# Curtis-Straus Test Report

Report No EF0410-2

> Whistler Client

> > 25 Industrial Ave

Chelmsford, MA 01824

Phone 978-244-1400 Fax 978-244-1491

**FRN** 0007659246

Model **WIHD** 

FCC ID **HSXMCRX** 

Equipment Type Receiver to be used with part 15C transmitter Equipment Code **CYY** 

> Results As detailed within this report

Prepared by - Test Engineer

Authorized by Michael Buchholz – EMC Manager

6/10/05 Issue Date

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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# Summary

This report is an application for Certification of a receiver intended to be used with part 15C transmitter operating at 434MHz. This report is designed to demonstrate the compliance of the receiver model number **WIHD** with the requirements outlined in Part 15B of 47 CFR.

# **Product Tested - Configuration Documentation**

Model number: WIHD
Serial number: Sample #1
Cables on the eut: None

Power source: Battery (fresh battery was used during the testing)



# Statement of Conformity

# Section 15.109(a)

47 CFR 15.109(a) states that "except for Class A devices, field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values"

Frequency	Limit
(MHz)	(dBuV/m)
30-88	40.00
88-216	43.52
216-960	46.02
above 960	53.98

# Test Methodology

Radiated emission testing was performed according to the procedures in ANSI C63.4 (2003). The testing was performed at a distance of 3 meter. The device's performance was investigated in the range 30 -2000MHz.

# Radiated Emissions Measurements

### **MEASUREMENTS**

There were no high emissions found during the testing.

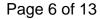


REPORT: EF0410-2	
Test Equipment	Used

SPECTRUM ANALYZI	ERS /	RANGE			4	ON	ASSET	2005
RECEIVERS			MN	N	<b>I</b> FR	SN	7.0021	CALIBRATION DU
RED		Hz-1.8GHz	8591E		HP	3441A03559	00024	13-JAN-2006
WHITE		Hz-22GHz	8593E		HP	3547U01252	00022	08-MAR-2006
BLUE		Hz-1.8GHz	8591E		HP	3223A00227	00070	03-NOV-2005
YELLOW		Hz-2.9GHz	8594E		HP	3523A01958	00100	20-APR-2006
GREEN		Hz-26.5GHz			<del>I</del> P	3829A03618	00143	02-AUG-2005
BLACK	9k	Hz-12.8GHz	8596E		<del>I</del> P	3710A00944	00337	27-DEC-2005
YELLOW-BLACK	20	Hz-40.0MHz	3585A		<del>I</del> P	2504A05219	00030	08-OCT-2005
TELECOM 3585	4 20	Hz-40.0MHz	3585A	\ H	<del>I</del> P	1750A02762	01067	04-FEB-2006
ORANGE	9k	Hz-26.5GHz	E4407	В Н	HP	US39440975	00394	05-NOV-2005
EMI TEST RECEIV	ER 20	0-1000MHz	ESVS3		&S	827957/001	01098	27-OCT-2005
LISNs/MEASUREMEN	<i>IT</i> RA	NGE	NANI		Men	CNI	ASSET	CALIBRATION D
PROBES			MN		MFR	SN		CALIBRATION DU
RED			8012-50-R-2	_	SOLAF		00753	15-APR-2006
BLUE (DC)			8012-50-R-2		SOLAF		00752	02-MAY-2006
YELLOW-BLACK	10kHz	-30MHz	8012-50-R-2	24-BNC	SOLAF	984735	00248	15-APR-2006
ORANGE	10kHz	-30MHz	8012-50-R-2	24-BNC	SOLAF	903707	00754	02-MAY-2006
GOLD (DC)	10kHz	-30MHz	8012-50-R-2	24-BNC	SOLAF	984734	00247	02-MAY-2006
Brown	10kHz	-30MHz	8012-50-R-2	24-BNC	SOLAF	0411656	00986	04-MAY-2006
GREEN	10kHz	-30MHz	8012-50-R-2	24-BNC	SOLAF		00987	04-MAY-2006
YELLOW	10ĸHz		8012-50-R-2		SOLAF		1080	04-MAY-2006
WHITE-BLACK		-30MHz	8610-50-TS		SOLAF		00678	15-APR-2006
BLACK		-30MHz	8610-50-TS		SOLAR		00675	15-APR-2006
RED-BLACK		-30MHz	8610-50-TS				00673	
					SOLAF			15-APR-2006
BLUE-BLACK		-30MHz	8610-50-TS		SOLAF		00676	15-APR-2006
BLUE MONITORING PRO		50MHz	91550		TEGAN		00807	21-MAY-2005
YELLOW MONITORING PR	.022	50MHz	91550	-2	ETS	50972	00493	24-NOV-2005
GREEN CURRENT TRANSFORMER	40Hz-	20MHz	150		PEARSO	N 10226	00793	07-APR-2007
CISPR LINE PROBE		кHz- ИHz	N/A		C-S	01	00805	06-MAY-2007
CISPR TELCO VOLTAGE P		-30MHz	CS A/C	-10	C-S	CS01	00296	28-SEP-2005
CISPR 22 TELCO ISI		30MHz	FCC-TLIS		FISCHE		00746	26-OCT-2006
ODEN ADEA TEST	SITE (OATS)		FCC CODE	_	IC Cod	- \/CC	CODE	CALIDDATION DI
OPEN AREA TEST				=				CALIBRATION DU
SITE F			93448		IC 2762		1688	04-APR-2007
SITE 7			93448		IC 2762		-905	20-MAR-2007
SITE A	A		93448		IC 2762	-A R	-903	20-MAR-2007
SITE N	Л		93448		IC 2762	·M R	-904	19-MAR-2007
SITE	J							09-MAY-2007
LINE CONDUCTED	TEST SITES		FCC CODE	:	IC Cod	F VCC	CI CODE	CALIBRATION DU
EMI 1			93448	_	N/A		1801	01-MAY-2006
						-		
EMI 2 EMI 3			93448 93448		N/A N/A	C-	1802 1803	01-MAY-2006 01-MAY-2006
Mivene/Dini eveno	DANOT	N 4 N		MED		SN	٨٥٥٠٠	CALIBRATION DU
MIXERS/DIPLEXERS	RANGE	MN 11970A/2		MFR			ASSET	
Mixer / Horn	26.5-40 GHz	6 11970A/2		HP/ATM	2332 <i>F</i>	.01695/A046903-01	1087	23-AUG-2005
Mixer / Horn	26.5-40 GHz	6		HP/ATM	3003A	.07825/A046903-01	1086	23-AUG-2005
MIXER / HORN	40-60 GHz	M19H	W/A	OML		U30110-1	00821	02-MAR-2007
MIXER / HORN	60-90 GHz	M12H	W/A	OML		E30110-1	00822	03-MAR-2007
MIXER / HORN	90-140 GHz	MO8H		OML		F21206-1	00811	03-MAR-2007
MIXER / HORN	140-220 GHz	MO5H		OML		G21206-1	00812	05-JAN-2005
DIPLEXER		DPL.		OML		N/A	00813	03-MAR-2007
Anconsuio	PANCE						Accet	
ABSORBING	RANGE		MN		MFR	SN	ASSET	CALIBRATION DU
CLAMPS								



PREAMPS / ATTENUATORS	/ 5				211	A	O
FILTERS	RANGE	M	N	MFR	SN	ASSET	CALIBRATION DUE
RED	0.10-2000MHz	z ZFL-1(	noo-l N	C-S	N/A	00798	08-APR-2006
BLUE	0.01-2000MHz			C-S	N/A	00759	26-JUL-2005
BLUE-BLACK	0.01-2000MHz			C-S	N/A	00800	10-FEB-2006
GREEN	0.01-2000MHz			C-S	N/A	00802	10-FEB-2006
BLACK	0.01-2000MHz	ZFL-10	)00-LN	C-S	N/A	00799	10-FEB-2006
Orange	0.01-2000MHz	ZFL-10	000-LN	C-S	N/A	00765	10-FEB-2006
WHITE	1-20GHz	SMC	-12A	C-S	42664	3 00760	21-JUL-2005
Brown	1-20GHz	PM2-38-218	-4R5-17-15-	0.0	DI 465	1132	00 MAY 2006
		SI		C-S	PL165	5	02-MAY-2006
YELLOW-BLACK	1-20GHz	SMC	-12A	C-S	53505	5 00801	21-JUL-2005
ORANGE-BLACK	1-20GHz		-12A	C-S	63736		21-JUL-2005
HF (YELLOW)	18-26.5GHz	AFS4-18002		C-S	46755		20-JUL-2005
` ,							
HIGH PASS FILTER	1-18 GHz	SPA-F		K&L	36	00817	06-JAN-2006
Low Pass Filter	1-9 GHz	11SL10-4100	)/X4400-O/O	K&L	4	00816	06-JAN-2006
HF 20DB 50W	0.03-20 GHz	PE 70	10.20	PASTERNACK	01	00791	10-MAY-2006
ATTENUATOR		PE 70	19-20	PASTERNACK	UI		10-IVIA 1-2000
HF 30 <sub>D</sub> B	0.03-20 GHz			_			
50WATTENUATOR		PE 70	19-30	PASTERNACK	02		10-MAY-2006
	10-100ĸHz				4460-0	1 1010	
Low Freq LPF	10-100K112	L200	K1G1	MICROWAVE CIRCUITS	DC043		30-AUG-2005
Low Freq LPF	10-100kHz	1.200	/101	MICROWAVE CIRCUITS	4777-0		20 4110 2005
EOW I NEW EIT		L200	KIGI	MICROWAVE CIRCUITS	DC043		30-AUG-2005
ANTENNAS	RANGE	MN	MFR	SN	ASSET	CALIBR	ATION DUE
GREEN BILOG	30-2000MHz	CBL6112B	CHASE	2742	00620		PR-2006
	30-2000MHz	CBL6112B					
GREEN-BLACK BILOG			CHASE	2412	00127		AN-2006
GREEN-RED BILOG	30-2000MHz	CBL6112B	CHASE	2435	00990	06-A	PR-2006
BLUE BILOG	30-1000MHz	3143	EMCO	1271	00803	06-M	AY-2007
GRAY BILOG	26-2000MHz	3141	EMCO	9703-1038	00066	06-MAY-2007(EM	II) / 21-JUN-2005(RFI)
YELLOW-BLACK BILOG	20-2000MHz	CBL6140A	CHASE	1112			II) / 25-JUN-2005(RFI)
		CDL0140A	CHASE			30-IVIA I -2007 (LIV	11) / 23-3014-2003(1111)
RED-WHITE BILOG	30-2000MHz	JB1	SUNOL	A091604-	01105	28-S	EP-2006
		-		1			
RED-BLACK BILOG	30-2000MHz	JB1	SUNOL	A091604-	01106	28-5	EP-2006
		3D1	OUNCE	2		20 0	L1 2000
YELLOW HORN	1-18GHz	3115	EMCO	9608-4898	00037	22-MAY-2005(E	MI) / 29-NOV-2005
		3113	LIVICO	3000-4030			RFI)
BLACK HORN	1-18GHz	3115	EMCO	9703-5148	00056	12-JI	JN-2005
ORANGE HORN	1-18GHz	3115	EMCO	0004-6123	00390	0411	JN-2005
HF (White) Horn	18-26.5GHz	801-WLM	WAVELINE	00758	00758		UL-2005
SMALL LOOP (RENTAL)	10kHz-30MHz	PLA-130/A	ARA	1009	TELOGY	11-F	EB-2006
SMALL LOOP	9kHz-30MHz	PLA-130/A	ARA	1024	00755	23-F	EB-2006
LARGE LOOP	20Hz-5MHz	6511	EMCO	9704-1154	00067	12-N	OV-2005
ACTIVE MONOPOLE	30Hz-30MHz	3301B	EMCO	3824	00068		AY-2006
INDUCTION COIL	50-60Hz	1000-4-8	C-S	N/A	00778		EP-2006
ADJUSTABLE DIPOLE	30-1000MHz	3121C	EMCO	1370	00757	_	AR-2007
ADJUSTABLE DIPOLE	30-1000MHz	3121C	EMCO	1371	00756	18-M	AR-2007
RE101 LOOP SENSOR	30Hz-100kHz	RE101-13.3cm	C-S	N/A	00818	13-M	AR-2007
RS101 RADIATING LOOP	30Hz-100ĸHz	RS101-12cm	C-S	N/A	00819	13-M	AR-2007
RS101 LOOP SENSOR	30Hz-100ĸHz	RS101-4CM	C-S	N/A	00820		AR-2007
		- 2					
FFT		IN I			CNI	A 0.057	O
<u>EFT</u>		IN .	MFR		SN	ASSET	CALIBRATION DUE
EFT DIRECT COUPLING CA	AP N	/A	C-S		01	00794	29-JAN-2006
ESD GENERATORS	M		MFR	ç	SN	ASSET	CALIBRATION DUE
						00763	17-FEB-2006
GREEN	NSG-		SCHAFFNER		0839		
RED	NSG-		SCHAFFNER		1625	00762	29-DEC-2005
YELLOW	930	D	ETS	2	01	00673	16-JUN-2005
BEST EMC-2 MN	MFR	SN	ASSET	-	C	ALIBRATION DUE	
DEGI LING-E IVIIV	IVIFIX					TEIDIVATION DUE	
BLUE 711-11	00 SCHAFFNE	R 199824		•	28-JUI -	2005 (Surge/D+I	/EFT)
		'` 002SC				•	,
					200E (CUDOE	\ / 20 II II 200E /I	1) / 00 DEO 000E
DED 744.44	00 SOUVEENE	200122	- 00623	3 24-JUN-	2003 (30RGE	) / 20-JUL-2005 (I	D+I) / 03-DEC-2005
RED 711-11	00 SCHAFFNE	R 200122 R 074SC		3 24-JUN-	ZUUS (SURGE	(EFT)	D+I) / 03-DEC-2005
RED 711-11	00 SCHAFFNE			3 24-JUN-	2003 (SURGE		D+I) / 03-DEC-2005
		R 074SC	;	3 24-JUN-	,	(EFT)	<u> </u>
HARMONIC & FLICKER ANA	ALYZER M	N 074SC	MFR		SN	(EFT) ASSET	CALIBRATION DUE
	A <i>LYZER</i> M HP68	N 074SC	;	353	,	(EFT)  ASSET 00738	CALIBRATION DUE 03-DEC-2005 20-JAN-2006





CHAMBERS AND S	TRIPLINE	MN		M	1FR	SN	ASSET	CALIBRATION DUE
RFI 1 CHAMI	BER	3 METER COI	MPACT	PANA	SHIELD	N/A	00797	25-JUN-2005
RFI 2 CHAMI		04' x 07' SHIELDIN			GREN	13329	00795	21-JUN-2005
RFI 3 STRIPI		N/A	0.0.2		C-S	N/A	00796	22-JUL-2005
		ECL5		_	-A Inc.	2041	00029	12-JAN-2006
ENVIRONMENTAL	. ,		10					
ENVIRONMENTAL	. (SAFETY)	SGTH-3	15	B-IVI-	-A Inc.	2245	00321	12-JAN-2006
AMPLIFIERS	RANGE	M	N	MFR	SN	ASSET	CALIBE	RATION DUE
RED	0.5-1000M			AR	18708	00032		UN-2005
GREEN	0.5-1000M	_	000B	AR	23423	00123		UN-2005
		_						CRFI) / 23-JUN-2005
BLUE	0.01-250M	Hz <b>7</b> 5A	250	AR	19165	00039	,	(RFI)
BLACK	0.01-250M	Hz 75A	250	AR	23411	00122	20	6 (CRFI)/ 25-JUN- 05(RFI)
ORANGE	0.01-250M	Hz 75A	250	AR	26827	00367		6 (CRFI) / 02-JUN- 05(RFI)
HP489A	1.0-2.0GF	Hz HP4	89A	HP	449-00762	00971	28-S	EP-2005
HUGHES 10W	1.0-2.0GF	-lz 11 <b>7</b> 7	'H09	Hughes	143	RENTAL	29-N	OV-2005
HP491C	2.0-4.0GH	Hz HP4	91C	HP	449-00638	00764	29-N	OV-2005
HUGHES 10W	4.0-8.0GF		'H02	HUGHES	092	RENTAL		OV-2005
HP493A #1	4.0-8.0GF			HP	17140224			EP-2005
HP493A #2	4.0-8.0GF			HP	2 449-00562			EP-2005
HP495A #2	7.0-12.0G			HP				OV-2005
HP495A	7.0-12.0G	HZ HP4	95A	ПР	904-00237	00086	29-IN	OV-2005
FIELD PROBES	RANGE	M	N	M	1FR	SN	ASSET	CALIBRATION DUE
RED	0.01-1000M	Hz HI-4	422	Hou	-ADAY	90369	00031	11-OCT-2005
GREEN	0.01-1000M		422		_ADAY	97363	00136	05-AUG-2005
BLUE	0.01-1000M				ADAY	95696	01100	27-OCT-2005
DLUE	0.01-1000W	пі-4	422	HOL	LADAY	93090	01100	27-001-2005
SIGNAL GENER	ATORS	RANGE	MN		MFR	SN	ASSET	CALIBRATION DUE
RED	(	0.09-2000MHz	HP8648B		HP	3847U02192	00366	15-FEB-2006
BLUE		0.1-1000MHz	HP8648A		HP	3426A00548	00034	20-JUL-2005
GREEN		0.09-2000MHz	HP8648B		HP	3623A02072		12-OCT-2005
ORANGE		0.1-1000MHz	HP8648B		HP	3537A01210		26-MAY-2005
		15MHz	HP33120A		HP	US36004674		21-OCT-2005
BLACK (TELEC	OM)	15MHz						
YELLOW			HP33120A		HP	US36014119		26-MAY-2005
BLUE-WHIT	_	0.1Hz-13MHz	HP3312A		HP	1432A07632		11-MAR-2006
SWEEPER		0.01-20.0GHz	HP83752A		HP	3610A01133	00087	03-MAY-2006
AM/FM STEREO SI	g. <b>G</b> EN.	0.1-170MHz	LG3236	L	.EADER	3687301	00959	03-SEP-2005
Dury by rotio	N C1 A1100	RANGE	MN		MFR	SN	ASSET	CALIBRATION DUE
BULK INJECTION GREEN		0.01-100MHz	95236-1	<u> </u>	ETS	50215	00118	CALIBRATION DUE 10-FEB-2006
RED	N	0.01-100MHz	95236-1		ETS	34026	1020	10-FEB-2006
CDN NETWO	ORKS	RANGE		MN		MFR Ass		ALIBRATION DUE
BLACK	ORKS	0.10-100MHz		20A M-2		C-S 007	783	22-JUN-2005
	ORKS	0.10-100MHz 0.10-100MHz		20A M-2 15A M-3	1	C-S 007 C-S 008	783 306	22-JUN-2005 09-FEB-2006
BLACK		0.10-100MHz		20A M-2	1	C-S 007 C-S 008 C-S 007	783 306 786	22-JUN-2005 09-FEB-2006 22-JUN-2005
BLACK BLUE		0.10-100MHz 0.10-100MHz		20A M-2 15A M-3	1	C-S 007 C-S 008	783 306 786	22-JUN-2005 09-FEB-2006
BLACK BLUE ORANGE		0.10-100MHz 0.10-100MHz 0.10-100MHz		20A M-2 15A M-3 15A M-2	1	C-S 007 C-S 008 C-S 007	783 306 786 780	22-JUN-2005 09-FEB-2006 22-JUN-2005
BLACK BLUE ORANGE RED WHITE		0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz		20A M-2 15A M-3 15A M-2 15A M-3 15A M-3	1	C-S 007 C-S 008 C-S 007 C-S 007 C-S 007	783 306 786 780 782	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006
BLACK BLUE ORANGE RED WHITE YELLOW-BL	<b>ACK</b>	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz		20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3		C-S 007 C-S 008 C-S 007 C-S 007 C-S 007 C-S 007 C-S 007	783 306 786 780 782	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006
BLACK BLUE ORANGE RED WHITE YELLOW-BLA BLUE-BLAC	<b>ACK</b>	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz		20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 15A M-3	1	C-S 007 C-S 008 C-S 007 C-S 007 C-S 007 C-S 007 C-S 007 C-S 007	783 306 786 780 782 784	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 09-FEB-2006 22-JUN-2005
BLACK BLUE ORANGE RED WHITE YELLOW-BLA BLUE-BLAC GREEN	ACK CK	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz		20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 15A M-3 30A M-3		C-S 007 C-S 008 C-S 007	783 306 786 780 782 784 781	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 09-FEB-2006 22-JUN-2005 22-JUN-2005
BLACK BLUE ORANGE RED WHITE YELLOW-BLAG GREEN YELLOW	ACK CK	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz		20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 30A M-3 30A M-5		C-S 007 C-S 008 C-S 007	783 306 786 780 782 784 781 779	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 09-FEB-2006 22-JUN-2005 22-JUN-2005 22-JUN-2005
BLACK BLUE ORANGE RED WHITE YELLOW-BLAG GREEN YELLOW BLUE-WHITE	ACK CK	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz		20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 30A M-3 30A M-5 15A M-5		C-S 007 C-S 008 C-S 007 C-S 008 C-S 007	783 306 786 780 782 784 781 779 304	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 09-FEB-2006 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005
BLACK BLUE ORANGE RED WHITE YELLOW-BLAC GREEN YELLOW BLUE-WHIT	ACK CK TE ES)	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz	1006	20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 30A M-3 30A M-5 15A M-5 2 RESISTOR	Nwk	C-S 007 C-S 008 C-S 007 C-S 008 C-S 007 C-S 008	783 306 786 780 782 784 7781 7779 304 788	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 09-FEB-2006 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 28-SEP-2005
BLACK BLUE ORANGE RED WHITE YELLOW-BLAG GREEN YELLOW BLUE-WHITE	ACK CK TE ES)	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz	1006	20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 30A M-3 30A M-5 15A M-5	Nwk	C-S 007 C-S 008 C-S 007 C-S 008 C-S 007 C-S 008	783 306 786 780 782 784 781 779 304	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 09-FEB-2006 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005
BLACK BLUE ORANGE RED WHITE YELLOW-BLAC GREEN YELLOW BLUE-WHIT	ACK CK TE ES)	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz	100s 100s	20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 30A M-3 30A M-5 15A M-5 2 RESISTOR	Nwk	C-S 007 C-S 008 C-S 007 C-S 008 C-S 008	783 306 786 780 782 784 7781 7779 304 788	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 09-FEB-2006 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 28-SEP-2005
BLACK BLUE ORANGE RED WHITE YELLOW-BLAC GREEN YELLOW BLUE-WHIT YELLOW (RE GREEN (RE	ACK CK TE ES) S)	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz	100s 100s	20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 30A M-3 30A M-5 15A M-5 2 RESISTOR 2 RESISTOR	<b>N</b> wk	C-S 007 C-S 008 C-S 007 C-S 008 C-S 008 C-S 008 C-S 008	783 306 786 780 782 784 781 7779 304 788 310 A	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 29-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 21-JUN-2005 22-JUN-2005 23-SEP-2005 17-JAN-2006
BLACK BLUE ORANGE RED WHITE YELLOW-BLAC GREEN YELLOW BLUE-WHIT YELLOW (RE	ACK CK TE ES) S)	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz	100s 100s	20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 30A M-3 30A M-5 15A M-5 2 RESISTOR	<b>N</b> wk	C-S 007 C-S 008 C-S 007 C-S 008 C-S 008	783 306 786 780 782 784 781 779 304 788 310	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 09-FEB-2006 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 28-SEP-2005
BLACK BLUE ORANGE RED WHITE YELLOW-BLAC GREEN YELLOW BLUE-WHIT YELLOW (RE GREEN (RE	ACK CK TE ES) S) SCOPES PE 100MHz	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz	100 <u>0</u> 100 <u>0</u> I 220	20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 30A M-3 30A M-5 15A M-5 2 RESISTOR 2 RESISTOR	Nwk Nwk	C-S 007 C-S 008 C-S 007 C-S 008 C-S 008 C-S 008 C-S 008	783 306 786 780 782 784 781 7779 304 788 310 A	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 21-JUN-2005 22-JUN-2005 23-JUN-2005 24-JUN-2005 25-JUN-2005 28-SEP-2005 17-JAN-2006
BLACK BLUE ORANGE RED WHITE YELLOW-BLAC GREEN YELLOW BLUE-WHIT YELLOW (RE GREEN (RE	ACK CK TE ES) (S) SCOPES PE 100MHZ 00MHZ (SAFE	0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz 0.10-100MHz	100 <u>s</u> 100 <u>s</u> I 220 340	20A M-2 15A M-3 15A M-2 15A M-3 15A M-3 15A M-3 30A M-3 30A M-5 15A M-5 2 RESISTOR 2 RESISTOR MFR	Nwk Nwk	C-S 007 C-S 008 C-S 008 C-S 008 C-S N	783 306 786 780 782 784 781 779 304 788 310 A	22-JUN-2005 09-FEB-2006 22-JUN-2005 09-FEB-2006 09-FEB-2006 09-FEB-2006 22-JUN-2005 22-JUN-2005 22-JUN-2005 22-JUN-2005 23-JUN-2005 24-JUN-2005 25-JUN-2006



REPORT: EF0410-2					FC	C ID: HS	XMCRX
RMS VOLTMETERS/CURRENT CL	AMP	MN	Mnfr		SN	ASSET	CALIBRATION DUE
TRUE-RMS MULTIMETER		79111	FLUKE		71700298	00769	21-OCT-2005
TRUE-RMS MULTIMETER		177	FLUKE		83390024	00973	10-MAR-2006
TRUE-RMS MULTIMETER (REFEREN	ICE)	177	FLUKE		83390025	00974	10-MAR-2006
TRUE-RMS MULTIMETER (TELECOI	м)	177	FLUKE		83430419	00975	10-MAR-2006
TRUE-RMS CLAMP METER (SAFET		36	FLUKE		68805882	00700	05-MAR-2005
Surge Generators		N	1N	MFR	SN	ASSET	CALIBRATION DUE
TRANSIENT WAVEFORM MONI			′M-5	CDI	003982	00323	17-JUN-2005
Universal Surge Generat	OR		<b>1</b> 5	CDI	003966	00324	09-JUN-2005
THREE PHASE COUPLING No			CN	CDI	003455	00325	09-JUN-2005
1.2x50uS Plugin Moduli		1.2x50∪	S PLUGIN	CDI	N/A	00842	09-JUN-2005
10x160uS Plugin Modul	E	10x160u	S PLUGIN	C-S	N/A	00843	09-JUN-2005
10x560uS Plugin Modul	E	10x560u	S PLUGIN	C-S	N/A	00841	09-JUN-2005
PSURGE CONTROLLER MODU	JLE	PSURC	GE 8000	HAEFELY	150267	00879	11-JUN-2005
COUPLING/DECOUPLING MOD	ULE	PSE	900	HAEFELY	149213	0880	11-JUN-2005
IMPULSE MODULE		PIM	1900	HAEFELY	149202	00881	11-JUN-2005
HIGH VOLTAGE CAP NWK 5KVDC	. 18uF	CS-H	HVCC	C-S	01	00772	28-SEP-2006
NEBS Surge Generator	, ,		//A	C-S	N/A	00088	17-JUN-2005
2x10uS Surge Generato			0uS	C-S	N/A	00846	23-JUN-2005
10x700uS Surge Generat			00US	C-S	N/A	00847	17-JUN-2005
12 PAIR SURGE RESISTOR MO			//A	C-S	N/A	00768	28-SEP-2005
Power/Noise Meters		MN	MFR		SN	ASSET	CALIBRATION DUE
POWER METER		435B	HP		2445A11012	00773	06-APR-2006
Power Meter		437B	HP		2912A01367	01099	27-OCT-2005
POWER SENSOR		8481A	HP		2702A61351	00774	05-APR-2006
PSOPHOMETER		2429	BRUEL & KJ		1237642	00585	14-FEB-2007
TRANSMISSION LINE TESTER (DBRI	uC)	185T	AMREL	HER	998658	00383	07-MAR-2006
TRANSMISSION LINE TESTER (DBRI	NC)	1031	AIVIREL		990000	00023	07-WAK-2000
OVERVOLTAGE CHAMBERS	MN	MFR		SN	I	ASSET	CALIBRATION DUE
72kW Power Fault Simulator	OV1	C-S		N/A	A	00792	31-MAR-2007
POWER FAULT SIMULATOR	OV2	C-S		N/A	4	00116	31-MAR-2007
D						A	0
DIPOLE TAPE MEASURES	MI		MFR		SN	ASSET	CALIBRATION DUE
26FT TAPE #1	23380	-	LUFKIN		C3166-1	00776	13-MAR-2007
26FT TAPE #2	23380	CME	LUFKIN		C3166-2	00777	13-MAR-2007
METEOROLOGICAL METERS		MN		MFR	SN	ASSET	CALIBRATION DUE
TEMP./HUMIDITY/ATM. PRESSURE GAUGE	74	00 PERCEPTION	on II	Davis	N/A	00965	08-FEB-2007
TEMPERATURE /HUMIDITY GAUGE		THG-912		HUGER	4000562	00789	01-FEB-2007
WEATHER CLOCK (PRESSURE ONLY	<b>()</b>	BA928		OREGON CIENTIFIC	C3166-1	00831	02-FEB-2007.
CONSUMABLES	SF	PEC.	Mfr		STOCK/MN	ASSET	CALIBRATION DUE
NEBS CHEESECLOTH	26-2	8м/кс	ED&D		ACC-01	N/A	N/A

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



## 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 1.3 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 2.1

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 2.2 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

#### Paragraph 3. GENERAL CONDITIONS:

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.

3.3 LABORATORY is not authorized to revoke, alter, release, enlarge or release any requirement of the equipment's design, manufacture or maintenance unless specifically authorized by CLIENT or his authorized representative.

THE ONLY WARRANTY MADE BY LABORATORY IN CONNECTION WITH ITS SERVICE PERFORMED HEREUNDER IS

THAT IT WILL USE THAT DEGREE OF CARE AND SKILL AS SET FORTH IN PARAGRAPH 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. 3.5

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 3.6 extreme caution.

The LABORATORY agrees to exercise ordinary care in receiving, preserving and shipping (F.O.B. Littleton, MA) any sample to be tested, but assumes no responsibility for damages, either direct or consequential, which arise from loss, damage or destruction of the samples due to the act of examination, modification or testing, or technical services or circumstances beyond LABORATORY's control.

3.8 The LABORATORY will hold samples for thirty (30) days after tests are completed, or until the CLIENT's outstanding debts to the LABORATORY are satisfied, whichever is later.

The CLIENT recognizes that generally accepted error variances apply and agrees to consider such error variances in its use of test data.

It is agreed between LABORATORY and CLIENT that no distribution of any tests, reports or analysis other than that described below shall be made to any third party without the prior written consent of both parties unless such distribution is mandated by operation of law. It is agreed that tests, reports, or analysis results may be disclosed to third party auditors of the laboratory at the laboratory facility in the course of accreditation maintenance audits. No reference to reports or technical services of the LABORATORY shall be made in any

advertising or promotional literature without the express written permission of the LABORATORY.

3.11 The CLIENT acknowledges that all employees of LABORATORY operate under employment contracts with the LABORATORY and

CLIENT agrees not to solicit employment of such employees or to solicit information related to other clients from said employees.

3.12 In recognition of the relative risks and benefits of the project to both CLIENT and LABORATORY, the risks have been allocated such that the CLIENT agrees, to the fullest extent permitted by law, to limit the liability of the LABORATORY to the CLIENT for any and all claims, losses, costs, damages of any nature whatsoever or claims expenses from any cause or causes, including attorneys' fees and costs and expert witness fees and costs, so that the total aggregate liability of the LABORATORY to the CLIENT shall not exceed \$100,000, or the LABORATORY'S total fee for services rendered on this project, whichever is greater. It is intended that this limitation apply to any and all liability or cause of action however alleged or arising, unless otherwise prohibited by law.

#### Paragraph 4. INSURANCE:

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 4.2 Compensation Acts and for bodily injury, death, or property damage.

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.

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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.

#### 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. 6.2
- 6.3 CLIENT agrees that test results presented herein relate only to the sample tested by the LABORATORY.



# A2LA Accreditation

		EN 55011 1991, 1998	Limits and methods of massurament of radio disturbance
SCOPE OF ACCE	REDITATION TO ISO/IEC 17025-1999	EN 33011 1991, 1998	Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-
	CURTIS-STRAUS <sup>1</sup>	SABS CISPR 11:1997	frequency equipment.  Industrial, scientific and medical (ISM) radio-frequency equipment –
	527 Great Road Littleton, MA 01460		Electromagnetic disturbance characteristics Limits and methods of measurement
	inlan Phone: 978-486-8880	Canada ICES-001 1998	Industrial, scientific and medical radio frequency generators
	ELECTRICAL	CNS13803 AS/NZS 2064: 1997	Industrial, Scientific and Medical Instrument  Limits and methods of measurement of electromagnetic disturbance
Valid until: July 31, 2005	Certificate Number: 1627-01		characteristics of industrial, scientific and medical (ISM) radio- frequency equipment.
		CSA C108.8 - M1983	Electromagnetic Emission from Data Processing Equipment and
In recognition of the successful completion of laboratory to perform the following Electroma	the A2LA evaluation process, accreditation is granted to this gnetic Compatibility (EMC), Telecommunications, and Product	CISPR 13:1996, 1998, 2001	Electronic Office Machines Limits and methods of measurement of radio interference
Safety tests:			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:
	etic fields); Conducted emissions testing (voltage and current); Transient testing; Radiated Immunity testing; Conducted Immunity		Electromagnetic compatibility. Part 1: Specification for limits and methods of measurement of radio disturbance characteristics of
testing; Lightning Immunity testing; Voltage I	Dips, Interrupts and Voltage Variations testing; Magnetic Immunity	The second at the second	broadcast receivers and associated equipment.
	Stability measurements; Longitudinal Induction measurements; lng; Low frequency disturbance voltage testing; Disturbance Power	EN 55013 Amend 12 1994	Limits and methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment.
measurements		SABS CISPR 13: 1996	Amendment 12 Limits and methods of measurement of radio interference
EMC Standards	<u>Title</u>	51.155 C151 K 15. 1770	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 characteristics of information technology equipment.	AS/NZS 1053: 1999	measurement of radio interference characteristics of sound and television broadcast receivers and associated equipment.
CNS13438 1994	Limits and methods of measurement of radio interference	CISPR 14 1993	Limits and methods of measurement of radio disturbance
EN55022:1994 and 1998	characteristics of information technology equipment. Limits and methods of measurement of radio disturbance	(except discontinuous disturbances)	characteristics of electrical motor- operated and thermal appliances for household and similar purposes, electric tools and electric apparatus.
SABS CISPR 22:1997	characteristics of information technology equipment. Information technology equipment – Radio disturbance	EN 55014 1993, 1997 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	изсопиниоиз изметапсех)	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 technology equipment	discontinuous disturbances)	characteristics of electrical motor- operated and thermal appliances for
CISPR 11 1990, 1997, 1999	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 SABS CISPR 14-1 1993	Household Electrical Appliances
		SABS CISPR 14-1 1993	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus Part 1: Emission –
Note: This accreditation covers testing perform located at 168 Ayer Rd, Littleton, MA 01460	rmed at the laboratory listed above and the satellite facility	SABS CISPR 14-2 1997 + A1:2001	Product family standard Electromagnetic compatibility – Requirements for household
,,,			appliances, electric tools and similar apparatus Part 2: Immunity -
(A2LA Cert. No. 1627-01) 10/31/03	Page 1 of 11		Product family standard
		(A2LA Cert. No. 1627-01) 10/31/03	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 equipment.	EN 61000-6-2: 1998, 2001	Electromagnetic Compatibility (EMC)- Part 6: Generic standards- Section 2: Immunity for industrial environments
EN 55020: 1995, 2002	Electromagnetic immunity of broadcast receivers and	EN 50091-2 1996	Specification for Uninterruptible Power Systems (UPS). Part 2: EMC
(associated group only) CISPR 24	Associated equipment.  Information technology equipment – Immunity characteristics –	EN 55024 1998	requirements 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,
AS/NZS 3200.1.2: 1995	Limits and methods of measurement		video, audio-visual and entertainment lighting control apparatus for
AS/NZS 3200.1.2: 1993	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.  Part 2: Immunity
European Union Basic EMC Standards EN 61000-4-2: 1995, 1999, 2001	Electromagnetic compatibility (EMC) Boot 4, Testing and	EN 61326 1998	Electrical equipment for measurement, control and laboratory use – EMC requirements
EN 01000-4-2. 1993, 1999, 2001	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 2: Electrostatic discharge	EN 61547 1996	Equipment for general lighting purposes – EMC immunity
EN 61000-4-3:1997, 1998, 2002	immunity test – Basic EMC Publication Electromagnetic compatibility (EMC). Part 4: Testing and	EN 50130-4 1996	requirements Alarm Systems. Part 4: Electromagnetic compatibility. Product family
AS/NZS 61000.4.3 1999	measurement techniques. Section 3: Radiated, radio-frequency, electromagnetic field immunity test		standard: Immunity requirements for components of fire, intruder and social alarm systems.
EN 61000-4-4 1995	Electromagnetic compatibility (EMC). Part 4: Testing and	EN 55104 1995	Electromagnetic compatibility immunity - requirements for household
	measurement techniques. Section 4: Electrical fast transient/burst immunity test – Basic EMC publication	EN 50083-2 1995	appliances, tools and similar apparatus. Product family standard. Cabled distribution systems for television and sound signals. Part 2:
EN 61000-4-5 1995 AS/NZS 61000.4.5 1999	(EMC) Part 4: Testing and measurement techniques. Section 5: Surge immunity test.	EN 60601-1-2: 1993, 2002	Electromagnetic compatibility for equipment.  Medical electrical equipment Part 1: general requirements for safety
EN 61000-4-6 1996	Electromagnetic compatibility (EMC). Part 4: Testing		Section 2: Collateral standard: Electromagnetic compatibility –
AS/NZS 61000.4.6 1999	and measurement techniques. Section 6: Immunity to conducted disturbances, induce by radio-frequency fields.	IEC 1800-3 1995	requirements and tests Adjustable speed electrical power drive systems. Part 3: EMC product
EN 61000-4-8 1994	Electromagnetic compatibility (EMC). Part 4: Testing and measurement techniques. Section 8: Power frequency magnetic	EN 60555 Part 2 1987	standard including specific test methods.  Disturbances in supply systems caused by household appliances and
FN (1000 4 11 100 4	field immunity test.		similar electrical equipment. Part 2: Harmonics
EN 61000-4-11 1994	(EMC) Part 4: Testing and measurement techniques. Section 11: Voltage dips, short interruptions and voltage Variations	EN 60555 Part 3 1987	Disturbances in supply systems caused by household appliances and similar electrical equipment. Part 3: Voltage fluctuations.
ENV 61000-2-2 1993	immunity tests. Electromagnetic compatibility (EMC). Part 2: Environment,	EN 61000-3-2: 1995, 2000 AS/NZS 61000.3.2 1998	Electromagnetic compatibility (EMC). Part 3: Limits Section 2: Limits for harmonic current emissions
	Section 2: Compatibility levels for low-frequency conducted	EN 61000-3-3 1995	Electromagnetic compatibility (EMC). Part 3: Limits Section 2:
	disturbances and signaling in public low-voltage power supply systems (IEC 1000-2-2:1990)	AS/NZS 61000.3.3 1999	Limitation of voltage fluctuations and flicker in low-voltage supply systems.
EU Product Family Standards		ETS 300 386-1 1994	Equipment Engineering (EE); Public telecommunication network equipment electro-magnetic compatibility (EMC) requirements Part 1:
EN 50081-1 1992	Electromagnetic capability – Generic emission standard. Part 1:		Product family overview, compliance criteria and test levels
EN 50081-2 1993	Residential, commercial and light industry. (I.S.) Electromagnetic compatibility – Generic emission standard. Part		
EN 50082-1 1992, 1998	Industrial environment     Electromagnetic compatibility – Generic emission standard. Part		
	1: Residential, commercial and light industry		
EN 50082-2 1995	Electromagnetic compatibility – Generic immunity Standard. Part 2: Industrial environment		
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ETS EN 300 386-2 1997, 1998,	Electromagnetic compatibility and radio spectrum matters	EN 300 328-2:2001	Electromagnetic compatibility and Radio spectrum Matters (ERM);
ETS EN 300 386 2000 v1.2.1, 2001 v1.3.1	(ERM); Telecommunication network equipment; Electromagnetic compatibility (EMC) requirements; Part 2: Product family	v1.2.1	Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Part 2: Harmonized EN covering essential
ETS 300 132-1 1996	standard.  Equipment Engineering (EE); Power supply interface at the input to telecommunications equipment; Part 1: Operated by	EN 301 489-1:2002	requirements under article 3.2 of the R&TTE Directive 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 Rev 1	receivers, 27.41 to 960.0 MHz
EN 300 330 v1.2.1: 1998, 1999	fixed radio links and ancillary equipment (ETS)  Electromagnetic compatibility and Radio spectrum matters (ERM); Short range devices (SRD); Technical characteristics	Canadian RSS-210 2000 Issue 3,	services Industry Canada – Low power license-exempt radio 2001 Issue 5 communication devices
	and test methods for radio equipment in the range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz	RFS29 1998	Specification for Restricted Radiation Radio Apparatus (New Zealand)
ETS 300 328 1996	to 30 MHz Radio Equipment and Systems (RES); Wideband transmission	FCC Standards 47 CFR FCC low power transmitters	Scope A1
210 300 320 1770	systems; Technical characteristics and test conditions for data transmission equipment operating in the 2,4 GHz ISM band and	operating on frequencies below 1 GHz, emergency alert systems, unintentional	Seepe
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	(ERM); Short range devices; Technical characteristics and test methods for radio equipment to be used in the 1 Ghz to 40 Ghz	operating on frequencies above 1 GHz, with the exception of spread spectrum	
EN 201 802 2002	frequency range	devices.	12
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	
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	low power transmitters using spread	
TWO 400 45	testing specification; Part 1: Radio Type approval and Radio Frequency (RF) conformance test specification	spectrum techniques. 47 CFR FCC Personal mobile Scope	Bl
EN301 489-17:2002 v1.2.1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for	Radio Services in the following FCC Rule Parts 22, 24, 25, 27.	
	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.	na na
		47 CFR FCC Maritime and Aviation Scope RadioServices in 47 CFR Parts	B3
		80 and 87 47 CFR FCC Microwave Radio Services	B4
		Scope in 47 CFR Parts 21, 74 and 101.	
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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/	and medical equipment.  Bellcore electromagnetic compatibility and electrical safety –	TIA/EIA-IS-883	Network Telecommunications Telephone Terminal Equipment Supplemental
2002 Issue 3	Generic criteria for network telecommunications equipment.		Technical Requirements for Connection of Stutter Dial Tone Detection Devices and ADSL Modems to the Telephone Network
ANSI EMC Standards ANSI C63.4: 1992, 1999, 2001	American National Standard for methods of measurement of radio-noise emissions for low-voltage electrical and electronic	TIA-968-A	Telecommunications Telephone Terminal Equipment Technical 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
ANSI C03.3 1988	radiated emissions measurements in electromagnetic		Network Industry
	interference (EMI) control – calibration of antennas.	Canada VDSL Issue 1 January 2003	Terminal Attachment Program Requirements and Test Methods for Very-High-Bit-Rate Digital Subscriber Line (VDSL) Terminal
IEEE EMC Standards IEEE C62.41: 1980, 1991	IEEE recommended practice on surge voltages in low-voltage	AS/ACIF S002-2001	Equipment Analogue interworking and non-interference requirements for
	AC power circuits		Customer Equipment for connection to the Public Switched Telephone Network
Swedish EMC Standards BAKOM 3336.3 1995	Electromagnetic compatibility and electrical safety (EMC & S)	AS/ACIF S016-2001	Requirements for Customer Equipment for connection to hierarchical digital interfaces
	for wired terminal equipment. Harmonization document information over the OFCOM requirements.	AS/ACIF S031-2001 AS/ACIF S038-2001	Requirements for ISDN Basic Access Interface Requirements for ISDN Primary Rate Access Interface
South African FMC or 1 1 4 4 CTC		AS/ACIF S043-2001 AS/ACIF S043-2001	Requirements for Customer Equipment for Connection to a Metallic
South African EMC standards other than CISI SABS 1718-1: 1996	South African Bureau of Standards: Specification for Gaming		Local Loop Interface of a Telecommunications Network — Part 1: General
	equipment. Part 1: Casino equipment.		Part 2: Broadband Part 3: DC, Low Frequency AC and Voiceband
Japanese VCCI Standards VCCI V-3/99.05 1999	Technical Requirements	ITU-T G.703 HKTA 2028	Physical/electrical characteristics of hierarchical Digital interfaces Network connection specification for connection of CPE to the PTNs in
VCCI V-4/99.05 1999	Instruction for Test Conditions for Requirement under Test	HKTA 2029	Hong Kong using digital leased circuits at data rate of 1544 kbit/s Network connection specification for connection of CPE to the PTNs in
Telecommunications		TBR 1:1995	Hong Kong using digital leased circuits at data rate of 2048 kbit/s Attachment requirements for terminal equipment to be connected to
Telecommunications Registration; General tes	t methods; Lightning surge; Drop testing; Balance testing; Signal		circuit switched data networks and leased circuits using a CCITT
	measurements; Pulse templates; Leakage testing; Impedance cluding 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	<u>Title</u>		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
	Equipment network. Analog and Digital Equipment. TCB Scope C1.		CCITT Recommendation X.25 interfaces at data signaling rates up to 1 920 kbit/s utilizing interfaces derived from CCITT Recommendations
CS-03 Issue 8 1996 through amendment 5	Specification for terminal equipment, terminal systems, Network protection devices, connection arrangements and		X.21 and X.21 bit
TIA/EIA TSB31-B 1998	hearing aids compatibility.  Bulletin Part 68 Rationale and Measurement Guidelines (Feb 1998)		
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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 techno- equipment including electrical business Equipment. Approval and test specification – Safety of information techno-	logy
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 – Alphabet reference index to IEC 950 (Supplement to AS/NZS 3260:199 Australian Communications Authority – Safety requirements	3)
TBR 21:1998	terminal equipment interface Terminal Equipment (TE); Attachment requirements for pan-	UL 1459 1995	customer equipment. Telephone Equipment	
TBR 24 : 1997	European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signaling Business TeleCommunications (BTC); 34 Mbit/s digital	IEC 1010-1 1990 IEC 61010-1 1993 EN 61010-1 1993, 2001 IEC 61010-1 2001 UL 61010B-1 2003 UL 3101-1 1993	Safety requirements for electrical equipment for measurement and laboratory use, Part 1: General requirements. Safety requirements for electrical equipment for measurement and laboratory use, Part 1: General requirements. Electrical equipment for laboratory use Part 1: General require	control
	Unstructured and structured leased lines (D34U and D34S); Attachment requirements for terminal equipment interface	CAN/CSA 1010-1 1999 (Including AM . UL 3111-1 1996 UL 3121-1 1995	Electrical measuring and test equipment. Part 1: General requi	ements.
Australia TS 002 : 1997	Analogue Interworking and Non interference Requirements for Customer Equipment Connected to the Public Switched	IEC 60601-1 1995 EN 60601-1 1995 (Including AM 2) UL 2601-1 1997	Medical electrical equipment. Part 1: General requirements fo Medical electrical equipment Medical electrical equipment. Part 1: General Requirements for	r safety.
TS 016: 1997	Telephone Network General Requirements for Customer Equipment Connected to Hierarchical Digital Interfaces	IEC 60065 1998, 2000 ANSI/UL 6500: 1998 CAN/CSA 60065-00	Audio, video and similar electronic apparatus – Safety require Audio/video and musical instrument apparatus for Household, commercial and similar general use	nents
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 Equipm	ent for
AS/ACIF S043.2:2001	Requirements for Customer Equipment for connection to a metallic loop interface of a Telecommunications Network – Part 2 Broadband	Canadian C22.2 No. 1-94 (1-98) 1998	household and similar general use Audio, video and similar electronic equipment. Consumer and commercial products	1994,
Product Safety General test methods; Input tests; Electric stre	ngth tests; Impulse tests; Permanency of marking tests;	EN 60065 1994 IEC 60825 1990	Safety requirements for main operated electronic and related a for household and similar general use. Radiation safety of laser products, equipment Classification,	paratus
Accessibility tests; Energy Hazard measureme tests; Limited power source measurements; Sta	nts: Capacitor discharge tests; Humidity conditioning; Earthing ability tests; Steel ball tests; Lithium Battery Reverse Current rmer abnormal tests; Telecom leakage tests; Over voltage/power	EN 60825-1 1994 IEC 60825-1 2001 IEC 60825-2 2000-5 systems	requirements and user's guide Safety of laser products Part 1: equipment Classification, requ and user's guide. Safety of laser products – Part 2: Safety of optical communica	
Product Safety Standards	<u>Title</u>	IEC 60825-4 1997-11 IEC 60335-1 1995	Safety of laser products – Part 4: Laser guards Safety of household and similar electrical appliances	
Specific Product Safety Standards IEC 950 1991	Safety of information technology equipment including Includes	(Including AM2 – 1997 & AM 12 – 1997 EN 60335-1 2001	') 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			
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UL 61010A-1 : 2002	Electrical equipment for laboratory use; part 1: General			
EN 61010-1 : 2001	requirements Safety requirements for electrical equipment for measurement,			
AS/NZS 60950 : 2000	control, and laboratory use - Part 1: General requirements Safety information technology equipment			
Environmental <sup>2</sup>				
Environmental Standards GR-63-CORE ETS 300 019 (vibration up to 1000Hz)	Title NEBS Requirements: Physical Protection Environmental conditions and environmental tests For telecommunications equipment			
<sup>2</sup> Environmental testing is performed at the sat	ellite facility located at 168 Ayer Rd, Littleton, MA 01460			

