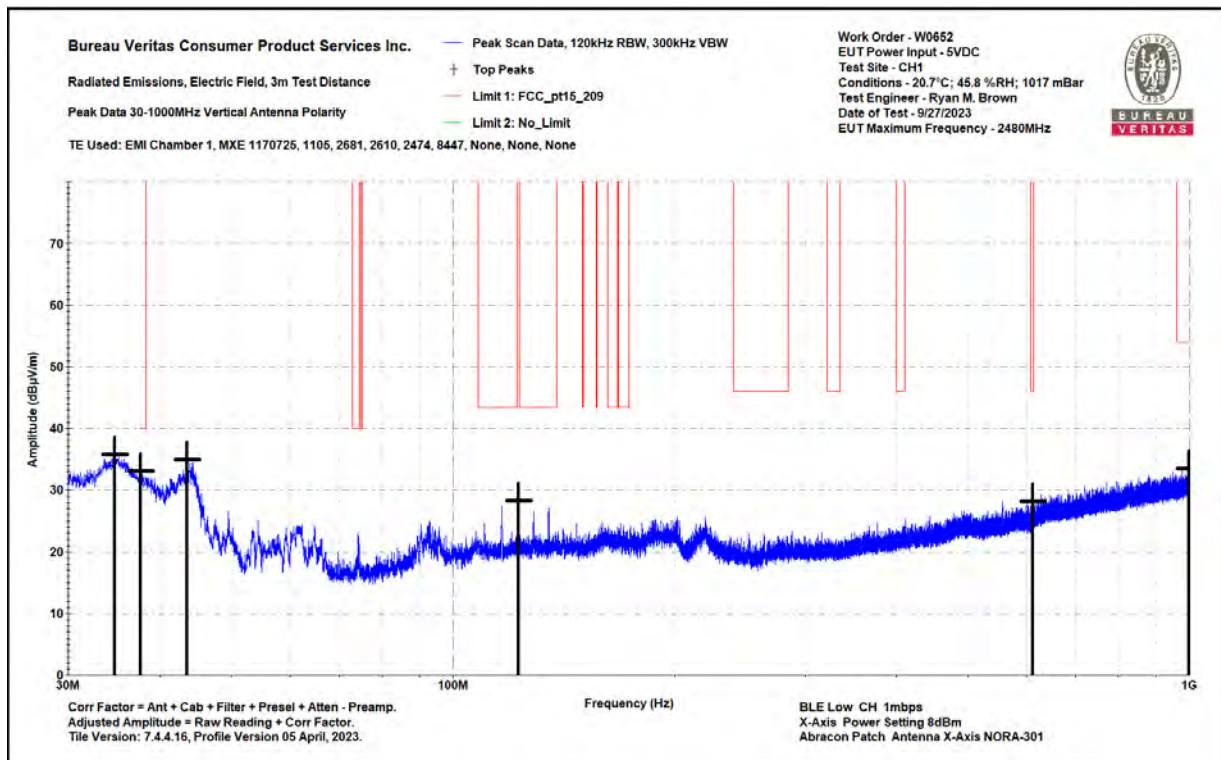




Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



30-1000MHz Vertical Plot

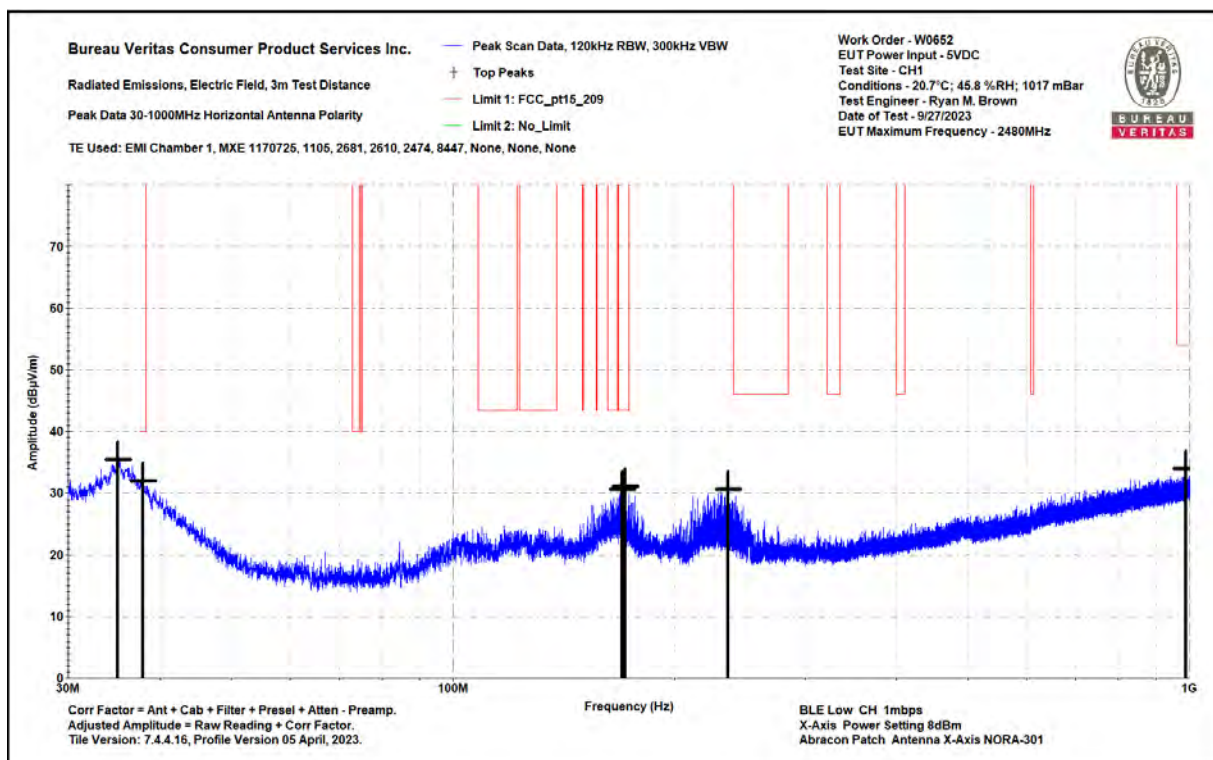
|                                               |  |  |  |  |                                          |  |  |  |  |
|-----------------------------------------------|--|--|--|--|------------------------------------------|--|--|--|--|
| Bureau Veritas Consumer Product Services Inc. |  |  |  |  | Work Order - W0652                       |  |  |  |  |
| Radiated Emissions Electric Field 3m Distance |  |  |  |  | EUT Power Input - 5VDC                   |  |  |  |  |
| Top Peaks Horizontal 30-1000MHz               |  |  |  |  | Test Site - CH1                          |  |  |  |  |
| Notes:                                        |  |  |  |  | Conditions - 20.7°C; 45.8 %RH; 1017 mBar |  |  |  |  |
| BLE Low CH 1mbps                              |  |  |  |  | Test Engineer - Ryan M. Brown            |  |  |  |  |
| X-Axis Power Setting 8dBm                     |  |  |  |  | Date of Test - 9/27/2023                 |  |  |  |  |
| Abracon Patch Antenna X-Axis NORA-301         |  |  |  |  |                                          |  |  |  |  |

| Frequency (MHz) | Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Lim1: FCC_pt15_209 (dBµV/m) | Lim1 Margin (dB) | Lim1 Test Results (Pass/Fail) | Worst Margin Lim1 (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|---------------------|--------------------------|----------------------------------|-----------------------------|------------------|-------------------------------|------------------------|---------------------|-----------------------|
| 37.857          | 37.3                | -5.3                     | 32                               | 40                          | -8               | PASS                          | -8                     | 250                 | 180                   |
| 169.462         | 39.4                | -8.8                     | 30.7                             | 43.5                        | -12.8            | PASS                          |                        | 200                 | 135                   |
| 171.208         | 40.1                | -8.9                     | 31.2                             | 43.5                        | -12.3            | PASS                          |                        | 200                 | 270                   |
| 989.427         | 29                  | 4.9                      | 33.9                             | 54                          | -20.1            | PASS                          |                        | 200                 | 270                   |

30-1000MHz Horizontal Data Table



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



30-1000MHz Horizontal Plot



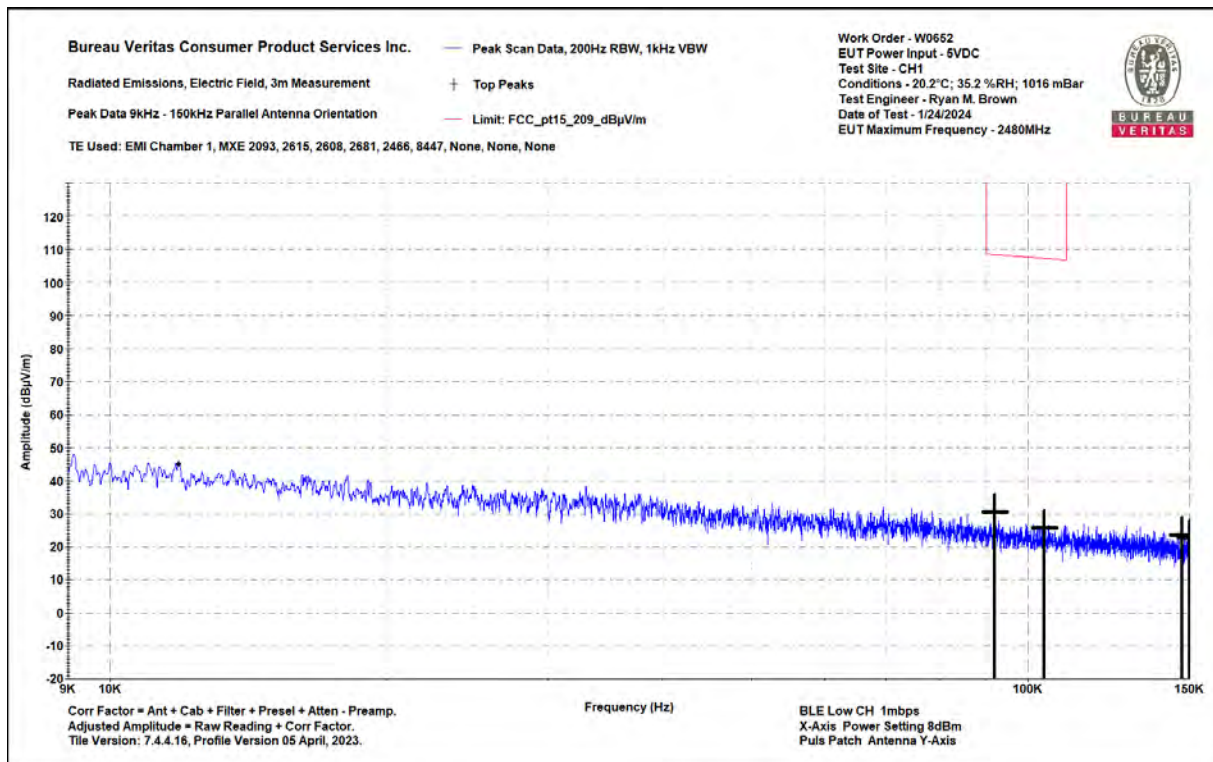
Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



NORA-W300 with Yageo Patch Antenna

Low CH, 1Mbps, Module axis: X, External antenna axis: Y

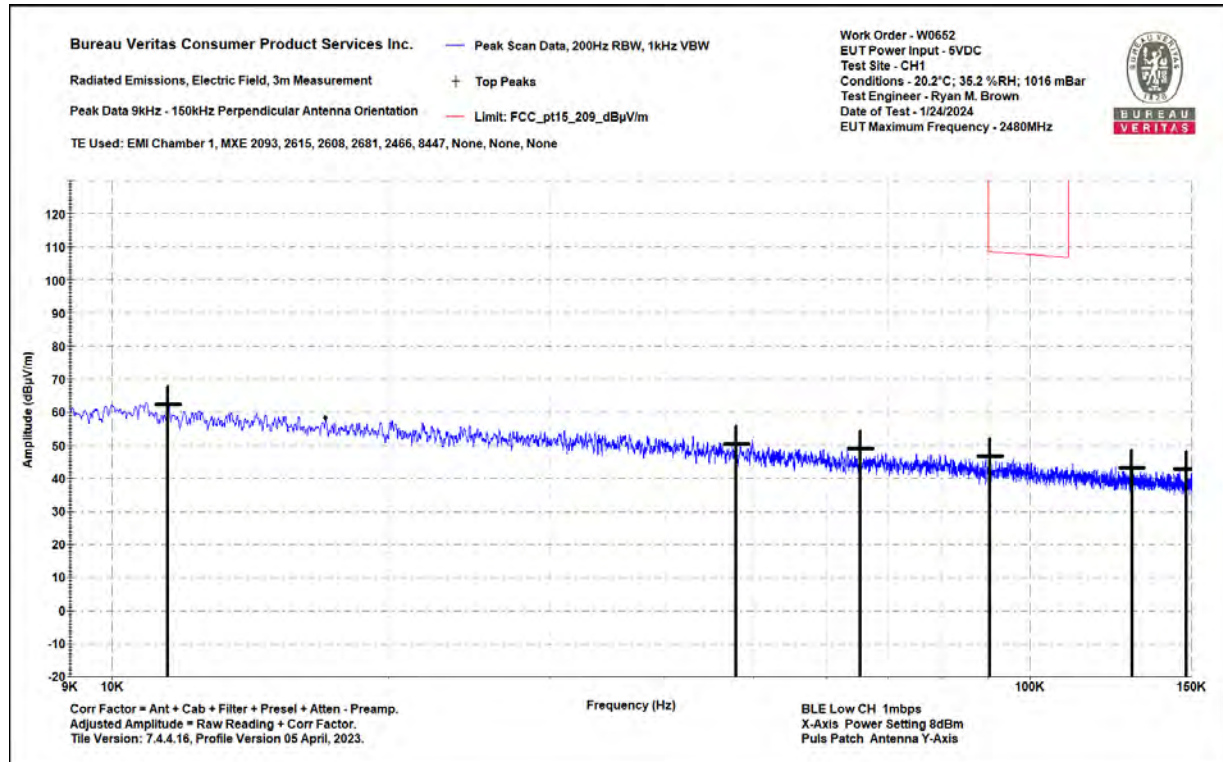
In 9kHz-30MHz range, no emissions within 20dB of the limit were identified in restricted bands. Only plots shown below.



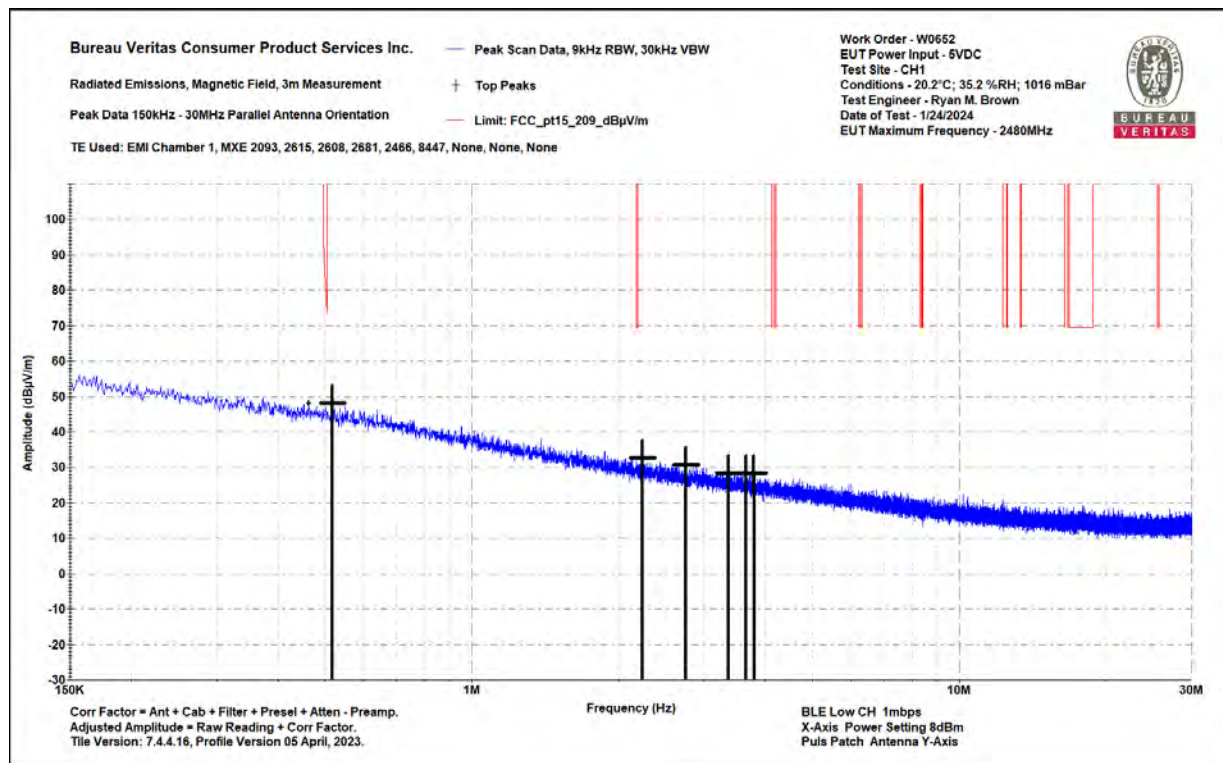
0.009-0.15MHz Parallel



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



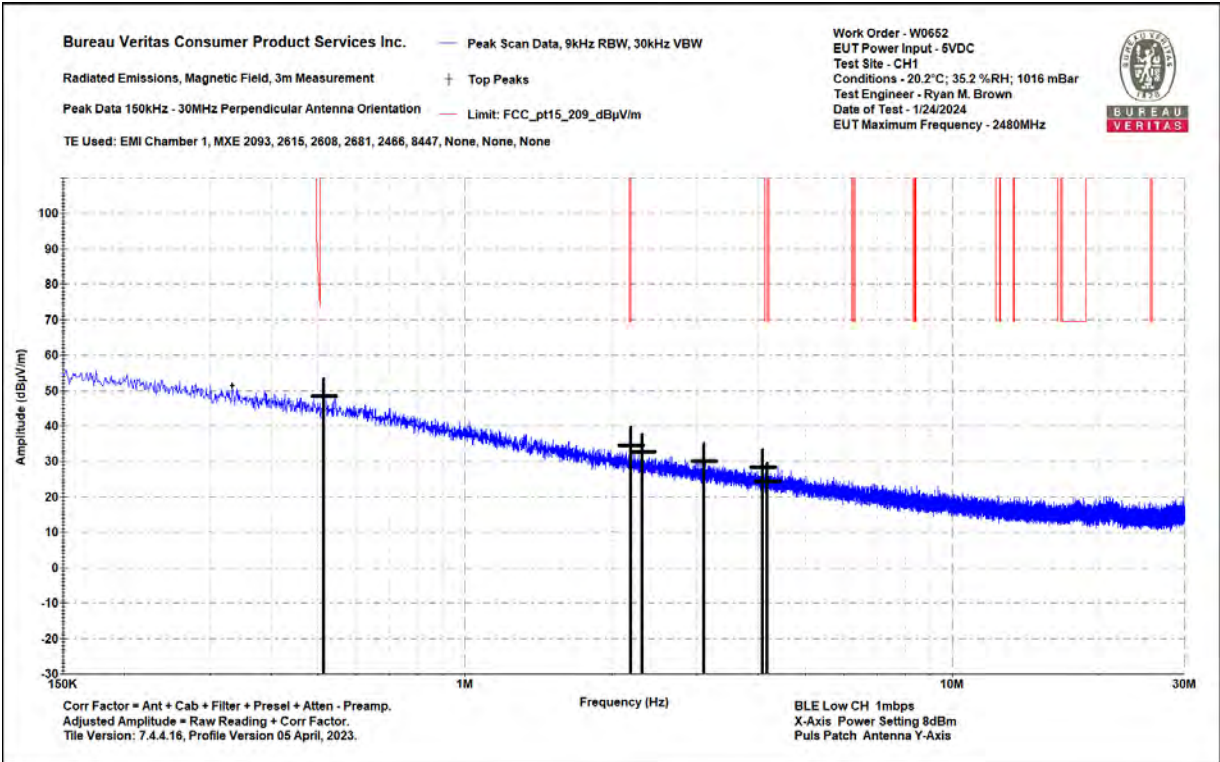
0.009-0.15MHz Perpendicular



0.15-30MHz Parallel



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



0.15-30MHz Perpendicular

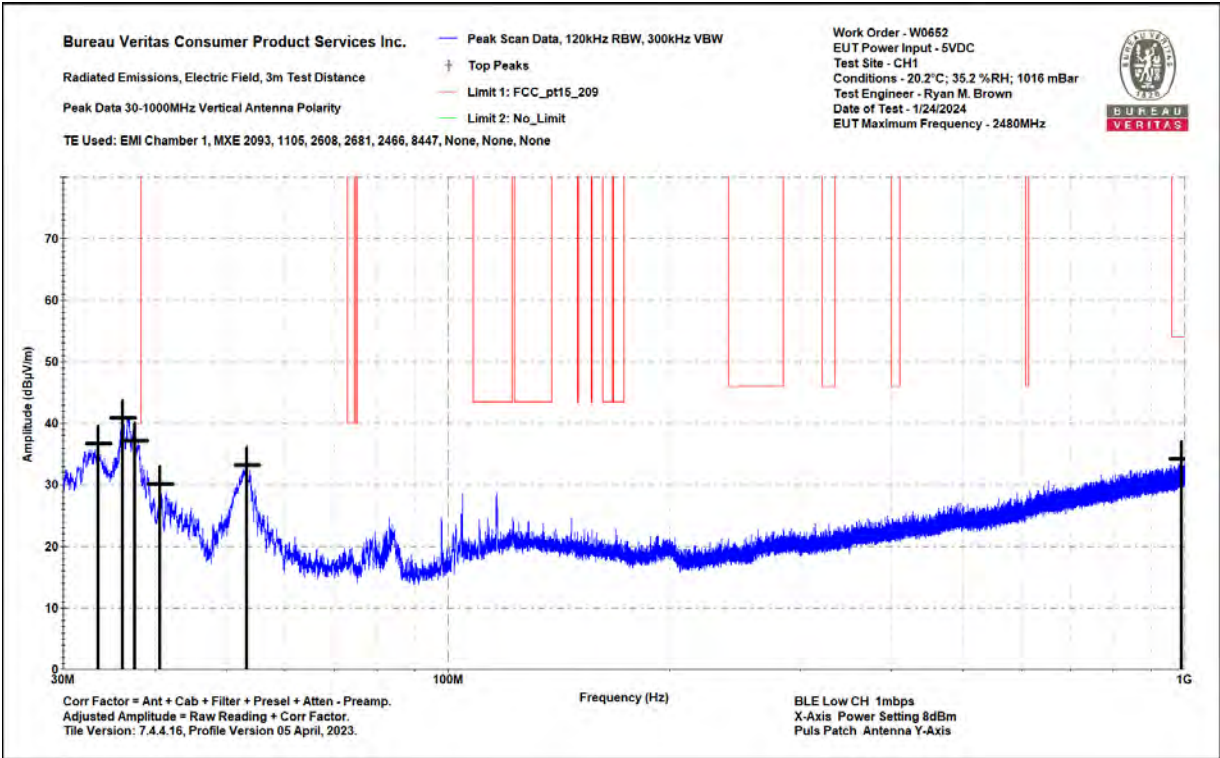
|                                               |  |  |  |  |                                          |  |  |  |  |
|-----------------------------------------------|--|--|--|--|------------------------------------------|--|--|--|--|
| Bureau Veritas Consumer Product Services Inc. |  |  |  |  | Work Order - W0652                       |  |  |  |  |
| Radiated Emissions Electric Field 3m Distance |  |  |  |  | EUT Power Input - 5VDC                   |  |  |  |  |
| Top Peaks Vertical 30-1000MHz                 |  |  |  |  | Test Site - CH1                          |  |  |  |  |
| Notes:                                        |  |  |  |  | Conditions - 20.2°C; 35.2 %RH; 1016 mBar |  |  |  |  |
| BLE Low CH 1mbps                              |  |  |  |  | Test Engineer - Ryan M. Brown            |  |  |  |  |
| X-Axis Power Setting 8dBm                     |  |  |  |  | Date of Test - 1/24/2024                 |  |  |  |  |
| Puls Patch Antenna Y-Axis                     |  |  |  |  |                                          |  |  |  |  |

| Frequency (MHz) | Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Lim1: FCC_pt15_209 (dBµV/m) | Lim1 Margin (dB) | Lim1 Test Results (Pass/Fail) | Worst Margin Lim1 (dB) | Antenna Height (cm) | Turntable Azimuth (degrees) |
|-----------------|---------------------|--------------------------|----------------------------------|-----------------------------|------------------|-------------------------------|------------------------|---------------------|-----------------------------|
| 37.542          | 42.2                | -5                       | 37.2                             | 40                          | -2.8             | PASS                          | -2.8                   | 100                 | 45                          |
| 990.324         | 28.8                | 5.4                      | 34.2                             | 54                          | -19.8            | PASS                          |                        | 150                 | 45                          |

30-1000MHz Vertical Data Table



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



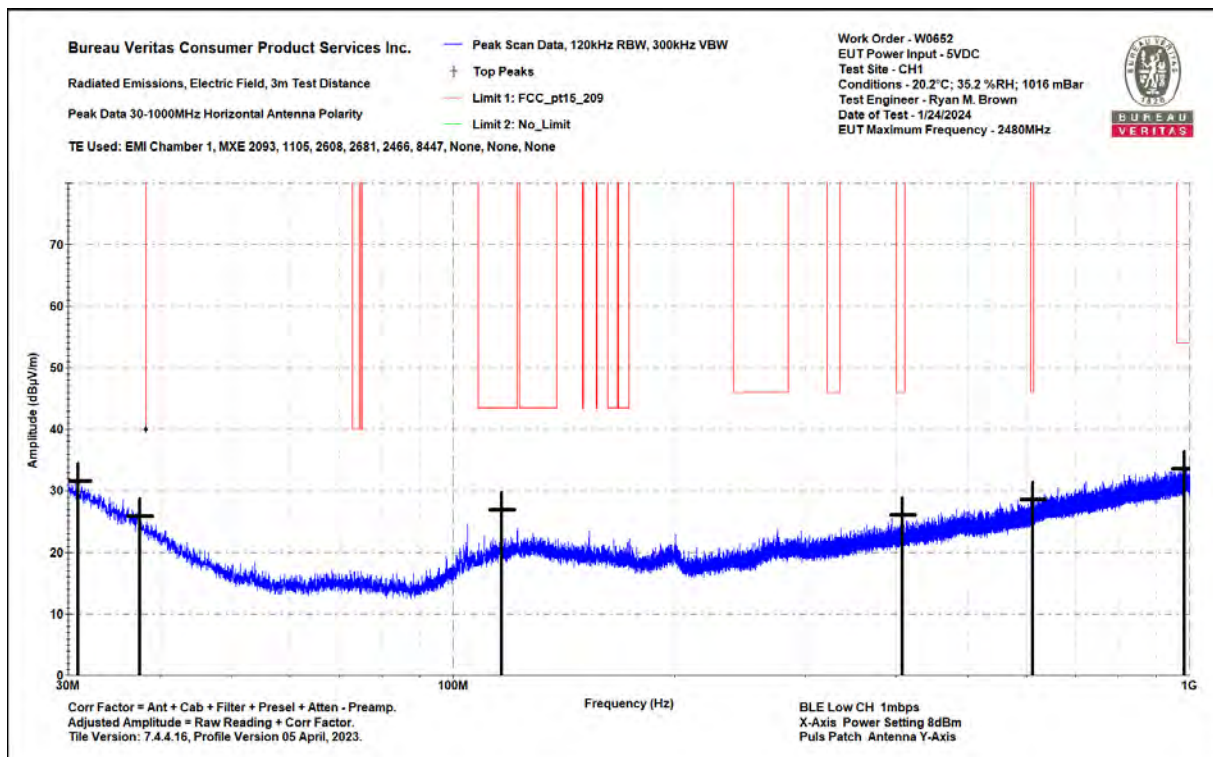
30-1000MHz Vertical Plot

| Bureau Veritas Consumer Product Services Inc. |                     |                          |                                  | Work Order - W0652                       |                  |                               |                        |                     |                       |
|-----------------------------------------------|---------------------|--------------------------|----------------------------------|------------------------------------------|------------------|-------------------------------|------------------------|---------------------|-----------------------|
| Radiated Emissions Electric Field 3m Distance |                     |                          |                                  | EUT Power Input - 5VDC                   |                  |                               |                        |                     |                       |
| Top Peaks Horizontal 30-1000MHz               |                     |                          |                                  | Test Site - CH1                          |                  |                               |                        |                     |                       |
| Notes:                                        |                     |                          |                                  | Conditions - 20.2°C; 35.2 %RH; 1016 mBar |                  |                               |                        |                     |                       |
| BLE Low CH 1mbps                              |                     |                          |                                  | Test Engineer - Ryan M. Brown            |                  |                               |                        |                     |                       |
| X-Axis Power Setting 8dBm                     |                     |                          |                                  | Date of Test - 1/24/2024                 |                  |                               |                        |                     |                       |
| Puls Patch Antenna Y-Axis                     |                     |                          |                                  |                                          |                  |                               |                        |                     |                       |
| Frequency (MHz)                               | Peak Reading (dBμV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBμV/m) | Lim1: FCC_pt15_209 (dBμV/m)              | Lim1 Margin (dB) | Lim1 Test Results (Pass/Fail) | Worst Margin Lim1 (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
| 37.5                                          | 30.7                | -5                       | 25.8                             | 40                                       | -14.2            | PASS                          | -14.2                  | 114                 |                       |
| 116.306                                       | 34.5                | -7.5                     | 26.9                             | 43.5                                     | -16.6            | PASS                          |                        | 250                 | 270                   |
| 407.087                                       | 30.4                | -4.4                     | 26                               | 46                                       | -20              | PASS                          |                        | 150                 | 225                   |
| 612.727                                       | 29.9                | -1.3                     | 28.6                             | 46                                       | -17.4            | PASS                          |                        | 200                 | 0                     |
| 982.588                                       | 28.4                | 5.2                      | 33.6                             | 54                                       | -20.4            | PASS                          |                        | 150                 | 135                   |

30-1000MHz Horizontal Data Table



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



30-1000MHz Horizontal Plot



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



Emissions above 1GHz

NORA-W306

Low CH, 1Mbps, Module axis: X

Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 3m Distance

Top Peaks Vertical 1-18GHz

Notes:

BLE Low CH TX 1Mbps

X-Axis Power Setting 8dBm

PCB Trace Antenna

Work Order - W0652

EUT Power Input - 5VDC

Test Site - CH1

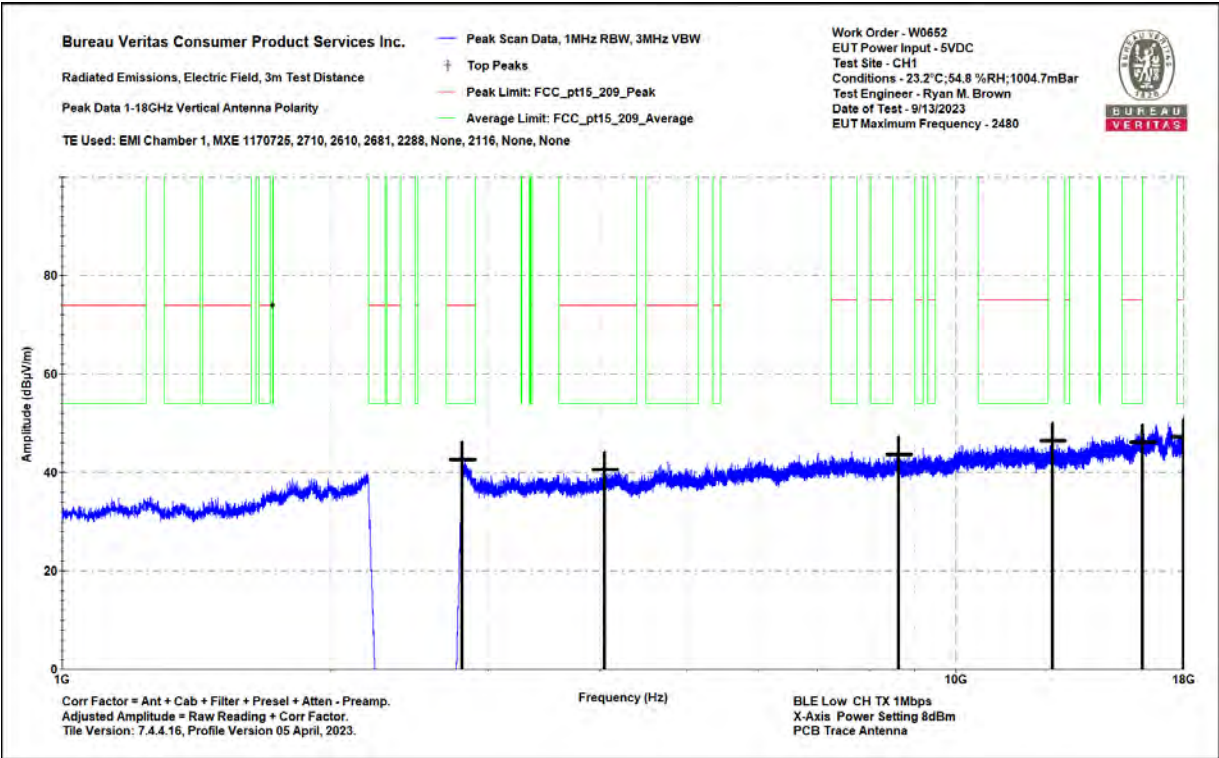
Conditions - 23.2°C;54.8 %RH;1004.7mBar

Test Engineer - Ryan M. Brown

Date of Test - 9/13/2023

| Frequency<br>(MHz) | Raw Peak<br>Reading<br>(dBµV) | Correction<br>Factor<br>(dB/m) | Adjusted<br>Peak<br>Amplitude<br>(dBµV/m) | Pk Lim:<br>FCC_pt15_20<br>9_Peak<br>(dBµV/m) | Margin to<br>Peak Limit<br>(dB) | Peak Limit<br>Test Results<br>(Pass/Fail) | Peak Limit<br>Worst<br>Margin<br>(dB) | Av Lim:<br>FCC_pt15_20<br>9_Average<br>(dBµV/m) | Margin to<br>Average<br>Limit<br>(dB) | Average<br>Limit Test<br>Result<br>(Pass/Fail) | Average<br>Limit Worst<br>Margin<br>(dB) | Antenna<br>Height<br>(cm) | EUT Azimuth<br>(degrees) |
|--------------------|-------------------------------|--------------------------------|-------------------------------------------|----------------------------------------------|---------------------------------|-------------------------------------------|---------------------------------------|-------------------------------------------------|---------------------------------------|------------------------------------------------|------------------------------------------|---------------------------|--------------------------|
| 2806.25            | 28.7                          | 13.8                           | 42.5                                      | 74                                           | -31.5                           | PASS                                      |                                       | 54                                              | -11.5                                 | PASS                                           |                                          | 100                       | 182                      |
| 4050.65            | 30.8                          | 9.8                            | 40.6                                      | 74                                           | -33.4                           | PASS                                      |                                       | 54                                              | -13.4                                 | PASS                                           |                                          | 200                       | 170                      |
| 17998.72           | 21.9                          | 25.3                           | 47.3                                      | 74                                           | -26.7                           | PASS                                      | -26.7                                 | 54                                              | -6.7                                  | PASS                                           | -6.7                                     | 300                       | 296                      |

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

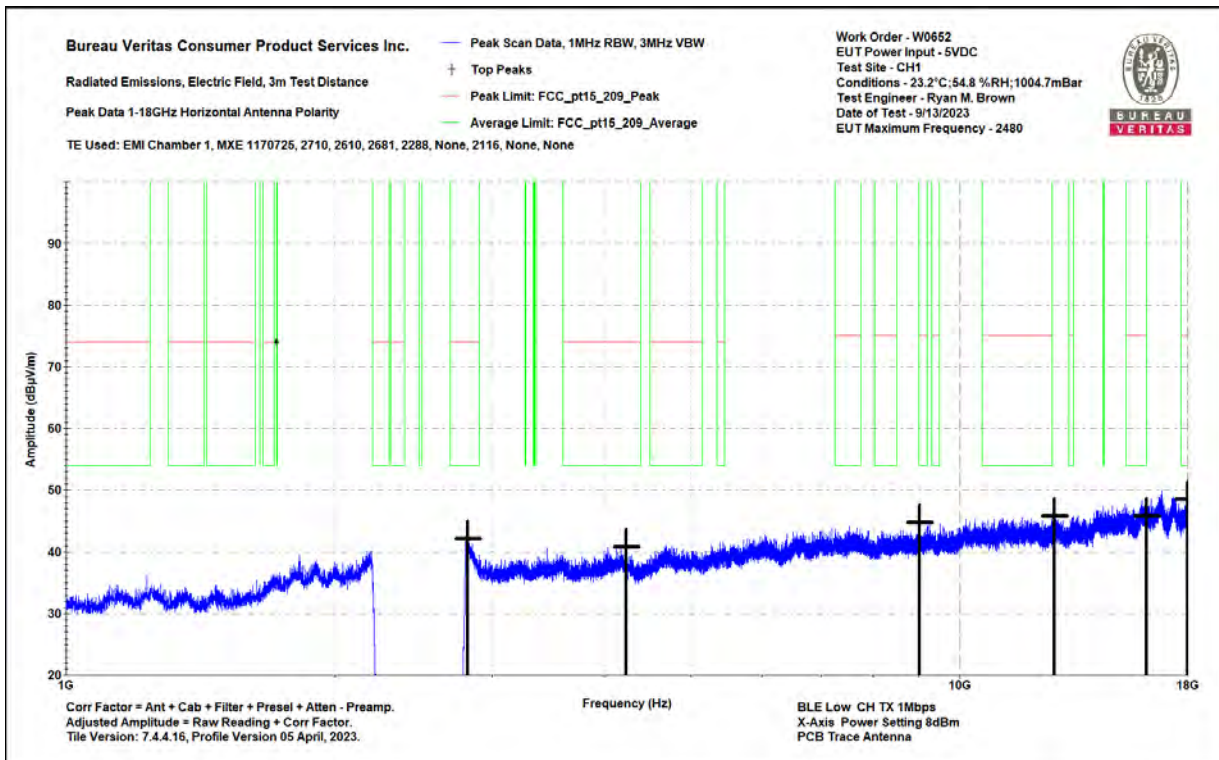


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 1-18GHz  
Notes:  
BLE Low CH TX 1Mbps  
X-Axis Power Setting 8dBm  
PCB Trace Antenna

Work Order - W0652  
EUT Power Input - 5VDC  
Test Site - CH1  
Conditions - 23.2°C;54.8 %RH;1004.7mBar  
Test Engineer - Ryan M. Brown  
Date of Test - 9/13/2023

| Frequency (MHz) | Raw Peak Reading (dBμV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBμV/m) | Pk Lim: FCC_pt15_209_Peak (dBμV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBμV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|--------------------------------|------------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2813.47         | 28.6                    | 13.5                     | 42.2                             | 74                                 | -31.8                     | PASS                           |                              | 54                                    | -11.8                    | PASS                          |                             | 300                 | 220                   |
| 4233.4          | 30.6                    | 10.2                     | 40.8                             | 74                                 | -33.2                     | PASS                           |                              | 54                                    | -13.2                    | PASS                          |                             | 100                 | 221                   |
| 9013.38         | 30.2                    | 14.6                     | 44.8                             | 74                                 | -29.2                     | PASS                           |                              | 54                                    | -9.2                     | PASS                          |                             | 200                 | 207                   |
| 16199.7         | 23.4                    | 22.4                     | 45.8                             | 74                                 | -28.2                     | PASS                           |                              | 54                                    | -8.2                     | PASS                          |                             | 200                 | 207                   |
| 18000           | 23.2                    | 25.3                     | 48.5                             | 74                                 | -25.5                     | PASS                           | -25.5                        | 54                                    | -5.5                     | PASS                          | -5.5                        | 200                 | 19                    |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

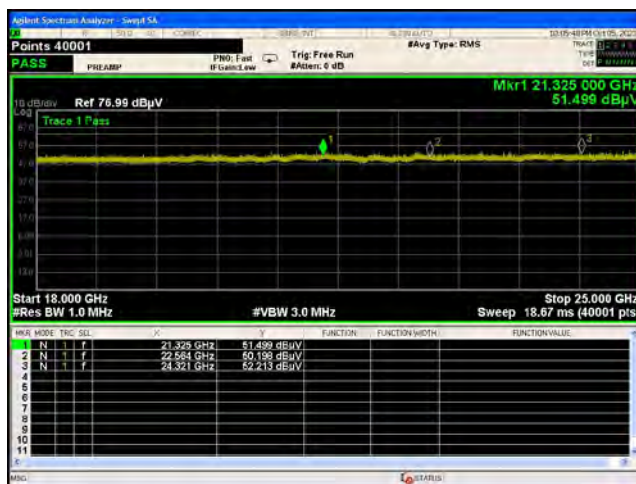


## Radiated Emissions Table

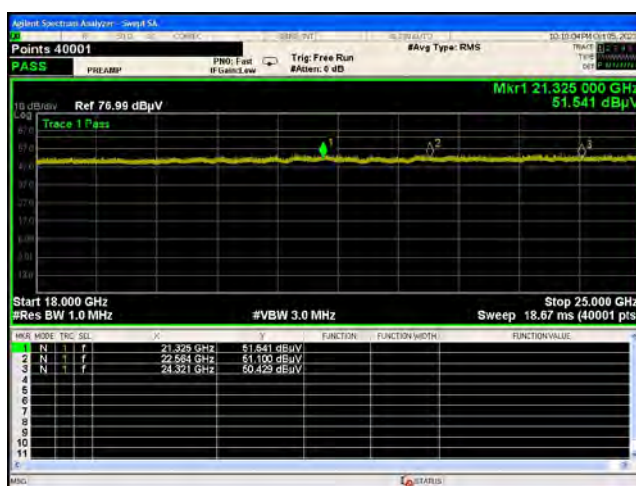
| Date: 05-Oct-23                                                            |                    | Company: U-Blox                            |                           |                       |                          |                      |                                   |                                  | Work Order: X0652                     |                |                       |                                      |                |                       |
|----------------------------------------------------------------------------|--------------------|--------------------------------------------|---------------------------|-----------------------|--------------------------|----------------------|-----------------------------------|----------------------------------|---------------------------------------|----------------|-----------------------|--------------------------------------|----------------|-----------------------|
| Engineer: Ryan M. Brown                                                    |                    | EUT Desc: NORA-W306 With PCB Trace Antenna |                           |                       |                          |                      |                                   |                                  | EUT Operating Voltage/Frequency: 5VDC |                |                       |                                      |                |                       |
| Temp: 22.5                                                                 |                    | Humidity: 55%                              |                           |                       |                          |                      |                                   |                                  | Pressure: 1014                        |                |                       |                                      |                |                       |
| Frequency Range: 18-25GHz                                                  |                    |                                            |                           |                       |                          |                      |                                   |                                  | Measurement Distance: 1 m             |                |                       |                                      |                |                       |
| Notes: Low CH                                                              |                    |                                            |                           |                       |                          |                      |                                   |                                  | EUT Max Freq: 2480                    |                |                       |                                      |                |                       |
| Antenna Polarization<br>(H / V)                                            | Frequency<br>(MHz) | Peak Reading<br>(dBµV)                     | Average Reading<br>(dBµV) | Preamp Factor<br>(dB) | Antenna Factor<br>(dB/m) | Cable Factor<br>(dB) | Adjusted Peak Reading<br>(dBµV/m) | Adjusted Avg Reading<br>(dBµV/m) | FCC Class B High Frequency - Peak     |                |                       | FCC Class B High Frequency - Average |                |                       |
|                                                                            |                    |                                            |                           |                       |                          |                      |                                   |                                  | Limit<br>(dBµV/m)                     | Margin<br>(dB) | Result<br>(Pass/Fail) | Limit<br>(dBµV/m)                    | Margin<br>(dB) | Result<br>(Pass/Fail) |
| V                                                                          | 21325.0            | 35.199                                     | 35.2                      | 0.0                   | 5.5                      | 10.8                 | 51.5                              | 51.5                             | 83.5                                  | -32.0          | Pass                  | 63.5                                 | -12.0          | Pass                  |
| V                                                                          | 22564.0            | 33.798                                     | 33.8                      | 0.0                   | 5.2                      | 11.2                 | 50.2                              | 50.2                             | 83.5                                  | -33.3          | Pass                  | 63.5                                 | -13.3          | Pass                  |
| V                                                                          | 24321.0            | 35.613                                     | 35.6                      | 0.0                   | 5.0                      | 11.6                 | 52.2                              | 52.2                             | 83.5                                  | -31.3          | Pass                  | 63.5                                 | -11.3          | Pass                  |
| H                                                                          | 21325.0            | 35.241                                     | 35.2                      | 0.0                   | 5.5                      | 10.8                 | 51.5                              | 51.5                             | 83.5                                  | -32.0          | Pass                  | 63.5                                 | -12.0          | Pass                  |
| H                                                                          | 22564.0            | 34.7                                       | 34.7                      | 0.0                   | 5.2                      | 11.2                 | 51.1                              | 51.1                             | 83.5                                  | -32.4          | Pass                  | 63.5                                 | -12.4          | Pass                  |
| H                                                                          | 24321.0            | 33.829                                     | 33.8                      | 0.0                   | 5.0                      | 11.6                 | 50.4                              | 50.4                             | 83.5                                  | -33.1          | Pass                  | 63.5                                 | -13.1          | Pass                  |
| Table Result:                                                              |                    | Pass                                       |                           | by                    |                          | -11.3 dB             |                                   | Worst Freq:                      |                                       | 22564.0 MHz    |                       |                                      |                |                       |
| Test Site: EMI Chamber 1                                                   |                    | Cable 1: Asset #2690                       |                           |                       |                          |                      |                                   |                                  | Cable 2: ---                          |                |                       | Cable 3: ---                         |                |                       |
| Analyzer: 2093                                                             |                    | Preamp: None                               |                           |                       |                          |                      |                                   |                                  | Antenna: 2709                         |                |                       | Preselector: ---                     |                |                       |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                    |                                            |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                    |                                            |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |
| Copyright Curtis-Straus LLC 2000                                           |                    |                                            |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |

## 18-25GHz Data Table

**Note:** Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



## 18-25GHz Vertical Plot



## 18-25GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



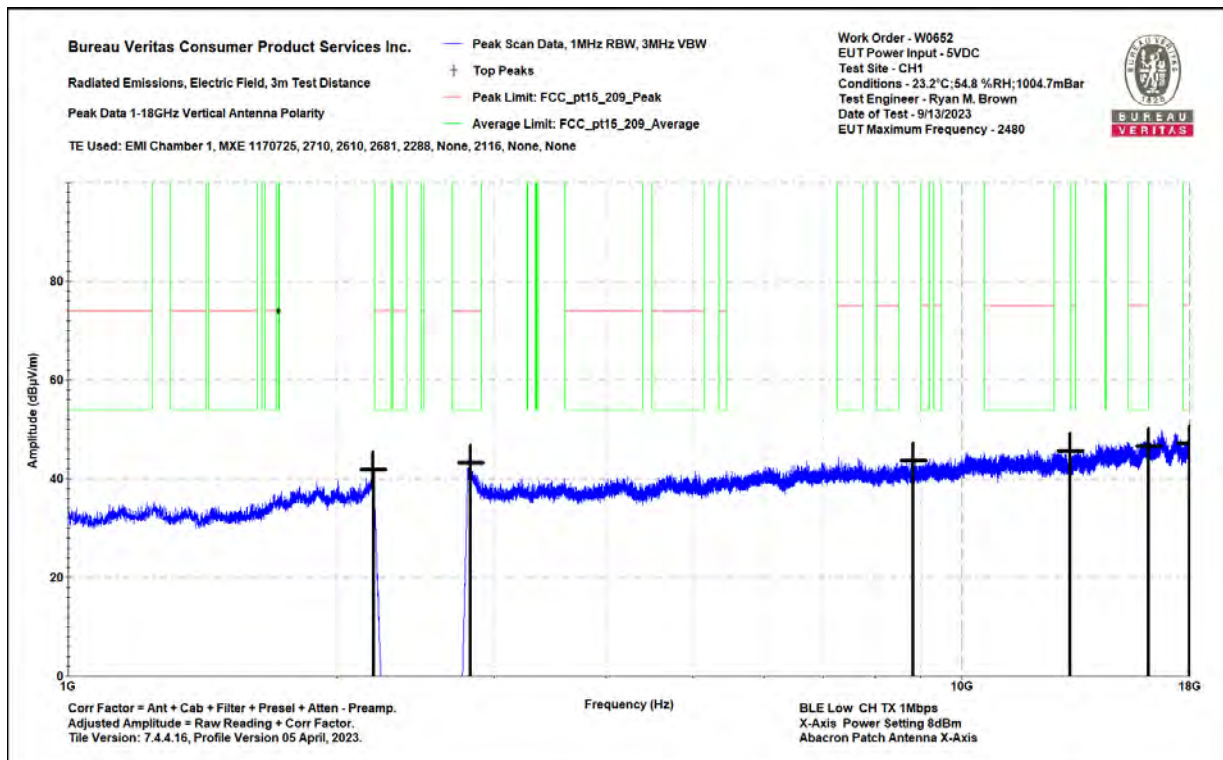
## NORA-W300 with Abracon Patch Antenna

Low CH, 1Mbps, Module axis: X, External antenna axis: X

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                        |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                    |
| Top Peaks Vertical 1-18GHz                    | Test Site - CH1                           |
| Notes:                                        | Conditions - 23.2°C; 54.8 %RH; 1004.7mBar |
| BLE Low CH TX 1Mbps                           | Test Engineer - Ryan M. Brown             |
| X-Axis Power Setting 8dBm                     | Date of Test - 9/13/2023                  |
| Abracon Patch Antenna X-Axis                  |                                           |

| Frequency (MHz) | Raw Peak Reading (dBμV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBμV/m) | Pk Lim: FCC_pt15_209_Peak (dBμV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBμV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2822.4          | 30                      | 13.2                     | 43.2                             | 74                                 | -30.8                     | PASS                                |                              | 54                                    | -10.8                        | PASS                                  |                                 | 100                 | 71                    |
| 17999.58        | 21.9                    | 25.3                     | 47.2                             | 74                                 | -26.8                     | PASS                                | -26.8                        | 54                                    | -6.8                         | PASS                                  | -6.8                            | 300                 | 260                   |

## 1-18GHz Vertical Data Table



## 1-18GHz Vertical Plot



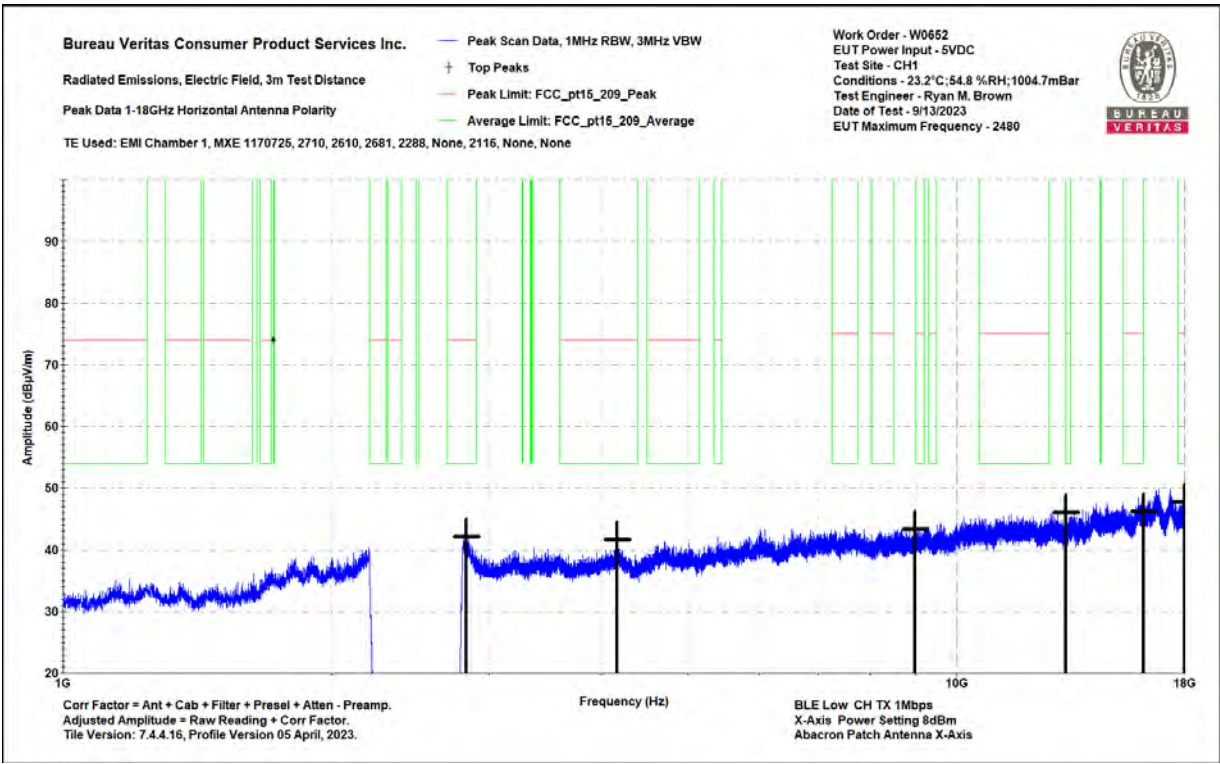
Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                      |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                  |
| Top Peaks Horizontal 1-18GHz                  | Test Site - CH1                         |
| Notes:                                        | Conditions - 23.2°C;54.8 %RH;1004.7mBar |
| BLE Low CH TX 1Mbps                           | Test Engineer - Ryan M. Brown           |
| X-Axis Power Setting 8dBm                     | Date of Test - 9/13/2023                |
| Abacron Patch Antenna X-Axis                  |                                         |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|--------------------------------|------------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2827.07         | 29.1                    | 13                       | 42.2                             | 74                                 | -31.8                     | PASS                           |                              | 54                                    | -11.8                    | PASS                          |                             | 300                 | 0                     |
| 4165.82         | 31.3                    | 10.3                     | 41.6                             | 74                                 | -32.4                     | PASS                           |                              | 54                                    | -12.4                    | PASS                          |                             | 200                 | 57                    |
| 17998.72        | 22.5                    | 25.3                     | 47.8                             | 74                                 | -26.2                     | PASS                           | -26.2                        | 54                                    | -6.2                     | PASS                          | -6.2                        | 200                 | 282                   |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2

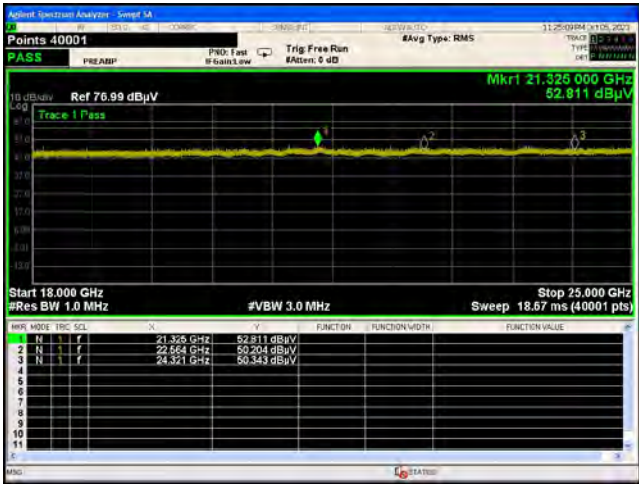


Radiated Emissions Table

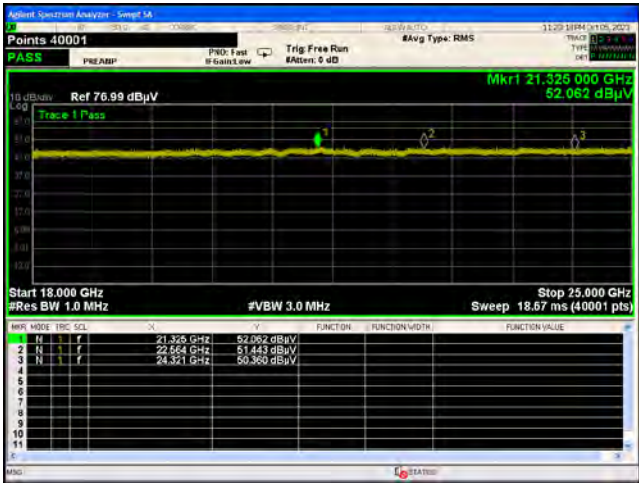
|                                                                            |                 |                                                |                        |                    |                       |                   |                                |                                       |                                   |                  |                    |                                      |             |                    |
|----------------------------------------------------------------------------|-----------------|------------------------------------------------|------------------------|--------------------|-----------------------|-------------------|--------------------------------|---------------------------------------|-----------------------------------|------------------|--------------------|--------------------------------------|-------------|--------------------|
| Date: 05-Oct-23                                                            |                 | Company: U-Blox                                |                        |                    |                       |                   |                                | Work Order: X0652                     |                                   |                  |                    |                                      |             |                    |
| Engineer: Ryan M. Brown                                                    |                 | EUT Desc: NORA-W300 With Abracon Patch Antenna |                        |                    |                       |                   |                                | EUT Operating Voltage/Frequency: 5VDC |                                   |                  |                    |                                      |             |                    |
| Temp: Temp: 22.5                                                           |                 | Humidity: 0.545                                |                        | Pressure: 1014     |                       |                   |                                |                                       |                                   |                  |                    |                                      |             |                    |
| Frequency Range: 18-25GHz                                                  |                 |                                                |                        |                    |                       |                   |                                | Measurement Distance: 1 m             |                                   |                  |                    |                                      |             |                    |
| Notes: Low CH                                                              |                 |                                                |                        |                    |                       |                   |                                | EUT Max Freq:                         |                                   |                  |                    |                                      |             |                    |
| Antenna Polarization (H / V)                                               | Frequency (MHz) | Peak Reading (dBμV)                            | Average Reading (dBμV) | Preamp Factor (dB) | Antenna Factor (dB/m) | Cable Factor (dB) | Adjusted Peak Reading (dBμV/m) | Adjusted Avg Reading (dBμV/m)         | FCC Class B High Frequency - Peak |                  |                    | FCC Class B High Frequency - Average |             |                    |
|                                                                            |                 |                                                |                        |                    |                       |                   |                                |                                       | Limit (dBμV/m)                    | Margin (dB)      | Result (Pass/Fail) | Limit (dBμV/m)                       | Margin (dB) | Result (Pass/Fail) |
| V                                                                          | 21325.0         | 36.51                                          | 36.5                   | 0.0                | 5.5                   | 10.8              | 52.8                           | 52.8                                  | 83.5                              | -30.7            | Pass               | 63.5                                 | -10.7       | Pass               |
| V                                                                          | 22564.0         | 33.804                                         | 33.8                   | 0.0                | 5.2                   | 11.2              | 50.2                           | 50.2                                  | 83.5                              | -33.3            | Pass               | 63.5                                 | -13.3       | Pass               |
| V                                                                          | 24321.0         | 33.743                                         | 33.7                   | 0.0                | 5.0                   | 11.6              | 50.3                           | 50.3                                  | 83.5                              | -33.2            | Pass               | 63.5                                 | -13.2       | Pass               |
| H                                                                          | 21325.0         | 35.762                                         | 35.8                   | 0.0                | 5.5                   | 10.8              | 52.1                           | 52.1                                  | 83.5                              | -31.4            | Pass               | 63.5                                 | -11.4       | Pass               |
| H                                                                          | 22564.0         | 35.043                                         | 35.0                   | 0.0                | 5.2                   | 11.2              | 51.4                           | 51.4                                  | 83.5                              | -32.1            | Pass               | 63.5                                 | -12.1       | Pass               |
| H                                                                          | 24321.0         | 33.76                                          | 33.8                   | 0.0                | 5.0                   | 11.6              | 50.4                           | 50.4                                  | 83.5                              | -33.1            | Pass               | 63.5                                 | -13.1       | Pass               |
| Table Result:                                                              |                 | Pass                                           |                        | by                 |                       | -10.7 dB          |                                | Worst Freq:                           |                                   | 21325.0 MHz      |                    |                                      |             |                    |
| Test Site: EMI Chamber 1                                                   |                 | Cable 1: Asset #2690                           |                        |                    |                       |                   |                                | Cable 2: ---                          |                                   | Cable 3: ---     |                    |                                      |             |                    |
| Analyzer: 2093                                                             |                 | Preamp: None                                   |                        |                    |                       |                   |                                | Antenna: 2709                         |                                   | Preselector: --- |                    |                                      |             |                    |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                 |                                                |                        |                    |                       |                   |                                |                                       |                                   |                  |                    |                                      |             |                    |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                 |                                                |                        |                    |                       |                   |                                |                                       |                                   |                  |                    |                                      |             |                    |
| Copyright Curtis-Straus LLC 2000                                           |                 |                                                |                        |                    |                       |                   |                                |                                       |                                   |                  |                    |                                      |             |                    |

18-25GHz Data Table

Note: Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



18-25GHz Vertical Plot



18-25GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



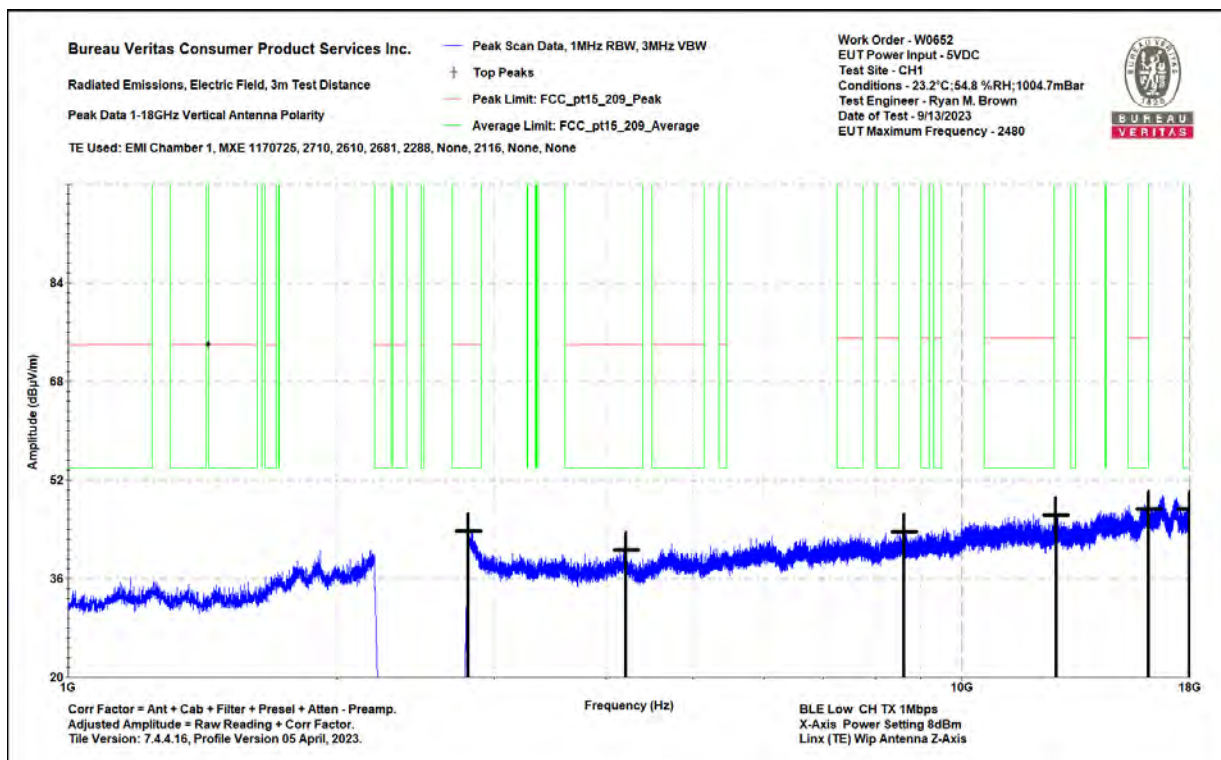
## NORA-W300 with Linx (TE) Whip Antenna

Low CH, 1Mbps, Module axis: X, External antenna axis: Z

|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                      |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                  |
| Top Peaks Vertical 1-18GHz                    | Test Site - CH1                         |
| Notes:                                        | Conditions - 23.2°C;54.8 %RH;1004.7mBar |
| BLE Low CH TX 1Mbps                           | Test Engineer - Ryan M. Brown           |
| X-Axis Power Setting 8dBm                     | Date of Test - 9/13/2023                |
| Linx (TE) Wip Antenna Z-Axis                  |                                         |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2802            | 29.8                    | 14                       | 43.8                             | 74                                 | -30.2                     | PASS                                |                              | 54                                    | -10.2                        | PASS                                  |                                 | 100                 | 145                   |
| 4213            | 30.3                    | 10.4                     | 40.7                             | 74                                 | -33.3                     | PASS                                |                              | 54                                    | -13.3                        | PASS                                  |                                 | 300                 | 144                   |
| 16195.88        | 25                      | 22.4                     | 47.4                             | 74                                 | -26.6                     | PASS                                | -26.6                        | 54                                    | -6.6                         | PASS                                  | -6.6                            | 300                 | 32                    |
| 17999.58        | 22                      | 25.3                     | 47.3                             | 74                                 | -26.7                     | PASS                                |                              | 54                                    | -6.7                         | PASS                                  |                                 | 200                 | 171                   |

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

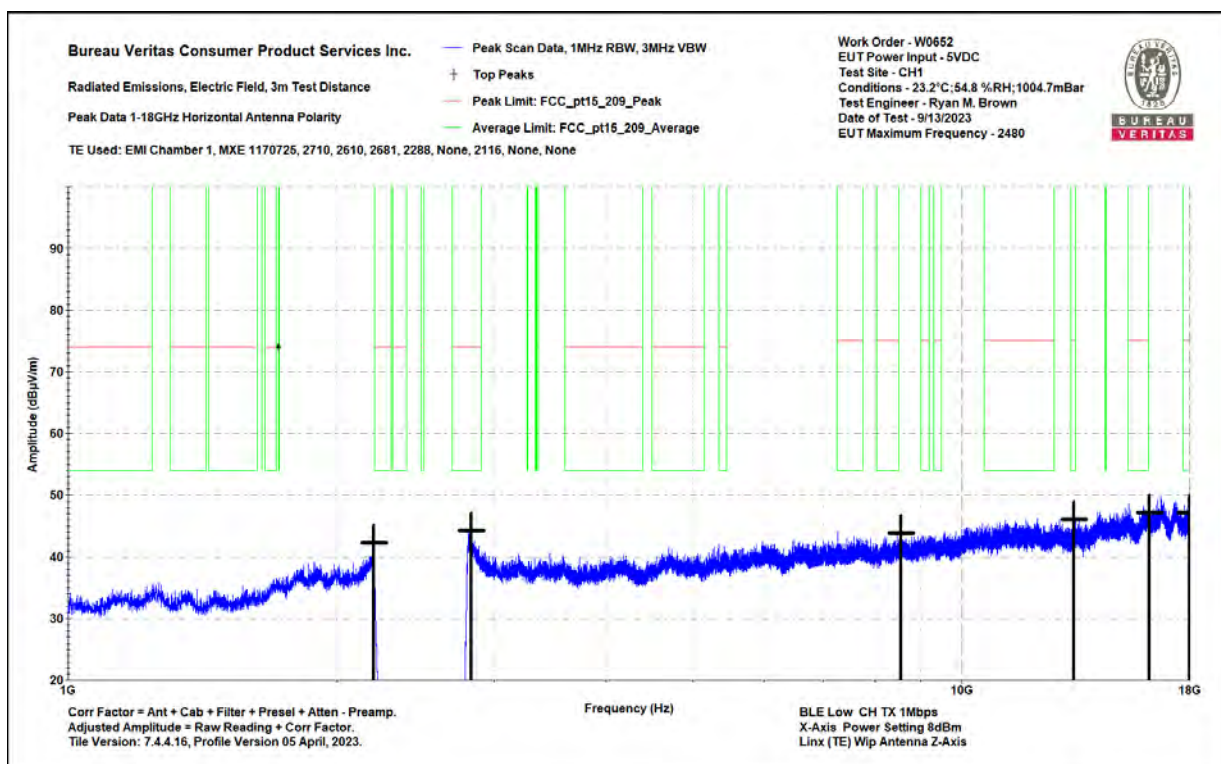


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 1-18GHz  
Notes:  
BLE Low CH TX 1Mbps  
X-Axis Power Setting 8dBm  
Linx (TE) Wip Antenna Z-Axis

Work Order - W0652  
EUT Power Input - 5VDC  
Test Site - CH1  
Conditions - 23.2°C;54.8 %RH;1004.7mBar  
Test Engineer - Ryan M. Brown  
Date of Test - 9/13/2023

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|--------------------------------|------------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2824.53         | 31.2                    | 13.1                     | 44.3                             | 74                                 | -29.7                     | PASS                           |                              | 54                                    | -9.7                     | PASS                          |                             | 300                 | 184                   |
| 13355.17        | 26.8                    | 19.2                     | 46.1                             | 74                                 | -27.9                     | PASS                           |                              | 54                                    | -7.9                     | PASS                          |                             | 300                 | 146                   |
| 18000           | 21.8                    | 25.3                     | 47.2                             | 74                                 | -26.8                     | PASS                           | -26.8                        | 54                                    | -6.8                     | PASS                          |                             | 300                 | 71                    |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

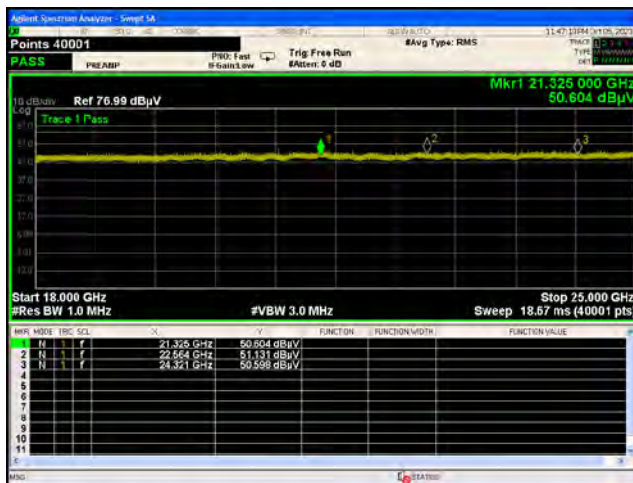


## Radiated Emissions Table

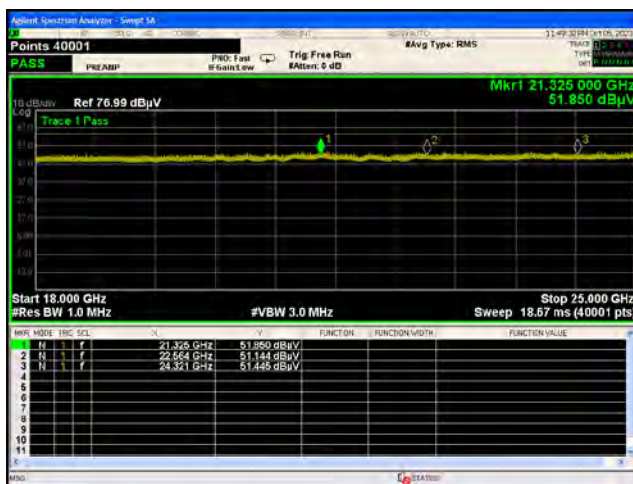
| Date: 05-Oct-23                                                            |                    | Company: U-Blox                                 |                           |                       |                          |                      |                                   |                                  | Work Order: X0652                     |                |                       |                                      |                |                       |
|----------------------------------------------------------------------------|--------------------|-------------------------------------------------|---------------------------|-----------------------|--------------------------|----------------------|-----------------------------------|----------------------------------|---------------------------------------|----------------|-----------------------|--------------------------------------|----------------|-----------------------|
| Engineer: Ryan M. Brown                                                    |                    | EUT Desc: NORA-W300 With Linx (TE) Whip Antenna |                           |                       |                          |                      |                                   |                                  | EUT Operating Voltage/Frequency: 5VDC |                |                       |                                      |                |                       |
| Temp: 22.5                                                                 |                    | Humidity: 55%                                   |                           |                       |                          |                      |                                   |                                  | Pressure: 1014                        |                |                       |                                      |                |                       |
| Frequency Range: 18-25GHz                                                  |                    |                                                 |                           |                       |                          |                      |                                   |                                  | Measurement Distance: 1 m             |                |                       |                                      |                |                       |
| Notes: Low CH                                                              |                    |                                                 |                           |                       |                          |                      |                                   |                                  | EUT Max Freq: 2480                    |                |                       |                                      |                |                       |
| Antenna Polarization<br>(H / V)                                            | Frequency<br>(MHz) | Peak Reading<br>(dBµV)                          | Average Reading<br>(dBµV) | Preamp Factor<br>(dB) | Antenna Factor<br>(dB/m) | Cable Factor<br>(dB) | Adjusted Peak Reading<br>(dBµV/m) | Adjusted Avg Reading<br>(dBµV/m) | FCC Class B High Frequency - Peak     |                |                       | FCC Class B High Frequency - Average |                |                       |
|                                                                            |                    |                                                 |                           |                       |                          |                      |                                   |                                  | Limit<br>(dBµV/m)                     | Margin<br>(dB) | Result<br>(Pass/Fail) | Limit<br>(dBµV/m)                    | Margin<br>(dB) | Result<br>(Pass/Fail) |
| V                                                                          | 21325.0            | 34.304                                          | 34.3                      | 0.0                   | 5.5                      | 10.8                 | 50.6                              | 50.6                             | 83.5                                  | -32.9          | Pass                  | 63.5                                 | -12.9          | Pass                  |
| V                                                                          | 22564.0            | 34.731                                          | 34.7                      | 0.0                   | 5.2                      | 11.2                 | 51.1                              | 51.1                             | 83.5                                  | -32.4          | Pass                  | 63.5                                 | -12.4          | Pass                  |
| V                                                                          | 24321.0            | 33.998                                          | 34.0                      | 0.0                   | 5.0                      | 11.6                 | 50.6                              | 50.6                             | 83.5                                  | -32.9          | Pass                  | 63.5                                 | -12.9          | Pass                  |
| H                                                                          | 21325.0            | 35.55                                           | 35.6                      | 0.0                   | 5.5                      | 10.8                 | 51.9                              | 51.9                             | 83.5                                  | -31.7          | Pass                  | 63.5                                 | -11.7          | Pass                  |
| H                                                                          | 22564.0            | 34.744                                          | 34.7                      | 0.0                   | 5.2                      | 11.2                 | 51.1                              | 51.1                             | 83.5                                  | -32.4          | Pass                  | 63.5                                 | -12.4          | Pass                  |
| H                                                                          | 24321.0            | 34.845                                          | 34.8                      | 0.0                   | 5.0                      | 11.6                 | 51.4                              | 51.4                             | 83.5                                  | -32.1          | Pass                  | 63.5                                 | -12.1          | Pass                  |
| Table Result:                                                              |                    | Pass                                            |                           | by                    |                          | -11.7 dB             |                                   | Worst Freq:                      |                                       | 21325.0 MHz    |                       |                                      |                |                       |
| Test Site: EMI Chamber 1                                                   |                    | Cable 1: Asset #2690                            |                           |                       |                          |                      |                                   |                                  | Cable 2: ---                          |                |                       | Cable 3: ---                         |                |                       |
| Analyzer: 2093                                                             |                    | Preamp: None                                    |                           |                       |                          |                      |                                   |                                  | Antenna: 2709                         |                |                       | Preselector: ---                     |                |                       |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                    |                                                 |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                    |                                                 |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |
| Copyright Curtis-Straus LLC 2000                                           |                    |                                                 |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |

## 18-25GHz Data Table

**Note:** Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



## 18-25GHz Vertical Plot



## 18-25GHz Horizontal Plot



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



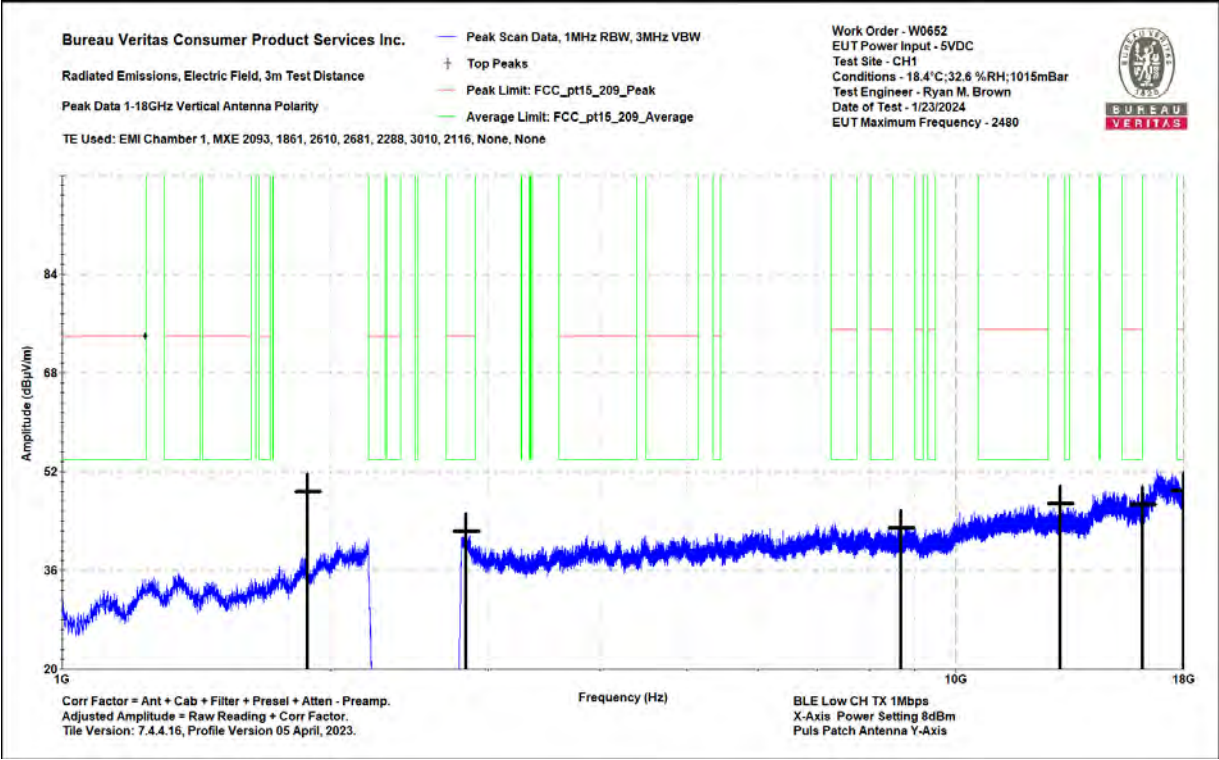
NORA-W300 with Yageo Patch Antenna

Low CH, 1Mbps, Module axis: X, External antenna axis: Y

|                                               |                                       |
|-----------------------------------------------|---------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                    |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                |
| Top Peaks Vertical 1-18GHz                    | Test Site - CH1                       |
| Notes:                                        | Conditions - 18.4°C;32.6 %RH;1015mBar |
| BLE Low CH TX 1Mbps                           | Test Engineer - Ryan M. Brown         |
| X-Axis Power Setting 8dBm                     | Date of Test - 1/23/2024              |
| Puls Patch Antenna Y-Axis                     |                                       |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2834.3          | 47.9                    | -5.5                     | 42.4                             | 74                                 | -31.6                     | PASS                                |                              | 54                                    | -11.6                        | PASS                                  |                                 | 100                 | 32                    |
| 16198.85        | 38.4                    | 8.3                      | 46.7                             | 74                                 | -27.3                     | PASS                                |                              | 54                                    | -7.3                         | PASS                                  |                                 | 200                 | 283                   |
| 17998.3         | 35.2                    | 13.7                     | 48.9                             | 74                                 | -25.1                     | PASS                                | -26.1                        | 54                                    | -5.1                         | PASS                                  | -5.1                            | 200                 | 97                    |

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



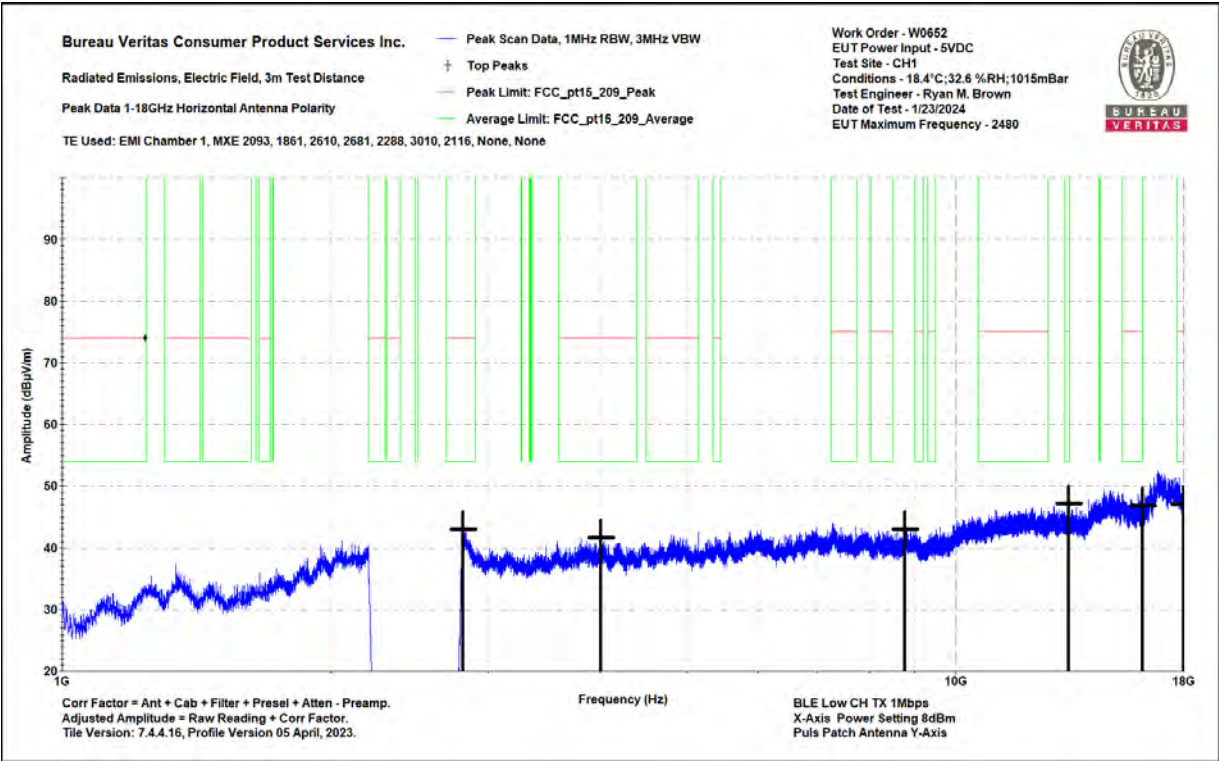
Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



|                                               |                                       |
|-----------------------------------------------|---------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                    |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                |
| Top Peaks Horizontal 1-18GHz                  | Test Site - CH1                       |
| Notes:                                        | Conditions - 18.4°C;32.6 %RH;1015mBar |
| BLE Low CH TX 1Mbps                           | Test Engineer - Ryan M. Brown         |
| X-Axis Power Setting 8dBm                     | Date of Test - 1/23/2024              |
| Puls Patch Antenna Y-Axis                     |                                       |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|--------------------------------|------------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2808.8          | 47.2                    | -4.2                     | 43                               | 74                                 | -31                       | PASS                           |                              | 54                                    | -11                      | PASS                          |                             | 200                 | 283                   |
| 4009.43         | 50                      | -8.3                     | 41.7                             | 74                                 | -32.3                     | PASS                           |                              | 54                                    | -12.3                    | PASS                          |                             | 100                 | 218                   |
| 13376.85        | 40.9                    | 6.3                      | 47.2                             | 74                                 | -26.8                     | PASS                           | -27.8                        | 54                                    | -6.8                     | PASS                          | -6.8                        | 200                 | 59                    |
| 16197.58        | 38.5                    | 8.3                      | 46.8                             | 74                                 | -27.2                     | PASS                           |                              | 54                                    | -7.2                     | PASS                          |                             | 200                 | 97                    |
| 18000           | 33.4                    | 13.7                     | 47.1                             | 74                                 | -26.9                     | PASS                           |                              | 54                                    | -6.9                     | PASS                          |                             | 300                 | 256                   |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2

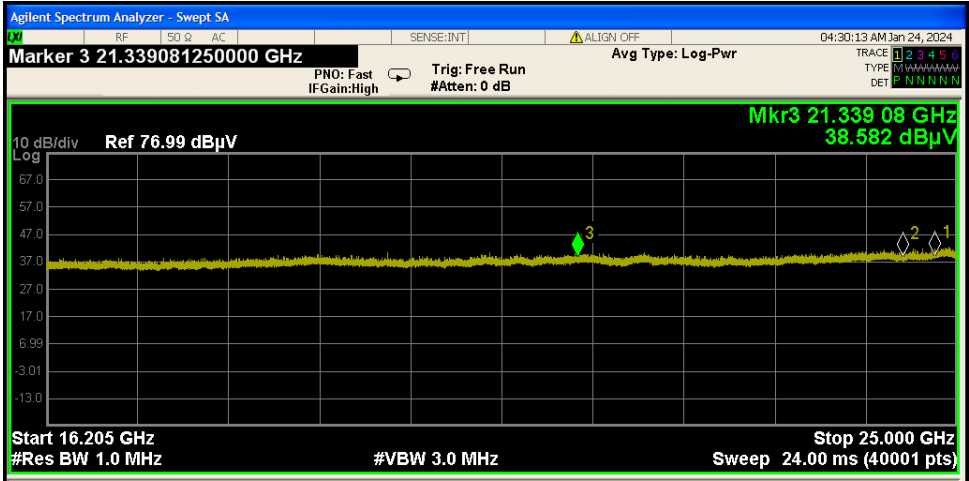


| Radiated Emissions Table                                                   |                 |                     |                                              |                    |                       |                   |                                |                               |                                       |             |                    |                                      |             |                    |
|----------------------------------------------------------------------------|-----------------|---------------------|----------------------------------------------|--------------------|-----------------------|-------------------|--------------------------------|-------------------------------|---------------------------------------|-------------|--------------------|--------------------------------------|-------------|--------------------|
| Date: 24-Jan-24                                                            |                 |                     | Company: U-Blox                              |                    |                       |                   |                                |                               | Work Order: X0652                     |             |                    |                                      |             |                    |
| Engineer: Ryan M. Brown                                                    |                 |                     | EUT Desc: NORA-W300 With Yageo Patch Antenna |                    |                       |                   |                                |                               | EUT Operating Voltage/Frequency: 5VDC |             |                    |                                      |             |                    |
| Temp: Temp: 20.2                                                           |                 |                     | Humidity: 35.2                               |                    |                       |                   |                                |                               | Pressure: 1016                        |             |                    |                                      |             |                    |
| Frequency Range: 18-25GHz                                                  |                 |                     |                                              |                    |                       |                   |                                |                               | Measurement Distance: 1 m             |             |                    |                                      |             |                    |
| Notes: Low CH                                                              |                 |                     |                                              |                    |                       |                   |                                |                               | EUT Max Freq: 2480                    |             |                    |                                      |             |                    |
| Antenna Polarization (H / V)                                               | Frequency (MHz) | Peak Reading (dBμV) | Average Reading (dBμV)                       | Preamp Factor (dB) | Antenna Factor (dB/m) | Cable Factor (dB) | Adjusted Peak Reading (dBμV/m) | Adjusted Avg Reading (dBμV/m) | FCC Class B High Frequency - Peak     |             |                    | FCC Class B High Frequency - Average |             |                    |
|                                                                            |                 |                     |                                              |                    |                       |                   |                                |                               | Limit (dBμV/m)                        | Margin (dB) | Result (Pass/Fail) | Limit (dBμV/m)                       | Margin (dB) | Result (Pass/Fail) |
|                                                                            |                 |                     |                                              |                    |                       |                   |                                |                               |                                       |             |                    |                                      |             |                    |
| V                                                                          | 24786.06        | 42.3                | 42.3                                         | 0.0                | 5.5                   | 10.8              | 58.6                           | 58.6                          | 83.5                                  | -24.9       | Pass               | 63.5                                 | -4.9        | Pass               |
| V                                                                          | 24475.38        | 41.77               | 41.8                                         | 0.0                | 5.2                   | 11.2              | 58.2                           | 58.2                          | 83.5                                  | -25.3       | Pass               | 63.5                                 | -5.3        | Pass               |
| V                                                                          | 21339.08        | 41.24               | 41.2                                         | 0.0                | 5.0                   | 11.6              | 57.8                           | 57.8                          | 83.5                                  | -25.7       | Pass               | 63.5                                 | -5.7        | Pass               |
| H                                                                          | 24786.06        | 38.914              | 38.9                                         | 0.0                | 5.5                   | 10.8              | 55.2                           | 55.2                          | 83.5                                  | -28.3       | Pass               | 63.5                                 | -8.3        | Pass               |
| H                                                                          | 24475.38        | 38.54               | 38.5                                         | 0.0                | 5.2                   | 11.2              | 54.9                           | 54.9                          | 83.5                                  | -28.6       | Pass               | 63.5                                 | -8.6        | Pass               |
| H                                                                          | 21339.08        | 38.582              | 38.6                                         | 0.0                | 5.0                   | 11.6              | 55.2                           | 55.2                          | 83.5                                  | -28.3       | Pass               | 63.5                                 | -8.3        | Pass               |
| Table Result: Pass by -4.9 dB                                              |                 |                     |                                              |                    |                       |                   |                                |                               | Worst Freq: 24786.06 MHz              |             |                    |                                      |             |                    |
| Test Site: EMI Chamber 1                                                   |                 |                     | Cable 1: Asset #2690                         |                    |                       |                   |                                |                               | Cable 2: ---                          |             |                    | Cable 3: ---                         |             |                    |
| Analyzer: 2093                                                             |                 |                     | Preamp: None                                 |                    |                       |                   |                                |                               | Antenna: 2709                         |             |                    | Preselector: ---                     |             |                    |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                 |                     |                                              |                    |                       |                   |                                |                               |                                       |             |                    |                                      |             |                    |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                 |                     |                                              |                    |                       |                   |                                |                               |                                       |             |                    |                                      |             |                    |
| Copyright Curtis-Straus LLC 2000                                           |                 |                     |                                              |                    |                       |                   |                                |                               |                                       |             |                    |                                      |             |                    |

18-25GHz Data Table



18-25GHz Vertical Plot



18-25GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



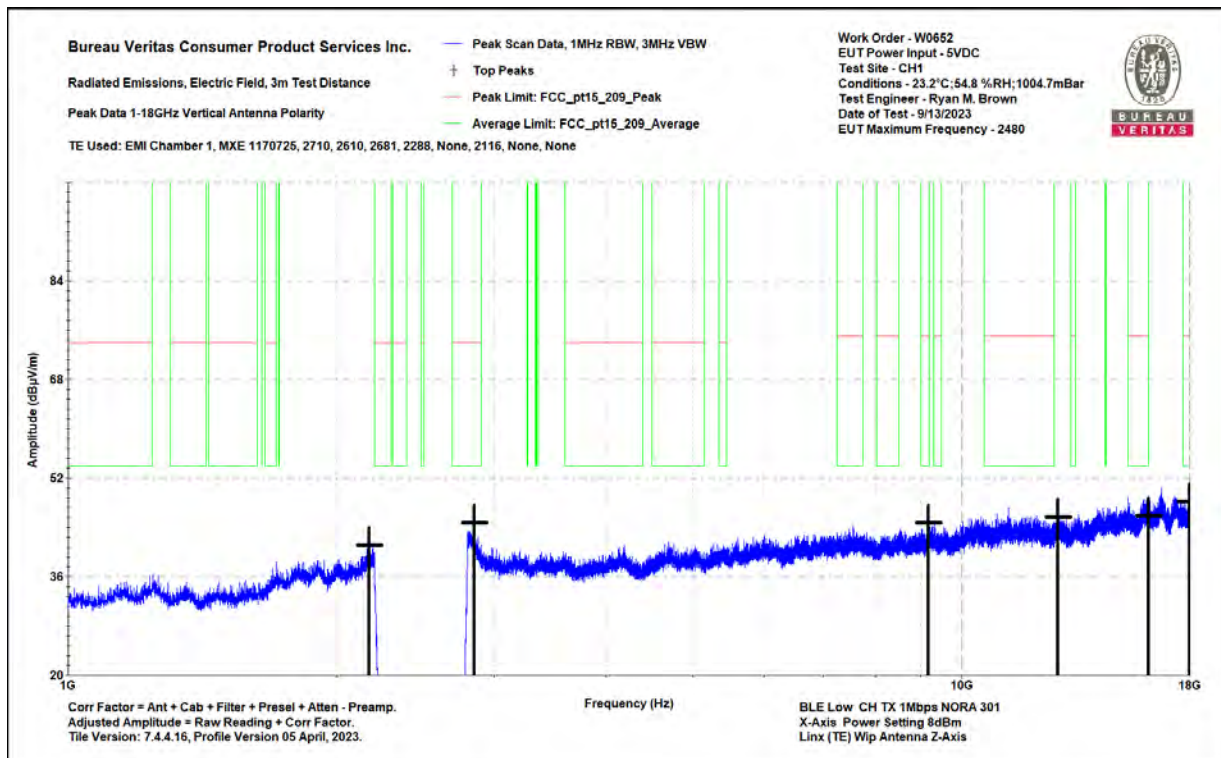
## NORA-W301 with Linx (TE) Whip Antenna

Low CH, 1Mbps, Module axis: X, External antenna axis: Z

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                        |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                    |
| Top Peaks Vertical 1-18GHz                    | Test Site - CH1                           |
| Notes:                                        | Conditions - 23.2°C; 54.8 %RH; 1004.7mBar |
| BLE Low CH TX 1Mbps NORA 301                  | Test Engineer - Ryan M. Brown             |
| X-Axis Power Setting 8dBm                     | Date of Test - 9/13/2023                  |
| Linx (TE) Wip Antenna Z-Axis                  |                                           |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2847.05         | 32.6                    | 12.2                     | 44.8                             | 74                                 | -29.2                     | PASS                                |                              | 54                                    | -9.2                         | PASS                                  |                                 | 200                 | 89                    |
| 9181.25         | 30.3                    | 14.5                     | 44.8                             | 74                                 | -29.2                     | PASS                                |                              | 54                                    | -9.2                         | PASS                                  |                                 | 200                 | 89                    |
| 16198.85        | 23.6                    | 22.4                     | 46                               | 74                                 | -28                       | PASS                                |                              | 54                                    | -8                           | PASS                                  |                                 | 100                 | 62                    |
| 17999.15        | 22.8                    | 25.3                     | 48.1                             | 74                                 | -25.9                     | PASS                                | -25.9                        | 54                                    | -5.9                         | PASS                                  | -5.9                            | 100                 | 293                   |

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

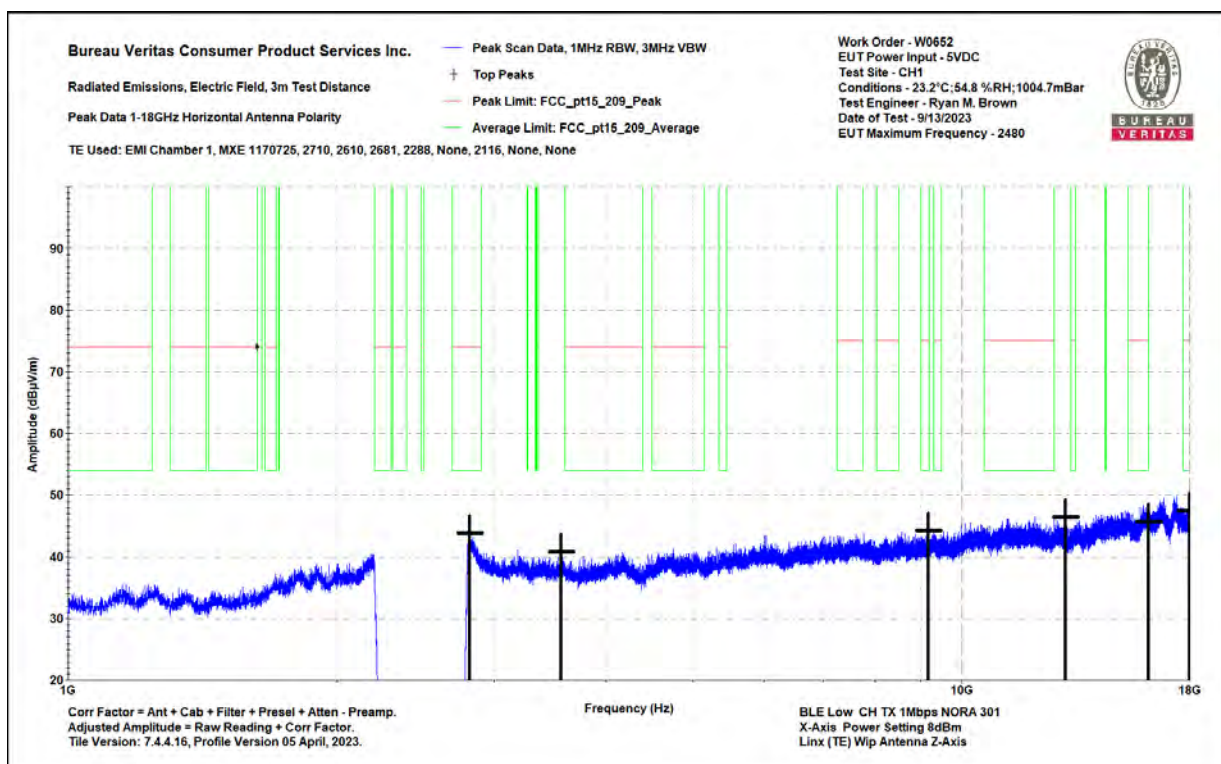


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 1-18GHz  
Notes:  
BLE Low CH TX 1Mbps NORA 301  
X-Axis Power Setting 8dBm  
Linx (TE) Wip Antenna Z-Axis

Work Order - W0652  
EUT Power Input - 5VDC  
Test Site - CH1  
Conditions - 23.2°C;54.8 %RH;1004.7mBar  
Test Engineer - Ryan M. Brown  
Date of Test - 9/13/2023

| Frequency (MHz) | Raw Peak Reading (dBμV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBμV/m) | Pk Lim: FCC_pt15_209_Peak (dBμV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBμV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|--------------------------------|------------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2815.18         | 30.4                    | 13.5                     | 43.9                             | 74                                 | -30.1                     | PASS                           |                              | 54                                    | -10.1                    | PASS                          |                             | 300                 | 261                   |
| 9182.1          | 29.7                    | 14.5                     | 44.3                             | 74                                 | -29.7                     | PASS                           |                              | 54                                    | -9.7                     | PASS                          |                             | 200                 | 286                   |
| 18000           | 22.2                    | 25.3                     | 47.5                             | 74                                 | -26.5                     | PASS                           | -26.5                        | 54                                    | -6.5                     | PASS                          | -6.5                        | 300                 | 295                   |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

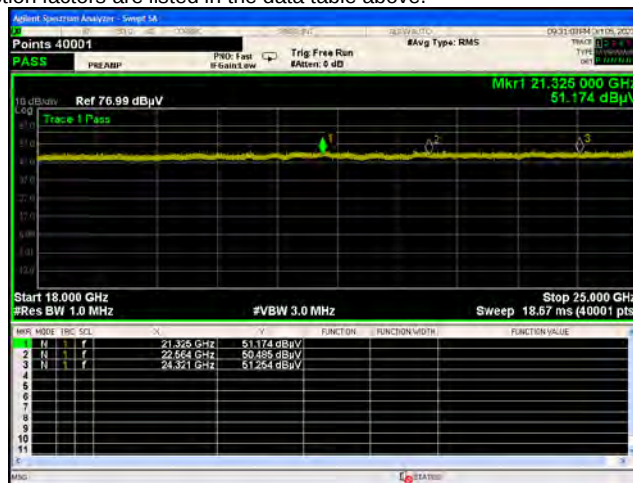


## Radiated Emissions Table

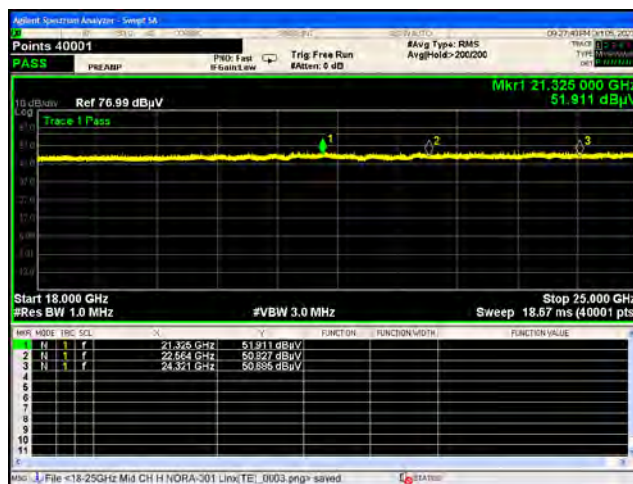
| Date: 27-Nov-23                                                            |                    | Company: U-Blox                                 |                           |                       |                          |                      |                                   |                                  | Work Order: X0652                     |                |                       |                                      |                |                       |
|----------------------------------------------------------------------------|--------------------|-------------------------------------------------|---------------------------|-----------------------|--------------------------|----------------------|-----------------------------------|----------------------------------|---------------------------------------|----------------|-----------------------|--------------------------------------|----------------|-----------------------|
| Engineer: Ryan M. Brown                                                    |                    | EUT Desc: NORA-W301 With Linx (TE) Whip Antenna |                           |                       |                          |                      |                                   |                                  | EUT Operating Voltage/Frequency: 5VDC |                |                       |                                      |                |                       |
| Temp: 22.5                                                                 |                    | Humidity: 55%                                   |                           |                       |                          |                      |                                   |                                  | Pressure: 1014                        |                |                       |                                      |                |                       |
| Frequency Range: 18-25GHz                                                  |                    |                                                 |                           |                       |                          |                      |                                   |                                  | Measurement Distance: 1 m             |                |                       |                                      |                |                       |
| Notes: Low CH                                                              |                    |                                                 |                           |                       |                          |                      |                                   |                                  | EUT Max Freq: 2480                    |                |                       |                                      |                |                       |
| Antenna Polarization<br>(H / V)                                            | Frequency<br>(MHz) | Peak Reading<br>(dBµV)                          | Average Reading<br>(dBµV) | Preamp Factor<br>(dB) | Antenna Factor<br>(dB/m) | Cable Factor<br>(dB) | Adjusted Peak Reading<br>(dBµV/m) | Adjusted Avg Reading<br>(dBµV/m) | FCC Class B High Frequency - Peak     |                |                       | FCC Class B High Frequency - Average |                |                       |
|                                                                            |                    |                                                 |                           |                       |                          |                      |                                   |                                  | Limit<br>(dBµV/m)                     | Margin<br>(dB) | Result<br>(Pass/Fail) | Limit<br>(dBµV/m)                    | Margin<br>(dB) | Result<br>(Pass/Fail) |
| V                                                                          | 21325.0            | 34.874                                          | 34.9                      | 0.0                   | 5.5                      | 10.8                 | 51.2                              | 51.2                             | 83.5                                  | -32.3          | Pass                  | 63.5                                 | -12.3          | Pass                  |
| V                                                                          | 22564.0            | 34.085                                          | 34.1                      | 0.0                   | 5.2                      | 11.2                 | 50.5                              | 50.5                             | 83.5                                  | -33.0          | Pass                  | 63.5                                 | -13.0          | Pass                  |
| V                                                                          | 24321.0            | 34.654                                          | 34.7                      | 0.0                   | 5.0                      | 11.6                 | 51.3                              | 51.3                             | 83.5                                  | -32.2          | Pass                  | 63.5                                 | -12.2          | Pass                  |
| H                                                                          | 21325.0            | 35.611                                          | 35.6                      | 0.0                   | 5.5                      | 10.8                 | 51.9                              | 51.9                             | 83.5                                  | -31.6          | Pass                  | 63.5                                 | -11.6          | Pass                  |
| H                                                                          | 22564.0            | 34.427                                          | 34.4                      | 0.0                   | 5.2                      | 11.2                 | 50.8                              | 50.8                             | 83.5                                  | -32.7          | Pass                  | 63.5                                 | -12.7          | Pass                  |
| H                                                                          | 24321.0            | 34.085                                          | 34.1                      | 0.0                   | 5.0                      | 11.6                 | 50.7                              | 50.7                             | 83.5                                  | -32.8          | Pass                  | 63.5                                 | -12.8          | Pass                  |
| Table Result:                                                              |                    | Pass                                            |                           | by                    |                          | -11.6 dB             |                                   | Worst Freq:                      |                                       | 21325.0 MHz    |                       |                                      |                |                       |
| Test Site: EMI Chamber 1                                                   |                    | Cable 1: Asset #2690                            |                           |                       |                          |                      |                                   |                                  | Cable 2: ---                          |                |                       | Cable 3: ---                         |                |                       |
| Analyzer: 2093                                                             |                    | Preamp: None                                    |                           |                       |                          |                      |                                   |                                  | Antenna: 2709                         |                |                       | Preselector: ---                     |                |                       |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                    |                                                 |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                    |                                                 |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |
| Copyright Curtis-Straus LLC 2000                                           |                    |                                                 |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |

## 18-25GHz Data Table

**Note:** Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



## 18-25GHz Vertical Plot



## 18-25GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



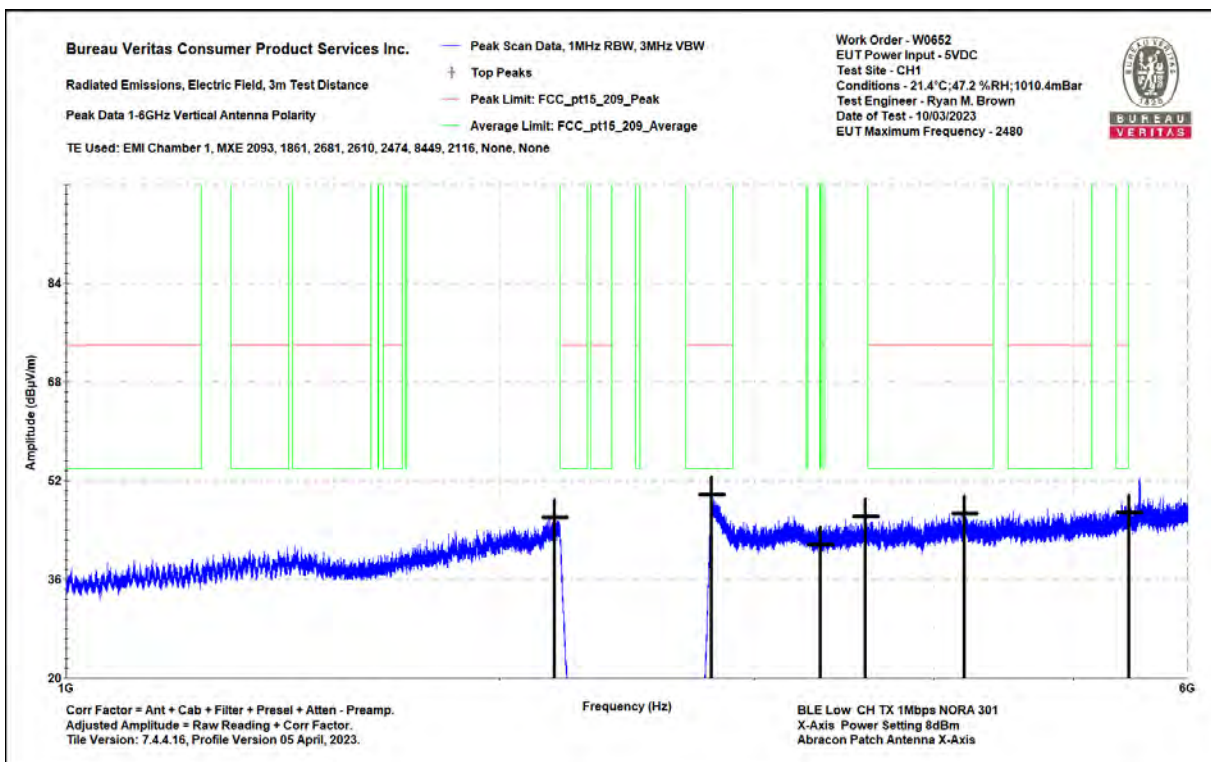
## NORA-W301 with Abracon Patch Antenna

Low CH, 1Mbps, Module axis: X, External antenna axis: X

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                        |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                    |
| Top Peaks Vertical 1-6GHz                     | Test Site - CH1                           |
| Notes:                                        | Conditions - 21.4°C; 47.2 %RH; 1010.4mBar |
| BLE Low CH TX 1Mbps NORA 301                  | Test Engineer - Ryan M. Brown             |
| X-Axis Power Setting 8dBm                     | Date of Test - 10/03/2023                 |
| Abracon Patch Antenna X-Axis                  |                                           |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2805            | 46                      | 3.8                      | 49.8                             | 74                                 | -24.2                     | PASS                                | -24.2                        | 54                                    | -4.2                         | PASS                                  | -4.2                            | 100                 | 70                    |
| 3339            | 42.8                    | -1.1                     | 41.7                             | 74                                 | -32.3                     | PASS                                |                              | 54                                    | -12.3                        | PASS                                  |                                 | 300                 | 70                    |
| 4202            | 45.3                    | 1.4                      | 46.7                             | 74                                 | -27.3                     | PASS                                |                              | 54                                    | -7.3                         | PASS                                  |                                 | 200                 | 170                   |

1-6GHz Vertical Data Table



1-6GHz Vertical Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



Radiated Emissions Electric Field 3m Distance

Top Peaks Horizontal 1-6GHz

Notes:

BLE Low CH TX 1Mbps NORA 301

X-Axis Power Setting 8dBm

EUT Power Input - 5VDC

Test Site - CH1

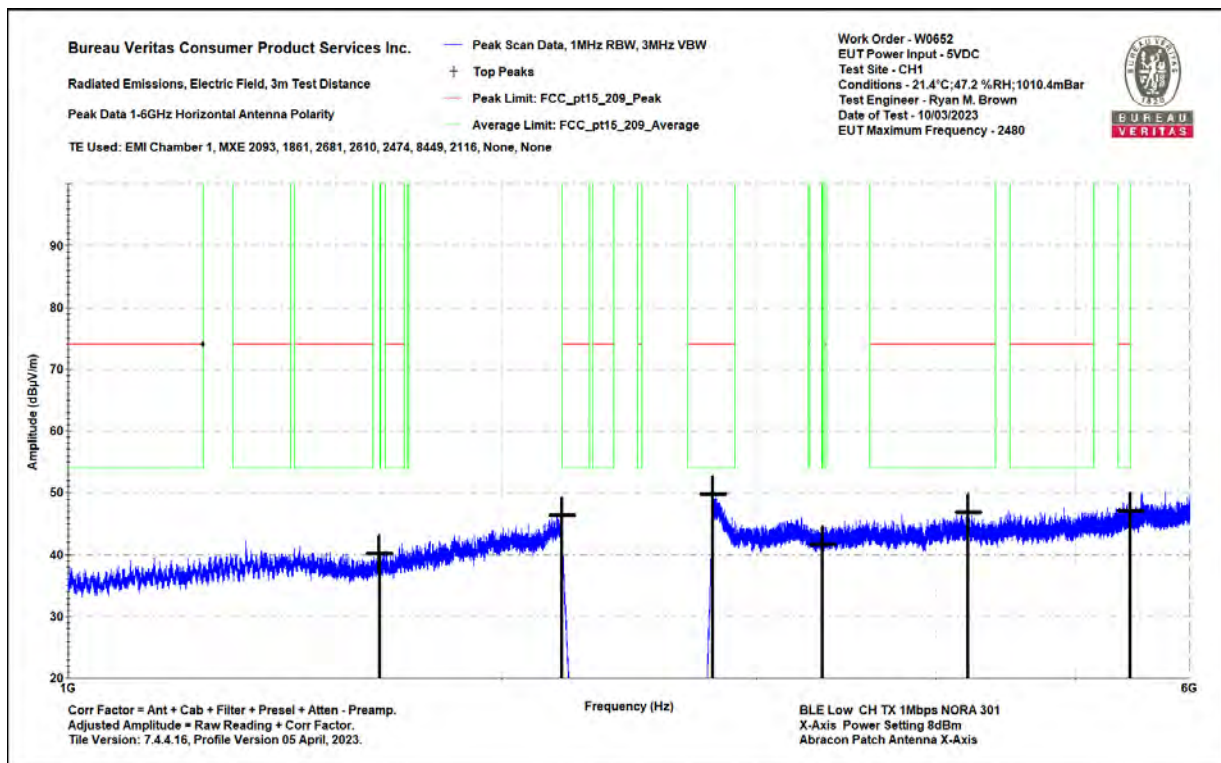
Conditions - 21.4°C; 47.2 %RH; 1010.4mBar

Test Engineer - Ryan M. Brown

Date of Test - 10/03/2023

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_20 9_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_20 9_Average (dBµV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|---------------------------|--------------------------------|------------------------------|----------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2800.75         | 45.8                    | 4                        | 49.8                             | 74                                  | -24.2                     | PASS                           | -24.2                        | 54                                     | -4.2                     | PASS                          | -4.2                        | 300                 | 259                   |
| 3339            | 42.8                    | -1.1                     | 41.7                             | 74                                  | -32.3                     | PASS                           |                              | 54                                     | -12.3                    | PASS                          |                             | 200                 | 315                   |
| 4208.88         | 45.4                    | 1.4                      | 46.8                             | 74                                  | -27.2                     | PASS                           |                              | 54                                     | -7.2                     | PASS                          |                             | 100                 | 294                   |
| 5460            | 44.2                    | 2.9                      | 47.1                             | 74                                  | -26.9                     | PASS                           |                              | 54                                     | -6.9                     | PASS                          |                             | 200                 | 59                    |

1-6GHz Horizontal Data Table



1-6GHz Horizontal Plot



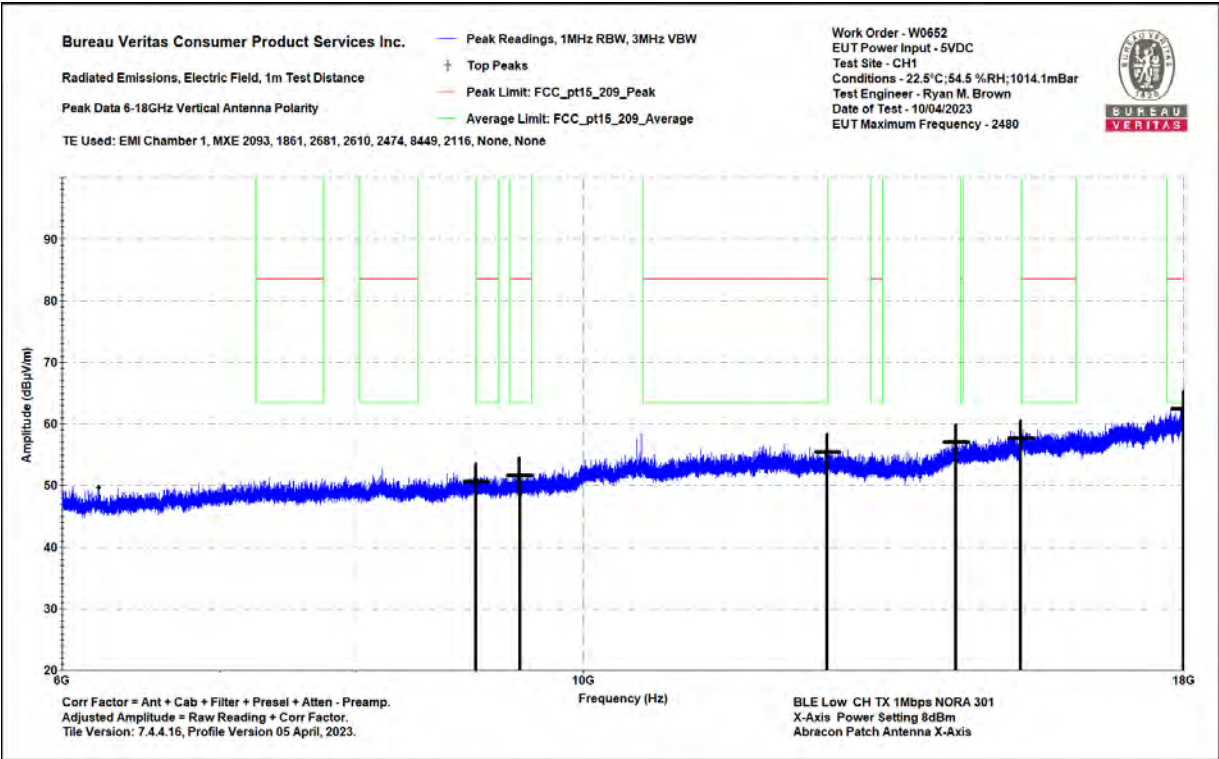
Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                      |
| Radiated Emissions Electric Field 1m Distance | EUT Power Input - 5VDC                  |
| Top Peaks Vertical 6-18GHz                    | Test Site - CH1                         |
| Notes:                                        | Conditions - 22.5°C;54.5 %RH;1014.1mBar |
| BLE Low CH TX 1Mbps NORA 301                  | Test Engineer - Ryan M. Brown           |
| X-Axis Power Setting 8dBm                     | Date of Test - 10/04/2023               |
| Abrakon Patch Antenna X-Axis                  |                                         |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Avg Limit (dB) | Avg Limit Test Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|--------------------------|------------------------------------|-----------------------------|---------------------|-----------------------|
| 9392.7          | 45.5                    | 6.1                      | 51.6                             | 83.5                               | -31.9                     | PASS                                |                              | 63.5                                  | -11.9                    | PASS                               |                             | 175                 | 208                   |
| 12693           | 45.5                    | 10                       | 55.4                             | 83.5                               | -28.1                     | PASS                                |                              | 63.5                                  | -8.1                     | PASS                               |                             | 125                 | 283                   |
| 17997.6         | 46.4                    | 16.1                     | 62.5                             | 83.5                               | -21                       | PASS                                | -21                          | 63.5                                  | -1                       | PASS                               | -1                          | 175                 | 315                   |

6-18GHz Vertical Data Table



6-18GHz Vertical Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

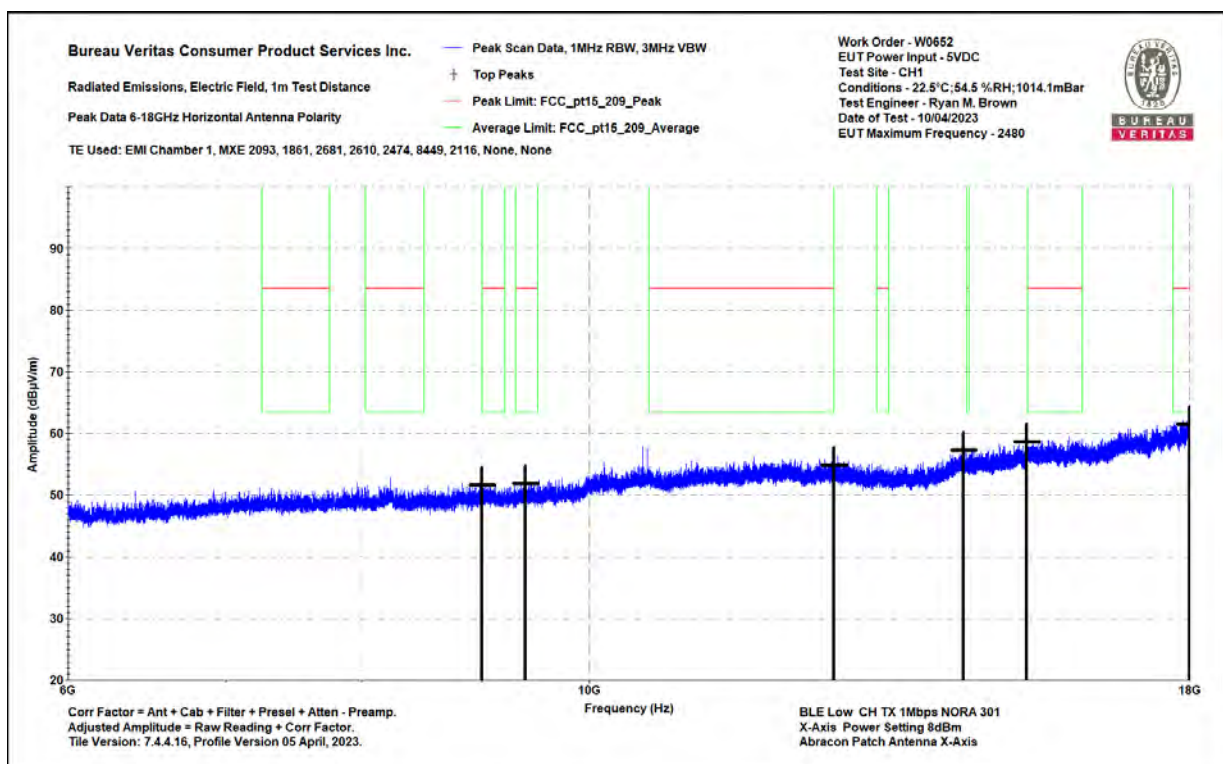


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 1m Distance  
Top Peaks Horizontal 6-18GHz  
Notes:  
BLE Low CH TX 1Mbps NORA 301  
X-Axis Power Setting 8dBm  
Abracon Patch Antenna X-Axis

Work Order - W0652  
EUT Power Input - 5VDC  
Test Site - CH1  
Conditions - 22.5°C;54.5 %RH;1014.1mBar  
Test Engineer - Ryan M. Brown  
Date of Test - 10/04/2023

| Frequency (MHz) | Raw Peak Reading (dBμV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBμV/m) | Pk Lim: FCC_pt15_209_Peak (dBμV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBμV/m) | Margin to Avg Limit (dB) | Avg Limit Test Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|--------------------------|------------------------------------|-----------------------------|---------------------|-----------------------|
| 9387.9          | 45.8                    | 6.1                      | 51.9                             | 83.5                               | -31.6                     | PASS                                |                              | 63.5                                  | -11.6                    | PASS                               |                             | 175                 | 283                   |
| 12699.6         | 44.8                    | 10                       | 54.8                             | 83.5                               | -28.7                     | PASS                                |                              | 63.5                                  | -8.7                     | PASS                               |                             | 200                 | 69                    |
| 17998.8         | 45.3                    | 16.2                     | 61.4                             | 83.5                               | -22.1                     | PASS                                | -22.1                        | 63.5                                  | -2.1                     | PASS                               | -2.1                        | 100                 | 220                   |

6-18GHz Horizontal Data Table



6-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

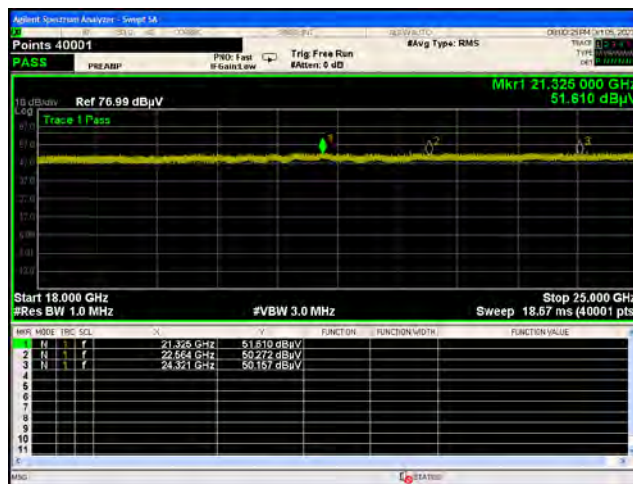


## Radiated Emissions Table

| Date: 27-Nov-23                                                            |                    |                        |                           | Company: U-Blox                                |                          |                      |                                   | Work Order: X0652                     |                                   |                |                       |                                      |                |                       |  |
|----------------------------------------------------------------------------|--------------------|------------------------|---------------------------|------------------------------------------------|--------------------------|----------------------|-----------------------------------|---------------------------------------|-----------------------------------|----------------|-----------------------|--------------------------------------|----------------|-----------------------|--|
| Engineer: Ryan M. Brown                                                    |                    |                        |                           | EUT Desc: NORA-W301 With Abracon Patch Antenna |                          |                      |                                   | EUT Operating Voltage/Frequency: 5VDC |                                   |                |                       |                                      |                |                       |  |
| Temp: 22.5                                                                 |                    |                        |                           | Humidity: 55%                                  |                          |                      |                                   | Pressure: 1014                        |                                   |                |                       |                                      |                |                       |  |
| Frequency Range: 18-25GHz                                                  |                    |                        |                           |                                                |                          |                      |                                   | Measurement Distance: 1 m             |                                   |                |                       |                                      |                |                       |  |
| Notes: Low CH                                                              |                    |                        |                           |                                                |                          |                      |                                   | EUT Max Freq: 2480                    |                                   |                |                       |                                      |                |                       |  |
| Antenna Polarization<br>(H / V)                                            | Frequency<br>(MHz) | Peak Reading<br>(dBμV) | Average Reading<br>(dBμV) | Preamp Factor<br>(dB)                          | Antenna Factor<br>(dB/m) | Cable Factor<br>(dB) | Adjusted Peak Reading<br>(dBμV/m) | Adjusted Avg Reading<br>(dBμV/m)      | FCC Class B High Frequency - Peak |                |                       | FCC Class B High Frequency - Average |                |                       |  |
|                                                                            |                    |                        |                           |                                                |                          |                      |                                   |                                       | Limit<br>(dBμV/m)                 | Margin<br>(dB) | Result<br>(Pass/Fail) | Limit<br>(dBμV/m)                    | Margin<br>(dB) | Result<br>(Pass/Fail) |  |
| V                                                                          | 21325.0            | 35.31                  | 35.3                      | 0.0                                            | 5.5                      | 10.8                 | 51.6                              | 51.6                                  | 83.5                              | -31.9          | Pass                  | 63.5                                 | -11.9          | Pass                  |  |
| V                                                                          | 22564.0            | 33.872                 | 33.9                      | 0.0                                            | 5.2                      | 11.2                 | 50.3                              | 50.3                                  | 83.5                              | -33.2          | Pass                  | 63.5                                 | -13.2          | Pass                  |  |
| V                                                                          | 24321.0            | 33.557                 | 33.6                      | 0.0                                            | 5.0                      | 11.6                 | 50.2                              | 50.2                                  | 83.5                              | -33.3          | Pass                  | 63.5                                 | -13.3          | Pass                  |  |
| H                                                                          | 21325.0            | 35.925                 | 35.9                      | 0.0                                            | 5.5                      | 10.8                 | 52.2                              | 52.2                                  | 83.5                              | -31.3          | Pass                  | 63.5                                 | -11.3          | Pass                  |  |
| H                                                                          | 22564.0            | 34.903                 | 34.9                      | 0.0                                            | 5.2                      | 11.2                 | 51.3                              | 51.3                                  | 83.5                              | -32.2          | Pass                  | 63.5                                 | -12.2          | Pass                  |  |
| H                                                                          | 24321.0            | 35.155                 | 35.2                      | 0.0                                            | 5.0                      | 11.6                 | 51.8                              | 51.8                                  | 83.5                              | -31.7          | Pass                  | 63.5                                 | -11.7          | Pass                  |  |
| Table Result:                                                              |                    | Pass                   |                           | by                                             |                          | -11.3 dB             |                                   | Worst Freq:                           |                                   | 21325.0 MHz    |                       |                                      |                |                       |  |
| Test Site: EMI Chamber 1                                                   |                    |                        |                           | Cable 1: Asset #2690                           |                          |                      |                                   | Cable 2: ---                          |                                   |                |                       | Cable 3: ---                         |                |                       |  |
| Analyzer: 2093                                                             |                    |                        |                           | Preamp: None                                   |                          |                      |                                   | Antenna: 2709                         |                                   |                |                       | Preselector: ---                     |                |                       |  |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                    |                        |                           |                                                |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |  |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                    |                        |                           |                                                |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |  |
| Copyright Curtis-Straus LLC 2000                                           |                    |                        |                           |                                                |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |  |

## 18-25GHz Data Table

**Note:** Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



## 18-25GHz Vertical Plot



## 18-25GHz Horizontal Plot

Bureau Veritas Consumer Product  
Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

Tel.: (978) 486-8880  
Fax: (978) 486-8828



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



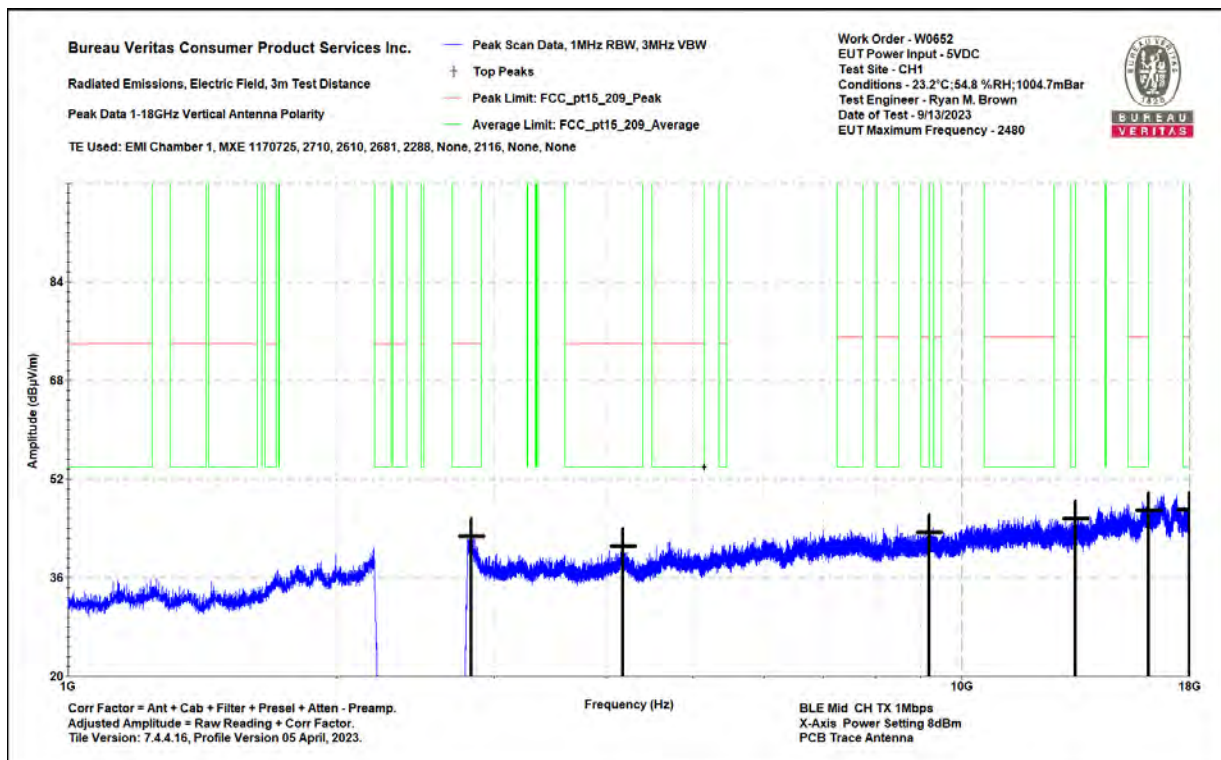
## NORA-W306

Mid CH, 1Mbps, Module axis: X

|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                      |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                  |
| Top Peaks Vertical 1-18GHz                    | Test Site - CH1                         |
| Notes:                                        | Conditions - 23.2°C;54.8 %RH;1004.7mBar |
| BLE Mid CH TX 1Mbps                           | Test Engineer - Ryan M. Brown           |
| X-Axis Power Setting 8dBm                     | Date of Test - 9/13/2023                |
| PCB Trace Antenna                             |                                         |

| Frequency (MHz) | Raw Peak Reading (dBμV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBμV/m) | Pk Lim: FCC_pt15_20 9_Peak (dBμV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_20 9_Average (dBμV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|---------------------------|-------------------------------------|------------------------------|----------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2824.1          | 29.6                    | 13.1                     | 42.7                             | 74                                  | -31.3                     | PASS                                |                              | 54                                     | -11.3                        | PASS                                  |                                 | 300                 | 296                   |
| 4173.48         | 30.8                    | 10.3                     | 41.1                             | 74                                  | -32.9                     | PASS                                |                              | 54                                     | -12.9                        | PASS                                  |                                 | 200                 | 17                    |
| 9193.58         | 28.8                    | 14.5                     | 43.3                             | 74                                  | -30.7                     | PASS                                |                              | 54                                     | -10.7                        | PASS                                  |                                 | 100                 | 297                   |
| 13398.1         | 26.2                    | 19.4                     | 45.6                             | 74                                  | -28.4                     | PASS                                |                              | 54                                     | -8.4                         | PASS                                  |                                 | 300                 | 146                   |
| 16196.3         | 24.6                    | 22.4                     | 47                               | 74                                  | -27                       | PASS                                |                              | 54                                     | -7                           | PASS                                  |                                 | 200                 | 132                   |
| 17999.58        | 21.7                    | 25.3                     | 47.1                             | 74                                  | -26.9                     | PASS                                | -26.9                        | 54                                     | -6.9                         | PASS                                  | -6.9                            | 100                 | 297                   |

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

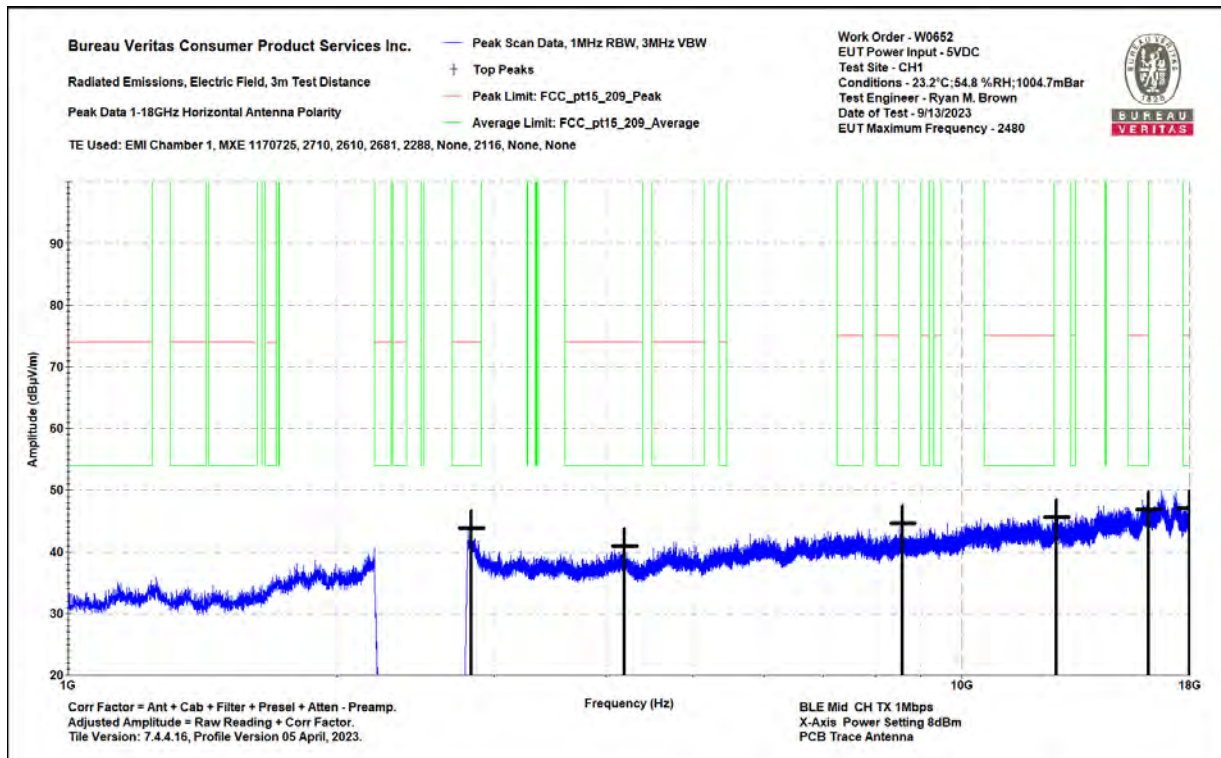


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 1-18GHz  
Notes:  
BLE Mid CH TX 1Mbps  
X-Axis Power Setting 8dBm  
PCB Trace Antenna

Work Order - W0652  
EUT Power Input - 5VDC  
Test Site - CH1  
Conditions - 23.2°C; 54.8 %RH; 1004.7mBar  
Test Engineer - Ryan M. Brown  
Date of Test - 9/13/2023

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|--------------------------------|------------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2825.8          | 30.8                    | 13.1                     | 43.9                             | 74                                 | -30.1                     | PASS                           |                              | 54                                    | -10.1                    | PASS                          |                             | 200                 | 170                   |
| 4191.75         | 30.4                    | 10.5                     | 40.9                             | 74                                 | -33.1                     | PASS                           |                              | 54                                    | -13.1                    | PASS                          |                             | 100                 | 147                   |
| 16197.15        | 24.4                    | 22.4                     | 46.8                             | 74                                 | -27.2                     | PASS                           |                              | 54                                    | -7.2                     | PASS                          |                             | 100                 | 107                   |
| 17999.58        | 21.8                    | 25.3                     | 47.1                             | 74                                 | -26.9                     | PASS                           | -26.9                        | 54                                    | -6.9                     | PASS                          | -6.9                        | 200                 | 132                   |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

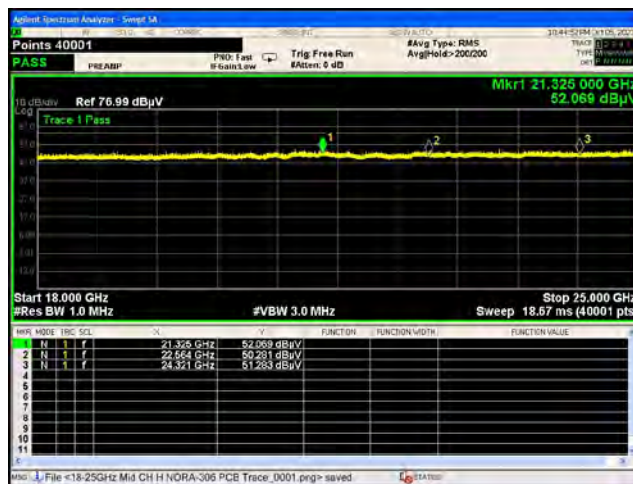


## Radiated Emissions Table

| Date: 05-Oct-23                                                            |                    | Company: U-Blox                            |                           |                       |                          |                      |                                   | Work Order: X0652                     |                                   |                |                       |                                      |                |                       |
|----------------------------------------------------------------------------|--------------------|--------------------------------------------|---------------------------|-----------------------|--------------------------|----------------------|-----------------------------------|---------------------------------------|-----------------------------------|----------------|-----------------------|--------------------------------------|----------------|-----------------------|
| Engineer: Ryan M. Brown                                                    |                    | EUT Desc: NORA-W306 With PCB Trace Antenna |                           |                       |                          |                      |                                   | EUT Operating Voltage/Frequency: 5VDC |                                   |                |                       |                                      |                |                       |
| Temp: 22.5                                                                 |                    | Humidity: 55%                              |                           |                       |                          |                      |                                   | Pressure: 1014                        |                                   |                |                       |                                      |                |                       |
| Frequency Range: 18-25GHz                                                  |                    |                                            |                           |                       |                          |                      |                                   | Measurement Distance: 1 m             |                                   |                |                       |                                      |                |                       |
| Notes: Mid CH                                                              |                    |                                            |                           |                       |                          |                      |                                   | EUT Max Freq: 2480                    |                                   |                |                       |                                      |                |                       |
| Antenna Polarization<br>(H / V)                                            | Frequency<br>(MHz) | Peak Reading<br>(dBµV)                     | Average Reading<br>(dBµV) | Preamp Factor<br>(dB) | Antenna Factor<br>(dB/m) | Cable Factor<br>(dB) | Adjusted Peak Reading<br>(dBµV/m) | Adjusted Avg Reading<br>(dBµV/m)      | FCC Class B High Frequency - Peak |                |                       | FCC Class B High Frequency - Average |                |                       |
|                                                                            |                    |                                            |                           |                       |                          |                      |                                   |                                       | Limit<br>(dBµV/m)                 | Margin<br>(dB) | Result<br>(Pass/Fail) | Limit<br>(dBµV/m)                    | Margin<br>(dB) | Result<br>(Pass/Fail) |
| V                                                                          | 21325.0            | 35.769                                     | 35.8                      | 0.0                   | 5.5                      | 10.8                 | 52.1                              | 52.1                                  | 83.5                              | -31.4          | Pass                  | 63.5                                 | -11.4          | Pass                  |
| V                                                                          | 22564.0            | 33.881                                     | 33.9                      | 0.0                   | 5.2                      | 11.2                 | 50.3                              | 50.3                                  | 83.5                              | -33.2          | Pass                  | 63.5                                 | -13.2          | Pass                  |
| V                                                                          | 24321.0            | 34.683                                     | 34.7                      | 0.0                   | 5.0                      | 11.6                 | 51.3                              | 51.3                                  | 83.5                              | -32.2          | Pass                  | 63.5                                 | -12.2          | Pass                  |
| H                                                                          | 21325.0            | 35.209                                     | 35.2                      | 0.0                   | 5.5                      | 10.8                 | 51.5                              | 51.5                                  | 83.5                              | -32.0          | Pass                  | 63.5                                 | -12.0          | Pass                  |
| H                                                                          | 22564.0            | 34.363                                     | 34.4                      | 0.0                   | 5.2                      | 11.2                 | 50.8                              | 50.8                                  | 83.5                              | -32.7          | Pass                  | 63.5                                 | -12.7          | Pass                  |
| H                                                                          | 24321.0            | 34.408                                     | 34.4                      | 0.0                   | 5.0                      | 11.6                 | 51.0                              | 51.0                                  | 83.5                              | -32.5          | Pass                  | 63.5                                 | -12.5          | Pass                  |
| Table Result:                                                              |                    | Pass                                       |                           | by                    |                          | -11.4 dB             |                                   | Worst Freq:                           |                                   | 21325.0 MHz    |                       |                                      |                |                       |
| Test Site: EMI Chamber 1                                                   |                    | Cable 1: Asset #2690                       |                           |                       |                          |                      |                                   | Cable 2: ---                          |                                   |                | Cable 3: ---          |                                      |                |                       |
| Analyzer: 2093                                                             |                    | Preamp: None                               |                           |                       |                          |                      |                                   | Antenna: 2709                         |                                   |                | Preselector: ---      |                                      |                |                       |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                    |                                            |                           |                       |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                    |                                            |                           |                       |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |
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## 18-25GHz Data Table

**Note:** Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



## 18-25GHz Vertical Plot



## 18-25GHz Horizontal Plot



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



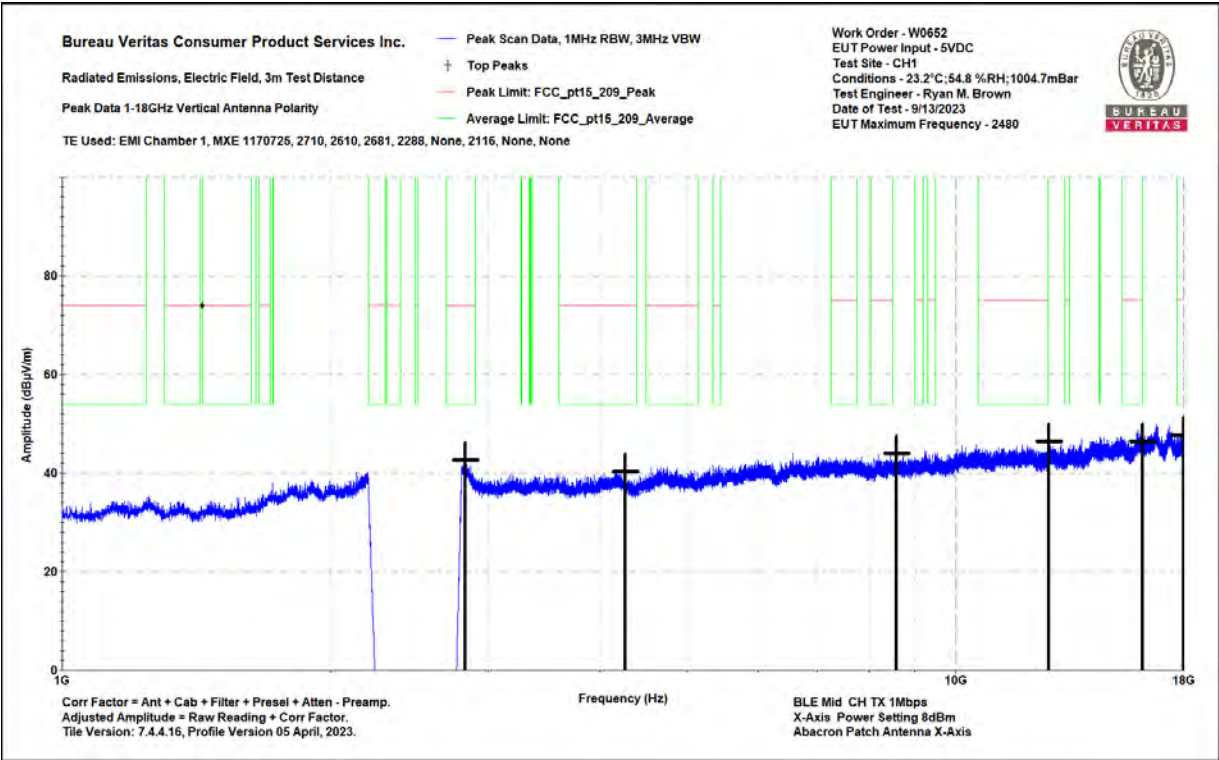
NORA-W300 with Abracon Patch Antenna

Mid CH, 1Mbps, Module axis: X, External antenna axis: X

|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                      |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                  |
| Top Peaks Vertical 1-18GHz                    | Test Site - CH1                         |
| Notes:                                        | Conditions - 23.2°C;54.8 %RH;1004.7mBar |
| BLE Mid CH TX 1Mbps                           | Test Engineer - Ryan M. Brown           |
| X-Axis Power Setting 8dBm                     | Date of Test - 9/13/2023                |
| Abacron Patch Antenna X-Axis                  |                                         |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2827.5          | 29.7                    | 13                       | 42.7                             | 74                                 | -31.3                     | PASS                                |                              | 54                                    | -11.3                        | PASS                                  |                                 | 100                 | 32                    |
| 4265.27         | 30.4                    | 10                       | 40.3                             | 74                                 | -33.7                     | PASS                                |                              | 54                                    | -13.7                        | PASS                                  |                                 | 200                 | 93                    |
| 17999.15        | 22.4                    | 25.3                     | 47.7                             | 74                                 | -26.3                     | PASS                                | -26.3                        | 54                                    | -6.3                         | PASS                                  | -6.3                            | 300                 | 108                   |

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 3m Distance

Top Peaks Horizontal 1-18GHz

Notes:

BLE Mid CH TX 1Mbps

X-Axis Power Setting 8dBm

Abacron Patch Antenna X-Axis

Work Order - W0652

EUT Power Input - 5VDC

Test Site - CH1

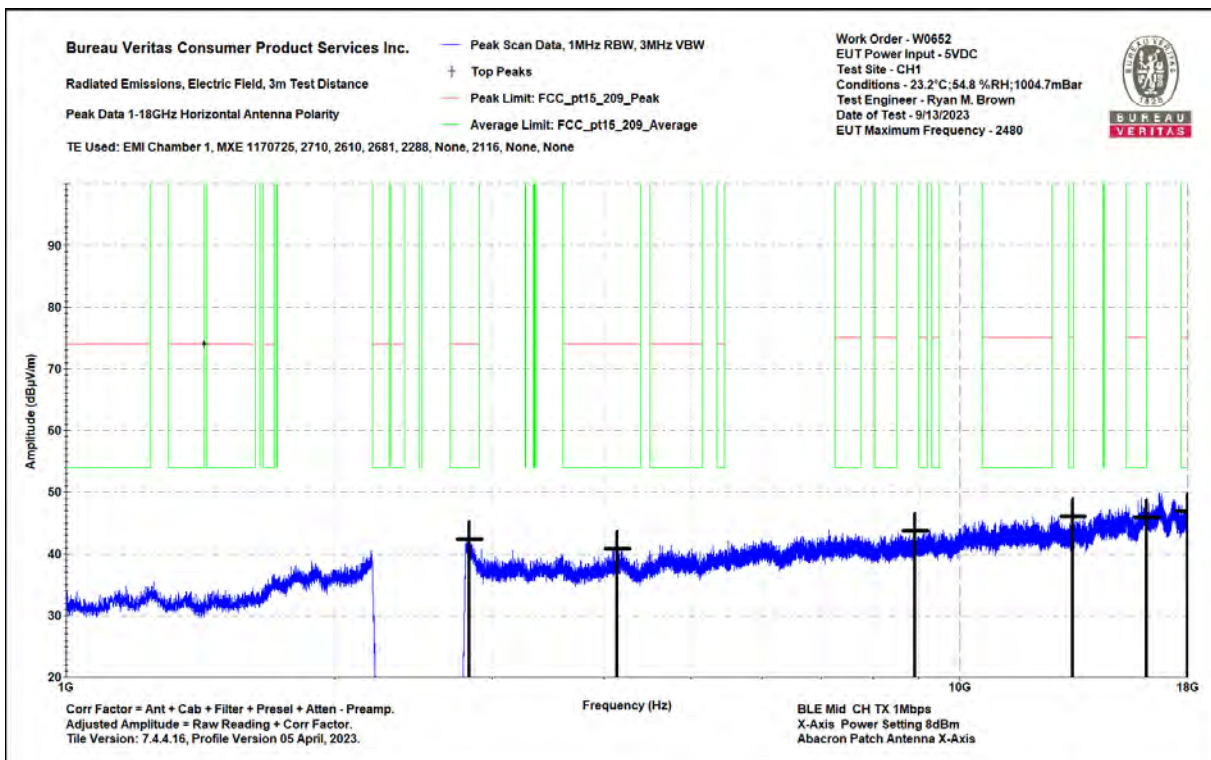
Conditions - 23.2°C;54.8 %RH;1004.7mBar

Test Engineer - Ryan M. Brown

Date of Test - 9/13/2023

| Frequency (MHz) | Raw Peak Reading (dBμV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBμV/m) | Pk Lim: FCC_pt15_209_Peak (dBμV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBμV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|--------------------------------|------------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2825.8          | 29.4                    | 13.1                     | 42.4                             | 74                                 | -31.6                     | PASS                           |                              | 54                                    | -11.6                    | PASS                          |                             | 200                 | 208                   |
| 4136.07         | 30.7                    | 10                       | 40.8                             | 74                                 | -33.2                     | PASS                           |                              | 54                                    | -13.2                    | PASS                          |                             | 100                 | 221                   |
| 13384.92        | 26.7                    | 19.3                     | 46.1                             | 74                                 | -27.9                     | PASS                           |                              | 54                                    | -7.9                     | PASS                          |                             | 100                 | 260                   |
| 18000           | 21.6                    | 25.3                     | 47                               | 74                                 | -27                       | PASS                           | -27                          | 54                                    | -7                       | PASS                          | -7                          | 200                 | 20                    |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

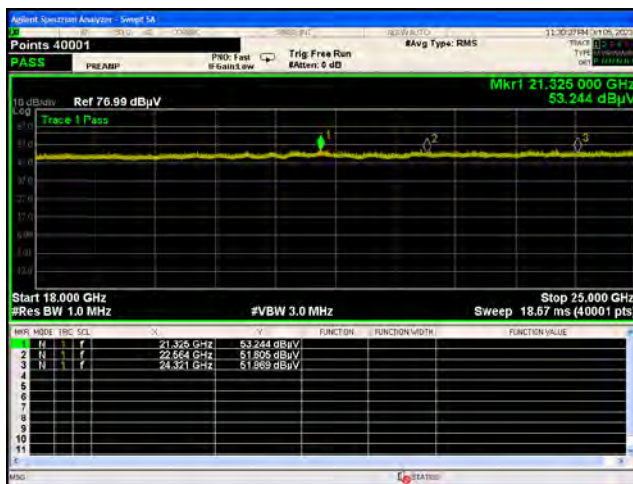


## Radiated Emissions Table

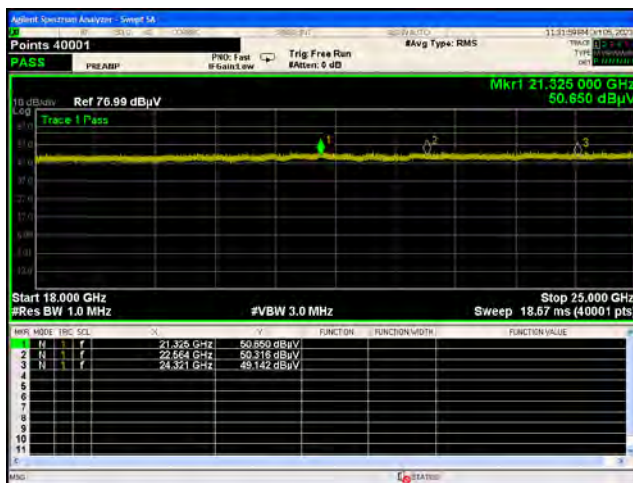
| Date: 27-Nov-23                                                            |                    | Company: U-Blox                                |                           |                       |                          | Work Order: X0652                     |                                   |                                  |                                   |                  |                       |                                      |                |                       |
|----------------------------------------------------------------------------|--------------------|------------------------------------------------|---------------------------|-----------------------|--------------------------|---------------------------------------|-----------------------------------|----------------------------------|-----------------------------------|------------------|-----------------------|--------------------------------------|----------------|-----------------------|
| Engineer: Ryan M. Brown                                                    |                    | EUT Desc: NORA-W300 With Abracon Patch Antenna |                           |                       |                          | EUT Operating Voltage/Frequency: 5VDC |                                   |                                  |                                   |                  |                       |                                      |                |                       |
| Temp: 22.5                                                                 |                    | Humidity: 55%                                  |                           |                       |                          | Pressure: 1014                        |                                   |                                  |                                   |                  |                       |                                      |                |                       |
| Frequency Range: 18-25GHz                                                  |                    |                                                |                           |                       |                          | Measurement Distance: 1 m             |                                   |                                  |                                   |                  |                       |                                      |                |                       |
| Notes: Mid CH                                                              |                    |                                                |                           |                       |                          | EUT Max Freq:                         |                                   |                                  |                                   |                  |                       |                                      |                |                       |
| Antenna Polarization<br>(H / V)                                            | Frequency<br>(MHz) | Peak Reading<br>(dBµV)                         | Average Reading<br>(dBµV) | Preamp Factor<br>(dB) | Antenna Factor<br>(dB/m) | Cable Factor<br>(dB)                  | Adjusted Peak Reading<br>(dBµV/m) | Adjusted Avg Reading<br>(dBµV/m) | FCC Class B High Frequency - Peak |                  |                       | FCC Class B High Frequency - Average |                |                       |
|                                                                            |                    |                                                |                           |                       |                          |                                       |                                   |                                  | Limit<br>(dBµV/m)                 | Margin<br>(dB)   | Result<br>(Pass/Fail) | Limit<br>(dBµV/m)                    | Margin<br>(dB) | Result<br>(Pass/Fail) |
| V                                                                          | 21325.0            | 36.944                                         | 36.9                      | 0.0                   | 5.5                      | 10.8                                  | 53.2                              | 53.2                             | 83.5                              | -30.3            | Pass                  | 63.5                                 | -10.3          | Pass                  |
| V                                                                          | 22564.0            | 35.205                                         | 35.2                      | 0.0                   | 5.2                      | 11.2                                  | 51.6                              | 51.6                             | 83.5                              | -31.9            | Pass                  | 63.5                                 | -11.9          | Pass                  |
| V                                                                          | 24321.0            | 35.269                                         | 35.3                      | 0.0                   | 5.0                      | 11.6                                  | 51.9                              | 51.9                             | 83.5                              | -31.6            | Pass                  | 63.5                                 | -11.6          | Pass                  |
| H                                                                          | 21325.0            | 34.35                                          | 34.4                      | 0.0                   | 5.5                      | 10.8                                  | 50.7                              | 50.7                             | 83.5                              | -32.9            | Pass                  | 63.5                                 | -12.9          | Pass                  |
| H                                                                          | 22564.0            | 33.916                                         | 33.9                      | 0.0                   | 5.2                      | 11.2                                  | 50.3                              | 50.3                             | 83.5                              | -33.2            | Pass                  | 63.5                                 | -13.2          | Pass                  |
| H                                                                          | 24321.0            | 32.542                                         | 32.5                      | 0.0                   | 5.0                      | 11.6                                  | 49.1                              | 49.1                             | 83.5                              | -34.4            | Pass                  | 63.5                                 | -14.4          | Pass                  |
| Table Result:                                                              |                    | Pass                                           |                           | by                    |                          | -10.3 dB                              |                                   | Worst Freq:                      |                                   | 21325.0 MHz      |                       |                                      |                |                       |
| Test Site: EMI Chamber 1                                                   |                    | Cable 1: Asset #2690                           |                           |                       |                          | Cable 2: ---                          |                                   |                                  |                                   | Cable 3: ---     |                       |                                      |                |                       |
| Analyzer: 2093                                                             |                    | Preamp: None                                   |                           |                       |                          | Antenna: 2709                         |                                   |                                  |                                   | Preselector: --- |                       |                                      |                |                       |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                    |                                                |                           |                       |                          |                                       |                                   |                                  |                                   |                  |                       |                                      |                |                       |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                    |                                                |                           |                       |                          |                                       |                                   |                                  |                                   |                  |                       |                                      |                |                       |
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## 18-25GHz Data Table

**Note:** Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



## 18-25GHz Vertical Plot



## 18-25GHz Horizontal Plot

Bureau Veritas Consumer Product  
Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

Tel.: (978) 486-8880  
Fax: (978) 486-8828



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



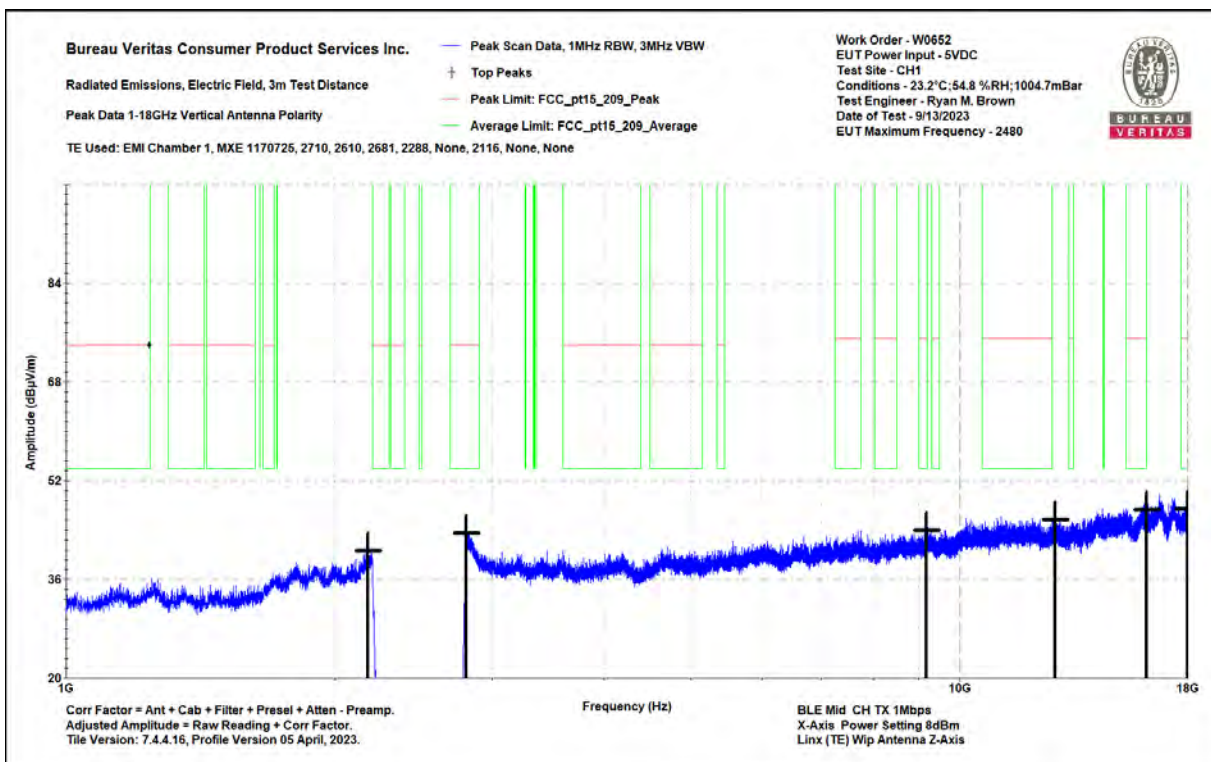
NORA-W300 with Linx (TE) Whip Antenna

Mid CH, 1Mbps, Module axis: X, External antenna axis: Z

|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                      |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                  |
| Top Peaks Vertical 1-18GHz                    | Test Site - CH1                         |
| Notes:                                        | Conditions - 23.2°C;54.8 %RH;1004.7mBar |
| BLE Mid CH TX 1Mbps                           | Test Engineer - Ryan M. Brown           |
| X-Axis Power Setting 8dBm                     | Date of Test - 9/13/2023                |
| Linx (TE) Wip Antenna Z-Axis                  |                                         |

| Frequency (MHz) | Raw Peak Reading (dBμV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBμV/m) | Pk Lim: FCC_pt15_20_9_Peak (dBμV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_20_9_Average (dBμV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|---------------------------|-------------------------------------|------------------------------|----------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2802.43         | 29.6                    | 14                       | 43.5                             | 74                                  | -30.5                     | PASS                                |                              | 54                                     | -10.5                        | PASS                                  |                                 | 200                 | 246                   |
| 9174.45         | 29.5                    | 14.5                     | 44                               | 74                                  | -30                       | PASS                                |                              | 54                                     | -10                          | PASS                                  |                                 | 200                 | 18                    |
| 17999.15        | 22.1                    | 25.3                     | 47.5                             | 74                                  | -26.5                     | PASS                                | -26.5                        | 54                                     | -6.5                         | PASS                                  | -6.5                            | 200                 | 18                    |

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2

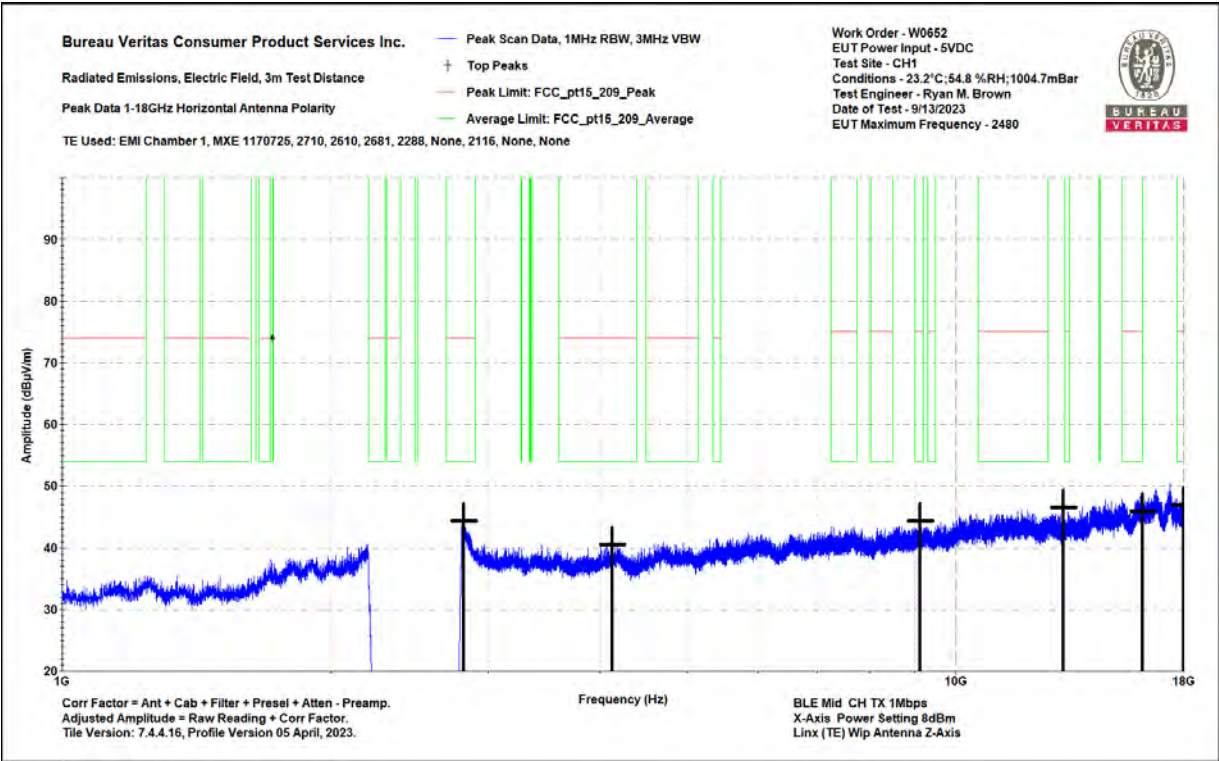


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 1-18GHz  
Notes:  
BLE Mid CH TX 1Mbps  
X-Axis Power Setting 8dBm  
Linx (TE) Wip Antenna Z-Axis

Work Order - W0652  
EUT Power Input - 5VDC  
Test Site - CH1  
Conditions - 23.2°C;54.8 %RH;1004.7mBar  
Test Engineer - Ryan M. Brown  
Date of Test - 9/13/2023

| Frequency<br>(MHz) | Raw Peak<br>Reading<br>(dBµV) | Correction<br>Factor<br>(dB/m) | Adjusted<br>Peak<br>Amplitude<br>(dBµV/m) | Pk Lim:<br>FCC_pt15_20<br>9_Peak<br>(dBµV/m) | Margin to<br>Peak Limit<br>(dB) | Peak Limit<br>Results<br>(Pass/Fail) | Peak Limit<br>Worst<br>Margin<br>(dB) | Av Lim:<br>FCC_pt15_20<br>9_Average<br>(dBµV/m) | Margin to<br>Avg Limit<br>(dB) | Avg Limit<br>Results<br>(Pass/Fail) | Avg Limit<br>Worst<br>Margin<br>(dB) | Antenna<br>Height<br>(cm) | EUT Azimuth<br>(degrees) |
|--------------------|-------------------------------|--------------------------------|-------------------------------------------|----------------------------------------------|---------------------------------|--------------------------------------|---------------------------------------|-------------------------------------------------|--------------------------------|-------------------------------------|--------------------------------------|---------------------------|--------------------------|
| 2814.75            | 30.9                          | 13.5                           | 44.4                                      | 74                                           | -29.6                           | PASS                                 |                                       | 54                                              | -9.6                           | PASS                                |                                      | 200                       | 95                       |
| 4126.73            | 30.6                          | 9.9                            | 40.5                                      | 74                                           | -33.5                           | PASS                                 |                                       | 54                                              | -13.5                          | PASS                                |                                      | 300                       | 70                       |
| 9122.6             | 29.9                          | 14.5                           | 44.4                                      | 74                                           | -29.6                           | PASS                                 |                                       | 54                                              | -9.6                           | PASS                                |                                      | 300                       | 296                      |
| 16198.85           | 23.6                          | 22.4                           | 46                                        | 74                                           | -28                             | PASS                                 |                                       | 54                                              | -8                             | PASS                                |                                      | 200                       | 19                       |
| 18000              | 21.6                          | 25.3                           | 46.9                                      | 74                                           | -27.1                           | PASS                                 | -27.1                                 | 54                                              | -7.1                           | PASS                                | -7.1                                 | 200                       | 170                      |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

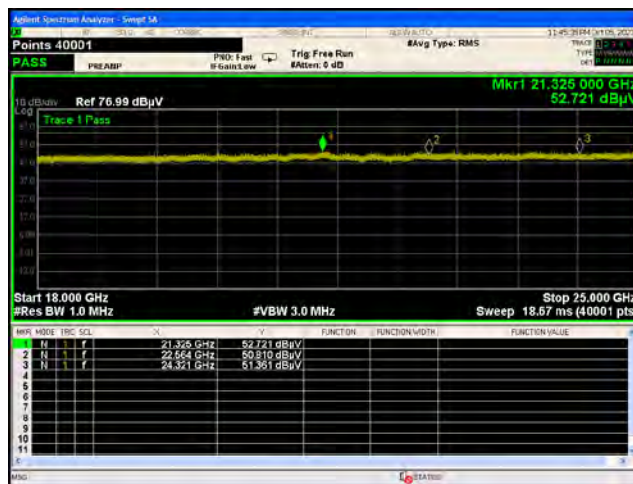


## Radiated Emissions Table

| Date: 05-Oct-23                                                            |                    | Company: U-Blox                                 |                           |                       |                          |                      |                                   | Work Order: X0652                     |                                   |                |                       |                                      |                |                       |
|----------------------------------------------------------------------------|--------------------|-------------------------------------------------|---------------------------|-----------------------|--------------------------|----------------------|-----------------------------------|---------------------------------------|-----------------------------------|----------------|-----------------------|--------------------------------------|----------------|-----------------------|
| Engineer: Ryan M. Brown                                                    |                    | EUT Desc: NORA-W300 With Linx (TE) Whip Antenna |                           |                       |                          |                      |                                   | EUT Operating Voltage/Frequency: 5VDC |                                   |                |                       |                                      |                |                       |
| Temp: Temp: 22.5                                                           |                    | Humidity: 55%                                   |                           |                       |                          |                      |                                   | Pressure: 1014                        |                                   |                |                       |                                      |                |                       |
| Frequency Range: 18-25GHz                                                  |                    |                                                 |                           |                       |                          |                      |                                   |                                       | Measurement Distance: 1 m         |                |                       |                                      |                |                       |
| Notes: Mid CH                                                              |                    |                                                 |                           |                       |                          |                      |                                   |                                       | EUT Max Freq: 2480                |                |                       |                                      |                |                       |
| Antenna Polarization<br>(H / V)                                            | Frequency<br>(MHz) | Peak Reading<br>(dBμV)                          | Average Reading<br>(dBμV) | Preamp Factor<br>(dB) | Antenna Factor<br>(dB/m) | Cable Factor<br>(dB) | Adjusted Peak Reading<br>(dBμV/m) | Adjusted Avg Reading<br>(dBμV/m)      | FCC Class B High Frequency - Peak |                |                       | FCC Class B High Frequency - Average |                |                       |
|                                                                            |                    |                                                 |                           |                       |                          |                      |                                   |                                       | Limit<br>(dBμV/m)                 | Margin<br>(dB) | Result<br>(Pass/Fail) | Limit<br>(dBμV/m)                    | Margin<br>(dB) | Result<br>(Pass/Fail) |
| V                                                                          | 21325.0            | 36.421                                          | 36.4                      | 0.0                   | 5.5                      | 10.8                 | 52.7                              | 52.7                                  | 83.5                              | -30.8          | Pass                  | 63.5                                 | -10.8          | Pass                  |
| V                                                                          | 22564.0            | 34.41                                           | 34.4                      | 0.0                   | 5.2                      | 11.2                 | 50.8                              | 50.8                                  | 83.5                              | -32.7          | Pass                  | 63.5                                 | -12.7          | Pass                  |
| V                                                                          | 24321.0            | 34.761                                          | 34.8                      | 0.0                   | 5.0                      | 11.6                 | 51.4                              | 51.4                                  | 83.5                              | -32.1          | Pass                  | 63.5                                 | -12.1          | Pass                  |
| H                                                                          | 21325.0            | 35.677                                          | 35.7                      | 0.0                   | 5.5                      | 10.8                 | 52.0                              | 52.0                                  | 83.5                              | -31.5          | Pass                  | 63.5                                 | -11.5          | Pass                  |
| H                                                                          | 22564.0            | 33.766                                          | 33.8                      | 0.0                   | 5.2                      | 11.2                 | 50.2                              | 50.2                                  | 83.5                              | -33.3          | Pass                  | 63.5                                 | -13.3          | Pass                  |
| H                                                                          | 24321.0            | 33.655                                          | 33.7                      | 0.0                   | 5.0                      | 11.6                 | 50.3                              | 50.3                                  | 83.5                              | -33.2          | Pass                  | 63.5                                 | -13.2          | Pass                  |
| Table Result:                                                              |                    | Pass                                            |                           | by                    |                          | -10.8 dB             |                                   | Worst Freq:                           |                                   | 21325.0 MHz    |                       |                                      |                |                       |
| Test Site: EMI Chamber 1                                                   |                    | Cable 1: Asset #2323                            |                           | Cable 2: ---          |                          | Cable 3: ---         |                                   |                                       |                                   |                |                       |                                      |                |                       |
| Analyzer: Gold                                                             |                    | Preamp: None                                    |                           | Antenna: Blue Horn    |                          | Preselector: ---     |                                   |                                       |                                   |                |                       |                                      |                |                       |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                    |                                                 |                           |                       |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                    |                                                 |                           |                       |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |
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## 18-25GHz Data Table

**Note:** Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



## 18-25GHz Vertical Plot



## 18-25GHz Horizontal Plot

Bureau Veritas Consumer Product  
Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

Tel.: (978) 486-8880  
Fax: (978) 486-8828



Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



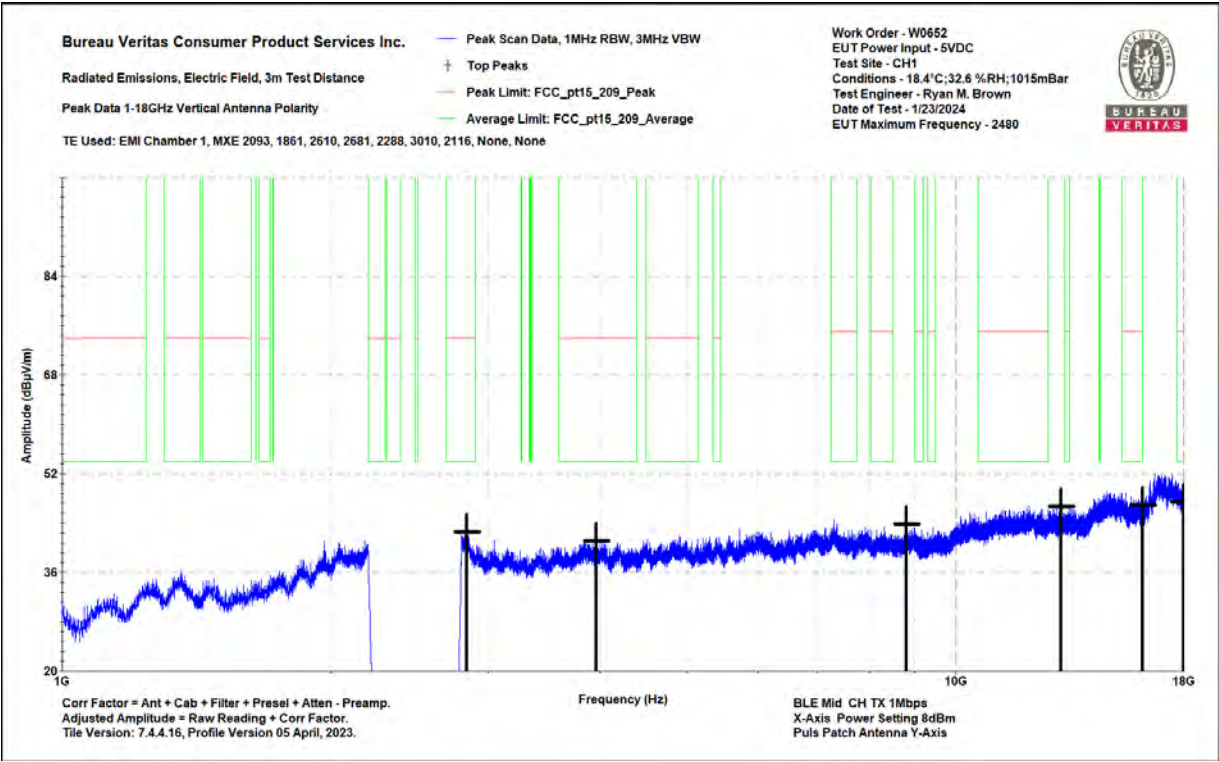
NORA-W300 with Yageo Patch Antenna

Mid CH, 1Mbps, Module axis: X, External antenna axis: Y

|                                               |                                       |
|-----------------------------------------------|---------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                    |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                |
| Top Peaks Vertical 1-18GHz                    | Test Site - CH1                       |
| Notes:                                        | Conditions - 18.4°C;32.6 %RH;1015mBar |
| BLE Mid CH TX 1Mbps                           | Test Engineer - Ryan M. Brown         |
| X-Axis Power Setting 8dBm                     | Date of Test - 1/23/2024              |
| Puls Patch Antenna Y-Axis                     |                                       |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2837.28         | 48.2                    | -5.6                     | 42.6                             | 74                                 | -31.4                     | PASS                                |                              | 54                                    | -11.4                        | PASS                                  |                                 | 200                 | 284                   |
| 3964.38         | 49.7                    | -8.5                     | 41.2                             | 74                                 | -32.8                     | PASS                                |                              | 54                                    | -12.8                        | PASS                                  |                                 | 200                 | 172                   |
| 18000           | 33.7                    | 13.7                     | 47.4                             | 74                                 | -26.6                     | PASS                                | -27.6                        | 54                                    | -6.6                         | PASS                                  | -6.6                            | 300                 | 144                   |

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

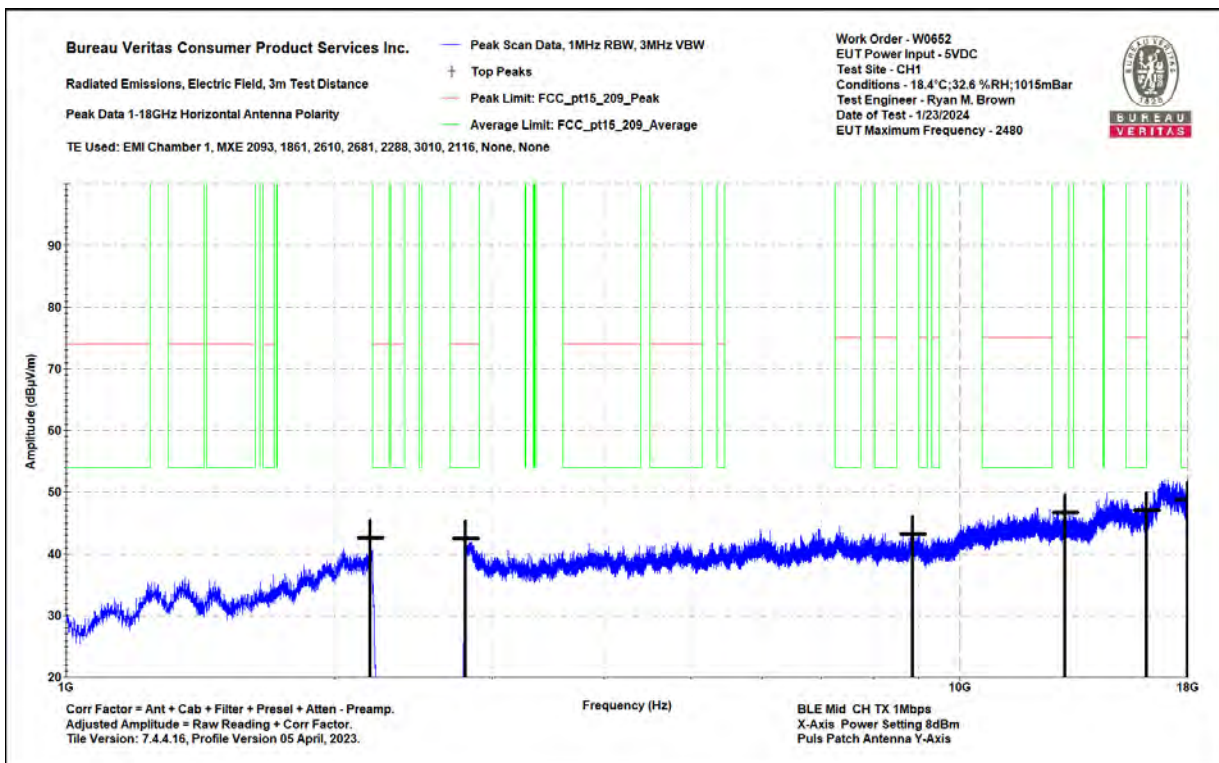


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 1-18GHz  
Notes:  
BLE Mid CH TX 1Mbps  
X-Axis Power Setting 8dBm  
Puls Patch Antenna Y-Axis

Work Order - W0652  
EUT Power Input - 5VDC  
Test Site - CH1  
Conditions - 18.4°C;32.6 %RH;1015mBar  
Test Engineer - Ryan M. Brown  
Date of Test - 1/23/2024

| Frequency<br>(MHz) | Raw Peak<br>Reading<br>(dBµV) | Correction<br>Factor<br>(dB/m) | Adjusted<br>Peak<br>Amplitude<br>(dBµV/m) | Pk Lim:<br>FCC_pt15_20<br>9_Peak<br>(dBµV/m) | Margin to<br>Peak Limit<br>(dB) | Peak Limit<br>Results<br>(Pass/Fail) | Peak Limit<br>Worst<br>Margin<br>(dB) | Av Lim:<br>FCC_pt15_20<br>9_Average<br>(dBµV/m) | Margin to<br>Avg Limit<br>(dB) | Avg Limit<br>Results<br>(Pass/Fail) | Avg Limit<br>Worst<br>Margin<br>(dB) | Antenna<br>Height<br>(cm) | EUT Azimuth<br>(degrees) |
|--------------------|-------------------------------|--------------------------------|-------------------------------------------|----------------------------------------------|---------------------------------|--------------------------------------|---------------------------------------|-------------------------------------------------|--------------------------------|-------------------------------------|--------------------------------------|---------------------------|--------------------------|
| 2799.88            | 46.4                          | -3.9                           | 42.5                                      | 74                                           | -31.5                           | PASS                                 |                                       | 54                                              | -11.5                          | PASS                                |                                      | 300                       | 181                      |
| 17999.58           | 35.1                          | 13.7                           | 48.8                                      | 74                                           | -25.2                           | PASS                                 | -26.2                                 | 54                                              | -5.2                           | PASS                                |                                      | 300                       | 218                      |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



## Radiated Emissions Table

| Date: 24-Jan-24                                                            |                 |                     |                        | Company: U-Blox                              |                       |                   |                                | Work Order: X0652                     |                                   |                          |                    |                                      |             |                    |  |
|----------------------------------------------------------------------------|-----------------|---------------------|------------------------|----------------------------------------------|-----------------------|-------------------|--------------------------------|---------------------------------------|-----------------------------------|--------------------------|--------------------|--------------------------------------|-------------|--------------------|--|
| Engineer: Ryan M. Brown                                                    |                 |                     |                        | EUT Desc: NORA-W300 With Yageo Patch Antenna |                       |                   |                                | EUT Operating Voltage/Frequency: 5VDC |                                   |                          |                    |                                      |             |                    |  |
| Temp: Temp:                                                                |                 | 20.2                |                        | Humidity:                                    |                       | 35.2              |                                | Pressure:                             |                                   | 1016                     |                    |                                      |             |                    |  |
| Frequency Range: 18-25GHz                                                  |                 |                     |                        |                                              |                       |                   |                                | Measurement Distance: 1 m             |                                   |                          |                    |                                      |             |                    |  |
| Notes: Mid CH                                                              |                 |                     |                        |                                              |                       |                   |                                | EUT Max Freq: 2480                    |                                   |                          |                    |                                      |             |                    |  |
| Antenna Polarization (H/V)                                                 | Frequency (MHz) | Peak Reading (dBμV) | Average Reading (dBμV) | Preamp Factor (dB)                           | Antenna Factor (dB/m) | Cable Factor (dB) | Adjusted Peak Reading (dBμV/m) | Adjusted Avg Reading (dBμV/m)         | FCC Class B High Frequency - Peak |                          |                    | FCC Class B High Frequency - Average |             |                    |  |
|                                                                            |                 |                     |                        |                                              |                       |                   |                                |                                       | Limit (dBμV/m)                    | Margin (dB)              | Result (Pass/Fail) | Limit (dBμV/m)                       | Margin (dB) | Result (Pass/Fail) |  |
| V                                                                          | 23655.46        | 38.77               | 38.8                   | 0.0                                          | 5.5                   | 10.8              | 55.1                           | 55.1                                  | 83.5                              | -28.4                    | Pass               | 63.5                                 | -8.4        | Pass               |  |
| V                                                                          | 24300.14        | 38.932              | 38.9                   | 0.0                                          | 5.2                   | 11.2              | 55.3                           | 55.3                                  | 83.5                              | -28.2                    | Pass               | 63.5                                 | -8.2        | Pass               |  |
| V                                                                          | 24900.18        | 40.268              | 40.3                   | 0.0                                          | 5.0                   | 11.6              | 56.9                           | 56.9                                  | 83.5                              | -26.6                    | Pass               | 63.5                                 | -6.6        | Pass               |  |
| H                                                                          | 23655.46        | 39.403              | 39.4                   | 0.0                                          | 5.5                   | 10.8              | 55.7                           | 55.7                                  | 83.5                              | -27.8                    | Pass               | 63.5                                 | -7.8        | Pass               |  |
| H                                                                          | 24300.14        | 42.293              | 42.3                   | 0.0                                          | 5.2                   | 11.2              | 58.7                           | 58.7                                  | 83.5                              | -24.8                    | Pass               | 63.5                                 | -4.8        | Pass               |  |
| H                                                                          | 24900.18        | 42.148              | 42.1                   | 0.0                                          | 5.0                   | 11.6              | 58.7                           | 58.7                                  | 83.5                              | -24.8                    | Pass               | 63.5                                 | -4.8        | Pass               |  |
| Table Result:                                                              |                 |                     |                        | Pass                                         |                       | by                |                                | -4.8 dB                               |                                   | Worst Freq: 24900.18 MHz |                    |                                      |             |                    |  |
| Test Site: EMI Chamber 1                                                   |                 |                     |                        | Cable 1: Asset #2690                         |                       |                   |                                | Cable 2: ---                          |                                   |                          |                    | Cable 3: ---                         |             |                    |  |
| Analyzer: 2093                                                             |                 |                     |                        | Preamp: None                                 |                       |                   |                                | Antenna: 2709                         |                                   |                          |                    | Preselector: ---                     |             |                    |  |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                 |                     |                        |                                              |                       |                   |                                |                                       |                                   |                          |                    |                                      |             |                    |  |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                 |                     |                        |                                              |                       |                   |                                |                                       |                                   |                          |                    |                                      |             |                    |  |
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# Test Report for u-blox AG Report No. EX0652-1 Issue 2



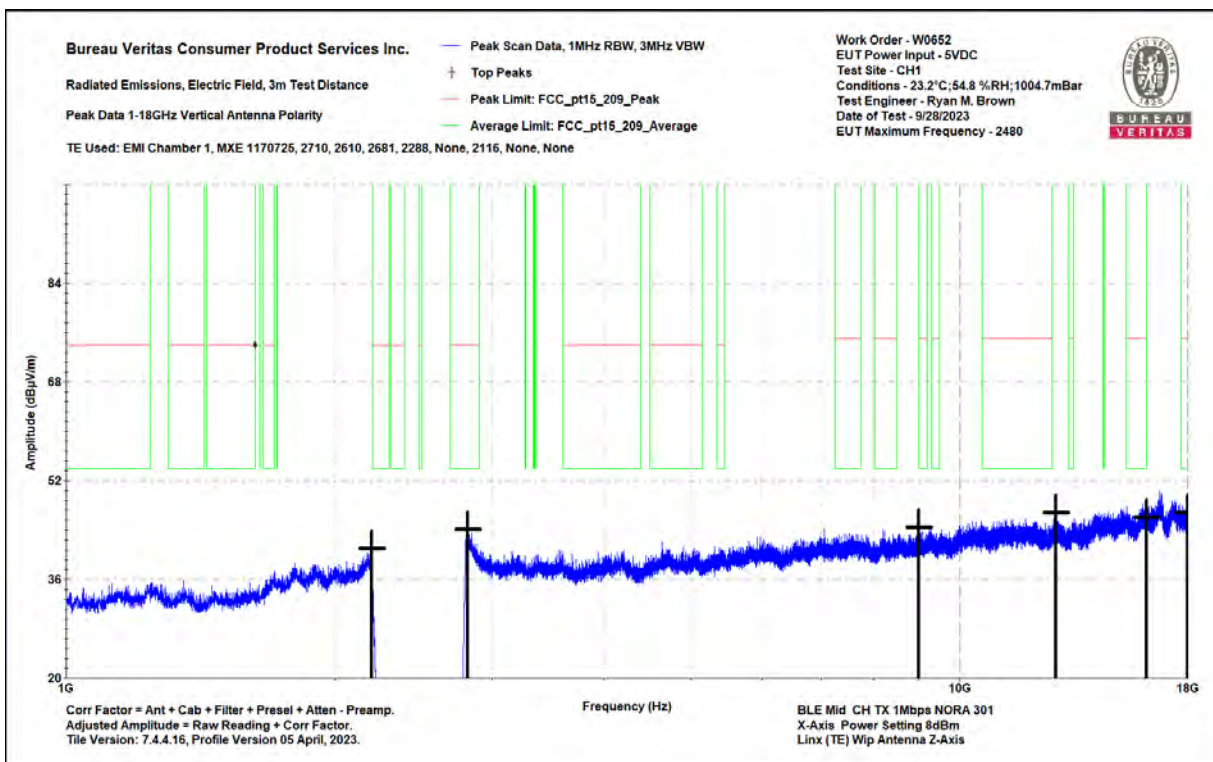
## NORA-W301 with Linx (TE) Whip Antenna

Mid CH, 1Mbps, Module axis: X, External antenna axis: Z

|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                      |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                  |
| Top Peaks Vertical 1-18GHz                    | Test Site - CH1                         |
| Notes:                                        | Conditions - 23.2°C;54.8 %RH;1004.7mBar |
| BLE Mid CH TX 1Mbps NORA 301                  | Test Engineer - Ryan M. Brown           |
| X-Axis Power Setting 8dBm                     | Date of Test - 9/28/2023                |
| Linx (TE) Wip Antenna Z-Axis                  |                                         |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_20_9_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_20_9_Average (dBµV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|-------------------------------------|---------------------------|-------------------------------------|------------------------------|----------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2817.3          | 30.7                    | 13.4                     | 44.1                             | 74                                  | -29.9                     | PASS                                |                              | 54                                     | -9.9                         | PASS                                  |                                 | 300                 | 261                   |
| 9008.7          | 30                      | 14.6                     | 44.5                             | 74                                  | -29.5                     | PASS                                |                              | 54                                     | -9.5                         | PASS                                  |                                 | 300                 | 96                    |
| 18000           | 21.5                    | 25.3                     | 46.8                             | 74                                  | -27.2                     | PASS                                | -27.2                        | 54                                     | -7.2                         | PASS                                  | -7.2                            | 100                 | 29                    |

1-18GHz Vertical Data Table



1-18GHz Vertical Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 3m Distance

Top Peaks Horizontal 1-18GHz

Notes:

BLE Mid CH TX 1Mbps NORA 301

X-Axis Power Setting 8dBm

Linx (TE) Wip Antenna Z-Axis

Work Order - W0652

EUT Power Input - 5VDC

Test Site - CH1

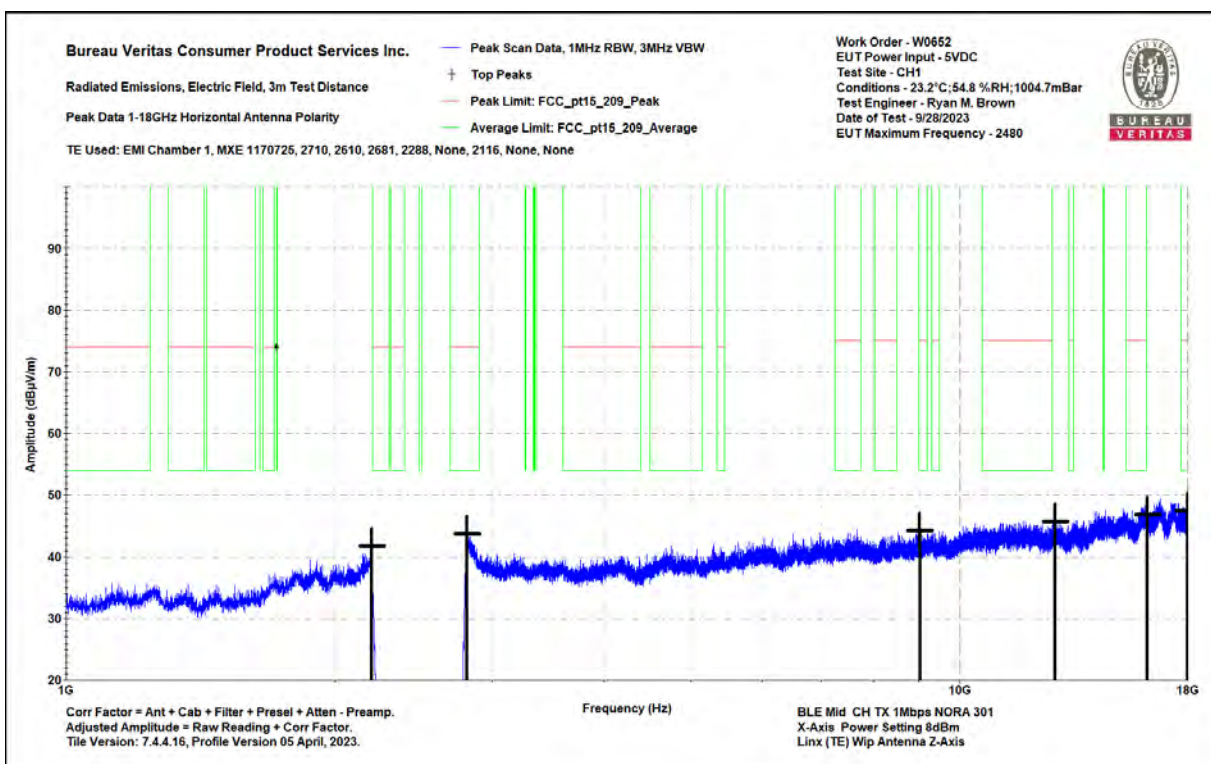
Conditions - 23.2°C;54.8 %RH;1004.7mBar

Test Engineer - Ryan M. Brown

Date of Test - 9/28/2023

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|--------------------------------|------------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2807.95         | 29.9                    | 13.8                     | 43.7                             | 74                                 | -30.3                     | PASS                           |                              | 54                                    | -10.3                    | PASS                          |                             | 100                 | 259                   |
| 9026.55         | 29.6                    | 14.5                     | 44.2                             | 74                                 | -29.8                     | PASS                           |                              | 54                                    | -9.8                     | PASS                          |                             | 200                 | 315                   |
| 17999.58        | 22.1                    | 25.3                     | 47.4                             | 74                                 | -26.6                     | PASS                           | -26.6                        | 54                                    | -6.6                     | PASS                          | -6.6                        | 300                 | 128                   |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

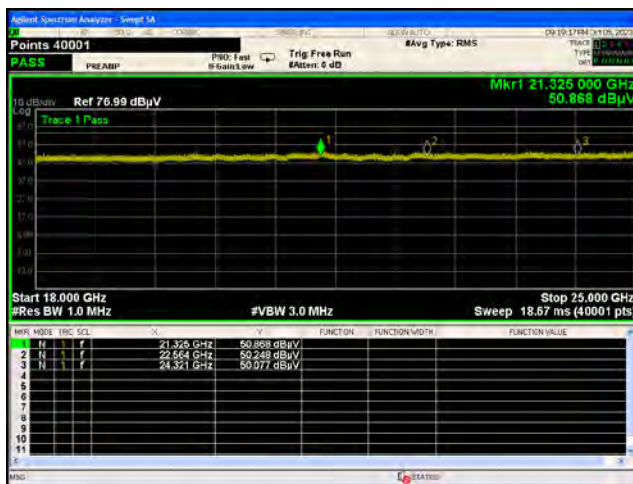


## Radiated Emissions Table

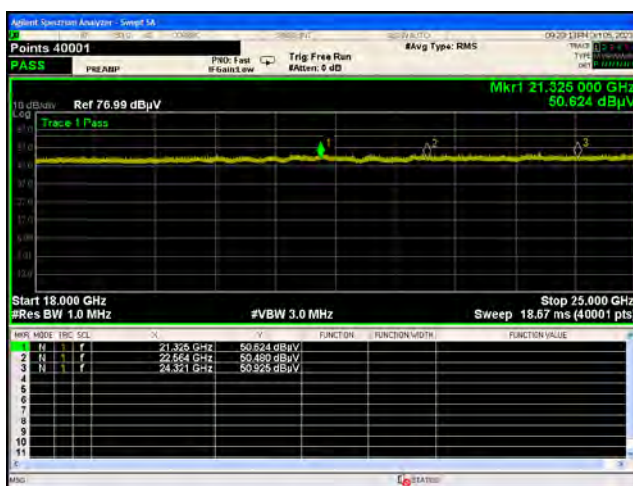
| Date: 05-Oct-23                                                            |                    | Company: U-Blox                                 |                           |                       |                          |                      |                                   | Work Order: X0652                     |                                   |                |                       |                                      |                |                       |
|----------------------------------------------------------------------------|--------------------|-------------------------------------------------|---------------------------|-----------------------|--------------------------|----------------------|-----------------------------------|---------------------------------------|-----------------------------------|----------------|-----------------------|--------------------------------------|----------------|-----------------------|
| Engineer: Ryan M. Brown                                                    |                    | EUT Desc: NORA-W301 With Linx (TE) Whip Antenna |                           |                       |                          |                      |                                   | EUT Operating Voltage/Frequency: 5VDC |                                   |                |                       |                                      |                |                       |
| Temp: 22.5                                                                 |                    | Humidity: 55%                                   |                           |                       |                          |                      |                                   | Pressure: 1014                        |                                   |                |                       |                                      |                |                       |
| Frequency Range: 18-25GHz                                                  |                    |                                                 |                           |                       |                          |                      |                                   | Measurement Distance: 1 m             |                                   |                |                       |                                      |                |                       |
| Notes: Mid CH                                                              |                    |                                                 |                           |                       |                          |                      |                                   | EUT Max Freq: 2480                    |                                   |                |                       |                                      |                |                       |
| Antenna Polarization<br>(H / V)                                            | Frequency<br>(MHz) | Peak Reading<br>(dBμV)                          | Average Reading<br>(dBμV) | Preamp Factor<br>(dB) | Antenna Factor<br>(dB/m) | Cable Factor<br>(dB) | Adjusted Peak Reading<br>(dBμV/m) | Adjusted Avg Reading<br>(dBμV/m)      | FCC Class B High Frequency - Peak |                |                       | FCC Class B High Frequency - Average |                |                       |
|                                                                            |                    |                                                 |                           |                       |                          |                      |                                   |                                       | Limit<br>(dBμV/m)                 | Margin<br>(dB) | Result<br>(Pass/Fail) | Limit<br>(dBμV/m)                    | Margin<br>(dB) | Result<br>(Pass/Fail) |
| V                                                                          | 21325.0            | 34.568                                          | 34.6                      | 0.0                   | 5.5                      | 10.8                 | 50.9                              | 50.9                                  | 83.5                              | -32.6          | Pass                  | 63.5                                 | -12.6          | Pass                  |
| V                                                                          | 22564.0            | 33.848                                          | 33.8                      | 0.0                   | 5.2                      | 11.2                 | 50.2                              | 50.2                                  | 83.5                              | -33.3          | Pass                  | 63.5                                 | -13.3          | Pass                  |
| V                                                                          | 24321.0            | 33.477                                          | 33.5                      | 0.0                   | 5.0                      | 11.6                 | 50.1                              | 50.1                                  | 83.5                              | -33.4          | Pass                  | 63.5                                 | -13.4          | Pass                  |
| H                                                                          | 21325.0            | 34.324                                          | 34.3                      | 0.0                   | 5.5                      | 10.8                 | 50.6                              | 50.6                                  | 83.5                              | -32.9          | Pass                  | 63.5                                 | -12.9          | Pass                  |
| H                                                                          | 22564.0            | 34.08                                           | 34.1                      | 0.0                   | 5.2                      | 11.2                 | 50.5                              | 50.5                                  | 83.5                              | -33.0          | Pass                  | 63.5                                 | -13.0          | Pass                  |
| H                                                                          | 24321.0            | 34.325                                          | 34.3                      | 0.0                   | 5.0                      | 11.6                 | 50.9                              | 50.9                                  | 83.5                              | -32.6          | Pass                  | 63.5                                 | -12.6          | Pass                  |
| Table Result:                                                              |                    | Pass                                            |                           | by                    |                          | -12.6 dB             |                                   | Worst Freq:                           |                                   | 21325.0 MHz    |                       |                                      |                |                       |
| Test Site: EMI Chamber 1                                                   |                    | Cable 1: Asset #2323                            |                           |                       |                          |                      |                                   | Cable 2: ---                          |                                   |                | Cable 3: ---          |                                      |                |                       |
| Analyzer: Gold                                                             |                    | Preamp: None                                    |                           |                       |                          |                      |                                   | Antenna: Blue Horn                    |                                   |                | Preselector: ---      |                                      |                |                       |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                    |                                                 |                           |                       |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                    |                                                 |                           |                       |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |
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## 18-25GHz Data Table

**Note:** Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



## 18-25GHz Vertical Plot



## 18-25GHz Horizontal Plot

Bureau Veritas Consumer Product  
Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

Tel.: (978) 486-8880  
Fax: (978) 486-8828



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



## NORA-W301 with Abracon Patch Antenna

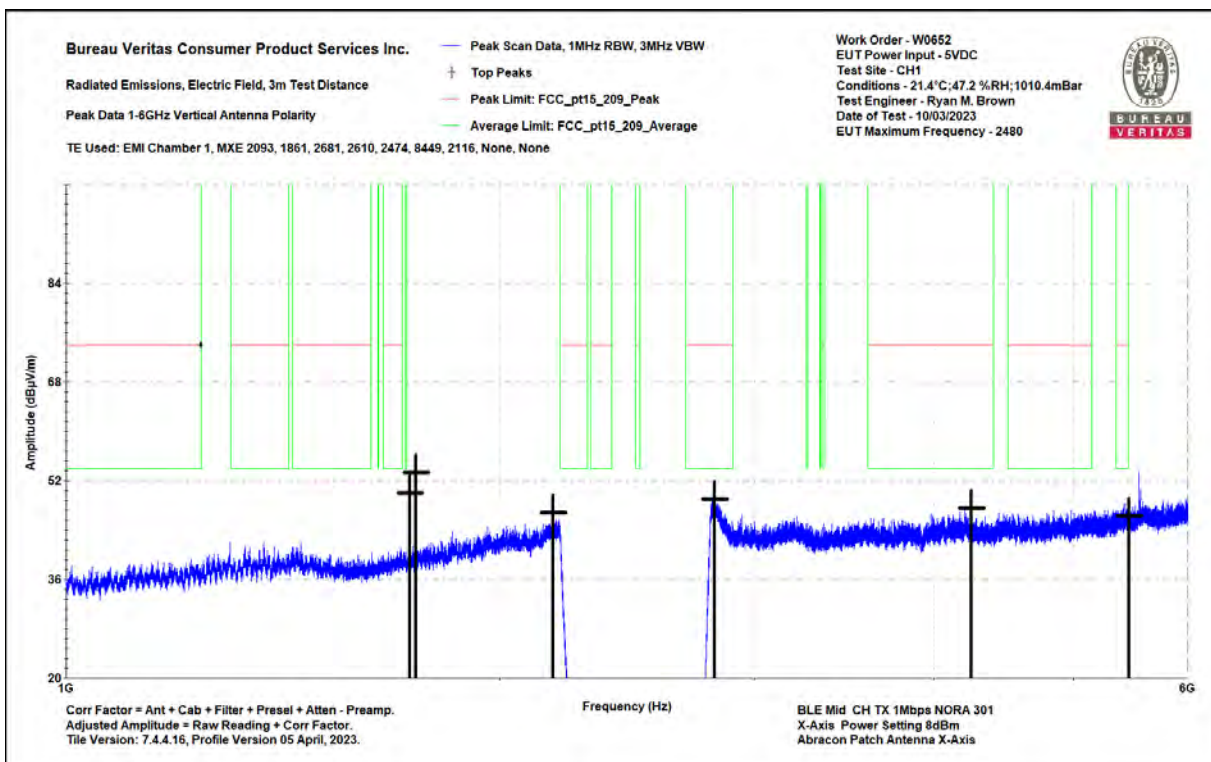
Mid CH, 1Mbps, Module axis: X, External antenna axis: X

Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Vertical 1-6GHz  
Notes:  
BLE Mid CH TX 1Mbps NORA 301  
X-Axis Power Setting 8dBm  
Abracon Patch Antenna X-Axis

Work Order - W0652  
EUT Power Input - 5VDC  
Test Site - CH1  
Conditions - 21.4°C; 47.2 %RH; 1010.4mBar  
Test Engineer - Ryan M. Brown  
Date of Test - 10/03/2023

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2818.13         | 45.9                    | 3.1                      | 49                               | 74                                 | -25                       | PASS                                | -25                          | 54                                    | -5                           | PASS                                  | -5                              | 200                 | 283                   |
| 4246.5          | 46.4                    | 1.2                      | 47.6                             | 74                                 | -26.4                     | PASS                                |                              | 54                                    | -6.4                         | PASS                                  |                                 | 300                 | 31                    |

1-6GHz Vertical Data Table



1-6GHz Vertical Plot



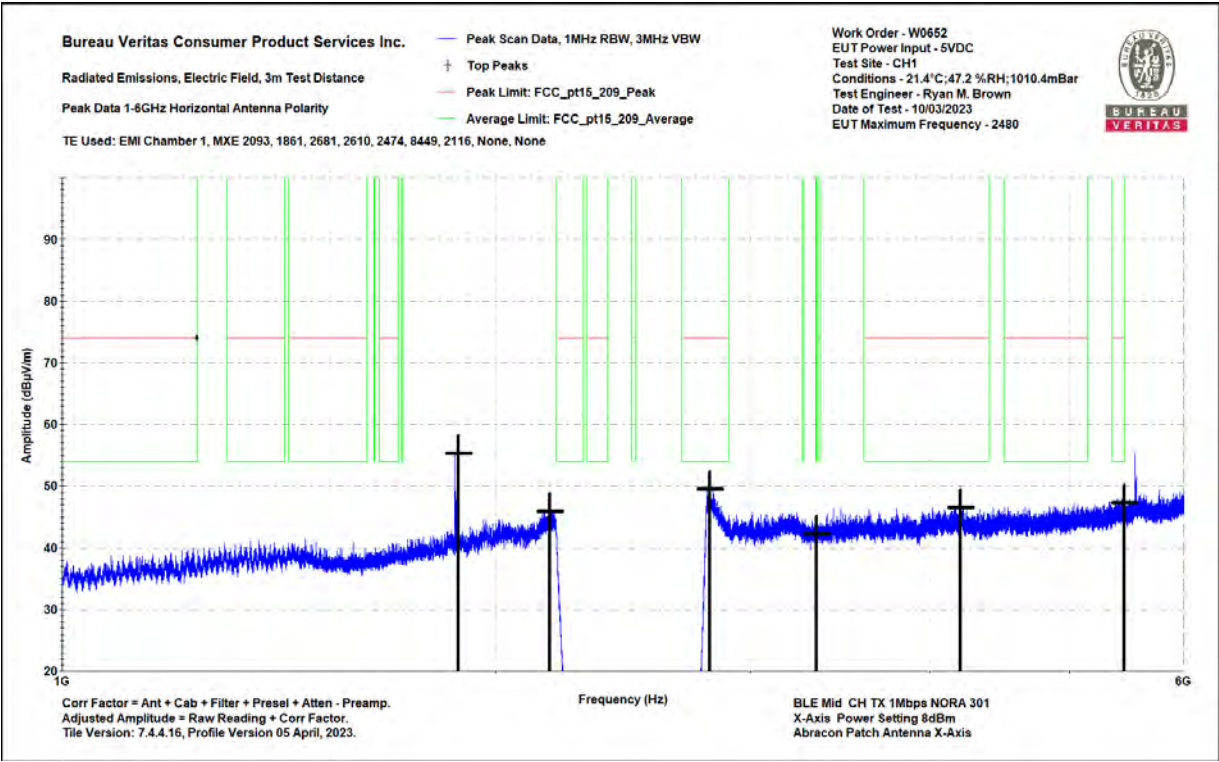
Test Report for u-blox AG  
Report No. EX0652-1 Issue 2



|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                      |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                  |
| Top Peaks Horizontal 1-6GHz                   | Test Site - CH1                         |
| Notes:                                        | Conditions - 21.4°C;47.2 %RH;1010.4mBar |
| BLE Mid CH TX 1Mbps NORA 301                  | Test Engineer - Ryan M. Brown           |
| X-Axis Power Setting 8dBm                     | Date of Test - 10/03/2023               |
| Abrakon Patch Antenna X-Axis                  |                                         |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|--------------------------------|------------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2812.75         | 46.1                    | 3.4                      | 49.5                             | 74                                 | -24.5                     | PASS                           | -24.5                        | 54                                    | -4.5                     | PASS                          | -4.5                        | 100                 | 107                   |
| 3339            | 43.3                    | -1.1                     | 42.2                             | 74                                 | -31.8                     | PASS                           |                              | 54                                    | -11.8                    | PASS                          |                             | 200                 | 97                    |
| 4201.13         | 45.1                    | 1.4                      | 46.5                             | 74                                 | -27.5                     | PASS                           |                              | 54                                    | -7.5                     | PASS                          |                             | 300                 | 107                   |

1-6GHz Horizontal Data Table



1-6GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 1m Distance

Top Peaks Vertical 6-18GHz

Notes:

BLE Mid CH TX 1Mbps NORA 301

X-Axis Power Setting 8dBm

Abracon Patch Antenna X-Axis

Work Order - W0652

EUT Power Input - 5VDC

Test Site - CH1

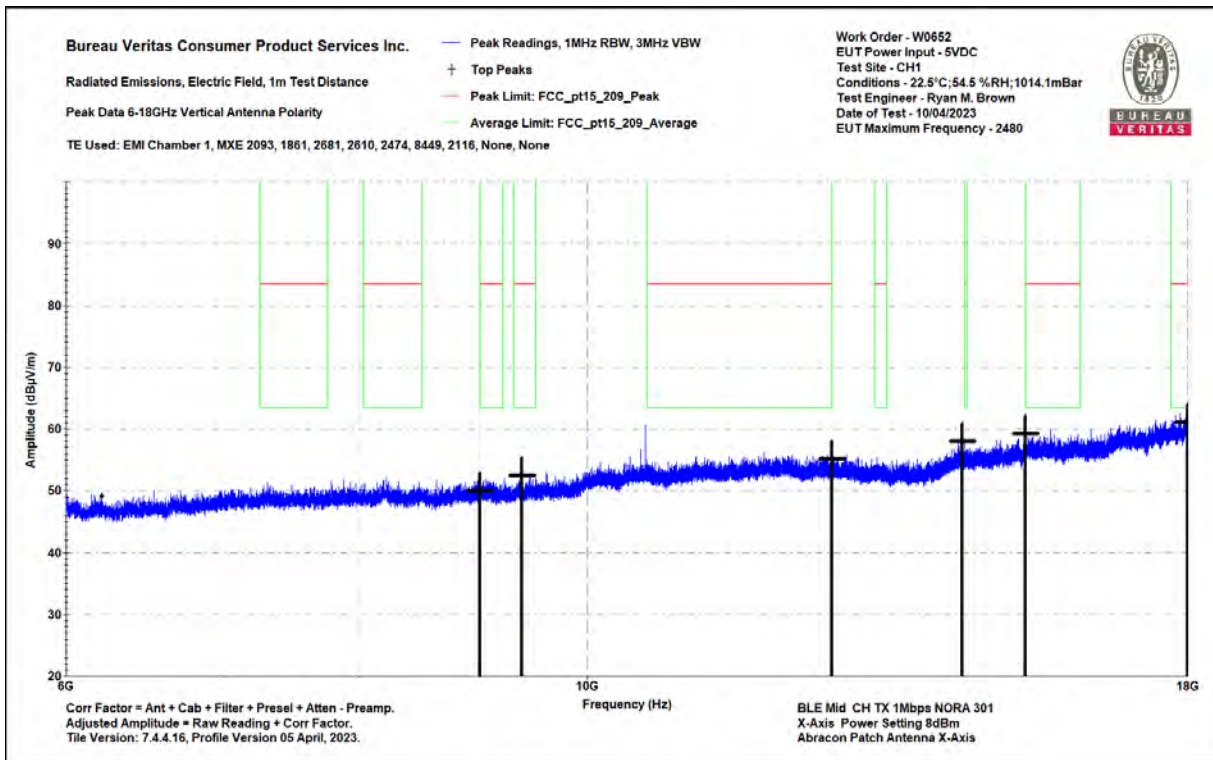
Conditions - 22.5°C;54.5 %RH;1014.1mBar

Test Engineer - Ryan M. Brown

Date of Test - 10/04/2023

| Frequency (MHz) | Raw Peak Reading (dBμV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBμV/m) | Pk Lim: FCC_pt15_209_Peak (dBμV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBμV/m) | Margin to Avg Limit (dB) | Avg Limit Test Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|--------------------------|------------------------------------|-----------------------------|---------------------|-----------------------|
| 9000            | 44.2                    | 5.8                      | 50                               | 83.5                               | -33.5                     | PASS                                |                              | 63.5                                  | -13.5                    | PASS                               |                             | 150                 | 183                   |
| 9372            | 46.4                    | 6.1                      | 52.5                             | 83.5                               | -31                       | PASS                                |                              | 63.5                                  | -11                      | PASS                               |                             | 200                 | 297                   |
| 15352.8         | 47.1                    | 12.2                     | 59.3                             | 83.5                               | -24.2                     | PASS                                |                              | 63.5                                  | -4.2                     | PASS                               |                             | 150                 | 70                    |
| 17999.1         | 45                      | 16.2                     | 61.1                             | 83.5                               | -22.4                     | PASS                                | -22.4                        | 63.5                                  | -2.4                     | PASS                               | -2.4                        | 100                 | 69                    |

6-18GHz Vertical Data Table



6-18GHz Vertical Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2



Bureau Veritas Consumer Product Services Inc.

Radiated Emissions Electric Field 1m Distance

Top Peaks Horizontal 6-18GHz

Notes:

BLE Mid CH TX 1Mbps NORA 301

X-Axis Power Setting 8dBm

Abracon Patch Antenna X-Axis

Work Order - W0652

EUT Power Input - 5VDC

Test Site - CH1

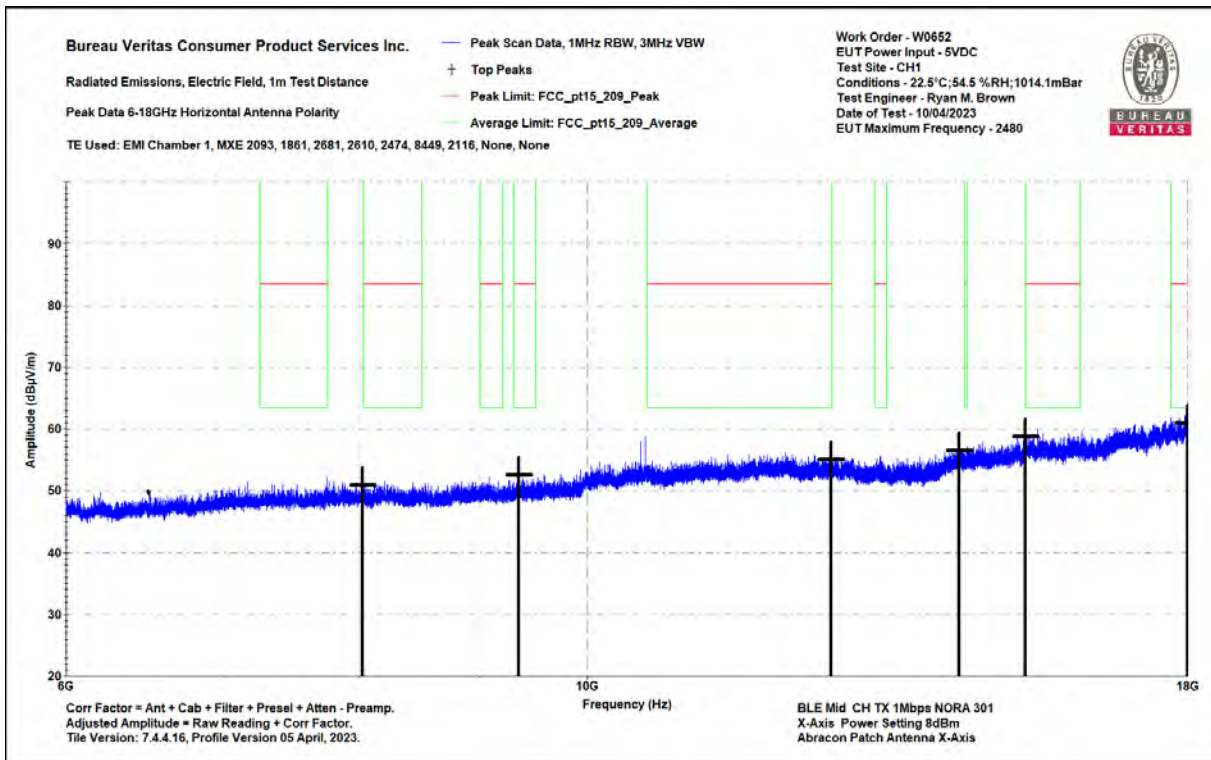
Conditions - 22.5°C;54.5 %RH;1014.1mBar

Test Engineer - Ryan M. Brown

Date of Test - 10/04/2023

| Frequency (MHz) | Raw Peak Reading (dBμV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBμV/m) | Pk Lim: FCC_pt15_209_Peak (dBμV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBμV/m) | Margin to Avg Limit (dB) | Avg Limit Test Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|--------------------------|------------------------------------|-----------------------------|---------------------|-----------------------|
| 9350.1          | 46.5                    | 6                        | 52.5                             | 83.5                               | -31                       | PASS                                |                              | 63.5                                  | -11                      | PASS                               |                             | 150                 | 258                   |
| 12694.8         | 45.1                    | 10                       | 55                               | 83.5                               | -28.5                     | PASS                                |                              | 63.5                                  | -8.5                     | PASS                               |                             | 150                 | 220                   |
| 15353.7         | 46.5                    | 12.2                     | 58.7                             | 83.5                               | -24.8                     | PASS                                |                              | 63.5                                  | -4.8                     | PASS                               |                             | 125                 | 209                   |
| 18000           | 44.8                    | 16.2                     | 61                               | 83.5                               | -22.5                     | PASS                                | -22.5                        | 63.5                                  | -2.5                     | PASS                               | -2.5                        | 150                 | 220                   |

6-18GHz Horizontal Data Table



6-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

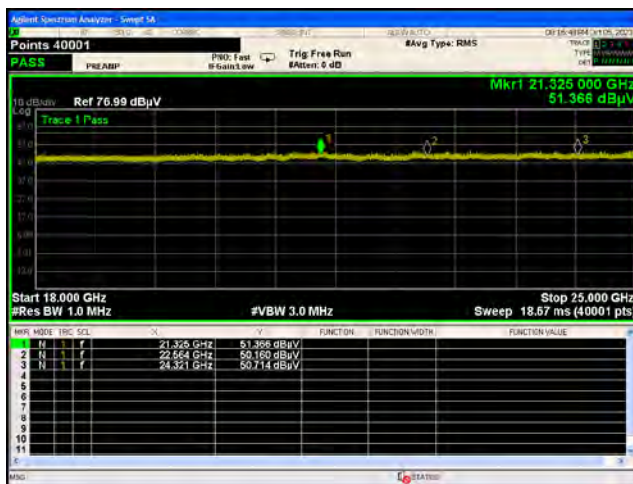


## Radiated Emissions Table

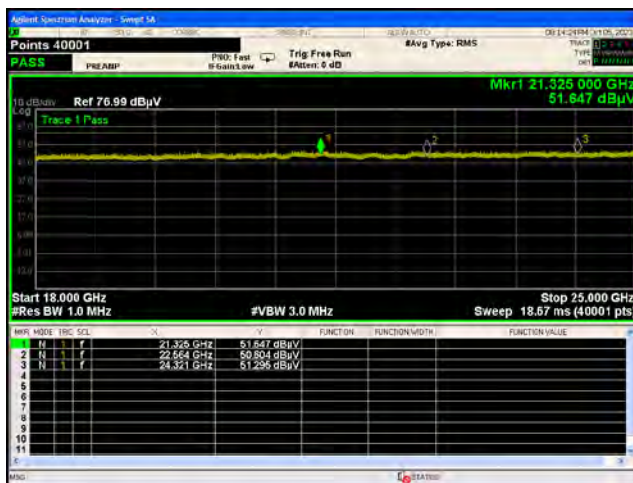
| Date: 05-Oct-23                                                            |                    | Company: U-Blox                                |                           |                       |                          |                      |                                   | Work Order: X0652                     |                                   |                |                       |                                      |                |                       |
|----------------------------------------------------------------------------|--------------------|------------------------------------------------|---------------------------|-----------------------|--------------------------|----------------------|-----------------------------------|---------------------------------------|-----------------------------------|----------------|-----------------------|--------------------------------------|----------------|-----------------------|
| Engineer: Ryan M. Brown                                                    |                    | EUT Desc: NORA-W301 With Abracon Patch Antenna |                           |                       |                          |                      |                                   | EUT Operating Voltage/Frequency: 5VDC |                                   |                |                       |                                      |                |                       |
| Temp: 22.5                                                                 |                    | Humidity: 55%                                  |                           |                       |                          |                      |                                   | Pressure: 1014                        |                                   |                |                       |                                      |                |                       |
| Frequency Range: 18-25GHz                                                  |                    |                                                |                           |                       |                          |                      |                                   | Measurement Distance: 1 m             |                                   |                |                       |                                      |                |                       |
| Notes: Mid CH                                                              |                    |                                                |                           |                       |                          |                      |                                   | EUT Max Freq: 2480                    |                                   |                |                       |                                      |                |                       |
| Antenna Polarization<br>(H / V)                                            | Frequency<br>(MHz) | Peak Reading<br>(dBμV)                         | Average Reading<br>(dBμV) | Preamp Factor<br>(dB) | Antenna Factor<br>(dB/m) | Cable Factor<br>(dB) | Adjusted Peak Reading<br>(dBμV/m) | Adjusted Avg Reading<br>(dBμV/m)      | FCC Class B High Frequency - Peak |                |                       | FCC Class B High Frequency - Average |                |                       |
|                                                                            |                    |                                                |                           |                       |                          |                      |                                   |                                       | Limit<br>(dBμV/m)                 | Margin<br>(dB) | Result<br>(Pass/Fail) | Limit<br>(dBμV/m)                    | Margin<br>(dB) | Result<br>(Pass/Fail) |
| V                                                                          | 21325.0            | 35.066                                         | 35.1                      | 0.0                   | 5.5                      | 10.8                 | 51.4                              | 51.4                                  | 83.5                              | -32.1          | Pass                  | 63.5                                 | -12.1          | Pass                  |
| V                                                                          | 22564.0            | 33.76                                          | 33.8                      | 0.0                   | 5.2                      | 11.2                 | 50.2                              | 50.2                                  | 83.5                              | -33.3          | Pass                  | 63.5                                 | -13.3          | Pass                  |
| V                                                                          | 24321.0            | 34.114                                         | 34.1                      | 0.0                   | 5.0                      | 11.6                 | 50.7                              | 50.7                                  | 83.5                              | -32.8          | Pass                  | 63.5                                 | -12.8          | Pass                  |
| H                                                                          | 21325.0            | 35.347                                         | 35.3                      | 0.0                   | 5.5                      | 10.8                 | 51.6                              | 51.6                                  | 83.5                              | -31.9          | Pass                  | 63.5                                 | -11.9          | Pass                  |
| H                                                                          | 22564.0            | 34.204                                         | 34.2                      | 0.0                   | 5.2                      | 11.2                 | 50.6                              | 50.6                                  | 83.5                              | -32.9          | Pass                  | 63.5                                 | -12.9          | Pass                  |
| H                                                                          | 24321.0            | 34.695                                         | 34.7                      | 0.0                   | 5.0                      | 11.6                 | 51.3                              | 51.3                                  | 83.5                              | -32.2          | Pass                  | 63.5                                 | -12.2          | Pass                  |
| Table Result:                                                              |                    | Pass                                           |                           | by                    |                          | -11.9 dB             |                                   | Worst Freq:                           |                                   | 21325.0 MHz    |                       |                                      |                |                       |
| Test Site: EMI Chamber 1                                                   |                    | Cable 1: Asset #2690                           |                           |                       |                          |                      |                                   | Cable 2: ---                          |                                   |                | Cable 3: ---          |                                      |                |                       |
| Analyzer: 2093                                                             |                    | Preamp: None                                   |                           |                       |                          |                      |                                   | Antenna: 2709                         |                                   |                | Preselector: ---      |                                      |                |                       |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                    |                                                |                           |                       |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                    |                                                |                           |                       |                          |                      |                                   |                                       |                                   |                |                       |                                      |                |                       |
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## 18-25GHz Data Table

**Note:** Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



## 18-25GHz Vertical Plot



## 18-25GHz Horizontal Plot

Bureau Veritas Consumer Product  
Services Inc.

One Distribution Center Circle, #1  
Littleton, MA

Tel.: (978) 486-8880  
Fax: (978) 486-8828



**Test Report for u-blox AG**  
**Report No. EX0652-1 Issue 2**



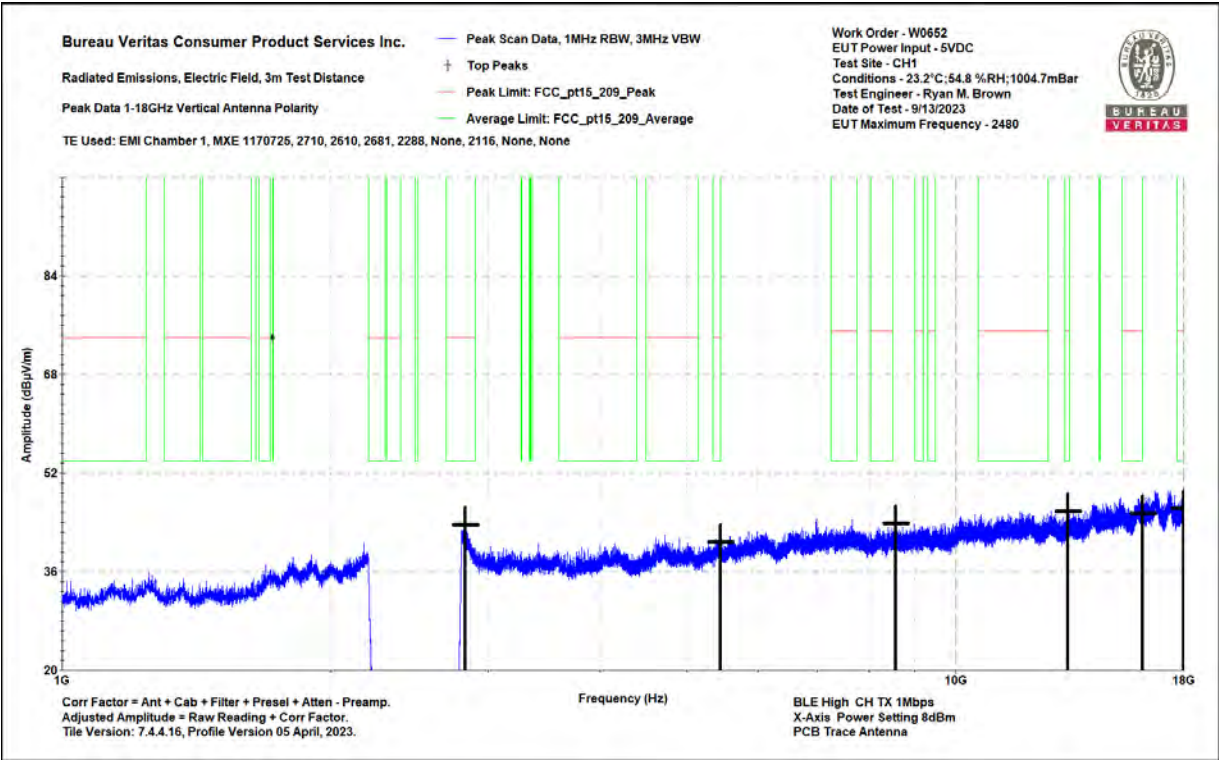
**NORA-306**

High CH, 1Mbps, Module axis: X

|                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| Bureau Veritas Consumer Product Services Inc. | Work Order - W0652                      |
| Radiated Emissions Electric Field 3m Distance | EUT Power Input - 5VDC                  |
| Top Peaks Vertical 1-18GHz                    | Test Site - CH1                         |
| Notes:                                        | Conditions - 23.2°C;54.8 %RH;1004.7mBar |
| BLE High CH TX 1Mbps                          | Test Engineer - Ryan M. Brown           |
| X-Axis Power Setting 8dBm                     | Date of Test - 9/13/2023                |
| PCB Trace Antenna                             |                                         |

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Test Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Average Limit (dB) | Average Limit Test Result (Pass/Fail) | Average Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|-------------------------------------|------------------------------|---------------------------------------|------------------------------|---------------------------------------|---------------------------------|---------------------|-----------------------|
| 2827.07         | 30.6                    | 13                       | 43.6                             | 74                                 | -30.4                     | PASS                                |                              | 54                                    | -10.4                        | PASS                                  |                                 | 100                 | 146                   |
| 5459.95         | 28.2                    | 12.5                     | 40.7                             | 74                                 | -33.3                     | PASS                                |                              | 54                                    | -13.3                        | PASS                                  |                                 | 200                 | 315                   |
| 13361.55        | 26.6                    | 19.3                     | 45.9                             | 74                                 | -28.1                     | PASS                                |                              | 54                                    | -8.1                         | PASS                                  |                                 | 300                 | 0                     |
| 17999.58        | 21.1                    | 25.3                     | 46.4                             | 74                                 | -27.6                     | PASS                                | -27.6                        | 54                                    | -7.6                         | PASS                                  | -7.6                            | 100                 | 107                   |

**1-18GHz Vertical Data Table**



**1-18GHz Vertical Plot**



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

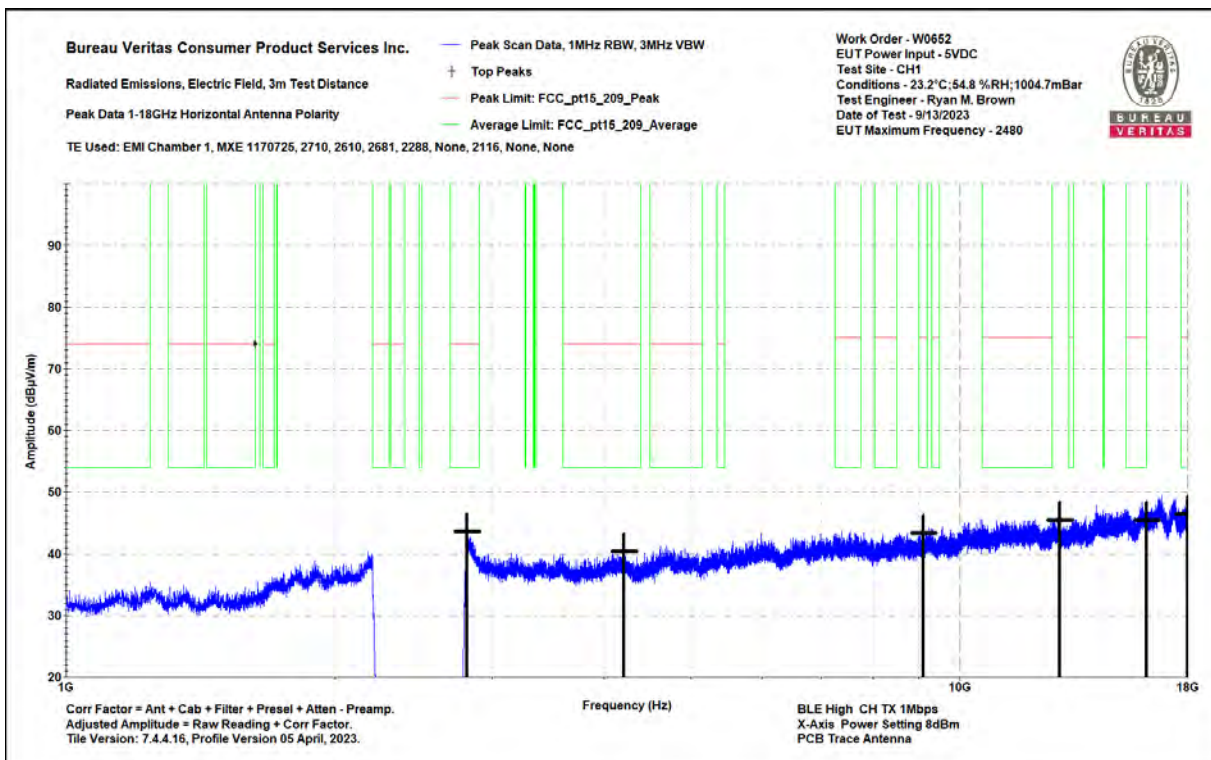


Bureau Veritas Consumer Product Services Inc.  
Radiated Emissions Electric Field 3m Distance  
Top Peaks Horizontal 1-18GHz  
Notes:  
BLE High CH TX 1Mbps  
X-Axis Power Setting 8dBm  
PCB Trace Antenna

Work Order - W0652  
EUT Power Input - 5VDC  
Test Site - CH1  
Conditions - 23.2°C;54.8 %RH;1004.7mBar  
Test Engineer - Ryan M. Brown  
Date of Test - 9/13/2023

| Frequency (MHz) | Raw Peak Reading (dBµV) | Correction Factor (dB/m) | Adjusted Peak Amplitude (dBµV/m) | Pk Lim: FCC_pt15_209_Peak (dBµV/m) | Margin to Peak Limit (dB) | Peak Limit Results (Pass/Fail) | Peak Limit Worst Margin (dB) | Av Lim: FCC_pt15_209_Average (dBµV/m) | Margin to Avg Limit (dB) | Avg Limit Results (Pass/Fail) | Avg Limit Worst Margin (dB) | Antenna Height (cm) | EUT Azimuth (degrees) |
|-----------------|-------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------|--------------------------------|------------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------------|---------------------|-----------------------|
| 2806.68         | 29.9                    | 13.8                     | 43.7                             | 74                                 | -30.3                     | PASS                           |                              | 54                                    | -10.3                    | PASS                          |                             | 100                 | 0                     |
| 4206.63         | 29.9                    | 10.4                     | 40.4                             | 74                                 | -33.6                     | PASS                           |                              | 54                                    | -13.6                    | PASS                          |                             | 300                 | 181                   |
| 9115.38         | 28.9                    | 14.5                     | 43.4                             | 74                                 | -30.6                     | PASS                           |                              | 54                                    | -10.6                    | PASS                          |                             | 300                 | 258                   |
| 17999.58        | 21.1                    | 25.3                     | 46.4                             | 74                                 | -27.6                     | PASS                           | -27.6                        | 54                                    | -7.6                     | PASS                          | -7.6                        | 300                 | 144                   |

1-18GHz Horizontal Data Table



1-18GHz Horizontal Plot



# Test Report for u-blox AG Report No. EX0652-1 Issue 2

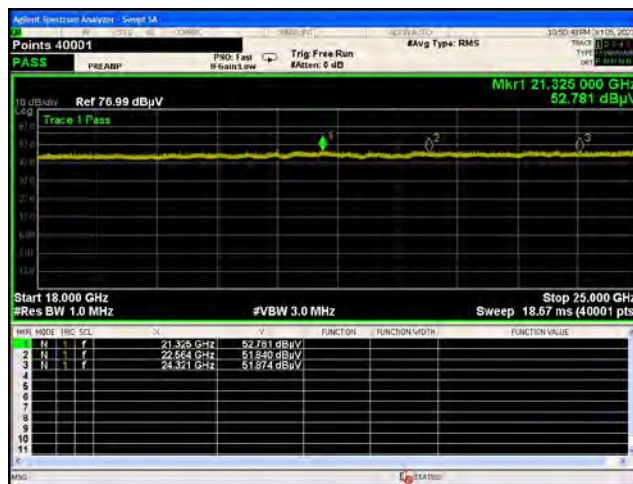


## Radiated Emissions Table

| Date: 05-Oct-23                                                            |                    | Company: U-Blox                            |                           |                       |                          |                      |                                   |                                  | Work Order: X0652                     |                |                       |                                      |                |                       |
|----------------------------------------------------------------------------|--------------------|--------------------------------------------|---------------------------|-----------------------|--------------------------|----------------------|-----------------------------------|----------------------------------|---------------------------------------|----------------|-----------------------|--------------------------------------|----------------|-----------------------|
| Engineer: Ryan M. Brown                                                    |                    | EUT Desc: NORA-W306 With PCB Trace Antenna |                           |                       |                          |                      |                                   |                                  | EUT Operating Voltage/Frequency: 5VDC |                |                       |                                      |                |                       |
| Temp: 22.5                                                                 |                    | Humidity: 55%                              |                           |                       |                          |                      |                                   |                                  | Pressure: 1014                        |                |                       |                                      |                |                       |
| Frequency Range: 18-25GHz                                                  |                    |                                            |                           |                       |                          |                      |                                   |                                  | Measurement Distance: 1 m             |                |                       |                                      |                |                       |
| Notes: High CH                                                             |                    |                                            |                           |                       |                          |                      |                                   |                                  | EUT Max Freq: 2480                    |                |                       |                                      |                |                       |
| Antenna Polarization<br>(H / V)                                            | Frequency<br>(MHz) | Peak Reading<br>(dBµV)                     | Average Reading<br>(dBµV) | Preamp Factor<br>(dB) | Antenna Factor<br>(dB/m) | Cable Factor<br>(dB) | Adjusted Peak Reading<br>(dBµV/m) | Adjusted Avg Reading<br>(dBµV/m) | FCC Class B High Frequency - Peak     |                |                       | FCC Class B High Frequency - Average |                |                       |
|                                                                            |                    |                                            |                           |                       |                          |                      |                                   |                                  | Limit<br>(dBµV/m)                     | Margin<br>(dB) | Result<br>(Pass/Fail) | Limit<br>(dBµV/m)                    | Margin<br>(dB) | Result<br>(Pass/Fail) |
| V                                                                          | 21325.0            | 36.481                                     | 36.5                      | 0.0                   | 5.5                      | 10.8                 | 52.8                              | 52.8                             | 83.5                                  | -30.7          | Pass                  | 63.5                                 | -10.7          | Pass                  |
| V                                                                          | 22564.0            | 35.44                                      | 35.4                      | 0.0                   | 5.2                      | 11.2                 | 51.8                              | 51.8                             | 83.5                                  | -31.7          | Pass                  | 63.5                                 | -11.7          | Pass                  |
| V                                                                          | 24321.0            | 35.274                                     | 35.3                      | 0.0                   | 5.0                      | 11.6                 | 51.9                              | 51.9                             | 83.5                                  | -31.6          | Pass                  | 63.5                                 | -11.6          | Pass                  |
| H                                                                          | 21325.0            | 33.565                                     | 33.6                      | 0.0                   | 5.5                      | 10.8                 | 49.9                              | 49.9                             | 83.5                                  | -33.6          | Pass                  | 63.5                                 | -13.6          | Pass                  |
| H                                                                          | 22564.0            | 35.524                                     | 35.5                      | 0.0                   | 5.2                      | 11.2                 | 51.9                              | 51.9                             | 83.5                                  | -31.6          | Pass                  | 63.5                                 | -11.6          | Pass                  |
| H                                                                          | 24321.0            | 32.857                                     | 32.9                      | 0.0                   | 5.0                      | 11.6                 | 49.5                              | 49.5                             | 83.5                                  | -34.0          | Pass                  | 63.5                                 | -14.0          | Pass                  |
| Table Result:                                                              |                    | Pass                                       |                           | by                    |                          | -10.7 dB             |                                   | Worst Freq:                      |                                       | 21325.0 MHz    |                       |                                      |                |                       |
| Test Site: EMI Chamber 1                                                   |                    | Cable 1: Asset #2690                       |                           |                       |                          |                      |                                   |                                  | Cable 2: ---                          |                |                       | Cable 3: ---                         |                |                       |
| Analyzer: 2093                                                             |                    | Preamp: None                               |                           |                       |                          |                      |                                   |                                  | Antenna: 2709                         |                |                       | Preselector: ---                     |                |                       |
| CSsoft Radiated Emissions Calculator v 1.017.226                           |                    |                                            |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |
| Adjusted Reading = Reading - Preamp Factor + Antenna Factor + Cable Factor |                    |                                            |                           |                       |                          |                      |                                   |                                  |                                       |                |                       |                                      |                |                       |
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## 18-25GHz Data Table

**Note:** Correction factors for Cable and Antenna were entered into the spectrum analyzer to allow direct comparison to the limit on the screen. Detailed correction factors are listed in the data table above.



## 18-25GHz Vertical Plot



## 18-25GHz Horizontal Plot

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