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USB-IF 2.0 Compliance
Test Report
for Peripheral

Company Name: <u>NXP Semiconductors</u>

VID: <u>8137</u> The VID for the company who apply the USB-IF logo.

Model Name: <u>LPC55S69 / LPC55S69JBD100</u>

Product Type: <u>MSC</u>

Report Date: <u>03/05/2019</u>

Test Result: **<u>PASS</u>**

Tester: <u>**Sofiya Mayevskiy**</u>   **Authorized Signature:** <u>**Kayla Seliner**</u>

Company Information:

Company

Company Name: NXP Semiconductors
Company Address: 411 E Plumeria Dr. San Jose, CA 95134

Technical Contact

Name: Dezheng Tang (Tom)
Phone Number: N/A
E-Mail: dezheng.tang@nxp.com
FAX Number: N/A

Basic Speed Compliance Tests

Basic Speed Signal Quality Test Result   ☒ **Pass**   ☐ **Fail**

Connector Type: <u>Untethered</u> (Tethered means no standard B or special B connector)

Basic Speed Upstream Signal Quality: ☒ **Pass**   ☐ **Fail**

Inrush Current Test: ☒ **Pass**   ☐ **Fail**

Back Voltage Test Result   ☒ **Pass**   ☐ **Fail**

Enumerate before / after

Pin	Voltage (mV)	
D+	0	0
D-	0	0
V_{Bus}	0	0

(All values <= 400mV)

Miscellaneous: ☒ **Pass**   ☐ **Fail**

BC 1.2 Implemented Check: ☐ **Supported** ☒ **Not Supported**

If the upstream port has BC 1.2 capability, all items of BC 1.2 Portable Device category should be tested under this port for USB-IF certification.

Frameworks Test Result (USB20CV) ☒ Pass ☐ **Fail**

This test primarily covers USB-IF testing of devices and hubs for compliance with the standard commands in Chapters 9 and 11 of the USB 2.0 specification. This specification does not describe the full set of USB-IF tests and assertions for these devices.

Basic-Speed:

VID: 0x1FC9   PID: 0x0092

Chapter 9 Test: ☒ **Pass**   ☐ **Fail**

Interface: 1   MAX Power: 100 mA   Remote Wakeup: N/A

MSC Class Test: ☒ **Pass**   ☐ **Fail**   ☐ N/A

UVC Class Test: ☐ **Pass**   ☐ **Fail**   ☒ N/A

HID Class Test: ☐ **Pass**   ☐ **Fail**   ☒ N/A

Frameworks Test Result (USB3xCV)   ☒ Pass   ☐ **Fail**

All USB peripherals are required to enumerate on a SuperSpeed host controller and pass all applicable tests within USB3xCV. Failure framework test in USB3xCV will prevent certification.

Basic-Speed:

VID: 0x1FC9   PID: 0x0092

Chapter 9 Test: ☒ **Pass**   ☐ **Fail**

Interface: 1   MAX Power: 100 mA   Remote Wakeup: N/A

MSC Class Test: ☒ **Pass**   ☐ **Fail**   ☐ **N/A**

UVC Class Test: ☐ **Pass**   ☐ **Fail**   ☒ **N/A**

HID Class Test: ☐ **Pass**   ☐ **Fail**   ☒ **N/A**

Power Current Test Result   ☒ **Pass**   ☐ **Fail**

Basic-Speed: Low Powered Device   ☒ **Pass**   ☐ **Fail**

Unconfiguration Power: <u>0.18</u> mA
(<= 100mA)

Configuration Power: <u>0.18</u> mA
(<= Max Power <= 100mA for Low Power)
(<= Max Power <= 500mA for High Power)

Suspend Mode Power without Remote Wakeup: <u>168.7</u> uA
Suspend Mode Power with Remote Wakeup Enabled: <u>N/A</u> uA
Suspend Mode Power with Remote Wakeup Diabled: <u>N/A</u> uA
(<= 2500uA for Self Power Hub or Non Compound Device)
(<= 12500uA for Bus Power Hub or Compound Device)

Powered' State Suspend Mode Power: <u>169.2</u> uA
(<= 2500uA for not Supporting USB Battery Charging)
(<= 100mA for Supporting USB Battery Charging)

Operating Power: <u>0.19</u> mA
(<= Max Power <= 100mA for Low Power)
(<= Max Power <= 100mA for Self Power)
(<= Max Power <= 500mA for High Power)

Interoperability Test Overall Result   ☒ **Pass** ☐ **Fail**

Operating System: Win10

XHCI Host Controller:

Root Port

Enumeration and Driver installation	☒ **Pass** ☐ **Fail**	
Check operation of device	☒ **Pass** ☐ **Fail**	
Interoperability – Operate all devices	☒ **Pass** ☐ **Fail**	
Hot plug test – A Plug	☒ **Pass** ☐ **Fail**	
Hot plug test – B Plug	☒ **Pass** ☐ **Fail**	☐ **N/A**
S3 Active Standby Test	☒ **Pass** ☐ **Fail**	
Remote Wake-up Test	☐ **Pass** ☐ **Fail**	☒ **N/A**
S3 Active Standby Resume Test	☒ **Pass** ☐ **Fail**	
S4 Active Hibernate Test	☒ **Pass** ☐ **Fail**	
S4 Active Hibernate Resume Test	☒ **Pass** ☐ **Fail**	
Warm Boot Test	☒ **Pass** ☐ **Fail**	
Hybrid Boot Test	☒ **Pass** ☐ **Fail**	
Cold Boot Test	☒ **Pass** ☐ **Fail**	

Topology Change 1 (SS Tree)

Enumeration	☒ **Pass** ☐ **Fail**	
Check operation of device	☒ **Pass** ☐ **Fail**	
Interoperability – Operate all devices	☒ **Pass** ☐ **Fail**	
Hot plug test – A Plug	☒ **Pass** ☐ **Fail**	
Hot plug test – B Plug	☒ **Pass** ☐ **Fail**	☐ **N/A**
S3 Active Standby Test	☒ **Pass** ☐ **Fail**	
Remote Wake-up Test	☐ **Pass** ☐ **Fail**	☒ **N/A**
S3 Active Standby Resume Test	☒ **Pass** ☐ **Fail**	
S4 Active Hibernate Test	☒ **Pass** ☐ **Fail**	
S4 Active Hibernate Resume Test	☒ **Pass** ☐ **Fail**	
Warm Boot Test	☒ **Pass** ☐ **Fail**	
Hybrid Boot Test	☒ **Pass** ☐ **Fail**	
Cold Boot Test	☒ **Pass** ☐ **Fail**	

Topology Change 2 (HS Tree)

Enumeration	☒ Pass	☐ Fail
Check operation of device	☒ Pass	☐ Fail
Interoperability – Operate all devices	☒ Pass	☐ Fail
Hot plug test – A Plug	☒ Pass	☐ Fail
Hot plug test – B Plug	☒ Pass	☐ Fail ☐ N/A
S3 Active Standby Test	☒ Pass	☐ Fail
Remote Wake-up Test	☐ Pass	☐ Fail ☒ N/A
S3 Active Standby Resume Test	☒ Pass	☐ Fail
S4 Active Hibernate Test	☒ Pass	☐ Fail
S4 Active Hibernate Resume Test	☒ Pass	☐ Fail
Warm Boot Test	☒ Pass	☐ Fail
Hybrid Boot Test	☒ Pass	☐ Fail
Cold Boot Test	☒ Pass	☐ Fail

Topology Change 3 (FS Tree)

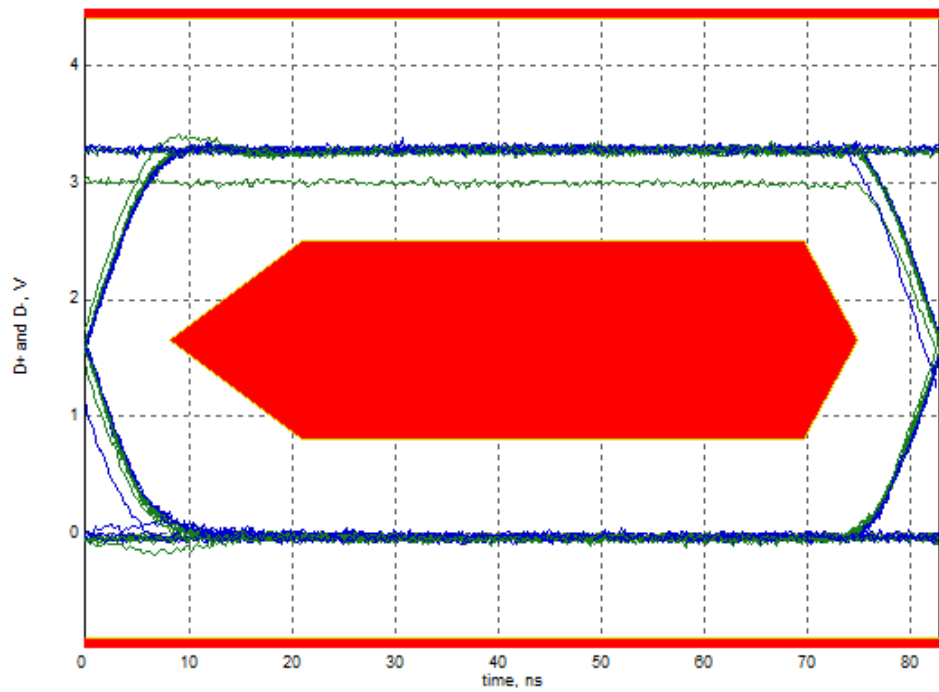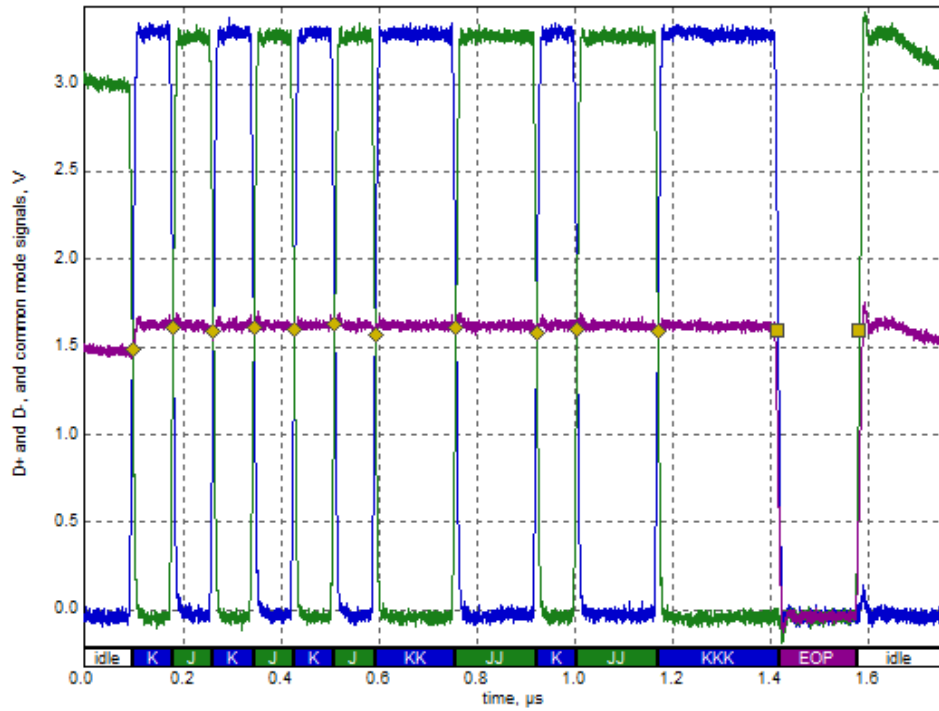|		
Enumeration	☒ Pass	☐ Fail
Check operation of device	☒ Pass	☐ Fail
Interoperability – Operate all devices	☒ Pass	☐ Fail
Hot plug test – A Plug	☒ Pass	☐ Fail
Hot plug test – B Plug	☒ Pass	☐ Fail ☐ N/A
S3 Active Standby Test	☒ Pass	☐ Fail
Remote Wake-up Test	☐ Pass	☐ Fail ☒ N/A
S3 Active Standby Resume Test	☒ Pass	☐ Fail
S4 Active Hibernate Test	☒ Pass	☐ Fail
S4 Active Hibernate Resume Test	☒ Pass	☐ Fail
Warm Boot Test	☒ Pass	☐ Fail
Hybrid Boot Test	☒ Pass	☐ Fail
Cold Boot Test	☒ Pass	☐ Fail

More Detail Test Result:

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1. **Basic Speed Upstream Signal Quality: Pass**

- Overall result: pass!
- Signal eye:
  eye passes
- EOP width: 167.51 ns
  EOP width passes
- Measured signaling rate: 12.0254 MHz
  signal rate passes
- Edge Monotonicity: 15 mV
  Monotonic Edge passes
- Crossover voltage range: 1.49 V to 1.63 V, mean crossover 1.59 V
  (first crossover at 1.49 V, 10 other differential crossovers checked)
  crossover voltages pass
- Consecutive jitter range: -89.136 ps to 168.511 ps, RMS jitter 74.294 ps
- Paired JK jitter range: -75.696 ps to -53.033 ps, RMS jitter 65.354 ps
- Paired KJ jitter range: -129.675 ps to 125.083 ps, RMS jitter 92.441 ps
  jitter passes

Additional Information

- Rising Edge Rate: 259.48 V/us (Equivalent risetime = 10.17 ns)
- Falling Edge Rate: 254.72 V/us (Equivalent falltime = 10.36 ns)
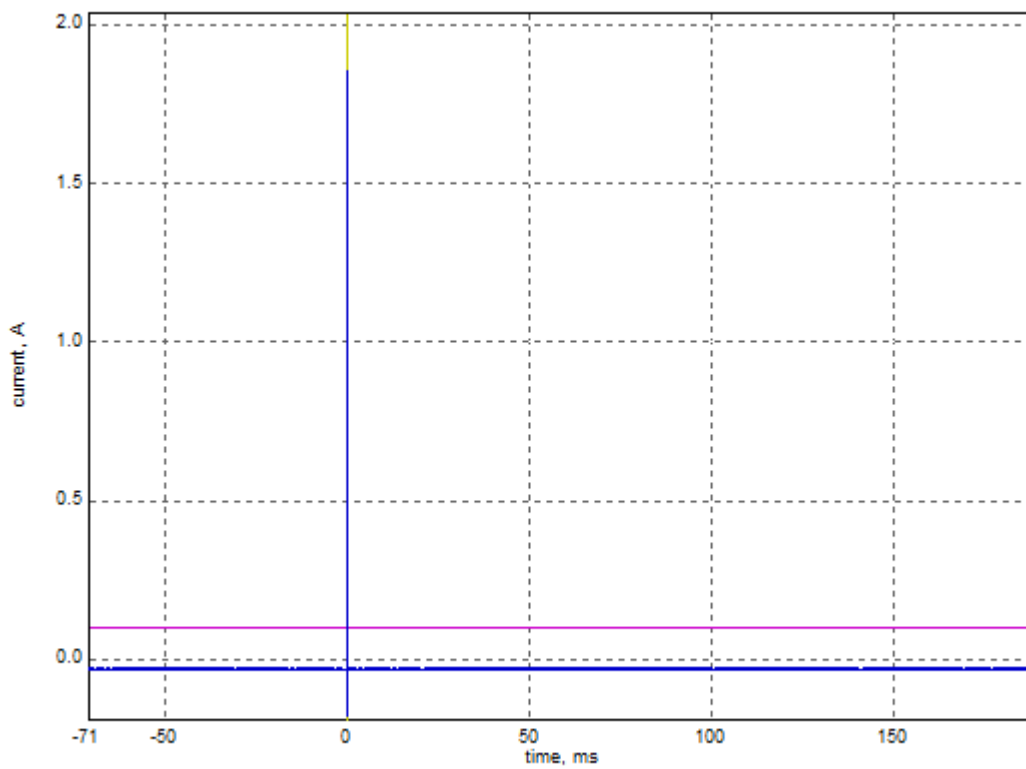- Edge Rate Match: 1.85% (limit +/-10%)

Signal Data and Eye

2. Inrush Current: Pass

- Overall result: pass!
- Inrush at 5.242 V: 5.5343 μC
  Inrush passes
- **Region 1 Start: -0.00051 ms - End: 0.105 ms = 5.534 μC**

Hot Plug (Attach) Current Draw

Testing Procedure Documents:

1. Universal Serial Bus Implementers Forum Full and Low Speed Electrical and Interoperability Compliance Test Procedure, Version: 1.3
2. xHCI Interoperability Test Procedures For Peripherals, Hubs and Hosts (Legacy, USB Type-C and Power Delivery), Version 0.9
3. USB Battery Charging 1.2 Compliance Plan, Revision: 1.1

Notice: The test results are only valid for the original tested device model.