User Guide

USB Cable Tester (UCT)

Detailed Specification



Revision: 1.4 - March 2026

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Notices

- This MSolutions product contains electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection is highly recommended in order to protect and extend the life of your equipment.
- The transmission distances of HDMI over CATx cables are measured using TE CONNECTIVITY 1427071-6 EIA/TIA-568-B termination (T568B) of cables is recommended for optimal performance. To minimise interference of unshielded twisted pairs in the CAT5e/6 cable, do not run the HDBaseT / CAT5e/6/6a cabling with or in close parallel proximity to mains power cables.
- Do not substitute or use any other power supply other than the enclosed unit, or an MSolutions approved replacement. Do not disassemble either the Tester, Transmitter, Receiver or optional Module units for any reason. Doing so will void the manufacturer's warranty.
- The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.
- MSolutions reserves the right to change the specifications of this unit without prior notice. As a result of this, physical representations or graphical elements contained within this user guide may not be accurate.

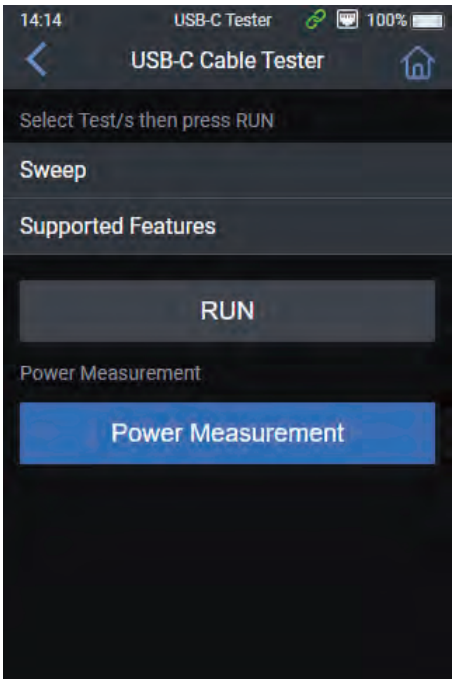
Overview

The USB Cable Tester (UCT) is a modular testing unit designed to interface with the MS-TestPro MS104B or MS106B systems. This modular unit is equipped with two independent testing capabilities: cable quality testing and power consumption testing. The UCT allows users to assess the quality of USB Type-C cables and the power consumption of connected devices. The primary objective is to ensure that USB Type-C cables meet quality standards and that the connected devices operate within specified power parameters.

Features

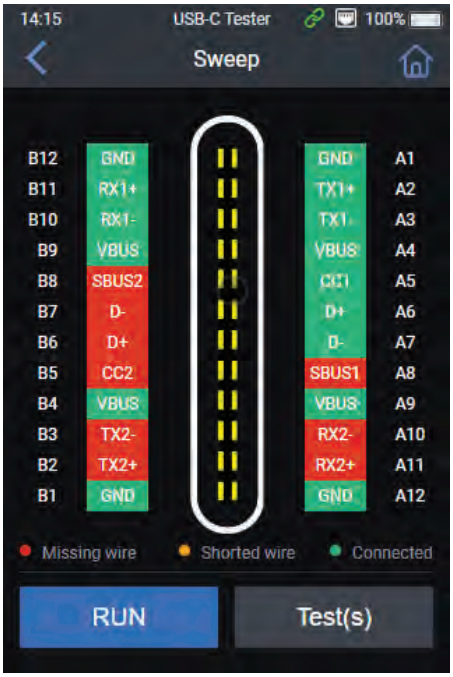
1. Cable Quality Testing

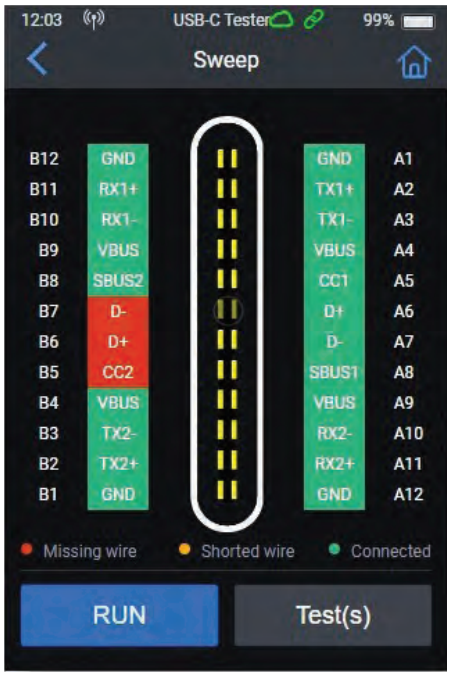
The cable quality testing feature of the UCT involves a sweep test that aims to detect wiring connectivity inside the USB Type-C cable and assess the quality of individual wires for signal propagation. It also reveals the presence of specific USB Type-C cable features that are essential for proper installation.

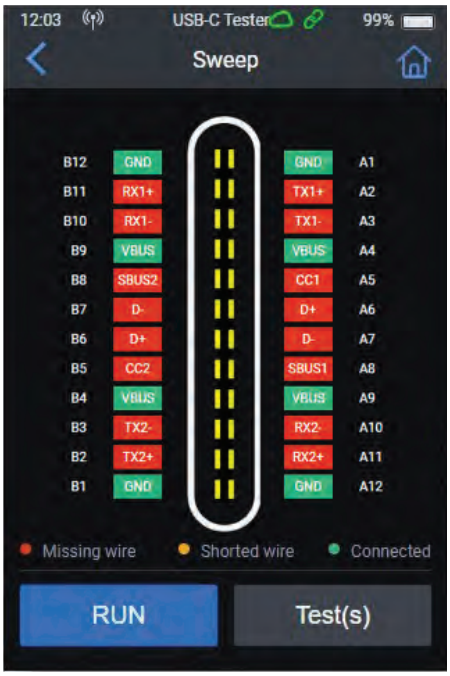


Testing Procedure

- Users must connect a USB Type-C cable to the UCT.
- The UCT interfaces with the MS-TestPro MS104B or MS106B system.
- The sweep test is initiated to analyze the cable's wiring connectivity and signal quality.





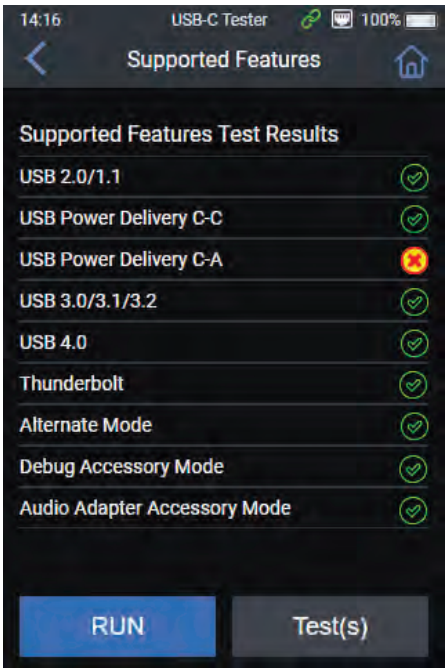


Cable Features Detection

The UCT identifies up to 8 different USB Type-C cable features, which are crucial for determining proper installation but are not visually distinguishable. These features include:

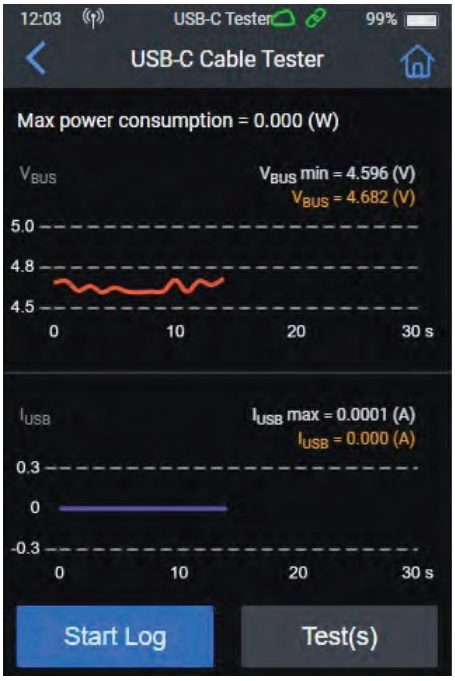
1. USB Power Delivery (PD) support
2. USB SuperSpeed (USB3.2 Gen 1) compatibility
3. USB Alternate Modes (e.g., DisplayPort, Thunderbolt)
4. USB Type-C connector orientation (CC orientation)
5. Active/passive cable detection
6. E-marker chip detection
7. USB Type-C connector pinout verification
8. Resistance and impedance measurement





2. Power Consumption Testing

The cable quality testing feature of the UCT involves a sweep test that aims to detect wiring connectivity inside the USB Type-C cable and assess the quality of individual wires for signal propagation. It also reveals the presence of specific USB Type-C cable features that are essential for proper installation.



Testing Procedure

- Users connect the UCT to a USB Type-C port on a PC, laptop, or USB Type-C host port.
- A Device Under Test (DUT) is connected to the appropriate USB Type-C port on the UCT.
- The DUT is the power consumer from the USB host port.
- The test is run over time, monitoring the current and voltage consumed by the DUT

3. USB Device Testing

With this test, the user can map the USB link from device to host.

Connect the end of the USB link to one of the 2 USB3.2 gen1 ports on the top of the tester instead of the PC.



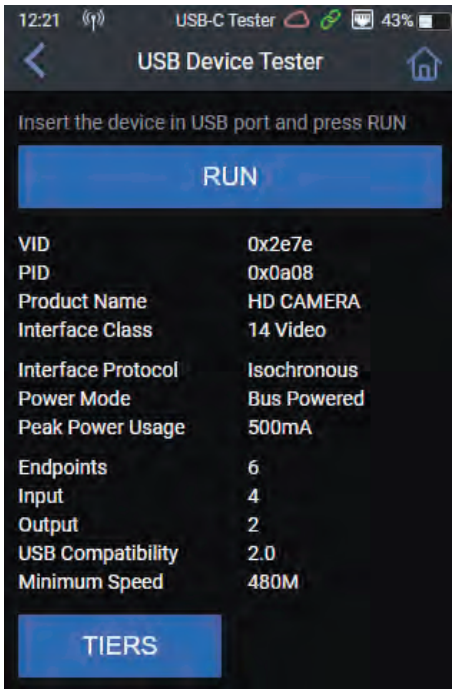
Run the USB device tester. The tester will generate a list of all USB devices on the link.



The user can now choose the device he needs to investigate. When clicking the device, a list of USB parameters of the chosen device will appear.

From this list, the user can see the most needed details from a USB device. In addition, the user can see the Tier count of the selected device.

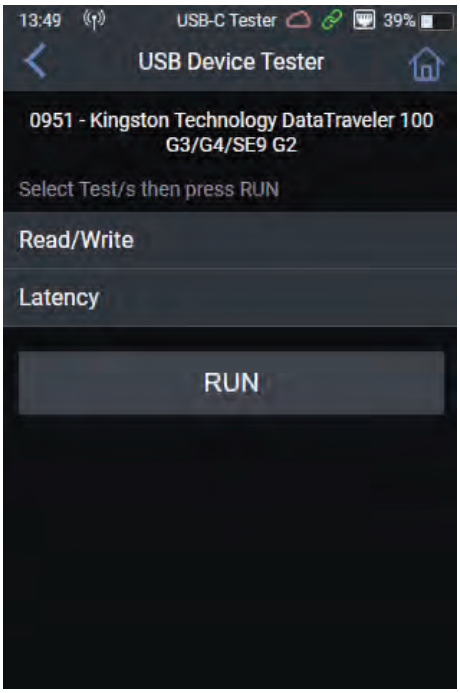
Click TIERS at the bottom of the list and the tester will generate a USB tier tree.

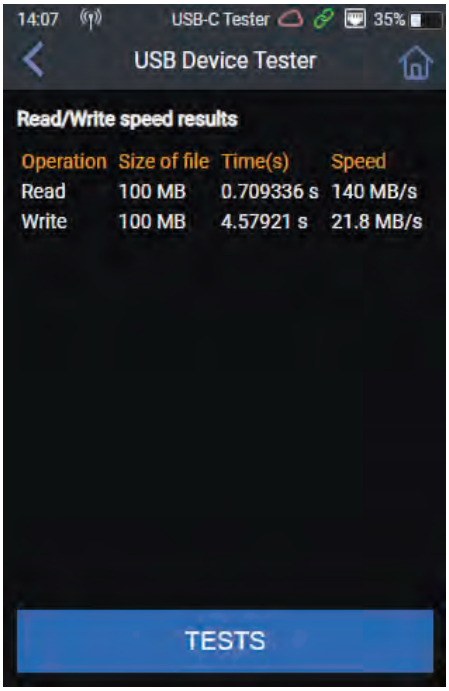


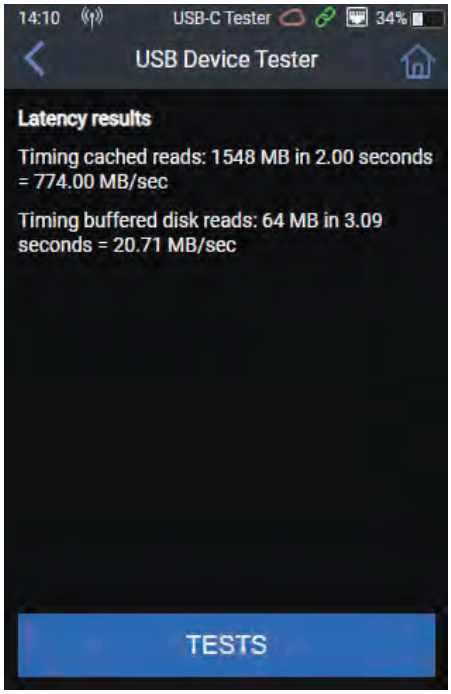
Here, the user can see the USB tier in which the selected device is located. The tiers are color-coded to reflect the proper number of tiers. Tiers 1-5 are green, the 6th is yellow, and 7th and above is red. Any device located above the 7th tier will not work properly.



Plug a USB drive into the extended port, choose it from the list of devices, and run the read/write and latency tests.







Technical Specifications

Interface Compatibility:
- UCT interfaces with MS-TestPro MS104B or MS106B systems
- Compatible with USB Type-C cables

Cable Quality Testing:
- Conducts a sweep test to check wiring connectivity
- Measures signal quality for each wire in the USB Type-C cable
- Detects and reports USB Type-C cable features
- Provides resistance and impedance measurements
- Test results are displayed on a user-friendly interface

Power Consumption Testing:
- Measures current and voltage consumed by the connected device
- Continuous monitoring over a user-defined time interval
- Ensures compatibility with USB Type-C Power Delivery specifications
- Graphical representation of power consumption data
- User-defined power consumption threshold for pass/fail evaluation

User Interface:
- Intuitive, user-friendly interface for easy operation
- LCD or LED display for test results
- USB ports for connecting the UCT to MS-TestPro systems and DUTs

Power Supply:
- The UCT is powered through a standard AC adapter

Dimensions and Weight:
- Compact and portable design for easy transport and use in various testing environments
- Dimensions (W x D x H): 60 x 84 x 25 mm
- Weight: 200 gr

Use Cases:
- Quality control and testing in manufacturing environments
- USB Type-C cable certification
- Troubleshooting USB Type-C cable and device compatibility issues
- Ensuring proper power delivery in USB extender setups, especially those involving HDbaseT technology
- Ensuring a proper USB tier count

Conclusion

The USB Cable Tester (UCT) is a versatile modular unit designed for cable quality testing and power consumption assessment. It provides a comprehensive solution to verify USB Type-C cable integrity, identify critical features, and ensure that connected devices operate within specified power parameters. The UCT is an essential tool for manufacturers, technicians, and engineers working with USB Type-C technology, ensuring reliable performance and compatibility.



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