

## 6.4 Maximum Power Spectral Density – 802.11a/n/ac §15.407(a.1)(2.5)

### Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle (>98%), at its maximum power control level, as defined in KDB 789033 v01r04, and at the appropriate frequencies. Method SA-1, as defined in KDB 789033 v01r04, was used to measure the power spectral density.

*In the 5.15 – 5.25GHz band, the maximum permissible power spectral density is 4dBm/MHz.*

*In the 5.25 – 5.35GHz, 5.47 – 5.725GHz bands, the maximum permissible power spectral density is 11dBm/MHz.*

### Test Procedure Used

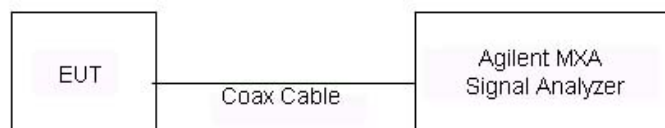
KDB 789033 v01r04 – Section F  
KDB 662911 v02r01 – Section E)2) Measure-and-Sum Technique

### Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points  $\geq 2 \times (\text{span}/\text{RBW})$
6. Sweep time = auto
7. Detector = power averaging (RMS)
8. Trigger was set to free run since the EUT was operating at a duty cycle  $\geq 98\%$
9. Trace was averaged over 100 sweeps
10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

### Test Setup

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



**Figure 6-3. Test Instrument & Measurement Setup**

### Test Notes

None

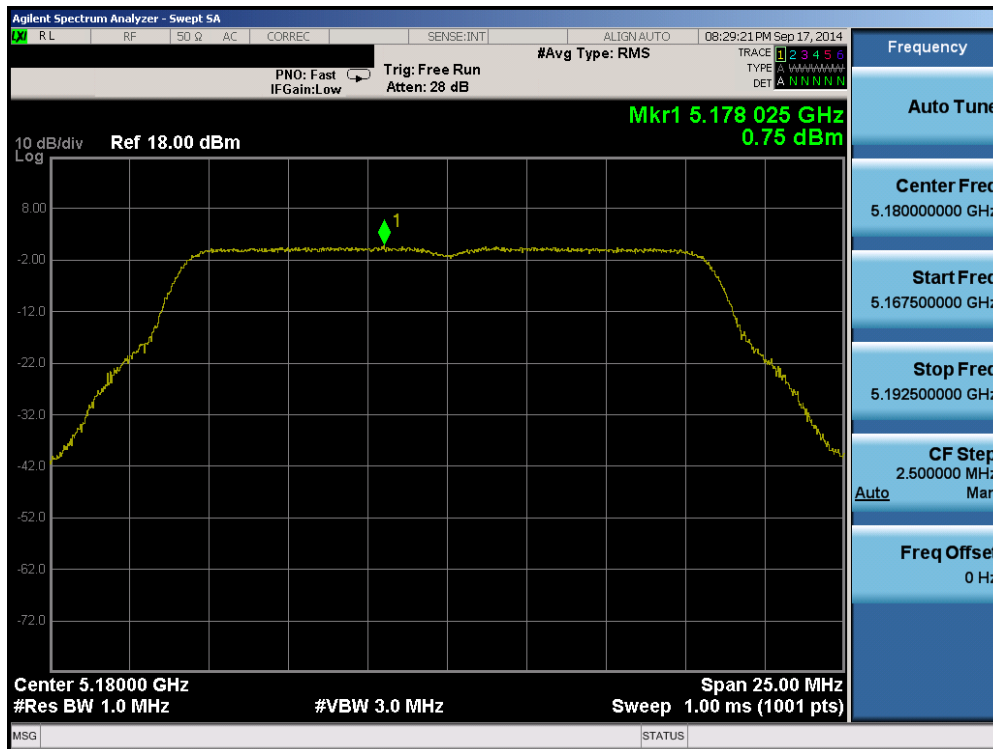
|                                      |                                                                                     |                                                                        |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                          |                                                                                       | Page 56 of 182                  |

## Antenna-1 Power Spectral Density Measurements

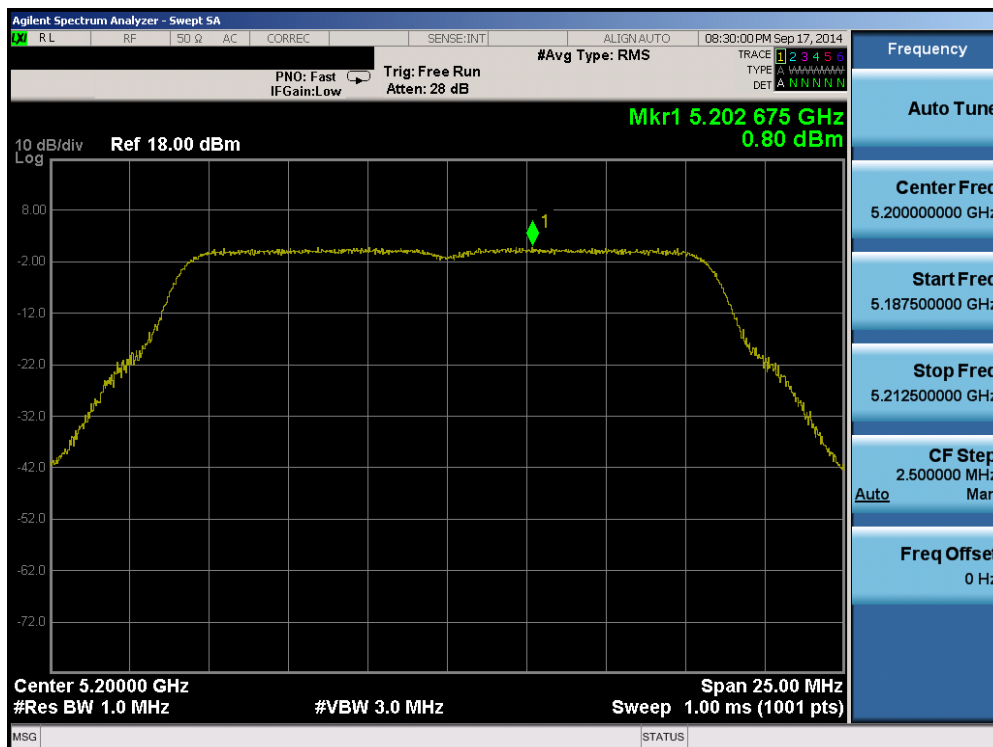
|         | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Power Density [dBm] | Max Permissible Power Density [dBm/MHz] | Margin [dB] | Pass / Fail |
|---------|-----------------|-------------|-------------|------------------|------------------------------|-----------------------------------------|-------------|-------------|
| Band 1  | 5180            | 36          | a           | 6                | 0.75                         | 4.0                                     | -3.25       | Pass        |
|         | 5200            | 40          | a           | 6                | 0.80                         | 4.0                                     | -3.20       | Pass        |
|         | 5240            | 48          | a           | 6                | 0.99                         | 4.0                                     | -3.01       | Pass        |
|         | 5180            | 36          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.16                         | 4.0                                     | -3.84       | Pass        |
|         | 5200            | 40          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.35                         | 4.0                                     | -3.65       | Pass        |
|         | 5240            | 48          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.74                         | 4.0                                     | -3.26       | Pass        |
|         | 5190            | 38          | n (40MHz)   | 13.5/15 (MCS0)   | -1.92                        | 4.0                                     | -5.92       | Pass        |
|         | 5230            | 46          | n (40MHz)   | 13.5/15 (MCS0)   | -1.71                        | 4.0                                     | -5.71       | Pass        |
|         | 5210            | 42          | ac (80MHz)  | 29.3/32.5 (MCS0) | -7.49                        | 4.0                                     | -11.49      | Pass        |
| Band 2A | 5260            | 52          | a           | 6                | 1.13                         | 11.0                                    | -9.87       | Pass        |
|         | 5280            | 56          | a           | 6                | 0.86                         | 11.0                                    | -10.14      | Pass        |
|         | 5320            | 64          | a           | 6                | 0.92                         | 11.0                                    | -10.09      | Pass        |
|         | 5260            | 52          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.89                         | 11.0                                    | -10.11      | Pass        |
|         | 5280            | 56          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.43                         | 11.0                                    | -10.57      | Pass        |
|         | 5320            | 64          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.75                         | 11.0                                    | -10.25      | Pass        |
|         | 5270            | 54          | n (40MHz)   | 13.5/15 (MCS0)   | -1.68                        | 11.0                                    | -12.68      | Pass        |
|         | 5310            | 62          | n (40MHz)   | 13.5/15 (MCS0)   | -1.74                        | 11.0                                    | -12.74      | Pass        |
|         | 5290            | 58          | ac (80MHz)  | 29.3/32.5 (MCS0) | -7.35                        | 11.0                                    | -18.35      | Pass        |
| Band 2C | 5500            | 100         | a           | 6                | 0.37                         | 11.0                                    | -10.63      | Pass        |
|         | 5580            | 116         | a           | 6                | 0.88                         | 11.0                                    | -10.12      | Pass        |
|         | 5700            | 140         | a           | 6                | 0.04                         | 11.0                                    | -10.96      | Pass        |
|         | 5500            | 100         | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.11                         | 11.0                                    | -10.89      | Pass        |
|         | 5580            | 116         | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.48                         | 11.0                                    | -10.52      | Pass        |
|         | 5700            | 140         | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.02                         | 11.0                                    | -10.98      | Pass        |
|         | 5510            | 102         | n (40MHz)   | 13.5/15 (MCS0)   | -2.47                        | 11.0                                    | -13.47      | Pass        |
|         | 5550            | 110         | n (40MHz)   | 13.5/15 (MCS0)   | -2.58                        | 11.0                                    | -13.58      | Pass        |
|         | 5670            | 134         | n (40MHz)   | 13.5/15 (MCS0)   | -2.78                        | 11.0                                    | -13.78      | Pass        |
|         | 5530            | 106         | ac (80MHz)  | 29.3/32.5 (MCS0) | -7.79                        | 11.0                                    | -18.79      | Pass        |

Table 6-18. Conducted Power Spectral Density Measurements

|                                      |                                                                                     |                                                                        |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                          | Page 57 of 182                                                                        |                                 |

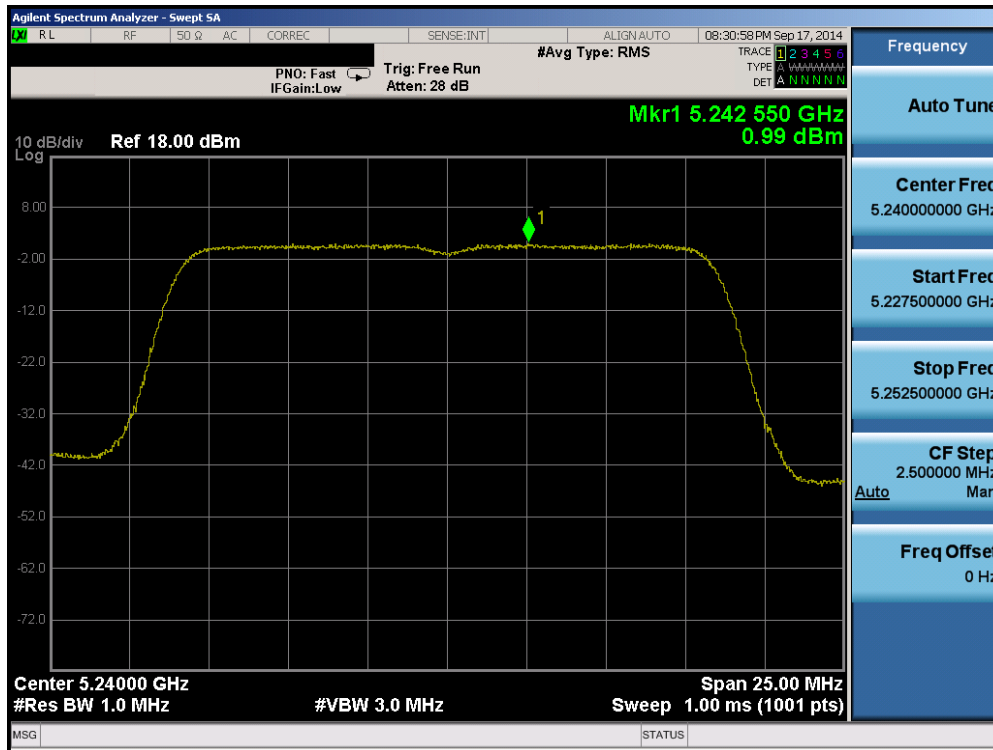


Plot 6-69. Peak Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 36)

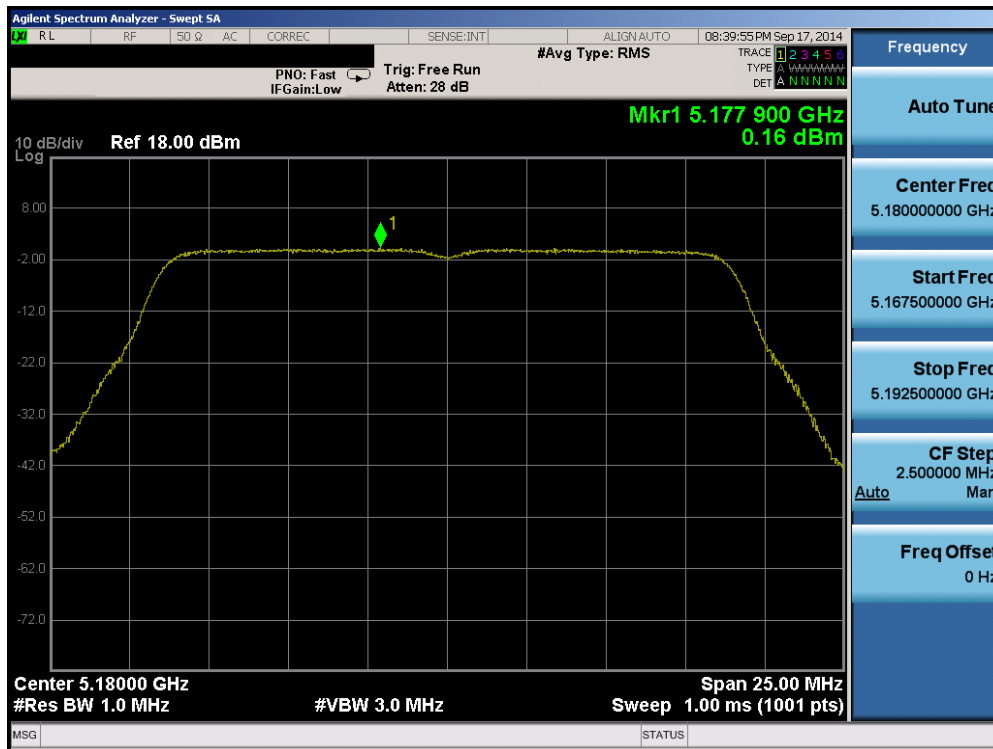


Plot 6-70. Peak Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 40)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 58 of 182                  |

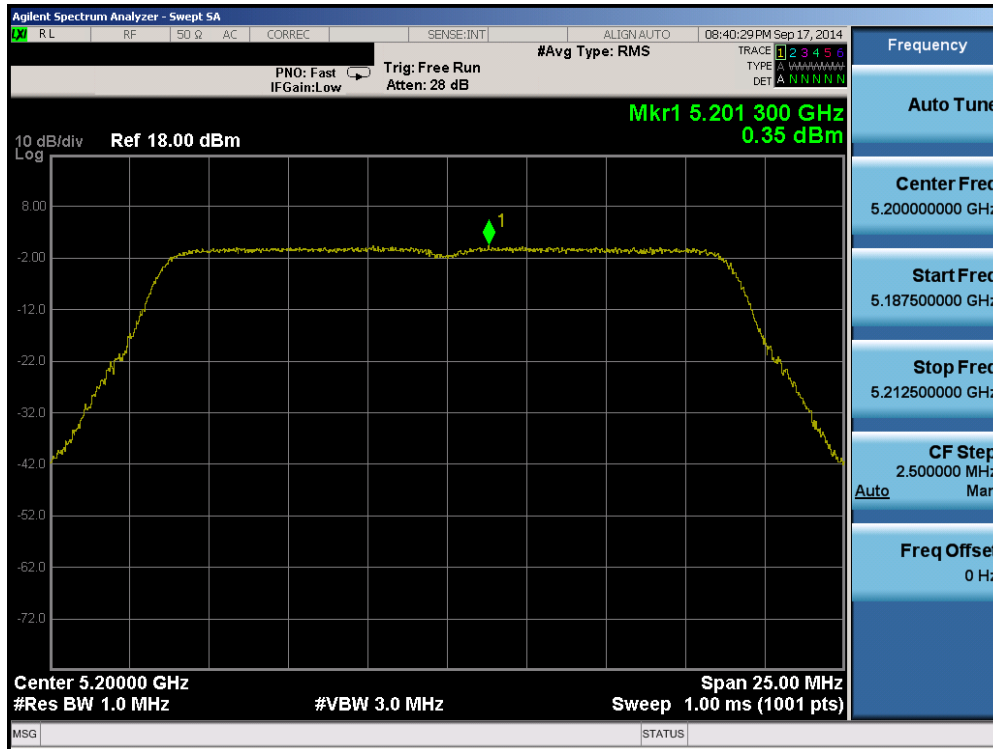


Plot 6-71. Peak Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)

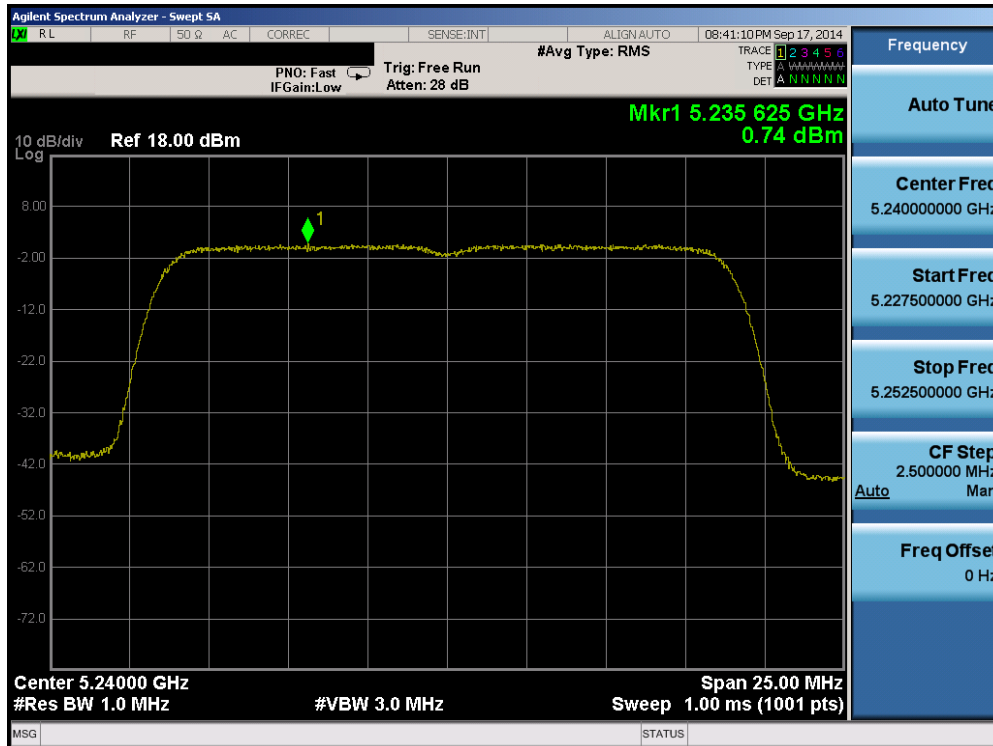


Plot 6-72. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 36)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 59 of 182                  |

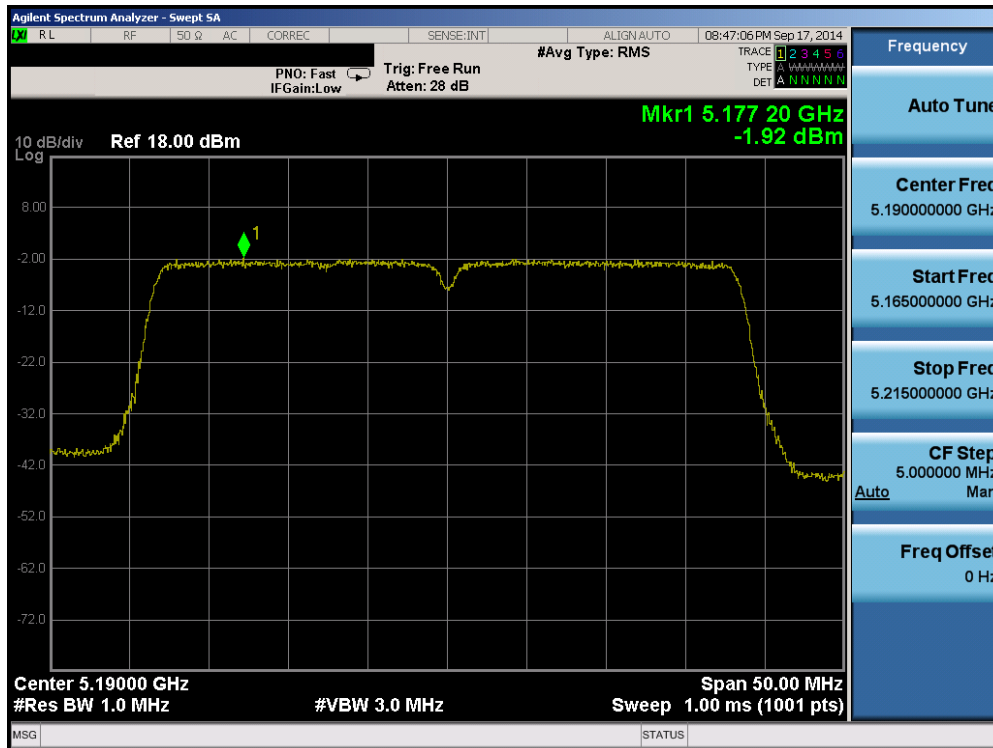


Plot 6-73. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 40)

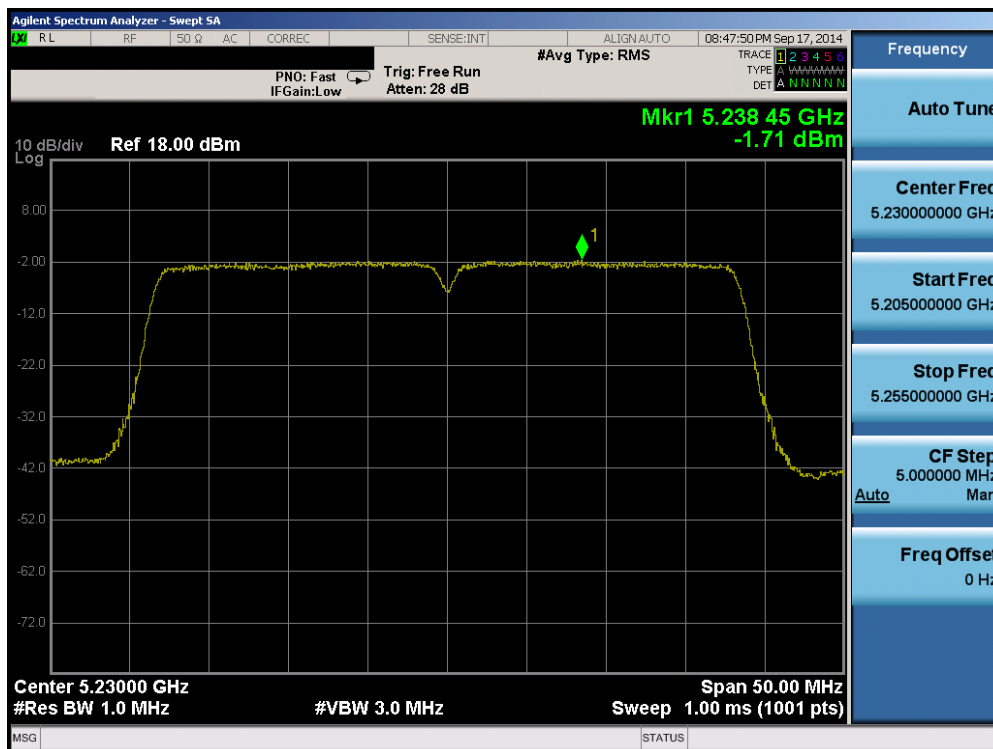


Plot 6-74. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)

|                                      |                                               |                                                                        |                |                                 |
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| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 60 of 182                  |

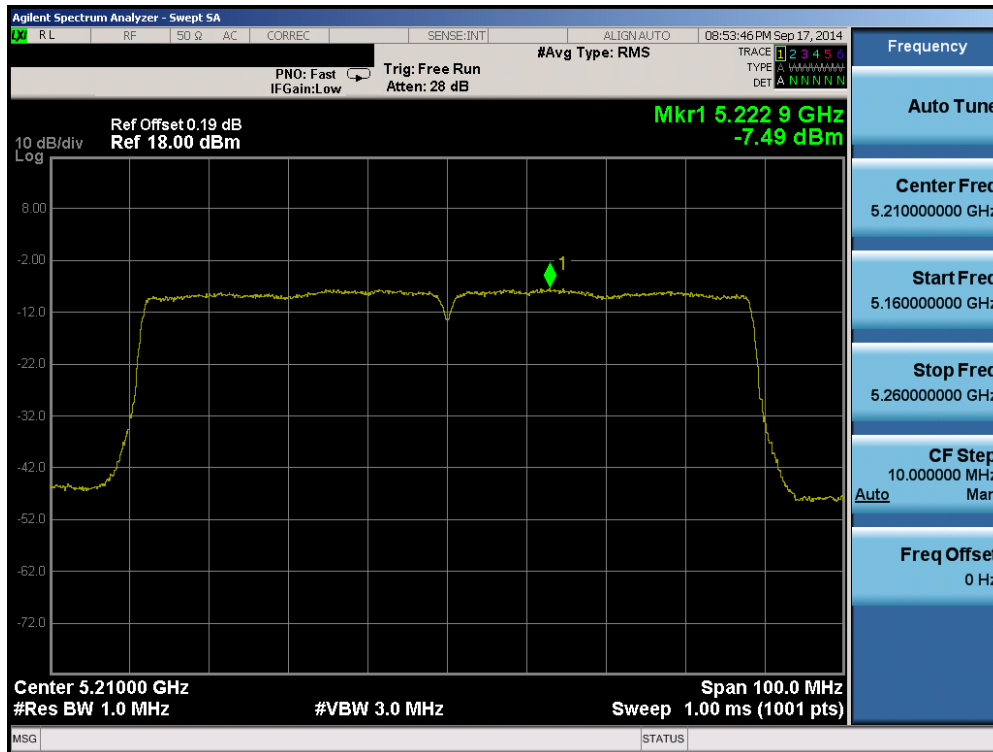


Plot 6-75. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)

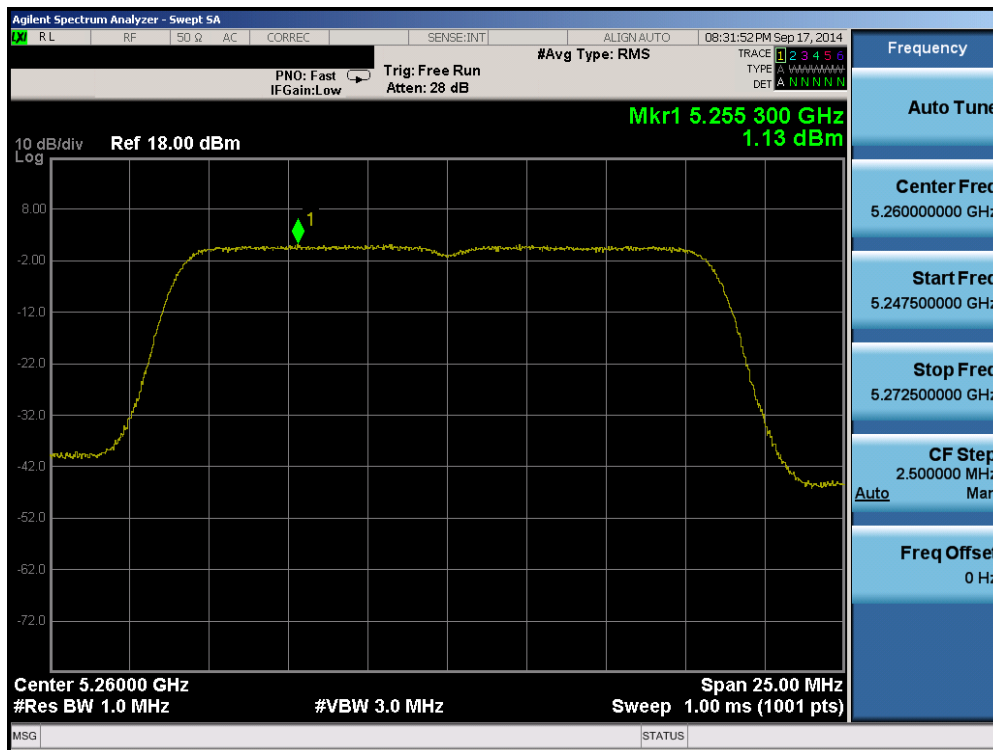


Plot 6-76. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

|                                      |                                               |                                                                        |                |                                 |
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| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 61 of 182                  |

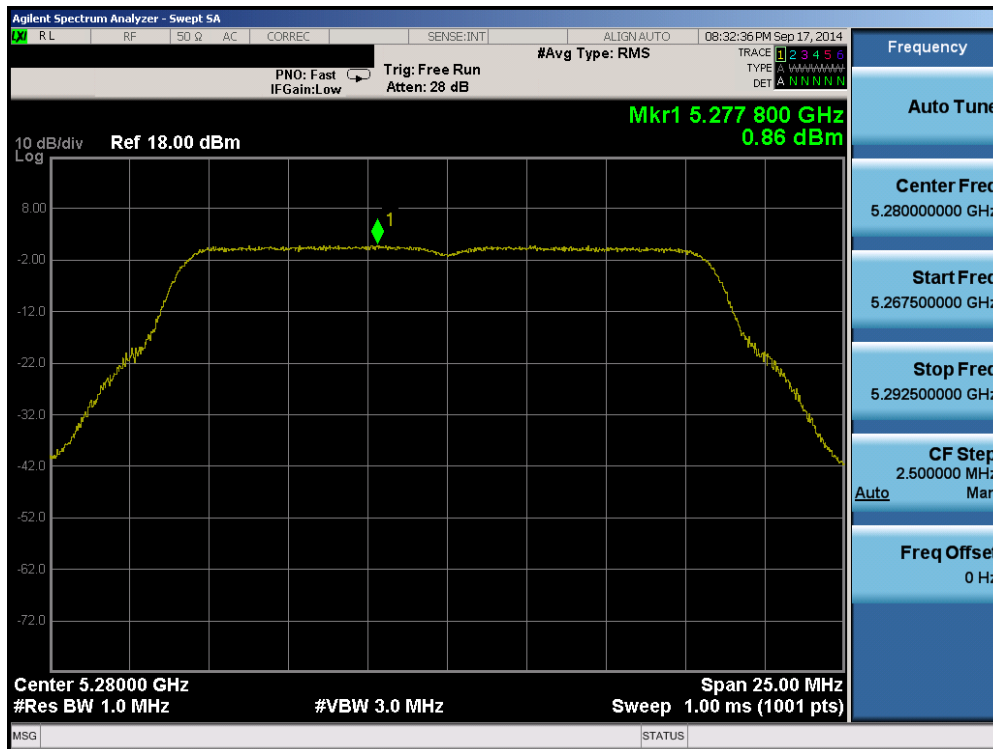


Plot 6-77. Peak Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)

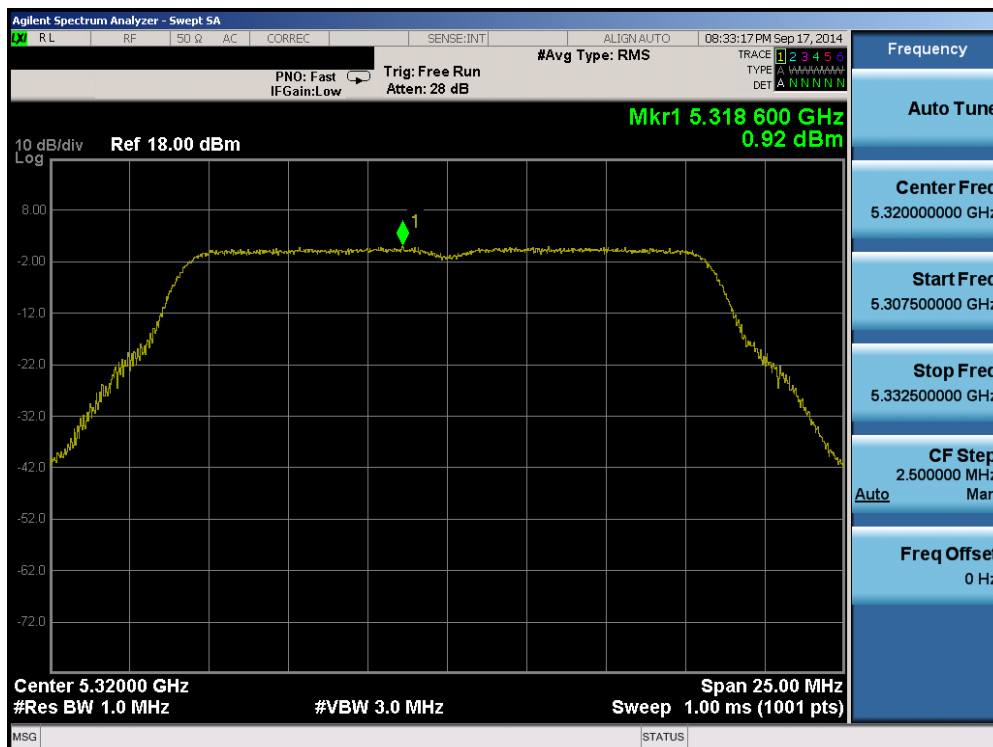


Plot 6-78. Peak Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 52)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 62 of 182                  |

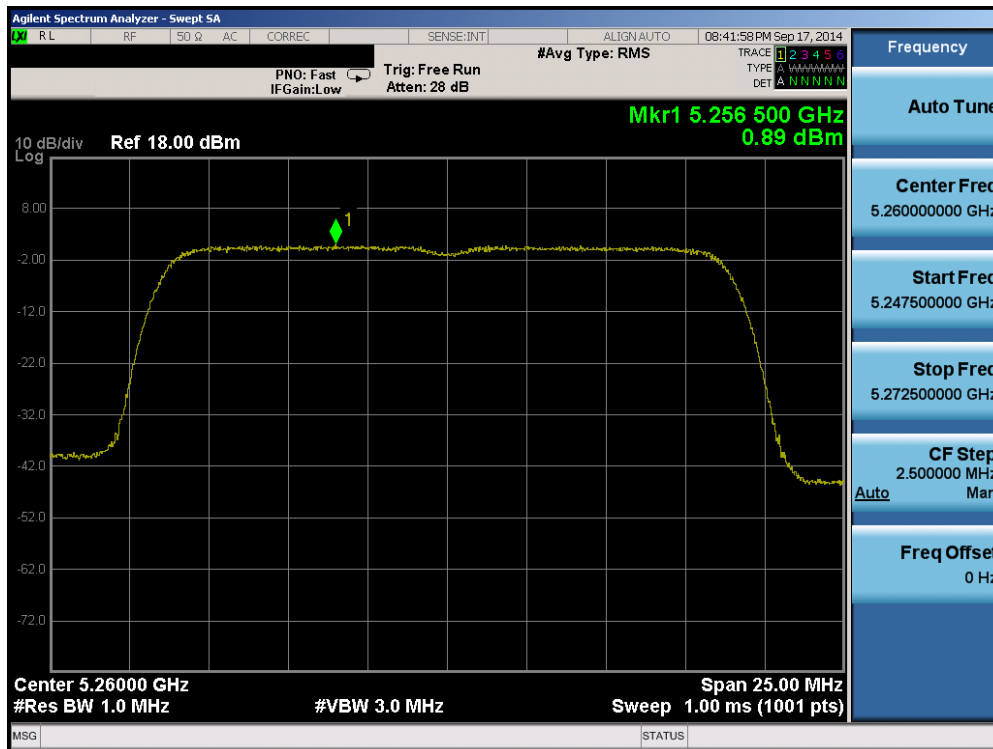


Plot 6-79. Peak Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 56)

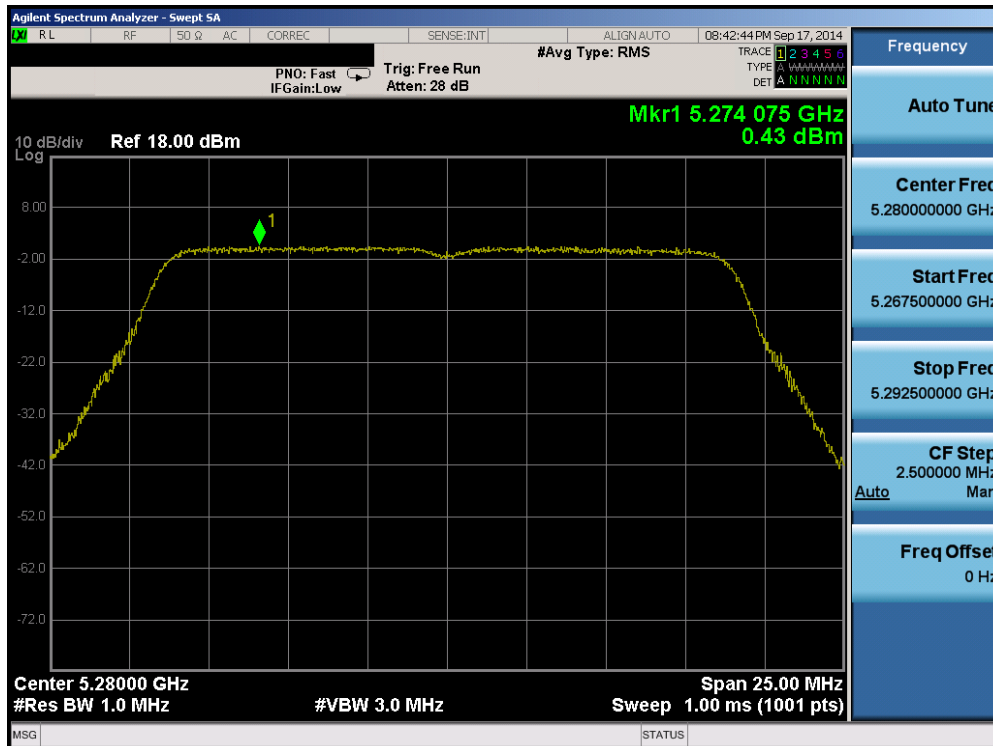


Plot 6-80. Peak Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 64)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 63 of 182                  |

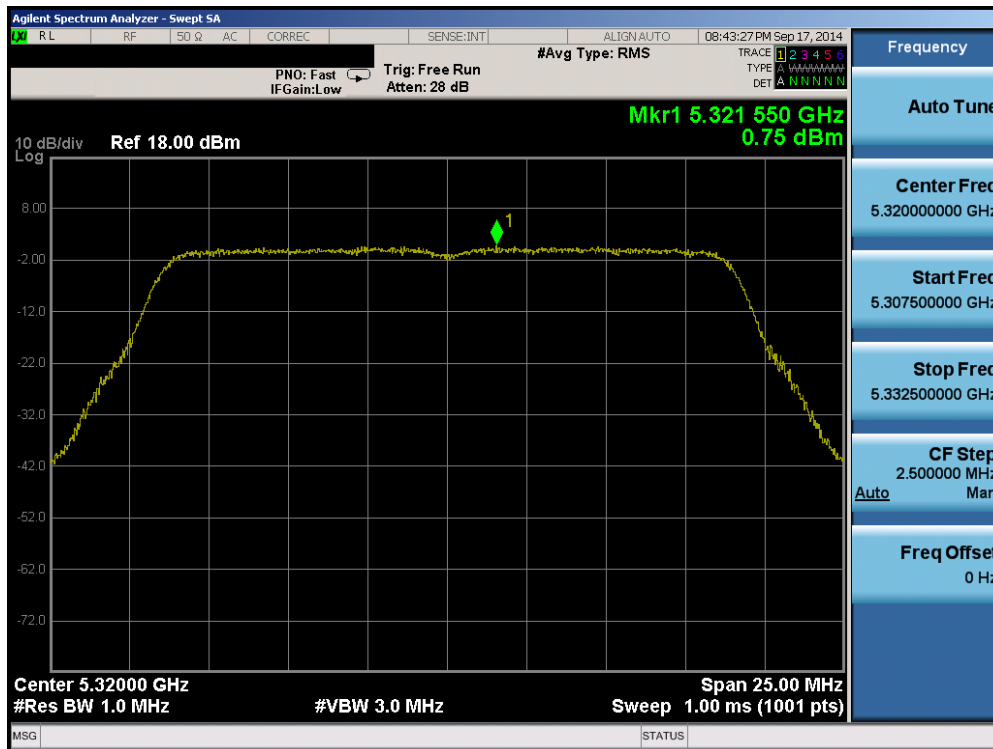


Plot 6-81. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 52)

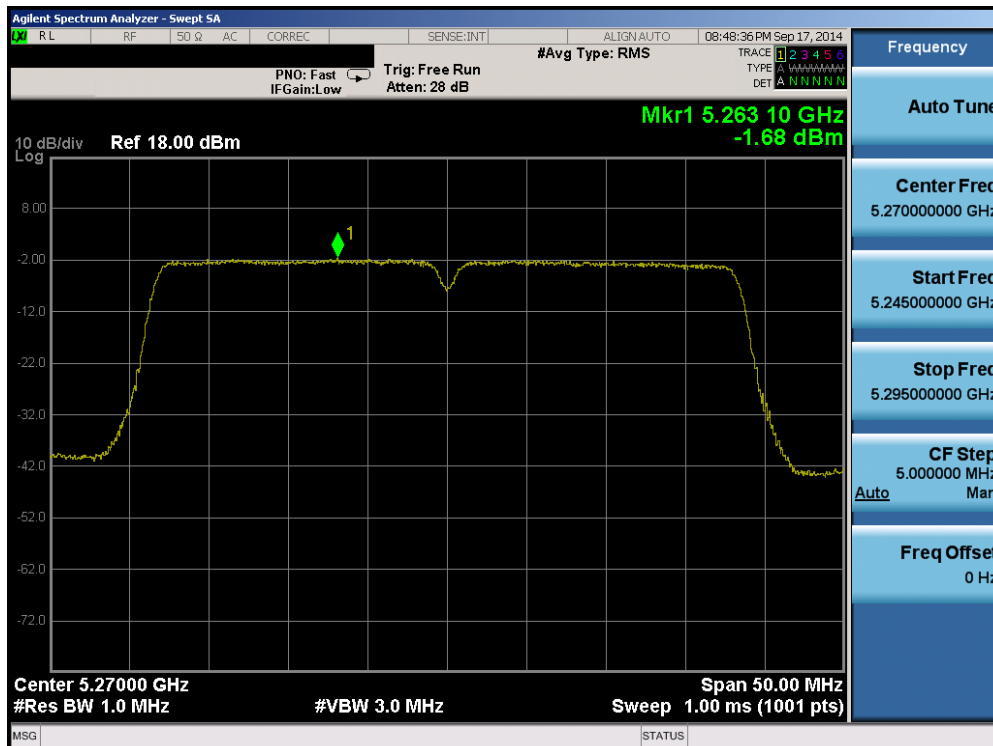


Plot 6-82. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 56)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 64 of 182                  |

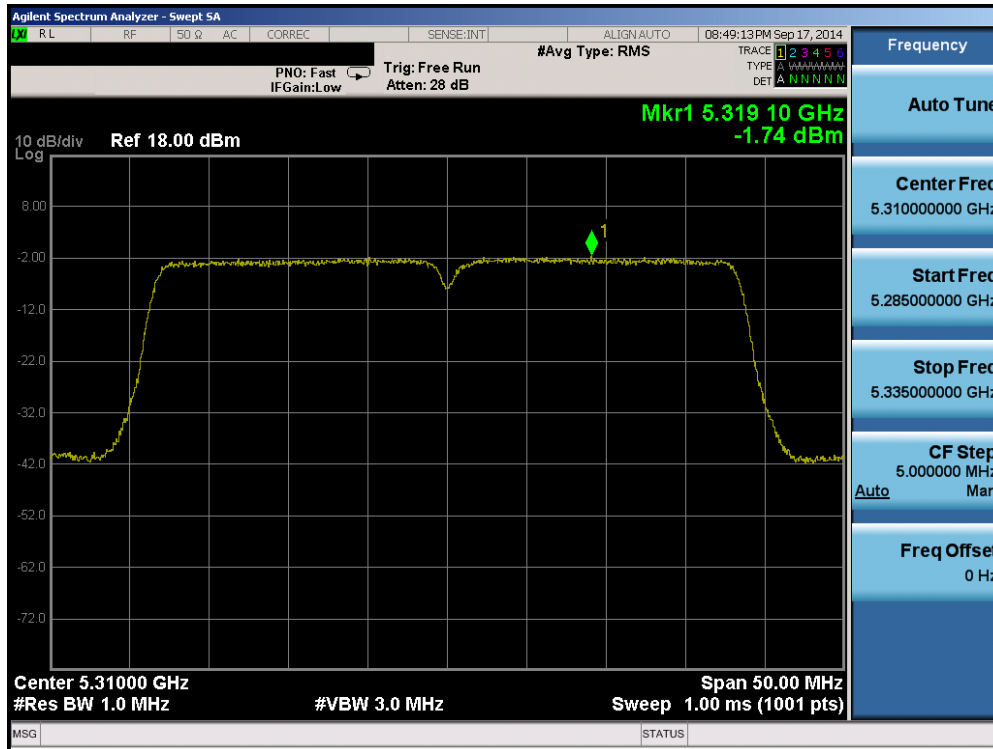


Plot 6-83. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)

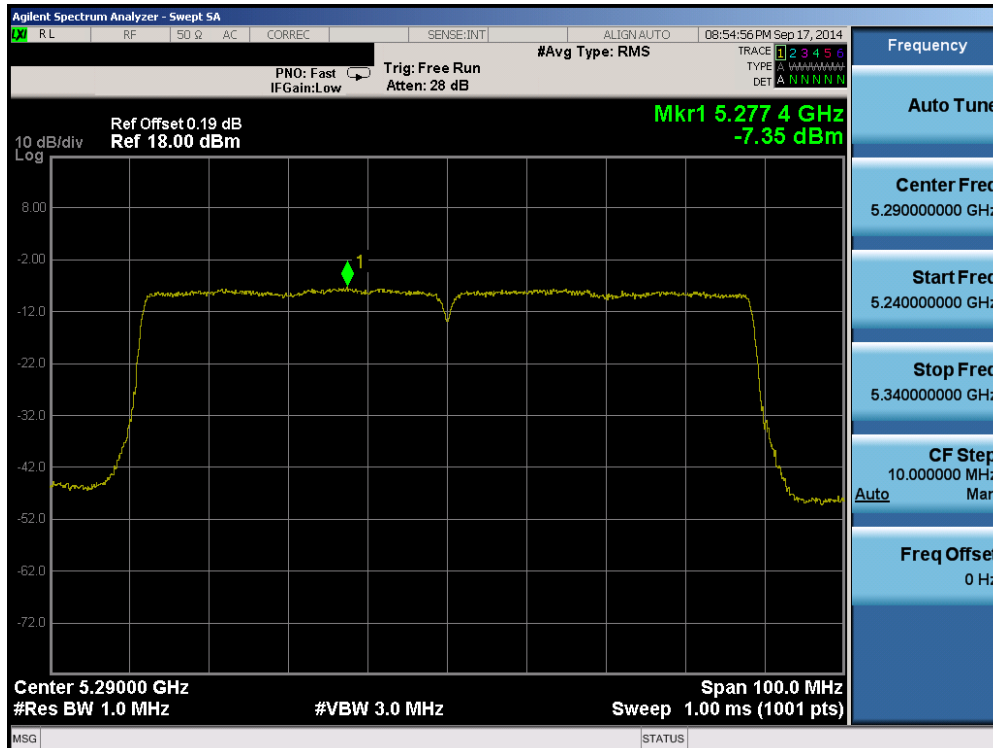


Plot 6-84. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 54)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 65 of 182                  |

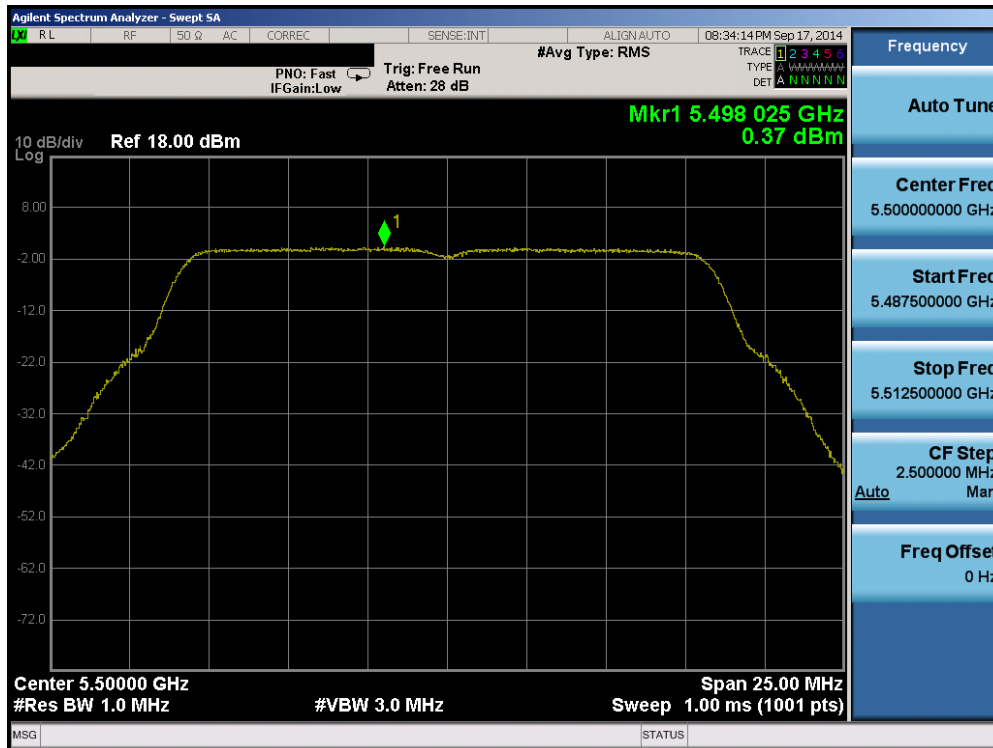


Plot 6-85. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)

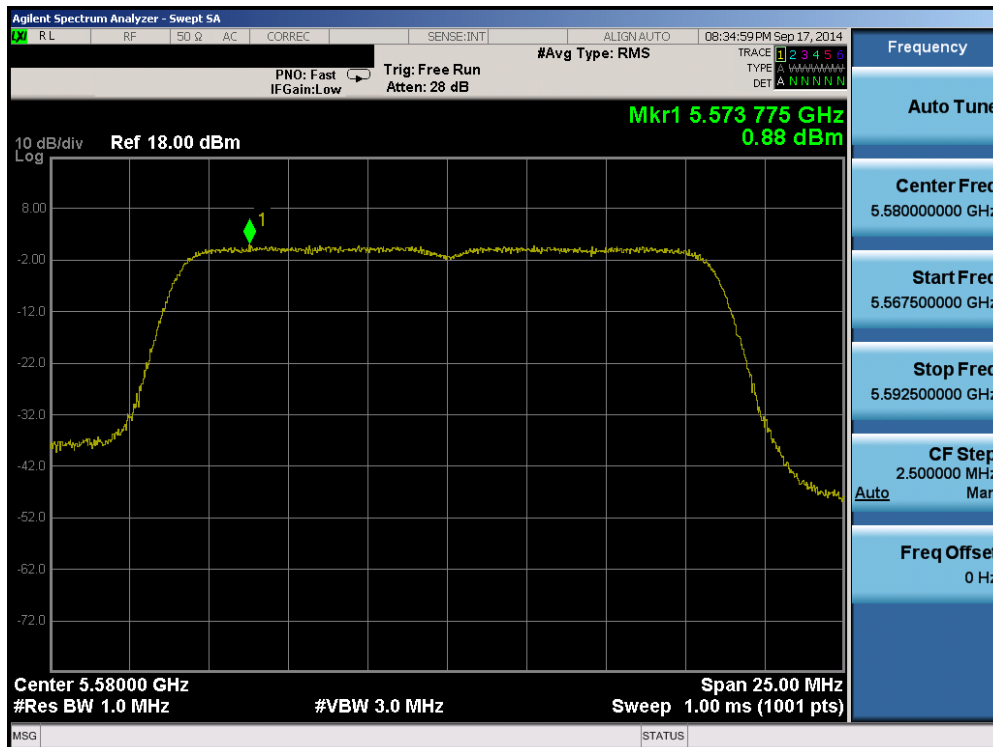


Plot 6-86. Peak Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 66 of 182                  |

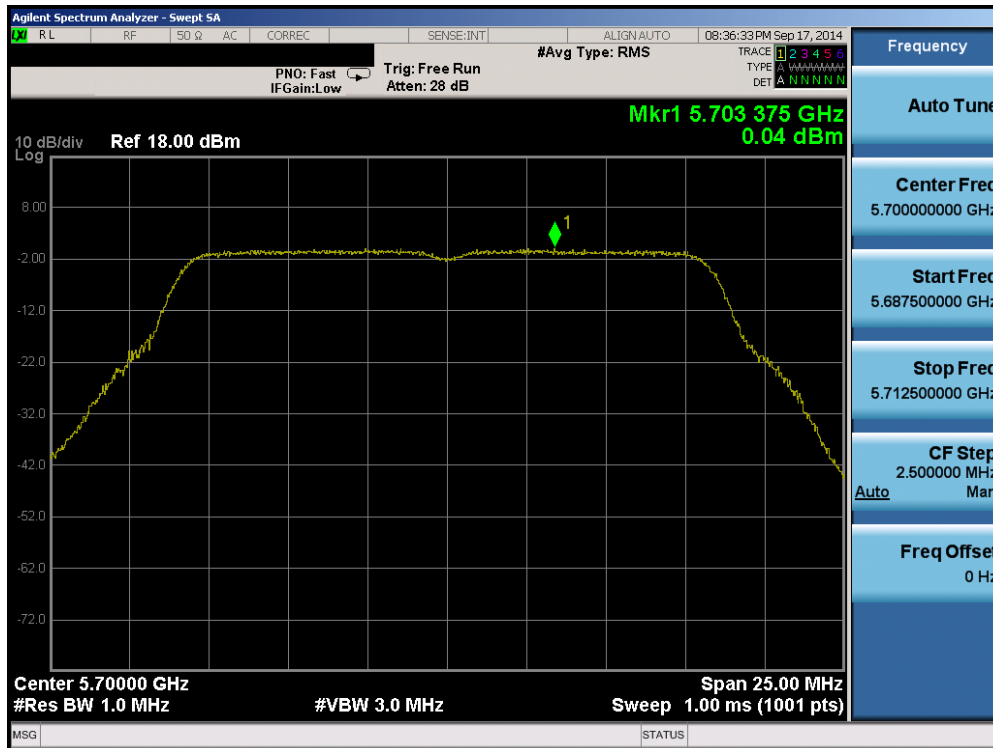


Plot 6-87. Peak Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 100)

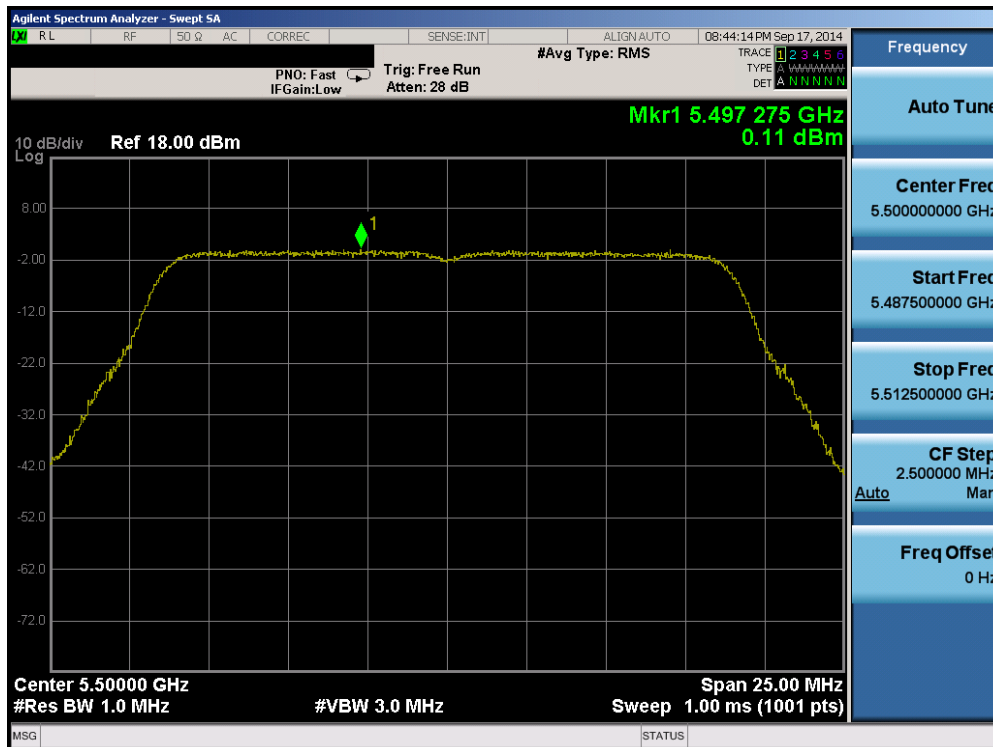


Plot 6-88. Peak Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 116)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 67 of 182                  |

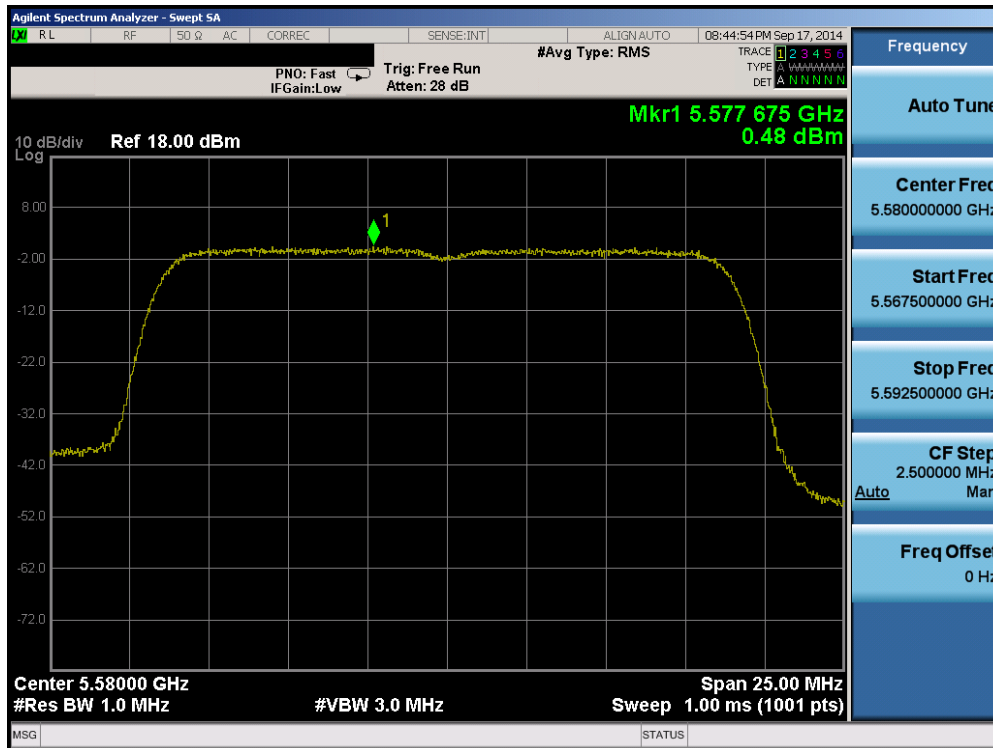


Plot 6-89. Peak Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 140)

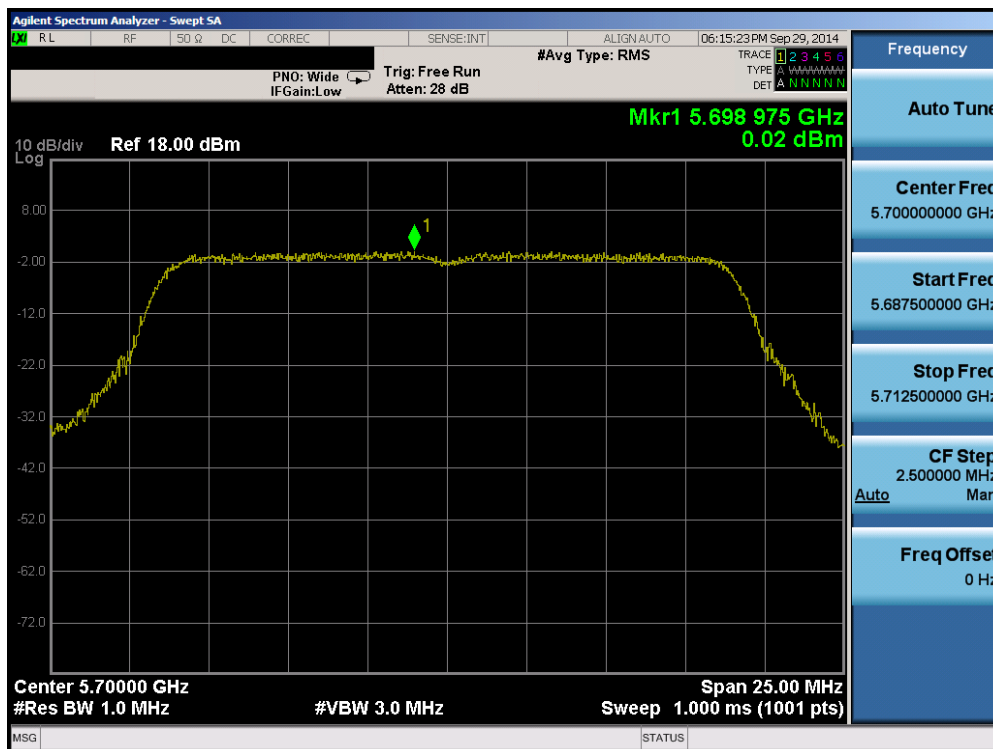


Plot 6-90. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 100)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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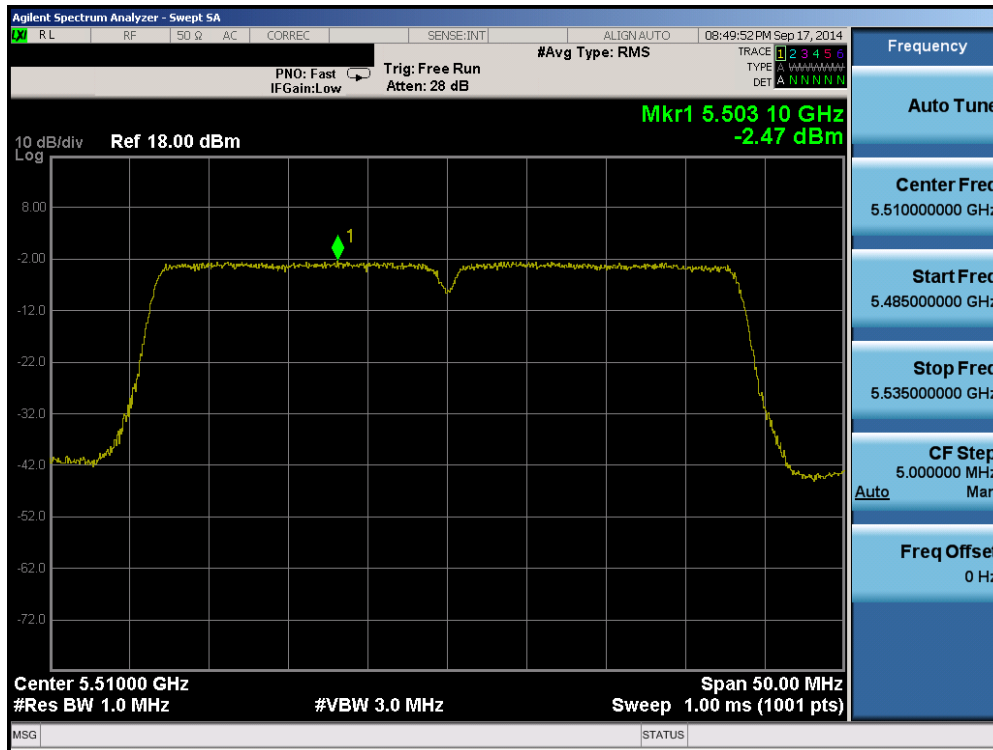


Plot 6-91. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 116)

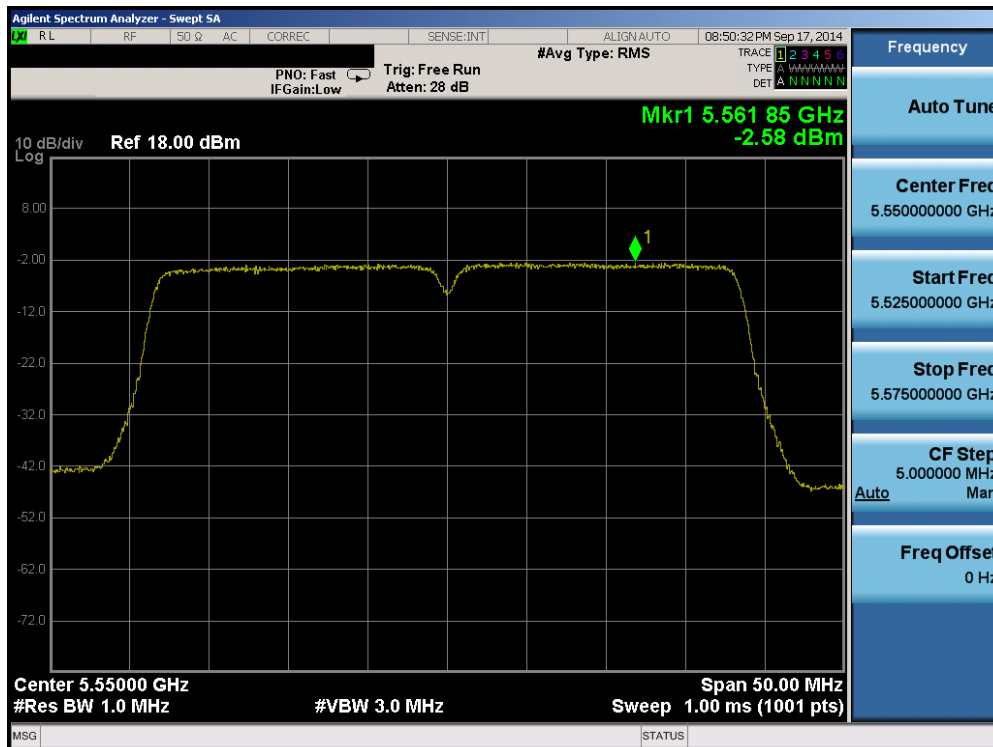


Plot 6-92. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 140)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 69 of 182                  |

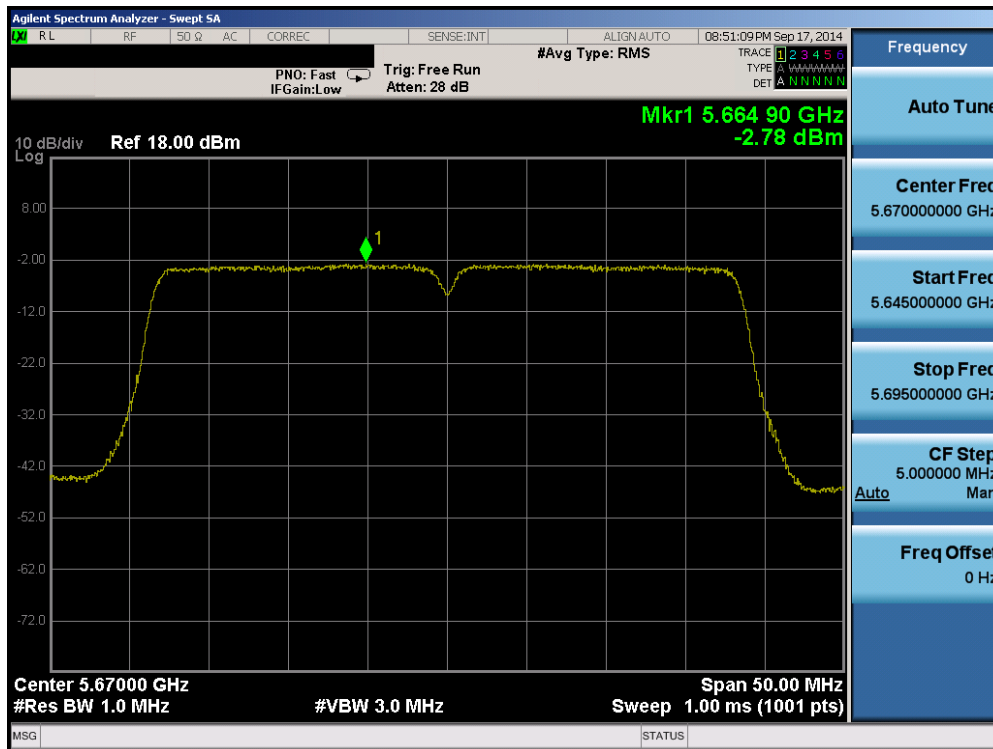


Plot 6-93. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)

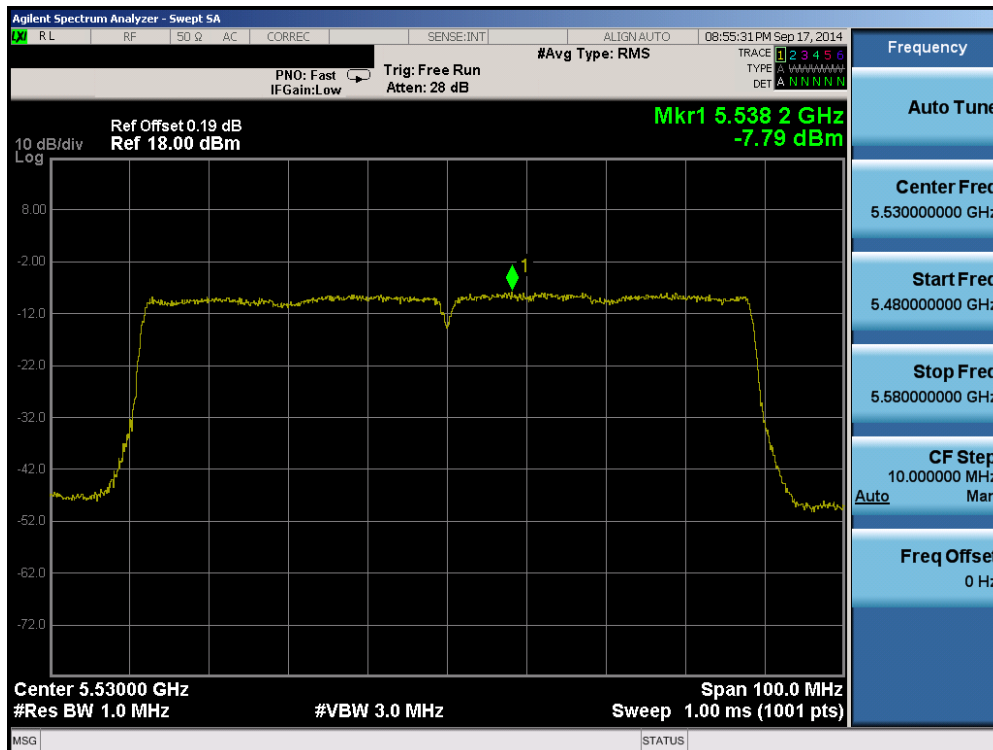


Plot 6-94. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 110)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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Plot 6-95. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 134)



Plot 6-96. Peak Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)

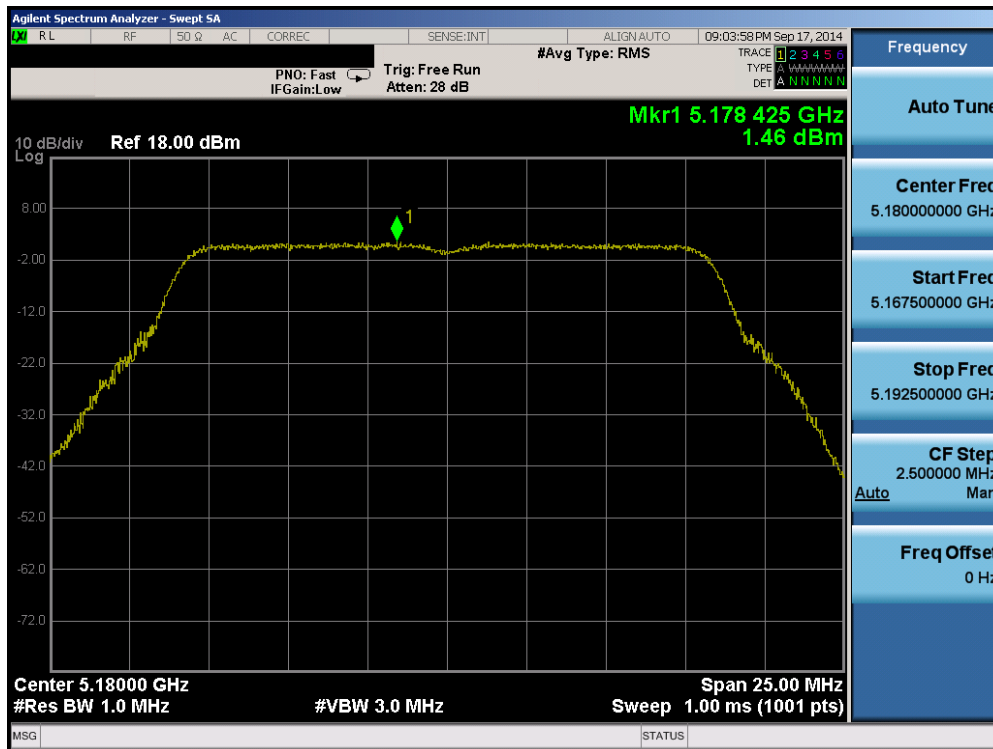
|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 71 of 182                  |

## Antenna-2 Power Spectral Density Measurements

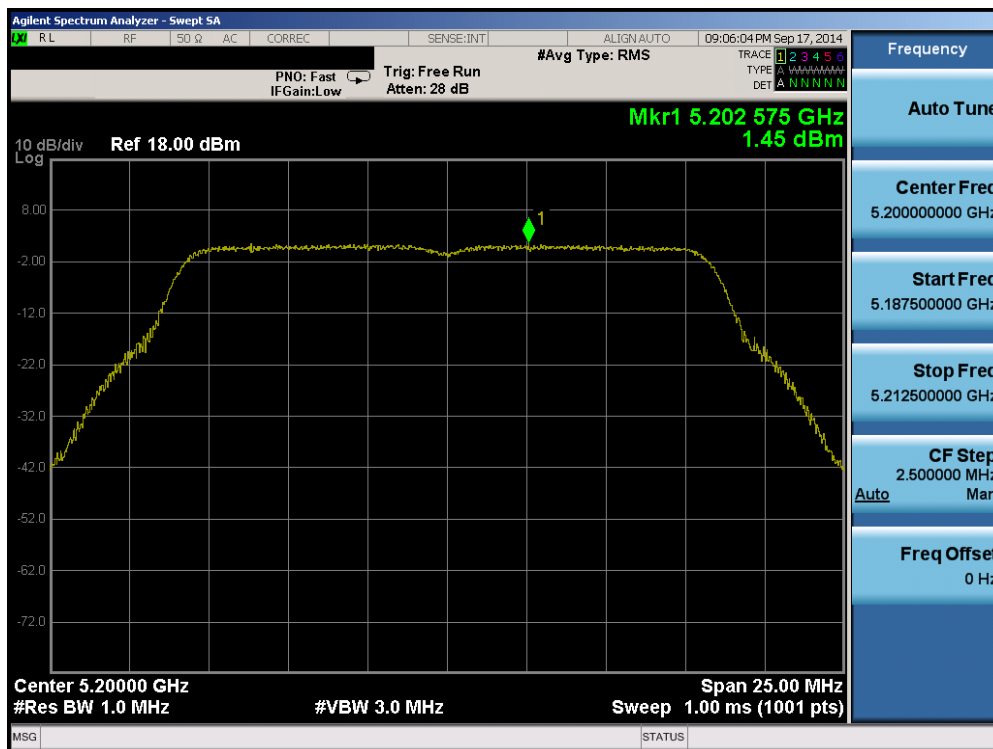
|         | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Power Density [dBm] | Max Permissible Power Density [dBm/MHz] | Margin [dB] | Pass / Fail |
|---------|-----------------|-------------|-------------|------------------|------------------------------|-----------------------------------------|-------------|-------------|
| Band 1  | 5180            | 36          | a           | 6                | 1.46                         | 4.0                                     | -2.54       | Pass        |
|         | 5200            | 40          | a           | 6                | 1.45                         | 4.0                                     | -2.55       | Pass        |
|         | 5240            | 48          | a           | 6                | 1.39                         | 4.0                                     | -2.61       | Pass        |
|         | 5180            | 36          | n (20MHz)   | 6.5/7.2 (MCS0)   | 1.01                         | 4.0                                     | -2.99       | Pass        |
|         | 5200            | 40          | n (20MHz)   | 6.5/7.2 (MCS0)   | 1.11                         | 4.0                                     | -2.89       | Pass        |
|         | 5240            | 48          | n (20MHz)   | 6.5/7.2 (MCS0)   | 1.13                         | 4.0                                     | -2.88       | Pass        |
|         | 5190            | 38          | n (40MHz)   | 13.5/15 (MCS0)   | -1.20                        | 4.0                                     | -5.20       | Pass        |
|         | 5230            | 46          | n (40MHz)   | 13.5/15 (MCS0)   | -1.45                        | 4.0                                     | -5.45       | Pass        |
|         | 5210            | 42          | ac (80MHz)  | 29.3/32.5 (MCS0) | -5.44                        | 4.0                                     | -9.44       | Pass        |
| Band 2A | 5260            | 52          | a           | 6                | 1.48                         | 11.0                                    | -9.52       | Pass        |
|         | 5280            | 56          | a           | 6                | 1.59                         | 11.0                                    | -9.41       | Pass        |
|         | 5320            | 64          | a           | 6                | 1.68                         | 11.0                                    | -9.32       | Pass        |
|         | 5260            | 52          | n (20MHz)   | 6.5/7.2 (MCS0)   | 1.04                         | 11.0                                    | -9.96       | Pass        |
|         | 5280            | 56          | n (20MHz)   | 6.5/7.2 (MCS0)   | 1.04                         | 11.0                                    | -9.96       | Pass        |
|         | 5320            | 64          | n (20MHz)   | 6.5/7.2 (MCS0)   | 1.47                         | 11.0                                    | -9.53       | Pass        |
|         | 5270            | 54          | n (40MHz)   | 13.5/15 (MCS0)   | -1.10                        | 11.0                                    | -12.10      | Pass        |
|         | 5310            | 62          | n (40MHz)   | 13.5/15 (MCS0)   | -0.93                        | 11.0                                    | -11.93      | Pass        |
|         | 5290            | 58          | ac (80MHz)  | 29.3/32.5 (MCS0) | -5.72                        | 11.0                                    | -16.72      | Pass        |
| Band 2C | 5500            | 100         | a           | 6                | 1.22                         | 11.0                                    | -9.78       | Pass        |
|         | 5580            | 116         | a           | 6                | 0.75                         | 11.0                                    | -10.25      | Pass        |
|         | 5700            | 140         | a           | 6                | 0.83                         | 11.0                                    | -10.17      | Pass        |
|         | 5500            | 100         | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.57                         | 11.0                                    | -10.43      | Pass        |
|         | 5580            | 116         | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.67                         | 11.0                                    | -10.33      | Pass        |
|         | 5700            | 140         | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.39                         | 11.0                                    | -10.61      | Pass        |
|         | 5510            | 102         | n (40MHz)   | 13.5/15 (MCS0)   | -1.92                        | 11.0                                    | -12.92      | Pass        |
|         | 5550            | 110         | n (40MHz)   | 13.5/15 (MCS0)   | -1.81                        | 11.0                                    | -12.81      | Pass        |
|         | 5670            | 134         | n (40MHz)   | 13.5/15 (MCS0)   | -1.89                        | 11.0                                    | -12.89      | Pass        |
|         | 5530            | 106         | ac (80MHz)  | 29.3/32.5 (MCS0) | -6.40                        | 11.0                                    | -17.40      | Pass        |

**Table 6-19. Conducted Power Spectral Density Measurements**

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       | Page 72 of 182                                                                        |                                 |

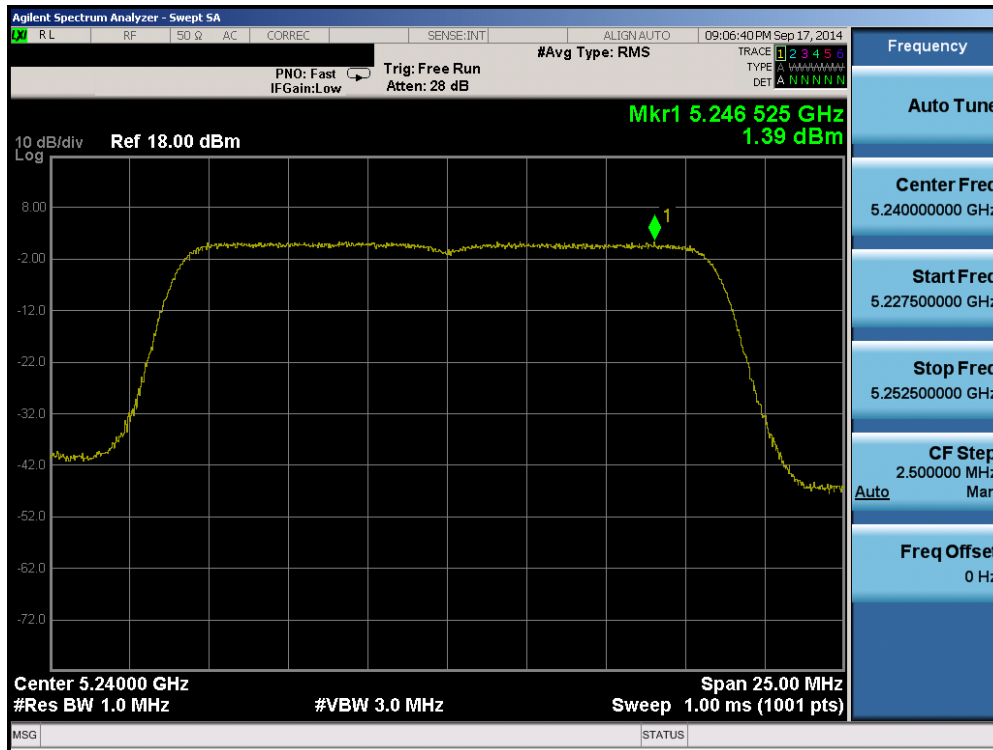


Plot 6-97. Peak Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 36)

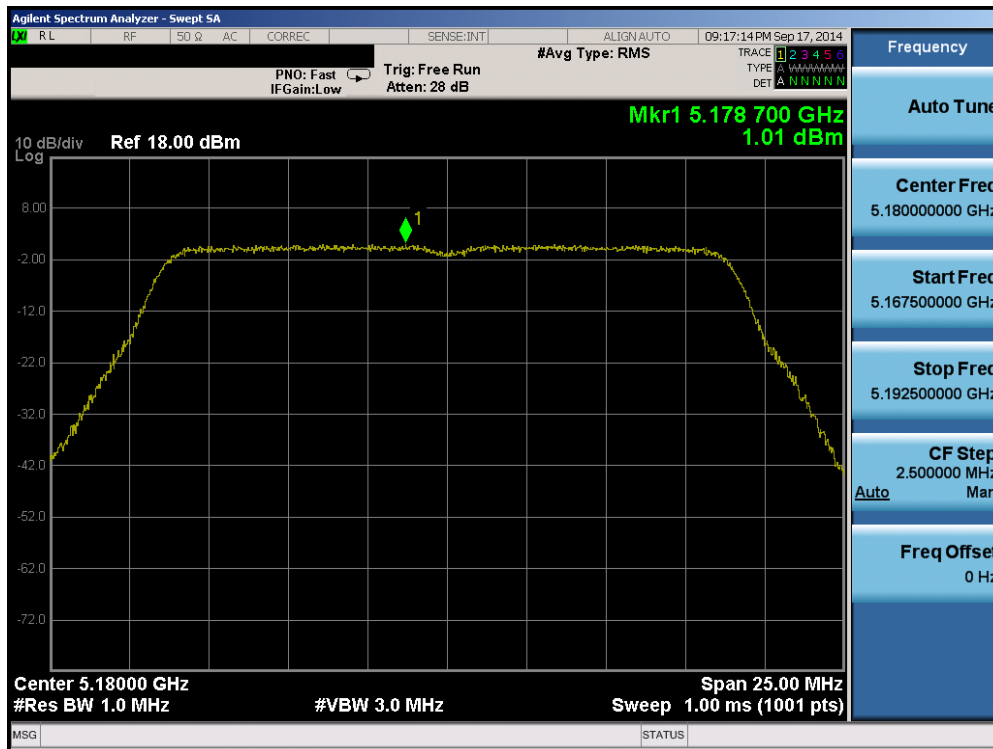


Plot 6-98. Peak Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 40)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 73 of 182                  |

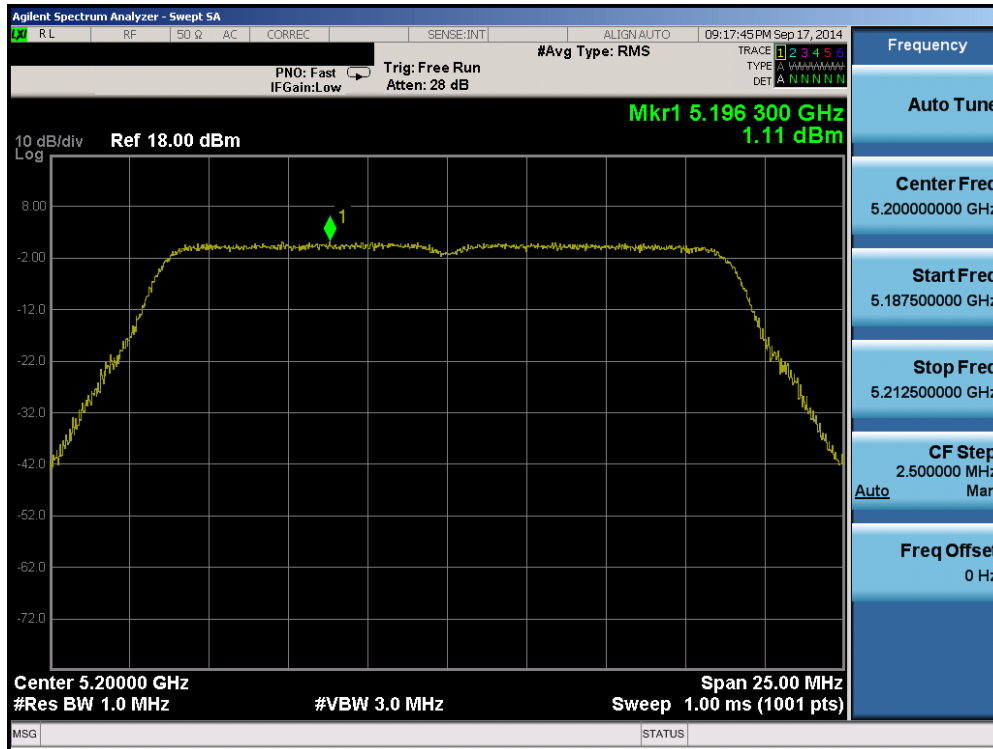


Plot 6-99. Peak Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)

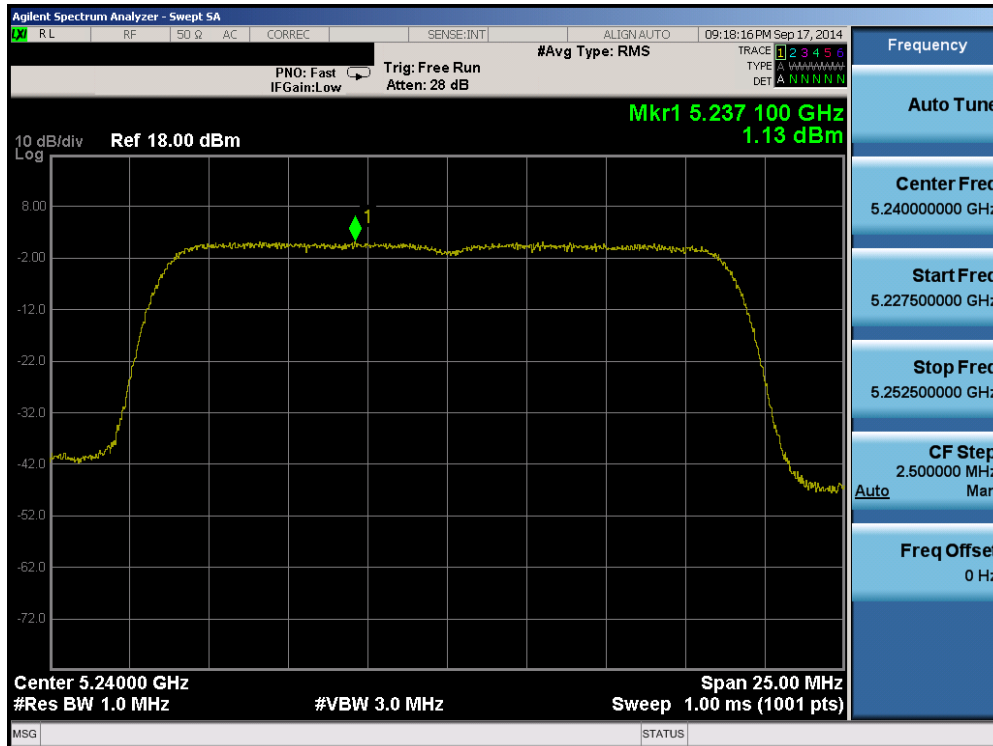


Plot 6-100. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 36)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 74 of 182                  |

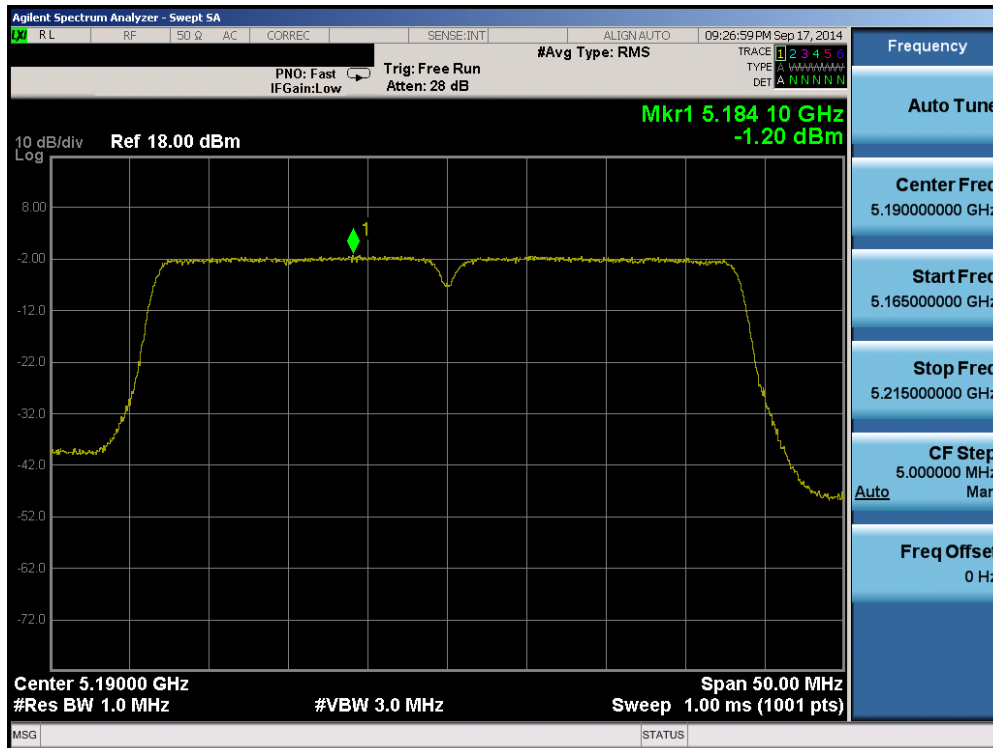


Plot 6-101. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 40)

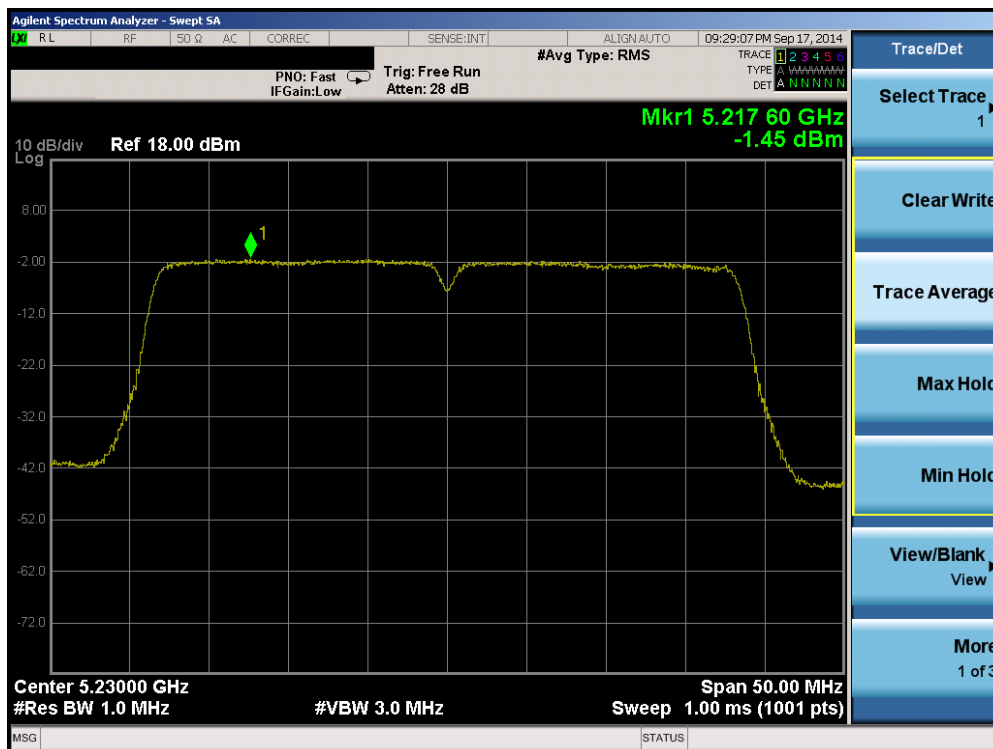


Plot 6-102. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 48)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 75 of 182                  |

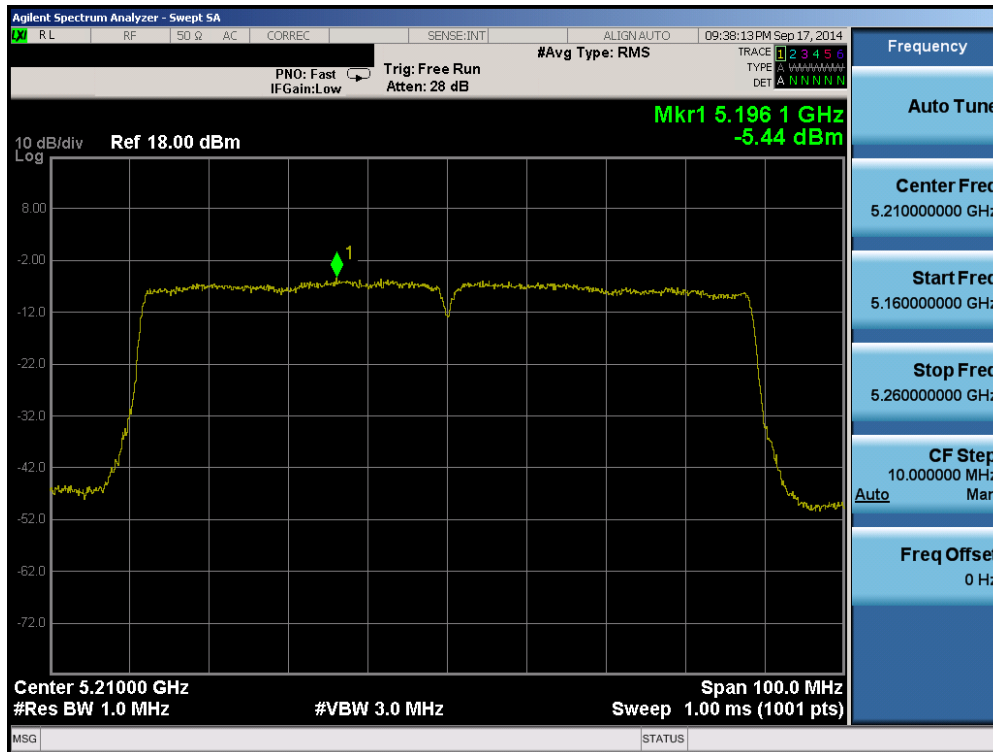


Plot 6-103. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)

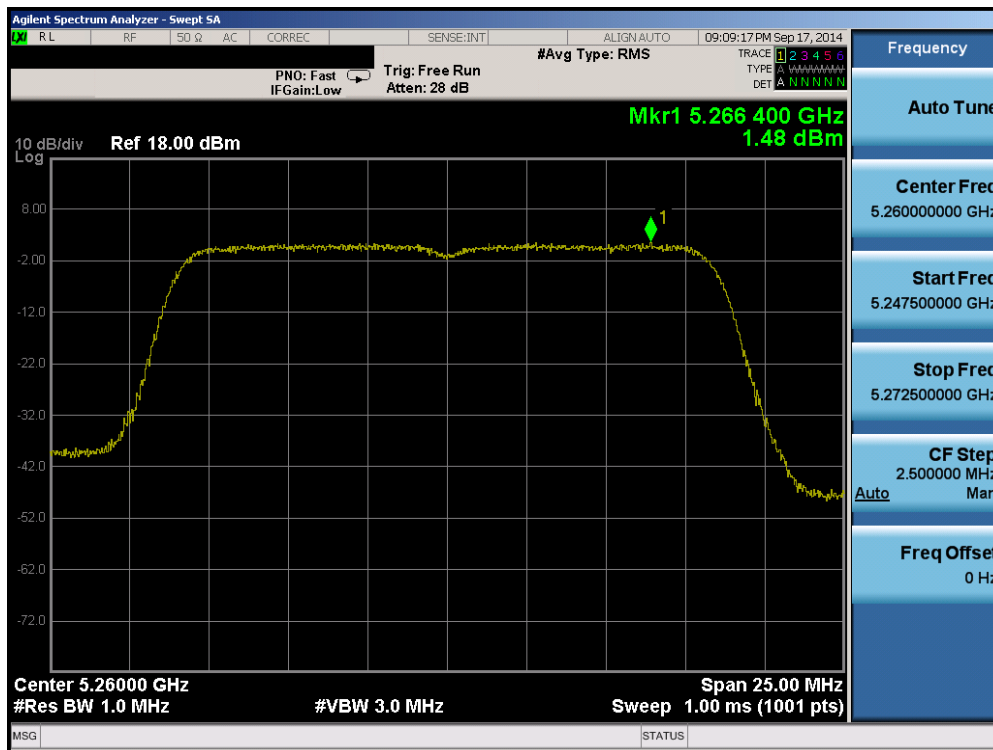


Plot 6-104. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 76 of 182                  |

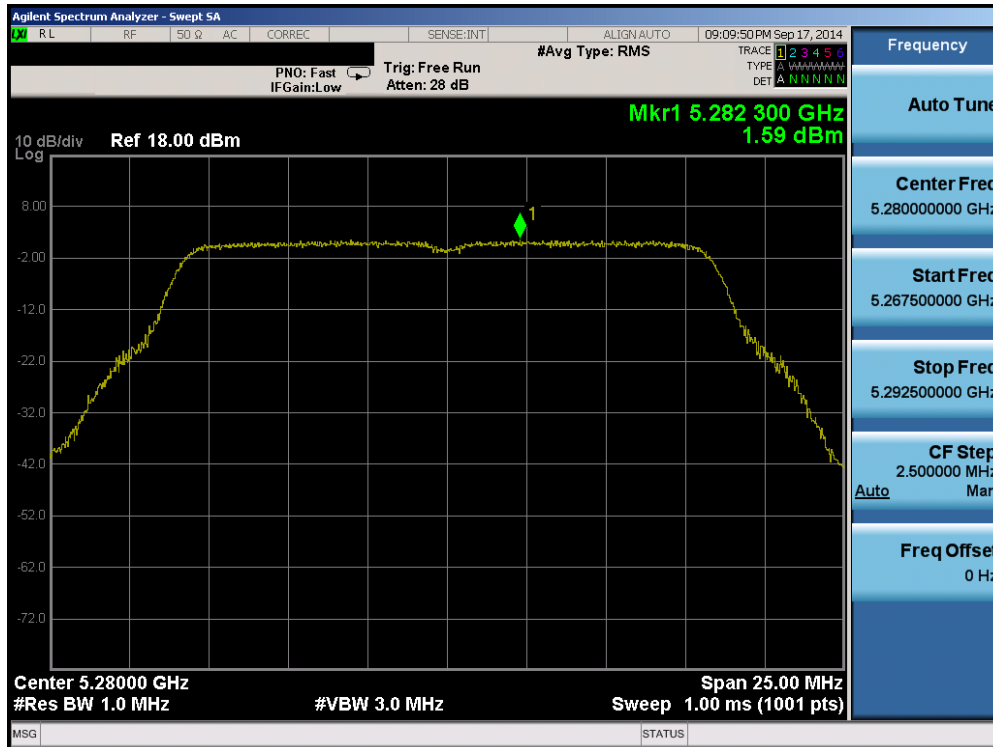


Plot 6-105. Peak Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 1) – Ch. 42)

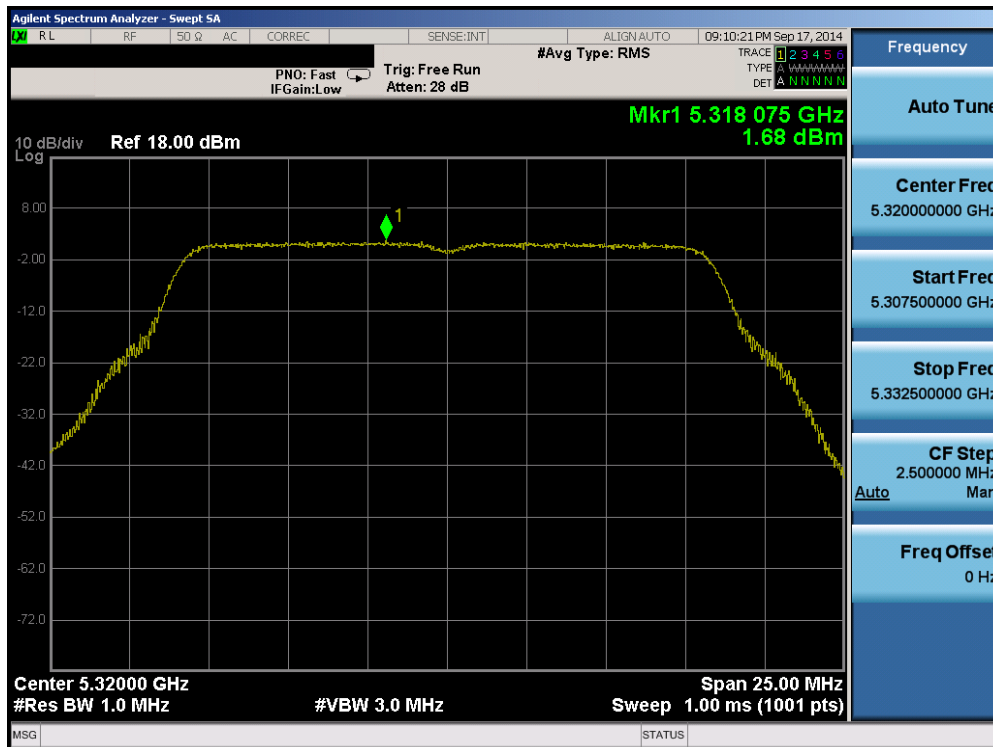


Plot 6-106. Peak Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 52)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 77 of 182                  |

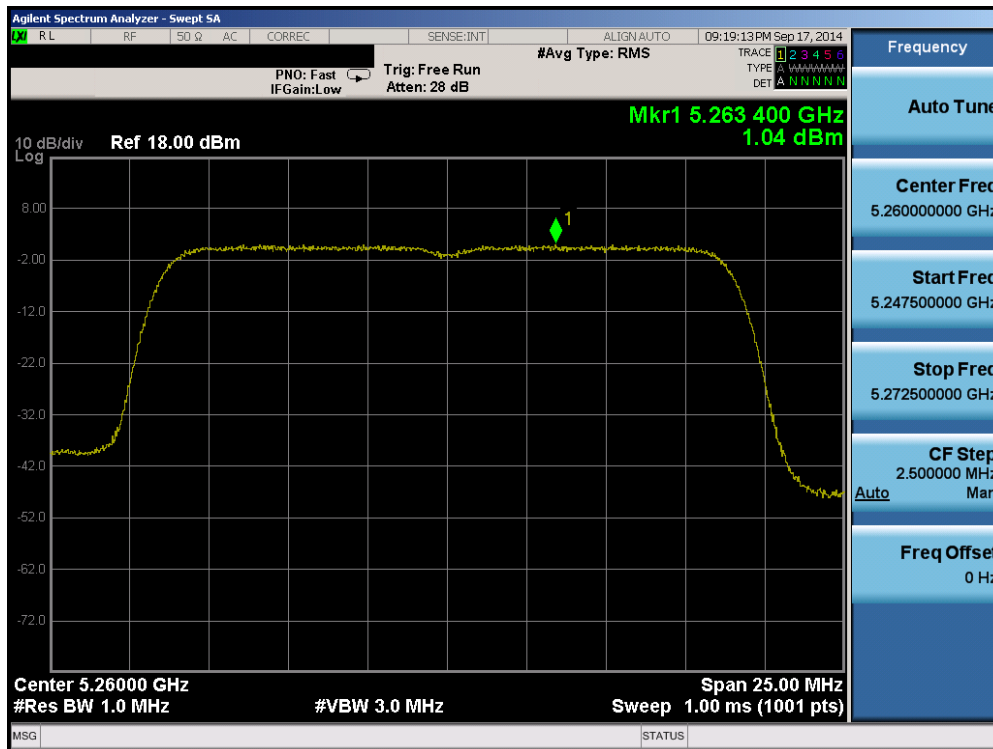


Plot 6-107. Peak Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 56)

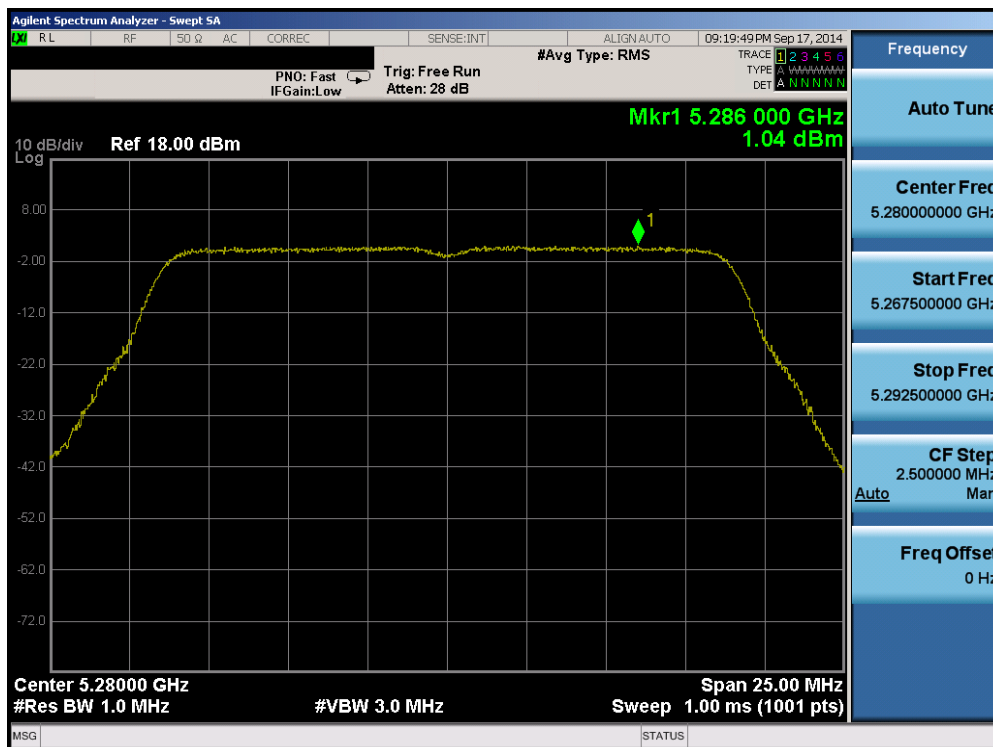


Plot 6-108. Peak Power Spectral Density Plot (802.11a (UNII Band 2A) – Ch. 64)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 78 of 182                  |

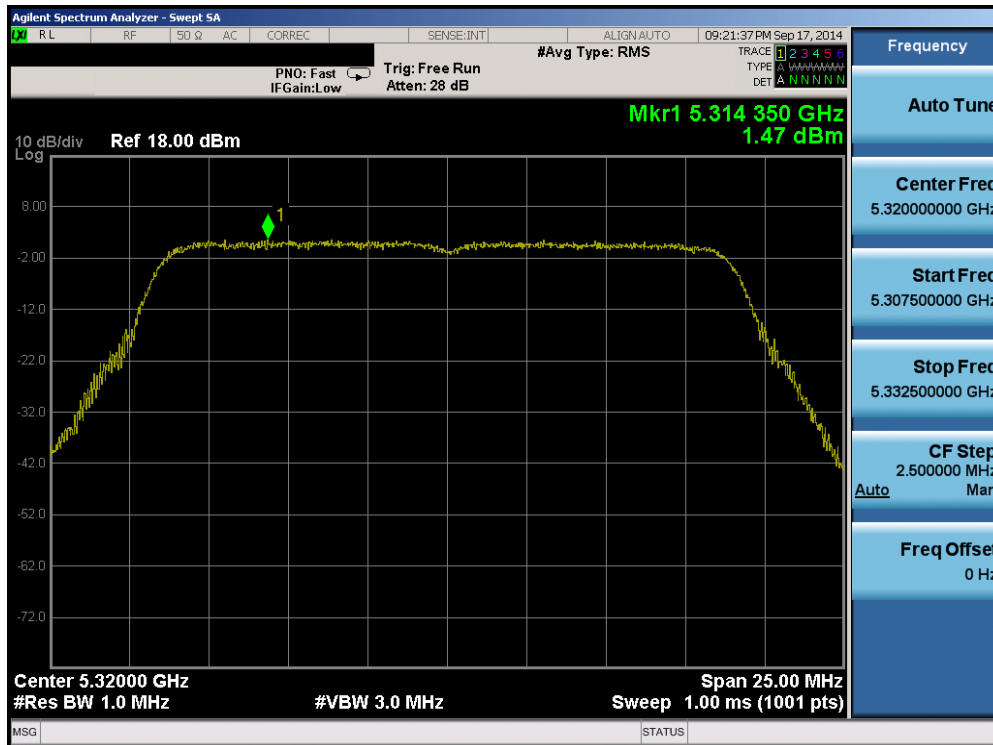


Plot 6-109. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 52)

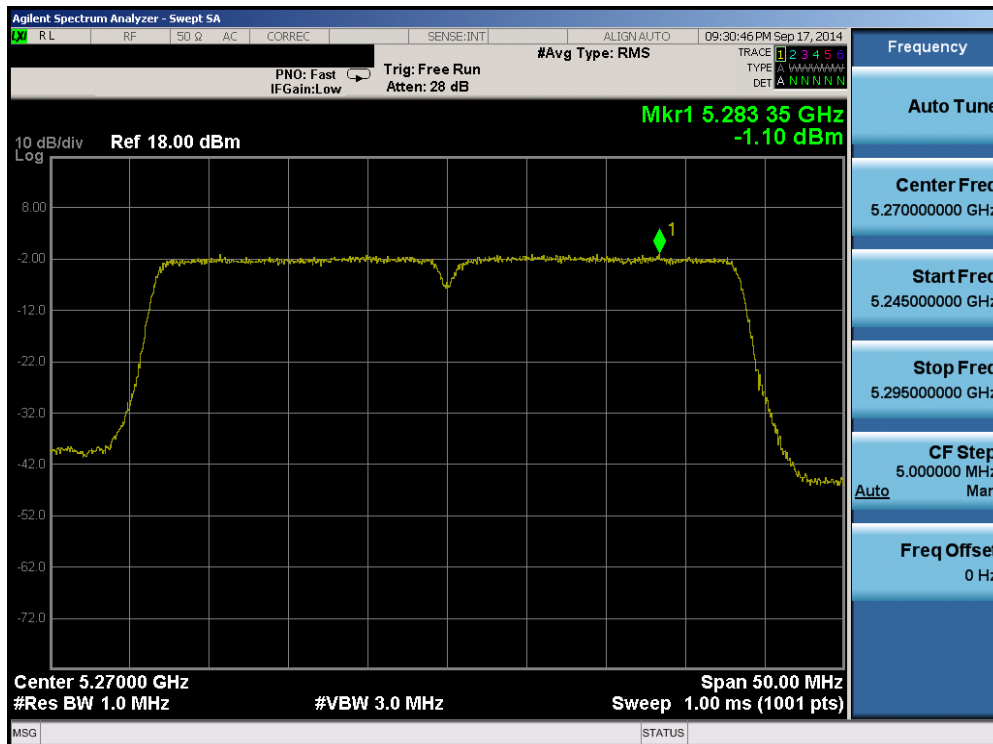


Plot 6-110. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 56)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 79 of 182                  |

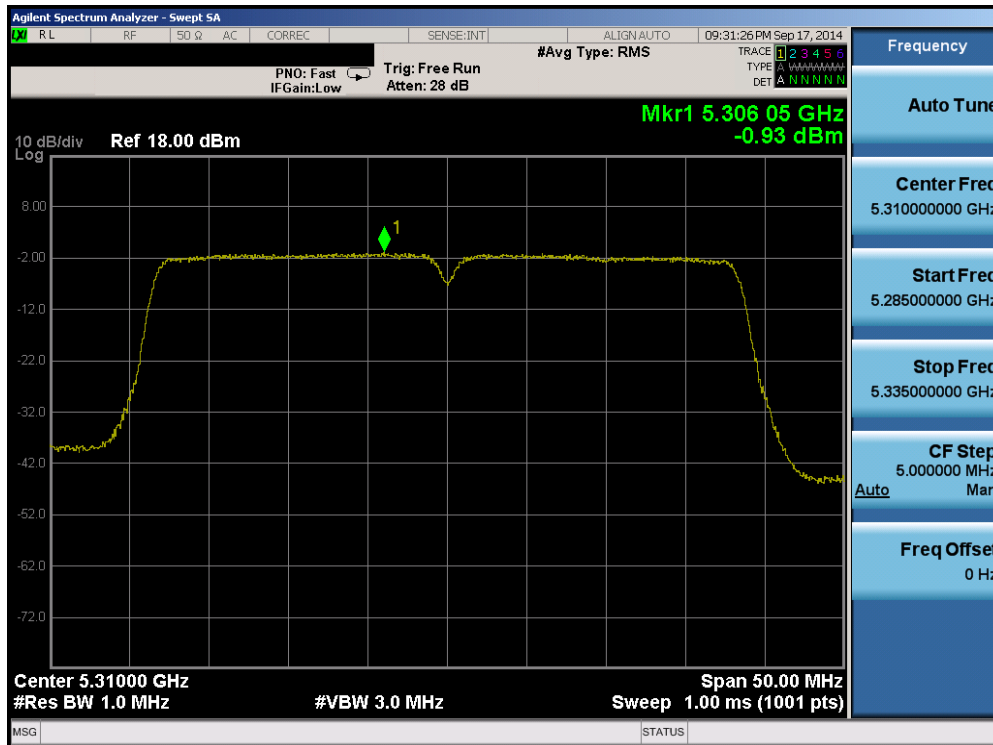


Plot 6-111. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) – Ch. 64)

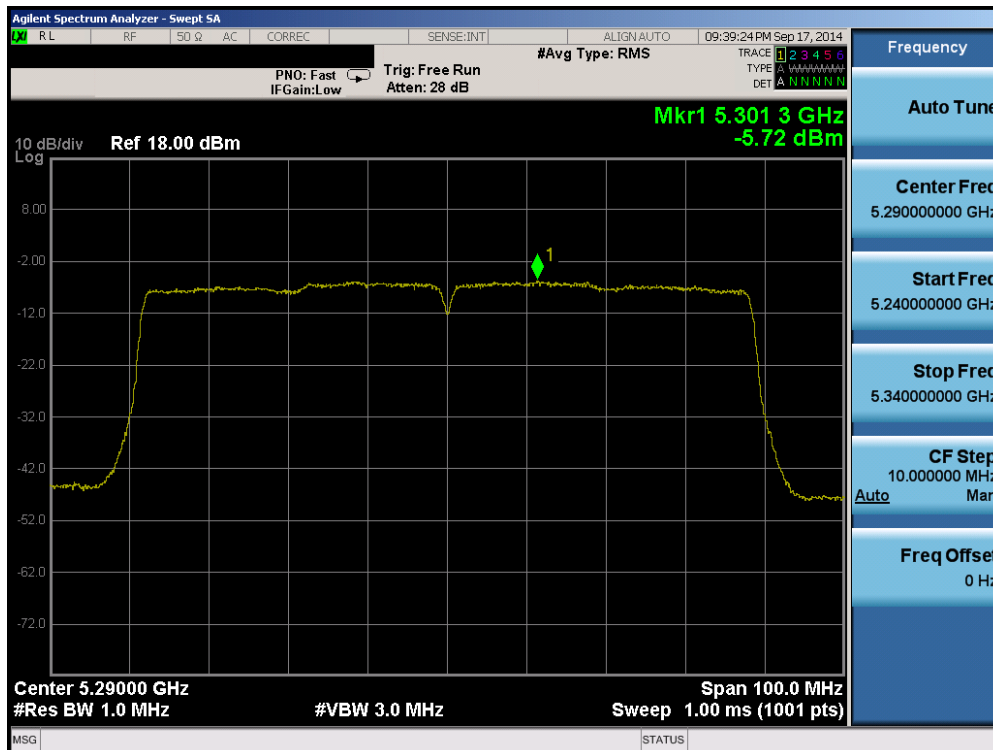


Plot 6-112. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 54)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 80 of 182                  |

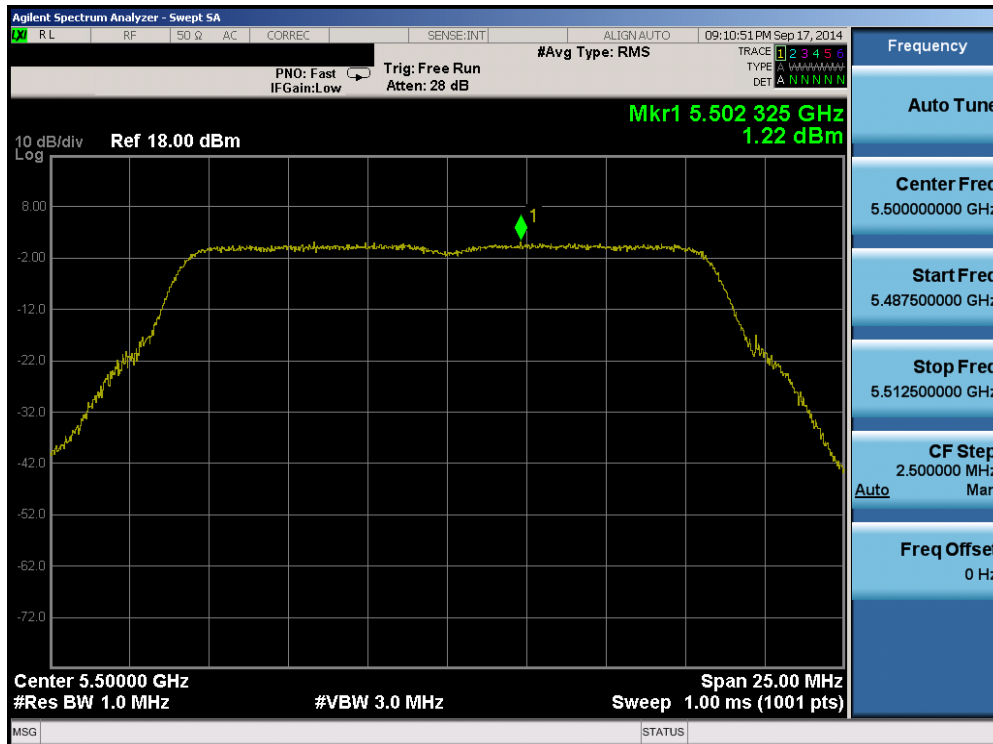


Plot 6-113. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)

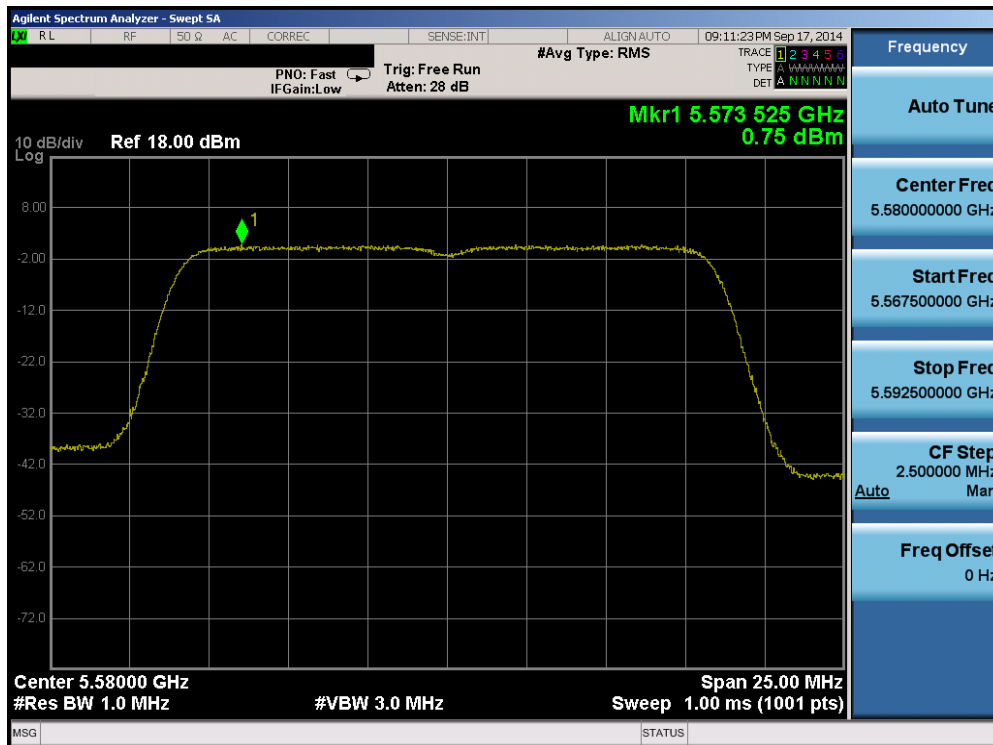


Plot 6-114. Peak Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 81 of 182                  |

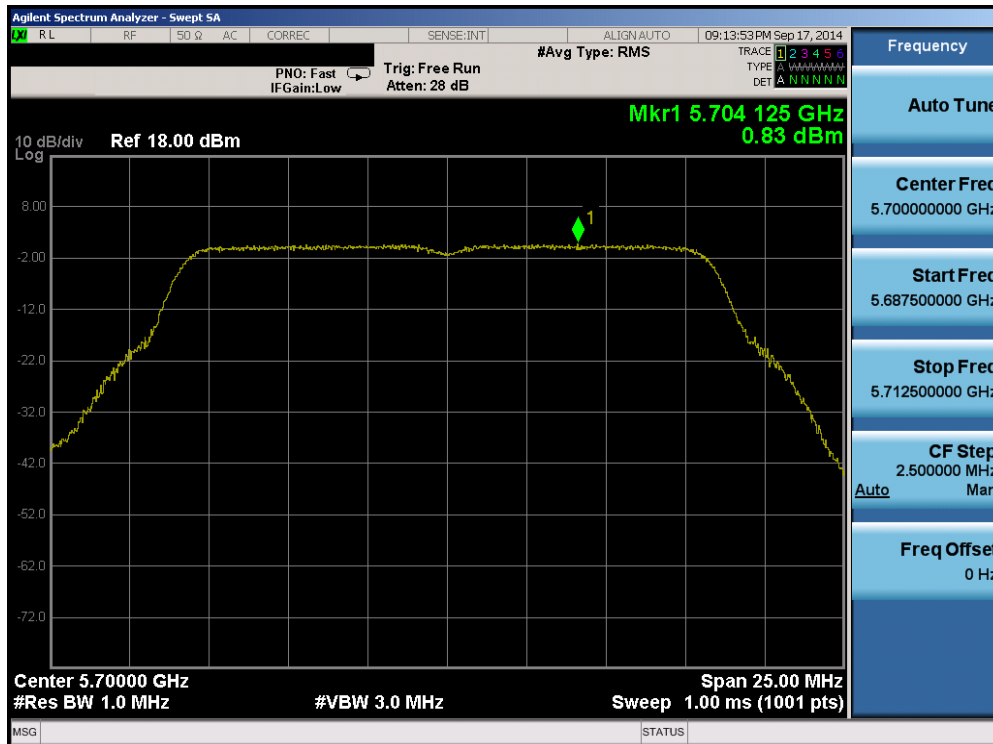


Plot 6-115. Peak Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 100)

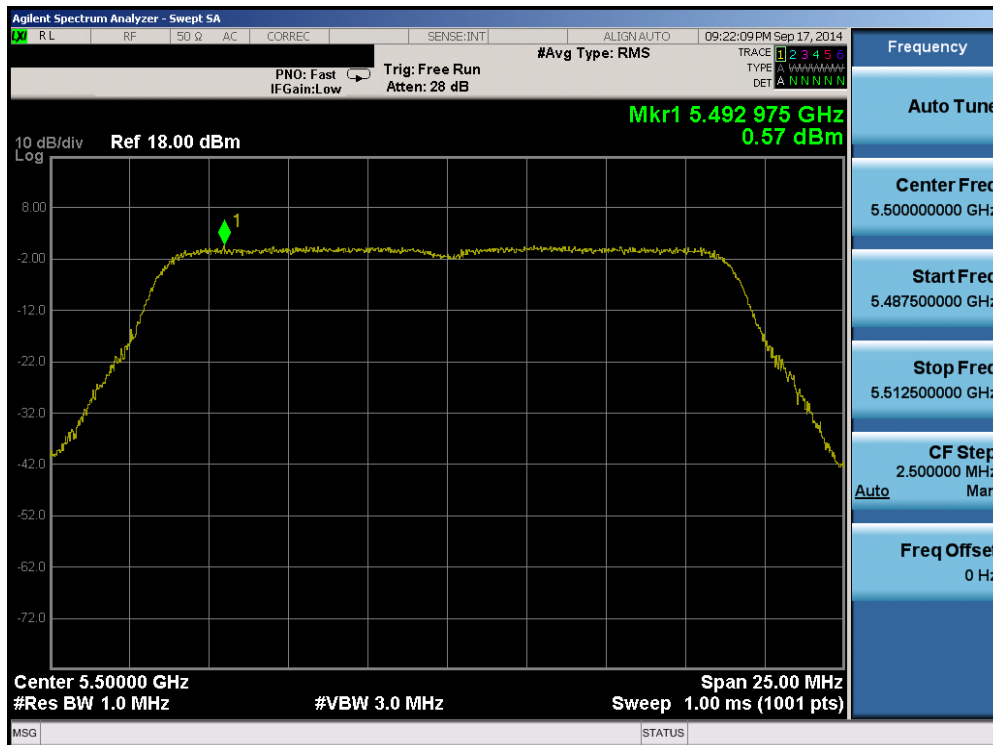


Plot 6-116. Peak Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 116)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 82 of 182                  |

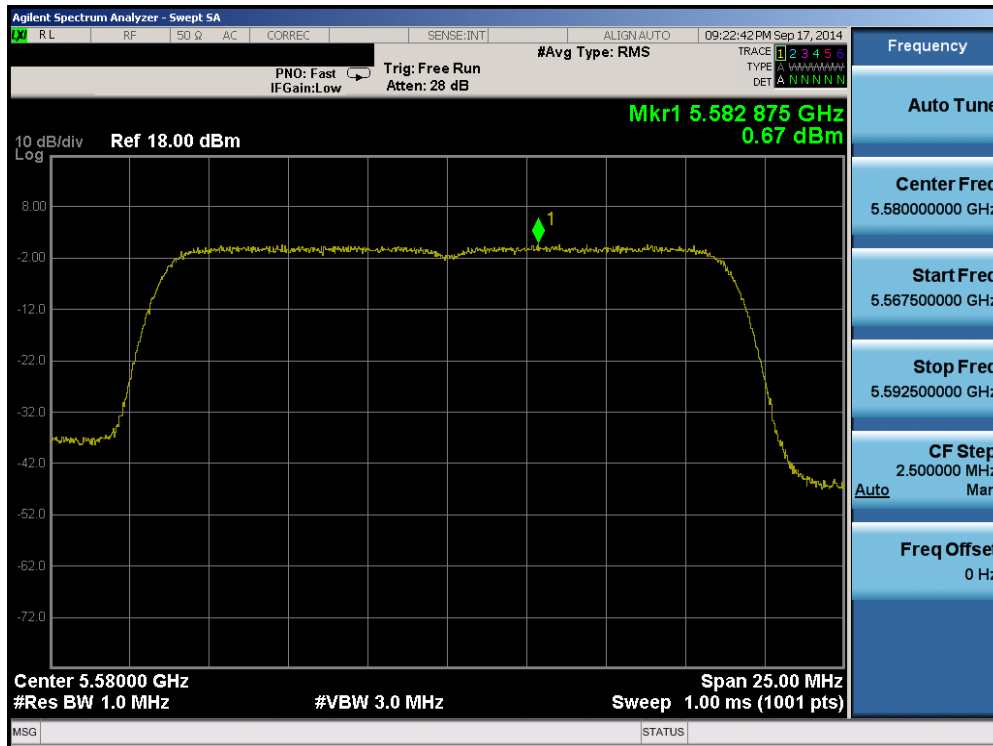


Plot 6-117. Peak Power Spectral Density Plot (802.11a (UNII Band 2C) – Ch. 140)

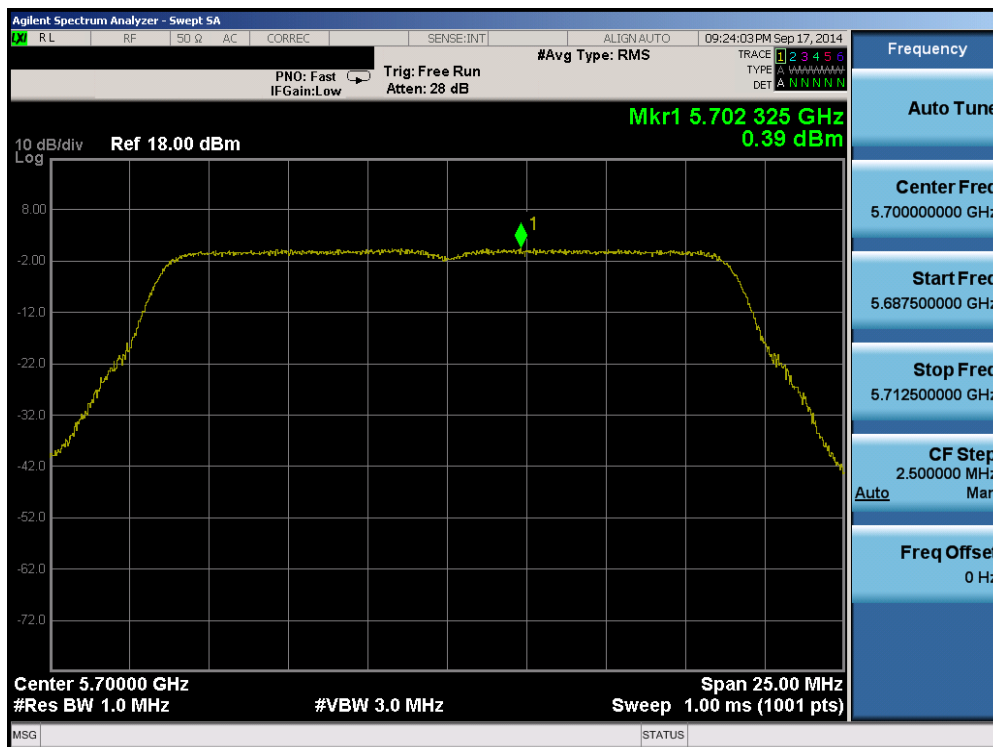


Plot 6-118. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 100)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 83 of 182                  |

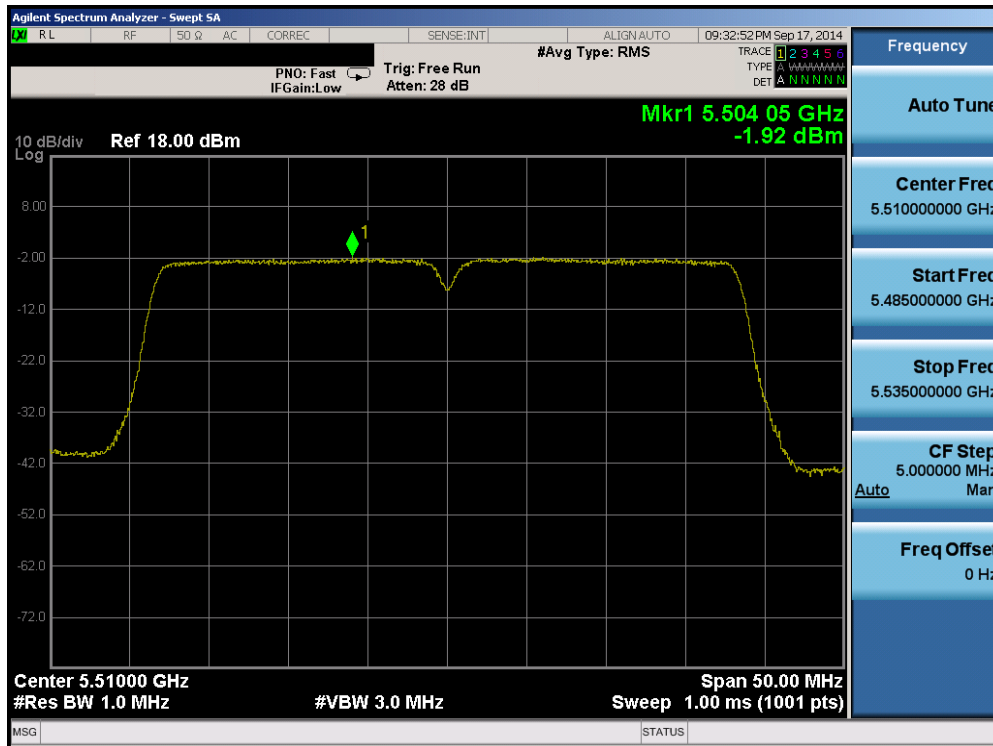


Plot 6-119. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 116)

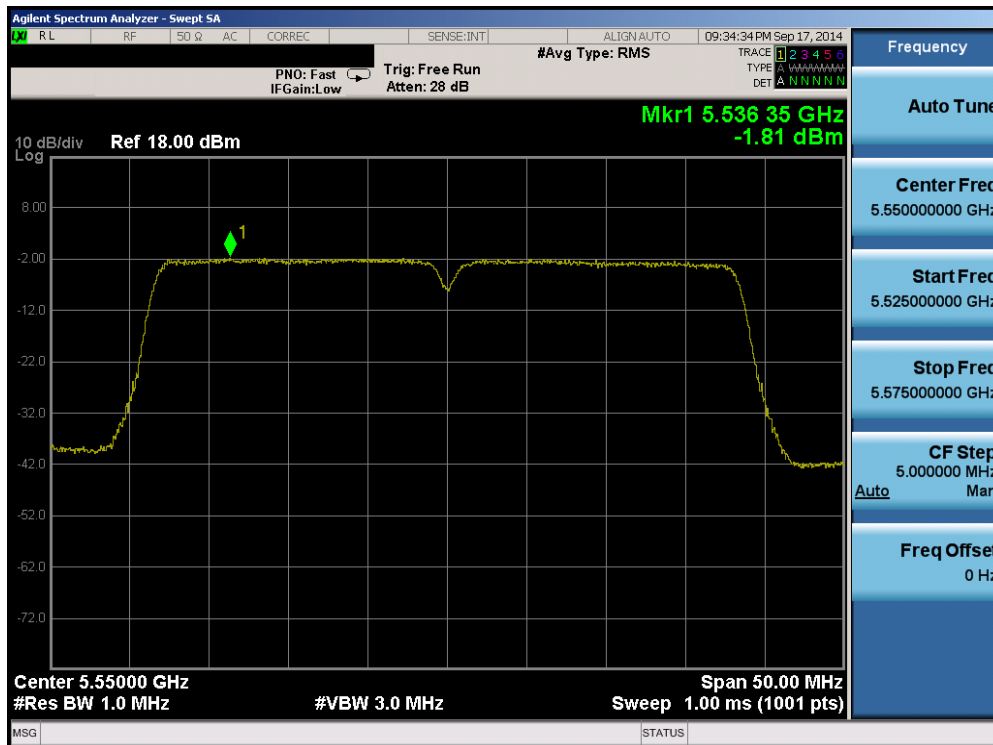


Plot 6-120. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 140)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 84 of 182                  |

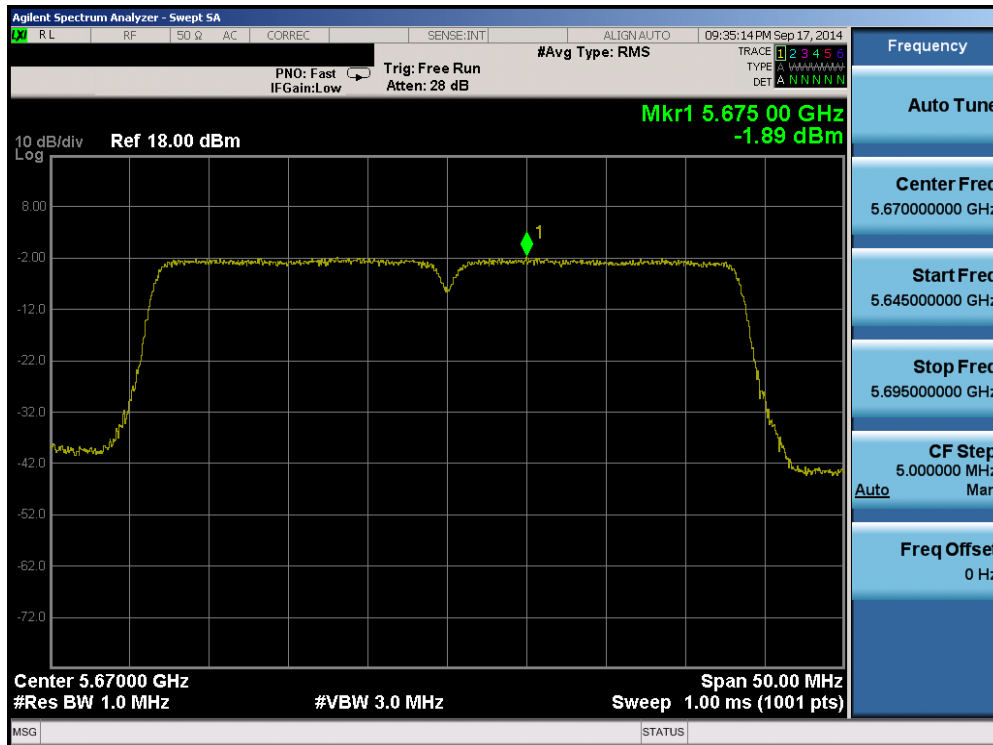


Plot 6-121. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 102)

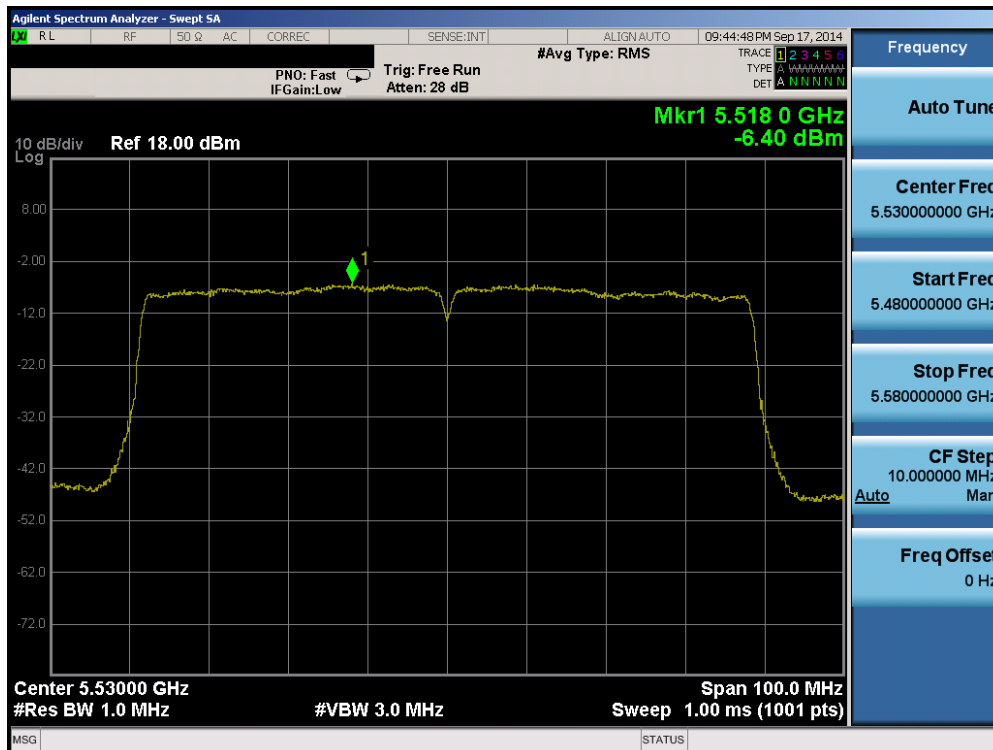


Plot 6-122. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 110)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 85 of 182                  |



Plot 6-123. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) – Ch. 134)



Plot 6-124. Peak Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 86 of 182                  |

## Summed MIMO Power Spectral Density Measurements

|         | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Antenn-1 Power Density [dBm] | Antenn-2 Power Density [dBm] | Summed MIMO Power Density [dBm] | Max Permissible Power Density [dBm/MHz] | Margin [dB] | Pass / Fail |
|---------|-----------------|-------------|-------------|------------------|------------------------------|------------------------------|---------------------------------|-----------------------------------------|-------------|-------------|
| Band 1  | 5180            | 36          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.16                         | 1.01                         | 3.62                            | 4.0                                     | -0.38       | Pass        |
|         | 5200            | 40          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.35                         | 1.11                         | 3.76                            | 4.0                                     | -0.24       | Pass        |
|         | 5240            | 48          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.74                         | 1.13                         | 3.95                            | 4.0                                     | -0.05       | Pass        |
|         | 5190            | 38          | n (40MHz)   | 13.5/15 (MCS0)   | -1.92                        | -1.20                        | 1.46                            | 4.0                                     | -2.54       | Pass        |
|         | 5230            | 46          | n (40MHz)   | 13.5/15 (MCS0)   | -1.71                        | -1.45                        | 1.43                            | 4.0                                     | -2.57       | Pass        |
|         | 5210            | 42          | ac (80MHz)  | 29.3/32.5 (MCS0) | -7.49                        | -5.44                        | -3.33                           | 4.0                                     | -7.33       | Pass        |
| Band 2A | 5260            | 52          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.89                         | 1.04                         | 3.97                            | 11.0                                    | -7.03       | Pass        |
|         | 5280            | 56          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.43                         | 1.04                         | 3.75                            | 11.0                                    | -7.25       | Pass        |
|         | 5320            | 64          | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.75                         | 1.47                         | 4.13                            | 11.0                                    | -6.87       | Pass        |
|         | 5270            | 54          | n (40MHz)   | 13.5/15 (MCS0)   | -1.68                        | -1.10                        | 1.63                            | 11.0                                    | -9.37       | Pass        |
|         | 5310            | 62          | n (40MHz)   | 13.5/15 (MCS0)   | -1.74                        | -0.93                        | 1.69                            | 11.0                                    | -9.31       | Pass        |
|         | 5290            | 58          | ac (80MHz)  | 29.3/32.5 (MCS0) | -7.35                        | -5.72                        | -3.45                           | 11.0                                    | -14.45      | Pass        |
| Band 2C | 5500            | 100         | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.11                         | 0.57                         | 3.36                            | 11.0                                    | -7.64       | Pass        |
|         | 5580            | 116         | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.48                         | 0.67                         | 3.58                            | 11.0                                    | -7.42       | Pass        |
|         | 5700            | 140         | n (20MHz)   | 6.5/7.2 (MCS0)   | 0.02                         | 0.39                         | 3.22                            | 11.0                                    | -7.78       | Pass        |
|         | 5510            | 102         | n (40MHz)   | 13.5/15 (MCS0)   | -2.47                        | -1.92                        | 0.83                            | 11.0                                    | -10.17      | Pass        |
|         | 5550            | 110         | n (40MHz)   | 13.5/15 (MCS0)   | -2.58                        | -1.81                        | 0.83                            | 11.0                                    | -10.17      | Pass        |
|         | 5670            | 134         | n (40MHz)   | 13.5/15 (MCS0)   | -2.78                        | -1.89                        | 0.70                            | 11.0                                    | -10.30      | Pass        |

**Table 6-20. MIMO Conducted Power Spectral Density Measurements**

### Note:

Per KDB 662911 v02r01 Section E)2), the power spectral density at Antenna 1 and Antenna 2 were first measured separately as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

### Sample MIMO Calculation:

At 5180MHz the average conducted power spectral density was measured to be 0.16 dBm for Antenna-1 and 1.01 dBm for Antenna-2.

$$\text{Antenna 1} + \text{Antenna 2} = \text{MIMO}$$

$$(0.16 \text{ dBm} + 1.01 \text{ dBm}) = (1.04 \text{ mW} + 1.26 \text{ mW}) = 2.30 \text{ mW} = 3.62 \text{ dBm}$$

|                                      |                                                                                     |                                                                        |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                          | Page 87 of 182                                                                        |                                 |

## 6.5 Peak Excursion Ratio – 802.11a/n/ac §15.407(a.6)

### Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle (>98%), at its maximum power control level, as defined in KDB 789033 v01r04, and at the appropriate frequencies. Method SA-1, as defined in KDB 789033 v01r04, was used to capture the average trace used to make the peak excursion measurement.

***The largest permissible difference between the modulation envelope (measured using a peak hold function) and the maximum power spectral density is 13 dBm/MHz.***

### Test Procedure Used

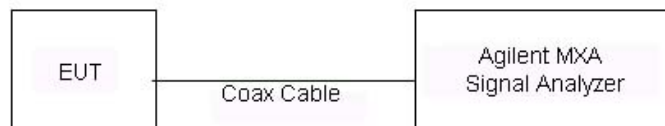
KDB 789033 v01r04 – Section G

### Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Detector = peak
6. Trace mode = max hold
7. Trace was allowed to stabilize
8. The peak search function of the spectrum analyzer was used to find the peak of the spectrum. This level was compared to the peak power density level found from the previous section to determine the peak excursion.

### Test Setup

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



**Figure 6-4. Test Instrument & Measurement Setup**

### Test Notes

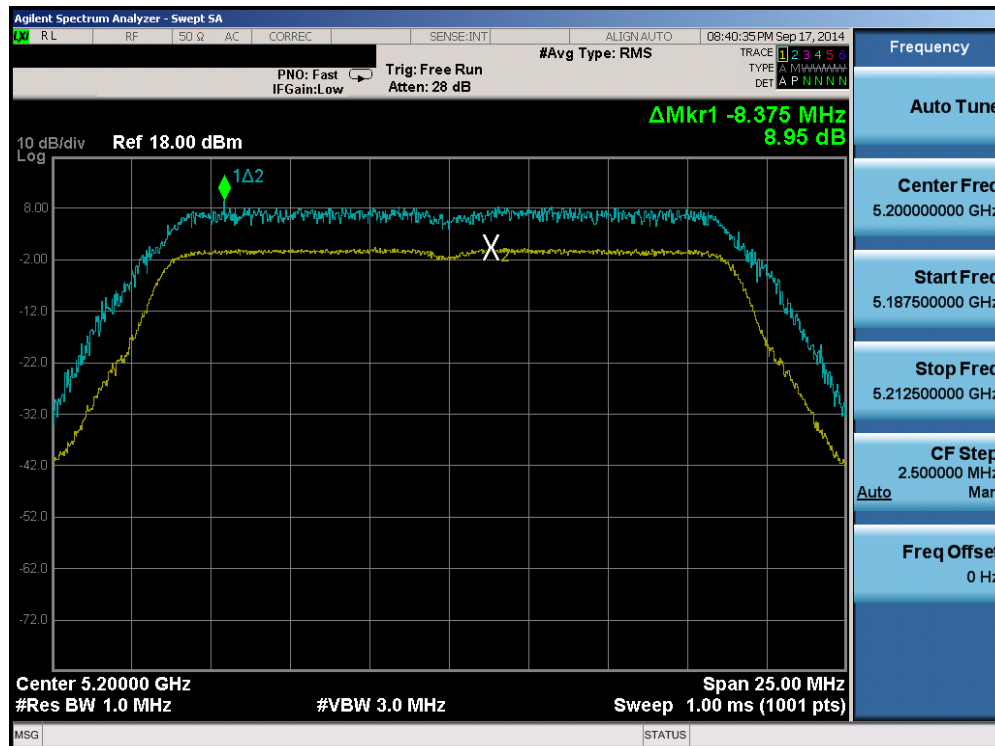
The peak excursion was investigated for all signal types, modulation types, channel bandwidths, and variations in signal parameters and the worst case data is shown below. Only the worst case modulation mode on a single channel among all bands is reported since that is sufficient to demonstrate compliance to the peak excursion requirement per KDB 789033 v01r04.

|                                      |                                                                                     |                                                                        |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                          |                                                                                       | Page 88 of 182                  |

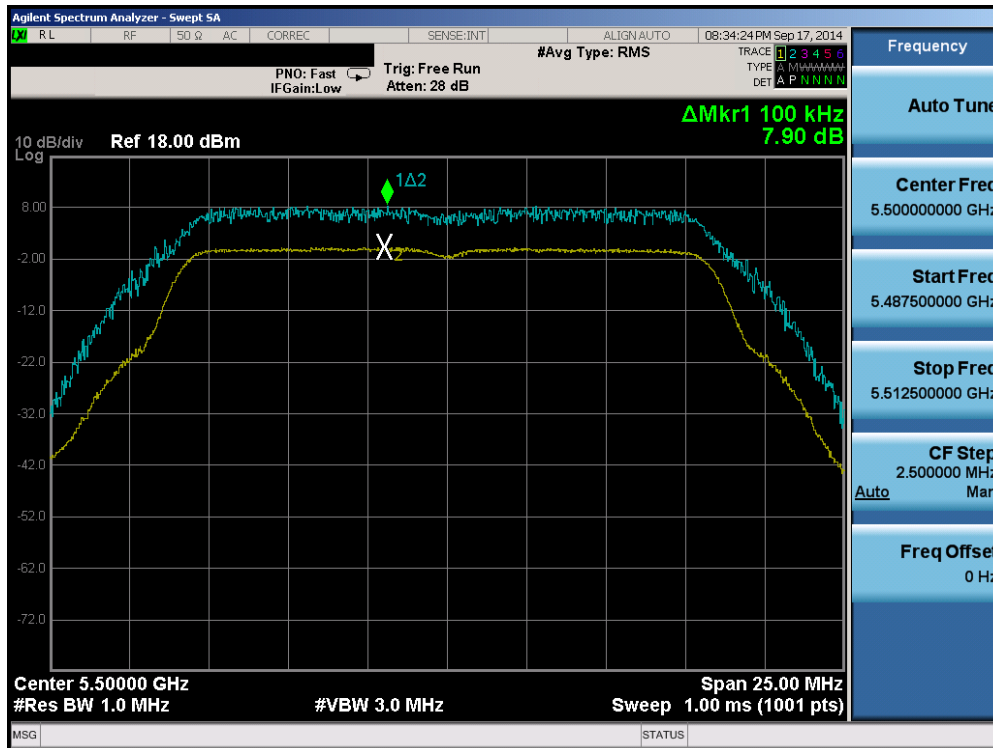
## Antenna-1 Peak Excursion Ratio – 802.11a/n/ac

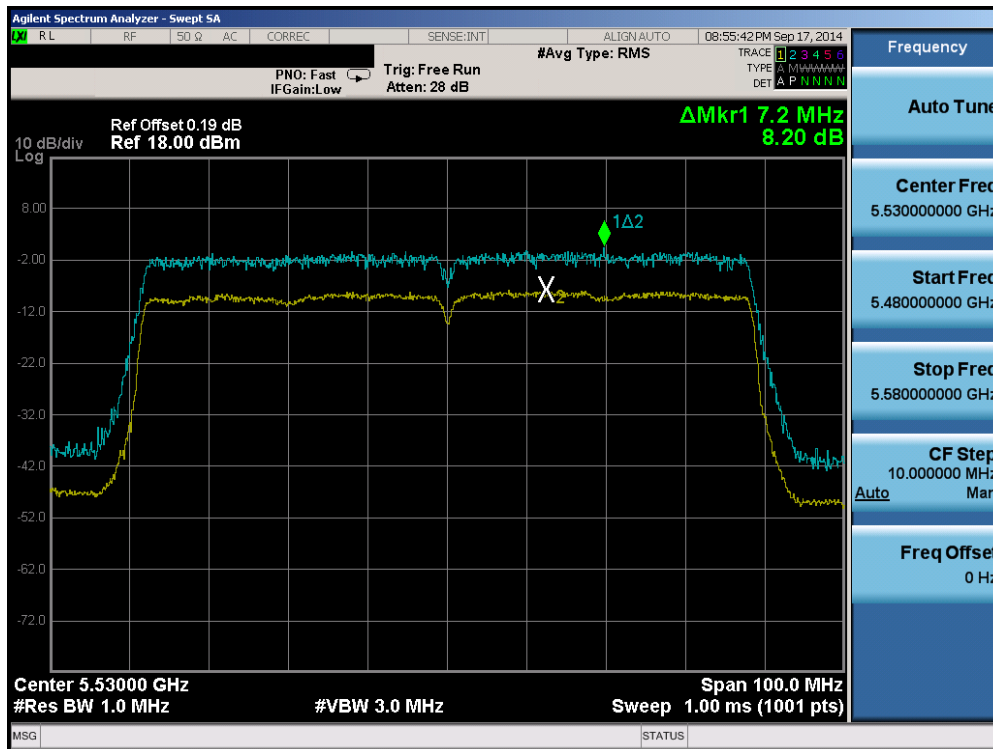
| Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Peak Excursion Ratio [dBm] | Max Permissible Peak Excursion Ratio [dBm/MHz] | Margin [dB] | Pass / Fail |
|-----------------|-------------|-------------|------------------|-------------------------------------|------------------------------------------------|-------------|-------------|
| 5200            | 40          | n (20MHz)   | 6.5/7.2 (MCS0)   | 8.95                                | 13.0                                           | -4.05       | Pass        |
| 5500            | 100         | a           | 6                | 7.90                                | 13.0                                           | -5.10       | Pass        |
| 5670            | 134         | n (40MHz)   | 13.5/15 (MCS0)   | 8.77                                | 13.0                                           | -4.24       | Pass        |
| 5530            | 106         | ac (80MHz)  | 29.3/32.5 (MCS0) | 8.20                                | 13.0                                           | -4.80       | Pass        |

**Table 6-21. Conducted Peak Excursion Ratio Measurements**



**Plot 6-125. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 1) – Ch. 40)**





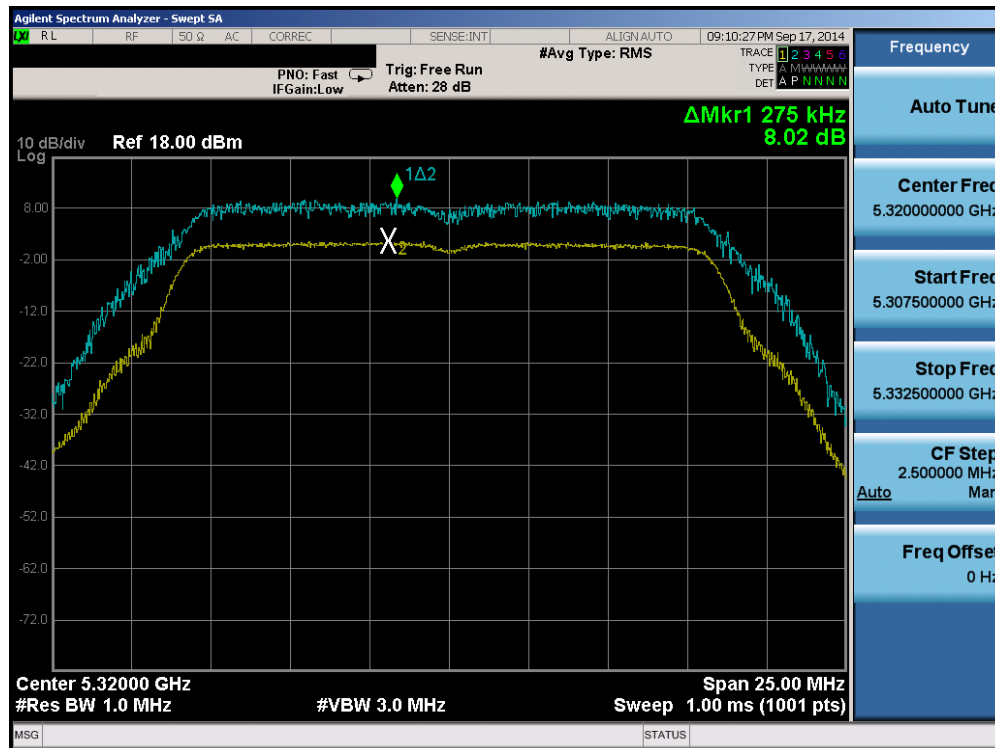
Plot 6-128. Peak Excursion Ratio Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 91 of 182                  |

## Antenna-2 Peak Excursion Ratio – 802.11a/n/ac

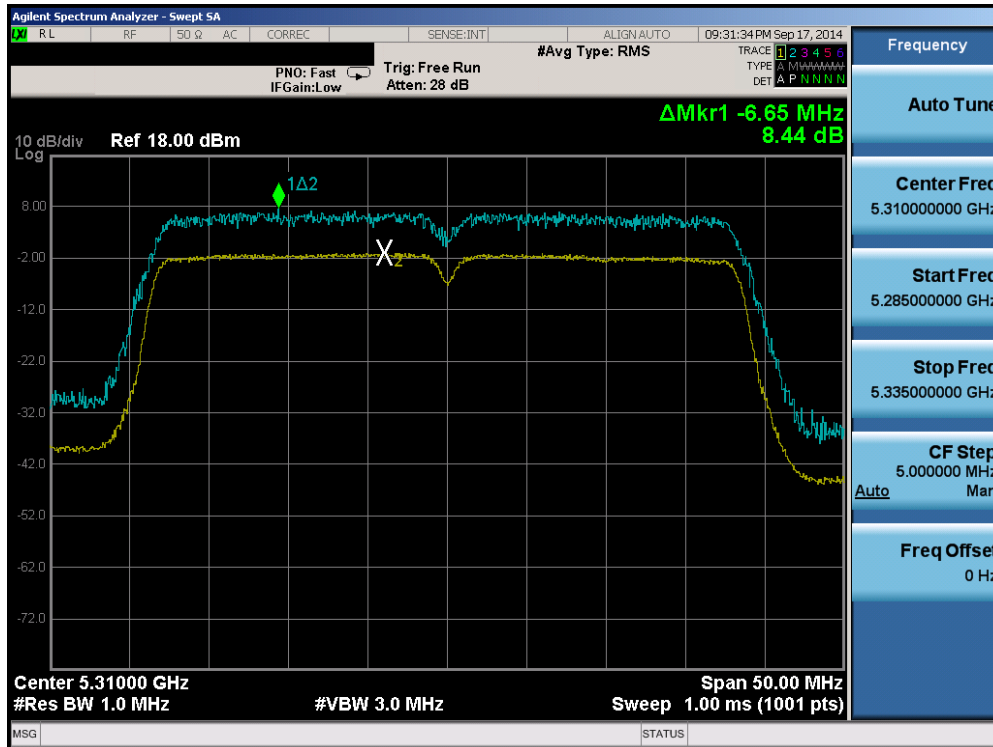
| Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Peak Excursion Ratio [dBm] | Max Permissible Peak Excursion Ratio [dBm/MHz] | Margin [dB] | Pass / Fail |
|-----------------|-------------|-------------|------------------|-------------------------------------|------------------------------------------------|-------------|-------------|
| 5320            | 64          | a           | 6                | 8.02                                | 13.0                                           | -4.98       | Pass        |
| 5310            | 62          | n (40MHz)   | 13.5/15 (MCS0)   | 8.44                                | 13.0                                           | -4.56       | Pass        |
| 5500            | 100         | n (20MHz)   | 6.5/7.2 (MCS0)   | 9.19                                | 13.0                                           | -3.81       | Pass        |
| 5530            | 106         | ac (80MHz)  | 29.3/32.5 (MCS0) | 8.14                                | 13.0                                           | -4.86       | Pass        |

Table 6-22. Conducted Peak Excursion Ratio Measurements

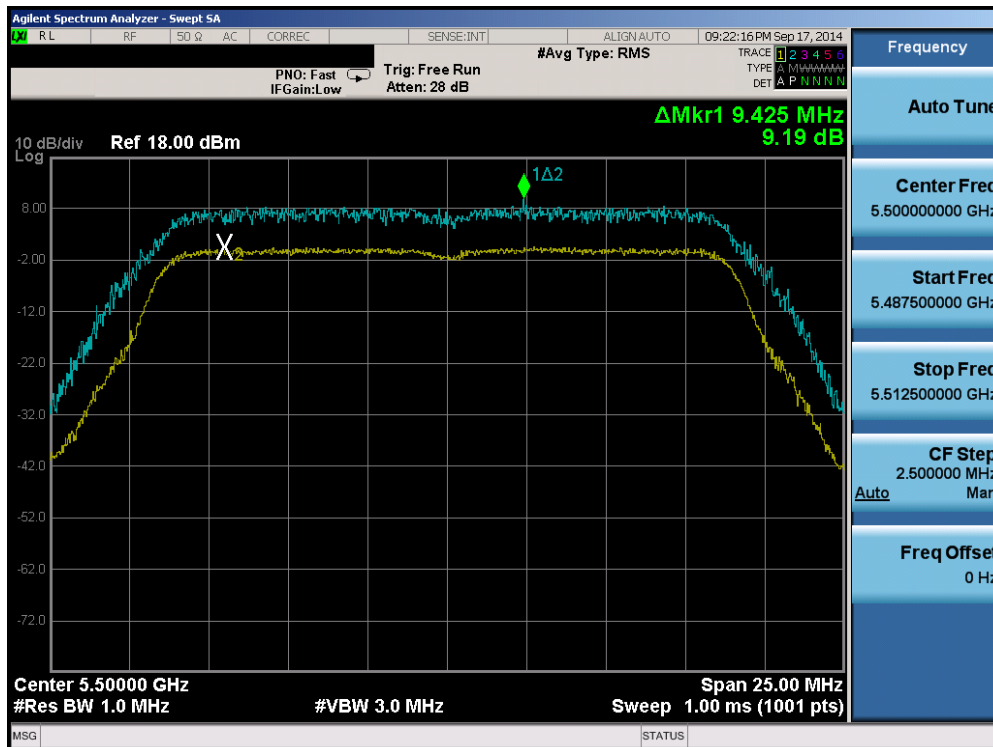


Plot 6-129. Peak Excursion Ratio Plot (802.11a (UNII Band 2A) – Ch. 64)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 92 of 182                  |

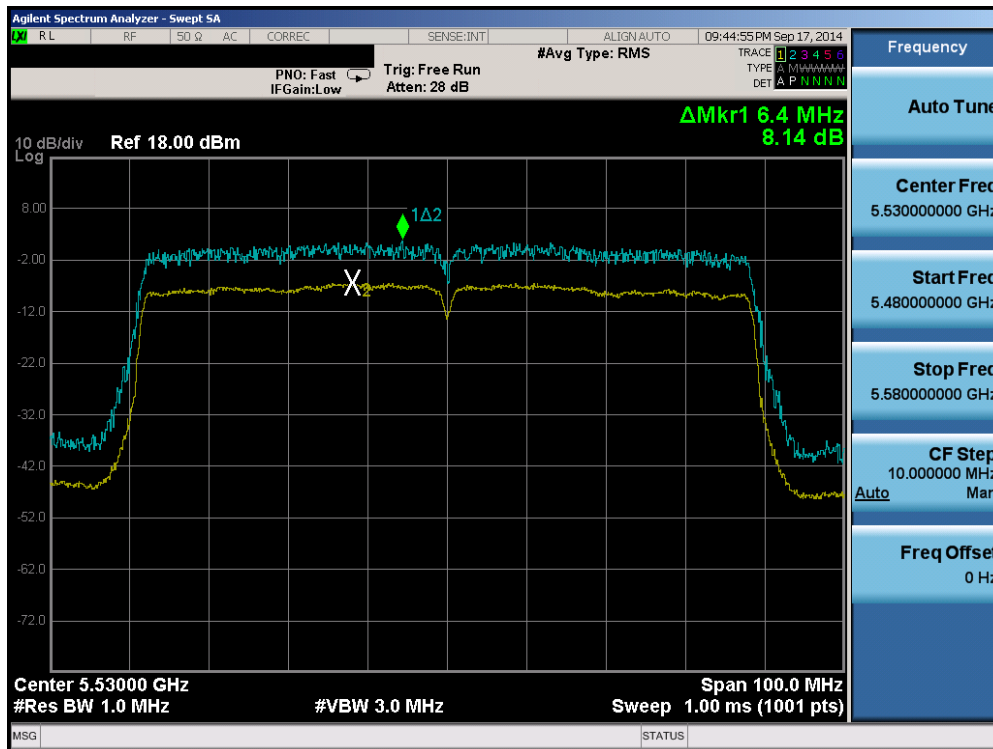


Plot 6-130. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 2A) – Ch. 62)



Plot 6-131. Peak Excursion Ratio Plot (20MHz BW 802.11n (UNII Band 2C) – Ch. 100)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 93 of 182                  |



Plot 6-132. Peak Excursion Ratio Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 106)

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 94 of 182                  |

## 6.6 Frequency Stability

### §15.407(g)

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY: 5,180,000,000 Hz  
 CHANNEL: 36  
 REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%)    | POWER (VDC) | TEMP (°C)  | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 %          | 3.85        | + 20 (Ref) | 5,180,000,006  | 6               | 0.00000012    |
| 100 %          |             | - 30       | 5,179,999,987  | -13             | -0.00000025   |
| 100 %          |             | - 20       | 5,180,000,012  | 12              | 0.00000023    |
| 100 %          |             | - 10       | 5,180,000,020  | 20              | 0.00000039    |
| 100 %          |             | 0          | 5,180,000,004  | 4               | 0.00000008    |
| 100 %          |             | + 10       | 5,179,999,977  | -23             | -0.00000044   |
| 100 %          |             | + 20       | 5,179,999,998  | -2              | -0.00000004   |
| 100 %          |             | + 30       | 5,180,000,027  | 27              | 0.00000052    |
| 100 %          |             | + 40       | 5,179,999,976  | -24             | -0.00000046   |
| 100 %          |             | + 50       | 5,179,999,999  | -1              | -0.00000002   |
| BATT. ENDPOINT | 3.45        | + 20       | 5,179,999,999  | -1              | -0.00000002   |

**Table 6-23. Frequency Stability Measurements for UNII Band 1 (Ch. 36)**

#### Note:

Based on the results of the frequency stability test shown above 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.

|                                      |                                                                                     |                                                                        |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                          | Page 95 of 182                                                                        |                                 |

## Frequency Stability

### §15.407(g)

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY: 5,260,000,000 Hz  
 CHANNEL: 52  
 REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%)    | POWER (VDC) | TEMP (°C)  | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 %          | 3.85        | + 20 (Ref) | 5,260,000,006  | 6               | 0.00000011    |
| 100 %          |             | - 30       | 5,260,000,023  | 23              | 0.00000044    |
| 100 %          |             | - 20       | 5,260,000,015  | 15              | 0.00000029    |
| 100 %          |             | - 10       | 5,259,999,985  | -15             | -0.00000029   |
| 100 %          |             | 0          | 5,259,999,979  | -21             | -0.00000040   |
| 100 %          |             | + 10       | 5,259,999,970  | -30             | -0.00000057   |
| 100 %          |             | + 20       | 5,260,000,020  | 20              | 0.00000038    |
| 100 %          |             | + 30       | 5,260,000,014  | 14              | 0.00000027    |
| 100 %          |             | + 40       | 5,259,999,975  | -25             | -0.00000048   |
| 100 %          |             | + 50       | 5,259,999,971  | -29             | -0.00000055   |
| BATT. ENDPOINT | 3.45        | + 20       | 5,260,000,025  | 25              | 0.00000048    |

**Table 6-24. Frequency Stability Measurements for UNII Band 2A (Ch. 52)**

#### Note:

Based on the results of the frequency stability test shown above 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.

|                                      |                                                                                     |                                                                        |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014                                                     | EUT Type:<br>Portable Handset                                          | Page 96 of 182                                                                        |                                 |

## Frequency Stability

**\$15.407(g)**

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY: 5,500,000,000 Hz  
 CHANNEL: 100  
 REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%)    | POWER (VDC) | TEMP (°C)  | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 %          | 3.85        | + 20 (Ref) | 5,500,000,010  | 10              | 0.00000018    |
| 100 %          |             | - 30       | 5,499,999,997  | -3              | -0.00000005   |
| 100 %          |             | - 20       | 5,500,000,001  | 1               | 0.00000002    |
| 100 %          |             | - 10       | 5,499,999,987  | -13             | -0.00000024   |
| 100 %          |             | 0          | 5,500,000,022  | 22              | 0.00000040    |
| 100 %          |             | + 10       | 5,500,000,002  | 2               | 0.00000004    |
| 100 %          |             | + 20       | 5,499,999,995  | -5              | -0.00000009   |
| 100 %          |             | + 30       | 5,499,999,978  | -22             | -0.00000040   |
| 100 %          |             | + 40       | 5,499,999,981  | -19             | -0.00000035   |
| 100 %          |             | + 50       | 5,499,999,993  | -7              | -0.00000013   |
| BATT. ENDPOINT | 3.45        | + 20       | 5,499,999,989  | -11             | -0.00000020   |

**Table 6-25. Frequency Stability Measurements for UNII Band 2C (Ch. 100)**

### Note:

Based on the results of the frequency stability test shown above 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.

|                                      |                                                                                     |                                                                        |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014                                                     | EUT Type:<br>Portable Handset                                          | Page 97 of 182                                                                        |                                 |

## 6.7 Radiated Spurious Emission Measurements

§15.407(b.1)(b.6) §15.205 §15.209

### Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle (>98%), at its maximum power control level, as defined in KDB 789033 v01r04, and at the appropriate frequencies. All channels, modes (e.g. 802.11a, 802.11n (20MHz BW) and 802.11n (40MHz BW)), and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

***All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 6-26 per Section 15.209.***

| Frequency         | Field Strength<br>[ $\mu$ V/m] | Measured Distance<br>[Meters] |
|-------------------|--------------------------------|-------------------------------|
| 0.009 – 0.490 MHz | 2400/F (kHz)                   | 300                           |
| 0.490 – 1.705 MHz | 24000/F (kHz)                  | 30                            |
| 1.705 – 30.00 MHz | 30                             | 30                            |
| 30.00 – 88.00 MHz | 100                            | 3                             |
| 88.00 – 216.0 MHz | 150                            | 3                             |
| 216.0 – 960.0 MHz | 200                            | 3                             |
| Above 960.0 MHz   | 500                            | 3                             |

**Table 6-26. Radiated Limits**

### Test Procedures Used

KDB 789033 v01r04 – Section H

### Test Settings

#### Average Measurements above 1GHz (Method AD)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be  $\geq 2 \times \text{span/RBW}$ )
6. Averaging type = power (RMS)
7. Sweep time = auto couple
8. Trace was averaged over 100 sweeps

|                                      |                                                                                     |                                                                        |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                          |                                                                                       | Page 98 of 182                  |

### Peak Measurements above 1GHz

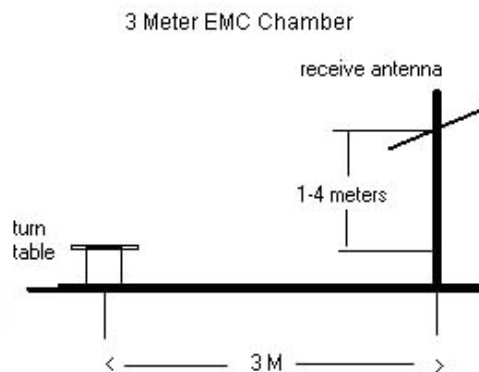
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

### Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = 120kHz
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

### Test Setup

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



**Figure 6-5. Test Instrument & Measurement Setup**

|                                             |                                               |                                                                               |                |                                        |
|---------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|----------------|----------------------------------------|
| <b>FCC ID:</b> A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | <b>FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT</b><br>(CERTIFICATION) | <b>SAMSUNG</b> | <b>Reviewed by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>0Y1409111863.A3L | <b>Test Dates:</b><br>09/10-09/29-2014        | <b>EUT Type:</b><br>Portable Handset                                          |                | Page 99 of 182                         |

## Test Notes

1. All radiated spurious emissions levels were measured in a radiated test setup per the guidance of KDB 789033 v01r04 Section H.
2. All emissions that lie in the restricted bands (denoted by a \* next to the frequency) specified in §15.205 are below the limit shown in Table 6-26.
3. All spurious emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 6-11. All spurious emissions that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz. At a distance of 3 meters, the field strength limit in dB $\mu$ V/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dB $\mu$ V/m.
4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
5. The battery used with this device for testing (Model: EB-BN915BBC) contains an embedded NFC antenna.
6. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
7. 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.

## Sample Calculations

### Determining Spurious Emissions Levels

- o Field Strength Level  $_{[dB\mu V/m]} = \text{Analyzer Level}_{[dBm]} + 107 + AFCL_{[dB/m]}$
- o  $AFCL_{[dB/m]} = \text{Antenna Factor}_{[dB/m]} + \text{Cable Loss}_{[dB]}$
- o  $\text{Margin}_{[dB]} = \text{Field Strength Level}_{[dB\mu V/m]} - \text{Limit}_{[dB\mu V/m]}$

### Radiated Band Edge Measurement Offset

- o The amplitude offset shown in the radiated restricted band edge plots in Section 6.8 was calculated using the formula:

$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + 10 \text{ dB Attenuator}) - \text{Preamplifier Gain}$$

|                                      |                                                                                     |                                                                        |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                          |                                                                                       | Page 100 of 182                 |

## Antenna-1 Radiated Spurious Emission Measurements

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5180MHz  
 Channel: 36

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10360.00        | -103.07              | Peak     | H               | H2                | 44.50       | 0.00                            | 48.43                   | 68.20          | -19.77      |
| * 15540.00      | -115.45              | Average  | H               | H2                | 48.84       | 0.00                            | 40.39                   | 53.98          | -13.59      |
| * 15540.00      | -101.36              | Peak     | H               | H2                | 48.84       | 0.00                            | 54.48                   | 73.98          | -19.50      |
| * 20720.00      | -106.43              | Average  | V               | V                 | 48.58       | -9.54                           | 39.60                   | 53.98          | -14.37      |
| * 20720.00      | -94.42               | Peak     | V               | V                 | 48.58       | -9.54                           | 51.61                   | 73.98          | -22.36      |
| 25900.00        | -97.37               | Peak     | V               | V                 | 50.95       | -9.54                           | 51.04                   | 68.20          | -17.16      |

Table 6-27. Radiated Measurements

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5200MHz  
 Channel: 40

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10400.00        | -103.20              | Peak     | H               | H2                | 44.55       | 0.00                            | 48.35                   | 68.20          | -19.85      |
| * 15600.00      | -115.77              | Average  | H               | H2                | 48.84       | 0.00                            | 40.06                   | 53.98          | -13.92      |
| * 15600.00      | -98.93               | Peak     | H               | H2                | 48.84       | 0.00                            | 56.90                   | 73.98          | -17.08      |
| * 20800.00      | -106.64              | Average  | V               | V                 | 48.66       | -9.54                           | 39.48                   | 53.98          | -14.50      |
| * 20800.00      | -97.33               | Peak     | V               | V                 | 48.66       | -9.54                           | 48.79                   | 73.98          | -25.19      |
| 26000.00        | -95.48               | Peak     | V               | V                 | 51.04       | -9.54                           | 53.02                   | 68.20          | -15.18      |

Table 6-28. Radiated Measurements

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 101 of 182                 |

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5240MHz  
 Channel: 48

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10480.00        | -102.61              | Peak     | H               | H2                | 44.67       | 0.00                            | 49.06                   | 68.20          | -19.14      |
| * 15720.00      | -115.86              | Average  | H               | H2                | 48.87       | 0.00                            | 40.01                   | 53.98          | -13.97      |
| * 15720.00      | -103.78              | Peak     | H               | H2                | 48.87       | 0.00                            | 52.09                   | 73.98          | -21.89      |
| * 20960.00      | -105.65              | Average  | V               | V                 | 48.75       | -9.54                           | 40.56                   | 53.98          | -13.42      |
| * 20960.00      | -97.91               | Peak     | V               | V                 | 48.75       | -9.54                           | 48.30                   | 73.98          | -25.68      |
| 26200.00        | -95.96               | Peak     | V               | V                 | 51.06       | -9.54                           | 52.55                   | 68.20          | -15.65      |

Table 6-29. Radiated Measurements

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5260MHz  
 Channel: 52

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10520.00        | -102.94              | Peak     | H               | H2                | 44.70       | 0.00                            | 48.76                   | 68.20          | -19.44      |
| * 15780.00      | -116.32              | Average  | H               | H2                | 48.90       | 0.00                            | 39.58                   | 53.98          | -14.40      |
| * 15780.00      | -102.27              | Peak     | H               | H2                | 48.90       | 0.00                            | 53.63                   | 73.98          | -20.35      |
| * 21040.00      | -108.81              | Average  | V               | V                 | 48.75       | -9.54                           | 37.40                   | 53.98          | -16.58      |
| * 21040.00      | -98.47               | Peak     | V               | V                 | 48.75       | -9.54                           | 47.74                   | 73.98          | -26.24      |
| 26300.00        | -94.52               | Peak     | V               | V                 | 51.09       | -9.54                           | 54.03                   | 68.20          | -14.17      |

Table 6-30. Radiated Measurements

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 102 of 182                 |

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5280MHz  
 Channel: 56

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10560.00        | -103.25              | Peak     | H               | H2                | 44.72       | 0.00                            | 48.46                   | 68.20          | -19.74      |
| * 15840.00      | -116.07              | Average  | H               | H2                | 48.98       | 0.00                            | 39.91                   | 53.98          | -14.07      |
| * 15840.00      | -102.45              | Peak     | H               | H2                | 48.98       | 0.00                            | 53.53                   | 73.98          | -20.45      |
| * 21120.00      | -109.20              | Average  | V               | V                 | 48.69       | -9.54                           | 36.95                   | 53.98          | -17.03      |
| * 21120.00      | -98.11               | Peak     | V               | V                 | 48.69       | -9.54                           | 48.04                   | 73.98          | -25.94      |
| 26400.00        | -93.67               | Peak     | V               | V                 | 51.16       | -9.54                           | 54.94                   | 68.20          | -13.26      |

Table 6-31. Radiated Measurements

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5320MHz  
 Channel: 64

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * 10640.00      | -115.65              | Average  | H               | H2                | 44.78       | 0.00                            | 36.13                   | 53.98          | -17.85      |
| * 10640.00      | -103.60              | Peak     | H               | H2                | 44.78       | 0.00                            | 48.18                   | 73.98          | -25.80      |
| * 15960.00      | -116.07              | Average  | H               | H2                | 49.16       | 0.00                            | 40.08                   | 53.98          | -13.90      |
| * 15960.00      | -104.43              | Peak     | H               | H2                | 49.16       | 0.00                            | 51.72                   | 73.98          | -22.26      |
| * 21280.00      | -109.23              | Average  | V               | V                 | 48.63       | -9.54                           | 36.86                   | 53.98          | -17.12      |
| * 21280.00      | -98.16               | Peak     | V               | V                 | 48.63       | -9.54                           | 47.93                   | 73.98          | -26.05      |
| 26600.00        | -104.84              | Peak     | V               | V                 | 47.32       | -9.54                           | 39.94                   | 68.20          | -28.26      |

Table 6-32. Radiated Measurements

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 103 of 182                 |

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5500MHz  
 Channel: 100

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * 11000.00      | -114.73              | Average  | H               | H2                | 44.63       | 0.00                            | 36.90                   | 53.98          | -17.08      |
| * 11000.00      | -101.91              | Peak     | H               | H2                | 44.63       | 0.00                            | 49.72                   | 73.98          | -24.26      |
| 16500.00        | -104.43              | Peak     | H               | H2                | 50.51       | 0.00                            | 53.08                   | 68.20          | -15.12      |
| 22000.00        | -97.10               | Peak     | V               | V                 | 48.96       | -9.54                           | 49.32                   | 68.20          | -18.88      |
| 27500.00        | -105.12              | Peak     | V               | V                 | 48.36       | -9.54                           | 40.70                   | 68.20          | -27.50      |

Table 6-33. Radiated Measurements

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5580MHz  
 Channel: 116

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * 11160.00      | -115.66              | Average  | H               | H2                | 44.72       | 0.00                            | 36.07                   | 53.98          | -17.91      |
| * 11160.00      | -96.93               | Peak     | H               | H2                | 44.72       | 0.00                            | 54.80                   | 73.98          | -19.18      |
| 16740.00        | -104.75              | Peak     | H               | H2                | 50.00       | 0.00                            | 52.25                   | 68.20          | -15.95      |
| * 22320.00      | -109.39              | Average  | V               | V                 | 49.73       | -9.54                           | 37.80                   | 53.98          | -16.18      |
| * 22320.00      | -97.68               | Peak     | V               | V                 | 49.73       | -9.54                           | 49.51                   | 73.98          | -24.47      |
| 27900.00        | -105.20              | Peak     | V               | V                 | 48.05       | -9.54                           | 40.31                   | 68.20          | -27.89      |

Table 6-34. Radiated Measurements

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 104 of 182                 |

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5700MHz  
 Channel: 140

|   | Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|---|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * | 11400.00        | -115.53              | Average  | H               | H2                | 45.03       | 0.00                            | 36.50                   | 53.98          | -17.48      |
| * | 11400.00        | -103.82              | Peak     | H               | H2                | 45.03       | 0.00                            | 48.21                   | 73.98          | -25.77      |
|   | 17100.00        | -104.94              | Peak     | H               | H2                | 49.99       | 0.00                            | 52.04                   | 68.20          | -16.16      |
| * | 22800.00        | -107.79              | Average  | V               | V                 | 49.82       | -9.54                           | 39.48                   | 53.98          | -14.49      |
| * | 22800.00        | -98.05               | Peak     | V               | V                 | 49.82       | -9.54                           | 49.22                   | 73.98          | -24.75      |
|   | 28500.00        | -105.86              | Peak     | V               | V                 | 48.01       | -9.54                           | 39.61                   | 68.20          | -28.59      |

Table 6-35. Radiated Measurements

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 105 of 182                 |

## Antenna-2 Radiated Spurious Emission Measurements

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5180MHz  
 Channel: 36

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10360.00        | -102.18              | Peak     | V               | H2                | 44.50       | 0.00                            | 49.32                   | 68.20          | -18.88      |
| * 15540.00      | -119.23              | Average  | V               | H2                | 48.84       | 0.00                            | 36.61                   | 53.98          | -17.37      |
| * 15540.00      | -104.05              | Peak     | V               | H2                | 48.84       | 0.00                            | 51.79                   | 73.98          | -22.19      |
| * 20720.00      | -113.13              | Average  | H               | H2                | 48.58       | -9.54                           | 32.90                   | 53.98          | -21.07      |
| * 20720.00      | -100.49              | Peak     | H               | H2                | 48.58       | -9.54                           | 45.54                   | 73.98          | -28.43      |
| 25900.00        | -100.44              | Peak     | H               | H2                | 50.95       | -9.54                           | 47.97                   | 68.20          | -20.23      |

Table 6-36. Radiated Measurements

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5200MHz  
 Channel: 40

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10400.00        | -102.28              | Peak     | V               | H2                | 44.55       | 0.00                            | 49.27                   | 68.20          | -18.93      |
| * 15600.00      | -115.89              | Average  | V               | H2                | 48.84       | 0.00                            | 39.94                   | 53.98          | -14.04      |
| * 15600.00      | -104.54              | Peak     | V               | H2                | 48.84       | 0.00                            | 51.29                   | 73.98          | -22.69      |
| * 20800.00      | -118.41              | Average  | H               | H2                | 48.66       | -9.54                           | 27.71                   | 53.98          | -26.27      |
| * 20800.00      | -100.31              | Peak     | H               | H2                | 48.66       | -9.54                           | 45.81                   | 73.98          | -28.17      |
| 26000.00        | -99.07               | Peak     | H               | H2                | 51.04       | -9.54                           | 49.43                   | 68.20          | -18.77      |

Table 6-37. Radiated Measurements

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 106 of 182                 |

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5240MHz  
 Channel: 48

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10480.00        | -102.36              | Peak     | V               | H2                | 44.67       | 0.00                            | 49.31                   | 68.20          | -18.89      |
| * 15720.00      | -116.16              | Average  | V               | H2                | 48.87       | 0.00                            | 39.71                   | 53.98          | -14.27      |
| * 15720.00      | -104.63              | Peak     | V               | H2                | 48.87       | 0.00                            | 51.24                   | 73.98          | -22.74      |
| * 20960.00      | -116.35              | Average  | H               | H2                | 48.75       | -9.54                           | 29.86                   | 53.98          | -24.12      |
| * 20960.00      | -100.84              | Peak     | H               | H2                | 48.75       | -9.54                           | 45.37                   | 73.98          | -28.61      |
| 26200.00        | -99.11               | Peak     | H               | H2                | 51.06       | -9.54                           | 49.40                   | 68.20          | -18.80      |

Table 6-38. Radiated Measurements

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5260MHz  
 Channel: 52

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10520.00        | -102.24              | Peak     | V               | H2                | 44.70       | 0.00                            | 49.46                   | 68.20          | -18.74      |
| * 15780.00      | -116.31              | Average  | V               | H2                | 48.90       | 0.00                            | 39.59                   | 53.98          | -14.39      |
| * 15780.00      | -104.45              | Peak     | V               | H2                | 48.90       | 0.00                            | 51.45                   | 73.98          | -22.53      |
| * 21040.00      | -115.29              | Average  | H               | H2                | 48.75       | -9.54                           | 30.92                   | 53.98          | -23.06      |
| * 21040.00      | -98.07               | Peak     | H               | H2                | 48.75       | -9.54                           | 48.14                   | 73.98          | -25.84      |
| 26300.00        | -95.47               | Peak     | H               | H2                | 51.09       | -9.54                           | 53.08                   | 68.20          | -15.12      |

Table 6-39. Radiated Measurements

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 107 of 182                 |

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5280MHz  
 Channel: 56

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10560.00        | -102.71              | Peak     | V               | H2                | 44.72       | 0.00                            | 49.00                   | 68.20          | -19.20      |
| * 15840.00      | -115.21              | Average  | V               | H2                | 48.98       | 0.00                            | 40.77                   | 53.98          | -13.21      |
| * 15840.00      | -103.42              | Peak     | V               | H2                | 48.98       | 0.00                            | 52.56                   | 73.98          | -21.42      |
| * 21120.00      | -115.20              | Average  | H               | H2                | 48.69       | -9.54                           | 30.95                   | 53.98          | -23.03      |
| * 21120.00      | -98.45               | Peak     | H               | H2                | 48.69       | -9.54                           | 47.70                   | 73.98          | -26.28      |
| 26400.00        | -93.17               | Peak     | H               | H2                | 51.16       | -9.54                           | 55.44                   | 68.20          | -12.76      |

**Table 6-40. Radiated Measurements**

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5320MHz  
 Channel: 64

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * 10640.00      | -115.72              | Average  | V               | H2                | 44.78       | 0.00                            | 36.06                   | 53.98          | -17.92      |
| * 10640.00      | -102.48              | Peak     | V               | H2                | 44.78       | 0.00                            | 49.30                   | 73.98          | -24.68      |
| * 15960.00      | -116.55              | Average  | V               | H2                | 49.16       | 0.00                            | 39.60                   | 53.98          | -14.38      |
| * 15960.00      | -104.19              | Peak     | V               | H2                | 49.16       | 0.00                            | 51.96                   | 73.98          | -22.02      |
| * 21280.00      | -116.07              | Average  | H               | H2                | 48.63       | -9.54                           | 30.02                   | 53.98          | -23.96      |
| * 21280.00      | -98.24               | Peak     | H               | H2                | 48.63       | -9.54                           | 47.85                   | 73.98          | -26.13      |
| 26600.00        | -104.38              | Peak     | H               | H2                | 47.32       | -9.54                           | 40.40                   | 68.20          | -27.80      |

**Table 6-41. Radiated Measurements**

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 108 of 182                 |

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5500MHz  
 Channel: 100

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * 11000.00      | -114.94              | Average  | V               | H2                | 44.63       | 0.00                            | 36.69                   | 53.98          | -17.29      |
| * 11000.00      | -102.04              | Peak     | V               | H2                | 44.63       | 0.00                            | 49.59                   | 73.98          | -24.39      |
| 16500.00        | -104.22              | Peak     | V               | H2                | 50.51       | 0.00                            | 53.29                   | 68.20          | -14.91      |
| 22000.00        | -96.43               | Peak     | H               | H2                | 48.96       | -9.54                           | 49.99                   | 68.20          | -18.21      |
| 27500.00        | -105.49              | Peak     | H               | H2                | 48.36       | -9.54                           | 40.33                   | 68.20          | -27.87      |

**Table 6-42. Radiated Measurements**

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5580MHz  
 Channel: 116

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * 11160.00      | -115.32              | Average  | V               | H2                | 44.72       | 0.00                            | 36.41                   | 53.98          | -17.57      |
| * 11160.00      | -102.73              | Peak     | V               | H2                | 44.72       | 0.00                            | 49.00                   | 73.98          | -24.98      |
| 16740.00        | -104.49              | Peak     | V               | H2                | 50.00       | 0.00                            | 52.51                   | 68.20          | -15.69      |
| * 22320.00      | -115.64              | Average  | H               | H2                | 49.73       | -9.54                           | 31.55                   | 53.98          | -22.43      |
| * 22320.00      | -98.58               | Peak     | H               | H2                | 49.73       | -9.54                           | 48.61                   | 73.98          | -25.37      |
| 27900.00        | -105.21              | Peak     | H               | H2                | 48.05       | -9.54                           | 40.30                   | 68.20          | -27.90      |

**Table 6-43. Radiated Measurements**

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 109 of 182                 |

Worst Case Mode: 802.11a  
 Worst Case Transfer Rate: 6 Mbps  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5700MHz  
 Channel: 140

|   | Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|---|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * | 11400.00        | -115.37              | Average  | V               | H2                | 45.03       | 0.00                            | 36.66                   | 53.98          | -17.32      |
| * | 11400.00        | -103.84              | Peak     | V               | H2                | 45.03       | 0.00                            | 48.19                   | 73.98          | -25.79      |
|   | 17100.00        | -104.82              | Peak     | V               | H2                | 49.99       | 0.00                            | 52.16                   | 68.20          | -16.04      |
| * | 22800.00        | -115.29              | Average  | H               | H2                | 49.82       | -9.54                           | 31.98                   | 53.98          | -21.99      |
| * | 22800.00        | -98.32               | Peak     | H               | H2                | 49.82       | -9.54                           | 48.95                   | 73.98          | -25.02      |
|   | 28500.00        | -105.86              | Peak     | H               | H2                | 48.01       | -9.54                           | 39.61                   | 68.20          | -28.59      |

**Table 6-44. Radiated Measurements**

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 110 of 182                 |

## MIMO Radiated Spurious Emission Measurements

Worst Case Mode: 802.11n  
 Worst Case Transfer Rate: MCS8  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5180MHz  
 Channel: 36

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10360.00        | -101.87              | Peak     | V               | H2                | 44.50       | 0.00                            | 49.63                   | 68.20          | -18.57      |
| * 15540.00      | -108.81              | Average  | V               | H2                | 48.84       | 0.00                            | 47.03                   | 53.98          | -6.95       |
| * 15540.00      | -97.08               | Peak     | V               | H2                | 48.84       | 0.00                            | 58.76                   | 73.98          | -15.22      |
| * 20720.00      | -97.76               | Average  | V               | V                 | 48.58       | -9.54                           | 48.27                   | 53.98          | -5.70       |
| * 20720.00      | -93.19               | Peak     | V               | V                 | 48.58       | -9.54                           | 52.84                   | 73.98          | -21.13      |
| 25900.00        | -96.71               | Peak     | V               | V                 | 50.95       | -9.54                           | 51.70                   | 68.20          | -16.50      |

Table 6-45. Radiated Measurements

Worst Case Mode: 802.11n  
 Worst Case Transfer Rate: MCS8  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5200MHz  
 Channel: 40

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10400.00        | -102.25              | Peak     | V               | H2                | 44.55       | 0.00                            | 49.30                   | 68.20          | -18.90      |
| * 15600.00      | -108.13              | Average  | V               | H2                | 48.84       | 0.00                            | 47.70                   | 53.98          | -6.28       |
| * 15600.00      | -96.19               | Peak     | V               | H2                | 48.84       | 0.00                            | 59.64                   | 73.98          | -14.34      |
| * 20800.00      | -98.70               | Average  | V               | V                 | 48.66       | -9.54                           | 47.42                   | 53.98          | -6.56       |
| * 20800.00      | -93.49               | Peak     | V               | V                 | 48.66       | -9.54                           | 52.63                   | 73.98          | -21.35      |
| 26000.00        | -97.63               | Peak     | V               | V                 | 51.04       | -9.54                           | 50.87                   | 68.20          | -17.33      |

Table 6-46. Radiated Measurements

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 111 of 182                 |

Worst Case Mode: 802.11n  
 Worst Case Transfer Rate: MCS8  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5240MHz  
 Channel: 48

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10480.00        | -102.48              | Peak     | V               | H2                | 44.67       | 0.00                            | 49.19                   | 68.20          | -19.01      |
| * 15720.00      | -115.20              | Average  | V               | H2                | 48.87       | 0.00                            | 40.67                   | 53.98          | -13.31      |
| * 15720.00      | -98.64               | Peak     | V               | H2                | 48.87       | 0.00                            | 57.23                   | 73.98          | -16.75      |
| * 20960.00      | -104.02              | Average  | V               | V                 | 48.75       | -9.54                           | 42.19                   | 53.98          | -11.79      |
| * 20960.00      | -93.02               | Peak     | V               | V                 | 48.75       | -9.54                           | 53.19                   | 73.98          | -20.79      |
| 26200.00        | -96.33               | Peak     | V               | V                 | 51.06       | -9.54                           | 52.18                   | 68.20          | -16.02      |

Table 6-47. Radiated Measurements

Worst Case Mode: 802.11n  
 Worst Case Transfer Rate: MCS8  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5260MHz  
 Channel: 52

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10520.00        | -102.35              | Peak     | V               | H2                | 44.70       | 0.00                            | 49.35                   | 68.20          | -18.85      |
| * 15780.00      | -116.12              | Average  | V               | H2                | 48.90       | 0.00                            | 39.78                   | 53.98          | -14.20      |
| * 15780.00      | -98.50               | Peak     | V               | H2                | 48.90       | 0.00                            | 57.40                   | 73.98          | -16.58      |
| * 21040.00      | -96.18               | Average  | V               | V                 | 48.75       | -9.54                           | 50.03                   | 53.98          | -3.95       |
| * 21040.00      | -91.70               | Peak     | V               | V                 | 48.75       | -9.54                           | 54.51                   | 73.98          | -19.47      |
| 26300.00        | -101.21              | Peak     | V               | V                 | 51.09       | -9.54                           | 47.34                   | 68.20          | -20.86      |

Table 6-48. Radiated Measurements

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 112 of 182                 |

Worst Case Mode: 802.11n  
 Worst Case Transfer Rate: MCS8  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5280MHz  
 Channel: 56

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| 10560.00        | -102.39              | Peak     | V               | H2                | 44.72       | 0.00                            | 49.32                   | 68.20          | -18.88      |
| * 15840.00      | -113.24              | Average  | V               | H2                | 48.98       | 0.00                            | 42.74                   | 53.98          | -11.24      |
| * 15840.00      | -96.04               | Peak     | V               | H2                | 48.98       | 0.00                            | 59.94                   | 73.98          | -14.04      |
| * 21120.00      | -98.03               | Average  | V               | V                 | 48.69       | -9.54                           | 48.12                   | 53.98          | -5.86       |
| * 21120.00      | -94.04               | Peak     | V               | V                 | 48.69       | -9.54                           | 52.11                   | 73.98          | -21.87      |
| 26400.00        | -100.14              | Peak     | V               | V                 | 51.16       | -9.54                           | 48.47                   | 68.20          | -19.73      |

Table 6-49. Radiated Measurements

Worst Case Mode: 802.11n  
 Worst Case Transfer Rate: MCS8  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5320MHz  
 Channel: 64

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * 10640.00      | -115.72              | Average  | V               | H2                | 44.78       | 0.00                            | 36.06                   | 53.98          | -17.92      |
| * 10640.00      | -101.99              | Peak     | V               | H2                | 44.78       | 0.00                            | 49.79                   | 73.98          | -24.19      |
| * 15960.00      | -116.06              | Average  | V               | H2                | 49.16       | 0.00                            | 40.09                   | 53.98          | -13.89      |
| * 15960.00      | -99.34               | Peak     | V               | H2                | 49.16       | 0.00                            | 56.81                   | 73.98          | -17.17      |
| * 21280.00      | -97.09               | Average  | V               | V                 | 48.63       | -9.54                           | 49.00                   | 53.98          | -4.98       |
| * 21280.00      | -94.07               | Peak     | V               | V                 | 48.63       | -9.54                           | 52.02                   | 73.98          | -21.96      |
| 26600.00        | -105.71              | Peak     | V               | V                 | 47.32       | -9.54                           | 39.07                   | 68.20          | -29.13      |

Table 6-50. Radiated Measurements

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 113 of 182                 |

Worst Case Mode: 802.11n  
 Worst Case Transfer Rate: MCS8  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5500MHz  
 Channel: 100

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * 11000.00      | -115.02              | Average  | V               | H2                | 44.63       | 0.00                            | 36.61                   | 53.98          | -17.37      |
| * 11000.00      | -102.93              | Peak     | V               | H2                | 44.63       | 0.00                            | 48.70                   | 73.98          | -25.28      |
| 16500.00        | -99.26               | Peak     | V               | H2                | 50.51       | 0.00                            | 58.25                   | 68.20          | -9.95       |
| 22000.00        | -94.04               | Peak     | V               | V                 | 48.96       | -9.54                           | 52.38                   | 68.20          | -15.82      |
| 27500.00        | -104.89              | Peak     | V               | V                 | 48.36       | -9.54                           | 40.93                   | 68.20          | -27.27      |

**Table 6-51. Radiated Measurements**

Worst Case Mode: 802.11n  
 Worst Case Transfer Rate: MCS8  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5580MHz  
 Channel: 116

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * 11160.00      | -115.18              | Average  | V               | H2                | 44.72       | 0.00                            | 36.55                   | 53.98          | -17.43      |
| * 11160.00      | -102.08              | Peak     | V               | H2                | 44.72       | 0.00                            | 49.65                   | 73.98          | -24.33      |
| 16740.00        | -104.35              | Peak     | V               | H2                | 50.00       | 0.00                            | 52.65                   | 68.20          | -15.55      |
| * 22320.00      | -98.93               | Average  | V               | V                 | 49.73       | -9.54                           | 48.26                   | 53.98          | -5.72       |
| * 22320.00      | -94.98               | Peak     | V               | V                 | 49.73       | -9.54                           | 52.21                   | 73.98          | -21.77      |
| 27900.00        | -104.44              | Peak     | V               | V                 | 48.05       | -9.54                           | 41.07                   | 68.20          | -27.13      |

**Table 6-52. Radiated Measurements**

|                                      |                                                                                     |                                                                     |                                                                                       |                                 |
|--------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9150                   |  | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT (CERTIFICATION) |  | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014                                                     | EUT Type:<br>Portable Handset                                       |                                                                                       | Page 114 of 182                 |

Worst Case Mode: 802.11n  
 Worst Case Transfer Rate: MCS8  
 Distance of Measurements: 1 & 3 Meters  
 Operating Frequency: 5700MHz  
 Channel: 140

|   | Frequency [MHz] | Analyzer Level [dBm] | Detector | Ant. Pol. [H/V] | EUT Pol. [H/H2/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|---|-----------------|----------------------|----------|-----------------|-------------------|-------------|---------------------------------|-------------------------|----------------|-------------|
| * | 11400.00        | -115.30              | Average  | V               | H2                | 45.03       | 0.00                            | 36.73                   | 53.98          | -17.25      |
| * | 11400.00        | -102.67              | Peak     | V               | H2                | 45.03       | 0.00                            | 49.36                   | 73.98          | -24.62      |
|   | 17100.00        | -104.60              | Peak     | V               | H2                | 49.99       | 0.00                            | 52.38                   | 68.20          | -15.82      |
| * | 22800.00        | -103.37              | Average  | V               | V                 | 49.82       | -9.54                           | 43.90                   | 53.98          | -10.07      |
| * | 22800.00        | -98.05               | Peak     | V               | V                 | 49.82       | -9.54                           | 49.22                   | 73.98          | -24.75      |
|   | 28500.00        | -106.57              | Peak     | V               | V                 | 48.01       | -9.54                           | 38.90                   | 68.20          | -29.30      |

**Table 6-53. Radiated Measurements**

## 6.8 Antenna-1 Radiated Band Edge Measurements (20MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

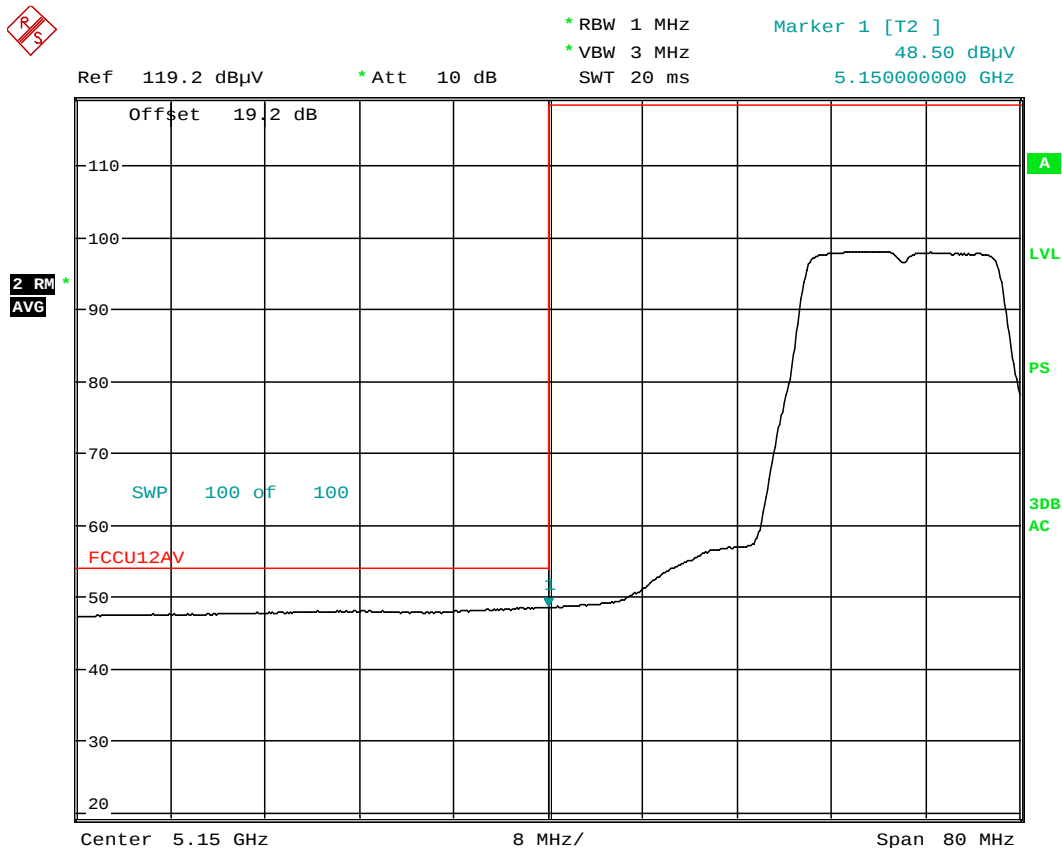
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5180MHz

Channel: 36

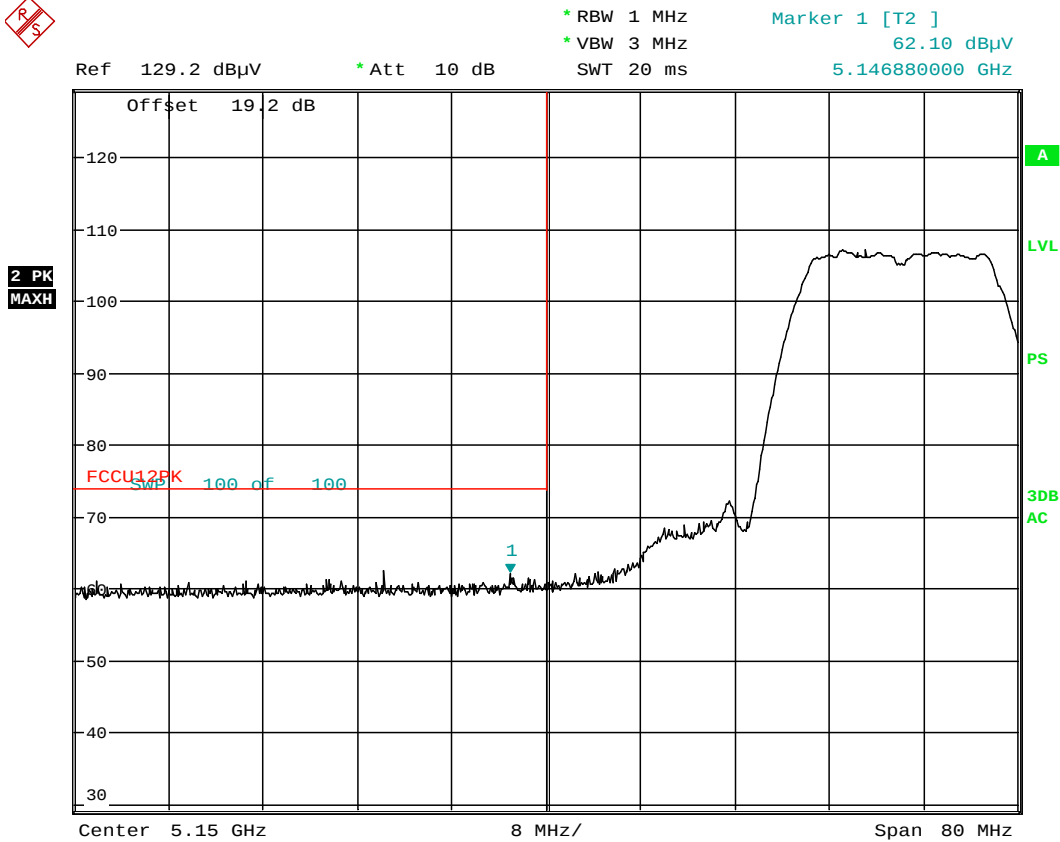


Date: 16.SEP.2014 20:22:57

**Plot 6-133. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 116 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 20:23:56

**Plot 6-134. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 117 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

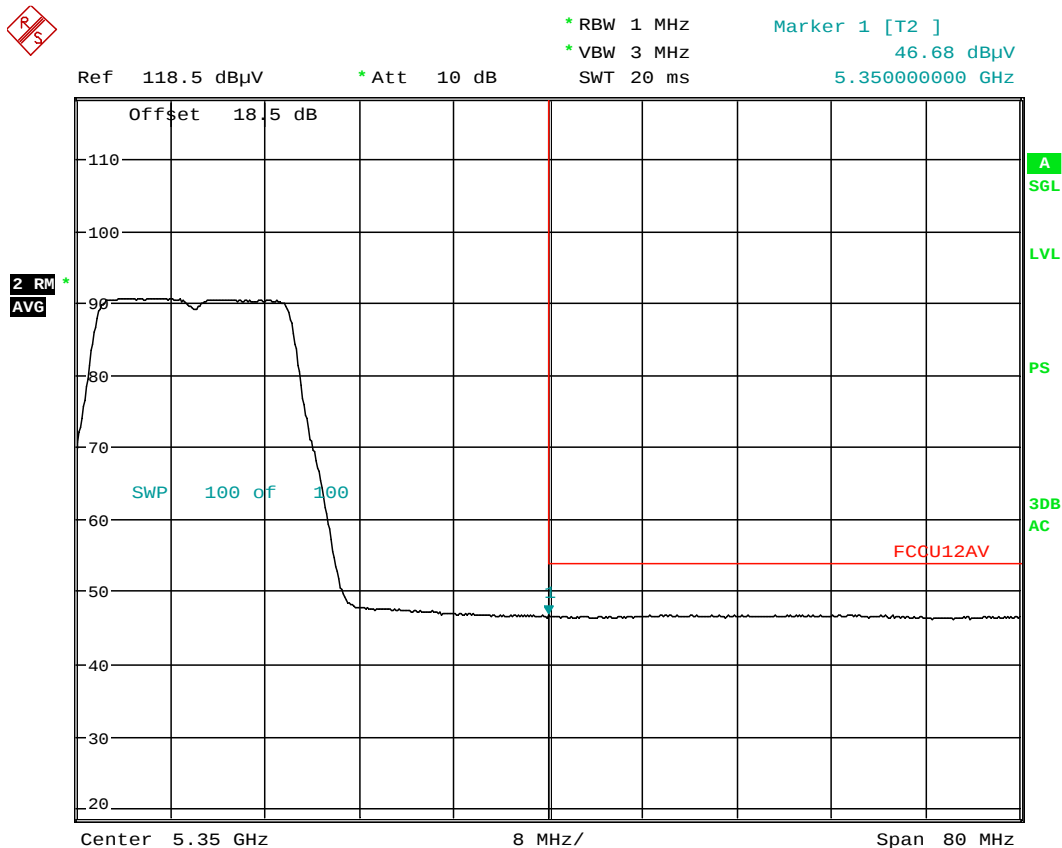
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5320MHz

Channel: 64

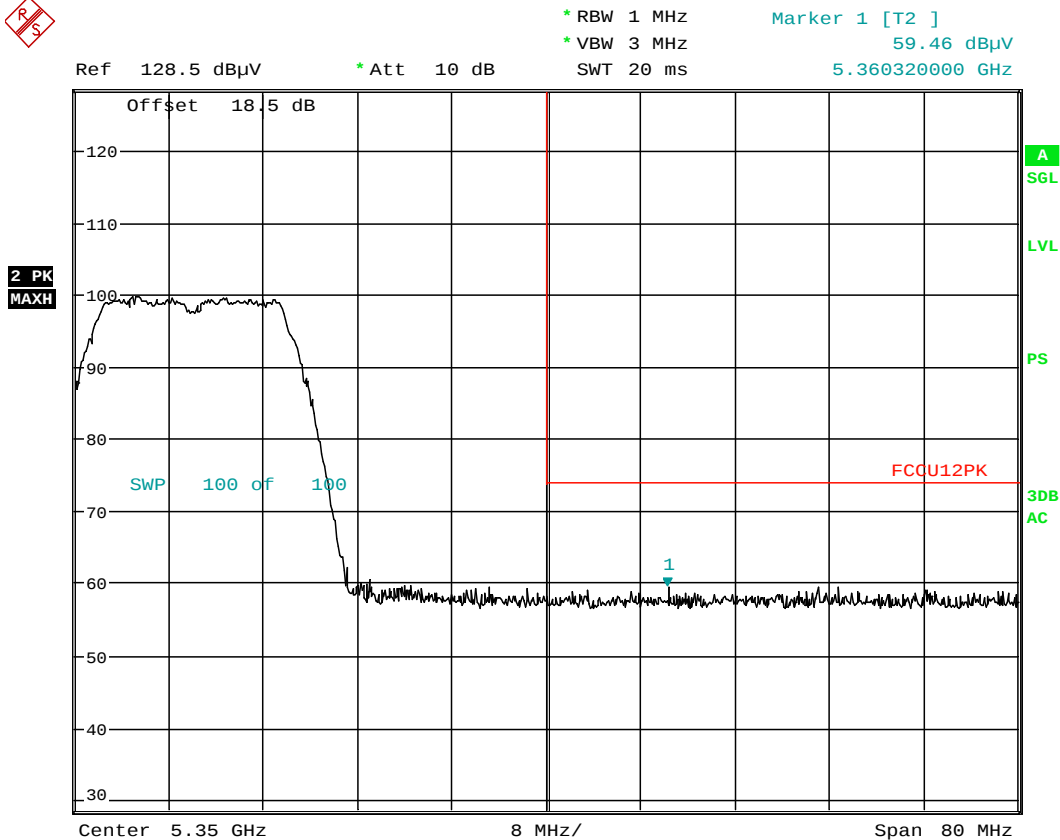


Date: 16.SEP.2014 21:06:54

**Plot 6-135. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 118 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 21:07:54

**Plot 6-136. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 119 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

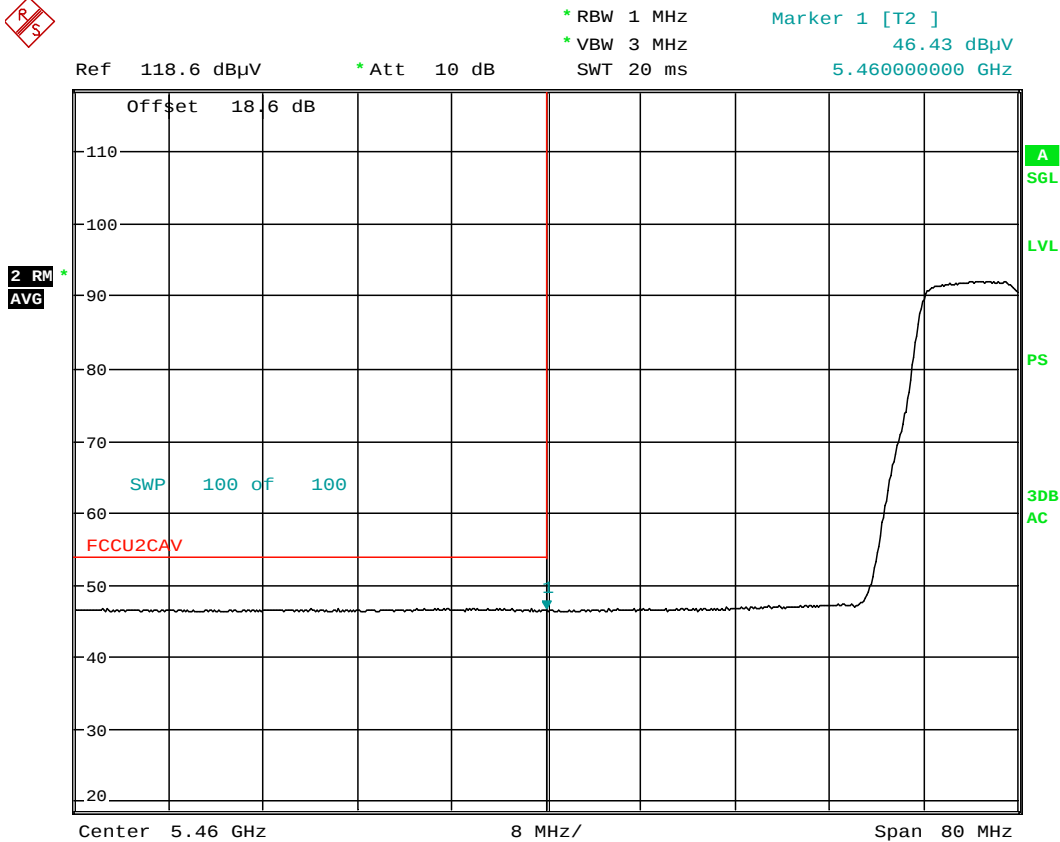
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5500MHz

Channel: 100

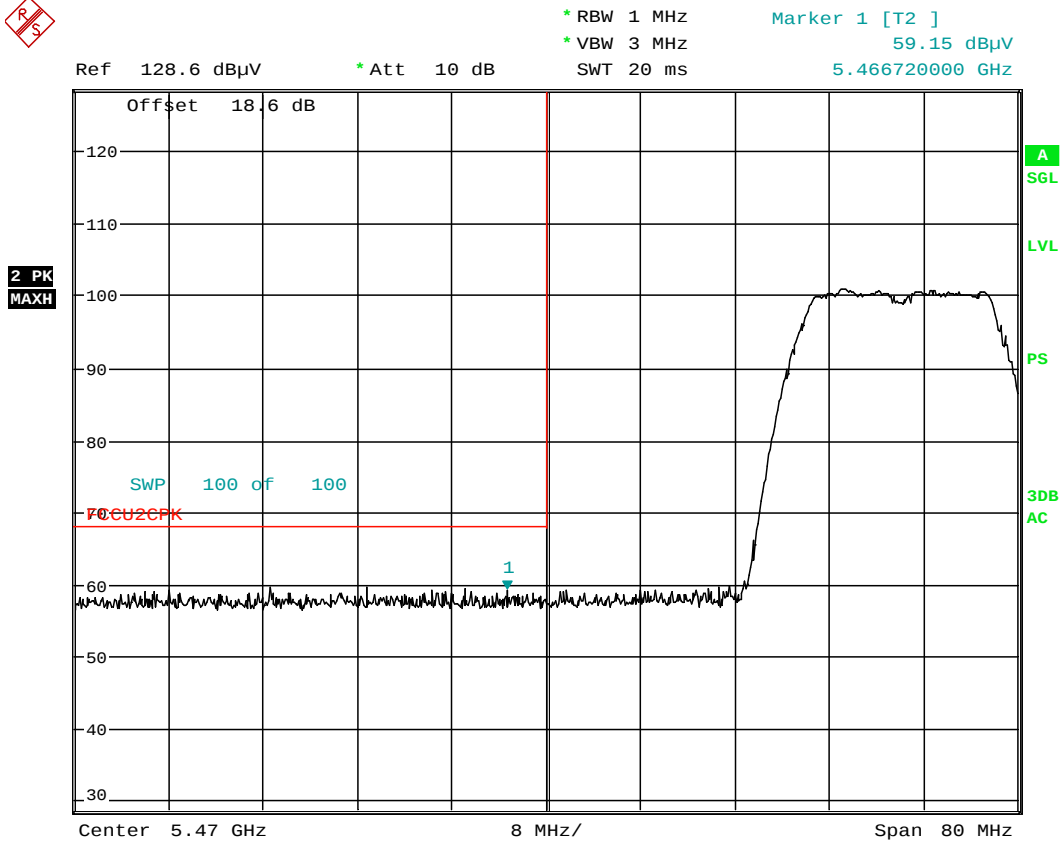


Date: 16.SEP.2014 21:12:37

**Plot 6-137. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 120 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



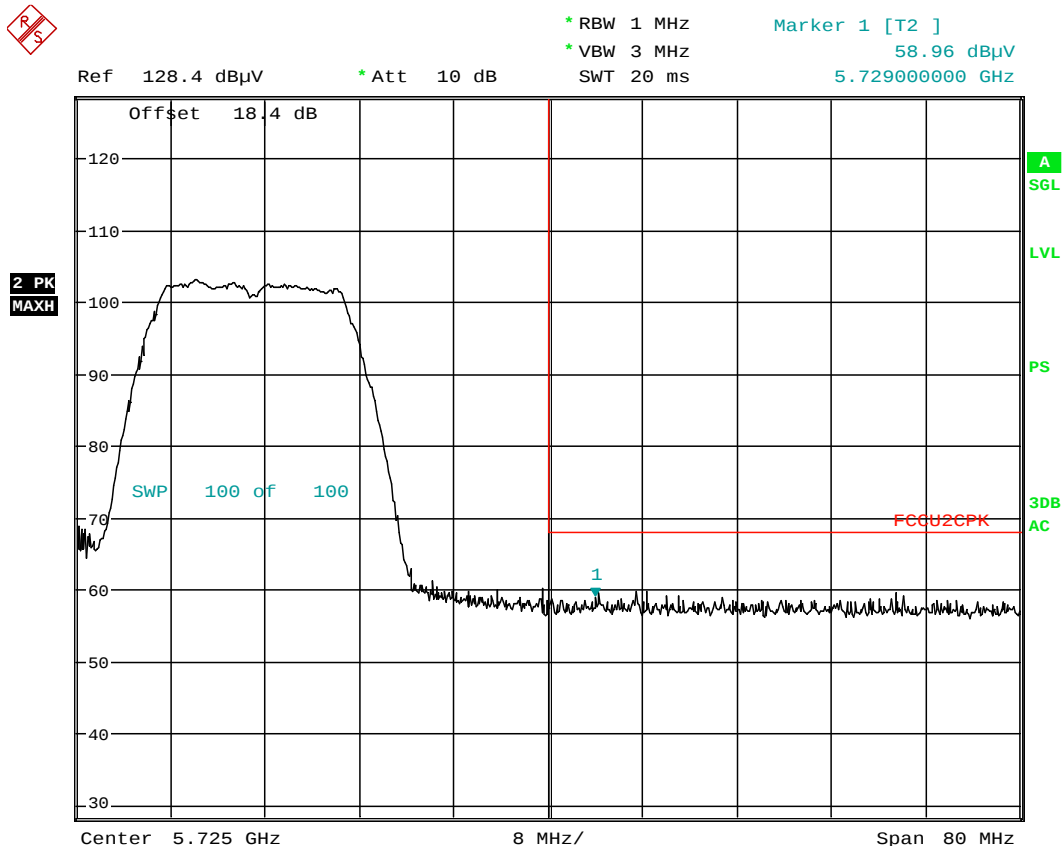
Date: 16.SEP.2014 21:13:26

**Plot 6-138. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 121 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

Worst Case Mode: 802.11a  
Worst Case Transfer Rate: 6 Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 5700MHz  
Channel: 140



Date: 16.SEP.2014 21:17:57

**Plot 6-139. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 122 of 182                 |

## 6.9 Antenna-1 Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

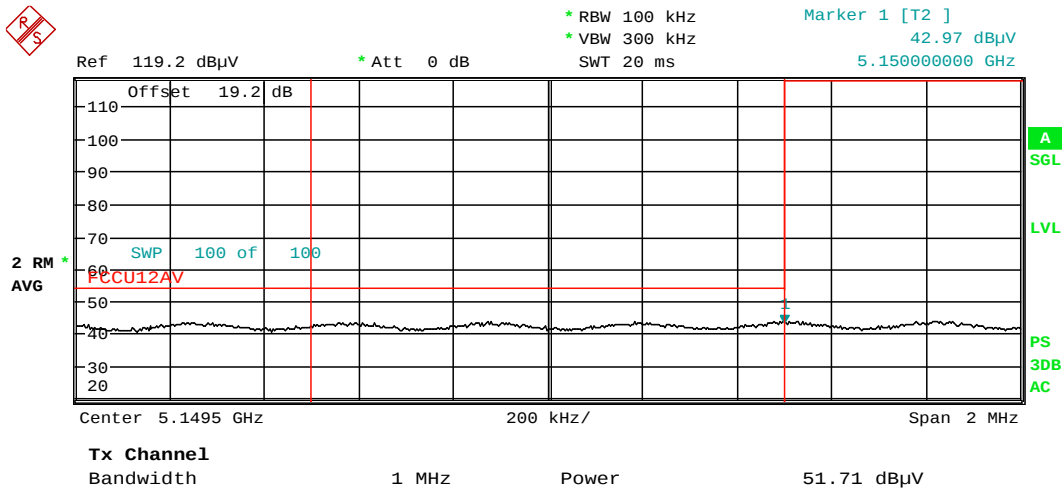
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5190MHz

Channel: 38

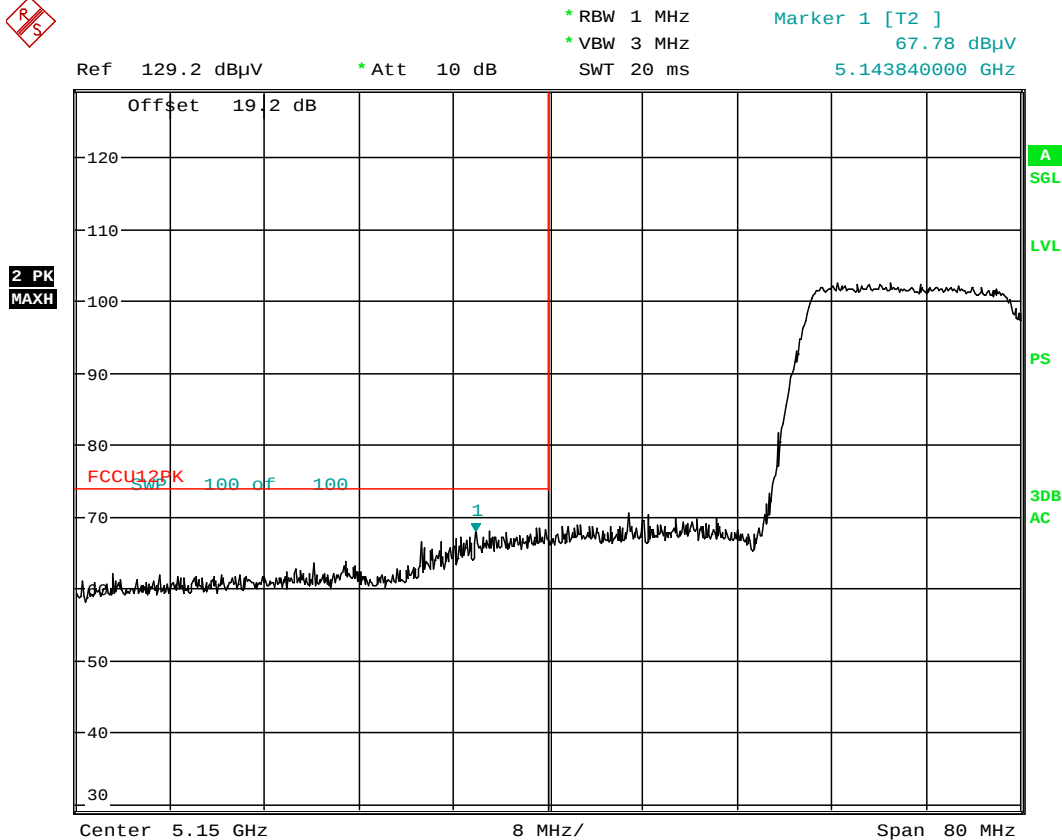


Date: 18.SEP.2014 01:24:35

**Plot 6-140. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 123 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 29.SEP.2014 23:56:24

**Plot 6-141. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 124 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

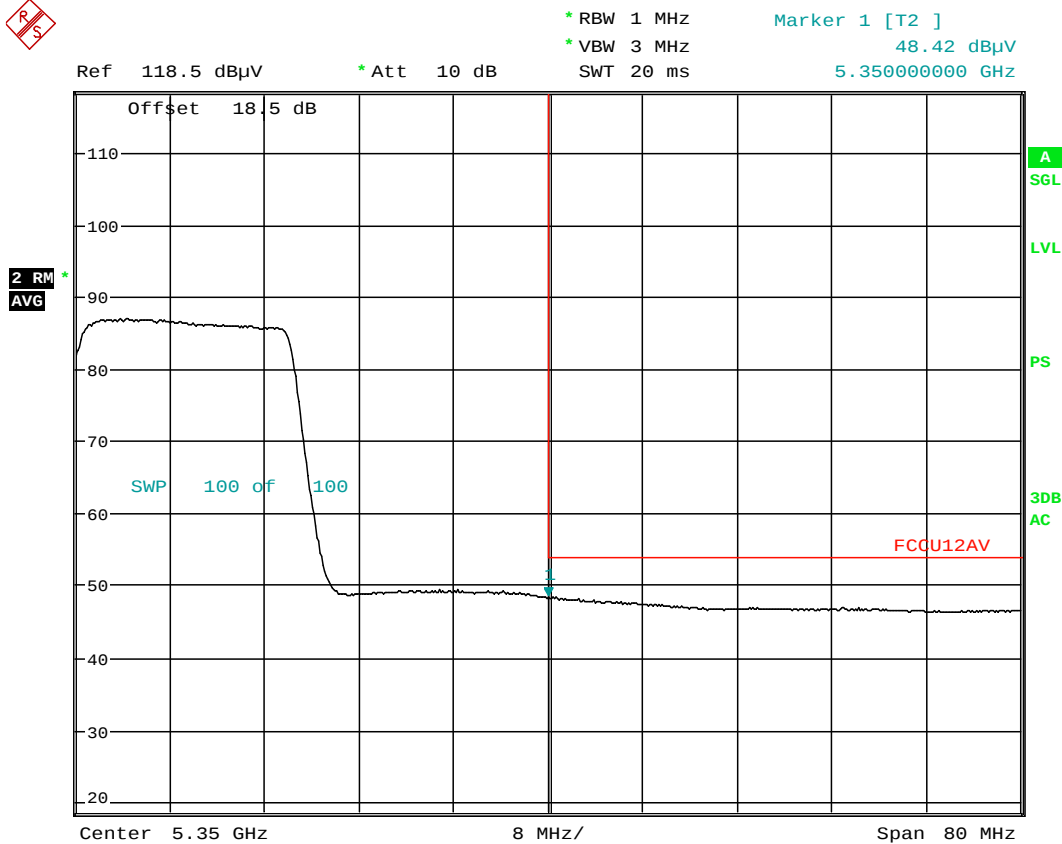
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5310MHz

Channel: 62

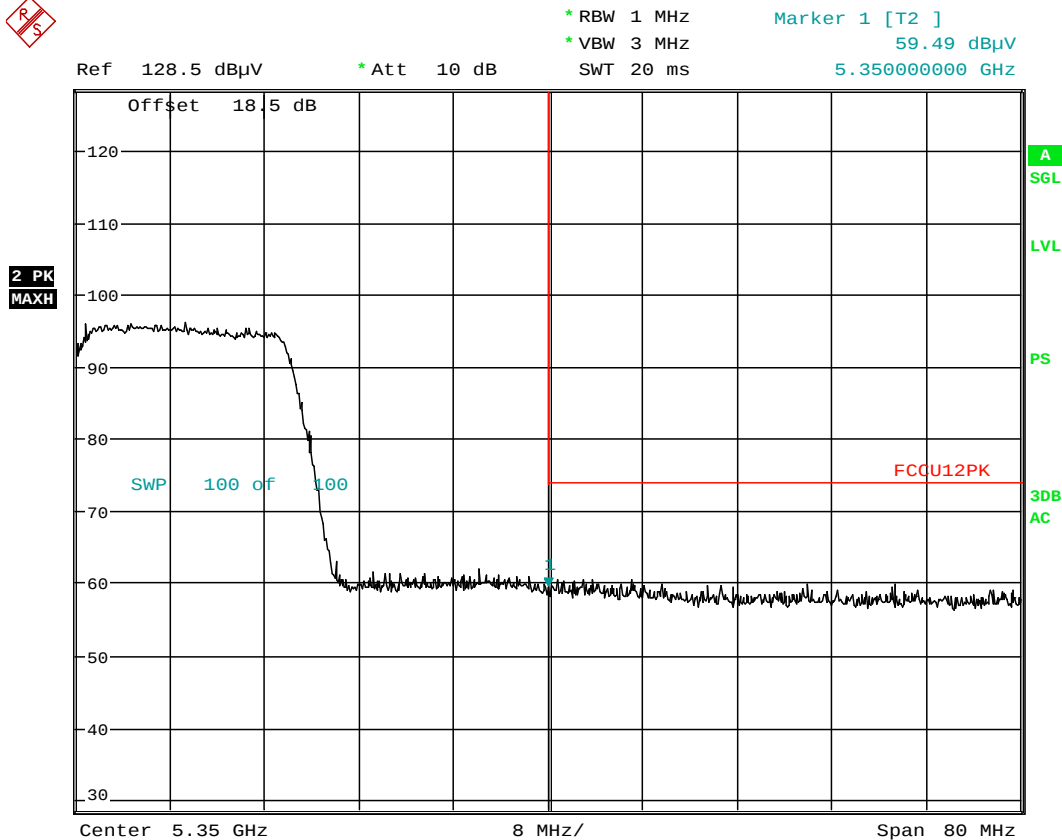


Date: 18.SEP.2014 01:28:27

**Plot 6-142. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 125 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



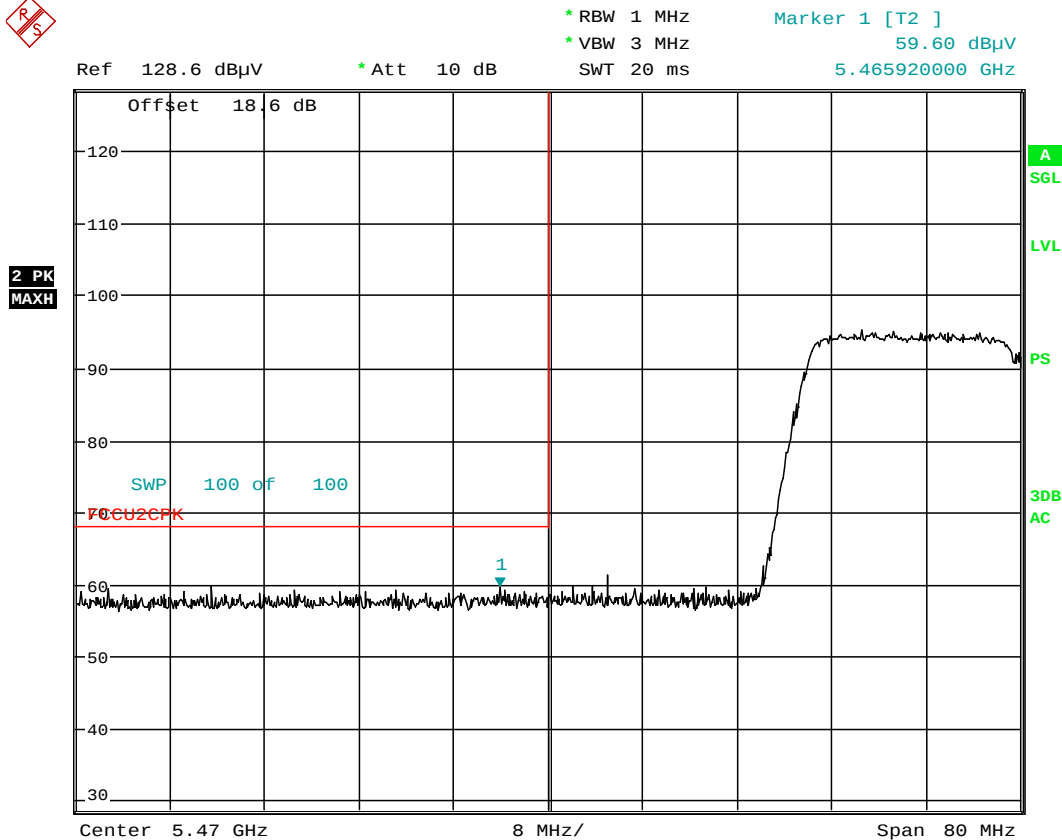
Date: 18.SEP.2014 01:29:09

**Plot 6-143. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 126 of 182                 |



# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 18.SEP.2014 01:33:41

**Plot 6-145. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 128 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

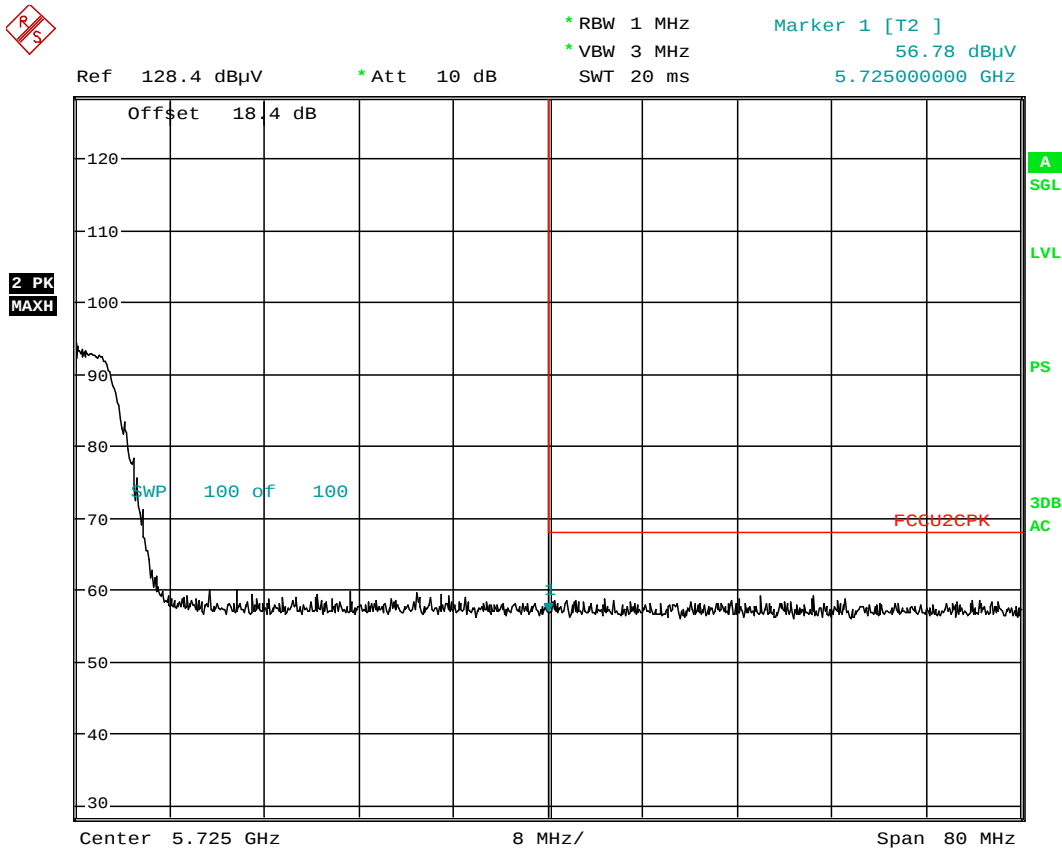
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5670MHz

Channel: 134



Date: 18.SEP.2014 01:37:14

**Plot 6-146. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 129 of 182                 |

## 6.10 Antenna-1 Radiated Band Edge Measurements (80MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

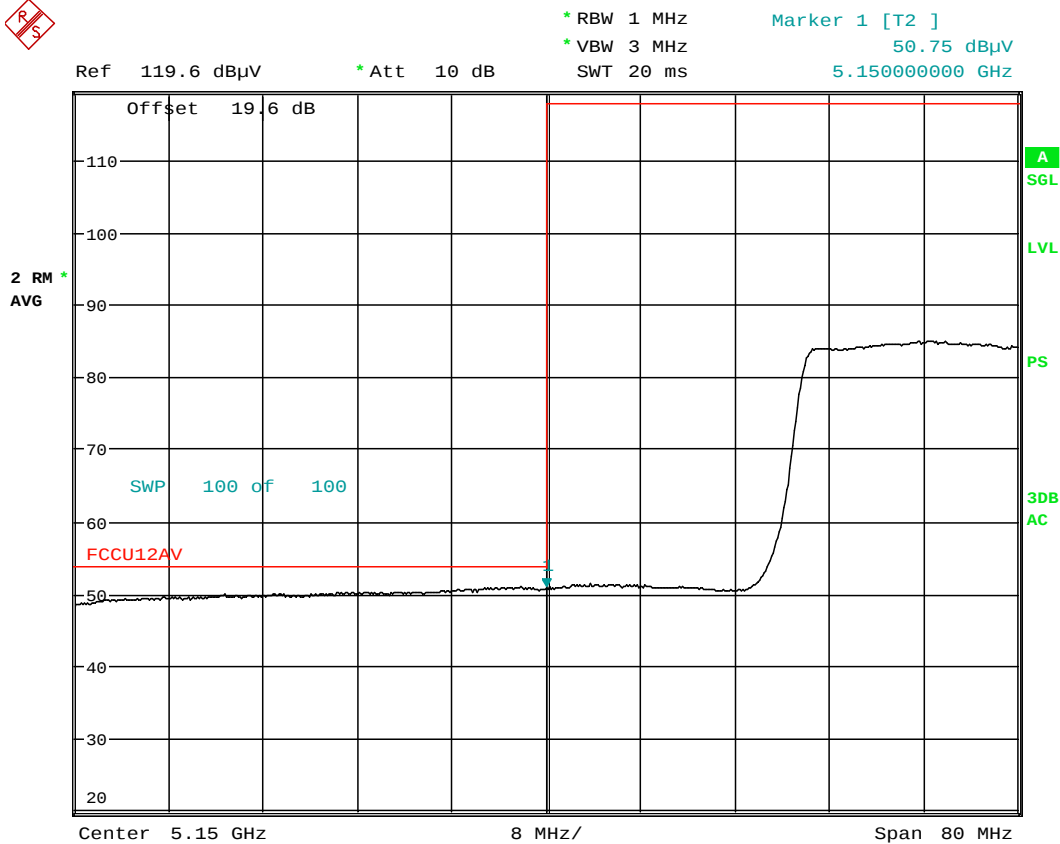
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5210MHz

Channel: 42

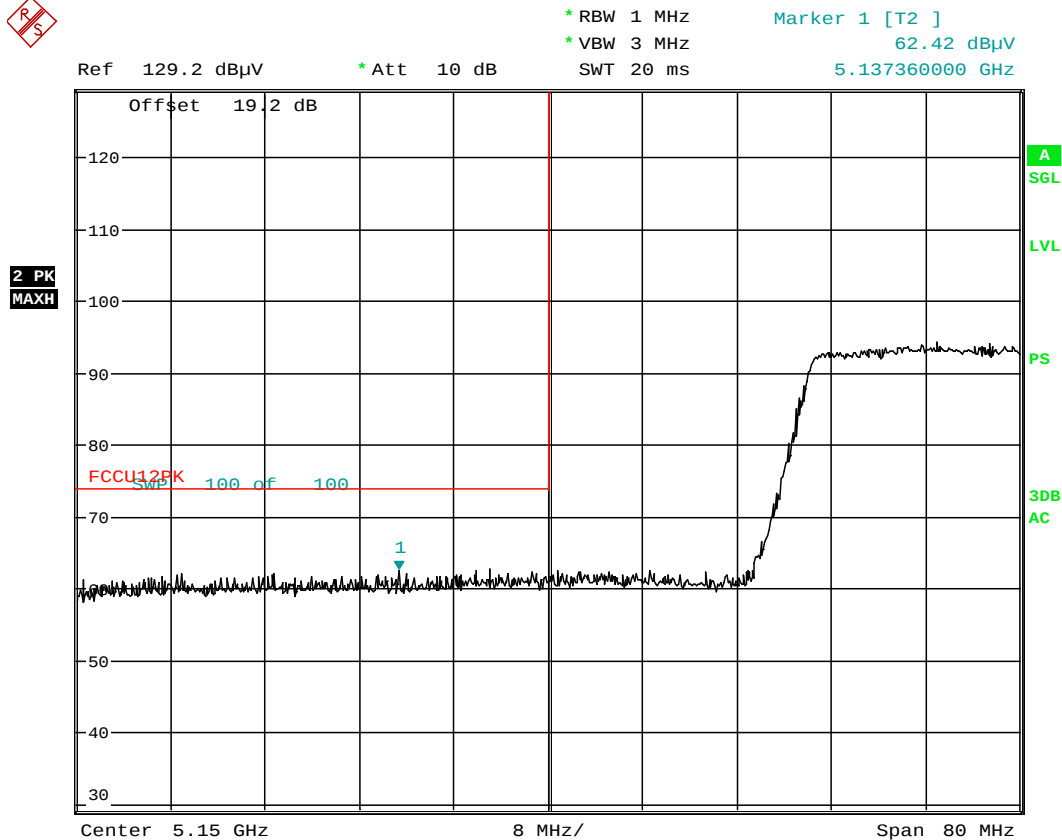


Date: 18.SEP.2014 01:56:52

**Plot 6-147. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 130 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 18.SEP.2014 01:57:27

**Plot 6-148. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 131 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

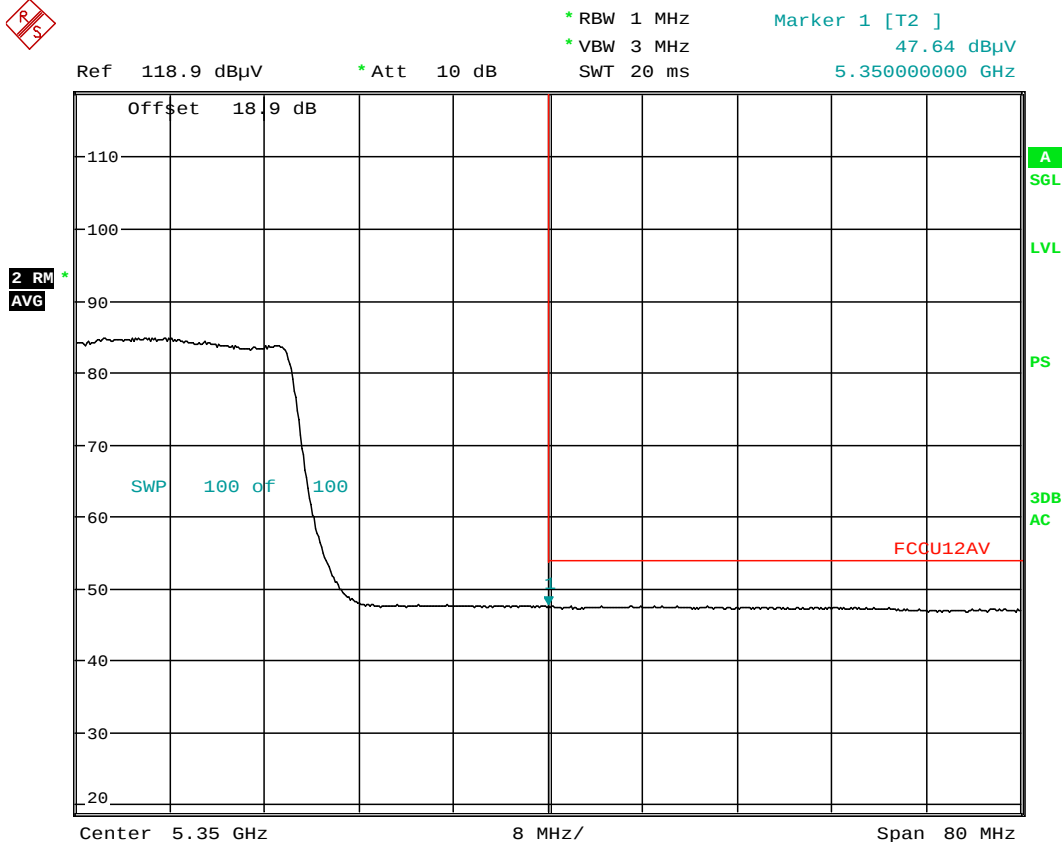
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5290MHz

Channel: 58

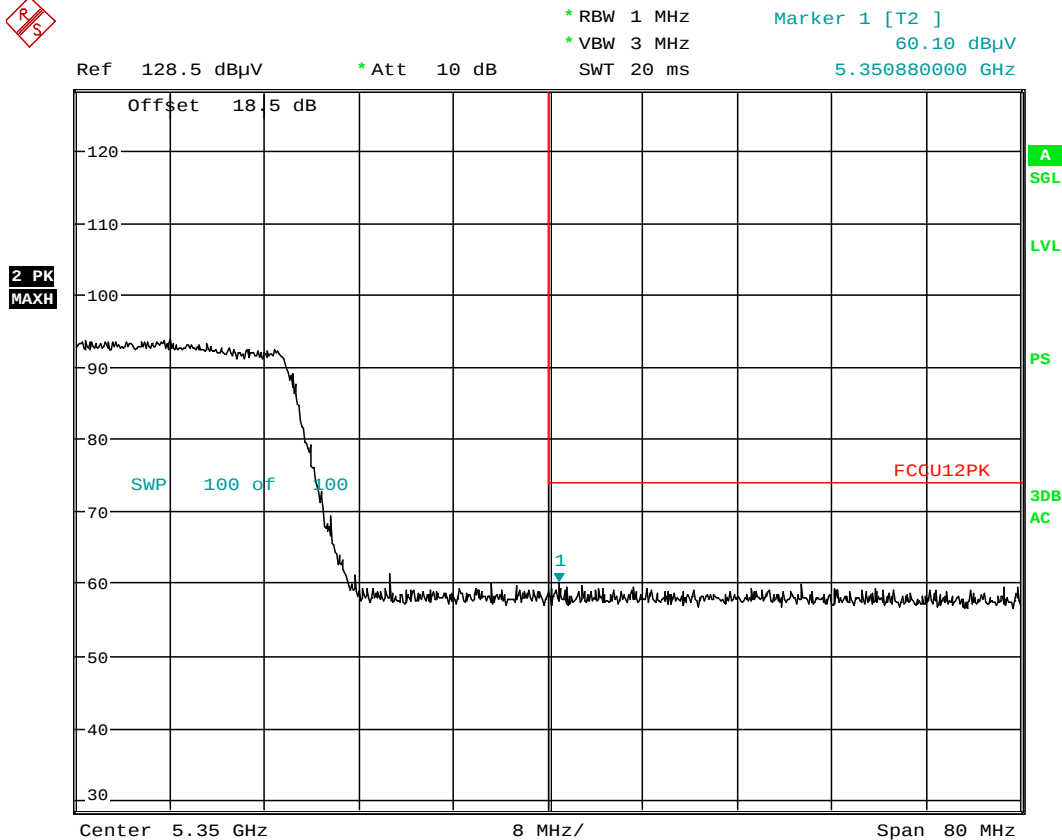


Date: 18.SEP.2014 01:45:08

**Plot 6-149. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 132 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 18.SEP.2014 01:45:42

**Plot 6-150. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 133 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

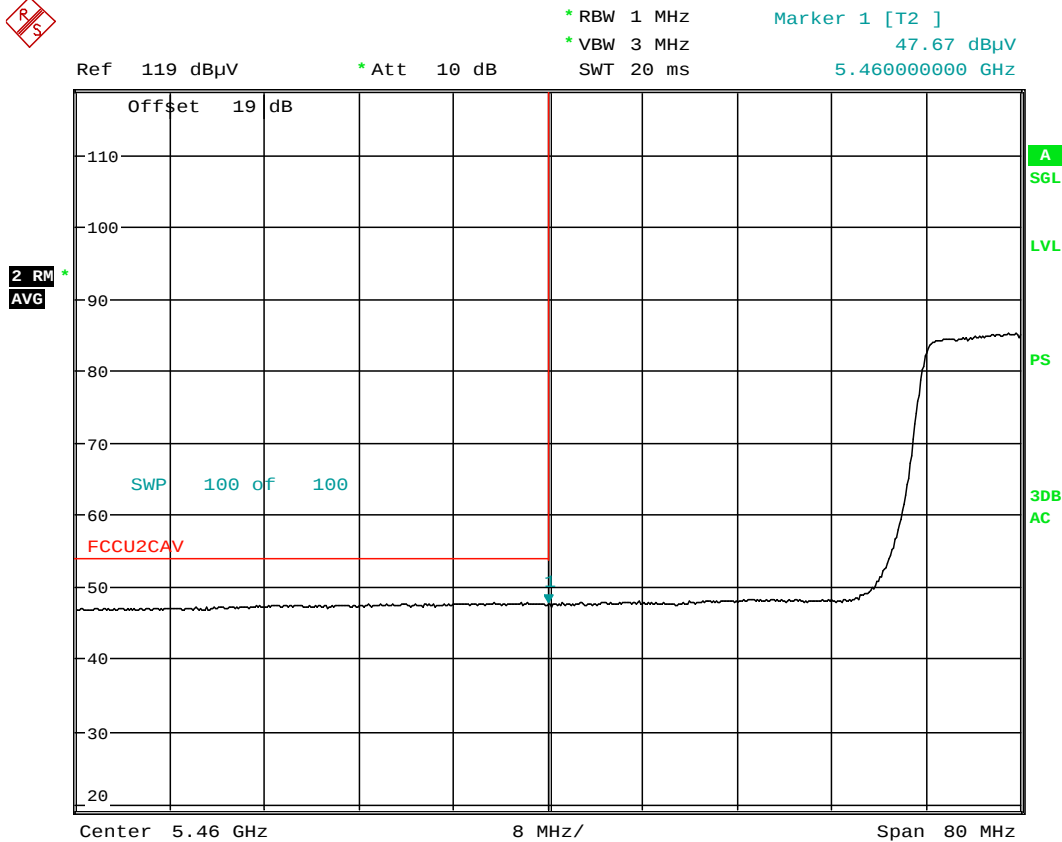
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5530MHz

Channel: 106

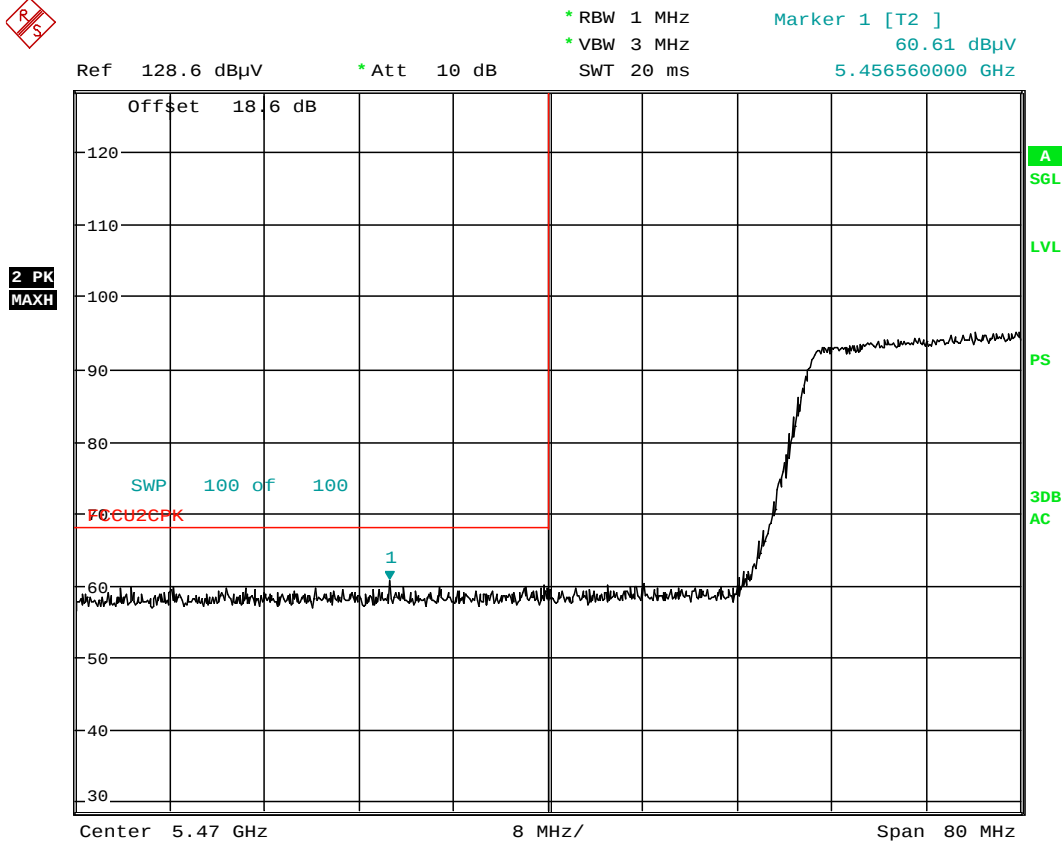


Date: 18.SEP.2014 01:51:01

**Plot 6-151. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 134 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 18.SEP.2014 01:51:41

**Plot 6-152. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 135 of 182                 |

## 6.11 Antenna-2 Radiated Band Edge Measurements (20MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

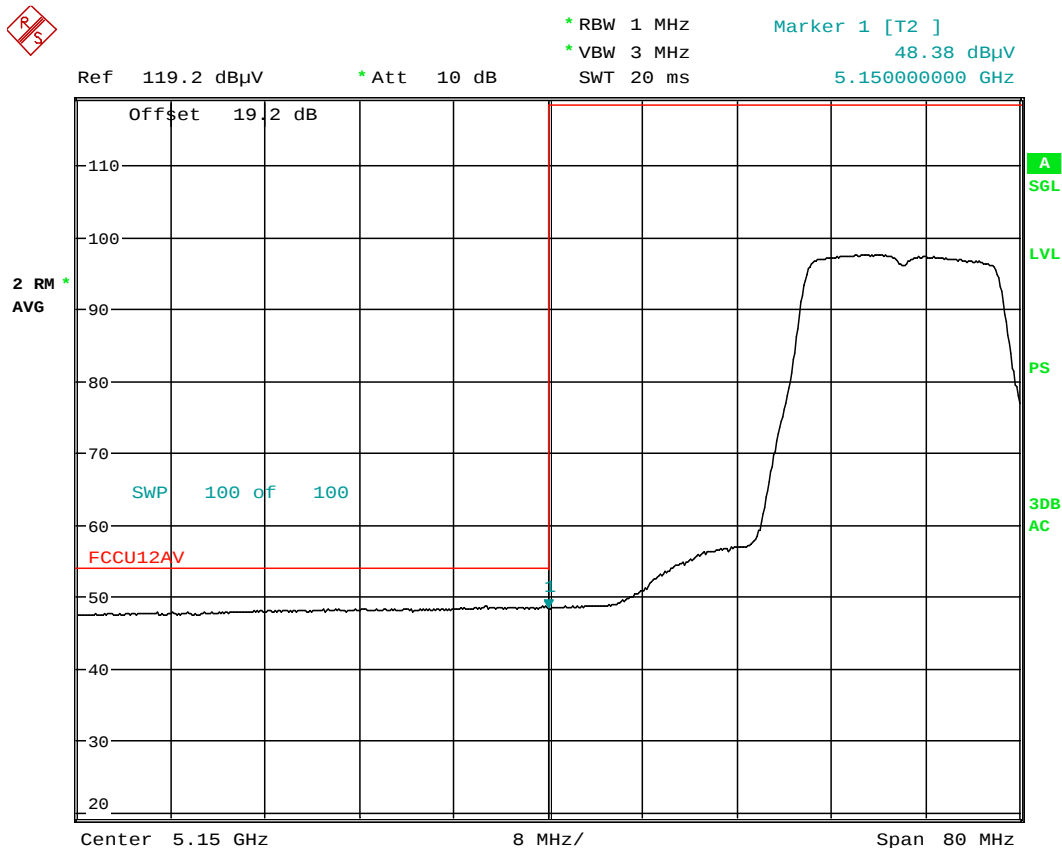
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5180MHz

Channel: 36

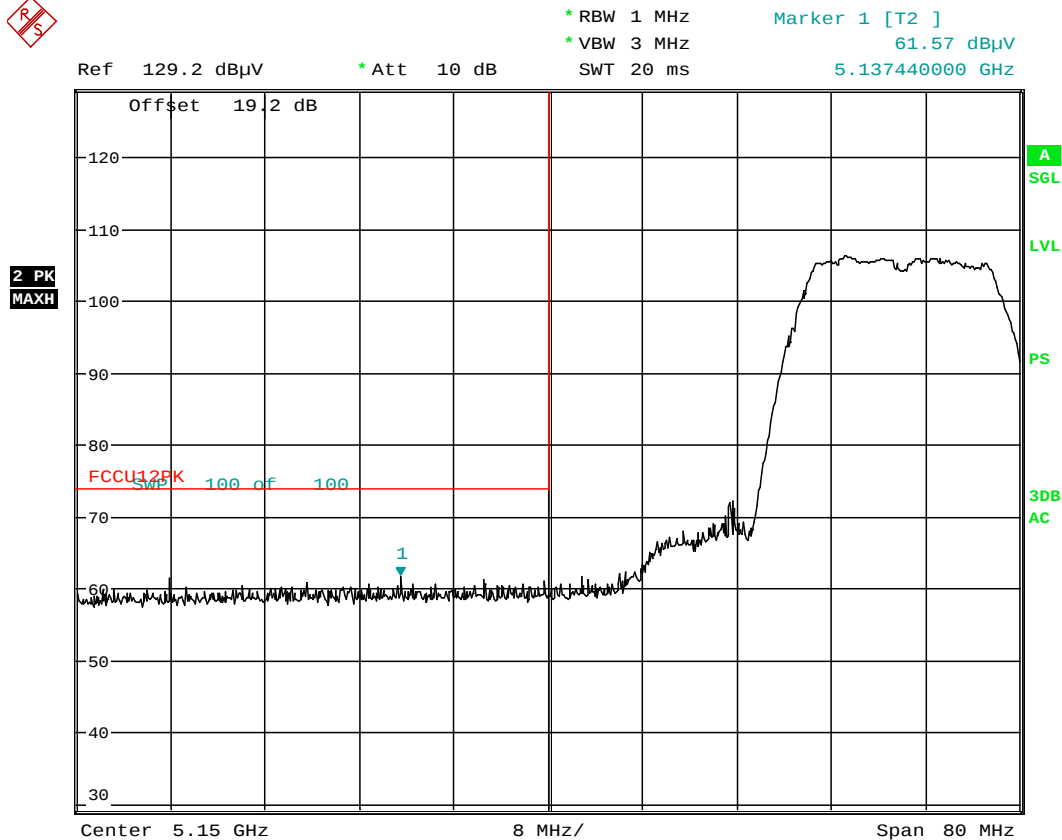


Date: 16.SEP.2014 21:44:09

**Plot 6-153. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 136 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 21:44:45

**Plot 6-154. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 137 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

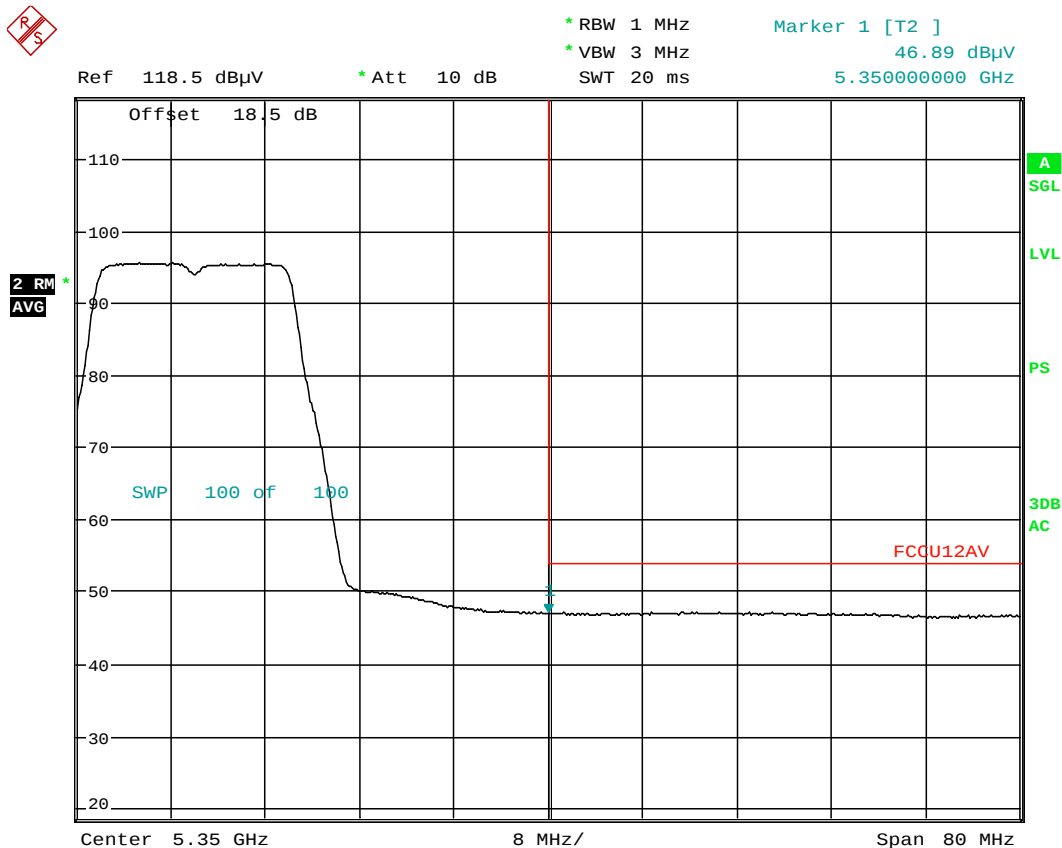
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5320MHz

Channel: 64

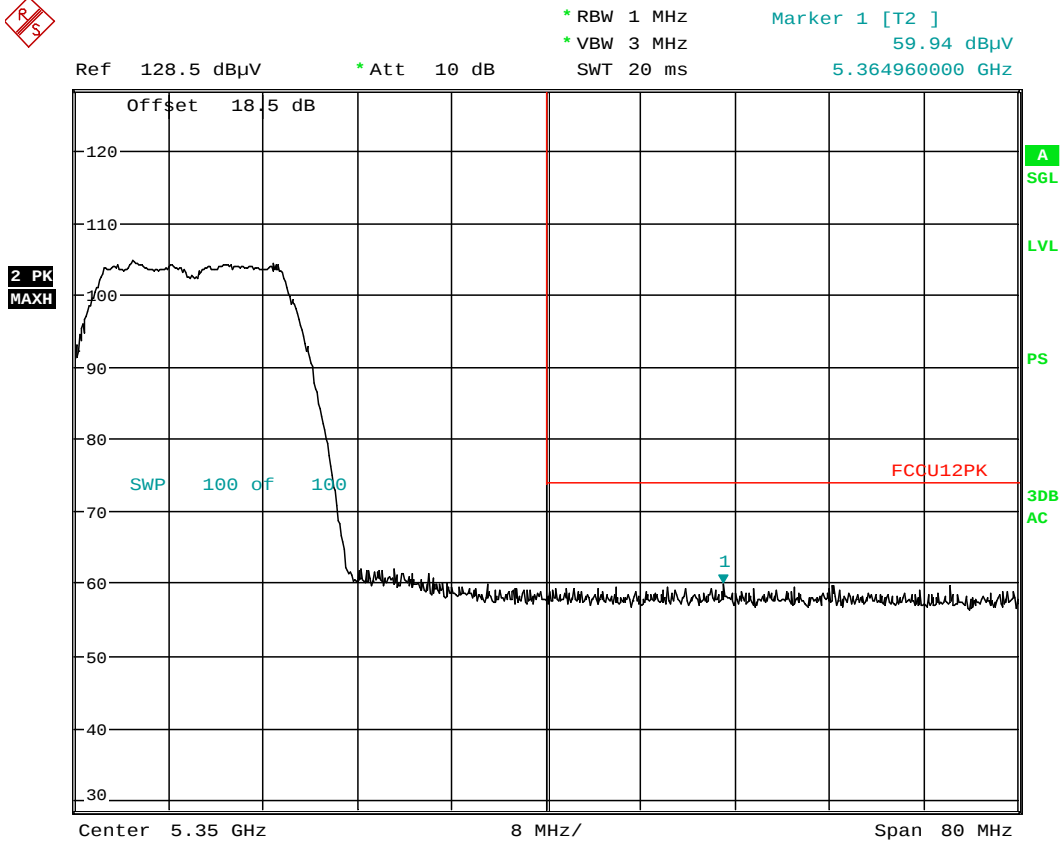


Date: 16.SEP.2014 23:24:31

**Plot 6-155. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 138 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 23:25:03

**Plot 6-156. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 139 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

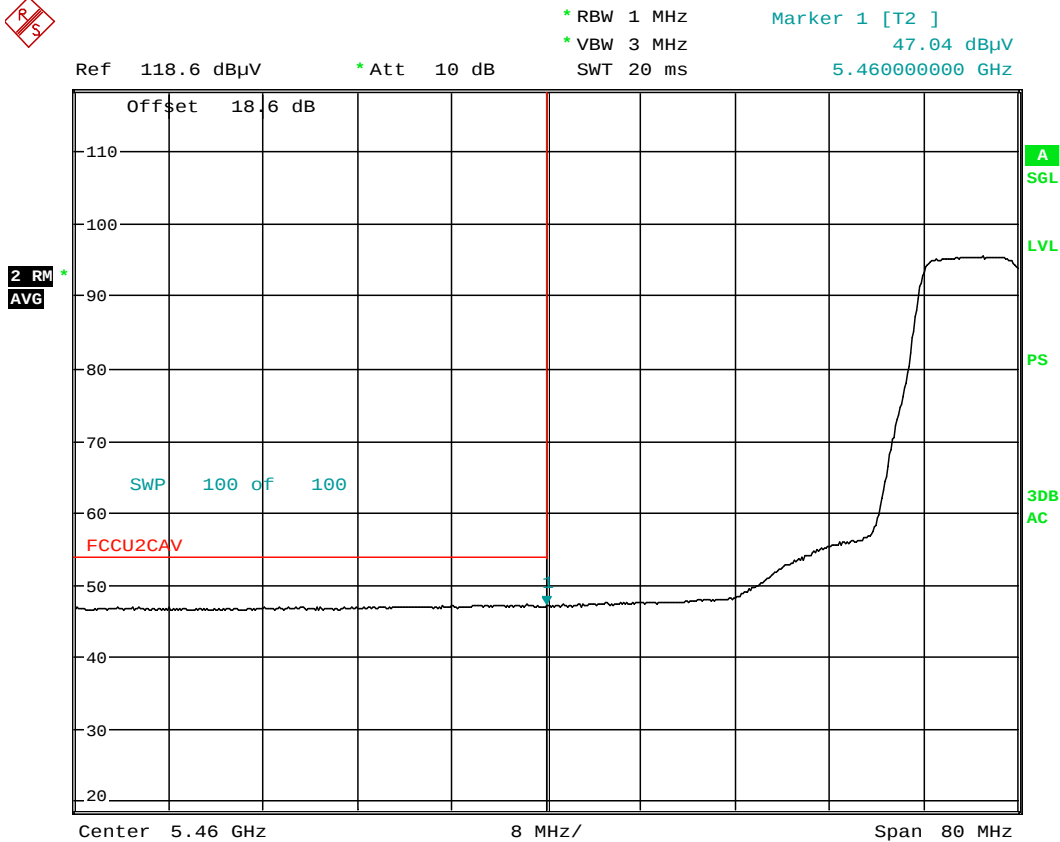
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5500MHz

Channel: 100

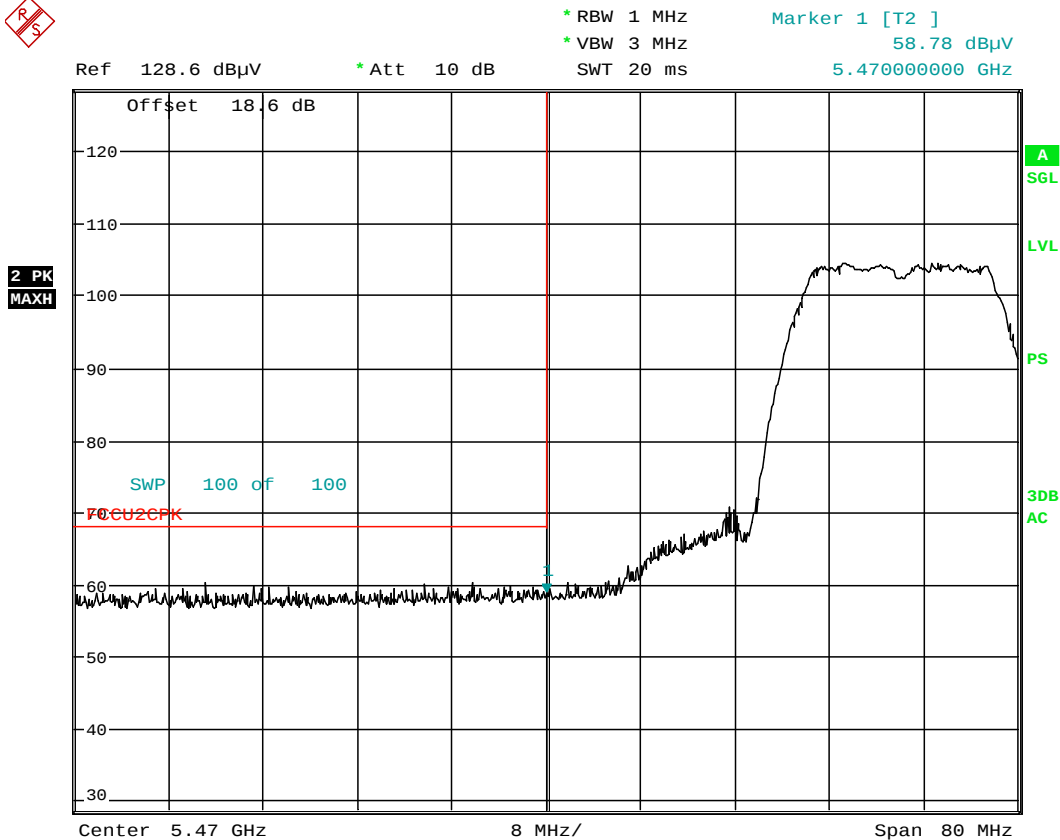


Date: 16.SEP.2014 23:28:31

**Plot 6-157. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 140 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



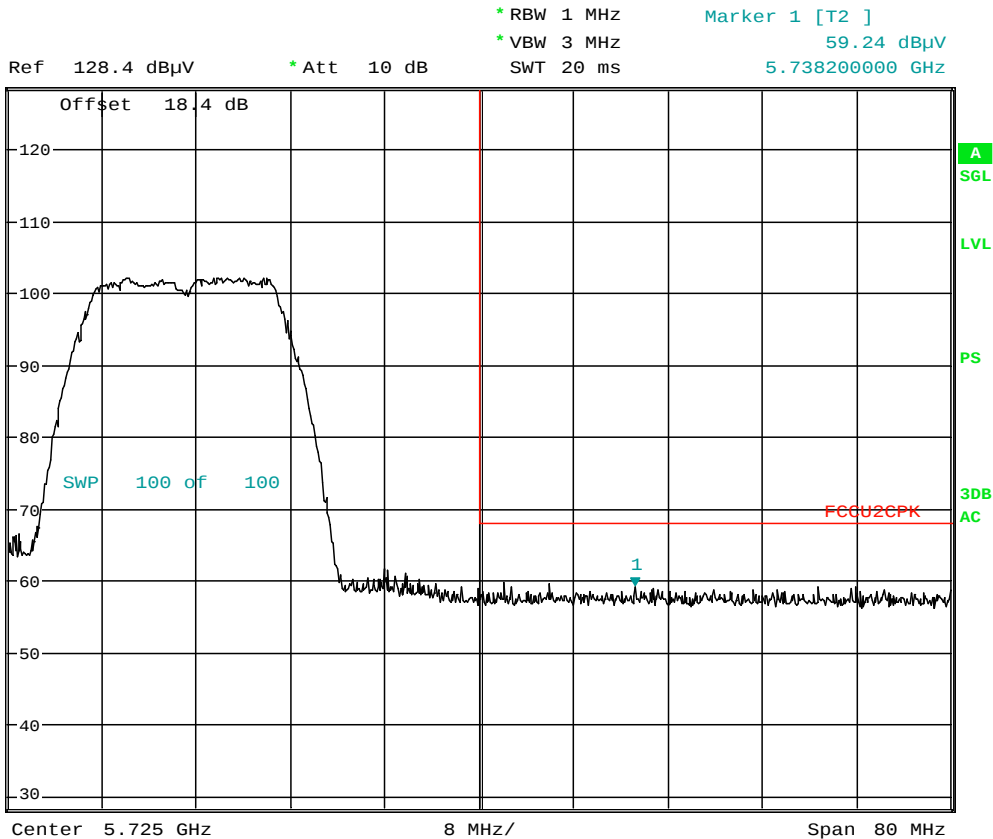
Date: 16.SEP.2014 23:29:06

**Plot 6-158. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 141 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

Worst Case Mode: 802.11a  
Worst Case Transfer Rate: 6 Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 5700MHz  
Channel: 140



Date: 16.SEP.2014 23:32:32

**Plot 6-159. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 142 of 182                 |

## 6.12 Antenna-2 Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

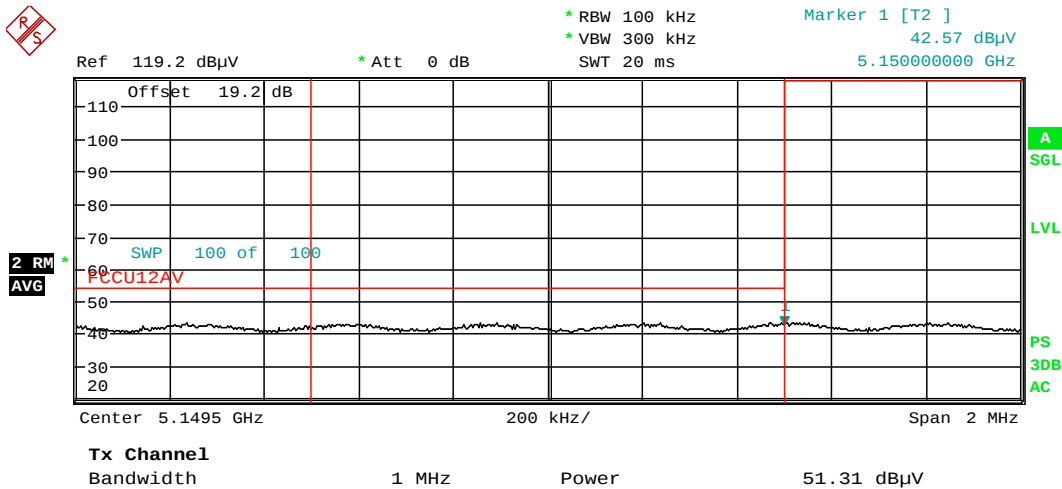
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5190MHz

Channel: 38

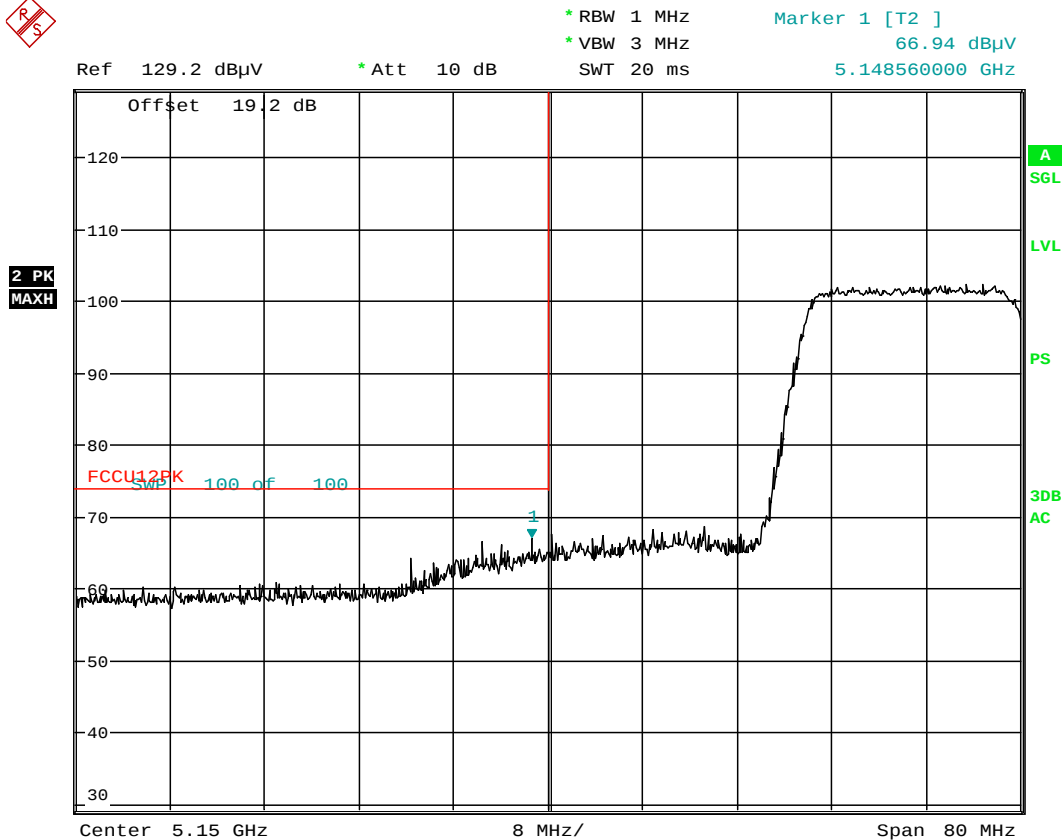


Date: 16.SEP.2014 22:24:34

**Plot 6-160. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 143 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 29.SEP.2014 23:50:40

**Plot 6-161. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 144 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

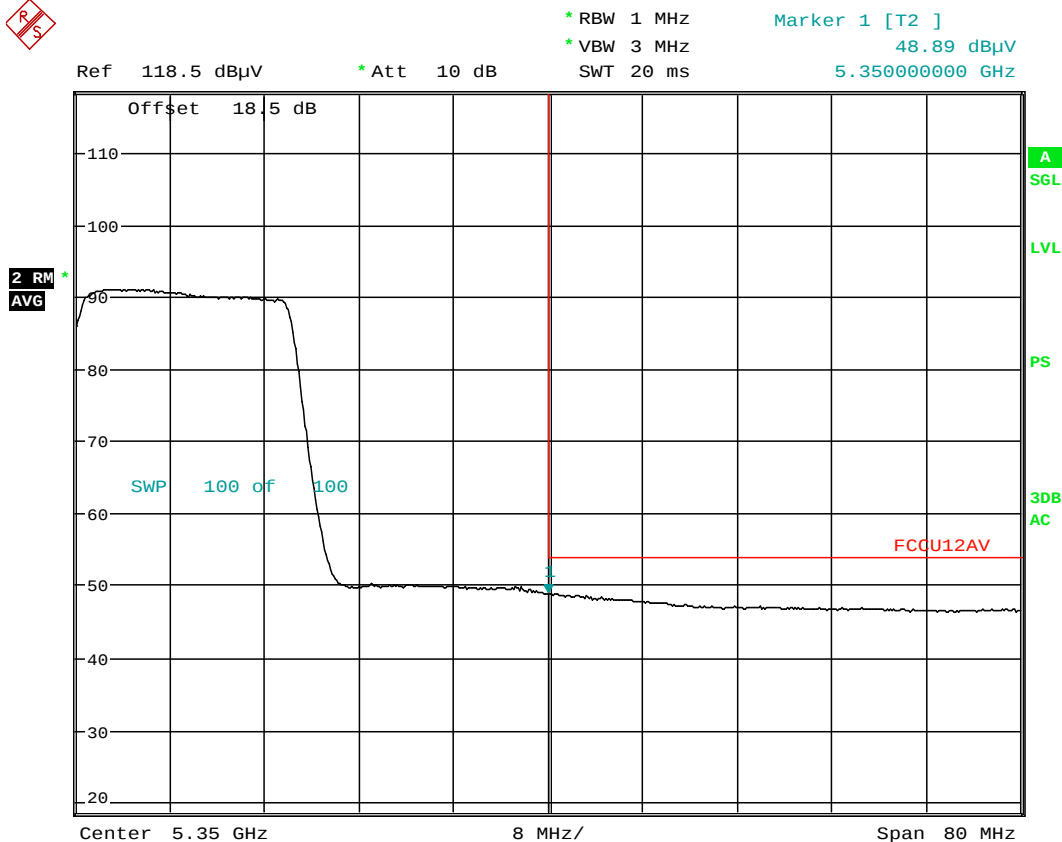
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5310MHz

Channel: 62

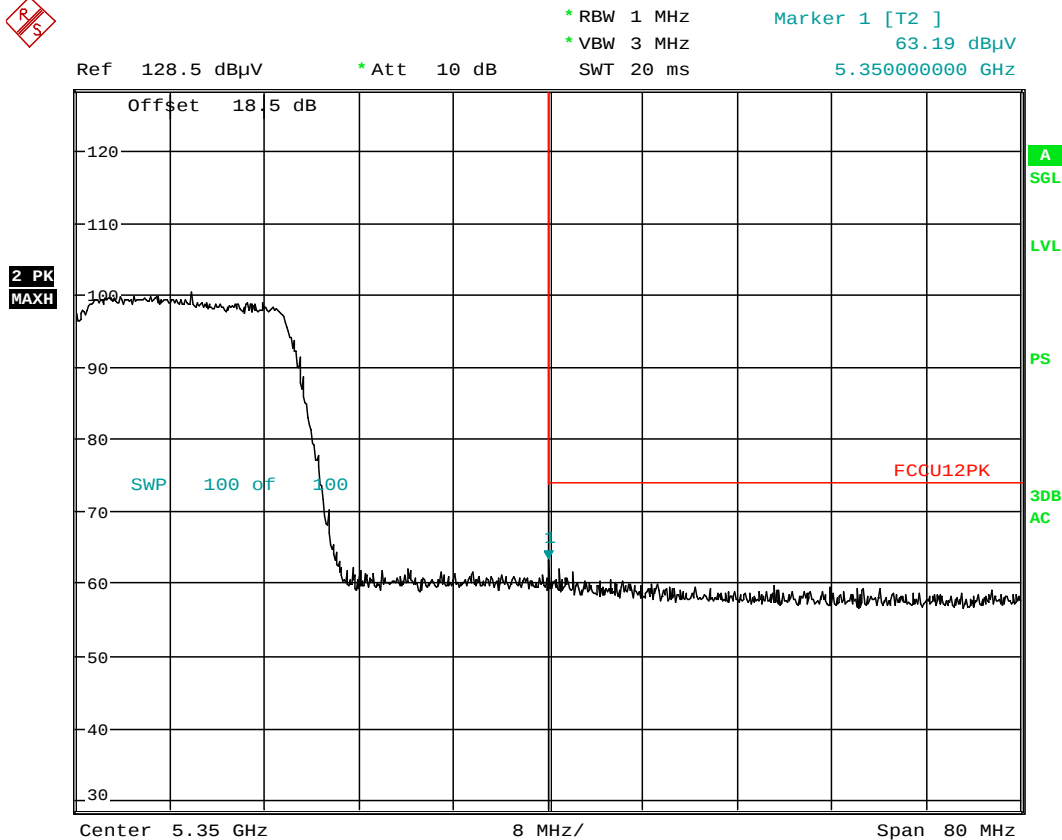


Date: 16.SEP.2014 22:32:18

**Plot 6-162. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 145 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 22:33:09

**Plot 6-163. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 146 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

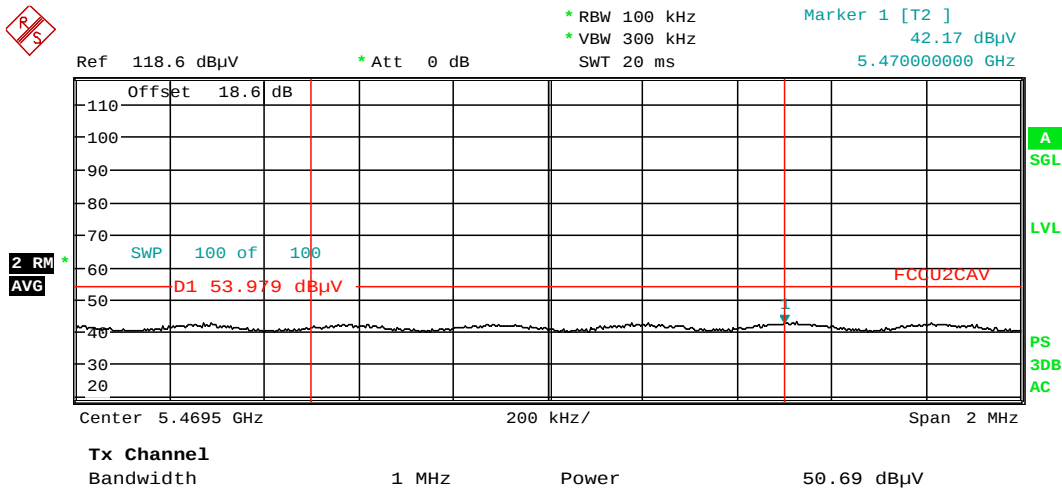
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5510MHz

Channel: 102

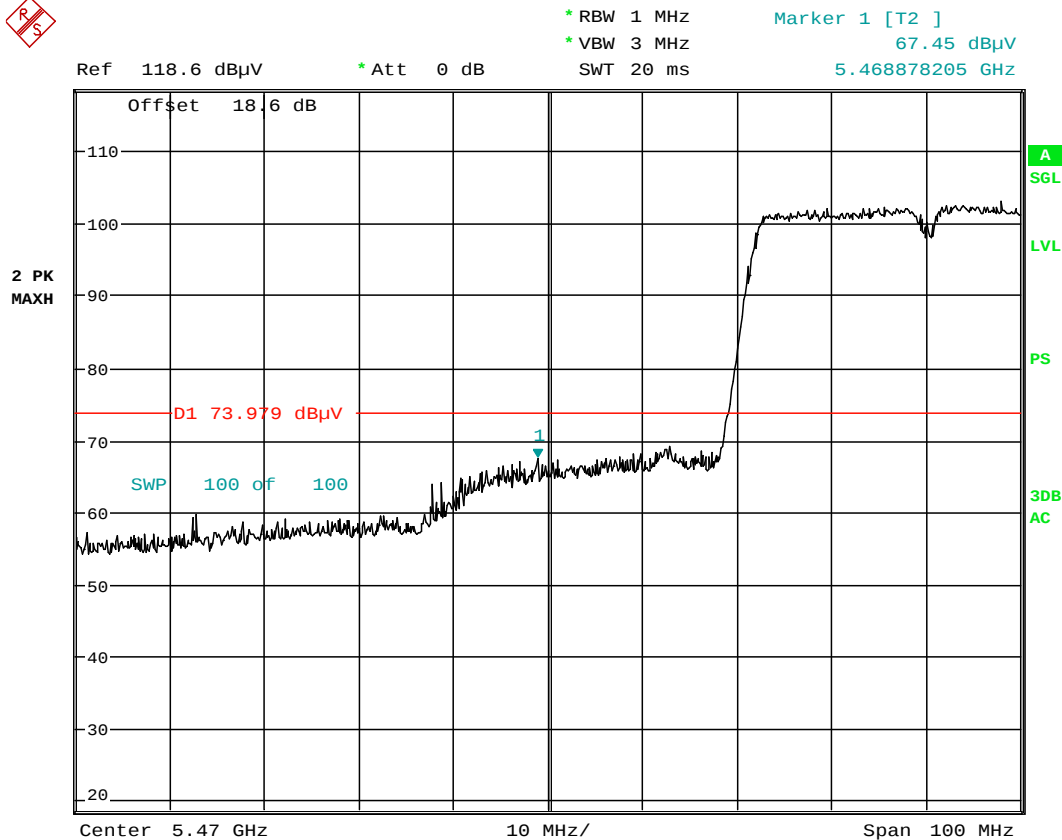


Date: 16.SEP.2014 22:44:21

**Plot 6-164. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 147 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 22:50:31

**Plot 6-165. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 148 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

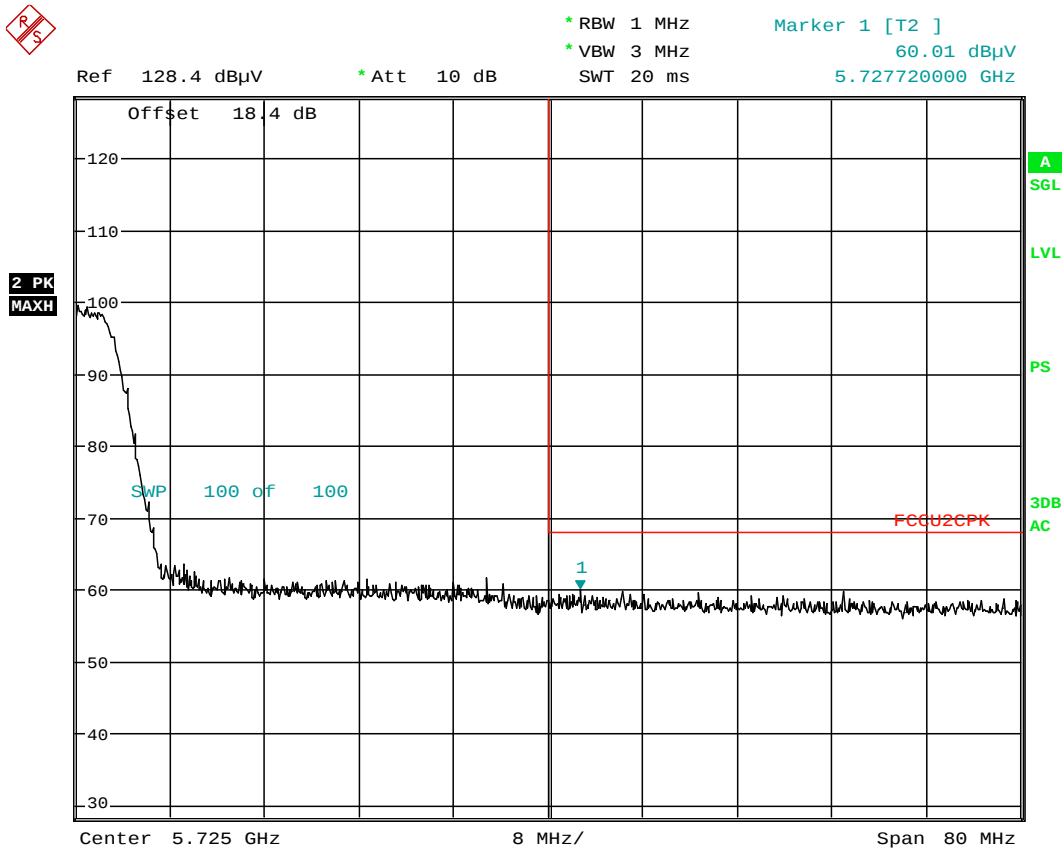
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5670MHz

Channel: 134



Date: 16.SEP.2014 22:55:42

**Plot 6-166. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 149 of 182                 |

## 6.13 Antenna-2 Radiated Band Edge Measurements (80MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

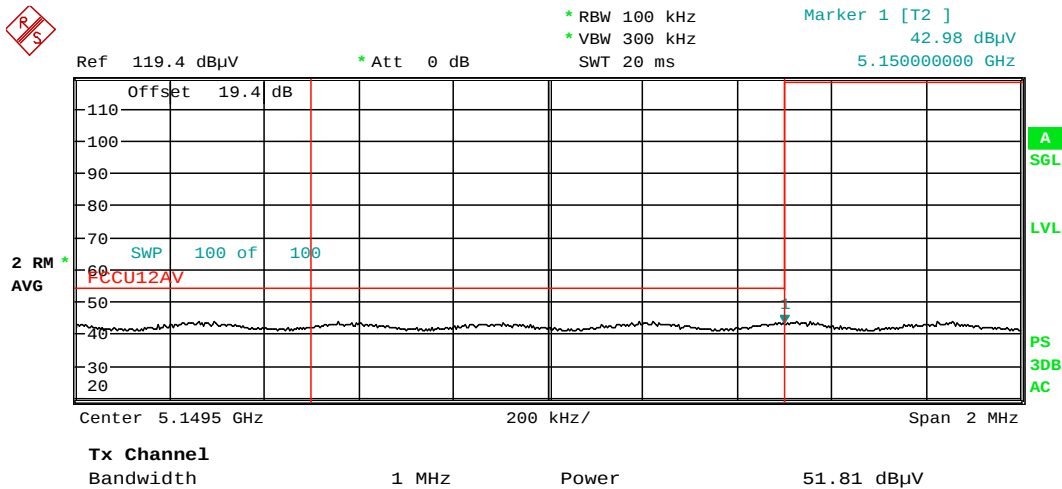
Worst Case Mode: 802.11n (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5210MHz

Channel: 42

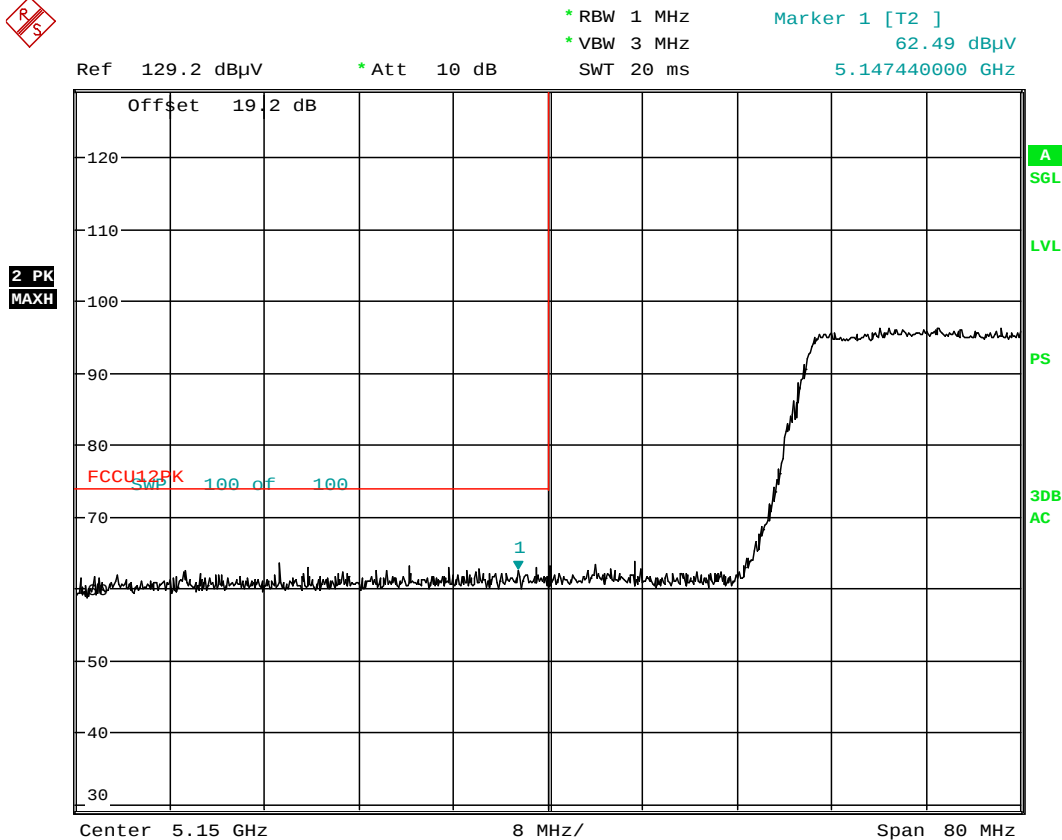


Date: 18.SEP.2014 02:10:05

**Plot 6-167. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 150 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 23:09:06

**Plot 6-168. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 151 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

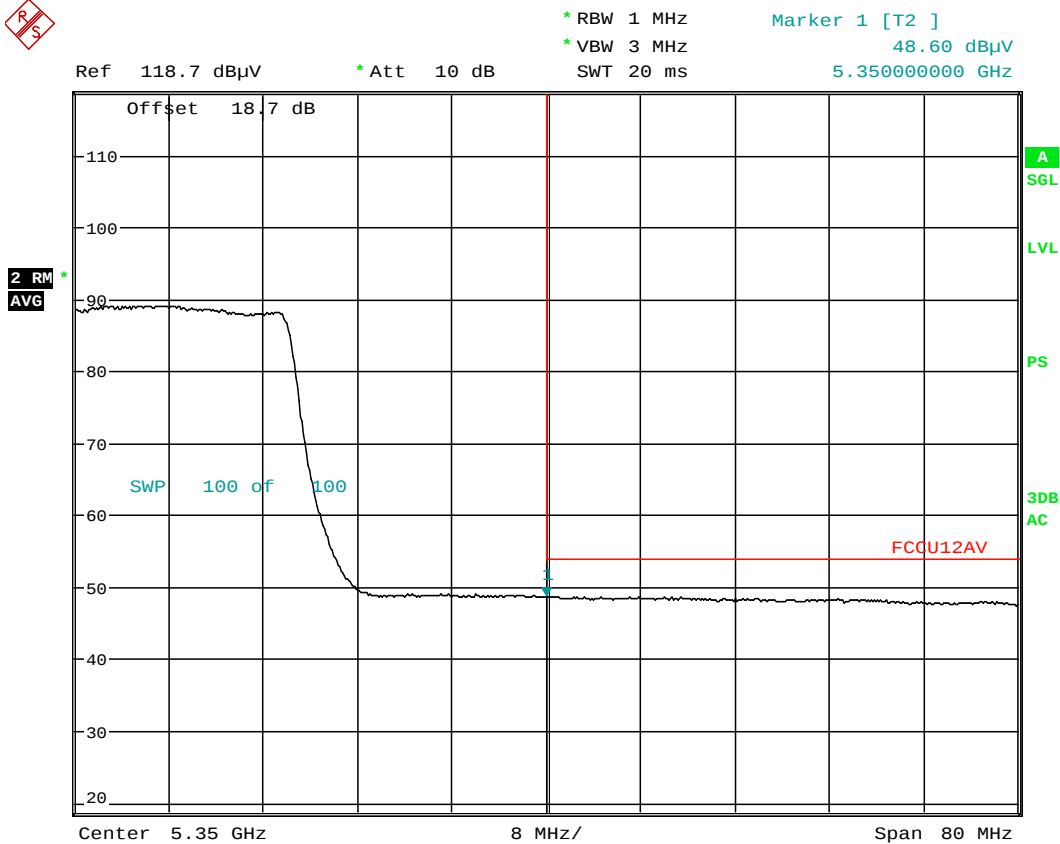
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5290MHz

Channel: 58

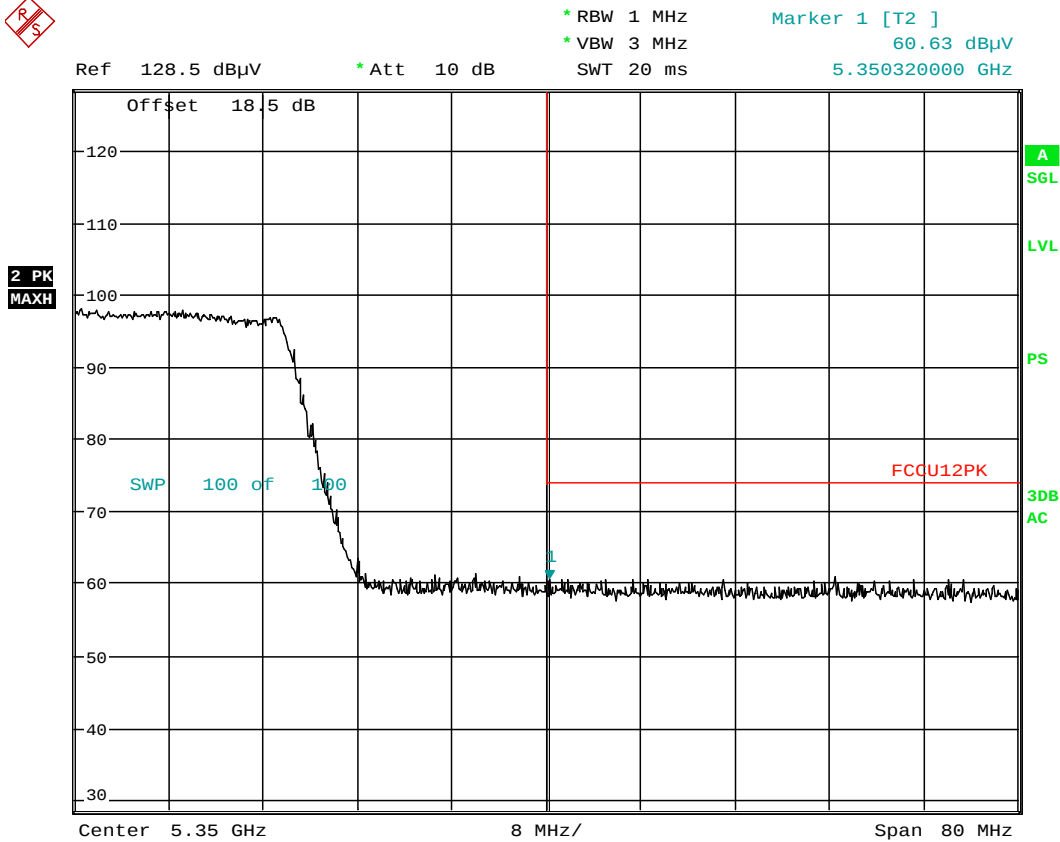


Date: 16.SEP.2014 23:13:42

**Plot 6-169. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 152 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 23:14:28

**Plot 6-170. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 153 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

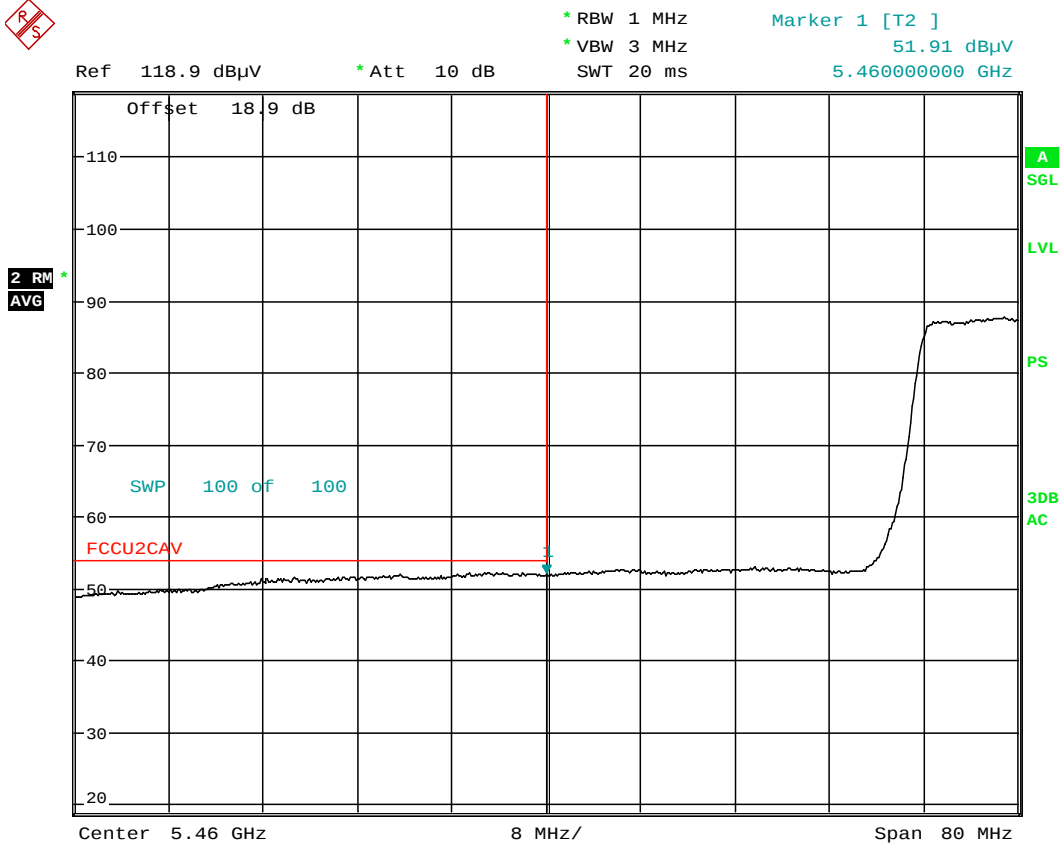
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5530MHz

Channel: 106

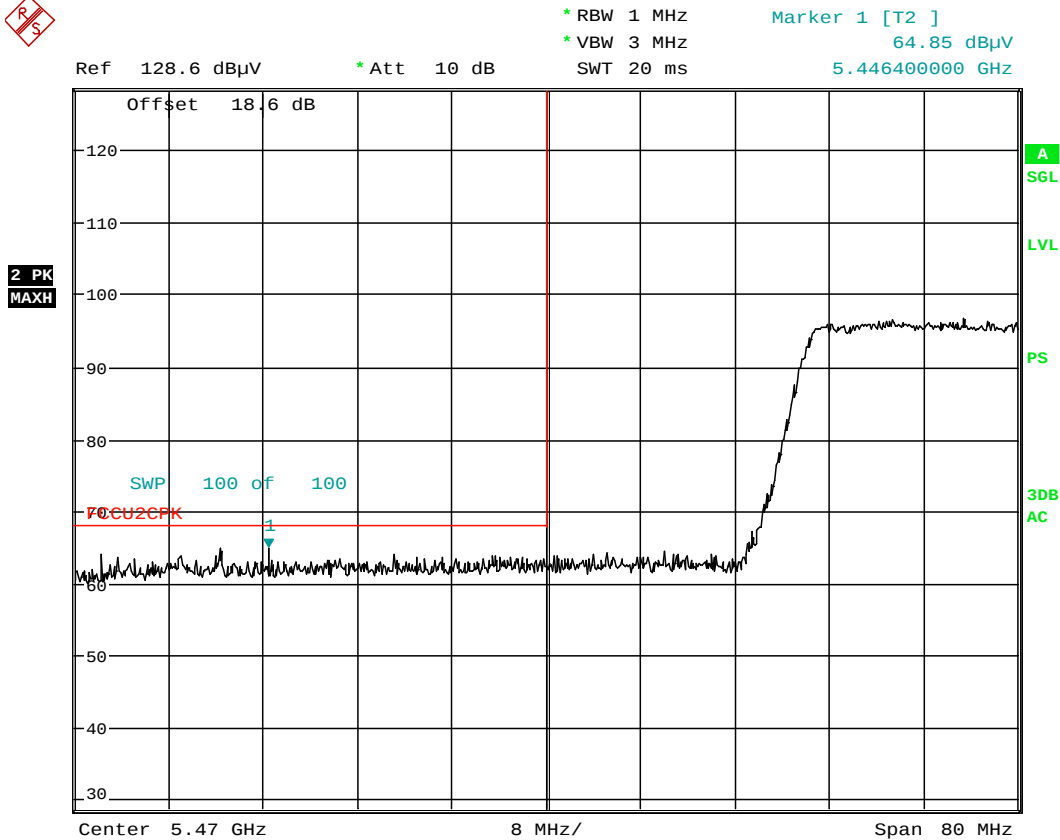


Date: 16.SEP.2014 23:18:48

**Plot 6-171. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 154 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 23:19:29

**Plot 6-172. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 155 of 182                 |

## 6.14 MIMO Radiated Band Edge Measurements (20MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

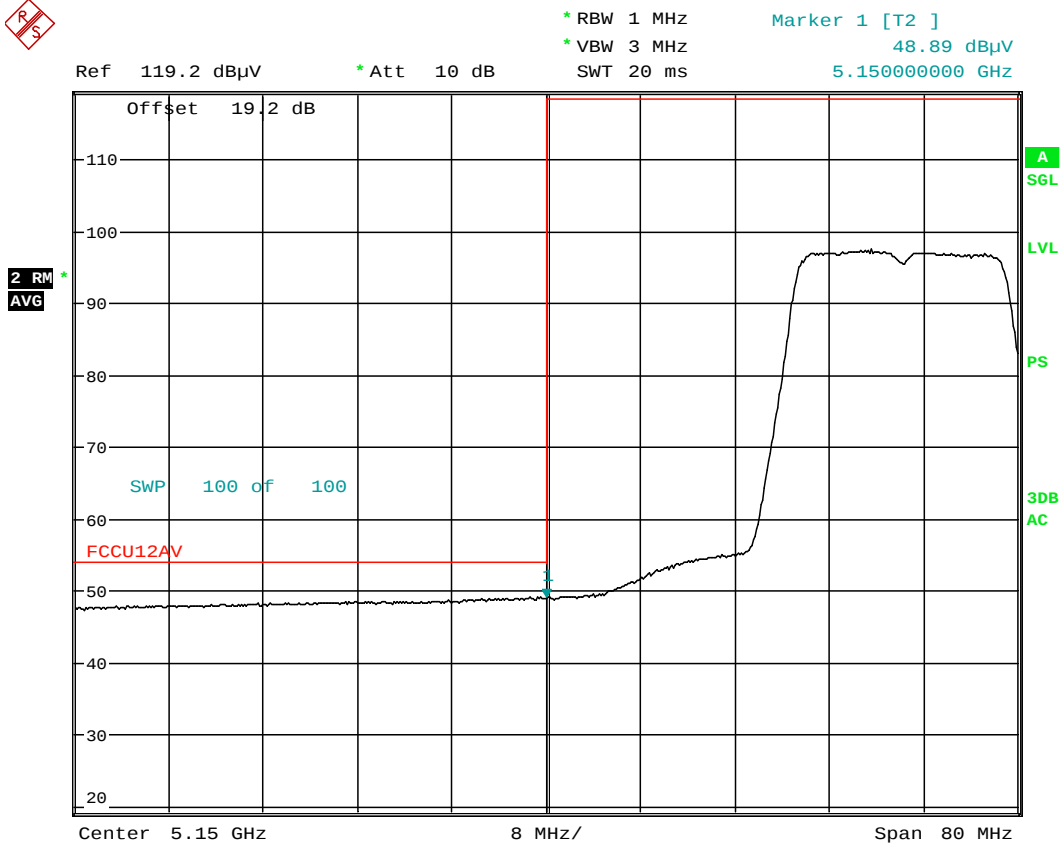
Worst Case Mode: 802.11n (20MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5180MHz

Channel: 36

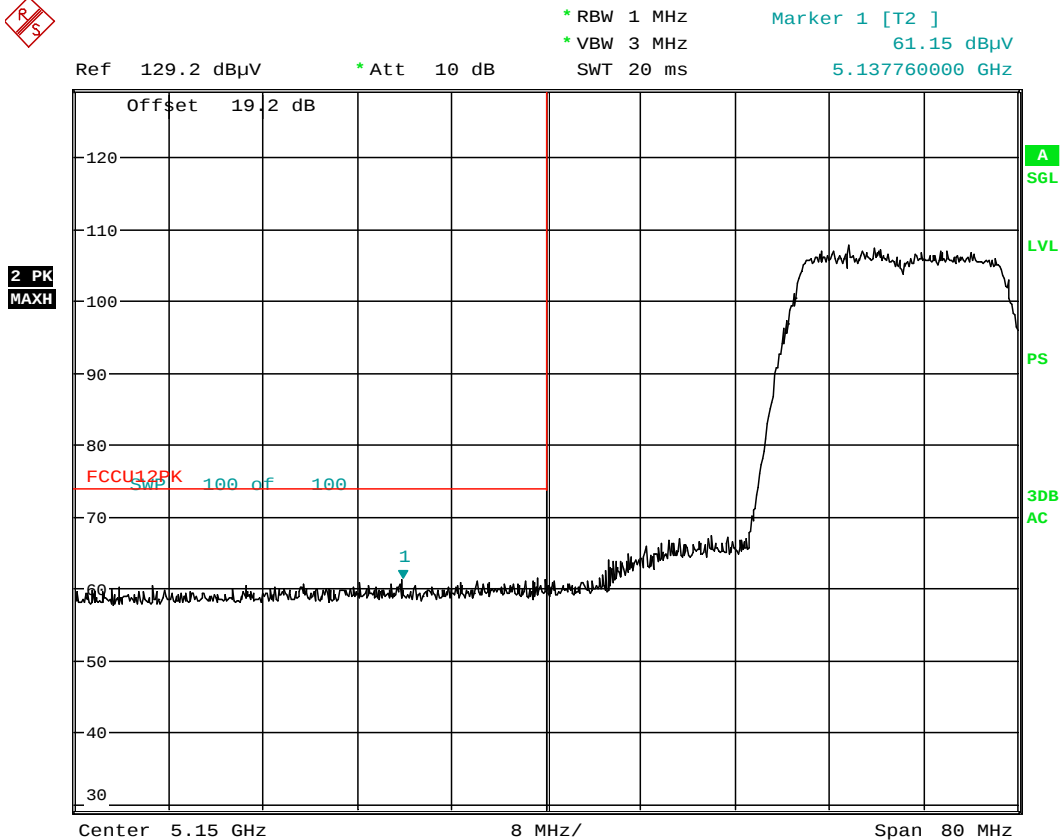


Date: 16.SEP.2014 23:49:43

**Plot 6-173. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 156 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 23:50:29

**Plot 6-174. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 157 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

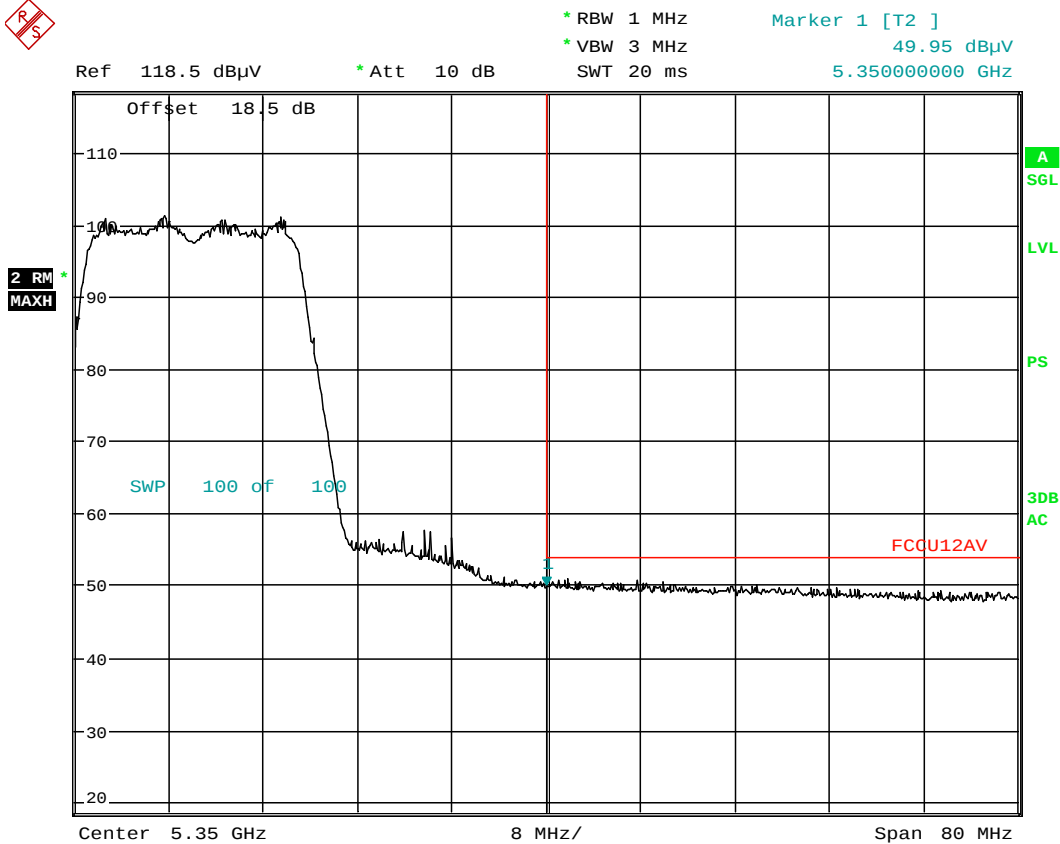
Worst Case Mode: 802.11n (20MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5320MHz

Channel: 64

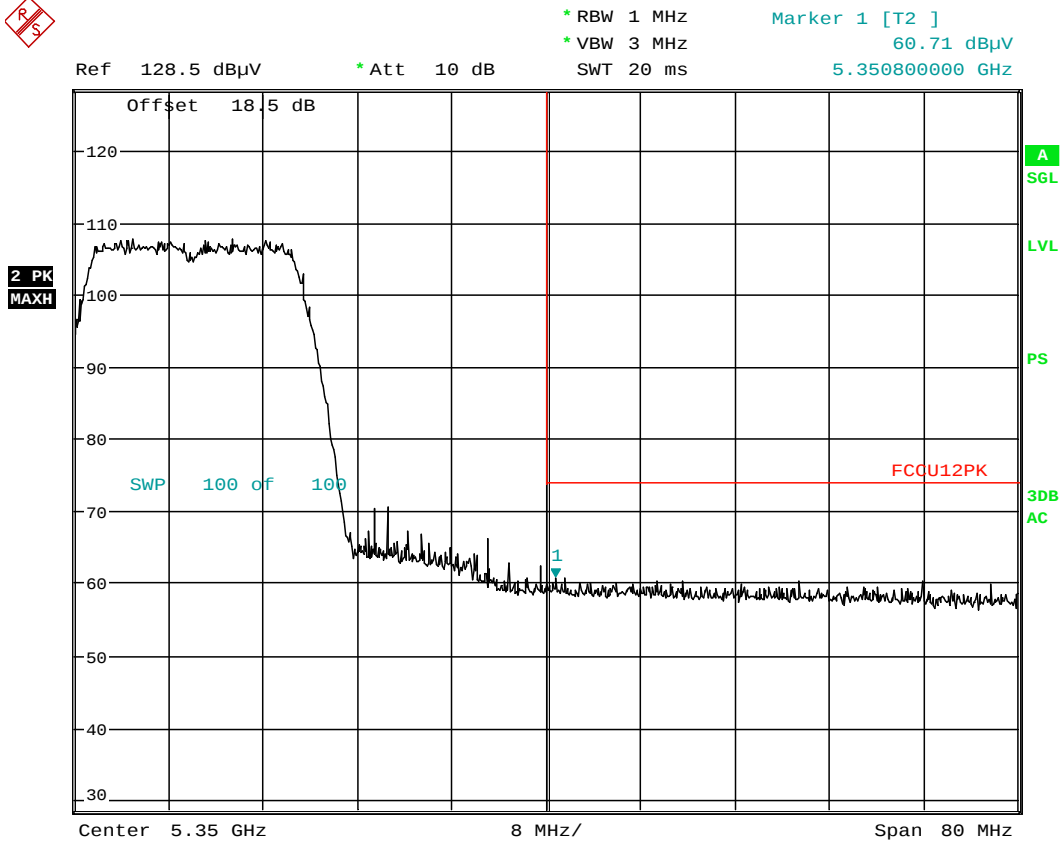


Date: 17.SEP.2014 01:44:05

**Plot 6-175. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 158 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 17.SEP.2014 01:44:45

**Plot 6-176. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 159 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

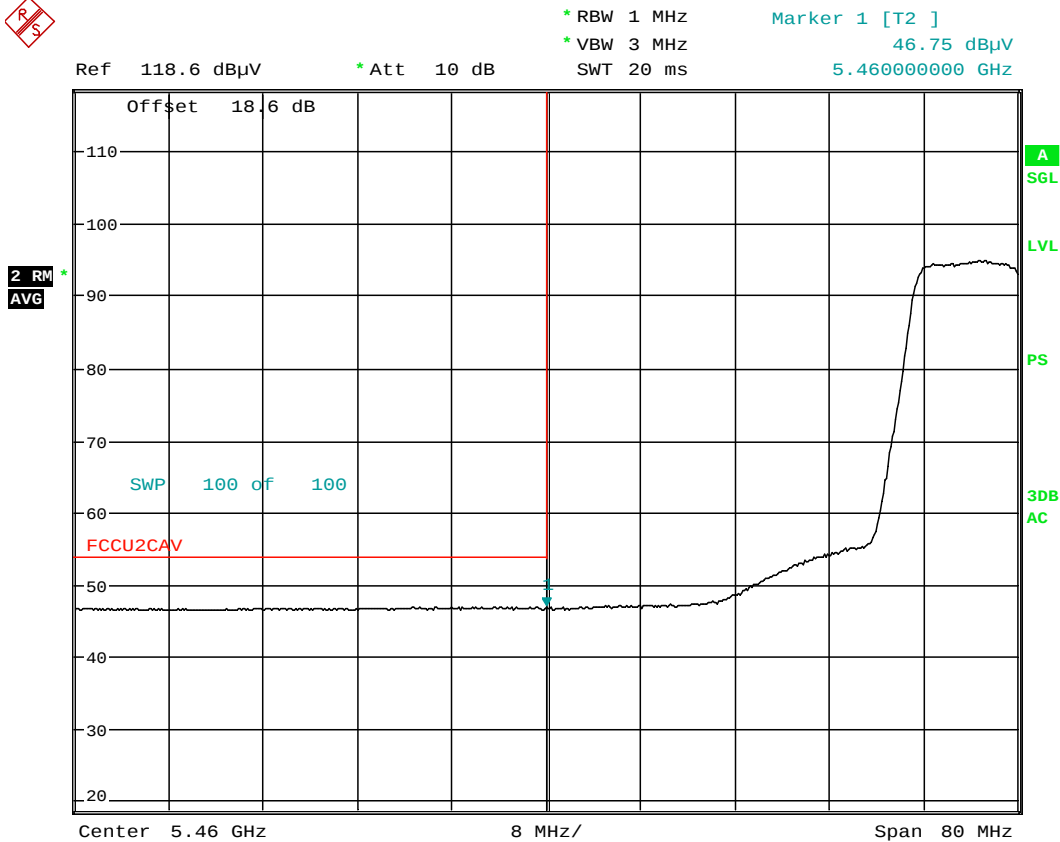
Worst Case Mode: 802.11n (20MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5500MHz

Channel: 100

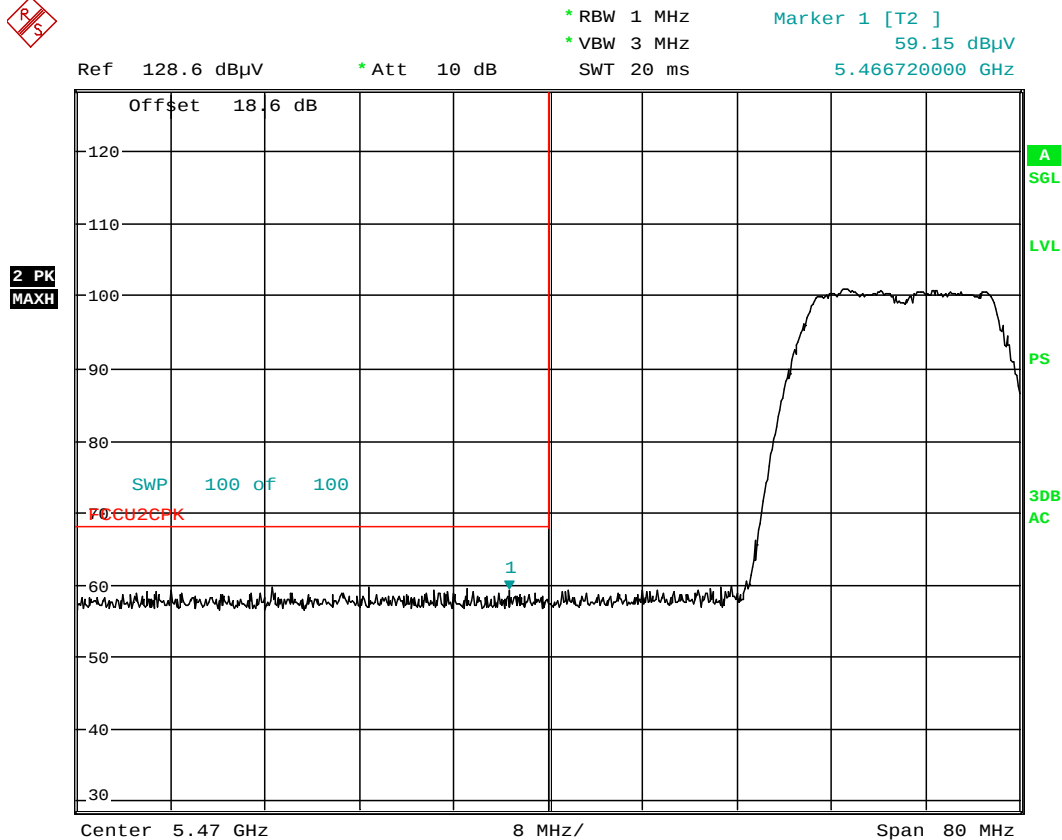


Date: 17.SEP.2014 01:50:52

**Plot 6-177. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 160 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 16.SEP.2014 21:13:26

**Plot 6-178. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 161 of 182                 |

# Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

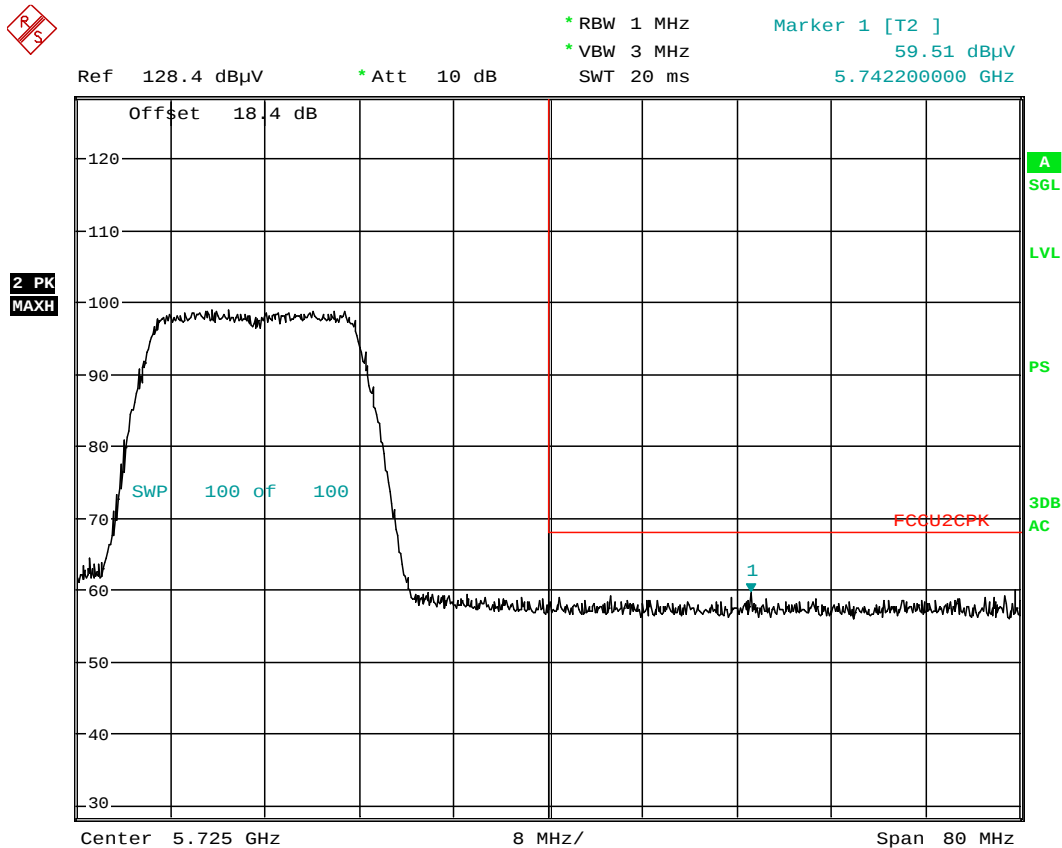
Worst Case Mode: 802.11n (20MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5700MHz

Channel: 140



Date: 17.SEP.2014 01:56:15

**Plot 6-179. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 162 of 182                 |

## 6.15 MIMO Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209

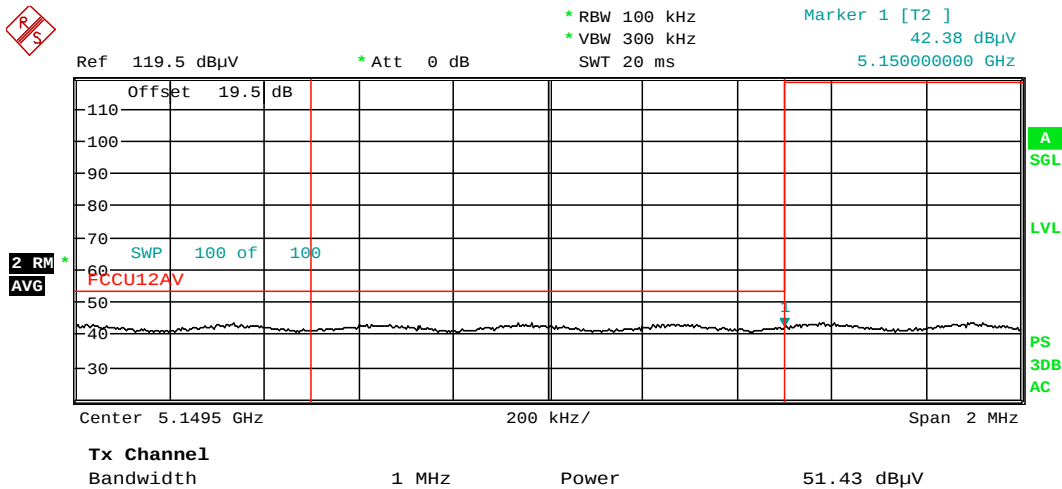
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5190MHz

Channel: 38



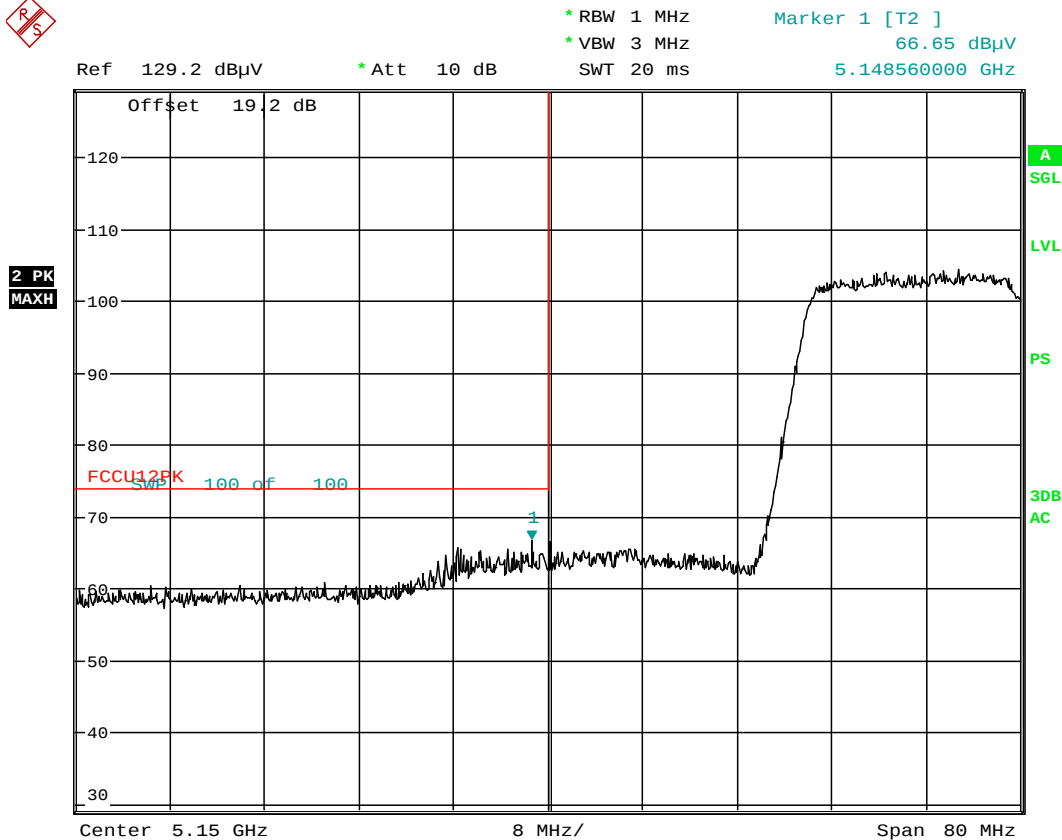
Date: 17.SEP.2014 00:02:15

**Plot 6-180. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 163 of 182                 |

# Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 17.SEP.2014 00:29:10

**Plot 6-181. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 164 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

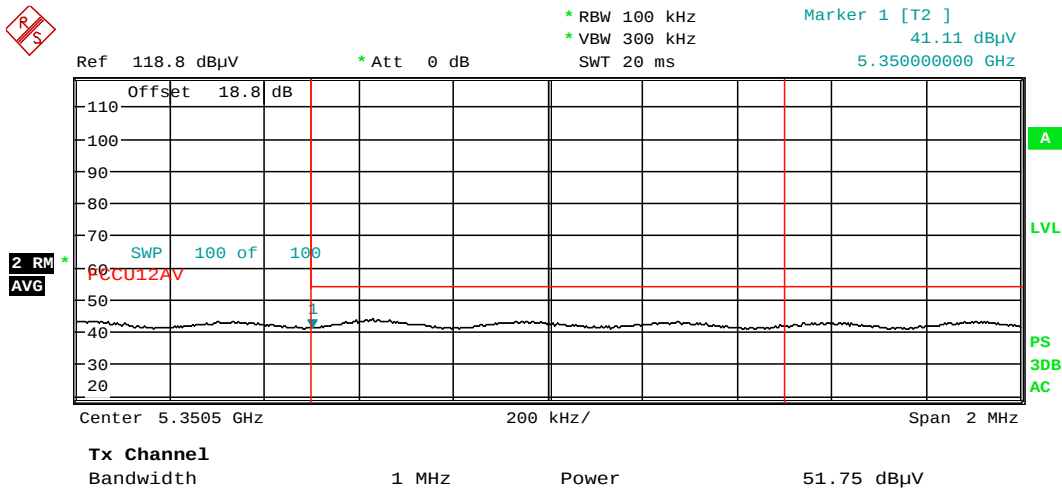
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5310MHz

Channel: 62

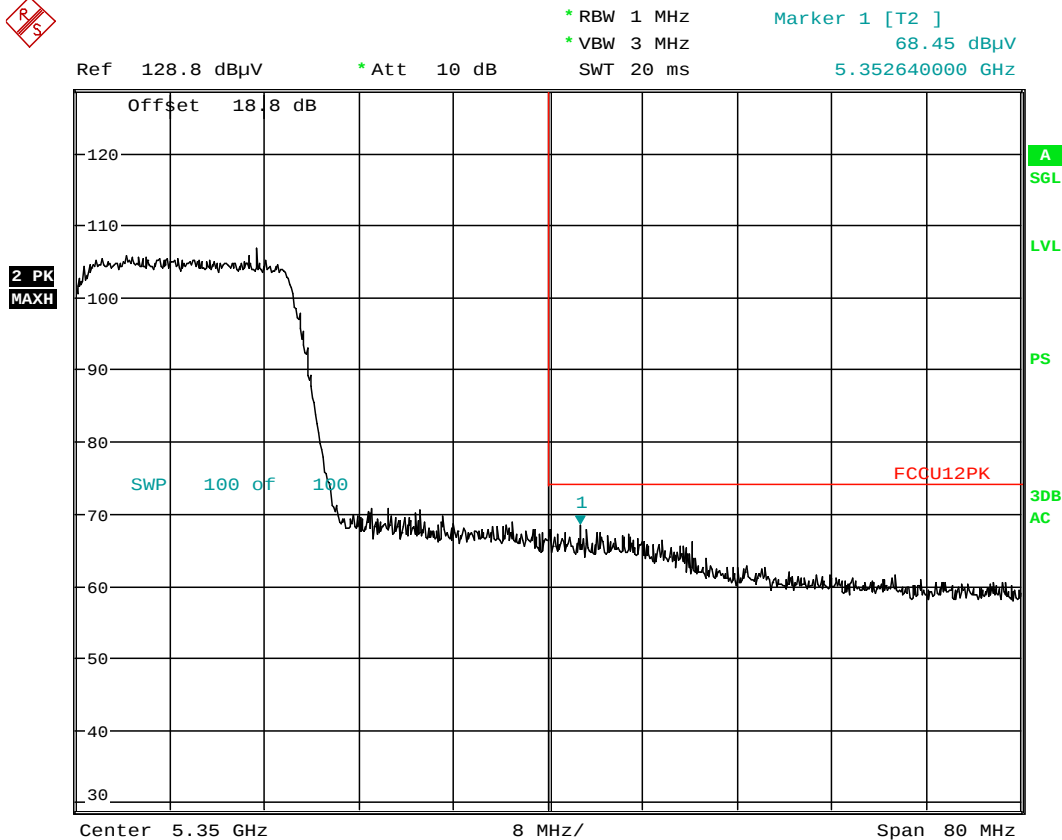


Date: 17.SEP.2014 00:35:35

**Plot 6-182. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 165 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 17.SEP.2014 00:36:42

**Plot 6-183. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 166 of 182                 |

## Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

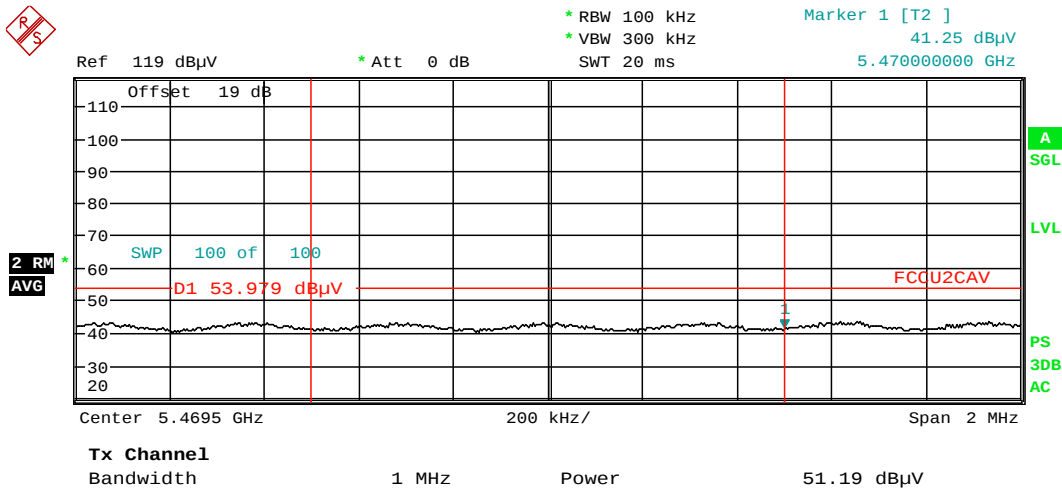
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5510MHz

Channel: 102

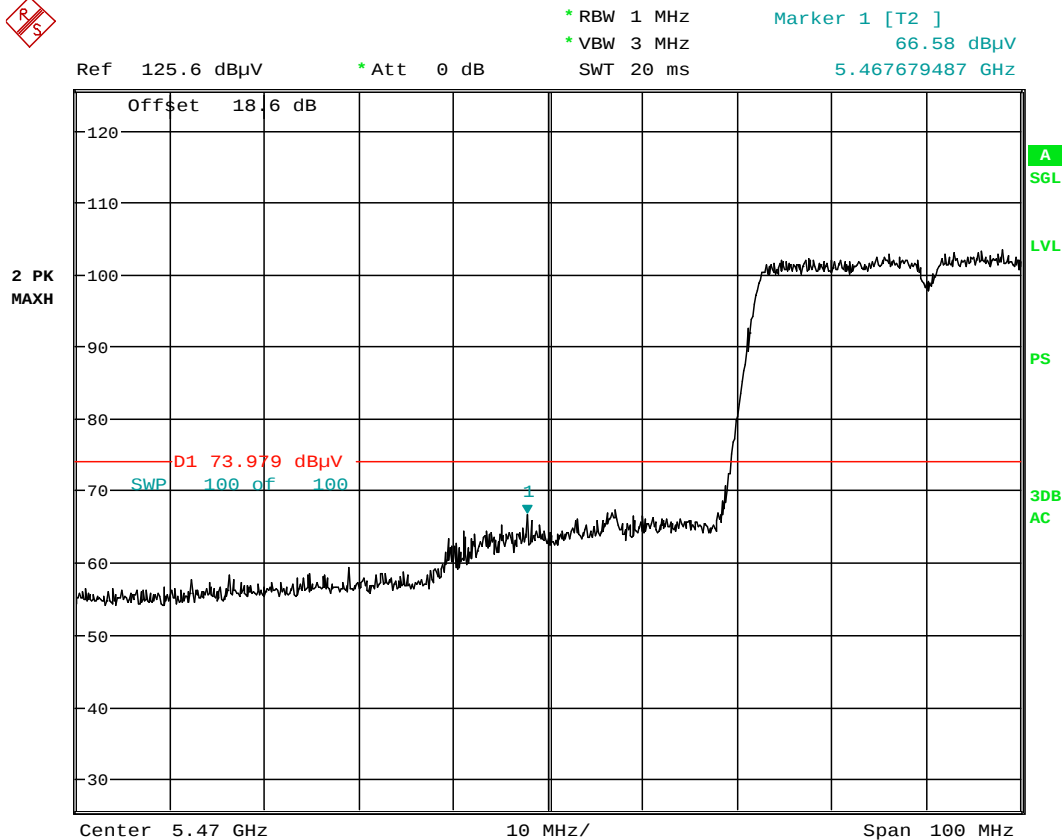


Date: 17.SEP.2014 00:46:31

**Plot 6-184. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 167 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 17.SEP.2014 00:49:06

**Plot 6-185. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 168 of 182                 |

# Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

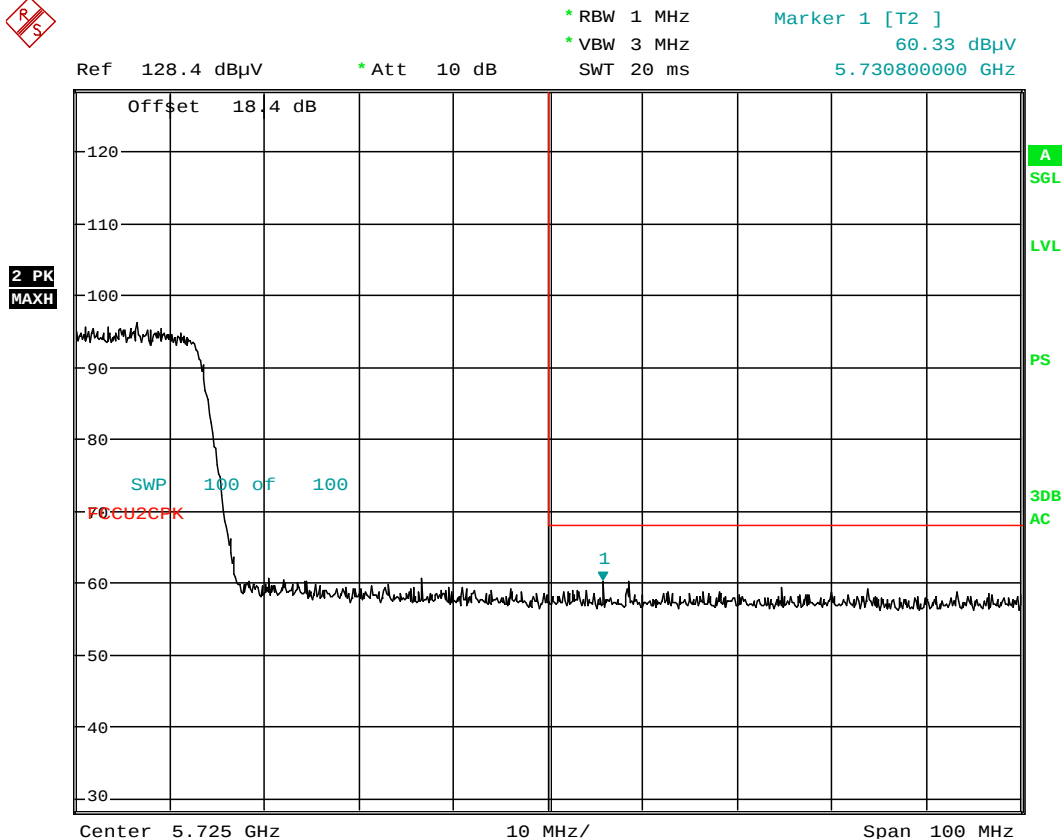
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS8

Distance of Measurements: 3 Meters

Operating Frequency: 5670MHz

Channel: 134



Date: 17.SEP.2014 00:53:30

**Plot 6-186. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 169 of 182                 |

## 6.16 MIMO Radiated Band Edge Measurements (80MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

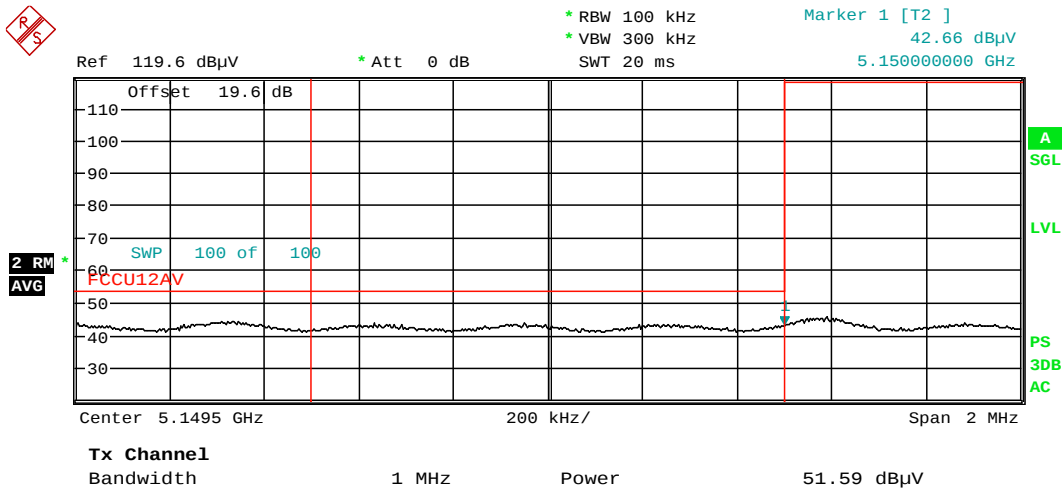
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5210MHz

Channel: 42



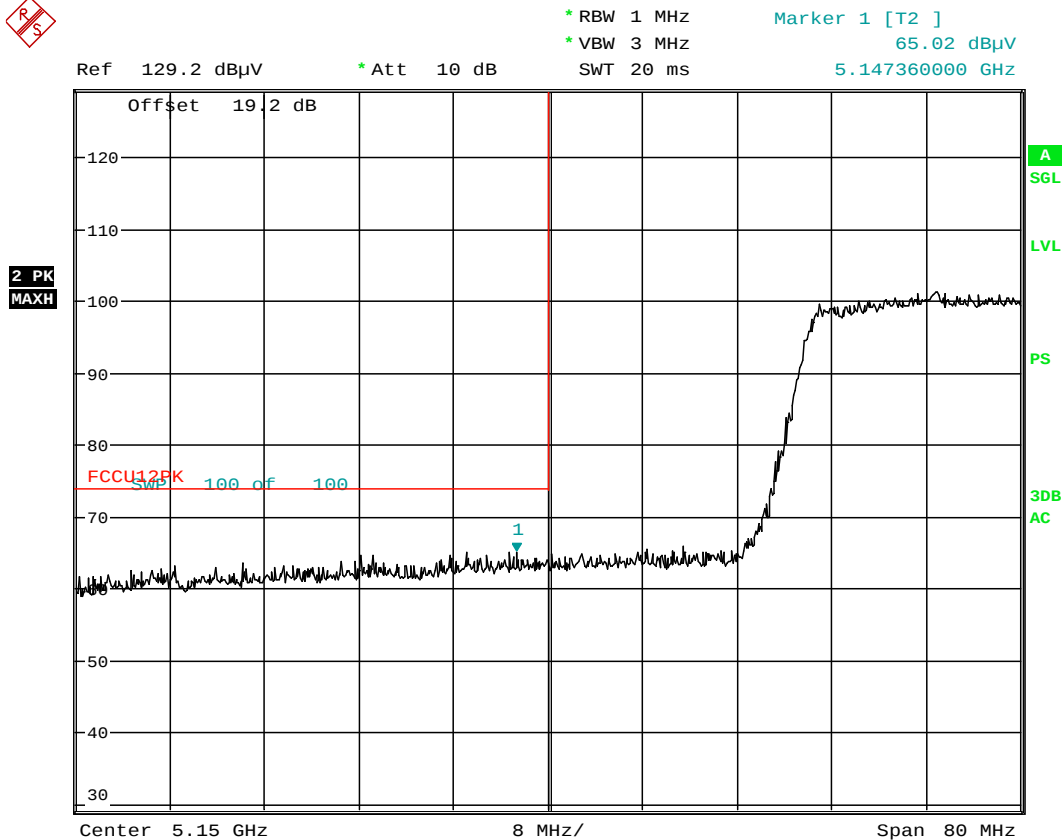
Date: 17.SEP.2014 01:18:17

**Plot 6-187. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 170 of 182                 |

# Radiated Band Edge Measurements (80MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 17.SEP.2014 01:19:23

**Plot 6-188. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 171 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

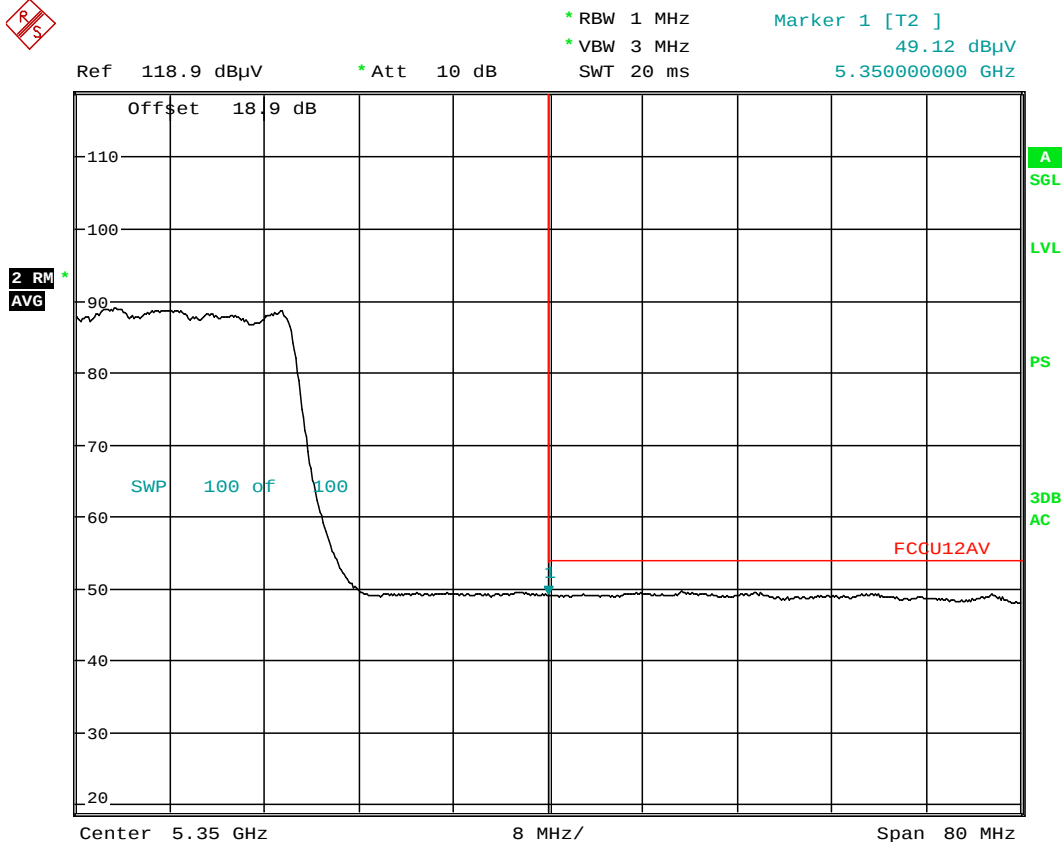
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5290MHz

Channel: 58

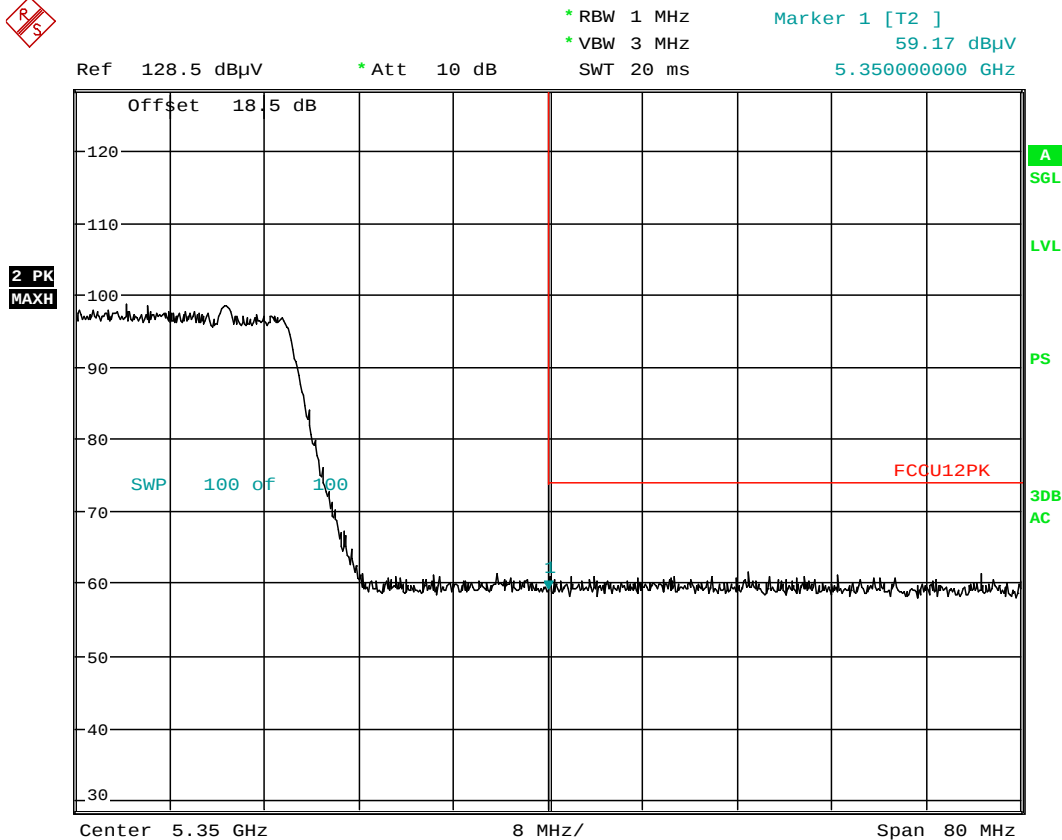


Date: 17.SEP.2014 01:26:37

**Plot 6-189. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29/2014               | EUT Type:<br>Portable Handset                                          |                | Page 172 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 17.SEP.2014 01:27:19

**Plot 6-190. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 173 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

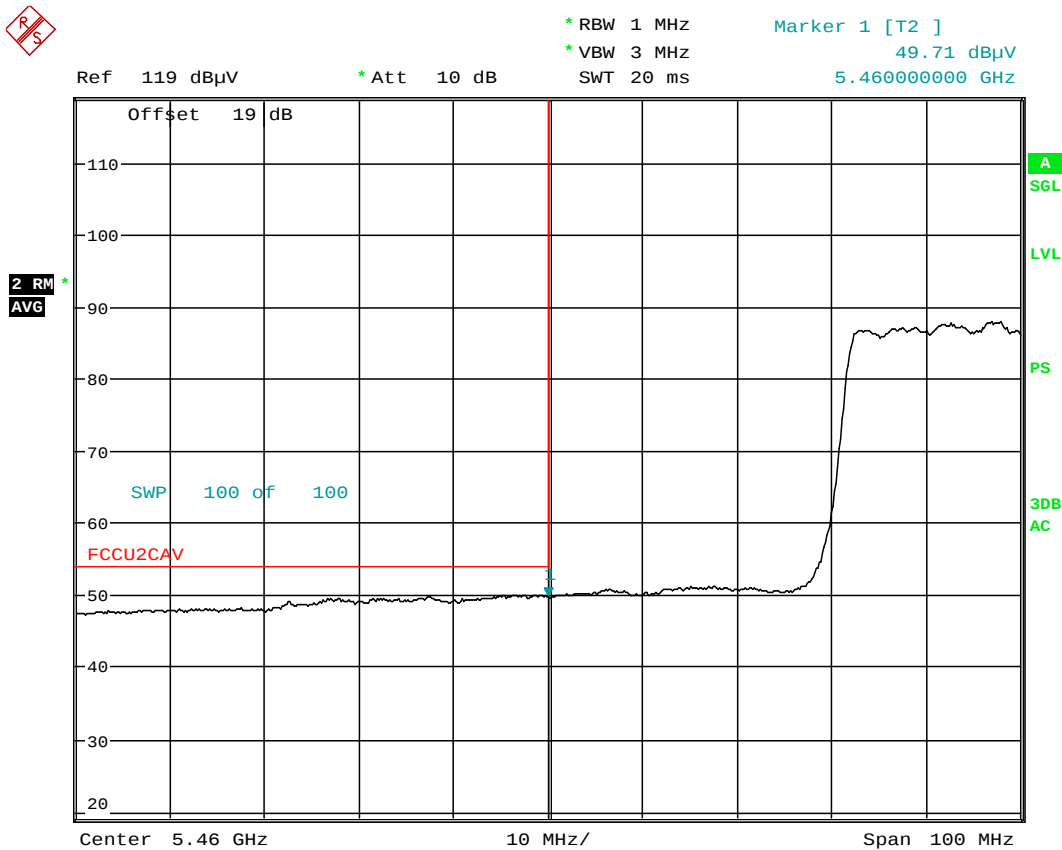
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5530MHz

Channel: 106

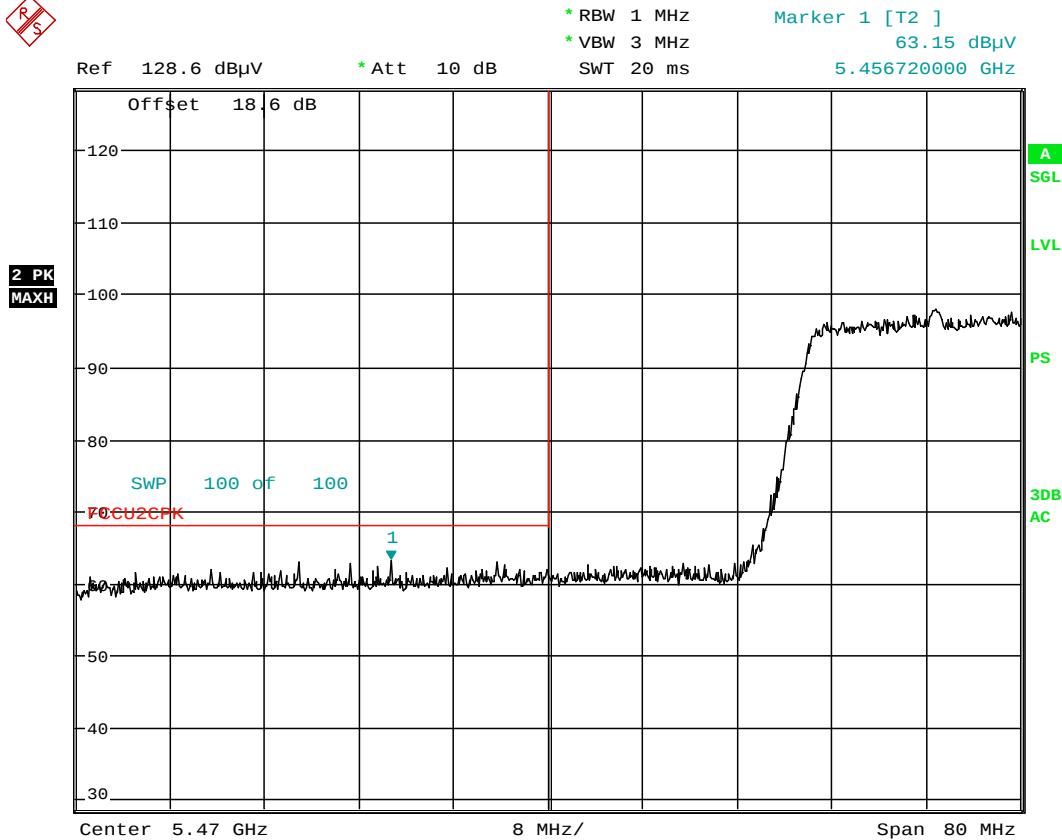


Date: 17.SEP.2014 01:32:21

**Plot 6-191. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 174 of 182                 |

# Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



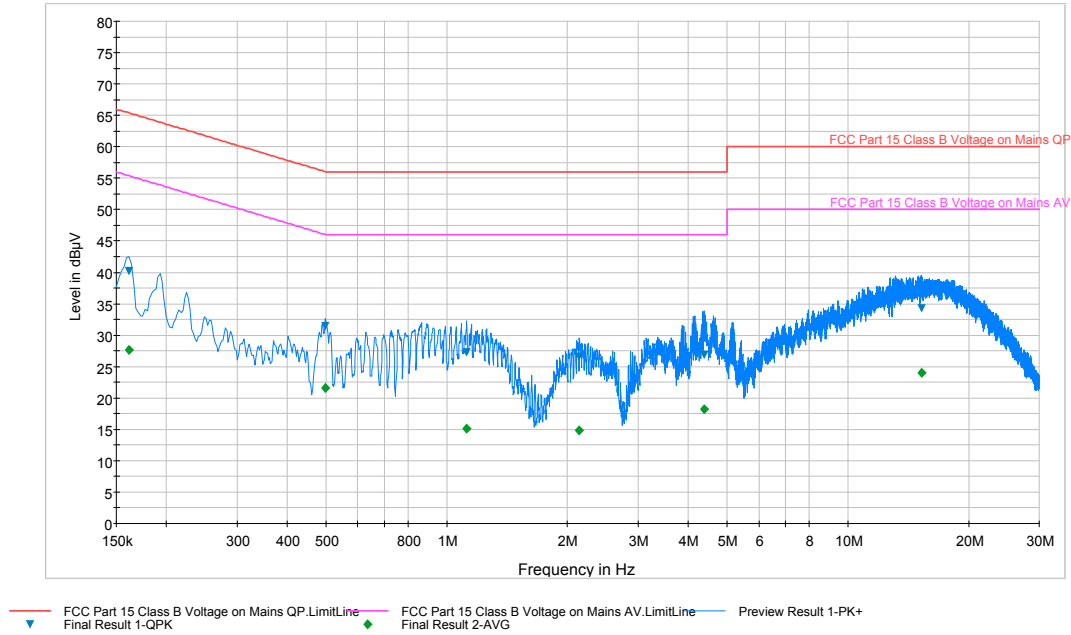
Date: 17.SEP.2014 01:32:58

**Plot 6-192. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)**

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 175 of 182                 |

## 6.17 Line-Conducted Test Data

### \$15.407



**Plot 6-193. Line Conducted Plot with 802.11a UNII Band 1 (L1)**

| Frequency | Line | Corr. | QuasiPeak | Limit | Margin | Average | Limit | Margin |
|-----------|------|-------|-----------|-------|--------|---------|-------|--------|
| MHz       |      | dB    | dBμV      | dBμV  | dB     | dBμV    | dBμV  | dB     |
| 0.161     | L1   | 0.2   | 40.30     | 65.40 | 25.10  | 27.60   | 55.40 | 27.80  |
| 0.499     | L1   | 0.1   | 31.50     | 56.00 | 24.60  | 21.50   | 46.00 | 24.50  |
| 1.120     | L1   | 0.1   | 27.30     | 56.00 | 28.70  | 15.10   | 46.00 | 30.90  |
| 2.141     | L1   | 0.1   | 26.60     | 56.00 | 29.40  | 14.90   | 46.00 | 31.10  |
| 4.376     | L1   | 0.2   | 26.80     | 56.00 | 29.20  | 18.20   | 46.00 | 27.80  |
| 15.261    | L1   | 0.5   | 34.30     | 60.00 | 25.70  | 24.00   | 50.00 | 26.00  |

**Table 6-54. Line Conducted Data with 802.11a UNII Band 1 (L1)**

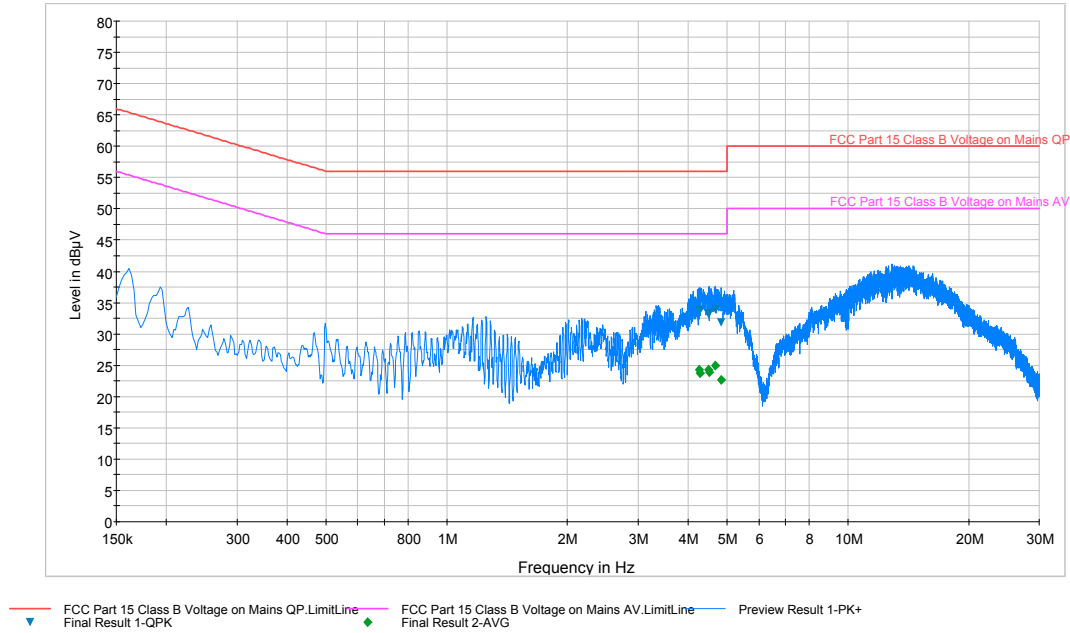
#### Notes:

- All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 36. The emissions found were not affected by the choice of channel used during testing.
- The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
- L1 = Phase; N = Neutral
- Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Corr. (dB)
- Margin (dB) = QP/AV Limit (dBμV) - QP/AV Level (dBμV)
- Traces shown in plot are made using a peak detector.
- Deviations to the Specifications: None.

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 176 of 182                 |

## Line-Conducted Test Data

**\$15.407**



**Plot 6-194. Line Conducted Plot with 802.11a UNII Band 1 (N)**

| Frequency<br>MHz | Line | Corr.<br>dB | QuasiPeak<br>dBμV | Limit<br>dBμV | Margin<br>dB | Average<br>dBμV | Limit<br>dBμV | Margin<br>dB |
|------------------|------|-------------|-------------------|---------------|--------------|-----------------|---------------|--------------|
| 4.250            | N    | 0.2         | 33.90             | 56.00         | 22.10        | 24.30           | 46.00         | 21.70        |
| 4.281            | N    | 0.2         | 33.70             | 56.00         | 22.30        | 23.70           | 46.00         | 22.30        |
| 4.490            | N    | 0.2         | 33.20             | 56.00         | 22.80        | 24.30           | 46.00         | 21.70        |
| 4.522            | N    | 0.2         | 33.30             | 56.00         | 22.70        | 23.90           | 46.00         | 22.10        |
| 4.682            | N    | 0.2         | 34.00             | 56.00         | 22.00        | 24.90           | 46.00         | 21.10        |
| 4.839            | N    | 0.2         | 31.80             | 56.00         | 24.20        | 22.60           | 46.00         | 23.40        |

**Table 6-55. Line Conducted Data with 802.11a UNII Band 1 (N)**

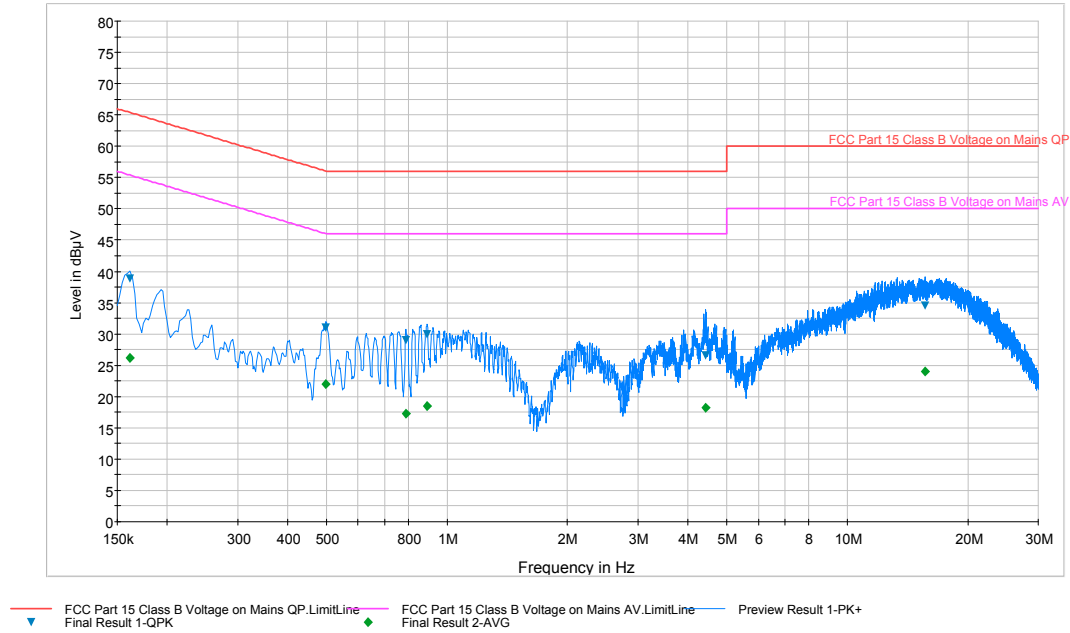
### Notes:

- All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 36. The emissions found were not affected by the choice of channel used during testing.
- The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
- L1 = Phase; N = Neutral
- Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Corr. (dB)
- Margin (dB) = QP/AVLimit (dBμV) - QP/AV Level (dBμV)
- Traces shown in plot are made using a peak detector.
- Deviations to the Specifications: None.

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
| Test Report S/N:<br>0Y1409111863.A3L | Test Dates:<br>09/10-09/29-2014               | EUT Type:<br>Portable Handset                                          |                | Page 177 of 182                 |

## Line-Conducted Test Data

**\$15.407**



**Plot 6-195. Line Conducted Plot with 802.11a UNII Band 2A (L1)**

| Frequency | Line | Corr. | QuasiPeak | Limit | Margin | Average | Limit | Margin |
|-----------|------|-------|-----------|-------|--------|---------|-------|--------|
| MHz       |      | dB    | dBμV      | dBμV  | dB     | dBμV    | dBμV  | dB     |
| 0.161     | L1   | 0.2   | 38.90     | 65.40 | 26.50  | 26.20   | 55.40 | 29.20  |
| 0.499     | L1   | 0.1   | 31.00     | 56.00 | 25.00  | 22.00   | 46.00 | 24.00  |
| 0.789     | L1   | 0.1   | 29.00     | 56.00 | 27.00  | 17.30   | 46.00 | 28.70  |
| 0.893     | L1   | 0.1   | 30.00     | 56.00 | 26.00  | 18.50   | 46.00 | 27.50  |
| 4.421     | L1   | 0.2   | 26.60     | 56.00 | 29.40  | 18.20   | 46.00 | 27.80  |
| 15.635    | L1   | 0.5   | 34.50     | 60.00 | 25.50  | 24.00   | 50.00 | 26.00  |

**Table 6-56. Line Conducted Data with 802.11a UNII Band 2A (L1)**

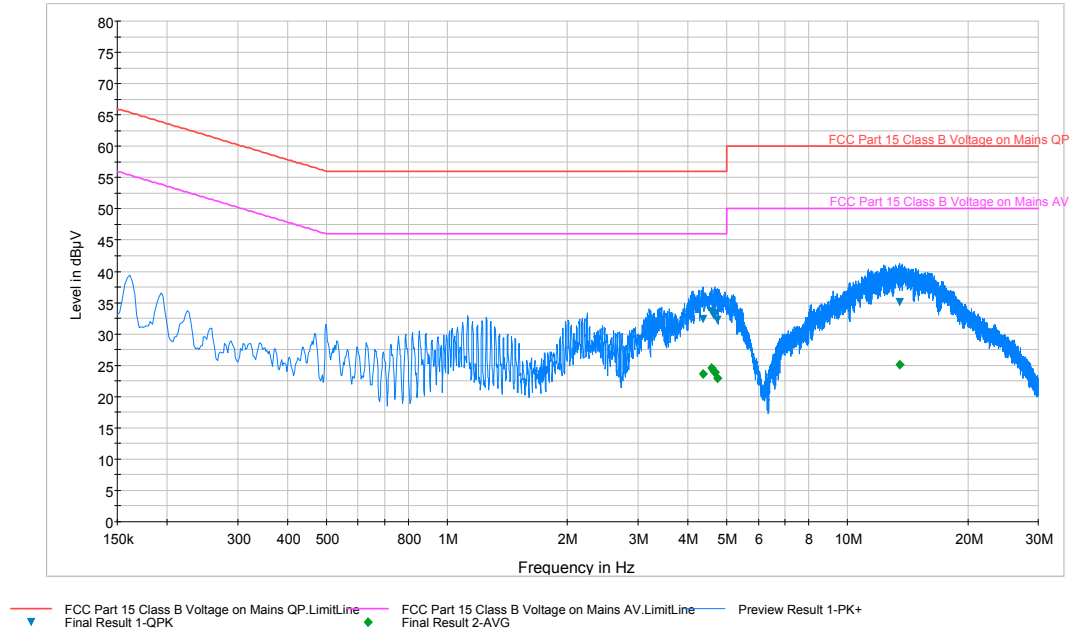
**Notes:**

- All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 52. The emissions found were not affected by the choice of channel used during testing.
- The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
- L1 = Phase; N = Neutral
- Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Corr. (dB)
- Margin (dB) = QP/AVLimit (dBμV) - QP/AV Level (dBμV)
- Traces shown in plot are made using a peak detector.
- Deviations to the Specifications: None.

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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## Line-Conducted Test Data

**\$15.407**



**Plot 6-196. Line Conducted Plot with 802.11a UNII Band 2A (N)**

| Frequency | Line | Corr. | QuasiPeak | Limit | Margin | Average | Limit | Margin |
|-----------|------|-------|-----------|-------|--------|---------|-------|--------|
| MHz       |      | dB    | dBμV      | dBμV  | dB     | dBμV    | dBμV  | dB     |
| 4.355     | N    | 0.2   | 32.40     | 56.00 | 23.60  | 23.60   | 46.00 | 22.40  |
| 4.589     | N    | 0.2   | 33.60     | 56.00 | 22.40  | 24.60   | 46.00 | 21.40  |
| 4.646     | N    | 0.2   | 32.90     | 56.00 | 23.10  | 24.00   | 46.00 | 22.00  |
| 4.677     | N    | 0.2   | 33.30     | 56.00 | 22.70  | 23.80   | 46.00 | 22.20  |
| 4.745     | N    | 0.2   | 32.30     | 56.00 | 23.70  | 22.90   | 46.00 | 23.10  |
| 13.515    | N    | 0.4   | 35.10     | 60.00 | 24.90  | 25.10   | 50.00 | 24.90  |

**Table 6-57. Line Conducted Data with 802.11a UNII Band 2A (N)**

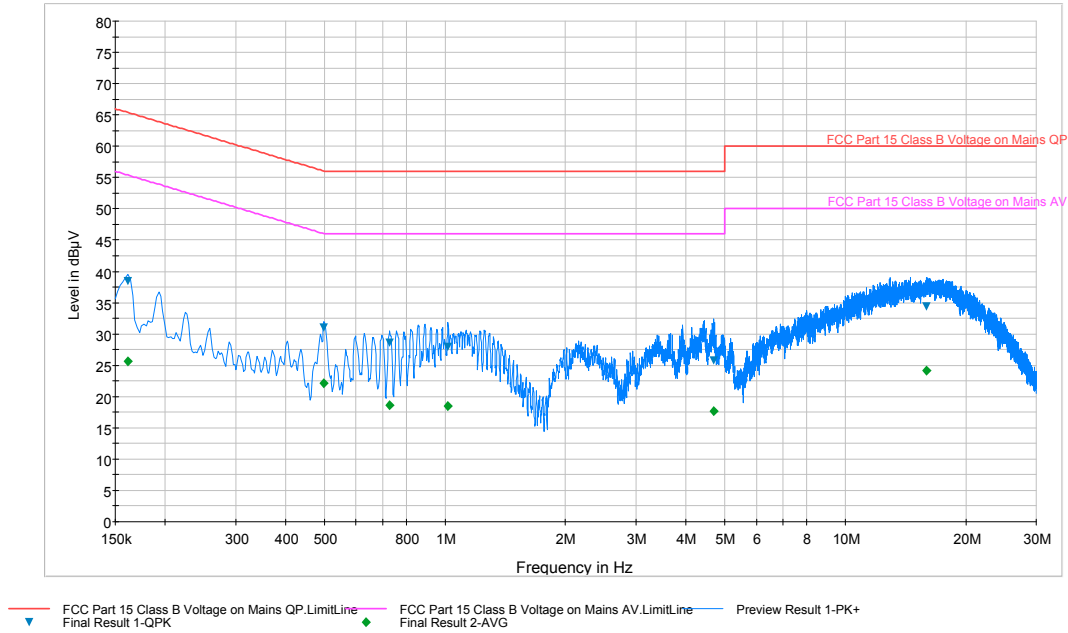
**Notes:**

- All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 52. The emissions found were not affected by the choice of channel used during testing.
- The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
- L1 = Phase; N = Neutral
- Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Corr. (dB)
- Margin (dB) = QP/AVLimit (dBμV) - QP/AV Level (dBμV)
- Traces shown in plot are made using a peak detector.
- Deviations to the Specifications: None.

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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## Line-Conducted Test Data

**\$15.407**



**Plot 6-197. Line Conducted Plot with 802.11a UNII Band 2C (L1)**

| Frequency<br>MHz | Line | Corr.<br>dB | QuasiPeak<br>dBμV | Limit<br>dBμV | Margin<br>dB | Average<br>dBμV | Limit<br>dBμV | Margin<br>dB |
|------------------|------|-------------|-------------------|---------------|--------------|-----------------|---------------|--------------|
| 0.161            | L1   | 0.2         | 38.40             | 65.40         | 27.00        | 25.60           | 55.40         | 29.80        |
| 0.499            | L1   | 0.1         | 31.00             | 56.00         | 25.00        | 22.10           | 46.00         | 24.00        |
| 0.728            | L1   | 0.1         | 28.60             | 56.00         | 27.40        | 18.60           | 46.00         | 27.40        |
| 1.019            | L1   | 0.1         | 27.90             | 56.00         | 28.10        | 18.50           | 46.00         | 27.50        |
| 4.688            | L1   | 0.2         | 25.80             | 56.00         | 30.20        | 17.70           | 46.00         | 28.30        |
| 15.965           | L1   | 0.5         | 34.50             | 60.00         | 25.50        | 24.10           | 50.00         | 25.90        |

**Table 6-58. Line Conducted Plot with 802.11a UNII Band 2C (L1)**

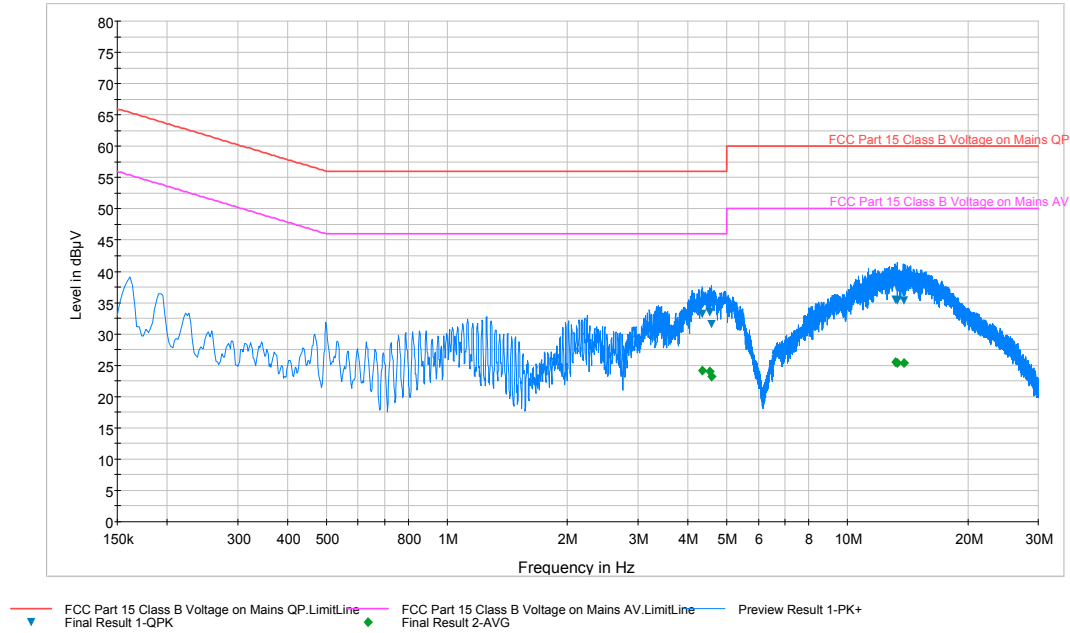
### Notes:

- All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 100. The emissions found were not affected by the choice of channel used during testing.
- The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
- L1 = Phase; N = Neutral
- Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Corr. (dB)
- Margin (dB) = QP/AVLimit (dBμV) - QP/AV Level (dBμV)
- Traces shown in plot are made using a peak detector.
- Deviations to the Specifications: None.

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
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## Line-Conducted Test Data

**\$15.407**



**Plot 6-198. Line Conducted Plot with 802.11a UNII Band 2C (N)**

| Frequency | Line | Corr. | QuasiPeak | Limit | Margin | Average | Limit | Margin |
|-----------|------|-------|-----------|-------|--------|---------|-------|--------|
| MHz       |      | dB    | dBμV      | dBμV  | dB     | dBμV    | dBμV  | dB     |
| 4.346     | N    | 0.2   | 33.30     | 56.00 | 22.70  | 24.10   | 46.00 | 21.90  |
| 4.529     | N    | 0.2   | 33.50     | 56.00 | 22.50  | 24.00   | 46.00 | 22.00  |
| 4.571     | N    | 0.2   | 31.60     | 56.00 | 24.40  | 23.20   | 46.00 | 22.80  |
| 13.182    | N    | 0.4   | 35.50     | 60.00 | 24.50  | 25.40   | 50.00 | 24.60  |
| 13.362    | N    | 0.4   | 35.40     | 60.00 | 24.60  | 25.40   | 50.00 | 24.60  |
| 13.844    | N    | 0.4   | 35.40     | 60.00 | 24.60  | 25.30   | 50.00 | 24.70  |

**Table 6-59. Line Conducted Data with 802.11a UNII Band 2C (N)**

### Notes:

- All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 100. The emissions found were not affected by the choice of channel used during testing.
- The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
- L1 = Phase; N = Neutral
- Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Corr. (dB)
- Margin (dB) = QP/AVLimit (dBμV) - QP/AV Level (dBμV)
- Traces shown in plot are made using a peak detector.
- Deviations to the Specifications: None.

|                                      |                                               |                                                                        |                |                                 |
|--------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9150                   | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Reviewed by:<br>Quality Manager |
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## 7.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Electronics, Co. Ltd. Portable Handset FCC ID: A3LSMN9150** is in compliance with Part 15E of the FCC Rules.

|                                             |                                                                                     |                                                                                |                                                                                       |                                        |
|---------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LSMN9150                   |  | <b>FCC Pt. 15.407 802.11a/n/ac UNII MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Reviewed by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>0Y1409111863.A3L | <b>Test Dates:</b><br>09/10-09/29-2014                                              | <b>EUT Type:</b><br>Portable Handset                                           |                                                                                       | Page 182 of 182                        |