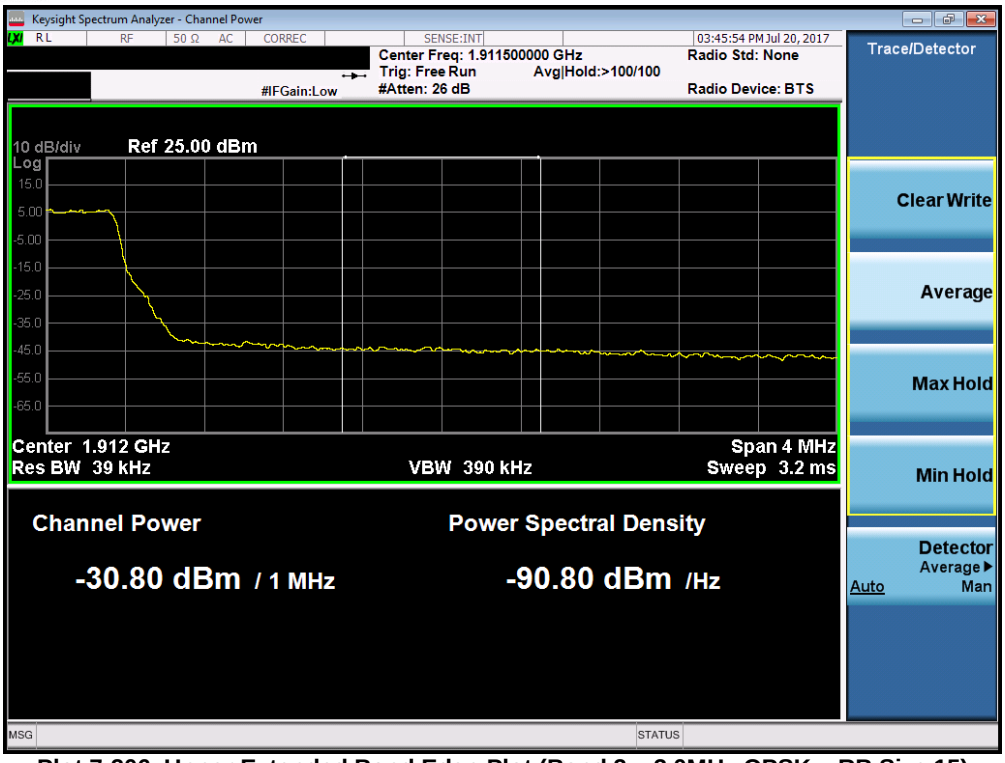
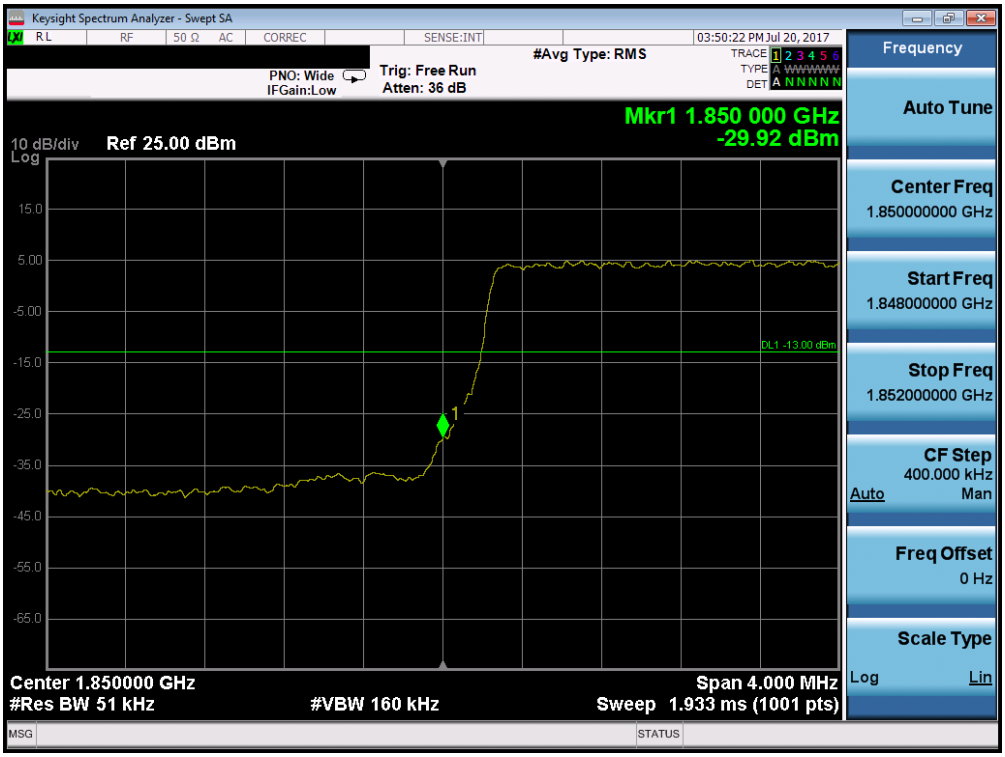



**Plot 7-206. Upper Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)**




**Plot 7-207. Lower Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)**

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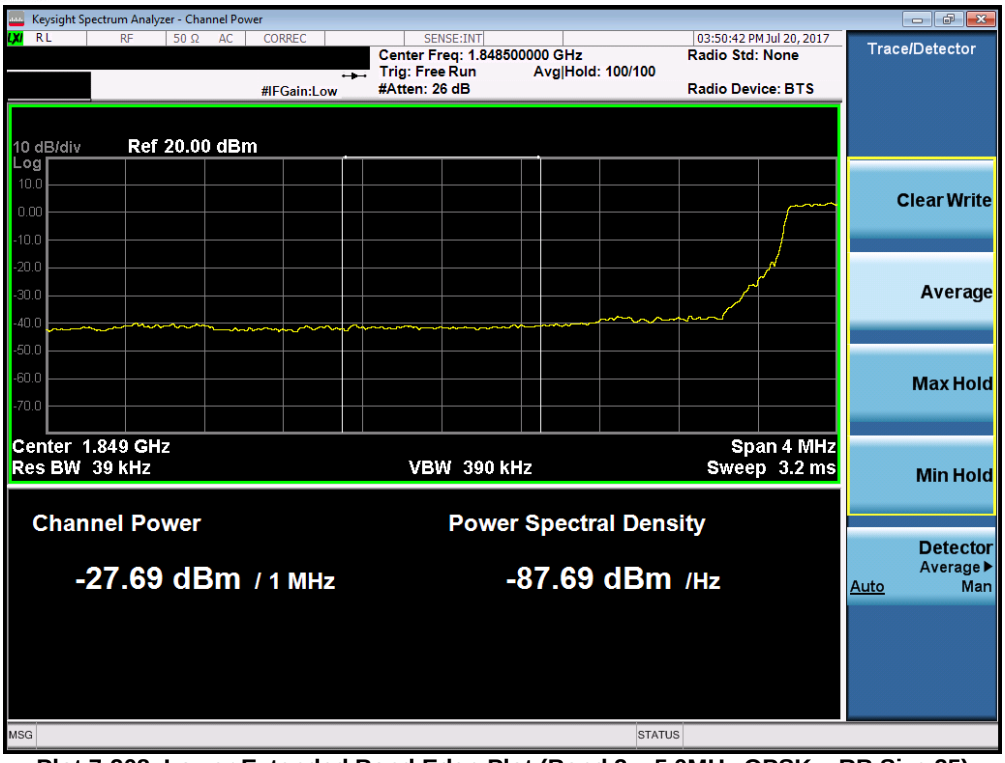
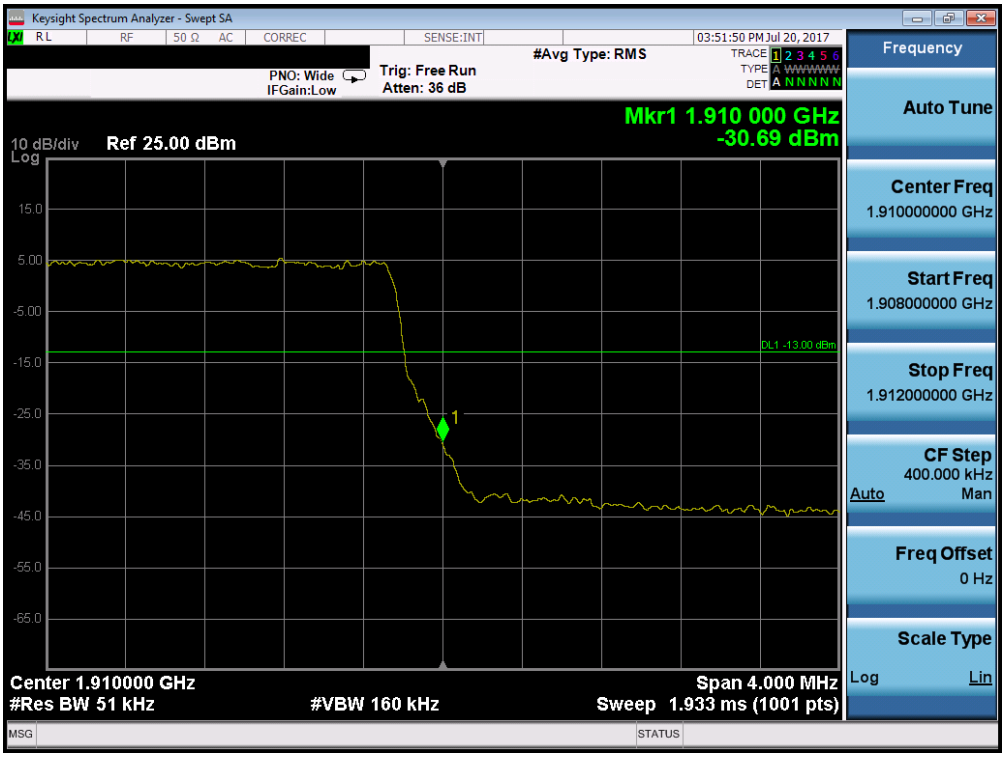



**Plot 7-208. Lower Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)**




**Plot 7-209. Upper Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)**

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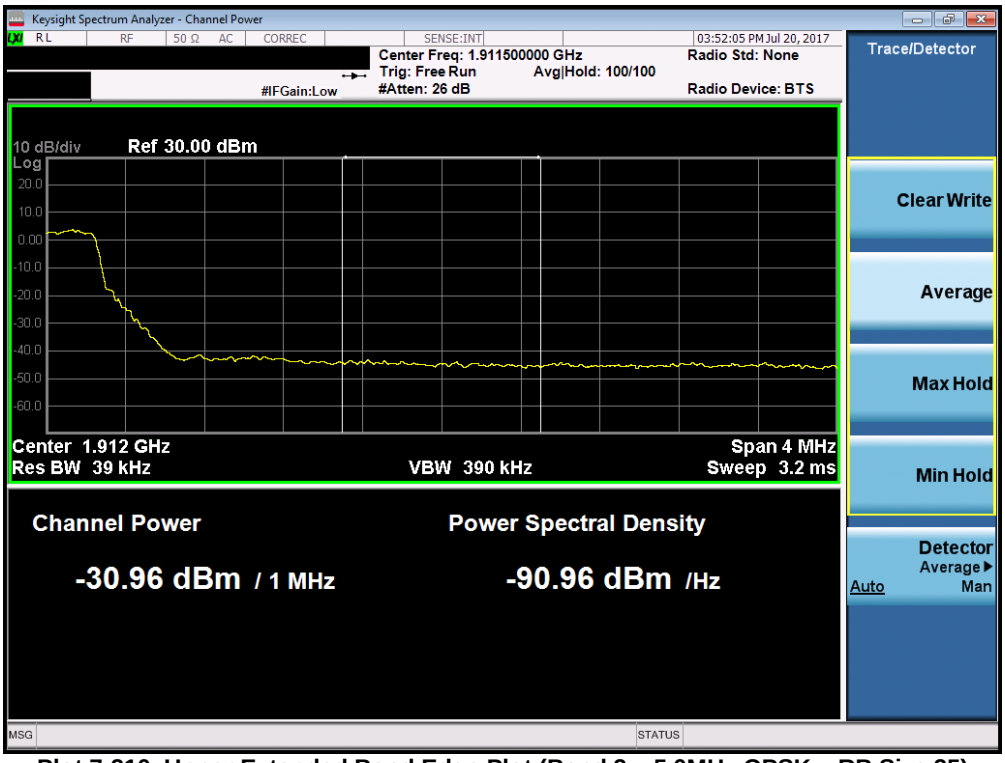
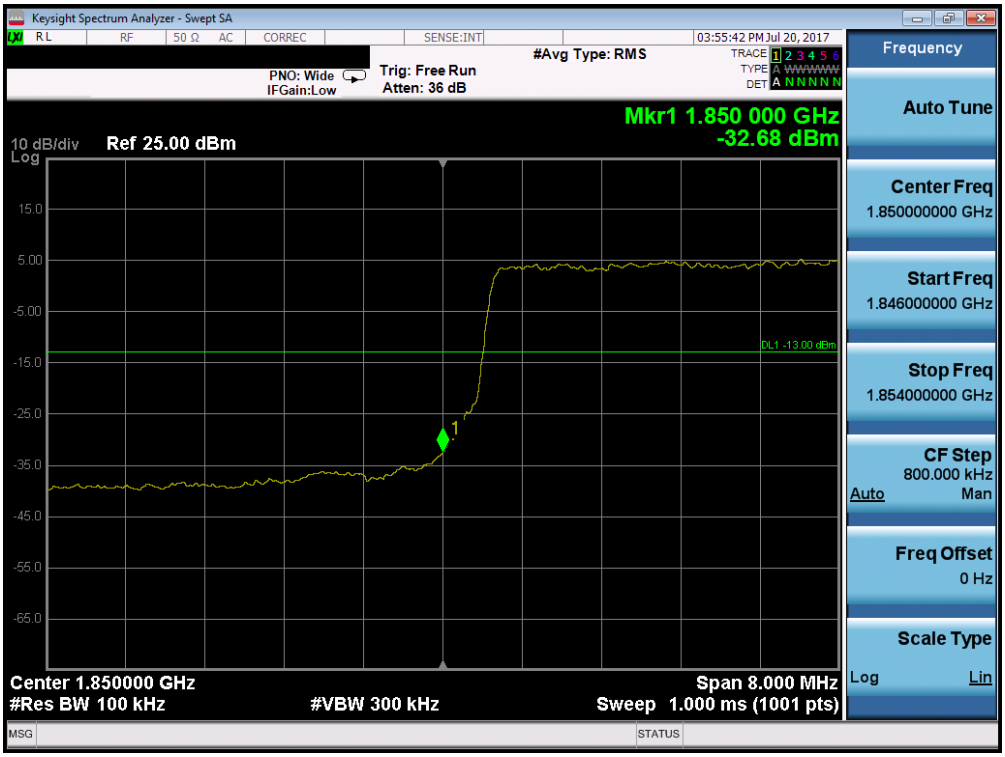



**Plot 7-210. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)**




**Plot 7-211. Lower Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)**

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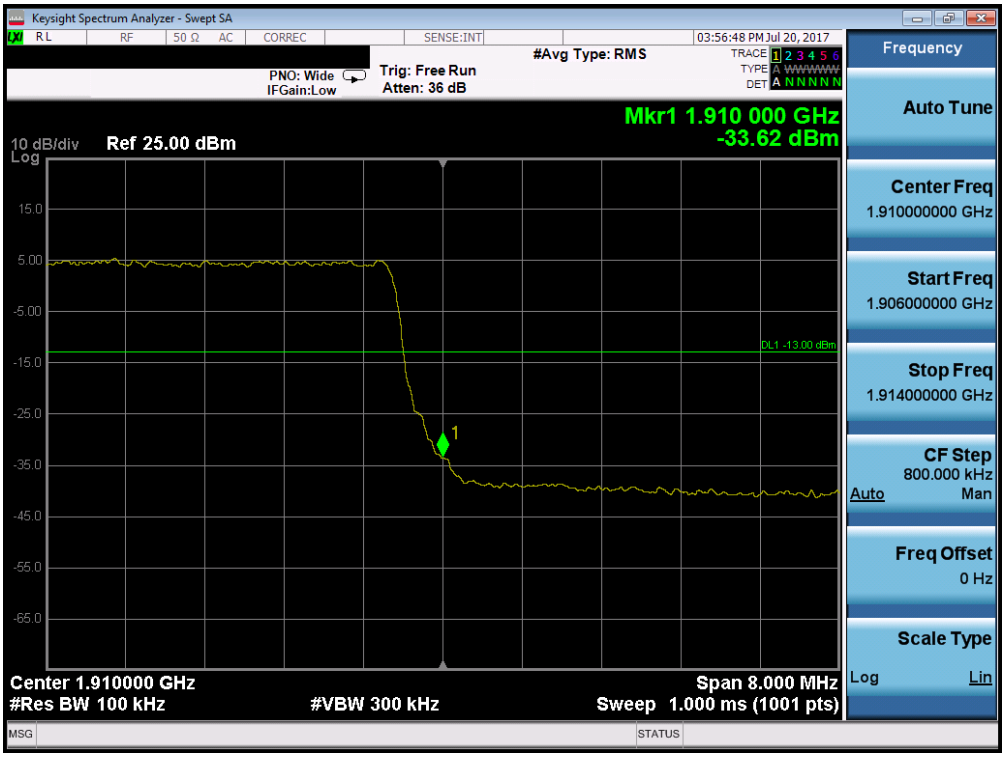
**Plot 7-212. Lower Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)**




**Plot 7-213. Upper Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)**

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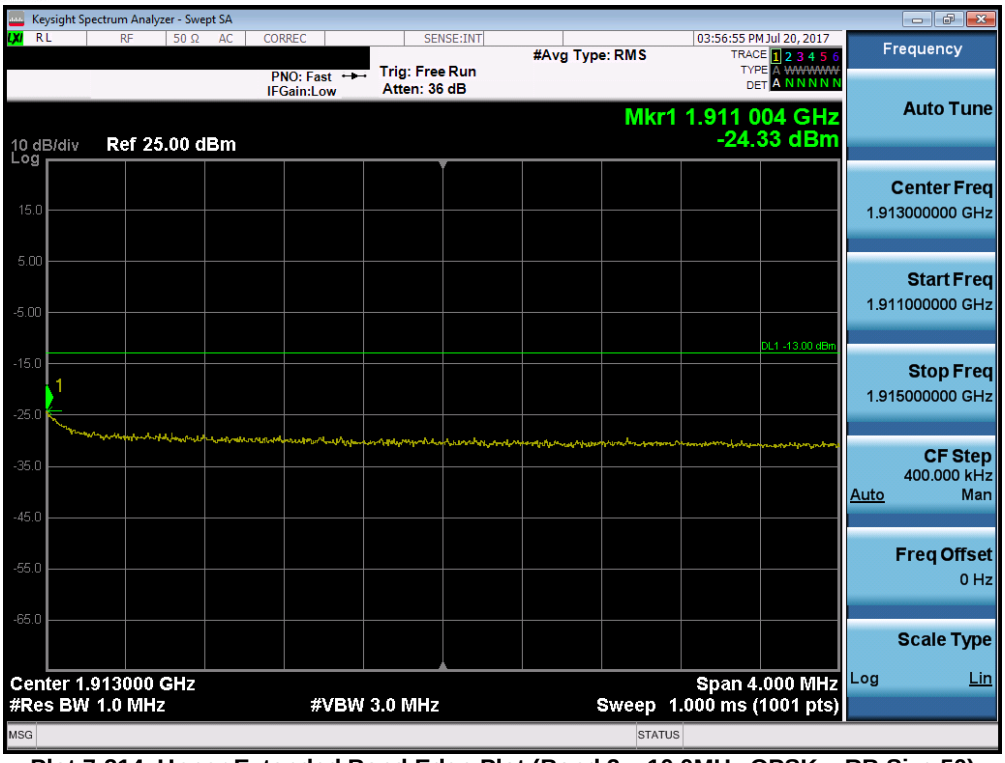
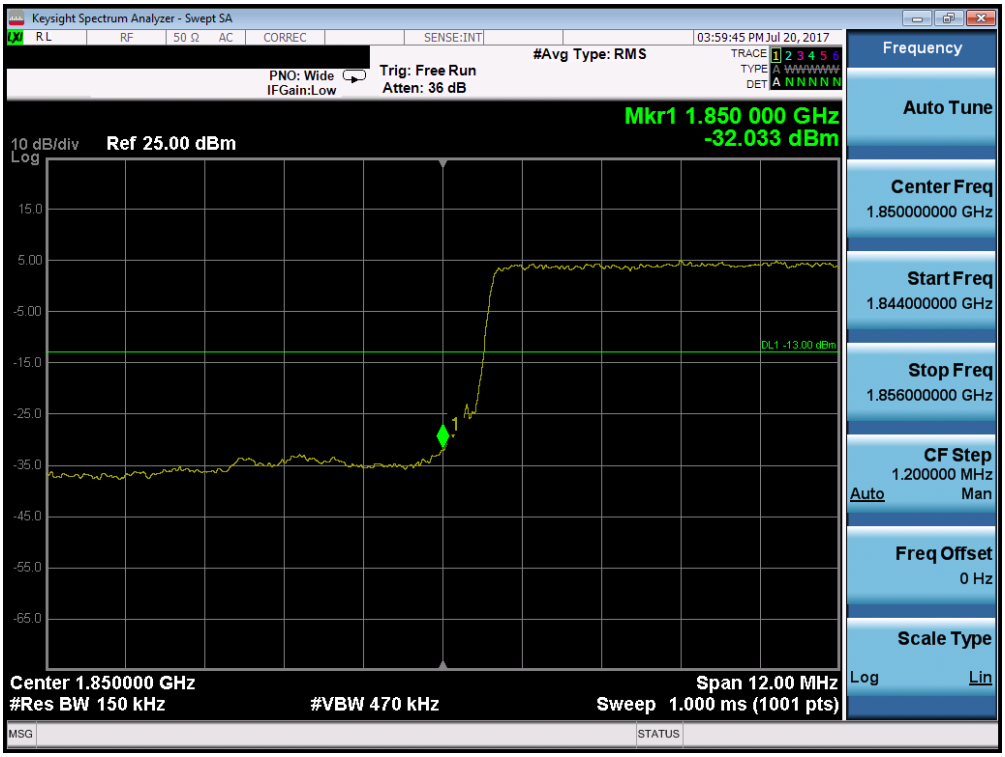



**Plot 7-214. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)**




**Plot 7-215. Lower Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)**

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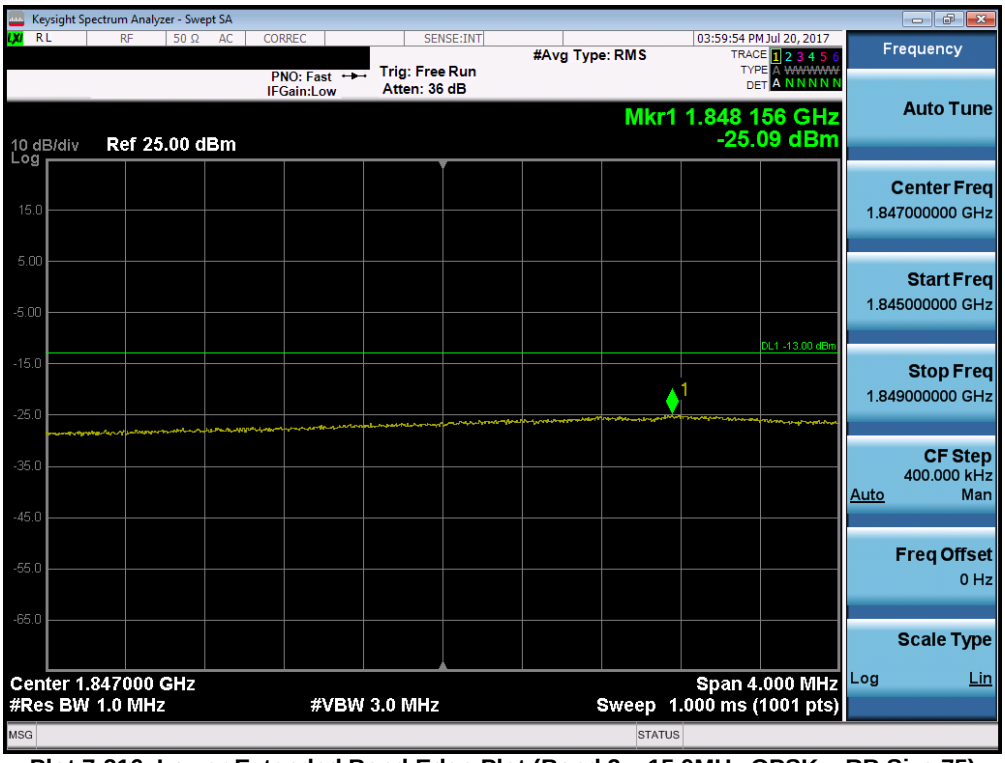
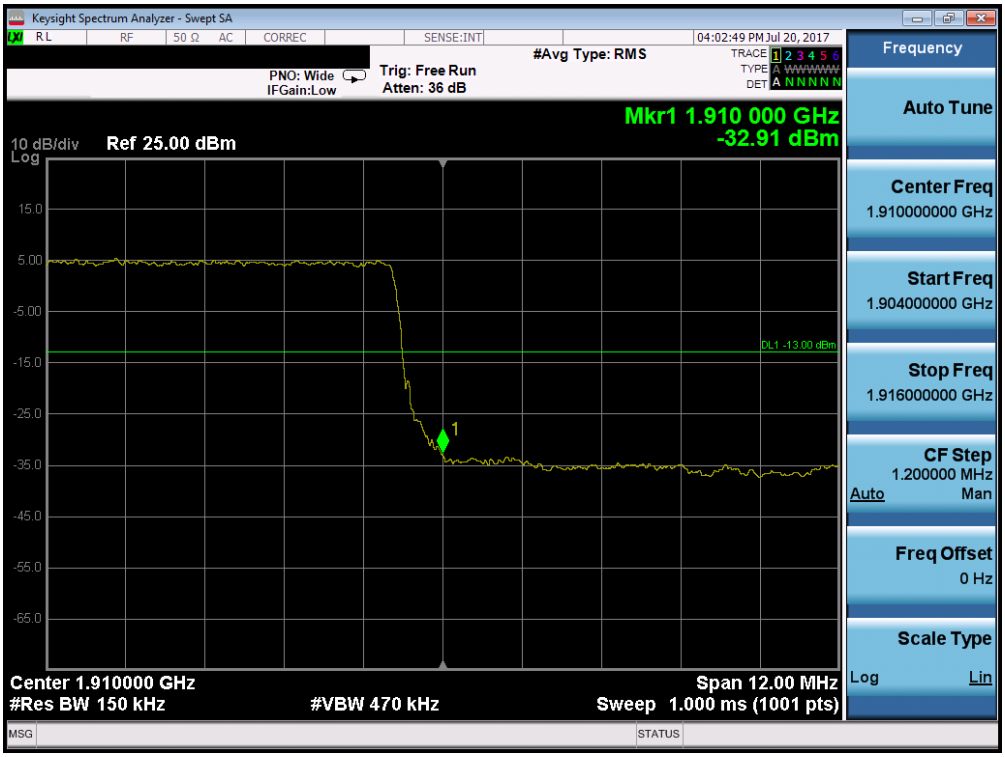



**Plot 7-216. Lower Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)**




**Plot 7-217. Upper Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)**

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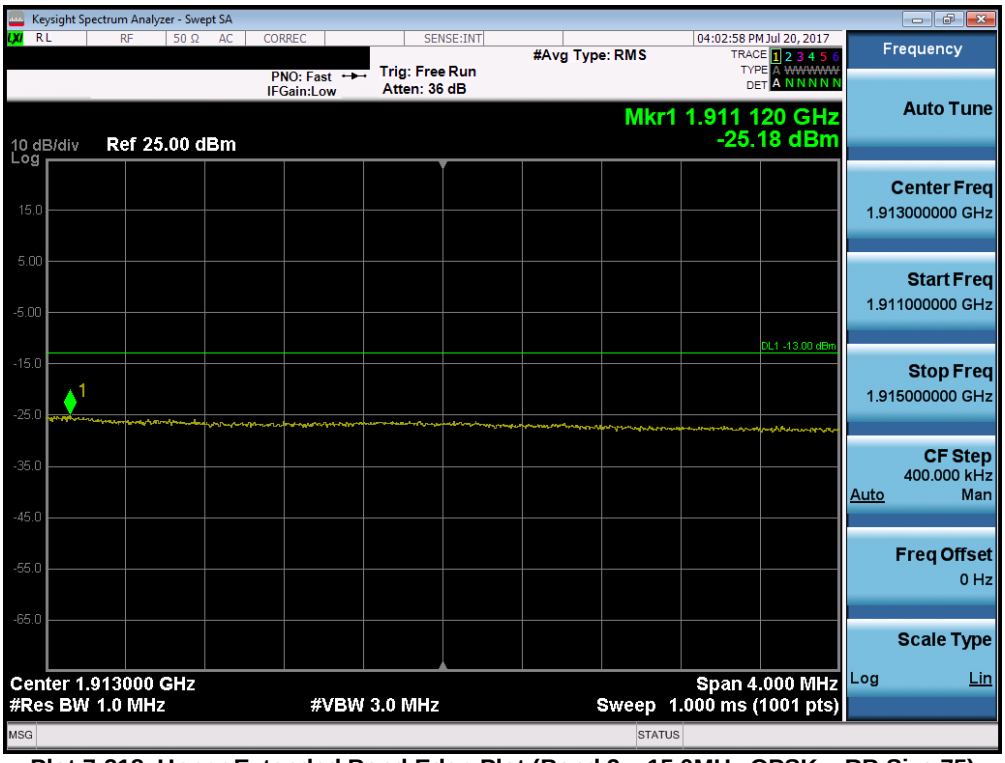
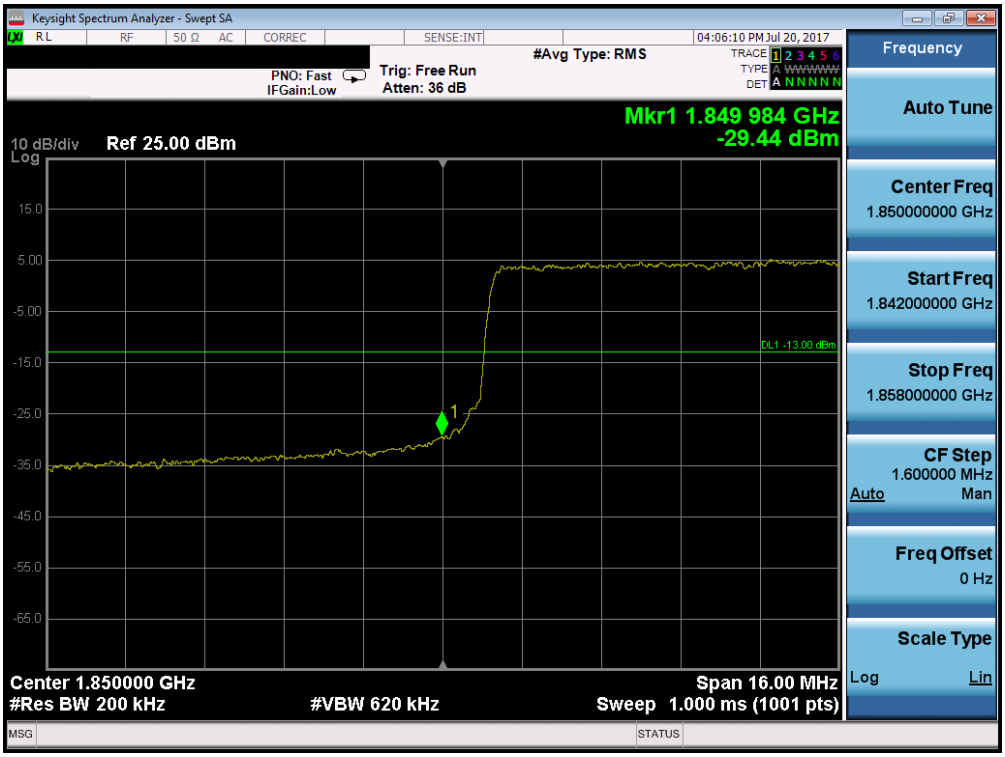



**Plot 7-218. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)**




**Plot 7-219. Lower Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)**



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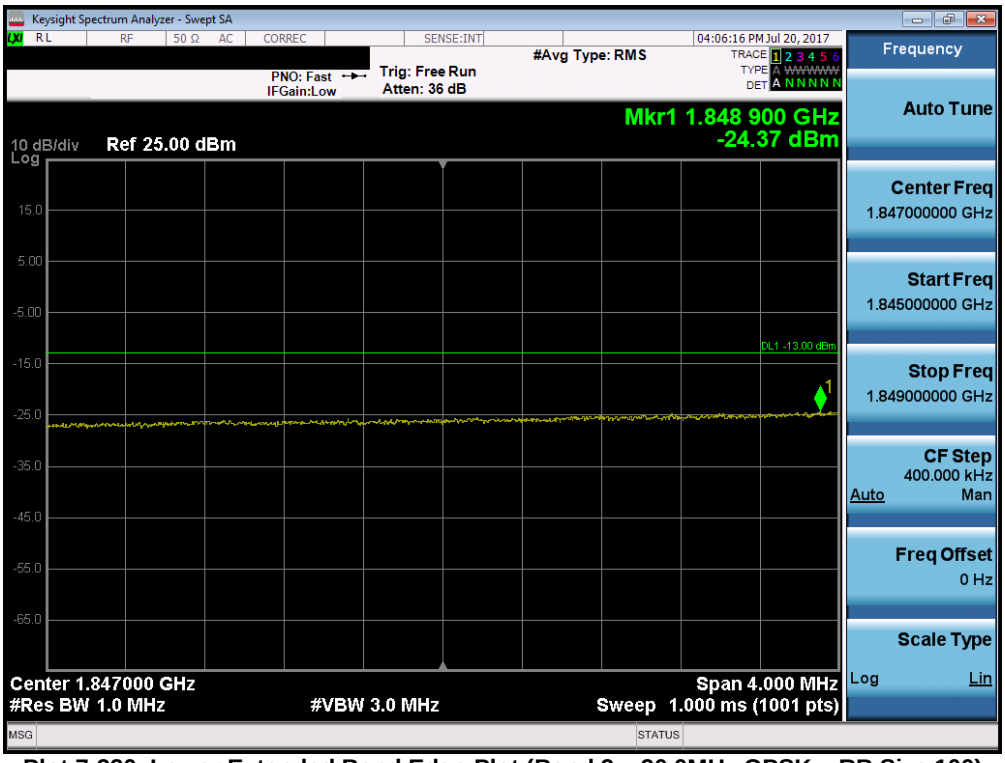
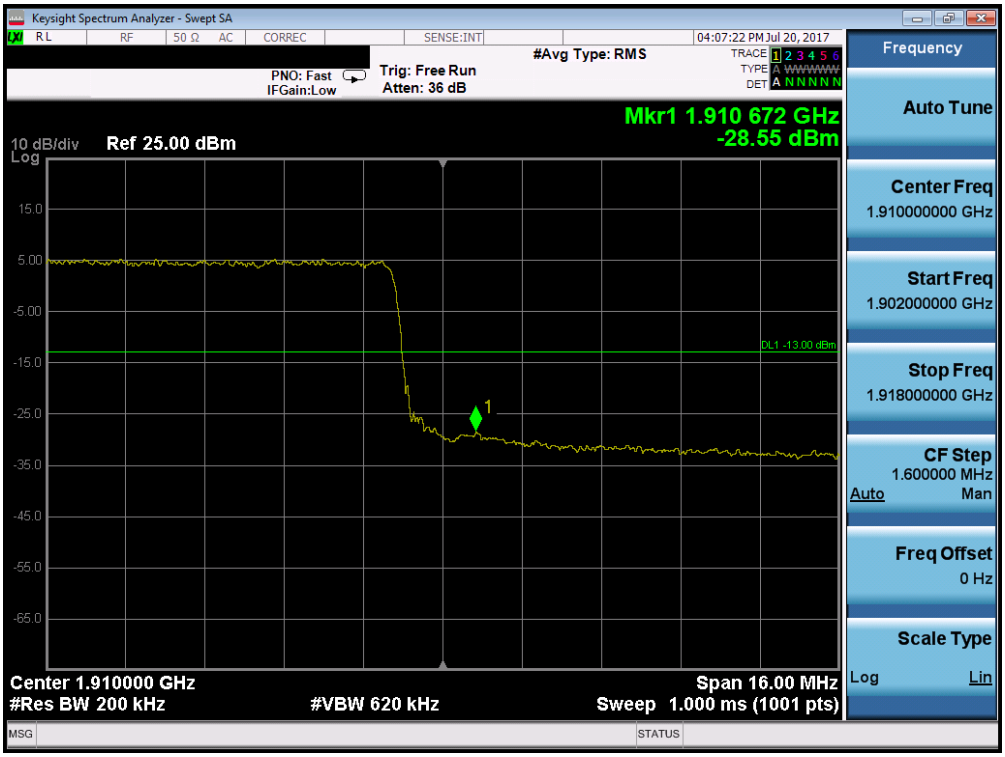



**Plot 7-220. Lower Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)**




**Plot 7-221. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)**



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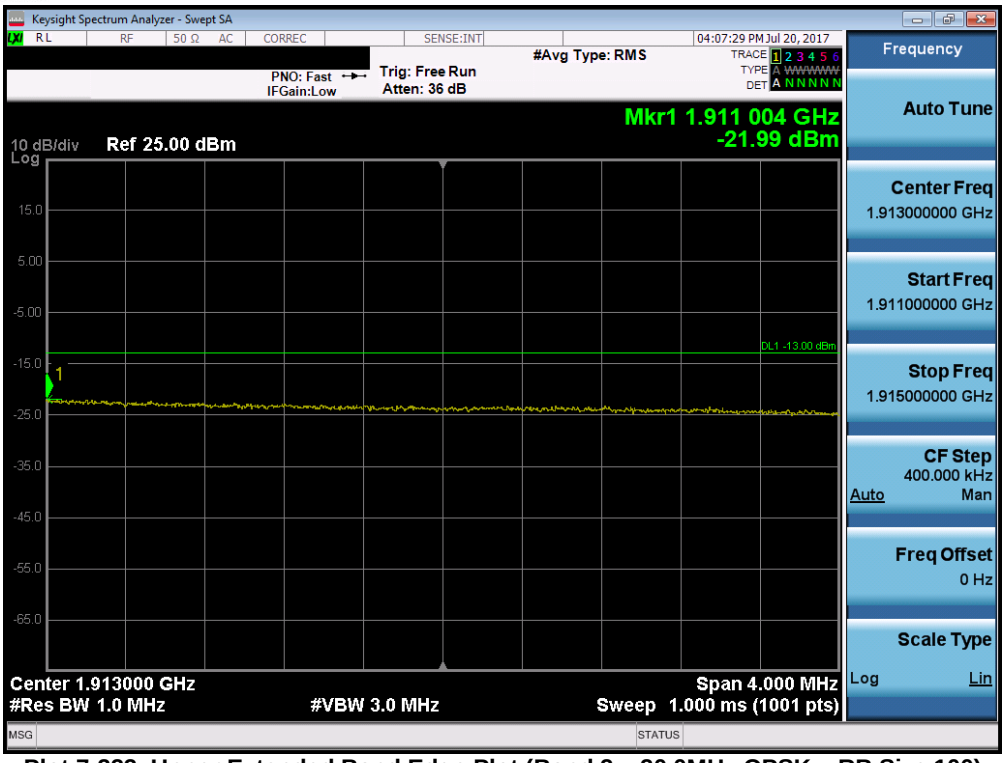
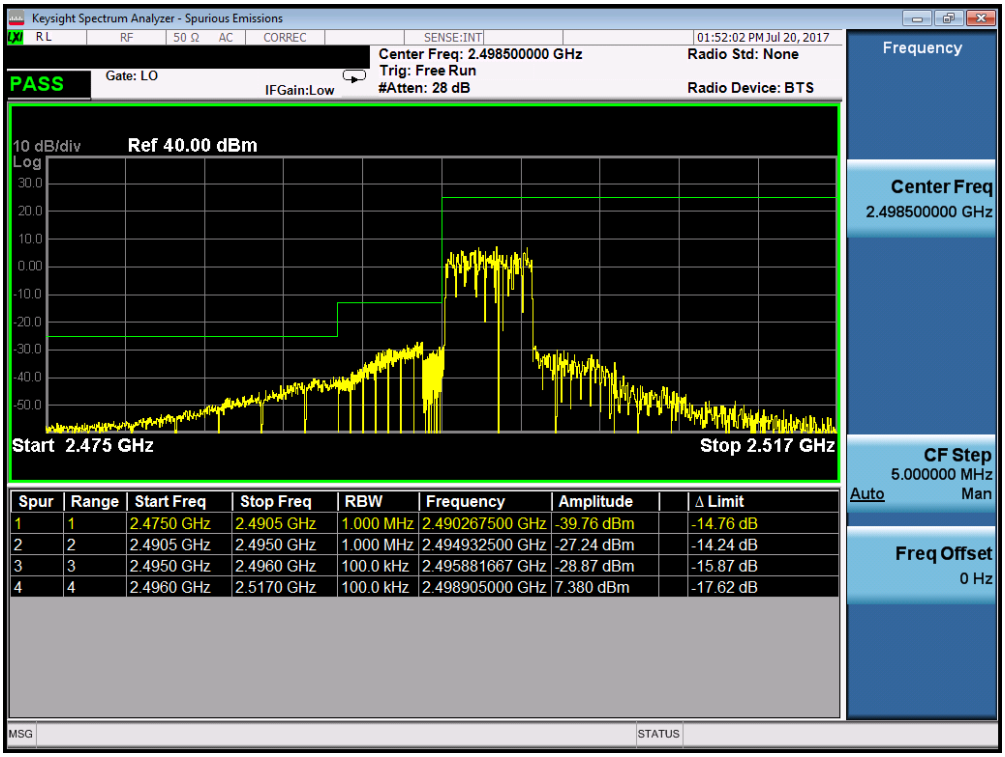



**Plot 7-222. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)**




| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | | Δ Limit |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2.4750 GHz | 2.4905 GHz | 1.000 MHz | 2.490267500 GHz | -39.76 dBm | | -14.76 dB |
| 2 | 2 | 2.4905 GHz | 2.4950 GHz | 1.000 MHz | 2.494932500 GHz | -27.24 dBm | | -14.24 dB |
| 3 | 3 | 2.4950 GHz | 2.4960 GHz | 100.0 kHz | 2.495881667 GHz | -28.87 dBm | | -15.87 dB |
| 4 | 4 | 2.4960 GHz | 2.5170 GHz | 100.0 kHz | 2.498905000 GHz | 7.380 dBm | | -17.62 dB |

**Plot 7-223. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)**



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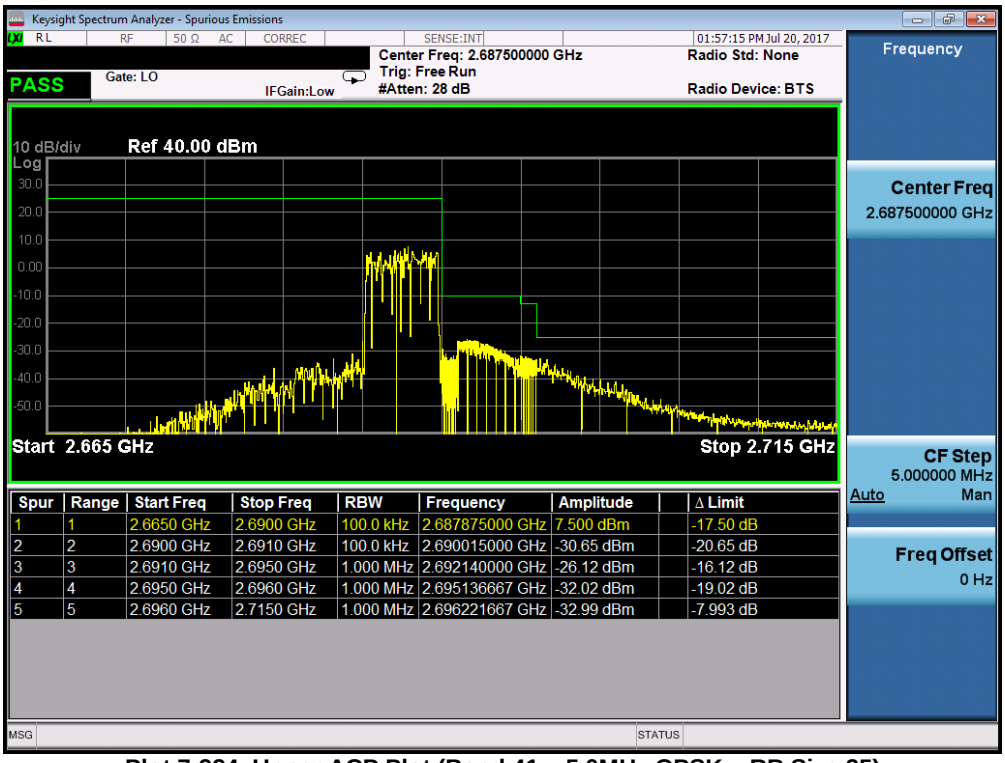
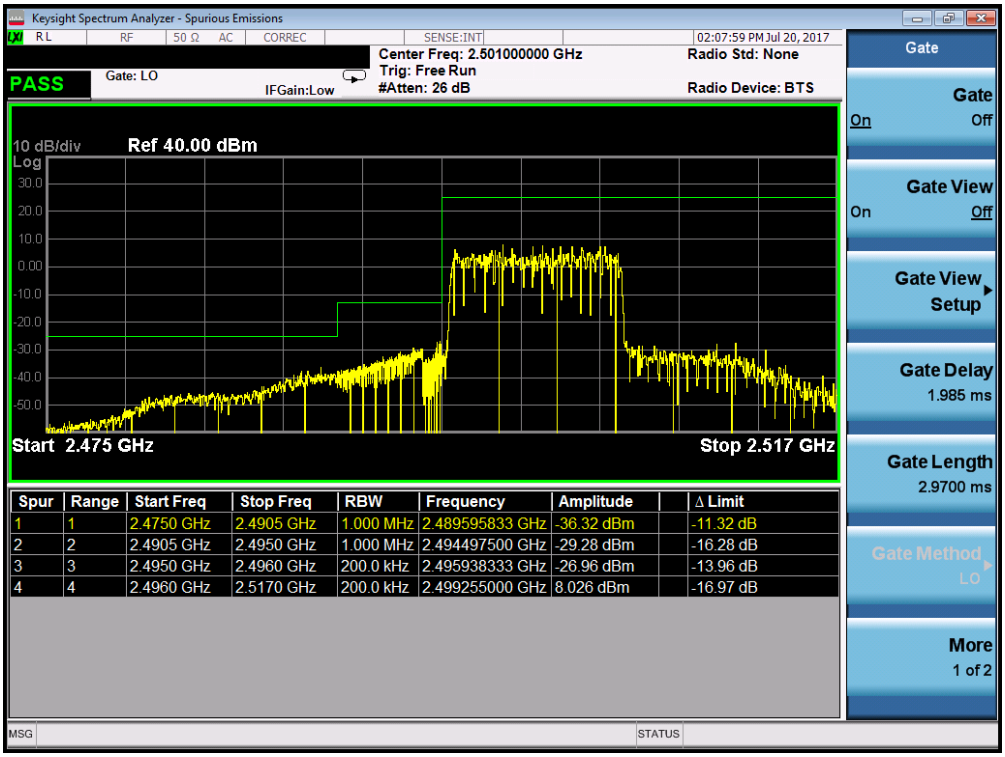



| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 2.6650 GHz | 2.6900 GHz | 100.0 kHz | 2.687875000 GHz | 7.500 dBm | -17.50 dB |
| 2 | 2 | 2.6900 GHz | 2.6910 GHz | 100.0 kHz | 2.690015000 GHz | -30.65 dBm | -20.65 dB |
| 3 | 3 | 2.6910 GHz | 2.6950 GHz | 1.000 MHz | 2.692140000 GHz | -26.12 dBm | -16.12 dB |
| 4 | 4 | 2.6950 GHz | 2.6960 GHz | 1.000 MHz | 2.695136667 GHz | -32.02 dBm | -19.02 dB |
| 5 | 5 | 2.6960 GHz | 2.7150 GHz | 1.000 MHz | 2.696221667 GHz | -32.99 dBm | -7.993 dB |

**Plot 7-224. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)**




| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 2.4750 GHz | 2.4905 GHz | 1.000 MHz | 2.489595833 GHz | -36.32 dBm | -11.32 dB |
| 2 | 2 | 2.4905 GHz | 2.4950 GHz | 1.000 MHz | 2.494497500 GHz | -29.28 dBm | -16.28 dB |
| 3 | 3 | 2.4950 GHz | 2.4960 GHz | 200.0 kHz | 2.495938333 GHz | -26.96 dBm | -13.96 dB |
| 4 | 4 | 2.4960 GHz | 2.5170 GHz | 200.0 kHz | 2.499255000 GHz | 8.026 dBm | -16.97 dB |

**Plot 7-225. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)**



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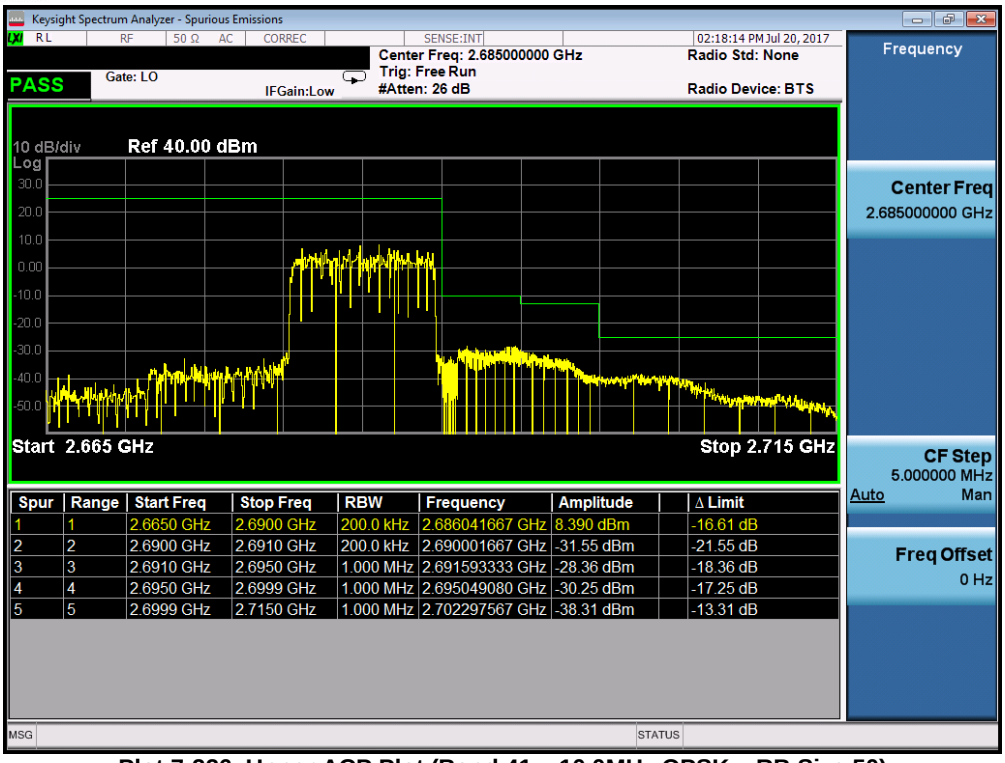
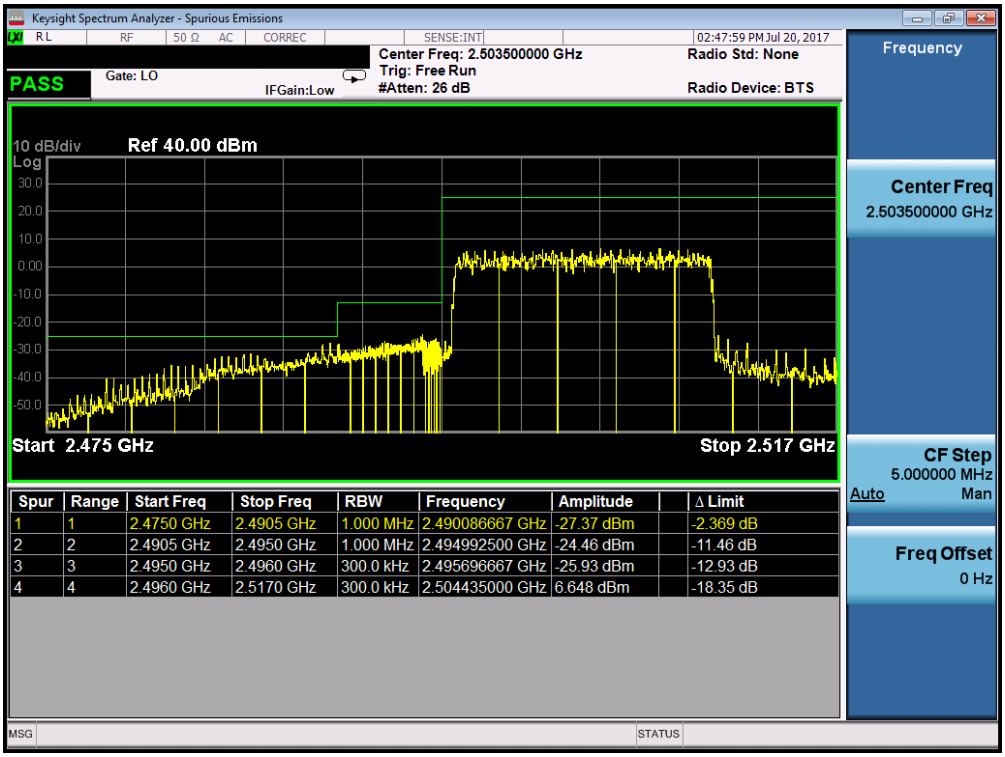



| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 2.6650 GHz | 2.6900 GHz | 200.0 kHz | 2.686041667 GHz | 8.390 dBm | -16.61 dB |
| 2 | 2 | 2.6900 GHz | 2.6910 GHz | 200.0 kHz | 2.690001667 GHz | -31.55 dBm | -21.55 dB |
| 3 | 3 | 2.6910 GHz | 2.6950 GHz | 1.000 MHz | 2.691593333 GHz | -28.36 dBm | -18.36 dB |
| 4 | 4 | 2.6950 GHz | 2.6999 GHz | 1.000 MHz | 2.695049080 GHz | -30.25 dBm | -17.25 dB |
| 5 | 5 | 2.6999 GHz | 2.7150 GHz | 1.000 MHz | 2.702297567 GHz | -38.31 dBm | -13.31 dB |

**Plot 7-226. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)**




| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 2.4750 GHz | 2.4905 GHz | 1.000 MHz | 2.490086667 GHz | -27.37 dBm | -2.369 dB |
| 2 | 2 | 2.4905 GHz | 2.4950 GHz | 1.000 MHz | 2.494992500 GHz | -24.46 dBm | -11.46 dB |
| 3 | 3 | 2.4950 GHz | 2.4960 GHz | 300.0 kHz | 2.495696667 GHz | -25.93 dBm | -12.93 dB |
| 4 | 4 | 2.4960 GHz | 2.5170 GHz | 300.0 kHz | 2.504435000 GHz | 6.648 dBm | -18.35 dB |

**Plot 7-227. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)**



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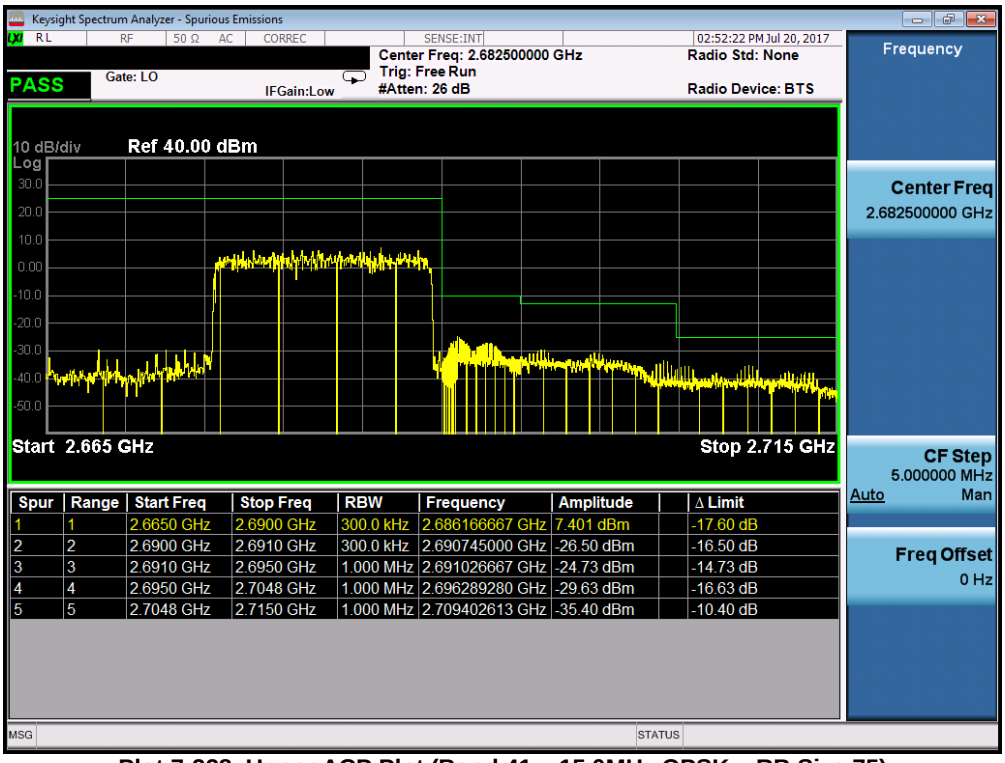
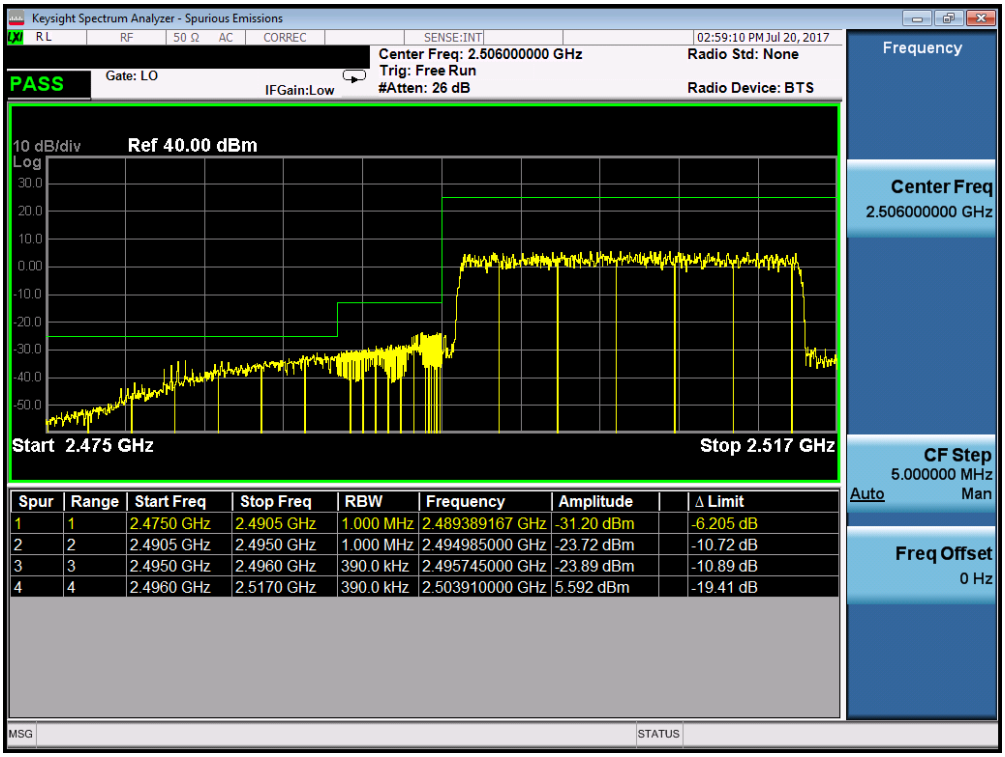



| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 2.6650 GHz | 2.6900 GHz | 300.0 kHz | 2.686166667 GHz | 7.401 dBm | -17.60 dB |
| 2 | 2 | 2.6900 GHz | 2.6910 GHz | 300.0 kHz | 2.690745000 GHz | -26.50 dBm | -16.50 dB |
| 3 | 3 | 2.6910 GHz | 2.6950 GHz | 1.000 MHz | 2.691026667 GHz | -24.73 dBm | -14.73 dB |
| 4 | 4 | 2.6950 GHz | 2.7048 GHz | 1.000 MHz | 2.696289280 GHz | -29.63 dBm | -16.63 dB |
| 5 | 5 | 2.7048 GHz | 2.7150 GHz | 1.000 MHz | 2.709402613 GHz | -35.40 dBm | -10.40 dB |

**Plot 7-228. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)**




| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | Δ Limit |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 2.4750 GHz | 2.4905 GHz | 1.000 MHz | 2.489389167 GHz | -31.20 dBm | -6.205 dB |
| 2 | 2 | 2.4905 GHz | 2.4950 GHz | 1.000 MHz | 2.494985000 GHz | -23.72 dBm | -10.72 dB |
| 3 | 3 | 2.4950 GHz | 2.4960 GHz | 390.0 kHz | 2.495745000 GHz | -23.89 dBm | -10.89 dB |
| 4 | 4 | 2.4960 GHz | 2.5170 GHz | 390.0 kHz | 2.503910000 GHz | 5.592 dBm | -19.41 dB |

**Plot 7-229. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)**



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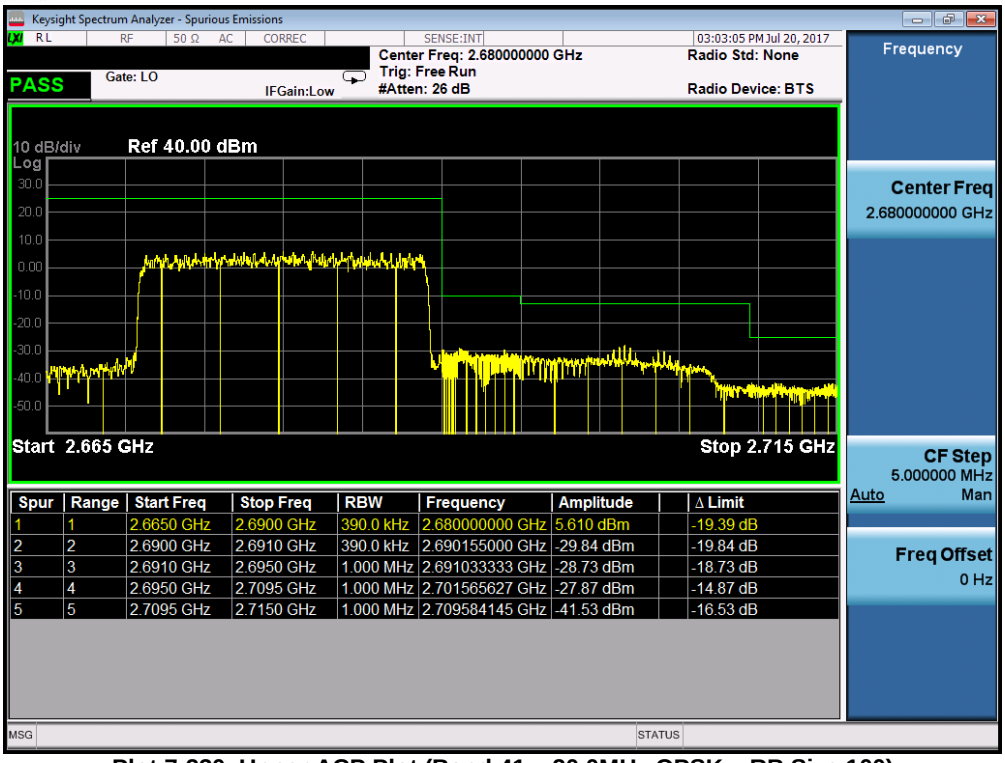


| Spur | Range | Start Freq | Stop Freq | RBW | Frequency | Amplitude | | Δ Limit |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2.6650 GHz | 2.6900 GHz | 390.0 kHz | 2.680000000 GHz | 5.610 dBm | | -19.39 dB |
| 2 | 2 | 2.6900 GHz | 2.6910 GHz | 390.0 kHz | 2.690155000 GHz | -29.84 dBm | | -19.84 dB |
| 3 | 3 | 2.6910 GHz | 2.6950 GHz | 1.000 MHz | 2.691033333 GHz | -28.73 dBm | | -18.73 dB |
| 4 | 4 | 2.6950 GHz | 2.7095 GHz | 1.000 MHz | 2.701565627 GHz | -27.87 dBm | | -14.87 dB |
| 5 | 5 | 2.7095 GHz | 2.7150 GHz | 1.000 MHz | 2.709584145 GHz | -41.53 dBm | | -16.53 dB |

**Plot 7-230. 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. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

### Test Setup

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

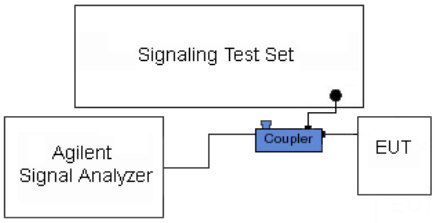


**Figure 7-4. Test Instrument & Measurement Setup**

### Test Notes

None.



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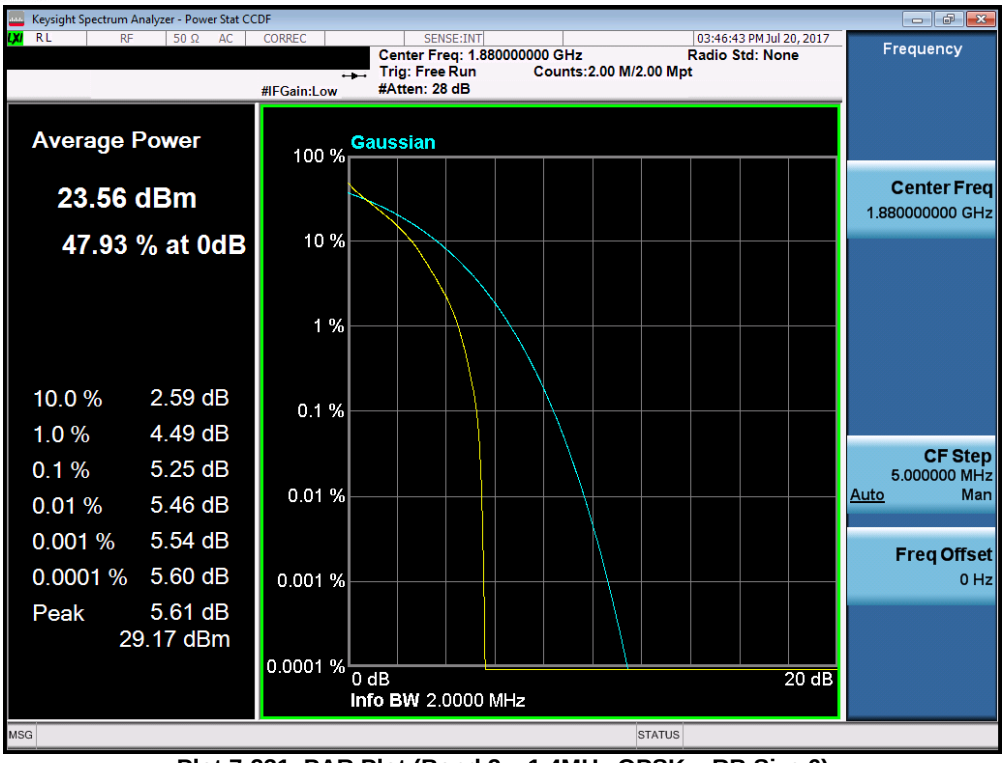
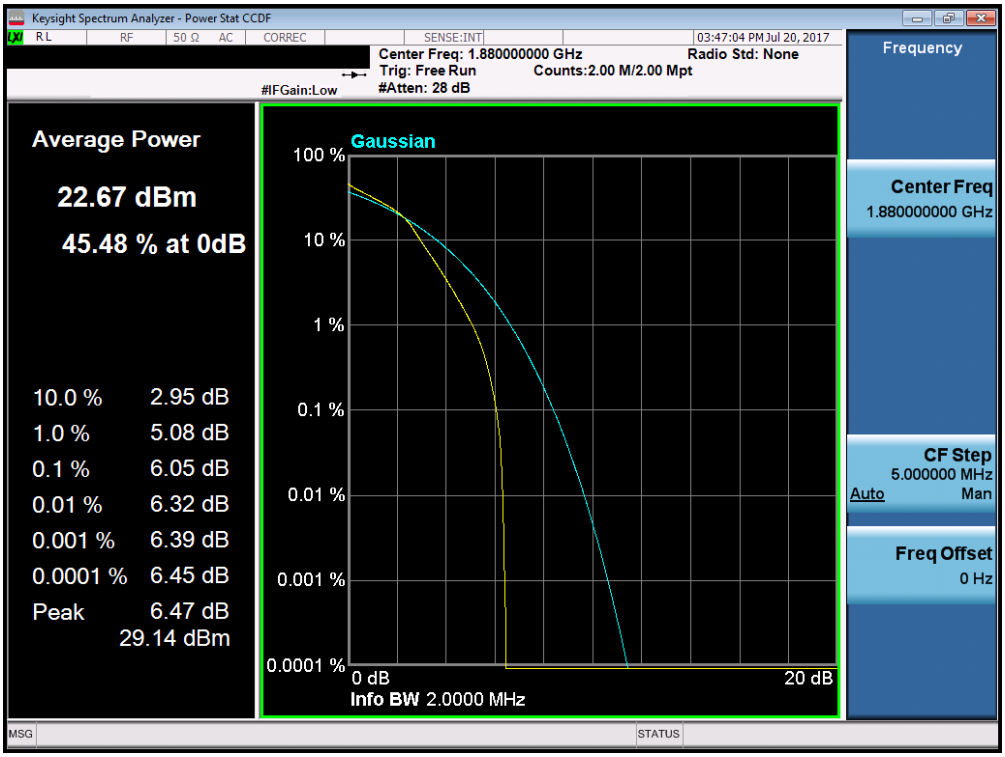



**Plot 7-231. PAR Plot (Band 2 – 1.4MHz QPSK – RB Size 6)**




**Plot 7-232. PAR Plot (Band 2 – 1.4MHz 16-QAM – RB Size 6)**

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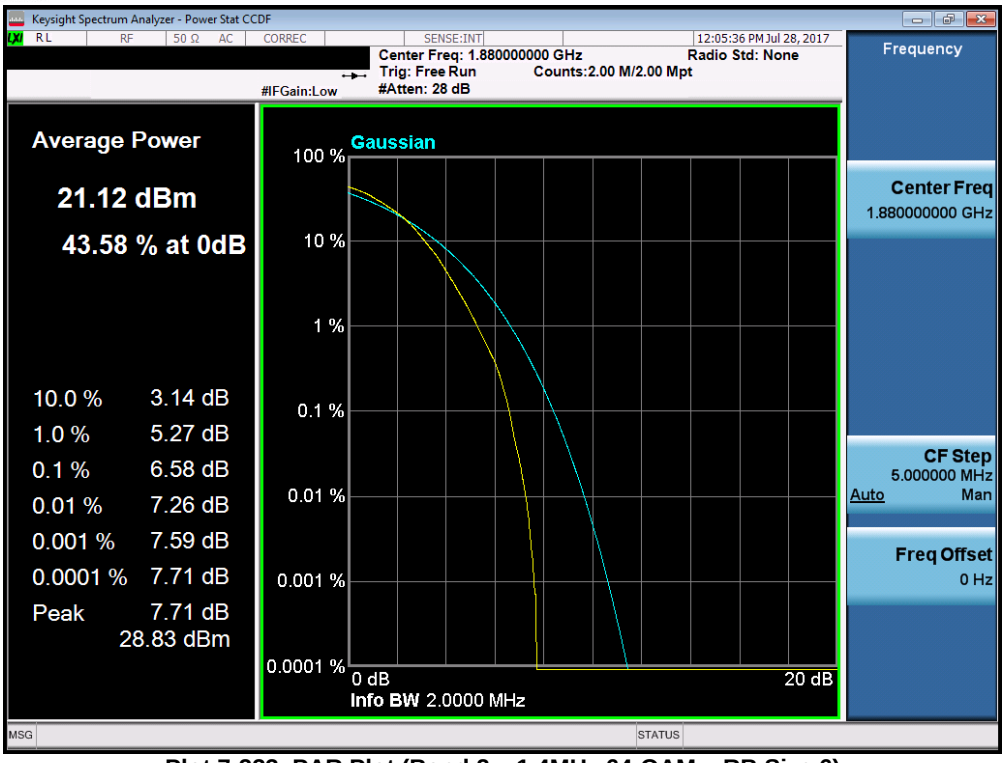
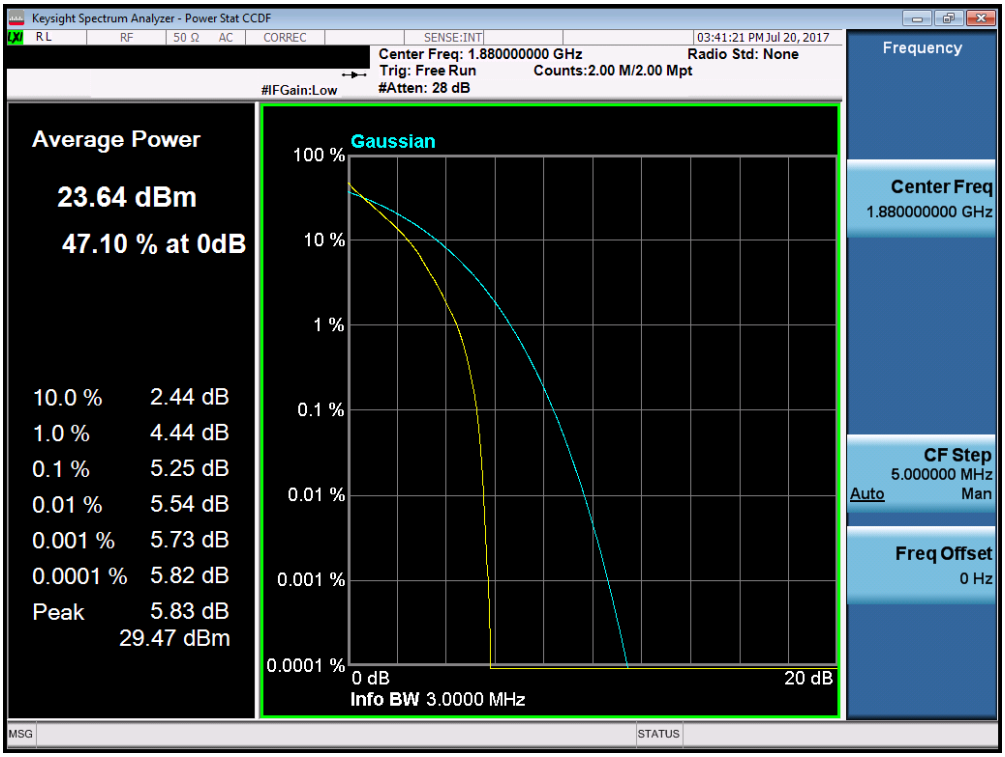



**Plot 7-233. PAR Plot (Band 2 – 1.4MHz 64-QAM – RB Size 6)**




**Plot 7-234. PAR Plot (Band 2 – 3.0MHz QPSK – RB Size 15)**

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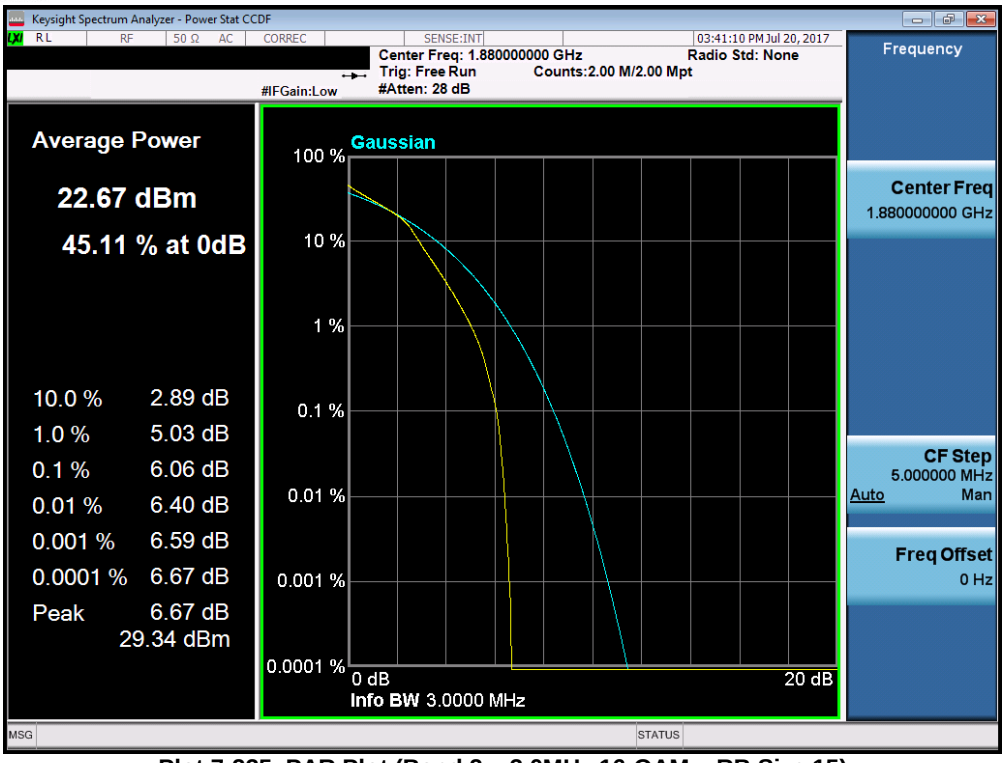
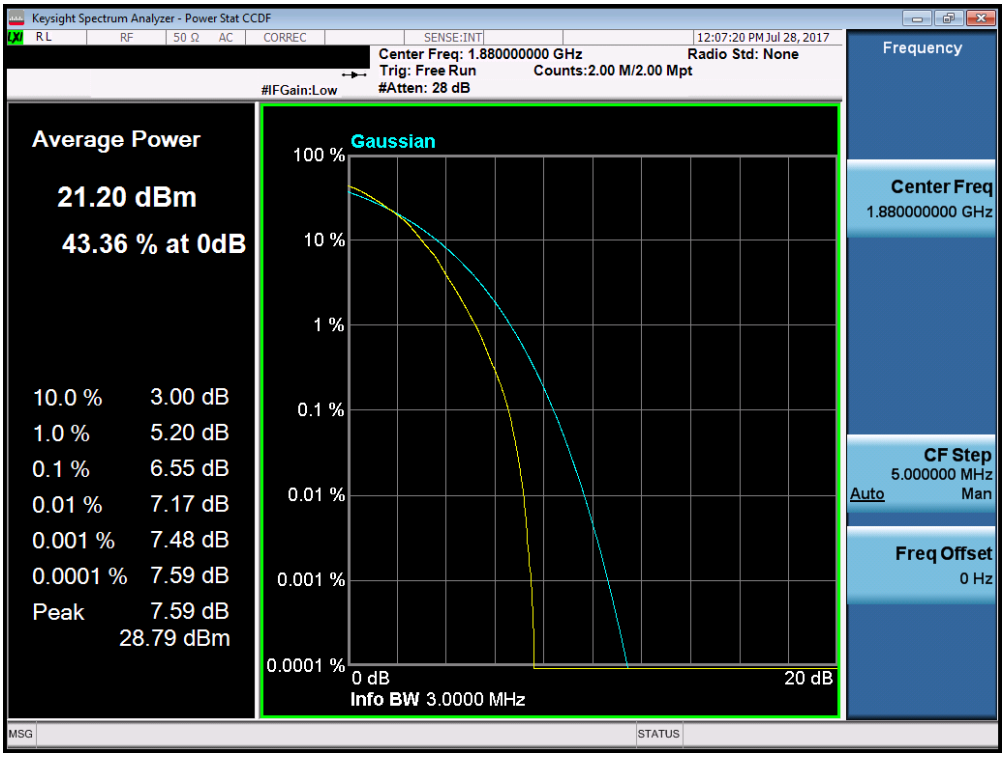



**Plot 7-235. PAR Plot (Band 2 – 3.0MHz 16-QAM – RB Size 15)**




**Plot 7-236. PAR Plot (Band 2 – 3.0MHz 64-QAM – RB Size 15)**

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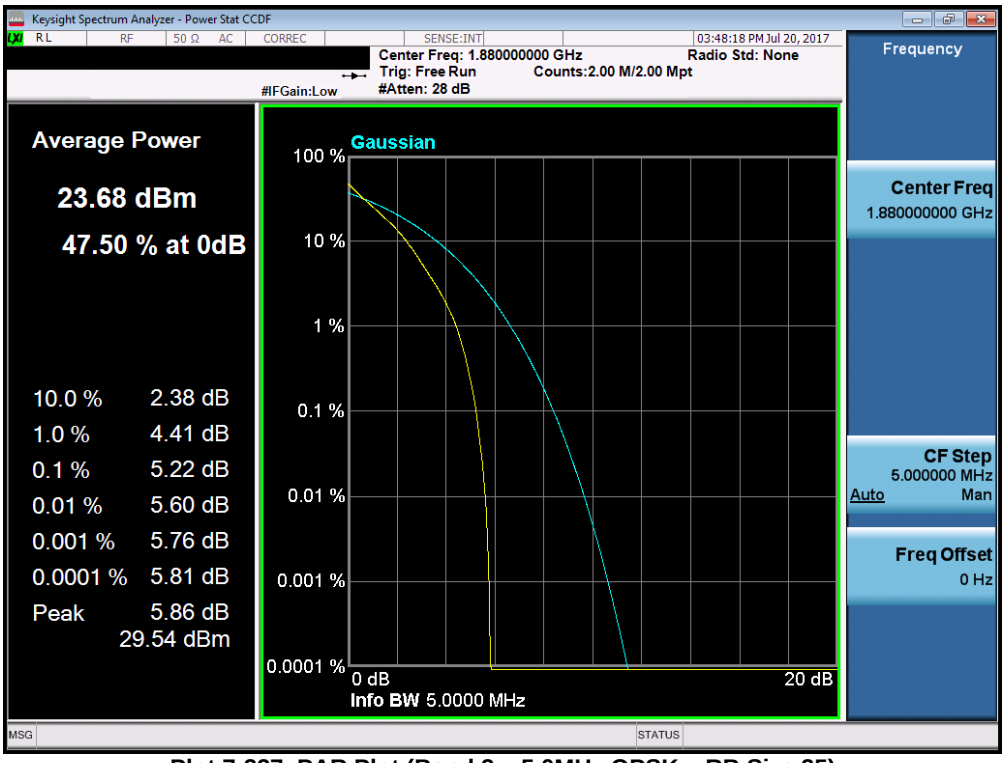
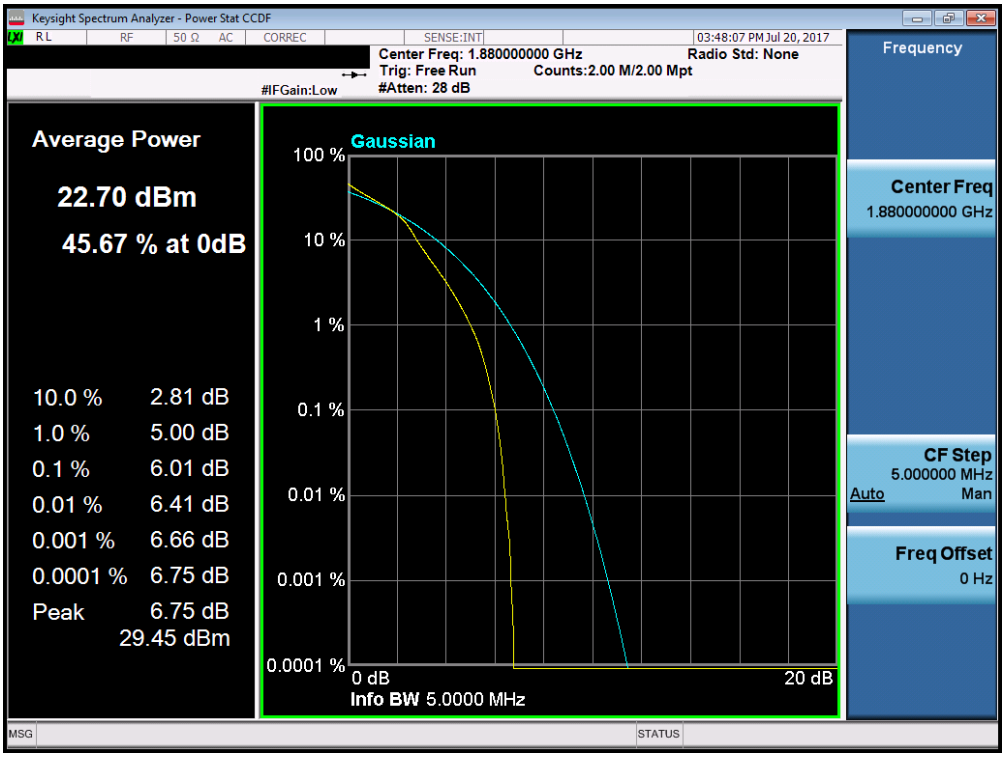



**Plot 7-237. PAR Plot (Band 2 – 5.0MHz QPSK – RB Size 25)**




**Plot 7-238. PAR Plot (Band 2 – 5.0MHz 16-QAM – RB Size 25)**

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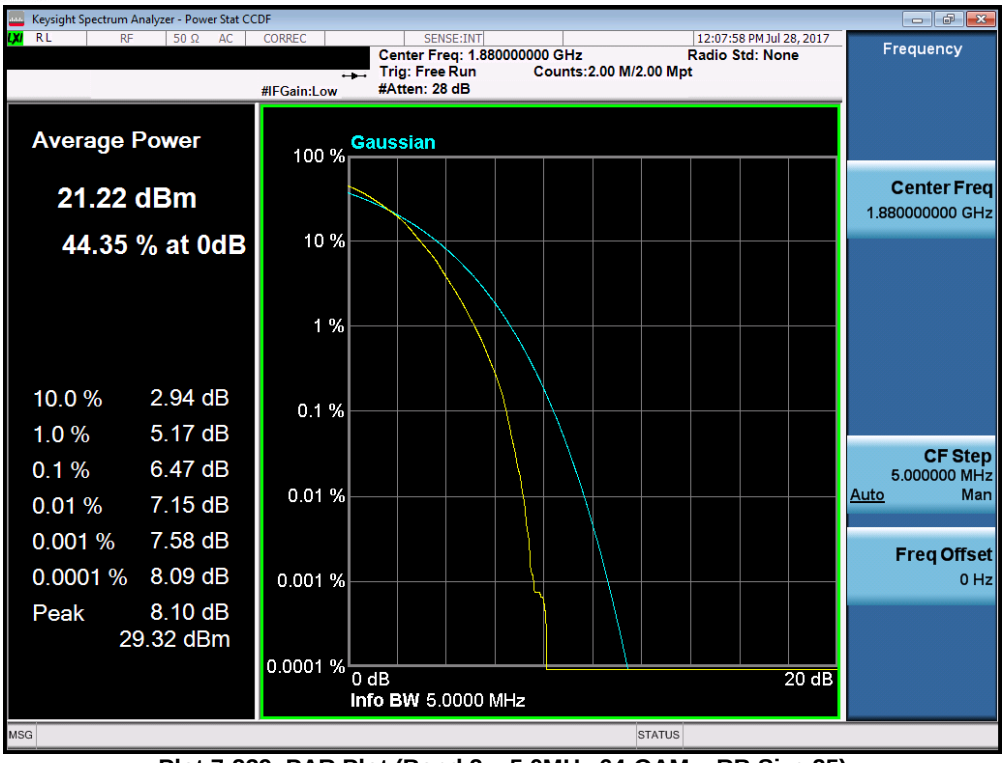
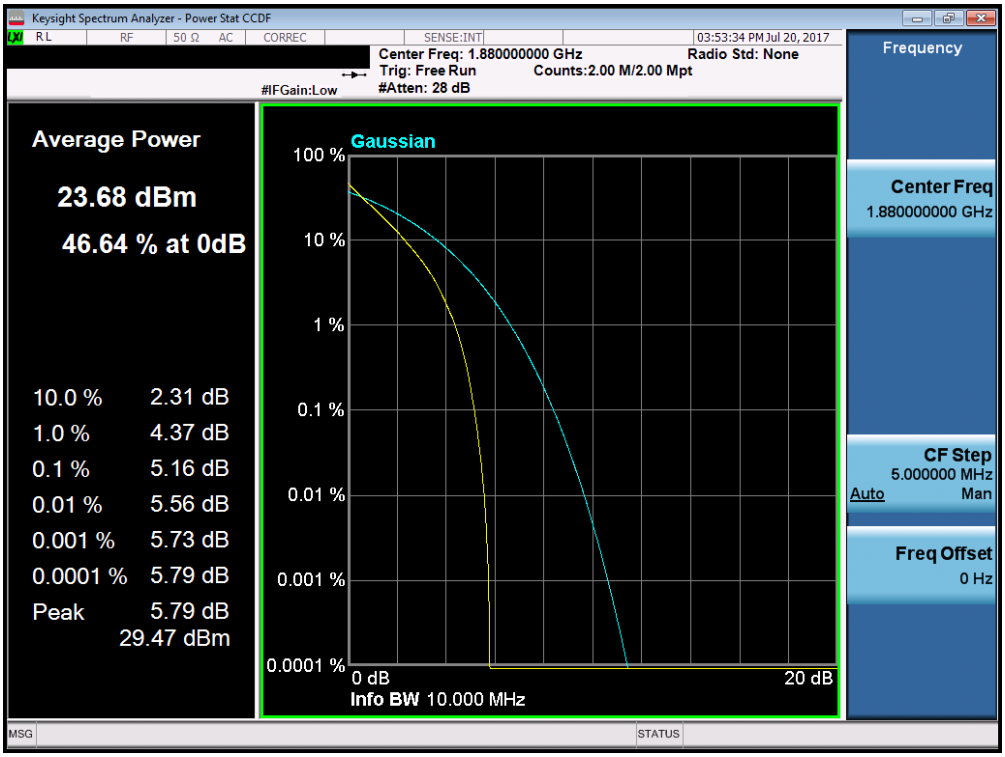



**Plot 7-239. PAR Plot (Band 2 – 5.0MHz 64-QAM – RB Size 25)**




**Plot 7-240. PAR Plot (Band 2 – 10.0MHz QPSK – RB Size 50)**

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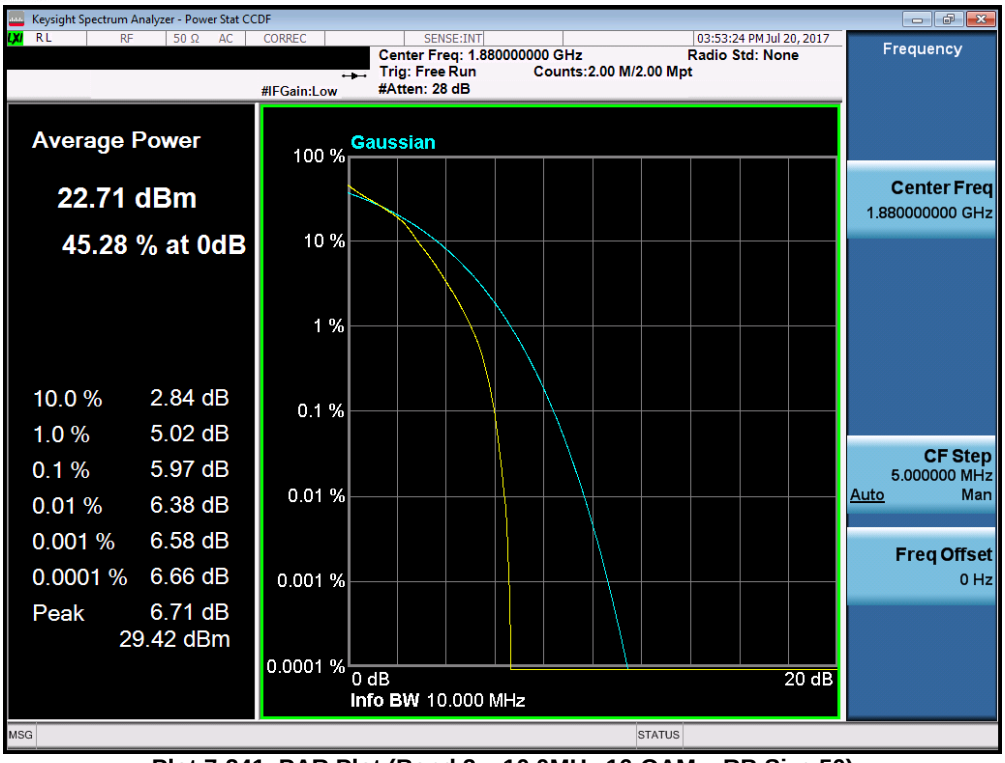
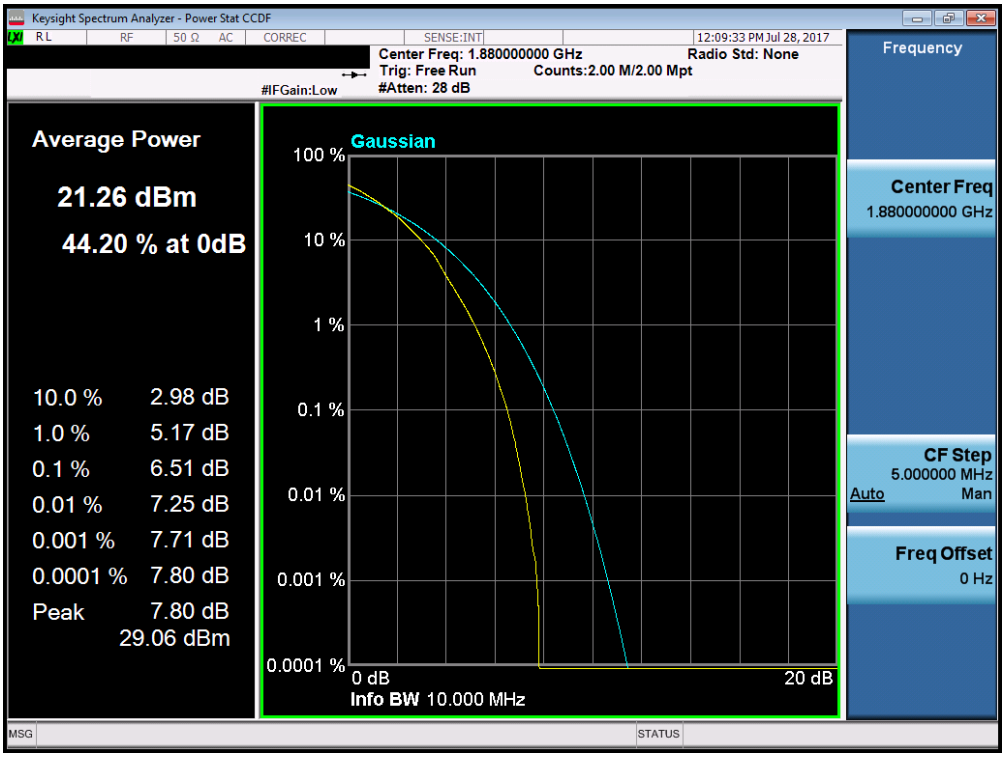



**Plot 7-241. PAR Plot (Band 2 – 10.0MHz 16-QAM – RB Size 50)**




**Plot 7-242. PAR Plot (Band 2 – 10.0MHz 64-QAM – RB Size 50)**

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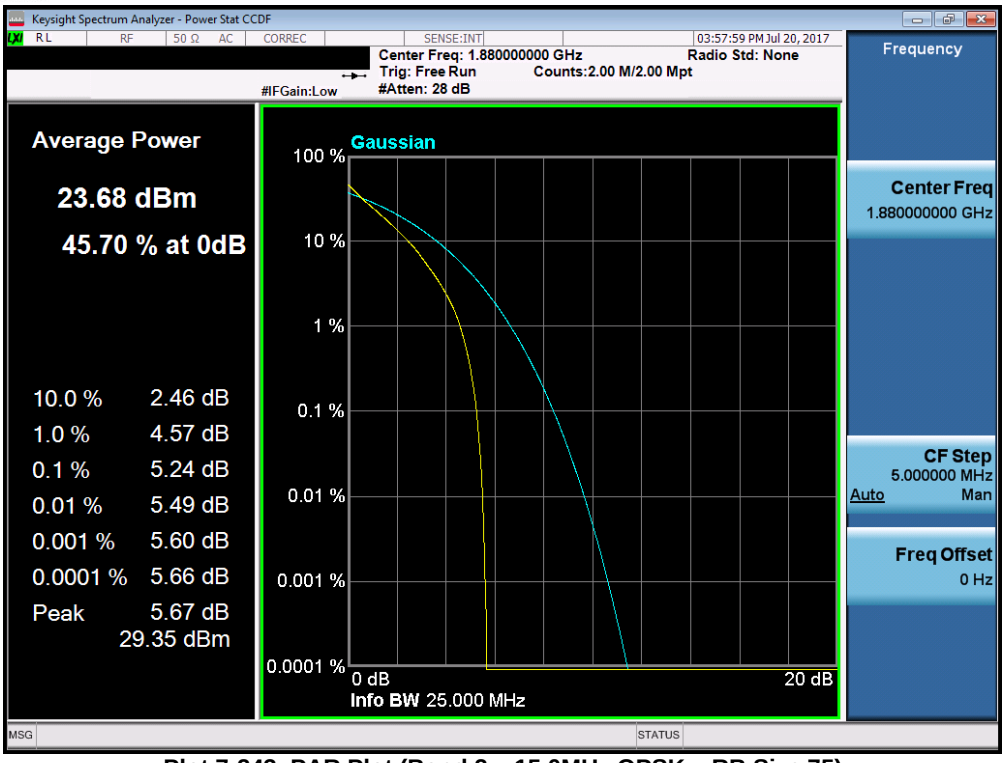
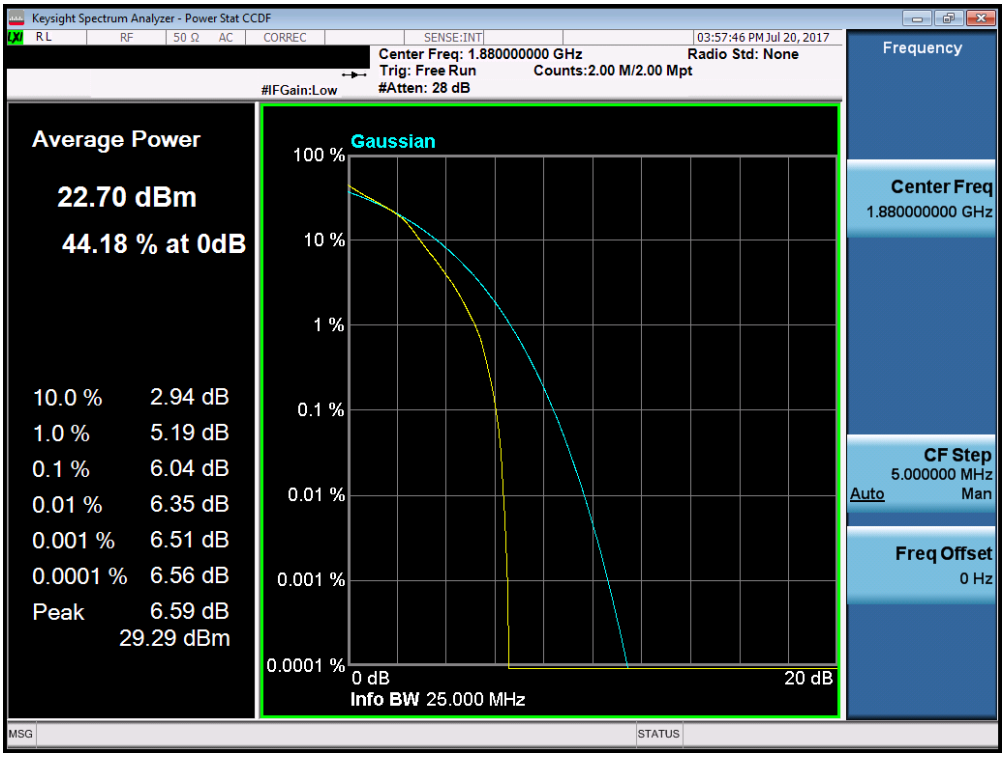



**Plot 7-243. PAR Plot (Band 2 – 15.0MHz QPSK – RB Size 75)**




**Plot 7-244. PAR Plot (Band 2 – 15.0MHz 16-QAM – RB Size 75)**

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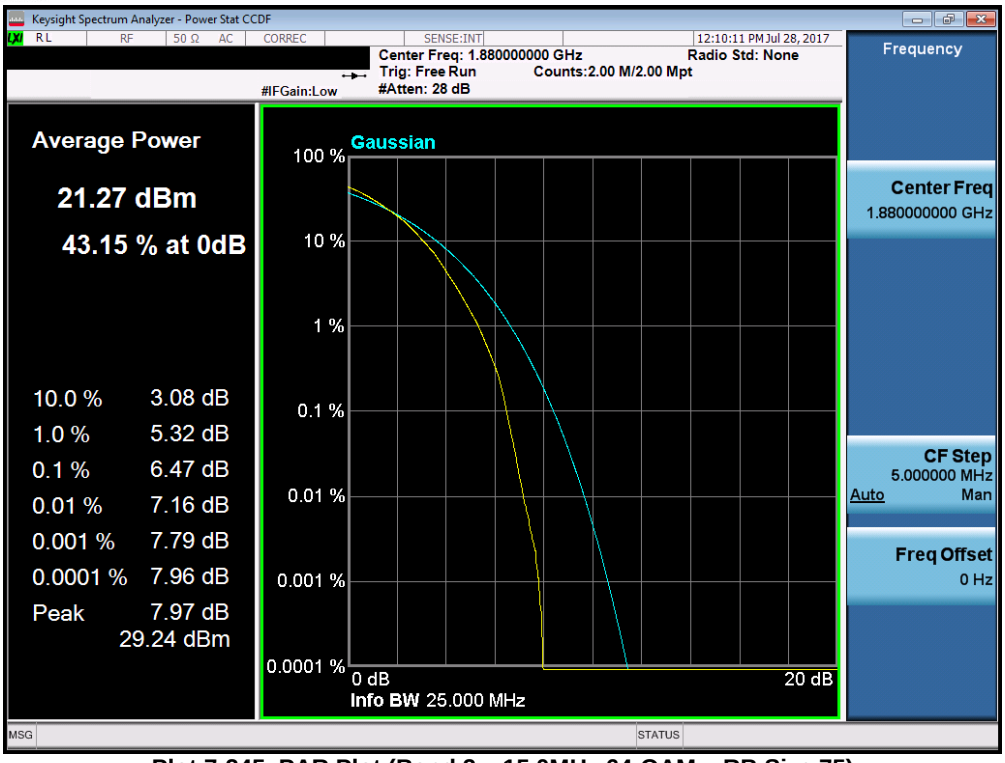
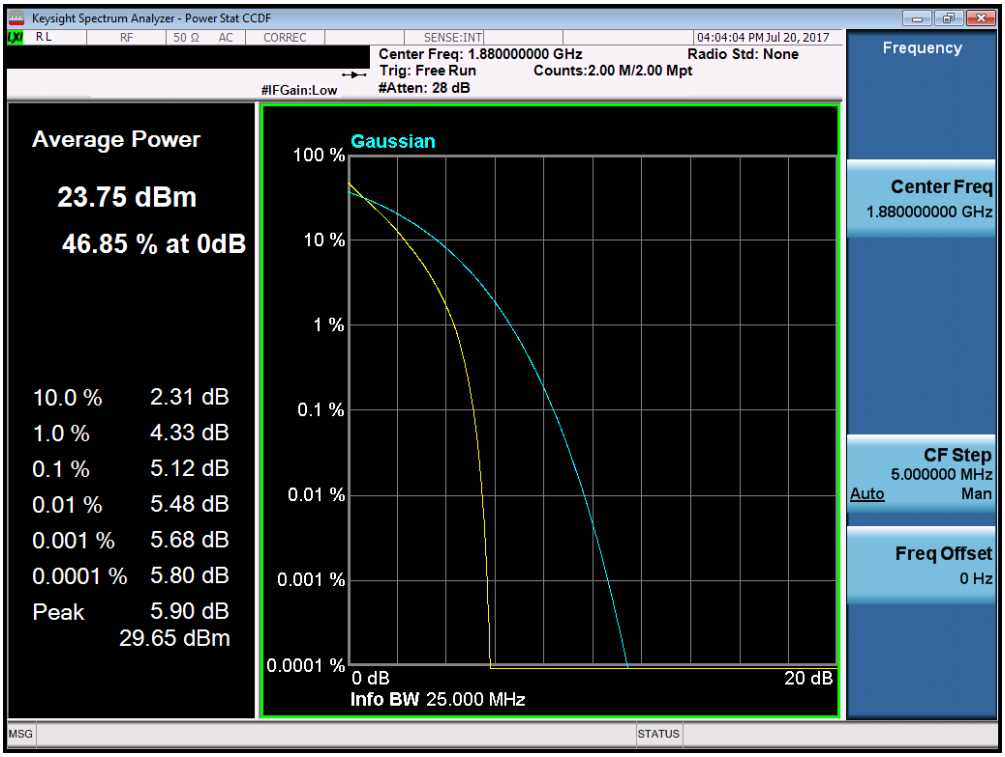



**Plot 7-245. PAR Plot (Band 2 – 15.0MHz 64-QAM – RB Size 75)**




**Plot 7-246. PAR Plot (Band 2 – 20.0MHz QPSK – RB Size 100)**

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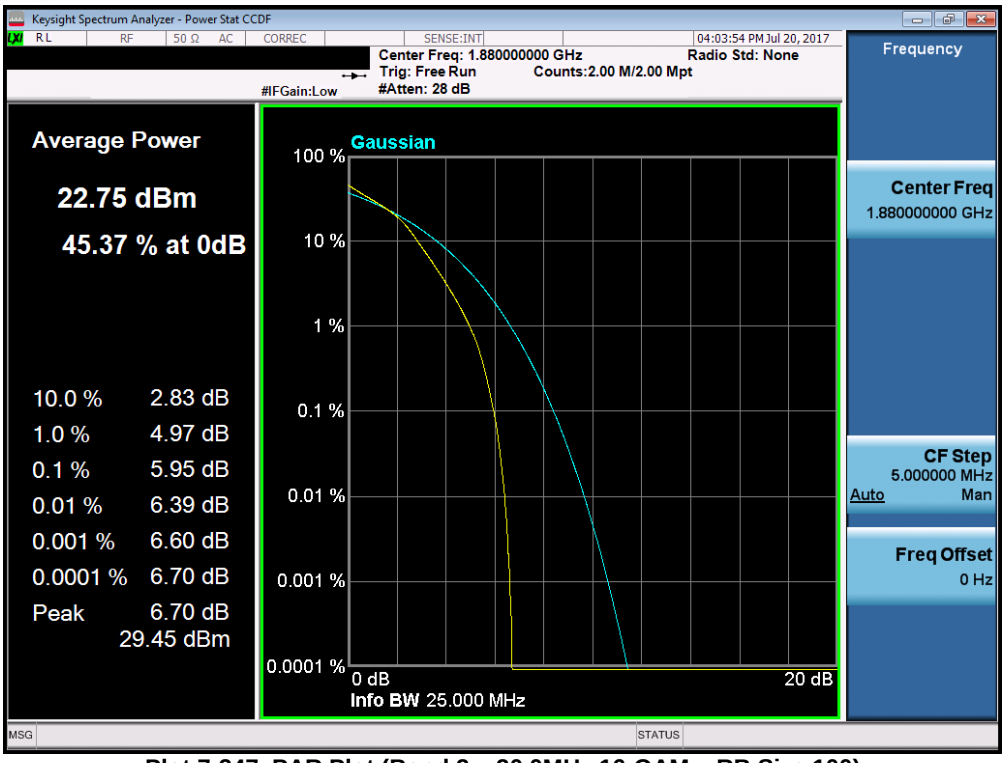
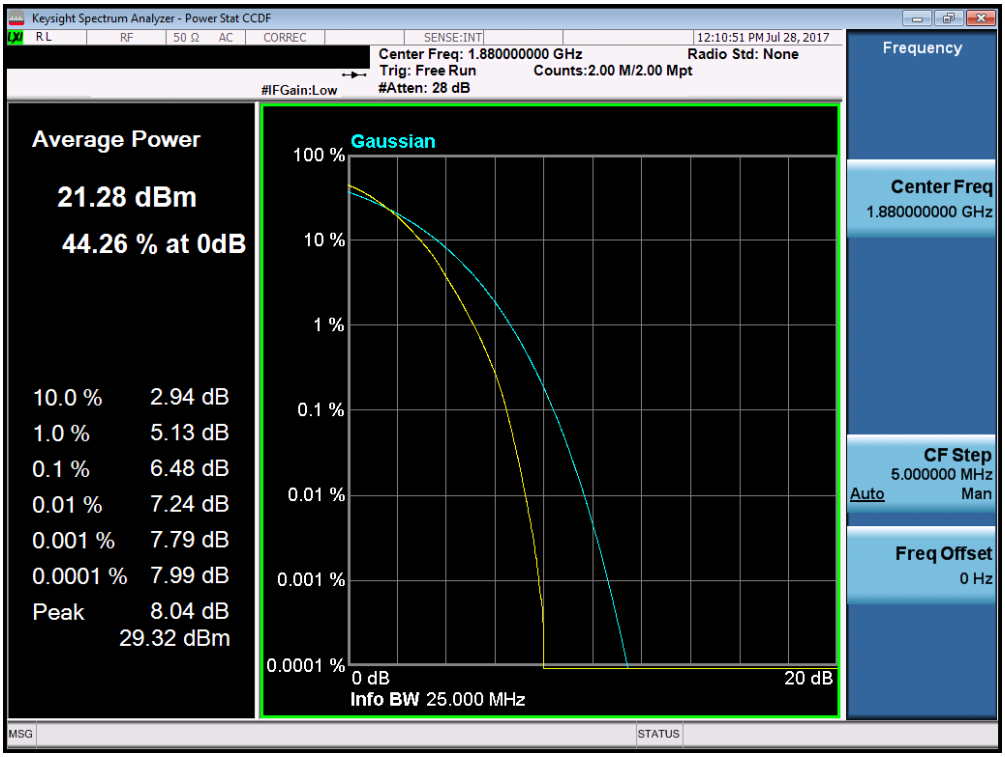



**Plot 7-247. PAR Plot (Band 2 – 20.0MHz 16-QAM – RB Size 100)**




**Plot 7-248. PAR Plot (Band 2 – 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(c.10) §27.50(d.4)**

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




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V 6.7
06/23/2017

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## Test Setup

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

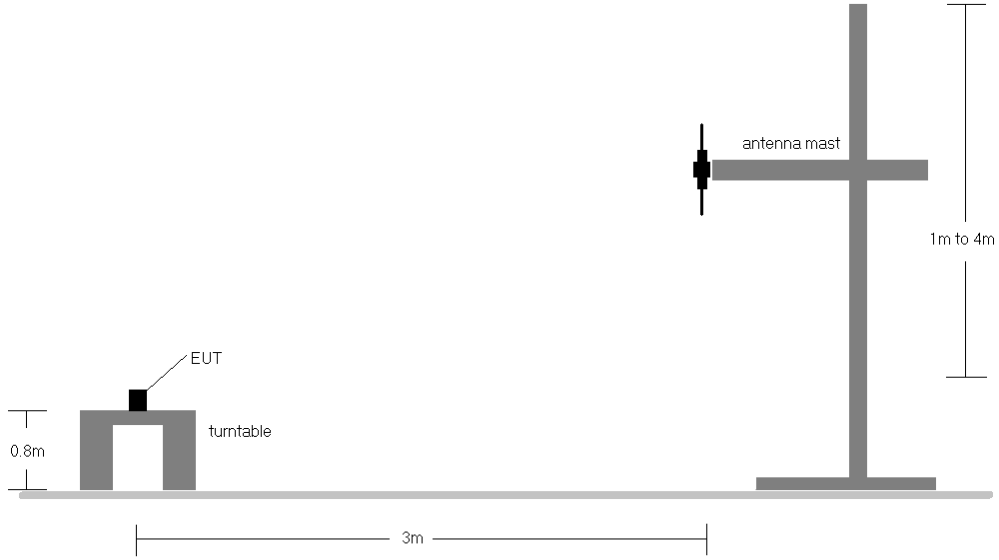


**Figure 7-5. Radiated Test Setup <1GHz**

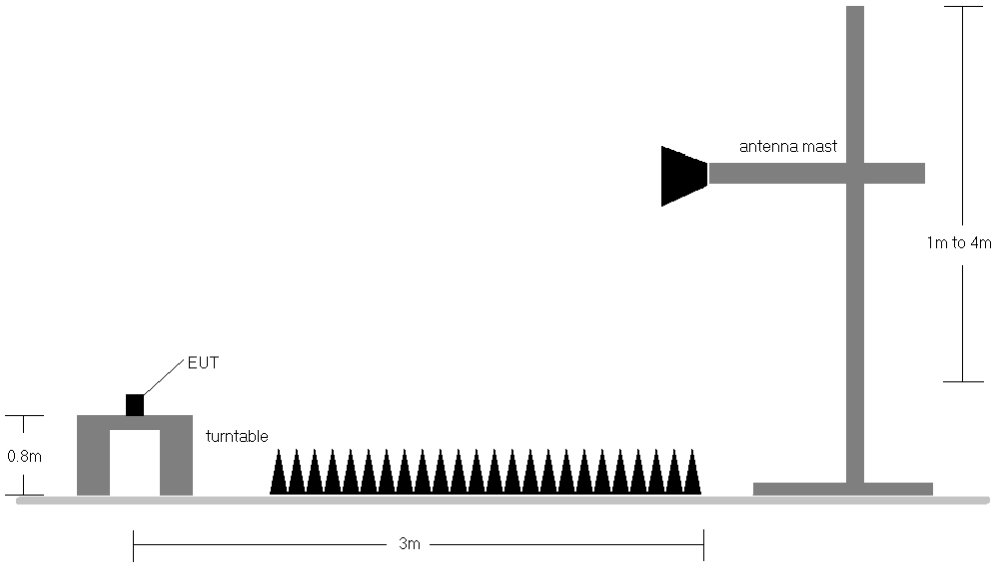


**Figure 7-6. Radiated Test Setup >1GHz**

## 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] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 665.50 | 5 | QPSK | V | 150 | 7 | 1 / 0 | 13.86 | -1.05 | 12.81 | 34.77 | -21.96 |
| 680.50 | 5 | QPSK | V | 150 | 17 | 1 / 0 | 14.82 | -1.05 | 13.77 | 34.77 | -21.00 |
| 695.50 | 5 | QPSK | V | 150 | 7 | 1 / 0 | 14.76 | -1.05 | 13.71 | 34.77 | -21.06 |
| 680.50 | 5 | 16-QAM | V | 150 | 17 | 1 / 0 | 14.40 | -1.05 | 13.35 | 34.77 | -21.42 |
| 680.50 | 5 | 64-QAM | V | 150 | 17 | 1 / 0 | 13.37 | -1.05 | 12.32 | 34.77 | -22.45 |
| 668.00 | 10 | QPSK | V | 150 | 20 | 1 / 0 | 13.59 | -1.05 | 12.54 | 34.77 | -22.23 |
| 680.50 | 10 | QPSK | V | 150 | 7 | 1 / 0 | 15.03 | -1.05 | 13.98 | 34.77 | -20.79 |
| 693.00 | 10 | QPSK | V | 150 | 5 | 1 / 0 | 15.04 | -1.05 | 13.99 | 34.77 | -20.78 |
| 693.00 | 10 | 16-QAM | V | 150 | 5 | 1 / 0 | 14.69 | -1.05 | 13.64 | 34.77 | -21.13 |
| 693.00 | 10 | 64-QAM | V | 150 | 5 | 1 / 0 | 13.75 | -1.05 | 12.70 | 34.77 | -22.07 |
| 670.50 | 15 | QPSK | V | 150 | 10 | 1 / 0 | 13.87 | -1.05 | 12.82 | 34.77 | -21.95 |
| 680.50 | 15 | QPSK | V | 150 | 20 | 1 / 0 | 14.56 | -1.05 | 13.51 | 34.77 | -21.26 |
| 690.50 | 15 | QPSK | V | 150 | 25 | 1 / 0 | 15.08 | -1.05 | 14.03 | 34.77 | -20.74 |
| 690.50 | 15 | 16-QAM | V | 150 | 25 | 1 / 0 | 14.70 | -1.05 | 13.65 | 34.77 | -21.12 |
| 690.50 | 15 | 64-QAM | V | 150 | 25 | 1 / 0 | 13.80 | -1.05 | 12.75 | 34.77 | -22.02 |
| 673.00 | 20 | QPSK | V | 150 | 23 | 1 / 0 | 13.90 | -1.05 | 12.85 | 34.77 | -21.92 |
| 680.50 | 20 | QPSK | V | 150 | 12 | 1 / 0 | 14.88 | -1.05 | 13.83 | 34.77 | -20.94 |
| 688.00 | 20 | QPSK | V | 150 | 0 | 1 / 0 | 14.92 | -1.05 | 13.87 | 34.77 | -20.90 |
| 688.00 | 20 | 16-QAM | V | 150 | 0 | 1 / 0 | 14.51 | -1.05 | 13.46 | 34.77 | -21.31 |
| 688.00 | 20 | 64-QAM | V | 150 | 0 | 1 / 0 | 13.55 | -1.05 | 12.50 | 34.77 | -22.27 |
| 690.50 | 15 | QPSK | H | 150 | 39 | 1 / 0 | 13.85 | -1.05 | 12.80 | 34.77 | -21.98 |
| 690.50 | 15 (WCP) | QPSK | H | 150 | 139 | 1 / 0 | 14.56 | -1.05 | 13.51 | 34.77 | -21.27 |

**Table 7-2. ERP Data (Band 71)**

| 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 | V | 150 | 106 | 1 / 0 | 17.28 | -1.05 | 16.23 | 34.77 | -18.54 |
| 707.50 | 1.4 | QPSK | V | 150 | 105 | 1 / 0 | 17.70 | -1.02 | 16.68 | 34.77 | -18.09 |
| 715.30 | 1.4 | QPSK | V | 150 | 107 | 1 / 0 | 17.79 | -0.99 | 16.80 | 34.77 | -17.97 |
| 715.30 | 1.4 | 16-QAM | V | 150 | 107 | 1 / 0 | 17.68 | -0.99 | 16.69 | 34.77 | -18.08 |
| 715.30 | 1.4 | 64-QAM | V | 150 | 107 | 1 / 0 | 17.08 | -0.99 | 16.09 | 34.77 | -18.68 |
| 700.50 | 3 | QPSK | V | 150 | 110 | 1 / 0 | 17.83 | -1.05 | 16.78 | 34.77 | -17.99 |
| 707.50 | 3 | QPSK | V | 150 | 109 | 1 / 0 | 17.47 | -1.02 | 16.45 | 34.77 | -18.32 |
| 714.50 | 3 | QPSK | V | 150 | 108 | 1 / 0 | 17.97 | -0.99 | 16.98 | 34.77 | -17.79 |
| 714.50 | 3 | 16-QAM | V | 150 | 108 | 1 / 0 | 17.91 | -0.99 | 16.92 | 34.77 | -17.85 |
| 714.50 | 3 | 64-QAM | V | 150 | 108 | 1 / 0 | 17.20 | -0.99 | 16.21 | 34.77 | -18.56 |
| 701.50 | 5 | QPSK | V | 150 | 102 | 1 / 0 | 18.17 | -1.04 | 17.13 | 34.77 | -17.65 |
| 707.50 | 5 | QPSK | V | 150 | 103 | 1 / 0 | 17.06 | -1.02 | 16.04 | 34.77 | -18.73 |
| 713.50 | 5 | QPSK | V | 150 | 101 | 1 / 0 | 17.58 | -1.00 | 16.58 | 34.77 | -18.19 |
| 701.50 | 5 | 16-QAM | V | 150 | 102 | 1 / 0 | 18.08 | -1.04 | 17.04 | 34.77 | -17.74 |
| 701.50 | 5 | 64-QAM | V | 150 | 102 | 1 / 0 | 17.25 | -1.04 | 16.21 | 34.77 | -18.57 |
| 704.00 | 10 | QPSK | V | 150 | 112 | 1 / 0 | 17.43 | -1.03 | 16.40 | 34.77 | -18.37 |
| 707.50 | 10 | QPSK | V | 150 | 110 | 1 / 0 | 17.79 | -1.02 | 16.77 | 34.77 | -18.00 |
| 711.00 | 10 | QPSK | V | 150 | 108 | 1 / 0 | 17.85 | -1.01 | 16.84 | 34.77 | -17.93 |
| 711.00 | 10 | 16-QAM | V | 150 | 108 | 1 / 0 | 17.77 | -1.01 | 16.76 | 34.77 | -18.01 |
| 711.00 | 10 | 64-QAM | V | 150 | 108 | 1 / 0 | 16.86 | -1.01 | 15.85 | 34.77 | -18.92 |
| 701.50 | 5 | QPSK | H | 150 | 3 | 1 / 0 | 16.06 | -1.04 | 15.02 | 34.77 | -19.76 |
| 701.50 | 5 (WCP) | QPSK | H | 150 | 126 | 1 / 0 | 18.06 | -1.04 | 17.02 | 34.77 | -17.76 |

**Table 7-3. ERP Data (Band 12)**



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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 | 136 | 1 / 0 | 18.45 | -0.65 | 17.80 | 38.45 | -20.65 |
| 836.50 | 1.4 | QPSK | H | 150 | 132 | 1 / 0 | 18.38 | -0.65 | 17.73 | 38.45 | -20.72 |
| 848.30 | 1.4 | QPSK | H | 150 | 135 | 1 / 0 | 19.22 | -0.65 | 18.57 | 38.45 | -19.88 |
| 848.30 | 1.4 | 16-QAM | H | 150 | 135 | 1 / 0 | 18.10 | -0.65 | 17.45 | 38.45 | -21.00 |
| 848.30 | 1.4 | 64-QAM | H | 150 | 135 | 1 / 0 | 17.81 | -0.65 | 17.16 | 38.45 | -21.29 |
| 825.50 | 3 | QPSK | H | 150 | 136 | 1 / 0 | 18.73 | -0.65 | 18.08 | 38.45 | -20.37 |
| 836.50 | 3 | QPSK | H | 150 | 139 | 1 / 0 | 19.04 | -0.65 | 18.39 | 38.45 | -20.06 |
| 847.50 | 3 | QPSK | H | 150 | 134 | 1 / 0 | 18.62 | -0.65 | 17.97 | 38.45 | -20.48 |
| 836.50 | 3 | 16-QAM | H | 150 | 139 | 1 / 0 | 18.94 | -0.65 | 18.29 | 38.45 | -20.16 |
| 836.50 | 3 | 64-QAM | H | 150 | 139 | 1 / 0 | 18.56 | -0.65 | 17.91 | 38.45 | -20.54 |
| 826.50 | 5 | QPSK | H | 150 | 139 | 1 / 0 | 18.93 | -0.65 | 18.28 | 38.45 | -20.17 |
| 836.50 | 5 | QPSK | H | 150 | 134 | 1 / 0 | 18.57 | -0.65 | 17.92 | 38.45 | -20.53 |
| 846.50 | 5 | QPSK | H | 150 | 131 | 1 / 0 | 18.63 | -0.65 | 17.98 | 38.45 | -20.47 |
| 826.50 | 5 | 16-QAM | H | 150 | 139 | 1 / 0 | 18.87 | -0.65 | 18.22 | 38.45 | -20.23 |
| 826.50 | 5 | 64-QAM | H | 150 | 139 | 1 / 0 | 18.63 | -0.65 | 17.98 | 38.45 | -20.47 |
| 829.00 | 10 | QPSK | H | 150 | 135 | 1 / 0 | 19.35 | -0.65 | 18.70 | 38.45 | -19.75 |
| 836.50 | 10 | QPSK | H | 150 | 131 | 1 / 0 | 19.00 | -0.65 | 18.35 | 38.45 | -20.10 |
| 844.00 | 10 | QPSK | H | 150 | 138 | 1 / 0 | 18.47 | -0.65 | 17.82 | 38.45 | -20.63 |
| 829.00 | 10 | 16-QAM | H | 150 | 135 | 1 / 0 | 19.31 | -0.65 | 18.66 | 38.45 | -19.79 |
| 829.00 | 10 | 64-QAM | H | 150 | 135 | 1 / 0 | 18.76 | -0.65 | 18.11 | 38.45 | -20.34 |
| 829.00 | 10 | QPSK | V | 150 | 105 | 1 / 0 | 18.99 | -0.65 | 18.34 | 38.45 | -20.11 |
| 829.00 | 10 (WCP) | QPSK | H | 150 | 43 | 1 / 0 | 18.35 | -0.65 | 17.70 | 38.45 | -20.75 |

**Table 7-4. 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 | V | 120 | 76 | 1 / 0 | 10.78 | 9.44 | 20.22 | 30.00 | -9.78 |
| 1745.00 | 1.4 | QPSK | V | 115 | 87 | 1 / 0 | 10.76 | 9.25 | 20.01 | 30.00 | -9.99 |
| 1779.30 | 1.4 | QPSK | V | 110 | 82 | 1 / 0 | 9.81 | 9.05 | 18.86 | 30.00 | -11.14 |
| 1710.70 | 1.4 | 16-QAM | V | 120 | 76 | 1 / 0 | 10.70 | 9.44 | 20.14 | 30.00 | -9.86 |
| 1710.70 | 1.4 | 64-QAM | V | 120 | 76 | 1 / 0 | 10.33 | 9.44 | 19.77 | 30.00 | -10.23 |
| 1711.50 | 3 | QPSK | V | 134 | 82 | 1 / 0 | 11.17 | 9.44 | 20.61 | 30.00 | -9.39 |
| 1745.00 | 3 | QPSK | V | 148 | 89 | 1 / 0 | 11.18 | 9.25 | 20.43 | 30.00 | -9.57 |
| 1778.50 | 3 | QPSK | V | 138 | 87 | 1 / 0 | 10.56 | 9.06 | 19.62 | 30.00 | -10.38 |
| 1711.50 | 3 | 16-QAM | V | 134 | 82 | 1 / 0 | 11.07 | 9.44 | 20.51 | 30.00 | -9.49 |
| 1711.50 | 3 | 64-QAM | V | 134 | 82 | 1 / 0 | 10.28 | 9.44 | 19.72 | 30.00 | -10.28 |
| 1712.50 | 5 | QPSK | V | 143 | 84 | 1 / 0 | 12.10 | 9.43 | 21.53 | 30.00 | -8.47 |
| 1745.00 | 5 | QPSK | V | 150 | 84 | 1 / 0 | 12.15 | 9.25 | 21.40 | 30.00 | -8.60 |
| 1777.50 | 5 | QPSK | V | 145 | 57 | 1 / 0 | 11.77 | 9.06 | 20.83 | 30.00 | -9.17 |
| 1712.50 | 5 | 16-QAM | V | 143 | 84 | 1 / 0 | 11.96 | 9.43 | 21.39 | 30.00 | -8.61 |
| 1712.50 | 5 | 64-QAM | V | 143 | 84 | 1 / 0 | 11.52 | 9.43 | 20.95 | 30.00 | -9.05 |
| 1715.00 | 10 | QPSK | V | 143 | 89 | 1 / 0 | 12.41 | 9.42 | 21.83 | 30.00 | -8.17 |
| 1745.00 | 10 | QPSK | V | 148 | 103 | 1 / 0 | 12.61 | 9.25 | 21.86 | 30.00 | -8.14 |
| 1775.00 | 10 | QPSK | V | 135 | 113 | 1 / 0 | 12.38 | 9.08 | 21.46 | 30.00 | -8.54 |
| 1745.00 | 10 | 16-QAM | V | 148 | 103 | 1 / 0 | 12.40 | 9.25 | 21.65 | 30.00 | -8.35 |
| 1745.00 | 10 | 64-QAM | V | 148 | 103 | 1 / 0 | 12.02 | 9.25 | 21.27 | 30.00 | -8.73 |
| 1717.50 | 15 | QPSK | V | 145 | 96 | 1 / 0 | 12.33 | 9.40 | 21.73 | 30.00 | -8.27 |
| 1745.00 | 15 | QPSK | V | 148 | 98 | 1 / 0 | 12.59 | 9.25 | 21.84 | 30.00 | -8.16 |
| 1772.50 | 15 | QPSK | V | 143 | 95 | 1 / 0 | 12.50 | 9.09 | 21.59 | 30.00 | -8.41 |
| 1745.00 | 15 | 16-QAM | V | 148 | 98 | 1 / 0 | 12.49 | 9.25 | 21.74 | 30.00 | -8.26 |
| 1745.00 | 15 | 64-QAM | V | 148 | 98 | 1 / 0 | 11.64 | 9.25 | 20.89 | 30.00 | -9.11 |
| 1720.00 | 20 | QPSK | V | 144 | 91 | 1 / 0 | 12.56 | 9.39 | 21.95 | 30.00 | -8.05 |
| 1745.00 | 20 | QPSK | V | 145 | 98 | 1 / 0 | 12.88 | 9.25 | 22.13 | 30.00 | -7.87 |
| 1770.00 | 20 | QPSK | V | 145 | 98 | 1 / 0 | 12.67 | 9.10 | 21.77 | 30.00 | -8.23 |
| 1745.00 | 20 | 16-QAM | V | 145 | 98 | 1 / 0 | 12.77 | 9.25 | 22.02 | 30.00 | -7.98 |
| 1745.00 | 20 | 64-QAM | V | 145 | 98 | 1 / 0 | 12.31 | 9.25 | 21.56 | 30.00 | -8.44 |
| 1745.00 | 20 | QPSK | H | 112 | 324 | 1 / 0 | 11.93 | 9.44 | 21.37 | 30.00 | -8.63 |
| 1745.00 | 20 (WCP) | QPSK | V | 145 | 262 | 1 / 0 | 11.47 | 9.25 | 20.72 | 30.00 | -9.28 |

**Table 7-5. 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 | 112 | 305 | 1 / 0 | 15.93 | 4.82 | 20.75 | 33.01 | -12.26 |
| 1880.00 | 1.4 | QPSK | H | 113 | 303 | 1 / 0 | 15.34 | 4.74 | 20.08 | 33.01 | -12.93 |
| 1909.30 | 1.4 | QPSK | H | 110 | 309 | 1 / 0 | 15.84 | 4.68 | 20.52 | 33.01 | -12.49 |
| 1850.70 | 1.4 | 16-QAM | H | 112 | 305 | 1 / 0 | 15.86 | 4.82 | 20.68 | 33.01 | -12.33 |
| 1850.70 | 1.4 | 64-QAM | H | 112 | 305 | 1 / 0 | 14.90 | 4.82 | 19.72 | 33.01 | -13.29 |
| 1851.50 | 3 | QPSK | H | 111 | 303 | 1 / 0 | 16.20 | 4.82 | 21.02 | 33.01 | -11.99 |
| 1880.00 | 3 | QPSK | H | 113 | 302 | 1 / 0 | 15.63 | 4.74 | 20.37 | 33.01 | -12.64 |
| 1908.50 | 3 | QPSK | H | 111 | 305 | 1 / 0 | 16.12 | 4.68 | 20.80 | 33.01 | -12.21 |
| 1851.50 | 3 | 16-QAM | H | 111 | 303 | 1 / 0 | 16.14 | 4.82 | 20.96 | 33.01 | -12.05 |
| 1851.50 | 3 | 64-QAM | H | 111 | 303 | 1 / 0 | 15.17 | 4.82 | 19.99 | 33.01 | -13.02 |
| 1852.50 | 5 | QPSK | H | 117 | 306 | 1 / 0 | 17.39 | 4.81 | 22.20 | 33.01 | -10.81 |
| 1880.00 | 5 | QPSK | H | 119 | 306 | 1 / 0 | 16.62 | 4.74 | 21.36 | 33.01 | -11.65 |
| 1907.50 | 5 | QPSK | H | 110 | 310 | 1 / 0 | 16.43 | 4.68 | 21.11 | 33.01 | -11.90 |
| 1852.50 | 5 | 16-QAM | H | 117 | 306 | 1 / 0 | 17.15 | 4.81 | 21.96 | 33.01 | -11.05 |
| 1852.50 | 5 | 64-QAM | H | 117 | 306 | 1 / 0 | 16.56 | 4.81 | 21.37 | 33.01 | -11.64 |
| 1855.00 | 10 | QPSK | H | 116 | 307 | 1 / 0 | 17.70 | 4.81 | 22.51 | 33.01 | -10.50 |
| 1880.00 | 10 | QPSK | H | 118 | 302 | 1 / 0 | 16.93 | 4.74 | 21.67 | 33.01 | -11.34 |
| 1905.00 | 10 | QPSK | H | 111 | 307 | 1 / 0 | 17.18 | 4.68 | 21.86 | 33.01 | -11.15 |
| 1855.00 | 10 | 16-QAM | H | 116 | 307 | 1 / 0 | 17.52 | 4.81 | 22.33 | 33.01 | -10.68 |
| 1855.00 | 10 | 64-QAM | H | 116 | 307 | 1 / 0 | 16.35 | 4.81 | 21.16 | 33.01 | -11.85 |
| 1857.50 | 15 | QPSK | H | 115 | 305 | 1 / 0 | 17.68 | 4.80 | 22.48 | 33.01 | -10.53 |
| 1880.00 | 15 | QPSK | H | 116 | 304 | 1 / 0 | 17.21 | 4.74 | 21.95 | 33.01 | -11.06 |
| 1902.50 | 15 | QPSK | H | 117 | 304 | 1 / 0 | 17.73 | 4.69 | 22.42 | 33.01 | -10.59 |
| 1857.50 | 15 | 16-QAM | H | 115 | 305 | 1 / 0 | 17.54 | 4.80 | 22.34 | 33.01 | -10.67 |
| 1857.50 | 15 | 64-QAM | H | 115 | 305 | 1 / 0 | 16.78 | 4.80 | 21.58 | 33.01 | -11.43 |
| 1860.00 | 20 | QPSK | H | 116 | 305 | 1 / 0 | 17.64 | 4.79 | 22.43 | 33.01 | -10.58 |
| 1880.00 | 20 | QPSK | H | 115 | 302 | 1 / 0 | 17.41 | 4.74 | 22.15 | 33.01 | -10.86 |
| 1900.00 | 20 | QPSK | H | 114 | 305 | 1 / 0 | 17.64 | 4.69 | 22.33 | 33.01 | -10.68 |
| 1860.00 | 20 | 16-QAM | H | 116 | 305 | 1 / 0 | 17.56 | 4.79 | 22.35 | 33.01 | -10.66 |
| 1860.00 | 20 | 64-QAM | H | 116 | 305 | 1 / 0 | 16.89 | 4.79 | 21.68 | 33.01 | -11.33 |
| 1855.00 | 10 | QPSK | V | 154 | 214 | 1 / 0 | 15.44 | 4.80 | 20.24 | 33.01 | -12.77 |
| 1855.00 | 10 (WCP) | QPSK | H | 112 | 352 | 1 / 0 | 16.45 | 4.81 | 21.26 | 33.01 | -11.75 |

**Table 7-6. EIRP Data (Band 2)**



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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 | 150 | 325 | 1 / 0 | 14.85 | 5.73 | 20.58 | 33.01 | -12.43 |
| 2593.00 | 5 | QPSK | H | 150 | 332 | 1 / 0 | 14.62 | 6.07 | 20.69 | 33.01 | -12.32 |
| 2687.50 | 5 | QPSK | H | 150 | 303 | 1 / 0 | 8.89 | 6.48 | 15.37 | 33.01 | -17.64 |
| 2593.00 | 5 | 16-QAM | H | 150 | 332 | 1 / 0 | 13.45 | 6.07 | 19.52 | 33.01 | -13.49 |
| 2593.00 | 5 | 64-QAM | H | 150 | 332 | 1 / 0 | 12.87 | 6.07 | 18.94 | 33.01 | -14.07 |
| 2501.00 | 10 | QPSK | H | 150 | 319 | 1 / 0 | 15.22 | 5.73 | 20.95 | 33.01 | -12.06 |
| 2593.00 | 10 | QPSK | H | 150 | 338 | 1 / 0 | 14.69 | 6.07 | 20.76 | 33.01 | -12.25 |
| 2685.00 | 10 | QPSK | H | 150 | 22 | 1 / 0 | 9.17 | 6.47 | 15.64 | 33.01 | -17.37 |
| 2501.00 | 10 | 16-QAM | H | 150 | 319 | 1 / 0 | 15.03 | 5.73 | 20.76 | 33.01 | -12.25 |
| 2501.00 | 10 | 64-QAM | H | 150 | 319 | 1 / 0 | 13.53 | 5.73 | 19.26 | 33.01 | -13.75 |
| 2503.50 | 15 | QPSK | H | 150 | 35 | 1 / 0 | 15.68 | 5.74 | 21.42 | 33.01 | -11.59 |
| 2593.00 | 15 | QPSK | H | 150 | 25 | 1 / 0 | 12.21 | 6.07 | 18.28 | 33.01 | -14.73 |
| 2682.50 | 15 | QPSK | H | 150 | 30 | 1 / 0 | 9.28 | 6.46 | 15.74 | 33.01 | -17.27 |
| 2503.50 | 15 | 16-QAM | H | 150 | 35 | 1 / 0 | 15.54 | 5.74 | 21.28 | 33.01 | -11.73 |
| 2503.50 | 15 | 64-QAM | H | 150 | 35 | 1 / 0 | 13.89 | 5.74 | 19.63 | 33.01 | -13.38 |
| 2506.00 | 20 | QPSK | H | 150 | 37 | 1 / 0 | 16.31 | 5.75 | 22.06 | 33.01 | -10.95 |
| 2593.00 | 20 | QPSK | H | 150 | 37 | 1 / 0 | 14.52 | 6.07 | 20.59 | 33.01 | -12.42 |
| 2680.00 | 20 | QPSK | H | 150 | 212 | 1 / 0 | 11.43 | 6.45 | 17.88 | 33.01 | -15.13 |
| 2506.00 | 20 | 16-QAM | H | 150 | 37 | 1 / 0 | 15.03 | 5.75 | 20.78 | 33.01 | -12.23 |
| 2506.00 | 20 | 64-QAM | H | 150 | 37 | 1 / 0 | 13.70 | 5.75 | 19.45 | 33.01 | -13.56 |
| 2506.00 | 20 | QPSK | V | 150 | 325 | 1 / 50 | 15.44 | 5.63 | 21.07 | 33.01 | -11.94 |
| 2506.00 | 20 (WCP) | QPSK | H | 150 | 314 | 1 / 0 | 13.52 | 5.75 | 19.27 | 33.01 | -13.74 |

**Table 7-7. EIRP Data (Band 41)**



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## 7.7 Radiated Spurious Emissions Measurements

**§2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h) §27.53(m)**

### 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.

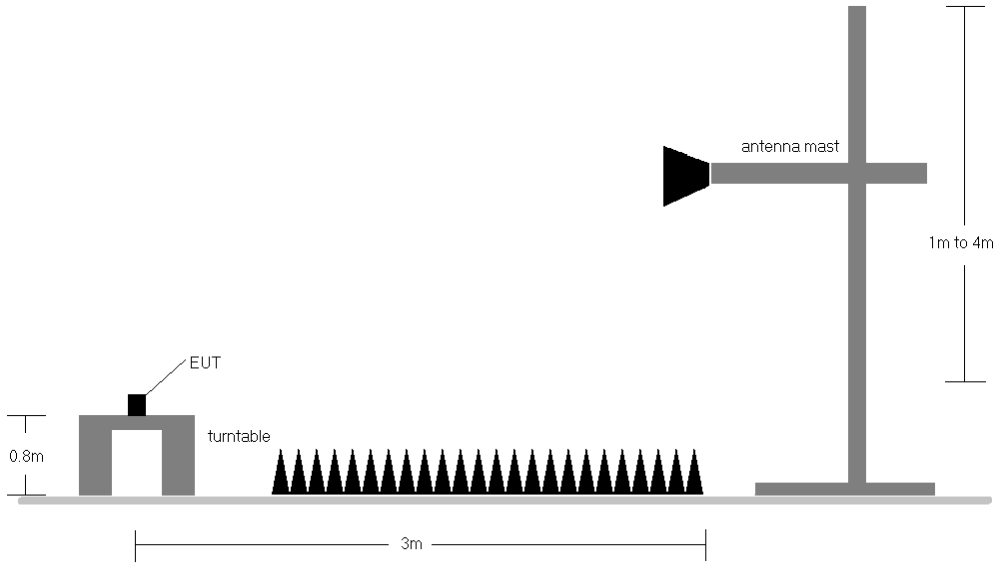


**Figure 7-7. Test Instrument & Measurement Setup**

## 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: | 670.50 | MHz | | |
| CHANNEL: | 133197 | | | |
| MEASURED OUTPUT POWER: | 12.82 | dBm | = | 0.019 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 15.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 25.82 | 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] |
|---|---|---|---|---|---|---|---|
| 1341.00 | H | 150 | 20 | -47.19 | 5.37 | -41.81 | 54.6 |
| 2011.50 | H | 150 | 20 | -41.50 | 5.43 | -36.07 | 48.9 |
| 2682.00 | H | 150 | 1 | -39.70 | 7.88 | -31.83 | 44.7 |
| 3352.50 | H | 150 | 8 | -53.02 | 7.85 | -45.17 | 58.0 |
| 4023.00 | H | 150 | 304 | -69.16 | 7.21 | -61.96 | 74.8 |
| 4693.50 | H | 150 | 27 | -67.49 | 8.13 | -59.36 | 72.2 |
| 5364.00 | H | 150 | 86 | -67.63 | 8.66 | -58.97 | 71.8 |
| 6034.50 | H | 150 | 355 | -66.62 | 7.85 | -58.77 | 71.6 |
| 6705.00 | H | 150 | 10 | -62.84 | 7.49 | -55.36 | 68.2 |

**Table 7-8. Radiated Spurious Data (Band 71 – Low Channel)**

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 680.50 | MHz | | |
| CHANNEL: | 133297 | | | |
| MEASURED OUTPUT POWER: | 13.51 | dBm | = | 0.022 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 15.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 26.51 | 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] |
|---|---|---|---|---|---|---|---|
| 1361.00 | H | 150 | 1 | -41.28 | 5.46 | -35.81 | 49.3 |
| 2041.50 | H | 150 | 0 | -39.70 | 5.63 | -34.07 | 47.6 |
| 2722.00 | H | 150 | 324 | -48.71 | 7.86 | -40.84 | 54.4 |
| 3402.50 | H | 150 | 14 | -59.86 | 7.85 | -52.01 | 65.5 |
| 4083.00 | H | 150 | 45 | -58.58 | 7.35 | -51.23 | 64.7 |
| 4763.50 | H | 150 | 325 | -49.92 | 8.17 | -41.75 | 55.3 |
| 5444.00 | H | 150 | 35 | -50.47 | 8.59 | -41.88 | 55.4 |
| 6124.50 | H | 150 | 1 | -59.42 | 7.85 | -51.57 | 65.1 |
| 6805.00 | H | 150 | 346 | -63.25 | 7.45 | -55.80 | 69.3 |

**Table 7-9. Radiated Spurious Data (Band 71 – Mid Channel)**



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| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 690.50 | MHz | | |
| CHANNEL: | 133397 | | | |
| MEASURED OUTPUT POWER: | 14.03 | dBm | = | 0.025 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 15.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 27.03 | 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] |
|---|---|---|---|---|---|---|---|
| 1381.00 | H | 150 | 25 | -45.85 | 5.55 | -40.30 | 54.3 |
| 2071.50 | H | 150 | 0 | -43.67 | 5.83 | -37.84 | 51.9 |
| 2762.00 | H | 150 | 356 | -46.96 | 7.86 | -39.10 | 53.1 |
| 3452.50 | H | 150 | 16 | -61.31 | 7.85 | -53.46 | 67.5 |
| 4143.00 | H | 150 | 350 | -68.71 | 7.50 | -61.21 | 75.2 |
| 4833.50 | H | 150 | 0 | -70.96 | 8.29 | -62.67 | 76.7 |
| 5524.00 | H | 150 | 0 | -67.63 | 8.55 | -59.08 | 73.1 |
| 6214.50 | H | 150 | 77 | -66.42 | 7.85 | -58.57 | 72.6 |
| 6905.00 | H | 150 | 14 | -59.85 | 7.45 | -52.40 | 66.4 |

**Table 7-10. Radiated Spurious Data (Band 71 – High Channel)**

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 690.50 | MHz | | |
| CHANNEL: | 133397 | | | |
| MEASURED OUTPUT POWER: | 13.51 | dBm | = | 0.022 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 15.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 26.51 | 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] |
|---|---|---|---|---|---|---|---|
| 1381.00 | V | 150 | 85 | -48.98 | 5.55 | -43.43 | 56.9 |
| 2071.50 | V | 150 | 294 | -46.25 | 5.83 | -40.42 | 53.9 |
| 2762.00 | V | 150 | 388 | -48.22 | 7.86 | -40.36 | 53.9 |
| 3452.50 | V | 150 | 0 | -49.65 | 7.85 | -41.80 | 55.3 |
| 4143.00 | V | 150 | 350 | -70.15 | 7.50 | -62.66 | 76.2 |
| 4833.50 | V | - | - | -74.11 | 8.29 | -65.82 | 79.3 |
| 5524.00 | V | - | - | -68.70 | 8.55 | -60.15 | 73.7 |
| 6214.50 | V | - | - | -67.64 | 7.85 | -59.79 | 73.3 |
| 6905.00 | V | 150 | 342 | -65.76 | 7.45 | -58.31 | 71.8 |

**Table 7-11. Radiated Spurious Data with WCP (Band 71 – High Channel)**



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| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 701.50 | MHz | | |
| CHANNEL: | 23035 | | | |
| MEASURED OUTPUT POWER: | 17.13 | dBm | = | 0.052 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 5.0 | 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] |
|---|---|---|---|---|---|---|---|
| 1403.00 | H | 160 | 43 | -59.49 | 5.60 | -53.89 | 71.0 |
| 2104.50 | H | 134 | 29 | -62.68 | 6.67 | -56.01 | 73.1 |
| 2806.00 | H | 119 | 64 | -62.08 | 7.92 | -54.16 | 71.3 |
| 3507.50 | H | 110 | 32 | -68.64 | 7.80 | -60.84 | 78.0 |
| 4209.00 | H | - | - | -68.95 | 8.30 | -60.65 | 77.8 |

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

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 707.50 | MHz | | |
| CHANNEL: | 23095 | | | |
| MEASURED OUTPUT POWER: | 16.04 | dBm | = | 0.040 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 5.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 29.04 | 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 | 161 | 39 | -59.53 | 5.69 | -53.84 | 69.9 |
| 2122.50 | H | 208 | 39 | -62.15 | 6.75 | -55.41 | 71.4 |
| 2830.00 | H | 118 | 60 | -61.05 | 7.90 | -53.15 | 69.2 |
| 3537.50 | H | 110 | 264 | -68.60 | 7.81 | -60.79 | 76.8 |
| 4245.00 | H | - | - | -68.84 | 8.41 | -60.43 | 76.5 |

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




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| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 713.50 | MHz | | |
| CHANNEL: | 23155 | | | |
| MEASURED OUTPUT POWER: | 16.58 | dBm | = | 0.046 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 5.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 29.58 | 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 | 152 | 34 | -60.89 | 5.79 | -55.10 | 71.7 |
| 2140.50 | H | 129 | 54 | -61.98 | 6.82 | -55.16 | 71.7 |
| 2854.00 | H | 119 | 76 | -65.06 | 7.88 | -57.18 | 73.8 |
| 3567.50 | H | - | - | -69.00 | 7.82 | -61.18 | 77.8 |

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

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 701.50 | MHz | | |
| CHANNEL: | 23035 | | | |
| MEASURED OUTPUT POWER: | 17.02 | dBm | = | 0.050 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 5.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 30.02 | 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 | 110 | 43 | -60.83 | 5.60 | -55.23 | 72.2 |
| 2104.50 | H | 121 | 47 | -64.97 | 6.67 | -58.30 | 75.3 |
| 2806.00 | H | 112 | 63 | -62.62 | 7.92 | -54.70 | 71.7 |
| 3507.50 | H | 111 | 176 | -70.26 | 7.80 | -62.46 | 79.5 |
| 4209.00 | H | - | - | -71.21 | 8.30 | -62.91 | 79.9 |

**Table 7-15. Radiated Spurious Data with WCP (Band 12 – Low Channel)**




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| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 829.00 | MHz | | |
| CHANNEL: | 20450 | | | |
| MEASURED OUTPUT POWER: | 18.70 | dBm | = | 0.074 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 10.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 31.70 | 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 | V | 126 | 5 | -58.01 | 6.75 | -51.27 | 70.0 |
| 2487.00 | V | 122 | 3 | -44.56 | 7.59 | -36.98 | 55.7 |
| 3316.00 | V | 120 | 341 | -64.75 | 7.51 | -57.24 | 75.9 |
| 4145.00 | V | - | - | -68.59 | 8.11 | -60.48 | 79.2 |

**Table 7-16. Radiated Spurious Data (Band 5 – Low Channel)**

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 836.50 | MHz | | |
| CHANNEL: | 20525 | | | |
| MEASURED OUTPUT POWER: | 18.35 | dBm | = | 0.068 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 10.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 31.35 | 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 | V | 121 | 6 | -58.77 | 6.77 | -52.00 | 70.4 |
| 2509.50 | V | 119 | 354 | -40.86 | 7.65 | -33.21 | 51.6 |
| 3346.00 | V | 123 | 339 | -63.37 | 7.53 | -55.84 | 74.2 |
| 4182.50 | V | - | - | -68.44 | 8.23 | -60.21 | 78.6 |

**Table 7-17. Radiated Spurious Data (Band 5 – Mid Channel)**



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| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 844.00 | MHz | | |
| CHANNEL: | 20600 | | | |
| MEASURED OUTPUT POWER: | 17.82 | dBm | = | 0.061 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 10.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 30.82 | 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 | V | 121 | 350 | -56.96 | 6.79 | -50.17 | 68.0 |
| 2532.00 | V | 121 | 358 | -42.47 | 7.63 | -34.84 | 52.7 |
| 3376.00 | V | 119 | 336 | -67.79 | 7.55 | -60.25 | 78.1 |
| 4220.00 | V | - | - | -69.07 | 8.34 | -60.73 | 78.5 |

**Table 7-18. Radiated Spurious Data (Band 5 – High Channel)**

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 829.00 | MHz | | |
| CHANNEL: | 20450 | | | |
| MEASURED OUTPUT POWER: | 17.70 | dBm | = | 0.059 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 10.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 30.70 | 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 | V | 141 | 33 | -54.64 | 6.75 | -47.90 | 65.6 |
| 2487.00 | V | 139 | 95 | -49.69 | 7.59 | -42.11 | 59.8 |
| 3316.00 | V | 117 | 177 | -64.41 | 7.51 | -56.90 | 74.6 |
| 4145.00 | V | - | - | -68.60 | 8.11 | -60.49 | 78.2 |

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




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| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1720.00 | MHz | | |
| CHANNEL: | 132072 | | | |
| MEASURED OUTPUT POWER: | 21.95 | dBm | = | 0.157 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 20.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 34.95 | 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] |
|---|---|---|---|---|---|---|---|
| 3440.00 | V | 110 | 355 | -69.57 | 9.80 | -59.77 | 81.7 |
| 5160.00 | V | 168 | 133 | -66.40 | 10.67 | -55.73 | 77.7 |
| 6880.00 | V | 152 | 340 | -60.72 | 11.72 | -49.00 | 70.9 |
| 8600.00 | V | - | - | -58.17 | 11.03 | -47.14 | 69.1 |

**Table 7-20. Radiated Spurious Data (Band 4/66 – Low Channel)**

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1745.00 | MHz | | |
| CHANNEL: | 132322 | | | |
| MEASURED OUTPUT POWER: | 22.13 | dBm | = | 0.163 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 20.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 35.13 | 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 | V | - | - | -69.71 | 9.90 | -59.81 | 81.9 |
| 5235.00 | V | - | - | -66.85 | 10.63 | -56.23 | 78.4 |

**Table 7-21. Radiated Spurious Data (Band 4/66 – Mid Channel)**




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| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1770.00 | MHz | | |
| CHANNEL: | 132572 | | | |
| MEASURED OUTPUT POWER: | 21.77 | dBm | = | 0.150 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 20.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 34.77 | 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] |
|---|---|---|---|---|---|---|---|
| 3540.00 | V | - | - | -69.01 | 9.90 | -59.10 | 80.9 |
| 5310.00 | V | - | - | -67.25 | 10.70 | -56.54 | 78.3 |

**Table 7-22. Radiated Spurious Data (Band 4/66 – High Channel)**

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1745.00 | MHz | | |
| CHANNEL: | 132322 | | | |
| MEASURED OUTPUT POWER: | 20.72 | dBm | = | 0.118 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 20.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 33.72 | 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 | V | - | - | -68.68 | 9.90 | -58.78 | 79.5 |
| 5235.00 | V | - | - | -67.03 | 10.63 | -56.41 | 77.1 |

**Table 7-23. Radiated Spurious Data with WCP (Band 4/66 – Mid Channel)**

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1855.00 | MHz | | |
| CHANNEL: | 18650 | | | |
| MEASURED OUTPUT POWER: | 22.51 | dBm | = | 0.178 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 10.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 35.51 | 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] |
|---|---|---|---|---|---|---|---|
| 3710.00 | H | - | - | -69.06 | 9.97 | -59.09 | 81.6 |
| 5565.00 | H | - | - | -67.77 | 11.23 | -56.54 | 79.0 |

**Table 7-24. Radiated Spurious Data (Band 2 – Low Channel)**




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| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1880.00 | MHz | | |
| CHANNEL: | 18900 | | | |
| MEASURED OUTPUT POWER: | 21.67 | dBm | = | 0.147 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 10.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 34.67 | 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] |
|---|---|---|---|---|---|---|---|
| 3760.00 | H | - | - | -68.48 | 9.79 | -58.70 | 80.4 |
| 5640.00 | H | - | - | -67.62 | 11.35 | -56.28 | 77.9 |

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

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1905.00 | MHz | | |
| CHANNEL: | 19150 | | | |
| MEASURED OUTPUT POWER: | 21.86 | dBm | = | 0.154 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 10.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 34.86 | 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 | H | 195 | 120 | -58.08 | 9.61 | -48.48 | 70.3 |
| 5715.00 | H | - | - | -67.28 | 11.43 | -55.85 | 77.7 |

**Table 7-26. Radiated Spurious Data (Band 2 – High Channel)**

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 1855.00 | MHz | | |
| CHANNEL: | 18650 | | | |
| MEASURED OUTPUT POWER: | 21.26 | dBm | = | 0.134 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 10.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 43 + 10 $\log_{10}$ (W) = | 34.26 | 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] |
|---|---|---|---|---|---|---|---|
| 3710.00 | H | 114 | 332 | -67.57 | 9.61 | -57.97 | 79.2 |
| 5565.00 | H | - | - | -67.41 | 11.43 | -55.98 | 77.2 |

**Table 7-27. Radiated Spurious Data with WCP (Band 2 – Mid Channel)**



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| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 2506.00 | MHz | | |
| CHANNEL: | 39750 | | | |
| MEASURED OUTPUT POWER: | 22.06 | dBm | = | 0.161 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 20.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 55 + 10 log10 (W) | 47.06 | 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] |
|---|---|---|---|---|---|---|---|
| 5012.00 | H | 142 | 232 | -67.04 | 10.91 | -56.13 | 78.2 |
| 7518.00 | H | 136 | 104 | -58.84 | 11.10 | -47.74 | 69.8 |
| 10024.00 | H | 132 | 168 | -58.29 | 12.07 | -46.22 | 68.3 |
| 12530.00 | H | - | - | -58.20 | 13.55 | -44.64 | 66.7 |

**Table 7-28. Radiated Spurious Data (Band 41 – Low Channel)**

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 2593.00 | MHz | | |
| CHANNEL: | 40620 | | | |
| MEASURED OUTPUT POWER: | 20.59 | dBm | = | 0.115 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 20.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 55 + 10 log10 (W) | 45.59 | 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 | H | 134 | 236 | -64.88 | 10.75 | -54.13 | 74.7 |
| 7779.00 | H | 130 | 178 | -59.16 | 11.40 | -47.76 | 68.4 |
| 10372.00 | H | 135 | 110 | -60.09 | 12.59 | -47.50 | 68.1 |
| 12965.00 | H | - | - | -55.82 | 13.37 | -42.45 | 63.0 |

**Table 7-29. Radiated Spurious Data (Band 41 – Mid Channel)**



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| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 2680.00 | MHz | | |
| CHANNEL: | 41490 | | | |
| MEASURED OUTPUT POWER: | 17.88 | dBm | = | 0.061 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 20.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 55 + 10 log10 (W) | 42.88 | 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] |
|---|---|---|---|---|---|---|---|
| 5360.00 | H | 132 | 232 | -65.71 | 10.74 | -54.96 | 72.8 |
| 8040.00 | H | 135 | 149 | -59.46 | 11.14 | -48.32 | 66.2 |
| 10720.00 | H | - | - | -60.52 | 12.77 | -47.75 | 65.6 |

**Table 7-30. Radiated Spurious Data (Band 41 – High Channel)**

| | | | | |
|---|---|---|---|---|
| OPERATING FREQUENCY: | 2506.00 | MHz | | |
| CHANNEL: | 39750 | | | |
| MEASURED OUTPUT POWER: | 19.27 | dBm | = | 0.085 W |
| MODULATION SIGNAL: | QPSK | | | |
| BANDWIDTH: | 20.0 | MHz | | |
| DISTANCE: | 3 | meters | | |
| LIMIT: | 55 + 10 log10 (W) | 44.27 | 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] |
|---|---|---|---|---|---|---|---|
| 5012.00 | H | - | - | -68.03 | 10.91 | -57.12 | 76.4 |
| 7518.00 | H | - | - | -59.41 | 11.10 | -48.31 | 67.6 |

**Table 7-31. Radiated Spurious Data with WCP (Band 41 – Low 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 71 Frequency Stability Measurements

**§2.1055 §27.54**

OPERATING FREQUENCY: 680,500,000 Hz

CHANNEL: 133297

REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|---|---|---|---|---|---|
| 100 % | 3.85 | + 20 (Ref) | 680,500,050 | 50 | 0.0000073 |
| 100 % | | - 30 | 680,500,387 | 387 | 0.0000569 |
| 100 % | | - 20 | 680,500,237 | 237 | 0.0000348 |
| 100 % | | - 10 | 680,500,019 | 19 | 0.0000028 |
| 100 % | | 0 | 680,499,920 | -80 | -0.0000118 |
| 100 % | | + 10 | 680,500,048 | 48 | 0.0000071 |
| 100 % | | + 20 | 680,499,997 | -3 | -0.0000004 |
| 100 % | | + 30 | 680,499,961 | -39 | -0.0000057 |
| 100 % | | + 40 | 680,499,934 | -66 | -0.0000097 |
| 100 % | | + 50 | 680,500,254 | 254 | 0.0000373 |
| BATT. ENDPOINT | 3.45 | + 20 | 680,500,074 | 74 | 0.0000109 |

**Table 7-32. Frequency Stability Data (Band 71)**




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# Band 71 Frequency Stability Measurements

**§2.1055 §27.54**

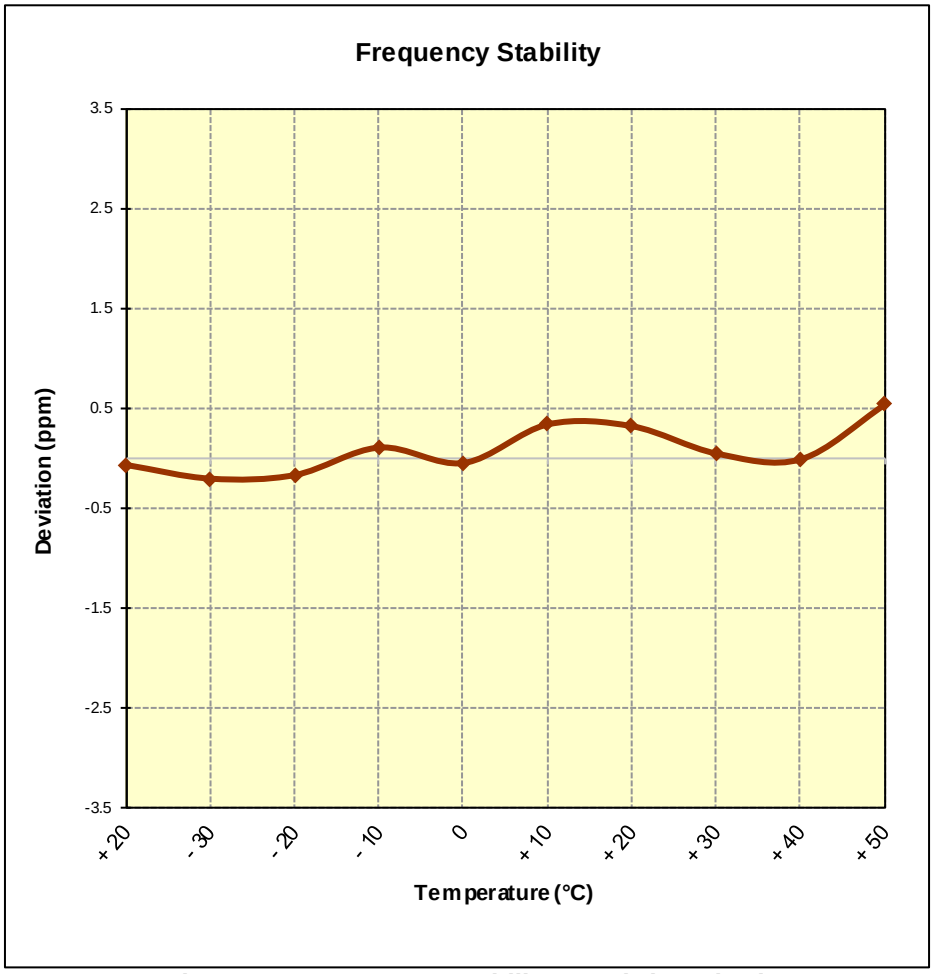


**Figure 7-8. Frequency Stability Graph (Band 71)**



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## Band 12 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) | 707,499,945 | -55 | -0.0000078 |
| 100 % | | - 30 | 707,499,846 | -154 | -0.0000218 |
| 100 % | | - 20 | 707,499,873 | -127 | -0.0000180 |
| 100 % | | - 10 | 707,500,072 | 72 | 0.0000102 |
| 100 % | | 0 | 707,499,960 | -40 | -0.0000057 |
| 100 % | | + 10 | 707,500,240 | 240 | 0.0000339 |
| 100 % | | + 20 | 707,500,226 | 226 | 0.0000319 |
| 100 % | | + 30 | 707,500,028 | 28 | 0.0000040 |
| 100 % | | + 40 | 707,499,987 | -13 | -0.0000018 |
| 100 % | | + 50 | 707,500,384 | 384 | 0.0000543 |
| BATT. ENDPOINT | 3.45 | + 20 | 707,500,352 | 352 | 0.0000498 |

**Table 7-33. Frequency Stability Data (Band 12)**




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# Band 12 Frequency Stability Measurements

**§2.1055 §27.54**

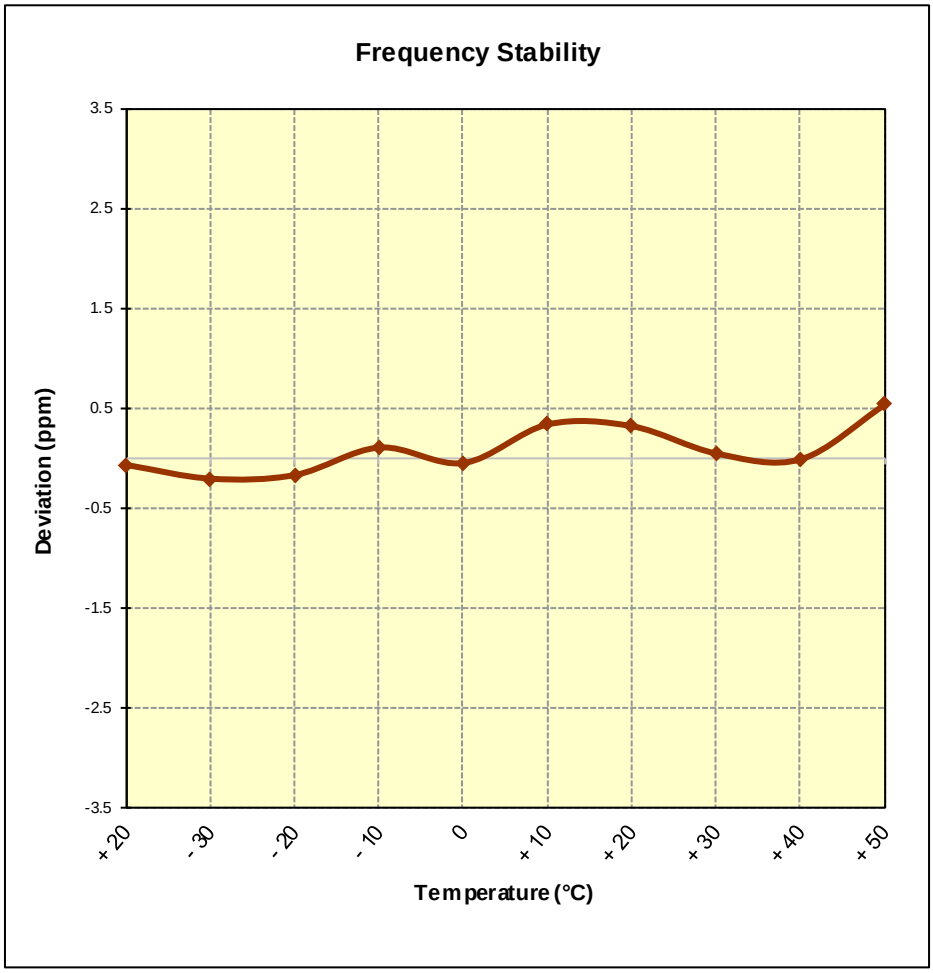


**Figure 7-9. Frequency Stability Graph (Band 12)**



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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) | 836,500,032 | 32 | 0.0000038 |
| 100 % | | - 30 | 836,499,887 | -113 | -0.0000135 |
| 100 % | | - 20 | 836,499,865 | -135 | -0.0000161 |
| 100 % | | - 10 | 836,499,796 | -204 | -0.0000244 |
| 100 % | | 0 | 836,499,748 | -252 | -0.0000301 |
| 100 % | | + 10 | 836,500,333 | 333 | 0.0000398 |
| 100 % | | + 20 | 836,499,916 | -84 | -0.0000100 |
| 100 % | | + 30 | 836,499,669 | -331 | -0.0000396 |
| 100 % | | + 40 | 836,499,875 | -125 | -0.0000149 |
| 100 % | | + 50 | 836,500,054 | 54 | 0.0000065 |
| BATT. ENDPOINT | 3.45 | + 20 | 836,499,818 | -182 | -0.0000218 |

**Table 7-34. Frequency Stability Data (Band 5)**




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# Band 5 Frequency Stability Measurements

**§2.1055 §22.355**

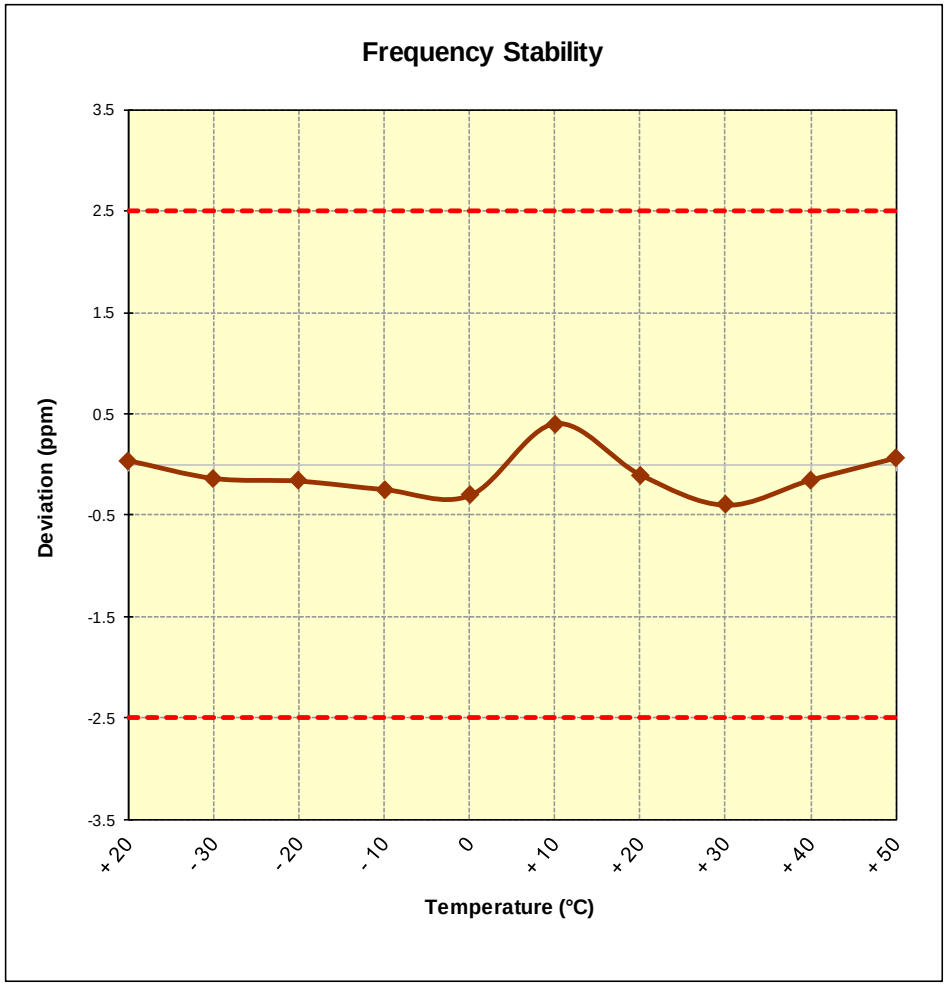


**Figure 7-10. Frequency Stability Graph (Band 5)**



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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) | 1,745,000,110 | 110 | 0.0000063 |
| 100 % | | - 30 | 1,744,999,919 | -81 | -0.0000046 |
| 100 % | | - 20 | 1,745,000,027 | 27 | 0.0000015 |
| 100 % | | - 10 | 1,745,000,044 | 44 | 0.0000025 |
| 100 % | | 0 | 1,744,999,987 | -13 | -0.0000007 |
| 100 % | | + 10 | 1,745,000,161 | 161 | 0.0000092 |
| 100 % | | + 20 | 1,745,000,154 | 154 | 0.0000088 |
| 100 % | | + 30 | 1,744,999,712 | -288 | -0.0000165 |
| 100 % | | + 40 | 1,745,000,060 | 60 | 0.0000034 |
| 100 % | | + 50 | 1,745,000,007 | 7 | 0.0000004 |
| BATT. ENDPOINT | 3.45 | + 20 | 1,744,999,865 | -135 | -0.0000077 |

**Table 7-35. 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**

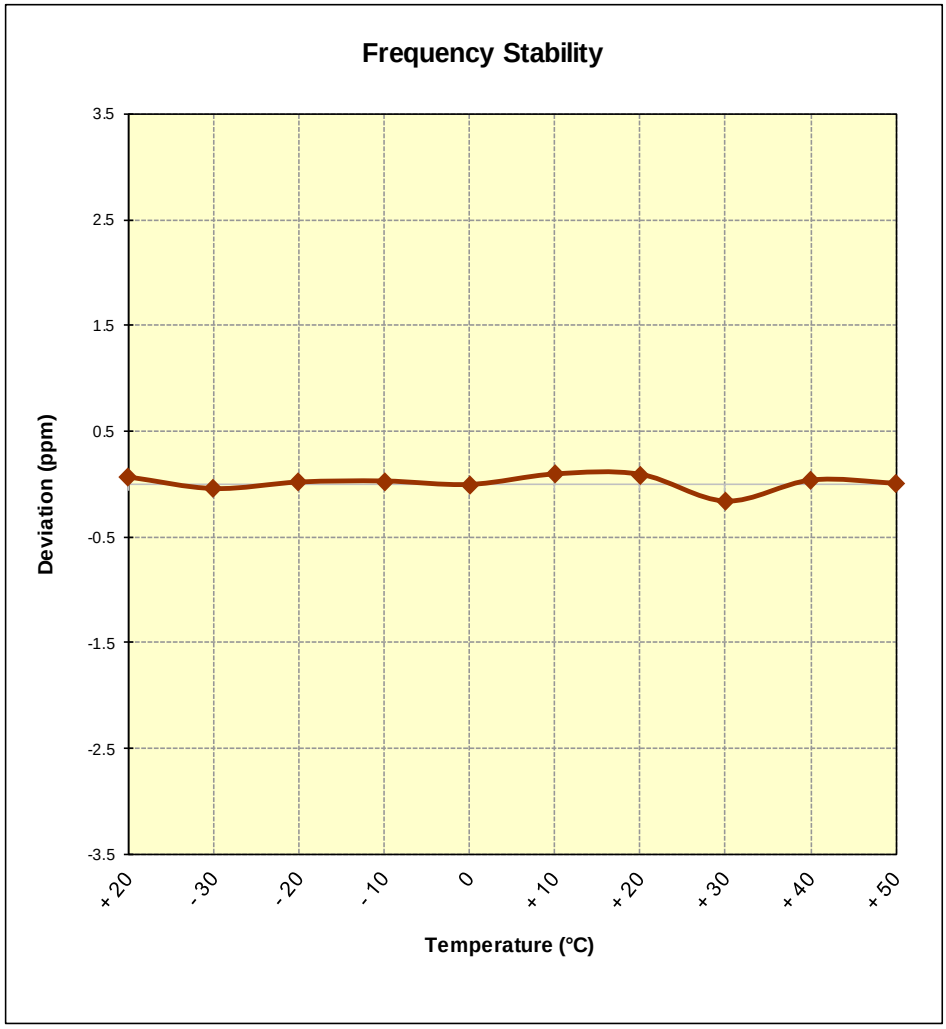


**Figure 7-11. Frequency Stability Graph (Band 4/66)**




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## Band 2 Frequency Stability Measurements
**§2.1055 §§24.235**

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 18900

REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|---|---|---|---|---|---|
| 100 % | 3.85 | + 20 (Ref) | 1,879,999,867 | -133 | -0.0000071 |
| 100 % | | - 30 | 1,879,999,587 | -413 | -0.0000220 |
| 100 % | | - 20 | 1,880,000,163 | 163 | 0.0000087 |
| 100 % | | - 10 | 1,879,999,899 | -101 | -0.0000054 |
| 100 % | | 0 | 1,879,999,974 | -26 | -0.0000014 |
| 100 % | | + 10 | 1,880,000,279 | 279 | 0.0000148 |
| 100 % | | + 20 | 1,880,000,162 | 162 | 0.0000086 |
| 100 % | | + 30 | 1,880,000,298 | 298 | 0.0000159 |
| 100 % | | + 40 | 1,880,000,273 | 273 | 0.0000145 |
| 100 % | | + 50 | 1,879,999,864 | -136 | -0.0000072 |
| BATT. ENDPOINT | 3.45 | + 20 | 1,879,999,848 | -152 | -0.0000081 |

**Table 7-36. Frequency Stability Data (Band 2)**

**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 Frequency Stability Measurements

**§2.1055 §§24.235**

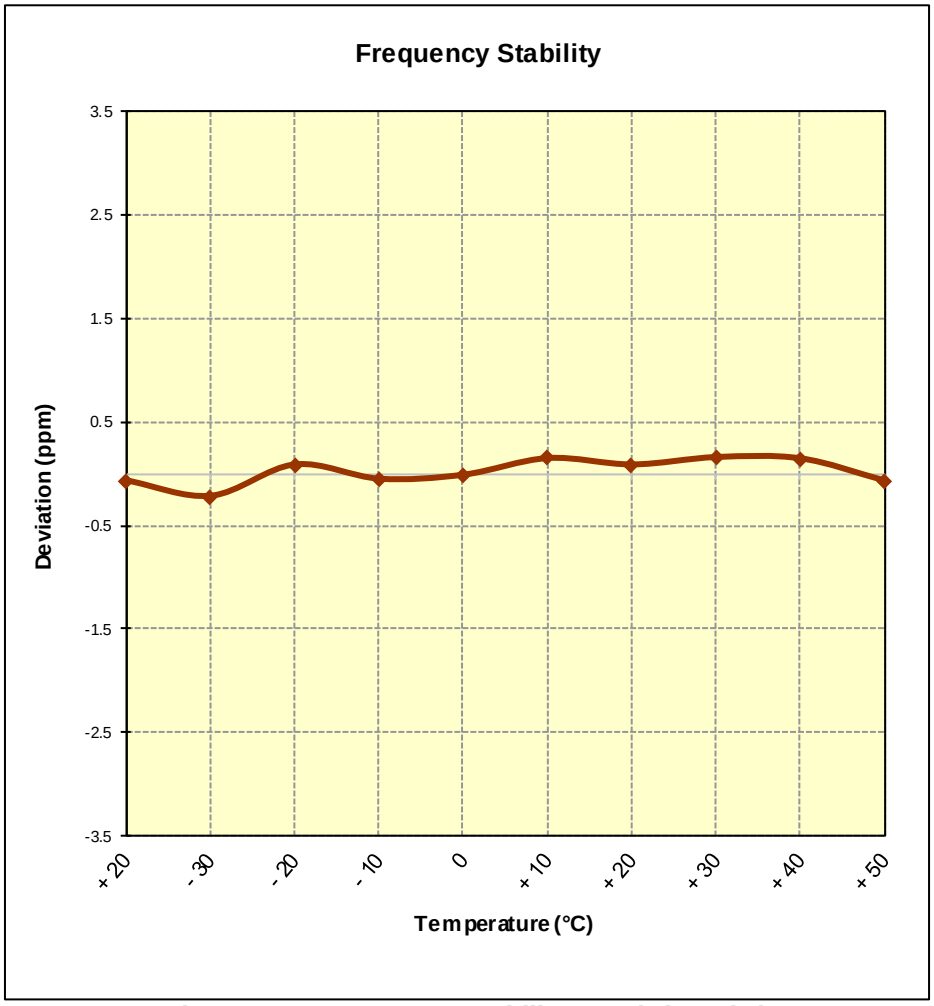


**Figure 7-12. Frequency Stability Graph (Band 2)**



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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) | 2,592,999,746 | -254 | -0.0000098 |
| 100 % | | - 30 | 2,593,000,241 | 241 | 0.0000093 |
| 100 % | | - 20 | 2,592,999,977 | -23 | -0.0000009 |
| 100 % | | - 10 | 2,593,000,258 | 258 | 0.0000099 |
| 100 % | | 0 | 2,593,000,209 | 209 | 0.0000081 |
| 100 % | | + 10 | 2,592,999,802 | -198 | -0.0000076 |
| 100 % | | + 20 | 2,592,999,756 | -244 | -0.0000094 |
| 100 % | | + 30 | 2,592,999,608 | -392 | -0.0000151 |
| 100 % | | + 40 | 2,593,000,371 | 371 | 0.0000143 |
| 100 % | | + 50 | 2,593,000,243 | 243 | 0.0000094 |
| BATT. ENDPOINT | 3.45 | + 20 | 2,593,000,015 | 15 | 0.0000006 |

**Table 7-37. 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

**§2.1055 §27.54**

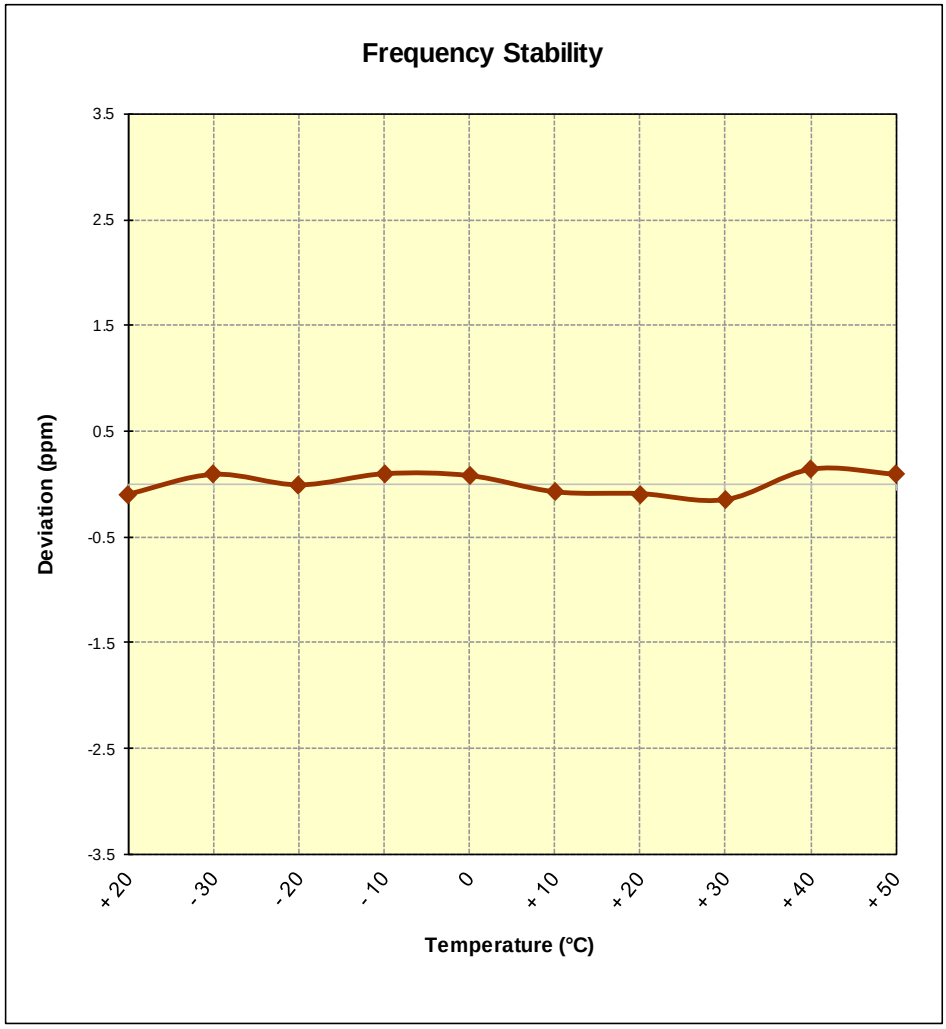


**Figure 7-13. Frequency Stability Graph (Band 41)**




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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: ZNFH932** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.




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