Test Report

Report No	EG0303-2
Client	Colubris Networks Gerrett Durling
Address	200 West Street Waltham, MA 02451
Phone	781-547-0378
IC	4891A-0100165
FCC ID	RTP55010016-5
Emission Designator	12M4G1D 16M4G1D 53M0G1D
Items tested	CM9 GP
Standards	Class II Permissive Change for FCC 15.247 and 15.407, RSS 210 Issue 6
Test Dates	April 11, 2006
Results	As detailed within this report
Prepared by	Mairaj Hussain – Test Engineer
Authorized by	Michael Buchholz – EMC Manager
Issue Date	6/28/06
Conditions of Issue	This Test Report is issued subject to the conditions stated in the '*Conditions of Testing*' section on page 20 of this report.

Contents

Form Final Report REV 4-5-06 (DW)

Summary

This report presents the data obtained from testing of CM9 GP radio module for Class II permissive change. CM9 GP is similar to radio tested under FCC ID RTP55010016-5 with the exception that CM9 GP has RoHS compliant S1, the main auxiliary antenna switch. Class II permissive change is requested because manufacturer intends to add new antennas to previously approved modular radio. A list of antennas is given below.

Antenna Manufacturer	MN	Gain		Frequency	Polarization
Centurion	NanoBlade	2.8dBi	2.4-2.5GHz	2.4 2.5GHz 4.9 – 6GHz	Vertical, Omni directional
		3.9dBi	5.15-5.35GHz		
		4dBi	5.6GHz		
Cushcraft	SL24513P12SMF	3dBi (nominal)		2.4 2.5GHz 5.15 – 5.35GHz	Linear, Omnidirectional

Radiated Spurious emissions testing was performed to ensure the compliance of the radio with new antennas to the applicable FCC standards. Emissions were maximized by rotating antennas along their range of motion.

Product was tested on a non conductive table 80cm above the ground plane. Receiving antenna was placed at a distance of 3m from the product. Radio output power was set to maximum level. All readings are peak unless otherwise noted.

Frequency Range Investigated	
2.4GHz Band	5GHz Band
1 – 10GHz	1 – 12GHz

Release Control Record

Issue No.	Reason for change	Date Issued
1	Original Release	June 28, 2006

Restrictions on Operation

NanoBlade Antenna:

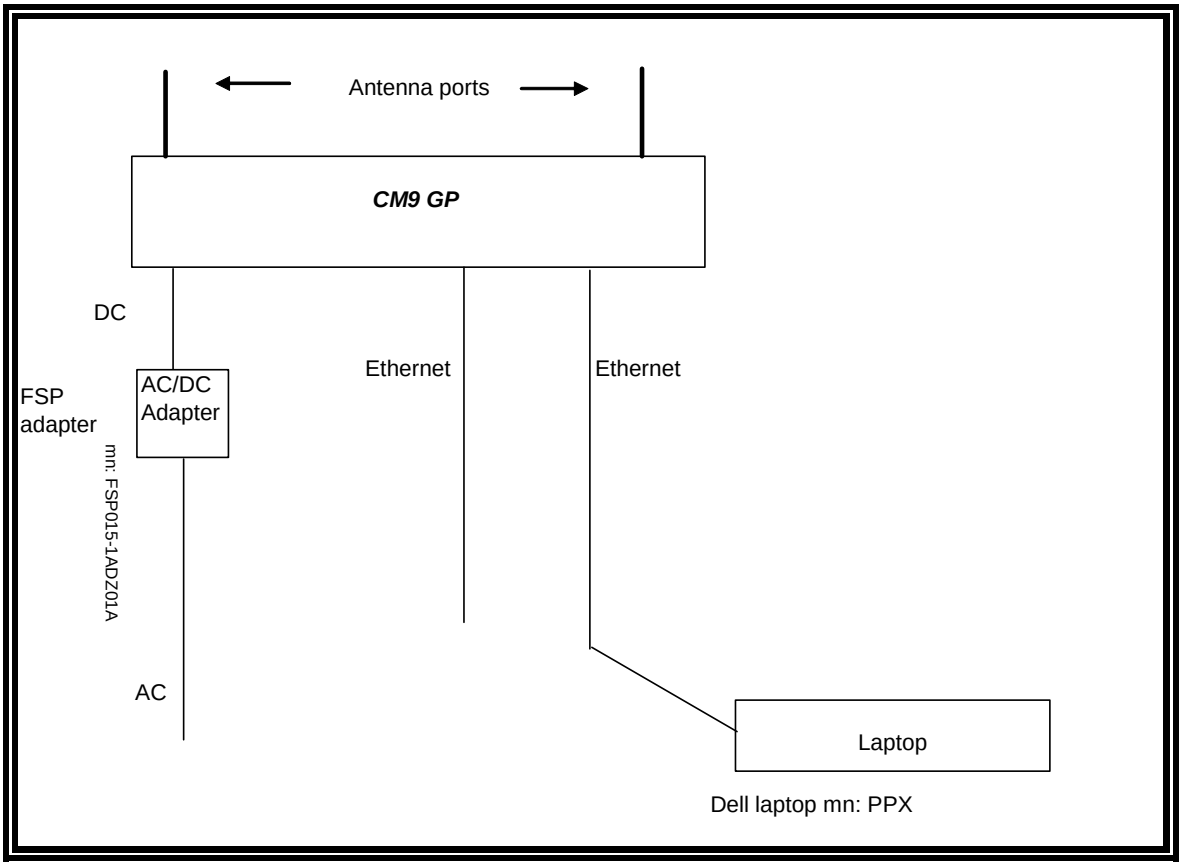
1. 5.15 – 5.35GHz band is for indoor operation.
2. CH165 at 5.825 can not be used.

SL24513P12SMF Antenna:

1. At CH1, 2412MHz power must be set at 15dBm in the software.
2. 5.15 – 5.35GHz band is for indoor operation.
3. CH165 at 5.825GHz can not be used.

Product Tested – Configuration Documentation

EUT Model Number	CM9 GP			
EUT Serial Number	Sample 1			
EUT Cables	***Type***	***Quantity***	***Shielded***	***Length***
	Ethernet	2	Yes	1 m
	DC	1	No	2 m
	AC	1	No	1 m
Support Equipment	**Type**		**MN**	
	Dell laptop		PPX	
	FSP adapter		FSP015-1ADZ01A	



Test Data and Plots

Spectrum Analyzer Setting:

For peak readings:
RBW: 1MHz VBW: 1MHz
For average readings:
RBW: 1MHz VBW: 30Hz

NanoBlade Antenna:

2.4GHz Operation

Radio's emissions resulting at or near the restricted bands were checked. Marker delta method was employed in order to better estimate the emission at the restricted band.

Table 1

Band Edge — *Curtis-Straus LLC*

Date: 31-Mar-06 **Company:** Colubris Networks **Work Order:**
Engineer: Mairaj Hussain **EUT Desc:** CM GP

Measurement Distance: 3 m

Notes: Antenna Nano Blade
mode b/g CH1; 2412 MHz; Non Cont. Tx mode

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)				FCC Class B Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
18mbps												
Hpk	2413.0	82.4										
Havg	2407.4	49.6										
300KHZ RBW												
Hpk	2412.9	80.1										
Hbe	2385.9	38.9										
delta:		41.2										
delta Pk	2385.9	41.2	0.0	29.7	2.7	73.6				74.0	-0.4	Pass
delta avg	2385.9	8.4	0.0	29.7	2.7	40.8				54.0	-13.2	Pass
1 mbps												
Hpk	2413.0	82.5										
Havg	2411.0	54.5										
300KHZ RBW												
Hpk	2411.0	80.3										
Hbe	2385.9	39.0										
delta:		41.3										
delta Pk	2385.9	41.2	0.0	29.7	2.7	73.6				74.0	-0.4	Pass
delta avg	2385.9	13.2	0.0	29.7	2.7	45.6				54.0	-8.4	Pass
54 mbps												
Hpk	2411.0	82.8										
Havg	2415.0	56.0										
300KHZ RBW												
Hpk	2412.9	80.2										
Hbe	2385.9	38.8										
delta:		41.4										
delta Pk	2385.9	41.4	0.0	29.7	2.7	73.8				74.0	-0.2	Pass
delta avg	2385.9	14.6	0.0	29.7	2.7	47.0				54.0	-7.0	Pass

Test Site: "A" **Pre-Amp:** none **Cable:** EMIR-HIGH 5 **Analyzer:** Brown **Antenna:** Orange Horn

Table 2

Band Edge — *Curtis-Straus LLC*

Date: 31-Mar-06 **Company:** Colubris Networks **Work Order:**
Engineer: Mairaj Hussain **EUT Desc:** CM GP

Measurement Distance: 3 m

Notes: Antenna Nano Blade antenna
mode b/g CH11; 2412 MHz

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)				FCC Class B Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
Non Cont Tx mode												
1 mbps at CH11												
delta pk	2484.7	35.6	0.0	30.0	2.9	68.5				74.0	-5.5	Pass
delta avg	2484.7	9.1	0.0	30.0	2.9	42.0				54.0	-12.0	Pass
18mbps												
delta pk	2483.5	35.0	0.0	30.0	2.9	67.9				74.0	-6.1	Pass
delta avg	2483.5	7.1	0.0	30.0	2.9	40.0				54.0	-14.0	Pass
54mbps												
delta pk	2488.0	33.7	0.0	30.0	2.9	66.6				74.0	-7.4	Pass
delta avg	2488.0	1.5	0.0	30.0	2.9	34.4				54.0	-19.6	Pass

Test Site: "A" **Pre-Amp:** none **Cable:** EMIR-HIGH 5 **Analyzer:** Brown **Antenna:** Orange Horn

Table 3

Spurious Emissions — *Curtis-Straus LLC*

Date: 31-Mar-06 **Company:** Colubris Networks **Work Order:**
Engineer: Mairaj Hussain **EUT Desc:** CM GP

Frequency Range: 1 - 10GHz **Measurement Distance:** 3 m

Notes: Antenna Nano Blade antenna
mode b/g CH1; 2412 MHz

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)				FCC Class B Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
Hpk	1017.0	55.4	39.5	25.4	1.8	43.1				54.0	-10.9	Pass
Hpk	1130.0	49.0	40.2	25.7	1.9	36.4				54.0	-17.6	Pass
Hpk	1570.0	55.7	40.3	27.0	2.3	44.7				54.0	-9.3	Pass
Hpk	2672.0	52.6	38.7	30.6	3.0	47.5				54.0	-6.5	Pass
Hpk	4831.7	59.5	38.8	35.3	4.4	60.4				74.0	-13.6	Pass
Havg	4831.7	45.3	38.8	35.3	4.4	46.2				54.0	-7.8	Pass

Table Result: Pass by -6.5 dB ***Worst Freq:*** 2672.0 MHz

Test Site: "A" **Pre-Amp:** Brown **Cable:** EMIR-HIGH 5 **Analyzer:** Brown **Antenna:** Orange Horn

5GHz Operation

Radio's emissions resulting at or near the restricted bands were checked. Marker delta method was employed in order to better estimate the emission at the restricted band.

Table 4

Band Edge Restricted Bands — *Curtis-Straus LLC*

Date: 05-Apr-06 **Company:** Colubris Networks **Work Order:** G0303
Engineer: Mairaj Hussain **EUT Desc:** CM9 GP

Measurement Distance: 3 m

Notes: NanoBlade Antenna
5GHz operation

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)				FCC Class B Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
CH36, 5.18GHz, 6Mbps												
Vpk	5150.0	53.7	39.1	36.0	3.5	54.1				74.0	-19.9	Pass
Vavg	5150.0	42.0	39.1	36.0	3.5	42.4				54.0	-11.6	Pass
Vpk	5149.5	57.6	39.1	36.0	3.5	58.0				74.0	-16.0	Pass
Vavg	5149.5	42.0	39.1	36.0	3.5	42.4				54.0	-11.6	Pass
DR 24Mbps												
Vpk	5150.0	63.6	39.1	36.0	3.5	64.0				74.0	-10.0	Pass
Vpk	5147.8	64.0	39.1	36.0	3.5	64.4				74.0	-9.6	Pass
Vavg	5150.0	44.7	39.1	36.0	3.5	45.1				54.0	-8.9	Pass
Vavg	5147.8	44.1	39.1	36.0	3.5	44.5				54.0	-9.5	Pass
DR 54Mbps												
Vpk	5150.0	50.1	39.1	36.0	3.5	50.5				54.0	-3.5	Pass
Ch64, 5.32GHz, 6Mbps												
Vpk	5350.0	59.8	39.0	36.3	3.7	60.8				74.0	-13.2	Pass
Vavg	5350.0	46.1	39.0	36.3	3.7	47.1				54.0	-6.9	Pass
DR 24Mbps												
Vpk	5352.2	62.9	39.0	36.3	3.7	63.9				74.0	-10.1	Pass
Vavg	5352.2	44.1	39.0	36.3	3.7	45.1				54.0	-8.9	Pass
DR 54Mbps												
Vpk	5351.1	52.9	39.0	36.3	3.7	53.9				74.0	-20.1	Pass
Vavg	5351.1	41.4	39.0	36.3	3.7	42.4				54.0	-11.6	Pass

Table Result: Pass by -3.5 dB ***Worst Freq:*** 5150.0 MHz

Test Site: "T" **Pre-Amp:** Brown **Cable:** EMIR-HIGH 1 **Analyzer:** Brown **Antenna:** Orange Horn

FCC 15.407(b)(2) "For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band."

FCC 15.407(b)(4)"For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz."

Table 5

15.407(b)(2) & (3) — *Curtis-Straus LLC*

Date: 05-Apr-06 **Company:** Colubris Networks **Work Order:** G0303
Engineer: Mairaj Hussain **EUT Desc:** CM9 GP
Measurement Distance: 3 m
Notes: NanoBlade Antenna 5GHz operation

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	--- EIRP (dBm)	---	---	FCC 15.407 Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
For indoor operation in 5.15 - 5.35GHz band												
Vpk 15.407(b)(3)	5250.0	92.4	38.9	36.2	3.5	93.2	-2.0			17.0	-18.9	Pass
Drop CH165												
Check for CH161, 5805MHz												
Vpk	5825	69.0	39.1	36.7	4.1	70.7	-24.5			-17.0	-7.5	Pass
Vpk	5835	51.0	39.1	36.7	4.1	52.7	-42.5			-27.0	-15.5	Pass

Test Site: "T" **Pre-Amp:** Brown **Cable:** EMIR-HIGH 1 **Analyzer:** Brown **Antenna:** Orange Horn

Table 6

Spurious Emissions — *Curtis-Straus LLC*

Date: 05-Apr-06 **Company:** Colubris Networks **Work Order:** G0303
Engineer: Mairaj Hussain **EUT Desc:** CM9 GP
Frequency Range: 1 - 12GHz **Measurement Distance:** 3 m
Notes: NanoBlade Antenna **EUT Max Freq:** 5.805GHz

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)				FCC Class B Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
Operating CH36, 5.18Hz, DR 6Mbps												
Vpk	1326.0	49.0	40.5	26.2	1.6	36.3				54.0	-17.7	Pass
Vpk	1493.0	53.1	40.4	26.7	1.7	41.1				54.0	-12.9	Pass
Vpk	3453.1	54.0	38.6	33.0	2.6	51.0				54.0	-3.0	Pass
Vpk	4757.0	56.2	39.0	35.1	3.2	55.5				74.0	-18.5	Pass
Vavg	4757.0	44.0	39.0	35.1	3.2	43.3				54.0	-10.7	Pass
Vpk	5967.3	52.0	38.6	36.8	4.3	54.5				74.0	-19.5	Pass
Vavg	5967.3	37.0	38.6	36.8	4.3	39.5				54.0	-14.5	Pass
CH161, 5.805GHz												
Vpk	3869.8	59.9	38.7	33.9	2.7	57.8				74.0	-16.2	Pass
Vavg (Non Con Tx)	3869.8	34.0	38.7	33.9	2.7	31.9				54.0	-22.1	Pass

Table Result: Pass by -3.0 dB ***Worst Freq:*** 3453.1 MHz

Test Site: "T" **Pre-Amp:** Brown **Cable:** EMIR-HIGH 1 **Analyzer:** Brown **Antenna:** Orange Horn

SL24513P12SMF Antenna

2.4GHz Operation

Radio's emissions resulting at or near the restricted bands were checked. Marker delta method was employed in order to better estimate the emission at the restricted band.

Table 7

Band Edge — *Curtis-Straus LLC*

Date: 11-Apr-06 **Company:** Colubris Networks **Work Order:** G0303
Engineer: Mairaj Hussain **EUT Desc:** CM9 GP
Measurement Distance: 3 m
Notes: Antenna SL24513P12SMF
Worst reading at the band edge or in restricted band recorded.

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)				FCC Class B Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
CH1, 2412MHz, 1Mbps												
Set power in the software at 15dBm												
Vpk	2411.0	82.1										
Vavg	2411.0	58.2										
300KH RBW												
Vpk	2411.0	79.5										
PK at Res B	2385.9	37.2										
Delta:		42.3										
Pk at BE	2385.9	39.8	0.0	29.7	2.5	72.0				74.0	-2.0	Pass
Avg at BE	2385.9	15.9	0.0	29.7	2.5	48.1				54.0	-5.9	Pass
DR: 24mbps												
Vpk	2411.0	84.6										
Vavg	2411.0	48.5										
300KH RBW												
Vpk	2411.0	80.2										
PK at Res BE	2385.9	37.2										
Delta:		43.0										
Pk at BE	2385.9	41.6	0.0	29.7	2.5	73.8				74.0	-0.2	Pass
Avg at BE	2385.9	5.5	0.0	29.7	2.5	37.7				54.0	-16.3	Pass
DR: 54mbps												
Vpk	2411.0	82.3										
Vavg	2411.0	45.2										
300KH RBW												
Vpk	2411.0	79.7										
PK at Res BE	2385.9	36.1										
Delta:		43.6										
Pk at BE	2385.9	38.7	0.0	29.7	2.5	70.9				74.0	-3.1	Pass
Avg at BE	2385.9	1.6	0.0	29.7	2.5	33.8				54.0	-20.2	Pass

Test Site: "T" **Pre-Amp:** none **Cable:** EMIR-HIGH 2 **Analyzer:** Brown **Antenna:** Orange Horn

Table 8

Band Edge — *Curtis-Straus LLC*

Date: 11-Apr-06 **Company:** Colubris Networks **Work Order:** G0303
Engineer: Mairaj Hussain **EUT Desc:** CM9 GP
Measurement Distance: 3 m
Notes: Antenna SL24513P12SMF

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)				FCC Class B Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
CH11, 2462MHz, 1mbps												
Vpk	2461.0	82.1										
Vavg	2461.0	55.3										
300KHz RBW												
Vpk	2460.9	80.0										
PK at BE	2487.4	34.5										
Delta:		45.5										
PK at BE	2487.4	36.6	0.0	30.0	2.5	69.1				74.0	-4.9	Pass
Avg at BE	2487.4	9.8	0.0	30.0	2.5	42.3				54.0	-11.7	Pass
DR: 24mbps												
Vpk	2461.0	82.0										
Vavg	2461.0	52.1										
300KHz RBW												
Vpk	2460.9	79.4										
PK at BE	2487.4	33.7										
Delta:		45.7										
PK at BE	2487.4	36.3	0.0	30.0	2.5	68.8				74.0	-5.2	Pass
Avg at BE	2487.4	6.4	0.0	30.0	2.5	38.9				54.0	-15.1	Pass
DR: 54mbps												
Vpk	2461.0	80.0										
Vavg	2461.0	64.0										
300KHz RBW												
Vpk	2460.9	74.9										
PK at BE	2487.4	31.6										
Delta:		43.3										
PK at BE	2487.4	36.7	0.0	30.0	2.5	69.2				74.0	-4.8	Pass
Avg at BE	2487.4	20.7	0.0	30.0	2.5	53.2				54.0	-0.8	Pass

Test Site: "T" **Pre-Amp:** none **Cable:** EMIR-HIGH 2 **Analyzer:** Brown **Antenna:** Orange Horn

Table 9

Spurious Emissions — *Curtis-Straus LLC*

Date: 11-Apr-06 **Company:** Colubris Networks **Work Order:** G0303
Engineer: Mairaj Hussain **EUT Desc:** CM9 GP
Frequency Range: 1 - 10GHz **Measurement Distance:** 3 m
Notes: Antenna SL24513P12SMF **EUT Max Freq:** 2462MHz

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)				FCC Class B Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
CH11, 2462MHz, 1mbps												
Vpk	1678.0	65.6	39.8	27.4	2.1	55.3				74.0	-18.7	Pass
V avg	1680.0	47.0	39.8	27.4	2.1	36.7				54.0	-17.3	Pass
Vpk	2982.0	63.9	38.4	31.6	2.8	59.9				74.0	-14.1	Pass
Vavg	2980.0	39.9	38.4	31.6	2.8	35.9				54.0	-18.1	Pass
Vpk	4924.0	59.8	38.7	35.6	3.8	60.5				74.0	-13.5	Pass
Vavg	4923.6	43.6	38.7	35.6	3.8	44.3				54.0	-9.7	Pass
Vpk	7381.0	50.5	38.6	38.6	4.2	54.7				74.0	-19.3	Pass
Vavg	7380.0	38.5	38.6	38.6	4.2	42.7				54.0	-11.3	Pass

Table Result: Pass by -9.7 dB ***Worst Freq:*** 4923.6 MHz

Test Site: "T" **Pre-Amp:** Brown **Cable:** EMIR-HIGH 2 **Analyzer:** --- **Antenna:** Orange Horn

5GHz Operation

Radio's emissions resulting at or near the restricted bands were checked. Marker delta method was employed in order to better estimate the emission at the restricted band.

Table 10

Band Edge — *Curtis-Straus LLC*

Date: 11-Apr-06 **Company:** Colubris Networks **Work Order:** G0303
Engineer: Mairaj Hussain **EUT Desc:** CM9 GP
Measurement Distance: 3 m
Notes: Antenna SL24513P12SMF

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)				FCC Class B Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
CH36, 5180MHz, 6mbps												
Vpk	5150.0	67.3	39.1	36.0	3.8	68.0				74.0	-6.0	Pass
Vavg	5150.0	48.5	39.1	36.0	3.8	49.2				54.0	-4.8	Pass
DR: 24mbps												
Vpk	5150.0	64.9	39.1	36.0	3.8	65.6				74.0	-8.4	Pass
Vavg	5150.0	47.8	39.1	36.0	3.8	48.5				54.0	-5.5	Pass
DR: 54mbps												
Vpk	5150.0	50.7	39.1	36.0	3.8	51.4				54.0	-2.6	Pass
CH64, 5320MHz, 54mbps												
Vpk	5350.0	50.0	39.0	36.3	3.8	51.1				54.0	-2.9	Pass
DR: 1mbps												
Vpk	5350.6	57.1	39.0	36.3	3.8	58.2				74.0	-15.8	Pass
Vavg	5350.6	43.1	39.0	36.3	3.8	44.2				54.0	-9.8	Pass

Table Result: Pass by -2.6 dB ***Worst Freq:*** 5150.0 MHz

Test Site: "T" **Pre-Amp:** Brown **Cable:** EMIR-HIGH 2 **Analyzer:** Brown **Antenna:** Orange Horn

FCC 15.407(b)(2) "For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band."

FCC 15.407(b)(4)"For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz."

Table 11

15.407(b)(2), & (4) *Curtis-Straus LLC*

Date: 11-Apr-06 **Company:** Colubris Networks **Work Order:** G0303
Engineer: Mairaj Hussain **EUT Desc:** CM9 GP
Measurement Distance: 3 m
Notes: Antenna SL24513P12SMF

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	EIRP (dBm)			FCC 15.407 Limit (dBµV/m)	FCC 15.407 Margin (dB)	FCC 15.407 Result (Pass/Fail)
For indoor operation only:												
Vpk	5250.0	97.8	38.9	36.2	3.8	98.9	3.7			17.0	-13.3	Pass
Result: 5.15 - 5.35GHz band indoor use only												
CH161, 6mbps												
Vpk	5825.0	72.4	39.1	36.7	4.2	74.2	-21.0			-17.0	-4.0	Pass
Vpk	5835.0	56.1	39.1	36.7	4.2	57.9	-37.3			-27.0	-10.3	Pass

Test Site: "T" **Pre-Amp:** Brown **Cable:** EMIR-HIGH 2 **Analyzer:** Brown **Antenna:** Orange Horn

Table 12

Spurious Emissions *Curtis-Straus LLC*

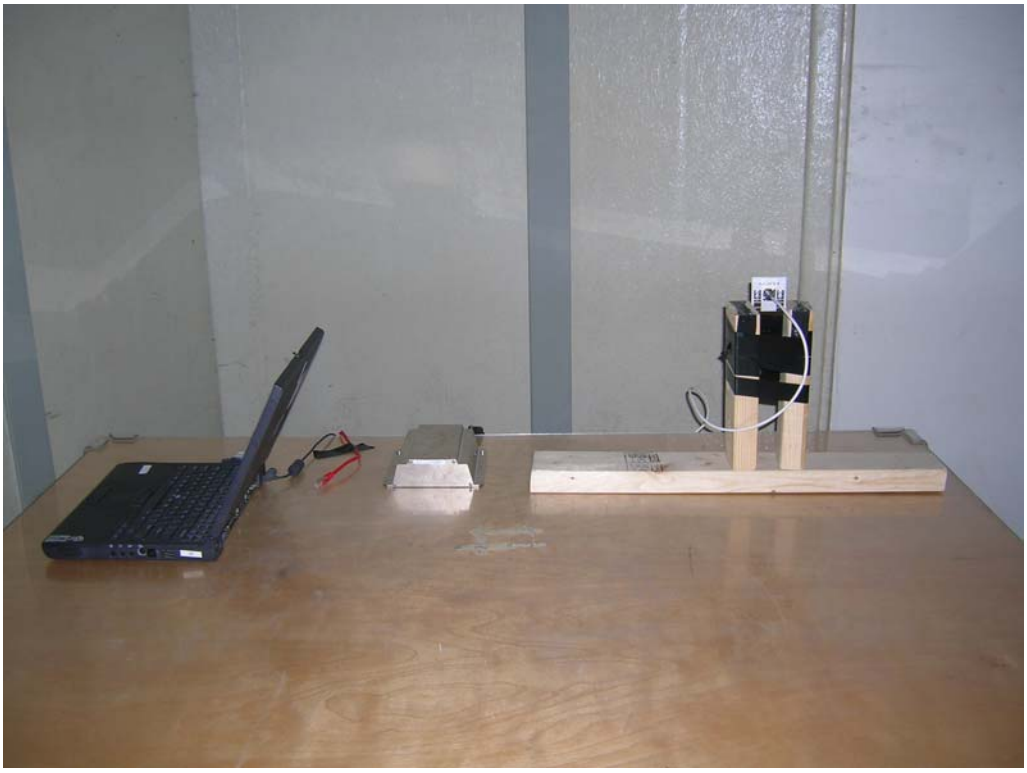
Date: 11-Apr-06 **Company:** Colubris Networks **Work Order:** G0303
Engineer: Mairaj Hussain **EUT Desc:** CM9 GP
Frequency Range: 1 - 12GHz **Measurement Distance:** 3 m
Notes: Antenna SL24513P12SMF

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)				FCC Class B Limit (dBµV/m)	FCC Class B Margin (dB)	FCC Class B Result (Pass/Fail)
Vpk	1887.9	73.7	40.2	28.3	2.2	64.0				74.0	-10.0	Pass
Vavg	1887.9	62.1	40.2	28.3	2.2	52.4				54.0	-1.6	Pass
Vpk	4777.0	54.4	38.9	35.2	3.6	54.3				74.0	-19.7	Pass
Vavg	4777.0	45.0	38.9	35.2	3.6	44.9				54.0	-9.1	Pass
Vpk	6049.0	63.2	39.1	36.8	4.2	65.1				74.0	-8.9	Pass
Vavg	6049.0	51.3	39.1	36.8	4.2	53.2				54.0	-0.8	Pass

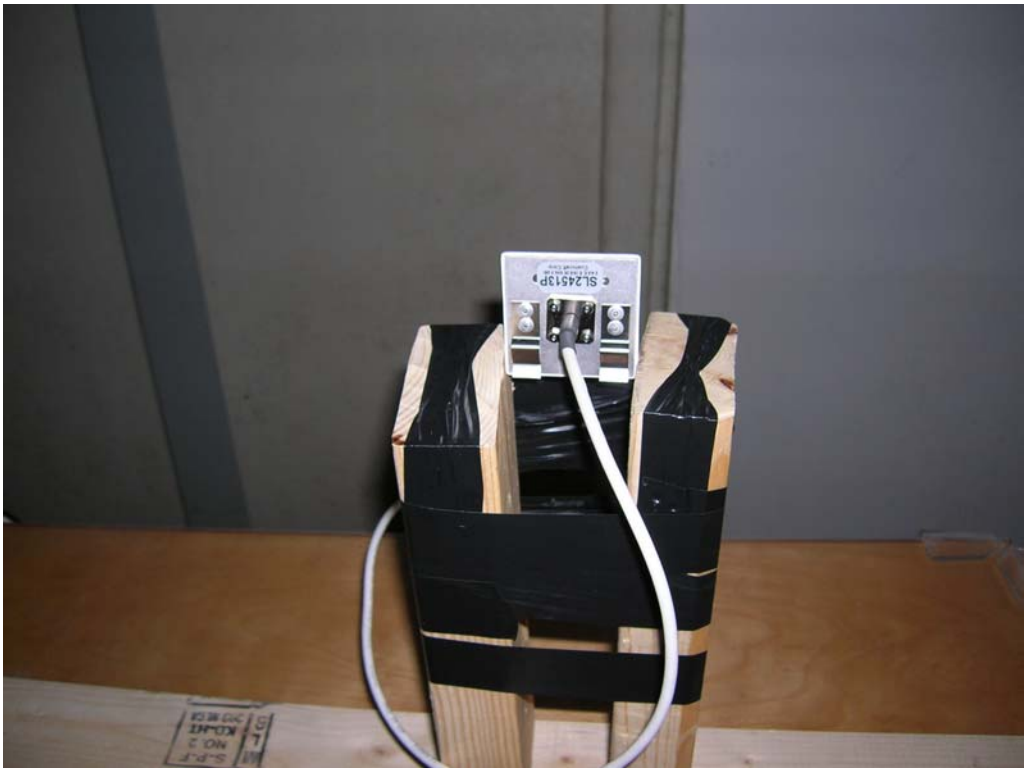
Table Result: Pass by -0.8 dB ***Worst Freq:*** 6049.0 MHz

Test Site: "T" **Pre-Amp:** Brown **Cable:** EMIR-HIGH 2 **Analyzer:** --- **Antenna:** Orange Horn

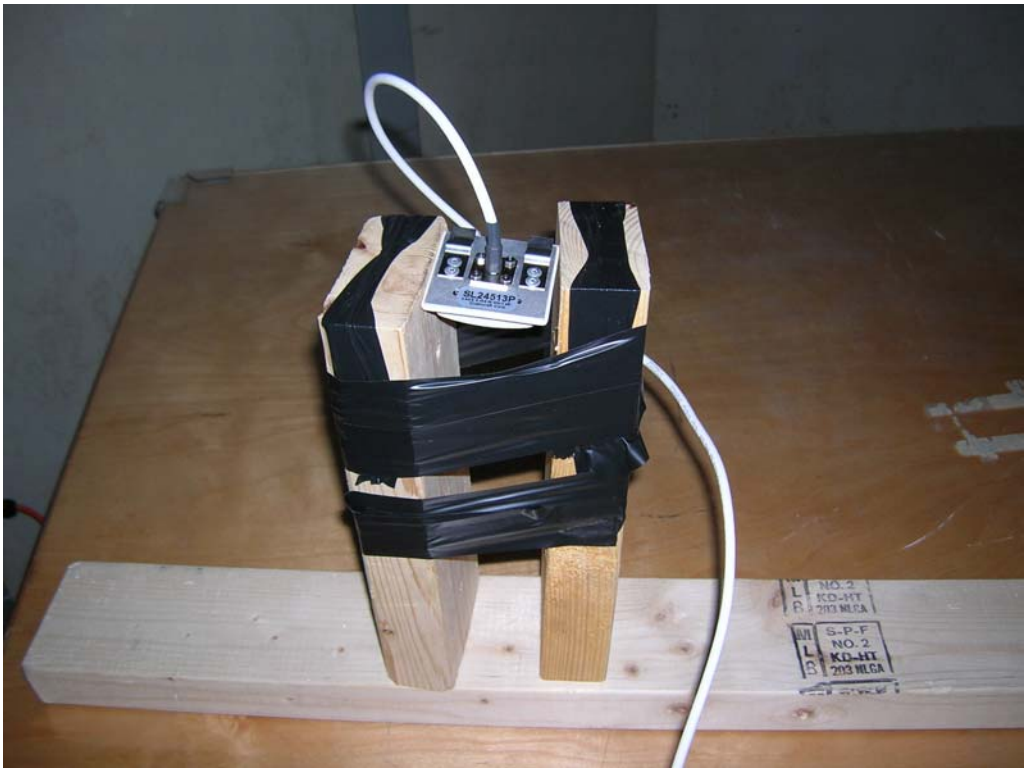
Test Configuration Photographs



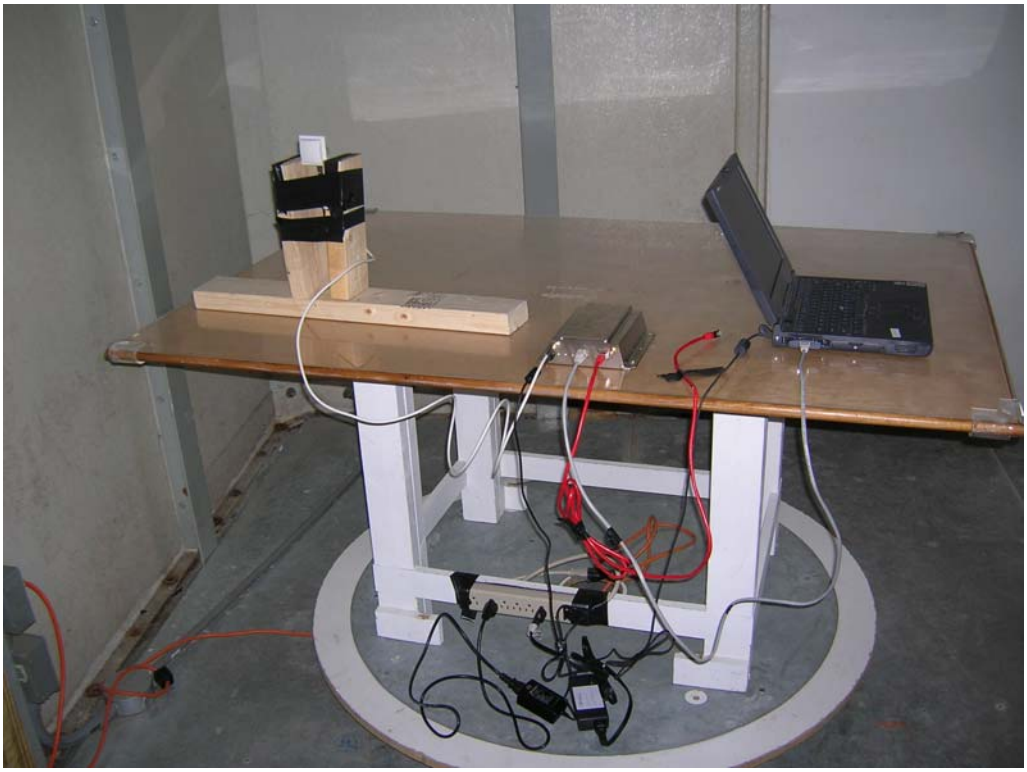
SL24513P12SMF antenna



SL24513P12SMF antenna



SL24513P12SMF antenna



SL24513P12SMF antenna

Test Equipment Used

REV. 10-MAR-2006

SPECTRUM ANALYZERS / RECEIVERS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
RED	9kHz-1.8GHz	8591E	HP	3441A03559	00024	I	30-DEC-2006
WHITE	9kHz-22GHz	8593E	HP	3547U01252	00022	I	08-MAR-2006
BLUE	9kHz-1.8GHz	8591E	HP	3223A00227	00070	I	14-DEC-2006
YELLOW	9kHz-2.9GHz	8594E	HP	3523A01958	00100	I	20-APR-2006
GREEN	9kHz-26.5GHz	8593E	HP	3829A03618	00143	I	21-NOV-2006
BLACK	9kHz-12.8GHz	8596E	HP	3710A00944	00337	I	02-NOV-2006
TELECOM 3585A	20Hz-40.0MHz	3585A	HP	2504A05219	00030	I	07-FEB-2007
TELECOM 3585A	20Hz-40.0MHz	3585A	HP	1750A03418	00558	1	06-APR-2006
TELECOM 3585A	20Hz-40.0MHz	3585A	HP	1750A02762	01067	I	01-MAR-2007
ORANGE	9kHz-26.5GHz	E4407B	HP	US39440975	00394	I	01-DEC-2006
BROWN (RENTAL)	9kHz-26.5GHz	E4407B	HP	SG44210511	Rental	1	05-JAN-2007
EMI TEST RECEIVER	20-1000MHz	ESVS30	R&S	827957/001	01098	I	27-OCT-2006

LISNs/MEASUREMENT PROBES	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
RED	10kHz-30MHz	8012-50-R-24-BNC	SOLAR	956348	00753	II	15-APR-2006
BLUE (DC)	10kHz-30MHz	8012-50-R-24-BNC	SOLAR	956349	00752	II	02-MAY-2006
YELLOW-BLACK	10kHz-30MHz	8012-50-R-24-BNC	SOLAR	984735	00248	II	OUT OF SERVICE
ORANGE	10kHz-30MHz	8012-50-R-24-BNC	SOLAR	903707	00754	II	02-MAY-2006
GOLD (DC)	10kHz-30MHz	8012-50-R-24-BNC	SOLAR	984734	00247	II	02-MAY-2006
BROWN	10kHz-30MHz	8012-50-R-24-BNC	SOLAR	0411656	00986	II	04-MAY-2006
GREEN	10kHz-30MHz	8012-50-R-24-BNC	SOLAR	0411657	00987	II	04-MAY-2006
YELLOW	10kHz-30MHz	8012-50-R-24-BNC	SOLAR	0411658	1080	II	04-MAY-2006
WHITE-BLACK	10kHz-30MHz	8610-50-TS-100-N	SOLAR	972019	00678	II	15-APR-2006
BLACK	10kHz-30MHz	8610-50-TS-100-N	SOLAR	972017	00675	II	15-APR-2006
RED-BLACK	10kHz-30MHz	8610-50-TS-100-N	SOLAR	972016	00677	II	15-APR-2006
BLUE-BLACK	10kHz-30MHz	8610-50-TS-100-N	SOLAR	972018	00676	II	15-APR-2006
BLUE MONITORING PROBE	0.01-150MHz	91550-2	TEGAM	12350	00807	I	26-MAY-2007
YELLOW MONITORING PROBE	0.01-150MHz	91550-2	ETS	50972	00493	I	23-JAN-2008
GREEN CURRENT TRANSFORMER	40Hz-20MHz	150	PEARSON	10226	00793	I	07-APR-2007
BLUE CISPR LINE PROBE	150kHz-30MHz	N/A	C-S	N/A	00805	II	08-JUN-2007
BLACK CISPR LINE PROBE	150kHz-30MHz	N/A	C-S	N/A	NONE	II	08-JUN-2007
CISPR TELCO VOLTAGE PROBE	10kHz-30MHz	CS A/C-10	C-S	CS01	00296	II	30-SEP-2006
CISPR 22 TELCO ISN	9kHz-30MHz	FCC-TLISN-T4	FISCHER	20115	00746	I	26-OCT-2006

OPEN AREA TEST SITE (OATS)	FCC CODE	IC CODE	VCCI CODE	CAT	CALIBRATION DUE
SITE F	93448	IC 2762-F	R-1688	II	04-APR-2007
SITE T	93448	IC 2762-T	R-905	II	14-AUG-2007
SITE A	93448	IC 2762-A	R-903	II	13-AUG-2007
SITE M	93448	IC 2762-M	R-904	II	19-MAR-2007

LINE CONDUCTED TEST SITES	FCC CODE	IC CODE	VCCI CODE	CAT	CALIBRATION DUE
EMI 1	93448	N/A	C-1801	II	01-MAY-2006
EMI 2	93448	N/A	C-1802	II	01-MAY-2006
EMI 3	93448	N/A	C-1803	II	01-MAY-2006

MIXERS/DIPLEXERS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
MIXER / HORN	26.5-40 GHz	11970A/28-442-6	HP/ATM	2332A01695/A046903-01	1087	I	23-AUG-2006
MIXER / HORN	26.5-40 GHz	11970A/28-442-6	HP/ATM	3003A07825/A046903-01	1086	I	23-AUG-2006
MIXER / HORN	40-60 GHz	M19HW/A	OML	U30110-1	00821	I	02-MAR-2007
MIXER	33-50 GHz	11970Q	HP	3003A03155	00104	I	08-NOV-2007
MIXER / HORN	50-75 GHz	11970V /QWH-VPRROO	HP/QUINSTAR	2521A01197/8794001	1179	I	15-NOV-2007
MIXER	75-110 GHz	11970W	HP	2521A01334	00105	I	22-NOV-2007
MIXER / HORN	60-90 GHz	M12HW/A	OML	E30110-1	00822	I	03-MAR-2007
MIXER / HORN	90-140 GHz	MO8HW/A	OML	F21206-1	00811	I	03-MAR-2007
MIXER / HORN	140-220 GHz	MO5HW/A	OML	G21206-1	00812	II	
DIPLEXER	40-220 GHz	DPL.26	OML	N/A	00813	I	03-MAR-2007

ABSORBING CLAMPS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
FISCHER CLAMP	30-1000MHz	F-201-23MM	FISCHER	10	00081	I	20-JAN-2008

HARMONIC & FLICKER ANALYZER	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
HFTS	HP6842A	HP	3531A-00169	00738	II	30-DEC-2007
10001I/2 AC POWER SYSTEM	(2) 500I	CALIFORNIA INSTRUMENTS	HK53687/HK53688	00376	II	09-JAN-2008

PREAMPS / ATTENUATORS / FILTERS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
RED	0.10-2000MHz	ZFL-1000-LN	C-S	N/A	00798	II	08-APR-2006
BLUE	0.01-2000MHz	ZFL-1000-LN	C-S	N/A	00759	II	03-AUG-2006
BLUE-BLACK	0.01-2000MHz	ZFL-1000-LN	C-S	N/A	00800	II	04-JAN-2007
GREEN	0.01-2000MHz	ZFL-1000-LN	C-S	N/A	00802	II	21-JUL-2006
BLACK	0.01-2000MHz	ZFL-1000-LN	C-S	N/A	00799	II	25-AUG-2006
ORANGE	0.01-2000MHz	ZFL-1000-LN	C-S	N/A	00765	II	28-DEC-2006
WHITE	1-20GHz	SMC-12A	C-S	426643	00760	II	04-AUG-2006
BROWN	1-20GHz	PM2-38-218-4R5-17-15-SFF	C-S	PL1655	1132	II	02-DEC-2006
YELLOW-BLACK	1-20GHz	SMC-12A	C-S	535055	00801	II	25-AUG-2006
HF (YELLOW)	18-26.5GHz	AFS4-18002650-60-8P-4	C-S	467559	00758	II	23-AUG-2007
HIGH PASS FILTER	1-18 GHz	SPA-F-55204	K&L	36	00817	II	05-JAN-2008
LOW PASS FILTER	1-9 GHz	11SL10-4100/X4400-O/O	K&L	4	00816	II	05-JAN-2008
HF 20DB 50W ATTENUATOR	0.03-20 GHz	PE 7019-20	PASTERNACK	01	00791	II	10-MAY-2007
HF 30DB 50W ATTENUATOR	0.03-20 GHz	PE 7019-30	PASTERNACK	02	1168	II	10-MAY-2007
LOW FREQ LPF	10-100KHz	L200K1G1	MICROWAVE CIRCUITS	4460-01 DC0432	1019	II	OUT OF SERVICE
LOW FREQ LPF	10-100KHz	L200K1G1	MICROWAVE CIRCUITS	4777-01 DC0434	1088	II	OUT OF SERVICE

ANTENNAS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
GREEN BILOG	30-2000MHz	CBL6112B	CHASE	2742	00620	II	13-JAN-2008
GREEN-BLACK BILOG	30-2000MHz	CBL6112B	CHASE	2412	00127	II	13-JAN-2008
GREEN-RED BILOG	30-2000MHz	CBL6112B	CHASE	2435	00990	II	06-APR-2006
BLUE BILOG	30-1000MHz	3143	EMCO	1271	00803	II	06-MAY-2007
GRAY BILOG	20-2000MHz	3141	EMCO	9703-1038	00066	II	06-MAY-2007(EMI) / 05-AUG-2006(RFI)
YELLOW-BLACK BILOG	20-2000MHz	CBL6140A	CHASE	1112	00126	II	06-MAY-2007(EMI) / 12-AUG-2006(RFI)
RED-WHITE BILOG	30-2000MHz	JB1	SUNOL	A091604-1	01105	II	28-SEP-2006
RED-BLACK BILOG	30-2000MHz	JB1	SUNOL	A091604-2	01106	II	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	I	26-AUG-2007
SMALL LOOP	10KHz-30MHz	PLA-130/A	ARA	1024	00755	I	22-FEB-2008
LARGE LOOP	20Hz-5MHz	6511	EMCO	9704-1154	00067	I	23-JAN-2008
ACTIVE MONOPOLE	30Hz-30MHz	3301B	EMCO	3824	00068	II	04-MAY-2006
INDUCTION COIL	50-60Hz	1000-4-8	C-S	N/A	00778	II	26-SEP-2007
ADJUSTABLE DIPOLE	30-1000MHz	3121C	EMCO	1370	00757	II	18-MAR-2007
ADJUSTABLE DIPOLE	30-1000MHz	3121C	EMCO	1371	00756	II	18-MAR-2007
RE101 LOOP SENSOR	30Hz-100KHz	RE101-13.3CM	C-S	N/A	00818	II	13-MAR-2007
RS101 RADIATING LOOP	30Hz-100KHz	RS101-12CM	C-S	N/A	00819	II	13-MAR-2007
RS101 LOOP SENSOR	30Hz-100KHz	RS101-4CM	C-S	N/A	00820	II	13-MAR-2007

EFT	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
EFT DIRECT COUPLING CAP	N/A	C-S	01	00794	II	06-FEB-2008

ESD GENERATORS	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
GREEN	NSG435	SCHAFFNER	000839	00763	I	02-MAR-2007
RED	NSG435	SCHAFFNER	001625	00762	I	06-JAN-2007
YELLOW	930D	ETS	201	00673	I	18-AUG-2007

BEST EMC-2	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
BLUE	711-1100	SCHAFFNER	199824-002SC	00117	II	16-JUN-2006 (SURGE) / 03-AUG-2006 (D+I) / 05-AUG-2006 (EFT)
RED	711-1100	SCHAFFNER	200122-074SC	00623	II	16-JUN-2006 (SURGE) / 04-AUG-2006 (D+I) / 04-JAN-2007 (EFT)

CHAMBERS AND STRIPLINE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
RFI 1 CHAMBER	3 METER COMPACT	PANASHIELD	N/A	00797	II	12-AUG-2006
RFI 2 CHAMBER	04' X 07' SHIELDING SYSTEM	LINDGREN	13329	00795	II	05-AUG-2006
RFI 3 STRIPLINE	N/A	C-S	N/A	00796	III	NA
ENVIRONMENTAL (SAFETY)	ECL5	B-M-A INC.	2041	00029	I	11-JAN-2007
ENVIRONMENTAL (SAFETY)	SGTH-31S	B-M-A INC.	2245	00321	I	11-JAN-2007

AMPLIFIERS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
RED	0.5-1000MHZ	10W1000B	AR	18708	00032	II	05-AUG-2006 (RFI2) / 12-AUG-2006 (RFI1)
GREEN	0.5-1000MHZ	10W1000B	AR	23423	00123	II	05-AUG-2006 (RFI2)
BLUE	0.01-250MHZ	75A250	AR	19165	00039	II	09-JAN-2007 (EUCRFI) / 10-DEC-2006 (NEBS CRFI)
BLACK	0.01-250MHZ	75A250	AR	23411	00122	II	10-JAN-2007 (EU CRFI) / 10-DEC-2006 (NEBS CRFI) / 05-AUG-2006 (RFI2)
ORANGE	0.01-250MHZ	75A250	AR	26827	00367	II	10-JAN-2007 (EU CRFI) / 10-DEC-2006 (NEBS CRFI)/ 12-AUG-2006 (RFI1)
BROWN 150W	0.1-250MHZ	150A250	AR	313454	RENTAL	II	NOT CALIBRATED
HP489A	1.0-2.0GHZ	HP489A	HP	449-00762	00971	II	OUT OF SERVICE
HUGHES 10W	1.0-2.0GHZ	1177H09	HUGHES	272	RENTAL	II	14-JUL-2006
HP491C	2.0-4.0GHZ	HP491C	HP	449-00636	00764	II	05-JUN-2006
HUGHES 10W	4.0-8.0GHZ	1177H02	HUGHES	092	RENTAL	II	05-JUN-2006
HP493A #1	4.0-8.0GHZ	HP493A	HP	171402242	00085	II	OUT OF SERVICE
HP493A #2	4.0-8.0GHZ	HP493A	HP	449-00562	00771	II	OUT OF SERVICE
HP495A	7.0-10.0GHZ	HP495A	HP	304-00237	00086	II	05-JUN-2006
AUDIO AMP	50-60HZ	MPA-200	RADIO SHACK	700438	NONE	III	NA
AUDIO AMP	50-60HZ	MPA-200	RADIO SHACK	708545	00862	III	NA

FIELD PROBES	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
RED	0.01-1000MHZ	HI-4422	HOLADAY	90369	00031	I	01-MAR-2007
GREEN	0.01-1000MHZ	HI-4422	HOLADAY	97363	00136	I	26-AUG-2006
BLUE	0.01-1000MHZ	HI-4422	HOLADAY	95696	01100	I	15-AUG-2006

SIGNAL GENERATORS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
RED	0.09-2000MHZ	HP8648B	HP	3847U02192	00366	I	28-FEB-2007
BLUE	0.1-1000MHZ	HP8648A	HP	3426A00548	00034	I	25-AUG-2006
GREEN	0.09-2000MHZ	HP8648B	HP	3623A02072	00125	I	17-OCT-2006
ORANGE	0.1-1000MHZ	HP8648B	HP	3537A01210	00025	I	24-JUN-2006
BLACK (TELECOM)	0.01HZ-15MHZ	HP33120A	HP	US36004674	00766	I	25-OCT-2006
YELLOW	0.01HZ-15MHZ	HP33120A	HP	US36014119	00249	I	OUT OF SERVICE
BROWN (NEW)	0.01HZ-15MHZ	HP33120A	HP	US36016621		I	23-NOV-2006
BLUE-WHITE	0.1HZ-13MHZ	HP3312A	HP	1432A07632	00775	I	11-MAR-2007
SWEEPER	0.01-20.0GHZ	HP83752A	HP	3610A01133	00087	II	03-MAY-2006
AM/FM STEREO SIG. GEN.	0.1-170MHZ	LG3236	LEADER	3687301	00959	I	30-AUG-2006
IMPULSE GENERATOR	1-100HZ	CIG-25	ELECTRO-METRICS	290	00942	I	05-AUG-2006

BULK INJECTION CLAMPS	RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
GREEN	0.01-100MHZ	95236-1	ETS	50215	00118	II	08-JUL-2006 (EU & NEBS CRFI)
RED	0.01-100MHZ	95236-1	ETS	34026	1020	II	08-JUL-2006 (EU & NEBS CRFI)

CDN NETWORKS	RANGE	MN	MFR	ASSET	CAT	CALIBRATION DUE
BLACK	0.10-100MHZ	20A M-2 (DC)	C-S	00783	II	08-JUL-2006
BLUE	0.10-100MHZ	15A M-3	C-S	00806	II	10-JAN-2007
ORANGE	0.10-100MHZ	15A M-2	C-S	00786	II	08-JUL-2006
RED	0.10-100MHZ	15A M-3	C-S	00780	II	10-JAN-2007
WHITE	0.10-100MHZ	15A M-3	C-S	00782	II	08-JUL-2006
YELLOW-BLACK	0.10-100MHZ	15A M-3	C-S	00784	II	10-JAN-2007
GREEN	0.10-100MHZ	30A M-3	C-S	00779	II	08-JUL-2006
YELLOW	0.10-100MHZ	30A M-5	C-S	00804	II	08-JUL-2006
BLUE-WHITE	0.10-100MHZ	15A M-5	C-S	00788	II	08-JUL-2006
BROWN	0.10-100MHZ	M-3	C-S	1169	II	10-JAN-2007
BROWN-WHITE	0.10-100MHZ	M-3	C-S	1170	II	10-JAN-2007
BROWN-BLACK	0.10-100MHZ	M-2 (DC)	C-S	1171	II	10-JAN-2007
RED-BLACK	0.10-100MHZ	M-2 (DC)	C-S	1177	II	
YELLOW (RES)	0.10-100MHZ	100Ω RESISTOR NWK (M-1)	C-S	00810	II	05-OCT-2006
GREEN (RES)	0.10-100MHZ	100Ω RESISTOR NWK (M-1)	C-S	1172	II	30-JAN-2007

OSCILLOSCOPES	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
EMC 100MHZ	TDS 220	TEKTRONIX	C036986	1166	I	26-AUG-2006
PRODUCT SAFETY 100 MHZ	TDS 340	TEKTRONIX	B012357	00737	I	06-OCT-2006
TELECOM 100 MHZ	54645A	HP/AGILENT	US36320452	00103	I	06-JUL-2006

ANSI T1.315	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
SBC NOISE CART		C-S			III	CALIBRATION NOT REQUIRED
SBC TRANSIENT CART		C-S			III	WAVESHAPE VERIFIED BEFORE USE

RMS VOLTMETERS/CURRENT CLAMP	MN	MNFR	SN	ASSET	CAT	CALIBRATION DUE
TRUE-RMS MULTIMETER	79III	FLUKE	71700298	00769	I	25-OCT-2006
TRUE-RMS MULTIMETER	177	FLUKE	83390024	00973	I	10-MAR-2006
TRUE-RMS MULTIMETER (REFERENCE)	177	FLUKE	83390025	00974	I	10-MAR-2007
TRUE-RMS MULTIMETER (TELECOM)	177	FLUKE	83430419	00975	I	10-MAR-2006
TRUE-RMS CLAMP METER (SAFETY)	36	FLUKE	68805882	00700	I	11-MAR-2006

SURGE GENERATORS	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
TRANSIENT WAVEFORM MONITOR	TWM-5	CDI	003982	00323	II	07-JUN-2006
UNIVERSAL SURGE GENERATOR	M5	CDI	003966	00324	II	09-JUN-2006
THREE PHASE COUPLING NWK	3CN	CDI	003455	00325	II	09-JUN-2006
1.2X50US PLUGIN MODULE	1.2X50US PLUGIN	CDI	N/A	00842	II	09-JUN-2006
10X160US PLUGIN MODULE	10X160US PLUGIN	C-S	N/A	00843	II	09-JUN-2006
10X560US PLUGIN MODULE	10X560US PLUGIN	C-S	N/A	00841	II	09-JUN-2006
PSURGE CONTROLLER MODULE	PSURGE 8000	HAEFELY	150267	00879	II	13-JUN-2006
COUPLING/DECOUPLING MODULE	PCD 900	HAEFELY	149213	00880	II	13-JUN-2006
IMPULSE MODULE	PIM 900	HAEFELY	149202	00881	II	13-JUN-2006
HIGH VOLTAGE CAP NWK 5KVDC, 18µF	CS-HVCC	C-S	01	00772	II	28-SEP-2006
NEBS SURGE GENERATOR	N/A	C-S	N/A	00088	II	08-JUN-2006
2X10US SURGE GENERATOR	2X10US	C-S	N/A	00846	II	09-JUN-2006
10X700US SURGE GENERATOR	10X700US	C-S	N/A	00847	II	09-JUN-2006
12 PAIR SURGE RESISTOR MODULE	N/A	C-S	N/A	00768	II	30-SEP-2006

POWER/NOISE METERS	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
POWER METER	435B	HP	2445A11012	00773	I	06-APR-2006
POWER METER	437B	HP	2912A01367	01099	I	25-OCT-2006
POWER SENSOR	8481A	HP	2702A61351	00774	I	05-APR-2006
PSOPHOMETER	2429	BRUEL & KJAER	1237642	00585	II	14-FEB-2007
TRANSMISSION LINE TESTER (DBRNC)	185T	AMREL	998658	00823	II	07-MAR-2006

OVERVOLTAGE CHAMBERS	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
72KW POWER FAULT SIMULATOR	OV1	C-S	N/A	00792	II	31-MAR-2007
POWER FAULT SIMULATOR	OV2	C-S	N/A	00116	II	31-MAR-2007

DIPOLE TAPE MEASURES	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
26FT TAPE #1	2338CME	LUFKIN	C3166-1	00776	I	13-MAR-2007
26FT TAPE #2	2338CME	LUFKIN	C3166-2	00777	I	13-MAR-2007

METEOROLOGICAL METERS	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
TEMP./HUMIDITY/ATM. PRESSURE GAUGE	7400 PERCEPTION II	DAVIS	N/A	00965	II	08-FEB-2007
TEMPERATURE /HUMIDITY GAUGE	THG-912	HUGER	4000562	00789	I	01-FEB-2007
WEATHER CLOCK (PRESSURE ONLY)	BA928	OREGON SCIENTIFIC	C3166-1	00831	I	02-FEB-2007

CONSUMABLES	SPEC.	MFR	STOCK/MN	ASSET	CAT	CALIBRATION DUE
NEBS CHEESECLOTH	26-28M/KG	ED&D	ACC-01	N/A	III	N/A
NEBS CARBON BLOCK	3-MIL-GAP 1KV SURGE	RELIABLE	3AB	N/A	III	N/A

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

Conditions Of Testing

[Bureau Veritas Consumer Products Services, Inc., a Massachusetts corporation], and/or its affiliates (collectively, the "Company") will conduct, at the request of the Submitter ("**Client**"), the tests specified on the submitted Test Request Form or equivalent in accordance with, and subject to, the following terms and conditions (collectively, "**Conditions**"):

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("**Test Report**") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "**BUREAU VERITAS**," "**BUREAU VERITAS CONSUMER PRODUCTS SERVICES**," "**BVCPS**", "**MTL**", "**ACTS**", "**MTL-ACTS**" and **CURTIS-STRAUS** (collectively, the "**Marks**") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only were such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.
13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS

AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.

14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B)NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.$10,000, WHICHEVER IS THE LESSER AMOUNT.

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

17. Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

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A2LA Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025-1999

CURTIS-STRAUS[1]
527 Great Road
Littleton, MA 01460
Barry Quinlan Phone: 978-486-8880
ELECTRICAL

Valid until: July 31, 2007 Certificate Number: 1627.01

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

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

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

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

Immunity	RRL No. 2005-130 (December 27, 2005)
Electrostatic Discharge (ESD)	EN 61000-4-2; AS/NZS 61000.4.2; KN61000-4-2
Radiated Immunity (RFI)	EN 61000-4-3, AS/NZS 61000.4.3; KN61000-4-3
Electrical Fast Transient Bursts (EFT)	EN 61000-4-4; AS/NZS 61000.4.4; KN61000-4-4
Surge	EN 61000-4-5, AS/NZS 61000.4.5; KN61000-4-5
Conducted Immunity	EN 61000-4-6, AS/NZS 61000.4.6; KN61000-4-6
Magnetic Immunity	EN 61000-4-8; AS/NZS 61000.4.8; KN61000-4-8
Voltage Dips and Interrupts	EN 61000-4-11; KN61000-4-11
Low Frequency Conducted Disturbances	EN 61000-2-2

Family Product or Industry Specific Specifications *including emissions and/or immunity*	GR-1089-CORE; GR-78-CORE (ESD) EN50081-1; EN50081-2; EN50082-2; EN50082-1; EN 61000-6-1; EN 61000-6-2; EN 61000-6-3; EN 61000-6-4; EN 50091-2; EN 55024; CISPR 24 EN 55103-1; EN 55103-2; EN 61326; EN 61547; EN 50130-4; EN 50083-2; EN 60601-1-2; EN 60601-2-2; EN 60601-2-24; EN 60601-2-32; EN 60601-2-38; EN 60601-2-47; IEC 1800-3; EN 61800-3; EN 55020; CISPR 20; EN 60555 Part 2; EN 60555 Part 3; ETS 300 386-1; EN 300 386-2; EN 300 386, ETS 300 132-1; ETS 300 132-2; EN 60669-2-1; AS/NZS 3200.1.2; CNS 13783-1; ETR 283; C62.41
Radiocommunications	
EU R&TTE Radio Standards;	EN 300 220-1; EN 300 220-3; EN 300 330-1; EN 300 330-2; EN 300 440-1; EN 300 440-2; EN 300 328; EN 300 385; EN 301 893
EU R&TTE EMC Standards	EN 300 339; EN 301 489-01; EN 301 489-03; EN 301 489-17
Canada Radio Standards	RSS-102; RSS-117; RSS-118; RSS-119; RSS-123; RSS-125; RSS-128; RSS-129; RSS-130; RSS-131; RSS-132; RSS-133; RSS-134; RSS-135; RSS-136; RSS-137; RSS-138; RSS-141; RSS-142; RSS-170; RSS-181; RSS-182; RSS-187; RSS-188; RSS-191; RSS-192; RSS-193; RSS-195; RSS-210; RSS-212; RSS-213; RSS-215; RSS-243; RSS-GEN; RSS-310; GL-36;
Australia/New Zealand Radio Standards	AS/NZS 4268; AS/NZS 4771; RFS29; Radiocommunications (Data Transmission Equipment Using Spread Spectrum Modulation Techniques); Radiocommunications (Spread Spectrum Devices); Radiocommunications (Short Range Devices); Radiocommunications (Low Interference Potential Devices);

Other Radio Standards	RTTE 01 (DGT-Taiwan);

FCC Standards and Test methods Support TCB Status--	
FCC Scope A – Unlicensed Radio Frequency Devices	
A1	1. 47 CFR Parts 11, 15 and 18 2. FCC MP-5, 3. ANSI C63.4-2003,
A2	1. 47 CFR Part 15, 2. ANSI C63.4-2003,
A3	1. 47 CFR Part 15, 2. ANSI C63.17-1998, 3. ANSI C63.4-2003,
A4	1. 47 CFR Part 15, 2. ANSI C63.4-2003,
FCC Scope B – Licensed Radio Service Equipment	
B1	1. 47 CFR Parts 2, 22, 24, 25, and 27 2. ANSI/TIA-603-C (2004)
B2	1. 47 CFR Parts 2, 22, 74, 90, 95, and 97 2. ANSI/TIA-603-C (2004)
B3	1. 47 CFR Parts 2, 80, and 87 2. ANSI/TIA-603-C (2004)
B4	1. 47 CFR Parts 2, 21, 74, and 101 2. ANSI/TIA-603-C (2004)

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

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

Telecom Standards	Title
North American standards	
FCC 47 CFR Part 68 Telephone Terminal Equipment	Connection of terminal equipment to the telephone network. Analog and Digital Equipment. TCB Scope C1.
CS-03 Issue 9	Specification for terminal equipment, terminal systems, Network protection devices, connection arrangements and hearing aids compatibility.
TIA/EIA TSB31-B 1998	Bulletin Part 68 Rationale and Measurement Guidelines (Feb 1998)
TIA-968-A, A1, A2, A3	Telecommunications Telephone Terminal Equipment Technical Requirements for Connection of Terminal Equipment to the Telephone Network
T1.TRQ.6-2001	Technical Requirements for SHDSL, HDSL2, HDSL4 Digital Subscriber Line Terminal Equipment to Prevent Harm to the Telephone Network Industry
Australia standards	
AS/ACIF S002-2001	Analogue interworking and non-interference requirements for Customer Equipment for connection to the Public Switched Telephone Network
AS/ACIF S016-2001	Requirements for Customer Equipment for connection to hierarchical digital interfaces
AS/ACIF S031-2001	Requirements for ISDN Basic Access Interface
AS/ACIF S038-2001	Requirements for ISDN Primary Rate Access Interface
AS/ACIF S043-2001	Requirements for Customer Equipment for Connection to a Metallic Local Loop Interface of a Telecommunications Network — Part 1: General Part 2: Broadband Part 3: DC, Low Frequency AC and Voice band
International standards	
ITU-T G.703	Physical/electrical characteristics of hierarchical Digital interfaces
Hong Kong standards	
HKTA 2011	Network Connection Specification for Connection of Customer Premises Equipment (CPE) to Direct Exchange Lines (DEL) of the Public Switched Telephone Network (PSTN) in Hong Kong
HKTA 2014	Network Connection Specification for Connection of Customer Premises Equipment (CPE) to the Public Telecommunications Network (PTN) in Hong Kong using ISDN Basic Rate Access (BRA) based on ITU-T Recommendations

Telecom Standards	Title
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
HKTA 2030	Network Connection Specification for Connection of Customer Premises Equipment (CPE) to the Public Telecommunications Network (PTN) in Hong Kong using Digital Leased Circuits at nx64 kbit/s
HKTA 2031	Network Connection Specification for Connection of Customer Premises Equipment (CPE) to the Public Telecommunications Network (PTN) in Hong Kong using Digital Leased Circuits below 64 kbit/s
HKTA 2032	Network Connection Specification for Connection of Customer Premises Equipment (CPE) to the Public Telecommunications Networks in Hong Kong using Asymmetric Digital Subscriber Lines (ADSL) based on ITU-T Recommendation G.992.1
HKTA 2033	Network Connection Specification for Connection of Customer Premises Equipment (CPE) to Fixed Telecommunications Networks in Hong Kong using Splitterless Asymmetric Digital Subscriber Lines (ADSL) based on ITU-T Recommendation G.992.2
European standards	
TBR 1: 1995	Attachment requirements for terminal equipment to Be connected to circuit switched data networks and Leased circuits using a CCITT Recommendation X.21 interface, or at an interface physically, functionally and electrically compatible with CCITT Recommendation X.21 but operating at any data signaling rate up to, and including, 1 984 kbit/s
TBR 2: 1997	Attachment requirements for Data Terminal Equipment (DTE) to connect to Packet Switched Public Data Networks (PSPDNs) for CCITT Recommendation X.25 interfaces at data signaling rates up to 1 920 kbit/s utilizing interfaces derived from CCITT Recommendations X.21 and X.21 bit
TBR 3: 1995 + Amdt : 1997	Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access
TBR 4: 1995 + Amdt : 1997	Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN primary rate access
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 equipment
TBR 013: 1996	Business TeleCommunications (BTC); 2 048 kbit/s digital structured leased lines (D2048S); Attachment requirements for terminal equipment interface

European standards (cont'd)	
TBR 21: 1998	Terminal Equipment (TE); Attachment requirements For pan-European approval for connection to the Analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signaling
TBR 24: 1997	Business TeleCommunications (BTC); 34 Mbit/s Digital Unstructured and structured leased lines (D34U and D34S); Attachment requirements for Terminal equipment interface
Taiwan standards (DGT)	
ADSL01	Asymmetric Digital Subscriber Line Terminal Equipment and POTS Splitter Technical Specifications
ID0002	DS1 Equipment Type Approval Guidelines
IS6100	ISDN Terminal Equipment Technical Specifications
PSTN01 (non-voice only)	Technical Specifications for Terminal Equipment for Connection to Public Switched Telephone Network
New Zealand standards	
PTC 200 (non-voice only)	Requirements for Connection of Customer Equipment to Analogue Lines
PTC 217	Requirements for Bandwidth Management Devices
TNA 117	Telecom 2048 kbit/s Standard Network Interface
PTC 270	Interim arrangements for ADSL CPE
Singapore Standards	
IDA TS ADSL	Type Approval Specification for Asymmetric Digital Subscriber Line (Full-rate ADSL) Modems
IDA TS ADSL 2	Type Approval Specification for Asymmetric Digital Subscriber Line Splitterless (G-Lite) Modems
IDA TS DLCN 1	Type Approval Specification for Digital Interfaces based on hierarchical bit rates of 2048 kbit/s, 34 368 kbit/s and 139 264 kbit/s
IDA TS ISDN 1	Type Approval Specification for connection of Terminal Equipment to Integrated Services Digital Network (ISDN) Basic Access
IDA TS ISDN 2	Type Approval Specification for connection of Terminal Equipment to Integrated Services Digital Network (ISDN) Primary Rate Access (PRA)
IDA TS PSTN (non-voice only)	Type Approval Specification for connection of Terminal Equipment to Public Switched Telephone Network (PSTN)
South Africa standards	
TE-001 (non-voice only)	Standard for Telecommunication Line Terminal Equipment (TLTE) for Connection to the Public Switched Telephone Network (PSTN)

Product Safety
General test methods:
Power input*, Permanence of marking*, Accessibility*, Permissibly limits*, Energy hazard measurement*, SELV circuits*, TNV limits*, Limited current*, Capacitor Discharge / voltage limitation*, Ring signal*, Humidity conditioning*, Creepage / Clearance / Distance thru Insulation (excluding CTI)*, Limited power measurement*, Ground Bond/Earthing*, Ground continuity*, Temperature*, Stability*, Applied force*, Steel sphere impact*, Mold stress*, Battery reverse current*, Ball pressure*, Leakage current*, Component abnormal*, Electric strength*, Impulse*, Overvoltage*, Acoustic sound pressure*, 130mm / 20mm flame*, Needle flame*, Hot flaming oil*, Locked rotor/motor armature*, Vibration, Bump, Drop*, Strain relief*, Torque*, Insulation resistance*, Sound level*, Handle loading*, Liquid overflow*, Spillage*, Liquid leakage*, Transformer shorts/overloads*, Rain test*, Wall mount*, Laser radiation (excluding x-ray)*, Voltage surge*, Functionality*, Protective impedance abnormal*, Capacitor short circuit abnormal*, Output abnormal*, Multi-supply abnormal*, Cooling abnormal*, Heating device abnormal*, Interlock abnormal*, Rigidity*, Cleaning*

Product Safety Standards	Title
Specific Product Safety Standards	
UL 60950 2000	Safety of information technology equipment
IEC 60950 1999	Safety of information technology equipment
EN 60950 2000	Safety of information technology equipment, including
IEC 60950-1 2001	Electrical business equipment.
UL 60950-1 2003	
CSA C22.2 No. 60950-00	
CSA C22.2 No. 60950-1 03	
IEC 61010-1 1993	Safety requirements for electrical equipment for measurement, control and laboratory use, Part 1: General requirements.
EN 61010-1 1993, 2001	Safety requirements for electrical equipment for measurement,
IEC 61010-1 2001	control and laboratory use, Part 1: General requirements.
UL 61010B-1 2003	
CAN/CSA 1010-1 1999 (*Including AM 2*)	Electrical equipment for laboratory use Part 1: General requirements.
IEC 60601-1 1995	Medical electrical equipment. Part 1: General requirements for safety.
EN 60601-1 1995 (*Including AM 2*)	Medical electrical equipment
UL 2601-1 1997	Medical electrical equipment. Part 1: General Requirements for safety.
IEC 60065 1998, 2000	Audio, video and similar electronic apparatus – Safety requirements
ANSI/UL 6500: 1998	Audio/video and musical instrument apparatus for Household,
CAN/CSA 60065-00	commercial and similar general use Australian/New Zealand
AS/NZS 60065 2000	Standard – Approval and test Specification – Mains operated electronic and related Equipment for household and similar general use
Canadian C22.2 No. 1-94 (1-98)	Audio, video and similar electronic equipment.
1994, 1998	Consumer and commercial products
EN 60065 1994	Safety requirements for main operated electronic and related apparatus for household and similar general use.
IEC 60825 1990	Radiation safety of laser products, equipment Classification, requirements and user's guide
EN 60825-1 1994	Safety of laser products Part 1: equipment

Product Safety Standards	Title
IEC 60825-1 2001	Classification, requirements and user's guide.
IEC 60825-2 2000-5	Safety of laser products – Part 2: Safety of optical communication systems
IEC 60825-4 1997-11	Safety of laser products – Part 4: Laser guards
21 CFR 1040.10	Performance standard for laser products
IEC 60335-1 1995	Safety of household and similar electrical appliances
(*Including AM2 – 1997 & AM 12 – 1997*)	Part 1: General requirements
EN 60335-1 2001	
UL 60335-1 1998	
CAN/CSA E335-1 1994	
UL 61010A-1: 2002	Electrical equipment for laboratory use; part 1: General requirements
EN 61010-1: 2001	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
AS/NZS 60950: 2000	Safety information technology equipment
EN 60950-1: 2001	Information Technology Equipment – Safety – Part1: General Requirements
AS/NZS 60950.1: 2003	Information Technology Equipment – Safety – General requirements
UL 61010 -1: 2004	Electrical Equipment for Measurement, Control and Laboratory Use; Part 1: General Requirements
UL 60601-1: 2003	Medical Electrical Equipment, Part 1: General Requirements for Safety
IEC 60601-1-1: 2000	Medical Electrical Equipment - Part 1: General Requirements For Safety 1: Collateral Standard: Safety Requirements For Medical Electrical Systems
EN 60601-1-1: 2001	Medical Electrical Equipment - Part 1: General Requirements for Safety – Section 1-1. Collateral Standard: Safety Requirements For Medical Electrical Systems
UL 60065: 2003	Audio, Video and Similar Electronic Apparatus – Safety Requirements
CSA 60065: 2003	Audio, Video and Similar Electronic Apparatus – Safety Requirements
IEC 60065: 2001	Audio, Video and Similar Electronic Apparatus – Safety Requirements
EN 60065: 2002	Audio, Video and Similar Electronic Apparatus – Safety Requirements
EN 60204 -1: 1998	Safety of Machinery – Electrical Equipment of Machines – Part 1: Specification for General Requirements
HKTA 2001	Compliance Test Specification – Safety and Electrical Protection Requirements for Subscriber Equipment Connected to the Public Telecommunications Networks In Hong Kong

Environmental Simulation

Test Technology	Test Standard	Supporting Standards
Accessibility*	IEC 60529	IP-0x thru IP-6x
Acoustic Noise*	GR-63-CORE Sec 4.6	
Airborne Contaminants	GR-63-CORE Sec 4.5	MFG & Hygroscopic Dust
Altitude	GR-63-CORE Sec 4.1.3	
Cold Start*	ETS 300 019	IEC 60068-2-1
Drip	IEC 60529	IP-x1 & IP-x2
Drops*	ETS 300 019	IEC 60068-2-32
	GR-63-CORE Sec 4.3	
Dust	IEC 60529	IP-5x & IP-6x
Firearms Resistance Testing	GR-487	
Fire Resistance	ANSLT1.319	
	GR-63-CORE Sec 4.2	Fire & Needle Flame
Heat Dissipation*	GR-63-CORE Sec 4.1.4	
Illumination	GR-63-CORE Sec 4.7	
Operational Temperature & Humidity (OpTH)*	ETS 300 019	IEC 60068-2-1 IEC 60068-2-2 IEC 60068-2-14 IEC 60068-2-56
	GR-63-CORE Sec 4.1.2	
Salt Fog & Spray	ASTM B117	
Spatial*	GR-63-CORE Sec 2.0 & 3.0	
Spraying-Splashing	IEC 60529	IP-x3 & IP-x4
Storage (Temperature & Humidity)*	ETS 300 019	IEC 60068-2-1 IEC 60068-2-2 IEC 60068-2-14 IEC 60068-2-30 IEC 60068-2-56
	GR-63-CORE Sec 4.1.1	
Vibration	ETS 300 019	IEC 60068-2-6 IEC 60068-2-27 IEC 60068-2-29 IEC 60068-2-32 IEC 60068-2-57 IEC 60068-2-64 Earthquake, Office & Transportation
	GR-63-CORE Sec 4.4	
Water Immersion	IEC 60529	IP-x7 & IP-x8
Water Jet	IEC 60529	IP-x5 & IP-x6

Note 1. For standards or methods listed on the scope of accreditation without a revision date, laboratories are expected to be competent in the use of the current version within one year of the date of publication of the standard test method or upon the date specified by the standard test method originator when the originator has implementation authority. When a superseded standard or method is required for an accredited test, the scope will include the superseded date/version. For those that support the TCB/CB status of the organization acting as a certifier on behalf of the FCC or IC the expectation is currency within 30 days of Federal Register publication of changes for FCC and 30 days after IC website update. This note shall not be construed as an Accreditation Body implication to adopt a more current standard than is required in a regulation or code (i.e. the legal requirement) which is adopted by the lab under their responsibility.

* On-site test service is available for this technology, test, or method.