EMC TEST REPORT

Test Report No.	**WC1203002**	Date of issue:	29 March 2012
Manufacturer	Calamp Wireless Networks Corporation		
Address	299 Johnson Avenue Suite 110		
	Waseca MN 56093		
Name of Equipment	Toro OSMAC Base Station		
Model No(s) Tested	NB-BS-01		
Serial No(s) Tested	33911014		

Test Result ■ **Compliant** ☐ **Non-compliant**

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REVISION RECORD

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	36	29 March 2012	Initial Release

TEST REPORT CONTENTS **Page(s)**

EMC TEST REGULATIONS:

The tests were performed according to following regulations:

■ - FCC	☐ - Class A	■ - Class B
■ - Canada ICES-003, Issue 4: 2004	☐ - Class A	■ - Class B

Test Methodology

Conducted and radiated emission testing is performed according to the procedures in ANSI C63.4-2003.

In compliance with FCC Docket 92-152, "Harmonization of Rules for Digital Devices Incorporate International Standards", testing for FCC compliance may be done following the ANSI C63.4-2003 procedures and using the CISPR 22 Limits.

ENVIRONMENTAL CONDITIONS IN THE LAB

	Actual
Temperature:	: 15 °C
Relative Humidity	: 60 %
Atmospheric pressure	: 98 kPa

POWER SUPPLY UTILIZED

Power supply system : 110 VAC / 60 Hz / 1ϕ

Measurement Uncertainty

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. This test system has a measurement uncertainty of ±1.8 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. This test system has a measurement uncertainty of ±4.8 dB. The equipment comprising the test systems is calibrated on an annual basis.

SIGN EXPLANATIONS

☐ - not applicable

■ - applicable

Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage) AC Power Lines

The measurements were performed at the following TÜV SÜD America test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Wild River Shield Room 1 - Anechoic ferrite-lined shielded room (7.3m x 3.7m x 3.7m) or (24' x 12' x 12')
☐ - Wild River Shield Room 2 - Shielded room (3.7m x 3.5m x 2.4m) or (12' x 11.5' x 8')
☐ - Oakwood Lab (Open Area Test Site)
☐ - New Brighton Lab Shielded Room

■ - Tabletop equipment is placed on a non-conducting table 80 centimeters above the floor, 40 centimeters from a vertical ground plane.
☐ - Floor standing equipment is placed directly on the turntable/ground plane.

Test equipment used:

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE02416	3825/2	Electro-Mechanics (EMCO)	50 Ω LISN	8812-1437	Code B 23-Feb-13
WRLE02534	ESHS-20	Rohde & Schwarz	EMI Receiver 9kHz-30MHz	837055/003	15-Jun-12
WRLE10863	N/A	TÜV SÜD America Inc	Test Companion Software Version 3.4.71	N/A	Code B 07-Oct-12

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak/average detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω/50 μH (CISPR 16-1-1) characteristics.

Test specification:

Frequency - range: ■ - 150 kHz to 30 MHz

EUT Power: ☐ - 50 Hz ☐ - 100 VAC ☐ - 230 VAC ☐ - 380 VAC

EUT Power: ■ - 60 Hz ☐ - 100 VAC ■ - 110 VAC ☐ - 208 VAC ☐ - 220 VAC ☐ - 480 VAC

Test Results - Conducted emissions 150 kHz - 30 MHz

The requirements are **☐ - N/A** **■ - MET** **☐ - NOT MET**

Minimum margin of compliance (Average) 10.3 dB at 17.79 MHz

Minimum margin of compliance (Quasi-peak) 15.95 dB at 160.7 kHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: _____

See the following pages for test set-up photos and data.

Test-setup photo(s):
Conducted emission 150 kHz - 30 MHz

Test-setup photo(s):
Conducted emission 150 kHz - 30 MHz

CONDUCTED EMISSIONS

Test Report #:	WC1203002 Run 2	Test Area:	STS		
EUT Model #:	NB-BS-01	Date:	3/22/2012		
EUT Serial #:	33911014	EUT Power:	110V / 60Hz	Temperature:	15.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Calamp Wireless Networks Corporation			Rel. Humidity:	60.0 %
EUT Description:	Base Station				
Notes:					
Data File Name:	3002.dat			Page:	1 of 4

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
160.7 kHz	48.69 Qp	0.26 / 0.19 / 0.0 / 0.0	49.14	L1	-16.29	n/a
177.58 kHz	43.93 Qp	0.27 / 0.18 / 0.0 / 0.0	44.38	L1	-20.22	n/a
213.4 kHz	36.35 Qp	0.29 / 0.16 / 0.0 / 0.0	36.8	L1	-26.27	n/a
355.71 kHz	33.75 Qp	0.34 / 0.1 / 0.0 / 0.0	34.19	L1	-24.63	n/a
443.45 kHz	21.79 Qp	0.37 / 0.1 / 0.0 / 0.0	22.26	L1	-34.73	n/a
995.0 kHz	25.91 Qp	0.52 / 0.1 / 0.0 / 0.0	26.53	L1	-29.47	n/a
1.725 MHz	22.53 Qp	0.71 / 0.1 / 0.0 / 0.0	23.34	L1	-32.66	n/a
12.695 MHz	22.69 Qp	2.06 / 0.2 / 0.0 / 0.0	24.95	L1	-35.05	n/a
17.79 MHz	33.69 Qp	2.5 / 0.2 / 0.0 / 0.0	36.39	L1	-23.61	n/a
29.96 MHz	-3.11 Qp	3.25 / 0.4 / 0.0 / 0.0	0.54	L1	-59.46	n/a
160.7 kHz	41.29 Av	0.26 / 0.19 / 0.0 / 0.0	41.74	L1	n/a	-13.69
177.58 kHz	37.16 Av	0.27 / 0.18 / 0.0 / 0.0	37.61	L1	n/a	-16.99
213.4 kHz	26.64 Av	0.29 / 0.16 / 0.0 / 0.0	27.09	L1	n/a	-25.98
355.71 kHz	32.04 Av	0.34 / 0.1 / 0.0 / 0.0	32.48	L1	n/a	-16.34
443.45 kHz	18.86 Av	0.37 / 0.1 / 0.0 / 0.0	19.33	L1	n/a	-27.66
995.0 kHz	25.27 Av	0.52 / 0.1 / 0.0 / 0.0	25.89	L1	n/a	-20.11
1.725 MHz	19.78 Av	0.71 / 0.1 / 0.0 / 0.0	20.59	L1	n/a	-25.41
12.695 MHz	20.41 Av	2.06 / 0.2 / 0.0 / 0.0	22.67	L1	n/a	-27.33
17.79 MHz	37.0 Av	2.5 / 0.2 / 0.0 / 0.0	39.7	L1	n/a	-10.3
29.96 MHz	-7.32 Av	3.25 / 0.4 / 0.0 / 0.0	-3.67	L1	n/a	-53.67
160.7 kHz	49.03 Qp	0.26 / 0.19 / 0.0 / 0.0	49.48	N	-15.95	n/a
177.58 kHz	44.15 Qp	0.27 / 0.18 / 0.0 / 0.0	44.6	N	-20.0	n/a
213.4 kHz	35.99 Qp	0.29 / 0.16 / 0.0 / 0.0	36.44	N	-26.63	n/a
355.71 kHz	33.25 Qp	0.34 / 0.1 / 0.0 / 0.0	33.69	N	-25.13	n/a
443.45 kHz	20.27 Qp	0.37 / 0.1 / 0.0 / 0.0	20.74	N	-36.25	n/a
995.0 kHz	26.81 Qp	0.52 / 0.1 / 0.0 / 0.0	27.43	N	-28.57	n/a
1.725 MHz	22.59 Qp	0.71 / 0.1 / 0.0 / 0.0	23.4	N	-32.6	n/a
12.695 MHz	19.37 Qp	2.06 / 0.2 / 0.0 / 0.0	21.63	N	-38.37	n/a

Tested by: Greg Jakubowski (Printed) — G Jakubowski (Signature)

Reviewed by: Brad A Reasoner (Printed) — (Signature)

CONDUCTED EMISSIONS

Test Report #:	WC1203002 Run 2	Test Area:	STS			
EUT Model #:	NB-BS-01	Date:	3/22/2012			
EUT Serial #:	33911014	EUT Power:	110V / 60Hz	Temperature:	15.0	°C
Test Method:	FCC B			Air Pressure:	98.0	kPa
Customer:	Calamp Wireless Networks Corporation			Rel. Humidity:	60.0	%
EUT Description:	Base Station					
Notes:						
Data File Name:	3002.dat			Page:	2 of 4	

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
17.79 MHz	33.03 Qp	2.5 / 0.2 / 0.0 / 0.0	35.73	N	-24.27	n/a
29.96 MHz	0.0 Qp	3.25 / 0.4 / 0.0 / 0.0	3.65	N	-56.35	n/a
29.96 MHz	-3.99 Qp	3.25 / 0.4 / 0.0 / 0.0	-0.34	N	-60.34	n/a
160.7 kHz	41.53 Av	0.26 / 0.19 / 0.0 / 0.0	41.98	N	n/a	-13.45
177.58 kHz	37.39 Av	0.27 / 0.18 / 0.0 / 0.0	37.84	N	n/a	-16.76
213.4 kHz	26.57 Av	0.29 / 0.16 / 0.0 / 0.0	27.02	N	n/a	-26.05
355.71 kHz	31.52 Av	0.34 / 0.1 / 0.0 / 0.0	31.96	N	n/a	-16.86
443.45 kHz	18.44 Av	0.37 / 0.1 / 0.0 / 0.0	18.91	N	n/a	-28.08
995.0 kHz	26.02 Av	0.52 / 0.1 / 0.0 / 0.0	26.64	N	n/a	-19.36
1.725 MHz	21.32 Av	0.71 / 0.1 / 0.0 / 0.0	22.13	N	n/a	-23.87
12.695 MHz	18.05 Av	2.06 / 0.2 / 0.0 / 0.0	20.31	N	n/a	-29.69
17.79 MHz	32.79 Av	2.5 / 0.2 / 0.0 / 0.0	35.49	N	n/a	-14.51
29.96 MHz	-8.25 Av	3.25 / 0.4 / 0.0 / 0.0	-4.6	N	n/a	-54.6

Tested by: Greg Jakubowski (Printed) _____ (Signature)

Reviewed by: Brad A Reasoner (Printed) _____ (Signature)

CONDUCTED EMISSIONS

Test Report #:	WC1203002 Run 2	Test Area:	STS			
EUT Model #:	NB-BS-01	Date:	3/22/2012			
EUT Serial #:	33911014	EUT Power:	110V / 60Hz	Temperature:	15.0	°C
Test Method:	FCC B			Air Pressure:	98.0	kPa
Customer:	Calamp Wireless Networks Corporation			Rel. Humidity:	60.0	%
EUT Description:	Base Station					
Notes:						
Data File Name:	3002.dat			Page:	3 of 4	

Measurement summary for limit1: EN55022 B Qp (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA1 EN55022 B Qp
160.7 kHz	49.03 Qp	0.26 / 0.19 / 0.0 / 0.0	49.48	N	-15.95
177.58 kHz	44.15 Qp	0.27 / 0.18 / 0.0 / 0.0	44.6	N	-20.0
17.79 MHz	33.69 Qp	2.5 / 0.2 / 0.0 / 0.0	36.39	L1	-23.61
355.71 kHz	33.75 Qp	0.34 / 0.1 / 0.0 / 0.0	34.19	L1	-24.63
213.4 kHz	36.35 Qp	0.29 / 0.16 / 0.0 / 0.0	36.8	L1	-26.27
995.0 kHz	26.81 Qp	0.52 / 0.1 / 0.0 / 0.0	27.43	N	-28.57
1.725 MHz	22.59 Qp	0.71 / 0.1 / 0.0 / 0.0	23.4	N	-32.6
443.45 kHz	21.79 Qp	0.37 / 0.1 / 0.0 / 0.0	22.26	L1	-34.73
12.695 MHz	22.69 Qp	2.06 / 0.2 / 0.0 / 0.0	24.95	L1	-35.05
29.96 MHz	0.0 Qp	3.25 / 0.4 / 0.0 / 0.0	3.65	N	-56.35

Measurement summary for limit2: EN55022 B Avg (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV)	EUT Lead	DELTA2 EN55022 B Avg
17.79 MHz	37.0 Av	2.5 / 0.2 / 0.0 / 0.0	39.7	L1	-10.3
160.7 kHz	41.53 Av	0.26 / 0.19 / 0.0 / 0.0	41.98	N	-13.45
355.71 kHz	32.04 Av	0.34 / 0.1 / 0.0 / 0.0	32.48	L1	-16.34
177.58 kHz	37.39 Av	0.27 / 0.18 / 0.0 / 0.0	37.84	N	-16.76
995.0 kHz	26.02 Av	0.52 / 0.1 / 0.0 / 0.0	26.64	N	-19.36
1.725 MHz	21.32 Av	0.71 / 0.1 / 0.0 / 0.0	22.13	N	-23.87
213.4 kHz	26.64 Av	0.29 / 0.16 / 0.0 / 0.0	27.09	L1	-25.98
12.695 MHz	20.41 Av	2.06 / 0.2 / 0.0 / 0.0	22.67	L1	-27.33
443.45 kHz	18.86 Av	0.37 / 0.1 / 0.0 / 0.0	19.33	L1	-27.66
29.96 MHz	-7.32 Av	3.25 / 0.4 / 0.0 / 0.0	-3.67	L1	-53.67

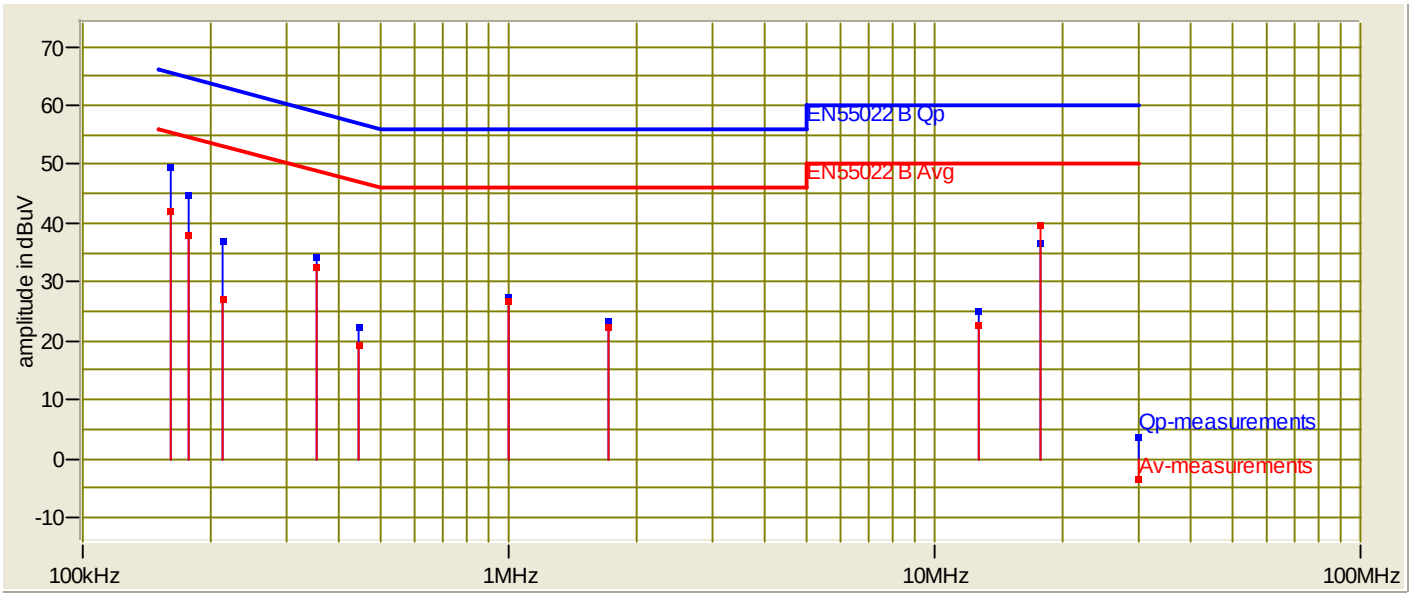
Tested by: Greg Jakubowski (Printed) — (Signature)

Reviewed by: Brad A Reasoner (Printed) — (Signature)

CONDUCTED EMISSIONS

Test Report #:	WC1203002 Run 2	Test Area:	STS		
EUT Model #:	NB-BS-01	Date:	3/22/2012		
EUT Serial #:	33911014	EUT Power:	110V / 60Hz	Temperature:	15.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Calamp Wireless Networks Corporation			Rel. Humidity:	60.0 %
EUT Description:	Base Station				
Notes:					
Data File Name:	3002.dat			Page:	4 of 4

Graph:



Tested by: Greg Jakubowski — Printed — Signature

Reviewed by: Brad A Reasoner — Printed — Signature

Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage) Telecommunications Cables

The measurements were performed at the following TÜV SÜD America test location:

■ - Test not applicable

☐ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Wild River Shield Room 1 - Anechoic ferrite-lined shielded room (7.3m x 3.7m x 3.7m) or (24' x 12' x 12')
☐ - Wild River Shield Room 2 - Shielded room (3.7m x 3.5m x 2.4m) or (12' x 11.5' x 8')
☐ - Oakwood Lab (Open Area Test Site)
☐ - New Brighton Lab Shielded Room

☐ - Tabletop equipment is placed on a non-conducting table 80 centimeters above the floor, 40 centimeters from the vertical ground plane (wall) of the screen room. .
☐ - Floor standing equipment is placed directly on the turntable/ground plane.

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak/average detection, and an Impedance Stabilization Network (ISN), with 50 Ω/50 μH (CISPR 22) characteristics.

Test specification:

Frequency - range: ☐ - 150 kHz to 30 MHz

EUT Power: ☐ - 50 Hz ☐ - 100 VAC ☐ - 230 VAC ☐ - 380 VAC

EUT Power: ☐ - 60 Hz ☐ - 100 VAC ☐- 110 VAC ☐ - 208 VAC ☐ - 220 VAC ☐ - 480 VAC

Test Results - Conducted common mode disturbance at telecommunication ports – 150 kHz to 30 MHz

The requirements are **■ - N/A** **☐ - MET** **☐ - NOT MET**

Minimum margin of compliance (Average) _____ dB at _____ kHz

Minimum margin of compliance (Quasi-peak) _____ dB at _____ MHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: Conducted emissions testing at telecommunication ports was not performed because the Equipment Under Test has no telecommunication ports.

Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The *RADIATED EMISSIONS (ELECTRIC FIELD)* measurements, in the frequency range of 30 MHz-1000 MHz, were tested in a horizontal and vertical polarization at the following TÜV SÜD America test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site) - NSA measurements made 08-11.
■ - Wild River Lab Small Test Site (Open Area Test Site) - NSA measurements made 08-11.
☐ - Oakwood Lab (Open Area Test Site) - NSA measurements made 10-09.

at a test distance of:
☐ - 3 meters
■ - 10 meters
☐ - 30 meters

■ - Tabletop equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane.
☐ - Floor standing equipment is placed directly on the turntable/ground plane.
☐ - Cables to simulators/testers are routed through the center of the table and to a screen room located outside the test area.

Test equipment used:

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE08052	8566B	Hewlett-Packard	Spectrum Analyzer	2115A00853	14-Feb-13
WRLE08051	85662A	Hewlett-Packard	Analyzer Display	2112A02220	14-Feb-13
WRLE02684	85650A	Hewlett-Packard	Quasi-Peak Adapter	2521A01006	10-Jun-12
WRLE03203	EM-6917B	Electro-Metrics	Biconicalog Periodic	106	18-Oct-12
WRLE02668	8447D	Hewlett-Packard	Preamplifier	1937A02209	Code B 10-May-12
WRLE10863	N/A	TÜV SÜD America Inc	Test Companion Software Version 3.4.71	N/A	Code B 07-Oct-12

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection.

Test specification:

Frequency - range: ■ - 30 MHz to 1000 MHz
EUT Power: ☐ - 50 Hz ☐ - 100 VAC ☐ - 230 VAC ☐ - 380 VAC
EUT Power: ■ - 60 Hz ☐ - 100 VAC ■- 110 VAC ☐ - 208 VAC ☐ - 220 VAC ☐ - 480 VAC
Antenna Height: ■ - 1 to 4 meters
Antenna Polarization: ■ - Horizontal ■ - Vertical
: ■ - EUT rotated 360 degrees

Test Results - Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are **☐ - N/A** **■ - MET** **☐ - NOT MET**

Minimum margin of compliance 0.64 dB at 144.0 MHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: _____

See the following pages for test set-up photos and data.

Test-setup photo(s):
Radiated emission 30 MHz - 1000 MHz

Test-setup photo(s):
Radiated emission 30 MHz - 1000 MHz

RADIATED EMISSIONS

Test Report #:	WC1203002 Run 1	Test Area:	STS		
EUT Model #:	NB-BS-01	Date:	3/22/2012		
EUT Serial #:	33911014	EUT Power:	110V / 60Hz	Temperature:	15.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Calamp Wireless Networks Corporation			Rel. Humidity:	60.0 %
EUT Description:	Base Station				
Notes:					
Data File Name:				Page:	1 of 5

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 EN55022- B <1GHz 10m (2006)	DELTA2
Begin scan 30 - 1000 MHz						
77.956 MHz	37.44 Qp	1.73 / 7.63 / 24.3 / 0.0	22.49	V / 1.00 / 0	-7.51	n/a
81.212 MHz	40.76 Qp	1.76 / 7.38 / 24.33 / 0.0	25.57	V / 1.00 / 0	-4.43	n/a
83.922 MHz	42.55 Qp	1.78 / 7.18 / 24.35 / 0.0	27.15	V / 1.00 / 0	-2.85	n/a
85.482 MHz	38.3 Qp	1.79 / 7.13 / 24.37 / 0.0	22.86	V / 1.00 / 0	-7.14	n/a
120.013 MHz	31.24 Qp	2.09 / 8.17 / 24.34 / 0.0	17.16	V / 1.00 / 0	-12.84	n/a
124.429 MHz	31.92 Qp	2.14 / 7.84 / 24.34 / 0.0	17.56	V / 1.00 / 0	-12.44	n/a
131.489 MHz	30.85 Qp	2.21 / 7.59 / 24.32 / 0.0	16.33	V / 1.00 / 0	-13.67	n/a
136.019 MHz	31.15 Qp	2.26 / 7.8 / 24.32 / 0.0	16.9	V / 1.00 / 0	-13.1	n/a
139.127 MHz	35.55 Qp	2.3 / 8.11 / 24.31 / 0.0	21.65	V / 1.00 / 0	-8.35	n/a
144.0 MHz	41.46 Qp	2.35 / 8.6 / 24.3 / 0.0	28.1	V / 1.00 / 0	-1.9	n/a
152.01 MHz	35.0 Qp	2.42 / 8.5 / 24.33 / 0.0	21.59	V / 1.00 / 0	-8.41	n/a
163.77 MHz	28.85 Qp	2.55 / 8.55 / 24.39 / 0.0	15.56	V / 3.00 / 0	-14.44	n/a
176.041 MHz	26.94 Qp	2.7 / 9.05 / 24.36 / 0.0	14.34	V / 3.00 / 0	-15.66	n/a
240.007 MHz	26.3 Qp	3.09 / 11.3 / 24.32 / 0.0	16.37	V / 3.00 / 0	-20.63	n/a
720.009 MHz	28.56 Qp	6.39 / 19.3 / 24.47 / 0.0	29.78	V / 3.00 / 0	-7.22	n/a
360.0 MHz	22.6 Qp	4.13 / 15.05 / 24.36 / 0.0	17.42	V / 3.00 / 0	-19.58	n/a
480.013 MHz	22.15 Qp	5.06 / 17.4 / 24.31 / 0.0	20.3	V / 3.00 / 0	-16.7	n/a
600.013 MHz	27.1 Qp	5.77 / 19.5 / 24.41 / 0.0	27.96	V / 3.00 / 0	-9.04	n/a
152.01 MHz	35.83 Qp	2.42 / 8.5 / 24.33 / 0.0	22.42	V / 1.00 / 0	-7.58	n/a
163.77 MHz	30.95 Qp	2.55 / 8.55 / 24.39 / 0.0	17.66	V / 1.00 / 0	-12.34	n/a
176.041 MHz	28.15 Qp	2.7 / 9.05 / 24.36 / 0.0	15.55	V / 1.00 / 0	-14.45	n/a
240.007 MHz	30.45 Qp	3.09 / 11.3 / 24.32 / 0.0	20.52	V / 1.00 / 0	-16.48	n/a
480.013 MHz	26.45 Qp	5.06 / 17.4 / 24.31 / 0.0	24.6	V / 1.00 / 0	-12.4	n/a
600.013 MHz	27.5 Qp	5.77 / 19.5 / 24.41 / 0.0	28.36	V / 1.00 / 0	-8.64	n/a
144.0 MHz	42.1 Qp	2.35 / 8.6 / 24.3 / 0.0	28.74	V / 1.00 / 90	-1.26	n/a

Tested by: Greg Jakubowski (Printed) — G Jakubowski (Signature)

Reviewed by: Brad A Reasoner (Printed) — (Signature)

RADIATED EMISSIONS

Test Report #:	WC1203002 Run 1	Test Area:	STS		
EUT Model #:	NB-BS-01	Date:	3/22/2012		
EUT Serial #:	33911014	EUT Power:	110V / 60Hz	Temperature:	15.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Calamp Wireless Networks Corporation			Rel. Humidity:	60.0 %
EUT Description:	Base Station				
Notes:					
Data File Name:				Page:	2 of 5

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 EN55022- B <1GHz 10m (2006)	DELTA2
360.0 MHz	24.3 Qp	4.13 / 15.05 / 24.36 / 0.0	19.12	V / 1.00 / 90	-17.88	n/a
120.013 MHz	34.25 Qp	2.09 / 8.17 / 24.34 / 0.0	20.17	V / 1.00 / 180	-9.83	n/a
124.429 MHz	33.15 Qp	2.14 / 7.84 / 24.34 / 0.0	18.79	V / 1.00 / 180	-11.21	n/a
163.77 MHz	32.55 Qp	2.55 / 8.55 / 24.39 / 0.0	19.26	V / 1.00 / 180	-10.74	n/a
120.013 MHz	35.45 Qp	2.09 / 8.17 / 24.34 / 0.0	21.37	V / 1.00 / 270	-8.63	n/a
124.429 MHz	35.1 Qp	2.14 / 7.84 / 24.34 / 0.0	20.74	V / 1.00 / 270	-9.26	n/a
131.489 MHz	31.3 Qp	2.21 / 7.59 / 24.32 / 0.0	16.78	V / 1.00 / 270	-13.22	n/a
136.019 MHz	32.95 Qp	2.26 / 7.8 / 24.32 / 0.0	18.7	V / 1.00 / 270	-11.3	n/a
139.127 MHz	35.65 Qp	2.3 / 8.11 / 24.31 / 0.0	21.75	V / 1.00 / 270	-8.25	n/a
360.0 MHz	25.4 Qp	4.13 / 15.05 / 24.36 / 0.0	20.22	V / 1.00 / 270	-16.78	n/a
720.009 MHz	30.45 Qp	6.39 / 19.3 / 24.47 / 0.0	31.67	H / 1.00 / 180	-5.33	n/a
175.8 MHz	21.55 Qp	2.7 / 9.04 / 24.36 / 0.0	8.93	H / 1.00 / 180	-21.07	n/a
504.007 MHz	26.05 Qp	5.21 / 17.92 / 24.33 / 0.0	24.85	H / 1.00 / 180	-12.15	n/a
624.002 MHz	27.45 Qp	5.91 / 19.12 / 24.43 / 0.0	28.05	H / 1.00 / 180	-8.95	n/a
648.002 MHz	25.75 Qp	6.04 / 19.73 / 24.45 / 0.0	27.08	H / 1.00 / 180	-9.92	n/a
816.003 MHz	28.25 Qp	6.86 / 21.18 / 24.11 / 0.0	32.18	H / 1.00 / 180	-4.82	n/a
336.0 MHz	24.0 Qp	3.93 / 13.85 / 24.31 / 0.0	17.47	H / 1.00 / 180	-19.53	n/a
175.8 MHz	23.55 Qp	2.7 / 9.04 / 24.36 / 0.0	10.93	H / 1.00 / 90	-19.07	n/a
175.8 MHz	24.6 Qp	2.7 / 9.04 / 24.36 / 0.0	11.98	H / 1.00 / 0	-18.02	n/a
175.8 MHz	30.4 Qp	2.7 / 9.04 / 24.36 / 0.0	17.78	H / 3.00 / 0	-12.22	n/a
176.041 MHz	30.35 Qp	2.7 / 9.05 / 24.36 / 0.0	17.75	H / 3.00 / 0	-12.25	n/a
336.0 MHz	28.15 Qp	3.93 / 13.85 / 24.31 / 0.0	21.62	H / 3.00 / 0	-15.38	n/a
360.0 MHz	26.85 Qp	4.13 / 15.05 / 24.36 / 0.0	21.67	H / 3.00 / 0	-15.33	n/a

Tested by: Greg Jakubowski (Printed) — G Jakubowski (Signature)

Reviewed by: Brad A Reasoner (Printed) — (Signature)

RADIATED EMISSIONS

Test Report #:	WC1203002 Run 1	Test Area:	STS		
EUT Model #:	NB-BS-01	Date:	3/22/2012		
EUT Serial #:	33911014	EUT Power:	110V / 60Hz	Temperature:	15.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Calamp Wireless Networks Corporation			Rel. Humidity:	60.0 %
EUT Description:	Base Station				
Notes:					
Data File Name:				Page:	3 of 5

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 EN55022- B <1GHz 10m (2006)	DELTA2
336.0 MHz	29.0 Qp	3.93 / 13.85 / 24.31 / 0.0	22.47	H / 3.00 / 180	-14.53	n/a
336.0 MHz	30.15 Qp	3.93 / 13.85 / 24.31 / 0.0	23.62	H / 3.00 / 270	-13.38	n/a
360.0 MHz	28.25 Qp	4.13 / 15.05 / 24.36 / 0.0	23.07	H / 3.00 / 270	-13.93	n/a
maximized						
144.0 MHz	42.72 Qp	2.35 / 8.6 / 24.3 / 0.0	29.36	V / 1.40 / 132	-0.64	n/a
83.922 MHz	42.44 Qp	1.78 / 7.18 / 24.35 / 0.0	27.04	V / 1.60 / 0	-2.96	n/a
816.003 MHz	30.38 Qp	6.86 / 21.18 / 24.11 / 0.0	34.31	H / 1.24 / 179	-2.69	n/a
720.009 MHz	31.48 Qp	6.39 / 19.3 / 24.47 / 0.0	32.7	H / 1.10 / 207	-4.3	n/a

Tested by: Greg Jakubowski (Printed) — G Jakubowski (Signature)

Reviewed by: Brad A Reasoner (Printed) — Brad A Reasoner (Signature)

RADIATED EMISSIONS

Test Report #:	WC1203002 Run 1	Test Area:	STS		
EUT Model #:	NB-BS-01	Date:	3/22/2012		
EUT Serial #:	33911014	EUT Power:	110V / 60Hz	Temperature:	15.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Calamp Wireless Networks Corporation			Rel. Humidity:	60.0 %
EUT Description:	Base Station				
Notes:					
Data File Name:				Page:	4 of 5

Measurement summary for limit1: EN55022- B <1GHz 10m (2006) (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 EN55022- B <1GHz 10m (2006)
144.0 MHz	42.72 Qp	2.35 / 8.6 / 24.3 / 0.0	29.36	V / 1.40 / 132	-0.64
816.003 MHz	30.38 Qp	6.86 / 21.18 / 24.11 / 0.0	34.31	H / 1.24 / 179	-2.69
83.922 MHz	42.55 Qp	1.78 / 7.18 / 24.35 / 0.0	27.15	V / 1.00 / 0	-2.85
720.009 MHz	31.48 Qp	6.39 / 19.3 / 24.47 / 0.0	32.7	H / 1.10 / 207	-4.3
81.212 MHz	40.76 Qp	1.76 / 7.38 / 24.33 / 0.0	25.57	V / 1.00 / 0	-4.43
85.482 MHz	38.3 Qp	1.79 / 7.13 / 24.37 / 0.0	22.86	V / 1.00 / 0	-7.14
77.956 MHz	37.44 Qp	1.73 / 7.63 / 24.3 / 0.0	22.49	V / 1.00 / 0	-7.51
152.01 MHz	35.83 Qp	2.42 / 8.5 / 24.33 / 0.0	22.42	V / 1.00 / 0	-7.58
139.127 MHz	35.65 Qp	2.3 / 8.11 / 24.31 / 0.0	21.75	V / 1.00 / 270	-8.25
120.013 MHz	35.45 Qp	2.09 / 8.17 / 24.34 / 0.0	21.37	V / 1.00 / 270	-8.63
600.013 MHz	27.5 Qp	5.77 / 19.5 / 24.41 / 0.0	28.36	V / 1.00 / 0	-8.64
624.002 MHz	27.45 Qp	5.91 / 19.12 / 24.43 / 0.0	28.05	H / 1.00 / 180	-8.95
124.429 MHz	35.1 Qp	2.14 / 7.84 / 24.34 / 0.0	20.74	V / 1.00 / 270	-9.26
648.002 MHz	25.75 Qp	6.04 / 19.73 / 24.45 / 0.0	27.08	H / 1.00 / 180	-9.92
163.77 MHz	32.55 Qp	2.55 / 8.55 / 24.39 / 0.0	19.26	V / 1.00 / 180	-10.74
136.019 MHz	32.95 Qp	2.26 / 7.8 / 24.32 / 0.0	18.7	V / 1.00 / 270	-11.3
504.007 MHz	26.05 Qp	5.21 / 17.92 / 24.33 / 0.0	24.85	H / 1.00 / 180	-12.15
175.8 MHz	30.4 Qp	2.7 / 9.04 / 24.36 / 0.0	17.78	H / 3.00 / 0	-12.22
176.041 MHz	30.35 Qp	2.7 / 9.05 / 24.36 / 0.0	17.75	H / 3.00 / 0	-12.25
480.013 MHz	26.45 Qp	5.06 / 17.4 / 24.31 / 0.0	24.6	V / 1.00 / 0	-12.4
131.489 MHz	31.3 Qp	2.21 / 7.59 / 24.32 / 0.0	16.78	V / 1.00 / 270	-13.22
336.0 MHz	30.15 Qp	3.93 / 13.85 / 24.31 / 0.0	23.62	H / 3.00 / 270	-13.38
360.0 MHz	28.25 Qp	4.13 / 15.05 / 24.36 / 0.0	23.07	H / 3.00 / 270	-13.93
240.007 MHz	30.45 Qp	3.09 / 11.3 / 24.32 / 0.0	20.52	V / 1.00 / 0	-16.48

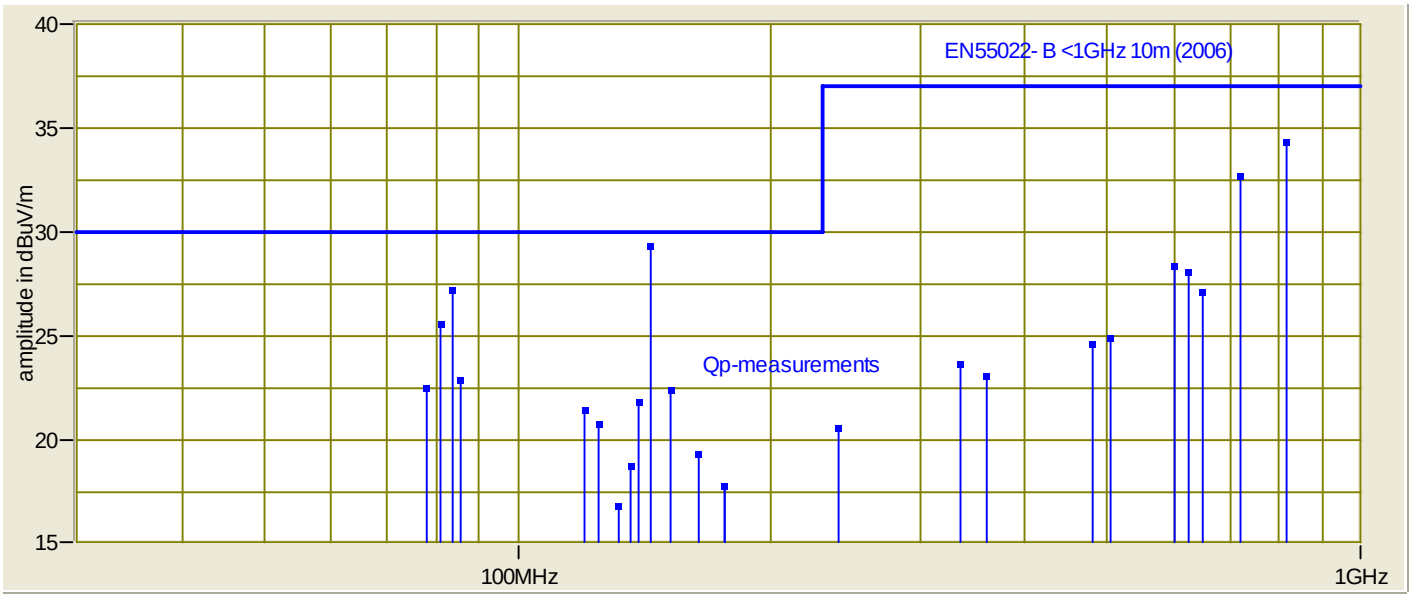
Tested by: Greg Jakubowski (Printed) _____ (Signature)

Reviewed by: Brad A Reasoner (Printed) _____ (Signature)

RADIATED EMISSIONS

Test Report #:	WC1203002 Run 1	Test Area:	STS		
EUT Model #:	NB-BS-01	Date:	3/22/2012		
EUT Serial #:	33911014	EUT Power:	110V / 60Hz	Temperature:	15.0 °C
Test Method:	FCC B			Air Pressure:	98.0 kPa
Customer:	Calamp Wireless Networks Corporation			Rel. Humidity:	60.0 %
EUT Description:	Base Station				
Notes:					
Data File Name:				Page:	5 of 5

Graph:



Tested by: Greg Jakubowski (Printed) _____ (Signature)

Reviewed by: Brad A Reasoner (Printed) _____ (Signature)

Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The *RADIATED EMISSIONS* measurements in the frequency range 1 GHz – 2 GHz were performed in a horizontal and vertical polarization at the following TÜV SÜD America test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■- Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)

at a test distance of:
☐ - 1 meters
■ - 3 meters
☐ - 10 meters

■ - Tabletop equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane.
☐ - Floor standing equipment is placed directly on the turntable/ground plane.
☐ - Cables to simulators/testers are routed through the center of the table and to a screen room located outside the test area.

Test equipment used:

TUV ID	Model	Manufacturer	Description	Serial	Cal Due
WRLE08052	8566B	Hewlett-Packard	Spectrum Analyzer	2115A00853	14-Feb-13
WRLE08051	85662A	Hewlett-Packard	Analyzer Display	2112A02220	14-Feb-13
WRLE02684	85650A	Hewlett-Packard	Quasi-Peak Adapter	2521A01006	10-Jun-12
WRLE03229	3115	Electro-Mechanics (EMCO)	Ridge Guide Antenna	2483	04-Aug-12
WRLE02668	8447D	Hewlett-Packard	Preamplifier	1937A02209	Code B 10-May-12

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure. Measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak/average detection..

Test specification:

Frequency - range: ■ - 1000 MHz – 2000 MHz
EUT Power: ☐ - 50 Hz ☐ - 100 VAC ☐ - 230 VAC ☐ - 380 VAC
EUT Power: ■ - 60 Hz ☐ - 100 VAC ■- 110 VAC ☐ - 208 VAC ☐ - 220 VAC ☐ - 480 VAC
Antenna Height: ■ - 1 to 4 meters
Antenna Polarization: ■ - Horizontal ■ - Vertical
: ■ - EUT rotated 360 degrees

FCC Test Results - Radiated emissions 1 GHz – 2 GHz

The requirements are **☐ - N/A** **■- MET** **☐ - NOT MET**

Minimum margin of compliance (peak) >10 dB from _____ MHz

Minimum margin of compliance (average) _____ dB at _____ MHz

Remarks: No significant emissions were detected within 10 dB of the limit.

See the following pages for test set-up photos and data.

Test-setup photo(s):
Radiated emission 1000 MHz – 2000 MHz

RADIATED EMISSIONS

Test Report #:	WC1203002 Run 3	Test Area:	STS			
EUT Model #:	NB-BS-01	Date:	3/22/2012			
EUT Serial #:	33911014	EUT Power:	110V / 60Hz	Temperature:	15.0	°C
Test Method:	FCC B			Air Pressure:	98.0	kPa
Customer:	Calamp Wireless Networks Corporation			Rel. Humidity:	60.0	%
EUT Description:	Base Station					
Notes:						
Data File Name:	3002.dat			Page:	1 of 1	

List of measurements for run #: 3

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC B >1GHz 3m av	DELTA2 FCC B >1G 3 M peak
Begin scan 1 - 2 GHz						
DUT rotated 360 degrees with measurement antenna vertical and horizontal						
No significant emissions detected						
End scan 1 - 2 GHz						

Tested by: Greg Jakubowski (Printed) _____ (Signature)

Reviewed by: Brad A Reasoner (Printed) _____ (Signature)

Equipment Under Test (EUT) Test Operation Mode:

☐ - Standby

☐ - Test program (H - Pattern)

☐ - Test program (color bar)

☐ - Test program (customer specific)

☐ - Practice operation

☐ - Normal Operating Mode

■ - See Software and/or Operating Modes in Appendix B

Configuration of the device under test:

■ - See Constructional Data Form in Appendix B

☐ - See Product Information Form in Appendix B

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the Operating Instructions provided by the manufacturer/client.

CONDUCTED EMISSIONS:
The final level, expressed in dBμV, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the CISPR limit.

To convert between dBμV and μV, the following conversions apply:
dBμV = 20(log μV)
μV = Inverse log (dBμV/20)

RADIATED EMISSIONS:
The final level, expressed in dBμV/m, is arrived at by taking the reading from the spectrum analyzer (Level dBμV) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has the CISPR limit subtracted from it to provide the Delta, which gives the tabular data as shown in the data sheets in Attachment B. The amplifier gain is automatically accounted for by using an analyzer offset.

Example:

FREQ (MHz)	LEVEL (dBuV)		CABLE/ANT/PREAMP (dB)		(dB/m)	(dB)	FINAL (dBuV/m)	POL/HGT/AZ	(m)	(deg)	DELTA1 EN 55022
60.80	42.5Qp	+	1.2	+	10.9	- 25.5 =	29.1	V	1.0	0.0	-10.9

GENERAL REMARKS:

Modifications required to pass:
■ None
☐ As indicated on the data sheet(s)

Test Specification Deviations: Additions to or Exclusions from:
■ None
☐ As indicated in the Test Plan
☐

SUMMARY:

The requirements according to the technical regulations are
■ - compliant and the equipment under test does fulfill the general approval requirements.
☐ - **non-compliant** and the equipment under test does **not** fulfill the general approval requirements.

EUT Received Date: 22 March 2012
Condition of EUT: Normal
Testing Start Date: 22 March 2012
Testing End Date: 22 March 2012

TÜV SÜD AMERICA INC

Tested by:
Greg S Jakubowski
Senior EMC Engineer

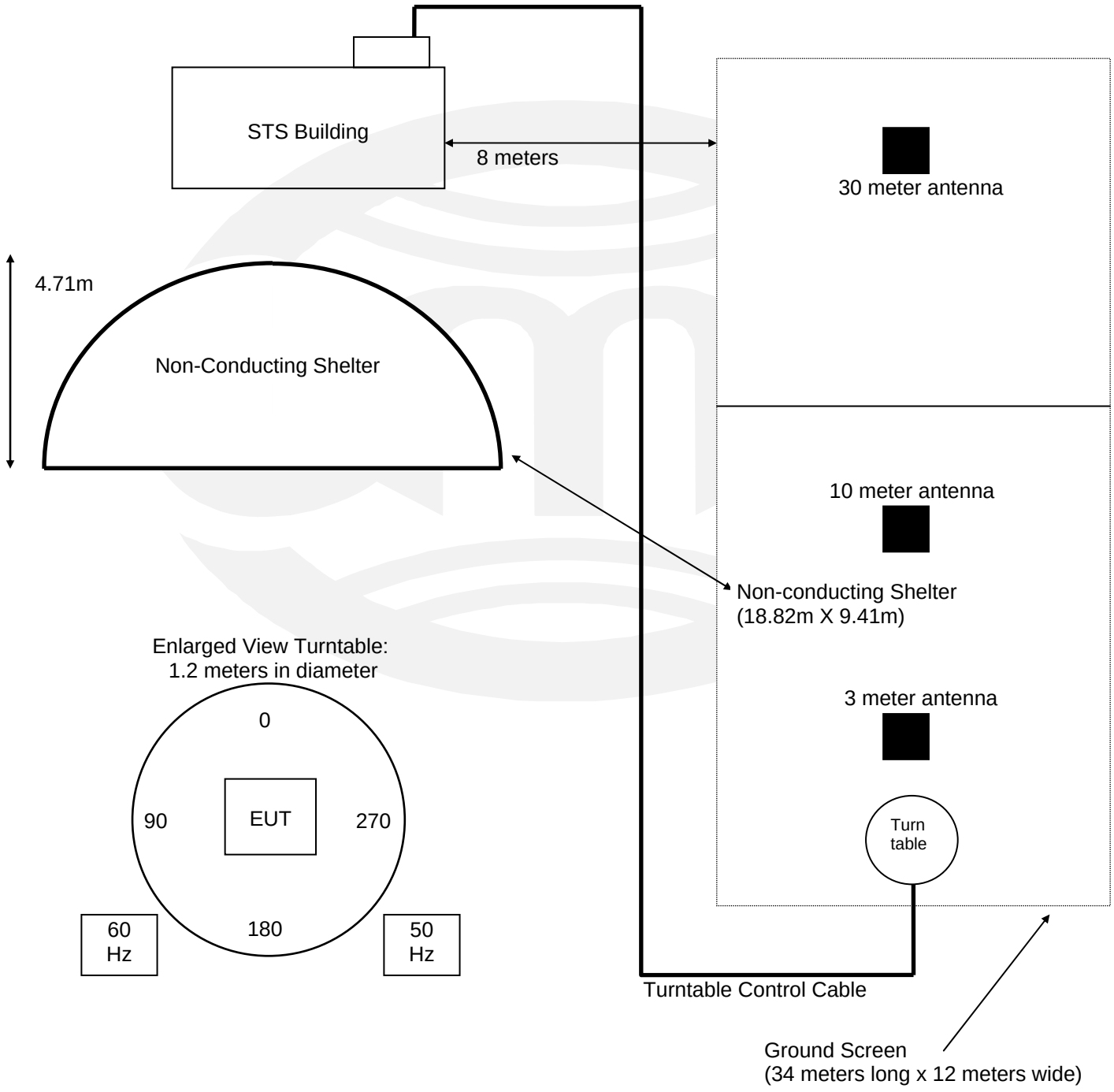
Approved by:
Brad A Reasoner
Senior EMC Technician

Appendix A

Test Setup Drawing(s)

TEST SETUP FOR EMISSIONS TESTING

WILD RIVER LAB
Small Test Site (STS)



Appendix B

Constructional Data Form(s)

and/or

Product Information Form(s)

EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE. IF TESTING RESULTS IN MODIFICATIONS TO THE EQUIPMENT, PLEASE SUBMIT A REVISED TP/CDF INDICATING THOSE MODIFICATIONS.
NOTE: This information will be input into your test report as shown below. Press the F1 key at any time to get HELP for the current field selected.

Company:	Calamp Wireless Networks Corporation		
Address:	299 Johnson Ave, Suite 110		
	Waseca MN, 56093		
Contact:	Daniel Hanson	Position:	EE
Phone:	507-833-6741	Fax:	507-833-6748
E-mail Address:	dhanson@calamp.com		

General Equipment Description -- ***NOTE: This information will be input into your test report as shown below.***

EUT Description	Base Station		
EUT Name	Toro OSMAC Base Station		
Model No.:	NB-BS-01	Serial No.:	33911014
Product Options:	N/A		
Configurations to be tested:	Standard		

Equipment Modification (*If applicable, indicate modifications since EUT was last tested. If modifications are made during this testing, submit revised TP/CDF after testing is complete.)*

Modifications since last test:	N/A
Modifications made during test:	N/A

Test Objective(s): ***Please indicate the tests to be performed, entering the applicable standard(s) where noted.***

- ☐ EMC Directive 2004/108/EC (EMC) — Std: ____
- ☐ Machinery Directive 89/392/EEC (EMC) — Std: ____
- ☐ Medical Device Directive 93/42/EEC (EMC) — Std: ____
- ☐ Vehicle Directive - 2004/104/EC (EMC)
  - ☐ Other Vehicle Std: ____
- ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC)

- ☒ FCC: Class ☐ A ☒ B Part 15
- ☐ VCCI: Class ☐ A ☐ B
- ☐ BSMI: Class ☐ A ☐ B (Separate Report)
- ☐ Canada: Class ☐ A ☐ B
- ☐ Australia: Class ☐ A ☐ B
- ☐ Other: ____
- ☐ Ag Directive *2009/64/EC (EMC)

EMC Test Plan and Constructional Data Form

Third Party Certification (contact TÜV for quote), if applicable (*Signature on last page required).	
☐ Attestation of Compliance (AoC)*	☐ EMC Certification (used with Octagon Mark)*
☐ Statement of Compliance (SoC, previously CoC)* - All aspects of the essential requirements were assessed	
Protection Class (Req'd for AoC, SoC, EMC Cert. N/A for vehicles) ☐ Class I ☐ Class II ☐ Class III (Press **F1** when field is selected to show additional information on Protection Class.)	
☐ FCC / TCB Certification	☐ Taiwan Certification
☐ Industry Canada / FCB Certification	☐ Korean Certification
☐ e-Mark Certification	

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure - *Complete this section if testing will not be attended by the customer.*

If a failure occurs, TÜV SÜD America should:

☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____

☐ Continue testing to complete test series.

☒ Continue testing to define corrective action.

☐ Stop testing.

EUT Specifications and Requirements

Length: 8" Width: 9.5" Height: 4.25" Weight: 3.3 lbs

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: 110V (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases: _____

Current (Amps/phase(max)): 1.2A Current (Amps/phase(nominal)): 0.8A

Other _____

Other Special Requirements

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)
Industrial

EUT Power Cable

☐ Permanent OR ☐ Removable Length (in meters): 1.0

☒ Shielded OR ☐ Unshielded

☐ Not Applicable

EMC Test Plan and Constructional Data Form

EUT Interface Ports and Cables

Type	Analog	Digital	During Test: Active	During Test: Passive	Qty	Shielding: Yes	Shielding: No	Shielding: Type	Termination	Connector Type	Port Termination	Length tested (in meters)	Removable	Permanent
EXAMPLE: *RS232*	☐	☒	☒	☐	*2*	☒	☐	*Foil over braid*	*Coaxial*	*Metallized 9-pin D-Sub*	*Characteristic Impedance*	*6*	☒	☐
AC power	☒	☐	☒	☐	1	☒	☐	Foil over braid	Pinch	DIN	AC	1	☒	☐
Tx/Rx	☒	☐	☒	☐	1	☐	☐	foil over braid	coaxial	type BNC	50	0	☒	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
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	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐
	☐	☐	☐	☐		☐	☐						☐	☐

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level:

Description:

Equipment Under Test (EUT) Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Receiver radiated emissions

2.

3.

Equipment Under Test (EUT) System Components -- List and describe all components which are part of the EUT. For FCC & Taiwan testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc)

Description	Model #	Serial #	FCC ID #

EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc) This information is required for FCC & Taiwan testing.

Description	*Model #*	*Serial #*	*FCC ID #*

Oscillator Frequencies

Manufacturer	*Frequency*	*Derived Frequency*	*Component # / Location*	*Description of Use*

Power Supply

Manufacturer	*Model #*	*Serial #*	*Type*
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

Manufacturer	*Model #*	*Location in EUT*

EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)

Description	*Manufacturer*	*Part # or Value*	*Qty*	*Component # / Location*

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

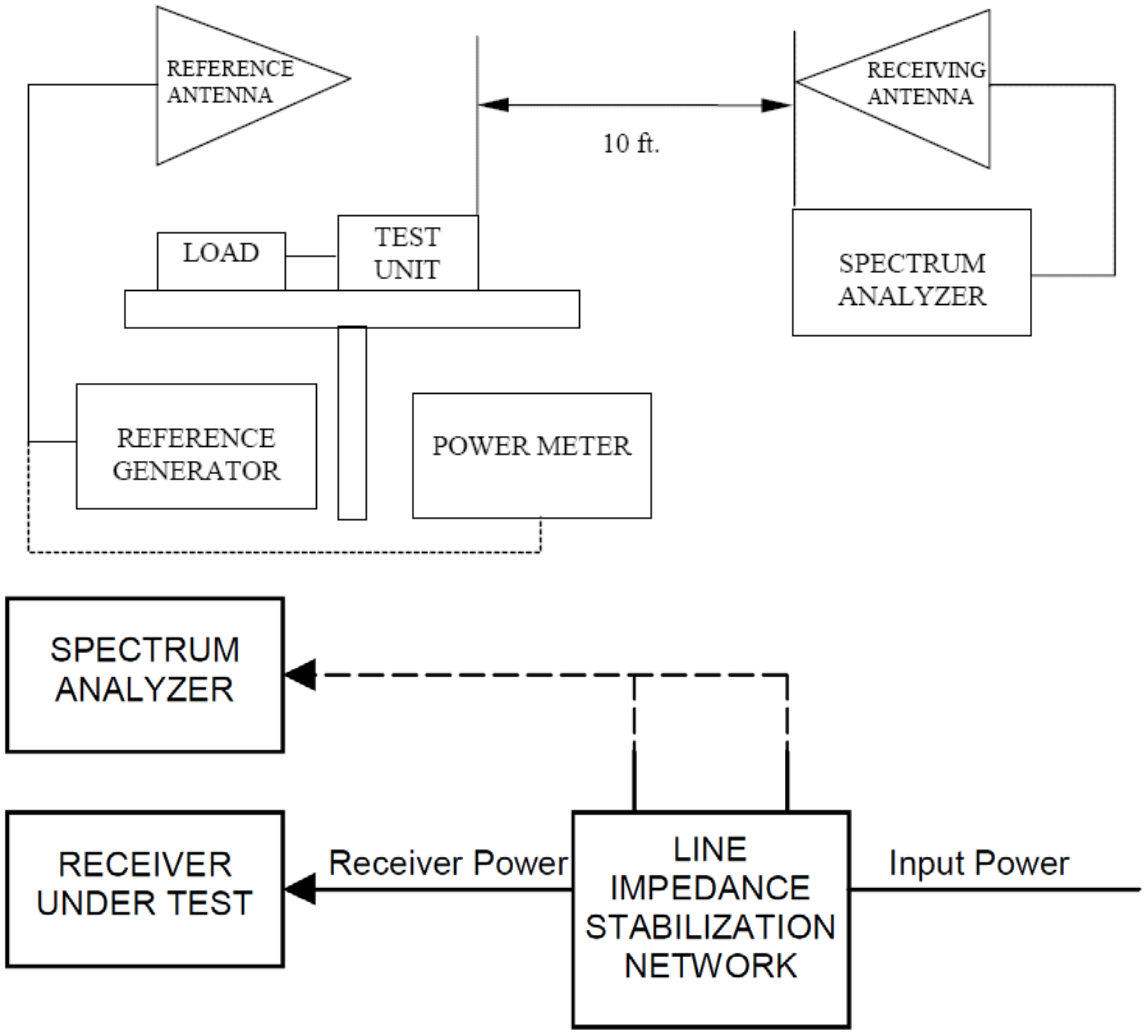
PLEASE ENTER NAMES BELOW (INSERT ELECTRONIC SIGNATURE IF POSSIBLE)

Authorization (Signature Required if a Third Party Certification is checked on pg 1)

Daniel Hanson	3/19/2011
Customer authorization to perform tests according to this test plan.	Date
Daniel Hanson	3/19/2011
Test Plan/CDF Prepared By (please print)	Date

EMC Block Diagram Form

System Configuration Block Diagram -- Provide a line drawing identifying the EUT, simulators, support equipment, I/O cables, power cables, and any other pertinent components to be used during testing. Use a dashed line to separate the equipment in the testing field versus equipment outside testing field.



Authorization Signatures

Daniel Hanson	3/19/2011
Customer authorization to perform tests according to this test plan.	Date
Daniel Hanson	3/19/2011
Test Plan/CDF Prepared By (please print)	Date