

# USB-IF COMPLIANCE PROGRAM

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## USB 2.0 Test Report for Full Speed Device

TM

Company Name: Holtek Semiconductor

Model Name: HT82A836R

Product Type: Audio Class

Product Receive Date: 2008/01/25

Test Start Date: 2008/01/25

Report Date: 2008/01/29

Test Result: **PASS**

Notice: Test result is valid only to the original tested device model. Allion reserves the right to prohibit others to distort, isolate, falsify, copied and/or by any process to change the content of this test report unless it is prior approved by Allion.

Project ID : UNC-HOK-USB-014\_1



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## Company

Company Name: Holtek Semiconductor  
Company Address: No.3, Creation Rd II, Science Park, Hsinchu 300, Taiwan, R.O.C.  
VID (Dec) 1241 The VID for the company who apply the USB-IF logo.

## Technical Contact

Name: Lee Chien Chia (李乾嘉)  
Phone Number: 03-5631999 ex. 1218  
E-Mail: eric\_lee@holtek.com.tw  
FAX Number: 03-5641557

## Marketing Contact

Name: \_\_\_\_\_  
Phone Number: \_\_\_\_\_  
E-Mail: \_\_\_\_\_  
FAX Number: \_\_\_\_\_

## Product Information:

Silicon Model Name: \_\_\_\_\_ TID (If you know): \_\_\_\_\_

\*\*\* These are requirement fields. All testing will be held until information is completed. \*\*\*

- Retail Device       Device and Silicon       Silicon Only  
 Hi Power       Low Power  
 Bus Powered       Self Powered  
 Untethered B       Tethered

Highest capacity tested for Mass Storage Device: \_\_\_\_\_

Device Category: \_\_\_\_\_ Device Description: \_\_\_\_\_

VID: 0x04D9      PID: 0x2836

Tested OS:  Win 2000  Win XP (Standard test fee will cover 1 OS only.)

Tester: Alex Chuang

Authorized Signature: *Eric Chen*

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## Legacy USB Compliance Tests

**Frameworks Test Result:**  Pass  Fail

Chapter 9:  Pass  Fail

HID View:  Pass  Fail  N/A

MSC Test:  Pass  Fail  N/A

UVC Test:  Pass  Fail  N/A

Interface: 4 MAX Power: 500 mA Remote Wakeup: Yes

**Power Current Test Result:**  Pass  Fail

Operating Power: 34.32 mA Unconfiguration Power: 25.97 mA (<100mA)  
(=< Max Power <= 100mA for Low Power) (<=Max Power <= 100mA)

Configuration Power: 28.39 mA  
(=< Max Power <= 100mA for Low Power)  
(=< Max Power <= 500mA for High Power)

Suspend Mode Power with Remote Wake Up: 481 uA

Suspend Mode Power without Remote Wake Up: 481 uA  
(=< 2500uA for High Power /w Remote Wake Up)  
(=< 500uA for others)

**Interoperability Test Overall Result:**  Pass  Fail OS:  W2k  XP

### EHCI Controller:

- |   |  |                               |
|---|--|-------------------------------|
| 1. Enumeration and Driver installation:   | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
| 2. Check operation of device              | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
| 3. Interoperability – Operate all device: | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
| 4. Hot plug test                          | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
| 5. Warm Boot test                         | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
| 6. Remote Wake-up test                    | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
| 7. S3 Active Standby Test                 | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
| 8. S3 Active Standby Resume Test          | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
| 9. Topology change                        | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
| 10. S4 Active Hibernate Test              | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |
| 11. S4 Active Hibernate Resume Test       | <input checked="" type="checkbox"/> Pass | <input type="checkbox"/> Fail |

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## UHCI Controller:

12. Interoperability – Operate all device:  Pass  Fail

## OHCI Controller:

13. Interoperability – Operate all device:  Pass  Fail

**Signal Quality Test Result:**  Pass  Fail

Full Speed UP Stream Signal Quality:  Pass  Fail

Inrush Current Test:  Pass  Fail

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

D+: 0 mV / 0 mV

D- : 0 mV / 0 mV

V<sub>Bus</sub>: 0 mV / 0 mV

(All values <= 400mV)

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## More Detail Test Result:

### 1. Full Speed Upstream Signal Quality: Pass

- Overall result: pass!
- Signal eye:  
eye passes
- EOP width: 167.39 ns  
EOP width passes
- Measured signaling rate: 12.0012 MHz  
signal rate passes
- Crossover voltage range: 1.40 V to 1.68 V, mean crossover 1.55 V  
(first crossover at 1.66 V, 10 other differential crossovers checked)  
crossover voltages pass
- Consecutive jitter range: -439.394 ps to 735.606 ps, RMS jitter 468.661 ps  
Paired JK jitter range: -150.000 ps to -50.000 ps, RMS jitter 111.803 ps  
Paired KJ jitter range: -1041.667 ps to 1075.000 ps, RMS jitter 748.633 ps  
\*\*\* jitter failure \*\*\* (max consecutive jitter 2000.00 ps, max paired jitter 1000.00 ps)  
\*\*\* waiver granted \*\*\*

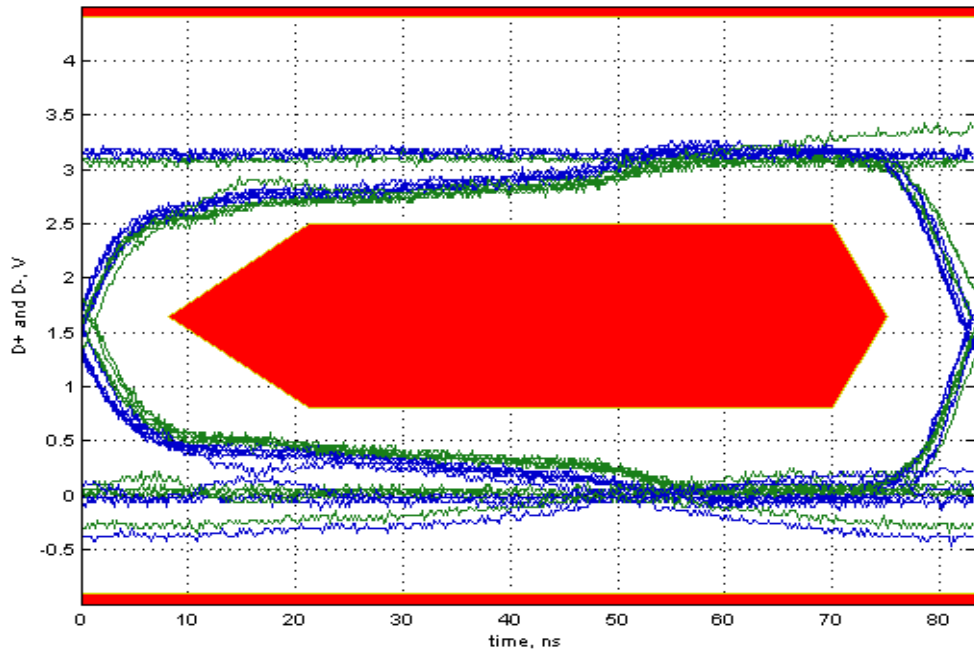
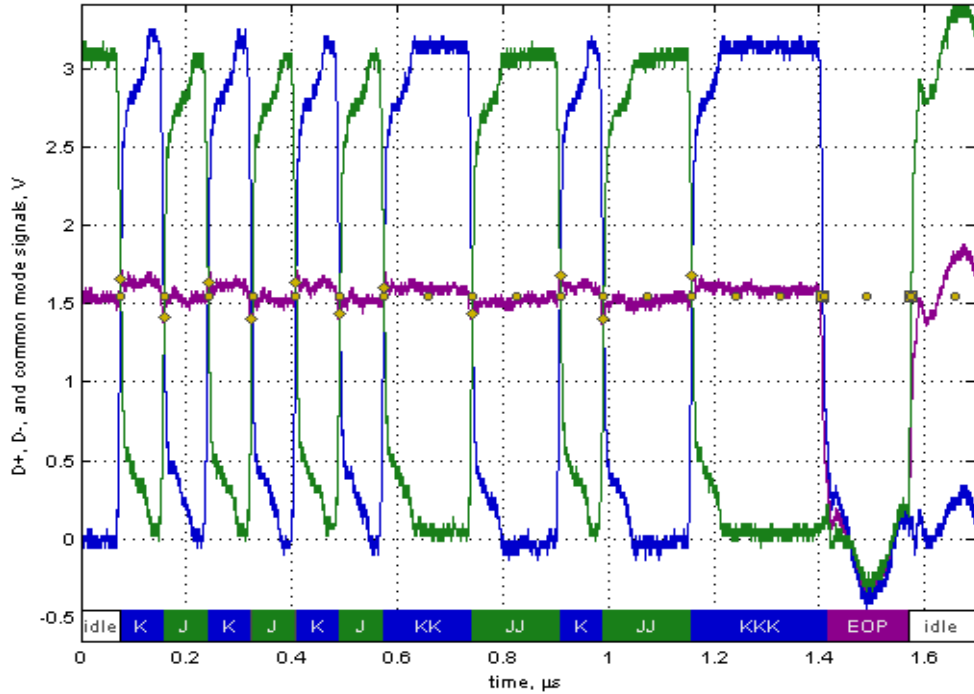
### Additional Information

- Rising Edge Rate: 145.97 V/us (Equivalent risetime = 18.09 ns)  
(minimum 132.00 V/us, maximum 660.00 V/us)
- Falling Edge Rate: 173.93 V/us (Equivalent risetime = 15.18 ns)  
(minimum 132.00 V/us, maximum 660.00 V/us)
- Edge Rate Match: 16.08% (limit +/-10%)

### Signal Data and Eye

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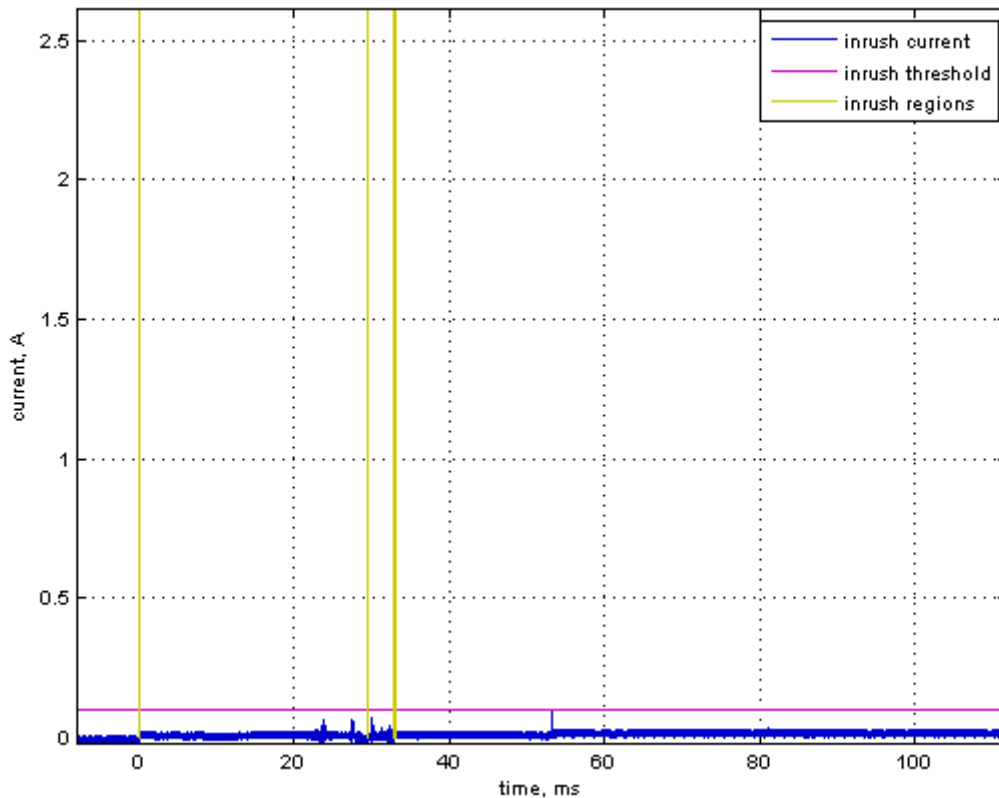
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## 2. Inrush Current: Pass

- Overall result: pass!
- Inrush at 5.000 V: 28.25  $\mu\text{C}$   
inrush passes
- Region 1 Start: 0.000253 ms - End: 0.125 ms = 28.25  $\mu\text{C}$
- Region 2 Start: 29.5 ms - End: 29.6 ms = 5.317  $\mu\text{C}$
- Region 3 Start: 33 ms - End: 33.1 ms = 0.426  $\mu\text{C}$

### Hot Plug (Attach) Current Draw



### Test Procedure Reference:

1. Universal Serial Bus Implementers Forum Full and Low Speed Electrical and Interoperability Compliance Test Procedure, version: 1.3

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