

Alcon Laboratories, Inc.

Constellation Vision System (NGVS)

December 04, 2007

Report No. ALCO0074 Rev. 1

Report Prepared By



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1-888-EMI-CERT

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EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: December 04, 2007

Alcon Laboratories, Inc.

Model: Constellation Vision System (NGVS)

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Field Strength of Fundamental	FCC 15.225:2006	ANSI C63.4:2003	Pass
Field Strength of Spurious Emissions	FCC 15.225:2006	ANSI C63.4:2003	Pass
Powerline Conducted Emissions	FCC 15.207:2006	ANSI C63.4:2003	Pass
Frequency Stability	FCC 15.225:2006	ANSI C63.4:2003	Pass

Modifications made to the product

See the Modifications section of this report

Approved By:

Ethan Schoonover, Sultan Lab Manager



NVLAP Lab Code: 200676-0

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 Number	Description	Date	Page Number
01	Changed the Version on the Constellation Software to 7.11.1.16	2-4-08	8
01	Changed the Doctor Filter serial number to the following: 0502860502X	2-4-08	8

FCC: Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.



NVLAP: Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.



NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0
NVLAP LAB CODE 200761-0

Industry Canada: Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS 212, Issue 1 (Provisional) and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements.



CAB: Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.



TÜV Product Service: Included in TÜV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TÜV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TÜV's current Listing of CARAT Laboratories, available from TÜV. A certificate was issued to represent that this laboratory continues to meet TÜV's CARAT Program requirements. Certificate No. USA0604C.



TÜV Rheinland: Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.



NEMKO: Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).



Australia/New Zealand: The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).



VCCI: Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (*Registration Numbers. - Hillsboro: C-1071, R-1025, C-2687, T-289, and R-2318, Irvine: R-1943, C-2766, and T-298, Sultan: R-871, C-1784, and T-294*).



BSMI: Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement. License No.SL2-IN-E-1017.



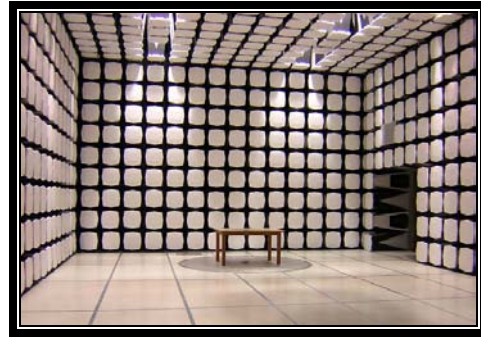
GOST: Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification



SCOPE

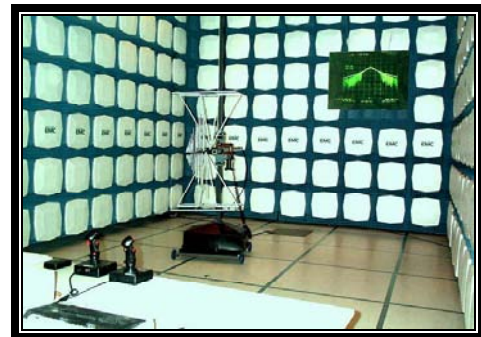
For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/scope.asp>



**California – Orange County Facility
Labs OC01 – OC13**

41 Tesla Ave. Irvine, CA 92618
(888) 364-2378 Fax: (503) 844-3826



**Oregon – Evergreen Facility
Labs EV01 – EV11**

22975 NW Evergreen Pkwy. Suite 400 Hillsboro, OR 97124
(503) 844-4066 Fax: (503) 844-3826



**Washington – Sultan Facility
Labs SU01 – SU07**

14128 339th Ave. SE Sultan, WA 98294
(888) 364-2378

Party Requesting the Test

Company Name:	Alcon Laboratories, Inc.
Address:	15800 Alton Parkway
City, State, Zip:	Irvine, CA 92618-3818
Test Requested By:	Thai Lam
Model:	Constellation Vision System (NGVS)
First Date of Test:	November 20, 2007
Last Date of Test:	November 21, 2007
Receipt Date of Samples:	November 20, 2007
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test**Functional Description of the EUT (Equipment Under Test):**

RFID: Radio operating at 13.553 - 13.567 MHz.

Testing Objective:

RFID radio seeking TCB certification under FCC 15.225.

CONFIGURATION 1 ALCO0074**Software/Firmware Running during test**

Description	Version
Constellation Software	7.11.1.16

EUT

Description	Manufacturer	Model/Part Number	Serial Number
Constellation Vision System	Alcon	8065751145/(212-0001-502)	Beta #11

Peripherals in test setup boundary

Description	Manufacturer	Model/Part Number	Serial Number
Constellation Footswitch	Alcon	8065750977	0702831001X
PurePoint Footswitch	Alcon	IPX8/562-1360-501	None
Handpiece Infiniti Ultrasound	Alcon	8065750121	0702679618X
Constellation Fragmentation Handpiece	Alcon	8065750888	Beta #02
Laser Indirect Ophthalmoscope	Alcon	8065751050	0703245401X
Diathermy	Alcon	8065807901	None
Barcode Scanner	Metrologic Instruments Inc	MS9544	None
Power Generator 150PSI	Porter Cable Corp	C2006	2767056720
Doctor Filter	Alcon	8065750260	0502860502X
Doctor Filter	Alcon	8065750260	0601862302X

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Cable	No	3.6m	No	EUT	AC Mains
Doctor Filter (2)	No	10m	No	Doctor Filter	EUT
Composite Video Cable (2)	No	3.4m	No	EUT	Unterminated
S-Video Cable (2)	No	1.9m	No	EUT	Unterminated
Video Overlay Cable	No	7.5m	No	EUT	Unterminated
VGA	No	1.7m	No	EUT	Unterminated
Ethernet Cable	Yes	4.1m	No	EUT	Remote Laptop
Laser Tether Cable	No	1.9m	No	EUT	Unterminated
Audio Cable/MP3	No	1.9m	No	EUT	Unterminated
Ethernet Cable	Yes	4.1m	No	EUT	Unterminated
Foot Switch Cable	No	4.5m	No	EUT	PurePoint Footswitch
LIO Cable	Yes	6.7m	No	EUT	Laser Indirect Ophthalmoscope
Foot Switch Cable	Yes	5.5m	No	EUT	Constellation Footswitch
Scanner Cable	No	.7m	No	Barcode Scanner	EUT
Diathermy Cable	No	3.5m	No	EUT	Diathermy
Handpiece Infiniti Ultrasound Cable	No	2m	No	Handpiece Infiniti Ultrasound	EUT
Constellation Fragmentation Handpiece Cable	No	2m	No	Constellation Fragmentation Handpiece	EUT
Serial Cable	No	1.9m	No	EUT	Unterminated
AC Cable	No	30cm	No	EUT	AC Mains
AC Cable	No	50cm	No	EUT	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	11/20/2007	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.
2	11/20/2007	Field Strength of 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.
3	11/20/2007	Frequency Stability	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	11/21/2007	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing completed.

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

RFID Radio On.

POWER SETTINGS INVESTIGATED

120V/60Hz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
LISN	Solar	9252-50-24-BNC	LIB	5/8/2006	24
OC11 cables a-b-e-f			OCM	1/8/2007	13
Receiver	Rohde & Schwartz	ESCI	ARF	12/14/2006	13

MEASUREMENT BANDWIDTHS

	Frequency Range	Peak Data	Quasi-Peak Data	Average Data
	(MHz)	(kHz)	(kHz)	(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

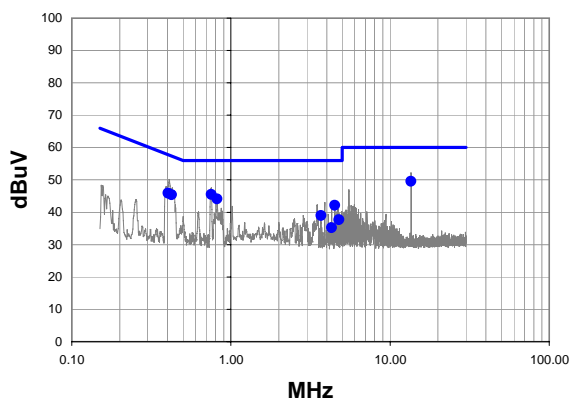
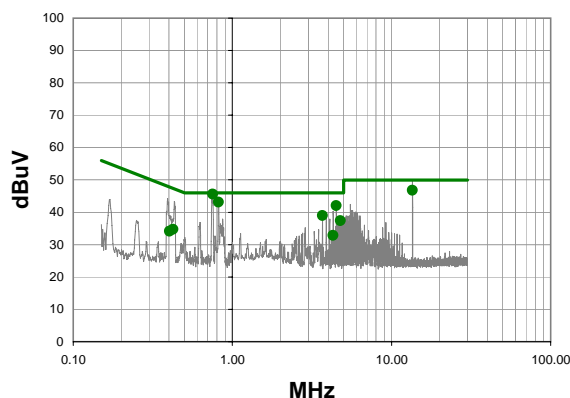
Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is 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 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50 Ω .

EMC**POWERLINE CONDUCTED EMISSIONS**

Work Order:	ALCO0074	Date:	11/21/07				
Project:	None	Temperature:	24.46				
Job Site:	OC06	Humidity:	44.9				
Serial Number:	702723711	Barometric Pres.:	1016.3 mb				
EUT:	Constellation Vision System (NGVS)						
Configuration:	1						
Customer:	Alcon Laboratories, Inc.						
Attendees:	Thai Lam						
EUT Power:	120V/60Hz						
Operating Mode:	RFID Radio On.						
Deviations:	None						
Comments:	None						
Test Specifications FCC 15.207:2006			Test Method ANSI C63.4:2003				
Run #	1	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**

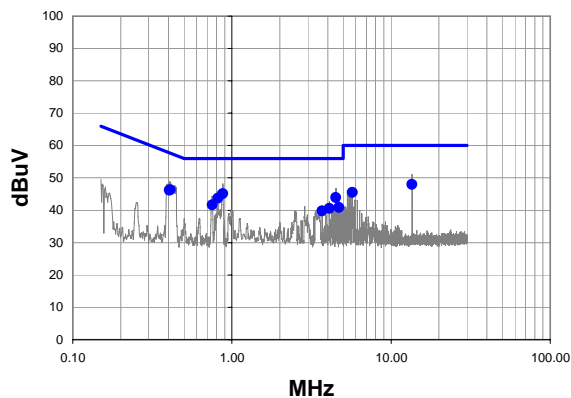
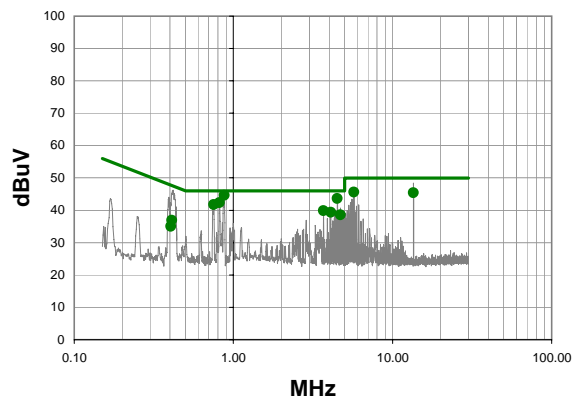
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
13.560	28.5	1.1	49.6	60.0	-10.4
0.752	24.7	0.8	45.5	56.0	-10.5
0.818	23.3	0.8	44.1	56.0	-11.9
0.403	24.8	1.1	45.9	57.8	-11.9
0.424	24.3	1.1	45.4	57.4	-12.0
4.504	21.3	0.8	42.1	56.0	-13.9
3.684	18.2	0.8	39.0	56.0	-17.0
4.764	16.9	0.8	37.7	56.0	-18.3
4.300	14.4	0.8	35.2	56.0	-20.8

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.752	24.8	0.8	45.6	46.0	-0.4
0.818	22.3	0.8	43.1	46.0	-2.9
13.560	25.7	1.1	46.8	50.0	-3.2
4.504	21.2	0.8	42.0	46.0	-4.0
3.684	18.2	0.8	39.0	46.0	-7.0
4.764	16.6	0.8	37.4	46.0	-8.6
0.424	13.7	1.1	34.8	47.4	-12.6
4.300	12.0	0.8	32.8	46.0	-13.2
0.403	13.1	1.1	34.2	47.8	-13.6

EMC**POWERLINE CONDUCTED EMISSIONS**

Work Order:	ALCO0074	Date:	11/21/07		
Project:	None	Temperature:	24.46		
Job Site:	OC06	Humidity:	44.9		
Serial Number:	702723711	Barometric Pres.:	1016.3 mb		
EUT:	Constellation Vision System (NGVS)				
Configuration:	1				
Customer:	Alcon Laboratories, Inc.				
Attendees:	Thai Lam				
EUT Power:	120V/60Hz				
Operating Mode:	RFID Radio On.				
Deviations:	None				
Comments:	None				
Test Specifications FCC 15.207:2006				Test Method ANSI C63.4:2003	
Run #	3	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)
0.878	24.3	0.8	45.1	56.0	-10.9
0.411	25.2	1.1	46.3	57.6	-11.4
0.405	25.1	1.1	46.2	57.8	-11.6
13.560	26.9	1.1	48.0	60.0	-12.0
4.504	23.1	0.8	43.9	56.0	-12.1
0.820	22.9	0.8	43.7	56.0	-12.3
0.752	20.8	0.8	41.6	56.0	-14.4
5.730	24.7	0.8	45.5	60.0	-14.5
4.708	20.1	0.8	40.9	56.0	-15.1
4.092	19.8	0.8	40.6	56.0	-15.4
3.684	19.0	0.8	39.8	56.0	-16.2

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.878	23.8	0.8	44.6	46.0	-1.4
4.504	22.8	0.8	43.6	46.0	-2.4
0.820	21.5	0.8	42.3	46.0	-3.7
0.752	20.9	0.8	41.7	46.0	-4.3
5.730	24.8	0.8	45.6	50.0	-4.4
13.560	24.3	1.1	45.4	50.0	-4.6
3.684	19.1	0.8	39.9	46.0	-6.1
4.092	18.6	0.8	39.4	46.0	-6.6
4.708	17.8	0.8	38.6	46.0	-7.4
0.411	15.8	1.1	36.9	47.6	-10.8
0.405	13.9	1.1	35.0	47.8	-12.8

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.

MODES OF OPERATION

RFID Radio On

MODE USED FOR FINAL DATA

RFID Radio On

POWER SETTINGS INVESTIGATED

120VAC/60Hz

POWER SETTINGS USED FOR FINAL DATA

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED

Start Frequency	13.11	Stop Frequency	14.01
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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
OC10 cables a,b,c,d Bilog			OCH	12/17/2006	13
Antenna, Loop	EMCO	6502	AZB	12/2/2006	24
Spectrum Analyzer	Agilent	E4446A	AAQ	1/18/2007	13

MEASUREMENT BANDWIDTHS

Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(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

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting and receiving while set at the lowest channel, a middle channel, and the highest channel available. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003).

NORTHWEST EMC										Field Strength Of Fundamental					PSA 2007.05.07 EMI 2006.4.26																																																							
EUT: Constellation Vision System (NGVS)										Work Order: ALCO0074																																																												
Serial Number: 0702723711										Date: 11/20/07																																																												
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Attendees: Thai Lam										Humidity: 45%																																																												
Project: None										Barometric Pres.: 1016.3 mb																																																												
Tested by: Jaemi Suh										Power: 120VAC/60Hz					Job Site: OC10																																																							
TEST SPECIFICATIONS										Test Method																																																												
FCC 15.225:2006										ANSI C63.4:2003																																																												
TEST PARAMETERS																																																																						
Antenna Height(s) (m)					1 - 4					Test Distance (m)					1																																																							
COMMENTS																																																																						
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<table border="1" style="width: 100%; border-collapse: collapse; font-size: 0.8em;"> <thead> <tr> <th>Freq (MHz)</th> <th>Amplitude (dBuV)</th> <th>Factor (dB)</th> <th>Azimuth (degrees)</th> <th>Height (meters)</th> <th>Distance (meters)</th> <th>External Attenuation (dB)</th> <th>Polarity</th> <th>Detector</th> <th>Distance Adjustment (dB)</th> <th>Adjusted dBuV/m</th> <th>Spec. Limit dBuV/m</th> <th>Compared to Spec. (dB)</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>13.560</td> <td>51.1</td> <td>10.9</td> <td>332.0</td> <td>1.0</td> <td>1.0</td> <td>0.0</td> <td>Loop</td> <td>QP</td> <td>41.2</td> <td>20.8</td> <td>84.0</td> <td>-63.2</td> <td>Par/Gnd, Perp/EUT</td> </tr> <tr> <td>13.561</td> <td>49.4</td> <td>10.9</td> <td>1.0</td> <td>1.0</td> <td>1.0</td> <td>0.0</td> <td>Loop</td> <td>QP</td> <td>47.1</td> <td>13.2</td> <td>84.0</td> <td>-70.8</td> <td>Perp/Gnd, Perp/EUT</td> </tr> <tr> <td>13.559</td> <td>43.1</td> <td>10.9</td> <td>11.0</td> <td>1.0</td> <td>1.0</td> <td>0.0</td> <td>Loop</td> <td>QP</td> <td>35.0</td> <td>19.0</td> <td>84.0</td> <td>-65.0</td> <td>Perp/Gnd, Par/EUT</td> </tr> </tbody> </table>															Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments	13.560	51.1	10.9	332.0	1.0	1.0	0.0	Loop	QP	41.2	20.8	84.0	-63.2	Par/Gnd, Perp/EUT	13.561	49.4	10.9	1.0	1.0	1.0	0.0	Loop	QP	47.1	13.2	84.0	-70.8	Perp/Gnd, Perp/EUT	13.559	43.1	10.9	11.0	1.0	1.0	0.0	Loop	QP	35.0	19.0	84.0	-65.0	Perp/Gnd, Par/EUT
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments																																																									
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NORTHWEST EMC										Field Strength Of Fundamental					PSA 2007.05.07 EMI 2006.4.26				
EUT: Constellation Vision System (NGVS)										Work Order: ALCO0074									
Serial Number: 0702723711										Date: 11/20/07									
Customer: Alcon Laboratories, Inc.										Temperature: 24.46									
Attendees: Thai Lam										Humidity: 45%									
Project: None										Barometric Pres.: 1016.3 mb									
Tested by: Jaemi Suh										Power: 120VAC/60Hz					Job Site: OC10				
TEST SPECIFICATIONS										Test Method									
FCC 15.225:2006										ANSI C63.4:2003									
TEST PARAMETERS																			
Antenna Height(s) (m)					1 - 4					Test Distance (m)					3				
COMMENTS																			
3M Distance.																			
EUT OPERATING MODES																			
Idle Mode. RFID Radio On. 802.11 b/g On.																			
DEVIATIONS FROM TEST STANDARD																			
No deviations.																			
Run #		5																	
Configuration #		1																	
Results		Pass																	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments						
13.561	37.8	10.9	93.0	1.0	3.0	0.0	Loop	QP	27.9	20.8	84.0	-63.2	Par/Gnd, Perp/EUT						
13.560	34.2	10.9	65.0	1.0	3.0	0.0	Loop	QP	31.9	13.2	84.0	-70.8	Perp/Gnd, Perp/EUT						
13.560	31.8	10.9	227.0	1.0	3.0	0.0	Loop	QP	23.7	19.0	84.0	-65.0	Perp/Gnd, Par/EUT						

Distance Adjustment Factor for Radiated Emissions below 30 MHz

Method: Per 47 CFR 15.31(f)(2), the data was extrapolated based upon a the measured fall-off (at each frequency / polarity).

EUT: Constellation Vision System (NGVS)
S/N: 0702723711
Date: 11/20/2007
Job Number: ALCO0074

Frequency (MHz)	Loop Antenna Polarity	Test Distance (meters)	Adjusted Level (dBuV/m)	Fall-Off from 1 to 3 m (dB)	Extrapolation Factor for Specification Limit (dB / decade)	Test Distance of Spec. Limit (meters)	Distance Adjustment Factor (dB)
13.560	Par/Gnd, Perp/EUT	1	62.0	13.3	27.9	30.0	41.2
13.560	Par/Gnd, Perp/EUT	3	48.7				27.9
13.560	Perp/Gnd, Perp/EUT	1	60.3	15.2	31.9	30.0	47.1
13.560	Perp/Gnd, Perp/EUT	3	45.1				31.9
13.560	Perp/Gnd, Par/EUT	1	54.0	11.3	23.7	30.0	35.0
13.560	Perp/Gnd, Par/EUT	3	42.7				23.7

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.

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Programmable Power Supply	Hewlett-Packard	6843A	THB	12/14/2006	13
Spectrum Analyzer	Hewlett Packard	8593E	AAP	12/14/2006	13
Temperature Chamber	Cincinnati Sub Zero	Z-32 PLUS	TBE	5/2/2007	12
Temperature Chamber	Tenney Engineering inc.	None		5/22/2007	12

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Variation of Supply Voltage

The primary supply voltage was varied from 85% to 115% of nominal. The EUT can only be operated from the public AC mains, so an AC lab supply was used to vary the supply voltage from 115% to 85% of 120 V, 60 Hz.


Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-20° to +50° C) and at 10°C intervals.

Measurements were made at the single transmit frequency. The antenna is integral to the EUT, so a radiated measurement was made using a spectrum analyzer and a near field probe. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

EMC

Frequency Stability

EUT: Constellation Vision System (NGVS)		Work Order: ALCO0074	
Serial Number: 0702723711		Date: 11/20/07	
Customer: Alcon Laboratories, Inc.		Temperature: 24.46	
Attendees: Thai Lam		Humidity: 45%	
Project: None		Barometric Pres.: 1016.3 mb	
Tested by: Jaemi Suh		Power: 120VAC/60Hz	
Job Site: OC13			
TEST SPECIFICATIONS		Test Method	
FCC 15.225:2006		ANSI C63.4:2003	
COMMENTS			
RFID ON.			
DEVIATIONS FROM TEST STANDARD			
Configuration #	1	Signature 	
		Value	Limit
Temperature Frequency Stability		View Table	0.01% = 100 ppm
Voltage Frequency Stability		View Table	0.01% = 100 ppm
			Results
			Pass
			Pass

Frequency Stability

Temperature Frequency Stability

Result: Pass**Value:** View Table**Limit:** 0.01% = 100 ppm

Frequency Stability with Variation of Ambient Temperature (Primary Supply = 120 VAC)

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Specification (ppm)
50	13.560000	13.560750	55.31	100
40	13.560000	13.560630	46.46	100
30	13.560000	13.560500	36.87	100
20	13.560000	13.560380	28.02	100
10	13.560000	13.560380	28.02	100
0	13.560000	13.560630	46.46	100
-10	13.560000	13.560750	55.31	100
-20	13.560000	13.560380	28.02	100

Voltage Frequency Stability

Result: Pass**Value:** View Table**Limit:** 0.01% = 100 ppm

Frequency Stability with Variation of AC Supply Voltage (Ambient Temperature = 20°C)

Voltage (Vac)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Specification (ppm)
138.0	13.560000	13.560452	33.33	100
132.0	13.560000	13.560452	33.33	100
126.0	13.560000	13.560438	32.30	100
120.0	13.560000	13.560435	32.08	100
114.0	13.560000	13.560423	31.19	100
108.0	13.560000	13.560428	31.56	100
102.0	13.560000	13.560420	30.97	100

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

RFID Radio On

MODE USED FOR FINAL DATA

RFID Radio On

POWER SETTINGS INVESTIGATED

120VAC/60Hz

POWER SETTINGS USED FOR FINAL DATA

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED

Start Frequency	10 KHz	Stop Frequency	1000 MHz
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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	AXJ	3/14/2006	24
Pre-Amplifier	Miteq	AM-1616-1000	AOM	12/17/2006	13
OC10 cables a,b,c,d Bilog			OCH	12/17/2006	13
Spectrum Analyzer	Agilent	E4446A	AAQ	1/18/2007	13
Antenna, Loop	EMCO	6502	AZB	12/2/2006	24

MEASUREMENT BANDWIDTHS

Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(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

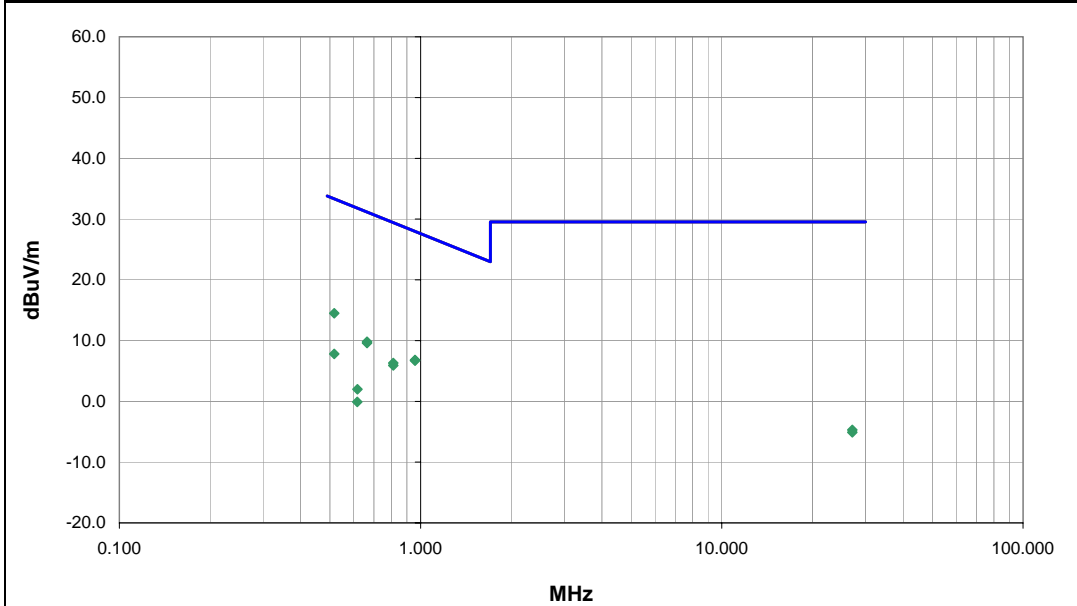
Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting and receiving while set at the lowest channel, a middle channel, and the highest channel available. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003).

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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments																																																																																																																																																																												
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0.664	39.0	10.6	94.0	1.0	3.0	0.0	Loop	QP	40.0	9.6	31.2	-21.6	Par/Gnd, Perp/EUT																																																																																																																																																																												
0.812	35.7	10.6	74.0	1.0	3.0	0.0	Loop	QP	40.0	6.3	29.4	-23.1	Par/Gnd, Perp/EUT																																																																																																																																																																												
0.812	35.3	10.6	80.0	1.0	3.0	0.0	Loop	QP	40.0	5.9	29.4	-23.5	Par/Gnd, Perp/EUT																																																																																																																																																																												
0.517	37.1	10.7	170.0	1.3	3.0	0.0	Loop	QP	40.0	7.8	33.3	-25.5	Par/Gnd, Perp/EUT																																																																																																																																																																												
0.617	31.4	10.6	104.0	1.0	3.0	0.0	Loop	QP	40.0	2.0	31.8	-29.8	Par/Gnd, Perp/EUT																																																																																																																																																																												
0.616	29.3	10.6	57.0	1.0	3.0	0.0	Loop	QP	40.0	-0.1	31.8	-31.9	Par/Gnd, Perp/EUT																																																																																																																																																																												
27.121	26.3	9.0	100.0	1.0	3.0	0.0	Loop	QP	40.0	-4.7	29.5	-34.2	Par/Gnd, Perp/EUT																																																																																																																																																																												
27.121	25.9	9.0	346.0	1.0	3.0	0.0	Loop	QP	40.0	-5.1	29.5	-34.6	Par/Gnd, Perp/EUT																																																																																																																																																																												