



Product Service

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TEST HOUSE CERTIFICATE

| | | | |
|----------------|---|------------------------------|--------------------------|
| CLIENT: | Vartech Systems Inc. 11529 Sun Belt Court Baton Rouge Louisiana 70809 USA | CERTIFICATE NUMBER | BO888975/015/01 Issue 01 |
| | | PROJECT NUMBER | BO611027 |
| | | CLIENT'S ORDER NUMBER | Q46742 |

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| INCOMING RELEASE NOTE | Declaration of Build Status: 611027 |
| DATE OF RECEIPT | 23 rd April 2003 |
| TEST ITEM | 19" Marine TFT Monitor |
| NUMBER OF ITEMS TESTED | One |
| SERIAL NUMBER | 32560001 |
| PART NUMBER | VarTech VT190RP |
| BUILD STATUS | Mod 00 |
| TEST SPECIFICATION AND ISSUE | EN 60945; 2002 |
| DATE OF TEST | 23 rd April 2003 to 13 th May 2003 |
| TESTS APPLIED | See Pages 2 and 3 |
| RESULT OF TESTS | The Equipment Under Test (EUT) met the specification requirements for the applied tests at modification state 2. See Pages 2 and 3. |
| EUT MODIFICATION CHRONOLOGY | Modification State 0 As supplied by Manufacturer. Modification State 1 A 100uH choke was added at the DC Converter input. A 470µF capacitor was added at the DC power input connector. An EMC gasket was added to the EUT rear panel and the front of the screen was bonded to the panel mounting brackets using aluminium tape. |
| EUT TEST CONFIGURATION | The Equipment Under Test (EUT) was functioning correctly during all testing. The EUT was installed within the test area and was configured to simulate typical user installations. |

APPROVED BY

J J Laydon
Approved Signatory

DATE: 24th April 2006





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CONTINUATION PAGE

SYSTEM TEST SETUP

The EUT was connected to a PC via a VGA cable connected to the Data Input. The PC was running a batch program in DOS mode which generated a scrolling screen full of white "H"s on a black background. A video colour bar pattern generator was also connected to the EUT Video input. Un-used ports had an un-terminated cable connected. For all immunity testing the EUT was monitored, using a CCTV system where necessary, to ensure that the display remained stable, the screen was continually scrolling and that the displayed "H"s were not corrupted.

TESTS APPLIED

Deviations From Standard

Deviations from the specifications used during testing are next to the applicable test in the text.

The EMC compliance of the Equipment Under Test was also assessed against, and met, the requirements of the following other specifications:

American Bureau of Shipping; - ABS Part 4, Chapter 9, Section 7; 2003
DNV; - Standards for Certification No. 24; April 2001
Germanischer Lloyd; - GL 2003; VI – Part 7, Chapter 3; 2003
Lloyds Register; – LR Type Approval System, Test Specification Number 1; 2002

Note: These Specifications are not included in our UKAS Schedule of Accreditation

EN 60945; 2002

Section 9.2 Table 5; Conducted Emissions, DC Power Port, 0.01MHz - 30MHz. The EUT failed to meet the requirements of the specification when configured at modification state 0. The EUT was modified and deemed to be at modification state 1. The EUT was re-tested and subsequently met the requirements of the specification when configured at modification state 1.

Deviation from the specification: A non-screened mains lead was used for the duration of this testing.

Section 9.3 Table 5; Radiated Emissions, Enclosure Port, 0.15MHz – 30MHz. The EUT met the requirements of the specification when configured at modification state 0.

Section 9.3 Table 5; Radiated Emissions, Enclosure Port, 30MHz – 2000MHz. The EUT failed to meet the requirements of the specification when configured at modification state 0. The EUT was modified and deemed to be at modification state 1. The EUT was subsequently re-tested and met the requirements of the specification when configured at modification state 1.

Deviation from the specification: Emissions in range 156MHz to 165MHz. Because the measuring receiver in use did not have a bandwidth of 9kHz the alternate Peak detector method of measurement, in accordance with EN 60945; 2002, section 9.3.2, c), was used. The receiver bandwidth used for this method was 12kHz.

Section 10.3, Table 6; Conducted RF Interference, DC Power Port; Signal/Control Ports; 0.15MHz - 80MHz. The EUT met the requirements of the specification when configured at modification state 0.

Deviation from the specification: The level of the test phenomenon applied was increased from 3Vrms to 10Vrms over the frequency range 0.15MHz to 80MHz as the frequency step size of the applied phenomenon allowed the spot frequencies between 0.15MHz to 80MHz to be tested during the applied sweep.

Section 10.4, Table 6; Radiated Electric Fields, Enclosure Port, 80MHz – 2000MHz. The EUT met the requirements of the specification when configured at modification state 0.

Deviation from the Specification: Due to the size and construction of the EUT it was possible during test to illuminate the whole EUT by testing Front and Rear faces only.

TESTS APPLIED - continued

Section 10.5, Table 6; Fast Transient (Bursts), DC Power Port; Signal/Control Port. The EUT met the requirements of the specification when configured at modification state 1.

Section 10.6, Table 6; Slow Transient (Surges), DC Power Port. The EUT met the requirements of the specification when configured at modification state 0.

Section 10.8, Table 6; Power Supply Failure, DC Power Port. The EUT met the requirements of the specification when configured at modification state 0.

Section 10.9, Table 6; Electrostatic Discharge, Enclosure Port, 6kV Contact, 8kV Air. The EUT met the requirements of the specification when configured at modification state 1.

Additional Testing Carried Out In Accordance With Other Specifications

Conducted Low Frequency; AC Power Port, 50Hz to 10kHz. The EUT met the requirements of the other specifications when configured at modification state 0.

Conducted Radio Frequency Interference, 0.01MHz – 0.15MHz. The EUT met the requirements of the other specifications when configured at modification state 0.

Immunity To Power Supply Variations (DC Power Port). The EUT met the requirements of the other specifications when configured at modification state 1.

Note: Where the required test parameters of EN 60945 were the same as or exceeded those of the other specifications, then the EUT was deemed compliant for all specifications without further testing. Where the test parameters of any of the other specifications exceeded those of EN 60945, then the EUT was tested using these parameters and deemed compliant for all applicable specifications. Where there were incompatible deviations in the test parameters of the applied specifications, then the EUT was tested using both.

OPINIONS AND INTERPRETATIONS

UKAS Accreditation's do not cover opinions and interpretations and any expressed herein are outside the scope of any UKAS Accreditation