



USB-IF 2.0 Compliance Test Report for Peripheral

Company Name: NXP

VID (Dec): 8137 The VID for the company who apply the USB-IF logo.

Model Name: LPC5536

Product Type: MSC

Report Date: 1/25/2022

Test Result: **PASS**

Tester: Benjamin Tovar-Prince

Authorized Signature: Kayla Seliner

Company Information:

Company

Company Name: NXP Semiconductors

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

Technical Contact

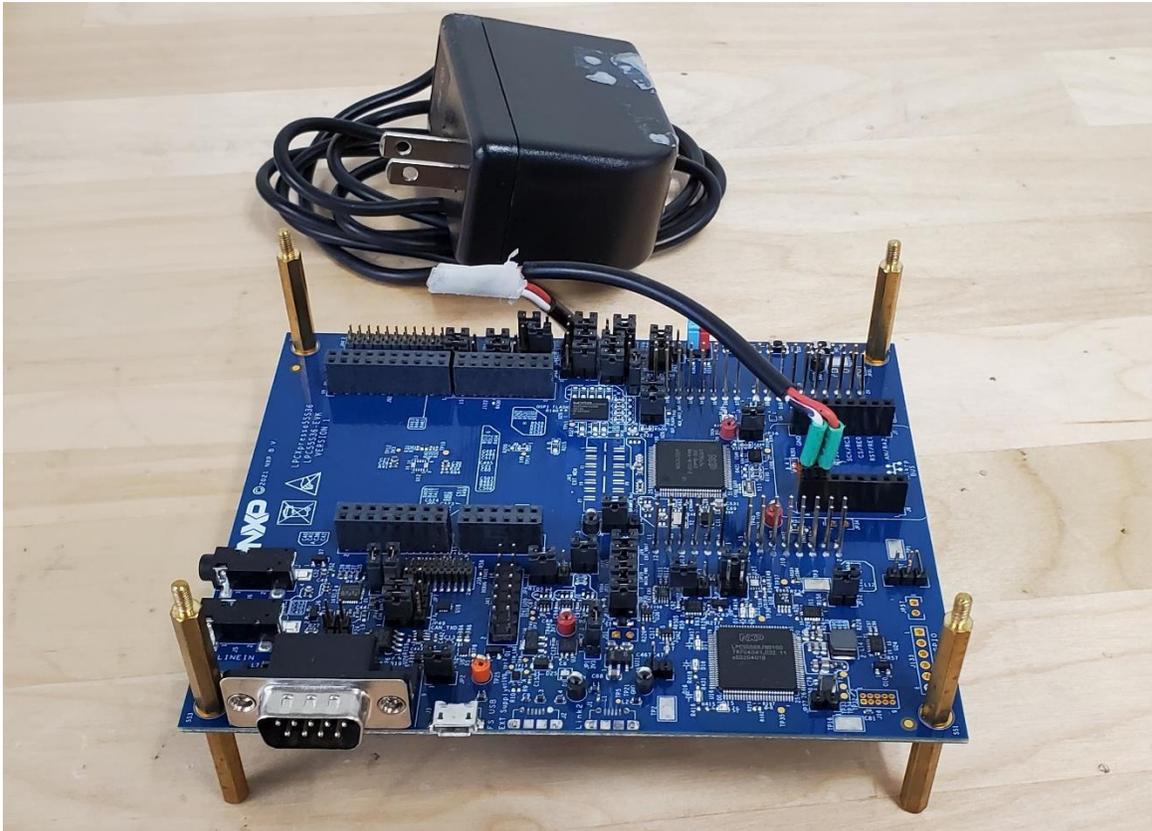
Name: Dezheng "Tom" Tang

Phone Number: N/A

E-Mail: dezheng.tang@nxp.com

FAX Number: N/A

Product Picture:



Overall Test Result Summary

Test Category	Result
Electrical	
Full Speed	Pass
BC 1.2	
Upstream Port	N/A
CV	
USB3CV	Pass
USB20CV	Pass
IOP	
Average Current Draw	Pass
Interoperability Interim Tree	Pass

Full Speed Electrical Compliance Tests

Connector Type: Untethered (Tethered means no standard B or special B connector)

Full Speed Upstream Signal Quality

Pass

Fail

Inrush Current

Pass

Fail

Back Voltage

Pass

Fail

Before Enumeration / After Enumeration

Pin	Voltage (mV)	
D+	0.0	0.0
D-	0.0	0.0
V _{Bus}	0.0	1.6

(All values <= 400mV)

Battery Charging 1.2 Compliance Tests

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.

Portable Device (PD)

Pass

Fail

N/A

B-UUT Initial Power-up Test

Pass

Fail

N/A

Data Contact Detect Test – With Current Source

Pass

Fail

N/A

Data Contact Detect Test – No Current Source

Pass

Fail

N/A

DCP Detection Test

Pass

Fail

N/A

CDP Detection Test

Pass

Fail

N/A

SDP Detection Test

Pass

Fail

N/A

ACA-Dock Detection Test

Pass

Fail

N/A

ACA-A Detection Test

Pass

Fail

N/A

ACA-B Detection Test

Pass

Fail

N/A

ACA-C Detection Test

Pass

Fail

N/A

ACA-GND Detection Test

Pass

Fail

N/A

Common Mode Test - Full Speed

Pass

Fail

N/A

Common Mode Test - High Speed

Pass

Fail

N/A

Dead Battery Provision Test

Pass

Fail

N/A

Command Verifier (CV) Compliance Tests

Framework Test Results (USB 3 Gen X CV) Pass Fail

All USB peripherals are required to enumerate on a Super Speed host controller (XHCI) and pass all applicable tests within USB 3 Gen X CV. Failures in framework tests in USB 3 Gen X CV will prevent certification.

DELL XPS8700 Platform

Full Speed:

VID: 0x1FC9 PID: 0x0092

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

Chapter 9 Tests:	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Connector Type Tests:	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
MSC Class Tests:	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
UVC Class Tests:	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input checked="" type="checkbox"/> N/A
HID Class Tests:	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input checked="" type="checkbox"/> N/A

Framework Test Results (USB 2 CV)

Pass **Fail**

All USB peripherals are required to enumerate on a High Speed host controller (EHCI) and pass all applicable tests within USB 2 CV. Failures in framework tests in USB 2 CV will prevent certification.

StarTech PEX400USB2 (add-in card)

Full Speed:

VID: 0x1FC9 PID: 0x92

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

Chapter 9 Tests: **Pass** **Fail**

MSC Class Tests: **Pass** **Fail** **N/A**

UVC Class Tests: **Pass** **Fail** **N/A**

HID Class Tests: **Pass** **Fail** **N/A**

Average Current Draw Compliance Tests

Full Speed: Low Powered Device

Pass

Fail

Unconfigured Current: 0.18 mA

(<= 100mA)

Configured Current: 0.18 mA

(<= Max Power <= 100mA for Low Power)

(<= Max Power <= 500mA for High Power)

Suspended Current: 190 uA

(<= 2500uA for Self Power Hub or Non Compound Device)

(<= 12500uA for Bus Power Hub or Compound Device)

Power Suspended State Current: 180 uA

(<= 2500uA for not Supporting USB Battery Charging)

(<= 100mA for Supporting USB Battery Charging)

Operating Current: 0.19 mA

(<= Max Power <= 100mA for Low Power)

(<= Max Power <= 100mA for Self Power)

(<= Max Power <= 500mA for High Power)

Interoperability (Interim Tree) Compliance Tests

Interoperability Overall Result

Pass Fail

DELL XPS8700 Platform

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

Initial Topology (DUT Behind SS5 Hub)

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 1 (DUT Behind HS5 Hub)

Enumeration	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Check operation of device	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Interoperability – Operate all devices	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hot plug test – A Plug	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hot plug test – B Plug	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
S3 Active Standby Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Remote Wake-up Test	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input checked="" type="checkbox"/> N/A
S3 Active Standby Resume Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
S4 Active Hibernate Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
S4 Active Hibernate Resume Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Warm Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hybrid Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Cold Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	

Topology Change 2 (DUT Behind FS3-1 Hub)

Enumeration	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Check operation of device	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Interoperability – Operate all devices	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hot plug test – A Plug	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hot plug test – B Plug	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
S3 Active Standby Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Remote Wake-up Test	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input checked="" type="checkbox"/> N/A
S3 Active Standby Resume Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
S4 Active Hibernate Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
S4 Active Hibernate Resume Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Warm Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hybrid Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Cold Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	

Interoperability without Driver Verifier:

Run Only if Saw Poor Video or Audio Quality	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
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**Tested without Driver Verifier due to Poor Video Quality

Host - USB 2.0 Cable - VL811+ Hub - DUT

Enumeration and Driver installation	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Check operation of device	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Interoperability – Operate all devices	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hot Plug Test – A Plug	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hot Plug Test – B Plug	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
S3 Active Standby Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Remote Wake-up Test	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input checked="" type="checkbox"/> N/A
S3 Active Standby Resume Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
S4 Active Hibernate Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
S4 Active Hibernate Resume Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Warm Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hybrid Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Cold Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	

Host - USB 2.0 Cable - RTS5423 Hub - DUT

Enumeration and Driver installation	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Check operation of device	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Interoperability – Operate all devices	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hot Plug Test – A Plug	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hot Plug Test – B Plug	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input type="checkbox"/> N/A
S3 Active Standby Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Remote Wake-up Test	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail	<input checked="" type="checkbox"/> N/A
S3 Active Standby Resume Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
S4 Active Hibernate Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
S4 Active Hibernate Resume Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Warm Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Hybrid Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	
Cold Boot Test	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail	

More Detailed Test Results:

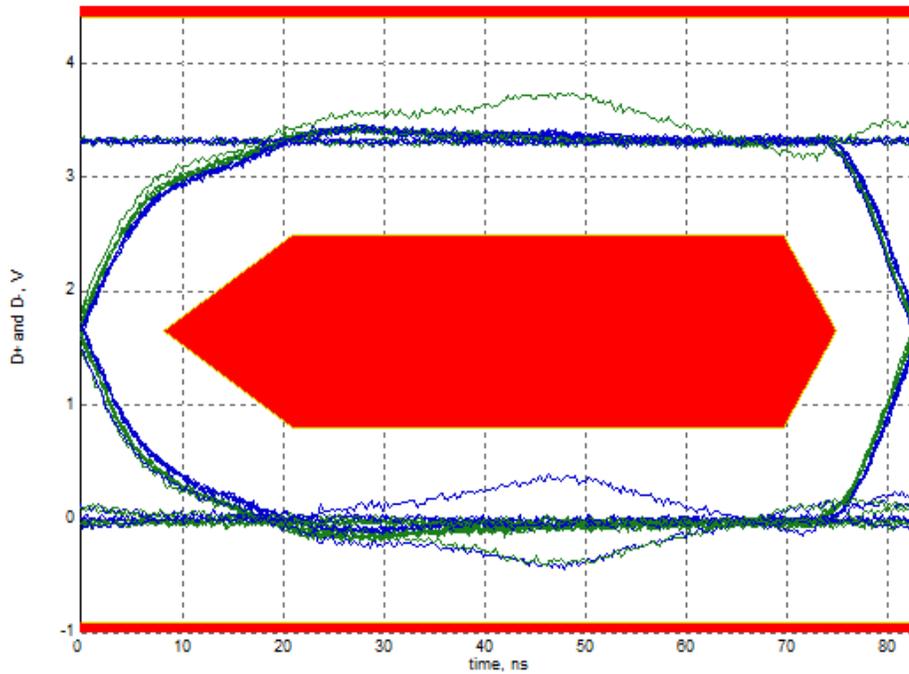
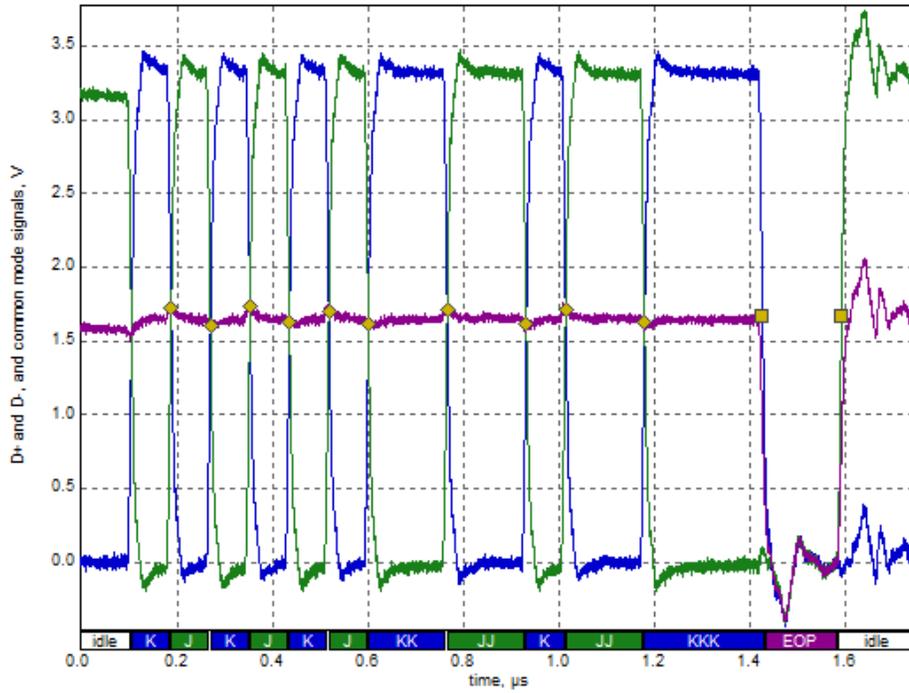
1. Full Speed Upstream Signal Quality: Pass

- Overall result: pass!
- Sync result:
sync passes
- Signal eye:
eye passes
- EOP width: 166.59 ns
EOP width passes
- Measured signaling rate: 12.0062 MHz
signal rate passes
- Edge Monotonicity: 16 mV
Monotonic Edge passes
- Crossover voltage range: 1.61 V to 1.73 V, mean crossover 1.67 V
(first crossover at 1.72 V, 9 other differential crossovers checked)
crossover voltages pass
- Consecutive jitter range: -118.532 ps to 116.945 ps, RMS jitter 76.296 ps
- Paired JK jitter range: -115.144 ps to 128.983 ps, RMS jitter 103.035 ps
- Paired KJ jitter range: -131.107 ps to 151.371 ps, RMS jitter 130.378 ps
jitter passes

Additional Information

- Rising Edge Rate: 210.66 V/us (Equivalent rise time = 12.53 ns)
- Falling Edge Rate: 208.89 V/us (Equivalent fall time = 12.64 ns)
- Edge Rate Match: 0.84% (limit +/-10%)
- Margin Above eye: 0.6967 V
- Margin Below eye: 0.4097 V
- Maximum Voltage: 3.7420 V
- Margin Below Top: 0.6580 V
- Minimum Voltage: -0.4379 V
- Margin Above Bottom: 0.4621 V

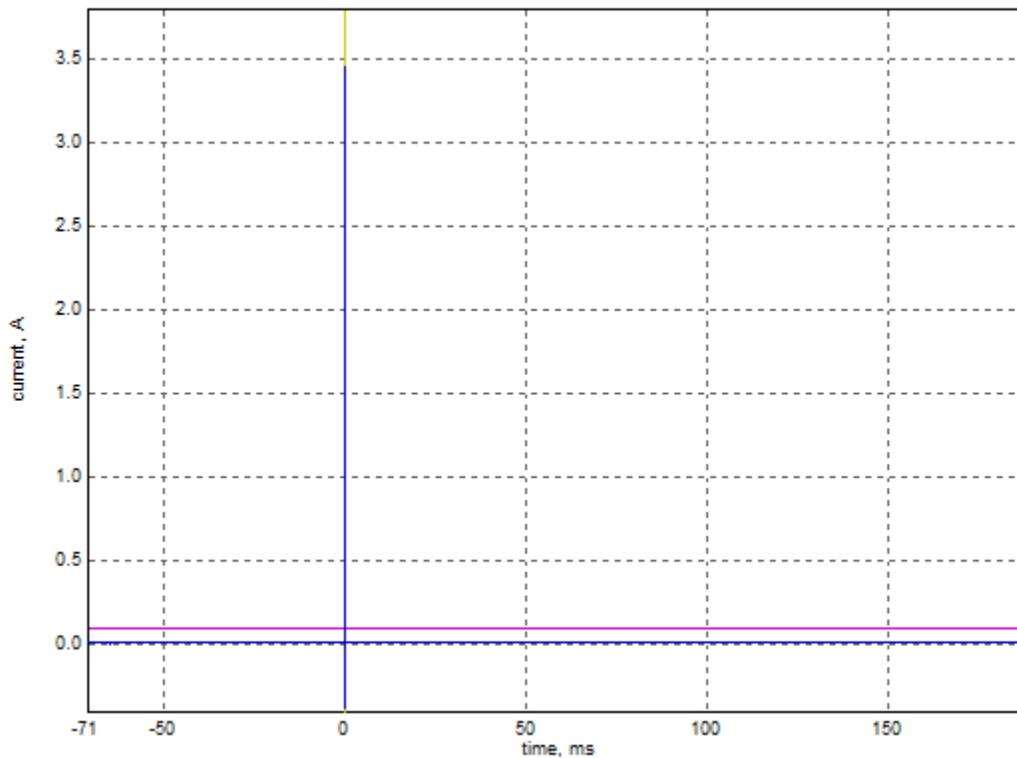
Signal Data and Eye



2. Inrush Current: Pass

- Overall result: pass!
- Inrush at 5.240 V: 14.3643 μC
Inrush passes
- **Region 1 Start: -0.00006 ms - End: 0.107 ms = 14.36 μC**

Hot Plug (Attach) Current Draw



Testing Procedure Documents:

1. Keysight D9010USBC USB 2.0 Compliance Test Application, Version 4.10.1
2. Universal Serial Bus Implementers Forum Full and Low Speed Electrical and Interoperability Compliance Test Procedure, Version: 1.3
3. USB Battery Charging 1.2 Compliance Plan, Revision: 1.2
4. xHCI Interoperability Test Procedures For Peripherals, Hubs and Hosts (Legacy, USB Type-C and Power Delivery), Version 0.98

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