Alcon Laboratories, Inc.

Centurion® Vision System®

Report #: ALCO0149.1 Rev 01

Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: April 17, 2012
Alcon Laboratories, Inc.
Model: Centurion® Vision System®

Emissions

Test Description	Specification	Test Method	Pass/Fail
Radiated Emissions	FCC 15.109:2012 Class A	ANSI C63.4:2009	**Pass**
Radiated Spurious Emissions	FCC 15.209:2012	ANSI C63.10:2009	**Pass**
Conducted Emissions	FCC 15.107:2012 Class A	ANSI C63.4:2009	**Pass**
Conducted Emissions	FCC 15.207:2012	ANSI C63.10:2009	**Pass**
Field Strength of Fundamental	FCC 15.209:2012	ANSI C63.10:2009	**Pass**

Deviations From Test Standards

None

Approved By:

Don Facteau, IS Manager

NVLAP Lab Code: 200676-0

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
41 Tesla Ave.
Irvine, CA 92618

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834B-1).

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision History

Revision Number	Description	Date	Page Number
01	Revised Radiated Spurious Emissions data to only include results for the communication carrier frequency of 115 kHz.	1/31/13	12
01	Revised Field Strength of Fundamental data to only include results for the communication carrier frequency of 115 kHz.	1/31/13	19

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025. The scope includes radio, ITE, and medical standards from around the world. See: http://www.nwemc.com/accreditations/

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

KCC / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Hong Kong

OFTA – Recognized by OFTA as a CAB for the acceptance of test data.

Vietnam

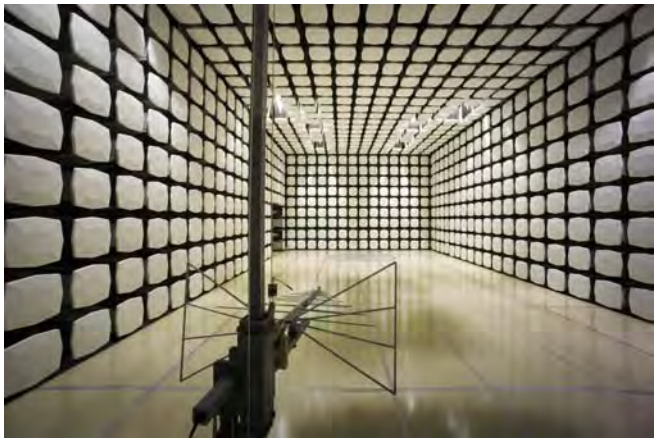
MIC – Recognized by MIC as a CAB for the acceptance of test data.

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards**.**

Locations

Oregon	California	New York	Minnesota	Washington
Labs EV01-EV12 22975 NW Evergreen Pkwy, #400 Hillsboro, OR 97124 (503) 844-4066	Labs OC01-OC13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs WA01-WA04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Labs MN01-MN08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Labs SU01-SU07 14128 339th Ave. SE Sultan, WA 98294 (360) 793-8675
VCCI				
C-1071, R-1025, G-84, C-2687, T-1658, R-2318	R-1943, G-85, C-2766, T-1659, G-548		R-3125, G-86, G-141, C-3464, T-1634	R-871, G-83, C-3265, T-1511
Industry Canada				
2834D-1, 2834D-*2*	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1



Product Description

Client and Equipment Under Test (EUT) Information

Company Name:	Alcon Laboratories, Inc.
Address:	15800 Alton Parkway
City, State, Zip:	Irvine, CA 92618-3818
Test Requested By:	Sergey Marker
Model:	Centurion® Vision System®
First Date of Test:	April 11, 2012
Last Date of Test:	April 17, 2012
Receipt Date of Samples:	April 11, 2012
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
Centurion® Vision System® is an ophthalmic surgical instrument, a Phacoemulsification Aspiration (P.E.A.) platform. The NGP is used for irrigation/aspiration, Phaco-Fragmentation, capsulorhexis, intraocular lens injection, vitreous aspiration, cutting, and Bipolar.

Testing Objective:
To comply requirements for contactless battery charger (inductive power transmission).

Configurations

Configuration 1 ALCO0149

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Centurion® Vision System®	Alcon Laboratories, Inc.	8065751763	1103473803X3
Centurion® Footswitch	Alcon Laboratories, Inc.	8065751762	1201677806X

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable	Yes	4.7m	No	Centurion® Vision System®	AC Mains
Footswitch Cable	Yes	3.7m	No	Centurion® Footswitch	Centurion® Vision System®
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Modifications

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	4/11/2012	Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	4/11/2012	Field Strength of Fundamental	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	4/11/2012	Radiated Spurious Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	4/17/2012	Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

RADIATED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Charging Footswitch and Data Communication

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

ALCO0149 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	1000 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Biconilog	EMCO	3142	AXK	4/21/2011	12 mo
OC08 Cables	N/A	30MHz-6GHz RE Cables	OCB	4/2/2012	12 mo
Pre-Amplifier	Miteq	AM-1551	AOX	4/2/2012	12 mo
Spectrum Analyzer	Agilent	E4443A	AAR	1/18/2012	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level was detected. This required the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search was utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT. Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance was 3 meters or 10 meters. At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna was increased so that the lowest point of the bottom of the antenna cleared the ground surface by at least 25 cm.

The EUT arrangement is configured as equivalent to that occurring in normal use. Tabletop equipment is placed on a 0.8 meter high non-conductive table & for Floor-standing equipment, it is placed on, but insulated from a ground reference plane by the use of its own rollers or stand-off supports. If measurements above 1 GHz were required, the test setup was modified to meet the regulatory requirements for higher frequency measurements. If required, RF absorber was placed on the floor between the measurement antenna and EUT.

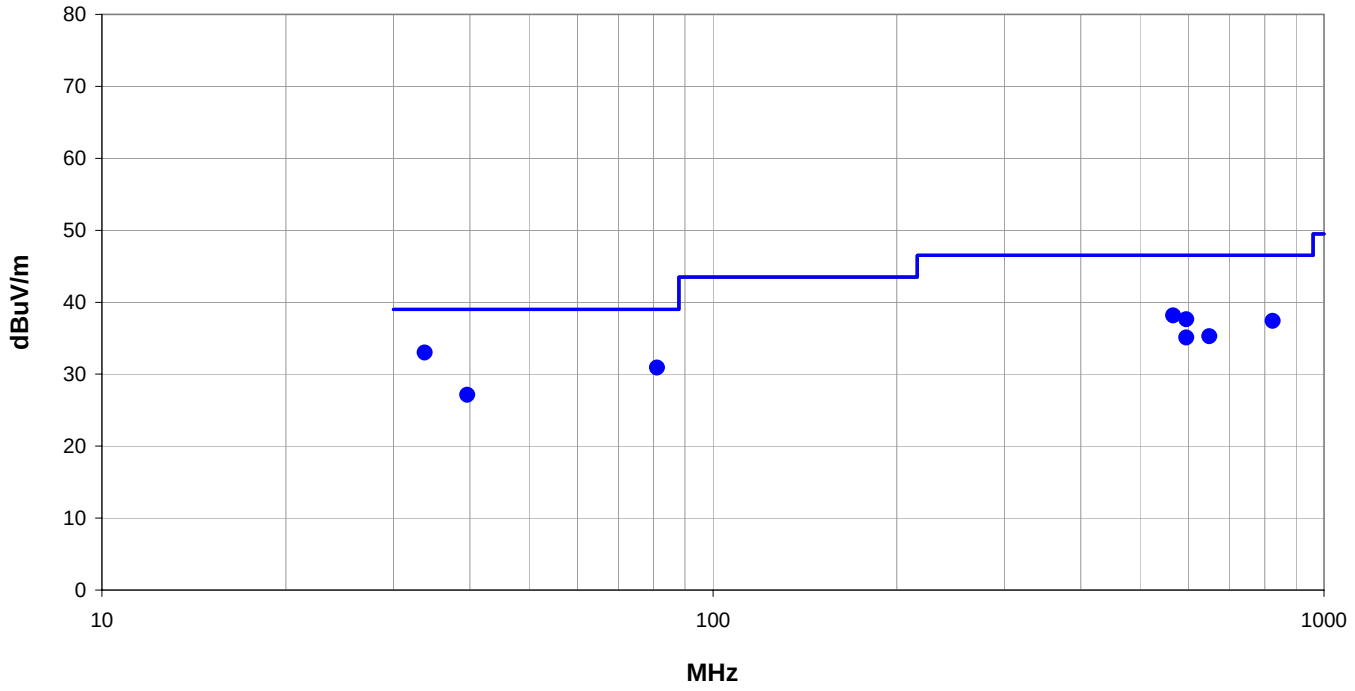
The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.

RADIATED EMISSIONS

Work Order:	ALCO0149	**Date:**	04/11/12		
Project:	None	**Temperature:**	29.15 °C		
Job Site:	OC08	**Humidity:**	41.15% RH		
Serial Number:	1103473804X2	**Barometric Pres.:**	1014.5 mbar	**Tested by:**	Jaemi Suh
EUT:	Centurion® Vision System®				
Configuration:	1				
Customer:	Alcon Laboratories, Inc.				
Attendees:	Thai Lam				
EUT Power:	120VAC/60Hz				
Operating Mode:	Charging Footswitch and Data Communication.				
Deviations:	None				
Comments:	Footswitch Pedal SN: 1201584906X				

Test Specifications	**Class A**	**Test Method**
FCC 15.109:2012		ANSI C63.4:2009

Run #	1	**Test Distance (m)**	10	**Antenna Height(s)**	1.85 - 2.5m	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
33.746	52.9	-19.9	2.0	6.0	10.0	0.0	Vert	QP	0.0	33.0	39.0	-6.0
81.008	58.6	-27.7	1.5	194.0	10.0	0.0	Vert	QP	0.0	30.9	39.0	-8.1
567.008	49.9	-11.8	1.1	267.0	10.0	0.0	Horz	QP	0.0	38.1	46.5	-8.4
595.226	48.9	-11.3	4.0	338.0	10.0	0.0	Horz	QP	0.0	37.6	46.5	-8.9
825.013	45.7	-8.3	1.5	1.0	10.0	0.0	Horz	QP	0.0	37.4	46.5	-9.1
649.334	45.3	-10.0	2.3	118.0	10.0	0.0	Horz	QP	0.0	35.3	46.5	-11.2
595.229	46.4	-11.3	1.0	311.0	10.0	0.0	Vert	QP	0.0	35.1	46.5	-11.4
39.629	50.0	-22.9	1.5	2.0	10.0	0.0	Vert	QP	0.0	27.1	39.0	-11.9

RADIATED SPURIOUS EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Charging Footswitch and Data Communication on Continously

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

ALCO0149 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	10 kHz	Stop Frequency	30 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
OC08 Cables	N/A	30MHz-6GHz RE Cables	OCB	4/2/2012	12 mo
Spectrum Analyzer	Agilent	E4443A	AAR	1/18/2012	12 mo
Antenna, Loop	EMCO	6502	AZB	12/6/2010	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and orientation in 3 orthogonal planes, the EUT and/or associated antenna is positioned in 3 orthogonal planes (per ANSI C63.10). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

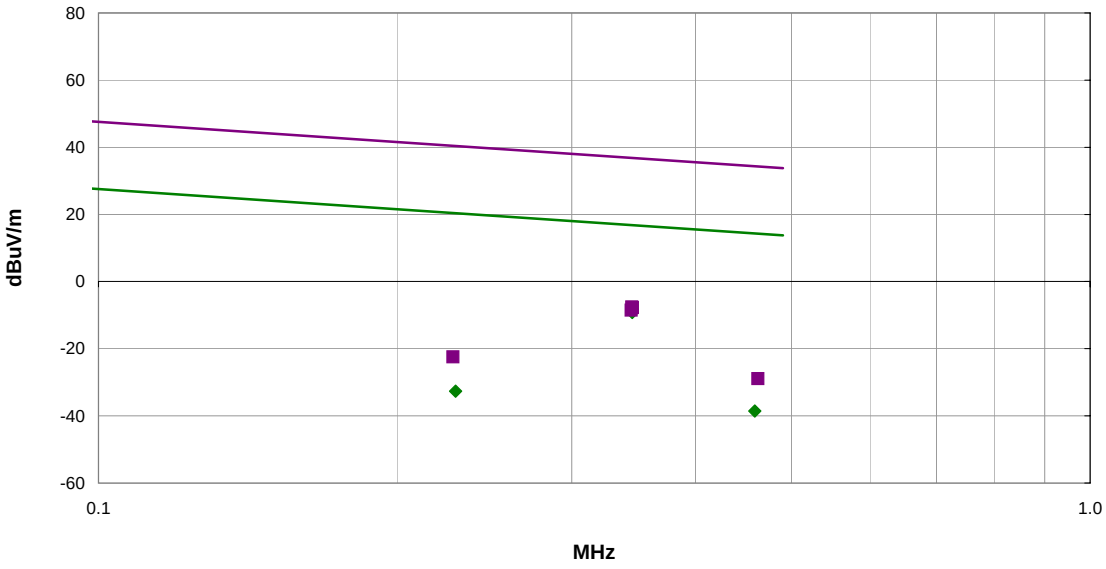
As outlined in 15.209(e), and associated reference to 15.31, measurements may be performed at a distance closer than specified as was the case in this testing. In this case the limit for the defined distance is outlined on the data sheet. For transmitters operating below 10 MHz, the data is adjusted by using the square of the inverse linear distance extrapolation factor of 40dB/decade.

RADIATED SPURIOUS EMISSIONS

Work Order:	ALCO0149	**Date:**	04/11/12		
Project:	None	**Temperature:**	24.15		
Job Site:	OC08	**Humidity:**	34.86		
Serial Number:	1103473804X2	**Barometric Pres.:**	1016.4	**Tested by:**	Jaemi Suh
EUT:	Centurion® Vision System®				
Configuration:	1				
Customer:	Alcon Laboratories, Inc.				
Attendees:	Thai Lam				
EUT Power:	120VAC/60Hz				
Operating Mode:	Charging Footswitch and Data Communication on Continously				
Deviations:	None				
Comments:	Footswitch Pedal SN: 1201584906X. 115 kHz communication carrier frequency				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	6	**Test Distance (m)**	3	**Antenna Height(s)**	1.85 - 2.5m	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.345	61.3	10.5	1.0	203.0	3.0	0.0	See Comments	AV	-80.0	-8.2	16.8	-25.0	Ant perp to ground, perp to eut
0.345	61.1	10.5	1.0	198.0	3.0	0.0	See Comments	AV	-80.0	-8.4	16.8	-25.2	Ant perp to ground, parallel to eut
0.345	60.3	10.5	1.0	210.0	3.0	0.0	See Comments	AV	-80.0	-9.2	16.8	-26.0	Ant parallel to ground, perp to eut
0.345	61.9	10.5	1.0	203.0	3.0	0.0	See Comments	PK	-80.0	-7.6	36.8	-44.4	Ant perp to ground, perp to eut
0.346	61.7	10.5	1.0	198.0	3.0	0.0	See Comments	PK	-80.0	-7.8	36.8	-44.6	Ant perp to ground, parallel to eut
0.345	61.0	10.5	1.0	210.0	3.0	0.0	See Comments	PK	-80.0	-8.5	36.9	-45.4	Ant parallel to ground, perp to eut
0.459	31.0	10.4	1.1	184.0	3.0	0.0	See Comments	AV	-80.0	-38.6	14.4	-53.0	Ant parallel to ground, perp to eut
0.229	37.0	10.4	1.0	248.0	3.0	0.0	See Comments	AV	-80.0	-32.6	20.4	-53.0	Ant parallel to ground, perp to eut
0.228	47.2	10.4	1.0	248.0	3.0	0.0	See Comments	PK	-80.0	-22.4	40.4	-62.9	Ant parallel to ground, perp to eut
0.462	40.7	10.4	1.1	184.0	3.0	0.0	See Comments	PK	-80.0	-28.9	34.3	-63.2	Ant parallel to ground, perp to eut

CONDUCTED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Charging Footswitch and Data Communication.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

ALCO0149 - 1

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator	Pasternack	6N10W-20	AWC	3/1/2012	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HFP	3/1/2012	24 mo
OC06 Cables	N/A	Telecom Cables	OCP	4/6/2012	12 mo
OC06 Cables	N/A	CE Cables	OCM	4/6/2012	12 mo
LISN	Solar	9252-50-24-BNC	LIA	6/13/2011	12 mo
Spectrum Analyzer	Agilent	E4440A	AFG	4/28/2011	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm.

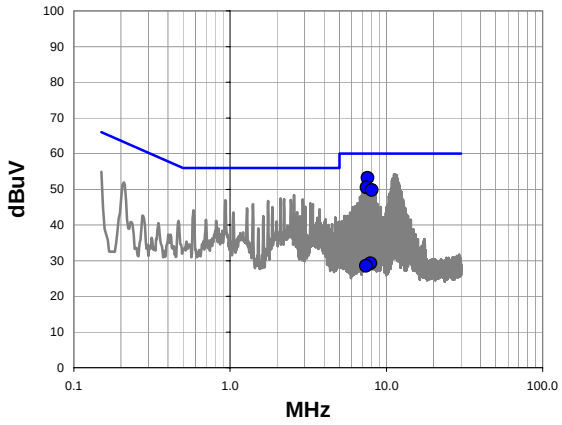
CONDUCTED EMISSIONS

Work Order:	ALCO0149	**Date:**	04/17/12		
Project:	None	**Temperature:**	22.81 °C		
Job Site:	OC06	**Humidity:**	44.9% RH		
Serial Number:	1103473804X2	**Barometric Pres.:**	1012.4 mbar	**Tested by:**	Jaemi Suh
EUT:	Centurion® Vision System®				
Configuration:	1				
Customer:	Alcon Laboratories, Inc.				
Attendees:	Thai Lam				
EUT Power:	110VAC/60Hz				
Operating Mode:	Charging Footswitch and Data Communication.				
Deviations:	None				
Comments:	Footswitch Pedal SN: 1201584906X. This is a Class A device. The only difference when the unit was on standby and communicating was in the 7-8 MHz area. Both QP and AVE were below the limit at the time of communication.				

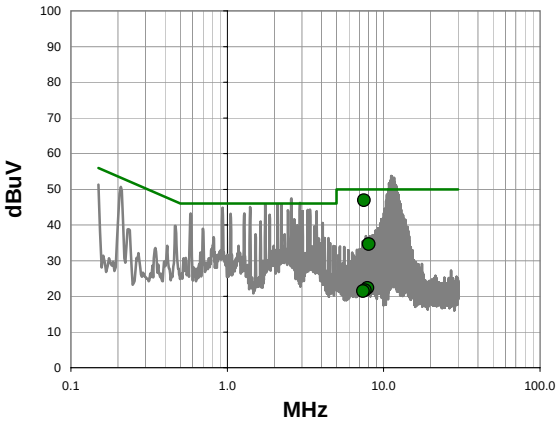
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	27	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.592	33.0	20.2	53.2	60.0	-6.8
7.475	30.3	20.2	50.5	60.0	-9.5
8.051	29.6	20.2	49.8	60.0	-10.2
7.900	9.0	20.2	29.2	60.0	-30.8
7.400	8.3	20.2	28.5	60.0	-31.5

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.475	26.7	20.2	46.9	50.0	-3.1
8.051	14.4	20.2	34.6	50.0	-15.4
7.900	2.1	20.2	22.3	50.0	-27.7
7.592	1.5	20.2	21.7	50.0	-28.3
7.400	1.2	20.2	21.4	50.0	-28.6

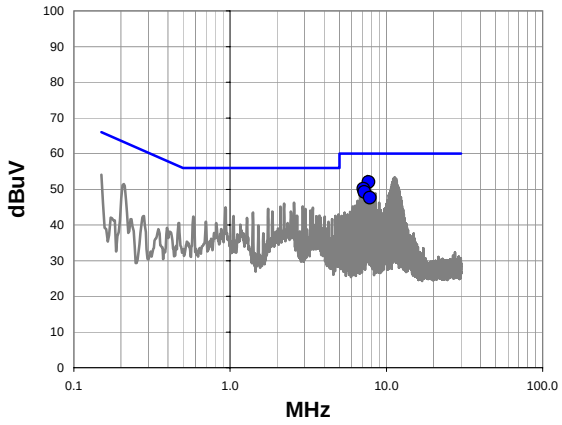
CONDUCTED EMISSIONS

Work Order:	ALCO0149	**Date:**	04/17/12		
Project:	None	**Temperature:**	22.81 °C		
Job Site:	OC06	**Humidity:**	44.9% RH		
Serial Number:	1103473804X2	**Barometric Pres.:**	1012.4 mbar	**Tested by:**	Jaemi Suh
EUT:	Centurion® Vision System®				
Configuration:	1				
Customer:	Alcon Laboratories, Inc.				
Attendees:	Thai Lam				
EUT Power:	110VAC/60Hz				
Operating Mode:	Charging Footswitch and Data Communication.				
Deviations:	None				
Comments:	Footswitch Pedal SN: 1201584906X. This is a Class A device. The only difference when the unit was on standby and communicating was in the 7-8 MHz area. Both QP and AVE were below the limit at the time of communication.				

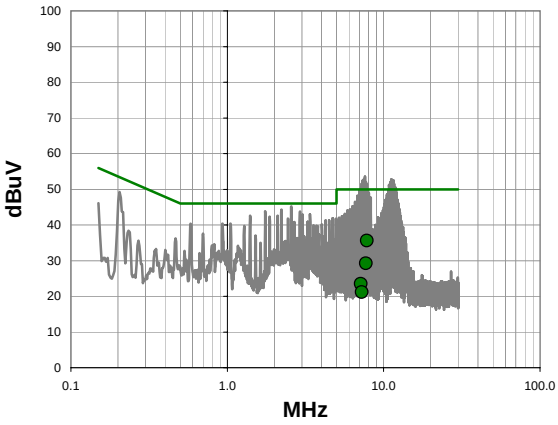
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	28	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.705	31.8	20.2	52.0	60.0	-8.0
7.129	29.9	20.2	50.1	60.0	-9.9
7.245	29.0	20.2	49.2	60.0	-10.8
7.821	27.4	20.2	47.6	60.0	-12.4

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.821	15.4	20.2	35.6	50.0	-14.4
7.705	9.0	20.2	29.2	50.0	-20.8
7.129	3.3	20.2	23.5	50.0	-26.5
7.245	1.0	20.2	21.2	50.0	-28.8

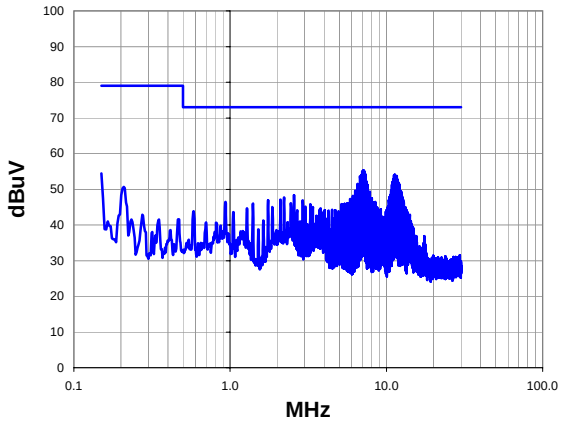
CONDUCTED EMISSIONS

Work Order:	ALCO0149	**Date:**	04/17/12		
Project:	None	**Temperature:**	22.81 °C		
Job Site:	OC06	**Humidity:**	44.9% RH		
Serial Number:	1103473804X2	**Barometric Pres.:**	1012.4 mbar	**Tested by:**	Jaemi Suh
EUT:	Centurion® Vision System®				
Configuration:	1				
Customer:	Alcon Laboratories, Inc.				
Attendees:	Thai Lam				
EUT Power:	110VAC/60Hz				
Operating Mode:	Charging Footswitch and Data Communication.				
Deviations:	None				
Comments:	Footswitch Pedal SN: 1201584906X. This device is a Class A device.				

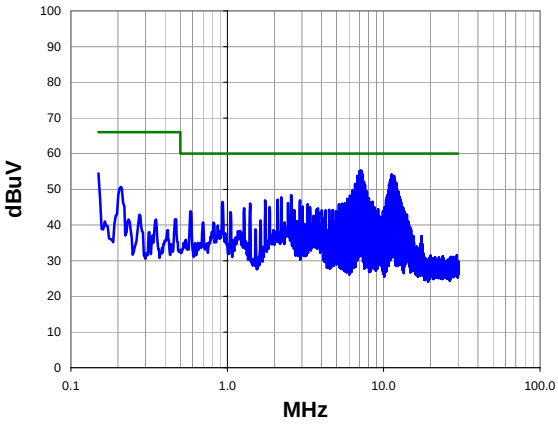
Test Specifications	**Class A**	**Test Method**
FCC 15.107:2012		ANSI C63.4:2009

Run #	9	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.129	35.1	20.2	55.3	73.0	-17.7
7.016	34.9	20.2	55.1	73.0	-17.9
7.245	34.8	20.2	55.0	73.0	-18.0
7.358	33.9	20.2	54.1	73.0	-18.9
11.305	33.7	20.4	54.1	73.0	-18.9
6.899	33.8	20.2	54.0	73.0	-19.0
11.192	33.6	20.4	54.0	73.0	-19.0
11.655	33.3	20.4	53.7	73.0	-19.3
6.786	33.4	20.2	53.6	73.0	-19.4
11.422	33.2	20.4	53.6	73.0	-19.4
11.538	32.9	20.4	53.3	73.0	-19.7
11.072	32.3	20.4	52.7	73.0	-20.3
11.771	32.3	20.4	52.7	73.0	-20.3
7.475	31.9	20.2	52.1	73.0	-20.9
10.955	31.6	20.4	52.0	73.0	-21.0
12.005	31.4	20.4	51.8	73.0	-21.2
6.557	31.3	20.2	51.5	73.0	-21.5
11.888	31.0	20.4	51.4	73.0	-21.6
12.125	30.9	20.4	51.3	73.0	-21.7
6.670	31.0	20.2	51.2	73.0	-21.8

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.129	35.1	20.2	55.3	60.0	-4.7
7.016	34.9	20.2	55.1	60.0	-4.9
7.245	34.8	20.2	55.0	60.0	-5.0
7.358	33.9	20.2	54.1	60.0	-5.9
11.305	33.7	20.4	54.1	60.0	-5.9
6.899	33.8	20.2	54.0	60.0	-6.0
11.192	33.6	20.4	54.0	60.0	-6.0
11.655	33.3	20.4	53.7	60.0	-6.3
6.786	33.4	20.2	53.6	60.0	-6.4
11.422	33.2	20.4	53.6	60.0	-6.4
11.538	32.9	20.4	53.3	60.0	-6.7
11.072	32.3	20.4	52.7	60.0	-7.3
11.771	32.3	20.4	52.7	60.0	-7.3
7.475	31.9	20.2	52.1	60.0	-7.9
10.955	31.6	20.4	52.0	60.0	-8.0
12.005	31.4	20.4	51.8	60.0	-8.2
6.557	31.3	20.2	51.5	60.0	-8.5
11.888	31.0	20.4	51.4	60.0	-8.6
12.125	30.9	20.4	51.3	60.0	-8.7
6.670	31.0	20.2	51.2	60.0	-8.8

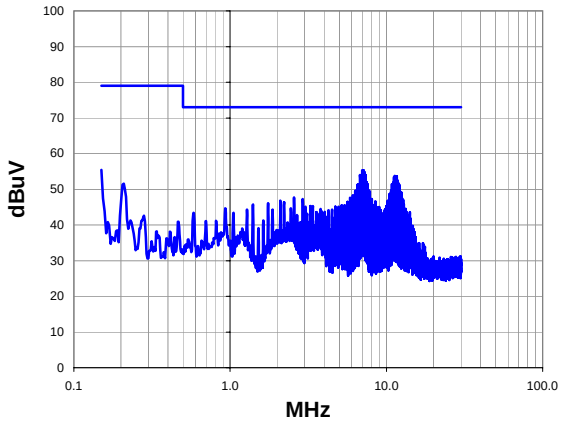
CONDUCTED EMISSIONS

Work Order:	ALCO0149	**Date:**	04/17/12		
Project:	None	**Temperature:**	22.81 °C		
Job Site:	OC06	**Humidity:**	44.9% RH		
Serial Number:	1103473804X2	**Barometric Pres.:**	1012.4 mbar	**Tested by:**	Jaemi Suh
EUT:	Centurion® Vision System®				
Configuration:	1				
Customer:	Alcon Laboratories, Inc.				
Attendees:	Thai Lam				
EUT Power:	110VAC/60Hz				
Operating Mode:	Charging Footswitch and Data Communication.				
Deviations:	None				
Comments:	Footswitch Pedal SN: 1201584906X. This device is a Class A device.				

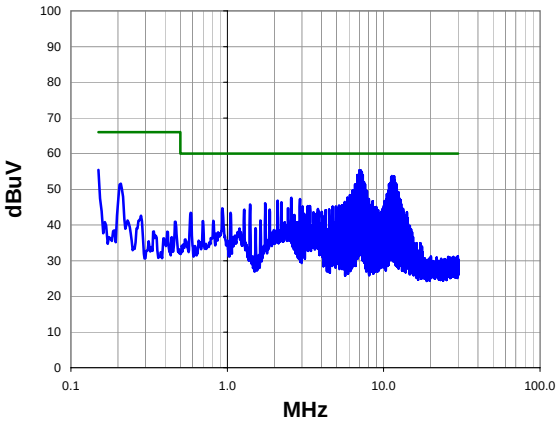
Test Specifications	**Class A**	**Test Method**
FCC 15.107:2012		ANSI C63.4:2009

Run #	10	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.016	35.1	20.2	55.3	73.0	-17.7
7.129	35.1	20.2	55.3	73.0	-17.7
7.245	34.6	20.2	54.8	73.0	-18.2
6.786	33.8	20.2	54.0	73.0	-19.0
6.899	33.8	20.2	54.0	73.0	-19.0
7.358	33.8	20.2	54.0	73.0	-19.0
11.305	33.3	20.4	53.7	73.0	-19.3
11.655	33.2	20.4	53.6	73.0	-19.4
11.188	33.0	20.4	53.4	73.0	-19.6
11.538	32.9	20.4	53.3	73.0	-19.7
11.422	32.2	20.4	52.6	73.0	-20.4
11.771	32.1	20.4	52.5	73.0	-20.5
7.475	31.8	20.2	52.0	73.0	-21.0
11.072	31.4	20.4	51.8	73.0	-21.2
12.005	31.2	20.4	51.6	73.0	-21.4
10.955	31.1	20.4	51.5	73.0	-21.5
6.670	31.2	20.2	51.4	73.0	-21.6
7.592	31.2	20.2	51.4	73.0	-21.6
10.839	31.0	20.4	51.4	73.0	-21.6
6.557	31.1	20.2	51.3	73.0	-21.7

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.016	35.1	20.2	55.3	60.0	-4.7
7.129	35.1	20.2	55.3	60.0	-4.7
7.245	34.6	20.2	54.8	60.0	-5.2
6.786	33.8	20.2	54.0	60.0	-6.0
6.899	33.8	20.2	54.0	60.0	-6.0
7.358	33.8	20.2	54.0	60.0	-6.0
11.305	33.3	20.4	53.7	60.0	-6.3
11.655	33.2	20.4	53.6	60.0	-6.4
11.188	33.0	20.4	53.4	60.0	-6.6
11.538	32.9	20.4	53.3	60.0	-6.7
11.422	32.2	20.4	52.6	60.0	-7.4
11.771	32.1	20.4	52.5	60.0	-7.5
7.475	31.8	20.2	52.0	60.0	-8.0
11.072	31.4	20.4	51.8	60.0	-8.2
12.005	31.2	20.4	51.6	60.0	-8.4
10.955	31.1	20.4	51.5	60.0	-8.5
6.670	31.2	20.2	51.4	60.0	-8.6
7.592	31.2	20.2	51.4	60.0	-8.6
10.839	31.0	20.4	51.4	60.0	-8.6
6.557	31.1	20.2	51.3	60.0	-8.7

FIELD STRENGTH OF FUNDAMENTAL

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Charging Footswitch and Data Communication on Continously

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

ALCO0149 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	10 kHz	Stop Frequency	30 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
OC08 Cables	N/A	30MHz-6GHz RE Cables	OCB	4/2/2012	12 mo
Spectrum Analyzer	Agilent	E4443A	AAR	1/18/2012	12 mo
Antenna, Loop	EMCO	6502	AZB	12/6/2010	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and orientation in 3 orthogonal planes, the EUT and/or associated antenna is positioned in 3 orthogonal planes (per ANSI C63.10). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

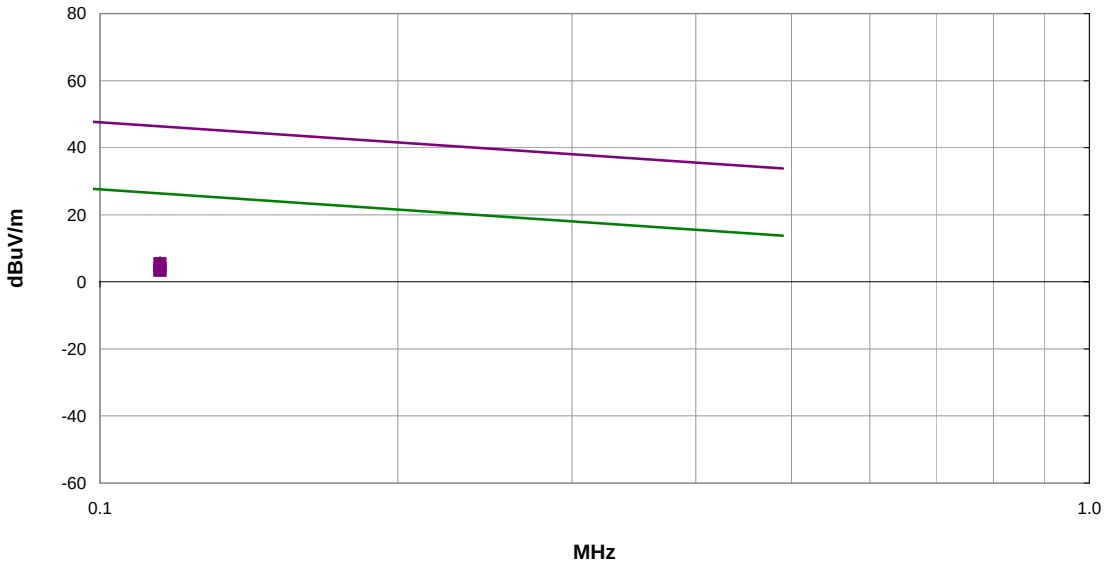
As outlined in 15.209(e), and associated reference to 15.31, measurements may be performed at a distance closer than specified as was the case in this testing. In this case the limit for the defined distance is outlined on the data sheet. For transmitters operating below 10 MHz, the data is adjusted by using the square of the inverse linear distance extrapolation factor of 40dB/decade.

FIELD STRENGTH OF FUNDAMENTAL

Work Order:	ALCO0149	**Date:**	04/11/12		
Project:	None	**Temperature:**	24.15		
Job Site:	OC08	**Humidity:**	34.86		
Serial Number:	1103473804X2	**Barometric Pres.:**	1016.4	**Tested by:**	Jaemi Suh
EUT:	Centurion® Vision System®				
Configuration:	1				
Customer:	Alcon Laboratories, Inc.				
Attendees:	Thai Lam				
EUT Power:	120VAC/60Hz				
Operating Mode:	Charging Footswitch and Data Communication on Continously				
Deviations:	None				
Comments:	Footswitch Pedal SN: 1201584906X, 115 kHz communication carrier frequency				

Test Specifications	**Test Method**
FCC 15.209:2012	ANSI C63.10:2009

Run #	4	**Test Distance (m)**	3	**Antenna Height(s)**	1.85 - 2.5m	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.115	75.3	10.3	1.9	199.0	3.0	0.0	See Comments	AV	-80.0	5.6	26.4	-20.7	Ant parallel to ground, perp to eut
0.115	73.1	10.3	1.9	273.0	3.0	0.0	See Comments	AV	-80.0	3.4	26.4	-22.9	Ant perp ground, Ant perp to eut
0.115	73.1	10.3	1.9	0.0	3.0	0.0	See Comments	AV	-80.0	3.4	26.4	-22.9	Ant perp ground, Ant parallel to eut
0.115	75.0	10.3	1.9	199.0	3.0	0.0	See Comments	PK	-80.0	5.3	46.4	-41.0	Ant parallel to ground, perp to eut
0.115	73.1	10.3	1.9	273.0	3.0	0.0	See Comments	PK	-80.0	3.4	46.4	-42.9	Ant perp ground, Ant perp to eut
0.115	73.1	10.3	1.9	0.0	3.0	0.0	See Comments	PK	-80.0	3.4	46.4	-42.9	Ant perp ground, Ant parallel to eut