



Washington Laboratories, Ltd.¹

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TESTING

Valid to: April 1, 2012

Certificate Number: AT-1448

I. Electrical

FIELD OF TEST	SPECIFIC TESTS OR PROPERTIES MEASURED	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED
Emissions Standards	Radiated and Conducted Emissions (40 Hz to 30 GHz)	FCC Part 15 B/C/D/E using ANSI C63.4 (2003) & ANSI C63.17; FCC Part 18 using FCC OST/MP-05 (1986); FCC Report and Order ET Docket 98-153 (FCC 02-48); Procedures IDB 20040420-001; Procedures in IDB 20021108-001 with FCC Method 47 CFR Part 15, Subpart F: DA 00-705 (March 30, 2000) and KDB Pub. No.558074, KDB Pub. No. 200433; DA 02-2138; CISPR 16-1-4 2007 +A1 2007; CISPR 22 (1997)+A1, (2000)+A2, (2002), CISPR 22 (2005); EN 55022 (1998)+A1, (2000)+A2, (2003), EN 55022 (2006),+A1 (2007); AS/NZS CISPR 22; CAN/CSA-CEI/IEC CISPR 22; CNS 13438(up to 6GHz); KN 22 with (RRA Announcement 2010-5, Dec 24, 2010); CISPR 11 (1997)+A1, (1999)+A2, (2002); CISPR 11: 2004-06 CISPR 11:2009/A1:2010 EN 55011 (1998)+A1, (1999)+A2, (2002); EN 55011:2009/A1:2010 AS/NZS CISPR 11; CNS 13803KN 11 with RRA Announcement 2010-5, (Dec 24, 2010); Technical Requirements for Electromagnetic Interference (RRA Public Notification 2011-18, Jul 5, 2011)



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Emissions Standards	Harmonics Emissions	IEC 61000-3-2 (2000)+A1, (2001)+A2, (2004), IEC 61000-3-2 (2005); EN 61000-3-2 (2000)+A2, (2005), EN 61000-3-2 (2006); AS/NZS 61000-3-2
	Flicker Emissions	IEC 61000-3-3 (1994)+A1, (2001)+A2, (2005); EN 61000-3-3 (1995)+A1, (2001)+A2, (2005); AS/NZS 61000-3-3
	Product Specific Emissions	IEC 61000-6-3; EN 61000-6-3; AS/NZS 61000.6.3; IEC 61000-6-4; EN 61000-6-4; AS/NZS 61000.6.4; CISPR 14-1 (2000)+A1, (2001)+A2, (2002), (excluding measurement of clicks); CISPR 14-1: 2005-11(excluding measurement of clicks); EN 55014-1 (2000)+A1, (2001)+A2, (2002), (excluding measurement of clicks); AS/NZS CISPR 14-1 (excluding measurement of clicks); KN 14-1 (RRA Announcement 2010-5, Dec 24, 2010) CNS 13783-1 (2001)+A1, (excluding measurement of clicks); CISPR 25, sections 6.2, 6.3 and 6.4 only
Immunity Standards	ESD Immunity Testing	IEC 61000-4-2 (1995)+A1, (1997)+A2, (1998); EN 61000-4-2 (1995)+A1,(1999)+A2, (2001); KN 61000-4-2 with (RRA Announcement 2010-6, Dec 24, 2010)
	RF Immunity Radiated Immunity (Up to 2.7 GHz, 20 V/m)	IEC 61000-4-3 (2002)+A1, (2002); IEC 61000-4-3 (2006); EN 61000-4-3 (2002)+A1, (2003), EN 61000-4-3 (2006); KN 61000-4-3 with (RRA Announcement 2010-6, Dec 24, 2010)
	EFT	IEC 61000-4-4 (1995)+A1, (2000)+A2, (2001); IEC 61000-4-4 (2004); EN 61000-4-4 (1995)+A1, (2001)+A2, (2002); EN 61000-4-4 (2004); KN 61000-4-4 with (RRA Announcement 2010-6, Dec 24, 2010)
	Surge	IEC 61000-4-5 (1995)+A1, (2000), IEC 61000-4-5 (2005); EN 61000-4-5 (1995)+A1, (2001), EN 61000-4-5 (2006); KN 61000-4-5 with (RRA Announcement 2010-6, Dec 24, 2010)



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Immunity Standards	Conducted Immunity	IEC 61000-4-6 (1996)+A1, (2001), IEC 61000-4-6 (2003)+A1, (2004)+A2, (2006); EN 61000-4-6 (1996)+A1, (2001), EN 61000-4-6 (2007), KN 61000-4-6 with (RRA Announcement 2010-6, Dec 24, 2010)
	Low Frequency Magnetic Immunity	IEC 61000-4-8 (1993)+A1, (2000); EN 61000-4-8 (1994)+A1, (2001); KN 61000-4-8 with (RRA Announcement 2010-6, Dec 24, 2010)
	Pulse Magnetic	IEC 61000-4-9 (1993)+A1, (2000); EN 61000-4-9 (1993)+A1, (2001)
	Damped Oscillatory Magnetic	IEC 61000-4-10 (1993)+A1, (2000); EN 61000-4-10 (1993)+A1, (2001)
	Power Dips and Interrupts	IEC 61000-4-11 (1993)+A1, (2000); (2004); EN 61000-4-11 (1993)+A1, (2001); (2004) KN 61000-4-11 with (RRA Announcement 2010-6, Dec 24, 2010)
	Ring Wave Immunity	IEC 61000-4-12 (1995)+A1, (2000), IEC 61000-4-12 (2006); EN 61000-4-12 (1995)+A1, (2001), EN 61000-4-12 (2006)
	Product Specific Immunity	CISPR 24 (1997)+A1, (2001)+A2, (2002); EN55024 (1998)+A1, (2001)+A2, (2003); AS/NZS CISPR 24:2002; KN 24 with (RRA Announcement 2010-6, Dec 24, 2010); EN 61000-6-1; EN 61000-6-2; AS/NZS 4254.1; EN 55103-2; EN 50130-4
	Combined Emissions/Immunity Generic/Specific Standards	IEC 60601-1-2; EN 60601-1-2; KN 60101-1-2 with (RRA Announcement 2010-6, Dec 24, 2010); IEC 61326; EN 61326
Emissions & Immunity Guidance Documents	Combined Emissions/Immunity Generic Reference	Regulatory Guide 1.180 EPRI 102323 Rev 2, EPRI 102323 Rev 3 Technical Requirements for Electromagnetic Susceptibility (RRA Public Notification 2011-17, Jul 5, 2011)



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Radio Testing	Australia/New Zealand	AS/NZS 4268, AS/NZS 4295, AS/NZS 4365
	Europe	ETSI EN 300 330-2; ETSI EN 300 390-2; ETSI EN 300 440-2; ETSI EN 301 489-1; ETSI EN 301 489-3; ETSI EN 301 489-4; ETSI EN 301 489-5; ETSI EN 301 489-7; ETSI EN 301 489-8; ETSI EN 301 489-12; ETSI EN 301 489-15; ETSI EN 301 489-17; ETSI EN 300 826; ETSI EN 302 326-1; ETSI EN 301-489-20; ETSI EN 301 428; ETSI EN 301-443; ETSI EN 301 459; ETSI EN 302 208-2; ETSI EN 300-219-2; ETSI EN 300-219-1; ETSI EN 301 441; ETSI EN 301 681; ETSI EN 301 426 (sections 4.2.1 and 4.2.2 only); ETSI EN 301 721 (sections 4.2.1, 4.2.2, 4.2.3 and 4.2.
	Korea	KN 301- 489-01; KN 301- 489-07; KN 301- 489-17; Rules on Radio Equipment including other Technical Requirements (KCC Public Notification 2011-31, May 12, 2011)
	Singapore	IDA TS: EMC, IDA TS GMPCS ITU-R M.1343-1



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Radio Testing	USA	TIA/EIA 603-C using 47 CFR Parts 2, 22 (cellular and non-cellular), 4, 25, 26, 27, 74, 80, 87, 90, 95, 97 and 101, IEEE C63.10
	Canada	RSS-Gen; RSS-102 (<i>excluding SAR</i>); RSS-111; RSS-112; RSS-117; RSS-118; RSS-119; RSS-123; RSS-125; RSS-128; RSS-129; RSS-131; RSS-132; RSS-133; RSS-134; RSS-135; RSS-136; RSS-137; RSS-138; RSS-139; RSS-141; RSS-142; RSS-170; RSS-181; RSS-182; RSS-188; RSS-191; RSS-192; RSS-193; RSS-194; RSS-195; RSS-210; RSS-213; RSS-215; RSS-220; RSS-243; RSS-287; RSS-310



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Military EMC	Conducted Emissions	MIL-STD-461E, F: Methods CE101, CE102, CE106; MIL-STD-462D: Methods CE101, CE102, CE106; MIL-STD-462: Methods CE01, CE02, CE03, CE06
	Radiated Emissions	MIL-STD-461E, F: Methods RE101, RE102 and RE103; MIL-STD-462D: Methods RE101, RE102 and RE103; MIL-STD-462: Methods RE01, RE02 and RE03
	Conducted Susceptibility	MIL-STD-461E, F: Methods CS101, CS 103; CS 104; CS 105, CS109, CS114, CS115, CS116; MIL-STD-462D: Methods CS101, CS103, CS114, CS115, CS116; MIL-STD-462: Methods, CS01, CS02, CS03, CS04, CS05, CS06, CS08
	Radiated Susceptibility	MIL-STD-461E, F: Methods RS101, RS103; MIL-STD-461/462D: Methods RS101, RS103
Airborne Equipment	Power Input	RTCA DO-160E, F: Section 16
	Voltage Spikes	RTCA DO-160E, F: Section 17
	Audio Frequency Conducted Susceptibility	RTCA DO-160E, F: Section 18
	Induced Signal Susceptibility	RTCA DO-160E, F: Section 19
	Conducted Susceptibility and Radiated Susceptibility	RTCA DO-160E, F: Section 20.4 Section 20.5
	Conducted and Radiated Emissions	RTCA DO-160E, F: Section 21.4 Section 21.5
	Lighting Induced Transient Susceptibility	RTCA DO-160E, F: Section 22
	ESD	RTCA DO-160E, F: Section 25

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Product Safety*	ITE	IEC 60950-1 (2005); IEC60950-1:2005+A1:2009; EN 60950-1 (2006); EN60950-1:2006 + A11:2009; EN60950-1:2006 + A1:2010; AS/NZS 60950-1 (2003); ANSI/UL 60950-1 (2007); CAN/CSA C22.2 60950-1-07 (2007)
	Measurement Control and Lab Use	IEC 61010-1 (2001); IEC61010-1:2010 EN 61010-1 (2001); EN61010-1:2010 UL61010-1 (2008) CAN/CSAC22.2 No.61010-1 (2004)
	Medical Equipment	IEC 60601-1:1988+ A1:1991 + A2:1995; IEC60601-1:2005 EN 60601-1: 1990 +A1:1993 + A2:1995; EN60601-1:2006; UL60601-1 (2006); AAMI ES60601-1:2010
	Machinery	IEC60204-1:2005 +A1:2008 EN60204-1:2006 + A1:2009
	Transmitters	EN60215:1989 + A2:1994 IEC60215:1987 + A2:1993
	Household & Similar Electronics	EN60335-1:2002 +A14:2010 IEC60335-1:2001 +A2:2006 UL60335-1 (2006)
	Audio, Video and Similar Electronic App.	EN60065:2002 +A2:2010 IEC60065:2001 +A2:2010 UL60065 (2004)
	General (Enclosures)	IEC 529, EN60529 Amendment 1: 1999-11 Section 13.2 & Section 14.2

II. Environmental

FIELD OF TEST	SPECIFIC TESTS OR PROPERTIES MEASURED	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED
Environmental*	Humidity	MIL-STD-810, Method 507.4
	Immersion	MIL-STD-810, Method 512.4
	Low Pressure (Altitude)	MIL-STD-810: Method 500
	High Temperature	MIL-STD-810, Method 501.4
	Low Temperature	MIL-STD-810, Method 502.4
	Temperature Shock	MIL-STD-810: Method 503
	Contamination by Fluids	MIL-STD-810: Method 504
	Humidity	MIL-STD-810, Method 507.4
	Salt Fog	MIL-STD-810: Method 509
	Immersion	MIL-STD-810, Method 512.4
	Vibration	MIL-STD-810: Method 514
	Shock	MIL-STD-810: Method 516
	Temperature and Altitude	RTCA DO-160E, F: Section 4
	Temperature Variation	RTCA DO-160E, F: Section 5
	Humidity	RTCA DO-160E, F: Section 6
	Operational Shocks and Crash Safety	RTCA DO-160E, F: Section 7
	Vibration	RTCA DO-160E, F: Section 8
	Waterproofness	RTCA DO-160E, F: Section 10

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Environmental*	Fluids Susceptibility	RTCA DO-160E, F: Section 11
	Salt Fog	RTCA DO-160E, F: Section 14
	Flammability	RTCA DO-160E, F: Section 26
	Cold	IEC60068-2-1
	Dry Heat	IEC60068-2-2
	Steady State Damp Heat	IEC60068-2-3
	Sinusoidal Vibration	IEC60068-2-6
	Salt Mist	IEC60068-2-11
	Low Air Pressure	IEC60068-2-13
	Change of Temperature	IEC60068-2-14
	Shock	IEC60068-2-27
	Bump	IEC60068-2-29
	Cyclic Damp Heat	IEC60068-2-30
	Drop and Topple	IEC60068-2-31
Free Fall	IEC60068-2-32	

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Environmental*	Cyclic Composite Temperature and Humidity	IEC60068-2-38
	Combined Cold/Low Air Pressure	IEC60068-2-40
	Combined Dry Heat/Low Air Pressure	IEC60068-2-41
	Immersion in Cleaning Solvents	IEC60068-2-45
	Combined Cold/Vibration	IEC60068-2-50
	Combined Dry Heat/Vibration	IEC60068-2-51
	Cyclic Salt Mist	IEC60068-2-52
	Test Cb: Damp Heat Steady State	IEC60068-2-56
	Test Fh: Broadband Random Vibration	IEC60068-2-64
	Test Xc: Fluid Contamination	IEC60068-2-74
	Test Cab: Damp heat, steady state	IEC60068-2-78



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ENERGY STAR® Information Technology	Computers	ENERGY STAR Computer Test Method, ENERGY STAR Program Requirements Product Specification for Computers, Version 5.2/6.0 EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies. IEC 62301: Household Electrical Appliances - Measurement of Standby Power
	Displays	ENERGY STAR Program Requirements Product Specification for Displays, Version 5.1 Test Method for Displays, Rev. Aug 2010 VESA Flat Panel Display Measurements (FPDM) Standard Version 2.0 IEC 62087 Ed 2.0 IEC 62301 Ed 1.0
	Imaging	ENERGY STAR Program Requirements Product Specification for Imaging Equipment, Version 1.2 Test Method for Imaging Equipment, Rev. Aug 2010 IEC 62301 Ed 1.0
ENERGY STAR® Home Electronics	Audio/Video	ENERGY STAR Program Requirements Product Specification for Audio/Video, Version 2.1 Test Methods for Audio/Video, Rev. Aug 2010 IEC 62301 Ed 1.0
	Battery Charging Systems (BCSs)	ENERGY STAR Program Requirements Product Specification for Battery Charging Systems, Version 1.1 Test Method for Battery Charging Systems, Rev. Aug-2010 IEC 61951-1: Ed 2.1 IEC 61951-2: Ed 2.0 IEC 61960: Ed 1.0
	Set-top Boxes (STBs)	ENERGY STAR Program Requirements for Set-top Boxes, Version 3.0 & 4.0 Test Procedure for Set-top Boxes CSA C380-08
	Telephony	ENERGY STAR Program Requirements Product Specification for Telephony, Version 2.2 Test Method for Telephony, Rev. Aug 2010

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ENERGY STAR® Home Electronics	Televisions	ENERGY STAR Program Requirements Product Specification for Televisions, Version 4.2 Test Method for Televisions, Rev. Aug 2010 CEA: Procedure for DAM Testing IEC 62087, Ed 2.0 CEA-2037: Determination of Television Average Power Consumption (December 2009) IEC 62301 Ed 1.0

Notes:

1. *This scope of accreditation (AT -1448) covers Customer Site Testing*
2. *This scope of accreditation also covers Environmental and Safety testing done at a satellite laboratory at 4840 Winchester Blvd, Suite 4, Frederick, MD 21703.*
3. *Tests identified by an asterisk (*) are performed at this satellite site.*
4. *This scope is part of and must be included with the Certificate of Accreditation No. AT -1448*



Vice President