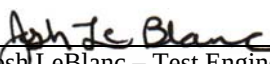




Test Report

Report No	EG0438-2
Client	Maximum Inc.
Phone	508-995-2200
Fax	none
FRN	0005833959
Models	WWIND
FCC ID	KLN312A
Equipment Type	Low Power Communications Device Transmitter
Equipment Code	DXX
Results	As detailed within this report
Prepared by	 Josh LeBlanc – Test Engineer
Authorized by	 Michael Buchholz – EMC Manager
Issue Date	4/24/06
Conditions of issue	This Test Report is issued subject to the conditions stated in 'terms and conditions' section of this

Curtis-Straus LLC is accredited by the American Association for Laboratory Accreditation for the specific scope of accreditation under Certificate Number 1627-01. This report may contain data which is not covered by the A2LA accreditation.



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Summary

This report is an application for certification of a transmitter operating pursuant to 47 CFR 15.249. The product covered by this report is the WWIND. It is a low power communications transmitter and receiver operating at 916.5MHz.

Test Methodology

Radiated emissions testing was performed according to the procedures specified in ANSI C63.4 (2003). The EUT was maximized around one axis, as the EUT can only be installed in one position. The EUT has an integrated internal antenna which can not be maximized separately. The EUT is battery powered with no provision to be connected to the AC mains. The standard test voltage was 3V dc provided by two AA alkaline batteries. The ambient environmental conditions were as follows:

Date	Temperature	Humidity
4/21/06	23.9°C	22%

Frequency range investigated:	30 MHz- 10 GHz
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Measurement Distance:		
<i>Frequency (MHz)</i>	<i>Distance (m)</i>	<i>Comments</i>
Fundamental 916.5MHz	3 m	Radiated
Spurious & Harmonics 30 – 10000MHz	3 m	Radiated

All readings are peak unless otherwise noted. For frequencies below 1000MHz, a RBW of 120kHz and a VBW of 300kHz were used. For frequencies above 1000MHz, a RBW of 1MHz and a VBW of 3MHz were used.

EUT Configuration

EUT Configuration				
Work Order: G0438				
Company: Maximum Inc.				
Company Address: 30 Samuel Barnet Blvd. New Bedford, Ma 02745				
Contact: Paul Hutchinson				
Person Present: Paul Hutchinson				
MN		SN		
EUT: WAIR		Test Sample 1		
EUT Description: Wireless air temperature transmitter				
EUT Max Frequency: 916.5MHz				
Support Equipment:	MN	SN		
none	--	--		
EUT Cables:	Qty	Shielded?	Length	Ferrites
none	--	--	--	--
Unpopulated EUT Ports:	Qty	Reason		
none	--	--		
Software / Operating Mode Description:				
The EUT was transmitting continuously for testing at the fundamental. During spurious emissions testing the EUT was transmitting every four seconds and receiving in between.				

Statement of Conformity

The WWIND has been found to conform to the following parts of the 47 CFR as detailed below:

47 CFR Part #	Comments
15.15(b)	The product contains no user accessible controls that increase transmission power above allowable levels.
15.19	The label is shown in the label exhibit.
15.21	Information to the user is shown in the instruction manual exhibit.
15.27	No special accessories are required for compliance.
15.31(e)	A fresh set of batteries was used.
15.203	The device utilizes an integral antenna.
15.204	The antenna is not accessible to the user and therefore cannot be easily removed.
15.205 15.209	The fundamental is not in a restricted band and the spurious emissions in the restricted bands comply with the general emission limits of 15.209.
15.207	The EUT is battery powered only.
15.249(a)	Fundamental and Harmonic emissions meet the limits specified in this section.
15.249(b)	EUT does not operate in the 24.0-24.25GHz band.
15.249(e)	The EUT meets the general radiated emissions limits of section 15.209.
15.249(e)	The EUT meets the peak limit of this section.

Modifications required for compliance:

In order to meet the fundamental emission limit, the resistor R25 was increased to 8.2kOhms.

Spurious Radiated Emissions

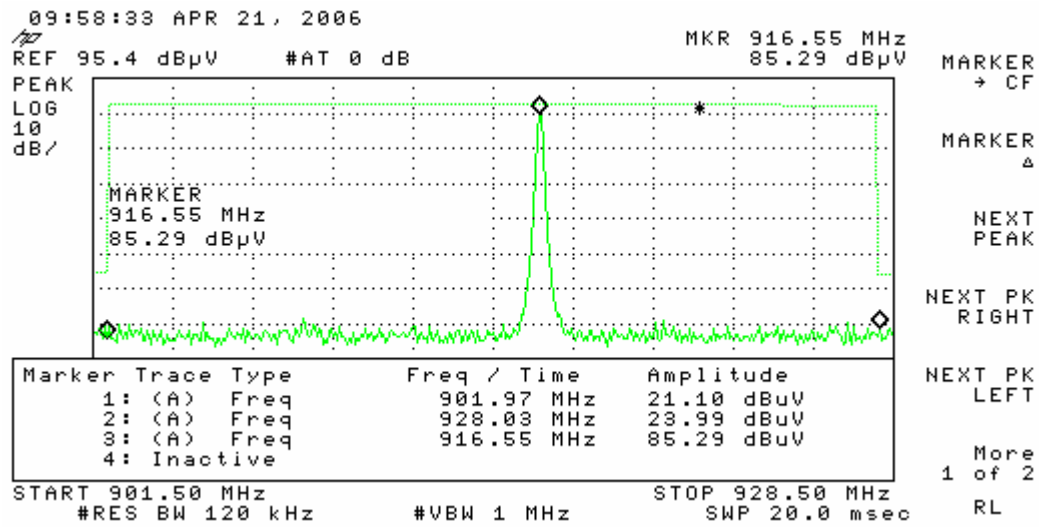
Sections 15.249(a), (d) & (e), 15.205, 15.209

Spurious Radiated Emissions											Curtis-Straus LLC		
Date: 21-Apr-06			Company: Maximum Inc.						Work Order: G0438				
Engineer: Josh LeBlanc			EUT Desc: WWIND										
Frequency Range: 30-1000MHz							Measurement Distance: 3 m						
Notes: TX/RX mode							EUT Max Freq: 916.5MHz						
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	---			FCC Class B			
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	
Vbb	231.8	30.9	22.2	11.7	1.7	22.1	---	---	---	46.0	-23.9	Pass	
Hbb	256.3	30.1	22.2	12.4	1.9	22.2	---	---	---	46.0	-23.8	Pass	
Hbb	262.3	29.7	22.2	12.9	1.9	22.3	---	---	---	46.0	-23.7	Pass	
Hbb	269.5	31.8	22.2	13.6	2.0	25.2	---	---	---	46.0	-20.8	Pass	
Hbb	274.8	31.0	22.2	13.7	2.0	24.5	---	---	---	46.0	-21.5	Pass	
Vbb	281.3	33.1	22.2	13.7	2.0	26.6	---	---	---	46.0	-19.4	Pass	
Vbb	287.3	33.0	22.2	13.9	2.0	26.7	---	---	---	46.0	-19.3	Pass	
Table Result:		Pass	by	-19.3 dB						Worst Freq:		287.3 MHz	
Test Site: "T"		Pre-Amp: Blue		Cable: EMIR-08		Analyzer: Blue			Antenna: Red-White				

Spurious Radiated Emissions											Curtis-Straus LLC		
Date: 21-Apr-06				Company: Maximum Inc.				Work Order: G0438					
Engineer: Josh LeBlanc				EUT Desc: WWIND									
Frequency Range: 1-10GHz							Measurement Distance: 3 m						
Notes: RX mode							EUT Max Freq: 916.5MHz						
Antenna Polarization (H / V)		Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	---			FCC Class B		
								Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)
No emissions found within 10dB of the limits				---	---	---	---	---	---	---	---	---	---
Test Site: "T"				Pre-Amp: Yel-Blk		Cable: EMIR-HIGH 2		Analyzer: Orange			Antenna: Black Horn		

Spurious Radiated Emissions											Curtis-Straus LLC		
Date: 21-Apr-06			Company: Maximum Inc.						Work Order: G0438				
Engineer: Josh LeBlanc			EUT Desc: WWIND										
Frequency Range: 1-10GHz							Measurement Distance: 3 m						
Notes: TX mode							EUT Max Freq: 916.5MHz						
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	---			FCC Class B			
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	
Vavg	1833.0	32.3	18.8	28.6	2.2	44.3	---	---	---	54.0	-9.7	Pass	
Vpk	1833.0	37.0	18.8	28.6	2.2	49.0	---	---	---	74.0	-25.0	Pass	
Table Result:			Pass		by		-9.7 dB		Worst Freq: 1833.0 MHz				
Test Site: "T"		Pre-Amp: Yel-Blk		Cable: EMIR-HIGH 2		Analyzer: Orange		Antenna: Black Horn					

Sample Calculation:Adjusted Reading = Reading – Pre Amp_(factor) + Antenna_(factor) + Cable_(factor)

Bandedge Plot

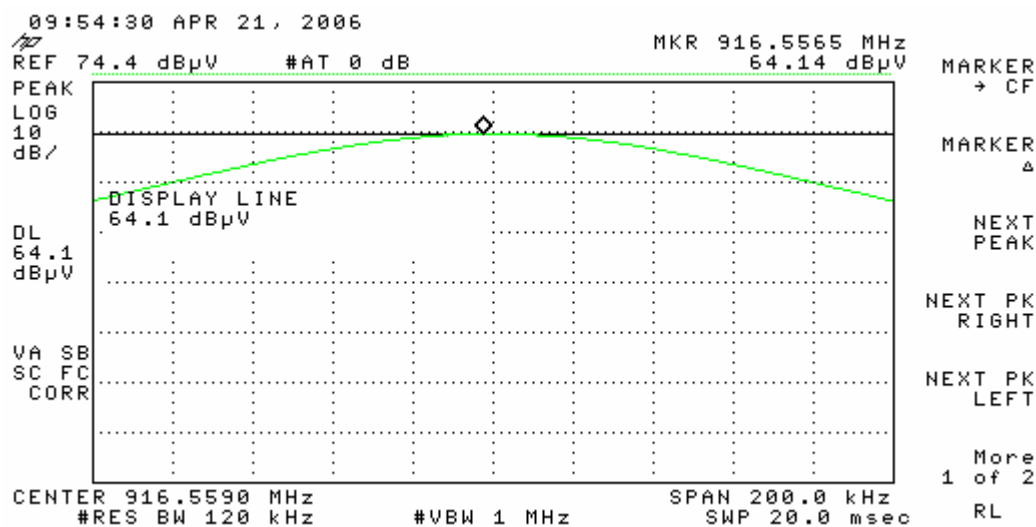
Conclusion: As can be seen on the plot above, the EUT meets the spurious emissions limits at the bandedges.

Fundamental Field Strength**Section 15.249(a)**

Fundamental Radiated Emission											Curtis-Straus LLC		
Date: 21-Apr-06				Company: Maximum Inc.					Work Order: G0438				
Engineer: Josh LeBlanc				EUT Desc: WWIND									
Frequency Range: 916.5MHz							Measurement Distance: 3 m						
Notes:													
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBμV/m)	---			FCC part 15.249			
							Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	
Vpk	916.55	64.1	0.0	22.9	4.7	91.7	---	---	---	94.0	-2.2	Pass	
Test Site: "T"		Pre-Amp: none		Cable: EMIR-08		Analyzer: Blue			Antenna: Red-White				

Sample Calculation:

Adjusted Reading = Reading – Pre Amp_(factor) + Antenna_(factor) + Cable_(factor)

Sample Plot

Test Equipment Used

REV. 11-APR-2006							
SPECTRUM ANALYZERS / RECEIVERS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
BLUE	9kHz-1.8GHz	8591E	HP	3223A00227	00070	I	14-DEC-2006
BROWN (RENTAL)	9kHz-26.5GHz	E4407B	HP	SG44210511	Rental	1	05-JAN-2007
OPEN AREA TEST SITE (OATS)	FCC CODE	IC CODE	VCCI CODE	CAT	CALIBRATION DUE		
SITE T	93448	IC 2762-T	R-905	II	14-AUG-2007		
PREAMPS / ATTENUATORS / FILTERS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
BLACK	0.01-2000MHz	ZFL-1000-LN	C-S	N/A	00799	II	25-AUG-2006
YELLOW-BLACK	1-20GHz	SMC-12A	C-S	535055	00801	II	25-AUG-2006
ANTENNAS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
RED-WHITE BILOG	30-2000MHz	JB1	SUNOL	A091604-1	01105	II	11-APR-2008
BLACK HORN	1-18GHz	3115	EMCO	9703-5148	00056	I	17-JUN-2007
METEOROLOGICAL METERS	MN		MFR	SN	ASSET	CAT	CALIBRATION DUE
TEMP./HUMIDITY/ATM. PRESSURE GAUGE	7400 PERCEPTION II		DAVIS	N/A	00965	II	08-FEB-2007
TEMPERATURE /HUMIDITY GAUGE	THG-912		HUGER	4000562	00789	I	01-FEB-2007
WEATHER CLOCK (PRESSURE ONLY)	BA928		OREGON SCIENTIFIC	C3166-1	00831	I	02-FEB-2007

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Terms and Conditions

Paragraph 1. SERVICES. LABORATORY will:

- 1.1 Use the degree of care and skill ordinarily exercised by and consistent with the standards of the profession.
- 1.2 Perform all technical services in substantial accordance with the generally accepted laboratory principles and practices.
- 1.3 Retain all pertinent records relating to the services performed for a period of three (3) years following submission of the report describing such services, during which period the records will be made available to CLIENT upon reasonable request.

Paragraph 2. CLIENT'S RESPONSIBILITIES. CLIENT or his authorized representative will:

- 2.1 Provide LABORATORY with all plans, schematics, specifications, addenda, change orders, drawings and other information for the proper performance of technical services.
- 2.2 Designate a person to act as CLIENT's representative with respect to LABORATORY's services to be performed on behalf of the CLIENT; such person or firm to have complete authority to transmit instructions, receive information and data, interpret and define CLIENT's policies and decisions with respect to the LABORATORY's work on behalf of the CLIENT and to order, at CLIENT's expense, such technical services as may be required.
- 2.3 Designate a person who is authorized to receive copies of LABORATORY's reports.
- 2.4 Undertake the following:
 - (a) Secure and deliver to LABORATORY, without cost to LABORATORY, preliminary representative samples of the equipment proposed to require technical services, together with any relevant data.
 - (b) Furnish such labor and equipment needed by LABORATORY to handle samples at the LABORATORY and to facilitate the specified technical services.

Paragraph 3. GENERAL CONDITIONS:

- 3.1 LABORATORY, by the performance of services covered hereunder, does not in any way assume any of those duties or responsibilities customarily vested in the CLIENT, its employees, or any other party, agency or authority.
- 3.2 LABORATORY shall not be responsible for acts of omissions of any other party or parties involved in the design, manufacture or maintenance of the equipment or the failure of any employee, contractor or subcontractor to undertake any aspect of equipment's design, manufacture or maintenance.
- 3.3 LABORATORY is not authorized to revoke, alter, release, enlarge or release any requirement of the equipment's design, manufacture or maintenance unless specifically authorized by CLIENT or his authorized representative.
- 3.4 THE ONLY WARRANTY MADE BY LABORATORY IN CONNECTION WITH ITS SERVICE PERFORMED HEREUNDER IS THAT IT WILL USE THAT DEGREE OF CARE AND SKILL AS SET FORTH IN PARAGRAPH 1 ABOVE. NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE OR INTENDED FOR SERVICES PROVIDED HEREUNDER.
- 3.5 Where the LABORATORY indicates that additional testing is advisable to obtain more valid or useful data, and where such testing has not been authorized, CLIENT agrees to view such test reports as inconclusive and preliminary.
- 3.6 The LABORATORY will supply technical service and prepare a report based solely on the sample submitted to the LABORATORY by the CLIENT. The CLIENT understands that application of the data to other devices is highly speculative and should be applied with extreme caution.
- 3.7 The LABORATORY agrees to exercise ordinary care in receiving, preserving and shipping (F.O.B. Littleton, MA) any sample to be tested, but assumes no responsibility for damages, either direct or consequential, which arise from loss, damage or destruction of the samples due to the act of examination, modification or testing, or technical services or circumstances beyond LABORATORY's control.
- 3.8 The LABORATORY will hold samples for thirty (30) days after tests are completed, or until the CLIENT's outstanding debts to the LABORATORY are satisfied, whichever is later.
- 3.9 The CLIENT recognizes that generally accepted error variances apply and agrees to consider such error variances in its use of test data.
- 3.10 It is agreed between LABORATORY and CLIENT that no distribution of any tests, reports or analysis other than that described below shall be made to any third party without the prior written consent of both parties unless such distribution is mandated by operation of law. It is agreed that tests, reports, or analysis results may be disclosed to third party auditors of the laboratory at the laboratory facility in the course of accreditation maintenance audits. No reference to reports or technical services of the LABORATORY shall be made in any advertising or promotional literature without the express written permission of the LABORATORY.
- 3.11 The CLIENT acknowledges that all employees of LABORATORY operate under employment contracts with the LABORATORY and CLIENT agrees not to solicit employment of such employees or to solicit information related to other clients from said employees.
- 3.12 In recognition of the relative risks and benefits of the project to both CLIENT and LABORATORY, the risks have been allocated such that the CLIENT agrees, to the fullest extent permitted by law, to limit the liability of the LABORATORY to the CLIENT for any and all claims, losses, costs, damages of any nature whatsoever or claims expenses from any cause or causes, including attorneys' fees and costs and expert witness fees and costs, so that the total aggregate liability of the LABORATORY to the CLIENT shall not exceed \$100,000, or the LABORATORY'S total fee for services rendered on this project, whichever is greater. It is intended that this limitation apply to any and all liability or cause of action however alleged or arising, unless otherwise prohibited by law.

Paragraph 4. INSURANCE:

- 4.1 LABORATORY shall secure and maintain throughout the full period of the services provided to the CLIENT adequate insurance to protect it from claims under applicable Workmen's Compensation Acts and also shall maintain one million dollars of general liability coverage to cover claims for bodily injury, death or property damage as may arise from the performance of its services.
- 4.2 The CLIENT hereby warrants that it has sufficient insurance to protect its employees adequately under applicable Workmen's Compensation Acts and for bodily injury, death, or property damage.
- 4.3 No insurance of whatever kind or type, which may be carried by either party is to be considered as in any way limiting any other party's responsibility for damages resulting from their operations or for furnishing work and materials.

Paragraph 5. PAYMENT:

- 5.1 CLIENT shall pay to LABORATORY such fees for services as previously agreed, orally or in writing, within 30 days of presentment of a bill for such services performed. In the event CLIENT ordered, orally or in writing, services but such services were not assigned a rate for billing, such services shall be billed at the LABORATORY's reasonable and customary rate.
- 5.2 CLIENT shall be responsible for all shipping, customs and other expenses related to services provided by LABORATORY to the CLIENT, and shall fully insure any test sample or other equipment provided to LABORATORY by the CLIENT.
- 5.3 Amounts overdue from CLIENT to LABORATORY shall be charged interest at a rate of 1½% per month.

Paragraph 6. ISO/IEC GUIDE 17025 ADDITIONS:

- 6.1 CLIENT agrees that this test report will not be reproduced except in full, without written approval from the LABORATORY.
- 6.2 CLIENT agrees that this test report shall not be used to claim product endorsement by A2LA or ANSI or any agency of the U.S. Government.
- 6.3 CLIENT agrees that test results presented herein relate only to the sample tested by the LABORATORY.

A2LA Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025:1999

CURTIS-STRAUS¹

527 Great Road

Littleton, MA 01460

Barry Quinlan Phone: 978-486-8880

ELECTRICAL

Valid until: July 31, 2007

Certificate Number: 1627.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following Electromagnetic Compatibility (EMC), Telecommunications, and Product Safety tests:

Electromagnetic Compatibility (EMC)

Radiated emissions testing (electric and magnetic fields)*; Conducted emissions testing (voltage and current)*; Electrostatic Discharge testing*; Electrical Fast Transient testing*; Radiated Immunity testing*; Conducted Immunity testing*; Lightning Immunity testing*; Voltage Dips*, Interrupts and Voltage Variations testing*; Magnetic Immunity testing*; RF Power measurements*; Frequency Stability Measurements*; Longitudinal Induction measurements*; Harmonic emissions testing*; Light flicker testing*; Low frequency disturbance voltage testing*; Disturbance Power measurements*; Power Cross Overvoltage testing*;

Test Type	Test Method(s)
Emissions	
Radiated and Conducted Emissions	FCC 47 CFR Parts 15 & 18; C63.4; CISPR 22; EN55022; SABS CISPR 22; AS/NZS CISPR 22; AS/NZS 3548; Canada ICES-003; CNS13438; KN 22 (RRL No. 2005-82, September 29, 2005); CISPR 11; EN 55011; SABS CISPR 11; AS/NZS CISPR 11; AS/NZS 2064; Canada ICES-001; CNS13803; CISPR 13; EN 55013; SABS CISPR 13; AS/NZS CISPR 13; AS/NZS 1053; CISPR 14-1; EN 55014-1; SABS CISPR 14; AS/NZS CISPR 14; AS/NZS 1044; CNS 13439; CISPR 15; EN 55015; GR-1089-CORE; CSA C108.8-M1983; EN 61000-3-2; AS/NZS 61000.3.2
Harmonics	EN 61000-3-3; AS/NZS 61000.3.3
Flicker	

1 Note: This accreditation covers testing performed at the laboratory listed above and the satellite facility located at 168 Ayer Rd, Littleton, MA 01460 and, for test types marked with an asterisk, at other sites as defined in "A2LA specific criteria for the accreditation of site testing and site calibration laboratories."

(A2LA Cert. No. 1627.01) 3/27/06

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Other Radio Standards	RTTE 01 (DGT-Taiwan);
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FCC Standards and Test methods Support TCB Status--

FCC Scope A – Unlicensed Radio Frequency Devices

A1	1. 47 CFR Parts 11, 15 and 18 2. FCC MP-5, 3. ANSI C63.4-2003.
A2	1. 47 CFR Part 15, 2. ANSI C63.4-2003.
A3	1. 47 CFR Part 15, 2. ANSI C63.17-1998, 3. ANSI C63.4-2003.
A4	1. 47 CFR Part 15, 2. ANSI C63.4-2003.

FCC Scope B – Licensed Radio Service Equipment

B1	1. 47 CFR Parts 2, 22, 24, 25, and 27 2. ANSI/TIA-603-C (2004)
B2	1. 47 CFR Parts 2, 22, 74, 90, 95, and 97 2. ANSI/TIA-603-C (2004)
B3	1. 47 CFR Parts 2, 80, and 87 2. ANSI/TIA-603-C (2004)
B4	1. 47 CFR Parts 2, 21, 74, and 101 2. ANSI/TIA-603-C (2004)

Country Specific Standards and Other

ITU EMC Standards	K 20; K 21; K 41; K 44
Swedish EMC Standards	BAKOM 3336.3
South African EMC Standards other then CISPR equivalents	SABS 1718-1; SANS 211/SABS CISPR 11; SANS 224/SABS CISPR 24; SANS 213/SABS CISPR 13; SANS 2200; SANS214-1/SABS CISPR 14-1; SANS214-2/SABS CISPR 14-2; SANS 215/SABS CISPR 15; SANS 222/SABS CISPR 22
Hong Kong EMC Standards	HKTA 1006; HKTA 1007; HKTA 1008; HKTA 1010; HKTA 1015; HKTA 1026; HKTA 1035; HKTA 1039; HKTA 1041; HKTA 1042; HKTA 1045
Singapore EMC Standards	IDA TS SRD; IDA TS EMC
Japanese VCCI Standards	VCCI V-3, VCCI V-4

Immunity

RRL No. 2005-130 (December 27, 2005)

EN 61000-4-2; AS/NZS 61000.4.2; KN61000-4-2

EN 61000-4-3; AS/NZS 61000.4.3; KN61000-4-3

EN 61000-4-4; AS/NZS 61000.4.4; KN61000-4-4

EN 61000-4-5; AS/NZS 61000.4.5; KN61000-4-5

EN 61000-4-6; AS/NZS 61000.4.6; KN61000-4-6

EN 61000-4-8; AS/NZS 61000.4.8; KN61000-4-7

EN 61000-4-11; KN61000-4-11

EN 61000-2-2

Family Product or Industry Specific Specifications including emissions and/or immunity

GR-1089-CORE; GR-78-CORE (ESD)

EN50081-1; EN50081-2; EN50082-2; EN50082-1; EN 61000-6-1; EN 61000-6-2; EN 61000-6-3; EN 61000-6-4; EN 50091-2; EN 55024; CISPR 24 EN 55103-1; EN 55103-2; EN 61326; EN 61547; EN 50130-4; EN 50083-2; EN 60601-1-2; EN 60601-2-2; EN 60601-2-24; EN 60601-2-32; EN 60601-2-38; EN 60601-2-47; IEC 1800-3; EN 61800-3; EN 55020; CISPR 20; EN 60555 Part 2; EN 60555 Part 3; ETS 300 386-1; EN 300 386-2; EN 300 386, ETS 300 132-1; ETS 300 132-2; EN 60669-2-1; AS/NZS 3200.1.2; CNS 13783-1; ETR 283; C62.41

Radiocommunications

EU R&TTE Radio Standards;

EN 300 220-1; EN 300 220-3; EN 300 330-1; EN 300 330-2; EN 300 440-1; EN 300 440-2; EN 300 328; EN 300 385; EN 301 893

EU R&TTE EMC Standards

EN 300 339; EN 301 489-01; EN 301 489-03; EN 301 489-17

Canada Radio Standards

RSS-102; RSS-117; RSS-118; RSS-119; RSS-123; RSS-125; RSS-128; RSS-129; RSS-130; RSS-131; RSS-132; RSS-133; RSS-134; RSS-135; RSS-136; RSS-137; RSS-138; RSS-141; RSS-142; RSS-170; RSS-181; RSS-182; RSS-187; RSS-188; RSS-191; RSS-192; RSS-193; RSS-195; RSS-210; RSS-212; RSS-213; RSS-215; RSS-243; RSS-GEN; RSS-310; GL-36;

Australia/New Zealand Radio Standards

AS/NZS 4268; AS/NZS 4771; RFS29; Radiocommunications (Data Transmission Equipment Using Spread Spectrum Modulation Techniques); Radiocommunications (Spread Spectrum Devices); Radiocommunications (Short Range Devices); Radiocommunications (Low Interference Potential Devices);

Telecommunications

Telecommunications Registration; General test methods; Lightning surge*; Drop testing*; Balance testing*; Signal power (metallic and longitudinal)*; Frequency measurements*; Pulse templates*; Leakage testing*; Impedance testing*; Hearing Aid Compatibility testing (excluding volume control)*; Protocol analysis* and Jitter testing*.

Telecom Standards

Title

North American standards

FCC 47 CFR Part 68 Telephone Terminal Equipment
CS-03 Issue 9

Connection of terminal equipment to the telephone network. Analog and Digital Equipment. TCB Scope C1. Specification for terminal equipment, terminal systems, Network protection devices, connection arrangements and hearing aids compatibility.

TIA/EIA TSB31-B 1998

Bulletin Part 68 Rationale and Measurement Guidelines (Feb 1998)

TIA-968-A, A1, A2, A3

Telecommunications Telephone Terminal Equipment Technical Requirements for Connection of Terminal Equipment to the Telephone Network

T1.TRQ.6-2001

Technical Requirements for SHDSL, HDSL2, HDSL4 Digital Subscriber Line Terminal Equipment to Prevent Harm to the Telephone Network Industry

Australia standards

AS/ACIF S002-2001

Analogue interworking and non-interference requirements for Customer Equipment for connection to the Public Switched Telephone Network

AS/ACIF S016-2001

Requirements for Customer Equipment for connection to hierarchical digital interfaces

AS/ACIF S031-2001

Requirements for ISDN Basic Access Interface

AS/ACIF S038-2001

Requirements for ISDN Primary Rate Access Interface

AS/ACIF S043-2001

Requirements for Customer Equipment for Connection to a Metallic Local Loop Interface of a Telecommunications Network —
Part 1: General
Part 2: Broadband
Part 3: DC, Low Frequency AC and Voice band

International standards

ITU-T G.703

Physical/electrical characteristics of hierarchical Digital interfaces

Hong Kong standards

HKTA 2011

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 2014

Network Connection Specification for Connection of Customer Premises Equipment (CPE) to the Public Telecommunications Network (PTN) in Hong Kong using ISDN Basic Rate Access (BRA) based on ITU-T Recommendations

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<u>Telecom Standards</u> HKTA 2028 HKTA 2029 HKTA 2030 HKTA 2031 HKTA 2032 HKTA 2033 <i>European standards</i> TBR 1: 1995 TBR 2: 1997 TBR 3: 1995 + Amdt : 1997 TBR 4: 1995 + Amdt : 1997 TBR 012: 1993 + Amdt : 1996 TBR 013: 1996 (A2LA Cert. No. 1627.01) 3/27/06	<u>Title</u> Network connection specification for connection of CPE to the PTNs in Hong Kong using digital leased circuits at data rate of 1544 kbit/s Network connection specification for connection of CPE to the PTNs in Hong Kong using digital leased circuits at data rate of 2048 kbit/s Network Connection Specification for Connection of Customer Premises Equipment (CPE) to the Public Telecommunications Network (PTN) in Hong Kong using Digital Leased Circuits at rx64 kbit/s Network Connection Specification for Connection of Customer Premises Equipment (CPE) to the Public Telecommunications Network (PTN) in Hong Kong using Digital Leased Circuits below 64 kbit/s Network Connection Specification for Connection of Customer Premises Equipment (CPE) to the Public Telecommunications Networks in Hong Kong using Asymmetric Digital Subscriber Lines (ADSL) based on ITU-T Recommendation G.992.1 Network Connection Specification for Connection of Customer Premises Equipment (CPE) to Fixed Telecommunications Networks in Hong Kong using Splitterless Asymmetric Digital Subscriber Lines (ADSL) based on ITU-T Recommendation G.992.2 Attachment requirements for terminal equipment to Be connected to circuit switched data networks and Leased circuits using a CCITT Recommendation X.21 interface, or at an interface physically, functionally and electrically compatible with CCITT Recommendation X.21 but operating at any data signaling rate up to, and including, 1 984 kbit/s Attachment requirements for Data Terminal Equipment (DTE) to connect to Packet Switched Public Data Networks (PSPDNs) for CCITT Recommendation X.25 interfaces at data signaling rates up to 1 920 kbit/s utilizing interfaces derived from CCITT Recommendations X.21 and X.21 bit Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN primary rate access Business Telecommunications (BT); Open Network Provision (ONP) technical requirements; 2 048 kbit/s digital unstructured leased line (D2048U) Attachment requirements for terminal equipment Business TeleCommunications (BTC); 2 048 kbit/s digital structured leased lines (D2048S); Attachment requirements for terminal equipment interface Page 5 of 10	<i>European standards (cont'd)</i> TBR 21: 1998 TBR 24: 1997 <i>Taiwan standards (DGT)</i> ADSL01 ID0002 IS6100 PSTN01 (non-voice only) <i>New Zealand standards</i> PTC 200 (non-voice only) PTC 217 TNA 117 PTC 270 <i>Singapore Standards</i> IDA TS ADSL IDA TS ADSL 2 IDA TS DLCN 1 IDA TS ISDN 1 IDA TS ISDN 2 IDA TS PSTN (non-voice only) <i>South Africa standards</i> TE-001 (non-voice only) (A2LA Cert. No. 1627.01) 3/27/06	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 Business TeleCommunications (BTC); 34 Mbit/s Digital Unstructured and structured leased lines (D34U and D34S); Attachment requirements for Terminal equipment interface Asymmetric Digital Subscriber Line Terminal Equipment and POTS Splitter Technical Specifications DS1 Equipment Type Approval Guidelines ISDN Terminal Equipment Technical Specifications Technical Specifications for Terminal Equipment for Connection to Public Switched Telephone Network Requirements for Connection of Customer Equipment to Analogue Lines Requirements for Bandwidth Management Devices Telecom 2048 kbit/s Standard Network Interface Interim arrangements for ADSL CPE Type Approval Specification for Asymmetric Digital Subscriber Line (Full-rate ADSL) Modems Type Approval Specification for Asymmetric Digital Subscriber Line Splitterless (G-Lite) Modems Type Approval Specification for Digital Interfaces based on hierarchical bit rates of 2048 kbit/s, 34 368 kbit/s and 139 264 kbit/s Type Approval Specification for connection of Terminal Equipment to Integrated Services Digital Network (ISDN) Basic Access Type Approval Specification for connection of Terminal Equipment to Integrated Services Digital Network (ISDN) Primary Rate Access (PRA) Type Approval Specification for connection of Terminal Equipment to Public Switched Telephone Network (PSTN) Standard for Telecommunication Line Terminal Equipment (TLTE) for Connection to the Public Switched Telephone Network (PSTN) Page 6 of 10
Product Safety General test methods: Power input*, Permanence of marking*, Accessibility*, Permissibly limits*, Energy hazard measurement*, SELV circuits*, TNV limits*, Limited current*, Capacitor Discharge / voltage limitation*, Ring signal*, Humidity conditioning*, Creepage / Clearance / Distance thru Insulation (excluding CITI)*, Limited power measurement*, Ground Bond/Earthing*, Ground continuity*, Temperature*, Stability*, Applied force*, Steel sphere impact*, Mold stress*, Battery reverse current*, Ball pressure*, Leakage current*, Component abnormal*, Electric strength*, Impulse*, Overvoltage*, Acoustic sound pressure*, 130mm/ 20mm flame*, Needle flame*, Hot flaming oil*, Locked rotor/motor armature*, Vibration, Bump, Drop*, Strain relief*, Torque*, Insulation resistance*, Sound level*, Handle loading*, Liquid overflow*, Spillage*, Liquid leakage*, Transformer shorts/overloads*, Rain test*, Wall mount*, Laser radiation (excluding x-ray)*, Voltage surge*, Functionality*, Protective impedance abnormal*, Capacitor short circuit abnormal*, Output abnormal*, Multi-supply abnormal*, Cooling abnormal*, Heating device abnormal*, Interlock abnormal*, Rigidity*, Cleaning* <u>Product Safety Standards</u> <i>Specific Product Safety Standards</i> UL 60950 2000 IEC 60950 1999 EN 60950 2000 IEC 60950-1 2001 UL 60950-1 2003 CSA C22.2 No. 60950-00 CSA C22.2 No. 60950-1 03 IEC 61010-1 1993 EN 61010-1 1993, 2001 IEC 61010-1 2001 UL 61010B-1 2003 CAN/CSA 1010-1 1999 (Including AM 2) IEC 60601-1 1995 EN 60601-1 1995 (Including AM 2) UL 2601-1 1997 IEC 60065 1998, 2000 ANSI/UL 6500: 1998 CAN/CSA 60065-00 AS/NZS 60065 2000 Canadian C22.2 No. 1-94 (1-98) 1994, 1998 EN 60065 1994 IEC 60825 1990 EN 60825-1 1994 (A2LA Cert. No. 1627.01) 3/27/06	<u>Title</u> Classification, requirements and user's guide. Safety of laser products – Part 2: Safety of optical communication systems Safety of laser products – Part 4: Laser guards Performance standard for laser products Safety of household and similar electrical appliances Part 1: General requirements Electrical equipment for laboratory use; part 1: General requirements Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements Safety information technology equipment Information Technology Equipment – Safety – Part1: General Requirements Information Technology Equipment – Safety – General requirements Electrical Equipment for Measurement, Control and Laboratory Use; Part 1: General Requirements Medical Electrical Equipment, Part 1: General Requirements for Safety Medical Electrical Equipment - Part 1: General Requirements For Safety 1: Collateral Standard: Safety Requirements For Medical Electrical Systems Medical Electrical Equipment - Part 1: General Requirements for Safety – Section 1-1, Collateral Standard: Safety Requirements For Medical Electrical Systems Audio, Video and Similar Electronic Apparatus – Safety Requirements Audio, Video and Similar Electronic Apparatus – Safety Requirements Audio, Video and Similar Electronic Apparatus – Safety Requirements Audio, Video and Similar Electronic Apparatus – Safety Requirements Safety of Machinery – Electrical Equipment of Machines – Part 1: Specification for General Requirements Compliance Test Specification – Safety and Electrical Protection Requirements for Subscriber Equipment Connected to the Public Telecommunications Networks In Hong Kong <u>Product Safety Standards</u> IEC 60825-1 2001 IEC 60825-2 2000-5 IEC 60825-4 1997-11 21 CFR 1040.10 IEC 60335-1 1995 (Including AM2 – 1997 & AM 12 – 1997) EN 60335-1 2001 UL 60335-1 1998 CAN/CSA E335-1 1994 UL 61010A-1: 2002 EN 61010-1: 2001 AS/NZS 60950: 2000 EN 60950-1: 2001 AS/NZS 60950.1: 2003 UL 61010 -1: 2004 UL 60601-1: 2003 IEC 60601-1-1: 2000 EN 60601-1-1: 2001 UL 60065: 2003 CSA 60065: 2003 IEC 60065: 2001 EN 60065: 2002 EN 60204 -1: 1998 HKTA 2001 (A2LA Cert. No. 1627.01) 3/27/06	Page 7 of 10	Page 8 of 10

<i>Environmental Simulation</i>			Note 1. For standards or methods listed on the scope of accreditation without a revision date, laboratories are expected to be competent in the use of the current version within one year of the date of publication of the standard test method or upon the date specified by the standard test method originator when the originator has implementation authority. When a superseded standard or method is required for an accredited test, the scope will include the superseded date/version. For those that support the TCB/CB status of the organization acting as a certifier on behalf of the FCC or IC the expectation is currency within 30 days of Federal Register publication of changes for FCC and 30 days after IC website update. This note shall not be construed as an Accreditation Body implication to adopt a more current standard than is required in a regulation or code (i.e. the legal requirement) which is adopted by the lab under their responsibility. <i>* On-site test service is available for this technology, test, or method.</i>
<u>Test Technology</u>	<u>Test Standard</u>	<u>Supporting Standards</u>	
Accessibility*	IEC 60529	IP-0x thru IP-6x	MFG & Hygroscopic Dust IEC 60068-2-1 IP-x1 & IP-x2 IEC 60068-2-32 IP-5x & IP-6x Fire & Needle Flame IEC 60068-2-1 IEC 60068-2-2 IEC 60068-2-14 IEC 60068-2-56
Acoustic Noise*	GR-63-CORE Sec 4.6		
Airborne Contaminants	GR-63-CORE Sec 4.5		IP-x3 & IP-x4 IEC 60068-2-1 IEC 60068-2-2 IEC 60068-2-14 IEC 60068-2-30 IEC 60068-2-56 IEC 60068-2-6 IEC 60068-2-27 IEC 60068-2-29 IEC 60068-2-32 IEC 60068-2-57 IEC 60068-2-64 Earthquake, Office & Transportation IP-x7 & IP-x8 IP-x5 & IP-x6
Altitude	GR-63-CORE Sec 4.1.3		
Cold Start*	ETS 300 019		GR-63-CORE Sec 4.1.2 ASTM B117 GR-63-CORE Sec 2.0 & 3.0 IEC 60529 ETS 300 019
Drip	IEC 60529		
Drops*	ETS 300 019		GR-63-CORE Sec 4.3 IEC 60529 GR-487 ANSI/T1.319 GR-63-CORE Sec 4.2 GR-63-CORE Sec 4.1.4 GR-63-CORE Sec 4.7
Dust	GR-63-CORE Sec 4.3		
Firearms Resistance Testing	IEC 60529		GR-63-CORE Sec 4.1.1 ETS 300 019 GR-63-CORE Sec 4.4 IEC 60529 IEC 60529
Fire Resistance	GR-487		
Heat Dissipation*	ANSI/T1.319		GR-63-CORE Sec 4.1.1 ETS 300 019 GR-63-CORE Sec 4.4 IEC 60529 IEC 60529
Illumination	GR-63-CORE Sec 4.2		
Operational Temperature & Humidity (OpTH)*	GR-63-CORE Sec 4.1.4		GR-63-CORE Sec 4.1.1 ETS 300 019 GR-63-CORE Sec 4.4 IEC 60529 IEC 60529
	GR-63-CORE Sec 4.7		
	ETS 300 019		
Salt Fog & Spray	GR-63-CORE Sec 4.1.2		
Spatial*	ASTM B117		
Spraying-Splashing	GR-63-CORE Sec 2.0 & 3.0		
Storage (Temperature & Humidity)*	IEC 60529		
	ETS 300 019		
Vibration	GR-63-CORE Sec 4.1.1		
	ETS 300 019		
Water Immersion	GR-63-CORE Sec 4.4		
Water Jet	IEC 60529		
	IEC 60529		

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