

APPENDIX I

Band-edge



Radiated Emissions, CFR Title 47, FCC Part 15

Manufacturer:	Transparent Technologies	Project Number:	A80432
Customer Representative:	Mark Shamley	Test Area:	10m
Model:	NRD1	S/N:	101
Standard Referenced:	FCC Part 15 Class B	Date:	April 24, 2008
Temperature:	21°C	Humidity:	19%
Input Voltage:	120VAC / 60Hz	Pressure:	837mb
Configuration of Unit:	Transmit at low-band, mid-band and high-band, respectively		
Test Engineer:	Donald Lighthart		

A80432-22-RE.doc

FR0100

Frequency Range	Band-Edge Measurement
Low-band	Amplitude at 902.0 MHz is 43.80 dB down from signal, as measured with a 120 kHz RBW and QP
High-band	Amplitude at 928.0 MHz is 42.90 dB down from signal, as measured with a 120 kHz RBW and QP

Conclusion: Product complies with Band-Edge requirement of FCC Part 2.1051, which states that **“...the magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.”**



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FR0100

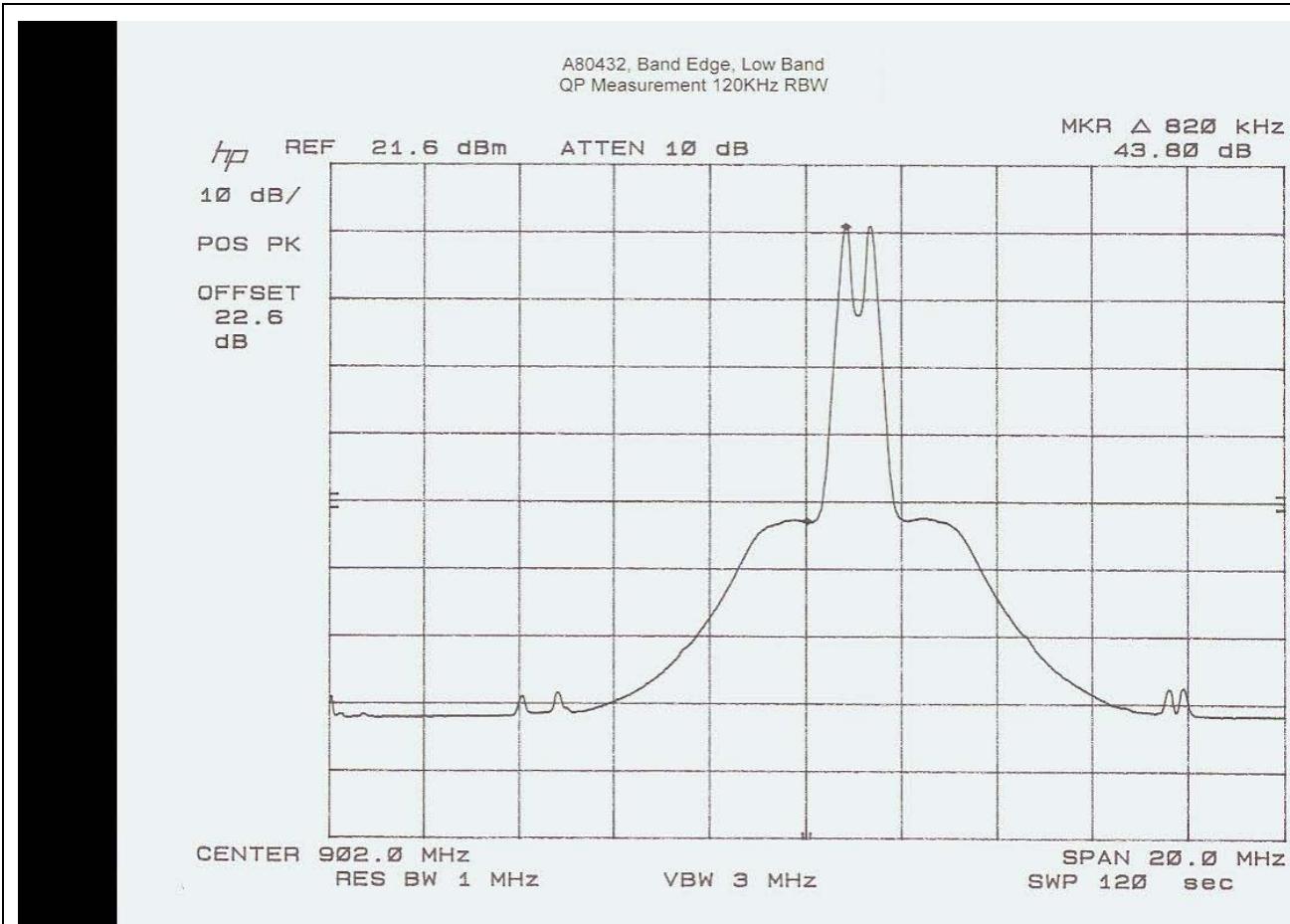


Figure I1. Band-Edge Measurement, Low-band.



Radiated Emissions, CFR Title 47, FCC Part 15

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Model:	NRD1	S/N:	101
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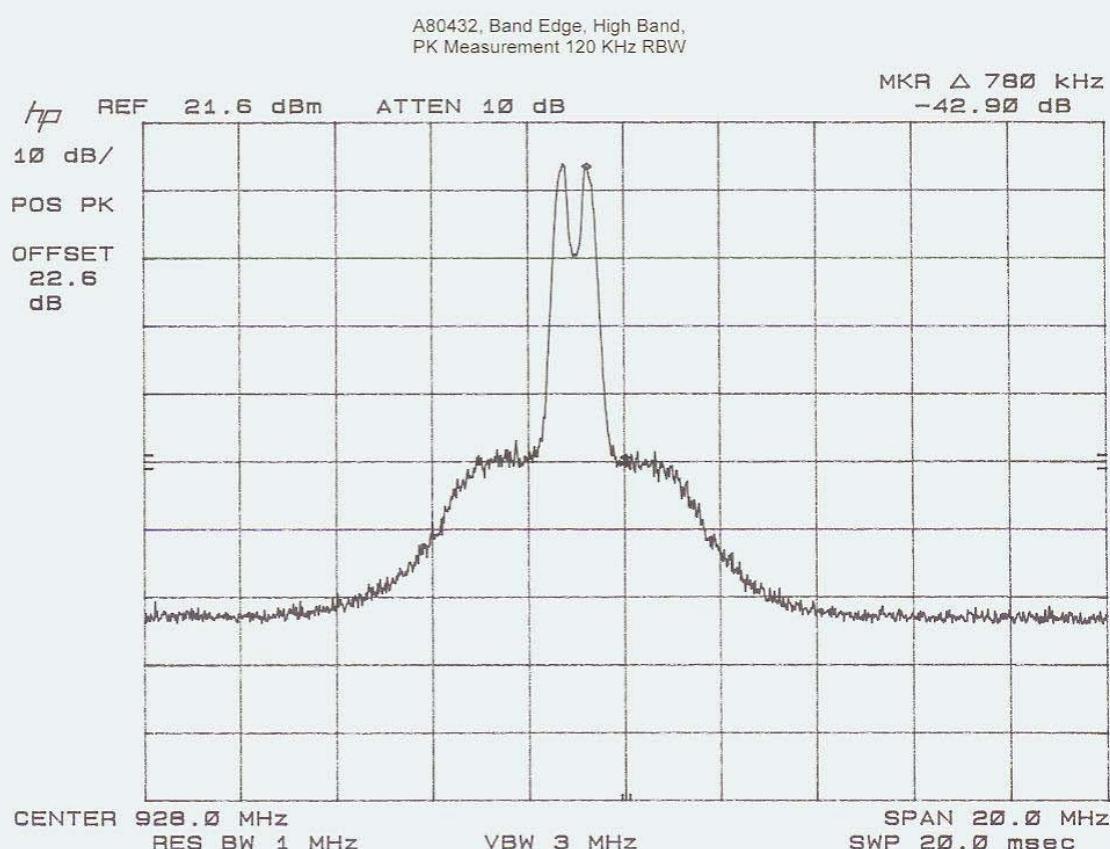


Figure I2. Band-Edge Measurement, High-band.



Radiated Emissions, CFR Title 47, FCC Part 15

Manufacturer:	Transparent Technologies	Project Number:	A80432
Customer Representative:	Mark Shamley	Test Area:	10m
Model:	NRD1	S/N:	101
Standard Referenced:	FCC Part 15 Class B	Date:	April 24, 2008

A80432-22-RE.doc

FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1263	Hewlett Packard	8566B	3014A06873	Spectrum Analyzer, 100 Hz to 22 GHz	08/21/2007	08/21/2008
1264	Hewlett Packard	85662A	2848A18247	Spectrum Analyzer Display	08/21/2007	08/21/2008
1265	Hewlett Packard	85650A	2521A00641	Quasi-Peak Adapter	08/21/2007	08/21/2008
NA	Transparent Technologies	NA	NA	Coaxial Cable, N-type male connector, each end	NA	NA
NA	Pasternack	PE7004-10	NA	10 dB Attenuator, DC-18 GHz, 1 Watt	NA	NA
NA	Pasternack	PE7014-10	NA	10 dB Attenuator, DC-18 GHz, 2 Watt	NA	NA

APPENDIX J

EMI Test Log



EMI Test Log

Manufacturer:	Transparent Technologies	Project Number:	A80432
Model:	NRD1	S/N:	101
Customer Representative:	Mark Shamley		
Standard Referenced:	FCC Part 15 Class B		

FR0105

Test	Test Code	Date	Event	Time (hrs)	Result	Initials
RE	13410	April 24, 2008 1800	Test# 1, 30MHz – 2GHz, 8 radials, 4 heights, 3 sec. Dwell, 80dB Ref Level, 2 notch filters and a 3dB attenuator in signal path, 120VAC / 60Hz – 902.97MHz is primary transmit frequency – Including setup time 1933MHz & 1963MHz are ambients	1.0	Pass	DL
		1930	Test# 2, 2GHz – 10GHz, 16 radials, 3 heights, 3 sec. Dwell, 107dB Ref Level, 120VAC / 60Hz – 902.97MHz is primary transmit frequency –Performed with 3dB of additional attenuation that didn't exist data will be modified in report manually - DL	1.0	Pass	DL
		2030	Test# 3, 2GHz – 10GHz, 16 radials, 3 heights, 3 sec. Dwell, 107dB Ref Level, 120VAC / 60Hz – 916.85MHz is primary transmit frequency	1.0	Pass	DL
		9130	Test# 4, 30MHz – 2GHz, 8 radials, 4 heights, 3 sec. Dwell, 80dB Ref Level, 120VAC / 60Hz – 916.85MHz is primary transmit frequency	1.0	Pass	DL
RE		April 25, 2008 0800	Test# 5, 30MHz – 2GHz, 8 radials, 4 heights, 3 sec. Dwell, 80dB Ref Level, 120VAC / 60Hz – 925.89MHz is primary transmit frequency 536 and 1962MHz are ambient signals	1.5	Pass	KJ
		0930	Test# 6, 2GHz – 10GHz, 16 radials, 3 heights, 3 sec. Dwell, 107dB Ref Level, 120VAC / 60Hz – 925.84MHz is primary transmit frequency	1.5	Pass	KJ
		1100	Test# 7, 30MHz – 2GHz, 8 radials, 4 heights, 3 sec. Dwell, 80dB Ref Level, 120VAC / 60Hz Rx Mode 1936 and 1961MHz are ambient signals	1.0	Pass	KJ
		1200	Tec Meeting	0.5	---	KJ
		1230	Lunch	0.5	---	KJ
		1300	Test# 8, 2GHz – 10GHz, 16 radials, 3 heights, 3 sec. Dwell, 107dB Ref Level, 120VAC / 60Hz RX mode	1345	Pass	KJ / DL
		1400	6dB bandwidth Testing	1.0	Pass	VG
		1500	Power Spectral Density Testing	1.0	Pass	VG
		1600	Peak Output Power Testing	1.0	Pass	VG
CE	2342	1700	Test# 9-10 150kHz – 30MHz 3sec Dwell, 80dB Ref. Level 120VAC / 60Hz –CE Troubleshooting	0.75	---	DL
		1745	Test# 11 150kHz – 30MHz 3sec Dwell, 80dB Ref. Level 120VAC / 60Hz – Tx Low band – CE Modification added – Corcom 3VB3 Line Filter	0.5	Pass	DL



EMI Test Log

Manufacturer: Transparent Technologies
Model: NRD1
Customer Representative: Mark Shamley
Standard Referenced: FCC Part 15 Class B

Project Number: A80432
S/N: 101

FR0105

Test	Test Code	Date	Event	Time (hrs)	Result	Initials
						
		1815	Test# 12 150kHz – 30MHz 3sec Dwell, 80dB Ref. Level 120VAC / 60Hz – Tx Mid band – CE Modification added – Corcom 3VB3 Line Filter	0.5	Pass	DL
		1845	Test# 13 150kHz – 30MHz 3sec Dwell, 80dB Ref. Level 120VAC / 60Hz – Tx High band – CE Modification added – Corcom 3VB3 Line Filter	0.5	Pass	DL
		1915	Test# 13 150kHz – 30MHz 3sec Dwell, 80dB Ref. Level 120VAC / 60Hz – Rx Mode – CE Modification added – Corcom 3VB3 Line Filter	0.5	Pass	DL

APPENDIX K

Laboratory Accreditations



Nemko Laboratory Authorization

Authorization: ELA 215

EMC Laboratory: **EMC Integrity, Inc.**
1736 Vista View Drive
Longmont, Colorado 80504
USA

Scope of Authorization: **All CENELEC standards [ENs] for EMC that are listed on the accompanying page, and all of the corresponding CISPR, IEC and ISO EMC standards that are listed on the accompanying page.**

Nemko has assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10. During the visit by the Nemko representative it was found that the Laboratory is capable of performing tests within the Scope of the Authorisation.

Accordingly, Nemko will normally accept test results from the laboratory on a partial or complete basis for certification of the products.

In order to maintain the Authorisation, the information given in the pertinent NLA-10 must be carefully followed. Nemko is to be promptly notified about any changes in the situation at the Laboratory, which may affect the basis for this Authorisation. The Authorisation may be withdrawn at any time if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through December 31, 2008.

Dallas, Texas, USA.

For and on behalf of Nemko AS:

A handwritten signature of 'T.B. Ketterling' in black ink.

T.B. Ketterling,
Nemko ELA Co-ordinator

Region: North America



**Nemko Laboratory
Authorization**
Authorization: ELA 215

SCOPE OF AUTHORIZATION

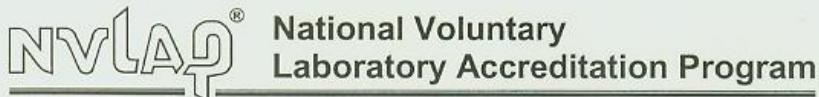
Capability to perform a basic test implies also that any product (family) standard calling up this basic test is also within the scope if mentioned below or not.

Generic & Product -Family Standards		
EN 55011 :1998+A1 :1999 +A2:2002 CISPR 11:1997 (Modified) + A1:1999 + A2:2002 CISPR 11 Ed. 4.1	EN 55014-1:2000 + A1:2001 + A2:2002 CISPR 14-1:2000 + A1:2001 + A2:2002 CISPR 14-1 Ed. 5.0	EN 55022: 1998+ A1:2000, +A2:2003 CISPR 22: 2003+ A1:2004 EN55022:2006 CISPR 22:2005 (Modified)
EN 55024: 1998 +A1:2001, +A2:2003 CISPR 24: 1997 +A1:2001, +A2:2002 CISPR 24 Ed. 1.0	EN 61000-6-1 :2007 IEC 61000-6-1 Ed. 2.0 EN 61000-6-1: 2001	EN 61000-6-2:2005 IEC 61000-6-2 Ed. 2.0
EN 61000-6-3 :2007 IEC 61000-6-3 Ed. 2.0 EN 61000-6-3: 2001 + A1 :2004	IEC 61000-6-2 Ed. 2.0 EN 61000-6-2: 2005 IEC 61000-6-2: 2005 EN 61000-6-2: 2001	EN 61326:1997 +A1:1998 + A2:2001 +A3:2003 IEC 61326:1997 + A1:1998 + A2:2000 IEC 61326:2002-02
EN 60601-1-2:2001 IEC 60601-1-2:2001 EN 60601-1-2:2006 IEC 60601-1-2 Ed. 2.1	EN 55103-1:1996 EN 55103-2 :1996	EN 300 386 V.1.3.1 EN 300 386 V.1.3.3
EN 61000-3-3: 1995, +A1:2001 +A2:2005 IEC 61000-3-3: 1994, +A1:2001 +A2:2005	EN 61000-3-2: 2000 +A2 :2005 IEC 61000-3-2: 2000 (Modified) +A1:2001 +A2:2004	BLANK
Basic Standards		
EN 61000-4-2:1995, +A1:1998, +A2:2000 IEC 61000-4-2:1995, +A1:1998, +A2:2000 IEC 61000-4-2 Ed. 1.2	EN 61000-4-3:2002, +A1:2002 IEC 61000-4-3:2002, +A1:2002 EN 61000-4-3 :2006 +A1 :2006 +A2 :2006 IEC 61000-4-3 Ed. 3.0	EN 61000-4-4:1995, +A1:2002, +A2:2002 IEC 61000-4-4:1995, +A1:2000, +A2:2001 EN 61000-4-4:2004 IEC 61000-4-4 Ed. 2.0
EN 61000-4-5:1995, +A1:2001 IEC 61000-4-5:1995, +A1:2000 EN 61000-4-5 :2006 IEC 61000-4-5 Ed. 2.0	EN 61000-4-6:1996, +A1:2001 IEC 61000-4-6:1996, +A1:2000 EN 61000-4-6 : 2006 IEC 61000-4-6 Ed. 2.2	EN 61000-4-8:1994,+A1:2001 IEC 61000-4-8:1994, +A1:2001 IEC 61000-4-8 Ed. 1.1
EN 61000-4-11:2004 IEC 61000-4-11 Ed. 2.0 EN 61000-4-11:1994, +A1:2000 IEC 61000-4-11:1994, +A1:2000	BLANK	BLANK

T.B.Ketterling

T.B. Ketterling, Nemko ELA Co-ordinator

Dallas, Texas December 7, 2006.



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMC Integrity, Inc.
1736 Vista View Drive
Longmont, CO 80504
Mr. Vincent W. Greb
Phone: 303-776-7249 Fax: 303-776-7314
E-Mail: vinceg@emcintegrity.com
URL: <http://www.emcintegrity.com>

**ELECTROMAGNETIC COMPATIBILITY
AND TELECOMMUNICATIONS**

NVLAP LAB CODE 200737-0

NVLAP Code Designation / Description

Emissions Test Methods:

12/100063c	IEC 61000-6-3 (1996), EN 61000-6-3 (2001), A1 (2004): Electromagnetic Compatibility (EMC) - Part 6: Generic standards - Section 3: Emission standard for residential, commercial, and light-industrial environments.
12/CIS11f	AS/NZS CISPR 11 (2002): Industrial, scientific and medical (ISM) radio frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement
12/CIS11g	IEC/CISPR 11, Ed. 4.1 (2004-06): Industrial, scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurements
12/CIS11h	AS/NZS CISPR 11 (2004): Industrial, scientific and medical (ISM) radio frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement
12/CIS11i	IEC/CISPR 11, Ed. 4.1 (2004-06) + A1(2004): Industrial, scientific and medical (ISM) radio frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement

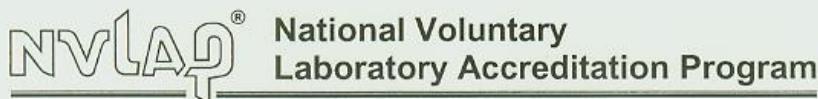
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12/CIS11j	EN 55011 (1998) + A1(1999), A2(2002): Industrial, scientific and medical (ISM) radio frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement
12/CIS11k	IEC/CISPR 11 (2003), EN 55011 (1998), A2(2002): Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical Radio-Frequency Equipment
12/CIS14b1	AS/NZS CISPR 14-1 (2003): Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission
12/CIS14x	IEC/CISPR 14-1, Ed. 4 (2003): Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission
12/CIS22	IEC/CISPR 22 (1997) & EN 55022 (1998) + A1(2000): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22 (1993) and EN 55022 (1994): Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1 (1995) and Amendment 2 (1996)
12/CIS22a4	IEC/CISPR 22 (1993) & EN 55022 (1994)+A1(1995), A2(1997): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22b	CNS 13438 (1997): Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/CIS22c	IEC/CISPR 22, Fourth Edition (2003-04) & EN 55022 (1998): Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
12/CIS22c1	IEC/CISPR 22, Edition 5 (2005) and EN 55022 (1998): Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement

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NVLAP LAB CODE 200737-0

NVLAP Code Designation / Description

12/CIS22c3	IEC/CISPR 22, Edition 5 (2005) + A1(2005): Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
12/CIS22c4	EN 55022 (1998) + A1(2000) + A2(2003): Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
12/EM02d	IEC 61000-3-2, Edition 2.2 (2004-11): Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A per phase)
12/EM03b	IEC 61000-3-3, Edition 1.1(2002-03) & EN 61000-3-3, A1(2001): EMC - Part 3-3; Limits - Limitations of voltage changes, voltage fluctuations and flicker, in public low-voltage supply-systems, for equipment with rated current <=16 A per phase and not subject to conditional connections
12/EM03g	IEC 61000-3-3, Edition 1.1 (2003) +A2 (2005): EMC Part 3-3: Limits - Limitations of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connections
12/F18	FCC OST/MP-5 (1986): FCC Methods of Measurement of Radio Noise Emissions for ISM Equipment (cited in FCC Method 47 CFR Part 18 - Industrial, Scientific, and Medical Equipment)
12/FCC15b	ANSI C63.4 (2003) with FCC Method 47 CFR Part 15, Subpart B: Unintentional Radiators
12/KN22	KN22 with RRL Notice No. 2005-82 (Sept. 29, 2005): RRL Notice No. 2005-82: Technical Requirements for Electromagnetic Interference Annex 8 (KN-22), RRL Notice No. 2005-131: Conformity Assessment Procedures for Electromagnetic Interference
12/T51	AS/NZS CISPR 22 (2002) and AS/NZS 3548 (1997): Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment
12/VCClA	VCCI: Agreement of Voluntary Control Council for Interference by Information Technology Equipment - Technical Requirements: V-3/2005.04

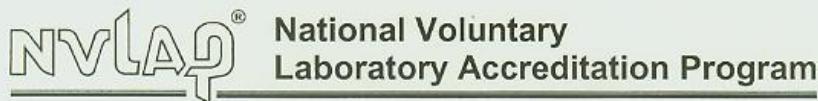
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NVLAP LAB CODE 200737-0

NVLAP Code Designation / Description

Immunity Test Methods:

12/610006h	IEC 61000-6-1, 2nd edition (2005-03): Electromagnetic compatibility (EMC) - Part 6: Generic standards - Section 1: Immunity for residential, commercial and light-industrial environments
12/610006i	IEC 61000-6-2, Edition 2.0 (2005-01): Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
12/I01b	IEC 61000-4-2 (2001); EN 61000-4-2 (2001), A2 (2001): Electrostatic Discharge Immunity Test
12/I01c	EN 61000-4-2 +A1(1998) +A2(2001): Electrostatic Discharge Immunity Test
12/I02b	IEC/EN 61000-4-3, Ed. 2.1 (2002), A1 (2002); EN 61000-4-3: Radiated, radio-frequency, electromagnetic field immunity test
12/I02e	EN 61000-4-3 (2002) + A1(2002) + IS1(2004): Radiated, radio-frequency, electromagnetic field immunity test
12/I02f	EN 61000-4-3 (2002) + A1(2002): Radiated, radio-frequency, electromagnetic field immunity test
12/I03c	IEC 61000-4-4, Ed. 2.0 (2004-07): Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
12/I04b	IEC 61000-4-5 (2001), A1(2000); EN 61000-4-5(2001), A1(2000): Surge Immunity Test
12/I05d	IEC 61000-4-6, Ed. 2.1 (2004); EN 61000-4-6: Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
12/I05e	EN 61000-4-6 (1996) + A1 (2001) + IS1(2004): Immunity to Conducted Disturbances, Induced by Radio Frequency Fields

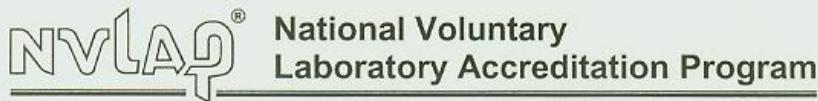
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12/I06b	IEC 61000-4-8 (2001), A1(2000); EN 61000-4-8 (2001),A1(2000): Power Frequency Magnetic Field Immunity Test
12/I06c	EN 61000-4-8 (1993) + A1 (2001): Power Frequency Magnetic Field Immunity Test
12/I07c	IEC 61000-4-11, Ed. 2 (2004-03) & EN 61000-4-11: Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests
12/I07e	EN 61000-4-11 (1994), A1 (2001): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests
12/I07f	EN 61000-4-11 (2004): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests
12/KN11a	KN 61000-4-11 with RRL Notice No. 2005-130 (Dec 27, 2005): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests
12/KN24	KN24 (December 2005) with RRL Notice No. 2005-83: Information Technology Equipment - immunity characteristics - limits and methods of measurements
12/KN2a	KN 61000-4-2 with RRL Notice No. 2005-130 (Dec. 27, 2005): Electrostatic Discharge Immunity Test
12/KN3a	KN 61000-4-3 with RRL Notice No. 2005-130 (Dec. 27, 2005): Radiated, radio-frequency, electromagnetic field immunity test
12/KN4a	KN 61000-4-4 with RRL Notice No. 2005-130 (Dec. 27, 2005): Electromagnetic compatibility (EMC): Testing and measurement techniques - Electrical Fast Transient/Burst Immunity
12/KN5a	KN 61000-4-5 with RRL Notice No. 2005-130 (Dec. 27, 2005): Surge Immunity Test
12/KN6a	KN 61000-4-6 with RRL Notice No. 2005-130 (Dec. 27, 2005): Electromagnetic compatibility (EMC): Testing and measurement techniques - Immunity to conducted disturbances,

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NVLAP Code Designation / Description

12/KN8a KN 61000-4-8 with RRL Notice No. 2005-130 (Dec. 27, 2005): Power Frequency Magnetic Field Immunity Test

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United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200737-0

EMC Integrity, Inc.
Longmont, CO

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO/ILAC/IAF Communiqué dated 18 June 2005).

2007-07-01 through 2008-06-30

Effective dates



Jeffrey S. Bruce
For the National Institute of Standards and Technology

END OF REPORT