

SCOPE OF ACCREDITATION

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Accredited Laboratory No. 440
(Conforms with requirements of CAN-P-4D (ISO/IEC 17025))

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CLIENTS SERVED: All interested parties

FIELDS OF TESTING: Electrical/Electronic, Mechanical/Physical

ISSUED ON: 2005-04-13

VALID TO: 2009-03-20

ELECTRICAL PRODUCTS AND ELECTRONIC PRODUCTS

Communications Equipment and Systems:

(Telecommunications Terminal Equipment)
(Telecommunications Switching Equipment)
(Telecommunications Transport Equipment)
(Telecommunications Access Equipment)
(EMC, Power Protection and Grounding)

FCC 47, CFR part 18
ANSI C63.17

Industrial, Scientific and Medical Equipment
American National Standard for methods of measurement
of the Electromagnetic and Operational Compatibility of
Unlicensed Personal Communications Services (UPCS)
Devices

ANSI C63.4

American National Standard for methods of measurement
of radio-noise emissions for low voltage electrical and

	electronic equipment in the range of 9 kHz to 40GHz
ANSI/TIA-603-B	Land Mobile FM or PM Communications Equipment. Measurement and performance standards
AS/NZS 3548:1995	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
AS/NZS CISPR 22	Information technology equipment Radio disturbance characteristics Limits and Methods of Measurements
CISPR 11	Industrial, scientific and medical (ISM) radio frequency equipment Radiated Emissions 30MHz-1GHz, Conducted Emissions 150kHz-30MHz
CISPR 22	Information Technology Equipment Radio Disturbance Characteristics limits and methods of measurement Radiated Emissions 30MHz-1GHz, Conducted Emissions 150kHz-30MHz
CNS 13438	(Chinese National Standard) Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
EN 300 339	Electromagnetic compatibility and Radio spectrum Matters (ERM); General electromagnetic compatibility (EMC) for radio communications equipment
EN 300 386, -2	Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; Electromagnetic compatibility (EMC) requirements
EN 301 489-01	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-17	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2.4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment
EN 50081-1	Electromagnetic compatibility – Generic emission standard – Part 1: Residential, commercial and light industry
EN 50082-1	Electromagnetic compatibility – Generic immunity standard – Part 1: Residential, commercial and light industry
EN 50082-2	Electromagnetic compatibility – Generic immunity standard – Part 2: Industrial environment
EN 55022	Information technology equipment – Radio disturbance characteristics– Limits and Methods of Measurements (Radiated emissions 30MHz-1 GHz, Conducted Emissions 150 kHz-30MHz)
EN/IEC 61000-3-2	Electromagnetic Compatibility (EMC) – Part-3-2: Testing and measurement techniques – Harmonics measurements (2-40th harmonic)
EN/IEC 61000-3-3	Electromagnetic Compatibility (EMC) – Part3-3: Testing and measurement techniques – Flicker (dc 0-100% dmax)

EN/IEC 61000-4-11	100% 1 x 10 ⁹ short or long term flickers) Electromagnetic Compatibility (EMC) – Part 4-11 testing and measurement techniques Voltage dips and interruptions; (1 ms–99.99 seconds)
EN/IEC 61000-4-2	Electromagnetic Compatibility (EMC) Section 4.2 Electrostatic Discharge immunity Test– Basic EMC Publication, 8kV contact discharge/15kV/air discharge
EN/IEC 61000-4-3	Electromagnetic Compatibility (EMC) Part 4-3: Testing and measurement techniques – radiated, radio frequency, electromagnetic field immunity test; 3V/m–10V/m; 80MHz–1GHz
EN/IEC 61000-4-4	Electromagnetic Compatibility (EMC) Part 4-4: Testing and measurement techniques – Electrical Fast Transient/burst immunity test Levels 1–4
EN/IEC 61000-4-5	Electromagnetic Compatibility (EMC) Part 4: Testing and measurement techniques Section 5. Surge immunity test Only for:

6.1 – Combination Wave

6.2 – CCITT Wave

EN/IEC 61000-4-6	Electromagnetic Compatibility (EMC) Part 4: Testing and measurement techniques– Section 6. Immunity to conducted and disturbances, induced by radio–frequency fields; (3V/m – 10V/m: 150kHz–80Mhz)
EN/IEC 61000-4-8	Electromagnetic Compatibility (EMC) Part 4: Testing and measurement techniques, Section 8 Power frequency magnetic field immunity test– Basic EMC Publication: (1A/m – 100A/m Continuous, 300A/m 1000A/m short duration)
EN55024 / CISPR 24	Information Technology Equipment– Immunity Characteristics limits and methods of measurement Only for:

4.2.1 – Electrostatic Discharges.

4.2.2 – Electrical Fast Transients.

4.2.3 – Continuous Radio Frequency Disturbances.

4.2.3.1 – Continuous Radiated Disturbances.

4.2.3.2 – Continuous Conducted Disturbances.

4.2.4 – Power Frequency Magnetic Fields.

4.2.5 – Surges

4.2.6 – Voltage Dips and Interruptions

ETSI EN 300 328, –1, –2	2.4 GHz ISM
ETSI EN 301 908–1, –5	
	3rd Generation Cellular
FCC 47 CFR Part 95	Personal Radio Services
FCC 47, CFR part 101	Fixed Microwave services
FCC 47, CFR part 15	Federal Communications Commission: Radio Frequency Devices
FCC 47, CFR part 22	Public Mobile Services
FCC 47, CFR part 24	Personal Communication
FCC 47, CFR part 90	Private Land Mobile Radio Services
MIC Notice No. 2001–115	Criteria for EMI (Korea) Dec 12, 2001
MIC Notice No. 2001–116	Criteria for EMS (Korea) Dec 12, 2001
RRL Notice No. 2000–182	Test Method for EMI (Korea) Oct 27, 2000
RRL Notice No. 2000–183	Test Method for EMS (Korea) Oct 28, 2000
RSS 118	Land and Subscriber Stations: Voice, Data and Tone modulated Angle Modulation RadioTelephone Transmitters and Receivers Operating in the Cellular Mobile Bands 824–849MHz and 869–894Mhz
RSS 128	800 MHz Dual–Mode TDMA Cellular Mobile Radiophones
RSS 129	800 MHz Dual–Mode CDMA Cellular Mobile Radiophones
RSS 130	Digital Cordless Telephones in the Band 944 to 948.5MHz
RSS 131	Zone Enhancers for the Land Mobile Service
RSS 132	800MHz Cellular Telephones employing new Technologies
RSS 133	2 GHz Licensed Personal Communications Services
RSS 134	Narrowband 900 MHz Personal Communications Services
RSS 135	Digital Scanner Receivers
RSS 137	Location And Monitoring Service in 902 928 MHz Band
RSS 210	Low–Power License – Exempt Radiocommunication Devices
RSS 213	2 GHz License Exempt Personal Communications Service Devices (PCS)
RSS 215	Analogue Scanner Receivers
RSS–195	Wireless Communications Service Equipment Operating in the bands 2305 –2320MHz and 2345 – 2360MHz
Telcordia GR–1089 Core	Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunication Equipment Only for: 2.4 – ESD 0–8kV contact discharge, 0–16kV air discharge 3.4 – Emissions

Radiated Emissions H-Field 9kHz – 30MHz

Radiated Emissions E-Field 9kHz – 18GHz

Conducted Emissions AC Power – Voltage 150kHz – 30MHz

Conducted Emissions AC Power – Current 10kHz – 30MHz

Conducted Emissions DC Power 10kHz – 30MHz

Conducted Emissions Signal Leads 10kHz – 30MHz

3.5 – Immunity

Radiated Immunity Magnetic Field 50Hz – 400Hz, 1 A/m – 100A/m (continuous), 300 A/m – 1000 A/m (short duration)

Radiated Immunity E-Field 80MHz – 1GHz 1 – 10V/m

Conducted Immunity AC Power – current 10KHz – 30MHz 1 – 10Arms

Conducted Immunity DC Power – current 10kHz – 30MHz 1 – 10Arms

Conducted Immunity Signal Leads 10KHz – 30MHz 1 – 10Arms

4 – Lightning

Longitudinal & Metallic Surges

1.2/50uS, (8/20), 2 ohm, 12 ohm < or equal 20kV open circuit

10/700 uS, 15 ohm, 40 ohm < or equal 8kV open circuit

10/1000 uS, 6 ohms < or equal 0.6 kV open circuit

10/1000 uS, 10 ohms < or equal 1.0 kV open circuit

10/1000 uS, 15 ohms < or equal 1.5 kV open circuit

2/10 uS, 2 ohms < or equal 2.5 kV open circuit

2/10 uS, 1 ohms < or equal 5.0 kV open circuit

2/10 uS, 8 ohms < or equal 0.8 kV open circuit

2/10 uS, 15 ohms < or equal 1.5 kV open circuit

Telecommunications Equipment

AS/ACIF S0016:2001	Requirements for Customer Equipment for connection to hierarchical digital interfaces (2048 Kbit/s)
AS/ACIF S002:2001	Analogue interworking and non-interference requirements for Customer Equipment for connection to the Public Switched Telephone
AS/ACIF S003:2001	Customer switching, multiplexing and ancillary equipment for connection to a Telecommunications Network
AS/ACIF S004:2001	Voice frequency performance requirements for Customer Equipment
CS-03 Issue 9 Nov, 2004	<p>Part I: Requirements for Terminal Equipment and Related Access Arrangements Intended for Direct Connection to Analogue Wire line Facilities</p> <p>Part II: Requirements for Terminal Equipment Intended for Connection to 1.544 Mbps (DS-1) Digital Facilities</p> <p>Part V: Requirements and Test Methods for Magnetic Output from Handset Telephones for Hearing Aid Coupling</p> <p>Part VI: Requirements for ISDN Terminal Equipment (PRI only)</p> <p>Part VIII: Requirements for Digital Subscriber Line (xDSL) Terminal Equipment</p>
ETSI EG 201 121 V1.1.3 (2000-02)	A guide to the application of TBR 21
ETSI EN 301 437 V1.1.1 (1999-06)	Terminal Equipment (TE); Attachment requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE supporting the voice telephony service in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signalling
ETSI ETR 275 ed.1 (1996-04)	Transmission and Multiplexing (TM); Considerations on transmission delay and transmission delay values for components on connections supporting speech communication over evolving digital networks
ETSI TS 103 021-1 V1.1.1 (2003-08)	Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 21, EN 301 437, TBR 15,

	TBR 17;Part 1: General aspects
HKTA 2011 ISSUE 4 AUGUST 2003	Network Connection Specification for Connection of Customer Premises Equipment (CPE) to Direct Exchange Lines (DEL) of the Public Switched Telephone Network (PSTN) in Hong Kong
HKTA 2017 ISSUE 03 FEBRUARY 2003	Network Connection Specification for Connection of Customer Premises Equipment (CPE) to the Public Telecommunications Network (PTN) in Hong Kong over Digital Trunk at 1544kbits/s using DTMF Signalling
IDA TS PSTN 1 A–CLIP	Specification for Analogue Calling Line Identity Presentation Facility for connection to Public Switched Telephone Network (PSTN)
ITU–T G 823(03/2000)	The control of jitter and wander within digital networks which are based on the 2048 kbit/s hierarchy
ITU–T Recommendation G.703 (11/01)	SERIES G: TRANSMISSION SYSTEMS AND MEDIA,DIGITAL SYSTEMS AND NETWORKS Digital transmission systems – Terminal equipments – General Physical/electrical characteristics of hierarchical digital interfaces
JATE (2M) April 2001	An example of documents to be submitted with application for Technical conditions compliance approval [ISDN & Digital Terminals] [Leased Circuit Terminals] April, 2001 Japan Approval Institute for Telecommunications Equipment
JATE Analog Telephone Terminals	An example of documents to be submitted with application for Technical conditions compliance approval APPROVAL [Analog Telephone Terminals] [Analog Leased Circuit Terminals] April, 2001 Japan Approval Institute for Telecommunications Equipment
PSTN01	Technical Specifications for Terminal Equipment for Connection to Public Switched Telephone Network (Taiwan)
TBR 12, Dec 1993 +Amnt A1, Jan 1996	Business Telecommunications (BT); Open Network Provision (ONP) technical requirements; 2 048 kbit/s digital unstructured leased line (D2048U) Attachment requirements for terminal equipment
TBR 13, Jan 1996	Business TeleCommunications (BTC); 2048 kbit/s digital structured leased lines (D2048S); Attachment requirements for terminal equipment interface
TBR 21, Jan 1998	Terminal Equipment (TE); Attachment requirements for pan–european approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of dual tone multi–frequency (DTMF) signaling
TBR 38, May 1998	Public Switched Telephone Network (PSTN); Attachment requirements for terminal equipment incorporating an analogue handset function capable of supporting the justified cases when connected to the analogue interface of the PSTN in Europe

TBR 4, Nov 1995+ A1 Dec 1997	Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN primary rate access
TIA-968-A Oct 2002	Telecommunications Telephone Terminal Equipment Technical Requirement for Connection of Terminal Equipment to the Telephone Network TIA-968-A (Upgrade and Revision of TIA/EIA/IS-968) OCTOBER 2002(Analog TE, 1.544 Mbps TE, xDSL TE)

Other

(Mechanical/Environmental)

IEC 60068-2	Basic Environmental Test Procedures Only for: Test A – Cold Test B – Dry Test Test Ca – Damp Heat Steady state Test Nb – Change of Temperature Test Ec – Drop and Topple (with Amendment 1) Test Ed – Freefall Test (with Amendment 1) Test Fc – Vibration (Sinusoidal)
ISTA-1	International Safe Transportation Association. Only for: Sections 1A and 1B Packaged and unpackaged drop
Telcordia GR-487-CORE	Generic Requirements for Electronic Equipment Cabinets. Only for: 3.26 – Exposure to high temperature 3.27 – Thermal shock 3.35.1 – Packaged drop 3.35.4 – Unpackaged drop
Telcordia GR-63-CORE	Network Equipment Building Systems (NEBS) Requirements: Physical Protection. Only for: 4.1.1.1 – Low temperature exposure and thermal shock 4.1.1.2 – High temperature exposure and thermal shock 4.1.1.3 – High relative humidity exposure 4.1.2 – Operating temperature 4.3.1 – Packaged drop 4.3.2 – Unpackaged drop 4.4.3.1 – Office Vibration 4.4.4.1 – Transportation vibration

(Safety Requirements and Methods for Telecommunication Equipment)

ACA AS/ACIF 001 (Australia/New Zealand)	Safety of Customer Equipment Only for: 3.35 – General 3.36 – Use of Line Isolation Units 3.37 – Particular requirements for Modem with voice
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	capability
ANSI/UL 60950–2000	Safety of Information Technology Equipment, Including Electrical Business Equipment, Third Edition, December 1, 2000. Only for: Tests per CAN/CSA C22.2 No 60950–00 (above) clause numbers may vary
AS/NZS 3260 (Australia/New Zealand)	Approval and test Specification–safety of information technology equipment including electrical business equipment Only for: 3.35 – Mechanical Strength 5.1 – Heating 5.2 – Earth leakage current 5.3 – Electric Strength 6.2.1.3 – Test for operating voltages generated externally Tests per CAN/CSA C22.2 No. 60950–00 as indicated below, clause numbers may vary.
AS/NZS 60950 2000	Safety of Information Technology Equipment, Including Electrical Business Equipment. Only for: Section: Tests per CAN/CSA C22.2 No 60950–00 (above) clause numbers may vary
CAN/CSA C 22.2 No. 0.4M82	Bonding and Grounding of Electrical Equipment (Protective Grounding)
CAN/CSA C 22.2 No. 60950–00	Safety of Information Technology Equipment, Including Electrical Business Equipment, Third Edition, December 1, 2000. Only for: 1.7.1 – Power rating 2.6.3 – Protective 2.8 – Safety Interlocks 2.10.3.1 – Clearances 4.2.1 – Mechanical Strength Sections (4.2.2 to 4.2.4) 4.2.5 – Impact test 4.2.6 – Drop test 4.5 – Thermal requirements 5.1 – Touch Current and Protective conductor current 5.2 – Electric Strength 5.3 – Abnormal Operating and Fault Conditions Sections (5.3.1 to 5.3.8) 6.4 – Protection Against Overvoltage from Power Line Crosses 6 – Connections to telecommunications networks
CAN/CSA C.22.2 No. 94	Special Purpose Enclosures Only for: Section 6.4 Rain
CAN/CSA C22.2 M 950	Safety of Information Technology and Telecommunication Equipment. Only for: Section: tests per CAN/CSA C22.2 No 60950–00 (above)

	clause numbers may vary
CAN/CSA–C22.2 No. 225–M90	Telecommunication Equipment, A National Standard of Canada Only for: 3.35 – Rating 6.4 – Leakage Currents 6.5 – Dielectric Voltage withstand test 6.9 – Fire Hazard test 6.11 – Mechanical Strength
EN 60950 (EU)	Safety of Information Technology Equipment, Including Electrical Business Equipment. Only for: Section: Tests per CAN/CSA C22.2 No 60950–00 (above) clause numbers may vary
EN 61010–1:2001	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Only for: 5.1.3 – Mains Supply 6.5.1.3 – Impedance of protective bonding of plug-connected equipment 6.5.1.4 – Bonding impedance of permanently connected equipment 6.8 – Procedure for dielectric strength tests 7.3 – Stability 8.1 – Enclosure Rigidity Test 8.2 – Drop Test 10.1 – Surface Temperature Limit for Protection Against Burns 10.4 – Conduct of Temperature Tests 14.9 – Circuits or components used as transient overvoltage limiting devices 15 – Protection by Interlocks
GR–1089–CORE	Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunications Equipment; Issue 2, December 1997, with revision 1, February 1999 Only for: Section: 4.5.12 First–Level AC Power Fault Tests (Telecommunications Port)
IEC 60529	Degree of Protection provided by enclosures Only for: Sections 14.2.3 and 14.2.4 Rain Test
IEC 60950	Safety of Information Technology Equipment, Including Electrical Business Equipment, third Edition, November 12, 1999. Only for: Sections: Tests per CAN/CSA C22.2 No 60950–00 (above) clause numbers may vary
IEC 61010–1:2001	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Only for:

	5.1.3 – Mains Supply
	6.5.1.3 – Impedance of protective bonding of plug-connected equipment
	6.5.1.4 – Bonding impedance of permanently connected equipment
	6.8 – Procedure for dielectric strength tests
	7.3 – Stability
	8.1 – Enclosure Rigidity Test
	8.2 – Drop Test
	10.1 – Surface Temperature Limit for Protection Against Burns
	10.4 – Conduct of Temperature Tests
	14.9 – Circuits or components used as transient overvoltage limiting devices
	15 – Protection by Interlocks
J 60950 (Japan)	Safety of Information Technology Equipment, Including Electrical Business Equipment. Only for: Sections: Tests per CAN/CSA C22.2 No 60950–00 (above) clause numbers may vary
TTA IC 950 Dec 31, 1998	Safety of Information Technology Equipment, Including Electrical Business Equipment. Only for: Section: tests per CAN/CSA C22.2 No 60950–00 (above) clause numbers may vary
UL 1459	Standard for Safety for telephone Equipment. Only for: 47 – Input test 49 – Temperature Test 50 – Dielectric voltage withstand test 50A – Overvoltage Test 51 – 15 Watt Power measurement 52 – Abnormal 53 – Mechanical Strength 64 – Grounding
UL 1950	Safety of Information Technology Equipment, Including Electrical Business Equipment. Only for: Section: tests per CAN/CSA C22.2 No 60950–00 (above) clause numbers may vary
UL 50	Enclosures for Electrical Equipment, Eleventh Edition, November 6, 1997. Only for: Section 30: Rain Test, Hose down test

Notes:

CAN–P–4D (ISO/IEC 17025): General Requirements for the Competence of Testing and Calibration Laboratories (ISO/IEC 17025–1999)

P. Paladino, P. Eng., Director, Conformity Assessment

Date: 2005-04-13

Number of Scope Listings: 101

SCC 1003-15/562

Partner File #0

Partner: None