Curtis-Straus Test Report

Report No EF0764-1

> LS Starrett Client

> > 121 Crescent Street Athol, MA 01331

Phone 978-249-3551

FRN 0014116503

RSS-210 Issue 6; FCC Part 15.249

Model 1500-1 FCC ID TV81500-1 IC 6164A-15001

Equipment Type Low Power Communications Device Transmitter **Equipment Code** DXX **Emission Designator** K₁D

> Results As detailed within this report

Prepared by

Authorized by

Michael Buchholz – EMC Manager

Issue Date 1/17/06

Conditions of issue

This Test Report is issued subject to the conditions stated in 'terms and conditions' section of this report.

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Table of Contents

Summary	
Test Methodology	3
Statement of Conformity	
EUT Configuration	
Fundamental Measurement	
Band Edge Measurements	
Radiated Spurious Emissions	
AC Line Conducted Emissions	
Voltage Variations	
Test Equipment Used	
Terms And Conditions	
A2LA Accreditation	



Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.249 and RSS-210(A2.9). The product is the Gateway, MN 1500-1. It is a transmitter that operates at 916.5 MHz.

Test Methodology

Radiated emissions testing are performed according to the procedures specified in ANSI C63.4 (2003) and RSS-GEN. Emissions were maximized by rotating the device around three orthogonal axes as well as varying the test antenna's height and polarity. The environmental conditions are shown below.

Date	Temperature (°c)	Humidity (%)
10/13/05	23.4	43
10/14/05	23.5	47
10/19/05	24.7	34
10/31/05	24.9	27
11/03/05	23.3	26

Frequency range investigated: 0.15MHz – 10GHz

Measurement distance: 0.15 – 30MHz Conducted

30MHz – 3GHz 3m 3 – 10GHz 1m

EUT antenna was varied and maximized during testing.



Statement of Conformity

The Gateway, MN 1500-1 has been found to conform to the following parts:

RSS-GEN	RSS 210	Part 15	Comments
5.3		15.15(b)	There are no controls accessible to the user that vary the output power.
5.2		15.19	The label is shown in the label exhibit.
7.1.5		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
7.1.4		15.203	The antenna connector for this device is inaccessible to the user, see below.
	2.6	15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
7.2.2		15.207	EUT meets the AC Line conducted emissions requirements of 15.207.
	A2.9	15.249	The unit complies with the requirements of 15.249

The antenna is not hard wired to the PCB, but the connection is inside the box. See picture below.





EUT Configuration

EUT Configuration

Work Order: F0764 Company: LS Starrett

Company Address: 121 Crescent Street

Athol, MA 01331 **Contact:** John Belliveau

	MN	SN	
EUT	:		
RS232/External USB, Powered by 5Vdc adapter	1500-1-RN	Sample 1	
USB to serial adapter by coolgear	-	70451	
Unifive power supply	UL310-0515	-	
Internal USB, Powered by USB Host	1500-1-UN	Sample 1	
Midsize powered by internal USB Dongle	1500-1-M	Sample 1	
Midsize, Internal USB, Powered by USB Host	1500-1-MN	Sample 1	

EUT Description: Gateway **EUT Max Frequency:** 916.6MHz

Support Equipment:	MN		SN		
None					
EUT Cables:	Qty	Shielded?	Length	Ferrites	
DC power	1	No	2 m	None	
USB	1	Yes	0.8 m	None	
Unpopulated EUT Ports:	Qty	Reason			
None					

Software / Operating Mode Description:

EUT was running in the transmit mode specified by the test. The modes available are: sleep, ASK transmit, OOK transmit, and receive. Unless otherwise stated the EUT was operating in ASK transmit mode which is the maximum transmitted power level mode.

The differences for the Gateway models are the way that it is powered and its I/O interface. For all models of the Gateway the transmitter portion of the unit is the same, therefore only spurious emissions testing was done on the 1500-1-UN, M, and MN. All Radio related testing and spurious emissions testing was done on the 1500-1-RN.



Fundamental Measurement

LIMIT

QuasiPeak: 93.9dBµV/m @ 3m [15.35(b)]

MEASUREMENTS

Fundam	ental									Curtis-St	raus LLC		
Date:	14-Oct-05			Company:	LS Starr	ett			N	ork Order:	F0764		
Engineer:	Mairaj Hussa	in	I	EUT Desc:	Gateway	y							
								Measuremen	nt Distance:	3 m			
Notes:	RBW: 120KH	lz; VBW: 1M	Hz					EU.	T Max Freq:	916.6MHz			
Antenna			Preamp	Antenna	Cable	Adjusted			F	CC Class I	В		
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading			Limit	Margin	Result		
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)			(dBµV/m)	(dB)	(Pass/Fail)		
ASK mode Vpk	916.67	62.1	0.0	21.7	8.2	92.0			94.0	-2.0	Pass		
OOK mode Vpk	916.7	60.2	0.0	21.7	8.2	90.1		94.0 -3.9 Pas					
Table	e Result:	Pass	by	-2.0	dB			Worst Freq: 916.67 MHz					
Test Site:	"A"	Pre-Amp:	none	Cable:	EMIR-0	6	Analyzer: White	hite Antenna: Grn-Blk					

Band Edge Measurements

LIMITS

QuasiPeak limit: FCC Class B limits 46dBuV/m @ 3m [15.35)b)]

MEASUREMENTS

Band Ed	geds										Curtis-St	aus LLC
Date:	13-Oct-05			Company:	LS Starr	ett				W	ork Order:	F0764
Engineer:	Mairaj Hussa	in	EUT Desc: Gateway									
									Measuremer	nt Distance:	3 m	
Notes:	RBW: 120KH	z; VBW: 1M	Hz						EU.	T Max Freq:	916.6MHz	
Antenna			Preamp	Antenna	Cable	Adjusted				F	CC Class I	3
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading				Limit	Margin	Result
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)				(dBµV/m)	(dB)	(Pass/Fail)
Vpk	902.0	17.9	20.7	21.6	4.5	23.3				46.0	-22.7	Pass
Vpk	928.0	19.0	20.6	21.8	4.7	24.9				46.0	-21.1	Pass
Table	e Result:	Pass	by	-21.1	dB				Wo	orst Freq:	928.0	MHz
Test Site:	"F"	Pre-Amp:	Green	Cable:	EMIR-04	4	Analyzer:	Black		Antenna:	Green	



Radiated Spurious Emissions

LIMITS

Average (above 1000MHz): $500\mu V/m = 53.9 dB\mu V/m$ @ 3m [15.249(a), (b), and (d)]

QuasiPeak limit (30-1000MHz): FCC Class B limits @ 3m [15.35(b)]

Note: If Peak measurements meet Average limits, then Average measurements are not required.

MEASUREMENTS

Radiated	l Emissio	ons Tab	le						Curtis-St	raus LLC		
Date:	13-Oct-05			Company:	LS Starre	ett		W	ork Order:	F0764		
Engineer:	Mairaj Hussai	'n		EUT Desc:	Gateway	MN 1500-1-RN	1-RN					
	Freque	ncy Range:	30 - 1000MHz				Meas	surement Distance:	3 m			
Notes:	Tx mode RBW: 120KH	z & 1MHz; VI	3W: 1MHz					EUT Max Freq:	916.6MHz			
Antenna			Preamp	Antenna	Cable	Adjusted		F	CC Class	В		
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading		Limit	Margin	Result		
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)		(dBµV/m)	(dB)	(Pass/Fail)		
V	43.0	35.5	21.5	12.8	0.8	27.6		40.0	-12.4	Pass		
v	64.0	35.0	21.5	6.7	1.0	21.2		40.0	-18.8	Pass		
V	74.4	34.0	21.5	7.0	1.1	20.6		40.0	-19.4	Pass		
V	86.5	34.8	21.4	8.8	1.1	23.3		40.0	-16.7	Pass		
v	109.6	32.4	21.5	12.1	1.3	24.3		43.5	-19.2	Pass		
V	161.7	35.8	21.5	10.9	1.6	26.8		43.5	-16.7	Pass		
v	174.1	37.8	21.4	10.2	1.7	28.3		43.5	-15.2	Pass		
V	36.0	38.2	21.5	16.4	1.3	34.4		40.0	-5.6	Pass		
Table	e Result:	Pass	by	-5.6	dB			Worst Freq:	36.0	MHz		
Test Site:	Test Site: "F"		Green	Cable:	EMIR-04		Analyzer: Black	Antenna:	Green			

Date	: 14-Oct-05			Company:	LS Stari	S Starrett Work Order: F0764						F0764		
Engineer	: Mairaj Hussa	in	EUT Desc: Gateway MN 1500-1-RN											
	Freque	ncy Range:	1 - 10GHz					ı	Measuremer	nt Distance:	3 m			
Notes	Tx, Mod type VBW: 1MHz;		<u>z</u>						EUT Max Freq: 916.6MHz					
Antenna			Preamp	Antenna	Cable	Adjusted				F	CC Class I	3		
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading				Limit	Margin	Result		
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)				(dBµV/m)	(dB)	(Pass/Fail)		
Vpk	1833.3	37.8	18.8	28.6	1.9	49.5				54.0	-4.5	Pass		
Vpk	2749.7	32.7	20.3	31.0	2.5	45.9			54.0 -8.1 Pass					
		D	b.,	-4.5	dB				W	Worst Freq: 1833.3 MHz				
	e Result:	Pass	by	-4.5	ab				***	nstrieq.	1000.0			

Radiated	l Emissi	ons Tab	ole							Curtis-St	aus LLC	
Date:	14-Oct-05			Company:	LS Stari	ett			٧	Vork Order:	F0764	
Engineer:	Mairaj Hussa	in	I	EUT Desc:	Gatewa	y MN 1500	500-1-RN					
	Freque	ncy Range:	30 - 10000	MHz				Measurement Distance: 3 m				
Notes:	Rx mode RBW: 120KH	lz & 1MHz; V	'BW: 1MHz					EU.	Γ Max Freq:	916.6MHz		
Antenna			Preamp	Antenna	Cable	Adjusted				FCC Class E	3	
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading			Limit	Margin	Result	
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)			(dBµV/m)	(dB)	(Pass/Fail)	
٧	37.2	37.3	21.5	15.8	1.3	32.9			40.0	-7.1	Pass	
v	41.9	33.6	21.4	13.4	1.4	27.0			40.0	-13.0	Pass	
V	42.4	34.9	21.4	13.1	1.4	28.0			40.0	-12.0	Pass	
v	114.5	38.0	21.2	12.5	2.4	31.7			43.5	-11.8	Pass	
v	126.6	36.5	21.0	12.8	2.5	30.8			43.5	-12.7	Pass	
V	168.2	37.4	20.6	10.5	3.0	30.3			43.5	-13.2	Pass	
v	176.2	42.2	20.4	10.1	3.1	35.0			43.5	-8.5	Pass	
v	182.0	39.7	20.3	10.1	3.1	32.6			43.5	-10.9	Pass	
v	195.4	36.4	20.5	10.5	3.2	29.6		43.5 -13.9 Pa				
Test Site:	"A"	Pre-Amp:	Black	Cable:	EMIR-0	6	Analyzer: White		Antenna:	Grn-Blk		



Radiated	l Emissi	ons Tab	ole							Curtis-St	raus LLC		
Date:	19-Oct-05			Company:	LS Stari	et		W	ork Order:	F0764			
Engineer:	David Harris			EUT Desc:	Gatewa	y MN 1500-	-1-M						
	Freque	ncy Range:	1-10GHz					Measurem	ent Distance:	3 m			
Notes:	Tested Route	r 1500-2-SN	at same tii	me				E	UT Max Freq:	916.6MHz			
Antenna			Preamp	Antenna	Cable	Adjusted		FCC Class B					
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading			Limit	Margin	Result		
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)			(dBµV/m)	(dB)	(Pass/Fail)		
Н	1065.0	42.5	38.3	25.6	1.3	31.1			54.0	-22.9	Pass		
Н	1260.0	40.0	38.2	26.1	1.5	29.4			54.0	-24.6	Pass		
Н	1597.0	39.7	39.1	27.1	1.8	29.5			54.0	-24.5	Pass		
Н	2064.0	50.1	39.4	28.9	2.0	41.6			54.0 -12.4 Pas				
Table	e Result:	Pass	by	-12.4	dB			V	Worst Freq: 2064.0 MHz				
Test Site:	"F"	Pre-Amp:	Brown	Cable:	EMIR-H	IGH 3	Analyzer: Green		Antenna:	Orange Ho	'n		

	19-Oct-05			Company:	LS Starr	et	Work Order: F0764					
Engineer: David Harris EUT Desc: Gateway MN							I-M					
	Freque	ncy Range:	30-1000M	Hz			Mea	surement Distance:	3 m			
Notes:	Tested Route	r 1500-2-SN	at same tir	ne				EUT Max Freq:	916.6MHz			
Antenna	1		Preamp	Antenna	Cable	Adjusted		F	CC Class I	8		
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading		Limit	Margin	Result		
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)		(dBµV/m)	(dB)	(Pass/Fail		
Н	65.3	29.1	21.5	8.3	1.0	16.9		40.0	-23.1	Pass		
Hbb	113.7	33.6	21.5	12.9	1.3	26.3		43.5	-17.2	Pass		
V	117.88	38.5	21.5	13.5	1.4	31.9		43.5	-11.6	Pass		
V	136.68	35.8	21.5	14.2	1.5	30.0		43.5	-13.5	Pass		
V	332.151	26.5	21.3	14.7	2.4	22.3		46.0	-23.7	Pass		
V	364.75	28.2	21.2	15.6	2.6	25.2		46.0	-20.8	Pass		
V	562.8	28.2	21.0	18.9	3.4	29.5		46.0	-16.5	Pass		
V	586.37	30.2	20.9	19.3	3.5	32.1		46.0	-13.9	Pass		
V	846.97	29.7	20.6	22.3	4.4	35.8		46.0	-10.2	Pass		
V	960.0	31.7	20.6	23.4	4.7	39.2		46.0	-6.8	Pass		
V	1009.0	27.6	20.5	24.3	4.9	36.3		54.0	-17.7	Pass		
Table	e Result:	Pass	by	-6.8	dB			Worst Freq:	960.0	MHz		

Radiated	l Emissi	ons Dat	ta Tabl	е						Curtis-St	aus LLC
Date:	03-Nov-05			Company: LS Starrett				Work Order: F0764			
Engineer:	Chad Bell			EUT Desc:	Gatewa	y MN 1500	-1-MN				
Frequency Range: 30-10000MHz Measurement Distance: 3 m						3 m					
Notes:								EU	Γ Max Freq:	916.6	
Antenna			Preamp	Antenna	Cable	Adjusted			ı	CC Class I	3
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading			Limit	Margin	Result
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)			(dBµV/m)	(dB)	(Pass/Fail)
V	32.6	48.7	25.6	5.3	0.1	28.5			40.0	-11.5	Pass
V	49.6	49.3	25.6	3.2	0.2	27.1			40.0	-12.9	Pass
V	62.7	45.4	25.5	5.3	0.2	25.4			40.0	-14.6	Pass
V	82.3	47.2	25.6	7.5	0.3	29.4			40.0	-10.6	Pass
V	97.1	45.8	25.6	9.4	0.4	30.0			43.5	-13.5	Pass
V	121.4	45.6	25.5	7.5	0.4	28.0			43.5	-15.5	Pass
V	169.8	45.2	25.4	9.6	0.5	29.9			43.5	-13.6	Pass
Table	e Result:	Pass	by	-10.6	dB			Wo	orst Freq:	82.3	MHz
Test Site:	RFI 2	Pre-Amp:	Red	Cable:	RFI Cat	oles	Analyzer: Green		Antenna:	Grey	



Radiated	Emissi	ons Dat	a Tabl	е						Curtis-St	aus LLC
Date:	03-Nov-05			Company:	LS Stari	ett			W	ork Order:	F0764
Engineer:	Chad Bell			EUT Desc:	Gatewa	y MN 1500-	1-UN				
	Frequency Range: 30-10000MHz Measurement Distance: 3 m										
Notes:								EUT	Max Freq:	916.6	
Antenna			Preamp	Antenna	Cable	Adjusted			F	CC Class E	3
Polarization	Frequency	Reading	Factor	Factor	Factor	Reading			Limit	Margin	Result
(H / V)	(MHz)	(dBµV)	(dB)	(dB/m)	(dB)	(dBµV/m)			(dBµV/m)	(dB)	(Pass/Fail)
V	53.0	46.9	25.5	3.8	0.2	25.4			40.0	-14.6	Pass
V	67.8	47.1	25.6	5.9	0.3	27.7			40.0	-12.3	Pass
V	72.5	46.8	25.6	6.4	0.3	27.9			40.0	-12.1	Pass
V	96.7	48.1	25.6	9.4	0.4	32.3			43.5	-11.2	Pass
V	121.0	51.0	25.5	7.5	0.4	33.4			43.5	-10.1	Pass
V	130.3	49.7	25.6	7.2	0.5	31.8			43.5	-11.7	Pass
V	145.2	47.7	25.4	7.9	0.5	30.7			43.5	-12.8	Pass
V	169.4	48.2	25.4	9.7	0.5	33.0			43.5	-10.5	Pass
Table	e Result:	Pass	by	-10.1	dB			Wo	rst Freq:	121.0	MHz
Test Site:	RFI 2	Pre-Amp:	Red	Cable:	RFI Cab	oles	Analyzer: Green		Antenna:	Grey	

AC Line Conducted Emissions **LIMITS**

Frequency of emission (MHz)	Quasi-peak limit (dBµV)	Average limit (dBµV)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

^{*}Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

MEASUREMENTS

Notes:	Mairaj Hussa	iin	Company: LS Starrett EUT Desc: Gateway			Work Order: F076 Test Site: EMI2				
	1									
LISN(s): G	Green									
Range: 0).15-30MHz			Othe	er Equipment: -		Spectr	um Analyzer:	Green	
					Impedance	FCC/	CISPR B	FCC/0	CISPR B	
_	Q.P. Re	adings	Ave. Re	eadings	Factor					Overal
requency	QP1	QP2	AV1	AV2		qp Limit	qp Margin	AVE Limit	AVE Margin	Result
(MHz)	(dBµV)	(dBµV)	(dBµV)	(dBµV)	(dB)	(dBµV)	dB	(dBµV)	dB	(Pass/Fa
0.15	28.1	27.1			20.0	66.0	-17.9	56.0	-7.9	Pass
0.19	26.3	20.5			20.0	64.0	-17.7	54.0	-7.7	Pass
0.44	6.8	11.5			20.0	57.1	-25.6	47.1	-15.6	Pass
0.55	11.0	13.7			20.0	56.0	-22.3	46.0	-12.3	Pass
2.00	5.5	9.4			20.0	56.0	-26.6	46.0	-16.6	Pass
3.25	9.7	14.9			20.0	56.0	-21.1	46.0	-11.1	Pass
3.36	7.0	11.8			20.0	56.0	-24.2	46.0	-14.2	Pass

Measurements were made using a 50 ohm, 50uH LISN.



Voltage Variations

Voltage '	Variatio	าร			Cur	tis-Straus LLC	
Date:	31-Oct-05		Company: LS Starret				
Engineer:	EUT Desc: Gateway 1500-1-RN						
Work Order: F0764							
Notes:	Notes:						
Variation							
from Nominal	Frequency	Reading	Voltage	Difference		Result	
(%)	(MHz)	(dBµV)	(Vdc)	(%)			
0	916.3	62.8	5.000				
+15	916.3	62.8	5.750	0.0		Pass	
-15	916.3	62.8	4.250	0.0		Pass	
Test Site:	"EMC 1"	Analyzer:	Blue	А	ntenna:	Black Horn	



Test Equipment Used

rest Equipi	nent O	Seu					REV. 05-OC	Γ-2005	
SPECTRUM ANAL		RANGE	M	N MFR	SN	Ass			CALIBRATION DUE
RED	<u>, </u>	9kHz-1.8GHz	859	1E HP	3441A0	3559 000)24 I		13-JAN-2006
WHITE		9kHz-22GHz	8593		3547U0				08-MAR-2006
BLUE		9kHz-1.8GHz			3223A0				03-NOV-2005
YELLOW		9kHz-2.9GHz	8594	4E HP	3523A0	1958 001	00 I		20-APR-2006
GREEN		9kHz-26.5GHz	8593	3E HP	3829A0	3618 001	43 I		02-AUG-2006
BLACK		9kHz-12.8GHz	8596		3710A0	0944 003	337 I		27-DEC-2005
YELLOW-BLA	CK	20Hz-40.0MHz			2504A0	5219 000)30 I		Out of Service
TELECOM 358	35A	20Hz-40.0MHz			1750A0)67 I		04-FEB-2006
ORANGE		9kHz-26.5GHz			US3944				22-JUN-2006
EMI TEST RECE	EIVER	20-1000MHz	ESVS	S30 R&S	827957	/001 010)98 I		27-OCT-2005
LISNS/MEASUREM	MENT	RANGE		45.1	14	011	ASSET	Сат	0
PROBES				MN	MFR	SN			CALIBRATION DUE
RED		10kHz-30MHz		R-24-BNC	SOLAR	956348	00753	II	15-APR-2006
BLUE (DC)		10kHz-30MHz		R-24-BNC	SOLAR	956349	00752	II	02-MAY-2006
YELLOW-BLACK		10kHz-30MHz		R-24-BNC	SOLAR	984735	00248	II	15-APR-2006
ORANGE (DO)		10kHz-30MHz		R-24-BNC	SOLAR	903707	00754	II.	02-MAY-2006
GOLD (DC)		10kHz-30MHz		R-24-BNC	SOLAR	984734	00247	II.	02-MAY-2006
BROWN		10kHz-30MHz		R-24-BNC	SOLAR	0411656	00986	II	04-MAY-2006
GREEN		10kHz-30MHz 10kHz-30MHz		R-24-BNC	SOLAR	0411657	00987	II	04-MAY-2006
YELLOW		10kHz-30MHz		R-24-BNC	SOLAR	0411658	1080	II II	04-MAY-2006
WHITE-BLACK		10kHz-30MHz		-TS-100-N	SOLAR	972019	00678	II	15-APR-2006
Black Red-Black		10kHz-30MHz		-TS-100-N -TS-100-N	SOLAR SOLAR	972017 972016	00675 00677	II II	15-APR-2006 15-APR-2006
BLUE-BLACK		10kHz-30MHz		-TS-100-N -TS-100-N	SOLAR	972018	00677	II	15-APR-2006 15-APR-2006
BLUE MONITORING F		0.01-150MHz		550-2	TEGAM	12350	00807	"	26-MAY-2007
YELLOW MONITORING		0.01-150MHz		550-2 550-2	ETS	50972	00493	;	24-NOV-2005
GREEN CURREN		40Hz-20MHz	910	000-2	LIS	30972	00493		24-INOV-2003
TRANSFORMER	₹		1	50	PEARSON	10226		'	07-APR-2007
BLUE CISPR LINE PI	ROBE	150кНz- 30МНz	1	N/A	C-S	N/A	00805	II	08-JUN-2007
BLACK CISPR LINE P	ROBE	150кHz- 30MHz	1	N/A	C-S	N/A	NONE	II	08-JUN-2007
CISPR TELCO VOLTAGE		10ĸHz-30MHz		VC-10	C-S	CS01	00296	II	30-SEP-2006
CISPR 22 TELCO	ISN	9kHz-30MHz	FCC-1	LISN-T4	FISCHER	20115	00746	<u> </u>	26-OCT-2006
OPEN AREA TE	ST SITE (O	4 <i>TS</i>)	FCC C	ODE	IC CODE	VCCI Co	DE CAT		CALIBRATION DUE
SIT	ΈF		9344	-	IC 2762-F	R-168			04-APR-2007
	ΈT		9344		IC 2762-T	R-905			14-AUG-2007
	EΑ		9344		IC 2762-A	R-903			13-AUG-2007
511	EM		9344	18	IC 2762-M	R-904	l II		19-MAR-2007
LINE CONDUCT	TED TEST S	ITES	FCC C	ODE	IC CODE	VCCIC	ODE	Сат	CALIBRATION DUE
EM	/II 1		9344	·8	N/A	C-18	01	II	01-MAY-2006
EM	/II 2		9344	8	N/A	C-18	02	II	01-MAY-2006
EM	/II 3		9344	8	N/A	C-18	03	II	01-MAY-2006
MIXERS/DIPLEXERS	RANGE	MN	ı	MFR	9	N	ASSET	Сат	CALIBRATION DUE
MIXERS/DIPLEXERS MIXER / HORN	26.5-40 GH			HP/ATM		5/A046903-01	1087	I	23-AUG-2006
MIXER / HORN	26.5-40 GF			HP/ATM		6/A046903-01	1087	i	23-AUG-2006 23-AUG-2006
MIXER / HORN	40-60 GH			OML		110-1	00821	i	02-MAR-2007
MIXER / HORN	60-90 GH			OML		110-1	00821	i	03-MAR-2007
MIXER / HORN	90-140 GF			OML		206-1	00811	i	03-MAR-2007
MIXER / HORN	140-220 GI			OML		206-1	00812	ii	OUT OF CALIBRATION
DIPLEXER	40-220 GF			OML		/A	00813	İ	03-MAR-2007
PREAMPS / ATTENUATO	nps /								
FILTERS	око/ F	RANGE	MN		MFR	SN	Asset	Сат	CALIBRATION DUE
RED	0.10	-2000MHz	ZFL-100	0-LN	C-S	N/A	00798	II	08-APR-2006
BLUE		-2000MHz	ZFL-100		C-S	N/A	00759	II	03-AUG-2006
BLUE-BLACK		-2000MHz	ZFL-100	0-LN	C-S	N/A	00800	II	10-FEB-2006
GREEN		-2000MHz	ZFL-100		C-S	N/A	00802		21-JUL-2006
BLACK	0.01	-2000MHz	ZFL-100	0-LN	C-S	N/A	00799	II	25-AUG-2006



ORANGE	0.01-2000MHz	ZFL-1000-LN	C-S	N/A	00765	Ш	10-FEB-2006
WHITE	1-20GHz	SMC-12A	C-S	426643	00760	Ш	04-AUG-2006
Brown	1-20GHz	PM2-38-218-4R5-17-15- SFF	C-S	PL1655	1132	II	27-JUN-2006
YELLOW-BLACK	1-20GHz	SMC-12A	C-S	535055	00801	П	25-AUG-2006
HF (YELLOW)	18-26.5GHz	AFS4-18002650-60-8P-4	C-S	467559	00758	П	23-AUG-2007
HIGH PASS FILTER	1-18 GHz	SPA-F-55204	K&L	36	00817	П	06-JAN-2006
Low Pass Filter	1-9 GHz	11SL10-4100/X4400-O/O	K&L	4	00816	П	06-JAN-2006
HF 20dB 50W ATTENUATOR	0.03-20 GHz	PE 7019-20	PASTERNACK	01	00791	П	10-MAY-2007
HF 30dB 50W ATTENUATOR	0.03-20 GHz	PE 7019-30	PASTERNACK	02	1168	П	10-MAY-2007
Low Freq LPF	10-100ĸHz	L200K1G1	MICROWAVE CIRCUITS	4460-01 DC0432	1019	II	OUT OF SERVICE
Low Freq LPF	10-100ĸHz	L200K1G1	MICROWAVE CIRCUITS	4777-01 DC0434	1088	II	30-AUG-2006

ANTENNAS	RANGE	MN	MFR	SN	ASSET	CA T	Calibration Due
GREEN BILOG	30-2000MHz	CBL6112B	CHASE	2742	00620	Ш	06-APR-2006
GREEN-BLACK BILOG	30-2000MHz	CBL6112B	CHASE	2412	00127	Ш	06-JAN-2006
GREEN-RED BILOG	30-2000MHz	CBL6112B	CHASE	2435	00990	Ш	OUT OF SERVICE
BLUE BILOG	30-1000MHz	3143	EMCO	1271	00803	Ш	06-MAY-2007
GRAY BILOG	20-2000MHz	3141	EMCO	9703-1038	00066	Ш	06-MAY-2007(EMI) / 05-AUG-2006(RFI)
YELLOW-BLACK BILOG	20-2000MHz	CBL6140A	CHASE	1112	00126	Ш	06-MAY-2007(EMI) / 12-AUG-2006(RFI)
RED-WHITE BILOG	30-2000MHz	JB1	SUNOL	A091604-1	01105	Ш	28-SEP-2006
RED-BLACK BILOG	30-2000MHz	JB1	SUNOL	A091604-2	01106	Ш	28-SEP-2006
YELLOW HORN	1-18GHz	3115	EMCO	9608-4898	00037	I	27-MAY-2007(EMI) / 05-JUN-2006 (RFI)
BLACK HORN	1-18GHz	3115	EMCO	9703-5148	00056	I	17-JUN-2007
ORANGE HORN	1-18GHz	3115	EMCO	0004-6123	00390	I	09-JUN-2007
HF (WHITE) HORN	18-26.5GHz	801-WLM	WAVELINE	00758	00758	- 1	26-AUG-2007
SMALL LOOP	9kHz-30MHz	PLA-130/A	ARA	1024	00755	- 1	23-FEB-2006
LARGE LOOP	20Hz-5MHz	6511	EMCO	9704-1154	00067	- 1	12-NOV-2005
ACTIVE MONOPOLE	30Hz-30MHz	3301B	EMCO	3824	00068	Ш	04-MAY-2006
INDUCTION COIL	50-60Hz	1000-4-8	C-S	N/A	00778	Ш	26-SEP-2007
ADJUSTABLE DIPOLE	30-1000MHz	3121C	EMCO	1370	00757	Ш	18-MAR-2007
ADJUSTABLE DIPOLE	30-1000MHz	3121C	EMCO	1371	00756	Ш	18-MAR-2007
RE101 LOOP SENSOR	30Hz-100kHz	RE101-13.3cm	C-S	N/A	00818	Ш	13-MAR-2007
RS101 RADIATING LOOP	30Hz-100kHz	RS101-12CM	C-S	N/A	00819	Ш	13-MAR-2007
RS101 LOOP SENSOR	30Hz-100ĸHz	RS101-4cm	C-S	N/A	00820	II	13-MAR-2007

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



FCC ID: TV81500-1 IC: 6164A-15001 REPORT: EF0764-1

Terms And Conditions

Paragraph 1. SERVICES. LABORATORY will:

Use the degree of care and skill ordinarily exercised by and consistent with the standards of the profession.

Perform all technical services in substantial accordance with the generally accepted laboratory principles and practices.

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:

- Provide LABORATORY with all plans, schematics, specifications, addenda, change orders, drawings and other information for the proper performance of technical services
- 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.
- Designate a person who is authorized to receive copies of LABORATORY's reports.
- 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.

 Furnish such labor and equipment needed by LABORATORY to handle samples at the LABORATORY and to facilitate the specified
 - technical services.

GENERAL CONDITIONS: Paragraph 3.

- 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.
- 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.
- 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.

 THE ONLY WARRANTY MADE BY LABORATORY IN CONNECTION WITH ITS SERVICE PERFORMED HEREUNDER IS 3.3
- THAT IT WILL USE THAT DEGREE OF CARE AND SKILL AS SET FORTH IN PARAGRAPH I ABOVE. NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE OR INTENDED FOR SERVICES PROVIDED HEREUNDER. 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.
- 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
- 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.
- 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 to the CLIENT shall not exceed \$100,000, or the laboratory of the 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:

- 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
- 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:



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.

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. Amounts overdue from CLIENT to LABORATORY shall be charged interest at a rate of 1½% per month.

5.2

5.3

Paragraph 6. ISO/IEC GUIDE 17025 ADDITIONS:

- CLIENT agrees that this test report will not be reproduced except in full, without written approval from the LABORATORY.
- 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.
- 6.3 CLIENT agrees that test results presented herein relate only to the sample tested by the LABORATORY.



A2LA Accreditation

SCOPE OF ACCE	REDITATION TO ISO/IEC 17025-1999	EN 55011 1991, 1998	Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio- frequency equipment.
	CURTIS-STRAUS ¹ 527 Great Road	SABS CISPR 11:1997	Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics Limits and methods of
Barry Or	Littleton, MA 01460 ninlan Phone: 978-486-8880	Canada ICES-001 1998	measurement Industrial, scientific and medical radio frequency generators
2		CNS13803	Industrial, Scientific and Medical Instrument
	ELECTRICAL	AS/NZS 2064: 1997	Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-
Valid until: January 31, 2006	Certificate Number: 1627.01		frequency equipment.
	CH. AND A I . C	CSA C108.8 – M1983	Electromagnetic Emission from Data Processing Equipment and
	the A2LA evaluation process, accreditation is granted to this agnetic Compatibility (EMC), Telecommunications, and Product	CISPR 13:1996, 1998, 2001	Electronic Office Machines Limits and methods of measurement of radio interference characteristics of sound and television broadcast receivers and
Electromagnetic Compatibility (EMC)		EN 55013: 1990, 2001	associated equipment. Sound and television broadcast receivers and associated equipment:
Radiated emissions testing (electric and magn	etic fields); Conducted emissions testing (voltage and current);	EN 33013. 1990, 2001	Electromagnetic compatibility. Part 1: Specification for limits and
	Transient testing; Radiated Immunity testing; Conducted Immunity		methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment.
testing; RF Power measurements; Frequency S	Dips, Interrupts and Voltage Variations testing; Magnetic Immunity Stability measurements; Longitudinal Induction measurements;	EN 55013 Amend 12 1994	Limits and methods of measurement of radio disturbance
Harmonic emissions testing; Light flicker testi measurements	ing; Low frequency disturbance voltage testing; Disturbance Power		characteristics of broadcast receivers and associated equipment. Amendment 12
measurements		SABS CISPR 13: 1996	Limits and methods of measurement of radio interference
EMC Standards	<u>Title</u>		characteristics of sound and television broadcast receivers and
Emissions		CNS 13439	associated equipment. Broadcast receiver and associated equipment Limits and methods of
CISPR 22 1997 with amendments 1 and 2	Limits and methods of measurement of radio disturbance	AS/NZS 1053: 1999	measurement of radio interference characteristics of sound and
CNS13438 1994	characteristics of information technology equipment. Limits and methods of measurement of radio interference	CISPR 14 1993	television broadcast receivers and associated equipment. Limits and methods of measurement of radio disturbance
	characteristics of information technology equipment.	(except discontinuous disturbances)	characteristics of electrical motor- operated and thermal appliances for
EN55022:1994 and 1998	Limits and methods of measurement of radio disturbance	EN 55014 1993, 1997	household and similar purposes, electric tools and electric apparatus.
SABS CISPR 22:1997	characteristics of information technology equipment. Information technology equipment – Radio disturbance	discontinuous disturbances)	Limits and methods of measurement of radio disturbance (except characteristics of electrical motor- operated and thermal appliances for
	characteristics - Limits and methods of measurement	•	household and similar purposes, electric tools and similar electric
Canada ICES-003 1997 AS/NZS 3548 1995	Digital apparatus Australian/New Zealand Standard Limits and methods of	AS/NZS 1044: 1995	apparatus. Limits and methods of measurement of radio disturbance (except
	measurement of radio disturbance characteristics of information	discontinuous disturbances)	characteristics of electrical motor- operated and thermal appliances for
CISPR 11 1990, 1997, 1999	technology equipment Limits and methods of measurement of electromagnetic		household and similar purposes, electric tools and similar electric apparatus.
	disturbance characteristics of industrial, scientific and medical		
	(ISM) radio-frequency equipment.	Immunity CNS13783-1	Household Electrical Appliances
		SABS CISPR 14-1 1993	Electromagnetic compatibility – Requirements for household
1 Note: This appredication govern testing perfo	rmed at the laboratory listed above and the satellite facility		appliances, electric tools and similar apparatus Part 1: Emission – Product family standard
located at 168 Ayer Rd, Littleton, MA 01460	tilled at the laboratory fisted above and the satellite facility	SABS CISPR 14-2 1997 + A1:2001	Electromagnetic compatibility - Requirements for household
			appliances, electric tools and similar apparatus Part 2: Immunity -
(A2LA Cert. No. 1627-01) 11/28/05	Page 1 of 11		Product family standard
		(A2LA Cert. No. 1627-01) 11/28/05	Page 2 of 11
CISPR 14-2 1996, 1997 + A1:2001	Immunity requirements for household appliances, tools and	EN 61000-6-1: 1997, 2001	Electromagnetic Compatibility (EMC)- Part 6: Generic standards-
CISPR 20: 1995, 2002 with amendment 3	similar apparatus. Limits and methods of measurement of immunity characteristics		Section 1: Immunity for residential, commercial and light-industrial environments
(associated group only)	of sound and television broadcast receivers and associated	EN 61000-6-2: 1998, 2001	Electromagnetic Compatibility (EMC)- Part 6: Generic standards-
EN 55020 1005 2002	equipment.	EN 50001 2 1006	Section 2: Immunity for industrial environments
EN 55020: 1995, 2002 (associated group only)	Electromagnetic immunity of broadcast receivers and Associated equipment.	EN 50091-2 1996	Specification for Uninterruptible Power Systems (UPS). Part 2: EMC requirements
CISPR 24	Information technology equipment - Immunity characteristics -	EN 55024 1998	Information technology equipment – Immunity Characteristics – Limits
SABS CISPR 24 1997	Limits and methods of measurement Information technology equipment – Immunity characteristics –	EN 55103-1 1997	and methods of measurement. Electromagnetic Compatibility – Product family standard for audio,
100700 2200 1 2 1007	Limits and methods of measurement		video, audio-visual and entertainment lighting control apparatus for
AS/NZS 3200.1.2: 1995	Approval and test specification – Medical electrical Equipment – General requirements for safety – Collateral Standard:	EN 55103-2 1997	professional use. Part 1: Emission Electromagnetic Compatibility – Product family standard for audio,
	Electromagnetic compatibility - Requirements and tests.	(excluding Annex A3)	video, audio-visual and entertainment lighting control professional use.
European Union Basic EMC Standards		EN 61326 1998	Part 2: Immunity Electrical equipment for measurement, control and laboratory use –
EN 61000-4-2: 1995, 1999, 2001	Electromagnetic compatibility (EMC). Part 4: Testing and		EMC requirements
	measurement techniques. Section 2: Electrostatic discharge immunity test – Basic EMC Publication	EN 61547 1996	Equipment for general lighting purposes – EMC immunity
EN 61000-4-3:1997, 1998, 2002			requirements
AS/NZS 61000.4.3 1999	Electromagnetic compatibility (EMC). Part 4: Testing and	EN 50130-4 1996	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family
A3/NZ3 01000.4.3 1999	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency,	EN 50130-4 1996	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and
EN 61000-4-4 1995	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and	EN 50130-4 1996 EN 55104 1995	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household
	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast	EN 55104 1995	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard.
EN 61000-4-4 1995 EN 61000-4-5 1995	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test – Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5:	EN 55104 1995 EN 50083-2 1995	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment.
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000-4.5 1999	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test – Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test.	EN 55104 1995	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety
EN 61000-4-4 1995 EN 61000-4-5 1995	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test – Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests
EN 61000-4-4 1995 EN 61000-4-5 1995 ASANZS 61000-4-5 1999 EN 61000-4-6 1996 AS/NZS 61000.4-6 1999	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test – Basic EMC publication (EMC). Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields.	EN 55104 1995 EN 50083-2 1995	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product
EN 61000-4-4 1995 EN 61000-4-5 1995 ASANZS 61000-4.5 1999 EN 61000-4-6 1996	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test – Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Testing and measurement techniques. Section 8: Power frequency magnetic	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000-4-5 1996 EN 61000-4-6 1996 AS/NZS 61000.4-6 1999 EN 61000-4-8 1994	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test — Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test.	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics
EN 61000-4-4 1995 EN 61000-4-5 1995 ASANZS 61000-4-5 1999 EN 61000-4-6 1996 AS/NZS 61000.4-6 1999	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test – Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC) Part 4: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations.
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000.4-5 1999 EN 61000-4-6 1996 AS/NZS 61000.4-6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test – Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC) Part 4: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations immunity tests.	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000-4-5 1996 EN 61000-4-6 1996 AS/NZS 61000.4-6 1999 EN 61000-4-8 1994	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test — Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC) Part 4: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment, Section 2: Compatibility levels for low-frequency conducted	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 ASA/XZS 61000.3-3 1998 EN 61000-3-3 1995	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000.4-5 1999 EN 61000-4-6 1996 AS/NZS 61000.4-6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test — Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC) Part 4: Testing and measurement techniques. Section 8: Double of the properties o	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 AS/NZS 61000.3.2 1998	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emission. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limitation of voltage fluctuations and flicker in low-voltage supply
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000.4-5 1999 EN 61000-4-6 1996 AS/NZS 61000.4-6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test — Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC) Part 4: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment, Section 2: Compatibility levels for low-frequency conducted	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 AS/NZS 61000.3.2 1998 EN 61000-3-3 1995 AS/NZS 61000.3.3 1999	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions
EN 61000-4-4 1995 EN 61000-4-5 1995 AS.NZS 61000.4.5 1999 EN 61000-4-6 1996 AS.NZS 61000.4.6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994 ENV 61000-2-2 1993	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test — Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 6: Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC) Part 4: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment, Section 2: Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems (IEC 1000-2-2:1990)	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 ASA/XZS 61000.3-3 1998 EN 61000-3-3 1995	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limitation of voltage fluctuations and flicker in low-voltage supply systems. Equipment Engineering (EE); Public telecommunication network equipment electro-magnetic compatibility (EMC) requirements Part 1:
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000.4-5 1999 EN 61000-4-6 1996 AS/NZS 61000.4-6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994 ENV 61000-2-2 1993	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test — Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC) Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment, Section 2: Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems (IEC 1000-2-2:1990) Electromagnetic capability – Generic emission standard. Part 1:	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 AS/NZS 61000.3.2 1998 EN 61000-3-3 1995 AS/NZS 61000.3.3 1999	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limitation of voltage fluctuations and flicker in low-voltage supply systems. Equipment Engineering (EE): Public telecommunication network
EN 61000-4-4 1995 EN 61000-4-5 1995 AS.NZS 61000.4.5 1999 EN 61000-4-6 1996 AS.NZS 61000.4.6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994 ENV 61000-2-2 1993	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test. Electromagnetic view and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC) Part 4: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment, Section 2: Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems (IEC 1000-2-2:1990) Electromagnetic capability – Generic emission standard. Part 1: Residential, commercial and light industry. (LS.)	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 AS/NZS 61000.3.2 1998 EN 61000-3-3 1995 AS/NZS 61000.3.3 1999	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limitation of voltage fluctuations and flicker in low-voltage supply systems. Equipment Engineering (EE); Public telecommunication network equipment electro-magnetic compatibility (EMC) requirements Part 1:
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000-4-5 1999 EN 61000-4-6 1996 AS/NZS 61000-4-6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994 ENV 61000-2-2 1993 EU Product Family Standards EN 50081-1 1992 EN 50081-2 1993	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test. Elsectrical fast transient/burst immunity test. Elsectromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Owner frequency magnetic field immunity test. (EMC). Part 4: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment, Section 2: Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems (IEC 1000-2-2:1990) Electromagnetic capability – Generic emission standard. Part 1: Residential, commercial and light industry. (LS.) Electromagnetic compatibility – Generic emission standard. Part 2: Industrial environment	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 AS/NZS 61000.3.2 1998 EN 61000-3-3 1995 AS/NZS 61000.3.3 1999	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limitation of voltage fluctuations and flicker in low-voltage supply systems. Equipment Engineering (EE); Public telecommunication network equipment electro-magnetic compatibility (EMC) requirements Part 1:
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000-4-5 1999 EN 61000-4-6 1996 AS/NZS 61000-4-6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994 ENV 61000-2-2 1993 EU Product Family Standards EN 50081-1 1992 EN 50081-2 1993 EN 50082-1 1992, 1998	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test — Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC). Part 5: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment, Section 2: Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems (IEC 1000-2-2:1990) Electromagnetic capability — Generic emission standard. Part 1: Residential, commercial and light industry. (LS.) Electromagnetic compatibility — Generic emission standard. Part 2: Industrial environment	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 AS/NZS 61000.3.2 1998 EN 61000-3-3 1995 AS/NZS 61000.3.3 1999	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limitation of voltage fluctuations and flicker in low-voltage supply systems. Equipment Engineering (EE); Public telecommunication network equipment electro-magnetic compatibility (EMC) requirements Part 1:
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000-4-5 1999 EN 61000-4-6 1996 AS/NZS 61000-4-6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994 ENV 61000-2-2 1993 EU Product Family Standards EN 50081-1 1992 EN 50081-2 1993	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test transient/burst immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test — Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC) Part 4: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment, Section 2: Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems (IEC 1000-2-2:1990) Electromagnetic capability — Generic emission standard. Part 1: Residential, commercial and light industry. (LS.) Electromagnetic compatibility — Generic emission standard. Part 2: Industrial environment Electromagnetic compatibility — Generic emission standard. Part 1: Residential, commercial and light industry (EMC) immunity immunity in testion and industry (EMC) immunity immuni	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 AS/NZS 61000.3.2 1998 EN 61000-3-3 1995 AS/NZS 61000.3.3 1999	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limitation of voltage fluctuations and flicker in low-voltage supply systems. Equipment Engineering (EE); Public telecommunication network equipment electro-magnetic compatibility (EMC) requirements Part 1:
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000-4-5 1999 EN 61000-4-6 1996 AS/NZS 61000-4-6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994 ENV 61000-2-2 1993 EU Product Family Standards EN 50081-1 1992 EN 50081-2 1993 EN 50082-1 1992, 1998	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test — Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC). Part 5: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment, Section 2: Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems (IEC 1000-2-2:1990) Electromagnetic capability — Generic emission standard. Part 1: Residential, commercial and light industry. (LS.) Electromagnetic compatibility — Generic emission standard. Part 2: Industrial environment	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 AS/NZS 61000.3.2 1998 EN 61000-3-3 1995 AS/NZS 61000.3.3 1999	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limitation of voltage fluctuations and flicker in low-voltage supply systems. Equipment Engineering (EE); Public telecommunication network equipment electro-magnetic compatibility (EMC) requirements Part 1:
EN 61000-4-4 1995 EN 61000-4-5 1995 AS/NZS 61000-4-5 1999 EN 61000-4-6 1996 AS/NZS 61000-4-6 1999 EN 61000-4-8 1994 EN 61000-4-11 1994 ENV 61000-2-2 1993 EU Product Family Standards EN 50081-1 1992 EN 50081-2 1993 EN 50082-1 1992, 1998	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test transient/burst immunity test. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 4: Electrical fast transient/burst immunity test — Basic EMC publication (EMC) Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields. Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic field immunity test. (EMC) Part 4: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment, Section 2: Compatibility levels for low-frequency conducted disturbances and signaling in public low-voltage power supply systems (IEC 1000-2-2:1990) Electromagnetic capability — Generic emission standard. Part 1: Residential, commercial and light industry. (LS.) Electromagnetic compatibility — Generic emission standard. Part 2: Industrial environment Electromagnetic compatibility — Generic emission standard. Part 1: Residential, commercial and light industry (EMC) immunity immunity in testion and industry (EMC) immunity immuni	EN 55104 1995 EN 50083-2 1995 EN 60601-1-2: 1993, 2002 IEC 1800-3 1995 EN 60555 Part 2 1987 EN 60555 Part 3 1987 EN 61000-3-2: 1995, 2000 AS/NZS 61000.3.2 1998 EN 61000-3-3 1995 AS/NZS 61000.3.3 1999	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family standard: Immunity requirements for components of fire, intruder and social alarm systems. Electromagnetic compatibility immunity – requirements for household appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2: Electromagnetic compatibility for equipment. Medical electrical equipment Part 1: general requirements for safety Section 2: Collateral standard: Electromagnetic compatibility – requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product standard including specific test methods. Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 2: Harmonics Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations. Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limitation of voltage fluctuations and flicker in low-voltage supply systems. Equipment Engineering (EE); Public telecommunication network equipment electro-magnetic compatibility (EMC) requirements Part 1:



ETS EN 300 386-2 1997, 1998,	Electromagnetic compatibility and radio spectrum matters (ERM);	EN 300 328-2:2001 v1.2.1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment
ETS EN 300 386 2000 v1.2.1, 2001 v1.3.1	Telecommunication network equipment; Electromagnetic compatibility (EMC) requirements; Part 2: Product family standard.		operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
ETS 300 132-1 1996	Equipment Engineering (EE); Power supply interface at the input to telecommunications equipment; Part 1: Operated by	EN 301 489-1:2002	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment
ETS 300 132-2 1996	alternating current (ac) derived from direct current (dc) sources Equipment Engineering (EE); Power supply interface at the input to telecommunications equipment; Part 2: Operated by	EN 60669-2-1:2002	and services; Part 1: Common technical requirements Switches for household and similar fixed electrical installations Part 2-1: Particular requirements – Electronic switches
ETR 283 1997	direct current (dc) Equipment Engineering (EE): Transient voltages at Interface A on telecommunications direct current (DC) power distributions.	Canada Radio Standards Canadian GL-36 1995	Industry Canada – technical requirements for low power Devices in the
EU radio standards		Canadian RSS-119 1999, 2000 Issue 6	2400 – 2483.5 MHz band. Industry Canada – Land mobile and fixed radio Transmitters and
(ETS) EN 300 385 v1.2.1: 1998, 1999	Electromagnetic compatibility and Radio spectrum matters (ERM); Electromagnetic Compatibility (EMC) standard for	Canadian RSS-134 1996 & 2000, Issue 1	receivers, 27.41 to 960.0 MHz Industry Canada – 900 MHz narrowband personal communications
EN 300 330 v1.2.1: 1998, 1999	fixed radio links and ancillary equipment (ETS)	Rev 1 Canadian RSS-210 2000 Issue 3,	services
EN 300 330 VI.2.1. 1990, 1999	Electromagnetic compatibility and Radio spectrum matters (ERM); Short range devices (SRD); Technical characteristics and test methods for radio equipment in the range 9 kHz to 25	RFS29 1998	Industry Canada – Low power license-exempt radio 2001 Issue 5 communication devices Specification for Restricted Radiation Radio Apparatus (New Zealand)
	MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz	FCC Standards	
ETS 300 328 1996	Radio Equipment and Systems (RES); Wideband transmission systems; Technical characteristics and test conditions for data	47 CFR FCC low power transmitters operating on frequencies below 1 GHz,	Scope A1
	transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques	emergency alert systems, unintentional radiators and ISM devices.	
ETS EN 300 440 v1.2.1 1999	Electromagnetic compatibility and Radio spectrum matters (ERM); Short range devices; Technical characteristics and test	47 CFR FCC low power transmitters operating on frequencies above 1 GHz,	Scope A2
	methods for radio equipment to be used in the 1 Ghz to 40 Ghz frequency range	with the exception of spread spectrum devices.	
EN 301 893:2002 v1.2.1	Broadband Radio Access Networks (BRAN); 5 GHz (draft) high performance RLAN; Harmonized EN covering Essential	47 CFR FCC Unlicensed Personal Scope Communications System (PCS) devices	A3
ETS 300 836-1:1998	requirements of article 3.2 of the R&TTE Directive Broadband Radio Access Networks (BRAN); High Performance	47 CFR FCC Unlicensed National Scope Information Infrastructure devices and	A4
	Radio Local Area Network (HIPERLAN) Type 1; Conformance testing specification; Part 1: Radio Type approval and Radio	low power transmitters using spread spectrum techniques.	
EN301 489-17:2002	Frequency (RF) conformance test specification Electromagnetic compatibility and Radio spectrum Matters	47 CFR FCC Personal mobile Scope Radio Services in the following FCC	BI
v1.2.1	(ERM); Electromagnetic Compatibility (EMC) standard for	Rule Parts 22, 24, 25, 27.	pa.
	radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems and 5 GHz high	47 CFR FCC General Mobile Radio Scope Services in the following FCC	B2
	performance RLAN equipment	Rule Parts 22, 74, 90, 95, 97. 47 CFR FCC Maritime and Aviation	В3
		Scope RadioServices in 47 CFR Parts 80 and 87	
		47 CFR FCC Microwave Radio Services Scope in 47 CFR Parts 21, 74 and 101.	B4
(A2LA Cert. No. 1627-01) 11/28/05	Page 5 of 11	(A2LA Cert. No. 1627-01) 11/28/05	Page 6 of 11
FCC/OST MP-5 1986	FCC (Federal Communications Commission) methods Of measurement of radio noise emissions from industrial, scientific	TIA/EIA-IS-968	Telecommunications Telephone Terminal Equipment Technical Requirements for Connection of Terminal Equipment to the Telephone
GR-1089-CORE: 1997, 1999 issue 2/ 2002 Issue 3	and medical equipment. Bellcore electromagnetic compatibility and electrical safety – Generic criteria for network telecommunications equipment.	TIA/EIA-IS-883	Network Telecommunications Telephone Terminal Equipment Supplemental Technical Requirements for Connection of Stutter Dial Tone Detection
ANSI EMC Standards		TIA-968-A	Devices and ADSL Modems to the Telephone Network Telecommunications Telephone Terminal Equipment Technical
ANSI C63.4: 1992, 1999, 2001, 2003	American National Standard for methods of measurement of radio-noise emissions for low-voltage electrical and electronic		Requirements for Connection of Terminal Equipment to the Telephone Network
ANSI C63.5 1988	equipment in the range of 9 kHz to 40GHz. American National Standard for electromagnetic compatibility –	T1.TRQ.6-2001	Technical Requirements for SHDSL, HDSL2, HDSL4 Digital Subscriber Line Terminal Equipment to Prevent Harm to the Telephone
	radiated emissions measurements in electromagnetic interference (EMI) control – calibration of antennas.	Canada VDSL	Network Industry Terminal Attachment Program Requirements and Test Methods for
IEEE EMC Standards	canoration of anomas.	Issue 1 January 2003	Very-High-Bit-Rate Digital Subscriber Line (VDSL) Terminal Equipment
IEEE C62.41: 1980, 1991	IEEE recommended practice on surge voltages in low-voltage AC power circuits	AS/ACIF S002-2001	Equipment Analogue interworking and non-interference requirements for Customer Equipment for connection to the Public Switched Telephone
Swedish EMC Standards	The poster effection	AS/ACIF S016-2001	Network Requirements for Customer Equipment for connection to hierarchical
BAKOM 3336.3 1995	Electromagnetic compatibility and electrical safety (EMC & S)	AS/ACIF S031-2001 AS/ACIF S031-2001	Requirements for Customer Equipment for connection to merarchical digital interfaces Requirements for ISDN Basic Access Interface
	for wired terminal equipment. Harmonization document information over the OFCOM requirements.	AS/ACIF S038-2001	Requirements for ISDN Primary Rate Access Interface
South African EMC standards other than CISPR		AS/ACIF S043-2001	Requirements for Customer Equipment for Connection to a Metallic Local Loop Interface of a Telecommunications Network —
SABS 1718-1: 1996	South African Bureau of Standards: Specification for Gaming equipment. Part 1: Casino equipment.		Part 1: General Part 2: Broadband
Japanese VCCI Standards		ITU-T G.703	Part 3: DC, Low Frequency AC and Voiceband Physical/electrical characteristics of hierarchical Digital interfaces
VCCI V-3/99.05 1999 VCCI V-4/99.05 1999	Technical Requirements Instruction for Test Conditions for Requirement under Test	HKTA 2028	Network connection specification for connection of CPE to the PTNs in Hong Kong using digital leased circuits at data rate of 1544 kbit/s
		HKTA 2029	Network connection specification for connection of CPE to the PTNs in Hong Kong using digital leased circuits at data rate of 2048 kbit/s
Telecommunications Telecommunications Registration: General test to	methods; Lightning surge; Drop testing; Balance testing; Signal	TBR 1:1995	Attachment requirements for terminal equipment to be connected to circuit switched data networks and leased circuits using a CCITT
power (metallic and longitudinal); Frequency me	neurous, Lignaning surge, Drop testing, Barance testing, Signal easurements; Pulse templates; Leakage testing; Impedance uding volume control); Protocol analysis and Jitter testing.		Recommendation X.21 interface, or at an interface physically, functionally and electrically compatible with CCITT Recommendation
Telecom Standards	Title		X.21 but operating at any data signaling rate up to, and including, 1 984 kbit/s
FCC 47 CFR Part 68 Telephone	Connection of terminal equipment to the telephone Terminal	TBR 2: 1997	Attachment requirements for Data Terminal Equipment (DTE) to connect to Packet Switched Public Data Networks (PSPDNs) for
CS-03 Issue 8 1996 through amendment 5	Equipment network. Analog and Digital Equipment. TCB Scope C1. Specification for terminal equipment, terminal systems,		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
	Network protection devices, connection arrangements and hearing aids compatibility.		
TIA/EIA TSB31-B 1998	Bulletin Part 68 Rationale and Measurement Guidelines (Feb 1998)		
(A2LA Cert. No. 1627-01) 11/28/05	Page 7 of 11	(A2LA Cert. No. 1627-01) 11/28/05	Page 8 of 11



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TBR 3: 1995 + Amdt: 1997	Integrated Services Digital Network (ISDN); Attachment	IEC 60950 2000	Safety of information technology equipment
TBR 4 : 1995 + Amdt : 1997	requirements for terminal equipment to connect to an ISDN using ISDN basic access Integrated Services Digital Network (ISDN); Attachment	EN 60950 1997, 1998, 2000 IEC 60950-1 2001 UL 60950-1 2003	Safety of information technology equipment, including Electrical business equipment.
	requirements for terminal equipment to connect to an ISDN using ISDN primary rate access	CSA C22.2 No. 60950-00 CSA C22.2 No. 60950-1 03	
TBR 012 : 1993 + Amdt : 1996	Business Telecommunications (BT); Open Network Provision (ONP) technical requirements; 2 048 kbit/s digital unstructured leased line (D2048U) Attachment requirements for terminal	AS/NZS 3260 1993 AS/NZS 3260 Supp 1 1996	Approval and test specification – Safety of information technology equipment including electrical business Equipment. Approval and test specification – Safety of information technology
TBR 013:1996	equipment Business TeleCommunications (BTC); 2 048 kbit/s digital structured leased lines (D2048S); Attachment requirements for	ACA TS 001 1997	equipment including electrical business equipment — Alphabetical reference index to IEC 950 (Supplement to AS/NZS 3260:1993) Australian Communications Authority – Safety requirements for
TBR 21: 1998	terminal equipment interface Terminal Equipment (TE); Attachment requirements for pan-	UL 1459 1995	customer equipment. Telephone Equipment
	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	IEC 1010-1 1990 IEC 61010-1 1993 EN 61010-1 1993, 2001 IEC 61010-1 2001 UL 61010B-1 2003	Safety requirements for electrical equipment for measurement, control and laboratory use, Part 1: General requirements. Safety requirements for electrical equipment for measurement, control and laboratory use, Part 1: General requirements.
TBR 24 : 1997	Business TeleCommunications (BTC); 34 Mbit/s digital Unstructured and structured leased lines (D34U and D34S); Attachment requirements for terminal equipment interface	UL 3101-1 1993 CAN/CSA 1010-1 1999 (Including AM UL 3111-1 1996 UL 3121-1 1995	Electrical equipment for laboratory use Part 1: General requirements. 2) Electrical measuring and test equipment. Part 1: General requirements.
Australia		IEC 60601-1 1995	Medical electrical equipment. Part 1: General requirements for safety.
TS 002 : 1997	Analogue Interworking and Non interference Requirements for Customer Equipment Connected to the Public Switched	EN 60601-1 1995 (Including AM 2) UL 2601-1 1997	Medical electrical equipment Medical electrical equipment. Part 1: General Requirements for safety.
TS 016: 1997	Telephone Network General Requirements for Customer Equipment Connected to	IEC 60065 1998, 2000 ANSI/UL 6500: 1998	Audio, video and similar electronic apparatus – Safety requirements Audio/video and musical instrument apparatus for
	Hierarchical Digital Interfaces	CAN/CSA 60065-00	Household, commercial and similar general use
TS 031 : 1997 TS 038 : 1997	Requirements for ISDN Basic Access Interface Requirements for ISDN Primary Rate Access Interface	AS/NZS 3250 1995 AS/NZS 60065 2000	Australian/New Zealand Standard – Approval and test Specification – Mains operated electronic and related Equipment for
AS/ACIF S043.2:2001	Requirements for Customer Equipment for connection to a		household and similar general use
	metallic loop interface of a Telecommunications Network – Part 2 Broadband	Canadian C22.2 No. 1-94 (1-98) 1998 EN 60065 1994	Audio, video and similar electronic equipment. Consumer and 1994, commercial products Safety requirements for main operated electronic and related apparatus
Product Safety General test methods: Input tests: Floatric st	rength tests; Impulse tests; Permanency of marking tests;	IEC 60825 1990	for household and similar general use. Radiation safety of laser products, equipment Classification,
Accessibility tests; Energy Hazard measuren	nents; Capacitor discharge tests; Humidity conditioning; Earthing		requirements and user's guide
	Stability tests; Steel ball tests; Lithium Battery Reverse Current former abnormal tests; Telecom leakage tests; Over voltage/power	EN 60825-1 1994 IEC 60825-1 2001	Safety of laser products Part 1: equipment Classification, requirements and user's guide.
cross tests (excluding x-ray tests).	tormer abnormar tests; Telecom leakage tests; Over voltage/power	IEC 60825-1 2001 IEC 60825-2 2000-5	Safety of laser products – Part 2: Safety of optical communication
Product Safety Standards	Title	IEC 60825-4 1997-11	systems Safety of laser products – Part 4: Laser guards
		IEC 60335-1 1995 (Including AM2 – 1997 & AM 12 – 199	Safety of household and similar electrical appliances
Specific Product Safety Standards IEC 950 1991	Safety of information technology equipment including Includes	EN 60335-1 2001	7) Part 1: General requirements
UL 1950 1998	Amendments 1, 2, 3, and 4 electrical business equipment. Safety of information technology equipment, including lectrical business equipment.	UL 60335-1 1998 CAN/CSA E335-1 1994	
CSA C22.2 No.950-95 UL 60950 2000	Safety of Information Technology Equipment (UL 1950) Safety of information technology equipment		
(A2LA Cert. No. 1627.01) 11/28/05	Page 9 of 11	(A2LA Cert. No. 1627.01) 11/28/05	Page 10 of 11
UL 61010A-1 : 2002	Electrical equipment for laboratory use; part 1: General requirements		
EN 61010-1 : 2001	Safety requirements for electrical equipment for measurement,		
AS/NZS 60950 : 2000	control, and laboratory use - Part 1: General requirements Safety information technology equipment		
Environmental ²			
	Tide		
Environmental Standards GR-63-CORE	Title NEBS Requirements: Physical Protection		
ETS 300 019	Environmental conditions and environmental tests For		
(vibration up to 1000Hz)	telecommunications equipment		
² Environmental testing is performed at the	estallite facility located at 168 Aver Pd. Littleton, MA 01460		
	satellite facility located at 168 Ayer Rd, Littleton, MA 01460		
(A2LA Cert. No. 1627.01) 11/28/05	Page 11 of 11		

