# EMC TEST REPORT
for
VOLTRONIC POWER TECHNOLOGY CORP.

UPS
Model Number: Galleon 2K, Galleon 3K

| | | |
|---|---|---|
| Prepared for | : | VOLTRONIC POWER TECHNOLOGY CORP. |
| Address | : | 12/F-2, No.396, Sec.1, Nei-Hu Road, Taipei, Taiwan R.O.C. |


| | | |
|---|---|---|
| Prepared by | : | Shenzhen EMTEK Co., Ltd |
| Address | : | Bldg 69, Majialong Industry Zone,<br>Nanshan District, Shenzen, Guangdong, China<br><br>Tel: (0755) 26954280<br>Fax: (0755) 26954282 |


| | | |
|---|---|---|
| Report Number | : | E0902005E-1 |
| Date of Test | : | October 17, 2011 to October 19, 2011 |
| Date of Report | : | October 19, 2011 |

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# TEST REPORT VERIFICATION

| | | |
|---|---|---|
| Applicant | : | VOLTRONIC POWER TECHNOLOGY CORP. |
| Manufacturer | : | VOLTRONIC POWER (SHENZHEN) TECHNOLOGY CORP. |
| EUT | : | UPS |
| Model Number | : | Galleon 2K, Galleon 3K |
| Input Voltage | : | 208-240V~, 50/60Hz |

Measurement Procedure Used:

EN62040-2: 2006
EN61000-4-2:2009, EN61000-4-3:2006+A1:2008+A2:2010 , EN61000-4-4:2004+A1:2010 , EN61000-4-5:2006, EN61000-4-6:2009, EN61000-4-8:2010, EN61000-4-11: 2004, EN61000-2-2: 2002, EN61000-3-2:2006+A1:2009+A2:2009, EN61000-3-3:2008

The device described above is tested by SHENZHEN EMTEK CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and SHENZHEN EMTEK CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN 62040-2 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN EMTEK CO., LTD.

Date of Test : October 17, 2011 to October 19, 2011

Prepared by : _____
(Engineer)

Reviewer : _____
(Project Manager)

Approved & Authorized Signer : _____
(Manager)

# 1. GENERAL INFORMATION

## 1.1. Description of Device (EUT)

| | | |
|---|---|---|
| EUT | : | UPS |
| Model Number | : | Galleon 2K, Galleon 3K |
| Test voltage | : | AC 230V/50Hz, |
| Power | : | GALLEON 2K: 2000VA,<br>GALLEON 3K: 3000VA |
| Applicant | : | VOLTRONIC POWER TECHNOLOGY CORP. |
| Address | : | 12/F-2, No.396, Sec.1, Nei-Hu Road, Taipei, Taiwan R.O.C. |
| Manufacturer | : | VOLTRONIC POWER (SHENZHEN) TECHNOLOGY CORP. |
| Address | : | 1-4F, Building 5, YuSheng Industrial Park, No.467, Section Xixiang, National Highway 107, Xixiang, Bao An District, Shenzhen, China |
| Date of receiver | : | October 17, 2011 |
| Date of Test | : | October 17, 2011 to October 19, 2011 |

## 1.2.Description of Test Facility

Site Description

Emc Lab. : Accredited By Cnas, 2010.10.29
The Certificate Is Valid Until 2013.10.28
The Laboratory Has Been Assessed And Proved To Be In Compliance With Cnas-Cl01:2006(Identical To Iso/Iec17025:2005)
THE CERTIFICATE REGISTRATION NUMBER IS L2291.

Accredited By TUV Rheinland Shenzhen 2010.5.25
The Laboratory Has Been Assessed According To The Requirements ISO/IEC 17025.

Accredited By FCC, October 28, 2010
The Certificate Registration Number Is 406365.

Accredited By Industry Canada, March 05, 2010
The Certificate Registration Number Is 46405-4480.

Name Of Firm : SHENZHEN EMTEK CO., LTD

Site Location : Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzhen, Guangdong, China

## 1.3.Measurement Uncertainty

Radiation Uncertainty : Ur = ±1.6656dB

Conduction Uncertainty : Uc = ±1.4118dB

# 2. MEASURING DEVICE AND TEST EQUIPMENT

## 2.1.For Power Line Conducted Emission

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | Rohde & Schwarz | ESCS30 | 828985/018 | May 29, 2011 | 1 Year |
| 2. | L.I.S.N | Rohde & Schwarz | ESH2-Z5 | 834549/005 | May 29, 2011 | 1 Year |
| 3. | 50 Ω Coaxial Switch | Anritsu | MP59B | M20531 | N/A | N/A |
| 4. | Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | 100006 | May 29, 2011 | 1 Year |
| 5. | Voltage Probe | Rohde & Schwarz | TK9416 | N/A | May 29, 2011 | 1 Year |

## 2.2.For Radiated Emission Measurement

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1 | EMI Test Receiver | Rohde & Schwarz | ESU | 1302.6005.26 | May 29, 2011 | 1 Year |
| 2 | Pre-Amplifier | HP | 8447D | 2944A07999 | May 29, 2011 | 1 Year |
| 3 | Bilog Antenna | Schwarz beck | VULB9163 | 142 | May 29, 2011 | 1 Year |
| 4 | Loop Antenna | ARA | PLA-1030/B | 1029 | May 29, 2011 | 1 Year |
| 5 | Horn Antenna | Schwarzbeck | BBHA 9170 | BBHA9170399 | May 29, 2011 | 1 Year |
| 6 | Horn Antenna | Schwarzbeck | BBHA 9120 | D143 | May 29, 2011 | 1 Year |

## 2.3.For Harmonic Current& Flick Measurement

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Power Frequency Test System | EMTEST | DPA500 | U0526100506 | May 29, 2011 | 1 Year |
| 2. | PC | N/A | P2L97 | N/A | May 29, 2011 | N/A |

## 2.4.For Electrostatic Discharge Immunity Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | ESD Tester | EM TEST | ESD 30C | V0256100500 | May 29, 2011 | 1 Year |

## 2.5.For RF Strength Susceptibility Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | RF Power Meter. Dual Channel | BOONTON | 4232A | 10539 | May 29, 2011 | 1 Year |
| 2. | 50ohm Diode Power Sensor | BOONTON | 51011EMC | 34236/34238 | May 29, 2011 | 1 Year |
| 3. | Broad-Band Horn Antenna | SCHWARZBECK | BBHA 9120 L3F | 332 | May 29, 2011 | 1 Year |
| 4. | Power Amplifier | PRANA | AP32MT215 | N/A | May 29, 2011 | 1 Year |
| 5. | Power Amplifier | MILMEGA | AS0102-55 | N/A | May 29, 2011 | 1 Year |
| 6. | Signal Generator | AEROFLEX | 2023B | N/A | May 29, 2011 | 1 Year |
| 7. | Field Strength Meter | HOLADAY | HI-6005 | N/A | May 29, 2011 | 1 Year |
| 8. | RS232 Fiber Optic Modem | HOLADAY | HI-4413P | N/A | May 29, 2011 | 1 Year |
| 9. | Log.-Per. Antenna | SCHWARZBECK | VULP 9118E | N/A | May 29, 2011 | 1 Year |

## 2.6. For Electrical Fast Transient /Burst Immunity Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Burst Tester | HAEFELY | PEFT4010 | 080981-16 | May 29, 2011 | 1Year |
| 2. | Coupling Clamp | HAEFELY | IP-4A | 147147 | May 29, 2011 | 1Year |

## 2.7. For Surge Immunity Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Surge Tester | EM TEST | VCS 500M6T | V0256100503 | May 29, 2011 | 1Year |

## 2.8. For Injected Current Susceptibility Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Simulator | EMTEST | CWS500C | 0900-12 | May 29, 2011 | 1Year |
| 2. | CDN | EMTEST | CDN-M2 | 5100100100 | May 29, 2011 | 1Year |
| 3. | CDN | EMTEST | CDN-M3 | 0900-11 | May 29, 2011 | 1Year |
| 4. | Injection Clamp | EMTEST | F-2031-23 MM | 368 | May 29, 2011 | 1Year |
| 5. | Attenuator | EMTEST | ATT6 | 0010222A | May 29, 2011 | 1Year |

## 2.9. For Magnetic Field Immunity Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Magnetic Field Tester | HAEFELY | MAG100 | 250040.1 | May 29, 2011 | 1Year |

## 2.10. For Voltage Dips and Interruptions Test

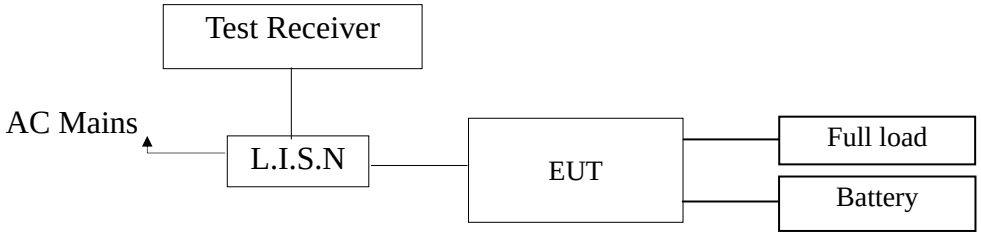
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1. | Dips Tester | HAEFELY | Pline1610 | 083732-12 | May 29, 2011 | 1Year |

## 2.11. Low Frequency Signals Test

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 2. | Programmable AC Source | CHROMA | 65930 | / | May 29, 2011 | 1Year |

# 3. POWER LINE CONDUCTED EMISSION MEASUREMENT

## 3.1.Block Diagram of Test Setup




(EUT: UPS)

## 3.2.Measuring Standard

EN62040-2: 2006 Category C2
Power Line Conducted Emission Limits

| Frequency (MHz) | Limit (dBμV) | |
|---|---|---|
| | Quasi-peak Level | Average Level |
| 0.15 ~ 0.50 | 79 | 66 |
| 0.50 ~ 30.00 | 73 | 60 |
| NOTE1- The lower limit shall apply at the transition frequencies. | | |

## 3.3.EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN 62040-2 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

UPS (EUT)
Model Number : Galleon 2K, Galleon 3K
Serial Number : N/A

## 3.4.Operating Condition of EUT

3.4.1.Setup the EUT as shown on Section 3.1.

3.4.2.Turn on the power of all equipments.

3.4.3.Let the EUT work in measuring mode (Line mode/ Battery mode) and measure it.

## 3.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 62040-2 regulations during conducted emission measurement.
The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9KHz in 150KHz~30MHz and 200Hz in 9KHz~150KHz.
The frequency range from 150kHz to 30MHz is investigated
All the scanning waveform is put in Appendix I.

## 3.6.Measuring Results

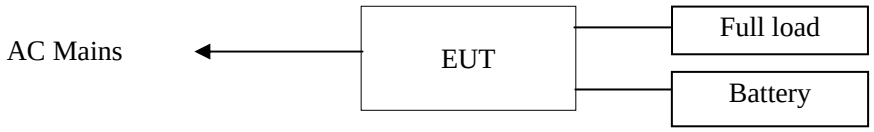
**PASS.**

Please reference to the following page

# 4. RADIATED EMISSION MEASUREMENT

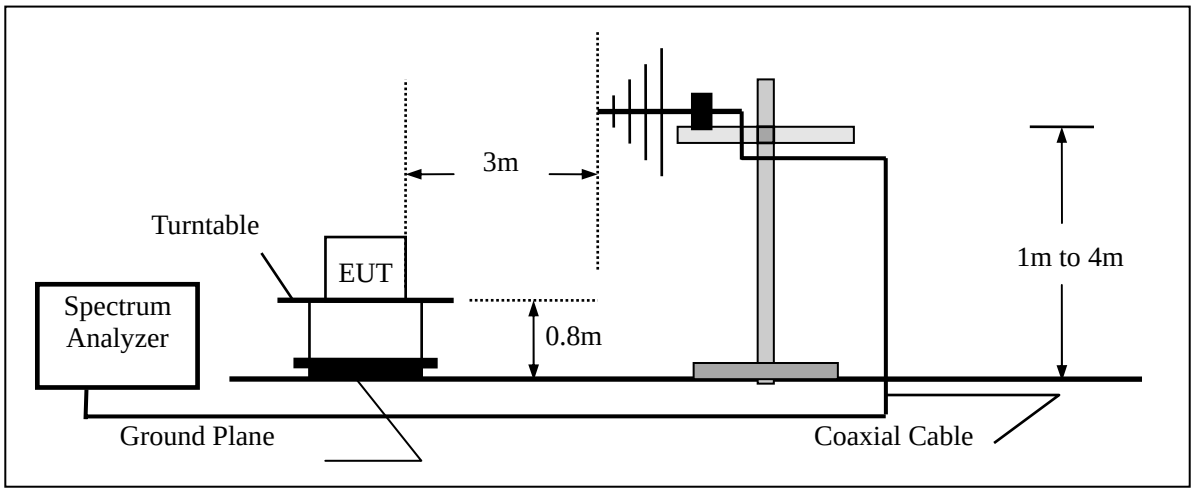
## 4.1.Block Diagram of Test

### 4.1.1.Block diagram of connection between the EUT and simulators




(EUT: UPS)

### 4.1.2.Block diagram of test setup (In chamber)




GROUND REFERENCE PLANE

(EUT: UPS)

## 4.2.Measuring Standard

EN62040-2: 2006 Category C2

## 4.3.Radiated Emission Limits

All emanations from device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

| FREQUENCY (MHz) | DISTANCE (Meters) | FIELD STRENGTHS LIMIT (dBμV/m) |
|---|---|---|
| 30 ~ 230 | 3 | 40 |
| 230 ~ 1000 | 3 | 47 |

Note**:** (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

## 4.4.EUT Configuration on Test

The EN 62040-2 regulations test method must be used to find the maximum emission during radiated emission measurement.

## 4.5.Operating Condition of EUT

4.5.1.Turn on the power.

4.5.2.After that, let the EUT work in test mode (Line mode/Battery mode) and measure it.

## 4.6.Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the Receiver (ESCS30) is set at 120kHz.
All the scanning curves are attached in Appendix II.

## 4.7.Measuring Results

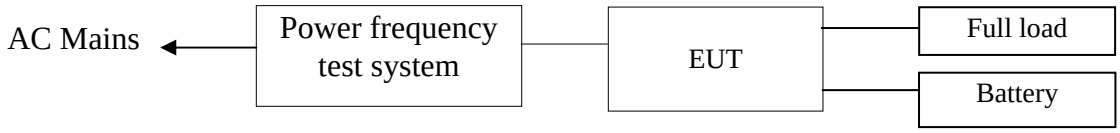
**PASS.**

The frequency range from 30MHz to 1000MHz is investigated.

Please reference to the following page

# 5. HARMONIC CURRENT EMISSION MEASUREMENT

## 5.1Block Diagram of Test Setup




(EUT: UPS)

## 5.2 Measuring Standard

EN61000-3-2:2006+A1:2009+A2:2009

## 5.3Operation Condition of EUT

Same as Section 3.4, except the test setup replaced as Section 5.1.

## 5.4Measuring Results

**PASS.**

# E. U. T. Result of GALLEON 2K

## *Check harmonics 2..40 [exception odd 21..39]:*

| | |
|---|---|
| **Harmonic(s) > 150%:** | |
| Order (n): | None |
| **Harmonic(s) with average > 100%:** | |
| Order (n): | None |

## *Check odd harmonics 21..39:*

| | |
|---|---|
| **All Partial Odd Harmonics below partial limits.** | |
| **Harmonic(s) > 150%:** | |
| Order (n): | None |
| **Harmonic(s) with average > 150%:** | |
| Order (n): | None |

## Power Source Result

| | |
|---|---|
| **First dataset out of limit:** | |
| DS (time): | None |
| **Harmonic(s) out of limit:** | |
| Order (n): | None |

## *Average harmonic current results*

| Hn | Ieff [A] | Ieff [%] | Limit [A] | Result |
|---|---|---|---|---|
| 1 | 4.578 | 100.000 | | |
| 2 | 61.976E-3 | 1.354 | 1.08 | PASS |
| 3 | 71.460E-3 | 1.561 | 2.30 | PASS |
| 4 | 12.004E-3 | 0.262 | 430.00E-3 | PASS |
| 5 | 43.075E-3 | 0.941 | 1.14 | PASS |
| 6 | 10.657E-3 | 0.233 | 300.00E-3 | PASS |
| 7 | 58.979E-3 | 1.288 | 770.00E-3 | PASS |
| 8 | 14.794E-3 | 0.323 | 230.00E-3 | PASS |
| 9 | 68.090E-3 | 1.487 | 400.00E-3 | PASS |
| 10 | 15.704E-3 | 0.343 | 184.00E-3 | PASS |
| 11 | 67.611E-3 | 1.477 | 330.00E-3 | PASS |
| 12 | 16.305E-3 | 0.356 | 153.33E-3 | PASS |
| 13 | 68.856E-3 | 1.504 | 210.00E-3 | PASS |
| 14 | 26.631E-3 | 0.582 | 131.43E-3 | PASS |
| 15 | 93.150E-3 | 2.035 | 150.00E-3 | PASS |
| 16 | 42.229E-3 | 0.922 | 115.00E-3 | PASS |
| 17 | 90.259E-3 | 1.972 | 132.35E-3 | PASS |
| 18 | 33.785E-3 | 0.738 | 102.22E-3 | PASS |
| 19 | 34.993E-3 | 0.764 | 118.42E-3 | PASS |
| 20 | 22.685E-3 | 0.496 | 92.00E-3 | PASS |
| 21 | 21.589E-3 | 0.472 | 160.71E-3 | PASS |
| 22 | 16.059E-3 | 0.351 | 83.64E-3 | PASS |
| 23 | 15.082E-3 | 0.329 | 146.74E-3 | PASS |
| 24 | 9.388E-3 | 0.205 | 76.66E-3 | PASS |
| 25 | 12.512E-3 | 0.273 | 135.00E-3 | PASS |
| 26 | 4.048E-3 | 0.088 | 70.77E-3 | PASS |
| 27 | 7.313E-3 | 0.160 | 124.99E-3 | PASS |
| 28 | 2.245E-3 | 0.049 | 65.71E-3 | PASS |
| 29 | 4.824E-3 | 0.105 | 116.39E-3 | PASS |
| 30 | 1.549E-3 | 0.034 | 61.33E-3 | PASS |
| 31 | 2.804E-3 | 0.061 | 108.87E-3 | PASS |
| 32 | 1.055E-3 | 0.023 | 57.50E-3 | PASS |
| 33 | 3.435E-3 | 0.075 | 102.27E-3 | PASS |
| 34 | 468.313E-6 | 0.010 | 54.12E-3 | PASS |
| 35 | 2.649E-3 | 0.058 | 96.44E-3 | PASS |
| 36 | 661.293E-6 | 0.014 | 51.11E-3 | PASS |
| 37 | 2.355E-3 | 0.051 | 91.21E-3 | PASS |
| 38 | 1.010E-3 | 0.022 | 48.42E-3 | PASS |
| 39 | 1.710E-3 | 0.037 | 86.53E-3 | PASS |
| 40 | 688.092E-6 | 0.015 | 46.00E-3 | PASS |

## *Maximum harmonic current results*

| Hn | Ieff [A] | Ieff [%] | Limit [A] | Result |
|---|---|---|---|---|
| 1 | 4.602 | 100.000 | | |
| 2 | 72.719E-3 | 1.580 | 1.62 | PASS |
| 3 | 77.784E-3 | 1.690 | 3.45 | PASS |
| 4 | 16.292E-3 | 0.354 | 645.00E-3 | PASS |
| 5 | 47.787E-3 | 1.038 | 1.71 | PASS |
| 6 | 14.366E-3 | 0.312 | 450.00E-3 | PASS |
| 7 | 62.910E-3 | 1.367 | 1.15 | PASS |
| 8 | 17.459E-3 | 0.379 | 345.00E-3 | PASS |
| 9 | 71.558E-3 | 1.555 | 600.00E-3 | PASS |
| 10 | 18.271E-3 | 0.397 | 276.00E-3 | PASS |
| 11 | 72.772E-3 | 1.581 | 495.00E-3 | PASS |
| 12 | 19.602E-3 | 0.426 | 229.99E-3 | PASS |
| 13 | 73.017E-3 | 1.587 | 315.00E-3 | PASS |
| 14 | 34.785E-3 | 0.756 | 197.15E-3 | PASS |
| 15 | 98.905E-3 | 2.149 | 225.00E-3 | PASS |
| 16 | 51.271E-3 | 1.114 | 172.50E-3 | PASS |
| 17 | 103.279E-3 | 2.244 | 198.52E-3 | PASS |
| 18 | 41.708E-3 | 0.906 | 153.33E-3 | PASS |
| 19 | 42.907E-3 | 0.932 | 177.63E-3 | PASS |
| 20 | 26.858E-3 | 0.584 | 138.00E-3 | PASS |
| 21 | 28.040E-3 | 0.609 | 160.71E-3 | PASS |
| 22 | 18.585E-3 | 0.404 | 125.46E-3 | PASS |
| 23 | 20.563E-3 | 0.447 | 146.74E-3 | PASS |
| 24 | 11.062E-3 | 0.240 | 114.99E-3 | PASS |
| 25 | 14.631E-3 | 0.318 | 135.00E-3 | PASS |
| 26 | 5.054E-3 | 0.110 | 106.16E-3 | PASS |
| 27 | 9.469E-3 | 0.206 | 124.99E-3 | PASS |
| 28 | 2.883E-3 | 0.063 | 98.57E-3 | PASS |
| 29 | 5.966E-3 | 0.130 | 116.39E-3 | PASS |
| 30 | 1.947E-3 | 0.042 | 92.00E-3 | PASS |
| 31 | 3.697E-3 | 0.080 | 108.87E-3 | PASS |
| 32 | 1.317E-3 | 0.029 | 86.25E-3 | PASS |
| 33 | 3.977E-3 | 0.086 | 102.27E-3 | PASS |
| 34 | 880.842E-6 | 0.019 | 81.18E-3 | PASS |
| 35 | 3.101E-3 | 0.067 | 96.44E-3 | PASS |
| 36 | 973.429E-6 | 0.021 | 76.66E-3 | PASS |
| 37 | 2.832E-3 | 0.062 | 91.21E-3 | PASS |
| 38 | 1.261E-3 | 0.027 | 72.63E-3 | PASS |
| 39 | 2.040E-3 | 0.044 | 86.53E-3 | PASS |
| 40 | 885.305E-6 | 0.019 | 69.00E-3 | PASS |

# E. U. T. Result of GALLEON 3K

## *Check harmonics 2..40 [exception odd 21..39]:*

| | |
|---|---|
| **Harmonic(s) > 150%:** | |
| Order (n): | None |
| **Harmonic(s) with average > 100%:** | |
| Order (n): | None |

## *Check odd harmonics 21..39:*

| | |
|---|---|
| **All Partial Odd Harmonics below partial limits.** | |
| **Harmonic(s) > 150%:** | |
| Order (n): | None |
| **Harmonic(s) with average > 150%:** | |
| Order (n): | None |

## Power Source Result

| | |
|---|---|
| **First dataset out of limit:** | |
| DS (time): | None |
| **Harmonic(s) out of limit:** | |
| Order (n): | None |

## *Average harmonic current results*

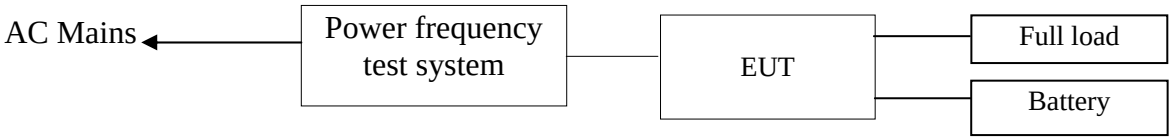
| Hn | Ieff [A] | Ieff [%] | Limit [A] | Result |
|---|---|---|---|---|
| 1 | 4.353 | 100.000 | | |
| 2 | 155.449E-3 | 3.571 | 1.08 | PASS |
| 3 | 111.485E-3 | 2.561 | 2.30 | PASS |
| 4 | 22.244E-3 | 0.511 | 430.00E-3 | PASS |
| 5 | 42.470E-3 | 0.976 | 1.14 | PASS |
| 6 | 22.616E-3 | 0.520 | 300.00E-3 | PASS |
| 7 | 60.927E-3 | 1.400 | 770.00E-3 | PASS |
| 8 | 35.010E-3 | 0.804 | 230.00E-3 | PASS |
| 9 | 69.929E-3 | 1.607 | 400.00E-3 | PASS |
| 10 | 36.488E-3 | 0.838 | 184.00E-3 | PASS |
| 11 | 58.379E-3 | 1.341 | 330.00E-3 | PASS |
| 12 | 42.646E-3 | 0.980 | 153.33E-3 | PASS |
| 13 | 53.918E-3 | 1.239 | 210.00E-3 | PASS |
| 14 | 40.259E-3 | 0.925 | 131.43E-3 | PASS |
| 15 | 34.992E-3 | 0.804 | 150.00E-3 | PASS |
| 16 | 48.335E-3 | 1.110 | 115.00E-3 | PASS |
| 17 | 14.364E-3 | 0.330 | 132.35E-3 | PASS |
| 18 | 34.070E-3 | 0.783 | 102.22E-3 | PASS |
| 19 | 23.599E-3 | 0.542 | 118.42E-3 | PASS |
| 20 | 25.041E-3 | 0.575 | 92.00E-3 | PASS |
| 21 | 19.440E-3 | 0.447 | 160.71E-3 | PASS |
| 22 | 11.019E-3 | 0.253 | 83.64E-3 | PASS |
| 23 | 12.273E-3 | 0.282 | 146.74E-3 | PASS |
| 24 | 4.437E-3 | 0.102 | 76.66E-3 | PASS |
| 25 | 5.103E-3 | 0.117 | 135.00E-3 | PASS |
| 26 | 2.961E-3 | 0.068 | 70.77E-3 | PASS |
| 27 | 3.040E-3 | 0.070 | 124.99E-3 | PASS |
| 28 | 4.024E-3 | 0.092 | 65.71E-3 | PASS |
| 29 | 3.318E-3 | 0.076 | 116.39E-3 | PASS |
| 30 | 3.376E-3 | 0.078 | 61.33E-3 | PASS |
| 31 | 3.097E-3 | 0.071 | 108.87E-3 | PASS |
| 32 | 2.684E-3 | 0.062 | 57.50E-3 | PASS |
| 33 | 2.255E-3 | 0.052 | 102.27E-3 | PASS |
| 34 | 1.950E-3 | 0.045 | 54.12E-3 | PASS |
| 35 | 1.926E-3 | 0.044 | 96.44E-3 | PASS |
| 36 | 1.758E-3 | 0.040 | 51.11E-3 | PASS |
| 37 | 1.398E-3 | 0.032 | 91.21E-3 | PASS |
| 38 | 1.184E-3 | 0.027 | 48.42E-3 | PASS |
| 39 | 1.301E-3 | 0.030 | 86.53E-3 | PASS |
| 40 | 1.057E-3 | 0.024 | 46.00E-3 | PASS |

## *Maximum harmonic current results*

| Hn | Ieff [A] | Ieff [%] | Limit [A] | Result |
|---|---|---|---|---|
| 1 | 4.373 | 100.000 | | |
| 2 | 167.984E-3 | 3.841 | 1.62 | PASS |
| 3 | 119.585E-3 | 2.735 | 3.45 | PASS |
| 4 | 31.340E-3 | 0.717 | 645.00E-3 | PASS |
| 5 | 53.492E-3 | 1.223 | 1.71 | PASS |
| 6 | 35.229E-3 | 0.806 | 450.00E-3 | PASS |
| 7 | 70.344E-3 | 1.609 | 1.15 | PASS |
| 8 | 44.558E-3 | 1.019 | 345.00E-3 | PASS |
| 9 | 80.640E-3 | 1.844 | 600.00E-3 | PASS |
| 10 | 46.845E-3 | 1.071 | 276.00E-3 | PASS |
| 11 | 68.144E-3 | 1.558 | 495.00E-3 | PASS |
| 12 | 49.121E-3 | 1.123 | 229.99E-3 | PASS |
| 13 | 65.696E-3 | 1.502 | 315.00E-3 | PASS |
| 14 | 53.112E-3 | 1.214 | 197.15E-3 | PASS |
| 15 | 51.975E-3 | 1.188 | 225.00E-3 | PASS |
| 16 | 64.248E-3 | 1.469 | 172.50E-3 | PASS |
| 17 | 27.114E-3 | 0.620 | 198.52E-3 | PASS |
| 18 | 41.650E-3 | 0.952 | 153.33E-3 | PASS |
| 19 | 32.373E-3 | 0.740 | 177.63E-3 | PASS |
| 20 | 33.742E-3 | 0.772 | 138.00E-3 | PASS |
| 21 | 25.872E-3 | 0.592 | 160.71E-3 | PASS |
| 22 | 16.035E-3 | 0.367 | 125.46E-3 | PASS |
| 23 | 16.056E-3 | 0.367 | 146.74E-3 | PASS |
| 24 | 6.745E-3 | 0.154 | 114.99E-3 | PASS |
| 25 | 7.670E-3 | 0.175 | 135.00E-3 | PASS |
| 26 | 4.154E-3 | 0.095 | 106.16E-3 | PASS |
| 27 | 4.479E-3 | 0.102 | 124.99E-3 | PASS |
| 28 | 5.372E-3 | 0.123 | 98.57E-3 | PASS |
| 29 | 5.097E-3 | 0.117 | 116.39E-3 | PASS |
| 30 | 4.723E-3 | 0.108 | 92.00E-3 | PASS |
| 31 | 4.308E-3 | 0.099 | 108.87E-3 | PASS |
| 32 | 3.762E-3 | 0.086 | 86.25E-3 | PASS |
| 33 | 3.050E-3 | 0.070 | 102.27E-3 | PASS |
| 34 | 2.639E-3 | 0.060 | 81.18E-3 | PASS |
| 35 | 2.882E-3 | 0.066 | 96.44E-3 | PASS |
| 36 | 2.444E-3 | 0.056 | 76.66E-3 | PASS |
| 37 | 2.219E-3 | 0.051 | 91.21E-3 | PASS |
| 38 | 1.688E-3 | 0.039 | 72.63E-3 | PASS |
| 39 | 1.776E-3 | 0.041 | 86.53E-3 | PASS |
| 40 | 1.545E-3 | 0.035 | 69.00E-3 | PASS |

# 6. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

## 6.1Block Diagram of Test Setup




(EUT: UPS)

## 6.2Measuring Standard

EN61000-3-3:2008

## 6.3Operation Condition of EUT

Same as Section 3.4, except the test setup replaced as Section 6.1.

## 6.4Measuring Results

**PASS.**

Please see the attached pages.

---

EN61000-3-3 TEST REPORT

---

Unit: UPS M/N: GALLEON 2K

Test mode: ON/OFF

Manuf: Voltronic

Operator: King

==========

TEST SETUP

---

Test Freq.: 50.00 Hz. Test Voltage: 230.0 vac
Waveform : SINE
Test Time: 10.0 min. Tshort: 10.0 min.

Prog. Zo Enabled: YES Prog. Zo: 0.000

Voltage Change less than once per Hour: NO
Impedance selected: IEC-725 STD. REF.

Synthetic R+L Enabled: NO
Resistance: 0.380 Ohms Inductance: 460.000 uH

TEST DATA

---

Result: PASS

| | EUT Data | Limit | Result | Test Enabled |
|---|---|---|---|---|
| Pst max | 0.128 | 1.00 | PASS | true |
| Plt max | 0.128 | 0.65 | PASS | false |
| dc % | 0.332 | 3.00 | PASS | true |
| dmax % | 0.574 | 4.00 | PASS | true |
| d(t) sec. | 0.000 | 0.20 | PASS | true |
| Power Source Data | | | | |
| Source Pst max | 0.022 | 0.400 | PASS | true |
| % THD | 0.03 | 3.00 | PASS | true |

END OF REPORT

---

EN61000-3-3 TEST REPORT

---

Unit: UPS M/N: GALLEON 3K

Test mode: ON/OFF

Manuf: Voltronic

Operator: King

==========

TEST SETUP

---

| | | | |
|---|---|---|---|
| Test Freq.: | 50.00 Hz. | Test Voltage: | 230.0 vac |
| Waveform : | SINE | | |
| Test Time: | 10.0 min. | Tshort: | 10.0 min. |

Prog. Zo Enabled: YES Prog. Zo: 0.000

Voltage Change less than once per Hour: NO
Impedance selected: IEC-725 STD. REF.

Synthetic R+L Enabled: NO
Resistance: 0.380 Ohms Inductance: 460.000 uH

TEST DATA

---

Result: PASS

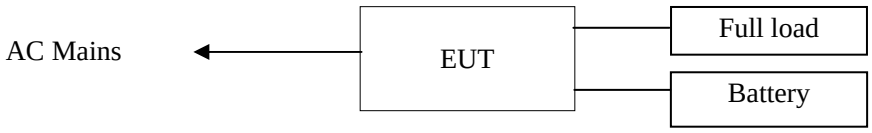
| | EUT Data | Limit | Result | Test Enabled |
|---|---|---|---|---|
| Pst max | 0.155 | 1.00 | PASS | true |
| Plt max | 0.155 | 0.65 | PASS | false |
| dc % | 0.097 | 3.00 | PASS | true |
| dmax % | 0.732 | 4.00 | PASS | true |
| d(t) sec. | 0.000 | 0.20 | PASS | true |
| Power Source Data | | | | |
| Source Pst max | 0.022 | 0.400 | PASS | true |
| % THD | 0.03 | 3.00 | PASS | true |

END OF REPORT

# 7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

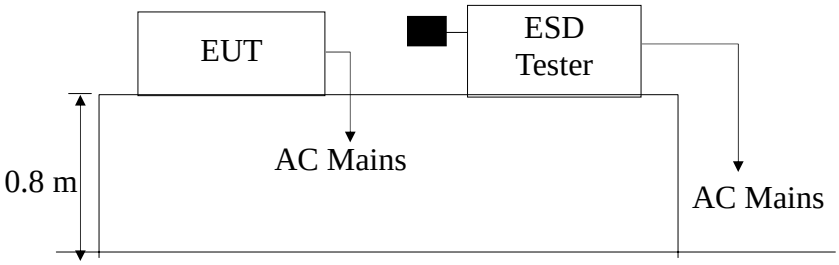
## 7.1 Block Diagram of Test Setup

### 7.1.1 Block diagram of connection between the EUT and simulators




(EUT: UPS)

### 7.1.2 Block diagram of ESD test setup




(EUT: UPS)

## 7.2 Test Standard

EN61000-4-2:2009 (Air Discharge: ±8KV, Contact Discharge: ±4KV)

## 7.3 Severity Levels and Performance Criterion

### 7.3.1 Severity level

| Level | Test Voltage Contact Discharge (KV) | Test Voltage Air Discharge (KV) |
|---|---|---|
| 1. | ±2 | ±2 |
| 2. | ±4 | ±4 |
| 3. | ±6 | ±8 |
| 4. | ±8 | ±15 |
| X | Special | Special |

7.3.2 Performance criterion **: A**

| | Criterion A |
|---|---|
| External and internal indications and metering (LCD) | No change |
| Output characteristics (Load) | No change |
| Control signals to external devices (Signal line) | No change |
| Mode of operation | No change |

## 7.4 EUT Configuration

The configuration of EUT are listed in Section 3.4.

## 7.5 Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section3.5. except the test set up replaced by Section 7.1.

## 7.6 Test Procedure

7.6.1 Air Discharge**:**

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

7.6.2 Contact Discharge**:**

All the procedure shall be same as Section 7.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

7.6.3 Indirect discharge for horizontal coupling plane

At least 10 single discharges(in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit(if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

7.6.4 Indirect discharge for vertical coupling plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

## 7.7 Test Results

PASS

Please refer to the following pages

# Electrostatic Discharge Test Result

SHENZHEN EMTEK CO., LTD

| | | | |
|---|---|---|---|
| Applicant : | VOLTRONIC POWER TECHNOLOGY CORP. | Test Date : | October 18, 2011 |
| EUT : | UPS | Temperature : | 22℃ |
| M/N : | Galleon 2K, Galleon 3K | Humidity : | 50% |
| Power Supply : | AC 230V/50Hz | Criterion : | A |
| Test Mode : | Line mode/Battery mode | Air discharge : | ±8.0KV |
| Test Engineer : | King | Contact discharge: | ±4.0KV |

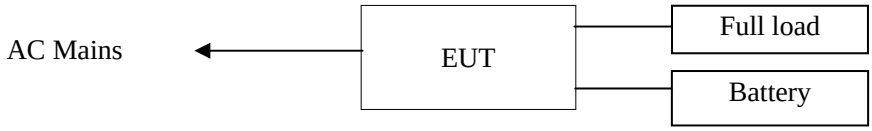
| **Location** | | **Kind** A-Air Discharge C-Contact Discharge | **Result** |
|---|---|---|---|
| Button | 10 points | A | PASS |
| LED | 20 points | A | PASS |
| Slot of EUT | 30 points | A | PASS |
| Output port | 15 points | C | PASS |
| Screw | 20 points | C | PASS |
| Metal part | 30 points | C | PASS |
| HCP | | C | PASS |
| VCP of front | | C | PASS |
| VCP of rear | | C | PASS |
| VCP of left | | C | PASS |
| VCP of right | | C | PASS |
| | | | |
| | | | |
| | | | |

Test Equipment: ESD Simulator (EMTEST, ESD 30C)

# 8. RF FIELD STRENGTH SUSCEPTIBILITY TEST

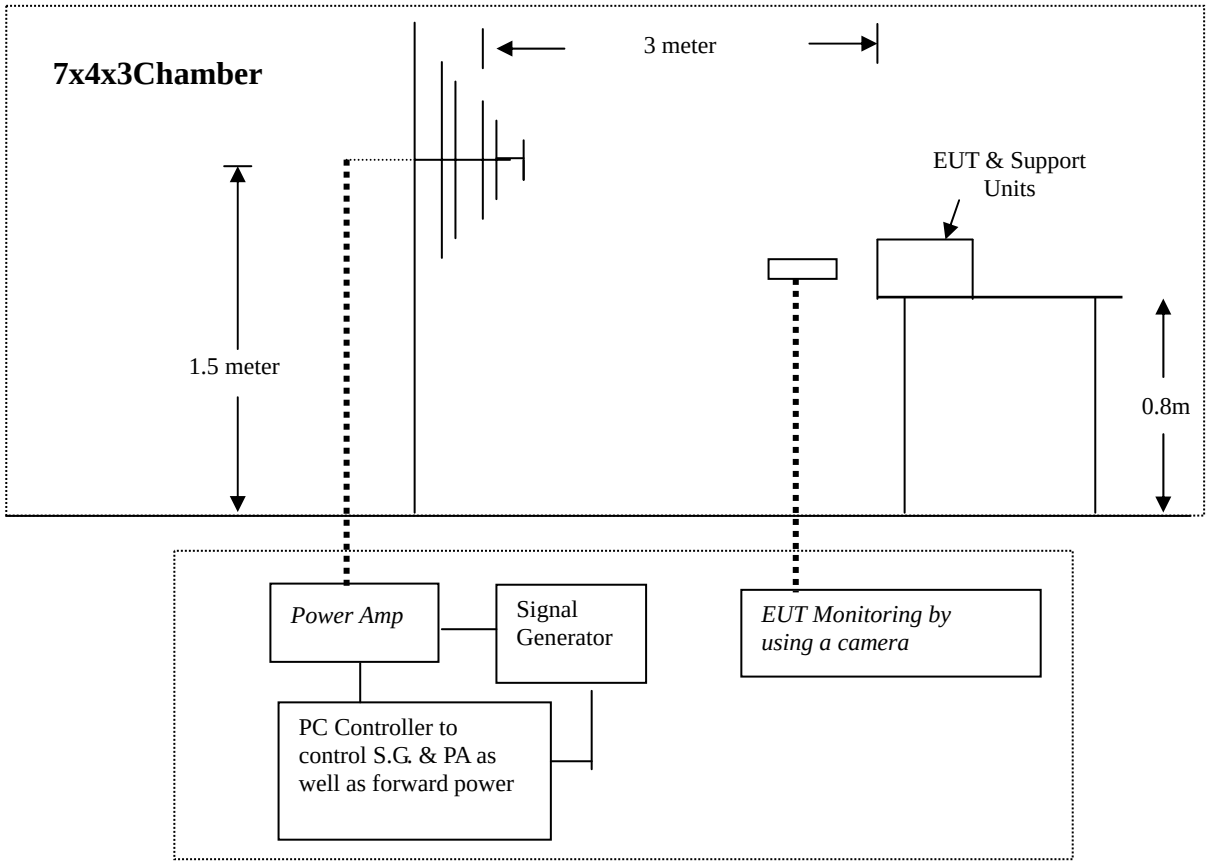
## 8.1 Block Diagram of Test

### 8.1.1 Block diagram of connection between the EUT and Load




(EUT: UPS)

### 8.1.2 Block diagram of RS test setup




(EUT: UPS)

## 8.2 Test Standard

EN61000-4-3:2006+A1:2008+A2:2010 (10V / m)

## 8.3 Severity Levels and Performance Criterion

### 8.3.1Severity Levels

| Level | Field Strength V/m |
|---|---|
| 1. | 1 |
| 2. | 3 |
| 3. | 10 |
| X | Special |

### 8.3.2 Performance Criterion : **A**

| | Criterion A |
|---|---|
| External and internal indications and metering (LCD) | No change |
| Output characteristics (Load) | No change |
| Control signals to external devices (Signal line) | No change |
| Mode of operation | No change |

## 8.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.4.

## 8.5Operating Condition of EUT

Same as radiated emission measurement which is listed in Section 3.5, except the test setup replaced as Section 8.1.

## 8.6 Test Procedure

The EUT are placed on a table which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a CCD camera is used to monitor its screen . All the scanning conditions are as following:

| Condition of Test | Remark |
|---|---|
| 1. Fielded Strength | 10V/m |
| 2. Radiated Signal | Modulated |
| 3. Scanning Frequency | 80-1000MHz |
| 4. Sweep time of radiated | 0.0015 Decade/s |
| 5. Dwell Time | 1 Sec. |

## 8.7 Test Results

**PASS.**

Please refer to the following page.

# RF Field Strength Susceptibility Test Results

SHENZHEN EMTEK CO., LTD.

| | | | |
|---|---|---|---|
| Applicant | : VOLTRONIC POWER TECHNOLOGY CORP. | Test Date: | October 18, 2011 |
| EUT | : UPS | Temperature: | 22℃ |
| M/N | : Galleon 2K, Galleon 3K | Humidity : | 50 % |
| Field Strength | : 10V/m | Criterion: | A |
| Power Supply | : AC 230V/50Hz | Test Mode: | Line mode/Battery mode |
| Test Engineer: | King | Frequency Range: | 80 to 1000 MHz |

Modulation: ☐None ☐ Pulse ☑AM 1KHz 80%

| | Frequency Rang 1: 80~ 1000MHz | | Frequency Rang 2: | |
|---|---|---|---|---|
| Steps | # / % | | # / % | |
| | Horizontal | Vertical | Horizontal | Vertical |
| Front | PASS | PASS | | |
| Right | PASS | PASS | | |
| Rear | PASS | PASS | | |
| Left | PASS | PASS | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Test Equipment **:**
1. Signal Generator : 2023B (AEROFLEX)
2. Power Amplifier : AS0102-55(MILMEGA)&AP32MT215(PRANA)
3. Log.-Per.Antenna: VULP9118E(SCHWARZBECK)
4. Broad-Band Horn Antenna: BBHA 9120L3F(SCHWARZBECK)
5. RF Power Meter. Dual Channel: 4232A(BOONTON)
6. Field Strength Meter: HI-6005(HOLADAY)

Note:

# 9. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

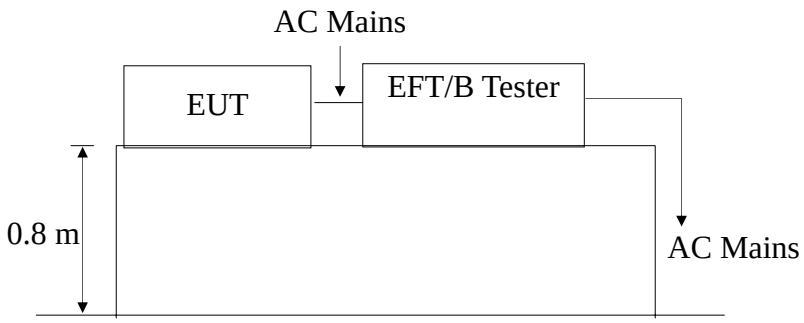
## 9.1 Block Diagram of Test Setup

### 9.1.1.Block Diagram of the EUT

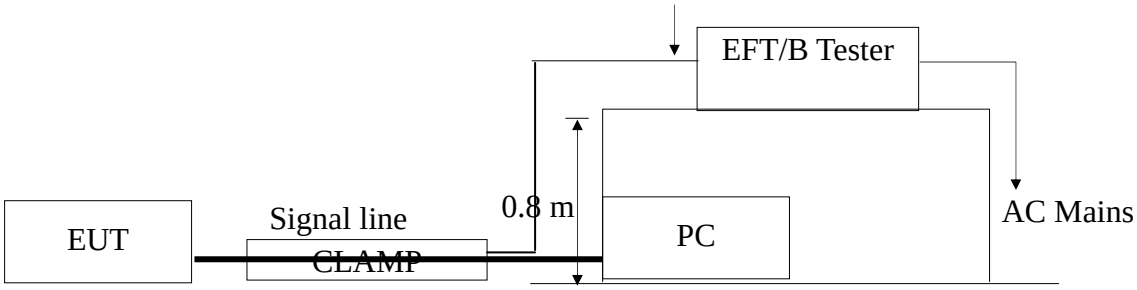

(EUT: UPS)

### 9.1.2.EFT Test Setup

AC Port:




Signal Line:




## 9.2 Test Standard

EN61000-4-4:2004+A1:2010 (Level: 2KV/5kHz)

## 9.3 Severity Levels and Performance Criterion

9.3.1 Severity level

| Open Circuit Output Test Voltage ±10% | | |
|---|---|---|
| Level | On Power Supply Lines | On I/O (Input/Output) Signal data and control lines |
| 1. | 0.5 KV | 0.25 KV |
| 2. | 1 KV | 0.5 KV |
| 3. | 2 KV | 1 KV |
| 4. | 4 KV | 2 KV |
| X | Special | Special |

9.3.2 Performance criterion **: A**

| | Criterion A |
|---|---|
| External and internal indications and metering (LCD) | No change |
| Output characteristics (Load) | No change |
| Control signals to external devices (Signal line) | No change |
| Mode of operation | No change |

## 9.4 EUT Configuration

The configuration of EUT are listed in Section 3.4.

## 9.5 Operating Condition of EUT

9.5.1 Setup the EUT as shown in Section 9.1.

9.5.2 Turn on the power of all equipments.

9.5.3 Let the EUT work in test mode (Line mode) and measure it.

## 9.6 Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

9.6.1 For input and output AC power ports**:**

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.6.2 For signal lines and control lines ports**:**

The capacitive coupling clamp shall be used for coupling the test voltage into the lines, put the signal lines into the coupling clamp, Grounding of the coaxial cable from the test generator shall be made in the vicinity of the coupling point. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.6.3 For DC output line ports**:**

It’s unnecessary to test.

## 9.7 Test Result

**PASS.**

Please refer to the following page.

# Electrical Fast Transient/Burst Test Results

SHENZHEN EMTEK CO., LTD.

| Standard | EN 61000-4-4 | Result: ☒ PASS / ☐FAIL |
|---|---|---|

Applicant : VOLTRONIC POWER TECHNOLOGY CORP.

EUT : UPS

M/N : Galleon 2K, Galleon 3K

Input Voltage: AC230V/50Hz

Criterion : A

Ambient Condition : 22 ℃ 50% RH

Operation Mode: Line mode

| Line : ☒ AC Mains | Line : ☒ Signal ☒ I/O Cable |
|---|---|
| Coupling : ☒ Direct | Coupling : ☒ Capacitive |
| Test Time : 120s | |

| Line | Test Voltage | Result(+) | Result(-) |
|---|---|---|---|
| L | 2KV | PASS | PASS |
| N | 2KV | PASS | PASS |
| PE | 2KV | PASS | PASS |
| L、N | 2KV | PASS | PASS |
| L、PE | 2KV | PASS | PASS |
| N、PE | 2KV | PASS | PASS |
| L、N、PE | 2KV | PASS | PASS |
| | | | |
| | | | |

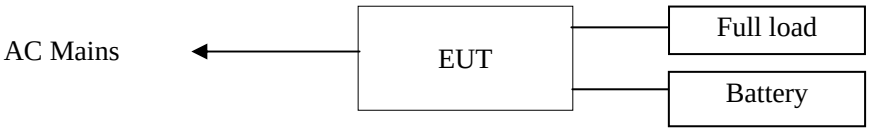
*Note:*

| Test Equipment | Burst Tester Model : PEFT 4010 |
|---|---|

# 10. SURGE IMMUNITY TEST

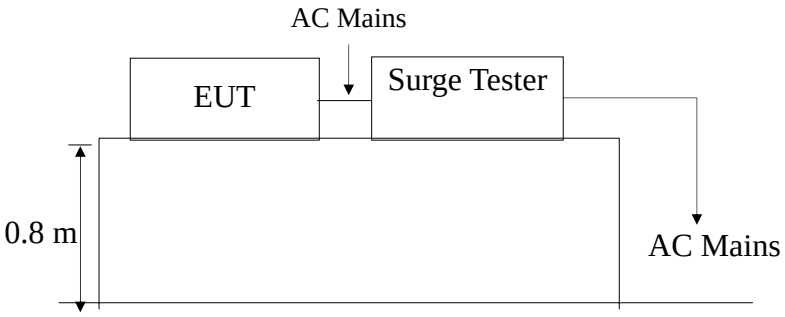
## 10.1 Block Diagram of Test Setup

### 10.1.1 Block Diagram of the EUT




(EUT: UPS)

### 10.1.2. Surge Test Setup




## 10.2 Test Standard

EN61000-4-5:2006 (Line to Line: Level, 1.0KV, Line to earth: 2.0KV)

## 10.3 Severity Levels and Performance Criterion

### 10.3.1.Severity level

| Severity Level | Open-Circuit Test Voltage<br>KV |
|---|---|
| 1 | 0.5 |
| 2 | 1.0 |
| 3 | 2.0 |
| 4 | 4.0 |
| * | Special |

10.3.2 Performance criterion **: B**

| | Criterion B |
|---|---|
| External and internal indications and metering (LCD) | No change |
| Output characteristics (Load) | No change |
| Control signals to external devices (Signal line) | No change |
| Mode of operation | No change |

## 10.4 EUT Configuration

The configuration of EUT are listed in Section 3.4.

## 10.5 Operating Condition of EUT

10.5.1 Setup the EUT as shown in Section 10.1.

10.5.2.Turn on the power of all equipments.

10.5.3.Let the EUT work in test mode (Line mode) and measure it.

## 10.6 Test Procedure

1) Set up the EUT and test generator as shown on Section 10.1.2.
2) For line to line coupling mode, provide a 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
4) Different phase angles are done individually.
5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

## 10.7 Test Result

**PASS.**

Please refer to the following page.

# Surge Immunity Test Result

SHENZHEN EMTEK CO., LTD.

| | |
|---|---|
| Applicant: VOLTRONIC POWER TECHNOLOGY CORP.<br>EUT : UPS<br>M/N : Galleon 2K, Galleon 3K<br>Power Supply: AC 230V / 50Hz<br>Test Engineer: KYLE | Test Date : October 18, 2011<br>Temperature : 22℃<br>Humidity : 50%<br>Test Mode : Line mode<br>Criterion : B |

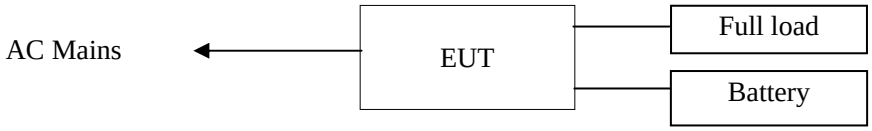
| Location | Polarity | Phase Angle | Number of Pulse | Pulse Voltage (KV) | Result |
|---|---|---|---|---|---|
| L-N | + | $0^o$ | 5 | 1.0 | PASS |
| | + | $90^o$ | 5 | 1.0 | PASS |
| | + | $180^o$ | 5 | 1.0 | PASS |
| | + | $270^o$ | 5 | 1.0 | PASS |
| | - | $0^o$ | 5 | 1.0 | PASS |
| | - | $90^o$ | 5 | 1.0 | PASS |
| | - | $180^o$ | 5 | 1.0 | PASS |
| | - | $270^o$ | 5 | 1.0 | PASS |
| L-PE | + | $0^o$ | 5 | 2.0 | PASS |
| | + | $90^o$ | 5 | 2.0 | PASS |
| | + | $180^o$ | 5 | 2.0 | PASS |
| | + | $270^o$ | 5 | 2.0 | PASS |
| | - | $0^o$ | 5 | 2.0 | PASS |
| | - | $90^o$ | 5 | 2.0 | PASS |
| | - | $180^o$ | 5 | 2.0 | PASS |
| | - | $270^o$ | 5 | 2.0 | PASS |
| N-PE | + | $0^o$ | 5 | 2.0 | PASS |
| | + | $90^o$ | 5 | 2.0 | PASS |
| | + | $180^o$ | 5 | 2.0 | PASS |
| | + | $270^o$ | 5 | 2.0 | PASS |
| | - | $0^o$ | 5 | 2.0 | PASS |
| | - | $90^o$ | 5 | 2.0 | PASS |
| | - | $180^o$ | 5 | 2.0 | PASS |
| | - | $270^o$ | 5 | 2.0 | PASS |

| | |
|---|---|
| Remark: | Test Equipment :<br>Surge Tester Psurge4.1 |

# 11. INJECTED CURRENTS SUSCEPTIBILITY TEST

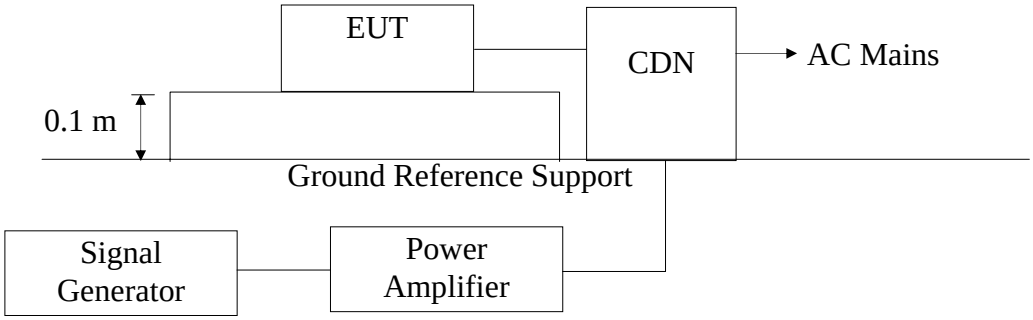
## 11.1 Block Diagram of Test Setup

### 11.1.1 Block Diagram of the EUT




(EUT: UPS)

### 11.1.2 Block Diagram of Test Setup




## 11.2 Test Standard

EN61000-4-6:2009 (Level: 10V (rms), (0.15MHz ~ 80MHz))

## 11.3 Severity Levels and Performance Criterion

### 11.3.1 Severity level

| Level | Field Strength V |
|---|---|
| 1 | 1 |
| 2 | 3 |
| 3 | 10 |
| X | Special |

11.3.2 Performance criterion**: A**

| | Criterion A |
|---|---|
| External and internal indications and metering (LCD) | No change |
| Output characteristics (Load) | No change |
| Control signals to external devices (Signal line) | No change |
| Mode of operation | No change |

## 11.4 EUT Configuration

The configuration of EUT are listed in Section 3.4.

## 11.5 Operating Condition of EUT

11.5.1 Setup the EUT as shown in Section 11.1.

11.5.1 Turn on the power of all equipments.

11.5.1 Let the EUT work in test mode (Line mode) and measure it.

## 11.6 Test Procedure

1) Set up the EUT, CDN and test generators as shown on Section 11.1.2.
2) Let the EUT work in test mode and measure it.
3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
4) The disturbance signal described below is injected to EUT through CDN.
5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
6) The frequency range is swept from 150KHz to80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
7) The rate of sweep shall not exceed $1.5*10^{-3}$decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

## 11.7 Test Results

**PASS.**

Please refer to the following page.

# Injected Currents Susceptibility Test Results

SHENZHEN EMTEK CO., LTD.

| | |
|---|---|
| Applicant **:** VOLTRONIC POWER TECHNOLOGY CORP.<br>EUT **:** UPS<br>M/N **:** Galleon 2K, Galleon 3K<br>Power Supply **:** AC 230V/50Hz<br>Test Engineer **:** King | Test Date**:** October 18, 2011<br>Temperature **:** 22℃<br>Humidity **:** 50% |
| Test Mode **:** Line mode | |

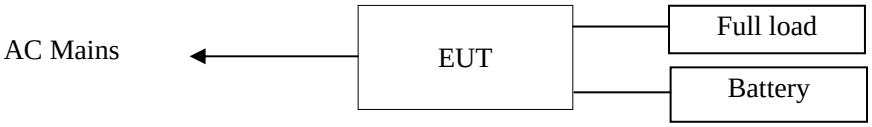
| Frequency Range (MHz) | Injected Position | Strength (Unmodulated) | Criterion | Result |
|---|---|---|---|---|
| 0.15 ~ 80 | AC Mains | 10V | A | PASS |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| | |
|---|---|
| Remark **:** 1. Modulation Signal**:**1KHz 80% AM<br>Measurement Equipment :<br>Simulator: CWS 500 (SWITZERLAND EMTEST)<br>CDN : ☐CDN-M2 (SWITZERLAND EMTEST)<br>☒CDN-M3 (SWITZERLAND EMTEST) | Note**:** |

# 12. MAGNETIC FIELD SUSCEPTIBILITY TEST

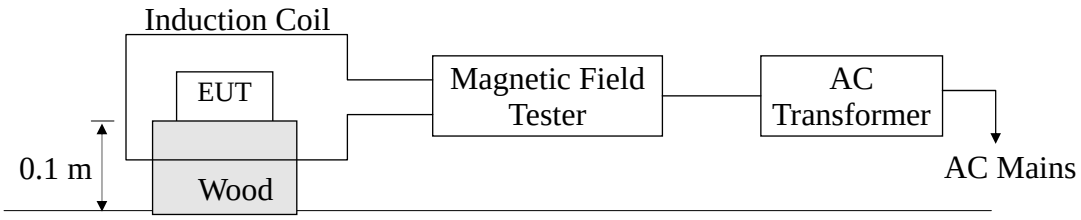
## 12.1 Block Diagram of Test

### 12.1.1 Block diagram of test setup




(EUT: UPS)

### 12.1.2 Magnetic field test setup




(EUT: UPS)

## 12.2 Test Standard

EN61000-4-8:2010, Severity Level: 30A / m

## 12.3 Severity Levels and Performance Criterion

### 12.3.1 Severity Levels

| Level | Field Strength A/m |
|---|---|
| 1 | 1 |
| 2 | 3 |
| 3 | 10 |
| 4 | 30 |
| 5 | 100 |
| X | Special |

12.3.2 Performance Criterion: **B**

| | Criterion B |
|---|---|
| External and internal indications and metering (LCD) | No change |
| Output characteristics (Load) | No change |
| Control signals to external devices (Signal line) | No change |
| Mode of operation | No change |

## 12.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

## 12.5 Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

## 12.6 Test Results

**PASS.**

Please refer to the following page.

# Magnetic Field Immunity Test Result

SHENZHEN EMTEK CO., LTD.

| Standard | EN 61000-4-8 | Result: ☒ Pass / ☐ Fail |
|---|---|---|

Applicant : VOLTRONIC POWER TECHNOLOGY CORP.

EUT : UPS M/N: Galleon 2K, Galleon 3K

Input Voltage : 230V / 50Hz

Date of Test : October 18, 2011 Test Engineer: King

Ambient Condition : Temp : 22℃ Humid: 58%

Criterion : B

Operation Mode : Line mode/Battery mode

| Test Level (A/M) | Testing Duration | Coil Orientation | Criterion | Result |
|---|---|---|---|---|
| 30 | 5 mins | X | A | PASS |
| 30 | 5 mins | Y | A | PASS |
| 30 | 5 mins | Z | A | PASS |

Operation Mode :

| Test Level (A/M) | Testing Duration | Coil Orientation | Criterion | Result |
|---|---|---|---|---|
| | | | | |
| | | | | |

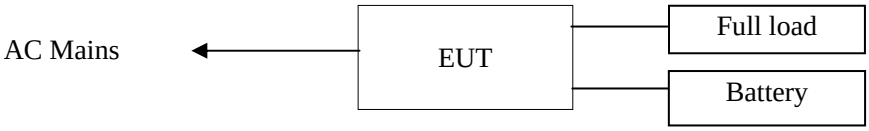
| Test Equipment | Magnetic Field Test : HEAFELY MAG 100.1 |
|---|---|

Note:

# 13. VOLTAGE DIPS AND INTERRUPTIONS TEST

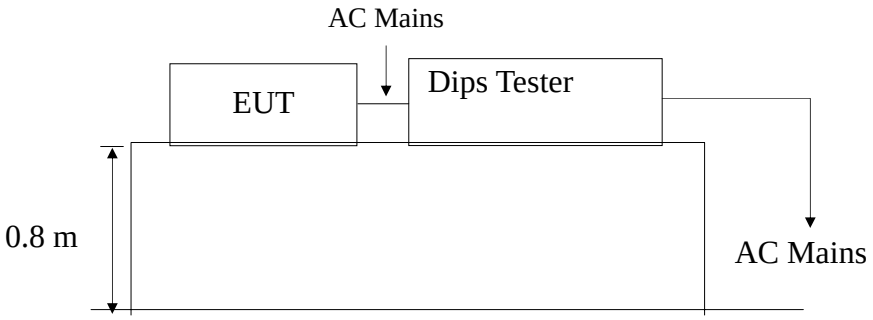
## 13.1 Block Diagram of Test Setup

### 13.1.1 Block Diagram of the EUT




(EUT: UPS)

### 13.1.2 Dips Test Setup




## 13.2 Test Standard

EN61000-4-11: 2004

## 13.3 Severity Levels and Performance Criterion

### 13.3.1 Severity level

| Test Level %UT | Voltage dip and short interruptions %UT | Duration (in period) |
|---|---|---|
| 0 | 100 | 0.5<br>1 |
| 40 | 60 | 5<br>10 |
| 70 | 30 | 25<br>50 |
| | | * |

13.3.2 Performance criterion: **B**

| | Criterion B |
|---|---|
| External and internal indications and metering (LCD) | No change |
| Output characteristics (Load) | No change |
| Control signals to external devices (Signal line) | No change |
| Mode of operation | Change |

## 13.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

## 13.5 Operating Condition of EUT

13.5.1 Setup the EUT as shown in Section 13.1.

13.5.2 Turn on the power of all equipments.

13.5.3 Let the EUT work in test mode (Line mode/Battery mode) and measure it.

## 13.6 Test Procedure

1) Set up the EUT and test generator as shown on Section 13.1.2.
2) The interruption is introduced at selected phase angles with specified duration.
3) Record any degradation of performance.

## 13.7 Test Result

**PASS.**

Please refer to the following page.

# Voltage Dips And Interruptions Test Results

SHENZHEN EMTEK CO., LTD.

| | |
|---|---|
| Applicant: VOLTRONIC POWER TECHNOLOGY CORP.<br>EUT : UPS<br>M/N : Galleon 2K, Galleon 3K<br>Power Supply : AC230V / 50Hz | Test Date : October 18, 2011<br>Temperature : 22℃<br>Humidity : 50%<br>Test Engineer : King |

Test Mode: Line mode

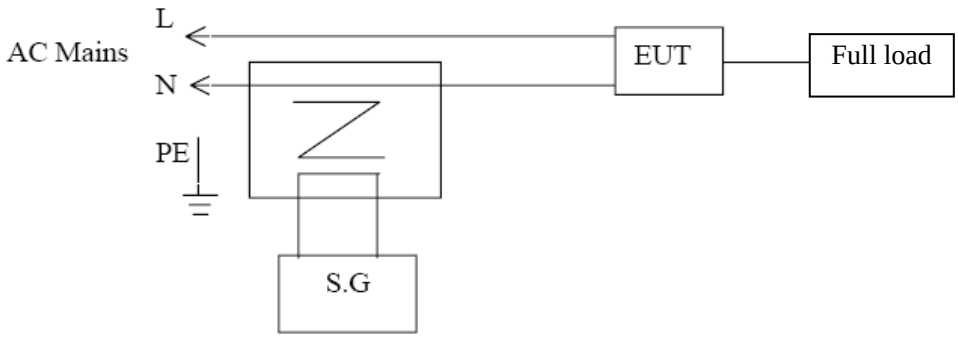
| Test Level<br>% $U_T$ | Voltage Dips & Short Interruptions<br>% $U_T$ | Duration (in periods) | Criterion<br>☐ A ☒ B<br>☐ C ☐ D | Result<br>P=PASS<br>F=Fail |
|---|---|---|---|---|
| 0 | 100 | 250P | B | P |
| 70 | 30 | 25P | B | P |
| 0 | 100 | 0.5P | B | P |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Note:

# 14. LOW FREQUENCY SIGNALS TEST

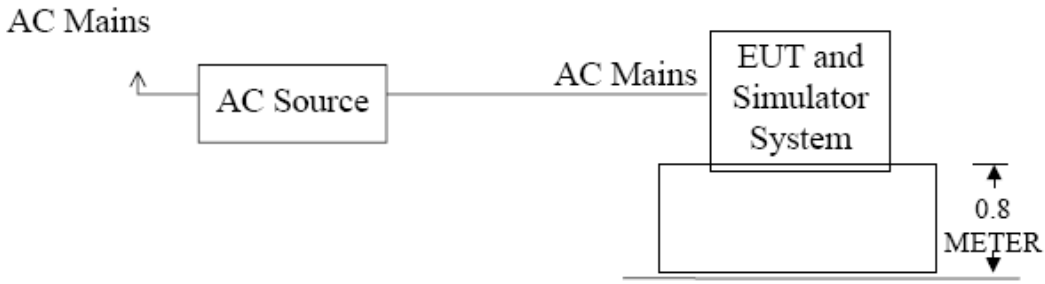
## 14.1 Block Diagram of Test Setup

### 14.1.1 Block Diagram of the EUT




(EUT: UPS)

### 14.1.2 Block Diagram of Test Setup




(EUT: UPS)

## 14.2 Test Standard

EN61000-2-2: 2002, Performance: A

| | Criterion A |
|---|---|
| External and internal indications and metering (LCD) | No change |
| Output characteristics (Load) | No change |
| Control signals to external devices (Signal line) | No change |
| Mode of operation | No change |

## 14.3 Operating Condition of EUT

Same as Section 3.5, Except the test setup replaced by Section 6.1.

## 14.4 Test Results

PASS.

Please refer to following pages.

# Low Frequency Signals Test Result

SHENZHEN EMTEK CO., LTD.

| | |
|---|---|
| Applicant : VOLTRONIC POWER TECHNOLOGY CORP. | Test Date: October 18, 2011 |
| EUT : UPS | Temperature : 22℃ |
| M/N : Galleon 2K, Galleon 3K | Humidity : 58% |
| Power Supply : AC230V/50Hz | Test Mode : Line mode |
| Test Engineer : King | |

| Frequency Range (Hz) | Position | Strength | Result | Note |
|---|---|---|---|---|
| 140 | See Fig.1 | 10V(rms) Sinusoidal | PASS | |
| 160 | | | PASS | |
| 200 | | | PASS | |
| 240 | | | PASS | |
| 280 | | | PASS | |
| 320 | | | PASS | |
| 360 | | | PASS | |

Note

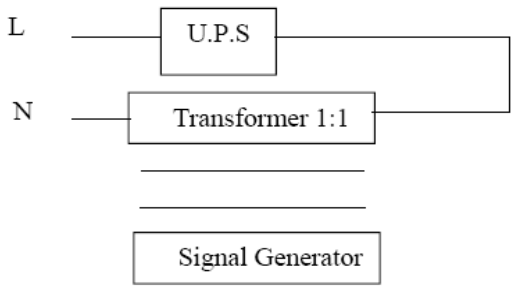



Fig.1

Test Equipment:
1. Isolation transformer
   Primary: Secondary=1:1
2. Signal Generator
   AC Source: 65930(Chroma)

# 15. TEST PHOTOGRAPH

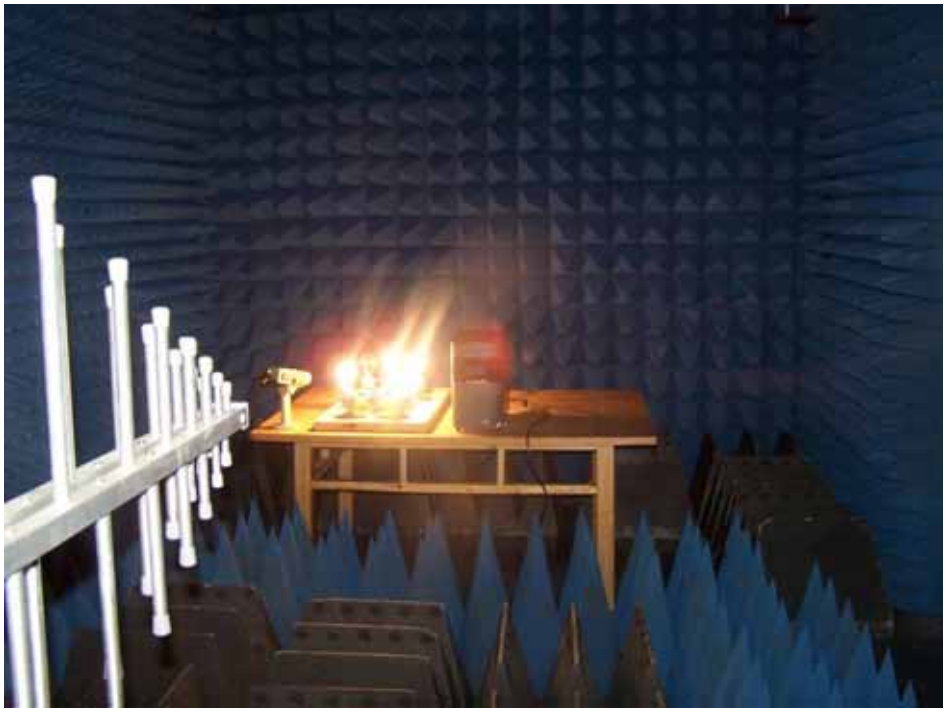
## 15.1 Photo of Conducted Emission Measurement

## 15.2 Photo of Radiation Emission Measurement

## 15.3 Photos of Harmonic / Flicker Measurement

## 15.4 Photos of Electrostatic Discharge Test

## 15.5 Photos of RF Field Strength susceptibility Test



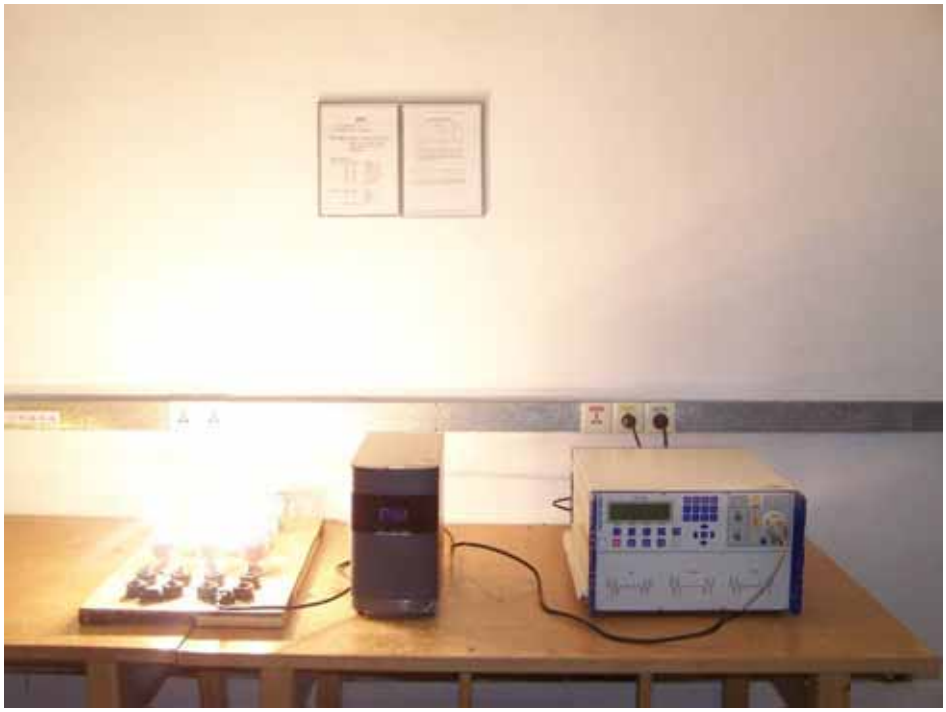
## 15.6 Photo of Electrical Fast Transient /Burst Test

## 15.7 Photo of Surge Test

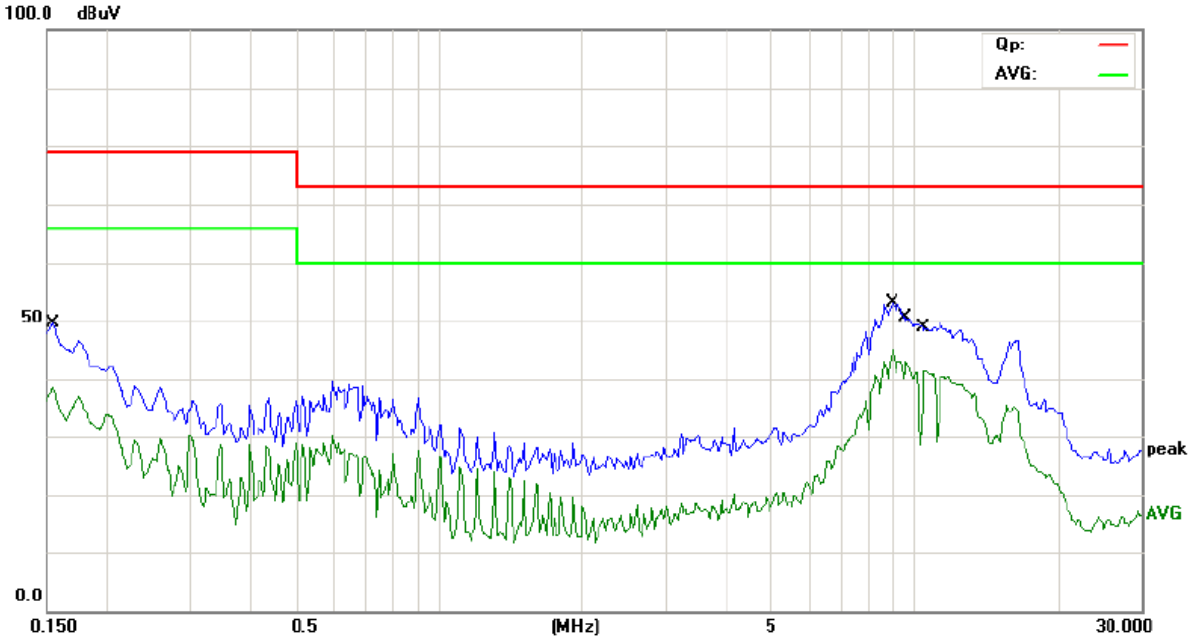
## 15.8 Photo of Injected Currents Susceptibility Test

## 15.9 Photo of Magnetic Field Immunity Test

## 15.10 Photo of Voltage Dips and Interruption Immunity Test



# APPENDIX I




Site site #1 Phase: L1 Temperature: 22

Limit: (CE)EN62040-2 C2_QP Power: AC 230V/50Hz Humidity: 50 %

EUT: UPS

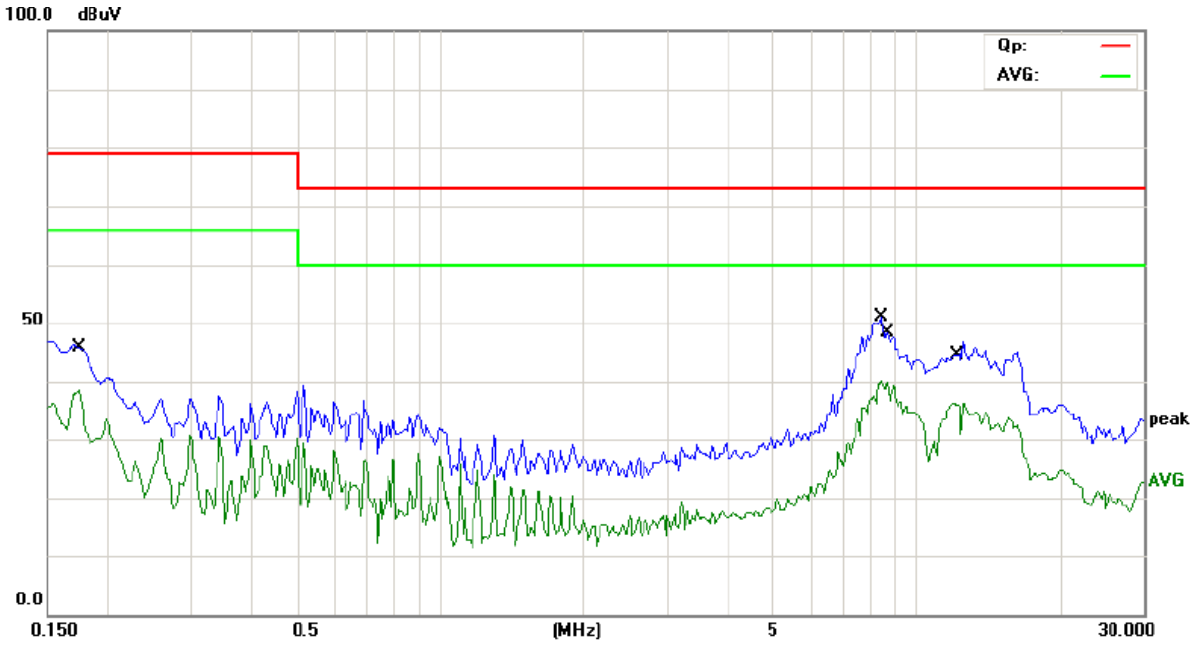
M/N: Galleon 2k

Mode: FULL LOAD

Note: LINE MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1550 | 38.64 | 0.00 | 38.64 | 66.00 | -27.36 | AVG | |
| 2 | * | 9.0000 | 45.11 | 0.00 | 45.11 | 60.00 | -14.89 | AVG | |
| 3 | | 9.6100 | 43.17 | 0.00 | 43.17 | 60.00 | -16.83 | AVG | |
| 4 | | 10.4750 | 41.36 | 0.00 | 41.36 | 60.00 | -18.64 | AVG | |

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LYX




Site site #1 Phase: N Temperature: 22

Limit: (CE)EN62040-2 C2_QP Power: AC 230V/50Hz Humidity: 50 %

EUT: UPS

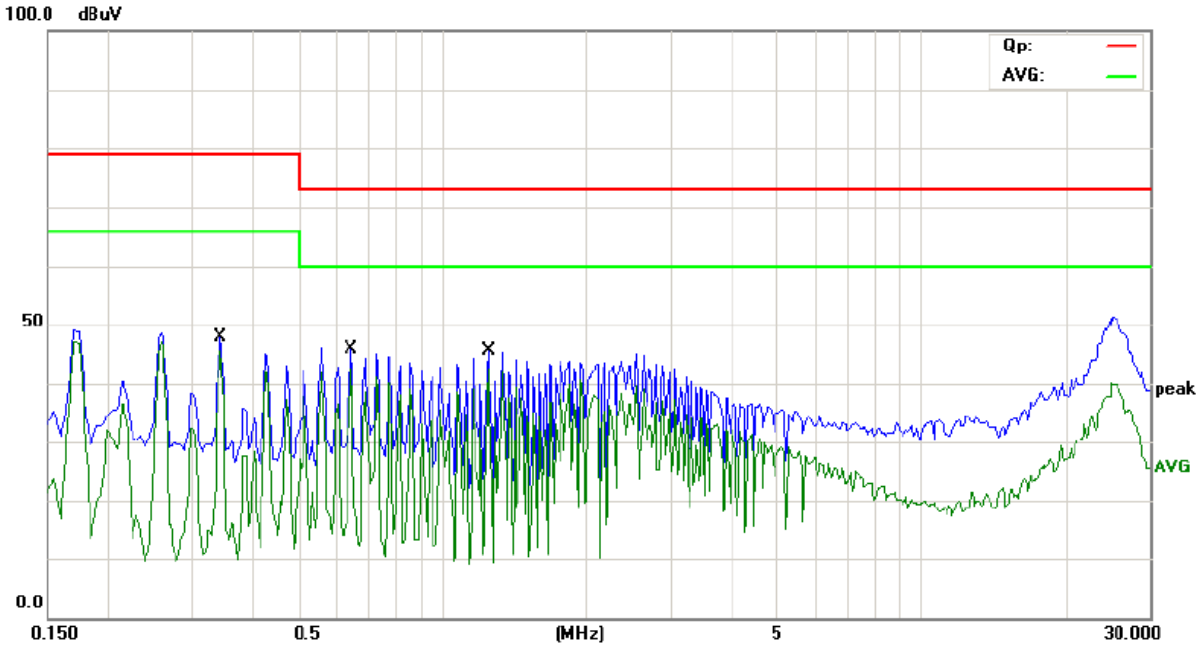
M/N: Galleon 2k

Mode: FULL LOAD

Note: LINE MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1750 | 38.51 | 0.00 | 38.51 | 66.00 | -27.49 | AVG | |
| 2 | * | 8.4200 | 40.04 | 0.00 | 40.04 | 60.00 | -19.96 | AVG | |
| 3 | | 8.6900 | 39.83 | 0.00 | 39.83 | 60.00 | -20.17 | AVG | |
| 4 | | 12.0000 | 36.49 | 0.00 | 36.49 | 60.00 | -23.51 | AVG | |

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LYX




Site site #1 Phase: L1 Temperature: 22

Limit: (CE)EN62040-2 C2_QP Power: Humidity: 50 %

EUT: UPS

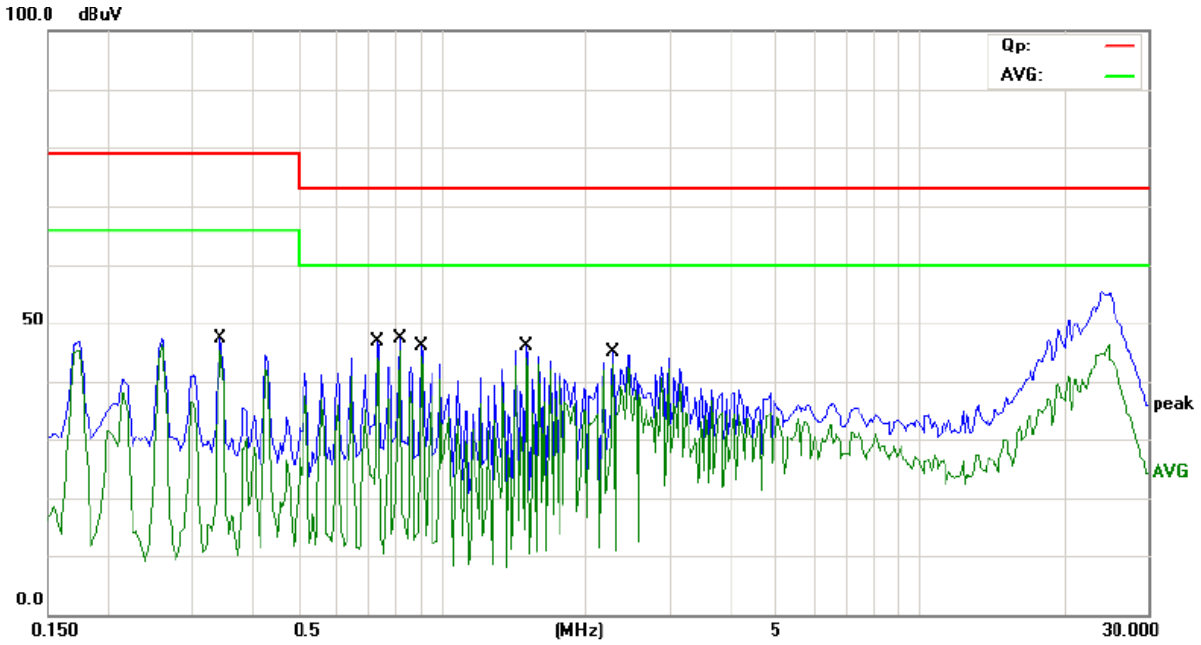
M/N: Galleon 2k

Mode: FULL LOAD

Note: BAT MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.3450 | 45.72 | 0.00 | 45.72 | 66.00 | -20.28 | AVG | |
| 2 | * | 0.6450 | 42.65 | 0.00 | 42.65 | 60.00 | -17.35 | AVG | |
| 3 | | 1.2500 | 42.60 | 0.00 | 42.60 | 60.00 | -17.40 | AVG | |

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LYX




Site site #1 Phase: N Temperature: 22

Limit: (CE)EN62040-2 C2_QP Power: Humidity: 50 %

EUT: UPS

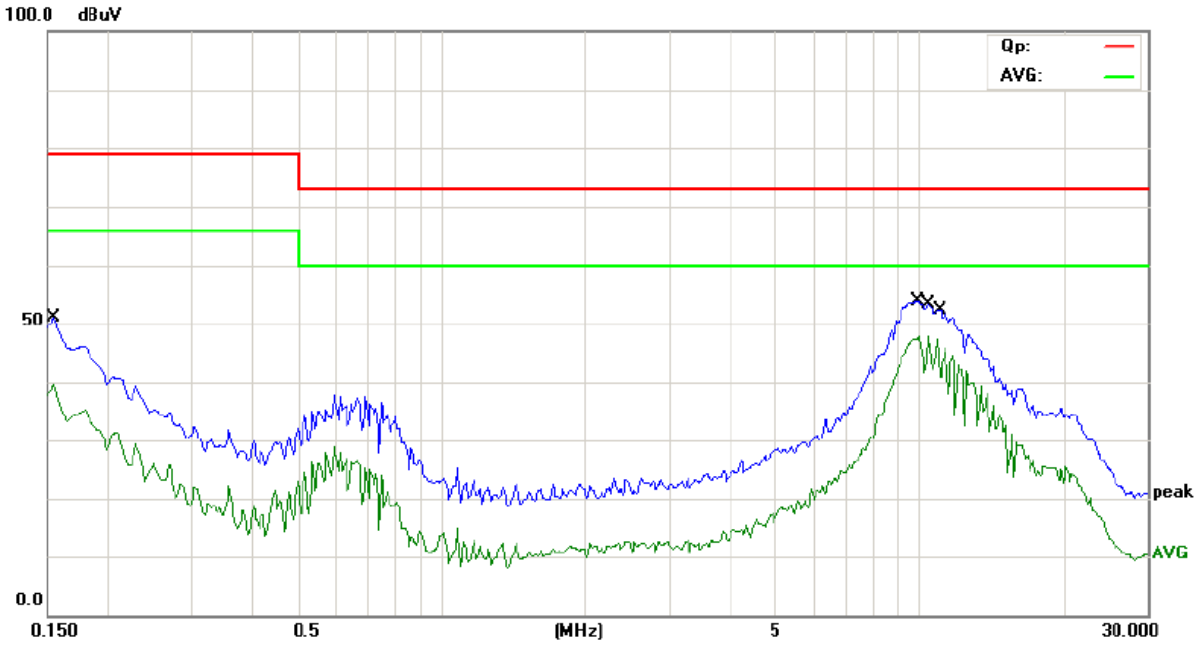
M/N: Galleon 2k

Mode: FULL LOAD

Note: BAT MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.3450 | 45.42 | 0.00 | 45.42 | 66.00 | -20.58 | AVG | |
| 2 | | 0.7350 | 44.09 | 0.00 | 44.09 | 60.00 | -15.91 | AVG | |
| 3 | * | 0.8200 | 45.31 | 0.00 | 45.31 | 60.00 | -14.69 | AVG | |
| 4 | | 0.9050 | 44.33 | 0.00 | 44.33 | 60.00 | -15.67 | AVG | |
| 5 | | 1.5100 | 44.21 | 0.00 | 44.21 | 60.00 | -15.79 | AVG | |
| 6 | | 2.2900 | 43.12 | 0.00 | 43.12 | 60.00 | -16.88 | AVG | |

*:Maximum data x:Over limit I:over margin Comment: Factor build in receiver. Operator: LYX




Site site #1 Phase: *L1* Temperature: 22

Limit: (CE)EN62040-2 C2_QP Power: AC 230V/50Hz Humidity: 50 %

EUT: UPS

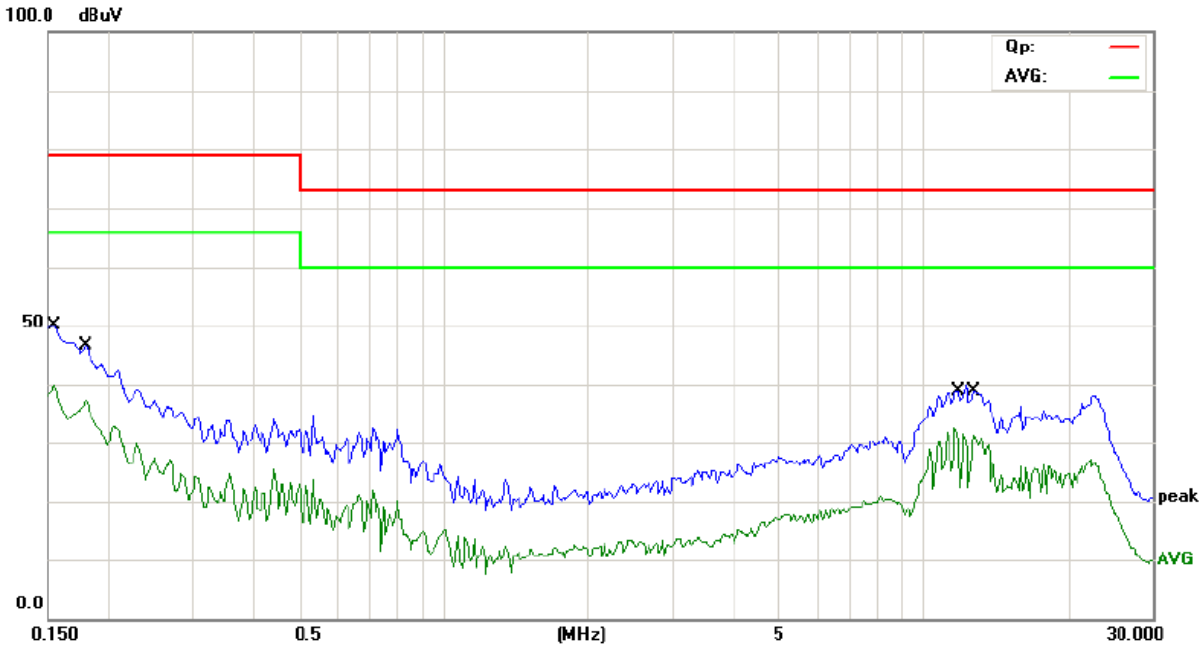
M/N: Galleon 3k

Mode: FULL LOAD

Note: LINE MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1550 | 39.52 | 0.00 | 39.52 | 66.00 | -26.48 | AVG | |
| 2 | * | 10.0000 | 47.97 | 0.00 | 47.97 | 60.00 | -12.03 | AVG | |
| 3 | | 10.4500 | 47.83 | 0.00 | 47.83 | 60.00 | -12.17 | AVG | |
| 4 | | 10.9000 | 47.26 | 0.00 | 47.26 | 60.00 | -12.74 | AVG | |

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LYX




Site site #1 Phase: N Temperature: 22

Limit: (CE)EN62040-2 C2_QP Power: AC 230V/50Hz Humidity: 50 %

EUT: UPS

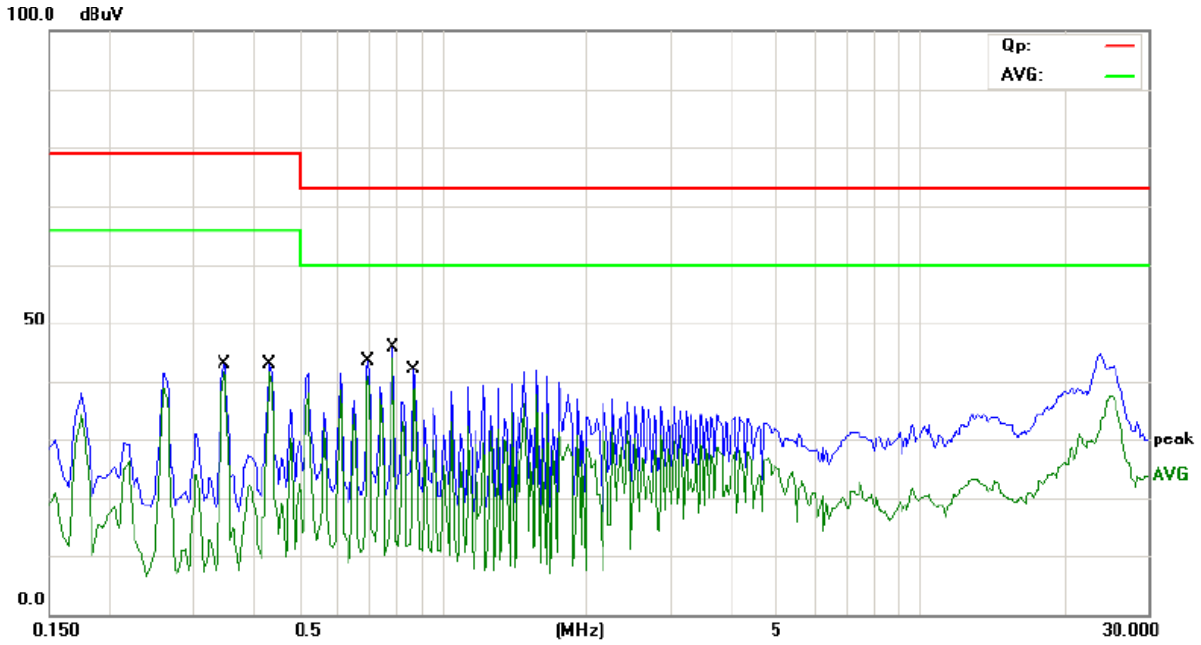
M/N: Galleon 3k

Mode: FULL LOAD

Note: LINE MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | * | 0.1550 | 39.77 | 0.00 | 39.77 | 66.00 | -26.23 | AVG | |
| 2 | | 0.1800 | 37.45 | 0.00 | 37.45 | 66.00 | -28.55 | AVG | |
| 3 | | 11.6750 | 32.51 | 0.00 | 32.51 | 60.00 | -27.49 | AVG | |
| 4 | | 12.7500 | 31.38 | 0.00 | 31.38 | 60.00 | -28.62 | AVG | |

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LYX




Site site #1 Phase: *L1* Temperature: 22

Limit: (CE)EN62040-2 C2_QP Power: Humidity: 50 %

EUT: UPS

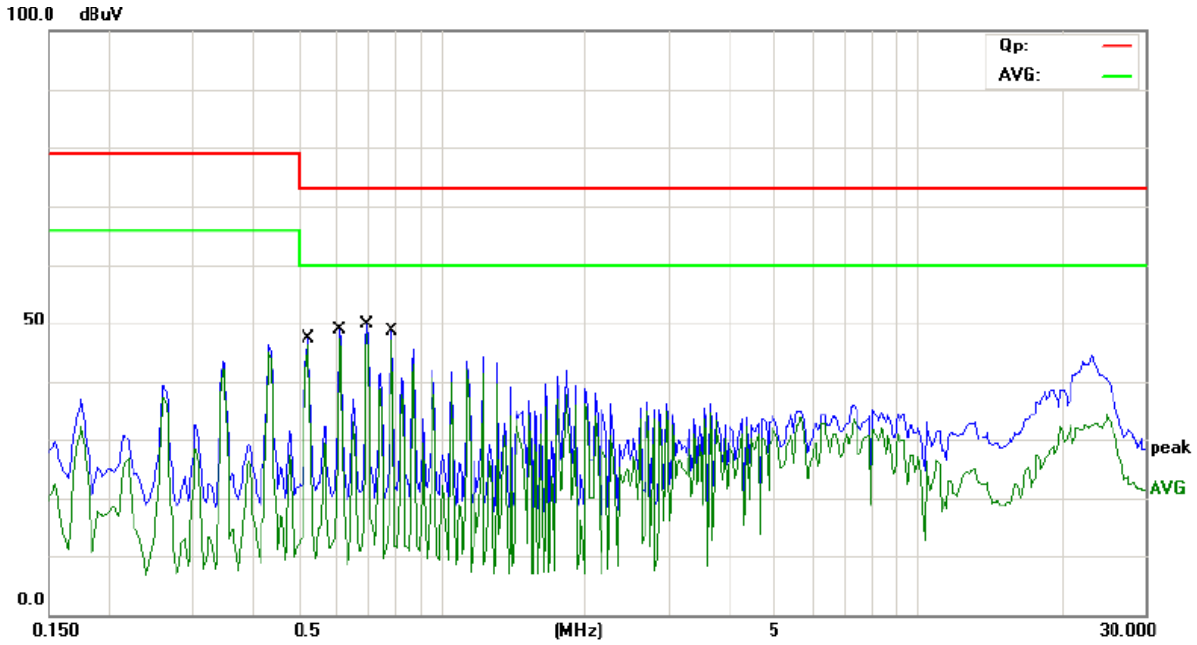
M/N: Galleon 3k

Mode: FULL LOAD

Note: BAT MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.3500 | 41.60 | 0.00 | 41.60 | 66.00 | -24.40 | AVG | |
| 2 | | 0.4350 | 41.63 | 0.00 | 41.63 | 66.00 | -24.37 | AVG | |
| 3 | | 0.7000 | 40.98 | 0.00 | 40.98 | 60.00 | -19.02 | AVG | |
| 4 | * | 0.7850 | 44.01 | 0.00 | 44.01 | 60.00 | -15.99 | AVG | |
| 5 | | 0.8750 | 38.90 | 0.00 | 38.90 | 60.00 | -21.10 | AVG | |

*:Maximum data x:Over limit I:over margin Comment: Factor build in receiver. Operator: LYX




Site site #1 Phase: N Temperature: 22

Limit: (CE)EN62040-2 C2_QP Power: Humidity: 50 %

EUT: UPS

M/N: Galleon 3k

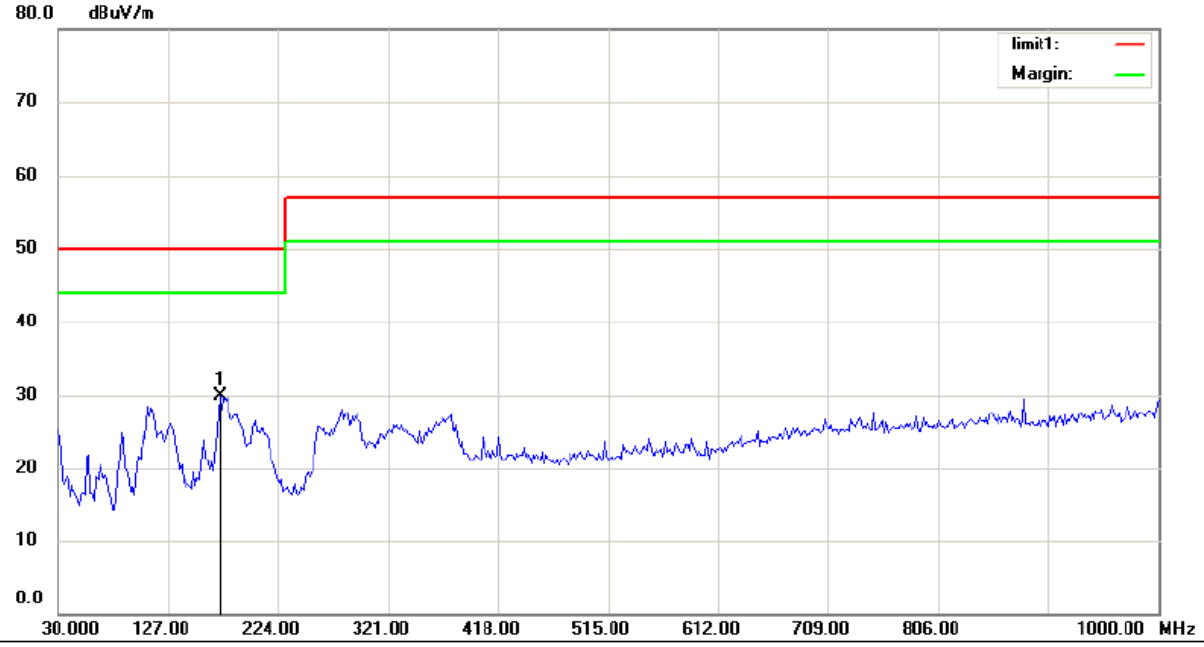
Mode: FULL LOAD

Note: BAT MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.5250 | 46.44 | 0.00 | 46.44 | 60.00 | -13.56 | AVG | |
| 2 | | 0.6100 | 47.35 | 0.00 | 47.35 | 60.00 | -12.65 | AVG | |
| 3 | * | 0.7000 | 48.10 | 0.00 | 48.10 | 60.00 | -11.90 | AVG | |
| 4 | | 0.7850 | 45.70 | 0.00 | 45.70 | 60.00 | -14.30 | AVG | |

*:Maximum data x:Over limit I:over margin Comment: Factor build in receiver. Operator: LYX

# APPENDIX II




Site site #1 Polarization: ***Horizontal*** Temperature: 22

Limit: (RE)EN62040-2 C2 Power: AC 230V/50Hz Humidity: 55 %

EUT: UPS

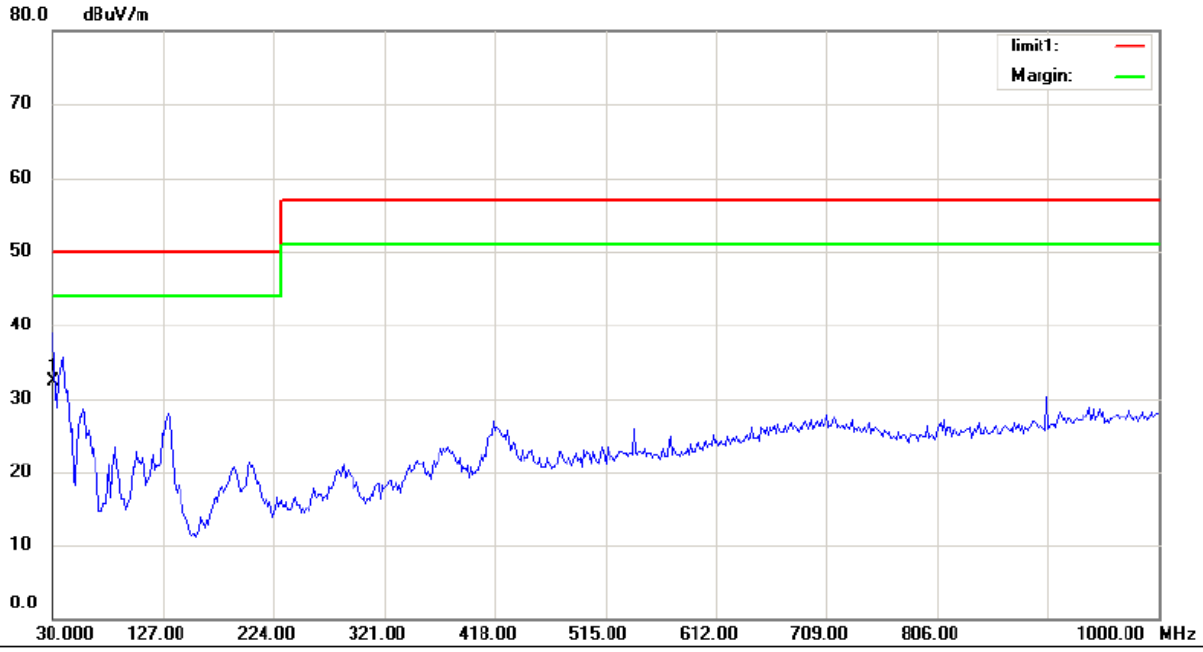
M/N: Galleon 2K

Mode:FULL LOAD

Note: LINE MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 173.0128 | 19.96 | 9.93 | 29.89 | 50.00 | -20.11 | QP | | | |

*:Maximum data x:Over limit !:over margin Operator: ZONE




Site site #1 Polarization: *Vertical* Temperature: 22

Limit: (RE)EN62040-2 C2 Power: AC 230V/50Hz Humidity: 55 %

EUT: UPS

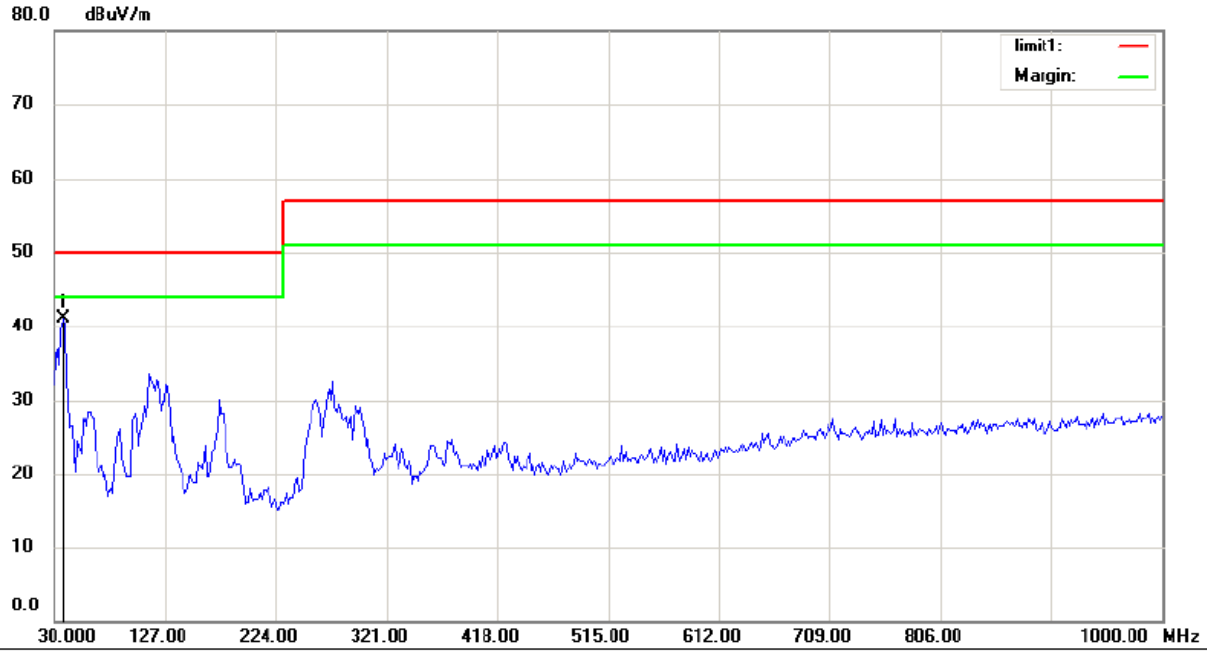
M/N: Galleon 2K

Mode:FULL LOAD

Note: LINE MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 30.4006 | 18.40 | 13.95 | 32.35 | 50.00 | -17.65 | QP | | | |

*:Maximum data x:Over limit I:over margin Operator: ZONE




Site site #1 Polarization: ***Horizontal*** Temperature: 22

Limit: (RE)EN62040-2 C2 Power: AC 230V/50Hz Humidity: 55 %

EUT: UPS

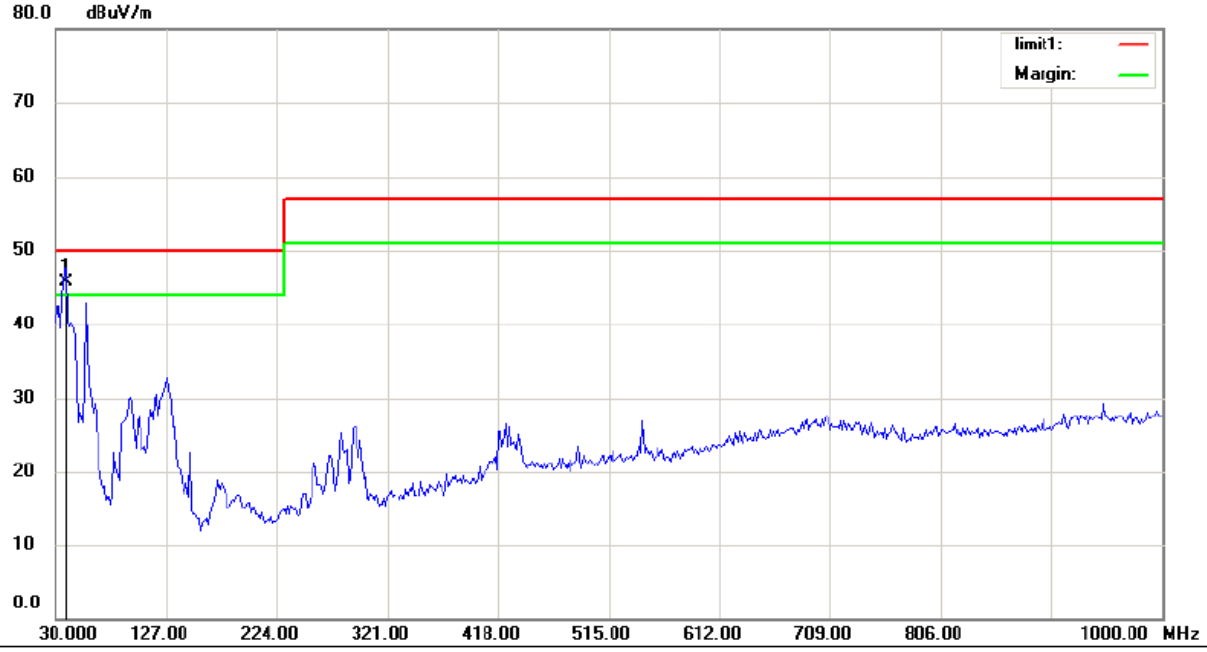
M/N: Galleon 2K

Mode:FULL LOAD

Note: BAT MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 37.7724 | 26.88 | 14.24 | 41.12 | 50.00 | -8.88 | QP | | | |

*:Maximum data x:Over limit !:over margin Operator: ZONE




Site site #1 Polarization: *Vertical* Temperature: 22

Limit: (RE)EN62040-2 C2 Power: AC 230V/50Hz Humidity: 55 %

EUT: UPS

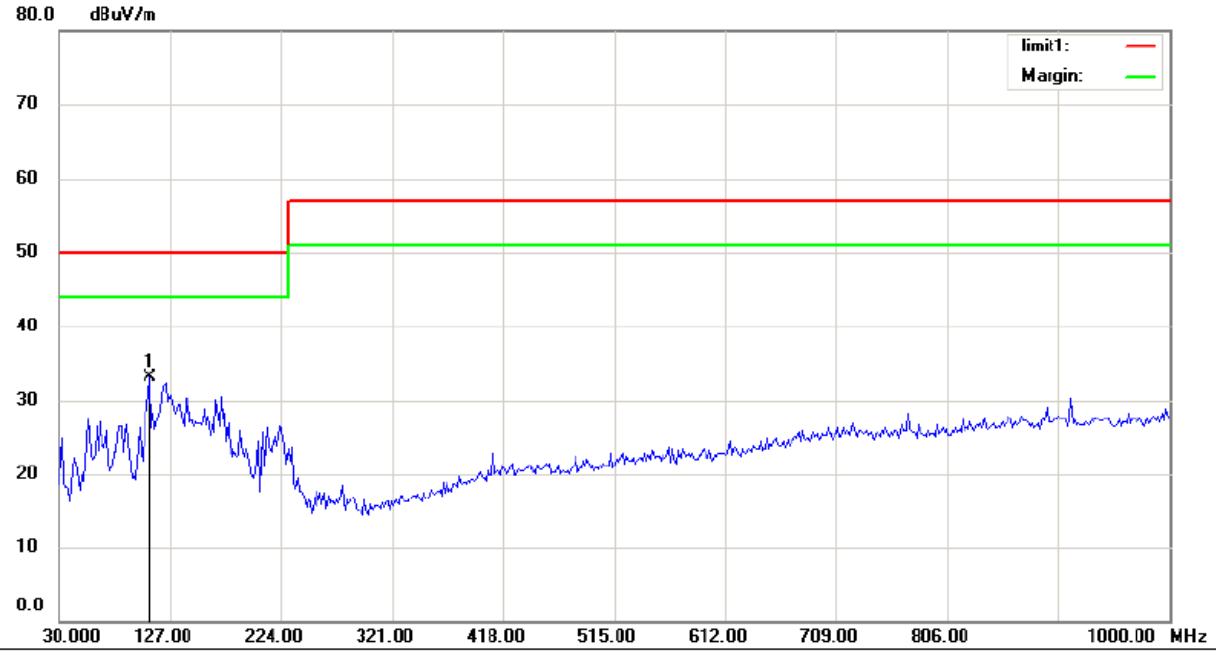
M/N: Galleon 2K

Mode:FULL LOAD

Note: BAT MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 39.0540 | 31.60 | 14.15 | 45.75 | 50.00 | -4.25 | QP | | | |

*:Maximum data x:Over limit !:over margin Operator: ZONE




Site site #1 Polarization: ***Horizontal*** Temperature: 22

Limit: (RE)EN62040-2 C2 Power: AC 230V/50Hz Humidity: 55 %

EUT: UPS

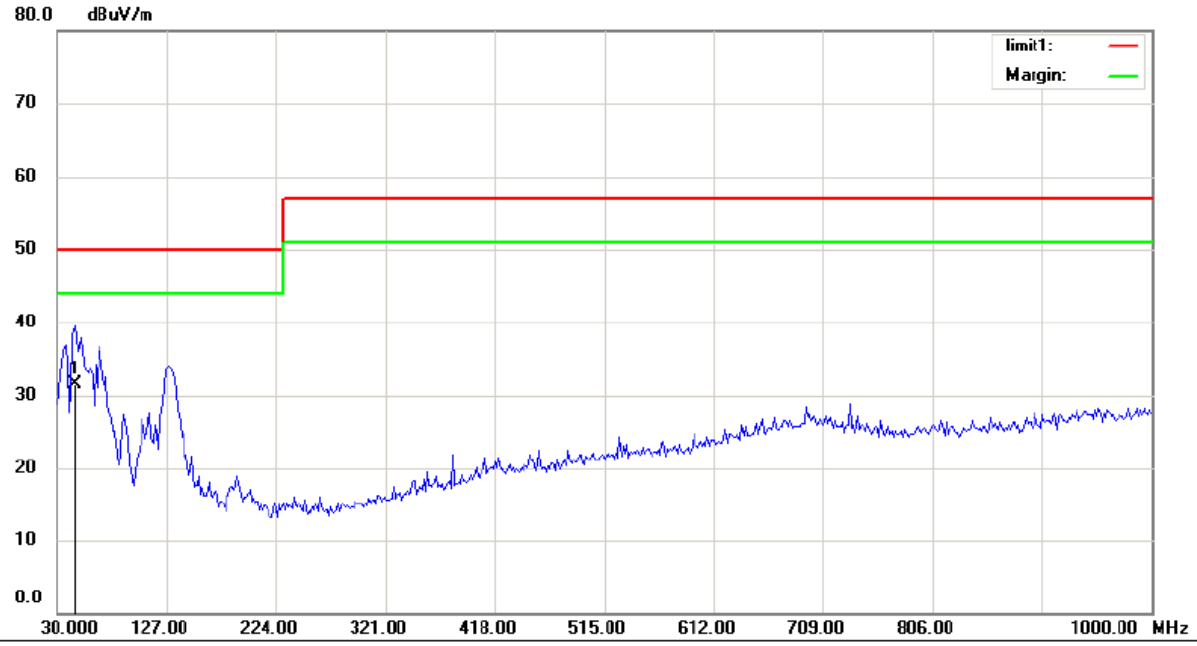
M/N: Galleon 3K

Mode:FULL LOAD

Note: LINE MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 109.2788 | 20.52 | 12.51 | 33.03 | 50.00 | -16.97 | QP | | | |

*:Maximum data x:Over limit !:over margin Operator: ZONE




Site site #1 Polarization: *Vertical* Temperature: 22

Limit: (RE)EN62040-2 C2 Power: AC 230V/50Hz Humidity: 55 %

EUT: UPS

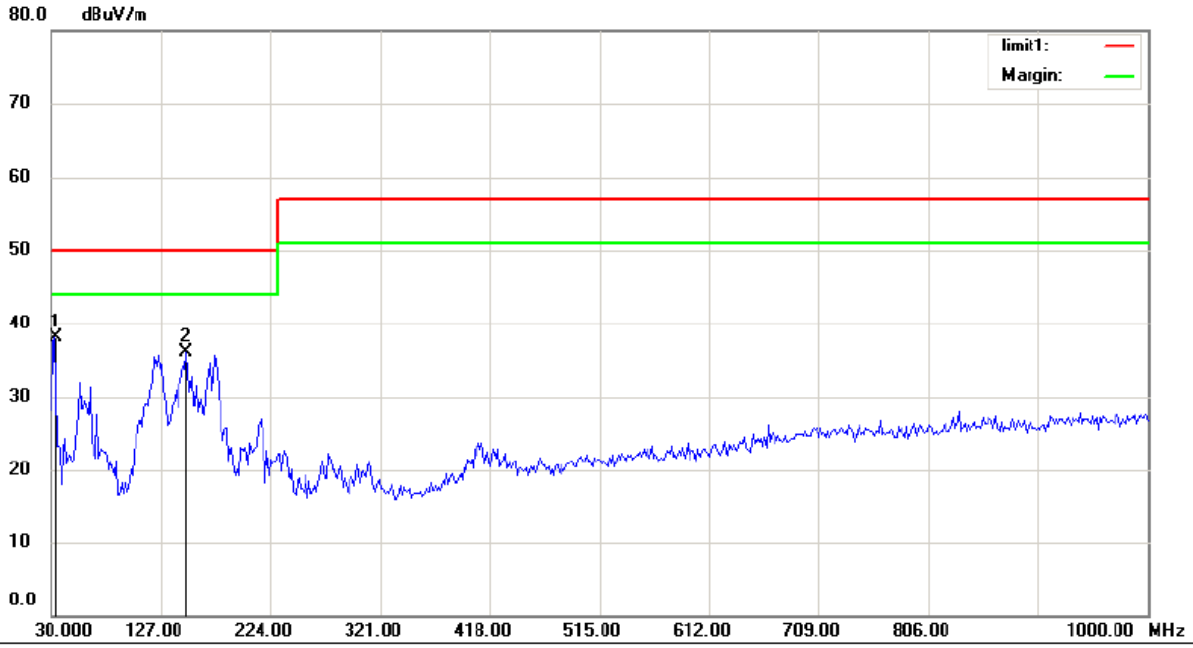
M/N: Galleon 3K

Mode:FULL LOAD

Note: LINE MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 45.5448 | 17.50 | 14.10 | 31.60 | 50.00 | -18.40 | QP | | | |

*:Maximum data x:Over limit !:over margin Operator: ZONE




Site site #1 Polarization: ***Horizontal*** Temperature: 22

Limit: (RE)EN62040-2 C2 Power: AC 230V/50Hz Humidity: 55 %

EUT: UPS

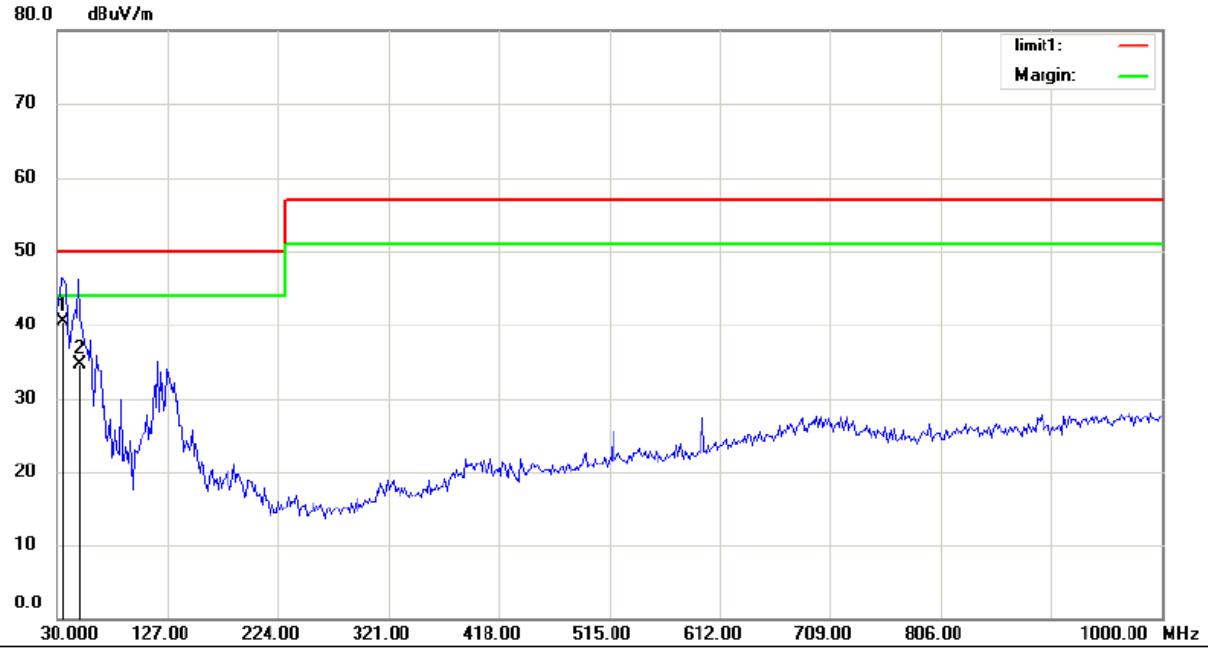
M/N: Galleon 3K

Mode:FULL LOAD

Note: BAT MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 33.1090 | 24.05 | 14.13 | 38.18 | 50.00 | -11.82 | QP | | | |
| 2 | | 149.6955 | 27.02 | 9.02 | 36.04 | 50.00 | -13.96 | QP | | | |

*:Maximum data x:Over limit !:over margin Operator: ZONE




Site site #1 Polarization: *Vertical* Temperature: 22

Limit: (RE)EN62040-2 C2 Power: AC 230V/50Hz Humidity: 55 %

EUT: UPS

M/N: Galleon 3K

Mode:FULL LOAD

Note: BAT MODE

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 35.9900 | 26.30 | 14.22 | 40.52 | 50.00 | -9.48 | QP | | | |
| 2 | | 49.3360 | 20.90 | 13.78 | 34.68 | 50.00 | -15.32 | QP | | | |

*:Maximum data x:Over limit !:over margin Operator: ZONE

# APPENDIX III
# (PHOTOS OF EUT)

**FIGURE 1**
GENERAL APPEARANCE OF EUT
Galleon 2K

Galleon 3K: