

Company: Alereon Inc.

Test of: Commander (AL5930)

(Contains Camouflage (AL5955) and Combat  
(AL5934))

To: FCC Part 15 Subpart F 15.519 - Hand Held  
UWB Devices

Report No.: ALER01-U2B Rev A

TEST REPORT



**TEST REPORT**  
FROM  
**MiCOM Labs**  
*opening wireless markets*

Test of: Alereon Inc.– Commander (AL5930)

To: FCC CFR 47 Part 15 Subpart F 15.519 – Hand Held UWB Systems

Test Report Serial No.: ALER01-U2B Rev A

This report supersedes: NONE

Applicant: Alereon Inc.  
10800 Pecan Park Blvd, STE 100  
Austin, TX 78750  
USA

Product Function: UWB Module with Parallel/Serial USB interface

Issue Date: 12th December 2018

**This Test Report is Issued Under the Authority of:**

**MiCOM Labs, Inc.**  
575 Boulder Court  
Pleasanton California 94566  
USA  
Phone: +1 (925) 462-0304  
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[www.micomlabs.com](http://www.micomlabs.com)



MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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## **1. ACCREDITATION, LISTINGS & RECOGNITION**

### **1.1. Test Accreditation**

MiCOM Labs, Inc. an accredited laboratory complies with the international standard ISO/IEC 17025. The company is accredited by the American Association for Laboratory Accreditation (A2LA) [www.a2la.org](http://www.a2la.org) test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; <http://www.a2la.org/scopepdf/2381-01.pdf>



A2LA has accredited  
**MiCOM LABS**  
Pleasanton, CA

for technical competence in the field of  
**Electrical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

Presented this 14<sup>th</sup> day of May 2018.

  
President and CEO  
For the Accreditation Council  
Certificate Number 2381.01  
Valid to November 30, 2019



*For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.*

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## **1.2. Recognition**

MiCOM Labs, Inc has widely recognized Electrical testing capabilities. Our international recognition includes Conformity Assessment Body designation by APEC MRA\*\* countries. Our test reports are widely accepted for global type approvals.

| <b>Country</b> | <b>Recognition Body</b>  | <b>Status</b> | <b>Phase</b> | <b>Identification No.</b>               |
|----------------|--|---------------|--------------|---|
| model          | Federal Communications Commission (FCC)  | TCB           | -            | US0159<br>Listing #: 102167             |
| Canada         | Industry Canada (IC)   | FCB           | APEC MRA 2   | US0159<br>Listing #: 4143A-2<br>4143A-3 |
| Japan          | MIC (Ministry of Internal Affairs and Communication)   | CAB           | APEC MRA 2   | RCB 210                                 |
|                | VCCI   | --            | --           | A-0012                                  |
| Europe         | European Commission  | NB            | EU MRA       | NB 2280                                 |
| Australia      | Australian Communications and Media Authority (ACMA)   | CAB           | APEC MRA 1   | US0159                                  |
| Hong Kong      | Office of the Telecommunication Authority (OFTA)   | CAB           | APEC MRA 1   |   |
| Korea          | Ministry of Information and Communication Radio Research Laboratory (RRL)                        | CAB           | APEC MRA 1   |   |
| Singapore      | Infocomm Development Authority (IDA)   | CAB           | APEC MRA 1   |   |
| Taiwan         | National Communications Commission (NCC)<br>Bureau of Standards, Metrology and Inspection (BSMI) | CAB           | APEC MRA 1   |   |
| Vietnam        | Ministry of Communication (MIC)  | CAB           | APEC MRA 1   |   |

\*\*APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement.

Is a recognition agreement under which test lab is accredited to regulatory standards of the APEC member countries

Phase I -recognition for product testing

Phase II – recognition for both product testing and certification

N/A – Not Applicable

\*\*EU MRA – European Union Mutual Recognition Agreement.

Is a recognition agreement under which test lab is accredited to regulatory standards of the EU member countries

\*\*NB – Notified Body

### **1.3. Product Certification**

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard ISO/IEC 17065. The company is accredited by the American Association for Laboratory Accreditation (A2LA) [www.a2la.org](http://www.a2la.org) test laboratory number 2381.02. MiCOM Labs test schedule is available at the following URL; <http://www.a2la.org/scopepdf/2381-02.pdf>



#### **United States of America – Telecommunication Certification Body (TCB)**

TCB Identifier – US0159

#### **Industry Canada – Certification Body**

CAB Identifier – US0159

#### **Europe – Notified Body**

Notified Body Identifier - 2280

#### **Japan – Recognized Certification Body (RCB)**

RCB Identifier – 210

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## **2. DOCUMENT HISTORY**

| Document History |                                |  |
|------------------|--------------------------------|--|
| Revision         | Date                           | Comments   |
| Draft            | 4 <sup>th</sup> December 2018  | Initial draft for client review.   |
| Draft #2         | 11 <sup>th</sup> December 2018 | Report revised per client comments for second client review prior to formal release. |
| Rev A            | 12 <sup>th</sup> December 2018 | Initial Release.   |
|                  |                                |  |
|                  |                                |  |
|                  |                                |  |
|                  |                                |  |

In the above table the latest report revision will replace all earlier versions.

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### 3. TEST RESULT CERTIFICATE

**Manufacturer:** Alereon Inc.  
10800 Pecan Park Blvd, STE 100  
Austin, TX 78750  
USA

**Tested By:** MiCOM Labs, Inc.  
575 Boulder Court  
Pleasanton  
California 94566, USA

**Model(s):** Camouflage (AL5955) and Commander (AL5930)  
Combat (AL5934)

**Telephone:** +1 925 462 0304

**Fax:** +1 925 462 0306

**Equipment Type:** UWB Module with Parallel/Serial interface and USB interface

**S/N's:** Camouflage (AL5955): 18300080  
Commander (AL5930): 18340126  
Combat (AL5934): 18300035

**Test Date(s):** 6<sup>th</sup> – 21<sup>st</sup> November 2018

**Website:** [www.micomlabs.com](http://www.micomlabs.com)

#### STANDARD(S)

FCC CFR 47 Part 15 Subpart F 15.519

#### TEST RESULTS

EQUIPMENT COMPLIES

MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

#### Notes:

1. This document reports conditions under which testing was conducted and the results of testing performed.
2. Details of test methods used have been recorded and kept on file by the laboratory.
3. Test results apply only to the item(s) tested.

**Approved & Released for MiCOM Labs, Inc. by:**

Graeme Grieve  
Quality Manager MiCOM Labs, Inc.

Gordon Hurst  
President & CEO MiCOM Labs, Inc.



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## **4. REFERENCES AND MEASUREMENT UNCERTAINTY**

### **4.1. Normative References**

| REF. | PUBLICATION                | YEAR               | TITLE  |
|------|----------------------------|--------------------|--|
| I    | FCC 47 CFR Part F          | 2018               | Radio Frequency Devices; Subpart F –Ultra Wide Band Devices  |
| II   | A2LA                       | August 2018        | R105 - Requirement's When Making Reference to A2LA Accreditation Status  |
| III  | ANSI C63.10                | 2013               | American National Standard for Testing Unlicensed Wireless Devices   |
| IV   | ANSI C63.4                 | 2014               | American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |
| V    | ETSI TR 100 028            | 2001-12            | Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics             |
| VI   | M 3003                     | Edition 3 Nov.2012 | Expression of Uncertainty and Confidence in Measurements   |
| VII  | FCC 47 CFR Part 2.1033     | 2016               | FCC requirements and rules regarding photographs and test setup diagrams.  |
| VIII | KDB 393764 D01 UWB FAQ v02 | January 29, 2018   | Ultra-Wideband (UWB) Devices frequently asked questions  |

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#### **4.2. Test and Uncertainty Procedure**

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.

## **5. PRODUCT DETAILS AND TEST CONFIGURATIONS**

### **5.1. Technical Details**

| <b>Details</b>                       | <b>Description</b>   |
|--------------------------------------|--|
| Purpose:                             | Test of the Alereon Commander (AL5930) to FCC CFR 47 Part 15 Subpart F 15.519  |
| Applicant:                           | Alereon Inc.<br>10800 Pecan Park Blvd, STE 100<br>Austin, TX 78750<br>USA  |
| Manufacturer:                        | As applicant   |
| Laboratory performing the tests:     | MiCOM Labs, Inc.<br>575 Boulder Court<br>Pleasanton California 94566 USA   |
| Test report reference number:        | ALER01-U2B   |
| Date EUT received:                   | 6 <sup>th</sup> November 2018  |
| Standard(s) applied:                 | FCC CFR 47 Part 15 Subpart F15.519   |
| Dates of test (from - to):           | 6 <sup>th</sup> – 21 <sup>st</sup> November 2018   |
| No of Units Tested:                  | 3  |
| Product Family Name:                 | AI5350/AI5100  |
| Model(s):                            | Alereon Commander (AL5930), Camouflage (AL5955) and Combat (AL5934)  |
| Location for use:                    | No fixed location<br>Primarily hand held   |
| Declared Frequency Range(s):         | 3100-10600 MHz   |
| Type of Modulation:                  | BPM/BPSK   |
| EUT Modes of Operation:              | 528 MHz Bandwidth  |
| Declared Nominal Output Power (dBm): | -41.3 dBm  |
| Transmit/Receive Operation:          | Transceiver  |
| Rated Input Voltage and Current:     | Camouflage (AL5955): 3.3V DC, 10 mA<br>Commander (AL5930): 3.3V DC, 240mA<br>Combat (AL5934): 5V DC, 250 mA  |
| Operating Temperature Range:         | -40 ~ +85°C  |
| ITU Emission Designator:             | 510MX0D  |
| Equipment Dimensions:                | Camouflage (AL5955): W: 0.86, L: 1.98 H: 0.151 Inches<br>Commander (AL5930): W: 0.86, L: 1.117 H: 0.151 Inches<br>Combat (AL5934): W: 0.86, L: 2.5 H: 0.151 Inches |
| Weight:                              | Camouflage (AL5955): 0.13 oz<br>Commander (AL5930): 0.10 oz<br>Combat (AL5934): 0.19 oz  |
| Hardware Rev:                        | 2.0.0  |
| Software Rev:                        | 28526  |

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## **5.2. Scope Of Test Program**

The scope of the test program was to test the Alereon Commander (AL5930) configurations in the frequency ranges 3100 - 10600 MHz for compliance against the following specification:

### **FCC CFR 47 Part 15 Subpart F – 15.519**

Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 3100 - 10600 MHz bands.

#### **Model Differences**

Camouflage (AL5955) – Serial Interface  
Commander (AL5930) – Parallel Interface  
Combat (AL5934) – USB Interface

The manufacturer declares that all 3 Models use exactly the same RF chipset (See Manufacturers declaration in Appendix B). Conducted testing was performed on the Combat (AL5934) model with USB Interface.



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### **5.3. Equipment Model(s) and Serial Number(s)**

| Type (EUT/Support) | Equipment Description (Including Brand Name) | Mfr.        | Model No.           | Serial No. |
|--------------------|--|-------------|---------------------|------------|
| EUT                | UWB Module with Serial interface             | Alereon Inc | Camouflage (AL5955) | 18300080   |
| EUT                | UWB Module with Parallel interface           | Alereon Inc | Commander (AL5930)  | 18340126   |
| EUT                | UWB Module with USB interface                | Alereon Inc | Combat (AL5934)     | 18300035   |
| Support            | Host Board                                   | Alereon Inc | AL5957              |            |
| Support            | Laptop                                       | Lenovo      |                     |            |

### **5.4. Antenna Details**

| Type | Manufacturer | Model        | Family | Gain (dBi)    | BF Gain | Dir BW | X-Pol | Frequency Band (MHz) |
|------|--------------|--------------|--------|---------------|---------|--------|-------|----------------------|
| Chip | Taiyo Yuden  | AH086M555003 | Patch  | 1.0/0.2/0.2   | --      | --     | No    | 3168-3696            |
| Chip | Taiyo Yuden  | AH086M555003 | Patch  | 0.2/-0.2/0.1  | --      | --     | No    | 6600-7656            |
| Chip | Taiyo Yuden  | AH086M555003 | Patch  | 0.1/-1.8/-1.8 | --      | --     | No    | 7656-8712            |

BF Gain - Beamforming Gain

Dir BW - Directional BeamWidth

X-Pol - Cross Polarization

### **5.5. Cabling and I/O Ports**

Custom 60 pin interface to Host Board/ USB

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## **5.6. Test Configurations**

Results for the following configurations are provided in this report:

| Channel Bandwidth(s) | Transmission Rate | Channel Frequency (MHz) |      |      |
|----------------------|-------------------|-------------------------|------|------|
|                      |                   | Low                     | Mid  | High |
| 500 MHz              | Max               | 3432                    | 3960 | 4488 |
| 500 MHz              | Max               | 6600                    | 7128 | 7656 |
| 500 MHz              | Max               | 7656                    | 8184 | 8712 |

## **5.7. Equipment Modifications**

The following modifications were required to bring the equipment into compliance:

1. NONE

## **5.8. Deviations from the Test Standard**

The following deviations from the test standard were required in order to complete the test program:

1. NONE



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## **6. TEST SUMMARY**

### List of Measurements

| Test Header                                      | Result   | Data Link                 |
|--|----------|---------------------------|
| UWB Bandwidth                                    | Complies | <a href="#">View Data</a> |
| Peak Power                                       | Complies | <a href="#">View Data</a> |
| Peak Power Density                               | Complies | <a href="#">View Data</a> |
| Spurious Radiated Emissions 1000 MHz - 18000 MHz | Complies | <a href="#">View Data</a> |
| Spurious Radiated Emissions in GPS Bands         | Complies | <a href="#">View Data</a> |
| 50 MHz Radiated Peak                             | Complies | <a href="#">View Data</a> |
| Shutdown Timing Requirements                     | Complies | <a href="#">View Data</a> |
| Comments: None                                   |          |                           |

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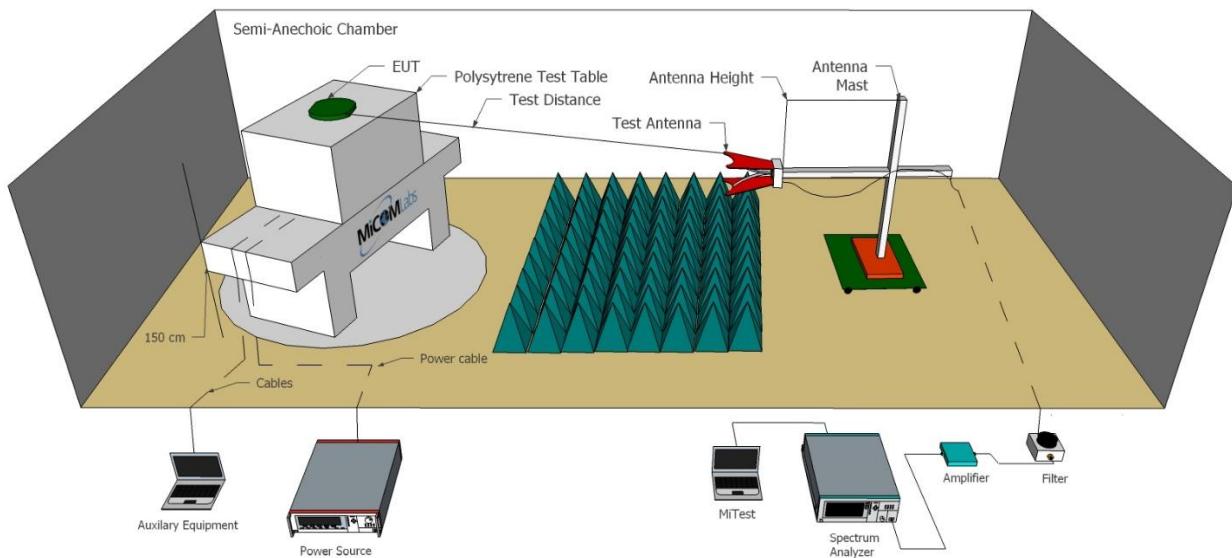
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## **7. TEST EQUIPMENT CONFIGURATION(S)**

### **7.1. Radiated Emissions - 3m Chamber**

The following tests were performed using the radiated test set-up shown in the diagram below. Radiated emissions above 1GHz.

Radiated Emissions Above 1GHz Test Setup



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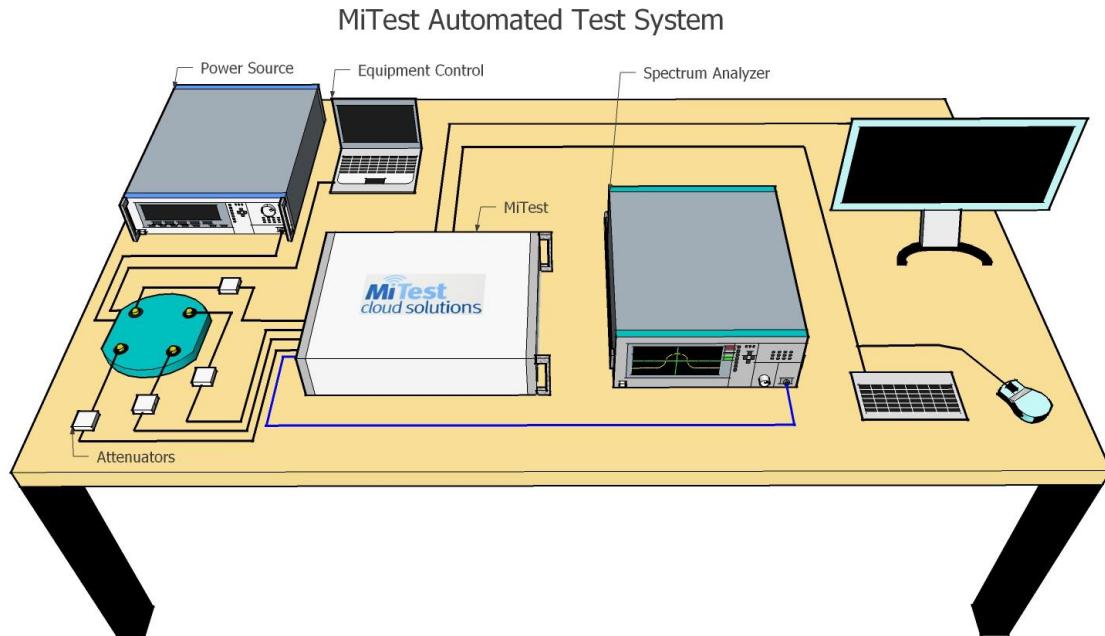
A full system calibration was performed on the test station and any resulting system losses (or gains) were taken into account in the production of all final measurement data.

| Asset# | Description                                       | Manufacturer         | Model#                                  | Serial#     | Calibration Due Date |
|--------|---|----------------------|---|-------------|----------------------|
| 170    | Video System Controller for Semi Anechoic Chamber | Panasonic            | WV-CU101                                | 04R08507    | Not Required         |
| 298    | 3M Radiated Emissions Chamber Maintenance Check   | MiCOM                | 3M Chamber                              | 298         | 21 Jan 2019          |
| 338    | Sunol 30 to 3000 MHz Antenna                      | Sunol                | JB3                                     | A052907     | 4 Apr 2019           |
| 378    | Rohde & Schwarz 40 GHz Receiver with Generator    | Rhode & Schwarz      | ESIB40                                  | 100107/040  | 12 Oct 2019          |
| 397    | Amp 10 - 2500MHz                                  | MiCOM Labs           | Amp 10 - 2500 MHz                       | NA          | 12 Dec 2018          |
| 399    | ETS 1-18 GHz Horn Antenna                         | ETS                  | 3117                                    | 00154575    | 12 Dec 2018          |
| 406    | Amplifier for Radiated Emissions                  | MiCOM Labs           | 40dB 1 to 18GHz Amp                     | 0406        | 12 Dec 2018          |
| 410    | Desktop Computer                                  | Dell                 | Inspiron 620                            | WS38        | Not Required         |
| 411    | Mast/Turntable Controller                         | Sunol Sciences       | SC98V                                   | 060199-1D   | Not Required         |
| 412    | USB to GPIB Interface                             | National Instruments | GPIB-USB HS                             | 11B8DC2     | Not Required         |
| 413    | Mast Controller                                   | Sunol Science        | TWR95-4                                 | 030801-3    | Not Required         |
| 415    | Turntable Controller                              | Sunol Sciences       | Turntable Controller                    | None        | Not Required         |
| 447    | MiTest Rad Emissions Test Software                | MiCOM                | Rad Emissions Test Software Version 1.0 | 447         | Not Required         |
| 462    | Schwarzbeck cable from Antenna to Amplifier.      | Schwarzbeck          | AK 9513                                 | 462         | 9 Oct 2019           |
| 463    | Schwarzbeck cable from Amplifier to Bulkhead.     | Schwarzbeck          | AK 9513                                 | 463         | 9 Oct 2019           |
| 464    | Schwarzbeck cable from Bulkhead to Receiver       | Schwarzbeck          | AK 9513                                 | 464         | 9 Oct 2019           |
| 465    | Low Pass Filter DC-1000 MHz                       | Mini-Circuits        | NLP-1200+                               | VUU01901402 | 9 Oct 2019           |
| 480    | Cable - Bulkhead to Amp                           | SRC Haverhill        | 157-3050360                             | 480         | 24 Aug 2019          |
| 481    | Cable - Bulkhead to Receiver                      | SRC Haverhill        | 151-3050787                             | 481         | 24 Aug 2019          |
| 510    | Barometer/Thermometer                             | Control Company      | 68000-49                                | 170871375   | 11 Dec 2018          |
| 518    | Cable - Amp to Antenna                            | SRC Haverhill        | 157-3051574                             | 518         | 24 Aug 2019          |
| CC05   | Confidence Check                                  | MiCOM                | CC05                                    | None        | 21 Jan 2019          |

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## **7.2. RF Conducted Emissions**

The following tests were performed using the conducted test set-up shown in the diagram below. UWB Bandwidth, Peak Transmit Power, Peak Power Density, Shutoff Timing Requirements



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| Asset# | Description                                    | Manufacturer         | Model#           | Serial#       | Calibration Due Date |
|--------|--|----------------------|------------------|---------------|----------------------|
| #3 SA  | MiTest Box to SA                               | Fairview Microwave   | SCA1814-0101-72  | #3 SA         | 20 Jan 2019          |
| #3P1   | EUT to MiTest box port 1                       | Fairview Microwave   | SCA1814-0101-72  | #3P1          | 20 Jan 2019          |
| #3P2   | EUT to MiTest box port 2                       | Fairview Microwave   | SCA1814-0101-72  | #3P2          | 20 Jan 2019          |
| #3P3   | EUT to MiTest box port 3                       | Fairview Microwave   | SCA1814-0101-72  | #3P3          | 20 Jan 2019          |
| #3P4   | EUT to MiTest box port 4                       | Fairview Microwave   | SCA1812-0101-72  | #3P4          | 20 Jan 2019          |
| 249    | Resistance Thermometer                         | Thermotronics        | GR2105-02        | 9340 #2       | 30 Oct 2019          |
| 361    | Desktop for RF#1, Labview Software installed   | Dell                 | Vostro 220       | WS RF#1       | Not Required         |
| 378    | Rohde & Schwarz 40 GHz Receiver with Generator | Rhode & Schwarz      | ESIB40           | 100107/040    | 12 Oct 2019          |
| 398    | MiTest RF Conducted Test Software              | MiCOM                | MiTest ATS       | Version 4.1   | Not Required         |
| 405    | DC Power Supply 0-60V                          | Agilent              | 6654A            | MY4001826     | Cal when used        |
| 408    | USB to GPIB interface                          | National Instruments | GPIB-USB HS      | 14C0DE9       | Not Required         |
| 436    | USB Wideband Power Sensor                      | Boonton              | 55006            | 8731          | 14 Sep 2019          |
| 440    | USB Wideband Power Sensor                      | Boonton              | 55006            | 9178          | 22 Sep 2019          |
| 441    | USB Wideband Power Sensor                      | Boonton              | 55006            | 9179          | 20 Sep 2019          |
| 442    | USB Wideband Power Sensor                      | Boonton              | 55006            | 9181          | 6 Oct 2019           |
| 445    | PoE Injector                                   | D-Link               | DPE-101GL        | QTAH1E2000625 | Not Required         |
| 461    | Spectrum Analyzer                              | Agilent              | E4440A           | MY46185537    | 20 Sep 2019          |
| 510    | Barometer/Thermometer                          | Control Company      | 68000-49         | 170871375     | 11 Dec 2018          |
| 515    | MiTest Cloud Solutions RF Test Box             | MiCOM                | 2nd Gen with DFS | 515           | 20 Jan 2019          |
| 75     | Environmental Chamber                          | ThermaTron           | SE-300-2-2       | 27946         | 24 Dec 2018          |

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## **8. MEASUREMENT AND PRESENTATION OF TEST DATA**

The measurement and graphical data presented in this test report was generated automatically using state-of-the-art technology creating an easy to read report structure. Numerical measurement data is separated from supporting graphical data (plots) through hyperlinks. Numerical measurement data can be reviewed without scrolling through numerous graphical pages to arrive at the next data matrix.

Plots have been relegated into the Appendix ‘Graphical Data’.

Test and report automation was performed by [MiTest](#). [MiTest](#) is an automated test system developed by MiCOM Labs. [MiTest](#) is the first cloud based modular test system enabling end-to-end automation of regulatory compliance testing for conducted RF testing.



The MiCOM Labs "MiTest" Automated Test System™ (Patent Pending)

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## **9. TEST RESULTS**

### **9.1. UWB Bandwidth**

| Conducted Test Conditions for 26 dB and 99% Bandwidth |                          |                            |             |
|---|--------------------------|----------------------------|-------------|
| <b>Standard:</b>                                      | FCC CFR 47:15.519        | <b>Ambient Temp. (°C):</b> | 24.0 - 27.5 |
| <b>Test Heading:</b>                                  | UWB Bandwidth            | <b>Rel. Humidity (%):</b>  | 32 - 45     |
| <b>Standard Section(s):</b>                           | ANSI C63.10 Section 10.1 | <b>Pressure (mBars):</b>   | 999 - 1001  |
| <b>Reference Document(s):</b>                         | See Normative References |                            |             |

**Test Procedure for UWB Bandwidth Measurement**  
The UWB Bandwidth is measured radiated, at a 3-meter distance, while EUT is operating in transmission mode at the appropriate center frequency. The Resolution Bandwidth was set to 1MHz RBW IAW ANSI C63.10.  
Testing was performed under ambient conditions at nominal voltage.

Test configuration and setup used for the measurement was per the Radiated Test Set-up section specified in this document.

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#### Equipment Configuration for UWB Bandwidth

|                                |                   |                                   |                |
|--------------------------------|-------------------|-----------------------------------|----------------|
| <b>Variant:</b>                | 500 MHz Bandwidth | <b>Duty Cycle (%):</b>            | 100            |
| <b>Data Rate:</b>              | -                 | <b>Antenna Gain (dBi):</b>        | 1.5            |
| <b>Modulation:</b>             | BPM/BPSK          | <b>Beam Forming Gain (Y)(dB):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable    | <b>Tested By:</b>                 | SB             |
| <b>Engineering Test Notes:</b> |                   |                                   |                |

#### Equipment Configuration for UWB Bandwidth

|                                |                |                                   |                      |
|--------------------------------|----------------|-----------------------------------|----------------------|
| <b>Variant:</b>                | Band Group 1   | <b>Duty Cycle (%):</b>            | 100                  |
| <b>Data Rate:</b>              | -              | <b>Antenna Gain (dBi):</b>        | Client Info Required |
| <b>Modulation:</b>             | BPM/BPSK       | <b>Beam Forming Gain (Y)(dB):</b> | Not Applicable       |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>                 | SB                   |
| <b>Engineering Test Notes:</b> |                |                                   |                      |

| Test Frequency | Measured 10 dB Bandwidth (MHz) | 10 dB Bandwidth (MHz) |         |  |  |
|----------------|--------------------------------|-----------------------|---------|--|--|
|                |                                | Highest               | Lowest  |  |  |
| 3432.00        | <a href="#">509.174</a>        | 509.174               | 509.174 |  |  |

| Test Frequency | Measured 10 dB Bandwidth (MHz) | 10 dB Bandwidth (MHz) |         |  |  |
|----------------|--------------------------------|-----------------------|---------|--|--|
|                |                                | Highest               | Lowest  |  |  |
| 3960.00        | <a href="#">508.116</a>        | 508.116               | 508.116 |  |  |

| Test Frequency | Measured 10 dB Bandwidth (MHz) | 10 dB Bandwidth (MHz) |         |  |  |
|----------------|--------------------------------|-----------------------|---------|--|--|
|                |                                | Highest               | Lowest  |  |  |
| 4488.00        | <a href="#">507.014</a>        | 507.014               | 507.014 |  |  |

#### Traceability to Industry Recognized Test Methodologies

|                          |                                  |
|--------------------------|----------------------------------|
| Work Instruction:        | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB                         |

Note: click the links in the above matrix to view the graphical image (plot).

The above values are representative of the worst case value between polarities and based on the power measurements.

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#### Equipment Configuration for UWB Bandwidth

|                                |                |                                   |                |
|--------------------------------|----------------|-----------------------------------|----------------|
| <b>Variant:</b>                | Band Group 3   | <b>Duty Cycle (%):</b>            | 100            |
| <b>Data Rate:</b>              | -              | <b>Antenna Gain (dBi):</b>        | 0.5            |
| <b>Modulation:</b>             | BPM/BPSK       | <b>Beam Forming Gain (Y)(dB):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>                 | SB             |
| <b>Engineering Test Notes:</b> |                |                                   |                |

| Test Frequency | Measured 10 dB Bandwidth (MHz) | 10 dB Bandwidth (MHz) |         |  |  |
|----------------|--------------------------------|-----------------------|---------|--|--|
|                |                                | Highest               | Lowest  |  |  |
| MHz            | Port A                         |                       |         |  |  |
| 6600.00        | 510.321                        | 510.321               | 510.321 |  |  |

| Test Frequency | Measured 10 dB Bandwidth (MHz) | 10 dB Bandwidth (MHz) |         |  |  |
|----------------|--------------------------------|-----------------------|---------|--|--|
|                |                                | Highest               | Lowest  |  |  |
| MHz            | PortA                          |                       |         |  |  |
| 7128.00        | 509.920                        | 509.920               | 509.920 |  |  |

| Test Frequency | Measured 10 dB Bandwidth (MHz) | 10 dB Bandwidth (MHz) |         |  |  |
|----------------|--------------------------------|-----------------------|---------|--|--|
|                |                                | Highest               | Lowest  |  |  |
| MHz            | Port A                         |                       |         |  |  |
| 7656.00        | 508.818                        | 508.818               | 508.818 |  |  |

#### Traceability to Industry Recognized Test Methodologies

|                          |                                  |
|--------------------------|----------------------------------|
| Work Instruction:        | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB                         |

Note: click the links in the above matrix to view the graphical image (plot).

The above values are representative of the worst case value between polarities and based on the power measurements.

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#### Equipment Configuration for UWB Bandwidth

|                                |                |                                   |                |
|--------------------------------|----------------|-----------------------------------|----------------|
| <b>Variant:</b>                | Band Group 6   | <b>Duty Cycle (%):</b>            | 100            |
| <b>Data Rate:</b>              | -              | <b>Antenna Gain (dBi):</b>        | 0.25           |
| <b>Modulation:</b>             | BPM/BPSK       | <b>Beam Forming Gain (Y)(dB):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>                 | SB             |
| <b>Engineering Test Notes:</b> |                |                                   |                |

| Test Frequency | Measured 10 dB Bandwidth (MHz) | 10 dB Bandwidth (MHz) |         |  |  |
|----------------|--------------------------------|-----------------------|---------|--|--|
|                |                                | Highest               | Lowest  |  |  |
| MHz            | Port A                         |                       |         |  |  |
| 7656.00        | 506.613                        | 506.613               | 506.613 |  |  |

| Test Frequency | Measured 10 dB Bandwidth (MHz) | 10 dB Bandwidth (MHz) |         |  |  |
|----------------|--------------------------------|-----------------------|---------|--|--|
|                |                                | Highest               | Lowest  |  |  |
| MHz            | PortA                          |                       |         |  |  |
| 8184.00        | 509.920                        | 509.920               | 509.920 |  |  |

| Test Frequency | Measured 10 dB Bandwidth (MHz) | 10 dB Bandwidth (MHz) |         |  |  |
|----------------|--------------------------------|-----------------------|---------|--|--|
|                |                                | Highest               | Lowest  |  |  |
| MHz            | Port A                         |                       |         |  |  |
| 8712.00        | 509.920                        | 509.9200              | 509.920 |  |  |

#### Traceability to Industry Recognized Test Methodologies

|                          |                                  |
|--------------------------|----------------------------------|
| Work Instruction:        | WI-03 MEASURING RF SPECTRUM MASK |
| Measurement Uncertainty: | ±2.81 dB                         |

Note: click the links in the above matrix to view the graphical image (plot).

The above values are representative of the worst case value between polarities and based on the power measurements.

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## 9.2. Peak Transmit Power

| Conducted Test Conditions for Maximum Radiated Output Power |                                     |                            |             |
|---|-------------------------------------|----------------------------|-------------|
| <b>Standard:</b>  | FCC CFR 47:15.519 (c)               | <b>Ambient Temp. (°C):</b> | 24.0 - 27.5 |
| <b>Test Heading:</b>  | Radiated Emissions UWB Transmission | <b>Rel. Humidity (%):</b>  | 32 - 45     |
| <b>Standard Section(s):</b>                                 | ANSI C63.10 Section 10.3.5          | <b>Pressure (mBars):</b>   | 999 - 1001  |
| <b>Reference Document(s):</b>                               | None                                |                            |             |

**Test Procedure for UWB Transmission**  
Testing was performed under ambient conditions at nominal voltage.

Test configuration and setup used for the measurement was per the Radiated Test Set-up section specified in this document. Supporting KDB's referenced below.

**Operating Frequency Band:**  
3100-10600 MHz

**Limits Maximum EIRP (dBm)**

| Frequency (MHz) | EIRP Limit (dBm) | EIRP at 3 Meters (dBuv/m) |
|-----------------|------------------|---------------------------|
| 3100 - 10600    | -41.3            | 53.9                      |

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#### Equipment Configuration for RF Output Power

|                                |                |                                   |                |
|--------------------------------|----------------|-----------------------------------|----------------|
| <b>Variant:</b>                | Band Group 1   | <b>Duty Cycle (%):</b>            | 99             |
| <b>Data Rate:</b>              | -              | <b>Antenna Gain (dBi):</b>        | 1.0/0.2/0.2    |
| <b>Modulation:</b>             | BPM/BPSK       | <b>Beam Forming Gain (Y)(dB):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>                 | SB             |
| <b>Engineering Test Notes:</b> |                |                                   |                |

#### Test Measurement Results

| Test Frequency<br>MHz | Measured Output<br>Power(dBm) | Calculated<br>Total Power | EIRP+<br>DCCF | Limit | Margin  | EUT Power<br>Setting |
|-----------------------|-------------------------------|---------------------------|---------------|-------|---------|----------------------|
|                       | Port A                        | dBm                       |               | dBm   | Numeric | Numeric              |
| 3432.00               | -42.92                        | -42.92                    | -41.92        | -41.3 | -0.62   | 4.0                  |
| 3960.00               | -41.72                        | -41.72                    | -41.52        | -41.3 | -0.22   | 4.0                  |
| 4488.00               | -41.92                        | -41.92                    | -41.72        | -41.3 | -0.42   | 4.0                  |

#### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | ±1.33 dB                        |

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#### Equipment Configuration for RF Output Power

|                                |                |                                   |                |
|--------------------------------|----------------|-----------------------------------|----------------|
| <b>Variant:</b>                | Band Group 3   | <b>Duty Cycle (%):</b>            | 99             |
| <b>Data Rate:</b>              | -              | <b>Antenna Gain (dBi):</b>        | 0.2/-0.2/0.1   |
| <b>Modulation:</b>             | BPM/BPSK       | <b>Beam Forming Gain (Y)(dB):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>                 | SB             |
| <b>Engineering Test Notes:</b> |                |                                   |                |

#### Test Measurement Results

| Test Frequency<br>MHz | Measured Output<br>Power(dBm) | Calculated<br>Total Power | EIRP+<br>DCCF | Limit | Margin  | EUT Power<br>Setting |
|-----------------------|-------------------------------|---------------------------|---------------|-------|---------|----------------------|
|                       | Port A                        | dBm                       |               | dBm   | Numeric | Numeric              |
| 6600.00               | -42.69                        | -42.69                    | -42.49        | -41.3 | -1.19   | 2.0                  |
| 7128.00               | -42.62                        | -42.62                    | -42.82        | -41.3 | -1.52   | 2.0                  |
| 7656.00               | -42.84                        | -42.84                    | -42.74        | -41.3 | -1.44   | 2.0                  |

#### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | ±1.33 dB                        |

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#### Equipment Configuration for RF Output Power

|                                |                |                                   |                |
|--------------------------------|----------------|-----------------------------------|----------------|
| <b>Variant:</b>                | Band Group 6   | <b>Duty Cycle (%):</b>            | 99             |
| <b>Data Rate:</b>              | -              | <b>Antenna Gain (dBi):</b>        | 0.1/-1.8/-1.8  |
| <b>Modulation:</b>             | BPM/BPSK       | <b>Beam Forming Gain (Y)(dB):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>                 | SB             |
| <b>Engineering Test Notes:</b> |                |                                   |                |

#### Test Measurement Results

| Test Frequency<br>MHz | Measured Output<br>Power(dBm) | Calculated<br>Total Power | EIRP+<br>DCCF | Limit | Margin  | EUT Power<br>Setting |
|-----------------------|-------------------------------|---------------------------|---------------|-------|---------|----------------------|
|                       | Port A                        | dBm                       |               | dBm   | Numeric | Numeric              |
| 7656.00               | -41.80                        | -41.80                    | -41.7         | -41.3 | -0.4    | 1.0                  |
| 8184.00               | -41.78                        | -41.78                    | -43.58        | -41.3 | -2.28   | 0.0                  |
| 8712.00               | -41.44                        | -41.44                    | -43.24        | -41.3 | -1.94   | 0.0                  |

#### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | ±1.33 dB                        |

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### **9.3. Peak Power Density**

| Test Conditions for Maximum Peak Power Density |                                     |                            |             |
|--|-------------------------------------|----------------------------|-------------|
| <b>Standard:</b>                               | FCC CFR 47:15.519 (e)               | <b>Ambient Temp. (°C):</b> | 24.0 - 27.5 |
| <b>Test Heading:</b>                           | Radiated Emissions UWB Transmission | <b>Rel. Humidity (%):</b>  | 32 - 45     |
| <b>Standard Section(s):</b>                    | ANSI C63.10 Section 10.3.6          | <b>Pressure (mBars):</b>   | 999 - 1001  |
| <b>Reference Document(s):</b>                  | None                                |                            |             |

#### **Test Procedure for UWB Transmission**

Testing was performed under ambient conditions at nominal voltage.

Test configuration and setup used for the measurement was per the Radiated Test Set-up section specified in this document. Supporting KDB's referenced below.

Measurements were gathered with a RBW of 1MHz and converted to 50MHz using the following formula:

$$\text{EIRP}_{1\text{ MHz}} = \text{EIRP}_{50\text{ MHz}} + 20\log(1\text{MHz}/50\text{MHz}) = 0\text{dBm} + (-34\text{dBm}) = -34\text{dBm}$$

#### **Operating Frequency Band:**

3100-10600 MHz

#### **Limits Maximum EIRP (dBm)**

| Frequency (MHz) | EIRP Limit (dBm/50MHz) | EIRP Limit (dBm/1MHz) |
|-----------------|------------------------|-----------------------|
| 3100 - 10600    | 0                      | -34                   |

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#### Equipment Configuration for Peak Power Density

|                                |                |                                   |                |
|--------------------------------|----------------|-----------------------------------|----------------|
| <b>Variant:</b>                | Band Group 1   | <b>Duty Cycle (%):</b>            | 99             |
| <b>Data Rate:</b>              | -              | <b>Antenna Gain (dBi):</b>        | 1.0/0.2/0.2    |
| <b>Modulation:</b>             | BPM/BPSK       | <b>Beam Forming Gain (Y)(dB):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>                 | SB             |
| <b>Engineering Test Notes:</b> |                |                                   |                |

#### Test Measurement Results

| Frequency | Measured Output Power   | Limit  | Margin  | EUT Power Setting |
|-----------|-------------------------|--------|---------|-------------------|
|           | dBm                     | dBm    | Numeric | Numeric           |
| 3432.00   | <a href="#">-36.101</a> | -34.00 | -2.10   | 4.0               |
| 3960.00   | <a href="#">-35.379</a> | -34.00 | -1.38   | 4.0               |
| 4488.00   | <a href="#">-35.635</a> | -34.00 | -1.64   | 4.0               |

#### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | ±1.33 dB                        |

Note: click the links in the above matrix to view the graphical image (plot).

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#### Equipment Configuration for Peak Power Density

|                                |                |                                   |                |
|--------------------------------|----------------|-----------------------------------|----------------|
| <b>Variant:</b>                | Band Group 3   | <b>Duty Cycle (%):</b>            | 99             |
| <b>Data Rate:</b>              | -              | <b>Antenna Gain (dBi):</b>        | 0.2/-0.2/0.1   |
| <b>Modulation:</b>             | BPM/BPSK       | <b>Beam Forming Gain (Y)(dB):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>                 | SB             |
| <b>Engineering Test Notes:</b> |                |                                   |                |

#### Test Measurement Results

| Frequency | Measured Output Power   | Limit  | Margin  | EUT Power Setting |
|-----------|-------------------------|--------|---------|-------------------|
|           | dBm                     | dBm    | Numeric | Numeric           |
| 6600.00   | <a href="#">-35.220</a> | -34.00 | -1.22   | 2.0               |
| 7128.00   | <a href="#">-36.648</a> | -34.00 | -2.65   | 2.0               |
| 7656.00   | <a href="#">-36.188</a> | -34.00 | -2.19   | 2.0               |

#### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | ±1.33 dB                        |

Note: click the links in the above matrix to view the graphical image (plot).

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#### Equipment Configuration for Peak Power Density

|                                |                |                                   |                |
|--------------------------------|----------------|-----------------------------------|----------------|
| <b>Variant:</b>                | Band Group 6   | <b>Duty Cycle (%):</b>            | 99             |
| <b>Data Rate:</b>              | -              | <b>Antenna Gain (dBi):</b>        | 0.1/-1.8/-1.8  |
| <b>Modulation:</b>             | BPM/BPSK       | <b>Beam Forming Gain (Y)(dB):</b> | Not Applicable |
| <b>TPC:</b>                    | Not Applicable | <b>Tested By:</b>                 | SB             |
| <b>Engineering Test Notes:</b> |                |                                   |                |

#### Test Measurement Results

| Frequency | Measured Output Power   | Limit  | Margin  | EUT Power Setting |
|-----------|-------------------------|--------|---------|-------------------|
|           | dBm                     | dBm    | Numeric | Numeric           |
| 7656.00   | <a href="#">-35.495</a> | -34.00 | -1.50   | 1.0               |
| 8184.00   | <a href="#">-36.648</a> | -34.00 | -2.65   | 1.0               |
| 8712.00   | <a href="#">-36.858</a> | -34.00 | -2.86   | 1.0               |

#### Traceability to Industry Recognized Test Methodologies

|                          |                                 |
|--------------------------|---------------------------------|
| <b>Work Instruction:</b> | WI-01 MEASURING RF OUTPUT POWER |
| <b>Uncertainty:</b>      | ±1.33 dB                        |

Note: click the links in the above matrix to view the graphical image (plot).

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## 9.4. TX Spurious Band Emissions

| Radiated Test Conditions for Radiated Spurious and Band-Edge Emissions |   |                            |             |
|--|---|----------------------------|-------------|
| <b>Standard:</b>   | FCC CFR 47 15.519                         | <b>Ambient Temp. (°C):</b> | 20.0 - 24.5 |
| <b>Test Heading:</b>   | Radiated Spurious and Band-Edge Emissions | <b>Rel. Humidity (%):</b>  | 32 - 45     |
| <b>Standard Section(s):</b>  | ANSI C63.10 Section 10.2 + 10.3           | <b>Pressure (mBars):</b>   | 999 - 1001  |
| <b>Reference Document(s):</b>  | See Normative References                  |                            |             |

### Test Procedure for Radiated Spurious and Band-Edge Emissions

Radiated emissions for restricted bands above 1 GHz are measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in max hold mode. Depending on the frequency band spanned a notch filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned.

Measurements on any restricted band frequency or frequencies above 1 GHz are based on the use of measurement instrumentation employing peak and average detectors. All measurements were performed using a resolution bandwidth of 1 MHz.

### Limits for Restricted Bands (15.205, 15.209)

Peak emission: 68.23 dBuV/m

Average emission: 54 dBuV/m

### Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.

$$FS = R + AF + CORR - FO$$

where:

FS = Field Strength

R = Measured Spectrum analyzer Input Amplitude

AF = Antenna Factor

CORR = Correction Factor = CL – AG + NFL

CL = Cable Loss

AG = Amplifier Gain

FO = Distance Falloff Factor

NFL = Notch Filter Loss

Measurements made at 1 meter to meet noise floor to limit requirements

| Frequency Range |       | Average Limit |                           |
|-----------------|-------|---------------|---------------------------|
| MHz             | MHz   | EIRP (dBm)    | EIRP at 1 Meters (dBuV/m) |
| 960             | 1610  | -75.3         | 29.4                      |
| 1610            | 1990  | -63.3         | 41.4                      |
| 1990            | 3100  | -61.3         | 43.4                      |
| 3100            | 10600 | -41.3         | 63.4                      |
| 10600           | 18000 | -61.3         | 43.4                      |

---

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Radiated Spurious Emissions in the GPS Bands 15.519 (d)

| Frequency Range |      | Average Limit |                           |
|-----------------|------|---------------|---------------------------|
| MHz             | MHz  | EIRP (dBm)    | EIRP at 1 Meters (dBuV/m) |
| 1164            | 1240 | -85.3         | 19.47                     |
| 1559            | 1610 | -85.3         | 19.47                     |

50 MHz Peak Emissions 15.519 (e)

Within 50 MHz bandwidth centered on highest radiated emissions  $f_M$ , Limit is 0 dBm EIRP. At 1 meter distance the equivalent level is 104.77 dBuVm

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#### 9.4.1. TX Spurious Band Emissions

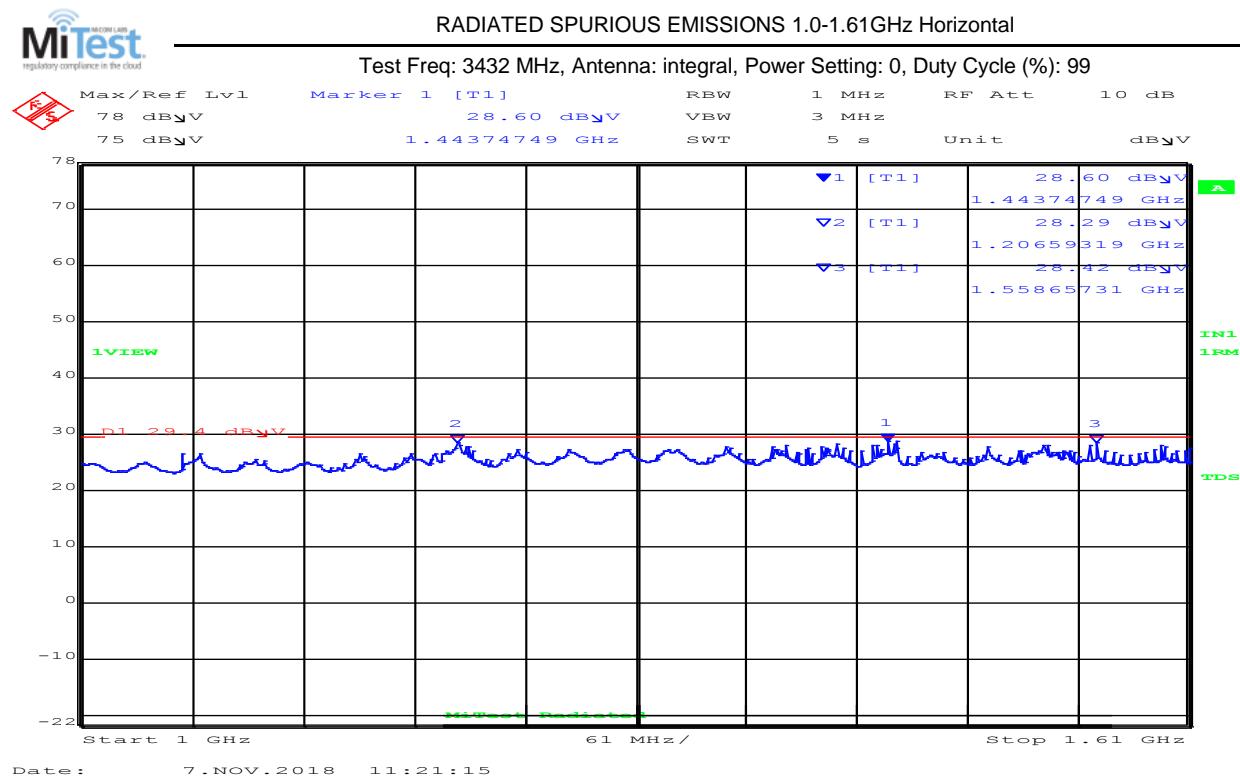
##### 9.4.1.1. Commander AL5930

3432 MHz

###### Equipment Configuration for Spurious Emissions 1 - 1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

###### Test Measurement Results



| 1000.00– 1610.00 MHz |               |              |                  |            |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1443.75*      | 28.2         | Average          | Horizontal | 150    | 0       | 29.4         | -1.2      | Pass       |
| 2                    | 1206.59*      | 26.4         | Average          | Horizontal | 150    | 0       | 29.4         | -3.0      | Pass       |
| 3                    | 1558.66*      | 25.2         | Average          | Horizontal | 150    | 0       | 29.4         | -4.2      | Pass       |

###### Test Notes:

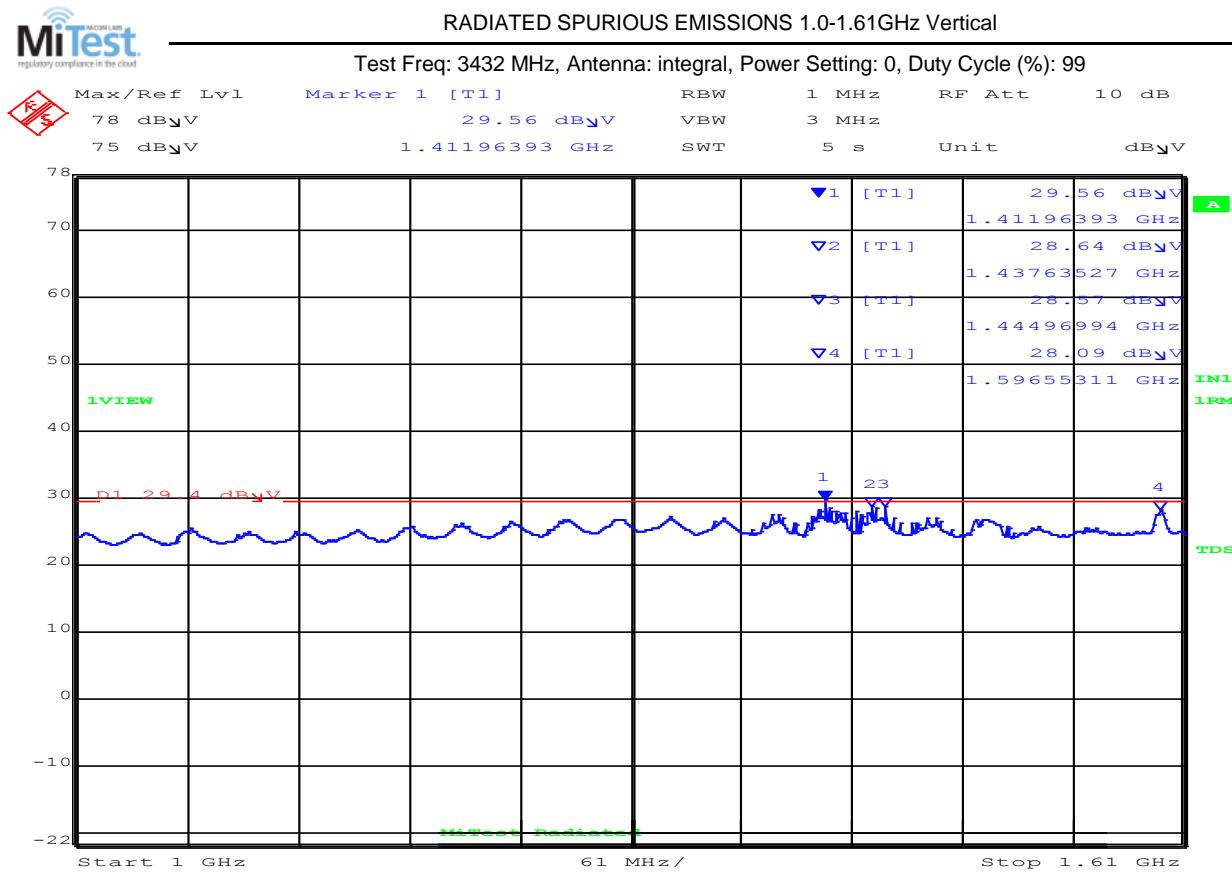
Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 1 - 1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



Date: 7.NOV.2018 11:31:31

| 1000.00– 1610.00 MHz |               |                           |                  |          |        |         |                           |           |            |
|----------------------|---------------|---------------------------|------------------|----------|--------|---------|---------------------------|-----------|------------|
| Num                  | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
| 1                    | 1411.96*      | 28.1                      | Average          | Vertical | 150    | 0       | 29.4                      | -1.3      | Pass       |
| 2                    | 1437.63*      | 28.0                      | Average          | Vertical | 150    | 0       | 29.4                      | -1.4      | Pass       |
| 3                    | 1444.96*      | 27.5                      | Average          | Vertical | 150    | 0       | 29.4                      | -1.9      | Pass       |
| 4                    | 1596.55*      | 27.2                      | Average          | Vertical | 150    | 0       | 29.4                      | -2.2      | Pass       |

#### Test Notes:

Source Laptop and UART to serial converter cable

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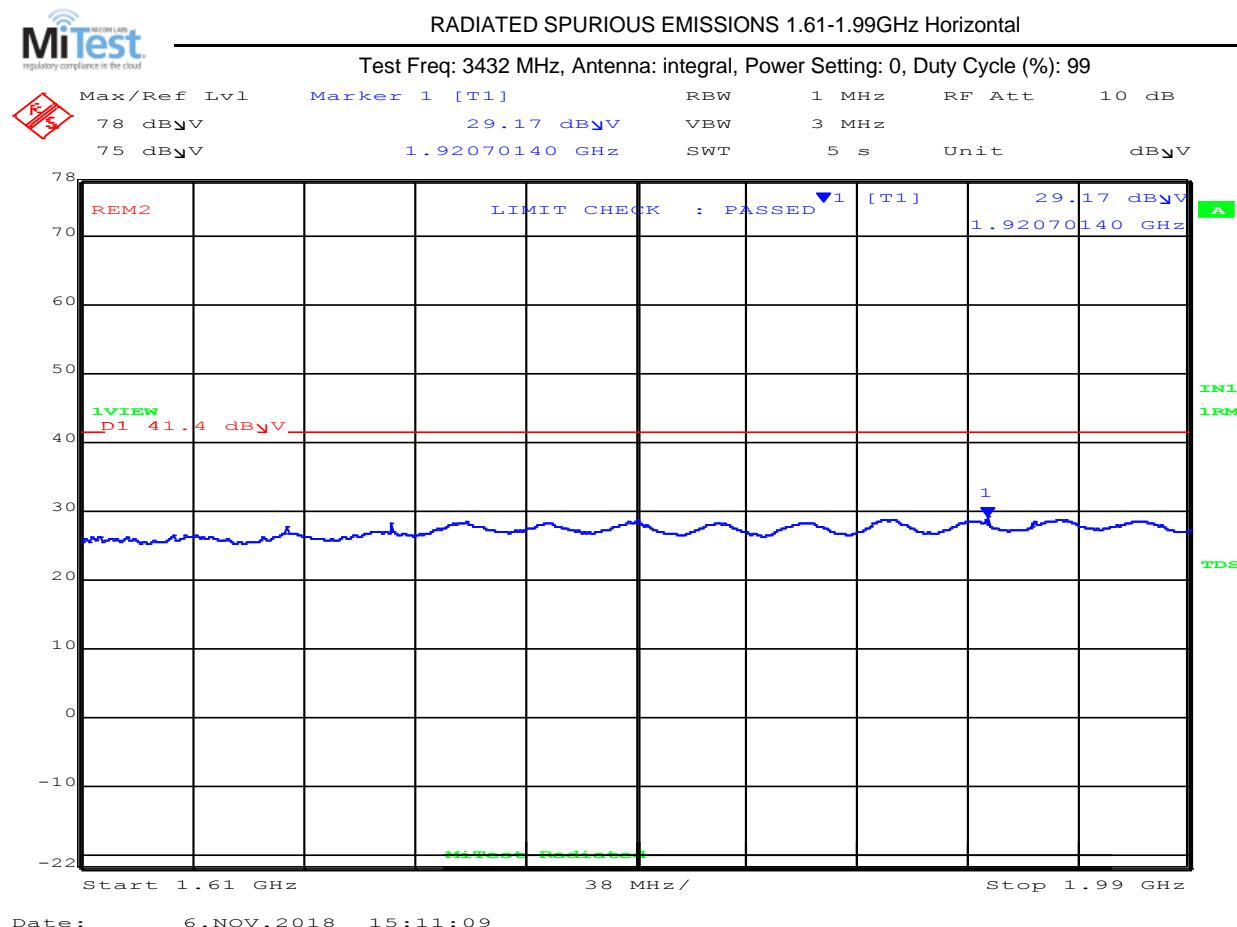


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#### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



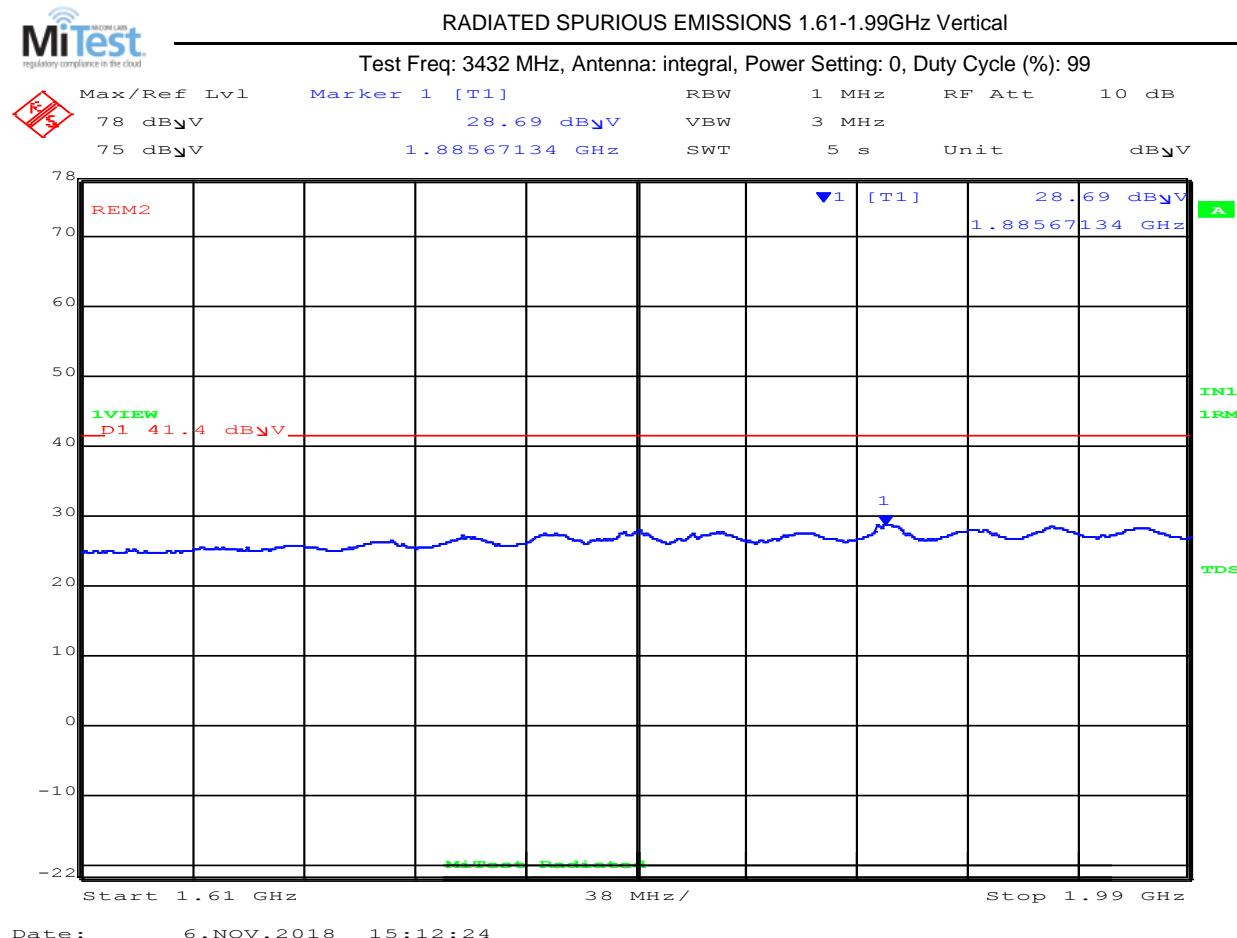
| 1610.00 – 1990.00 MHz                 |               |                           |                  |     |        |         |                           |           |            |  |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |  |
| <b>Test Notes:</b><br>Laptop Removed  |               |                           |                  |     |        |         |                           |           |            |  |

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**Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



**1610.00 – 1990.00 MHz**

| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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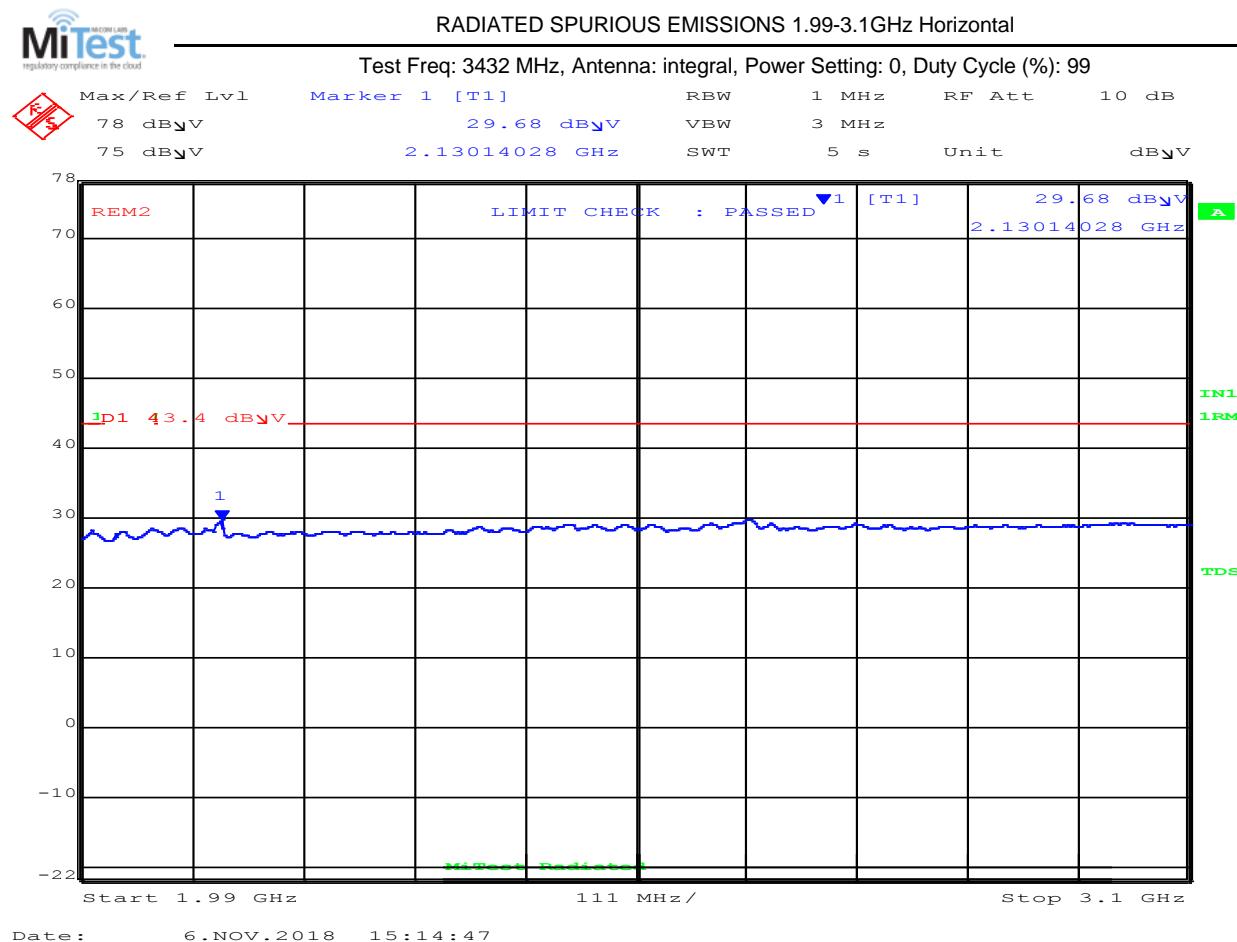


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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1990.00 – 3100.00 GHz                 |               |                    |                  |     |        |         |                    |           |            |  |
|---------------------------------------|---------------|--------------------|------------------|-----|--------|---------|--------------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |                    |                  |     |        |         |                    |           |            |  |
| <b>Test Notes:</b><br>Laptop Removed  |               |                    |                  |     |        |         |                    |           |            |  |

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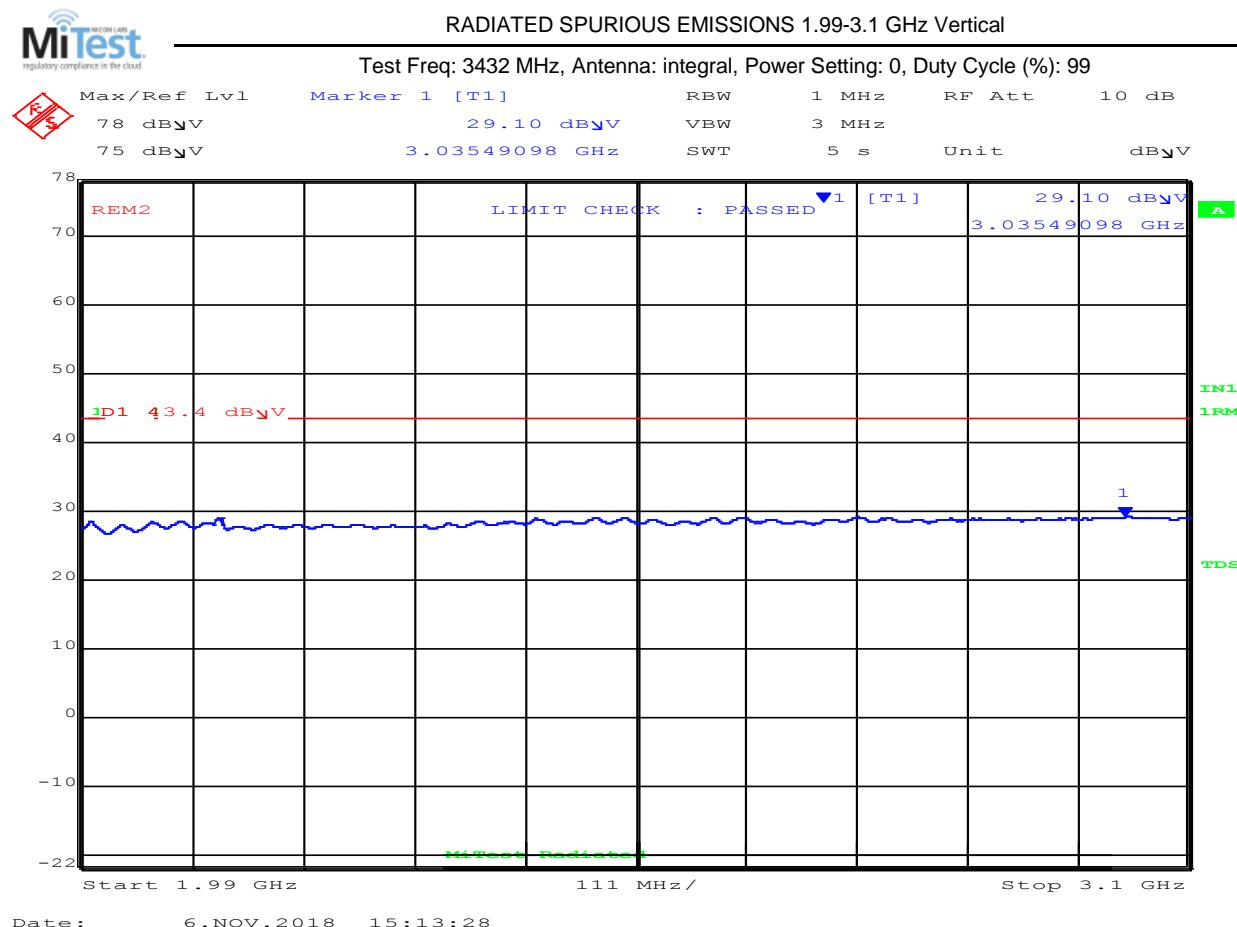


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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



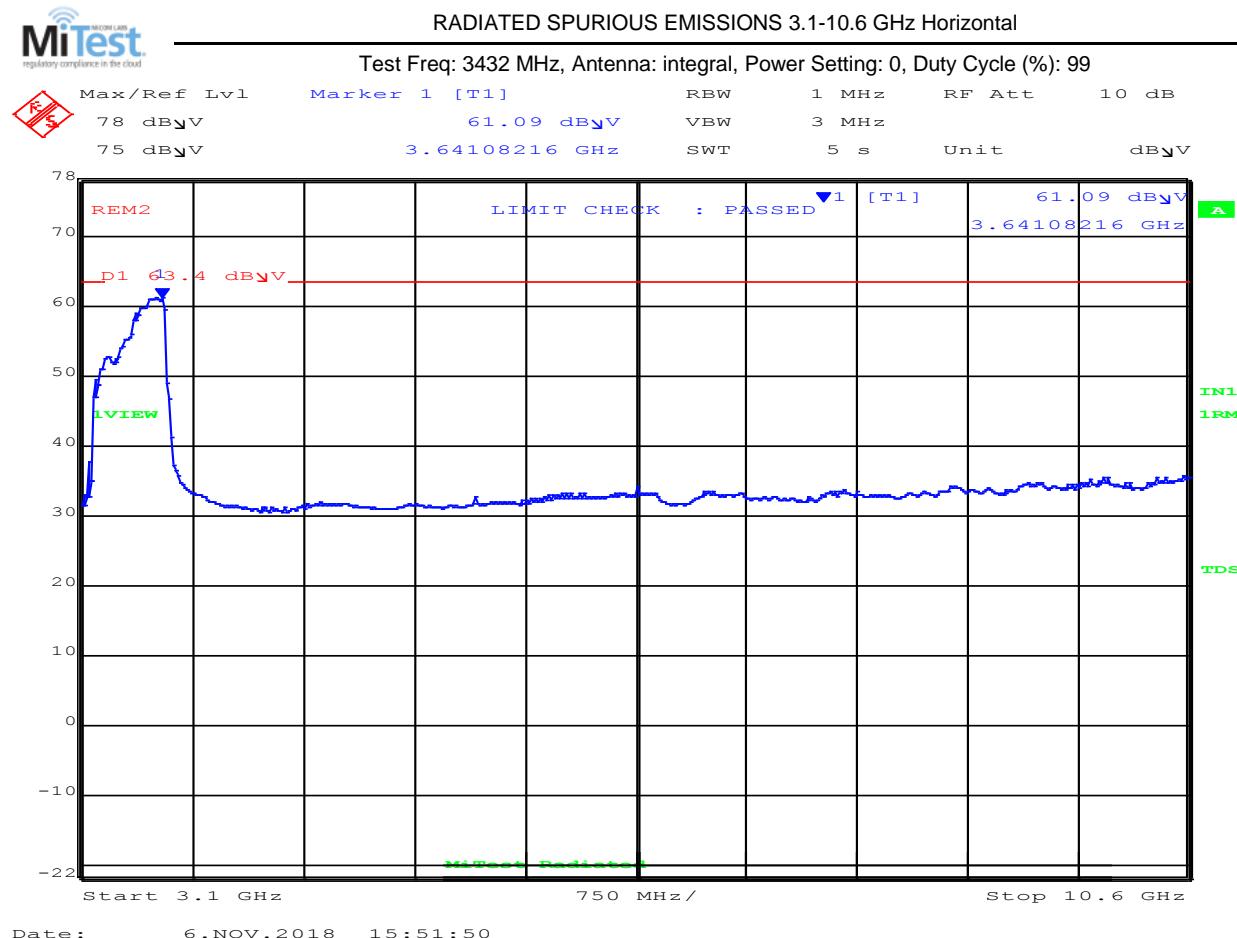
| 1990.00 – 3100.00 GHz                 |               |                           |                  |     |        |         |                           |           |            |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                                   | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
| No Signals Found within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |                           |                  |     |        |         |                           |           |            |

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 3100.00 - 10600.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 3641.08       | 59.60        | Average          | Horizontal | 150    | 0       | 63.4         | -3.8      | Pass       |

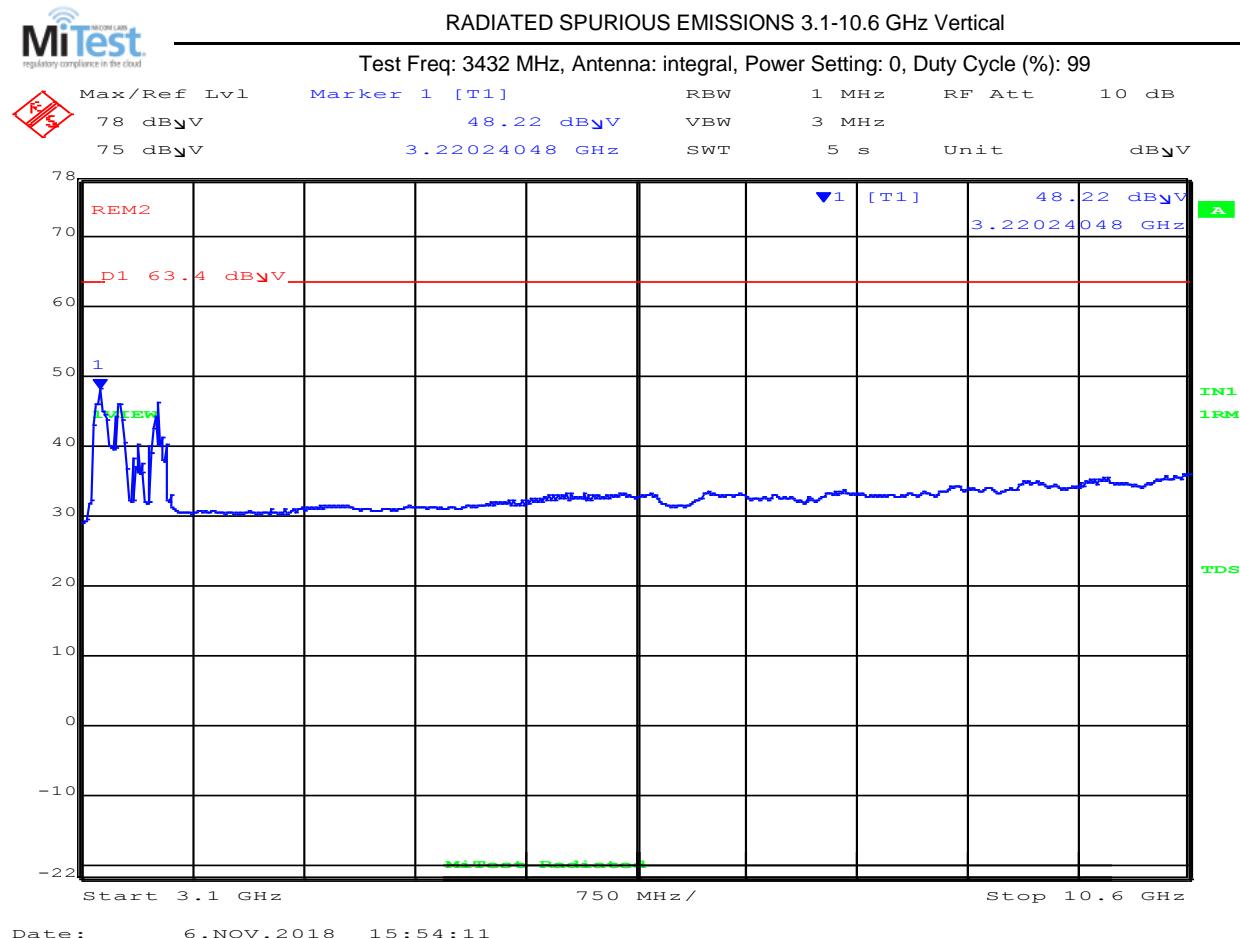
**Test Notes:**

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 3100.00 - 10600.00 MHz

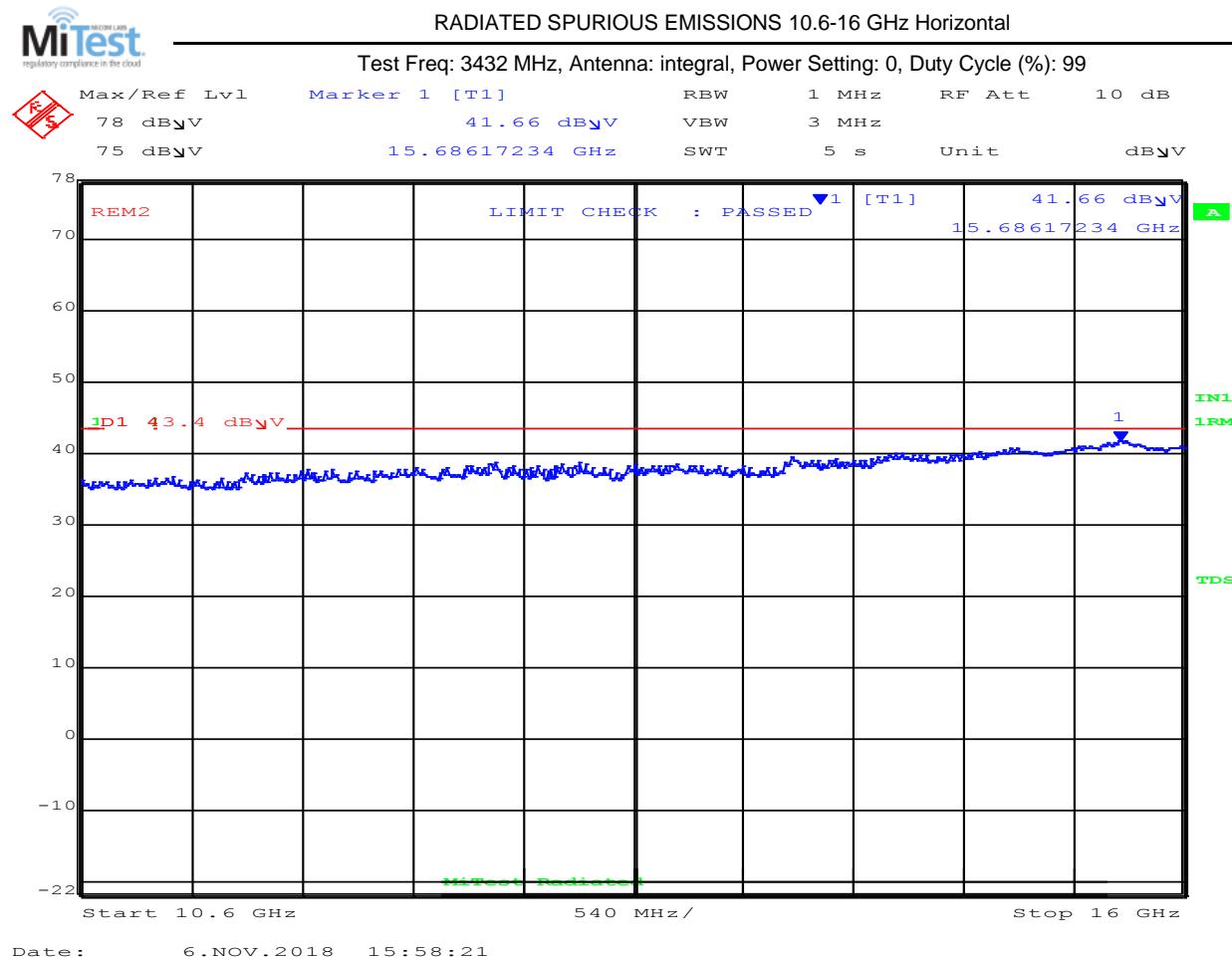
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b>                    |               |              |                  |     |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num                | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1                  | 15686.17      | 40.2         | Average          | Horizontal | 150    | 0       | 43.4         | -3.2      | Pass       |
| <b>Test Notes:</b> |               |              |                  |            |        |         |              |           |            |

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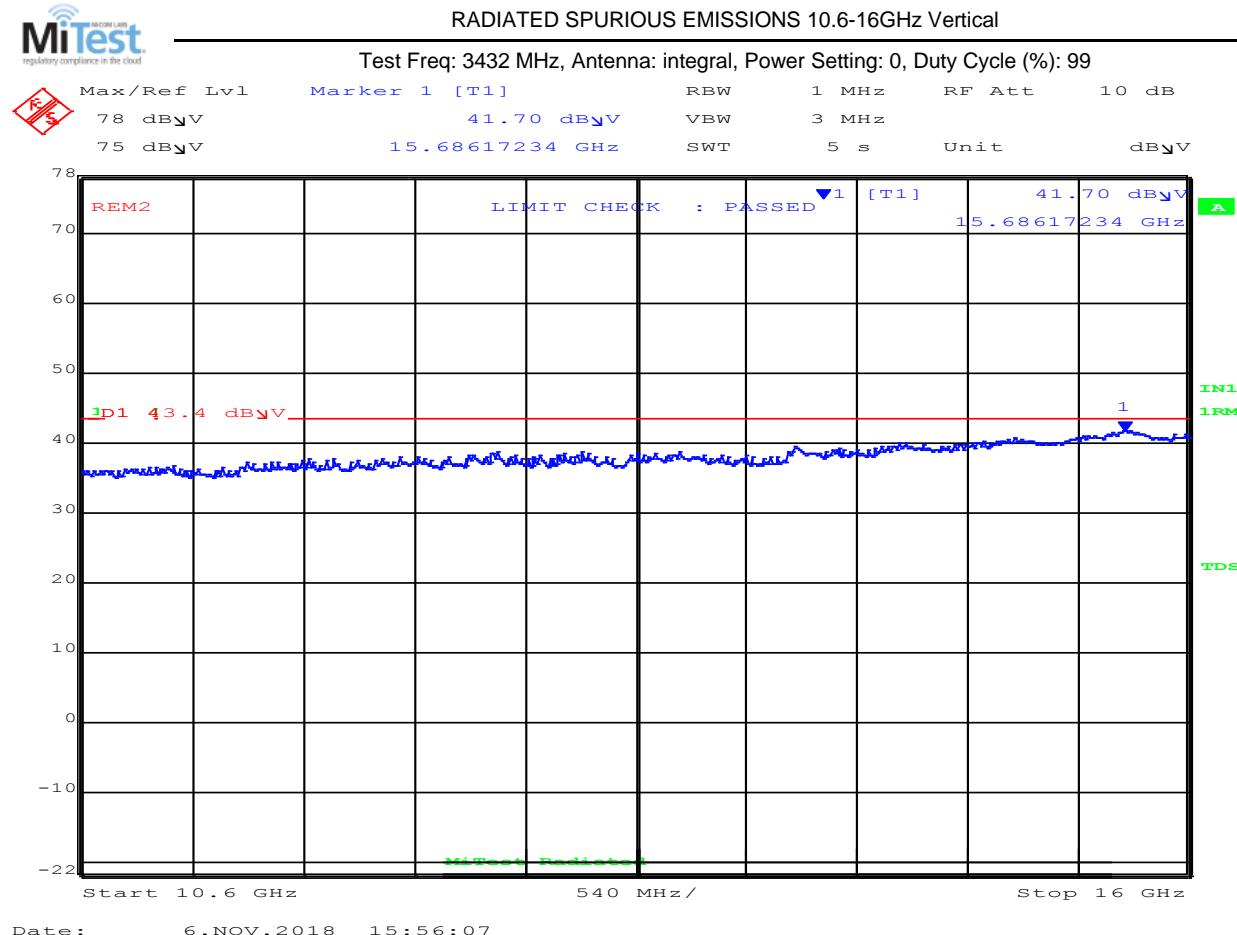


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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.17      | 41.3               | Average          | Vertical | 150    | 0       | 43.4               | -2.1      | Pass       |

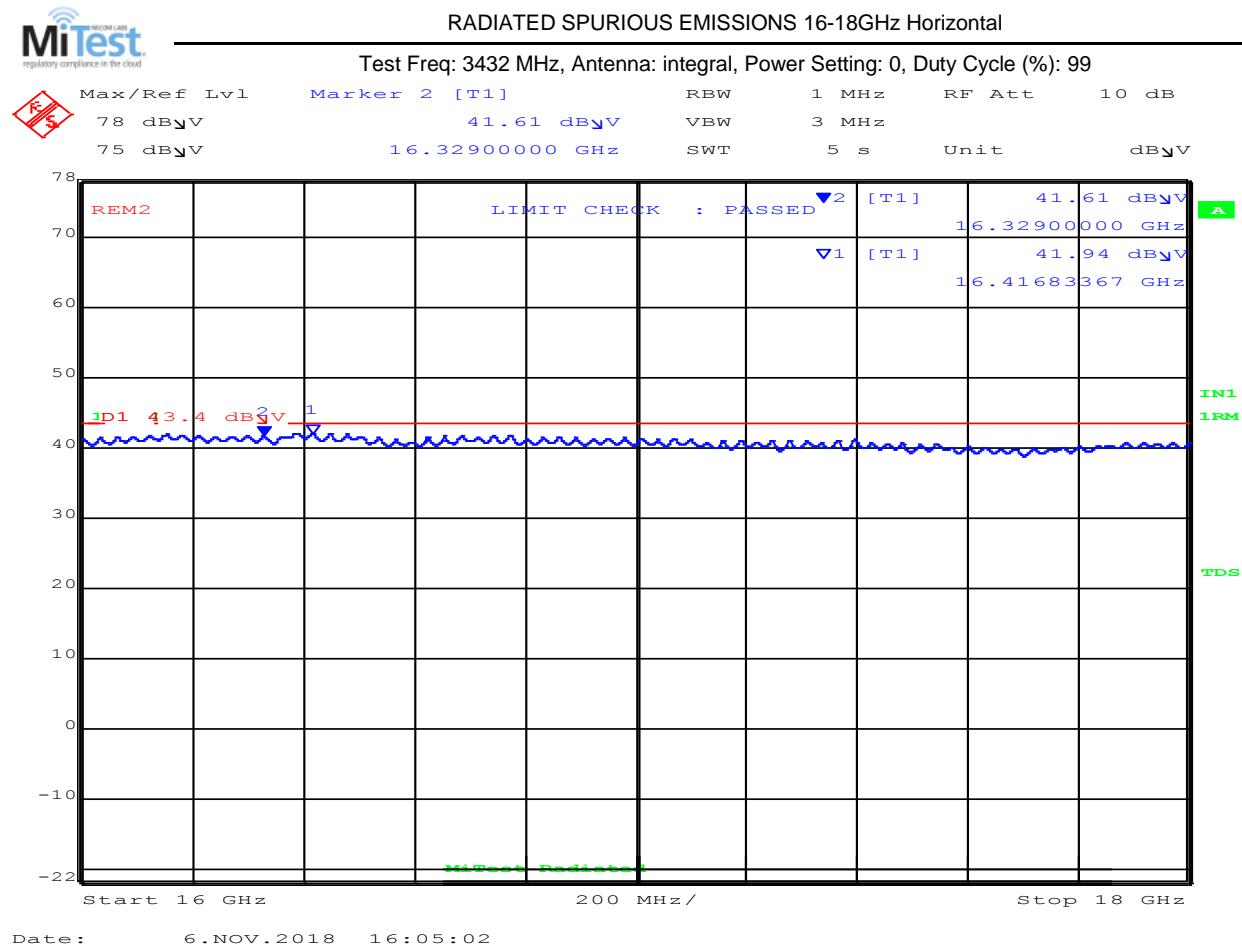
**Test Notes:**

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### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 16000.00 – 18000.00 GHz |               |                    |                  |            |        |         |                    |           |            |
|-------------------------|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| Num                     | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                       | 16416.83      | 40.9               | Average          | Horizontal | 150    | 0       | 43.4               | -2.5      | Pass       |
| 2                       | 16329.00      | 40.6               | Average          | Horizontal | 150    | 0       | 43.4               | -2.8      | Pass       |
| <b>Test Notes:</b>      |               |                    |                  |            |        |         |                    |           |            |

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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

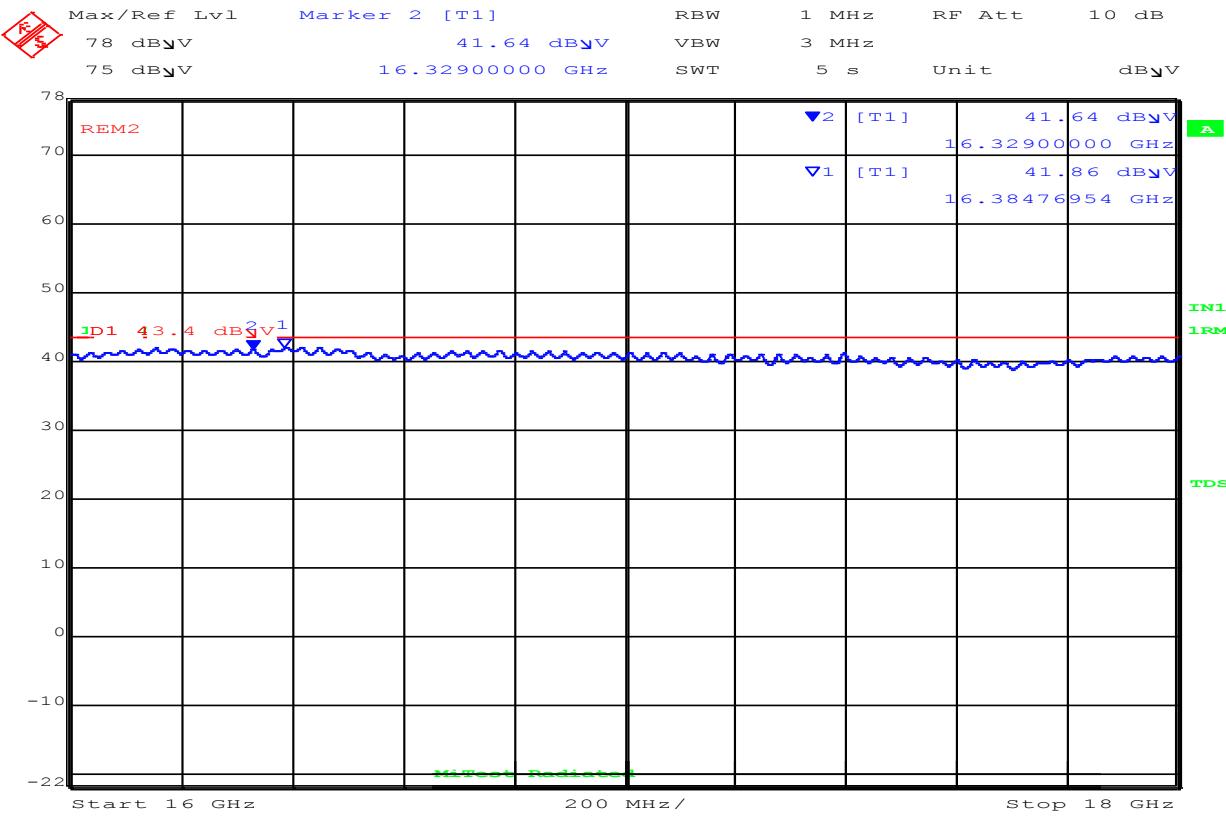
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 16-18GHz Vertical

Test Freq: 3432 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 6.NOV.2018 16:10:03

#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>u</sub> V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB <sub>u</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|----------|--------|---------|---------------------------|-----------|------------|
| 1   | 16384.77      | 40.9                      | Average          | Vertical | 150    | 0       | 43.4                      | -2.5      | Pass       |
| 2   | 16329.00      | 40.5                      | Average          | Vertical | 150    | 0       | 43.4                      | -2.9      | Pass       |

#### Test Notes:

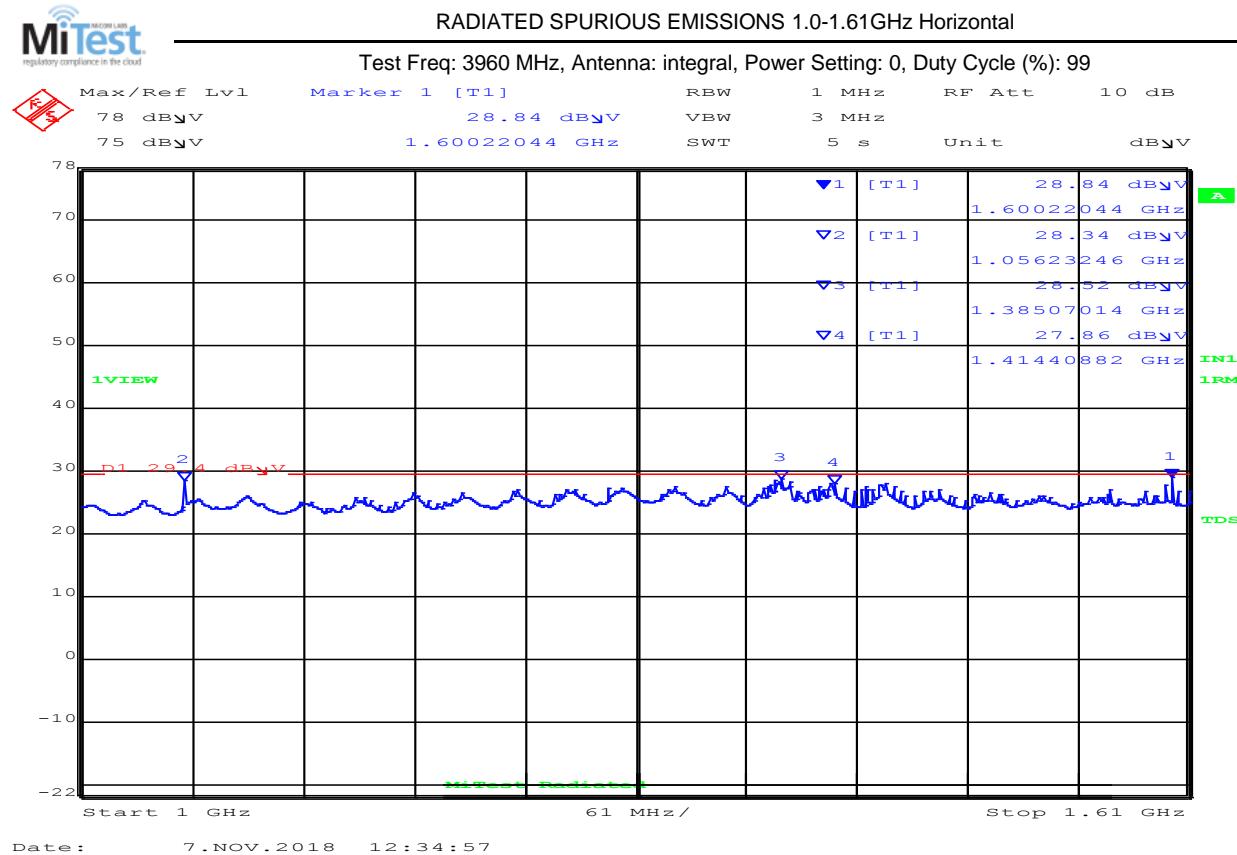
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3960 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 1000.00– 1610.00 MHz |               |                          |                  |            |        |         |                          |           |            |
|----------------------|---------------|--------------------------|------------------|------------|--------|---------|--------------------------|-----------|------------|
| Num                  | Frequency MHz | Level dB <sub>µV/m</sub> | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>µV/m</sub> | Margin dB | Pass /Fail |
| 1                    | 1600.22*      | 28.10                    | Average          | Horizontal | 150    | 0       | 29.4                     | -1.3      | Pass       |
| 2                    | 1056.23*      | 28.5                     | Average          | Horizontal | 150    | 0       | 29.4                     | -0.9      | Pass       |
| 3                    | 1385.51*      | 27.1                     | Average          | Horizontal | 150    | 0       | 29.4                     | -2.3      | Pass       |
| 3                    | 1414.41*      | 27.0                     | Average          | Horizontal | 150    | 0       | 29.4                     | -2.4      | Pass       |

**Test Notes:**  
 Source Laptop and UART to serial converter cable

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**Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical**

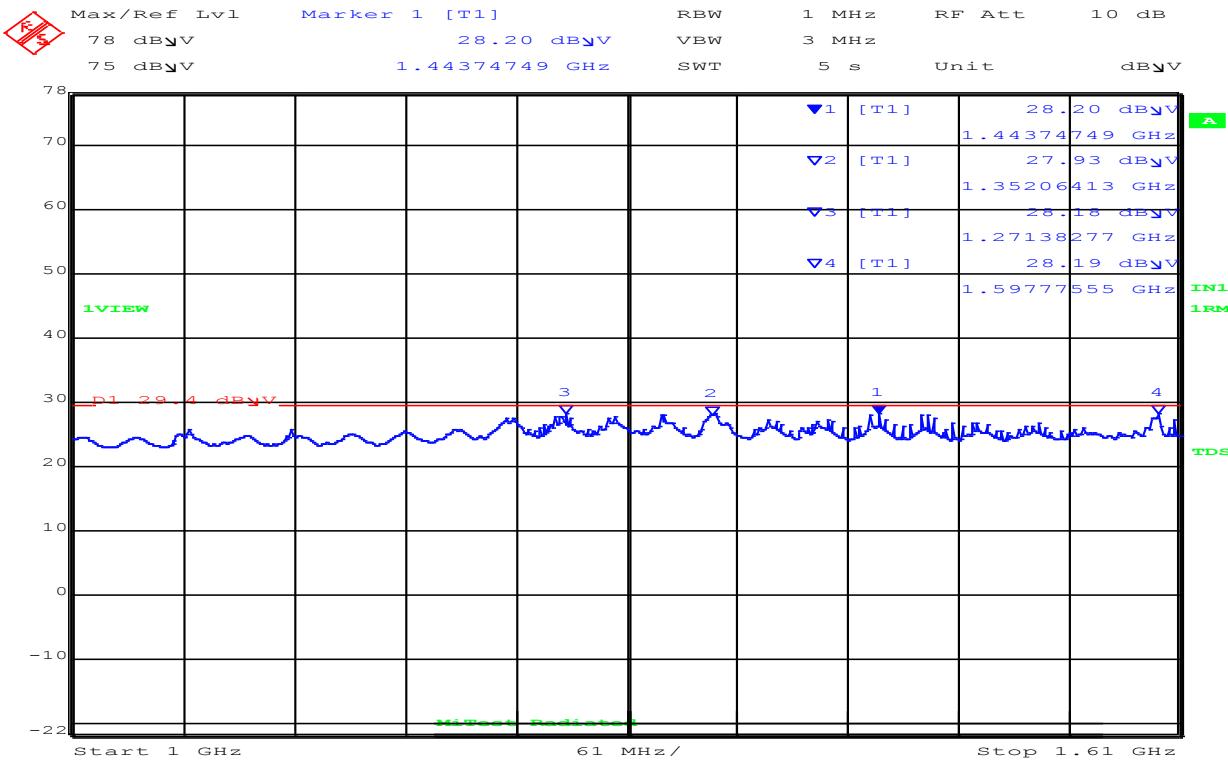
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



**RADIATED SPURIOUS EMISSIONS 1.0-1.61GHz Vertical**

Test Freq: 3960 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 7.NOV.2018 12:25:15

| 1000.00– 1610.00 MHz |               |              |                  |          |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBuV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
| 1                    | 1443.74*      | 27.5         | Average          | Vertical | 150    | 0       | 29.4         | -1.9      | Pass       |
| 2                    | 1352.06*      | 26.9         | Average          | Vertical | 150    | 0       | 29.4         | -2.5      | Pass       |
| 3                    | 1271.38*      | 26.2         | Average          | Vertical | 150    | 0       | 29.4         | -3.2      | Pass       |
| 4                    | 1597.77*      | 27.1         | Average          | Vertical | 150    | 0       | 29.4         | -2.3      | Pass       |

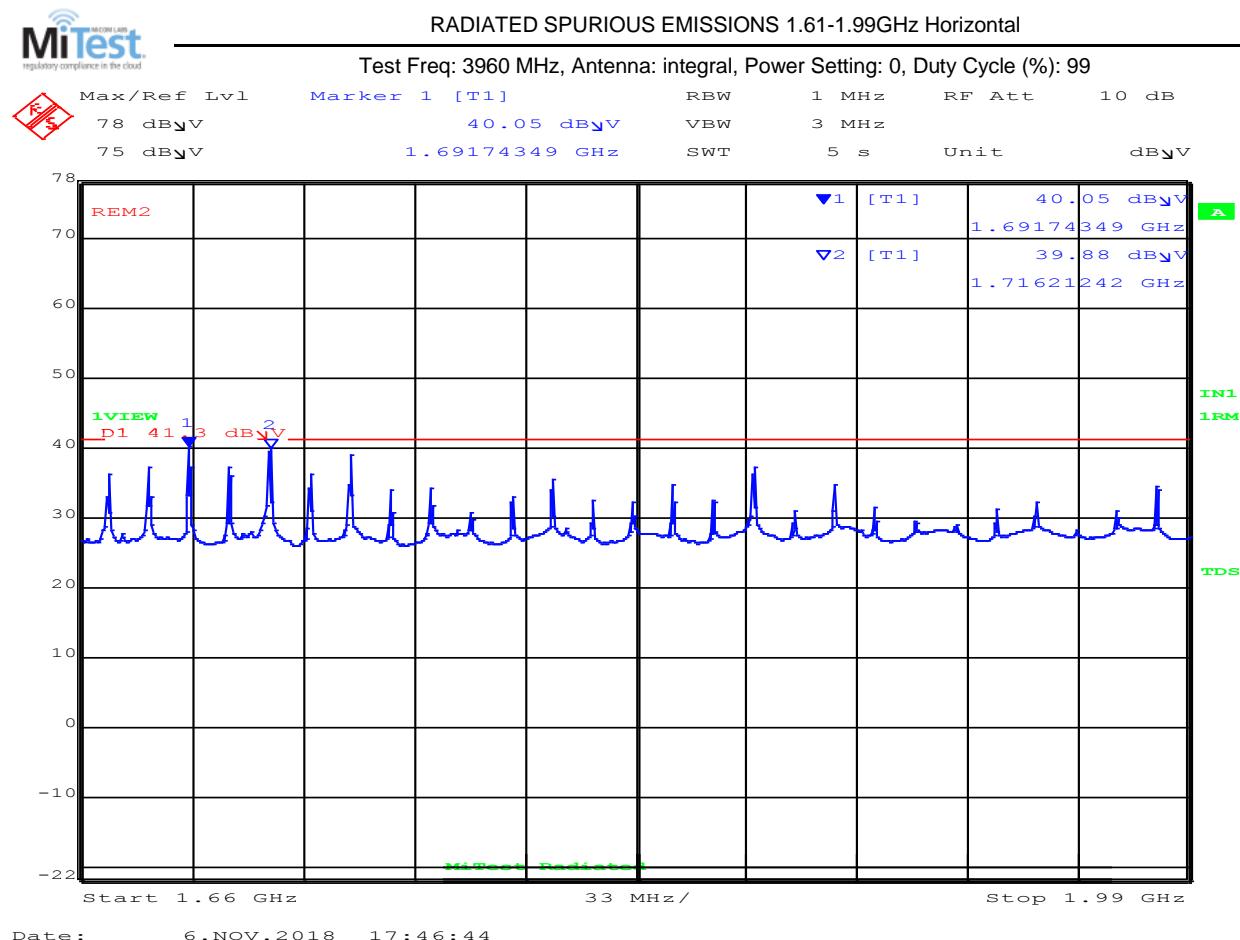
**Test Notes:**  
Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 1610.00 – 1990.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 1691.74*      | 38.7         | Average          | Horizontal | 150    | 0       | 41.4         | -2.7      | Pass       |
| 2   | 1716.21*      | 39.2         | Average          | Horizontal | 150    | 0       | 41.4         | -2.2      | Pass       |

#### Test Notes:

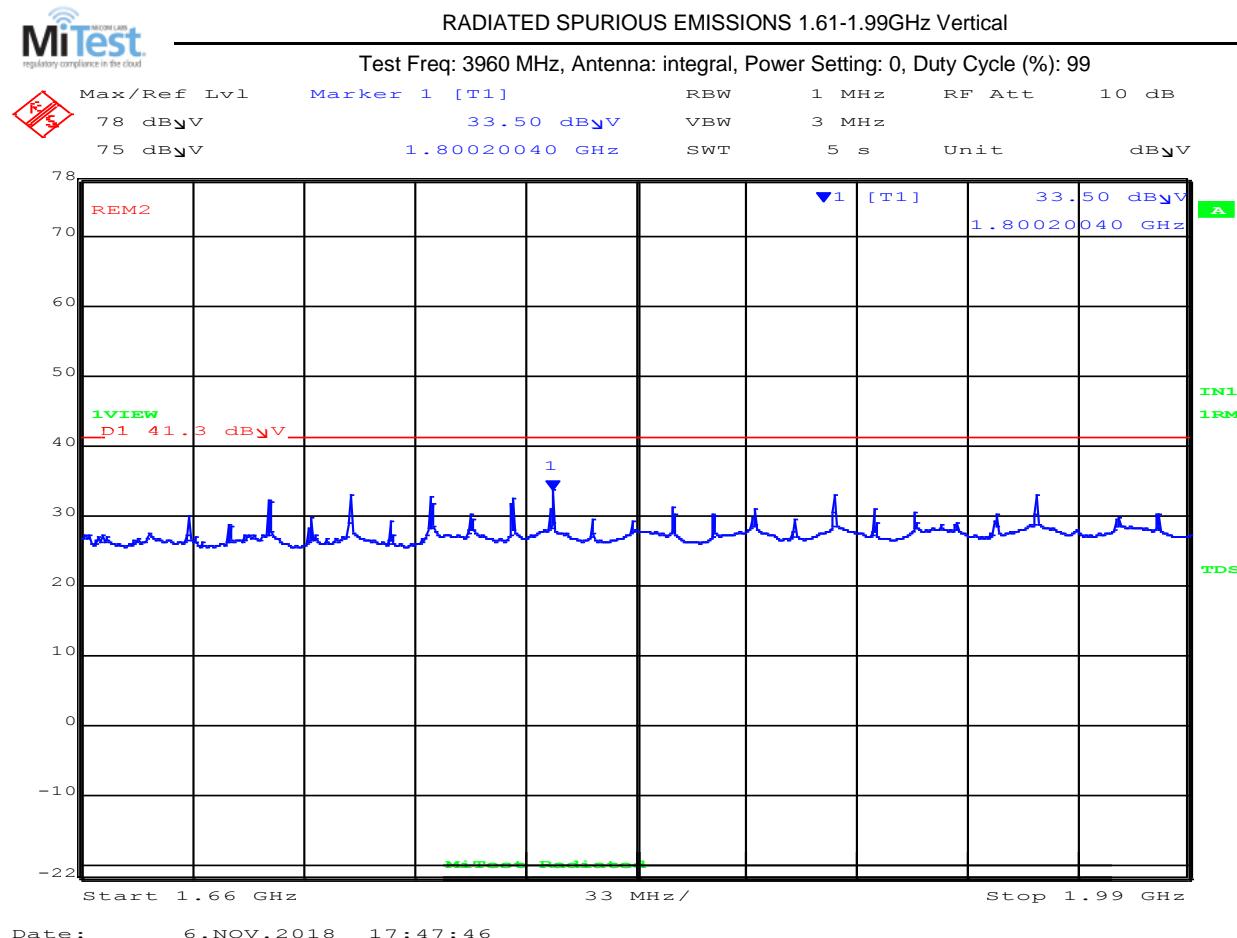
Source Laptop and UART to serial converter cable

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**Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



**1610.00 – 1990.00 MHz**

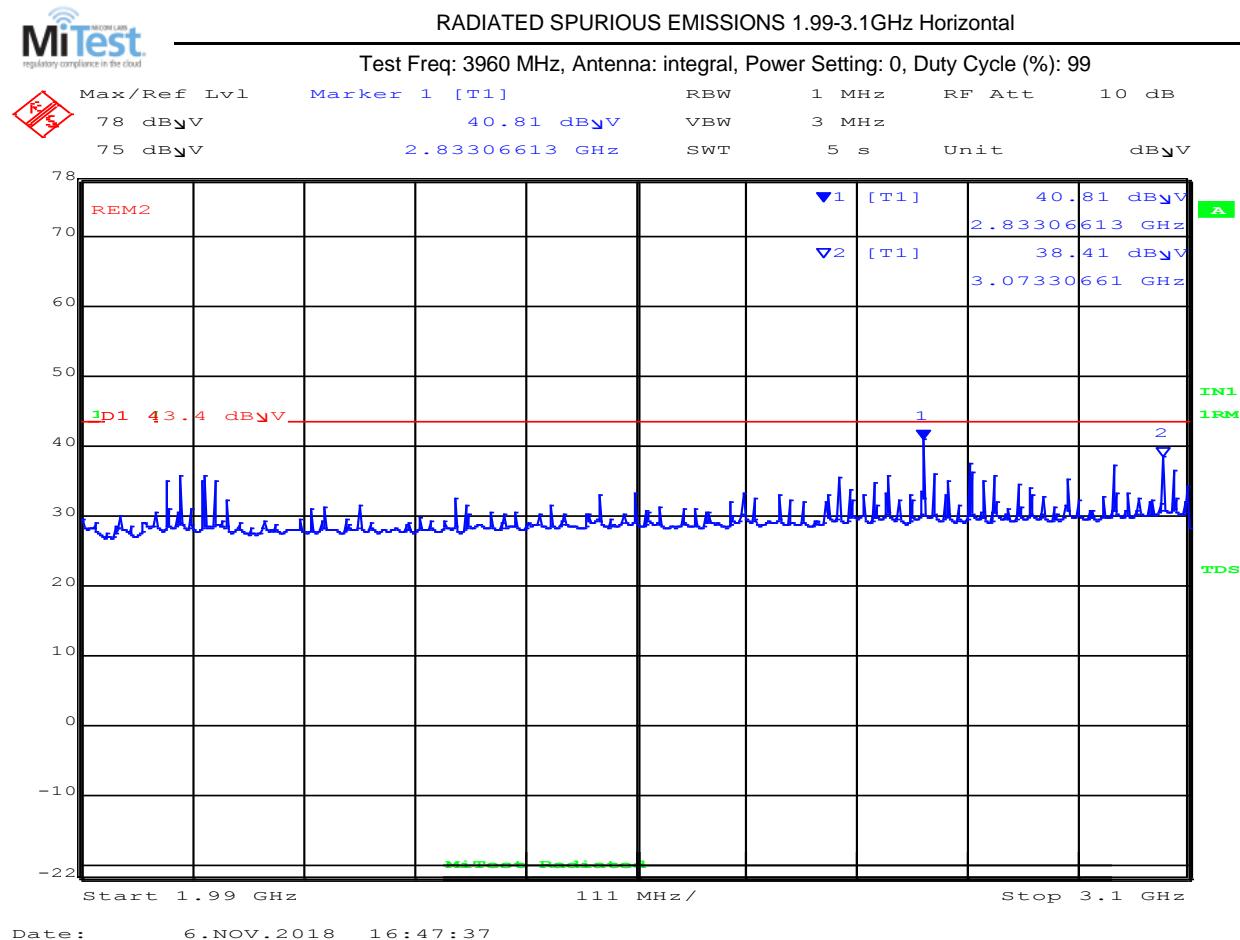
| Num  | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|--|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals Found within 6 dB of Limit                                  |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Source Laptop and UART to serial converter cable |               |              |                  |     |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 1990.00 – 3100.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 2833.06*      | 40.8         | Average          | Horizontal | 150    | 0       | 43.4         | -2.6      | Pass       |
| 2   | 3073.31*      | 38.2         | Average          | Horizontal | 150    | 0       | 43.4         | -5.2      | Pass       |

#### Test Notes:

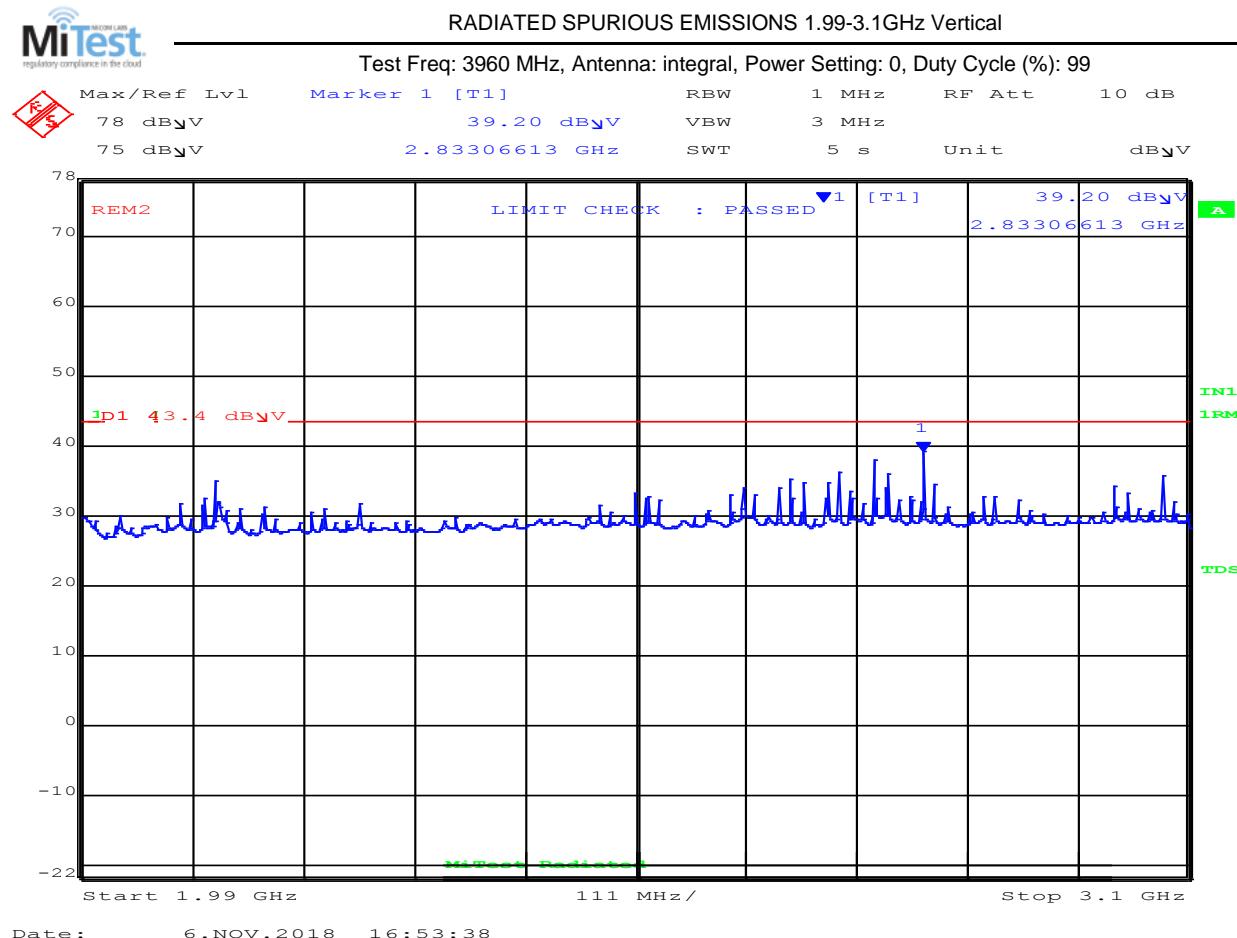
Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 1990.00 – 3100.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| 1   | 2833.06*      | 39.2         | Average          | Vertical | 150    | 0       | 43.4         | -4.2      | Pass       |

#### Test Notes:

Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

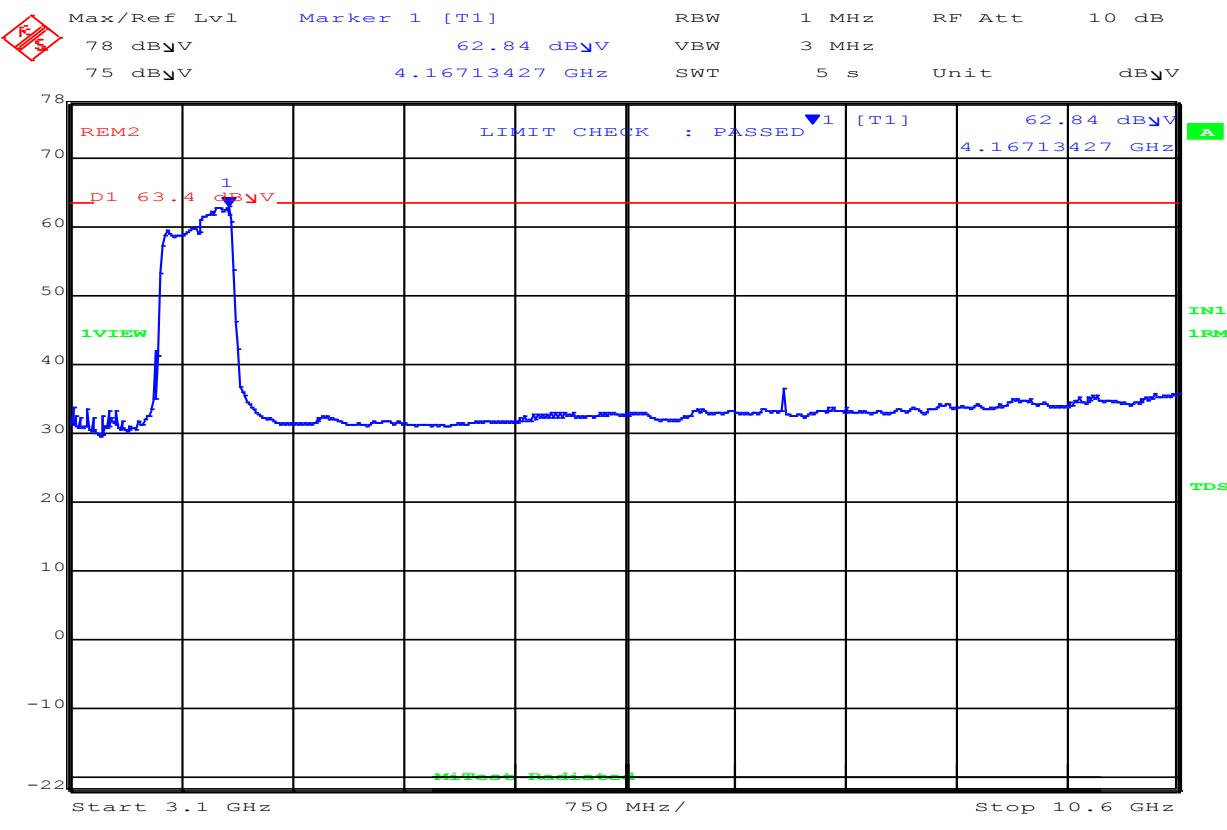
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 3.1-10.6GHz Horizontal

Test Freq: 3960 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 6.NOV.2018 16:40:51

#### 3100.00 - 10600.00 MHz

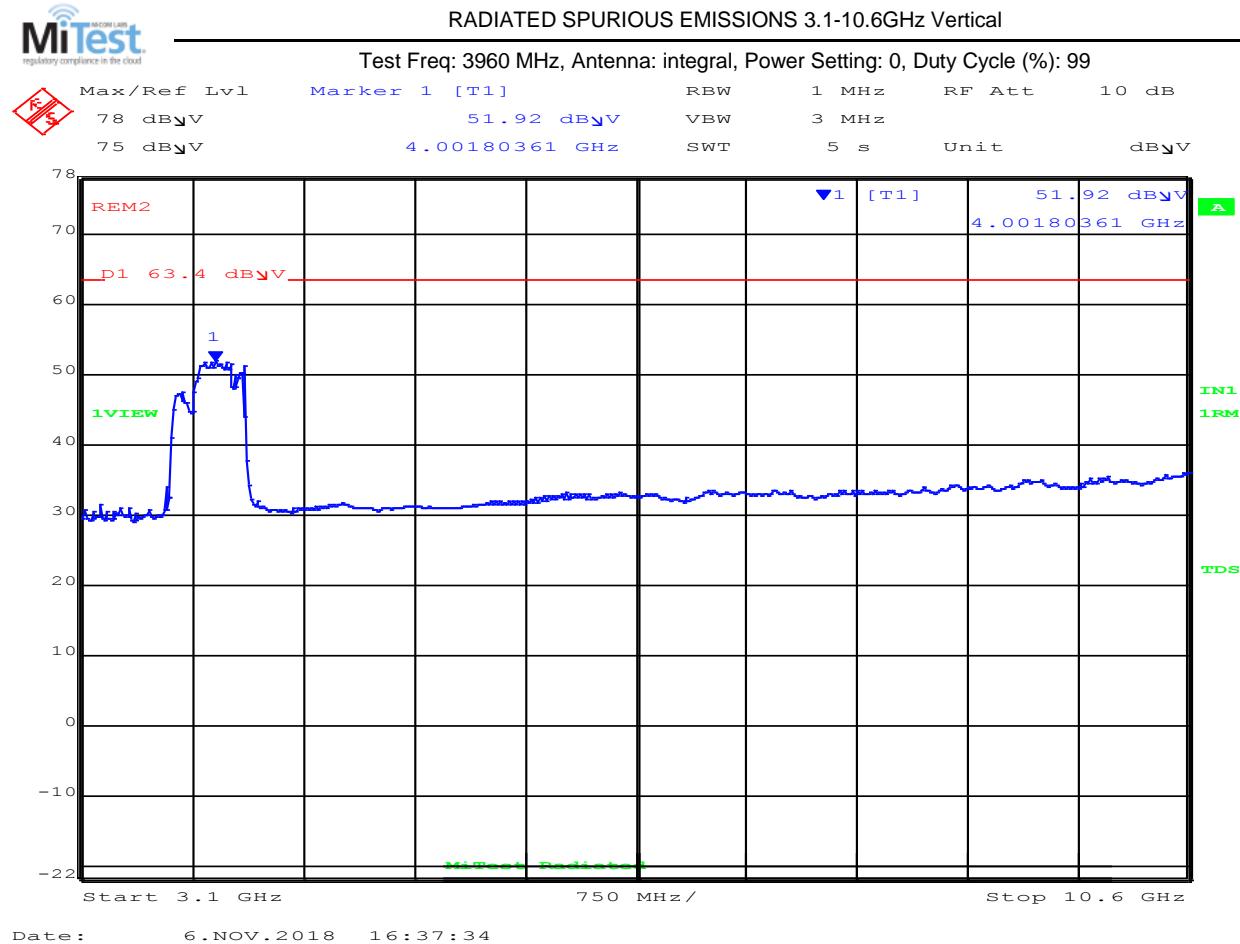
| Num                | Frequency MHz | Level dBμV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBμV/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1                  | 4167.13       | 62.0         | Average          | Horizontal | 150    | 0       | 63.4         | -1.4      | Pass       |
| <b>Test Notes:</b> |               |              |                  |            |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz                |               |              |                  |     |        |         |              |           |            |  |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |  |
| <b>Test Notes:</b>                    |               |              |                  |     |        |         |              |           |            |  |

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**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
**Page:** 55 of 466

#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

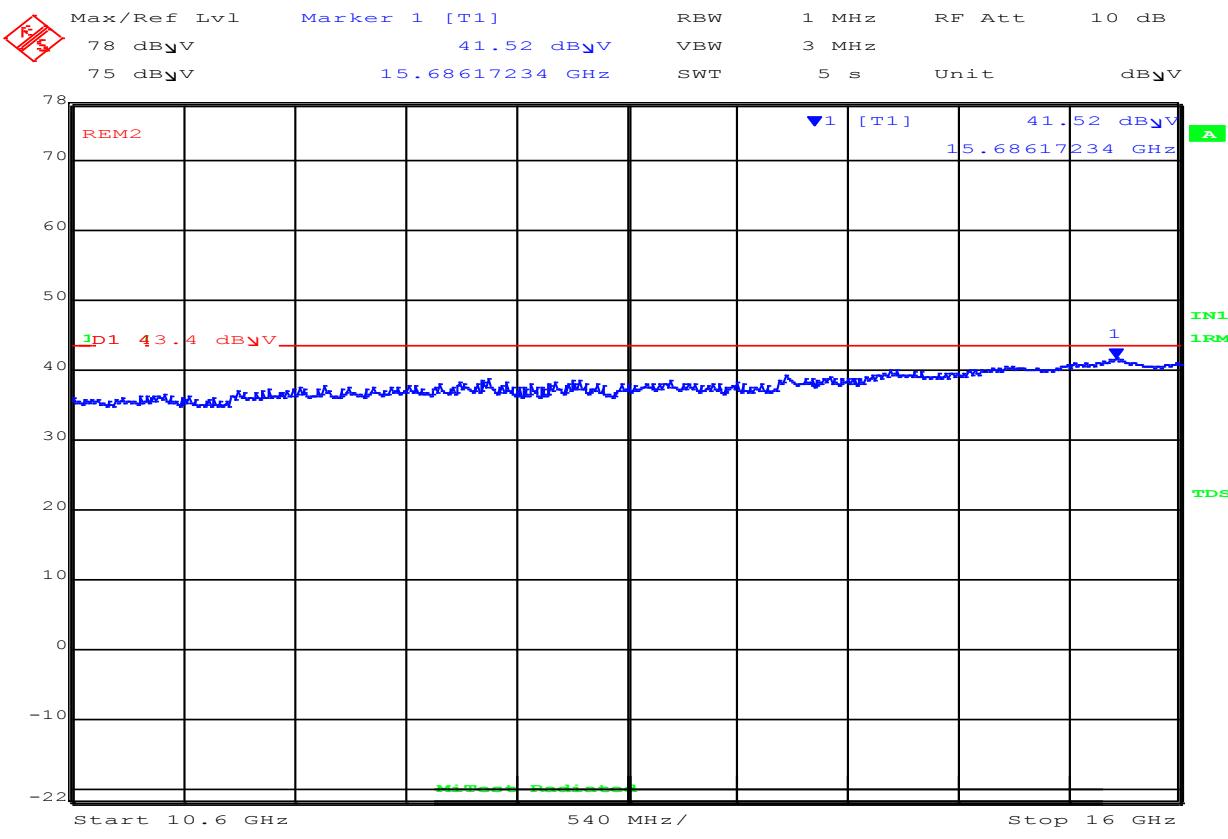
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 10.6-16GHz Horizontal

Test Freq: 3960 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 6.NOV.2018 16:32:39

#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.17      | 39.9               | Average          | Horizontal | 150    | 0       | 29.4               | -3.5      | Pass       |

#### Test Notes:

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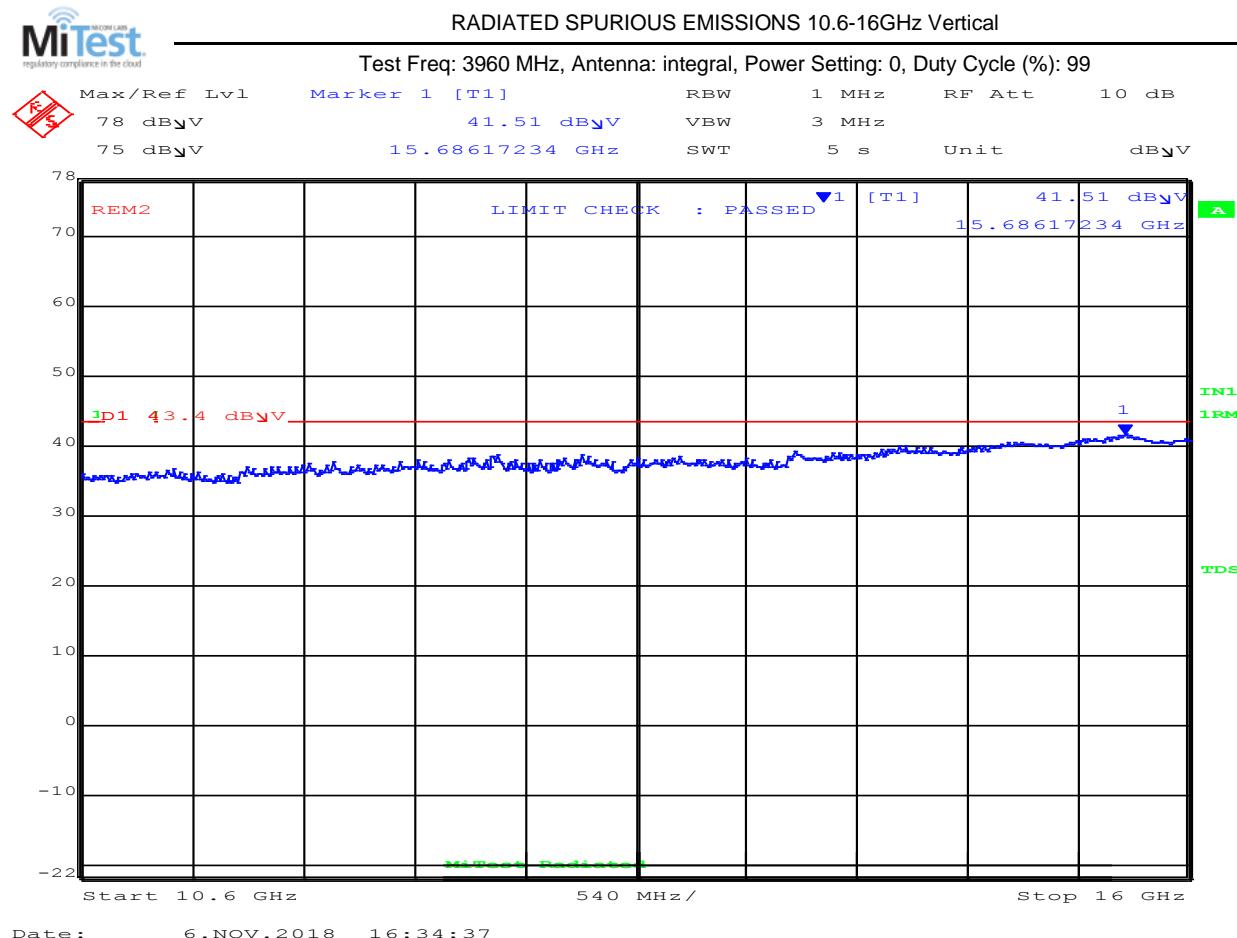


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
**Page:** 56 of 466

#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.17      | 39.9               | Average          | Vertical | 150    | 0       | 43.4               | -3.5      | Pass       |

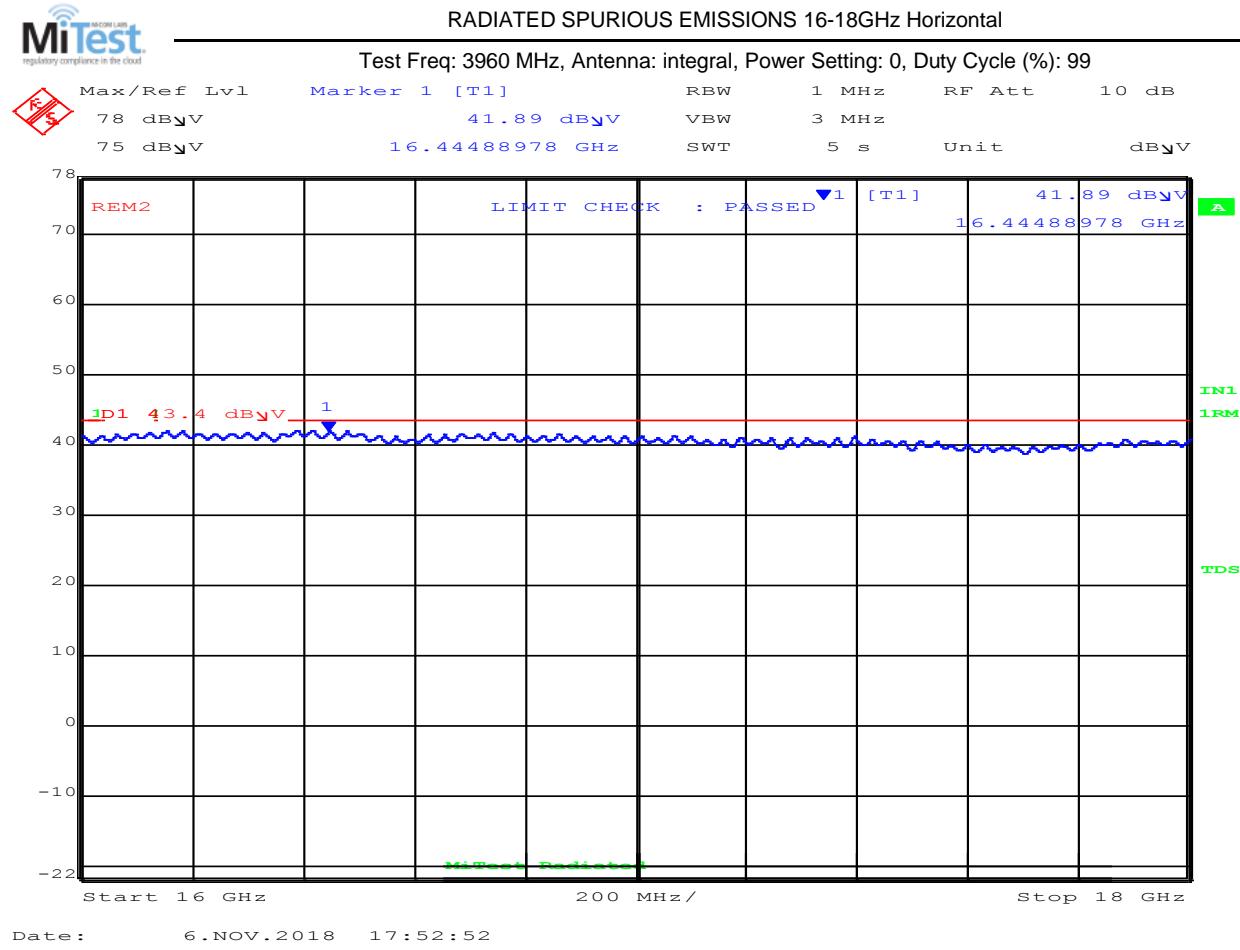
#### Test Notes:

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**Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



| 16000.00 – 18000.00 GHz |               |              |                  |            |        |         |              |           |            |
|-------------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                     | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                       | 16444.89      | 40.8         | Average          | Horizontal | 150    | 0       | 43.4         | -2.6      | Pass       |
| Test Notes:             |               |              |                  |            |        |         |              |           |            |

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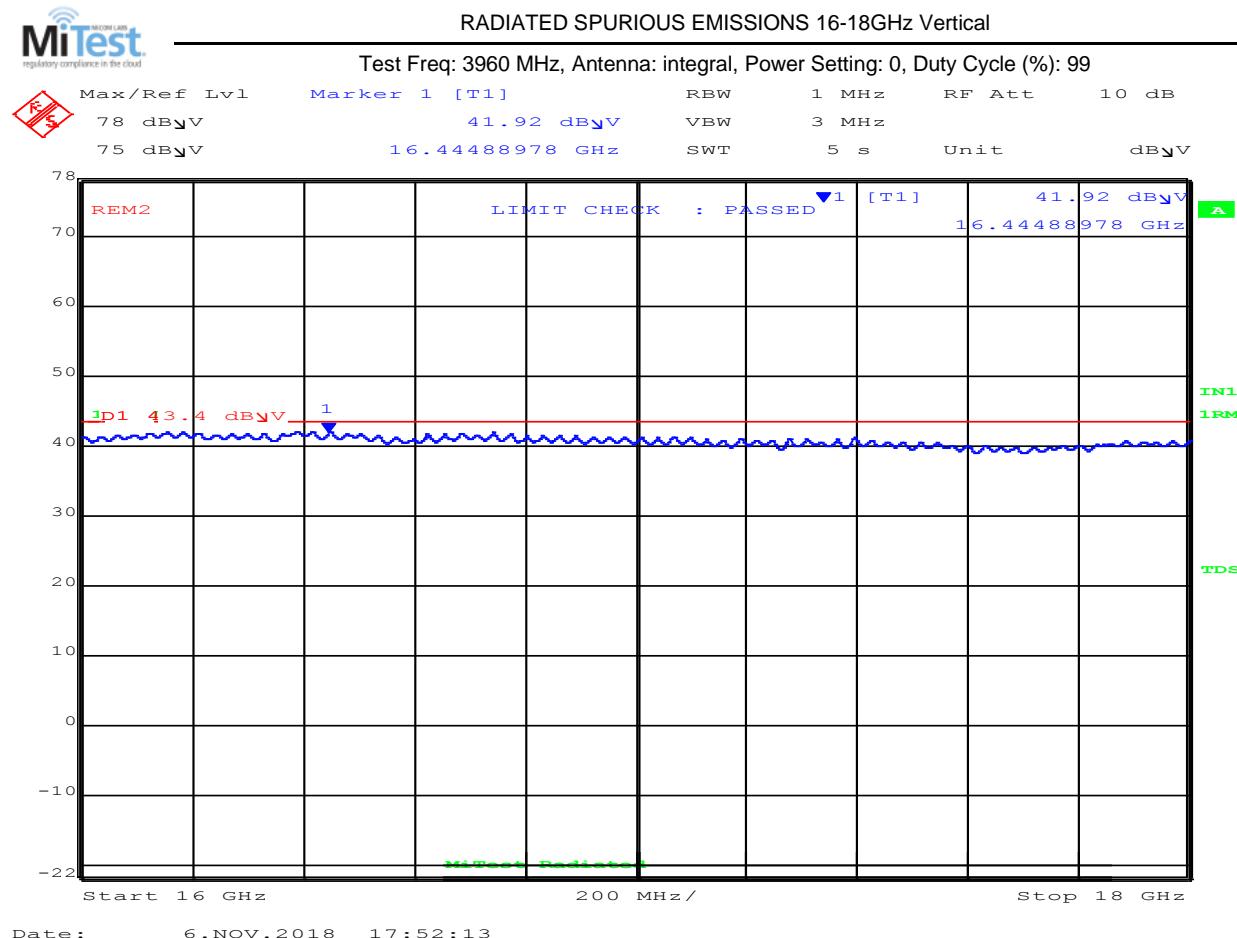


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 16444.89      | 40.8               | Average          | Vertical | 150    | 0       | 43.4               | -2.6      | Pass       |

**Test Notes:**

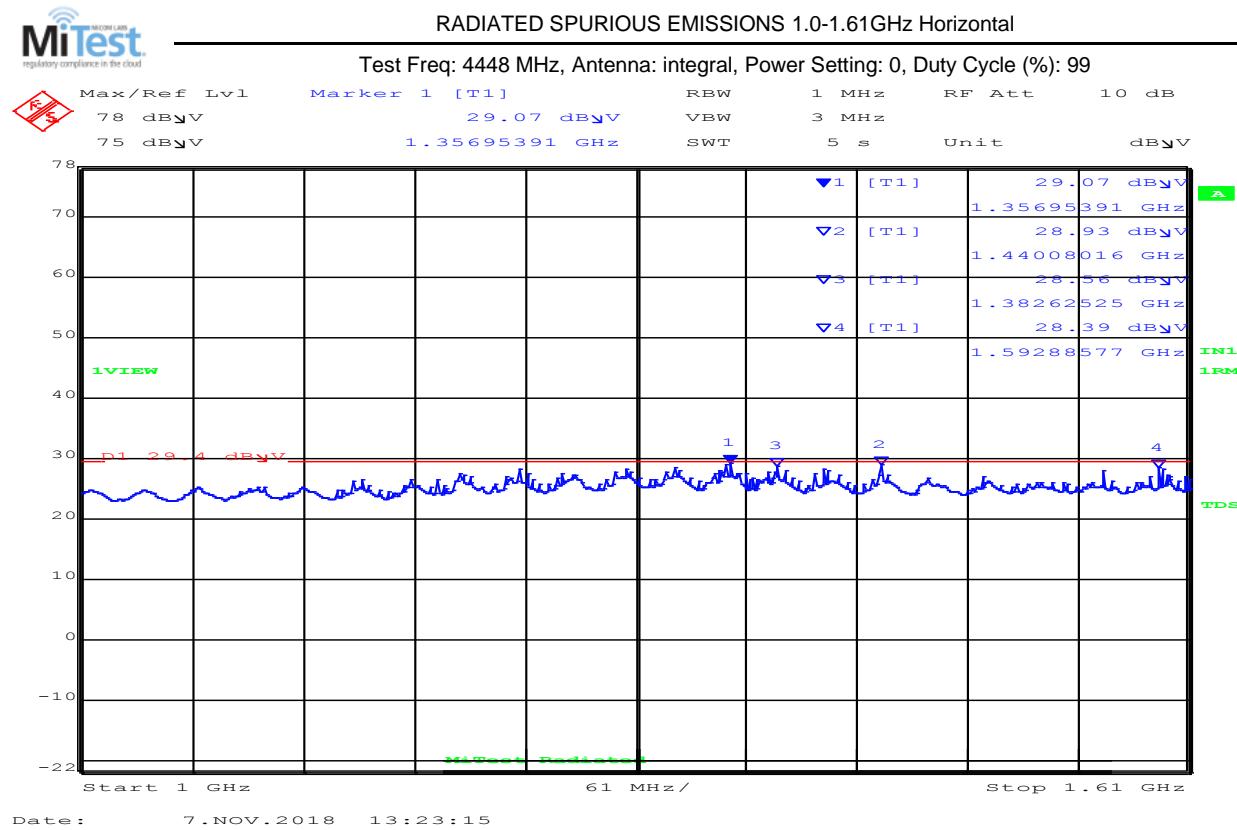
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4488 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 1000.00– 1610.00 MHz |               |              |                  |            |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1356.95*      | 27.7         | Average          | Horizontal | 150    | 0       | 29.4         | -1.7      | Pass       |
| 2                    | 1440.08       | 28.3         | Average          | Horizontal | 150    | 0       | 29.4         | -1.1      | Pass       |
| 3                    | 1382.62*      | 28.0         | Average          | Horizontal | 150    | 0       | 29.4         | -1.4      | Pass       |
| 4                    | 1592.89*      | 27.9         | Average          | Horizontal | 150    | 0       | 29.4         | -1.5      | Pass       |

**Test Notes:**  
 Source Laptop and UART to serial converter cable

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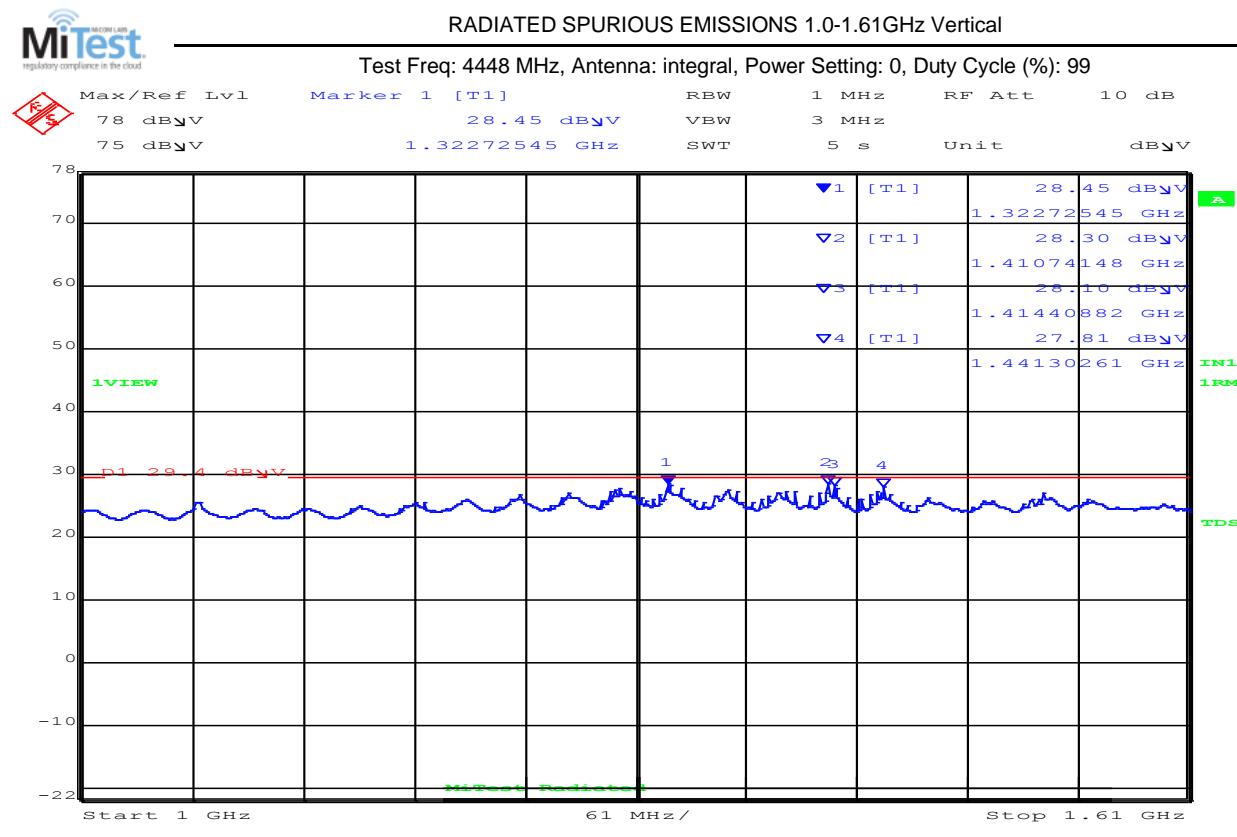


**Title:** Aleron AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1000.00– 1610.00 MHz |               |                    |                  |          |        |         |                    |           |            |
|----------------------|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| Num                  | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                    | 1322.72*      | 27.1               | Average          | Vertical | 150    | 0       | 29.4               | -2.3      | Pass       |
| 2                    | 1410.74*      | 28.0               | Average          | Vertical | 150    | 0       | 29.4               | -1.4      | Pass       |
| 3                    | 1414.41*      | 27.9               | Average          | Vertical | 150    | 0       | 29.4               | -1.5      | Pass       |
| 4                    | 1441.30*      | 26.9               | Average          | Vertical | 150    | 0       | 29.4               | -2.5      | Pass       |

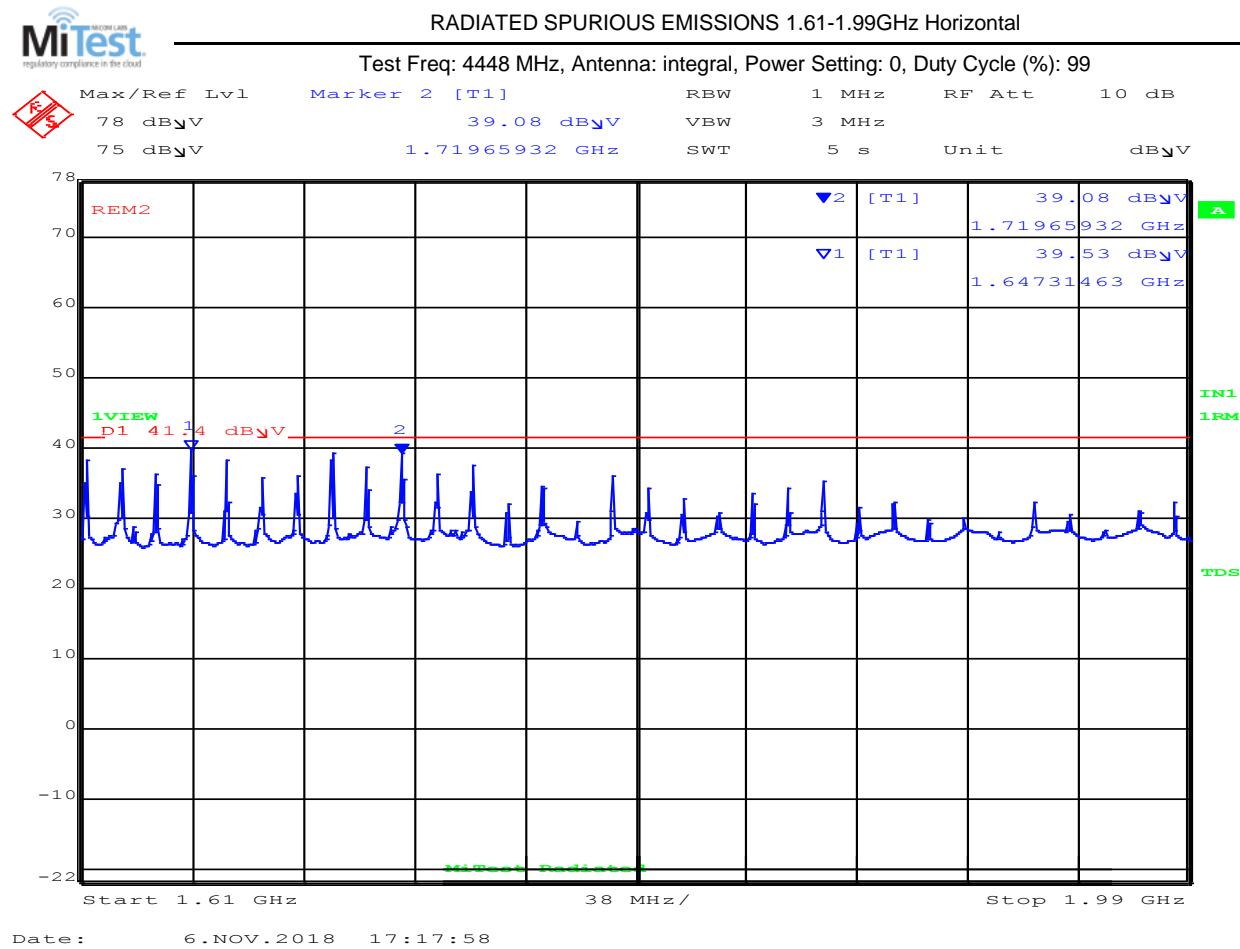
**Test Notes:**  
Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 1610.00 – 1990.00 MHz |               |              |                  |            |        |         |              |           |            |
|-----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                     | 1647.31*      | 37.2         | Average          | Horizontal | 150    | 0       | 41.4         | -4.2      | Pass       |
| 2                     | 1719.66*      | 38.6         | Average          | Horizontal | 150    | 0       | 41.4         | -2.8      | Pass       |

**Test Notes:**  
Source Laptop and UART to serial converter cable

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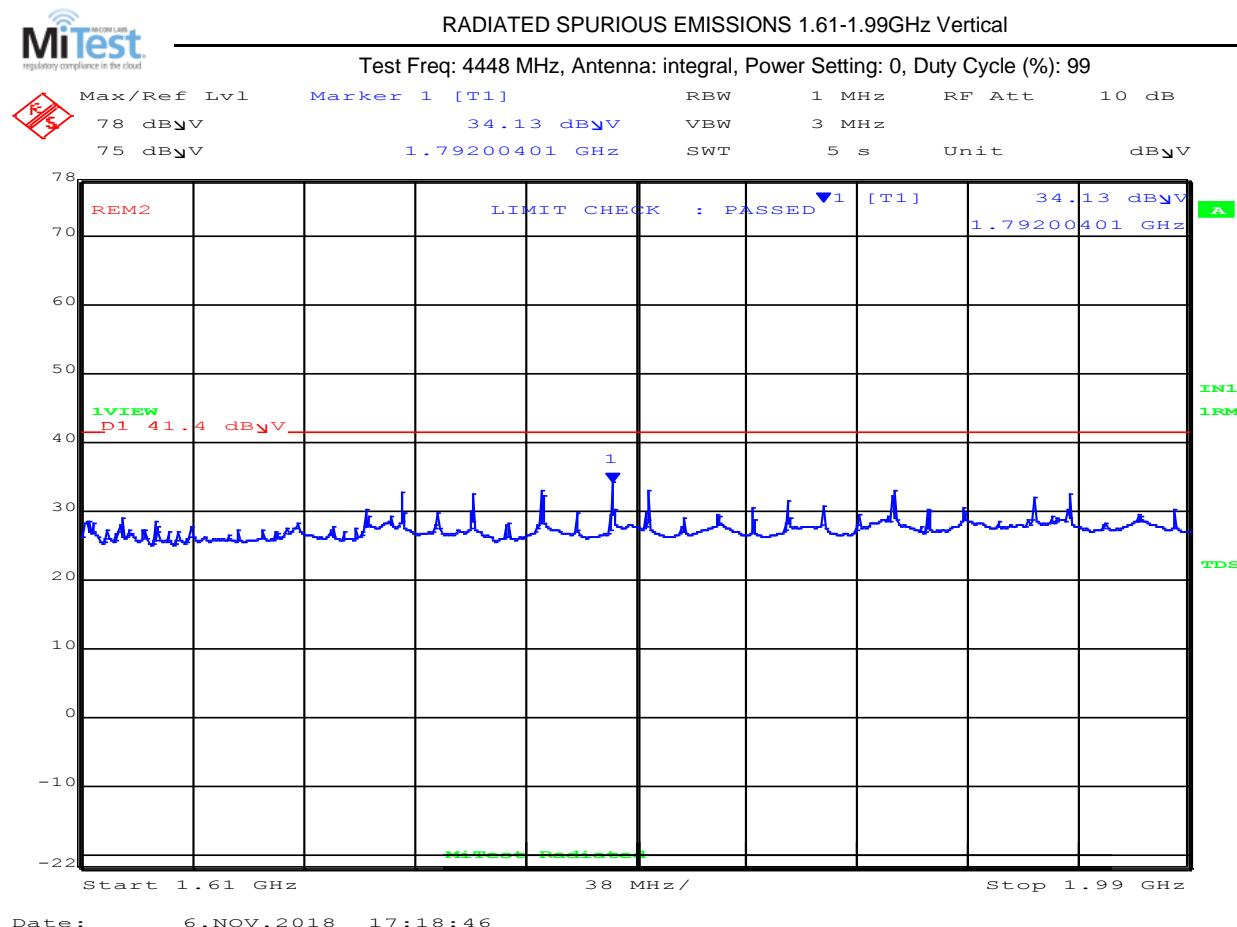


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



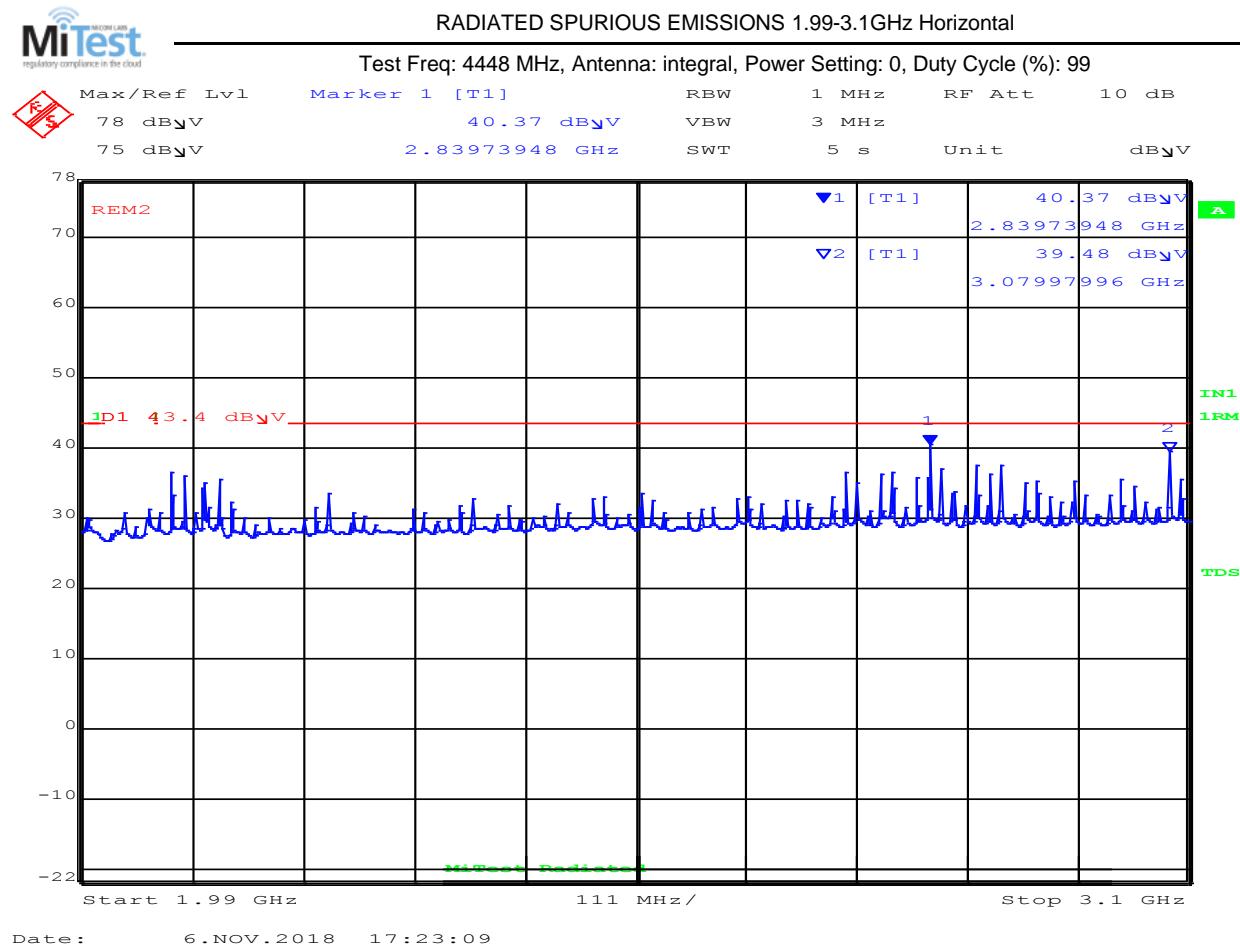
| 1610.00 – 1990.00 MHz                 |               |                           |                  |     |        |         |                           |           |            |  |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |  |
| Test Notes:                           |               |                           |                  |     |        |         |                           |           |            |  |

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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1990.00 – 3100.00 GHz |               |              |                  |            |        |         |              |           |            |
|-----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                     | 2839.74*      | 41.7         | Average          | Horizontal | 150    | 0       | 43.4         | -1.7      | Pass       |
| 2                     | 3079.98*      | 40.3         | Average          | Horizontal | 150    | 0       | 43.4         | -3.1      | Pass       |

**Test Notes:**  
 Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

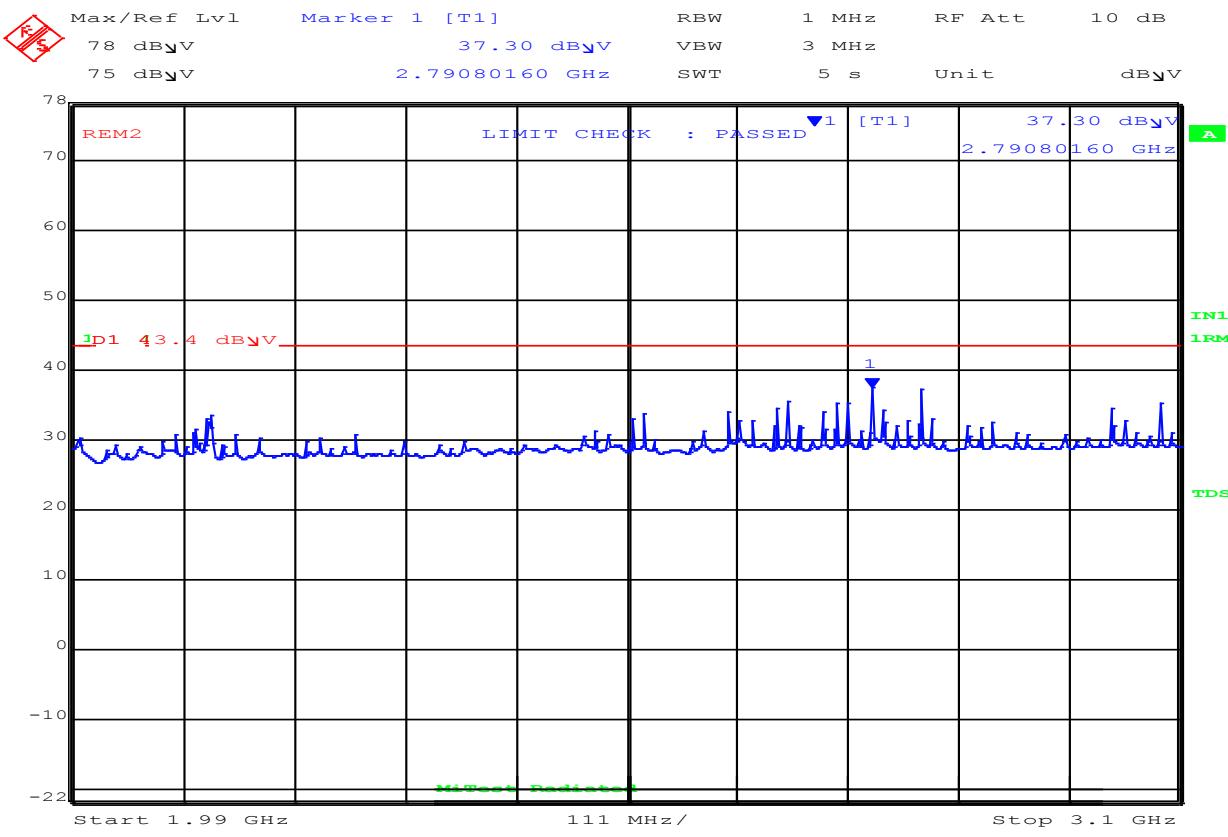
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 1.99-3.1GHz Vertical

Test Freq: 4448 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 6.NOV.2018 17:27:11

#### 1990.00 – 3100.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 2790.80*      | 37.3               | Average          | Vertical | 150    | 0       | 29.4               | -2.1      | Pass       |

#### Test Notes:

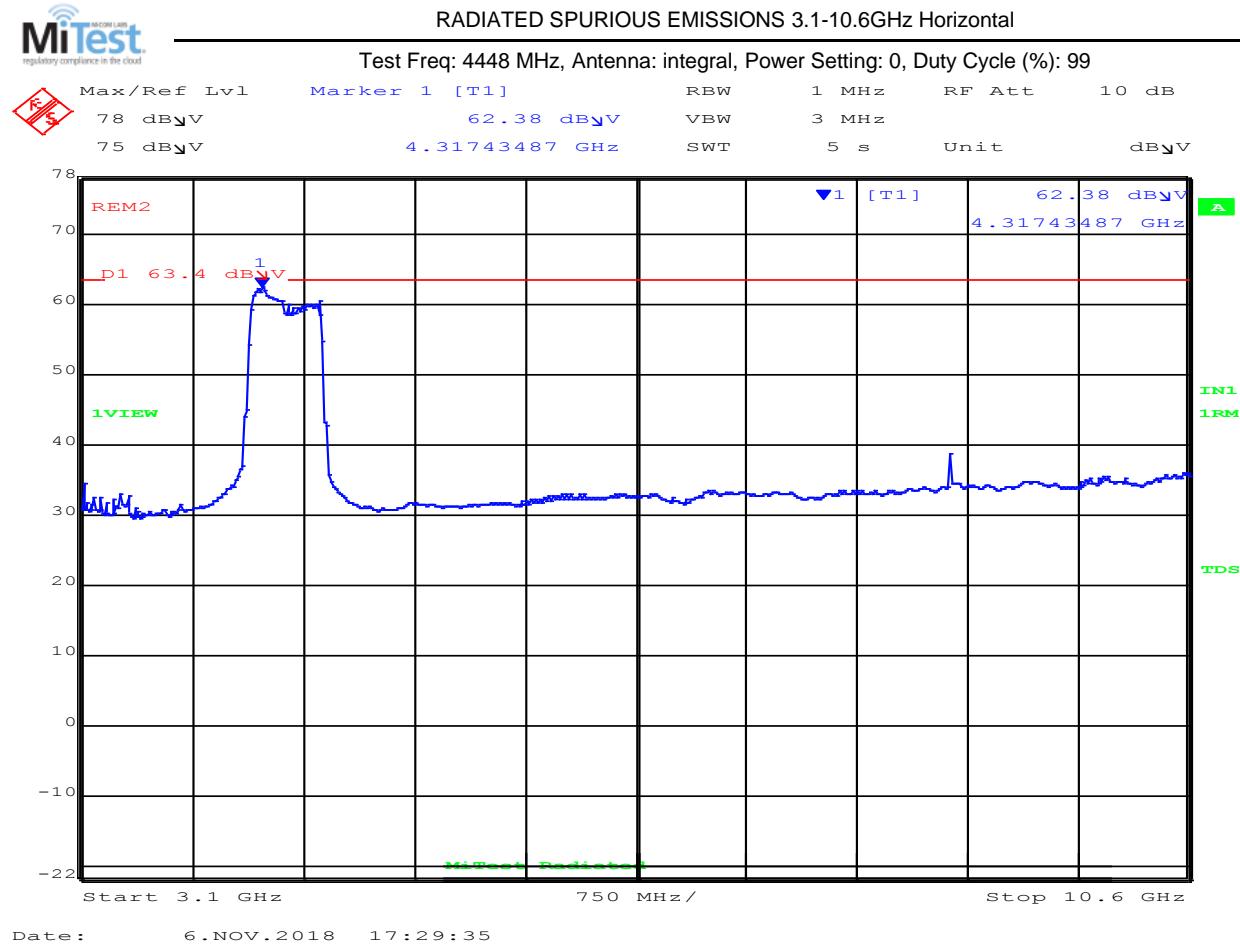
Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 3100.00 - 10600.00 MHz

| Num                | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1                  | 4317.43       | 61.2         | Average          | Horizontal | 150    | 0       | 63.4         | -2.2      | Pass       |
| <b>Test Notes:</b> |               |              |                  |            |        |         |              |           |            |

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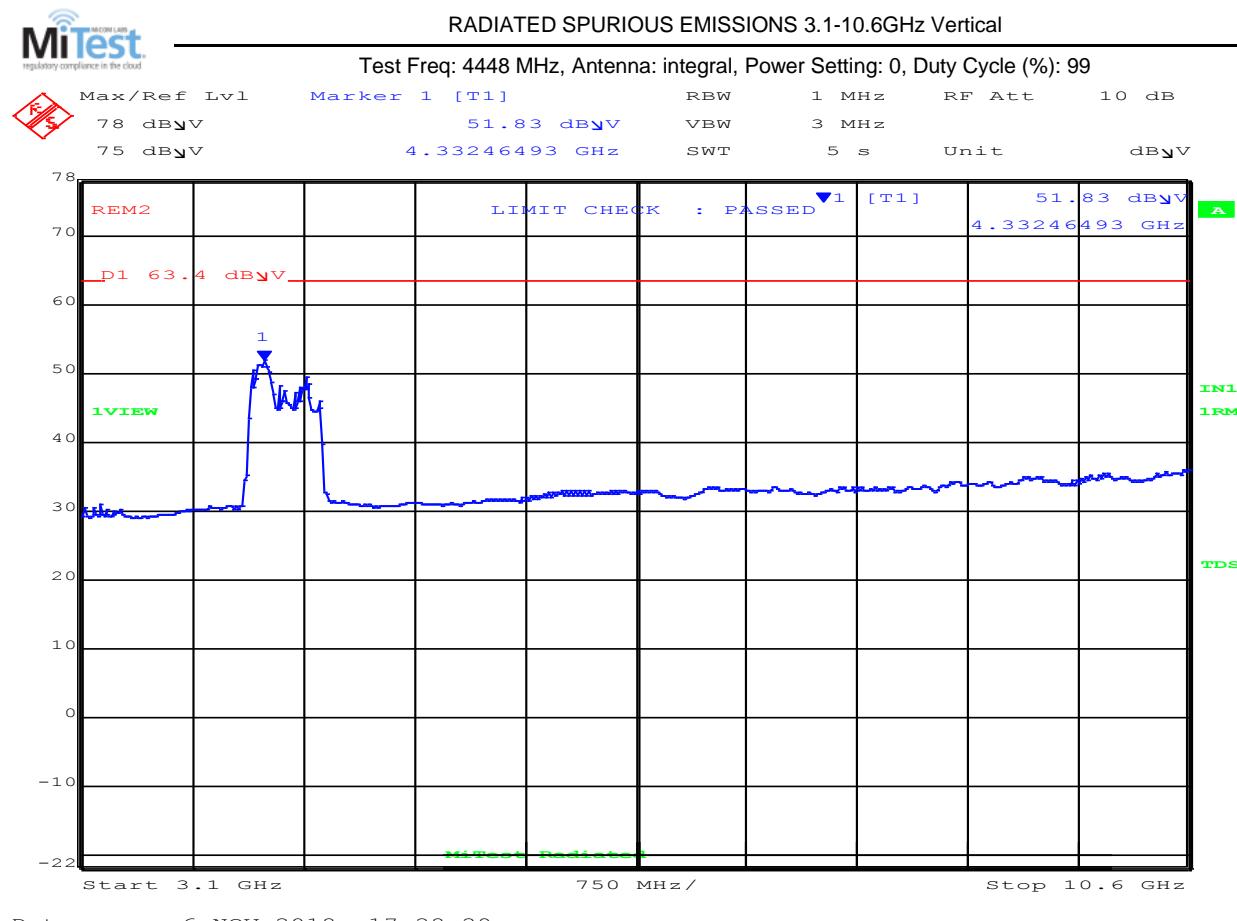


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz                |               |                           |                  |     |        |         |                           |           |            |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                                   | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
| No Signals Found within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |
| Test Notes:                           |               |                           |                  |     |        |         |                           |           |            |

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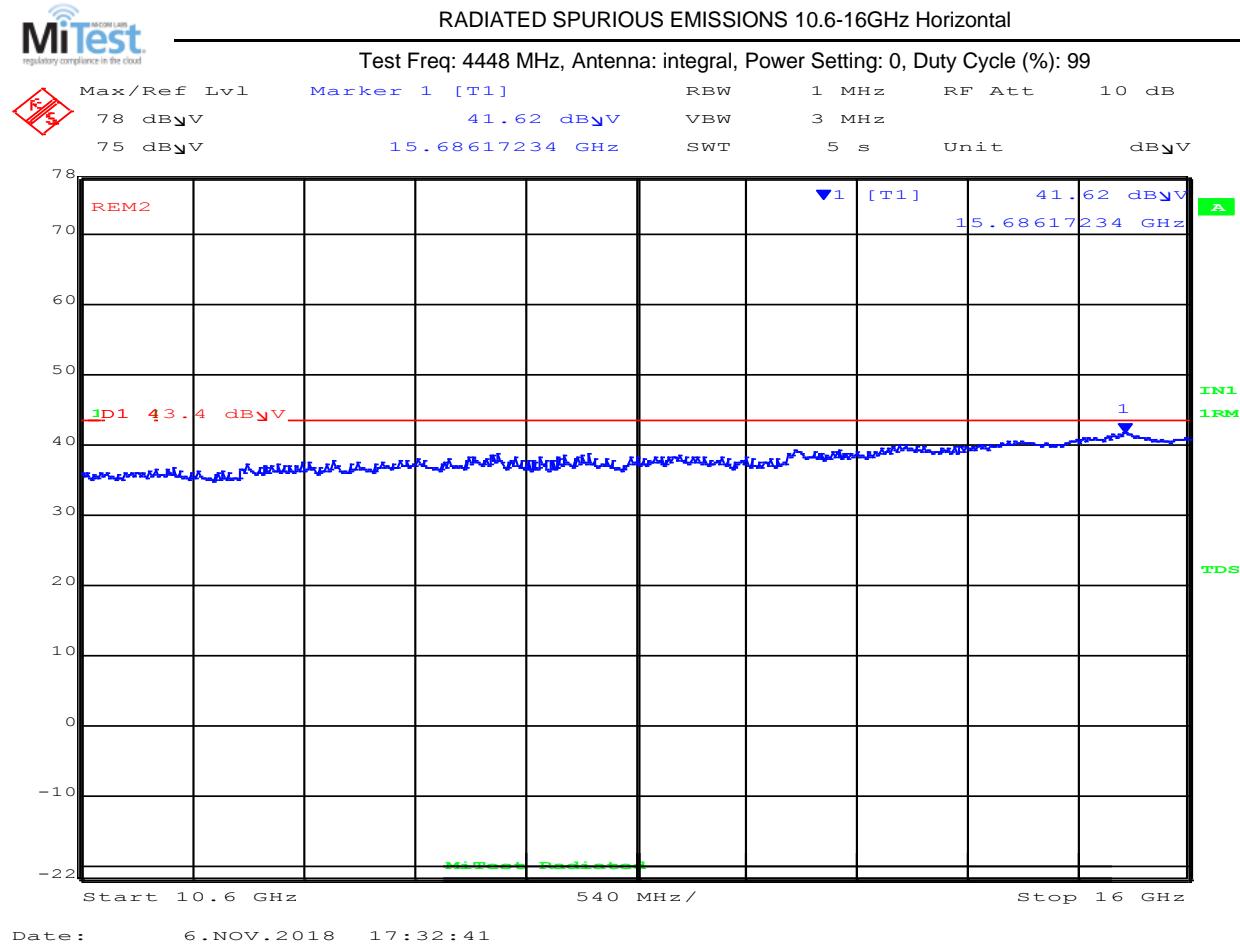


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.17      | 40.3               | Average          | Horizontal | 150    | 0       | 43.4               | -3.1      | Pass       |

#### Test Notes:

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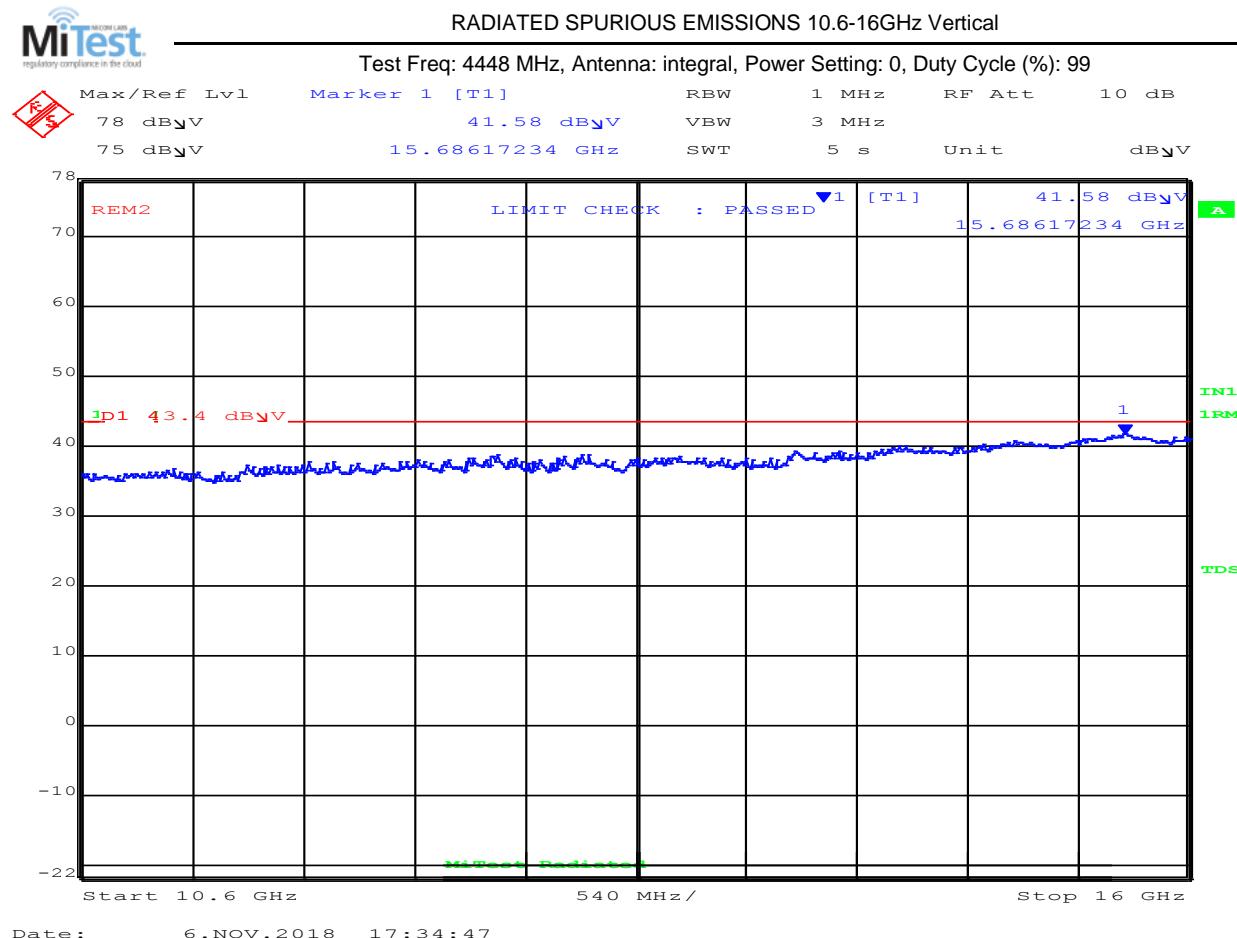


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.17      | 40.3               | Average          | Vertical | 150    | 0       | 43.4               | -3.1      | Pass       |

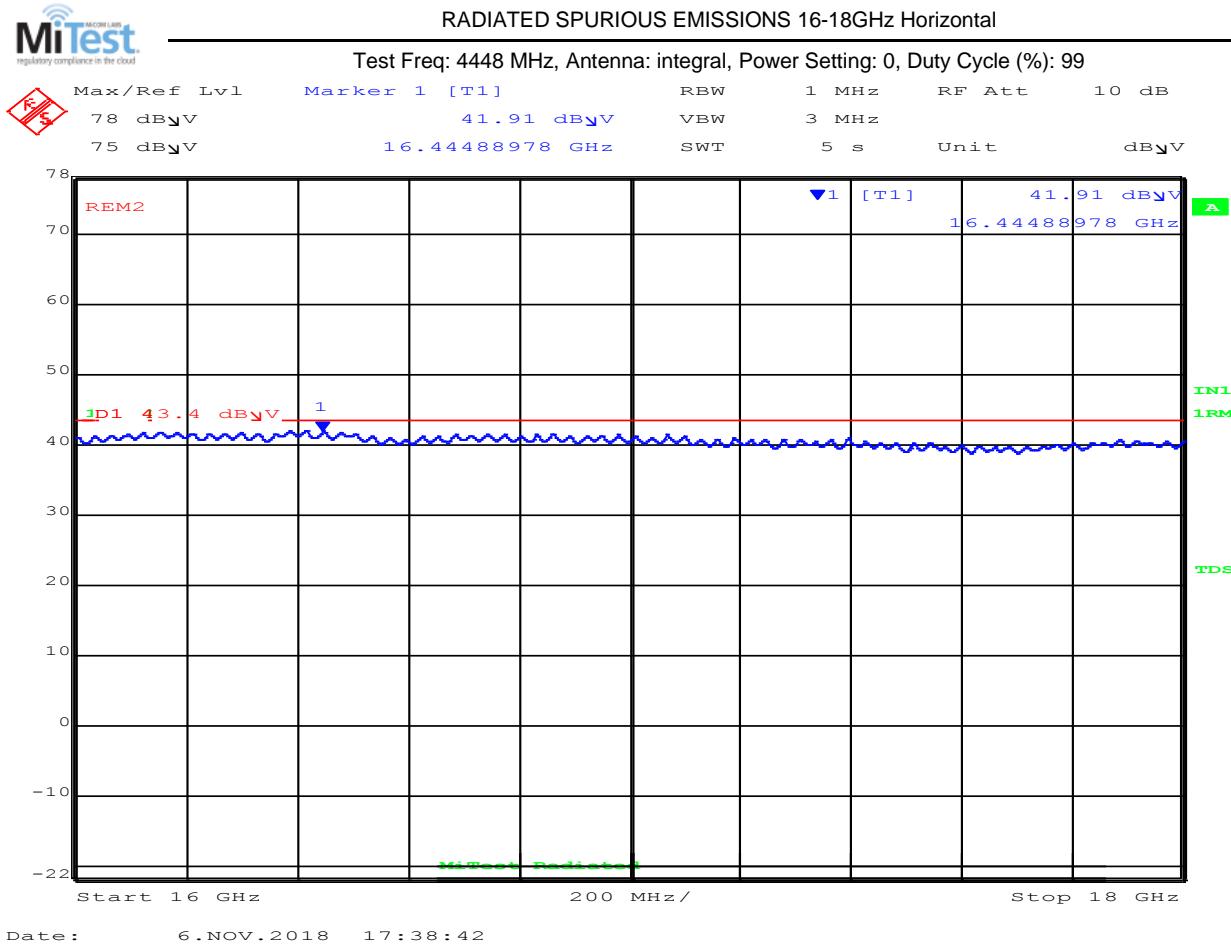
**Test Notes:**

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Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



16000.00 – 18000.00 GHz

| Num                | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1                  | 16444.89      | 40.9         | Average          | Horizontal | 150    | 0       | 43.4         | -2.5      | Pass       |
| <b>Test Notes:</b> |               |              |                  |            |        |         |              |           |            |

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Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

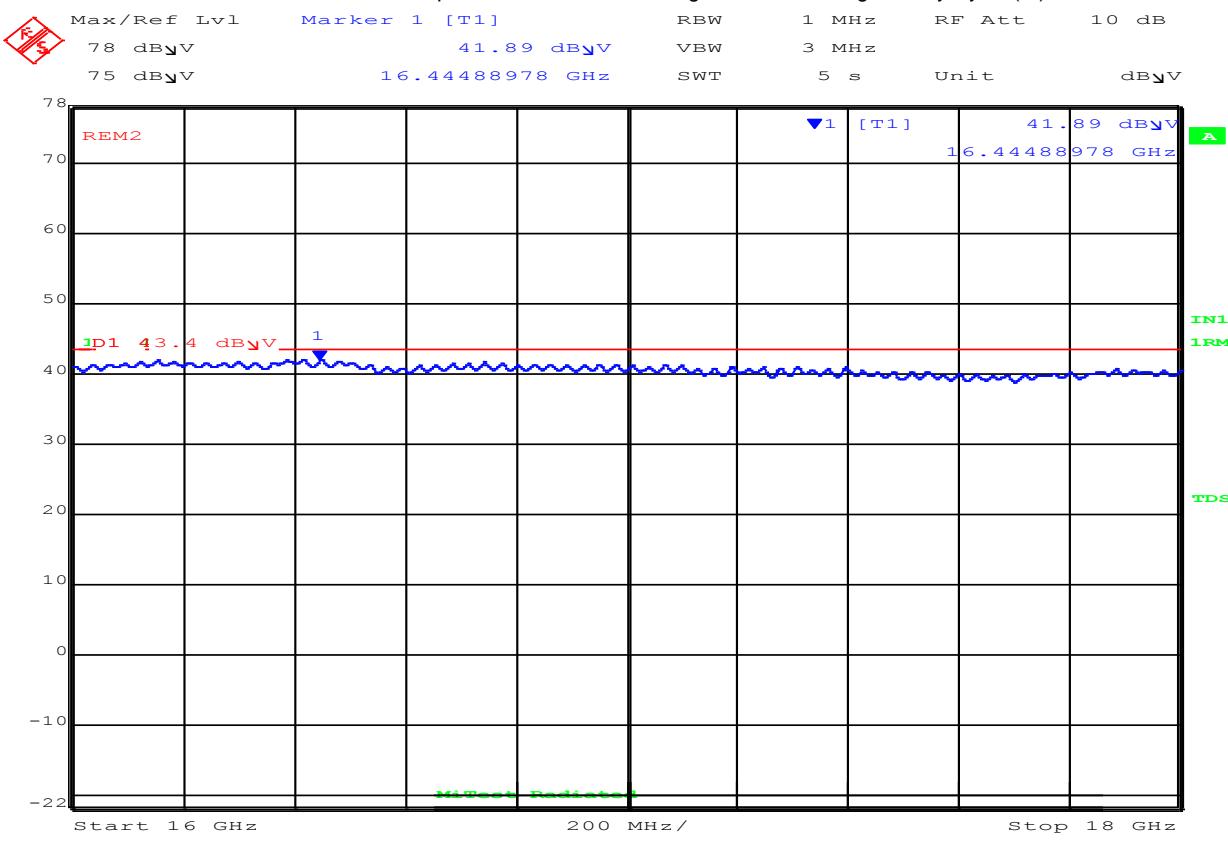
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



RADIATED SPURIOUS EMISSIONS 16-18GHz Vertical

Test Freq: 4448 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 6.NOV.2018 17:36:57

16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|----------|--------|---------|---------------------------|-----------|------------|
| 1   | 16444.89      | 40.9                      | Average          | Vertical | 150    | 0       | 43.4                      | -2.5      | Pass       |

Test Notes:

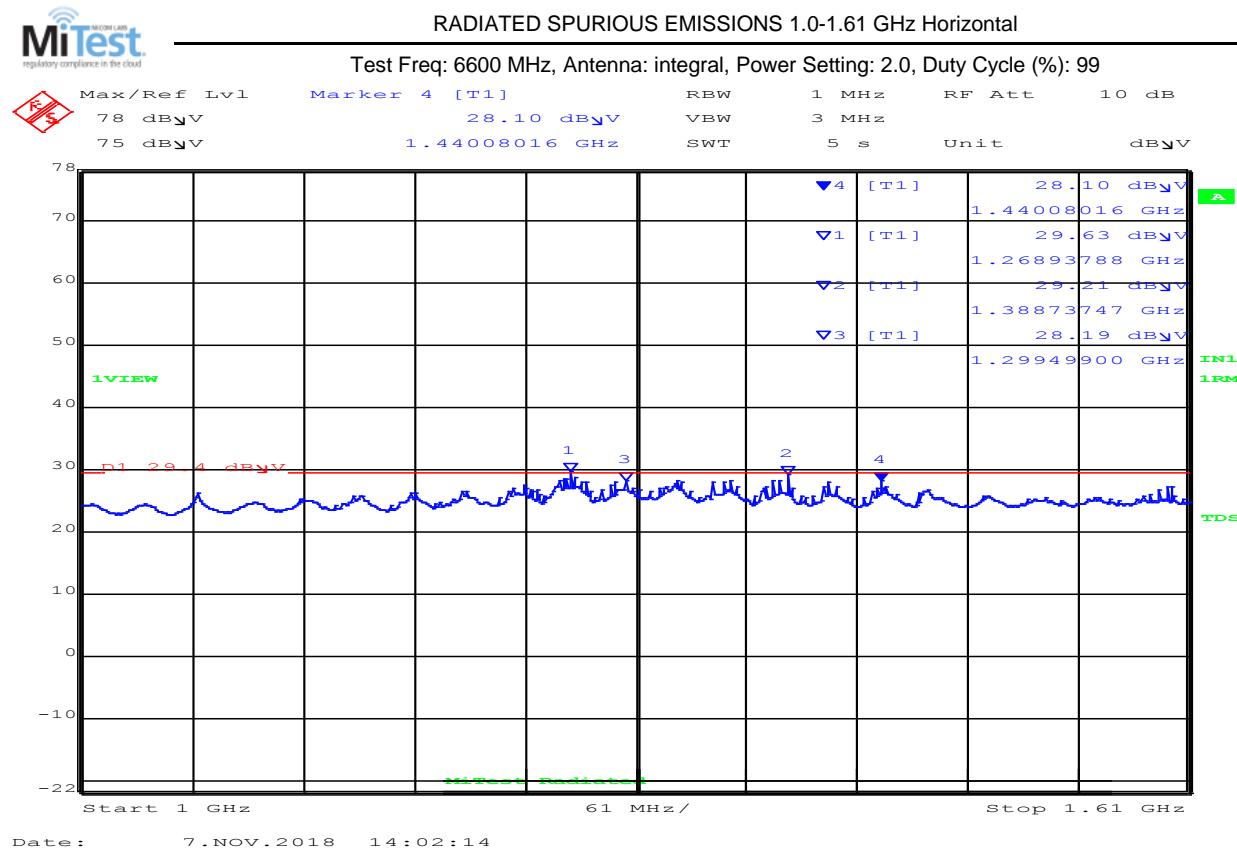
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6600 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 1000.00– 1610.00 MHz |               |                          |                  |            |        |         |                          |           |            |
|----------------------|---------------|--------------------------|------------------|------------|--------|---------|--------------------------|-----------|------------|
| Num                  | Frequency MHz | Level dB <sub>μV/m</sub> | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>μV/m</sub> | Margin dB | Pass /Fail |
| 1                    | 1268.94*      | 28.5                     | Average          | Horizontal | 150    | 0       | 29.4                     | -0.9      | Pass       |
| 2                    | 1388.74*      | 27.5                     | Average          | Horizontal | 150    | 0       | 29.4                     | -1.9      | Pass       |
| 3                    | 1299.50*      | 27.9                     | Average          | Horizontal | 150    | 0       | 29.4                     | -1.5      | Pass       |
| 4                    | 1440.08       | 28.1                     | Average          | Horizontal | 150    | 0       | 29.4                     | -1.3      | Pass       |

**Test Notes:**  
Source Laptop and UART to serial converter cable

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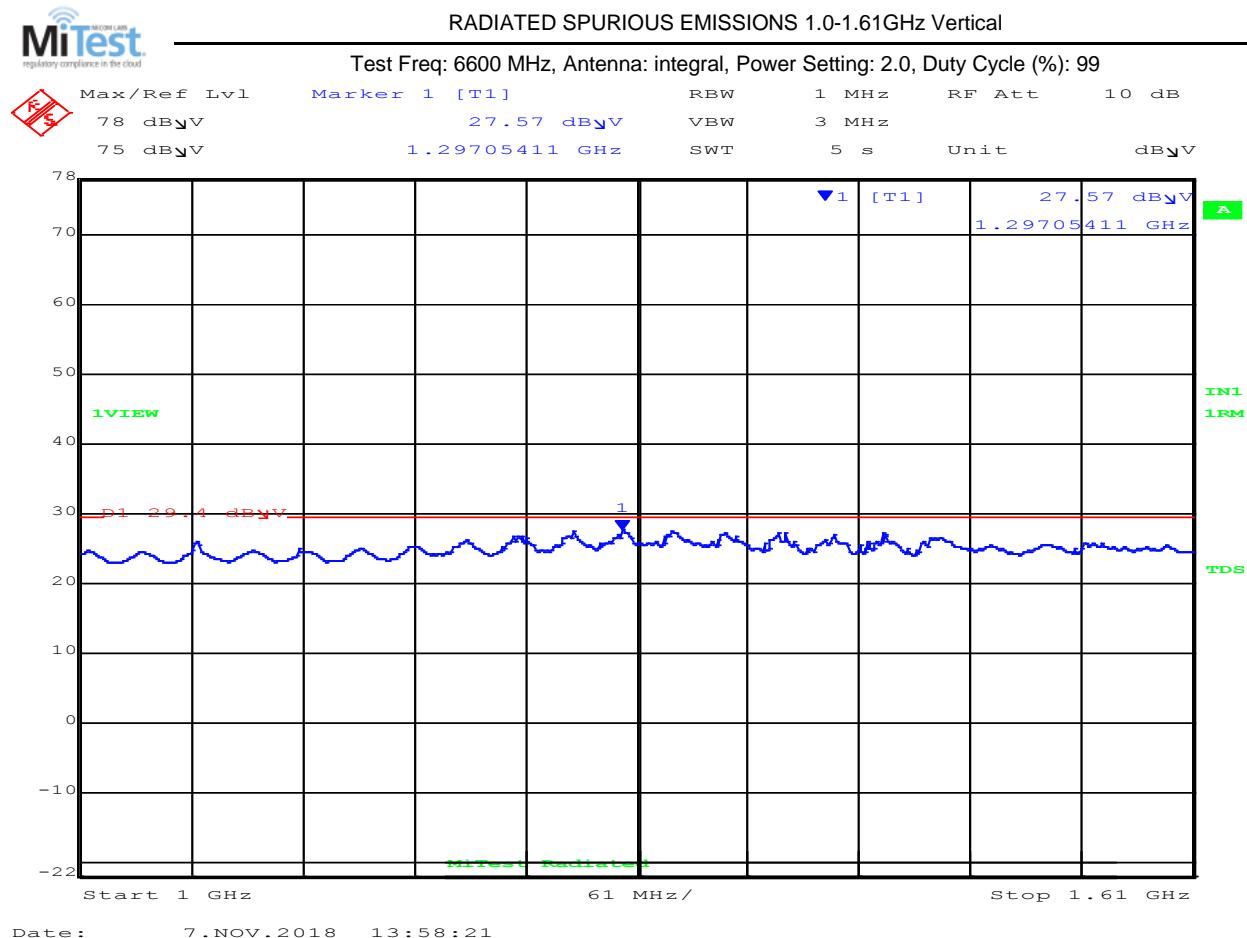


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 1000.00– 1610.00 MHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 1297.05       | 26.8               | Average          | Vertical | 150    | 0       | 29.4               | -2.6      | Pass       |

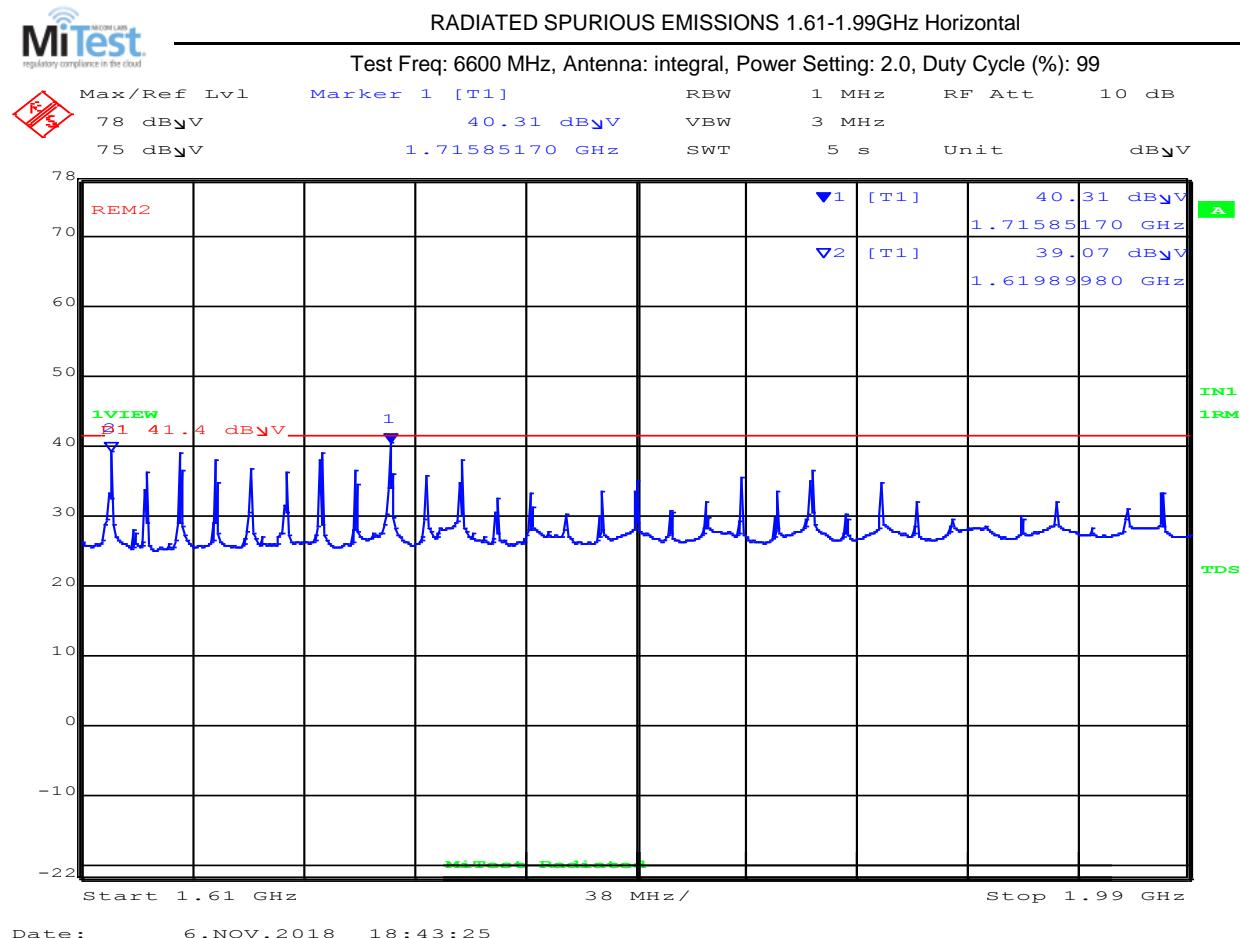
**Test Notes:**

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### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 1610.00 – 1990.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 1715.85*      | 40.1         | Average          | Horizontal | 150    | 0       | 41.4         | -1.3      | Pass       |
| 2   | 1619.90*      | 39.1         | Average          | Horizontal | 150    | 0       | 41.4         | -2.3      | Pass       |

#### Test Notes:

Source Laptop and UART to serial converter cable

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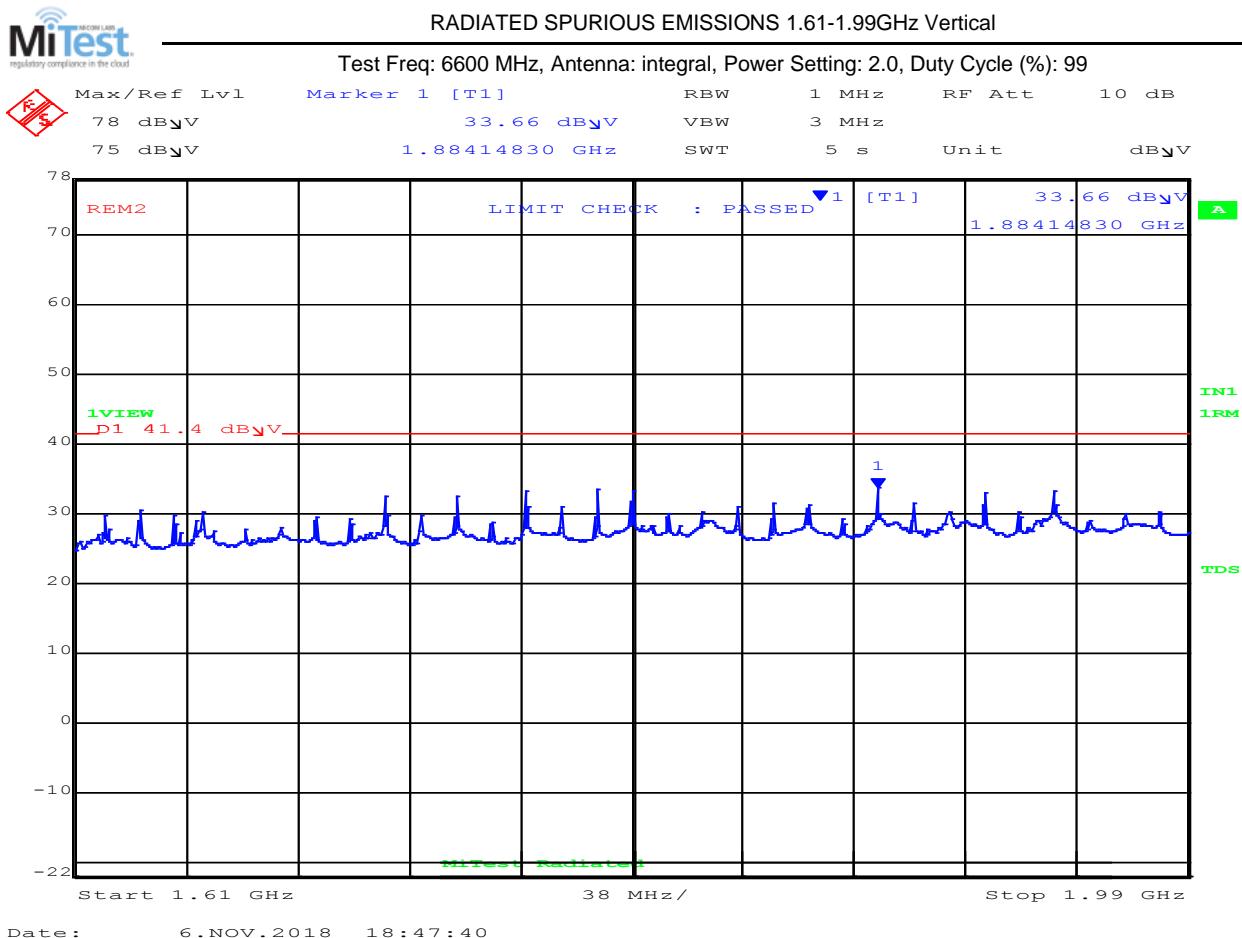


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
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#### Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1610.00 – 1990.00 MHz                 |               |                          |                  |     |        |         |                          |           |            |
|---------------------------------------|---------------|--------------------------|------------------|-----|--------|---------|--------------------------|-----------|------------|
| Num                                   | Frequency MHz | Level dB <sub>μV/m</sub> | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μV/m</sub> | Margin dB | Pass /Fail |
| No Signals Found within 6 dB of Limit |               |                          |                  |     |        |         |                          |           |            |
| Test Notes:                           |               |                          |                  |     |        |         |                          |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

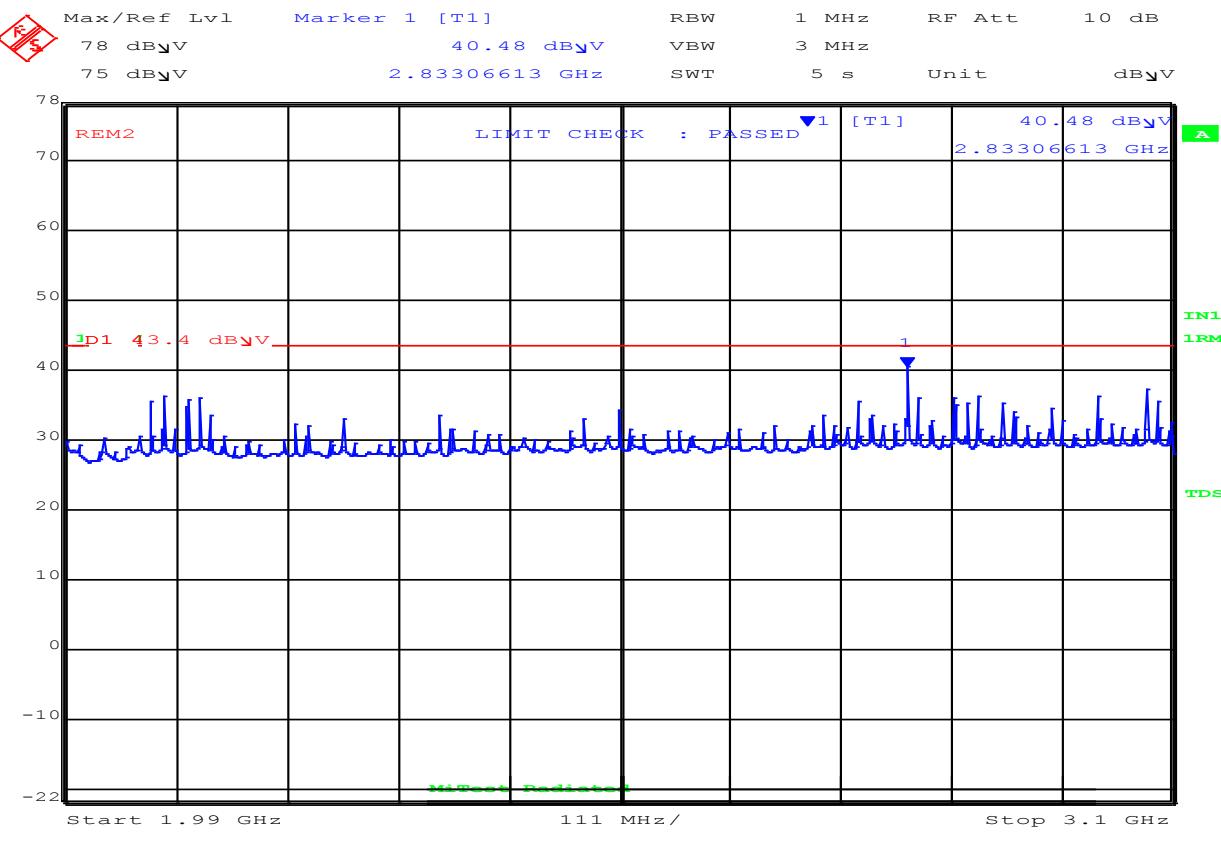
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 1.99-3.1GHz Horizontal

Test Freq: 6600 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 6.NOV.2018 18:39:48

#### 1990.00 – 3100.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 2833.07*      | 40.1               | Average          | Horizontal | 150    | 0       | 43.4               | -3.3      | Pass       |

#### Test Notes:

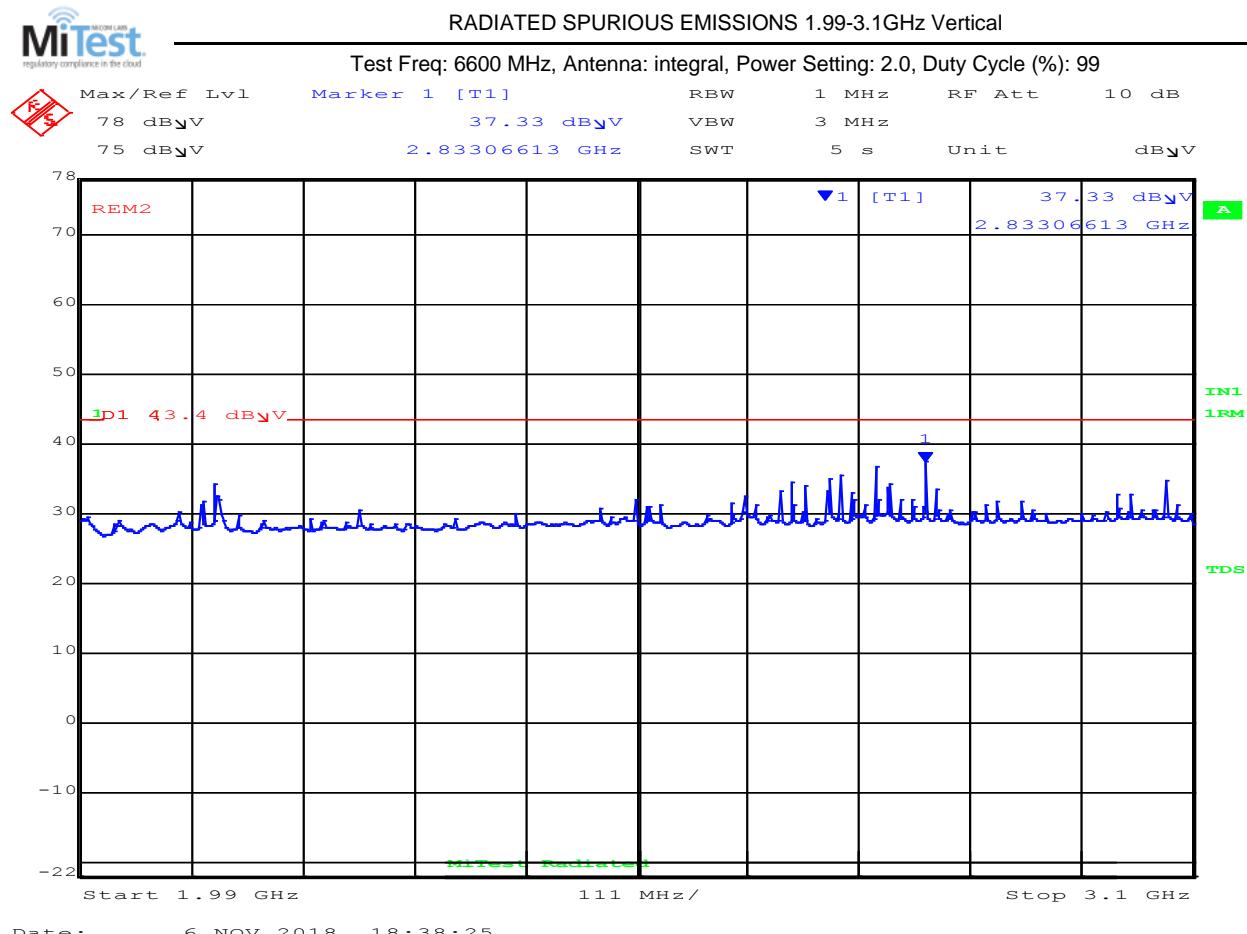
Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 1990.00 – 3100.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| 1   | 2833.07*      | 37.1         | Average          | Vertical | 150    | 0       | 43.4         | -6.3      | Pass       |

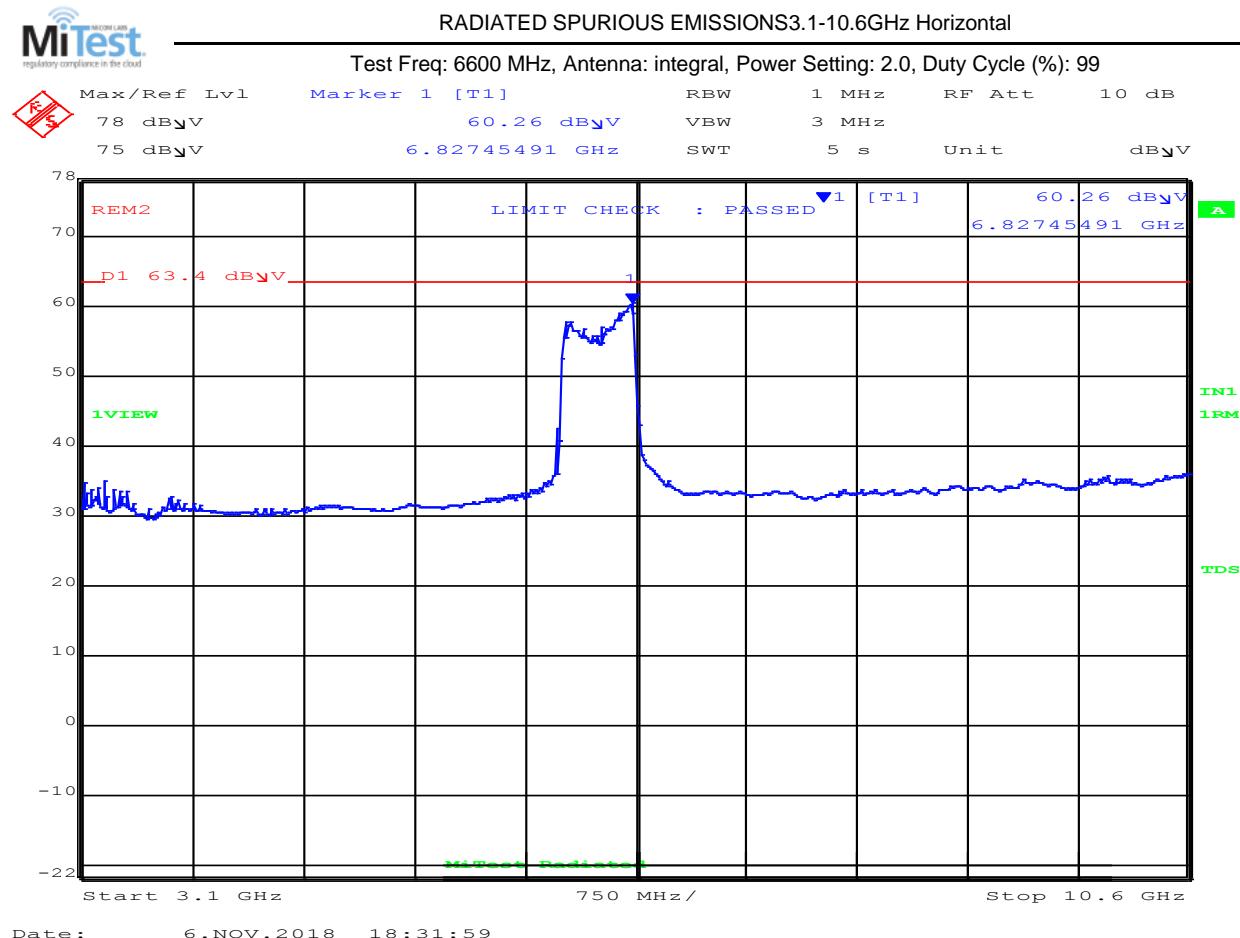
**Test Notes:**  
 Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 3100.00 - 10600.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 6827.45       | 59.1         | Average          | Horizontal | 150    | 0       | 63.4         | -4.3      | Pass       |
| 2   | 1600.22       | 25.60        | Average          | Horizontal | 150    | 0       | 29.4         | -3.8      | Pass       |

### Test Notes:

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

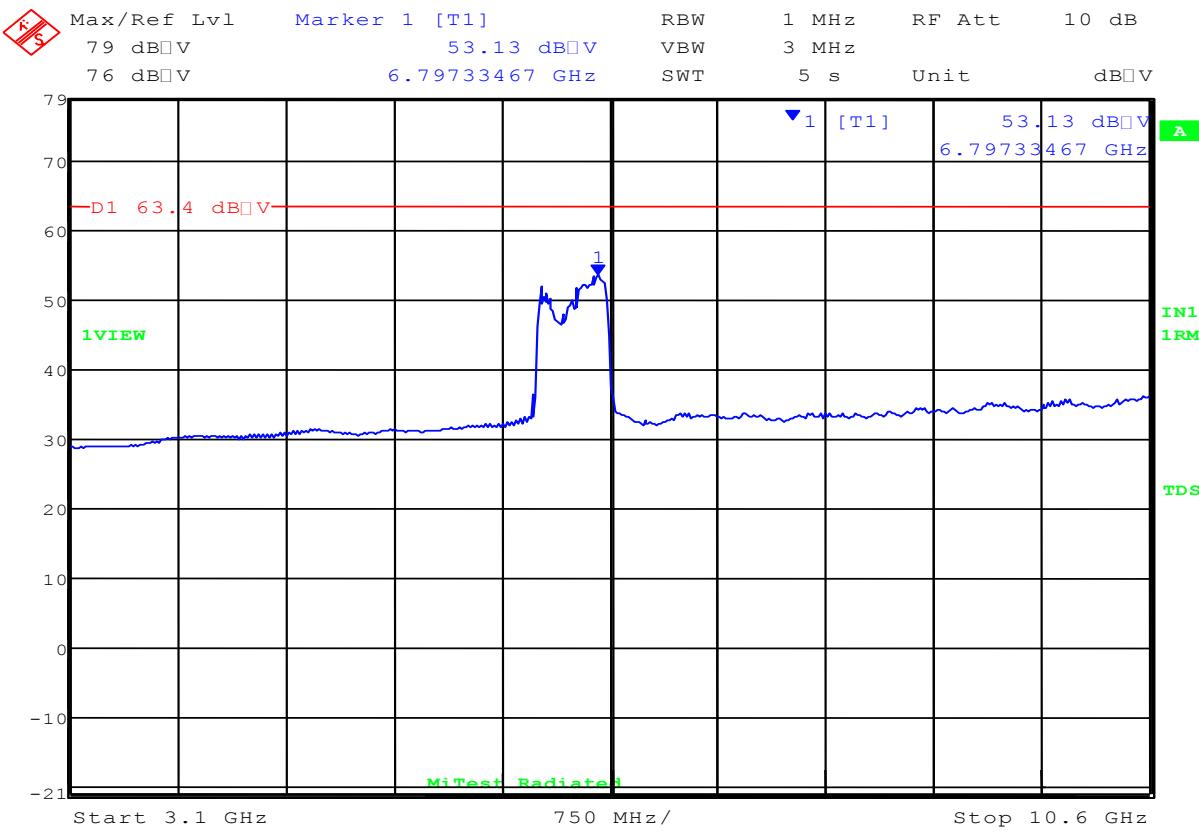
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 3.1-10.6 GHz Vertical

Test Freq: 6600 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 6.NOV.2018 18:34:36

#### 3100.00 - 10600.00 MHz

| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b>                    |               |              |                  |     |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

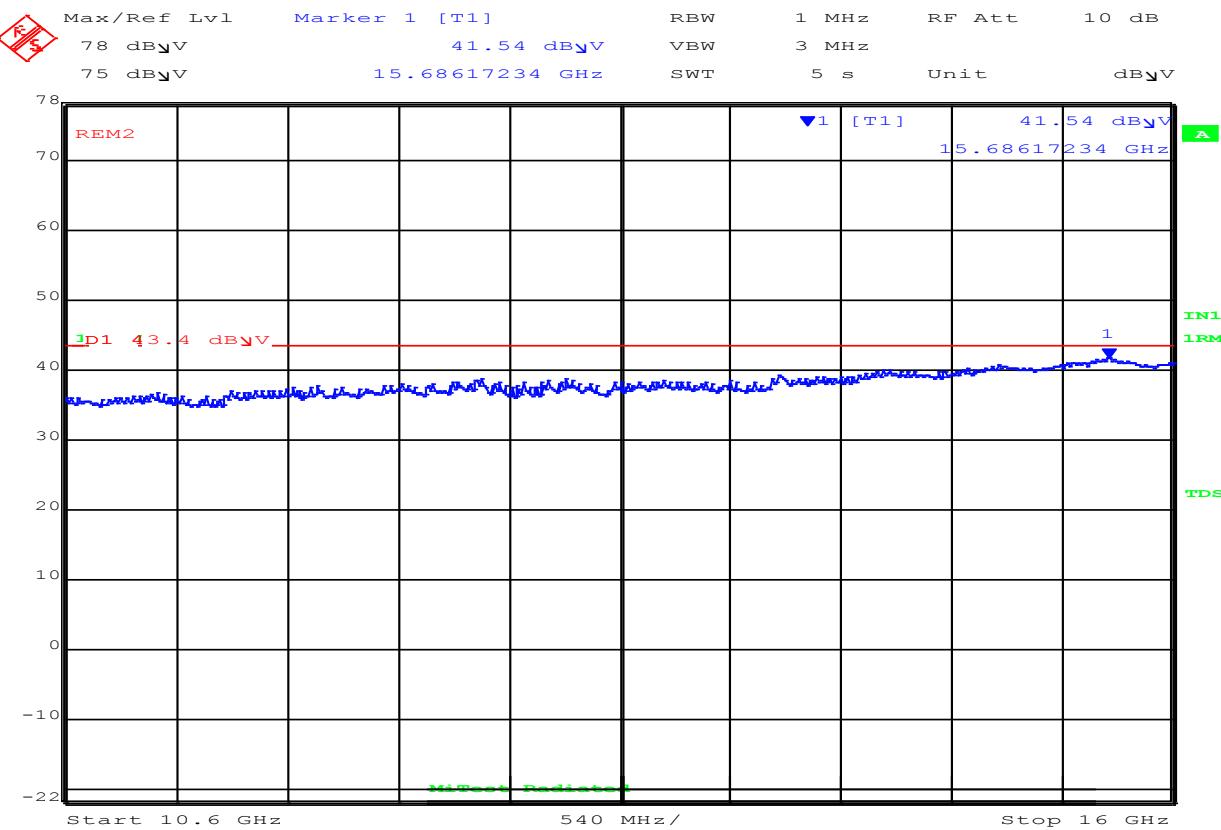
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 10.6-16GHz Horizontal

Test Freq: 6600 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 6.NOV.2018 18:28:31

#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.17      | 40.1               | Average          | Horizontal | 150    | 0       | 43.4               | -3.3      | Pass       |

**Test Notes:**

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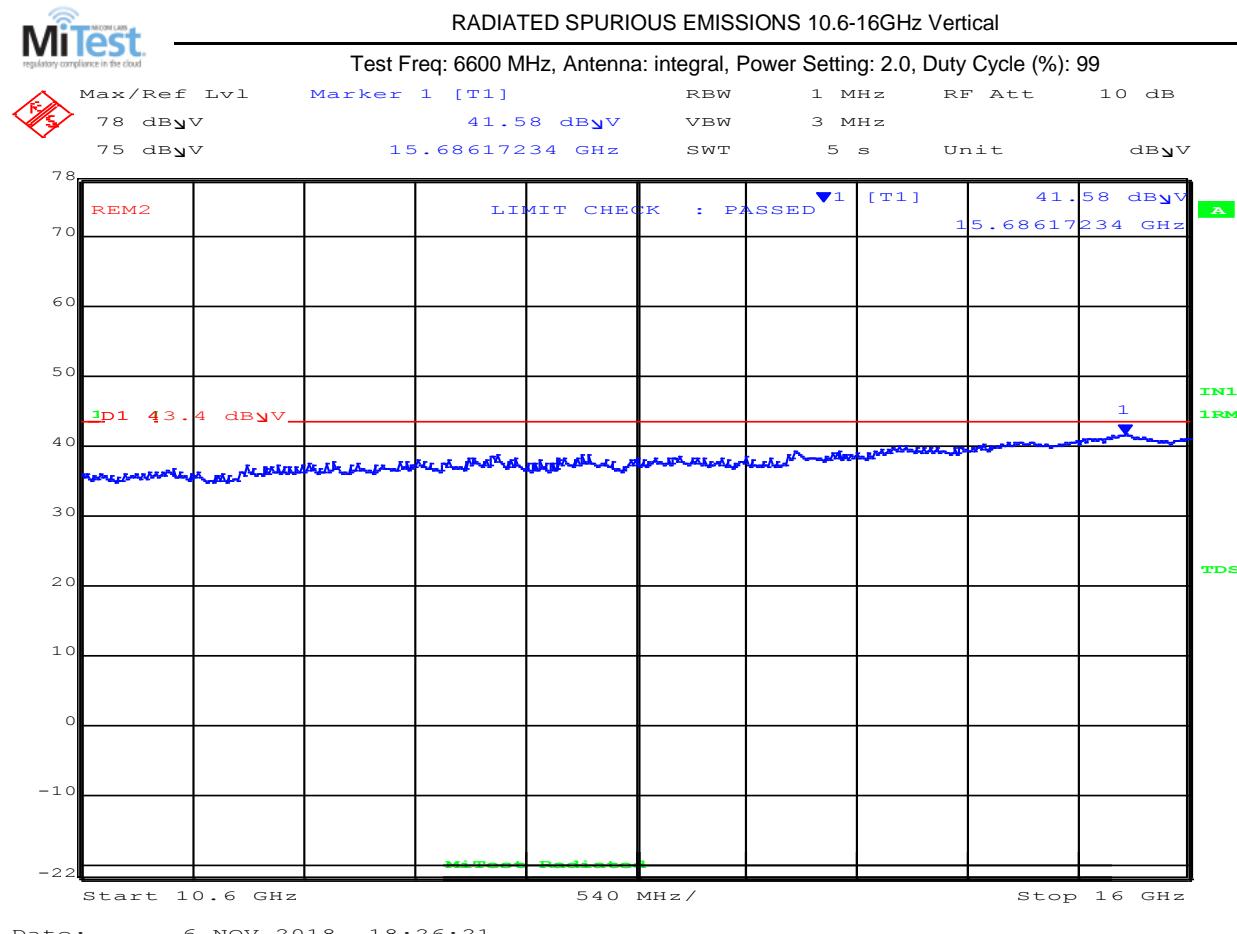


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.17      | 40.2               | Average          | Vertical | 150    | 0       | 43.4               | -3.2      | Pass       |

**Test Notes:**

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### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

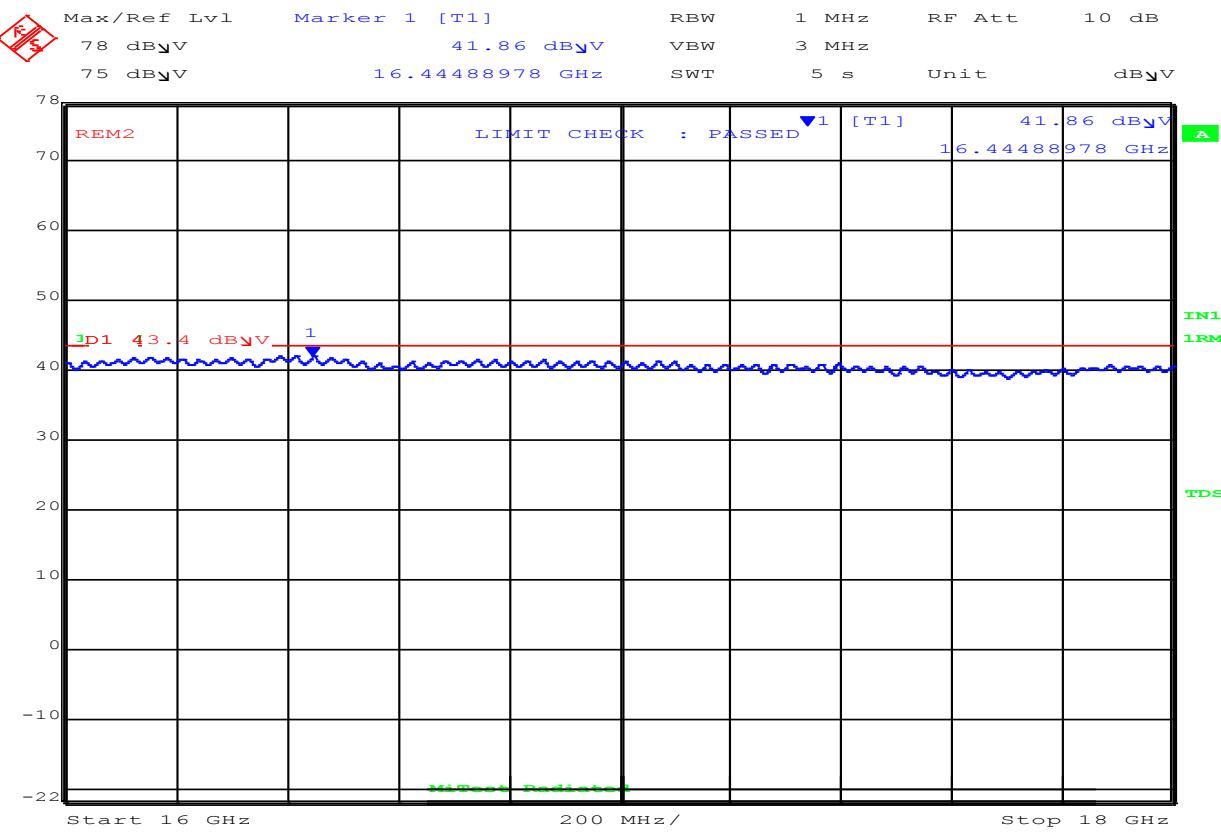
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 16-18GHz Horizontal

Test Freq: 6600 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 6.NOV.2018 18:21:32

#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 16444.89      | 40.9               | Average          | Horizontal | 150    | 0       | 43.4               | -2.5      | Pass       |

### Test Notes:

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### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

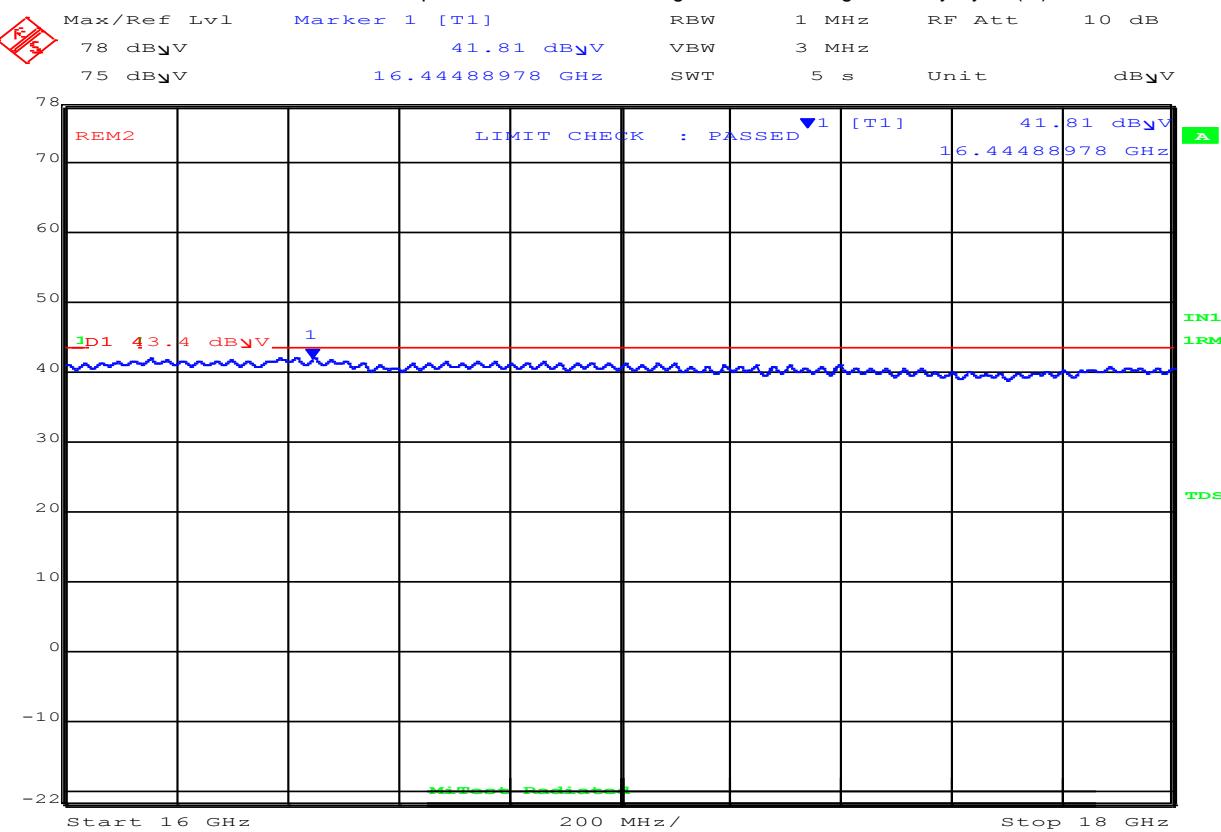
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 16-18GHz Vertical

Test Freq: 6600 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 6.NOV.2018 18:24:31

#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 16444.89      | 40.9               | Average          | Vertical | 150    | 0       | 43.4               | -2.5      | Pass       |

### Test Notes:

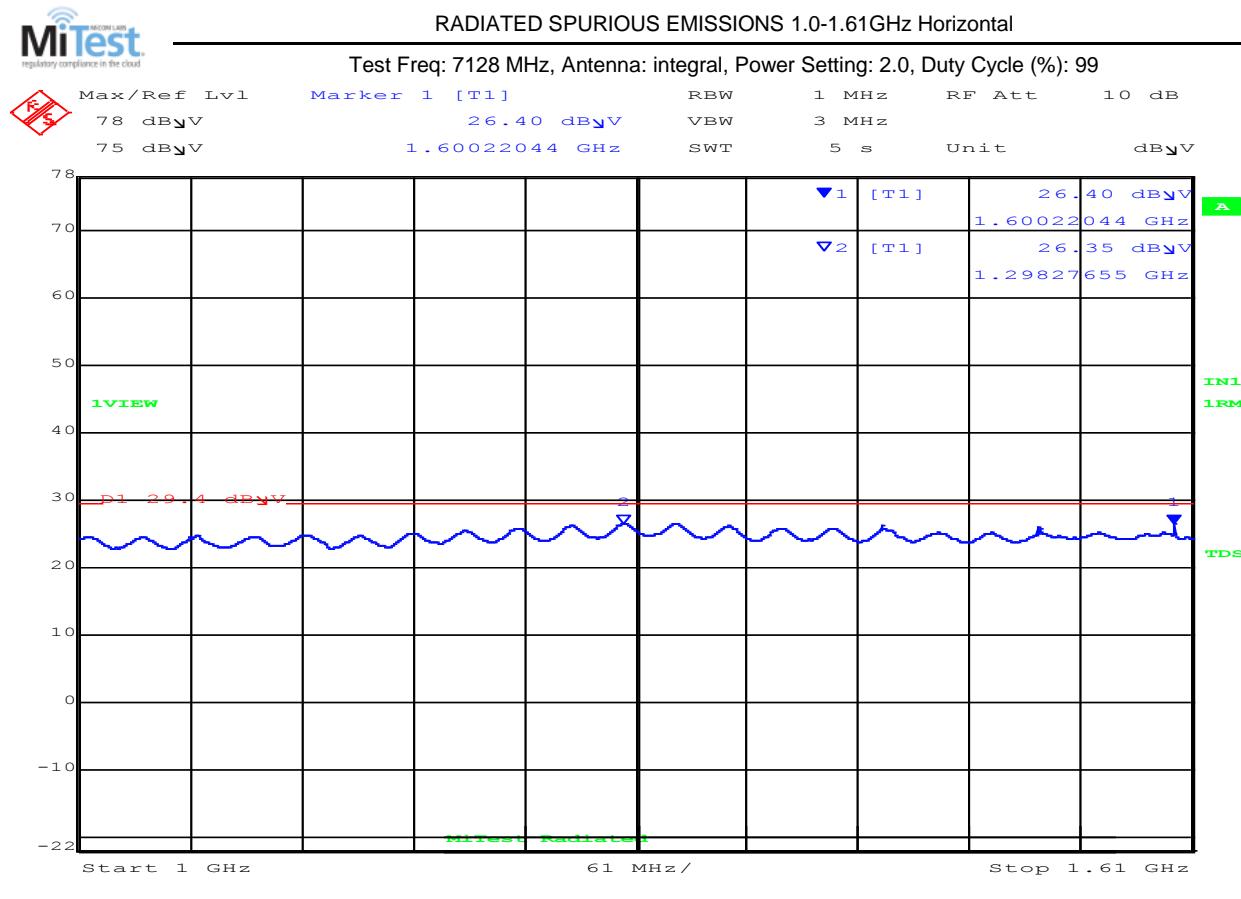
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7128 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



Date: 7.NOV.2018 14:17:27

| 1000.00– 1610.00 MHz |               |              |                  |            |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1600.22       | 26.7         | Average          | Horizontal | 150    | 0       | 29.4         | -2.7      | Pass       |
| 2                    | 1298.28       | 24.8         | Average          | Horizontal | 150    | 0       | 29.4         | -4.6      | Pass       |

**Test Notes:**  
 Removed Laptop

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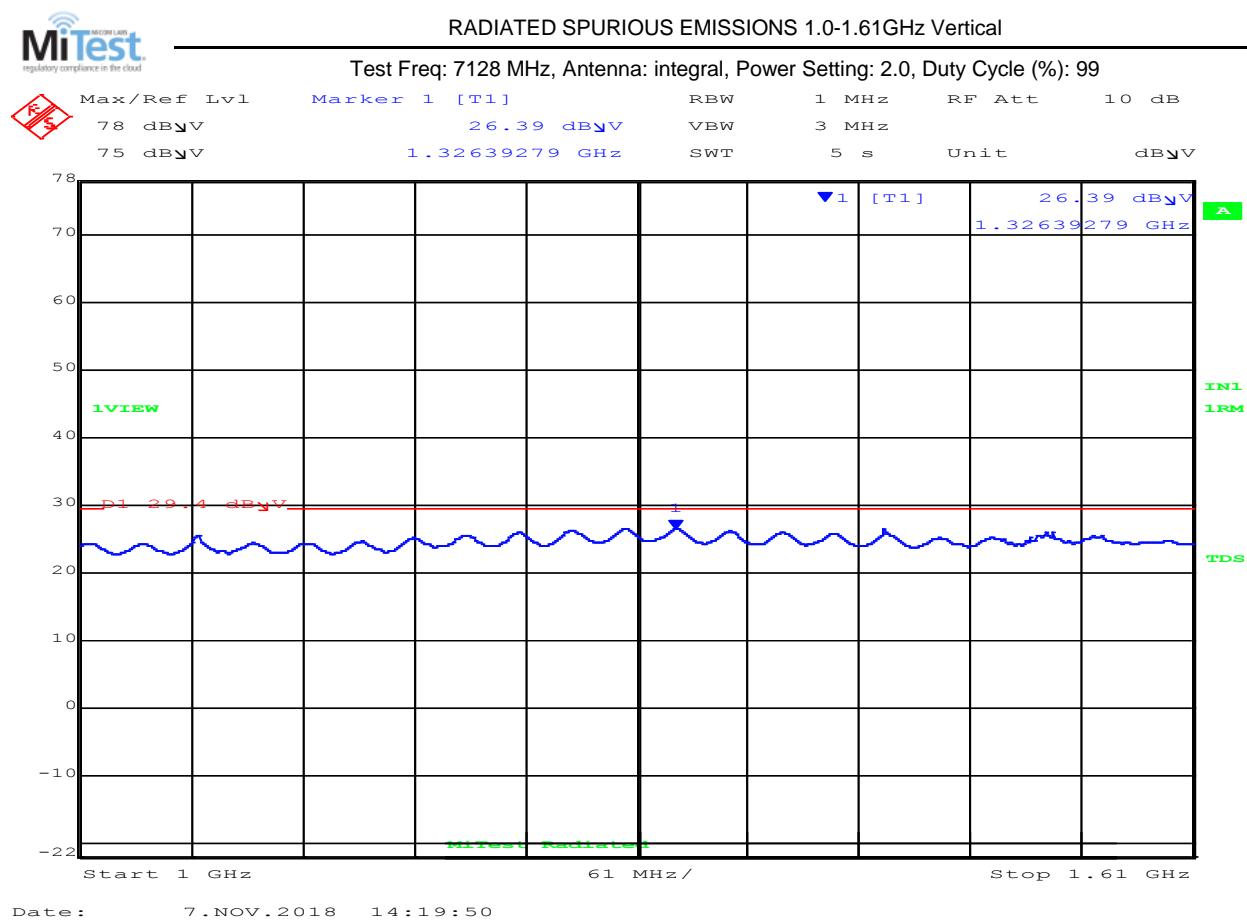


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



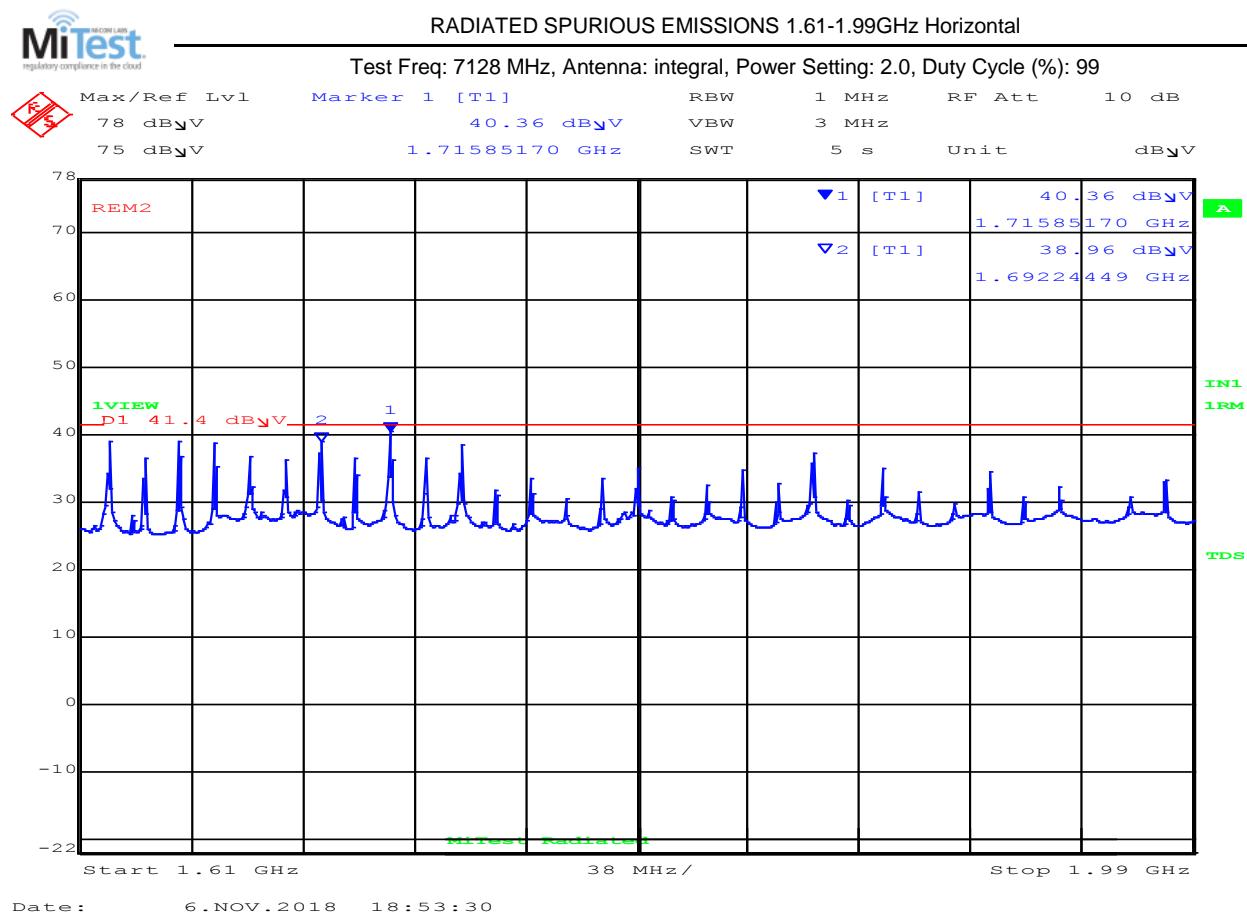
| 1000.00– 1610.00 MHz |               |              |                  |          |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1326.39       | 24.8         | Average          | Vertical | 150    | 0       | 29.4         | -4.6      | Pass       |
| Test Notes:          |               |              |                  |          |        |         |              |           |            |
| Removed Laptop       |               |              |                  |          |        |         |              |           |            |

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**Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



| <b>1610.00 – 1990.00 MHz</b> |                      |                     |                         |            |               |                |                     |                  |                   |
|------------------------------|----------------------|---------------------|-------------------------|------------|---------------|----------------|---------------------|------------------|-------------------|
| <b>Num</b>                   | <b>Frequency MHz</b> | <b>Level dBµV/m</b> | <b>Measurement Type</b> | <b>Pol</b> | <b>Hgt cm</b> | <b>Azt Deg</b> | <b>Limit dBµV/m</b> | <b>Margin dB</b> | <b>Pass /Fail</b> |
| 1                            | 1715.85*             | 40.6                | Average                 | Horizontal | 150           | 0              | 41.4                | -2.8             | Pass              |
| 2                            | 1692.24*             | 40.3                | Average                 | Horizontal | 150           | 0              | 41.4                | -3.1             | Pass              |

**Test Notes:**  
Source Laptop and UART to serial converter cable

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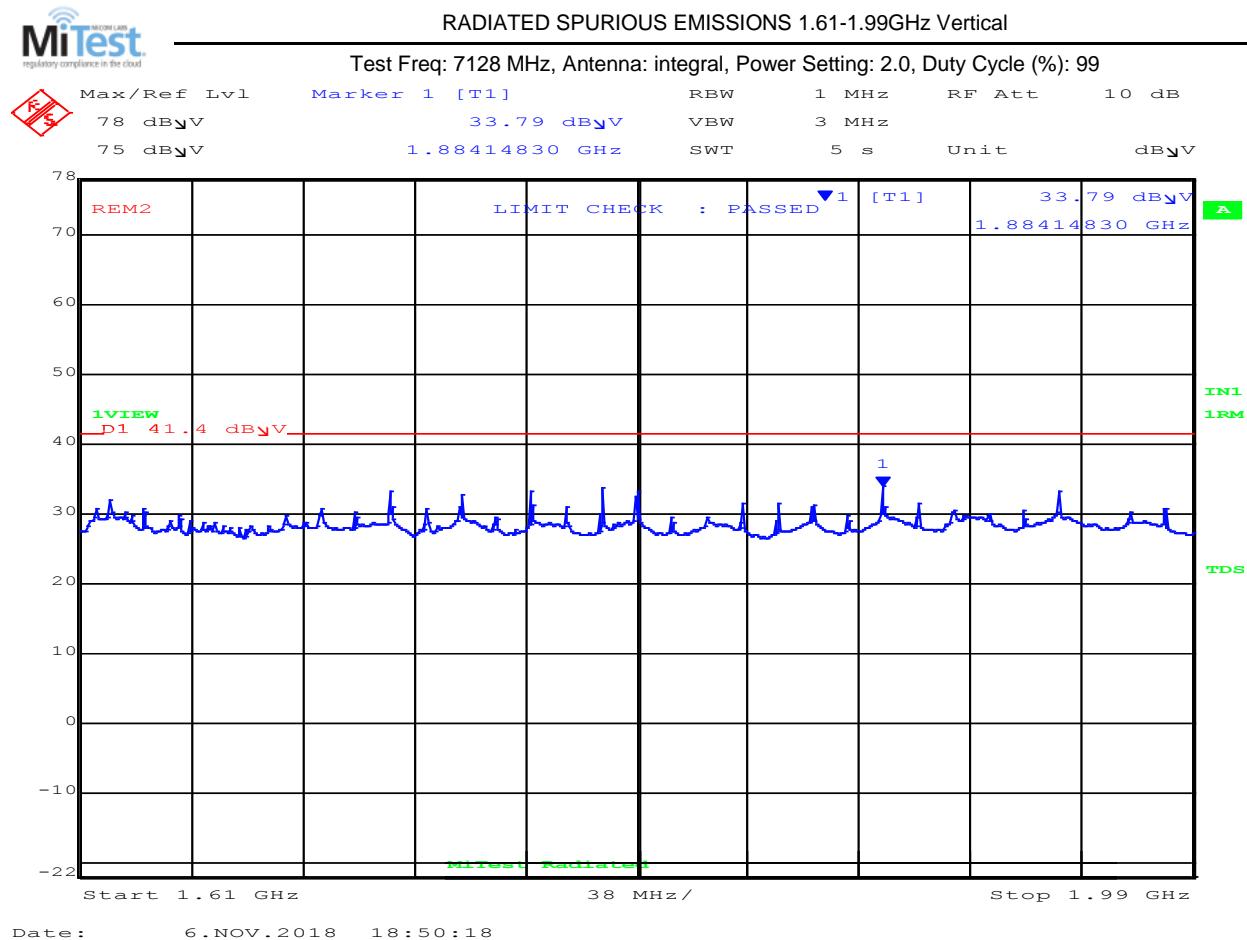


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
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#### Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



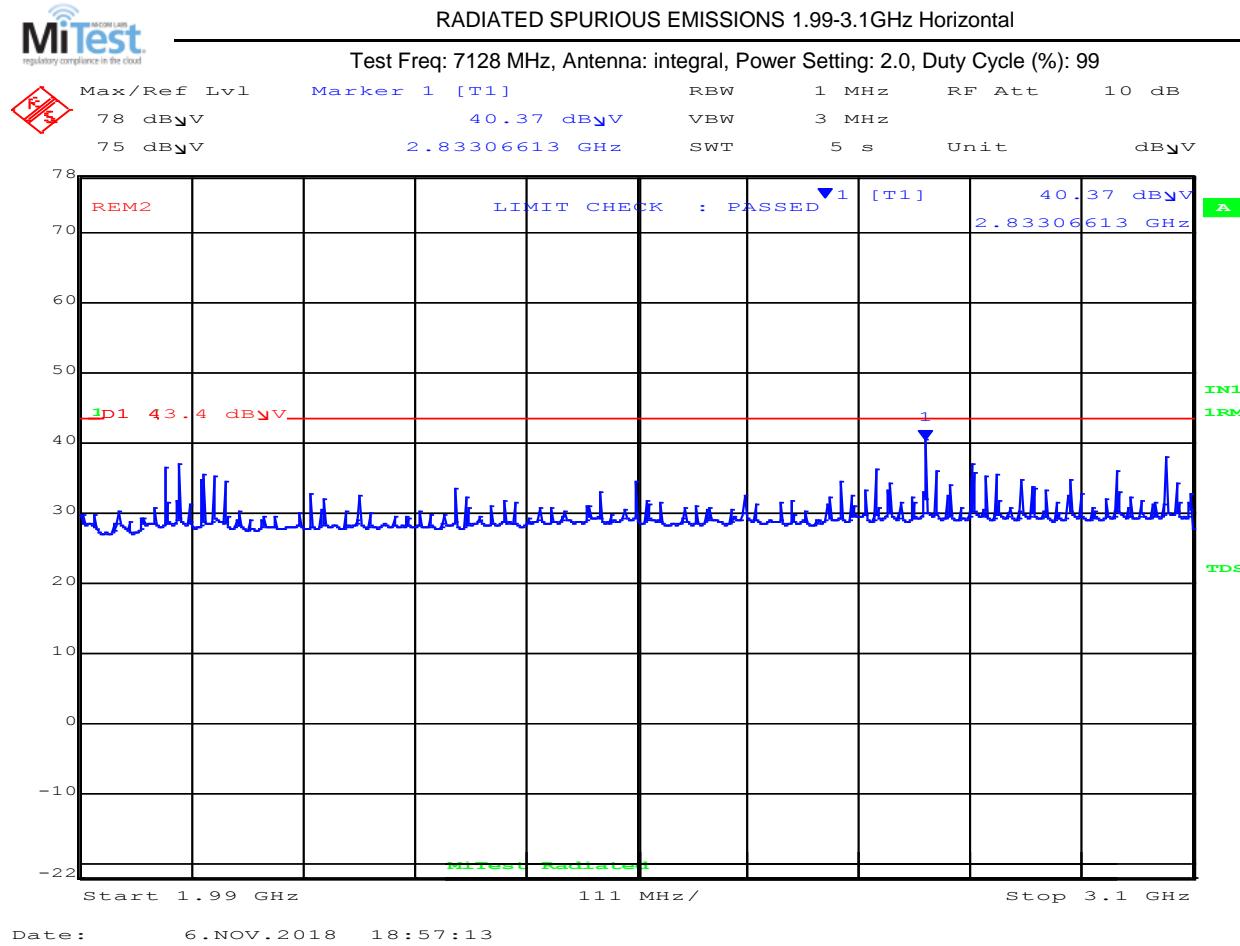
| 1610.00 – 1990.00 MHz                 |               |              |                  |     |        |         |              |           |            |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| Test Notes:                           |               |              |                  |     |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 1990.00 – 3100.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 2833.07*      | 40.5         | Average          | Horizontal | 150    | 0       | 43.4         | -2.9      | Pass       |

#### Test Notes:

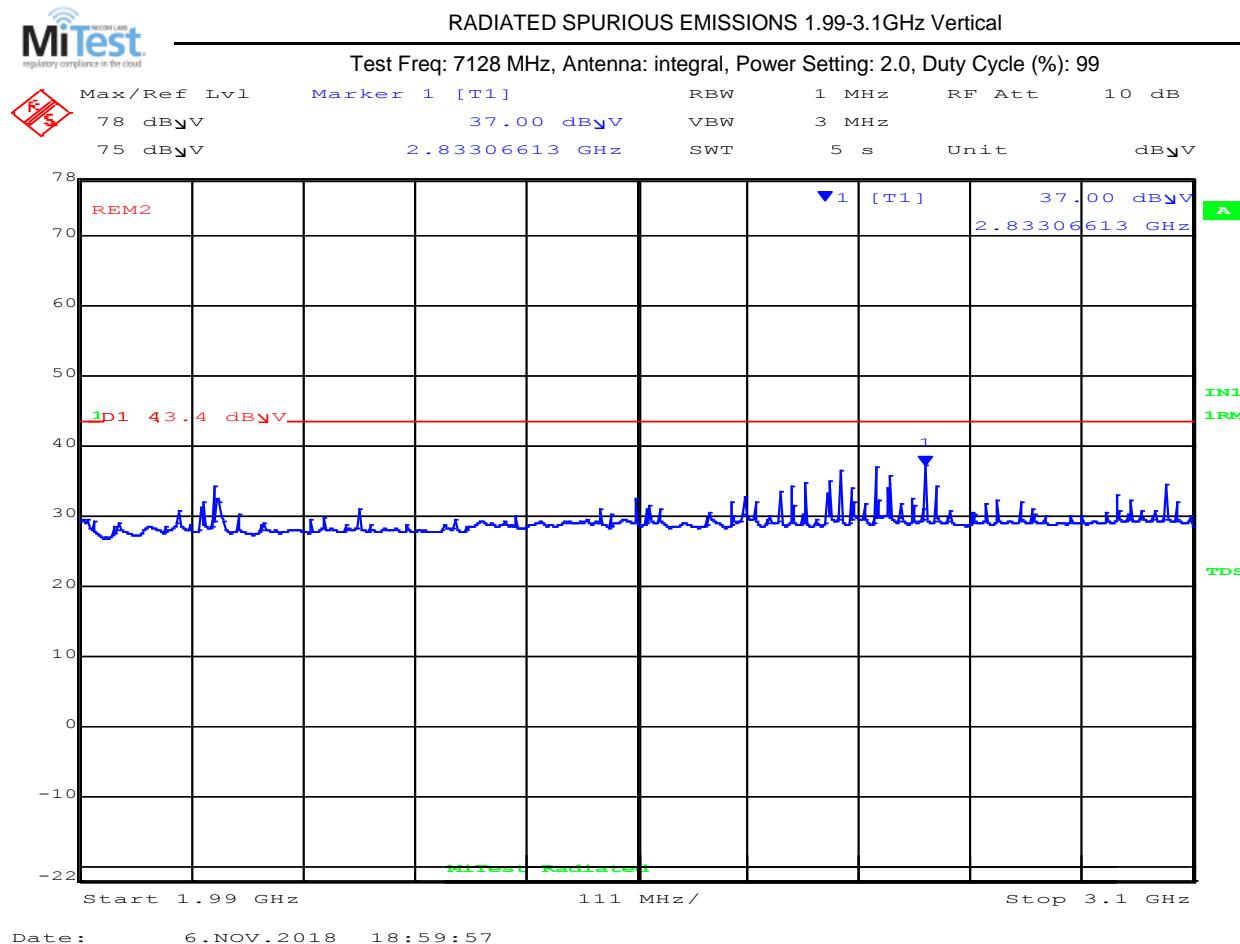
Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 1990.00 – 3100.00 GHz  |               |              |                  |          |        |         |              |           |            |
|--|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num  | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1  | 2833.07*      | 37.1         | Average          | Vertical | 150    | 0       | 43.4         | -6.3      | Pass       |
| <b>Test Notes:</b><br>Source Laptop and UART to serial converter cable |               |              |                  |          |        |         |              |           |            |

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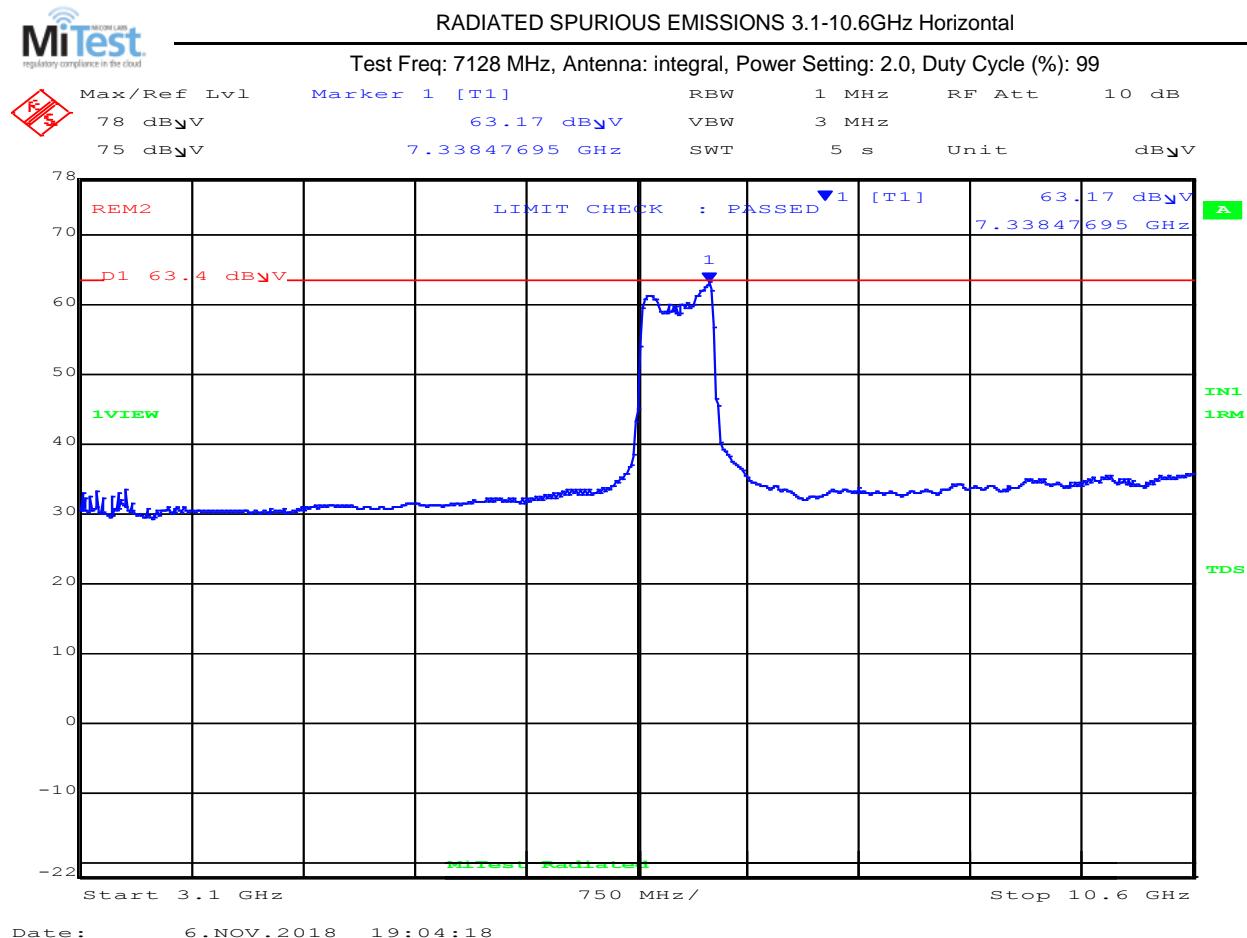


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 3100.00 - 10600.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 7338.48       | 62.2         | Average          | Horizontal | 150    | 0       | 63.4         | -1.2      | Pass       |

#### Test Notes:

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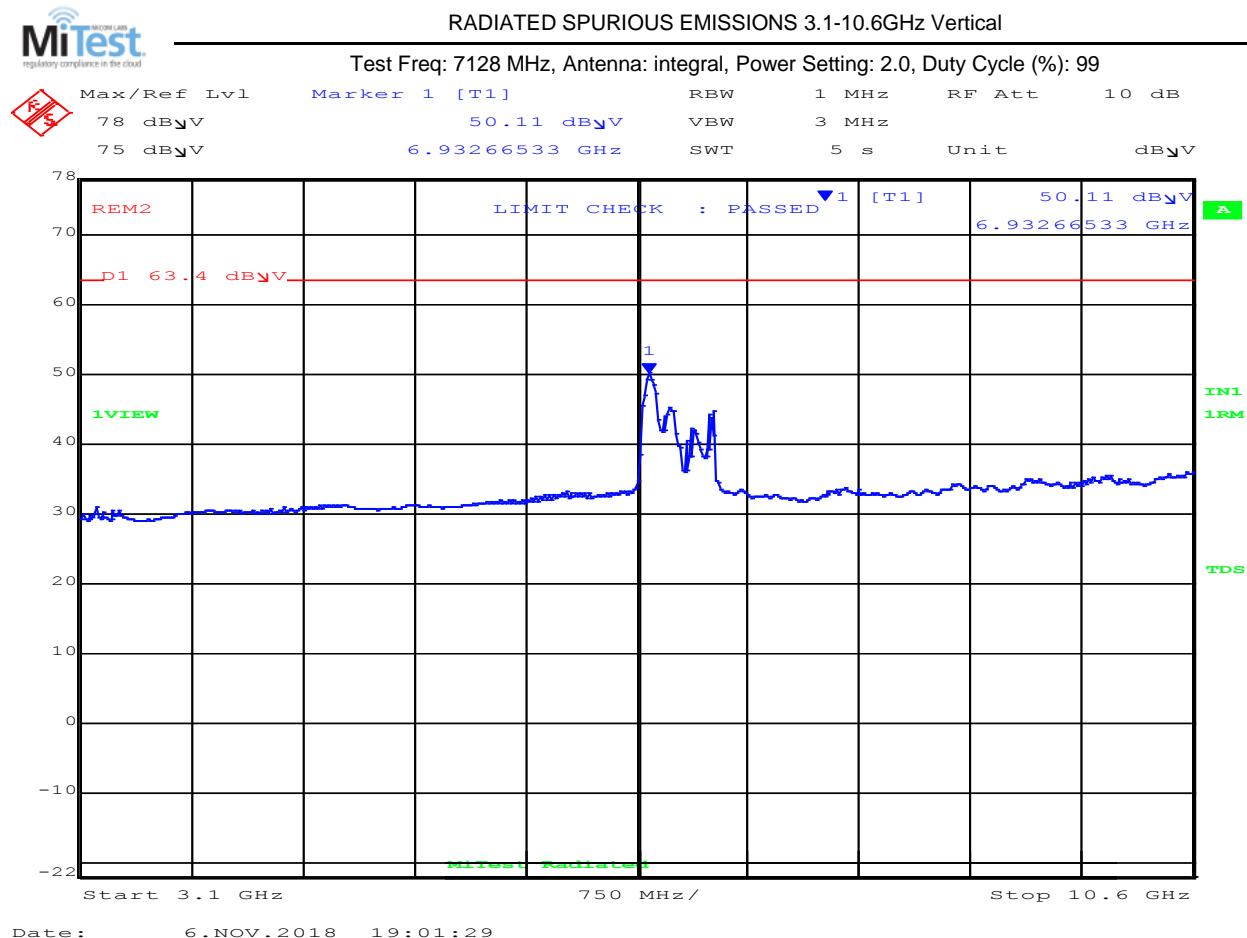


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz                |               |                           |                  |     |        |         |                           |           |            |  |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |  |
| Test Notes:                           |               |                           |                  |     |        |         |                           |           |            |  |

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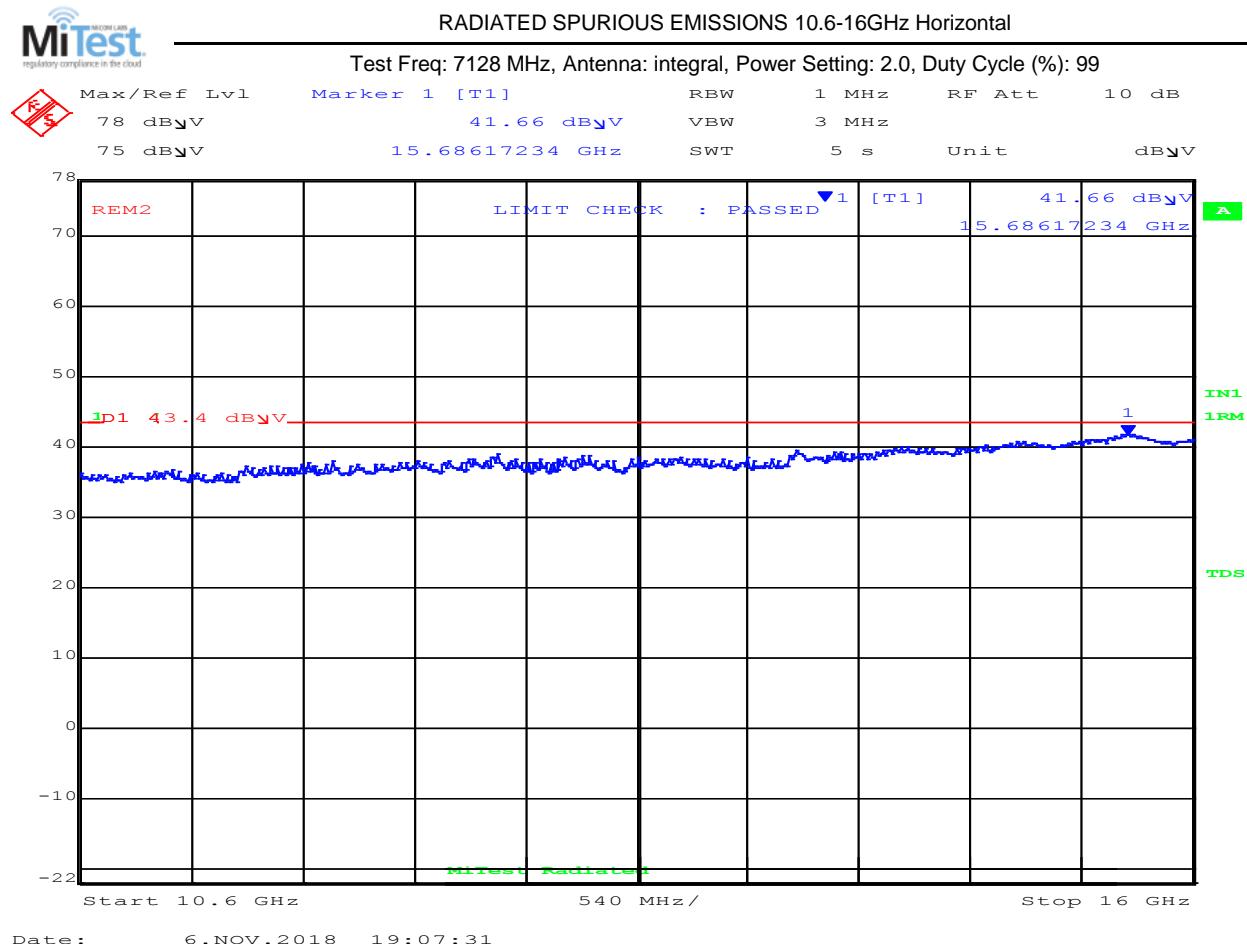


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 10600.00 – 16000.00 GHz |               |              |                  |            |        |         |              |           |            |
|-------------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                     | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                       | 15686.17      | 40.3         | Average          | Horizontal | 150    | 0       | 43.4         | -3.1      | Pass       |
| Test Notes:             |               |              |                  |            |        |         |              |           |            |

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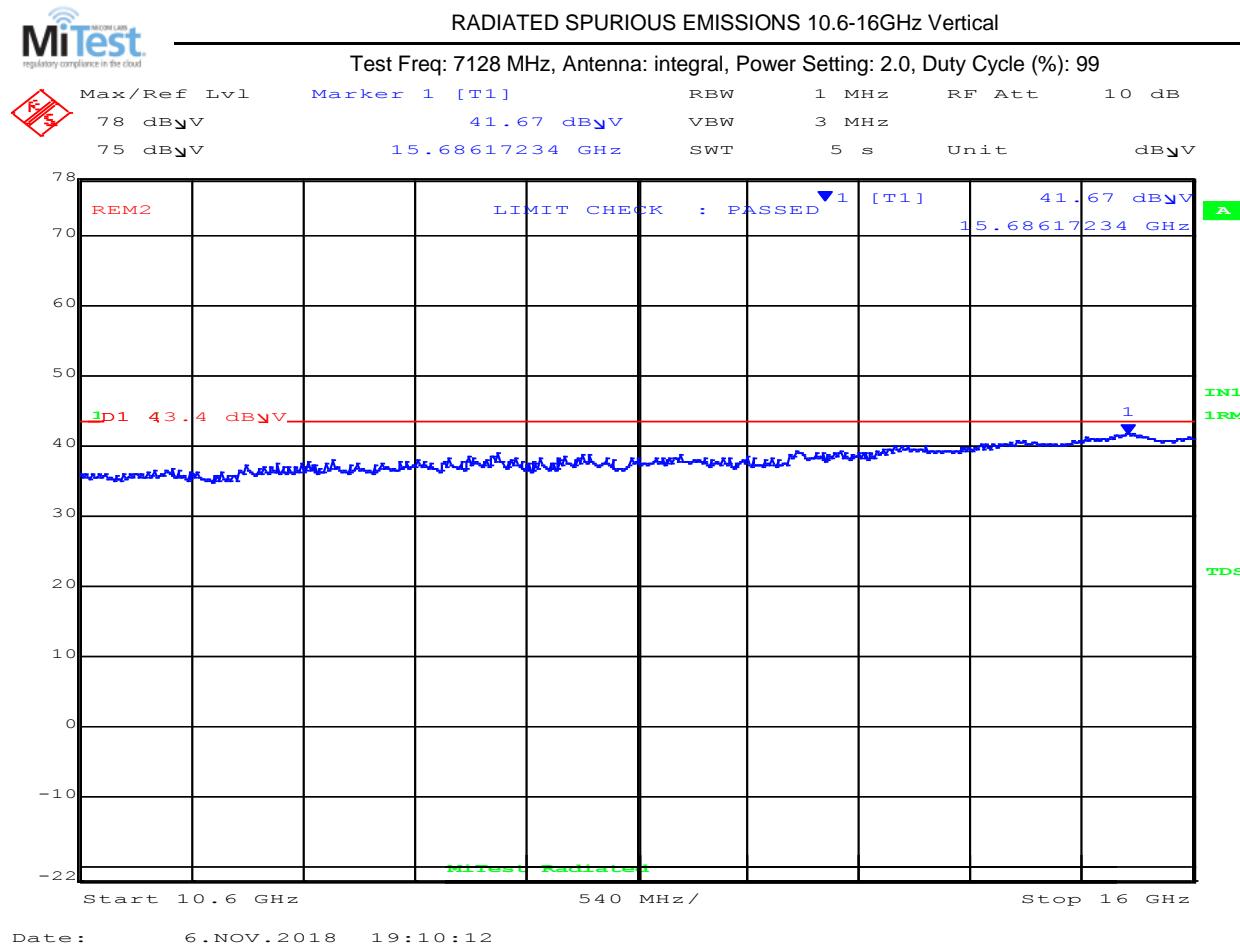


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB <sub>μV/m</sub> | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB <sub>μV/m</sub> | Margin dB | Pass /Fail |
|-----|---------------|--------------------------|------------------|----------|--------|---------|--------------------------|-----------|------------|
| 1   | 15686.17      | 40.3                     | Average          | Vertical | 150    | 0       | 43.4                     | -3.1      | Pass       |

**Test Notes:**

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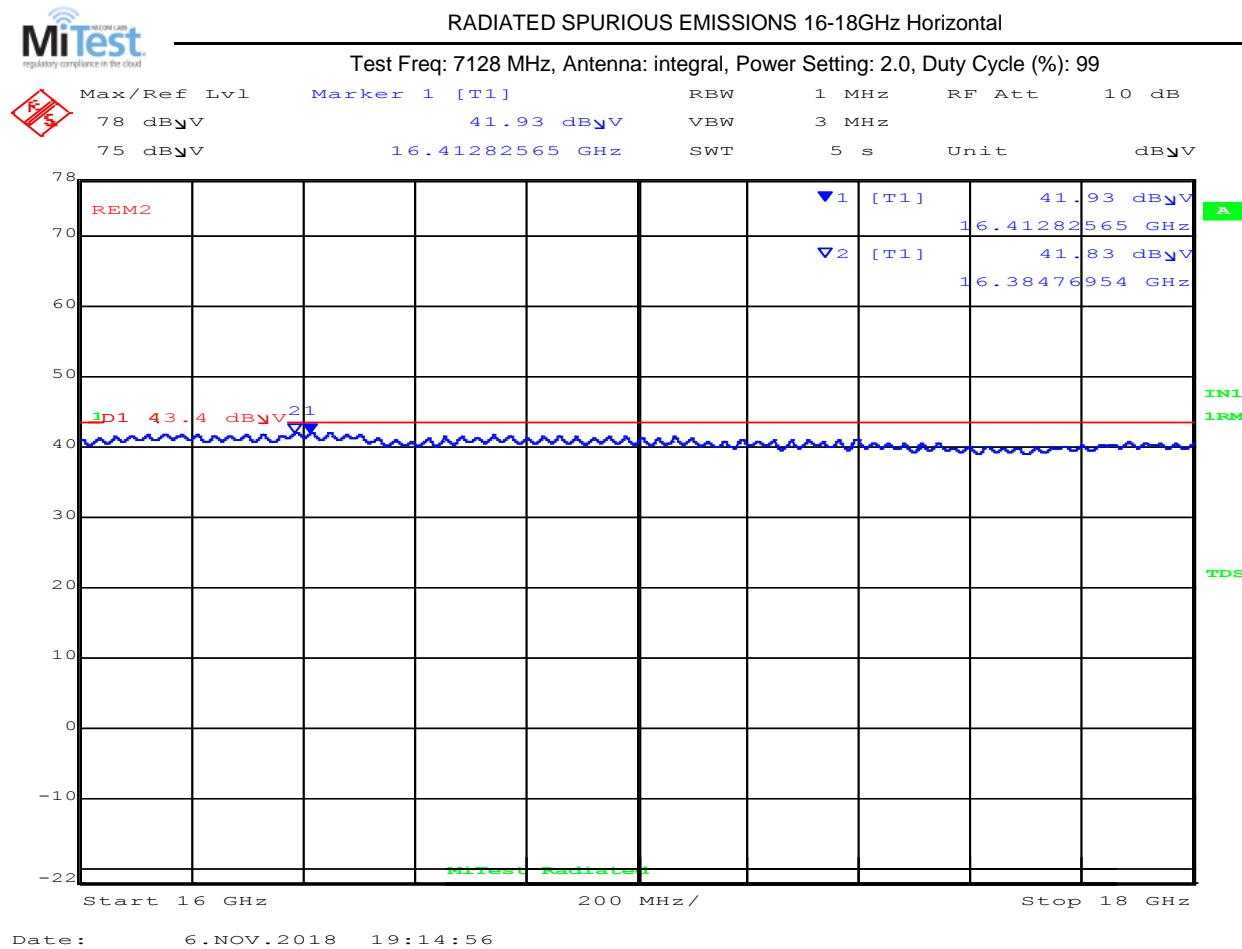


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 16000.00 – 18000.00 GHz |               |              |                  |            |        |         |              |           |            |
|-------------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                     | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                       | 16412.82      | 40.9         | Average          | Horizontal | 150    | 0       | 43.4         | -2.5      | Pass       |
| 2                       | 163884.77     | 40.8         | Average          | Horizontal | 150    | 0       | 43.4         | -2.6      | Pass       |
| Test Notes:             |               |              |                  |            |        |         |              |           |            |

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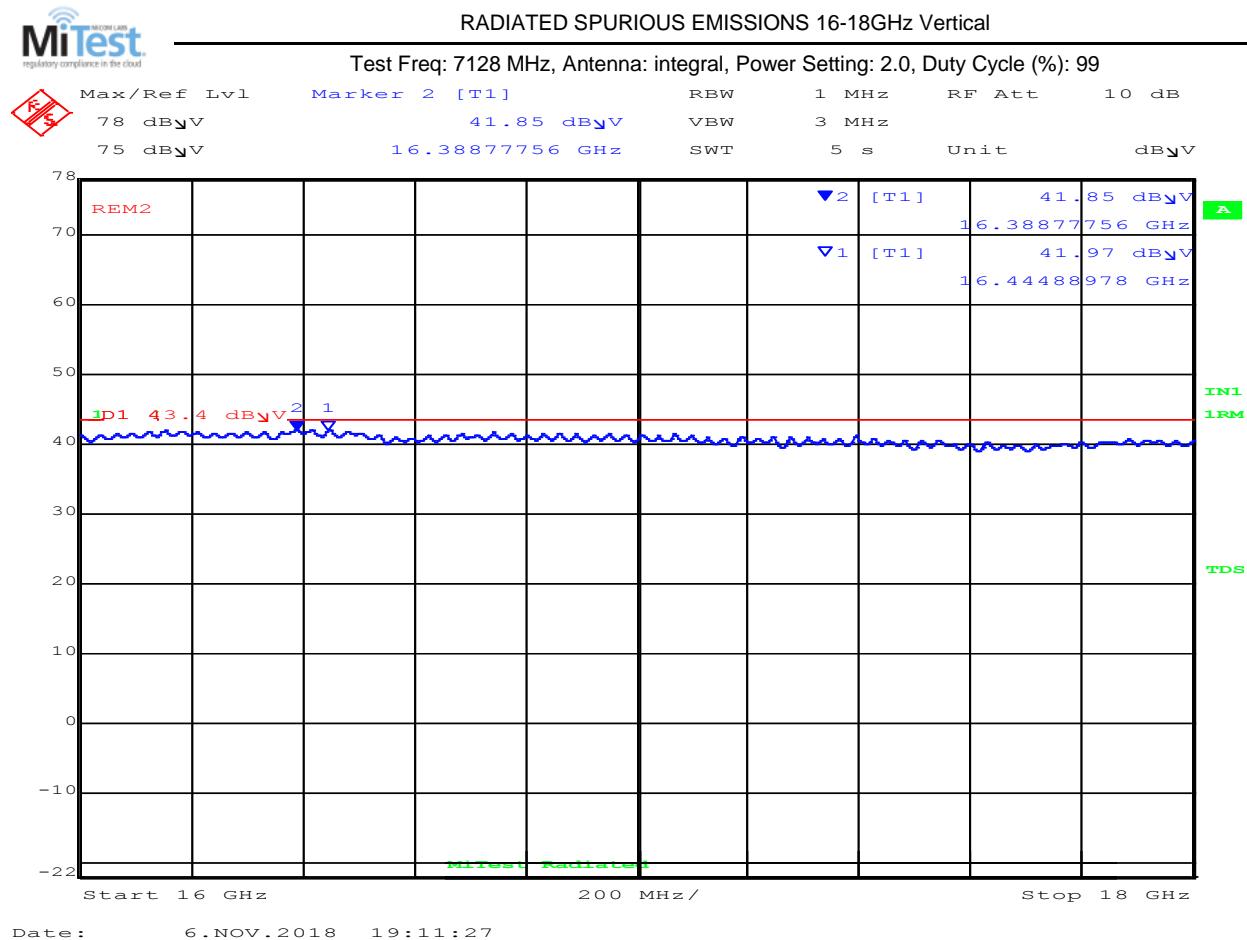


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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



Date: 6.NOV.2018 19:11:27

#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 16444.89      | 40.9               | Average          | Vertical | 150    | 0       | 43.4               | -2.5      | Pass       |
| 2   | 16388.78      | 40.8               | Average          | Vertical | 150    | 0       | 43.4               | -2.6      | Pass       |

#### Test Notes:

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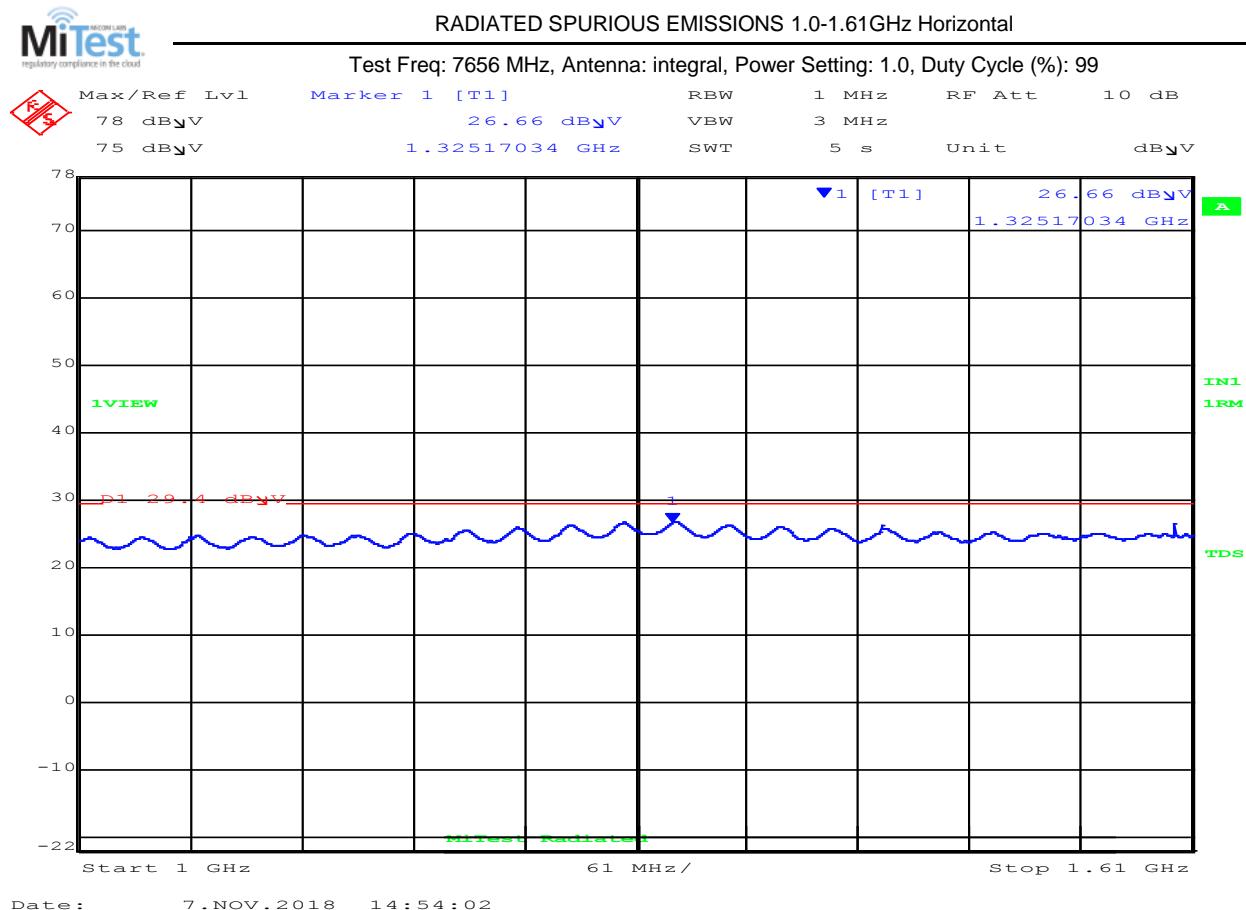
**Title:** Alereon AL5955, AL5930, AL5934  
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7656 MHz (Covers Band Group 3 TFC 7 and Band Group 6 TFC 5)

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 1000.00– 1610.00 MHz |               |                    |                  |            |        |         |                    |           |            |
|----------------------|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| Num                  | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                    | 1325.17       | 25.3               | Average          | Horizontal | 150    | 0       | 29.4               | -4.1      | Pass       |

**Test Notes:**  
Laptop Removed

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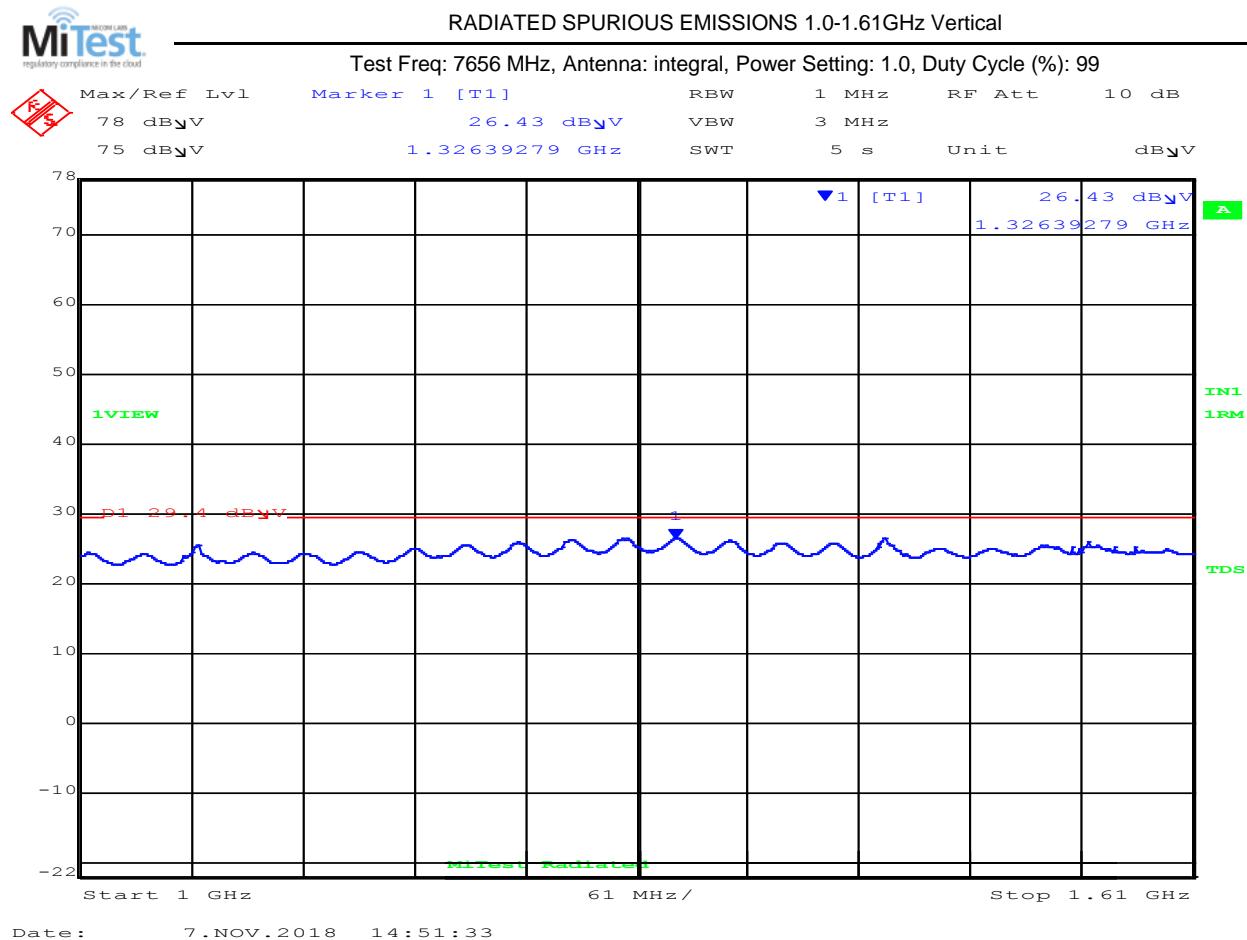


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 1000.00– 1610.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| 1   | 1326.39       | 25.1         | Average          | Vertical | 150    | 0       | 29.4         | -4.1      | Pass       |

**Test Notes:**  
Laptop Removed

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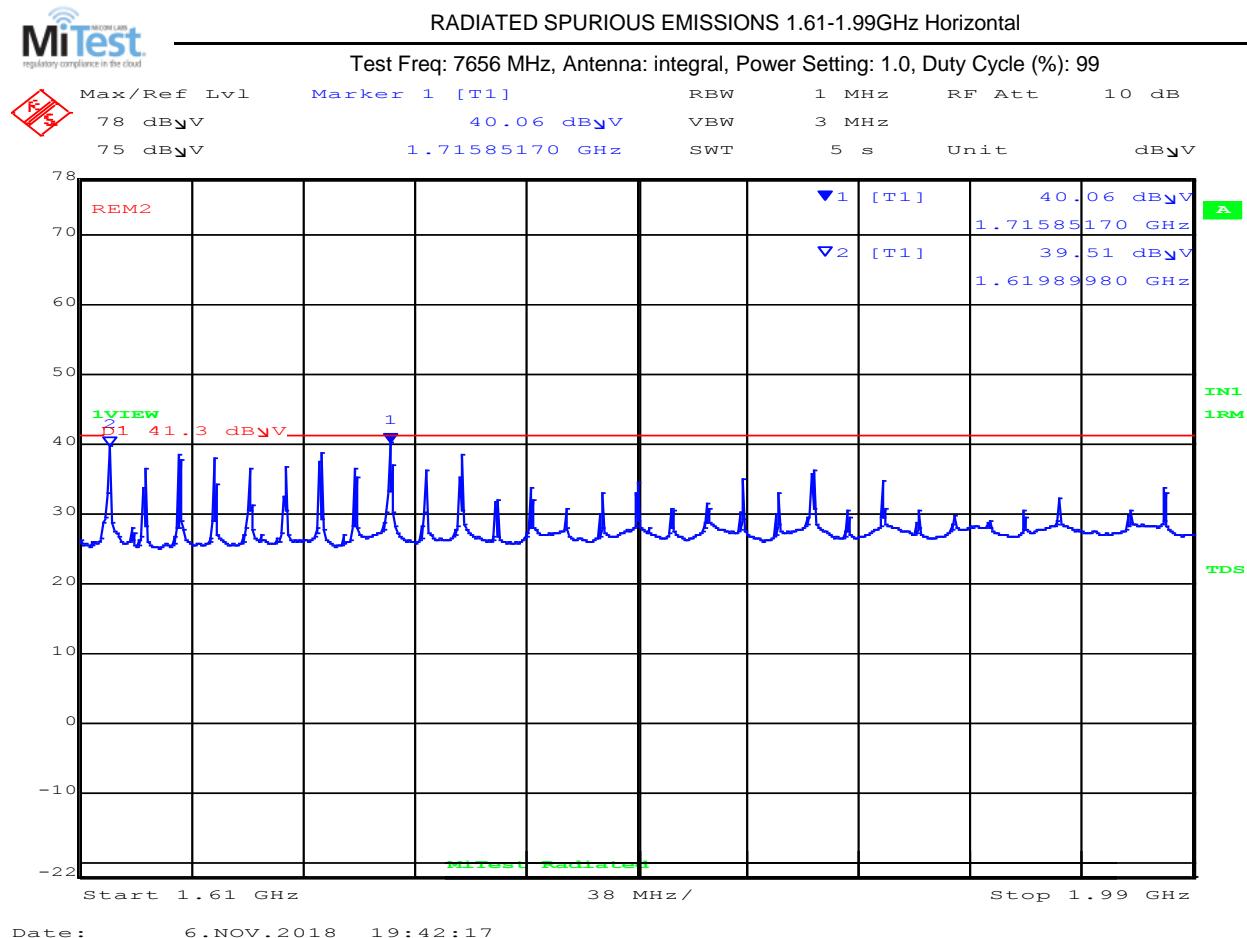


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 1610.00 – 1990.00 MHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 1715.85*      | 40.1               | Average          | Horizontal | 150    | 0       | 43.4               | -3.3      | Pass       |
| 2   | 1619.99*      | 39.6               | Average          | Horizontal | 150    | 0       | 43.4               | -3.8      | Pass       |

#### Test Notes:

Source Laptop and UART to serial converter cable

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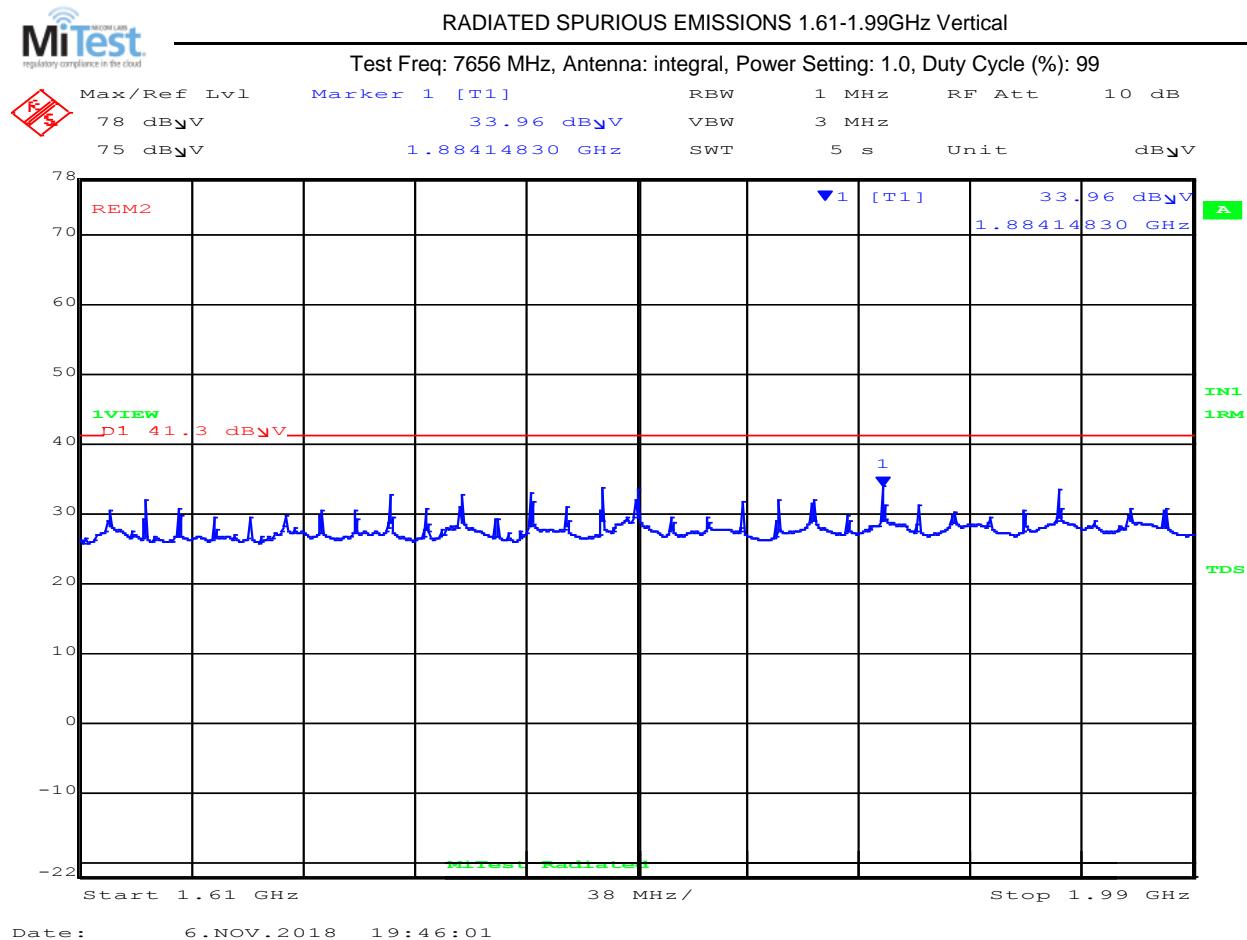


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 1610.00 – 1990.00 MHz

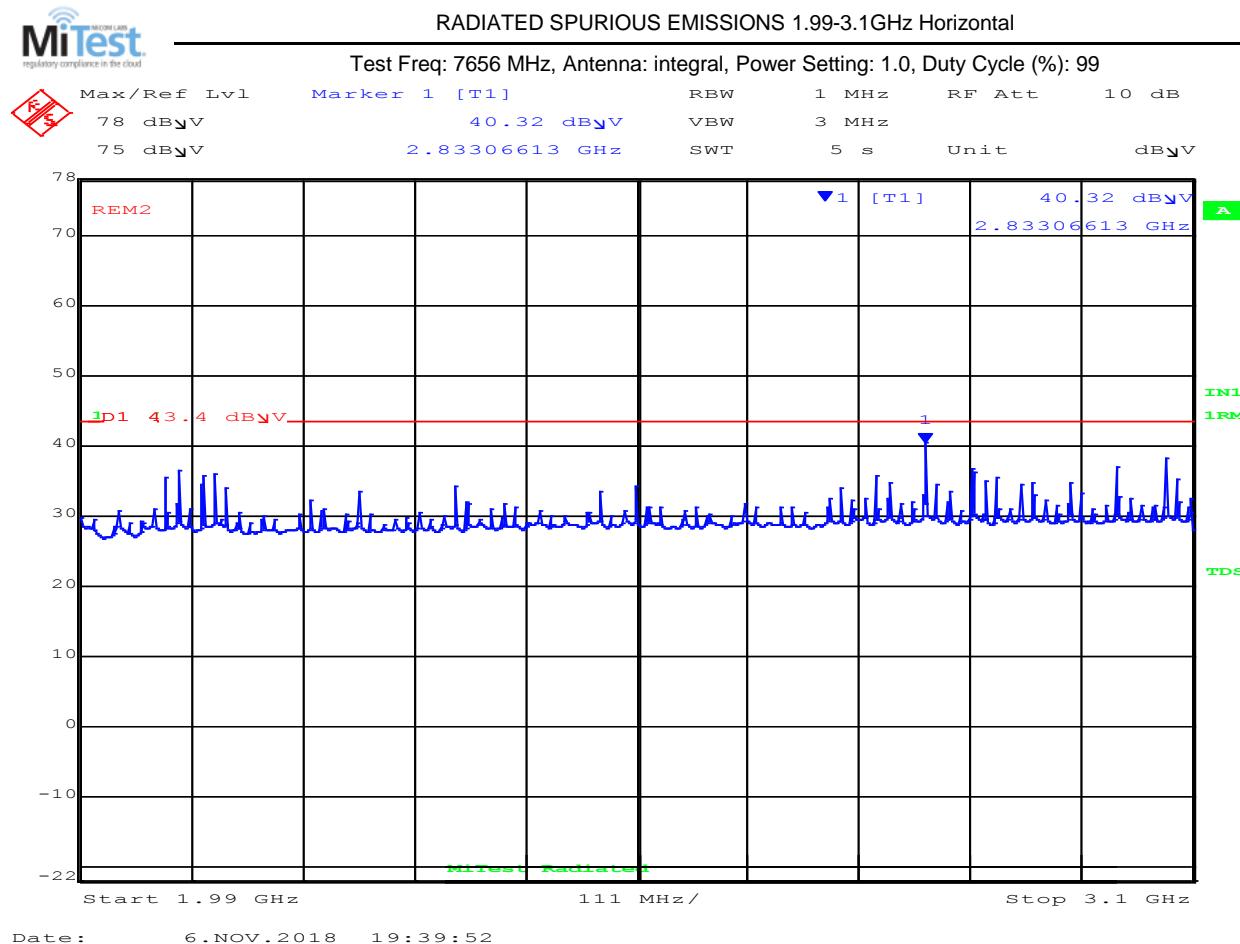
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| Test Notes:                           |               |              |                  |     |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 1990.00 – 3100.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 2833.07*      | 42.3         | Average          | Horizontal | 150    | 0       | 43.4         | -1.1      | Pass       |

#### Test Notes:

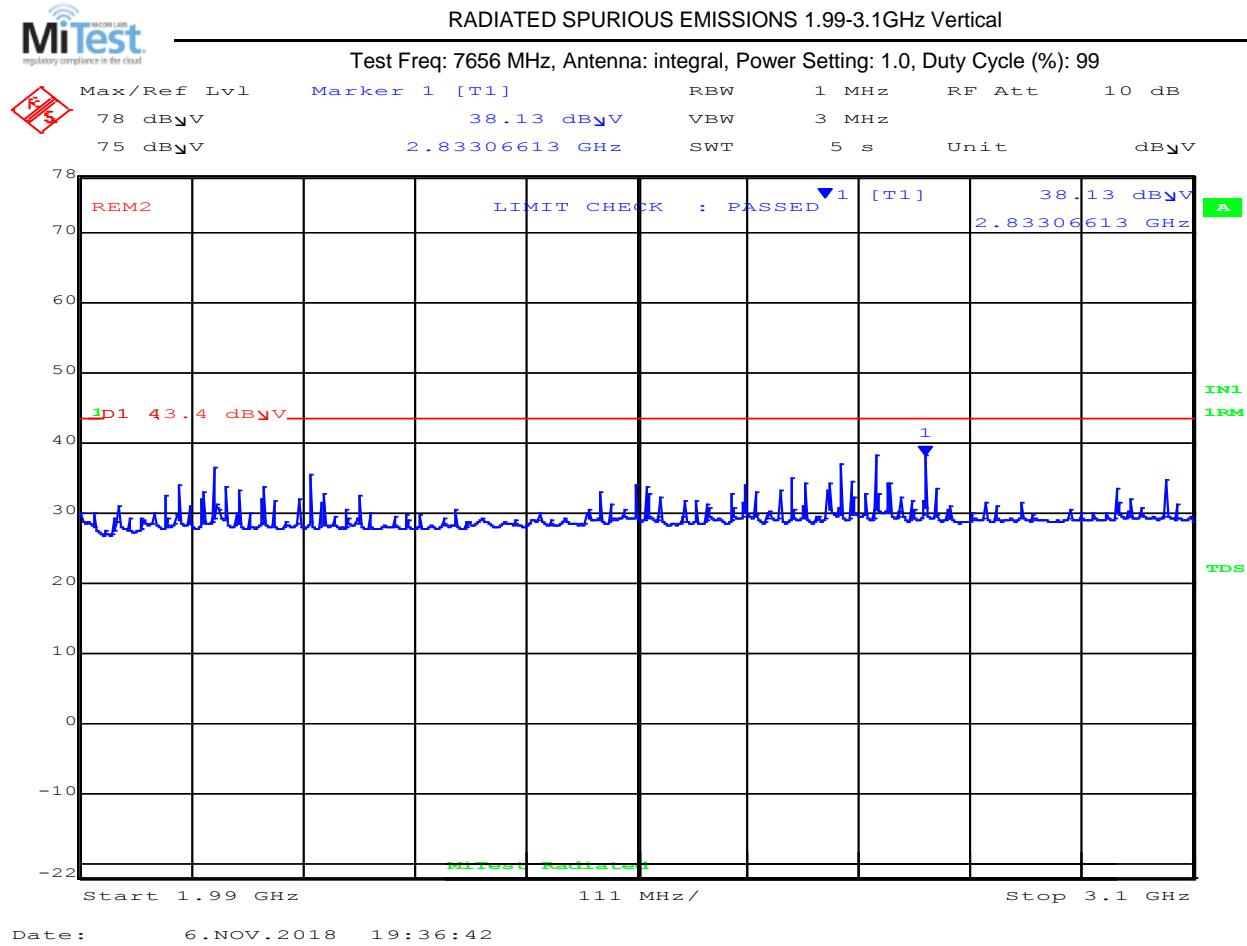
Source Laptop and UART to serial converter cable

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



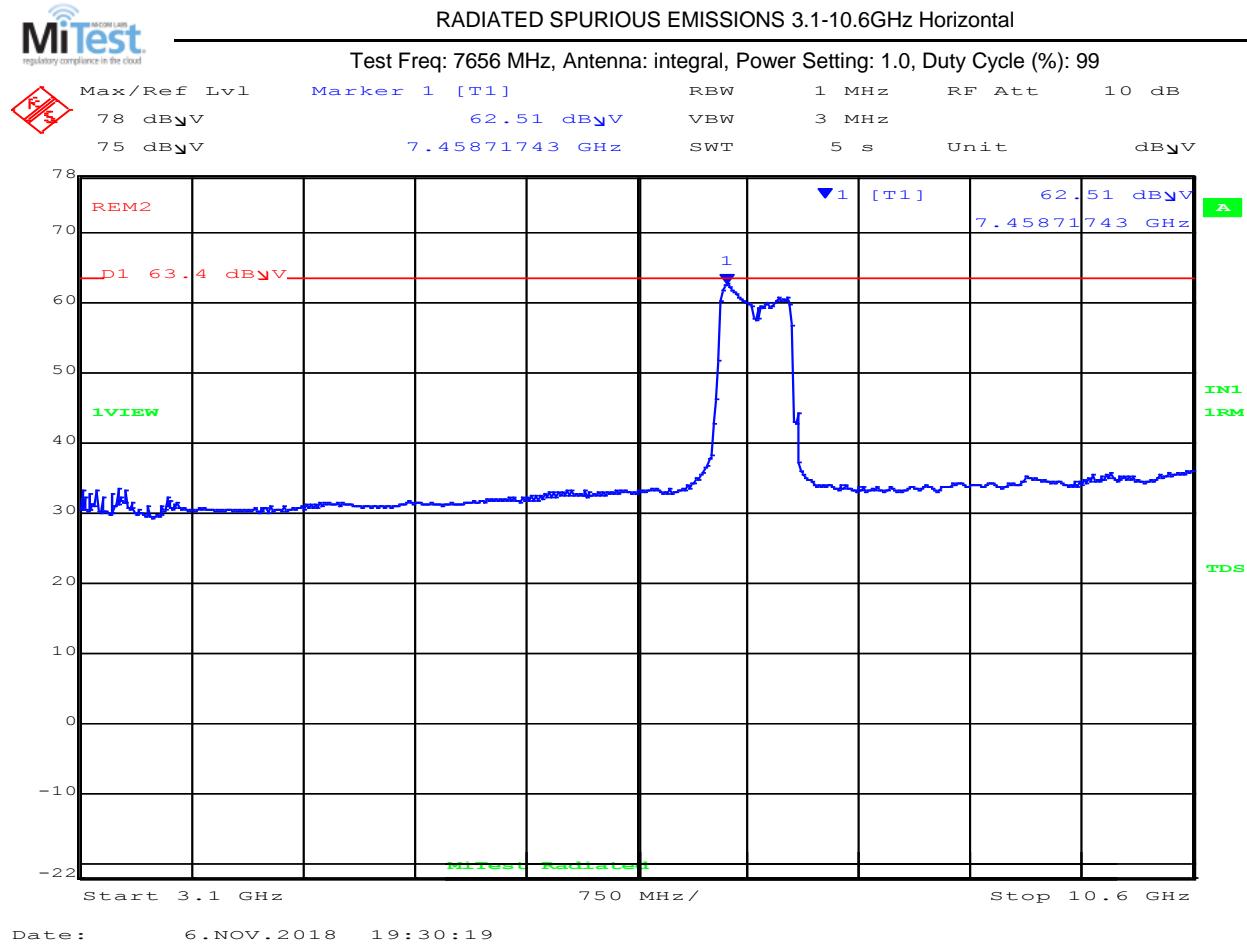
| 1990.00 – 3100.00 GHz  |               |              |                  |          |        |         |              |           |            |
|--|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num  | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1  | 2833.07*      | 40.2         | Average          | Vertical | 150    | 0       | 43.4         | -3.2      | Pass       |
| <b>Test Notes:</b><br>Source Laptop and UART to serial converter cable |               |              |                  |          |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



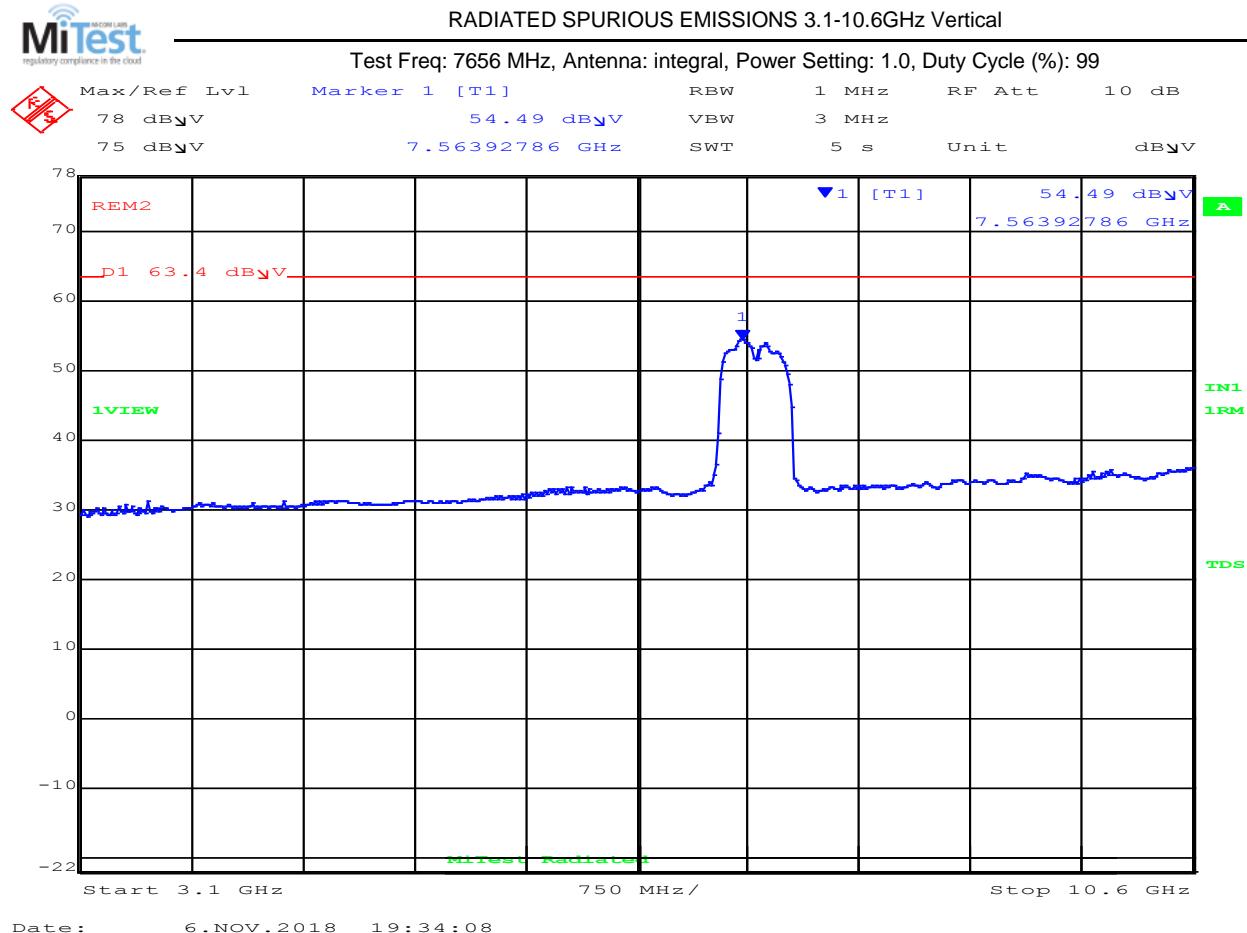
| 3100.00 - 10600.00 MHz |               |                    |                  |            |        |         |                    |           |            |
|------------------------|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| Num                    | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                      | 7458.72       | 61.6               | Average          | Horizontal | 150    | 0       | 63.4               | -1.8      | Pass       |
| <b>Test Notes:</b>     |               |                    |                  |            |        |         |                    |           |            |

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz                |               |              |                  |     |        |         |              |           |            |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b>                    |               |              |                  |     |        |         |              |           |            |

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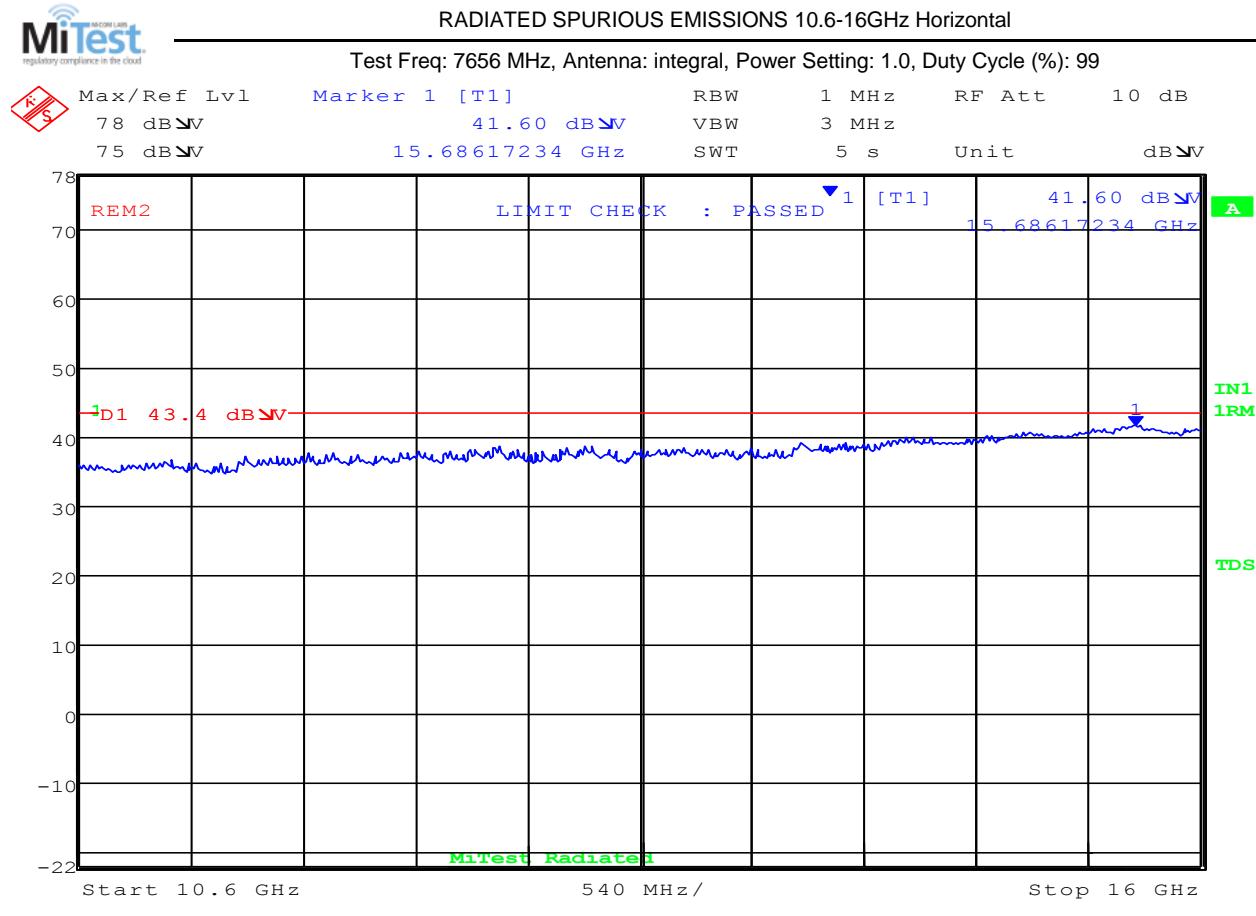


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

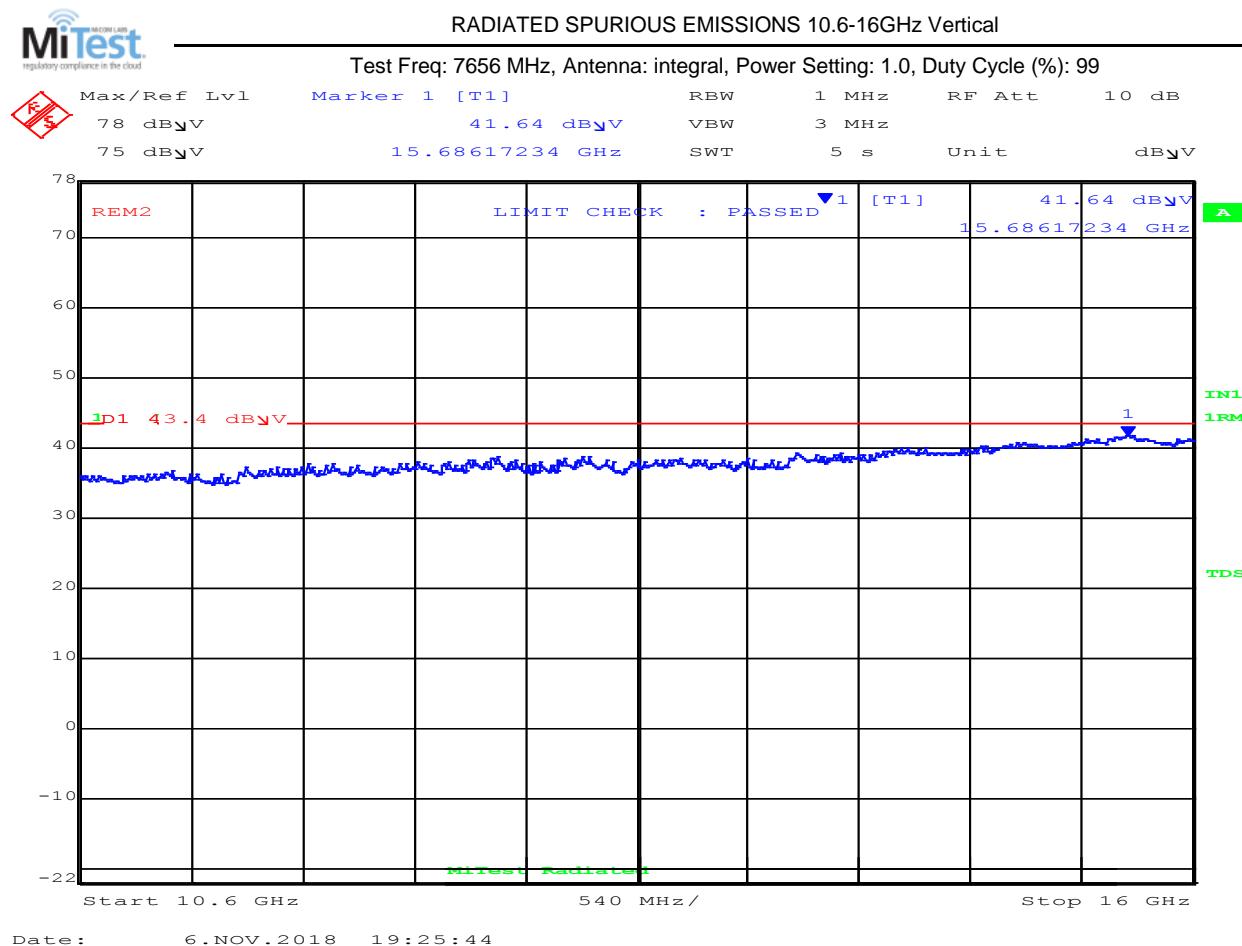
| Num                | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1                  | 15686.17      | 40.2               | Average          | Horizontal | 150    | 0       | 43.4               | -3.2      | Pass       |
| <b>Test Notes:</b> |               |                    |                  |            |        |         |                    |           |            |

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**Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



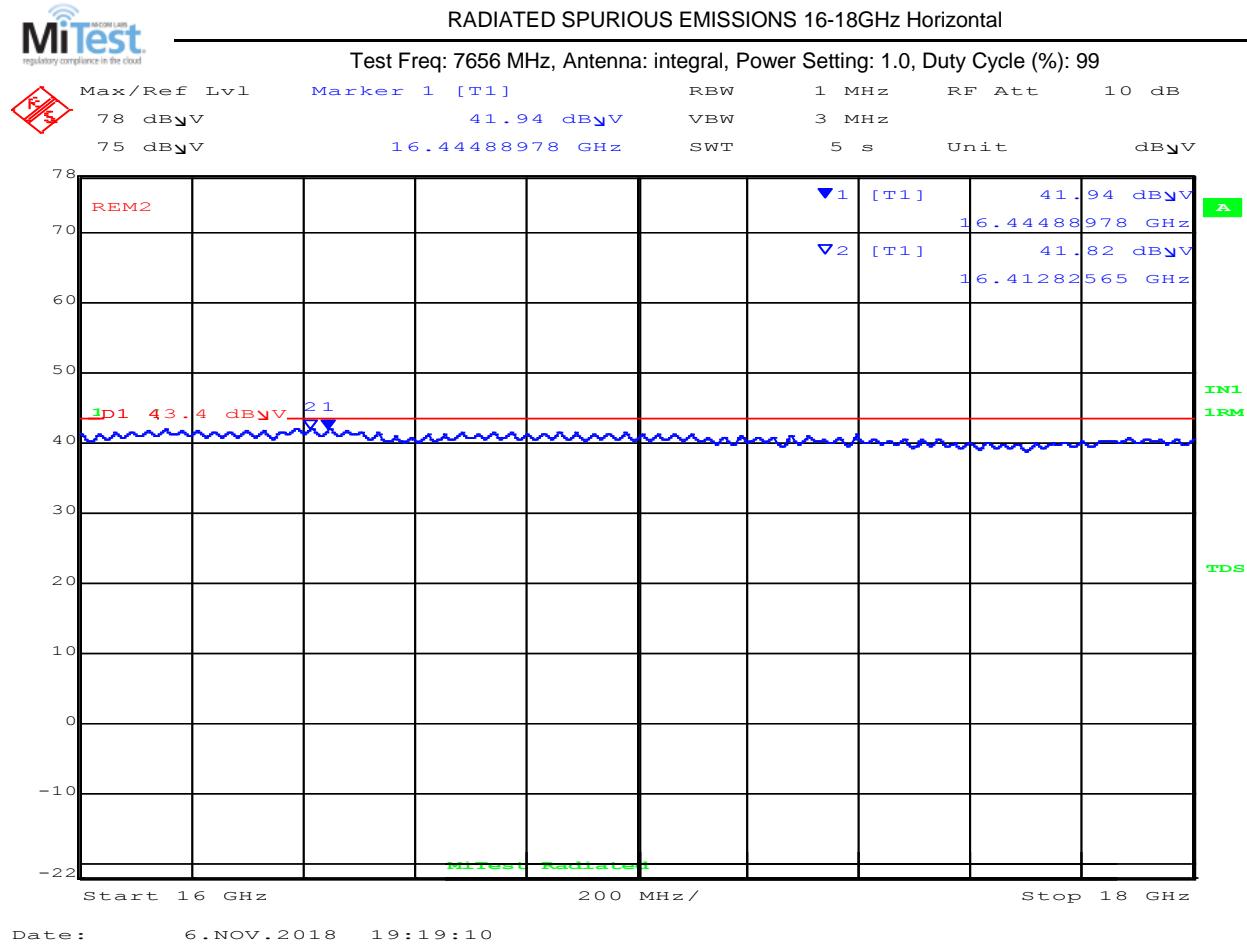
| 10600.00 – 16000.00 GHz |               |              |                  |          |        |         |              |           |            |
|-------------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num                     | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                       | 15686.17      | 40.3         | Average          | Vertical | 150    | 0       | 43.4         | -3.1      | Pass       |
| <b>Test Notes:</b>      |               |              |                  |          |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 16444.89      | 40.9         | Average          | Horizontal | 150    | 0       | 43.4         | -2.5      | Pass       |
| 2   | 16412.83      | 40.8         | Average          | Horizontal | 150    | 0       | 43.4         | -2.6      | Pass       |

**Test Notes:**

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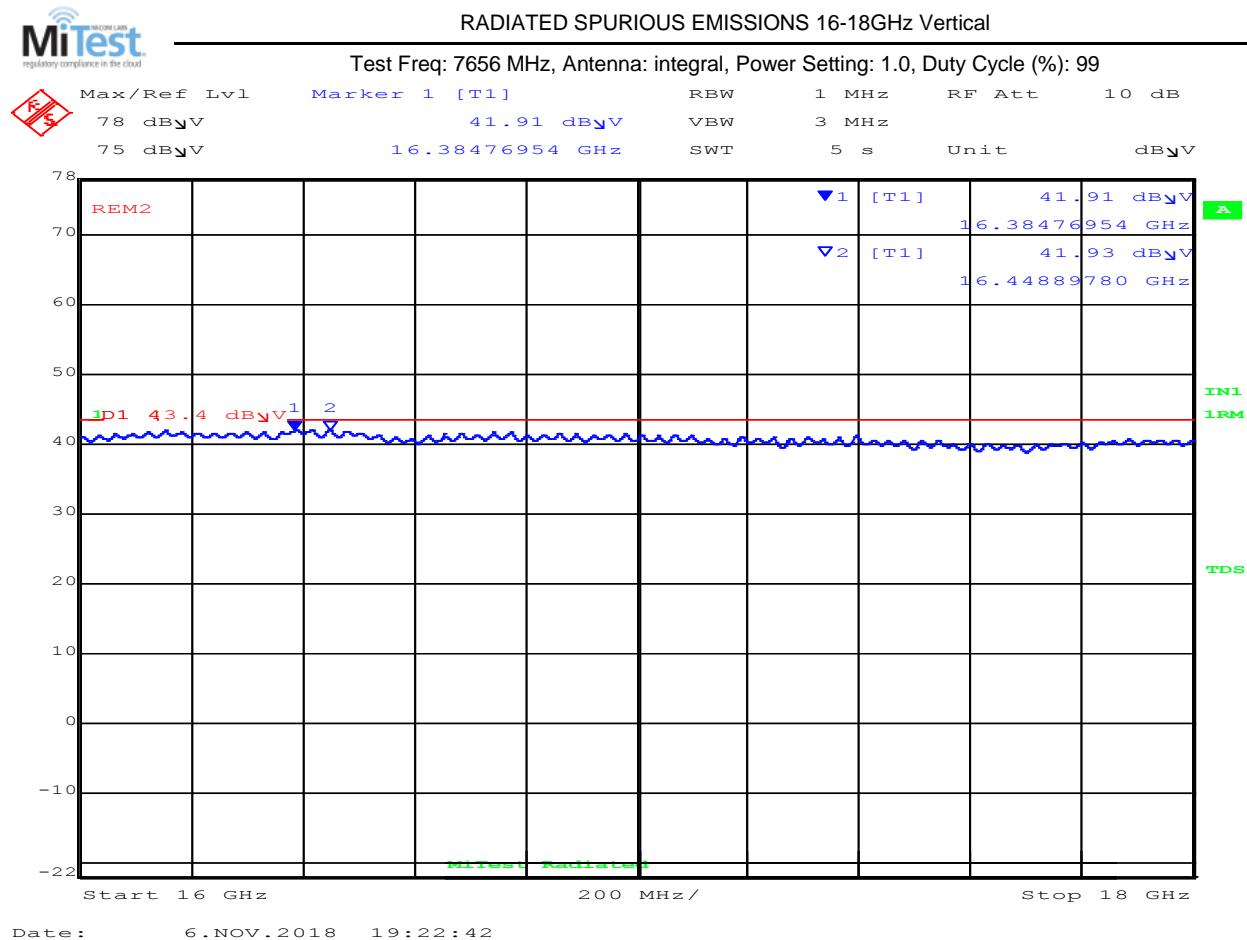


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|----------|--------|---------|---------------------------|-----------|------------|
| 1   | 16384.48      | 40.8                      | Average          | Vertical | 150    | 0       | 43.4                      | -2.6      | Pass       |
| 2   | 16448.90      | 40.9                      | Average          | Vertical | 150    | 0       | 43.4                      | -2.5      | Pass       |

#### Test Notes:

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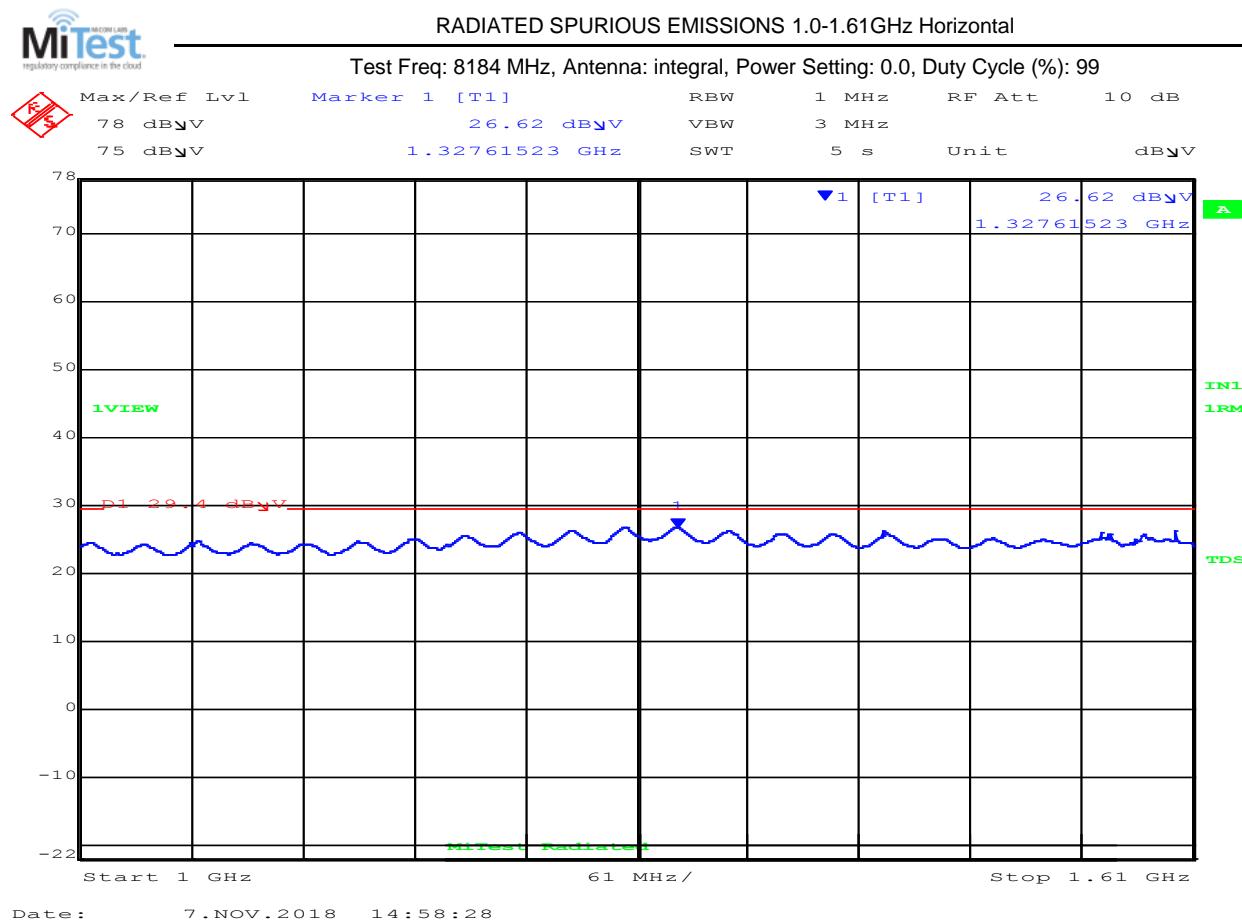
**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
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8184 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



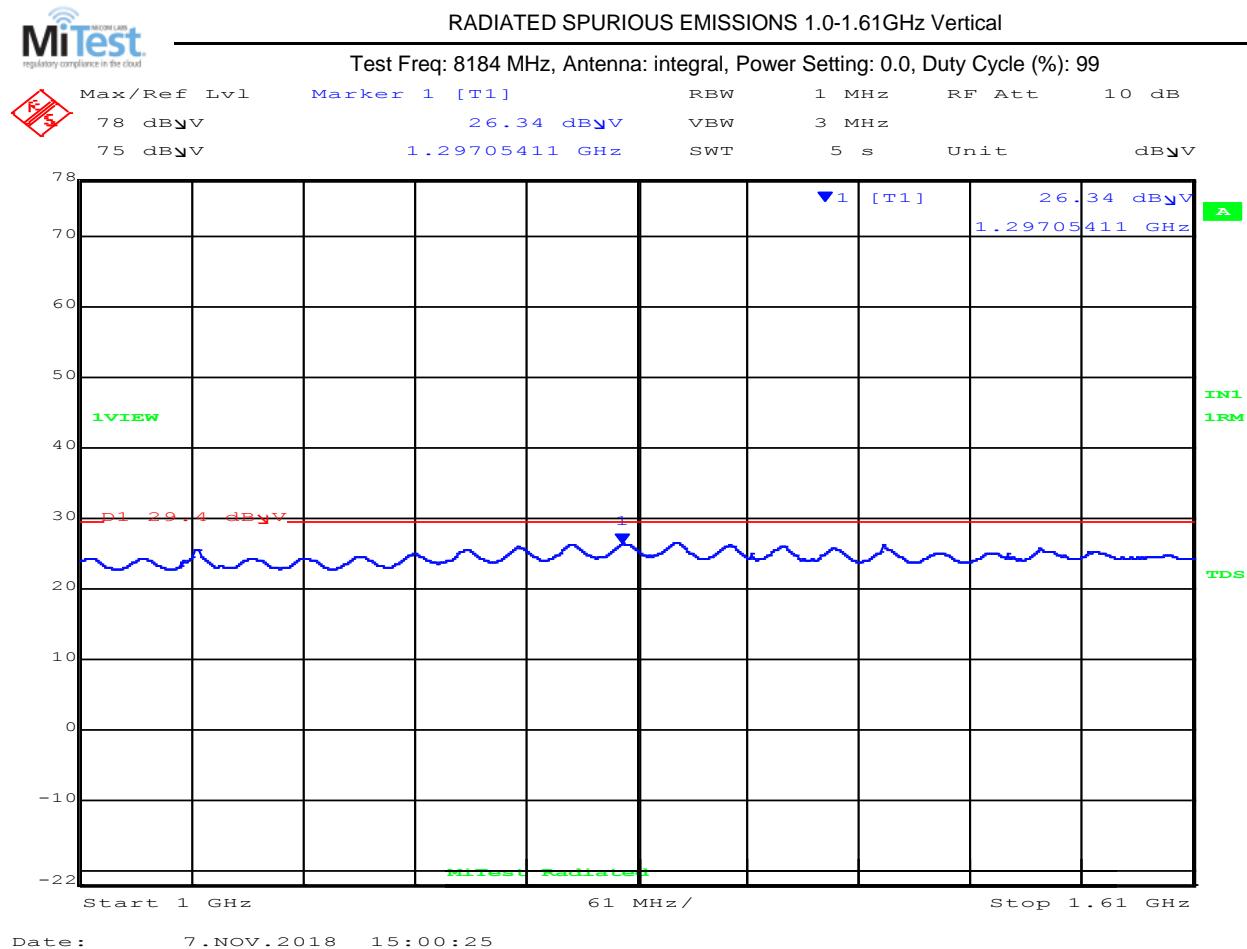
| 1000.00– 1610.00 MHz |               |                    |                  |            |        |         |                    |           |            |  |
|----------------------|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|--|
| Num                  | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |  |
| 1                    | 1327.62       | 25.10              | Average          | Horizontal | 150    | 0       | 29.4               | -4.3      | Pass       |  |
| Test Notes:          |               |                    |                  |            |        |         |                    |           |            |  |

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### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



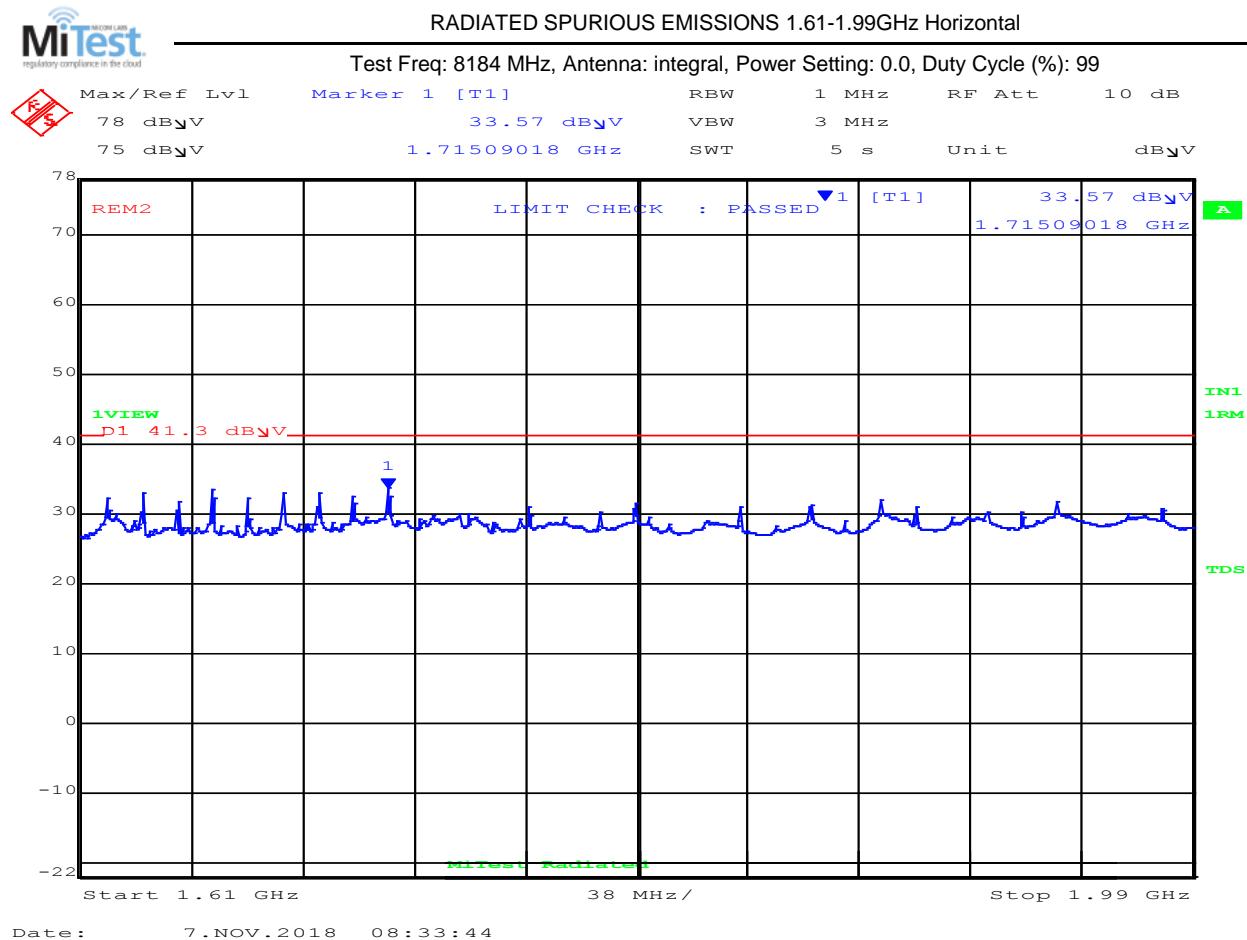
| 1000.00–1610.00 MHz |               |              |                  |          |        |         |              |           |            |
|---------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num                 | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 2                   | 1297.05       | 25.1         | Average          | Vertical | 150    | 0       | 29.4         | -4.3      | Pass       |
| <b>Test Notes:</b>  |               |              |                  |          |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 1610.00 – 1990.00 MHz                 |               |              |                  |     |        |         |              |           |            |  |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |  |
| <b>Test Notes:</b>                    |               |              |                  |     |        |         |              |           |            |  |

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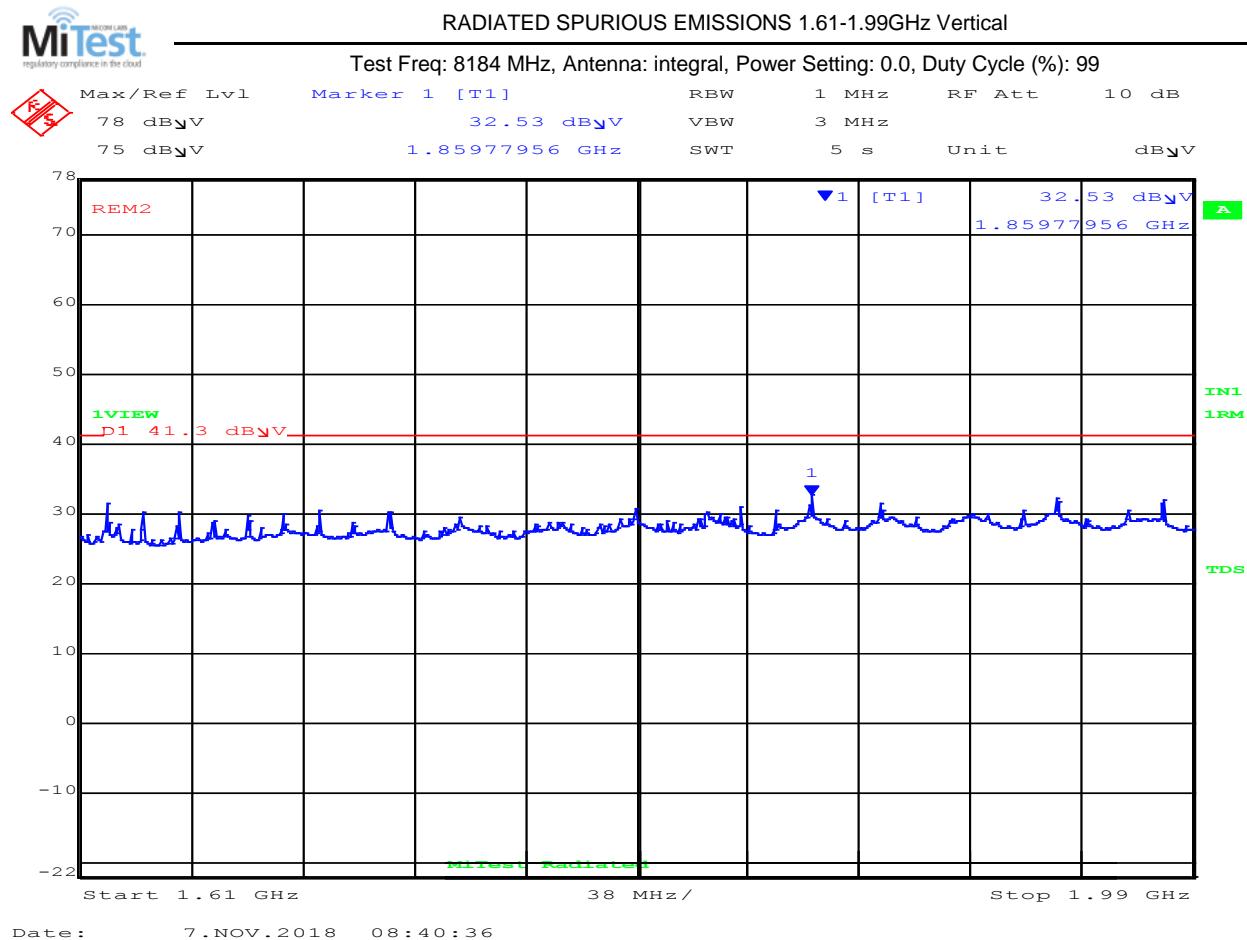


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#### Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 1610.00 – 1990.00 MHz

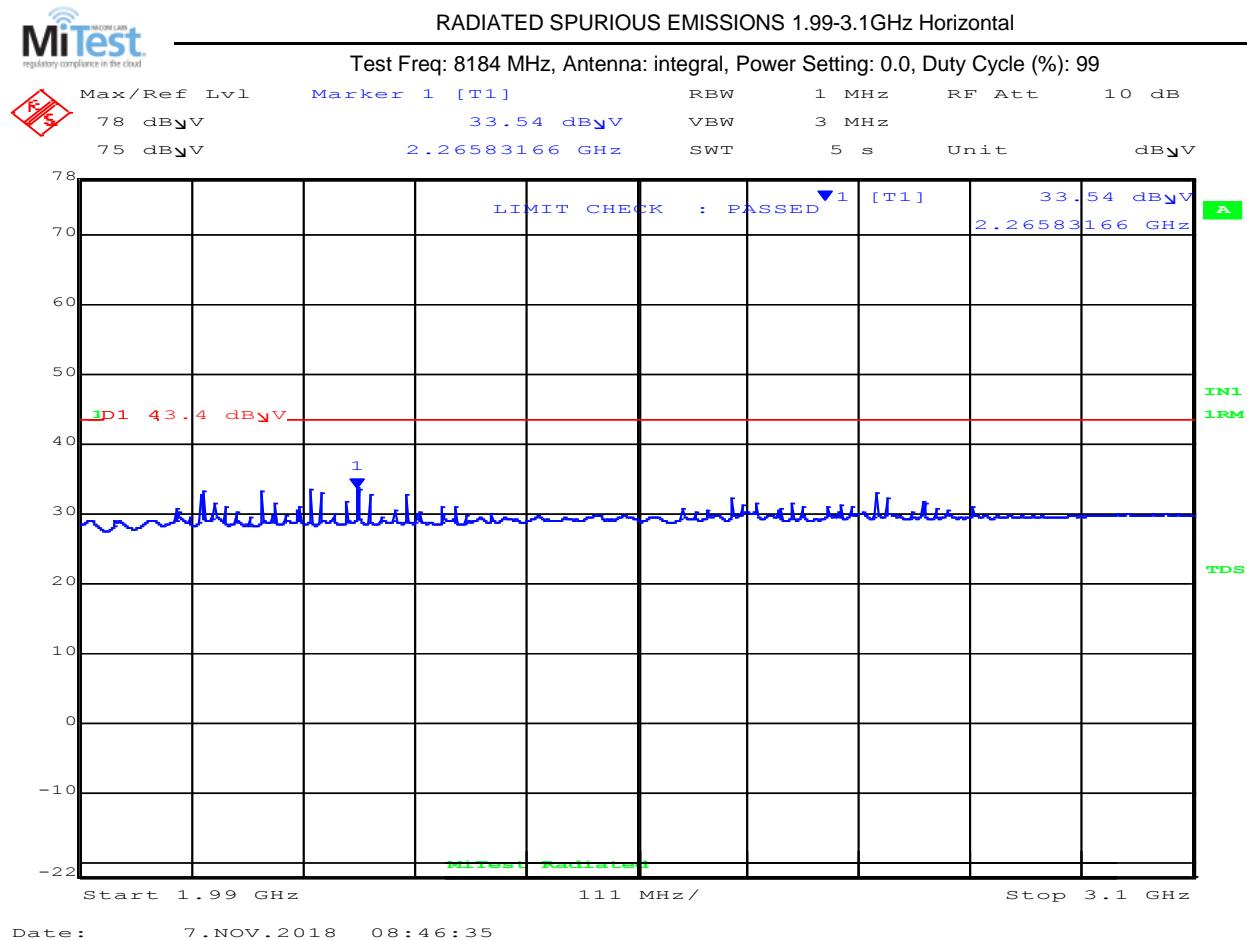
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| Test Notes:                           |               |              |                  |     |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 1990.00 – 3100.00 GHz                 |               |              |                  |     |        |         |              |           |            |  |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |  |
| <b>Test Notes:</b>                    |               |              |                  |     |        |         |              |           |            |  |

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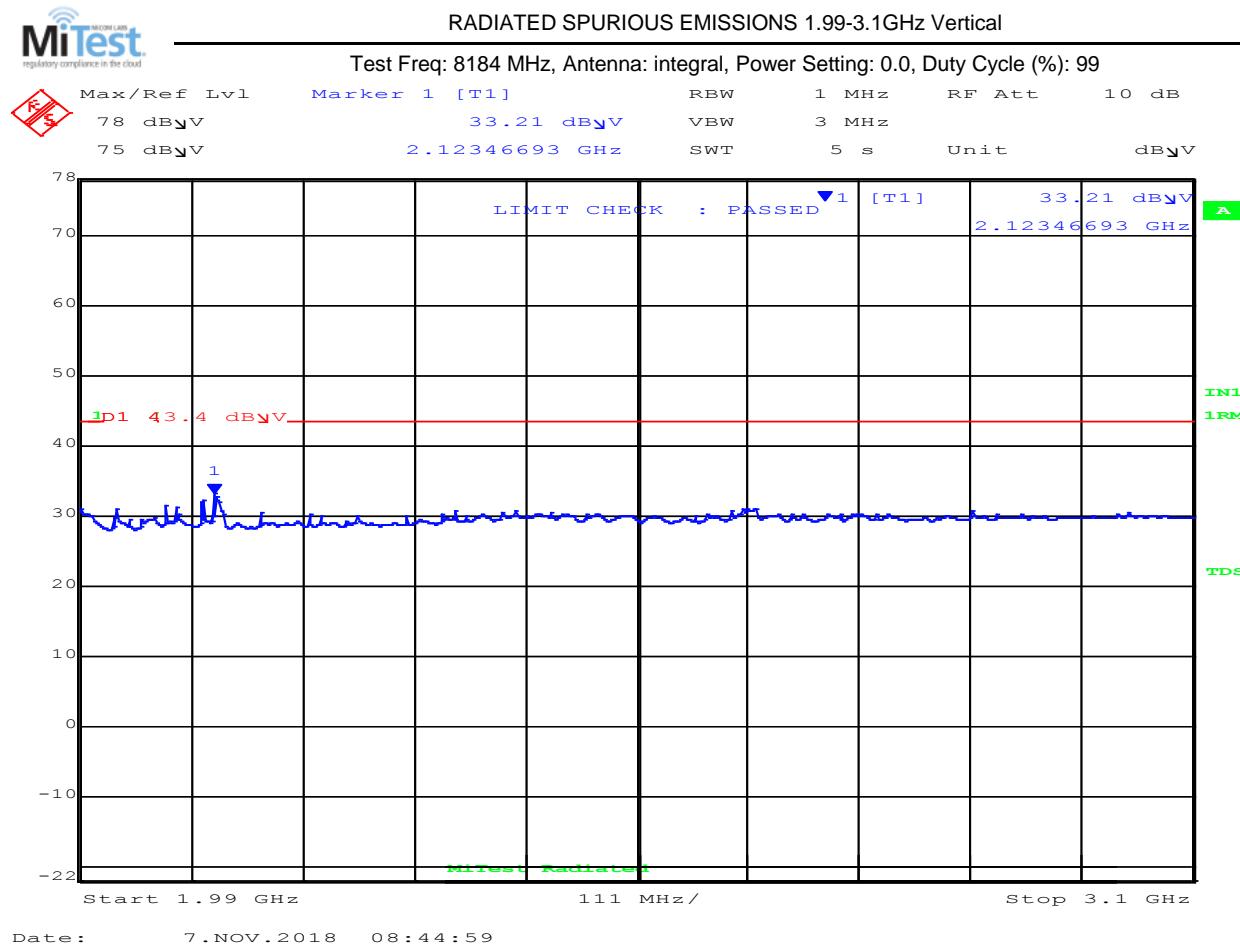


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



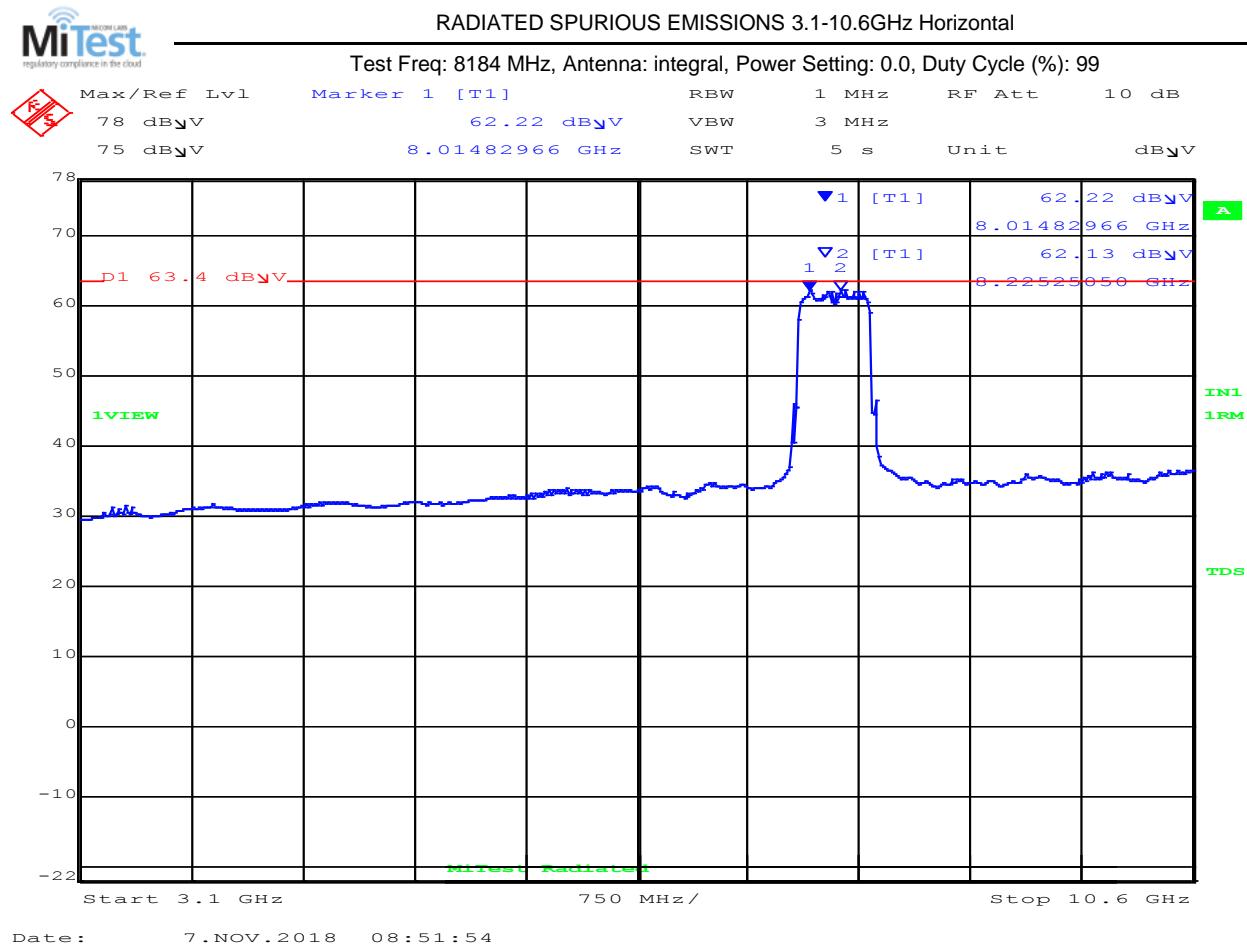
| 1990.00 – 3100.00 GHz                 |               |                           |                  |     |        |         |                           |           |            |  |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |  |
| Test Notes:                           |               |                           |                  |     |        |         |                           |           |            |  |

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz |               |              |                  |            |        |         |              |           |            |
|------------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                    | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                      | 8014.83       | 60.9         | Average          | Horizontal | 150    | 0       | 63.4         | -2.5      | Pass       |
| 2                      | 8225.25       | 60.3         | Average          | Horizontal | 150    | 0       | 63.4         | -3.1      | Pass       |

**Test Notes:**

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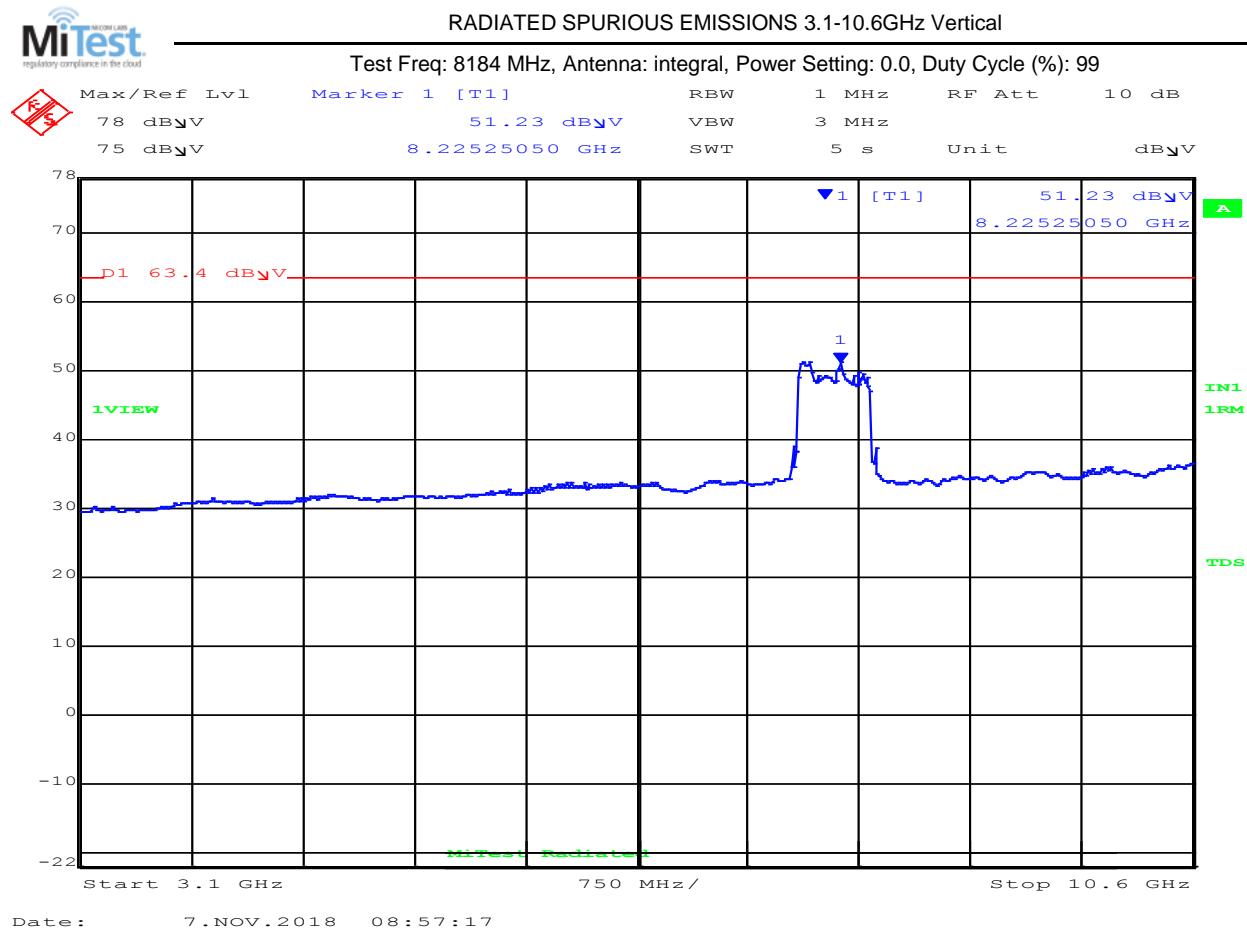


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 3100.00 - 10600.00 MHz                |               |                          |                  |     |        |         |                          |           |            |
|---------------------------------------|---------------|--------------------------|------------------|-----|--------|---------|--------------------------|-----------|------------|
| Num                                   | Frequency MHz | Level dB <sub>μV/m</sub> | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μV/m</sub> | Margin dB | Pass /Fail |
| No Signals Found within 6 dB of Limit |               |                          |                  |     |        |         |                          |           |            |
| Test Notes:                           |               |                          |                  |     |        |         |                          |           |            |

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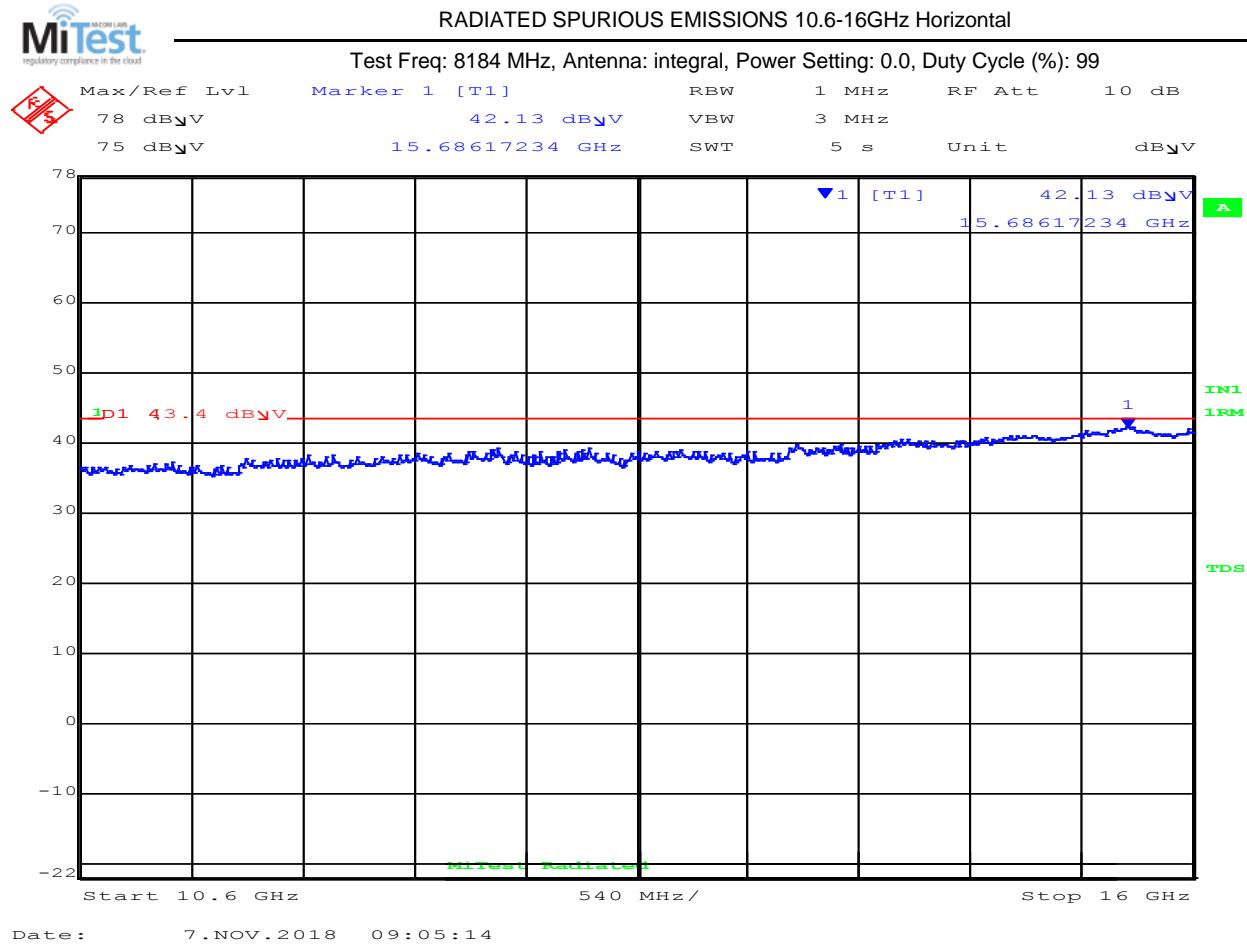


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



Date: 7.NOV.2018 09:05:14

#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.17      | 40.6               | Average          | Horizontal | 150    | 0       | 43.4               | -2.8      | Pass       |

**Test Notes:**

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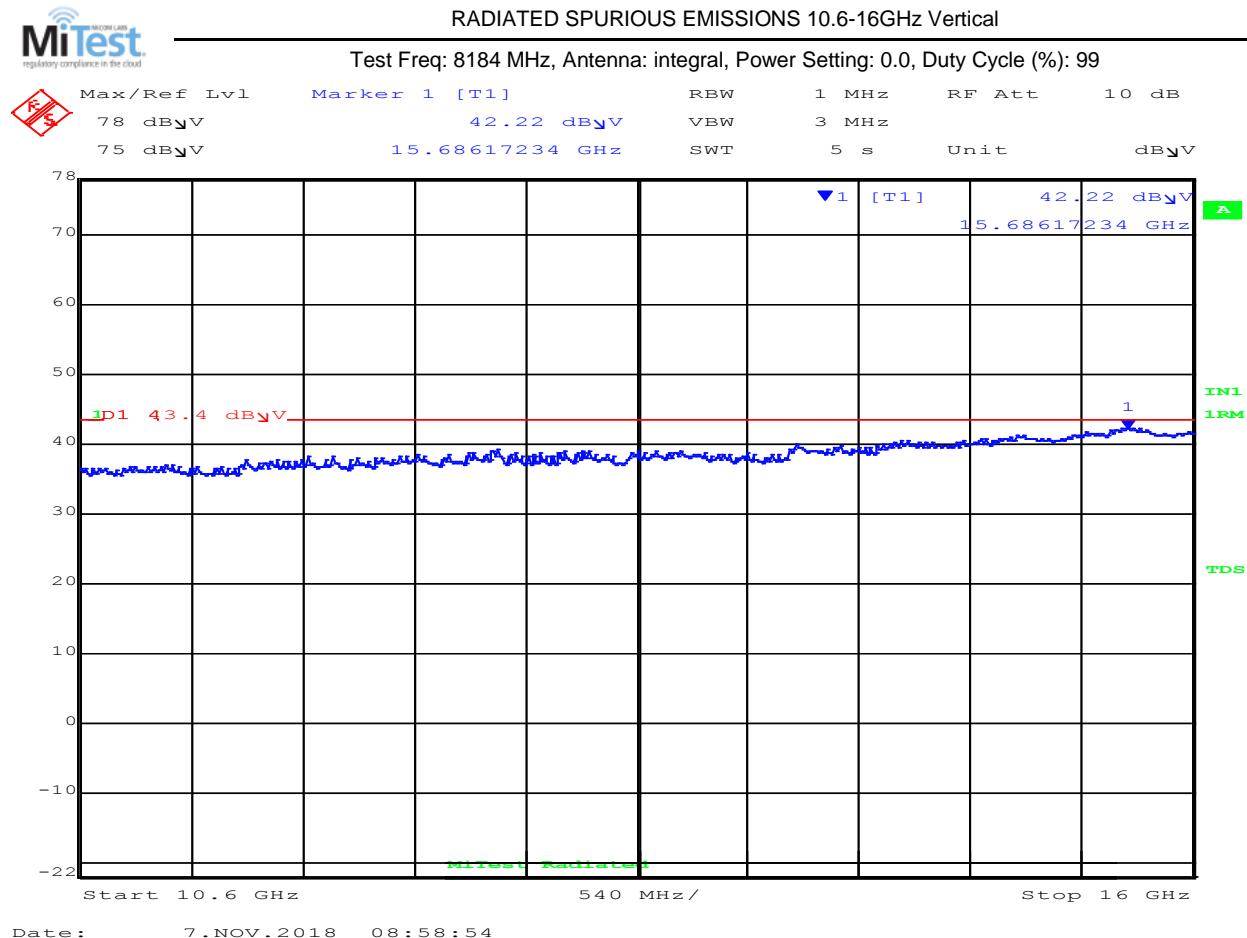


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.17      | 40.8               | Average          | Vertical | 150    | 0       | 43.4               | -2.6      | Pass       |

#### Test Notes:

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### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

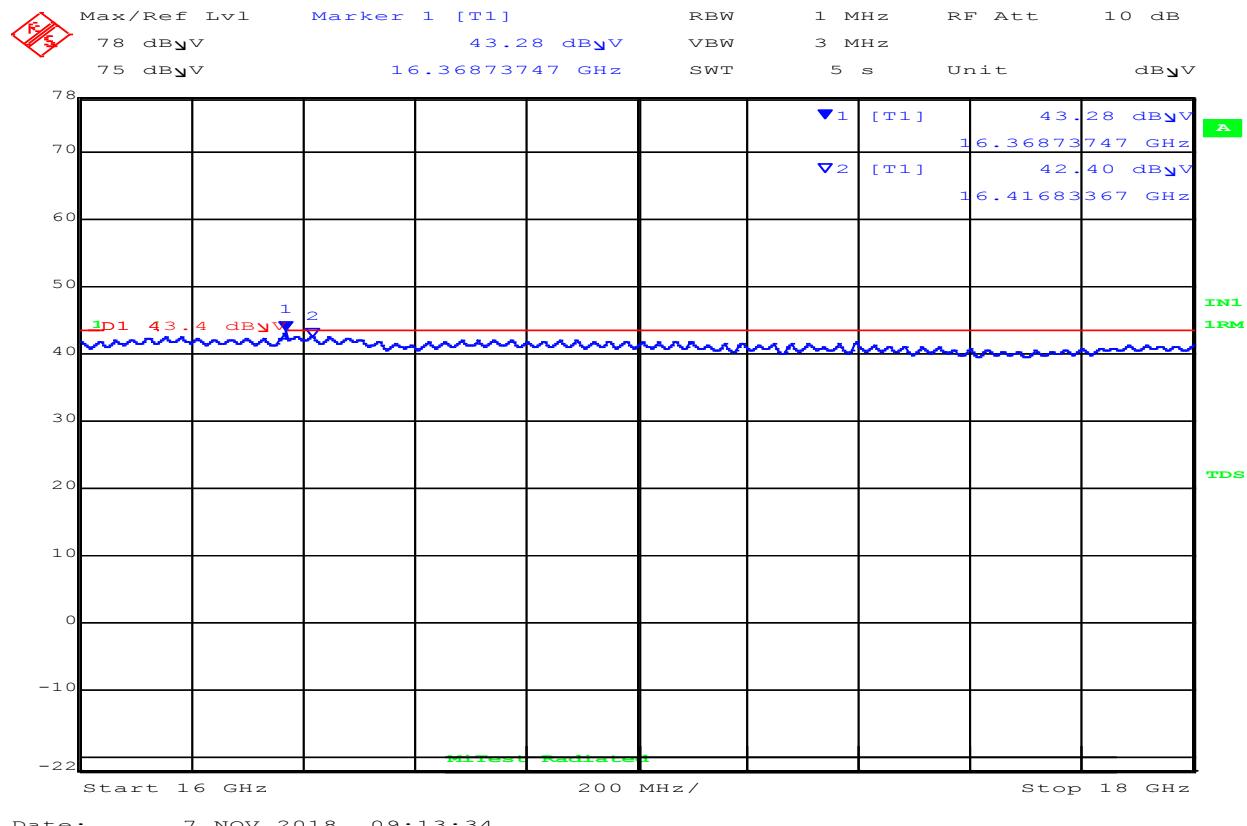
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 16-18GHz Horizontal

Test Freq: 8184 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 16368.74      | 40.2               | Average          | Horizontal | 150    | 0       | 43.4               | -3.2      | Pass       |
| 2   | 16416.83      | 40.7               | Average          | Horizontal | 150    | 0       | 43.4               | -2.7      | Pass       |

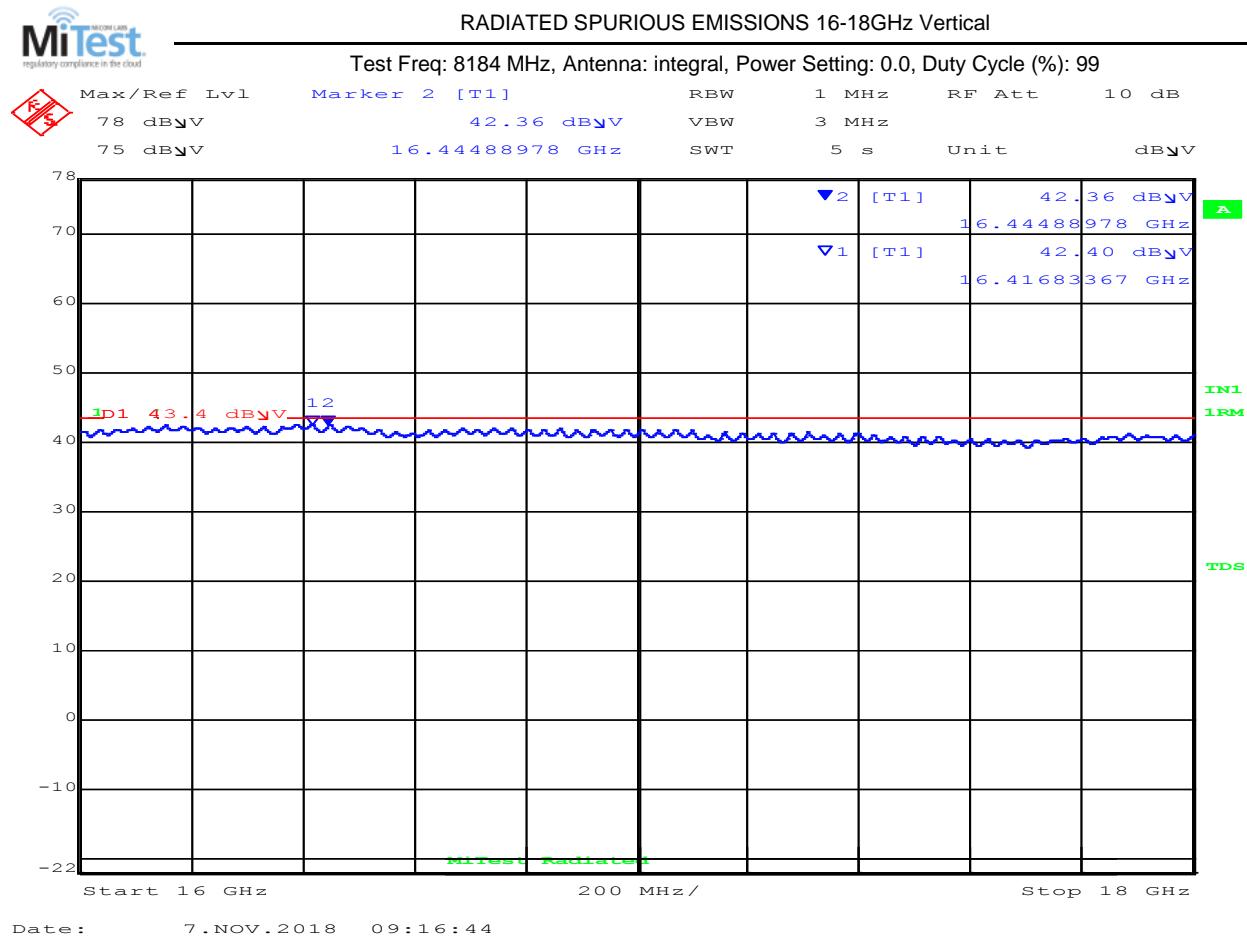
#### Test Notes:

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Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 16000.00 – 18000.00 GHz |               |              |                  |          |        |         |              |           |            |
|-------------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num                     | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                       | 16444.89      | 40.7         | Average          | Vertical | 150    | 0       | 43.4         | -2.7      | Pass       |
| 2                       | 16416.83      | 39.8         | Average          | Vertical | 150    | 0       | 43.4         | -3.6      | Pass       |
| Test Notes:             |               |              |                  |          |        |         |              |           |            |

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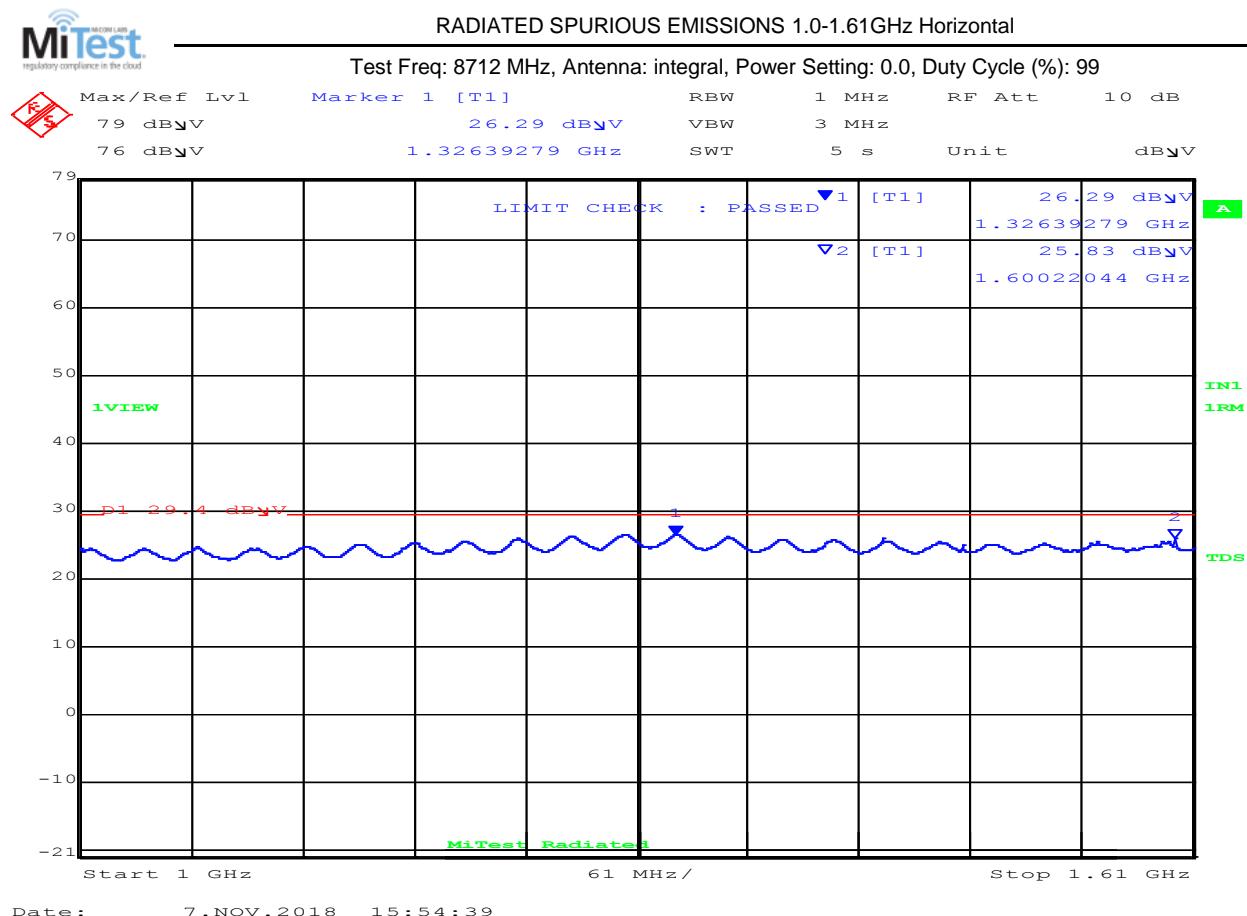
**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
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8712 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



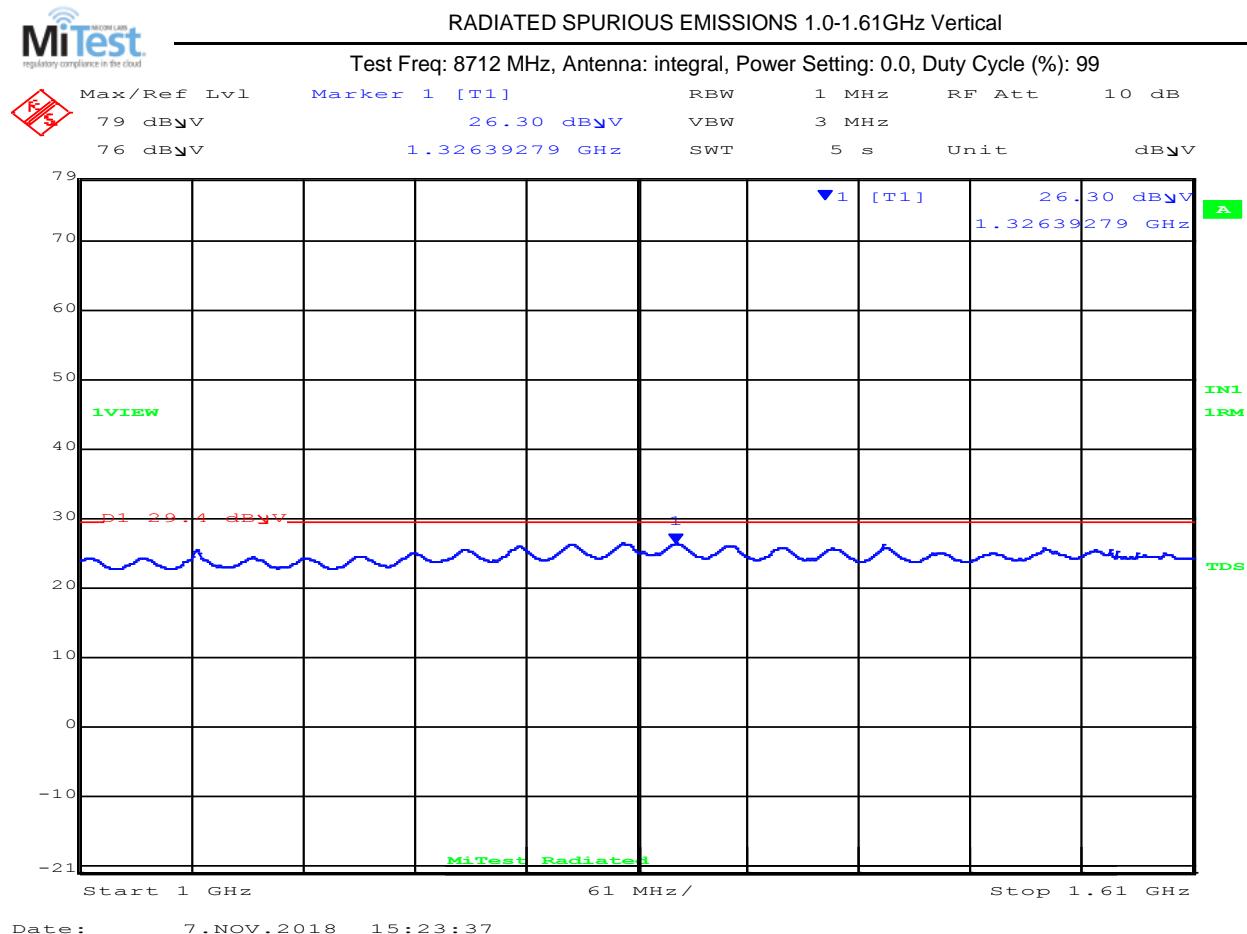
| 1000.00– 1610.00 MHz |               |              |                  |            |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1326.39       | 25.10        | Average          | Horizontal | 150    | 0       | 29.4         | -4.3      | Pass       |
| 2                    | 1600.22       | 25.70        | Average          | Horizontal | 150    | 0       | 29.4         | -3.7      | Pass       |
| Test Notes:          |               |              |                  |            |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 1000.00– 1610.00 MHz |               |                    |                  |          |        |         |                    |           |            |
|----------------------|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| Num                  | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                    | 1326.39       | 24.9               | Average          | Vertical | 150    | 0       | 29.4               | -4.5      | Pass       |
| <b>Test Notes:</b>   |               |                    |                  |          |        |         |                    |           |            |

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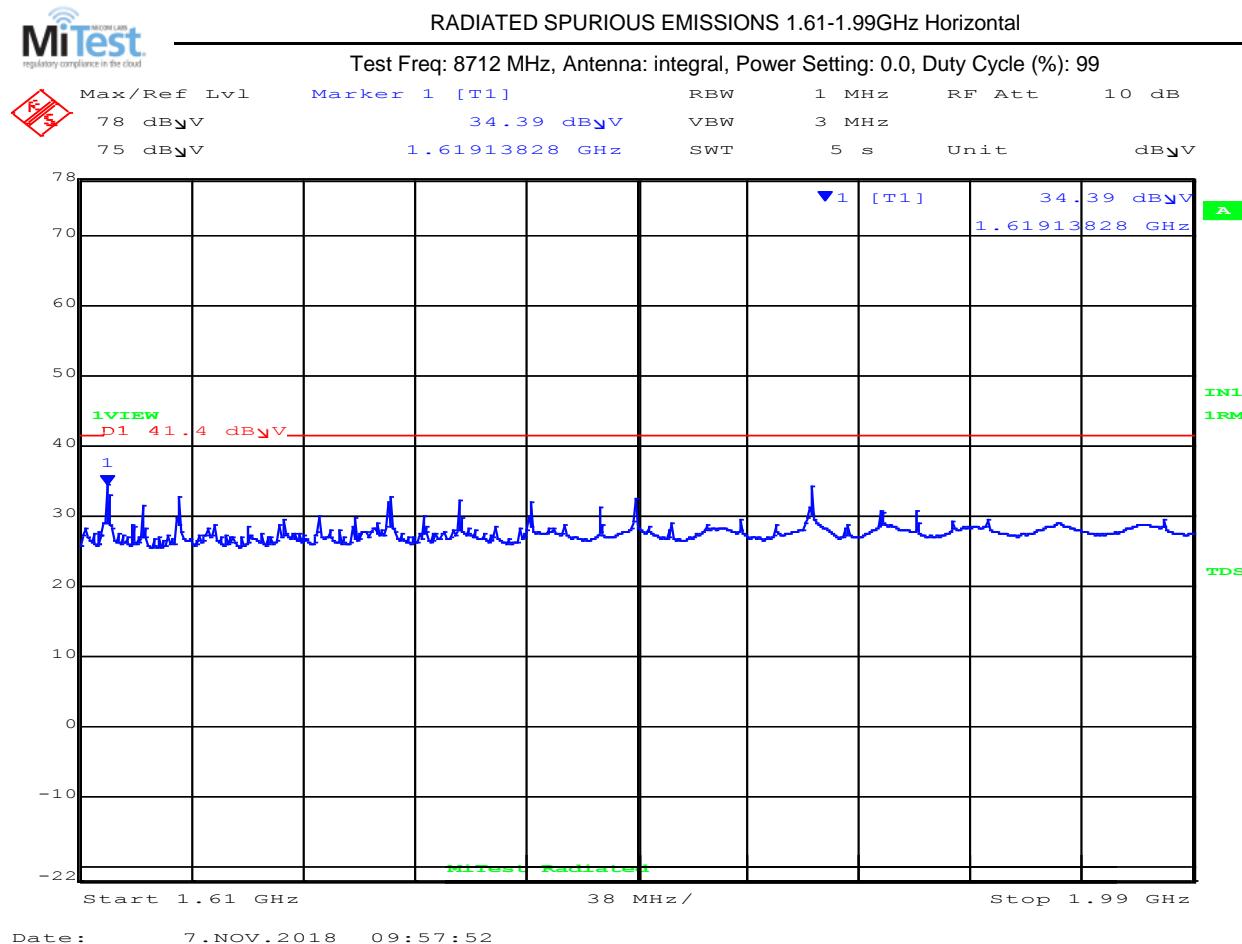


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



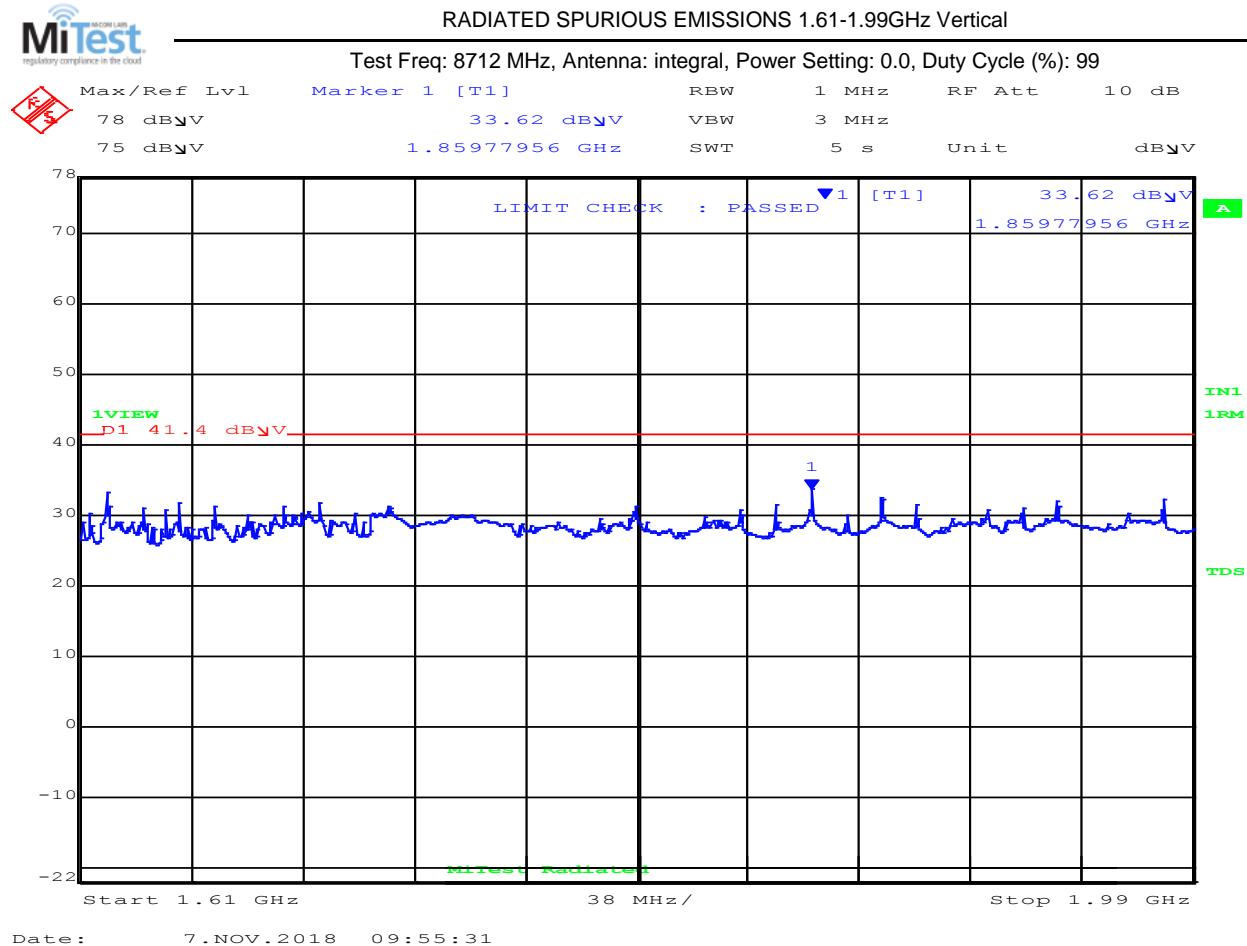
| 1610.00 – 1990.00 MHz                 |               |                          |                  |     |        |         |                          |           |            |  |
|---------------------------------------|---------------|--------------------------|------------------|-----|--------|---------|--------------------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dB <sub>μV/m</sub> | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μV/m</sub> | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |                          |                  |     |        |         |                          |           |            |  |
| Test Notes:                           |               |                          |                  |     |        |         |                          |           |            |  |

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**Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



| 1610.00 – 1990.00 MHz                 |               |              |                  |     |        |         |              |           |            |  |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |  |
| <b>Test Notes:</b>                    |               |              |                  |     |        |         |              |           |            |  |

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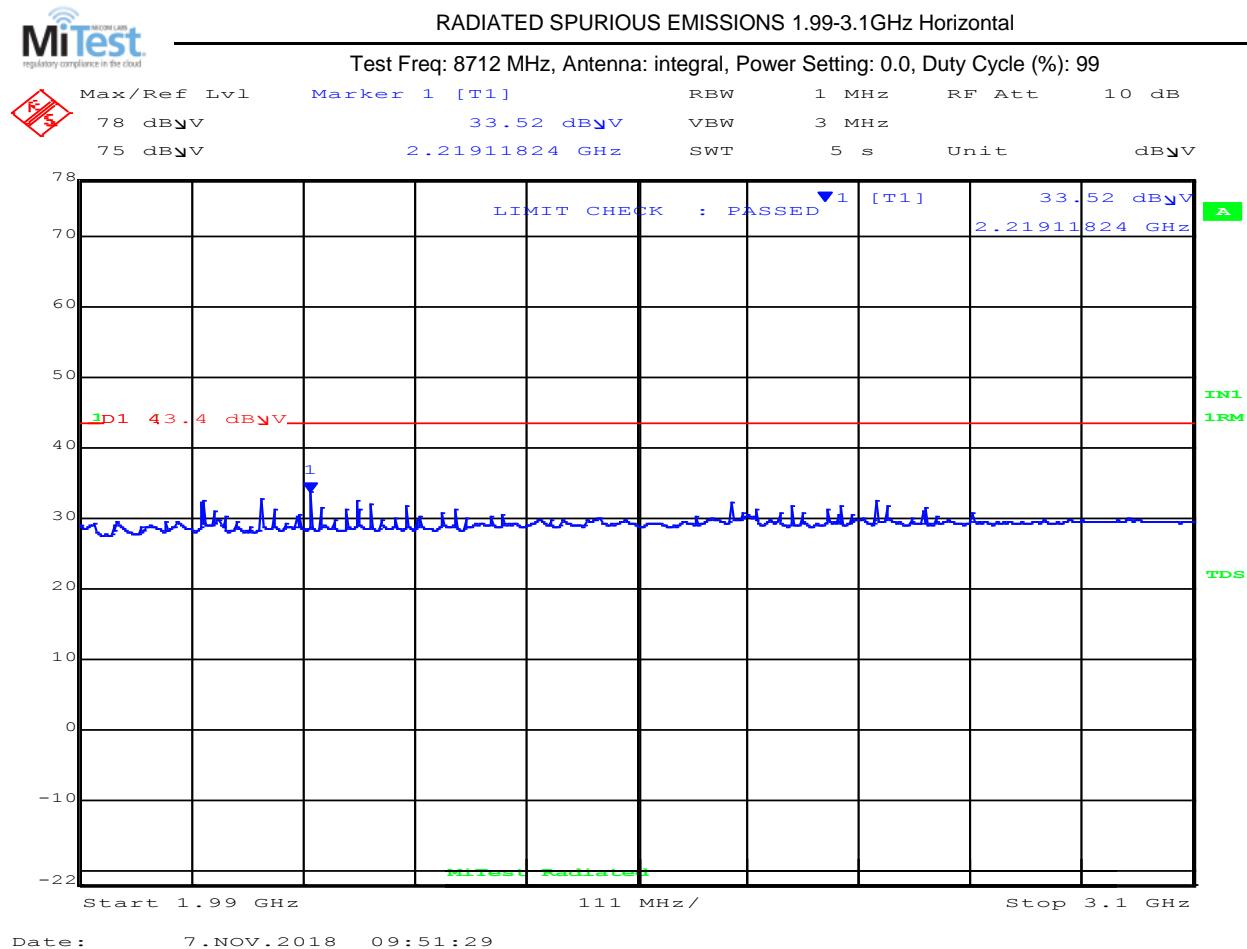


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1990.00 – 3100.00 GHz                 |               |              |                  |     |        |         |              |           |            |  |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |  |
| Test Notes:                           |               |              |                  |     |        |         |              |           |            |  |

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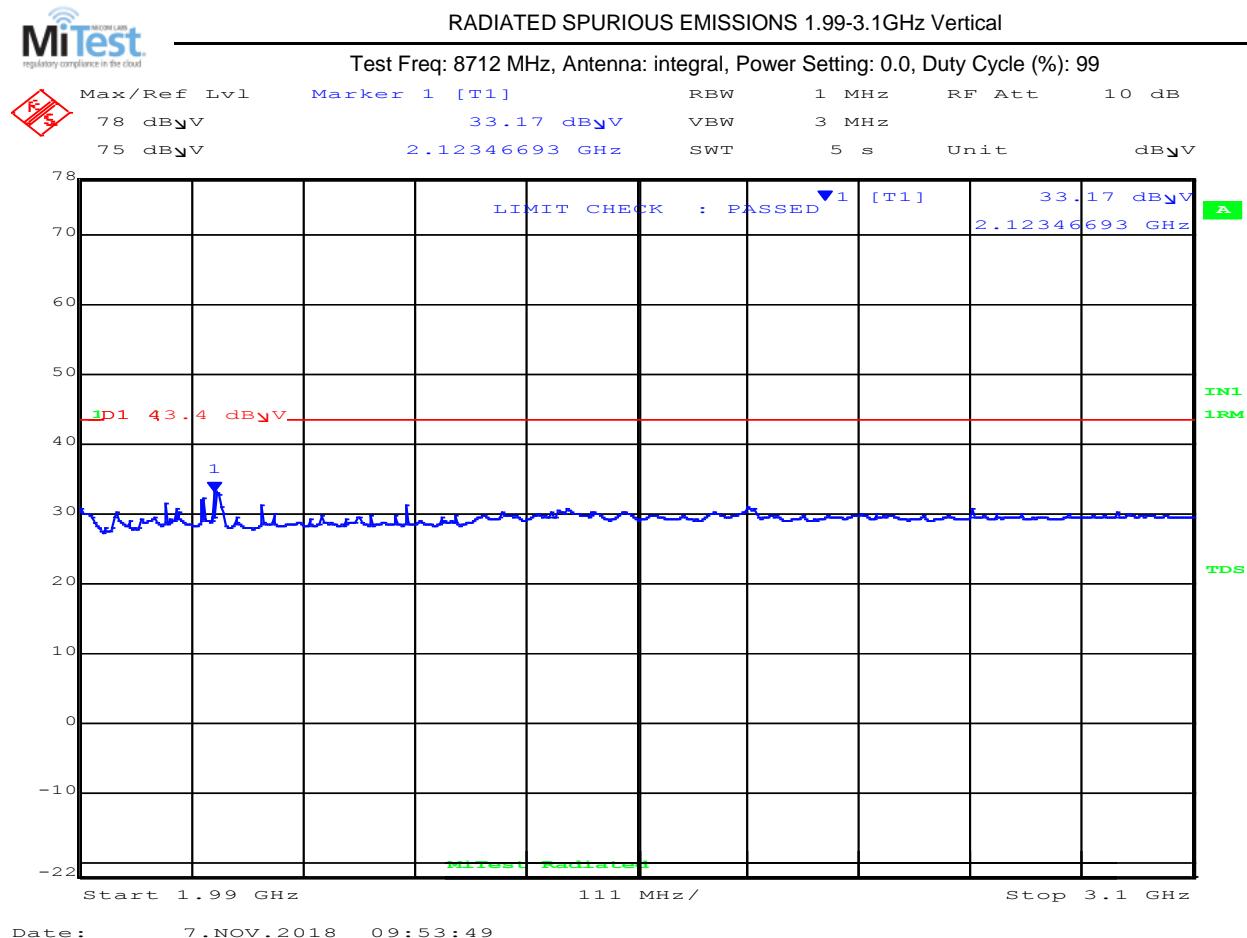


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1990.00 – 3100.00 GHz                 |               |              |                  |     |        |         |              |           |            |  |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals Found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |  |
| Test Notes:                           |               |              |                  |     |        |         |              |           |            |  |

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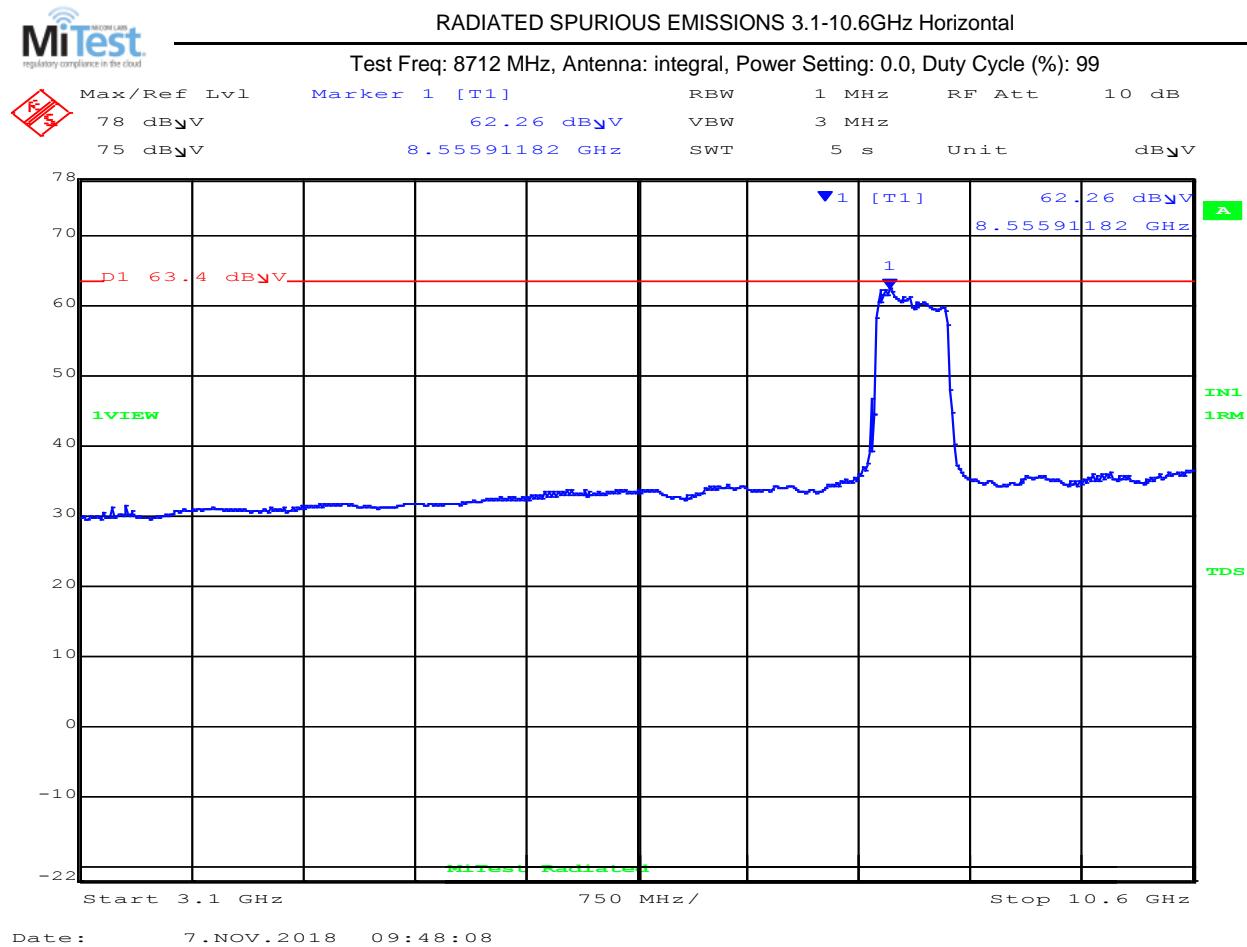


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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 3100.00 - 10600.00 MHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 8555.91       | 61.7               | Average          | Horizontal | 150    | 0       | 43.4               | -1.7      | Pass       |

**Test Notes:**

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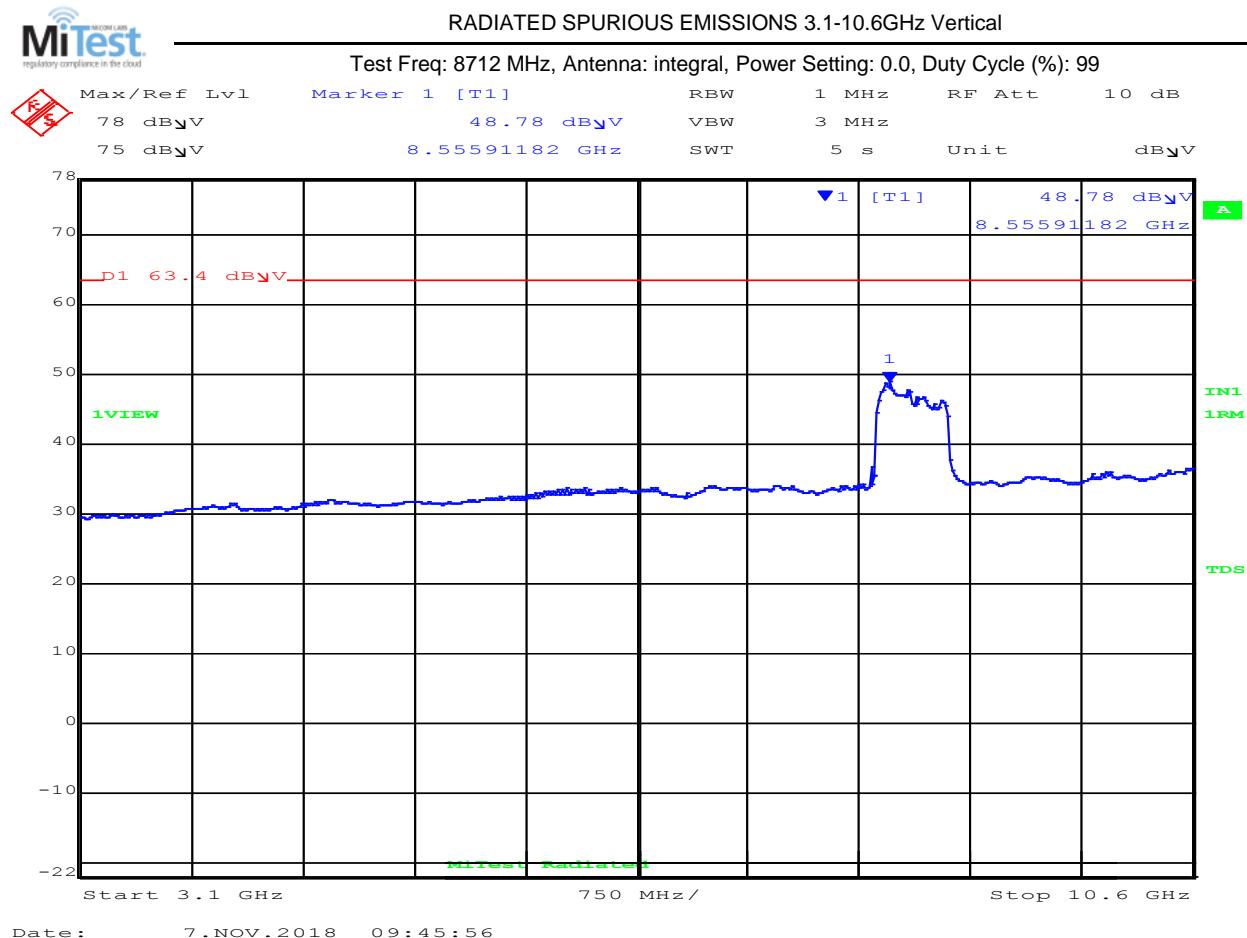


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 3100.00 - 10600.00 MHz

| Num                                   | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| No Signals Found within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |
| Test Notes:                           |               |                           |                  |     |        |         |                           |           |            |

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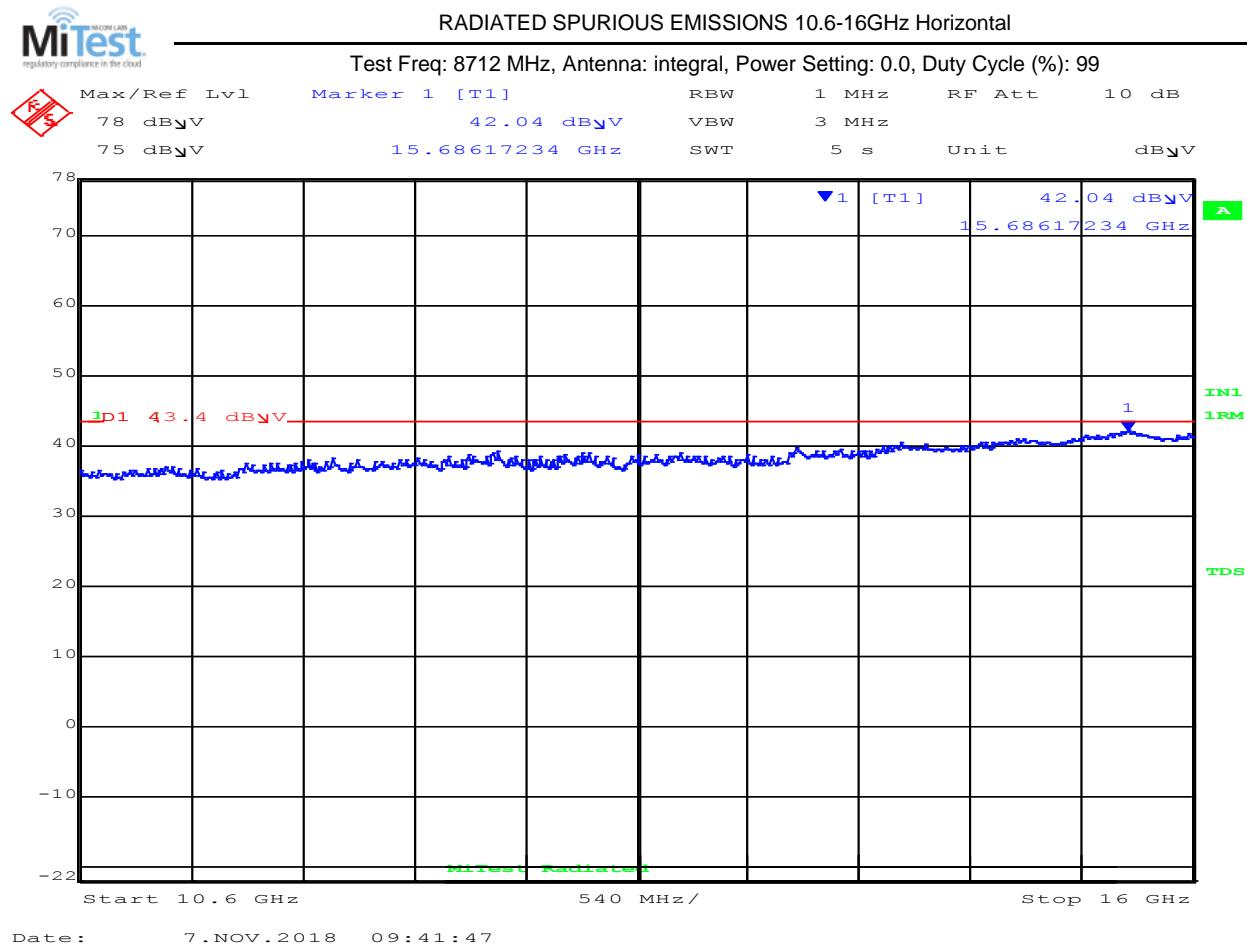


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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.17      | 40.4               | Average          | Horizontal | 150    | 0       | 43.4               | -3.0      | Pass       |

**Test Notes:**

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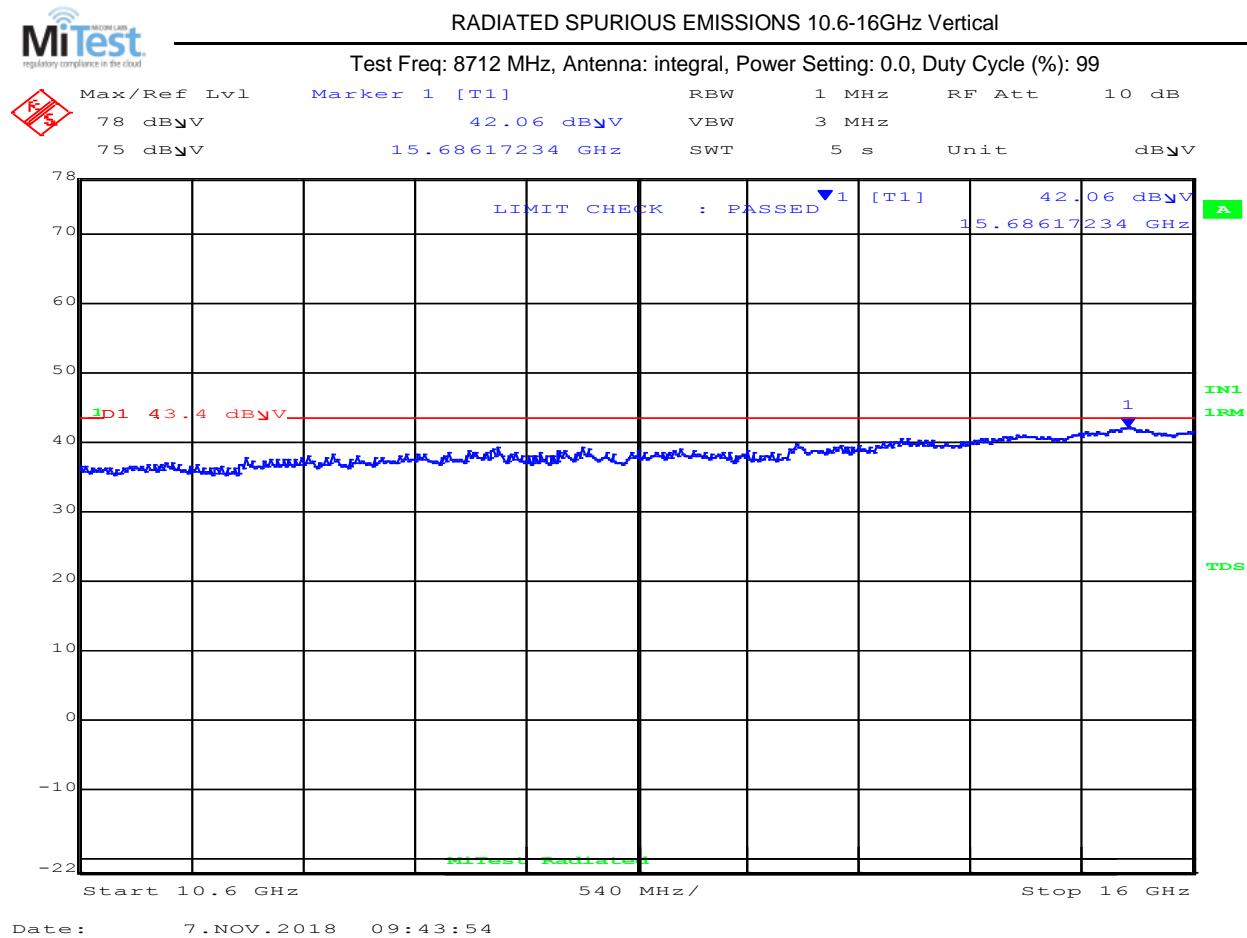


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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 10600.00 – 16000.00 GHz |               |                    |                  |          |        |         |                    |           |            |
|-------------------------|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| Num                     | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                       | 15686.17      | 40.5               | Average          | Vertical | 150    | 0       | 43.4               | -2.9      | Pass       |
| Test Notes:             |               |                    |                  |          |        |         |                    |           |            |

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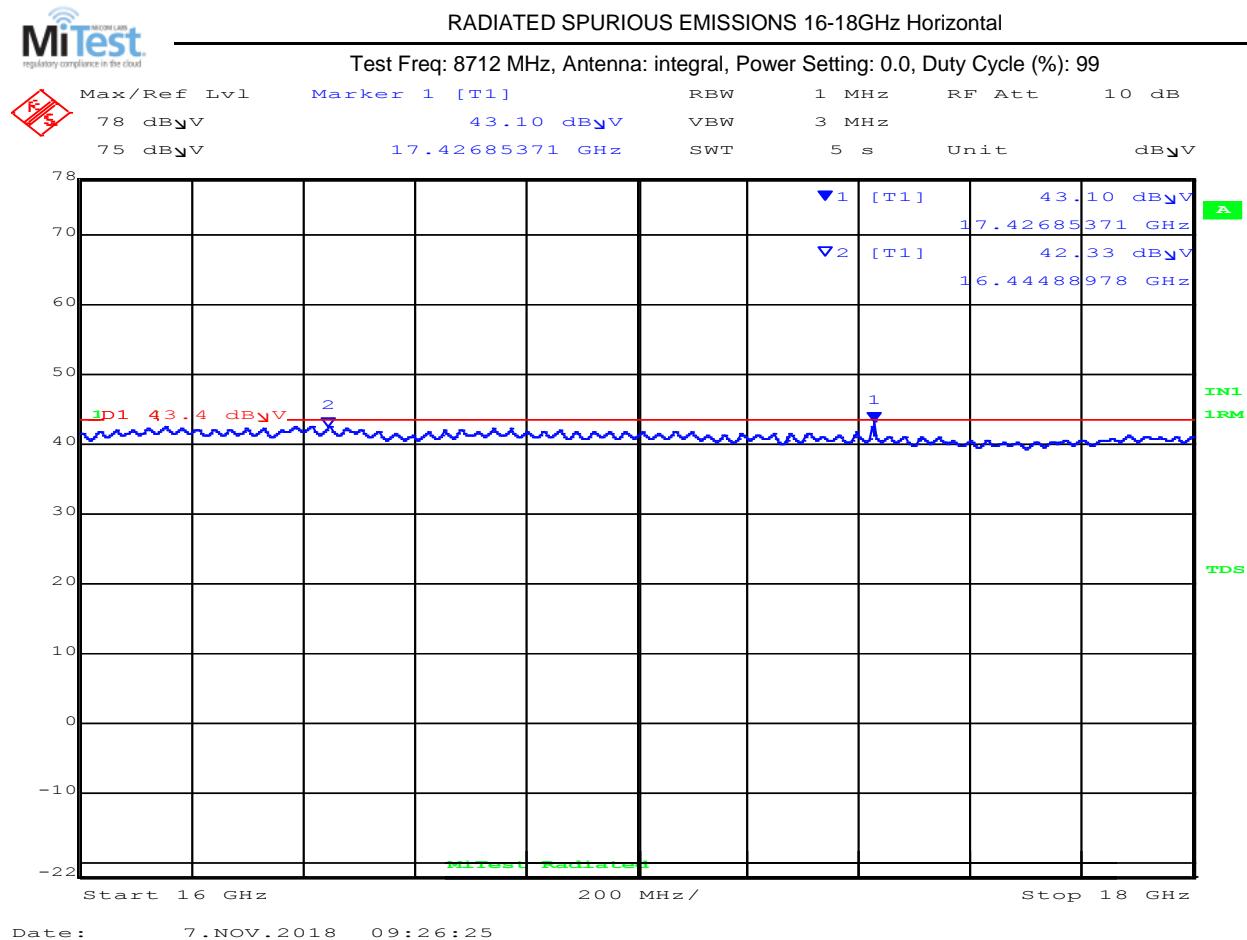


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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



Date: 7.NOV.2018 09:26:25

#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|
| 1   | 17426.85      | 41.3                      | Average          | Horizontal | 150    | 0       | 43.4                      | -2.1      | Pass       |
| 2   | 16444.89      | 39.8                      | Average          | Horizontal | 150    | 0       | 43.4                      | -3.6      | Pass       |

#### Test Notes:

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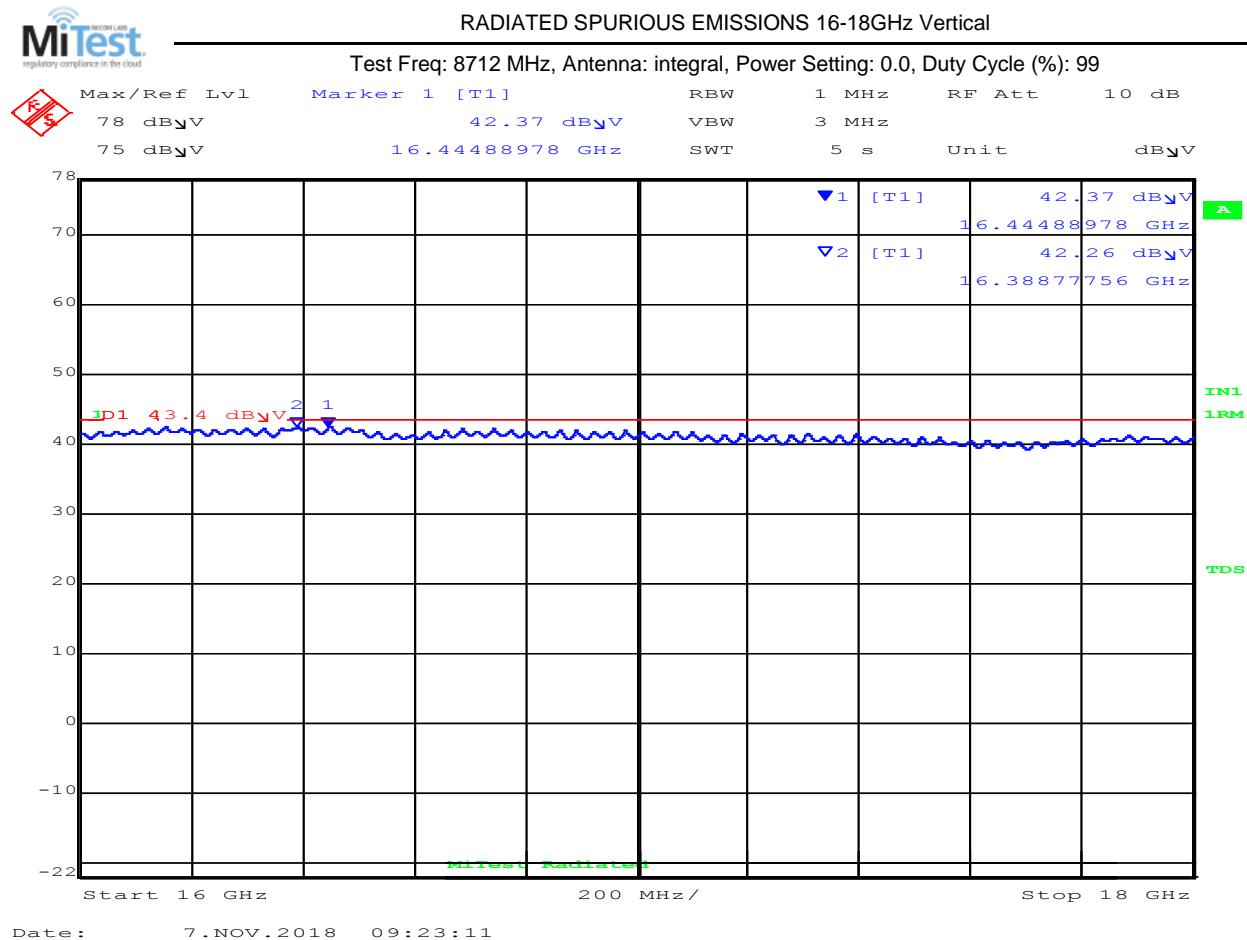


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 16444.89      | 40.9               | Average          | Vertical | 150    | 0       | 43.4               | -2.5      | Pass       |
| 2   | 16388.78      | 40.8               | Average          | Vertical | 150    | 0       | 29.4               | -2.6      | Pass       |

#### Test Notes:

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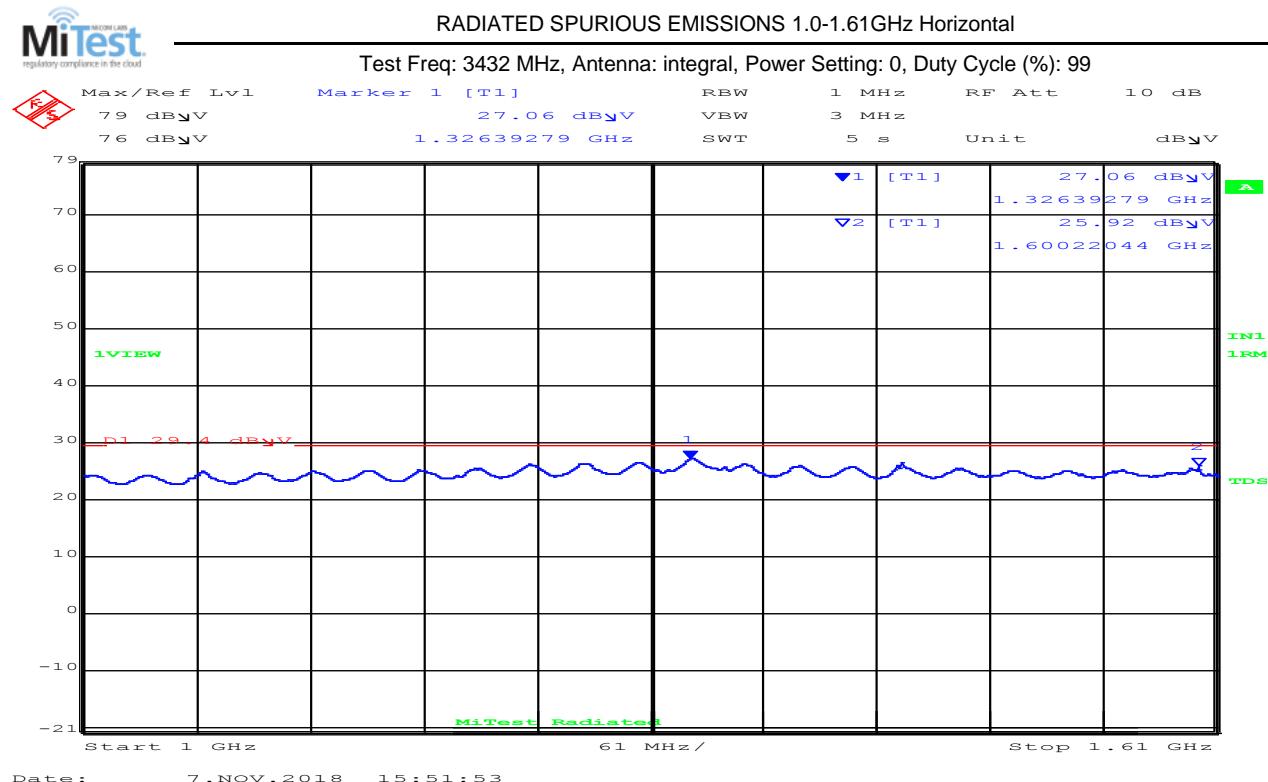
### 9.4.1.2. Camouflage AL5955

3432 MHz

#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1000.00– 1610.00 MHz |               |              |                  |            |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1326.39       | 25.10        | Average          | Horizontal | 150    | 0       | 29.4         | -4.3      | Pass       |
| 2                    | 1600.22       | 25.60        | Average          | Horizontal | 150    | 0       | 29.4         | -3.8      | Pass       |
| Test Notes:          |               |              |                  |            |        |         |              |           |            |
| Laptop Removed       |               |              |                  |            |        |         |              |           |            |

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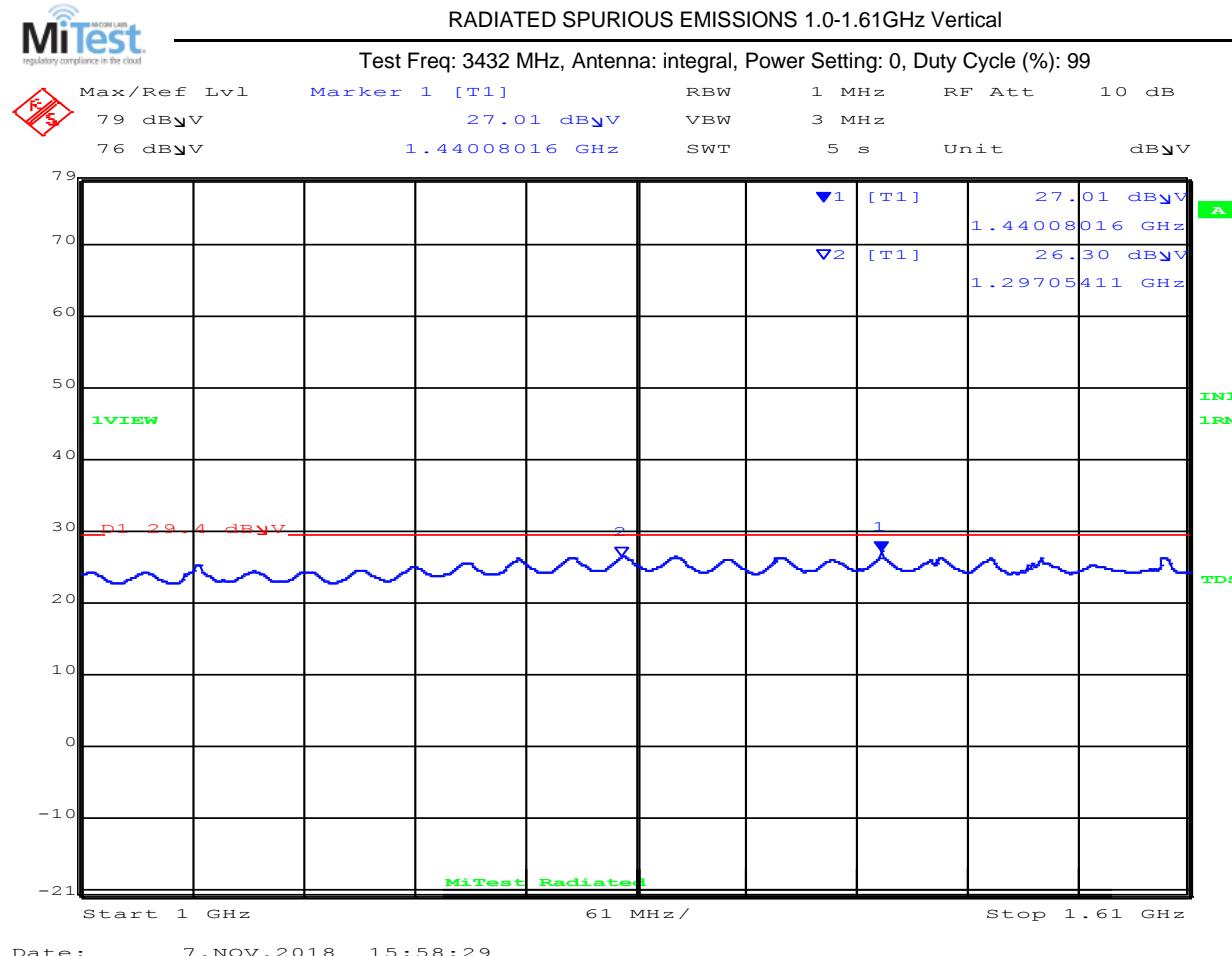


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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1000.00– 1610.00 MHz |               |                    |                  |          |        |         |                    |           |            |
|----------------------|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| Num                  | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                    | 1440.08       | 25.90              | Average          | Vertical | 150    | 0       | 29.4               | -3.5      | Pass       |
| 2                    | 1297.05       | 24.80              | Average          | Vertical | 150    | 0       | 29.4               | -4.6      | Pass       |

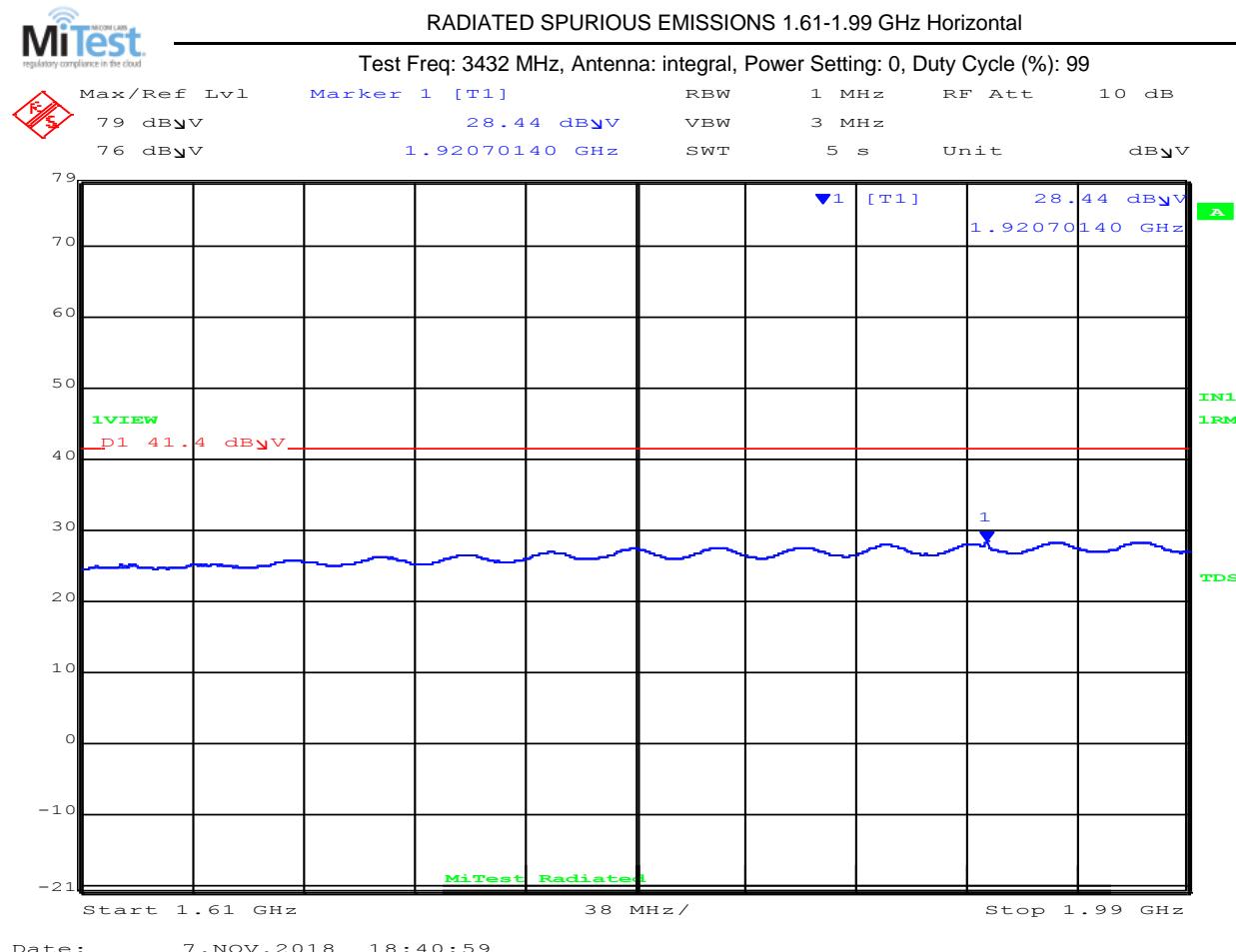
**Test Notes:**  
Laptop Removed

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### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



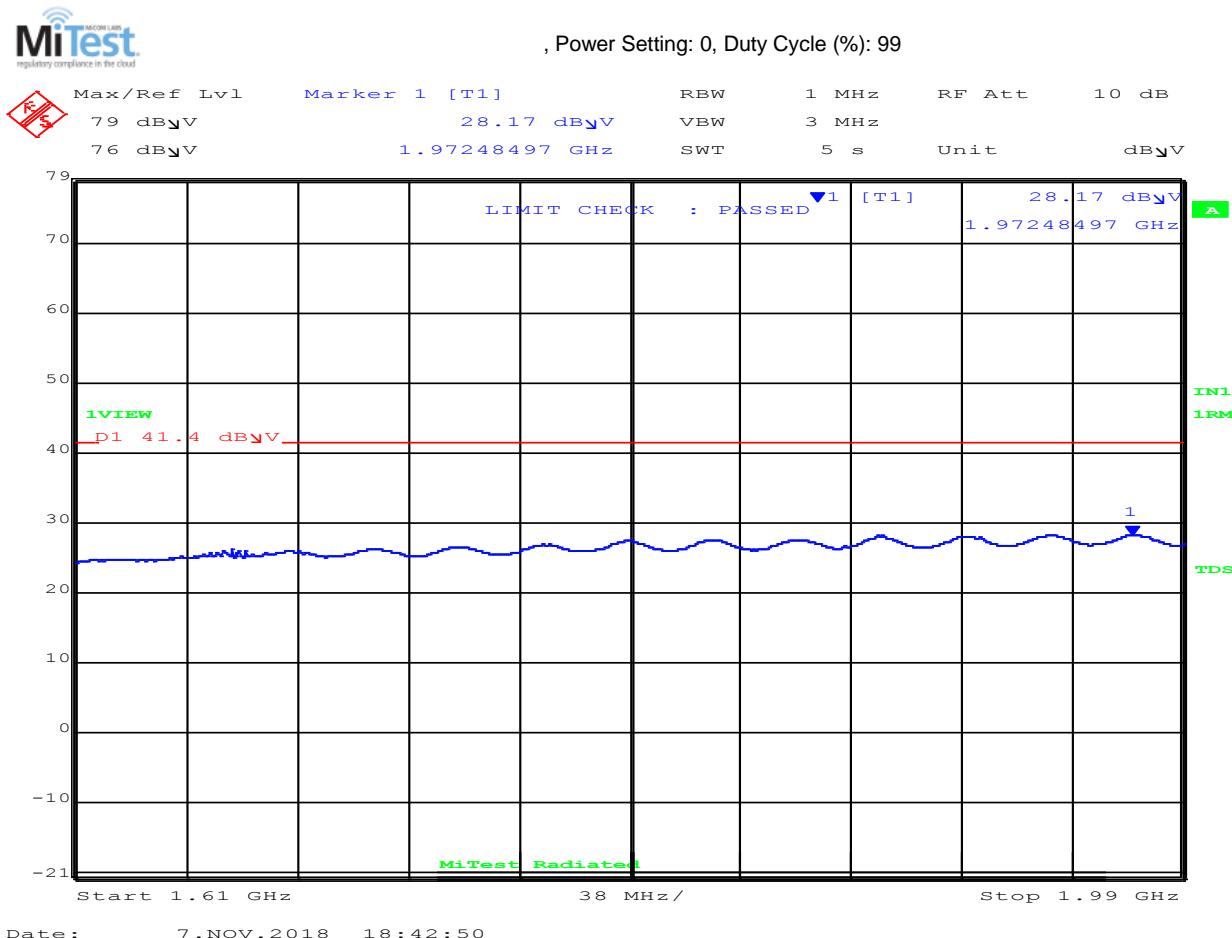
| 1610.00–1990.00MHz                   |               |              |                  |     |        |         |              |           |            |
|--------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num                                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals within 6 dB of limit      |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed |               |              |                  |     |        |         |              |           |            |

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**Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



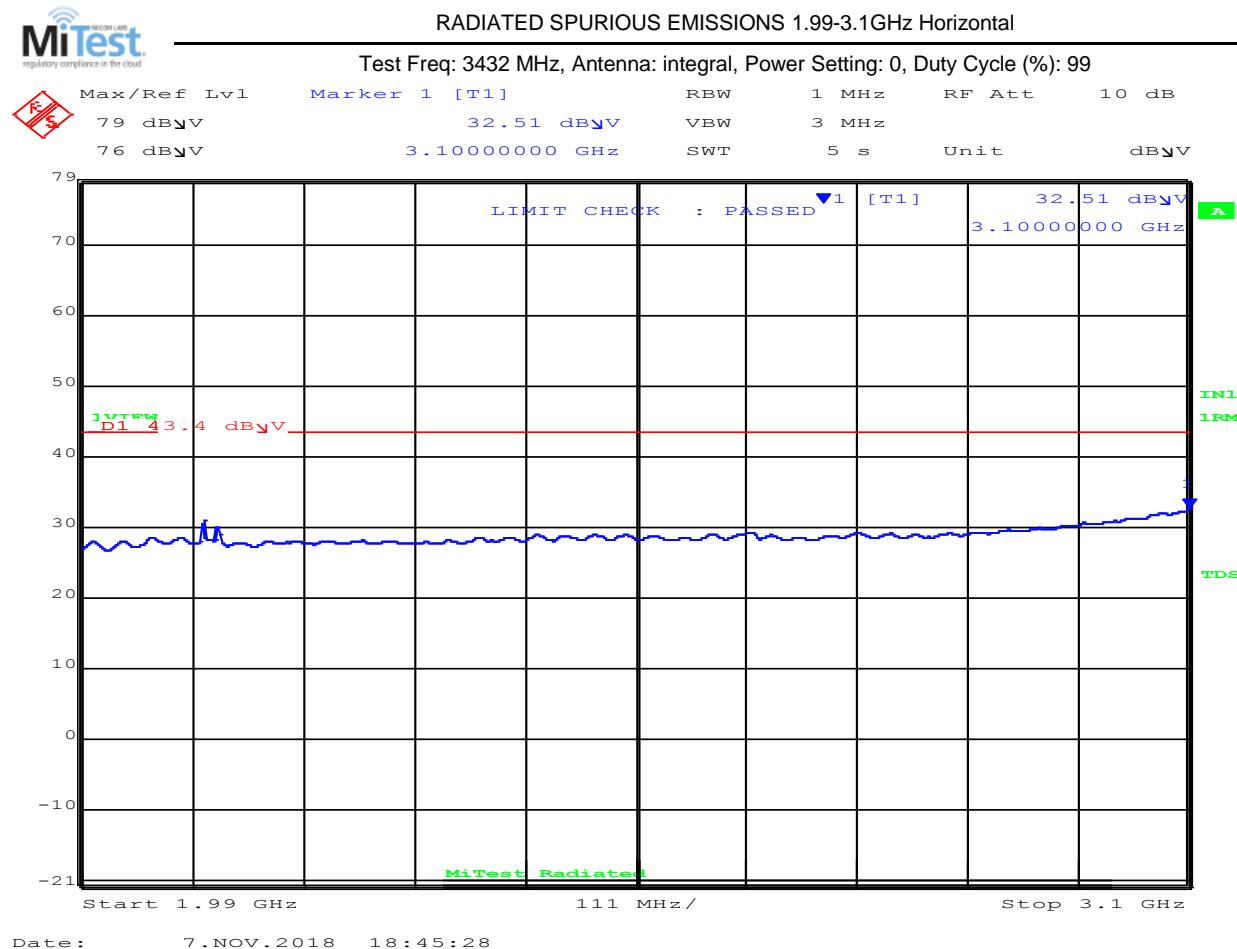
| 1610.00 – 1990.00 MHz                |               |              |                  |     |        |         |              |           |            |
|--------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num                                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals within 6 dB of limit      |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed |               |              |                  |     |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



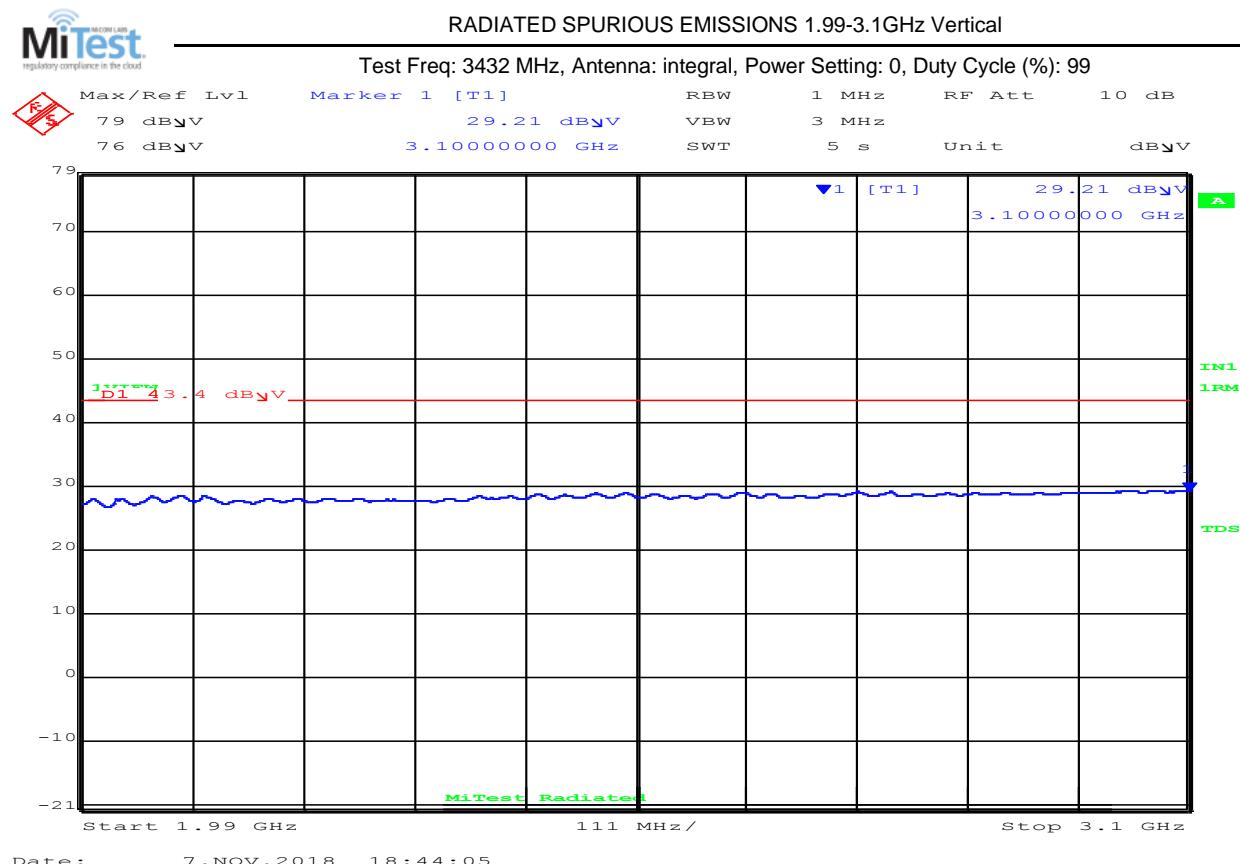
| 1990.00–3100.00 GHz                  |               |              |                  |     |        |         |              |           |            |  |
|--------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals within 6 dB of limit      |               |              |                  |     |        |         |              |           |            |  |
| <b>Test Notes:</b><br>Laptop Removed |               |              |                  |     |        |         |              |           |            |  |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 1990.00 – 3100.00 GHz                |               |                          |                  |     |        |         |                          |           |            |  |
|--------------------------------------|---------------|--------------------------|------------------|-----|--------|---------|--------------------------|-----------|------------|--|
| Num                                  | Frequency MHz | Level dB <sub>V</sub> /m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>V</sub> /m | Margin dB | Pass /Fail |  |
| No Signals within 6 dB of limit      |               |                          |                  |     |        |         |                          |           |            |  |
| <b>Test Notes:</b><br>Laptop Removed |               |                          |                  |     |        |         |                          |           |            |  |

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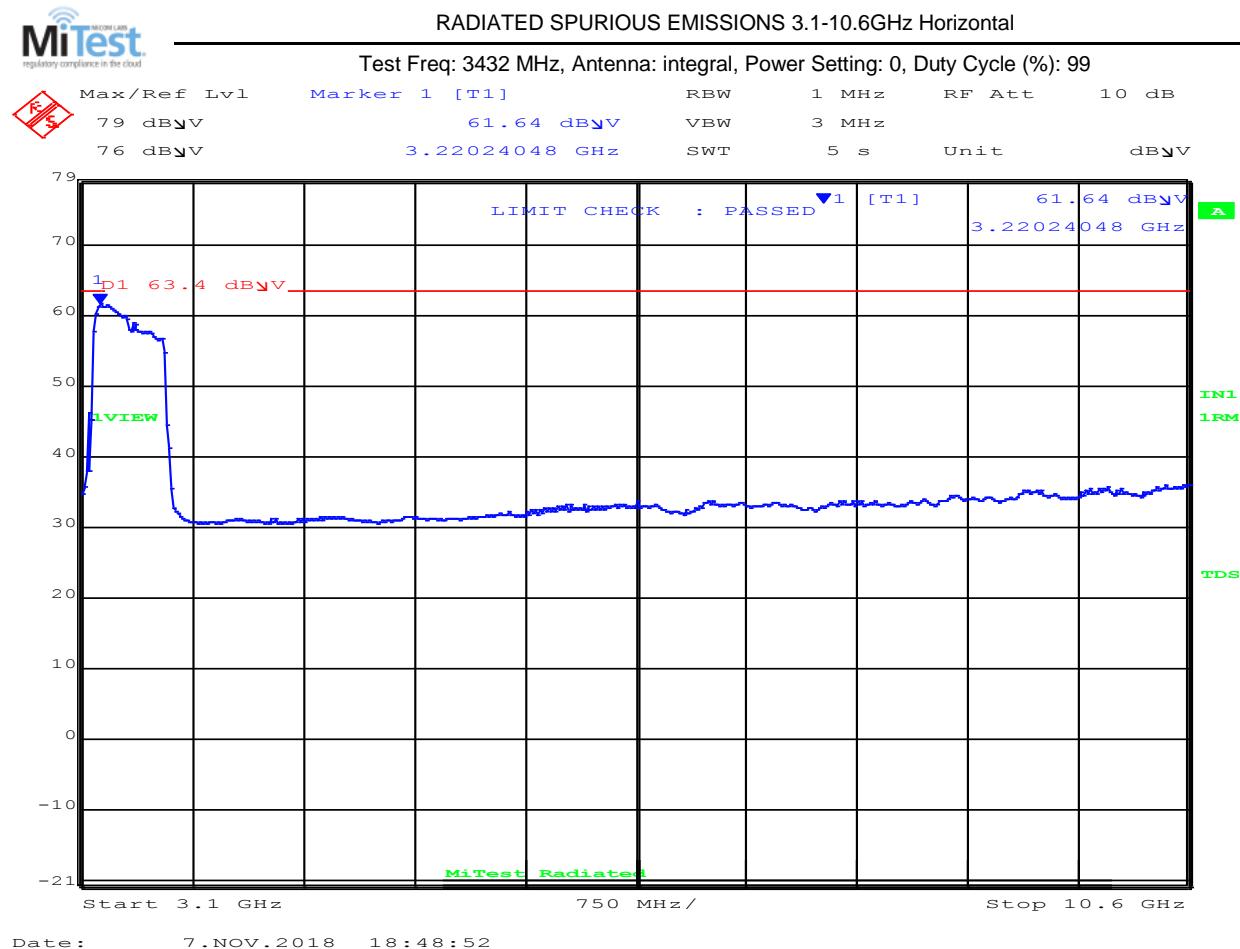


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 3100.00 - 10600.00 MHz |               |                    |                  |            |        |         |                    |           |            |
|------------------------|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| Num                    | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                      | 3220.24       | 60.4               | Average          | Horizontal | 150    | 0       | 63.4               | -3.0      | Pass       |

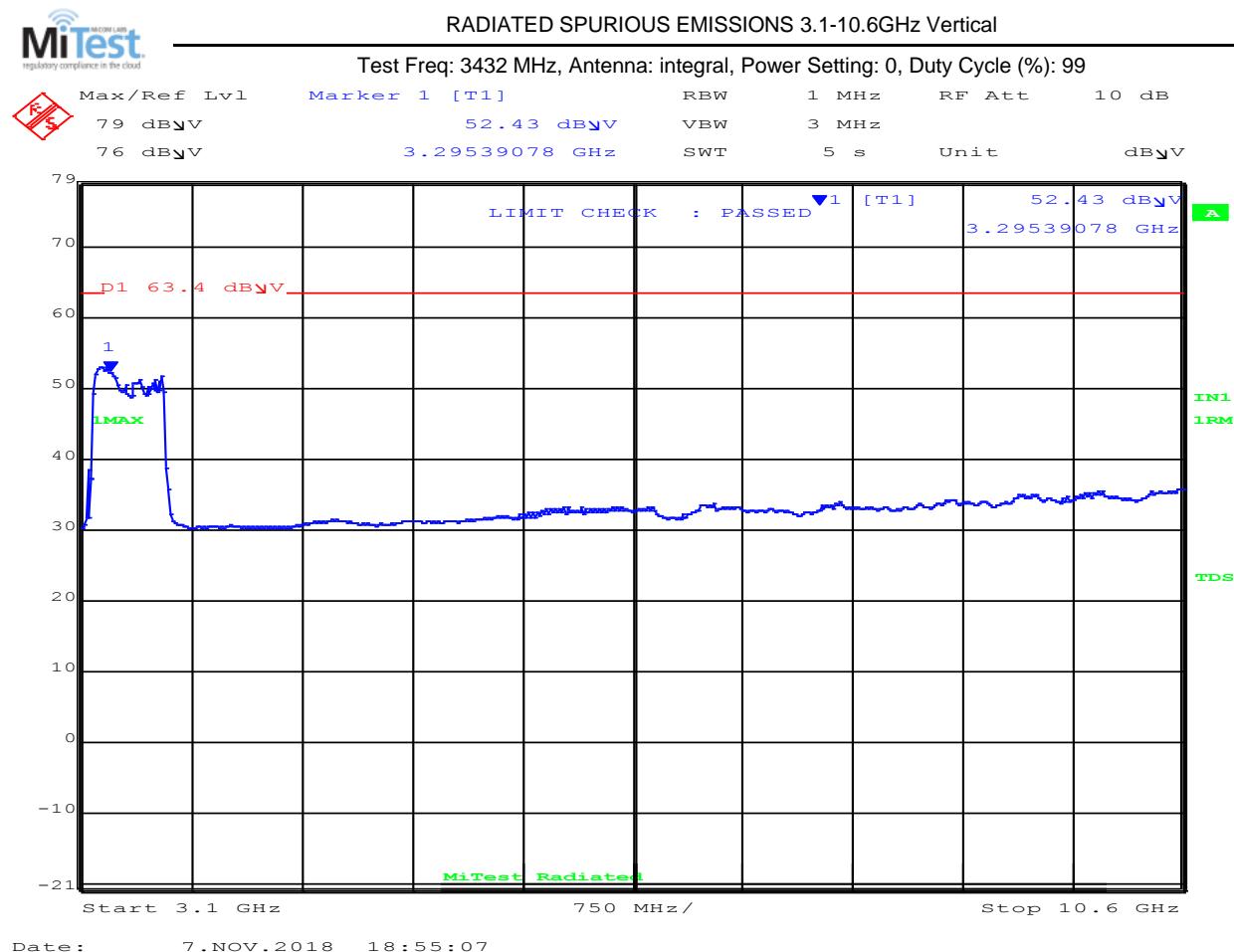
**Test Notes:**

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



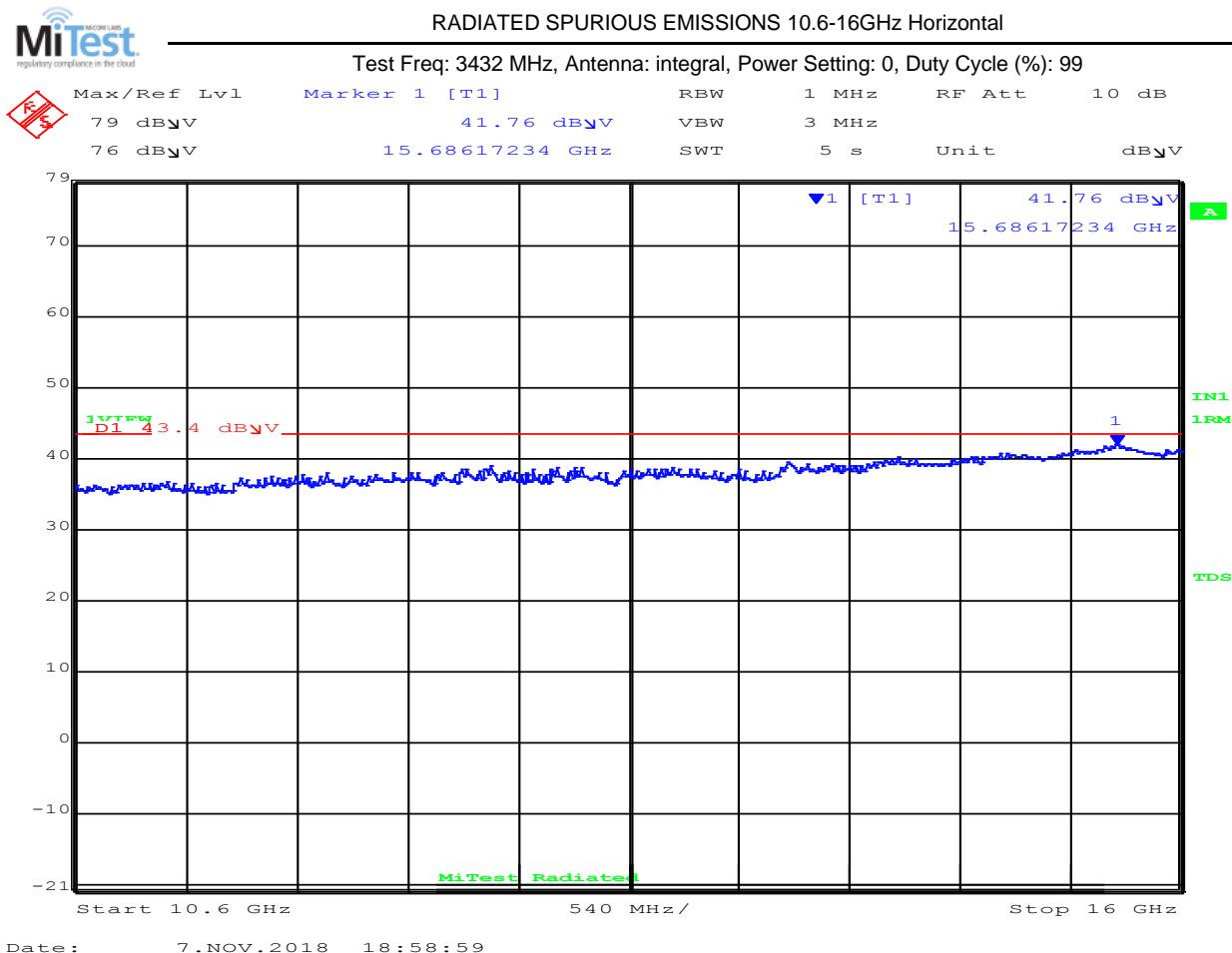
| 3100.00 - 10600.00 MHz          |               |                           |                  |     |        |         |                           |           |            |
|---------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                             | Frequency MHz | Level dB <sub>p</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>p</sub> V/m | Margin dB | Pass /Fail |
| No Signals within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |
| <b>Test Notes:</b>              |               |                           |                  |     |        |         |                           |           |            |

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### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 10600.00 – 16000.00 GHz

| Num                | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
|--------------------|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|
| 1                  | 15686.2       | 36.0                      | Average          | Horizontal | 150    | 0       | 43.4                      | -7.4      | Pass       |
| <b>Test Notes:</b> |               |                           |                  |            |        |         |                           |           |            |

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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

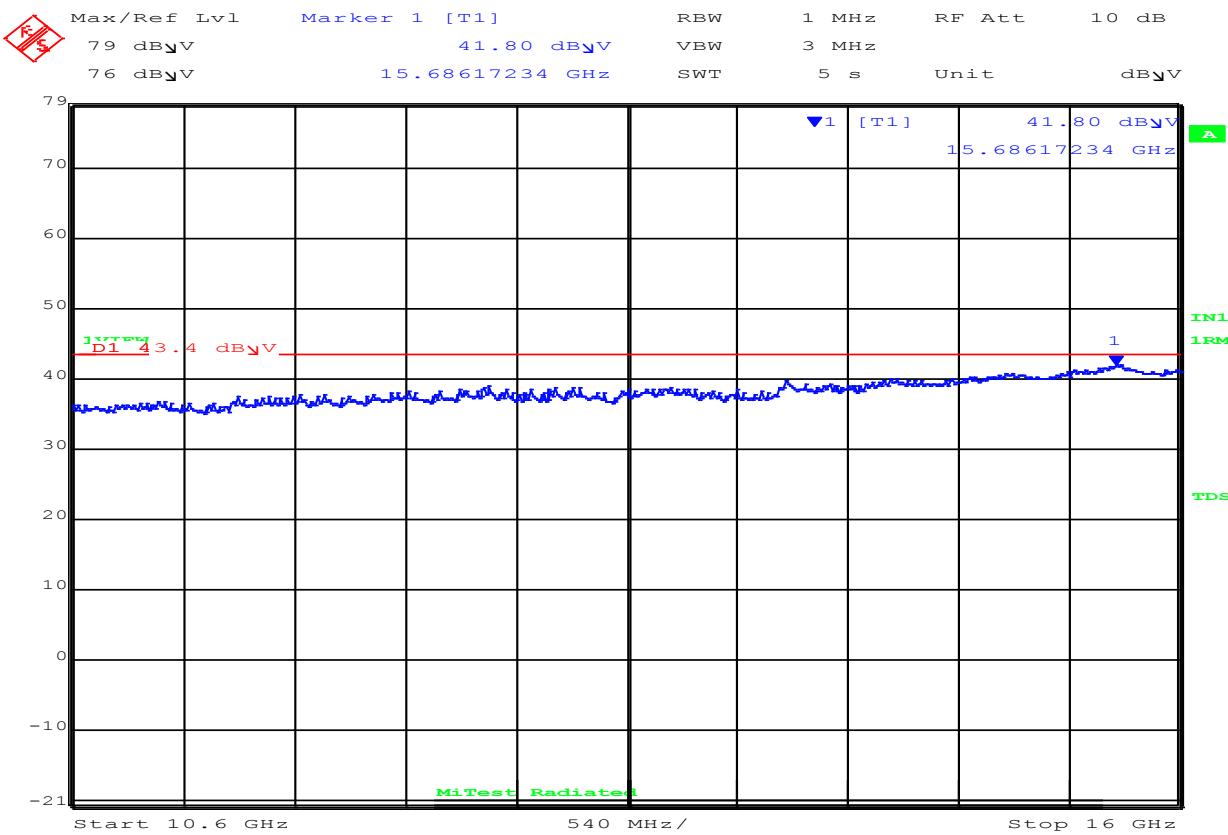
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 10.6-16GHz Vertical

Test Freq: 3432 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 7.NOV.2018 18:56:27

#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| 1   | 15686.2       | 36.1         | Average          | Vertical | 150    | 0       | 43.4         | -7.3      | Pass       |

**Test Notes:**

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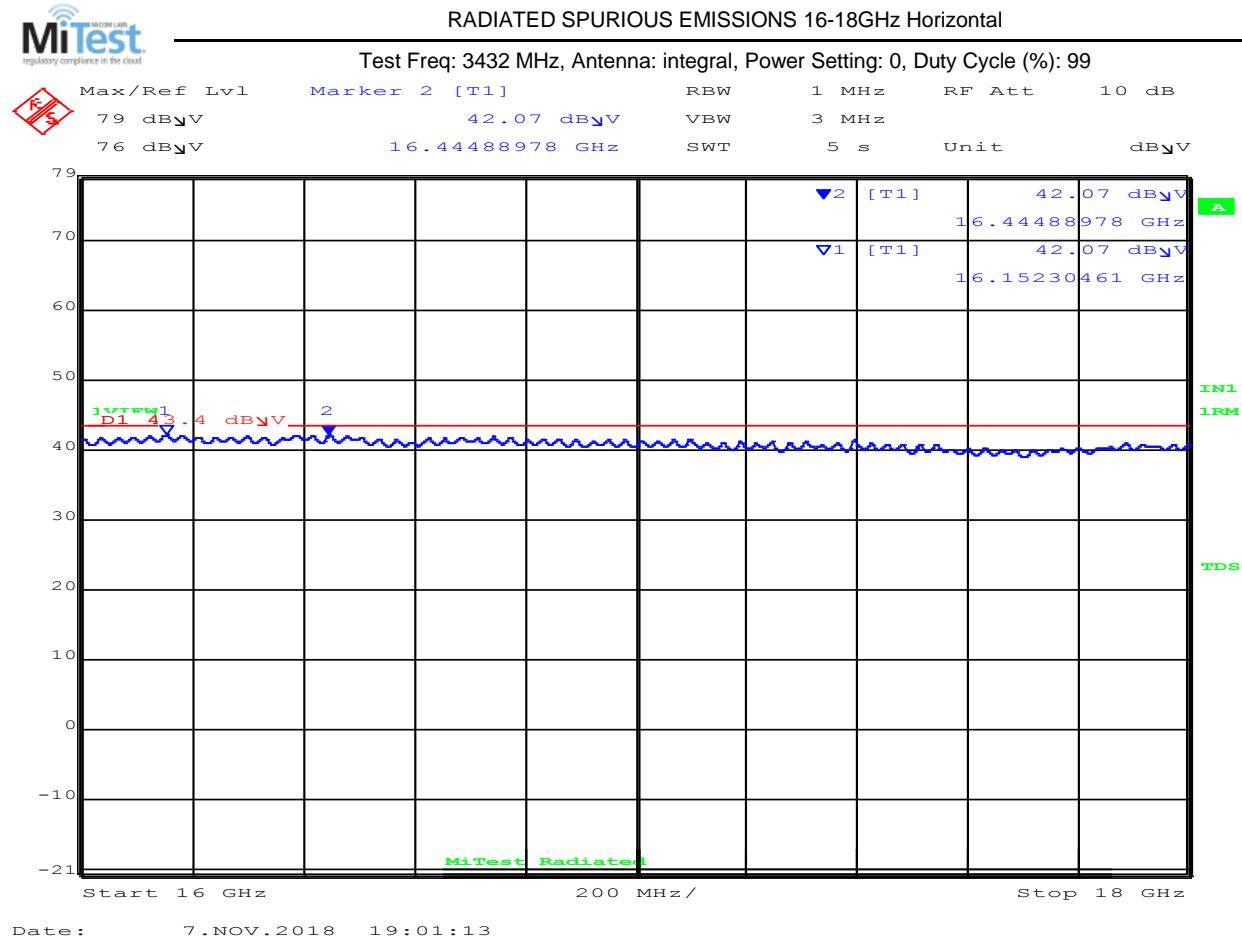


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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|
| 1   | 16152.3       | 41.0                      | Average          | Horizontal | 150    | 0       | 43.4                      | -2.4      | Pass       |
| 2   | 16448.9       | 40.9                      | Average          | Horizontal | 150    | 0       | 43.4                      | -2.5      | Pass       |

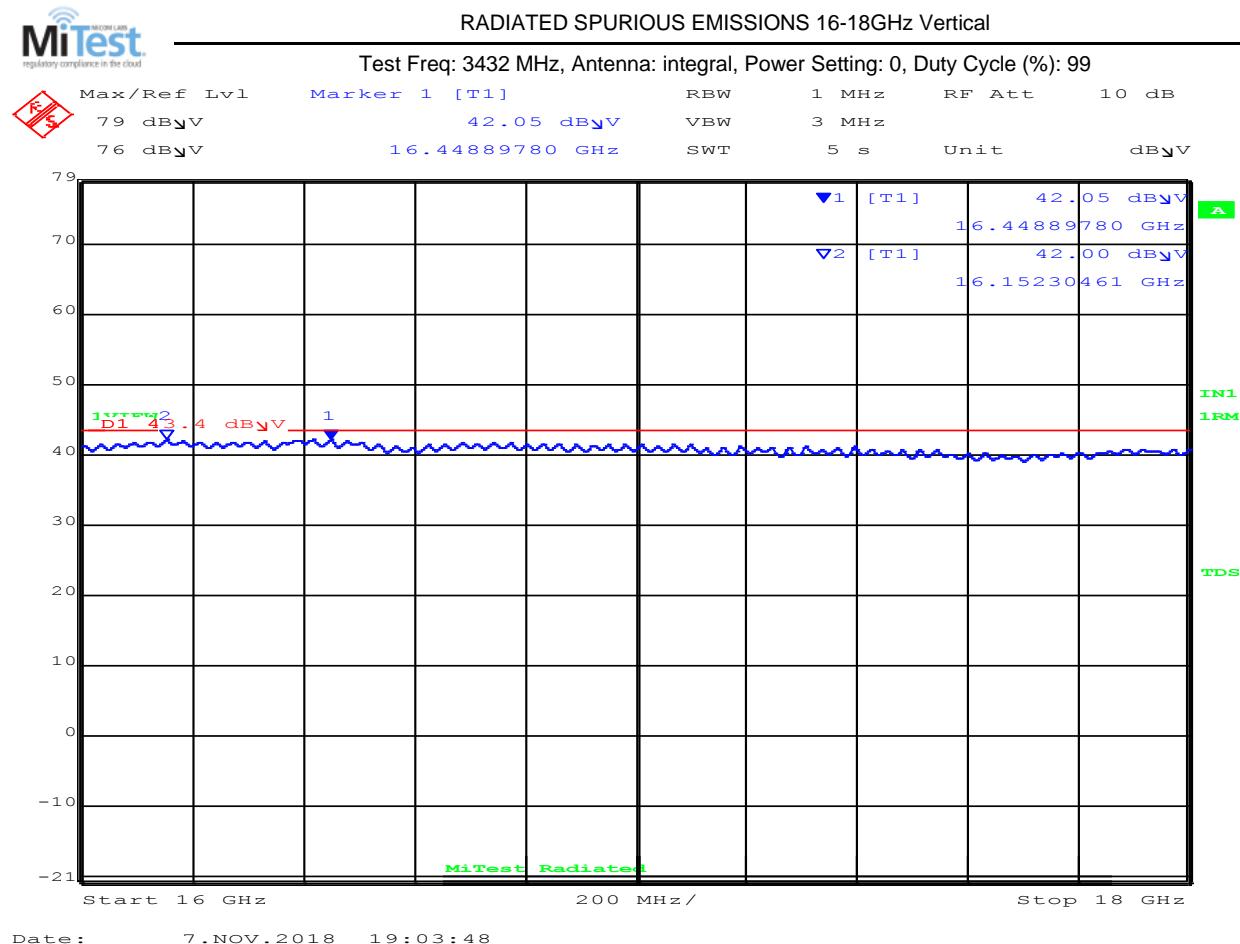
#### Test Notes:

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Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 16000.00 – 18000.00 GHz |               |              |                  |          |        |         |              |           |            |
|-------------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num                     | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                       | 16448.9       | 41.0         | Average          | Vertical | 150    | 0       | 43.4         | -2.4      | Pass       |
| 2                       | 16152.3       | 41.0         | Average          | Vertical | 150    | 0       | 43.4         | -2.4      | Pass       |
| Test Notes:             |               |              |                  |          |        |         |              |           |            |

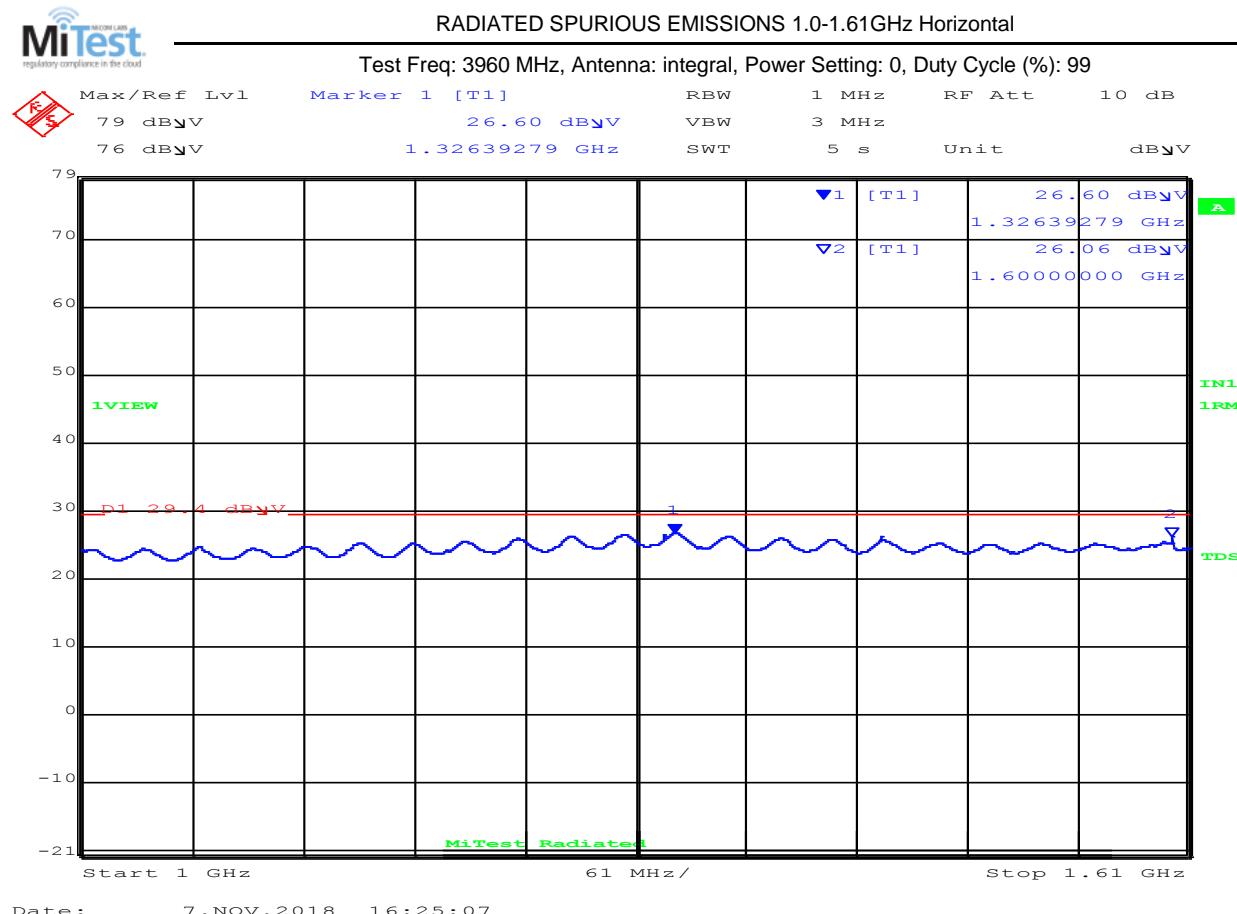
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3960 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 1000.00– 1610.00 MHz |               |              |                  |            |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1326.39       | 24.9         | Average          | Horizontal | 150    | 0       | 29.4         | -4.50     | Pass       |
| 2                    | 1600.22       | 27.1         | Average          | Horizontal | 150    | 0       | 29.4         | -2.30     | Pass       |
| Test Notes:          |               |              |                  |            |        |         |              |           |            |
| Laptop Removed       |               |              |                  |            |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

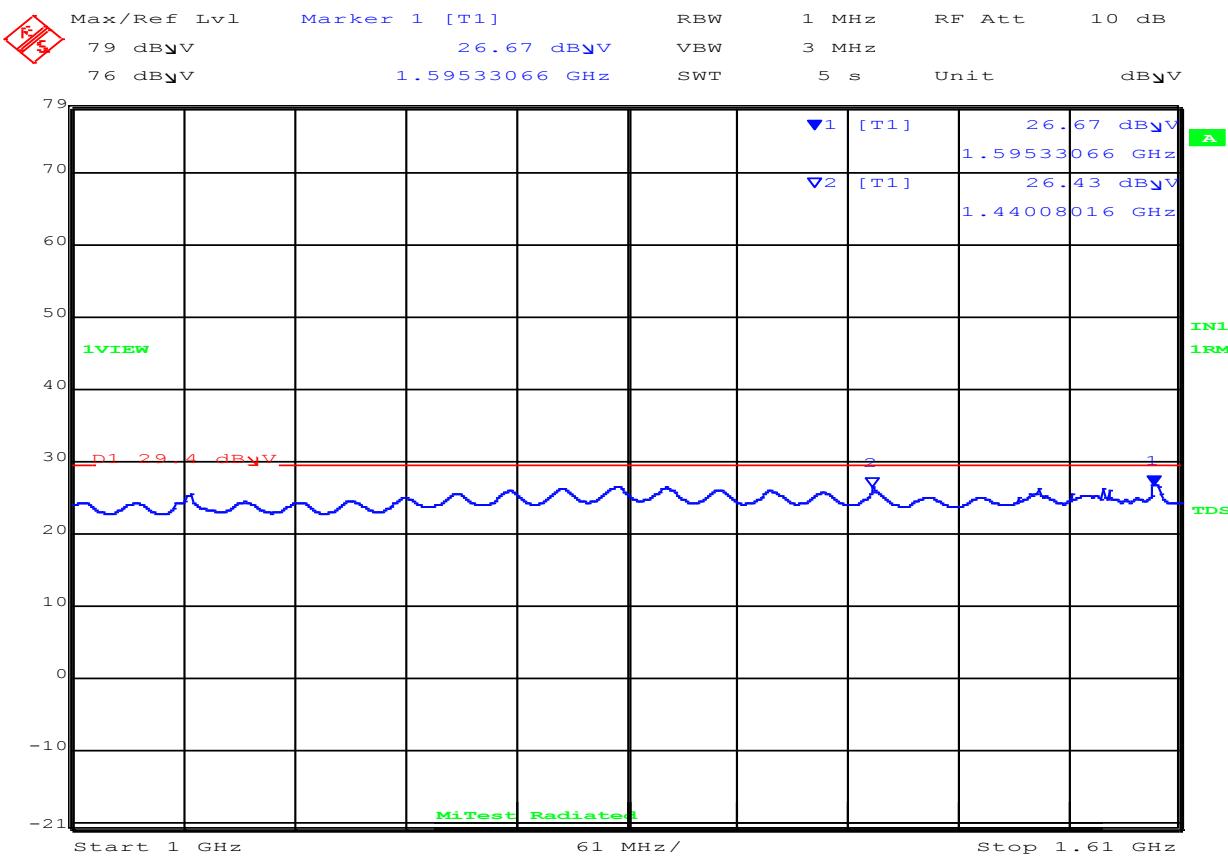
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 1.0-1.61GHz Vertical

Test Freq: 3960 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 7.NOV.2018 16:20:22

#### 1000.00– 1610.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| 1   | 1595.3        | 24.8         | Average          | Vertical | 150    | 0       | 29.4         | -4.60     | Pass       |
| 2   | 1440.1        | 25.8         | Average          | Vertical | 150    | 0       | 29.4         | -3.60     | Pass       |

**Test Notes:**  
Laptop Removed

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#### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

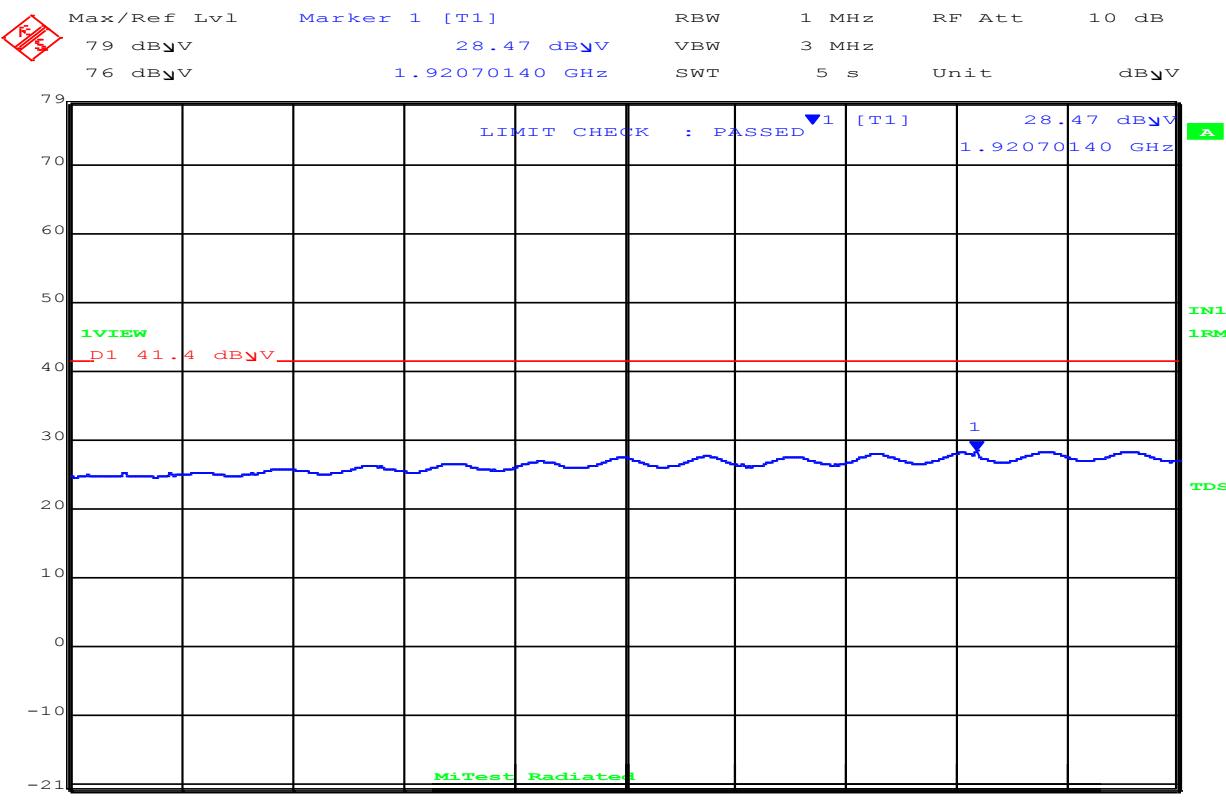
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 1.61-1.99GHz Horizontal

Test Freq: 3960 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 7.NOV.2018 19:30:22

##### 1610.00 – 1990.00 MHz

| Num                                   | Frequency MHz | Level dB <sub>µV/m</sub> | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>µV/m</sub> | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------------------|------------------|-----|--------|---------|--------------------------|-----------|------------|
| No Signals found within 6 dB of limit |               |                          |                  |     |        |         |                          |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |                          |                  |     |        |         |                          |           |            |

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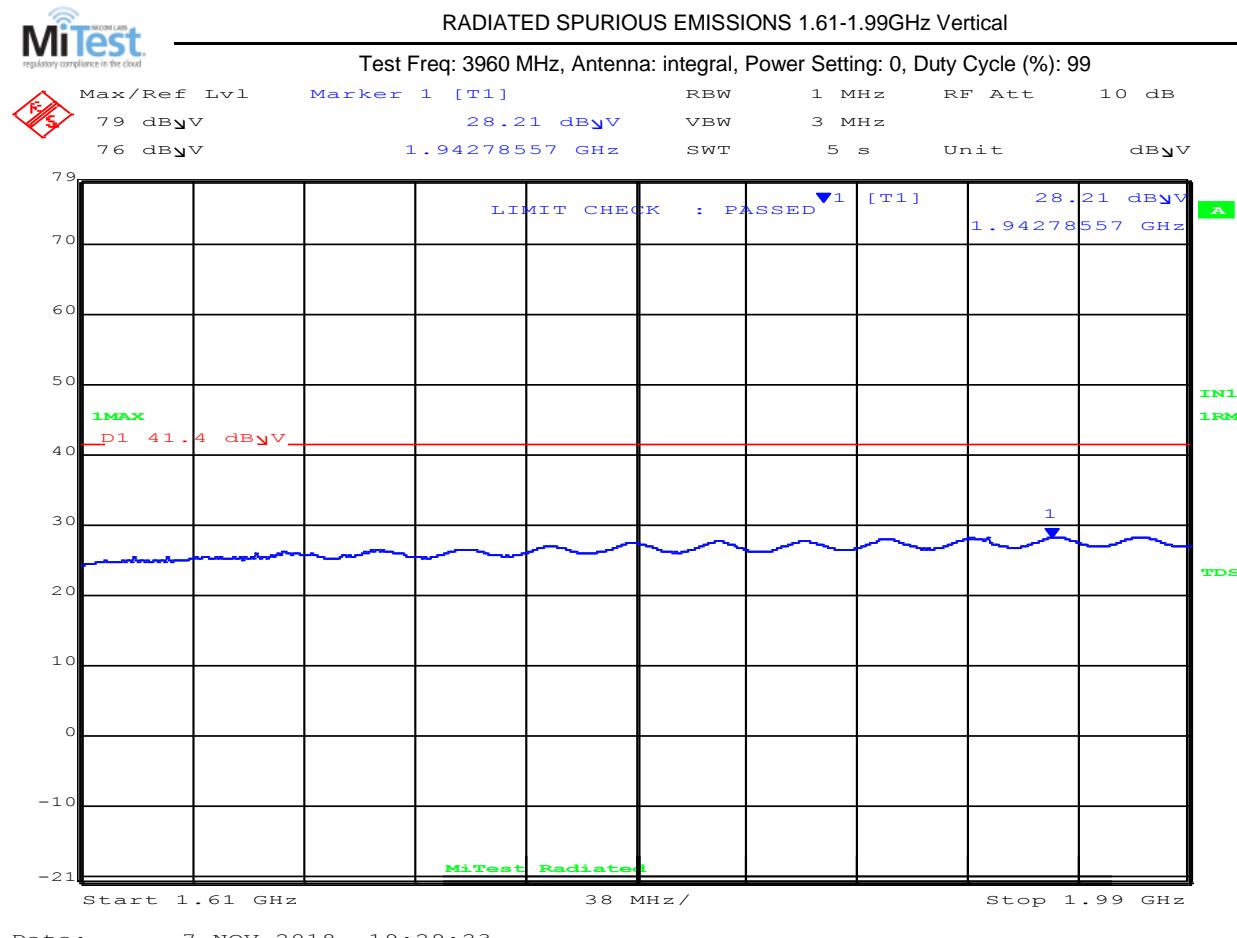


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1610.00 – 1990.00 MHz                 |               |                           |                  |     |        |         |                           |           |            |  |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |  |
| No Signals found within 6 dB of limit |               |                           |                  |     |        |         |                           |           |            |  |
| <b>Test Notes:</b><br>Laptop Removed  |               |                           |                  |     |        |         |                           |           |            |  |

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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

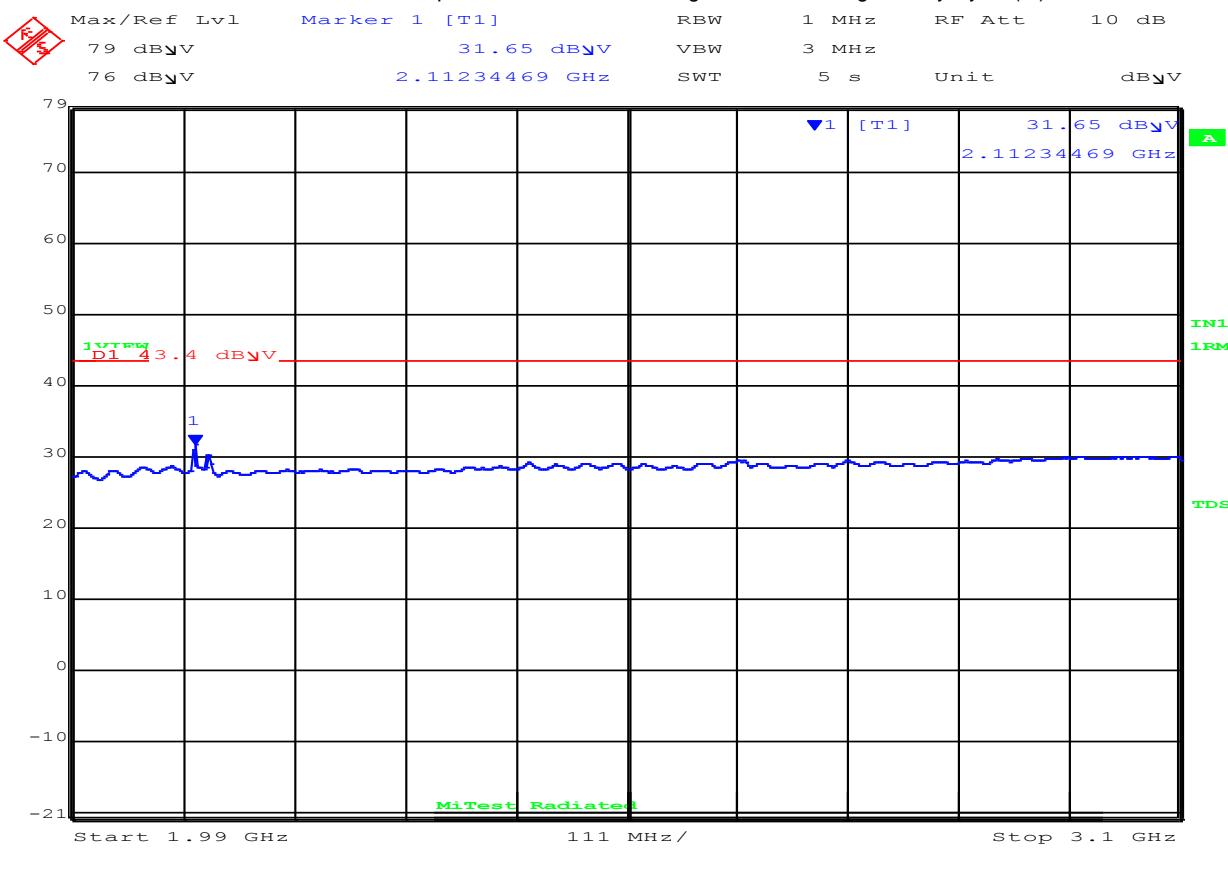
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 1.99-3.1GHz Horizontal

Test Freq: 3960 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



#### 1990.00 – 3100.00 GHz

| Num                                   | Frequency MHz | Level dB <sub>µV/m</sub> | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>µV/m</sub> | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------------------|------------------|-----|--------|---------|--------------------------|-----------|------------|
| No Signals found within 6 dB of limit |               |                          |                  |     |        |         |                          |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |                          |                  |     |        |         |                          |           |            |

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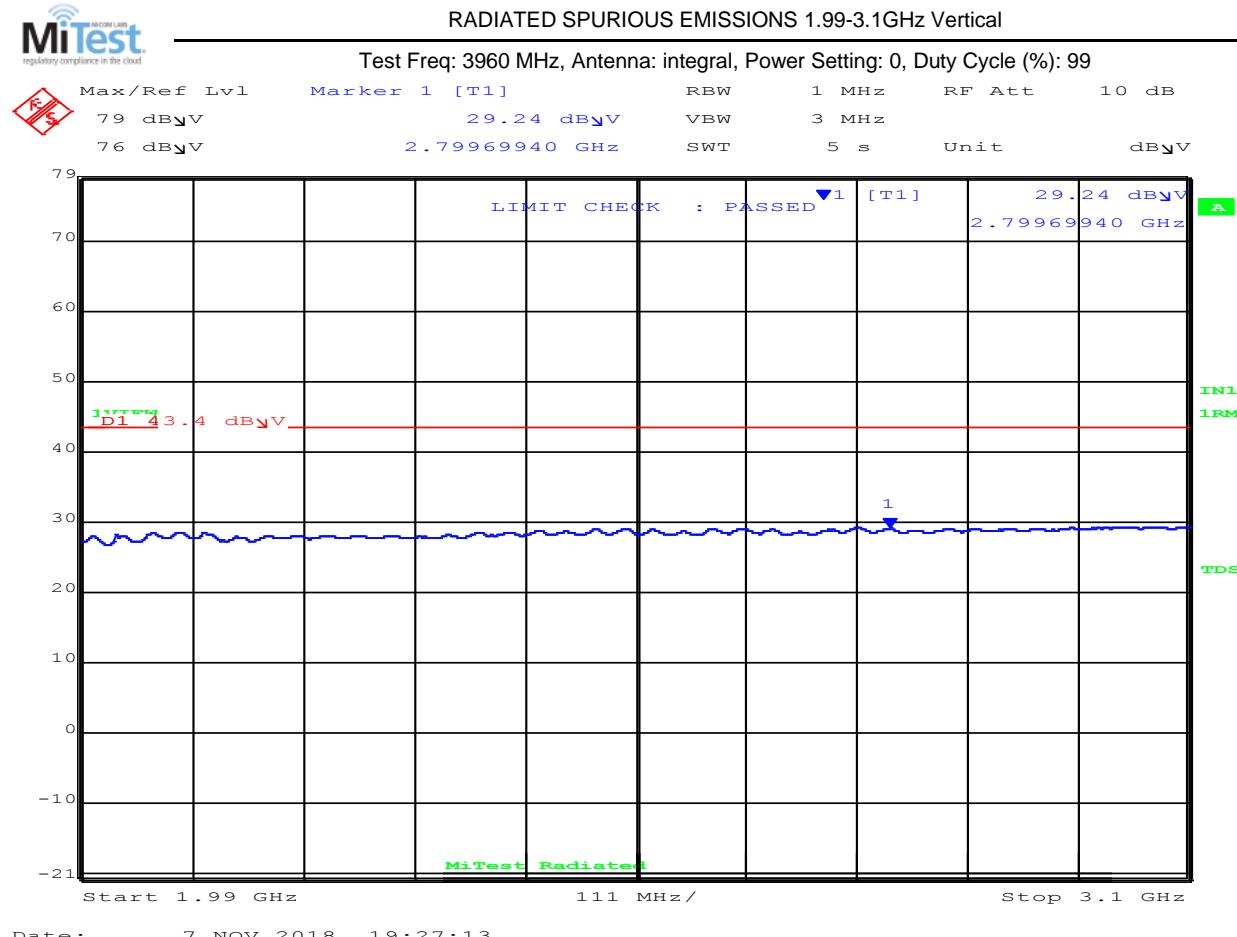


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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1990.00 – 3100.00 GHz                 |               |                           |                  |     |        |         |                           |           |            |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                                   | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of limit |               |                           |                  |     |        |         |                           |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |                           |                  |     |        |         |                           |           |            |

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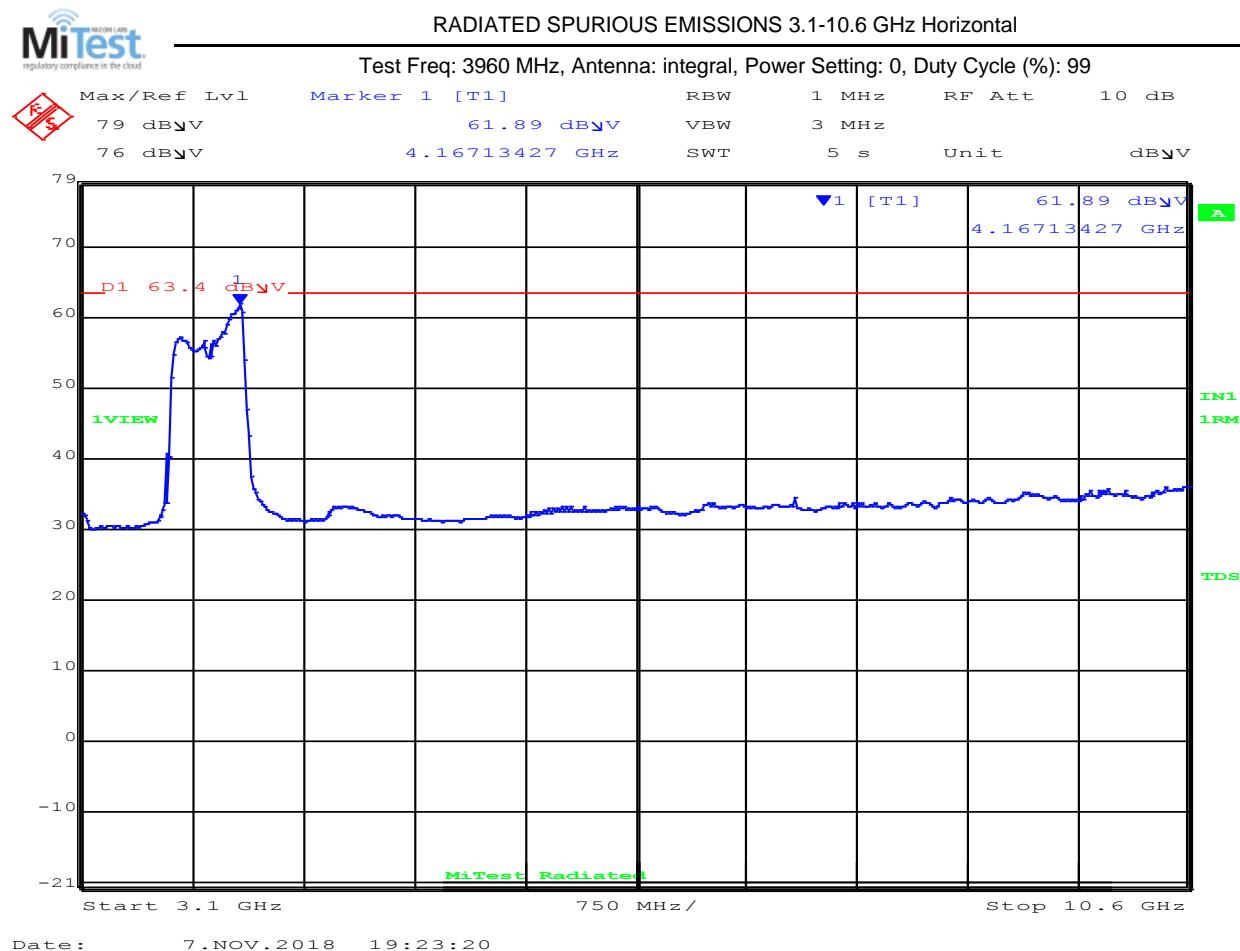


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 3100.00 - 10600.00 MHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 4167.1        | 59.6               | Average          | Horizontal | 150    | 0       | 63.4               | -3.80     | Pass       |

#### Test Notes:

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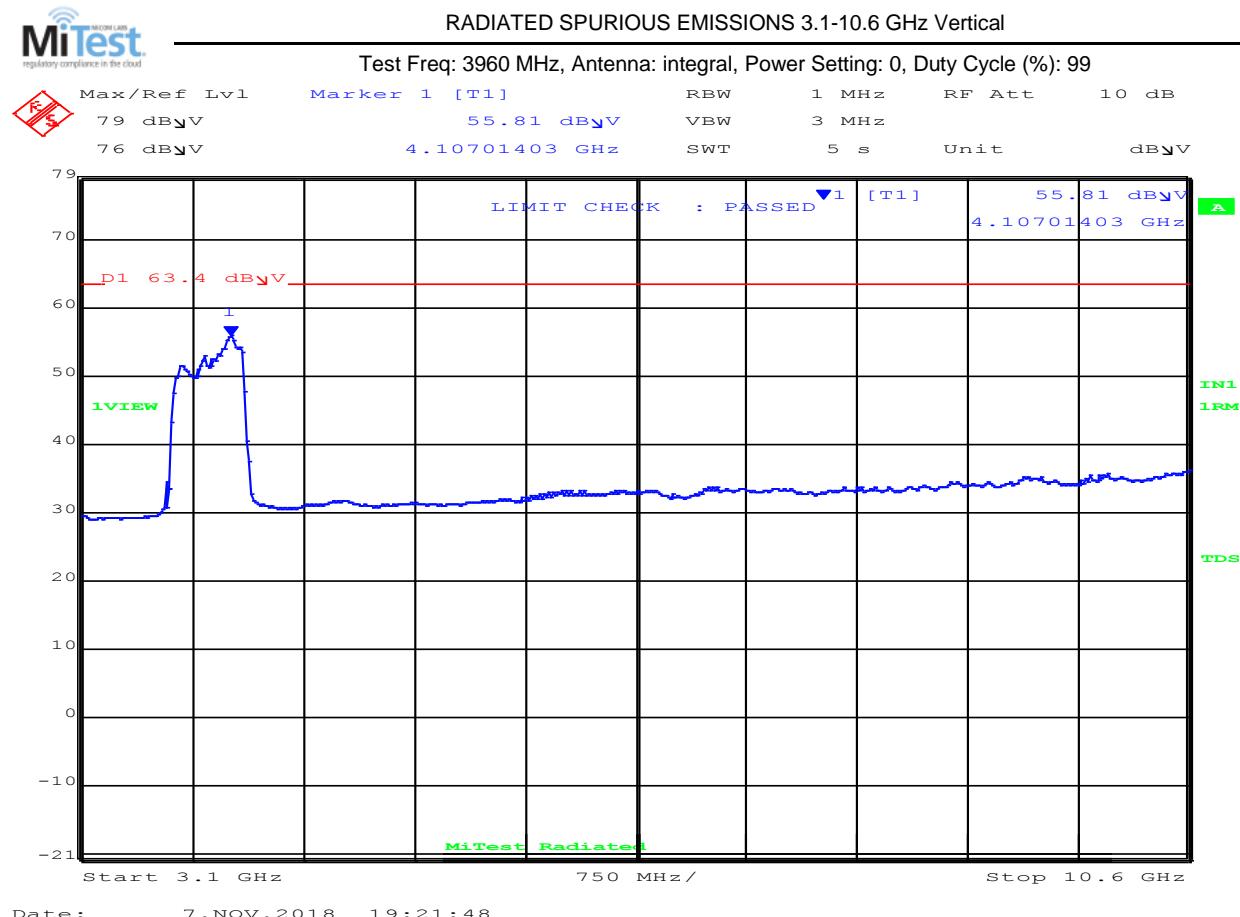


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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 3100.00 - 10600.00 MHz                |               |                           |                  |     |        |         |                           |           |            |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                                   | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of limit |               |                           |                  |     |        |         |                           |           |            |
| Test Notes:                           |               |                           |                  |     |        |         |                           |           |            |

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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

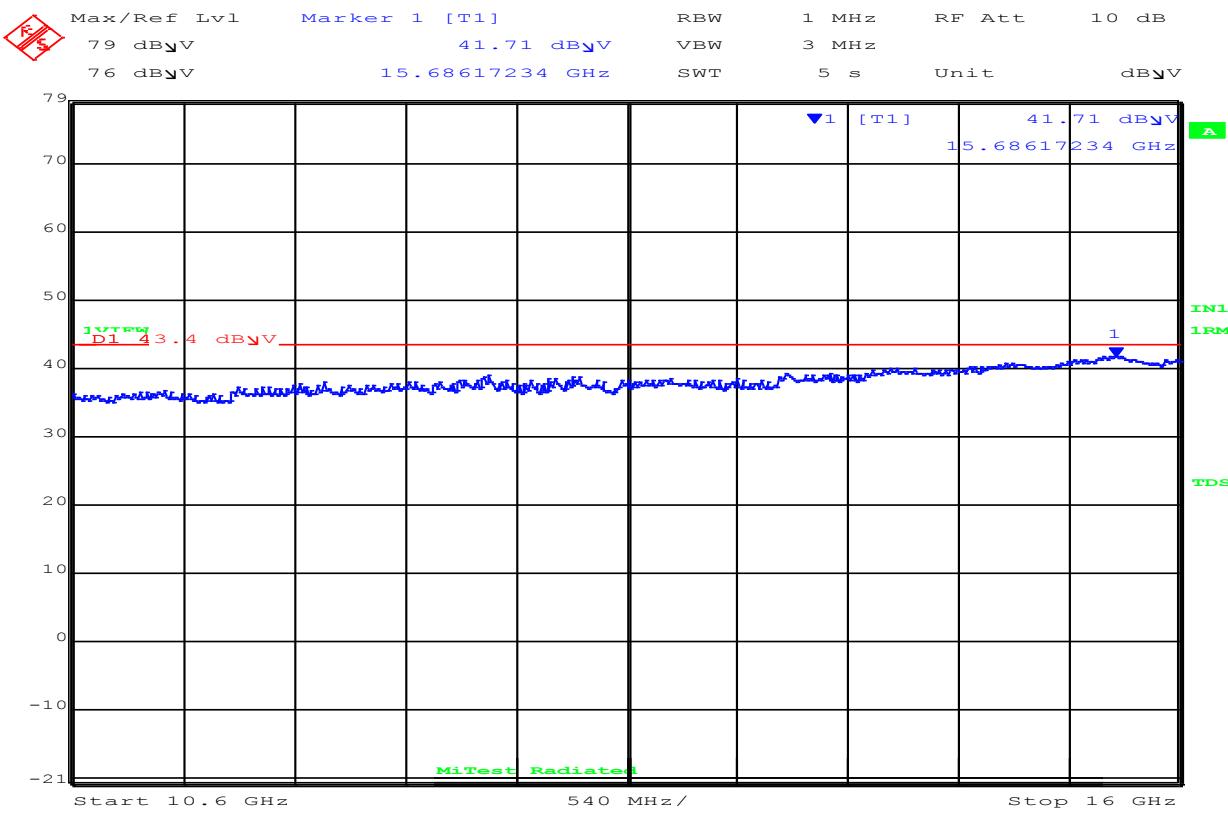
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 10.6-16 GHz Horizontal

Test Freq: 3960 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 7.NOV.2018 19:16:53

#### 10600.00 – 16000.00 GHz

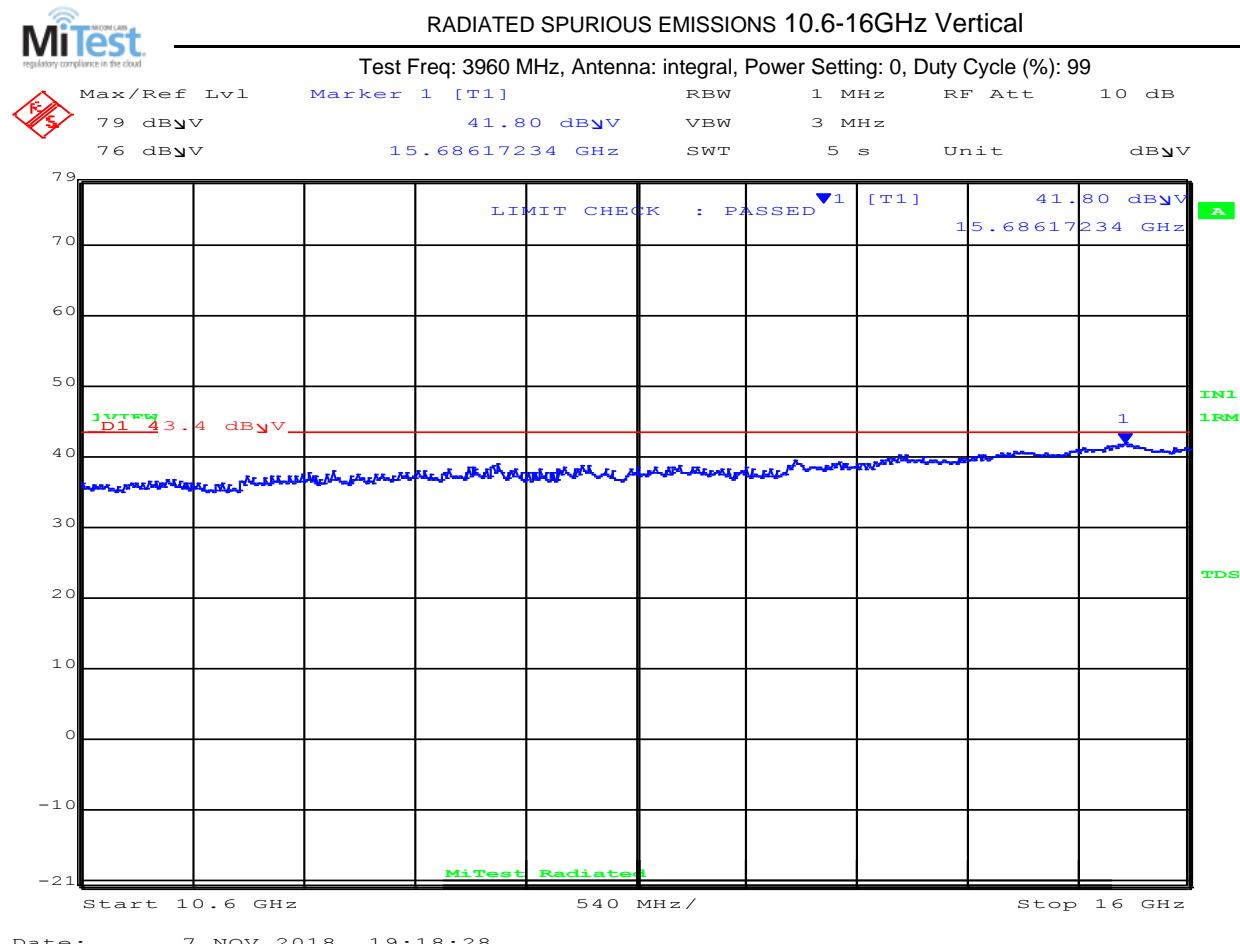
| Num                | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1                  | 15686.2       | 40.2         | Average          | Horizontal | 150    | 0       | 43.4         | -3.20     | Pass       |
| <b>Test Notes:</b> |               |              |                  |            |        |         |              |           |            |

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**Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



| 10600.00 – 16000.00 GHz |               |              |                  |          |        |         |              |           |            |
|-------------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num                     | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                       | 15686.2       | 40.1         | Average          | Vertical | 150    | 0       | 43.4         | -3.30     | Pass       |
| <b>Test Notes:</b>      |               |              |                  |          |        |         |              |           |            |

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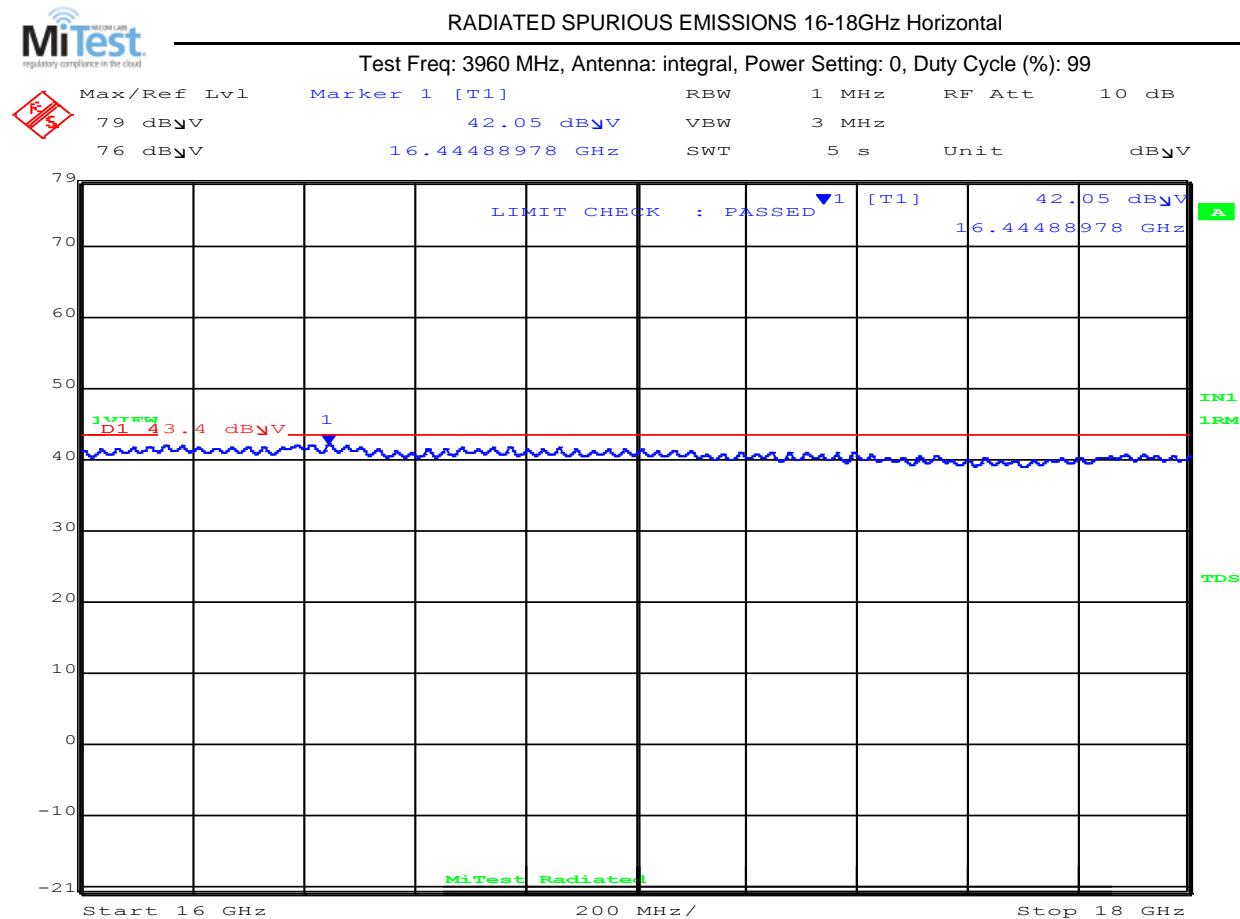


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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



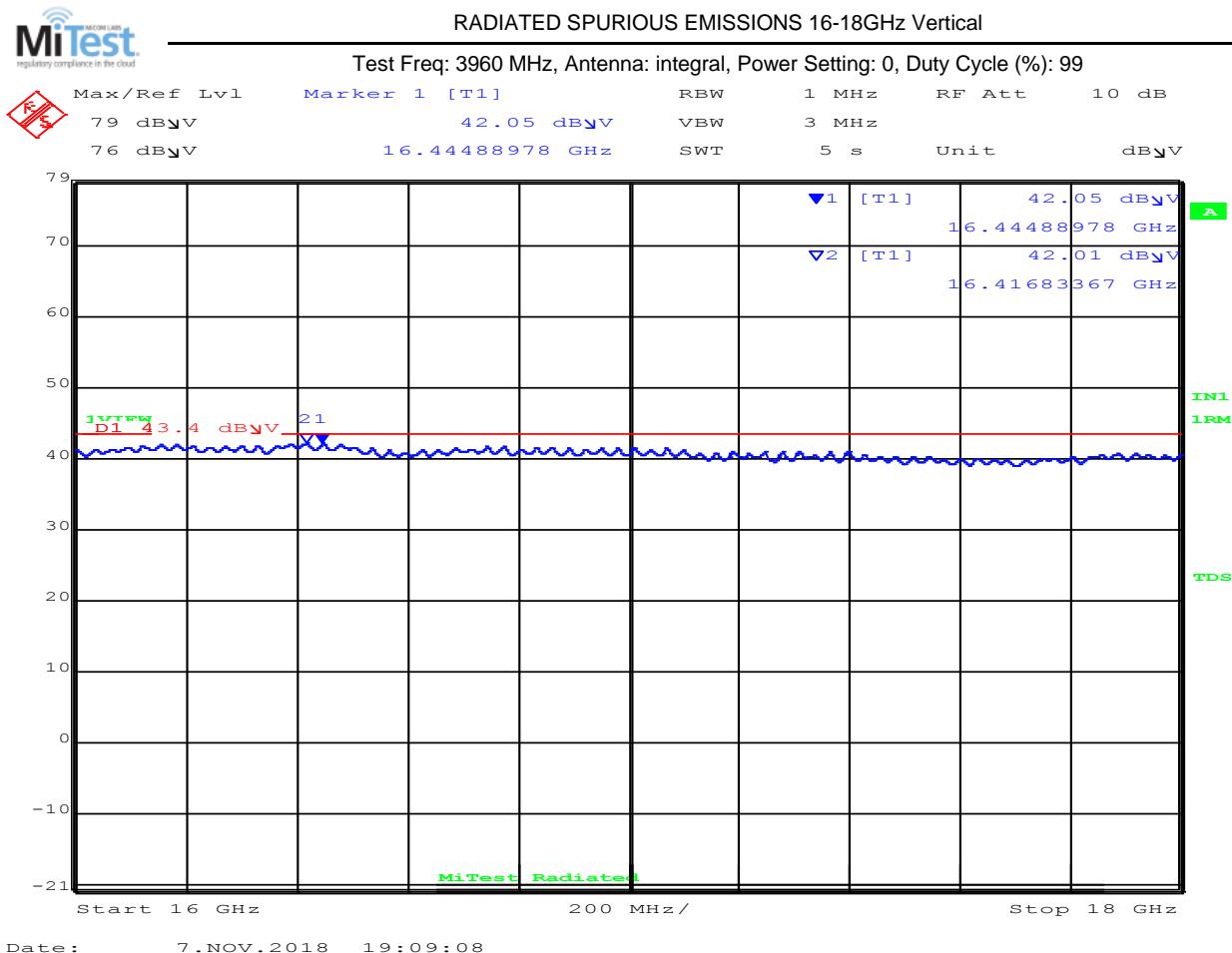
| Num                | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1                  | 16444.9       | 41.0               | Average          | Horizontal | 150    | 0       | 43.4               | -2.40     | Pass       |
| <b>Test Notes:</b> |               |                    |                  |            |        |         |                    |           |            |

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Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3960.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|----------|--------|---------|---------------------------|-----------|------------|
| 1   | 16444.9       | 40.9                      | Average          | Vertical | 150    | 0       | 43.4                      | -2.50     | Pass       |
| 2   | 16416.8       | 41.0                      | Average          | Vertical | 150    | 0       | 43.4                      | -2.40     | Pass       |

Test Notes:

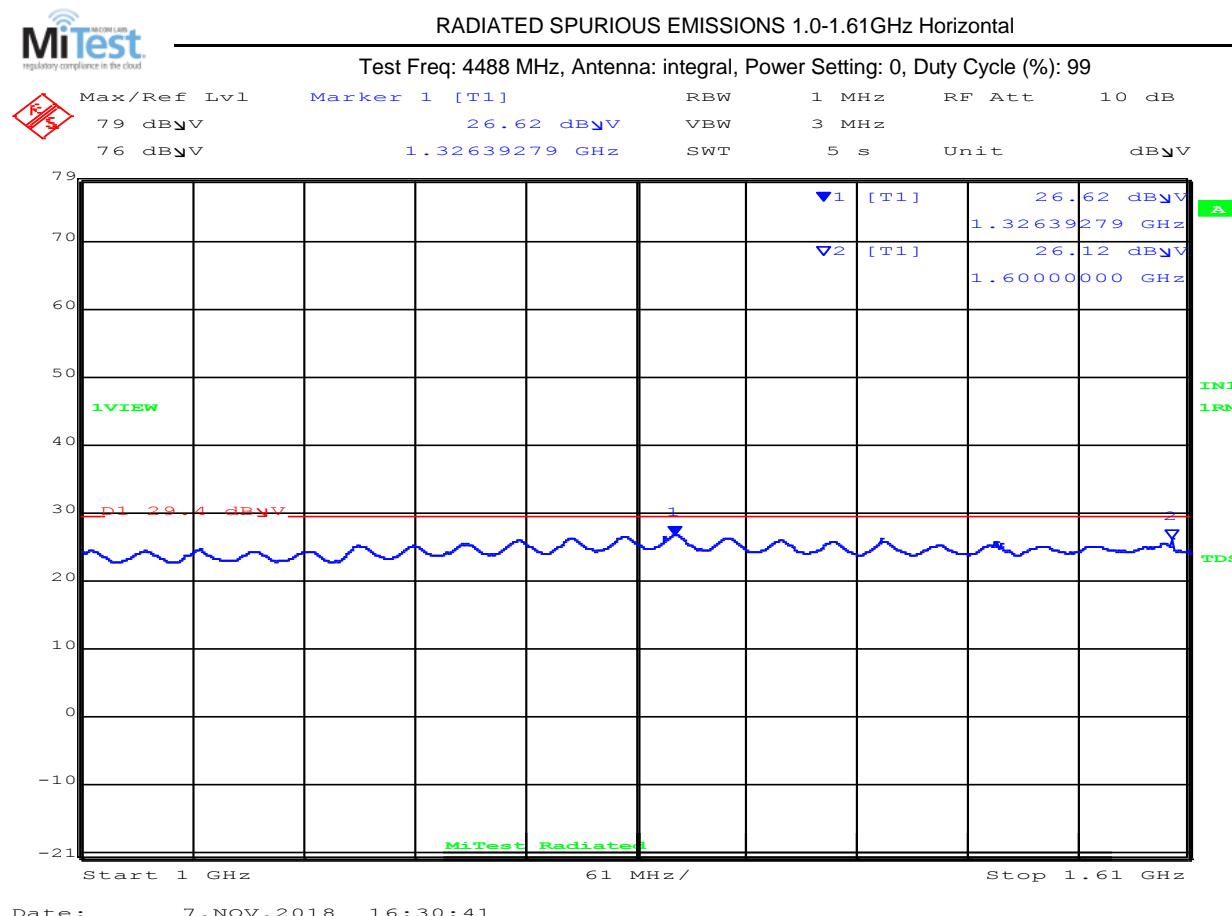
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4488 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 1000.00–1610.00MHz |               |              |                  |            |        |         |              |           |            |
|--------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                  | 1326.4        | 24.9         | Average          | Horizontal | 150    | 0       | 29.4         | -4.50     | Pass       |
| 2                  | 1600.0        | 27.2         | Average          | Horizontal | 150    | 0       | 29.4         | -2.20     | Pass       |
| Test Notes:        |               |              |                  |            |        |         |              |           |            |
| Laptop Removed     |               |              |                  |            |        |         |              |           |            |

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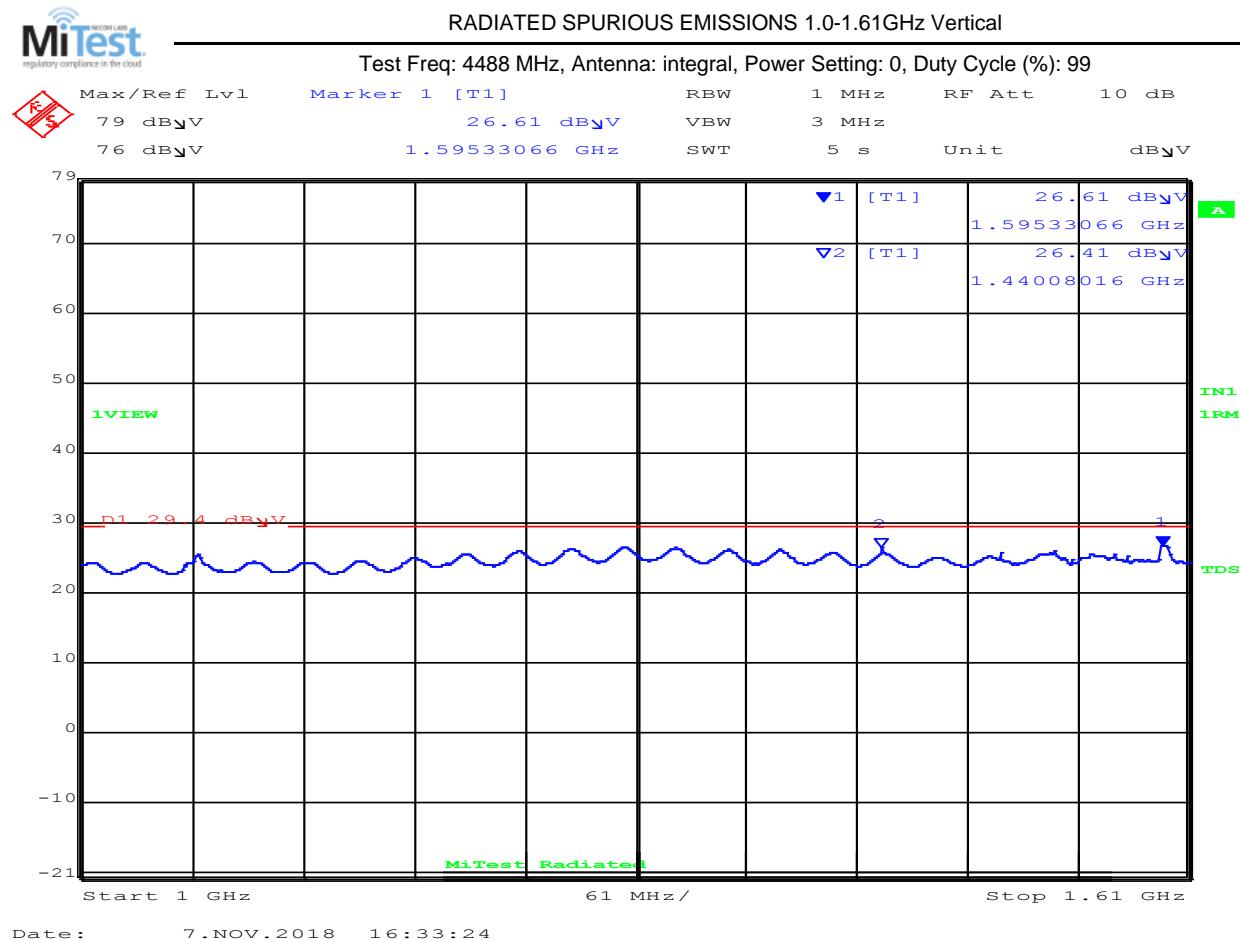


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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1000.00– 1610.00 MHz |               |                    |                  |          |        |         |                    |           |            |
|----------------------|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| Num                  | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                    | 1595.3        | 24.7               | Average          | Vertical | 150    | 0       | 29.4               | -4.70     | Pass       |
| 2                    | 1440.1        | 25.8               | Average          | Vertical | 150    | 0       | 29.4               | -3.60     | Pass       |

**Test Notes:**  
Laptop Removed

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**Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal**

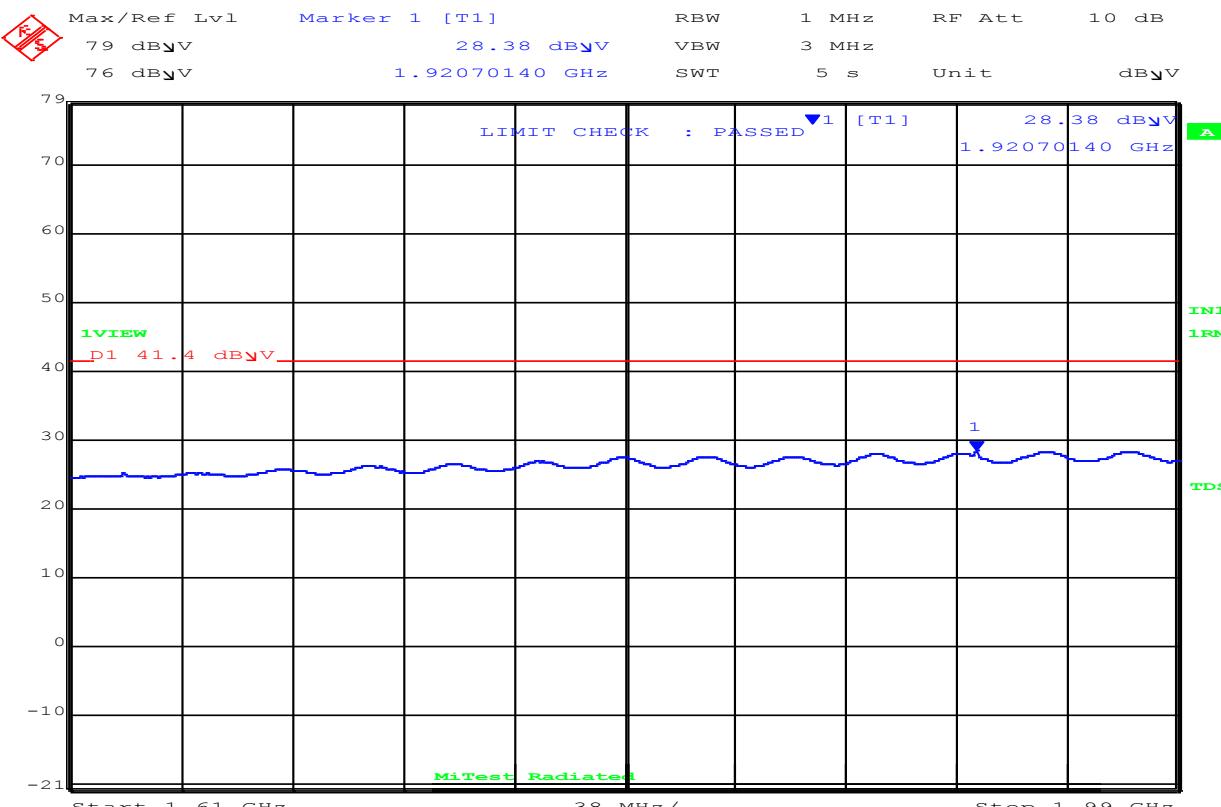
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



RADIATED SPURIOUS EMISSIONS 1.61-1.99GHz Horizontal

Test Freq: 4488 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 7.NOV.2018 19:33:18

1610.00 – 1990.00 MHz

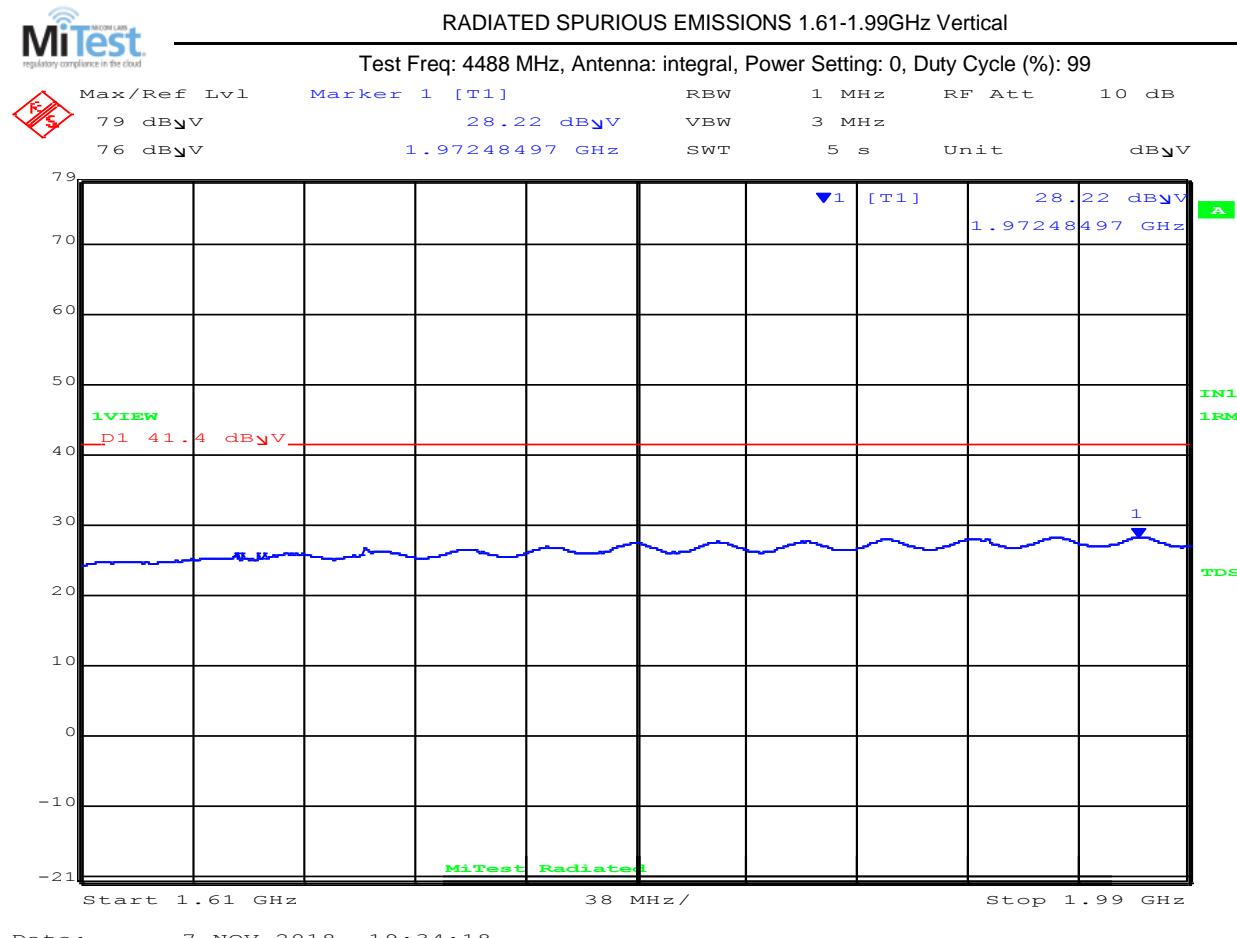
| Num                                   | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| No Signals found within 6 dB of limit |               |                           |                  |     |        |         |                           |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |                           |                  |     |        |         |                           |           |            |

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**Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



| 1610.00 – 1990.00 MHz                 |               |              |                  |     |        |         |              |           |            |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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**Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal**

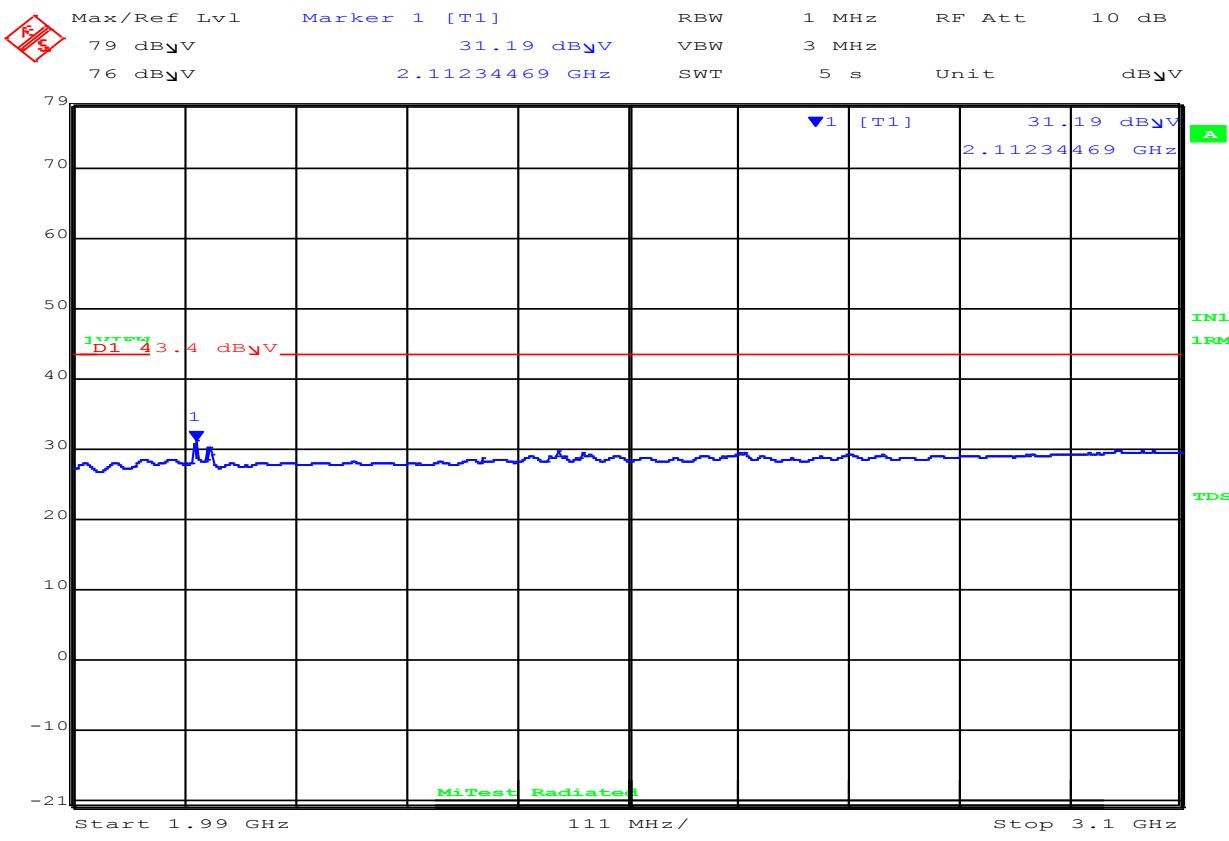
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



**RADIATED SPURIOUS EMISSIONS 1.99-3.1GHz Horizontal**

Test Freq: 4488 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



Date: 7.NOV.2018 19:37:20

**1990.00 – 3100.00 GHz**

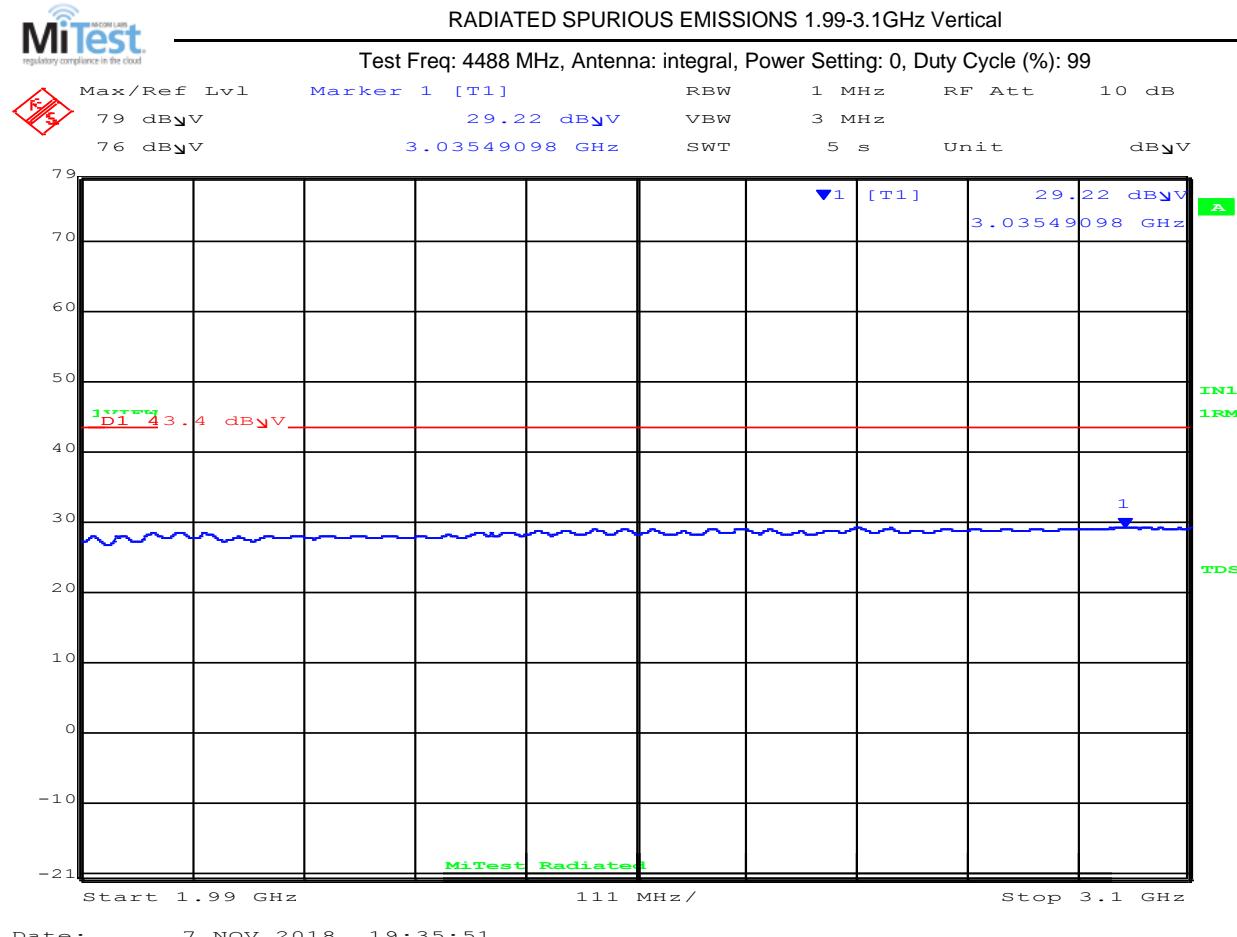
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals found within 6 dB of limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 1990.00 – 3100.00 GHz                 |               |              |                  |     |        |         |              |           |            |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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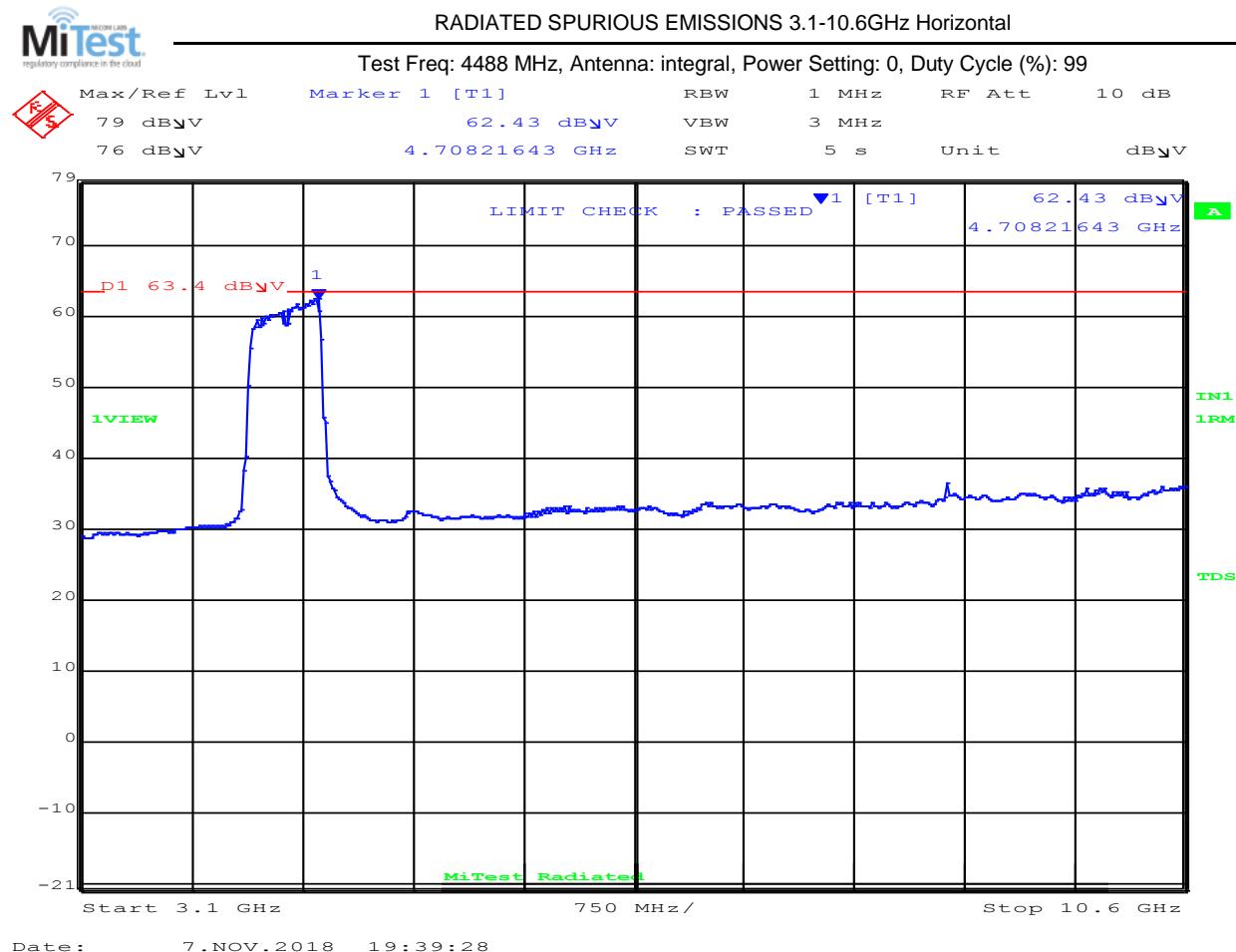


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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



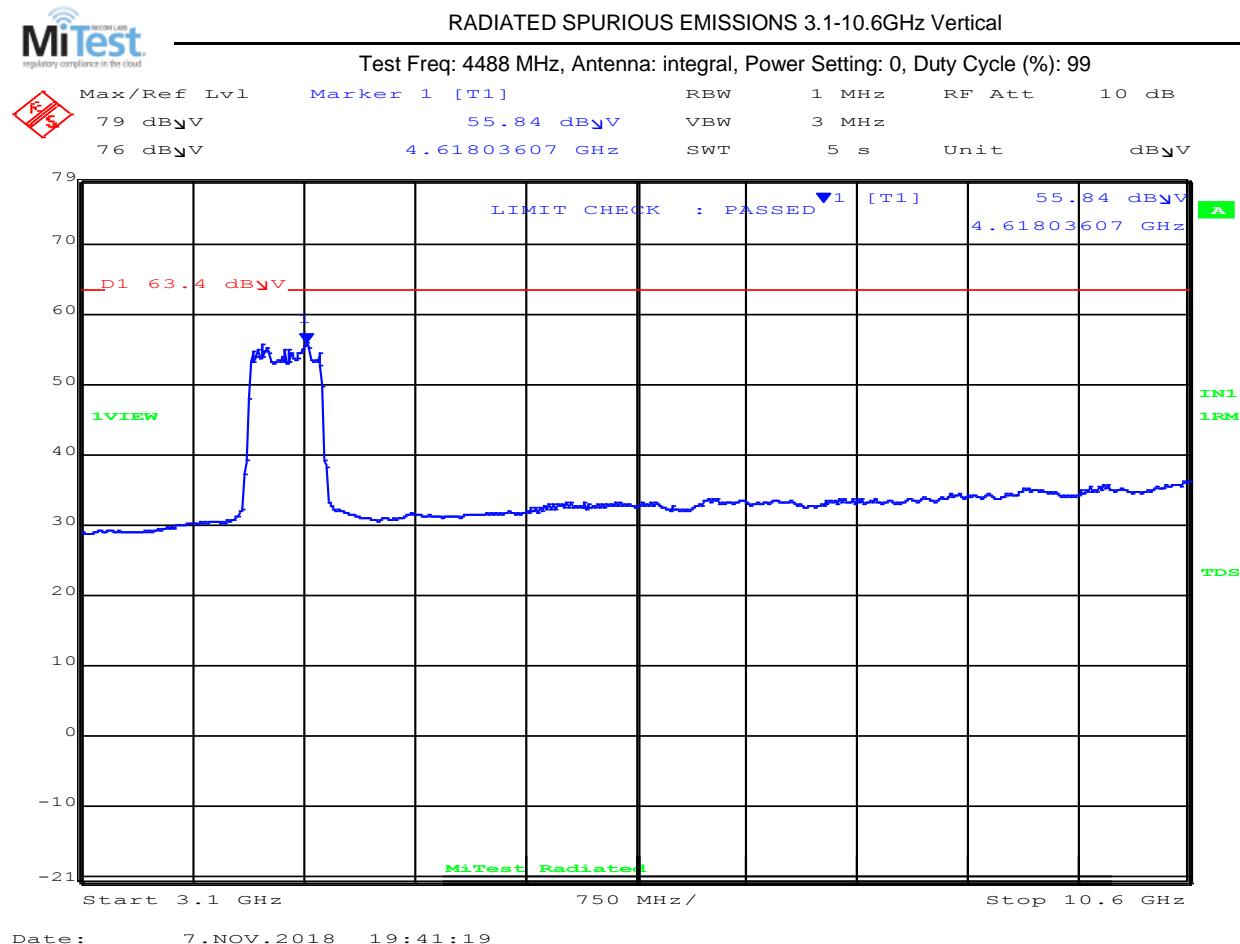
| 3100.00 - 10600.00 MHz |               |                           |                  |            |        |         |                           |           |            |  |
|------------------------|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|--|
| Num                    | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |  |
| 1                      | 4708.2        | 61.6                      | Average          | Horizontal | 150    | 0       | 63.4                      | -1.80     | Pass       |  |
| Test Notes:            |               |                           |                  |            |        |         |                           |           |            |  |

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz                |               |              |                  |     |        |         |              |           |            |  |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals found within 6 dB of limit |               |              |                  |     |        |         |              |           |            |  |
| <b>Test Notes:</b>                    |               |              |                  |     |        |         |              |           |            |  |

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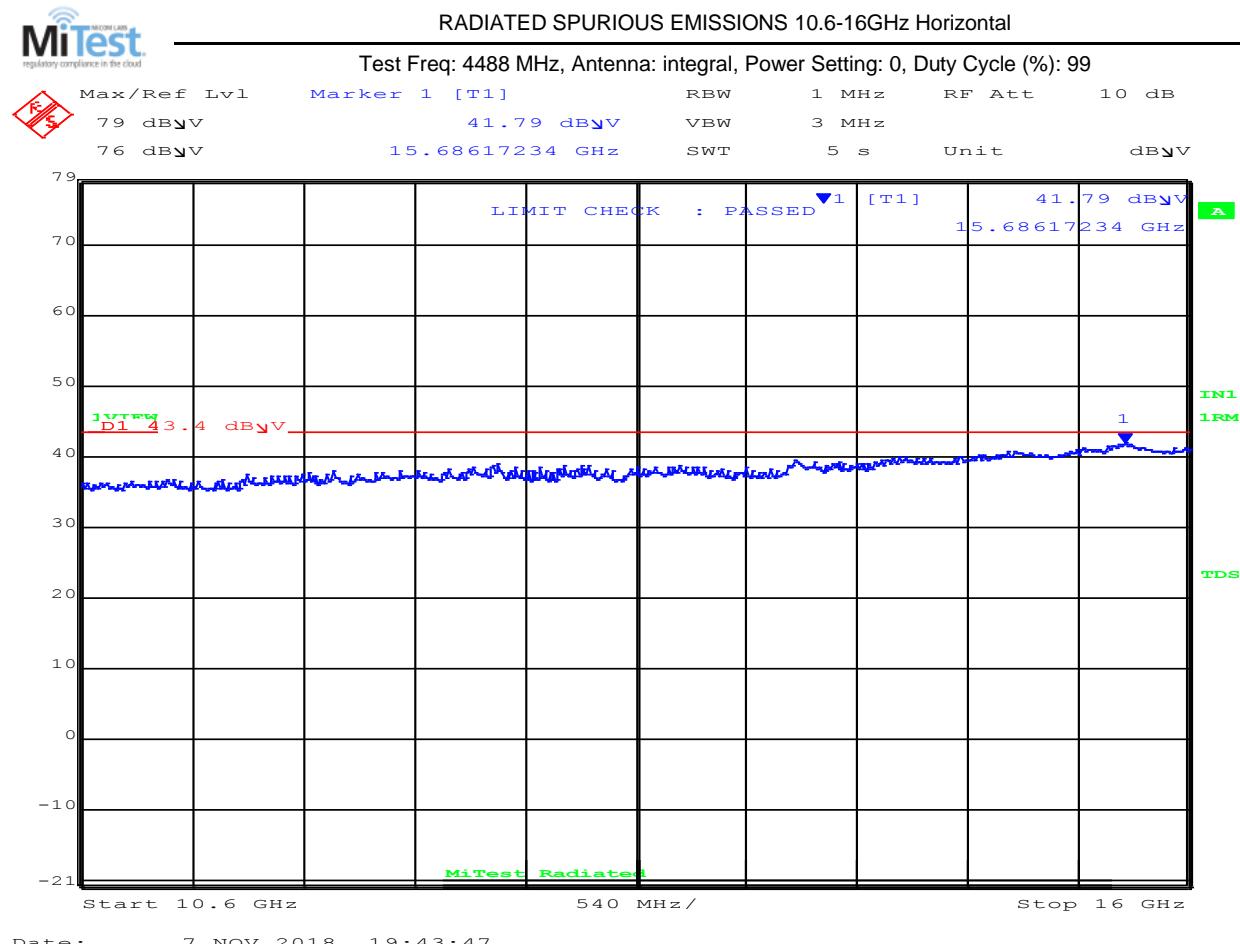


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 10600.00 – 16000.00 GHz |               |                    |                  |            |        |         |                    |           |            |
|-------------------------|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| Num                     | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                       | 15686.2       | 40.3               | Average          | Horizontal | 150    | 0       | 43.4               | -3.10     | Pass       |

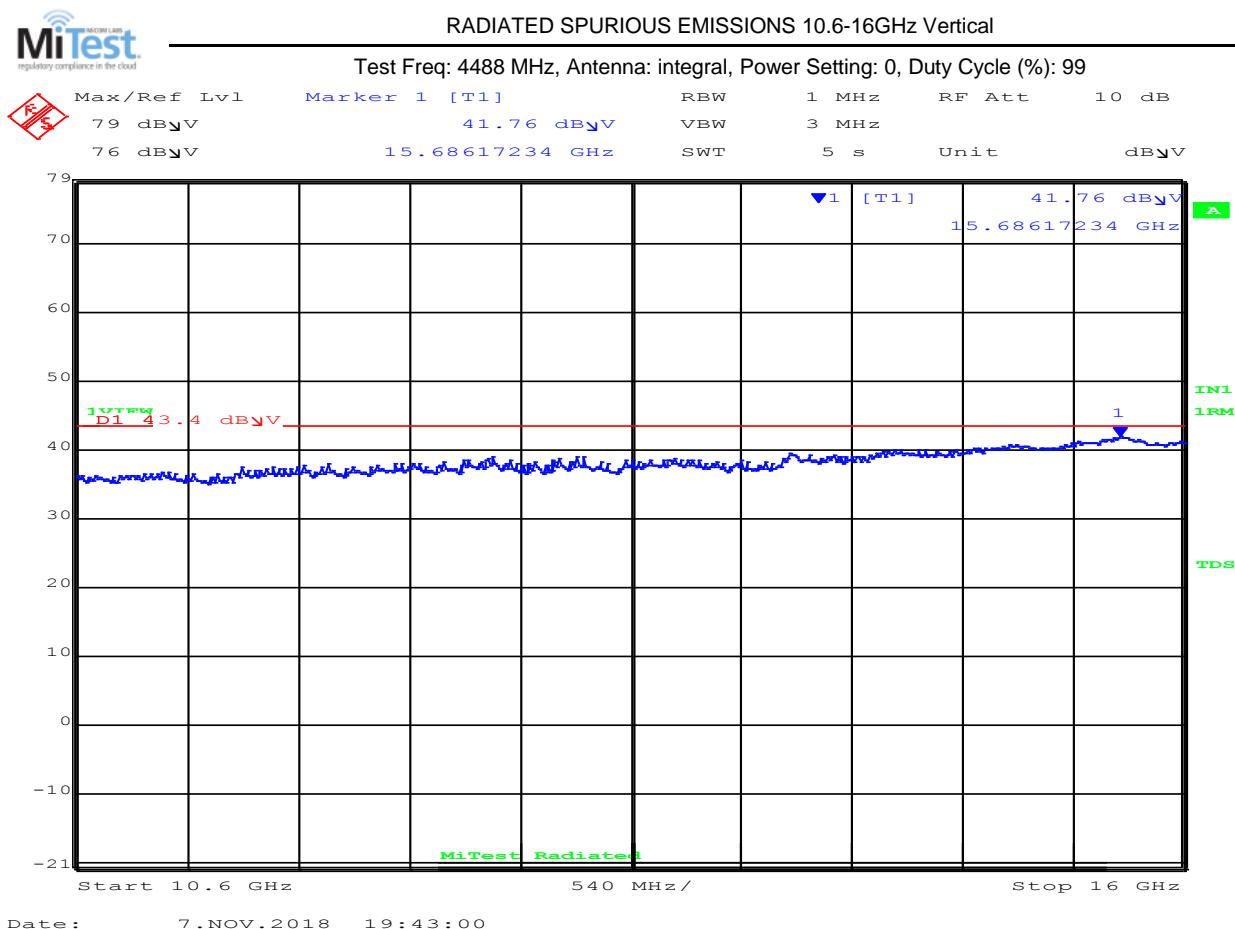
**Test Notes:**

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**Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



| 10600.00 – 16000.00 GHz |               |                    |                  |          |        |         |                    |           |            |
|-------------------------|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| Num                     | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                       | 15686.2       | 40.1               | Average          | Vertical | 150    | 0       | 43.4               | -3.30     | Pass       |
| <b>Test Notes:</b>      |               |                    |                  |          |        |         |                    |           |            |

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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

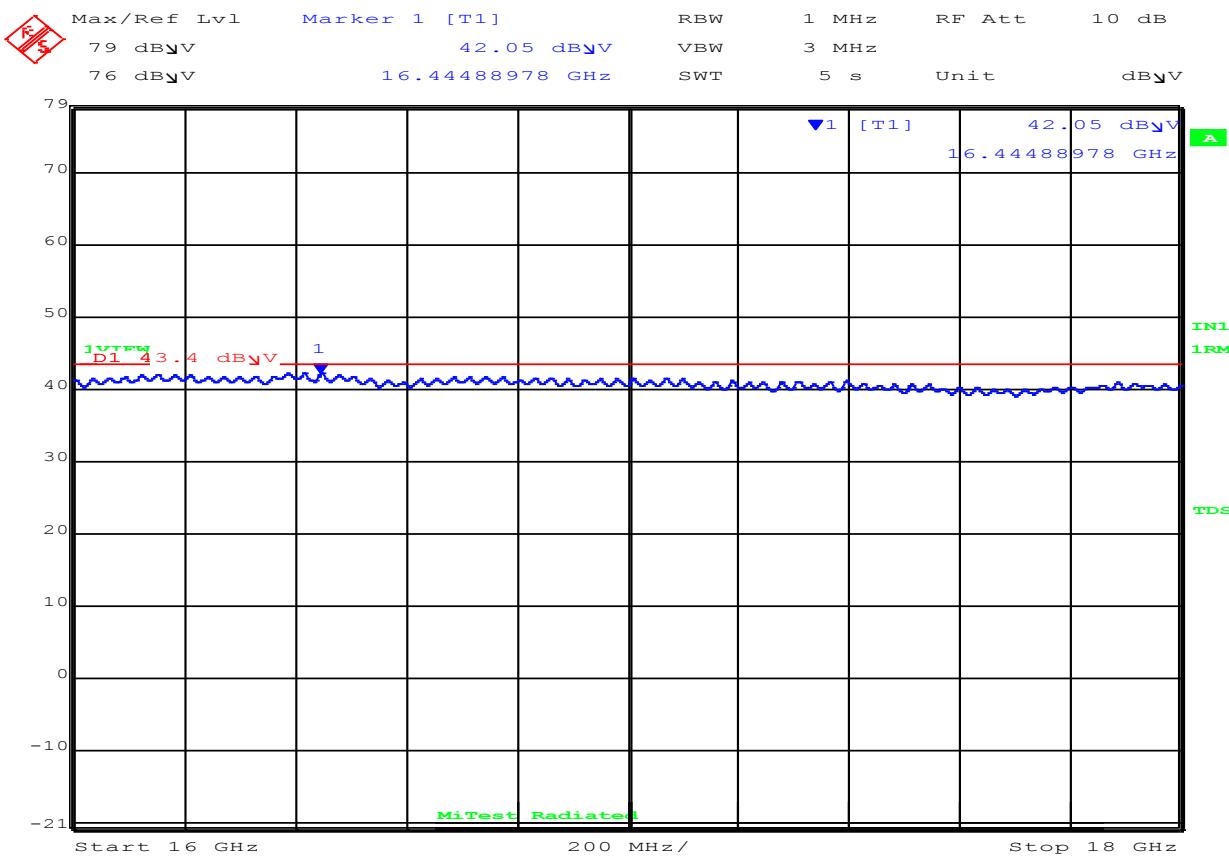
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 16-18GHz Horizontal

Test Freq: 4488 MHz, Antenna: integral, Power Setting: 0, Duty Cycle (%): 99



#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 16444.9       | 41.1         | Average          | Horizontal | 150    | 0       | 43.4         | -2.30     | Pass       |

#### Test Notes:

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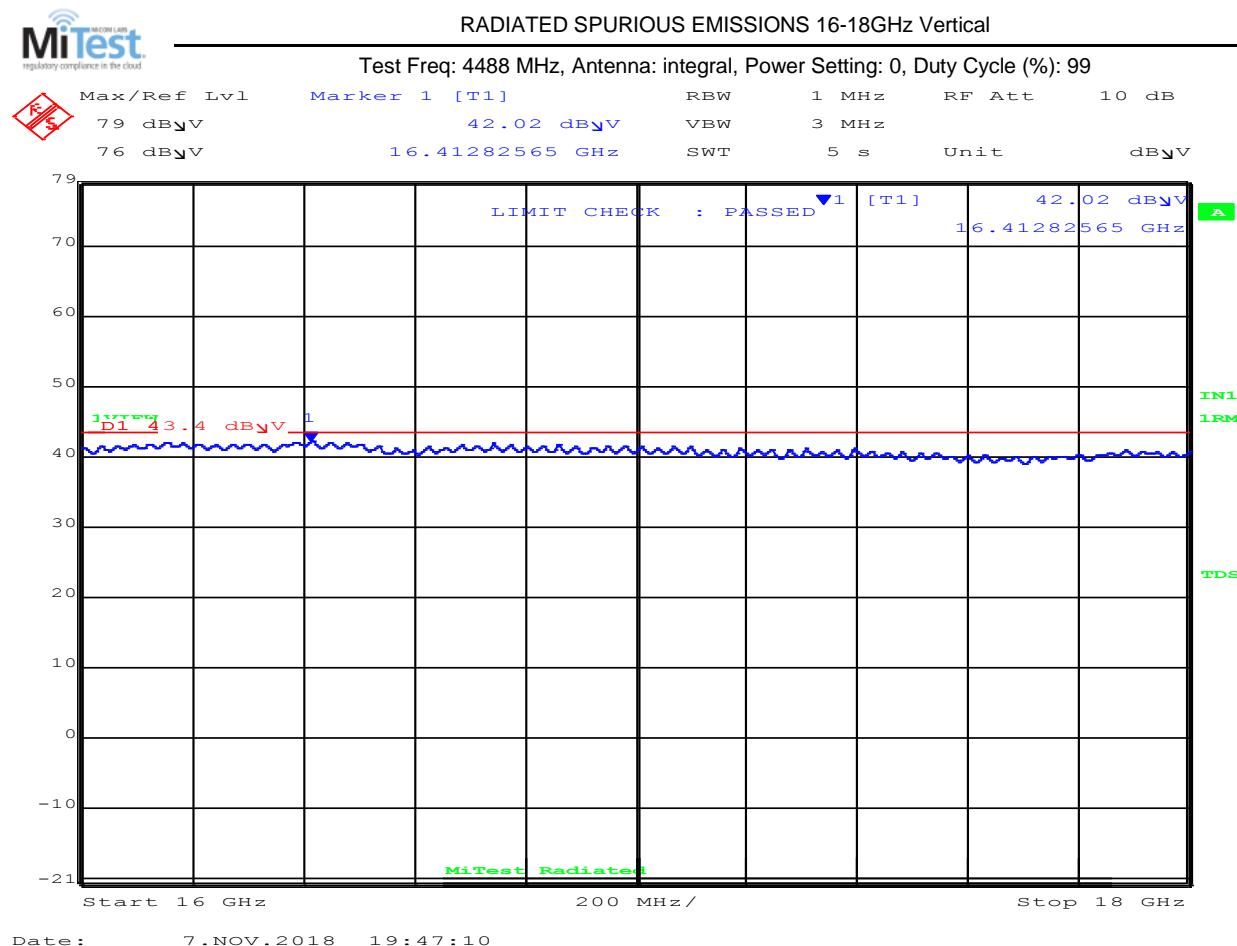


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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 4488.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 16000.00 – 18000.00 GHz |               |                    |                  |          |        |         |                    |           |            |
|-------------------------|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| Num                     | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                       | 16412.8       | 40.9               | Average          | Vertical | 150    | 0       | 43.4               | -2.50     | Pass       |
| Test Notes:             |               |                    |                  |          |        |         |                    |           |            |

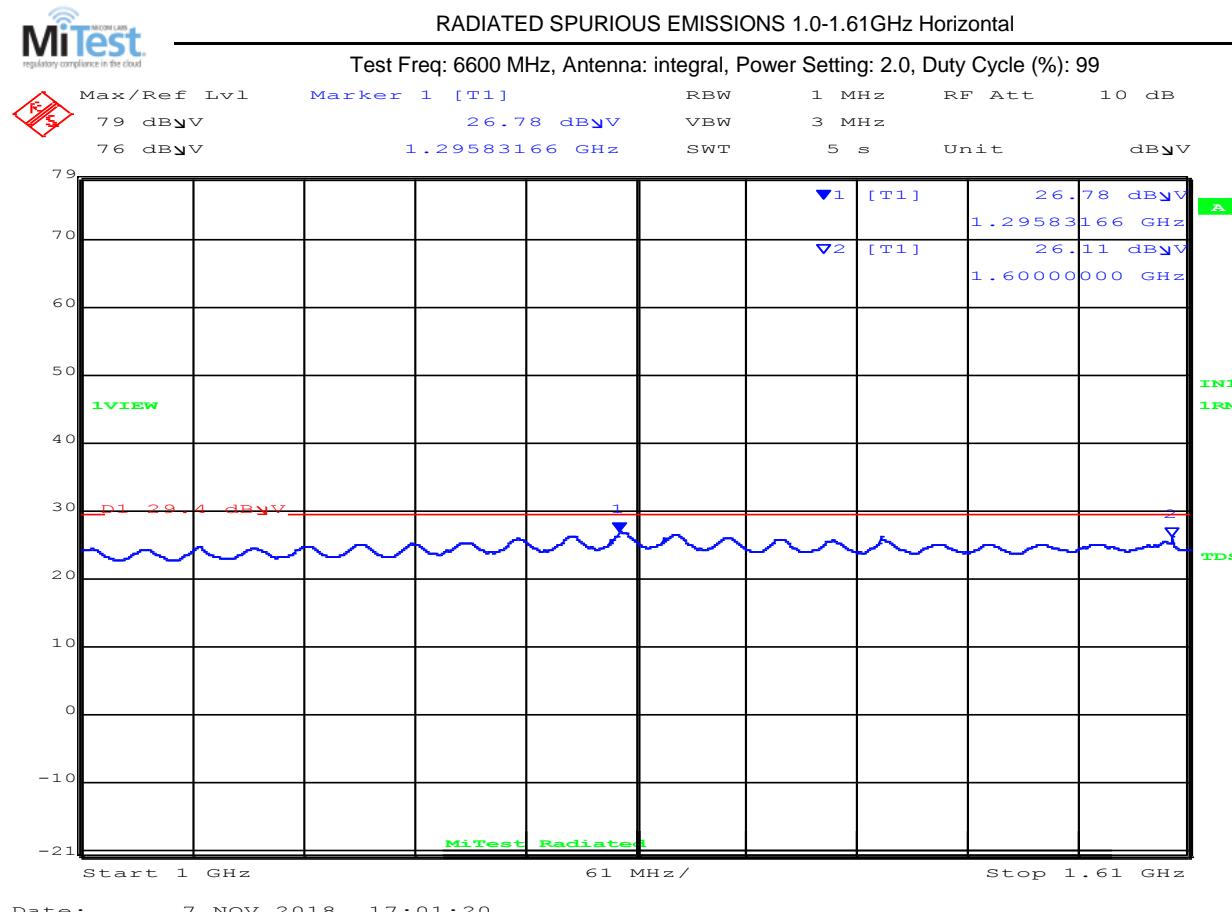
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6600 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 1000.00– 1610.00 MHz |               |              |                  |            |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1295.8        | 25.2         | Average          | Horizontal | 150    | 0       | 29.4         | -4.20     | Pass       |
| 2                    | 1600.0        | 26.2         | Average          | Horizontal | 150    | 0       | 29.4         | -3.20     | Pass       |
| Test Notes:          |               |              |                  |            |        |         |              |           |            |
| Laptop Removed       |               |              |                  |            |        |         |              |           |            |

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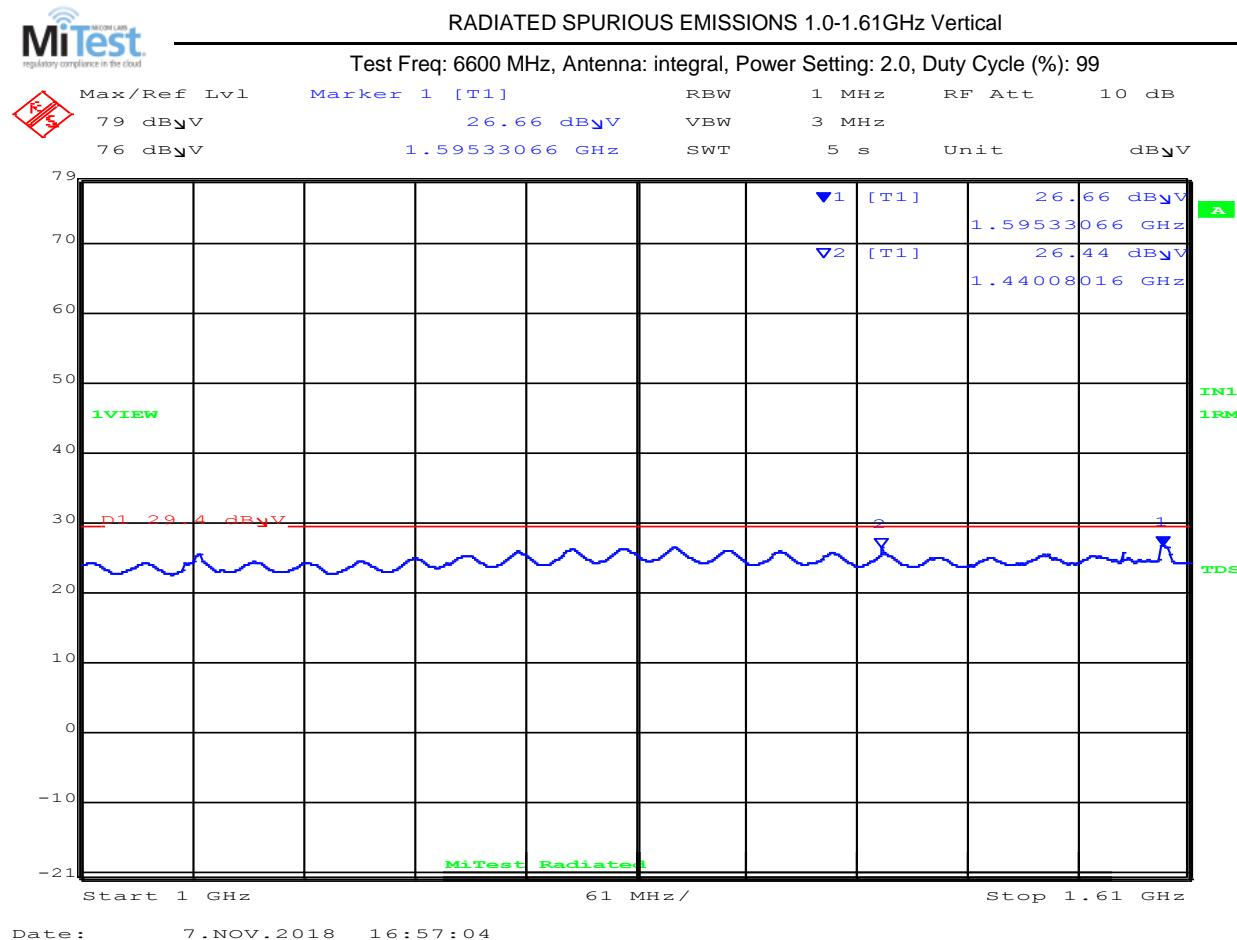


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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 1000.00– 1610.00 MHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 1595.3        | 25.1               | Average          | Vertical | 150    | 0       | 29.4               | -4.30     | Pass       |
| 2   | 1440.1        | 25.8               | Average          | Vertical | 150    | 0       | 29.4               | -3.60     | Pass       |

**Test Notes:**  
Laptop Removed

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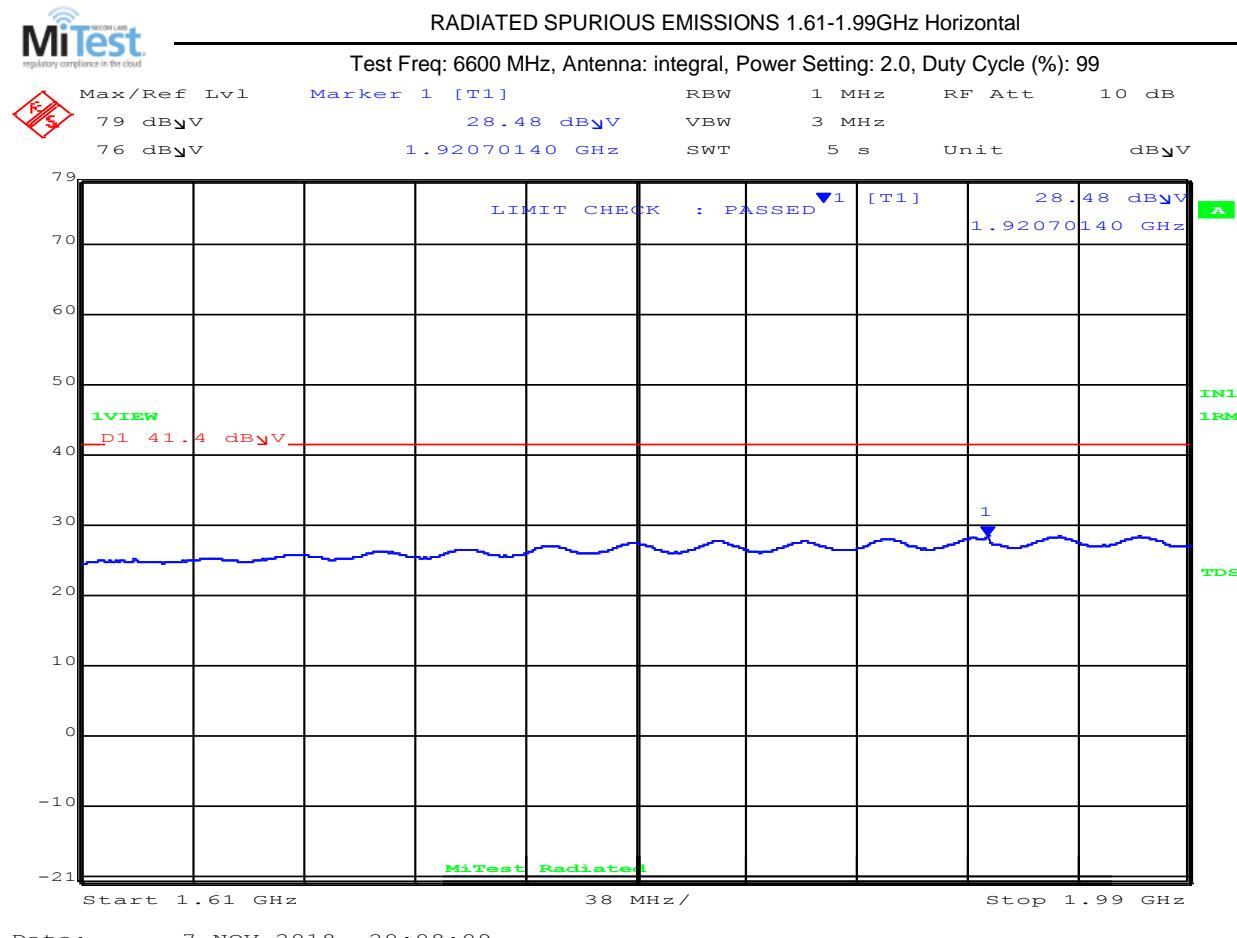


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#### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1610.00 – 1990.00 MHz                  |               |                           |                  |     |        |         |                           |           |            |  |
|--|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|--|
| Num                                    | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |  |
| No Signals found within 6 dB of limit. |               |                           |                  |     |        |         |                           |           |            |  |
| <b>Test Notes:</b><br>Laptop Removed   |               |                           |                  |     |        |         |                           |           |            |  |

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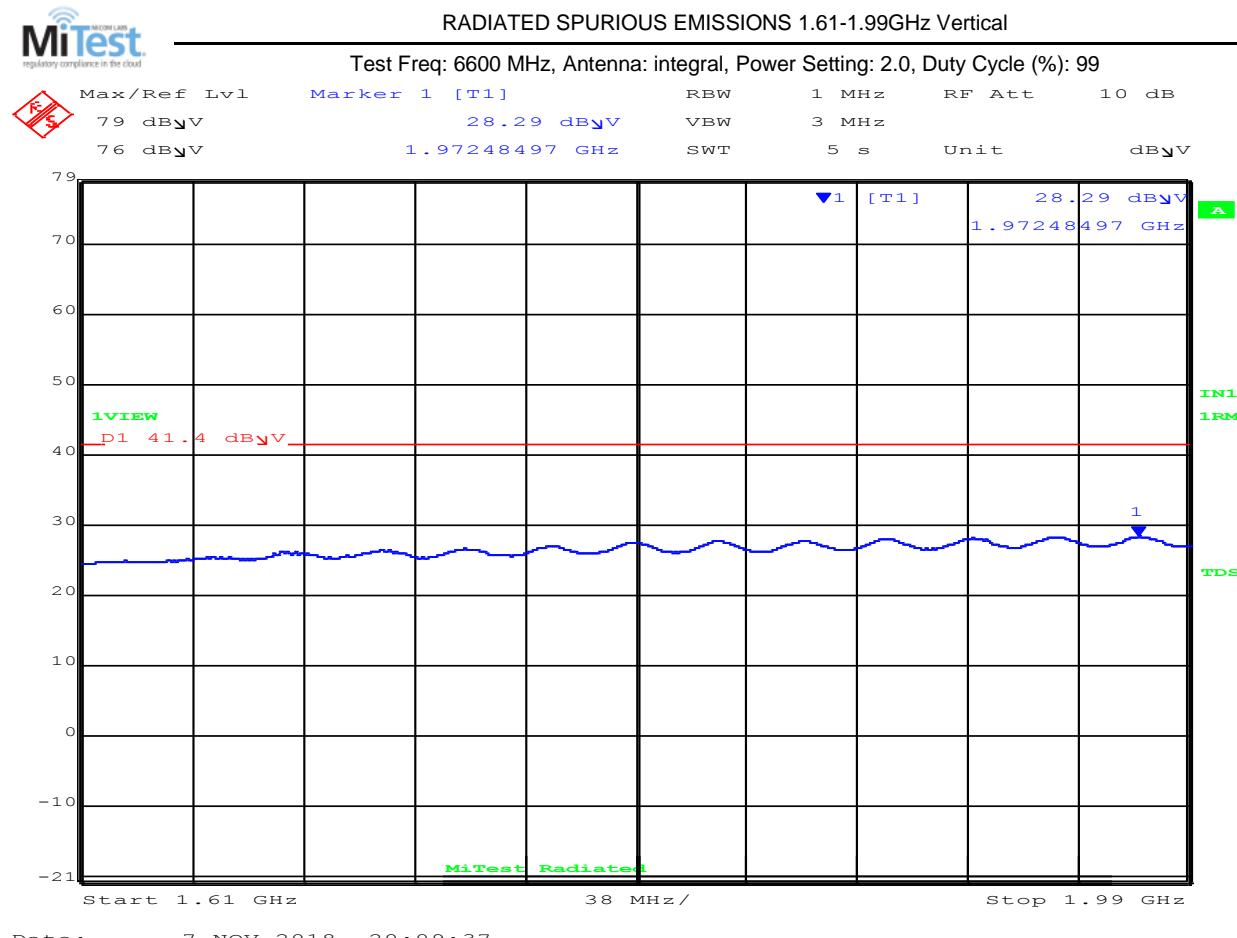


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#### Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1610.00 – 1990.00 MHz                  |               |                           |                  |     |        |         |                           |           |            |
|--|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                                    | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of limit. |               |                           |                  |     |        |         |                           |           |            |
| <b>Test Notes:</b><br>Laptop Removed   |               |                           |                  |     |        |         |                           |           |            |

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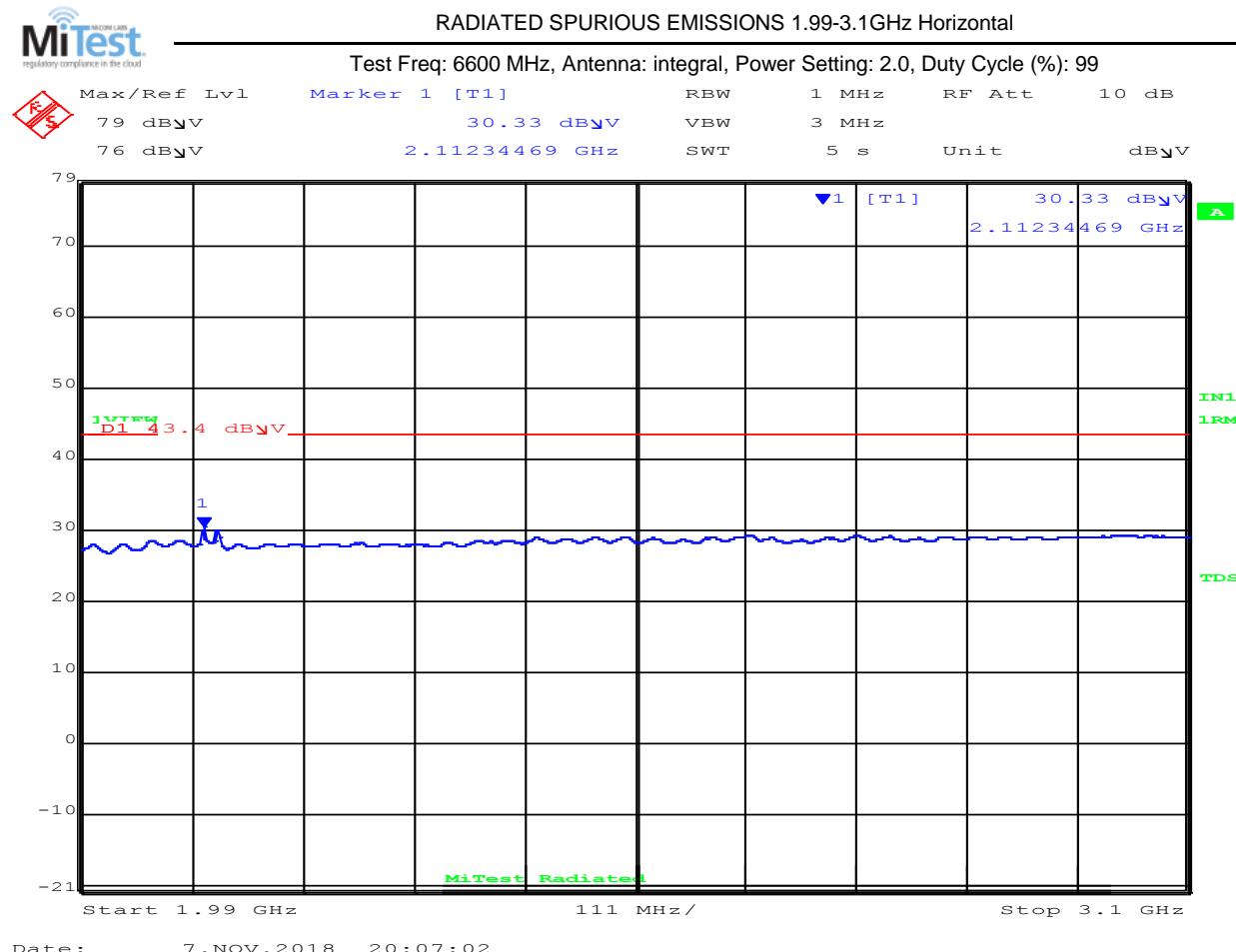


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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



Date: 7.NOV.2018 20:07:02

| 1990.00 – 3100.00 GHz                  |               |                           |                  |     |        |         |                           |           |            |
|--|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                                    | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of limit. |               |                           |                  |     |        |         |                           |           |            |
| <b>Test Notes:</b><br>Laptop Removed   |               |                           |                  |     |        |         |                           |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

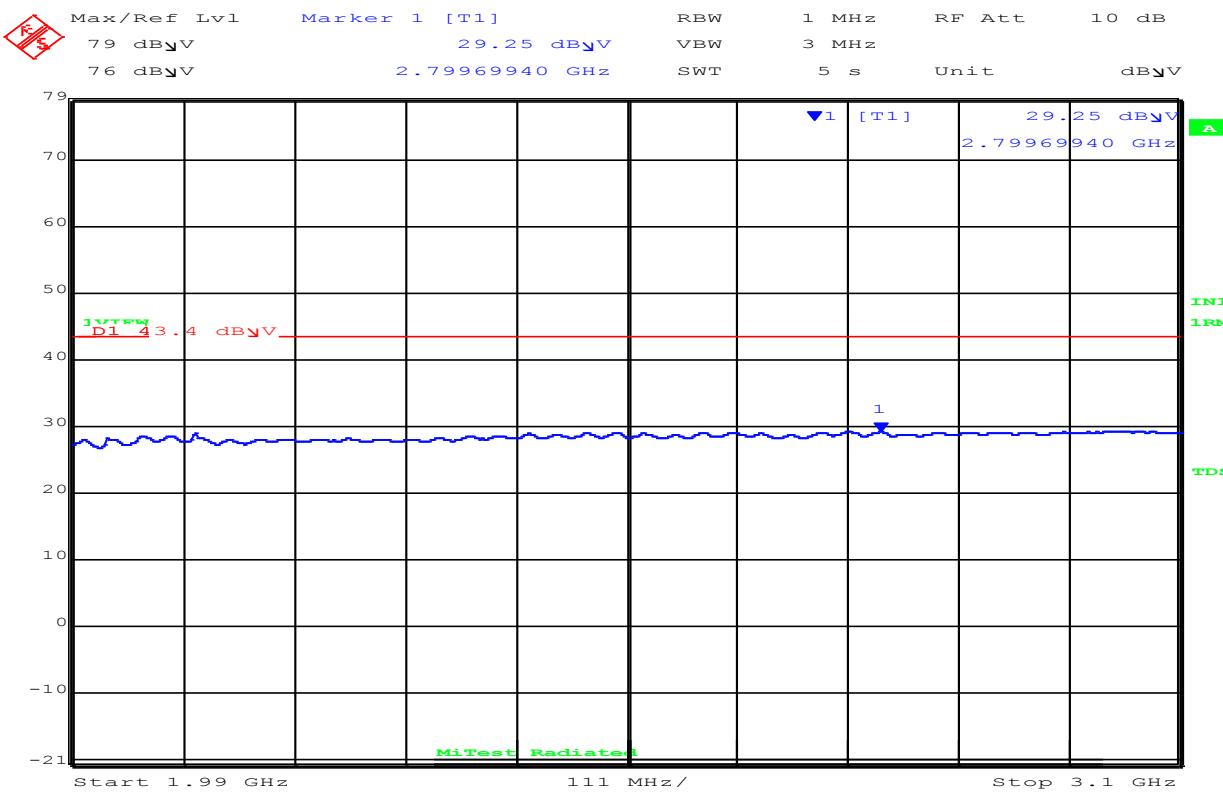
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 1.99-3.1GHz Vertical

Test Freq: 6600 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 7.NOV.2018 20:06:02

| 1990.00 – 3100.00 GHz                  |               |              |                  |     |        |         |              |           |            |
|--|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num                                    | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of limit. |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed   |               |              |                  |     |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

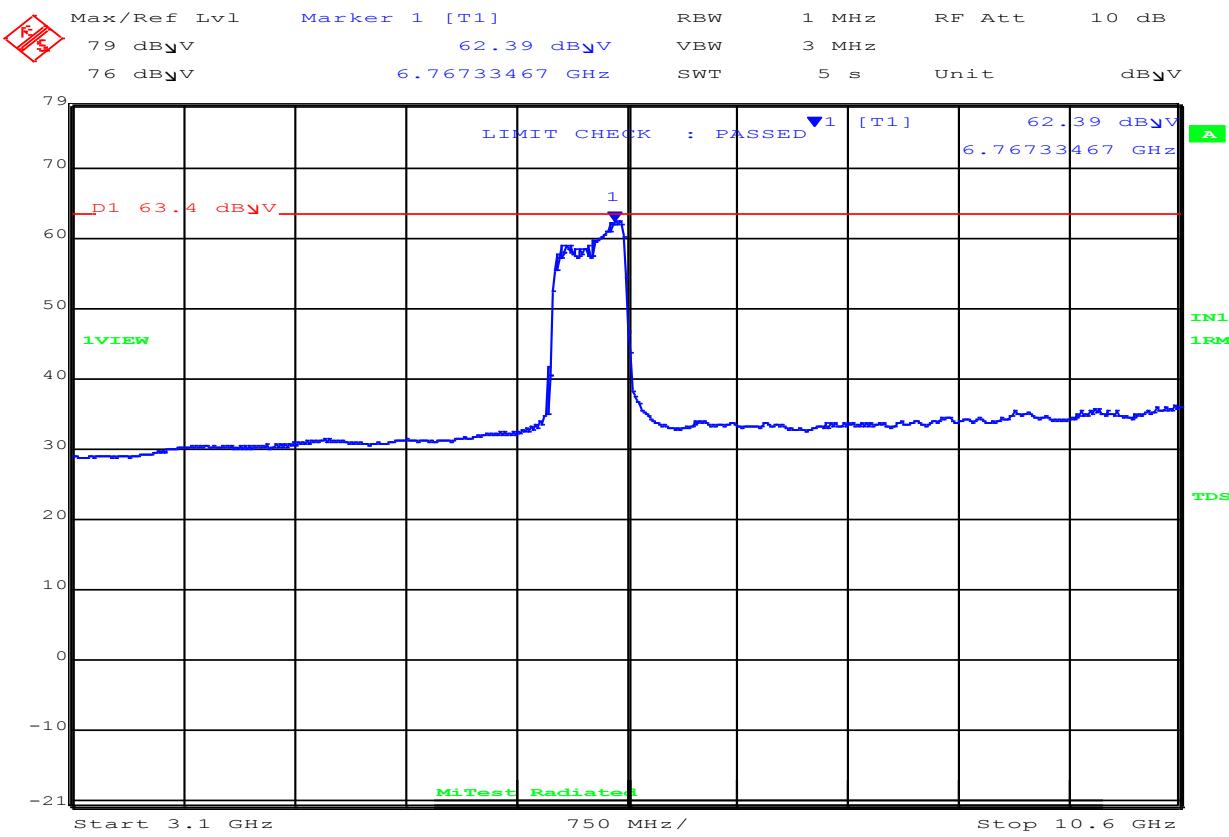
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 3.1-10.6GHz Horizontal

Test Freq: 6600 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 7.NOV.2018 20:01:36

##### 3100.00 - 10600.00 MHz

| Num | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|
| 1   | 6767.3        | 61.5                      | Average          | Horizontal | 150    | 0       | 63.4                      | -1.90     | Pass       |

#### Test Notes:

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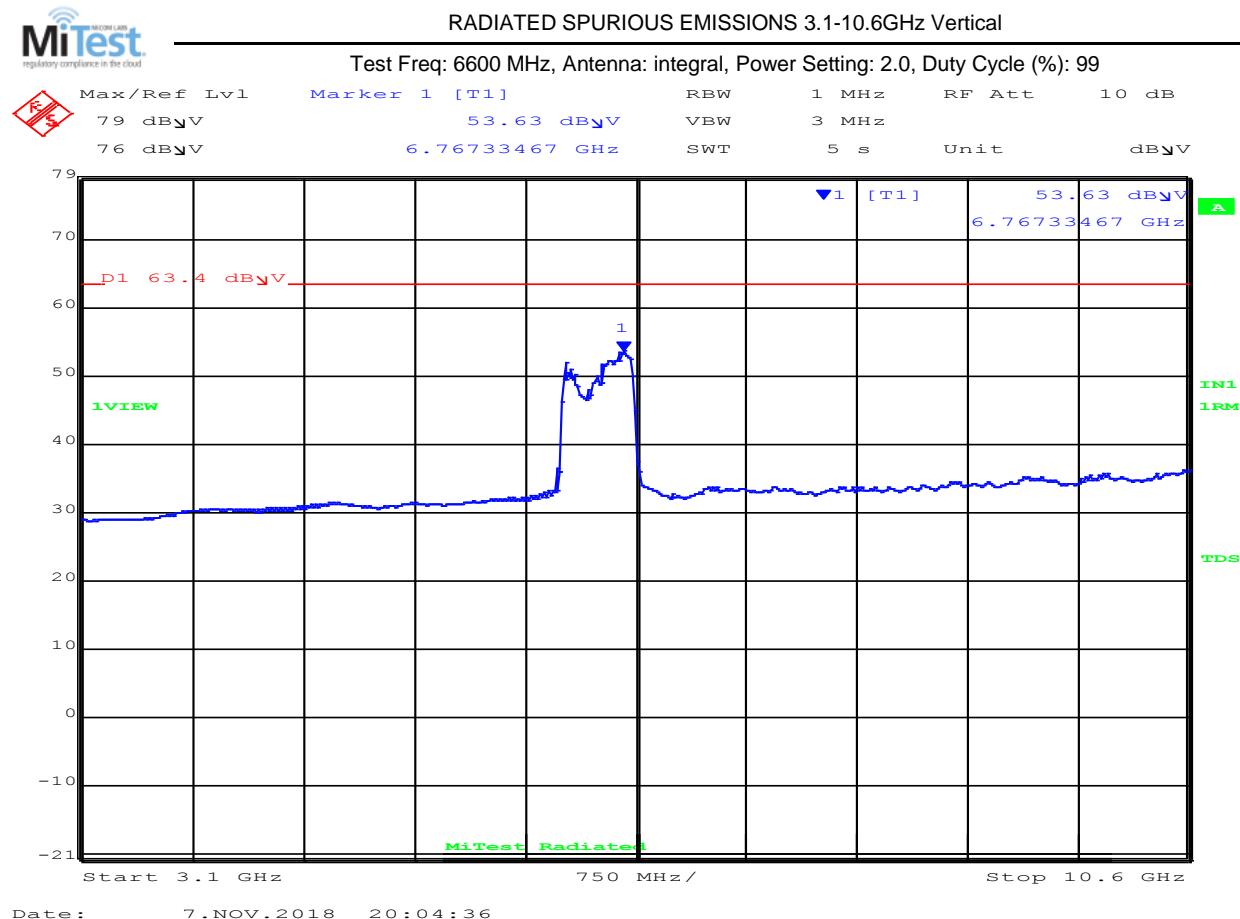


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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz                 |               |                           |                  |     |        |         |                           |           |            |
|--|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                                    | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of limit. |               |                           |                  |     |        |         |                           |           |            |
| Test Notes:                            |               |                           |                  |     |        |         |                           |           |            |

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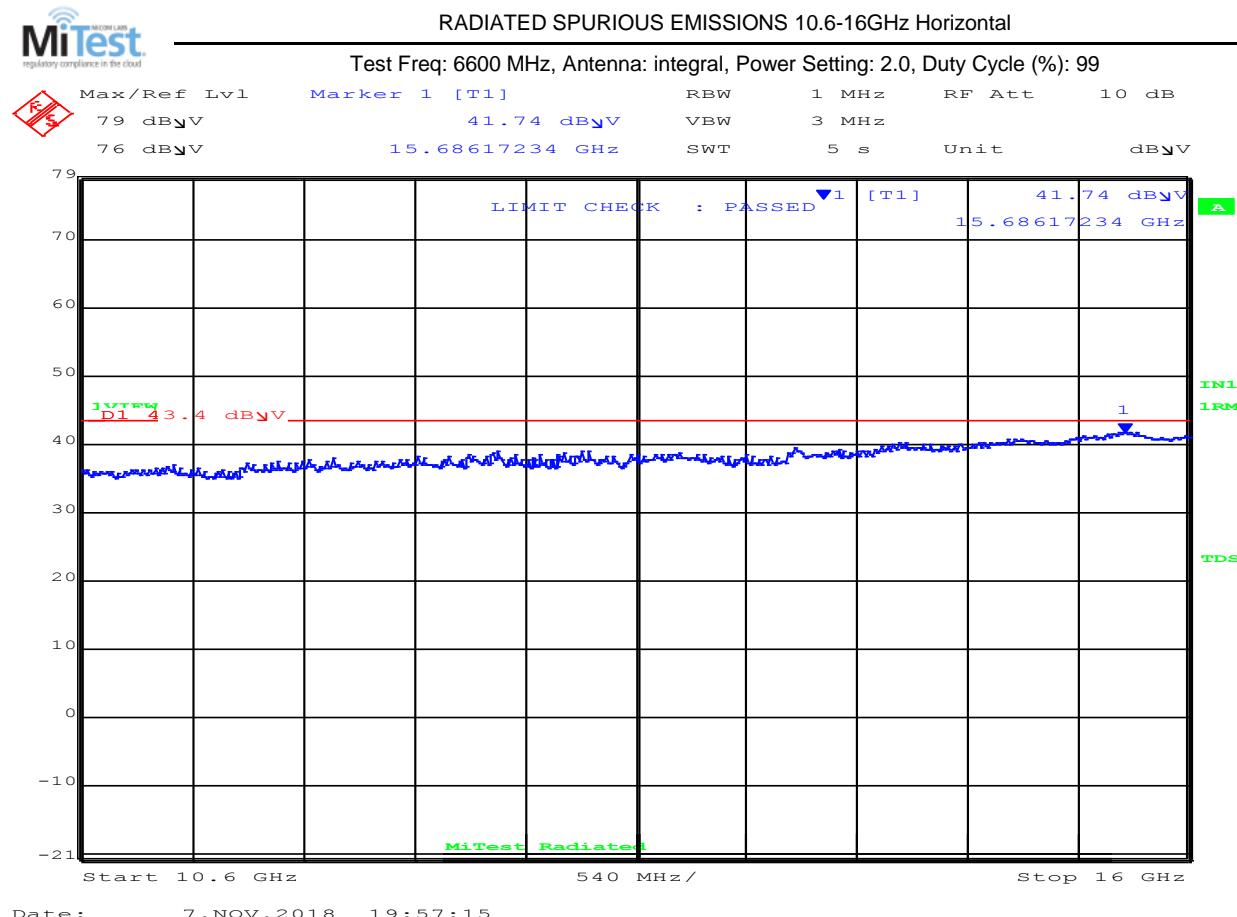


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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



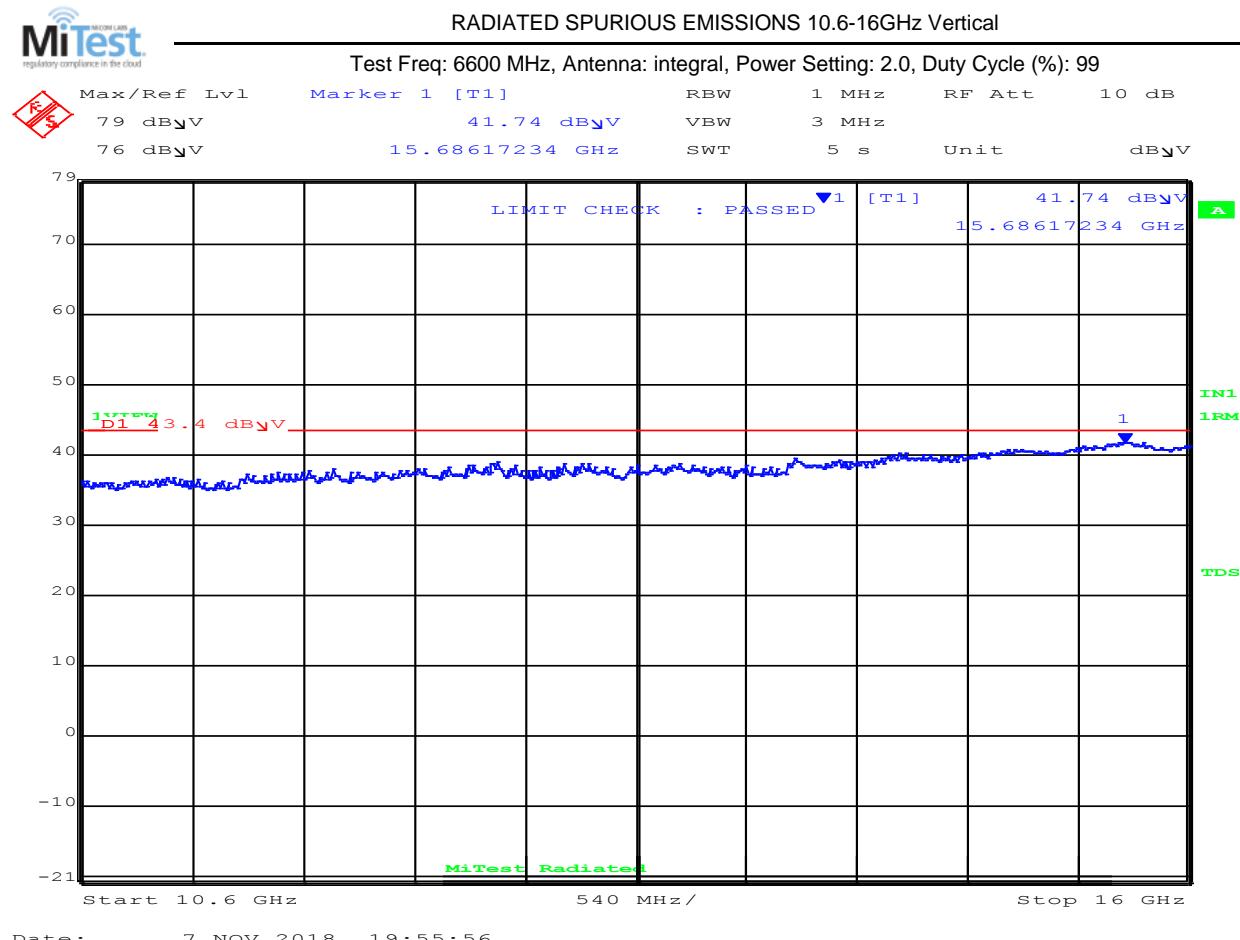
| 10600.00 – 16000.00 GHz |               |                           |                  |            |        |         |                           |           |            |
|-------------------------|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|
| Num                     | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
| 1                       | 15686.2       | 40.4                      | Average          | Horizontal | 150    | 0       | 43.4                      | -3.00     | Pass       |
| Test Notes:             |               |                           |                  |            |        |         |                           |           |            |

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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num                | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| 1                  | 15686.2       | 40.3         | Average          | Vertical | 150    | 0       | 43.4         | -3.10     | Pass       |
| <b>Test Notes:</b> |               |              |                  |          |        |         |              |           |            |

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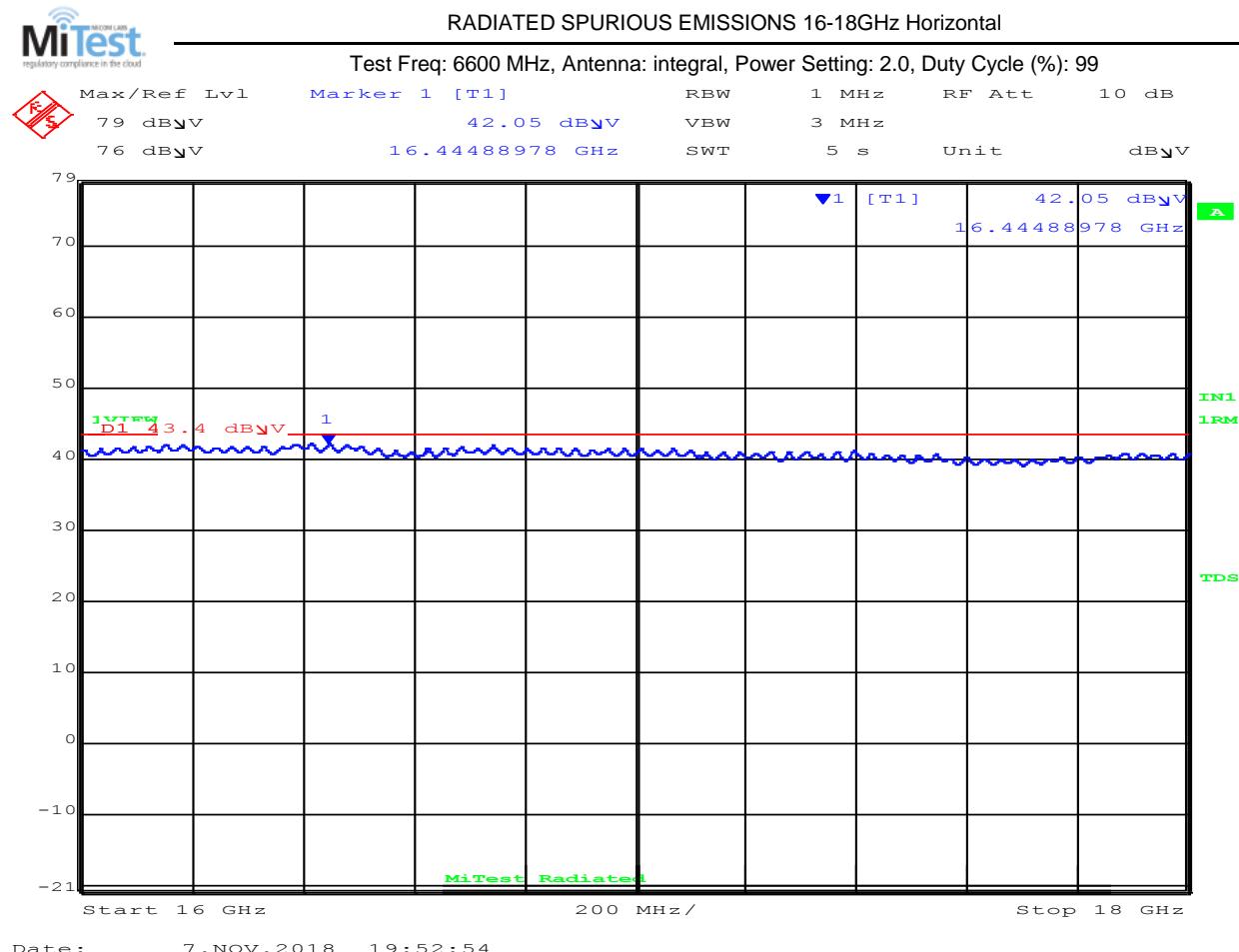


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



Date: 7.NOV.2018 19:52:54

#### 16000.00 – 18000.00 GHz

| Num                | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
|--------------------|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|
| 1                  | 16444.9       | 40.8                      | Average          | Horizontal | 150    | 0       | 43.4                      | -2.60     | Pass       |
| <b>Test Notes:</b> |               |                           |                  |            |        |         |                           |           |            |

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### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

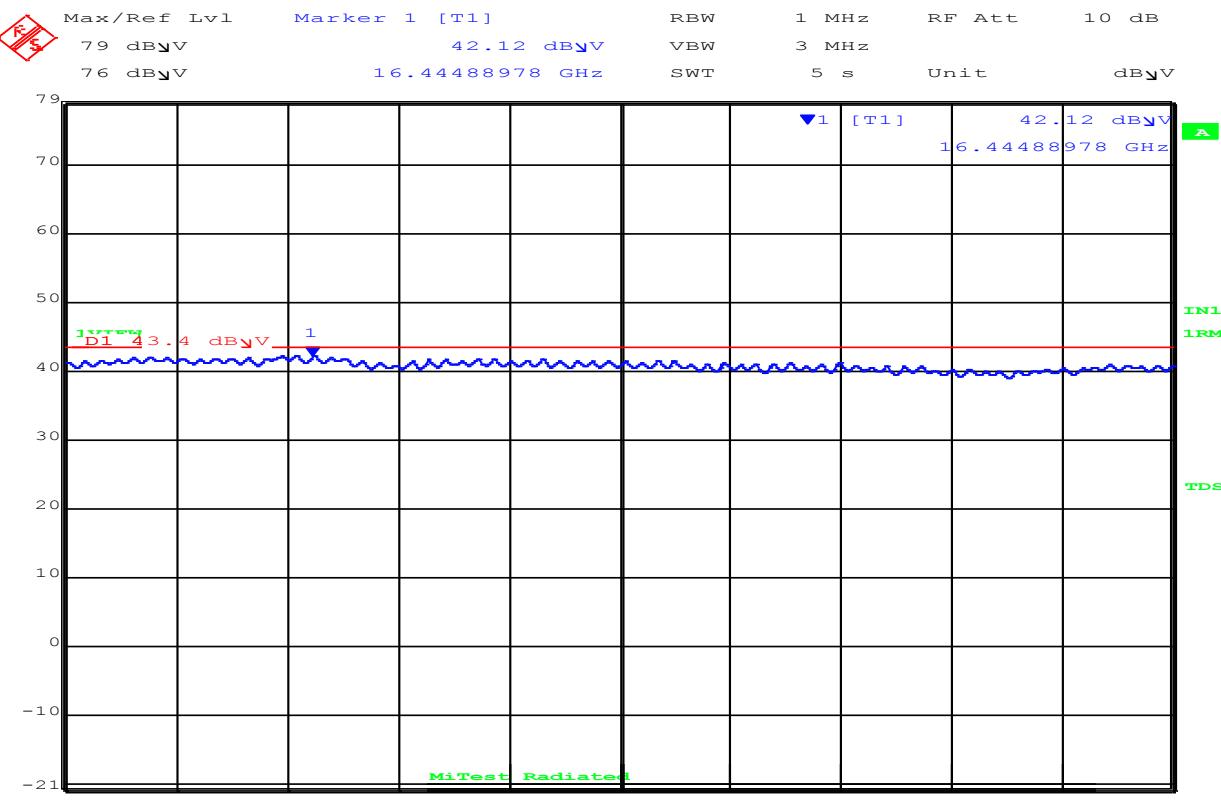
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.2            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 6600.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 16-18GHz Vertical

Test Freq: 6600 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 7.NOV.2018 19:50:56

#### 16000.00 – 18000.00 GHz

| Num                | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1                  | 16444.9       | 40.9               | Average          | Vertical | 150    | 0       | 43.4               | -2.50     | Pass       |
| <b>Test Notes:</b> |               |                    |                  |          |        |         |                    |           |            |

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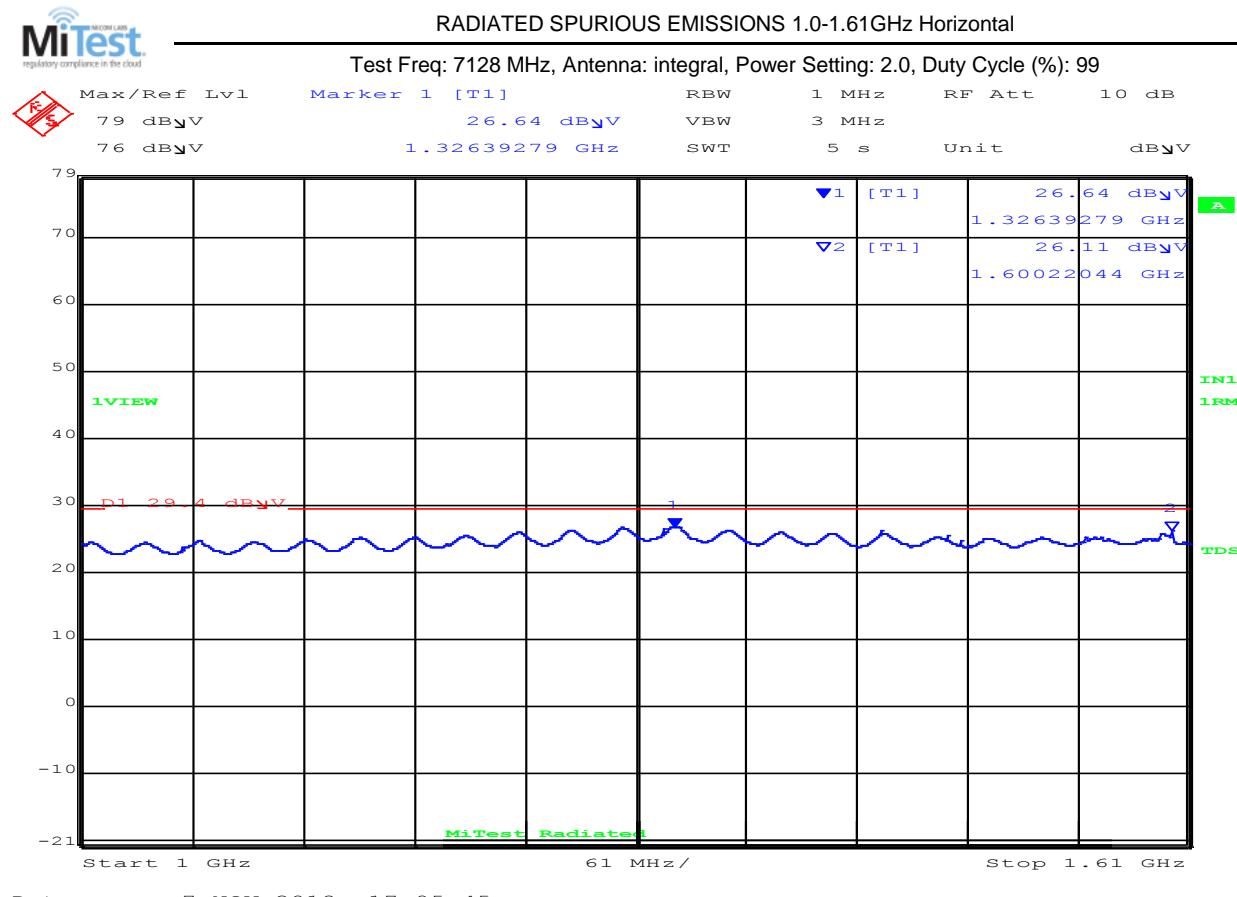
**Title:** Alereon AL5955, AL5930, AL5934  
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7128 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 1000.00– 1610.00 MHz |               |              |                  |            |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1326.4        | 24.9         | Average          | Horizontal | 150    | 0       | 29.4         | -4.50     | Pass       |
| 2                    | 1600.2        | 26.1         | Average          | Horizontal | 150    | 0       | 29.4         | -3.30     | Pass       |

**Test Notes:**  
Laptop Removed

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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

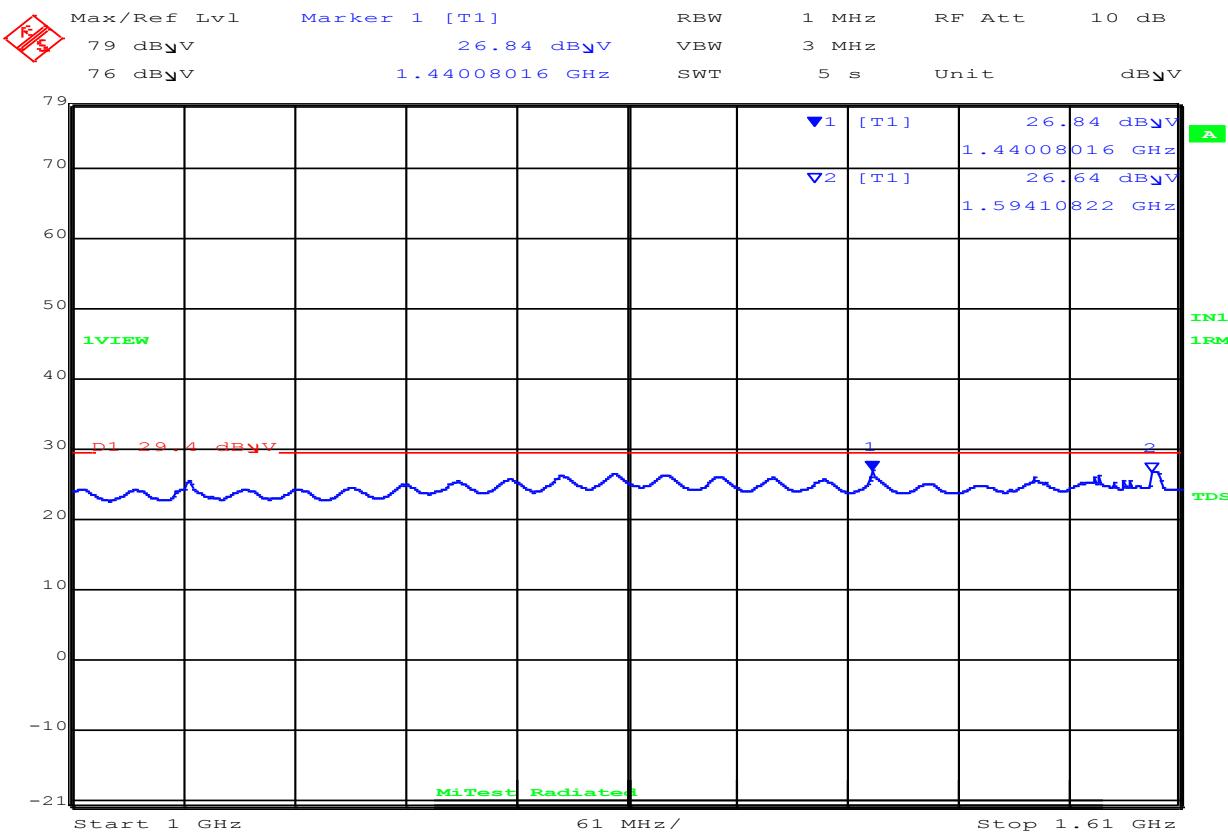
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 1.0-1.61GHz Vertical

Test Freq: 7128 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 7.NOV.2018 17:14:57

#### 1000.00–1610.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| 1   | 1440.1        | 25.7         | Average          | Vertical | 150    | 0       | 29.4         | -3.70     | Pass       |
| 2   | 1594.1        | 25.4         | Average          | Vertical | 150    | 0       | 29.4         | -4.00     | Pass       |

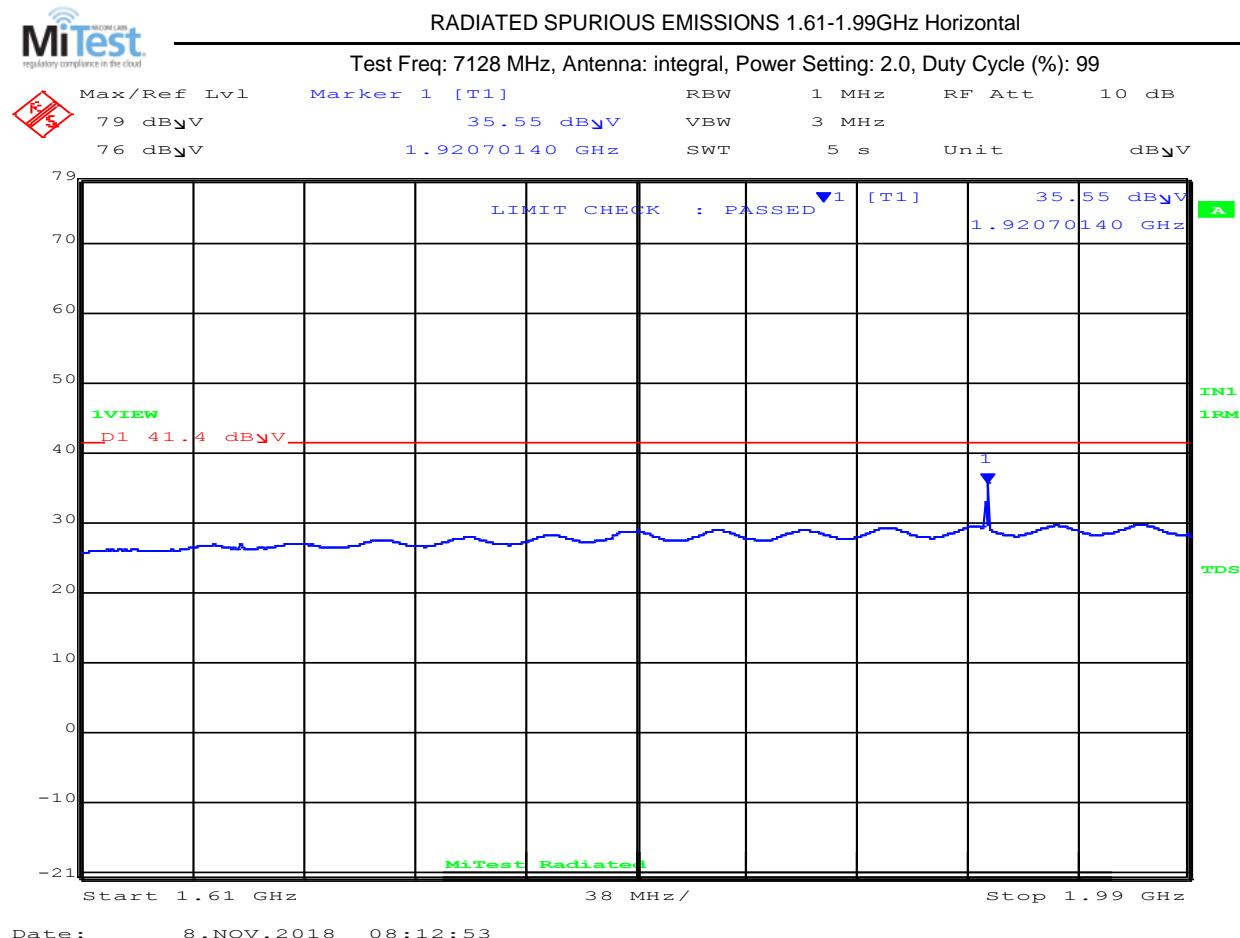
**Test Notes:**  
Laptop Removed

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### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 1610.00 – 1990.00 MHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 1920.7        | 35.7               | Average          | Horizontal | 150    | 0       | 41.4               | -5.70     | Pass       |

**Test Notes:**  
Laptop Removed

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#### Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical

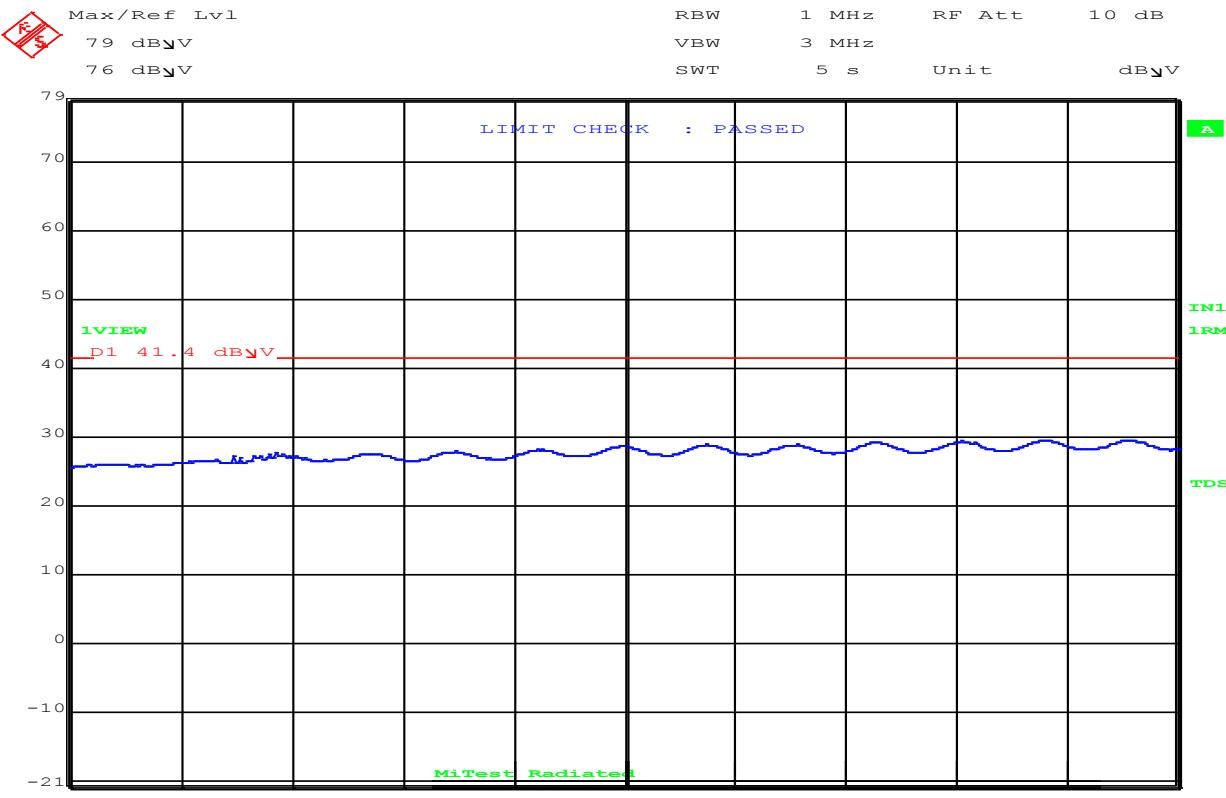
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 1.61-1.99GHz Vertical

Test Freq: 7128 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 8.NOV.2018 08:15:52

#### 1610.00 – 1990.00 MHz

| Num                                   | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------------|------------------|-----|--------|---------|--------------------|-----------|------------|
| No Signals found within 6 dB of Limit |               |                    |                  |     |        |         |                    |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |                    |                  |     |        |         |                    |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

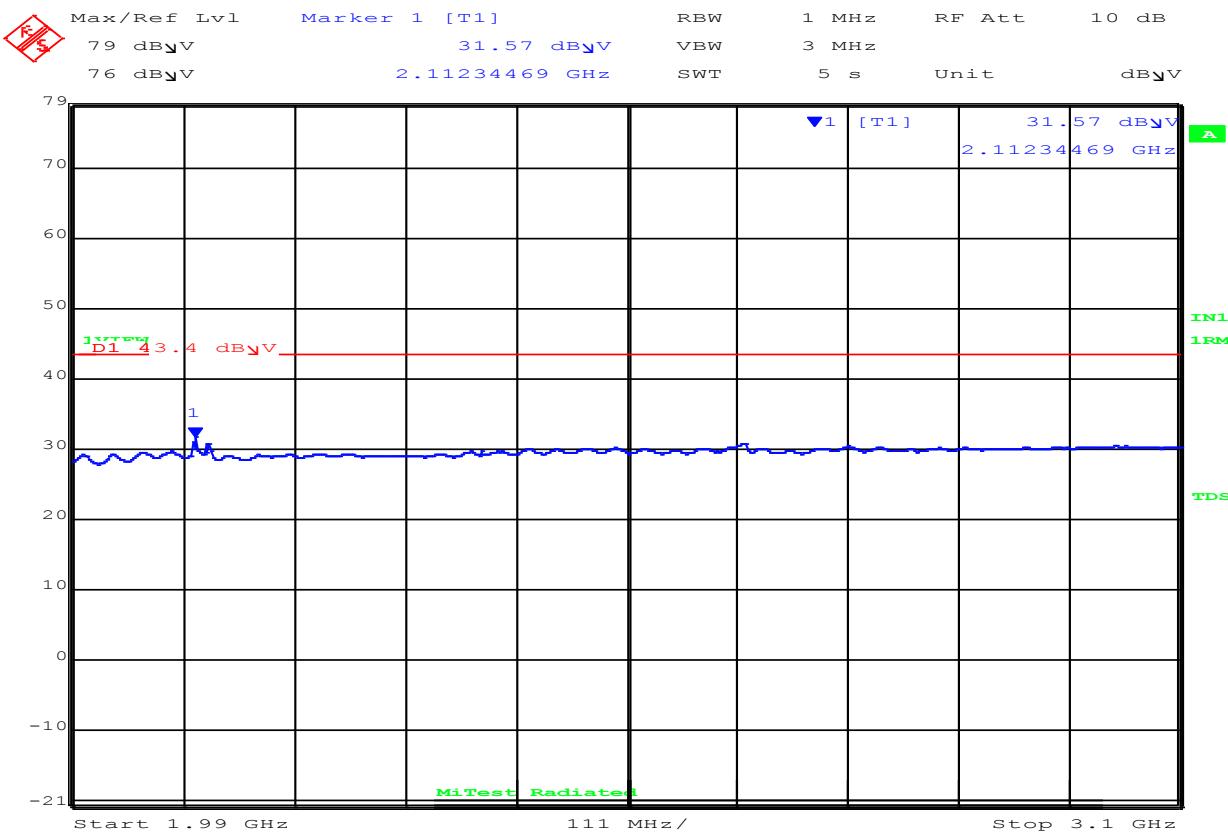
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 1.99-1.31GHz Horizontal

Test Freq: 7128 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



#### 1990.00 – 3100.00 GHz

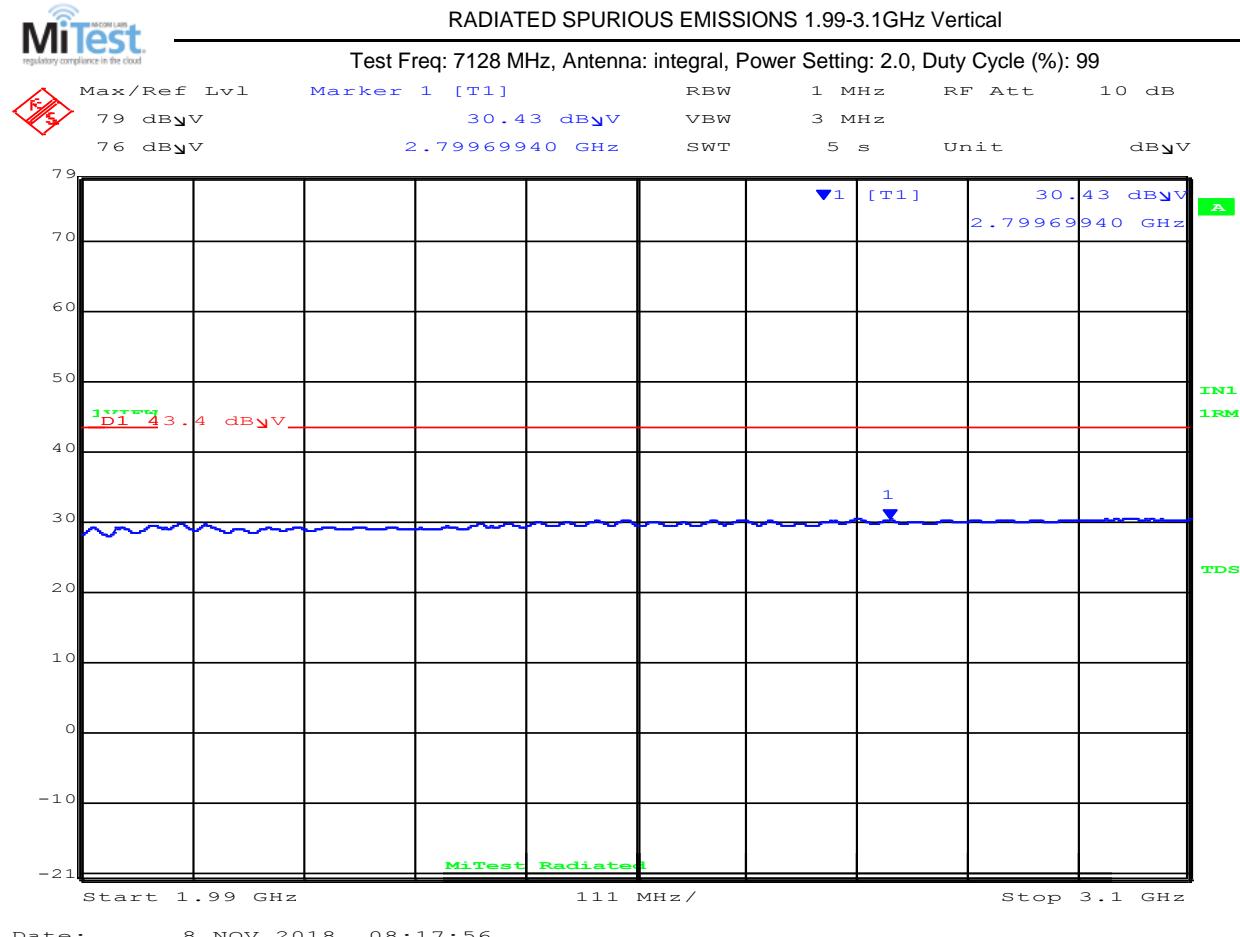
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 1990.00 – 3100.00 GHz                 |               |              |                  |     |        |         |              |           |            |  |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |  |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |  |

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

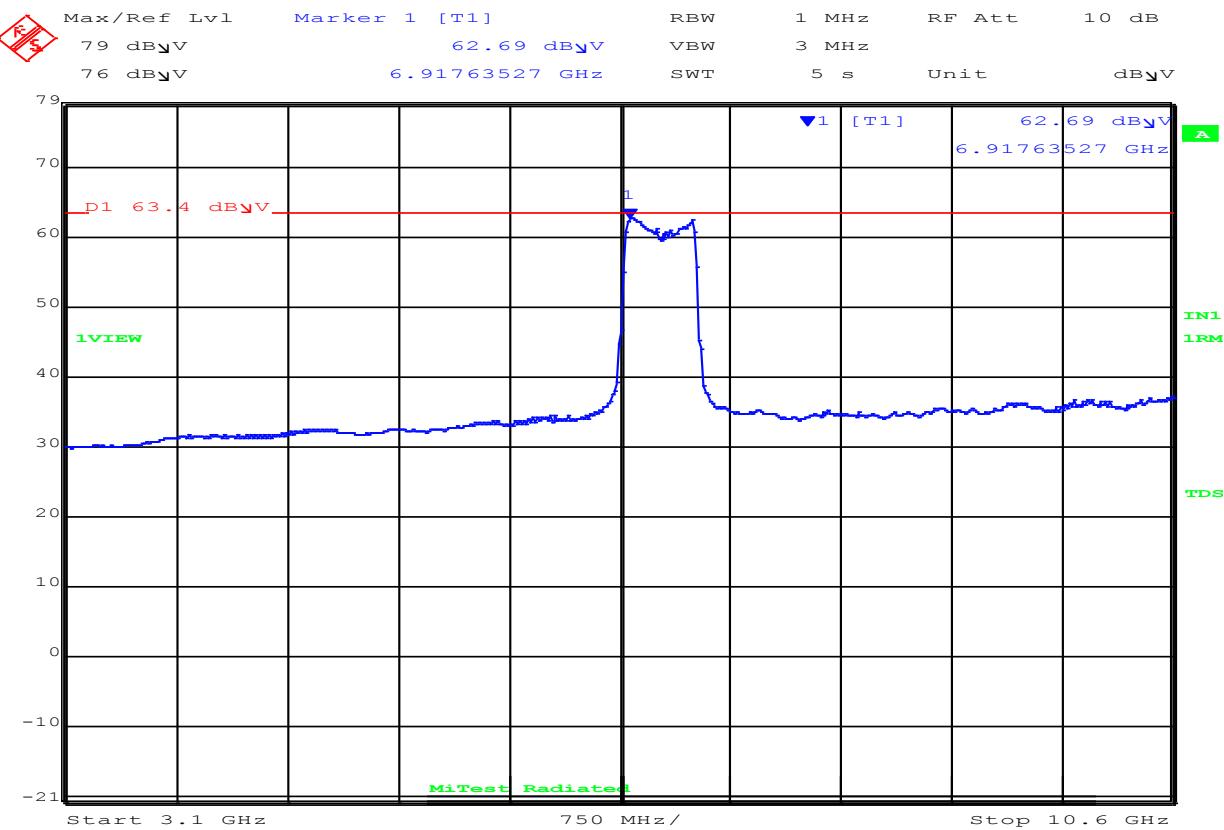
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 3.1-10.6GHz Horizontal

Test Freq: 7128 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 8.NOV.2018 08:21:19

#### 3100.00 - 10600.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 6917.6        | 61.8         | Average          | Horizontal | 150    | 0       | 63.4         | -1.60     | Pass       |

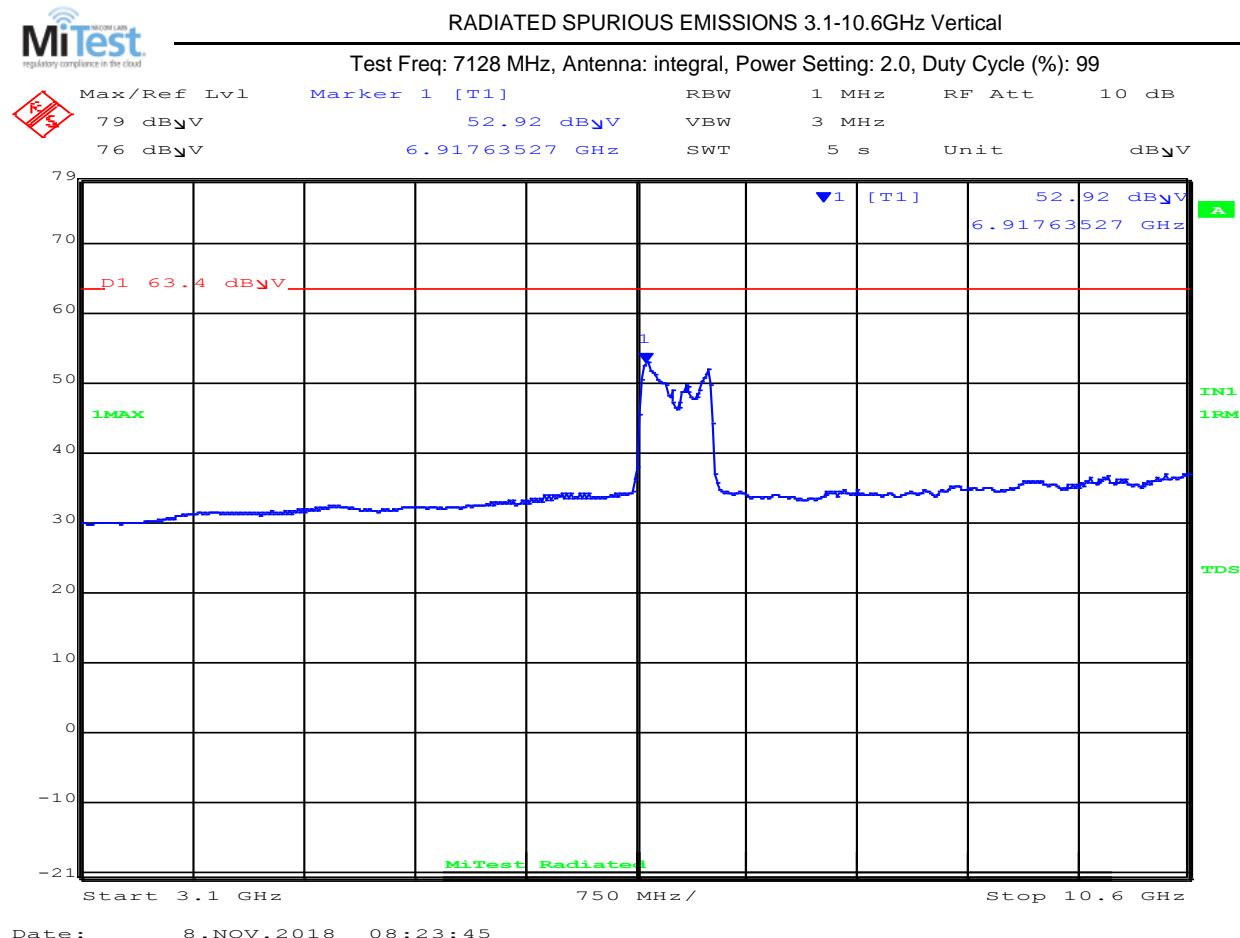
**Test Notes:**

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz                |               |                           |                  |     |        |         |                           |           |            |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                                   | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |
| <b>Test Notes:</b>                    |               |                           |                  |     |        |         |                           |           |            |

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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

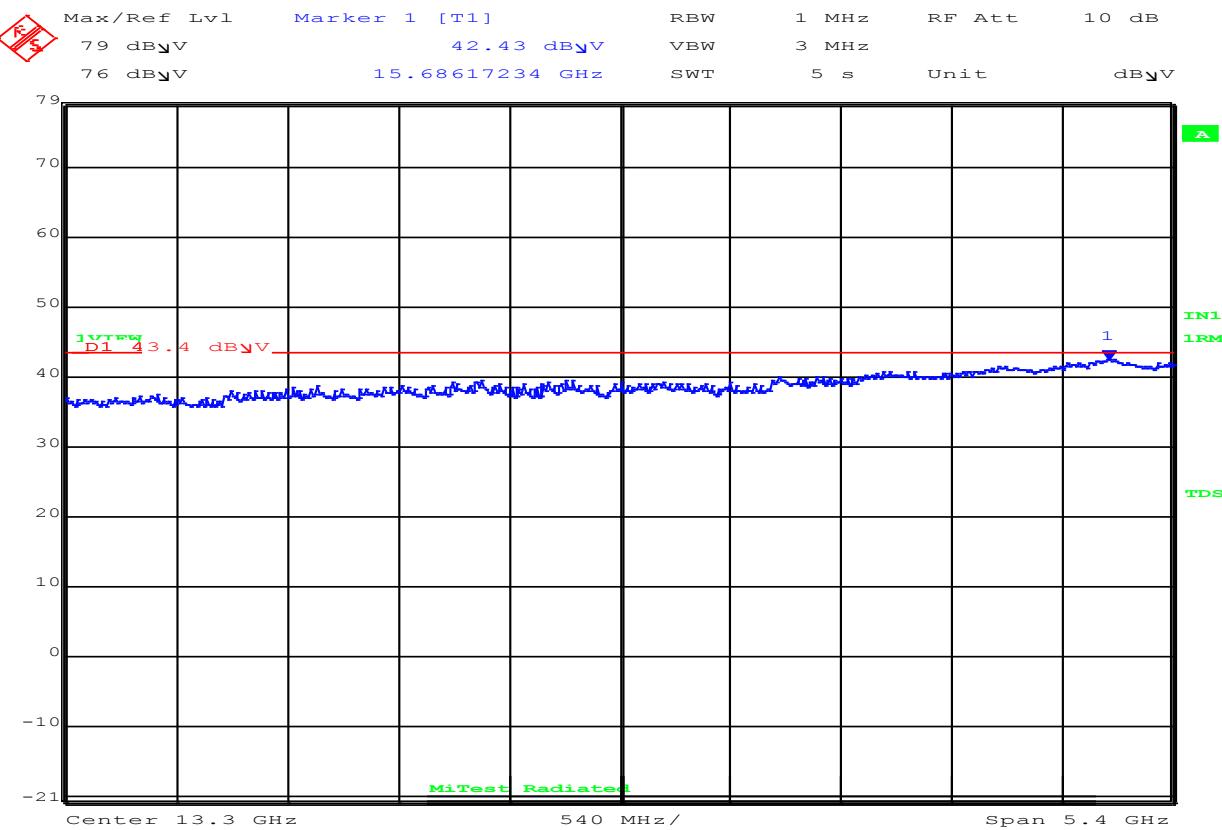
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 10.6-16GHz Horizontal

Test Freq: 7128 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 8.NOV.2018 08:37:00

#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 15686.2       | 41.0         | Average          | Horizontal | 150    | 0       | 43.4         | -2.40     | Pass       |

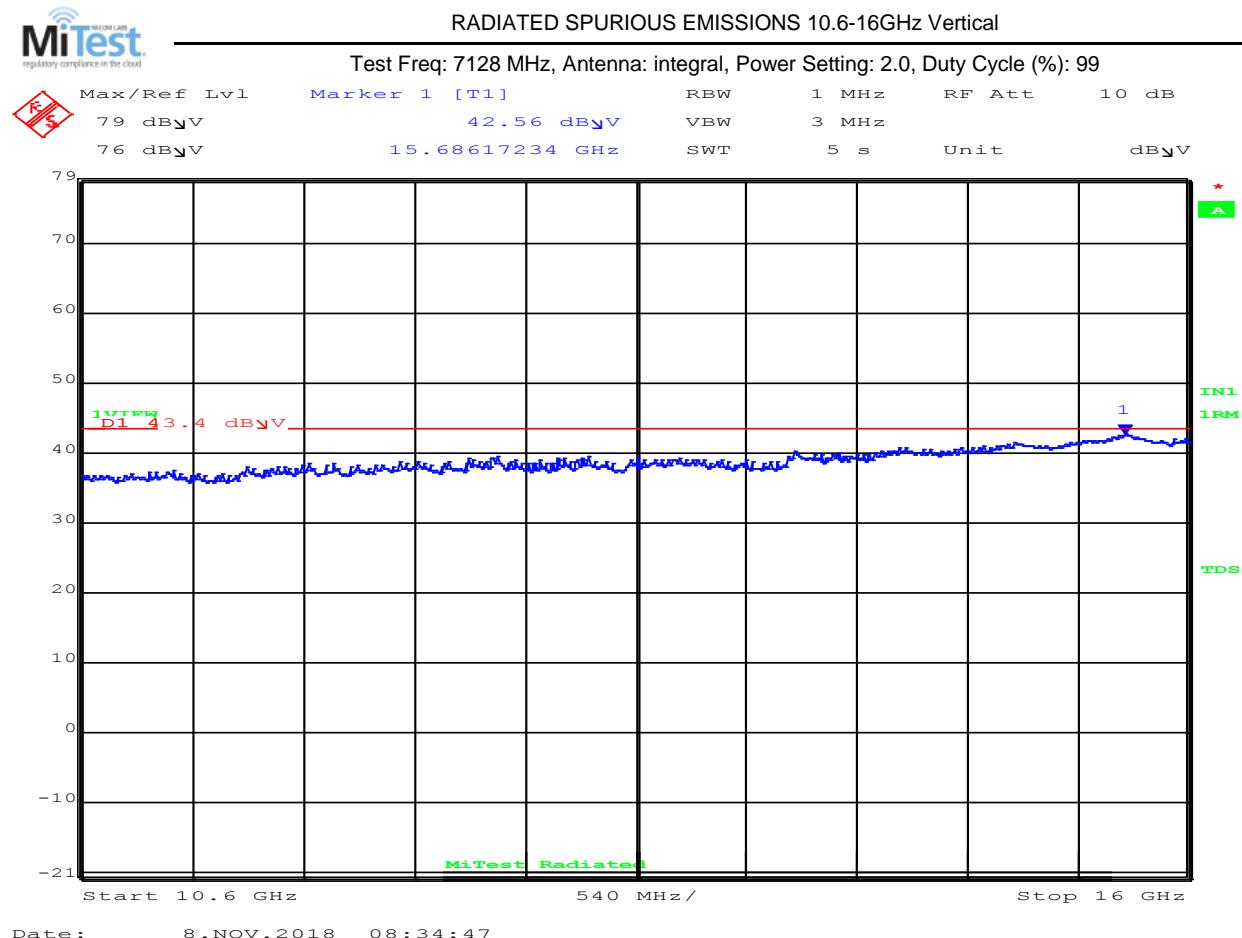
**Test Notes:**

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**Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



| 10600.00 – 16000.00 GHz |               |              |                  |          |        |         |              |           |            |  |
|-------------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|--|
| Num                     | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| 1                       | 15686.2       | 41.1         | Average          | Vertical | 150    | 0       | 43.4         | -2.30     | Pass       |  |
| <b>Test Notes:</b>      |               |              |                  |          |        |         |              |           |            |  |

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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

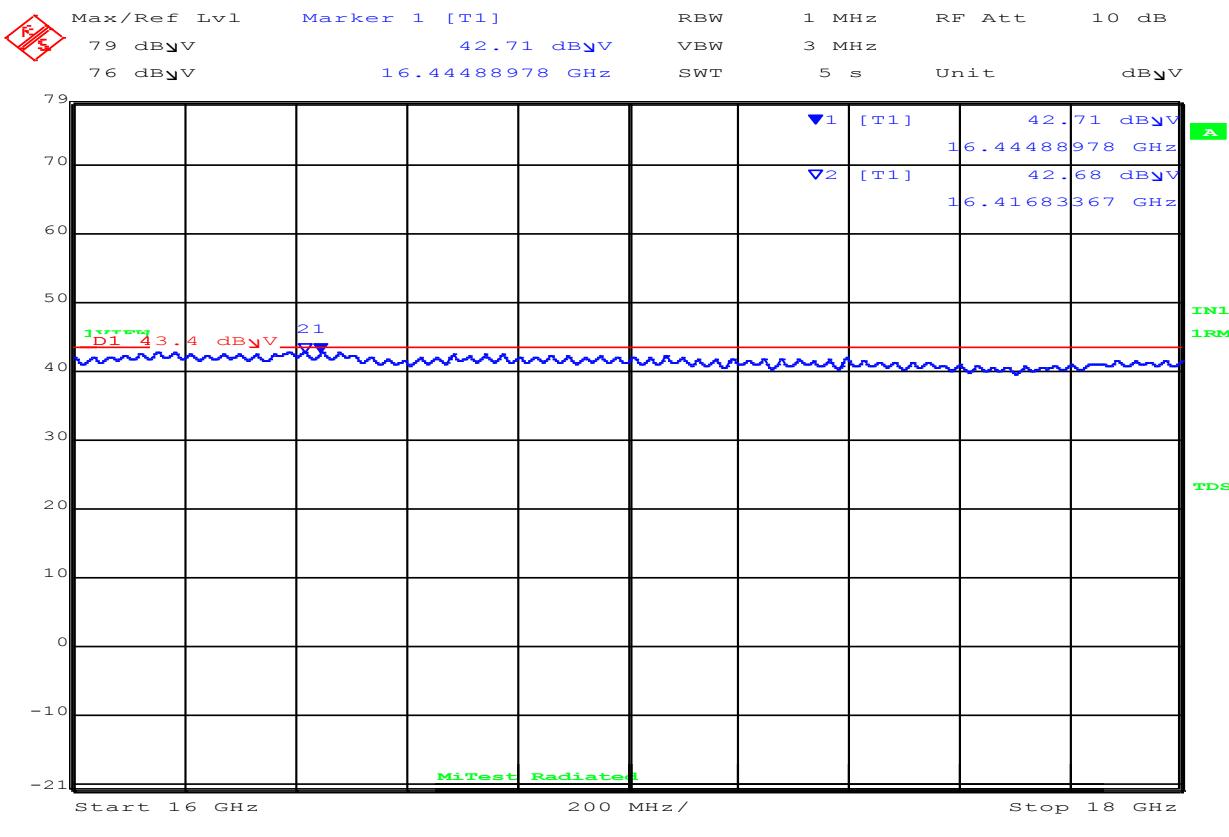
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 16-18GHz Horizontal

Test Freq: 7128 MHz, Antenna: integral, Power Setting: 2.0, Duty Cycle (%): 99



Date: 8.NOV.2018 08:38:53

#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|
| 1   | 16448.9       | 41.5                      | Average          | Horizontal | 150    | 0       | 43.4                      | -1.90     | Pass       |
| 2   | 16416.8       | 41.6                      | Average          | Horizontal | 150    | 0       | 43.4                      | -1.80     | Pass       |

#### Test Notes:

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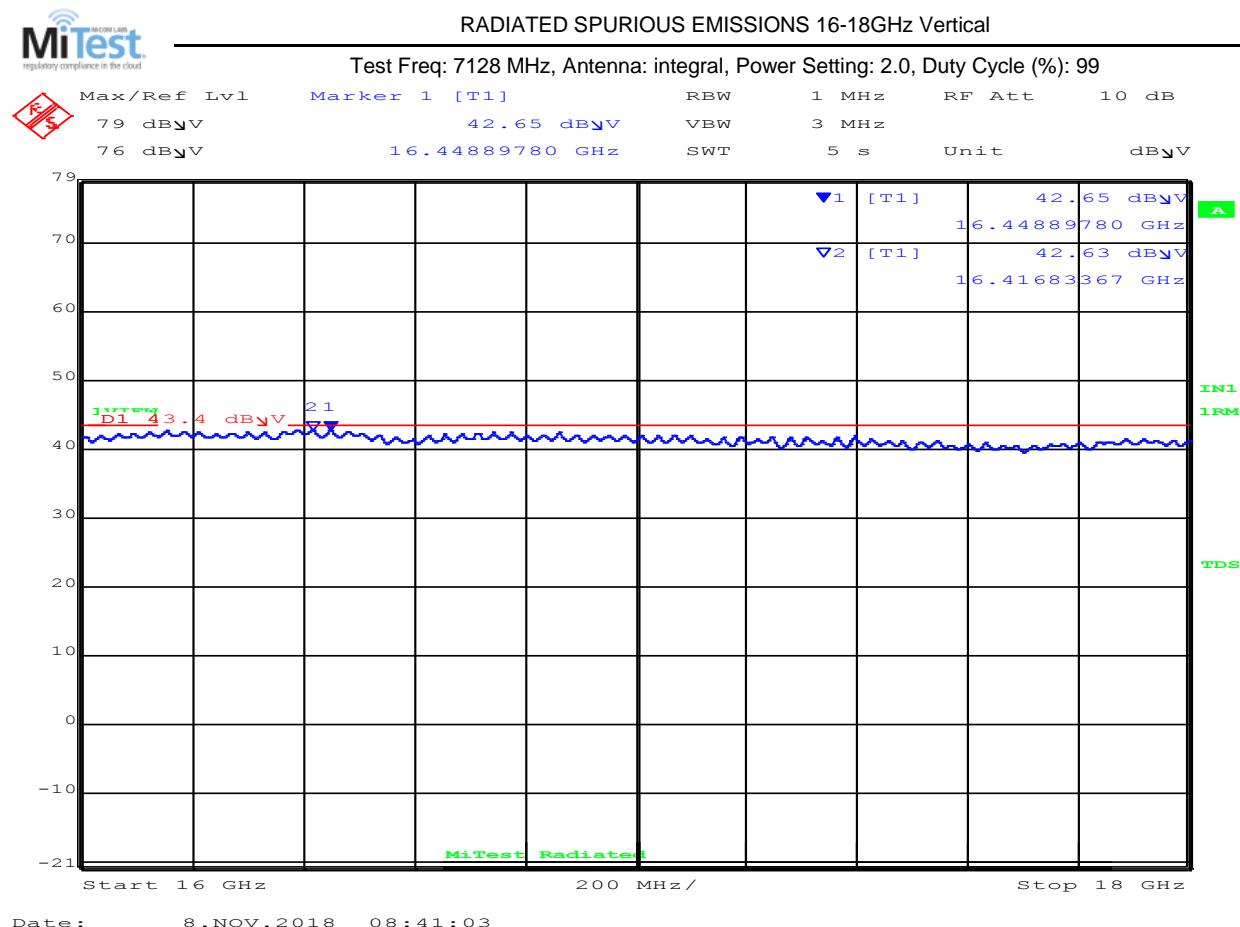


**Title:** Alereon AL5955, AL5930, AL5934  
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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -0.2           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7128.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 2.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



Date: 8.NOV.2018 08:41:03

#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|----------|--------|---------|---------------------------|-----------|------------|
| 1   | 16448.9       | 41.6                      | Average          | Vertical | 150    | 0       | 43.4                      | -1.80     | Pass       |
| 2   | 16416.8       | 41.7                      | Average          | Vertical | 150    | 0       | 43.4                      | -1.70     | Pass       |

#### Test Notes:

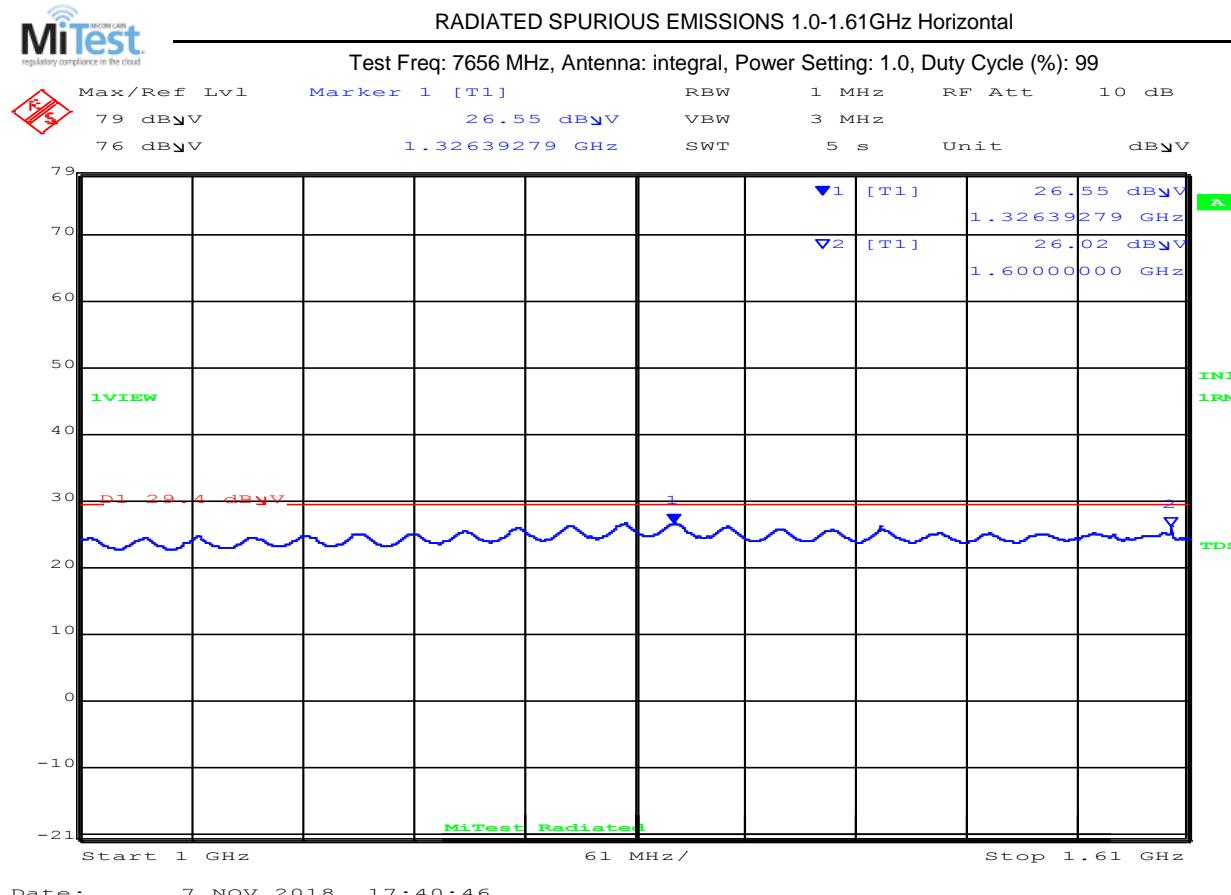
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7656 MHz (Covers Band Group 3 TFC 7 and Band Group 6 TFC 5)

**Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



| 1000.00– 1610.00 MHz |               |              |                  |            |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1326.4        | 24.8         | Average          | Horizontal | 150    | 0       | 29.4         | -4.60     | Pass       |
| 2                    | 1600.0        | 26.9         | Average          | Horizontal | 150    | 0       | 29.4         | -2.50     | Pass       |

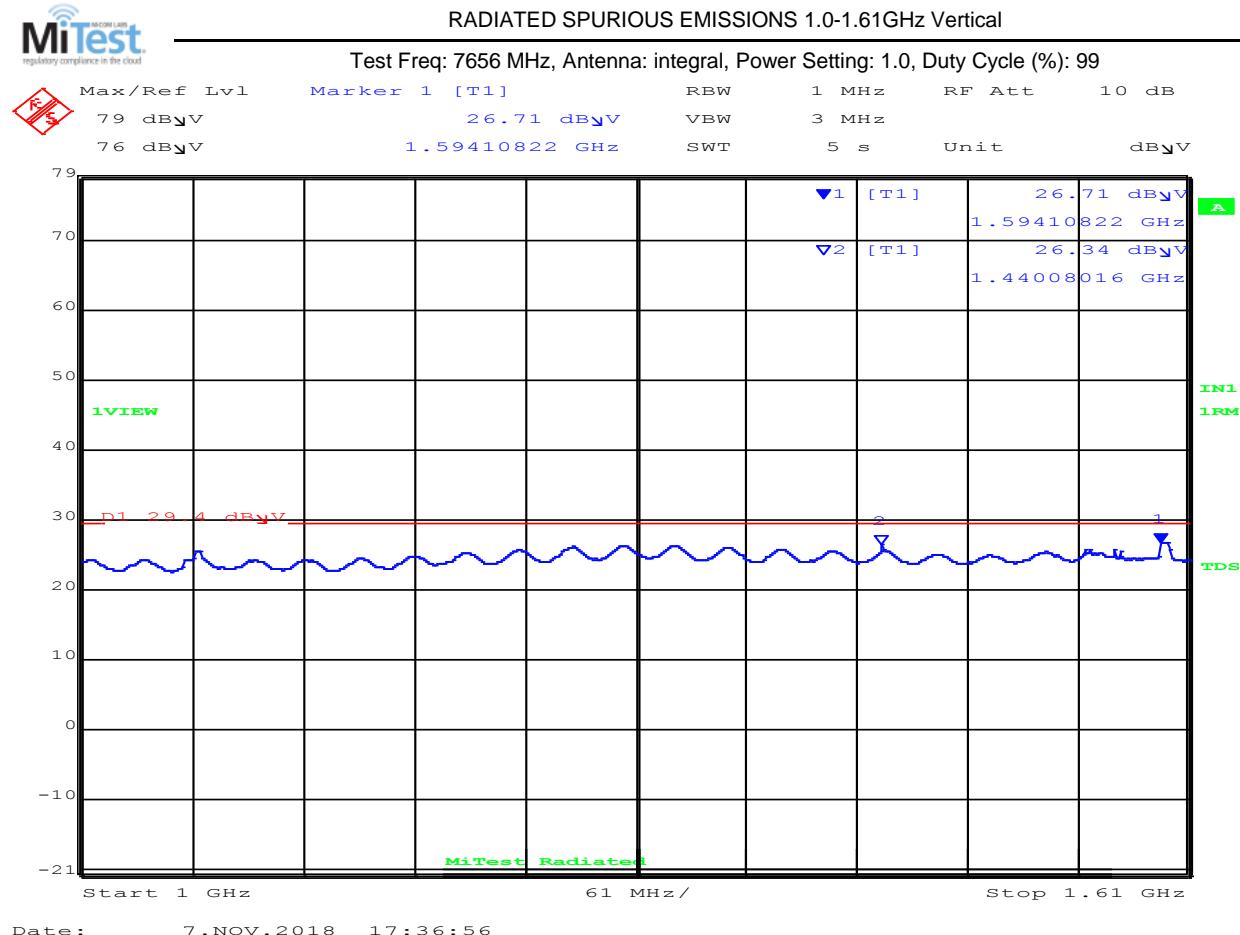
**Test Notes:**  
Laptop Removed

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### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 1000.00– 1610.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| 1   | 1594.1        | 25.0         | Average          | Vertical | 150    | 0       | 29.4         | -4.40     | Pass       |
| 2   | 1440.1        | 25.8         | Average          | Vertical | 150    | 0       | 29.4         | -3.60     | Pass       |

**Test Notes:**  
Laptop Removed

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**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

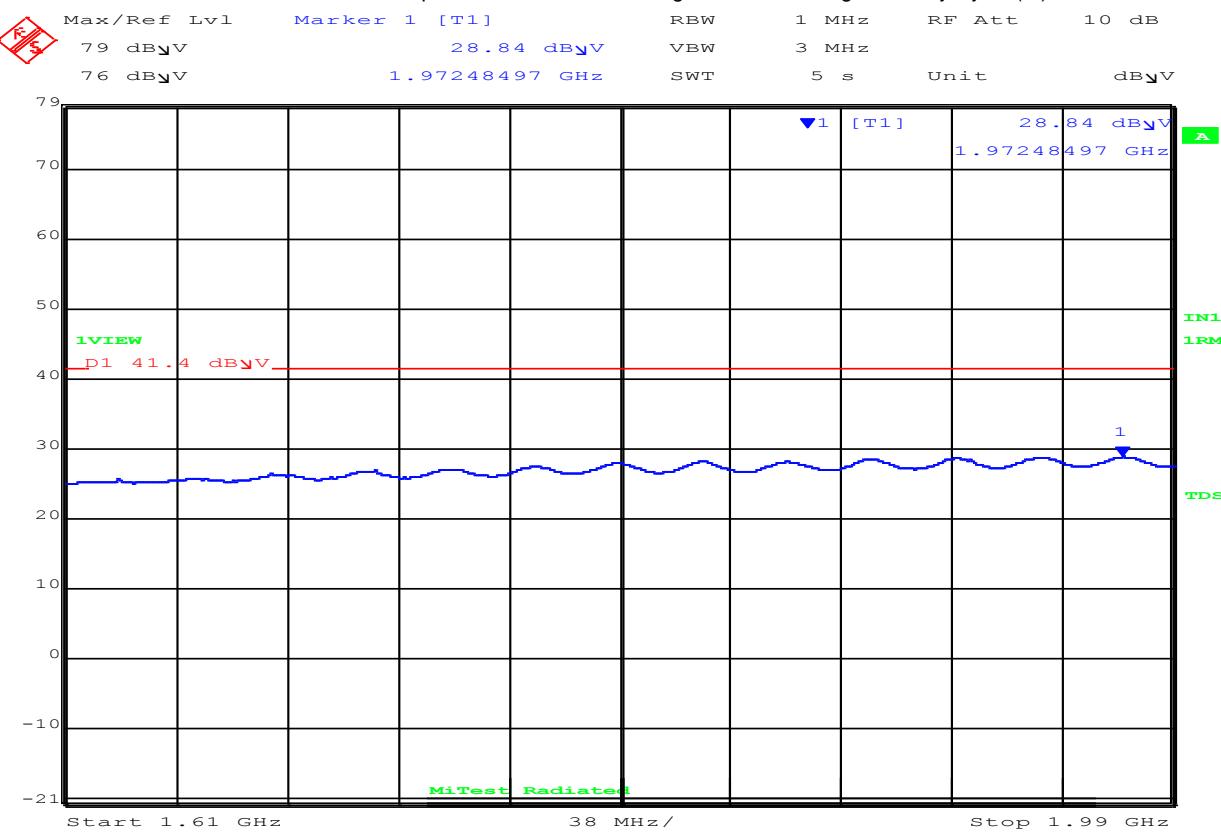
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 1.61-1.99GHz Horizontal

Test Freq: 7656 MHz, Antenna: integral, Power Setting: 1.0, Duty Cycle (%): 99



Date: 8.NOV.2018 09:02:23

#### 1610.00 – 1990.00 MHz

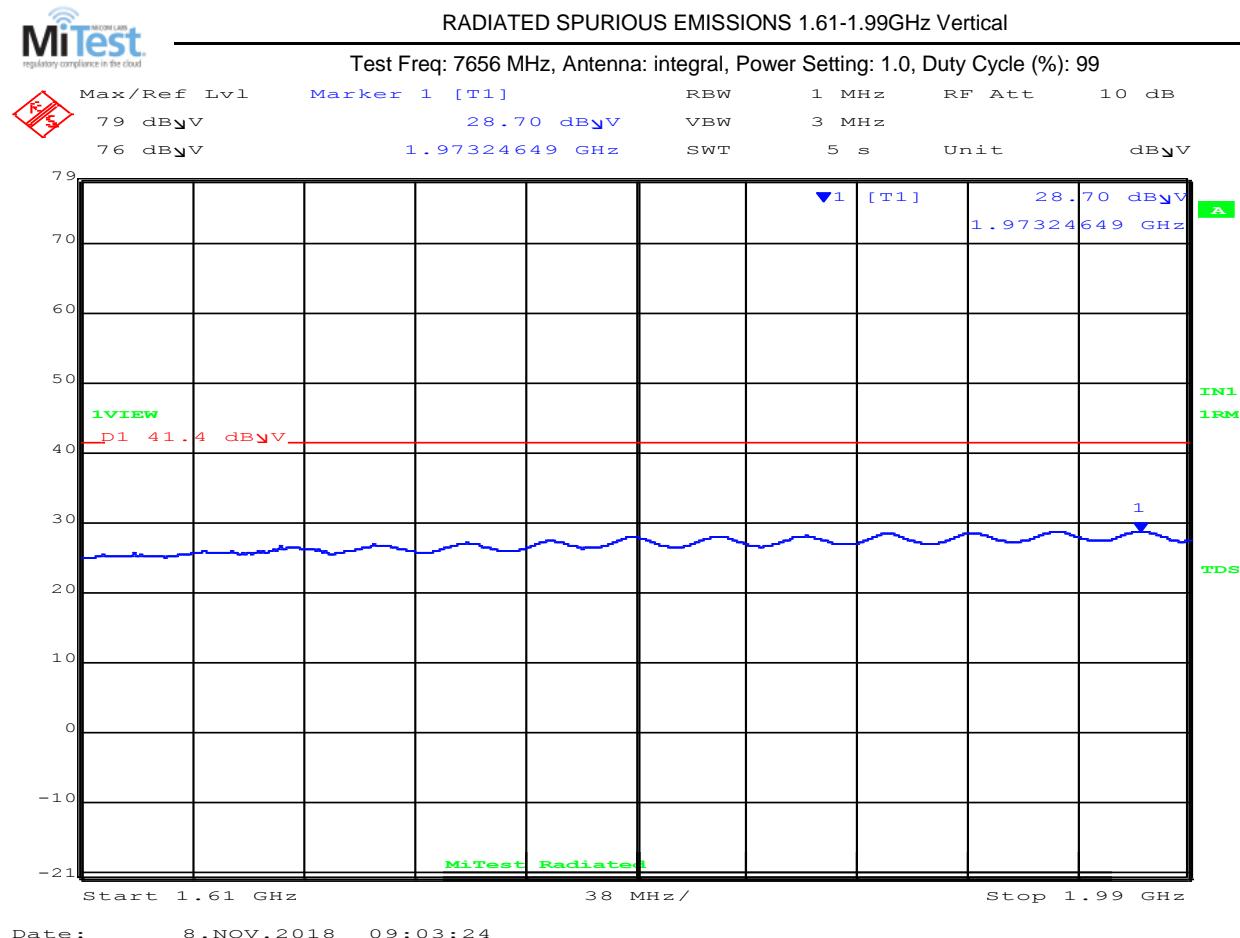
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals found within 6 dB of limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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**Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



| 1610.00 – 1990.00 MHz                 |               |              |                  |     |        |         |              |           |            |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

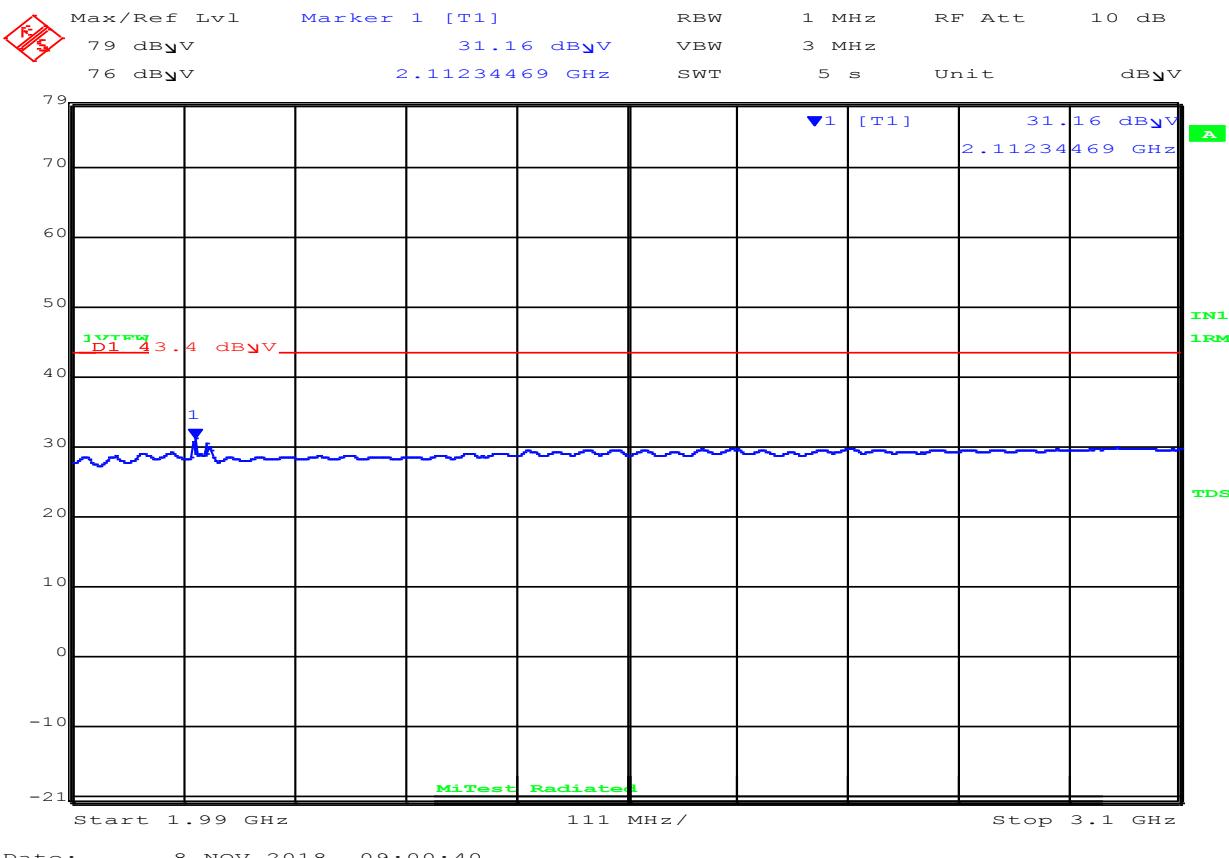
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 1.99-3.1GHz Horizontal

Test Freq: 7656 MHz, Antenna: integral, Power Setting: 1.0, Duty Cycle (%): 99



##### 1990.00 – 3100.00 GHz

| Num                                   | Frequency MHz | Level dBμV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBμV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals found within 6 dB of limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

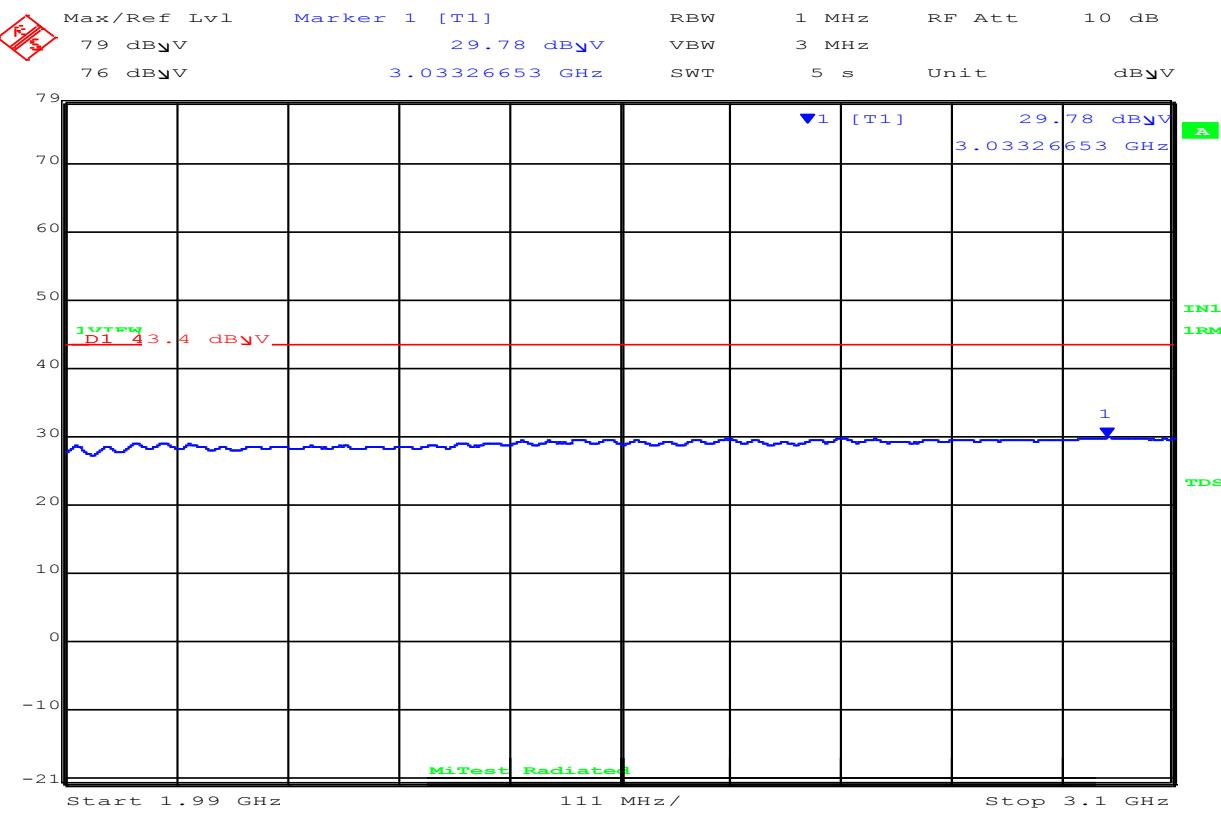
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 1.99-3.1GHz Vertical

Test Freq: 7656 MHz, Antenna: integral, Power Setting: 1.0, Duty Cycle (%): 99



Date: 8.NOV.2018 08:59:35

#### 1990.00 – 3100.00 GHz

| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals found within 6 dB of limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

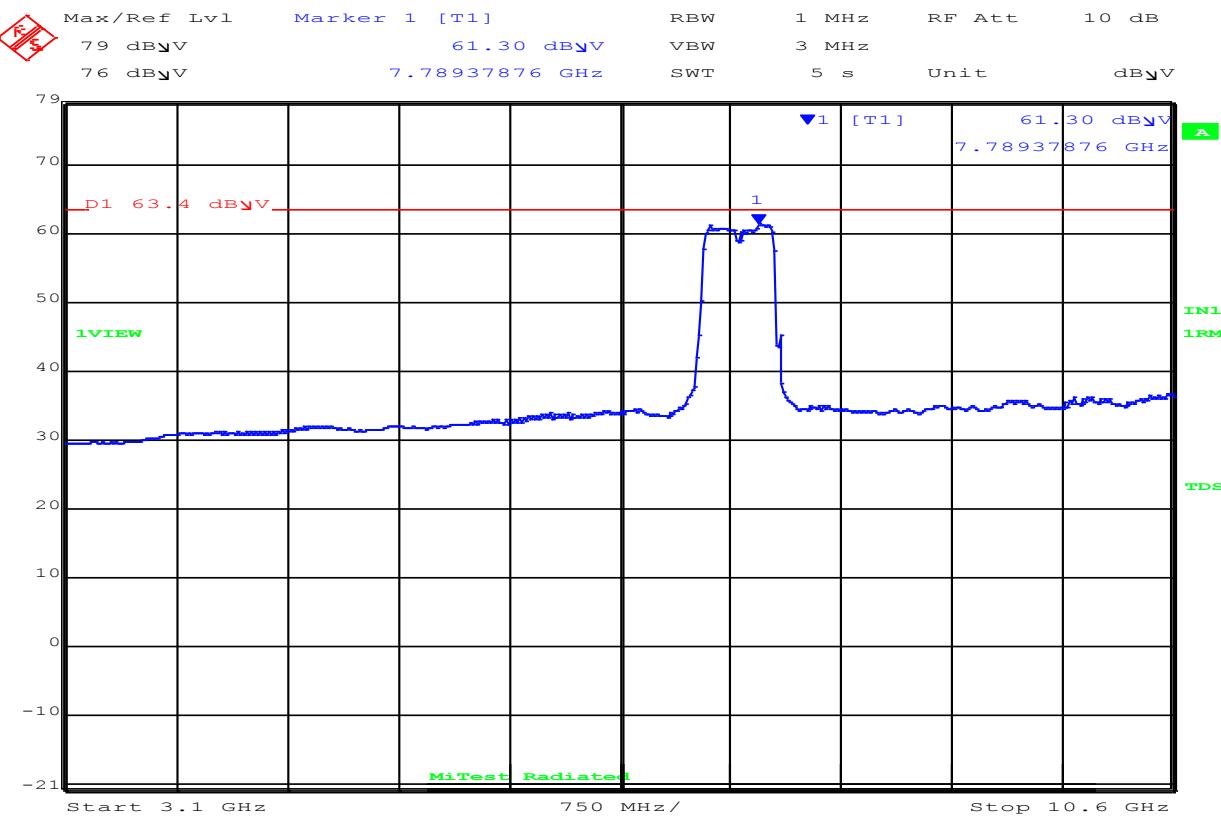
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 3.1-10.6GHz Horizontal

Test Freq: 7656 MHz, Antenna: integral, Power Setting: 1.0, Duty Cycle (%): 99



Date: 8.NOV.2018 08:55:56

#### 3100.00 - 10600.00 MHz

| Num                | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1                  | 7789.4        | 58.6               | Average          | Horizontal | 150    | 0       | 63.4               | -4.80     | Pass       |
| <b>Test Notes:</b> |               |                    |                  |            |        |         |                    |           |            |

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#### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

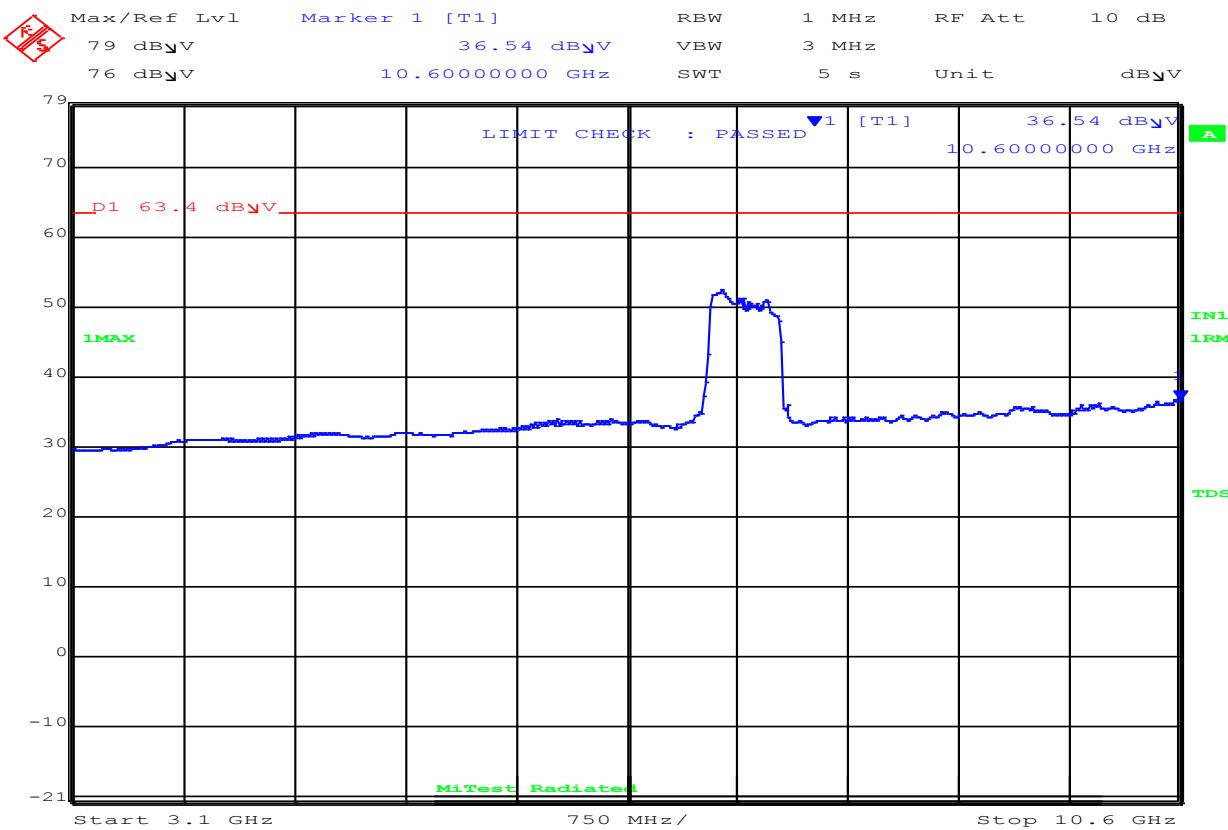
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 3.1-10.6GHz Vertical

Test Freq: 7656 MHz, Antenna: integral, Power Setting: 1.0, Duty Cycle (%): 99



Date: 8.NOV.2018 08:54:05

#### 3100.00 - 10600.00 MHz

| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals found within 6 dB of limit |               |              |                  |     |        |         |              |           |            |
| Test Notes:                           |               |              |                  |     |        |         |              |           |            |

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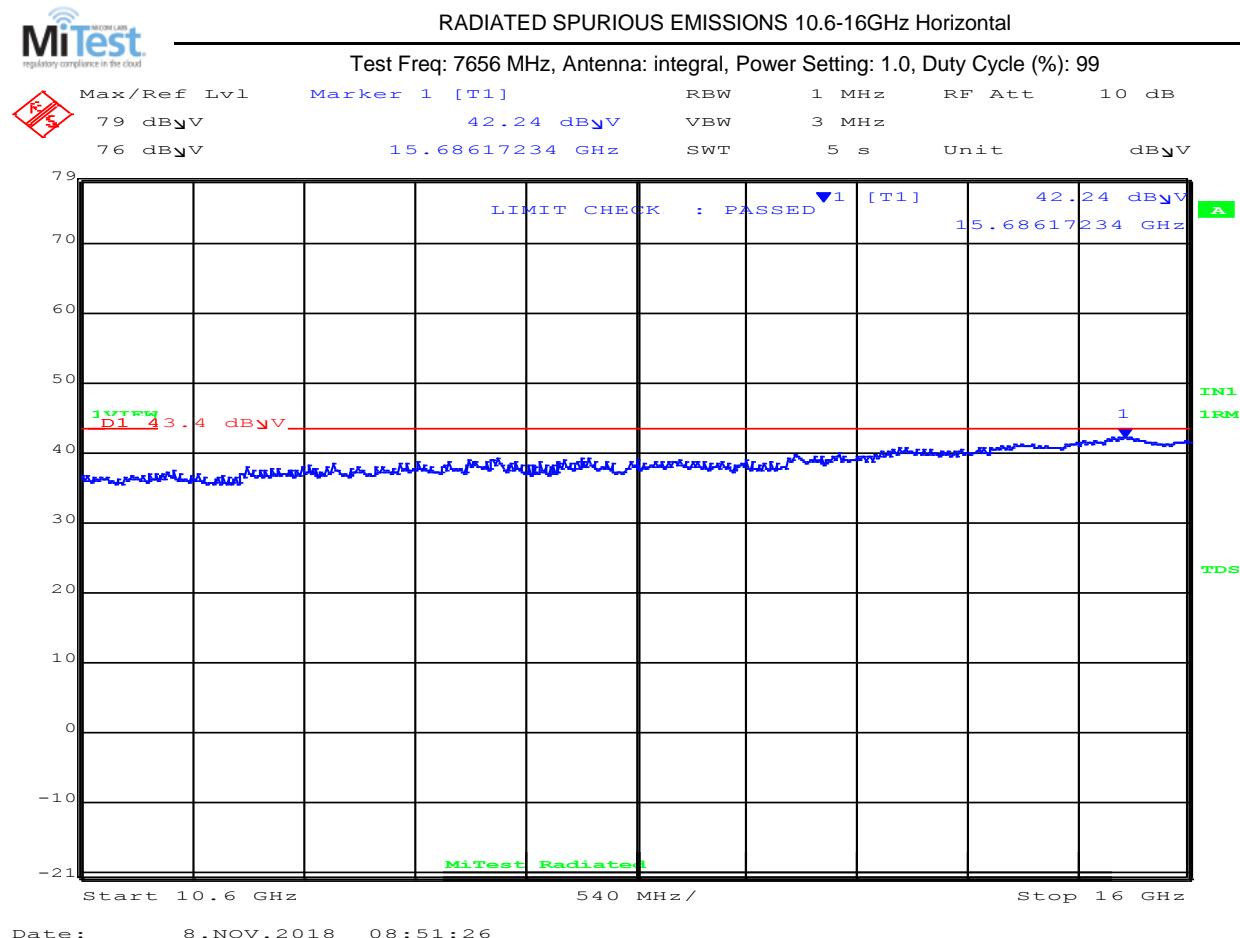


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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.2       | 40.7               | Average          | Horizontal | 150    | 0       | 43.4               | -2.70     | Pass       |

**Test Notes:**

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**Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical**

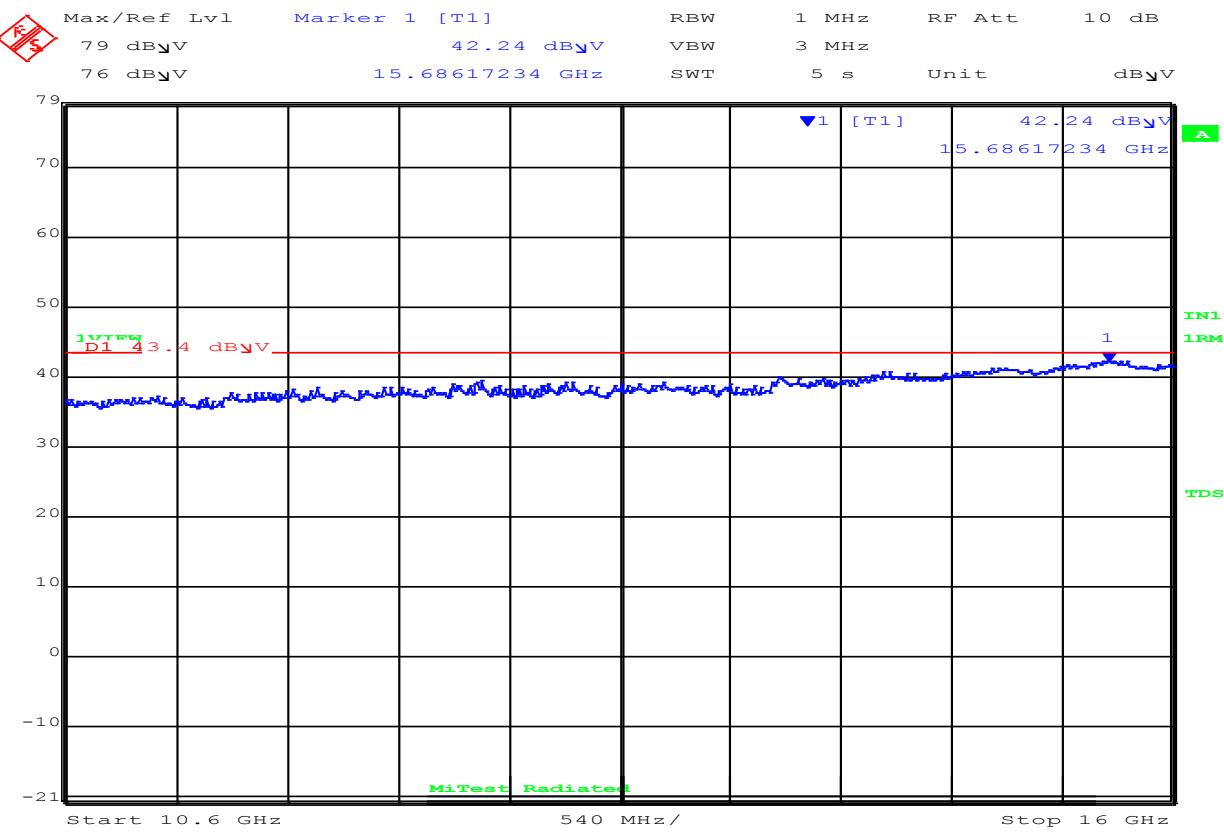
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



RADIATED SPURIOUS EMISSIONS 10.6-16GHz Vertical

Test Freq: 7656 MHz, Antenna: integral, Power Setting: 1.0, Duty Cycle (%): 99



Date: 8.NOV.2018 08:57:55

10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|----------|--------|---------|---------------------------|-----------|------------|
| 1   | 15686.2       | 40.8                      | Average          | Vertical | 150    | 0       | 43.4                      | -2.60     | Pass       |

**Test Notes:**

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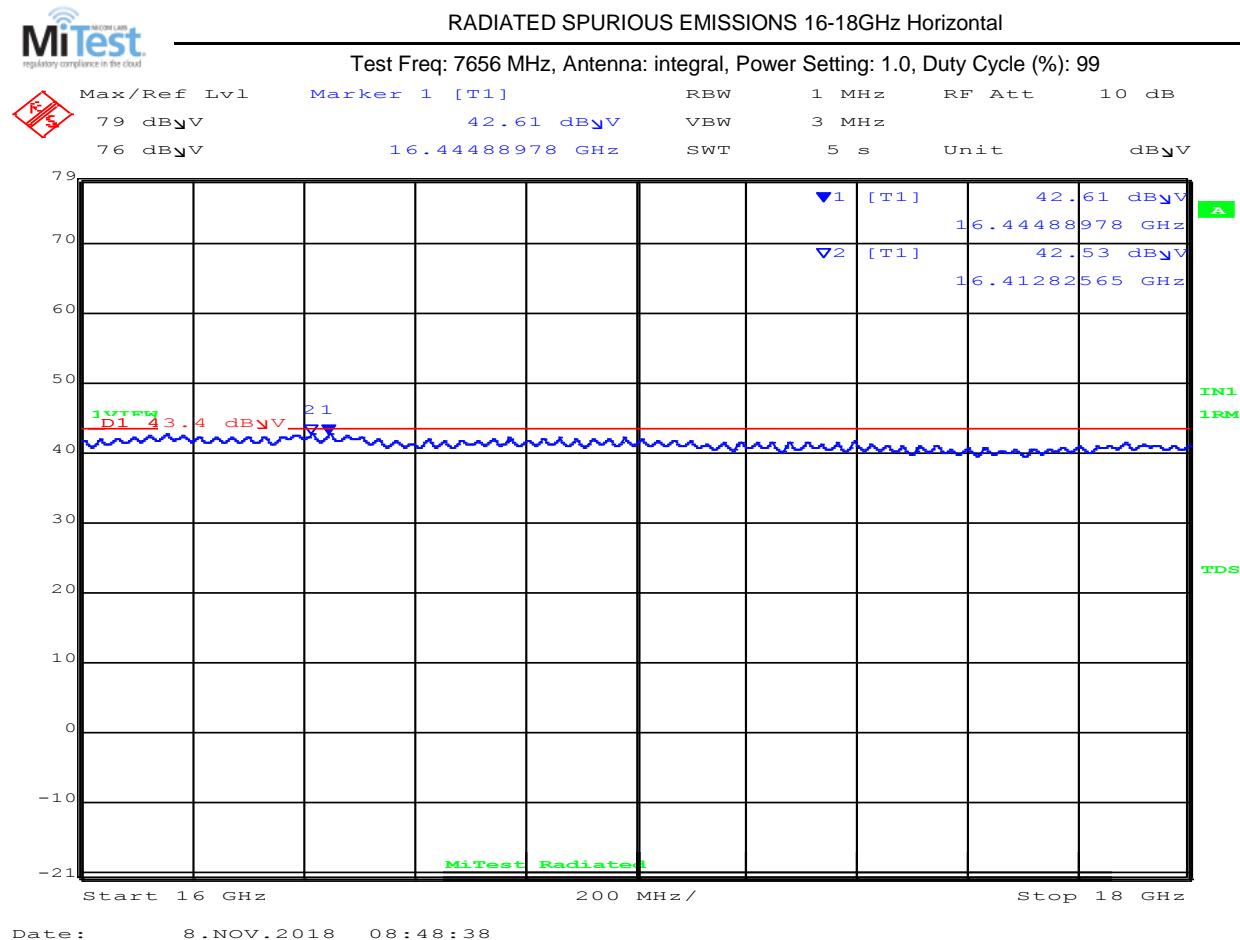


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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|
| 1   | 16444.9       | 41.5                      | Average          | Horizontal | 150    | 0       | 43.4                      | -1.90     | Pass       |
| 2   | 16412.8       | 41.4                      | Average          | Horizontal | 150    | 0       | 43.4                      | -2.00     | Pass       |

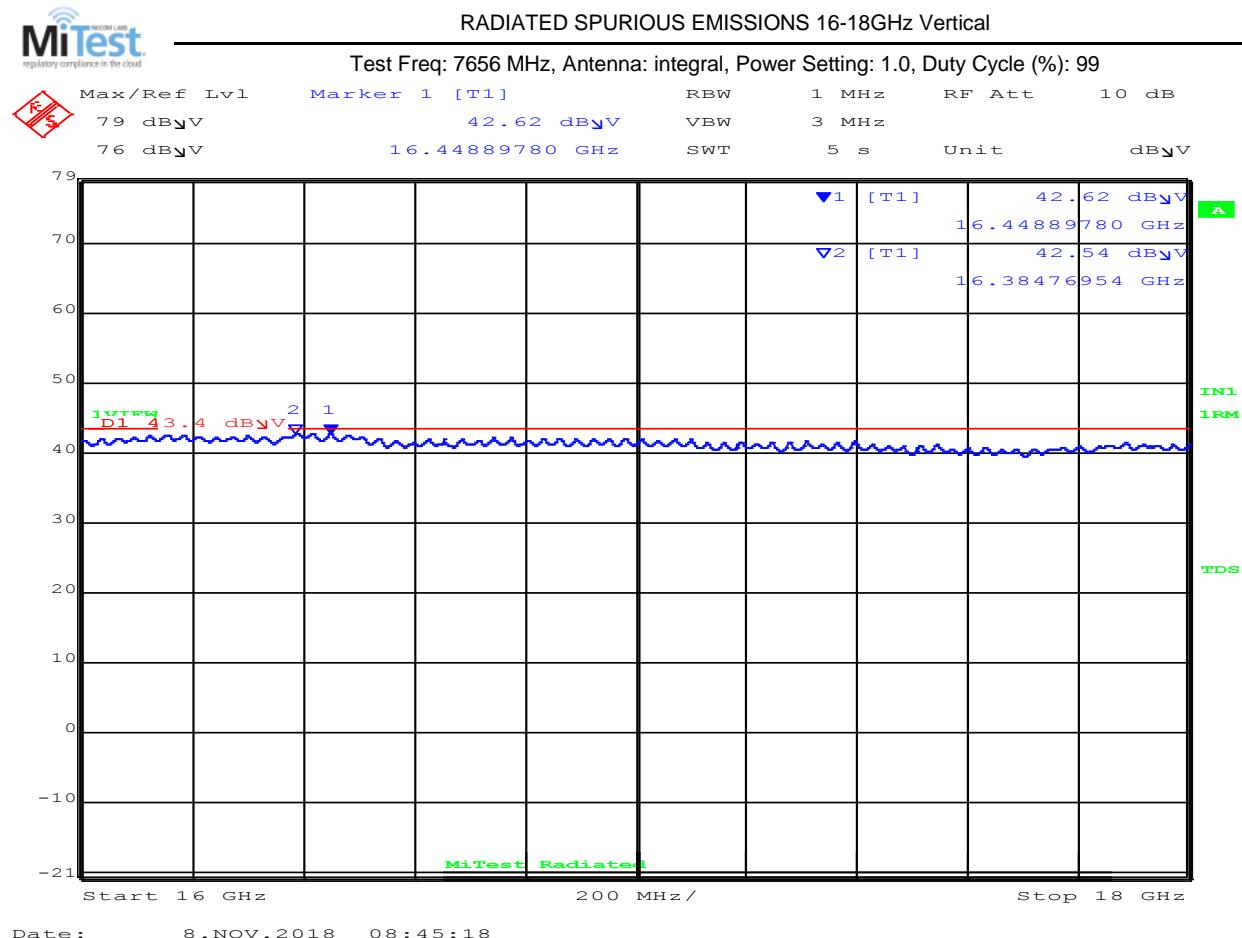
#### Test Notes:

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### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 0.1            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 7656.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 1.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 16448.9       | 42.6               | Average          | Vertical | 150    | 0       | 43.4               | -0.80     | Pass       |
| 2   | 16384.7       | 41.5               | Average          | Vertical | 150    | 0       | 43.4               | -1.90     | Pass       |

### Test Notes:

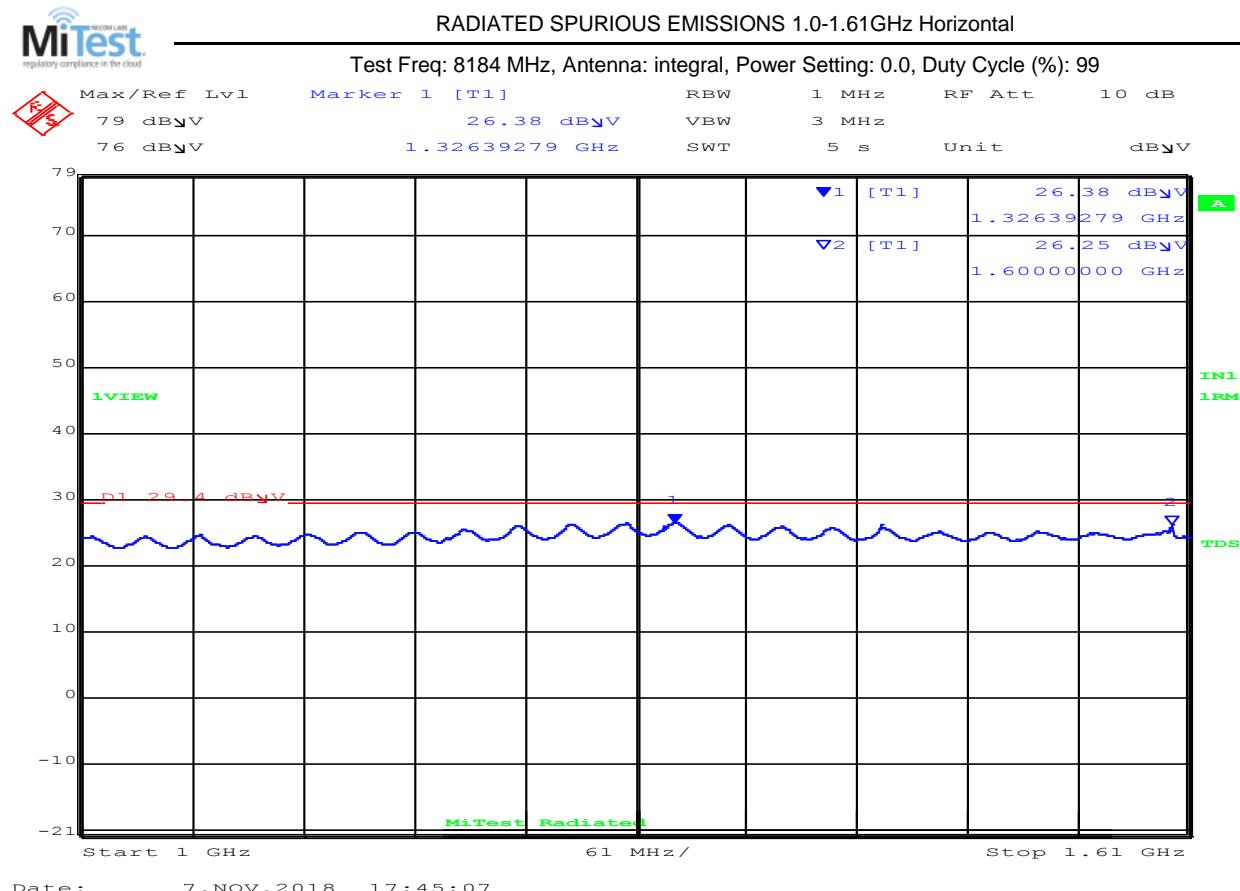
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8184 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



1000.00– 1610.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 1326.4        | 25.0         | Average          | Horizontal | 150    | 0       | 29.4         | -4.40     | Pass       |
| 2   | 1600.0        | 27.1         | Average          | Horizontal | 150    | 0       | 29.4         | -2.30     | Pass       |

**Test Notes:**  
 Laptop Removed

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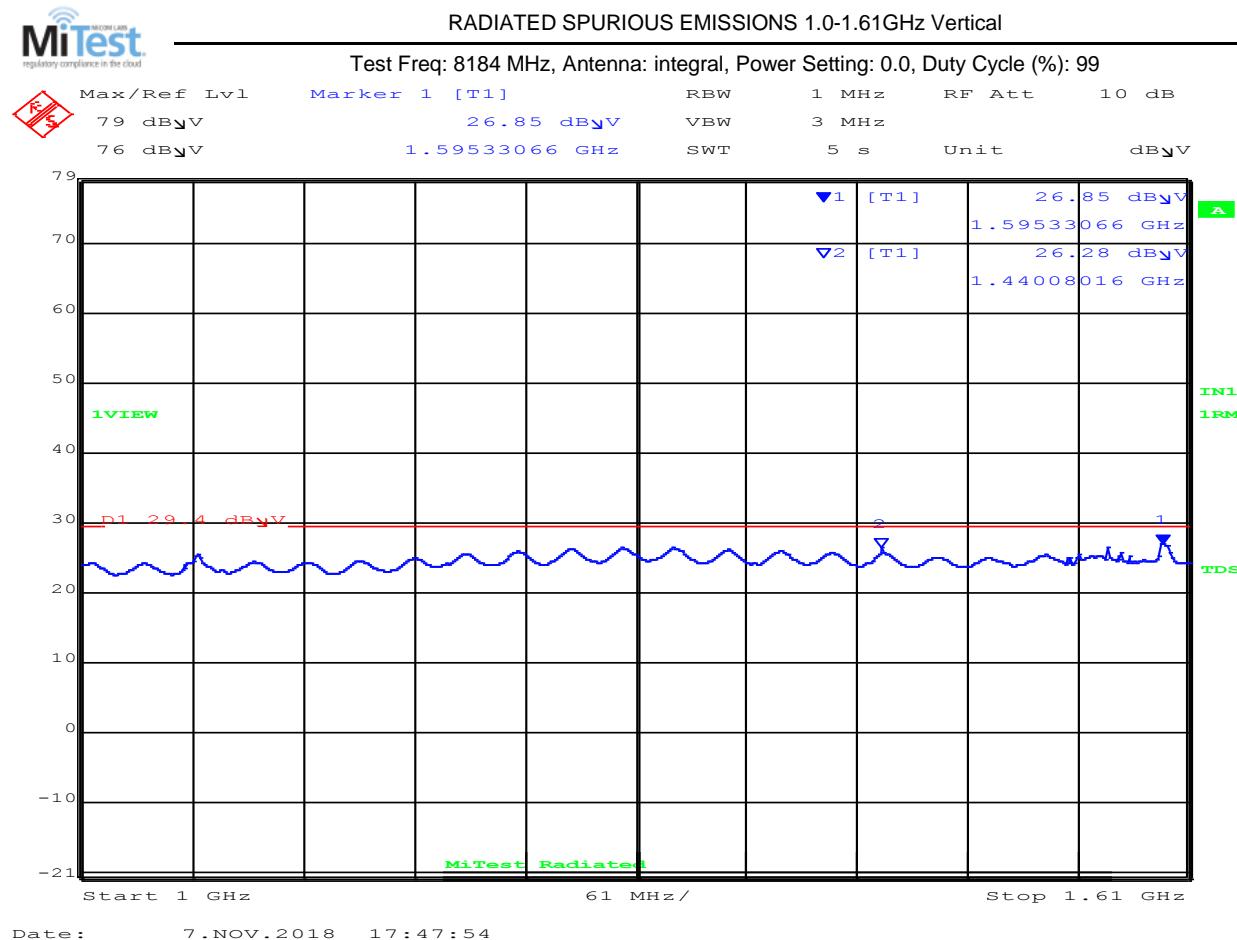


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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1000.00– 1610.00 MHz |               |                    |                  |          |        |         |                    |           |            |
|----------------------|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| Num                  | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                    | 1595.3        | 24.9               | Average          | Vertical | 150    | 0       | 29.4               | -4.50     | Pass       |
| 2                    | 1440.1        | 25.8               | Average          | Vertical | 150    | 0       | 29.4               | -3.60     | Pass       |

**Test Notes:**  
Laptop Removed

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#### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

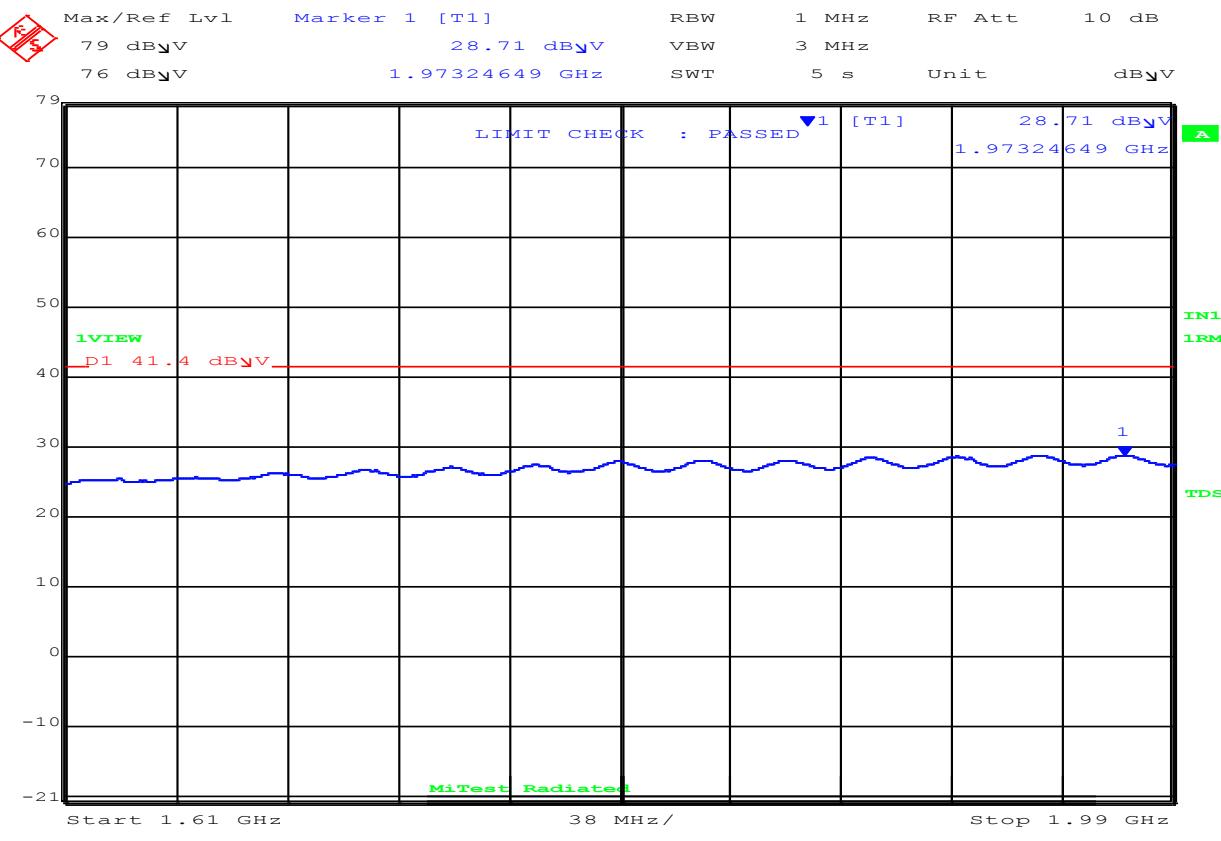
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 1.61-1.99GHz Horizontal

Test Freq: 8184 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



Date: 8.NOV.2018 09:10:44

##### 1610.00 – 1990.00 MHz

| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| Test Notes:<br>Laptop Removed         |               |              |                  |     |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical

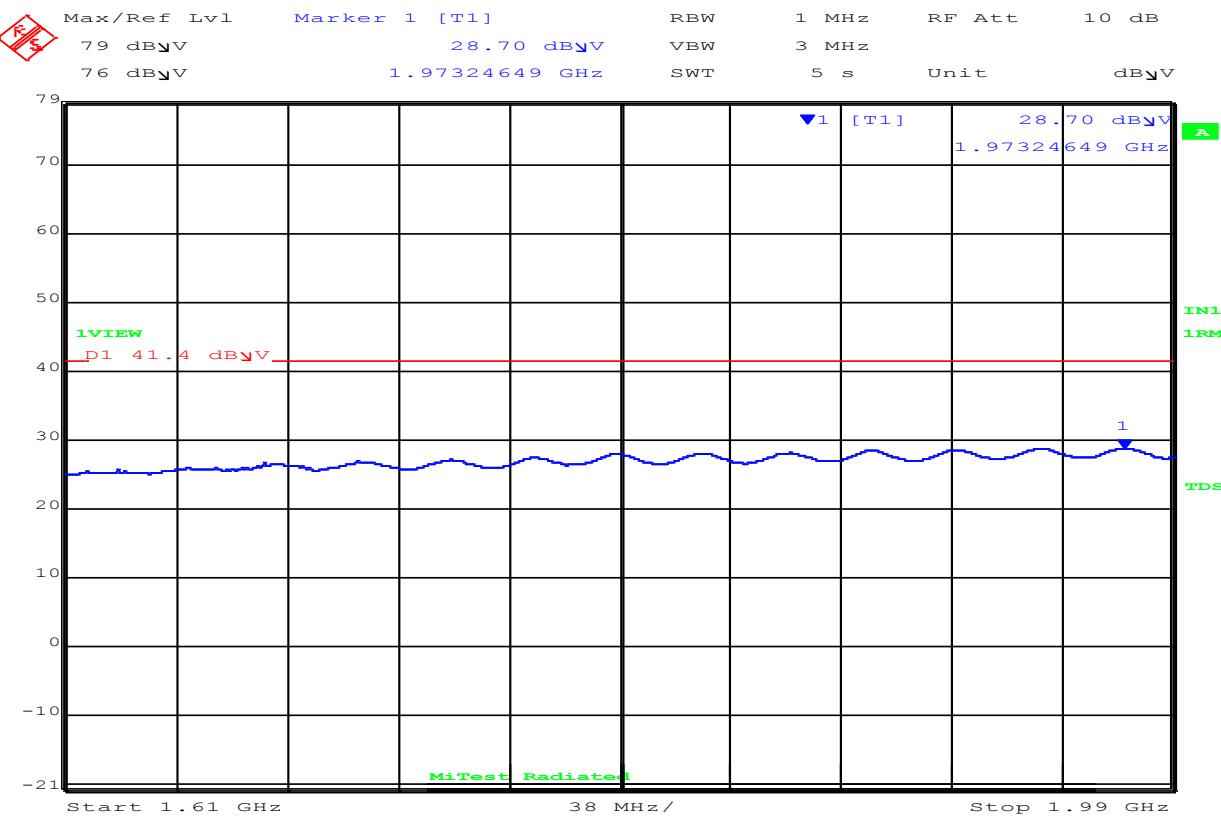
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 1.61-1.99GHz Vertical

Test Freq: 8184 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



Date: 8.NOV.2018 09:03:24

#### 1610.00 – 1990.00 MHz

| Num                                   | Frequency MHz | Level dBμV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBμV/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| No Signals found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

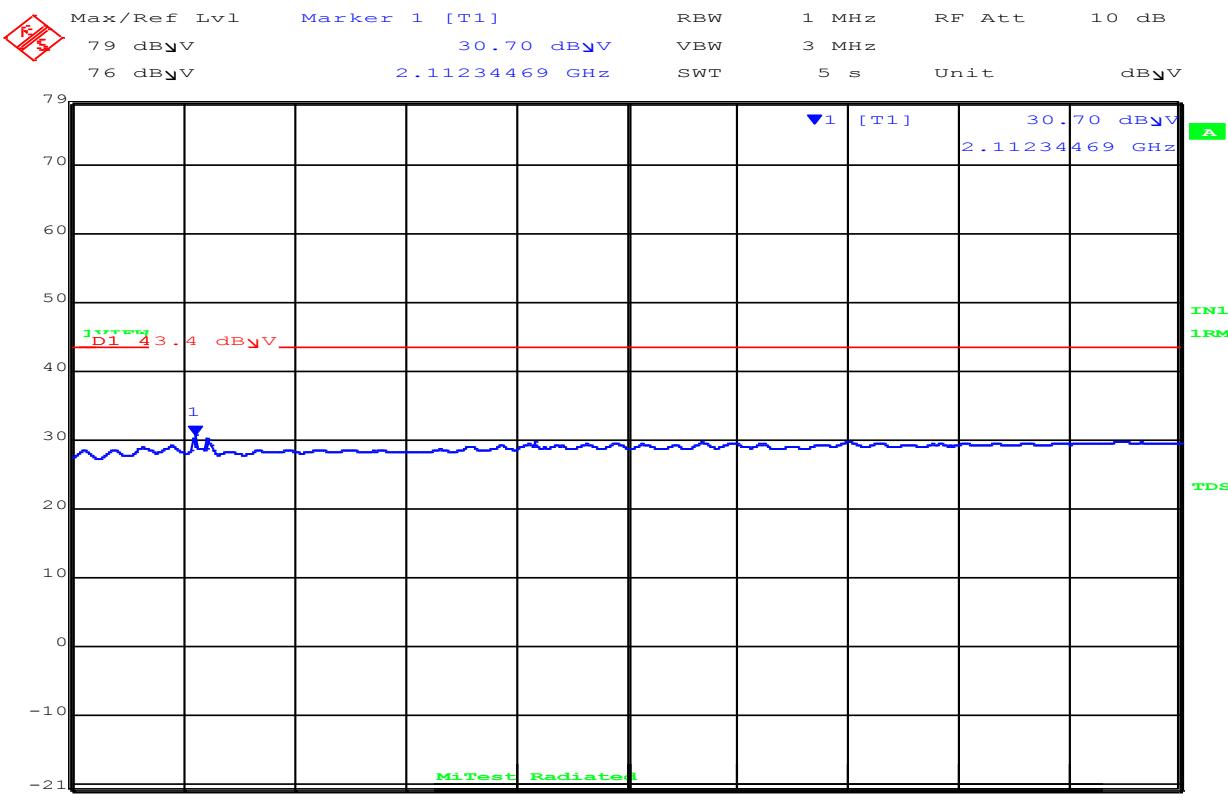
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 1.99-3.1GHz Horizontal

Test Freq: 8184 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



Date: 8.NOV.2018 09:29:29

##### 1990.00 – 3100.00 GHz

| Num                                   | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------------|------------------|-----|--------|---------|--------------------|-----------|------------|
| No Signals found within 6 dB of Limit |               |                    |                  |     |        |         |                    |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |                    |                  |     |        |         |                    |           |            |

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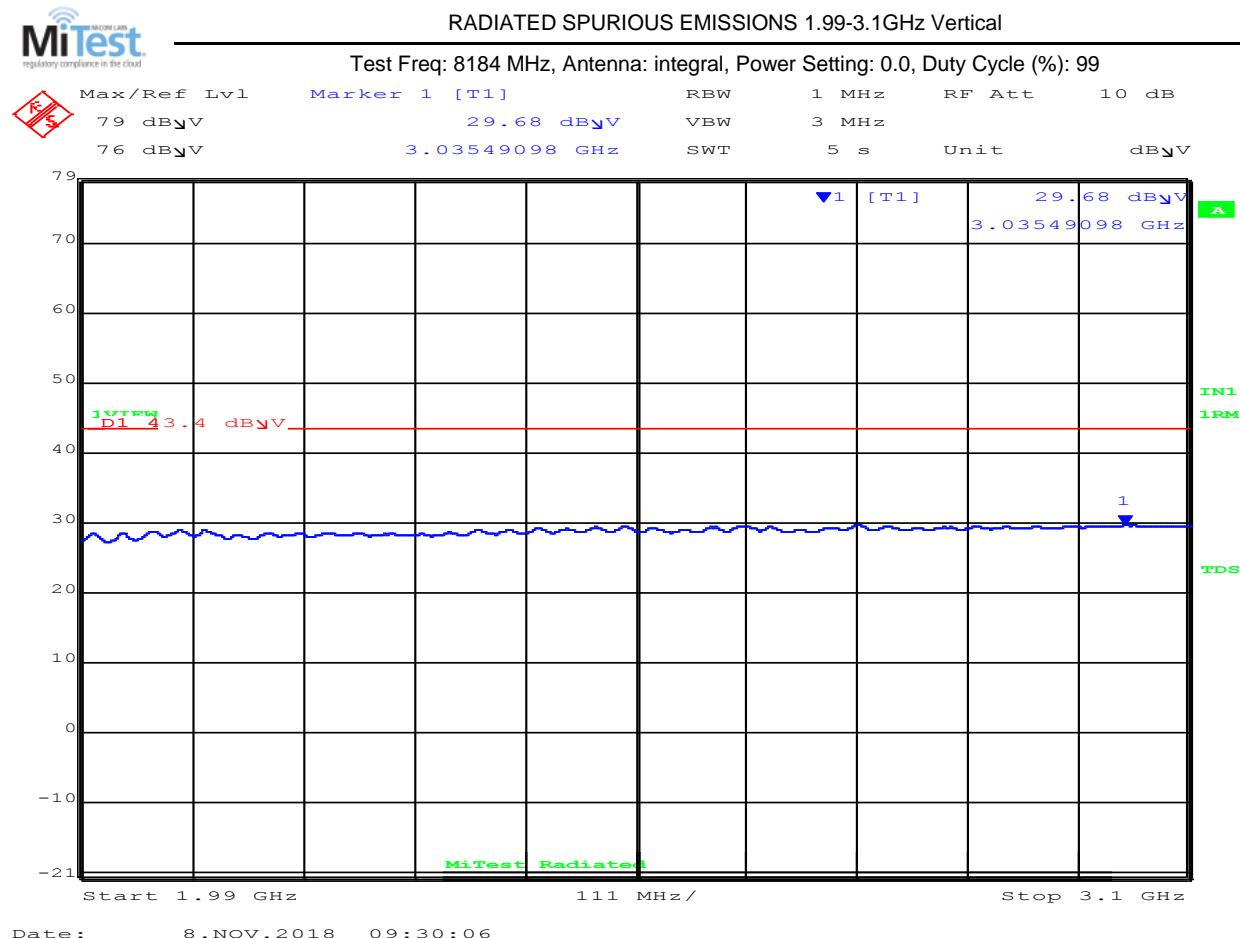


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#### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1990.00 – 3100.00 GHz                 |               |                    |                  |     |        |         |                    |           |            |
|---------------------------------------|---------------|--------------------|------------------|-----|--------|---------|--------------------|-----------|------------|
| Num                                   | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of Limit |               |                    |                  |     |        |         |                    |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |                    |                  |     |        |         |                    |           |            |

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

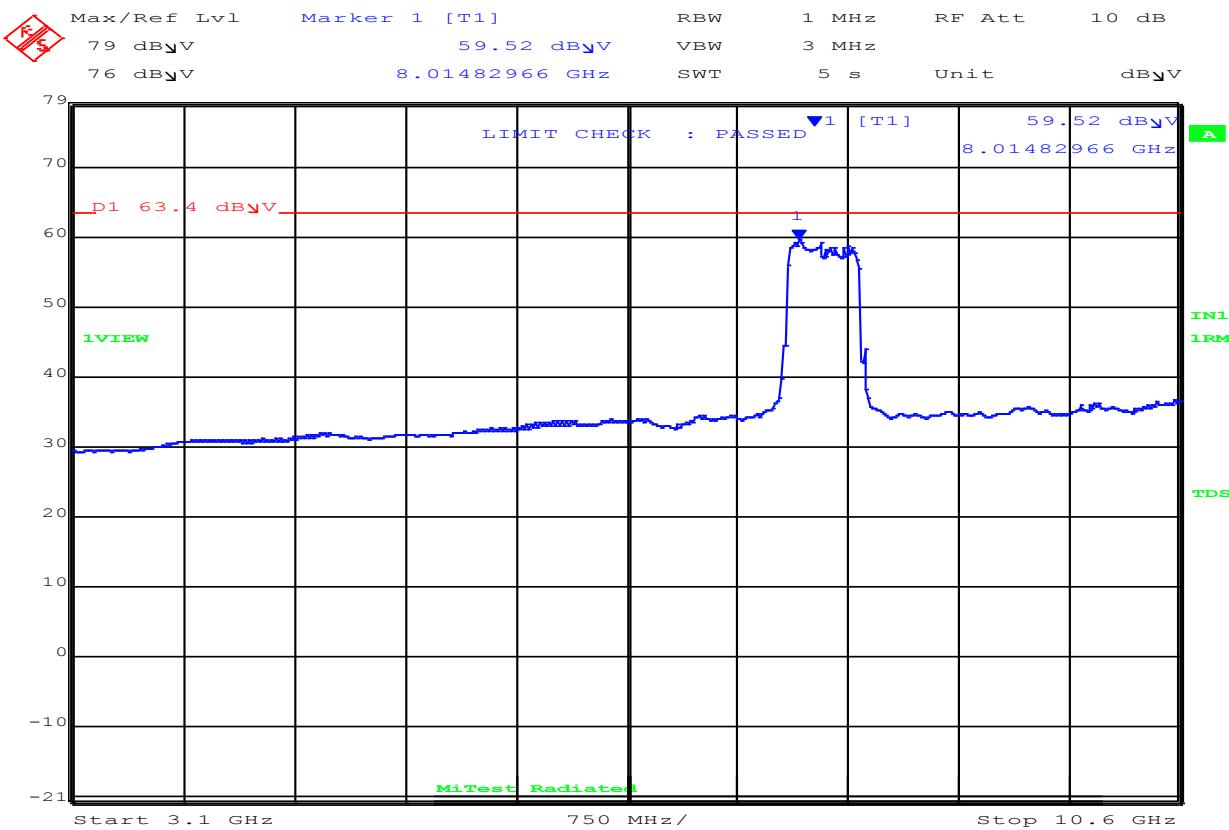
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 3.1-10.6GHz Horizontal

Test Freq: 8184 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



Date: 8.NOV.2018 09:26:52

#### 3100.00 - 10600.00 MHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 8014.8        | 59.2         | Average          | Horizontal | 150    | 0       | 63.4         | -4.20     | Pass       |

### Test Notes:

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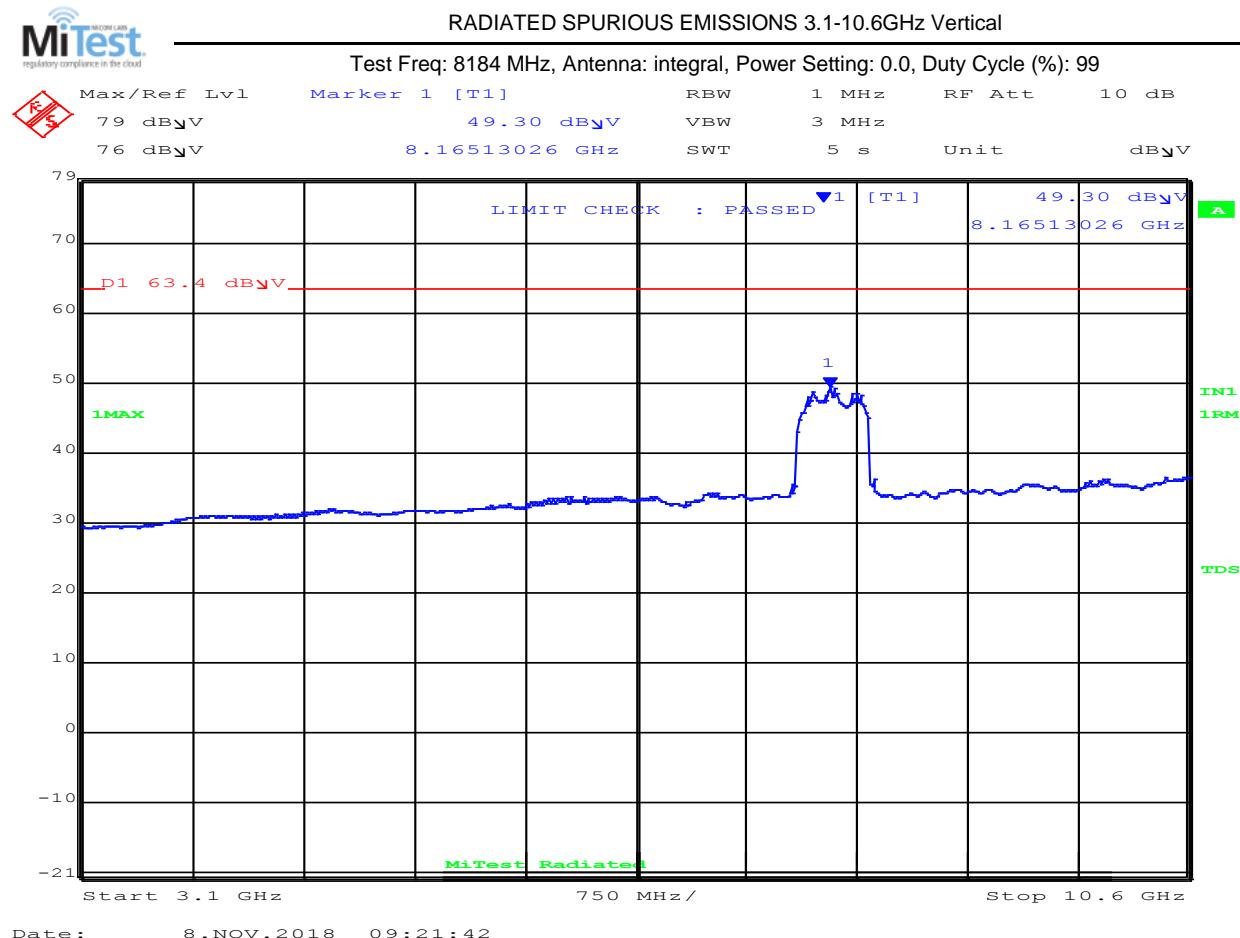


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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz                |               |                           |                  |     |        |         |                           |           |            |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                                   | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |
| Test Notes:                           |               |                           |                  |     |        |         |                           |           |            |

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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

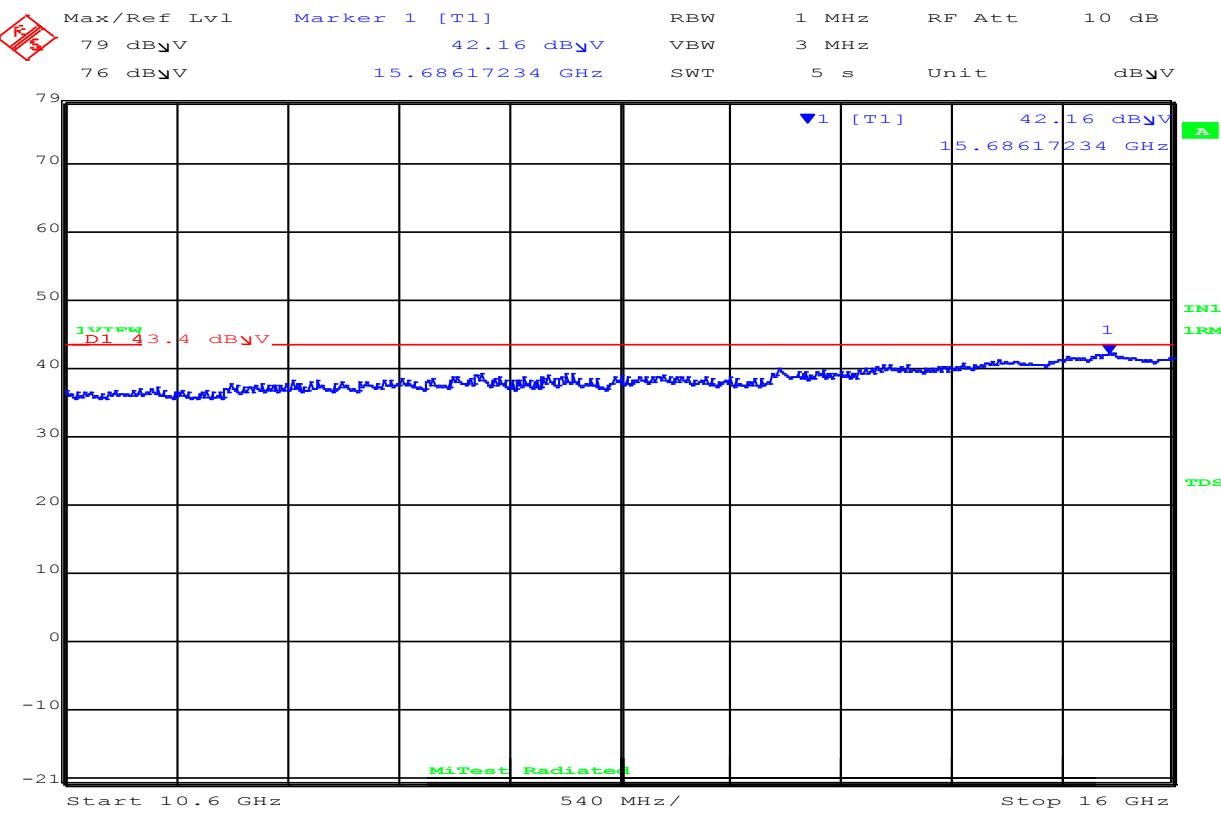
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 10.6-16GHz Horizontal

Test Freq: 8184 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



#### 10600.00 – 16000.00 GHz

| Num                | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1                  | 15686.2       | 40.7         | Average          | Horizontal | 150    | 0       | 43.4         | -2.70     | Pass       |
| <b>Test Notes:</b> |               |              |                  |            |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

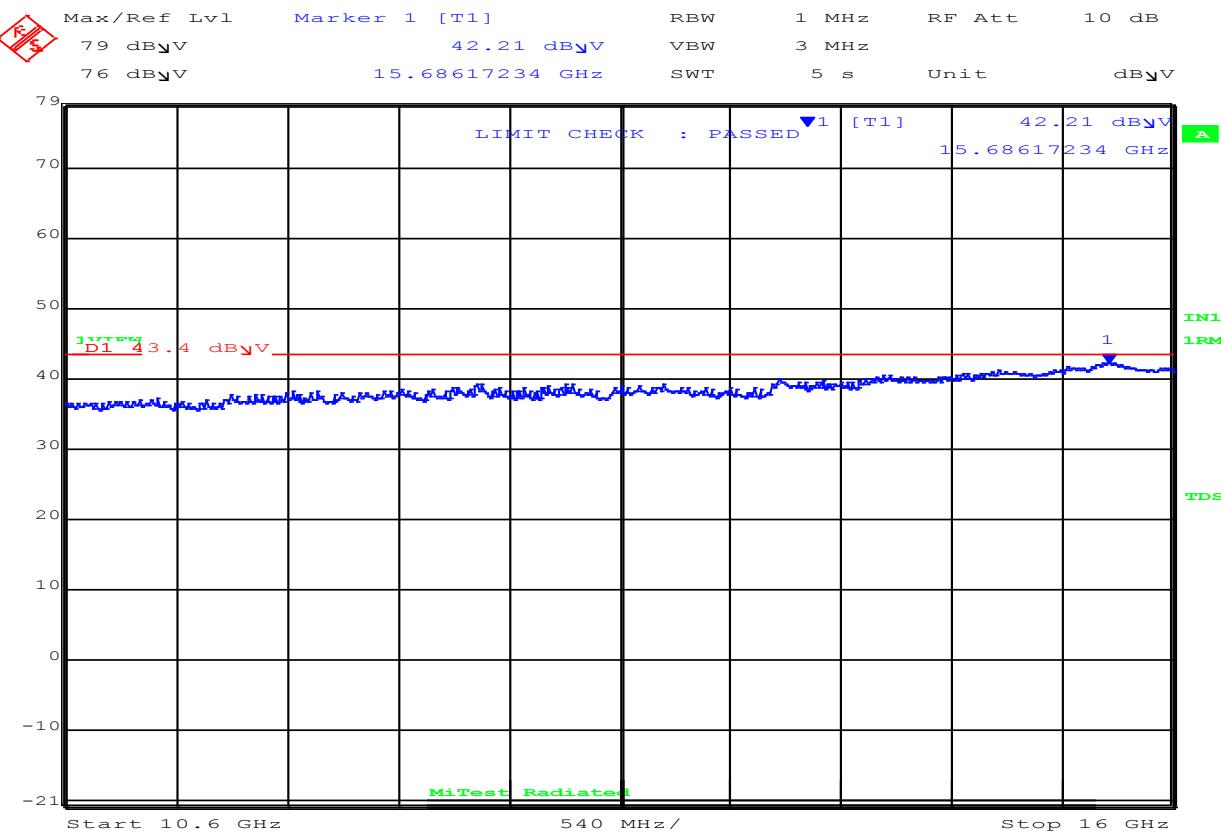
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 10.6-16GHz Vertical

Test Freq: 8184 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



Date: 8.NOV.2018 09:31:12

#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|----------|--------|---------|---------------------------|-----------|------------|
| 1   | 15686.2       | 40.8                      | Average          | Vertical | 150    | 0       | 43.4                      | -2.60     | Pass       |

#### Test Notes:

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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

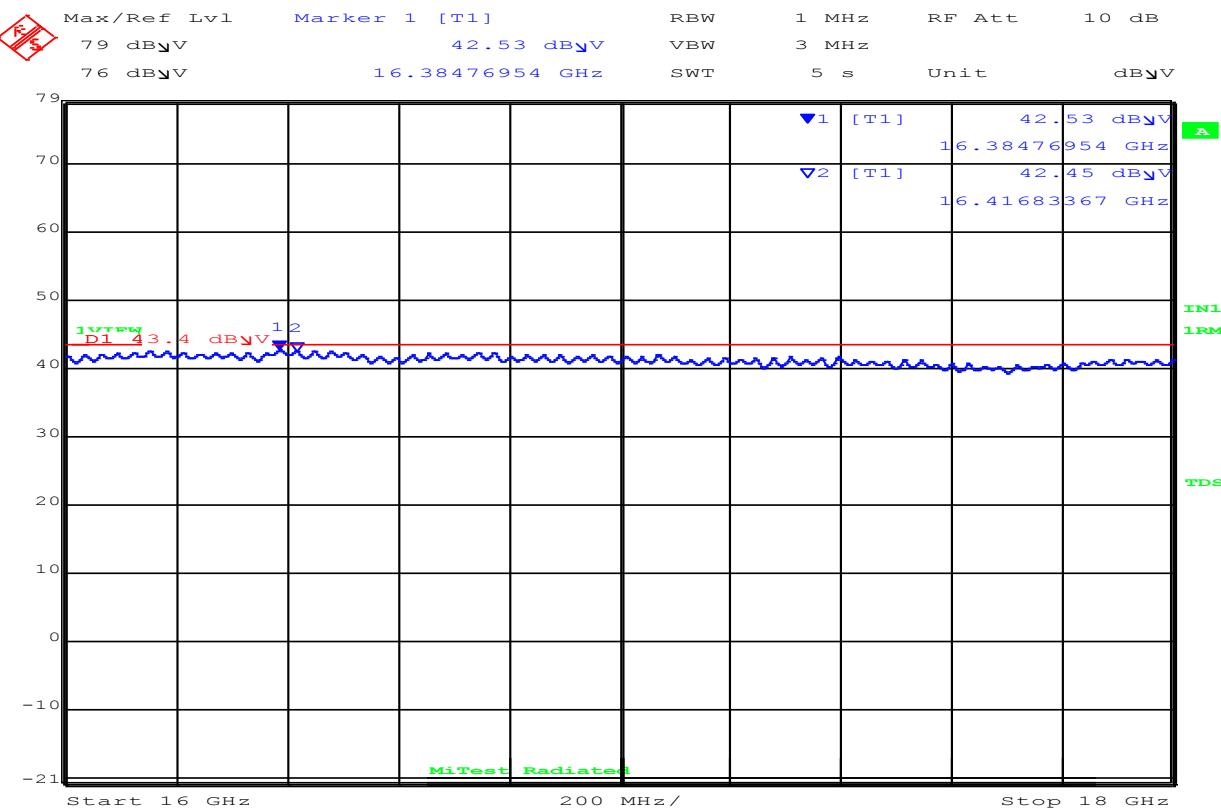
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 16-18GHz Horizontal

Test Freq: 8184 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



Date: 8.NOV.2018 09:34:28

#### 16000.00 – 18000.00 GHz

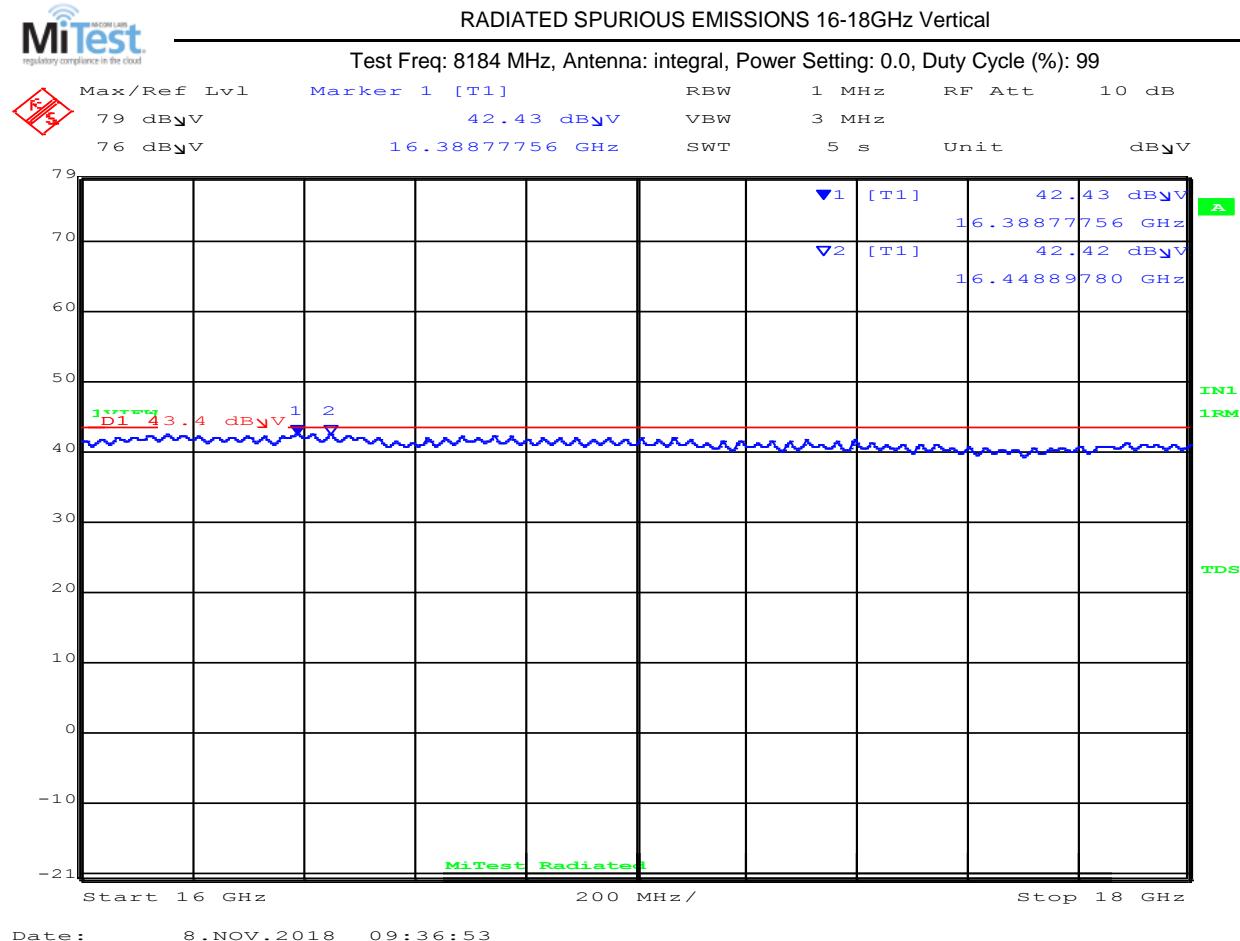
| Num                | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|--------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1                  | 16384.7       | 41.3         | Average          | Horizontal | 150    | 0       | 43.4         | -2.10     | Pass       |
| 2                  | 16416.8       | 41.5         | Average          | Horizontal | 150    | 0       | 43.4         | -1.90     | Pass       |
| <b>Test Notes:</b> |               |              |                  |            |        |         |              |           |            |

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Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8184.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 16000.00 – 18000.00 GHz |               |              |                  |          |        |         |              |           |            |
|-------------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num                     | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                       | 16388.8       | 41.3         | Average          | Vertical | 150    | 0       | 43.4         | -2.10     | Pass       |
| 2                       | 16488.9       | 41.6         | Average          | Vertical | 150    | 0       | 43.4         | -1.80     | Pass       |

Test Notes:

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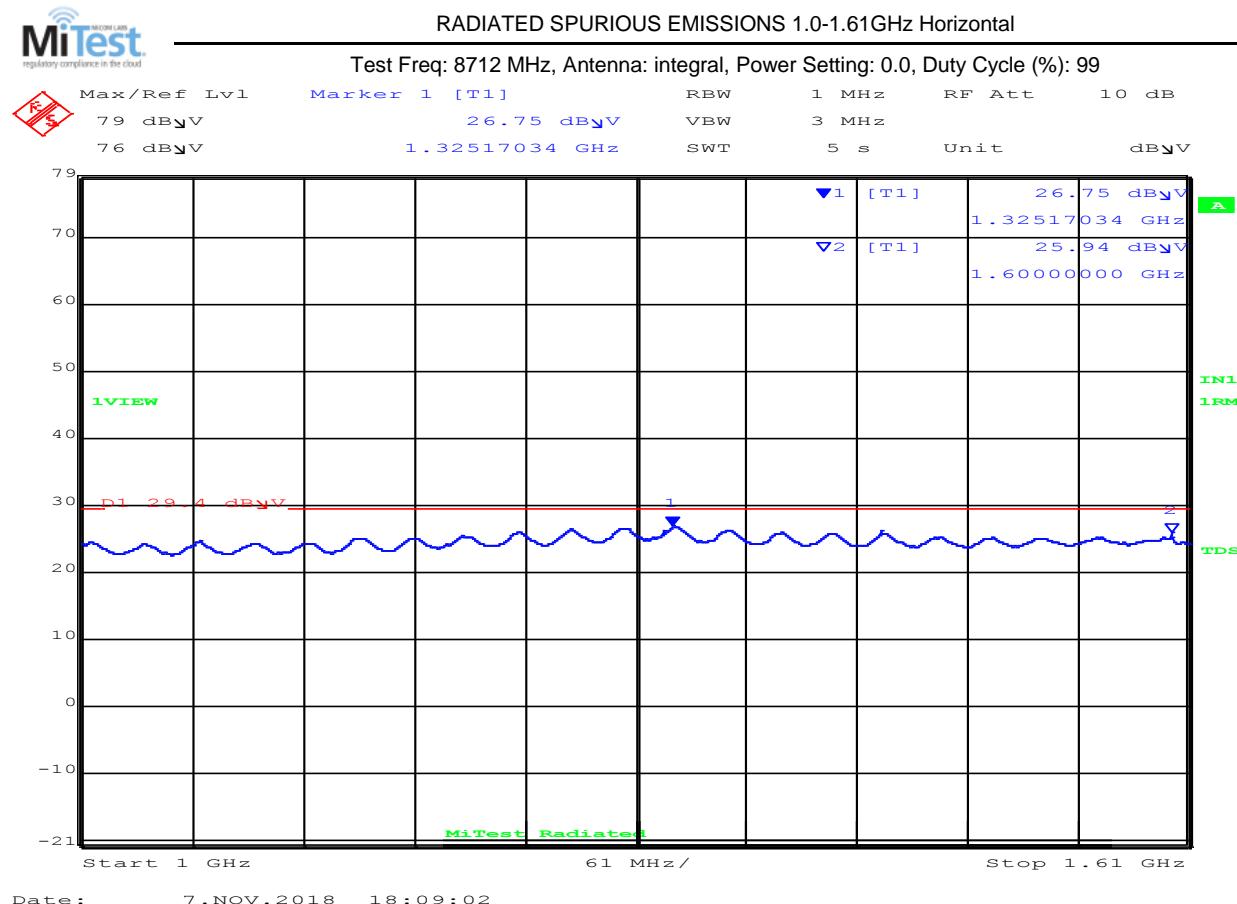
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8712 MHz

Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



| 1000.00– 1610.00 MHz |               |              |                  |            |        |         |              |           |            |
|----------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| Num                  | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                    | 1325.2        | 25.0         | Average          | Horizontal | 150    | 0       | 29.4         | -4.40     | Pass       |
| 2                    | 1600.0        | 25.9         | Average          | Horizontal | 150    | 0       | 29.4         | -3.50     | Pass       |

**Test Notes:**  
Laptop Removed

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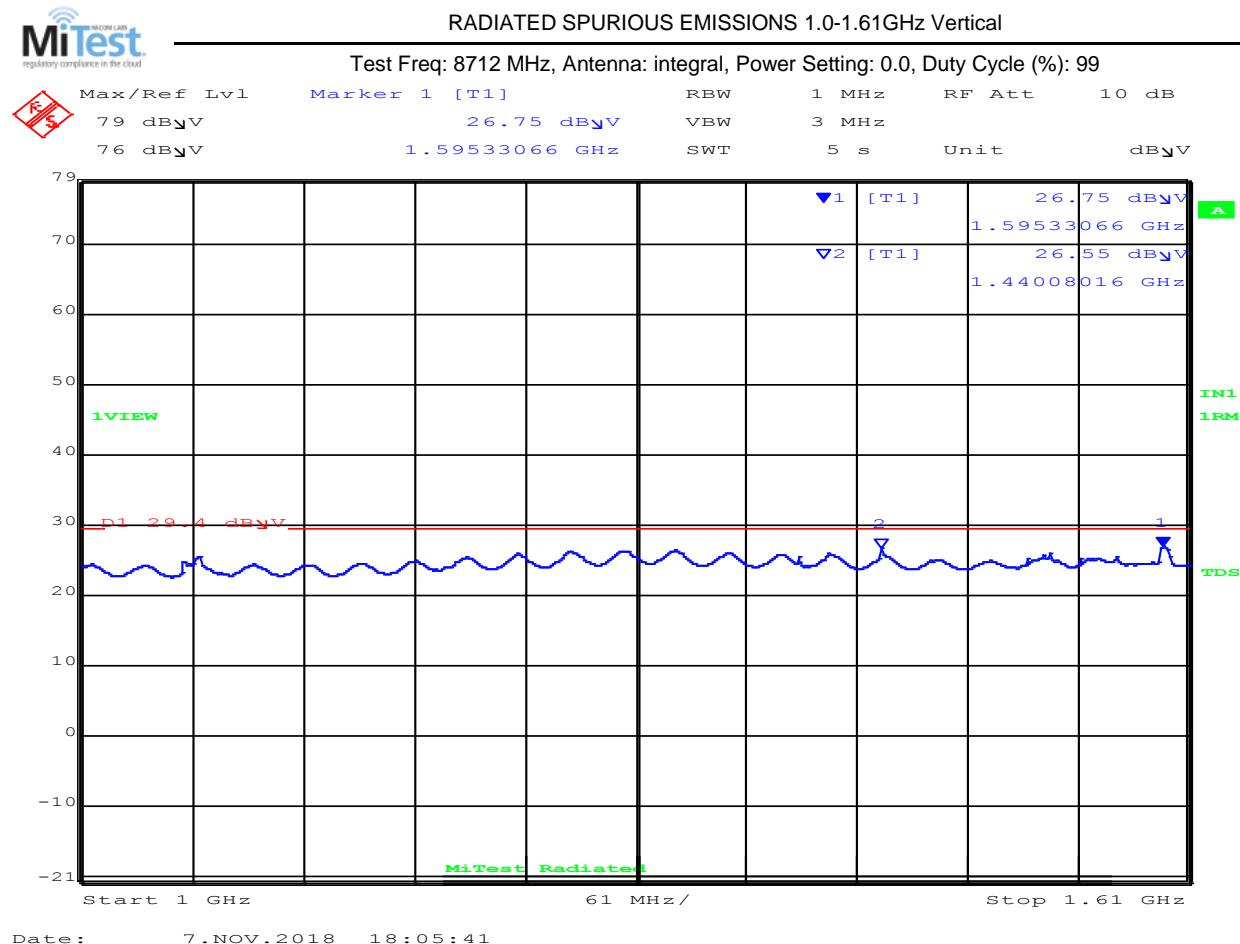


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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1000.00–1610.00 MHz |               |                    |                  |          |        |         |                    |           |            |
|---------------------|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| Num                 | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| 1                   | 1595.3        | 25.9               | Average          | Vertical | 150    | 0       | 29.4               | -3.50     | Pass       |
| 2                   | 1440.1        | 25.8               | Average          | Vertical | 150    | 0       | 29.4               | -3.60     | Pass       |

**Test Notes:**  
Laptop Removed

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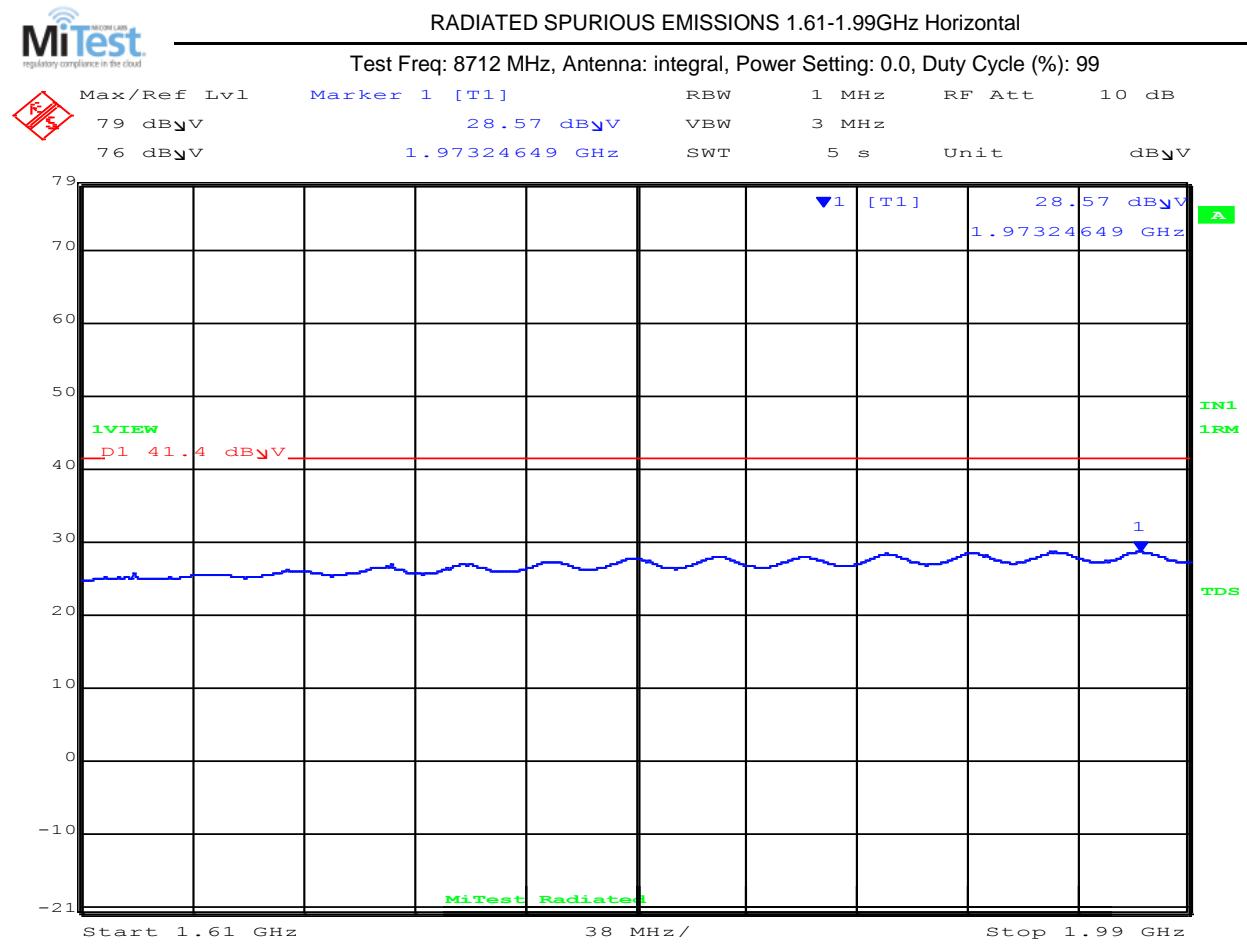


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#### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1610.00 – 1990.00 MHz                 |               |              |                  |     |        |         |              |           |            |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |

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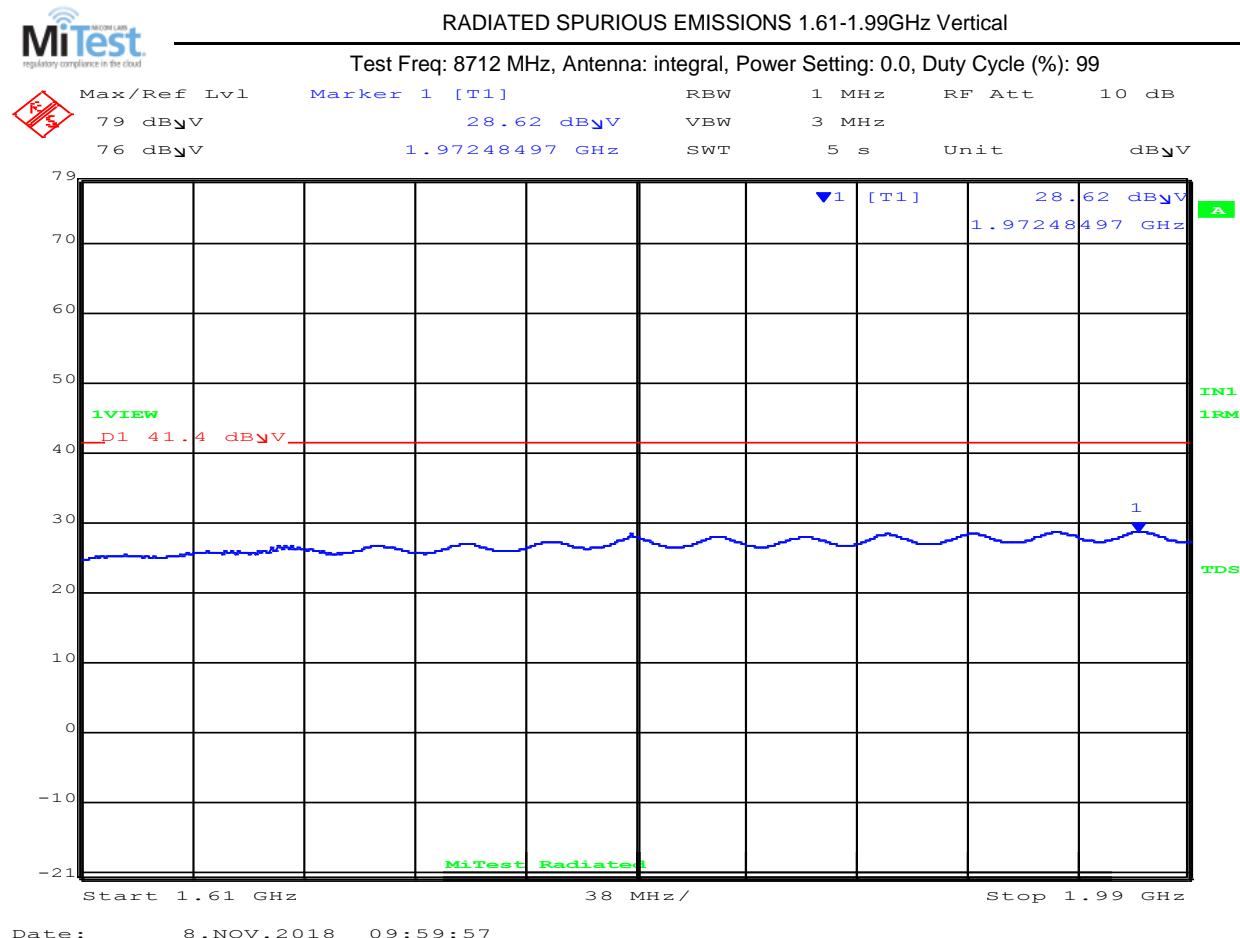


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
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#### Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1610.00 – 1990.00 MHz                 |               |                           |                  |     |        |         |                           |           |            |
|---------------------------------------|---------------|---------------------------|------------------|-----|--------|---------|---------------------------|-----------|------------|
| Num                                   | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
| No Signals found within 6 dB of Limit |               |                           |                  |     |        |         |                           |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |                           |                  |     |        |         |                           |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

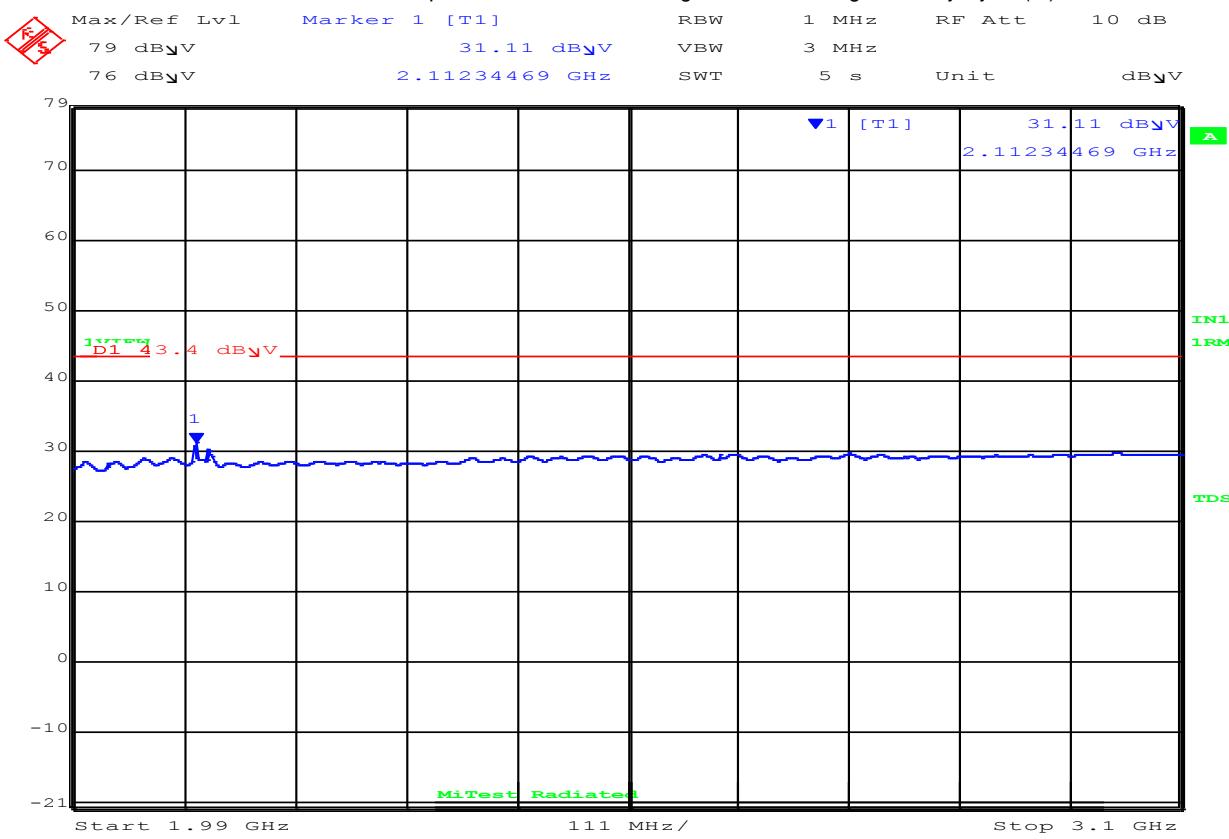
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 1.99-3.1GHz Horizontal

Test Freq: 8712 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



Date: 8.NOV.2018 09:56:55

#### 1990.00 – 3100.00 GHz

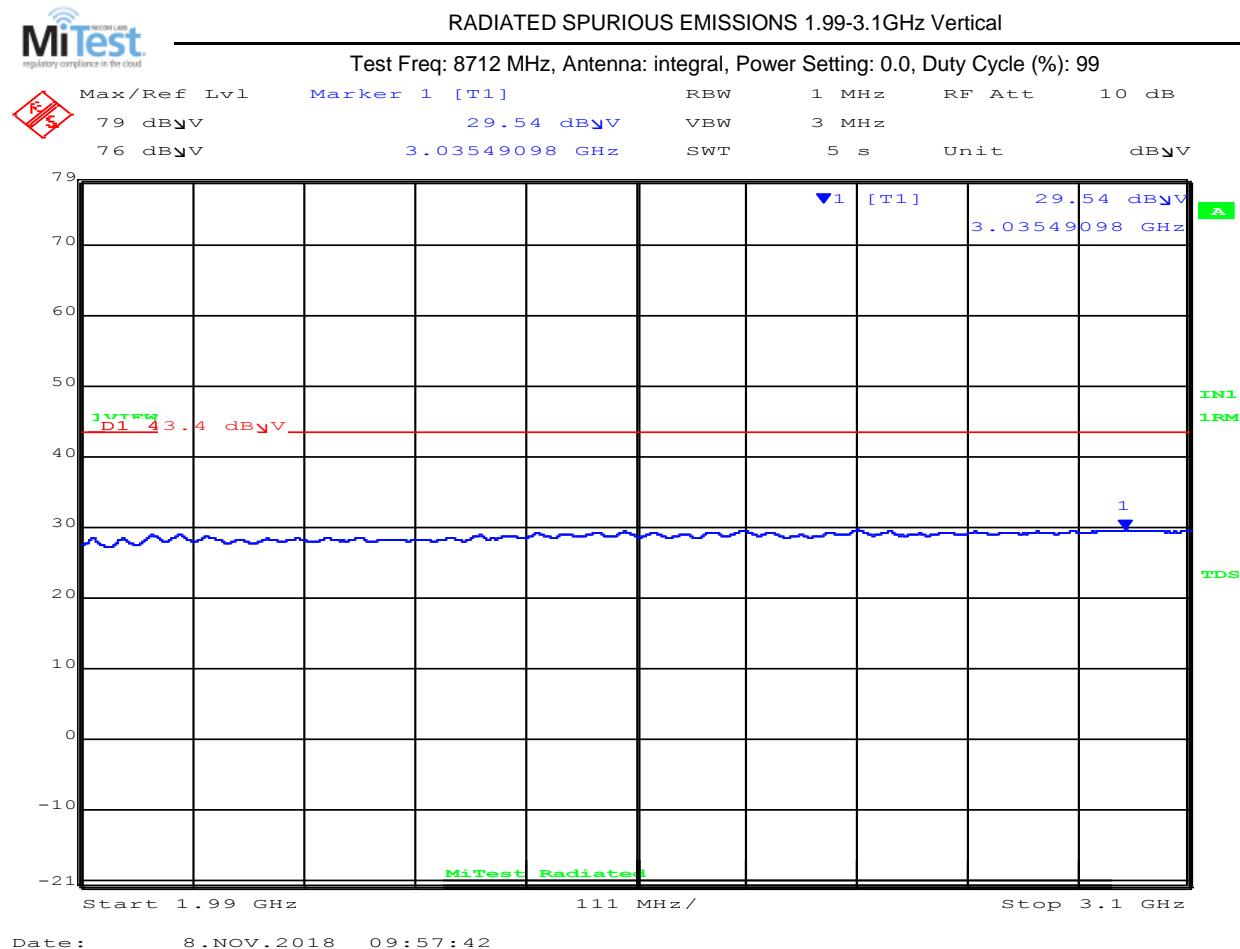
| Num                                   | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|---------------------------------------|---------------|--------------------|------------------|-----|--------|---------|--------------------|-----------|------------|
| No Signals found within 6 dB of Limit |               |                    |                  |     |        |         |                    |           |            |
| <b>Test Notes:</b><br>Laptop Removed  |               |                    |                  |     |        |         |                    |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 1990.00 – 3100.00 GHz                 |               |              |                  |     |        |         |              |           |            |  |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |  |
| <b>Test Notes:</b><br>Laptop Removed  |               |              |                  |     |        |         |              |           |            |  |

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

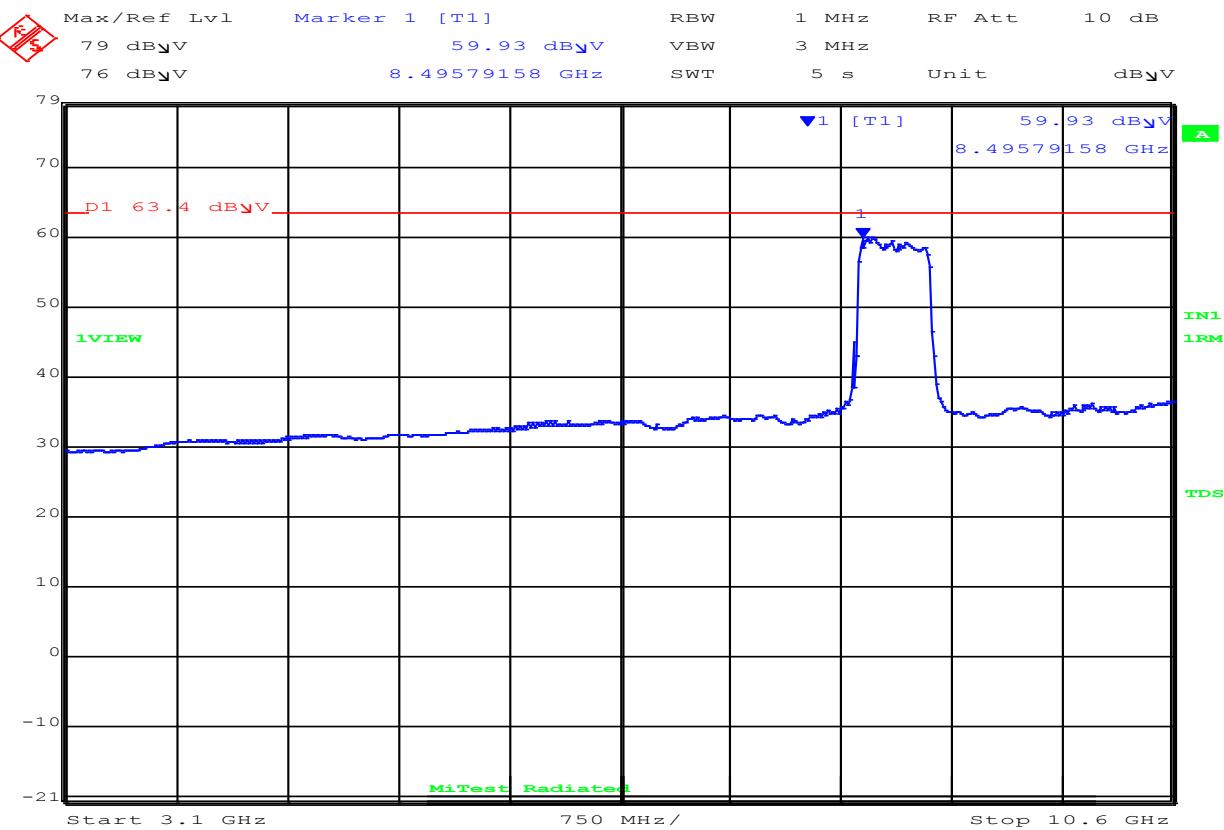
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



#### RADIATED SPURIOUS EMISSIONS 3.1-10.6GHz Horizontal

Test Freq: 8712 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



Date: 8.NOV.2018 09:53:31

#### 3100.00 - 10600.00 MHz

| Num | Frequency MHz | Level dBμV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBμV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 8495.7        | 58.4         | Average          | Horizontal | 150    | 0       | 63.4         | -5.00     | Pass       |

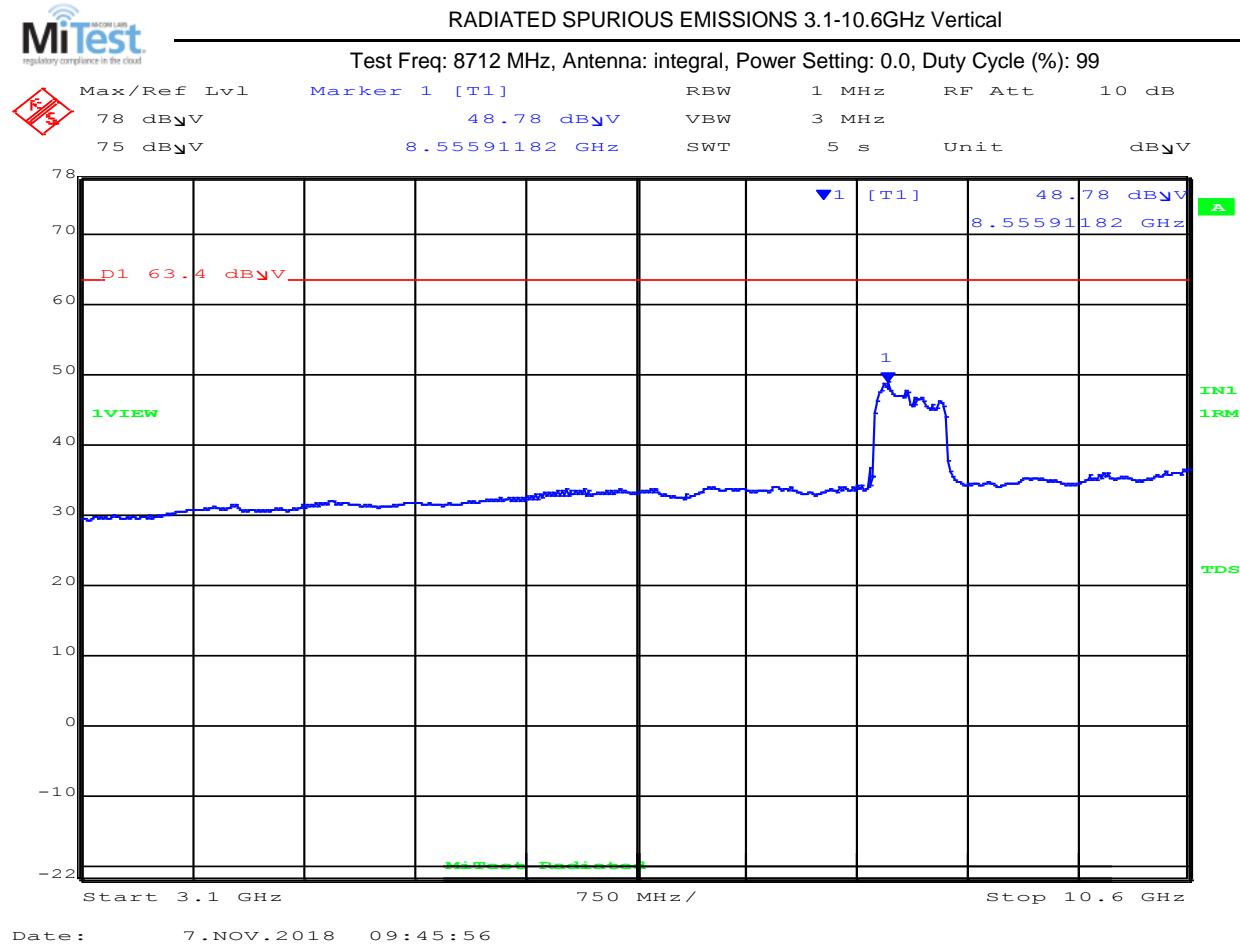
**Test Notes:**

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz                |               |              |                  |     |        |         |              |           |            |  |
|---------------------------------------|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num                                   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals found within 6 dB of Limit |               |              |                  |     |        |         |              |           |            |  |
| <b>Test Notes:</b>                    |               |              |                  |     |        |         |              |           |            |  |

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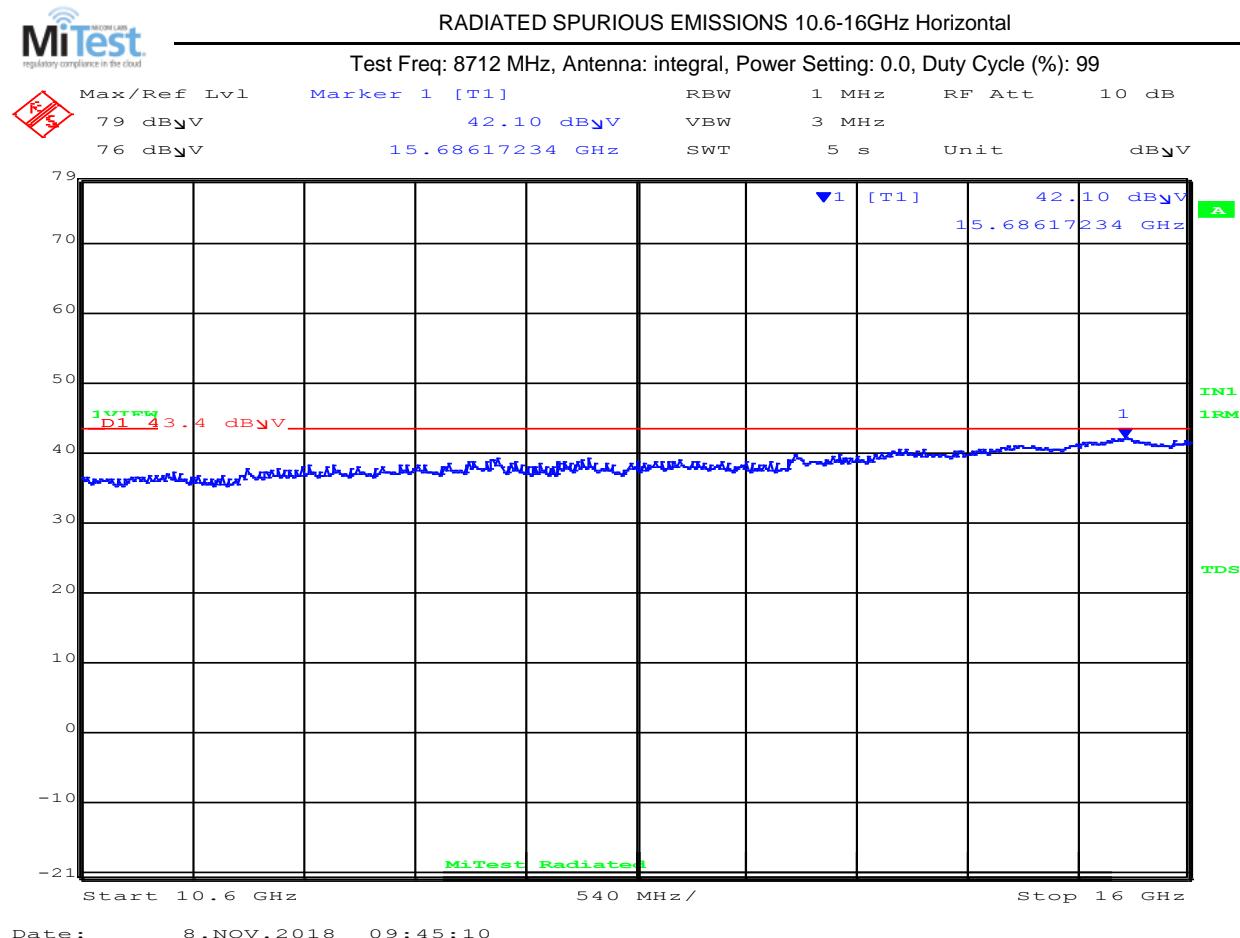


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|------------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.2       | 40.6               | Average          | Horizontal | 150    | 0       | 43.4               | -2.80     | Pass       |

**Test Notes:**

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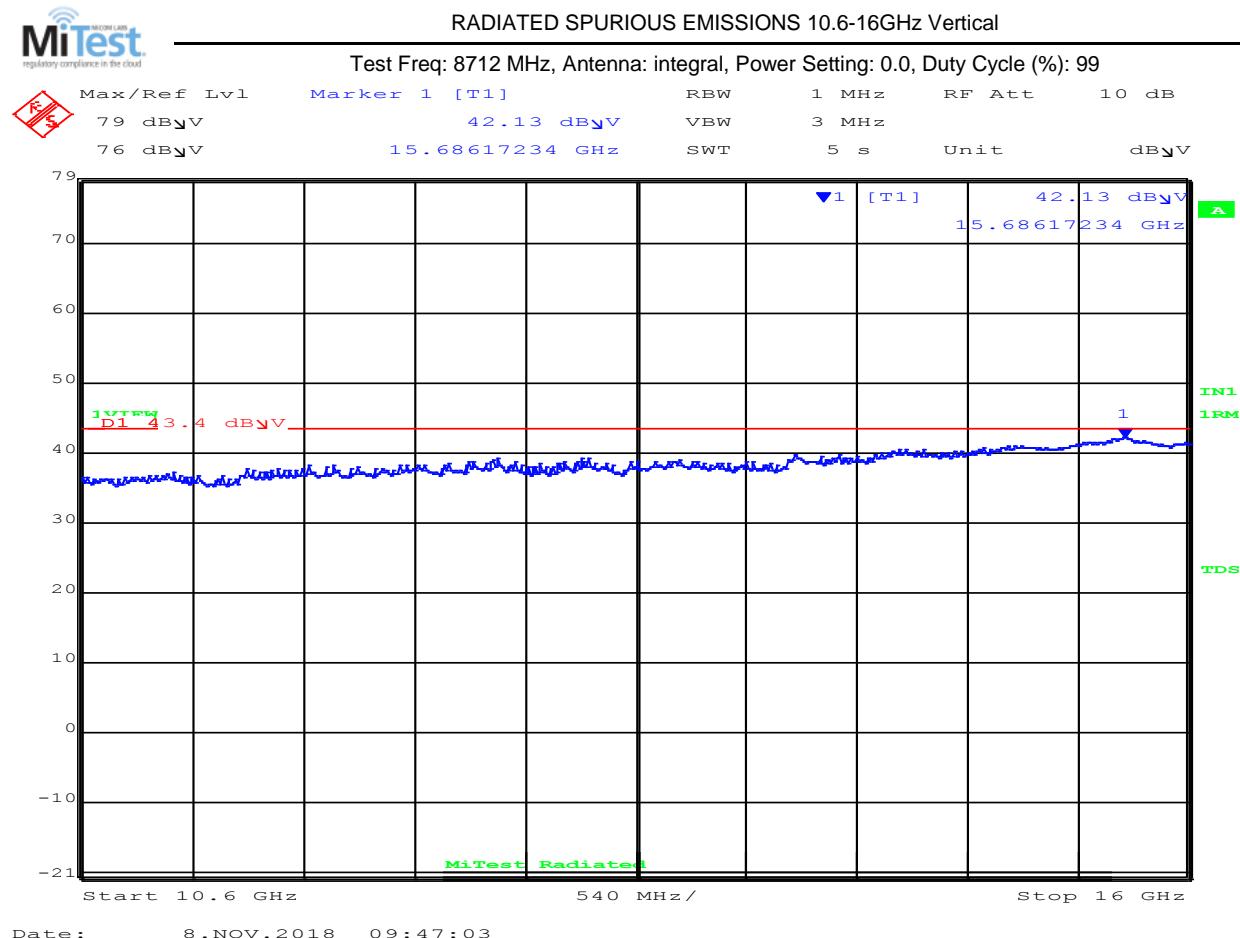


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.2       | 40.7               | Average          | Vertical | 150    | 0       | 43.4               | -2.70     | Pass       |

**Test Notes:**

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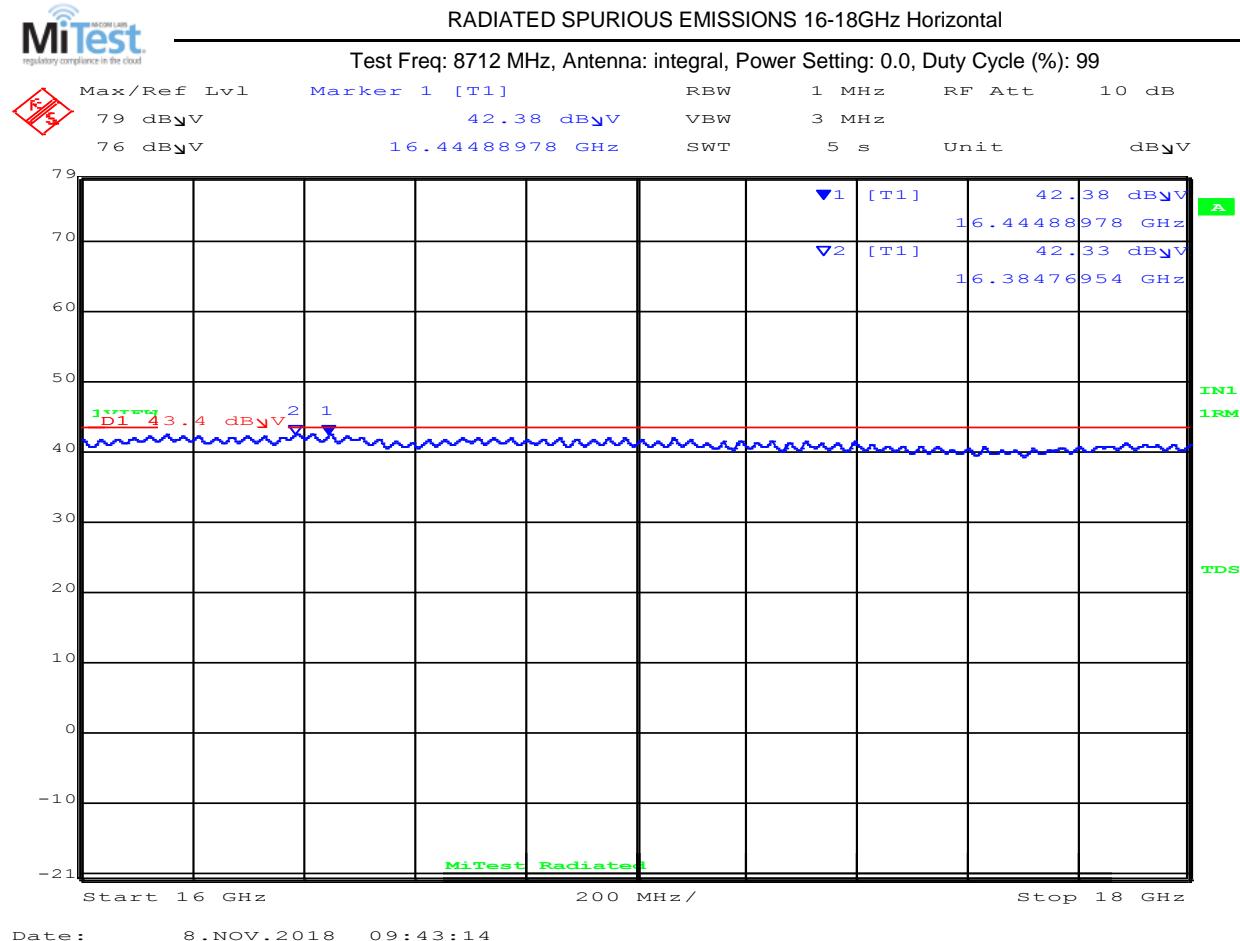


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>μ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>μ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|
| 1   | 16444.9       | 41.4                      | Average          | Horizontal | 150    | 0       | 43.4                      | -2.00     | Pass       |
| 2   | 16384.8       | 41.3                      | Average          | Horizontal | 150    | 0       | 43.4                      | -2.10     | Pass       |

#### Test Notes:

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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

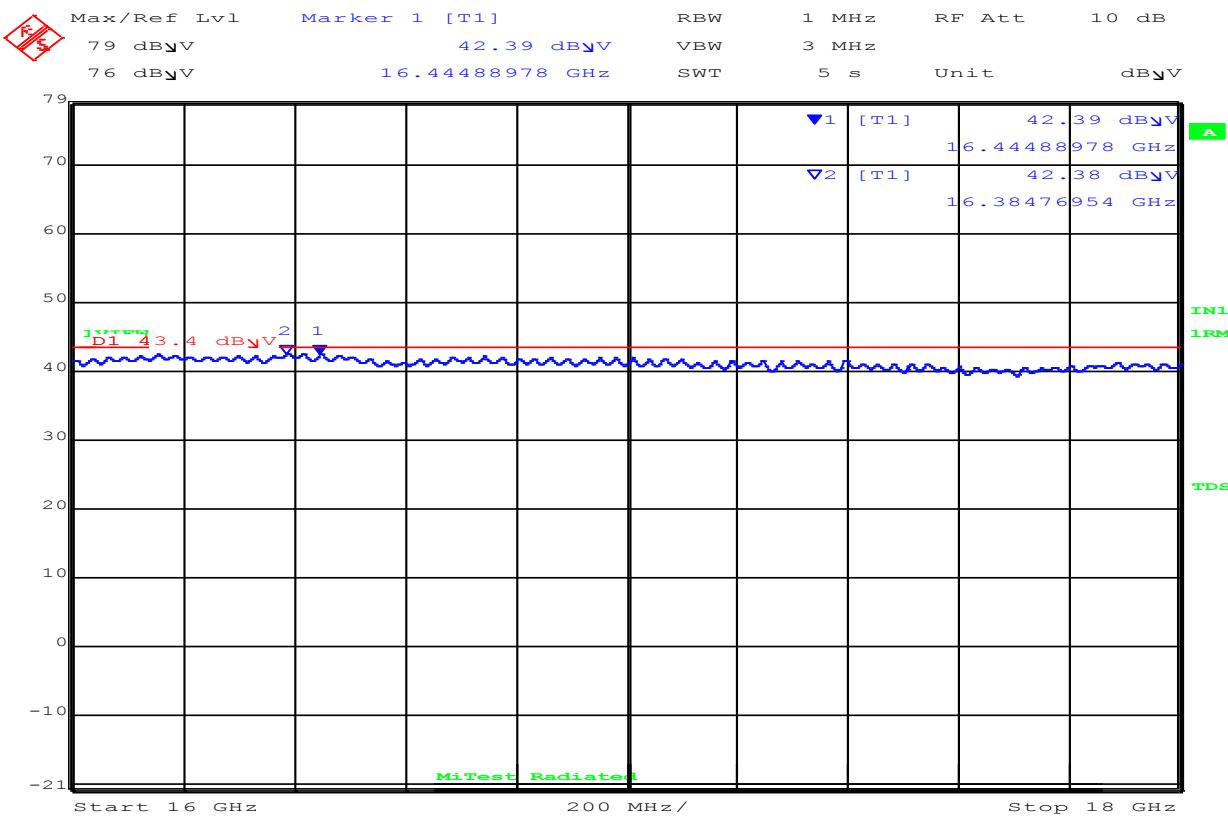
|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | -1.8           | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 8712.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | 0.0            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



##### RADIATED SPURIOUS EMISSIONS 16-18GHz Vertical

Test Freq: 8712 MHz, Antenna: integral, Power Setting: 0.0, Duty Cycle (%): 99



Date: 8.NOV.2018 09:40:35

#### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dB <sub>µ</sub> V/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dB <sub>µ</sub> V/m | Margin dB | Pass /Fail |
|-----|---------------|---------------------------|------------------|------------|--------|---------|---------------------------|-----------|------------|
| 1   | 16444.9       | 41.4                      | Average          | Horizontal | 150    | 0       | 43.4                      | -2.00     | Pass       |
| 2   | 16384.8       | 41.3                      | Average          | Horizontal | 150    | 0       | 43.4                      | -2.10     | Pass       |

#### Test Notes:

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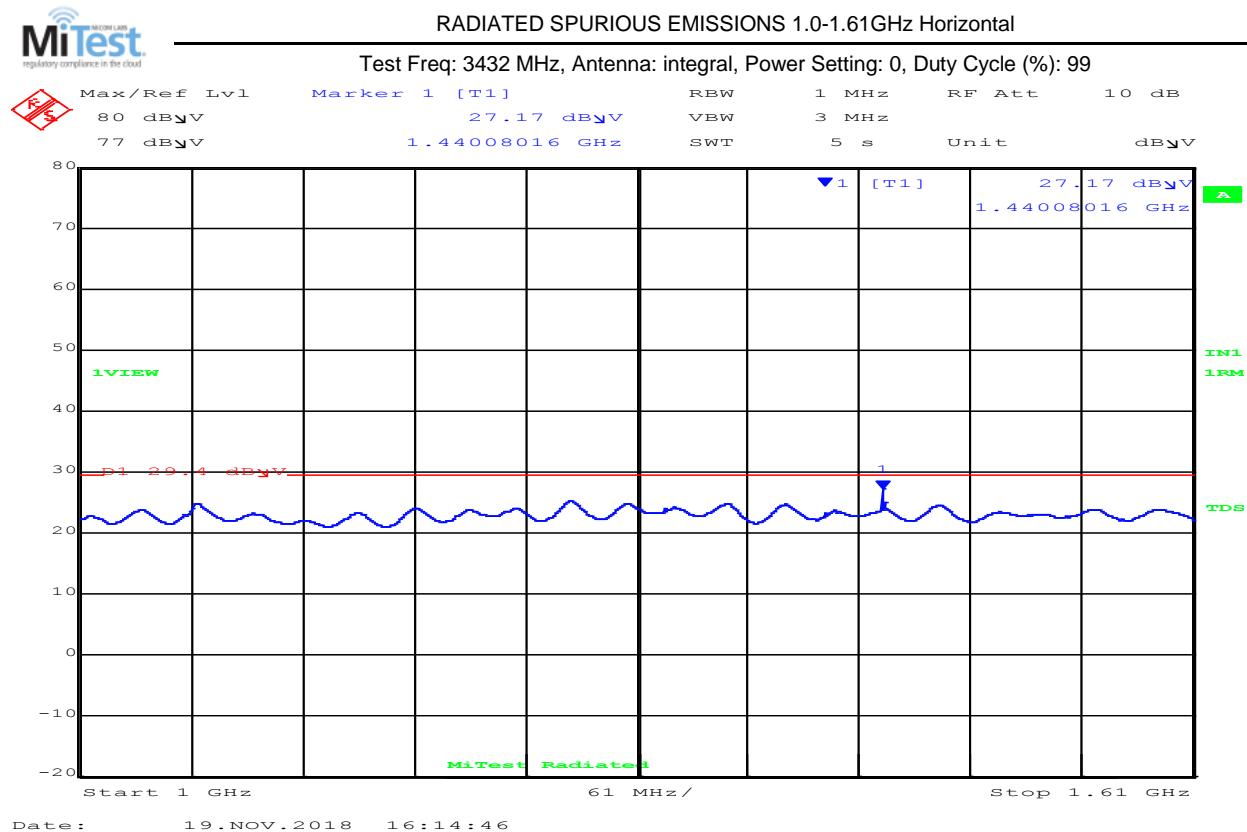
### 9.4.1.3. Combat AL5934

3432 MHz

#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 1000.00– 1610.00 MHz  |               |              |                  |            |        |         |              |           |            |  |
|---|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|--|
| Num   | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| 1   | 1440.08       | 26.9         | Average          | Horizontal | 150    | 0       | 29.4         | -2.5      | Pass       |  |
| <b>Test Notes:</b>  |               |              |                  |            |        |         |              |           |            |  |
| Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end) |               |              |                  |            |        |         |              |           |            |  |

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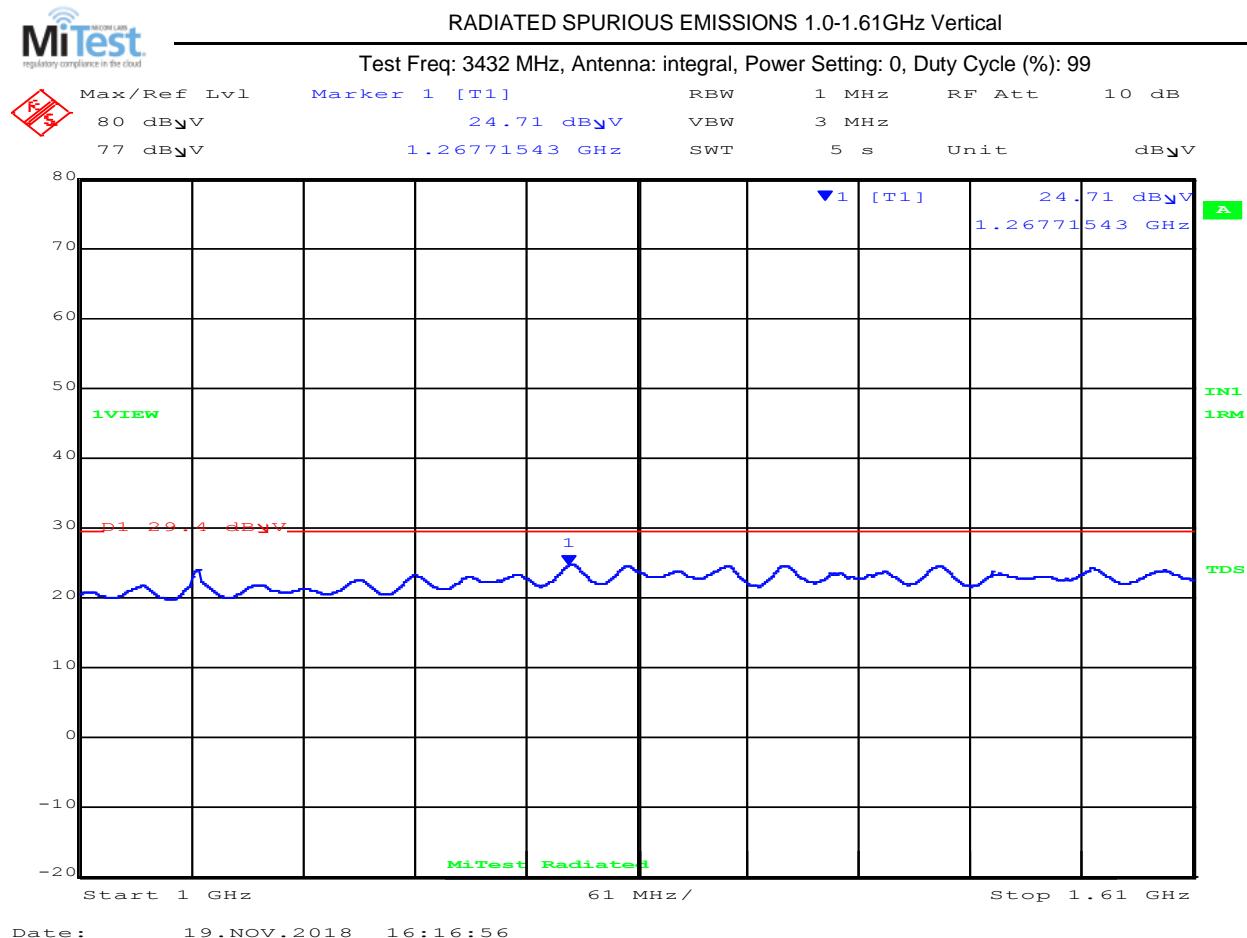


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#### Equipment Configuration for Spurious Emissions 1-1.61 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 1000.00– 1610.00 MHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 1267.72       | 23.90              | Average          | Vertical | 150    | 0       | 29.4               | -5.5      | Pass       |

#### Test Notes:

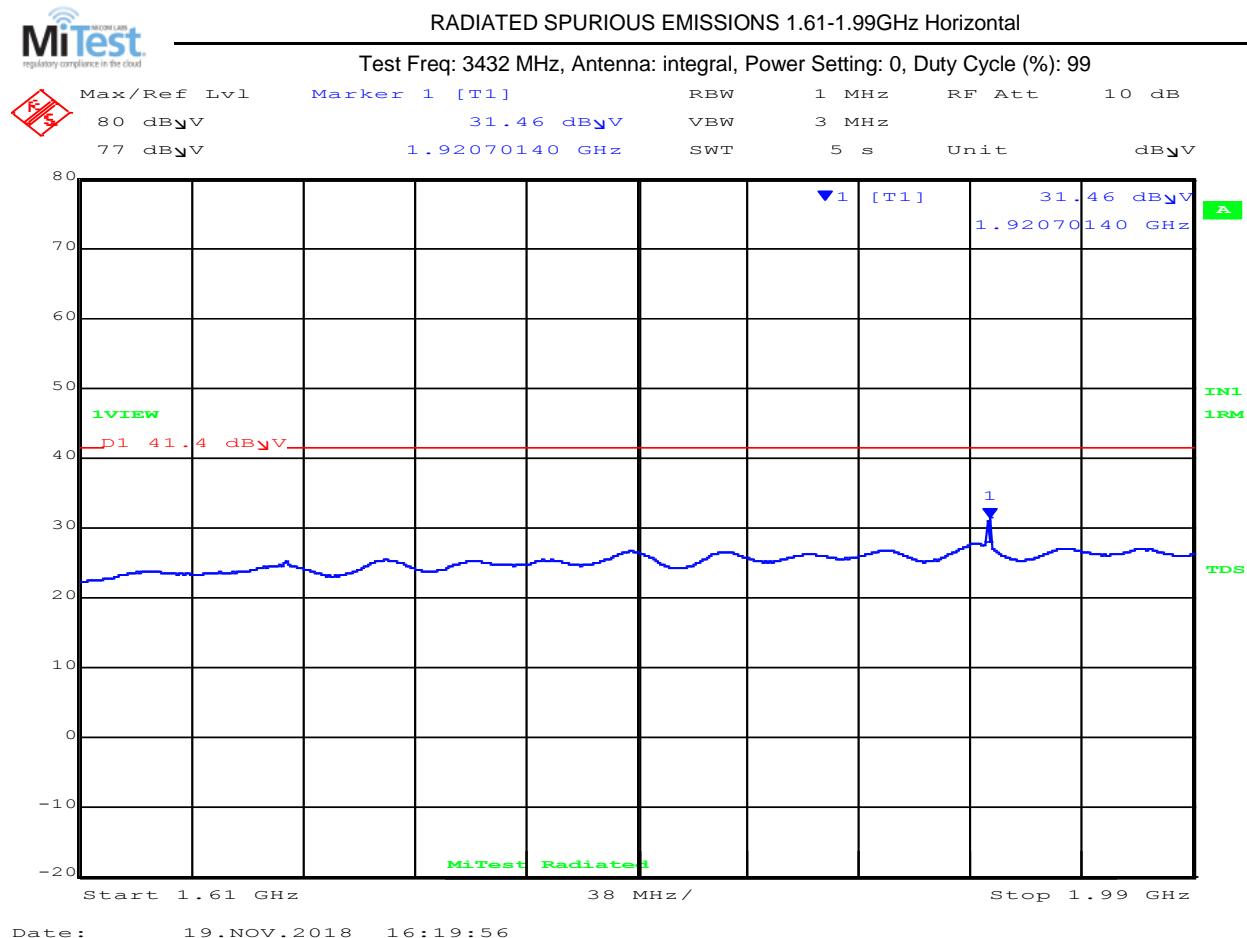
Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end)

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### Equipment Configuration for Spurious Emissions 1.61 - 1.99 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



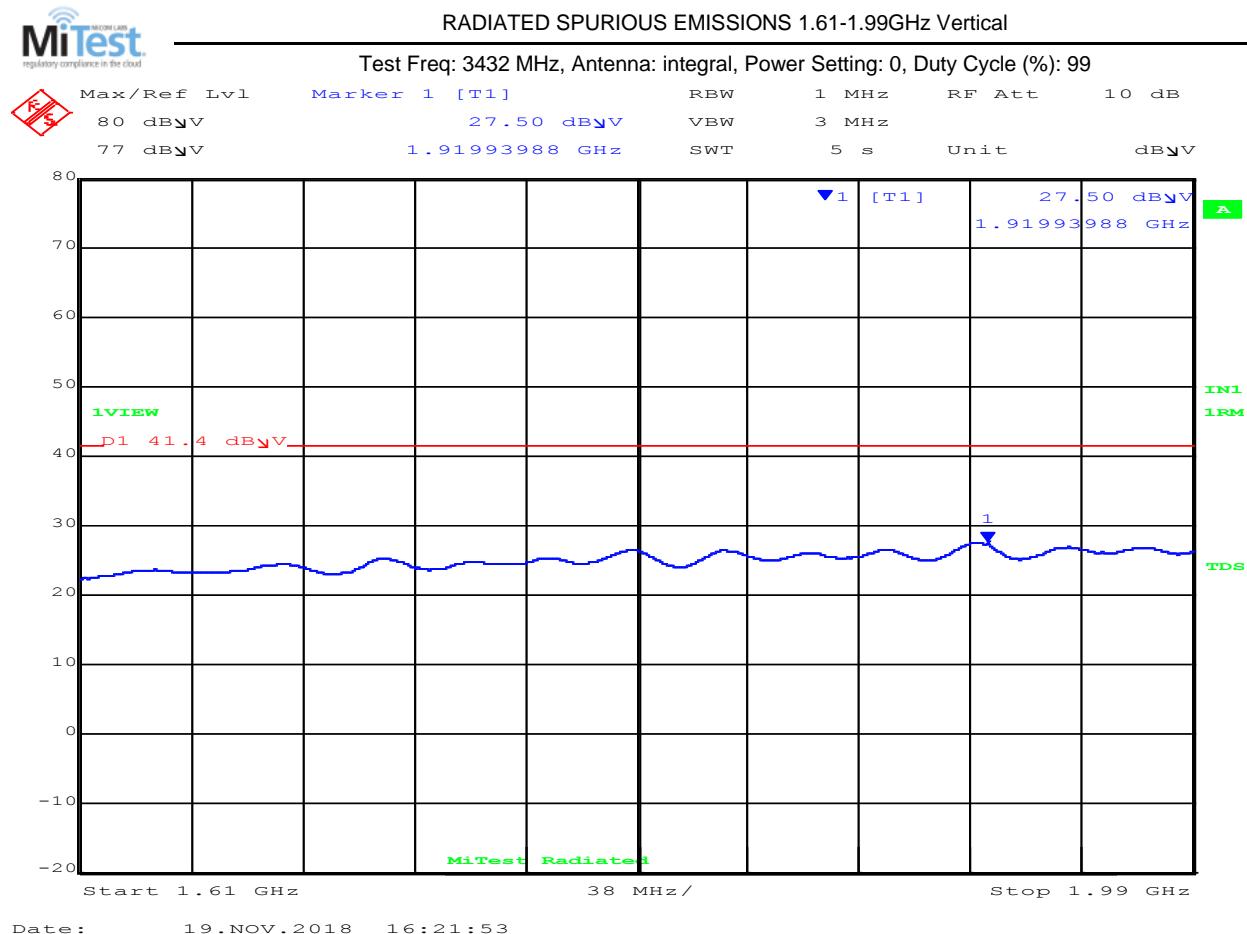
| 1610.00–1990.00MHz  |               |              |                  |     |        |         |              |           |            |  |
|---|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|--|
| Num   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| No Signals within 6 dB of limit   |               |              |                  |     |        |         |              |           |            |  |
| <b>Test Notes:</b><br>Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end) |               |              |                  |     |        |         |              |           |            |  |

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**Equipment Configuration for Spurious Emissions 1.61 – 1.99 GHz Vertical**

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

**Test Measurement Results**



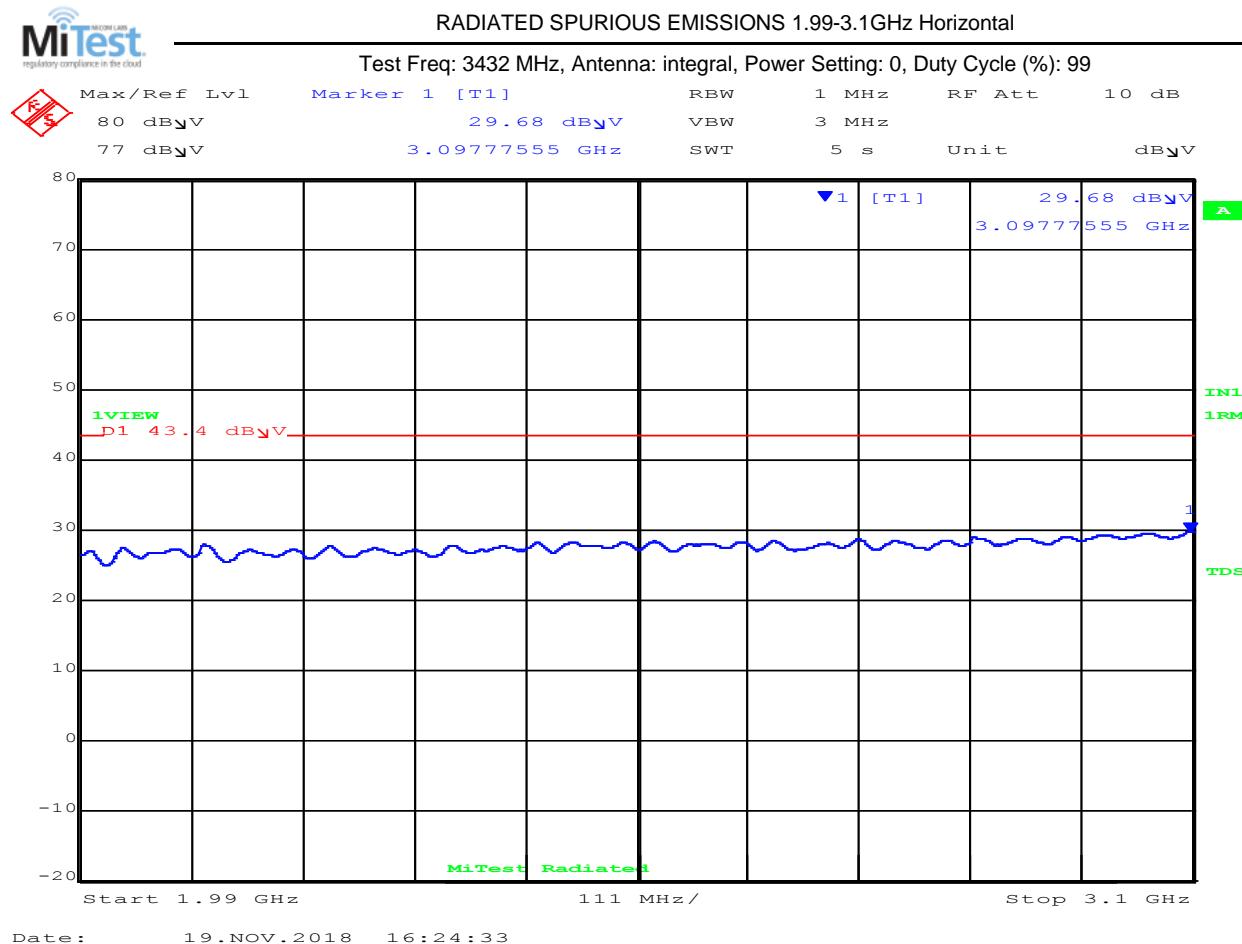
| 1610.00 – 1990.00 MHz   |               |              |                  |     |        |         |              |           |            |
|---|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals within 6 dB of limit   |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end) |               |              |                  |     |        |         |              |           |            |

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Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

Test Measurement Results



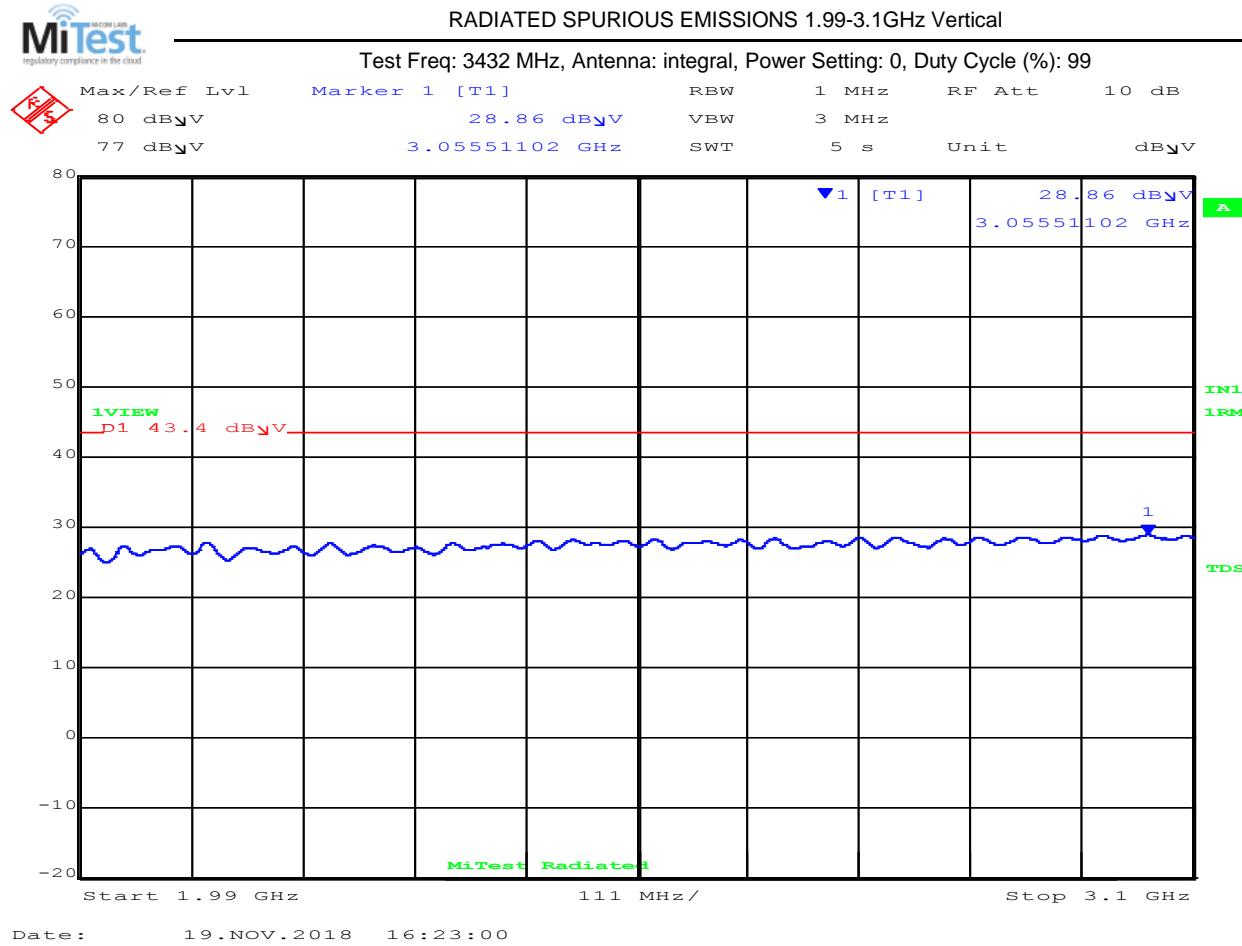
| 1990.00–3100.00 GHz   |               |              |                  |     |        |         |              |           |            |
|---|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals within 6 dB of limit   |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end) |               |              |                  |     |        |         |              |           |            |

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### Equipment Configuration for Spurious Emissions 1.99 – 3.1 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



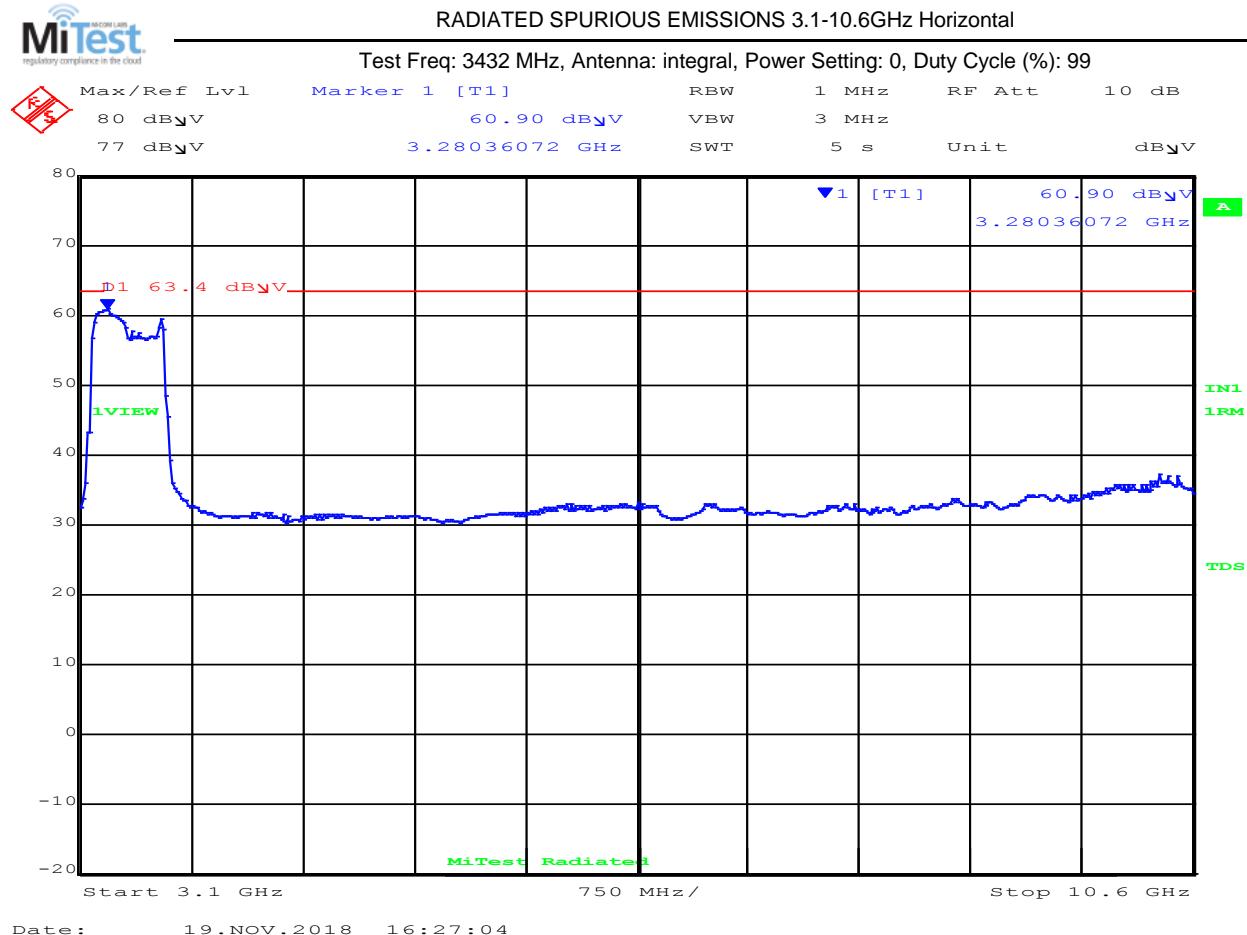
| 1990.00 – 3100.00 GHz   |               |                    |                  |     |        |         |                    |           |            |
|---|---------------|--------------------|------------------|-----|--------|---------|--------------------|-----------|------------|
| Num   | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
| No Signals within 6 dB of limit   |               |                    |                  |     |        |         |                    |           |            |
| <b>Test Notes:</b><br>Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end) |               |                    |                  |     |        |         |                    |           |            |

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



| 3100.00 - 10600.00 MHz |               |              |                  |            |        |         |              |           |            |  |
|------------------------|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|--|
| Num                    | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |  |
| 1                      | 3280.36       | 58.9         | Average          | Horizontal | 150    | 0       | 63.4         | -4.5      | Pass       |  |

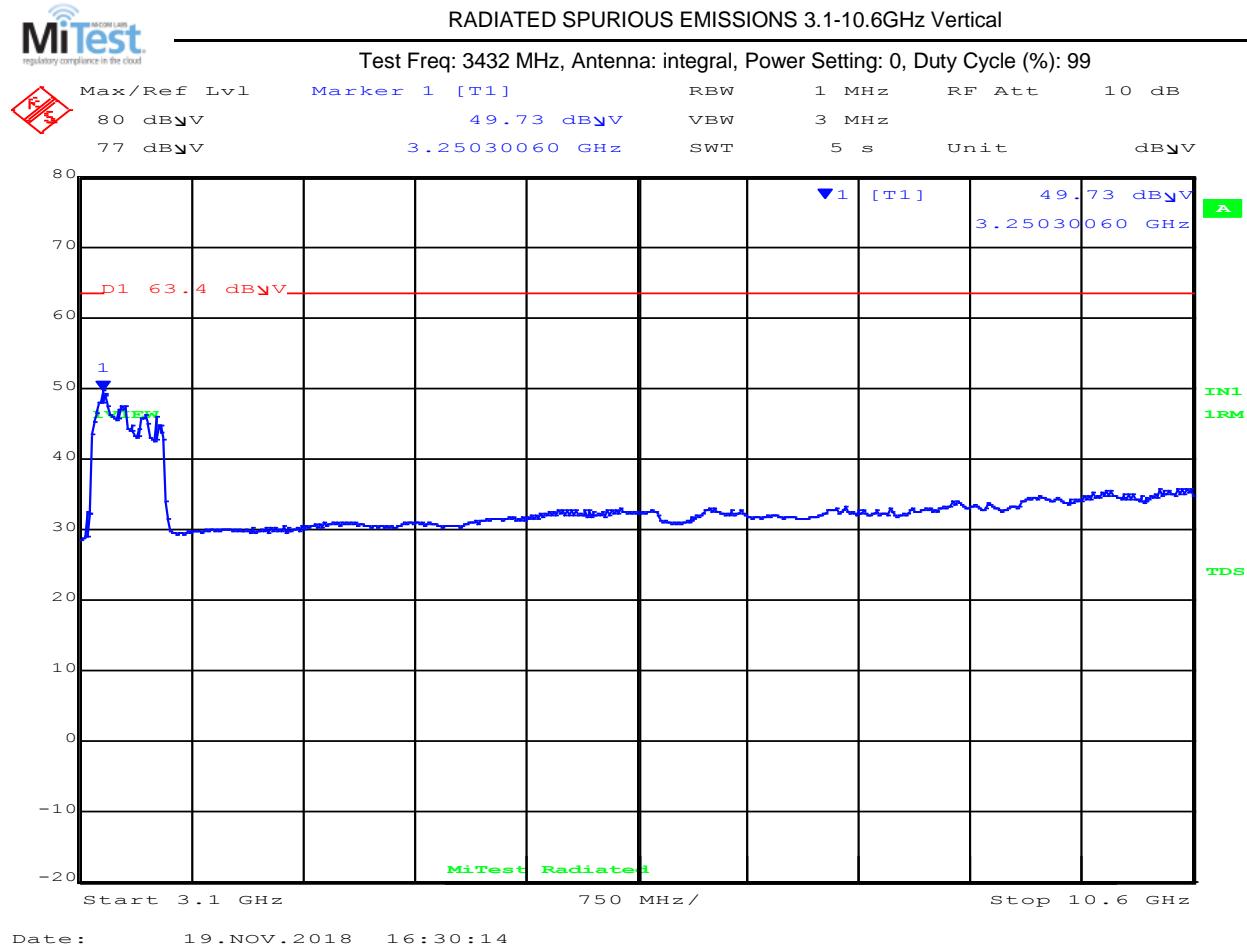
**Test Notes:**  
Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end)

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### Equipment Configuration for Spurious Emissions 3.1 – 10.6 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



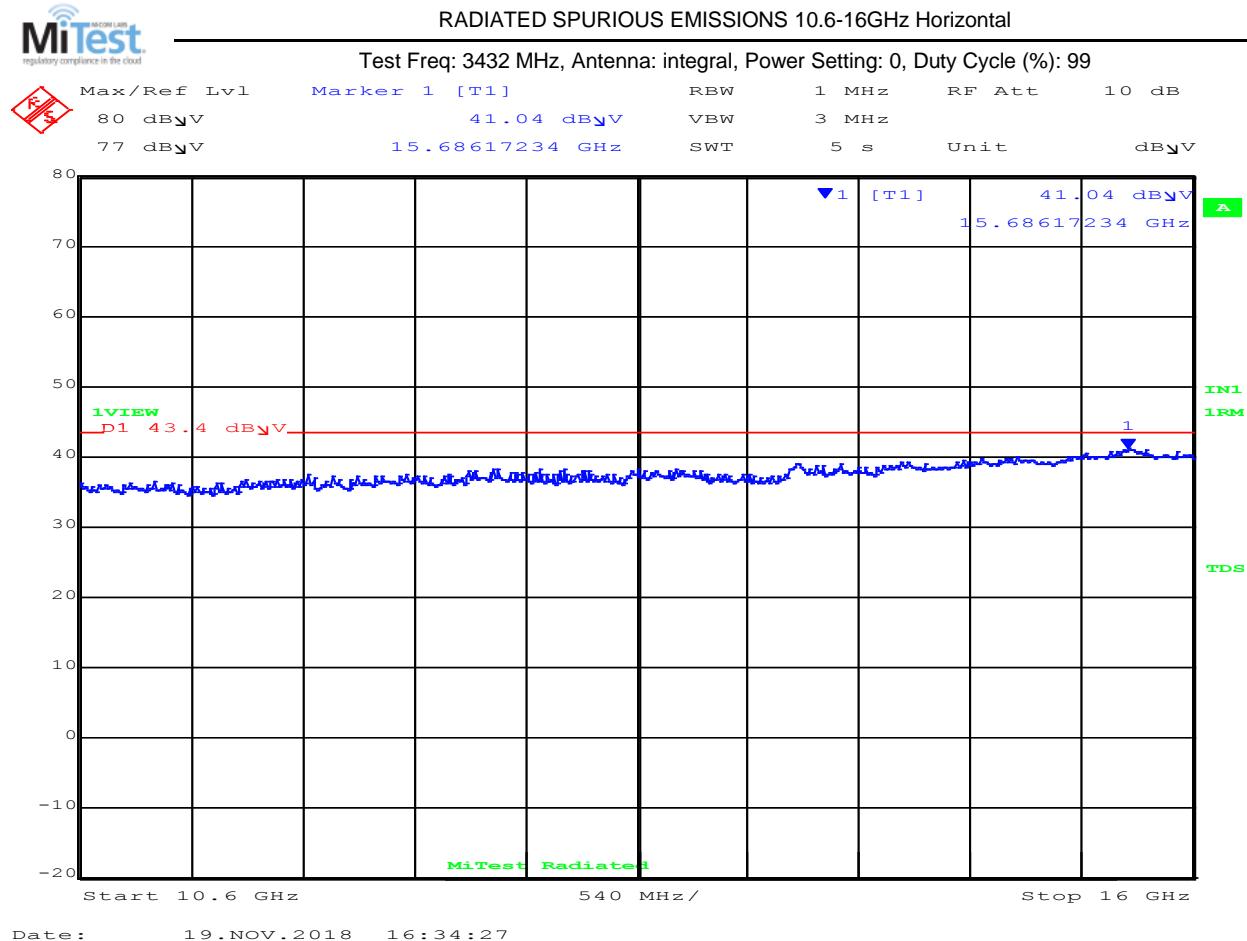
| 3100.00 - 10600.00 MHz  |               |              |                  |     |        |         |              |           |            |
|---|---------------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| Num   | Frequency MHz | Level dBµV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| No Signals within 6 dB of Limit   |               |              |                  |     |        |         |              |           |            |
| <b>Test Notes:</b><br>Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end) |               |              |                  |     |        |         |              |           |            |

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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 15686.2       | 39.8         | Average          | Horizontal | 150    | 0       | 43.4         | -3.6      | Pass       |

#### Test Notes:

Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end)

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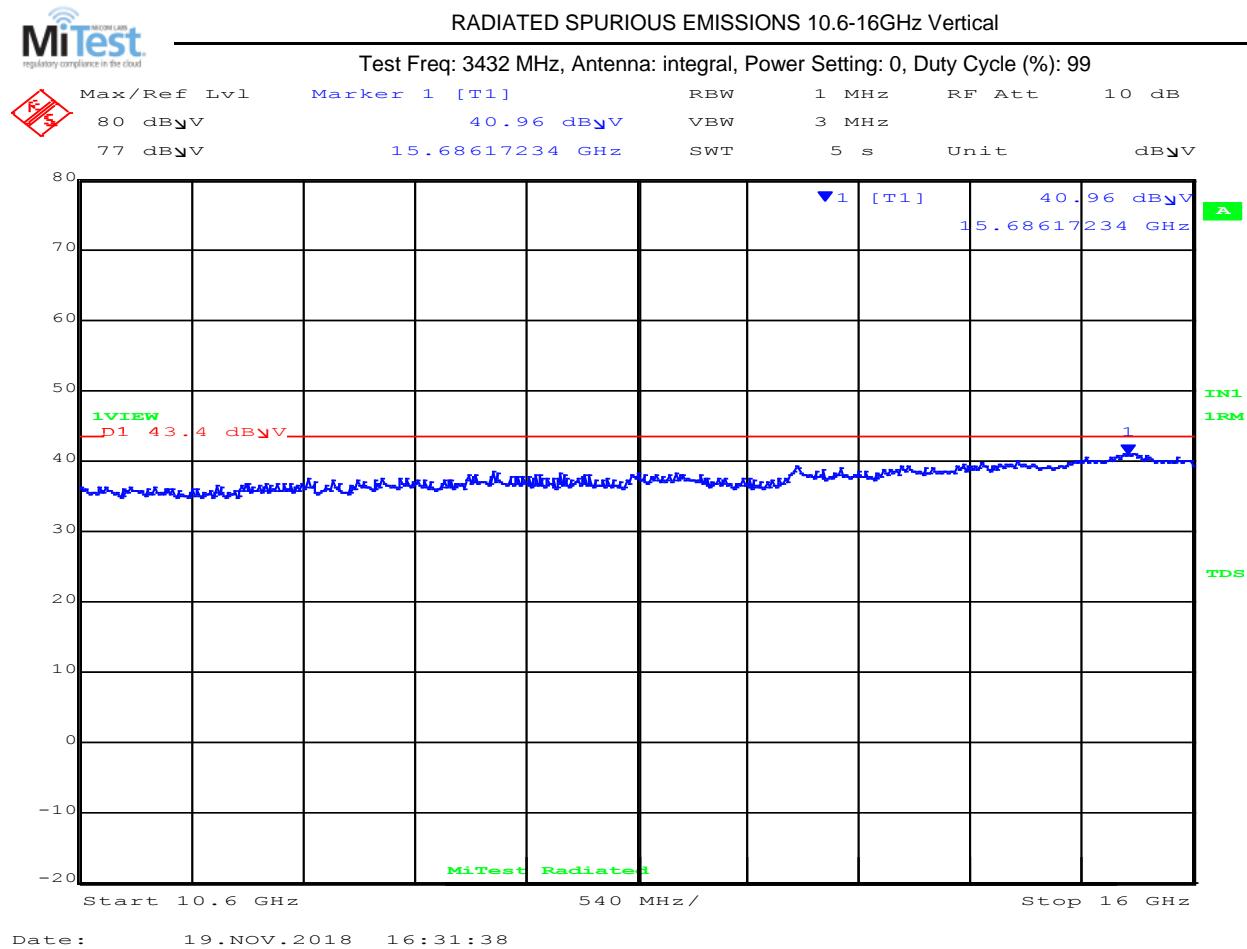


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 10.6 – 16.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



Date: 19.NOV.2018 16:31:38

#### 10600.00 – 16000.00 GHz

| Num | Frequency MHz | Level dB $\mu$ V/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dB $\mu$ V/m | Margin dB | Pass /Fail |
|-----|---------------|--------------------|------------------|----------|--------|---------|--------------------|-----------|------------|
| 1   | 15686.2       | 39.9               | Average          | Vertical | 150    | 0       | 43.4               | -3.5      | Pass       |

#### Test Notes:

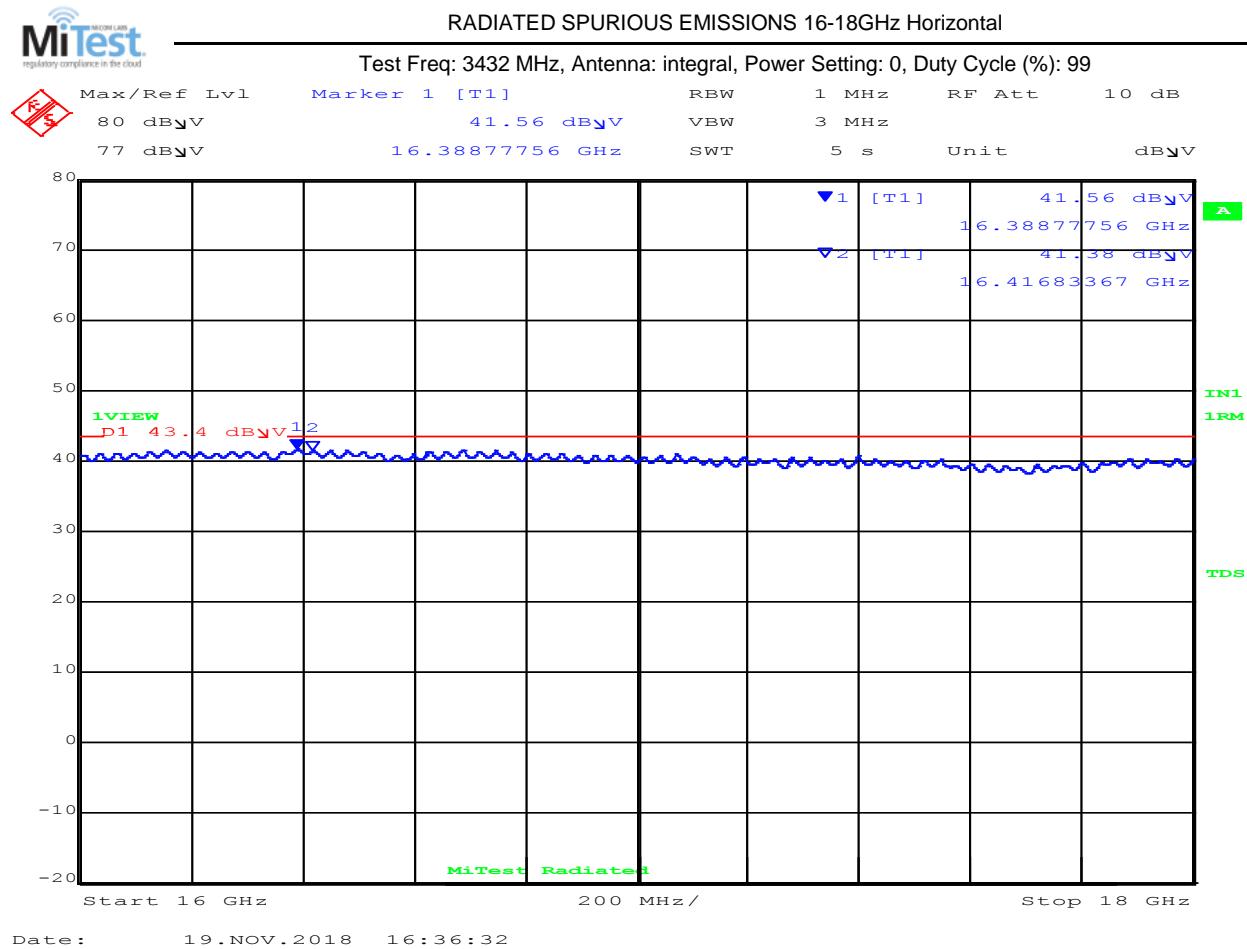
Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end)

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### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Horizontal

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

### Test Measurement Results



### 16000.00 – 18000.00 GHz

| Num | Frequency MHz | Level dBµV/m | Measurement Type | Pol        | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
|-----|---------------|--------------|------------------|------------|--------|---------|--------------|-----------|------------|
| 1   | 16388.8       | 40.5         | Average          | Horizontal | 150    | 0       | 43.4         | -2.5      | Pass       |
| 2   | 16416.8       | 40.3         | Average          | Horizontal | 150    | 0       | 43.4         | -3.1      | Pass       |

#### Test Notes:

Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end)

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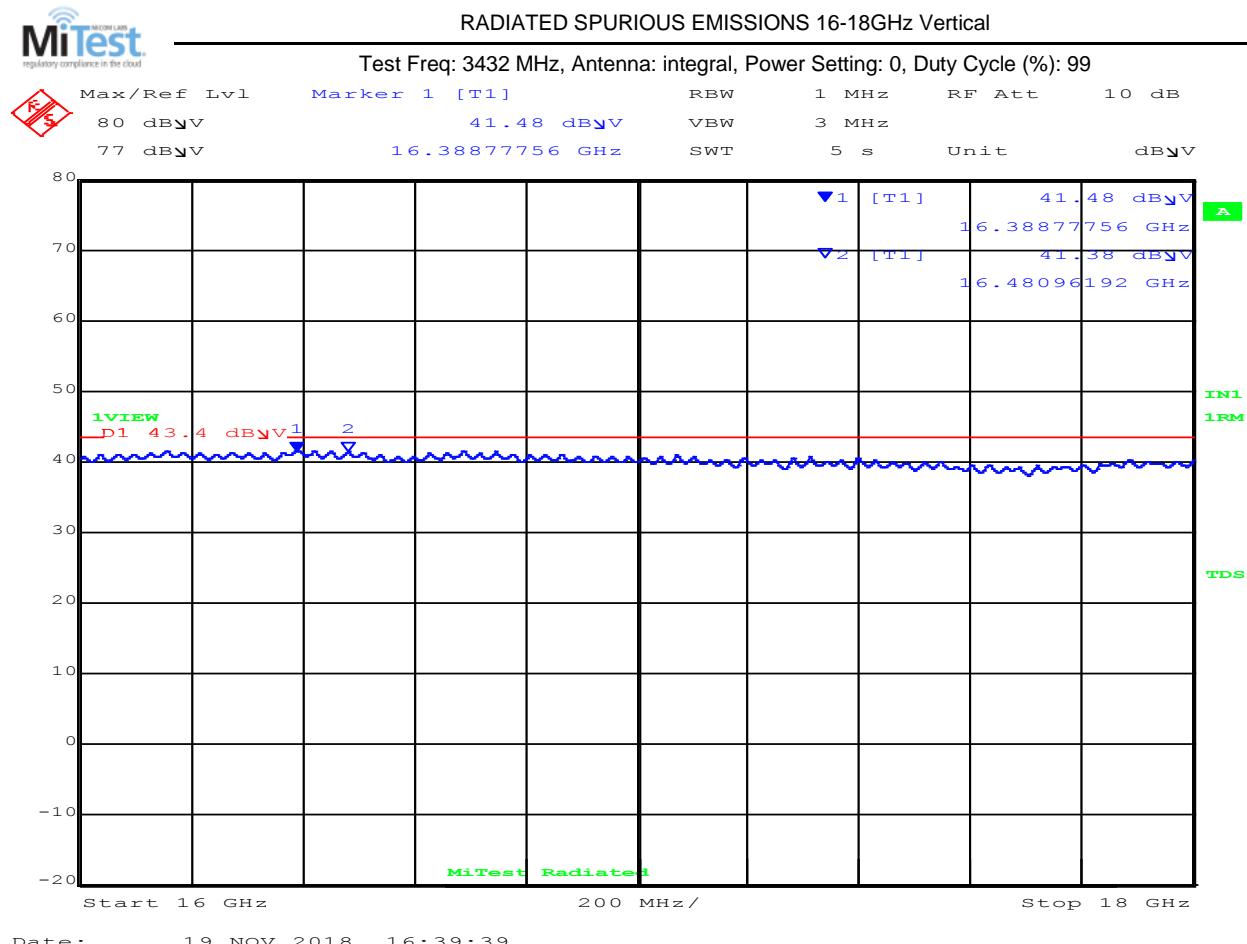


**Title:** Alereon AL5955, AL5930, AL5934  
**To:** FCC Part 15.519  
**Serial #:** ALER01-U2B Rev A  
**Issue Date:** 12th December 2018  
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#### Equipment Configuration for Spurious Emissions 16.0 – 18.0 GHz Vertical

|                                 |                |                        |                   |
|---------------------------------|----------------|------------------------|-------------------|
| <b>Antenna:</b>                 | Chip           | <b>Variant:</b>        | 500 MHz Bandwidth |
| <b>Antenna Gain (dBi):</b>      | 1.0            | <b>Modulation:</b>     | BPM/BPSK          |
| <b>Beam Forming Gain (Y):</b>   | Not Applicable | <b>Duty Cycle (%):</b> | 99%               |
| <b>Channel Frequency (MHz):</b> | 3432.00        | <b>Data Rate:</b>      |                   |
| <b>Power Setting:</b>           | Max            | <b>Tested By:</b>      | JMH               |

#### Test Measurement Results



| 16000.00 – 18000.00 GHz |               |              |                  |          |        |         |              |           |            |
|-------------------------|---------------|--------------|------------------|----------|--------|---------|--------------|-----------|------------|
| Num                     | Frequency MHz | Level dBµV/m | Measurement Type | Pol      | Hgt cm | Azt Deg | Limit dBµV/m | Margin dB | Pass /Fail |
| 1                       | 16388.8       | 40.5         | Average          | Vertical | 150    | 0       | 43.4         | -2.9      | Pass       |
| 2                       | 16481.0       | 40.3         | Average          | Vertical | 150    | 0       | 43.4         | -3.1      | Pass       |

**Test Notes:**  
Laptop connected via 10ft USB cable with Ferrites (TDK ZCAT-330-1236 and Fair-Rite Type 61 with one turn at each end)

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