*AAEON* Technology INC.
ISO-9001/ISO-14001 Certified
Industrial Automation PCs

# HSB-440I A0.1
# Thermal Image Analysis Report

**Release Date: APR. 16, 2003**

| | | |
|---|---|---|
| 2003-04-16 | Wayne Chen | Rex Chang |
| **Issue Stamp** | **A.V.P.** | **Test Engineer** |

# Thermal Image Analysis

Ⅰ. **Model Name:** **HSB-440I Rev.A0.1 (BIOS:0.1 )**

Ⅱ. **Description:** **Half-size CPU Card**

Ⅲ. **Date:** **APR. 16, 2003**

Ⅳ. **Measure Site:** **AAEON DV Dept.**

Ⅴ. **Issued by :** **Rex Chang**

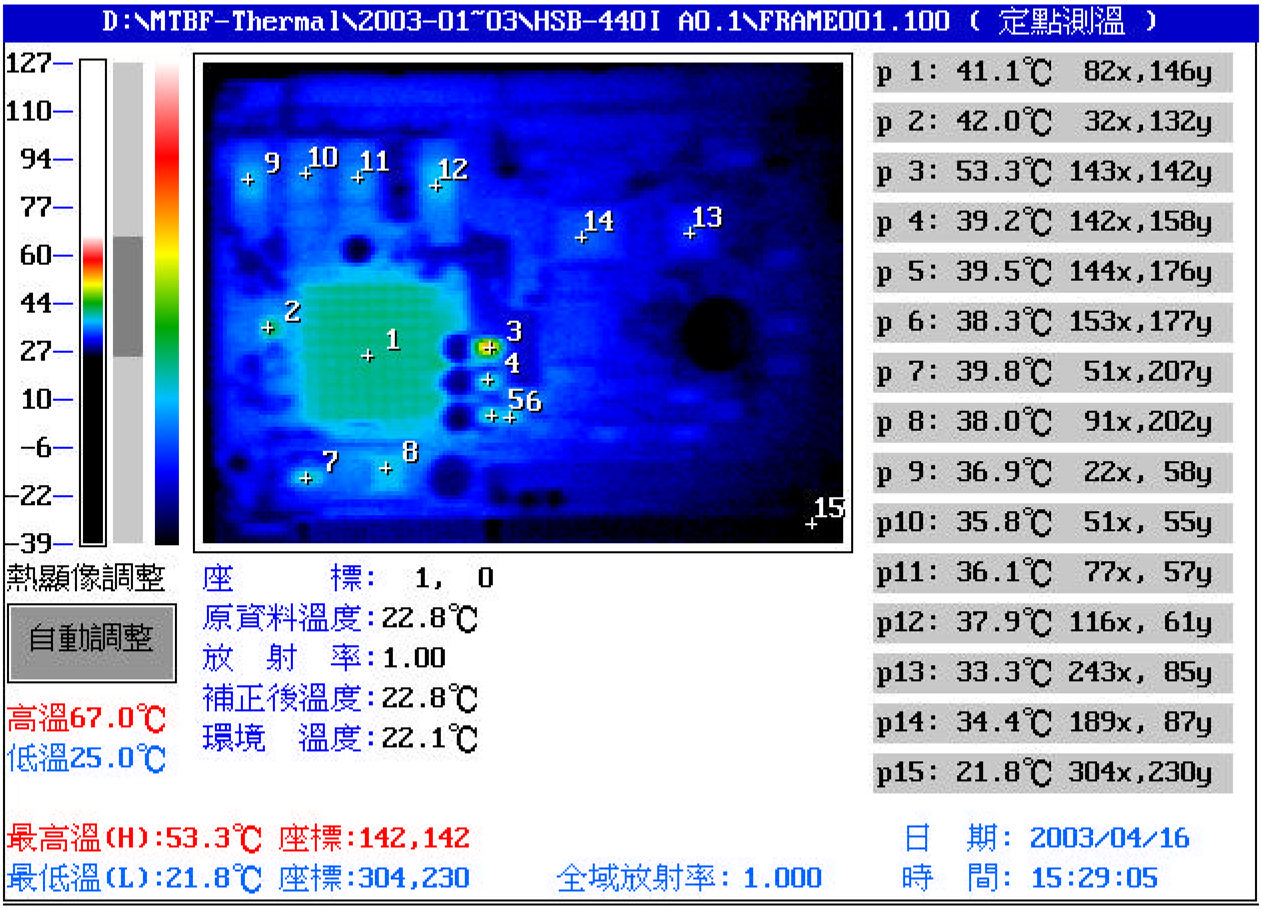
Ⅵ.**Equipment:** **TVS-100 series by NIPPON AVIONICS CO., LTD.**

## Ⅶ. Simulation Environment:

- **Temperature: 21. 9degrees C**
- **CPU: Embedded Low power STPC ATLAS 100/133 MHz processor**
- **RAM: Onboard 64MB SDRAM ELPIDA D45128163G5-A75-9JF(PC-100)**
- **Compact Flash : PQI 32MB**
- **Application Software: QAPlus5.5**
- **Take Picture Time: Power on 30 minutes after**

## Temperature Profile Test:

### Component Side :



D:\MTBF-Thermal\2003-01~03\HSB-440I A0.1\FRAME001.100 ( 定點測溫 )

高溫67.0℃
低溫25.0℃

座　　標: 1, 0
原資料溫度:22.8℃
放　射　率:1.00
補正後溫度:22.8℃
環境　溫度:22.1℃

```
p 1: 41.1℃  82x,146y
p 2: 42.0℃  32x,132y
p 3: 53.3℃ 143x,142y
p 4: 39.2℃ 142x,158y
p 5: 39.5℃ 144x,176y
p 6: 38.3℃ 153x,177y
p 7: 39.8℃  51x,207y
p 8: 38.0℃  91x,202y
p 9: 36.9℃  22x, 58y
p10: 35.8℃  51x, 55y
p11: 36.1℃  77x, 57y
p12: 37.9℃ 116x, 61y
p13: 33.3℃ 243x, 85y
p14: 34.4℃ 189x, 87y
p15: 21.8℃ 304x,230y
```

最高溫(H):53.3℃ 座標:142,142
最低溫(L):21.8℃ 座標:304,230　全域放射率: 1.000

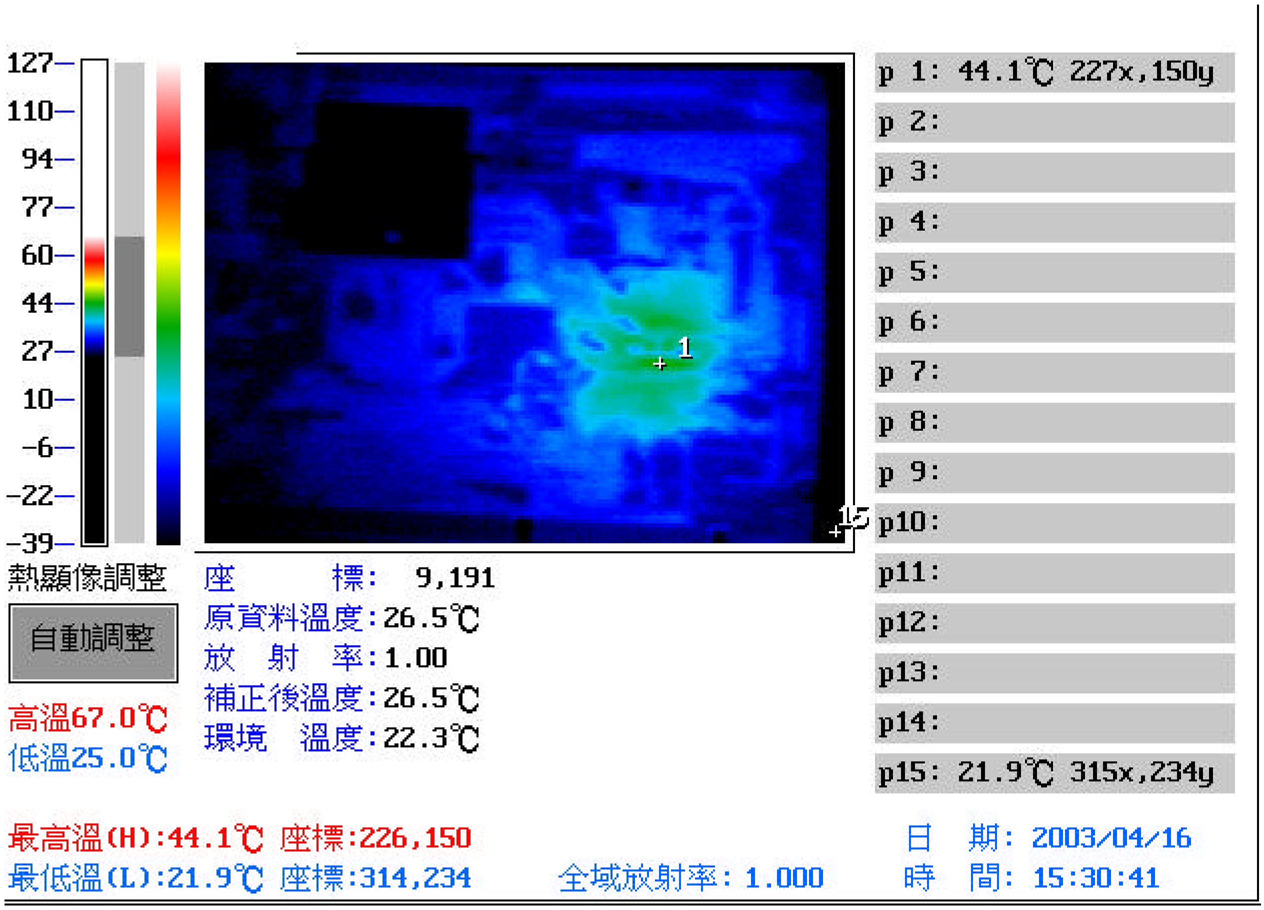
日　期: 2003/04/16
時　間: 15:29:05

| Point | Position | Describe | Ts | Tm | Note |
|---|---|---|---|---|---|
| 1 | U13 | ST CPU.PBGA 516Pin.CPU/NB/SB All in one/133MHz.STPC - ATLAS.STPCI2HEYC | | 41.1 ℃ | |
| 2 | U12 | IC.SMD SOP.8P Clock Output Buffer.ICS.ICS9112-16 | | 42.0 ℃ | |
| 3 | U14 | IC.SMD.SOIC 8P.Ultra Low Dropout Regulator.IR.IRU1150CS | | 53.3 ℃ | |
| 4 | L1 | INDUCTOR.3.3uH 3A.20%.SMD 2Pin.震元.SMTDR54-3R3M | | 39.2 ℃ | |
| 5 | U21 | Dual N-Channel.SMD SO-8.2.5V MOSFET.APEC.AP9926M | | 39.5 ℃ | |
| 6 | U22 | IC.SMD SOP.8Pin Switching PWM Controller.IR.IRU3037CS | | 38.3 ℃ | |
| 7 | U32 | IC.SMD.SOIC 14P.TI.SN7406 | | 39.8 ℃ | |
| 8 | U33 | GAL.PLCC.20P Blank.LATTICE.PALCE16V8H-25JC/4 | | 38.0 ℃ | |
| 9 | U2 | IC.SMD SDRAM.8M*16 PC-133 TSOPII 54P3.3V.ELPIDA.UPD45128163G5-A75-9JF | | 36.9 ℃ | |
| 10 | U3 | IC.SMD SDRAM.8M*16 PC-133 TSOPII 54P3.3V.ELPIDA.UPD45128163G5-A75-9JF | | 35.8 ℃ | |
| 11 | U4 | IC.SMD SDRAM.8M*16 PC-133 TSOPII 54P3.3V.ELPIDA.UPD45128163G5-A75-9JF | | 36.1 ℃ | |
| 12 | U5 | IC.SMD SDRAM.8M*16 PC-133 TSOPII 54P3.3V.ELPIDA.UPD45128163G5-A75-9JF | | 37.9 ℃ | |
| 13 | U8 | IC.SMD.LQFP 100P PCI Ethernet Chip.RELTEK.RTL8139DL | | 33.3 ℃ | |
| 14 | U7 | IC.SMD.128P QFP Super I/O.Winbond.W83977F-A | | 34.4 ℃ | |
| 15 | | The Room Temperature | | 21.8 ℃ | |

1. Operation Temperature (℃):
Ts = Defined by component specification ; Tm = Measured by DV

# Temperature Profile Test:

## Solder Side :



p 1: 44.1℃ 227x,150y
p 2:
p 3:
p 4:
p 5:
p 6:
p 7:
p 8:
p 9:
p10:
p11:
p12:
p13:
p14:
p15: 21.9℃ 315x,234y

座　　標:　9,191
原資料溫度:26.5℃
放　射　率:1.00
補正後溫度:26.5℃
環境　溫度:22.3℃

高溫67.0℃
低溫25.0℃

最高溫(H):44.1℃ 座標:226,150
最低溫(L):21.9℃ 座標:314,234
全域放射率: 1.000
日　期: 2003/04/16
時　間: 15:30:41

| Point | Position | Describe | Ts | Tm | Note |
|---|---|---|---|---|---|
| 1 | U13 | Reversed side of PCB (ST CPU.PBGA CPU/NB/SB All in one/133MHz.STPC - ATLAS.STPCI2HEYC) |  | 44.1 ℃ |  |
| 2 |  |  |  | ℃ |  |
| 3 |  |  |  | ℃ |  |
| 4 |  |  |  | ℃ |  |
| 5 |  |  |  | ℃ |  |
| 6 |  |  |  | ℃ |  |
| 7 |  |  |  | ℃ |  |
| 8 |  |  |  | ℃ |  |
| 9 |  |  |  | ℃ |  |
| 10 |  |  |  | ℃ |  |
| 11 |  |  |  | ℃ |  |
| 12 |  |  |  | ℃ |  |
| 13 |  |  |  |  |  |
| 14 |  |  |  |  |  |
| 15 |  | The Room Temperature |  | 21.9 ℃ |  |

1. Operation Temperature (℃):

Ts = Defined by component specification ; Tm = Measured by DV