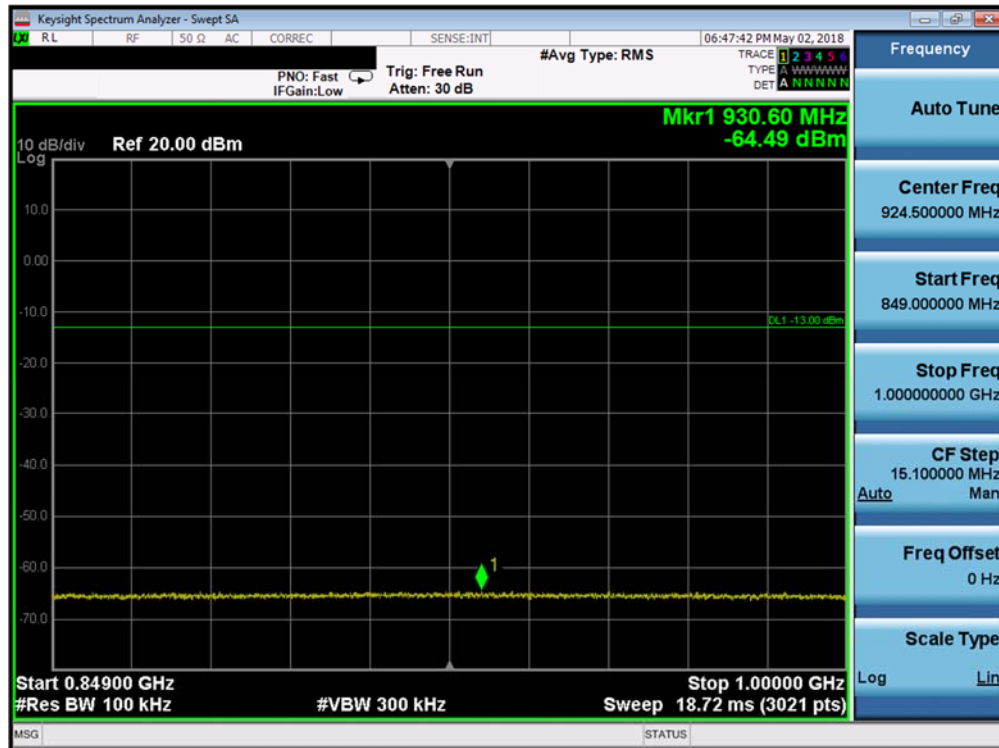


## Cellular WCDMA Mode

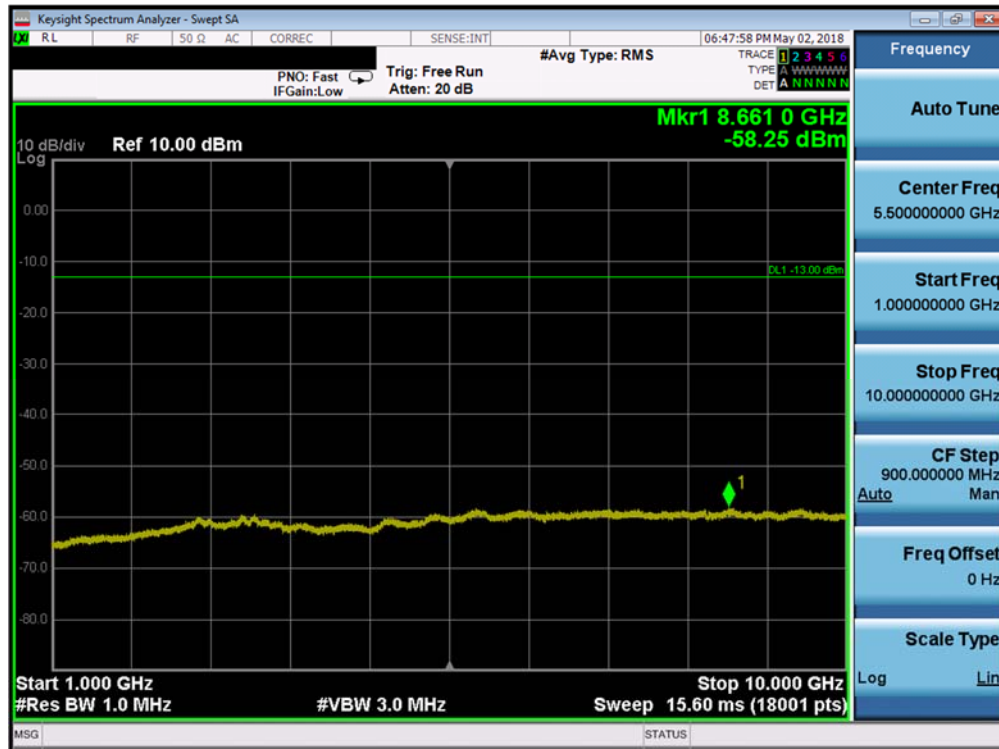


Plot 7-46. Conducted Spurious Plot (Cellular WCDMA Mode - Low Channel)



Plot 7-47. Conducted Spurious Plot (Cellular WCDMA Mode - Low Channel)

|                                         |                                               |                                       |    |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | LG | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |    | Page 40 of 107                  |

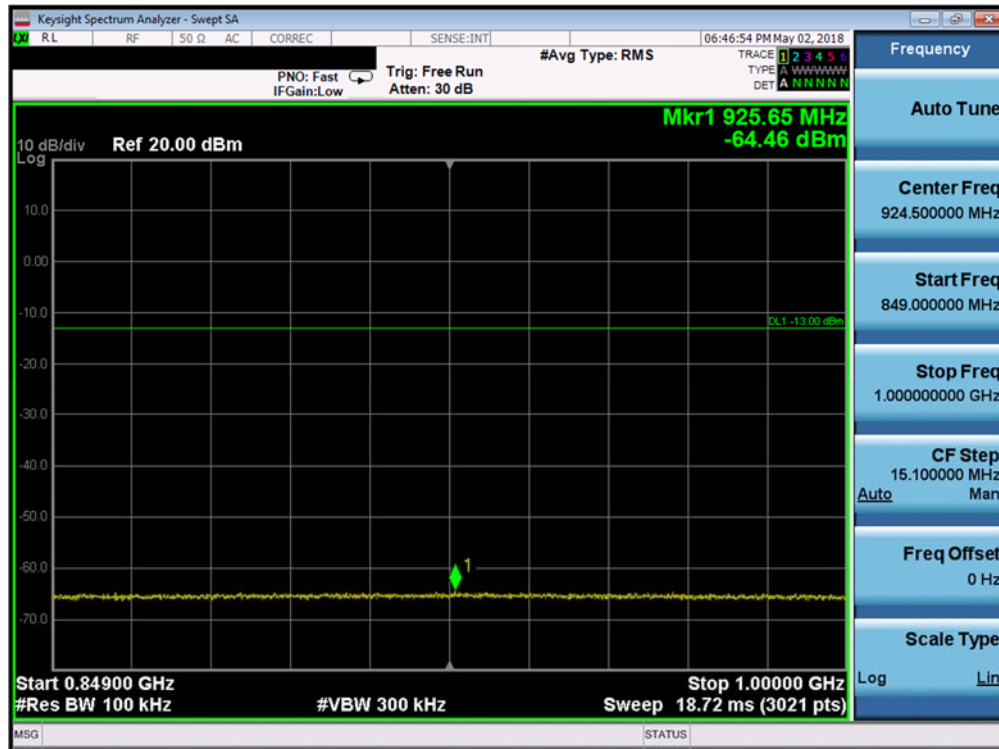


Plot 7-48. Conducted Spurious Plot (Cellular WCDMA Mode - Low Channel)

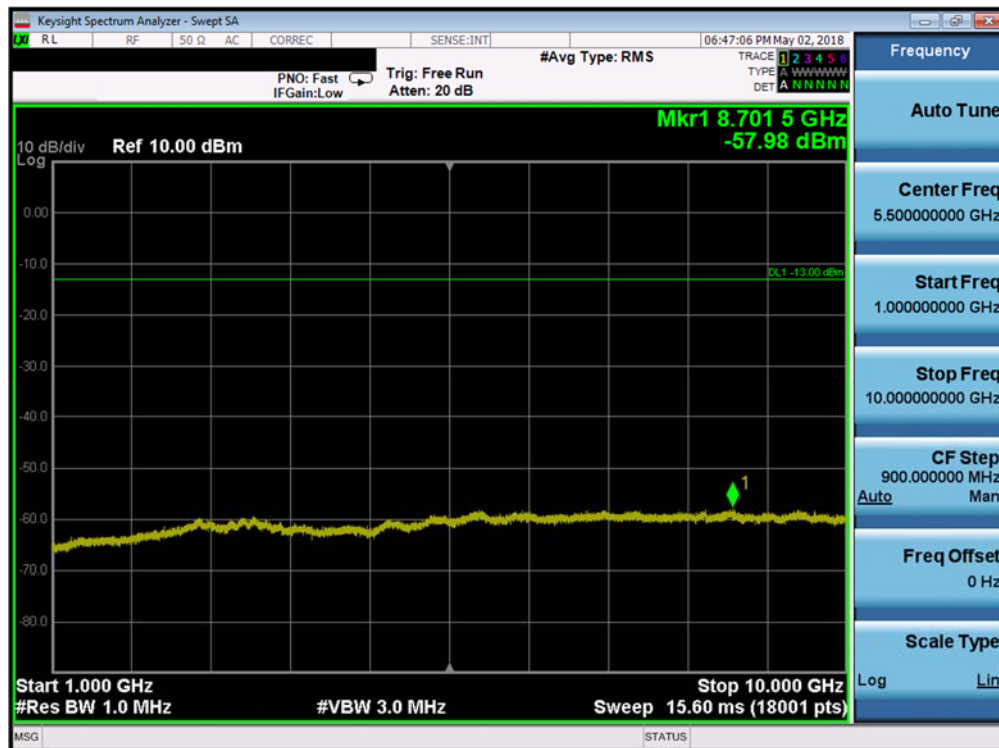


Plot 7-49. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 41 of 107                  |



Plot 7-50. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)

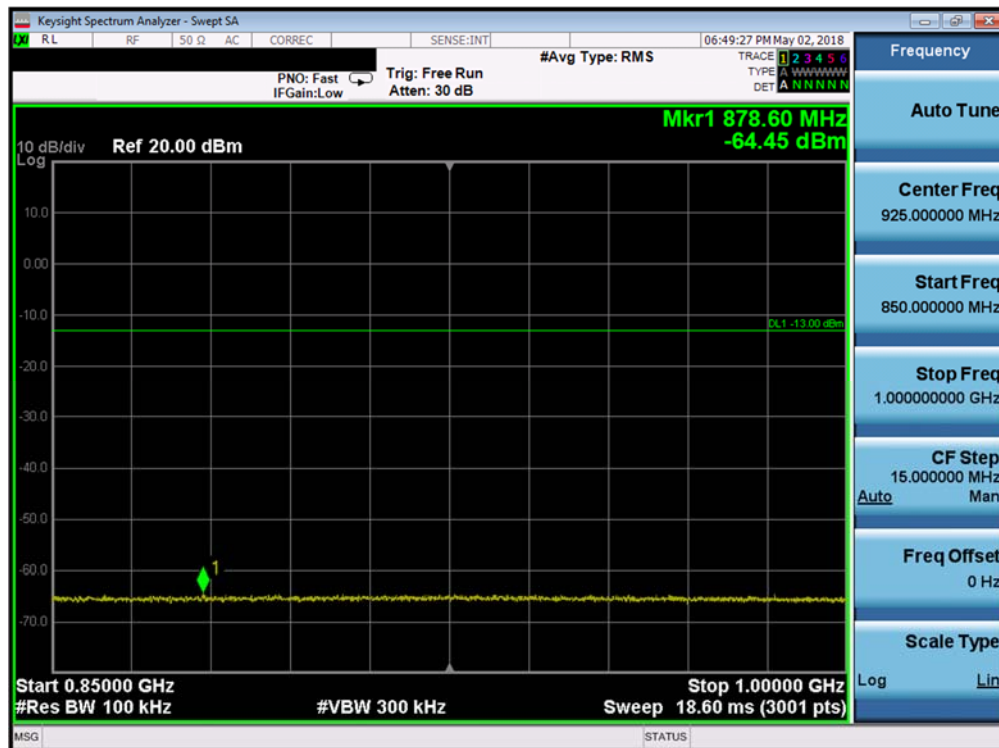


Plot 7-51. Conducted Spurious Plot (Cellular WCDMA Mode - Mid Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 42 of 107                  |

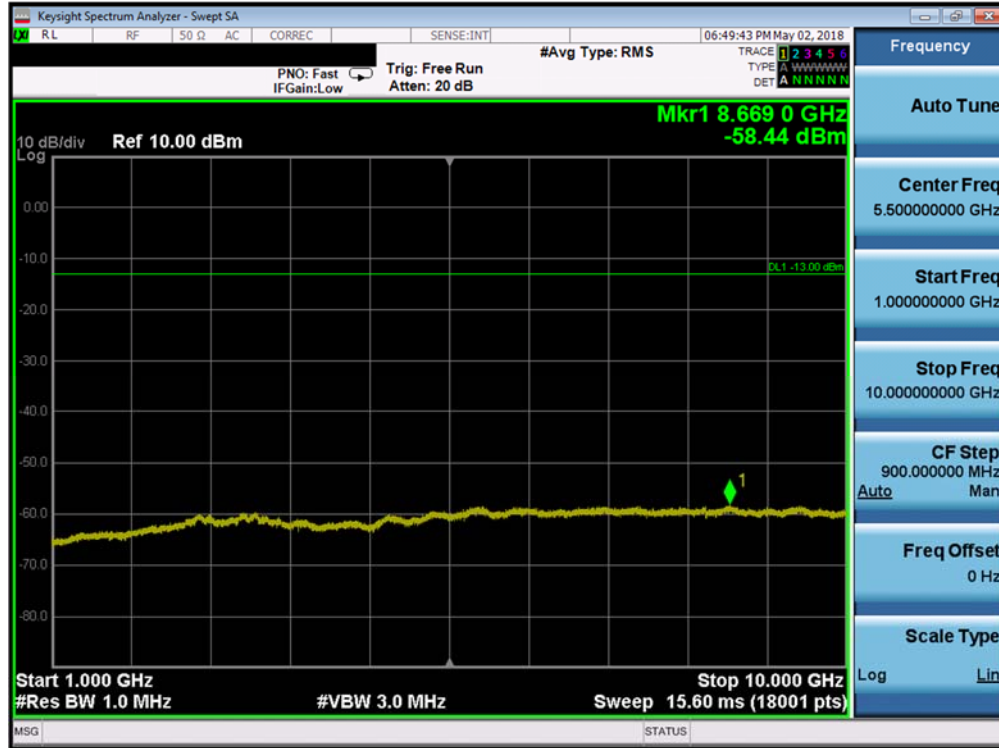


Plot 7-52. Conducted Spurious Plot (Cellular WCDMA Mode - High Channel)



Plot 7-53. Conducted Spurious Plot (Cellular WCDMA Mode - High Channel)

|                                         |                                               |                                       |    |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | LG | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |    | Page 43 of 107                  |

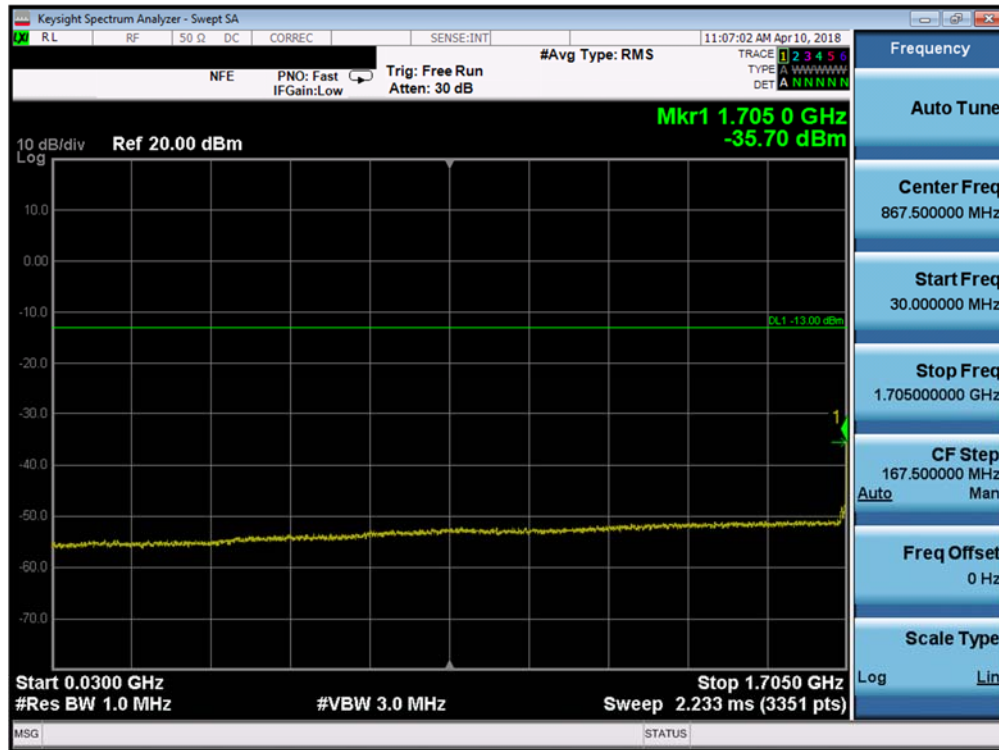


Plot 7-54. Conducted Spurious Plot (Cellular WCDMA Mode - High Channel)

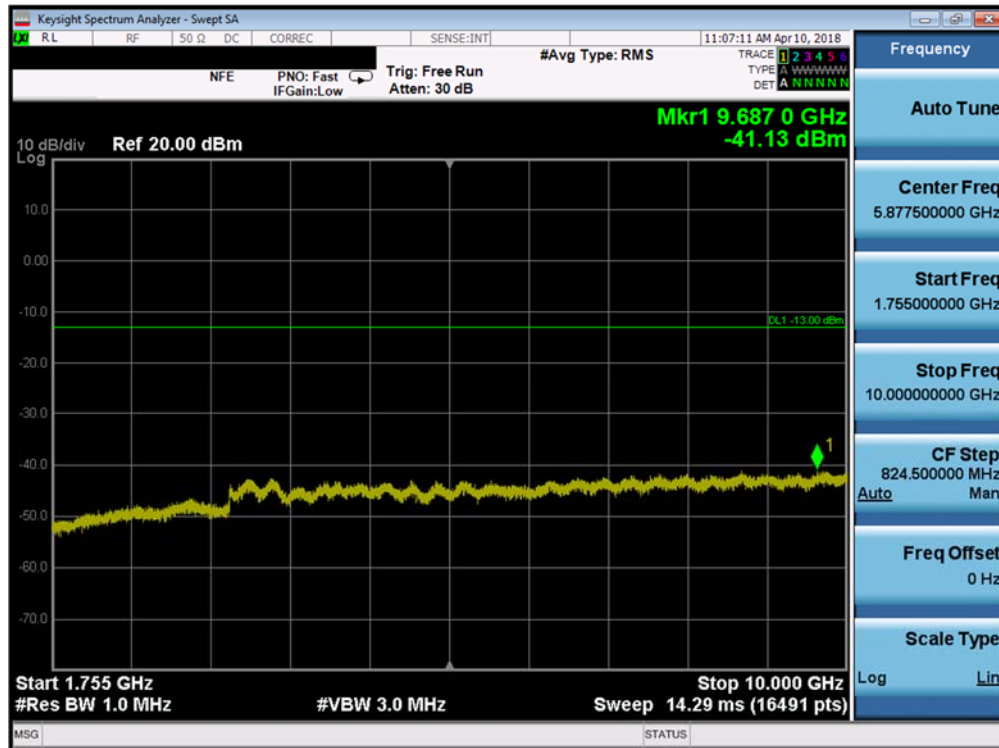
|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 44 of 107                  |



## AWS WCDMA Mode

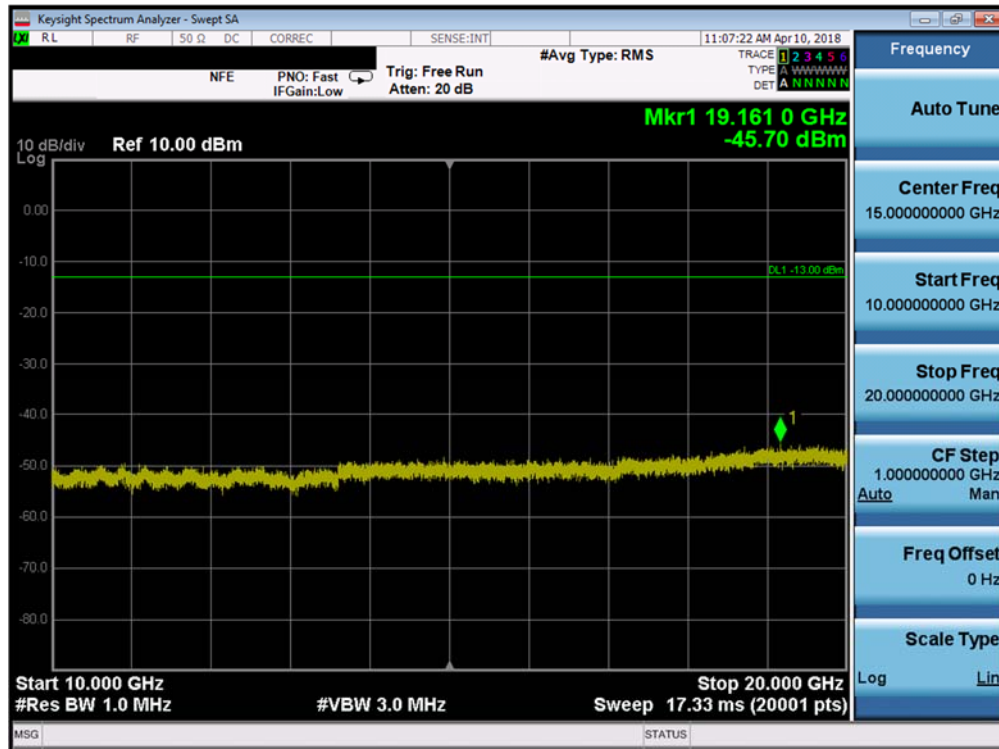


Plot 7-55. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)

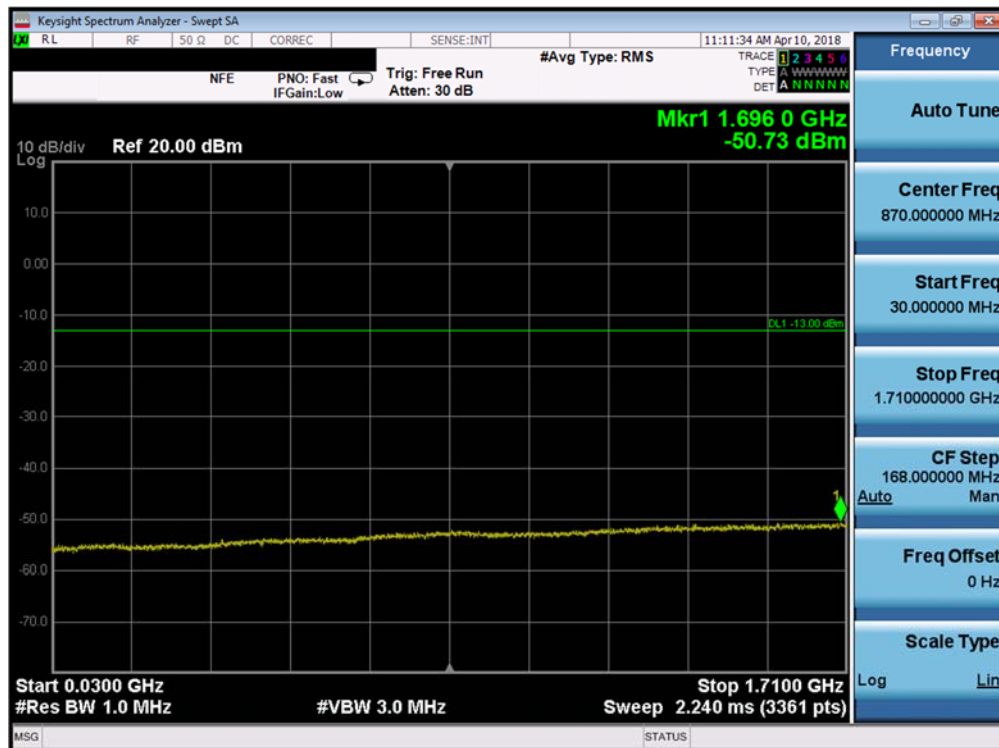


Plot 7-56. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)

|                                         |                                               |                                       |  |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|--|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |  | Page 45 of 107                  |

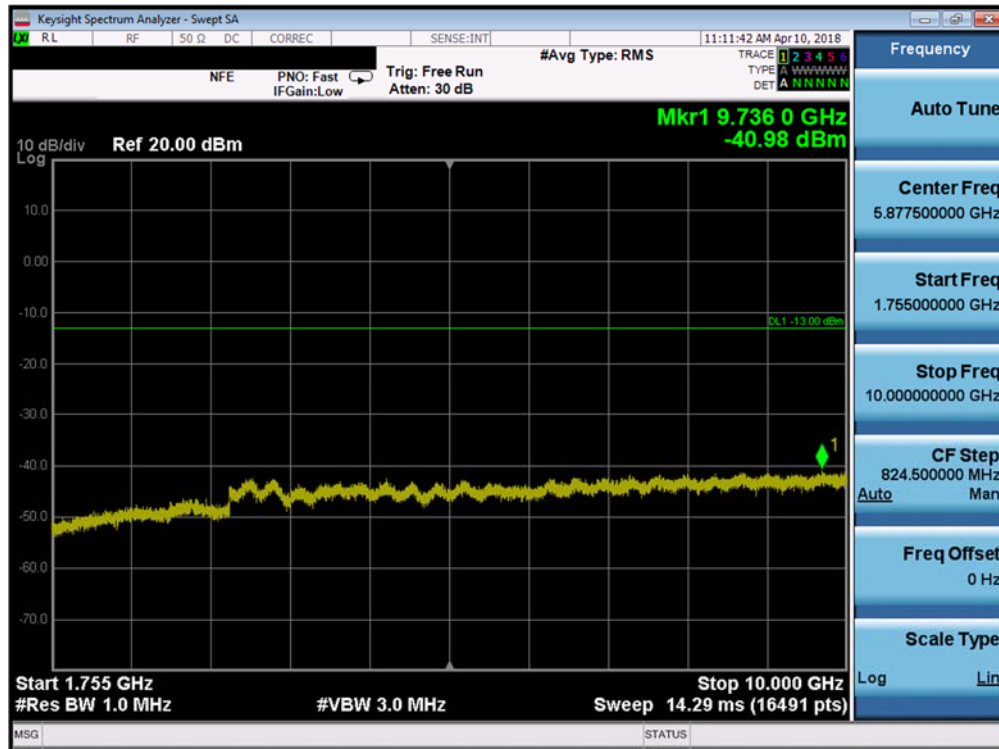


Plot 7-57. Conducted Spurious Plot (AWS WCDMA Mode - Low Channel)

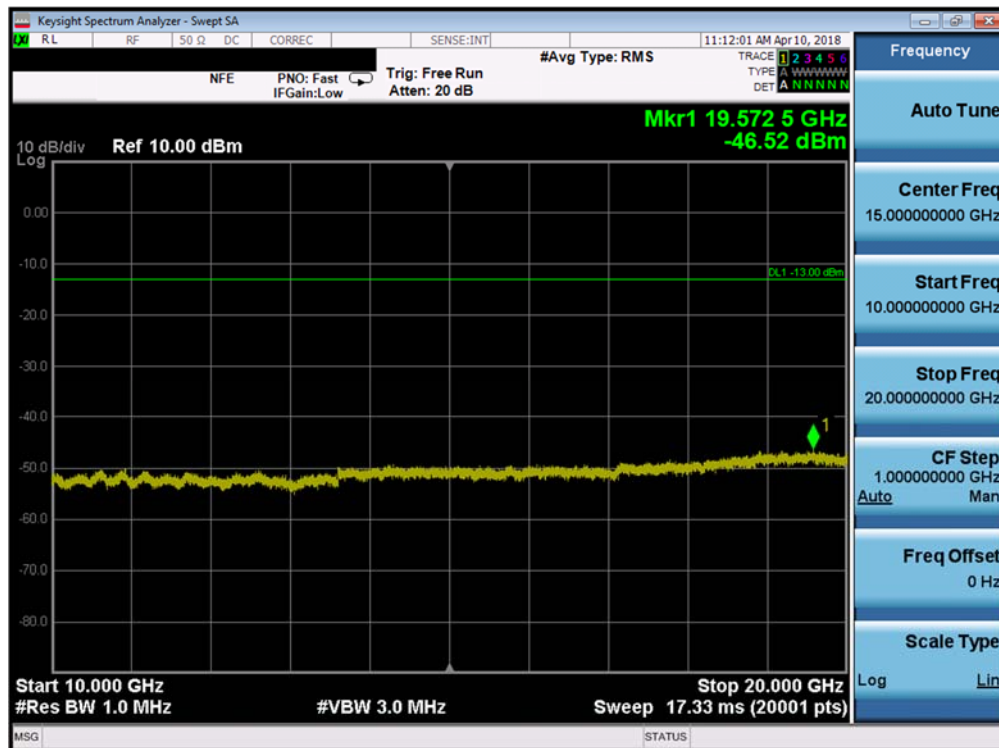


Plot 7-58. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 46 of 107                  |



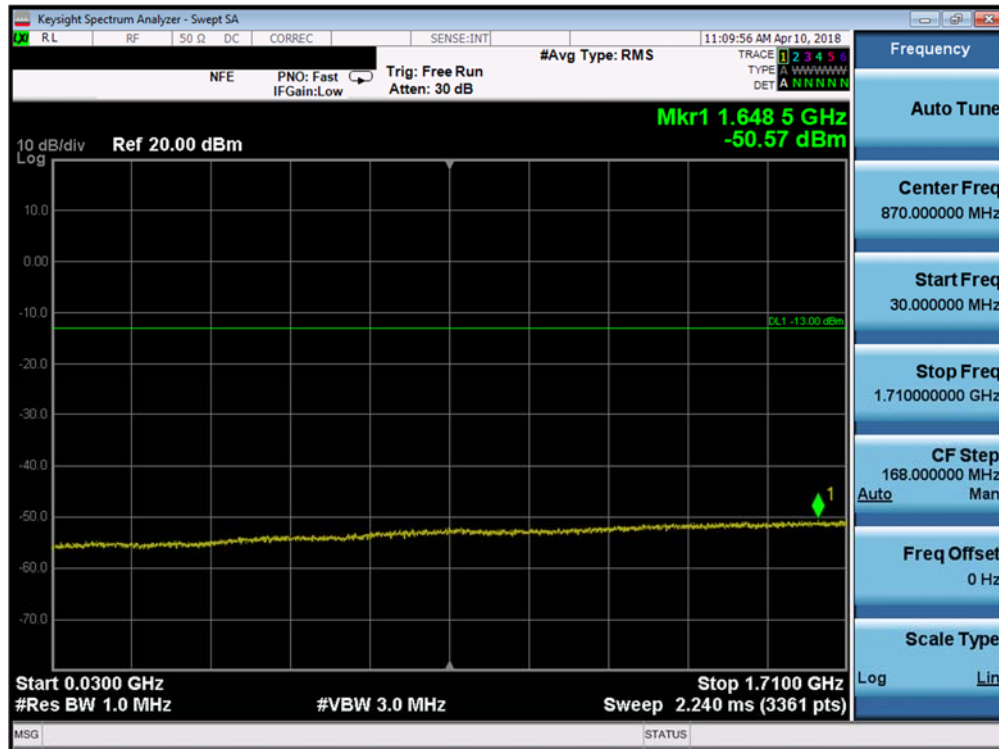
Plot 7-59. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)



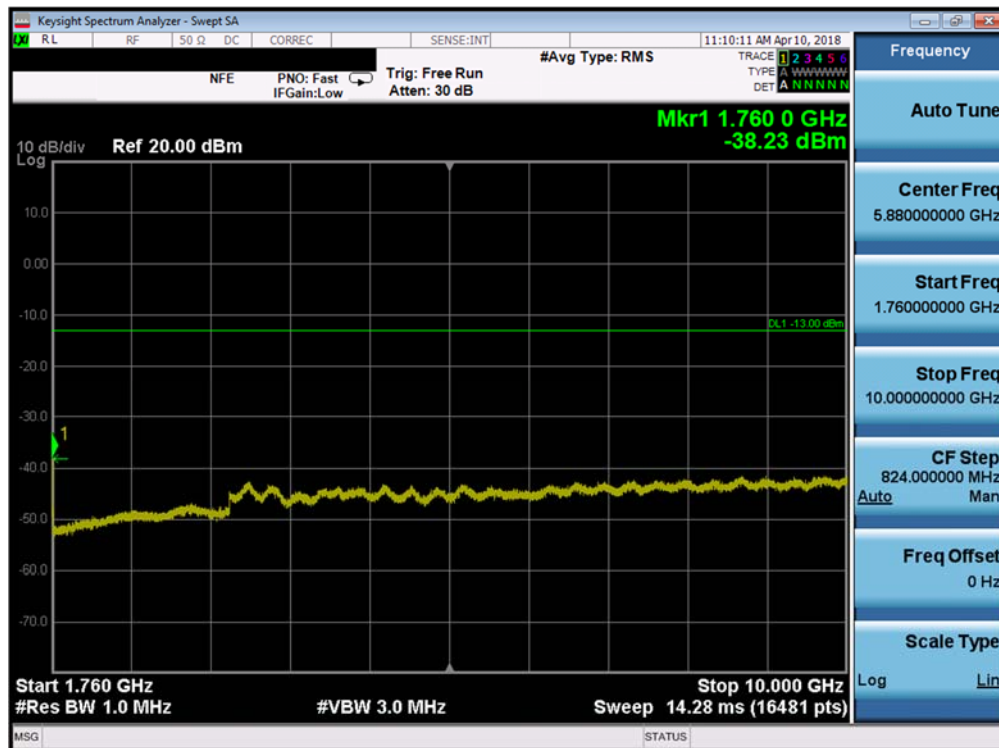
Plot 7-60. Conducted Spurious Plot (AWS WCDMA Mode - Mid Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 47 of 107                  |



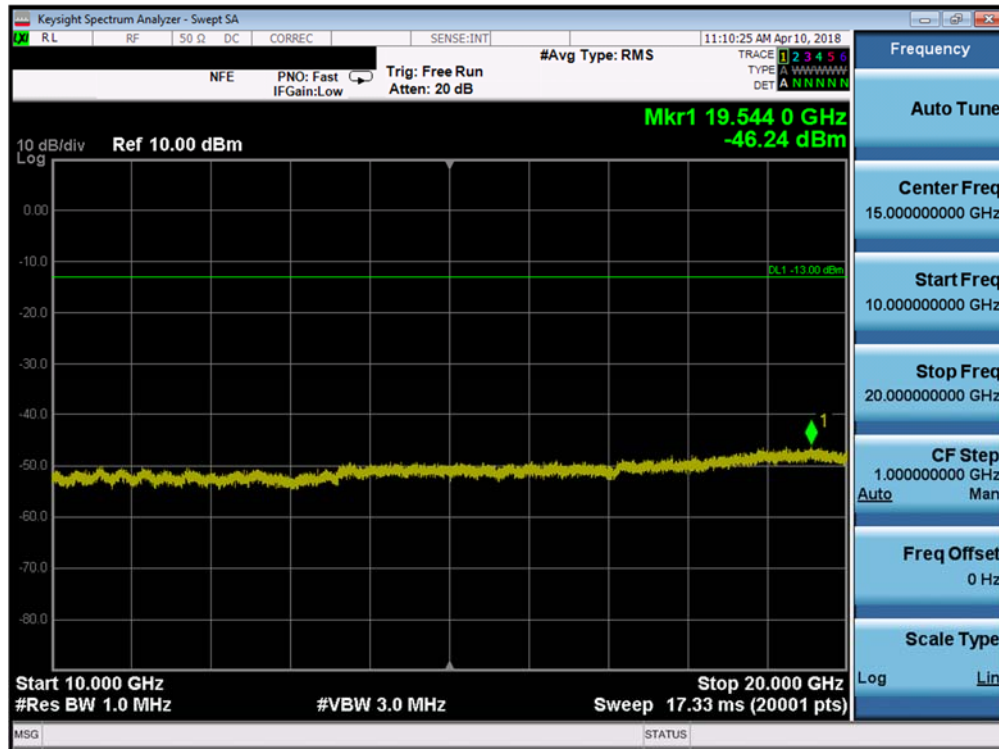


Plot 7-61. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)



Plot 7-62. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)

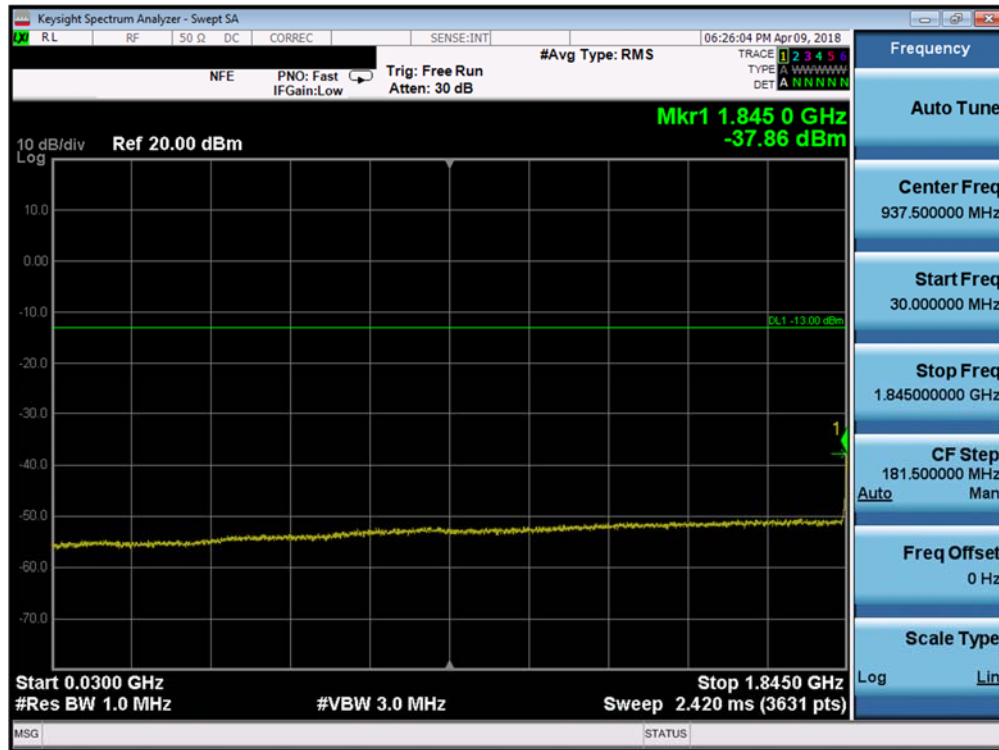
|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 48 of 107                  |



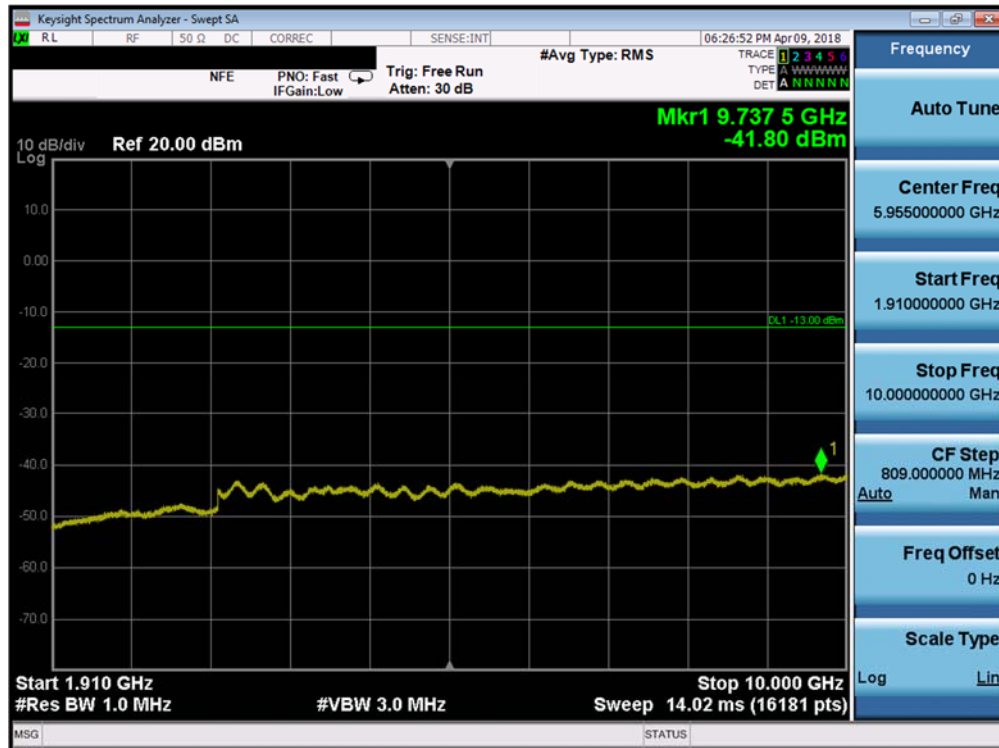
Plot 7-63. Conducted Spurious Plot (AWS WCDMA Mode - High Channel)

|                                         |                                               |                                       |    |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | LG | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |    | Page 49 of 107                  |

## PCS WCDMA Mode

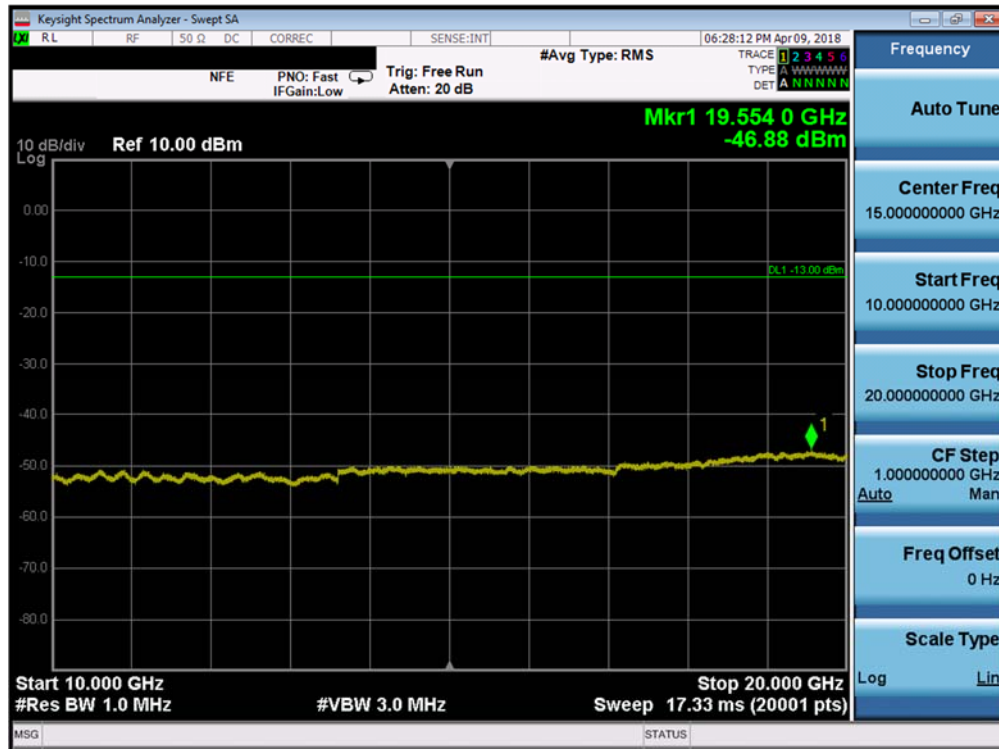


Plot 7-64. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)

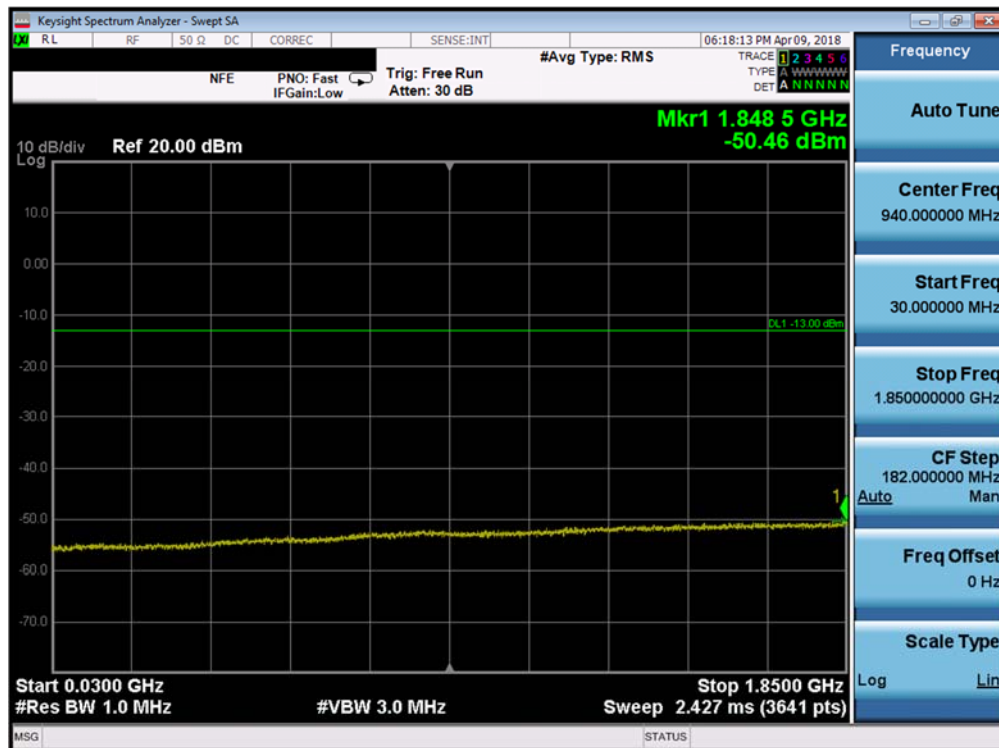


Plot 7-65. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)

|                                         |                                               |                                       |  |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|--|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |  | Page 50 of 107                  |

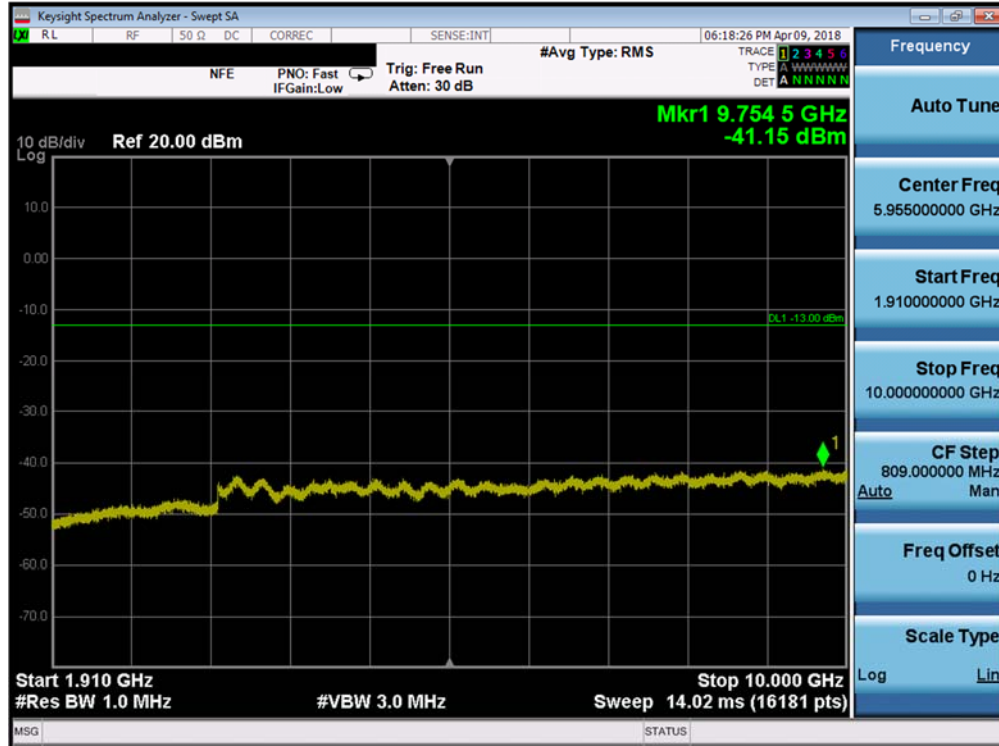


Plot 7-66. Conducted Spurious Plot (PCS WCDMA Mode - Low Channel)

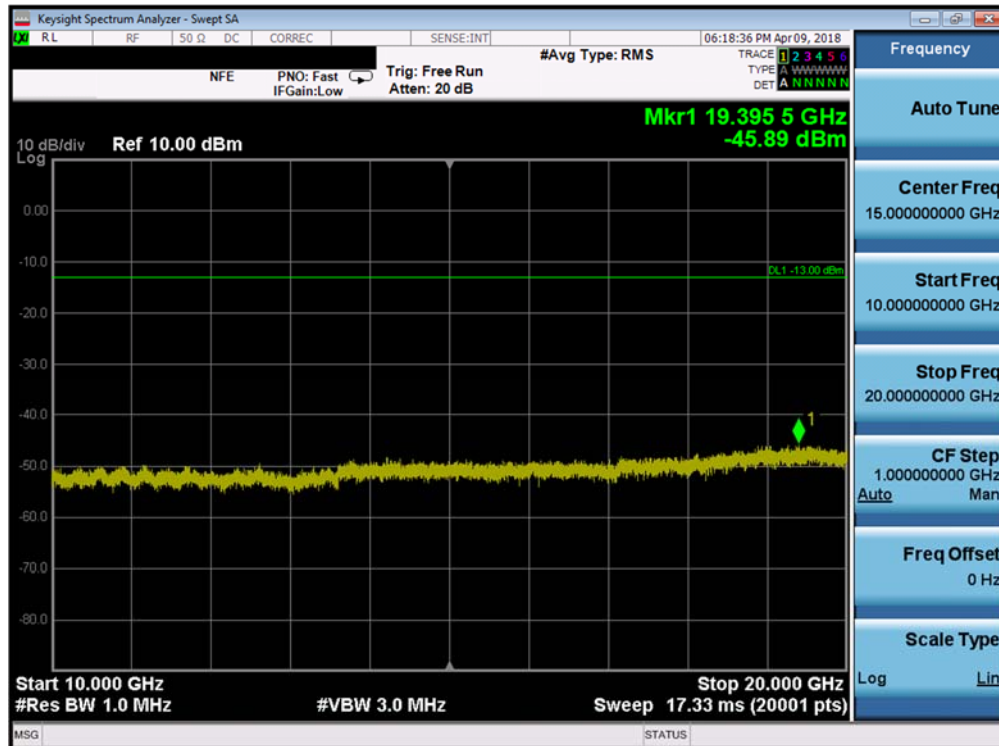


Plot 7-67. Conducted Spurious Plot (PCS WCDMA Mode - Mid Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 51 of 107                  |



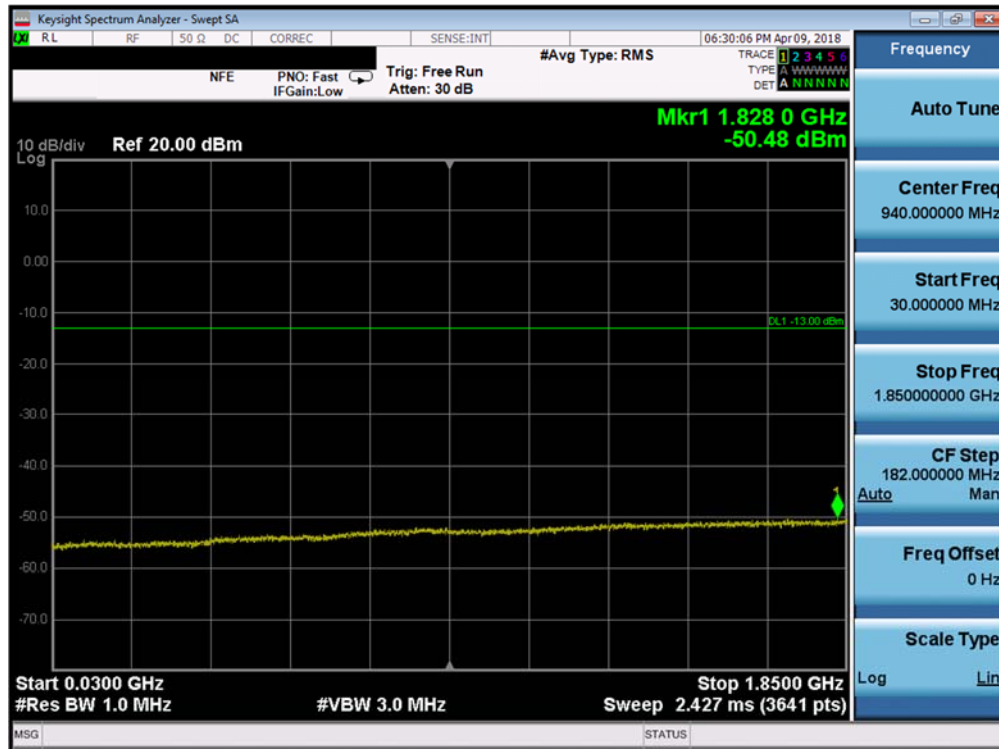
Plot 7-68. Conducted Spurious Plot (PCS WCDMA Mode - Mid Channel)



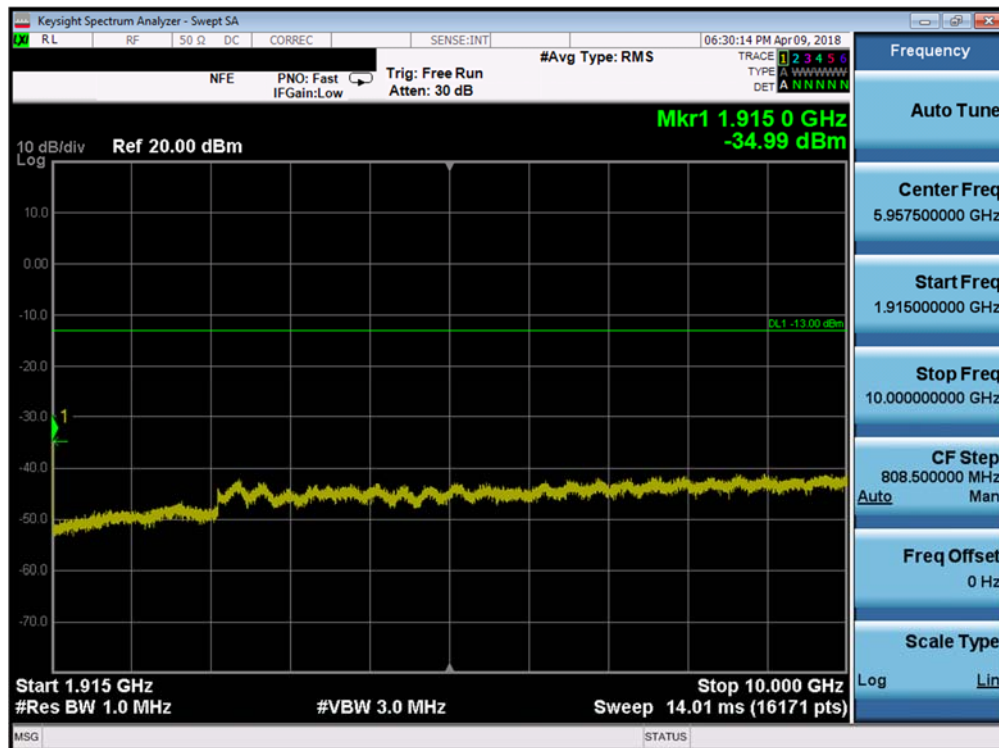
Plot 7-69. Conducted Spurious Plot (PCS WCDMA Mode - Mid Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 52 of 107                  |



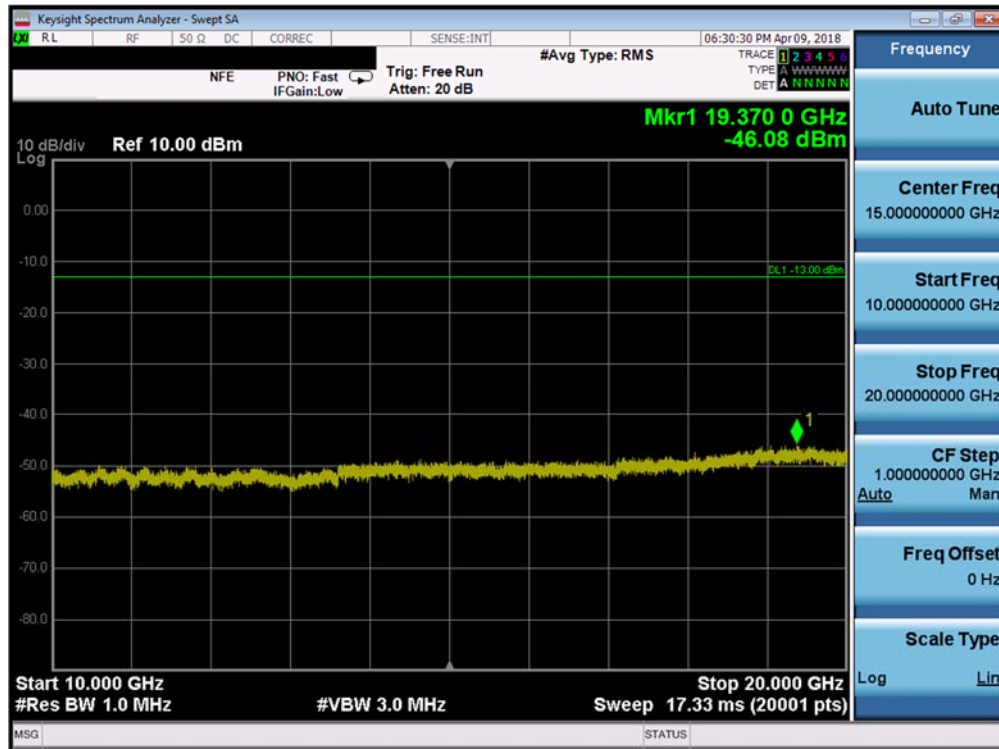


Plot 7-70. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)



Plot 7-71. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 53 of 107                  |



Plot 7-72. Conducted Spurious Plot (PCS WCDMA Mode - High Channel)

|                                         |                                               |                                       |  |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|--|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |  | Page 54 of 107                  |

## 7.4 Band Edge Emissions at Antenna Terminal

### Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

***The minimum permissible attenuation level of any spurious emission is  $43 + \log_{10}(P_{\text{Watts}})$ , where  $P$  is the transmitter power in Watts.***

### Test Procedure Used

KDB 971168 D01 v03r01 – Section 6.0

### Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW  $\geq$  1% of the emission bandwidth
4. VBW  $\geq$  3 x RBW
5. Detector = RMS
6. Number of sweep points  $\geq$  2 x Span/RBW
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize

### Test Setup

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



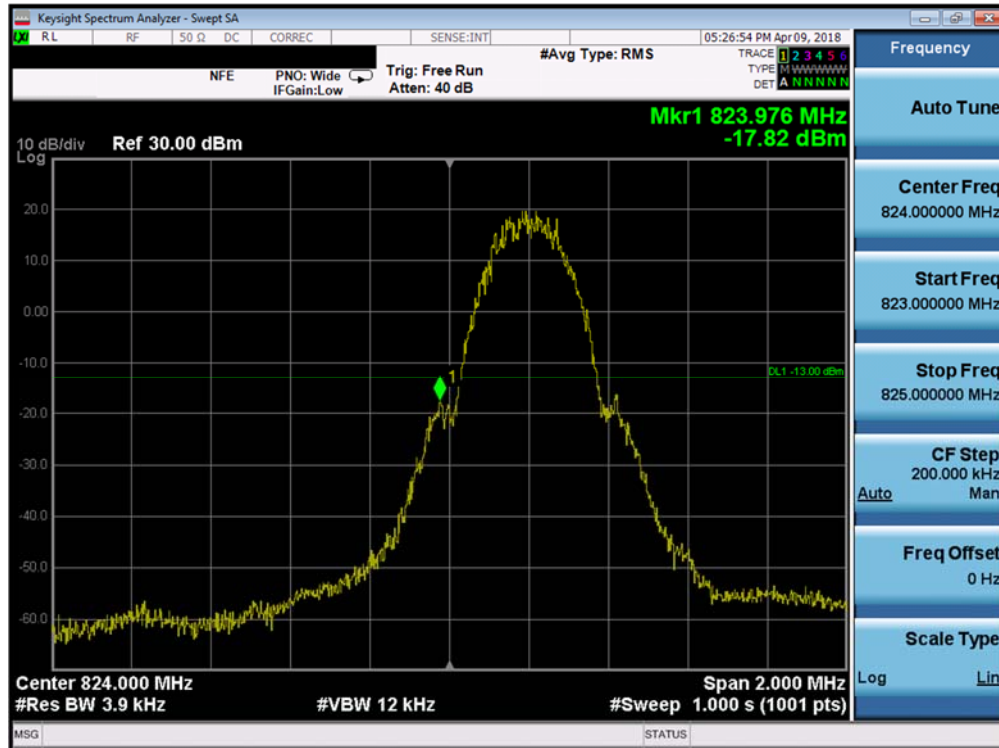
**Figure 7-3. Test Instrument & Measurement Setup**

### Test Notes

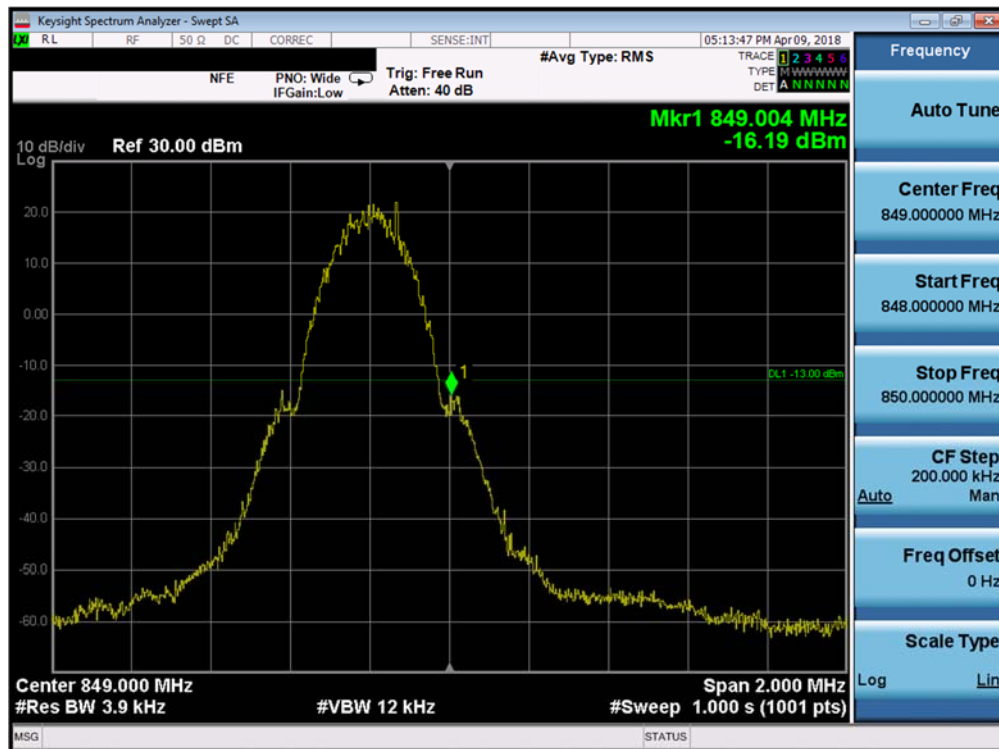
Per 22.917(b), 24.238(b), 27.53(h)(3), and RSS-132(5.5), RSS-133(6.5), RSS-139(6.5), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

|                                                |                                               |                                               |           |                                        |
|------------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------|----------------------------------------|
| FCC ID: ZNFQ710US                              | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> | <b>LG</b> | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1M1803280057-02.ZNF | <b>Test Dates:</b><br>3/27 - 5/2/2018         | <b>EUT Type:</b><br>Portable Handset          |           | Page 55 of 107                         |

## Cellular GPRS Mode



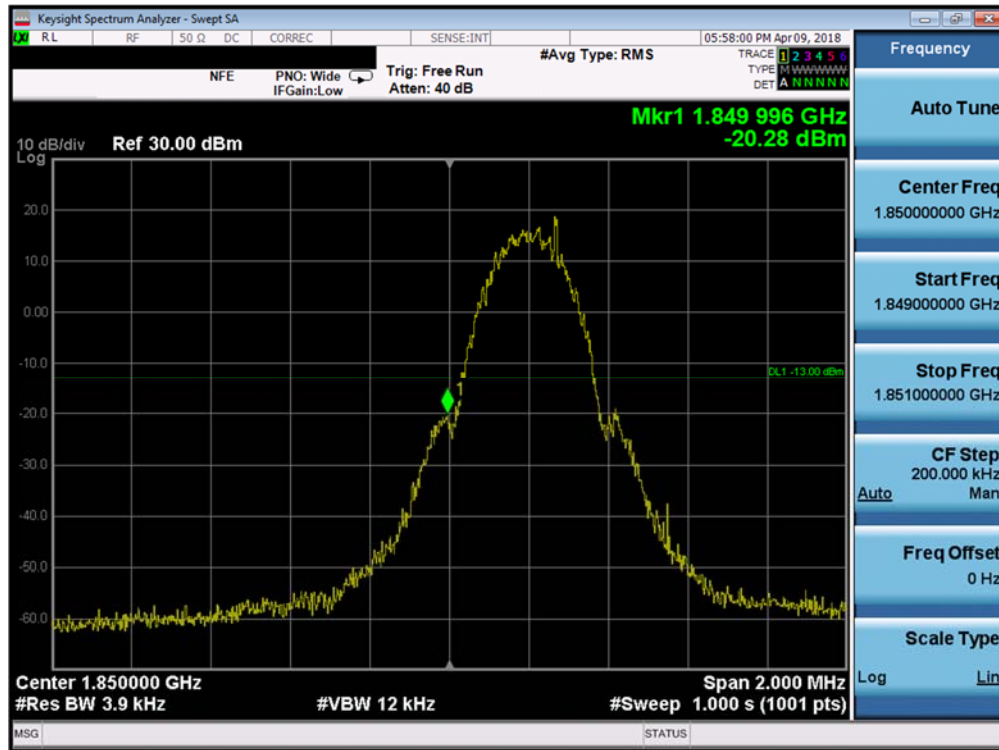
Plot 7-73. Band Edge Plot (Cellular GPRS Mode - Low Channel)



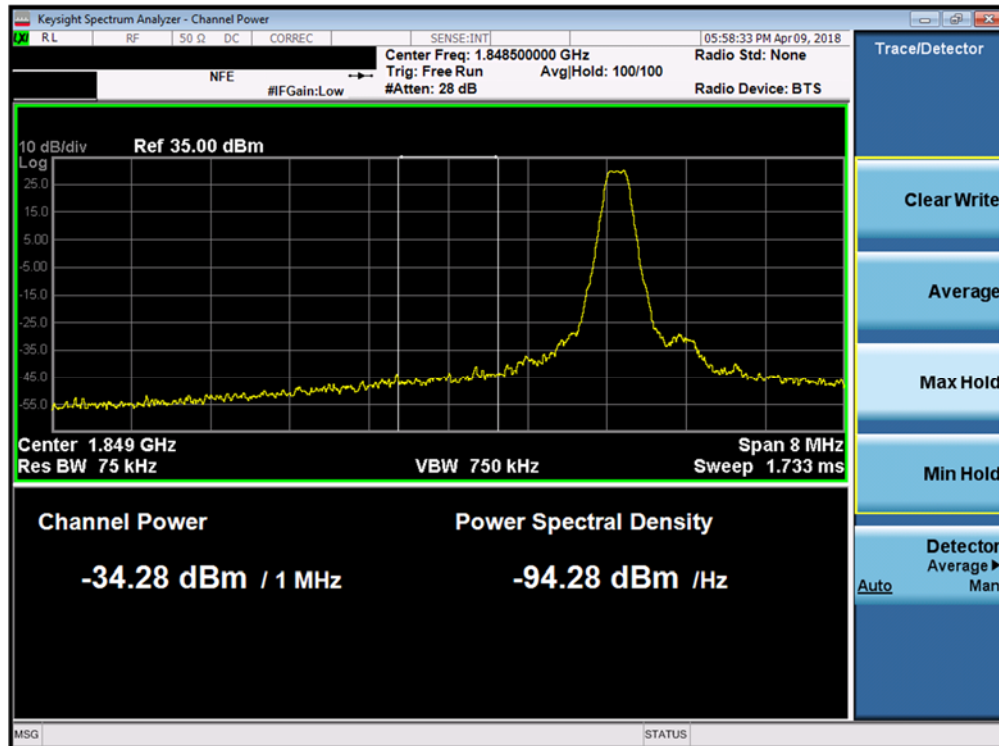
Plot 7-74. Band Edge Plot (Cellular GPRS Mode - High Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 56 of 107                  |

## PCS GPRS Mode



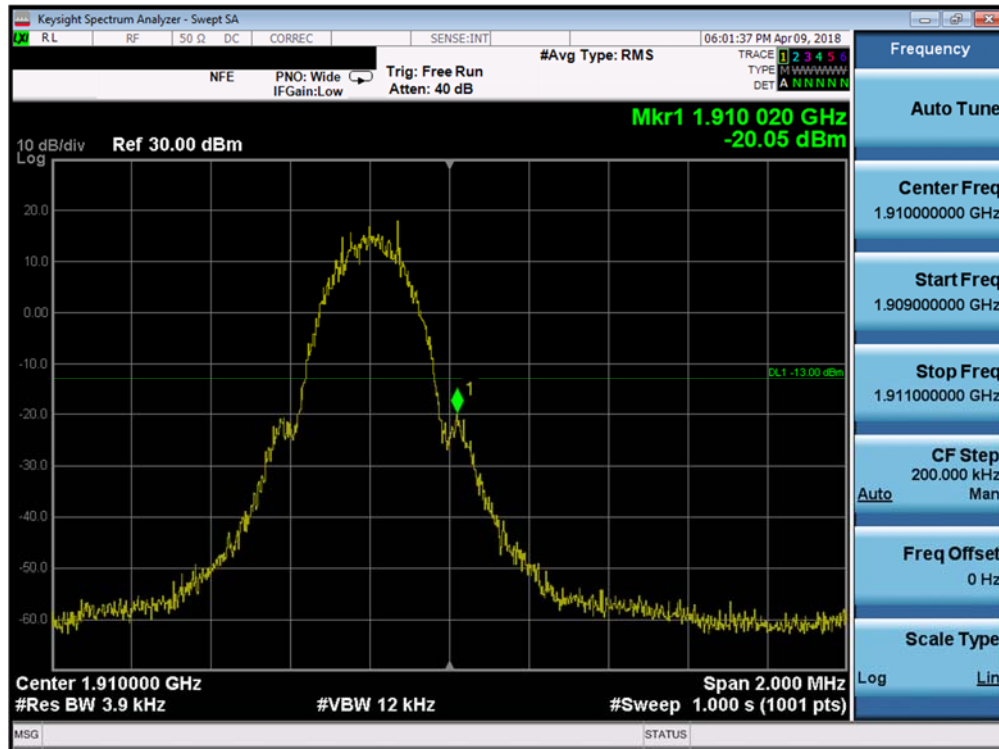
Plot 7-75. Band Edge Plot (PCS GPRS Mode - Low Channel)



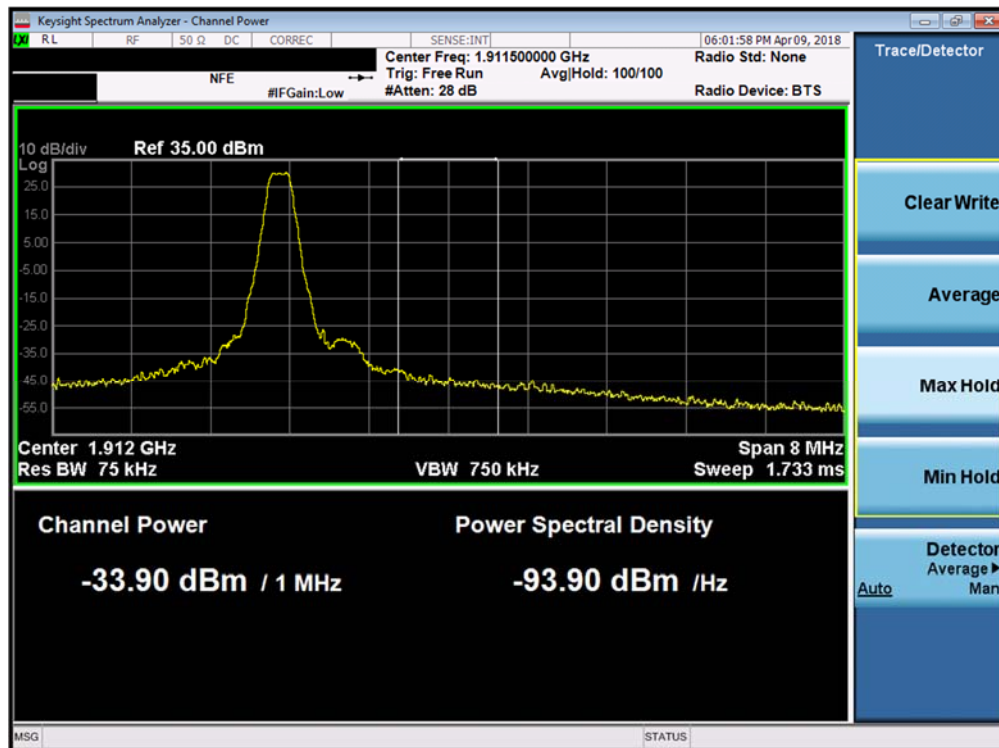
Plot 7-76. 4MHz Span Plot (PCS GPRS Mode - Low Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 57 of 107                  |





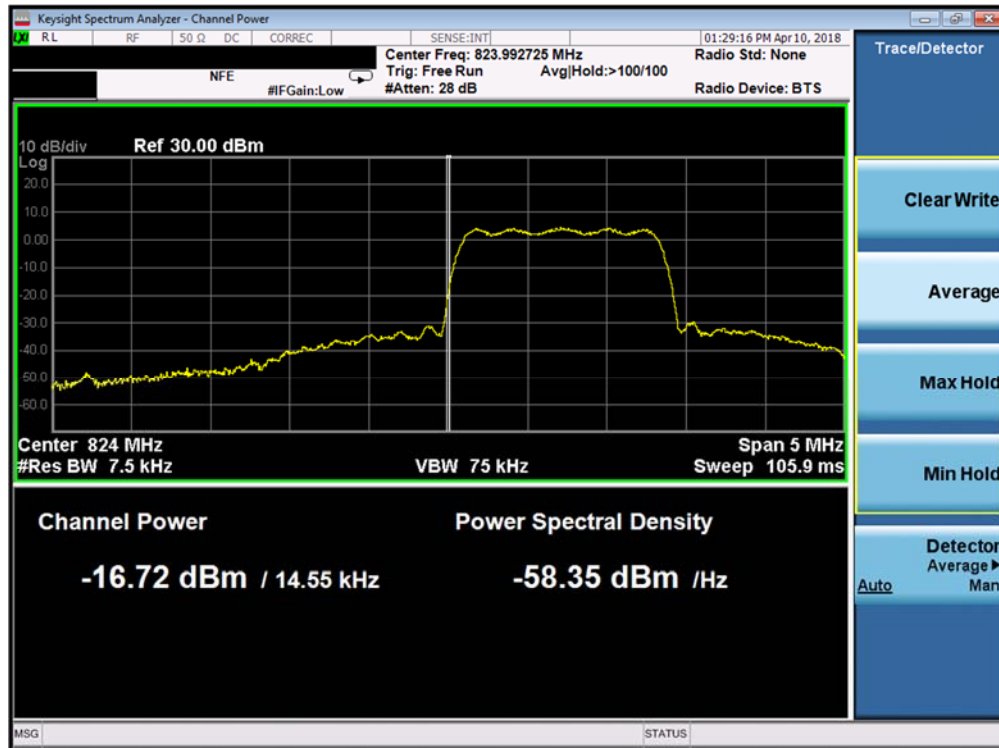
Plot 7-77. Band Edge Plot (PCS GPRS Mode - High Channel)



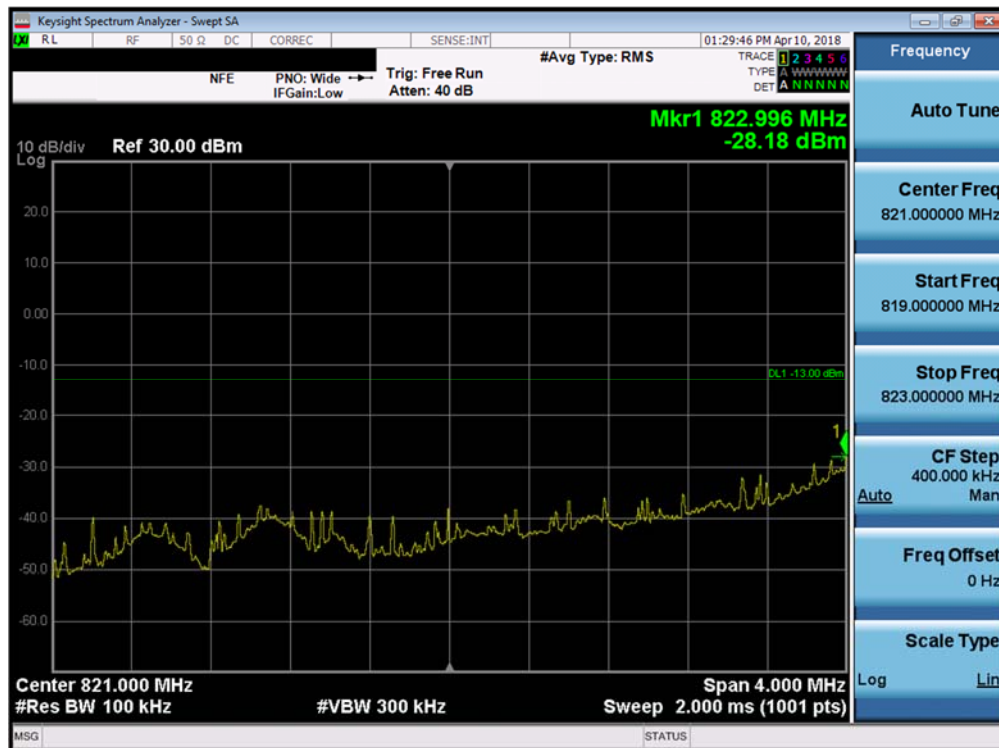
Plot 7-78. 4MHz Span Plot (PCS GPRS Mode - High Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 58 of 107                  |

## Cellular CDMA Mode

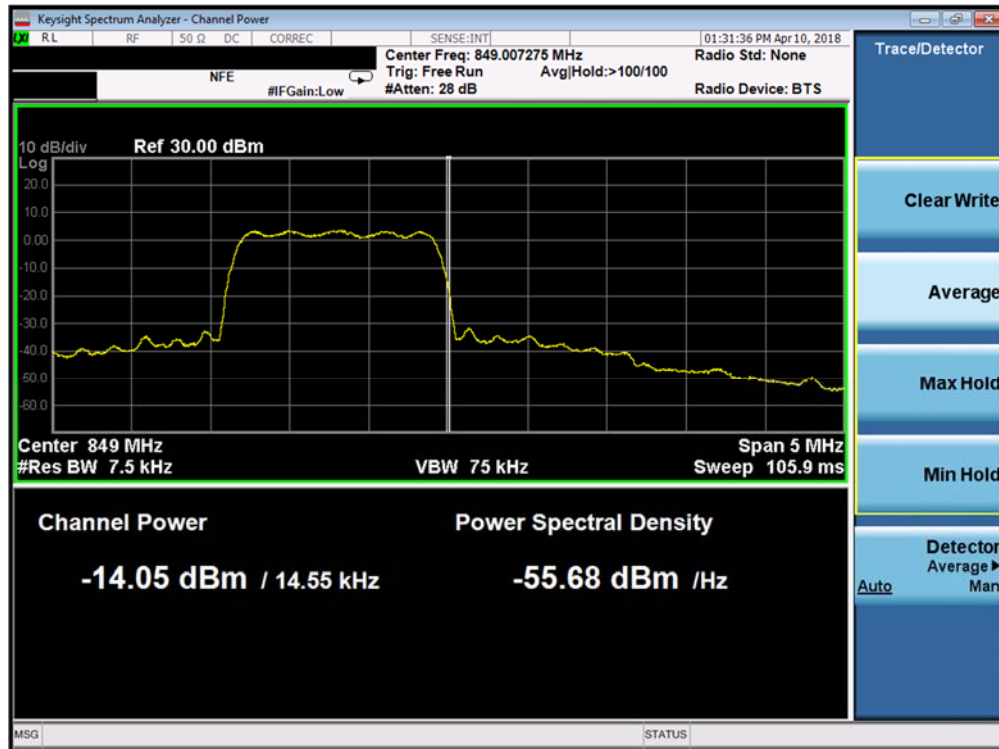


Plot 7-79. Band Edge Plot (Cellular CDMA Mode - Low Channel)



Plot 7-80. 4MHz Span Plot (Cellular CDMA Mode - Low Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 59 of 107                  |



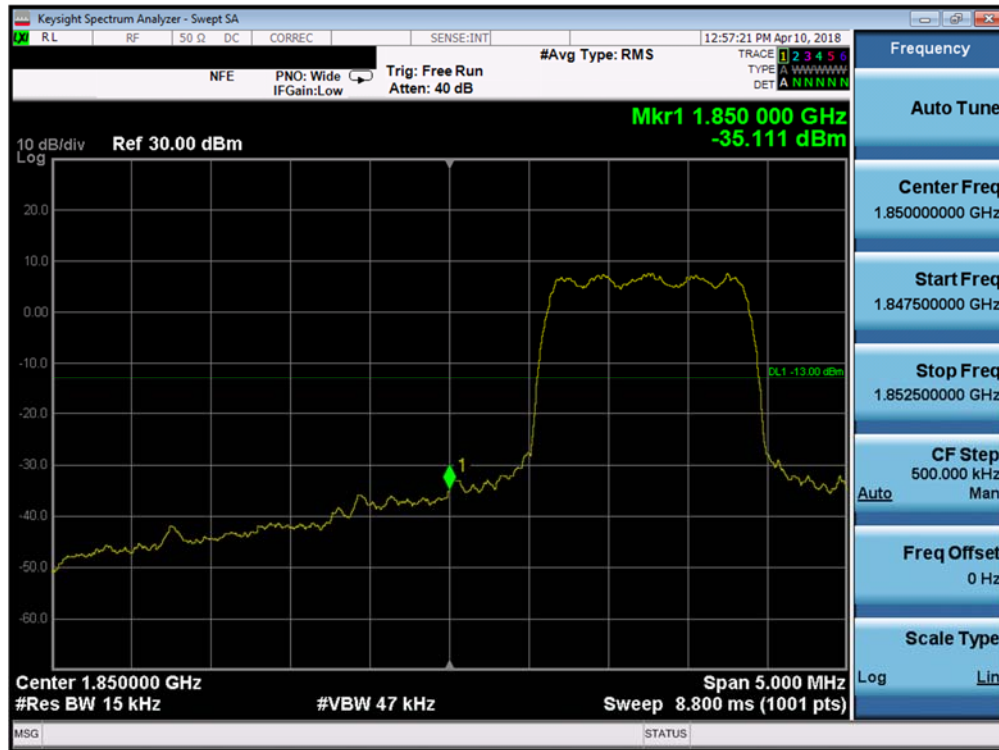
Plot 7-81. Band Edge Plot (Cellular CDMA Mode - High Channel)



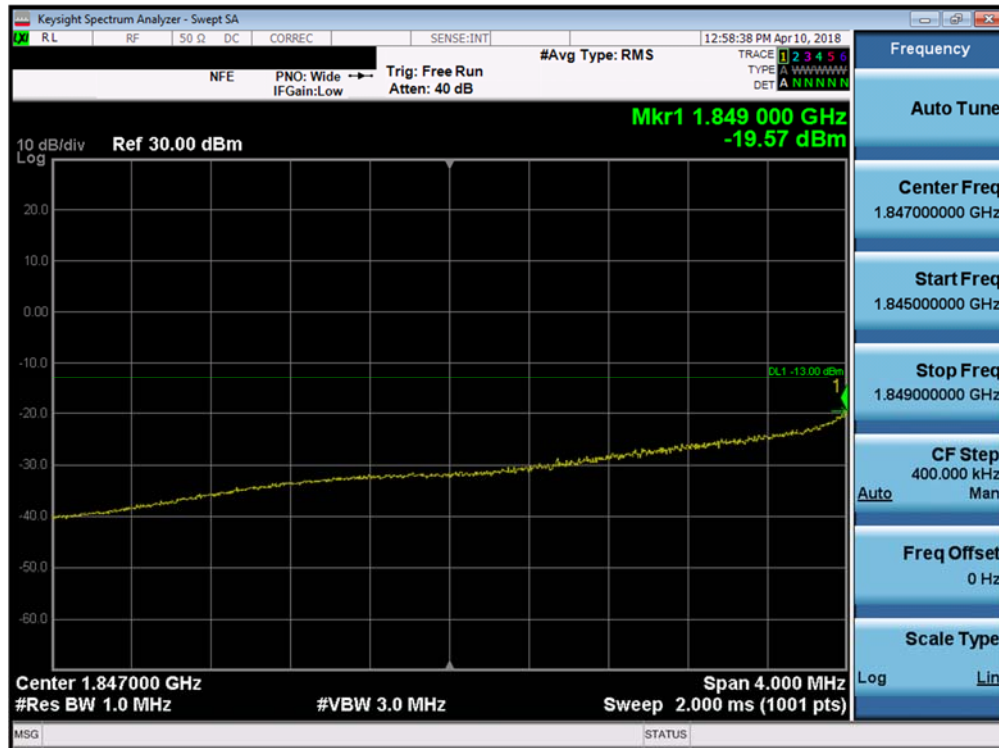
Plot 7-82. 4MHz Span Plot (Cellular CDMA Mode - High Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 60 of 107                  |

## PCS CDMA Mode



Plot 7-83. Band Edge Plot (PCS CDMA Mode - Low Channel)

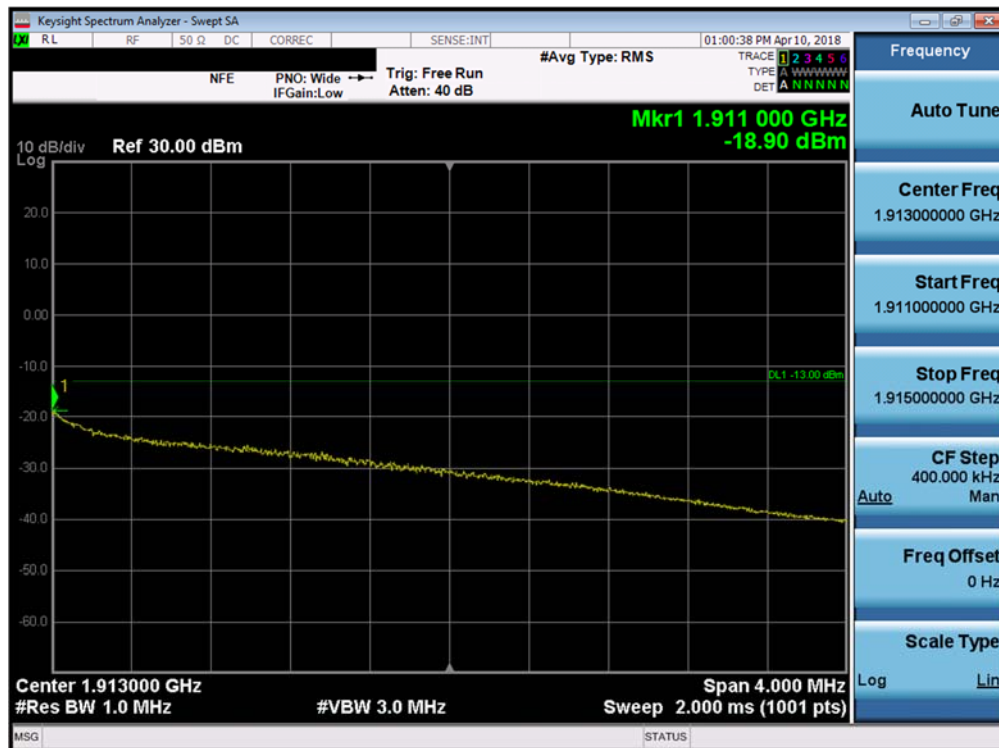


Plot 7-84. 4MHz Span Plot (PCS CDMA Mode - Low Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 61 of 107                  |



Plot 7-85. Band Edge Plot (PCS CDMA Mode - High Channel)

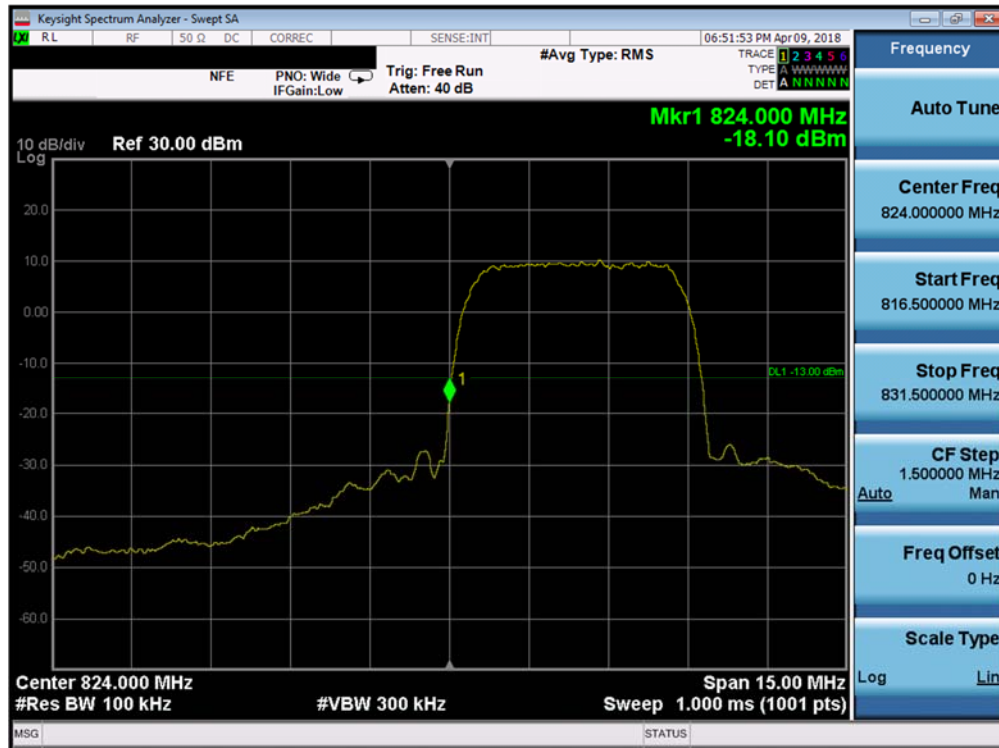


Plot 7-86. 4MHz Span Plot (PCS CDMA Mode - High Channel)

|                                         |                                               |                                       |    |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | LG | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |    | Page 62 of 107                  |



## Cellular WCDMA Mode



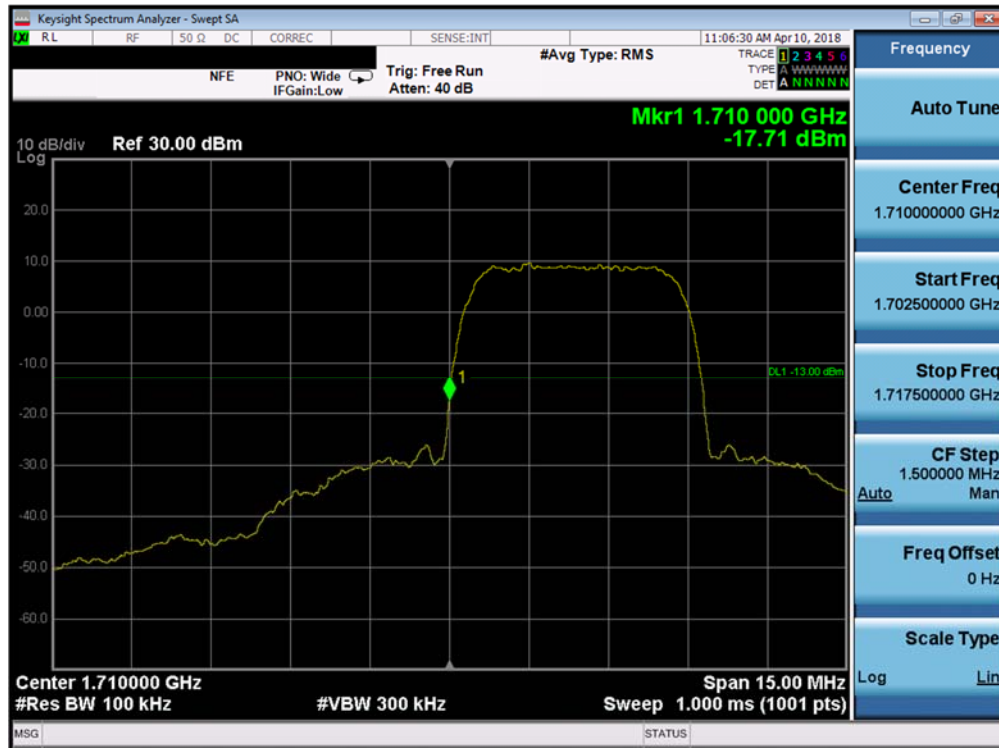
Plot 7-87. Band Edge Plot (Cellular WCDMA Mode - Low Channel)



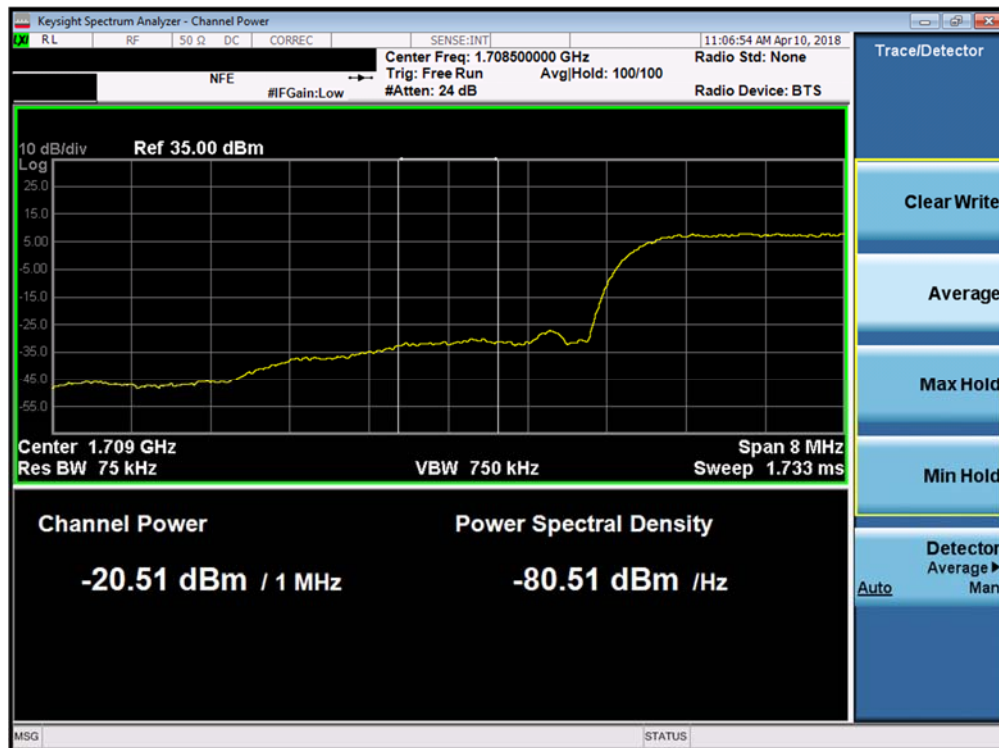
Plot 7-88. Band Edge Plot (Cellular WCDMA Mode - High Channel)

|                                         |                                               |                                       |    |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | LG | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |    | Page 63 of 107                  |

## AWS WCDMA Mode



Plot 7-89. Band Edge Plot (AWS WCDMA Mode - Low Channel)

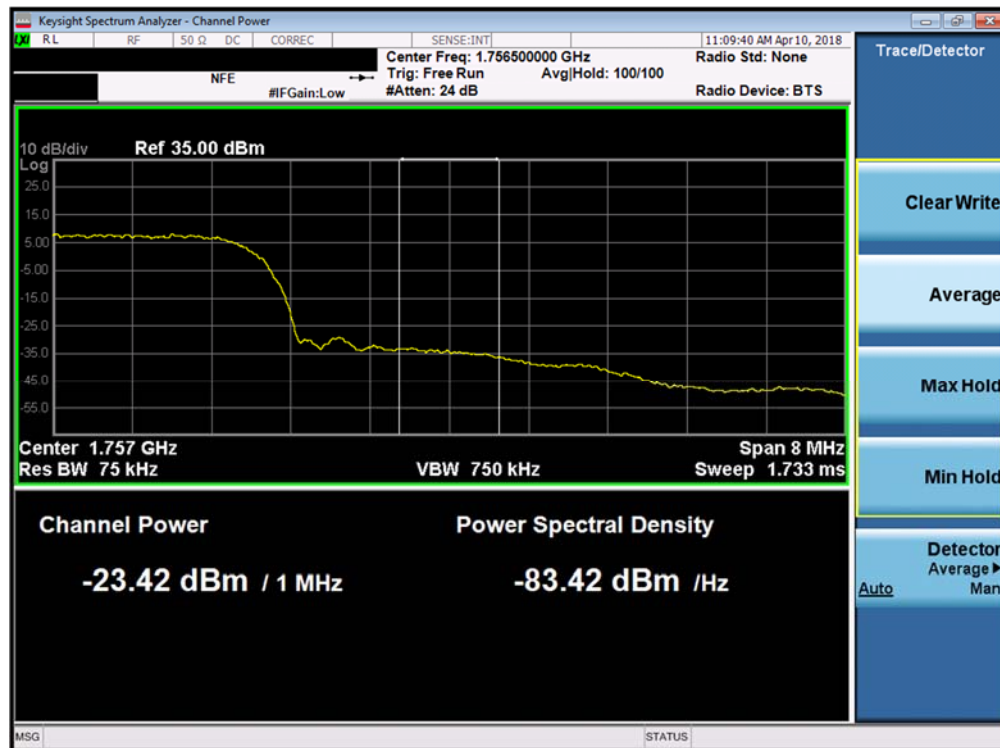


Plot 7-90. 4MHz Span Plot (AWS WCDMA Mode - Low Channel)

|                                         |                                               |                                       |           |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|-----------|---------------------------------|
| FCC ID: ZNFQ710US                       | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>LG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1803280057-02.ZNF | Test Dates:<br>3/27 - 5/2/2018                | EUT Type:<br>Portable Handset         |           | Page 64 of 107                  |



### Plot 7-91. Band Edge Plot (AWS WCDMA Mode - High Channel)



### Plot 7-92. 4MHz Span Plot (AWS WCDMA Mode - High Channel)

|                                                |                                                                                                                                                                                                                         |                                      |                                        |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------|
| FCC ID: ZNFQ710US                              |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                                      | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1M1803280057-02 ZNF | <b>Test Dates:</b><br>3/27 - 5/2/2018                                                                                                                                                                                   | <b>EUT Type:</b><br>Portable Handset | Page 65 of 107                         |