TUV Product Service, Octagon House, Concorde Way, Segensworth North,
Fareham, Hampshire, PO15 5RL, United Kingdom
Tel: +44(0)1489 558100. Website: www.tuvps.co.uk

TEST HOUSE CERTIFICATE

CLIENT:	Vartech Systems Inc. 11529 Sun Belt Court Baton Rouge Louisiana 70809 USA	CERTIFICATE NUMBER	SX888975/015/004 Issue 01
		PROJECT NUMBER	OS611027
		CLIENT'S ORDER NUMBER	Q46742

INCOMING RELEASE NOTE	Declaration of Build Status BO611027
DATE OF RECEIPT	14th April 2003
TEST ITEM	19" Marine TFT Monitor
NUMBER OF ITEMS TESTED	One
SERIAL NUMBER	32558001
PART NUMBER	VarTech VT190RP
TEST SPECIFICATION AND ISSUE	EN 60945; 2002 Lloyds Registry Test Specification No 1: 2002
DATE OF TEST	14th May – 21st July 2003
TESTS APPLIED	See Table Below

SPECIFICATION	TEST
EN 60945 Section 8.7	Vibration
EN 60945 Section 8.2	Dry Heat
EN 60945 Section 8.3	Damp Heat
LR Type Approval System Test Specification No 1 Section 14	Humidity Test 1 – Cyclic
EN 60945 Section 8.4.2	Low Temperature
EN 60945 Section 11.2	Compass Safe Distance
EN 60945 Section 11.1	Acoustic Noise
EN 60945 Section 12.1	Safety, Protection Against Hazardous Voltage

See further details on Page 3 & 4.

RESULT OF TESTS: The Equipment Under Test (EUT) met the specification requirements for the applied tests. See Page 2.

APPROVED BY: D Grace

DATE: 26th April 2006

D H Grace
Authorised Signatory

RESULT OF TESTS (continued)

EN 60945: 2002 – Section 8.7 – Vibration

The unit showed no sign of damage or deterioration on completion of the test. All functional tests carried out by TUV Product Service showed the unit to be operating correctly.

EN 60945: 2002 – Section 8.2 – Dry Heat

The unit showed no sign of damage or deterioration on completion of the test. All functional tests carried out by TUV Product Service showed the unit to be operating correctly

EN 60945: 2002 – Section 8.3 – Damp Heat

The unit showed no sign of damage or deterioration on completion of the test. All functional tests carried out by TUV Product Service showed the unit to be operating correctly

Lloyds Register: LR Type Approval System: Test Specification No 1: Section 14 – Damp Heat Cyclic

The unit showed no sign of damage or deterioration on completion of the test. All functional tests carried out by TUV Product Service showed the unit to be operating correctly.

EN 60945: 2002 – Section 8.4.2 – Low Temperature

The unit showed no sign of damage or deterioration on completion of the test. All functional tests carried out by TUV Product Service showed the unit to be operating correctly

EN 60945: 2002 – Section 11.2 – Compass Safe Distance

Test 1: A third of a degree deflection was found at 1650 mm distance of the unit from the compass.
Test 2: A third of a degree deflection was found at 1400mm distance of the unit from the compass.
Test 3: A third of a degree deflection was found at 1105 mm distance of the unit from the compass.

EN 60945: 2002 – Section 11.1 – Acoustic Noise

The Monitor met the requirements of EN 60945: Clause 11.1 for Acoustic Noise and Signals.
The sound pressure level from the powered Monitor showed no increase above the ambient noise level of 33.5dB(A) (The limit is 60dB(A)).

EN 60945: 2002 – Section 12.1 – Safety, Protection Against Hazardous Voltage

There was no location on the Unit at which the Test Finger could be inserted.

TESTS APPLIED

EN 60945: 2002 – Section 8.7 – Vibration

The unit was fixed to a vibration fixture via its front fixings and then bolted to the vibrator table.
The unit was then subjected to a sinusoidal resonance search test in each of three mutually perpendicular axes. The vibration levels were :

3 Hz to 13.2 Hz at 1 mm peak displacement,
13.2 Hz to 100 Hz at 0.7g peak acceleration
Sweep rate 0.5 octaves/minute

EN 60945: 2002 – Section 8.2 – Dry Heat
The powered unit was installed in a climatic chamber at ambient conditions. The unit was then subjected to the following temperature cycle.
1. +25°C to +55°C at 1°C per minute
2. +55°C for 16 hours, after 15 hours the unit was functioned i.a.w. Clause 8.2.2.2.
3. +55°C to +25°C at 1°C per minute
4. +25°C for a minimum of 1 hour

EN 60945: 2002 – Section 8.3 – Damp Heat

The un-powered unit was installed in a climatic chamber at ambient conditions.
The unit was then subjected to the following temperature and humidity cycle.

1. Increase from normal room temperature and relative humidity to 40°C and 93% relative humidity (rh) over a period of 3 hours
2. +40°C/93%rh for 16 hours, after 14 hours the unit was powered and functioned i.a.w. Clause 8.3.1.2
3. +40°C/93%rh to normal room temperature and relative humidity over a period in excess of 1 hour
4. Normal room temperature and humidity for a minimum of 1 hour

Lloyds Register: LR Type Approval System: Test Specification No 1: Section 14 – Damp Heat Cyclic

The powered Monitor was installed in a climatic chamber at ambient conditions.
The unit was then subjected to two of the following temperature/humidity cycles:
Temperature raised from 20°C to 55°C over a period of 2 hours.
1. +55°C/93% relative humidity (rh) for a period of 12 hours.
2. +55°C to 20°C over a period of 2 hours.
3. 20°C/93%rh for a period of 6 hours

EN 60945: 2002 – Section 8.4.2 – Low Temperature

The unpowered unit was installed in a climatic chamber at ambient conditions. The unit was then subjected to the following temperature cycle.
1. +25°C to -15°C at 1°C per minute
2. -15°C for 16 hours, after 14 hours at -15°C the unit was powered and functioned for the remaining 2 hours at -15°C
3. -15°C to +25°C at 1°C per minute
4. +25°C for a minimum of 1 hour

TESTS APPLIED (continued)

EN 60945: 2002 – Section 11.2 – Compass Safe Distance

The right hand side of the Unit was found to be the worst case and this was used for the tests. The unit was then subjected to the following tests:

Test 1:In the magnetic condition in which it was received.
Test 2:After normalizing within a Helmholtz Coil.
Test 3:In the energized condition.

EN 60945: 2002 – Section 11.1 – Acoustic Noise

The measurements were taken using a B&K Sound Level Meter at 1m from the equipment under test in accordance with the specification.

EN 60945: 2002 – Section 12.1 – Safety, Protection Against Hazardous Voltage

Insertion of the jointed finger, straight and in a bent position, was tested in every potential access point of the unit.