

# USB Type-C ENGINEERING CHANGE NOTICE

## Title: Right-Angle Plug Dimensional and Test Requirements Applied to: USB Type-C Specification Release 2.3, October 2023

### Brief description of the functional changes proposed:

Add mechanical details for right angle USB Type-C plugs to Interface Definition section 3.2.1. Add testing details for right angle plugs to wrenching strength test section 3.8.1.7.

### Benefits as a result of the proposed changes:

Clearly define dimensions and test requirements for right angle plugs, currently undefined.

### An assessment of the impact to the existing revision and systems that currently conform to the USB specification:

No impact to certified connectors.

### An analysis of the hardware implications:

Adds test requirements for right angle plugs

### An analysis of the software implications:

N/A

### An analysis of the compliance testing implications:

Clearly defines dimension and test requirements for right angle plugs for USB test and certification labs.

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## Actual Change Requested

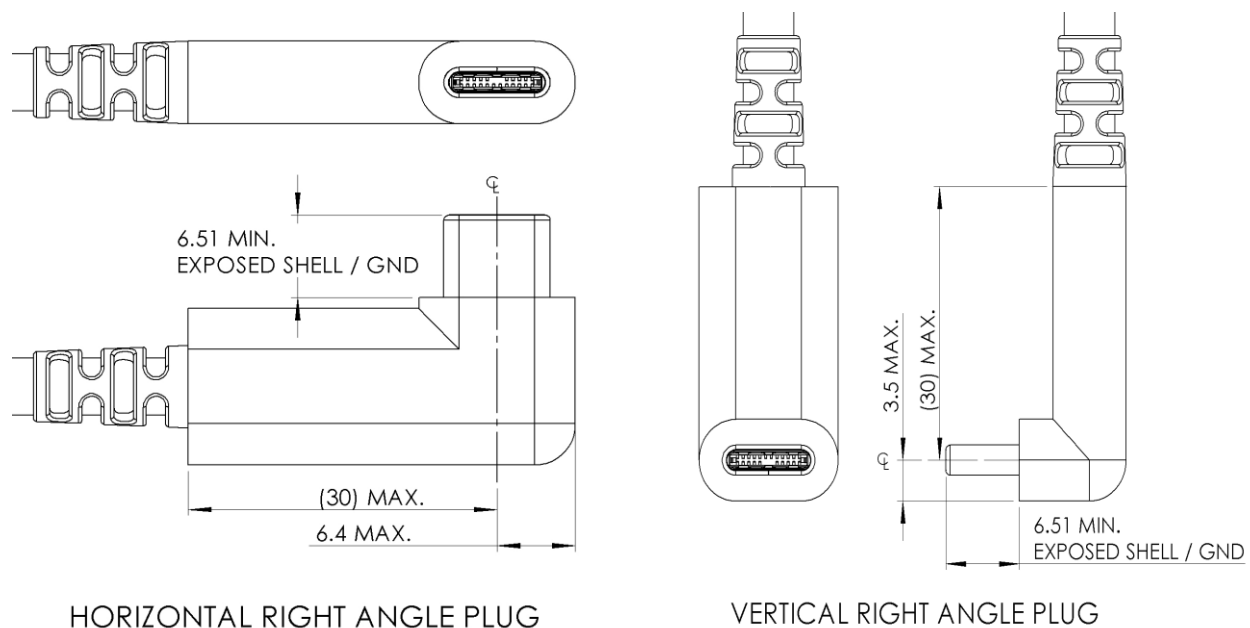
### USB Type-C spec

## Add item to Section 3.2.1 Interface Definition

18. USB Type-C Plugs with right angle overmolds shall comply with the dimensions in Figure 3.4.

## Insert new figures to Section 3.2.1 Interface Definition

**Figure 3-4 Right Angle USB Type-C Plug(s) Dimensional Requirements**



## Wrenching Strength, Section 3.8.1.7, Page 134 & 135

### From Text:

...Compliant connectors shall meet the following force thresholds:

- A moment of 0-0.75 Nm (e.g., 50 N at 15 mm from the edge of the receptacle) is applied to a plug inserted in the test fixture in each of the four directions. A single plug shall be used for this test...

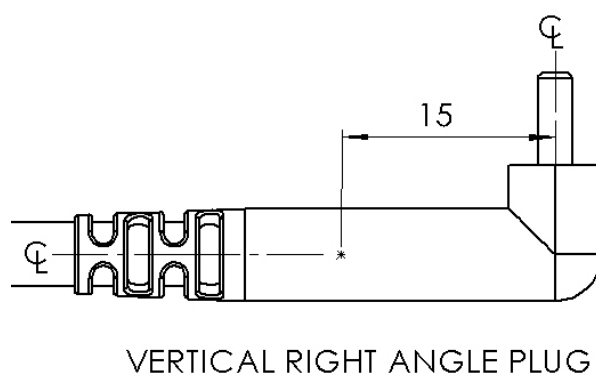
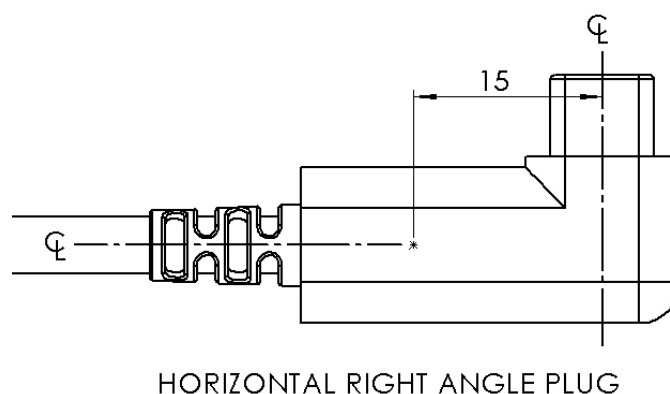
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## To Text:

...Compliant connectors shall meet the following force thresholds:

- A moment of 0-0.75 Nm (e.g., 50 N at 15 mm from the edge of the receptacle) is applied to a plug inserted in the test fixture in each of the four directions. USB Type-C Plugs with right angle overmolds shall apply torque forces of 50 N, 15mm from the centerline of the plug perpendicular to the direction of the cable exit, along the centerline of the cable, (see Figure 3-7X). This force will be applied in all four directions for Horizontal right angle plugs and in three direction for Vertical right angle plugs, (force in opposition to the insertion direction causes Vertical right angle plugs to disconnect from the test fixture). If a suitable surface for applying the force is not available, the force will be scaled to provide the equivalent force at the plug interface or the overmold shall use a clamp fixture to provide a suitable surface for applying the torque and moment forces. A single plug shall be used for this test....
- Note that in order to test horizontal right angle plugs, a receptacle fixture with a vertically mounted receptacle may be required to access the inside surface of the overmold for applying the test force.

**Figure 3-7X Torque Force Application Distance for Right Angle Plugs**



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## Text on Page 135

### From Text:

- The plug *shall* disengage from the test fixture or demonstrate mechanical failure (i.e., the force applied during the test procedure peaks and drops off) when a moment of 2.0 Nm is applied to the plug in the up and down directions and a moment 3.5 Nm is applied to the plug in the left and right directions. A new plug is required for each of the four test directions. An example of the mechanical failure point and an illustration of the wrenching test fixture are shown in Figure 3-72 and Figure 3-73, respectively.

### To Text:

- The plug *shall* disengage from the test fixture or demonstrate mechanical failure (i.e., the force applied during the test procedure peaks and drops off) when a moment of 2.0 Nm is applied to the plug in the up and down directions, (the wide side for right angle overmolds), and a moment 3.5 Nm is applied to the plug in the left and right directions, (the narrow side for right angle overmolds). A new plug is required for each of the four test directions. An example of the mechanical failure point and an illustration of the wrenching test fixture are shown in Figure 3-72 and Figure 3-73, respectively.