CRITERION TECHNOLOGY

NVLAP Accredited Since 1993

NVLAP LAB CODE 100396-0

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EMC QUALIFICATION TEST REPORT

VENSTAR, INC.

BASE STATION, BASE STATION 1

TESTED TO CONFORM WITH:

☒ **EMISSIONS STANDARDS**

FOR

INFORMATION TECHNOLOGY EQUIPMENT (ITE)

Test Report Number:	061128-1107B
Date of Issue:	May 8, 2007
Date of Test Completion:	May 6, 2007
Manufacturer's Address:	9250 Owensmouth Ave Chatsworth, CA 91311-5853
Phone:	(818) 341-8760

Approved by:

Laboratory Director

DISCLAIMERS

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Criterion Technology reports apply only to the specific Equipment Under Test (EUT) sample(s) tested under the test conditions described in this report. If the manufacturer intends to use this report as a document demonstrating compliance of this model, additional models of this product must have electrical and mechanical characteristics identical to the device tested for this report. Criterion Technology shall have no liability for any deductions, inferences, or generalizations drawn by the client or others from Criterion Technology issued reports.

Total liability is limited to the amount invoiced for the testing of this EUT and the contents of this report are not warranted.

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Any questions regarding this report should be directed to:

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12/CIS11a - IEC/CISPR 11, edition 3.1 (1999-08)
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12/CIS11c - IEC/CISPR 11 (1997), A1 (1999), A2 (2002)
12/CIS11d - EN 55011 (1998), A1 (1999), A2 (2001)
12/CIS22 - IEC/CISPR 22 (1997) and EN 55022 (1998) + A1 (2000)
12/CIS22a - IEC/CISPR 22 (1993) and EN 55022 (1994), Amendment 1:1995 & Amendment 2: 1996
12/CIS22b - CNS13438 (1997)
12/EM02a - IEC 61000-3-2, Edition 2.1 (2001-10) and EN 61000-3-2 (2000), and AS/NZS 2279.1 (2000)
12/EMO2b - IEC 61000-3-2, Second Edition (2000-08)
12/EMO2c - BS EN 61000-3-2, ED. 2 (2001); IEC 610003-2, ED. 2 (2000)
12/EM03 - ICE 61000-3-3 (1995); EN 61000-3-3 (1995); AS/NZS 2279.3 (1995)
12/EM03a - ICE 1000-3-3 (1994-12)
12/EM03b - ICE 61000-3-3 Edition 1.1 (2002-03) & EN 61000-3-3, A1 (2001)
12/EM03c - ICE 61000-3-3 (1994) with Amendment 1 (2001)
12/EM03d - ICE 61000-3-3 (1995) + A1 (2001)
12/FCC15b - ANSI C63.4 (2003) with FCC Method 47 CFR Part 15, Subpart B
12/T51 - AS/NZS CISPR 22 (2002) and AS/NZS 3548 (1997)
12/I01 – IEC 61000-4-2, Ed. 2.1 (2001), A1, A2; EN 61000-4-2
12/I02 – IEC 61000-4-3, Ed. 2.0 (2002-03); EN 61000-4-3 (2002)
12/I03 – IEC 61000-4-4 (1995), A1 (2002), A2 (2001); EN 61000-4-4
12/I04 – IEC 61000-4-5, Ed. 1.1 (2001-04); EN 61000-4-5
12/I05 – IEC 61000-4-6, Ed. 2.0 (2003-05); EN 61000-4-6
12/I06- - IEC 61000-4-8, Ed. 1.1 (2001); EN 61000-4-8
12/I07 – IEC 61000-4-11, Ed. 1.1 (2001-03); EN 61000-4-11

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TABLE OF CONTENTS

EMC QUALIFICATION TEST REPORT
BASE STATION, BASE STATION 1

1.0 EXECUTIVE SUMMARY

1.1 PURPOSE

The purpose of this report is to present EMC test data and demonstrate conformity to the requirements of the prescribed standards for Emissions and/or Immunity.

1.2 CONFORMITY

The test article was tested to the standards listed in Table I with the indicated conformity status. All test methods were performed in accordance to with the standards listed.

TABLE I. EMISSIONS CONFORMITY SUMMARY

TEST TYPE	COMPLIANCE STANDARD	TESTING TECHNIQUE	TEST DESCRIPTION	PRODUCT CLASSIFICATION	CONFORMITY STATUS
EMISSIONS	FCC Part 15	☒ IEC/EN 55022 (under 1GHz) ☒ FCC TITLE 47 PART 15 SECTION 31 (a)(3) (above 1GHz)	Unintentional Radiated Emissions	Class B	**PASSED**
	FCC Part 15.249	☒ FCC PART 15.249	Intentional Radiated Emissions		**PASSED**
	FCC Part 15.207	☒ FCC PART 15.207	Intentional Radiated Conducted Emissions		**PASSED**

1.3 EQUIPMENT UNDER TEST (EUT)

EUT NAME:	**BASE STATION**
EUT MODEL/PART NUMBER(S):	**BASE STATION 1**
EUT SERIAL NUMBER(S):	**064800001**

2.0 EMISSIONS TEST STANDARDS

FCC Part 15, Subpart B **Class B**

2.1 ☒ UNINTENTIONAL RADIATED EMISSIONS – 30 MHZ TO 1000 MHZ

Measurements for *Radiated Emissions* were performed over the frequency range of 30 MHz to 1000 MHz in the horizontal and vertical antenna polarities to the requirements of:

FCC Part 15, Subpart B **Class B**

Testing Conditions

Date of Test:	May 6, 2007
Temperature:	21º
Relative Humidity:	17%
Test Voltage:	120 VAC 60 Hz
Test Operator:	lws

Test Location

Criterion Technology Open Area Test Site

Test Distance

Antenna Distance: **3 meter(s)** **Final Measurement(s)**

Test Equipment

☒ Hewlett-Packard Spectrum Analyzer, HP 8566B ☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A
☐ Hewlett-Packard Tracking Generator, HP 85645A
☐ Rohde and Schwarz Receiver, ESHS-30 ☒ Rohde and Schwarz Receiver, ESVS-30
☒ Mini Circuits Pre-Amp #2 ☐ Veratech Pre-Amp #3
☒ Chase BiLog Antenna, Model 1121 ☐ Antenna Research, Horn Antenna, Model DRG118/A
☐ EMCO BiConnical Antenna, Model 3108 ☐ EMCO Log Periodic Antenna, Model 3146

Test Results of Radiated Emissions

Test Status: **PASSED** Frequency Range: 30 MHz to 1000 MHz

Minimum Margin to Limit: **-4.50** dB at **48.0711** MHz

Remarks

See: **APPENDIX A** for EUT Photographs **APPENDIX B** for Data Sheets
APPENDIX D for Test Equipment Calibration Status

2.2 ☒ UNINTENTIONAL RADIATED EMISSIONS ABOVE 1GHZ

Measurements for *Radiated Emissions* were performed over the frequency range of 1 GHz to 10 GHz in the horizontal and vertical antenna polarities to the requirements of:

FCC Part 15 Subpart B **Class B**

Testing Conditions

Date of Test:	May 6, 2007
Temperature:	21º
Relative Humidity:	17%
Test Voltage:	120 VAC 60 Hz
Test Operator:	lws

Test Location

Criterion Technology Open Area Test Site

Test Distance

Antenna Distance: **3 meter(s)** **Final Measurement(s)**

Test Equipment

☒ Hewlett-Packard Spectrum Analyzer, HP 8566B ☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A
☐ Hewlett-Packard Tracking Generator, HP 85645A
☐ Rohde and Schwarz Receiver, ESHS-30 ☐ Rohde and Schwarz Receiver, ESVS-30
☐ Mini Circuits Pre-Amp #2 ☒ Veratech Pre-Amp #3
☐ Chase BiLog Antenna, Model 1121 ☒ Antenna Research, Horn Antenna, Model DRG118/A
☐ EMCO BiConnical Antenna, Model 3108 ☐ EMCO Log Periodic Antenna, Model 3146

Test Results of Radiated Emissions

Test Status: **PASSED** Frequency Range: 1 GHz to 10 GHz

Minimum Margin to Limit: **-17.87** dB at **3656.5140** MHz

Remarks

See: **APPENDIX A** for EUT Photographs **APPENDIX B** for Data Sheets
APPENDIX D for Test Equipment Calibration Status

2.3 ☒ INTENTIONAL RADIATOR

Measurements for *Radiated Emissions* were performed over the frequency range of 0.9 GHz to 10 GHz the horizontal and vertical antenna polarities to the requirements of:

FCC Part 15.249

Testing Conditions

Date of Test:	March 23, 2007
Temperature:	20ºC
Relative Humidity:	25%
Test Voltage:	110 VAC 60 Hz
Test Operator:	lws

Test Location

Criterion Technology Open Area Test Site

Test Distance

Antenna Distance: **3 meter(s)** **Final Measurement(s)**

Test Equipment

☒ Hewlett-Packard Spectrum Analyzer, HP 8566B ☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A
☐ Hewlett-Packard Tracking Generator, HP 85645A
☐ Rohde and Schwarz Receiver, ESHS-30 ☒ Rohde and Schwarz Receiver, ESVS-30
☒ Mini Circuits Pre-Amp #2 ☒ Veratech Pre-Amp #3
☒ Chase BiLog Antenna, Model 1121 ☒ Antenna Research, Horn Antenna, Model DRG118/A
☐ EMCO BiConnical Antenna, Model 3108 ☐ EMCO Log Periodic Antenna, Model 3146

Test Accessories: Laptop

Test Results of Radiated Emissions – Harmonics – lower band edge

Test Status: **PASSED** Frequency Range: 0.9 GHz to 10 GHz

Minimum Margin to Limit: **-6.55** dB at **1818.517** MHz

Fundamental

Minimum Margin to Limit: **-5.21** dB at **909.2585** MHz

Remarks

See: **APPENDIX A** for EUT Photographs **APPENDIX B** for Data Sheets
APPENDIX D for Test Equipment Calibration Status

2.4 ☒ INTENTIONAL RADIATOR

Measurements for *Radiated Emissions* were performed over the frequency range of 1.0 GHz to 10 GHz the horizontal and vertical antenna polarities to the requirements of:

FCC Part 15.249

Testing Conditions

Date of Test:	March 23, 2007
Temperature:	20ºC
Relative Humidity:	25%
Test Voltage:	110 VAC 60 Hz
Test Operator:	lws

Test Location

Criterion Technology Open Area Test Site

Test Distance

Antenna Distance: **3 meter(s)** **Final Measurement(s)**

Test Equipment

☒ Hewlett-Packard Spectrum Analyzer, HP 8566B ☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A
☐ Hewlett-Packard Tracking Generator, HP 85645A
☐ Rohde and Schwarz Receiver, ESHS-30 ☒ Rohde and Schwarz Receiver, ESVS-30
☒ Mini Circuits Pre-Amp #2 ☒ Veratech Pre-Amp #3
☒ Chase BiLog Antenna, Model 1121 ☒ Antenna Research, Horn Antenna, Model DRG118/A
☐ EMCO BiConnical Antenna, Model 3108 ☐ EMCO Log Periodic Antenna, Model 3146

Test Accessories: Laptop

Test Results of Radiated Emissions – Harmonics – middle of band

Test Status: **PASSED** Frequency Range: 1.0 GHz to 10 GHz

Minimum Margin to Limit: **-11.73** dB at **1828.116** MHz

Fundamental

Minimum Margin to Limit: **-5.57** dB at **914.058** MHz

Remarks

See: **APPENDIX A** for EUT Photographs **APPENDIX B** for Data Sheets
APPENDIX D for Test Equipment Calibration Status

2.5 ☒ INTENTIONAL RADIATOR

Measurements for *Radiated Emissions* were performed over the frequency range of 0.9 GHz to 10 GHz the horizontal and vertical antenna polarities to the requirements of:

FCC Part 15.249

Testing Conditions

Date of Test:	March 23, 2007
Temperature:	20ºC
Relative Humidity:	25%
Test Voltage:	110 VAC 60 Hz
Test Operator:	lws

Test Location

Criterion Technology Open Area Test Site

Test Distance

Antenna Distance: **3 meter(s)** **Final Measurement(s)**

Test Equipment

☒ Hewlett-Packard Spectrum Analyzer, HP 8566B ☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A
☐ Hewlett-Packard Tracking Generator, HP 85645A
☐ Rohde and Schwarz Receiver, ESHS-30 ☒ Rohde and Schwarz Receiver, ESVS-30
☒ Mini Circuits Pre-Amp #2 ☒ Veratech Pre-Amp #3
☒ Chase BiLog Antenna, Model 1121 ☒ Antenna Research, Horn Antenna, Model DRG118/A
☐ EMCO BiConnical Antenna, Model 3108 ☐ EMCO Log Periodic Antenna, Model 3146

Test Accessories: Laptop

Test Results of Radiated Emissions – Harmonics – upper band edge

Test Status: **PASSED** Frequency Range: 0.9 GHz to 10 GHz

Minimum Margin to Limit: **-9.02** dB at **1840.5928** MHz

Fundamental

Minimum Margin to Limit: **-6.19** dB at **920.2964** MHz

Remarks

See: **APPENDIX A** for EUT Photographs **APPENDIX B** for Data Sheets
APPENDIX D for Test Equipment Calibration Status

2.6 ☒ INTENTIONAL RADIATOR

Measurements for *Radiated Emissions* were performed over the frequency range of 0.9 GHz to 1.0 GHz the horizontal and vertical antenna polarities to the requirements of:

FCC Part 15.249

Testing Conditions

Date of Test:	March 23, 2007
Temperature:	20ºC
Relative Humidity:	25%
Test Voltage:	110 VAC 60 Hz
Test Operator:	Iws

Test Location

Criterion Technology Open Area Test Site

Test Distance

Antenna Distance: **3 meter(s)** **Final Measurement(s)**

Test Equipment

☒ Hewlett-Packard Spectrum Analyzer, HP 8566B ☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A
☐ Hewlett-Packard Tracking Generator, HP 85645A
☐ Rohde and Schwarz Receiver, ESHS-30 ☒ Rohde and Schwarz Receiver, ESVS-30
☒ Mini Circuits Pre-Amp #2 ☒ Veratech Pre-Amp #3
☒ Chase BiLog Antenna, Model 1121 ☒ Antenna Research, Horn Antenna, Model DRG118/A
☐ EMCO BiConnical Antenna, Model 3108 ☐ EMCO Log Periodic Antenna, Model 3146

Test Accessories: Laptop

Test Results of Radiated Emissions – Outside of the frequency band – lower band edge

Test Status: **PASSED** Frequency Range: 0.9 GHz to 10 GHz

Noise at lower band edge: **-62.2** dB at **902.01** MHz

Minimum Margin to Limit: **-12.2** dB at **902.01** MHz

Spuious below lower band edge: **-56.0** dB at **899.46** MHz

Minimum Margin to Limit: **-4.0** dB at **899.46** MHz

Remarks

See: **APPENDIX A** for EUT Photographs **APPENDIX B** for Data Sheets
APPENDIX D for Test Equipment Calibration Status

2.7 ☒ INTENTIONAL RADIATOR

Measurements for *Radiated Emissions* were performed over the frequency range of 0.9 GHz to 10 GHz the horizontal and vertical antenna polarities to the requirements of:

FCC Part 15.249

Testing Conditions

Date of Test:	March 23, 2007
Temperature:	20ºC
Relative Humidity:	25%
Test Voltage:	110 VAC 60 Hz
Test Operator:	lws

Test Location

Criterion Technology Open Area Test Site

Test Distance

Antenna Distance: **3 meter(s)** **Final Measurement(s)**

Test Equipment

☒ Hewlett-Packard Spectrum Analyzer, HP 8566B ☒ Hewlett-Packard Quasi-Peak Adapter, HP 85650A
☐ Hewlett-Packard Tracking Generator, HP 85645A
☐ Rohde and Schwarz Receiver, ESHS-30 ☒ Rohde and Schwarz Receiver, ESVS-30
☒ Mini Circuits Pre-Amp #2 ☒ Veratech Pre-Amp #3
☒ Chase BiLog Antenna, Model 1121 ☒ Antenna Research, Horn Antenna, Model DRG118/A
☐ EMCO BiConnical Antenna, Model 3108 ☐ EMCO Log Periodic Antenna, Model 3146

Test Accessories: Laptop

Test Results of Radiated Emissions – Outside of the frequency band – upper band edge

Test Status: **PASSED** Frequency Range: 0.9 GHz to 10 GHz

Noise at upper band edge: **-59.2** dB at **927.92** MHz

Minimum Margin to Limit: **-9.2** dB at **927.92** MHz

Spuious above upper band edge: **-56.2** dB at **930.28** MHz

Minimum Margin to Limit: **-6.2** dB at **930.28** MHz

Remarks

See: **APPENDIX A** for EUT Photographs **APPENDIX B** for Data Sheets
APPENDIX D for Test Equipment Calibration Status

2.8 INTENTIONAL RADIATED CONDUCTED EMISSIONS

Measurements for *Conducted Emissions* were performed over the frequency range of 150 kHz to 30 MHz to the requirements of:

FCC PART 15.207 **Class B**

Testing Conditions

Date of Test:	March 20, 2007
Temperature:	19°C
Relative Humidity:	22%
Test Voltage:	120 VAC 60 Hz
Test Operator:	lws

Test Location

Criterion Technology Open Area Test Site

Test Equipment

Hewlett-Packard Spectrum Analyzer, HP 8566B
Rohde and Schwarz Receiver, ESHS-30 Rohde and Schwarz LISN, ESH2-Z5

Test Accessories: Laptop

Test Results of Conducted Emissions

Test Status: PASSED Frequency Range: 150 KHZ TO 30 MHZ

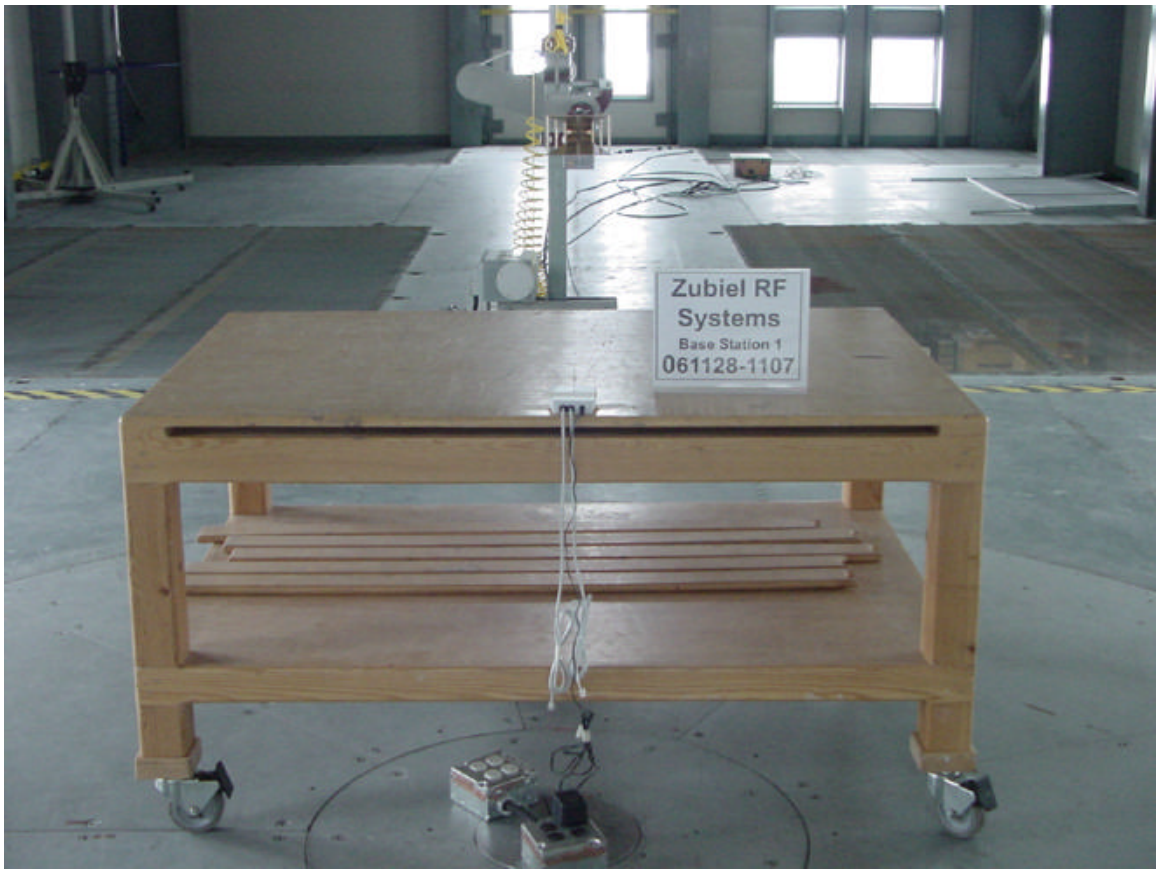
Minimum Margin to Limit: **-27.8** dB at **0.38000** MHz

Remarks

See: **APPENDIX A** for EUT Photographs **APPENDIX B** for Data Sheets
APPENDIX D for Test Equipment Calibration Status

3.0 APPENDIX A: EUT PHOTOGRAPHS

3.1 UNINTENTIONAL RADIATED EMISSIONS

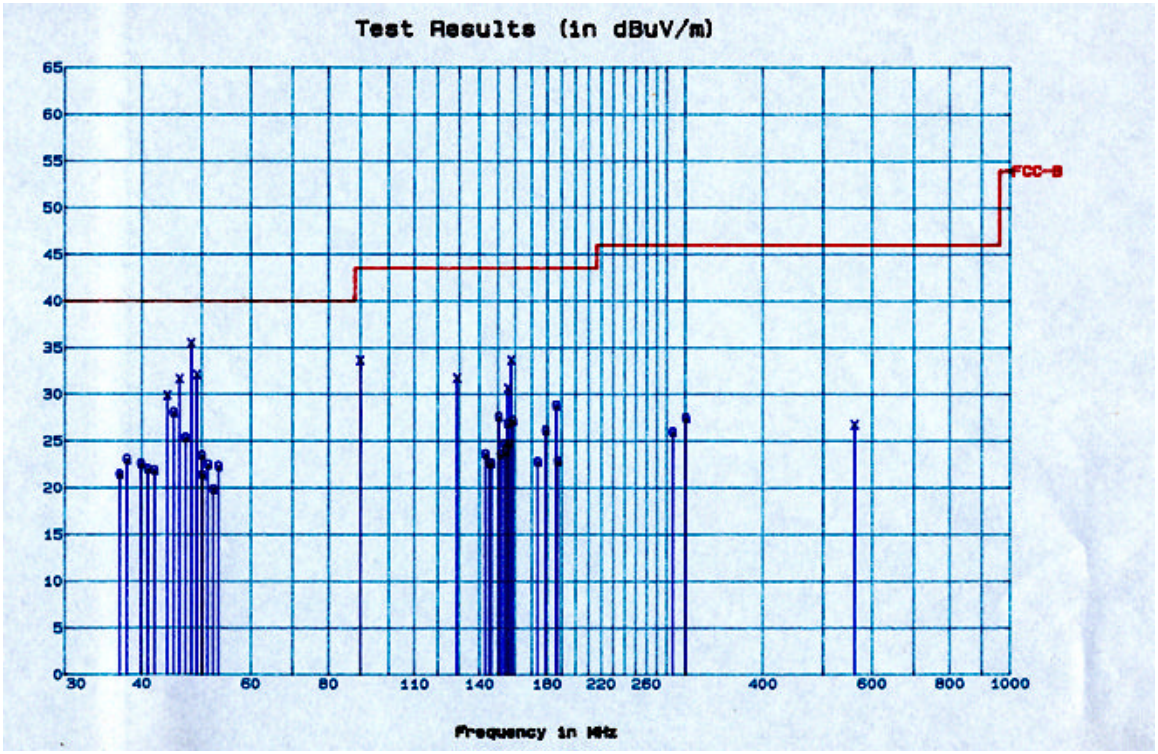


3.2 INTENTIONAL RADIATOR

4.0 APPENDIX B: DATA SHEETS

4.1 UNINTENTIONAL RADIATED EMISSIONS PLOT – 30 MHZ TO 1 GHZ

Criterion Technology **Date: May 6, 2007**
EUT: Base Station, Base Station 1 **S/N: 064800001**
Manufacturer: Venstar, Inc.
Tester: lws **SpiD: 061128-1107**
EUT Level: as received
EUT Information: tabletop
Test Information: RF transmission and reception at Max Duty Cycle **3m, 120 VAC 60 Hz. FCC Part 15 Class A**
Test Cond: Temp: 21°C **Humidity: 17%**



4.2 UNINTENTIONAL RADIATED EMISSIONS TABLE – 30 MHZ TO 1 GHZ

Notes:
The third column below contains alpha characters which pertain to the type of measurements made. The following are the definitions for those characters: q = Quasi Peak, m = Maximized (cable, rotation and antenna height), s = scanned but no data taken, and a = average. For the first character in column four, a '-' indicates that value is below the limit while an '*' indicates that value is above the limit
If the list is sorted using "I-sort", then quasi-peak and average levels are weighted higher than peak levels and are moved to the front of the scan list.
The following keys help to better understand the data:
TT: Turntable position in degrees
Hght: Height of antenna in centimeters
Az: Azimuth, V = Vertical, H= Horizontal

Minimum Margin to Limit: **-4.50** dB at **48.0711** MHz

Criterion Technology Sun May 06 22:05:51 2007
EUT: Base Station, Base Station 1
S/N: 064800001
Manufacturer: Venstar, Inc.
Tester: lws Special ID: 061128-1107
EUT Level: as received
EUT Information: tabletop
Test information: RF transmission and reception at Max Duty Cycle, 3m, 120V/60Hz, FCC Part 15 Class A

Table 1: Scan List, sorted by margin to limit FCC-B, -21.0dB filter

Freq, MHz	Value dBuV/m	Sts	Margin to FCC-B linmits (dB)	TT	Hght	Az	Comment
48.0711	35.50	m	-4.50	31	100	V	nb
49.0945	32.10	m	-7.90	20	100	V	nb
46.0289	31.66	m	-8.34	44	100	V	nb
157.5059	33.68	m	-9.84	327	100	V	nb
90.0000	33.65	m	-9.87	51	100	V	NA 10. ck
43.9809	29.90	m	-10.10	16	100	V	nb
128.8736	31.73	m	-11.79	308	100	V	nb
45.0059	28.09	q	-11.91	180	151	V	nb
155.4639	30.65	m	-12.87	43	100	V	.
47.0469	25.39	q	-14.61	271	151	V	nb
186.1459	28.83	q	-14.69	0	151	V	nb
150.3549	27.63	q	-15.89	0	151	V	nb
158.5339	27.22	q	-16.30	0	151	V	nb
49.9945	23.48	q	-16.52	0	151	V	10. ck
155.4606	26.91	q	-16.61	0	151	V	nb
37.8431	23.09	q	-16.91	271	151	V	nb
178.9879	26.18	q	-17.34	271	151	V	nb
39.8869	22.61	q	-17.39	271	151	V	nb
51.1393	22.52	q	-17.48	271	151	V	nb
53.1851	22.35	q	-17.65	0	151	V	nb
40.9079	22.05	q	-17.95	0	151	V	nb
41.9349	21.92	q	-18.08	90	151	V	nb
36.8179	21.49	q	-18.51	271	151	V	nb
300.7028	27.49	q	-18.53	271	151	V	nb
50.1149	21.42	q	-18.58	271	151	V	.
156.4879	24.77	q	-18.75	0	151	V	nb
153.4209	24.74	q	-18.78	0	151	V	.
562.3759	26.77	m	-19.25	217	100	V	.
154.4407	23.93	q	-19.59	0	151	V	nb
143.1969	23.64	q	-19.88	90	151	V	nb

151.3739	23.60	q	-19.92	0	151	V	nb
286.3827	26.01	q	-20.01	271	151	H	nb
52.1649	19.87	q	-20.13	0	151	V	nb
187.1719	22.89	q	-20.63	271	151	V	nb
173.8746	22.81	q	-20.71	271	151	V	nb
146.2569	22.68	q	-20.84	271	151	V	nb
145.2376	22.63	q	-20.89	271	151	V	nb

Table 2: Scan List for FCC-B, sorted by Frequency, -21.0dB filter

Freq, MHz	Final Value dBuV/m	Sts	Margin to FCC-B limits (dB)	TT	Hght	Az	Comment
36.8179	21.49	q	-18.51	271	151	V	nb
37.8431	23.09	q	-16.91	271	151	V	nb
39.8869	22.61	q	-17.39	271	151	V	nb
40.9079	22.05	q	-17.95	0	151	V	nb
41.9349	21.92	q	-18.08	90	151	V	nb
43.9809	29.90	m	-10.10	16	100	V	nb
45.0059	28.09	q	-11.91	180	151	V	nb
46.0289	31.66	m	-8.34	44	100	V	nb
47.0469	25.39	q	-14.61	271	151	V	nb
48.0711	35.50	m	-4.50	31	100	V	nb
49.0945	32.10	m	-7.90	20	100	V	nb
49.9945	23.48	q	-16.52	0	151	V	10. ck
50.1149	21.42	q	-18.58	271	151	V	.
51.1393	22.52	q	-17.48	271	151	V	nb
52.1649	19.87	q	-20.13	0	151	V	nb
53.1851	22.35	q	-17.65	0	151	V	nb
90.0000	33.65	m	-9.87	51	100	V	NA 10. ck
128.8736	31.73	m	-11.79	308	100	V	nb
143.1969	23.64	q	-19.88	90	151	V	nb
145.2376	22.63	q	-20.89	271	151	V	nb
146.2569	22.68	q	-20.84	271	151	V	nb
150.3549	27.63	q	-15.89	0	151	V	nb
151.3739	23.60	q	-19.92	0	151	V	nb
153.4209	24.74	q	-18.78	0	151	V	.
154.4407	23.93	q	-19.59	0	151	V	nb
155.4606	26.91	q	-16.61	0	151	V	nb
155.4639	30.65	m	-12.87	43	100	V	.
156.4879	24.77	q	-18.75	0	151	V	nb
157.5059	33.68	m	-9.84	327	100	V	nb
158.5339	27.22	q	-16.30	0	151	V	nb
173.8746	22.81	q	-20.71	271	151	V	nb
178.9879	26.18	q	-17.34	271	151	V	nb
186.1459	28.83	q	-14.69	0	151	V	nb
187.1719	22.89	q	-20.63	271	151	V	nb
286.3827	26.01	q	-20.01	271	151	H	nb
300.7028	27.49	q	-18.53	271	151	V	nb
562.3759	26.77	m	-19.25	217	100	V	.

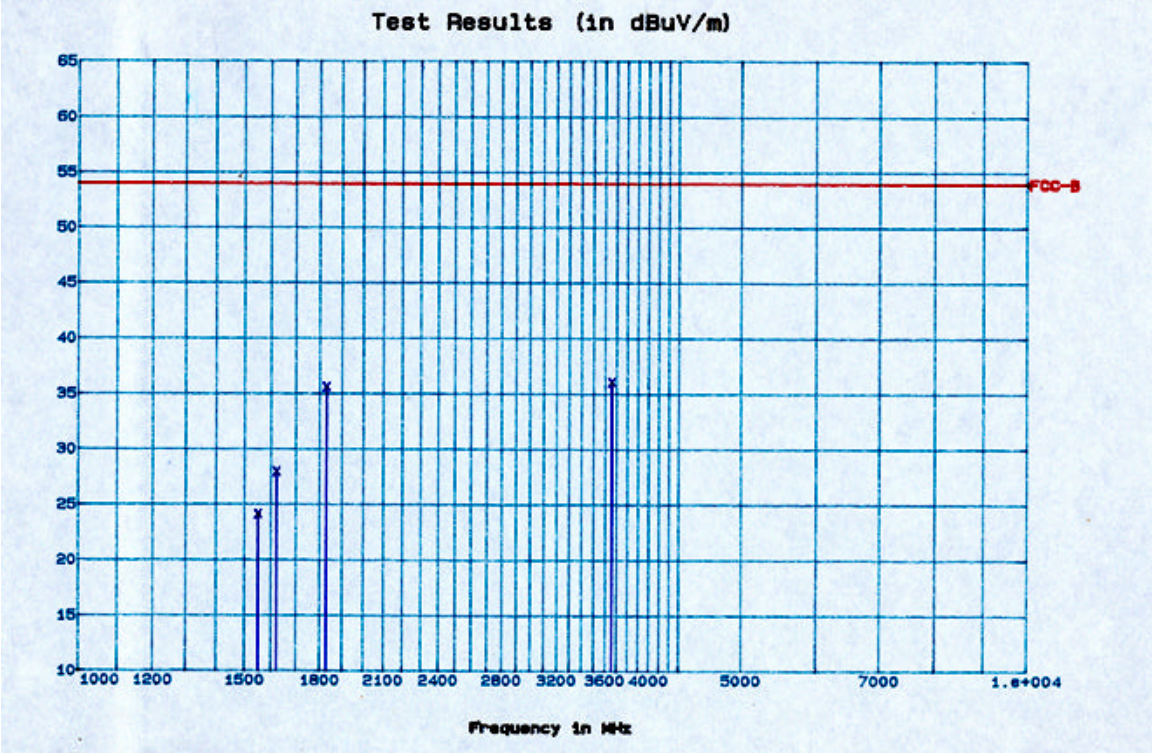
Table 3: Complete Scan List Sorted by Frequency

Freq, MHz	I-val before xducr factors dBuV	Final Value dBuV/m	Sts	TT	Hght	Az	Time	Comment
32.7303	24.31	18.97	q	0	151	V	Sun May 06 21:08:07 2007	nb
36.8179	28.78	21.49	q	271	151	V	Sun May 06 21:26:13 2007	nb
37.8431	30.83	23.09	q	271	151	V	Sun May 06 21:26:15 2007	nb
39.8869	31.23	22.61	q	271	151	V	Sun May 06 21:26:17 2007	nb
40.9079	31.34	22.05	q	0	151	V	Sun May 06 21:08:16 2007	nb
41.9349	31.89	21.92	q	90	151	V	Sun May 06 21:12:11 2007	nb
43.9809	40.77	29.90	m	16	100	V	Sun May 06 21:46:02 2007	nb
45.0059	39.48	28.09	q	180	151	V	Sun May 06 21:24:03 2007	nb
46.0289	43.66	31.66	m	44	100	V	Sun May 06 21:44:55 2007	nb
47.0469	37.99	25.39	q	271	151	V	Sun May 06 21:26:31 2007	nb
48.0711	48.66	35.50	m	31	100	V	Sun May 06 21:42:07 2007	nb
49.0945	45.81	32.10	m	20	100	V	Sun May 06 21:44:00 2007	nb
49.9945	37.59	23.48	q	0	151	V	Sun May 06 21:08:34 2007	10. ck
50.1149	35.57	21.42	q	271	151	V	Sun May 06 21:26:40 2007	.
51.1393	37.07	22.52	q	271	151	V	Sun May 06 21:26:42 2007	nb
52.1649	34.79	19.87	q	0	151	V	Sun May 06 21:08:43 2007	nb
53.1851	37.58	22.35	q	0	151	V	Sun May 06 21:08:45 2007	nb
54.2109	28.27	12.72	q	90	151	V	Sun May 06 21:12:40 2007	nb
56.2469	27.56	11.86	q	90	151	V	Sun May 06 21:12:42 2007	nb
57.2779	33.67	17.83	q	90	151	V	Sun May 06 21:12:44 2007	nb
59.3259	29.06	12.87	q	90	151	V	Sun May 06 21:12:47 2007	nb
60.3439	26.12	10.00	q	271	151	V	Sun May 06 21:26:59 2007	nb
61.3669	26.13	10.07	q	271	151	V	Sun May 06 21:27:01 2007	nb
64.4329	30.34	14.26	q	90	151	V	Sun May 06 21:12:53 2007	nb
65.4559	24.06	8.02	q	271	151	V	Sun May 06 21:27:06 2007	nb
90.0000	46.73	33.65	m	51	100	V	Sun May 06 21:51:05 2007	NA 10. ck
100.0500	27.84	16.31	q	0	151	V	Sun May 06 21:09:12 2007	NA+50kHz, 10ck
128.8736	41.27	31.73	m	308	100	V	Sun May 06 21:59:36 2007	nb
143.1969	33.31	23.64	q	90	151	V	Sun May 06 21:13:12 2007	nb
145.2376	32.46	22.63	q	271	151	V	Sun May 06 21:27:25 2007	nb
146.2569	32.61	22.68	q	271	151	V	Sun May 06 21:27:27 2007	nb
147.2824	31.55	21.58	q	0	151	V	Sun May 06 21:09:23 2007	nb
149.3232	23.97	13.90	q	271	151	V	Sun May 06 21:27:32 2007	nb
150.3549	37.83	27.63	q	0	151	V	Sun May 06 21:09:28 2007	nb
151.3739	33.91	23.60	q	0	151	V	Sun May 06 21:11:26 2007	nb
153.4209	35.21	24.74	q	0	151	V	Sun May 06 21:09:35 2007	.
154.4407	34.50	23.93	q	0	151	V	Sun May 06 21:09:37 2007	nb
155.4606	37.58	26.91	q	0	151	V	Sun May 06 21:09:39 2007	nb
155.4639	41.32	30.65	m	43	100	V	Sun May 06 21:56:05 2007	.
156.4879	35.50	24.77	q	0	151	V	Sun May 06 21:09:44 2007	nb
157.5059	44.39	33.68	m	327	100	V	Sun May 06 21:47:54 2007	nb
158.5339	37.92	27.22	q	0	151	V	Sun May 06 21:09:48 2007	nb
167.9761	26.60	15.02	q	90	151	V	Sun May 06 21:13:46 2007	nb
173.8746	34.28	22.81	q	271	151	V	Sun May 06 21:27:59 2007	nb
178.9879	38.18	26.18	q	271	151	V	Sun May 06 21:28:01 2007	nb
182.0569	33.28	21.00	q	271	151	V	Sun May 06 21:28:04 2007	nb
185.1239	33.46	21.29	q	271	151	V	Sun May 06 21:28:06 2007	nb

186.1459	40.93	28.83	q	0	151	V	Sun May 06 21:10:02 2007	nb
187.1719	34.91	22.89	q	271	151	V	Sun May 06 21:28:11 2007	nb
272.0635	31.53	23.58	q	90	151	V	Sun May 06 21:14:02 2007	nb
284.3371	28.53	20.89	q	271	151	H	Sun May 06 21:30:38 2007	.
286.3827	33.57	26.01	q	271	151	H	Sun May 06 21:30:40 2007	nb
288.4293	25.94	18.46	q	90	151	H	Sun May 06 21:16:36 2007	.
300.7028	34.88	27.49	q	271	151	V	Sun May 06 21:28:22 2007	nb
329.3408	30.02	23.22	q	90	151	H	Sun May 06 21:16:40 2007	.
562.3759	27.72	26.77	m	217	100	V	Sun May 06 22:04:06 2007	.

4.3 UNINTENTIONAL RADIATED EMISSIONS PLOT – ABOVE 1 GHZ

Criterion Technology **Date: May 6, 2007**
EUT: Base Station, Base Station 1 **S/N: 064800001**
Manufacturer: Venstar, Inc.
Tester: lws **SpiD: 061128-1107**
EUT Level: as received
EUT Information: tabletop
Test Information: RF transmission and reception at Max Duty Cycle **3m, 120 VAC 60 Hz. FCC Part 15 Class A**
Test Cond: Temp: 21°C **Humidity: 17%**



4.4 UNINTENTIONAL RADIATED EMISSIONS TABLE – ABOVE 1 GHZ

Notes:
The third column below contains alpha characters which pertain to the type of measurements made. The following are the definitions for those characters: q = Quasi Peak, m = Maximized (cable, rotation and antenna height), s = scanned but no data taken, and a = average. For the first character in column four, a '-' indicates that value is below the limit while an '*' indicates that value is above the limit
If the list is sorted using "I-sort", then quasi-peak and average levels are weighted higher than peak levels and are moved to the front of the scan list.
The following keys help to better understand the data:
TT: Turntable position in degrees
Hght: Height of antenna in centimeters
Az: Azimuth, V = Vertical, H= Horizontal

Minimum Margin to Limit: **-17.87** dB at **3656.5140** MHz

Criterion Technology Sun May 06 23:28:51 2007
EUT: Base Station, Base Station 1
S/N: 064800001
Manufacturer: Venstar, Inc.
Tester: lws Special ID: 061128-1107
EUT Level: as received
EUT Information: tabletop
Test information: RF transmission and reception at Max Duty Cycle, 3m, 120V/60Hz, FCC Part 15 Class A

Table 1: Scan List, sorted by margin to limit FCC-B, -35.0dB filter

Freq, MHz	Value dBuV/m	Sts	Margin to FCC-B limits (dB)	TT	Hght	Az	Comment
3656.5140	36.11	m	-17.87	283	155	V	.
1828.2599	35.65	m	-18.33	123	127	V	.
1619.8443	27.99	m	-25.99	258	109	V	.
1547.6940	24.18	m	-29.80	247	162	H	bb

Table 2: Scan List for FCC-B, sorted by Frequency, -35.0dB filter

Freq, MHz	Final Value dBuV/m	Sts	Margin to FCC-B limits (dB)	TT	Hght	Az	Comment
1547.6940	24.18	m	-29.80	247	162	H	bb
1619.8443	27.99	m	-25.99	258	109	V	.
1828.2599	35.65	m	-18.33	123	127	V	.
3656.5140	36.11	m	-17.87	283	155	V	.

Table 3: Complete Scan List Sorted by Frequency

Freq, MHz	I-val before xducr factors dBuV	Final Value dBuV/m	Sts	TT	Hght	Az	Time	Comment
1547.6940	36.90	24.18	m	247	162	H	Sun May 06 23:06:56 2007	bb
1619.8443	40.07	27.99	m	258	109	V	Sun May 06 23:20:42 2007	.
1828.2599	45.42	35.65	m	123	127	V	Sun May 06 23:25:07 2007	.
3656.5140	38.84	36.11	m	283	155	V	Sun May 06 23:27:24 2007	.

4.5 INTENTIONAL RADIATOR PER FCC 24

Fundamental Freq (MHz)	Field Strength before rcvr pads	Rcvr atten pads (db)	Field Strength (dbuv/m) @ 3 meters See Note 1	Field Strength limit (dbuv/m)	Margin to limit
909.2585	76.79	12	88.79	94	5.21

Harmonic #	Frequency		F val db	F val- 20log D (12.05) db	FCC part 24 limit (dbuV/m)	Margin to Limit (db)	Comments
2 Fo	1818.517		59.5	47.45	54	-6.55	
3 Fo	2727.7755		48.5	36.48	54	-17.52	
4 Fo	3637.034		36.75	24.70	54	-29.30	
5 Fo	4546.2925		39.75	27.70	54	-26.30	
6 Fo	5455.551		38.93	26.88	54	-27.12	Noise Floor
7 Fo	6364.8095		44.36	32.31	54	-21.69	Noise Floor
8 Fo	7274.068		44.29	32.24	54	-21.76	Noise Floor
9 Fo	8183.3265		44.19	32.14	54	-21.86	Noise Floor
10 Fo	9092.585		44.26	32.21	54	-21.79	Noise Floor

Duty cycle is 25 msec. On time and 100 msec is allowed total cycle time or D = .25
20 log D = 12.05 db
Note: Harmonics taken in peak mode with max hold activated.
Transmitter was tested in three orthogonal planes
Note 1: Field strength indicated is peak power

4.6 INTENTIONAL RADIATOR PER FCC 24

Fundamental Freq (MHz)	Field Strength before rcvr pads	Rcvr atten pads (db)	Field Strength (dbuv/m) @ 3 meters See Note 1	Field Strength limit (dbuv/m)	Margin to limit
914.058	76.43	12	88.43	94	5.57

Harmonic #	Frequency		F val db	F val- 20log D (12.05) db	FCC part 24 limit (dbuV/m)	Margin to Limit (db)	Comments
2 Fo	1828.116		54.31	42.27	54	-11.73	
3 Fo	2742.174		50.33	38.28	54	-15.72	
4 Fo	3656.232		43.3	31.25	54	-22.75	
5 Fo	4570.29		39.53	27.48	54	-26.52	
6 Fo	5484.348		38.61	26.56	54	-27.44	Noise Floor
7 Fo	6398.406		44.08	32.03	54	-21.97	Noise Floor
8 Fo	7312.464		44.24	32.19	54	-21.18	Noise Floor
9 Fo	8226.522		43.99	31.94	54	-22.06	Noise Floor
10 Fo	9140.58		43.89	31.84	54	-22.16	Noise Floor

Duty cycle is 25 msec. On time and 100 msec is allowed total cycle time or D = .25
20 log D = 12.05 db
Note: Harmonics taken in peak mode with max hold activated.
Transmitter was tested in three orthogonal planes
Note 1: Field strength indicated is peak power

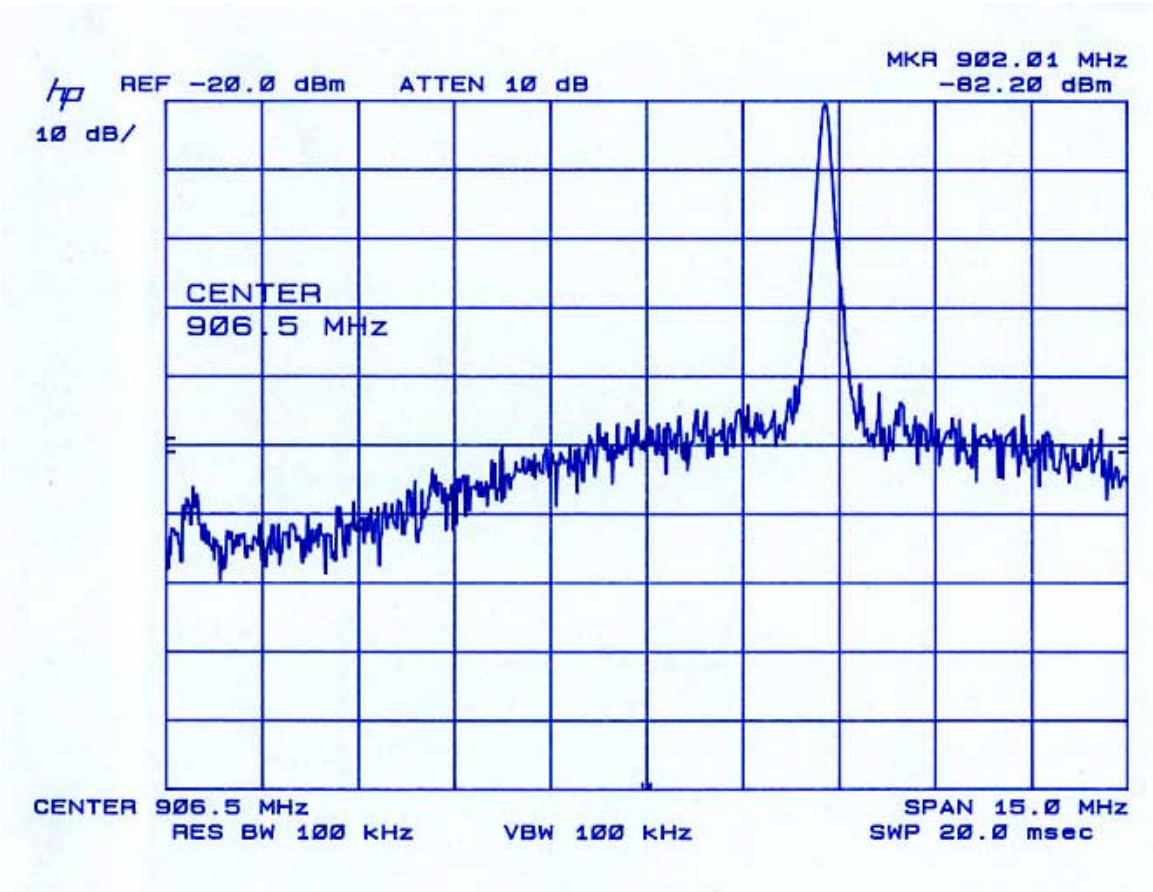
4.7 INTENTIONAL RADIATOR PER FCC 24

Fundamental Freq (MHz)	Field Strength before rcvr pads	Rcvr atten pads (db)	Field Strength (dbuv/m) @ 3 meters See Note 1	Field Strength limit (dbuv/m)	Margin to limit
920.2964	75.81	12	87.81	94	6.19

Harmonic #	Frequency		F val db	F val- 20log D (12.05) db	FCC part 24 limit (dbuV/m)	Margin to Limit (db)	Comments
2 Fo	1840.5928		57.02	44.98	54	-9.02	
3 Fo	2760.8892		46.73	34.68	54	-19.32	
4 Fo	3681.1856		38.68	26.63	54	-27.37	
5 Fo	4601.482		36.84	24.79	54	-29.21	
6 Fo	5521.7784		37.67	25.62	54	-28.38	Noise Floor
7 Fo	6442.0748		43.8	31.75	54	-22.25	Noise Floor
8 Fo	7362.3712		46.16	34.11	54	-19.89	Noise Floor
9 Fo	8282.6676		47.27	35.22	54	-18.78	Noise Floor
10 Fo	9202.964		48.46	36.41	54	-17.59	Noise Floor

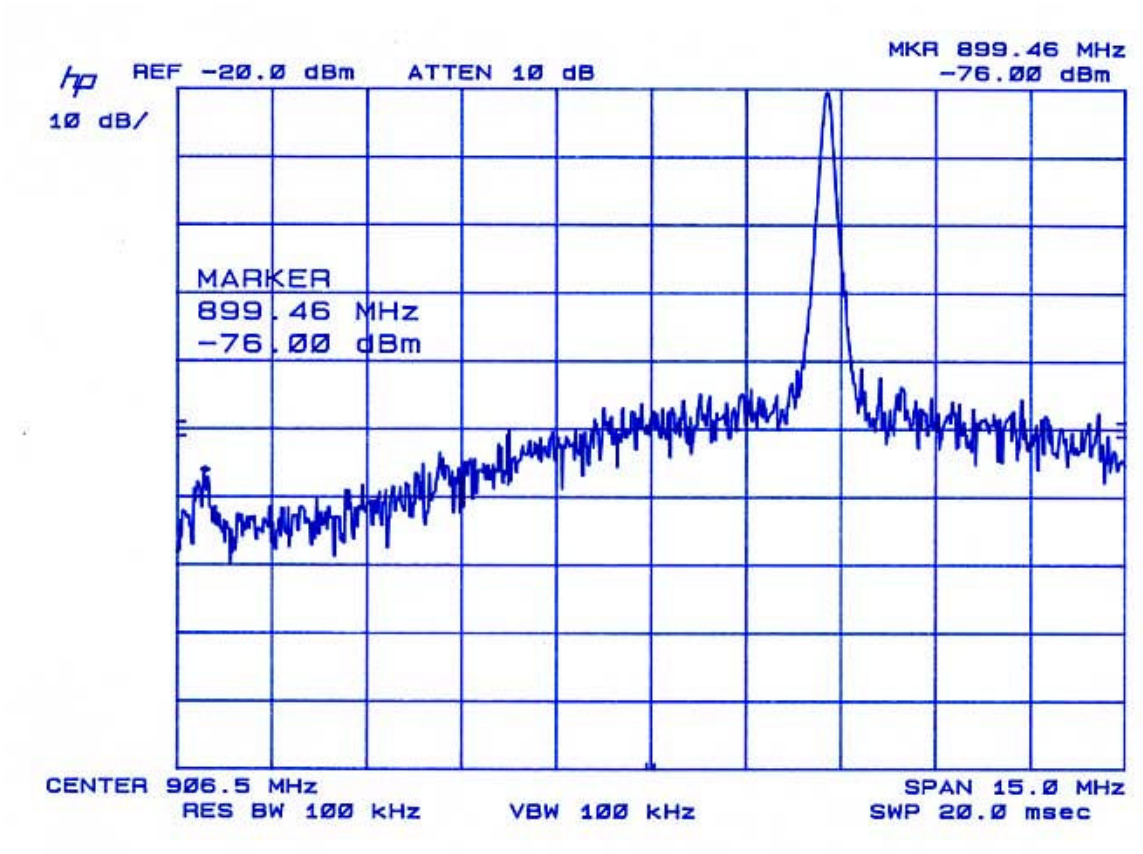
Duty cycle is 25 msec. On time and 100 msec is allowed total cycle time or D = .25
20 log D = 12.05 db
Note: Harmonics taken in peak mode with max hold activated.
Transmitter was tested in three orthogonal planes
Note 1: Field strength indicated is peak power

4.8 INTENTIONAL RADIATOR - NOISE LEVEL AT LOWER BAND EDGE



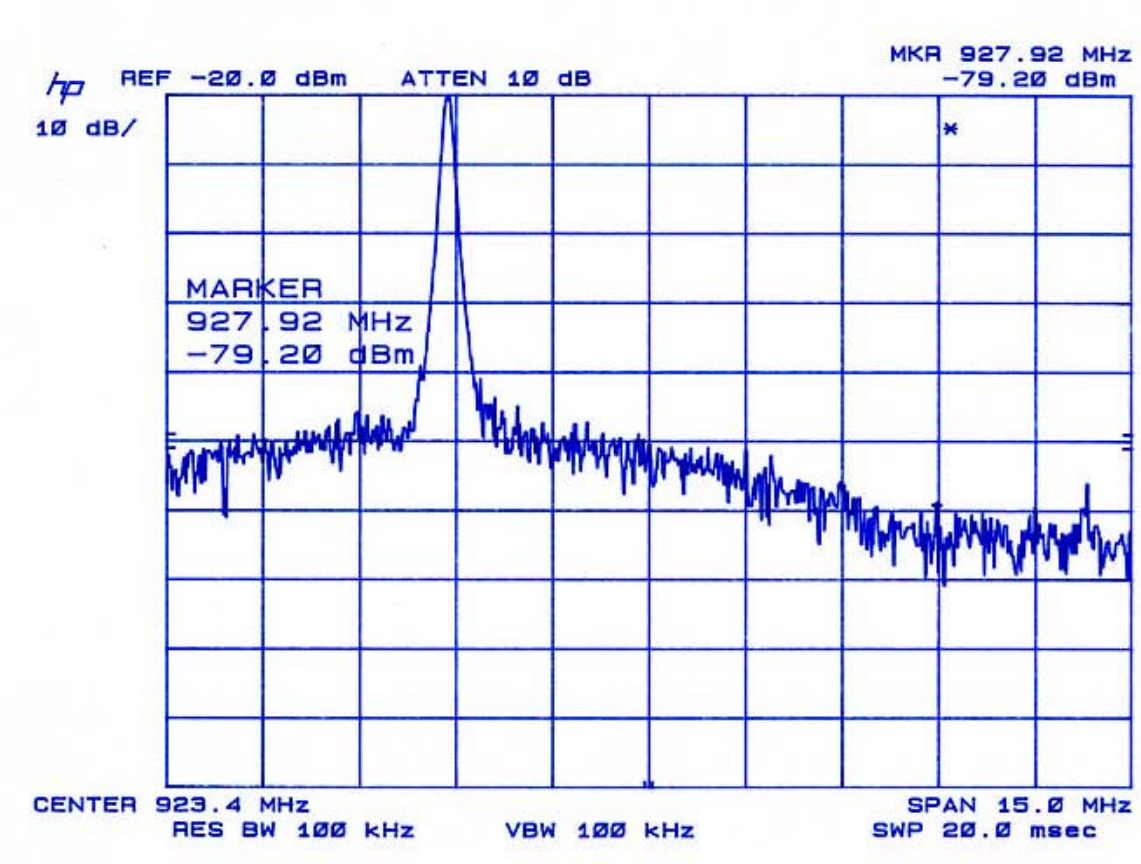
Note: Plot of fundamental taken with quasi peak detector activated.

4.9 INTENTIONAL RADIATOR - HIGHEST SPURIOUS BELOW LOWER BAND EDGE



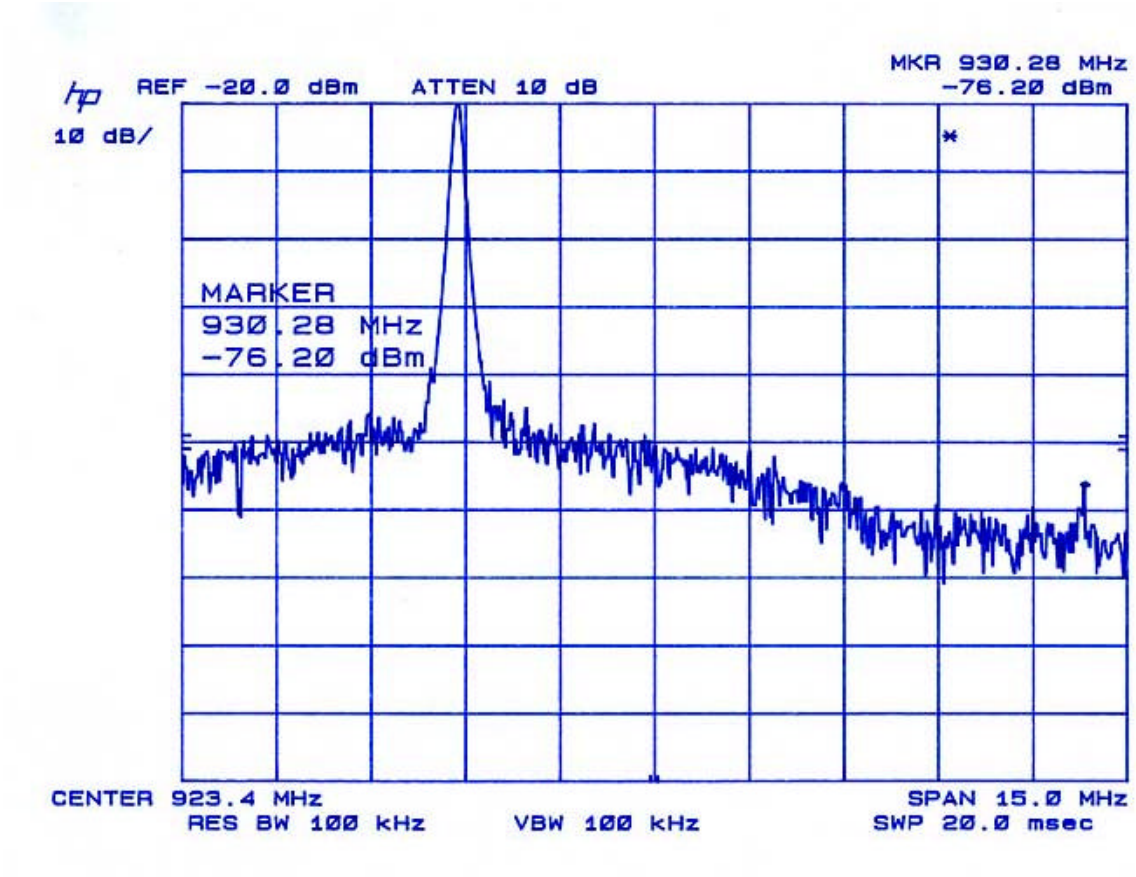
Note: Plot of fundamental taken with quasi peak detector activated.

4.10 INTENTIONAL RADIATOR - NOISE LEVEL AT UPPER BAND EDGE



Note: Plot of fundamental taken with quasi peak detector activated.

4.11 INTENTIONAL RADIATOR - HIGHEST SPURIOUS ABOVE UPPER BAND EDGE



Note: Plot of fundamental taken with quasi peak detector activated.

4.12 INTENTIONAL RADIATED CONDUCTED EMISSIONS

Criterion Technology Inc.
Conducted Emissions

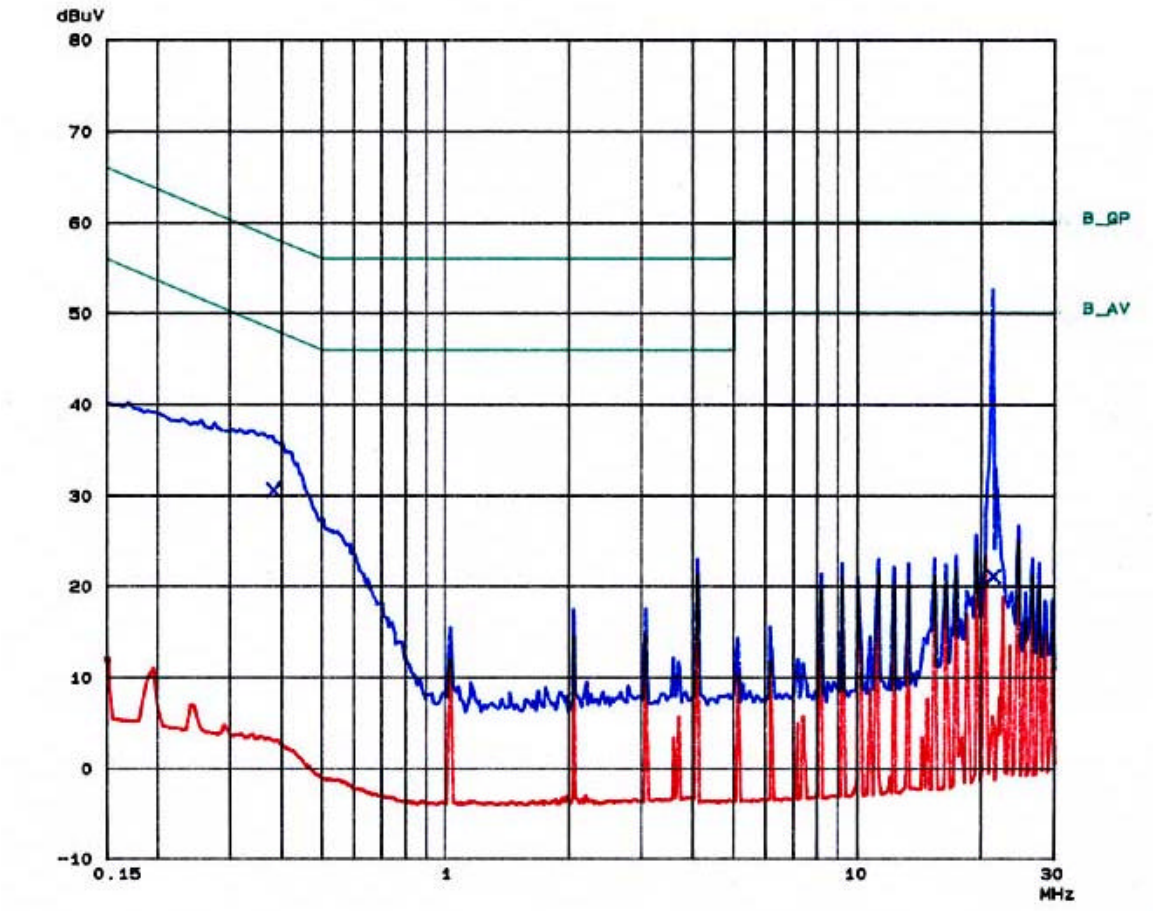
EUT: Base Station, Base Station 1
Manuf: Venstar, Inc.
Operator: lws 061128-1107
Test Spec: FCC Part 15.207 Class B
Test Cond: Temp: 19°C Humidity: 22%
Comment: 120 VAC 60 Hz, L on Prescan, L & N on Final

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	If BW	Detector	M-Time	Atten	Preamp	OpRge
150k	30M	5k	10k	PK+AV	100MS	AUTO LN	OFF	60db

Final Measurement: x QP / + AV
Meas Time: 1s
Subranges: 25
Acc Margin: 22dB

Transducer	No.	Start	Stop	Name
1	1	9k	30M	SRw3dB
	3	9k	30M	LISN



4.13 INTENTIONAL RADIATED CONDUCTED EMISSIONS

Criterion Technology Inc.
Conducted Emissions

EUT: Base Station, Base Station 1
Manuf: Venstar, Inc.
Operator: lws
Test Spec: FCC Part 15.207 Class B
Comment: 120 VAC 60Hz, L on Prescan, L & N on Final

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	If BW	Detector	M-Time	Atten	Preamp	OpRge
150k	30M	5k	10k	PK+AV	100MS	AUTO LN	OFF	60db

Final Measurement Results:

Indicated Phase/PE shows Configuration of max. Emission

Frequency MHz	QP Level DBuv	QP Limit DBuv	Phase -	PE -
0.38000	30.5	58.3	N	gndgnd
21.24000	21.0	60.0	L1	

Frequency MHz	AV Level DBuv	AV Limit DBuv	Phase -	PE -

No Results – All emissions are 22dB or more below the limit

Minimum Margin to Limit: **-27.8** dB at **0.38000** MHz

5.0 APPENDIX C: PRODUCT INFORMATION FORM

CRITERION TECHNOLOGY PRODUCT INFORMATION FORM

General Information **Date:** 12/4/2006

Company Name: Venstar, Inc
Company Address: 9250 Owensmouth Avenue
Chatsworth, CA 91311
Contacts:
Compliance Engineer: Stan Zubiel Phone: (719) 488-8535 Email: stan@zubiel.com
Design Engineer: Stan Zubiel Phone: (719) 488-8535 Email: stan@zubiel.com

Test Description
De-Bug ____ Formal (Initial) X Formal (Re-Verification) ____

Market Information (Check all that Apply)
USA X Canada ___ Euro. Union ___ Taiwan ___ Japan ___ New Zealand ___ Australia ___
Other ____

Product Information
Name: Base Station Model Number: Base Station 1 Serial Number: 064800001

Product Dimensions: 4.8" x 3.2" x 0.9" Weight: ____

Product Power Source:
Battery
Type ____
AC Supply
Input Voltage Range(s)
Phases 1 ___ Delta ___ Wye ___
Current 50
Frequency 60Hz
Manufacturer ____
Model Number RH41-0900500AV
Topology
Linear X Switching Mode ____ Switching Frequency ____

Operation Software:

Name: RA Base Version Number: 0

Operating Modes: (Please Include Cycle Time)

Time necessary for EUT to be exercised and able to fully respond: 1 **seconds**.

Test Type – Emissions (Please check all that apply):

Information Technology Equipment

Class A ____
Class B _X_
Oscillator/Clock Frequencies (MHz)

Industrial, Scientific, Medical Equipment

Class A ____
Class B ____
Oscillator/Clock Frequencies (MHz)

Unintentional Radiator

Class A ____
Class B _X_
Oscillator/Clock Frequencies (MHz) 3.6864 MHz, 3.579545 MHz, 10MHz
Receiver
Type (Regen., Superhet., Direct Conv., Homodyne) Direct conversion
Local Oscillator Frequencies 914.25 MHz
Frequency Range 902 – 928 MHz

Intentional Radiator

Fundamental Frequency Range 902 – 928 MHz
Local Oscillator Frequencies 914.28 MHz
Power Output (to antenna) +5dBm
Integral Antenna (Yes/No) yes
Modulation Type (AM, CM, Pulse, Spread Spectrum) F5K
Control Circuits (Microprocessor/Micro-controller) Micro-controller
Oscillator/Clock Frequencies (MHz)

____ **IEC 61000-3-2**, Harmonics
Max. Steady State Power Consumed by Product: ____ Watts

____ **IEC 61000-3-3,** Flicker Meter

EMISSIONS

To be compliant with C63.4-2003 test methodology, for the emissions testing, the equipment must be exercising all of the functionality within the capability of the Equipment under test. In addition, the equipment must be equipped in the configuration of maximum capability which will be offered to customers,. The test software installed in the Equipment Under Test (EUT) must exercise all of the modules in this maximum capability configuration.

Description of the maximum capability configuration: RF transmission and reception at maximum duty cycle

Name and revision # of the test software used for the emissions test: RF test firmware – Base Rev. 0.

6.0 APPENDIX D: TEST EQUIPMENT AND CALIBRATION STATUS

Manufacturer	Name/Description	Model Number	Serial Number	Cal. Due Date
Veratech	Preamp (AMP3)	unknown	N/A	5/8/2007
Veratech	Preamp (AMP2)	unknown	N/A	5/8/2007
EMCO	Horn	3160-08	1147	5/9/2007
EMCO	biconnical antenna	3108	9103-2441	5/24/2007
EMCO	log periodic antenna	3146	9004-2763	5/25/2007
Chase	Bilog 30 - 1000 MHz	CB6111	1121	5/25/2007
Rohde/ Schwarz	LISN	ESH2-Z5	828739-001	6/4/2007
Rohde/ Schwarz	VHF/UHF Receiver	ESVS-30	863342014	6/16/2007
Rohde/ Schwarz	HF Receiver	ESHS-30	826003/011	7/10/2007
Microwave Technologies	Standard Gain Horn & Harmonic Mixer	12A-18 & HP1197OK	19527JE & 2332A01314	8/1/2007
FCC	CDN	FCC-801-M3-25	9714	8/9/2007
FCC	EM Clamp	F2031	309	8/9/2007
Amplifier Research	Directional Coupler	DC2600	302981	8/9/2007
Solar Electronics	LISN	8012-50-R-24-BNC	892310	8/9/2007
Amplifier Research	Power Amplifier	100W1000M1	20214	9/5/2007
Dickson	Temperature/ RH Recorder	THDX	5300245	9/15/2007
Amplifier Research	Power Amplifier	150A100A	20183	9/20/2007
Tegam	Current Probe	925236-1	12588	9/20/2007
Hewlett Packard	Signal Generator	HP 8648D	3642000145	10/11/2007
Haefely Trench	EFT Tester	PEFT Junior	583-333-51	12/12/2007
Haefely Trench	Surge Coupler	FP-Surge 32.1	083-925-05	12/12/2007
Haefely Trench	Surge Generator	PSURGE 6.1	083-906-07	12/12/2007
Haefely Trench	Interrupter tester	Pline 1610	083-970-07	12/12/2007
Hewlett Packard	Tracking Generator	HP85645A	3210A00124	12/26/2007
Haefely Trench	ESD Gun	PESD 1600	H605100	1/25/2008
Hewlett Packard	Spectrum Analyzer Display	HP 85662A	2403A07322	2/4/2008
Hewlett Packard	Quasi Peak Adapter	85650A	2403A07322	2/4/2008
Hewlett Packard	Spectrum Analyzer	HP 8566B	2421A00527	2/4/2008
Hewlett Packard	Pulse Generator	HP 8116A	2901G09493	2/22/2008

7.0 APPENDIX E: TEST DIRECTIVES, STANDARDS AND METHODS

7.1.1 EUROPEAN DIRECTIVES, STANDARDS AND METHODS

89/336/EEC: Council Directive of 03 May 1989 on the Approximation of the Laws of the Member States Relating to Electromagnetic Compatibility, OJEC No. L 139/19-26, Aug 1993.

BS DD ENV 50204 (CENELEC): Testing and Measurement Techniques; Radiated Electromagnetic Field from Digital Radio Telephones - Immunity Test, 1996.

EN 55011 (CENELEC): ISM Radio-Frequency Equipment Radio Disturbance Characteristics - Limits and Methods of Measurement, with Amendments 1:1999 & A2, 2002.

EN 55014-1 (CENELEC): Part 1. Electromagnetic Compatibility Requirements for Household Appliances, Electric Tools and Similar Apparatus - Part 1. Emission - Product Family Standard, 2006.

EN 55022 (CENELEC): ITE - Radio-Frequency Equipment Radio Disturbance Characteristics - Limits and Methods of Measurement, 2006.

EN 55024 (CENELEC): ITE - Immunity Characteristics - Limits and Methods of Measurement, 2003.

EN 55103-1: Product Family standard for audio, video, audio - visual and entertainment lighting control apparatus for professional use. Part 1: Emissions, April 1997.

EN 55103-2: Product Family standard for audio, video, audio - visual and entertainment lighting control apparatus for professional use. Part 2: Immunity, April 1997.

EN 60601-1-2 (CENELEC): Medical Electrical Equipment. Part 1. General Requirements for Safety - Section 1.2. Collateral Standard: Electromagnetic Compatibility - Requirements and Tests, A1:2006.

EN 61000-6-2: EMC- Part 6-2. Generic Standard-Immunity for Industrial Environments, 2005.

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