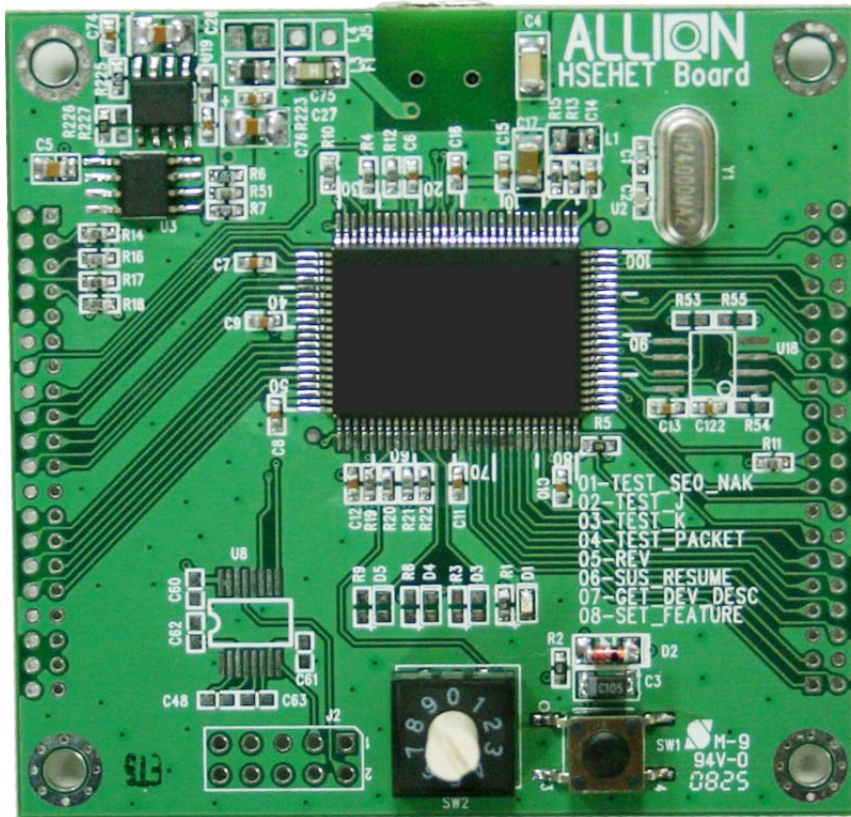


Allion HSEHET User Manual

High Speed Embedded Host Electrical Test Board

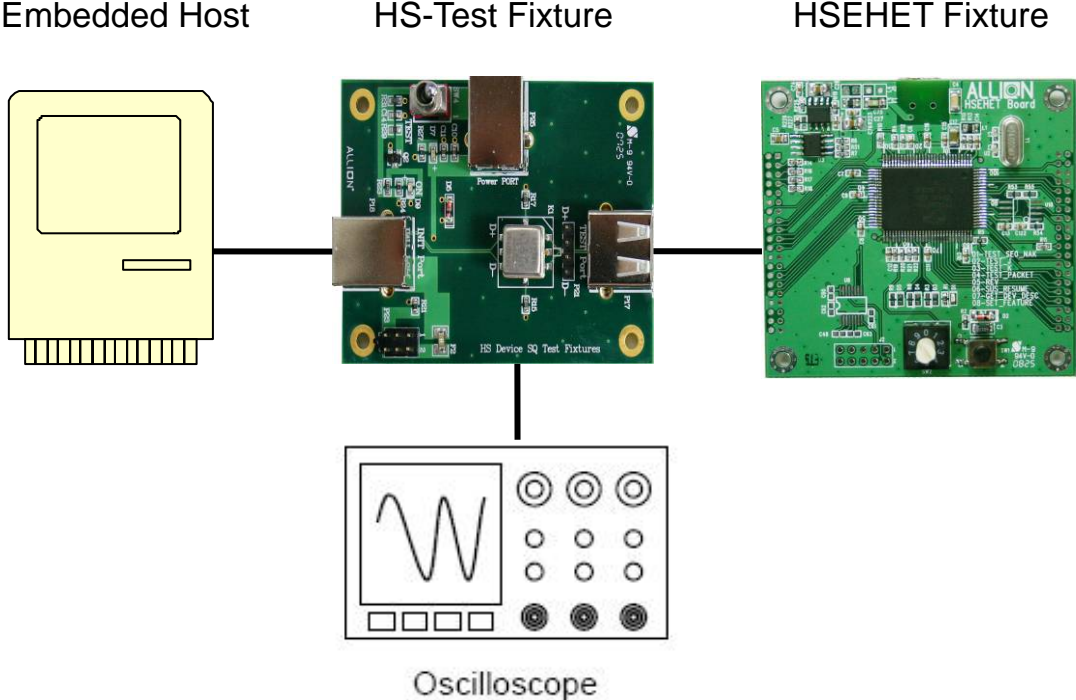


1 Basic Function:

Part No.	Function
SW1	Reset USB connection and force Host Under Test to detect HSEHET again
SW2	Switch to change the Test Mode PID value. Support 10 PID values: 0 == PID 0x0100 Reserved 1 == PID 0x0101 TEST_SE0_NAK 2 == PID 0x0102 TEST_J 3 == PID 0x0103 TEST_K 4 == PID 0x0104 TEST_PACKET 5 == PID 0x0105 Reserved 6 == PID 0x0106 HS_HOST_PORT_SUSPEND_RESUME 7 == PID 0x0107 SINGLE_STEP_GET_GEV_DESC 8 == PID 0x0108 SINGLE_STEP_SET_FEATURE 9 == PID 0x0109 Reserved

2 Test Procedure (base on EHSET_v1.01 Section 4)

2.1 Test Environment:



The detail scope setting for all test items list below should refer to Host High Speed Electrical Test Procedure

http://www.usb.org/developers/docs#comp_test_procedures .

● 4.1 High Speed Signal Quality (EL_2, EL_3, EL_6, EL_7)

#	Test Fixtures	Host
1	Prepare your Host High Speed Signal Quality test fixture (HS-Test Fixture) and test environment	
2	Connect the Host HS-Test Fixture into the port under test of the Host controller	
3	Switch Allion HSEHET SW2 to '4'	
4	Connect the Init port of the HS-Test Fixture into the Allion HSEHET test fixture (If there is no Init port on another brand of the Host HS-Test Fixture, connect Allion HSEHET into the port under test of the Host controller for 15 seconds, then replace Allion HSEHET with the Host HS-Test Fixture)	
5		Host enumerates the HSEHET and responds to the TEST_PACKET PID by continuously sending test packets
6	Capture waveform and analyze with suitable tool	
7	Repeat on all remaining downstream ports	

● 4.2.1 SINGLE_STEP_DEV_DESC (EL_21, EL_23, EL_25)

#	Test Fixtures	Host
1	Prepare your Host HS-Test Fixture and test environment	
2	Connect Host HS-Test Fixture into the port under test of the Host controller with 15cm USB Standard A to Standard B cable (If there is no Init port on another brand of the Host HS-Test Fixture, replace the Host HS-Test Fixture with the Device HS-Test Fixture)	
3	Switch Allion HSEHET SW2 to '7'	
4	Connect the Init port of the Host HS-Test Fixture into the Allion HSEHET test fixture with 2m USB Standard A to Micro B cable	
5		Host Enumerates the HSEHET and begins to issue SOFs to HSEHET for 15 seconds
6	Verify SOFs are being transmitted and raise the scope's trigger until SOFs are no long detected	
7		After 15 seconds of SOFs, the host initiates the setup phase of the GetDescriptor() command. The host sends SETUP and DATA (first and second) packets back to back
8	The HSEHET send an ACK (third) packet in response to the SETUP and DATA fro host. The scope triggers on the ACK from the HSEHET	
9	EL_21: Verify sync field in the SETUP and DATA (first and second) packets is 32 bits at 2.08 ns/bit	
10	EL_25: Verify EOP of the DATA (second) packet is 8 bits at 2.08 ns/bit	
11	EL_23: Measure interpacket gap between the SETUP and DATA (first and second) packets from the host is between 88 – 192 bits at 2.08 ns/bit	
12	Repeat on all remaining downstream ports	

● 4.2.2 SINGLE_STEP_SET_FEATURE (EL_22, EL_55)

#	Test Fixtures	Host
1	Prepare your Host HS-Test Fixture and test environment	
2	Connect Host HS-Test Fixture into the port under test of the Host controller with 15cm USB Standard A to Standard B cable (If there is no Init port on another brand of the Host HS-Test Fixture, replace the Host HS-Test Fixture with the Device HS-Test Fixture)	
3	Switch Allion HSEHET SW2 to '8'	
4	Connect the Init port of the Host HS-Test Fixture into the Allion HSEHET test fixture with 2m USB Standard A to Micro B cable	
5		Host enumerates the HSEHET and sends a GetDescriptor() to the HSEHET
6	The HSEHET sends an ACK in response to the DetDescriptor()	
7		The host sends SOFs for 15 seconds (it does NOT send the IN packet immediately)
8	Verify SOFs are being transmitted and raise the scope's trigger until SOFs are no long detected	
9		The host issues an IN (first) packet
10	The HSEHET sends DATA (second) packet. This triggers the scope	
11		The host sends an ACK (third) packet
12	EL_22: Measure response time between the DATA and ACK (second and third) packets. This must be between 8-192 bits at 2.08 ns/bit	
13	Lower the scope's trigger so that it triggers on an SOF. Stop the scope.	
14	EL_55: Measure the EOP width of the SOF packet. This must be 40 bits at 2.08 ns/bit	
15	Repeat on all remaining downstream ports	

- 4.3 Host CHIRP Timing (EL_33, EL_34, EL_35)

This test corresponds to “4.7 Host CHIRP Timing (EL_33, EL_34, EL_35)” in the HHSETP document. Please refer to specified test procedure for scope on http://www.usb.org/developers/docs#comp_test_procedures .

- 4.4.1 SUSPEND(EL_39) and 4.4.2 RESUME (EL_41)

#	Test Fixtures	Host
1	Prepare your Host HS-Test Fixture and test environment	
2	Connect Host HS-Test Fixture into the port under test of the Host controller with 15cm USB Standard A to Standard B cable (If there is no Init port on another brand of the Host HS-Test Fixture, replace the Host HS-Test Fixture with the Device HS-Test Fixture)	
3	Switch Allion HSEHET SW2 to '6'	
4	Connect the Init port of the Host HS-Test Fixture into the Allion HSEHET test fixture with 15cm USB Standard A to Micro B cable	
5		Host identifies SUSPEND/RESUME Test Mode VID/PID, wait 15 seconds for scope setup and suspends the port under test
6	EL_39: Measure time from the last SOF to full-speed J-state (transition to full-speed 3.0ms – 3.125 ms)	
7		After 15 seconds, the host drives a Resume K-state on the port under test, then starts sending SOFs
8	EL_41: Measure time from falling edge of D- to the first SOF (<3ms)	
9	Repeat on all remaining downstream ports	

● 4.5 Host Test_J (EL_9)

#	Test Fixtures	Host
1	Prepare your Host HS-Test Fixture and test environment	
2	Connect the Host HS-Test Fixture into the port under test of the Host controller	
3	Switch Allion HSEHET SW2 to '2'	
4	Connect the Init port of the HS-Test Fixture into the Allion HSEHET test fixture (If there is no Init port on another brand of the Host HS-Test Fixture, connect Allion HSEHET into the port under test of the Host controller for 15 seconds, then replace Allion HSEHET with the Host HS-Test Fixture)	
5		Host identifies Test_J Test Mode VID/PID and enter HS J state
6	EL_8: Measure D+ and D- voltage	
7	Repeat on all remaining downstream ports	

● 4.6 Host Test_K (EL_9)

#	Test Fixtures	Host
1	Prepare your Host HS-Test Fixture and test environment	
2	Connect the Host HS-Test Fixture into the port under test of the Host controller	
3	Switch Allion HSEHET SW2 to '3'	
4	Connect the Init port of the HS-Test Fixture into the Allion HSEHET test fixture (If there is no Init port on another brand of the Host HS-Test Fixture, connect Allion HSEHET into the port under test of the Host controller for 15 seconds, then replace Allion HSEHET with the Host HS-Test Fixture)	
5		Host identifies Test_K Test Mode VID/PID and enter HS K state
6	EL_8: Measure D+ and D- voltage	
7	Repeat on all remaining downstream ports	

● 4.7 Host Test_SE0 (EL_9)

#	Test Fixtures	Host
1	Prepare your Host HS-Test Fixture and test environment	
2	Connect the Host HS-Test Fixture into the port under test of the Host controller	
3	Switch Allion HSEHET SW2 to '1'	
4	Connect the Init port of the HS-Test Fixture into the Allion HSEHET test fixture (If there is no Init port on another brand of the Host HS-Test Fixture, connect Allion HSEHET into the port under test of the Host controller for 15 seconds, then replace Allion HSEHET with the Host HS-Test Fixture)	
5		Host identifies SE0 Test Mode VID/PID and drive an SE0
6	EL_9: Measure D+ and D- voltage	
7	Repeat on all remaining downstream ports	

If you have any question, please contact service@allion.com

www.allion.com

