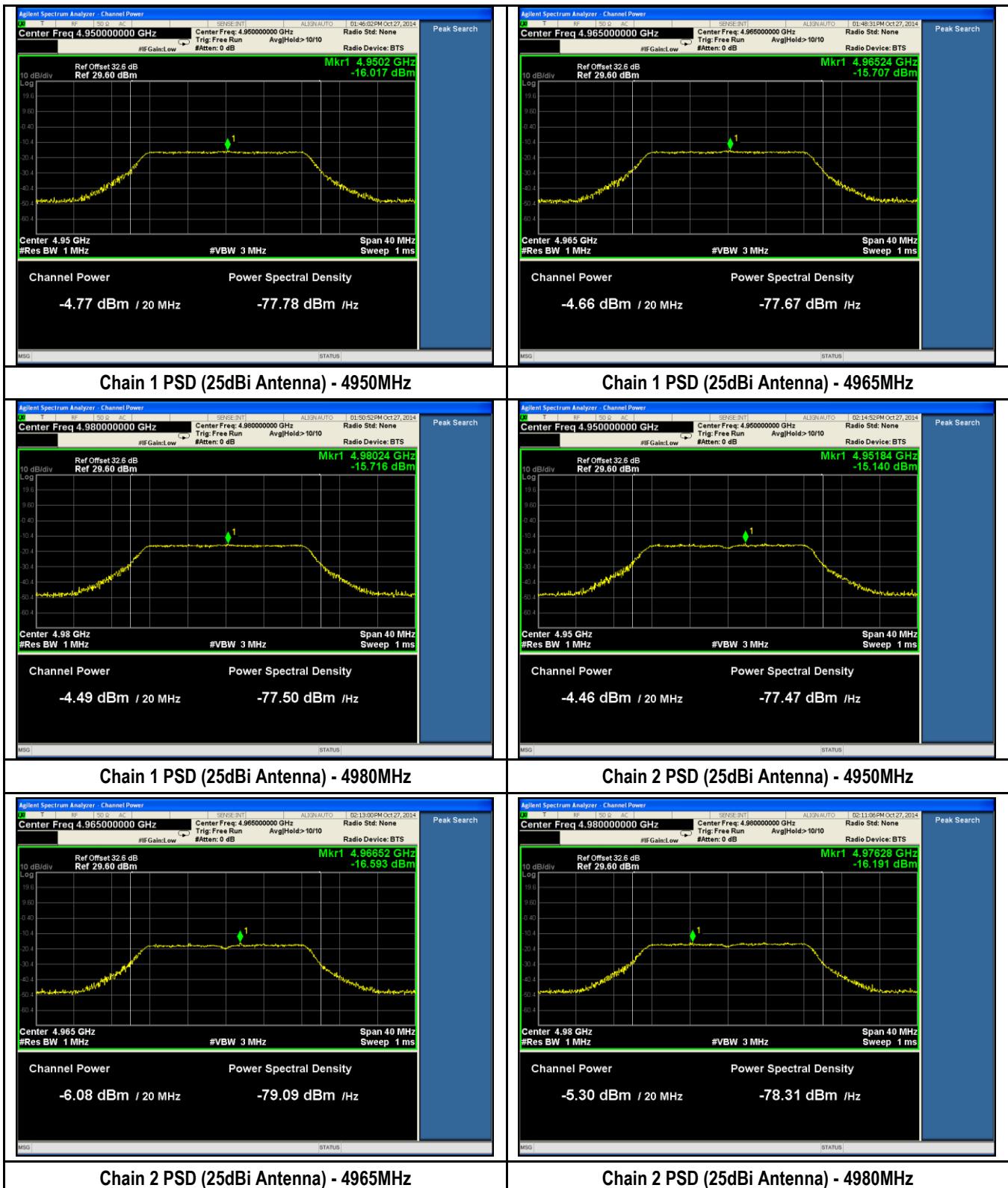
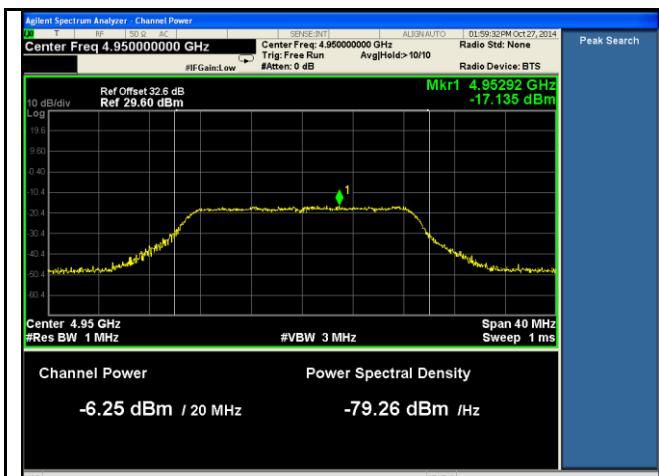
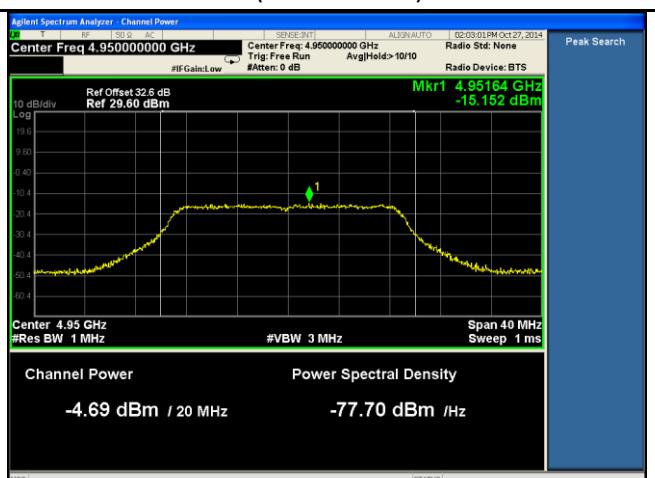
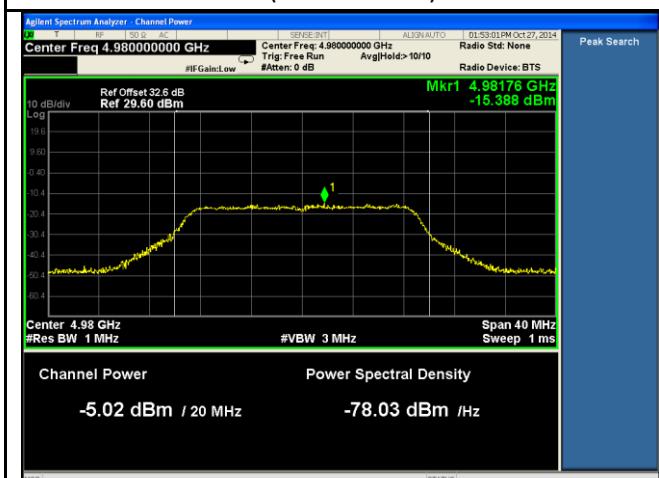


Power Spectral Density Test Plots

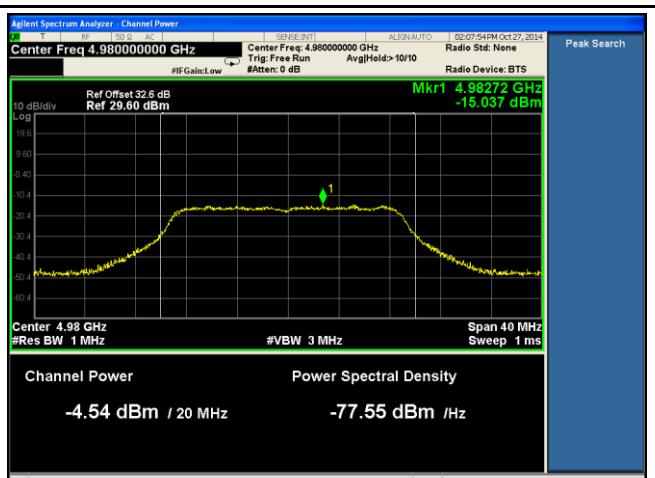
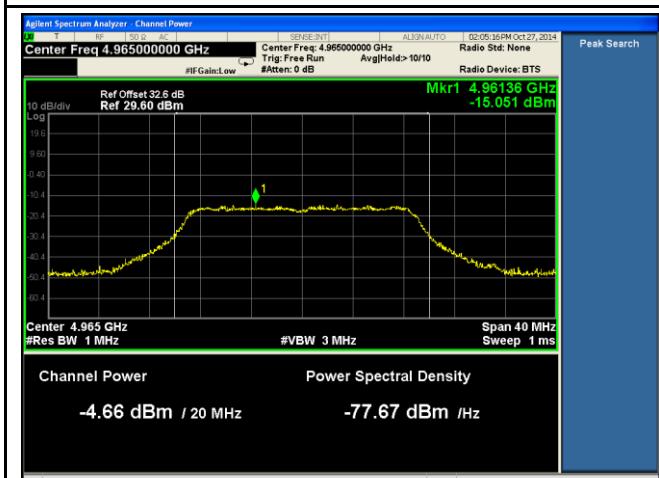




Chain 3 PSD (25dBi Antenna) - 4950MHz

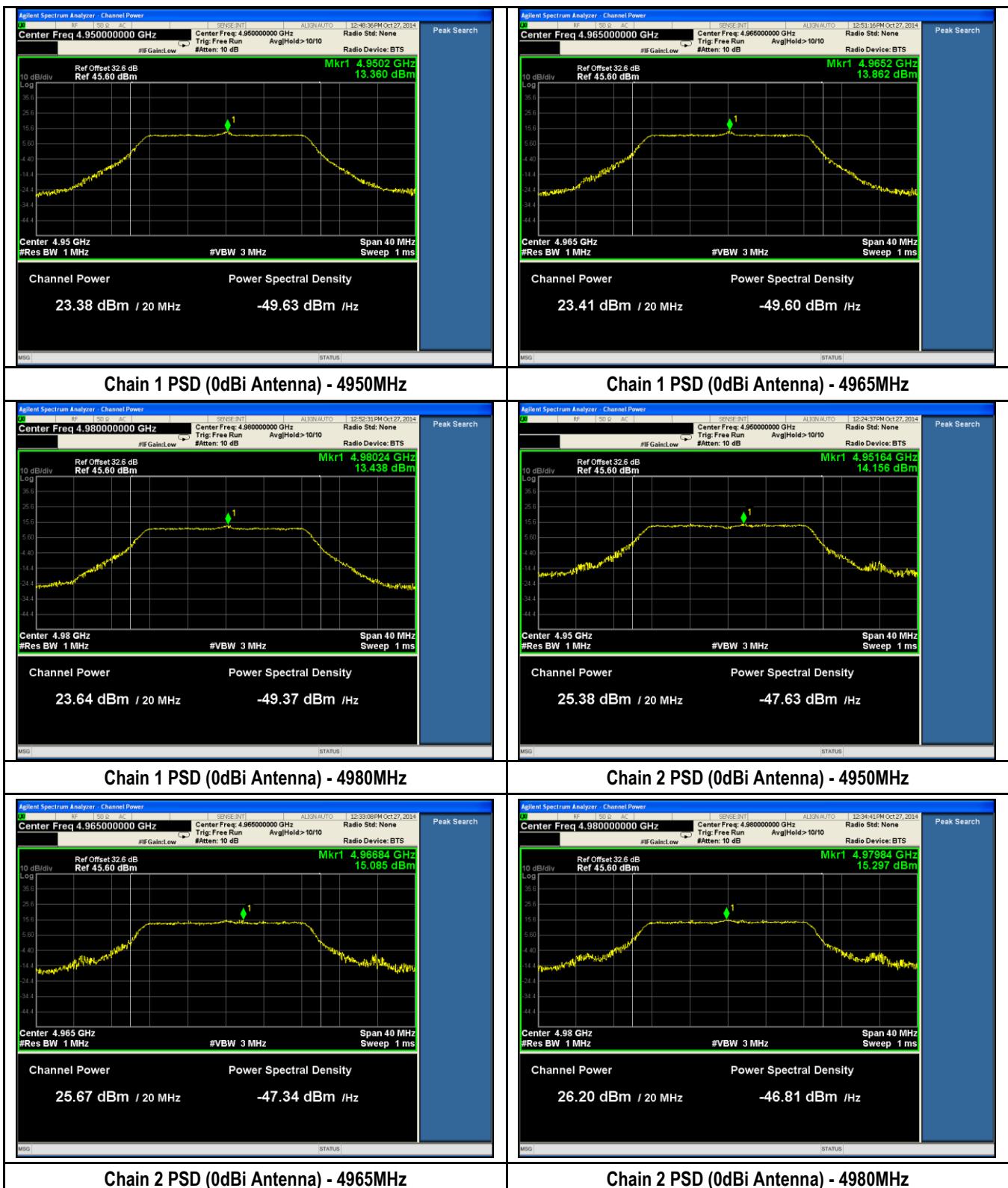


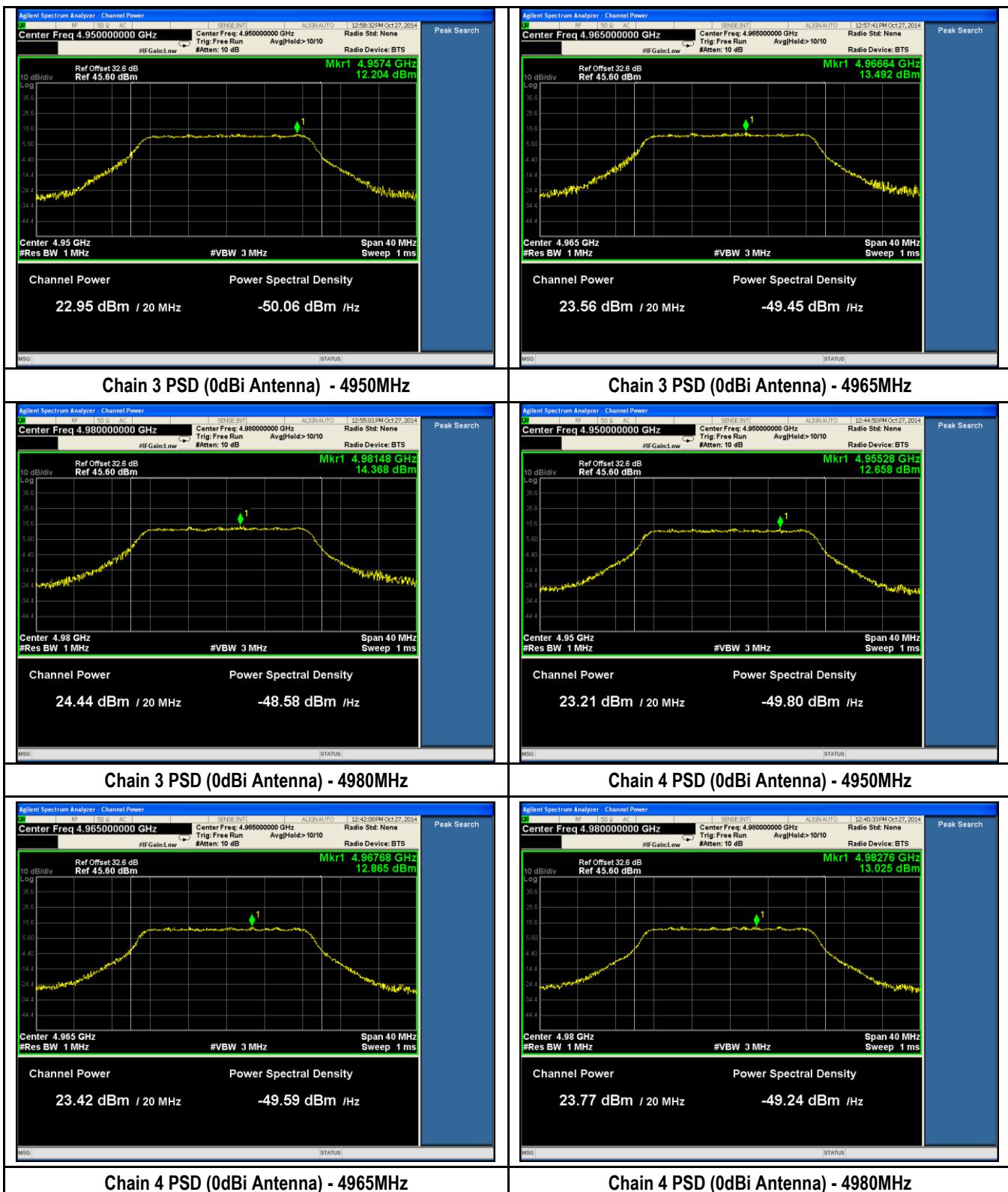
Chain 3 PSD (25dBi Antenna) - 4980MHz



Chain 4 PSD (25dBi Antenna) - 4965MHz

Chain 4 PSD (25dBi Antenna) - 4980MHz





10.4 Peak Excursion

Requirement(s):

| Spec | Requirement | Applicable |
|--------------------------|---|-------------------------------------|
| FCC §90.1215 | The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less. | <input checked="" type="checkbox"/> |
| Test Setup | <pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] </pre> | |
| Test Procedure | <p>The EUT was set to transmit continuously;</p> <p>The following setting were set on the spectrum analyzer:</p> <p><u>Trace 1:</u></p> <ul style="list-style-type: none"> - RBW = 1MHz - VBW = 3 x RBW - Span = 40MHz - Detector = Peak - Trace = Maxhold <p><u>Trace 2:</u></p> <ul style="list-style-type: none"> - RBW = 1MHz - VBW = 3 x RBW - Span = 40MHz - Detector = Average (RMS) - Trace = 100 Trace average | |
| Environmental conditions | Temperature (°C) Humidity (%) Atmospheric (mbar) | 22 °C 42% 1019 mbar |
| Test Date | 10/27/2014 | |
| Remark | - | |
| Result | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |

Test Data Yes N/A

Test Plot Yes (See below) N/A

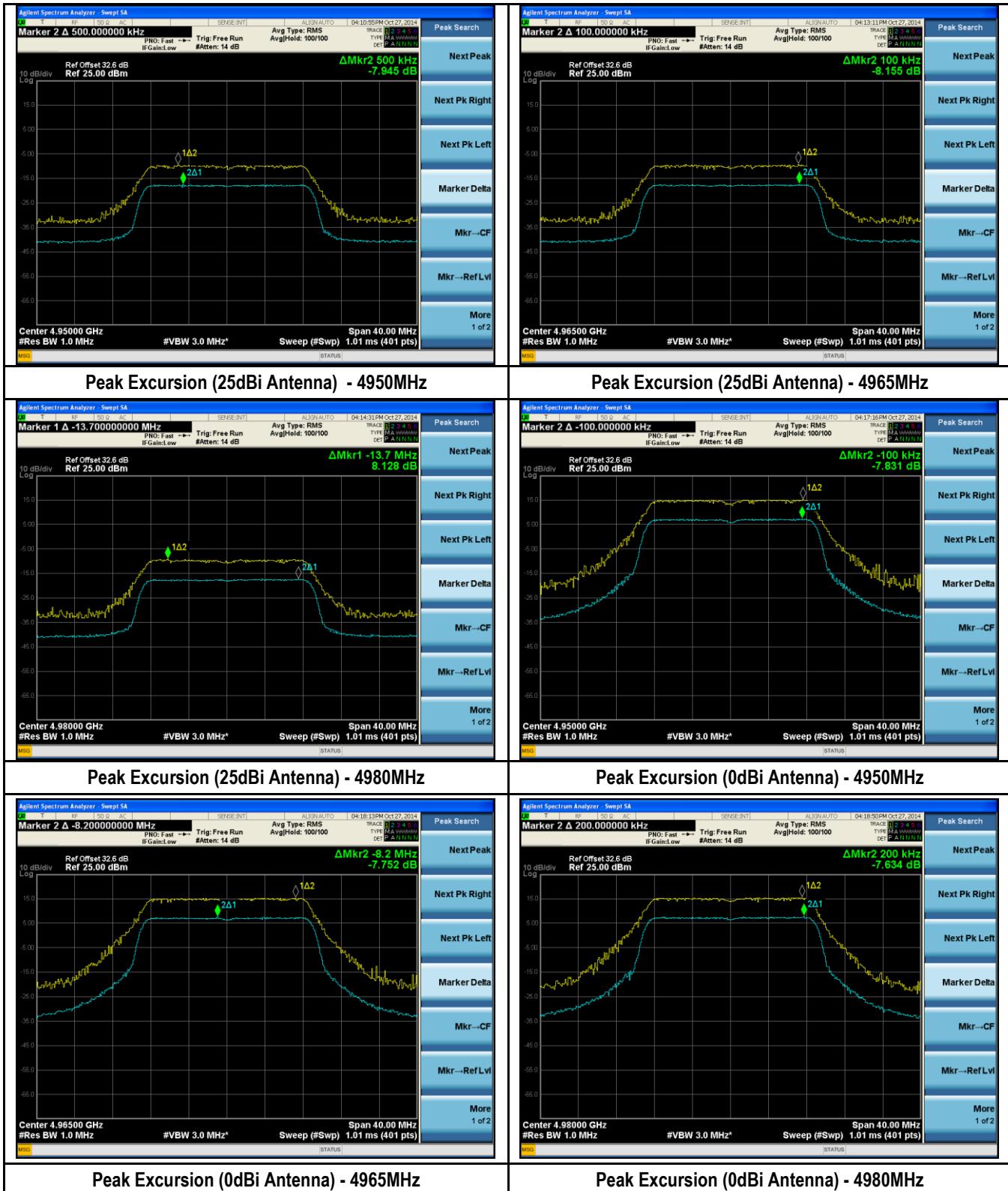
Peak Excursion Measurement Results (25dBi Antenna Gain)

| Channel | Frequency (MHz) | Peak Excursion (dBm) | Limit (dBm) | Result |
|---------|-----------------|----------------------|-------------|--------|
| Low | 4950 | 7.945 | 13.00 | Pass |
| Mid | 4965 | 8.155 | 13.00 | Pass |
| High | 4980 | 8.128 | 13.00 | Pass |

Peak Excursion Measurement Results (0dBi Antenna Gain)

| Channel | Frequency (MHz) | Peak Excursion (dBm) | Limit (dBm) | Result |
|---------|-----------------|----------------------|-------------|--------|
| Low | 4950 | 7.831 | 13.00 | Pass |
| Mid | 4965 | 7.752 | 13.00 | Pass |
| High | 4980 | 7.634 | 13.00 | Pass |

Peak Excursion Test Plots



10.5 Transmitter Conducted Unwanted Emissions

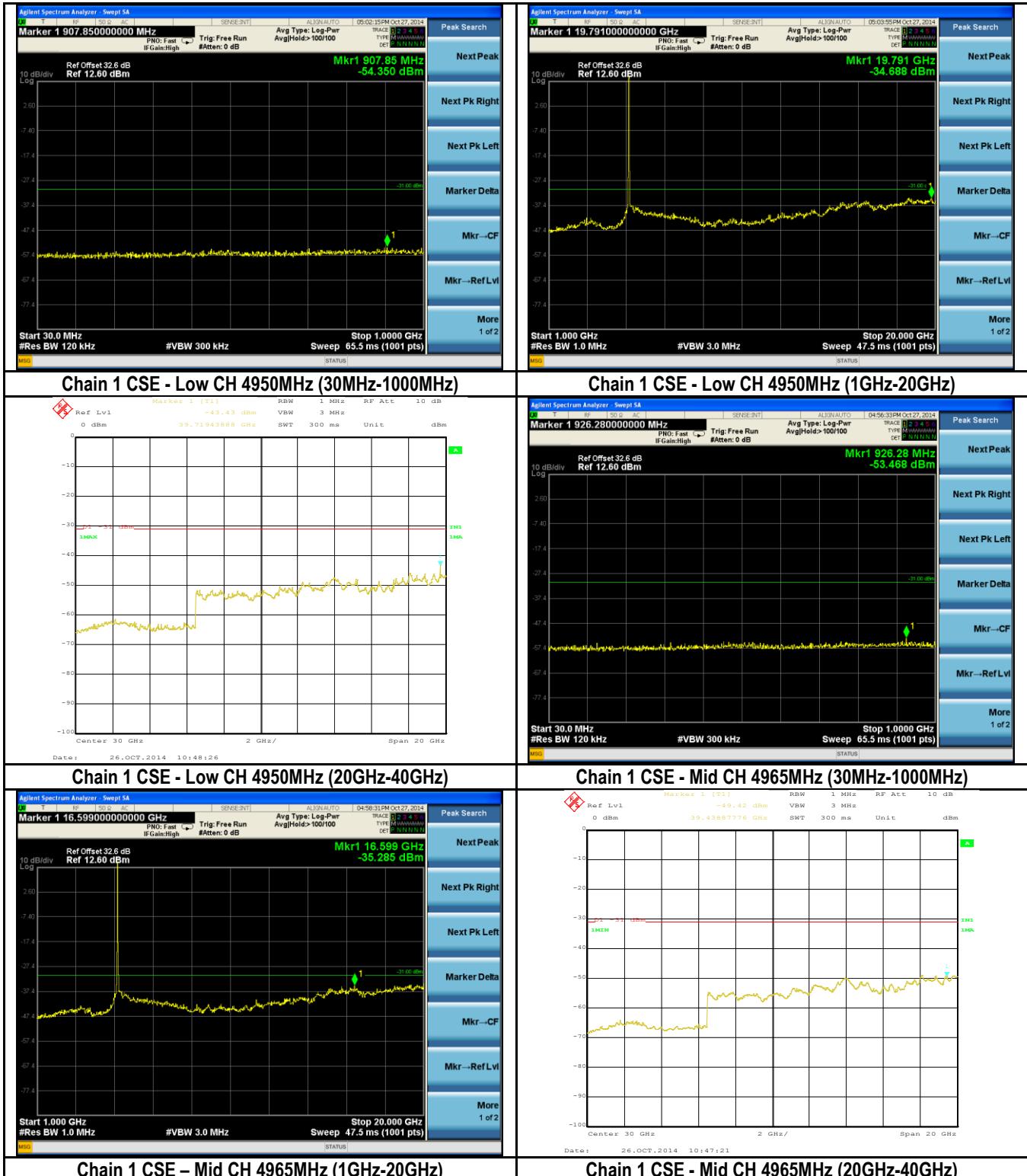
Requirement(s):

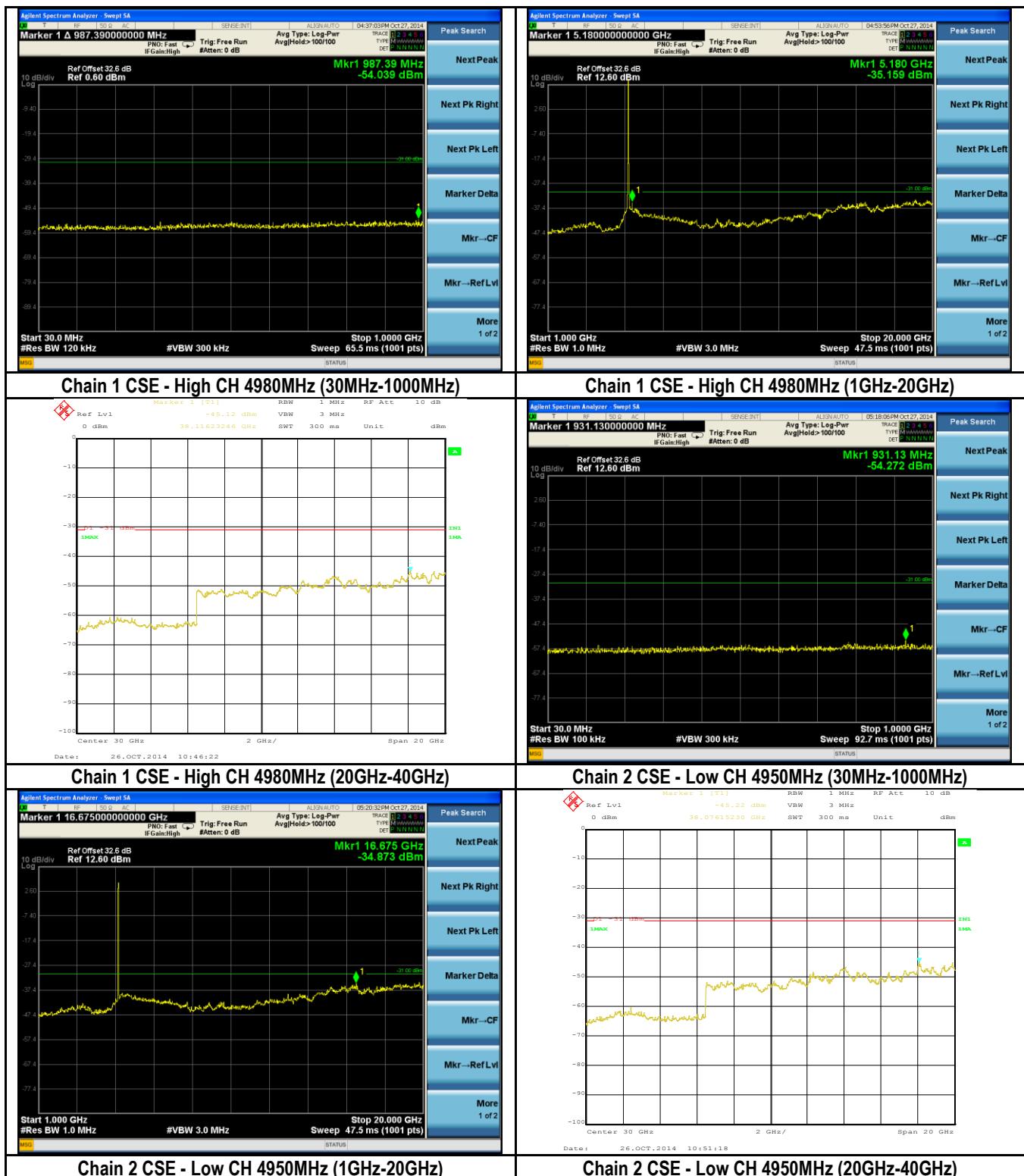
| Spec | Requirement | Applicable | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|--|---|---------------------|--|-----------------------|------------------------|-------------------|---|---|--------------------|--------------------|--------------------|--------------------|-------------------------|-------------------------|---------------------|------------------------|------------------------|----------------------|-------------------------|-------------------------|-------------|----|---|-------------------------------------|
| FCC §2.1051 FCC §90.210 | <p>For low power transmitters (20 dBm or less) and high power transmitters (greater than 20 dBm operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:</p> <table border="1"> <thead> <tr> <th rowspan="2">Frequency Offset f_d</th> <th colspan="2">Minimum Attenuation</th> </tr> <tr> <th>Low Power Transmitter</th> <th>High Power Transmitter</th> </tr> </thead> <tbody> <tr> <td>$0 < f_d \leq 45$</td> <td>0</td> <td>0</td> </tr> <tr> <td>$45 < f_d \leq 50$</td> <td>$219 \log(f_d/45)$</td> <td>$568 \log(f_d/45)$</td> </tr> <tr> <td>$50 < f_d \leq 55$</td> <td>$10 + 242 \log(f_d/50)$</td> <td>$26 + 145 \log(f_d/50)$</td> </tr> <tr> <td>$55 < f_d \leq 100$</td> <td>$20 + 31 \log(f_d/55)$</td> <td>$32 + 31 \log(f_d/55)$</td> </tr> <tr> <td>$100 < f_d \leq 150$</td> <td>$28 + 68 \log(f_d/100)$</td> <td>$40 + 57 \log(f_d/100)$</td> </tr> <tr> <td>$f_d > 150$</td> <td>40</td> <td>50 dB or $55 + 10 \log(P)$ dB, whichever is the lesser attenuation.</td> </tr> </tbody> </table> <p>f_d is the percentage of the equipment's channel bandwidth..</p> | Frequency Offset f_d | Minimum Attenuation | | Low Power Transmitter | High Power Transmitter | $0 < f_d \leq 45$ | 0 | 0 | $45 < f_d \leq 50$ | $219 \log(f_d/45)$ | $568 \log(f_d/45)$ | $50 < f_d \leq 55$ | $10 + 242 \log(f_d/50)$ | $26 + 145 \log(f_d/50)$ | $55 < f_d \leq 100$ | $20 + 31 \log(f_d/55)$ | $32 + 31 \log(f_d/55)$ | $100 < f_d \leq 150$ | $28 + 68 \log(f_d/100)$ | $40 + 57 \log(f_d/100)$ | $f_d > 150$ | 40 | 50 dB or $55 + 10 \log(P)$ dB, whichever is the lesser attenuation. | <input checked="" type="checkbox"/> |
| Frequency Offset f_d | Minimum Attenuation | | | | | | | | | | | | | | | | | | | | | | | | |
| | Low Power Transmitter | High Power Transmitter | | | | | | | | | | | | | | | | | | | | | | | |
| $0 < f_d \leq 45$ | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| $45 < f_d \leq 50$ | $219 \log(f_d/45)$ | $568 \log(f_d/45)$ | | | | | | | | | | | | | | | | | | | | | | | |
| $50 < f_d \leq 55$ | $10 + 242 \log(f_d/50)$ | $26 + 145 \log(f_d/50)$ | | | | | | | | | | | | | | | | | | | | | | | |
| $55 < f_d \leq 100$ | $20 + 31 \log(f_d/55)$ | $32 + 31 \log(f_d/55)$ | | | | | | | | | | | | | | | | | | | | | | | |
| $100 < f_d \leq 150$ | $28 + 68 \log(f_d/100)$ | $40 + 57 \log(f_d/100)$ | | | | | | | | | | | | | | | | | | | | | | | |
| $f_d > 150$ | 40 | 50 dB or $55 + 10 \log(P)$ dB, whichever is the lesser attenuation. | | | | | | | | | | | | | | | | | | | | | | | |
| Test Setup | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Procedure | <ul style="list-style-type: none"> - The EUT was set to transmit in a modulated transmit mode. - The RF output of the EUT was connected to a spectrum analyzer using appropriate attenuations. - Conducted spurious emissions were measured up to 40GHz. - Sufficient scans were taken to show any out of band emissions. | | | | | | | | | | | | | | | | | | | | | | | | |
| Environmental conditions | Temperature (°C) Humidity (%) Atmospheric (mbar) | 21 °C 38% 1020 mbar | | | | | | | | | | | | | | | | | | | | | | | |
| Test Date | 10/28/2014 | | | | | | | | | | | | | | | | | | | | | | | | |
| Remark | Per KDB 662911 D01 Multiple transmitter Output v02r01 the limit is calculated as follow: Measure and add $10\log(N_{ANT})$ dB, where N_{ANT} is the number of outputs; therefore, Limit calculation for the 0dBi antenna gain: $-25 - 10\log(N_{ANT}) = -25 - 6 = -31$ dBm Limit calculation for the 25dBi antenna gain: $P(\text{dBm}) - 40 - 10\log(N_{ANT}) = 3.84 - 40 - 6 \approx -42$ dBm | | | | | | | | | | | | | | | | | | | | | | | | |
| Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | | | | | | | | | | | | | | | | | | | | | | | | |

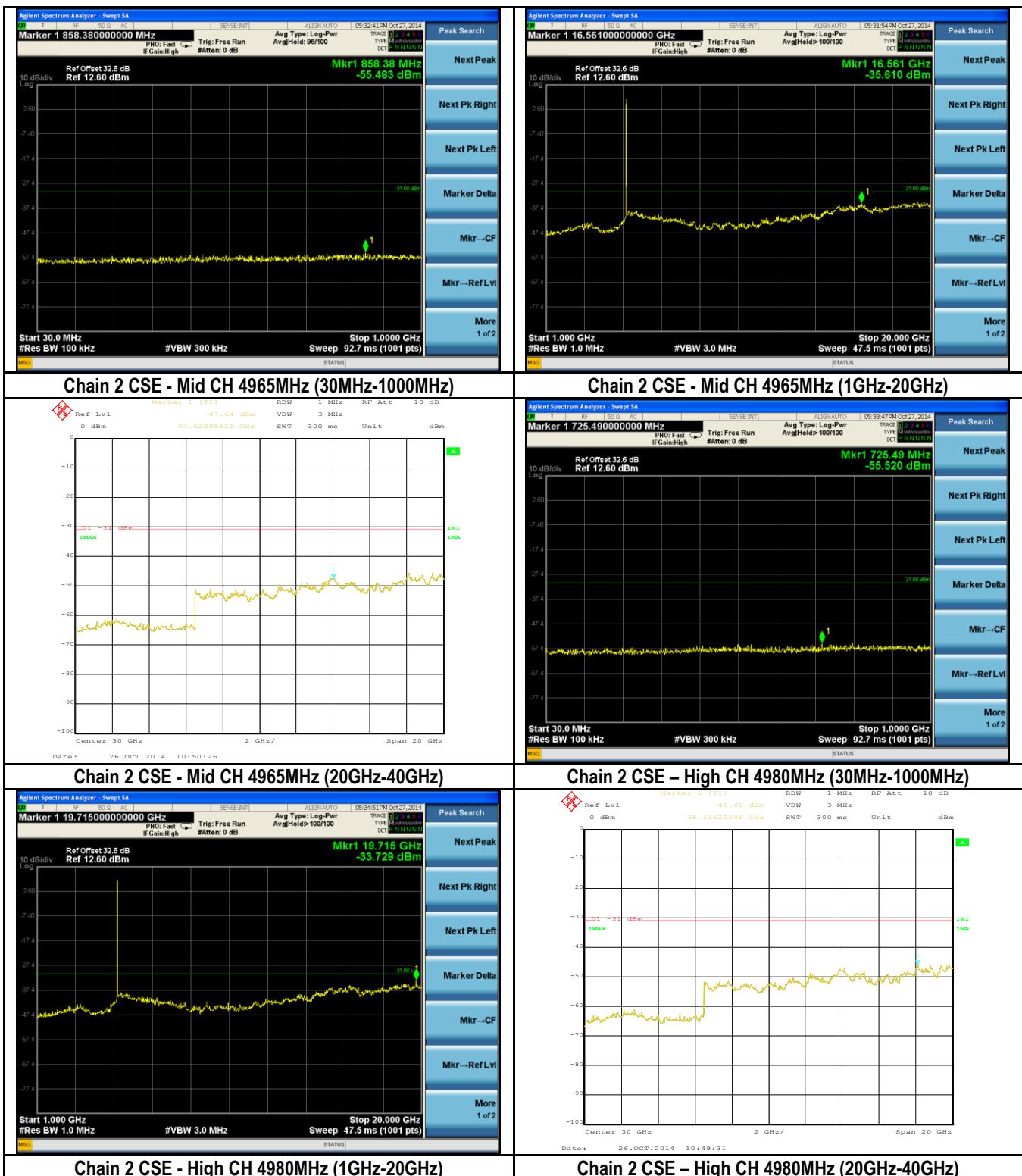
Test Data Yes N/A

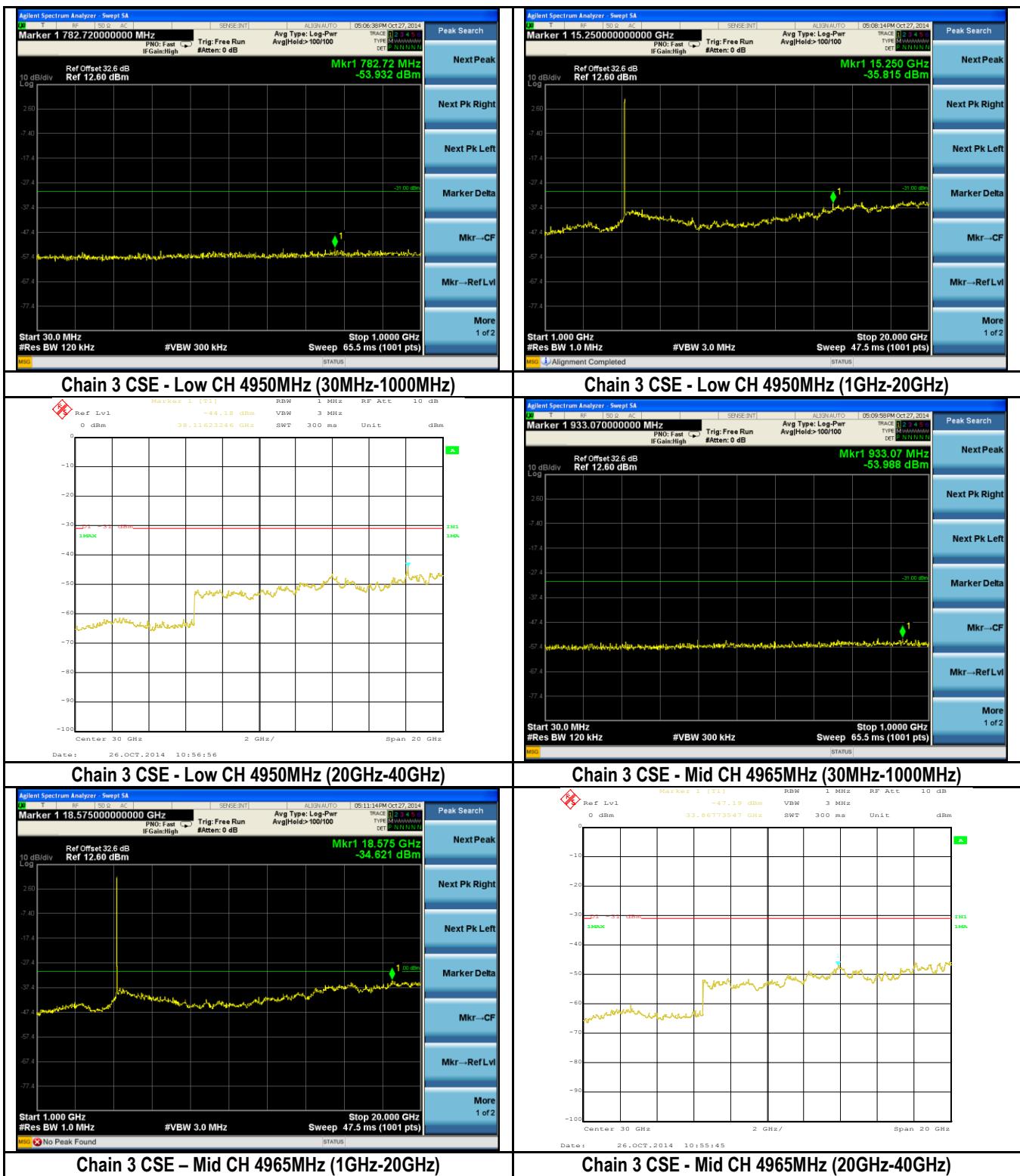
Test Plot Yes (See below) N/A

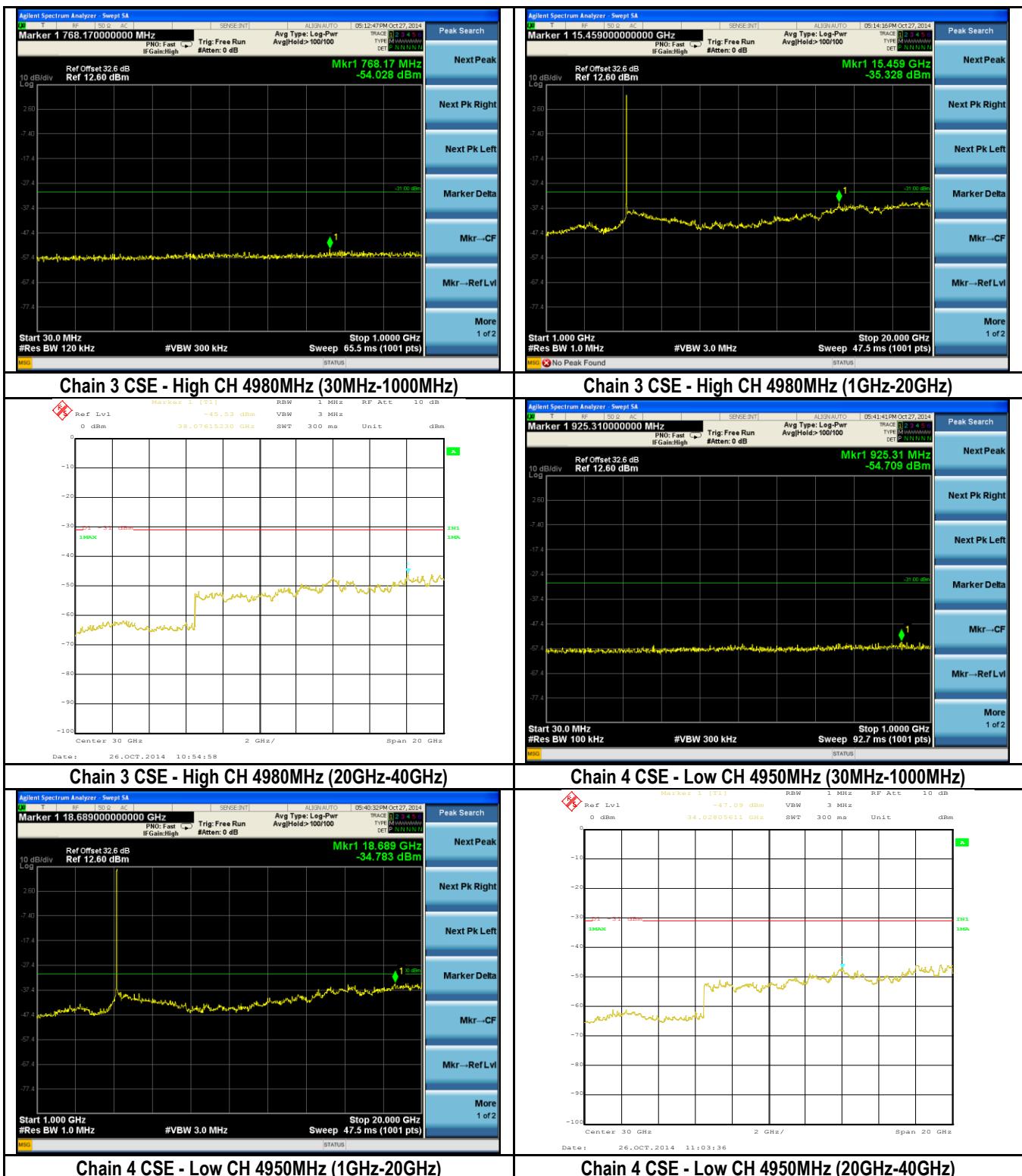
Conducted Spurious Emissions Test Plots (0dBi Antenna Gain)

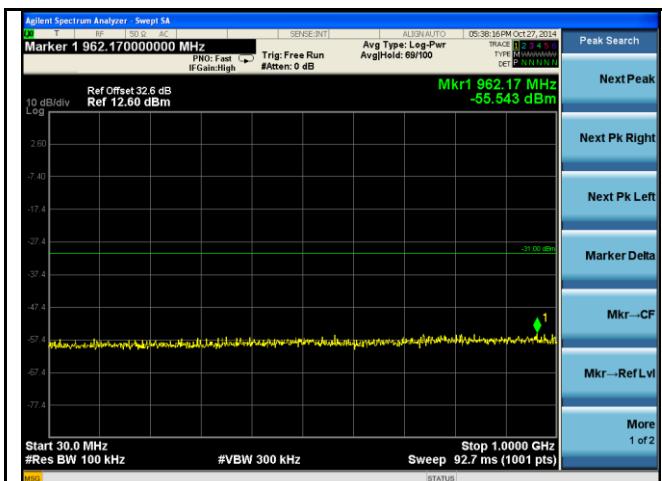




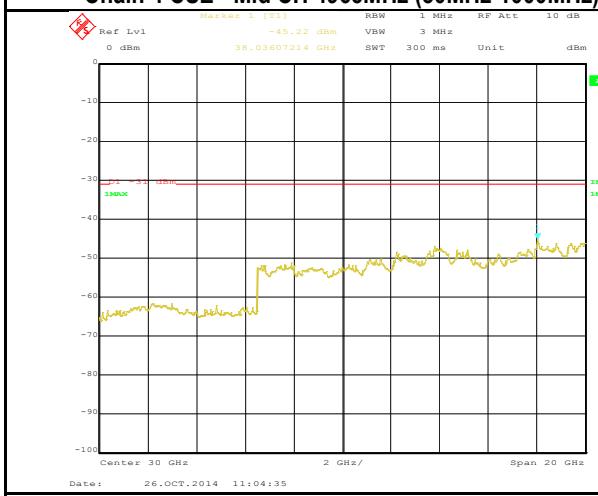




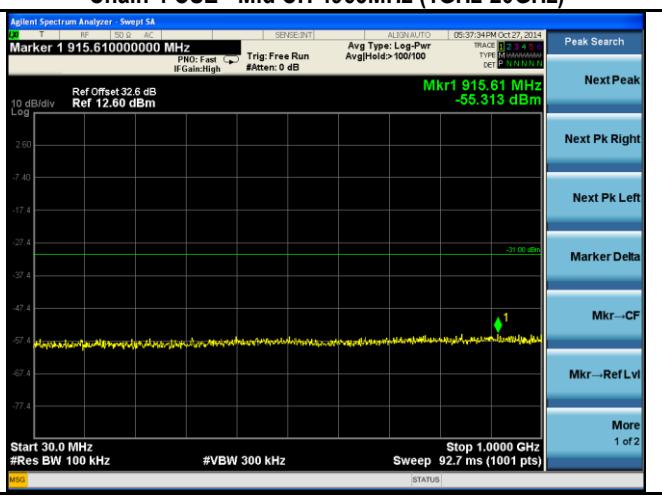




Chain 4 CSE - Mid CH 4965MHz (30MHz-1000MHz)



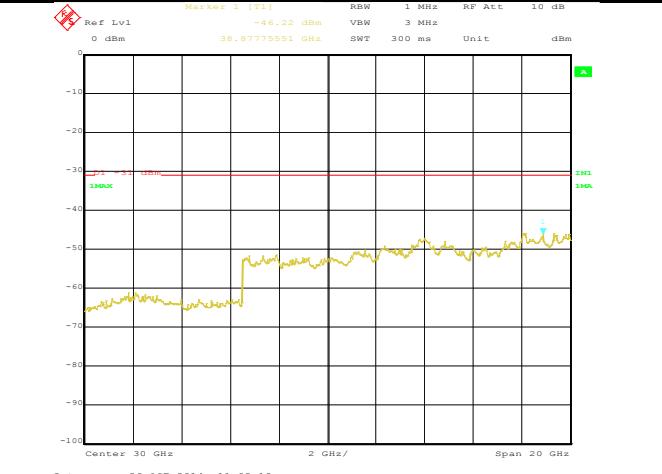
Chain 4 CSE - Mid CH 4965MHz (1GHz-20GHz)



Chain 4 CSE - Mid CH 4965MHz (20GHz-40GHz)



Chain 4 CSE – High CH 4980MHz (30MHz-1000MHz)

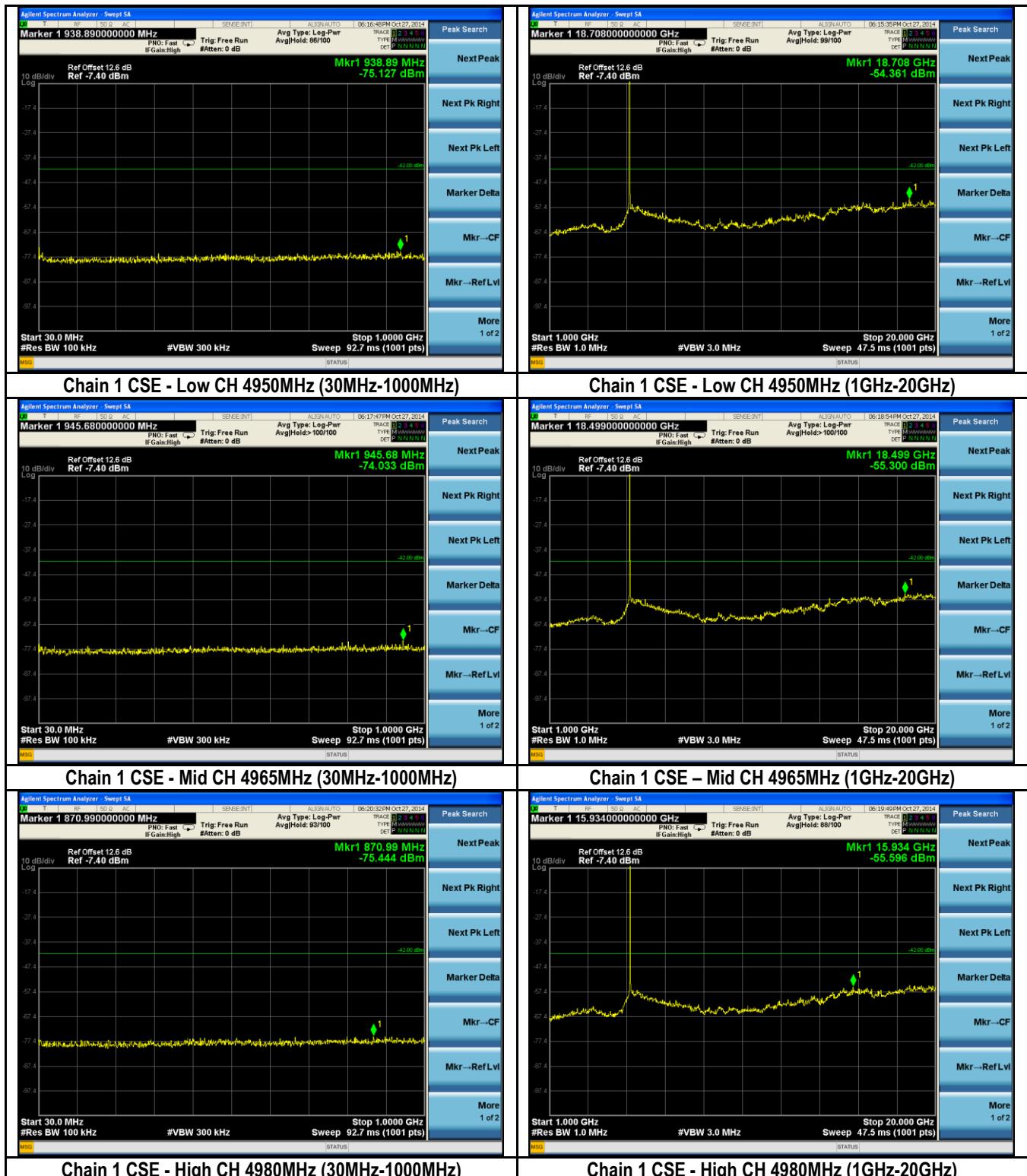


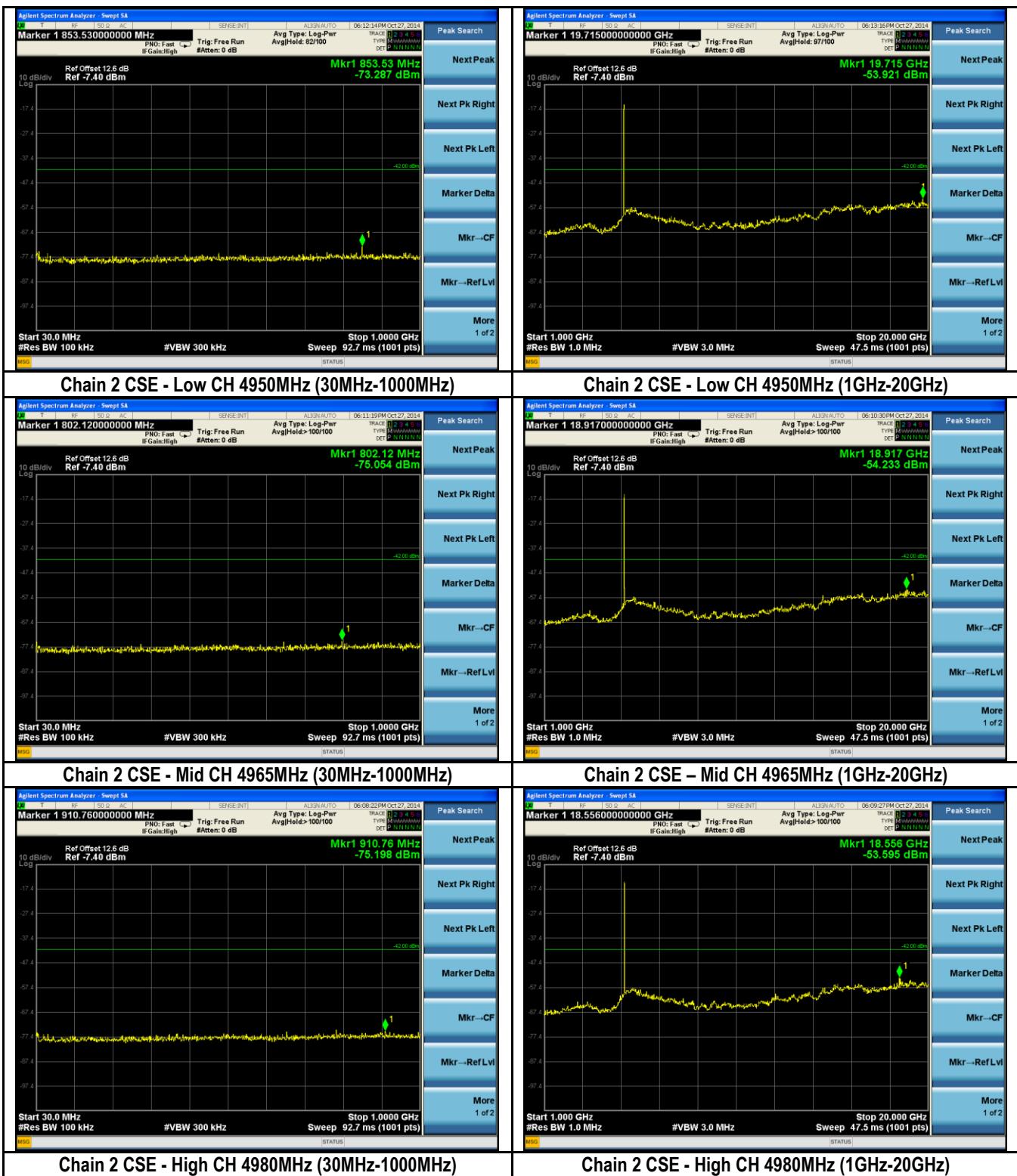
775 Montague Expressway, Milpitas, CA 95035, USA • Phone: (+1) 408 526 1188 • Facsimile: (+1) 408 526 1088

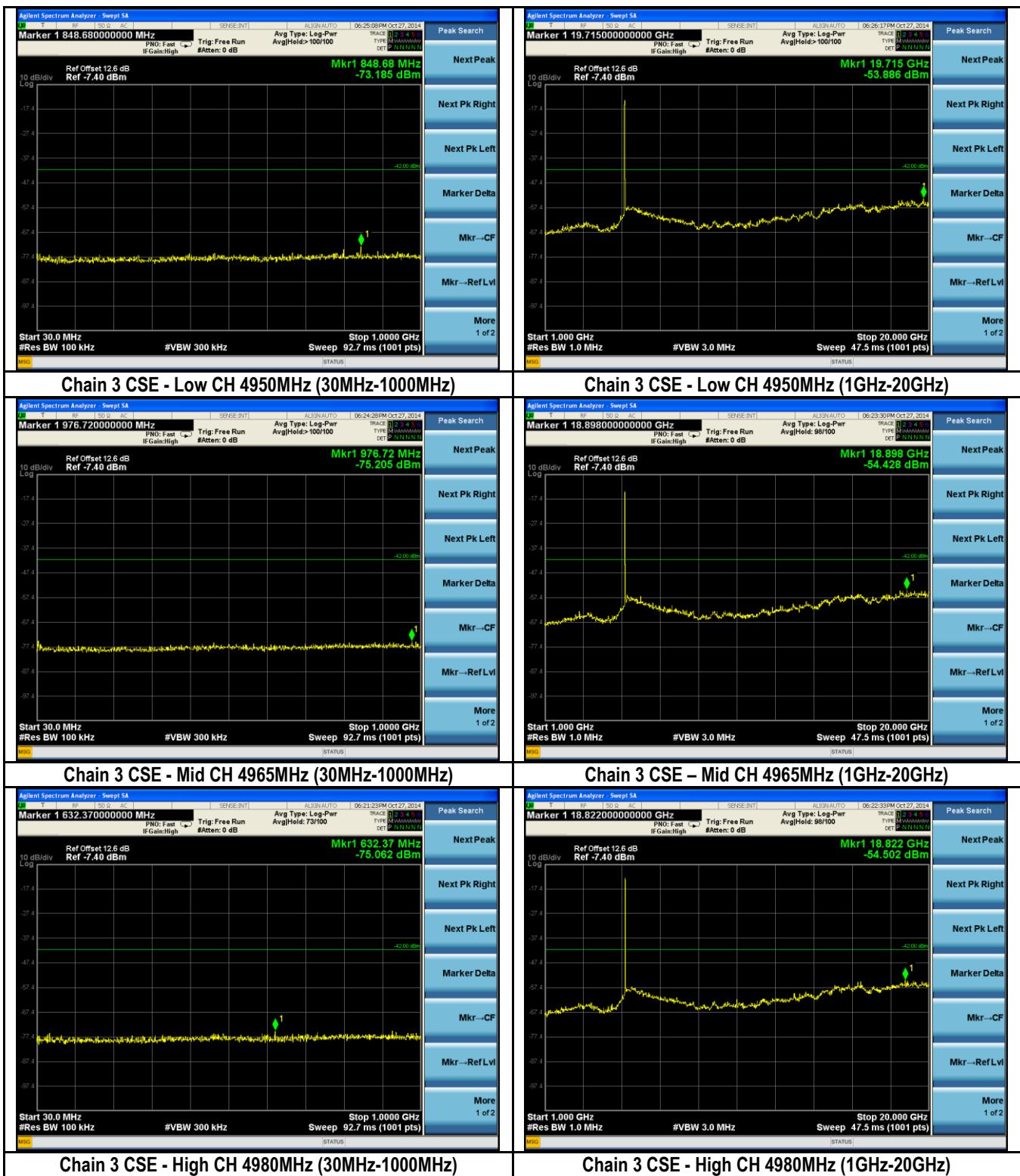
Visit us at: www.siemic.com; Follow us at:

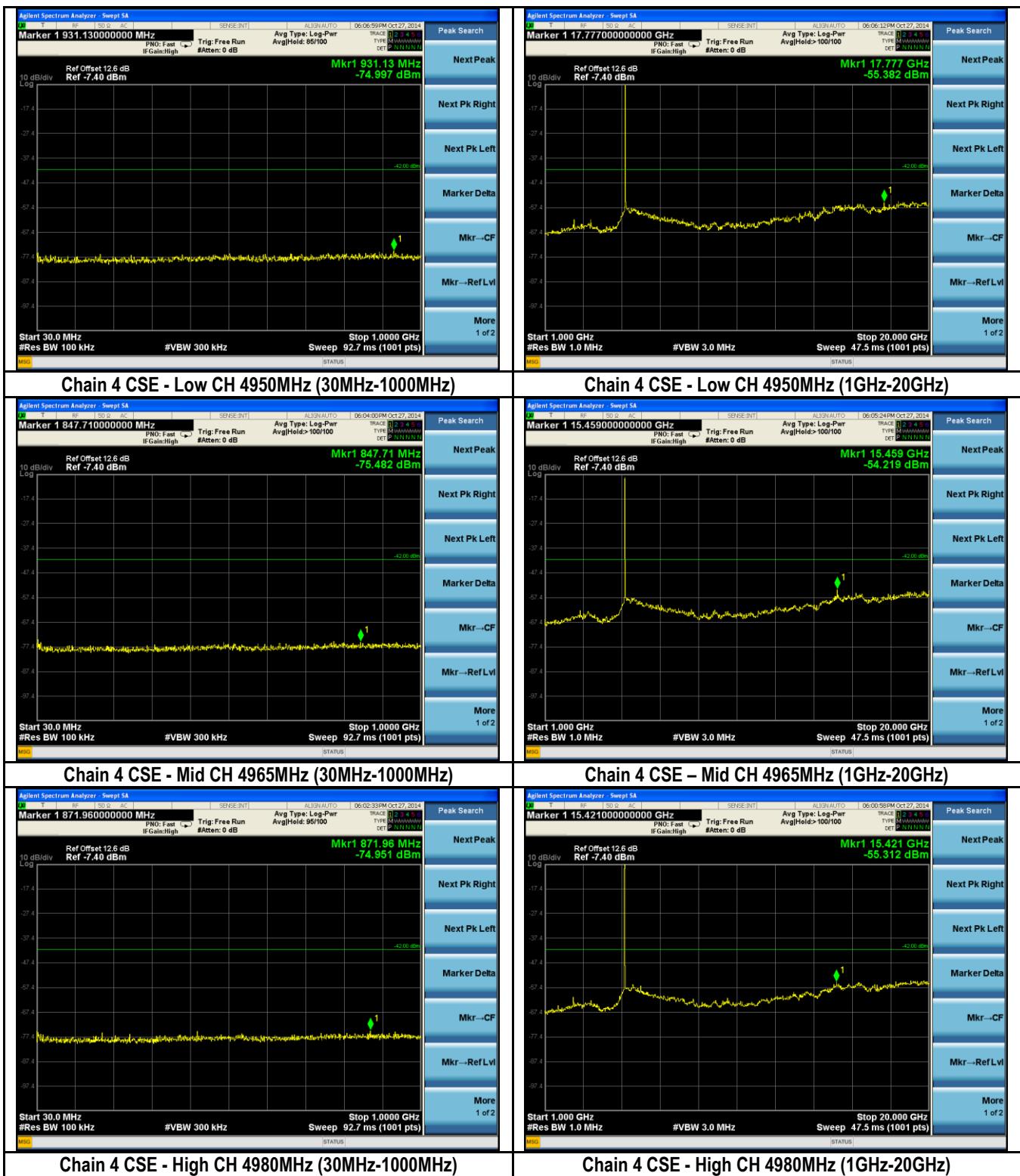


Conducted Spurious Emissions Test Plots (25dBi Antenna Gain)



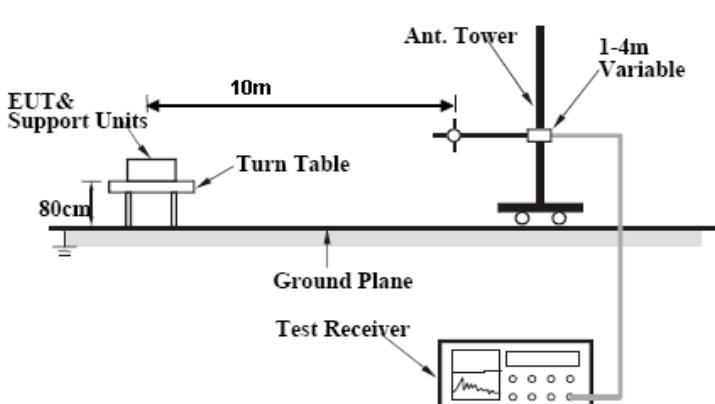






10.6 Radiated Spurious Emissions

Requirement(s):

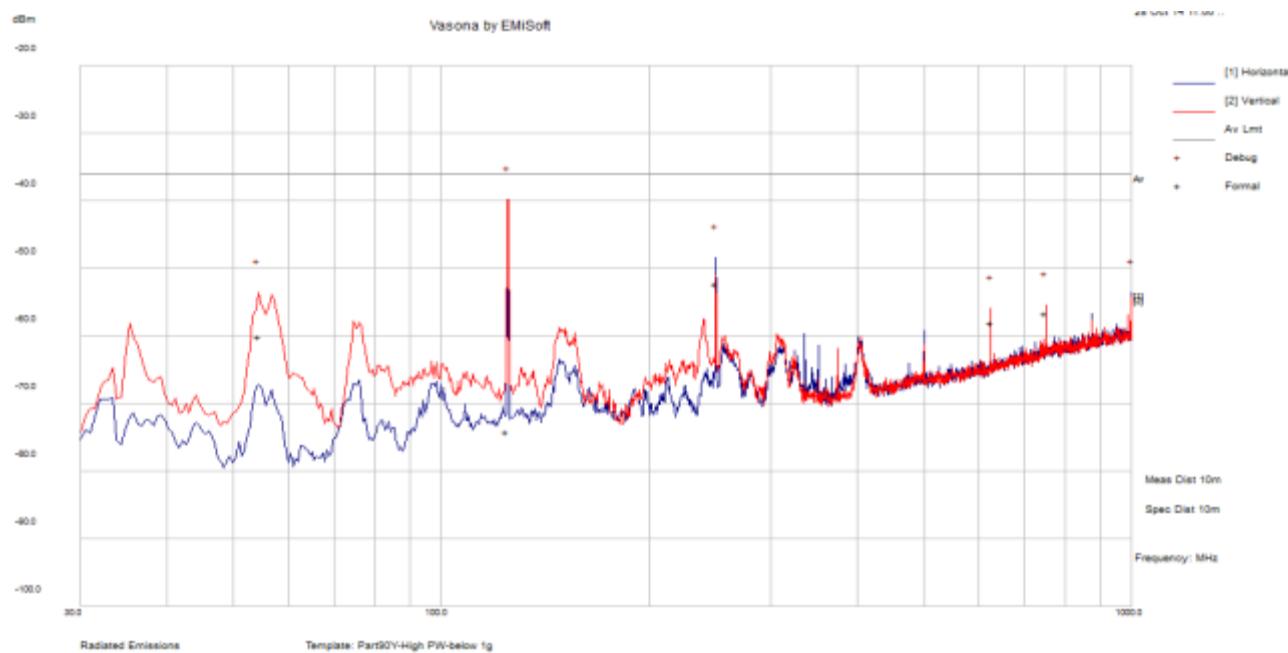
| Spec | Requirement | Applicable | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|--|---|---------------------|--|-----------------------|------------------------|-------------------|---|---|--------------------|--------------------|--------------------|--------------------|-------------------------|-------------------------|---------------------|------------------------|------------------------|----------------------|-------------------------|-------------------------|-------------|----|---|-------------------------------------|
| FCC §2.1053 FCC §90.210 | <p>For low power transmitters (20 dBm or less) and high power transmitters (greater than 20 dBm operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:</p> <table border="1"> <thead> <tr> <th rowspan="2">Frequency Offset f_d</th> <th colspan="2">Minimum Attenuation</th> </tr> <tr> <th>Low Power Transmitter</th> <th>High Power Transmitter</th> </tr> </thead> <tbody> <tr> <td>$0 < f_d \leq 45$</td> <td>0</td> <td>0</td> </tr> <tr> <td>$45 < f_d \leq 50$</td> <td>$219 \log(f_d/45)$</td> <td>$568 \log(f_d/45)$</td> </tr> <tr> <td>$50 < f_d \leq 55$</td> <td>$10 + 242 \log(f_d/50)$</td> <td>$26 + 145 \log(f_d/50)$</td> </tr> <tr> <td>$55 < f_d \leq 100$</td> <td>$20 + 31 \log(f_d/55)$</td> <td>$32 + 31 \log(f_d/55)$</td> </tr> <tr> <td>$100 < f_d \leq 150$</td> <td>$28 + 68 \log(f_d/100)$</td> <td>$40 + 57 \log(f_d/100)$</td> </tr> <tr> <td>$f_d > 150$</td> <td>40</td> <td>50 dB or $55 + 10 \log(P)$ dB, whichever is the lesser attenuation.</td> </tr> </tbody> </table> <p>f_d is the percentage of the equipment's channel bandwidth..</p> | Frequency Offset f_d | Minimum Attenuation | | Low Power Transmitter | High Power Transmitter | $0 < f_d \leq 45$ | 0 | 0 | $45 < f_d \leq 50$ | $219 \log(f_d/45)$ | $568 \log(f_d/45)$ | $50 < f_d \leq 55$ | $10 + 242 \log(f_d/50)$ | $26 + 145 \log(f_d/50)$ | $55 < f_d \leq 100$ | $20 + 31 \log(f_d/55)$ | $32 + 31 \log(f_d/55)$ | $100 < f_d \leq 150$ | $28 + 68 \log(f_d/100)$ | $40 + 57 \log(f_d/100)$ | $f_d > 150$ | 40 | 50 dB or $55 + 10 \log(P)$ dB, whichever is the lesser attenuation. | <input checked="" type="checkbox"/> |
| Frequency Offset f_d | Minimum Attenuation | | | | | | | | | | | | | | | | | | | | | | | | |
| | Low Power Transmitter | High Power Transmitter | | | | | | | | | | | | | | | | | | | | | | | |
| $0 < f_d \leq 45$ | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| $45 < f_d \leq 50$ | $219 \log(f_d/45)$ | $568 \log(f_d/45)$ | | | | | | | | | | | | | | | | | | | | | | | |
| $50 < f_d \leq 55$ | $10 + 242 \log(f_d/50)$ | $26 + 145 \log(f_d/50)$ | | | | | | | | | | | | | | | | | | | | | | | |
| $55 < f_d \leq 100$ | $20 + 31 \log(f_d/55)$ | $32 + 31 \log(f_d/55)$ | | | | | | | | | | | | | | | | | | | | | | | |
| $100 < f_d \leq 150$ | $28 + 68 \log(f_d/100)$ | $40 + 57 \log(f_d/100)$ | | | | | | | | | | | | | | | | | | | | | | | |
| $f_d > 150$ | 40 | 50 dB or $55 + 10 \log(P)$ dB, whichever is the lesser attenuation. | | | | | | | | | | | | | | | | | | | | | | | |
| Test Setup |  | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Procedure | <ol style="list-style-type: none"> The EUT was switched on and allowed to warm up to its normal operating condition. Measurement was made at a distance of 10 m. The measuring antenna was set to 1 meter away from the ground plain. Maximization of the emissions was carried out by rotating the EUT, and adjusting the antenna azimuth. The test was done in both horizontal and vertical antenna polarizations. The measurement shall be made with the transmitter set to the lowest operating frequency and with the transmitter set to the highest operating frequency | | | | | | | | | | | | | | | | | | | | | | | | |
| Remark | <p>Limit for the 0dBi antenna gain: -36 dBm Limit for the 25dBi antenna gain: -25dBm The EUT was tested with the chains transmitting at different bands (4.9GHz & 5GHz band) and channels at same time. All four chains will not operate in the 4.9GHz band simultaneously in actual use.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | | | | | | | | | | | | | | | | | | | | | | | | |

Test Data Yes N/A

Test Plot Yes (See below) N/A

Radiated Emission Test Results (Below 1GHz)

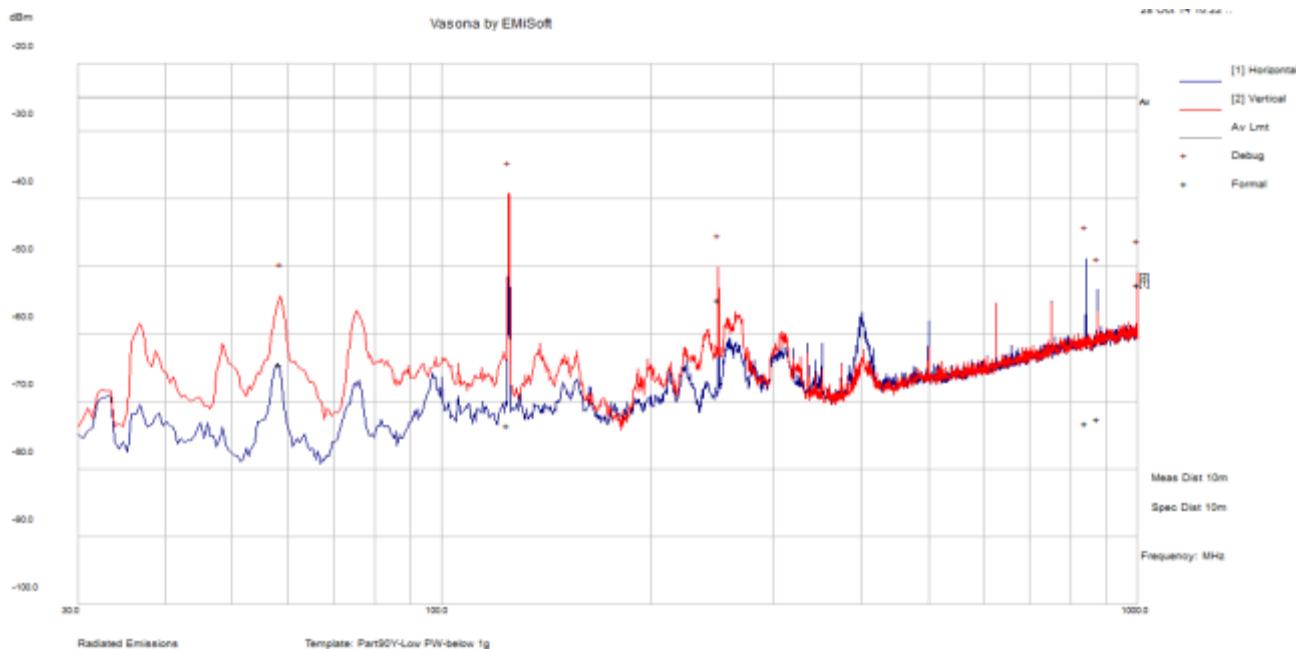
| Test specification | | Radiated Spurious Emissions | |
|---------------------------|---|-----------------------------|--------|
| Environmental Conditions: | Temp (°C): | 22 | Result |
| | Humidity (%) | 41 | |
| | Atmospheric (mbar): | 1021 | |
| Mains Power: | 120VAC/60Hz | | PASS |
| Tested by: | Angel Escamilla | | |
| Test Date: | 10/28/2014 | | |
| Remarks: | All chains transmitting simultaneously, 0dBi antenna gain | | |



30MHz – 1000MHz at 10m distance

| Frequency MHz | Raw dBm | Cable Loss | AF dB | Level dBm/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBm/m | Margin dB | Pass /Fail |
|---------------|---------|------------|--------|-------------|------------------|-----|--------|---------|-------------|-----------|------------|
| 249.95 | -49.15 | 24.97 | -28.14 | -52.31 | Average | H | 365.00 | 157.00 | -36.00 | -16.31 | Pass |
| 750.00 | -65.15 | 26.88 | -18.44 | -56.71 | Average | V | 400.00 | 106.00 | -36.00 | -20.71 | Pass |
| 625.00 | -64.17 | 26.46 | -20.36 | -58.07 | Average | V | 279.00 | 357.00 | -36.00 | -22.07 | Pass |
| 54.49 | -52.06 | 23.42 | -31.40 | -60.04 | Average | V | 214.00 | 331.00 | -36.00 | -24.04 | Pass |
| 1000.54 | -49.51 | 27.37 | -39.33 | -61.47 | Average | H | 106.00 | 79.00 | -36.00 | -25.47 | Pass |
| 124.44 | -72.48 | 24.24 | -25.93 | -74.16 | Average | V | 120.00 | 9.00 | -36.00 | -38.16 | Pass |

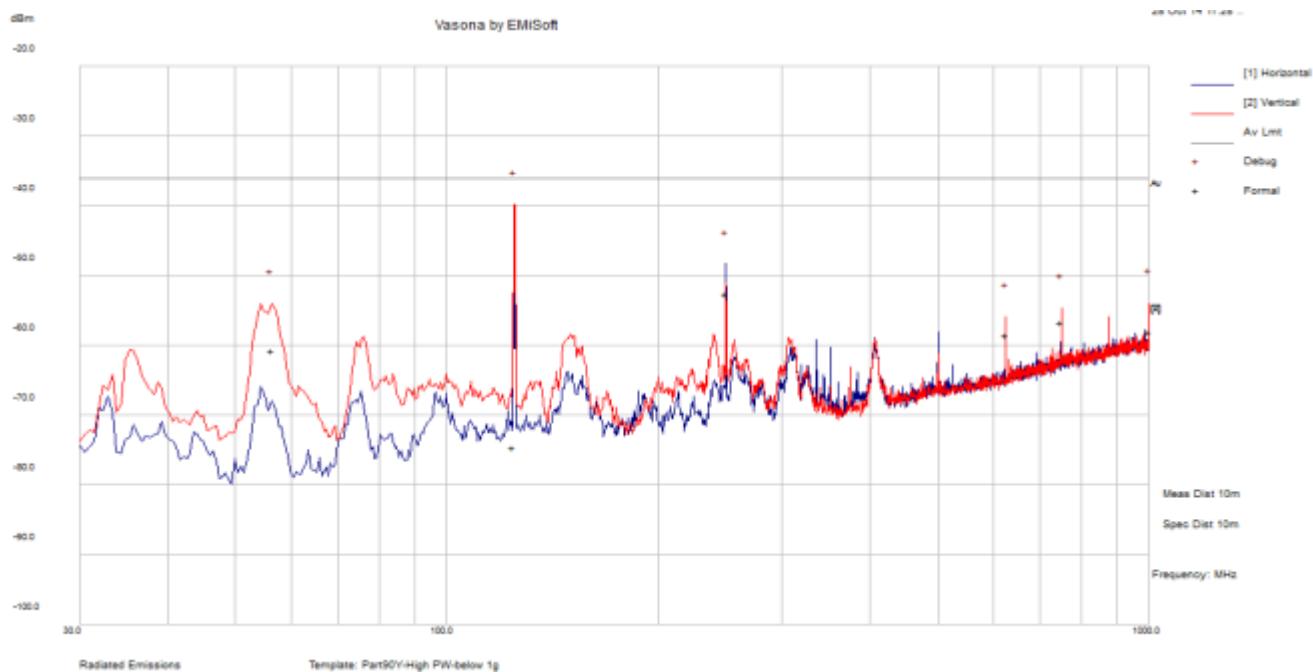
| Test specification | | Radiated Spurious Emissions | | |
|---------------------------|--|-----------------------------|--------|--|
| Environmental Conditions: | Temp (°C): | 23 | Result | |
| | Humidity (%) | 43 | | |
| | Atmospheric (mPa): | 1021 | | |
| Mains Power: | 120VAC/60Hz | | | |
| Tested by: | Angel Escamilla | | | |
| Test Date: | 10/28/2014 | | | |
| Remarks: | All chains transmitting simultaneously, 25dBi antenna gain | | | |



30MHz – 1000MHz at 10m distance

| Frequency MHz | Raw dBm | Cable Loss | AF dB | Level dBm/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBm/m | Margin dB | Pass /Fail |
|---------------|---------|------------|--------|-------------|------------------|-----|--------|---------|-------------|-----------|------------|
| 999.98 | -64.62 | 27.37 | -15.53 | -52.78 | Average | V | 195.00 | 305.00 | -25.00 | -27.78 | Pass |
| 249.95 | -51.78 | 24.97 | -28.14 | -54.94 | Average | V | 100.00 | 124.00 | -25.00 | -29.94 | Pass |
| 58.51 | -56.44 | 23.47 | -31.55 | -64.52 | Average | V | 122.00 | 112.00 | -25.00 | -39.52 | Pass |
| 875.21 | -82.73 | 27.16 | -17.04 | -72.60 | Average | H | 161.00 | 229.00 | -25.00 | -47.60 | Pass |
| 842.88 | -82.81 | 27.11 | -17.49 | -73.19 | Average | H | 193.00 | 142.00 | -25.00 | -48.19 | Pass |
| 124.49 | -71.87 | 24.24 | -25.92 | -73.55 | Average | V | 334.00 | 56.00 | -25.00 | -48.55 | Pass |

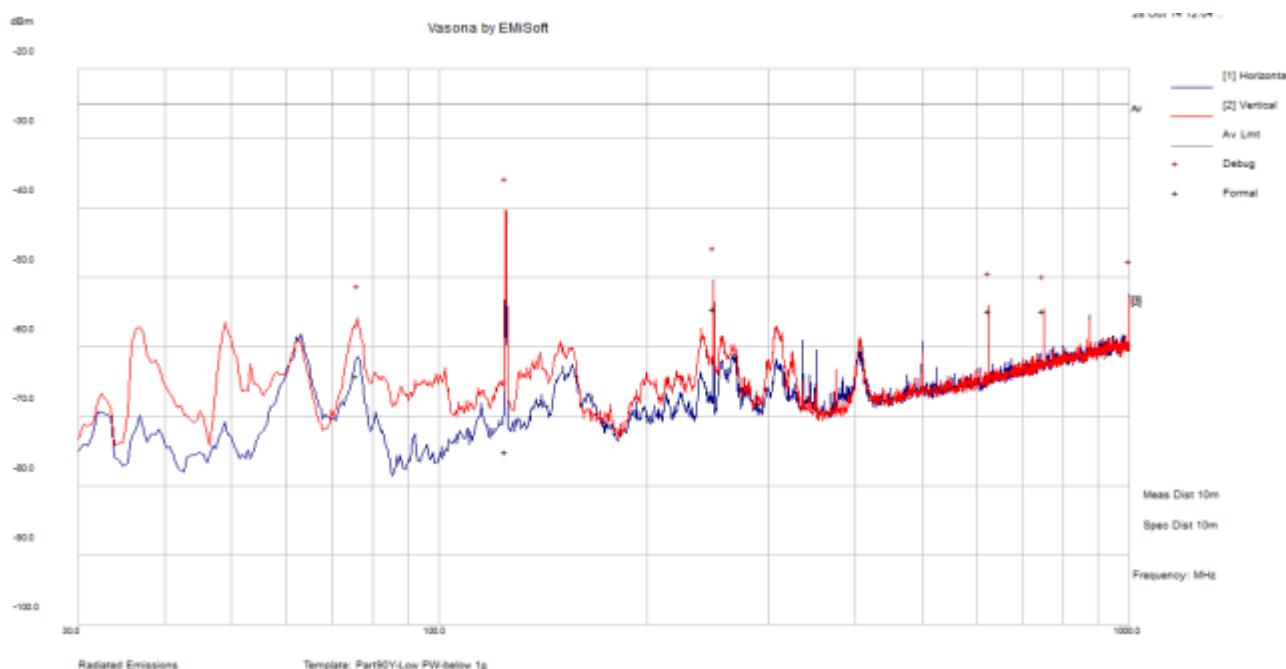
| Test specification | | Radiated Spurious Emissions | | | |
|---------------------------|--|-----------------------------|--------|------|--|
| Environmental Conditions: | Temp (°C): | 22 | Result | PASS | |
| | Humidity (%) | 41 | | | |
| | Atmospheric (mbar): | 1021 | | | |
| Mains Power: | 120VAC/60Hz | | | | |
| Tested by: | Angel Escamilla | | | | |
| Test Date: | 10/28/2014 | | | | |
| Remarks: | Chains 1 and 2 transmitting simultaneously at 4950MHz with 0dBi antenna Chains 3 and 4 transmitting simultaneously at 5165MHz with 0dBi antenna | | | | |



30MHz – 1000MHz at 10m distance

| Frequency MHz | Raw dBm | Cable Loss | AF dB | Level dBm/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBm/m | Margin dB | Pass /Fail |
|---------------|---------|------------|--------|-------------|------------------|-----|--------|---------|-------------|-----------|------------|
| 249.95 | -49.43 | 24.97 | -28.14 | -52.60 | Average | H | 245.00 | 157.00 | -36.00 | -16.60 | Pass |
| 750.00 | -65.12 | 26.88 | -18.44 | -56.69 | Average | V | 400.00 | 101.00 | -36.00 | -20.69 | Pass |
| 999.97 | -69.83 | 27.37 | -15.53 | -57.99 | Average | V | 185.00 | 294.00 | -36.00 | -21.99 | Pass |
| 625.01 | -64.55 | 26.46 | -20.35 | -58.44 | Average | V | 305.00 | 351.00 | -36.00 | -22.44 | Pass |
| 56.43 | -52.63 | 23.45 | -31.53 | -60.71 | Average | V | 159.00 | 124.00 | -36.00 | -24.71 | Pass |
| 124.43 | -73.00 | 24.24 | -25.93 | -74.68 | Average | V | 175.00 | 30.00 | -36.00 | -38.68 | Pass |

| Test specification | | Radiated Spurious Emissions | | |
|---------------------------|--|-----------------------------|------|--|
| Environmental Conditions: | | Temp (°C): | 23 | |
| | | Humidity (%) | 43 | |
| | | Atmospheric (mPa): | 1021 | |
| Mains Power: | 120VAC/60Hz | | | |
| Tested by: | Angel Escamilla | | | |
| Test Date: | 10/28/2014 | | | |
| Remarks: | Chains 1 and 2 transmitting simultaneously at 4950MHz with 25dBi antenna Chains 3 and 4 transmitting simultaneously at 5165MHz with 25dBi antenna | | | |



30MHz – 1000MHz at 10m distance

| Frequency MHz | Raw dBm | Cable Loss | AF dB | Level dBm/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBm/m | Margin dB | Pass /Fail |
|---------------|---------|------------|--------|-------------|------------------|-----|--------|---------|-------------|-----------|------------|
| 249.95 | -51.25 | 24.97 | -28.14 | -54.42 | Average | H | 338.00 | 292.00 | -25.00 | -29.42 | Pass |
| 625.01 | -60.81 | 26.46 | -20.35 | -54.71 | Average | V | 301.00 | 195.00 | -25.00 | -29.71 | Pass |
| 749.99 | -63.25 | 26.88 | -18.44 | -54.81 | Average | V | 228.00 | 317.00 | -25.00 | -29.81 | Pass |
| 1000.00 | -45.53 | 27.37 | -39.33 | -57.49 | Average | H | 229.00 | 215.00 | -25.00 | -32.49 | Pass |
| 75.87 | -56.52 | 23.66 | -31.29 | -64.16 | Average | V | 248.00 | 344.00 | -25.00 | -39.16 | Pass |
| 124.71 | -73.46 | 24.24 | -25.92 | -75.13 | Average | V | 247.00 | 335.00 | -25.00 | -50.13 | Pass |

Radiated Emission Test Results (1GHz-40GHz) – 0dBi Antenna

Chains 1 and 2 transmitting simultaneously at 4950MHz with 0dBi antenna, Chains 3 and 4 transmitting simultaneously at 4980MHz with 0dBi antenna

| Frequency MHz | Raw dBm | Cable Loss | AF dB | Level dBm/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBm/m | Margin dB | Pass /Fail |
|---------------|---|------------|-------|-------------|------------------|-----|--------|---------|-------------|-----------|------------|
| 7183.63 | -68.97 | 4.59 | 3.06 | -61.33 | Average | V | 100.00 | 45.00 | -36.00 | -25.33 | Pass |
| 9636.23 | -72.10 | 4.50 | 6.60 | -61.03 | Average | H | 100.00 | 41.00 | -36.00 | -25.00 | Pass |
| 14584.67 | -73.64 | 6.32 | 10.60 | -56.72 | Average | V | 200.00 | 54.00 | -36.00 | -20.72 | Pass |
| Remark | Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified. | | | | | | | | | | |

Chains 1 and 2 transmitting simultaneously at 4965MHz with 0dBi antenna, Chains 3 and 4 transmitting simultaneously at 4980MHz with 0dBi antenna

| Frequency MHz | Raw dBm | Cable Loss | AF dB | Level dBm/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBm/m | Margin dB | Pass /Fail |
|---------------|---|------------|-------|-------------|------------------|-----|--------|---------|-------------|-----------|------------|
| 8775.61 | -71.30 | 4.30 | 5.60 | -61.45 | Average | H | 100.00 | 3.00 | -36.00 | -25.50 | Pass |
| 9499.98 | -71.71 | 4.47 | 6.58 | -60.66 | Average | V | 100.00 | 15.00 | -36.00 | -24.66 | Pass |
| 14167.34 | -73.71 | 6.15 | 10.33 | -57.23 | Average | V | 200.00 | 34.23 | -36.00 | -21.23 | Pass |
| Remark | Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified. | | | | | | | | | | |

Chains 1 and 2 transmitting simultaneously at 4965MHz with 0dBi antenna, Chains 3 and 4 transmitting simultaneously at 5165MHz with 0dBi antenna

| Frequency MHz | Raw dBm | Cable Loss | AF dB | Level dBm/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBm/m | Margin dB | Pass /Fail |
|---------------|---|------------|-------|-------------|------------------|-----|--------|---------|-------------|-----------|------------|
| 8784.82 | -71.04 | 4.25 | 5.56 | -61.23 | Average | V | 100.00 | 21.00 | -36.00 | -25.23 | Pass |
| 14269.54 | -73.81 | 6.19 | 10.53 | -57.09 | Average | V | 200.00 | 32.00 | -36.00 | -21.09 | Pass |
| 17753.01 | -76.68 | 6.59 | 13.63 | -56.46 | Average | H | 100.00 | 353.00 | -36.00 | -20.46 | Pass |
| Remark | Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified. | | | | | | | | | | |

Radiated Emission Test Results (1GHz-40GHz) – 25dBi Antenna

Chains 1 and 2 transmitting simultaneously at 4950MHz with 25dBi antenna, Chains 3 and 4 transmitting simultaneously at 4980MHz with 25dBi antenna

| Frequency MHz | Raw dBm | Cable Loss | AF dB | Level dBm/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBm/m | Margin dB | Pass /Fail |
|---------------|---|------------|-------|-------------|------------------|-----|--------|---------|-------------|-----------|------------|
| 6444.57 | -67.94 | 4.25 | 2.10 | -61.59 | Average | V | 100.00 | 13.00 | -25.00 | -36.59 | Pass |
| 9771.93 | -72.44 | 4.57 | 6.61 | -61.26 | Average | V | 100.00 | 4.00 | -25.00 | -36.26 | Pass |
| 14033.98 | -74.59 | 6.10 | 10.07 | -58.43 | Average | V | 100.00 | 21.00 | -25.00 | -33.43 | Pass |
| Remark | Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified. | | | | | | | | | | |

Chains 1 and 2 transmitting simultaneously at 4965MHz with 25dBi antenna, Chains 3 and 4 transmitting simultaneously at 4980MHz with 25dBi antenna

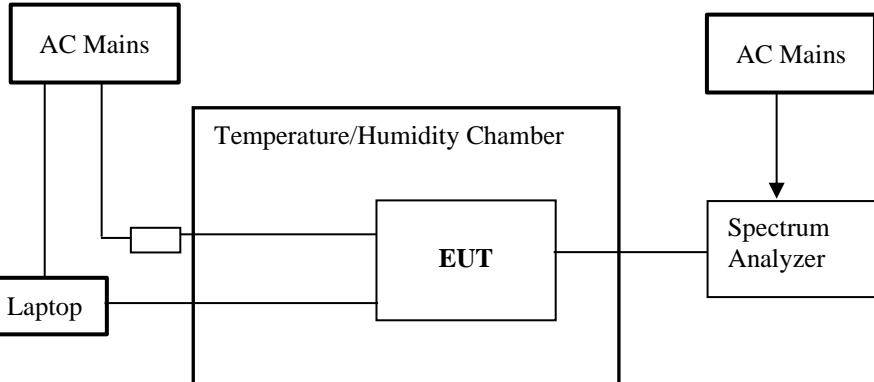
| Frequency MHz | Raw dBm | Cable Loss | AF dB | Level dBm/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBm/m | Margin dB | Pass /Fail |
|---------------|---|------------|-------|-------------|------------------|-----|--------|---------|-------------|-----------|------------|
| 6960.15 | -68.64 | 4.65 | 2.67 | -61.32 | Average | H | 100.00 | 23.00 | -25.00 | -36.32 | Pass |
| 9593.69 | -72.41 | 4.51 | 6.59 | -61.31 | Average | V | 100.00 | 53.00 | -25.00 | -36.31 | Pass |
| 14039.71 | -73.70 | 6.10 | 10.08 | -57.52 | Average | V | 100.00 | 3.00 | -25.00 | -32.52 | Pass |
| Remark | Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified. | | | | | | | | | | |

Chains 1 and 2 transmitting simultaneously at 4965MHz with 25dBi antenna, Chains 3 and 4 transmitting simultaneously at 5165MHz with 25dBi antenna

| Frequency MHz | Raw dBm | Cable Loss | AF dB | Level dBm/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBm/m | Margin dB | Pass /Fail |
|---------------|---|------------|-------|-------------|------------------|-----|--------|---------|-------------|-----------|------------|
| 6979.79 | -68.60 | 4.70 | 2.70 | -61.26 | Average | H | 100.00 | 312.00 | -25.00 | -36.30 | Pass |
| 8764.98 | -71.14 | 4.25 | 5.56 | -61.33 | Average | V | 100.00 | 234.00 | -25.00 | -36.33 | Pass |
| 14005.59 | -73.42 | 6.08 | 10.01 | -57.33 | Average | V | 100.00 | 353.00 | -25.00 | -32.33 | Pass |
| Remark | Emissions were scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit. Both horizontal and vertical polarizations were verified. | | | | | | | | | | |

10.7 Frequency Stability

Requirement(s):

| Spec | Requirement | Applicable |
|----------------------------|--|-------------------------------------|
| FCC §2.1055 FCC §90.213 | The test shall be performed at normal and extreme test conditions. From -30°C to +50°C and vary the primary supply voltage from 85% to 115% of the nominal value. | <input checked="" type="checkbox"/> |
| Test Setup |  <p>The diagram illustrates the test setup. On the left, two AC Mains outlets are shown. One outlet connects to a Laptop, which is connected to a Temperature/Humidity Chamber. The other outlet connects to the EUT (Equipment Under Test), which is also connected to the chamber. The EUT is further connected to a Spectrum Analyzer on the right.</p> | |
| Test Procedure | <ul style="list-style-type: none"> - The EUT was switched on and allowed to warm up to its normal operating condition. - The EUT output was connected to a spectrum analyser and the frequency stability was measured. - Measurements were taken after a thermal balance was obtained. - Normal and extreme test conditions were measured | |
| Test Data | 10/29/2014 | |
| Remark | - | |
| Result | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |

Test Data Yes N/A

Test Plot Yes (See below) N/A

Test Results

Temperature Vs Frequency Stability: Low Channel

| Temperature (°C) | Center Frequency (MHz) | Measured Frequency (MHz) | Deviation (ppm) |
|------------------|------------------------|--------------------------|-----------------|
| 50 | 4950.00 | 4949.9571 | 8.67 |
| 40 | 4950.00 | 4949.9548 | 9.14 |
| 30 | 4950.00 | 4949.9652 | 7.04 |
| 20 | 4950.00 | 4949.9678 | 6.51 |
| 10 | 4950.00 | 4949.9703 | 6.01 |
| 0 | 4950.00 | 4949.9689 | 6.29 |
| -10 | 4950.00 | 4949.9600 | 8.09 |
| -20 | 4950.00 | 4949.9615 | 7.77 |
| -30 | 4950.00 | 4949.9586 | 8.35 |

Voltage Vs Frequency Stability: Low Channel

| Voltage (AC) | Center Frequency (MHz) | Measured Frequency (MHz) | Deviation (ppm) |
|--------------|------------------------|--------------------------|-----------------|
| 138 | 4950.00 | 4949.9634 | 7.40 |
| 120 | 4950.00 | 4949.9678 | 6.51 |
| 102 | 4950.00 | 4949.9856 | 2.92 |

Temperature Vs Frequency Stability: Middle Channel

| Temperature (°C) | Center Frequency (MHz) | Measured Frequency (MHz) | Deviation (ppm) |
|------------------|------------------------|--------------------------|-----------------|
| 50 | 4965.00 | 4964.9839 | 3.24 |
| 40 | 4965.00 | 4964.9766 | 4.70 |
| 30 | 4965.00 | 4964.9853 | 2.97 |
| 20 | 4965.00 | 4964.9975 | 0.50 |
| 10 | 4965.00 | 4965.0413 | 8.33 |
| 0 | 4965.00 | 4965.0154 | 3.09 |
| -10 | 4965.00 | 4964.9548 | 9.11 |
| -20 | 4965.00 | 4964.9581 | 8.44 |
| -30 | 4965.00 | 4965.0401 | 8.08 |

Voltage Vs Frequency Stability: Middle Channel

| Voltage (AC) | Center Frequency (MHz) | Measured Frequency (MHz) | Deviation (ppm) |
|--------------|------------------------|--------------------------|-----------------|
| 138 | 4965.00 | 4965.0193 | 3.90 |
| 120 | 4965.00 | 4964.9975 | 0.50 |
| 102 | 4965.00 | 4965.0149 | 2.99 |

Temperature Vs Frequency Stability: High Channel

| Temperature (°C) | Center Frequency (MHz) | Measured Frequency (MHz) | Deviation (ppm) |
|------------------|------------------------|--------------------------|-----------------|
| 50 | 4980.00 | 4980.0165 | -3.30 |
| 40 | 4980.00 | 4980.0269 | -5.39 |
| 30 | 4980.00 | 4979.9646 | 7.10 |
| 20 | 4980.00 | 4979.9556 | 8.92 |
| 10 | 4980.00 | 4979.9716 | 5.70 |
| 0 | 4980.00 | 4979.9596 | 8.11 |
| -10 | 4980.00 | 4979.9759 | 4.85 |
| -20 | 4980.00 | 4979.9551 | 9.03 |
| -30 | 4980.00 | 4979.9529 | 9.46 |

Voltage Vs Frequency Stability: High Channel

| Voltage (AC) | Center Frequency (MHz) | Measured Frequency (MHz) | Deviation (ppm) |
|--------------|------------------------|--------------------------|-----------------|
| 138 | 4980.00 | 4979.9834 | 3.34 |
| 120 | 4980.00 | 4979.9556 | 8.92 |
| 102 | 4980.00 | 4979.9657 | 6.90 |

Annex A. TEST INSTRUMENT

| Instrument | Model | Serial # | Cal Date | Cal Cycle | Cal Due | In use |
|---|----------|---------------|------------|-----------|------------|-------------------------------------|
| Radiated Unwanted Emissions | | | | | | |
| R & S Receiver | ESL6 | 100178 | 03/01/2014 | 1 Year | 03/01/2015 | <input checked="" type="checkbox"/> |
| R & S Receiver | ESIB 40 | 100179 | 05/24/2014 | 1 Year | 05/24/2015 | <input checked="" type="checkbox"/> |
| ETS-Lingren Loop Antenna | 6512 | 00049120 | 08/22/2014 | 1 Year | 08/22/2015 | <input type="checkbox"/> |
| Bi-Log antenna (30MHz~2GHz) | JB1 | A030702 | 08/12/2014 | 1 Year | 08/12/2015 | <input checked="" type="checkbox"/> |
| Horn Antenna (1-26.5GHz) | 3115 | 10SL0059 | 04/26/2014 | 1 Year | 04/26/2015 | <input checked="" type="checkbox"/> |
| Horn Antenna (18-40 GHz) | AH-840 | 101013 | 04/23/2014 | 1 Year | 04/23/2015 | <input checked="" type="checkbox"/> |
| Pre-Amplifier (1-26.5GHz) | 8449B | 3008A00715 | 05/30/2014 | 1 Year | 05/30/2015 | <input checked="" type="checkbox"/> |
| Microwave Preamplifier (18-40 GHz) | PA-840 | 181251 | 05/30/2014 | 1 Year | 05/30/2015 | <input checked="" type="checkbox"/> |
| 3 Meters SAC | 3M | N/A | 10/13/2014 | 1 Year | 10/13/2015 | <input type="checkbox"/> |
| 10 Meters SAC | 10M | N/A | 06/05/2014 | 1 Year | 06/05/2015 | <input checked="" type="checkbox"/> |
| Sekonic Hygro Hermograph | ST-50 | HE01-000092 | 05/25/2014 | 1 Year | 05/25/2015 | <input checked="" type="checkbox"/> |
| RF Conducted Measurements | | | | | | |
| Spectrum Analyzer | N9010A | MY50210206 | 08/13/2014 | 1 Year | 08/13/2015 | <input checked="" type="checkbox"/> |
| Spectrum Analyzer | E4407B | US88441016 | 05/31/2014 | 1 Year | 05/31/2015 | <input type="checkbox"/> |
| R & S Receiver | ESIB 40 | 100179 | 05/24/2014 | 1 Year | 05/24/2015 | <input checked="" type="checkbox"/> |
| RF Power Sensor | 7002-006 | 13I00030SNO82 | 08/01/2014 | 1 Year | 08/01/2015 | <input checked="" type="checkbox"/> |
| Frequency Stability Measurements | | | | | | |
| Spectrum Analyzer | 8564E | 3738A00962 | 09/04/2014 | 1 Year | 09/04/2015 | <input checked="" type="checkbox"/> |
| Test Equity Environment Chamber | 1007H | 61201 | 07/30/2014 | 1 Year | 07/30/2015 | <input checked="" type="checkbox"/> |

Annex B. SIEMIC Accreditation

| Accreditations | Document | Scope / Remark |
|---|--|---|
| ISO 17025 (A2LA) |  | Please see the documents for the detailed scope |
| ISO Guide 65 (A2LA) |  | Please see the documents for the detailed scope |
| TCB Designation | | A1, A2, A3, A4, B1, B2, B3, B4, C |
| FCC DoC Accreditation |  | FCC Declaration of Conformity Accreditation |
| FCC Site Registration |  | 3 meter site |
| FCC Site Registration |  | 10 meter site |
| IC Site Registration |  | 3 meter site |
| IC Site Registration |  | 10 meter site |
| EU NB |  | Radio & Telecommunications Terminal Equipment: EN45001 – EN ISO/IEC 17025 |
| |  | Electromagnetic Compatibility: EN45001 – EN ISO/IEC 17025 |
| Singapore iDA CB(Certification Body) |   | Phase I, Phase II |
| Vietnam MIC CAB Accreditation |  | Please see the document for the detailed scope |
| Hong Kong OFCA |  | (Phase II) OFCA Foreign Certification Body for Radio and Telecom |
| |  | (Phase I) Conformity Assessment Body for Radio and Telecom |
| Industry Canada CAB |  | Radio: Scope A – All Radio Standard Specification in Category I |
| |  | Telecom: CS-03 Part I, II, V, VI, VII, VIII |

| | | |
|---|---|--|
| Japan Recognized Certification Body Designation |  | <p>Radio: A1. Terminal equipment for purpose of calling</p> <p>Telecom: B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law</p> |
| Korea CAB Accreditation |  | <p>EMI: KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI</p> <p>EMS: KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS</p> <p>Radio: RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68</p> <p>Telecom: President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4</p> |
| Taiwan NCC CAB Recognition |  | LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08 |
| Taiwan BSMI CAB Recognition |  | CNS 13438 |
| Japan VCCI |  | R-3083: Radiation 3 meter site C-3421: Main Ports Conducted Interference Measurement T-1597: Telecommunication Ports Conducted Interference Measurement |
| Australia CAB Recognition |  | <p>EMC: AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4</p> <p>Radio-communications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771</p> <p>Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06 AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1</p> |
| Australia NATA Recognition |  | AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016, AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2 |