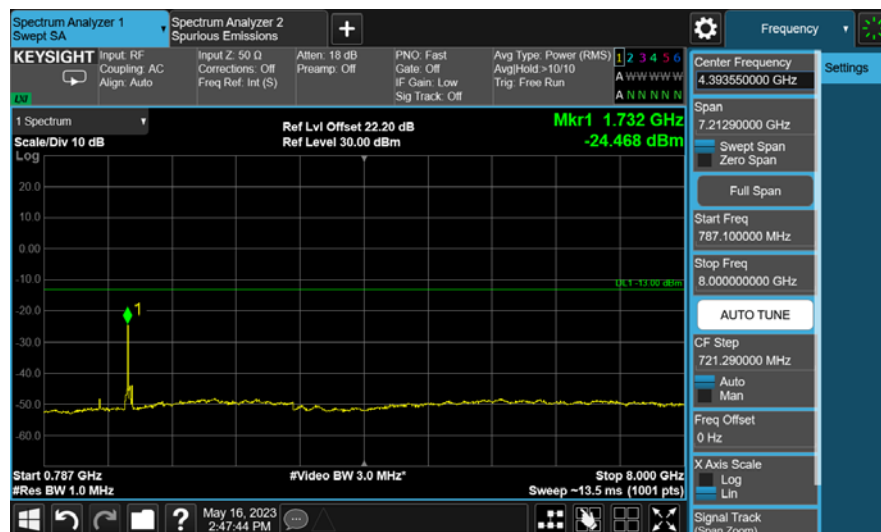
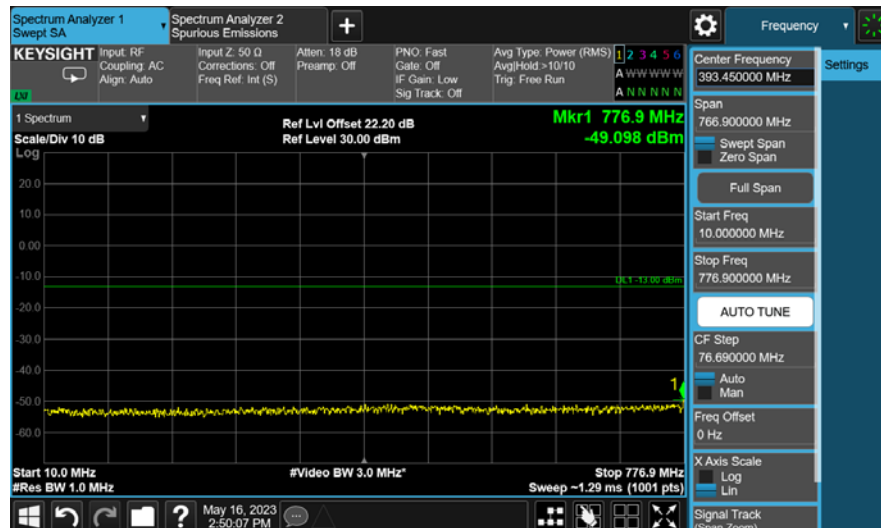


Conducted spurious emissions

UL_Upper 700MHz Band



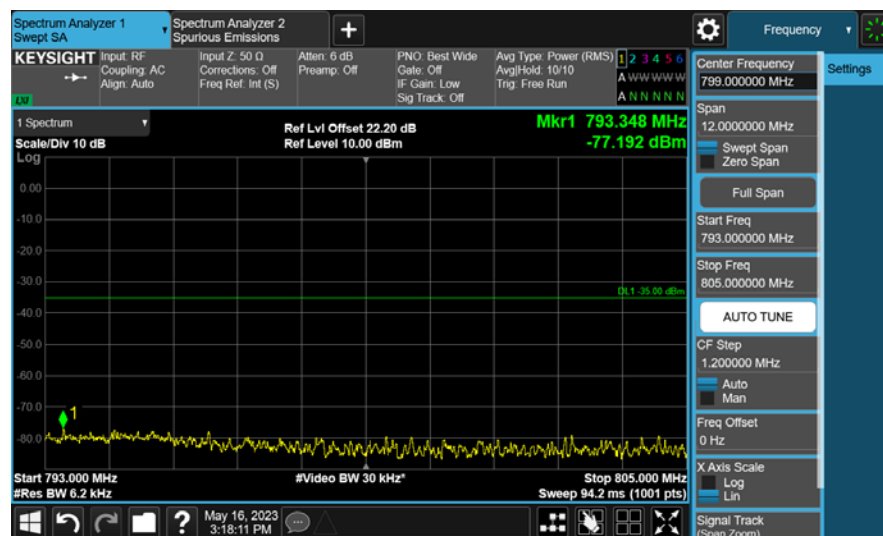
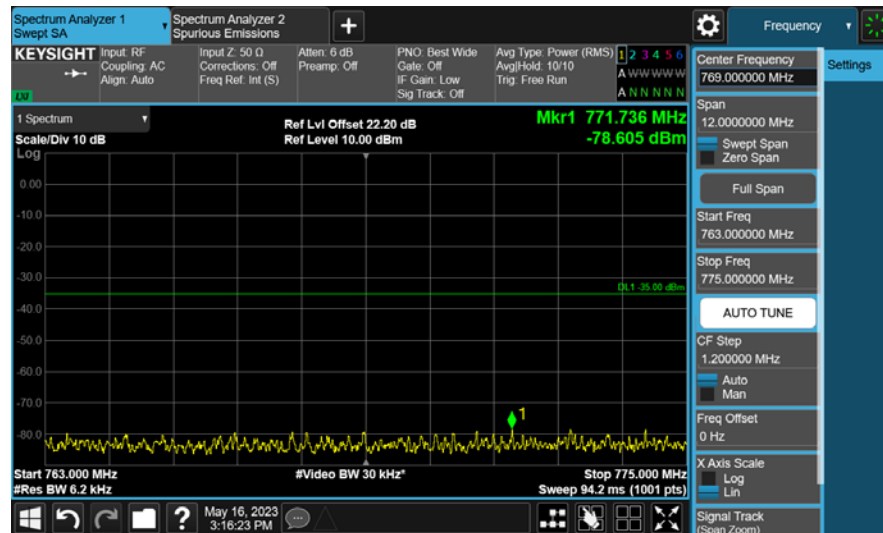
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Conducted spurious emissions

UL_Upper 700MHz Band



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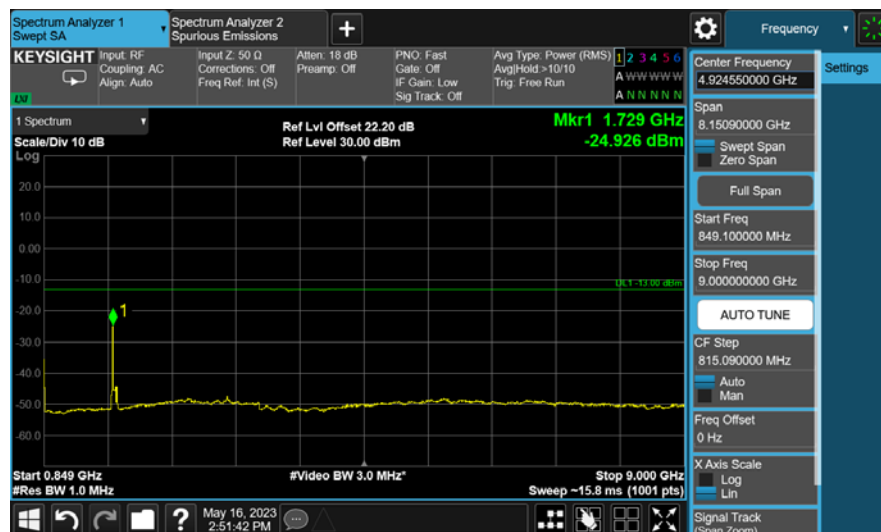
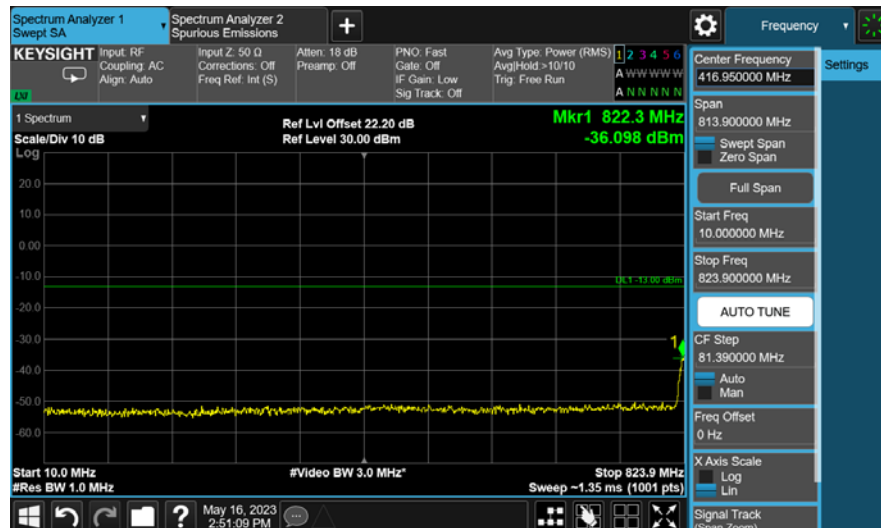
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Conducted spurious emissions

UL_Cellular Band

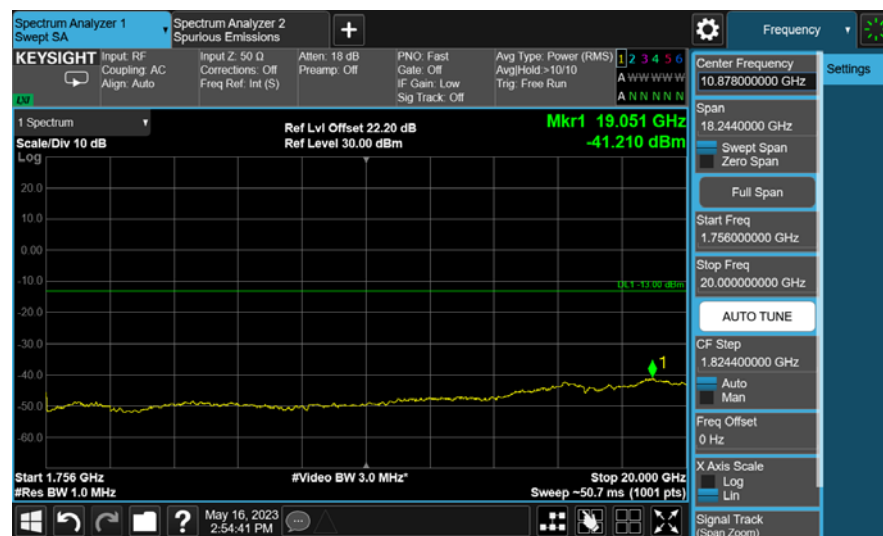
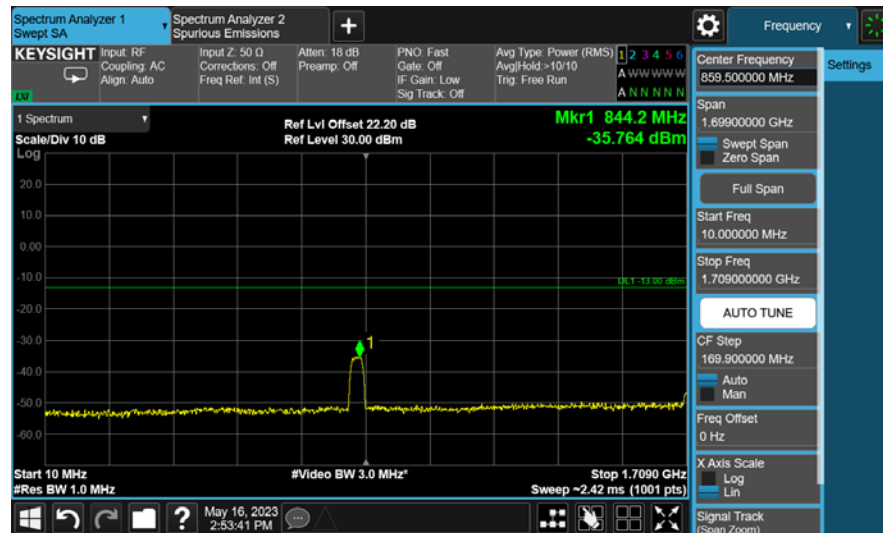


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Conducted spurious emissions

UL_AWS-1 Band

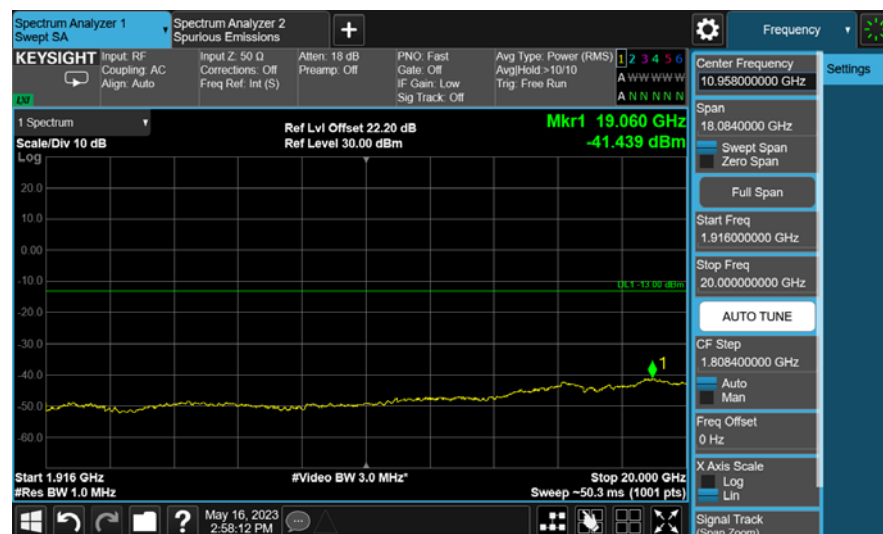
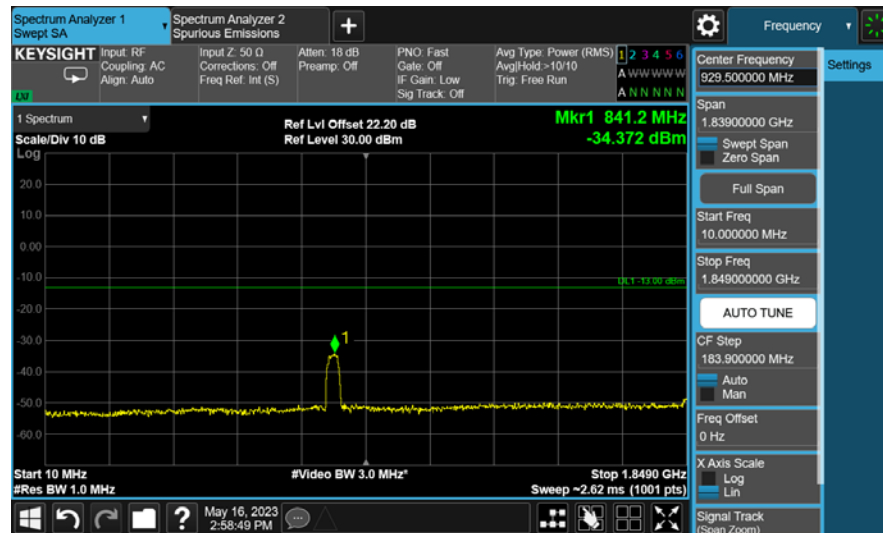


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Conducted spurious emissions

UL_Broadband PCS Band



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8 Noise

8.1 Maximum transmitter noise power level

20.21(e)(9)(i)(A) Noise Limits:

Fixed booster maximum downlink noise power shall not exceed $-102.5\text{dBm/MHz} + 20 \log_{10}(\text{Frequency})$, where Frequency is the uplink mid-band frequency of the supported spectrum bands in MHz.

| Band | Uplink mid-band frequency (MHz) | Maximum downlink noise limit (dBm/MHz) |
|---------------|---------------------------------|--|
| Lower 700MHz | 707 | ≤ -45.5 |
| Upper 700MHz | 782 | ≤ -44.6 |
| Cellular | 836.5 | ≤ -44.0 |
| AWS-1 | 1882.5 | ≤ -37.7 |
| Broadband PCS | 1732.5 | ≤ -37.0 |

| Maximum transmitter noise power level | | | | |
|---------------------------------------|---------------|-----------------------|-----------------|---------|
| Path | Band | Noise Level (dBm/MHz) | Limit (dBm/MHz) | Verdict |
| DL | Lower 700MHz | -51.61 | ≤ -45.5 | PASS |
| | Upper 700MHz | -51.61 | ≤ -44.6 | PASS |
| | Cellular | -54.39 | ≤ -44.0 | PASS |
| | AWS-1 | -53.15 | ≤ -37.7 | PASS |
| | Broadband PCS | -52.64 | ≤ -37.0 | PASS |

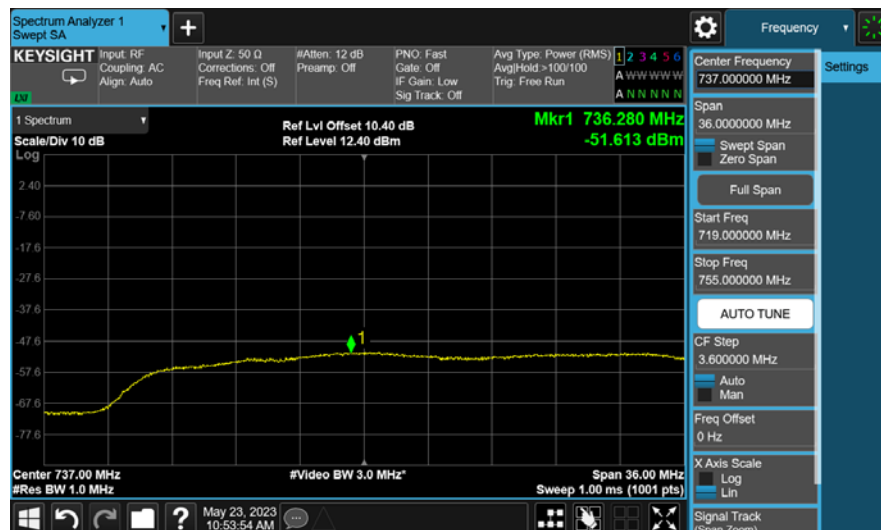


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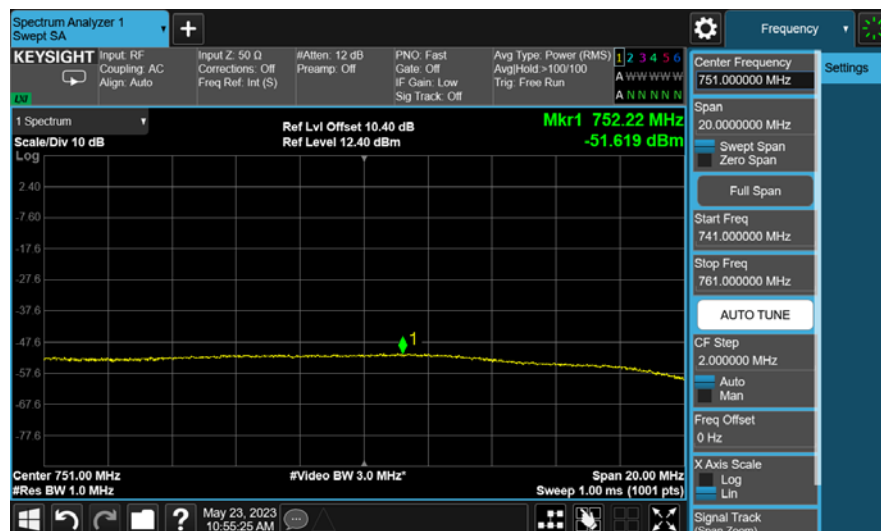
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Maximum transmitter Noise Power Level

DL_Lower 700MHz Band



DL_Upper 700MHz Band



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Maximum transmitter Noise Power Level

DL_Cellular Band



DL_AWS-1 Band

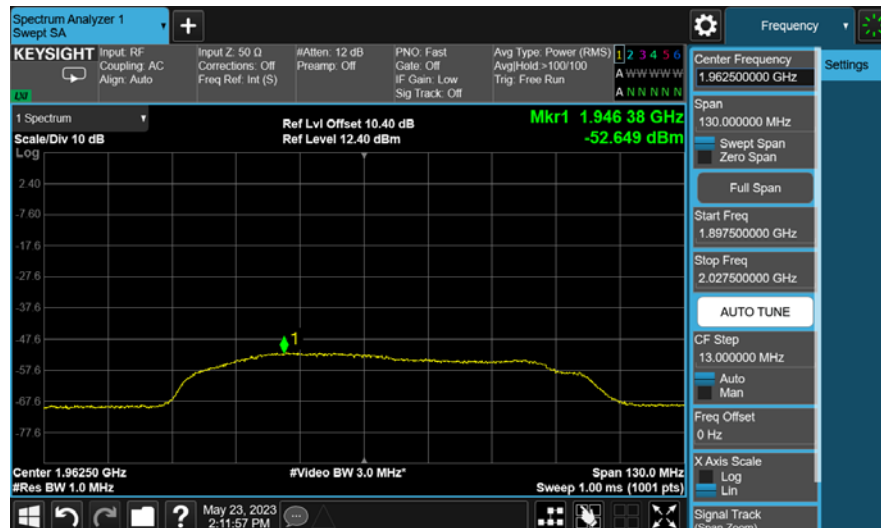


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Maximum transmitter Noise Power Level

DL_Broadband PCS Band



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8.2 RSSI-dependent noise power level

20.21(e)(9)(i)(A) Noise Limits:

The transmitted noise power shall not exceed $-103 \text{ dBm/MHz-RSSI}$. Boosters with MSCL less than 40 dB, shall reduce the Noise output in (A) by 40 dB-MSCL, where MSCL is the minimum coupling loss in dB between the wireless device and booster's server port.

According to appendix B and the declaration from the manufacturer, the Lowest MSCL values for each band were calculated as follows:

| Band | f (MHz) | d (m) | Service ANT Gain (dBi) | Cable Loss (dB) | MSCL (dB) |
|---------------|---------|-------|------------------------|-----------------|-----------|
| Lower 700MHz | 698 | 1 | 4 | 0 | 25.3 |
| Upper 700MHz | 777 | 1 | 4 | 0 | 26.3 |
| Cellular | 824 | 1 | 4 | 0 | 26.8 |
| AWS-1 | 1710 | 1 | 4 | 0 | 33.1 |
| Broadband PCS | 1850 | 1 | 4 | 0 | 33.8 |

Therefore, the transmitted noise power shall not exceed $-103 \text{ dBm/MHz-RSSI}-(40\text{-MSCL})$

20.21(e)(9)(i)(I) Transmit Power Off Mode:

The uplink and downlink noise power shall not exceed -70 dBm/MHz in "Transmit Power OFF Mode".

KDB 935210 D04 appendix D figure D1 provider-specific consumer signal booster variable noise limits:

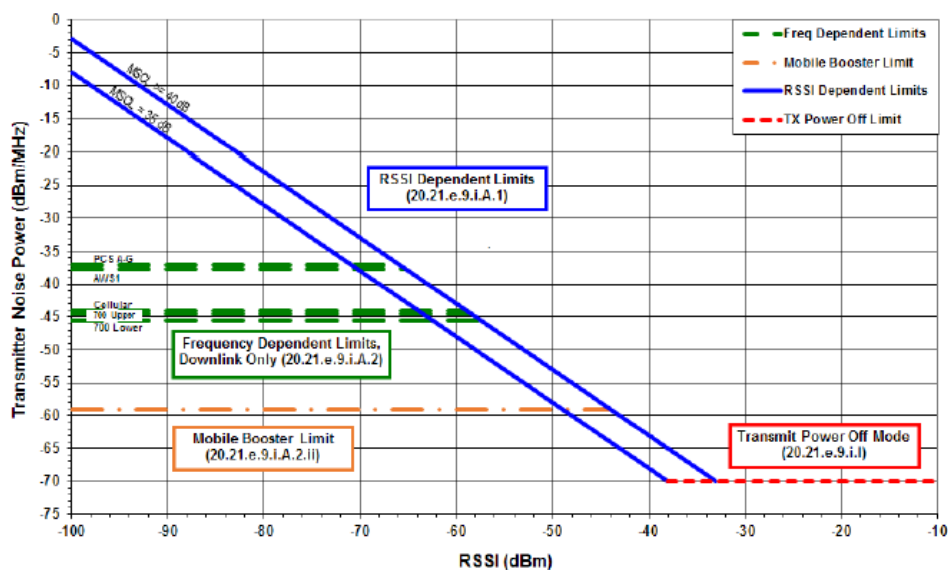


Figure D1 – Provider-specific consumer signal booster variable noise limits

Therefore, the RSSI-dependent region can be calculated:

| Band | RSSI-dependent region |
|---------------|-----------------------|
| Lower 700MHz | -72.2 to -47.7 dBm |
| Upper 700MHz | -72.1 to -46.7 dBm |
| Cellular | -72.2 to -46.2 dBm |
| AWS-1 | -72.2 to -39.9 dBm |
| Broadband PCS | -72.2 to -39.2 dBm |



| RSSI-dependent noise power level | | | | | |
|----------------------------------|--------------|------------|-----------------------|-------------------|---------|
| Path | Band | RSSI (dBm) | Noise Level (dBm/MHz) | Limit (dBm/MHz) | Verdict |
| DL | Lower 700MHz | -80 | -51.61 | ≤-45.5 | PASS |
| | | -70 | -53.24 | ≤-47.7 | PASS |
| | | -63 | -58.10 | ≤-54.7 | PASS |
| | | -55 | -65.26 | ≤-62.7 | PASS |
| | | -52 | -68.85 | ≤-65.7 | PASS |
| | | -47 | -73.27 | ≤-70 | PASS |
| | Upper 700MHz | -90 | -51.61 | ≤-44.6 | PASS |
| | | -80 | -55.35 | ≤-44.6 | PASS |
| | | -67 | -57.82 | ≤-49.7 | PASS |
| | | -58 | -62.12 | ≤-58.7 | PASS |
| | | -51 | -67.46 | ≤-65.7 | PASS |
| | | -46 | -72.21 | ≤-70 ¹ | PASS |
| | Cellular | -90 | -54.39 | ≤-44.0 | PASS |
| | | -80 | -55.11 | ≤-44.0 | PASS |
| | | -69 | -58.83 | ≤-47.2 | PASS |
| | | -63 | -61.02 | ≤-53.2 | PASS |
| | | -51 | -63.32 | ≤-65.2 | PASS |
| | | -46 | -74.14 | ≤-70 | PASS |
| | AWS-1 | -80 | -53.15 | ≤-37.7 | PASS |
| | | -71 | -54.32 | ≤-38.9 | PASS |
| | | -64 | -55.74 | ≤-45.9 | PASS |
| | | -53 | -59.37 | ≤-56.9 | PASS |
| | | -42 | -69.63 | ≤-67.9 | PASS |
| | | -39 | -74.32 | ≤-70 | PASS |



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| RSSI-dependent noise power level | | | | | |
|----------------------------------|---------------|------------|-----------------------|-----------------|---------|
| Path | Band | RSSI (dBm) | Noise Level (dBm/MHz) | Limit (dBm/MHz) | Verdict |
| DL | Broadband PCS | -80 | -52.64 | ≤-37.0 | PASS |
| | | -68 | -53.00 | ≤-41.2 | PASS |
| | | -62 | -54.37 | ≤-47.2 | PASS |
| | | -59 | -58.93 | ≤-50.2 | PASS |
| | | -55 | -62.18 | ≤-54.2 | PASS |
| | | -39 | -73.72 | ≤-70 | PASS |
| UL | Lower 700MHz | -90 | -47.27 | ≤-45.5 | PASS |
| | | -80 | -48.37 | ≤-45.5 | PASS |
| | | -68 | -52.28 | ≤-49.7 | PASS |
| | | -56 | -63.47 | ≤-61.7 | PASS |
| | | -54 | -69.43 | ≤-63.7 | PASS |
| | | -47 | -87.14 | ≤-70 | PASS |
| | Upper 700MHz | -90 | -49.38 | ≤-44.6 | PASS |
| | | -80 | -53.21 | ≤-44.6 | PASS |
| | | -71 | -55.74 | ≤-45.7 | PASS |
| | | -59 | -61.22 | ≤-57.7 | PASS |
| | | -49 | -64.38 | ≤-67.7 | PASS |
| | | -46 | -89.83 | ≤-70 | PASS |
| | Cellular | -90 | -45.12 | ≤-44.0 | PASS |
| | | -80 | -48.32 | ≤-44.0 | PASS |
| | | -70 | -51.23 | ≤-46.2 | PASS |
| | | -62 | -60.23 | ≤-54.2 | PASS |
| | | -54 | -65.37 | ≤-62.2 | PASS |
| | | -46 | -86.96 | ≤-70 | PASS |



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| RSSI-dependent noise power level | | | | | |
|----------------------------------|---------------|------------|-----------------------|-----------------|---------|
| Path | Band | RSSI (dBm) | Noise Level (dBm/MHz) | Limit (dBm/MHz) | Verdict |
| UL | AWS-1 | -80 | -46.74 | ≤-37.7 | PASS |
| | | -70 | -50.26 | ≤-39.9 | PASS |
| | | -60 | -53.33 | ≤-49.9 | PASS |
| | | -54 | -61.02 | ≤-55.9 | PASS |
| | | -45 | -67.32 | ≤-64.9 | PASS |
| | | -39 | -82.89 | ≤-70 | PASS |
| | Broadband PCS | -90 | -47.38 | ≤-37.0 | PASS |
| | | -80 | -49.83 | ≤-37.0 | PASS |
| | | -72 | -55.47 | ≤-37.2 | PASS |
| | | -63 | -60.32 | ≤-46.2 | PASS |
| | | -58 | -63.48 | ≤-51.2 | PASS |
| | | -39 | -80.51 | ≤-70 | PASS |

8.3 Variable noise response time

| Variable noise response time | | | | |
|------------------------------|---------------|----------|-----------|---------|
| Path | Band | Time (s) | Limit (s) | Verdict |
| DL | Lower 700MHz | 0.22 | ≤3 | PASS |
| | Upper 700MHz | 0.42 | ≤3 | PASS |
| | Cellular | 0.25 | ≤3 | PASS |
| | AWS-1 | 0.28 | ≤3 | PASS |
| | Broadband PCS | 0.49 | ≤3 | PASS |
| UL | Lower 700MHz | 0.22 | ≤3 | PASS |
| | Upper 700MHz | 0.41 | ≤3 | PASS |
| | Cellular | 0.26 | ≤3 | PASS |
| | AWS-1 | 0.25 | ≤3 | PASS |
| | Broadband PCS | 0.23 | ≤3 | PASS |



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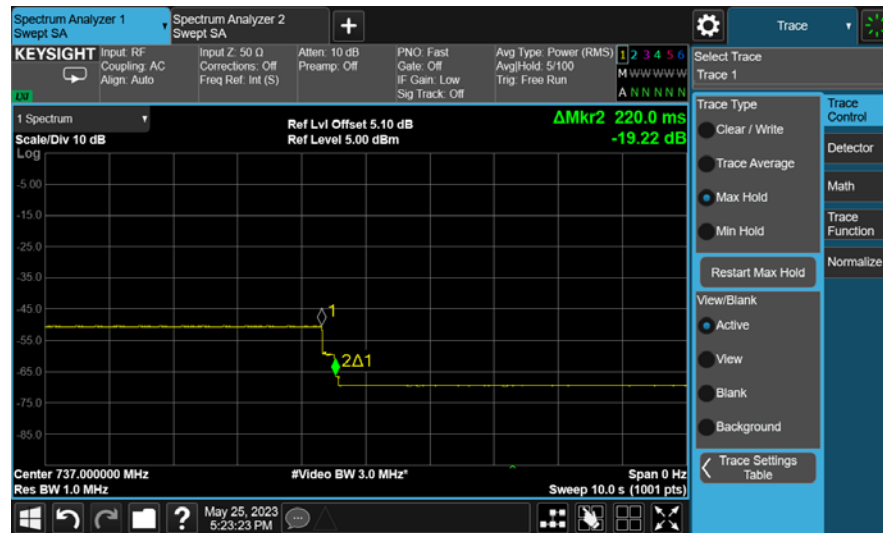
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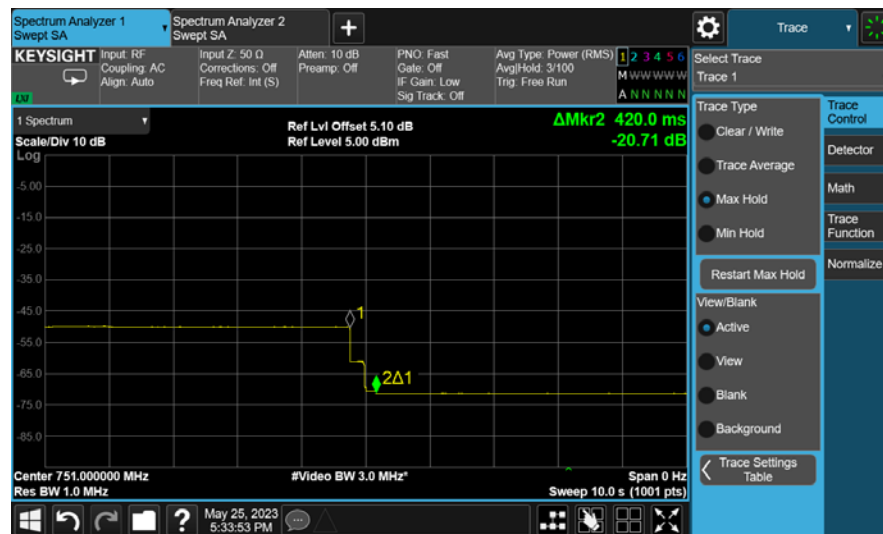
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Variable noise response time

DL_Lower 700MHz Band



DL_Upper 700MHz Band

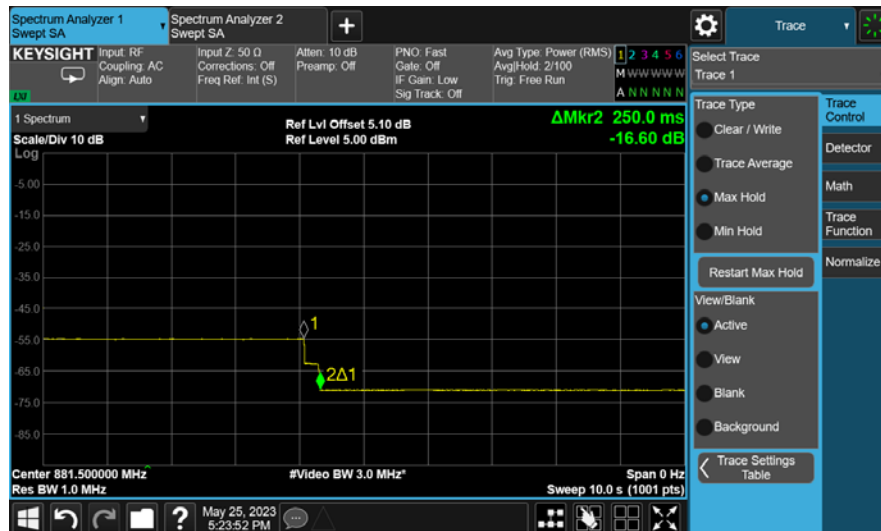


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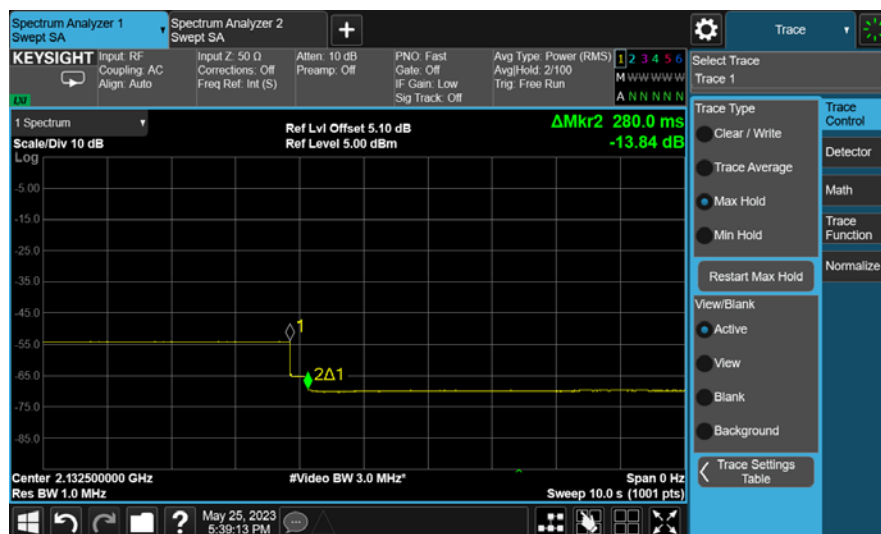
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Variable noise response time

DL_Cellular Band



DL_AWS-1 Band

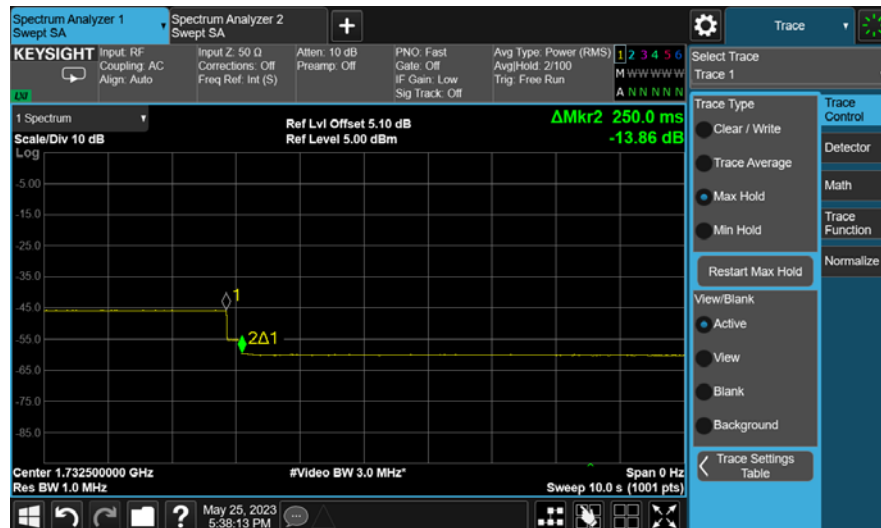


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Variable noise response time

UL_AWS-1 Band



UL_Broadband PCS Band



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9 Uplink inactivity

| Uplink Inactivity | | | | | | |
|-------------------|---------------|----------|-----------|-----------------------|-----------------|---------|
| Path | Band | Time (s) | limit (s) | Noise Level (dBm/MHz) | Limit (dBm/MHz) | Verdict |
| UL | Lower 700MHz | 0.72 | ≤5 | -87.82 | ≤-70 | PASS |
| | Upper 700MHz | 0.44 | ≤5 | -90.10 | ≤-70 | PASS |
| | Cellular | 0.86 | ≤5 | -86.39 | ≤-70 | PASS |
| | AWS-1 | 1.1 | ≤5 | -83.32 | ≤-70 | PASS |
| | Broadband PCS | 0.97 | ≤5 | -80.59 | ≤-70 | PASS |

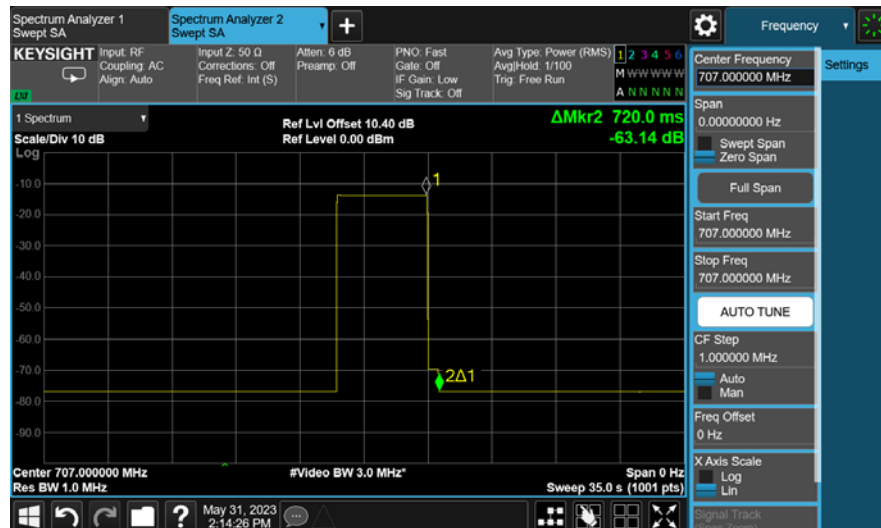


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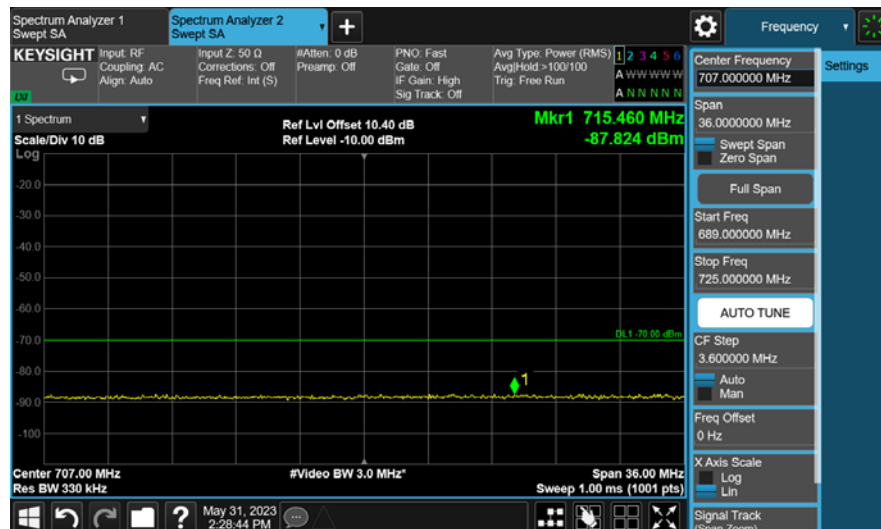
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Uplink inactivity

UL_Lower 700MHz Band_Time



UL_Lower 700MHz Band_Noise power

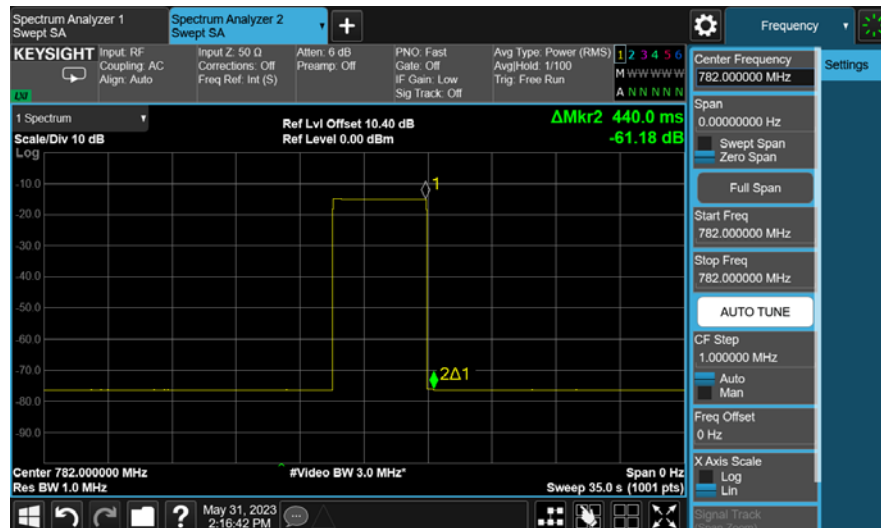


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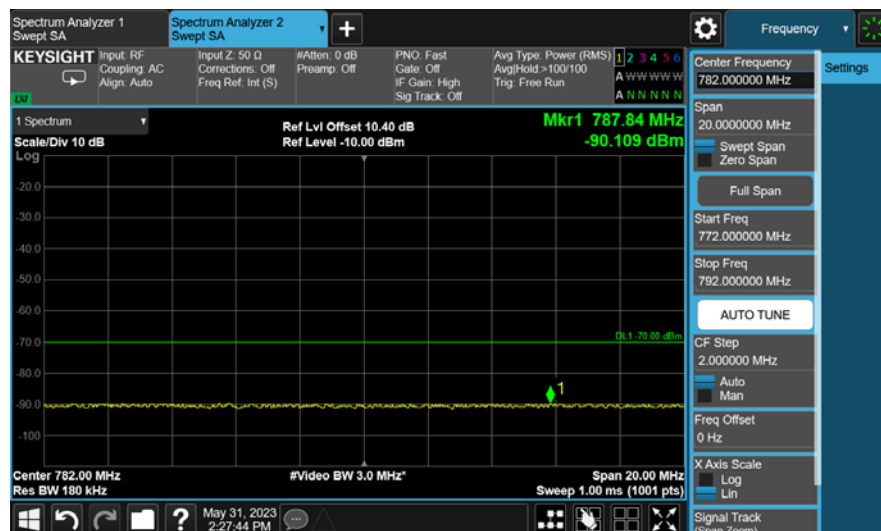
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Uplink inactivity

UL_Upper 700MHz Band_Time



UL_Upper 700MHz Band_Noise power



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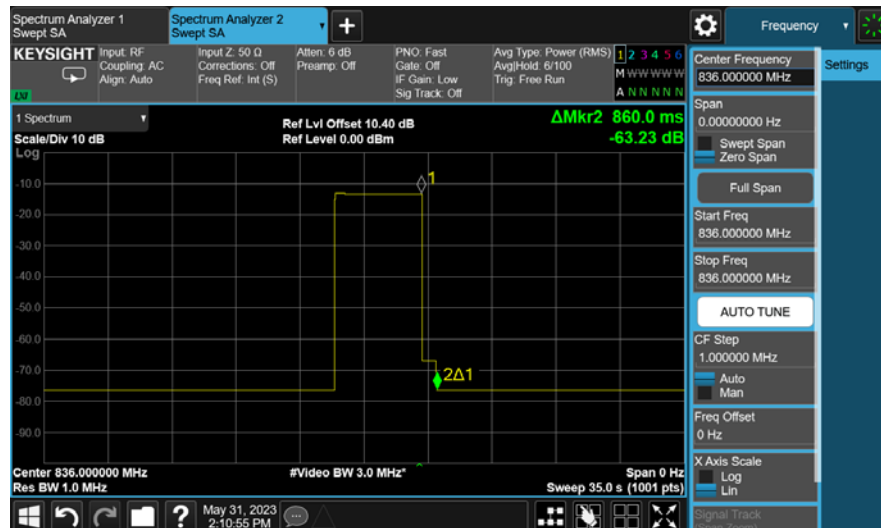
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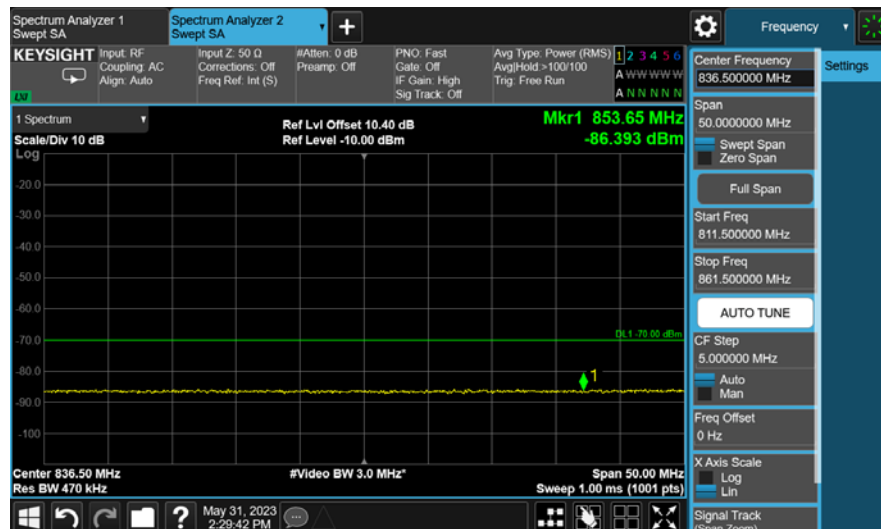
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Uplink inactivity

UL_Cellular Band_Time



UL_Cellular Band_Noise power



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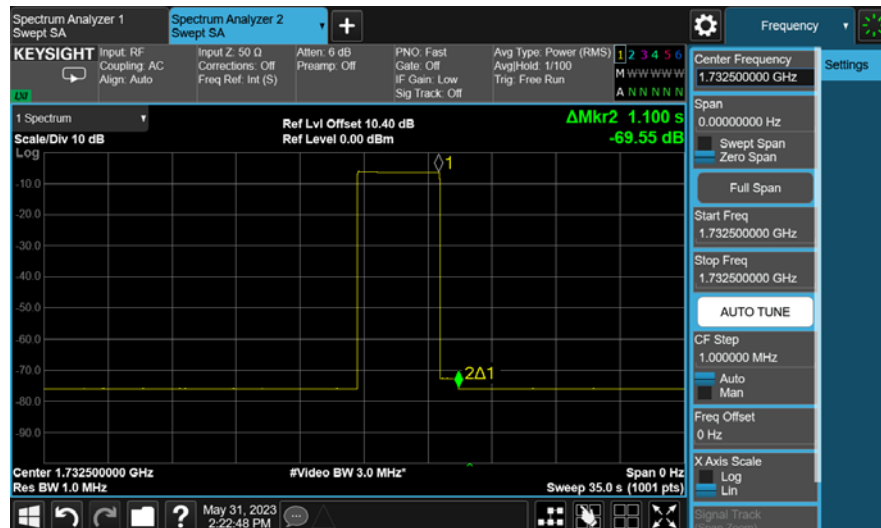
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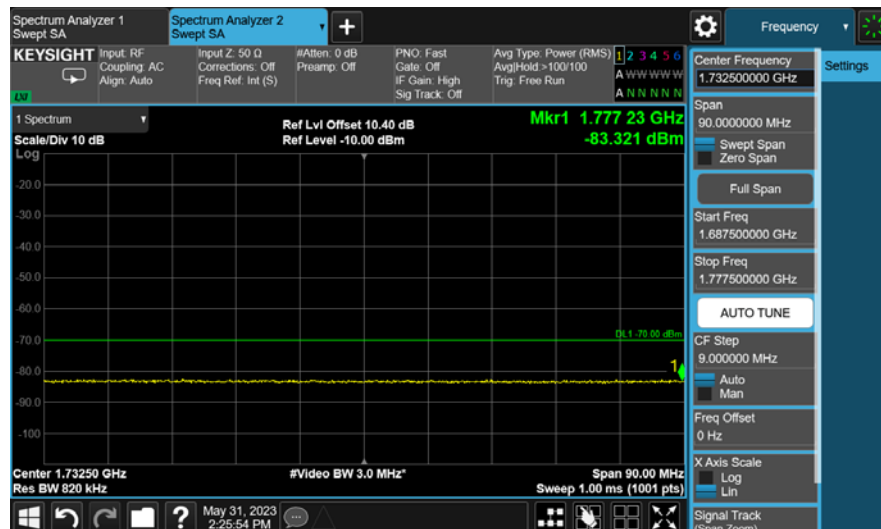
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Uplink inactivity

UL_AWS-1 Band_Time



UL_AWS-1 Band_Noise power

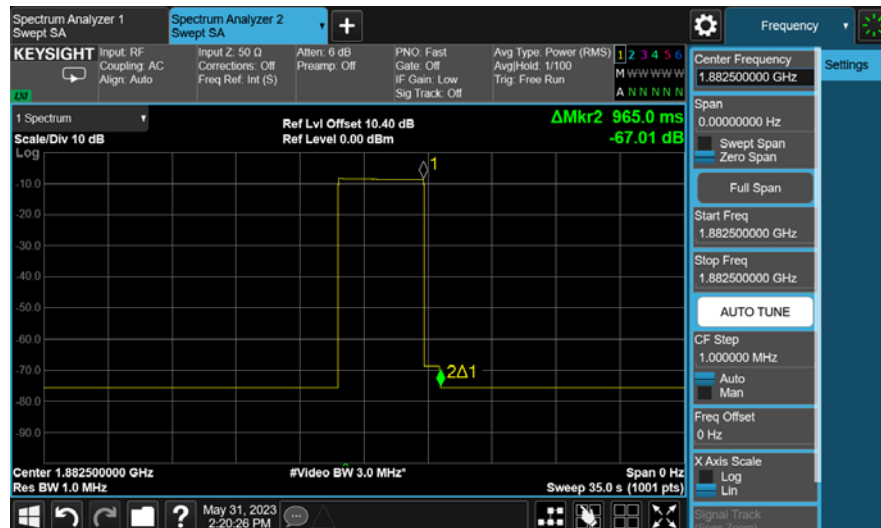


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Uplink inactivity

UL_Broadband PCS Band_Time



UL_Broadband PCS Band_Noise power



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10 Variable booster gain

10.1 Variable gain

20.21(e)(9)(i)(C)(1) Booster Gain Limits:

The uplink and downlink gain in dB of a frequency selective consumer booster referenced to its input and output ports shall not exceed BSCL-28 dB-(40 dB-MSCL).

20.21(e)(9)(i)(I) Transmit Power Off Mode:

The uplink gain shall not exceed the lesser of 23 dB or MSCL in "Transmit Power OFF Mode".

KDB 935210 D04 appendix D figure D2 provider-specific consumer signal booster variable gain limits:

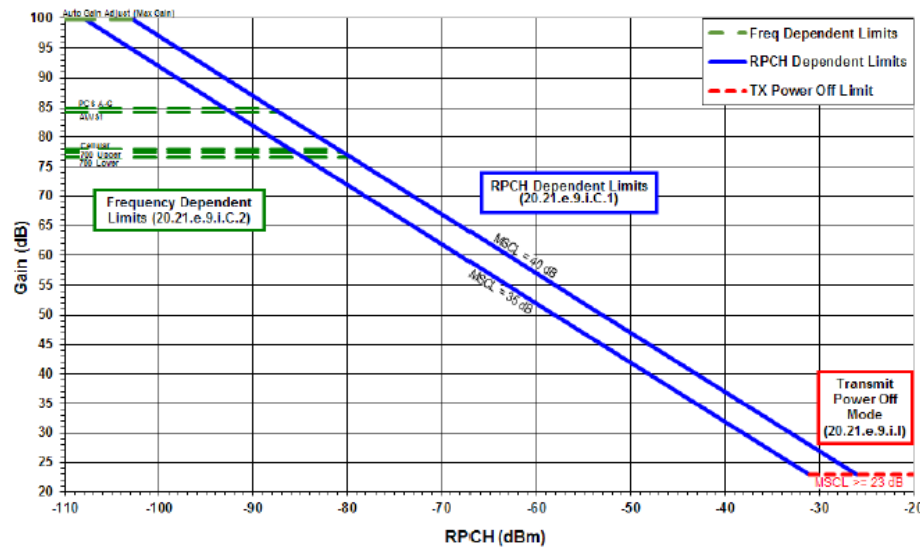


Figure D2 – Provider-specific consumer signal booster variable gain limits

According to appendix B and the declaration from the manufacturer, the Lowest MSCL values for each band were calculated as follows:

| Band | f (MHz) | d (m) | Service ANT Gain (dBi) | Cable Loss (dB) | MSCL (dB) |
|---------------|---------|-------|------------------------|-----------------|-----------|
| Lower 700MHz | 698 | 1 | 4 | 0 | 25.3 |
| Upper 700MHz | 777 | 1 | 4 | 0 | 26.3 |
| Cellular | 824 | 1 | 4 | 0 | 26.8 |
| AWS-1 | 1710 | 1 | 4 | 0 | 33.1 |
| Broadband PCS | 1850 | 1 | 4 | 0 | 33.8 |

Therefore, the RSSI-dependent region can be calculated:

| Band | RPCH dependent region |
|---------------|-----------------------|
| Lower 700MHz | -117.7 to -40.7 dBm |
| Upper 700MHz | -116.7 to -39.7 dBm |
| Cellular | -116.2 to -39.2 dBm |
| AWS-1 | -109.9 to -32.9 dBm |
| Broadband PCS | -109.2 to -32.2 dBm |



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| Variable Gain | | | | | | | |
|---------------|--------------|------------|------------|------------------------|-----------|------------|---------|
| Path | Band | RPCH (dBm) | BSCL (dBm) | P _{out} (dBm) | Gain (dB) | Limit (dB) | Verdict |
| DL | Lower 700MHz | -90 | 115 | -20.4 | 69.6 | ≤72.3 | PASS |
| | | -86 | 111 | -21.3 | 64.7 | ≤68.3 | PASS |
| | | -74 | 99 | -20.6 | 53.4 | ≤56.3 | PASS |
| | | -71 | 96 | -22.0 | 49 | ≤53.3 | PASS |
| | | -66 | 91 | -21.8 | 44.2 | ≤48.3 | PASS |
| | | -60 | 85 | -22.1 | 37.9 | ≤42.3 | PASS |
| | Upper 700MHz | -89 | 114 | -19.3 | 69.7 | ≤72.3 | PASS |
| | | -81 | 106 | -19.8 | 61.2 | ≤64.3 | PASS |
| | | -69 | 94 | -19.4 | 49.6 | ≤52.3 | PASS |
| | | -61 | 86 | -20.5 | 40.5 | ≤44.3 | PASS |
| | | -54 | 79 | -20.6 | 33.4 | ≤37.3 | PASS |
| | | -49 | 74 | -21.1 | 27.9 | ≤32.3 | PASS |
| | Cellular | -85 | 110 | -18.8 | 66.2 | ≤73.8 | PASS |
| | | -78 | 103 | -19.3 | 58.7 | ≤58.8 | PASS |
| | | -71 | 96 | -19.6 | 51.4 | ≤44.8 | PASS |
| | | -64 | 89 | -18.6 | 45.4 | ≤37.8 | PASS |
| | | -52 | 77 | -19.5 | 32.5 | ≤33.8 | PASS |
| | | -48 | 73 | -19.0 | 29.0 | ≤30.8 | PASS |
| | AWS-1 | -90 | 115 | -18.6 | 71.4 | ≤80.1 | PASS |
| | | -75 | 100 | -17.5 | 57.5 | ≤65.1 | PASS |
| | | -70 | 95 | -18.0 | 52.0 | ≤60.1 | PASS |
| | | -61 | 86 | -20.1 | 40.9 | ≤51.1 | PASS |
| | | -58 | 83 | -19.5 | 38.5 | ≤48.1 | PASS |
| | | -54 | 79 | -18.8 | 35.2 | ≤44.1 | PASS |



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| Variable Gain | | | | | | | |
|---------------|---------------|------------|------------|------------------------|-----------|------------|---------|
| Path | Band | RPCH (dBm) | BSCL (dBm) | P _{out} (dBm) | Gain (dB) | Limit (dB) | Verdict |
| DL | Broadband PCS | -88 | 113 | -19.3 | 68.7 | ≤78.8 | PASS |
| | | -71 | 96 | -17.9 | 53.1 | ≤61.8 | PASS |
| | | -63 | 88 | -18.1 | 44.9 | ≤53.8 | PASS |
| | | -56 | 81 | -19.0 | 37.0 | ≤46.8 | PASS |
| | | -51 | 76 | -17.6 | 33.4 | ≤41.8 | PASS |
| | | -44 | 69 | -18.5 | 25.5 | ≤34.8 | PASS |
| UL | Lower 700MHz | -84 | 109 | 1.1 | 59.1 | ≤66.3 | PASS |
| | | -81 | 106 | -3.2 | 54.8 | ≤63.3 | PASS |
| | | -73 | 98 | -15.3 | 42.7 | ≤55.3 | PASS |
| | | -63 | 88 | -19.8 | 38.2 | ≤45.3 | PASS |
| | | -56 | 81 | -24.7 | 33.3 | ≤38.3 | PASS |
| | | -51 | 76 | -26.6 | 31.4 | ≤33.3 | PASS |
| | Upper 700MHz | -83 | 108 | 2.5 | 60.5 | ≤72.3 | PASS |
| | | -72 | 97 | 1.0 | 59.0 | ≤64.3 | PASS |
| | | -66 | 91 | -12.1 | 45.9 | ≤52.3 | PASS |
| | | -58 | 83 | -21.8 | 36.2 | ≤44.3 | PASS |
| | | -48 | 73 | -27.5 | 30.5 | ≤37.3 | PASS |
| | | -43 | 68 | -31.1 | 26.9 | ≤32.3 | PASS |
| | Cellular | -90 | 115 | 2.7 | 60.7 | ≤73.8 | PASS |
| | | -75 | 100 | -2.4 | 55.6 | ≤58.8 | PASS |
| | | -61 | 86 | -15.5 | 42.5 | ≤44.8 | PASS |
| | | -54 | 79 | -26.7 | 31.3 | ≤37.8 | PASS |
| | | -50 | 75 | -28.9 | 29.1 | ≤33.8 | PASS |
| | | -47 | 72 | -33.6 | 24.4 | ≤30.8 | PASS |



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| Variable Gain | | | | | | | |
|--|---------------|------------|------------|------------|-----------|------------|---------|
| Path | Band | RPCH (dBm) | BSCL (dBm) | Pout (dBm) | Gain (Db) | Limit (Db) | Verdict |
| UL | AWS-1 | -87 | 112 | 4.3 | 62.3 | ≤77.1 | PASS |
| | | -75 | 100 | 2.5 | 60.5 | ≤65.1 | PASS |
| | | -67 | 92 | -7.4 | 50.6 | ≤57.1 | PASS |
| | | -61 | 86 | -19.3 | 38.7 | ≤51.1 | PASS |
| | | -57 | 82 | -17.7 | 40.3 | ≤47.1 | PASS |
| | | -52 | 77 | -23.1 | 34.9 | ≤42.1 | PASS |
| | Broadband PCS | -90 | 115 | 11.7 | 69.7 | ≤80.8 | PASS |
| | | -80 | 105 | 7.6 | 65.6 | ≤70.8 | PASS |
| | | -71 | 96 | -3.9 | 54.1 | ≤61.8 | PASS |
| | | -63 | 88 | -9.6 | 48.4 | ≤53.8 | PASS |
| | | -55 | 80 | -21.3 | 36.7 | ≤45.8 | PASS |
| | | -49 | 74 | -25.8 | 32.2 | ≤39.8 | PASS |
| Remark: For UL, the input signal levels were set to -58dBm. | | | | | | | |

10.2 Variable gain timing

| Variable Uplink Gain Timing | | | | |
|-----------------------------|---------------|----------|-----------|---------|
| Path | Band | Time (s) | Limit (s) | Verdict |
| UL | Lower 700MHz | 0.45 | ≤3 | PASS |
| | Upper 700MHz | 0.76 | ≤3 | PASS |
| | Cellular | 0.37 | ≤3 | PASS |
| | AWS-1-1 | 0.35 | ≤3 | PASS |
| | Broadband PCS | 0.71 | ≤3 | PASS |



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11 Occupied bandwidth

| Occupied Bandwidth | | | | |
|--------------------|--------------|------------------------|--------------|---------|
| Path | Band | Center Frequency (MHz) | Input Signal | Verdict |
| DL | Lower 700MHz | 737 | GSM | PASS |
| | | | 1.25MHz AWGN | PASS |
| | | | 4.1MHz AWGN | PASS |
| | Upper 700MHz | 751 | GSM | PASS |
| | | | 1.25MHz AWGN | PASS |
| | | | 4.1MHz AWGN | PASS |
| | Cellular | 881.5 | GSM | PASS |
| | | | 1.25MHz AWGN | PASS |
| | | | 4.1MHz AWGN | PASS |
| | AWS-1 | 2132.5 | GSM | PASS |
| | | | 1.25MHz AWGN | PASS |
| | | | 4.1MHz AWGN | PASS |
| UL | Lower 700MHz | 707 | GSM | PASS |
| | | | 1.25MHz AWGN | PASS |
| | | | 4.1MHz AWGN | PASS |
| | Upper 700MHz | 782 | GSM | PASS |
| | | | 1.25MHz AWGN | PASS |
| | | | 4.1MHz AWGN | PASS |
| | Cellular | 836.5 | GSM | PASS |
| | | | 1.25MHz AWGN | PASS |
| | | | 4.1MHz AWGN | PASS |



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| Occupied Bandwidth | | | | |
|--------------------|---------------|------------------------|--------------|---------|
| Path | Band | Center Frequency (MHz) | Input Signal | Verdict |
| UL | AWS-1 | 1732.5 | GSM | PASS |
| | | | 1.25MHz AWGN | PASS |
| | | | 4.1MHz AWGN | PASS |
| | Broadband PCS | 1882.5 | GSM | PASS |
| | | | 1.25MHz AWGN | PASS |
| | | | 4.1MHz AWGN | PASS |



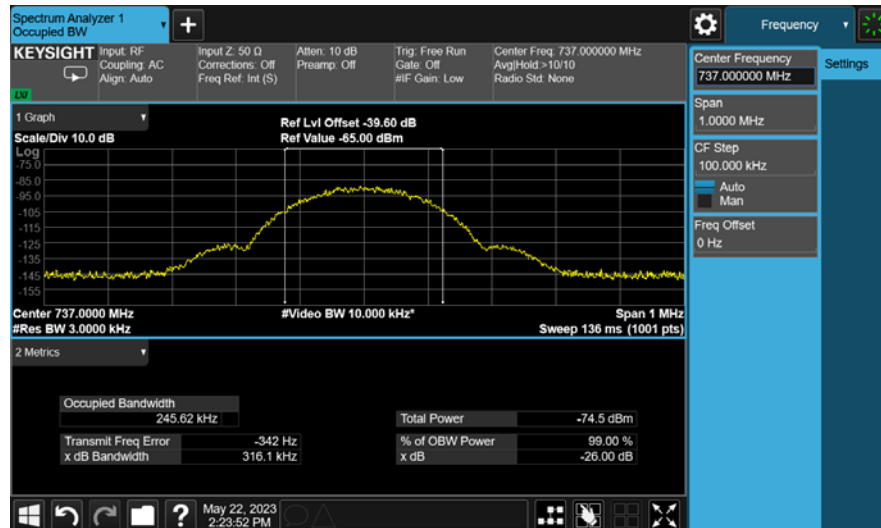
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Occupied bandwidth

DL_Lower 700MHz Band_GSM signal type

Input



Output



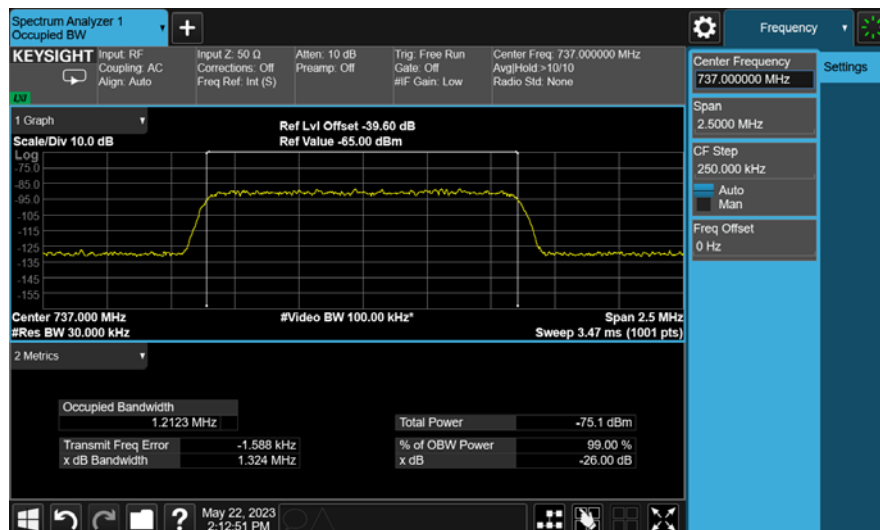
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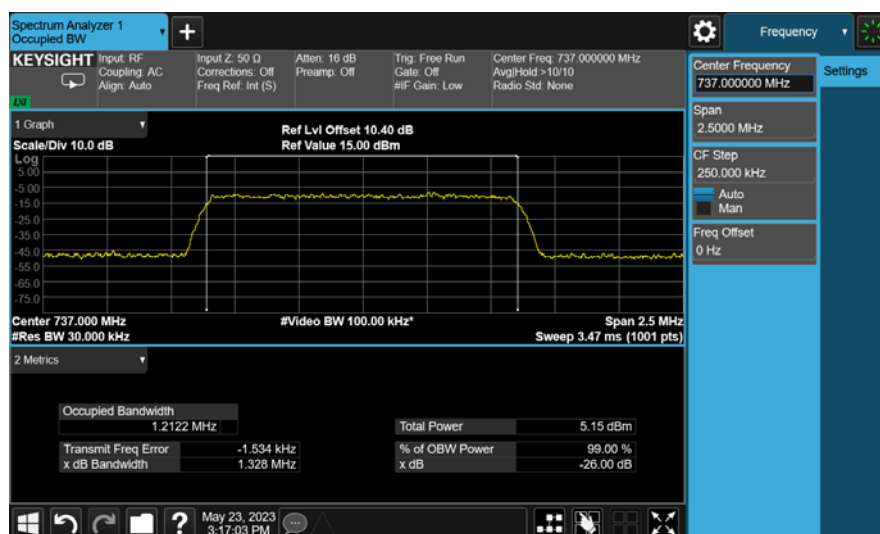
Occupied bandwidth

DL_Lower 700MHz Band_1.25MHz AWGN signal type

Input



Output



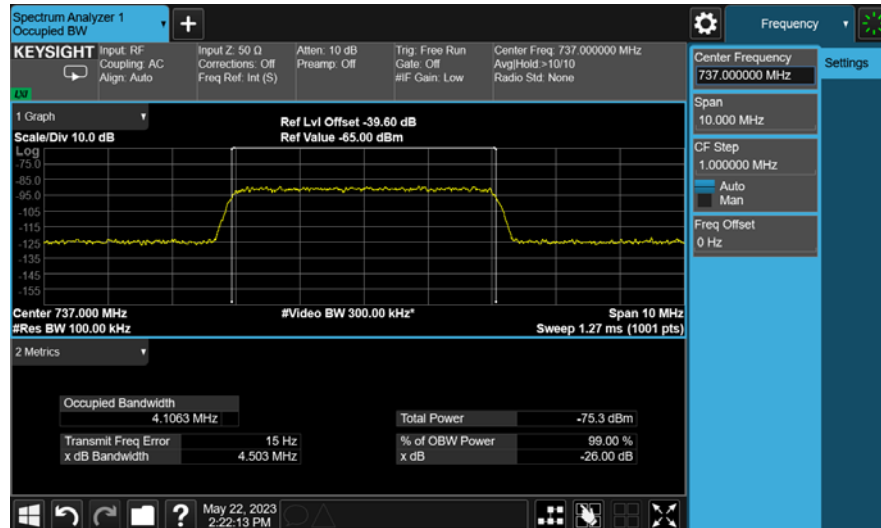
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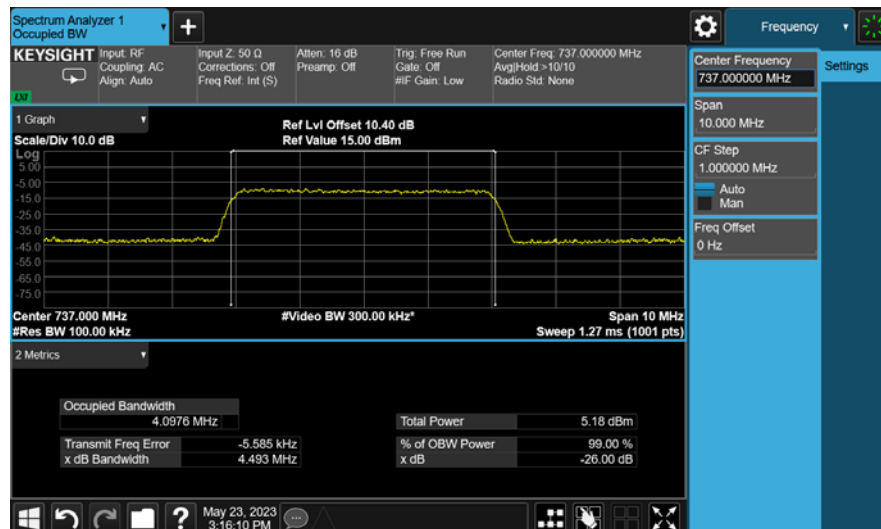
Occupied bandwidth

DL_Lower 700MHz Band_4.1MHz AWGN signal type

Input



Output



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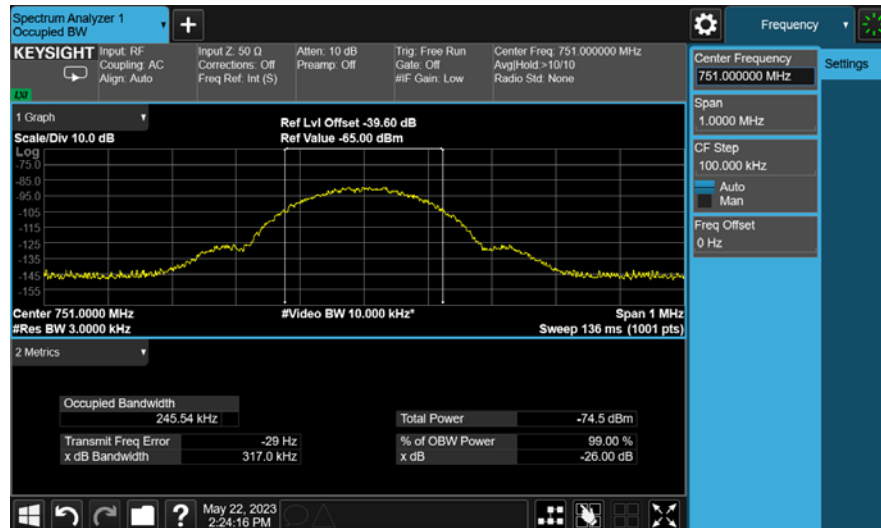
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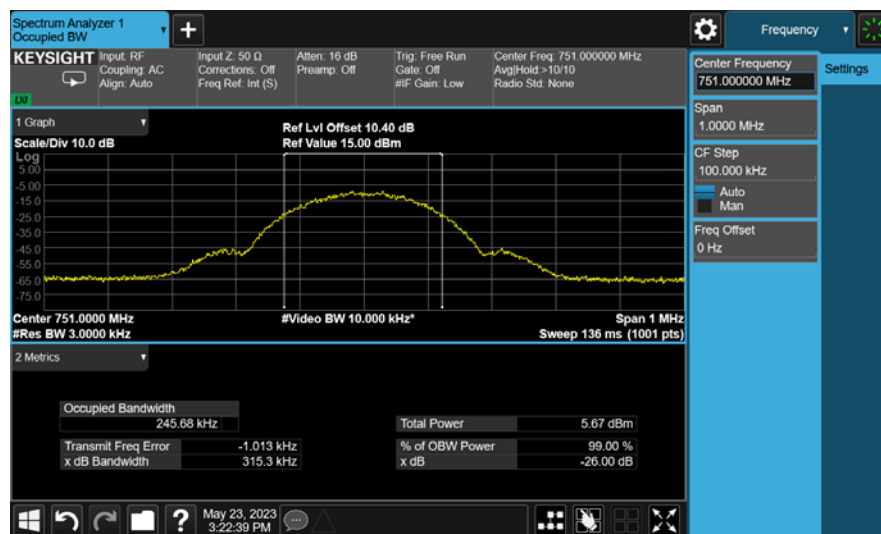
Occupied bandwidth

DL_Upper 700MHz Band_GSM signal type

Input



Output



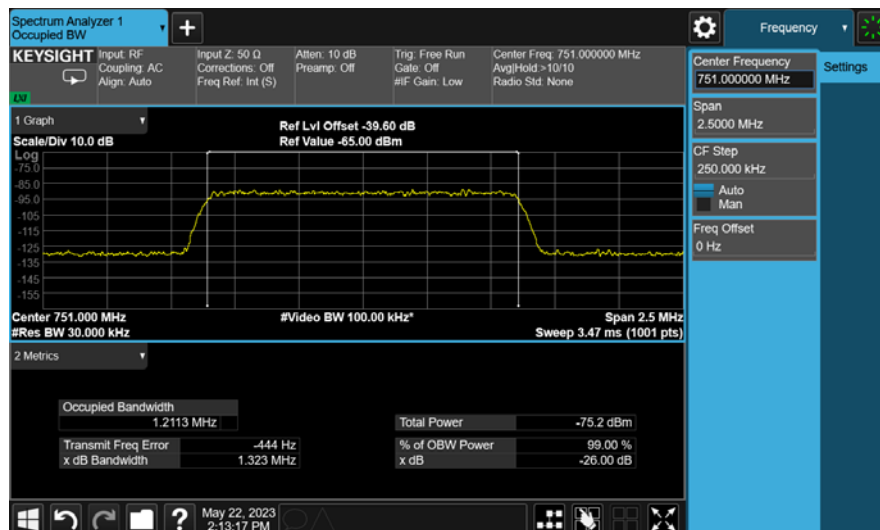
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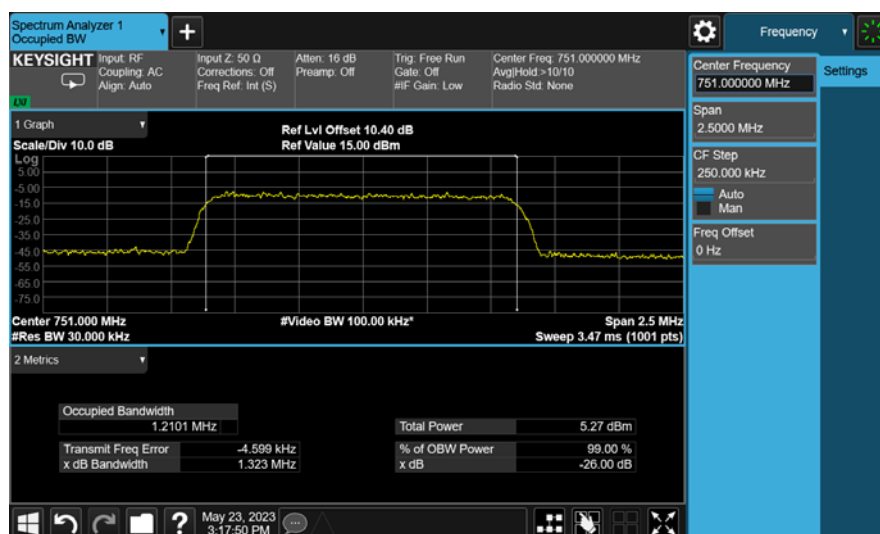
Occupied bandwidth

DL_Upper 700MHz Band_1.25MHz AWGN signal type

Input



Output



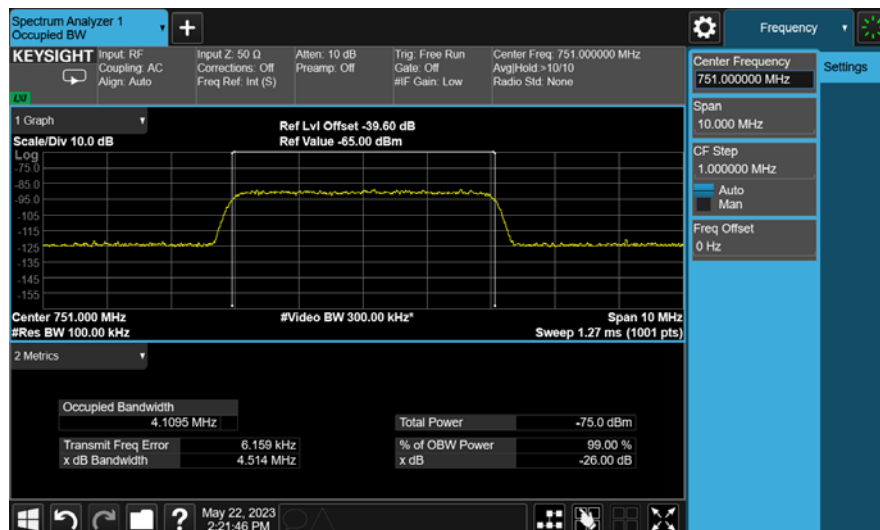
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Occupied bandwidth

DL_Upper 700MHz Band_4.1MHz AWGN signal type

Input



Output



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Occupied bandwidth

DL_Cellular Band_GSM signal type

Input



Output



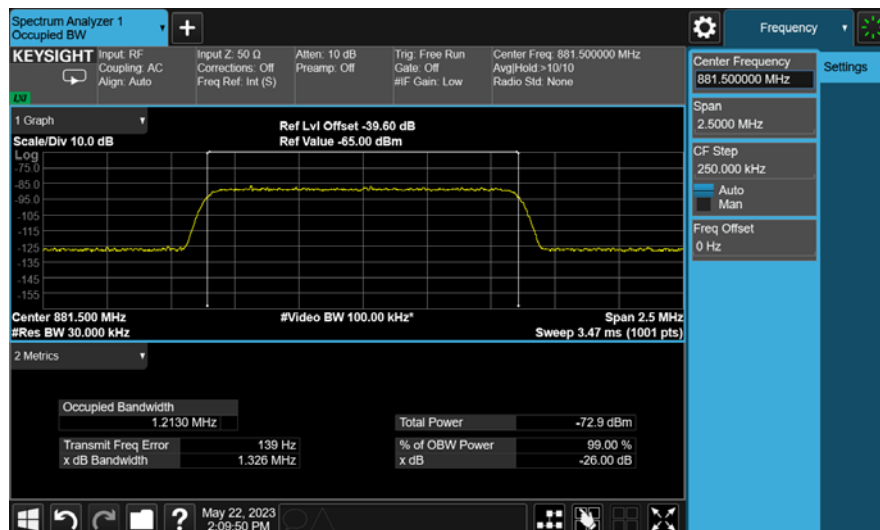
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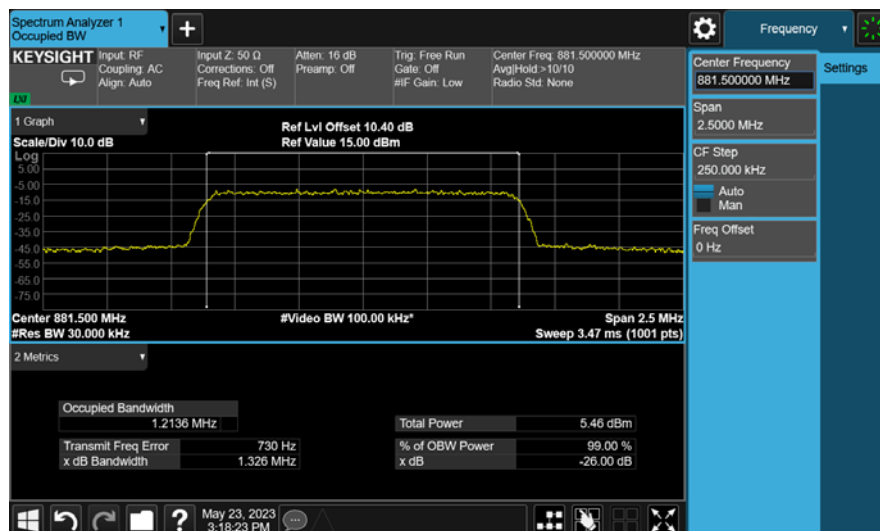
Occupied bandwidth

DL_Cellular Band_1.25MHz AWGN signal type

Input



Output



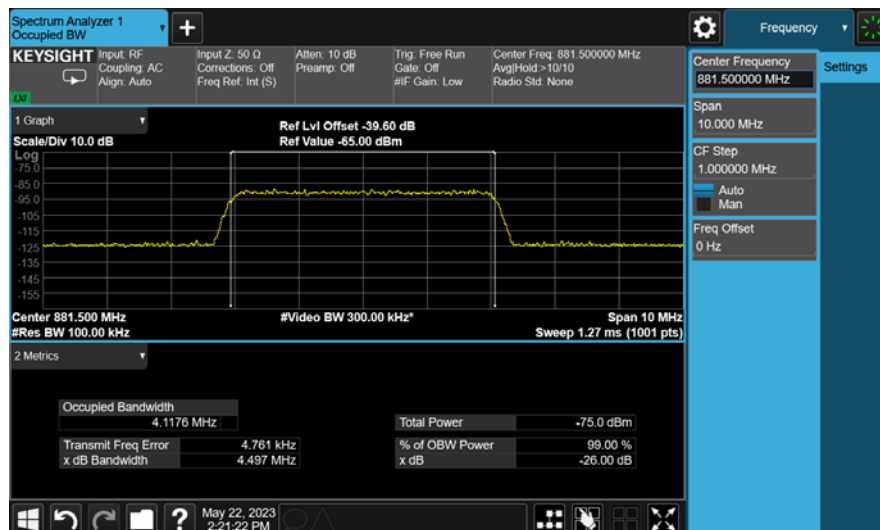
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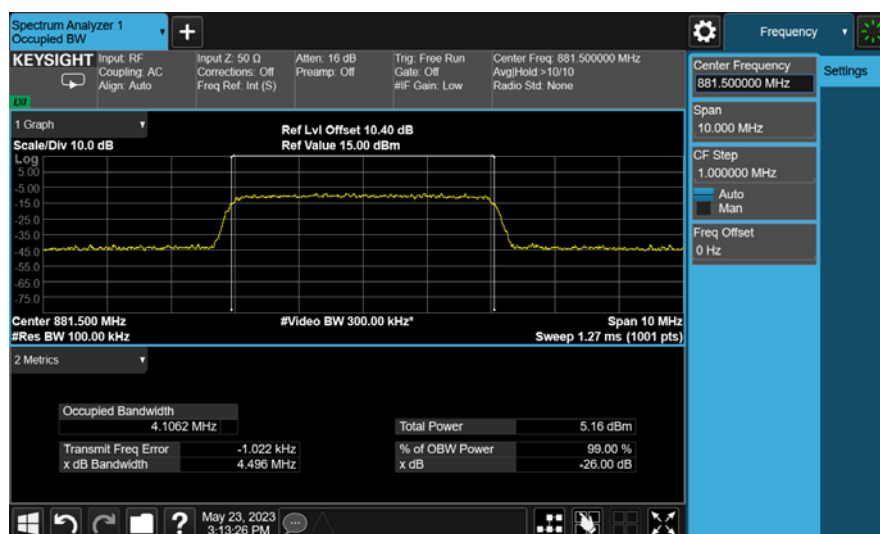
Occupied bandwidth

DL_Cellular Band_4.1MHz AWGN signal type

Input



Output



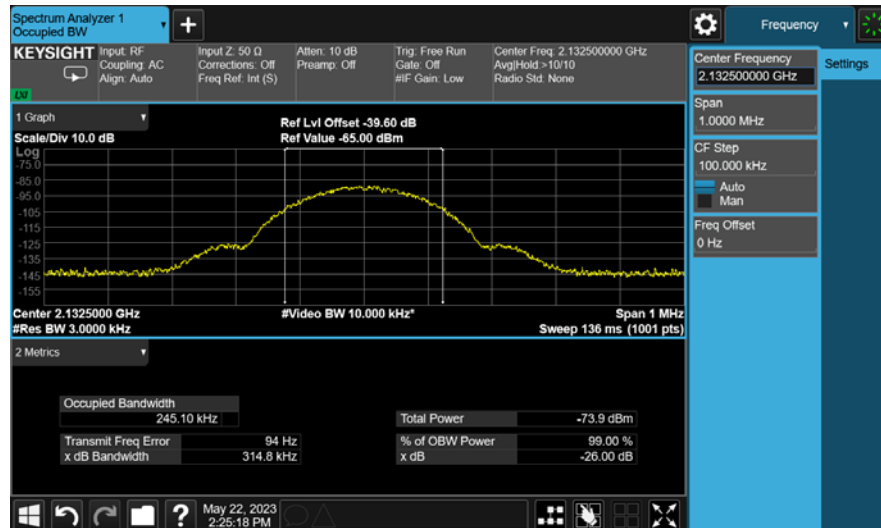
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Occupied bandwidth

DL_AWS-1 Band_GSM signal type

Input



Output



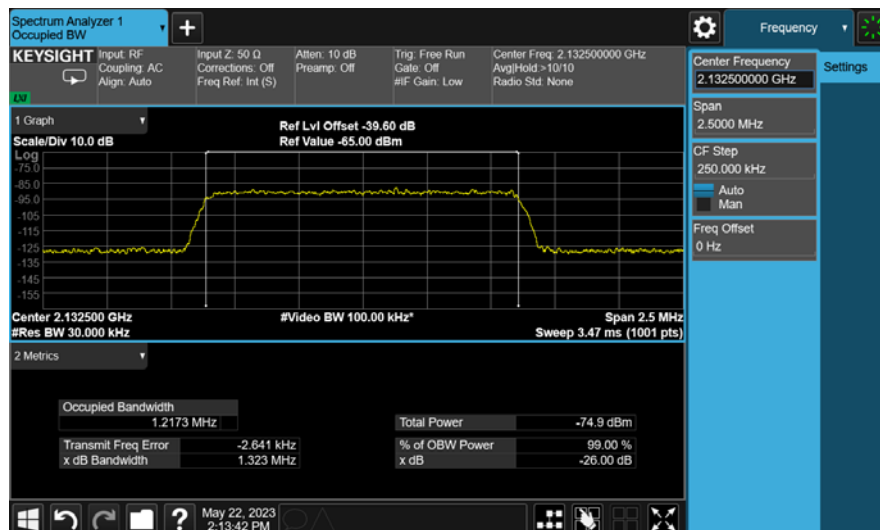
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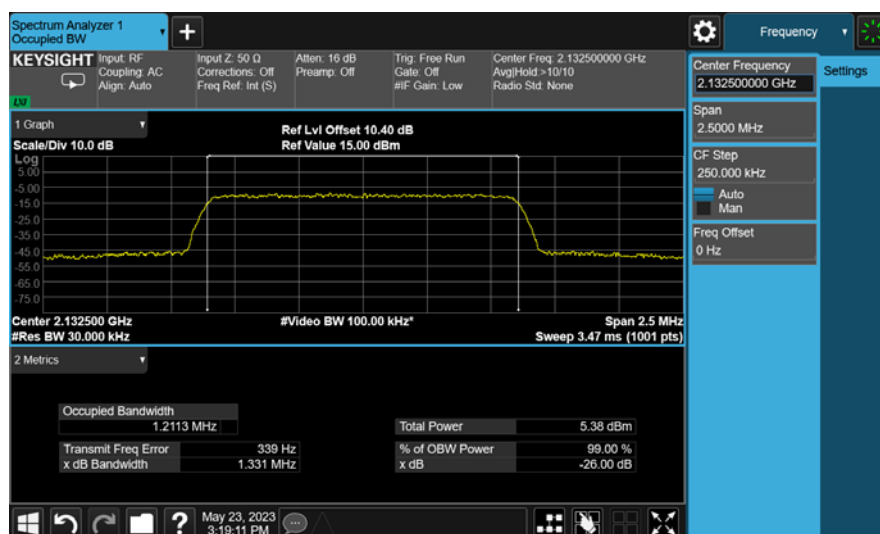
Occupied bandwidth

DL_AWS-1 Band_1.25MHz AWGN signal type

Input



Output



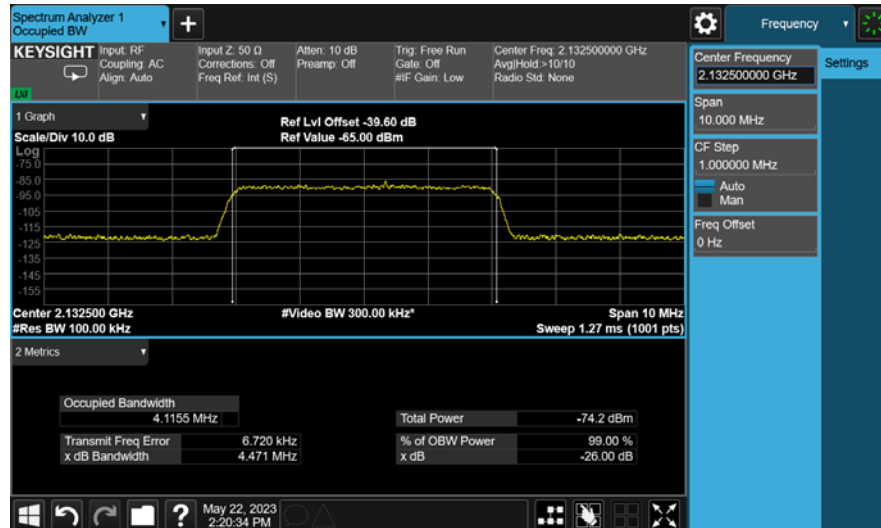
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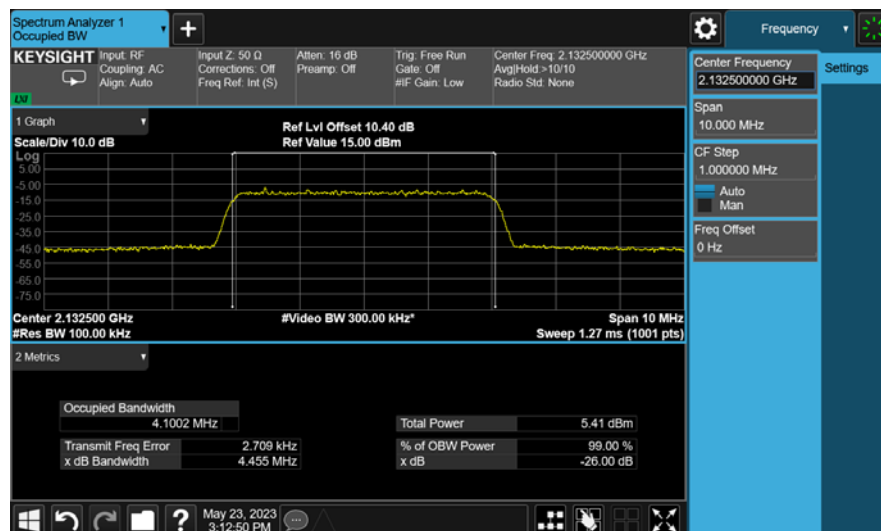
Occupied bandwidth

DL_AWS-1 Band_4.1MHz AWGN signal type

Input



Output



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