

NSTL USB Low Speed Device Test Report

Company Name:	HOLTEK SEMICONDUCTOR INC.
Model Name:	HT82M22A OPTICAL MOUSE
Device Type:	HT82M22A
Issue Date:	4/28/2005
Test Result:	PASS

USB-IF Test Report

Company

Company Name: HOLTEK SEMICONDUCTOR INC.
VID (Dec) 1241 The VID for the company who apply the USB-IF logo.

Technical Contact

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Device Information:

- Retail Device Device and Silicon Silicon Only
 Hi Power Low Power
 Bus Powered Self Powered
 Low Speed
 Tethered Un-tethered with specified "B" connector
(All of low speed devices must use captive cable)

Device Category: PC Device Description: MOUSE IC

VID: 1241 PID: 1166

Tested O.S. Windows 2000 Windows XP **(Standard test fee will cover 1 OS only.)**

Tester: [Eric Chen](#)
Review: [James Ou](#)
Date: [04/28/2005](#)

Over All Test Result: Pass

Frameworks Test Result: Pass Fail

Chapter 9: Pass Fail HID View: Pass Fail N/A

Interface: 1 MAX Power: 100 mA Remote Wakeup: Yes

Power Current Test Result: Pass Fail

Operating Power: 67.6 mA Unconfiguration Power: 6.42 mA (<100mA)

(≤ Max Power ≤ 100mA for Low Power)

(≤Max Power ≤ 100mA)

(≤ Max Power ≤ 100mA for Self Power)

(≤ Max Power ≤ 500mA for High Power)

Configuration Power: 33.2 mA

(≤ Max Power ≤ 100mA for Low Power)

(≤ Max Power ≤ 500mA for High Power)

Suspend Mode Power with Remote Wake up Function: 1444 uA

Suspend Mode Power without Remote Wake up Function: 1444 uA

(≤ 2500uA for High Power /w Remote Wake Up)

(≤ 500uA for others)

Interoperability Test Overall Result: Pass Fail OS: W2k XP

EHCI Controller: (Intel D865GLC Motherboard)

- | | | | |
|---|--|-------------------------------|---|
| 1. Enumeration and Driver installation: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |
| 2. Operation with Default Driver: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |
| 3. Update Driver: | <input type="checkbox"/> Pass | <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> N/A |
| 4. Install Additional Software: | <input type="checkbox"/> Pass | <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> N/A |
| 5. DUT Demonstrates Operation: | <input type="checkbox"/> Pass | <input type="checkbox"/> Fail | <input checked="" type="checkbox"/> N/A |
| 6. DUT Operation Speed: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |
| 7. Interoperability – Operate all device: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |
| 8. Hot Detach & Reattach: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |
| 9. Topology Change: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |
| 10. Warm Boot: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |
| 11. Cold Boot: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |
| 12. Active S1 Suspend and Resume: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |
| 13. Inactive S1 Suspend and Resume: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |
| 14. Active S3 Suspend and Resume: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail | |

UHCI Controller: (Intel D865GLC Motherboard)

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|---|--|-------------------------------|
| 1. Enumeration and Driver installation: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
|---|--|-------------------------------|

- 2. Interoperability – Operate all device: Pass Fail
- 3. Hot Detach & Reattach: Pass Fail
- 4. Topology Change: Pass Fail
- 5. Warm Boot: Pass Fail
- 6. Cold Boot: Pass Fail
- 7. Active S1 Suspend and Resume: Pass Fail
- 8. Inactive S1 Suspend and Resume: Pass Fail
- 9. Active S3 Suspend and Resume: Pass Fail

OHCI Controller: (PCI Add-on Card)

- 1. Enumeration and Driver installation: Pass Fail
- 2. Interoperability – Operate all device: Pass Fail
- 3. Hot Detach & Reattach: Pass Fail
- 4. Topology Change: Pass Fail
- 5. Warm Boot: Pass Fail
- 6. Cold Boot: Pass Fail
- 7. Active S1 Suspend and Resume: Pass Fail
- 8. Inactive S1 Suspend and Resume: Pass Fail
- 9. Active S3 Suspend and Resume: Pass Fail

EHCI Controller: (PCI Add-on Card)

- 1. Enumeration and Driver installation: Pass Fail
- 2. Active S3 Suspend and Resume: Pass Fail

Signal Quality Test Result: Pass Fail

Low Speed UP Stream Signal Quality: Pass Fail

Inrush Current Test: Pass Fail

($\leq 100\text{mA}$ and $200\mu\text{C}$)

Back Voltage Test: (Enumerate before/after) Pass Fail

D+: 0V / 0V

D- : 0V / 0V

V_{Bus}: 0V / 0V

(All values $\leq 400\text{mV}$)

More Detail Test Result:

1. Power Current Test: Pass with waiver
The suspend current cannot exceed 500uA.

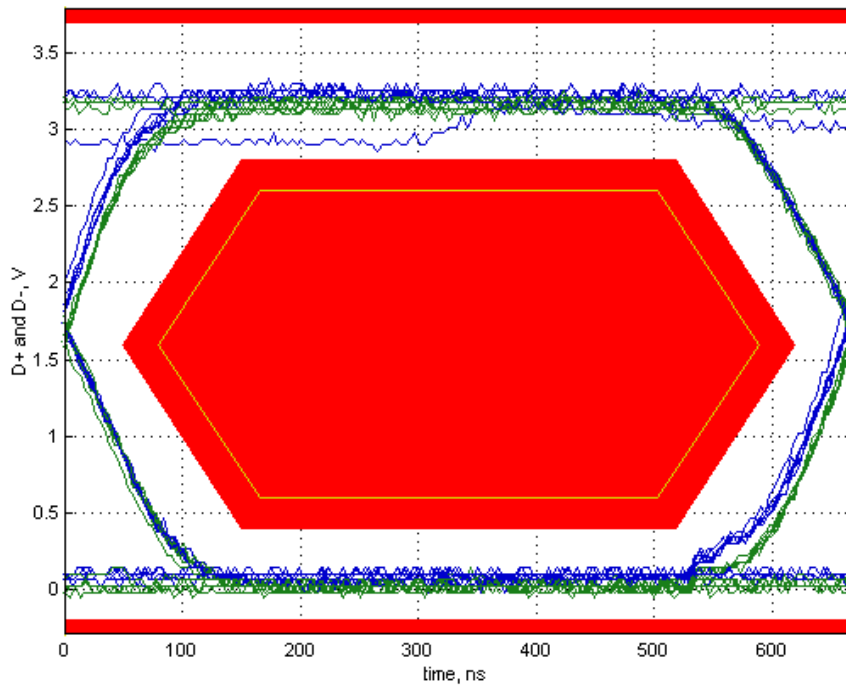
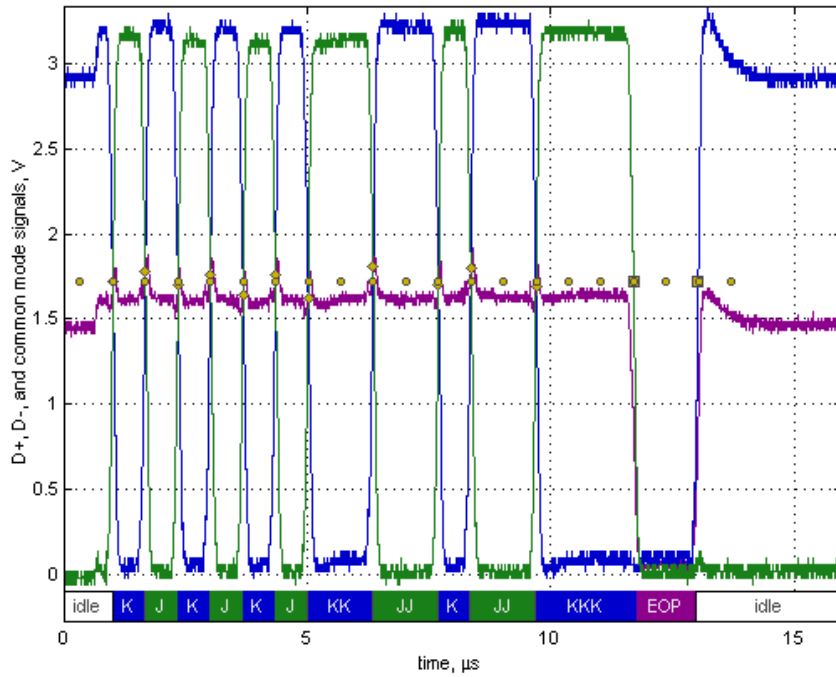
*** **Specification:** All devices must draw 500uA or less current while in suspend unless the device is high-powered and has remote wakeup enabled where 2500uA is permitted ***

*** **Waiver ID 17:** The USB-IF allows any device consume up to 2500uA while suspended ***

2. Low Speed Upstream Signal Quality Test: Pass

- Overall result: pass!
- Signal eye:
eye passes
- EOP width: 1.33μs
EOP width passes
- Receivers: reliable operation on tier 6
receivers pass
- Measured signaling rate: 1.4956MHz
signal rate passes
- Crossover voltage range: 1.62V to 1.81V, mean crossover 1.73V
(first crossover at 1.72V, 10 other differential crossovers checked)
crossover voltages pass
- Consecutive jitter range: -3.1ns to 3.2ns, RMS jitter 2.2ns
Paired JK jitter range: -1.8ns to 1.9ns, RMS jitter 1.1ns
Paired KJ jitter range: -0.4ns to 1.5ns, RMS jitter 0.7ns
jitter passes

[Signal Data and Eye](#)



3. Inrush Current Test: Pass

- Overall result: pass!
- Inrush at 5.150V: 26.75 μ C
inrush passes

Hot Plug (Attach) Current Draw

