



| FCC TEST REPORT FCC 47 CFR Part 15E Industry Canada RSS-247 Digital transmission systems operating within the 5150 – 5350 and 5470 – 5850 MHz band | |
|---|--|
| Report Reference No. | G0M-1510-5172-TFC407WF-161-V01 |
| Testing Laboratory | Eurofins Product Service GmbH |
| Address | Storkower Str. 38c 15526 Reichenwalde Germany |
| Accreditation |   <p>A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A</p> |
| Applicant's name | u-blox Berlin GmbH |
| Address | Rudower Chaussee 9 12489 Berlin GERMANY |
| Test specification: | |
| Standard | 47 CFR Part 15E RSS-247, Issue 1, 2015-05 RSS-Gen, Issue 4, 2014-11 ANSI C63.10:2013 ANSI C63.4:2014 |
| Test scope | partial radio compliance test according to customer request |
| Equipment under test (EUT): | |
| Product description | WLAN/Bluetooth multi-radio host-based module |
| Model No. | ELLA-W1 |
| Additional Model(s) | None |
| Brand Name(s) | None |
| Hardware version | G8, mounted on eval board version 1.01 |
| Firmware / Software version | MFG firmware |
| | FCC-ID: none IC: none |
| Test result | Passed |

Possible test case verdicts:

- neither assessed nor tested : N/N
- required by standard but not appl. to test object : N/A
- required by standard but not tested : N/T
- not required by standard for the test object : N/R
- test object does meet the requirement : P (Pass)
- test object does not meet the requirement : F (Fail)

Testing:


Test Lab Temperature : 20 – 23 °C


Test Lab Humidity : 32 – 38 %

Date of receipt of test item : 2015-11-02

Date (s) of performance of tests : 2015-11-02 - 2015-11-16

Compiled by : Toralf Jahn

Tested by (+ signature) : Toralf Jahn 
 (Responsible for Test)

Approved by (+ signature) : Christian Weber 
 (Head of Lab)

Date of issue : 2015-12-23

Total number of pages : 128

General remarks:

The test results presented in this report relate only to the object tested.
The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

Additional comments:

This test report is for the versions ELLA-W161-A and ELLA-W161.

Version History

| Version | Issue Date | Remarks | Revised by |
|---------|------------|-----------------|------------|
| 01 | 2015-12-23 | Initial Release | |

REPORT INDEX

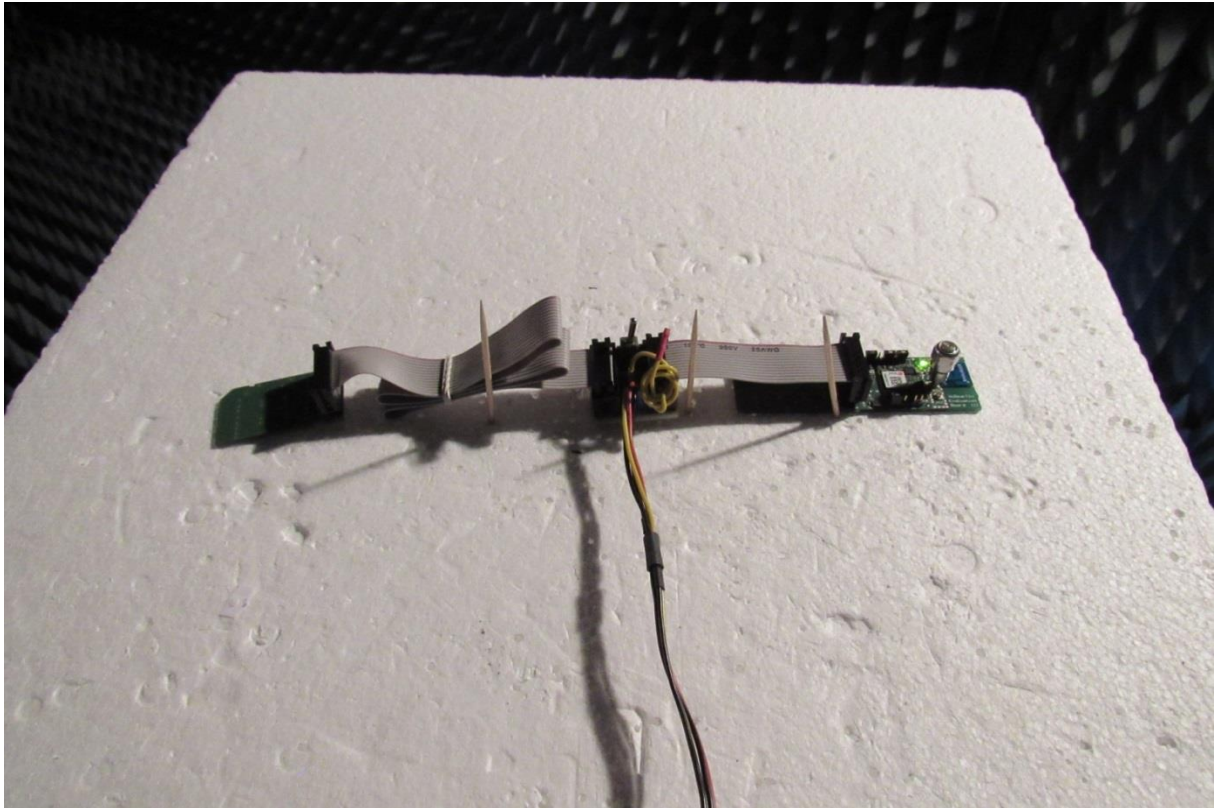
| | | |
|----------|--|-----------|
| 1 | EQUIPMENT (TEST ITEM) DESCRIPTION | 5 |
| 1.1 | Photos – Test setup | 7 |
| 1.2 | Supporting Equipment Used During Testing | 8 |
| 1.3 | Test Modes | 9 |
| 1.4 | Test Equipment Used During Testing | 10 |
| 1.5 | Sample emission level calculation | 11 |
| 2 | RESULT SUMMARY | 12 |
| 3 | TEST CONDITIONS AND RESULTS | 13 |
| 3.1 | Test Conditions and Results – Conducted spurious emissions | 13 |
| 3.2 | Test Conditions and Results – Transmitter radiated emissions in the restricted bands | 33 |
| ANNEX A | Transmitter radiated spurious emissions | 37 |

1 Equipment (Test item) Description

| | | |
|-------------------------------------|---|----------|
| Description | WLAN/Bluetooth multi-radio host-based module | |
| Model | ELLA-W1 | |
| Additional Model(s) | None | |
| Brand Name(s) | None | |
| Serial number | None | |
| Hardware version | G8, mounted on eval board version 1.01 | |
| Software / Firmware version | MFG firmware | |
| FCC-ID | none | |
| IC | none | |
| Equipment type | End product | |
| Radio type | Transceiver | |
| Radio technology | IEEE 802.11 a/n | |
| Master / Client capabilities | Client without radar detection | |
| Operating frequency range | 5180 - 5700 MHz | |
| Assigned frequency band | 5150 - 5725 MHz | |
| Main test frequencies | Channel 40 | 5200 MHz |
| | Channel 60 | 5300 MHz |
| | Channel 100 | 5500 MHz |
| | Channel 140 | 5700 MHz |
| Spreading | OFDM | |
| Modulations | BPSK, QPSK, 16-QAM, 64-QAM | |
| Channel spacing | 20 / 40MHz | |
| Number of antennas | none | |
| Antenna | Type | N/A |
| | Model | N/A |
| | Manufacturer | N/A |
| | Gain | N/A |
| Manufacturer | u-blox Berlin GmbH Rudower Chaussee 9 12489 Berlin GERMANY | |
| Power supply | V _{NOM} | 3.3 VDC |
| | V _{MIN} | 3.0 VDC |
| | V _{MAX} | 3.6 VDC |
| Temperature range | T _{NOM} | +25°C |
| | T _{MIN} | -40°C |
| | T _{MAX} | +85°C |

| | | |
|----------------------|--------|-----|
| AC/DC-Adaptor | Model | N/A |
| | Vendor | N/A |
| | Input | N/A |
| | Output | N/A |

1.1 Photos – Test setup



1.2 Supporting Equipment Used During Testing

| Product Type* | Device | Manufacturer | Model No. | Comments |
|---|-------------------|--------------|------------------|-------------------------------|
| AE | Development board | lesswire AG | WiBear11n-SF1-EK | Mounting of EUT |
| CABL | Flat ribbon cable | unspecific | unspecific | SDIO connection to control PC |
| AE | Interface card | DeLock | 91481 | SDIO interface on PC |
| AE | power supply | Statron | 2224.7 | |
| <p>*Note: Use the following abbreviations:</p> <p style="padding-left: 40px;">AE : Auxiliary/Associated Equipment, or</p> <p style="padding-left: 40px;">SIM : Simulator (Not Subjected to Test)</p> <p style="padding-left: 40px;">CABL : Connecting cables</p> | | | | |

1.3 Test Modes

| Mode # | Description | |
|--------|---------------------|---|
| OFDM | General conditions: | EUT powered by laboratory power supply. |
| | Radio conditions: | Mode = standalone transmit Spreading = OFDM Modulation = BPSK Data rate = 6 Mbps Bandwidth = 20 MHz Duty cycle = 100 % Power level = 15 dBm firmware setting |
| HT20 | General conditions: | EUT powered by laboratory power supply. |
| | Radio conditions: | Mode = standalone transmit Spreading = OFDM Modulation = MCS0 (BPSK) Data rate = 6.5 Mbps Bandwidth = 20 MHz Duty cycle = 100 % Power level = 15 dBm firmware setting |
| HT40 | General conditions: | EUT powered by laboratory power supply. |
| | Radio conditions: | Mode = standalone transmit Spreading = OFDM Modulation = MCS0 (BPSK) Data rate = 6.5 Mbps Bandwidth = 40 MHz Duty cycle = 100 % Power level = 15 dBm firmware setting |

1.4 Test Equipment Used During Testing

| Measurement Software | | | |
|-----------------------------|------------------|------------|-----------|
| Description | Manufacturer | Name | Version |
| EMC Test Software | Dare Instruments | Radimation | 2014.1.15 |

| Conducted spurious emissions | | | | | |
|-------------------------------------|--------------|-------|------------|-----------|----------|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| Spectrum analyzer | R&S | FSW43 | EF00896 | 2015-03 | 2016-03 |

| Radiated spurious emissions | | | | | |
|------------------------------------|--------------|--------|------------|-----------|----------|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| Semi-anechoic chamber | Frankonia | AC 1 | EF00062 | - | - |
| Spectrum Analyzer | R&S | FSIQ26 | EF00242 | 2015-04 | 2016-04 |
| Biconical Antenna | R&S | HK 116 | EF00012 | 2013-02 | 2016-02 |
| LPD Antenna | R&S | HL 223 | EF00187 | 2014-03 | 2017-03 |
| LPD Antenna | R&S | HL 025 | EF00327 | 2015-10 | 2018-10 |

1.5 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dB μ V. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on Analyzer (dB}\mu\text{V)} + \text{A.F. (dB)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dB μ V/m). The FCC limits are given in units of μ V/m. The following formula is used to convert the units of μ V/m to dB μ V/m:

$$\text{Limit (dB}\mu\text{V/m)} = 20 * \log (\mu\text{V/m})$$

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

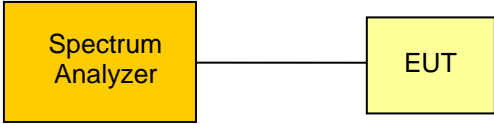
$$\begin{array}{rclcl} \text{Reading} & + & \text{AF} & = & \text{Net Reading} & : & \text{Net reading - FCC limit} & = & \text{Margin} \\ 21.5 \text{ dB}\mu\text{V} & + & 26 \text{ dB} & = & 47.5 \text{ dB}\mu\text{V/m} & : & 47.5 \text{ dB}\mu\text{V/m} - 57.0 \text{ dB}\mu\text{V/m} & = & -9.5 \text{ dB} \end{array}$$

2 Result Summary

| FCC 47 CFR Part 15E, IC RSS-247 | | | | |
|---|--|--|--------|---|
| Product Specific Standard Section | Requirement – Test | Reference Method | Result | Remarks |
| IC RSS-247 § 3.1 | Occupied Bandwidth | ANSI C63.10 | N/R | Informational only |
| FCC § 15.407(a)(h) | 26 dB emission bandwidth | ANSI C63.10 | N/T | Customer specific test plan |
| FCC § 15.407(a) IC RSS-247 § 6.2 | Maximum output power | ANSI C63.10 | N/T | Customer specific test plan |
| FCC § 15.407(a) IC RSS-247 § 6.2 | Maximum power spectral density | ANSI C63.10 | N/T | Customer specific test plan |
| FCC § 15.407(b) IC RSS-247 § 6.2 | Conducted spurious emissions at antenna port | ANSI C63.10 | PASS | |
| FCC § 15.407(b) IC RSS-247 § 6.2 | Band edge compliance | ANSI C63.10 | N/T | Customer specific test plan |
| FCC § 15.407(g) | Frequency stability | ANSI C63.10 | N/T | Customer specific test plan |
| FCC § 15.407(a)(e) IC RSS-247 § 6.2 | Minimum 6 dB Bandwidth | ANSI C63.10 | N/T | Customer specific test plan |
| FCC § 15.407(h) IC RSS-247 § 6.2 | Transmit Power Control (TPC) | ANSI C63.10 | N/T | Customer specific test plan |
| FCC § 15.407(h) IC RSS-247 § 6.3 | Dynamic Frequency Selection (DFS) | FCC Order, ET Docket No.03-122 (FCC 06-96) | N/T | Customer specific test plan |
| FCC § 15.407(b) FCC § 15.207 IC RSS-247 § 3.1 | AC power line conducted emissions | ANSI C63.10 | N/T | Customer specific test plan |
| FCC § 15.407(b) FCC § 15.209 IC RSS-247 § 6.2 | Transmitter radiated spurious emissions | ANSI C63.10 | FAIL | Customer specific test plan. Measurements only above 1 GHz. Antenna ports terminated with 50 Ohms. |
| IC RSS-247 § 3.1 | Receiver radiated spurious emissions | ANSI C63.10 | N/T | Customer specific test plan |
| Remarks: | | | | |

3 Test Conditions and Results

3.1 Test Conditions and Results – Conducted spurious emissions

| Conducted spurious emissions acc. to FCC 15.407 / IC RSS-247 | | Verdict: PASS |
|---|--|----------------------|
| EUT requirement rule parts and clause | Reference | |
| | FCC 15.407(b) (1) – (4) / IC RSS-247 6.2 | |
| Test according to measurement reference | Reference Method | |
| | ANSI C63.10 | |
| Test frequency range | Tested frequencies | |
| | 10 MHz – 10 th Harmonic | |
| Limits | | |
| Frequency band [MHz] | Out of frequency band limit [e.i.r.p.] | |
| 5150 - 5250 | -27 dBm/MHz | |
| 5250 – 5350 | -27 dBm/MHz | |
| 5470 - 5725 | -27 dBm/MHz | |
| 5725 – (5825) 5850 | -17 dBm/MHz (within 10 MHz outside the band edges) | |
| 5725 – (5825) 5850 | -27 dBm/MHz | |
| Comments: Below 1 GHz peak detector is permitted as alternative to quasi-peak detector. Above 1 GHz peak detector is requested. | | |
| Test setup | | |
|  | | |
| Test procedure | | |
| <ol style="list-style-type: none"> 1. Set EUT to test mode 2. Adjust reference level according to antenna gain 3. Set sweep time to auto 4. Set detector to peak and trace to max hold 5. Allow max hold to run until trace has stabilized 6. Set markers to emission peaks | | |

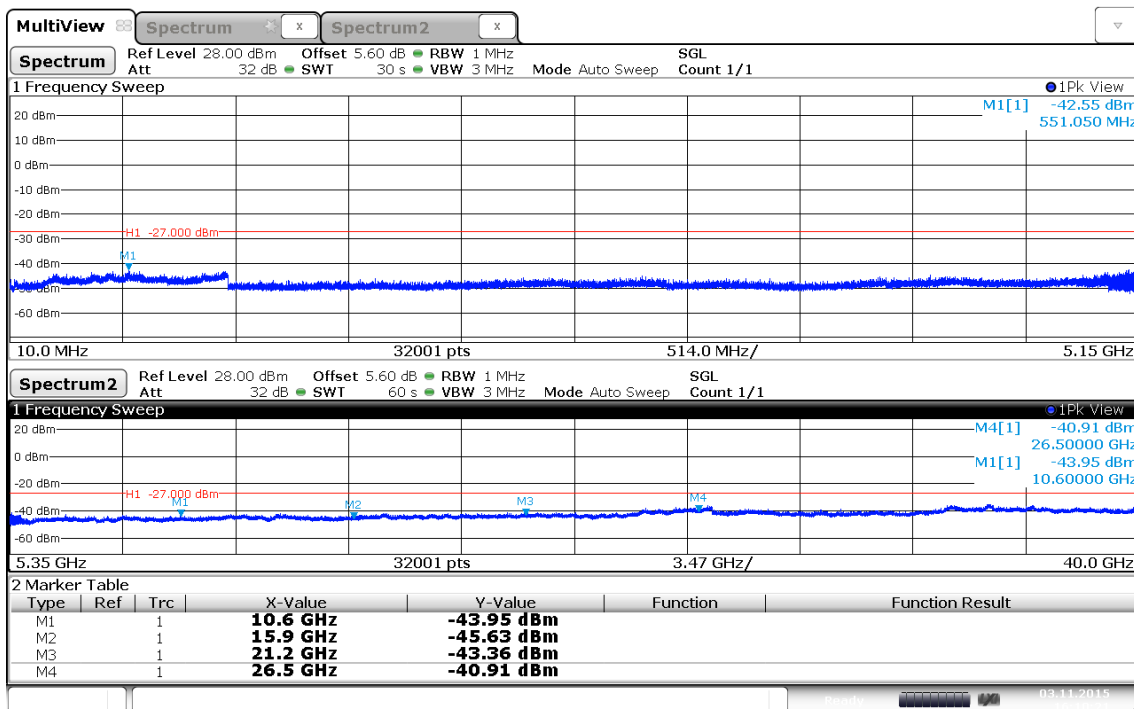
| Test overview | | | | | |
|---------------|--------------------------|------|-------------|-----------------------------------|--------|
| Channel | Frequency f_0 [MHz] | Mode | Model | Measurement Range | Result |
| 60 | 5300 | OFDM | ELLA-W161-A | 1 – 12.5 GHz | Pass |
| 60 | 5300 | HT20 | ELLA-W161-A | 1 – 12.5 GHz | Pass |
| 62 | 5310 | HT40 | ELLA-W161-A | 1 – 12.5 GHz | Pass |
| 40 | 5200 | OFDM | ELLA-W161-A | 1 – 12.5 GHz | Pass |
| 100 | 5500 | OFDM | ELLA-W161-A | 1 – 12.5 GHz | Pass |
| 140 | 5700 | OFDM | ELLA-W161-A | 1 – 12.5 GHz | Pass |
| 40 | 5200 | OFDM | ELLA-W161-A | 3 x f_0 , 4 x f_0 , 6 x f_0 | Pass |
| 60 | 5300 | OFDM | ELLA-W161-A | 3 x f_0 , 4 x f_0 , 6 x f_0 | Pass |
| 100 | 5500 | OFDM | ELLA-W161-A | 4 x f_0 | Pass |
| 140 | 5700 | OFDM | ELLA-W161-A | 4 x f_0 | Pass |
| 40 | 5200 | OFDM | ELLA-W161 | 1 – 12.5 GHz | Pass |
| 60 | 5300 | OFDM | ELLA-W161 | 1 – 12.5 GHz | Pass |
| 100 | 5500 | OFDM | ELLA-W161 | 1 – 12.5 GHz | Pass |
| 140 | 5700 | OFDM | ELLA-W161 | 1 – 12.5 GHz | Pass |
| 40 | 5200 | OFDM | ELLA-W161 | 3 x f_0 , 4 x f_0 , 6 x f_0 | Pass |
| 60 | 5300 | OFDM | ELLA-W161 | 3 x f_0 , 4 x f_0 , 6 x f_0 | Pass |
| 100 | 5500 | OFDM | ELLA-W161 | 4 x f_0 | Pass |
| 140 | 5700 | OFDM | ELLA-W161 | 4 x f_0 | Pass |

Comments: The Channels 60/62 were measured for ELLA-W161-A with OFDM, HT20 and HT40. OFDM was determined as the worst case out of OFDM, HT20 and HT40. Subsequent measurements for ELLA-W161-A and for ELLA-W161 were only performed with OFDM.

ELLA-W161-A Conducted spurious emissions – OFDM 5300 MHz
Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5300 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-03
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement

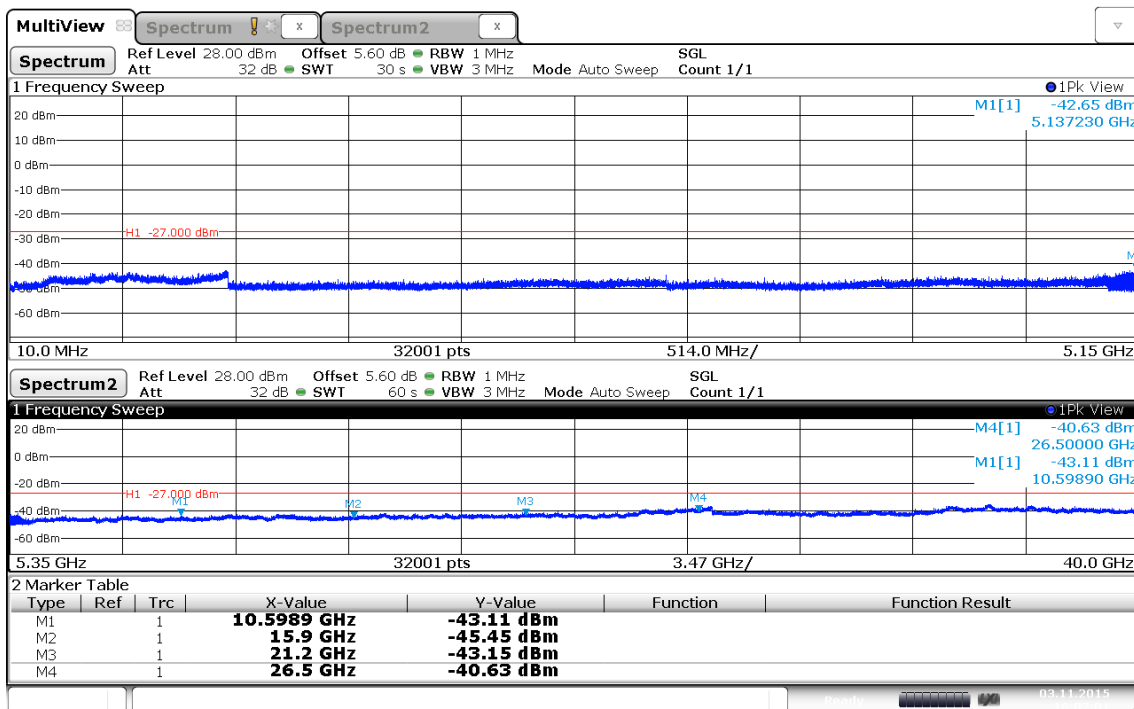


ELLA-W161-A Conducted spurious emissions – HT20 5300 MHz

Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 n HT20, 5300 MHz, MCS0, Power 15 dBm
 Test Date: 2015-11-03
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement

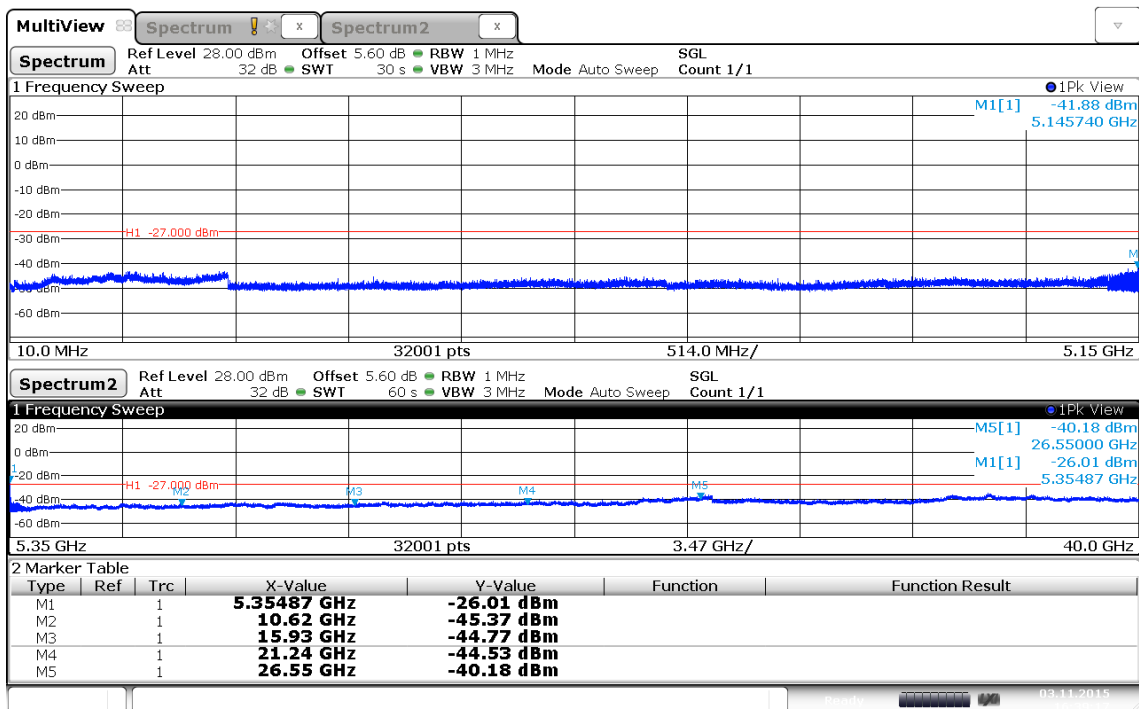


Date: 3.NOV.2015 16:07:01

ELLA-W161-A Conducted spurious emissions – HT40 5310 MHz
Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 n HT40, 5310 MHz, MCS0, Power 15 dBm
 Test Date: 2015-11-03
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement



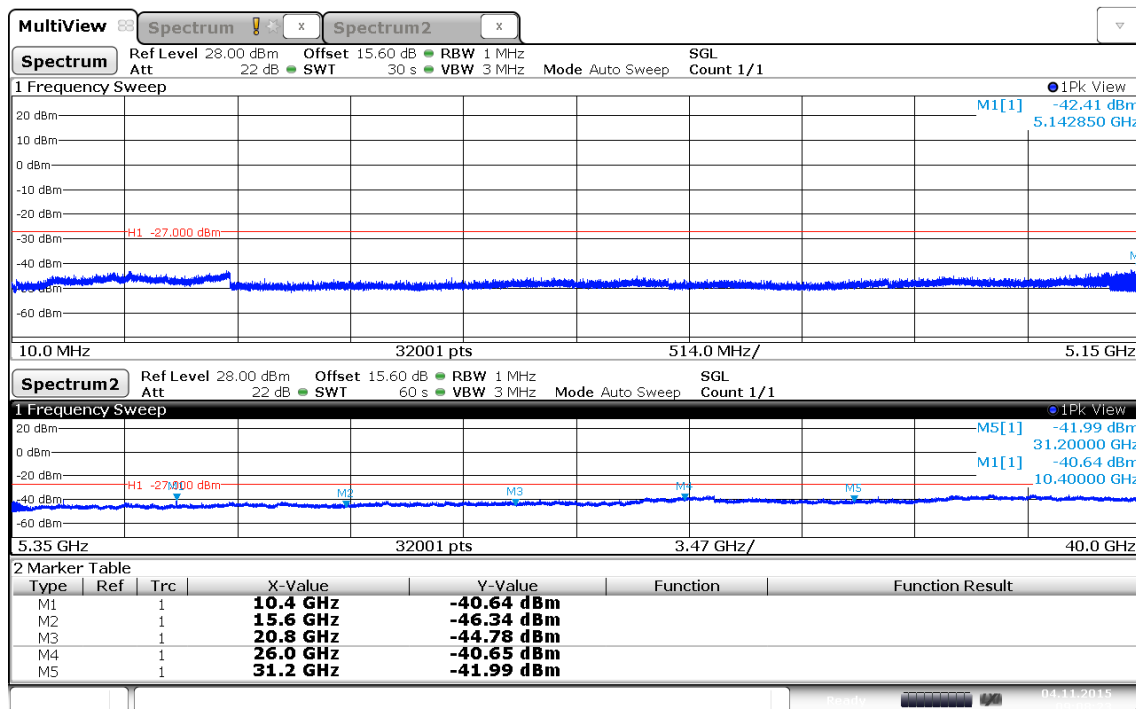
Date: 3.NOV.2015 16:39:16

ELLA-W161-A Conducted spurious emissions – OFDM 5200 MHz

Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5200 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement

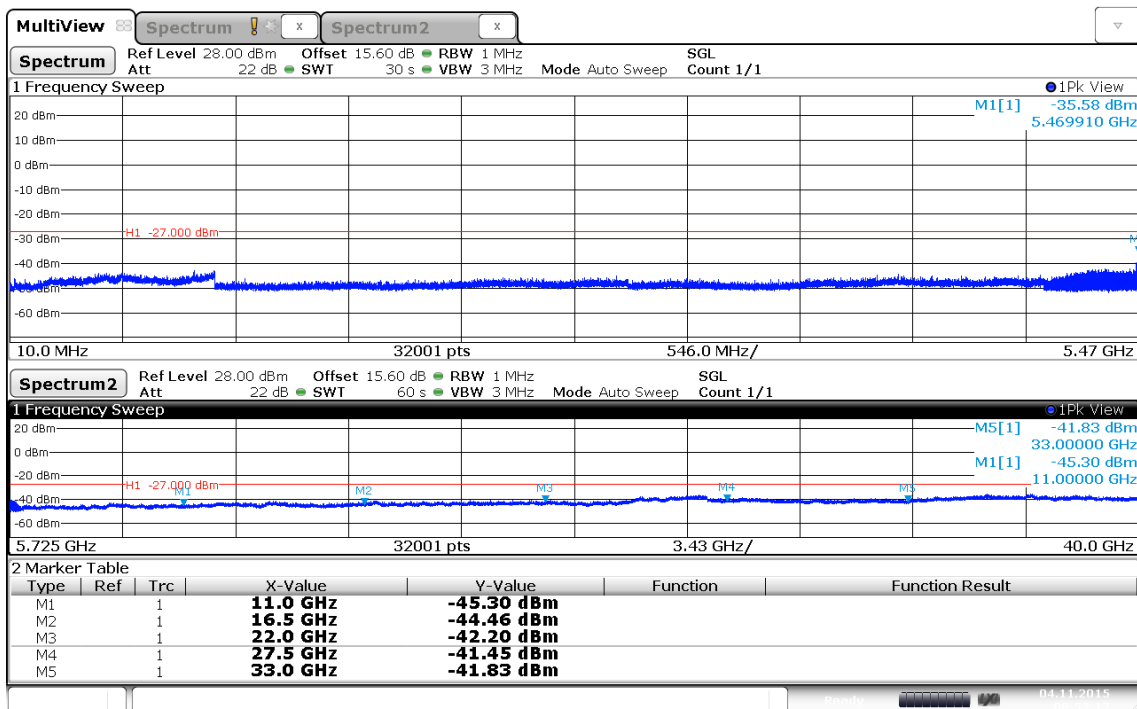


Date: 4. NOV. 2015 09:08:23

ELLA-W161-A Conducted spurious emissions – OFDM 5500 MHz
Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5500 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement



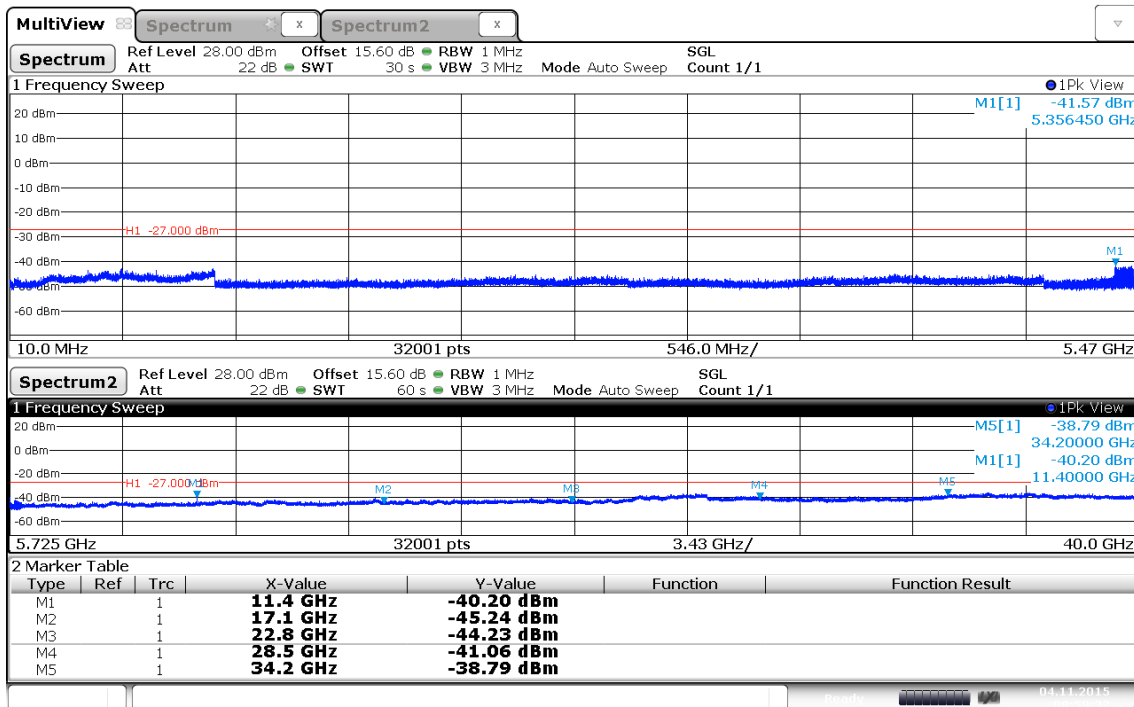
Date: 4. NOV. 2015 08:52:17

ELLA-W161-A Conducted spurious emissions – OFDM 5700 MHz

Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5700 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement

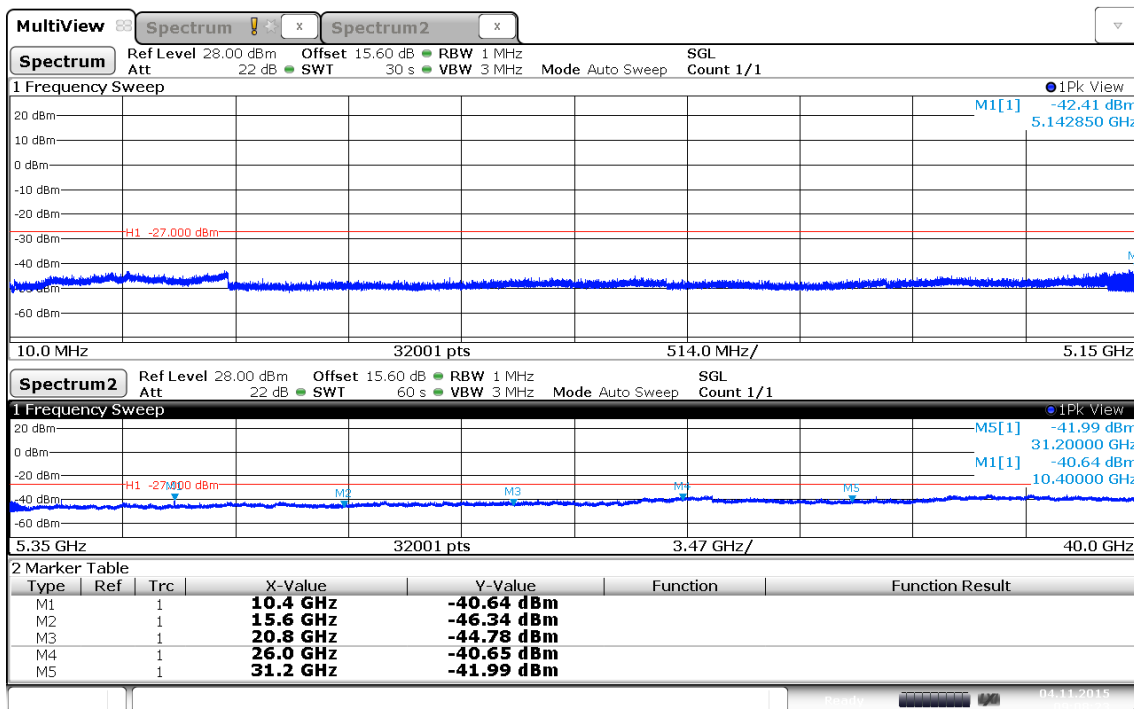


Date: 4. NOV. 2015 08:59:31

ELLA-W161-A Conducted spurious emissions – OFDM 5200 MHz
Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5200 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement



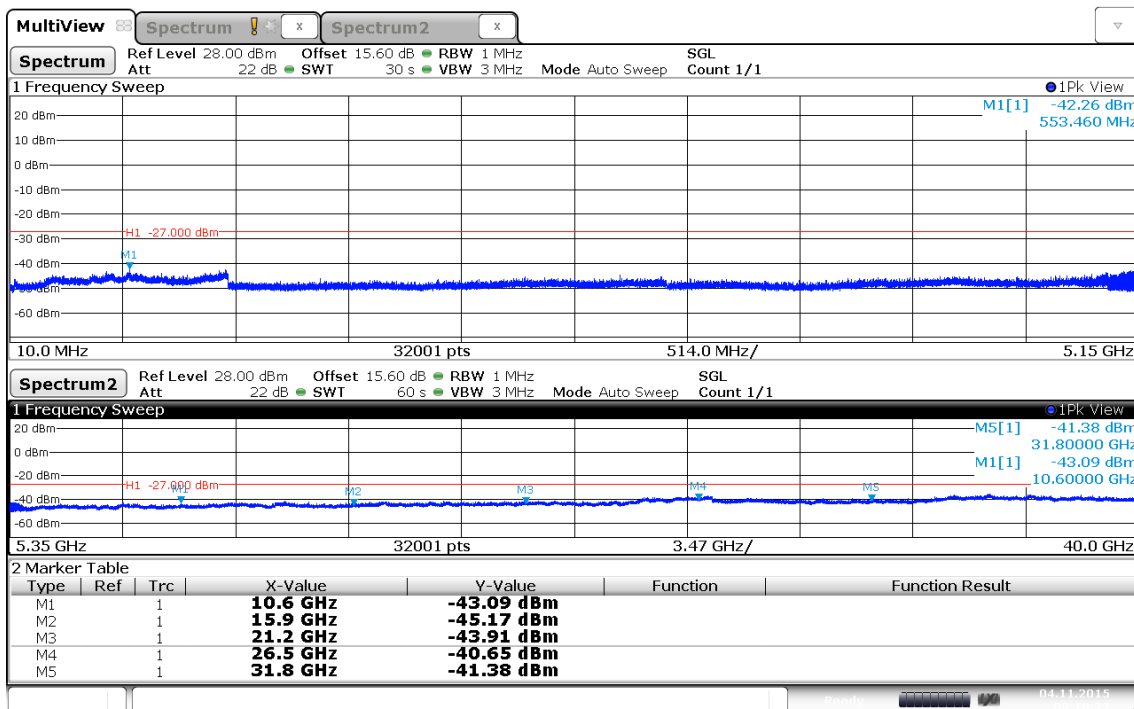
Date: 4. NOV. 2015 09:08:23

ELLA-W161-A Conducted spurious emissions – OFDM 5300 MHz

Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5300 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement



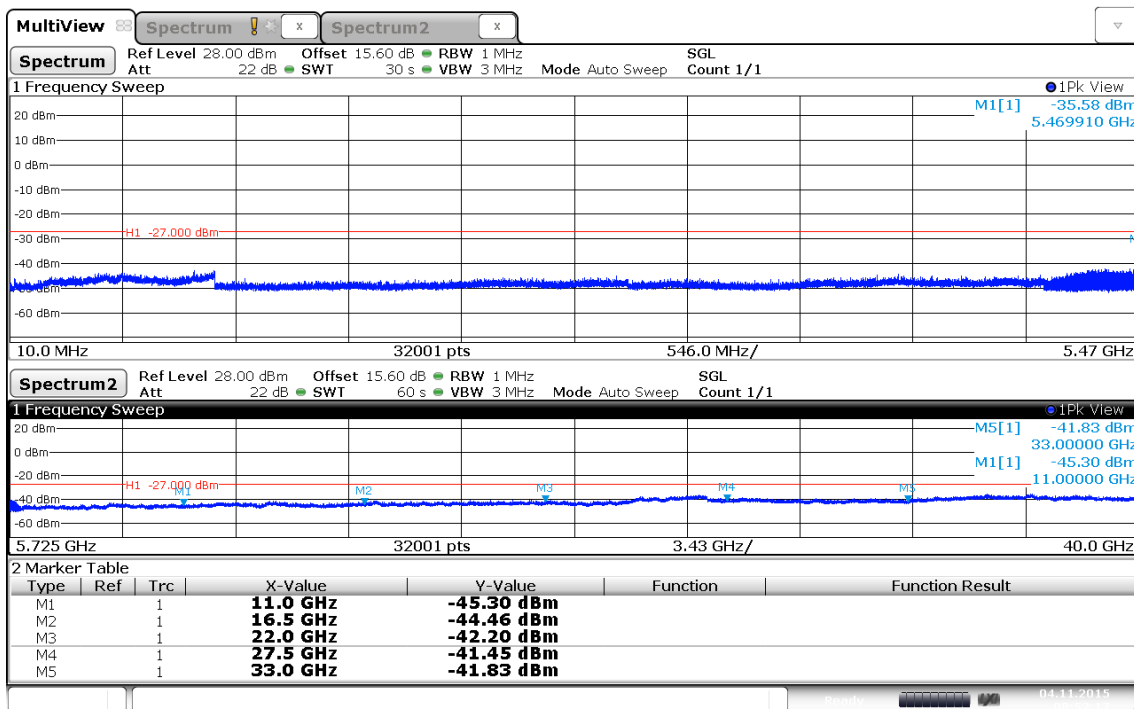
Date: 4. NOV. 2015 09:18:23

ELLA-W161-A Conducted spurious emissions – OFDM 5500 MHz

Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5500 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement



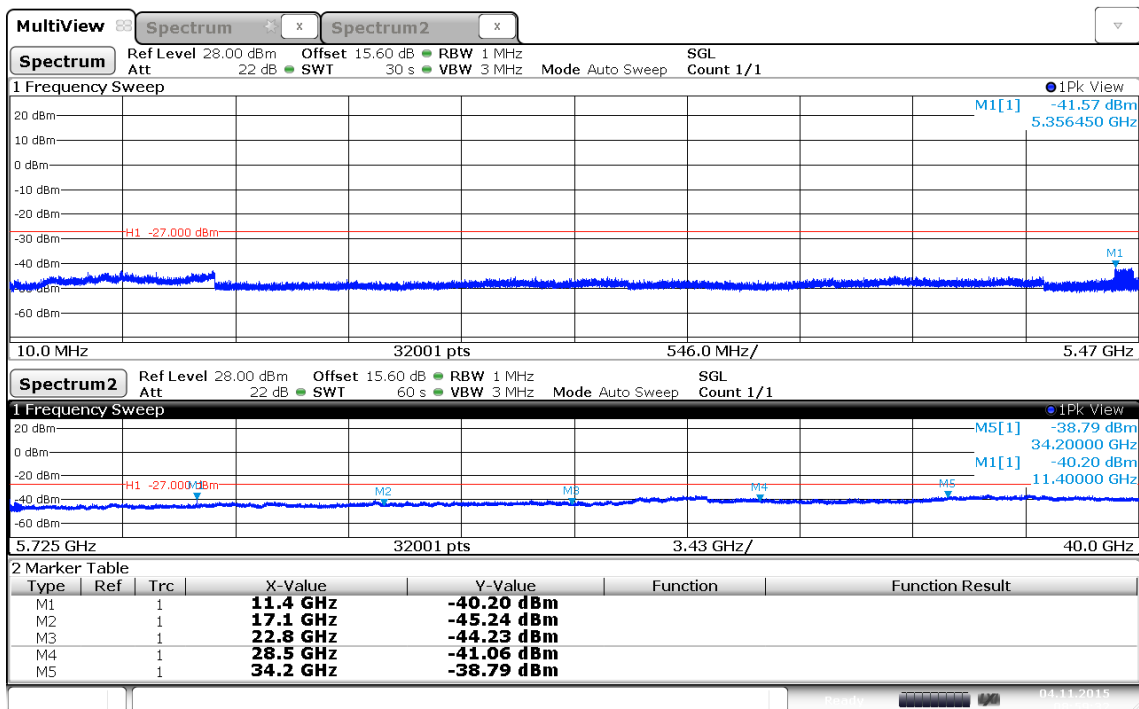
Date: 4. NOV. 2015 08:52:17

ELLA-W161-A Conducted spurious emissions – OFDM 5700 MHz

Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5700 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement



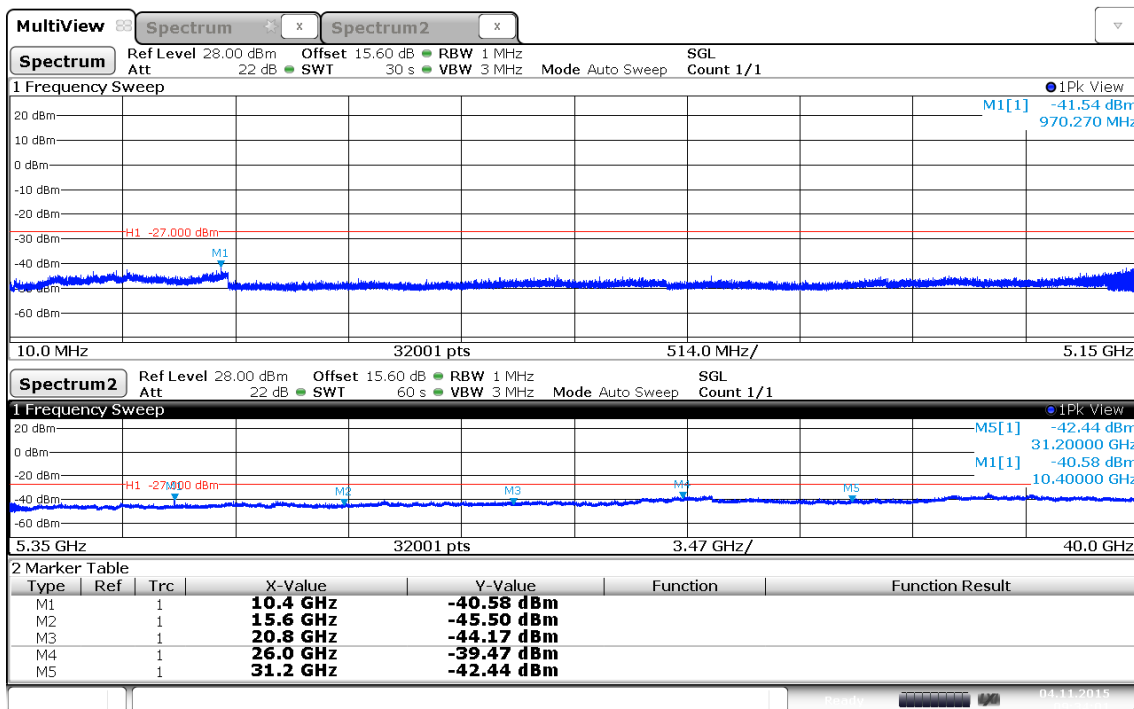
Date: 4. NOV. 2015 08:59:31

ELLA-W161 Conducted spurious emissions – OFDM 5200 MHz

Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5200 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement

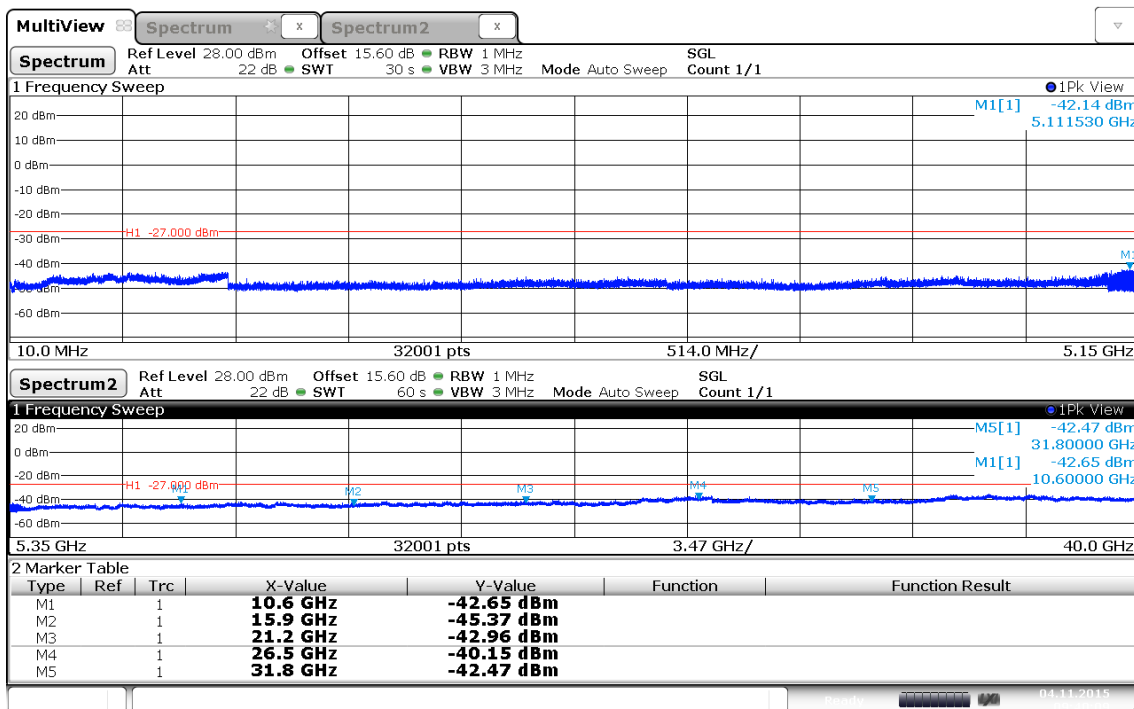


Date: 4.NOV.2015 09:34:01

ELLA-W161 Conducted spurious emissions – OFDM 5300 MHz
Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5300 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement

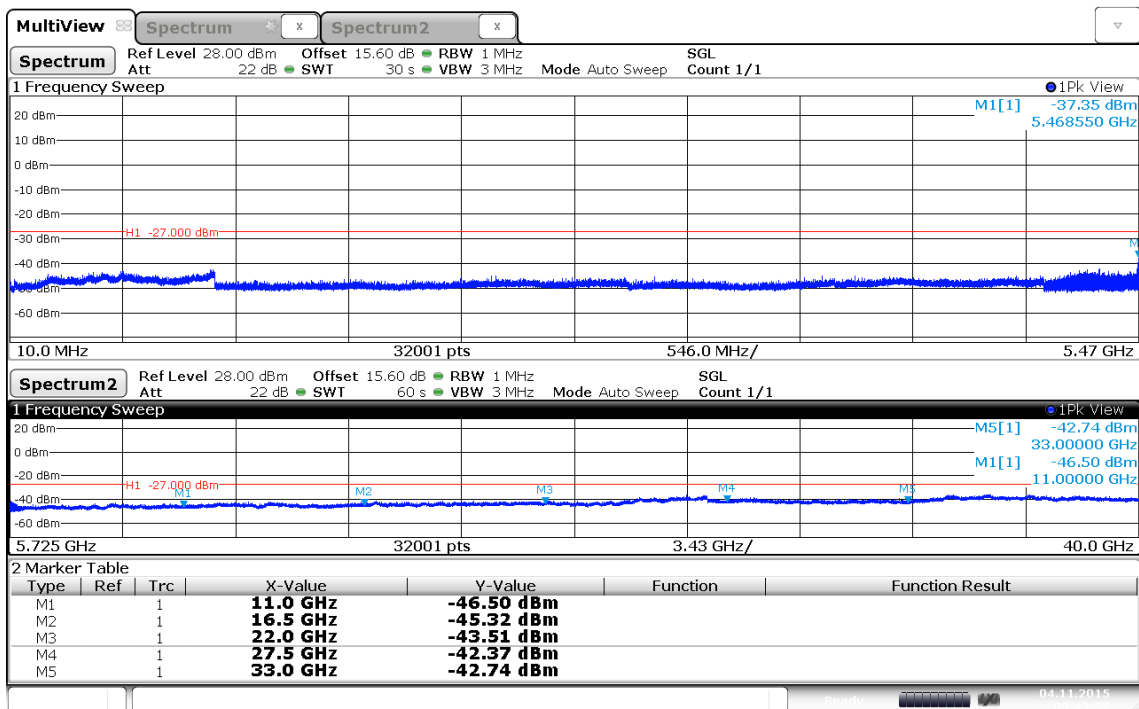


Date: 4. NOV. 2015 09:40:09

ELLA-W161 Conducted spurious emissions – OFDM 5500 MHz
Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

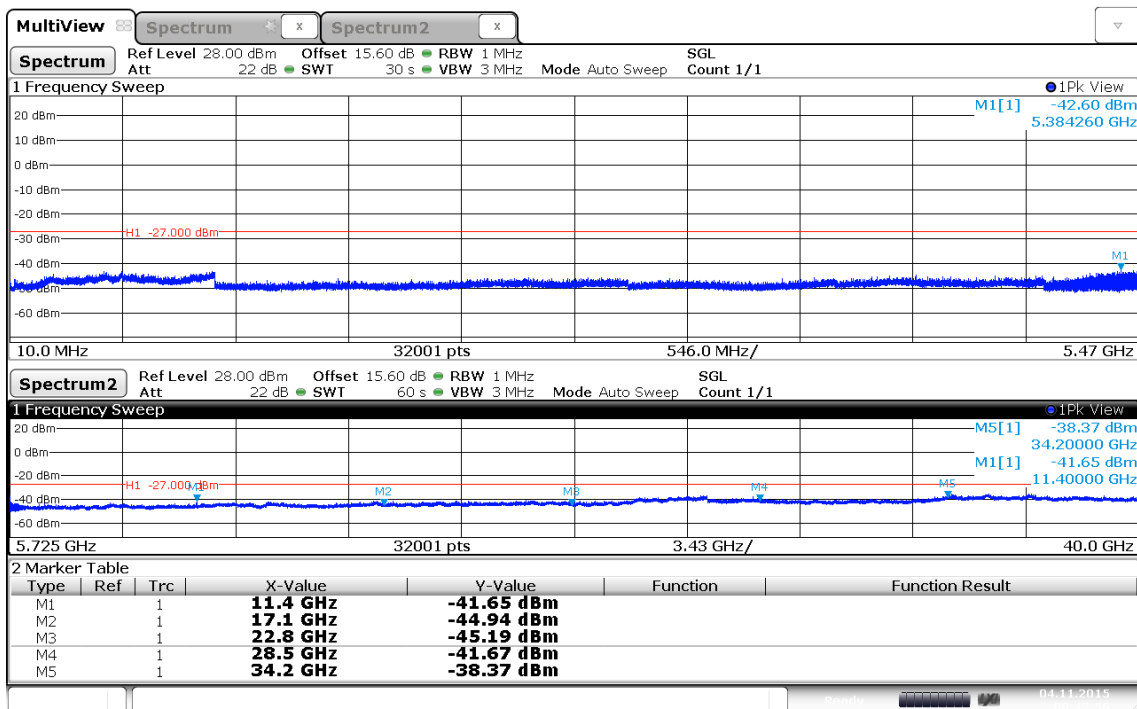
Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5500 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement



ELLA-W161 Conducted spurious emissions – OFDM 5700 MHz
Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5700 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement

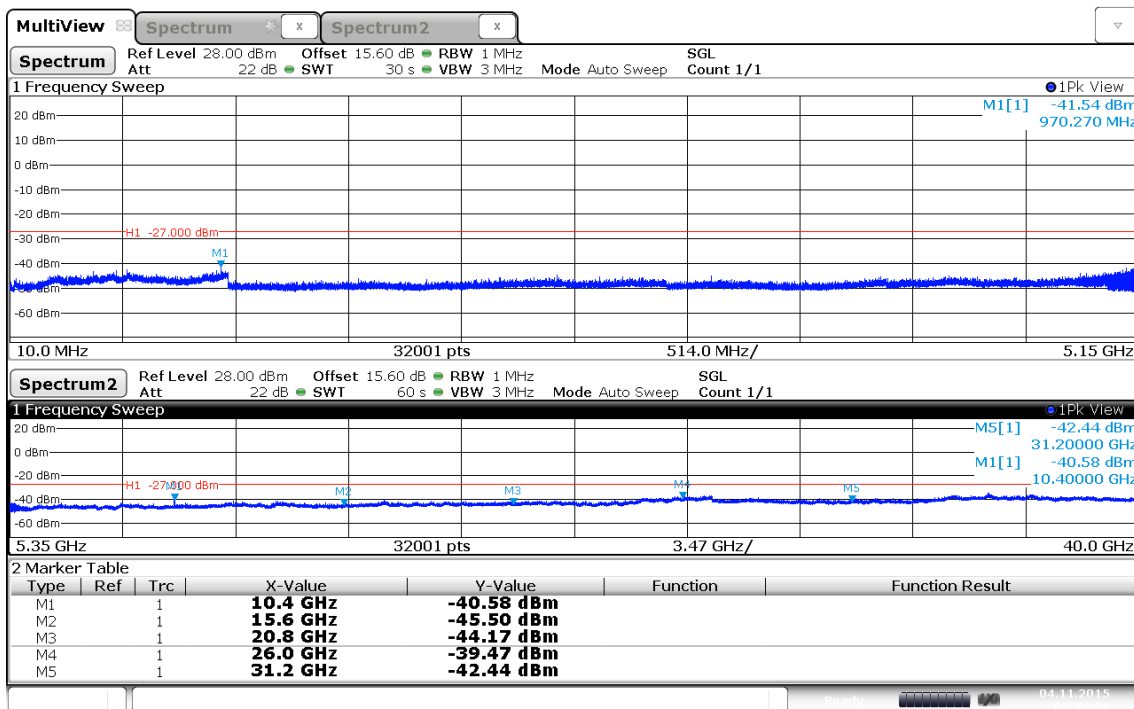


ELLA-W161 Conducted spurious emissions – OFDM 5200 MHz

Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5200 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement



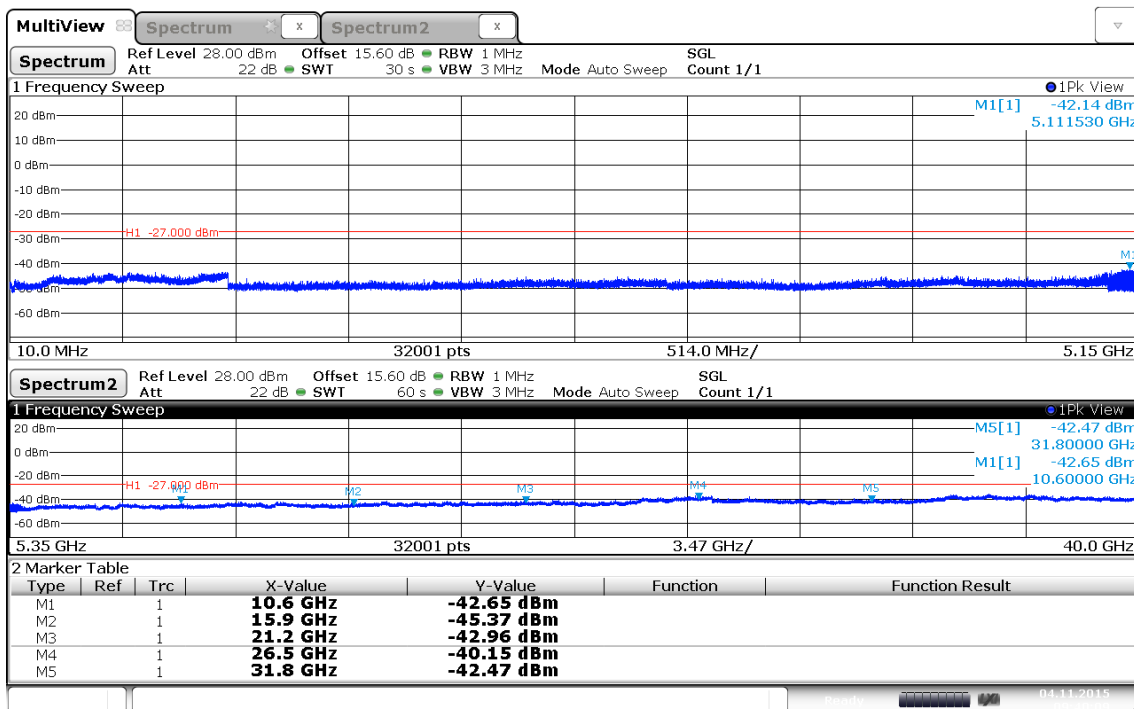
Date: 4.NOV.2015 09:34:01

ELLA-W161 Conducted spurious emissions – OFDM 5300 MHz

Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5300 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement



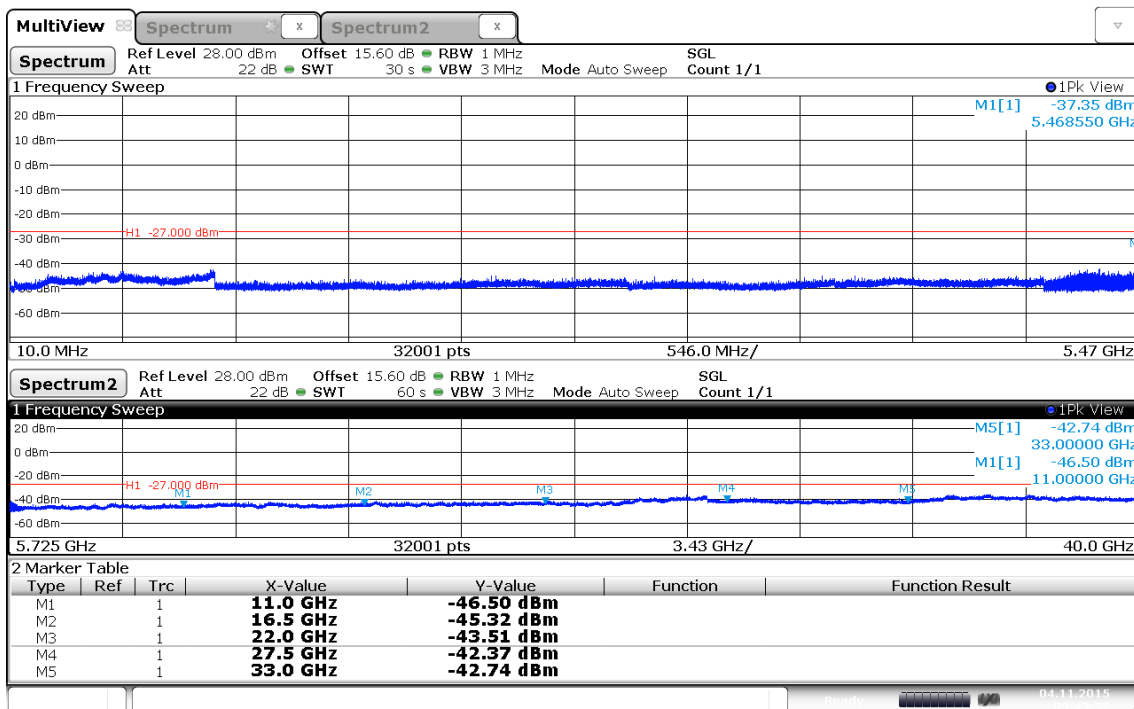
Date: 4. NOV. 2015 09:40:09

ELLA-W161 Conducted spurious emissions – OFDM 5500 MHz

Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5500 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement

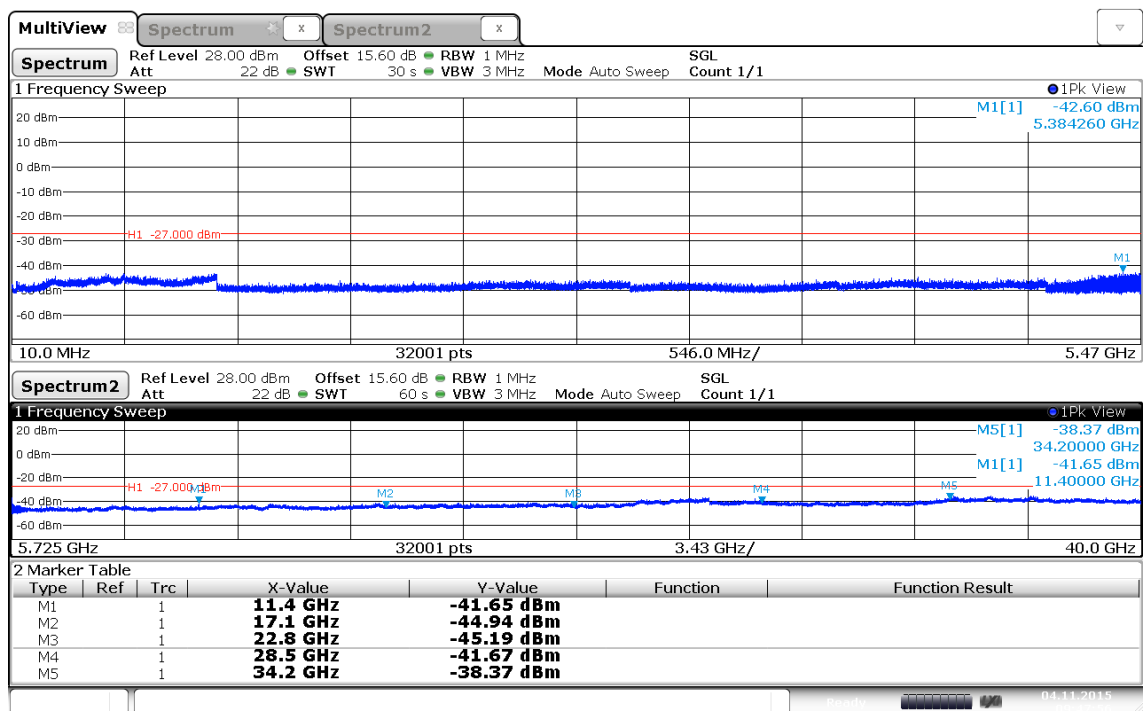


Date: 4. NOV. 2015 09:43:57

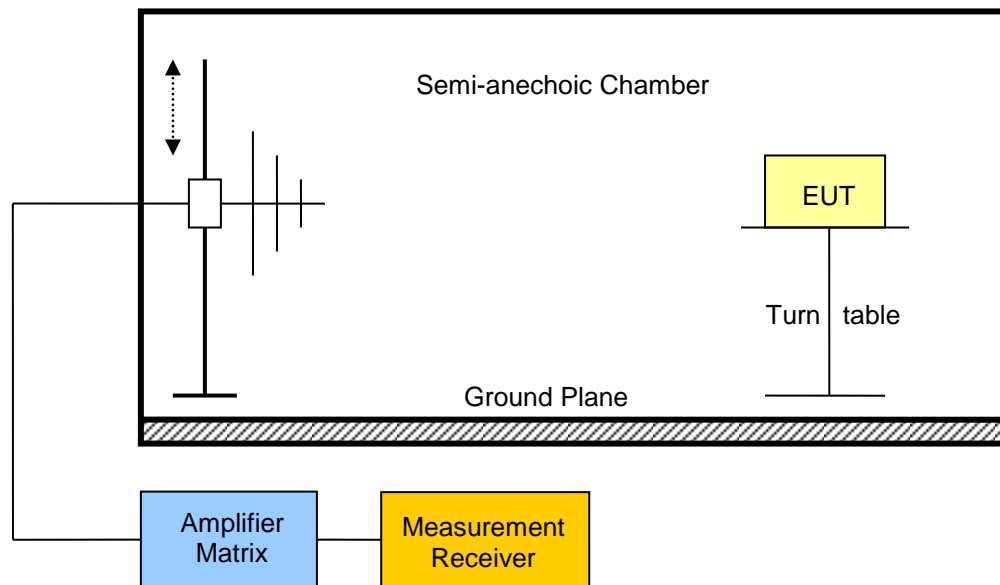
ELLA-W161 Conducted spurious emissions – OFDM 5700 MHz
Spurious Emissions in the non-restricted frequency bands acc. to FCC 15.407

Project Number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Christian Weber
 Test Conditions: Tnom / Vnom
 Mode: Tx, IEEE 802.11 a, 5700 MHz, 6 Mbps, Power 15 dBm
 Test Date: 2015-11-04
 Verdict: PASS
 Note 1: Antenna Gain 4.6 dBi
 Note 2: conducted measurement



3.2 Test Conditions and Results – Transmitter radiated emissions in the restricted bands

| Transmitter radiated emissions acc. to FCC 47 CFR 15.407 / IC RSS-247 | | | | Verdict: FAIL | |
|---|------------|------------------------------------|----------------------|--------------------|--|
| Test according referenced standards | | Reference Method | | | |
| | | FCC 15.407(b) (7) / IC RSS-247 6.2 | | | |
| Test according to measurement reference | | Reference Method | | | |
| | | ANSI C63.10 | | | |
| Test frequency range | | Tested frequencies | | | |
| | | 30 MHz – 10 th Harmonic | | | |
| Limits | | | | | |
| Frequency range [MHz] | Detector | Limit [μ V/m] | Limit [dB μ V/m] | Limit Distance [m] | |
| 30 – 88 | Quasi-Peak | 100 | 40 | 3 | |
| 88 – 216 | Quasi-Peak | 150 | 43.5 | 3 | |
| 216 – 960 | Quasi-Peak | 200 | 46 | 3 | |
| 960 – 1000 | Quasi-Peak | 500 | 54 | 3 | |
| > 1000 | Average | 500 | 54 | 3 | |
| <p>Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). Below 1000 MHz peak detector is allowed as an alternative to quasi-peak detector. Above 1000 MHz is an additional peak limit 20 dB above the average limit. If all peak measurements satisfy the average limit, then average measurements are not required.</p> | | | | | |
| Test setup | | | | | |
|  <p>The diagram illustrates the test setup within a Semi-anechoic Chamber. A Ground Plane is at the base. An EUT (Equipment Under Test) is placed on a Turn table. A probe is positioned to measure emissions. The chamber is connected to an Amplifier Matrix and a Measurement Receiver.</p> | | | | | |

| Test procedure | | | | | | | | | |
|--|-------------------------|-----------|--------------------------|-------------------------------|------|------|----------------------|------------------|-------------|
| <ol style="list-style-type: none"> 1. Set EUT to test mode 2. Set span according to measurement range 3. Set resolution bandwidth below 1 GHz according to CISPR 16 with peak/quasi-peak detector and to 1 MHz with peak/average detector above 1 GHz 4. Set markers to peak emission levels within restricted bands | | | | | | | | | |
| Test results ELLA-W161-A | | | | | | | | | |
| Channel | Channel Frequency [MHz] | Test Mode | Emission Frequency [MHz] | Emission Level [db μ V/m] | Det. | Pol. | Limit [db μ V/m] | Limit dist. [m]* | Margin [dB] |
| 60 | 5300 | OFDM | 10592 | 44.29 | pk | ver | 68.00 | 3 | -23.71 |
| 60 | 5300 | HT20 | 10600 | 43.48 | pk | ver | 68.00 | 3 | -24.52 |
| 100 | 5500 | OFDM | 10992 | 45.52 | pk | ver | 74.00 | 3 | -28.48 |
| 140 | 5700 | OFDM | 11400 | 44.13 | pk | ver | 74.00 | 3 | -29.87 |
| 40 | 5200 | OFDM | 15600 | 38.97 | pk | hor | 74.00 | 3 | -35.03 |
| 40 | 5200 | OFDM | 15600 | 39.89 | pk | ver | 74.00 | 3 | -34.11 |
| 40 | 5200 | OFDM | 20805 | 47.48 | pk | hor | 74.00 | 3 | -26.52 |
| 40 | 5200 | OFDM | 20805 | 46.75 | pk | ver | 74.00 | 3 | -27.25 |
| 40 | 5200 | OFDM | 31206 | 45.51 | pk | hor | 74.00 | 3 | -28.49 |
| 40 | 5200 | OFDM | 31206 | 46.12 | pk | ver | 74.00 | 3 | -27.88 |
| 60 | 5300 | OFDM | 10592 | 44.00 | pk | ver | 68.00 | 3 | -24.00 |
| 60 | 5300 | OFDM | 15900 | 37.59 | pk | hor | 74.00 | 3 | -36.41 |
| 60 | 5300 | OFDM | 15900 | 37.35 | pk | ver | 74.00 | 3 | -36.65 |
| 60 | 5300 | OFDM | 21196 | 46.37 | pk | hor | 74.00 | 3 | -27.63 |
| 60 | 5300 | OFDM | 21196 | 46.46 | pk | ver | 74.00 | 3 | -27.54 |
| 60 | 5300 | OFDM | 31804 | 45.79 | pk | ver | 68.00 | 3 | -22.21 |
| 60 | 5300 | OFDM | 31804 | 45.22 | pk | hor | 68.00 | 3 | -22.78 |
| 100 | 5500 | OFDM | 21995 | 49.25 | pk | hor | 68.00 | 3 | -18.75 |
| 100 | 5500 | OFDM | 21995 | 54.32 | pk | ver | 68.00 | 3 | -13.68 |
| 140 | 5700 | OFDM | 22794 | 48.15 | pk | hor | 74.00 | 3 | -25.85 |
| 140 | 5700 | OFDM | 22794 | 52.51 | pk | ver | 74.00 | 3 | -21.49 |

| Test results ELLA-W161 | | | | | | | | | |
|------------------------|-------------------------|-----------|--------------------------|-------------------------------|------|------|----------------------|------------------|-------------|
| Channel | Channel Frequency [MHz] | Test Mode | Emission Frequency [MHz] | Emission Level [db μ V/m] | Det. | Pol. | Limit [db μ V/m] | Limit dist. [m]* | Margin [dB] |
| 40 | 5200 | OFDM | 10392 | 45.17 | pk | hor | 68.00 | 3 | -22.83 |
| 40 | 5200 | OFDM | 10400 | 46.53 | pk | ver | 68.00 | 3 | -21.47 |
| 40 | 5200 | OFDM | 15600 | 39.18 | pk | hor | 74.00 | 3 | -34.82 |
| 40 | 5200 | OFDM | 15600 | 39.78 | pk | ver | 74.00 | 3 | -34.22 |
| 60 | 5300 | OFDM | 10600 | 47.51 | pk | hor | 68.00 | 3 | -20.49 |
| 60 | 5300 | OFDM | 10600 | 50.44 | pk | ver | 68.00 | 3 | -17.56 |
| 60 | 5300 | OFDM | 15900 | 36.73 | pk | hor | 74.00 | 3 | -37.27 |
| 60 | 5300 | OFDM | 15900 | 36.98 | pk | ver | 74.00 | 3 | -37.02 |
| 100 | 5500 | OFDM | 10992 | 46.73 | pk | hor | 74.00 | 3 | -27.27 |
| 100 | 5500 | OFDM | 10992 | 52.23 | pk | ver | 74.00 | 3 | -21.77 |
| 140 | 5700 | OFDM | 11400 | 47.26 | pk | hor | 74.00 | 3 | -26.74 |
| 140 | 5700 | OFDM | 11400 | 53.14 | pk | ver | 74.00 | 3 | -20.86 |
| 40 | 5200 | OFDM | 10392 | 45.17 | pk | hor | 68.00 | 3 | -22.83 |
| 40 | 5200 | OFDM | 10400 | 46.53 | pk | ver | 68.00 | 3 | -21.47 |
| 40 | 5200 | OFDM | 15600 | 39.18 | pk | hor | 74.00 | 3 | -34.82 |
| 40 | 5200 | OFDM | 15600 | 39.78 | pk | ver | 74.00 | 3 | -34.22 |
| 40 | 5200 | OFDM | 20805 | 47.21 | pk | hor | 74.00 | 3 | -26.79 |
| 40 | 5200 | OFDM | 20805 | 47.57 | pk | ver | 74.00 | 3 | -26.43 |
| 40 | 5200 | OFDM | 26007 | 49.41 | pk | hor | 68.00 | 3 | -18.59 |
| 40 | 5200 | OFDM | 26007 | 49.49 | pk | ver | 68.00 | 3 | -18.51 |
| 40 | 5200 | OFDM | 31206 | 46.25 | pk | hor | 74.00 | 3 | -27.75 |
| 40 | 5200 | OFDM | 31206 | 45.70 | pk | ver | 74.00 | 3 | -28.30 |
| 60 | 5300 | OFDM | 10600 | 47.51 | pk | hor | 68.00 | 3 | -20.49 |
| 60 | 5300 | OFDM | 10600 | 50.44 | pk | ver | 68.00 | 3 | -17.56 |
| 60 | 5300 | OFDM | 15900 | 36.73 | pk | hor | 74.00 | 3 | -37.27 |
| 60 | 5300 | OFDM | 15900 | 36.98 | pk | ver | 74.00 | 3 | -37.02 |
| 60 | 5300 | OFDM | 21196 | 47.10 | pk | hor | 74.00 | 3 | -26.90 |
| 60 | 5300 | OFDM | 21196 | 47.08 | pk | ver | 74.00 | 3 | -26.92 |
| 60 | 5300 | OFDM | 26526 | 42.92 | pk | hor | 68.00 | 3 | -25.08 |
| 60 | 5300 | OFDM | 26526 | 43.81 | pk | ver | 68.00 | 3 | -24.19 |
| 60 | 5300 | OFDM | 31804 | 45.21 | pk | hor | 68.00 | 3 | -22.79 |
| 60 | 5300 | OFDM | 31804 | 44.72 | pk | ver | 68.00 | 3 | -23.28 |
| 100 | 5500 | OFDM | 21995 | 48.46 | pk | hor | 68.00 | 3 | -19.54 |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

| | | | | | | | | | |
|-----|------|------|-------|-------|-----|-----|-------|---|--------|
| 100 | 5500 | OFDM | 21995 | 58.75 | pk | ver | 68.00 | 3 | -09.25 |
| 140 | 5700 | OFDM | 22794 | 49.69 | pk | hor | 74.00 | 3 | -24.31 |
| 140 | 5700 | OFDM | 22794 | 57.51 | pk | ver | 74.00 | 3 | -16.49 |
| 140 | 5700 | OFDM | 22794 | 57.50 | avg | ver | 54.00 | 3 | 3.50 |

Comments:

- * Physical distance between EUT and measurement antenna.
- Customer specific test plan. Measurements only above 1. Antenna ports terminated with 50 Ohms. The Low Channel was measured for ELLA-W136-A with OFDM, HT20 and HT40. OFDM was determined as the worst case out of OFDM, HT20 and HT40. Subsequent measurements were only performed with OFDM.

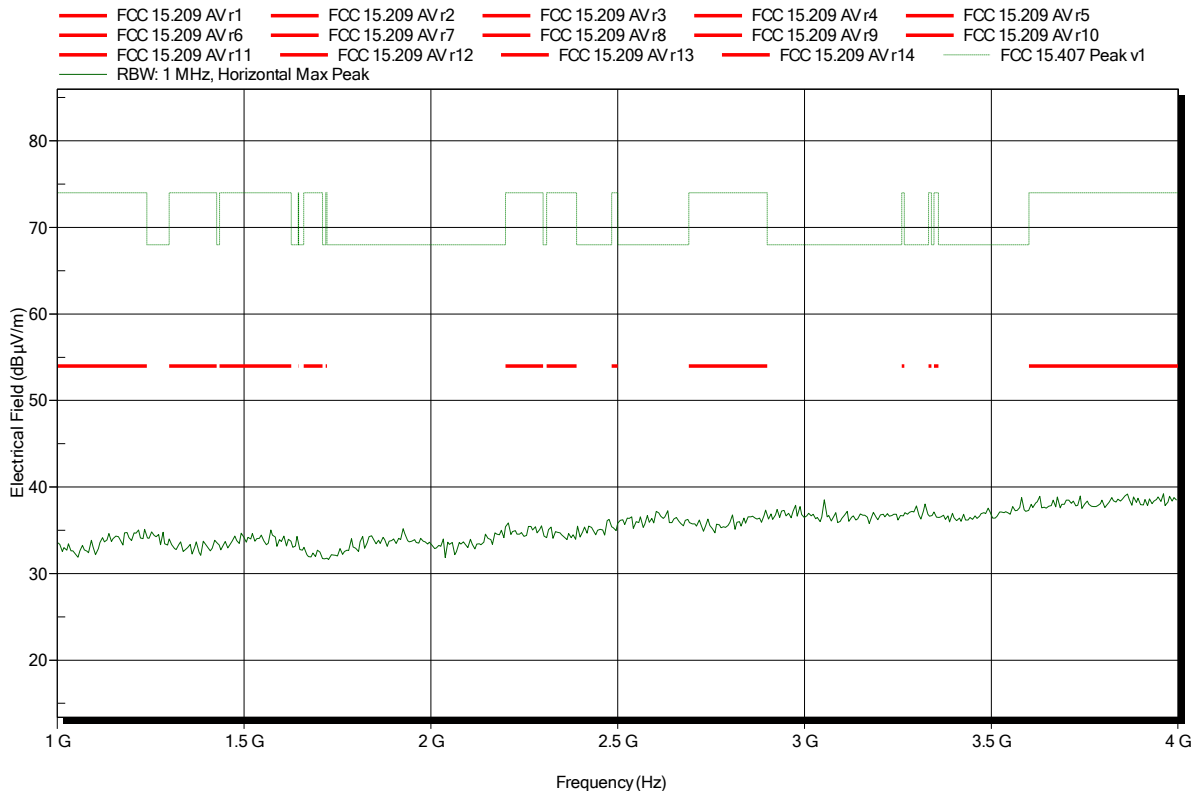
ANNEX A Transmitter radiated spurious emissions

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-11
 Note:

Index 4

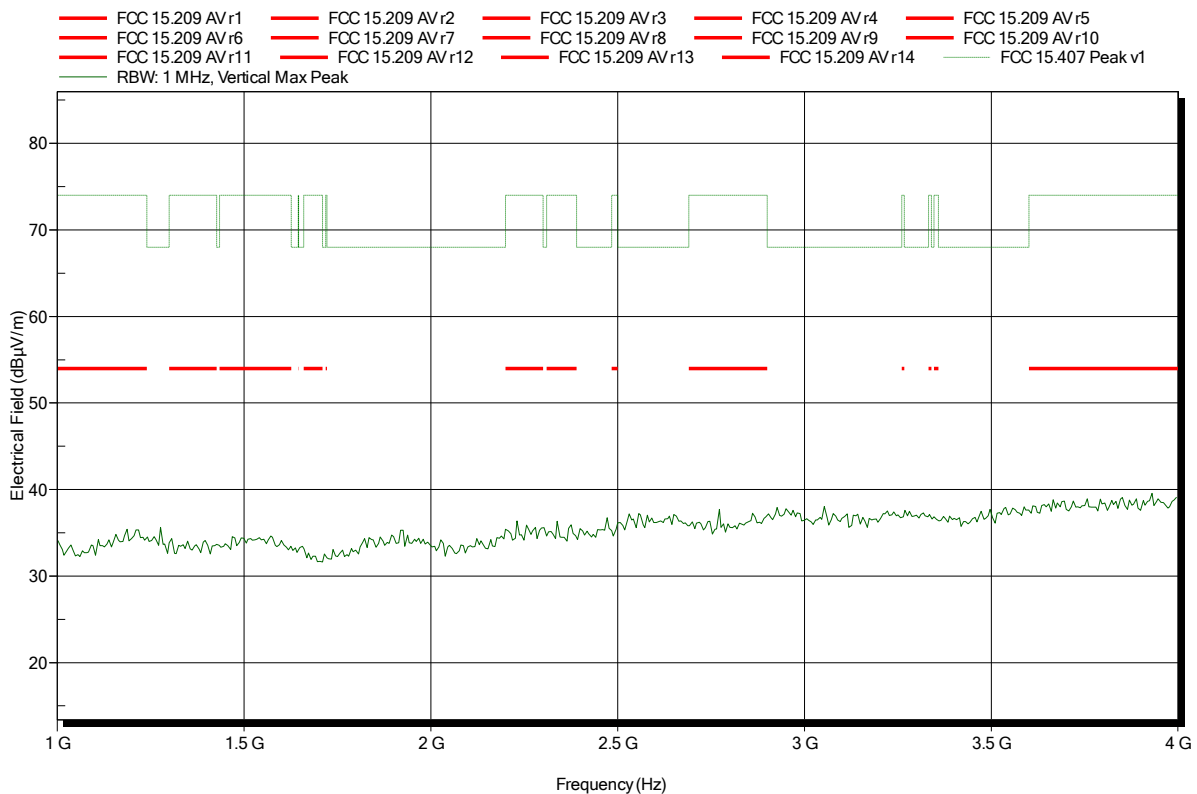


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-11
 Note:

Index 5

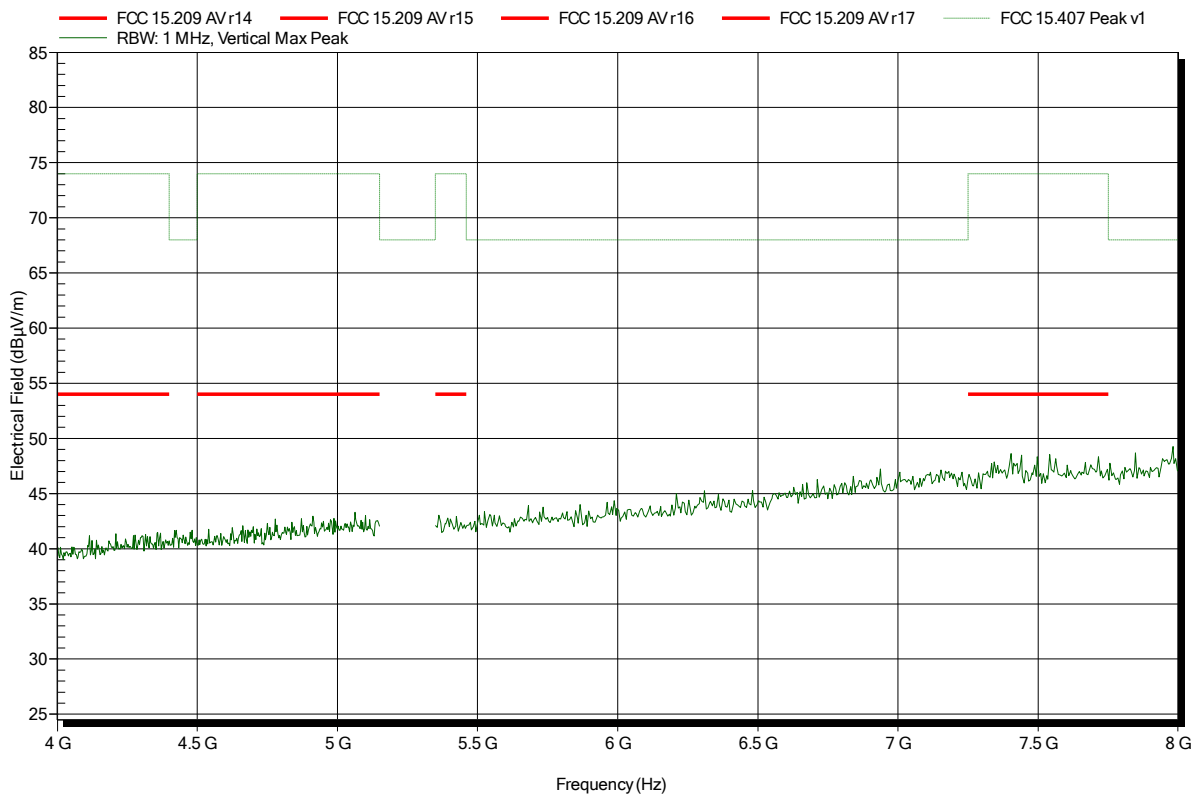


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-11 |
| Note: | |

Index 7

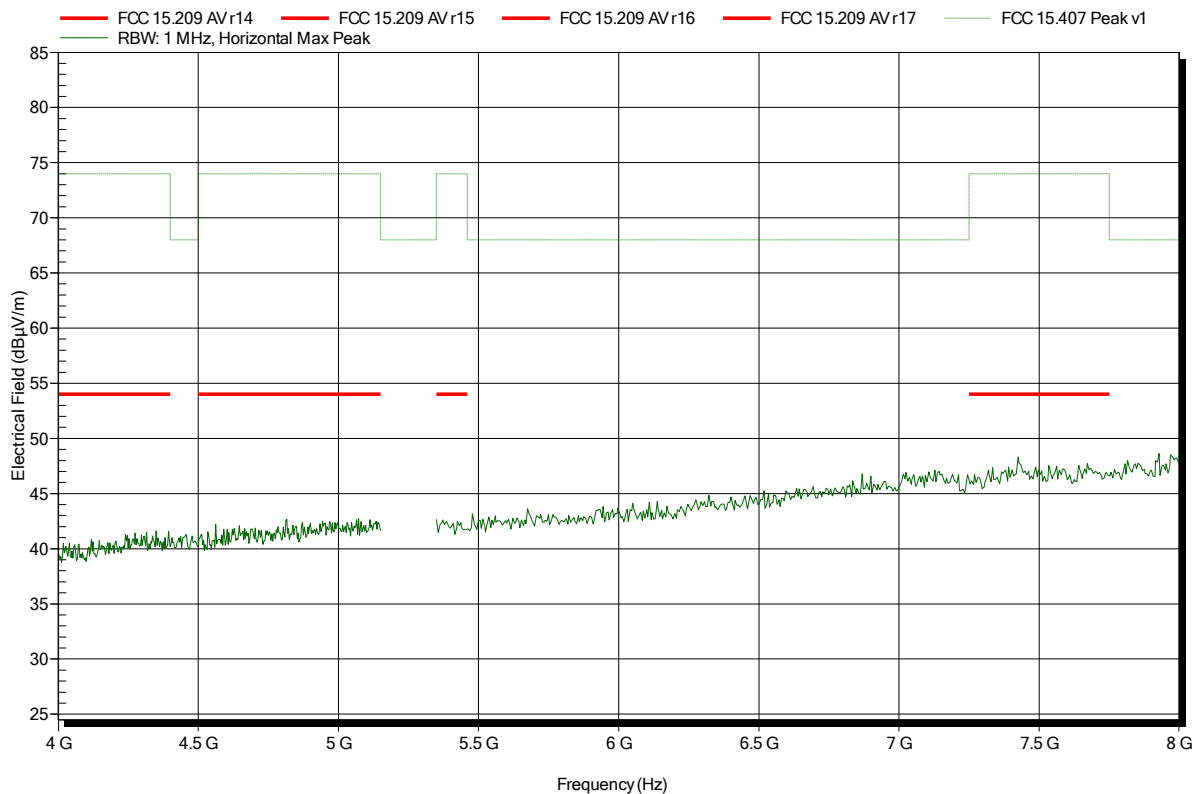


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-11 |
| Note: | |

Index 6

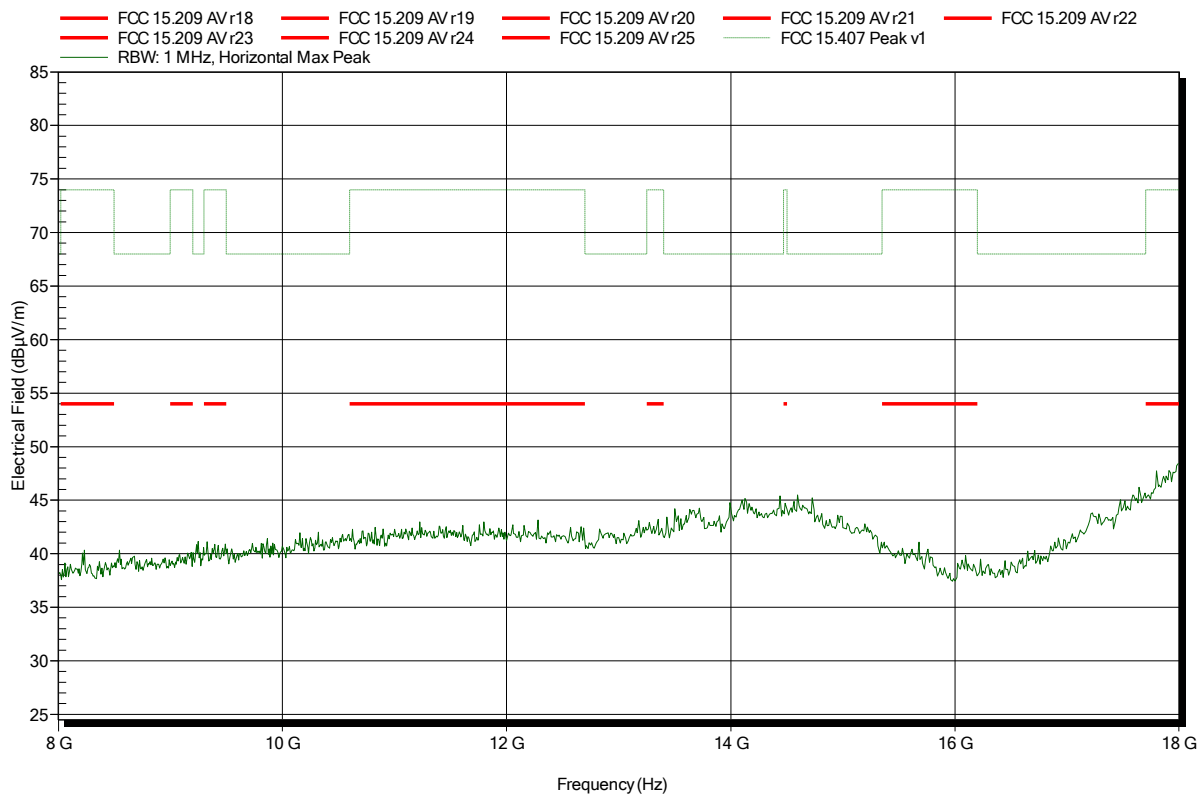


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-11
 Note:

Index 8

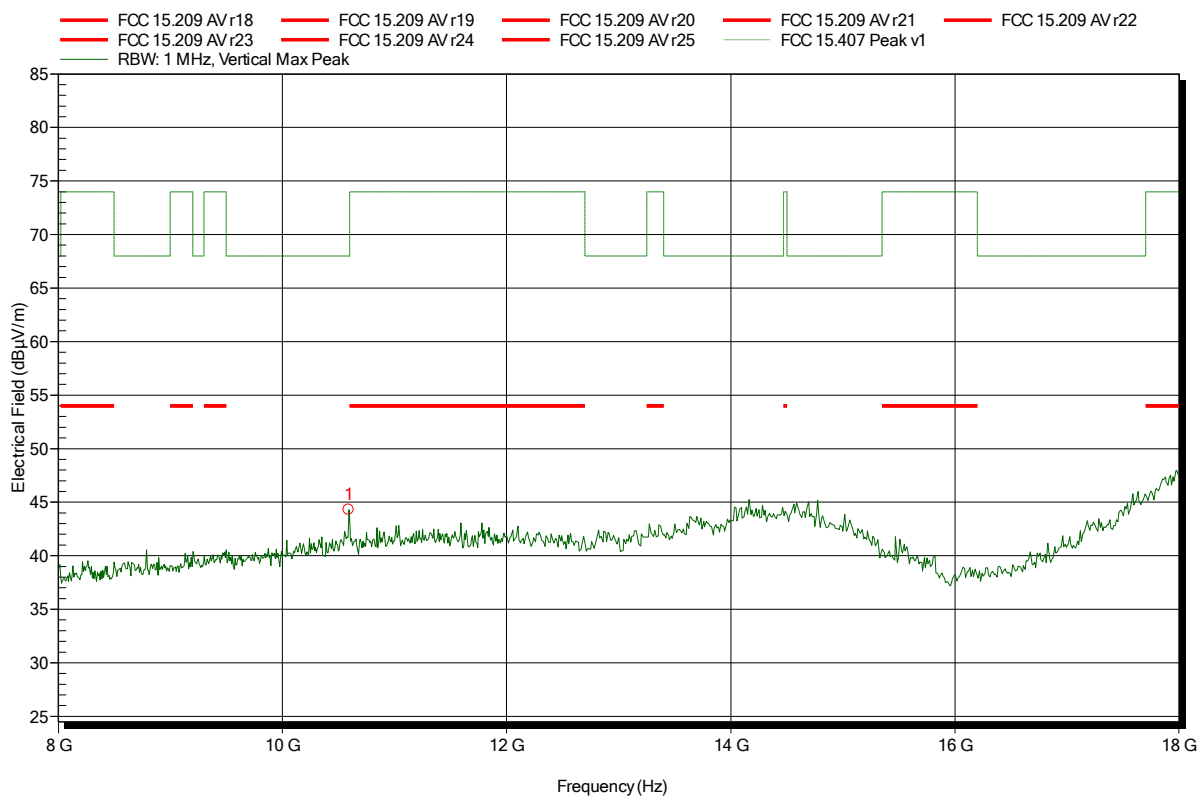


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-11
 Note:

Index 9



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 10.592 GHz | 44.29 dBµV/m | 68 dBµV/m | -23.71 dB | Pass |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

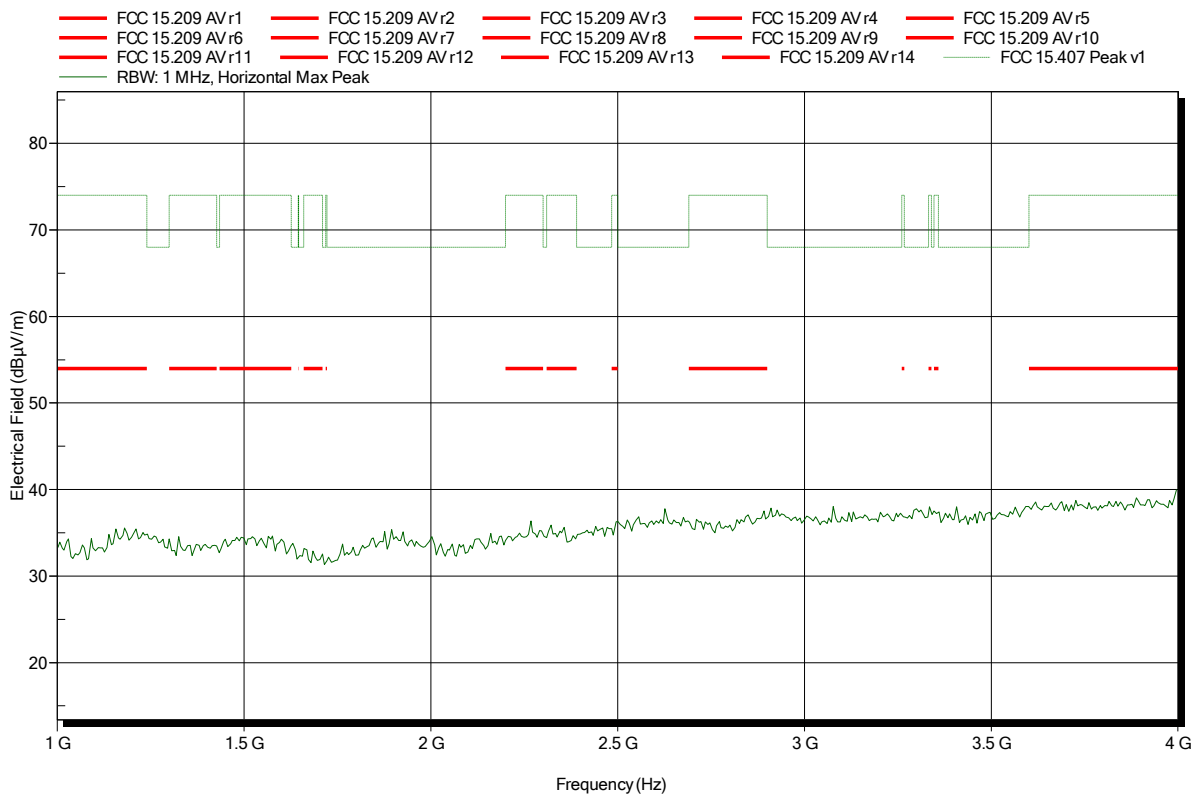
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch60, 802.11n HT20, MCS0, 15dBm
 Test Date: 2015-11-12
 Note:

Index 13

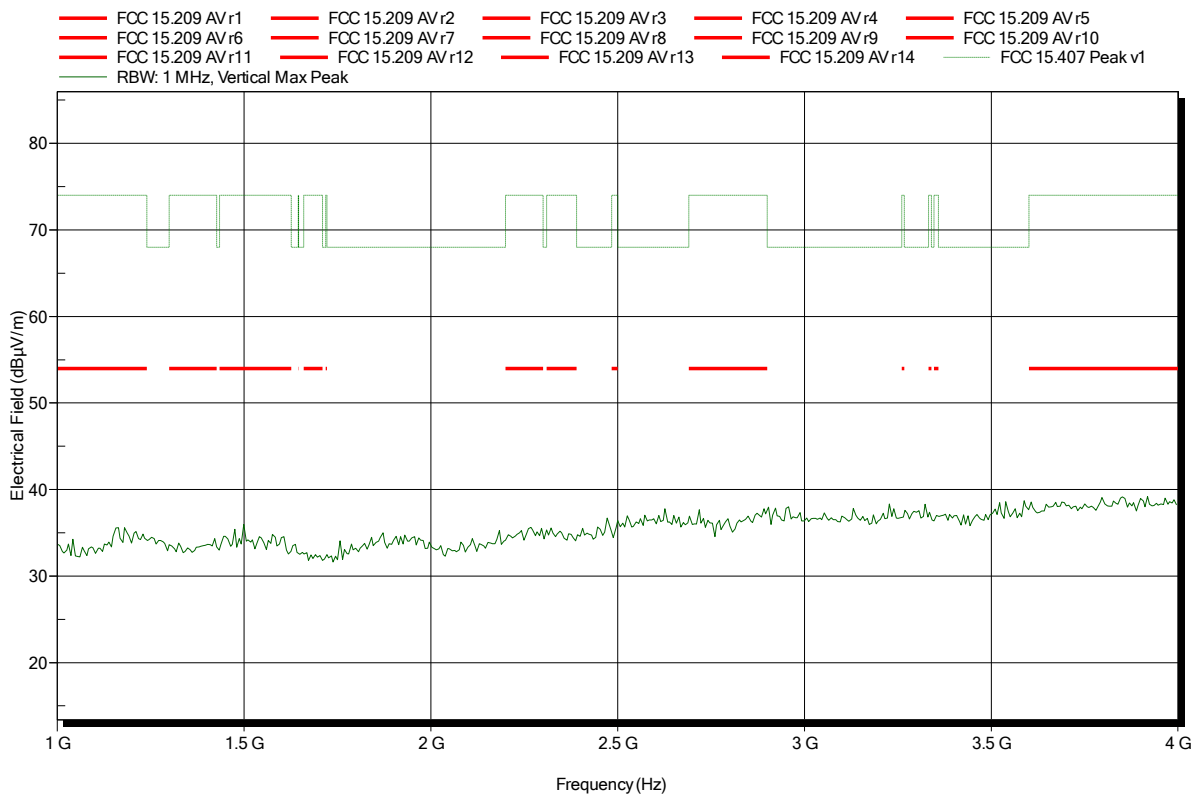


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch60, 802.11n HT20, MCS0, 15dBm
 Test Date: 2015-11-12
 Note:

Index 14

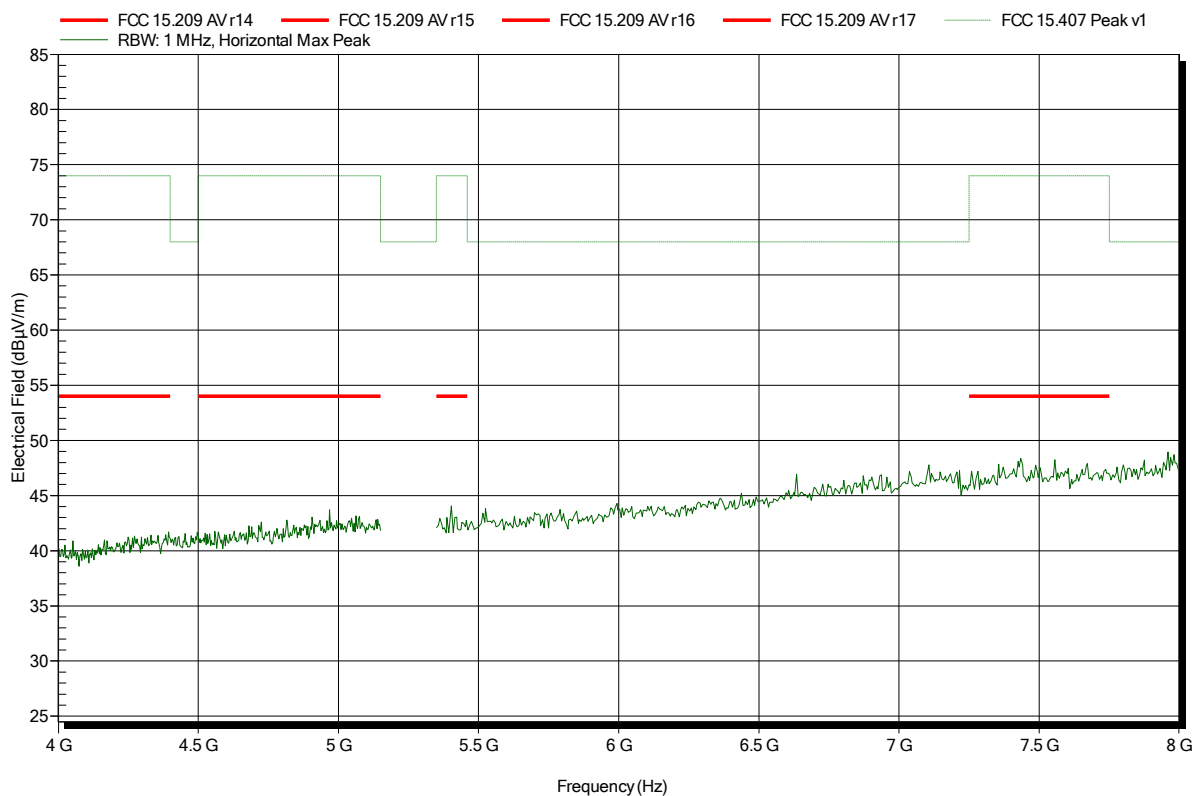


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch60, 802.11n HT20, MCS0, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 12

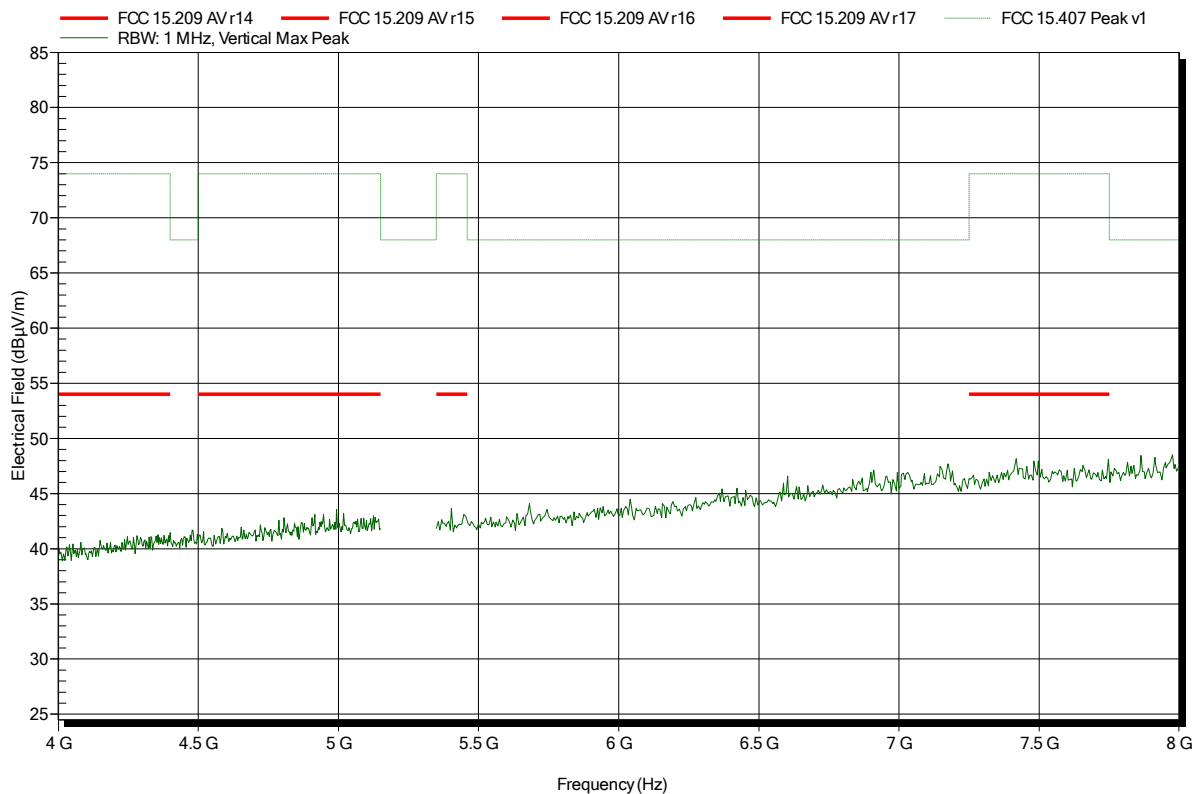


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch60, 802.11n HT20, MCS0, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 15

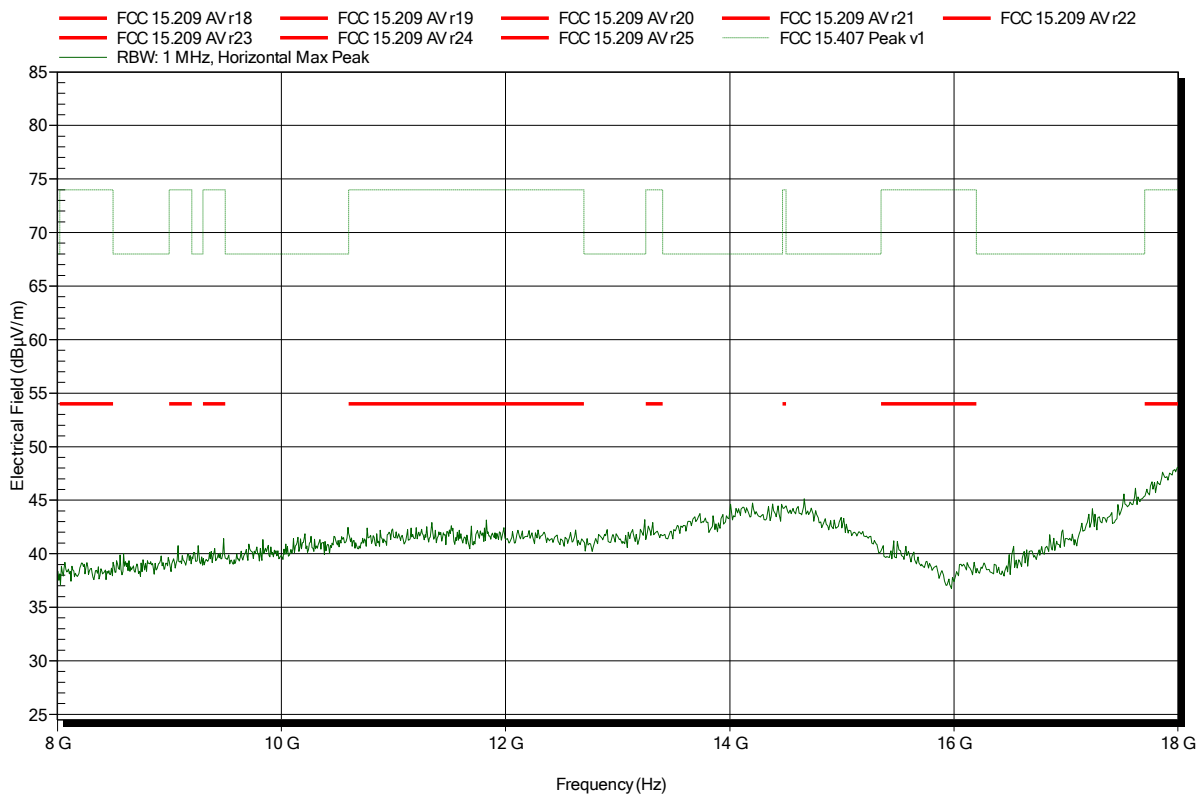


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11n HT20, MCS0, 15dBm
 Test Date: 2015-11-12
 Note:

Index 11

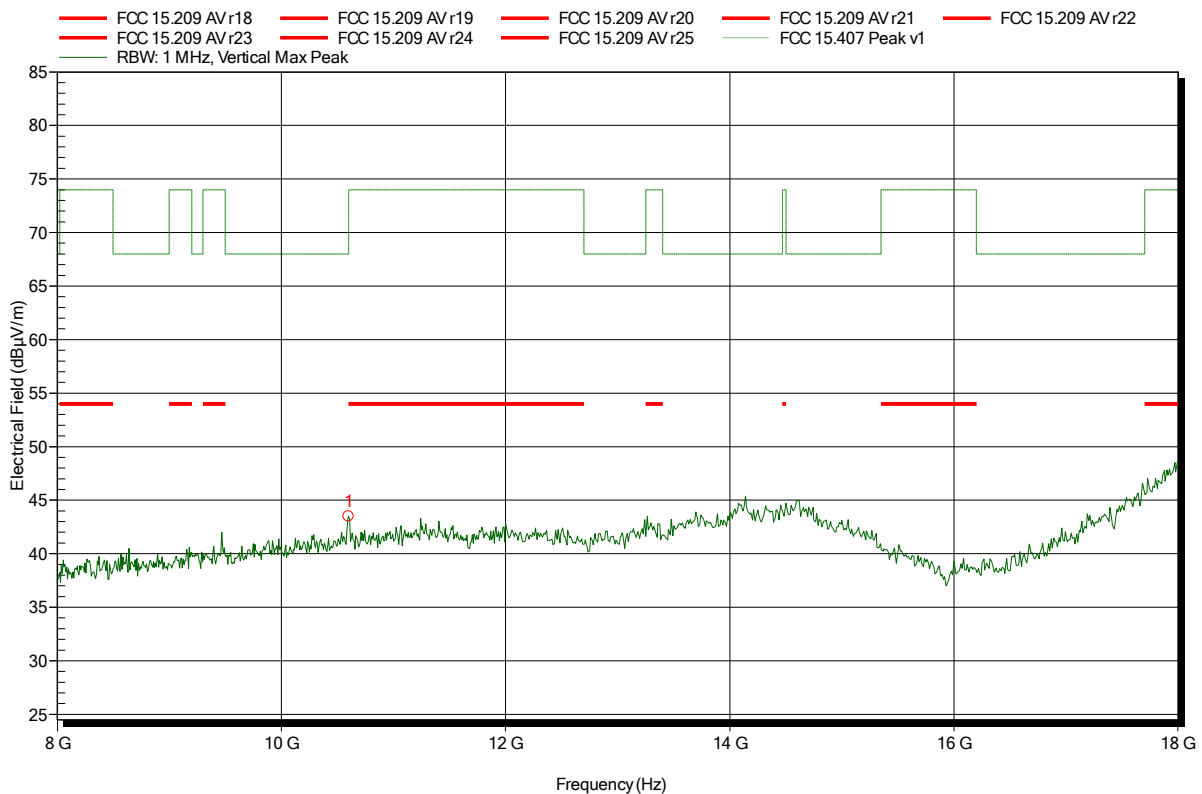


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11n HT20, MCS0, 15dBm
 Test Date: 2015-11-12
 Note:

Index 10



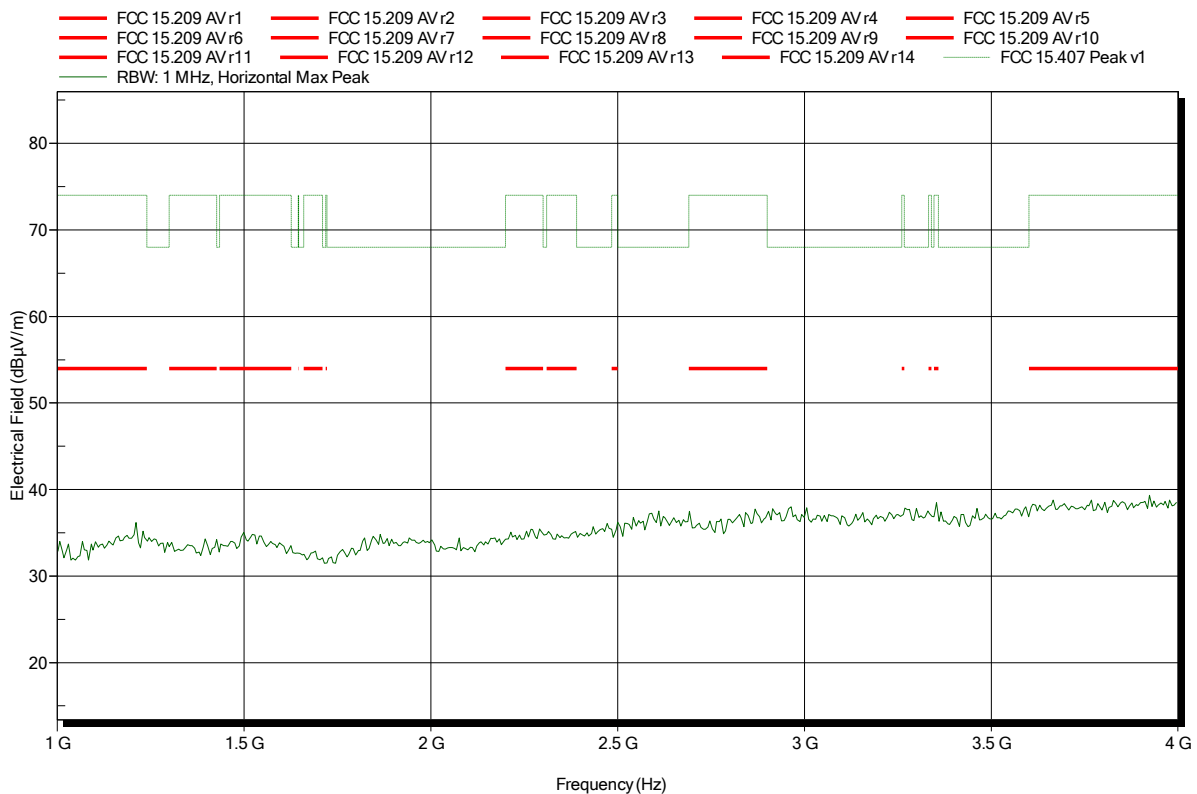
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 10.6 GHz | 43.48 dBµV/m | 68 dBµV/m | -24.52 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch62, 802.11n HT40, MCS0, 15dBm
 Test Date: 2015-11-12
 Note:

Index 19

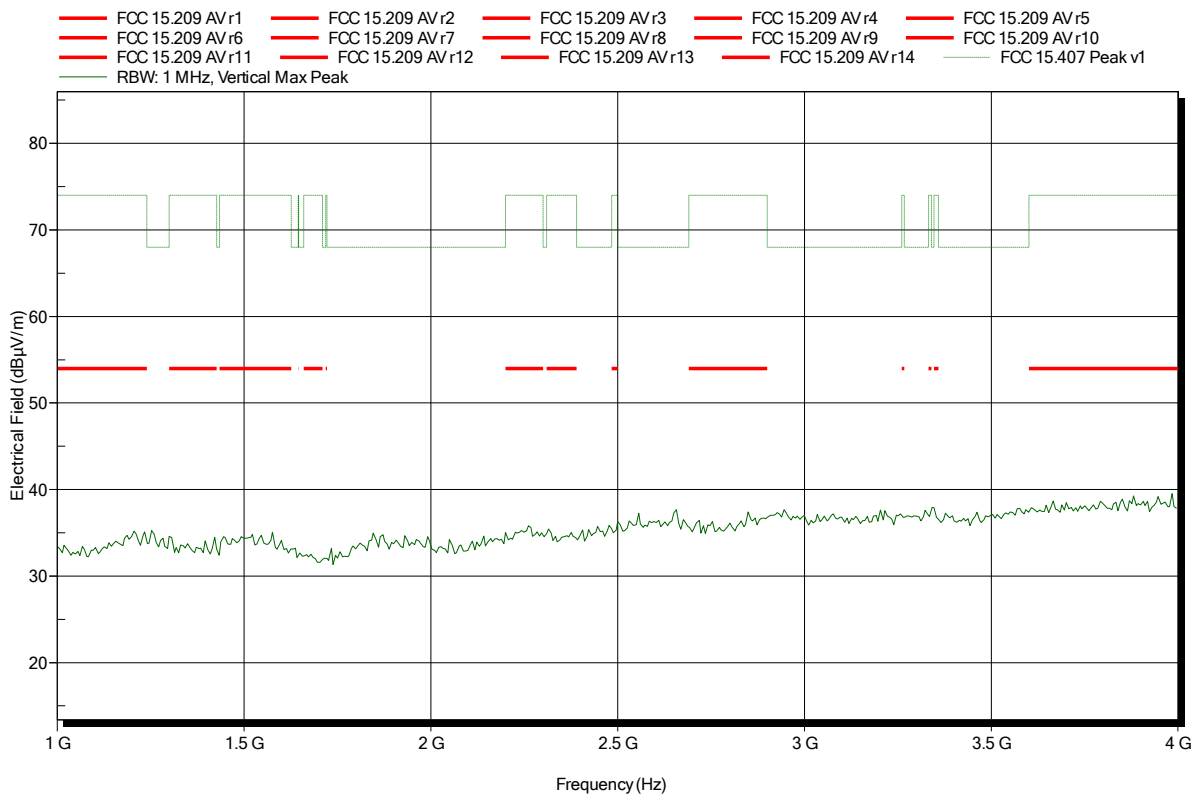


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch62, 802.11n HT40, MCS0, 15dBm
 Test Date: 2015-11-12
 Note:

Index 16

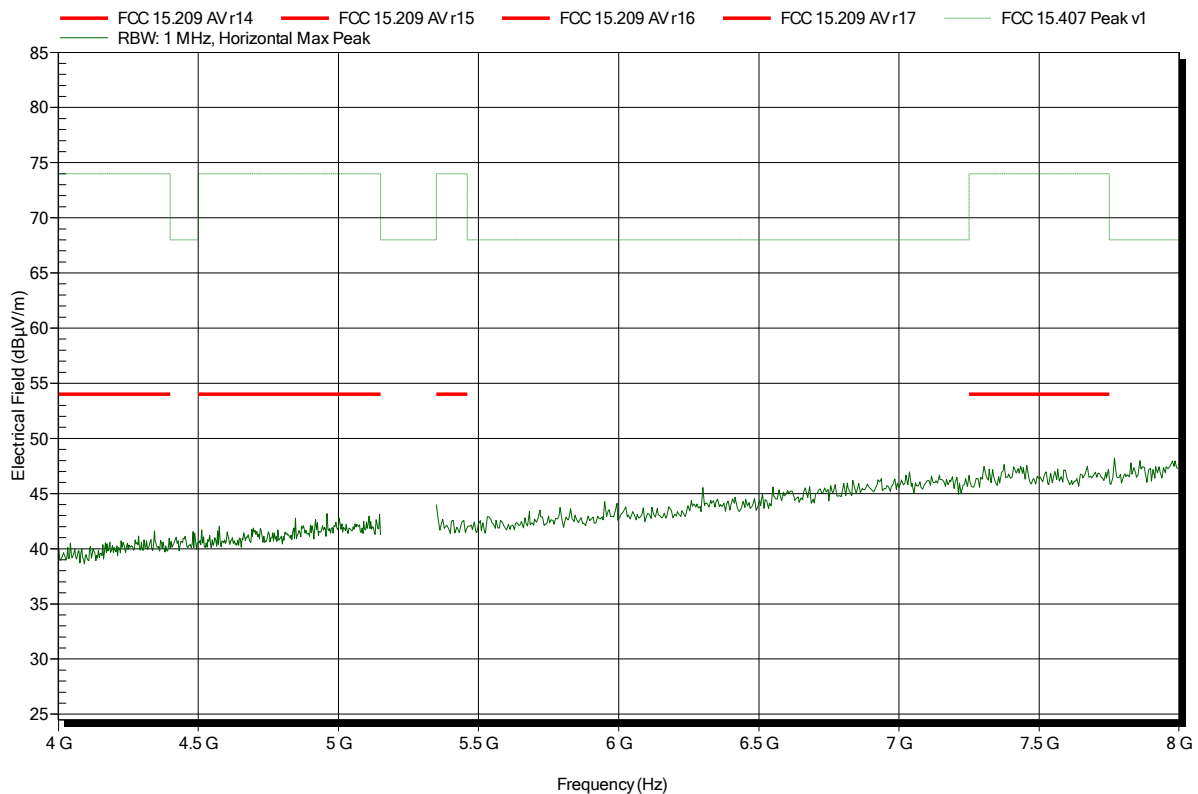


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch62, 802.11n HT40, MCS0, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 18

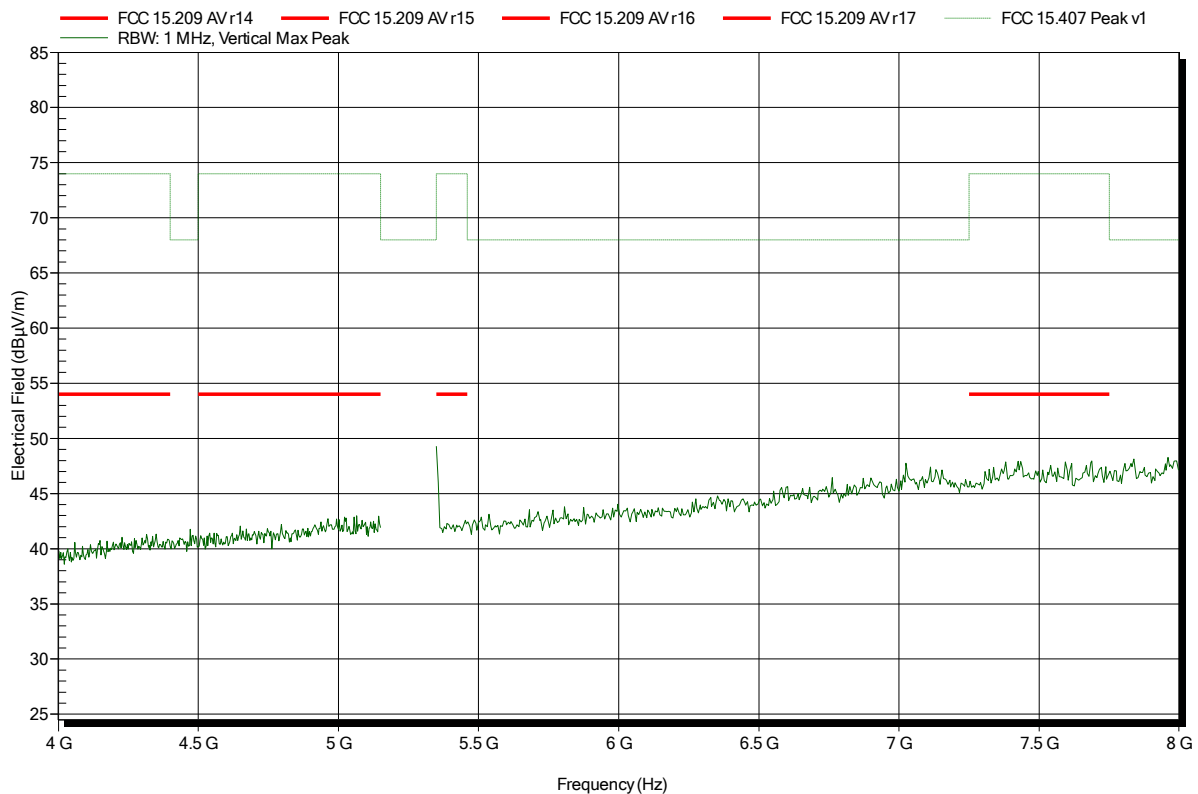


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch62, 802.11n HT40, MCS0, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 17

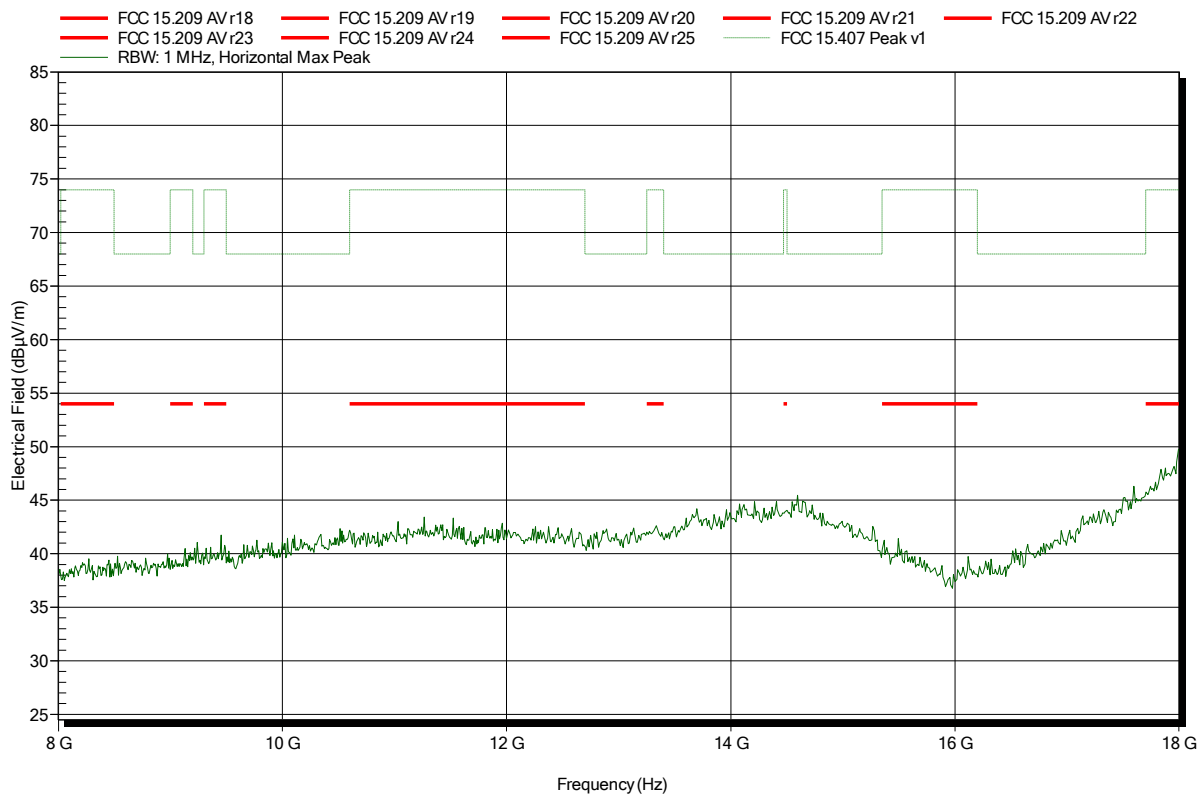


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch62, 802.11n HT40, MCS0, 15dBm
 Test Date: 2015-11-12
 Note:

Index 20

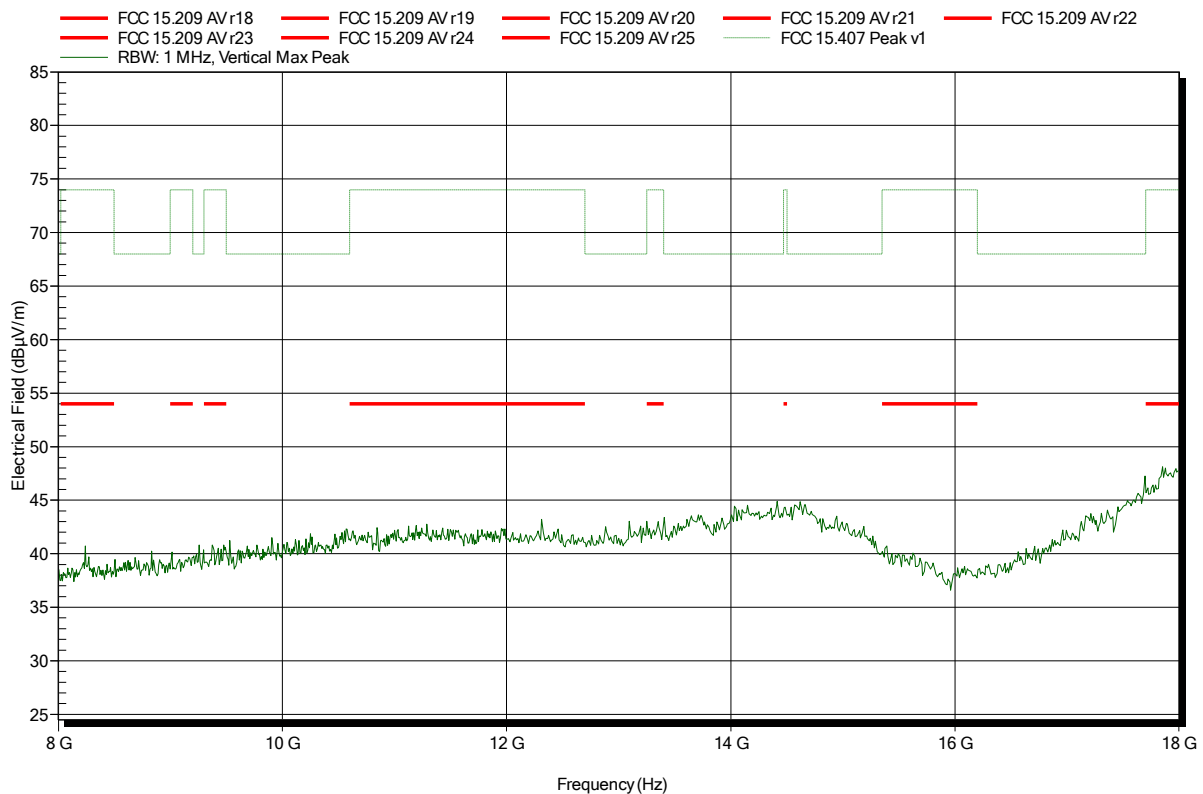


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch62, 802.11n HT40, MCS0, 15dBm
 Test Date: 2015-11-12
 Note:

Index 21

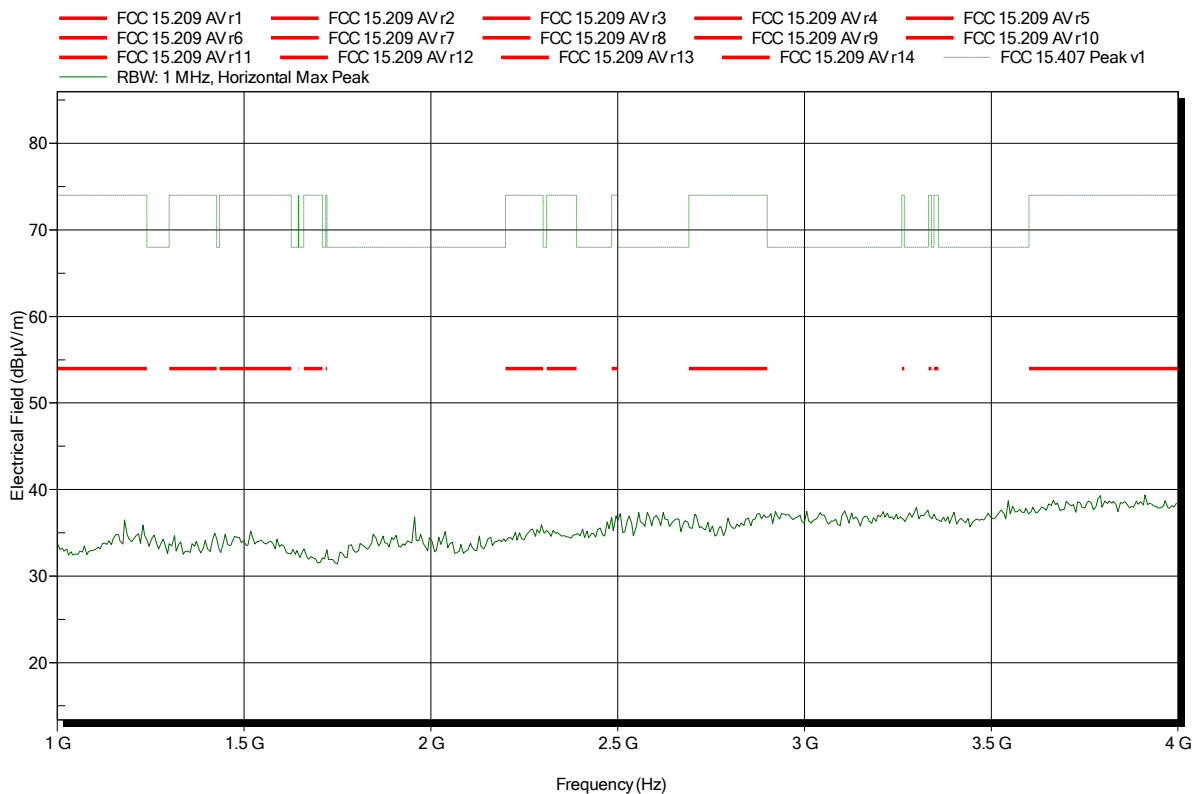


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 12

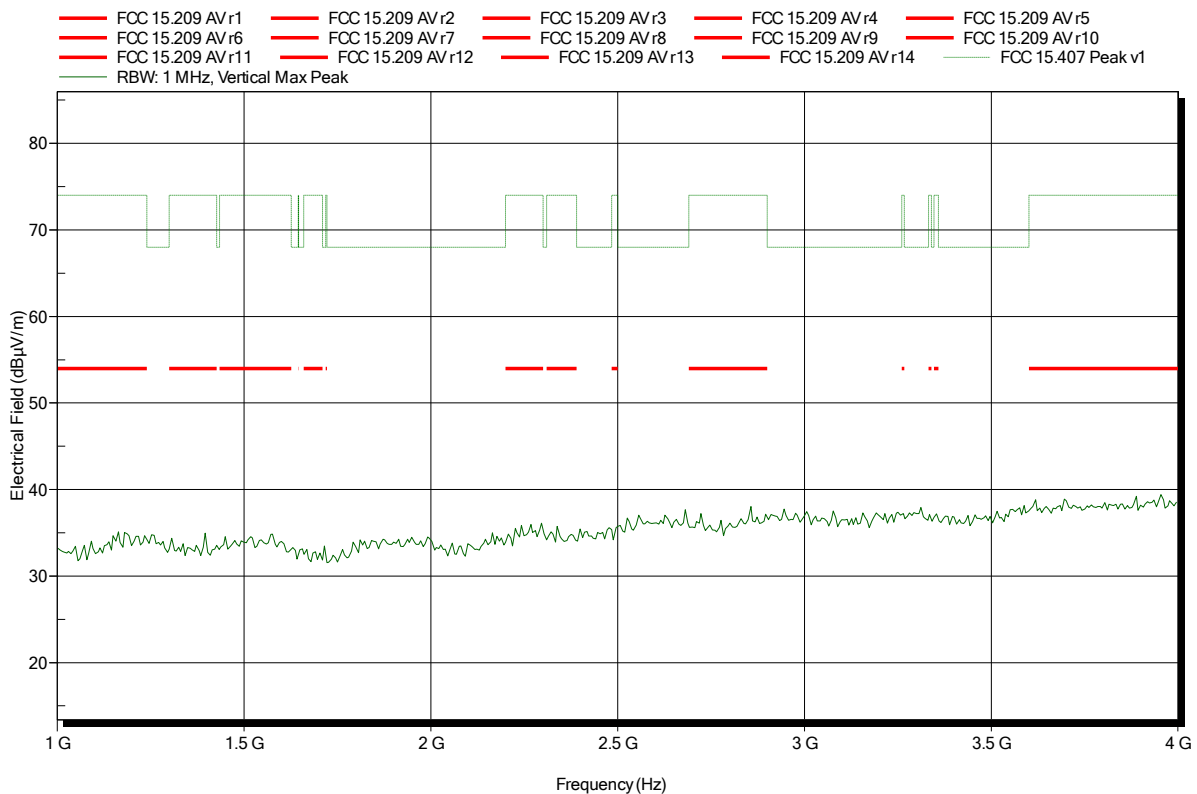


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 14

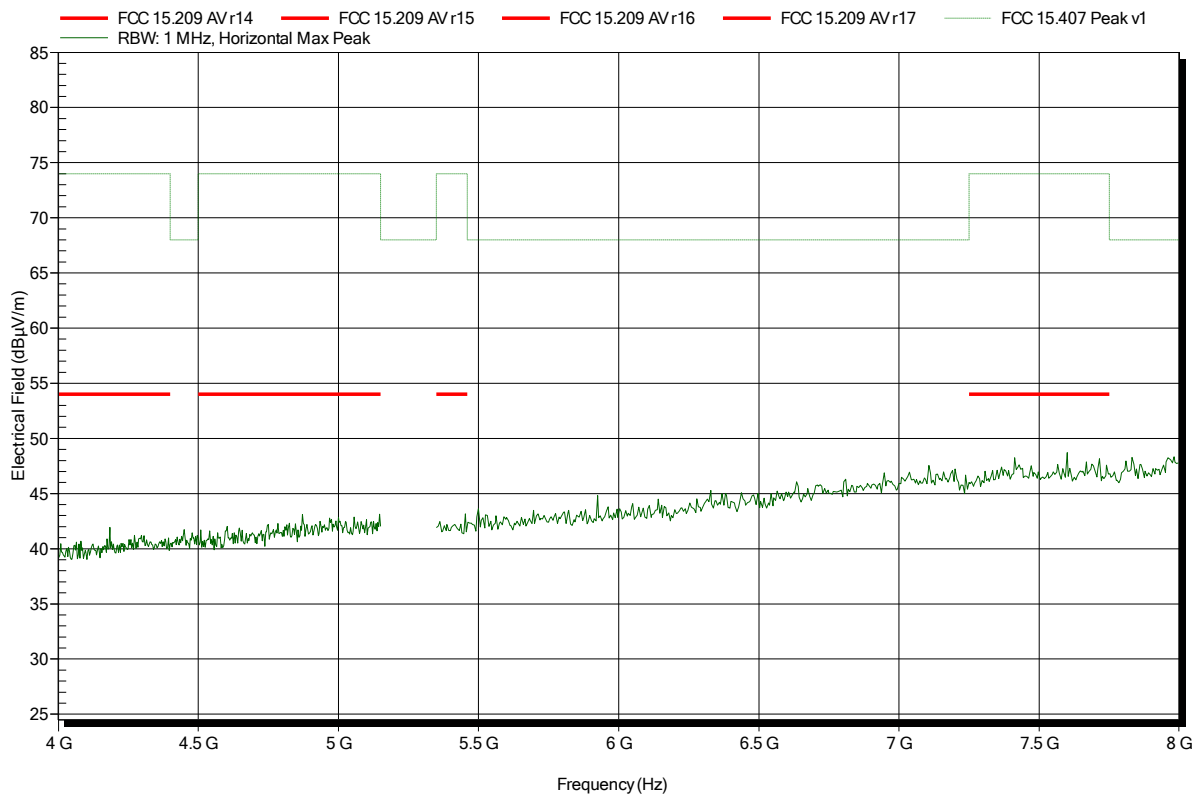


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 13

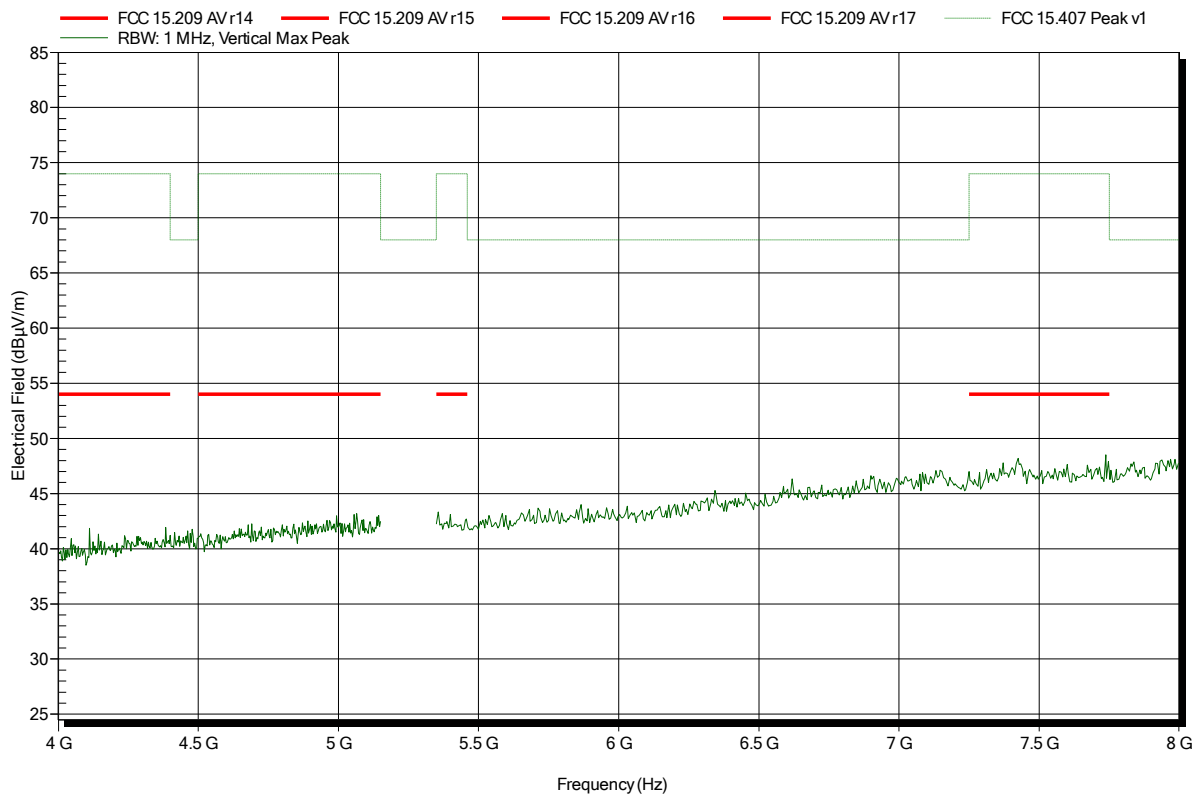


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 15

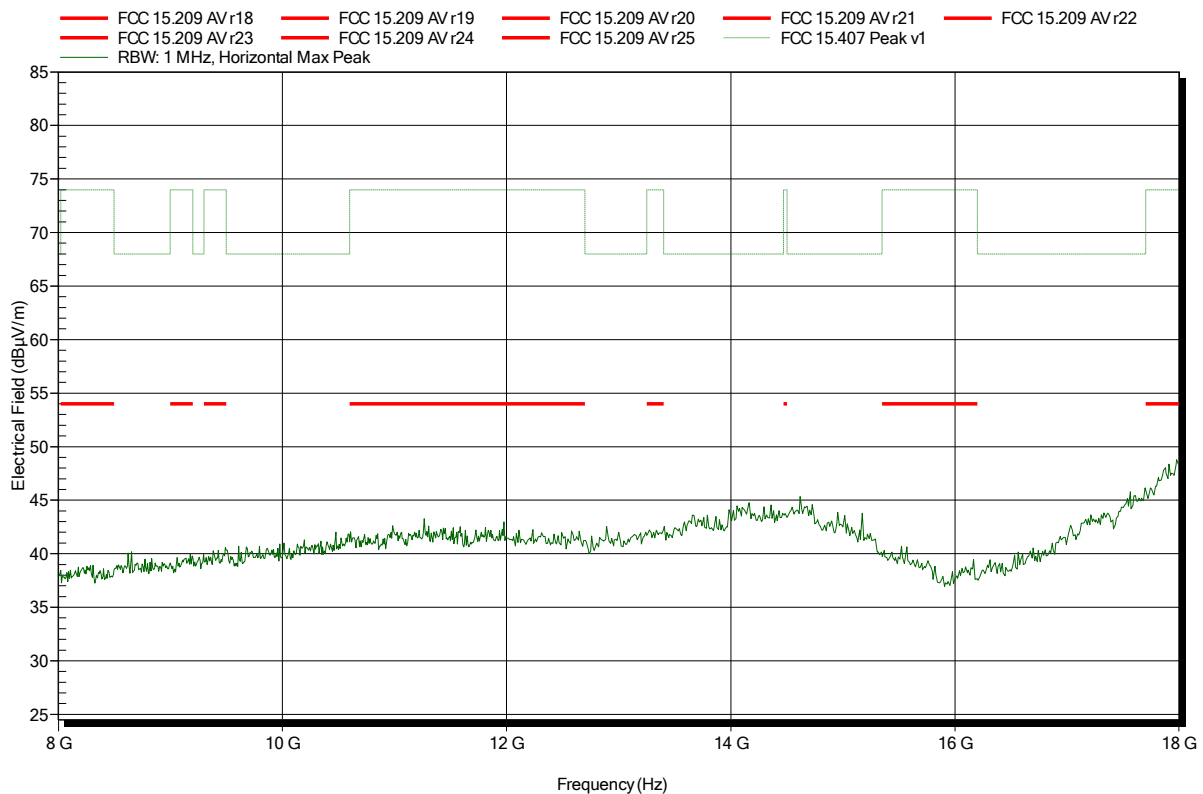


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 11

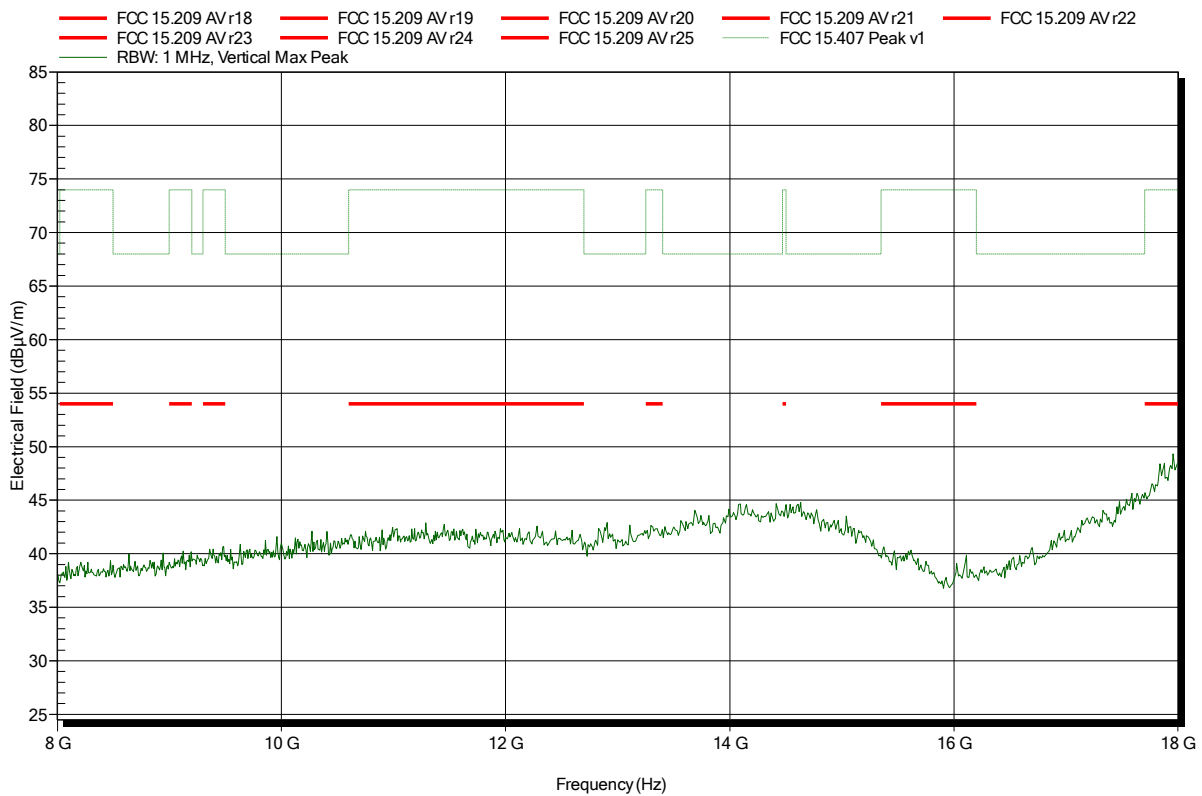


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 10

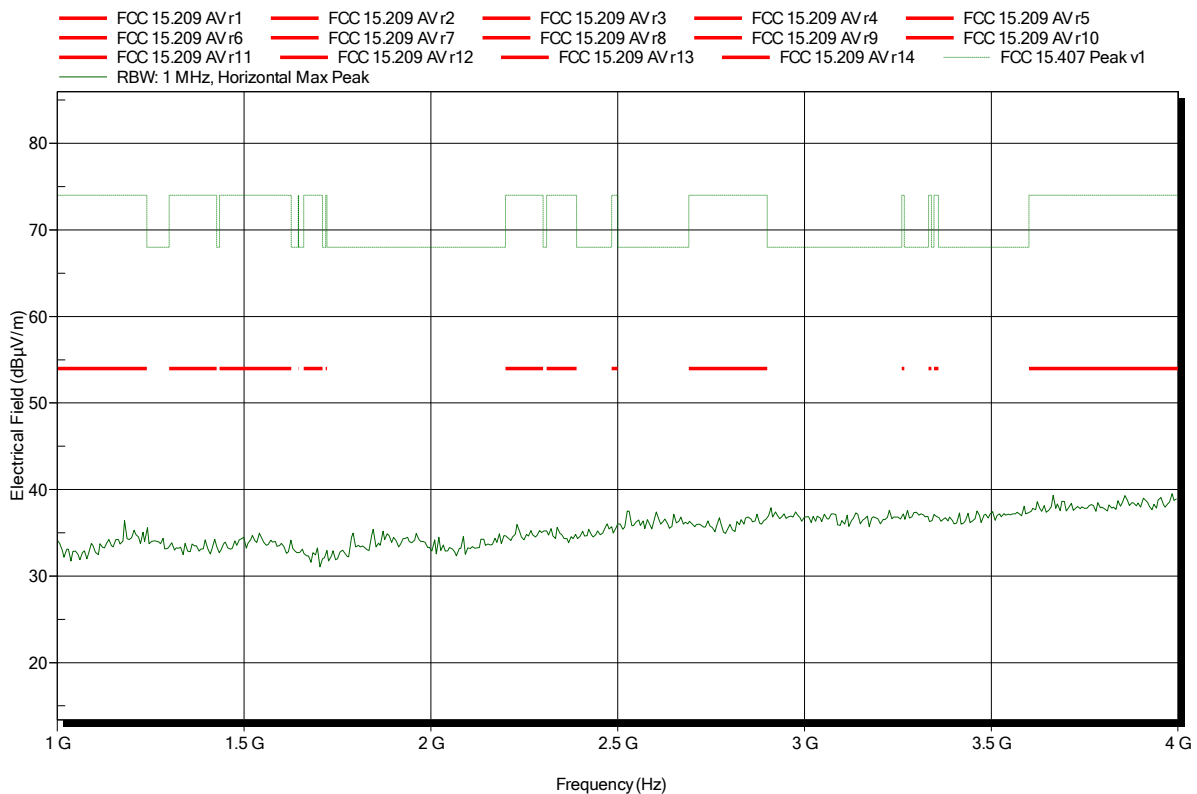


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 18

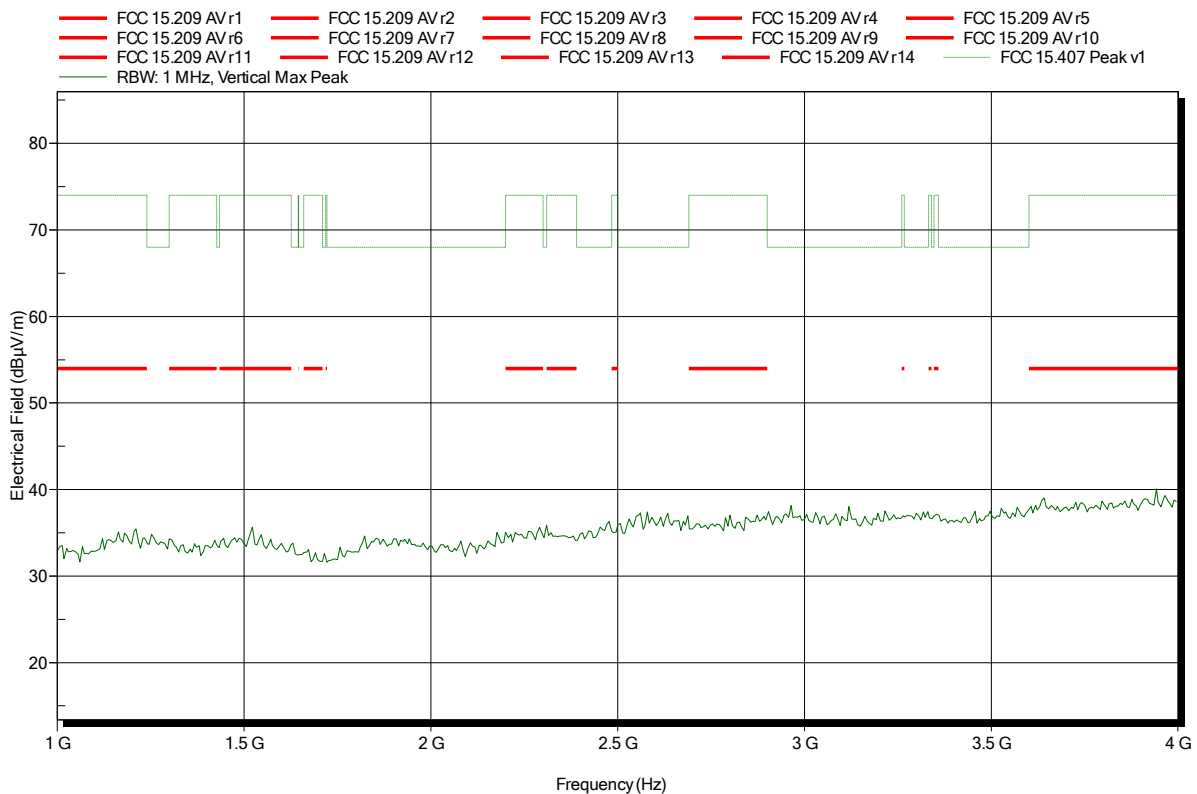


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 17

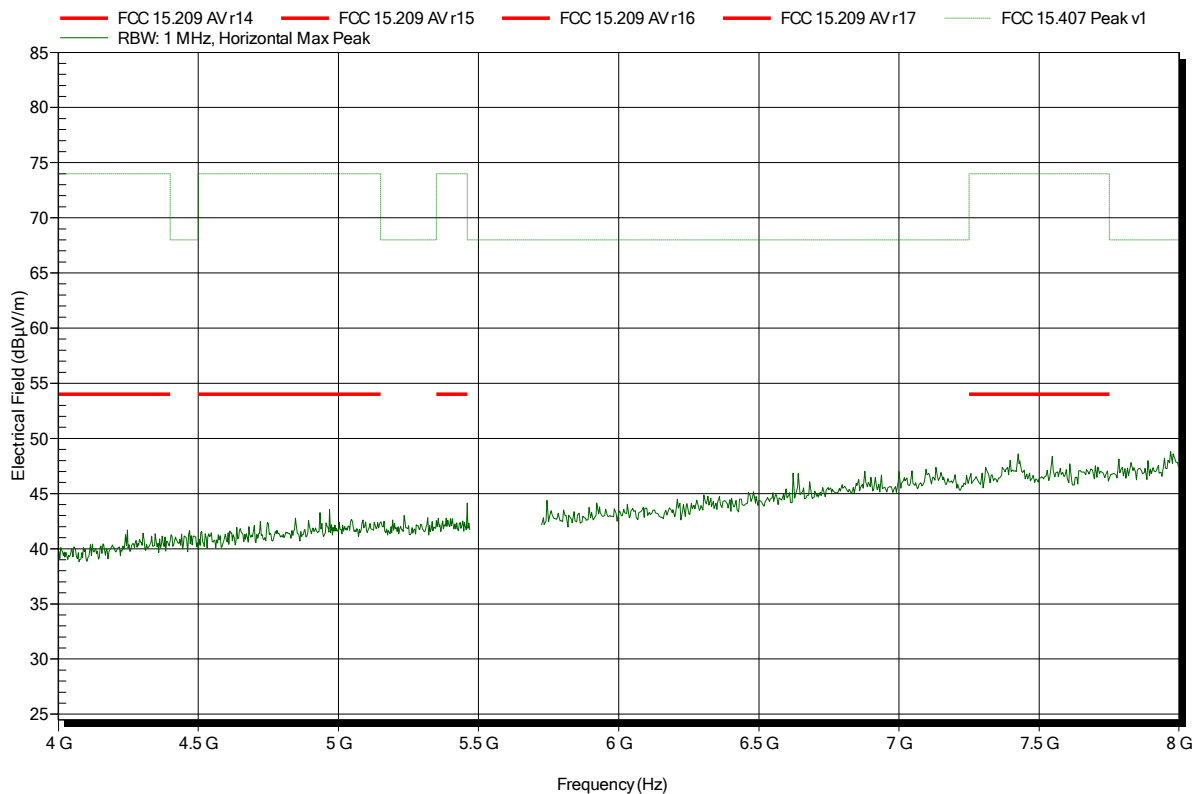


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|--|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 19

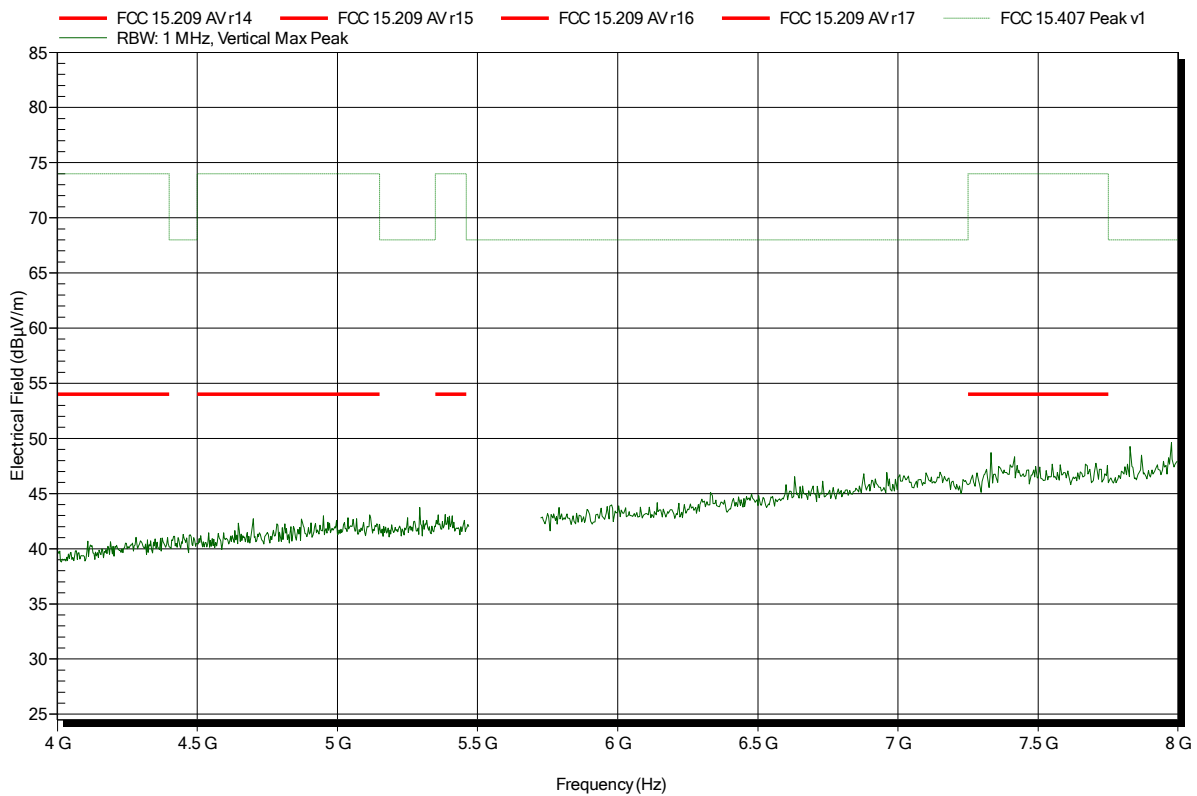


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|--|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 16

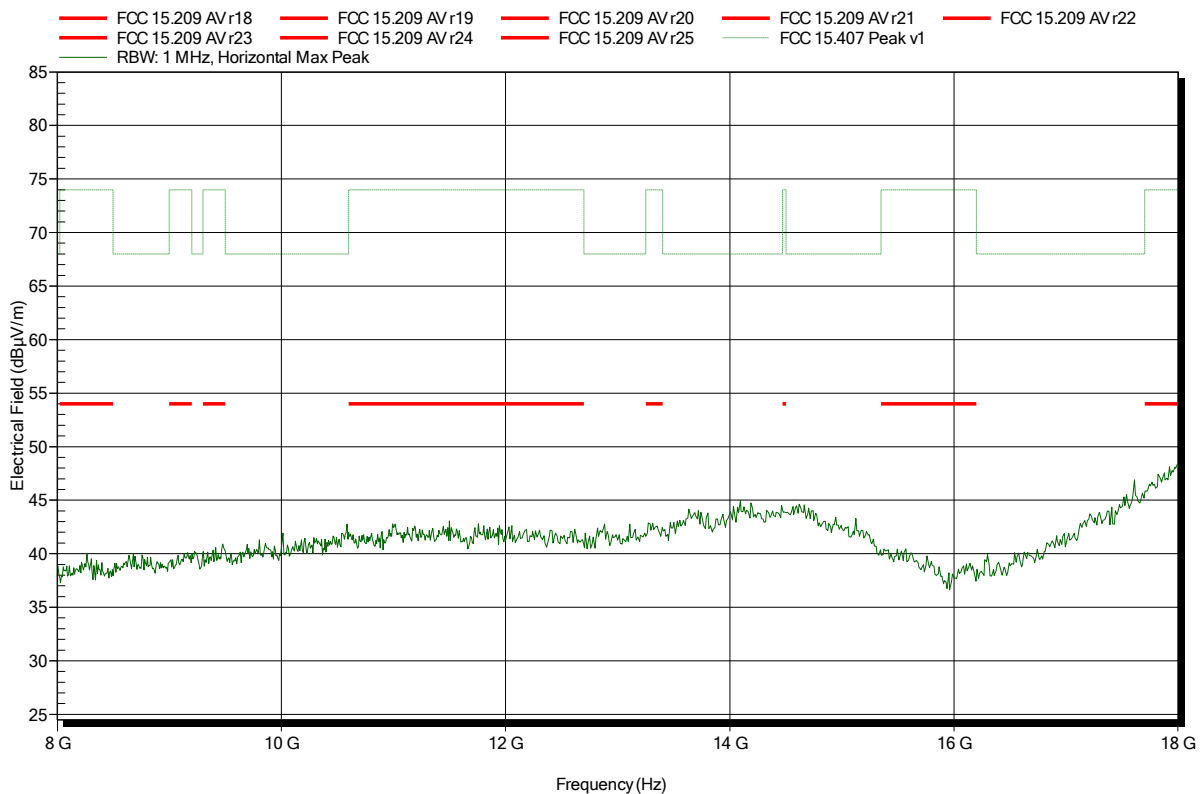


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 20

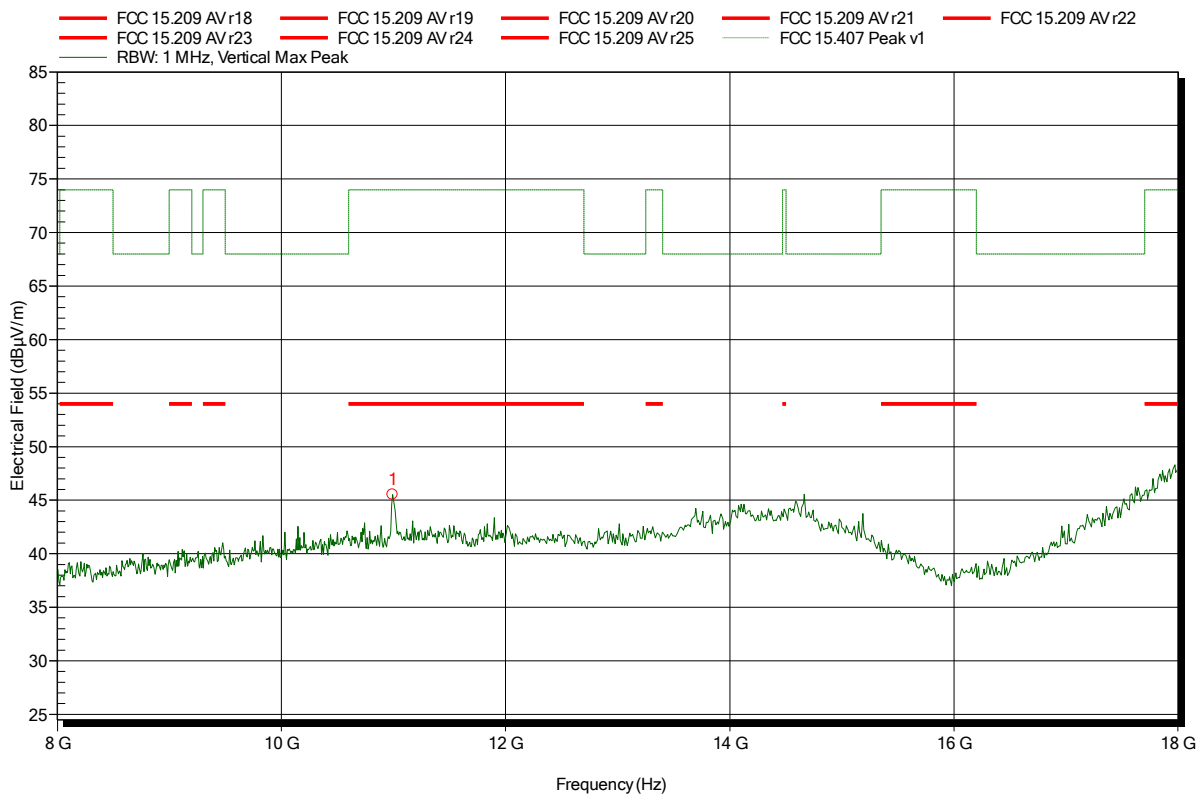


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 21



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 10.992 GHz | 45.52 dBµV/m | 74 dBµV/m | -28.48 dB | Pass |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

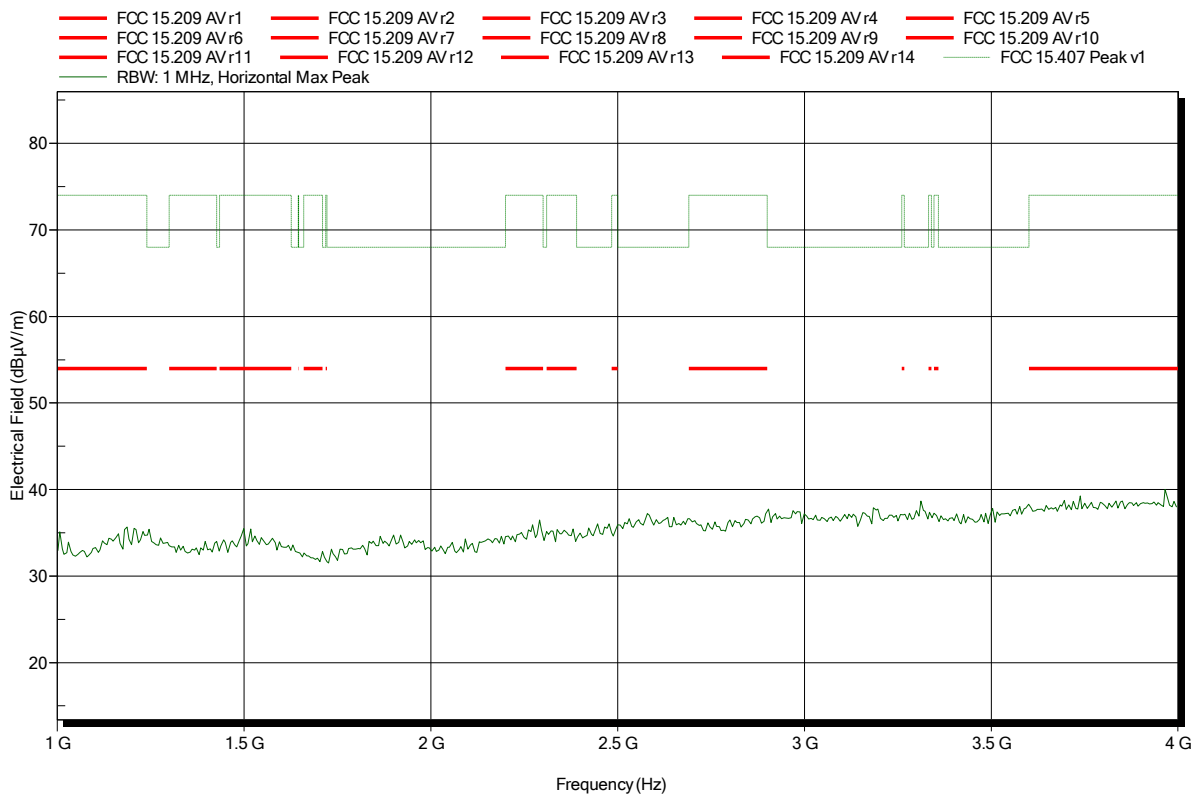
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 24

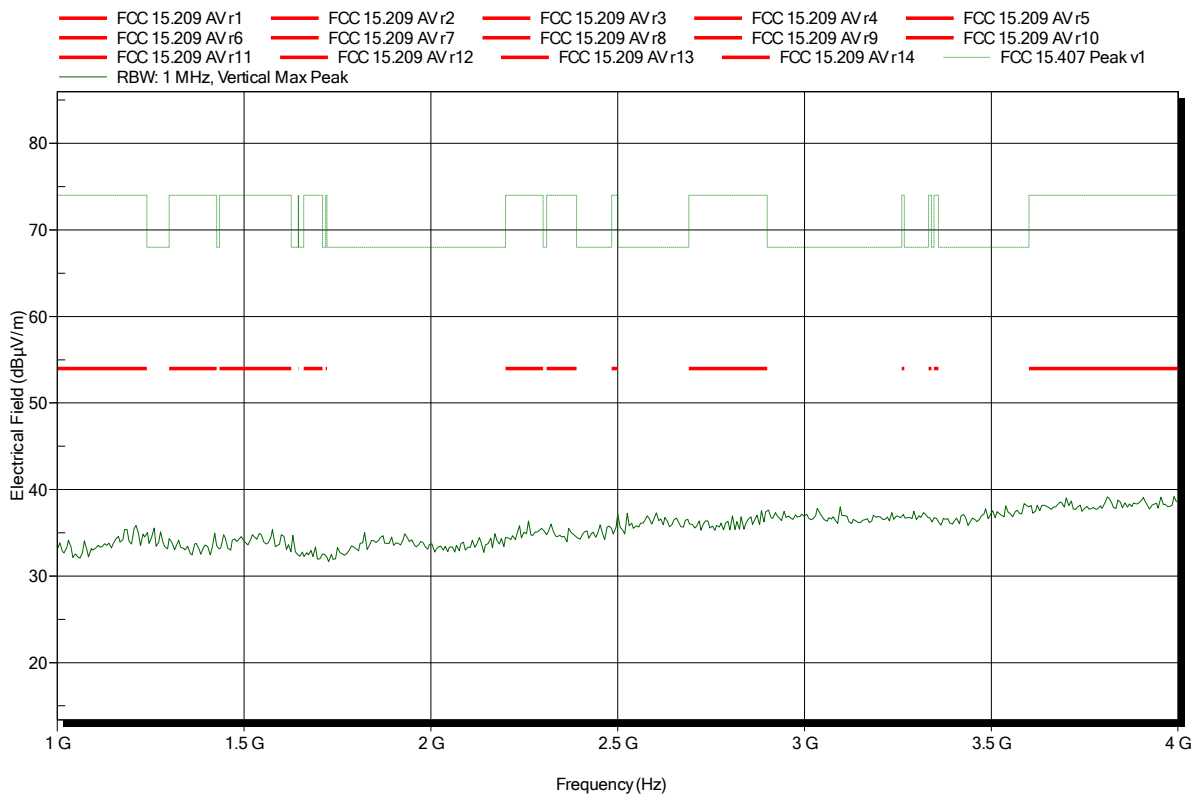


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 26

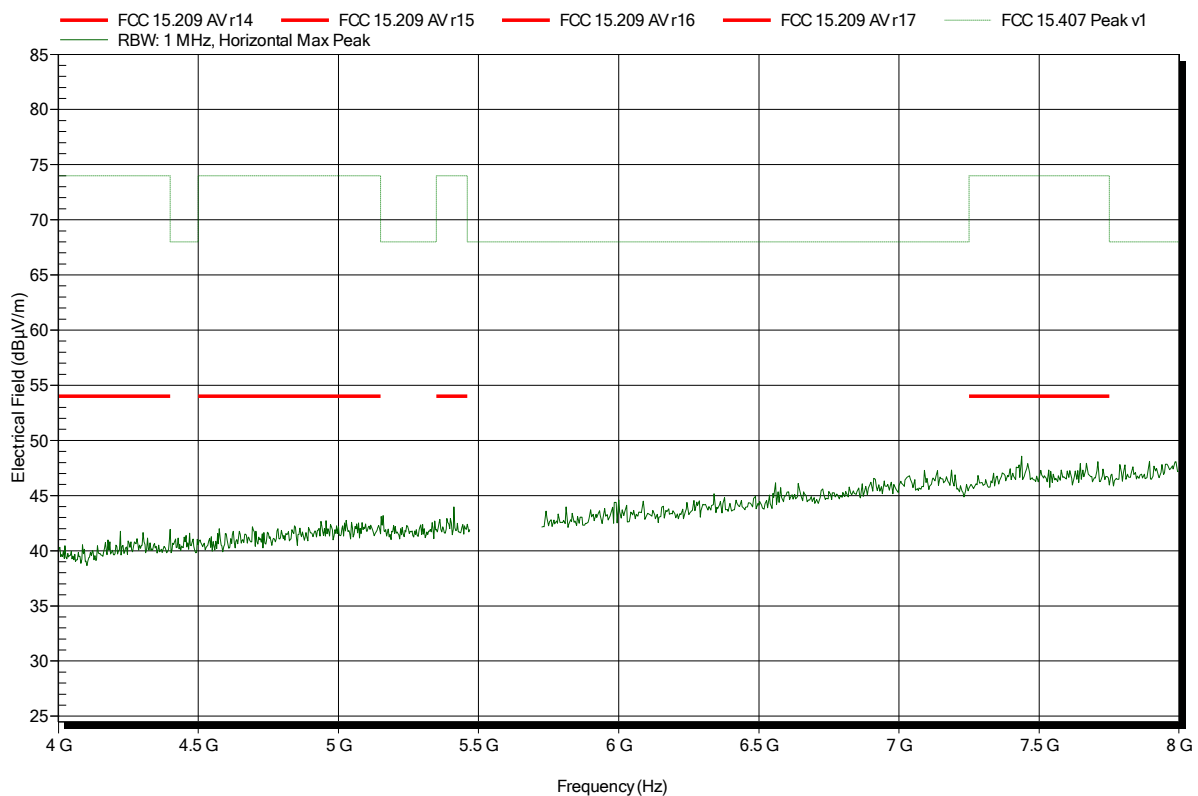


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|--|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 25

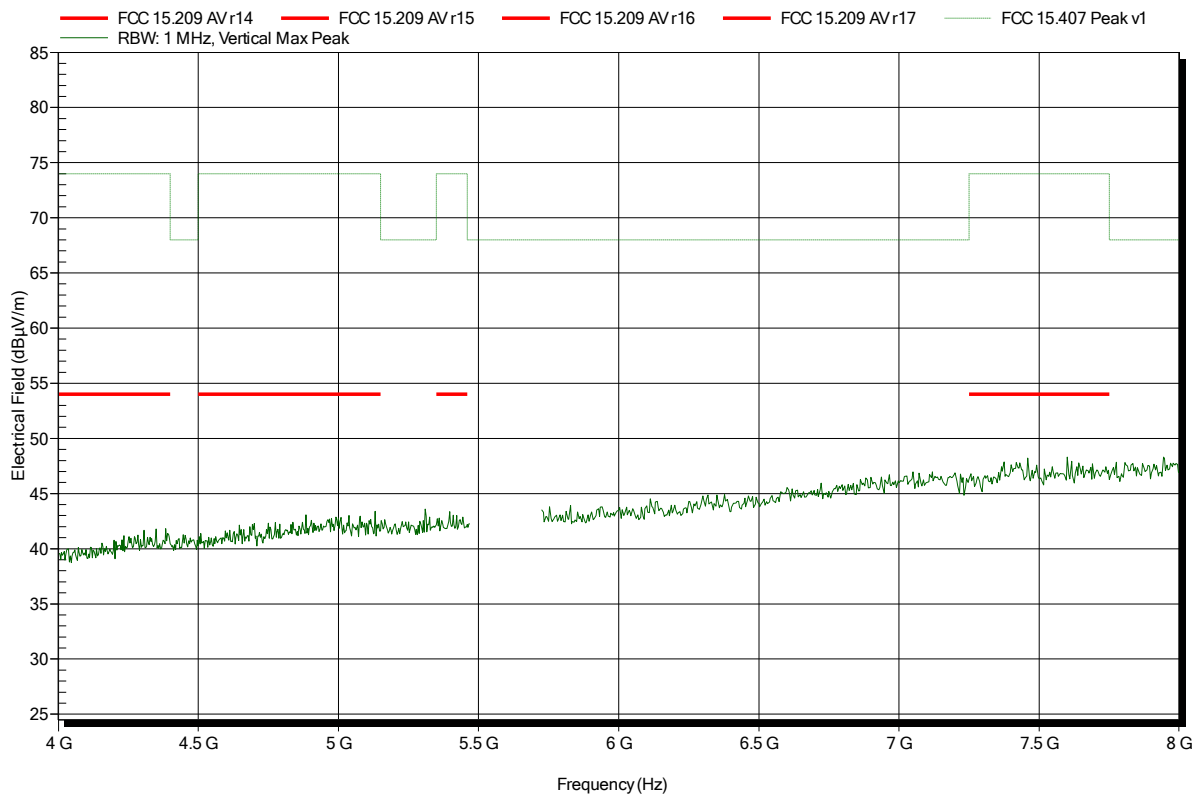


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|--|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161-A |
| Model: | Test Sample #5 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 27

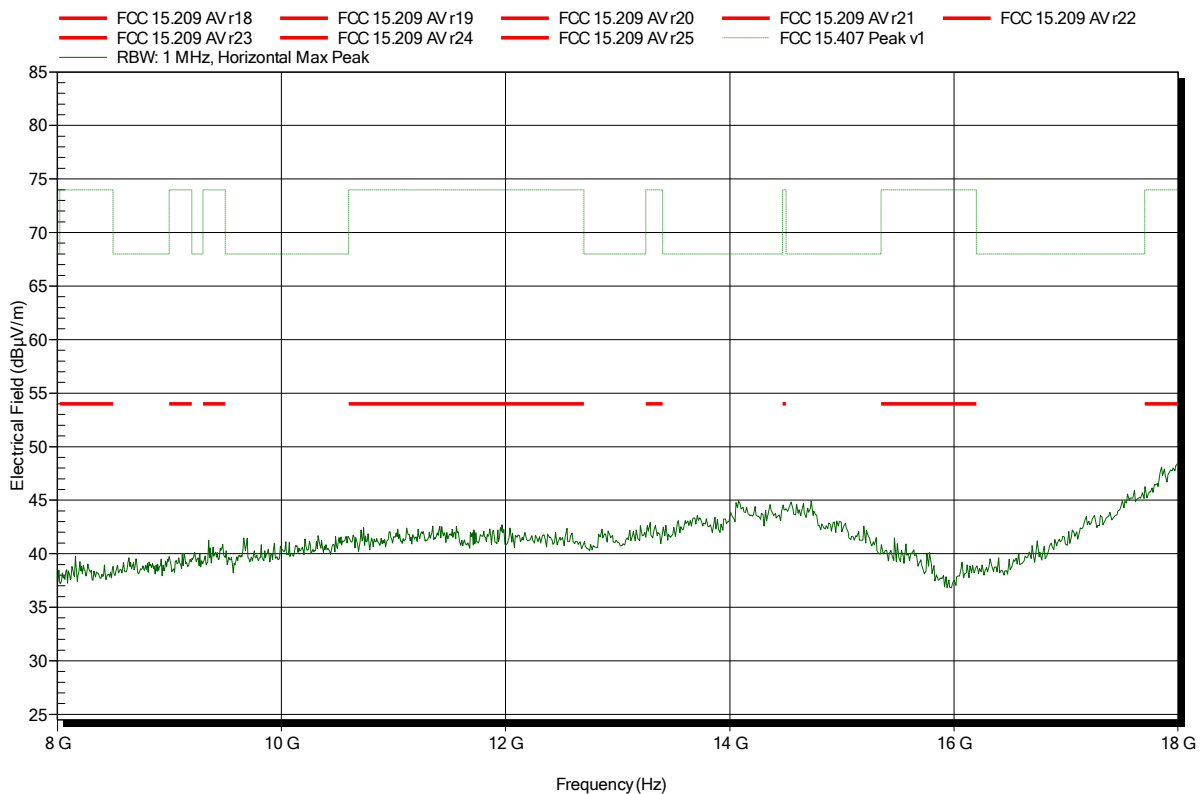


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 23

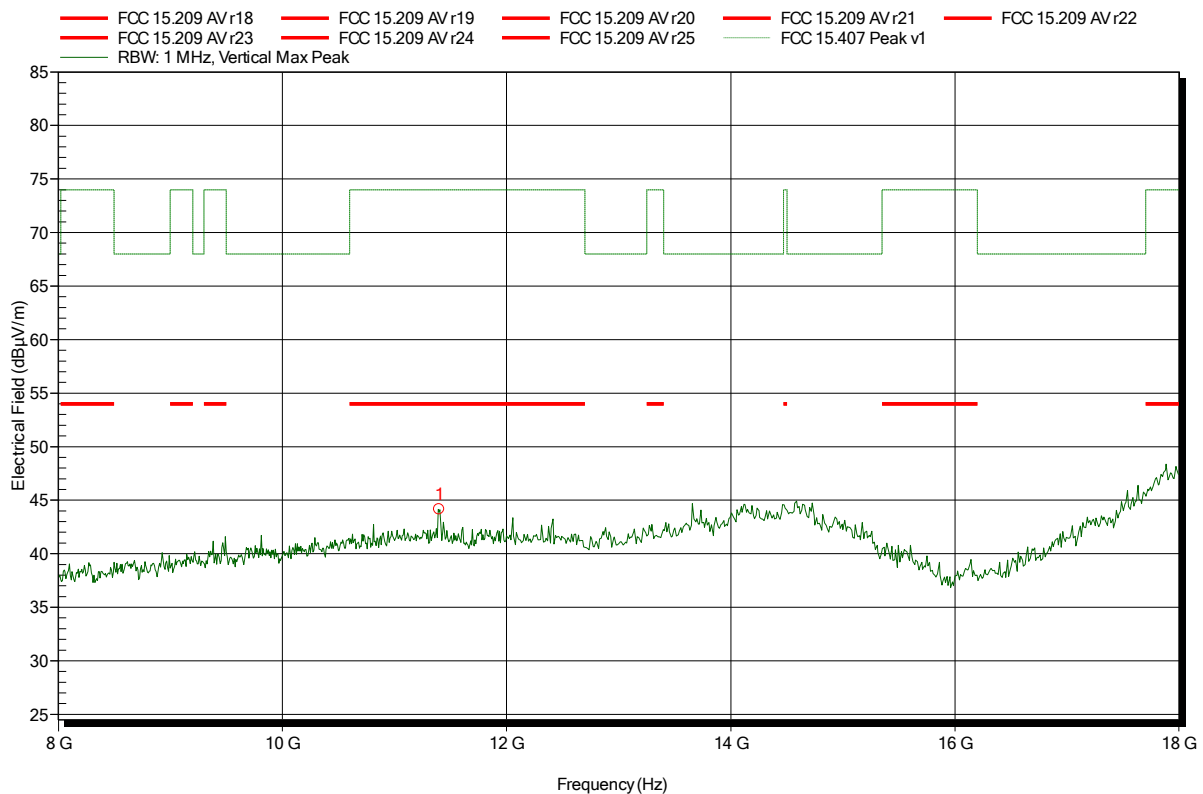


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 22



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 11.4 GHz | 44.13 dBµV/m | 74 dBµV/m | -29.87 dB | Pass |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

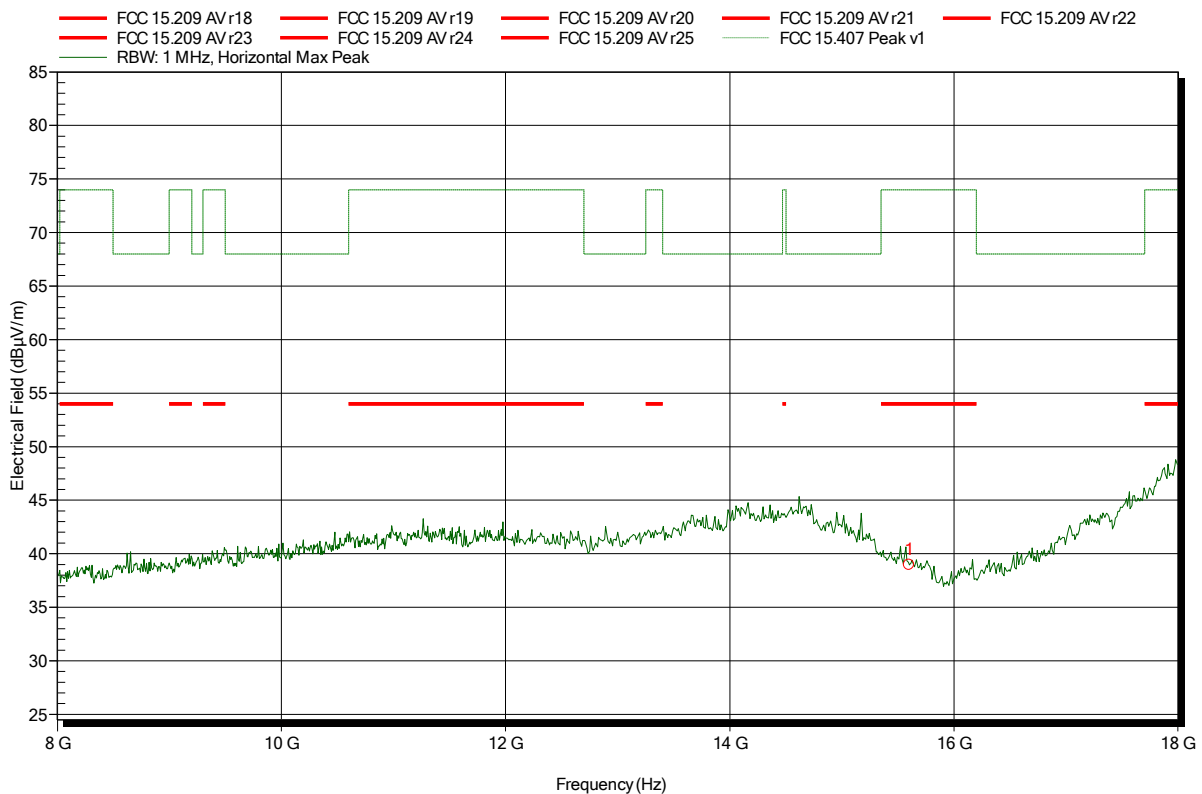
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 11



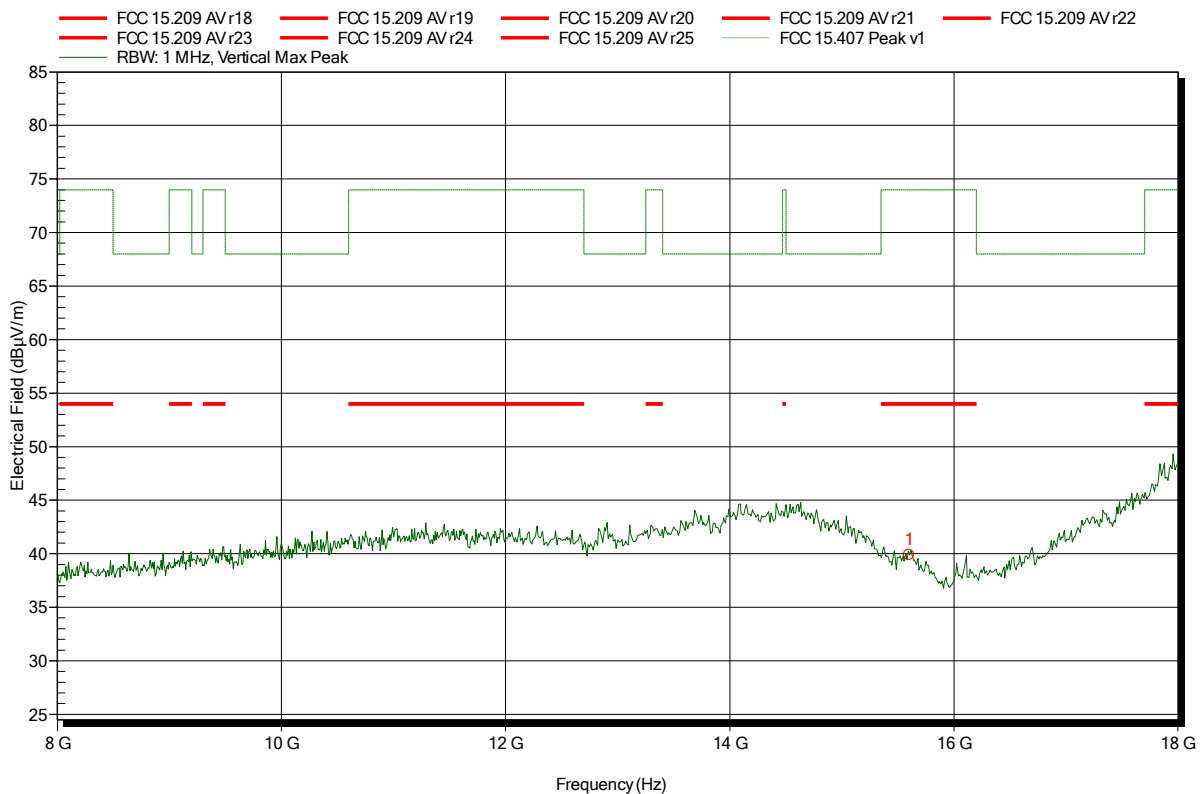
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 15.6 GHz | 38.97 dBµV/m | 74 dBµV/m | -35.03 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 10



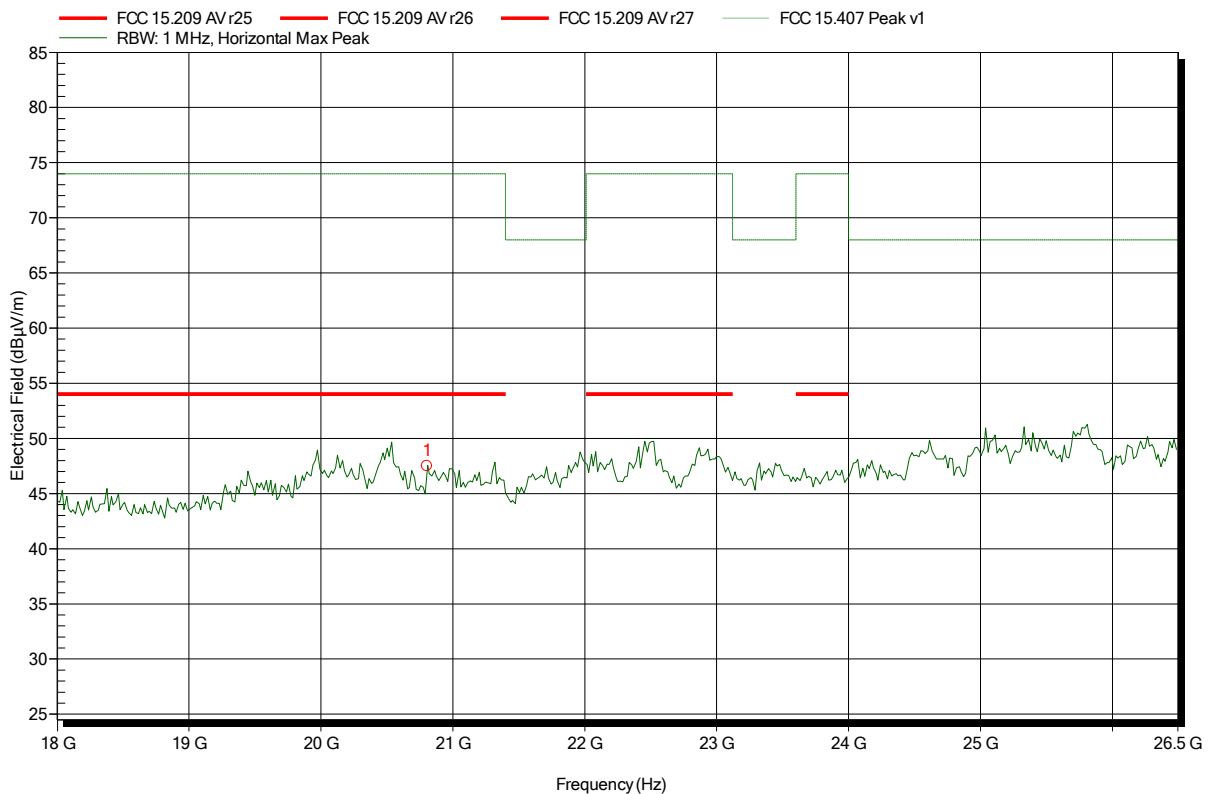
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 15.6 GHz | 39.89 dBµV/m | 74 dBµV/m | -34.11 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Weber
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 16



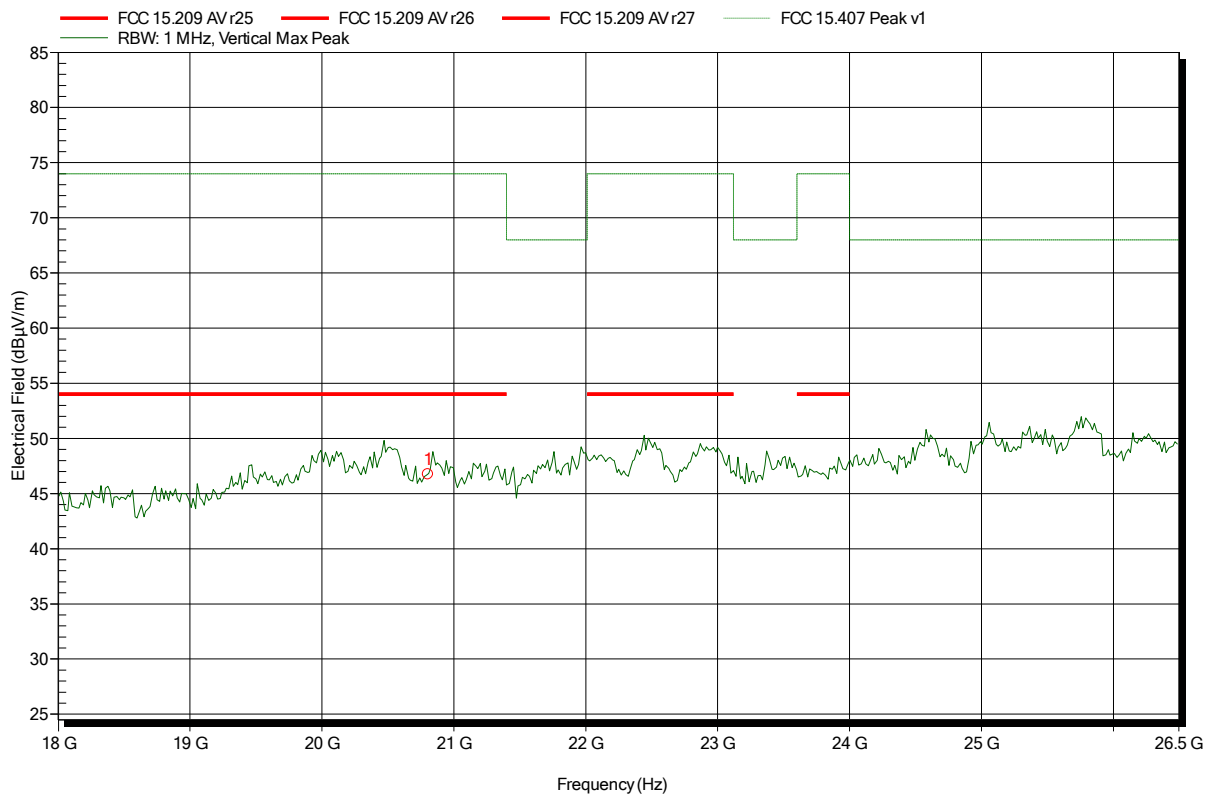
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 20.805 GHz | 47.48 dBµV/m | 74 dBµV/m | -26.52 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Weber
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 17



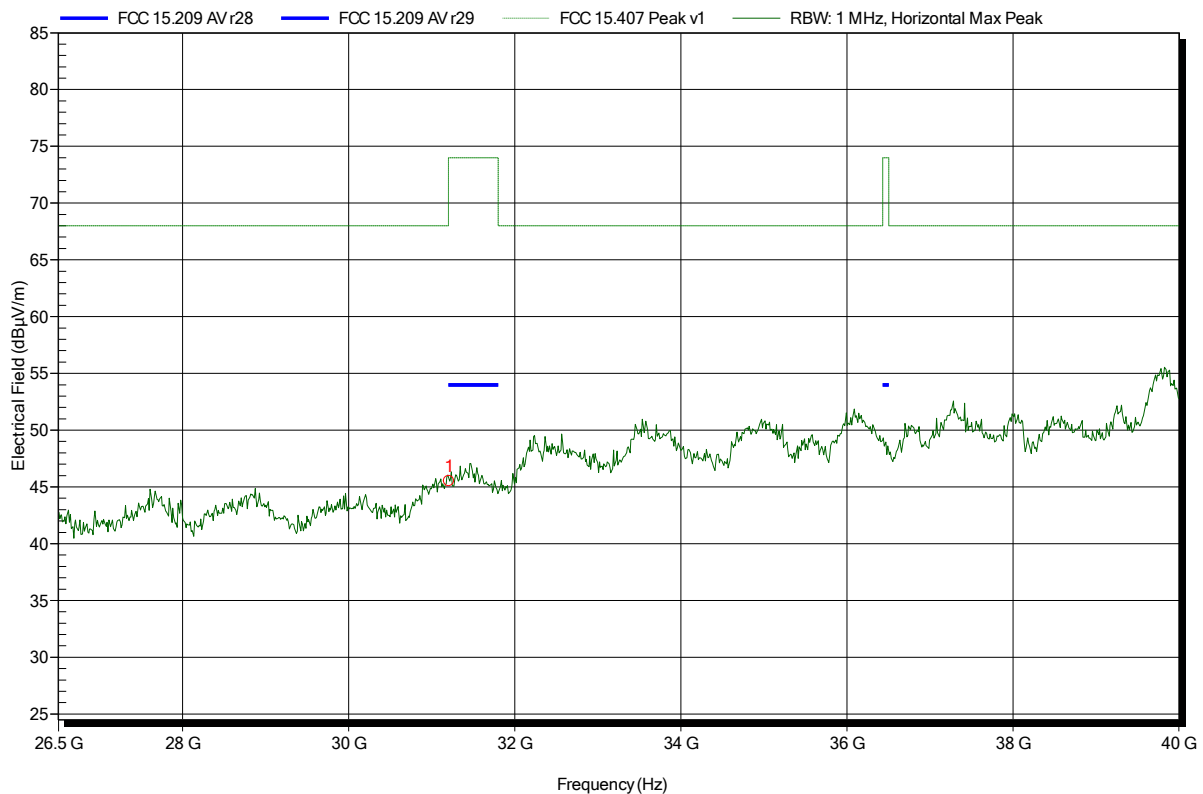
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 20.805 GHz | 46.75 dBµV/m | 74 dBµV/m | -27.25 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: 22240-25, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-16
 Note:

Index 18



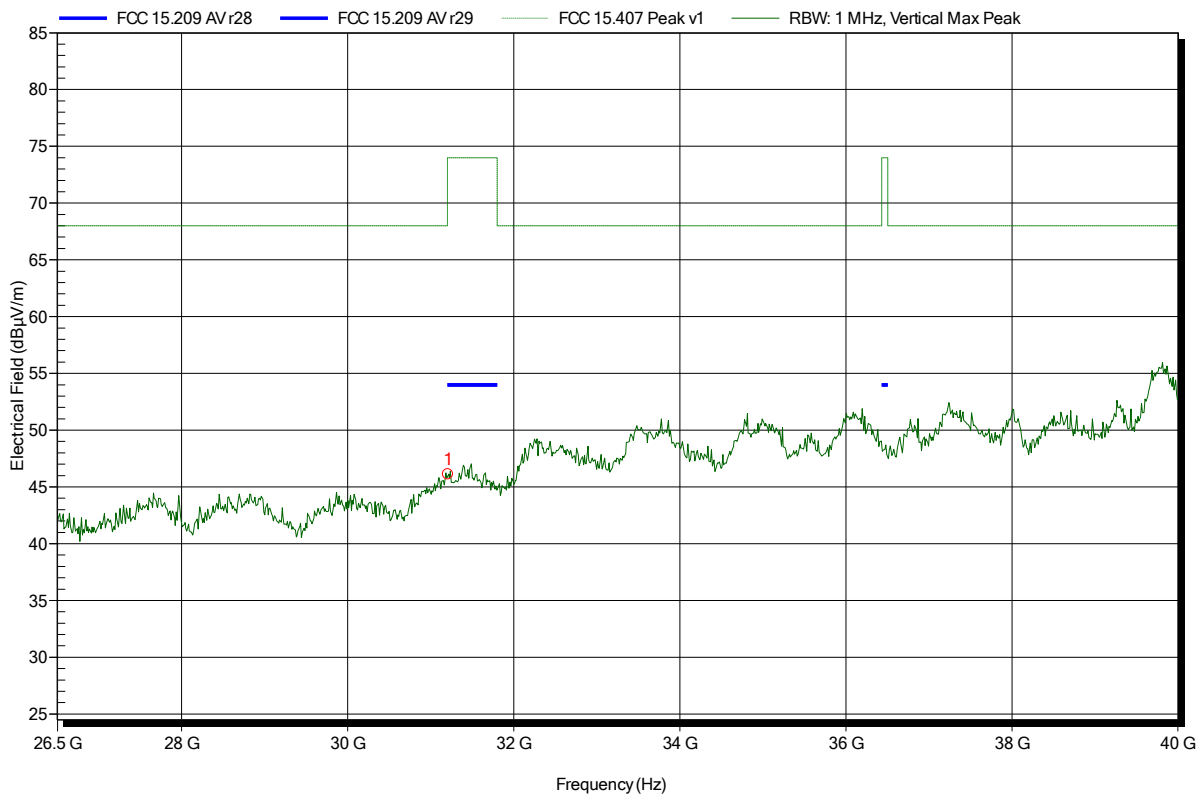
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 31.206 GHz | 45.51 dBµV/m | 74 dBµV/m | -28.49 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: 22240-25, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-16
 Note:

Index 19



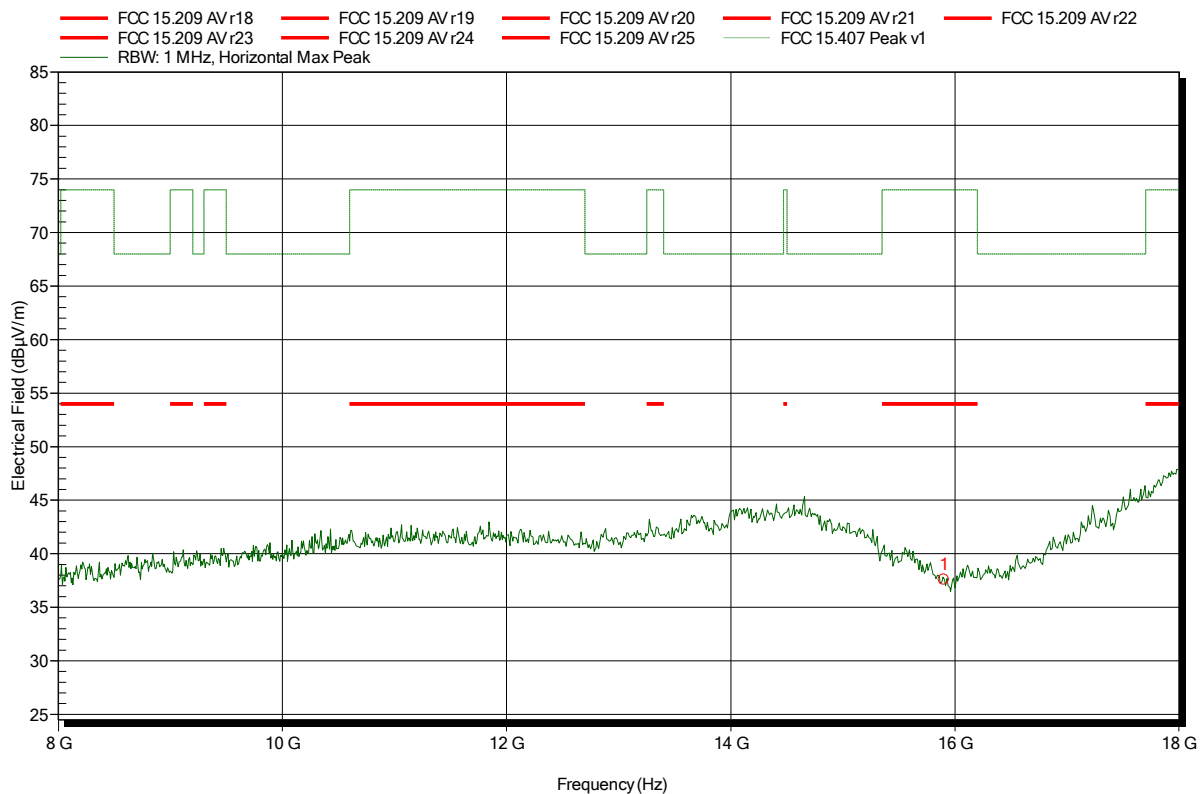
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 31.206 GHz | 46.12 dBµV/m | 74 dBµV/m | -27.88 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 17



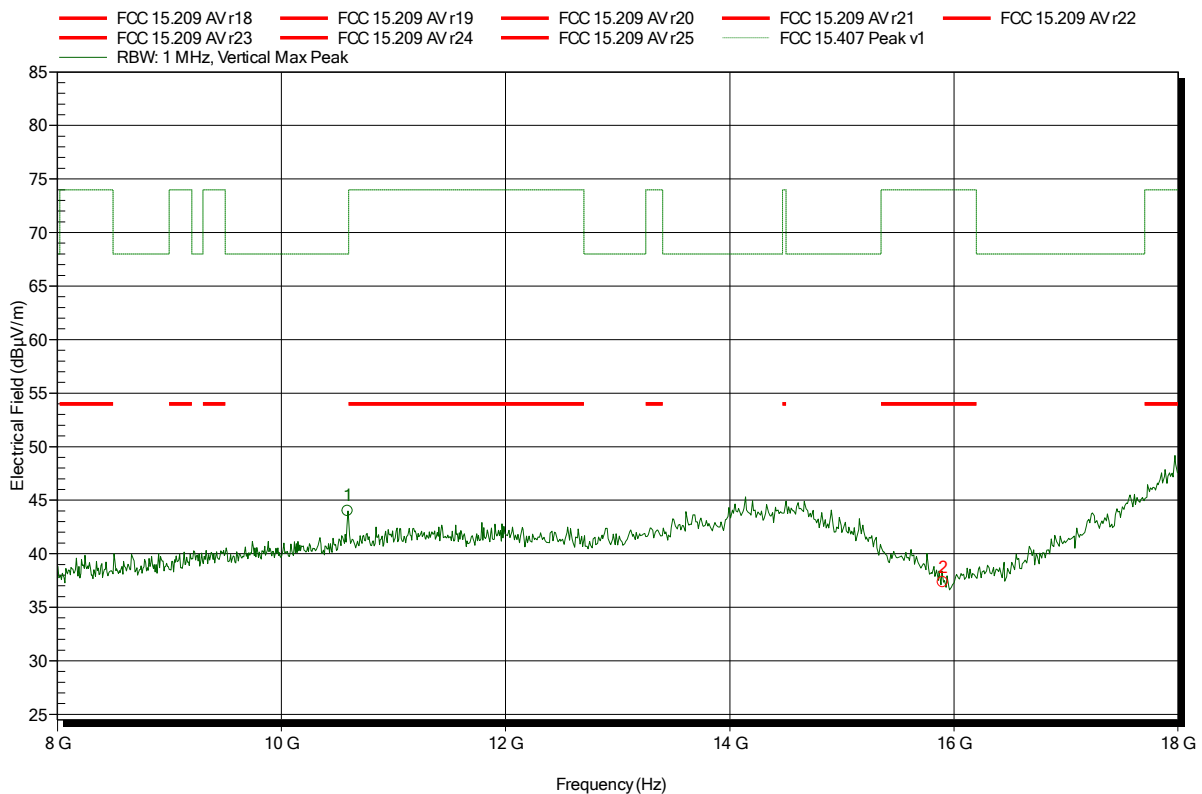
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 15.9 GHz | 37.59 dBµV/m | 74 dBµV/m | -36.41 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 16



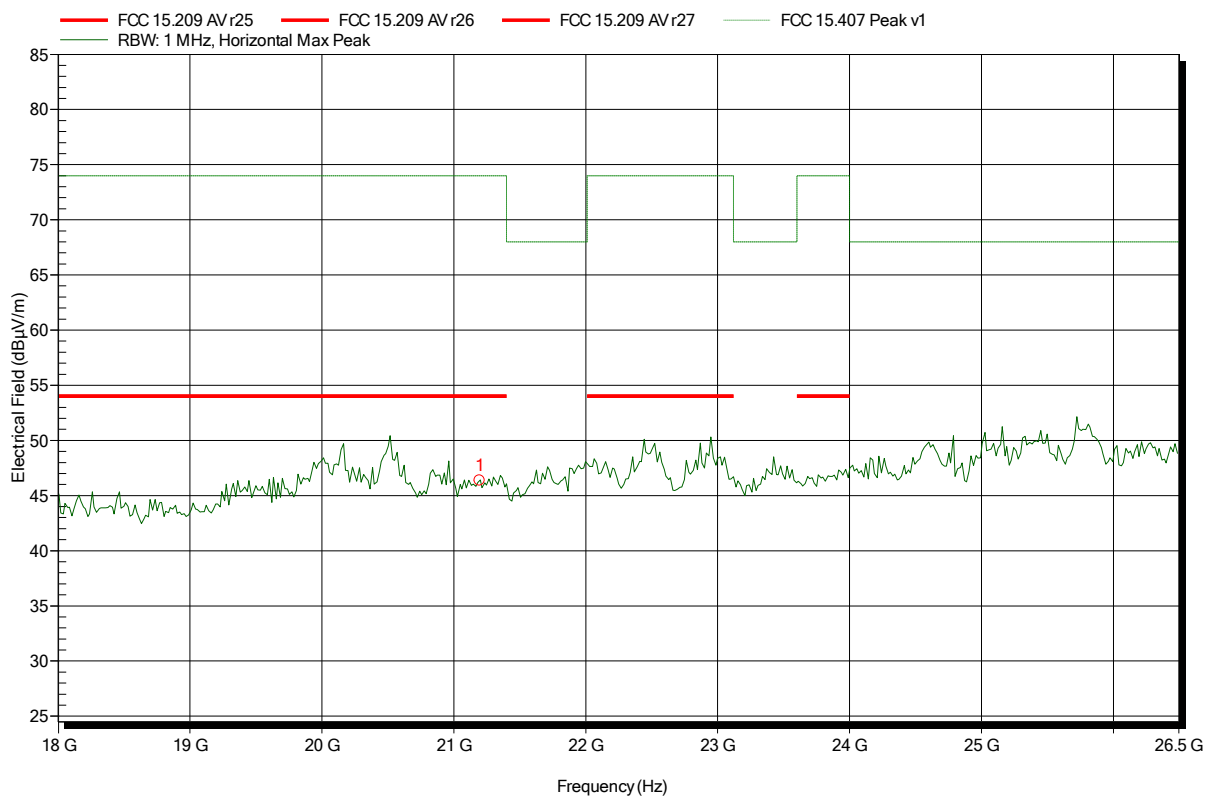
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 10.592 GHz | 44 dBµV/m | 68 dBµV/m | -24 dB | Pass |
| 15.9 GHz | 37.35 dBµV/m | 74 dBµV/m | -36.65 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 19



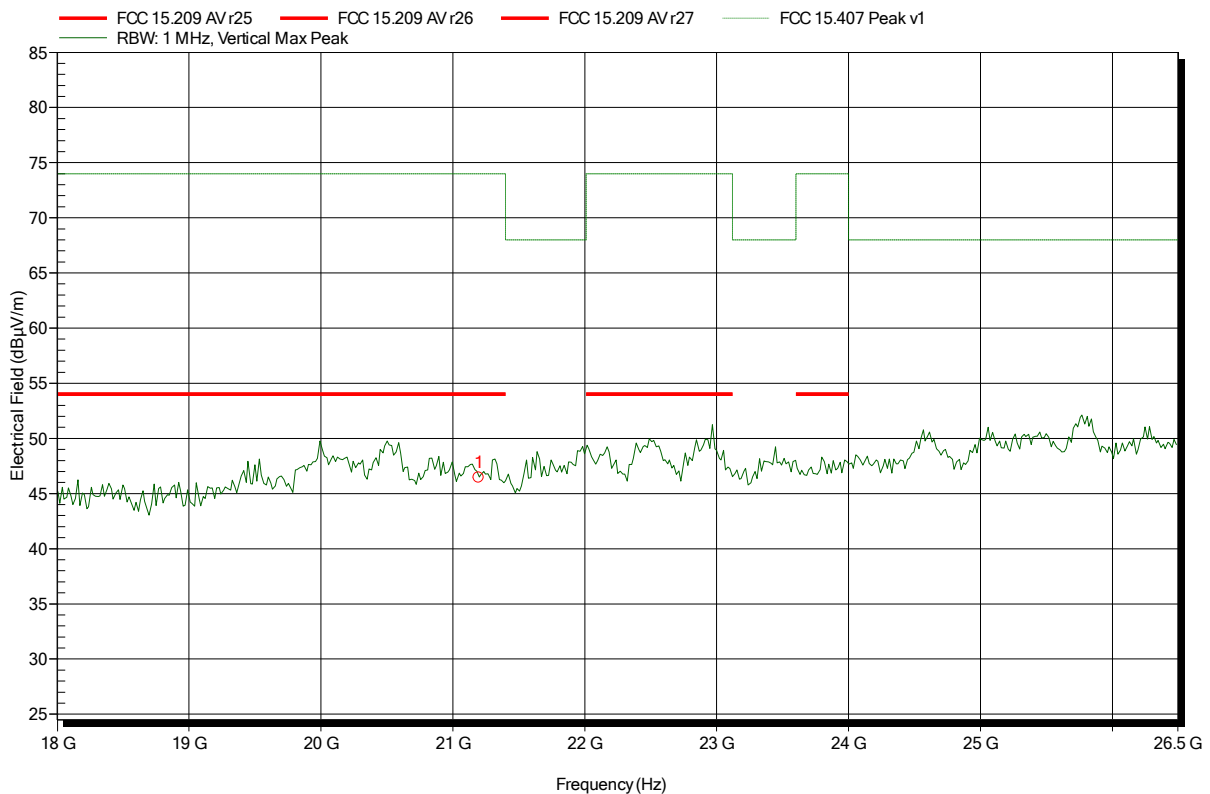
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 21.196 GHz | 46.37 dBµV/m | 74 dBµV/m | -27.63 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 18



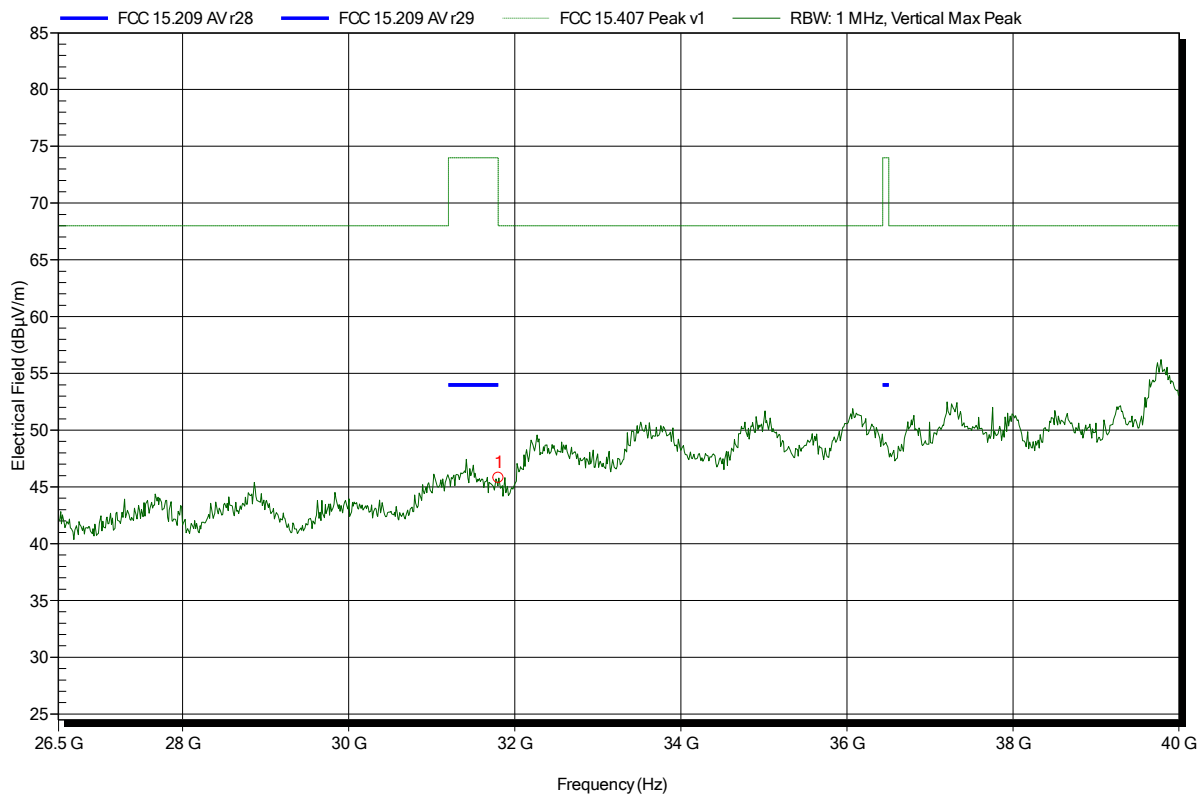
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 21.196 GHz | 46.46 dBµV/m | 74 dBµV/m | -27.54 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: 22240-25, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-16
 Note:

Index 21



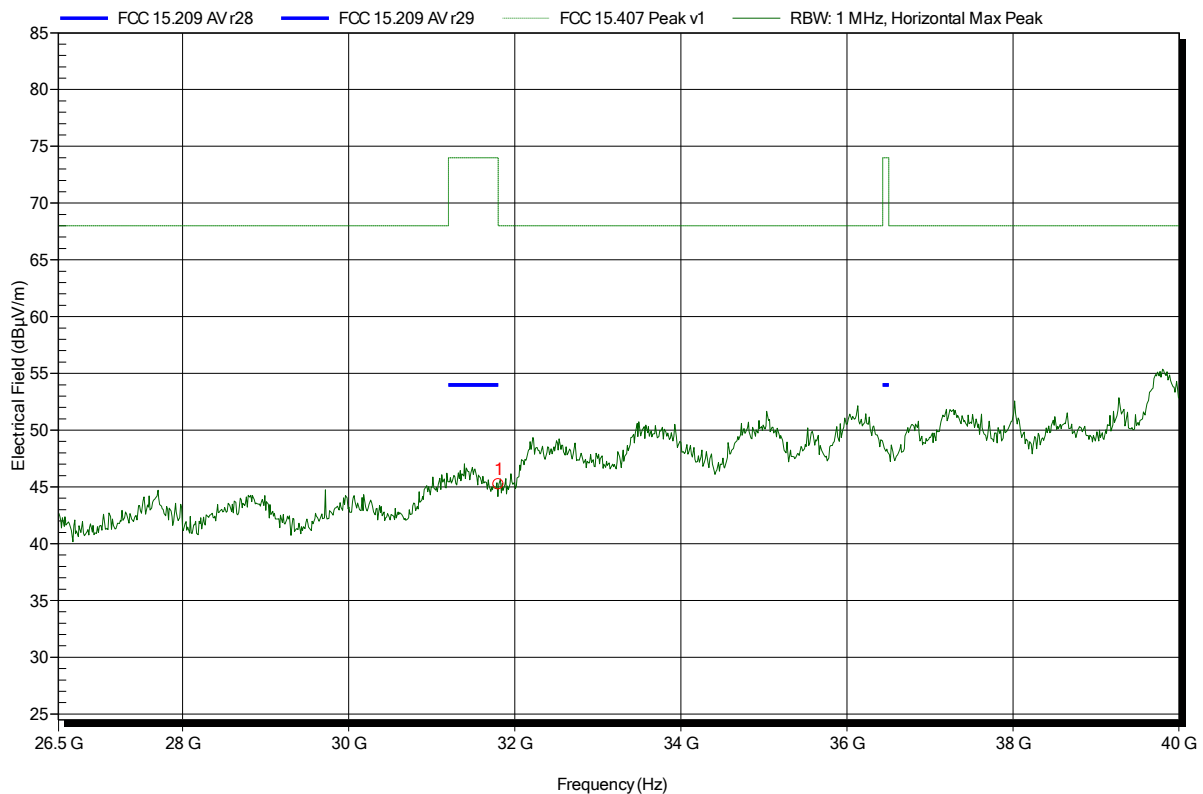
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 31.804 GHz | 45.79 dBµV/m | 68 dBµV/m | -22.21 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: 22240-25, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-16
 Note:

Index 22



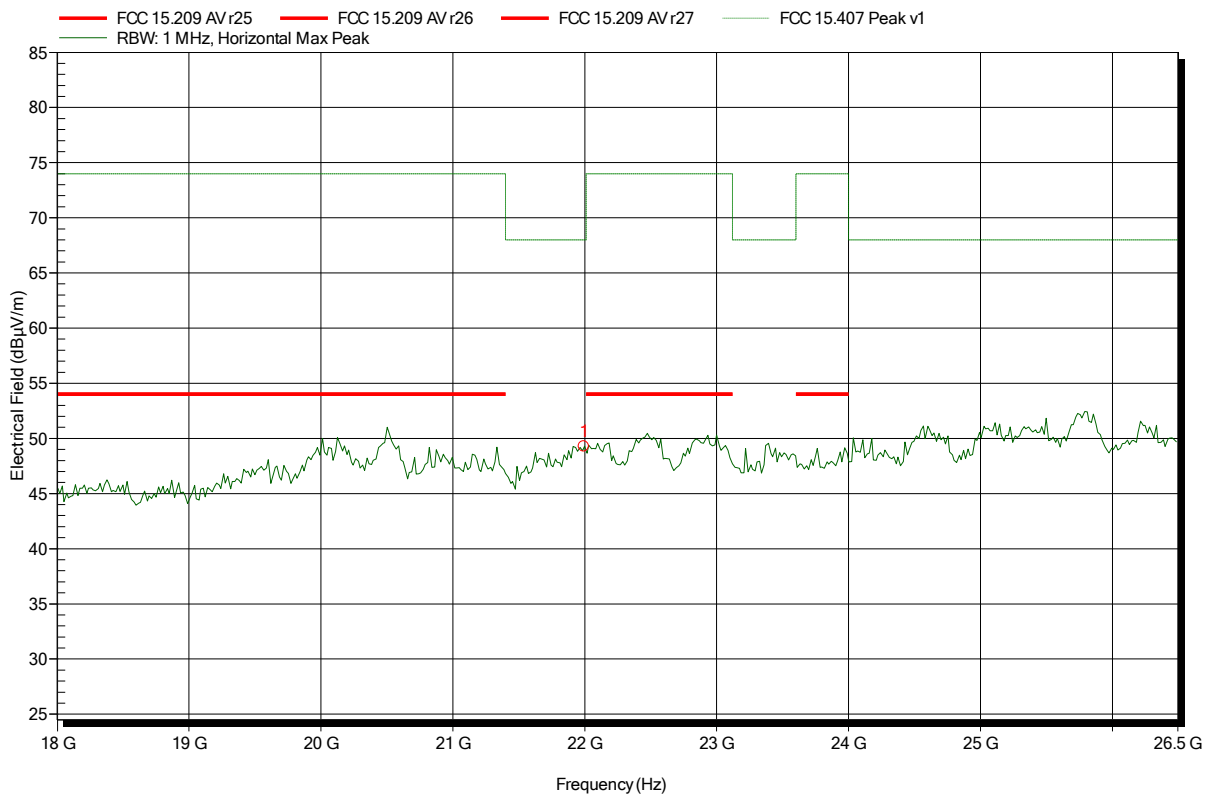
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 31.804 GHz | 45.22 dBµV/m | 68 dBµV/m | -22.78 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 18



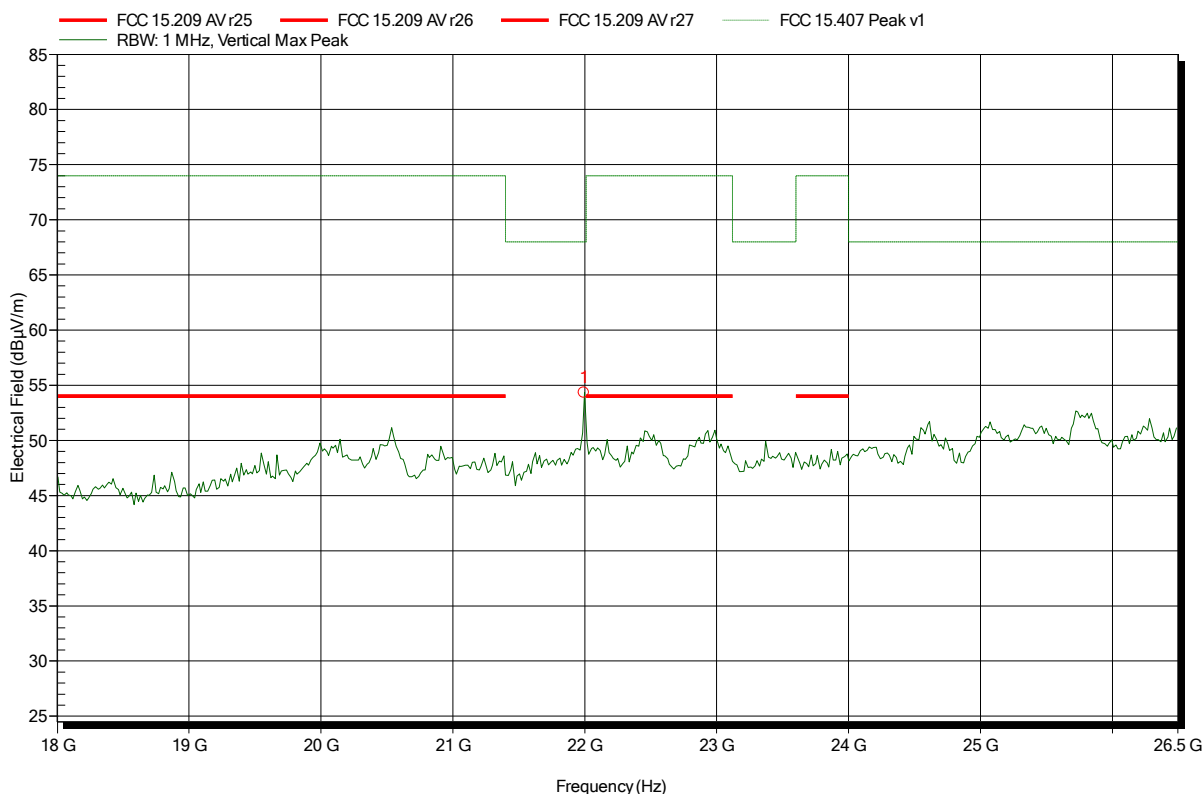
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 21.995 GHz | 49.25 dBµV/m | 68 dBµV/m | -18.75 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 19



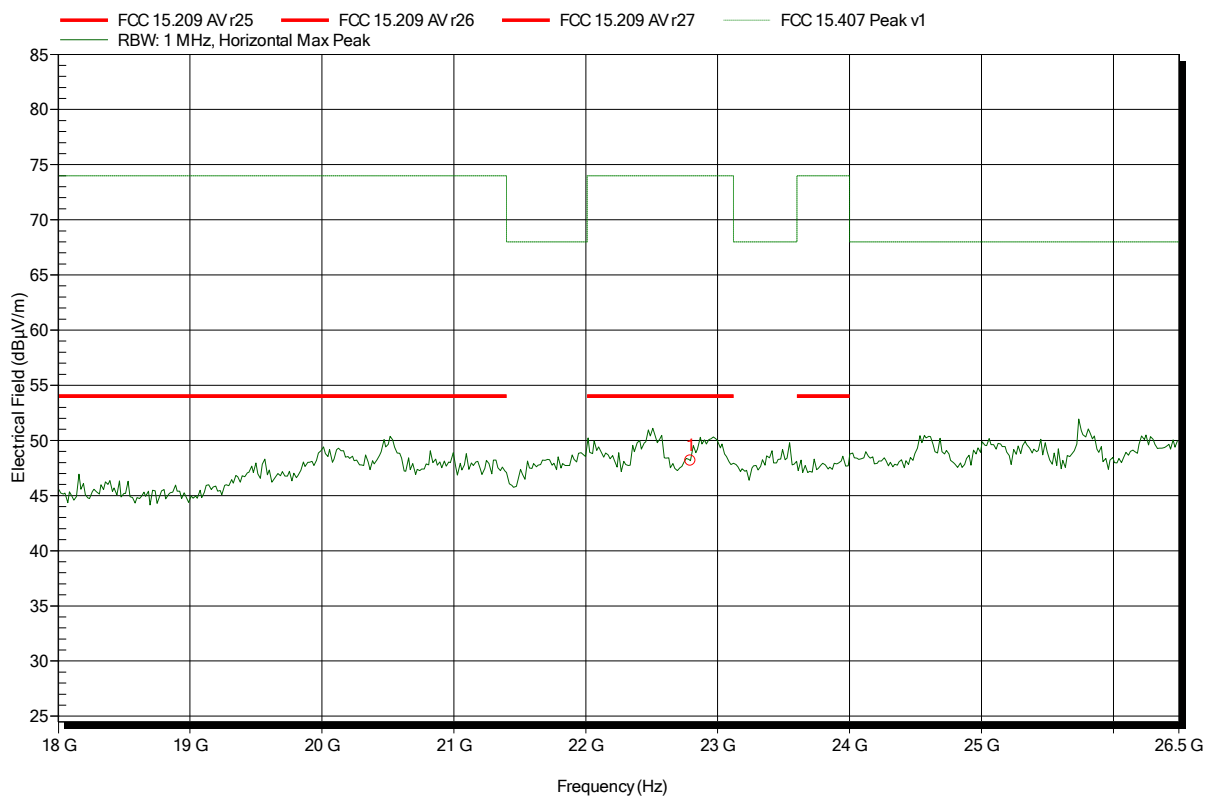
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 21.995 GHz | 54.32 dBµV/m | 68 dBµV/m | -13.68 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-16
 Note:

Index 20



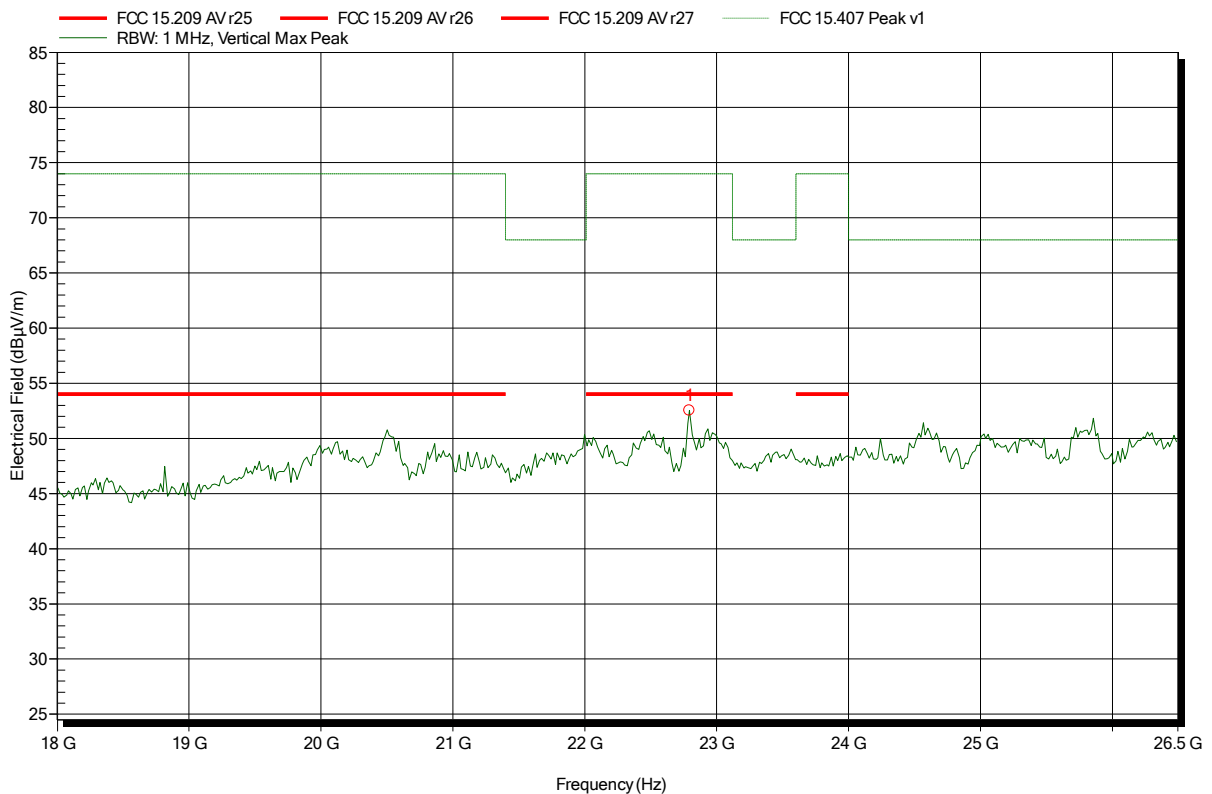
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 22.794 GHz | 48.15 dBµV/m | 74 dBµV/m | -25.85 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161-A
 Model: Test Sample #5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-16
 Note:

Index 21



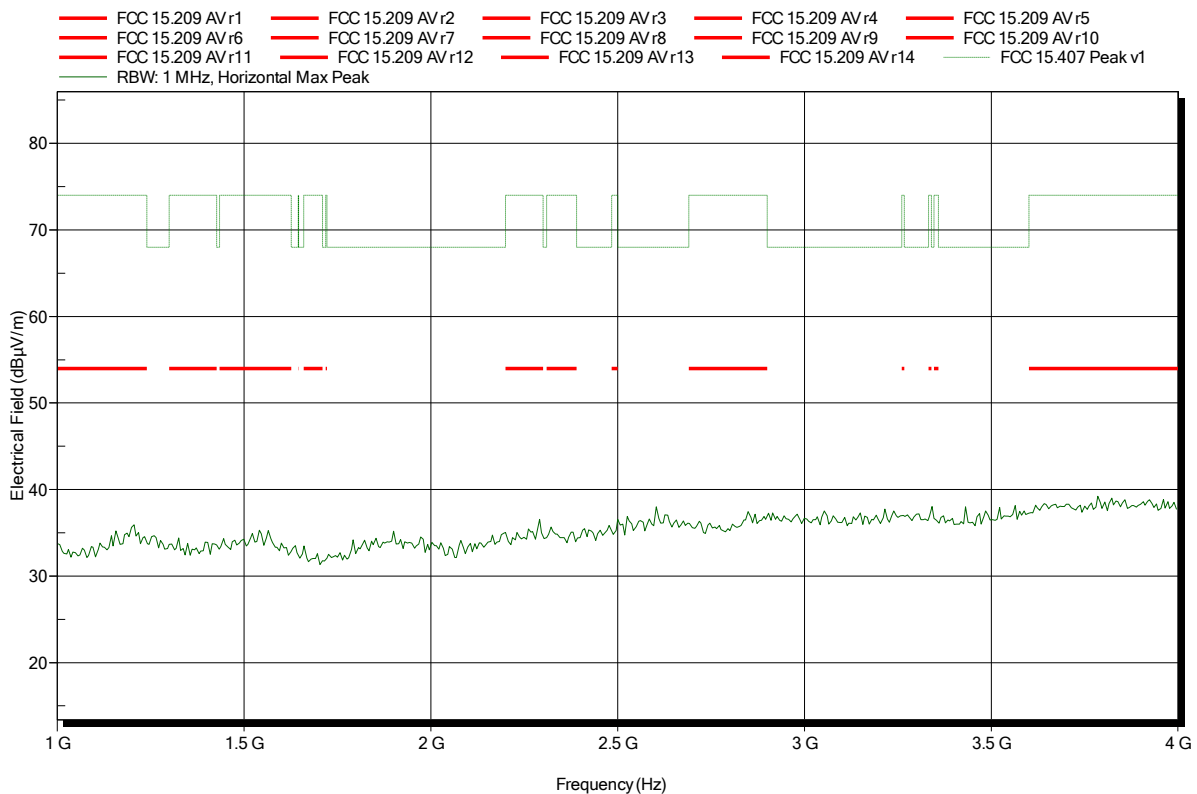
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 22.794 GHz | 52.51 dBµV/m | 74 dBµV/m | -21.49 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 20

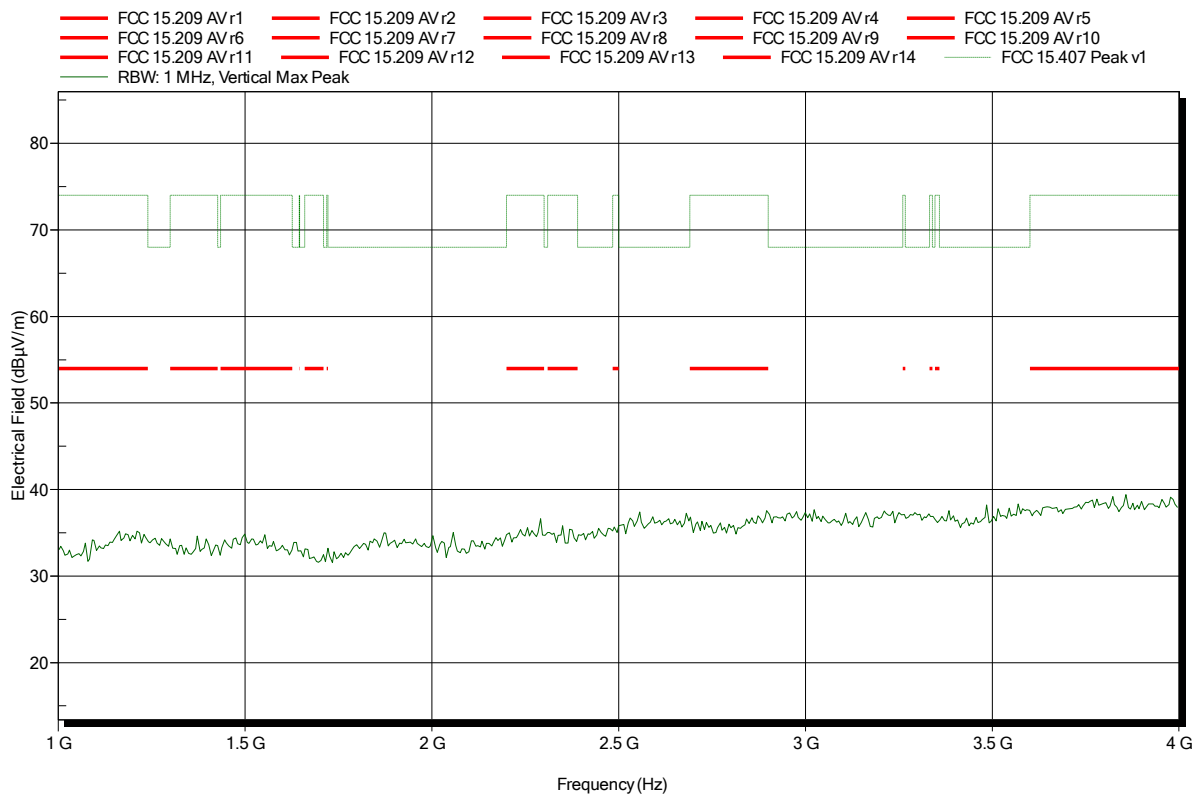


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 18

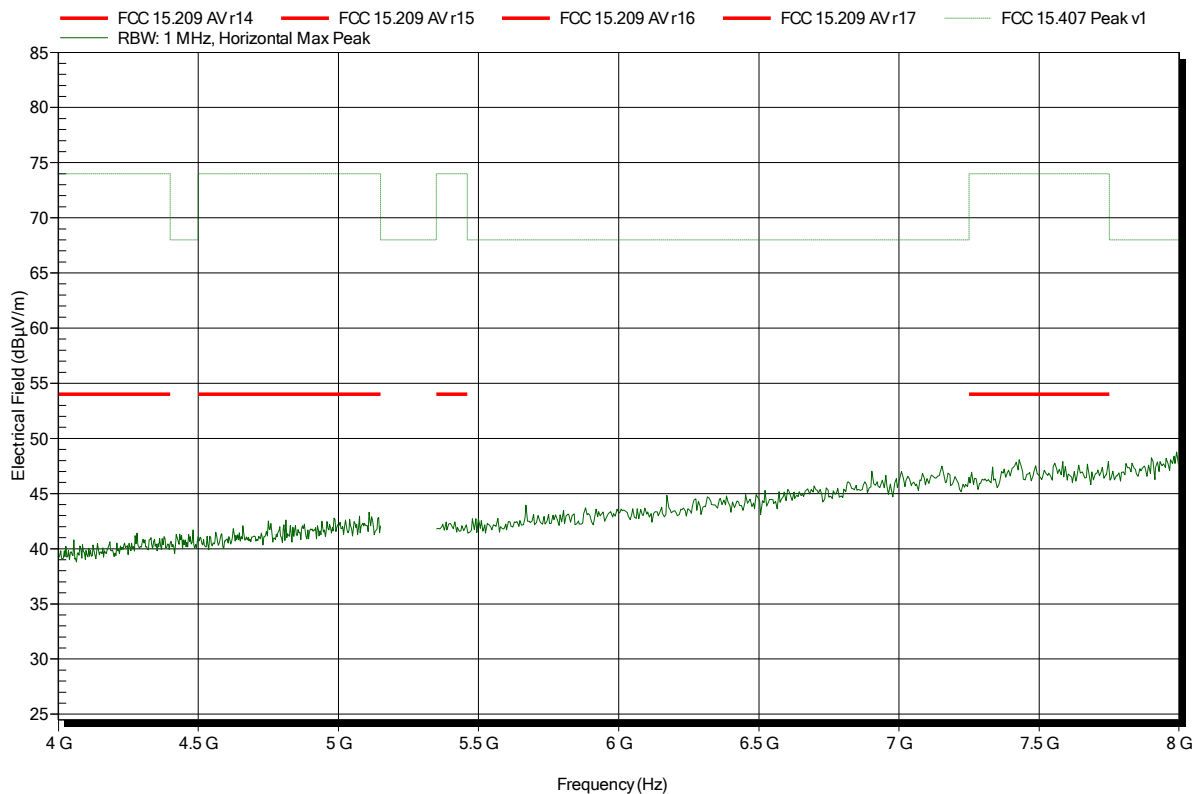


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161 |
| Model: | Test Sample #6 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 21

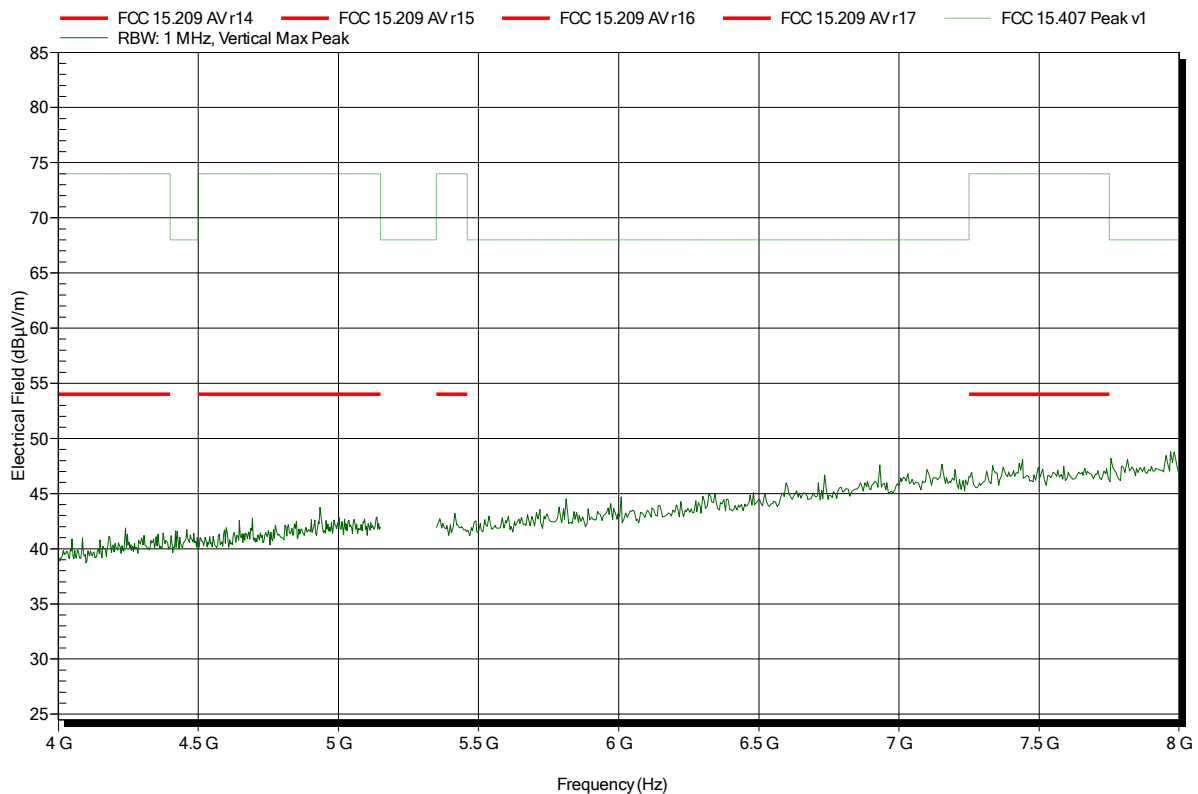


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161 |
| Model: | Test Sample #6 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 19

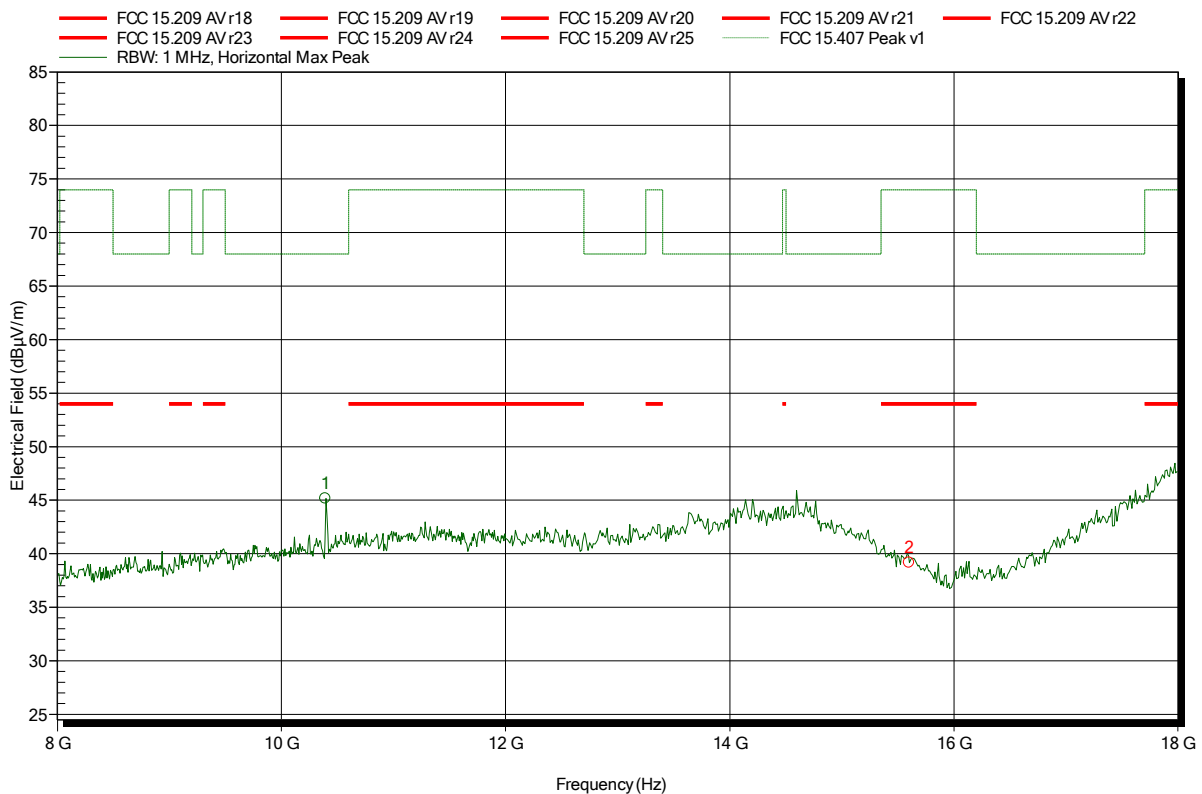


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 16



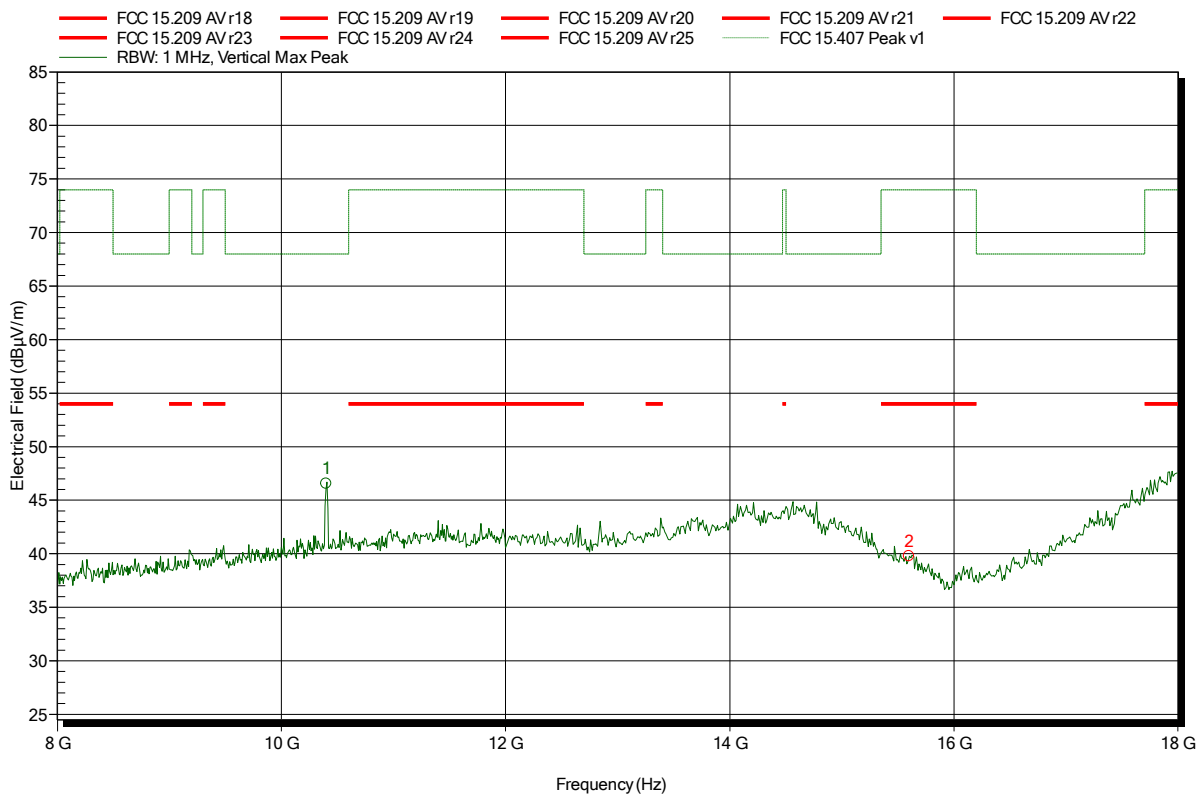
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 10.392 GHz | 45.17 dBµV/m | 68 dBµV/m | -22.83 dB | Pass |
| 15.6 GHz | 39.18 dBµV/m | 74 dBµV/m | -34.82 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 17



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 10.4 GHz | 46.53 dBµV/m | 68 dBµV/m | -21.47 dB | Pass |
| 15.6 GHz | 39.78 dBµV/m | 74 dBµV/m | -34.22 dB | Pass |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

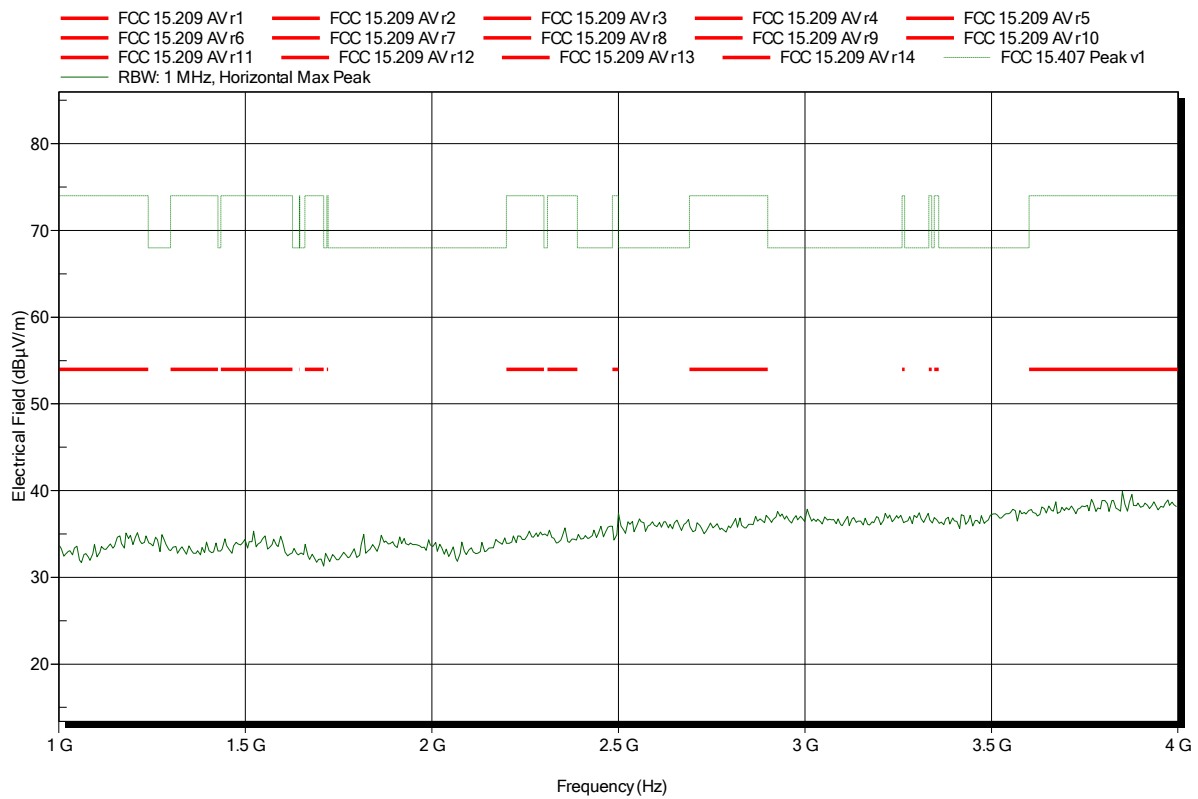
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 22

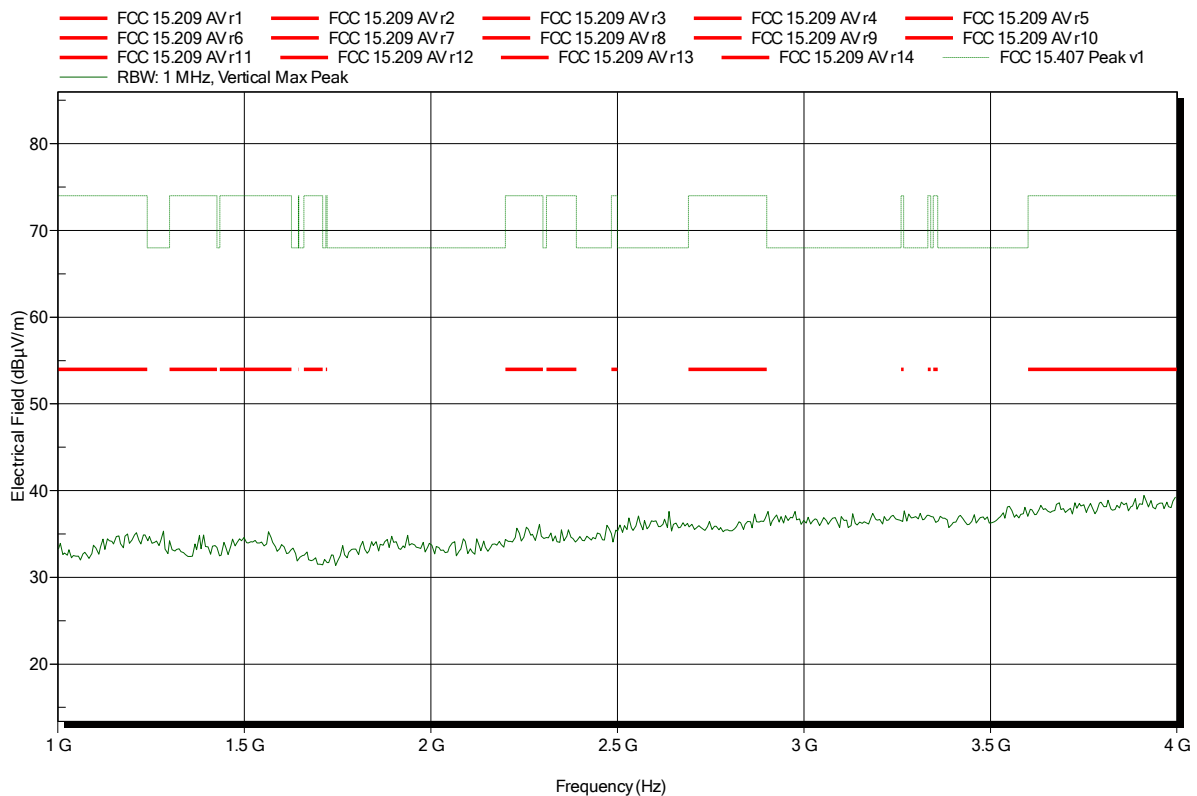


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 24

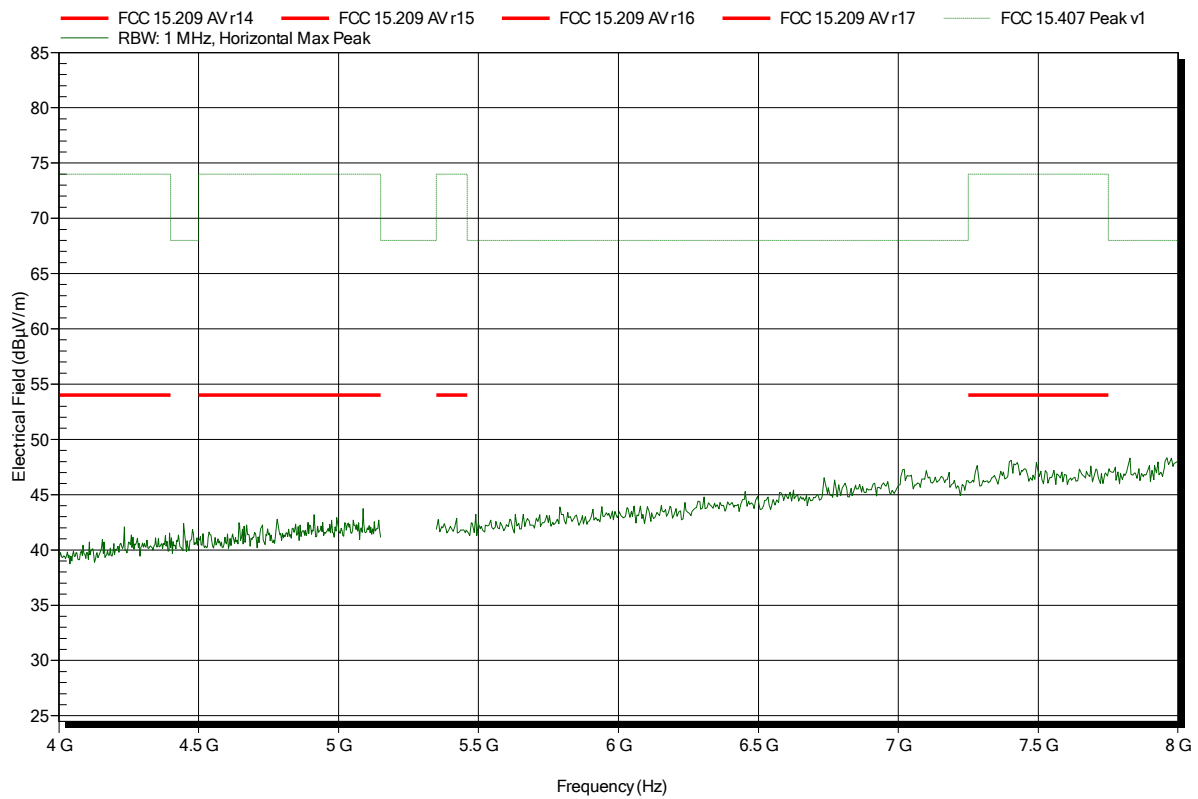


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161 |
| Model: | Test Sample #6 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 23

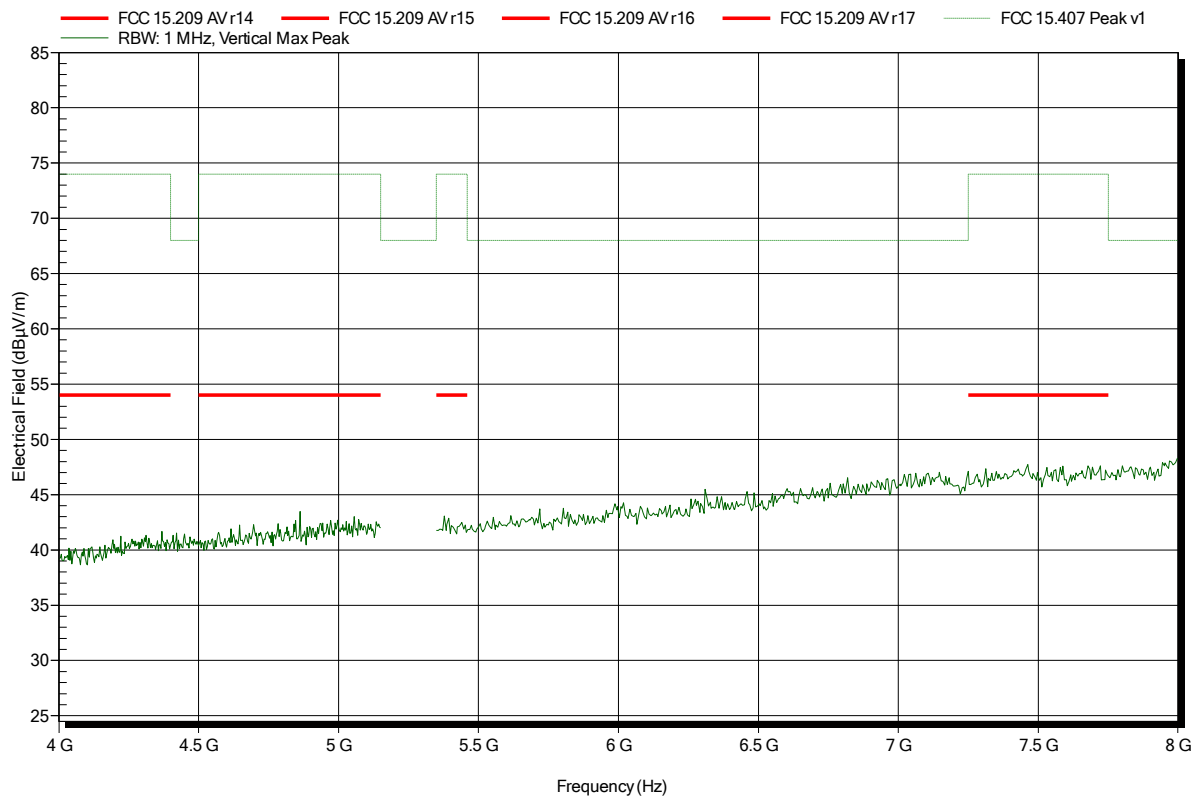


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|---|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161 |
| Model: | Test Sample #6 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 25

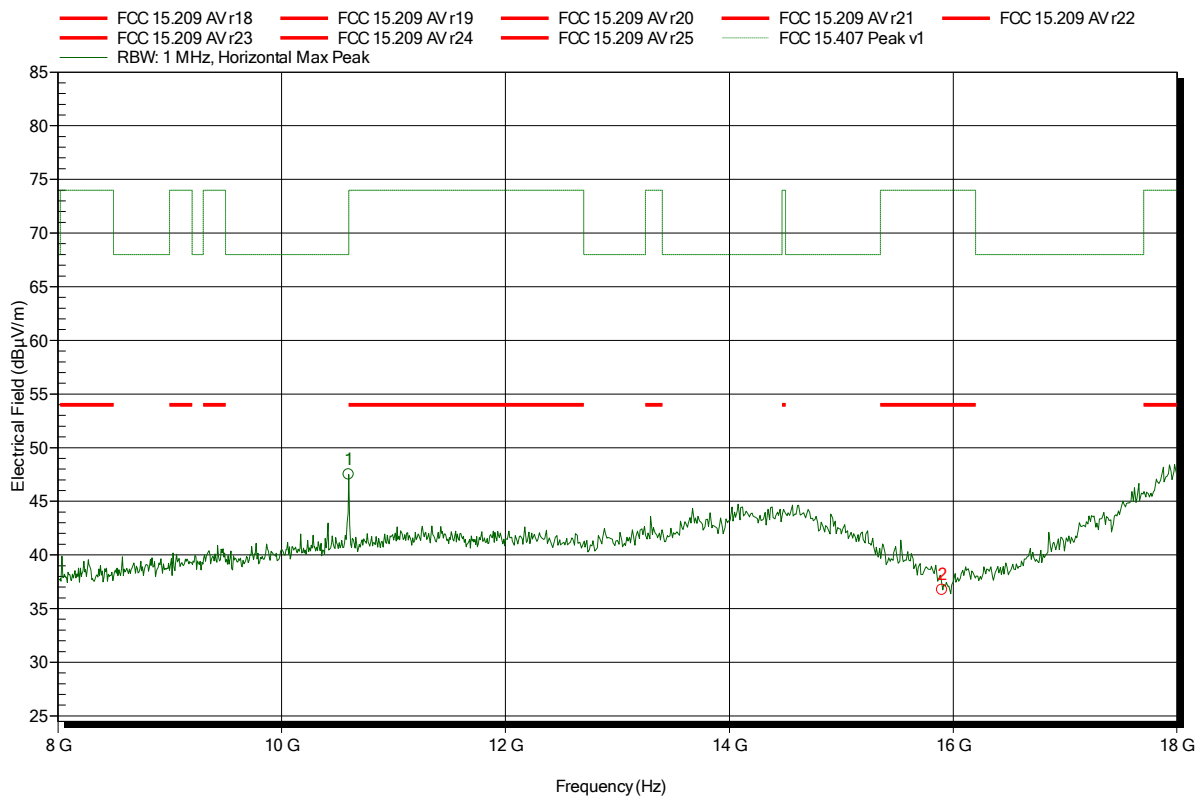


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 27



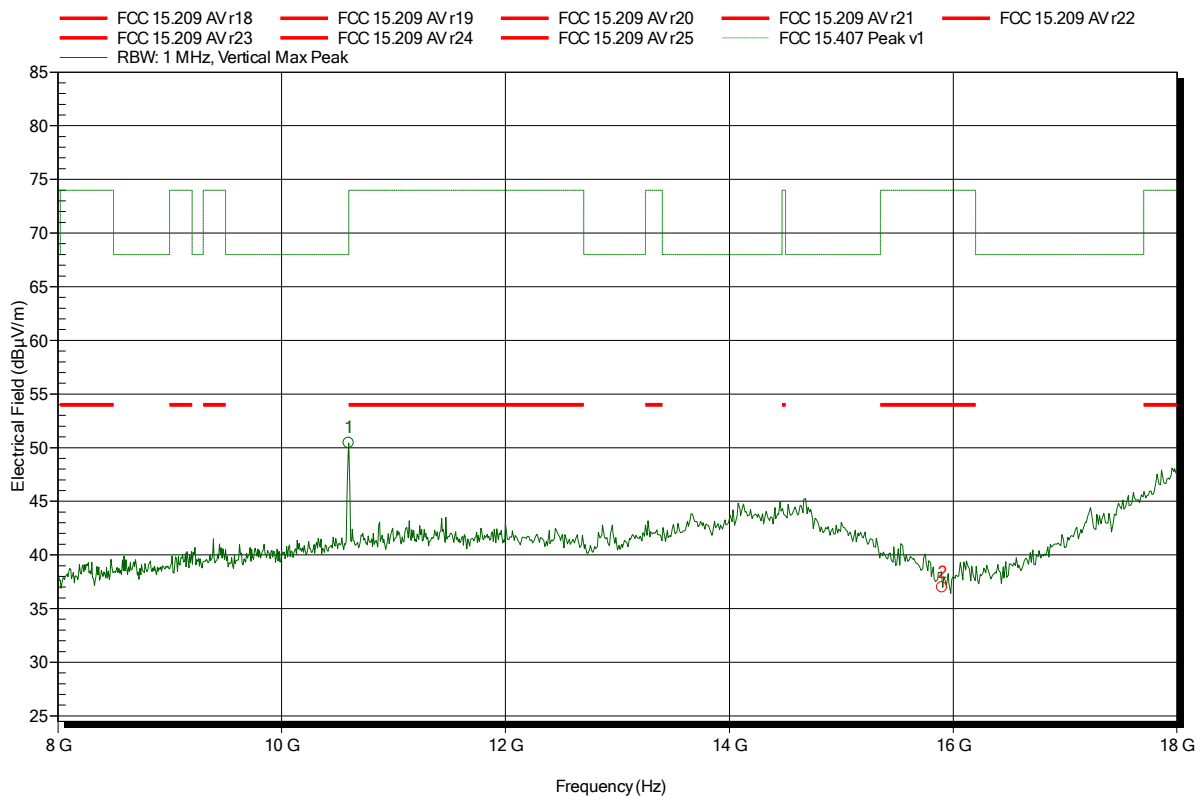
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 10.6 GHz | 47.51 dBµV/m | 68 dBµV/m | -20.49 dB | Pass |
| 15.9 GHz | 36.73 dBµV/m | 74 dBµV/m | -37.27 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 26



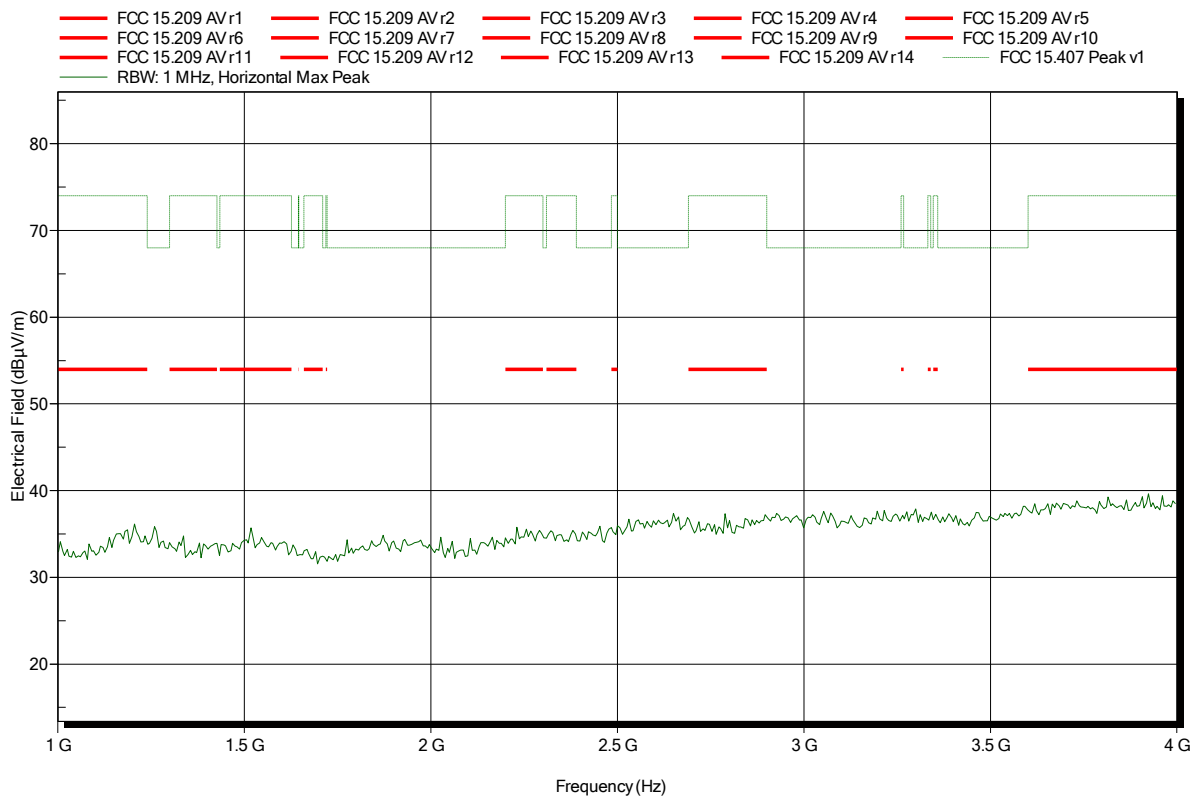
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 10.6 GHz | 50.44 dBµV/m | 68 dBµV/m | -17.56 dB | Pass |
| 15.9 GHz | 36.98 dBµV/m | 74 dBµV/m | -37.02 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 26

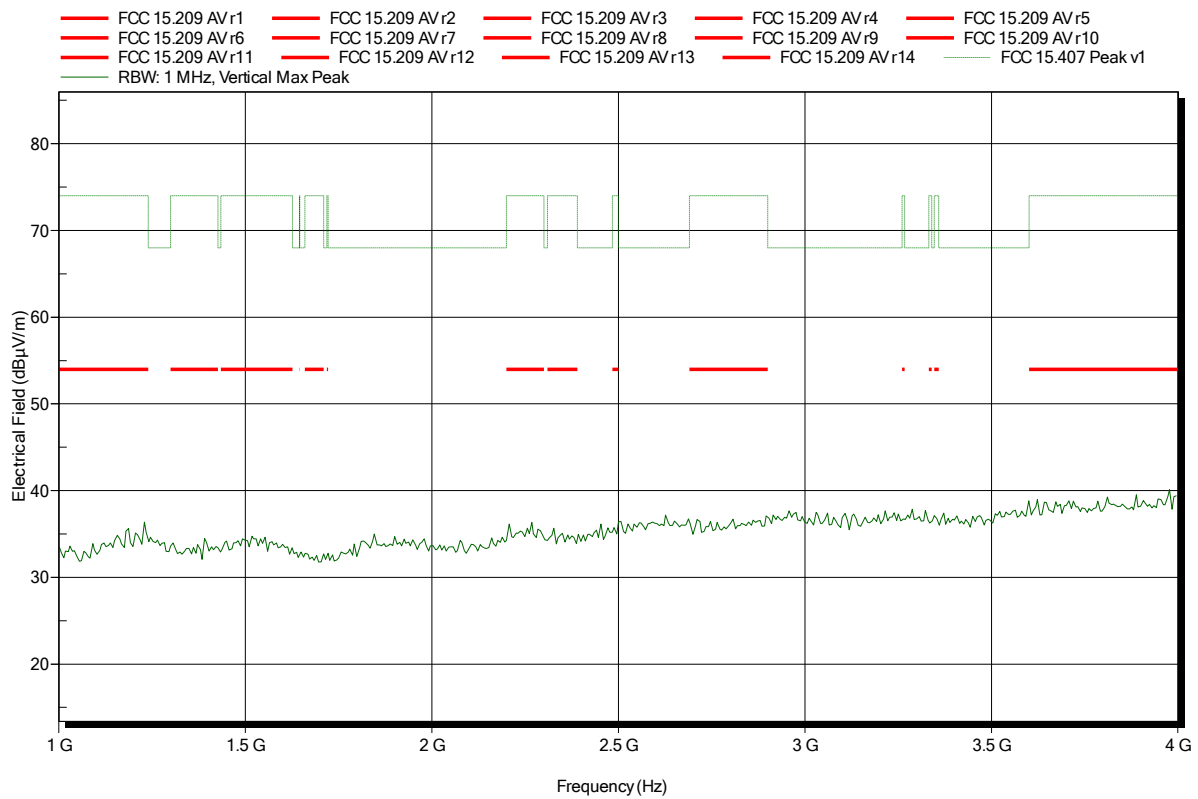


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 24

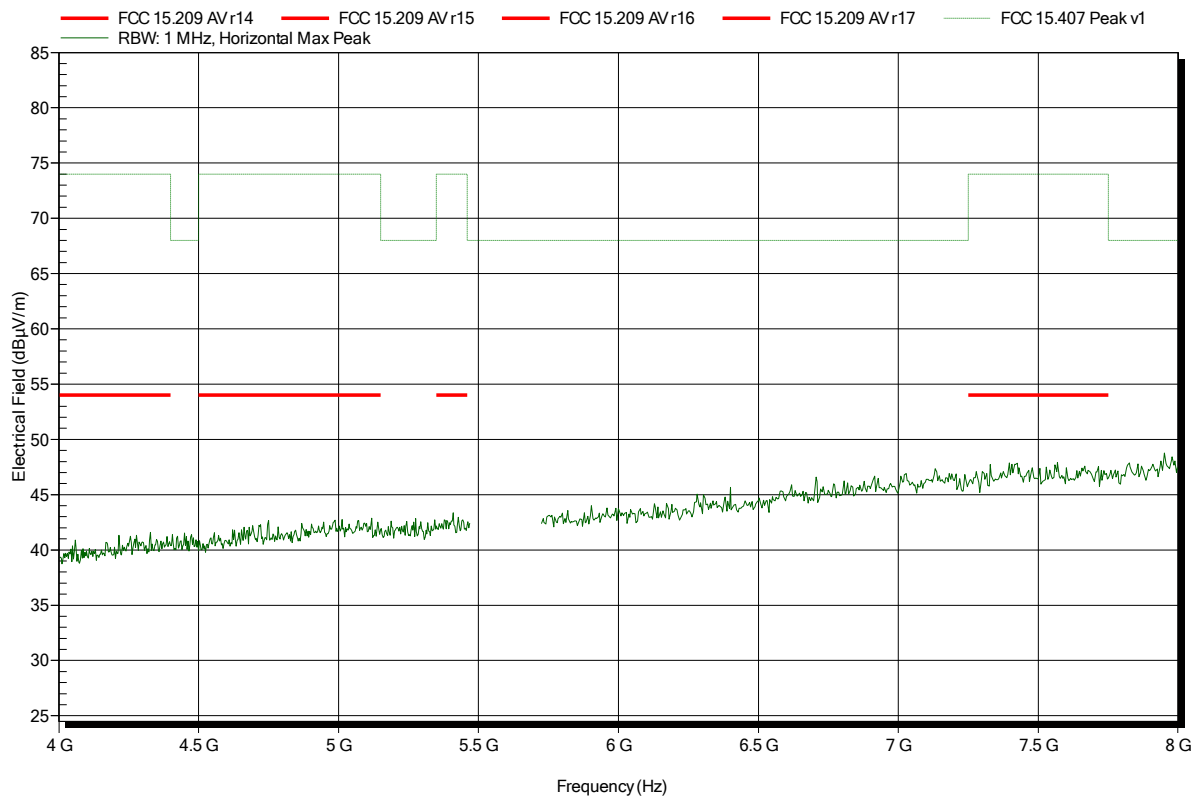


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|--|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161 |
| Model: | Test Sample #6 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 27

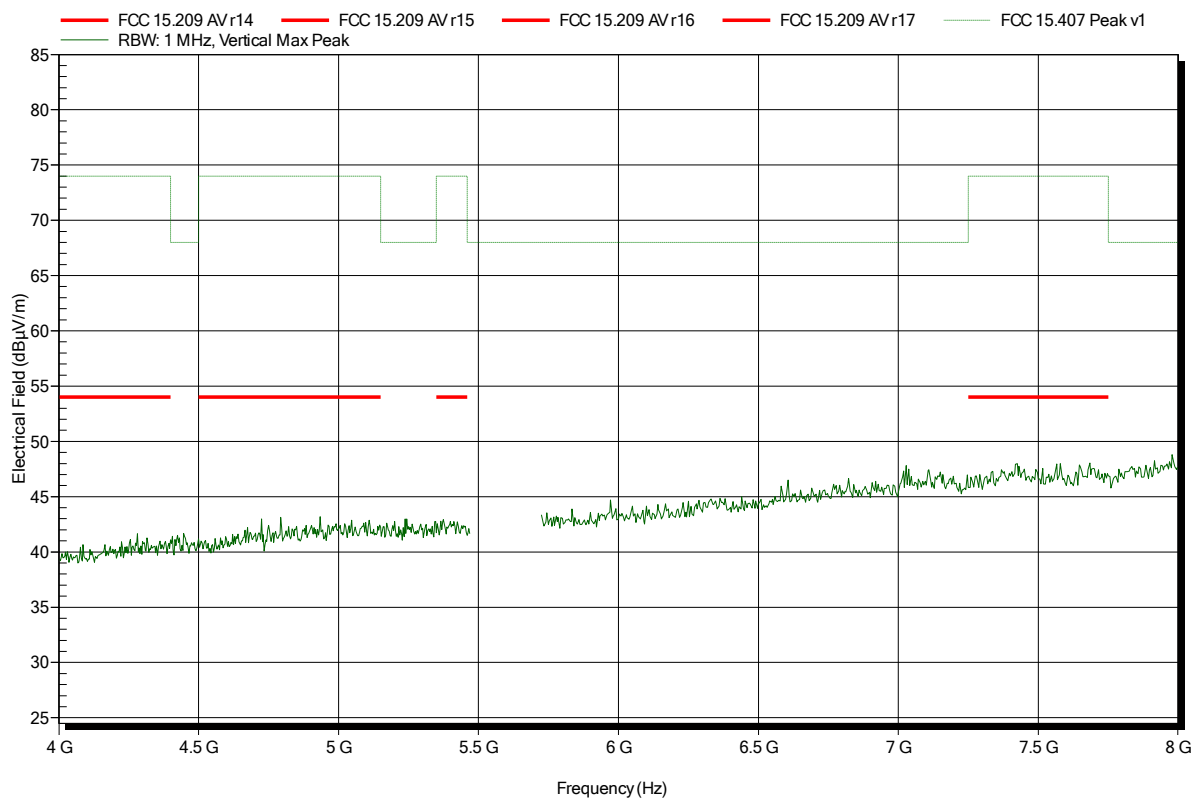


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|--|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161 |
| Model: | Test Sample #6 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 25

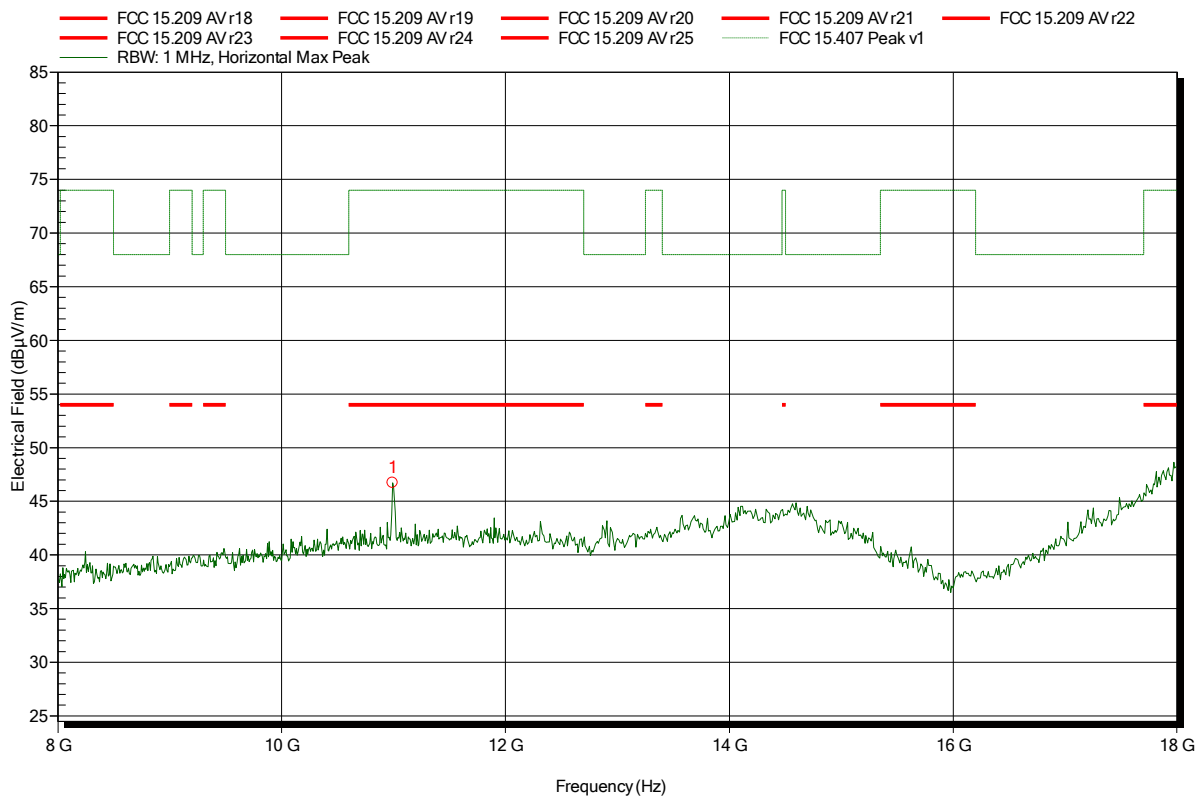


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 22



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 10.992 GHz | 46.73 dBµV/m | 74 dBµV/m | -27.27 dB | Pass |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

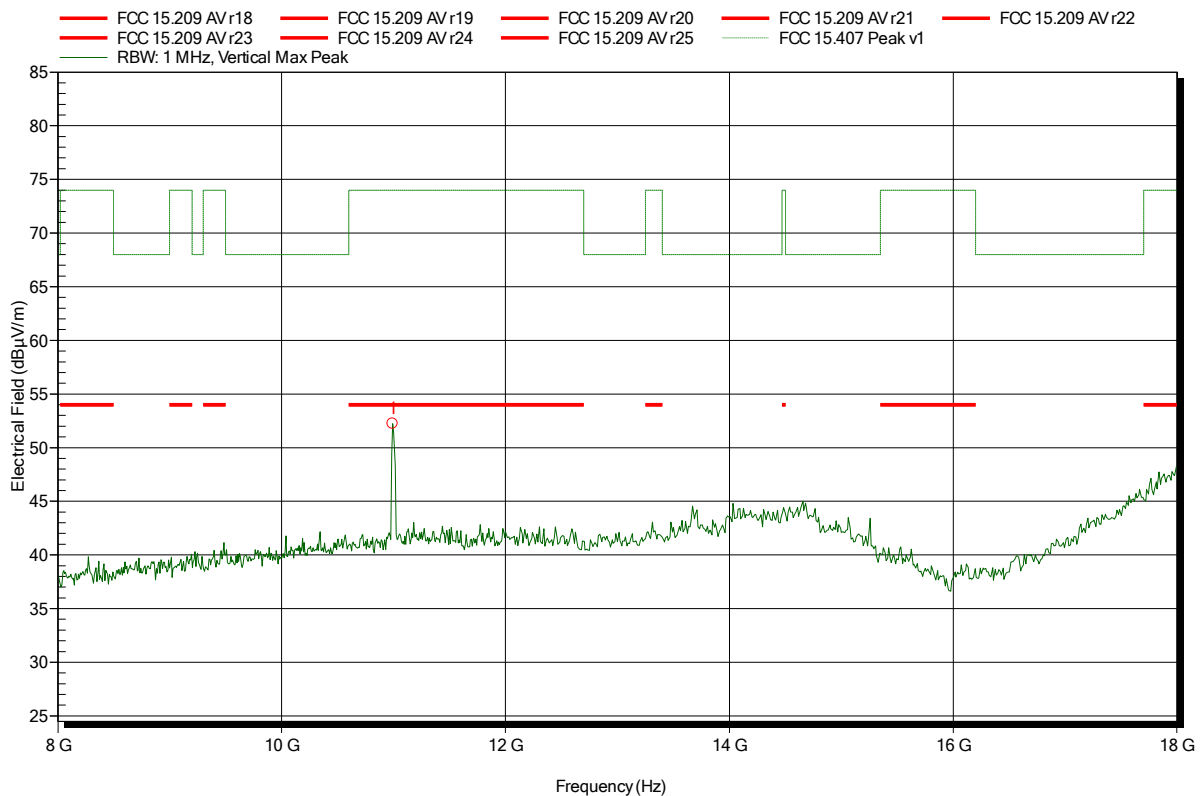
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 23



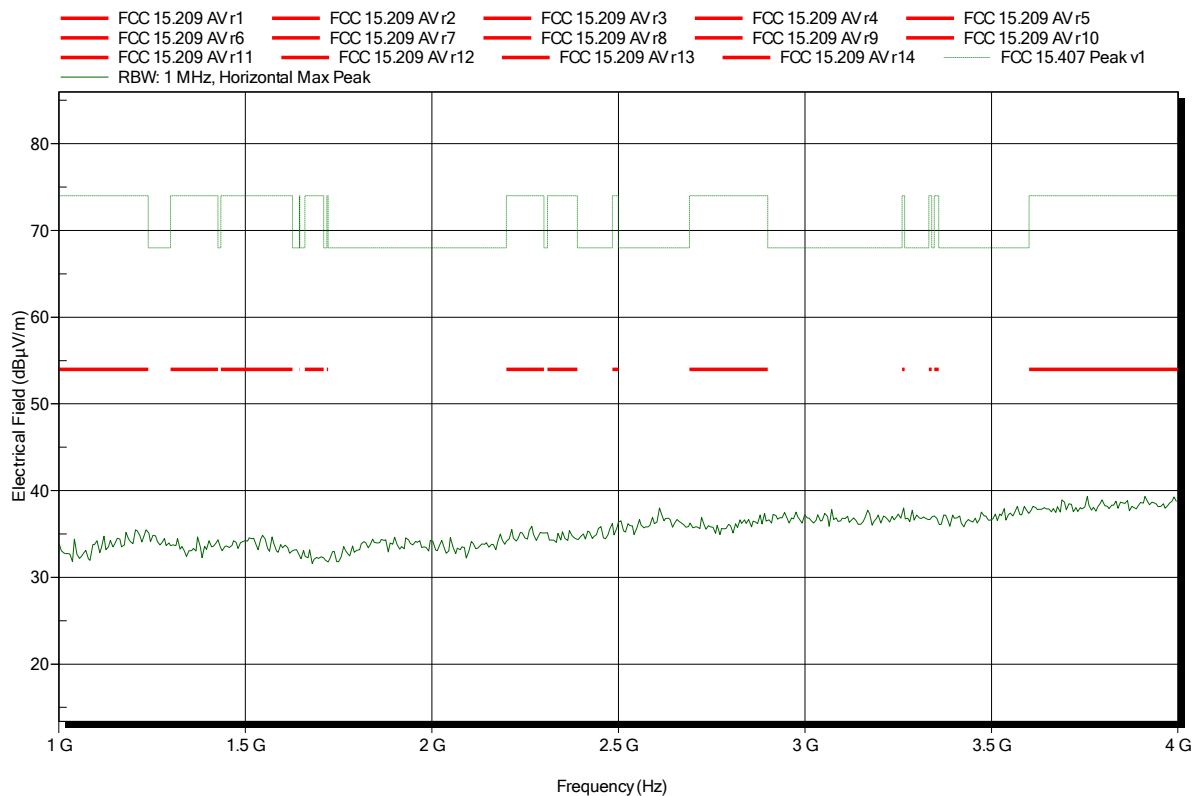
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 10.992 GHz | 52.23 dBµV/m | 74 dBµV/m | -21.77 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 28

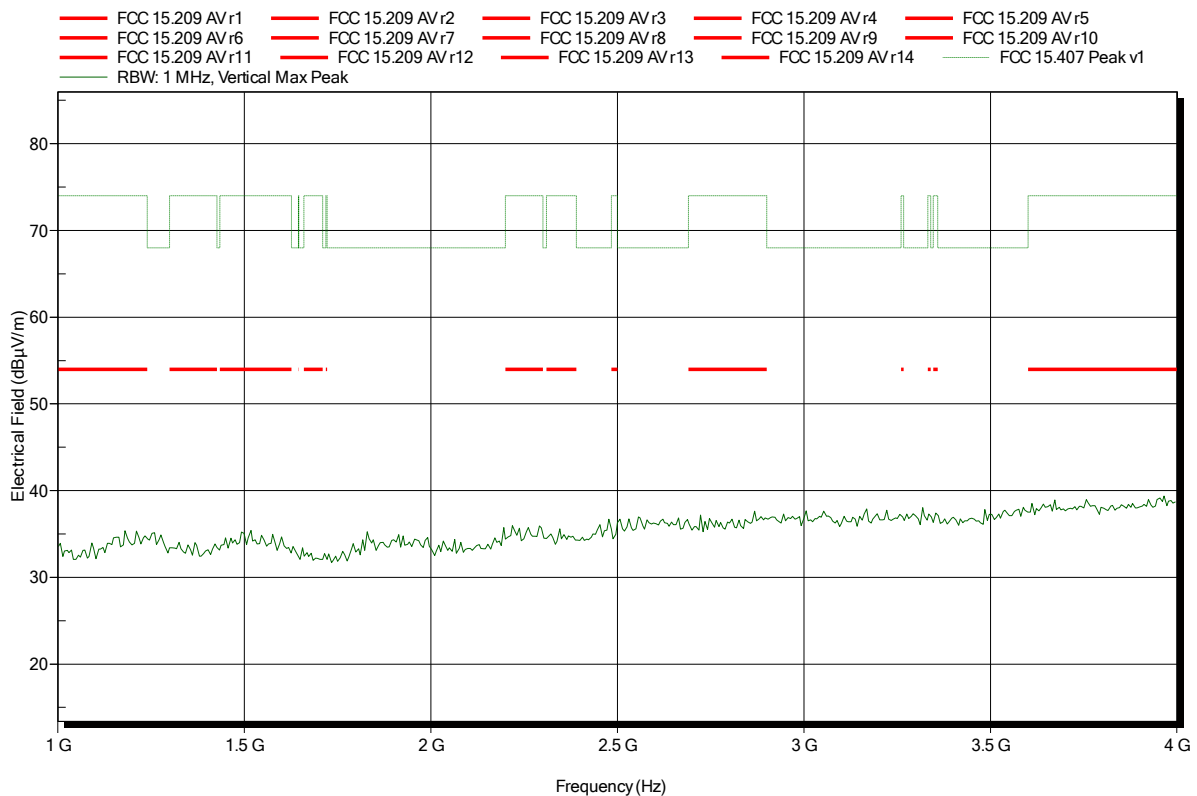


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 30

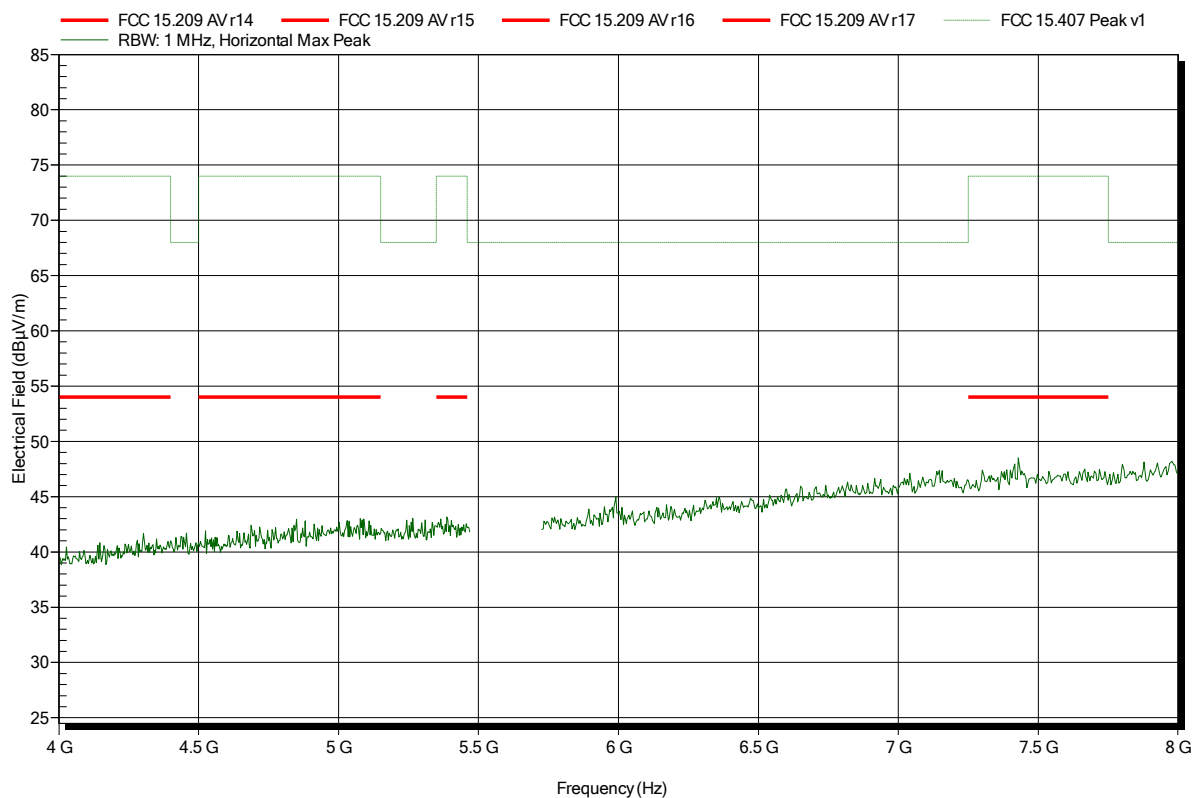


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|--|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161 |
| Model: | Test Sample #6 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Horizontal |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 29

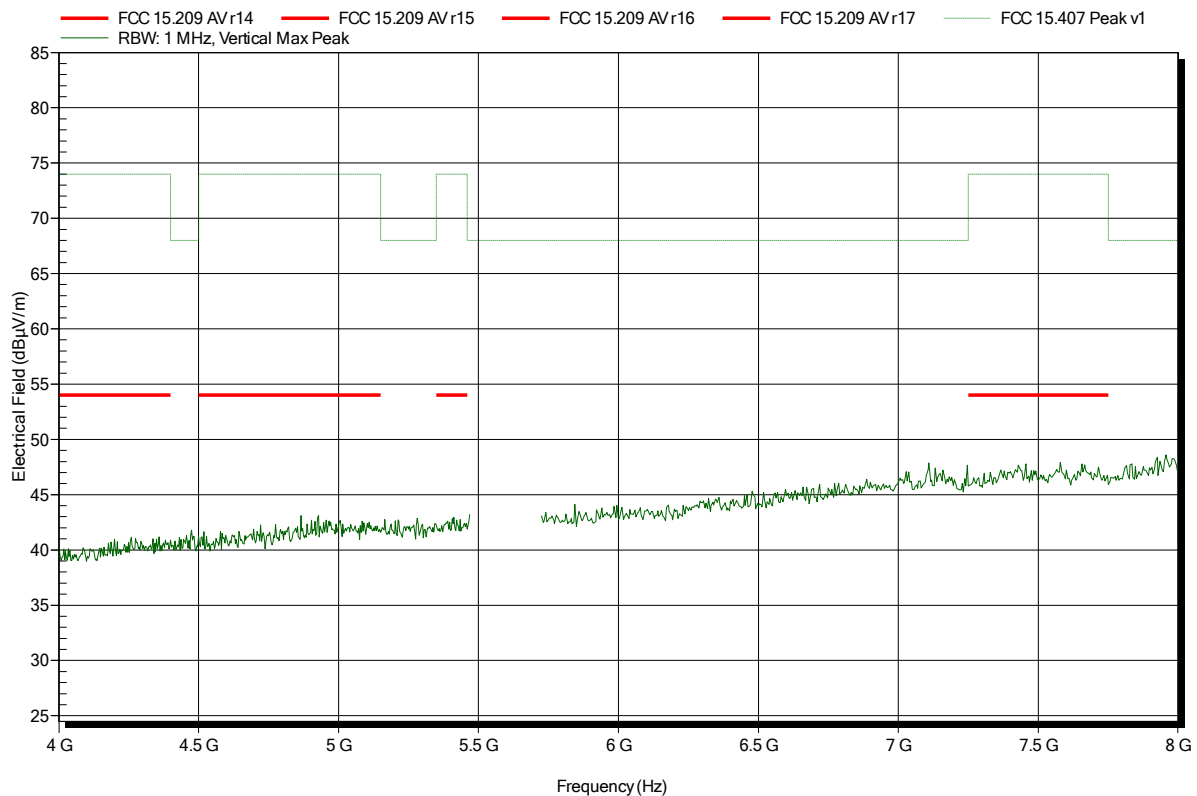


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

| | |
|-----------------------|--|
| Applicant: | u-blox Berlin GmbH |
| EUT Name: | ELLA-W161 |
| Model: | Test Sample #6 |
| Test Site: | Eurofins Product Service GmbH |
| Operator: | Mr. Jahn |
| Test Conditions: | Tnom: 25°C, Vnom: 3.3 V DC |
| Antenna: | Schwarzbeck BBHA 9120D, Vertical |
| Measurement distance: | 3 m |
| Mode: | TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm |
| Test Date: | 2015-11-12 |
| Note: | |

Index 31

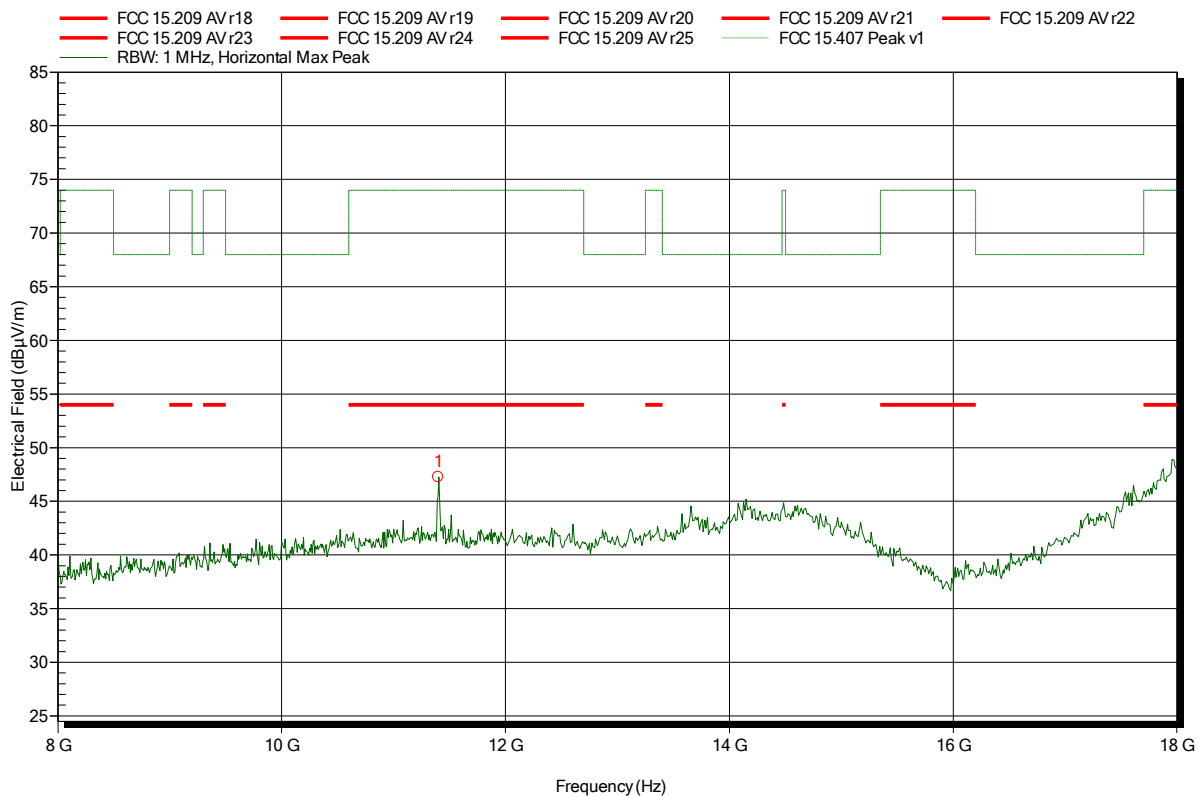


Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 33



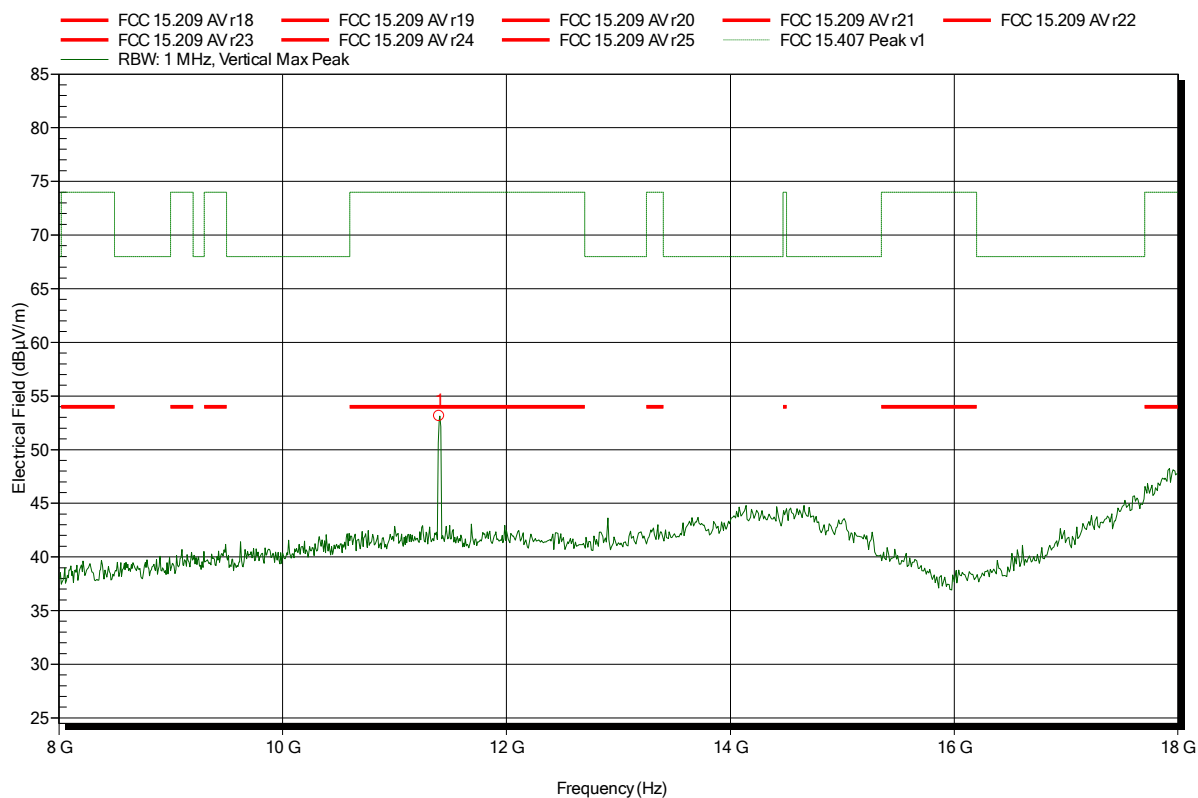
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 11.4 GHz | 47.26 dBµV/m | 74 dBµV/m | -26.74 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 32



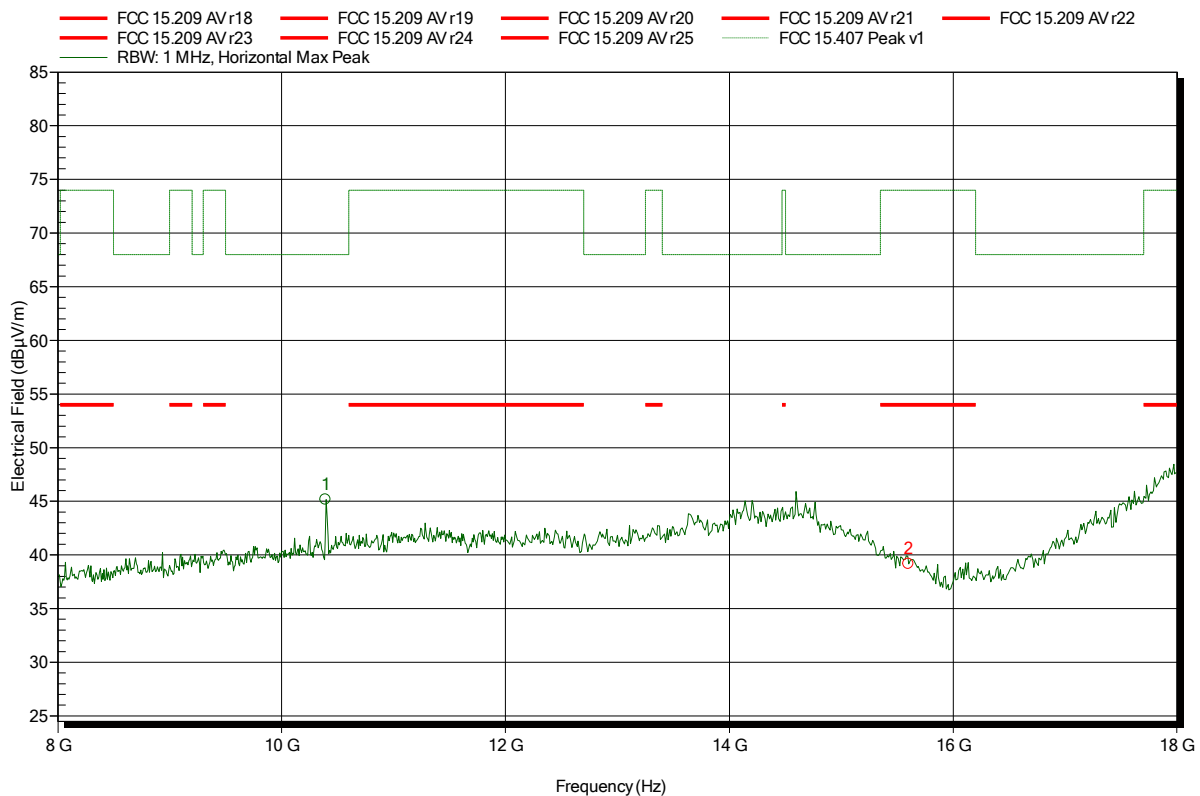
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 11.4 GHz | 53.14 dBµV/m | 74 dBµV/m | -20.86 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 16



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 10.392 GHz | 45.17 dBµV/m | 68 dBµV/m | -22.83 dB | Pass |
| 15.6 GHz | 39.18 dBµV/m | 74 dBµV/m | -34.82 dB | Pass |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

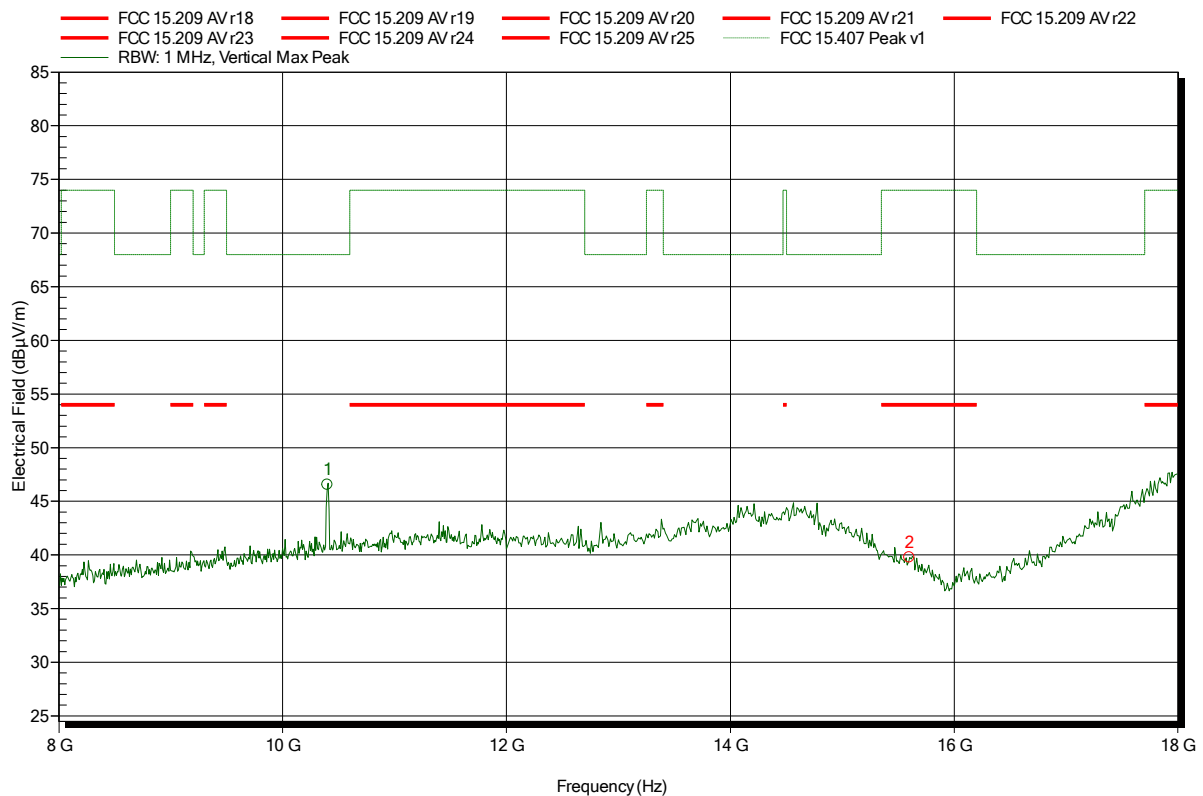
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 17



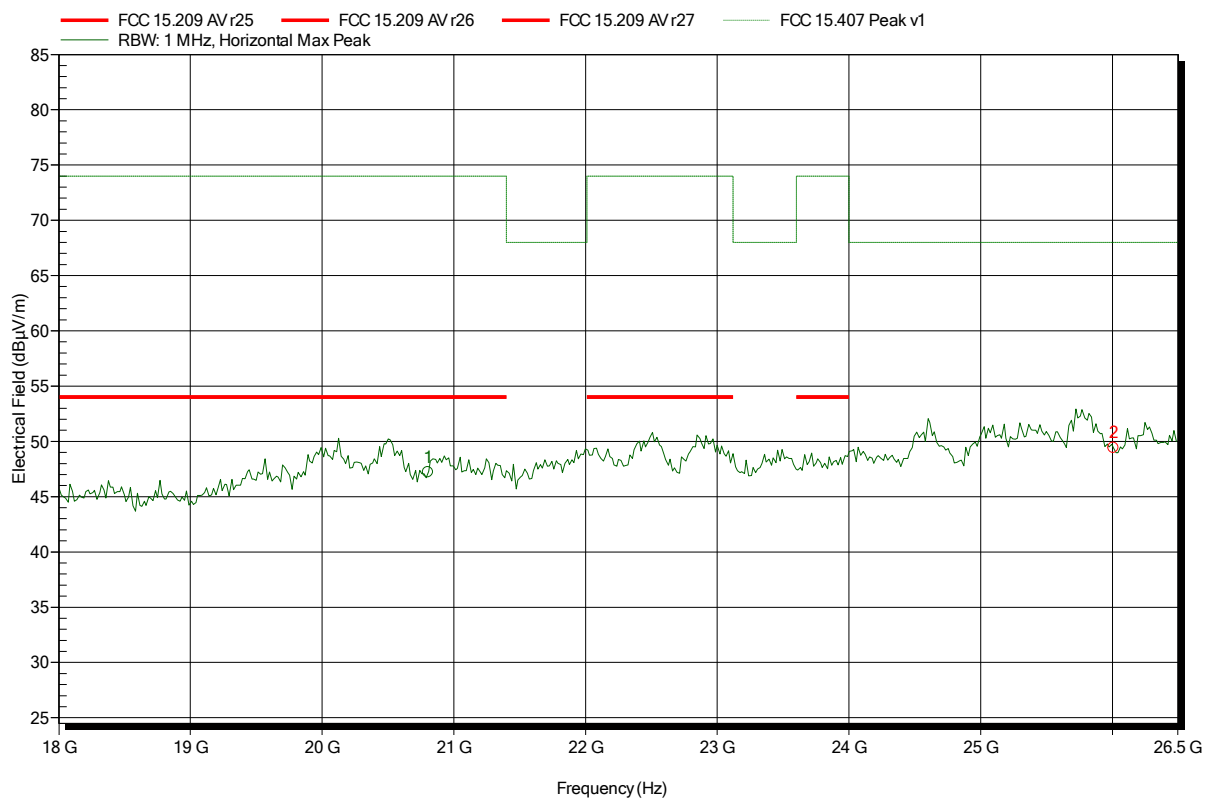
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 10.4 GHz | 46.53 dBµV/m | 68 dBµV/m | -21.47 dB | Pass |
| 15.6 GHz | 39.78 dBµV/m | 74 dBµV/m | -34.22 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 23



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 20.805 GHz | 47.21 dBµV/m | 74 dBµV/m | -26.79 dB | Pass |
| 26.007 GHz | 49.41 dBµV/m | 68 dBµV/m | -18.59 dB | Pass |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

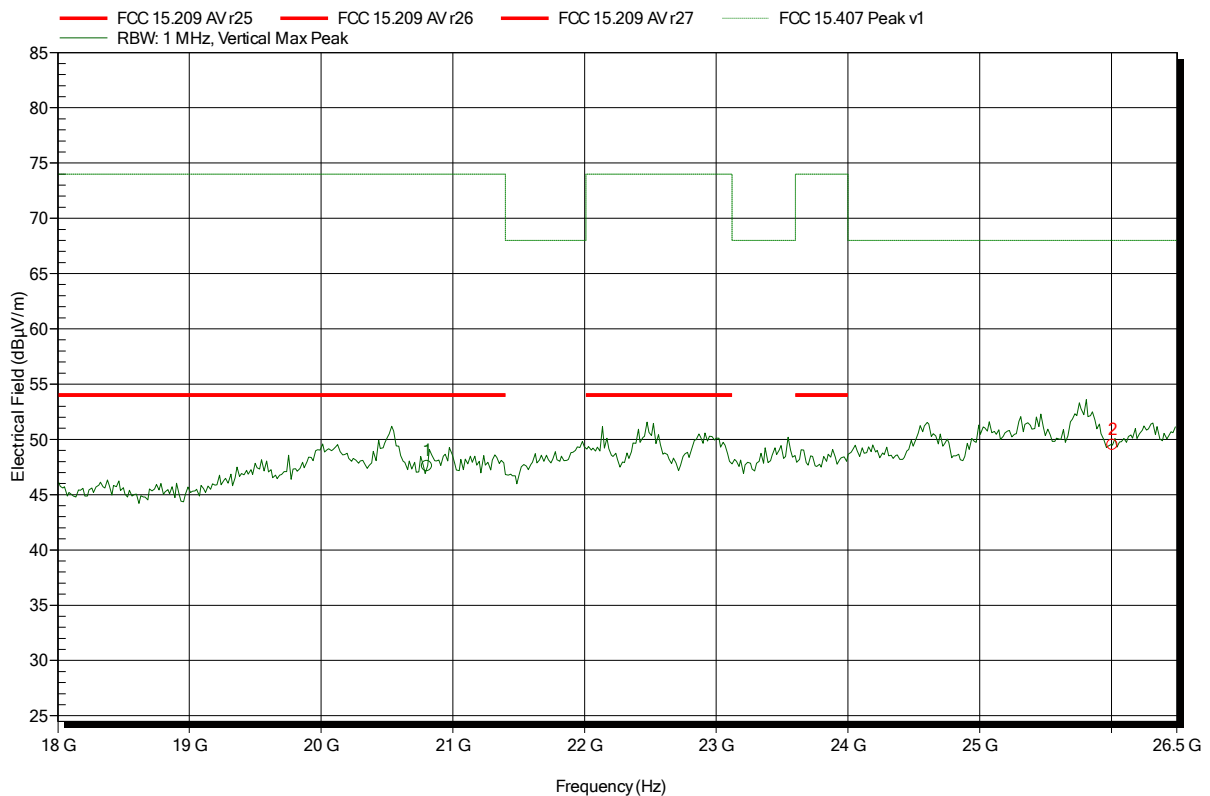
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 22



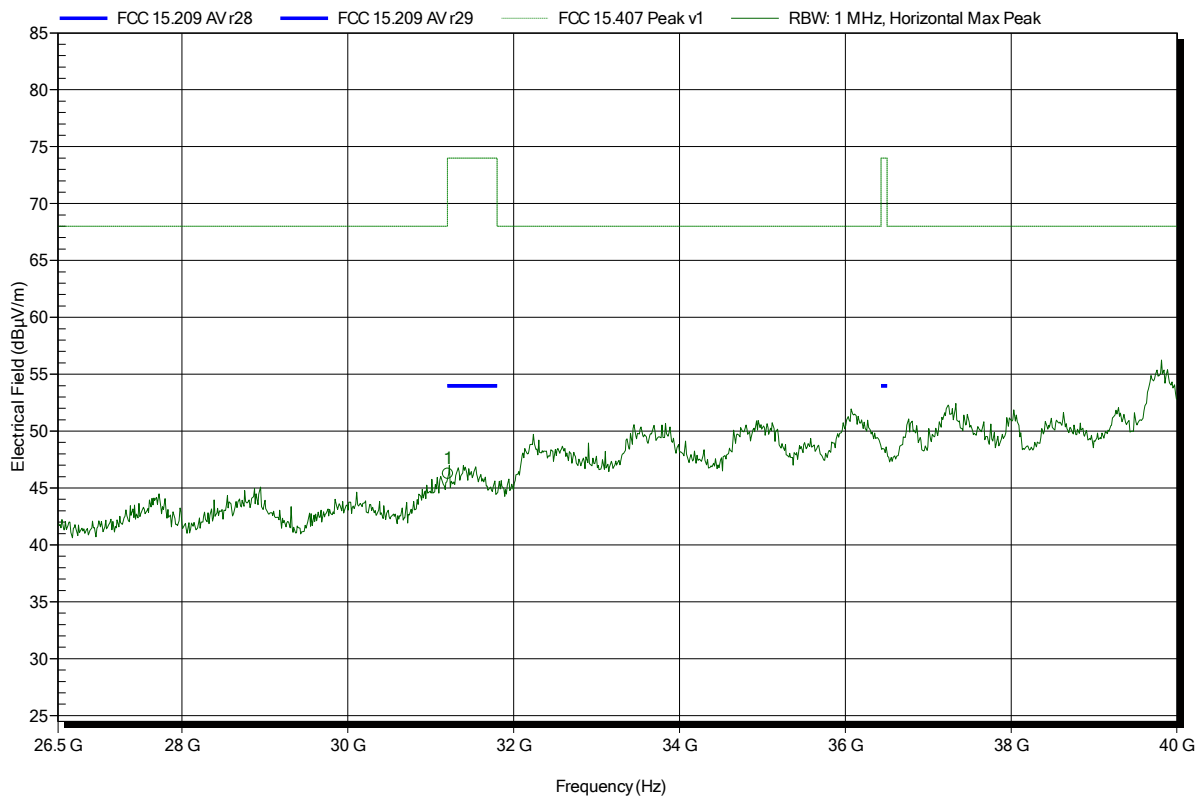
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 20.805 GHz | 47.57 dBµV/m | 74 dBµV/m | -26.43 dB | Pass |
| 26.007 GHz | 49.49 dBµV/m | 68 dBµV/m | -18.51 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: 22240-25, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-16
 Note:

Index 24



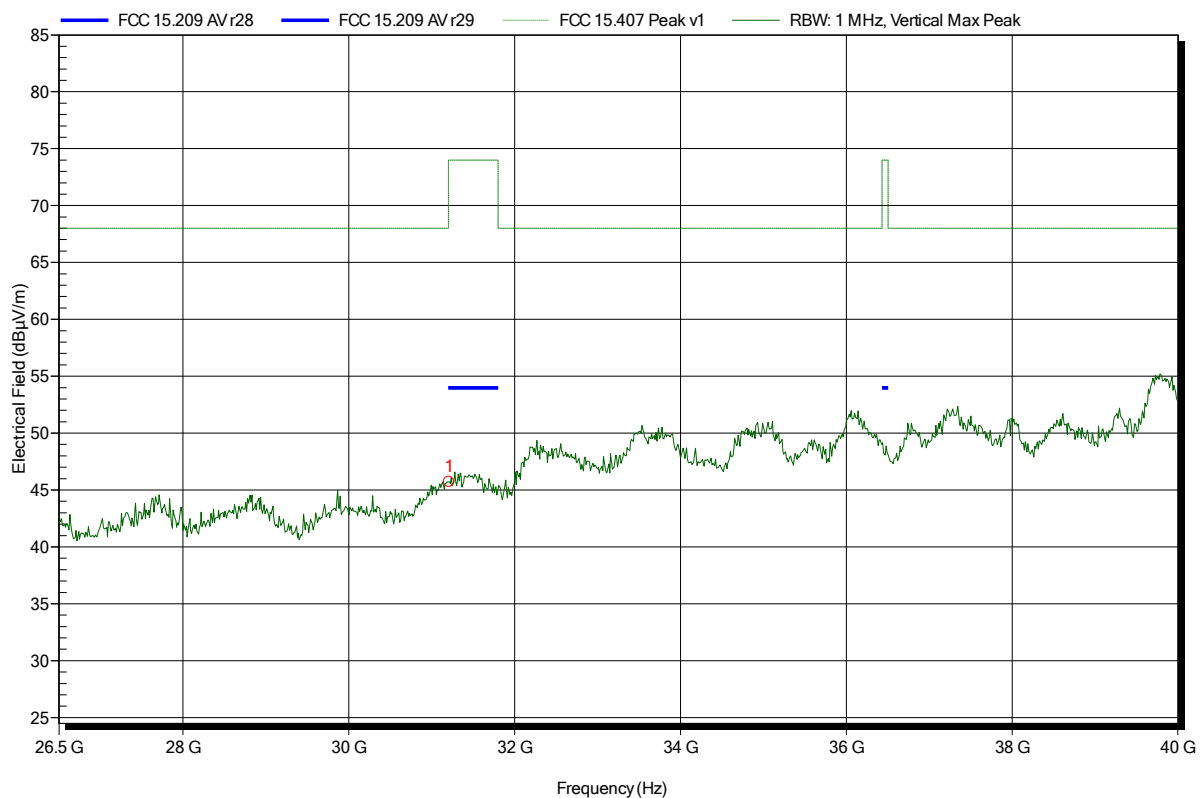
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 31.206 GHz | 46.25 dBµV/m | 74 dBµV/m | -27.75 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: 22240-25, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch40, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-16
 Note:

Index 25



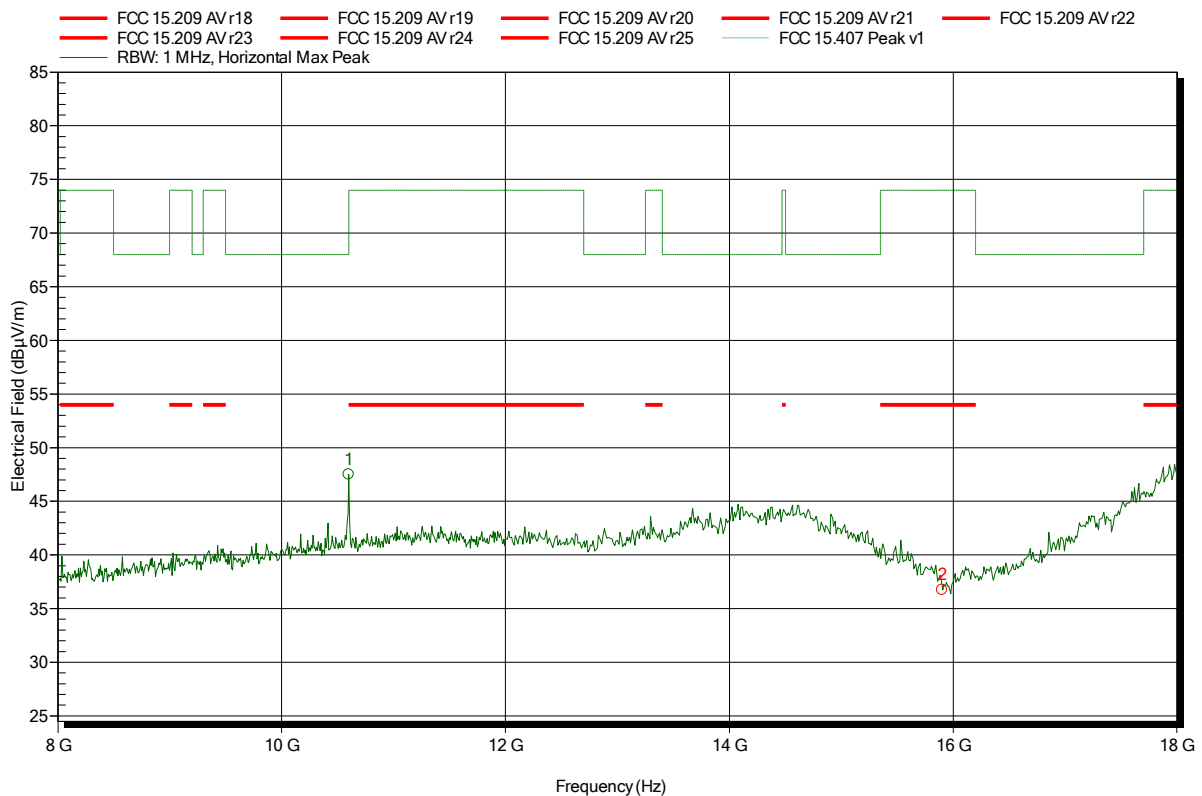
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|-------------|------------|-----------------|--------|
| 31.206 GHz | 45.7 dBµV/m | 74 dBµV/m | -28.3 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 27



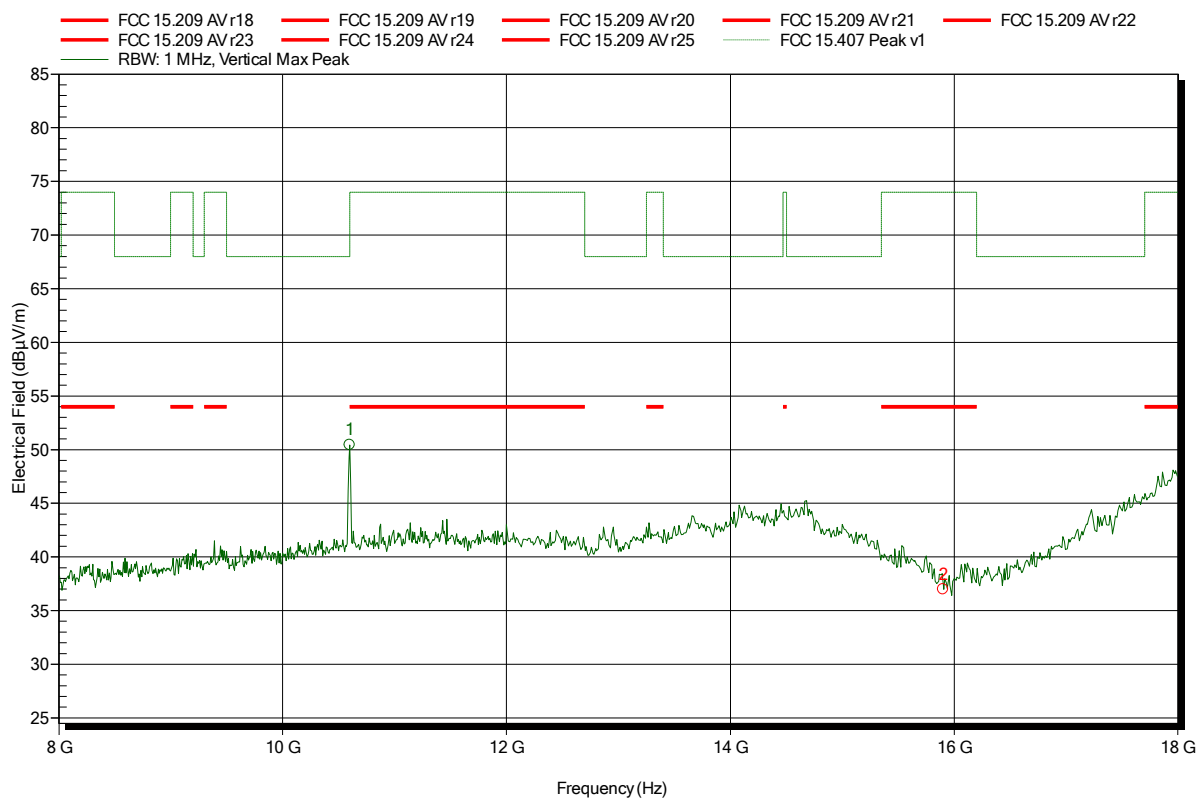
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 10.6 GHz | 47.51 dBµV/m | 68 dBµV/m | -20.49 dB | Pass |
| 15.9 GHz | 36.73 dBµV/m | 74 dBµV/m | -37.27 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-12
 Note:

Index 26



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|-----------|--------------|------------|-----------------|--------|
| 10.6 GHz | 50.44 dBµV/m | 68 dBµV/m | -17.56 dB | Pass |
| 15.9 GHz | 36.98 dBµV/m | 74 dBµV/m | -37.02 dB | Pass |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

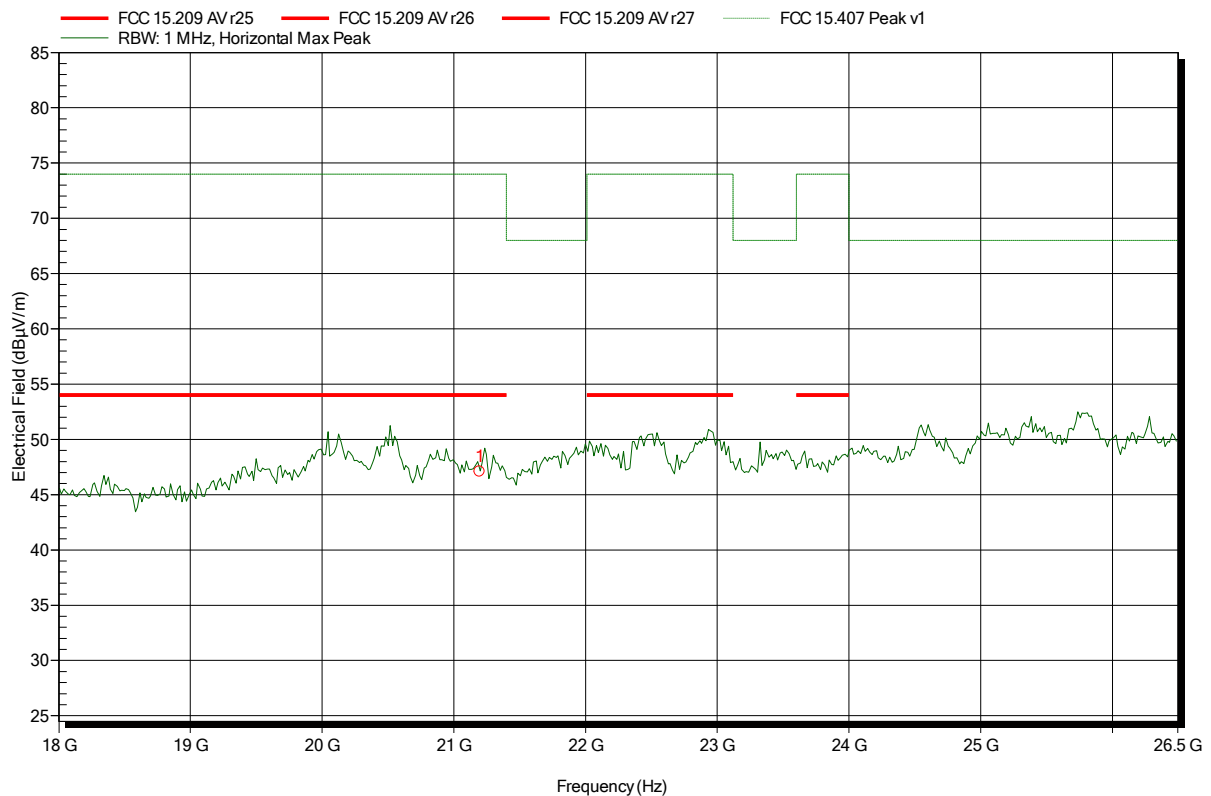
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 28



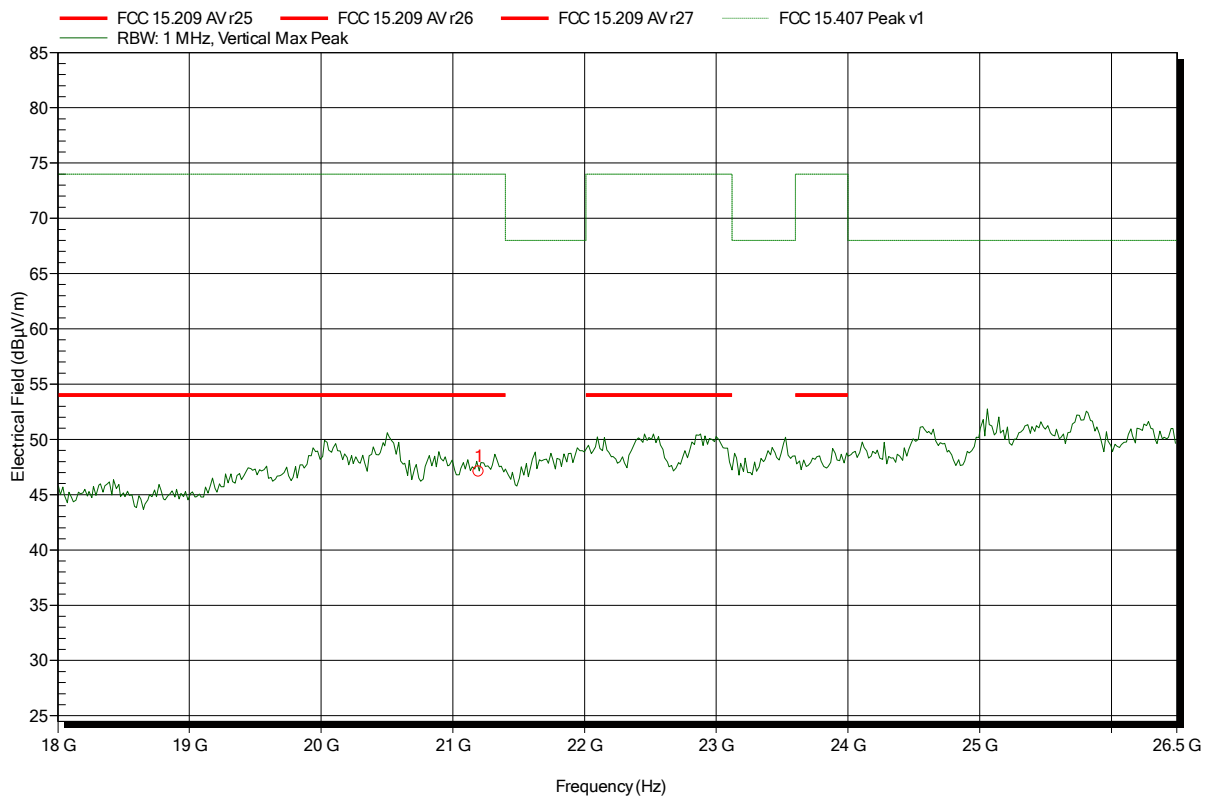
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|-------------|------------|-----------------|--------|
| 21.196 GHz | 47.1 dBµV/m | 74 dBµV/m | -26.9 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 29



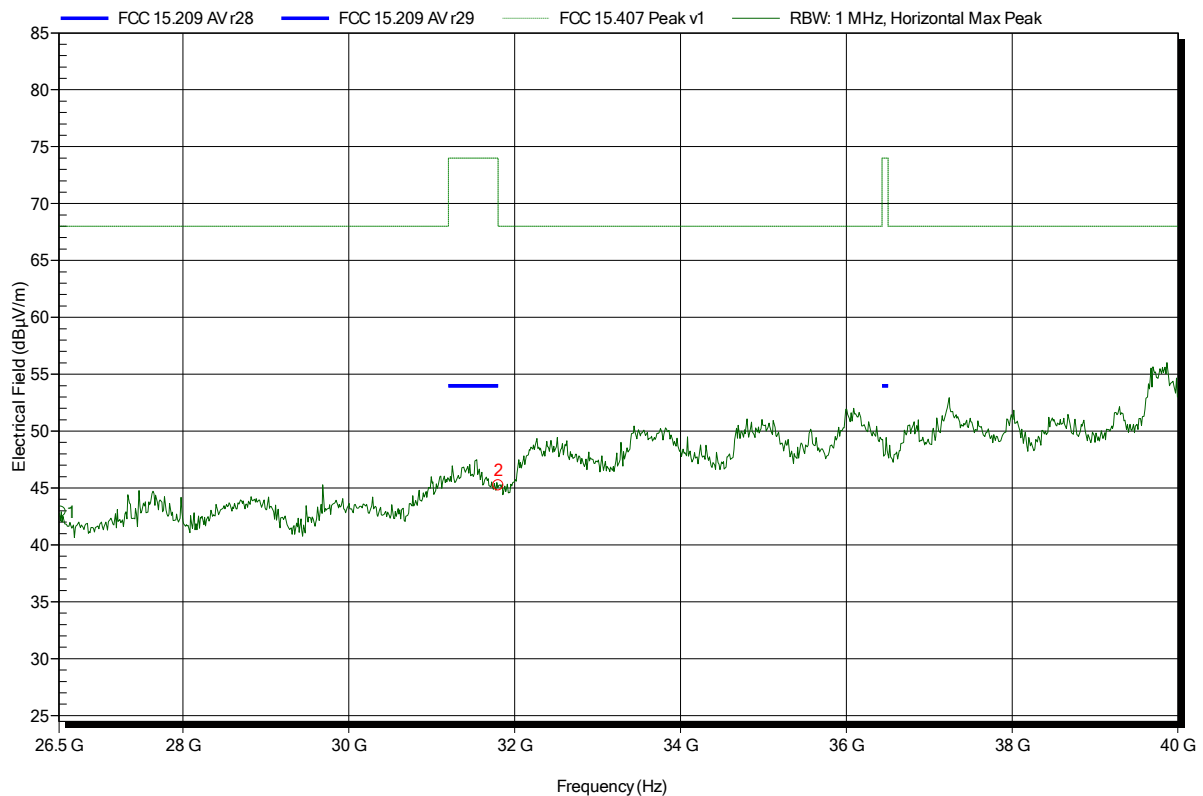
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 21.196 GHz | 47.08 dBµV/m | 74 dBµV/m | -26.92 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: 22240-25, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 30



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 26.526 GHz | 42.92 dBµV/m | 68 dBµV/m | -25.08 dB | Pass |
| 31.804 GHz | 45.21 dBµV/m | 68 dBµV/m | -22.79 dB | Pass |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

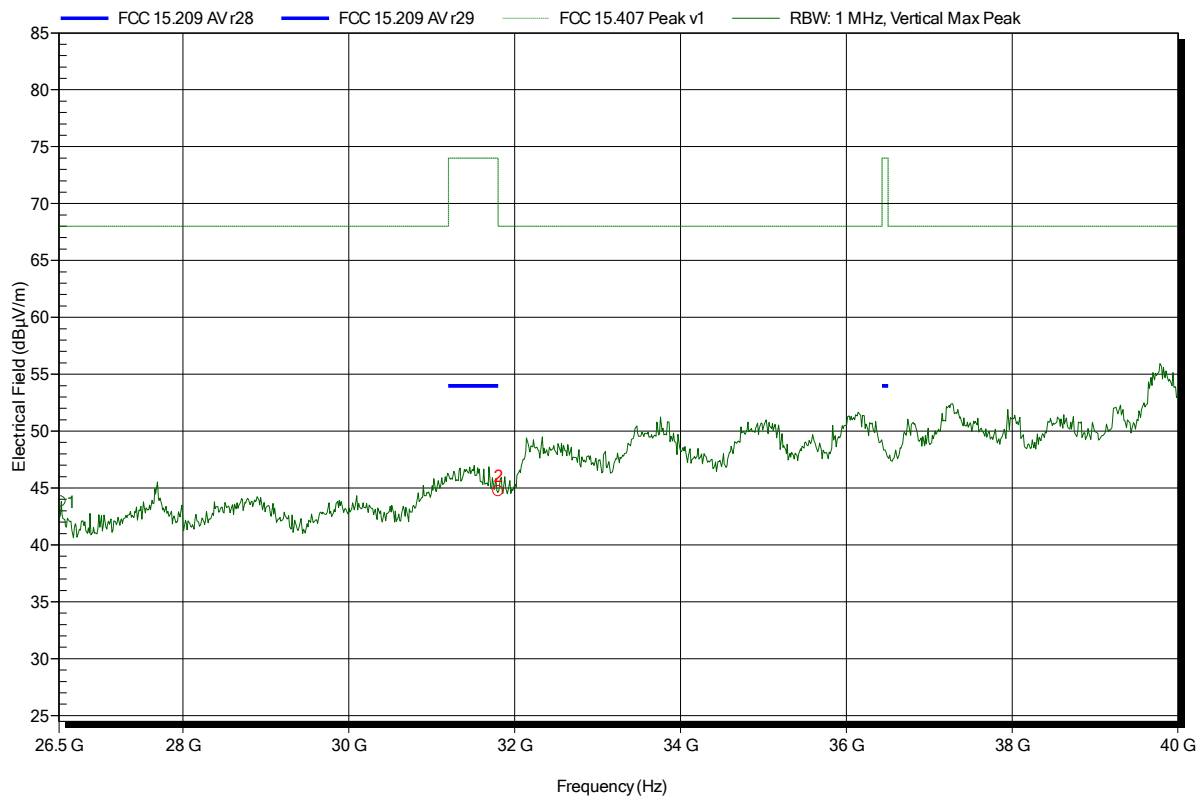
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: 22240-25, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch60, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 31



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 26.526 GHz | 43.81 dBµV/m | 68 dBµV/m | -24.19 dB | Pass |
| 31.804 GHz | 44.72 dBµV/m | 68 dBµV/m | -23.28 dB | Pass |

Test Report No.: G0M-1510-5172-TFC407WF-161-V01

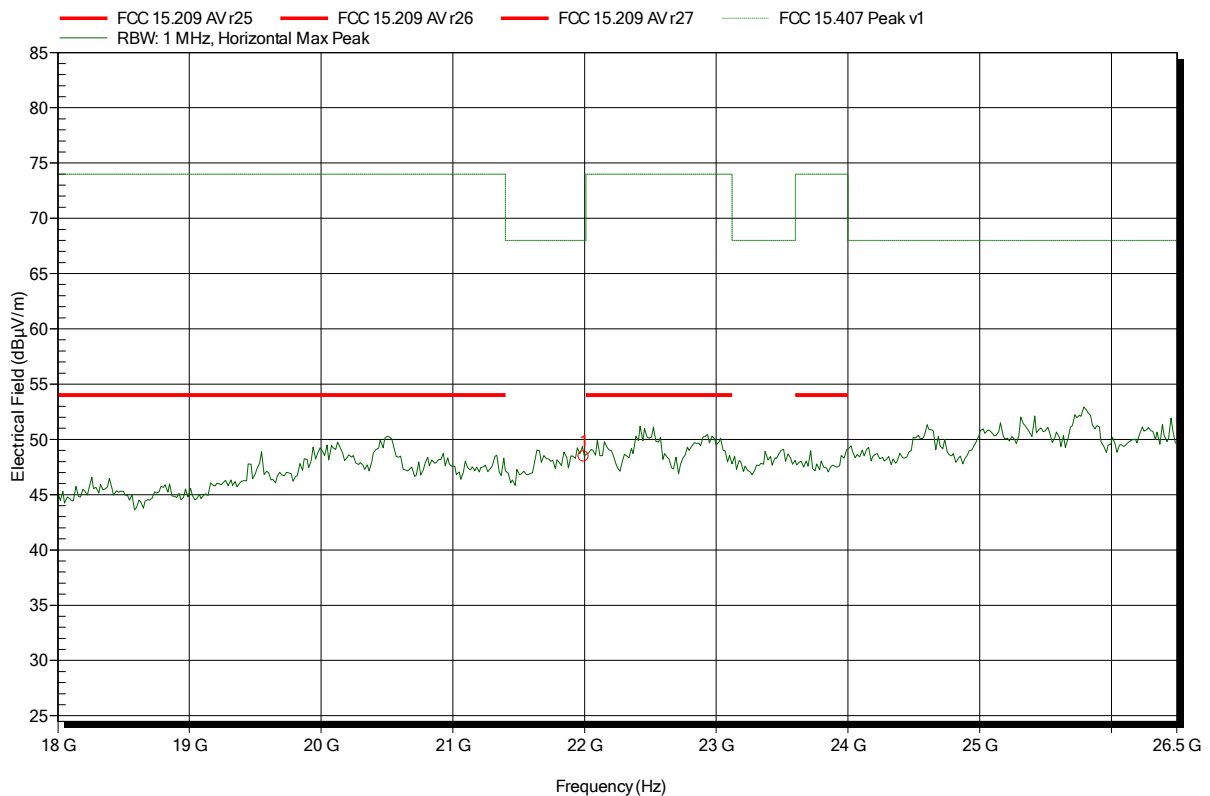
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 31



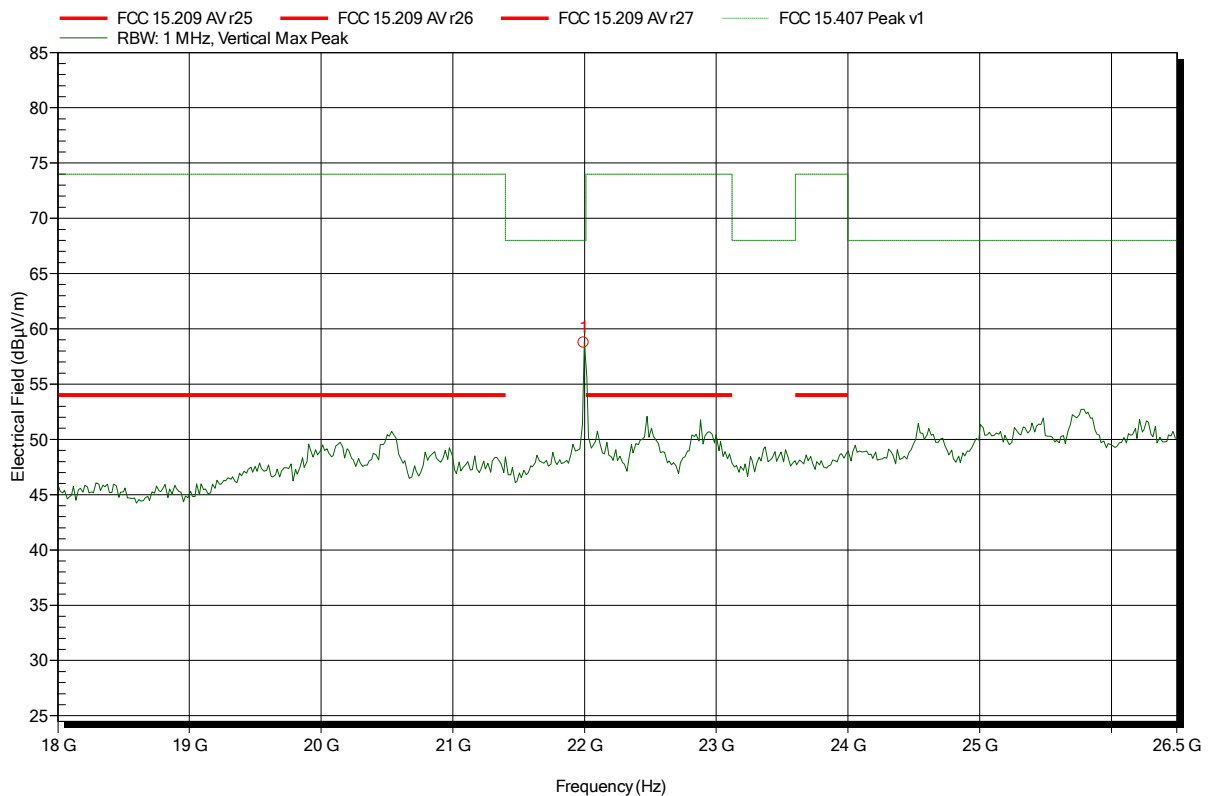
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 21.995 GHz | 48.46 dBµV/m | 68 dBµV/m | -19.54 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch100, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 30



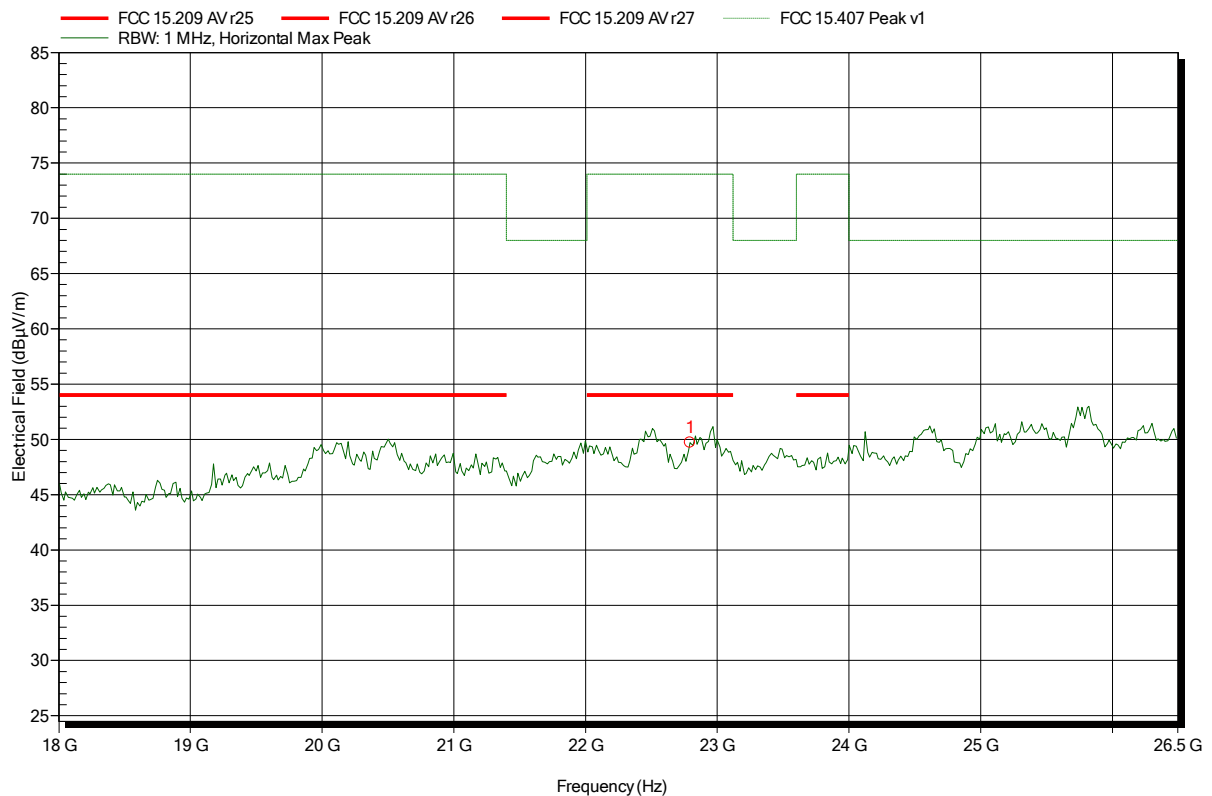
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 21.995 GHz | 58.75 dBµV/m | 68 dBµV/m | -9.25 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 32



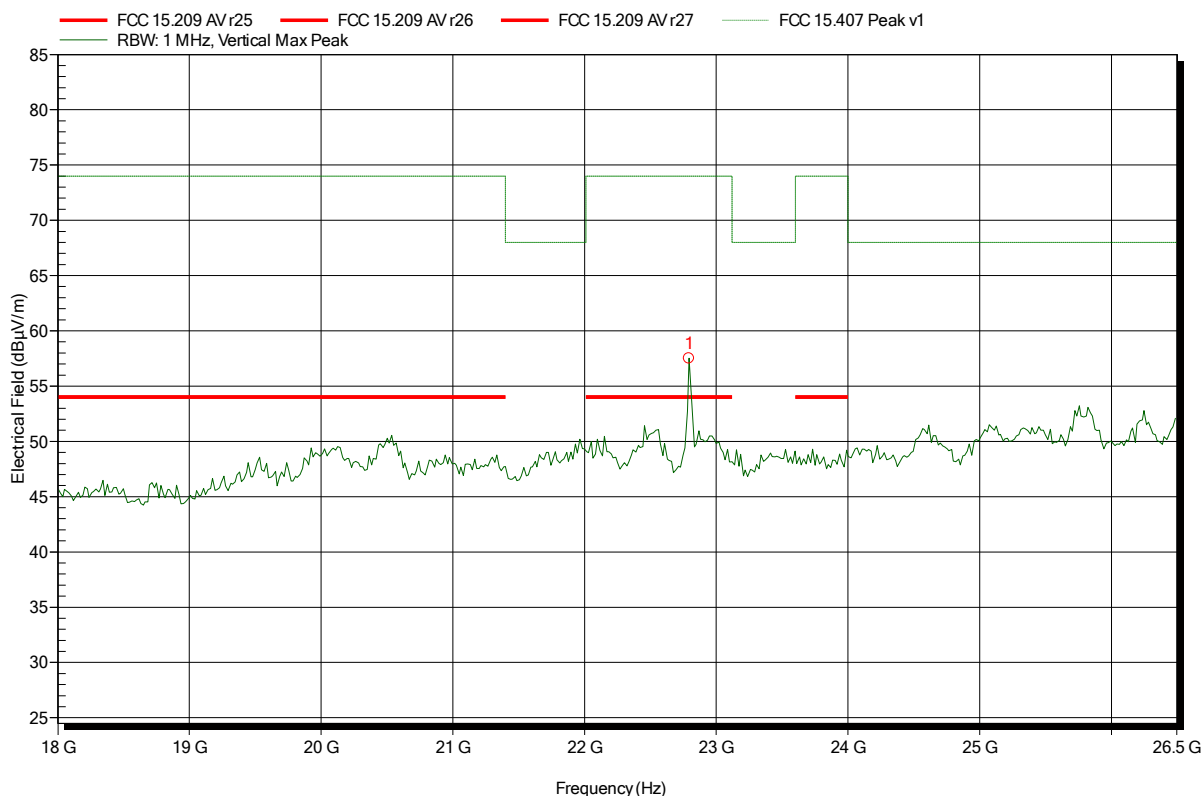
| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|------------|-----------------|--------|
| 22.794 GHz | 49.69 dBµV/m | 74 dBµV/m | -24.31 dB | Pass |

Spurious emissions according to FCC 15.407

Project number: G0M-1510-5172

Applicant: u-blox Berlin GmbH
 EUT Name: ELLA-W161
 Model: Test Sample #6
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Jahn
 Test Conditions: Tnom: 25°C, Vnom: 3.3 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; TX; 5GHz, Ch140, 802.11a, 6Mbps, 15dBm
 Test Date: 2015-11-13
 Note:

Index 33



| Frequency | Peak | Peak Limit | Peak Difference | Status |
|------------|--------------|---------------|--------------------|--------|
| 22.794 GHz | 57.51 dBµV/m | 74 dBµV/m | -16.49 dB | Pass |
| Frequency | Average | Average Limit | Average Difference | Status |
| 22.794 GHz | 57.50 dBµV/m | 54 dBµV/m | 3.50 dB | Fail |