

Antenna-2 Power Spectral Density Measurements

| | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Power Density [dBm] | Max Power Density Limit [dBm/MHz] | Power Density Margin [dB] |
|---------|--------------------|----------------|-------------|------------------|------------------------------------|---|------------------------------|
| | 5180 | 36 | а | 6 | 5.73 | 11.0 | -5.27 |
| | 5200 | 40 | а | 6 | 5.73 | 11.0 | -5.27 |
| | 5240 | 48 | а | 6 | 6.05 | 11.0 | -4.95 |
| ~ | 5180 | 36 | n (20MHz) | 6.5/7.2 (MCS0) | 4.66 | 11.0 | -6.34 |
| Band 1 | 5200 | 40 | n (20MHz) | 6.5/7.2 (MCS0) | 5.40 | 11.0 | -5.60 |
| ä | 5240 | 48 | n (20MHz) | 6.5/7.2 (MCS0) | 5.65 | 11.0 | -5.35 |
| | 5190 | 38 | n (40MHz) | 13.5/15 (MCS0) | -2.23 | 11.0 | -13.23 |
| | 5230 | 46 | n (40MHz) | 13.5/15 (MCS0) | 2.41 | 11.0 | -8.59 |
| | 5210 | 42 | ac (80MHz) | 29.3/32.5 (MCS0) | -1.10 | 11.0 | -12.10 |
| | 5260 | 52 | а | 6 | 6.29 | 11.0 | -4.72 |
| | 5280 | 56 | а | 6 | 6.16 | 11.0 | -4.84 |
| ZA | 5320 | 64 | а | 6 | 6.39 | 11.0 | -4.61 |
| | 5260 | 52 | n (20MHz) | 6.5/7.2 (MCS0) | 6.16 | 11.0 | -4.84 |
| Band 2A | 5280 | 56 | n (20MHz) | 6.5/7.2 (MCS0) | 5.76 | 11.0 | -5.24 |
| Ва | 5320 | 64 | n (20MHz) | 6.5/7.2 (MCS0) | 5.81 | 11.0 | -5.19 |
| | 5270 | 54 | n (40MHz) | 13.5/15 (MCS0) | 2.21 | 11.0 | -8.79 |
| | 5310 | 62 | n (40MHz) | 13.5/15 (MCS0) | 2.11 | 11.0 | -8.89 |
| | 5290 | 58 | ac (80MHz) | 29.3/32.5 (MCS0) | -1.08 | 11.0 | -12.08 |
| | 5500 | 100 | а | 6 | 6.41 | 11.0 | -4.59 |
| | 5580 | 116 | а | 6 | -5.71 | 11.0 | -16.71 |
| | 5720 | 144 | а | 6 | 6.35 | 11.0 | -4.66 |
| | 5500 | 100 | n (20MHz) | 6.5/7.2 (MCS0) | 5.75 | 11.0 | -5.25 |
| 2C | 5580 | 116 | n (20MHz) | 6.5/7.2 (MCS0) | -6.03 | 11.0 | -17.03 |
| Band 2C | 5720 | 144 | n (20MHz) | 6.5/7.2 (MCS0) | 6.04 | 11.0 | -4.96 |
| Ba | 5510 | 102 | n (40MHz) | 13.5/15 (MCS0) | 2.31 | 11.0 | -8.69 |
| | 5550 | 110 | n (40MHz) | 13.5/15 (MCS0) | -8.93 | 11.0 | -19.93 |
| | 5710 | 142 | n (40MHz) | 13.5/15 (MCS0) | 2.24 | 11.0 | -8.76 |
| | 5530 | 106 | ac (80MHz) | 29.3/32.5 (MCS0) | -0.60 | 11.0 | -11.60 |
| | 5690 | 138 | ac (80MHz) | 29.3/32.5 (MCS0) | -3.93 | 11.0 | -14.93 |

Table 7-21. Bands 1, 2A, 2C Conducted Power Spectral Density Measurements

| | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Power Density [dBm] | | e.i.r.p. Power Density [dBm/MHz] | Max e.i.r.p Power Density Limit [dBm/MHz] | e.i.r.p Power Density Margin [dB] |
|------|--------------------|----------------|-------------|------------------|------------------------------------|-------|--|---|---|
| | 5180 | 36 | а | 6 | 5.73 | -7.95 | -2.22 | 10.0 | -12.22 |
| | 5200 | 40 | а | 6 | 5.73 | -7.95 | -2.22 | 10.0 | -12.22 |
| | 5240 | 48 | а | 6 | 6.05 | -7.95 | -1.90 | 10.0 | -11.90 |
| - | 5180 | 36 | n (20MHz) | 6.5/7.2 (MCS0) | 4.66 | -7.95 | -3.29 | 10.0 | -13.29 |
| Band | 5200 | 40 | n (20MHz) | 6.5/7.2 (MCS0) | 5.40 | -7.95 | -2.55 | 10.0 | -12.55 |
| ä | 5240 | 48 | n (20MHz) | 6.5/7.2 (MCS0) | 5.65 | -7.95 | -2.30 | 10.0 | -12.30 |
| | 5190 | 38 | n (40MHz) | 13.5/15 (MCS0) | -2.23 | -7.95 | -10.18 | 10.0 | -20.18 |
| | 5230 | 46 | n (40MHz) | 13.5/15 (MCS0) | 2.41 | -7.95 | -5.54 | 10.0 | -15.54 |
| | 5210 | 42 | ac (80MHz) | 29.3/32.5 (MCS0) | -1.10 | -7.95 | -9.05 | 10.0 | -19.05 |

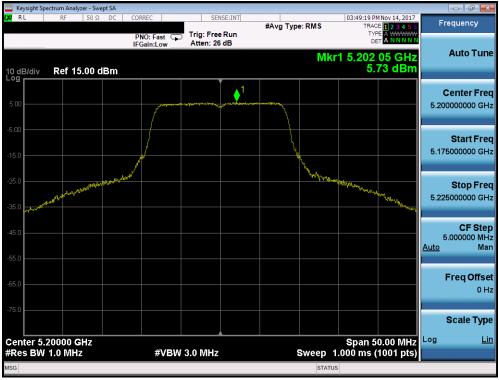
Table 7-22. Band 1 e.i.r.p. Power Spectral Density Measurements

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | | | | |
|--|--|---------------------------------------|---------|---------------------------------|--|--|--|--|
| Test Report S/N: Test Dates: | | EUT Type: | | Dege 96 of 200 | | | | |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 86 of 200 | | | | |
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| | pectrum Analyzer - Swept SA | | | | | - ē 론 |
|------------------|-----------------------------|---|--|--|--|-----------------------------------|
| X/RL | RF 50 Ω DC | | Trig: Free Run | #Avg Type: RMS | 03:47:31 PM Nov 14, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWWW | Frequency |
| | _ | PNO: Wide G | Atten: 26 dB | | DETANNNN | |
| 10 dB/div Log | Ref 15.00 dBm | | | Mk | r1 5.183 700 GHz 5.73 dBm | Auto Tun |
| | | | | ▲ 1 | | Center Fre |
| 5.00 | | ~~~~~ <u>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</u> | and a star of the second s | frydad gyfel ar yn yn dy felef y fry afferfyn yf ar y ffan a syn defeldig of | | 5.180000000 GH |
| -5.00 | | | | | | Start Fre 5,167500000 GH |
| -15.0 | wheel water | | | | Milled Work of the Contraction o | |
| -35.0 | | | | | | Stop Fre 5.192500000 GH |
| -45.0 | | | | | | CF Ste |
| -55.0 | | | | | | 2.500000 MH <u>Auto</u> Ma |
| .65.0 | | | | | | Freq Offse |
| -75.0 | | | | | | 0 H |
| | | | | | | Scale Typ |
| | .18000 GHz / 1.0 MHz | #VBW | (3.0 MHz | Sweep | Span 25.00 MHz 1.000 ms (1001 pts) | Log <u>Li</u> |
| ISG | | | | STA | | |





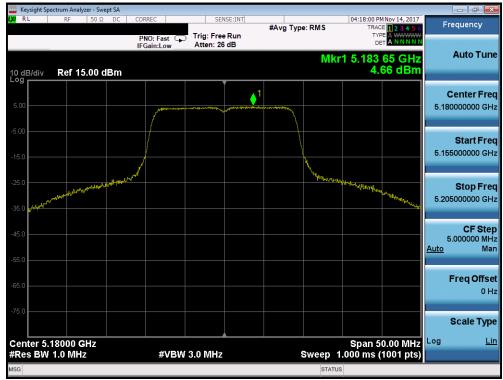
Plot 7-116. Power Spectral Density Plot (802.11a (UNII Band 1) - Ch. 40)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | | | | |
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| Test Report S/N: | Report S/N: Test Dates: EUT Type: | | Dege 97 of 200 | | | | | |
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| | pectrum Analyzer - Sw | | | | | | | | | | |
|----------------------|--|-------------------|------------------------|---|--------|----------|---------------|---------------------------------|--|------|---------------------------------------|
| L <mark>XI</mark> RL | RF 50 Ω | DC COI | RREC | SEN | SE:INT | #Avg Typ | e: RMS | TRAC | Nov 14, 2017 | Fi | requency |
| | - | P IF | NO: Fast 🕞 Gain:Low | Trig: Free Atten: 26 | | | | TYP DE | | | |
| 10 dB/div Log | Ref 15.00 d | dBm | | | | | Mkr | 1 5.244 6. | 75 GHz 05 dBm | | Auto Tune |
| 5.00 | | | | and a star of the start of the st | | 1 | | | | | Center Freq 0000000 GHz |
| -5.00 | | ٨ | ¢ | | | | | | | 5.21 | Start Freq 5000000 GHz |
| -25.0 | where a south of the south of t | uples of Departed | | | | | how we wanted | and and a start when a start we | had and a start of the start of | 5.26 | Stop Freq 5000000 GHz |
| -45.0 | | | | | | | | | | Auto | CF Step 5.000000 MH2 Mar |
| -65.0 | | | | | | | | | | | Freq Offse 0 Hi |
| -75.0 | | | | | | | | | | | Scale Type |
| | .24000 GHz 1.0 MHz | | #VBW | / 3.0 MHz | | | Sweep 1 | Span 5 .000 ms (| 0.00 MHz 1001 pts) | Log | Lin |
| MSG | | | | | | | STATUS | 3 | | | |





Plot 7-118. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) - Ch. 36)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|-------------------------------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | t Report S/N: Test Dates: EUT Type: | | | Dage 89 of 200 | |
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| Keysight Spectrum Analyzer - Swept SA | | | | |
|---------------------------------------|--|------------------|---|---|
| XX RL RF 50Ω DC | | E:INT #Avg Type: | | Frequency |
| 10 dB/div Ref 15.00 dBm | PNO: Fast Trig: Free I IFGain:Low Atten: 26 o | | Mkr1 5.202 40 GF 5.40 dB | Auto Tune |
| 5.00 | | 1 | | Center Freq 5.200000000 GHz |
| -5.00 | | | | Start Freq 5.175000000 GHz |
| -25.0 | | | Monthly Destanting Destanting | Stop Freq 5.225000000 GHz |
| -45.0 | | | | CF Step 5.000000 MH <u>Auto</u> Mar |
| -65.0 | | | | Freq Offse 0 H: |
| | | | | Scale Type |
| Center 5.20000 GHz #Res BW 1.0 MHz | #VBW 3.0 MHz | s | Span 50.00 Mł weep 1.000 ms (1001 pl | lz ^{Log <u>Lin</u> s)} |
| MSG | | | STATUS | |

Plot 7-119. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) - Ch. 40)



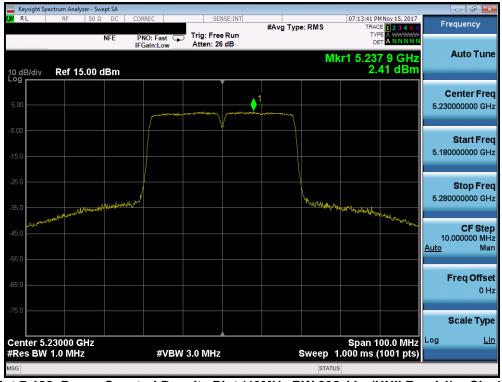
Plot 7-120. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 1) - Ch. 48)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 90 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 89 of 200 |
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| Keysight Sp R L | RF | r - Swept SA 50 Ω DC | CORREC | SENSE:INT | | 07:10:47 PM No | v 15. 2017 | |
|----------------------------------|---------------------|-------------------------|-------------|--------------|------------------------|-------------------------------|---------------------------------|--------------------------------------|
| | 14 | NFE | PNO: Fast G | | #Avg Type: RMS | TRACE | 2 3 4 5 6 | Frequency |
|) dB/div | Ref 15. | 00 dBm | IFGain:Low | Allen. 20 dB | | Mkr1 5.186 6 | | Auto Tui |
| | | | | | Ang Jawang indigate au | | | Center Fr 5.190000000 Gi |
| 5.0 | | | | | | | | Start Fr 5.140000000 G |
| 5.0 | | Muriling | Advand . | | | Martin William and and | | Stop Fr 5.240000000 G |
| 5.0 <mark>سيلسونيم</mark> 5.0 | or Artal was Now | at work work work and | | | | | | CF St 10.000000 M <u>ito</u> M |
| 5.0 | | | | | | | | Freq Offs 0 |
| 5.0 | | | | | | | | Scale Ty |
| | 19000 GH 1.0 MHz | lz | #VBW | / 3.0 MHz | Swee | Span 100. p 1.000 ms (10 | .0 MHz ^{Lo} 01 pts) | og <u>i</u> |
| G | | | | | S | TATUS | | |





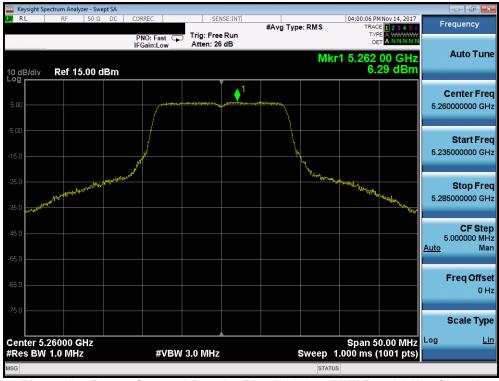
Plot 7-122. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) - Ch. 46)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| Test Report S/N: | Test Dates: | EUT Type: | | Page 90 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | table Handset | |
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| | pectrum Analyz | er - Swept SA | | | | | - 6 💌 |
|------------------|--|---|--|--------------|----------------|--|--|
| X/RL | RF | 50 Ω DC NFE | CORREC | SENSE:INT | #Avg Type: RMS | 07:46:17 PM Nov 15, 2017 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A N N N N N | Frequency |
| 10 dB/div Log | Ref 15. | .00 dBm | IFGain:Low | Atten: 26 dB | Μ | kr1 5.222 8 GHz -1.10 dBm | Auto Tun |
| 5.00 | | | and the second second | 1 | | | Center Fre 5.210000000 GH |
| 5.00 | | | | | | | Start Fre 5.110000000 G⊦ |
| 35.0 | | لى چې لې چې او د او | And a second sec | | handelau | | Stop Fre 5.310000000 G⊦ |
| 45.0 45.0 | and and a second se | | | | | and the section of th | CF Ste 20.000000 MH <u>Auto</u> Ma |
| 65.0 | | | | | | | Freq Offs 0 I |
| 75.0 | | | | | | | Scale Typ |
| | .2100 GH / 1.0 MHz | | #VBW | 3.0 MHz | Sweep | Span 200.0 MHz 1.000 ms (1001 pts) | Log <u>L</u> |
| ISG | | | | | STAT | us | |





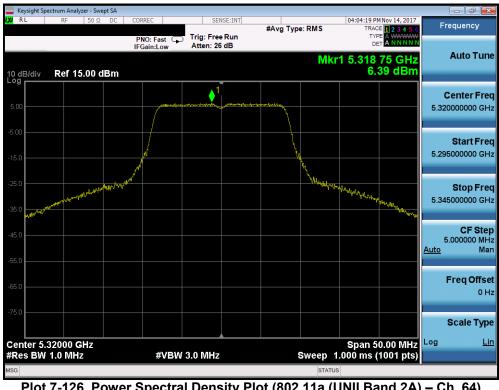
Plot 7-124. Power Spectral Density Plot (802.11a (UNII Band 2A) - Ch. 52)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| Test Report S/N: | Test Dates: | EUT Type: | | Dega 01 of 200 |
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| Keysight Spectrum Analyzer - Swept SA | | | | |
|---------------------------------------|--|-----------------------|--|--|
| ΙΧΙ R F 50 Ω DC | | MSE:INT #Avg Type | e: RMS TRACE | Nov 14, 2017 1 2 3 4 5 6 Frequency |
| 10 dB/div Ref 15.00 dBm | PNO: Fast Trig: Free IFGain:Low Atten: 26 | | DE Mkr1 5.281 | A MINININ 95 GHz Auto Tune 16 dBm |
| 5.00 | | ↓ ¹ | | Center Freq 5.280000000 GHz |
| -5.00 | | | | Start Freq 5.255000000 GHz |
| -25.0 -35.0 -35.0 | | | And the second sec | 5.305000000 GHz |
| -45.0 | | | | CF Step 5.000000 MHz <u>Auto</u> Man |
| -65.0 | | | | Freq Offset 0 Hz |
| -75.0 | | | | Scale Type |
| Center 5.28000 GHz #Res BW 1.0 MHz | #VBW 3.0 MHz | | Span 50 /) Sweep 1.000 ms | |
| MSG | | | STATUS | |

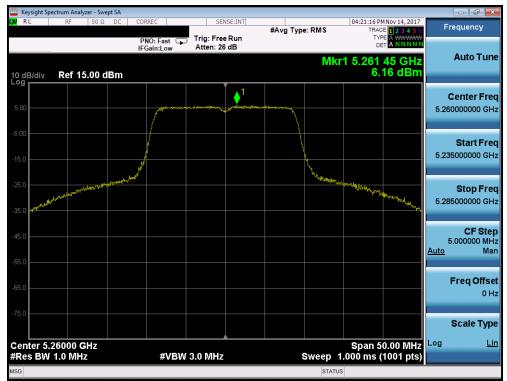
Plot 7-125. Power Spectral Density Plot (802.11a (UNII Band 2A) - Ch. 56)



Plot 7-126. Power Spectral Density Plot (802.11a (UNII Band 2A) - Ch. 64)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| Test Report S/N: | Test Dates: | EUT Type: | | Dago 02 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 92 of 200 |
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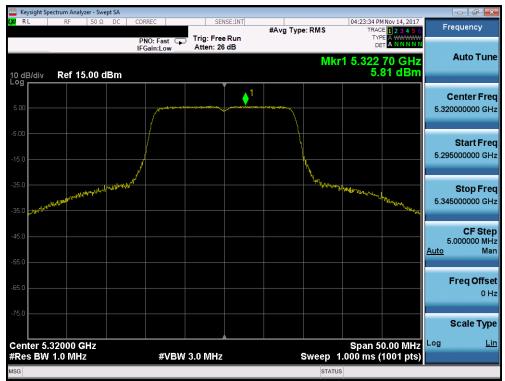
Plot 7-127. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) - Ch. 52)



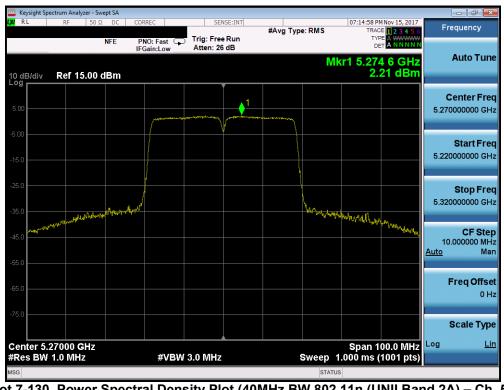
Plot 7-128. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) - Ch. 56)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| Test Report S/N: | Test Dates: | EUT Type: | | Dage 02 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 93 of 200 |
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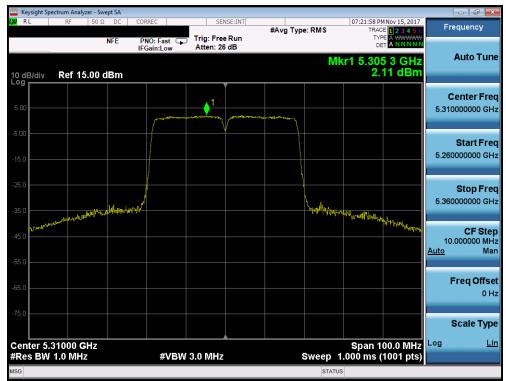
Plot 7-129. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2A) - Ch. 64)



Plot 7-130. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) - Ch. 54)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Daga 04 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 94 of 200 |
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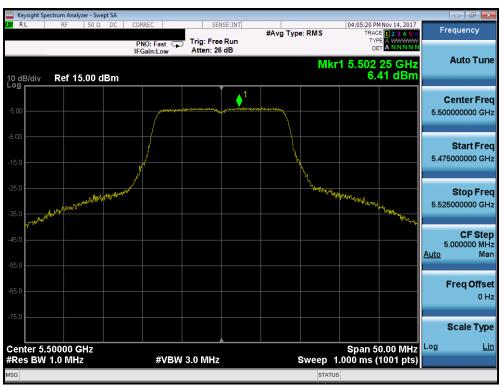
Plot 7-131. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2A) - Ch. 62)



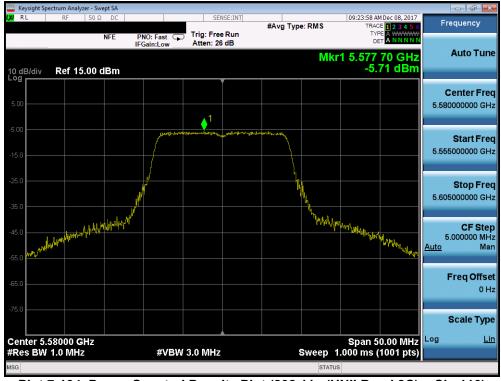
Plot 7-132. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2A) – Ch. 58)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| Test Report S/N: | Test Dates: | EUT Type: | | Dage 05 of 200 |
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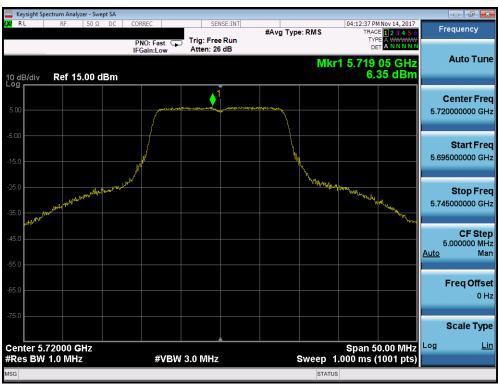
| Plot 7-133. Power Spe | ectral Density Plot | (802.11a (U | INII Band 2C) | – Ch. 100) |
|-----------------------|---------------------|-------------|---------------|------------|
|-----------------------|---------------------|-------------|---------------|------------|



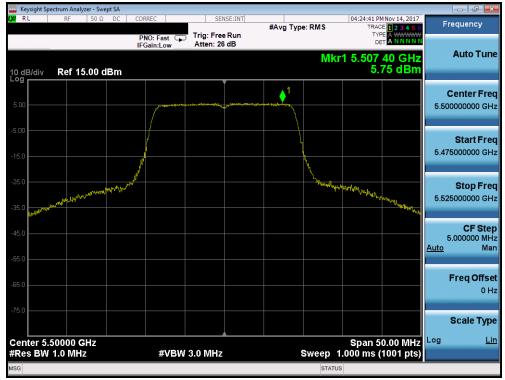
Plot 7-134. Power Spectral Density Plot (802.11a (UNII Band 2C) - Ch. 116)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| Test Report S/N: | Test Dates: | EUT Type: | | Dage 06 of 200 |
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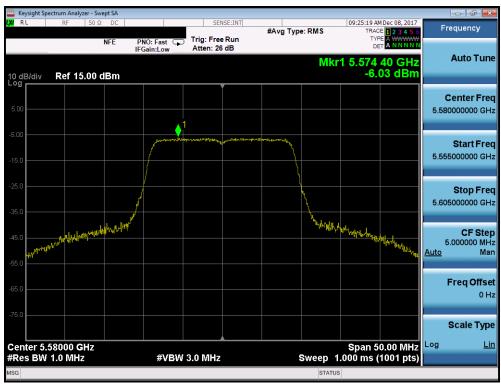




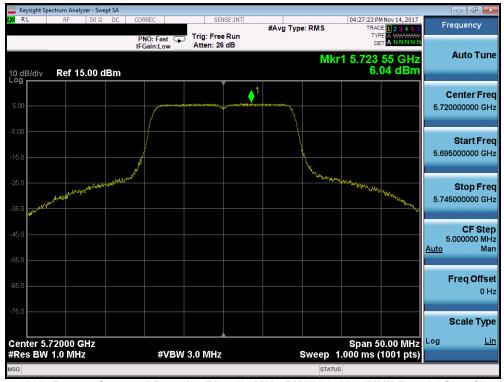
Plot 7-136. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) - Ch. 100)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
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| Test Report S/N: | Test Dates: | EUT Type: | | Dage 07 of 200 | |
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Plot 7-137. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) - Ch. 116)



Plot 7-138. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 2C) - Ch. 144)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| Test Report S/N: | Test Dates: | EUT Type: | | Dage 08 of 200 |
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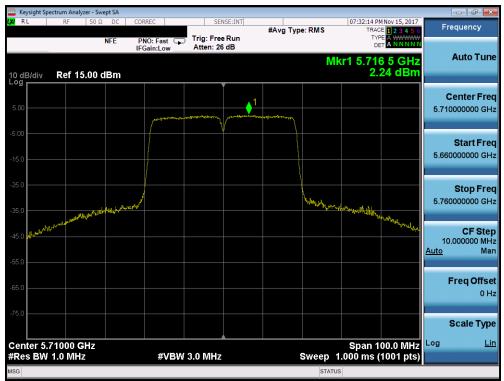
Plot 7-139. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) - Ch. 102)



Plot 7-140. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) - Ch. 110)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| Test Report S/N: | Test Dates: | EUT Type: | | Baga 00 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 99 of 200 |
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Plot 7-141. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2C) - Ch. 142)



Plot 7-142. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) - Ch. 106)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 100 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 100 of 200 |
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| | ectrum Analyzer | | | | | | | |
|----------------------|---------------------|---|------------|--------------|----------------|---|--|---|
| XI RL | RF | 50 Ω DC NFE | CORREC | SENSE:INT | #Avg Type: R | MS TRA | PM Nov 15, 2017 CE 1 2 3 4 5 6 (PE A ********* | Frequency |
| 10 dB/div | Ref 15.0 | | IFGain:Low | Atten: 26 dB | | Mkr1 5.70 | 4 8 GHz 93 dBm | Auto Tune |
| 5.00 | | | | | ▲ ¹ | | | Center Fred 5.690000000 GH: |
| -5.00 | | | Martin | | | | | Start Free 5.590000000 GH |
| -25.0 | | | | | | | | Stop Fred 5.790000000 GH |
| -45.0 | Manganan | Jewer Warden and Warden | | | بيكر | have all all and a second and a s | and the source of | CF Stej 20.000000 MH <u>Auto</u> Ma |
| 65.0 | | | | | | | | Freq Offse 0 H |
| -75.0 | | | | | | | | Scale Type |
| Center 5. #Res BW | 6900 GHz 510 kHz | | #VBW | 3.0 MHz | Sw | Span 2 eep 1.000 ms | 200.0 MHz (1001 pts) | Log <u>Lir</u> |
| ISG | | | | | | STATUS | | |

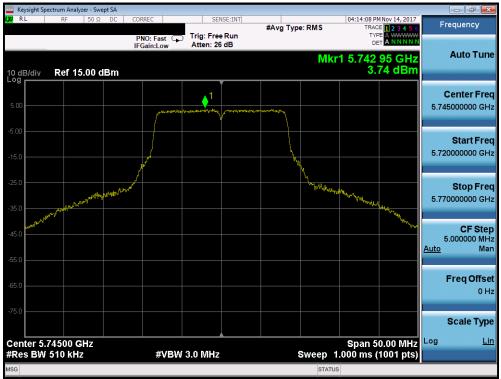
Plot 7-143. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 2C) – Ch. 138)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|----------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 101 of 200 | |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 101 of 200 | |
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| | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Power Density [dBm] | Max Permissible Power Density [dBm/500kHz] | Margin [dB] |
|------|--------------------|----------------|-------------|------------------|------------------------------------|--|----------------|
| | 5745 | 149 | а | 6 | 3.74 | 30.0 | -26.26 |
| | 5785 | 157 | а | 6 | 3.56 | 30.0 | -26.44 |
| ę | 5825 | 165 | а | 6 | 3.14 | 30.0 | -26.86 |
| | 5745 | 149 | n (20MHz) | 6.5/7.2 (MCS0) | 3.79 | 30.0 | -26.21 |
| Band | 5785 | 157 | n (20MHz) | 6.5/7.2 (MCS0) | 3.03 | 30.0 | -26.97 |
| ä | 5825 | 165 | n (20MHz) | 6.5/7.2 (MCS0) | 2.64 | 30.0 | -27.36 |
| | 5755 | 151 | n (40MHz) | 13.5/15 (MCS0) | -0.27 | 30.0 | -30.27 |
| | 5795 | 159 | n (40MHz) | 13.5/15 (MCS0) | -0.68 | 30.0 | -30.68 |
| | 5775 | 155 | ac (80MHz) | 29.3/32.5 (MCS0) | -0.61 | 30.0 | -30.61 |

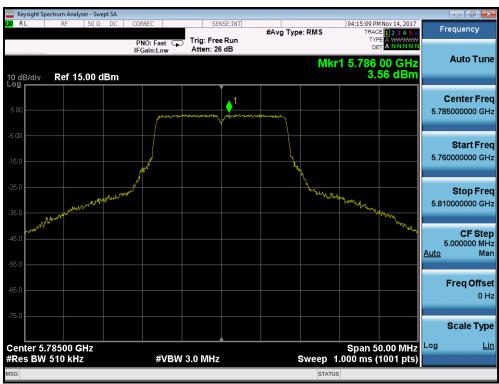
Table 7-23. Band 3 Conducted Power Spectral Density Measurements



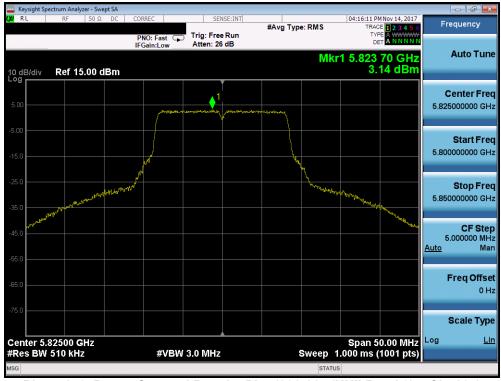
Plot 7-144. Power Spectral Density Plot (802.11a (UNII Band 3) - Ch. 149)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|---------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 102 of 200 | |
| 1M1711010281-06-R2.A3L 11/1-12/7/2017 | | Portable Handset | | Page 102 of 200 | |
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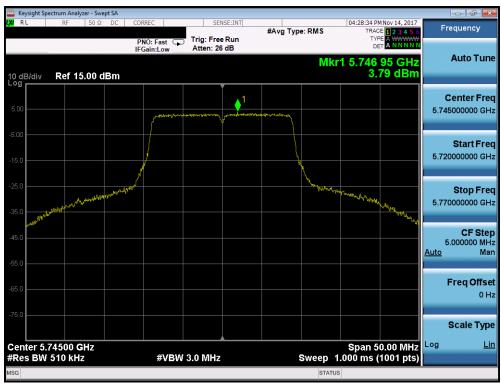




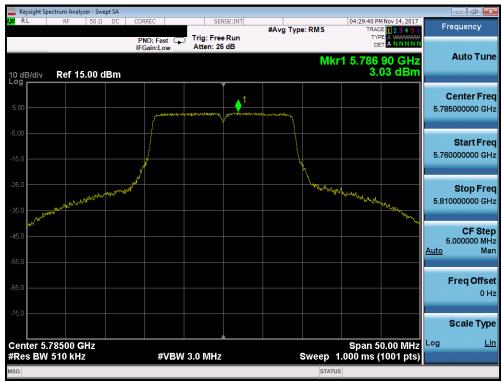
Plot 7-146. Power Spectral Density Plot (802.11a (UNII Band 3) - Ch. 165)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | | | |
|--|--|---------------------------------------|---------|---------------------------------|--|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 102 of 200 | | | |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 103 of 200 | | | |
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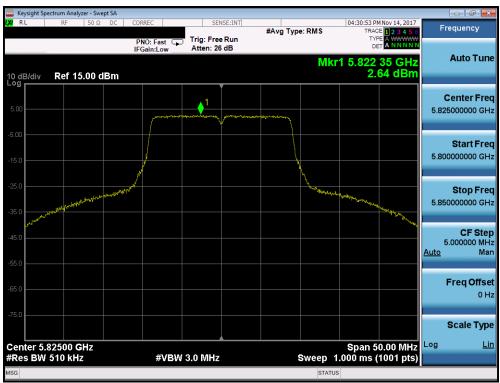
Plot 7-147. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 149)



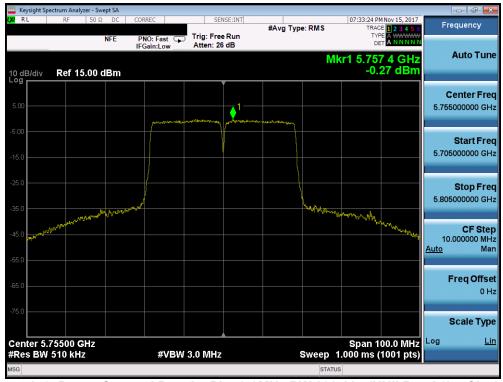
Plot 7-148. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) - Ch. 157)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | | | | |
|--|---|---------------------------------------|---------|---------------------------------|--|--|--|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 104 of 200 | | | | |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 104 of 200 | | | | |
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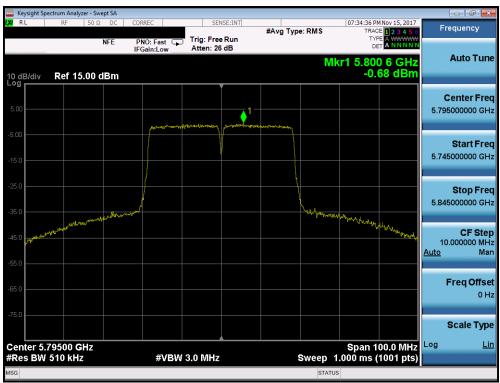
Plot 7-149. Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 165)



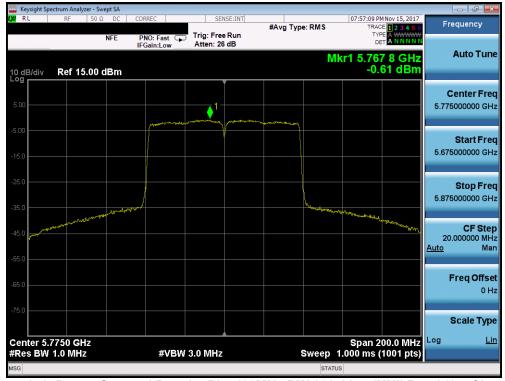
Plot 7-150. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) - Ch. 151)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|------------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: Portable Handset | | Page 105 of 200 | |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | | | | |
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Plot 7-151. Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 161)



Plot 7-152. Power Spectral Density Plot (80MHz BW 802.11ac (UNII Band 3) - Ch. 155)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|----------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 106 of 200 | |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 106 of 200 | |
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Summed MIMO/CDD Power Spectral Density Measurements

| | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Antenna-1 Power Density [dBm] | Antenna-2 Power Density [dBm] | Summed MIMO/CDD Power Density [dBm] | Max Power Density Limit [dBm/MHz] | Power Density Margin [dB] |
|---------|--------------------|----------------|-------------|------------------|-------------------------------------|-------------------------------------|--|---|---------------------------------|
| | 5180 | 36 | а | 6.5/7.2 (MCS0) | 6.75 | 5.73 | 9.28 | 11.0 | -1.72 |
| | 5200 | 40 | а | 6.5/7.2 (MCS0) | 6.12 | 5.73 | 8.94 | 11.0 | -2.06 |
| | 5240 | 48 | а | 6.5/7.2 (MCS0) | 6.44 | 6.05 | 9.26 | 11.0 | -1.74 |
| - | 5180 | 36 | n (20MHz) | 6.5/7.2 (MCS0) | 5.61 | 4.66 | 8.17 | 11.0 | -2.83 |
| Band 1 | 5200 | 40 | n (20MHz) | 6.5/7.2 (MCS0) | 5.72 | 5.40 | 8.57 | 11.0 | -2.43 |
| ä | 5240 | 48 | n (20MHz) | 6.5/7.2 (MCS0) | 5.98 | 5.65 | 8.82 | 11.0 | -2.18 |
| | 5190 | 38 | n (40MHz) | 13.5/15 (MCS0) | 2.15 | -2.23 | 3.50 | 11.0 | -7.50 |
| | 5230 | 46 | n (40MHz) | 13.5/15 (MCS0) | 2.06 | 2.41 | 5.25 | 11.0 | -5.75 |
| | 5210 | 42 | ac (80MHz) | 29.3/32.5 (MCS0) | -0.91 | -1.10 | 2.01 | 11.0 | -8.99 |
| | 5260 | 52 | а | 6.5/7.2 (MCS0) | 6.57 | 6.29 | 9.44 | 11.0 | -1.56 |
| | 5280 | 56 | а | 6.5/7.2 (MCS0) | 6.58 | 6.16 | 9.39 | 11.0 | -1.61 |
| | 5320 | 64 | а | 6.5/7.2 (MCS0) | 6.50 | 6.39 | 9.46 | 11.0 | -1.54 |
| 2A | 5260 | 52 | n (20MHz) | 6.5/7.2 (MCS0) | 6.06 | 6.16 | 9.12 | 11.0 | -1.88 |
| Band 2A | 5280 | 56 | n (20MHz) | 6.5/7.2 (MCS0) | 6.07 | 5.76 | 8.93 | 11.0 | -2.07 |
| Ba | 5320 | 64 | n (20MHz) | 6.5/7.2 (MCS0) | 6.05 | 5.81 | 8.94 | 11.0 | -2.06 |
| | 5270 | 54 | n (40MHz) | 13.5/15 (MCS0) | 1.90 | 2.21 | 5.07 | 11.0 | -5.93 |
| | 5310 | 62 | n (40MHz) | 13.5/15 (MCS0) | 1.99 | 2.11 | 5.06 | 11.0 | -5.94 |
| | 5290 | 58 | ac (80MHz) | 29.3/32.5 (MCS0) | -0.99 | -1.08 | 1.98 | 11.0 | -9.02 |
| | 5500 | 100 | а | 6.5/7.2 (MCS0) | 6.37 | 6.41 | 9.40 | 11.0 | -1.60 |
| | 5580 | 116 | а | 6.5/7.2 (MCS0) | -6.12 | -5.71 | -2.90 | 11.0 | -13.90 |
| | 5720 | 144 | а | 6.5/7.2 (MCS0) | 5.90 | 6.35 | 9.14 | 11.0 | -1.86 |
| | 5500 | 100 | n (20MHz) | 6.5/7.2 (MCS0) | 6.03 | 5.75 | 8.90 | 11.0 | -2.10 |
| 2C | 5580 | 116 | n (20MHz) | 6.5/7.2 (MCS0) | -6.48 | -6.03 | -3.24 | 11.0 | -14.24 |
| Band | 5720 | 144 | n (20MHz) | 6.5/7.2 (MCS0) | 5.58 | 6.04 | 8.83 | 11.0 | -2.17 |
| Ba | 5510 | 102 | n (40MHz) | 13.5/15 (MCS0) | -9.18 | 2.31 | 2.61 | 11.0 | -8.39 |
| | 5550 | 110 | n (40MHz) | 13.5/15 (MCS0) | -9.10 | -8.93 | -6.00 | 11.0 | -17.00 |
| | 5710 | 142 | n (40MHz) | 13.5/15 (MCS0) | 1.79 | 2.24 | 5.03 | 11.0 | -5.97 |
| | 5530 | 106 | ac (80MHz) | 29.3/32.5 (MCS0) | -0.47 | -0.60 | 2.48 | 11.0 | -8.52 |
| | 5690 | 138 | ac (80MHz) | 29.3/32.5 (MCS0) | -3.92 | -3.93 | -0.91 | 11.0 | -11.91 |

Table 7-24. Bands 1, 2A, 2C MIMO/CDD Conducted Power Spectral Density Measurements

| | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Antenna-1 Power Density [dBm] | Antenna-2 Power Density [dBm] | Summed MIMO/CDD Power Density [dBm] | Directional Gain [dBi] | e.i.r.p. Power Density [dBm/MHz] | Max e.i.r.p. Power Density Limit [dBm/MHz] | e.i.r.p. Power Density Margin [dB] |
|------|--------------------|----------------|-------------|------------------|-------------------------------------|-------------------------------------|--|---------------------------|--|--|--|
| | 5180 | 36 | а | 6.5/7.2 (MCS0) | 6.75 | 5.73 | 9.28 | -4.50 | 4.78 | 10.0 | -5.22 |
| | 5200 | 40 | а | 6.5/7.2 (MCS0) | 6.12 | 5.73 | 8.94 | -4.50 | 4.44 | 10.0 | -5.56 |
| | 5240 | 48 | а | 6.5/7.2 (MCS0) | 6.44 | 6.05 | 9.26 | -4.50 | 4.76 | 10.0 | -5.24 |
| - | 5180 | 36 | n (20MHz) | 6.5/7.2 (MCS0) | 5.61 | 4.66 | 8.17 | -4.50 | 3.67 | 10.0 | -6.33 |
| Band | 5200 | 40 | n (20MHz) | 6.5/7.2 (MCS0) | 5.72 | 5.40 | 8.57 | -4.50 | 4.07 | 10.0 | -5.93 |
| ä | 5240 | 48 | n (20MHz) | 6.5/7.2 (MCS0) | 5.98 | 5.65 | 8.82 | -4.50 | 4.32 | 10.0 | -5.68 |
| | 5190 | 38 | n (40MHz) | 13.5/15 (MCS0) | 2.15 | -2.23 | 3.50 | -4.50 | -1.00 | 10.0 | -11.00 |
| | 5230 | 46 | n (40MHz) | 13.5/15 (MCS0) | 2.06 | 2.41 | 5.25 | -4.50 | 0.75 | 10.0 | -9.25 |
| | 5210 | 42 | ac (80MHz) | 29.3/32.5 (MCS0) | -0.91 | -1.10 | 2.01 | -4.50 | -2.49 | 10.0 | -12.49 |

Table 7-25. Band 1 MIMO/CDD e.i.r.p Power Spectral Density Measurements

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Antenn-1 Power Density [dBm] | Antenn-2 Power Density [dBm] | Summed MIMO/CDD Power Density [dBm] | Max Permissible Power Density [dBm/500kHz] | Margin [dB] |
|----------|--------------------|----------------|-------------|------------------|------------------------------------|------------------------------------|--|--|----------------|
| | 5745 | 149 | а | 6.5/7.2 (MCS0) | 3.37 | 3.74 | 6.57 | 30.0 | -23.43 |
| | 5785 | 157 | а | 6.5/7.2 (MCS0) | 3.69 | 3.56 | 6.64 | 30.0 | -23.36 |
| | 5825 | 165 | а | 6.5/7.2 (MCS0) | 2.95 | 3.14 | 6.06 | 30.0 | -23.94 |
| m | 5745 | 149 | n (20MHz) | 6.5/7.2 (MCS0) | 3.11 | 3.79 | 6.47 | 30.0 | -23.53 |
| Band | 5785 | 157 | n (20MHz) | 6.5/7.2 (MCS0) | 3.15 | 3.03 | 6.10 | 30.0 | -23.90 |
| ä | 5825 | 165 | n (20MHz) | 6.5/7.2 (MCS0) | 2.87 | 2.64 | 5.77 | 30.0 | -24.23 |
| | 5755 | 151 | n (40MHz) | 13.5/15 (MCS0) | -0.57 | -0.27 | 2.59 | 30.0 | -27.41 |
| | 5795 | 159 | n (40MHz) | 13.5/15 (MCS0) | -0.89 | -0.68 | 2.23 | 30.0 | -27.77 |
| | 5775 | 155 | ac (80MHz) | 29.3/32.5 (MCS0) | -0.74 | -0.61 | 2.33 | 30.0 | -27.67 |

Table 7-26. Band 3 MIMO/CDD Conducted Power Spectral Density Measurements

Note:

Per ANSI C63.10-2013 Section 14.4.3, the directional gain is calculated using the following formula, where Gn is the gain of the nth antenna and Nant, the total number of antennas used.

Directional gain =
$$10 \log[(10^{G_I/20} + 10^{G_2/20} + ... + 10^{G_N/20})^2 / N_{ANT}] dBi$$

Sample MIMO Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average conducted power spectral density was measured to be 5.61 dBm for Antenna-1 and 4.66 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(5.61 dBm + 4.66 dBm) = (3.64 mW + 2.92 mW) = 6.57 mW = 8.17 dBm

Sample e.i.r.p. Power Density Calculation:

At 5180MHz in 802.11n (20MHz BW) mode, the average MIMO power density was calculated to be 8.17 dBm with directional gain of -4.5 dBi.

e.i.r.p. Power Spectral Density (dBm) = Power Spectral Density (dBm) + Ant gain (dBi)

= 8.17 dBm + -4.5 dBi

= 3.67 dBm

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7.6 Frequency Stability §15.407(g); RSS-Gen [6.11]

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: | 4.30 | VDC |

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|----------------|---------------------|-------------------|--------------------|------------------|
| 100 % | 4.30 | + 20 (Ref) | 5,179,999,558 | -442 | -0.0000085 |
| 100 % | | - 30 | 5,180,000,144 | 144 | 0.0000028 |
| 100 % | | - 20 | 5,179,999,920 | -80 | -0.0000015 |
| 100 % | | - 10 | 5,179,999,968 | -32 | -0.0000006 |
| 100 % | | 0 | 5,179,999,778 | -222 | -0.0000043 |
| 100 % | | + 10 | 5,180,000,239 | 239 | 0.0000046 |
| 100 % | | + 20 | 5,180,000,081 | 81 | 0.0000016 |
| 100 % | | + 30 | 5,179,999,978 | -22 | -0.0000004 |
| 100 % | | + 40 | 5,180,000,049 | 49 | 0.0000009 |
| 100 % | | + 50 | 5,180,000,331 | 331 | 0.0000064 |
| BATT. ENDPOINT | 3.70 | + 20 | 5,179,999,998 | -2 | 0.0000000 |

 Table 7-27. 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.

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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: | 4.30 | VDC |

| POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-----------------------|---|---|---|
| 4.30 | + 20 (Ref) | 5,260,000,083 | 83 | 0.0000016 |
| | - 30 | 5,260,000,079 | 79 | 0.0000015 |
| | - 20 | 5,259,999,733 | -267 | -0.0000051 |
| | - 10 | 5,260,000,161 | 161 | 0.0000031 |
| | 0 | 5,260,000,110 | 110 | 0.0000021 |
| | + 10 | 5,259,999,814 | -186 | -0.0000035 |
| | + 20 | 5,259,999,998 | -2 | 0.0000000 |
| | + 30 | 5,260,000,012 | 12 | 0.0000002 |
| | + 40 | 5,259,999,846 | -154 | -0.0000029 |
| | + 50 | 5,260,000,281 | 281 | 0.0000053 |
| 3.70 | + 20 | 5,260,000,010 | 10 | 0.0000002 |
| | (VDC) 4.30 3.70 | (VDC) (°C) 4.30 + 20 (Ref) - 30 - 20 - 10 - 10 0 + 10 + 20 + 30 + 40 + 50 3.70 + 20 | (VDC)(°C)(Hz) 4.30 $+ 20 (Ref)$ $5,260,000,083$ $- 30$ $5,260,000,079$ $- 20$ $5,259,999,733$ $- 10$ $5,260,000,161$ 0 $5,260,000,161$ 0 $5,260,000,110$ $+ 10$ $5,259,999,814$ $+ 20$ $5,259,999,814$ $+ 20$ $5,260,000,012$ $+ 40$ $5,259,999,846$ $+ 50$ $5,260,000,281$ 3.70 $+ 20$ $5,260,000,010$ | I OWER (VDC)(°C)I REGUENCI (Hz)I req. BeV. (Hz) 4.30 $+ 20$ (Ref) $5,260,000,083$ 83 $- 30$ $5,260,000,079$ 79 $- 20$ $5,259,999,733$ -267 $- 10$ $5,260,000,161$ 161 0 $5,260,000,161$ 110 $+ 10$ $5,259,999,814$ -186 $+ 20$ $5,259,999,814$ -186 $+ 20$ $5,259,999,814$ -186 $+ 20$ $5,260,000,012$ 12 $+ 30$ $5,260,000,012$ 12 $+ 40$ $5,259,999,846$ -154 $+ 50$ $5,260,000,281$ 281 |

 Table 7-28. 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: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|------------------|---------------------------------|
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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: | 4.30 | VDC |

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|----------------|---------------------|-------------------|--------------------|------------------|
| 100 % | 4.30 | + 20 (Ref) | 5,499,999,939 | -61 | -0.0000011 |
| 100 % | | - 30 | 5,499,999,972 | -28 | -0.0000005 |
| 100 % | | - 20 | 5,499,999,818 | -182 | -0.0000033 |
| 100 % | | - 10 | 5,500,000,001 | 1 | 0.0000000 |
| 100 % | | 0 | 5,499,999,949 | -51 | -0.0000009 |
| 100 % | | + 10 | 5,499,999,994 | -6 | -0.0000001 |
| 100 % | | + 20 | 5,500,000,039 | 39 | 0.0000007 |
| 100 % | | + 30 | 5,500,000,166 | 166 | 0.0000030 |
| 100 % | | + 40 | 5,500,000,420 | 420 | 0.0000076 |
| 100 % | | + 50 | 5,500,000,027 | 27 | 0.0000005 |
| BATT. ENDPOINT | 3.70 | + 20 | 5,500,000,028 | 28 | 0.0000005 |

 Table 7-29. 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: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 111 of 200 |
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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: | 5,745,000,000 | Hz |
|----------------------|---------------|-----|
| CHANNEL: | 149 | |
| REFERENCE VOLTAGE: | 4.30 | VDC |

| (VDC) | (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|-------|------------|--|--|---|
| 4.30 | + 20 (Ref) | 5,745,000,036 | 36 | 0.0000006 |
| | - 30 | 5,744,999,859 | -141 | -0.0000025 |
| | - 20 | 5,744,999,967 | -33 | -0.0000006 |
| | - 10 | 5,744,999,795 | -205 | -0.0000036 |
| | 0 | 5,745,000,121 | 121 | 0.0000021 |
| | + 10 | 5,744,999,924 | -76 | -0.0000013 |
| | + 20 | 5,745,000,043 | 43 | 0.0000007 |
| | + 30 | 5,744,999,863 | -137 | -0.0000024 |
| | + 40 | 5,744,999,955 | -45 | -0.0000008 |
| | + 50 | 5,745,000,066 | 66 | 0.0000011 |
| 3.70 | + 20 | 5,744,999,852 | -148 | -0.0000026 |
| | | $ \begin{array}{r} -20 \\ -10 \\ 0 \\ +10 \\ +20 \\ +30 \\ +40 \\ +50 \\ 3.70 +20 \\ \end{array} $ | - 20 5,744,999,967 - 10 5,744,999,795 0 5,745,000,121 + 10 5,744,999,924 + 20 5,745,000,043 + 30 5,744,999,863 + 40 5,744,999,955 + 50 5,745,000,066 3.70 + 20 5,744,999,852 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |

 Table 7-30. Frequency Stability Measurements for UNII Band 3 (Ch. 149)

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: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
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7.7 Radiated Spurious Emission Measurements – Above 1GHz §15.407(b) §15.205 §15.209; RSS-Gen [8.9]

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, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02, and at the appropriate frequencies. All channels, modes (e.g. 802.11a, 802.11n (20MHz BW), 802.11n (40MHz BW), and 802.11ac (80MHz)), 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.

For transmitters operating in the 5.15-5.25 GHz and 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of −27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at 5 MHz above or below the band edge.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 6 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-31 per Section 15.209 and RSS-Gen (8.9).

| Frequency | Field Strength [μV/m] | Measured Distance [Meters] | | |
|-----------------|--------------------------|-------------------------------|--|--|
| Above 960.0 MHz | 500 | 3 | | |

Table 7-31. Radiated Limits

Test Procedures Used

ANSI C63.10-2013 – Sections 12.7.7.2, 12.7.6, 12.7.5 KDB 789033 D02 v02 – Section G

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 x span/RBW)
- 6. Averaging type = power (RMS)
- 7. Sweep time = auto couple
- 8. Trace was averaged over 100 sweeps

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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.

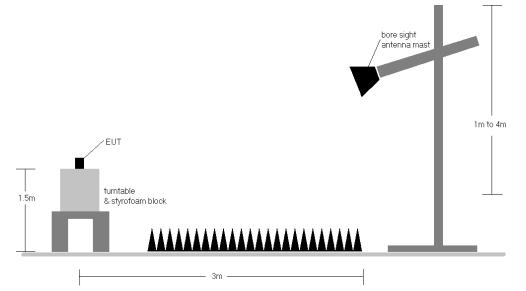


Figure 7-5. Test Instrument & Measurement Setup

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
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Test Notes

- 1. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 and Section 8.10 of RSS-Gen are below the limit shown in Table 7-31.
- 2. All spurious emissions lying in restricted bands specified in §15.205 and Section 8.10 of RSS-Gen are below the limit shown in Table 7-31. 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 dBµV/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 68.2dBµV/m.
- 3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- 4. This unit was tested with its standard battery.
- 5. 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.
- 6. 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.
- 7. Radiated spurious emissions were investigated while operating in MIMO mode, however, it was determined that single antenna operation produced the worst case emissions. Since the emissions produced from MIMO operation were found to be more than 20dB below the limit, the MIMO emissions are not reported.
- 8. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section.
- 9. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Sample Calculations

Determining Spurious Emissions Levels

- ο Field Strength Level [dBµV/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- ο Margin [dB] = Field Strength Level [dBμV/m] Limit [dBμV/m]

Radiated Band Edge Measurement Offset

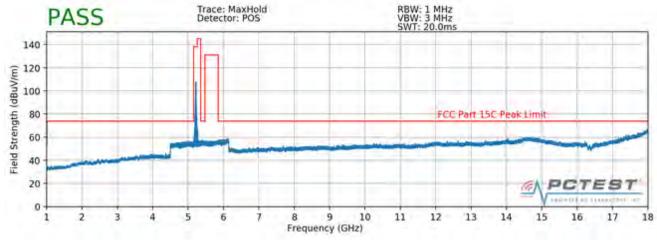
• The amplitude offset shown in the radiated restricted band edge plots in Section 7.7 was calculated using the formula:

Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

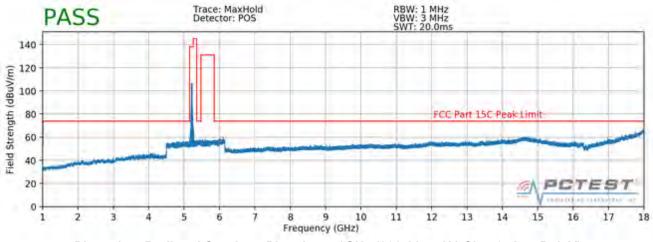
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
|--|------------------|---------------------------------------|--|---------------------------------|
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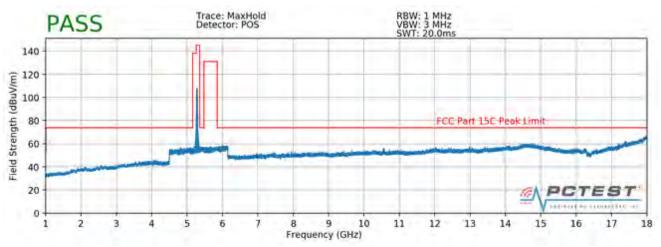
7.7.1 Antenna-1 Radiated Spurious Emission Measurements







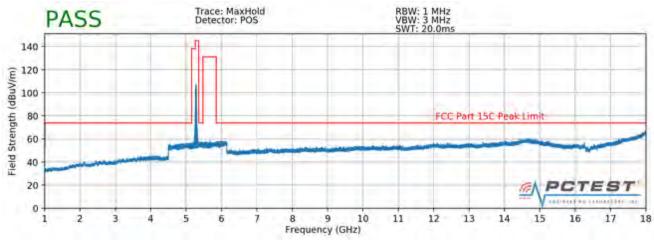


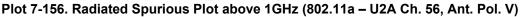


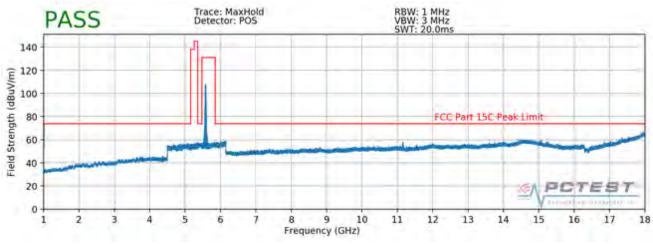
Plot 7-155. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)

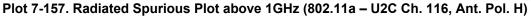
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|------------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 116 of 200 | |
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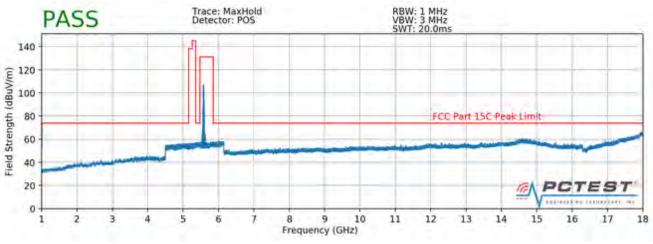








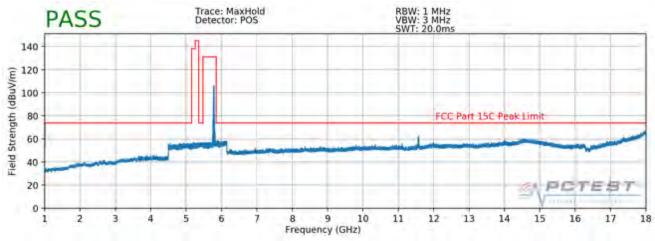


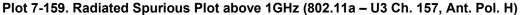


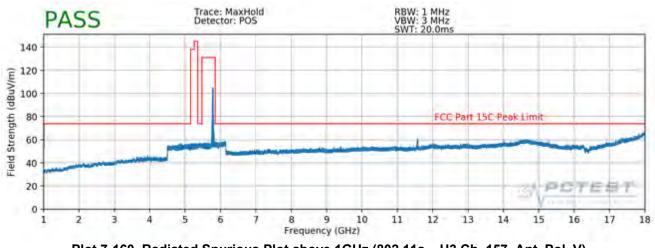
Plot 7-158. Radiated Spurious Plot above 1GHz (802.11a – U2C Ch. 116, Ant. Pol. V)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|------------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 117 of 200 | |
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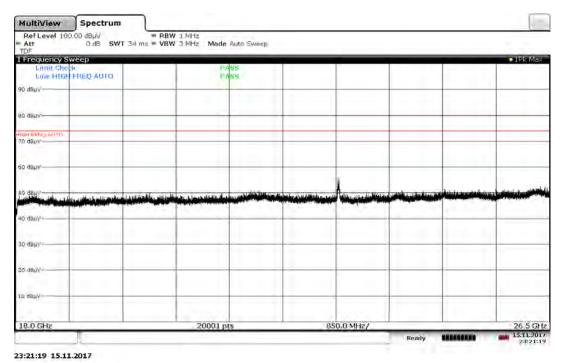


Plot 7-160. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157, Ant. Pol. V)

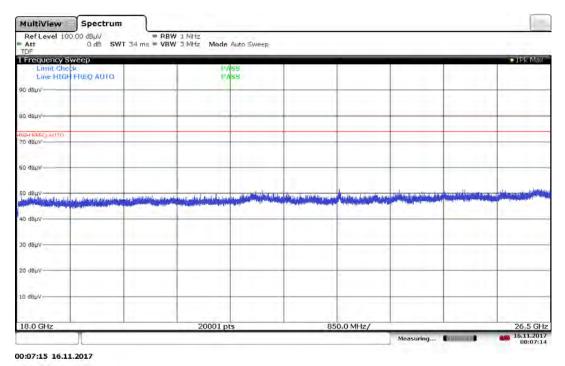
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|------------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 119 of 200 | |
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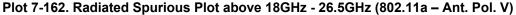


Antenna-1 Radiated Spurious Emissions Measurements (Above 18GHz)





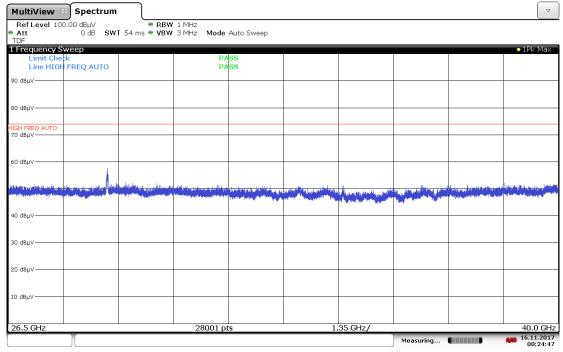




| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager | |
|--|------------------|---------------------------------------|--|---------------------------------|--|
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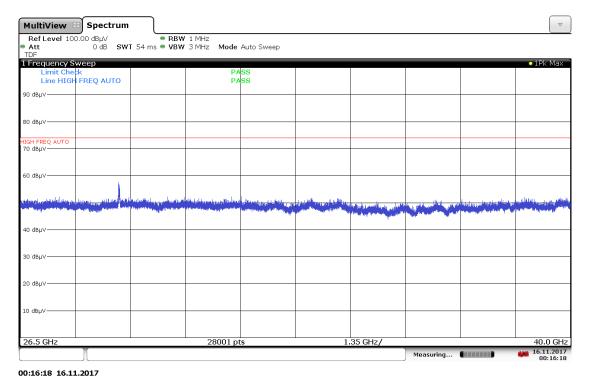


Antenna-1 Radiated Spurious Emissions Measurements (Above 18GHz)



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Plot 7-164. Radiated Spurious Plot above 26.5GHz - 40GHz (802.11a - Ant. Pol. V)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|------------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Daga 120 of 200 | |
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Antenna-1 Radiated Spurious Emission Measurements §15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

| Worst Case Mode: | 802.11a |
|---------------------------|---------|
| Worst Case Transfer Rate: | 6Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5180MHz |
| Channel: | 36 |
| | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10360.00 | Peak | Н | 100 | 329 | -49.92 | 12.13 | -9.54 | 59.67 | 68.20 | -8.53 |
| * | 15540.00 | Average | Н | 100 | 3 | -71.16 | 14.49 | -9.54 | 40.79 | 53.98 | -13.19 |
| * | 15540.00 | Peak | Н | 100 | 3 | -57.93 | 14.49 | -9.54 | 54.02 | 73.98 | -19.96 |
| * | 20720.00 | Average | Н | 100 | 3 | -69.79 | 7.94 | -9.54 | 35.61 | 53.98 | -18.37 |
| * | 20720.00 | Peak | Н | 100 | 3 | -59.30 | 7.94 | -9.54 | 46.10 | 73.98 | -27.88 |
| | 25900.00 | Peak | Н | 100 | 265 | -55.54 | 8.46 | -9.54 | 50.38 | 68.20 | -17.82 |

Table 7-32. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| 802.11a | |
|---------|--|
| 6Mbps | |
| 1 Meter | |
| 5200MHz | |
| 40 | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10400.00 | Peak | Н | 100 | 322 | -50.91 | 12.12 | -9.54 | 58.67 | 68.20 | -9.53 |
| * | 15600.00 | Average | Н | 100 | 357 | -69.68 | 14.31 | -9.54 | 42.09 | 53.98 | -11.89 |
| * | 15600.00 | Peak | Н | 100 | 357 | -57.44 | 14.31 | -9.54 | 54.33 | 73.98 | -19.65 |
| * | 20800.00 | Average | Н | 100 | 275 | -69.94 | 7.95 | -9.54 | 35.47 | 53.98 | -18.51 |
| * | 20800.00 | Peak | Н | 100 | 275 | -59.50 | 7.95 | -9.54 | 45.91 | 73.98 | -28.07 |
| | 26000.00 | Peak | Н | 100 | 274 | -57.13 | 8.60 | -9.54 | 48.93 | 68.20 | -19.27 |

Table 7-33. Radiated Measurements

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|------------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Page 121 of 200 | |
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| Worst Case Mode: | 802.11a |
|---------------------------|---------|
| Worst Case Transfer Rate: | 6Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5240MHz |
| Channel: | 48 |
| | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10480.00 | Peak | Н | 100 | 322 | -49.50 | 12.09 | -9.54 | 60.05 | 68.20 | -8.15 |
| * | 15720.00 | Average | Н | 100 | 359 | -68.58 | 14.02 | -9.54 | 42.90 | 53.98 | -11.08 |
| * | 15720.00 | Peak | Н | 100 | 359 | -54.48 | 14.02 | -9.54 | 57.00 | 73.98 | -16.98 |
| * | 20960.00 | Average | Н | 100 | 276 | -70.15 | 7.91 | -9.54 | 35.22 | 53.98 | -18.76 |
| * | 20960.00 | Peak | Н | 100 | 276 | -58.96 | 7.91 | -9.54 | 46.41 | 73.98 | -27.57 |
| | 26200.00 | Peak | Н | 100 | 262 | -54.49 | 8.62 | -9.54 | 51.59 | 68.20 | -16.61 |

Table 7-34. Radiated Measurements

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

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10480.00 | Peak | Н | 100 | 234 | -58.36 | 12.09 | -9.54 | 51.19 | 68.20 | -17.01 |
| * | 15720.00 | Average | Н | 100 | 307 | -71.66 | 14.02 | -9.54 | 39.82 | 53.98 | -14.16 |
| * | 15720.00 | Peak | Н | 100 | 307 | -59.66 | 14.02 | -9.54 | 51.82 | 73.98 | -22.16 |
| * | 20960.00 | Average | Н | 100 | 271 | -71.19 | 7.91 | -9.54 | 34.18 | 53.98 | -19.80 |
| * | 20960.00 | Peak | Н | 100 | 271 | -59.79 | 7.91 | -9.54 | 45.58 | 73.98 | -28.40 |
| | 26200.00 | Peak | Н | 100 | 266 | -55.89 | 8.62 | -9.54 | 50.19 | 68.20 | -18.01 |

Table 7-35. Radiated Measurements with WCP

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Daga 122 of 200 |
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| Worst Case Mode: | 802.11a |
|---------------------------|---------|
| Worst Case Transfer Rate: | 6Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5260MHz |
| Channel: | 52 |
| | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10520.00 | Peak | н | 100 | 232 | -48.73 | 12.16 | -9.54 | 60.89 | 68.20 | -7.31 |
| * | 15780.00 | Average | Н | 100 | 359 | -68.31 | 14.03 | -9.54 | 43.18 | 53.98 | -10.80 |
| * | 15780.00 | Peak | Н | 100 | 359 | -53.94 | 14.03 | -9.54 | 57.55 | 73.98 | -16.43 |
| * | 21040.00 | Average | Н | 100 | 281 | -70.11 | 7.92 | -9.54 | 35.27 | 53.98 | -18.71 |
| * | 21040.00 | Peak | Н | 100 | 281 | -59.43 | 7.92 | -9.54 | 45.95 | 73.98 | -28.03 |
| | 26300.00 | Peak | Н | 100 | 264 | -54.62 | 8.73 | -9.54 | 51.57 | 68.20 | -16.63 |

Table 7-36. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| | 802.11a |
|---|---------|
| | 6Mbps |
| : | 1 Meter |
| | 5280MHz |
| | 56 |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10560.00 | Peak | н | 100 | 326 | -48.13 | 12.04 | -9.54 | 61.37 | 68.20 | -6.83 |
| * | 15840.00 | Average | Н | 100 | 358 | -68.92 | 14.25 | -9.54 | 42.78 | 53.98 | -11.20 |
| * | 15840.00 | Peak | н | 100 | 358 | -53.86 | 14.25 | -9.54 | 57.84 | 73.98 | -16.14 |
| * | 21120.00 | Average | н | 100 | 276 | -69.83 | 7.96 | -9.54 | 35.59 | 53.98 | -18.39 |
| * | 21120.00 | Peak | н | 100 | 276 | -59.42 | 7.96 | -9.54 | 46.00 | 73.98 | -27.98 |
| | 26400.00 | Peak | Н | 100 | 265 | -55.36 | 8.94 | -9.54 | 51.04 | 68.20 | -17.16 |

Table 7-37. Radiated Measurements

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Daga 122 of 200 |
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| 802.11a |
|---------|
| 6Mbps |
| 1 Meter |
| 5320MHz |
| 64 |
| |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 10640.00 | Average | н | 100 | 329 | -61.35 | 12.06 | -9.54 | 48.17 | 53.98 | -5.81 |
| * | 10640.00 | Peak | н | 100 | 329 | -50.03 | 12.06 | -9.54 | 59.49 | 73.98 | -14.49 |
| * | 15960.00 | Average | Н | 100 | 3 | -67.28 | 14.55 | -9.54 | 44.73 | 53.98 | -9.25 |
| * | 15960.00 | Peak | н | 100 | 3 | -53.11 | 14.55 | -9.54 | 58.90 | 73.98 | -15.08 |
| * | 21280.00 | Average | Н | 100 | 257 | -69.57 | 8.04 | -9.54 | 35.93 | 53.98 | -18.05 |
| * | 21280.00 | Peak | Н | 100 | 257 | -57.96 | 8.04 | -9.54 | 47.54 | 73.98 | -26.44 |
| | 26600.00 | Peak | Н | 100 | 256 | -42.02 | -8.30 | -9.54 | 47.13 | 68.20 | -21.07 |

Table 7-38. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| 8 | 302.11a |
|---|---------|
| 6 | 6Mbps |
| - | 1 Meter |
| Ę | 5320MHz |
| 6 | 64 |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 10640.00 | Average | Н | 100 | 238 | -64.97 | 12.06 | -9.54 | 44.55 | 53.98 | -9.43 |
| * | 10640.00 | Peak | Н | 100 | 238 | -54.89 | 12.06 | -9.54 | 54.63 | 73.98 | -19.35 |
| * | 15960.00 | Average | н | 100 | 301 | -71.78 | 14.55 | -9.54 | 40.23 | 53.98 | -13.75 |
| * | 15960.00 | Peak | Н | 100 | 301 | -59.31 | 14.55 | -9.54 | 52.70 | 73.98 | -21.28 |
| * | 21280.00 | Average | н | 100 | 272 | -69.98 | 8.04 | -9.54 | 35.52 | 53.98 | -18.46 |
| * | 21280.00 | Peak | н | 100 | 272 | -59.30 | 8.04 | -9.54 | 46.20 | 73.98 | -27.78 |
| | 26600.00 | Peak | Н | 100 | 276 | -39.51 | -8.30 | -9.54 | 49.64 | 68.20 | -18.56 |

Table 7-39. Radiated Measurements with WCP

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|-------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: Test Dates: 1M1711010281-06-R2.A3L 11/1-12/7/2017 | | EUT Type: | | Page 124 of 200 |
| | | Portable Handset | | Page 124 01 200 |
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| 802.11a |
|----------|
| 6Mbps |
| 1 Meter |
| _5500MHz |
| 100 |
| |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11000.00 | Average | Н | 100 | 312 | -71.56 | 12.87 | -9.54 | 38.77 | 53.98 | -15.21 |
| * | 11000.00 | Peak | Н | 100 | 312 | -58.06 | 12.87 | -9.54 | 52.27 | 73.98 | -21.71 |
| | 16500.00 | Peak | Н | 100 | 5 | -53.71 | 16.61 | -9.54 | 60.36 | 68.20 | -7.84 |
| | 22000.00 | Peak | Н | 100 | 302 | -57.18 | 8.43 | -9.54 | 48.70 | 68.20 | -19.50 |
| | 27500.00 | Peak | Н | 100 | 311 | -44.74 | -8.80 | -9.54 | 43.92 | 68.20 | -24.28 |

Table -40. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11160.00 | Average | Н | 100 | 317 | -67.08 | 12.76 | -9.54 | 43.14 | 53.98 | -10.84 |
| * | 11160.00 | Peak | Н | 100 | 317 | -51.81 | 12.76 | -9.54 | 58.41 | 73.98 | -15.57 |
| | 16740.00 | Peak | Н | 100 | 55 | -56.75 | 16.64 | -9.54 | 57.35 | 68.20 | -10.85 |
| * | 22320.00 | Average | Н | 100 | 280 | -69.29 | 8.11 | -9.54 | 36.28 | 53.98 | -17.70 |
| * | 22320.00 | Peak | Н | 100 | 280 | -58.73 | 8.11 | -9.54 | 46.84 | 73.98 | -27.14 |
| | 27900.00 | Peak | Н | 100 | 301 | -40.44 | -9.26 | -9.54 | 47.76 | 68.20 | -20.44 |

Table -41. Radiated Measurements

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dago 125 of 200 |
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| Worst Case Mode: | 802.11a |
|---------------------------|---------|
| Worst Case Transfer Rate: | 6Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5720MHz |
| Channel: | 144 |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11440.00 | Average | Н | 100 | 222 | -64.91 | 12.57 | -9.54 | 45.12 | 53.98 | -8.86 |
| * | 11440.00 | Peak | Н | 100 | 222 | -50.71 | 12.57 | -9.54 | 59.32 | 73.98 | -14.66 |
| | 17160.00 | Peak | Н | 100 | 5 | -54.96 | 18.31 | -9.54 | 60.81 | 68.20 | -7.39 |
| * | 22880.00 | Average | Н | 100 | 222 | -67.79 | 8.28 | -9.54 | 37.95 | 53.98 | -16.03 |
| * | 22880.00 | Peak | Н | 100 | 222 | -56.17 | 8.28 | -9.54 | 49.57 | 73.98 | -24.41 |
| | 28600.00 | Peak | Н | 100 | 256 | -39.13 | -9.08 | -9.54 | 49.25 | 68.20 | -18.95 |

 Table -42. Radiated Measurements

| Worst Case Mode: | 802.11a |
|---------------------------|---------|
| Worst Case Transfer Rate: | 6Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5720MHz |
| Channel: | 144 |
| | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11440.00 | Average | н | 100 | 225 | -68.67 | 12.57 | -9.54 | 41.36 | 53.98 | -12.62 |
| * | 11440.00 | Peak | Н | 100 | 225 | -58.03 | 12.57 | -9.54 | 52.00 | 73.98 | -21.98 |
| | 17160.00 | Peak | Н | 100 | 287 | -55.00 | 18.31 | -9.54 | 60.77 | 68.20 | -7.43 |
| * | 22880.00 | Average | Н | 100 | 225 | -68.77 | 8.28 | -9.54 | 36.97 | 53.98 | -17.01 |
| * | 22880.00 | Peak | Н | 100 | 225 | -57.67 | 8.28 | -9.54 | 48.07 | 73.98 | -25.91 |
| | 28600.00 | Peak | Н | 100 | 259 | -43.42 | -9.08 | -9.54 | 44.96 | 68.20 | -23.24 |

Table 7-43. Radiated Measurements with WCP

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dogo 126 of 200 |
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| Worst Case Mode: | 802.11a |
|---------------------------|---------|
| Worst Case Transfer Rate: | 6Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5745MHz |
| Channel: | 149 |
| | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11490.00 | Average | Н | 100 | 218 | -62.11 | 12.43 | -9.54 | 47.78 | 53.98 | -6.20 |
| * | 11490.00 | Peak | Н | 100 | 218 | -49.93 | 12.43 | -9.54 | 59.96 | 73.98 | -14.02 |
| | 17235.00 | Peak | Н | 100 | 54 | -54.17 | 18.61 | -9.54 | 61.90 | 68.20 | -6.30 |
| * | 22980.00 | Average | Н | 100 | 221 | -67.65 | 8.16 | -9.54 | 37.97 | 53.98 | -16.01 |
| * | 22980.00 | Peak | Н | 100 | 221 | -55.35 | 8.16 | -9.54 | 50.27 | 73.98 | -23.71 |
| | 28725.00 | Peak | Н | 100 | 257 | -40.03 | -9.24 | -9.54 | 48.19 | 68.20 | -20.01 |

Table -44. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| 802.11a |
|---------|
| 6Mbps |
| 1 Meter |
| 5785MHz |
| 157 |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11570.00 | Average | Н | 100 | 225 | -61.93 | 12.54 | -9.54 | 48.07 | 53.98 | -5.91 |
| * | 11570.00 | Peak | Н | 100 | 225 | -51.20 | 12.54 | -9.54 | 58.80 | 73.98 | -15.18 |
| | 17355.00 | Peak | Н | 100 | 262 | -56.11 | 18.73 | -9.54 | 60.08 | 68.20 | -8.12 |
| | 23140.00 | Peak | Н | 100 | 247 | -55.60 | 8.37 | -9.54 | 50.23 | 68.20 | -17.97 |
| | 28925.00 | Peak | Н | 100 | 256 | -37.72 | -9.65 | -9.54 | 50.09 | 68.20 | -18.11 |

Table -45. Radiated Measurements

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 107 of 200 |
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| Worst Case Mode: | _802.11a |
|---------------------------|----------|
| Worst Case Transfer Rate: | _6Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5825MHz |
| Channel: | 165 |
| | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11650.00 | Average | Н | 100 | 46 | -62.47 | 12.99 | -9.54 | 47.97 | 53.98 | -6.01 |
| * | 11650.00 | Peak | Н | 100 | 46 | -51.57 | 12.99 | -9.54 | 58.87 | 73.98 | -15.11 |
| | 17475.00 | Peak | Н | 100 | 263 | -56.63 | 19.25 | -9.54 | 60.07 | 68.20 | -8.13 |
| | 23300.00 | Peak | Н | 100 | 247 | -56.57 | 8.50 | -9.54 | 49.38 | 68.20 | -18.82 |
| | 29125.00 | Peak | Н | 100 | 254 | -35.52 | -9.87 | -9.54 | 52.07 | 68.20 | -16.13 |

Table -46. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel: 802.11a 6Mbps 1 Meter 5785MHz 157

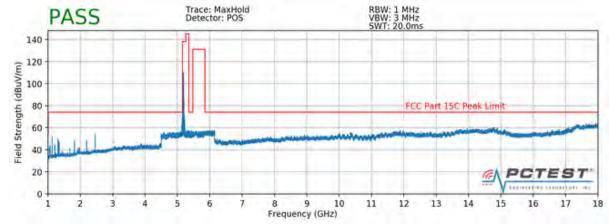
| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11570.00 | Average | Н | 100 | 234 | -69.53 | 12.54 | -9.54 | 40.47 | 53.98 | -13.51 |
| * | 11570.00 | Peak | Н | 100 | 234 | -58.37 | 12.54 | -9.54 | 51.63 | 73.98 | -22.35 |
| | 17355.00 | Peak | Н | 100 | 295 | -57.57 | 18.73 | -9.54 | 58.62 | 68.20 | -9.58 |
| | 23140.00 | Peak | Н | 100 | 265 | -59.05 | 8.37 | -9.54 | 46.78 | 68.20 | -21.42 |
| | 28925.00 | Peak | Н | 100 | 256 | -45.32 | -9.65 | -9.54 | 42.49 | 68.20 | -25.71 |

Table 7-47. Radiated Measurements with WCP

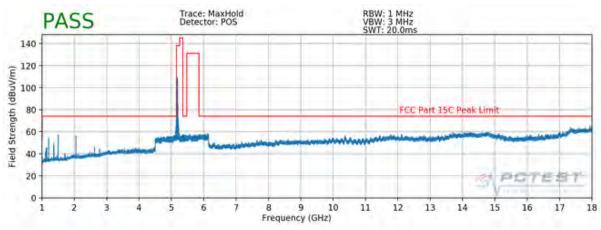
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 128 of 200 |
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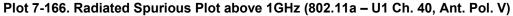


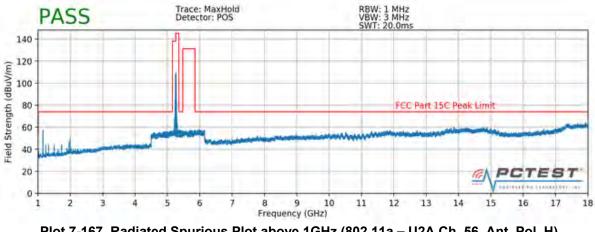
7.7.2 Antenna-2 Radiated Spurious Emission Measurements







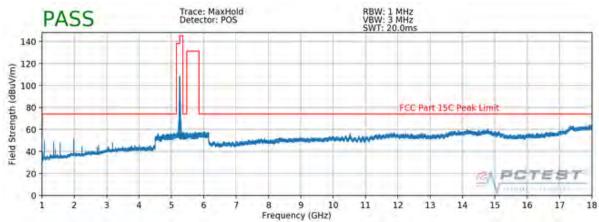




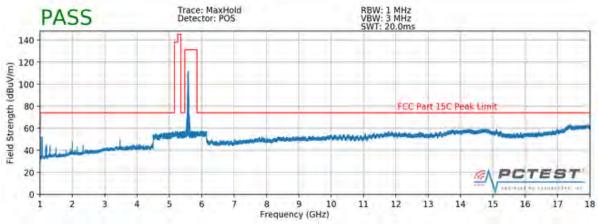
Plot 7-167. Radiated Spurious Plot above 1GHz (802.11a – U2A Ch. 56, Ant. Pol. H)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 100 of 200 |
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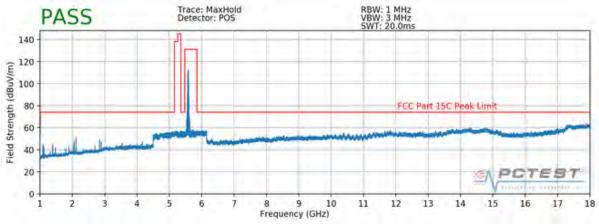








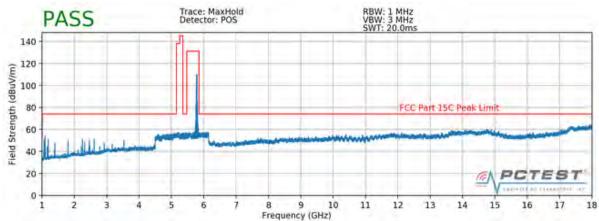
Plot 7-169. Radiated Spurious Plot above 1GHz (802.11a - U2C Ch. 116, Ant. Pol. H)



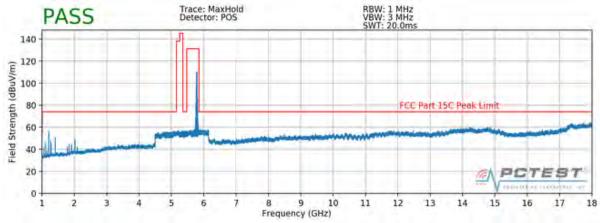
Plot 7-170. Radiated Spurious Plot above 1GHz (802.11a - U2C Ch. 116, Ant. Pol. V)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 120 of 200 |
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Plot 7-171. Radiated Spurious Plot above 1GHz (802.11a - U3 Ch. 157, Ant. Pol. H)

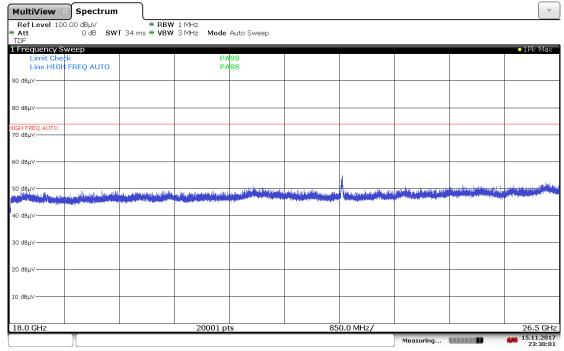


Plot 7-172. Radiated Spurious Plot above 1GHz (802.11a - U3 Ch. 157, Ant. Pol. V)

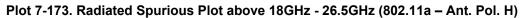
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 121 of 200 |
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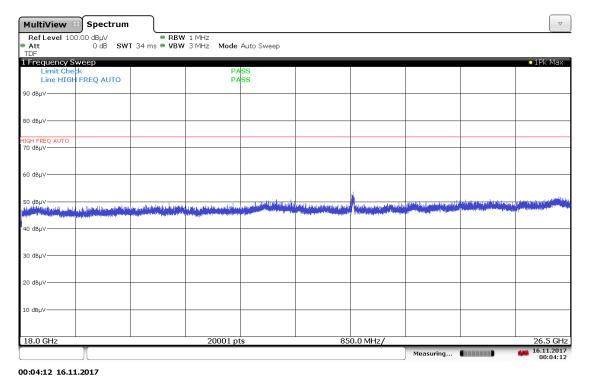


Antenna-2 Radiated Spurious Emissions Measurements (Above 18GHz)



23:30:02 15.11.2017



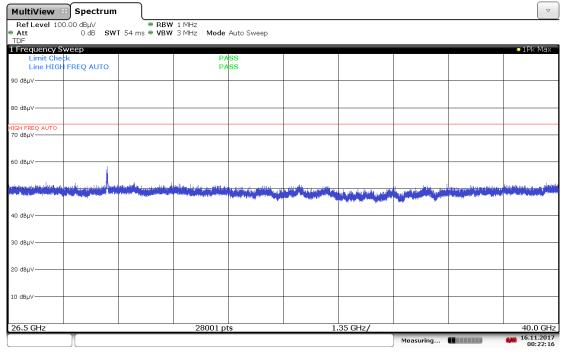


Plot 7-174. Radiated Spurious Plot above 18GHz - 26.5GHz (802.11a - Ant. Pol. V)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 122 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 132 of 200 |
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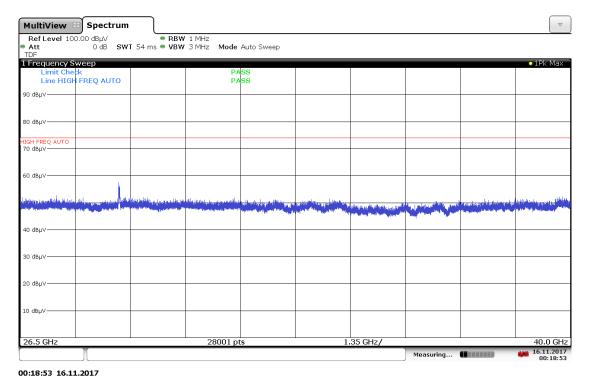


Antenna-2 Radiated Spurious Emissions Measurements (Above 18GHz)



00:22:16 16.11.2017





Plot 7-176. Radiated Spurious Plot above 26.5GHz - 40GHz (802.11a - Ant. Pol. V)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 122 of 200 |
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Antenna-2 Radiated Spurious Emission Measurements §15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

| Worst Case Mode: | _802.11a |
|---------------------------|----------|
| Worst Case Transfer Rate: | 6Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5180MHz |
| Channel: | 36 |
| | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10360.00 | Peak | Н | 100 | 224 | -50.00 | 12.13 | -9.54 | 59.59 | 68.20 | -8.61 |
| * | 15540.00 | Average | Н | 100 | 357 | -66.31 | 14.49 | -9.54 | 45.64 | 53.98 | -8.34 |
| * | 15540.00 | Peak | Н | 100 | 357 | -53.37 | 14.49 | -9.54 | 58.58 | 73.98 | -15.40 |
| * | 20720.00 | Average | Н | 100 | 257 | -68.84 | 7.94 | -9.54 | 36.56 | 53.98 | -17.42 |
| * | 20720.00 | Peak | Н | 100 | 257 | -57.59 | 7.94 | -9.54 | 47.81 | 73.98 | -26.17 |
| | 25900.00 | Peak | Н | 100 | 247 | -52.04 | 8.46 | -9.54 | 53.88 | 68.20 | -14.32 |

Table -48. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| 802.11a | |
|---------|--|
| 6Mbps | |
| 1 Meter | |
| 5200MHz | |
| 40 | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10400.00 | Peak | н | 100 | 225 | -51.38 | 12.12 | -9.54 | 58.20 | 68.20 | -10.00 |
| * | 15600.00 | Average | Н | 100 | 268 | -66.37 | 14.31 | -9.54 | 45.40 | 53.98 | -8.58 |
| * | 15600.00 | Peak | Н | 100 | 268 | -55.83 | 14.31 | -9.54 | 55.94 | 73.98 | -18.04 |
| * | 20800.00 | Average | Н | 100 | 259 | -69.07 | 7.95 | -9.54 | 36.34 | 53.98 | -17.64 |
| * | 20800.00 | Peak | Н | 100 | 259 | -58.97 | 7.95 | -9.54 | 46.44 | 73.98 | -27.54 |
| | 26000.00 | Peak | Н | 100 | 264 | -51.77 | 8.60 | -9.54 | 54.29 | 68.20 | -13.91 |

Table -49. Radiated Measurements

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 124 of 200 |
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| Worst Case Mode: | 802.11a |
|---------------------------|---------|
| Worst Case Transfer Rate: | 6Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5240MHz |
| Channel: | 48 |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10480.00 | Peak | Н | 100 | 226 | -52.76 | 12.09 | -9.54 | 56.79 | 68.20 | -11.41 |
| * | 15720.00 | Average | Н | 100 | 271 | -67.66 | 14.02 | -9.54 | 43.82 | 53.98 | -10.16 |
| * | 15720.00 | Peak | Н | 100 | 271 | -54.08 | 14.02 | -9.54 | 57.40 | 73.98 | -16.58 |
| * | 20960.00 | Average | Н | 100 | 281 | -69.10 | 7.91 | -9.54 | 36.27 | 53.98 | -17.71 |
| * | 20960.00 | Peak | Н | 100 | 281 | -57.25 | 7.91 | -9.54 | 48.12 | 73.98 | -25.86 |
| | 26200.00 | Peak | Н | 100 | 267 | -55.58 | 8.62 | -9.54 | 50.50 | 68.20 | -17.70 |

Table -50. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| 802.11a |
|---------|
| 6Mbps |
| 1 Meter |
| 5180MHz |
| 36 |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10360.00 | Peak | н | 100 | 240 | -52.58 | 12.13 | -9.54 | 57.01 | 68.20 | -11.19 |
| * | 15540.00 | Average | Н | 100 | 292 | -67.89 | 14.49 | -9.54 | 44.06 | 53.98 | -9.92 |
| * | 15540.00 | Peak | Н | 100 | 292 | -56.14 | 14.49 | -9.54 | 55.81 | 73.98 | -18.17 |
| * | 20720.00 | Average | Н | 100 | 278 | -68.99 | 7.94 | -9.54 | 36.41 | 53.98 | -17.57 |
| * | 20720.00 | Peak | Н | 100 | 278 | -57.95 | 7.94 | -9.54 | 47.45 | 73.98 | -26.53 |
| | 25900.00 | Peak | Н | 100 | 265 | -54.88 | 8.46 | -9.54 | 51.04 | 68.20 | -17.16 |

Table 7-51. Radiated Measurements with WCP

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 125 of 200 |
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| W | /orst Case | Mode: | | 80 |)2.11a | | | | | |
|--------------------|------------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| Ŵ | orst Case | Transt | fer Rate: | 6 | Mbps | | | | | |
| D | istance of | Measu | rements: | 1 | Meter | | | | | |
| 0 | perating F | requer | icy: | 52 | 260MHz | | | | | |
| С | hannel: | | | 52 | 2 | | | | | |
| Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
| 10520.00 | Peak | Н | 100 | 321 | -53.56 | 12.16 | -9.54 | 56.06 | 68.20 | -12.14 |
| 15780.00 | Average | Н | 100 | 356 | -66.10 | 14.03 | -9.54 | 45.39 | 53.98 | -8.59 |
| 15780.00 | Peak | Н | 100 | 356 | -53.33 | 14.03 | -9.54 | 58.16 | 73.98 | -15.82 |
| 21040.00 | Average | Н | 100 | 261 | -67.93 | 7.92 | -9.54 | 37.45 | 53.98 | -16.53 |
| 21040.00 | Peak | Н | 100 | 261 | -56.45 | 7.92 | -9.54 | 48.93 | 73.98 | -25.05 |
| 26300.00 | Peak | Н | 100 | 265 | -55.27 | 8.73 | -9.54 | 50.92 | 68.20 | -17.28 |

| Table -52. Radiated M | easurements |
|-----------------------|-------------|
|-----------------------|-------------|

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| 802.11a | |
|---------|--|
| 6Mbps | |
| 1 Meter | |
| 5280MHz | |
| 56 | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10560.00 | Peak | Н | 100 | 256 | -54.72 | 12.04 | -9.54 | 54.78 | 68.20 | -13.42 |
| * | 15840.00 | Average | Н | 100 | 354 | -65.68 | 14.25 | -9.54 | 46.02 | 53.98 | -7.96 |
| * | 15840.00 | Peak | Н | 100 | 354 | -53.10 | 14.25 | -9.54 | 58.60 | 73.98 | -15.38 |
| * | 21120.00 | Average | н | 100 | 282 | -67.08 | 7.96 | -9.54 | 38.34 | 53.98 | -15.64 |
| * | 21120.00 | Peak | Н | 100 | 282 | -55.54 | 7.96 | -9.54 | 49.88 | 73.98 | -24.10 |
| | 26400.00 | Peak | Н | 100 | 214 | -56.98 | 8.94 | -9.54 | 49.42 | 68.20 | -18.78 |

 Table -53. Radiated Measurements

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 126 of 200 |
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Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| 802.11a |
|---------|
| 6Mbps |
| 1 Meter |
| 5320MHz |
| 64 |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 10640.00 | Average | Н | 100 | 257 | -69.60 | 12.06 | -9.54 | 39.92 | 53.98 | -14.06 |
| * | 10640.00 | Peak | Н | 100 | 257 | -57.67 | 12.06 | -9.54 | 51.85 | 73.98 | -22.13 |
| * | 15960.00 | Average | Н | 100 | 357 | -66.67 | 14.55 | -9.54 | 45.34 | 53.98 | -8.64 |
| * | 15960.00 | Peak | Н | 100 | 357 | -54.57 | 14.55 | -9.54 | 57.44 | 73.98 | -16.54 |
| * | 21280.00 | Average | н | 100 | 280 | -66.80 | 8.04 | -9.54 | 38.70 | 53.98 | -15.28 |
| * | 21280.00 | Peak | Н | 100 | 280 | -56.19 | 8.04 | -9.54 | 49.31 | 73.98 | -24.67 |
| | 26600.00 | Peak | Н | 100 | 263 | -43.44 | -8.30 | -9.54 | 45.71 | 68.20 | -22.49 |

Table -54. Radiated Measurements4

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| | 10560.00 | Peak | Н | 100 | 243 | -52.77 | 12.04 | -9.54 | 56.73 | 68.20 | -11.47 |
| * | 15840.00 | Average | Н | 100 | 295 | -65.55 | 14.25 | -9.54 | 46.15 | 53.98 | -7.83 |
| * | 15840.00 | Peak | Н | 100 | 295 | -54.84 | 14.25 | -9.54 | 56.86 | 73.98 | -17.12 |
| * | 21120.00 | Average | Н | 100 | 255 | -69.31 | 7.96 | -9.54 | 36.11 | 53.98 | -17.87 |
| * | 21120.00 | Peak | Н | 100 | 255 | -58.81 | 7.96 | -9.54 | 46.61 | 73.98 | -27.37 |
| | 26400.00 | Peak | Н | 100 | 287 | -56.52 | 8.94 | -9.54 | 49.88 | 68.20 | -18.32 |

Table 7-55. Radiated Measurements with WCP

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dogo 127 of 200 |
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| _802.11a |
|----------|
| _6Mbps |
| 1 Meter |
| 5500MHz |
| 100 |
| |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11000.00 | Average | Н | 100 | 209 | -75.62 | 12.87 | -9.54 | 34.71 | 53.98 | -19.27 |
| * | 11000.00 | Peak | Н | 100 | 209 | -63.75 | 12.87 | -9.54 | 46.58 | 73.98 | -27.40 |
| | 16500.00 | Peak | Н | 100 | 277 | -53.91 | 16.61 | -9.54 | 60.16 | 68.20 | -8.04 |
| | 22000.00 | Peak | Н | 100 | 282 | -56.07 | 8.43 | -9.54 | 49.81 | 68.20 | -18.39 |
| | 27500.00 | Peak | Н | 100 | 270 | -44.32 | -8.80 | -9.54 | 44.34 | 68.20 | -23.86 |

Table -56. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| 802.11a |
|---------|
| 6Mbps |
| 1 Meter |
| 5820MHz |
| 116 |
| |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11640.00 | Average | Н | 100 | 140 | -72.92 | 12.76 | -9.54 | 37.30 | 53.98 | -16.68 |
| * | 11640.00 | Peak | Н | 100 | 140 | -61.37 | 12.76 | -9.54 | 48.85 | 73.98 | -25.13 |
| | 16740.00 | Peak | Н | 100 | 50 | -54.42 | 16.64 | -9.54 | 59.68 | 68.20 | -8.52 |
| * | 22320.00 | Average | Н | 100 | 266 | -69.21 | 8.11 | -9.54 | 36.36 | 53.98 | -17.62 |
| * | 22320.00 | Peak | Н | 100 | 266 | -56.50 | 8.11 | -9.54 | 49.07 | 73.98 | -24.91 |
| | 27900.00 | Peak | Н | 100 | 245 | -43.23 | -9.26 | -9.54 | 44.97 | 68.20 | -23.23 |

Table -57. Radiated Measurements

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dago 128 of 200 |
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| 802.11a |
|---------|
| 6Mbps |
| 1 Meter |
| 5720MHz |
| 144 |
| |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11440.00 | Average | Н | 100 | 266 | -70.67 | 12.57 | -9.54 | 39.36 | 53.98 | -14.62 |
| * | 11440.00 | Peak | Н | 100 | 266 | -63.95 | 12.57 | -9.54 | 46.08 | 73.98 | -27.90 |
| | 17160.00 | Peak | Н | 100 | 357 | -62.37 | 18.31 | -9.54 | 53.40 | 68.20 | -14.80 |
| * | 22880.00 | Average | Н | 100 | 304 | -69.42 | 8.28 | -9.54 | 36.32 | 53.98 | -17.66 |
| * | 22880.00 | Peak | Н | 100 | 304 | -58.67 | 8.28 | -9.54 | 47.07 | 73.98 | -26.91 |
| | 28600.00 | Peak | Н | 100 | 257 | -37.58 | -9.08 | -9.54 | 50.80 | 68.20 | -17.40 |

 Table -58. Radiated Measurements

Worst Case Mode: _____ Worst Case Transfer Rate: ____ Distance of Measurements: _____ Operating Frequency: _____ Channel: _____

802.11a 6Mbps 1 Meter 5500MHz 100

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11000.00 | Average | Н | 100 | 244 | -70.63 | 12.87 | -9.54 | 39.70 | 53.98 | -14.28 |
| * | 11000.00 | Peak | Н | 100 | 244 | -59.89 | 12.87 | -9.54 | 50.44 | 73.98 | -23.54 |
| | 16500.00 | Peak | Н | 100 | 285 | -56.86 | 16.61 | -9.54 | 57.21 | 68.20 | -10.99 |
| | 22000.00 | Peak | Н | 100 | 273 | -57.52 | 8.43 | -9.54 | 48.36 | 68.20 | -19.84 |
| | 27500.00 | Peak | Н | 100 | 257 | -44.79 | -8.80 | -9.54 | 43.87 | 68.20 | -24.33 |

Table 7-59. Radiated Measurements with WCP

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 120 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 139 of 200 |
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| Worst Case Mode: | 802.11a |
|---------------------------|---------|
| Worst Case Transfer Rate: | 6Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5745MHz |
| Channel: | 149 |
| | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11490.00 | Average | Н | 100 | 268 | -69.05 | 12.43 | -9.54 | 40.84 | 53.98 | -13.14 |
| * | 11490.00 | Peak | Н | 100 | 268 | -58.98 | 12.43 | -9.54 | 50.91 | 73.98 | -23.07 |
| | 17235.00 | Peak | Н | 100 | 272 | -51.11 | 18.61 | -9.54 | 64.96 | 68.20 | -3.24 |
| * | 22980.00 | Average | Н | 100 | 302 | -68.77 | 8.16 | -9.54 | 36.85 | 53.98 | -17.13 |
| * | 22980.00 | Peak | Н | 100 | 302 | -57.65 | 8.16 | -9.54 | 47.97 | 73.98 | -26.01 |
| | 28725.00 | Peak | Н | 100 | 254 | -34.97 | -9.24 | -9.54 | 53.25 | 68.20 | -14.95 |

Table -60. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| 802.11a | |
|---------|--|
| 6Mbps | |
| 1 Meter | |
| 5785MHz | |
| 157 | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11570.00 | Average | Н | 100 | 266 | -70.85 | 12.54 | -9.54 | 39.15 | 53.98 | -14.83 |
| * | 11570.00 | Peak | Н | 100 | 266 | -60.27 | 12.54 | -9.54 | 49.73 | 73.98 | -24.25 |
| | 17355.00 | Peak | Н | 100 | 269 | -52.71 | 18.73 | -9.54 | 63.48 | 68.20 | -4.72 |
| | 23140.00 | Peak | Н | 100 | 303 | -56.52 | 8.37 | -9.54 | 49.31 | 68.20 | -18.89 |
| | 28925.00 | Peak | Н | 100 | 256 | -35.10 | -9.65 | -9.54 | 52.71 | 68.20 | -15.49 |

Table -61. Radiated Measurements

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 140 of 200 |
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Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

| <u>802.11a</u> | |
|----------------|--|
| 6Mbps | |
| 1 Meter | |
| 5825MHz | |
| 165 | |
| | |

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11650.00 | Average | Н | 100 | 263 | -72.41 | 12.99 | -9.54 | 38.03 | 53.98 | -15.95 |
| * | 11650.00 | Peak | Н | 100 | 263 | -61.16 | 12.99 | -9.54 | 49.28 | 73.98 | -24.70 |
| | 17475.00 | Peak | Н | 100 | 268 | -57.92 | 19.25 | -9.54 | 58.78 | 68.20 | -9.42 |
| | 23300.00 | Peak | Н | 100 | 303 | -56.96 | 8.50 | -9.54 | 48.99 | 68.20 | -19.21 |
| | 29125.00 | Peak | Н | 100 | 256 | -34.78 | -9.87 | -9.54 | 52.81 | 68.20 | -15.39 |

Table -62. Radiated Measurements

Worst Case Mode: Worst Case Transfer Rate: Distance of Measurements: Operating Frequency: Channel:

802.11a 6Mbps 1 & 3 Meters 5745MHz 149

| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|--|-------------------------------|-------------------|----------------|
| * | 11490.00 | Average | Н | 100 | 278 | -73.15 | 12.43 | -9.54 | 36.74 | 53.98 | -17.24 |
| * | 11490.00 | Peak | Н | 100 | 278 | -63.20 | 12.43 | -9.54 | 46.69 | 73.98 | -27.29 |
| | 17235.00 | Peak | Н | 100 | 287 | -52.57 | 18.61 | -9.54 | 63.50 | 68.20 | -4.70 |
| * | 22980.00 | Average | Н | 100 | 279 | -69.43 | 8.16 | -9.54 | 36.19 | 53.98 | -17.79 |
| * | 22980.00 | Peak | Н | 100 | 279 | -58.71 | 8.16 | -9.54 | 46.91 | 73.98 | -27.07 |
| | 28725.00 | Peak | Н | 100 | 254 | -43.71 | -9.24 | -9.54 | 44.51 | 68.20 | -23.69 |

Table 7-63. Radiated Measurements with WCP

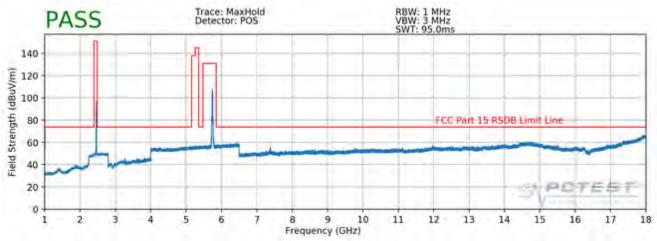
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 111 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 141 of 200 |
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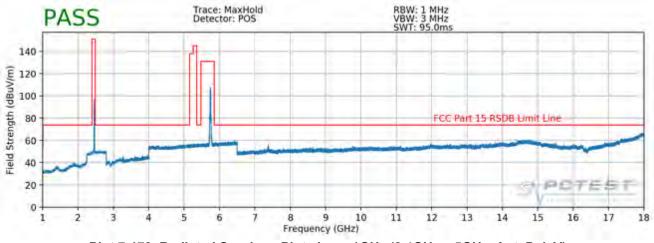
7.7.3 Simultaneous Tx Radiated Spurious Emissions Measurements §15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

| Description | 2.4 GHz Emission | 5 GHz Emission |
|---------------------------|------------------|----------------|
| Antenna | 1 | 2 |
| Channel | 11 | 144 |
| Operating Frequency (MHz) | 2462 | 5720 |
| Data Rate (Mbps) | 1 | 6 |
| Mode | b | а |

Table 7-64. Simultaneous Transmission Config-1







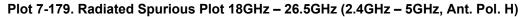
Plot 7-178. Radiated Spurious Plot above 1GHz (2.4GHz – 5GHz, Ant. Pol. V)

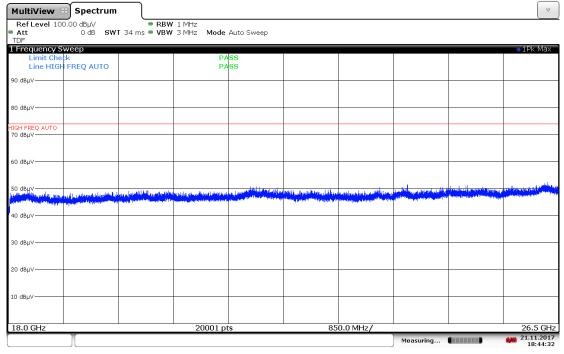
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|-----------------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | Dega 142 of 200 | |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 142 of 200 |
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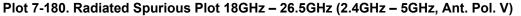
| MultiView 8 | | | | | | | | | |
|---|--|---|--------------------------------------|---|----|---|---|------------------------------------|---|
| RefLevel 100 Att TDF | 00 dBµV 0 dB SW 1 | | W 1 MHz W 3 MHz Mode | Auto Sweep | | | | | |
| 1 Frequency Sv | veep | | | | | | | | ●1Pk Max |
| Limit Chec | k | | | SS | | | | | |
| Line HIGH | FREQ AUTO | | PA | ss | | | | | |
| 90 dBµV | | | | | | | | | |
| 80 dBµV | | | | | | | | | |
| 80 dBpv | | | | | | | | | |
| HIGH FREQ AUTO | | | | | | | | | |
| | | | | | | | | | |
| 60 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 50 dBuV | | | dia and a parallal separation of the | a state with to show | | | nul | a harman to water the | ومالية فالجانان وجماعه الا |
| And the second | test a september for held filled as | And provided and the second | | provide the second s | | An and Alaberta and a second se | and the second se | A home plather death fill back was | and the second se |
| | - Harrison - Constraint - Const | | | | | | | | |
| 40 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 30 dBµV | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 20 dBµV | | | - | | | | | | |
| | | | | | | | | | |
| 10 dBµV | | | | | | | | | |
| to dop? | | | | | | | | | |
| | | | | | | | | | |
| 18.0 GHz | | 1 | 20001 pt | l IS | 85 | 0.0 MHz/ | | 1 | 26.5 GHz |
| | Y | | | | | _/ | Measuring | (| 21.11.2017 |
| | Л | | | | | | measuring | | 18:48:44 |

18:48:45 21.11.2017





18:44:32 21.11.2017



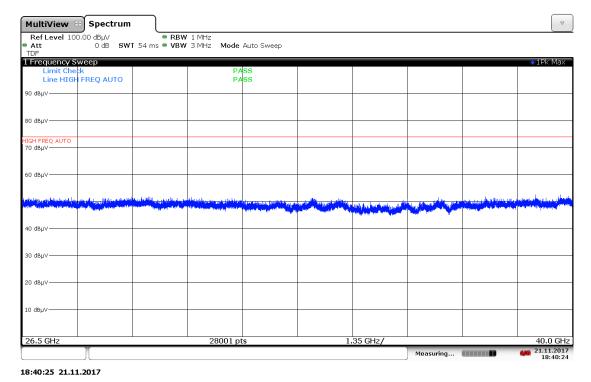
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|-----------------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | Dage 142 of 200 | |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | Page 143 of 200 | |
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| MultiView | Spectrum | | | | | | | | |
|--|---|---|------------------------------|--|----|--------------------------------|---|---|------------------------|
| RefLevel 100 Att TDF | 0.00 dBµV 0 dB SW 1 | ● RBW T 54 ms ● VBW | 1 MHz 3 MHz Mode | Auto Sweep | | | | | |
| 1 Frequency S | weep | | | | | | | | ●1Pk Max |
| Limit Che | k | | PA | SS | | | | | |
| Line HIGH | FREQ AUTO | | PA | SS | | | | | |
| 90 dBµV | | | | | | | | | |
| an agha | | | | | | | | | |
| | | | | | | | | | |
| 80 dBµV | | | | | | | | | |
| | | | | | | | | | |
| HIGH FREQ AUTO 70 dBµV | | | | | | | | | |
| TO GDP V | | | | | | | | | |
| | | | | | | | | | |
| 60 dBµ∨ | | | | | | | | | |
| | | | | | | | | | |
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| Alexandra and the states of th | Contraction of the second s | And a lot from the second state of the second state | And And Links, and the owner | | | had a second state of a second | No No. | in the second | and an United States |
| | | 1.00 | | and the second | | and day highly day part | And the second second | | |
| 10 10 11 | | | | | | | | | |
| 40 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 30 dBµV | | | | | | | | | |
| 00 000 | | | | | | | | | |
| | | | | | | | | | |
| 20 dBµV | | | | | | | | | |
| · | | | | | | | | | |
| | | | | | | | | | |
| 10 dBµ∨ | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 26.5 GHz | | 1 | 28001 pt | S | 1. | 35 GHz/ | 1 | 1 | 40.0 GHz |
| | T T | | | | | | Measuring | | 21.11.2017 18:33:44 |

18:33:44 21.11.2017





Plot 7-182. Radiated Spurious Plot above 26.5GHz (2.4GHz – 5GHz, Ant. Pol. V)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dego 144 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 144 of 200 |
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| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|-------------------------------|-------------------|----------------|
| * | 4054.00 | Peak | V | - | - | -63.66 | 2.75 | 46.09 | 53.98 | -7.89 |
| * | 7312.00 | Average | V | - | - | -77.38 | 9.49 | 39.11 | 53.98 | -14.87 |
| * | 7312.00 | Peak | V | - | - | -65.16 | 9.49 | 51.33 | 73.98 | -22.65 |
| | 8978.00 | Average | V | - | - | -77.20 | 9.82 | 39.62 | 53.98 | -14.36 |
| | 8978.00 | Peak | V | - | - | -65.83 | 9.82 | 50.99 | 73.98 | -22.99 |

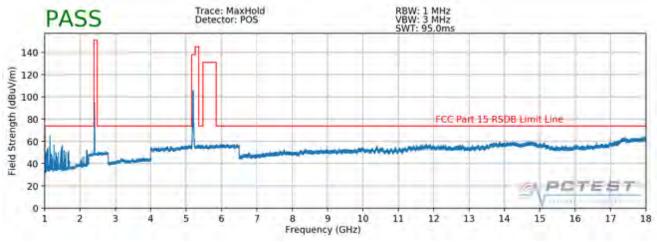
Table 7-65. Radiated Measurements (ANT1 2.4GHz – ANT2 5GHz)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|------------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 145 of 200 | |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 145 of 200 | |
| © 2017 PCTEST Engineering Labo | V 7.1 10/25/2017 | | | | |

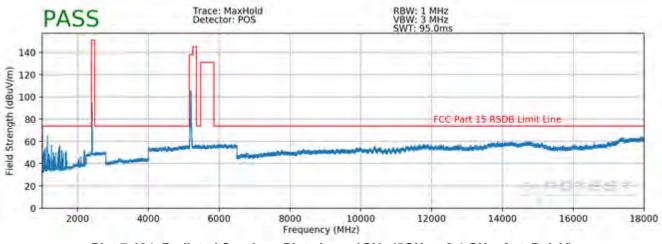


| Description | 2.4 GHz Emission | 5 GHz Emission |
|---------------------------|------------------|----------------|
| Antenna | 2 | 1 |
| Channel | 1 | 40 |
| Operating Frequency (MHz) | 2412 | 5200 |
| Data Rate (Mbps) | 1 | 6 |
| Mode | b | а |

Table 7-66. Simultaneous Transmission Config-2



Plot 7-183. Radiated Spurious Plot above 1GHz (5GHz – 2.4 GHz, Ant. Pol. H)



Plot 7-184. Radiated Spurious Plot above 1GHz (5GHz – 2.4 GHz, Ant. Pol. V)

Note:

Emissions below 2GHz were investigated and determined to be ambient noise that does not originate from the EUT.

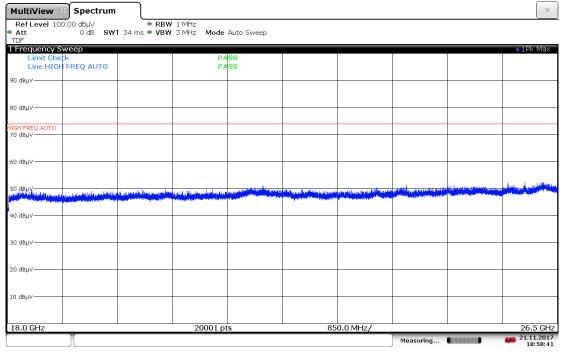
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 146 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 146 of 200 |
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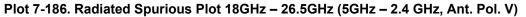
| MultiView 🙁 Spectr | | | | | | |
|--|---|--|---|--|--|------------------------------|
| Ref Level 100.00 dBµV ● Att 0 dB TDF | ● RBW 1 MHz SWT 34 ms ● VBW 3 MHz Mode | Auto Sweep | | | | |
| 1 Frequency Sweep | | | | | | ●1Pk Max |
| Limit Check Line HIGH FREQ AUT | | SS SS | | | | |
| - | ~ | 55 | | | | |
| 90 dBµV | | | | | | |
| 80 dBµV | | | | | | |
| | | | | | | |
| HIGH FREQ AUTO 70 dBµV | | | | | | |
| | | | | | | |
| 60 dBµV | | | | | | |
| | | | | | | |
| 50 dBµV | a kauta aka la k | and the second state of the second state of the second | | | المرجع العصافية والمرجع والمرجع | And the second second second |
| | | | and the second se | and the second | May a paint a second de la parte de la | |
| 40 dBuV | | | | | | |
| 40 UBpV | | | | | | |
| | | | | | | |
| 30 dBµV | | | | | | |
| | | | | | | |
| 20 dBµV | | | | | | |
| | | | | | | |
| 10 dBµV | | | | | | |
| | | | | | | |
| 18.0 GHz | 20001 p | ts | 850.0 MHz/ | | [| 26.5 GHz |
| | | | | | | 21.11.2017 |

18:55:34 21.11.2017

Plot 7-185. Radiated Spurious Plot 18GHz - 26.5GHz (5GHz - 2.4 GHz, Ant. Pol. H)



18:58:42 21.11.2017



| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Daga 117 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 147 of 200 |
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| MultiView | Spectrum | | | | | | | | |
|--|---|--|--|--|--|---------------|-----------|--|---|
| | 00 dBµV 0 dB SW 1 | • RBW 54 ms • VBW | | Auto Sweep | | | | | |
| TDF | | | | | | | | | |
| 1 Frequency Sw Limit Check | | | DA | SS | | | | | ●1Pk Max |
| Line HIGH F | | | | SS | | | | | |
| 90 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 80 dBµV | | | | | | | | | |
| HIGH FREQ AUTO 70 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 60 dBµ∨ | | | | | | | | | |
| http://www.itera.uk | 6 and the Jacobson of Laboration | and where the second states of the | and the second states of the | Leave in the black | ينفقه معربيه والطواب | and matrix at | | | م معالم معالية المعالم المعالم المعالم المعالم المعالم المعالية المعالم المعالية المعالية المعالم المعالم المعال |
| and a first property in the second state of th | and the state of the | and the second | Perfection of the second designation of the | na an tanàna amin'ny saratra dia mampika | and a state of the second second second second | | | Section of the sectio | |
| 40 dBµV | | | | | | | | | |
| io appr | | | | | | | | | |
| 30 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 20 dBµV | | | | | | | | | |
| 10 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 26.5 GHz | | | 28001 pt | :S | 1. | .35 GHz/ | | | 40.0 GH: |
| | Y I | | | | | | Measuring | | 21.11.2017 19:04:33 |

19:04:34 21.11.2017



| MultiView | Spectrum | | | | | | | | |
|----------------------------|----------------|------------------------------------|-----------------------------|------------|----|---|-------------|------------------------------|------------------------|
| RefLevel 100 Att TDF | | ■ RBW T 54 ms ■ VBW | 1 MHz 3 MHz Mode | Auto Sweep | | | | | |
| 1 Frequency Sy | weep | | | | | | | | ●1Pk Max |
| Limit Che Line HIGH | k FREQ AUTO | | | SS SS | | | | | |
| 90 dBµV | | | | | | | | | |
| 80 dBµV | | | | | | | | | |
| HIGH FREQ AUTO 70 dBµV | | | | | | | | | |
| 60 dBµV | | | | | | | | | |
| | | industrial a construction of the M | ania, mil.,, in dinamidiana | | | and the state of the | Colore Land | and a supplementation of the | |
| 40 dBµV | | | | | | | | | |
| 30 dBµV | | | | | | | | | |
| 20 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 10 dBµV | | | | | | | | | |
| 26.5 GHz | | 1 | 28001 pt | is s | 1. | .35 GHz/ | 1 | 1 | 40.0 GHz |
| |][] | | | | | / | Measuring | | 21.11.2017 19:02:35 |

19:02:35 21.11.2017



| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 149 of 200 |
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| Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|-------------------------------|-------------------|----------------|
| 5952.00 | Peak | Н | - | - | -65.38 | 5.05 | 46.67 | 53.98 | -7.31 |
| 7988.00 | Peak | Н | - | - | -66.48 | 10.08 | 50.60 | 53.98 | -3.38 |
| 8740.00 | Average | Н | - | - | -77.92 | 10.15 | 39.23 | 53.98 | -14.75 |
| 8740.00 | Peak | Н | - | - | -66.08 | 10.15 | 51.07 | 73.98 | -22.91 |

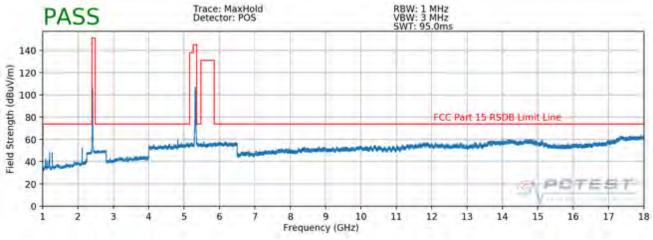
Table 7-67. Radiated Measurements (ANT1 5GHz – ANT2 2.4GHz)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 140 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 149 of 200 |
| © 2017 PCTEST Engineering Labo | pratory, Inc. | | | V 7.1 10/25/2017 |

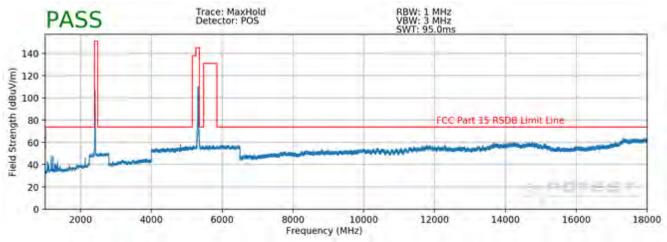


| Description | 2.4 GHz Emission | 5 GHz Emission |
|---------------------------|------------------|----------------|
| Antenna | 1, 2 | 1, 2 |
| Channel | 6 | 56 |
| Operating Frequency (MHz) | 2437 | 5280 |
| Data Rate (Mbps) | 1 | 6 |
| Mode | b | а |

Table 7-68. Dual Band Simultaneous Transmission Config-3



Plot 7-189. Radiated Spurious Plot above 1GHz (Dual Band Simult. Tx, Ant. Pol. H)



Plot 7-190. Radiated Spurious Plot above 1GHz (Dual Band Simult. Tx, Ant. Pol. V)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 150 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 150 of 200 |
| © 2017 PCTEST Engineering Labo | oratory, Inc. | | | V 7.1 10/25/2017 |



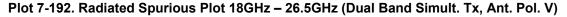
| MultiView | Spectrum | | | | | | | | |
|----------------------------|-------------|------------------------|--|---|----------------------------|--------------------------------------|--|---------------------------|---|
| RefLevel 100 Att TDF | | ● RBW T 34 ms ● VBW | | Auto Sweep | | | | | |
| 1 Frequency S Limit Che | | | PA PA | SS SS | | | | | ●1Pk Max |
| 90 dBµV | | | | | | | | | |
| 80 dBµV | | | | | | | | | |
| HIGH FREQ AUTO 70 dBµV | | | | | | | | | |
| 60 dBµV | | | | | | | | | |
| 50 dBµV | L reference | ar a aichear a triach | a | | alarati kar tilak ava ora. | en en rann of et e et alabites her : | a, the did | understation of the state | untra diseta del del seg |
| 40 dBµV | | | na na siya kata kata kata kata kata kata kata ka | an all sea ann an Anna an Anna Anna Anna | | | y piniste i _{son a p} roma più la que dei | and Harden and Andreas A | Paylor Manual Control of Control |
| 30 dBµV | | | | | | | | | |
| 20 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 10 dBµV | | | | | | | | | |
| 18.0 GHz | | 1 | 20001 pt | | 85 | 0.0 MHz/ | | <u> </u> | 26.5 GHz |
| |)(| | | | | | Measuring | | 21.11.2017 19:14:10 |

19:14:11 21.11.2017

Plot 7-191. Radiated Spurious Plot 18GHz – 26.5GHz (Dual Band Simult. Tx, Ant. Pol. H)

| MultiView 8 | Spectrum | | | | | | | | |
|-----------------------------------|----------------|--------------------------------------|---|--|---|---|--|--|--|
| RefLevel 100 Att TDF | | | / 1 MHz / 3 MHz Mode | Auto Sweep | | | | | |
| 1 Frequency Sv | | | | | | | | | 1Pk Max |
| Limit Chec Line HIGH | k FREQ AUTO | | | SS SS | | | | | |
| 90 dBµV | | | | | | | | | |
| 80 dBµV | | | | | | | | | |
| HIGH FREQ AUTO 70 dBµV | | | | | | | | | |
| 60 dBµV | | | | | | | | | |
| 00 000 | | | | | | | | | |
| 50 dBµV | | - alternation for the | a al duar concentration for | يرابع والعليمة المحمد ورور | and a discontinue databilitation of the | and the second second | And the second in these strends | the station of the state of the | A CONTRACTOR OF THE OWNER OF THE |
| A DESCRIPTION OF A DESCRIPTION OF | | (and by a provide provide the second | The part of the second s | and the second sec | and the second se | and the second se | A DESCRIPTION OF THE OWNER OWNER | Means we want with the strategies | and the second s |
| <u>′</u> | | | | | | | | | |
| 40 dBµV | | | | | | | | | |
| 30 dBµV | | | | | | | | | |
| 20 dBµV | | | | | | | | | |
| 10 dBµV | | | | | | | | | |
| 10 0001 | | | | | | | | | |
| 18.0 GHz | | | 20001 pt | | 85 | 0.0 MHz/ | | I | 26.5 GHz |
| | | | 20001 pt | | | | Measuring | | 21.11.2017 19:12:35 |

19:12:35 21.11.2017



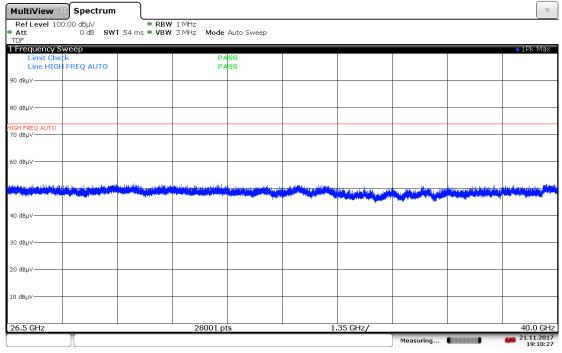
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|------------------|---------------------------------------|---------|---------------------------------|--|
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| MultiView 8 | | | | | | | | | |
|------------------------------|---|--|--|---|--------------------|-------------|-----------|---|-------------------------------------|
| RefLevel 100 Att TDF | 0 dB SW | ● RBW T 54 ms ● VBW | 1 MHz 3 MHz Mode | Auto Sweep | | | | | |
| 1 Frequency Sy Limit Cher | weep :k | | PA | SS | | | | | ●1Pk Max |
| | FREQ AUTO | | PA | SS | | | | | |
| 90 dBµ∨ | | | | | | | | | |
| 80 dBµV | | | | | | | | | |
| HIGH FREQ AUTO | | | | | | | | | |
| 70 dBµV | | | | | | | | | |
| 60 dBµ∨ | | | | | | | | | |
| anntaige and the flesh | ليعقمه والمقتو وسيعمدهم | and developing to she have | | ور و و و الالان الالي الالية الم | ويطلحون ومطالعواري | also also a | a | a | and the Ball of the day of the ball |
| | and and a state of the second seco | a harren harrin da kan barren berren ber | The second s | Sand and the same of the state of | | | | | and first the same of the |
| 40 dBµV | | | | | | | | | |
| 30 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 20 dBµV | | | | | | | | | |
| 10 dBµV | | | | | | | | | |
| | | | | | | | | | |
| 26.5 GHz | | 1 | 28001 pt | S | 1. | 35 GHz/ | 1 | 1 | 40.0 GHz |
| | | | | | | | Measuring | | 21.11.2017 19:06:51 |

19:06:52 21.11.2017

Plot 7-193. Radiated Spurious Plot above 26.5GHz (Dual Band Simult. Tx, Ant. Pol. H)



19:10:28 21.11.2017



| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|---|---------------------------------------|-----------------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 152 of 200 |
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| | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|--------------------|----------|-----------------------|---------------------------|----------------------------------|----------------------------|----------------|-------------------------------|-------------------|----------------|
| | 3249.00 | Peak | Н | - | - | -64.76 | 0.10 | 42.34 | 53.98 | -11.64 |
| | 6092.00 | Peak | Н | - | - | -64.23 | 6.28 | 49.05 | 53.98 | -4.93 |
| * | 8123.00 | Average | Н | - | - | -76.77 | 9.23 | 39.46 | 53.98 | -14.52 |
| * | 8123.00 | Peak | Н | - | - | -64.61 | 9.23 | 51.62 | 73.98 | -22.36 |

Table 7-69. Radiated Measurements (Dual Band Simult. Tx)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
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7.7.4 Antenna-1 Radiated Band Edge Measurements (20MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]; RSS-Gen [8.9]



Plot 7-195. Radiated Lower Band Edge Plot (Average – UNII Band 1)



Plot 7-196. Radiated Lower Band Edge Plot (Peak – UNII Band 1)

| Worst Case Mode: | 802.11n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5320MHz |
| Channel: | 64 |
| | |



Plot 7-197. Radiated Upper Band Edge Plot (Average – UNII Band 2A)

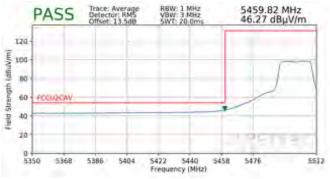


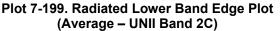
Plot 7-198. Radiated Upper Band Edge Plot (Peak – UNII Band 2A)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|------------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Daga 154 of 200 |
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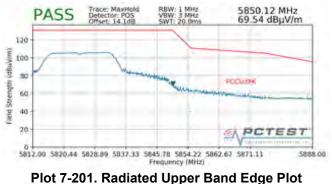


| Worst Case Mode: | 802.11n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5500MHz |
| Channel: | 100 |





| Worst Case Mode: | 802.11n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5825MHz |
| Channel: | 165 |

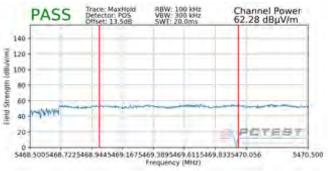


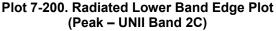
(Peak – UNII Band 3)

Note

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

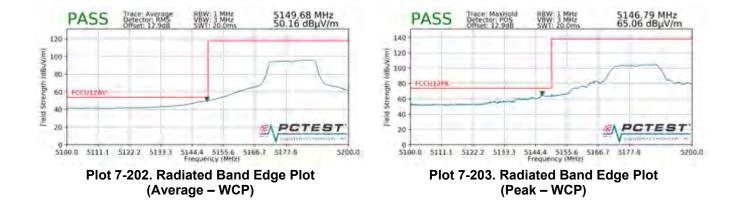
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|------------------|---------------------------------------|---------|---------------------------------|--|
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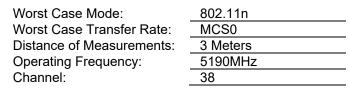
| Worst Case Mode: | 802.11n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5180MHz |
| Channel: | 36 |

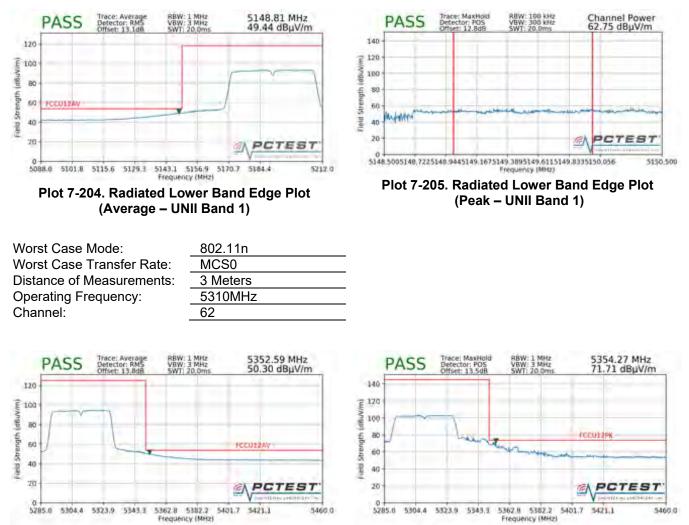


| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|----------------|---------------------------------------|---------|---------------------------------|--|
| Test Report S/N: | Test Dates: | EUT Type: | | Dama 450 af 200 | |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 156 of 200 | |
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7.7.5 Antenna-1 Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]





Plot 7-206. Radiated Upper Band Edge Plot (Average – UNII Band 2A)



Note:

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

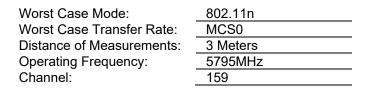
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | |
|--|----------------|---------------------------------------|---------|---------------------------------|--|
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| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 157 of 200 | |
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| Worst Case Mode: | 802.11n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5510MHz |
| Channel: | 102 |







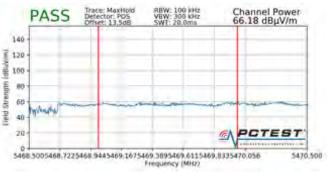


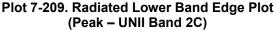
(Peak – UNII Band 3)

Note

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

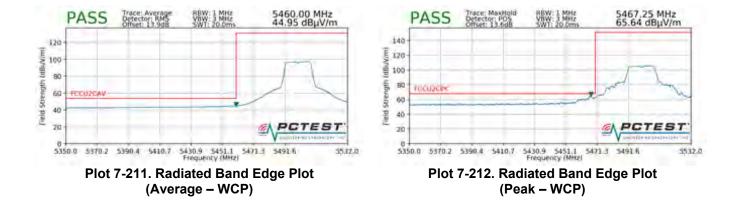
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
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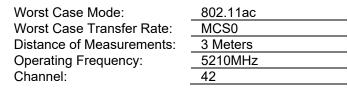
| Worst Case Mode: | 802.11n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5510MHz |
| Channel: | 102 |

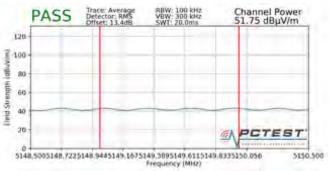


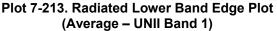
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
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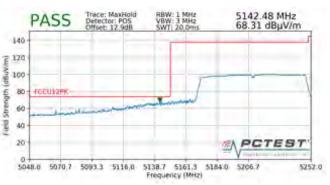


7.7.6 Antenna-1 Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]



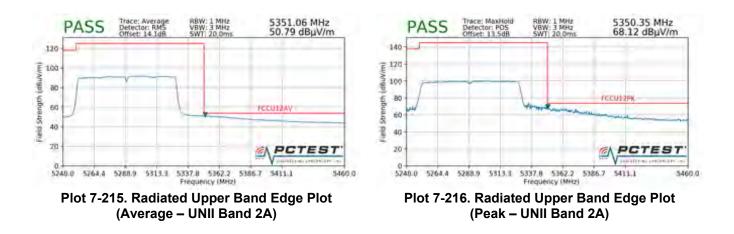






Plot 7-214. Radiated Lower Band Edge Plot (Peak – UNII Band 1)

| Worst Case Mode: | 802.11ac |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5290MHz |
| Channel: | 58 |



Note

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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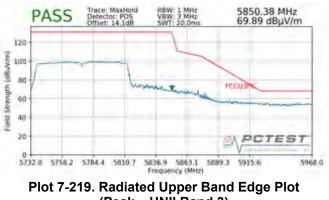


| Worst Case Mode: | 802.11ac |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5530MHz |
| Channel: | 106 |

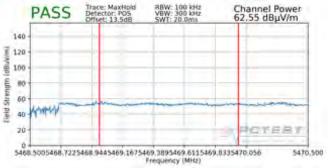


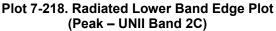
Plot 7-217. Radiated Lower Band Edge Plot (Average - UNII Band 2C)

| 802.11ac |
|----------|
| MCS0 |
| 3 Meters |
| 5775MHz |
| 155 |
| |



(Peak – UNII Band 3)



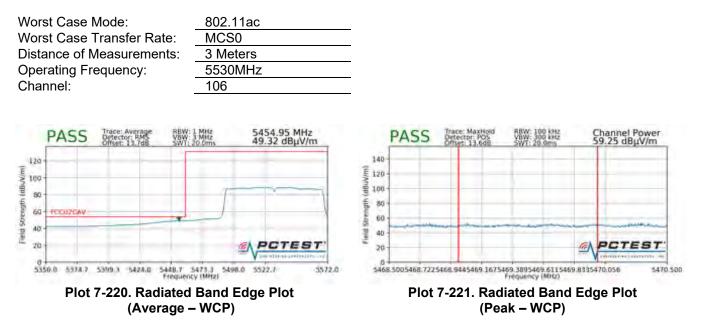


Note

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits.

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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Note

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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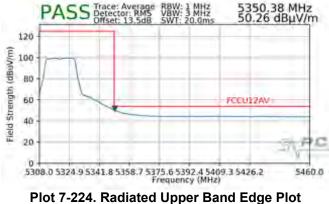
7.7.7 Antenna-2 Radiated Band Edge Measurements (20MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

| 2.11n |
|--------|
| CS0 |
| Veters |
| 80MHz |
| |
| |

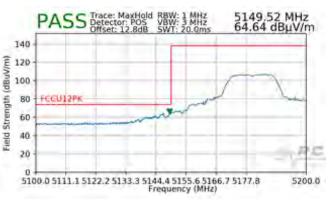


Plot 7-222. Radiated Lower Band Edge Plot (Average – UNII Band 1)

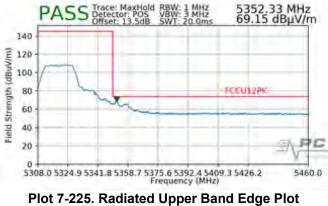
| Worst Case Mode: | 802.11 n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5320MHz |
| Channel: | 64 |
| | |







Plot 7-223. Radiated Lower Band Edge Plot (Peak – UNII Band 1)



(Peak – UNII Band 2A)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|---|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 162 of 200 |
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Worst Case Mode:802.11 nWorst Case Transfer Rate:MCS0Distance of Measurements:3 MetersOperating Frequency:5500MHzChannel:100

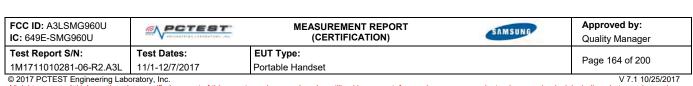


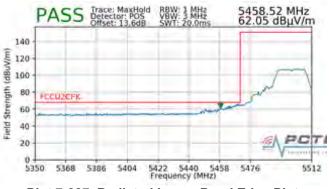
Plot 7-226. Radiated Lower Band Edge Plot (Average – UNII Band 2C)

| Worst Case Mode: | 802.11 n |
|---|---------------------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5825MHz |
| Channel: | 165 |
| Distance of Measurements: Operating Frequency: | 3 Meters 5825MHz |





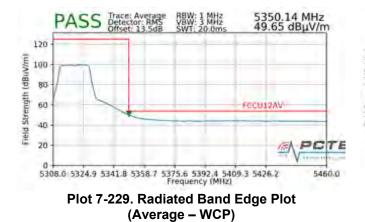


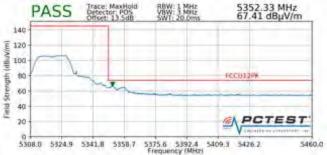


Plot 7-227. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)



| Worst Case Mode: | 802.11 n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5320MHz |
| Channel: | 64 |





Plot 7-230. Radiated Band Edge Plot (Peak - WCP)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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7.7.8 Antenna-2 Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

| Worst Case Mode: | 802.11 n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5190MHz |
| Channel: | 38 |

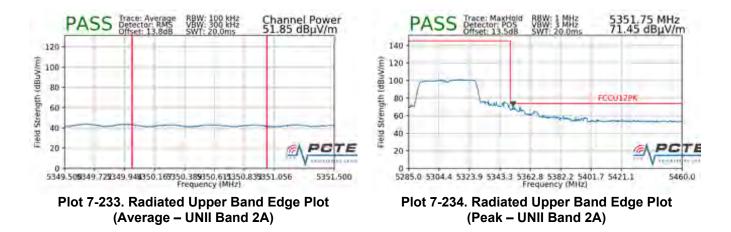


Plot 7-231. Radiated Lower Band Edge Plot (Average - UNII Band 1)

| Worst Case Mode: | 802.11 n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5310MHz |
| Channel: | 62 |



Plot 7-232. Radiated Lower Band Edge Plot (Peak – UNII Band 1)



Note

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| Worst Case Mode: | 802.11 n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5510MHz |
| Channel: | 102 |



Plot 7-235. Radiated Lower Band Edge Plot (Average – UNII Band 2C)

| Worst Case Mode: | 802.11 n | |
|---------------------------|----------|--|
| Worst Case Transfer Rate: | MCS0 | |
| Distance of Measurements: | 3 Meters | |
| Operating Frequency: | 5795MHz | |
| Channel: | 159 | |



Plot 7-237. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

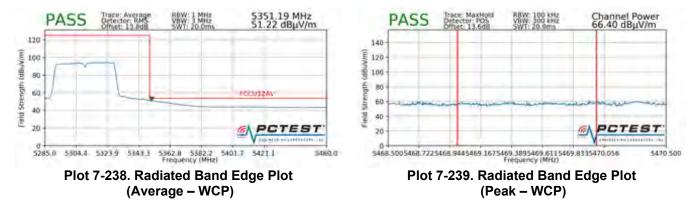


Plot 7-236. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
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| Worst Case Mode: | 802.11 n | |
|---------------------------|----------|--|
| Worst Case Transfer Rate: | MCS0 | |
| Distance of Measurements: | 3 Meters | |
| Operating Frequency: | 5310MHz | |
| Channel: | 62 | |



Note

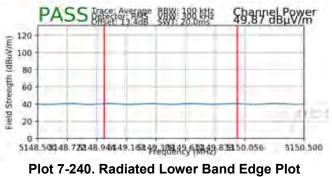
Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits.

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|------------------|---------------------------------|
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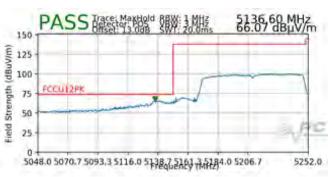


7.7.9 Antenna-2 Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

| Worst Case Mode: | 802.11 ac |
|---------------------------|-----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5210MHz |
| Channel: | 42 |

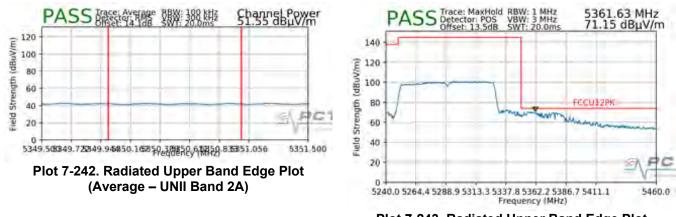


(Average – UNII Band 1)



Plot 7-241. Radiated Lower Band Edge Plot (Peak – UNII Band 1)

| Worst Case Mode: | 802.11 ac |
|---------------------------|-----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5290MHz |
| Channel: | 58 |



Plot 7-243. Radiated Upper Band Edge Plot (Peak – UNII Band 2A)

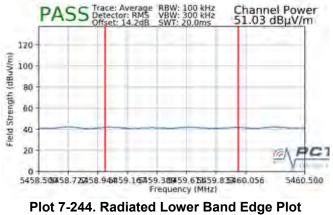
Note:

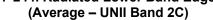
Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

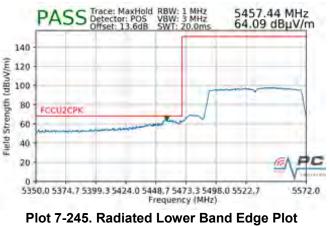
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 160 of 200 |
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Worst Case Mode:802.11 acWorst Case Transfer Rate:MCS0Distance of Measurements:3 MetersOperating Frequency:5530MHzChannel:106

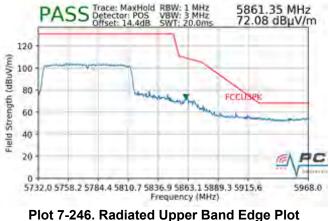






(Peak – UNII Band 2C)

| Worst Case Mode: | 802.11ac |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5775MHz |
| Channel: | 155 |



(Peak – UNII Band 3)

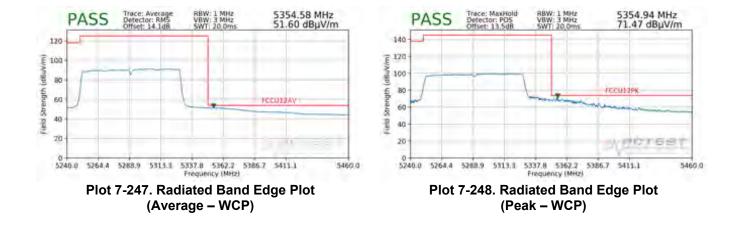
Note:

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
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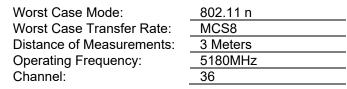
| Worst Case Mode: | 802.11 ac |
|---------------------------|-----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5290MHz |
| Channel: | 58 |

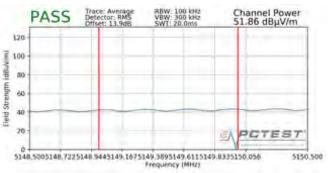


| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|------------------|---------------------------------|
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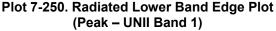
7.7.10 MIMO Radiated Band Edge Measurements (20MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]



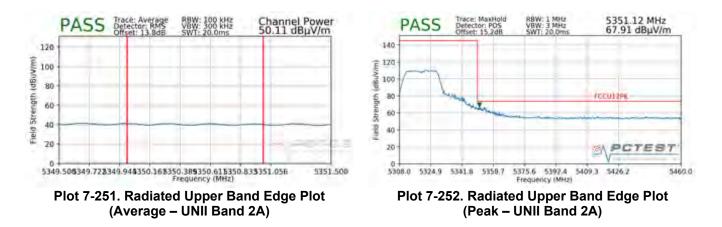


Plot 7-249. Radiated Lower Band Edge Plot (Average – UNII Band 1)





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



Note:

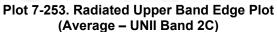
Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

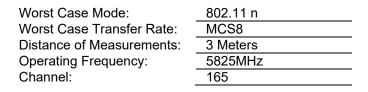
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dogo 172 of 200 |
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| Worst Case Mode: | 802.11 n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS8 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5500MHz |
| Channel: | 100 |







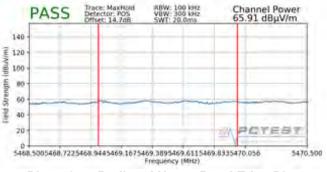


Plot 7-255. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

Note:

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

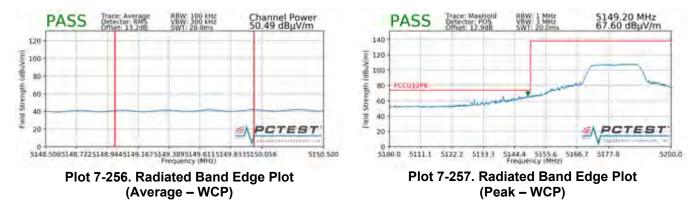
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 172 of 200 |
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| · · · · · · · · · · · · · · · · · · · | |
|---------------------------------------|----------|
| Worst Case Mode: | 802.11 n |
| Worst Case Transfer Rate: | MCS8 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5180MHz |
| Channel: | 36 |
| | |



Note:

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

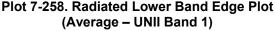
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|------------------|---------------------------------|
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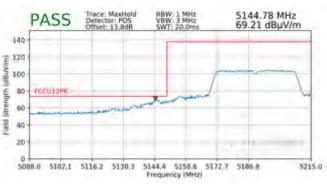


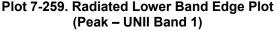
7.7.11 MIMO Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

| Worst Case Mode: | 802.11 n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS8 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5190MHz |
| Channel: | 38 |

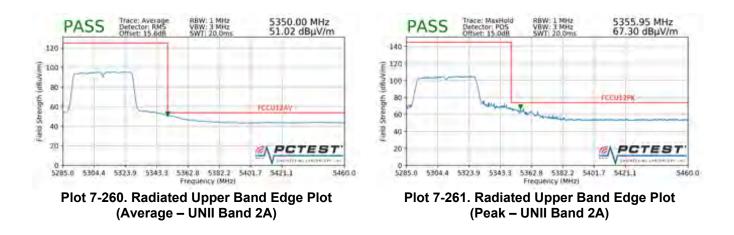








| Worst Case Mode: | 802.11 n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS8 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5310MHz |
| Channel: | 62 |



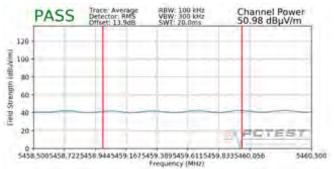
Note:

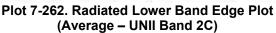
Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

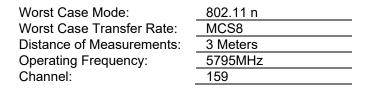
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
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| Worst Case Mode: | 802.11 n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS8 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5510MHz |
| Channel: | 102 |

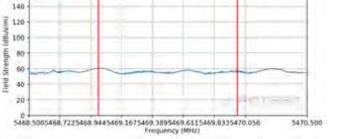








(Peak – UNII Band 3)



RBW: 100 kHz VBW: 300 kHz SWT: 20.0ms

Channel Power

65.93 dBµV/m

MaxE

ector: POS et: 14.7dB

PASS



Note:

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

-Bb

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|------------------|---------------------------------|
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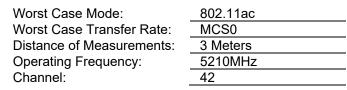
| Worst Case Mode: | 802.11 n |
|---------------------------|----------|
| Worst Case Transfer Rate: | MCS8 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5190MHz |
| Channel: | 38 |

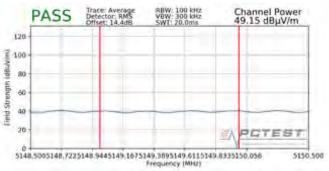


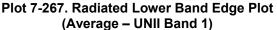
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|------------------|---------------------------------|
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7.7.12 MIMO Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]



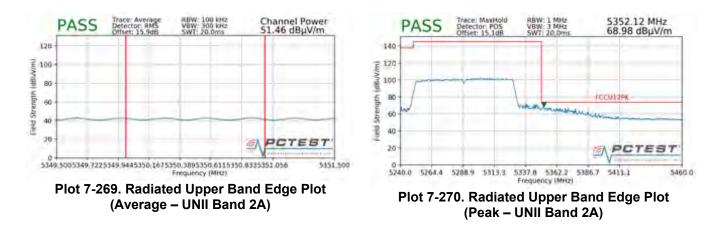






Plot 7-268. Radiated Lower Band Edge Plot (Peak – UNII Band 1)

| Worst Case Mode: | 802.11 ac |
|---------------------------|-----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5290MHz |
| Channel: | 58 |



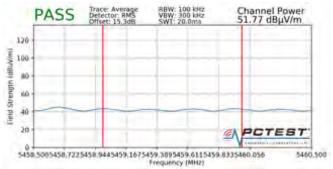
Note:

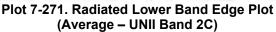
Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

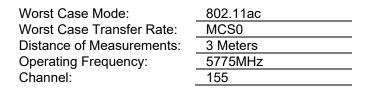
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|------------------|---------------------------------|
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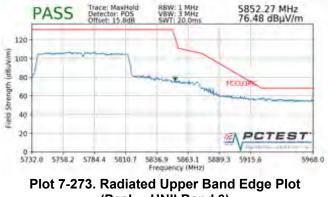


| Worst Case Mode: | 802.11 ac |
|---------------------------|-----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5530MHz |
| Channel: | 106 |







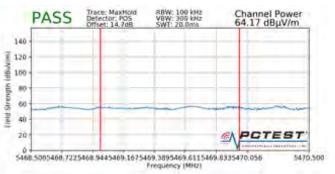


(Peak – UNII Band 3)



Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

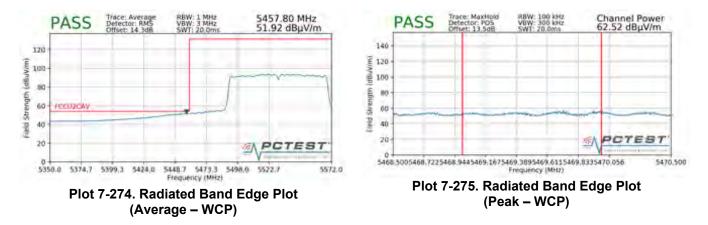
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
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| Worst Case Mode: | 802.11 ac |
|---------------------------|-----------|
| Worst Case Transfer Rate: | MCS0 |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5530MHz |
| Channel: | 106 |



Note:

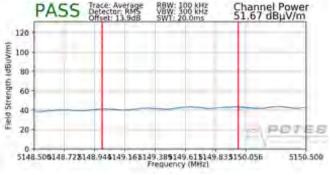
Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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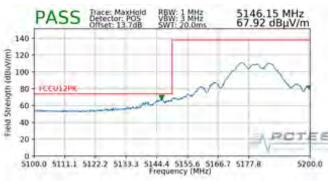
7.7.13 CDD Radiated Band Edge Measurements (20MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

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

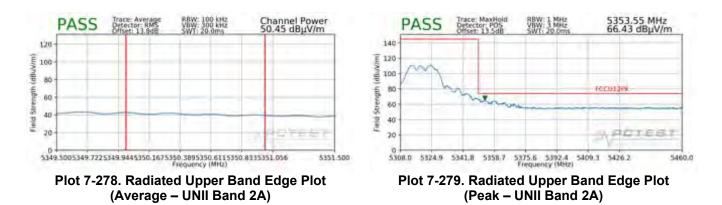


Plot 7-276. Radiated Lower Band Edge Plot (Average – UNII Band 1)

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



Plot 7-277. Radiated Lower Band Edge Plot (Peak – UNII Band 1)



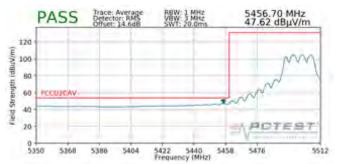
Note:

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

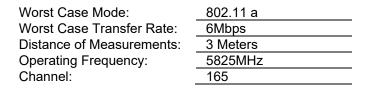
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
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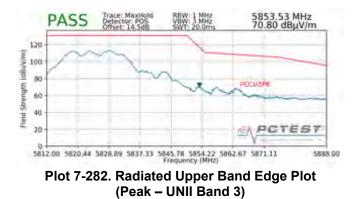


| Worst Case Mode: | 802.11 a |
|---------------------------|----------|
| Worst Case Transfer Rate: | 6Mbps |
| Distance of Measurements: | 3 Meters |
| Operating Frequency: | 5500MHz |
| Channel: | 100 |





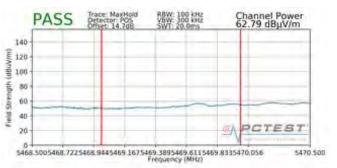




Note:

Per KDB 789033 Section II (G)(3)(d)(ii), integration was used to determine compliance with out-of band emission limits. Integration method was performed across the first 1 MHz band outside the authorized band of operation which was found to be the worst case emission at the band edge.

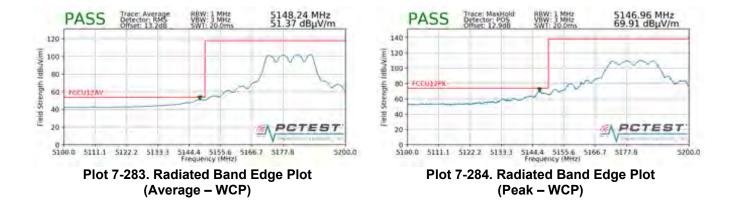
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dega 192 of 200 |
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Worst Case Mode:802.11 aWorst Case Transfer Rate:6MbpsDistance of Measurements:3 MetersOperating Frequency:5180MHzChannel:36



| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dama 400 af 000 |
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7.8 Radiated Spurious Emissions Measurements – Below 1GHz §15.209; RSS-Gen [8.9]

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, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for radiated spurious emissions. 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 and Table 6 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-70 per Section 15.209 and RSS-Gen (8.9).

| Frequency | Field Strength [μV/m] | Measured Distance [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 7-70. Radiated Limits

Test Procedures Used

ANSI C63.10-2013

Test Settings

Quasi-Peak Field Strength Measurements

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 120kHz (for emissions from 30MHz 1GHz)
- 3. Detector = quasi-peak
- 4. Sweep time = auto couple
- 5. Trace mode = max hold
- 6. Trace was allowed to stabilize

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Test Setup

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

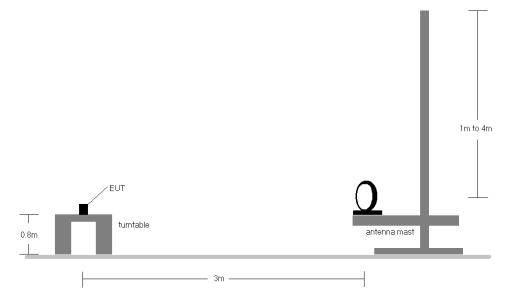
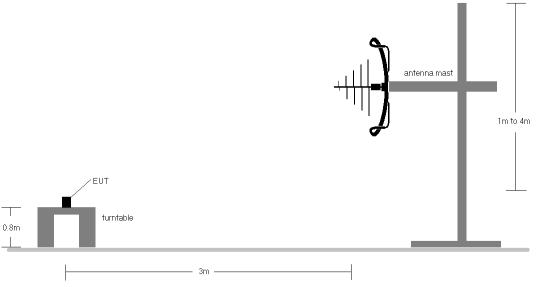
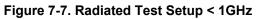


Figure 7-6. Radiated Test Setup < 30MHz





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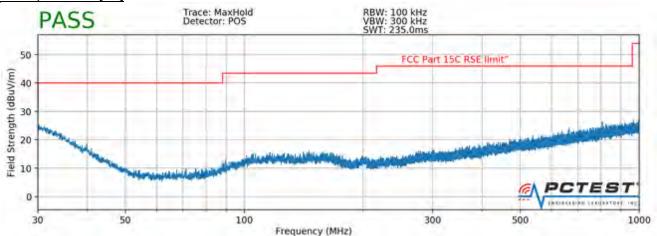


- 1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-70.
- 2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
- 3. This unit was tested with its standard battery.
- 4. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
- 5. Emissions were measured at a 3 meter test distance.
- 6. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
- 7. No spurious emissions were detected within 20dB of the limit below 30MHz.
- 8. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
- The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.

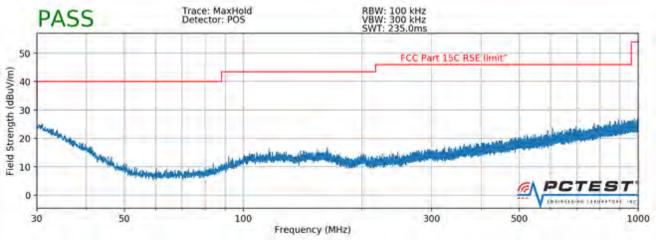
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|--|-----------------------|---------------------------------------|------------------|---------------------------------|
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Antenna-1 Radiated Spurious Emissions Measurements (Below 1GHz) §15.209; RSS-Gen [8.9]



Plot 7-285. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)

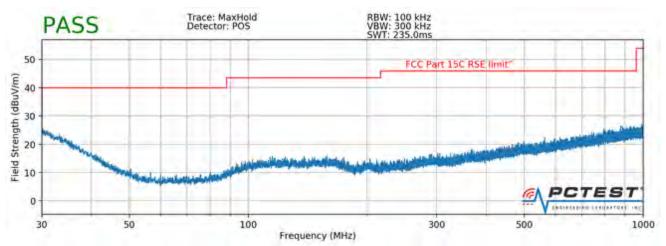


Plot 7-286. Radiated Spurious Plot below 1GHz (802.11a - U3 Ch. 157, Ant. Pol. V)

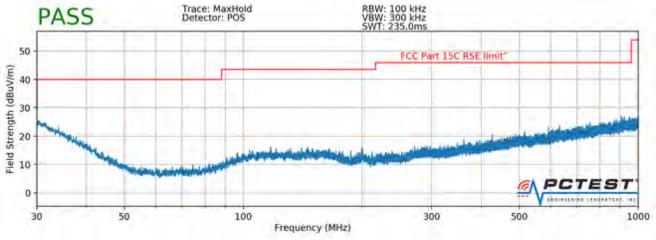
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | | | |
|--|--|---------------------------------------|-----------------|---------------------------------|--|--|--|
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Antenna-2 Radiated Spurious Emissions Measurements (Below 1GHz) §15.209; RSS-Gen [8.9]



Plot 7-287. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157, Ant. Pol. H)



Plot 7-288. Radiated Spurious Plot below 1GHz (802.11a - U3 Ch. 157, Ant. Pol. V)

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7.9 Line-Conducted Test Data §15.407; RSS-Gen [8.8]

Test Overview and Limit

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.

All conducted emissions must not exceed the limits shown in the table below, per Section 15.207 and RSS-Gen (8.8).

| Frequency of emission | Conducted | Limit (dBµV) |
|-----------------------|------------|--------------|
| (MHz) | Quasi-peak | Average |
| 0.15 – 0.5 | 66 to 56* | 56 to 46* |
| 0.5 – 5 | 56 | 46 |
| 5 – 30 | 60 | 50 |

Table 7-71. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.10-2013, Section 6.2

Test Settings

Quasi-Peak Field Strength Measurements

- 1. Analyzer center frequency was set to the frequency of the spurious emission of interest
- 2. RBW = 9kHz (for emissions from 150kHz 30MHz)
- 3. Detector = quasi-peak
- 4. Sweep time = auto couple
- 5. Trace mode = max hold
- 6. Trace was allowed to stabilize

Average Field Strength Measurements

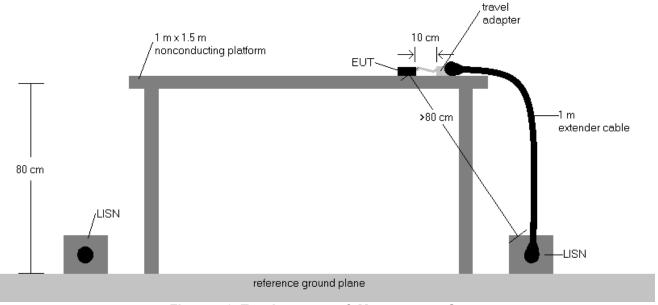
- 1. Analyzer center frequency was set to the frequency of the spurious emission of interest
- 2. RBW = 9kHz (for emissions from 150kHz 30MHz)
- 3. Detector = RMS
- 4. Sweep time = auto couple
- 5. Trace mode = max hold
- 6. Trace was allowed to stabilize

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Test Setup

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



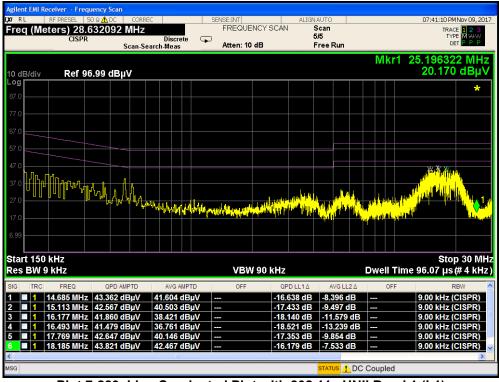


Test Notes

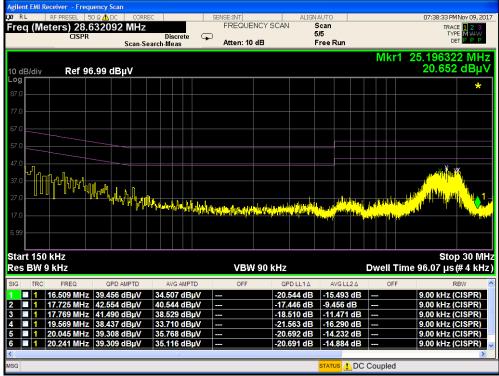
- All modes of operation were investigated and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
- 2. The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207 and RSS-Gen (8.8).
- 3. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- 4. QP/AV Level (dB μ V) = QP/AV Analyzer/Receiver Level (dB μ V) + Corr. (dB)
- 5. Margin (dB) = QP/AV Limit (dB μ V) QP/AV Level (dB μ V)
- 6. Traces shown in plot are made using a peak detector.
- 7. Deviations to the Specifications: None.

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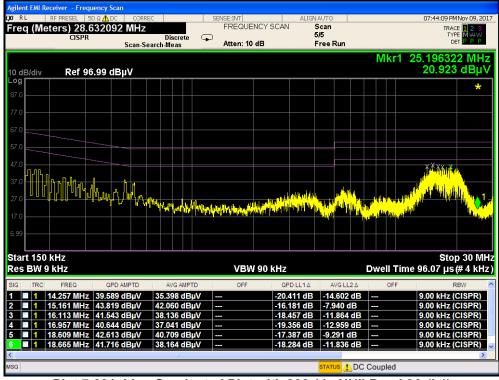
Plot 7-289. Line Conducted Plot with 802.11a UNII Band 1 (L1)



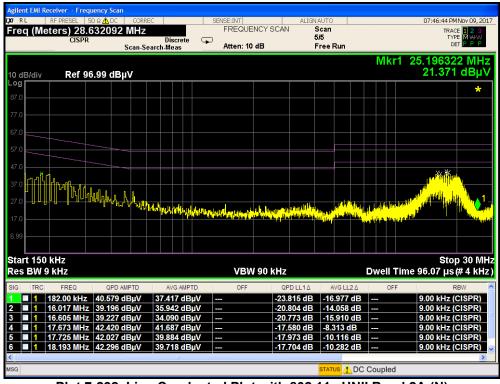


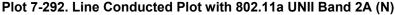
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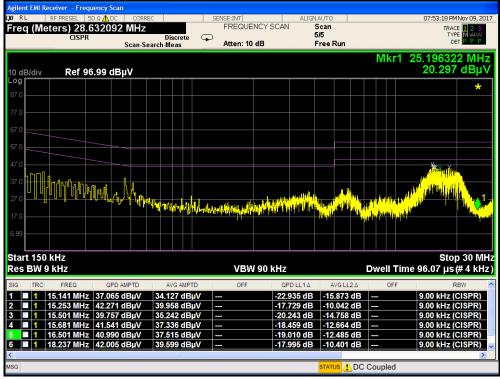
Plot 7-291. Line Conducted Plot with 802.11a UNII Band 2A (L1)



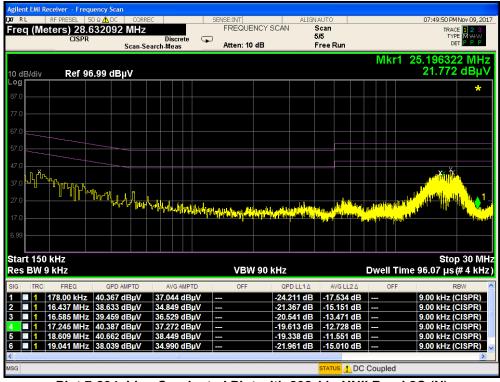


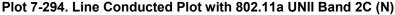
| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager | | | | |
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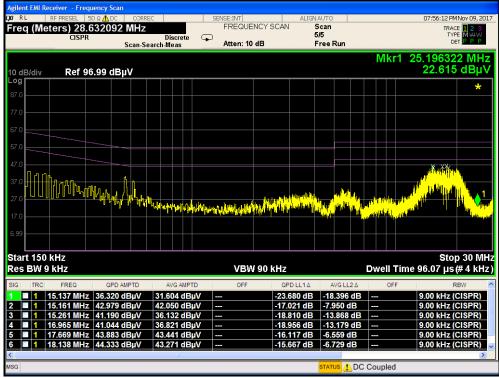
Plot 7-293. Line Conducted Plot with 802.11a UNII Band 2C (L1)



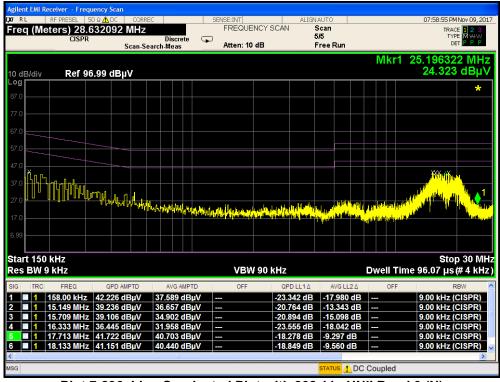


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Plot 7-295. Line Conducted Plot with 802.11a UNII Band 3 (L1)





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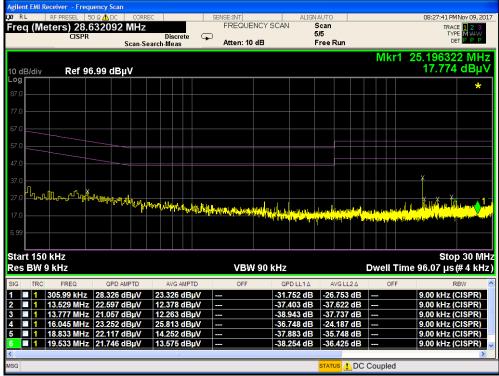


| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
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| s BW | 9 kHz | | | | | | VBI | N 90 KH | Z | | | Dw | ell 1 | Гime | 96.07 µ | ıs (#4 I | đ |
| TRC | FREQ | QPD A | MPTD | AV | G AMP | TD | OFF | | QPD LL1 A | AV | G LL2 Δ | 1 | OF | F | | RBW | _ |
| | 293.99 kHz | 28.854 d | | 24.03 | | | | | 1.557 dB | | 380 dB | | | | 9.00 kH | | |
| | 489.98 kHz | | | 21.21 | | | | | 7.761 dB | | 949 dB | | | | 9.00 kH | | |
| | 1.5699 MHz 12.201 MHz | | | 28.98 13.59 | | | | | <u>0.752 dB</u> 7.055 dB | |) <u>20 dB</u> 104 dB | | | | 9.00 kH 9.00 kH | | |
| | 15.333 MHz | | | 15.87 | | | | | 5.368 dB | | 124 dB | | | | 9.00 kH | | |
| | 15.561 MHz | | | 16.73 | | | | | 8.055 dB | | 265 dB | | | | 9.00 kH | | |
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Plot 7-297. Line Conducted Plot with WCP - 802.11a UNII Band 1 (L1)



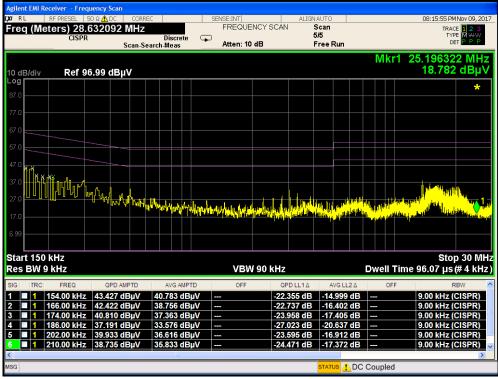
Plot 7-298. Line Conducted Plot with WCP - 802.11a UNII Band 1 (N)

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| RL | Receiver - Frequer Receiver - Frequers Reference - Reference - Frequencies - Reference - R | i0 Ω <u>Λ</u> DC 📗 | CORREC | | | SENSE:INT FREQUE | NCY SCAN | ALIGN AUT Scal | | | | 08:21:48 PM | Nov 09, 201 |
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| | | 29.020 d | | 3.878 | | | -36.390 | | 1.532 dE | | | 9.00 kHz (C | |
| | 174.00 kHz 190.00 kHz | 30.443 de 27.793 de | | 8.512 | | | -34.32 | | 6.255 dE | | | 9.00 kHz (C 9.00 kHz (C | |
| | 202.00 kHz | 28.913 d | | 4.870 | | | -34.61 | | 8.658 dE | | | 9.00 kHz (C | |
| | 222.00 kHz | 26.675 d | | 1.798 | | | -36.069 | | 0.946 dE | | | 9.00 kHz (C | |
| | 14.813 MHz | | | 0.325 | | | -37.697 | | 9.675 dE | | | 9.00 kHz (C | |
| | 1-1.0 10 10112 | 22.000 01 | - v M C | | | | 01.001 | | | · . | | 3.00 KHZ (C | |
| | 14.01010112 | 22.000 dt | 500 2 | Ш | | | 01.001 | | | | | 5.00 KH2 (C | |

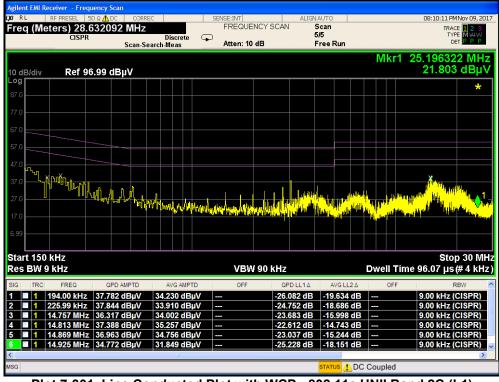
Plot 7-299. Line Conducted Plot with WCP - 802.11a UNII Band 2A (L1)



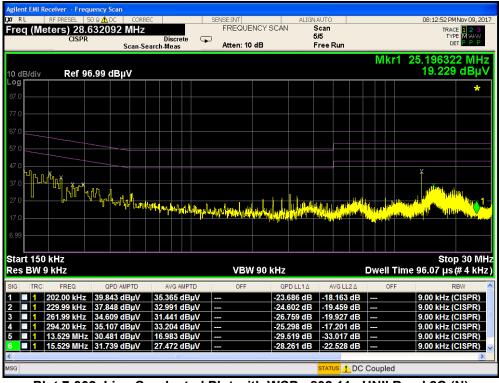
Plot 7-300. Line Conducted Plot with WCP - 802.11a UNII Band 2A (N)

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Plot 7-301. Line Conducted Plot with WCP - 802.11a UNII Band 2C (L1)



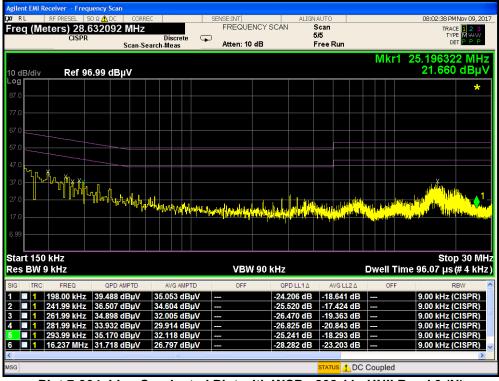


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| Mkr1 25.196322 MH | _{кі} req (М | | | CORRE MHZ Scan-Se | Dis | screte | | | ENCY SCA | N | NAUTO Scan 5/5 Free Ri | un | | | | | PM Nov 09, 20 RACE 1 2 3 TYPE M WW DET P P P |
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| 70 70 <td< th=""><th colspan="10">Mkr1 25.196322 MHz 10 dB/div Ref 96.99 dBμV 23.193 dBμV</th></td<> | Mkr1 25.196322 MHz 10 dB/div Ref 96.99 dBμV 23.193 dBμV | | | | | | | | | | | | | | | | |
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| BW 9 kHz VBW 90 kHz Dwell Time 96.07 µs # 4 kH G TRC FRE0 OPD AMPTD AVG AMPTD OFF OPD L11A AVG L12A OFF RBW I 1 58.00 kHz 43.767 dBµV 41.309 dBµV 21.801 dB -14.259 dB 9.00 kHz (CISPR) I 1 66.00 kHz 42.770 dBµV 39.731 dBµV -22.389 dB -15.427 dB 9.00 kHz (CISPR) I 1 94.00 kHz 38.206 dBµV 35.739 dBµV -25.658 dB -8.125 dB 9.00 kHz (CISPR) I 1 94.00 kHz 38.201 dBµV 36.490 dBµV -24.164 dB -16.875 dB 9.00 kHz (CISPR) I 1 15.493 MHz 34.495 dBµV 29.890 dBµV -25.505 dB 20.131 dB 9.00 kHz (CISPR) I 1 15.625 MHz 33.687 dBµV 28.912 dBµV -26.313 dB -21.088 dB 9.00 kHz (CISPR) | 7.0 | | \sim w w w w | ր Ի ս ս յչ | Murls | r huh | lake at 1 | la satilare bal | | | | | lar J. J. a. | l in the | tal <mark>n d</mark> i | | ndinda 1 |
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| ■ 1 166.00 kHz 42.770 dBµV 39.731 dBµV -22.389 dB -15.427 dB 9.00 kHz (CISPR) ■ 1 194.00 kHz 38.206 dBµV 35.739 dBµV -25.658 dB -18.125 dB 9.00 kHz (CISPR) ■ 206.00 kHz 39.201 dBµV 36.490 dBµV -24.164 dB -16.875 dB 9.00 kHz (CISPR) ■ 1 15.493 MHz 34.495 dBµV 29.869 dBµV -24.164 dB -16.875 dB 9.00 kHz (CISPR) ■ 1 15.625 MHz 33.687 dBµV 28.912 dBµV -26.313 dB -21.088 dB 9.00 kHz (CISPR) ■ 1 15.625 MHz 33.687 dBµV 28.912 dBµV -26.313 dB -21.088 dB 9.00 kHz (CISPR) | 7.0 99 99 | 0 kHz | | | Murly | Ч., | to the second | | | | | | Dwo | eli T | ime 9 | | |
| 1 194.00 kHz 38.206 dBµV 35.739 dBµV -25.658 dB -18.125 dB 9.00 kHz (CISPR) 1 206.00 kHz 39.201 dBµV 36.490 dBµV -24.164 dB -16.875 dB 9.00 kHz (CISPR) 1 15.493 MHz 34.495 dBµV 29.869 dBµV -25.505 dB -20.131 dB 9.00 kHz (CISPR) 1 15.625 MHz 33.687 dBµV 28.912 dBµV -26.313 dB -20.088 dB 9.00 kHz (CISPR) | art 15 | 0 kHz 9 kHz | | | AV | /G AMF | PTD | VBI | V 90 KH2 | Z DPD LL1 A | | | | | |)6.07 μ | s (# 4 kH RBW |
| ■ 1 206.00 kHz 39.201 dBµV 36.490 dBµV24.164 dB -16.875 dB 9.00 kHz (CISPR) ■ 1 15.493 MHz 34.495 dBµV 29.869 dBµV25.505 dB -20.131 dB 9.00 kHz (CISPR) ■ 1 15.625 MHz 33.687 dBµV 28.912 dBµV26.313 dB -21.088 dB 9.00 kHz (CISPR) | art 15 | 0 kHz 9 kHz FREQ 158.00 kHz | QPD AMI 43.767 dE | BμV | AV 41.30 | /G AMF D9 dE | PTD BµV | VB) OFF | N 90 kHz | 2 PD LL1 A 1.801 dB | -14.2 | 259 dB | | | 9 | 9.00 kHz | RBW C(CISPR) |
| ■ 1 15.493 MHz 34.495 dBµV 29.869 dBµV25.505 dB -20.131 dB 9.00 kHz (CISPR) ■ 1 15.625 MHz 33.687 dBµV 28.912 dBµV26.313 dB -21.088 dB 9.00 kHz (CISPR) | 7.0 99 tart 15 es BW | 0 kHz 9 kHz 58.00 kHz 158.00 kHz | QPD AMI 43.767 dE 42.770 dE | BμV BμV | AV 41.30 39.73 | (G AMF 09 dE 31 dE | ^{этр} ЗµV ЗµV | VB) OFF | N 90 kHz -21 -22 | 2 PD LL1A 1.801 dB 2.389 dB | -14.2 -15.4 | 259 dB 427 dB | | | 9 | 06.07 µ 9.00 kHz 9.00 kHz | s (# 4 kH RBW (CISPR) (CISPR) |
| | 7.0 99 tart 15 es BW | 0 kHz 9 kHz 158.00 kHz 166.00 kHz 194.00 kHz | QPD AM 43.767 dE 42.770 dE 38.206 dE | ΒμV ΒμV ΒμV | AV 41.30 39.73 35.73 | (G AMF 09 dE 31 dE 39 dE | этр ЗрV ЗрV ЗрV | VB) OFF | N 90 kHz -21 -22 -25 | Z IPD LL1 A I.801 dB I.389 dB 5.658 dB | -14.2 -15.4 -18.1 | 259 dB 427 dB 125 dB | | | 9 | 96.07 µ 9.00 kHz 9.00 kHz 9.00 kHz | CISPR) |
| | 7.0 99 tart 15 es BW | 0 KHz 9 KHz 158.00 KHz 166.00 KHz 194.00 KHz 206.00 KHz 15.493 MHz | QPD AM 43.767 dE 42.770 dE 38.206 dE 39.201 dE 39.201 dE | BµV BµV BµV BµV BµV | 41.30 39.73 35.73 36.49 29.80 | (G AMF 09 dE 31 dE 39 dE 90 dE 59 dE | отр ЗµV ЗµV ЗµV ЗµV ЗµV | VB) OFF | N 90 kHz -21 -22 -25 -24 -25 | 2 IPD LL1A I.801 dB 2.389 dB 5.658 dB I.164 dB 5.505 dB | -14.2 -15.4 -18.1 -16.8 -20.1 | 259 dB 427 dB 125 dB 375 dB 131 dB | | | | 9.00 kHz 9.00 kHz 9.00 kHz 9.00 kHz 9.00 kHz 9.00 kHz | CISPR) (CISPR) (CISPR) (CISPR) (CISPR) (CISPR) (CISPR) |
| | 7.0 99 tart 15 es BW | 0 KHz 9 KHz 158.00 KHz 166.00 KHz 194.00 KHz 206.00 KHz 15.493 MHz | QPD AM 43.767 dE 42.770 dE 38.206 dE 39.201 dE 39.201 dE | BµV BµV BµV BµV BµV | 41.30 39.73 35.73 36.49 29.80 | (G AMF 09 dE 31 dE 39 dE 90 dE 59 dE | отр ЗµV ЗµV ЗµV ЗµV ЗµV | VB) OFF | N 90 kHz -21 -22 -25 -24 -25 | 2 IPD LL1A I.801 dB 2.389 dB 5.658 dB I.164 dB 5.505 dB | -14.2 -15.4 -18.1 -16.8 -20.1 | 259 dB 427 dB 125 dB 375 dB 131 dB | | | | 9.00 kHz 9.00 kHz 9.00 kHz 9.00 kHz 9.00 kHz 9.00 kHz | CISPR) (CISPR) (CISPR) (CISPR) (CISPR) (CISPR) (CISPR) |

Plot 7-303. Line Conducted Plot with WCP - 802.11a UNII Band 3 (L1)





| FCC ID: A3LSMG960U IC: 649E-SMG960U | | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 100 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 199 of 200 |
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8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG960U** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules and RSS-247 of the Innovation, Science and Economic Development Canada Rules.

| FCC ID: A3LSMG960U IC: 649E-SMG960U | PCTEST* | MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
|--|----------------|---------------------------------------|---------|---------------------------------|
| Test Report S/N: | Test Dates: | EUT Type: | | Dage 200 of 200 |
| 1M1711010281-06-R2.A3L | 11/1-12/7/2017 | Portable Handset | | Page 200 of 200 |
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