Measurement of RF Emissions from the Model C036045A001A 450AP Radio Transmitter

For	Cambium Networks, Inc. 3800 Golf Road Rolling Meadows, IL 60714
P.O. Number	4500371074
Date Tested	August 16 through August 23, 2018 and September 28, 2018
Test Personnel	Richard King
Test Specification	FCC "Code of Federal Regulations" Title 47 Part 96 Subpart E, Section 96.41 KDB 940660 January 29, 2018

Test Report By: Richard E. King

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Requested By: Steve Payne
Cambium Networks, Inc.

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REVISION HISTORY

Revision	Date	Description
—	11 OCT 2018	Initial release
A	17 Oct 2018 By REK	- Added Rev A to the report number on the cover and throughout the report. - Corrected formatting error on data pages 88-90.
B	8 APR 2019 By Rick King	- Added Rev B to the report number on the cover and throughout the report. - Added the applicable antenna information to section 1.1 which was originally listed section 3.1.2. - Added a table of the PSD results at the end of the PSD plots. - Corrected the EIRP output power table on page 27 to read dBm/10MHz. - Added FCC ID Z8H89FT0010 to section 1.1.
C	17 JUN 2019 By Rick King	- Added Rev C to the report number on the cover and throughout the report. - Included a reference to the Total Power table on page 8. - Added a Total Power Ports A +B table on page 28.
D	25 JUN 2019 By Rick King	- Added Rev D to the report number on the cover and throughout the report. - Corrected a Total Power Ports A +B table on page 28.

Measurement of RF Emissions from the 450AP Radio Transmitter, Part No. C036045A001A

1. INTRODUCTION

1.1. Scope of Tests

This document represents the results of the series of radio interference measurements performed on a Cambium Networks, Inc. 450AP Radio Transmitter, Part No. C036045A001A, (hereinafter referred to as the Equipment Under Test (EUT)). The EUT was manufactured and submitted for testing by Cambium Networks, Inc. located in Rolling Meadows, IL.

Applicable antennas:
PMP 450 3 GHz Access Point Antenna / Winncom model C030045D901A, serial number 3011130004 3.3-3.8GHz 65 Deg. 17dBi gain antenna.

FCC ID: Z8H89FT0010

1.2. Purpose

The test series was performed to determine if the EUT would meet selected requirements of FCC Part 96, Subpart E, Section 96.41, for Citizens Broadband Radio Service. Testing was performed in accordance with KDB 940660 D01 Part 96 CBRS Eqpt v01 and IEEE C63.26-2015.

1.3. Deviations, Additions and Exclusions

There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4. EMC Laboratory Identification

This series of tests was performed by Elite Electronic Engineering Incorporated of Downers Grove, Illinois. The laboratory is accredited by the American Association for Laboratory Accreditation (A2LA), A2LA Lab Code: 1786-01.

1.5. Laboratory Conditions

The temperature at the time of the test was 23°C and the relative humidity was 48%.

2. APPLICABLE DOCUMENTS

The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 96, Subpart E, Section 96.41
- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 2
- IEEE C63.26-2015 “American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services Accredited by the American National Standards Institute”
- FCC KDB 940660, " Certification and Test Procedures For Citizens Broadband Radio Service Devices Authorized Under PART 96", Released January 29, 2018

3. EUT Setup and Operation

3.1. General Description

The EUT is a Cambium Networks, Inc., 450AP Radio Transmitter, Part No. C036045A001A. A block diagram of the EUT setup is shown as Figure 1. A photograph of the EUT is shown as Figure 2.

3.1.1. Power Input

The EUT was powered by 30V from a Gigabit Compatible, Model No. PSA15M300 POE power supply.

3.1.2. Peripheral Equipment

The EUT was submitted with a PMP 450 3 GHz Access Point Antenna / Winncom model C030045D901A serial number 3011130004 3.3-3.8GHz 65 Deg. 17dBi gain antenna. This antenna was used to establish the EIRP output power level.

3.1.3. Signal Input/Output Leads

No interconnect cables were submitted with the EUT.

3.1.4. Grounding

The EUT was grounded through the ground lug on the chassis of the EUT to the ground plane.

3.1.5. Frequency of EUT

The frequency spectrum from 30MHz to 40GHz was investigated.

3.2. Operational Mode

All emissions tests were performed separately in the following modes:

Tx @ 3555MHz, 20dBm, 10MHz
Tx @ 3600MHz, 20dBm, 10MHz
Tx @ 3695MHz, 20dBm, 10MHz

3.3. EUT Modifications

No modifications were required for compliance.

4. Test Facility and Test Instrumentation

4.1. Shielded Enclosure

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. With the exception of the floor, the reflective surfaces of the shielded chamber are lined with ferrite tiles on the walls and ceiling. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2014 and CISPR 16 for site attenuation.

4.2. Test Instrumentation

The test instrumentation and auxiliary equipment used during the tests are listed in Table 9-1.

4.3. Calibration Traceability

Test equipment is maintained and calibrated on a regular basis with a calibration interval not greater than two years. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.4. Measurement Uncertainty

All measurements are an estimate of their true value. The measurement uncertainty characterizes, with a specified confidence level, the spread of values which may be possible for a given measurement system.

The measurement uncertainty for these tests is presented below:

Conducted Emissions Measurements		
Combined Standard Uncertainty	1.06	-1.06
Expanded Uncertainty (95% confidence)	2.12	-2.12

Radiated Emissions Measurements		
Combined Standard Uncertainty	2.09	-2.09
Expanded Uncertainty (95% confidence)	4.19	-4.19

5. TEST PROCEDURES

5.1. FCC RF Power Output Measurements

5.1.1.Requirements

5.1.1.1 FCC 96.41

Per 96.41(b), Power limits: Unless otherwise specified in this section, the maximum effective isotropic radiated power (EIRP) and maximum Power Spectral Density (PSD) of any CBSD and End User Device must comply with the limits shown in the table in this paragraph (b):

Device	Maximum EIRP (dBm/10 MHZ)	Maximum PSD (dBm/MHz)
End User Device	23	n/a
Category A CBSD	30	20
Category B CBSD[1]	47	37

[1] Category B CBSDs will only be authorized for use after an ESC is approved and commercially deployed consistent with §§96.15 and 96.67.

5.1.2.Procedures

5.1.2.1 EIRP/Average Conducted Output Power

In accordance with Paragraph 5.2.4.3.2 of C63.26: 2015 Alternative procedure for measuring average power of a narrowband signal with a constant duty cycle using a spectrum/signal analyzer or EMI receiver:

When the fundamental condition for average power measurements cannot be realized (i.e., the EUT cannot be configured to transmit at full-power on a continuous basis (i.e., duty cycle < 98%) and the instrumentation cannot be configured to measure only during active full-power transmissions), then the following procedure can be used if the EUT duty cycle is constant (i.e., duty cycle variations are less than or equal to ±2%):

a) Set span to 2 × to 3 × the OBW.
b) Set RBW ≥ OBW.
c) Set VBW ≥ 3 × RBW.
d) Set number of measurement points in sweep ≥ 2 × span / RBW.
e) Sweep time:

1) Set = auto-couple, or
2) Set ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. The transmission period is the (on + off) time.

f) Detector = power averaging (rms).
g) Set sweep trigger to “free run.”
h) Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. (To accurately determine the average power over the on and off period of the transmitter, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.)
i) Use the peak marker function to determine the maximum amplitude level.
j) Add [10 log (1/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25%.

5.1.3. Results

The conducted output power data is shown on pages 21 through 26. All output power levels from the EUT were below the limits of FCC 96.41. The EIRP output power data is shown on pages 27 and 28. As can be seen from the data the EIRP output power levels were within the specification limits.

5.2. Emissions Outside the Fundamental

5.2.1. Requirements

5.2.1.1 FCC 96.41

Emission and interference limits—Confirm that the device satisfies the emission limits specified in Section 96.41(e) for all declared channel sizes, at the lowest and highest edges of the band, and in the middle of the band.

3.5 GHz Emissions and Interference Limits—(1) General protection levels: Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed −13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed −25 dBm/MHz. The upper and lower SAS-assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.

Emissions outside the fundamental - The limits for emission outside the fundamental are as follows.

- within 0 MHz to 10 MHz above and below the assigned channel ≤ -13 dBm/MHz
- greater than 10 MHz above and below the assigned channel ≤ -25 dBm/MHz
- any emission below 3530 MHz and above 3720 MHz ≤ -40 dBm/MHz.

5.2.2. Procedures

When the fundamental condition for average power measurements cannot be realized (i.e., the EUT cannot be configured to transmit at full-power on a continuous basis (i.e., duty cycle < 98%) and the instrumentation cannot be configured to measure only during active full-power transmissions), then the following procedure can be used if the EUT duty cycle is constant (i.e., duty cycle variations are less than or equal to ±2%):

a) Set span to 2 × to 3 × the OBW.
b) Set RBW ≥ OBW.
c) Set VBW ≥ 3 × RBW.
d) Set number of measurement points in sweep ≥ 2 × span / RBW.

e) Sweep time:
    1) Set = auto-couple, or
    2) Set ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. The transmission period is the (on + off) time.
f) Detector = power averaging (rms).
g) Set sweep trigger to “free run.”
h) Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. (To accurately determine the average power over the on and off period of the transmitter, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.)
i) Use the peak marker function to determine the maximum amplitude level.

5.2.3.Results

The plots for emissions outside the fundamental are presented on pages 29 through 46. All emissions measured from the EUT were within the specification limits.

5.3. Spurious Radiated Emissions

5.3.1.Requirements

5.3.1.1 FCC 96.41

Emission and interference limits—Confirm that the device satisfies the emission limits specified in Section 96.41(e) for all declared channel sizes, at the lowest and highest edges of the band, and in the middle of the band.

Emissions outside the fundamental—The limits for emission outside the fundamental are as follows:

- any emission below 3530 MHz and above 3720 MHz ≤ -40 dBm/MHz.

5.3.2. Antenna Conducted Spurious Emissions - Procedures

The antenna port of the EUT was connected to the spectrum analyzer through 30dB of attenuation. The emissions in the frequency range from 30MHz to 40GHz were observed and plotted separately with the EUT transmitting at low, middle and high hopping frequencies.

a) Set RBW 1MHz.
b) Set VBW ≥ 3 × RBW.
c) Sweep time:
1) Set = auto-couple
d) Detector = power averaging (rms).
e) Use the peak marker function to determine the maximum amplitude level.

5.3.3.Spurious Radiated Emissions - Procedures

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with CISPR 16 for site attenuation.

The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

1. Preliminary radiated measurements were performed to determine the frequencies where the significant emissions might be found. The EUT was placed on a 1.5 meter high, non-conductive stand and set to transmit. With the EUT at one set position and the measurement antenna at a set height (i.e. without maximizing), the radiated emissions were measured using a peak detector and

automatically plotted. The broadband measuring antenna was positioned at a 3 meter distance from the EUT. This data was then automatically plotted up through the tenth harmonic of the transmit frequency of the EUT. All preliminary tests were performed separately with the EUT operating in the modes listed in paragraph 3.2.

2. All significant broadband and narrowband signals found in the preliminary sweeps were then maximized. For all measurements below 1GHz, a bilog antenna was used as the measurement antenna. For all tests an RMS average detector was used. For all measurements above 1GHz, a horn antenna was used as the measurement antenna. An average detector was used for all tests above 1GHz.

3. To ensure that maximum emission levels were measured, the following steps were taken:

   a. The EUT was rotated so that all of its sides were exposed to the receiving antenna.
   b. Since the measuring antennas are linearly polarized, both horizontal and vertical field components were measured.
   c. The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings.

The equivalent power was determined from the field intensity levels measured at 3 meters using the substitution method. To determine the emission power, another antenna was set in place of the EUT and connected to a calibrated signal generator. (A tuned dipole was used for all measurements below 1GHz and a double ridged waveguide antenna was used for all measurements above 1GHz.) The output of the signal generator was adjusted to match the received level at the spectrum analyzer. The signal level was recorded. The reading was corrected to compensate for cable loss, as required, and for frequencies above 1GHz, increased by the gain of the waveguide.

5.3.4. Results

The plots of the RMS average antenna conducted emissions are presented on pages 47 through 58. All antenna conducted spurious emissions measured from the EUT were within the specification limits.

The plots of the peak preliminary spurious radiated emissions and the final tabular average spurious radiated emissions results are presented on pages 59 through 91. All spurious radiated emissions measured from the EUT were within the specification limits.

Photographs of the test configuration which yielded the highest or worst case, radiated emission levels are shown as Figure 3 and Figure 4.

5.4. Power Spectral Density-

5.4.1. Requirements

Per 96.41(b), Power limits: Unless otherwise specified in this section, the maximum effective isotropic radiated power (EIRP) and maximum Power Spectral Density (PSD) of any CBSD and End User Device must comply with the limits shown in the table in this paragraph (b):

Device	Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)
End User Device	23	n/a
Category A CBSD	30	20
Category B CBSD[1]	47	37

[1]Category B CBSDs will only be authorized for use after an ESC is approved and commercially deployed consistent with §§96.15 and 96.67.

5.4.2.Procedures

In accordance with paragraph 5.2.4.3.2 of C63.26: 2015 Alternative procedure for measuring average power of a narrowband signal with a constant duty cycle using a spectrum/signal analyzer or EMI receiver:

When the fundamental condition for average power measurements cannot be realized (i.e., the EUT cannot be configured to transmit at full-power on a continuous basis (i.e., duty cycle < 98%) and the instrumentation cannot be configured to measure only during active full-power transmissions), then the following procedure can be used if the EUT duty cycle is constant (i.e., duty cycle variations are less than or equal to ±2%):

a) Set span to 2 × to 3 × the OBW.
b) Set RBW 1MHz.
c) Set VBW ≥ 3 × RBW.
d) Set number of measurement points in sweep ≥ 2 × span / RBW.
e) Sweep time:
    1) Set = auto-couple, or
    2) Set ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. The transmission period is the (on + off) time.
f) Detector = power averaging (rms).
g) Set sweep trigger to “free run.”
h) Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. (To accurately determine the average power over the on and off period of the transmitter, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.)
i) Use the peak marker function to determine the maximum amplitude level.
j) Add [10 log (1/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25%.

5.4.3.Results

The power spectral density plots and table with the EUT transmitting are shown on pages 92 through 98. As can be seen from the data, the power spectral density levels from the EUT are within the limits.

5.5. Peak-to-average power ratio (PAPR)

5.5.1.Requirements

Power measurement: The peak-to-average power ratio (PAPR) of any CBSD transmitter output power must not exceed 13 dB. PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities or another Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

5.5.2.Procedures

In accordance with paragraph 5.2.4.3.2 of C63.26: 2015 Alternative procedure for measuring average power of a narrowband signal with a constant duty cycle using a spectrum/signal analyzer or EMI receiver, the average power was measured and recorded.

See 5.1.2.1 for the measurement procedure.

In accordance with paragraph 5.2.3.3 of C63.26: 2015 Measurement of peak power in a narrowband signal with a spectrum/signal analyzer or EMI receiver:

This procedure can be used to measure the peak power in either a CW-like or noise-like narrowband RF signal. The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

a) Set the RBW ≥ OBW.
b) Set VBW ≥ 3 × RBW.
c) Set span ≥ 2 × OBW.
d) Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period).
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use the peak marker function to determine the peak amplitude level..

5.5.3.Results

The results are presented on data page 99. As can be seen from the data the peak top average ratio is less than the 13 dB limit.

5.6. Reception Limits

5.6.1.Requirements

Reception limits: Priority Access Licensees must accept adjacent channel and in-band blocking interference (emissions from other authorized Priority Access or GAA CBSDs transmitting between 3550 and 3700 MHz) up to a power spectral density level not to exceed −40 dBm in any direction with greater than 99% probability when integrated over a 10 megahertz reference bandwidth unless the affected Priority Access Licensees agree to an alternative limit and communicates that to the SAS.

5.6.2.Procedures

a) Interfering signal was set to 3565MHz.
b) The interfering signal was adjusted to the -40 dBm power spectral density level at the input of the EUT port tested.
c) The link signal was verified between link signal source and the EUT.
d) Recorded the downlink and up link efficiency with the interfering signal removed.
e) Applied the interfering signal to the EUT
f) Recorded the downlink and uplink efficiency
g) Steps (a) through (f) were repeated with the interfering signal set to adjacent channel 3575MHz
h) Steps (a) through (f) were repeated with the interfering signal set to adjacent channel 3585MHz.

5.6.3.Results

Plots of the applied interfering signal are shown on data pages 100 through 102. The results are presented on data page 103. As can be seen from the data, the downlink and uplink efficiency remained at acceptable percentages when the -40dBm power spectral density level was applied.

6. OTHER TEST CONDITIONS

6.1. Test Personnel and Witnesses

All tests were performed by qualified personnel from Elite Electronic Engineering Incorporated.

6.2. Disposition of the EUT

The EUT and all associated equipment were returned to Cambium Networks, Inc. upon completion of the tests.

7. CONCLUSIONS

The Cambium Networks, Inc. 450AP Radio Transmitter, Model No. C036045A001A did fully meet the output EIRP power, power spectral density, peak-to-average power ratio, spurious emissions and emissions outside the fundamental requirements of the FCC "Code of Federal Regulations" Title 47, Part 96, Subpart E and FCC

KDB 940660 when tested per IEEE C63.26-2015.

8. CERTIFICATION

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specifications.

The data presented in this test report pertains to the EUT at the test date. Any electrical or mechanical modification made to the EUT subsequent to the specified test date will serve to invalidate the data and void this certification.

This report must not be used to claim product certification, approval, or endorsement by A2LA, NIST or any agency of the Federal Government.

9. EQUIPMENT LIST

Table 9-1 Equipment List

Eq ID	Equipment Description	Manufacturer	Part No.	Serial No.	Frequency Range	Cal Date	Due Date
APW0	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-30-20G20R6G	PL2926/0646	20GHZ-26.5GHZ	4/5/2018	4/5/2019
APW10	PREAMPLIFIER	PMI	PE2-35-120-5R0-10-12-SFF	PL9609/1139	1GHZ-20GHZ	4/5/2018	4/5/2019
APW5	PREAMPLIFIER	PLANAR	PE2-36-26D540G-5R0-1	PL3044/0651	26.5GHZ-40GHZ	2/28/2018	2/28/2020
CDX5	COMPUTER	ELITE	WORKSTATION			N/A	
GSE0	SIGNAL GENERATOR (40GHZ)	ROHDE & SCHWARZ	SMB100A	175137	100KHZ-40GHZ	8/24/2018	8/24/2019
NHG0	STANDARD GAIN HORN ANTENNA	NARDA	638	---	18-26.5GHZ	NOTE 1	
NHG1	STANDARD GAIN HORN ANTENNA	NARDA	638	---	18-26.5GHZ	NOTE 1	
NHH0	STANDARD GAIN HORN ANTENNA	NARDA	V637	---	26.5-40GHZ	NOTE 1	
NHH1	STANDARD GAIN HORN ANTENNA	NARDA	V637	---	26.5-40GHZ	NOTE 1	
NTA3	BILOG ANTENNA	TESEQ	6112D	32853	25-1000MHz	9/11/2017	9/11/2018
NWQ0	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS LINDGREN	3117	66657	1GHZ-18GHZ	5/31/2018	5/31/2020
NWQ1	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS-LINDGREN	3117	66655	1GHZ-18GHZ	4/10/2018	4/10/2020
RBG0	EMI ANALYZER	ROHDE & SCHWARZ	ESW44	101533	10HZ-44GHZ	12/7/2017	12/7/2018
T1EE	10DB 25W ATTENUATOR	WEINSCHEL	46-10-34	BN2321	DC-18GHZ	7/9/2018	7/9/2020
T1P0	10dB ATTENUATOR (40GHz)	WEINSCHEL	89-10-12	254	DC-40GHz	3/2/2018	3/2/2020
T2DS	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-34	BS0916	DC-18GHZ	4/24/2018	4/24/2020
T2Q2	20DB/20W ATTENUATOR	AEROFLEX/WEINSCHEL	89-20-21	336	DC-40GHZ	8/15/2017	8/15/2019
XOA1	WAVE-TO-COAX ADAPTER	HEWLETT PACKARD	R281A	02119	26.5-65GHZ	NOTE 1	
XOA2	WAVE-TO-COAX ADAPTER	HEWLETT PACKARD	R281B	01138	26.5-65GHZ	NOTE 1	
XOB1	ADAPTER	HEWLETT PACKARD	K281C	10422	18-26.5GHZ	NOTE 1	
XOB2	ADAPTER	HEWLETT PACKARD	K281C,012	09407	18-26.5GHZ	NOTE 1	
RBG3	EMI ANALYZER	ROHDE & SCHWARZ	ESW44	101592	2HZ-44GHZ	2/20/2018	2/20/2019
T1E0	10DB 25W ATTENUATOR	WEINSCHEL	46-10-43	AU1882	DC-18GHZ	4/30/2018	4/30/2020
T2D5	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-43	AY9244	DC-18GHZ	5/14/2018	5/14/2020
T2DN	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-34	BS2147	DC-18GHZ	4/23/2018	4/23/2020
T2DT	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-34	BS0917	DC-18GHZ	4/24/2018	4/24/2020
TVH5	VARIABLE ATTENUATOR	HEWLETT PACKARD	8495B	3308A17362	0-70DB	2/20/2017	2/20/2019
XLT13	5W, 50 OHM TERMINATION	JFW INDUSTRIES	50T-199 N M	---	DC-2GHZ	8/15/2017	8/15/2019
XLT22	5W, 50 OHM TERMINATION	JFW INDUSTRIES	50T-199 N M	---	DC-2GHZ	8/15/2017	8/15/2019
XLZ8	50 OHM TERMINATION	PASTERNACK	PE6009	004	DC-18GHZ	4/16/2018	4/16/2020
XYF0	POWER SPLITTER	HEWLETT PACKARD	HP11667A	23852	DC-18GHz	11/15/2017	11/15/2019

I/O: Initial Only
N/A: Not Applicable
Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

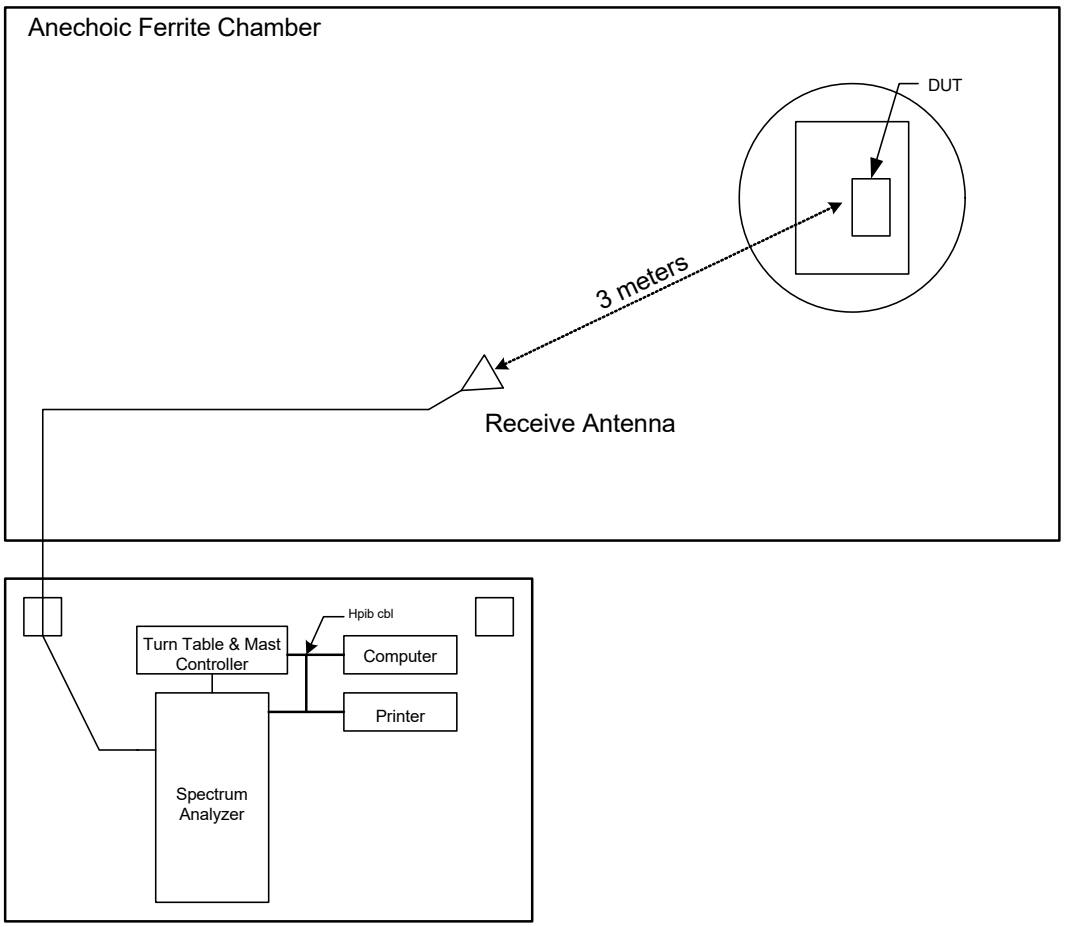
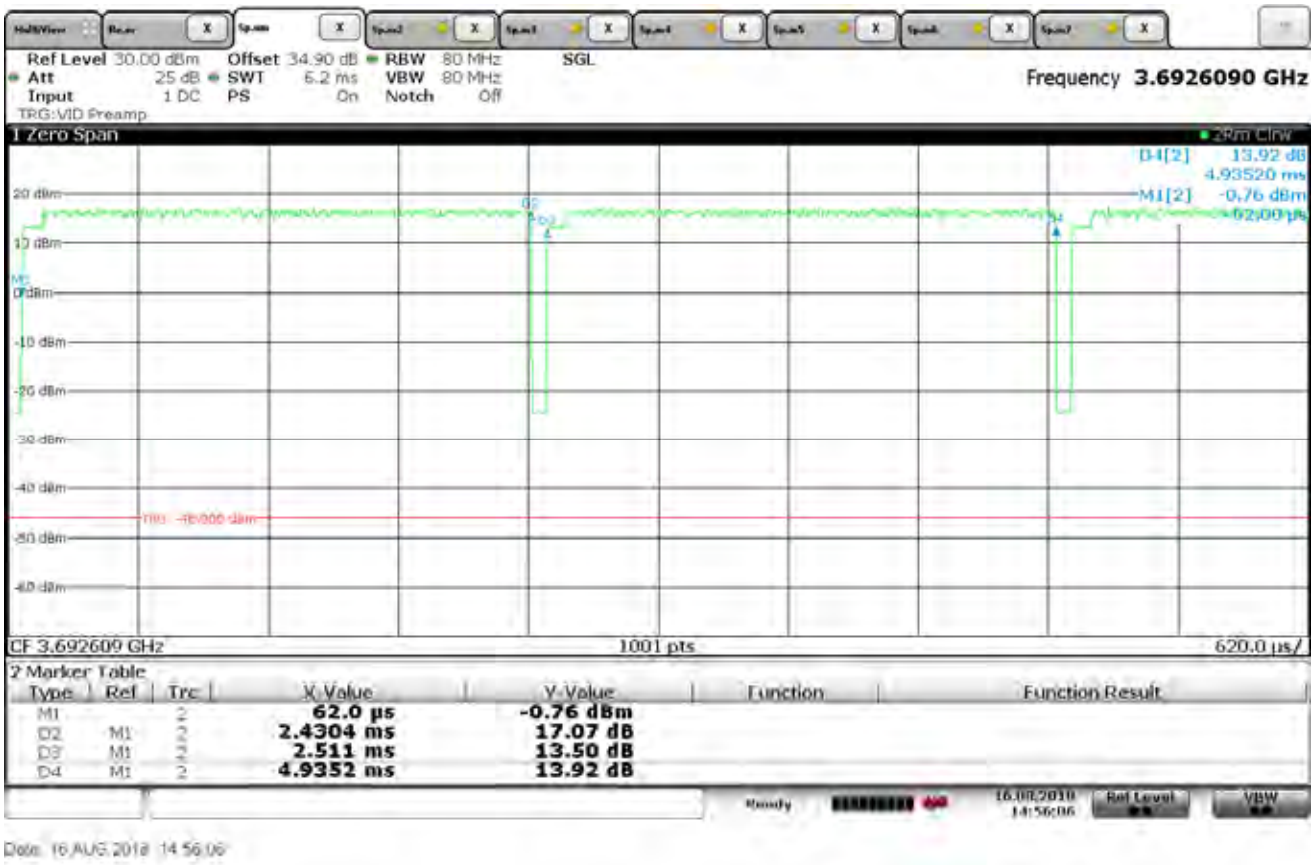


FIGURE 1 BLOCKDIAGRAM OF TEST SETUP

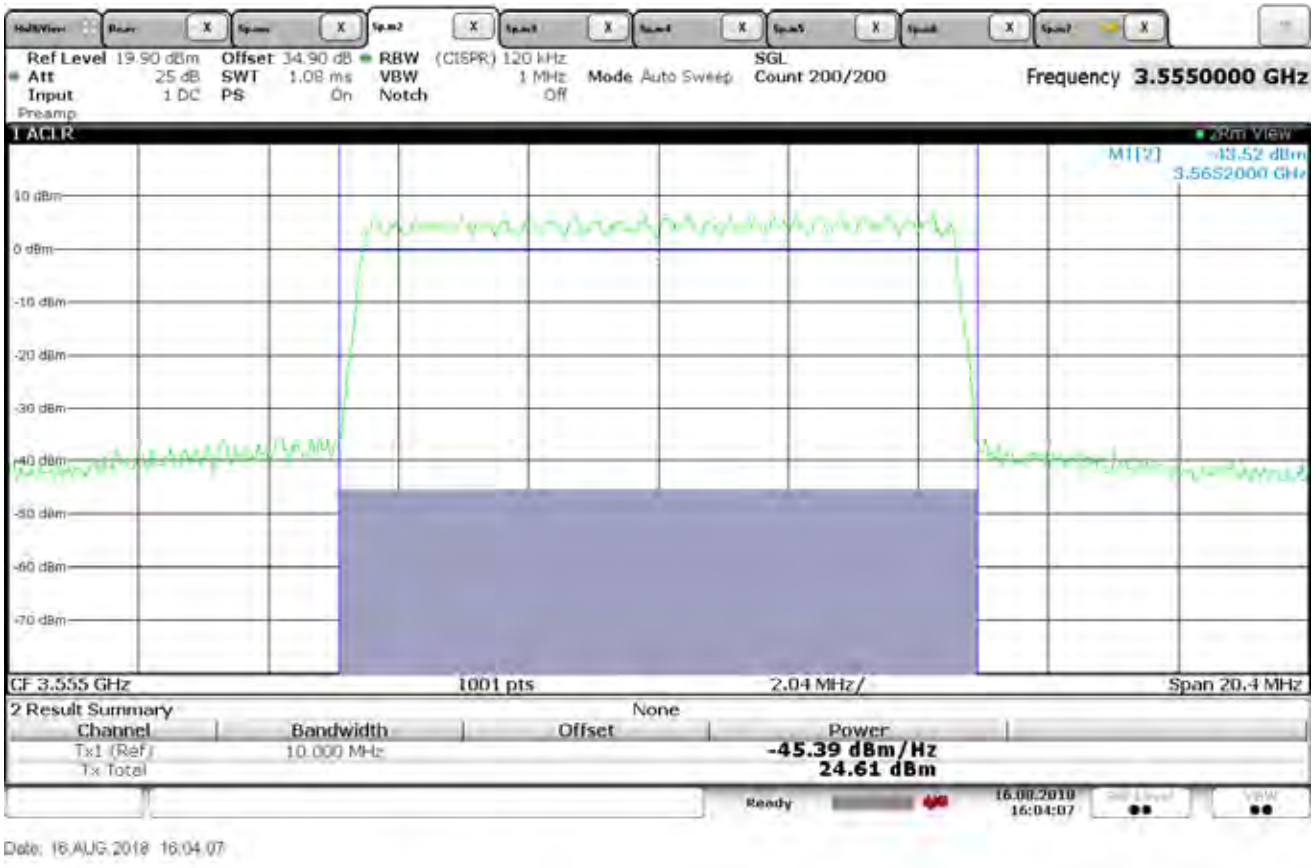
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41 - Compute the Average to 100% duty cycle
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz
NOTES	: Duty Cycle = 2.43mS/2.5mS = .96%
NOTES	: Add (10 log (1/duty cycle)) = 10*log(1/.96) = 0.2dB



Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Conducted Output Power
DATE	: August 22, 2018
MODE	: Transmit at 3555MHz Channel A
NOTES	: AVG Conducted Output Power = 24.6dBm + 0.2dB = 24.8dBm



Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Conducted Output Power
DATE	: August 22, 2018
MODE	: Transmit at 3555MHz Channel B
NOTES	: AVG Conducted Output Power = 24.5dBm + 0.2dB = 24.7dBm

Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Conducted Output Power
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz Channel A
NOTES	: AVG Conducted Output Power = 24.9dBm + 0.2dB = 25.1dBm

Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Conducted Output Power
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz Channel B
NOTES	: AVG Conducted Output Power = 24.8dBm + 0.2dB = 25.0dBm

Checked BY Richard E. King :

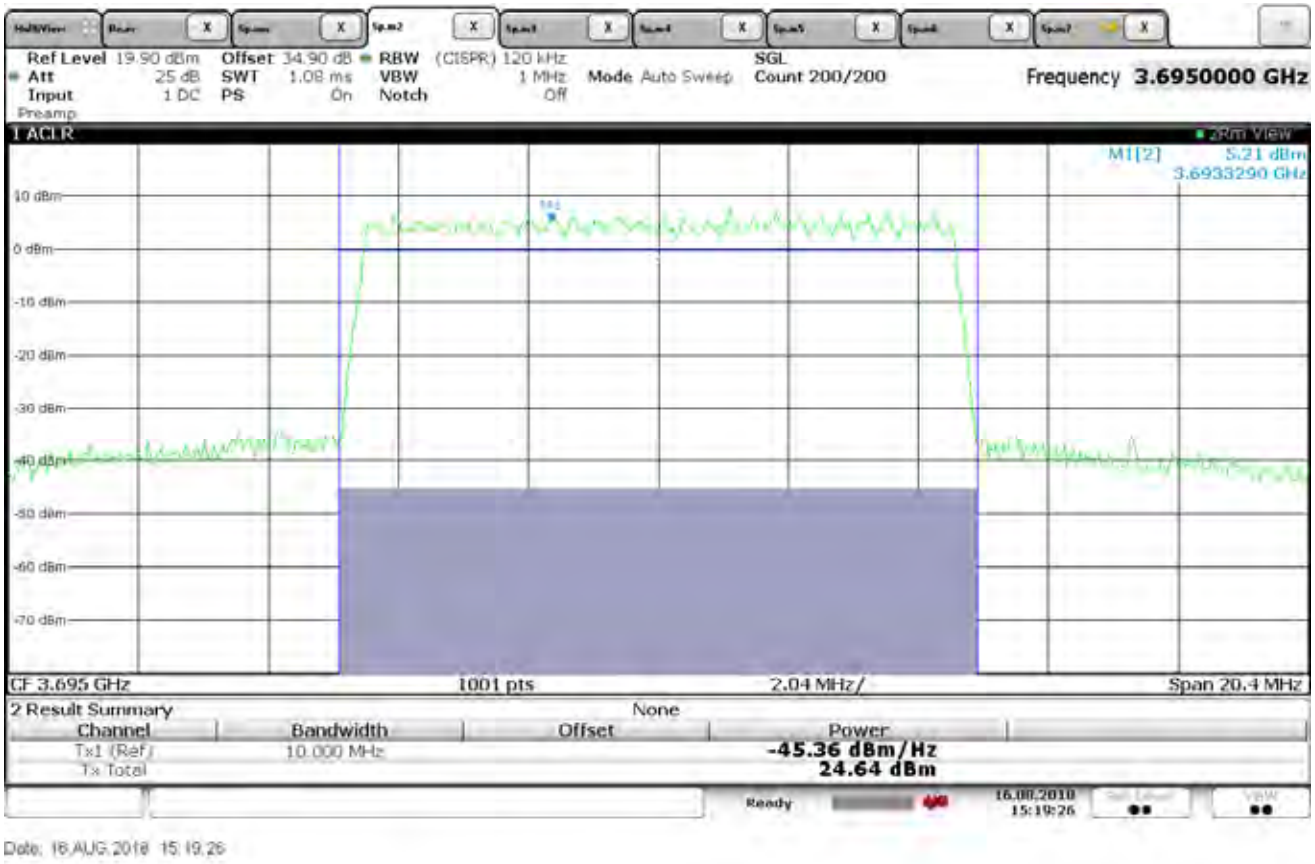
Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Conducted Output Power
DATE	: August 22, 2018
MODE	: Transmit at 3695MHz Channel A
NOTES	: AVG Conducted Output Power = 25.0dBm + 0.2dB = 25.2dBm

Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Conducted Output Power
DATE	: August 22, 2018
MODE	: Transmit at 3695MHz Channel B
NOTES	: AVG Conducted Output Power = 24.6dBm + 0.2dB = 24.8dBm



Checked BY Richard E. King :

Richard E. King

MANUFACTURER : Cambium Networks, Inc.
PART NO. : C036045A001A
SERIAL NO. : CNL164402WE
SPECIFICATION : FCC 96.41(e) EIRP
DATE : August 22, 2018
NOTES :

Frequency MHz	Antenna Port	RMS Average Meter Reading (dBm)	Duty Cycle Correction dB	Antenna Gain (dBi)	EIRP Total (dBm/10MHz)	EIRP Limit (dBm/10MHz)	Margin (dB)
3555	A	24.6	0.2	17	41.8	47	-5.2
3555	B	24.5	0.2	17	41.7	47	-5.3
3600	A	24.9	0.2	17	42.1	47	-4.9
3600	B	24.8	0.2	17	42.0	47	-5.0
3695	A	25.0	0.2	17	42.2	47	-4.8
3695	B	24.6	0.2	17	41.8	47	-5.2

EIRP (dBm) = RMS AVG Meter Reading + Duty Cycle Correction + Antenna Gain

Checked BY Richard E. King :

Richard E. King

MANUFACTURER : Cambium Networks, Inc.
PART NO. : C036045A001A
SERIAL NO. : CNL164402WE
SPECIFICATION : FCC 96.41(e) Total Power (Ports A+B)
DATE : August 22, 2018
NOTES :

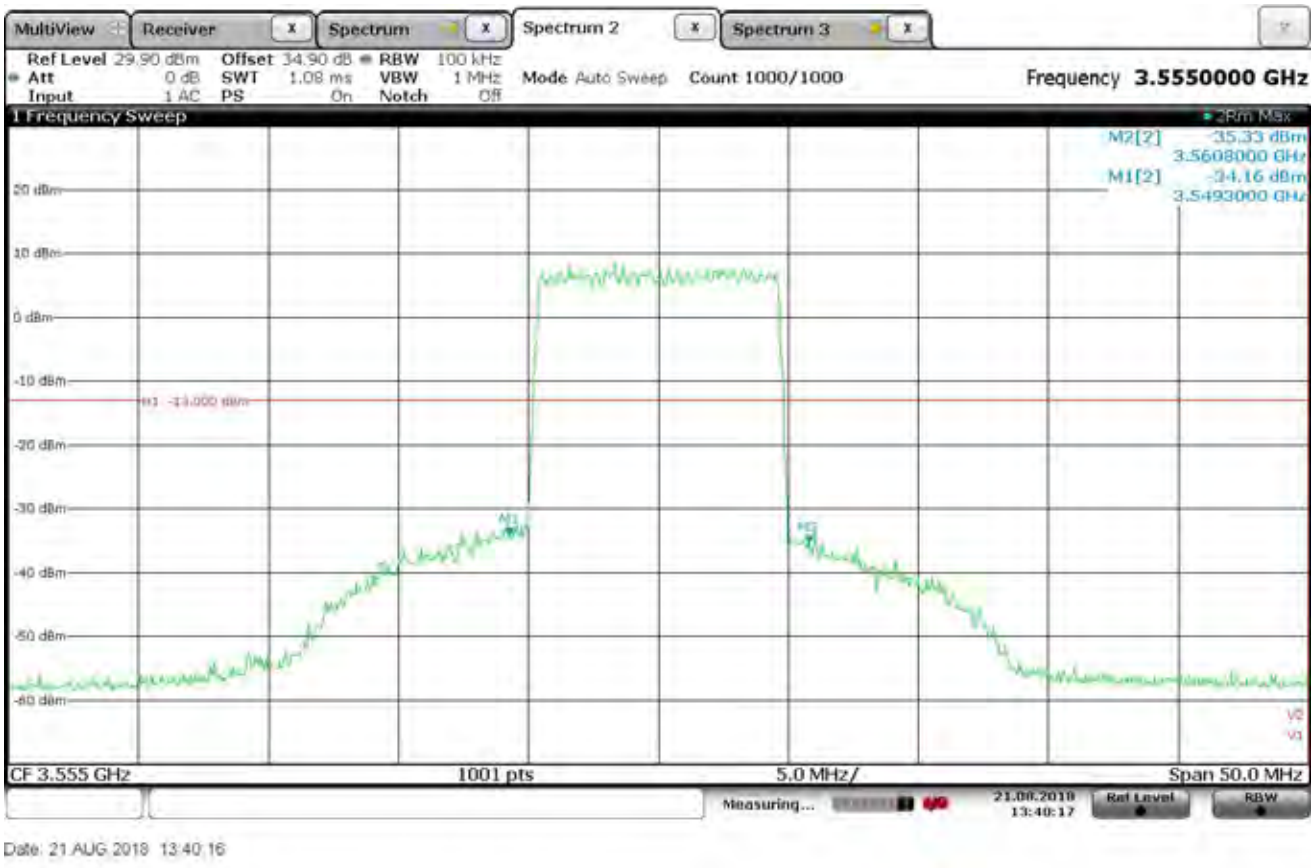
Frequency MHz	RMS Average Meter Readings Antenna Ports A and B (dBm)		RMS Total Average Meter Readings Ports A + B (dBm)	Duty Cycle Correction dB	Antenna Gain (dBi)	EIRP Total Ports A+B (dBm/10MHz)	EIRP Limit (dBm/10MHz)
	A	B					
3555	24.6	24.5	27.6	0.2	17	44.8	47
3600	24.9	24.8	27.9	0.2	17	45.1	47
3695	25.0	24.6	27.8	0.2	17	45.0	47

EIRP (dBm) = RMS AVG Meter Reading (Ports A+B) + Duty Cycle Correction + Antenna Gain

Checked BY Richard E. King :

Richard E. King

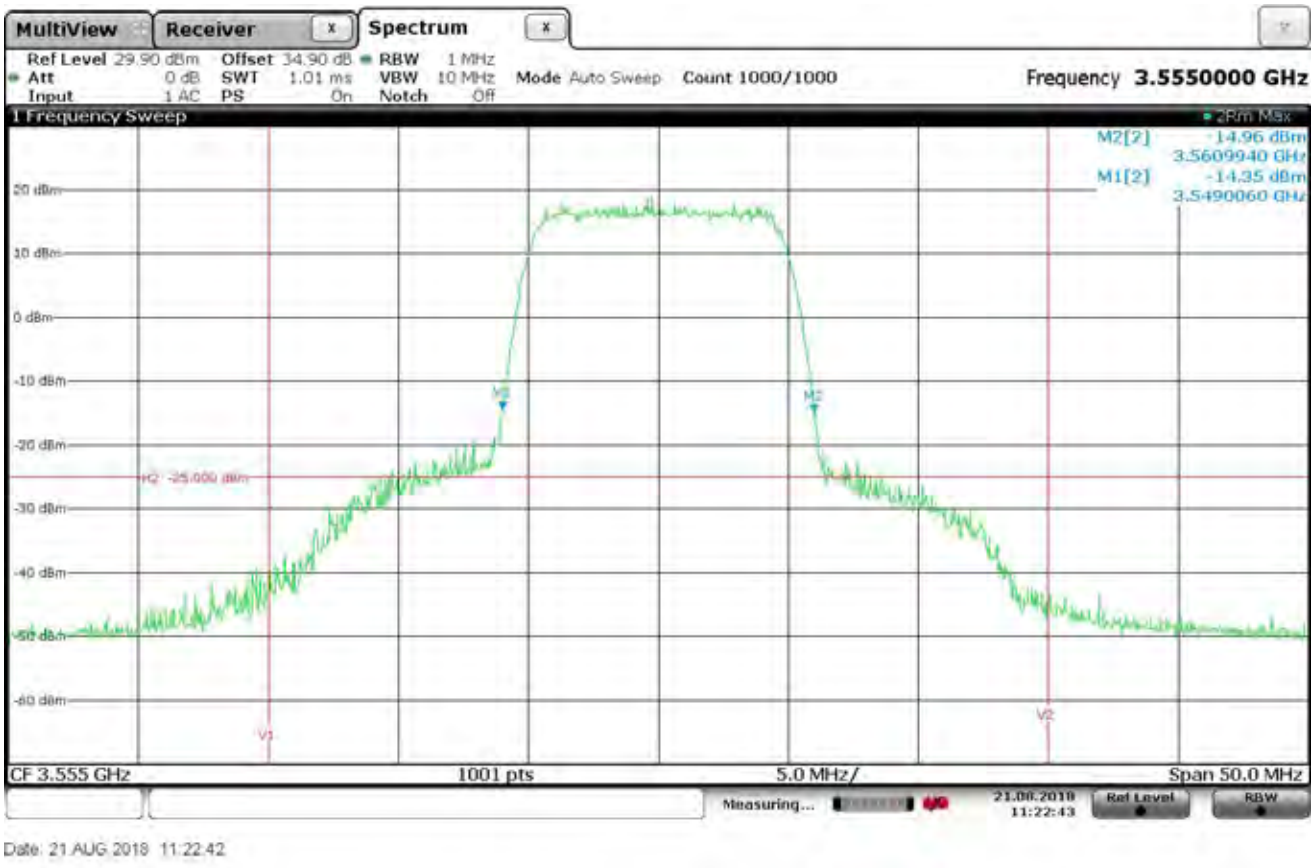
MANUFACTURER : Cambium Networks, Inc.
PART NO. : C036045A001A
SERIAL NO. : CNL164402WE
SPECIFICATION : FCC 96.41(e) Emissions outside the fundamental
DATE : August 22, 2018
MODE : Transmit at 3555MHz Channel A
NOTES : V1- low edge of the assigned channel minus 5MHz = 3550MHz
: V2- high edge of the assigned channel plus 5MHz = 3560MHz



Checked BY Richard E. King :

Richard E. King

MANUFACTURER : Cambium Networks, Inc.
PART NO. : C036045A001A
SERIAL NO. : CNL164402WE
SPECIFICATION : FCC 96.41(e) Emissions outside the fundamental
DATE : August 22, 2018
MODE : Transmit at 3555MHz Channel A
NOTES : V1- low edge of the assigned channel minus 10MHz = 3540MHz
: V2- high edge of the assigned channel plus 10MHz = 3570MHz

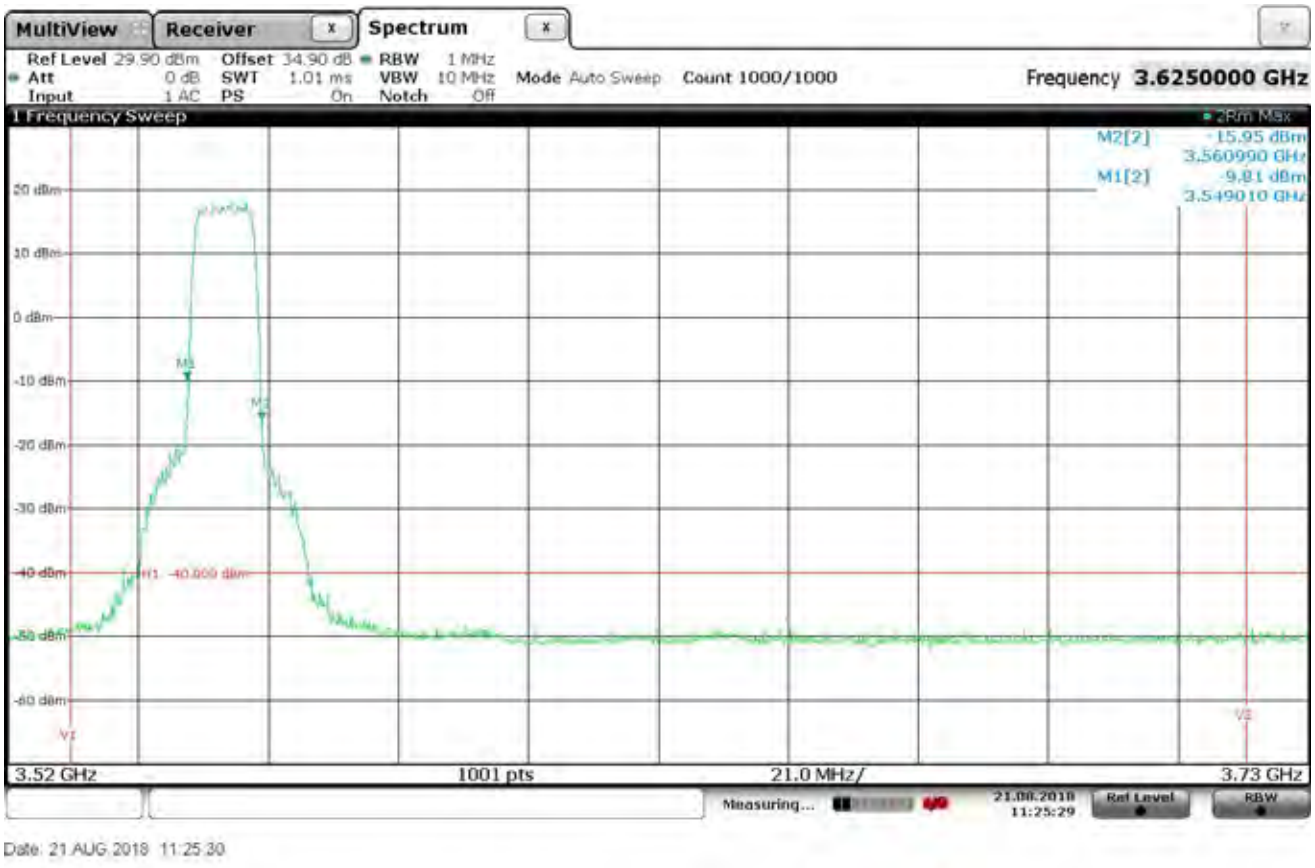


Date: 21.AUG.2018 11:22:42

Checked BY Richard E. King :

Richard E. King

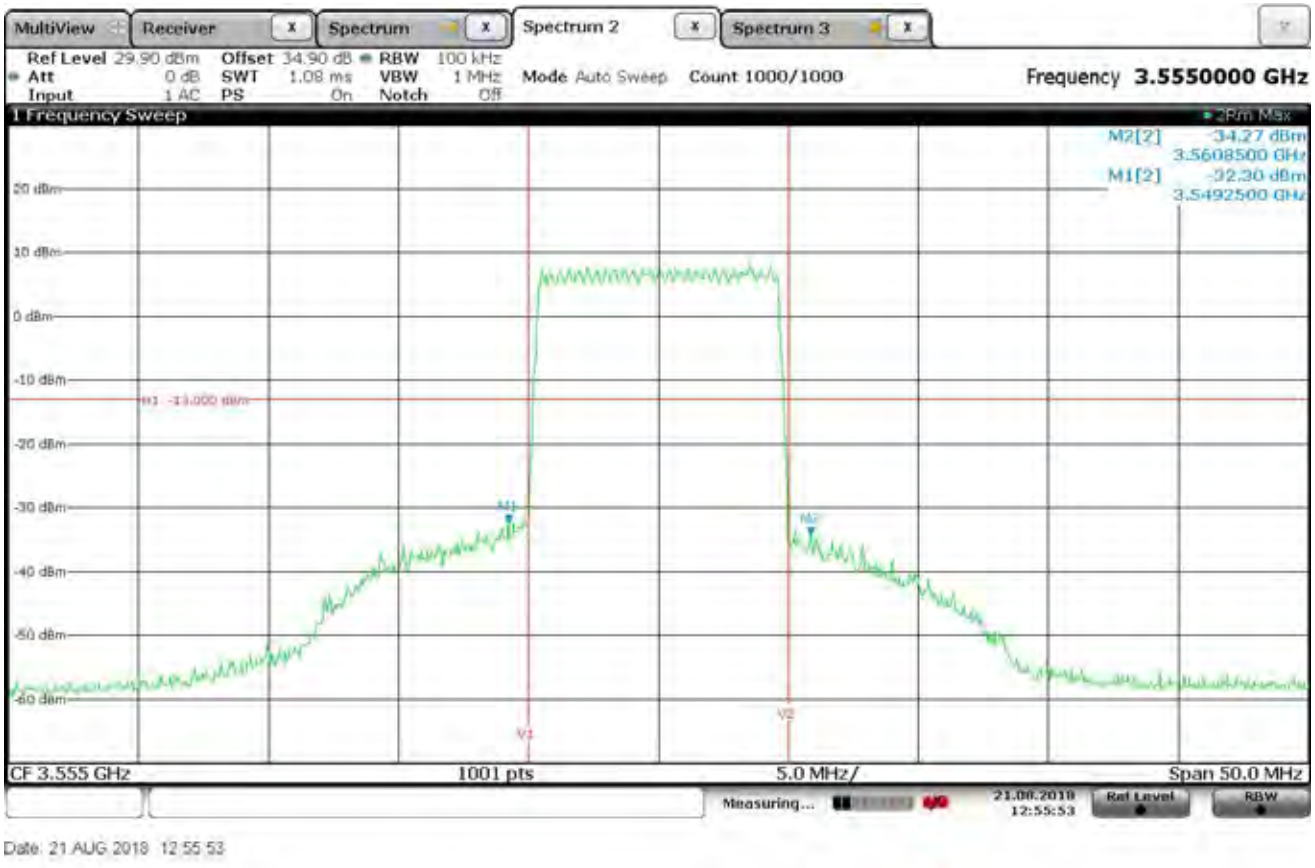
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3555MHz Channel A
NOTES	: V1- channel low bandedge at 3530MHz
	: V2- channel low bandedge at 3670MHz



Checked BY Richard E. King :

Richard E. King

MANUFACTURER : Cambium Networks, Inc.
PART NO. : C036045A001A
SERIAL NO. : CNL164402WE
SPECIFICATION : FCC 96.41(e) Emissions outside the fundamental
DATE : August 23, 2018
MODE : Transmit at 3555MHz Channel B
NOTES : V1- low edge of the assigned channel minus 5MHz = 3550MHz
: V2- high edge of the assigned channel plus 5MHz = 3560MHz

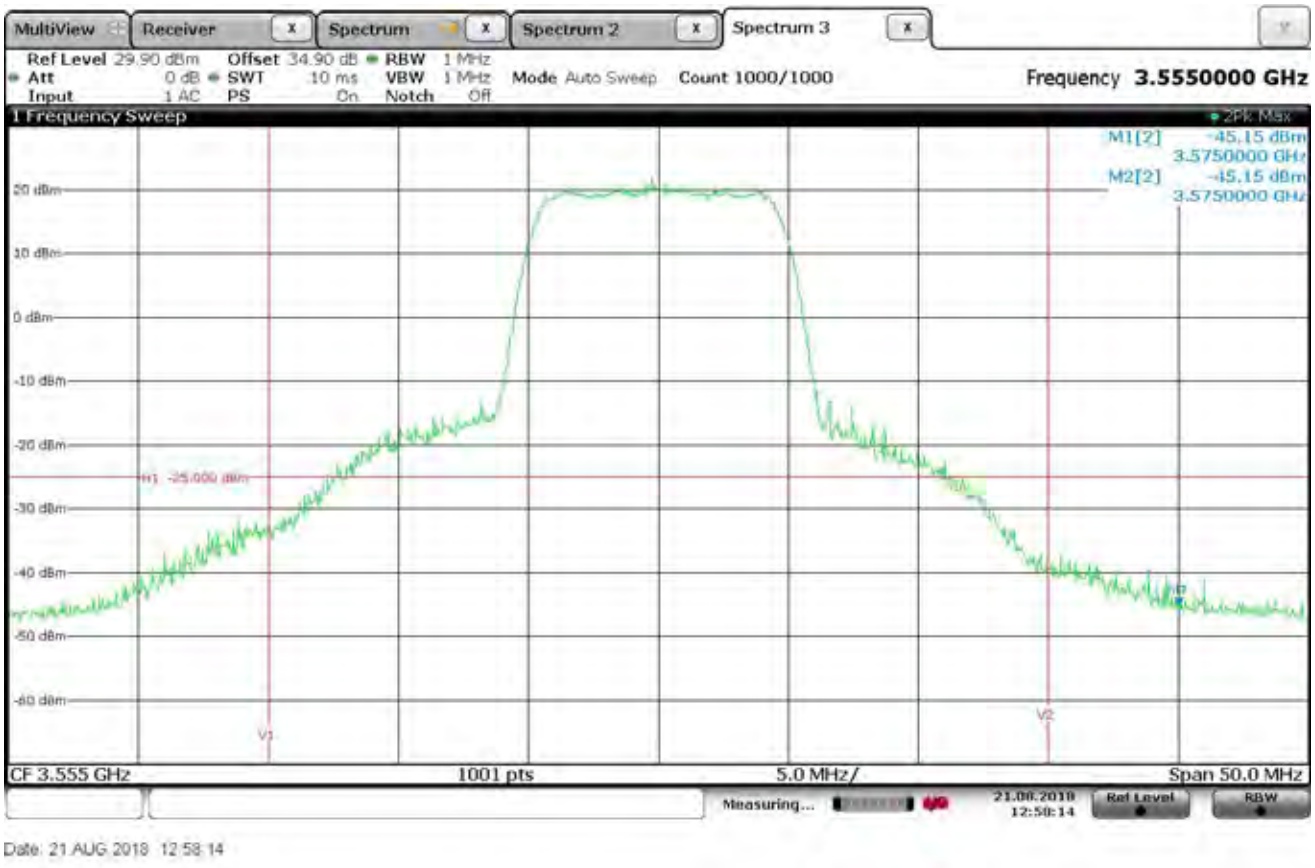


Date: 21 AUG 2018 12:55:53

Checked BY Richard E. King :

Richard E. King

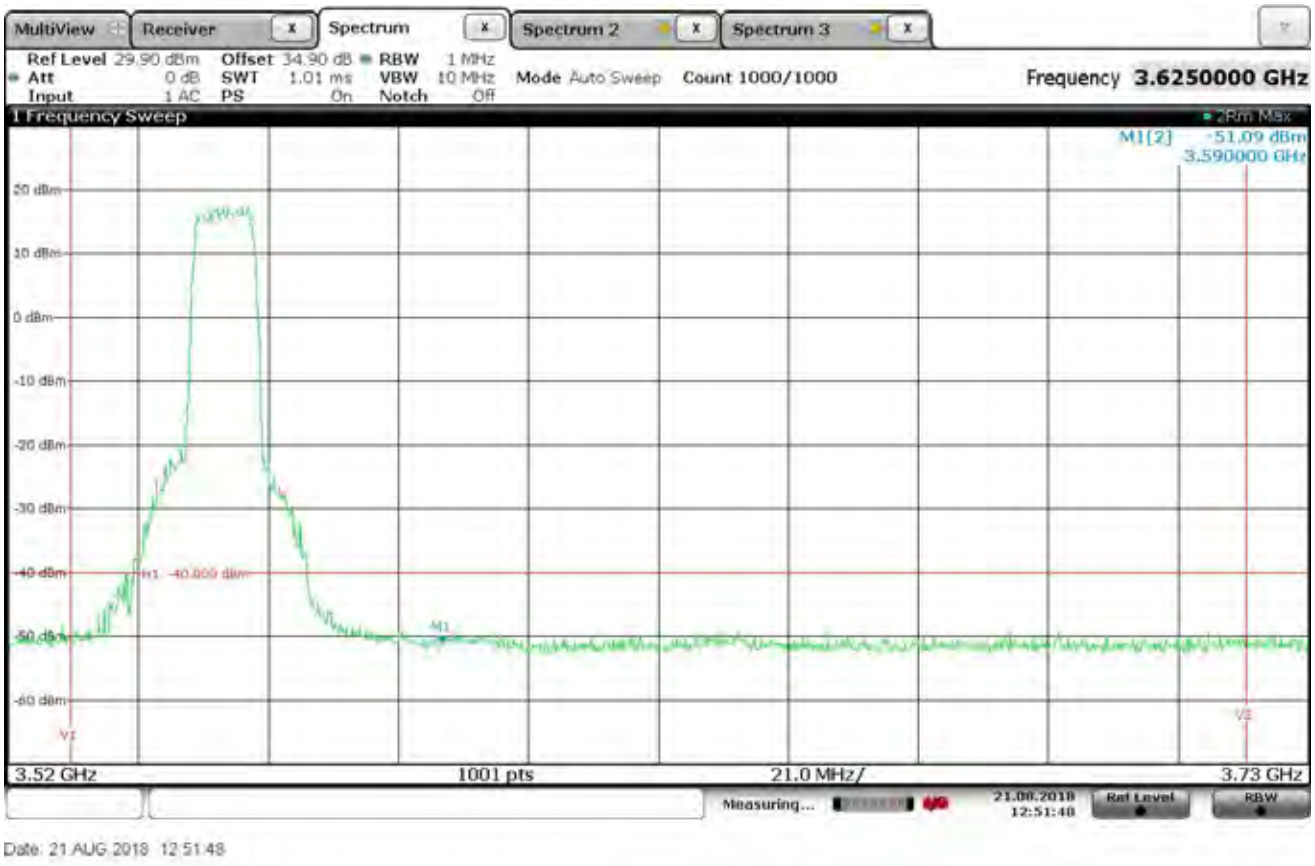
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3555MHz Channel B
NOTES	: V1- low edge of the assigned channel minus 10MHz = 3540MHz
	: V2- high edge of the assigned channel plus 10MHz = 3570MHz



Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3555MHz Channel A
NOTES	: V1- channel low bandedge at 3530MHz
	: V2- channel low bandedge at 3670MHz

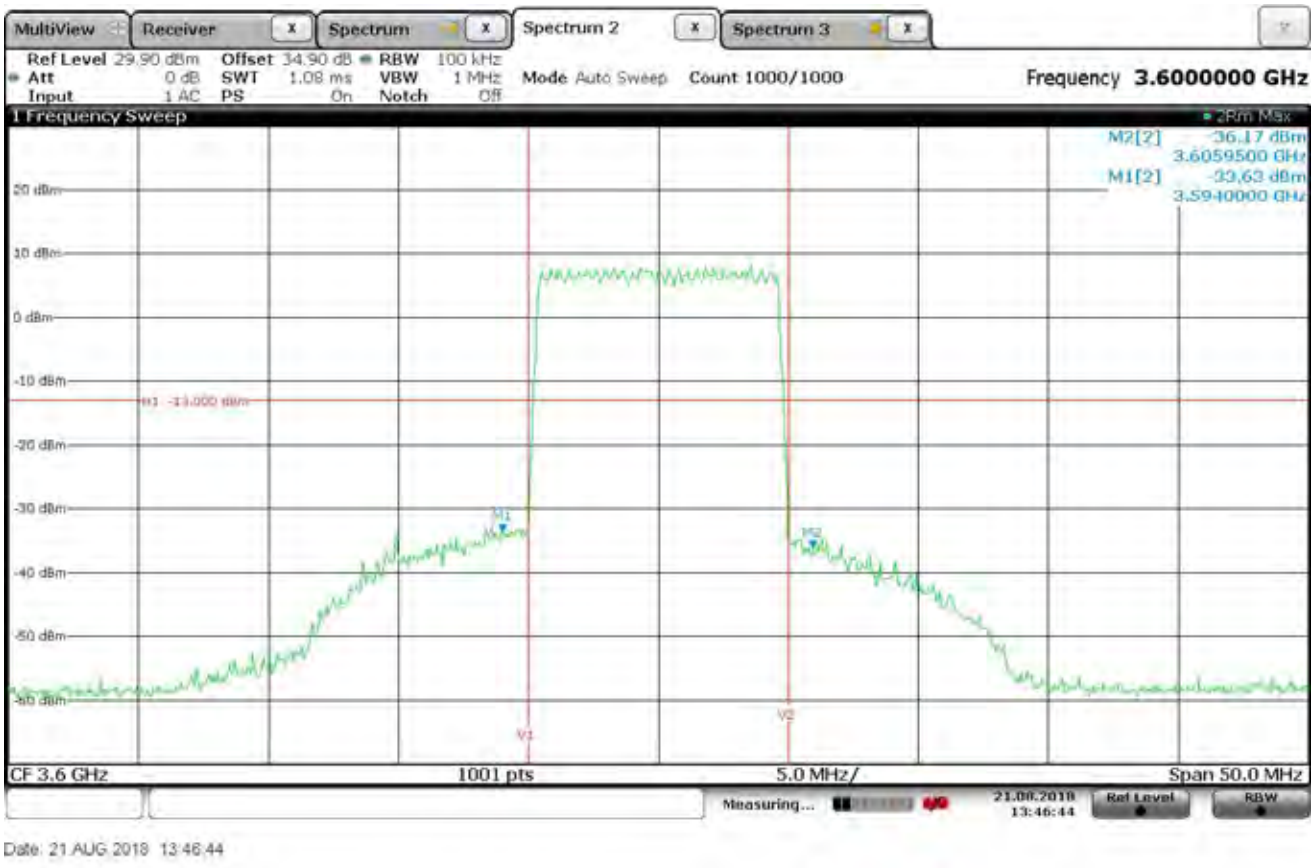


Date: 21.AUG.2018 12:51:48

Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz Channel A
NOTES	: V1- low edge of the assigned channel minus 10MHz = 3540MHz
	: V2- high edge of the assigned channel plus 10MHz = 3570MHz

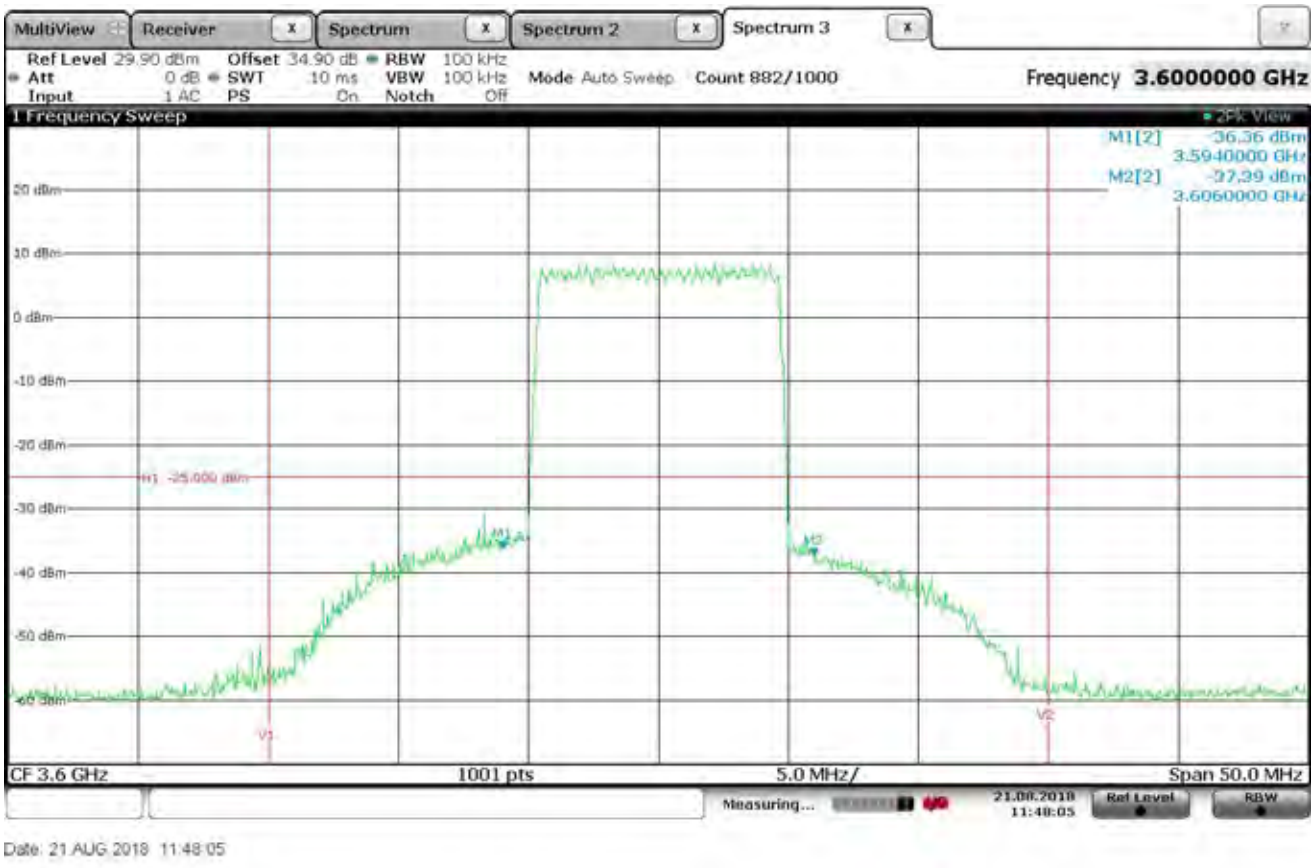


Date: 21.AUG.2018 13:46:44

Checked BY Richard E. King :

Richard E. King

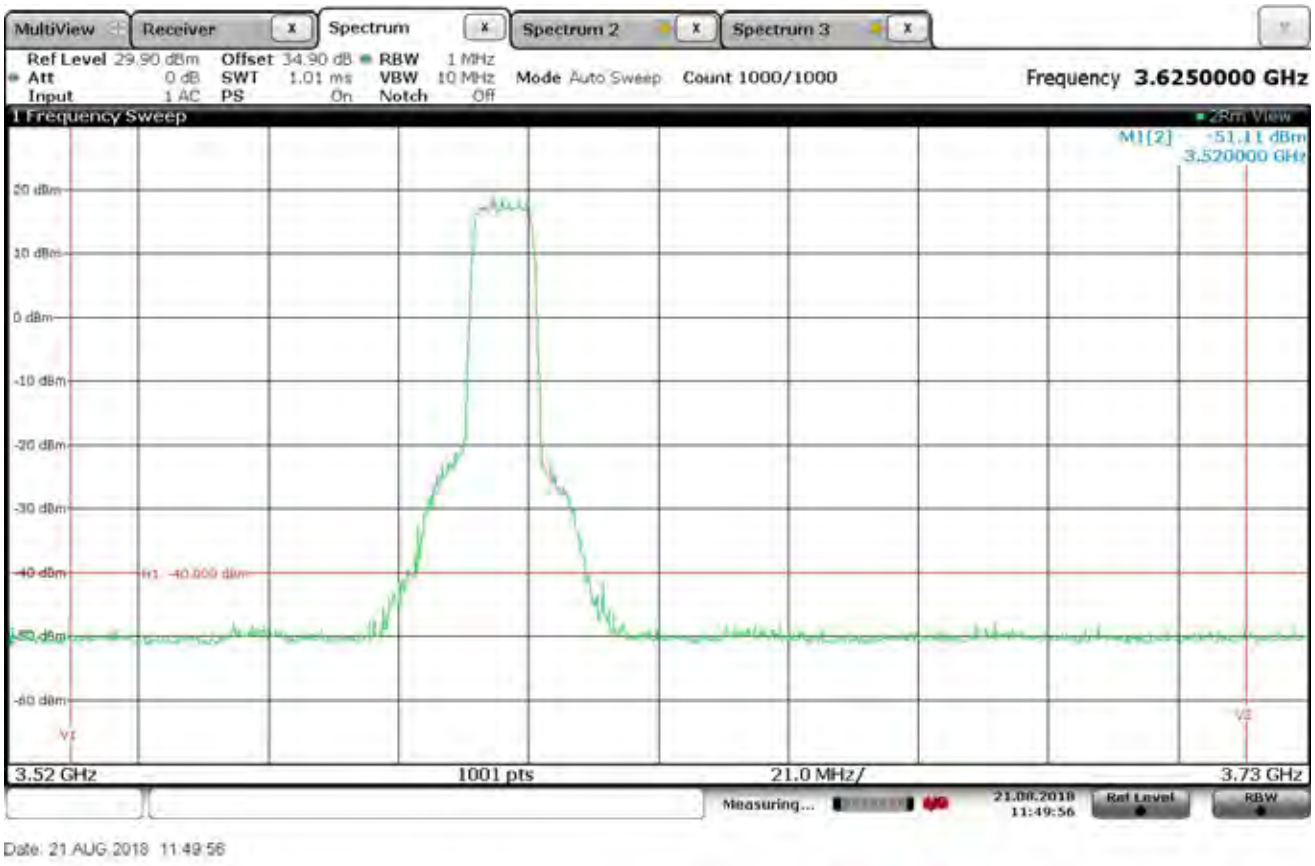
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz Channel A
NOTES	: V1- low edge of the assigned channel minus 10MHz = 3540MHz
	: V2- high edge of the assigned channel plus 10MHz = 3570MHz



Checked BY Richard E. King :

Richard E. King

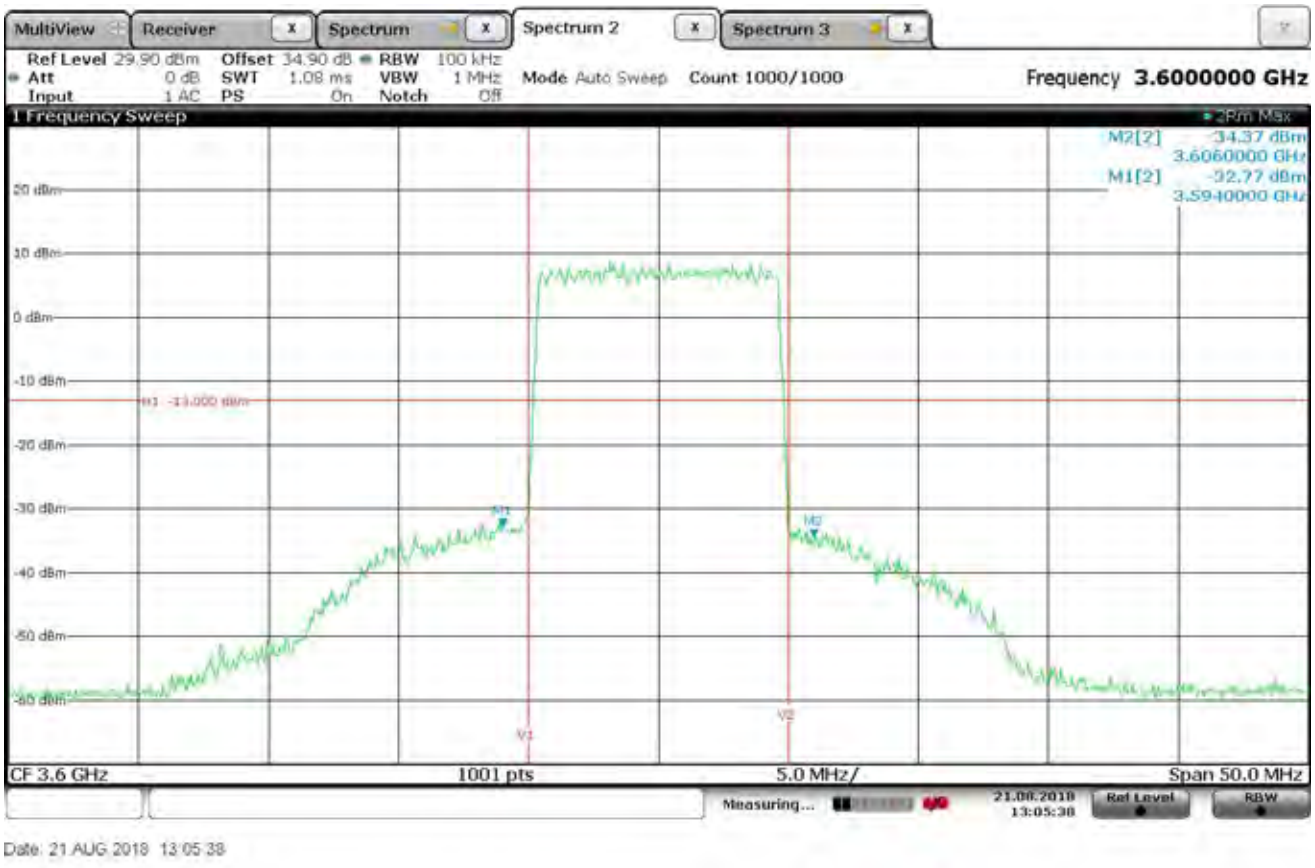
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz Channel A
NOTES	: V1- channel low bandedge at 3530MHz
	: V2- channel low bandedge at 3670MHz



Checked BY Richard E. King :

Richard E. King

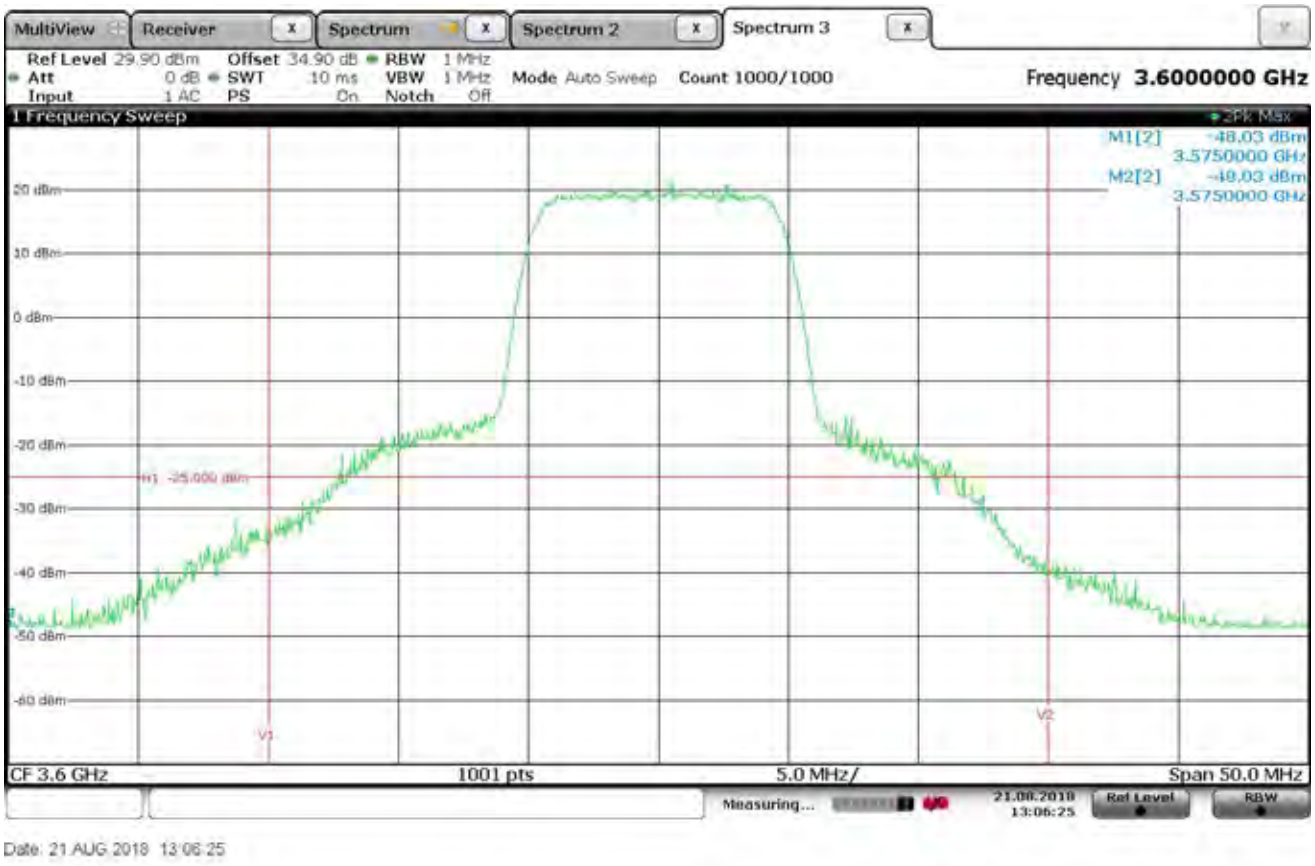
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz Channel B
NOTES	: V1- low edge of the assigned channel minus 10MHz = 3540MHz
	: V2- high edge of the assigned channel plus 10MHz = 3570MHz



Checked BY Richard E. King :

Richard E. King

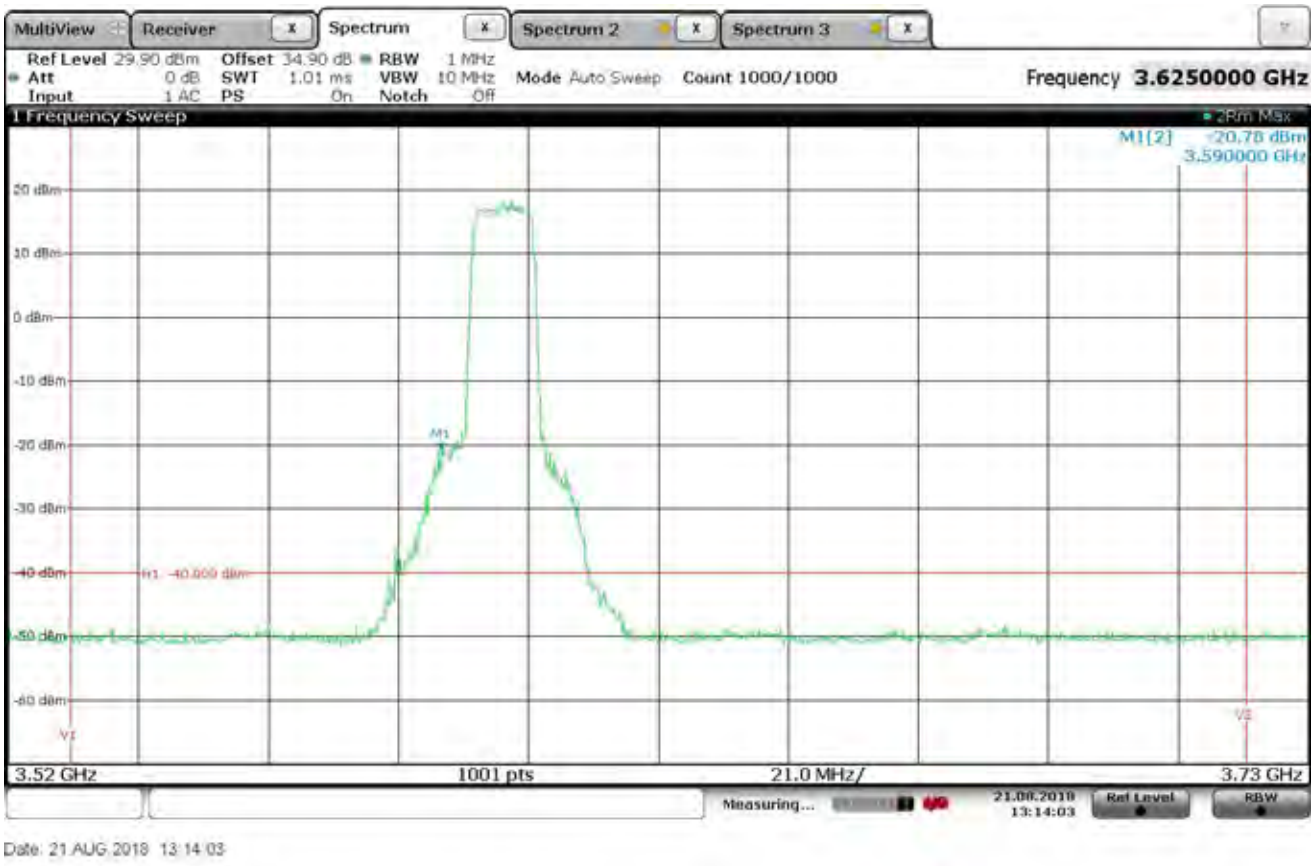
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz Channel B
NOTES	: V1- low edge of the assigned channel minus 10MHz = 3540MHz
	: V2- high edge of the assigned channel plus 10MHz = 3570MHz



Checked BY Richard E. King :

Richard E. King

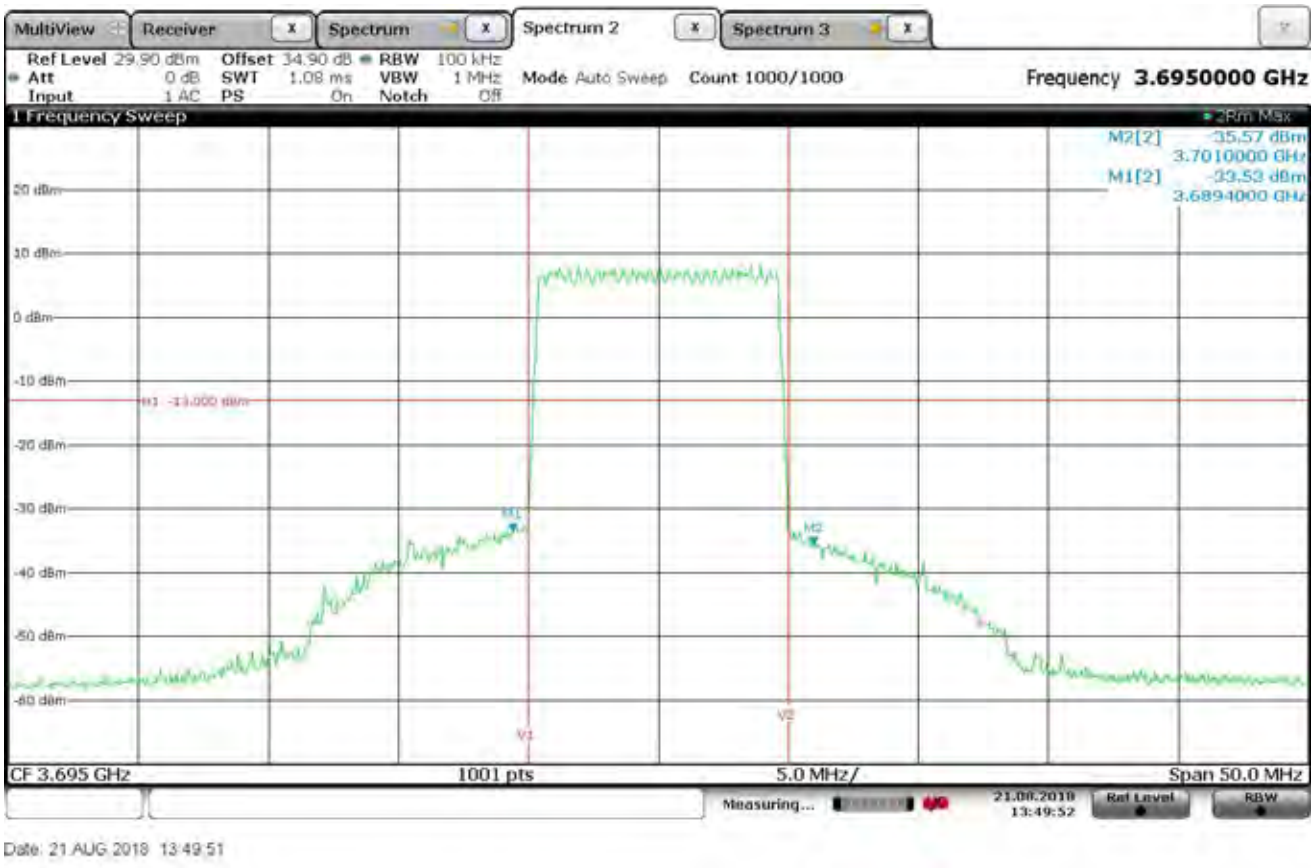
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz Channel B
NOTES	: V1- channel low bandedge at 3530MHz
	: V2- channel low bandedge at 3670MHz



Checked BY Richard E. King :

Richard E. King

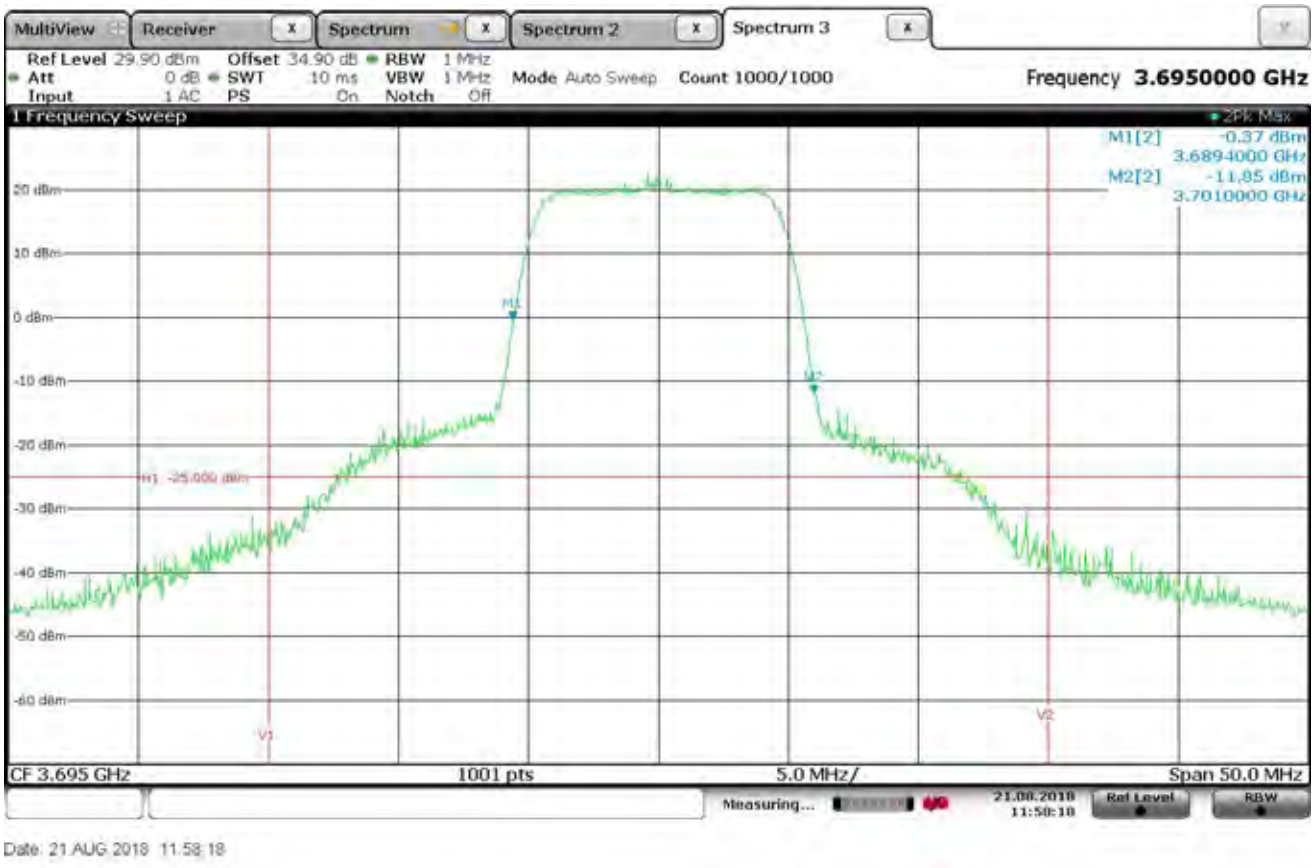
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3695MHz Channel A
NOTES	: V1- low edge of the assigned channel minus 10MHz = 3540MHz
	: V2- high edge of the assigned channel plus 10MHz = 3570MHz



Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3695MHz Channel A
NOTES	: V1- low edge of the assigned channel minus 10MHz = 3540MHz
	: V2- high edge of the assigned channel plus 10MHz = 3570MHz

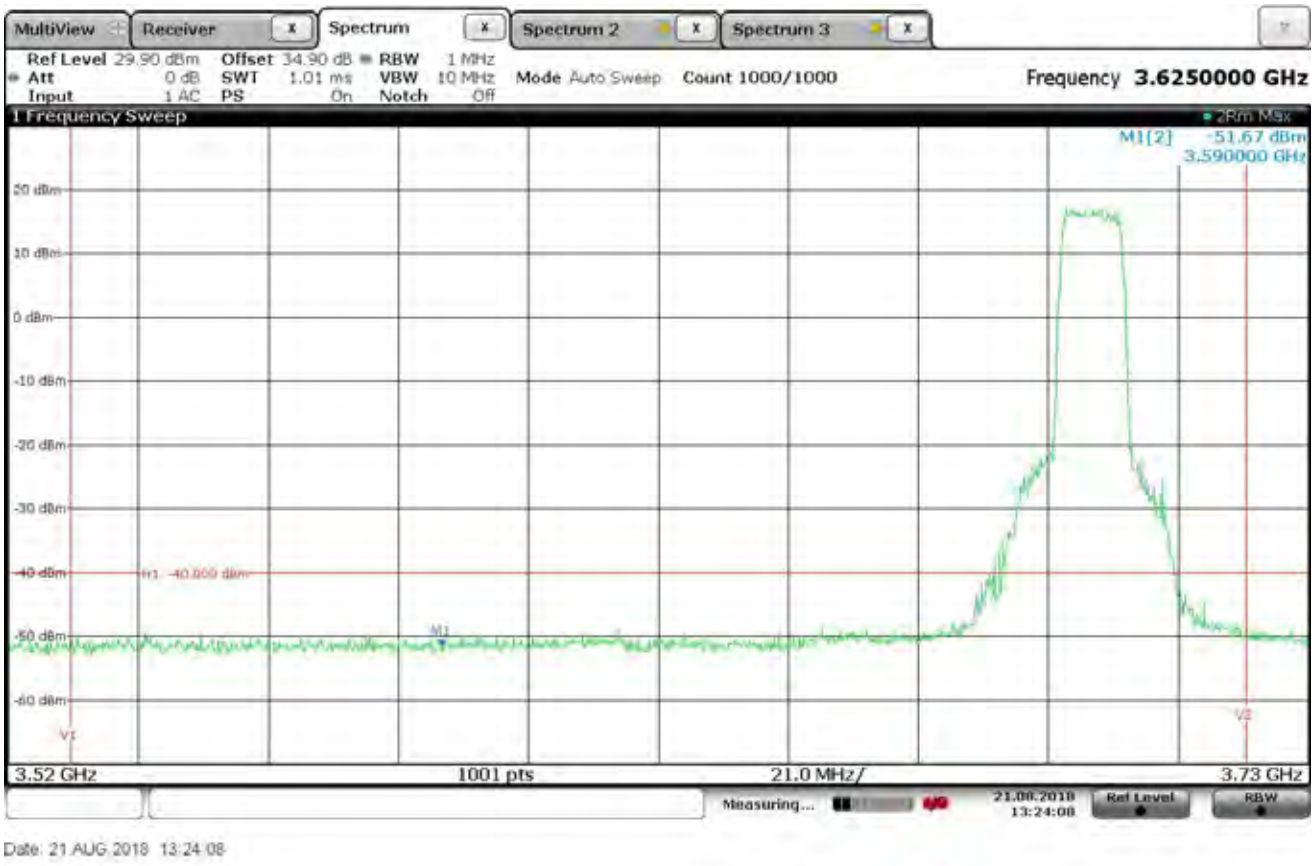


Date: 21.AUG.2018 11:58:18

Checked BY Richard E. King :

Richard E. King

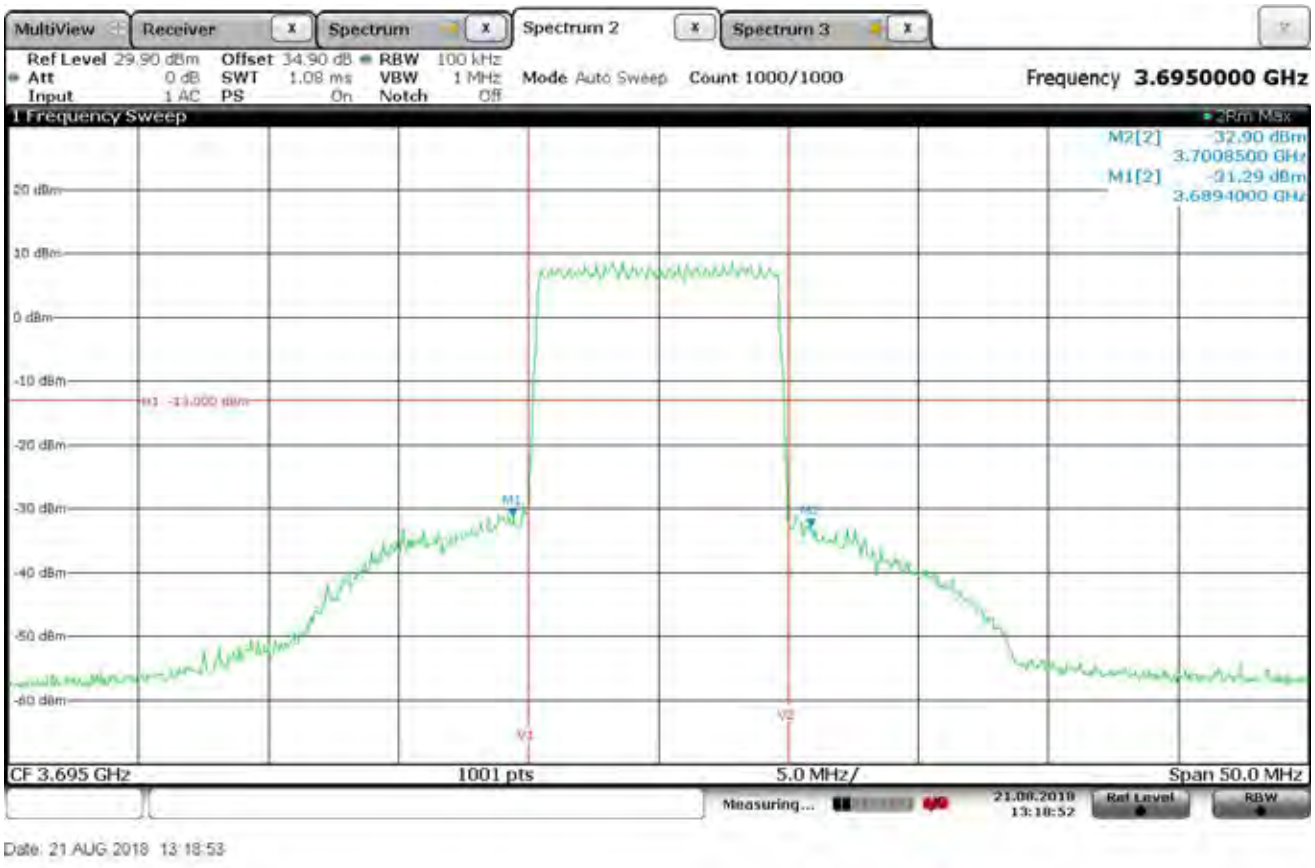
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3695MHz Channel A
NOTES	: V1- channel low bandedge at 3530MHz
	: V2- channel low bandedge at 3670MHz



Checked BY Richard E. King :

Richard E. King

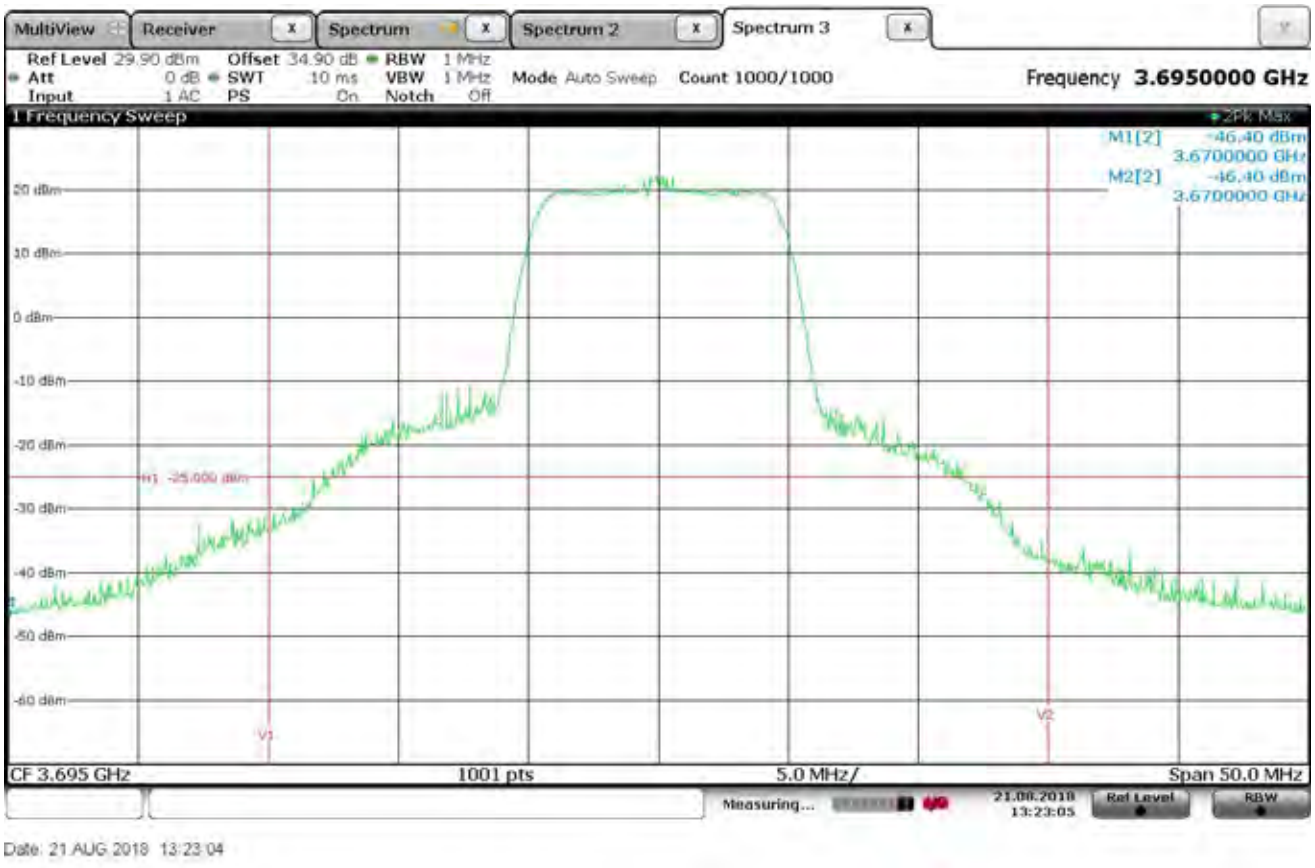
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3695MHz Channel B
NOTES	: V1- low edge of the assigned channel minus 10MHz = 3540MHz
	: V2- high edge of the assigned channel plus 10MHz = 3570MHz



Checked BY Richard E. King :

Richard E. King

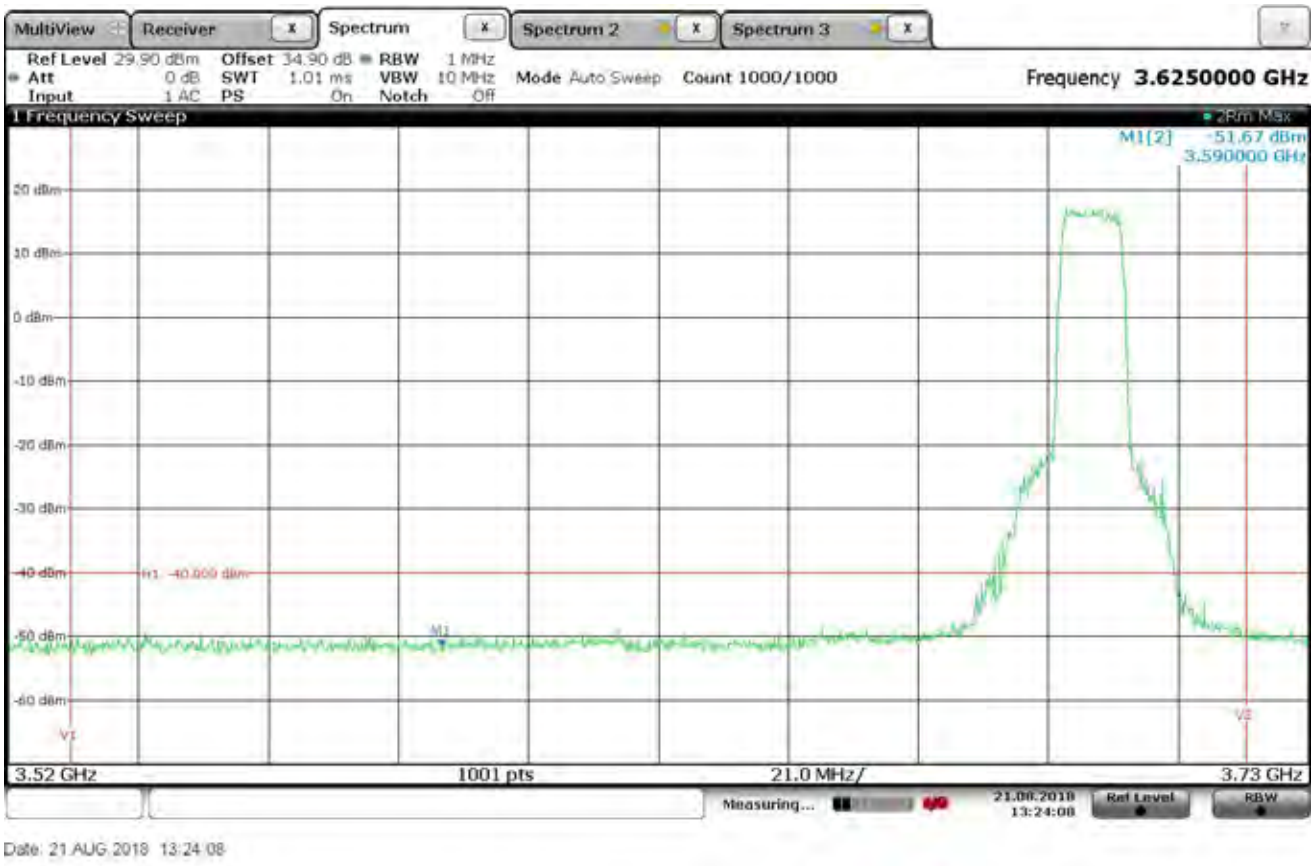
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3695MHz Channel B
NOTES	: V1- low edge of the assigned channel minus 10MHz = 3540MHz
	: V2- high edge of the assigned channel plus 10MHz = 3570MHz



Checked BY Richard E. King :

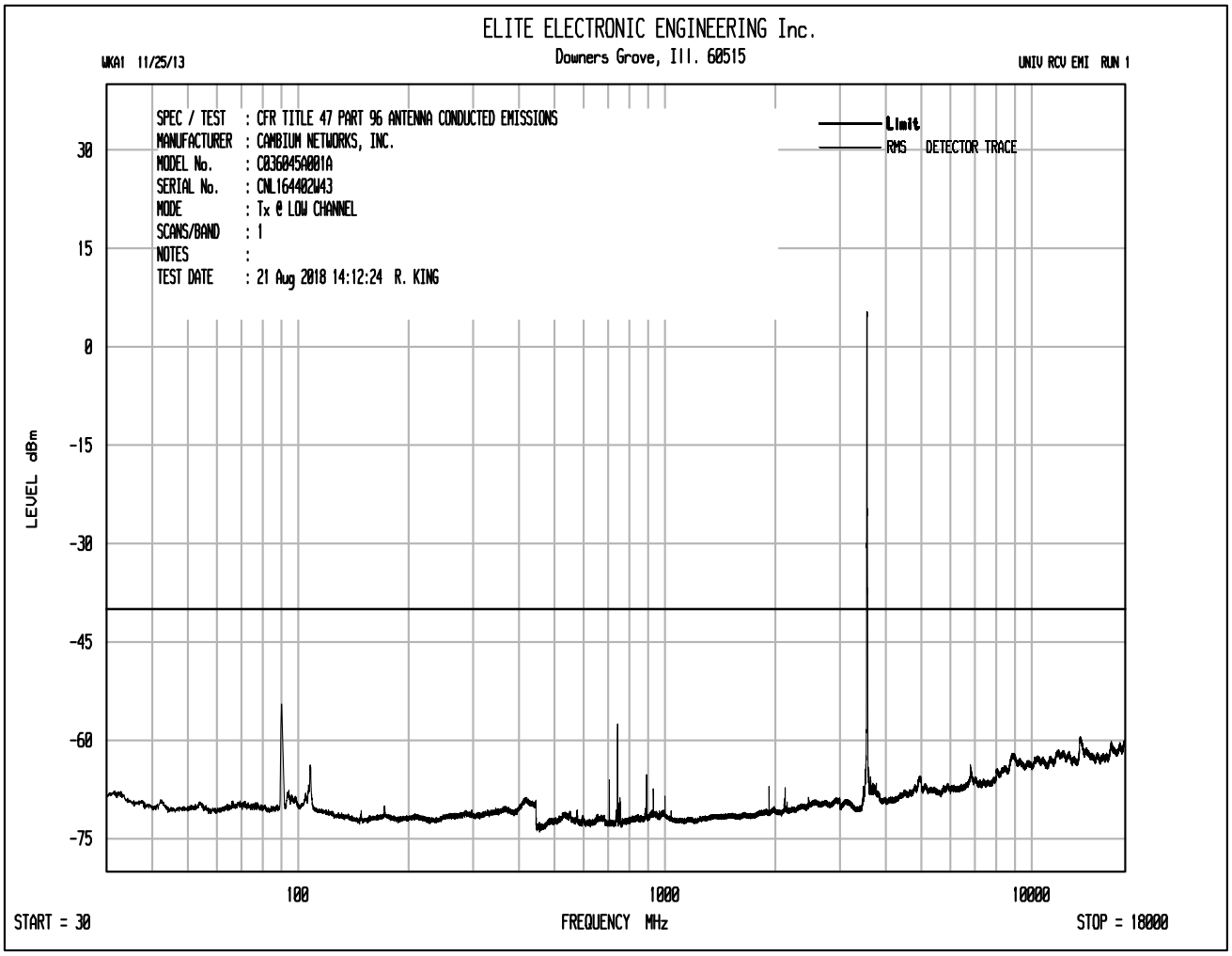
Richard E. King

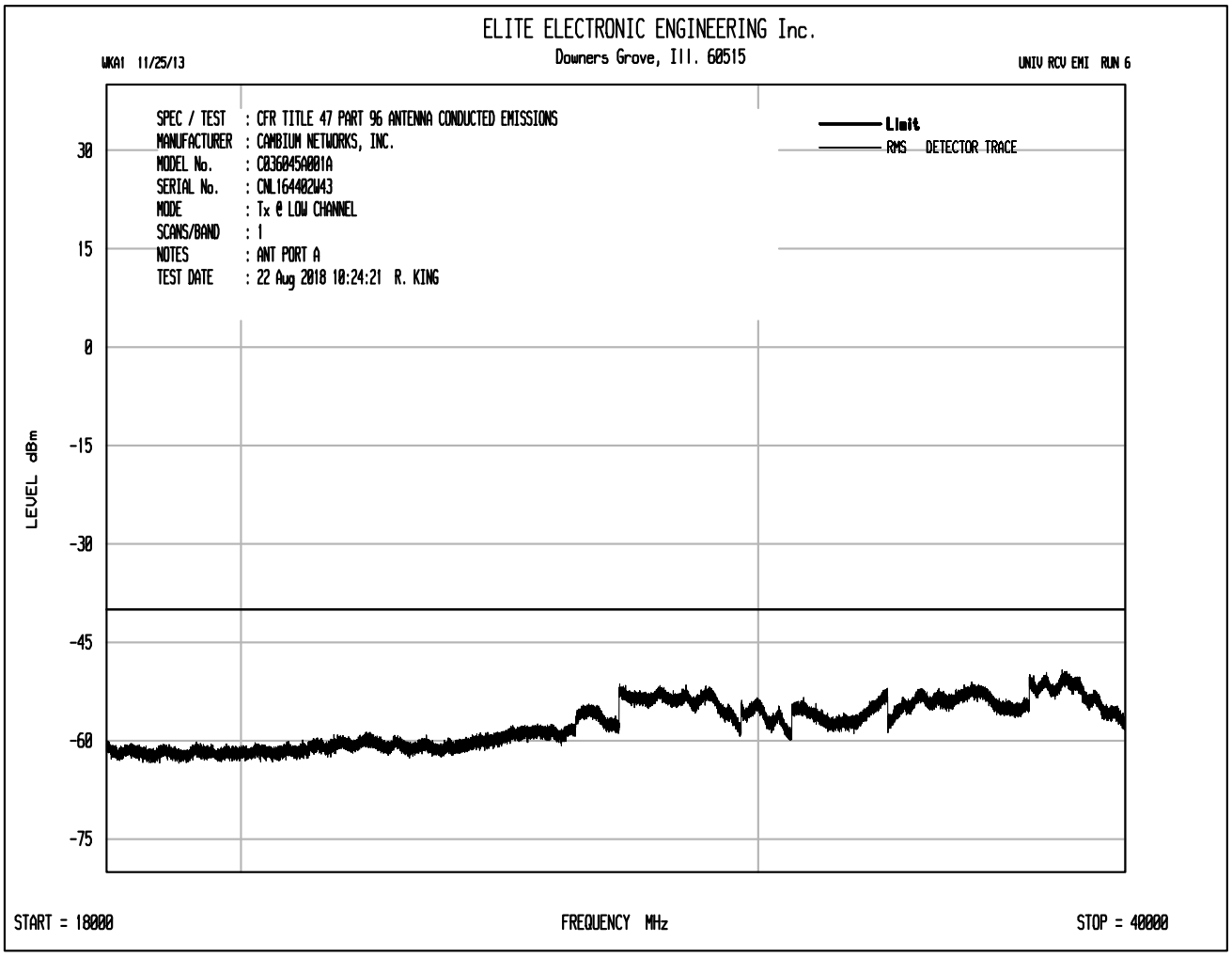
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Emissions outside the fundamental
DATE	: August 22, 2018
MODE	: Transmit at 3695MHz Channel B
NOTES	: V1- channel low bandedge at 3530MHz
	: V2- channel low bandedge at 3670MHz

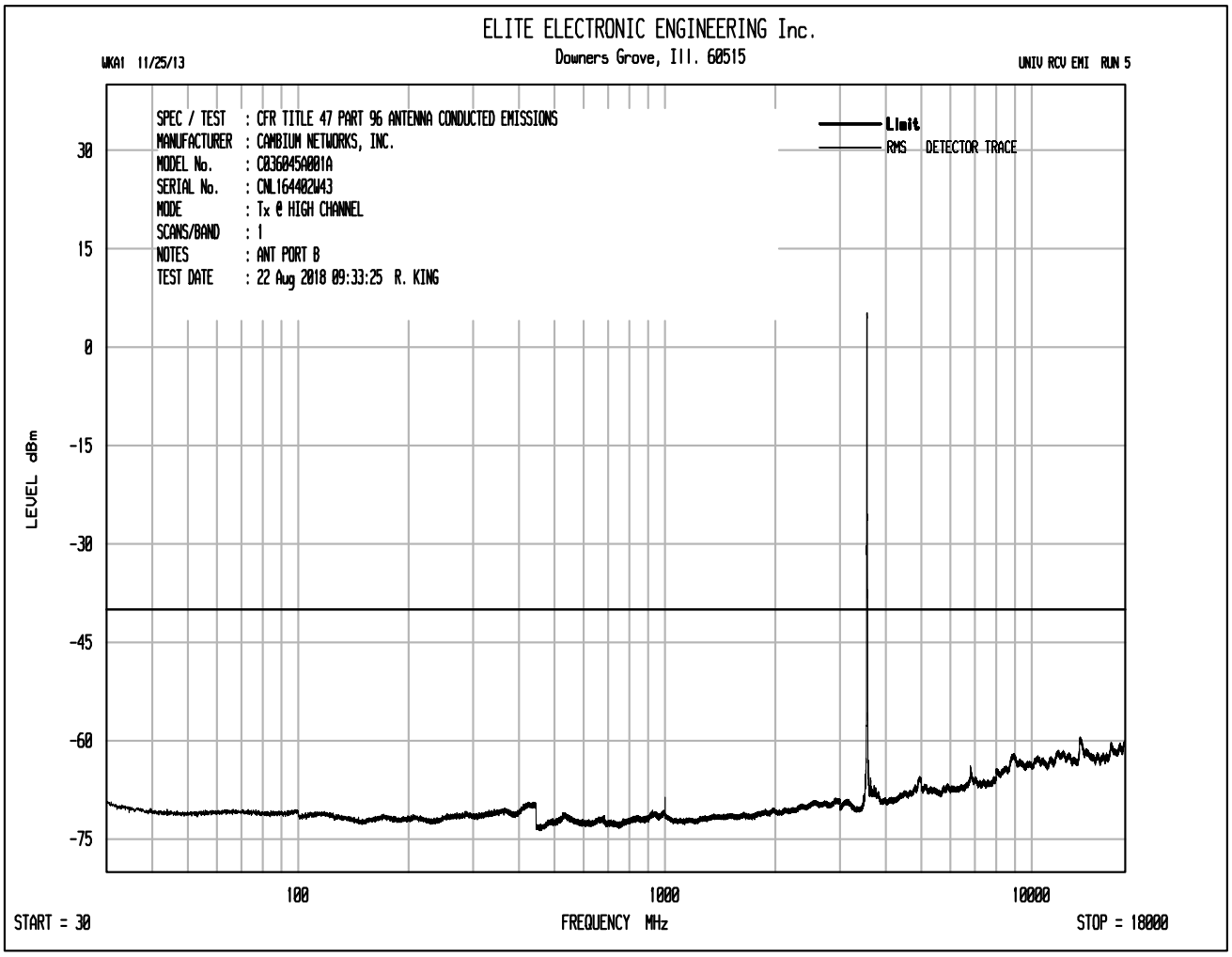


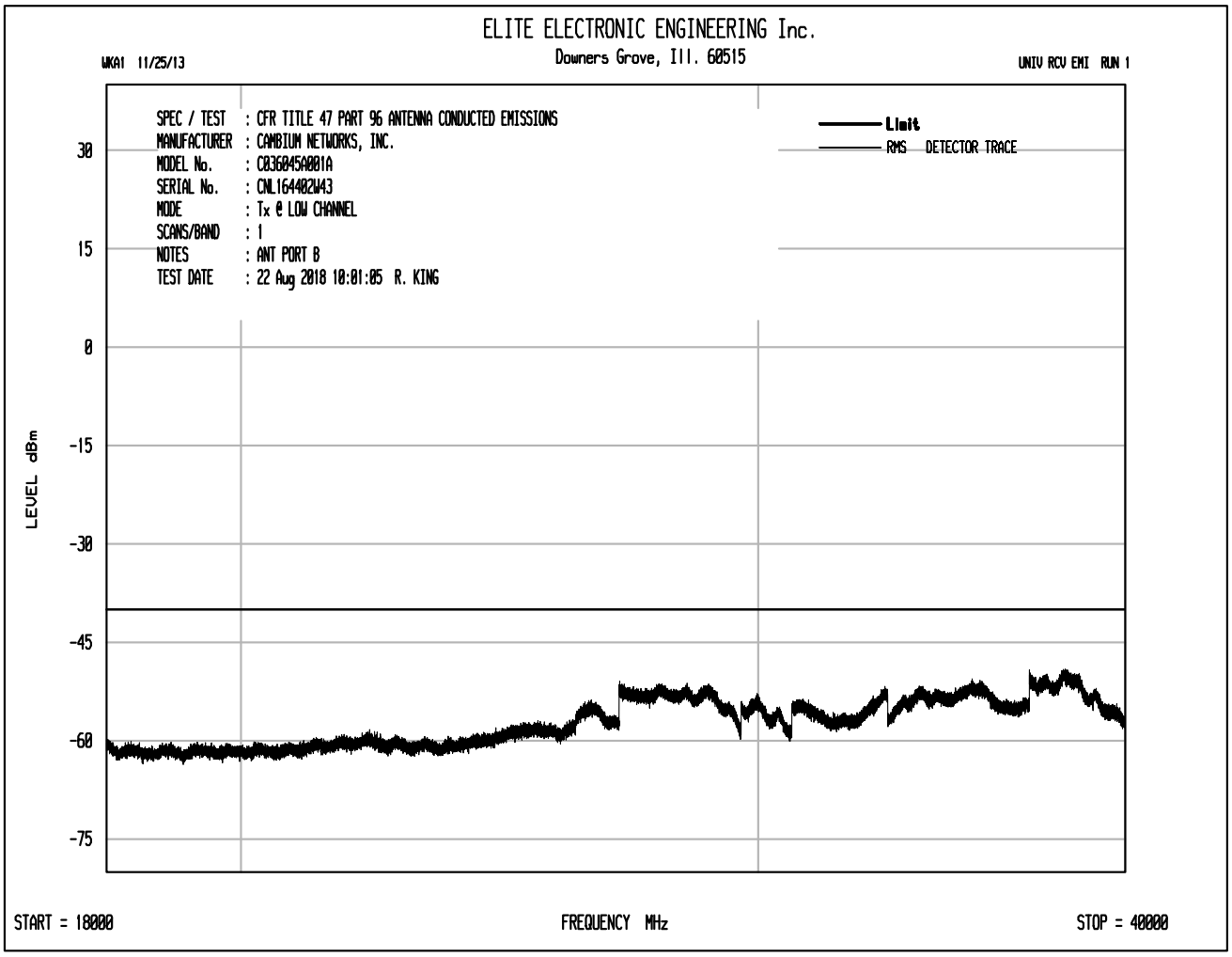
Checked BY Richard E. King :

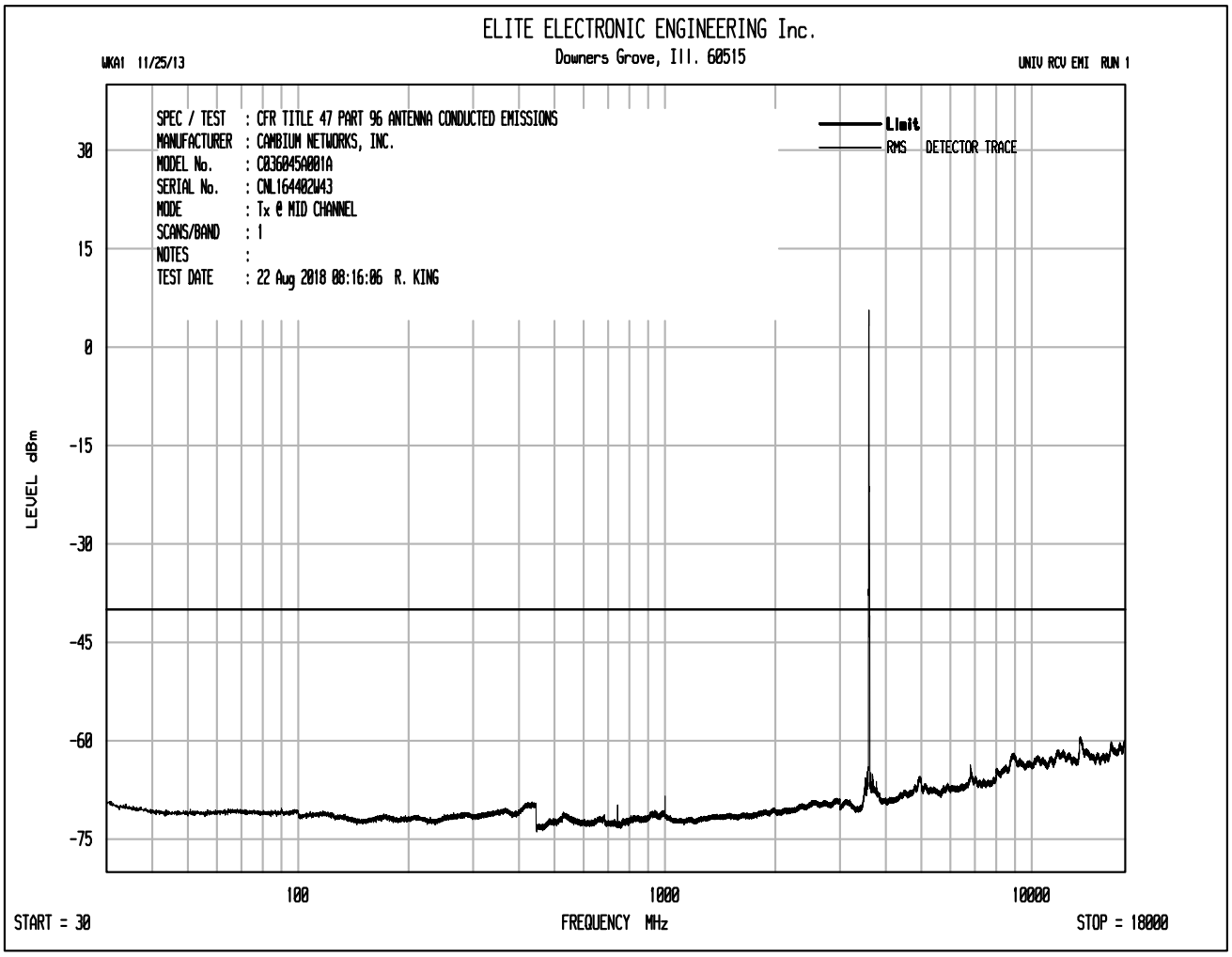
Richard E. King

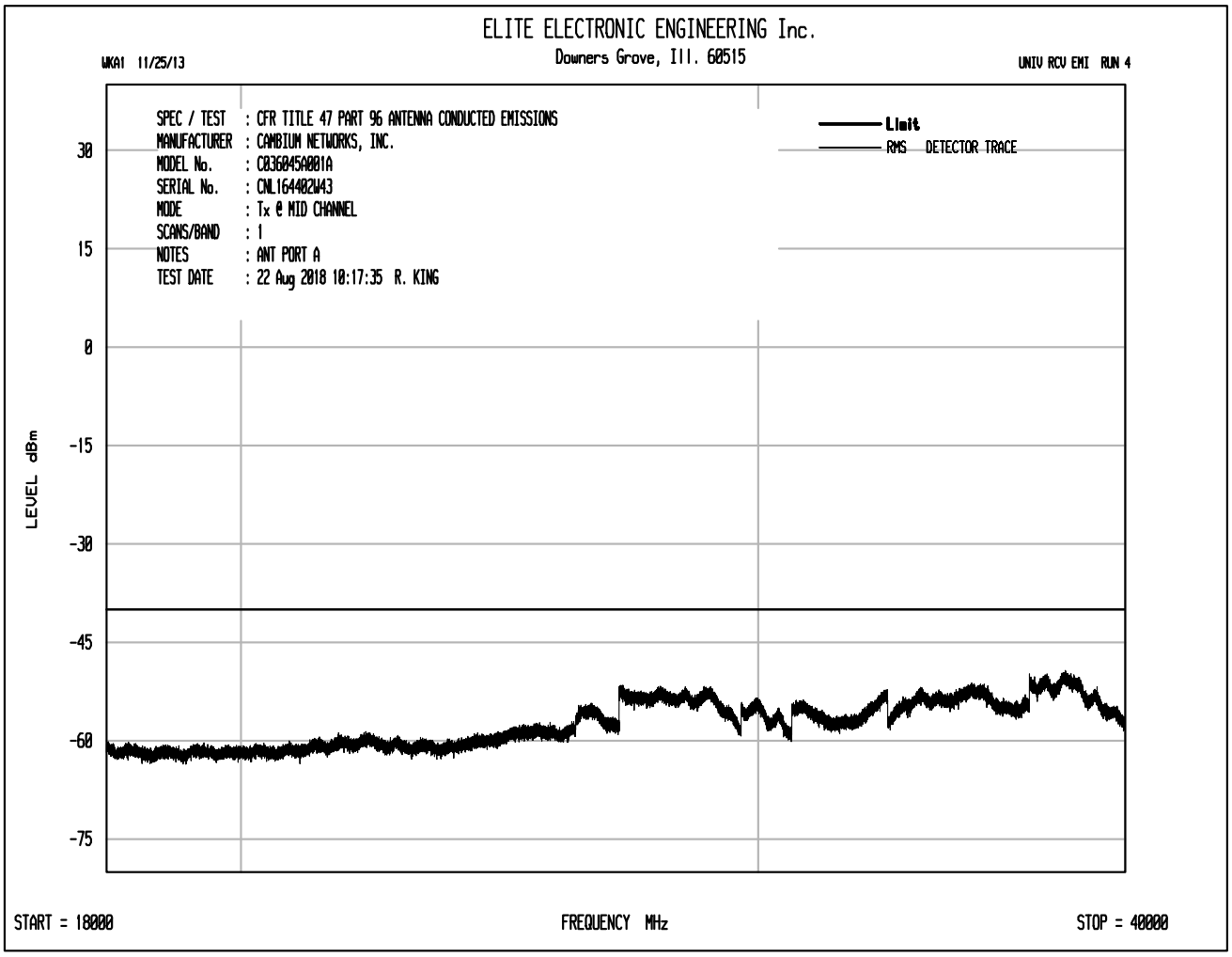

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 1
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 21 Aug 2018 14:12:24 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
100
1000
10000
START = 30
FREQUENCY MHz
STOP = 18000

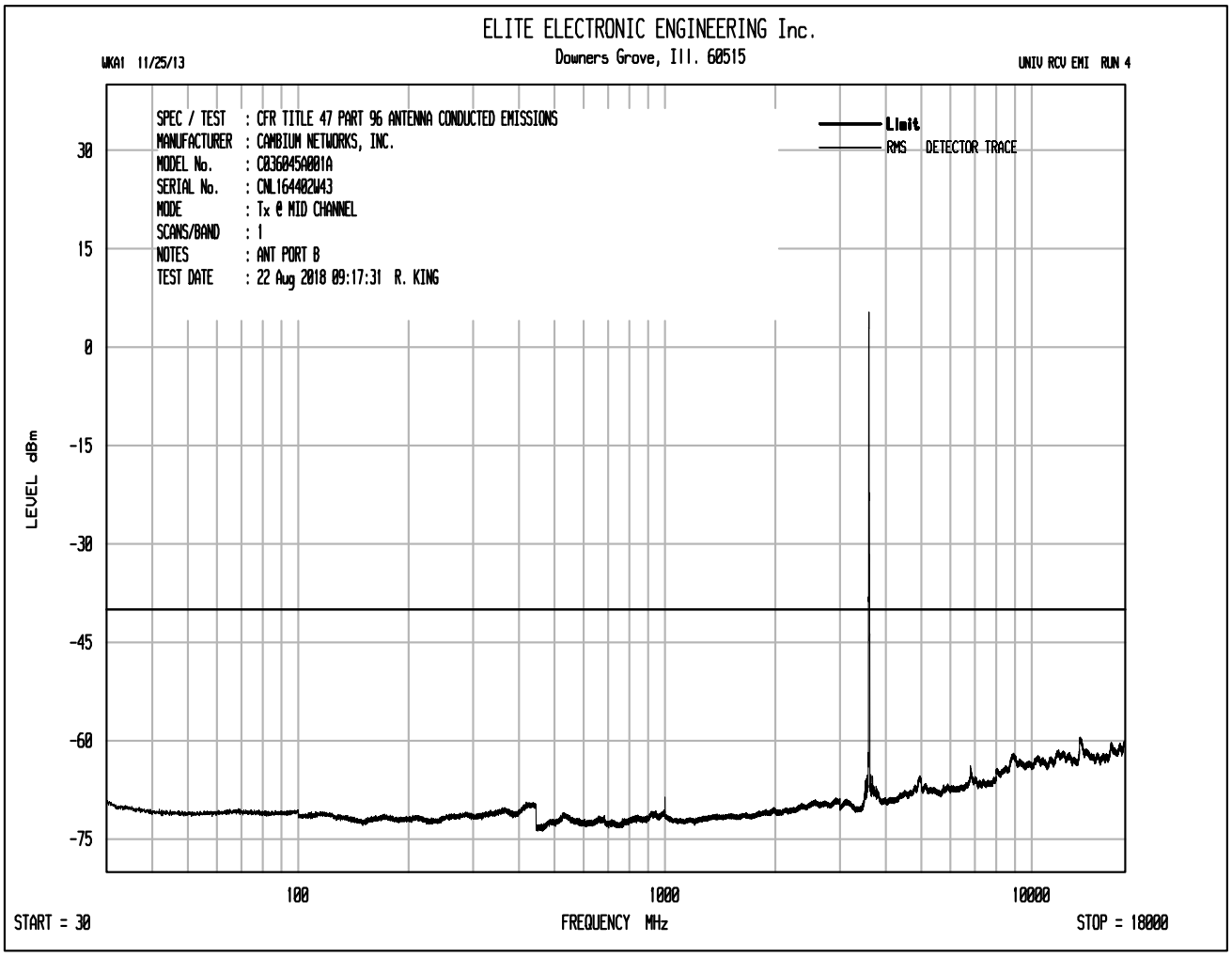

ELITE ELECTRONIC ENGINEERING Inc.
WKA1 11/25/13
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 6
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES : ANT PORT A
TEST DATE : 22 Aug 2018 10:24:21 R. KING
Limit
RMS DETECTOR TRACE
30
15
0
-15
-30
-45
-60
-75
LEVEL dBm
START = 18000
FREQUENCY MHz
STOP = 40000

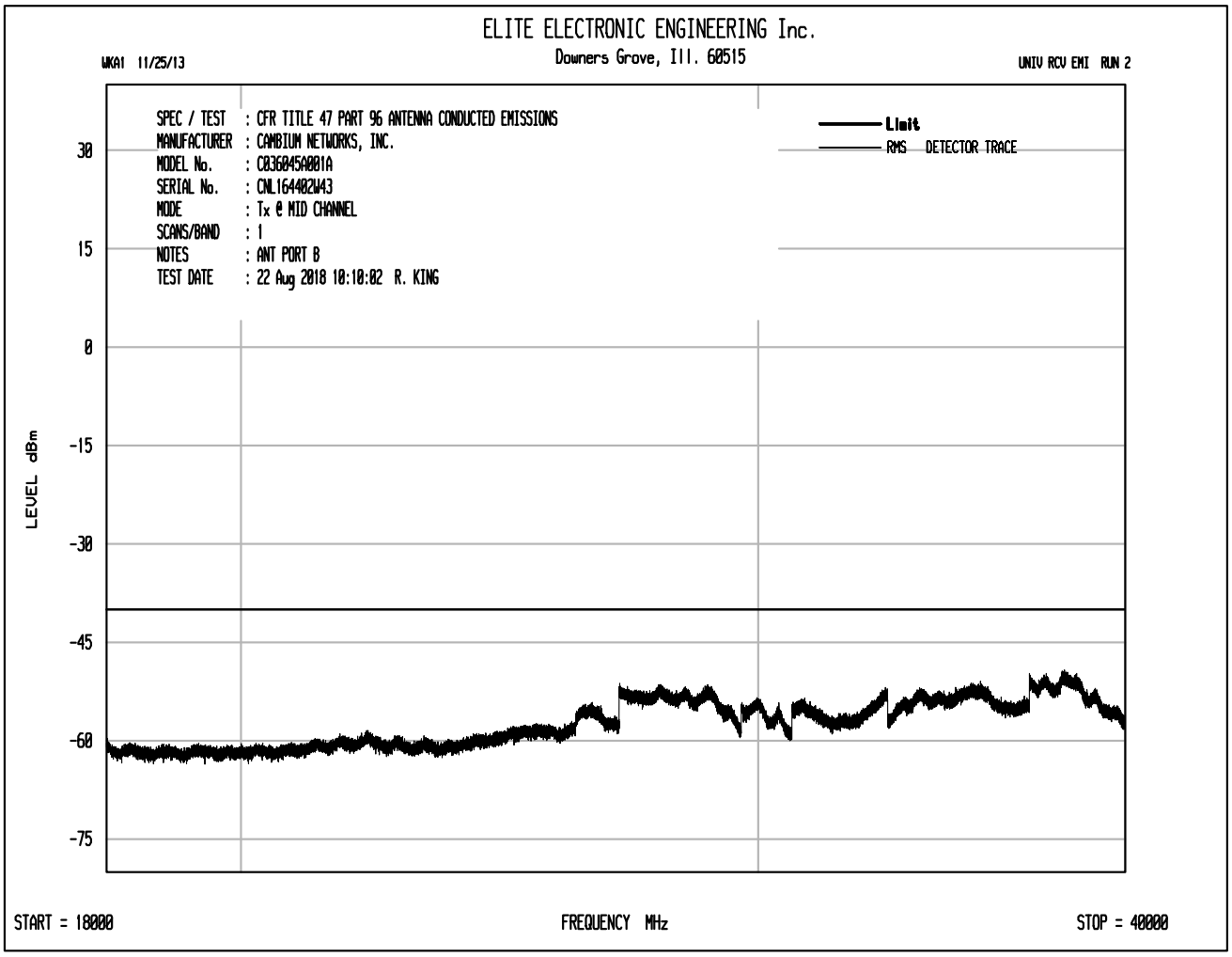

ELITE ELECTRONIC ENGINEERING Inc.
WKA1 11/25/13
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 5
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES : ANT PORT B
TEST DATE : 22 Aug 2018 09:33:25 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
100
1000
10000
START = 30
FREQUENCY MHz
STOP = 18000

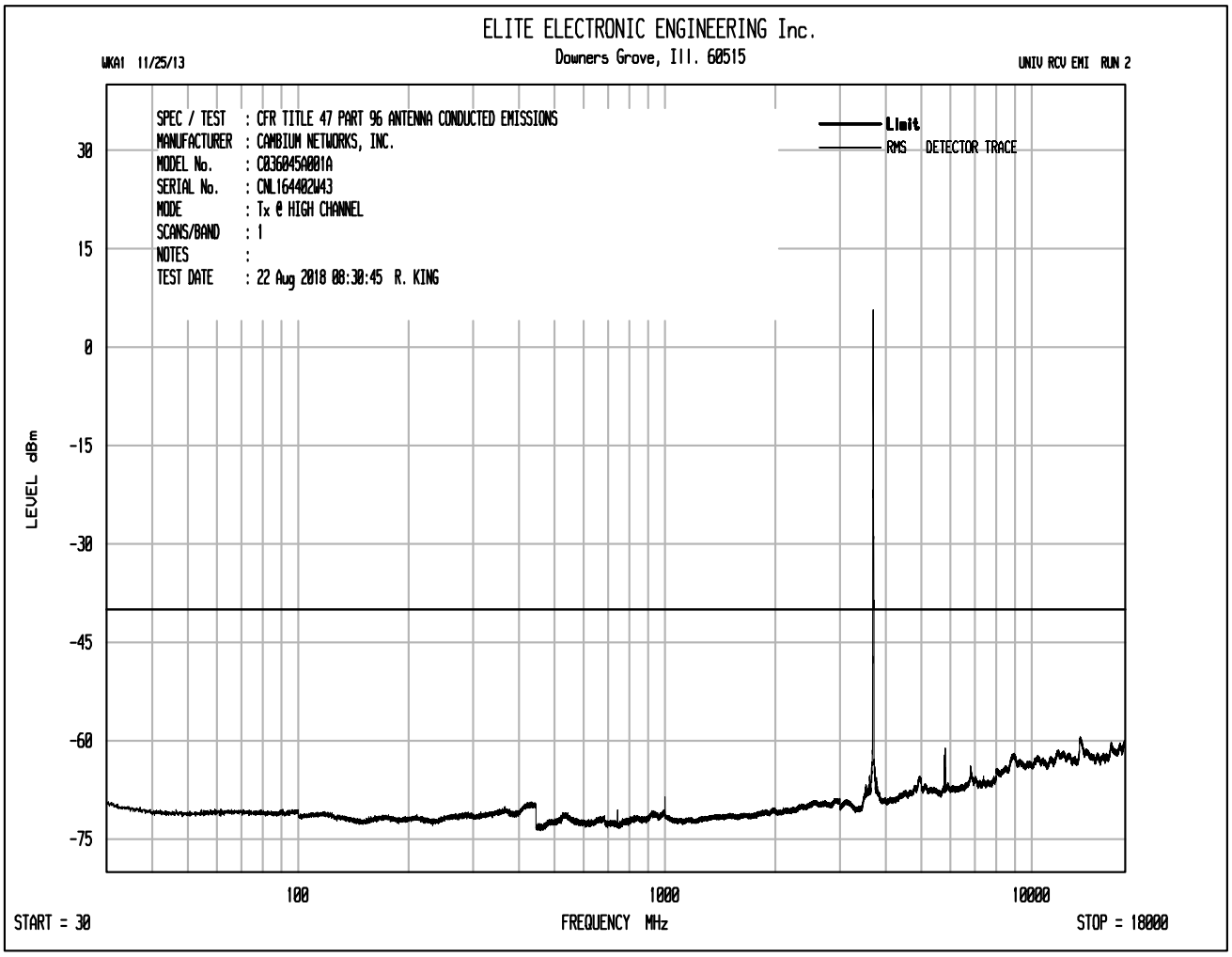

ELITE ELECTRONIC ENGINEERING Inc.
WKA1 11/25/13
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 1
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES : ANT PORT B
TEST DATE : 22 Aug 2018 10:01:05 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
START = 18000
FREQUENCY MHz
STOP = 40000

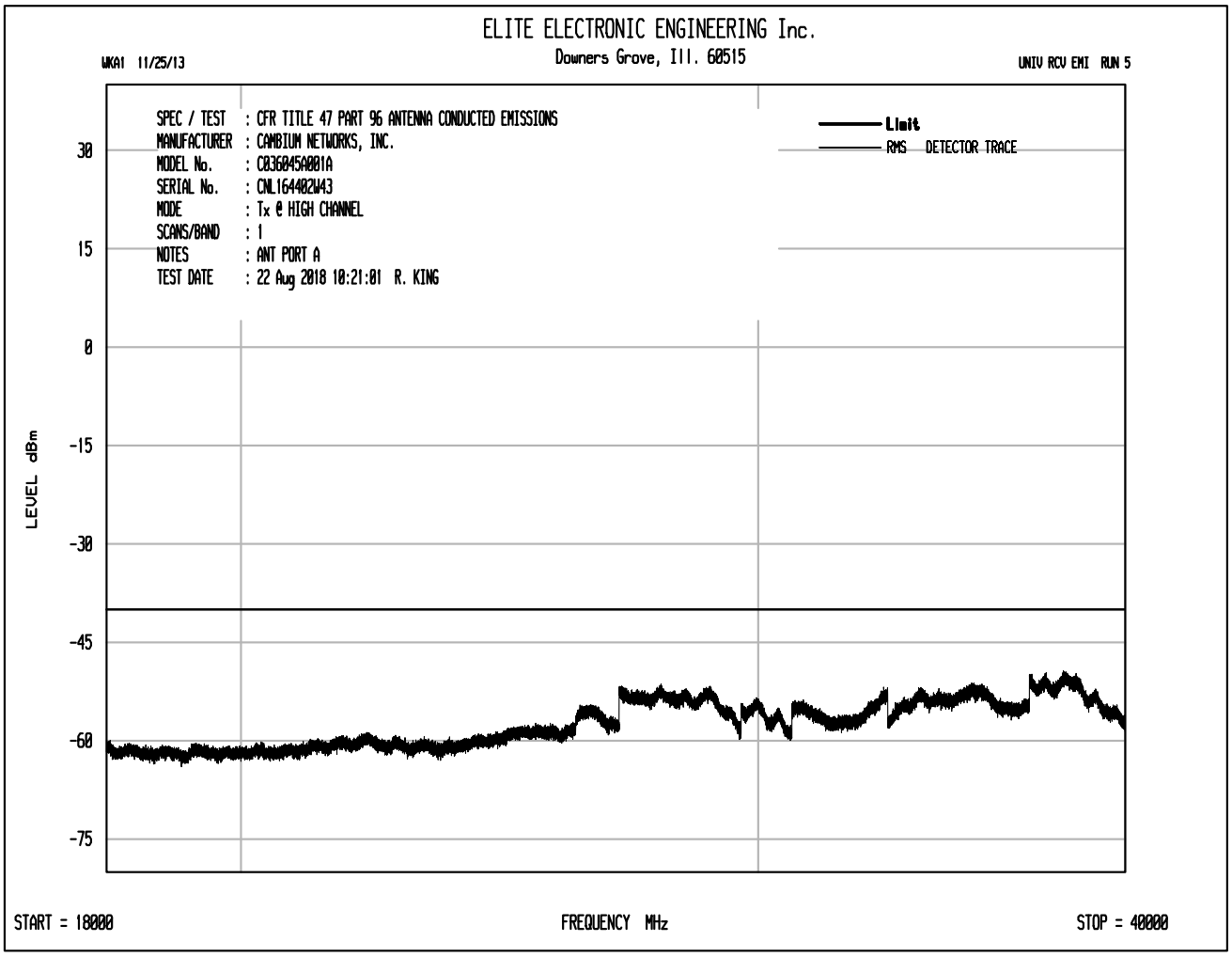

ELITE ELECTRONIC ENGINEERING Inc.
WKA1 11/25/13
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 1
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 22 Aug 2018 08:16:06 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
100
1000
10000
START = 30
FREQUENCY MHz
STOP = 18000

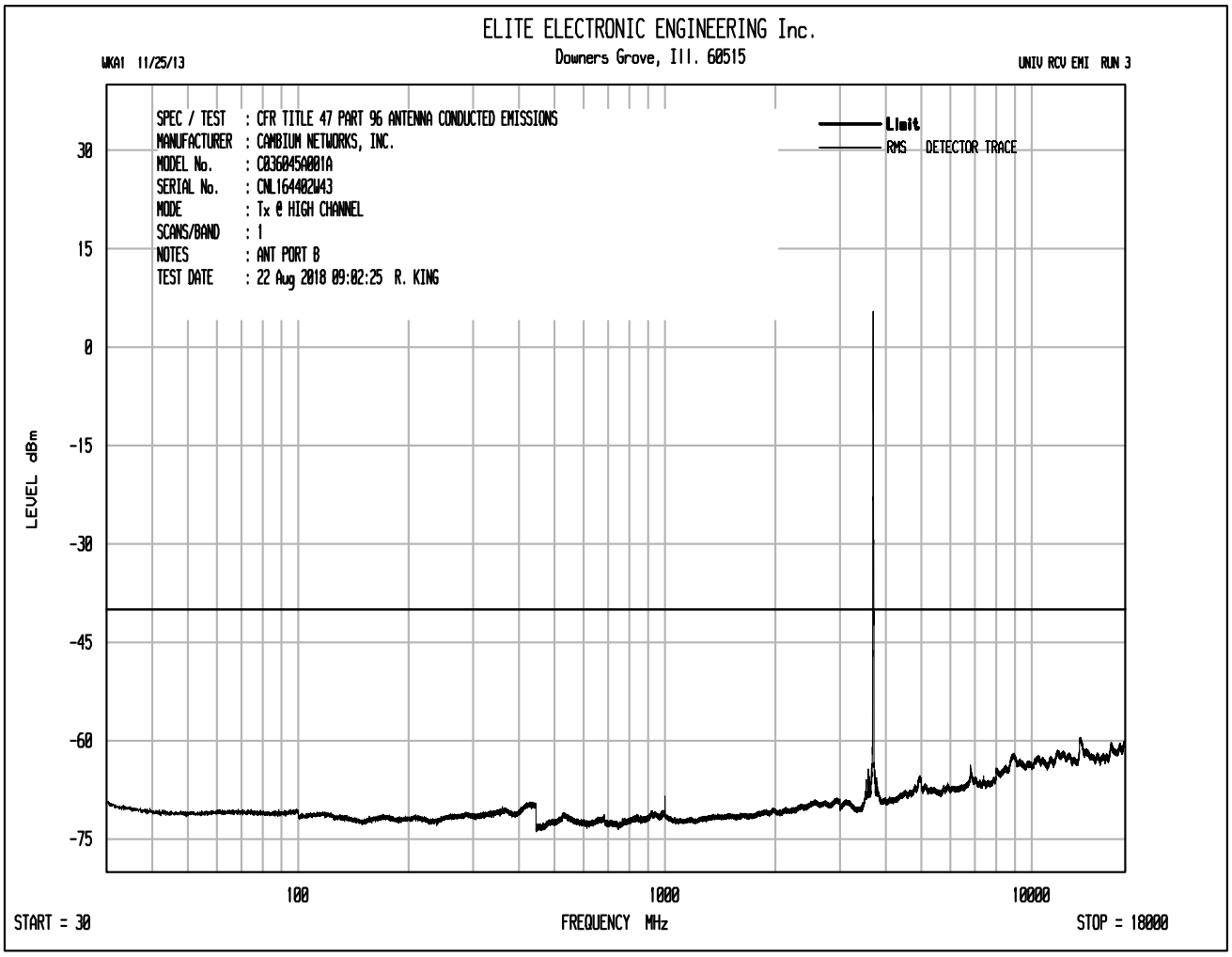

ELITE ELECTRONIC ENGINEERING Inc.
WKA1 11/25/13
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 4
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES : ANT PORT A
TEST DATE : 22 Aug 2018 10:17:35 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
START = 18000
FREQUENCY MHz
STOP = 40000

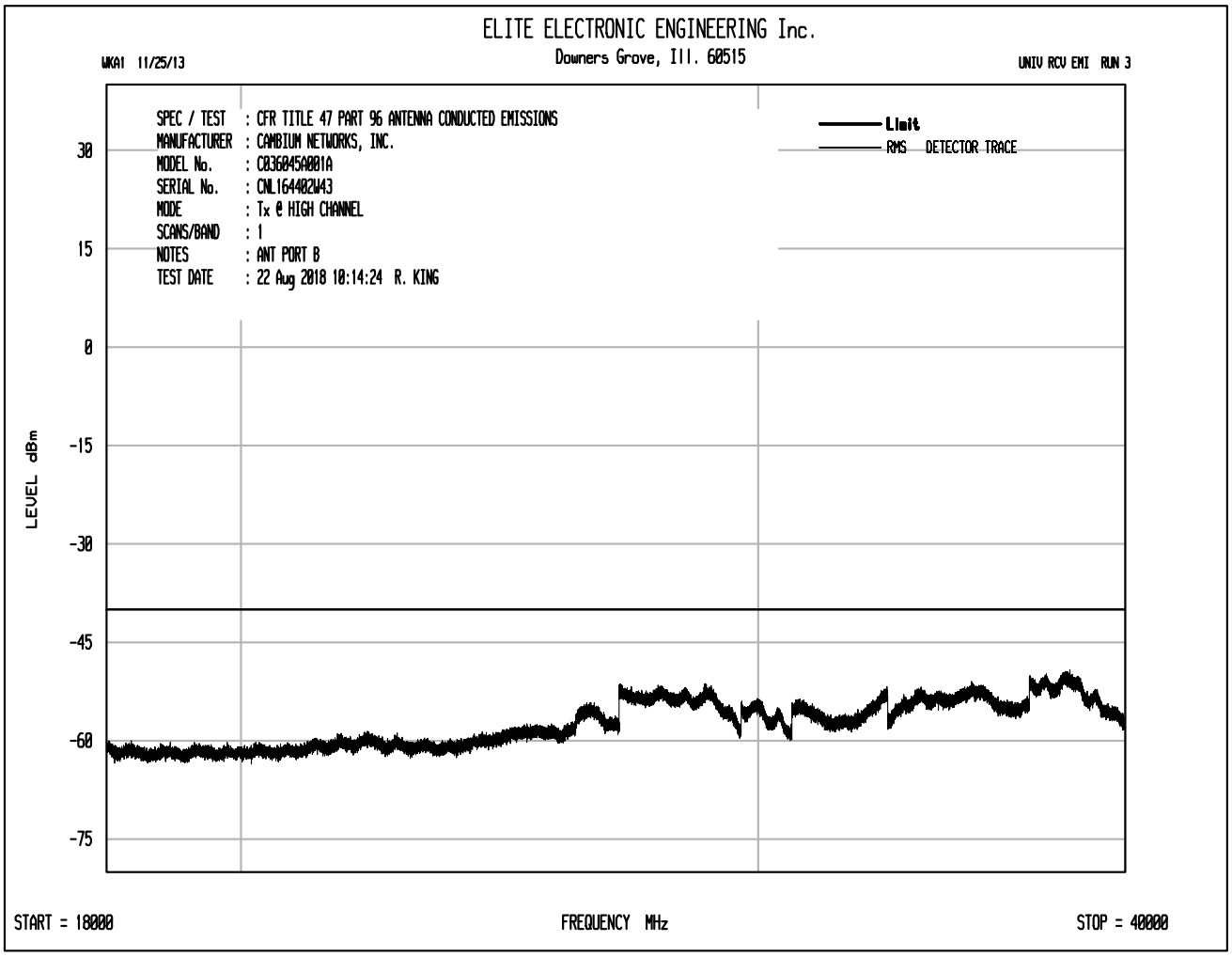

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 4
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES : ANT PORT B
TEST DATE : 22 Aug 2018 09:17:31 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
100
1000
10000
START = 30
FREQUENCY MHz
STOP = 18000

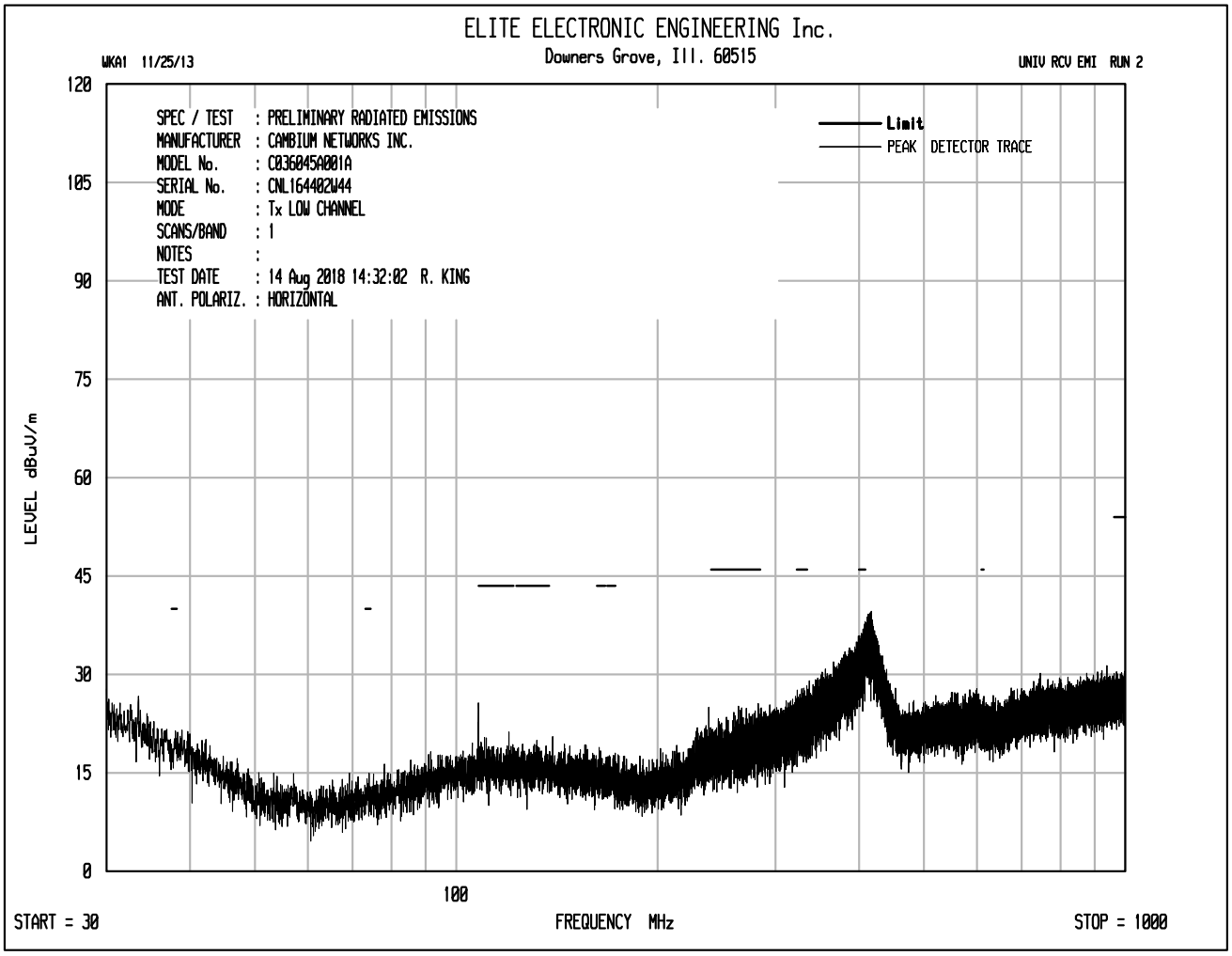

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 2
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES : ANT PORT B
TEST DATE : 22 Aug 2018 10:10:02 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
START = 18000
FREQUENCY MHz
STOP = 40000

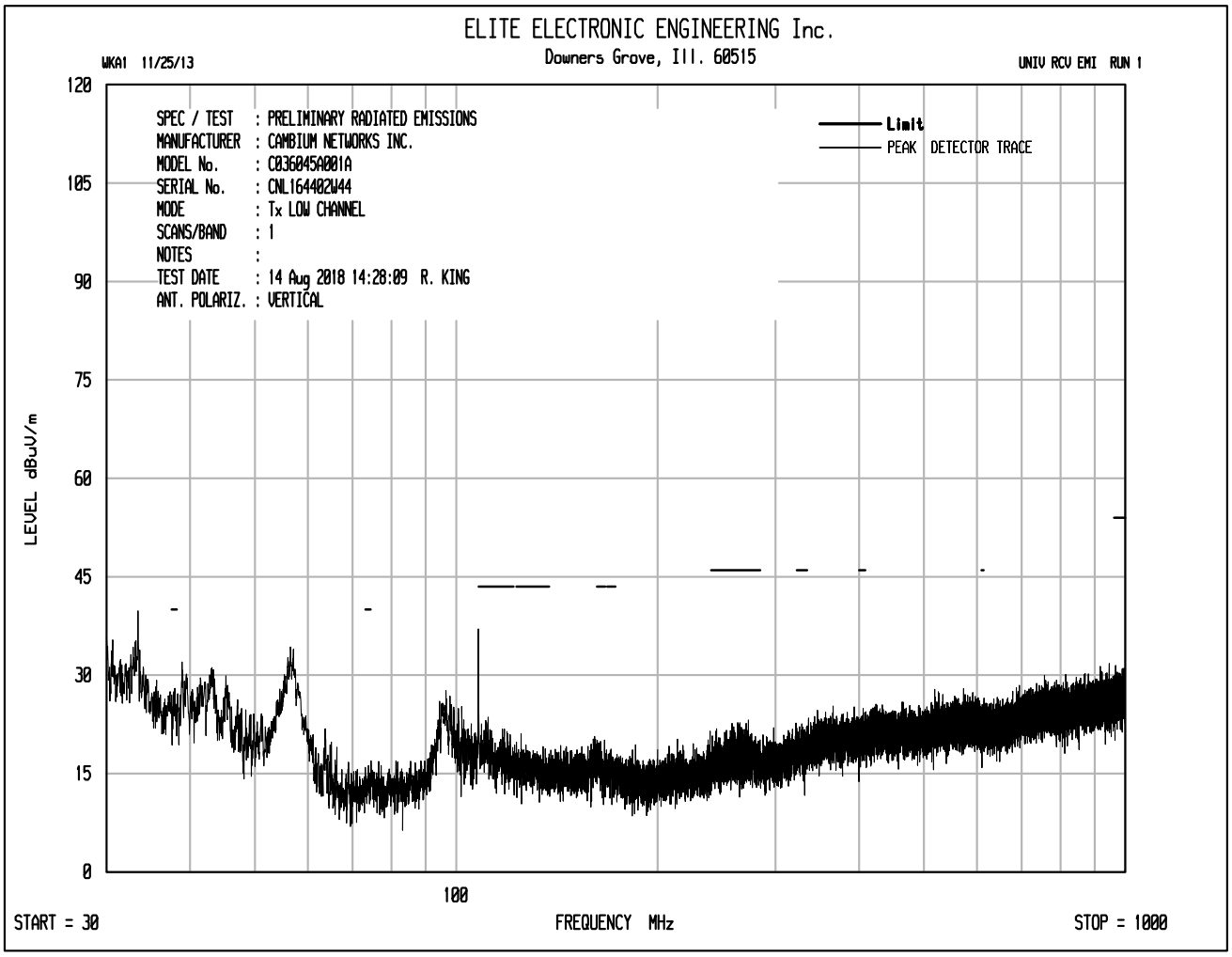

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 2
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 22 Aug 2018 08:30:45 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
100
1000
10000
START = 30
FREQUENCY MHz
STOP = 18000

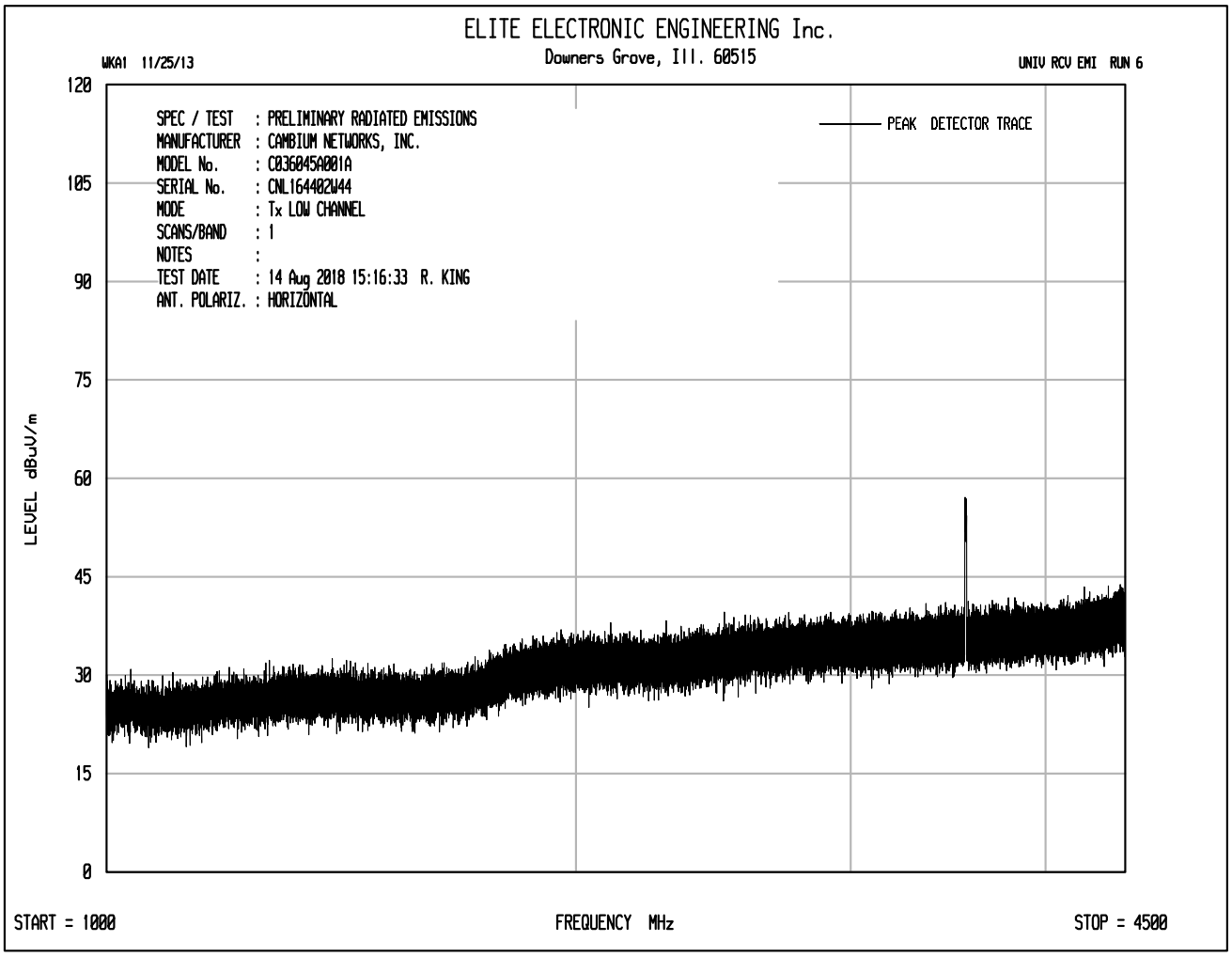

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 5
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES : ANT PORT A
TEST DATE : 22 Aug 2018 10:21:01 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
START = 18000
FREQUENCY MHz
STOP = 40000

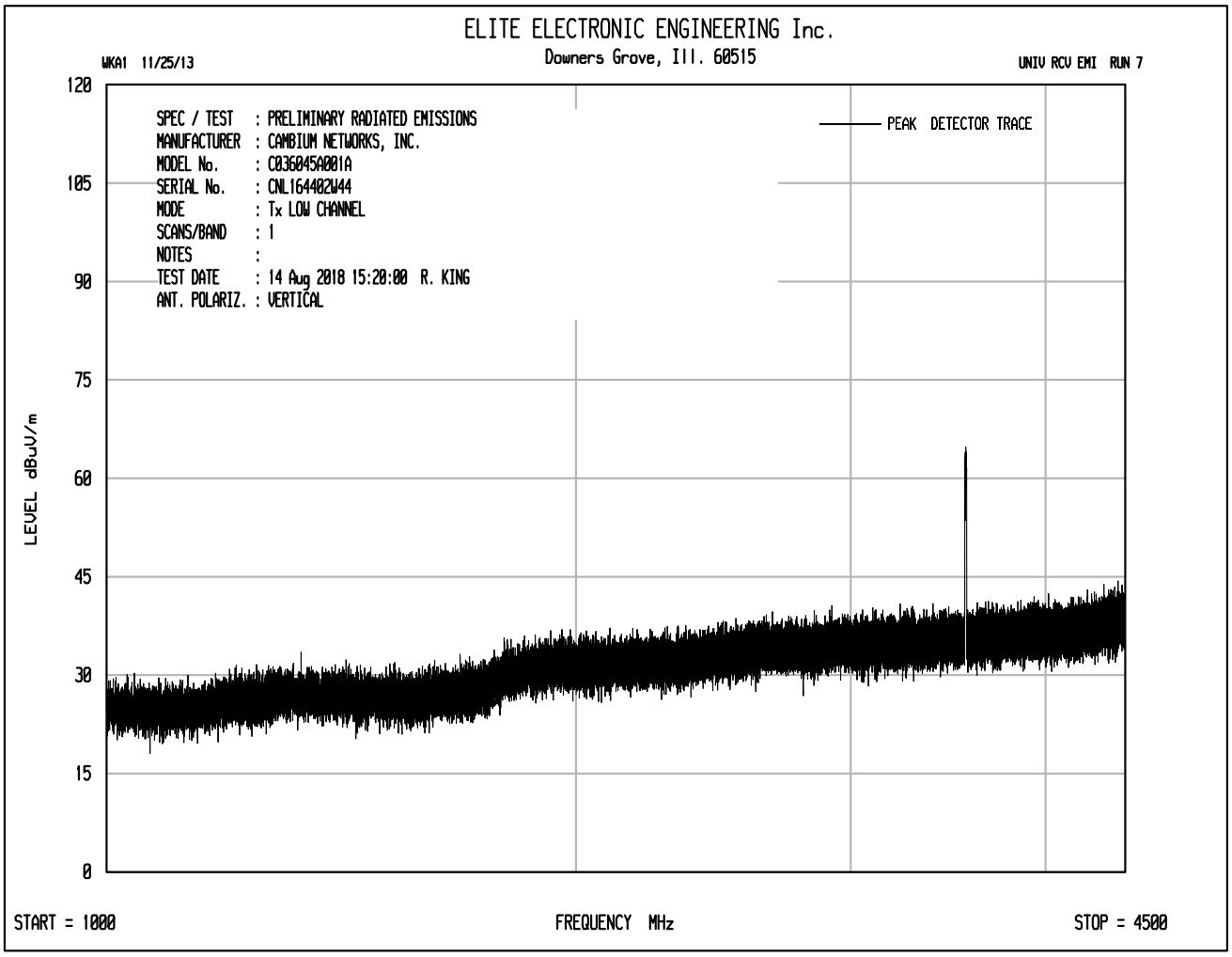

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 3
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES : ANT PORT B
TEST DATE : 22 Aug 2018 09:02:25 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
100
1000
10000
START = 30
FREQUENCY MHz
STOP = 18000

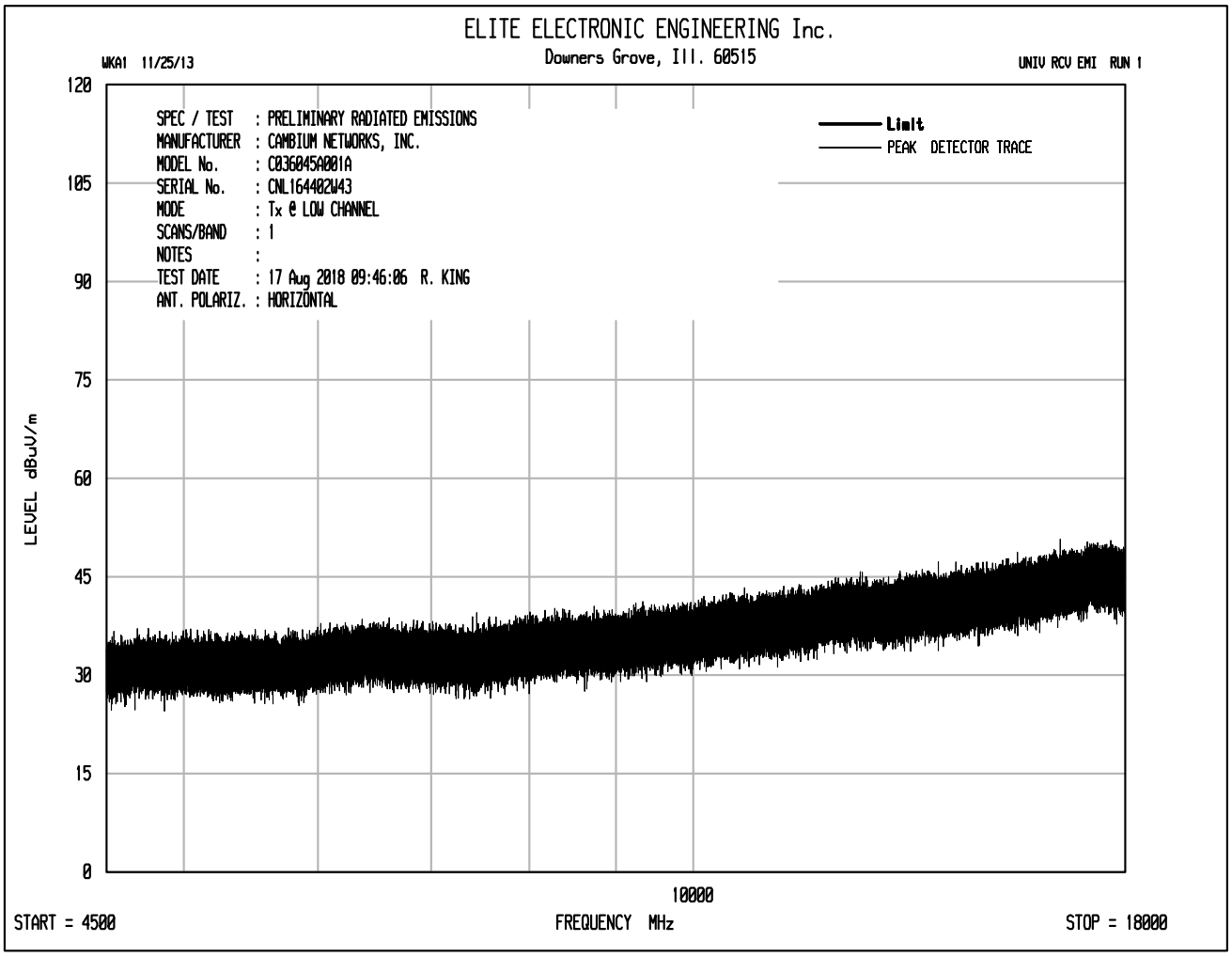

ELITE ELECTRONIC ENGINEERING Inc.
WKA1 11/25/13
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 3
SPEC / TEST : CFR TITLE 47 PART 96 ANTENNA CONDUCTED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES : ANT PORT B
TEST DATE : 22 Aug 2018 10:14:24 R. KING
Limit
RMS DETECTOR TRACE
LEVEL dBm
30
15
0
-15
-30
-45
-60
-75
START = 18000
FREQUENCY MHz
STOP = 40000

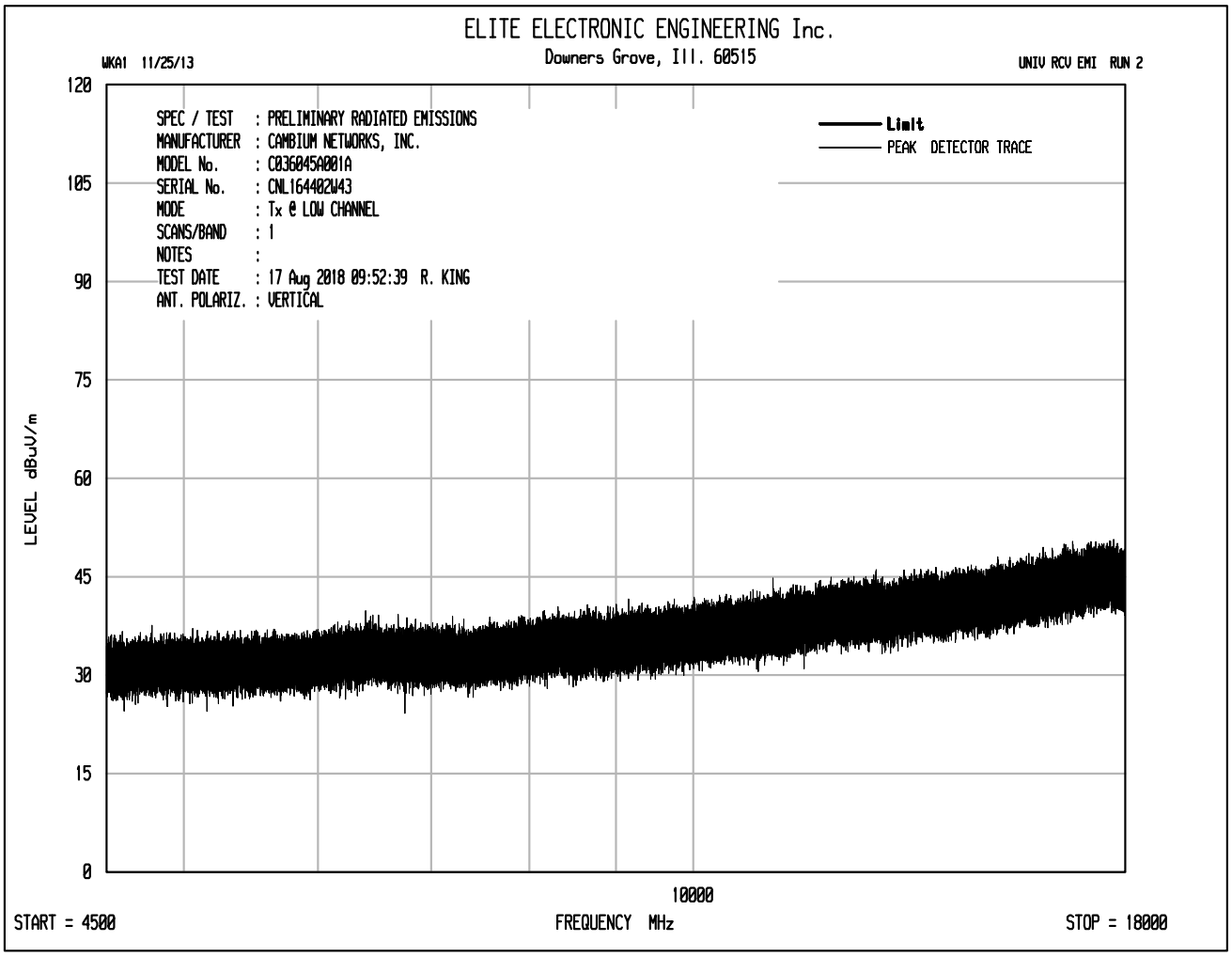

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 2
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 14:32:02 R. KING
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
100
START = 30
FREQUENCY MHz
STOP = 1000

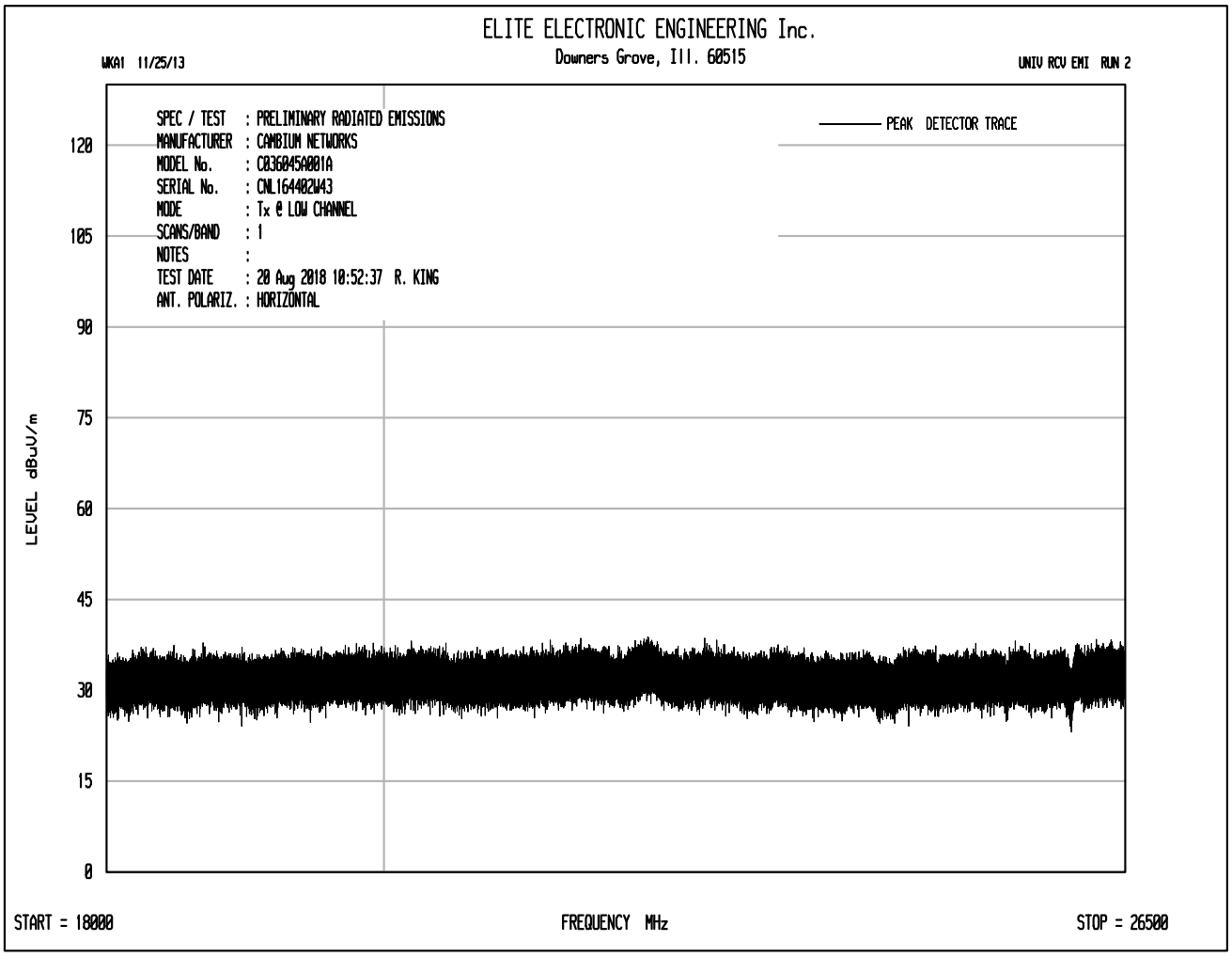

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 1
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 14:28:09 R. KING
ANT. POLARIZ. : VERTICAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
100
START = 30
FREQUENCY MHz
STOP = 1000

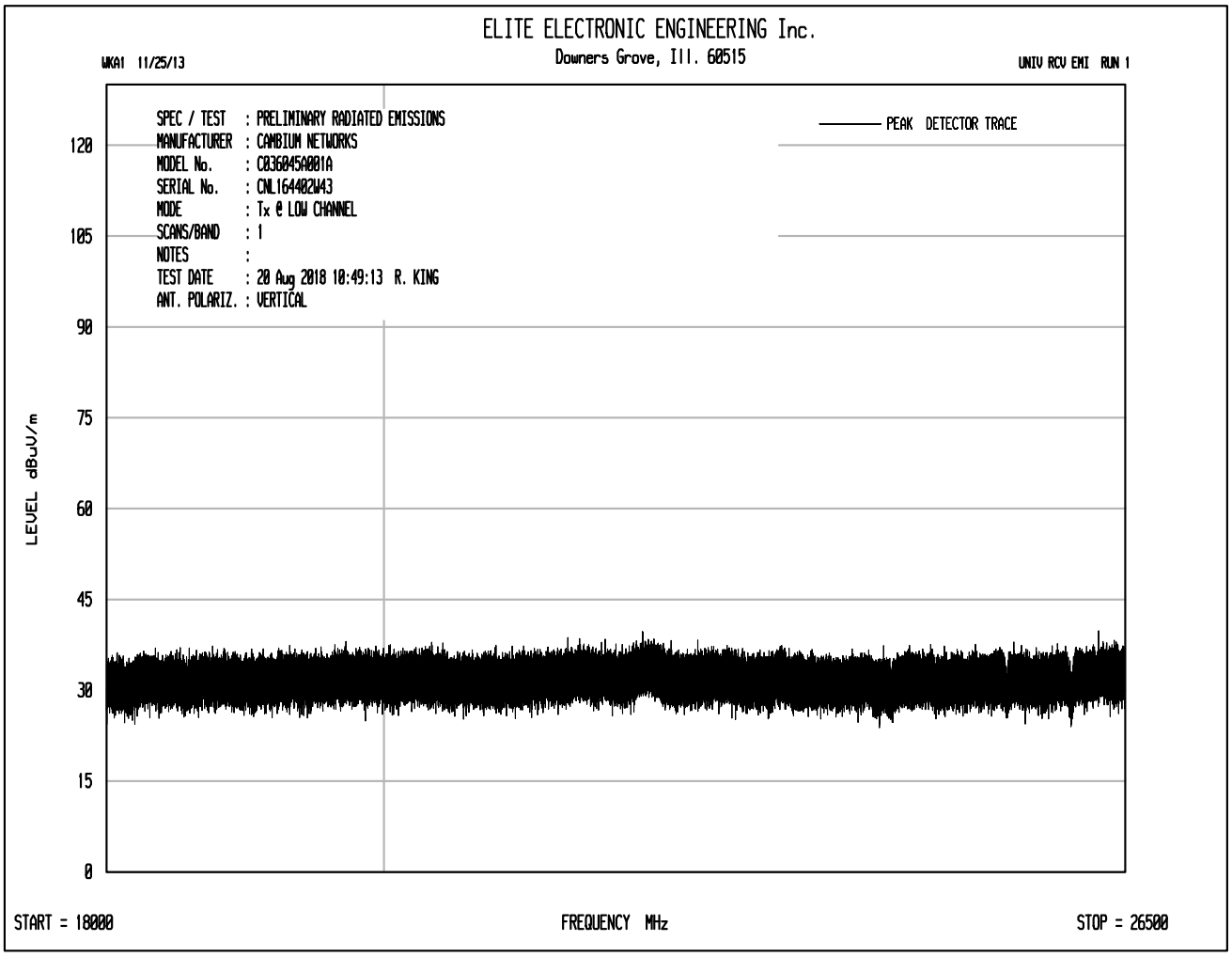

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 6
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 15:16:33 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 4500

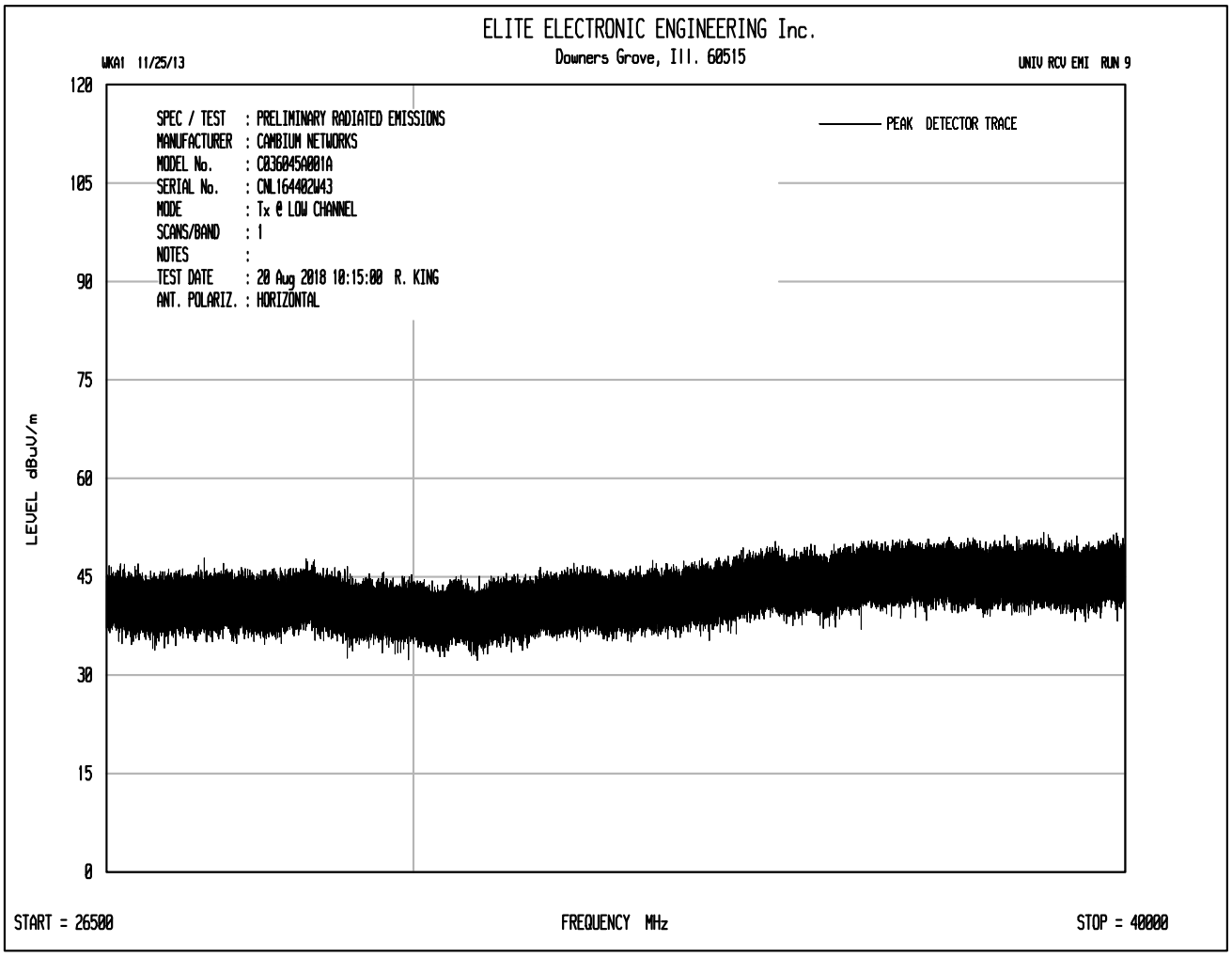

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 7
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 15:20:00 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 4500

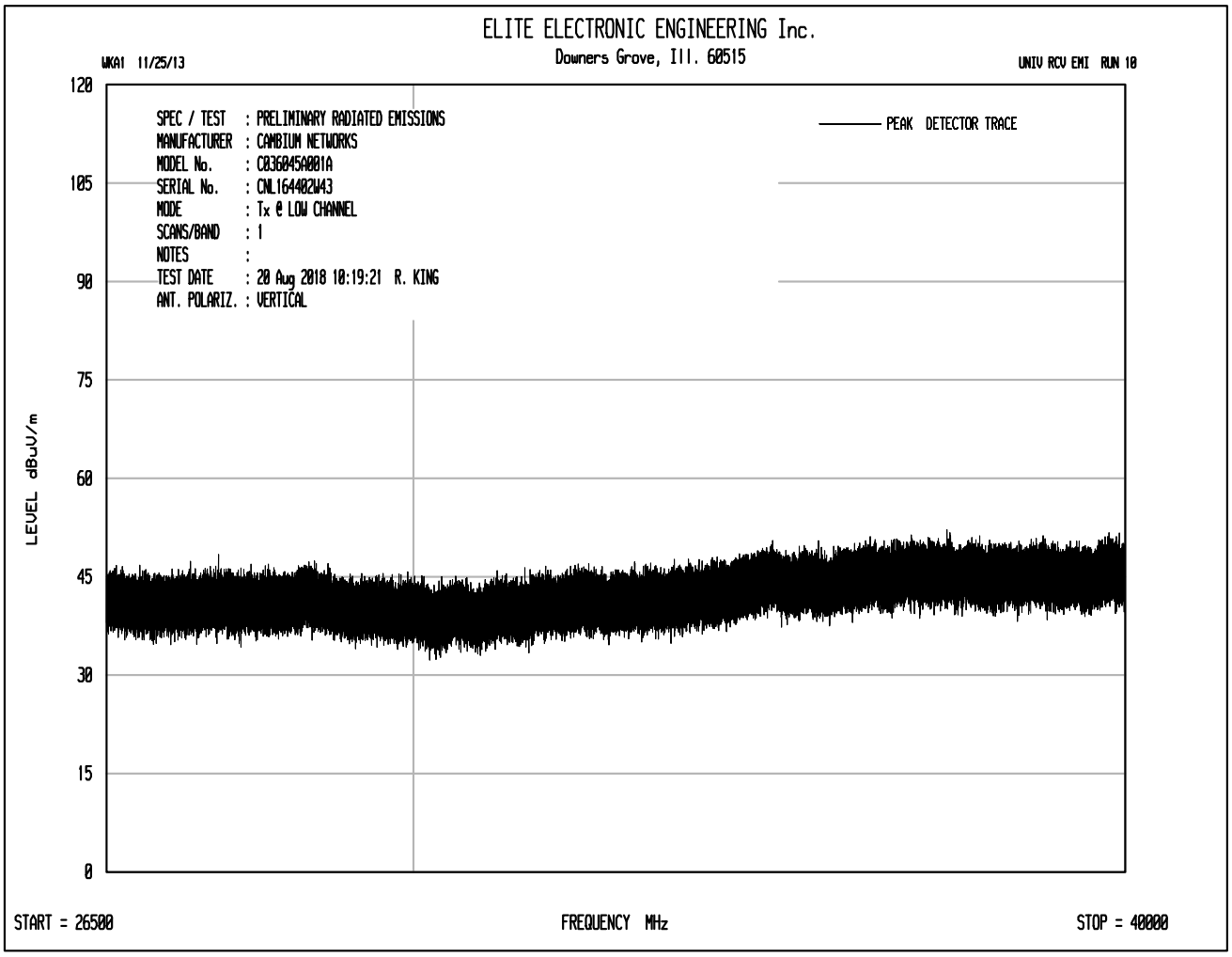

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 1
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 17 Aug 2018 09:46:06 R. KING
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
10000
START = 4500
FREQUENCY MHz
STOP = 18000

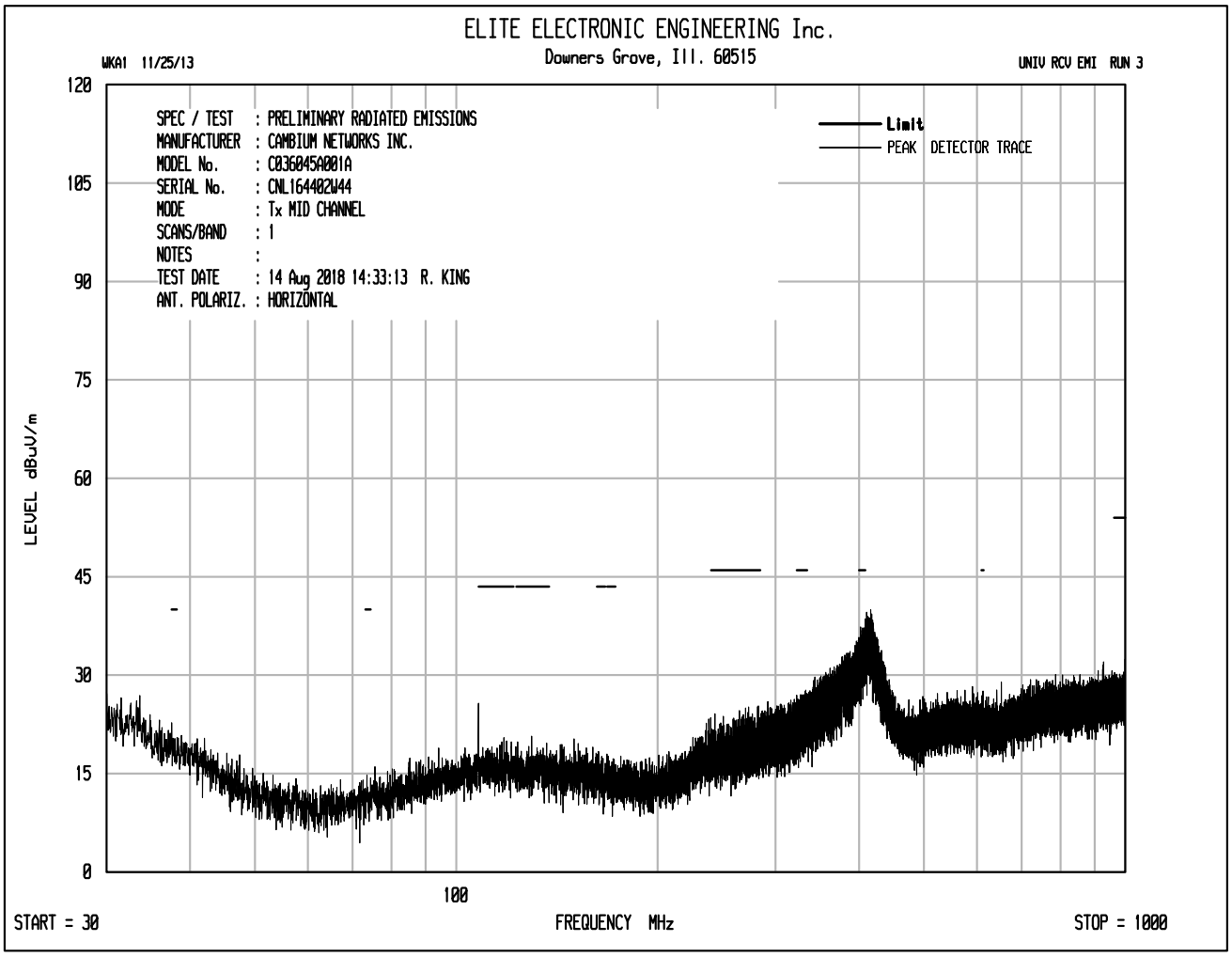

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 2
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 17 Aug 2018 09:52:39 R. KING
ANT. POLARIZ. : VERTICAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
10000
START = 4500
FREQUENCY MHz
STOP = 18000

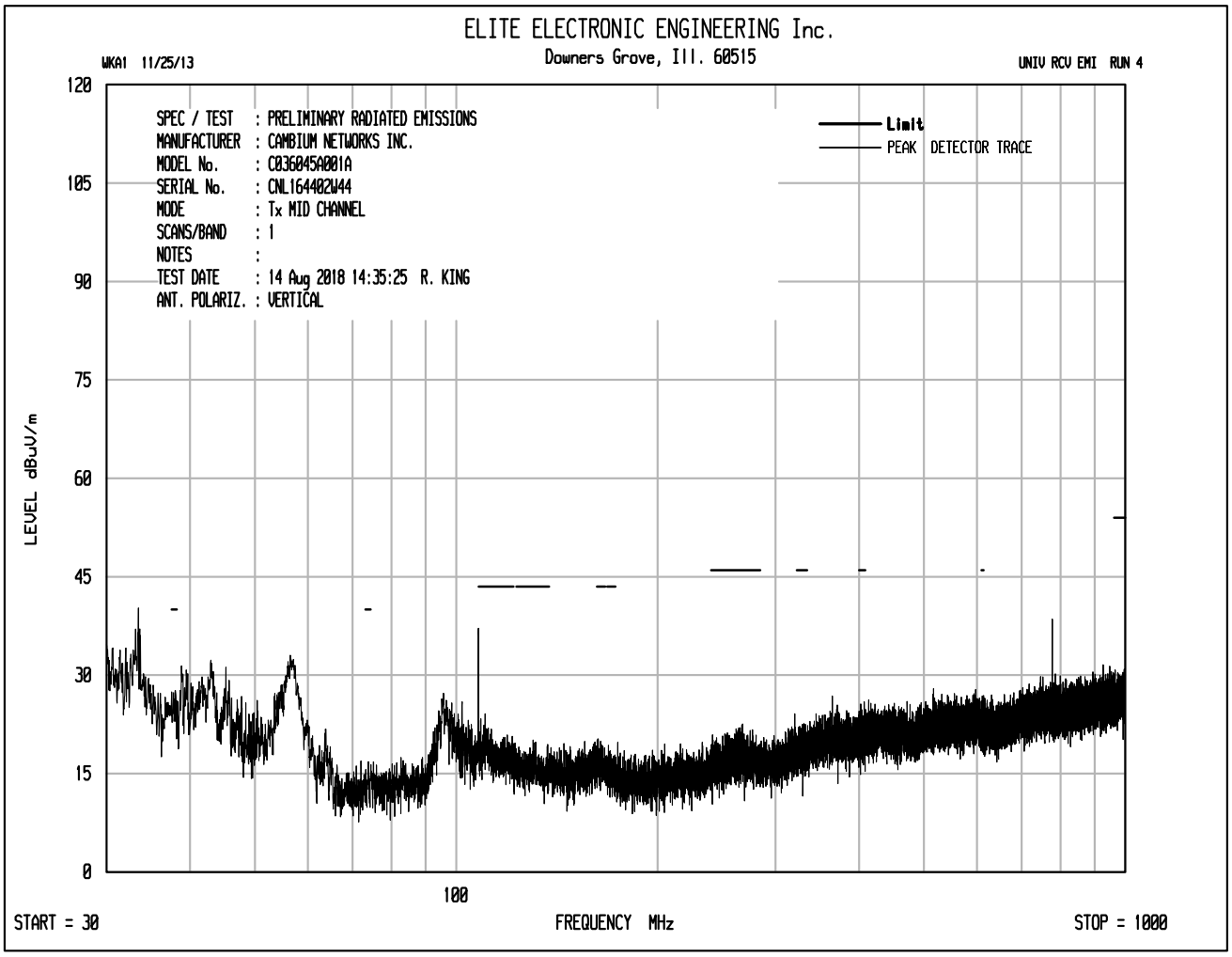

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 2
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 10:52:37 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 18000
FREQUENCY MHz
STOP = 26500

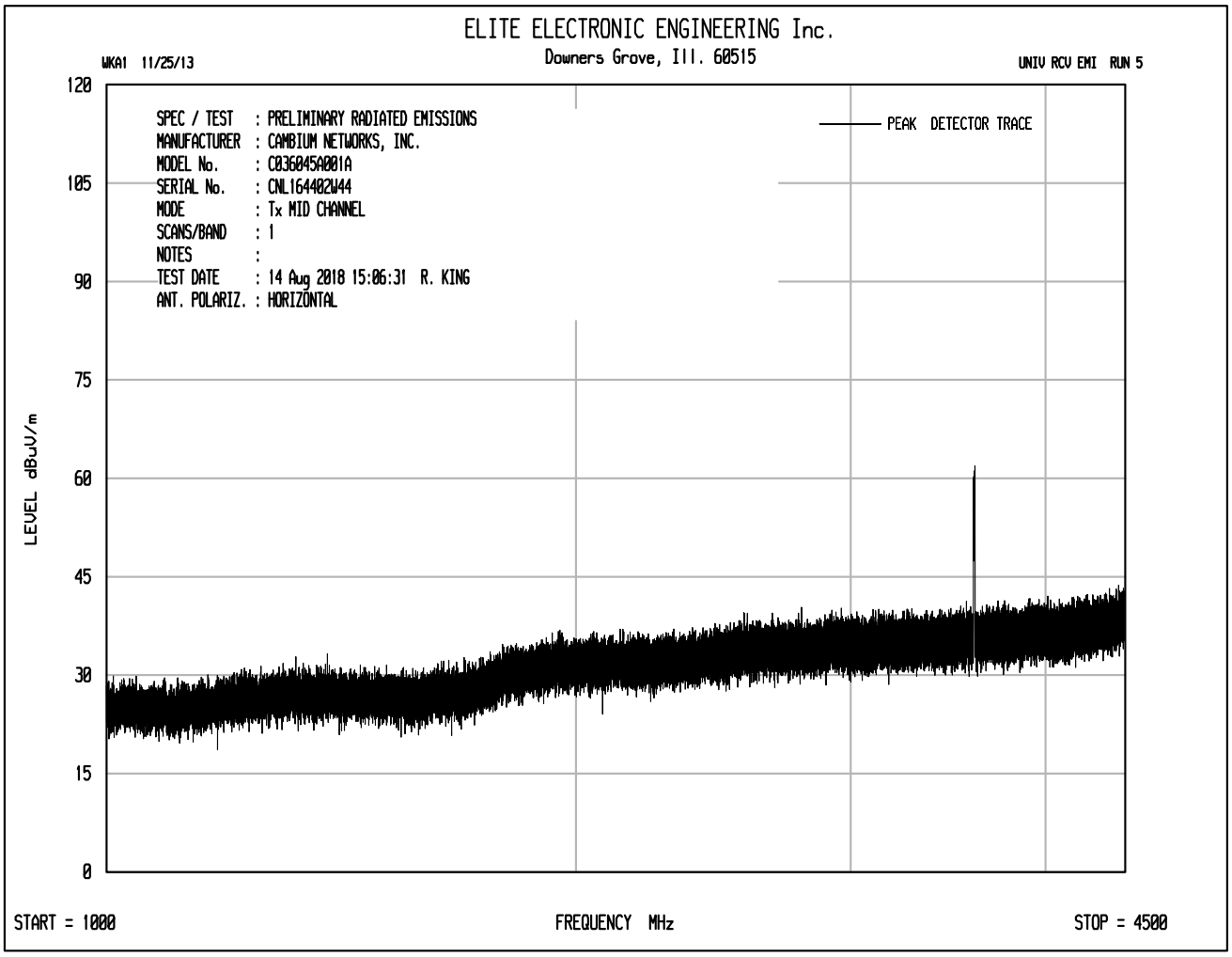

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 1
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 10:49:13 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 18000
FREQUENCY MHz
STOP = 26500

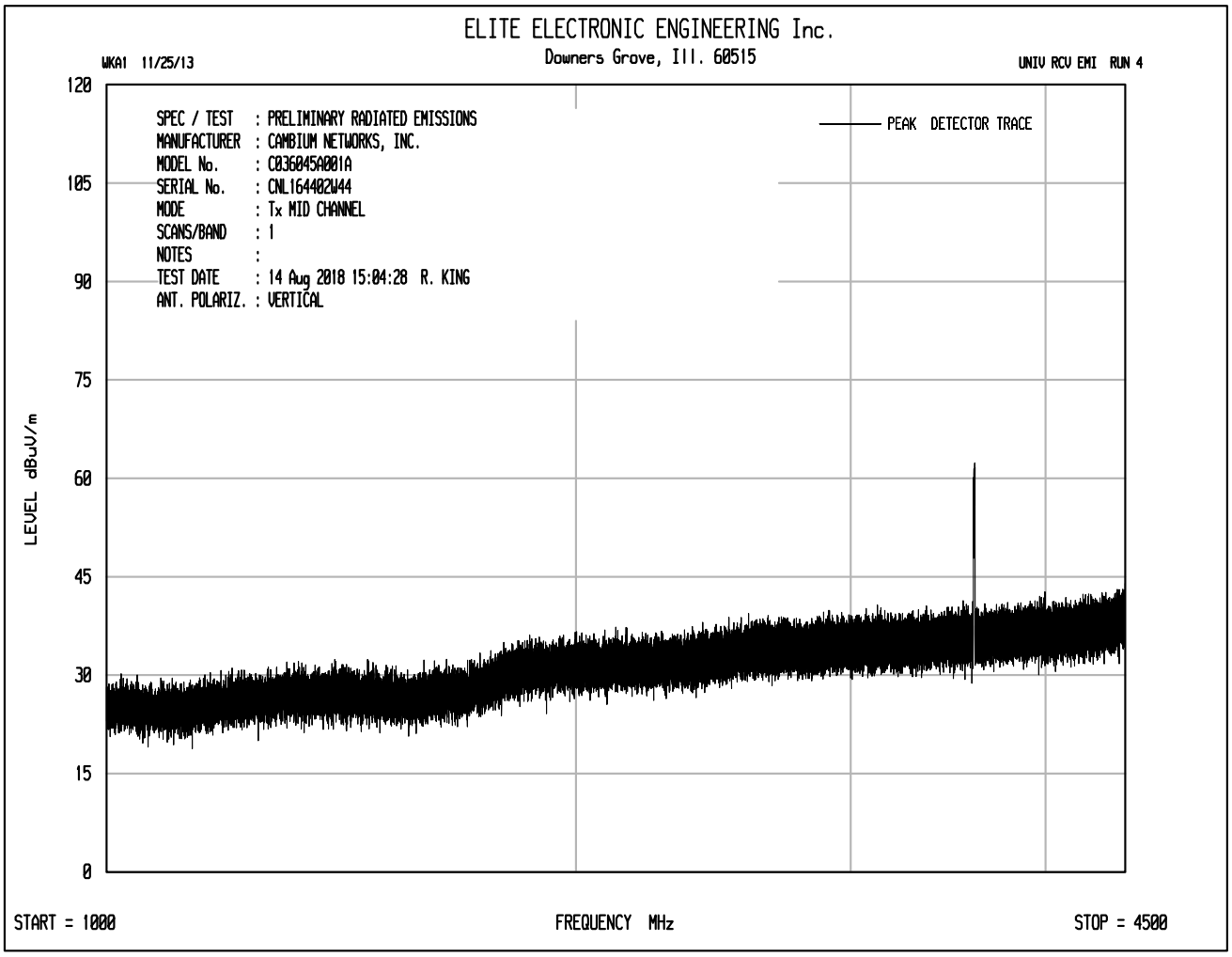

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 9
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 10:15:00 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 26500
FREQUENCY MHz
STOP = 40000

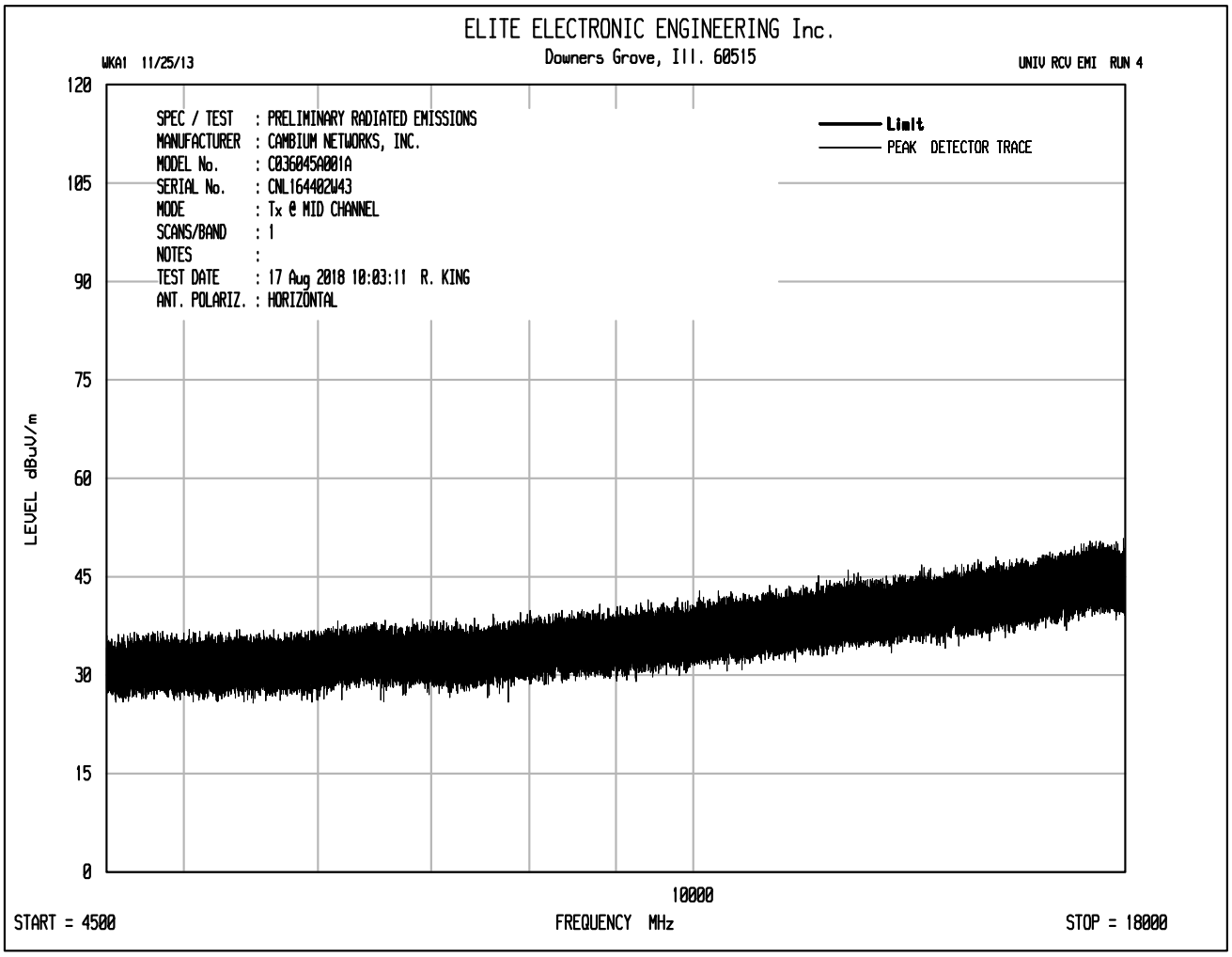

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 10
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ LOW CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 10:19:21 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 26500
FREQUENCY MHz
STOP = 40000

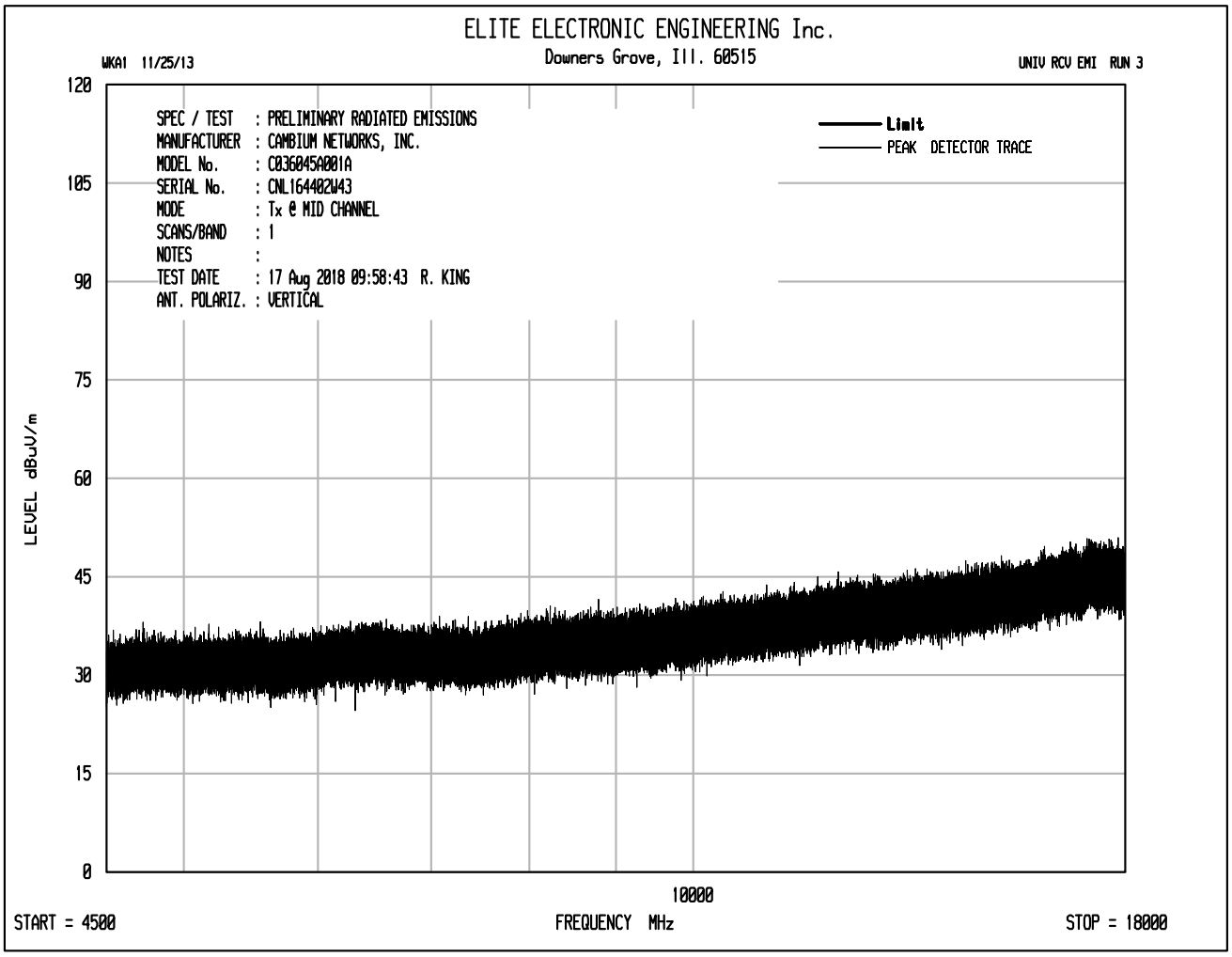

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 3
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 14:33:13 R. KING
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
100
START = 30
FREQUENCY MHz
STOP = 1000

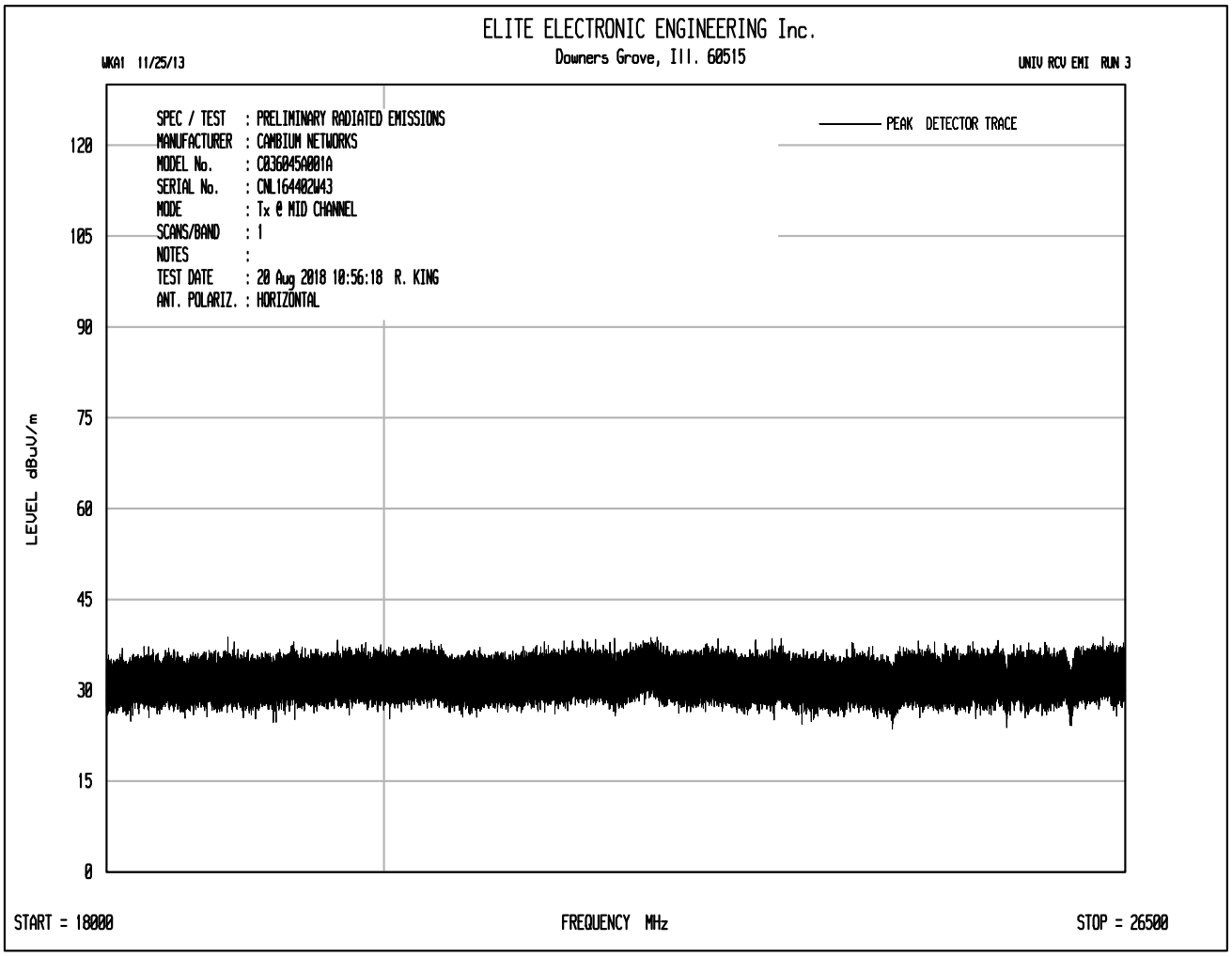

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 4
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 14:35:25 R. KING
ANT. POLARIZ. : VERTICAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
100
START = 30
FREQUENCY MHz
STOP = 1000

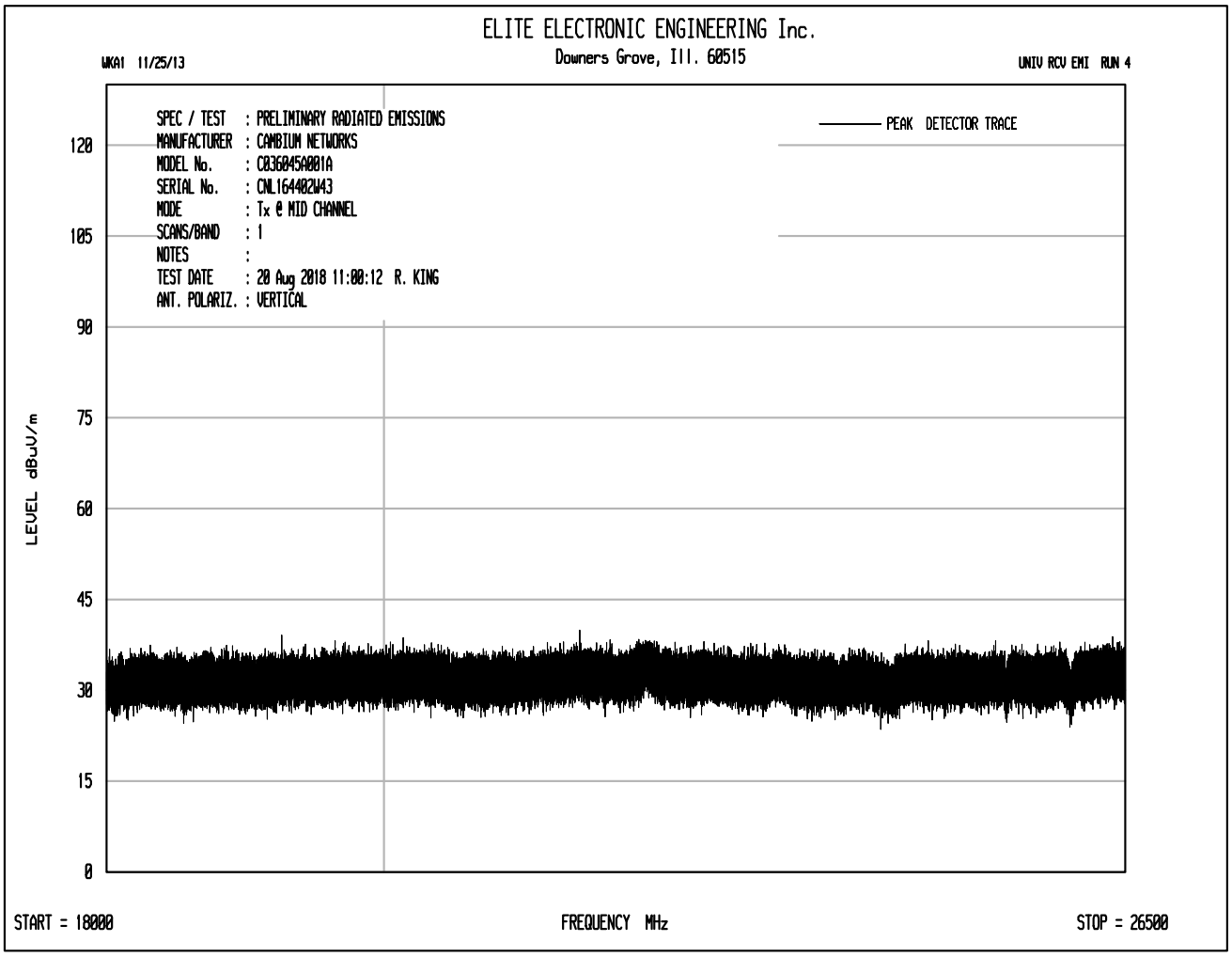

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 5
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 15:06:31 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 4500

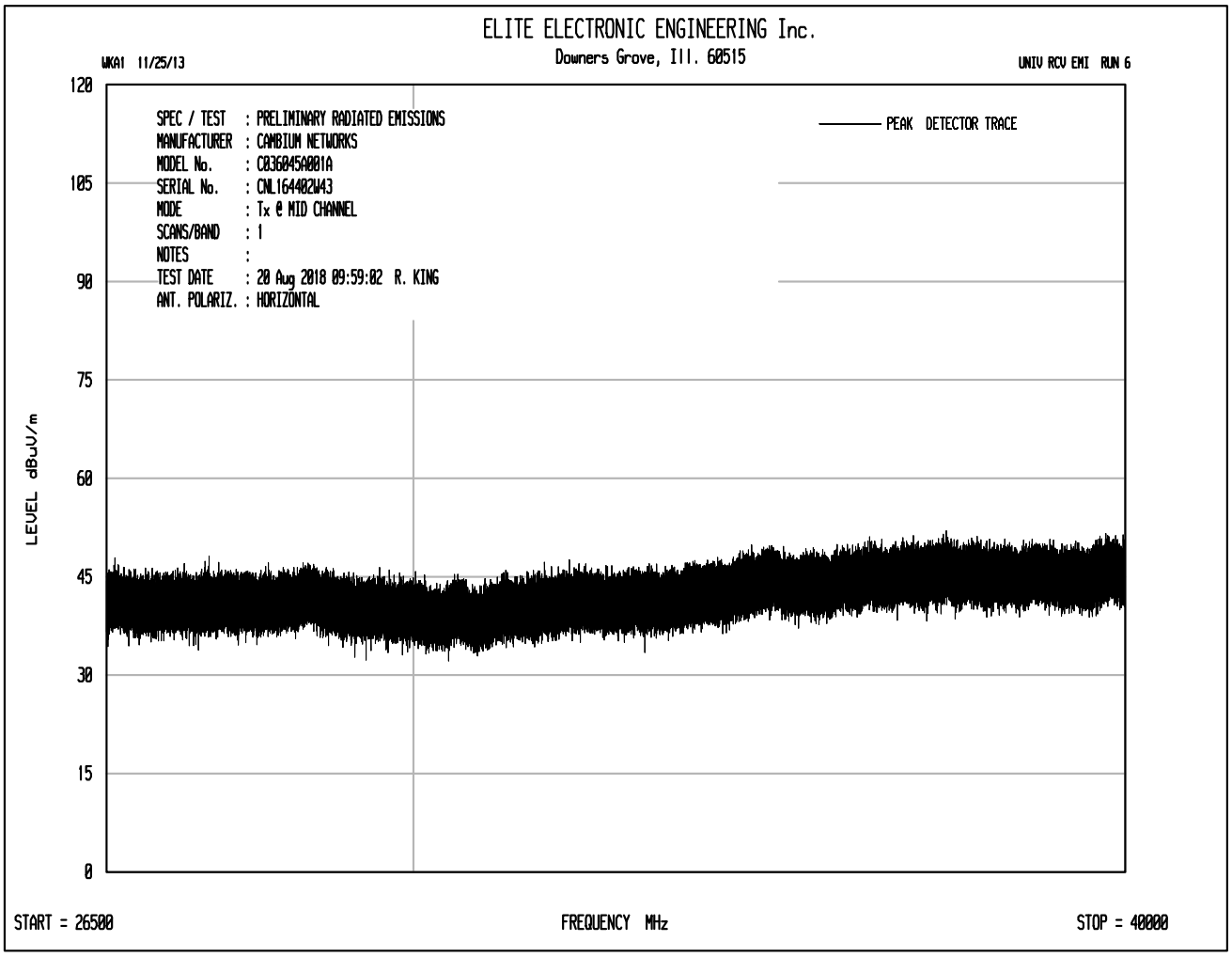

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 4
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 15:04:28 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 4500

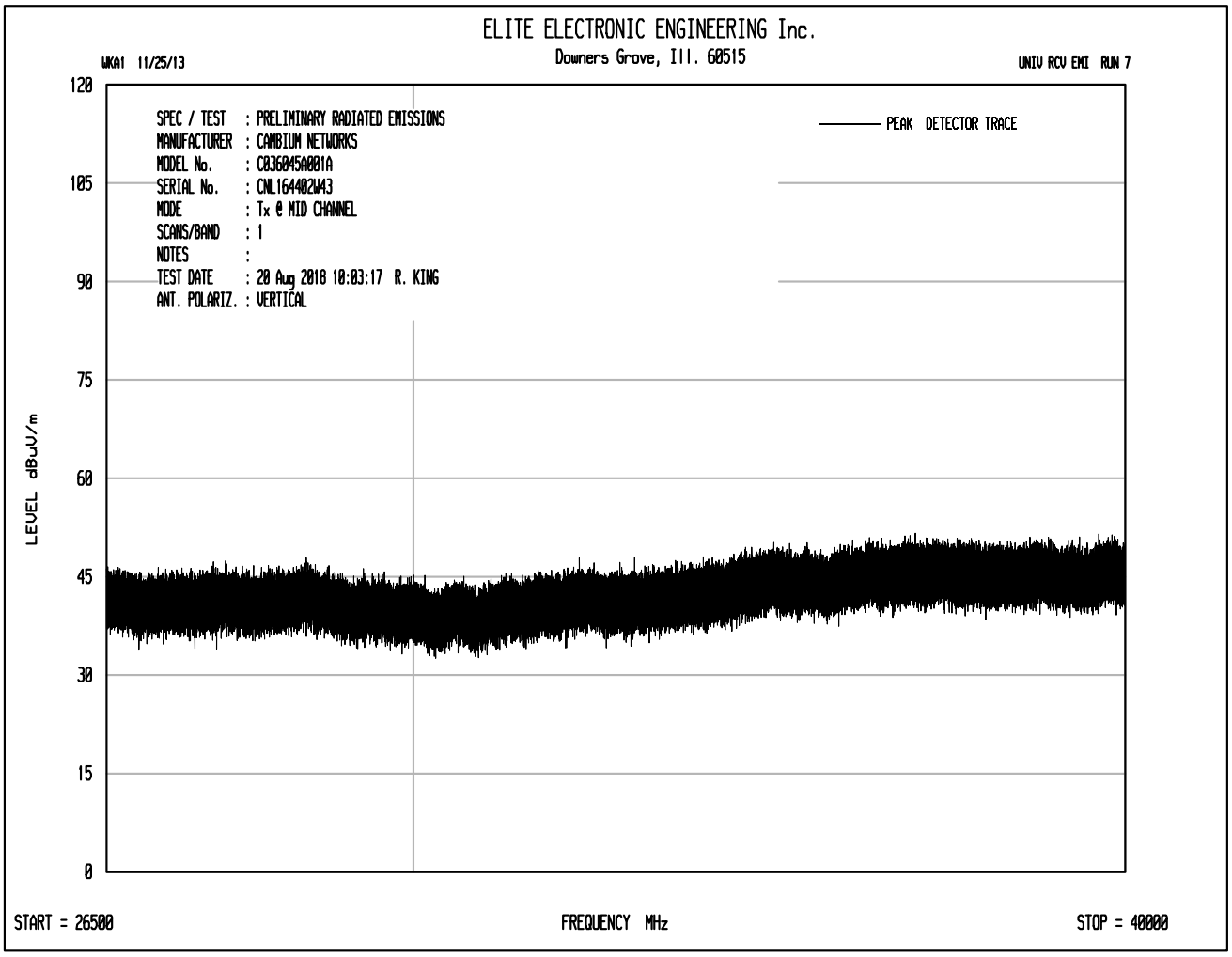

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 4
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 17 Aug 2018 10:03:11 R. KING
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
10000
START = 4500
FREQUENCY MHz
STOP = 18000

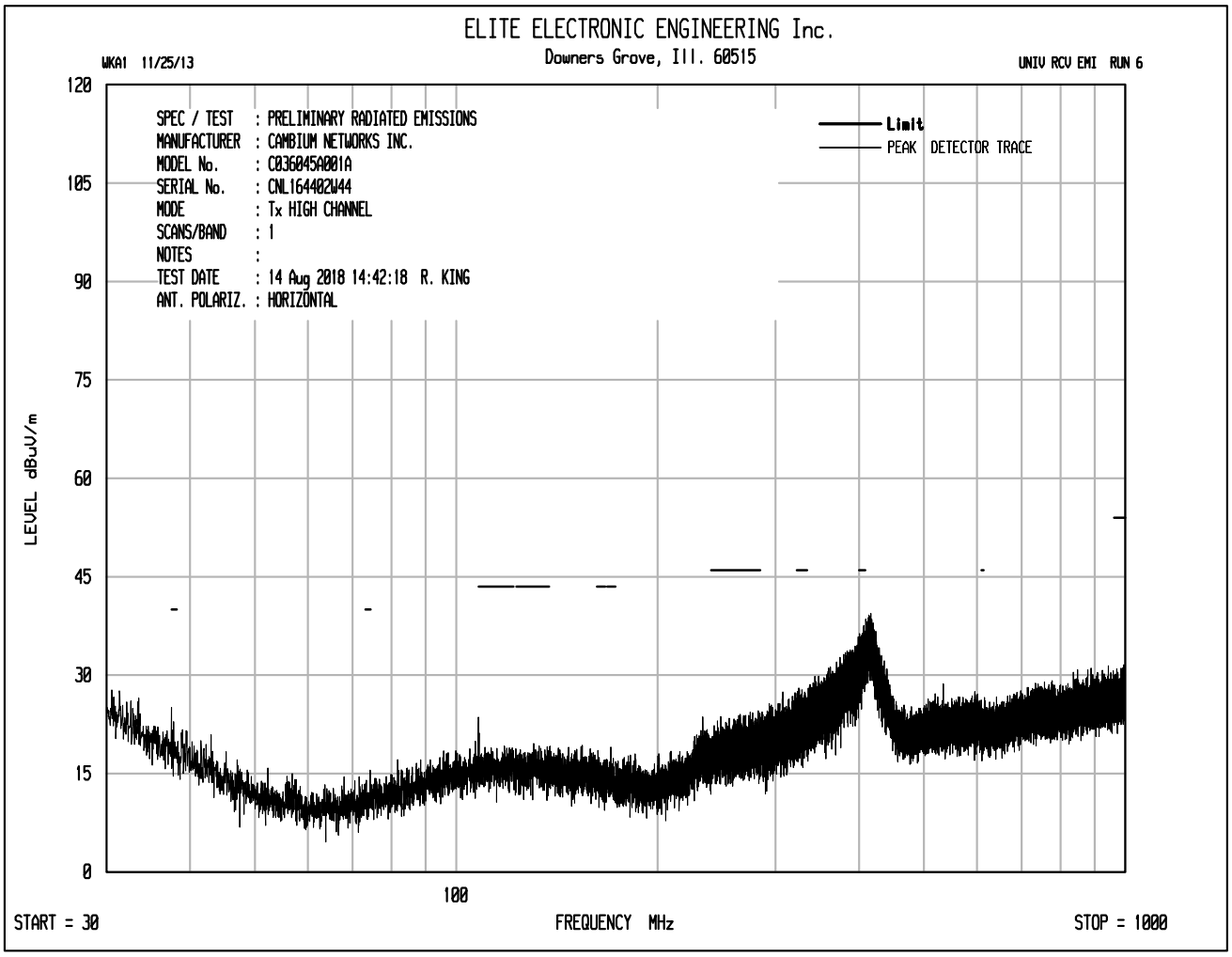

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 3
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 17 Aug 2018 09:58:43 R. KING
ANT. POLARIZ. : VERTICAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
10000
START = 4500
FREQUENCY MHz
STOP = 18000

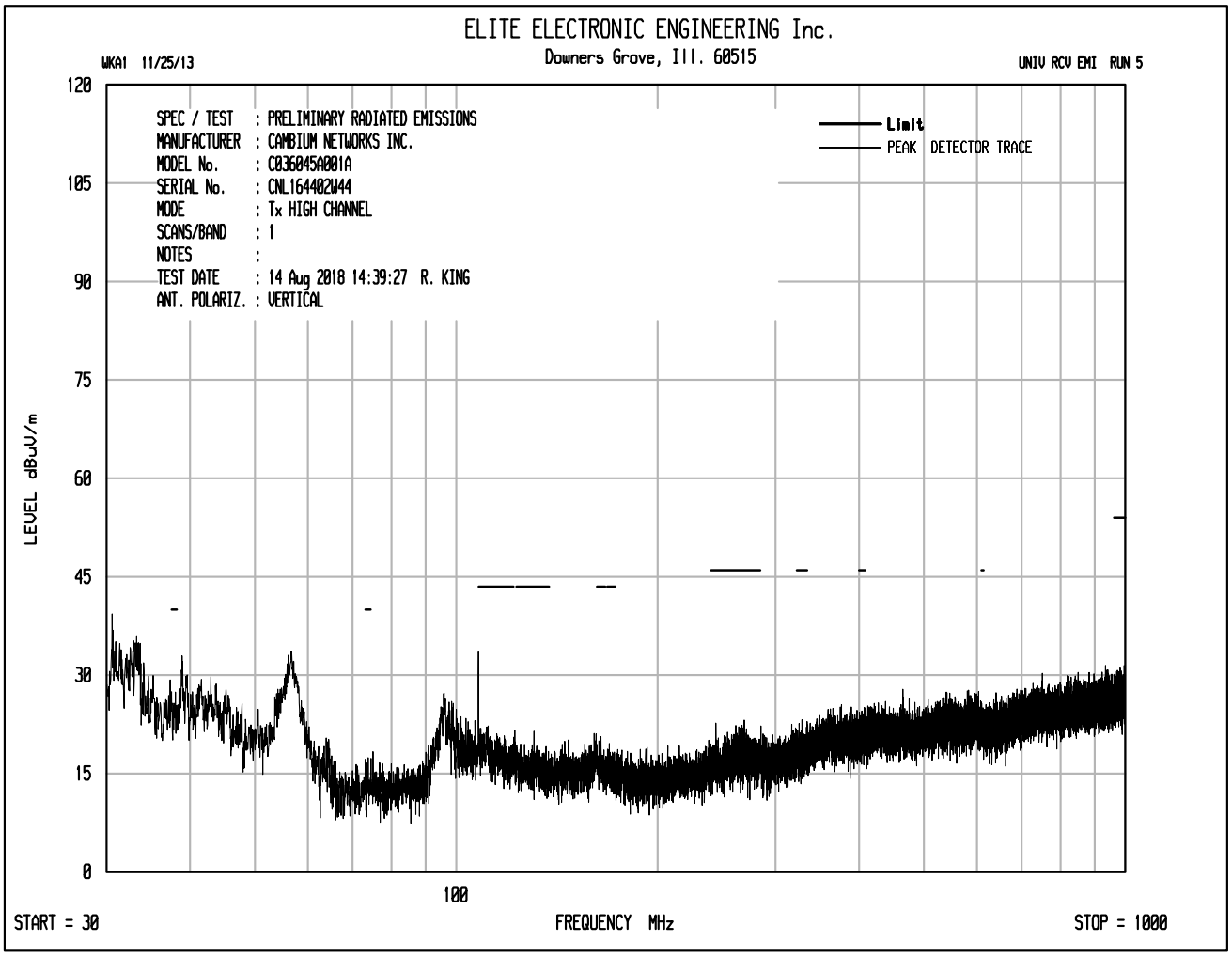

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 3
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 10:56:18 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 18000
FREQUENCY MHz
STOP = 26500

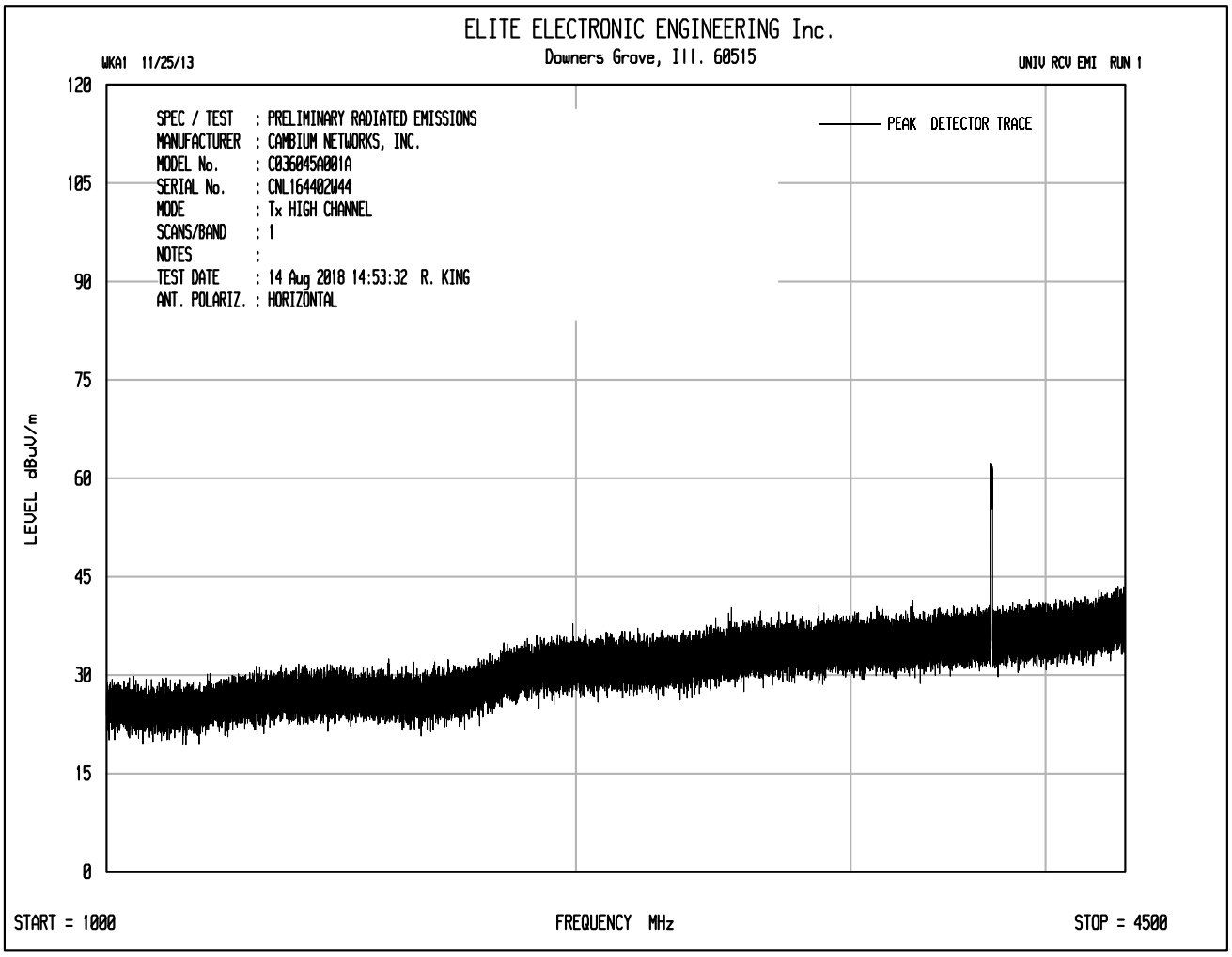

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 4
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 11:00:12 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 18000
FREQUENCY MHz
STOP = 26500

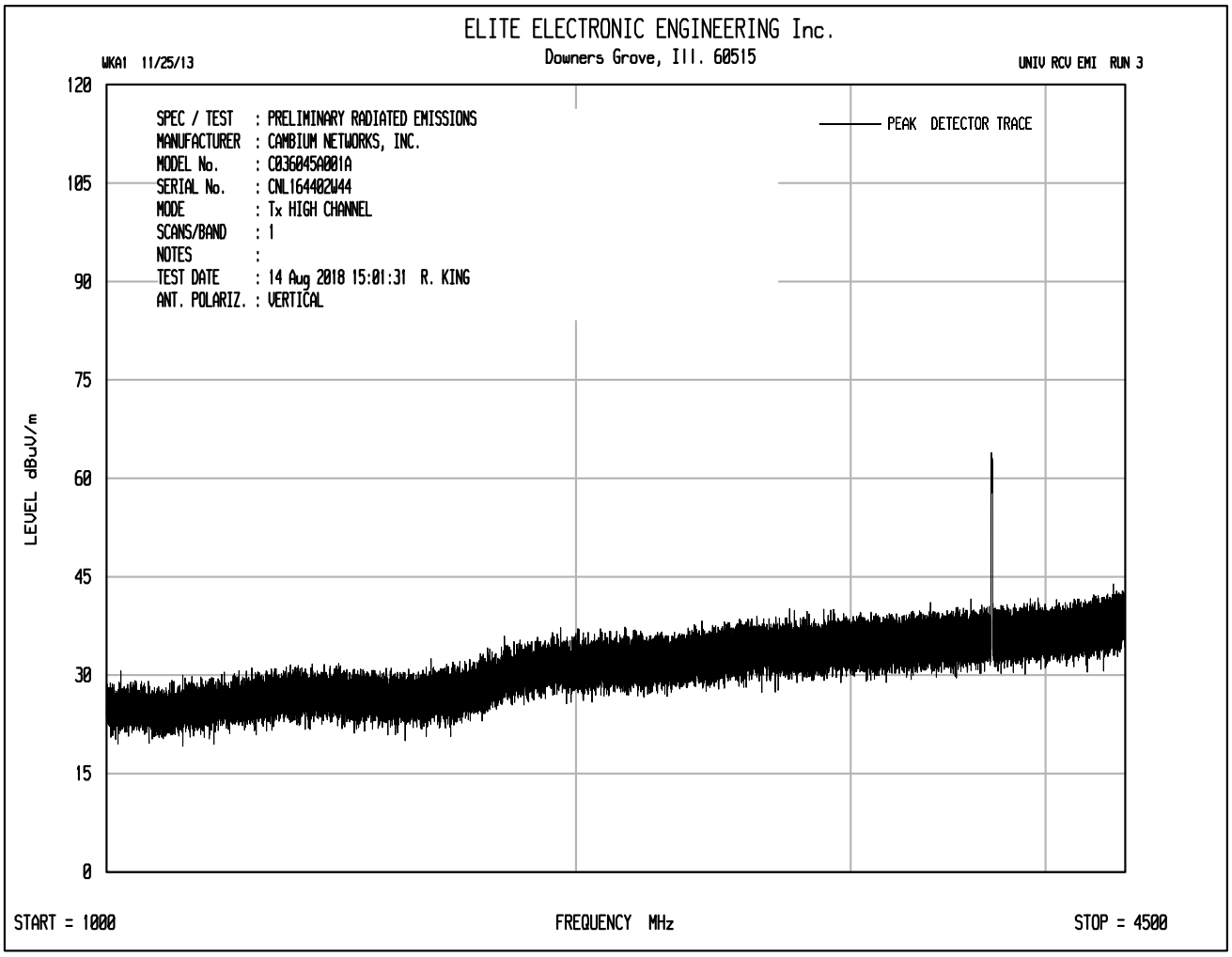

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 6
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 09:59:02 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 26500
FREQUENCY MHz
STOP = 40000

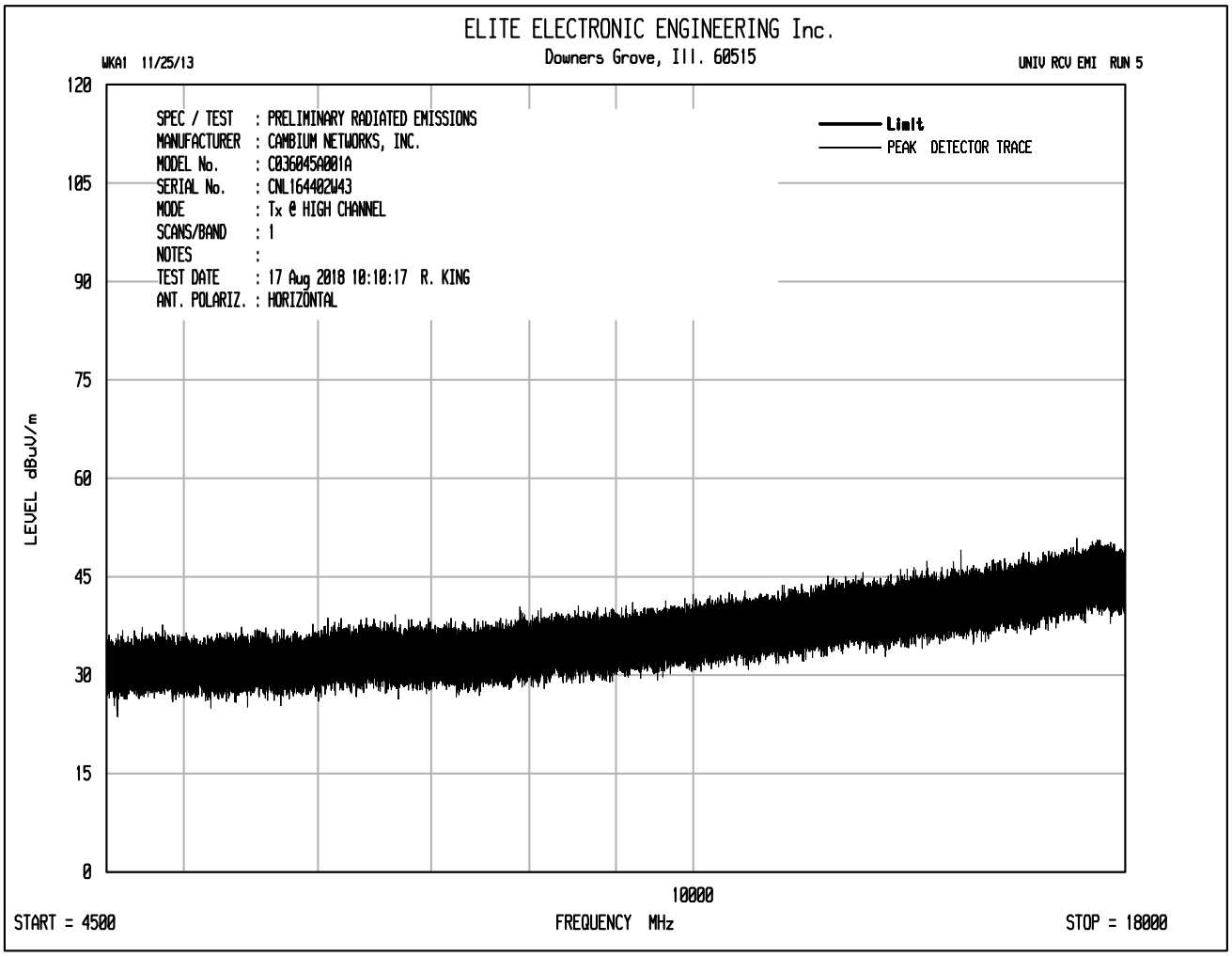

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 7
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ MID CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 10:03:17 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 26500
FREQUENCY MHz
STOP = 40000

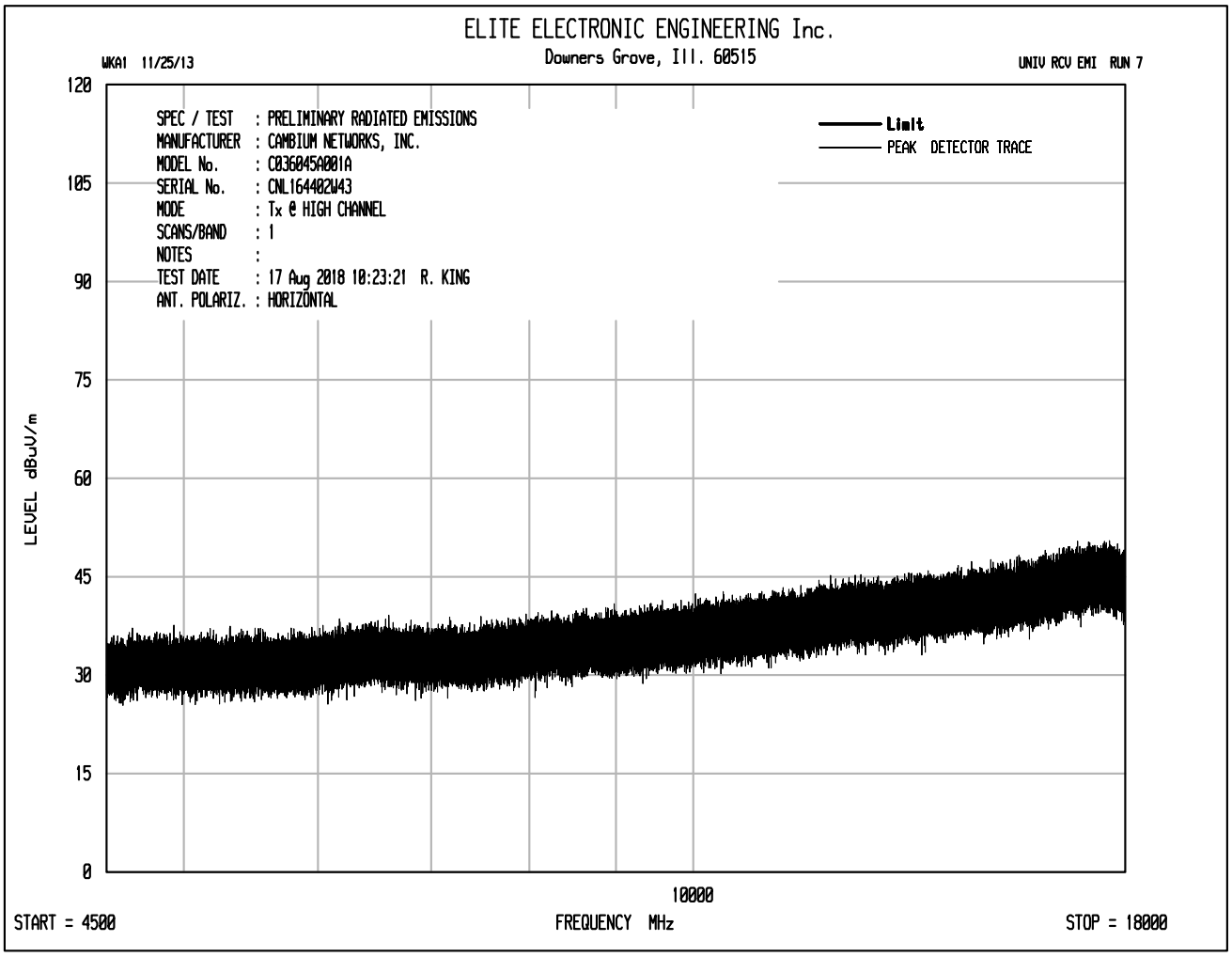

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 6
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 14:42:18 R. KING
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
100
START = 30
FREQUENCY MHz
STOP = 1000

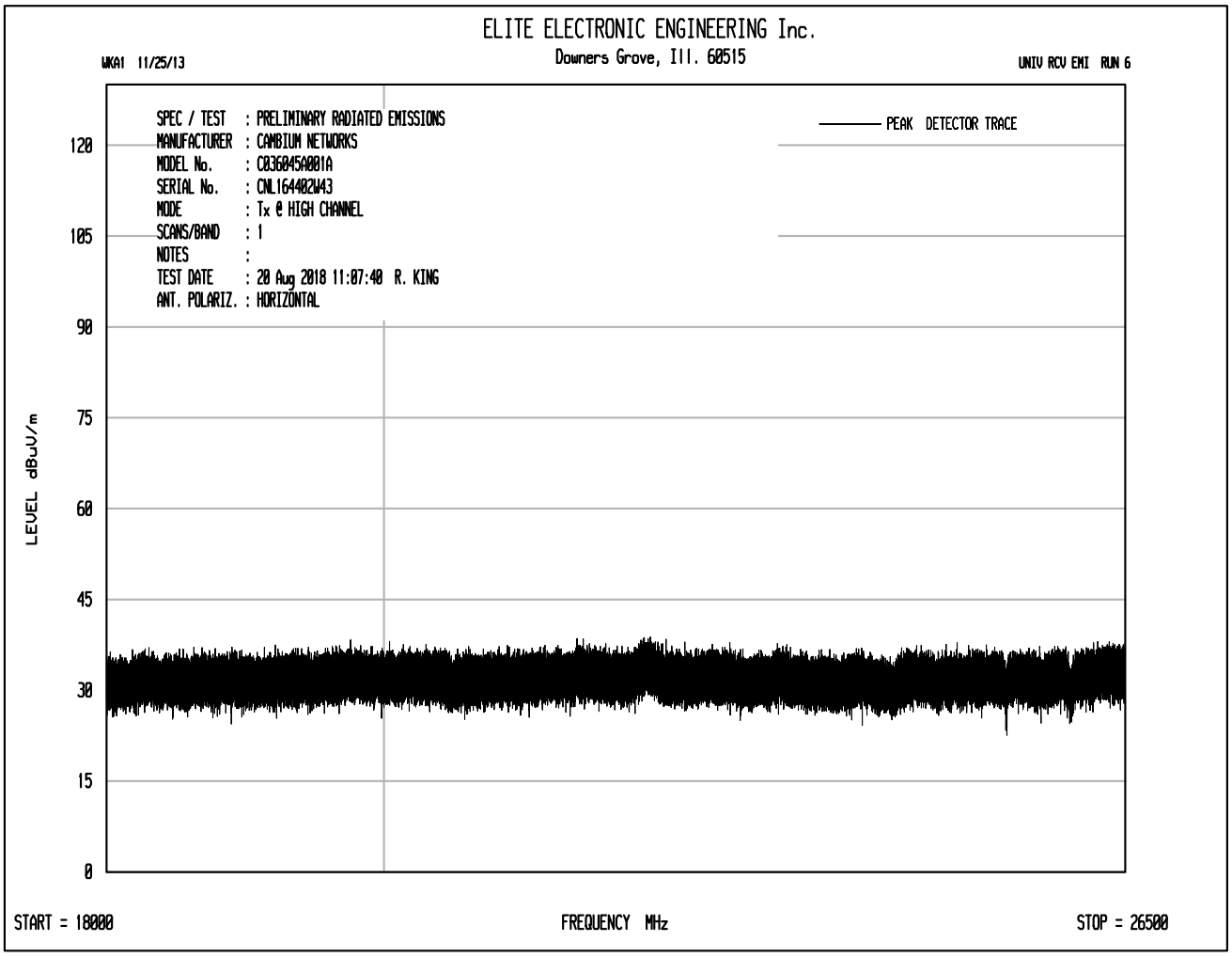

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 5
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 14:39:27 R. KING
ANT. POLARIZ. : VERTICAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
100
START = 30
FREQUENCY MHz
STOP = 1000

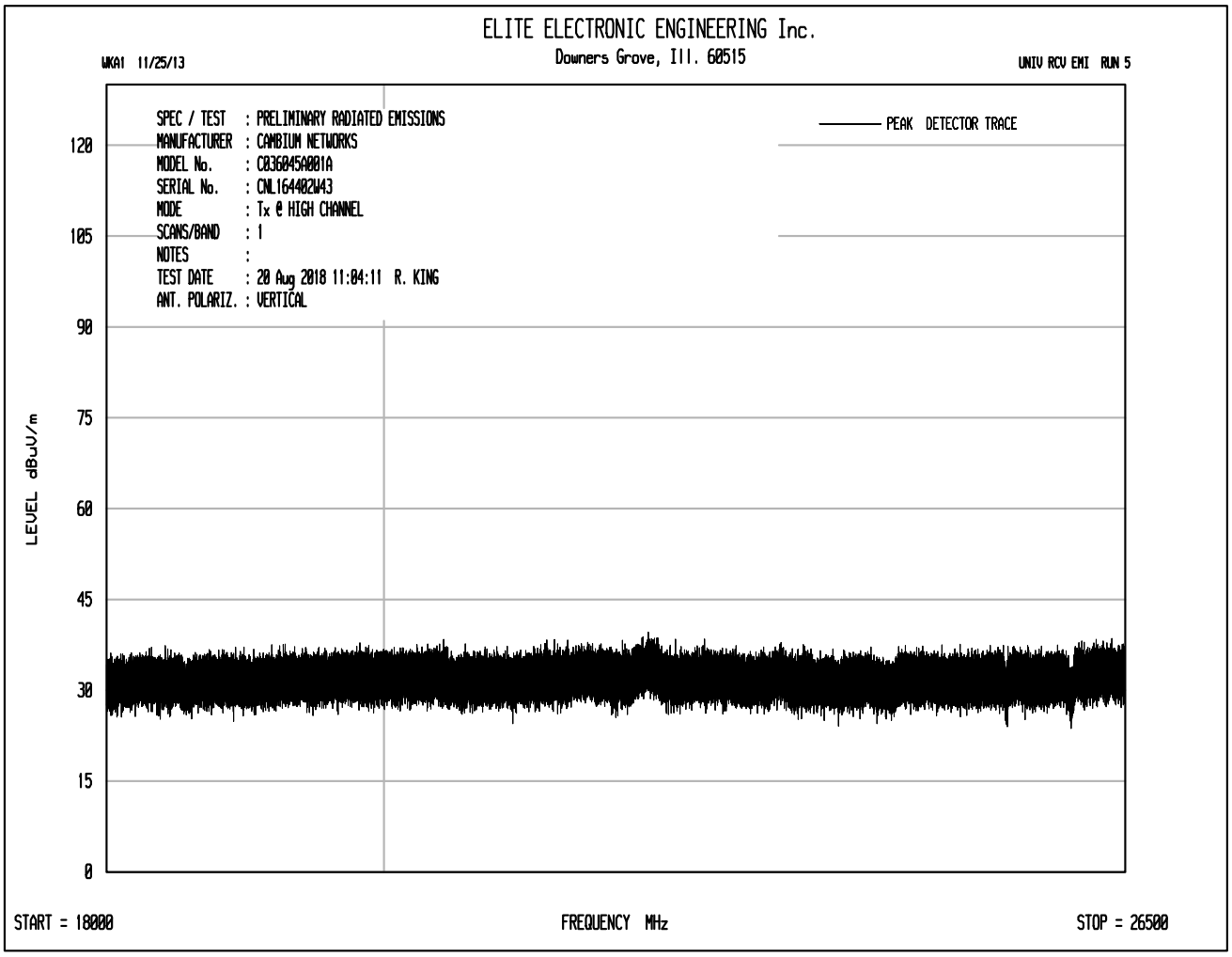

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 1
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 14:53:32 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 4500

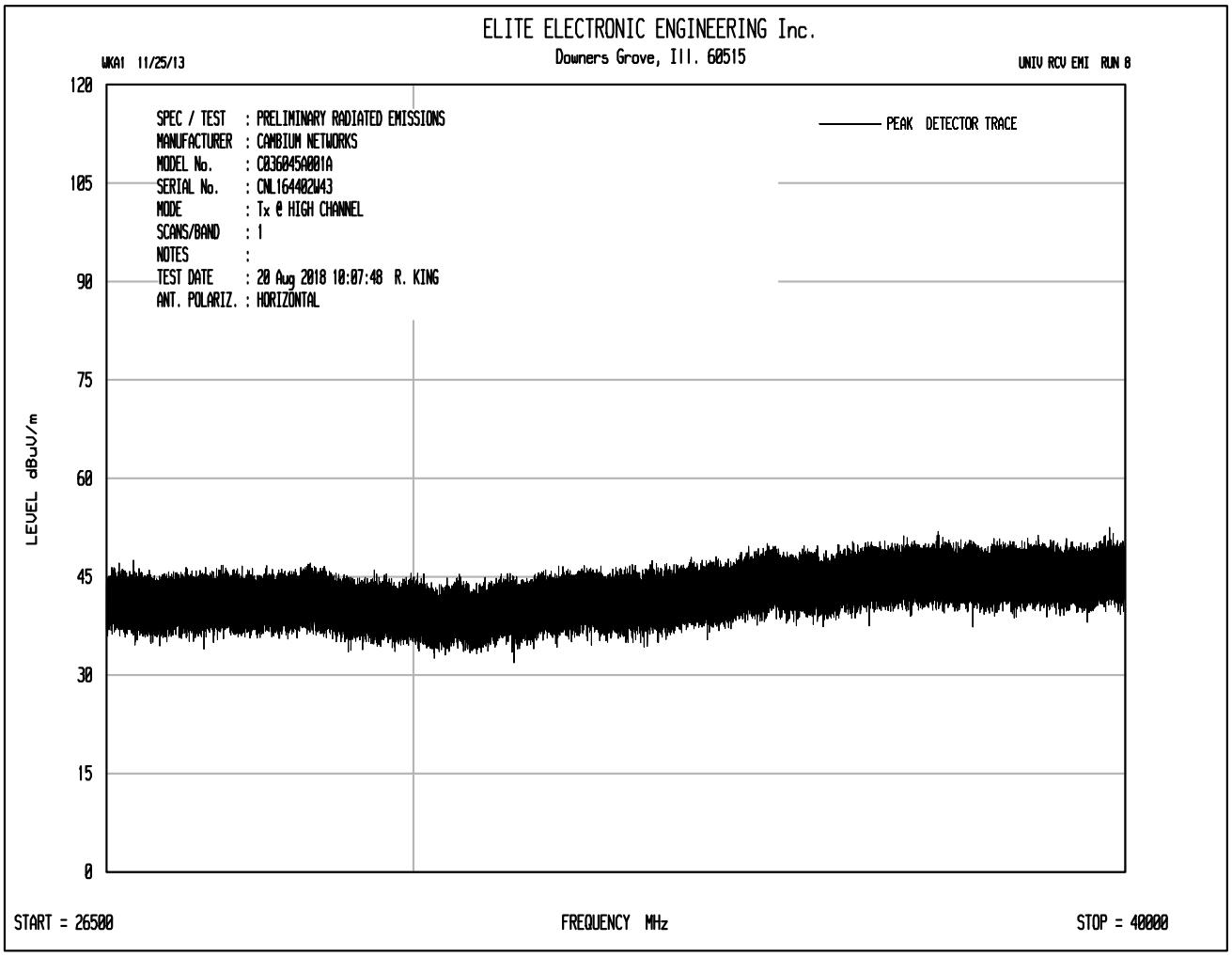

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 3
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W44
MODE : Tx HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 14 Aug 2018 15:01:31 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 4500

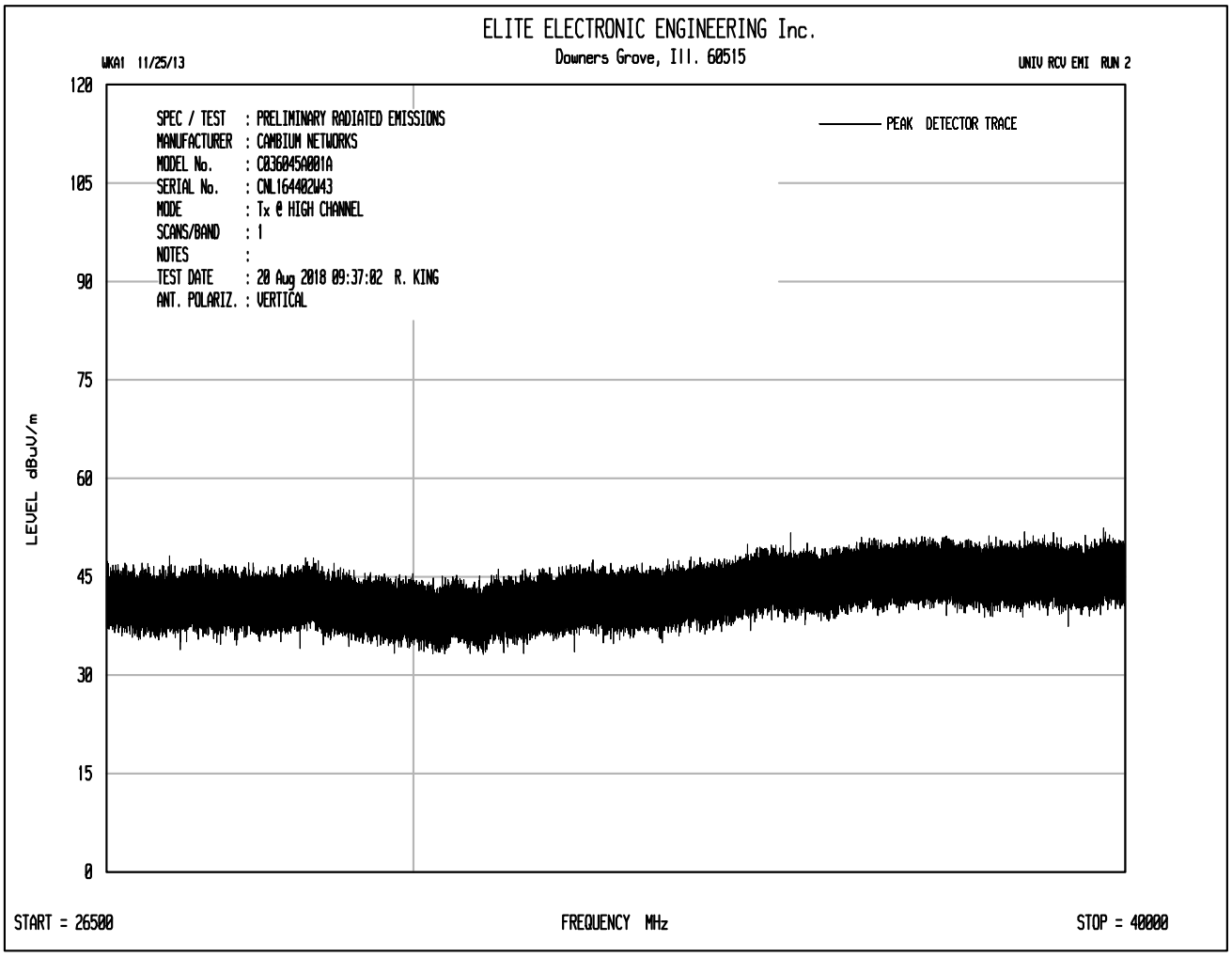

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 5
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 17 Aug 2018 10:10:17 R. KING
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
10000
START = 4500
FREQUENCY MHz
STOP = 18000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 7
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS, INC.
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 17 Aug 2018 10:23:21 R. KING
ANT. POLARIZ. : HORIZONTAL
Limit
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
10000
START = 4500
FREQUENCY MHz
STOP = 18000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 6
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 11:07:40 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 18000
FREQUENCY MHz
STOP = 26500


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 5
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 11:04:11 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 18000
FREQUENCY MHz
STOP = 26500


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 8
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 10:07:48 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 26500
FREQUENCY MHz
STOP = 40000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 2
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : CAMBIUM NETWORKS
MODEL No. : C036045A001A
SERIAL No. : CNL164402W43
MODE : Tx @ HIGH CHANNEL
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Aug 2018 09:37:02 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 26500
FREQUENCY MHz
STOP = 40000

MANUFACTURER : Cambium Networks, Inc.
PART NO. : C036045A001A
SPECIFICATION : FCC 96.41(e) Spurious Radiated Emissions
DATE : August 25, 2018
MODE : Transmit at 3555MHz
NOTES :

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	LIMIT (dBM/MHz)
7110.00	H	45.7	*	-51.5	9.6	7.3	-49.2	-40.0
7110.00	V	45.8	*	-51.5	9.6	7.3	-49.2	-40.0
10665.00	H	46.5	*	-52.9	11.2	8.8	-50.5	-40.0
10665.00	V	46.6	*	-52.9	11.2	8.8	-50.5	-40.0
14220.00	H	46.0	*	-51.6	11.8	10.3	-50.1	-40.0
14220.00	V	46.1	*	-51.6	11.8	10.3	-50.1	-40.0
17775.00	H	46.5	*	-53.5	12.3	11.9	-53.1	-40.0
17775.00	V	46.3	*	-53.5	12.3	11.9	-53.1	-40.0
21330.00	H	36.0	*	-64.0	14.3	0.0	-49.7	-40.0
21330.00	V	36.0	*	-64.0	14.3	0.0	-49.7	-40.0
24885.00	H	35.9	*	-68.0	15.3	0.0	-52.7	-40.0
24885.00	V	35.9	*	-68.1	15.3	0.0	-52.7	-40.0
28440.00	H	38.9	*	-66.1	13.3	0.0	-52.8	-40.0
28440.00	V	38.9	*	-66.1	13.3	0.0	-52.7	-40.0
31995.00	H	40.4	*	-66.1	14.2	0.0	-51.9	-40.0
31995.00	V	40.4	*	-66.1	14.2	0.0	-51.9	-40.0
35550.00	H	39.9	*	-63.3	15.0	0.0	-48.3	-40.0
35550.00	V	39.9	*	-63.3	15.0	0.0	-48.3	-40.0

Checked BY Richard E. King :

Richard E. King

MANUFACTURER : Cambium Networks, Inc.
PART NO. : C036045A001A
SPECIFICATION : FCC 96.41(e) Spurious Radiated Emissions
DATE : August 25, 2018
MODE : Transmit at 3600MHz
NOTES :

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	LIMIT (dBM/MHz)
7200.00	H	46.9	*	-51.3	7.1	4.9	-49.1	-40.0
7200.00	V	46.8	*	-51.8	7.1	4.9	-49.6	-40.0
10800.00	H	46.5	*	-52.2	8.2	5.9	-49.9	-40.0
10800.00	V	46.4	*	-52.1	8.2	5.9	-49.8	-40.0
14400.00	H	45.2	*	-51.6	9.2	7.0	-49.3	-40.0
14400.00	V	45.4	*	-51.4	9.2	7.0	-49.1	-40.0
18000.00	H	46.7	*	-53.8	12.9	0.0	-40.9	-40.0
18000.00	V	46.7	*	-53.2	12.9	0.0	-40.3	-40.0
21600.00	H	36.0	*	-64.1	14.2	0.0	-49.9	-40.0
21600.00	V	36.0	*	-64.1	14.2	0.0	-49.9	-40.0
25200.00	H	35.9	*	-68.0	15.4	0.0	-52.6	-40.0
25200.00	V	35.9	*	-68.0	15.4	0.0	-52.6	-40.0
28800.00	H	39.9	*	-66.1	13.4	0.0	-52.7	-40.0
28800.00	V	39.9	*	-66.1	13.4	0.0	-52.6	-40.0
32400.00	H	39.6	*	-66.1	14.3	0.0	-51.8	-40.0
32400.00	V	39.6	*	-66.1	14.3	0.0	-51.8	-40.0
36000.00	H	39.7	*	-63.3	15.1	0.0	-48.2	-40.0
36000.00	V	39.6	*	-63.3	15.1	0.0	-48.2	-40.0

Checked BY Richard E. King :

Richard E. King

MANUFACTURER : Cambium Networks, Inc.
PART NO. : C036045A001A
SPECIFICATION : FCC 96.41(e) Spurious Radiated Emissions
DATE : August 25, 2018
MODE : Transmit at 3695MHz
NOTES :

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	Matched Sig. Gen. Reading (dBm)	Equivalent Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)	LIMIT (dBM/MHz)
7390.00	H	43.2	*	-51.8	9.8	6.2	-48.2	-40.0
7390.00	V	44.6	*	-51.9	9.8	6.2	-48.3	-40.0
11085.00	H	46.8	*	-53.1	11.3	7.6	-49.3	-40.0
11085.00	V	46.9	*	-52.7	11.3	7.6	-48.9	-40.0
14780.00	H	46.3	*	-52.2	11.8	8.9	-49.3	-40.0
14780.00	V	46.2	*	-52.3	11.8	8.9	-49.4	-40.0
18475.00	H	45.7	*	-53.4	13.1	2.2	-42.5	-40.0
18475.00	V	45.6	*	-53.2	13.1	2.2	-42.3	-40.0
22170.00	H	36.0	*	-64.0	14.4	2.2	-51.8	-40.0
22170.00	V	36.0	*	-64.0	14.4	2.2	-51.8	-40.0
25865.00	H	35.9	*	-68.0	15.6	2.2	-54.6	-40.0
25865.00	V	35.9	*	-68.1	15.6	2.2	-54.6	-40.0
29560.00	H	39.3	*	-66.1	13.6	2.4	-54.9	-40.0
29560.00	V	39.3	*	-66.1	13.6	2.4	-54.8	-40.0
33255.00	H	40.6	*	-66.1	14.5	2.6	-54.2	-40.0
33255.00	V	40.6	*	-66.1	14.5	2.6	-54.2	-40.0
36950.00	H	40.3	*	-63.3	15.3	2.8	-50.8	-40.0
36950.00	V	40.3	*	-63.3	15.3	2.8	-50.8	-40.0

Checked BY Richard E. King :

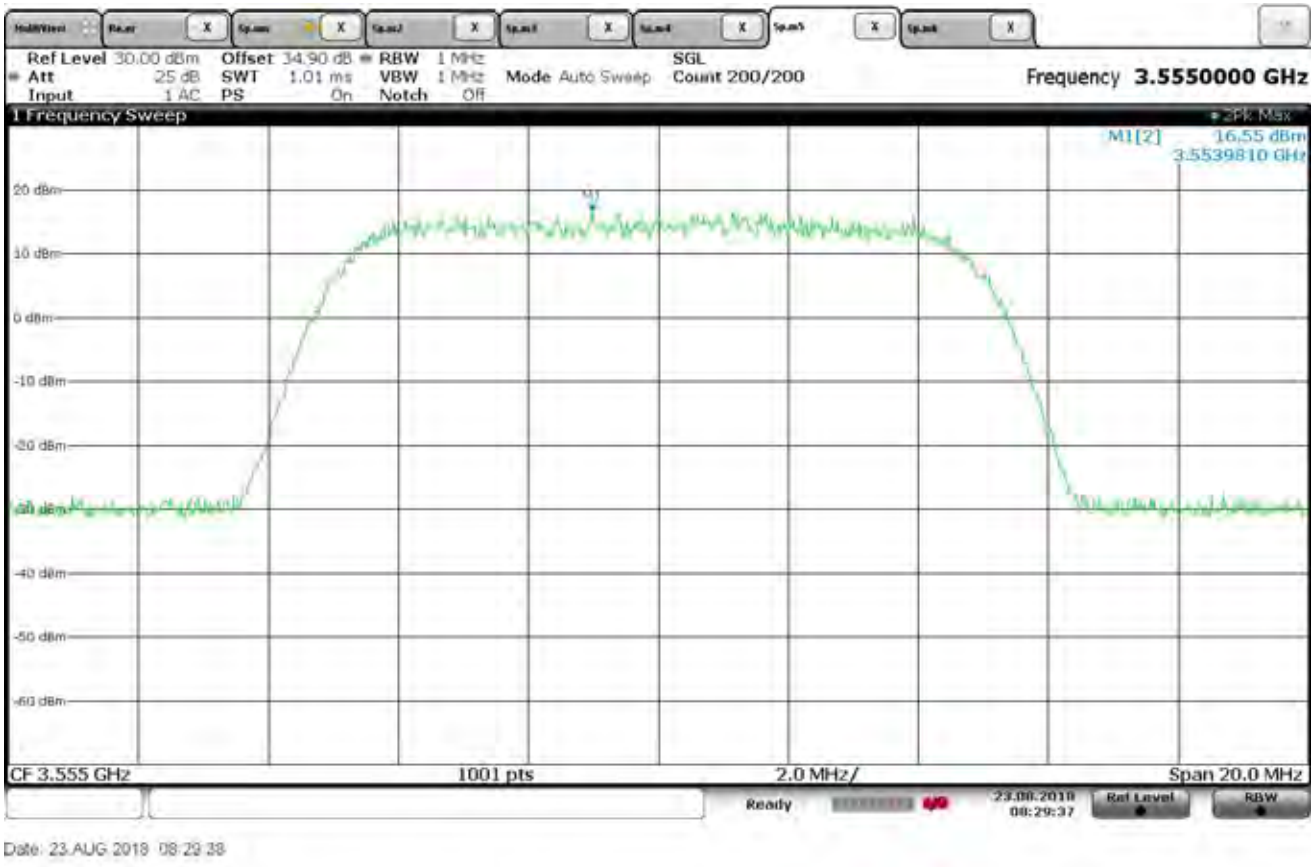
Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Power Spectral Density
DATE	: August 22, 2018
MODE	: Transmit at 3555MHz Channel A
NOTES	: Power Spectral Density = 16.4dBm + 0.2dB = 16.6dBm

Checked BY Richard E. King :

Richard E. King

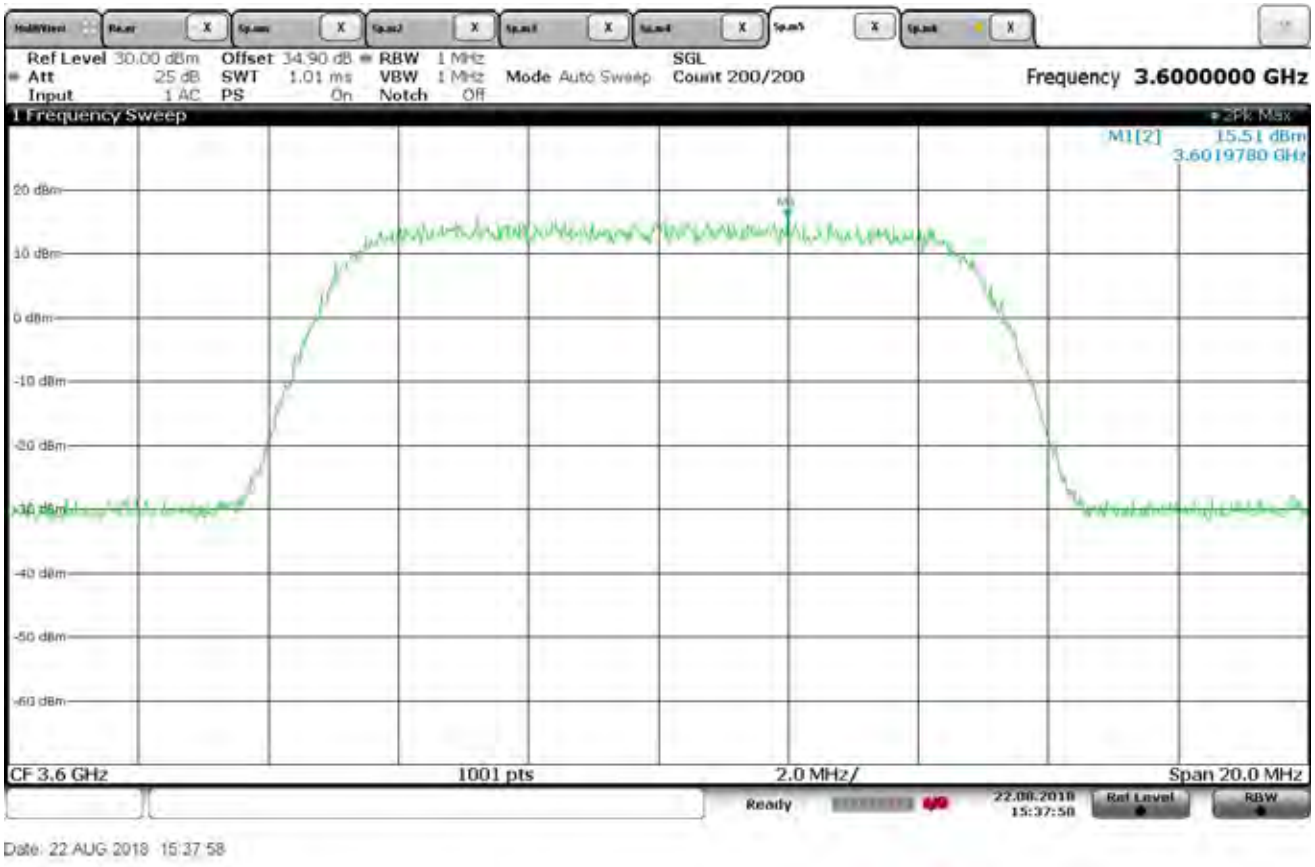
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Power Spectral Density
DATE	: August 22, 2018
MODE	: Transmit at 3555MHz Channel B
NOTES	: Power Spectral Density = 16.6dBm + 0.2dB = 16.8dBm



Checked BY Richard E. King :

Richard E. King

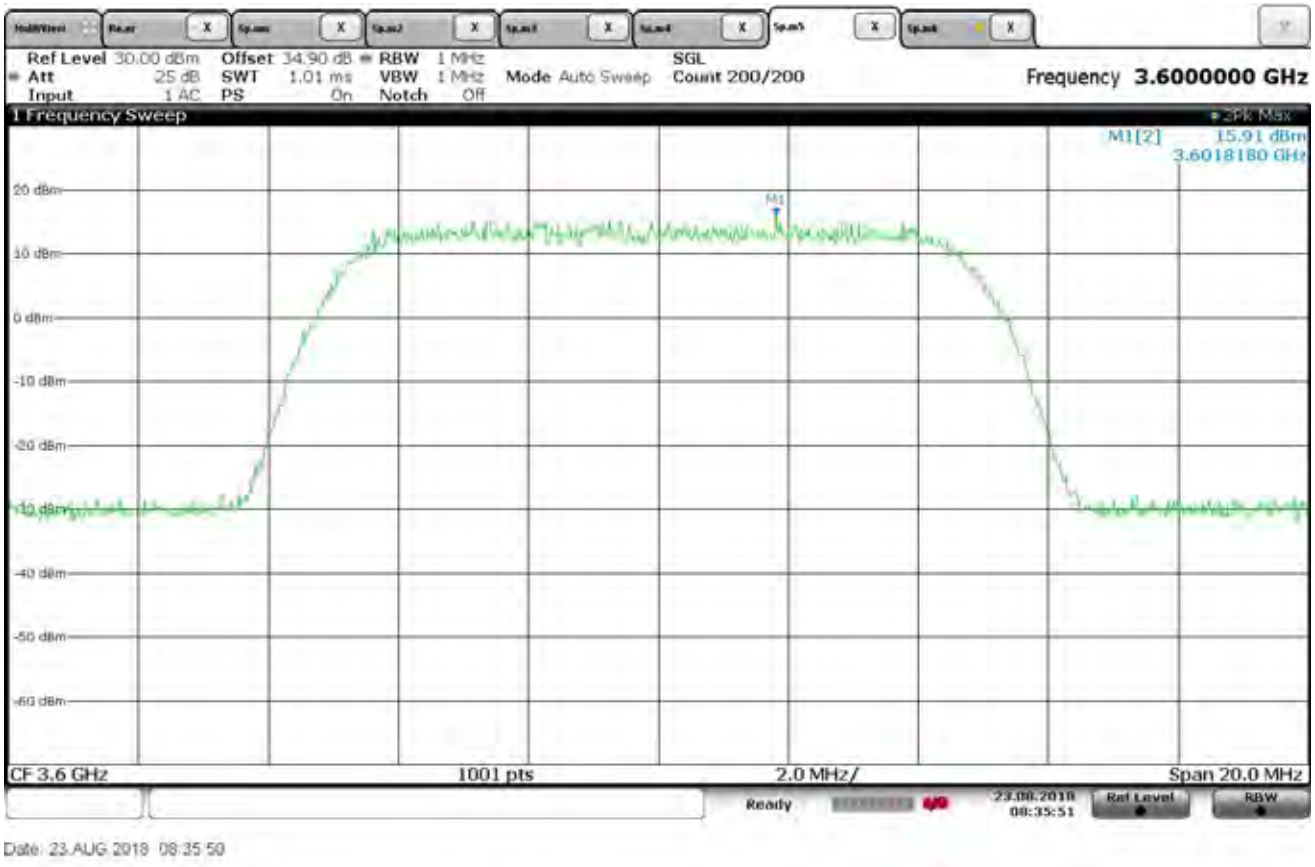
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Power Spectral Density
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz Channel A
NOTES	: Power Spectral Density = 15.5dBm + 0.2dB = 15.7dBm



Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Power Spectral Density
DATE	: August 22, 2018
MODE	: Transmit at 3600MHz Channel B
NOTES	: Power Spectral Density = 15.9dBm + 0.2dB = 16.1dBm



Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Power Spectral Density
DATE	: August 22, 2018
MODE	: Transmit at 3695MHz Channel A
NOTES	: Power Spectral Density = 16.0dBm + 0.2dB = 16.2dBm

Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(e) Power Spectral Density
DATE	: August 22, 2018
MODE	: Transmit at 3695MHz Channel B
NOTES	: Power Spectral Density = 15.0dBm + 0.2dB = 15.2dBm

Checked BY Richard E. King :

Richard E. King

MANUFACTURER : Cambium Networks, Inc.
MODEL NO. : C036045A001A
SERIAL NO. : CNL164402WE
SPECIFICATION : FCC 96.41(e) Power Spectral Density
DATE : August 2, 2018
NOTES :

Frequency MHz	Antenna Port	Meter Reading (dBm)	Duty Cycle Correction dB	Total PSD (dBm/MHz)	Maximum PSD (dBm/MHz)	Margin (dB)
3555	A	16.4	0.2	16.6	37	-20.4
3555	B	16.6	0.2	16.8	37	-20.2
3600	A	15.5	0.2	15.7	37	-21.3
3600	B	15.9	0.2	16.1	37	-20.9
3695	A	16	0.2	16.2	37	-20.8
3695	B	15	0.2	15.2	37	-21.8

PSD = Meter Reading + Duty Cycle Correction

Checked BY Richard E. King :

Richard E. King

MANUFACTURER : Cambium Networks, Inc.
PART NO. : C036045A001A
SERIAL NO. : CNL164402WE
SPECIFICATION : FCC 96.41(e) Peak to Average Ratio
DATE : August 22, 2018
NOTES :

Frequency (MHZ)	Antenna Port	Peak Meter Reading (dBm)	Average Meter Reading (dBM)	Peak to Average Total (dB)	Peak to Average Limit (dB)	Margin (dB)
3555	A	28.15	24.6	3.55	13	-9.45
3555	B	28.11	24.5	3.61	13	-9.39
3600	A	26.54	24.9	1.64	13	-11.36
3600	B	28.31	24.8	3.51	13	-9.49
3695	A	28.58	25	3.58	13	-9.42
3695	B	28.23	24.6	3.63	13	-9.37

Checked BY Richard E. King :

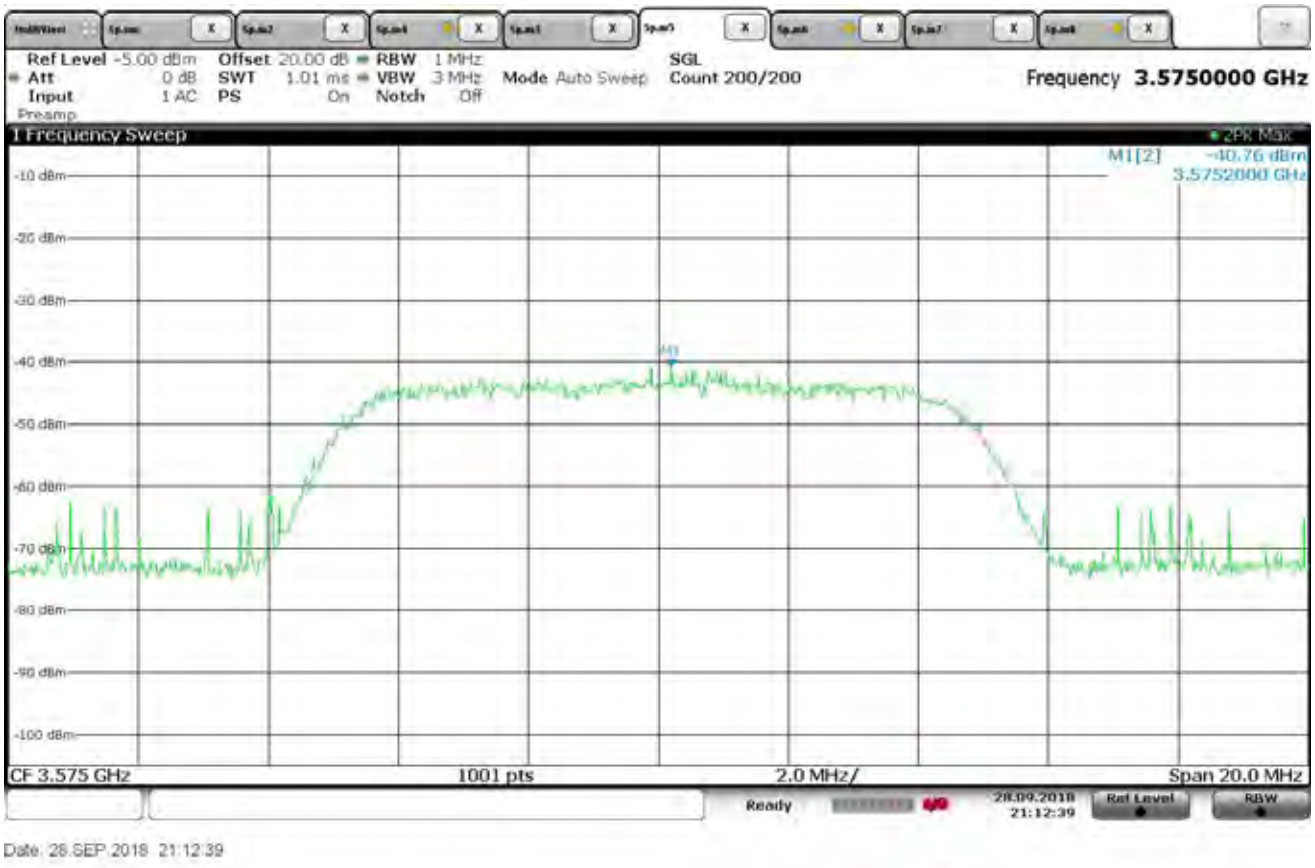
Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(f) Reception Limits
DATE	: September 28, 2018
MODE	: Transmit at 3565MHz Channel A
NOTES	: Applied Interferring Signal at the EUT

Checked BY Richard E. King :

Richard E. King

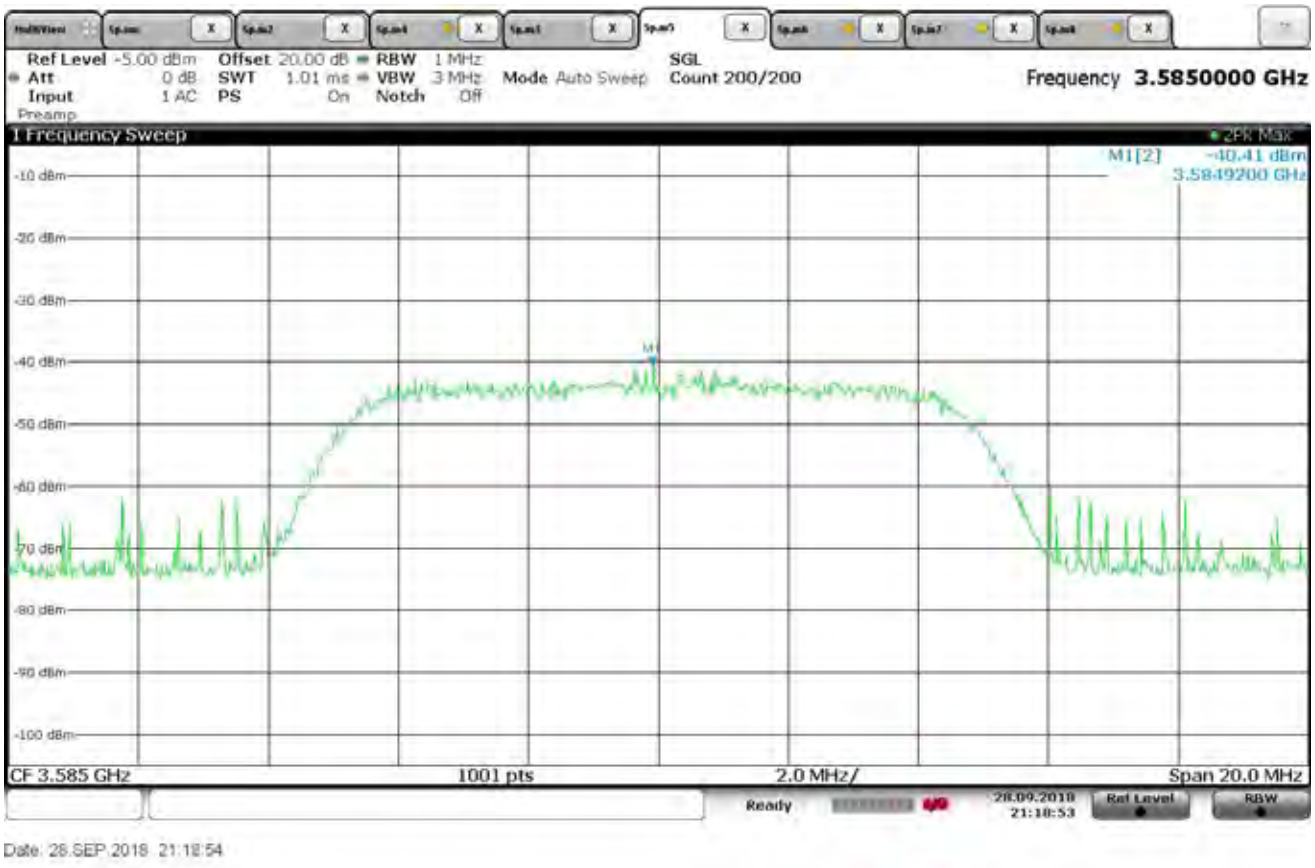
MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(f) Reception Limits
DATE	: September 28, 2018
MODE	: Transmit at 3575MHz Channel A
NOTES	: Applied Interferring Signal at the EUT



Checked BY Richard E. King :

Richard E. King

MANUFACTURER	: Cambium Networks, Inc.
PART NO.	: C036045A001A
SERIAL NO.	: CNL164402WE
SPECIFICATION	: FCC 96.41(f) Reception Limits
DATE	: September 28, 2018
MODE	: Transmit at 3575MHz Channel A
NOTES	: Applied Interferring Signal at the EUT



Checked BY Richard E. King :

Richard E. King

MANUFACTURER : Cambium Networks, Inc.
PART NO. : C036045A001A
SERIAL NO. : CNL164402WE
SPECIFICATION : FCC 96.41(f) Reception Limits
DATE : September 28, 2018
NOTES :

Frequency (MHZ)	Antenna Port	Applied Interfering Signal (dBm)	Link Throughput Test Before applied interfering signal (%)		Link Throughput Test after applied interfering signal (%)		Reception Limit (dBm)
			Downlink Efficiency	Uplink Efficiency	Downlink Efficiency	Uplink Efficiency	
3565	A	-40.00	99	99	98	96	-40
3565	A	-40.00	99	99	98	96	-40
3685	A	-40.00	99	99	98	96	-40

Checked BY Richard E. King :

Richard E. King