Alcon Laboratories, Inc.

Constellation Vision System (NGVS)

January 17, 2008

Report No. ALCO0074.1 Rev. 1

Report Prepared By



www.nwemc.com 1-888-EMI-CERT

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22975 NW Evergreen Parkway Suite 400 Hillsboro, Oregon 97124

Certificate of Test

Issue Date: January 17, 2008 Alcon Laboratories, Inc.

Model: Constellation Vision System (NGVS)

Emissions					
Test Description	Specification	Test Method	Pass/Fail		
Spurious Radiated Emissions	FCC 15.247(DTS):2006	ANSI C63.4:2003 KDB No. 558074	Pass		
Radiated Emissions	FCC 15.109(g) (CISPR 22:1997):2006 Class A	ANSI C63.4:2003	Pass		
AC Power Line Conducted Emissions	FCC 15.207:2006	ANSI C63.4:203	Pass		

Modifications made to the product

See the Modifications section of this report

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.

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 History

Revision 05/05/03

Revision Number	Description	Date	Page Number
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.



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 TUV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories, available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV'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



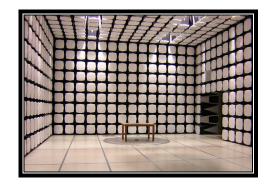
MIC: Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157)



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

Product Description

Rev 11/17/06

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:	December 13, 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):

WiFi Radio operating in the 2.480-2.4835 MHz band.

Testing Objective:

To demonstrate compliance to FCC requirements in support of a Class II Permissive Change.

Configurations

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 Hand piece	Alcon	8065750888	Beta #02			
Laser Indirect Ophthalmoscope	Alcon	8065751050	0703245401X			
Diathermy	Alcon	8065807901	None			
Barcode Scanner	Metrologic Instruments	MS9544	None			
Power Generator 150PSI	Porter Cable Corp	C2006	2767056720			
Doctor Filter	Alcon	8065750260	0502860502X			
Doctor Filter	Alcon	8065750260	0601862302X			

Configurations

Revision 9/21/05

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Cable	No	3.6m	No	Constellation Vision System	AC Mains
Doctor Filter (2)	No	10m	No	Doctor Filter	Constellation Vision System
Composite Video Cable (2)	No	3.4m	No	Constellation Vision System	Unterminated
S-Video Cable (2)	No	1.9m	No	Constellation Vision System	Unterminated
Video Overlay Cable	No	7.5m	No	Constellation Vision System	Unterminated
VGA	No	1.7m	No	Constellation Vision System	Unterminated
Ethernet Cable	Yes	4.1m	No	Constellation Vision System	Remote Laptop
Laser Tether Cable	No	1.9m	No	Constellation Vision System	Unterminated
Audio Cable/MP3	No	1.9m	No	Constellation Vision System	Unterminated
Ethernet Cable	Yes	4.1m	No	Constellation Vision System	Unterminated
Foot Switch Cable	No	4.5m	No	Constellation Vision System	PurePoint Footswitch
LIO Cable	Yes	6.7m	No	Constellation Vision System	Laser Indirect Ophthalmoscope
Foot Switch Cable	Yes	5.5m	No	Constellation Vision System	Constellation Footswitch
Scanner Cable	No	.7m	No	Barcode Scanner	Constellation Vision System
Diathermy Cable	No	3.5m	No	Constellation Vision System	Diathermy
Hand piece Infiniti Ultrasound Cable	No	2m	No	Hand piece Infiniti Ultrasound	Constellation Vision System
Constellation Fragmentation Hand piece Cable	No	2m	No	Constellation Fragmentation Hand piece	Constellation Vision System
Serial Cable	No	1.9m	No	Constellation Vision System	Unterminated
AC Cable	No	30cm	No	Constellation Vision System	AC Mains
AC Cable	No	50cm	No	Constellation Vision System	AC Mains

Revision 4/28/03

	Equipment modifications						
Item	Date	Test	Modification	Note	Disposition of EUT		
1	11/20/2007	Spurious 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	11/26/2007	Radiated Emission	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	12/13/2007	AC Power Line Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing 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.

MODES OF OPERATION

Standby Mode

MODE USED FOR FINAL DATA

Standby Mode

POWER SETTINGS INVESTIGATED

120VAC/60Hz

POWER SETTINGS USED FOR FINAL DATA

120VAC/60Hz

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	3/14/2006	24
OC08 cables b,c,d,f			OCB	8/23/2007	13
Pre-Amplifier	Miteq	AM-1551	AOX	8/19/2006	24
Spectrum Analyzer	Agilent	E4443A	AAR	1/18/2007	13

MEASUREMENT BANDWIDTHS							
Frequence	cy Range	Peak Data	Quasi-Peak Data	Average Data			
(Mi	Hz)	(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 b	andwidths and detec	ctors specified. No video filte	er was used.			

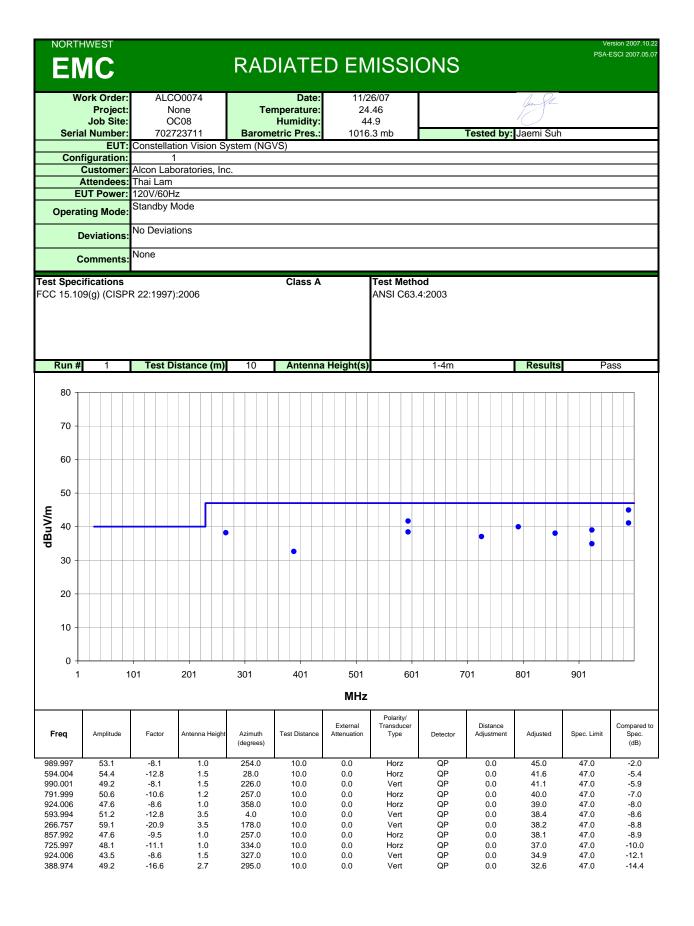
MEASUREMENT UNCERTAINTY

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, 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 will be detected. This requires the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search is 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 shall be 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 shall be increased so that the lowest point of the bottom of the antenna clears the ground surface by at least 25 cm.



SPURIOUS 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.

MODES OF OPERATION

Channel 1. Idle Mode. 802.11 b/g On. Channel 6. Idle Mode. 802.11 b/g On. Channel 11. Idle Mode. 802.11 b/g On.

MODE USED FOR FINAL DATA

Channel 1. Idle Mode. 802.11 b/g On. Channel 6. Idle Mode. 802.11 b/g On. Channel 11. Idle Mode. 802.11 b/g On.

POWER SETTINGS INVESTIGATED

120VAC/60Hz

POWER SETTINGS USED FOR FINAL DATA

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED						
Start Frequency	30 MHz	Stop Frequency	26 GHz			

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
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	7/11/2006	24
Antenna, Horn	EMCO	3160-09	AHN	NCR	0
OC10 SMA cable for 18026 GHz			OCK	7/11/2006	24
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	10/13/2006	24
Antenna, Horn	ETS	3160-08	AHT	NCR	0
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	10/13/2006	24
Antenna, Horn	ETS	3160-07	AHR	NCR	24
OC 10 Cables a, b, c, I Cables			OCO	1/14/2007	13
Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	1/14/2007	13
Antenna, Horn	EMCO	3115	AHB	8/31/2007	24
OC10 cables a,b,c,e,f Horn Cables			OCJ	7/23/2007	13
Antenna, Biconilog	EMCO	3142	AXJ	3/14/2006	24
OC10 cables a,b,c,d Bilog			OCH	12/17/2006	13
Pre-Amplifier	Miteq	AM-1616-1000	AOM	12/17/2006	13
Spectrum Analyzer	Agilent	E4446A	AAQ	1/18/2007	13

IEASUREMENT 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 u	sing the handwidths and dete	ctore enecified No video filte	ar was usad						

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 highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

SPURIOUS RADIATED EMISSIONS EMC EUT: Constellation Vision System (NGVS) Serial Number: 0702723711 Customer: Alcon Laboratories, Inc. Attendees: Thai Lam Project: None Tested by: Jaemi Suh TEST SPECIFICATIONS Work Order: ALCO0074 Date: 11/20/07 Temperature: 24.46 Humidity: 45% Barometric Pres.: 1016.3 mb Power: 120VAC/60Hz Job Site: OC10

FCC 15.247 (DTS):2006

ANSI C63.4:2003 KDB No. 558074

TEST PARAMETERS

Antenna Height(s) (m) 1 - 4 Test Distance (m)

COMMENTS
Channel 11. Band Edge Measurement at 2483.5 MHz. Data Rates Tested: 1, 6, 11, 36, 54 Mbps.

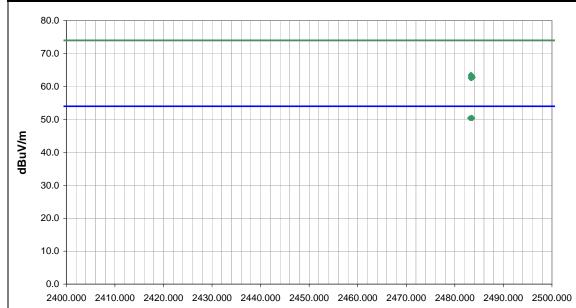
EUT OPERATING MODES

Idle Mode. RFID Radio On. 802.11 b/g On.
DEVIATIONS FROM TEST STANDARD

No deviations.

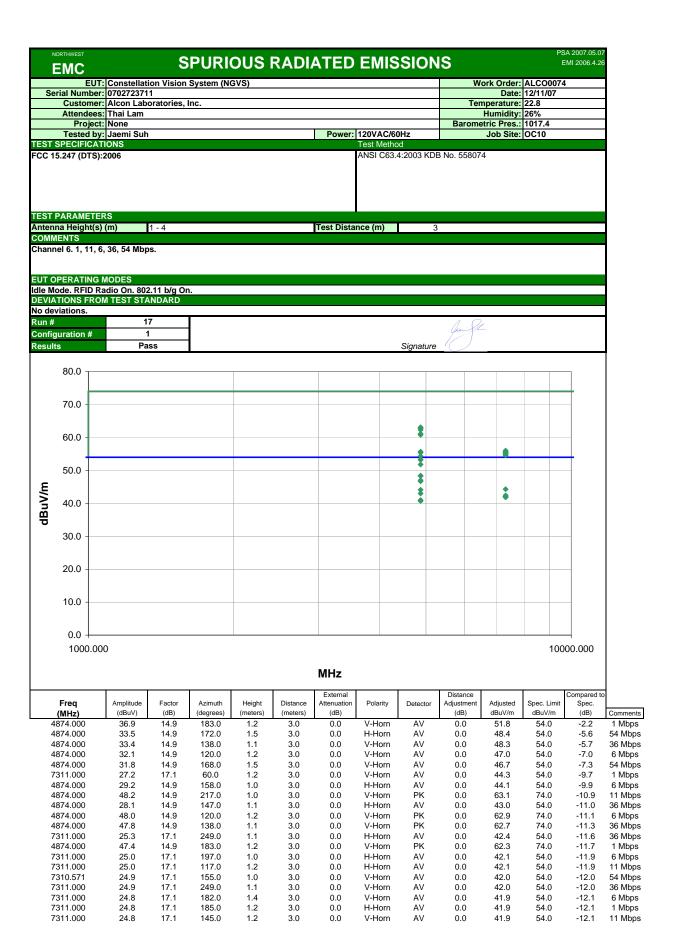
Run #	13
Configuration #	1
Results	Pass

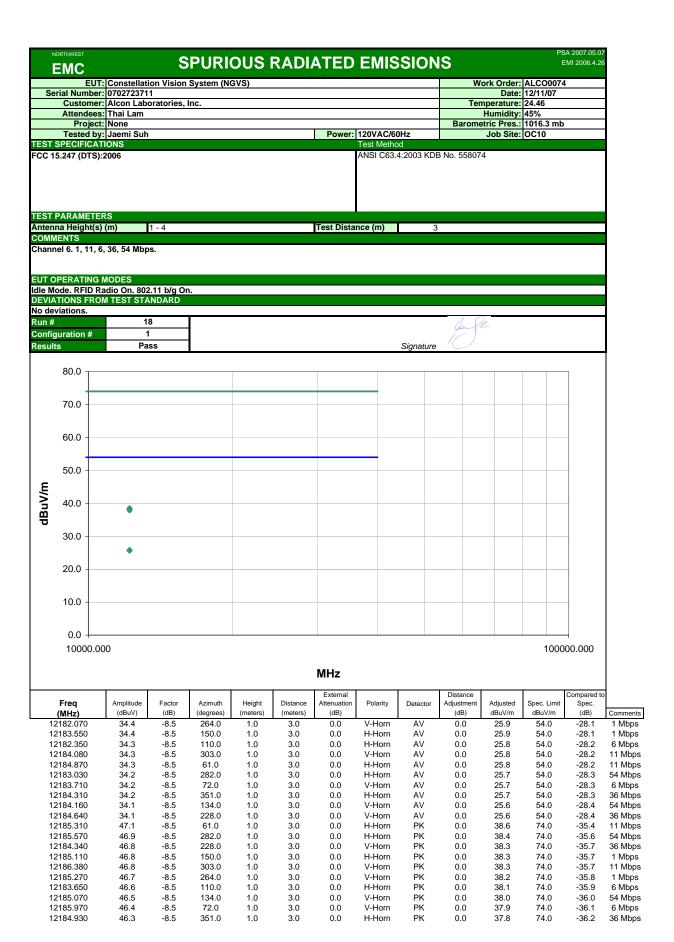
Signature

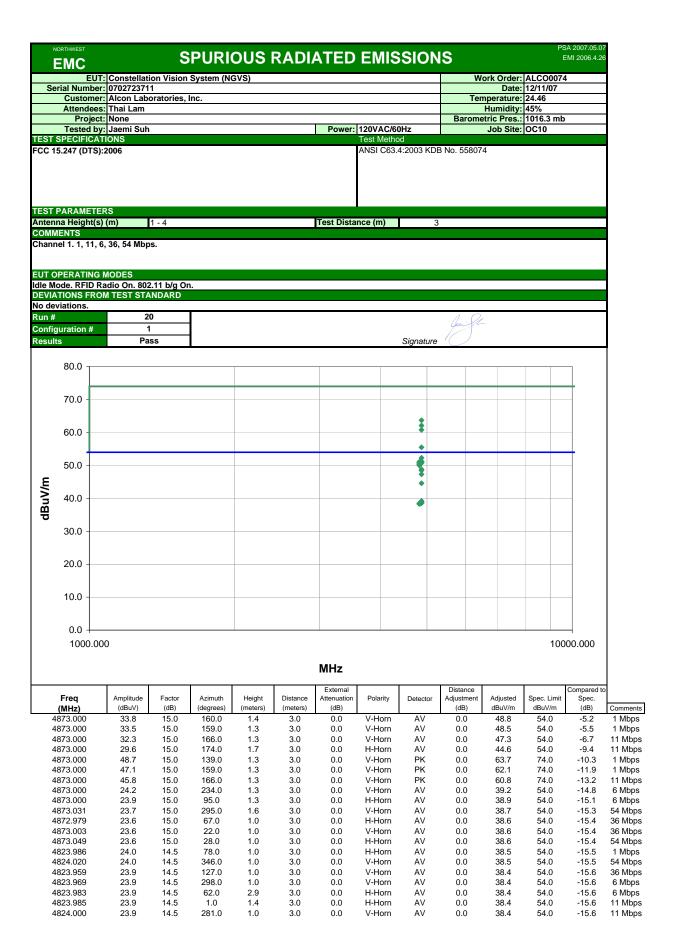


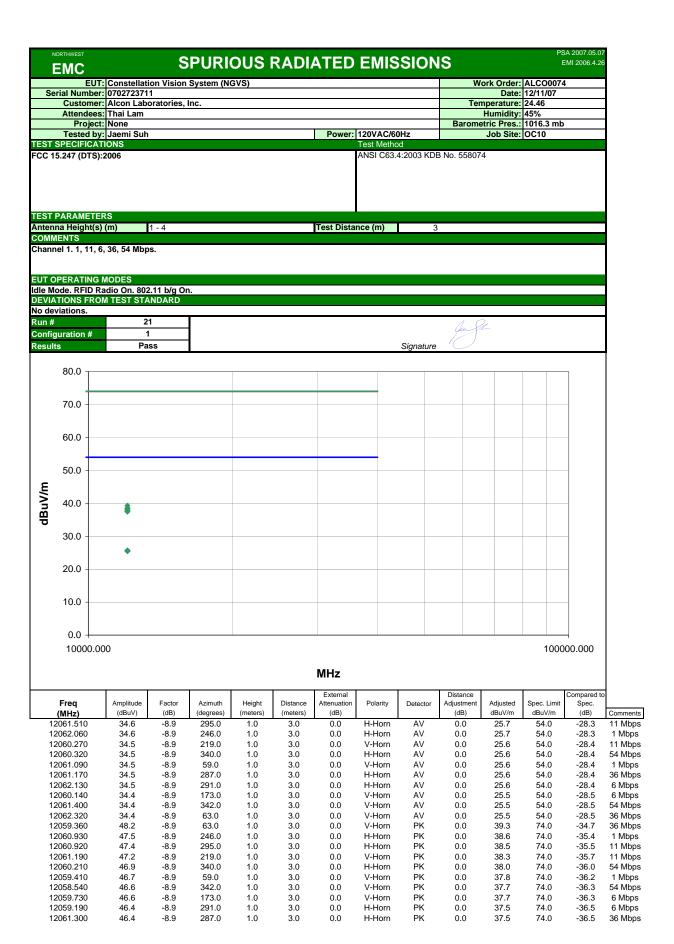
MHz

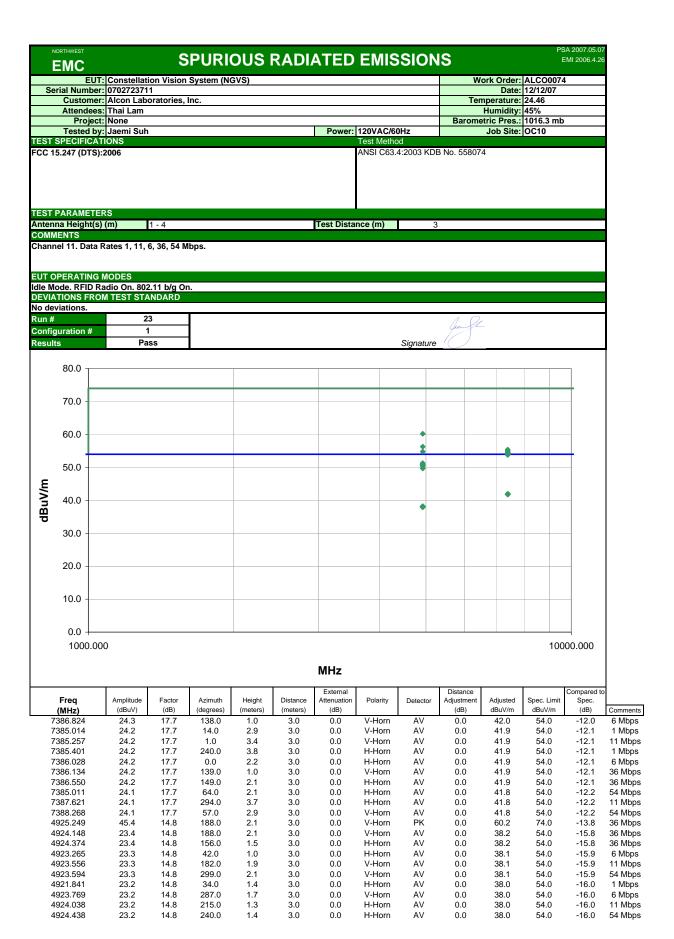
						External			Distance			Compared to	
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.	
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)	Comments
2483.450	25.0	5.5	241.0	1.0	0.0	20.0	V-Horn	AV	0.0	50.5	54.0	-3.5	36 Mbps
2483.463	25.0	5.5	221.0	2.8	0.0	20.0	H-Horn	AV	0.0	50.5	54.0	-3.5	54 Mbps
2483.118	24.9	5.5	235.0	1.0	0.0	20.0	V-Horn	AV	0.0	50.4	54.0	-3.6	1 Mbps
2483.270	24.9	5.5	72.0	1.0	0.0	20.0	V-Horn	AV	0.0	50.4	54.0	-3.6	54 Mbps
2483.473	24.9	5.5	77.0	1.0	0.0	20.0	V-Horn	AV	0.0	50.4	54.0	-3.6	6 Mbps
2483.488	24.9	5.5	359.0	1.4	0.0	20.0	H-Horn	AV	0.0	50.4	54.0	-3.6	1 Mbps
2483.528	24.9	5.5	19.0	2.8	0.0	20.0	H-Horn	AV	0.0	50.4	54.0	-3.6	36 Mbps
2483.582	24.9	5.5	233.0	3.0	0.0	20.0	H-Horn	AV	0.0	50.4	54.0	-3.6	6 Mbps
2483.589	24.9	5.5	42.0	2.9	0.0	20.0	H-Horn	AV	0.0	50.4	54.0	-3.6	11 Mbps
2483.629	24.9	5.5	295.0	1.0	0.0	20.0	V-Horn	AV	0.0	50.4	54.0	-3.6	11 Mbps
2483.323	38.1	5.5	221.0	2.8	0.0	20.0	H-Horn	PK	0.0	63.6	74.0	-10.4	54 Mbps
2483.400	37.9	5.5	72.0	1.0	0.0	20.0	V-Horn	PK	0.0	63.4	74.0	-10.6	54 Mbps
2483.255	37.7	5.5	295.0	1.0	0.0	20.0	V-Horn	PK	0.0	63.2	74.0	-10.8	11 Mbps
2483.615	37.7	5.5	19.0	2.8	0.0	20.0	H-Horn	PK	0.0	63.2	74.0	-10.8	36 Mbps
2483.579	37.6	5.5	77.0	1.0	0.0	20.0	V-Horn	PK	0.0	63.1	74.0	-10.9	6 Mbps
2483.460	37.4	5.5	233.0	3.0	0.0	20.0	H-Horn	PK	0.0	62.9	74.0	-11.1	6 Mbps
2483.706	37.2	5.5	42.0	2.9	0.0	20.0	H-Horn	PK	0.0	62.7	74.0	-11.3	11 Mbps
2483.261	37.1	5.5	241.0	1.0	0.0	20.0	V-Horn	PK	0.0	62.6	74.0	-11.4	36 Mbps
2483.280	37.0	5.5	235.0	1.0	0.0	20.0	V-Horn	PK	0.0	62.5	74.0	-11.5	1 Mbps
2483.441	37.0	5.5	359.0	1.4	0.0	20.0	H-Horn	PK	0.0	62.5	74.0	-11.5	1 Mbps

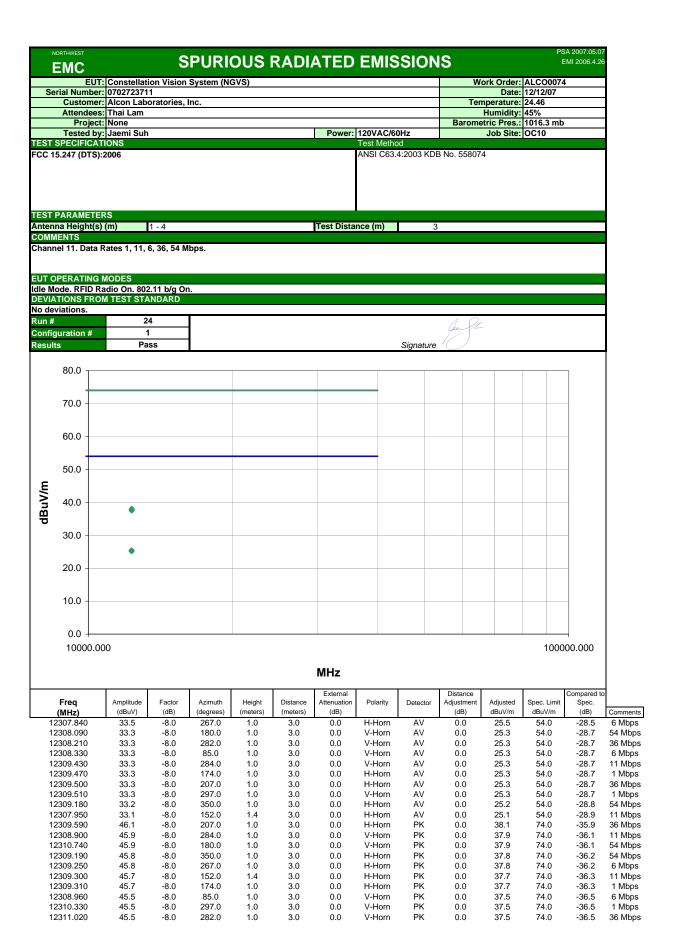














AC POWERLINE CONDUCTED EMISSIONS

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

802.11 On. RFID On. Channel 1 (Low Channel)

802.11 On. RFID On. Channel 6 (Mid Channel)

802.11 On. RFID On. Channel 11 (High Channel)

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

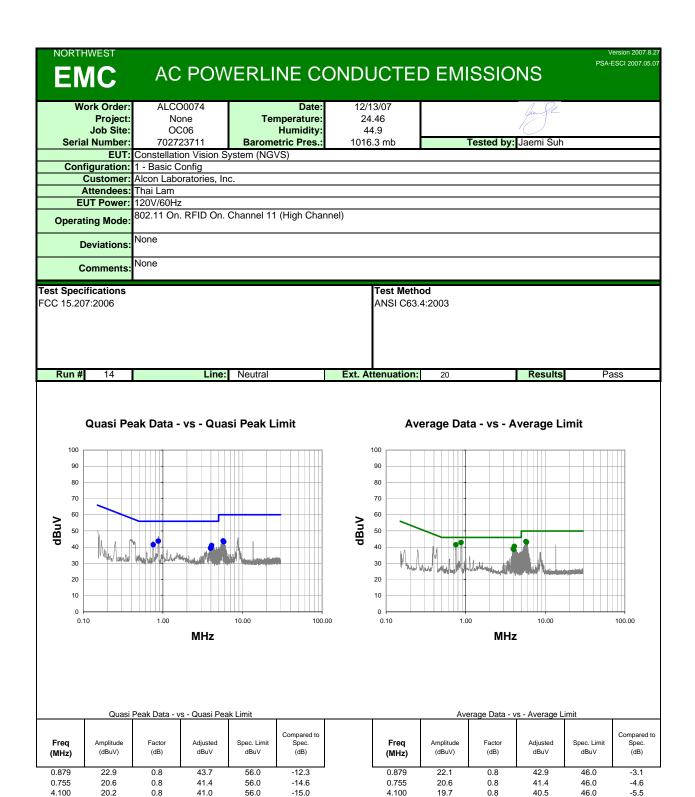
ASUREMENT	BANDWIDTHS			
	Frequency Range	Peak Data	Quasi-Peak Data	Average Data
	(MHz)	(kHz)	(kHz)	(kHz)
	0.01 - 0.15	1.0	0.2	0.2
	0.15 - 30.0	10.0	9.0	9.0
	30.0 - 1000	100.0	120.0	120.0
	Above 1000	1000.0	N/A	1000.0
Ň	Measurements were made us	ing the bandwidths and dete	ectors specified. No video filte	er 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 .



5.840

3.976

4.024

22.6

22.2

18.1

17.7

0.8

0.8

43.4

43.0

38.9

50.0

46.0

46.0

-6.6

-7.0

-7.1

-7.5

56.0

60.0

56.0

-16.1

-16.2

-16.7

-16.7

4.024

5.718

5.840

3.976

19.1

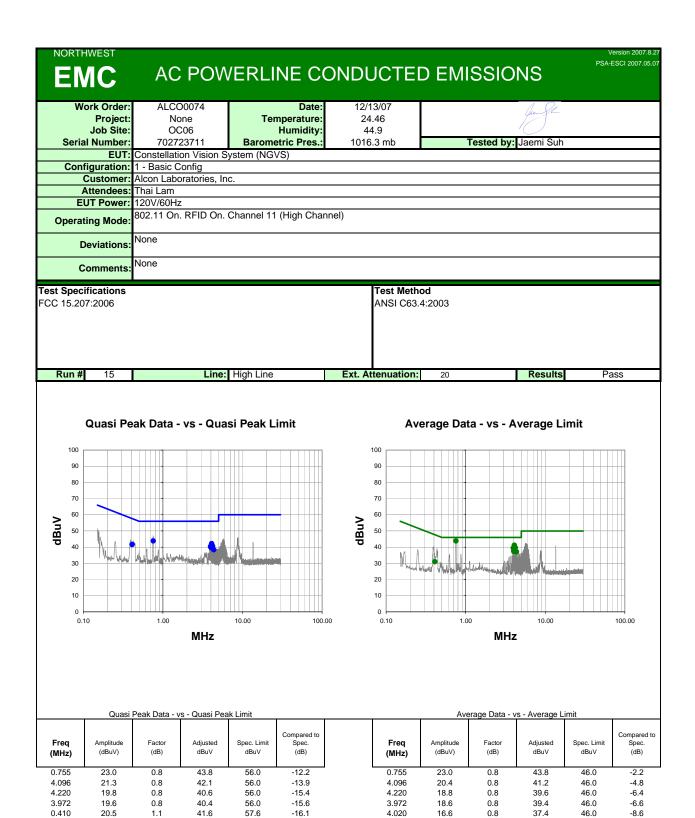
22.5

8.0

8.0

39.9

43.3



4.344

18.9

8.0

39.7

56.0

56.0

-16.3

-17.6

4.344

0.410

16.3

0.8

37.1

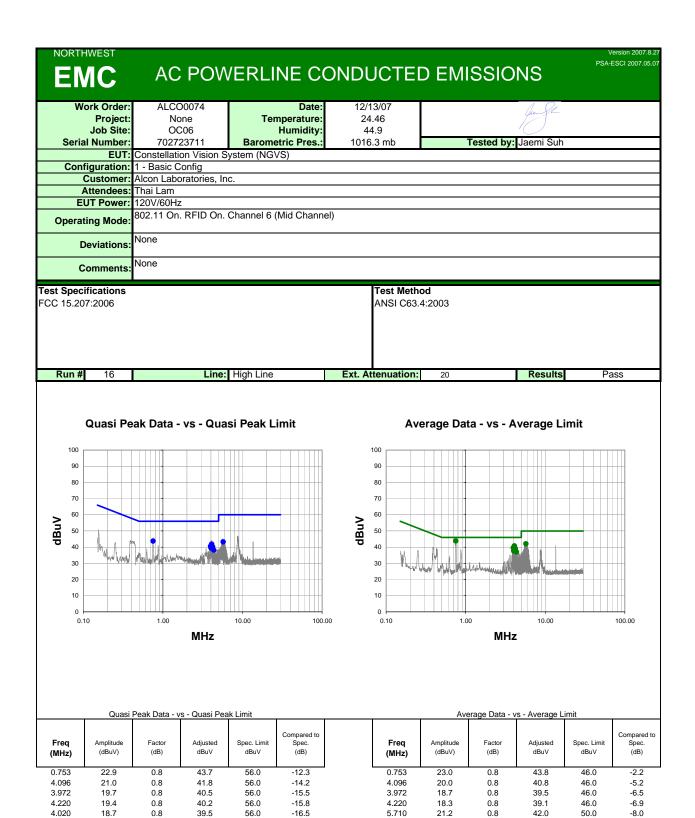
31.0

46.0

47.6

-8.9

-16.7



4.344

22.4

8.0

43.2

60.0

56.0

-16.8

-17.8

4.020

4.344

16.8

16.2

0.8

37.6

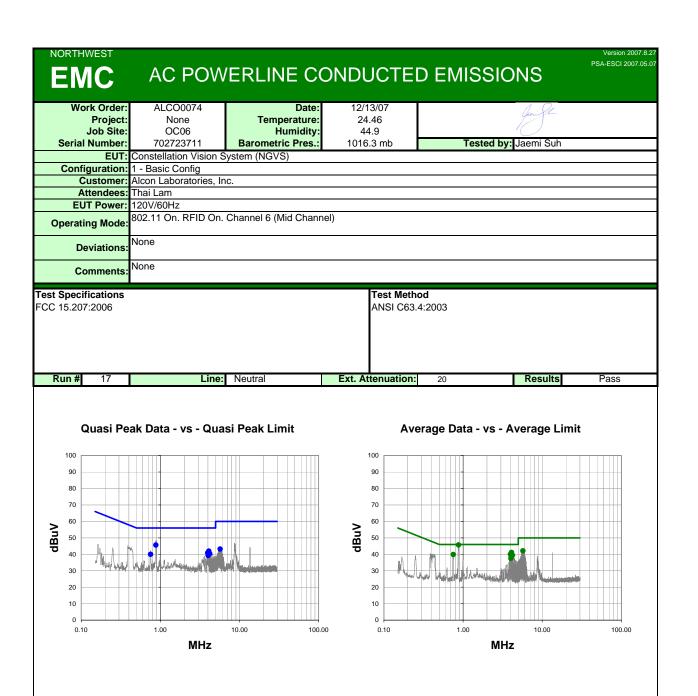
37.0

46.0

46.0

-8.4

-9.0



Average Data - vs - Average Limit

(dB)

0.8

0.8

0.8

0.8

0.8

0.8

0.8

Adjusted

dBuV

45.7

41.1

39.9

39.8

39.4

42.1

37.5

dBuV

46.0

46.0

46.0

46.0

46.0

50.0

46.0

Compared to

(dB)

-0.3

-4.9

-6.1

-6.2

-6.6

-7.9

-8.5

Quasi Peak Data - vs - Quasi Peak Limit

(dB)

0.8

0.8

0.8

0.8

0.8

0.8

0.8

Adjusted

dBuV

45.6

41.9

40.8

40.3

39.9

39.3

43.1

Freq

(MHz)

0.879

4.096

3.972

4.220

0.755

4.020

5.710

Amplitude

(dBuV)

24.8

21.1

20.0

19.5

19.1

18.5

22.3

Compared to

(dB)

-10 4

-14.1

-15.2

-15.7

-16.1

-16.7

-16.9

Freq

(MHz)

0.879

4.096

3.972

0.755

4.220

5.710

4.020

Amplitude

(dBuV)

24.9

20.3

19.1

19.0

18.6

21.3

16.7

Spec. Limit

dBuV

56.0

56.0

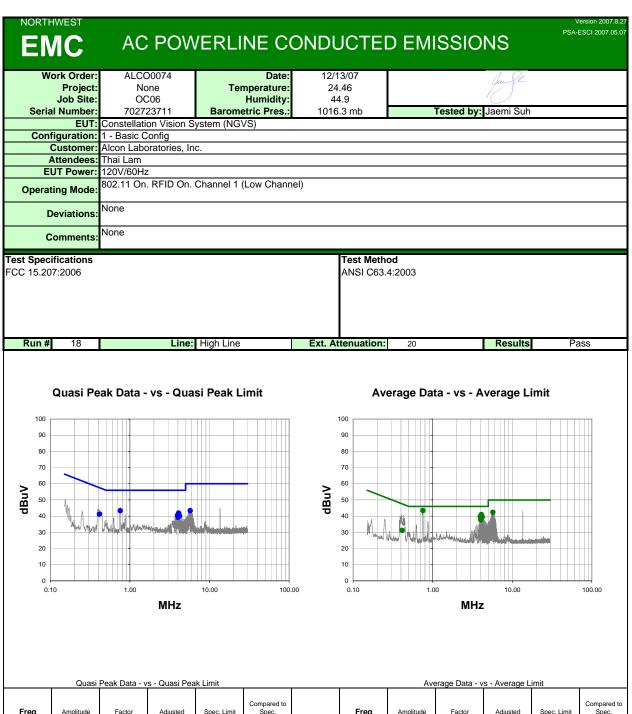
56.0

56.0

56.0

56.0

60.0



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)	Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.755	22.5	0.8	43.3	56.0	-12.7	0.755	22.6	8.0	43.4	46.0	-2.6
4.096	21.0	0.8	41.8	56.0	-14.2	4.096	20.2	0.8	41.0	46.0	-5.0
3.972	19.7	8.0	40.5	56.0	-15.5	3.972	18.9	8.0	39.7	46.0	-6.3
4.220	19.4	0.8	40.2	56.0	-15.8	4.220	18.6	0.8	39.4	46.0	-6.6
0.415	20.1	1.1	41.2	57.5	-16.4	5.710	21.5	0.8	42.3	50.0	-7.7
5.710	22.5	0.8	43.3	60.0	-16.7	4.020	16.9	0.8	37.7	46.0	-8.3
4.020	18.5	8.0	39.3	56.0	-16.7	0.415	10.1	1.1	31.2	47.5	-16.4

0.415

0.753

5.710

4.220

20.0

20.6

19.2

22.6

18.5

0.8

1.1

0.8

0.8

40.8

41.7

40.0

43.4

39.3

56.0

57.5

56.0

60.0

-15.2

-15.9

-16.0

-16.6

-16.7

0.753

3.972

5.710

4.220

0.415

19.1

19.1

21.5

17.5

10.5

8.0

8.0

0.8

8.0

39.9

39.9

42.3

38.3

46.0

46.0

50.0

46.0

47.5

-6.1

-6.1

-7.7

-7.7

-16.0