



INTERNATIONAL STANDARD

**Universal Serial Bus interfaces for data and power -
Part 1-3: Common components - USB Type-C® cable and connector
specification**



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Universal Serial Bus Type-C Cable and Connector Specification

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Contents

Specification Editor	20
Specification Work Group Contributors.....	20
Pre-Release Draft Industry Reviewing Companies That Provided Feedback.....	28
Revision History.....	29
1 Introduction.....	30
1.1 Purpose	30
1.2 Scope	30
1.3 Related Documents	30
1.4 Conventions.....	31
1.4.1 Precedence	31
1.4.2 Keywords	31
1.4.3 Numbering.....	32
1.5 Terms and Abbreviations	32
2 Overview	38
2.1 Introduction	38
2.2 USB Type-C Receptacles, Plugs and Cables	39
2.3 Configuration Process.....	40
2.3.1 Source-to-Sink Attach/Detach Detection.....	41
2.3.2 Plug Orientation/Cable Twist Detection.....	41
2.3.3 Initial Power (Source-to-Sink) Detection and Establishing the Data (Host-to-Device) Relationship 41	
2.3.4 USB Type-C VBUS Current Detection and Usage.....	42
2.3.5 <i>USB PD</i> Communications.....	42
2.3.6 Functional Extensions	43
2.4 VBUS.....	43
2.5 VCONN.....	43
2.6 Hubs.....	44
3 Mechanical.....	45
3.1 Overview.....	45
3.1.1 Compliant Connectors.....	45
3.1.2 Compliant Cable Assemblies	45
3.1.3 Compliant USB Type-C to Legacy Cable Assemblies.....	46
3.1.4 Compliant USB Type-C to Legacy Adapter Assemblies.....	47
3.2 USB Type-C Connector Mating Interfaces.....	47
3.2.1 Interface Definition.....	47
3.2.2 Reference Designs	71

3.2.3	Pin Assignments and Descriptions	78
3.3	Cable Construction and Wire Assignments	79
3.3.1	Cable Construction (<i>Informative</i>).....	79
3.3.2	Wire Assignments	81
3.3.3	Wire Gauges and Cable Diameters (<i>Informative</i>).....	82
3.4	Standard USB Type-C Cable Assemblies.....	84
3.4.1	USB Full-Featured Type-C Cable Assembly.....	84
3.4.2	<i>USB 2.0</i> Type-C Cable Assembly	86
3.4.3	USB Type-C Captive Cable Assembly	86
3.4.4	USB Type-C Thumb Drive Assembly	87
3.5	Legacy Cable Assemblies.....	87
3.5.1	USB Type-C to <i>USB 3.1</i> Standard-A Cable Assembly	88
3.5.2	USB Type-C to <i>USB 2.0</i> Standard-A Cable Assembly	89
3.5.3	USB Type-C to <i>USB 3.1</i> Standard-B Cable Assembly	90
3.5.4	USB Type-C to <i>USB 2.0</i> Standard-B Cable Assembly	91
3.5.5	USB Type-C to <i>USB 2.0</i> Mini-B Cable Assembly.....	92
3.5.6	USB Type-C to <i>USB 3.1</i> Micro-B Cable Assembly	93
3.5.7	USB Type-C to <i>USB 2.0</i> Micro-B Cable Assembly	94
3.6	Legacy Adapter Assemblies.....	94
3.6.1	USB Type-C to <i>USB 3.1</i> Standard-A Receptacle Adapter Assembly	94
3.6.2	USB Type-C to <i>USB 2.0</i> Micro-B Receptacle Adapter Assembly	96
3.7	Electrical Characteristics.....	96
3.7.1	Raw Cable (<i>Informative</i>).....	97
3.7.2	USB Type-C to USB Type-C Passive Cable Assemblies	98
3.7.3	Mated Connector (<i>Informative – USB 3.2 Gen2 and USB4 Gen2</i>).....	120
3.7.4	Receptacle Connector SI Requirements and Testing (<i>Normative – USB4 Gen3/Gen4</i>).....	124
3.7.5	USB Type-C to USB Legacy Cable Assemblies (<i>Normative</i>)	126
3.7.6	USB Type-C to USB Legacy Adapter Assemblies (<i>Normative</i>)	130
3.7.7	Shielding Effectiveness Requirements (<i>Normative</i>)	133
3.7.8	DC Electrical Requirements (<i>Normative</i>).....	135
3.8	Mechanical and Environmental Requirements (<i>Normative</i>).....	138
3.8.1	Mechanical Requirements	138
3.8.2	Environmental Requirements.....	143
3.9	Docking Applications (<i>Informative</i>)	144
3.10	Implementation Notes and Design Guides	145
3.10.1	EMC Management (<i>Informative</i>)	145

3.10.2	Stacked and Side-by-Side Connector Physical Spacing (<i>Informative</i>)	148
3.10.3	Cable Mating Considerations (<i>Informative</i>)	148
3.11	Extended Power Range (EPR) Cables	150
3.11.1	Electrical Requirements.....	150
3.11.2	EPR Cable Identification Requirements.....	150
4	Functional	151
4.1	Signal Summary.....	151
4.2	Signal Pin Descriptions	151
4.2.1	USB 3.2/USB4 Pins	151
4.2.2	USB 2.0 Pins.....	152
4.2.3	Auxiliary Signal Pins	152
4.2.4	Power and Ground Pins	152
4.2.5	Configuration Pins	152
4.3	Sideband Use (SBU).....	152
4.4	Power and Ground.....	153
4.4.1	IR Drop.....	153
4.4.2	VBUS	154
4.4.3	VCONN	155
4.5	Configuration Channel (CC)	160
4.5.1	Architectural Overview.....	160
4.5.2	CC Functional and Behavioral Requirements	172
4.5.3	USB Port Interoperability Behavior	208
4.6	Power	226
4.6.1	Power Requirements during USB Suspend.....	227
4.6.2	VBUS Power Provided Over a USB Type-C Cable	228
4.7	USB Hubs	233
4.8	Power Sourcing and Charging.....	234
4.8.1	DFP as a Power Source.....	234
4.8.2	Non-USB Charging Methods	236
4.8.3	Sinking Host.....	237
4.8.4	Sourcing Device.....	237
4.8.5	Charging a System with a Dead Battery	237
4.8.6	USB Type-C Multi-Port Chargers	237
4.9	Electronically Marked Cables	241
4.9.1	Parameter Values.....	242
4.9.2	Active Cables.....	242

4.10	VCONN-Powered Accessories (VPAs) and VCONN-Powered USB Devices (VPDs).....	243
4.10.1	VCONN-Powered Accessories (VPAs).....	243
4.10.2	VCONN-Powered Devices (VPDs).....	243
4.11	Parameter Values	245
4.11.1	Termination Parameters	245
4.11.2	Timing Parameters.....	247
4.11.3	Voltage Parameters	251
5	<i>USB4</i> Discovery and Entry	258
5.1	Overview of the Discovery and Entry Process	258
5.2	<i>USB4</i> Functional Requirements.....	259
5.2.1	<i>USB4</i> Host Functional Requirements.....	259
5.2.2	USB Device Functional Requirements.....	259
5.2.3	<i>USB4</i> Alternate Mode Support.....	259
5.3	<i>USB4</i> Power Requirements.....	260
5.3.1	Source Power Requirements	260
5.3.2	Sink Power Requirements	260
5.3.3	Device Power Management Requirements	260
5.4	<i>USB4</i> Discovery and Entry Flow Requirements	261
5.4.1	USB Type-C Initial Connection	261
5.4.2	USB Power Delivery Contract.....	261
5.4.3	<i>USB4</i> Discovery and Entry Flow	261
5.4.4	<i>USB4</i> Post-Entry Operation.....	267
5.5	<i>USB4</i> Hub Connection Requirements.....	267
5.5.1	<i>USB4</i> Hub Port Initial Connection Requirements.....	267
5.5.2	<i>USB4</i> Hub UFP and Host Capabilities Discovery.....	267
5.5.3	Hub DFP Connection Requirements	268
5.5.4	Hub Ports Connection Behavior Flow Examples.....	269
5.5.5	Connecting to Downstream <i>USB4</i> Hubs	275
5.5.6	Fallback Functional Requirements for <i>USB4</i> Hubs	275
5.6	<i>USB4</i> Device Connection Requirements	276
5.6.1	Fallback Mapping of <i>USB4</i> Peripheral Functions of USB Device Class Types	276
5.7	Parameter Values	277
5.7.1	Timing Parameters	277
6	Active Cables.....	278
6.1	General Specifications for All Active Cables.....	278
6.1.1	Discovering Active Cable Characteristics.....	278

6.1.2	Electrical Requirements	280
6.1.3	Mechanical Requirements	312
6.2	Additional Specifications for Copper and Hybrid-Optical Active Cables.....	313
6.2.1	Active Cable Block Diagram	314
6.2.2	<i>USB4</i> Asymmetric Mode Support	314
6.2.3	Active Cable <i>USB PD</i> Requirements.....	314
6.2.4	Active Cable Behaviors in Response to <i>USB PD</i> Events.....	314
6.2.5	Active Cable Power Requirements.....	315
6.3	Additional Specifications for Optically Isolated Active Cables	315
6.3.1	OIAC Block Diagrams	316
6.3.2	OIAC Limitations and General Requirements	318
6.3.3	OIAC Cable Power Requirements	319
6.3.4	OIAC <i>USB PD</i> Requirements.....	319
6.3.5	OIAC Connection Flow and State Diagrams	329
6.3.6	Additional Electrical Requirements for OIAC	348
6.3.7	Additional Mechanical Requirements for OIAC	351
A	Liquid Corrosion Mitigation Mode.....	352
A.1	Overview.....	352
A.2	Detail	352
A.3	Liquid Detection Methods.....	354
A.3.1	Liquid Measurement Method	354
A.3.2	Pulsed Measurement Method.....	354
A.3.3	Impedance Measurement Method.....	355
A.4	Liquid Detection Pins in the Connector	358
B	Debug Accessory Mode	361
B.1	Overview.....	361
B.2	Functional	361
B.2.1	Signal Summary	361
B.2.2	Port Interoperability.....	362
B.2.3	Debug Accessory Mode Entry.....	362
B.2.4	Connection State Diagrams.....	362
B.2.5	DTS Port Interoperability Behaviors.....	371
B.2.6	Orientation Detection.....	380
B.3	Security/Privacy Requirements.....	380
C	USB Type-C Digital Audio.....	381
C.1	Overview.....	381

C.2	USB Type-C Digital Audio Specifications.....	381
D	Thermal Design Considerations for Active Cables.....	382
D.1	Introduction	382
D.2	Model.....	382
D.2.1	Assumptions.....	382
D.2.2	Model Architecture.....	383
D.2.3	Heat Sources.....	383
D.2.4	Heat Flow.....	384
D.3	USB 3.2 Single-Lane Active Cable.....	385
D.3.1	USB 3.2 Single-Lane Active Cable Design Considerations	385
D.4	Dual-Lane Active Cables.....	388
D.4.1	USB 3.2 Dual-Lane Active Cable Design Considerations	388
D.4.2	USB 3.2 Dual-Lane Active Cable in a Multiple Port Configuration.....	390
D.5	USB 3.2 Host and Device Design Considerations	391
D.5.1	Heat Spreading or Heat Sinking from Host or Device.....	391
D.5.2	Motherboard Temperature Control	392
D.5.3	Wider Port Spacing for Multi-Port Applications	392
D.5.4	Power Policies	392
E	Alternate Modes.....	393
E.1	Alternate Mode Architecture	393
E.2	Alternate Mode Requirements.....	393
E.2.1	Alternate Mode Pin Reassignment.....	394
E.2.2	Alternate Mode Electrical Requirements.....	394
E.3	Parameter Values	397
E.4	Example Alternate Mode – USB DisplayPort™ Dock	398
E.4.1	USB DisplayPort™ Dock Example.....	398
E.4.2	Functional Overview.....	398
E.4.3	Operational Summary	399
E.5	Example Alternate Mode Entry Flow with Cable Warnings.....	400
E.5.1	Operational Summary	401
F	Thunderbolt™ 3 Compatibility Discovery and Entry.....	402
F.1	TBT3 Compatibility Mode Functional Requirements	402
F.1.1	TBT3-Compatible Power Requirements.....	402
F.1.2	TBT3-Compatible Host Requirements	402
F.1.3	TBT3-Compatible Device Upstream Requirements.....	402
F.1.4	TBT3-Compatible Device Downstream Requirements.....	402

F.1.5	<i>TBT3</i> -Compatible Self-Powered Device Without Predefined Upstream Port Rules	403
F.1.6	<i>TBT3</i> -Compatible Devices with a Captive Cable	403
F.2	<i>TBT3</i> Discovery and Entry Flow.....	403
F.2.1	<i>TBT3</i> Passive Cable Discover Identity Responses	404
F.2.2	<i>TBT3</i> Active Cable Discover Identity Responses.....	407
F.2.3	<i>TBT3</i> Device Discover Identity Responses	410
F.2.4	<i>TBT3</i> Discover SVID Responses.....	411
F.2.5	<i>TBT3</i> Device Discover Mode Responses	412
F.2.6	<i>TBT3</i> Cable Discover Mode Responses	413
F.2.7	<i>TBT3</i> Cable Enter Mode Command.....	414
F.2.8	<i>TBT3</i> Device Enter Mode Command	415
F.2.9	<i>TBT3</i> Cable Functional Difference Summary	417
G	Extracting Pulse Response from Sampled Data and Calculating Non-Linearity Noise.....	418
H	<i>USB PD</i> High-Voltage Design Considerations	420
H.1	Potential for Arcing Damage During Cable Withdrawal.....	420
H.2	Arcing During <i>USB</i> Type-C Cable Withdrawal	420
H.3	Mitigating Arcing Damage During Cable Withdrawal Due to Sink Discharge.....	422
H.3.1	Limiting Sink Discharge Rate.....	423
H.3.2	Load Removal	424
H.3.3	Limiting Source Current Capability	427
I	<i>USB PD</i> Encoding Guidelines for <i>USB</i> Type-C Product Types	428
I.1	<i>USB</i> Type-C Product Type Definitions and <i>USB PD</i> Encodings.....	428
I.2	<i>USB PD</i> Encoding Guidelines Tables.....	429
I.3	Detailed Examples.....	436
I.3.1	<i>USB 3.2</i> Host – no DC – Power Consumer : DRP (Source or Sink) / Not DRD (DFP).....	436
I.3.2	<i>USB 3.2</i> Peripheral – Power Provider : DRP (Source or Sink) / Not DRD (UFP).....	436
I.3.3	<i>USB4</i> Host – Power Consumer : DRP (Source or Sink) / Not DRD (DFP)	437
I.3.4	<i>USB4</i> Host – <i>USB4</i> DC – Partial or no <i>USB</i> Equivalent : DRP (Source or Sink) / DRD.....	437
I.3.5	<i>USB4</i> Peripheral : UFP (Sink)	438
I.3.6	<i>USB4</i> Dock (Upstream) – Power Provider : DRP (Source or Sink) / Not DRD (UFP)	439
I.3.7	<i>USB4</i> Hub (Downstream) – DFP (Source)	439
J	Design Assumptions for the <i>USB4</i> Gen4 LRD Cable Specification	441

Figures

Figure 2-1	<i>USB</i> Type-C Receptacle Interface (Front View).....	38
Figure 2-2	<i>USB</i> Full-Featured Type-C Plug Interface (Front View).....	39
Figure 3-1	<i>USB</i> Type-C Receptacle Interface Dimensions.....	50
Figure 3-2	Reference Design <i>USB</i> Type-C Plug External EMC Spring Contact Zones.....	54

Figure 3-3 USB Full-Featured Type-C Plug Interface Dimensions.....	55
Figure 3-4 Right-Angle USB Type-C Plug Dimensional Requirements	58
Figure 3-5 Reference Footprint for a USB Type-C Vertical Mount Receptacle (<i>Informative</i>)	59
Figure 3-6 Reference Footprint for a USB Type-C Dual-Row SMT Right-Angle Receptacle (<i>Informative</i>)	60
Figure 3-7 Reference Footprint for a USB Type-C Hybrid Right-Angle Receptacle (<i>Informative</i>).....	61
Figure 3-8 Reference Footprint for a USB Type-C Mid-Mount Dual-Row SMT Receptacle (<i>Informative</i>)	62
Figure 3-9 Reference Footprint for a USB Type-C Mid-Mount Hybrid Receptacle (<i>Informative</i>).....	63
Figure 3-10 Reference Footprint for a <i>USB 2.0</i> Type-C Through Hole Right Angle Receptacle (<i>Informative</i>) ...	64
Figure 3-11 Reference Footprint for a <i>USB 2.0</i> Type-C Single Row Right Angle Receptacle (<i>Informative</i>)	65
Figure 3-12 <i>USB 2.0</i> Type-C Plug Interface Dimensions	67
Figure 3-13 USB Type-C Plug EMC Shielding Spring Tip Requirements	70
Figure 3-14 Reference Design of Receptacle Mid-Plate.....	71
Figure 3-15 Reference Design of Retention Latch	72
Figure 3-16 Illustration of the Latch Soldered to the Paddle Card Ground.....	72
Figure 3-17 Reference Design of the USB Full-Featured Type-C Plug Internal EMC Spring.....	73
Figure 3-18 Reference Design of the <i>USB 2.0</i> Type-C Plug Internal EMC Spring	74
Figure 3-19 Reference Design of Internal EMC Pad.....	75
Figure 3-20 Reference Design of a USB Type-C Receptacle with External EMC Springs.....	76
Figure 3-21 Reference Design of a USB Full-Featured Type-C Plug Paddle Card.....	77
Figure 3-22 Illustration of a USB Full-Featured Type-C Cable Cross Section, a Coaxial Wire Example with VCONN	80
Figure 3-23 Illustration of a USB Full-Featured Type-C Cable Cross Section, a Coaxial Wire Example without VCONN	80
Figure 3-24 USB Full-Featured Type-C Standard Cable Assembly	84
Figure 3-25 USB Type-C to <i>USB 3.1</i> Standard-A Cable Assembly.....	88
Figure 3-26 USB Type-C to <i>USB 2.0</i> Standard-A Cable Assembly.....	89
Figure 3-27 USB Type-C to <i>USB 3.1</i> Standard-B Cable Assembly.....	90
Figure 3-28 USB Type-C to <i>USB 2.0</i> Standard-B Cable Assembly.....	91
Figure 3-29 USB Type-C to <i>USB 2.0</i> Mini-B Cable Assembly	92
Figure 3-30 USB Type-C to <i>USB 3.1</i> Micro-B Cable Assembly.....	93
Figure 3-31 USB Type-C to <i>USB 2.0</i> Micro-B Cable Assembly.....	94
Figure 3-32 USB Type-C to <i>USB 3.1</i> Standard-A Receptacle Adapter Assembly.....	95
Figure 3-33 USB Type-C to <i>USB 2.0</i> Micro-B Receptacle Adapter Assembly.....	96
Figure 3-34 Illustration of Test Points for a Mated Cable Assembly.....	98
Figure 3-35 Recommended Differential Insertion Loss Requirement (<i>USB 3.2</i> Gen2 and <i>USB4</i> Gen2)	99
Figure 3-36 Recommended Differential Return Loss Requirement	99
Figure 3-37 Recommended Differential Crosstalk Requirement.....	100
Figure 3-38 Recommended Differential Near-End and Far-End Crosstalk Requirement between USB D+/D- Pair and TX/RX Pair	101
Figure 3-39 Recommended Differential Insertion Loss Requirement (<i>USB4</i> Gen3/Gen4).....	101
Figure 3-40 Illustration of Insertion Loss Fit at Nyquist Frequency	102
Figure 3-41 Input Pulse Spectrum.....	103
Figure 3-42 IMR Limit as Function of ILfitatNq.....	104
Figure 3-43 IRL Limit as Function of ILfitatNq	106
Figure 3-44 Differential-to-Common Mode Conversion Requirement.....	106
Figure 3-45 IMR Limit as Function of ILfit at 10 GHz (<i>USB4</i> Gen3/Gen4).....	110
Figure 3-46 Definition of Port, Victim, and Aggressor.....	111
Figure 3-47 IXT_DP and IXT_USB Limit as Function of ILfit at 10 GHz (<i>USB4</i> Gen3/Gen4)	111
Figure 3-48 IRL Limit as Function of ILfit at 10 GHz (<i>USB4</i> Gen3/Gen4).....	112
Figure 3-49 Differential-to-Common Mode Conversion Requirement (<i>USB4</i> Gen3/Gen4).....	112
Figure 3-50 Cable Assembly in System.....	113

Figure 3-51 Requirement for Differential Coupling between CC and D+/D-	116
Figure 3-52 Requirement for Single-Ended Coupling between CC and D- in <i>USB 2.0</i> Type-C Cables.....	116
Figure 3-53 Requirement for Single-Ended Coupling between CC and D- in USB Full-Featured Type-C Cables	117
Figure 3-54 Requirement for Differential Coupling between VBUS and D+/D-	117
Figure 3-55 Requirement for Single-Ended Coupling between SBU_A and SBU_B.....	118
Figure 3-56 Requirement for Single-Ended Coupling between SBU_A/SBU_B and CC.....	119
Figure 3-57 Requirement for Coupling between SBU_A and differential D+/D-, and SBU_B and differential D+/D-	119
Figure 3-58 Illustration of USB Type-C Mated Connector.....	120
Figure 3-59 Recommended Impedance Limits of a USB Type-C Mated Connector.....	121
Figure 3-60 Recommended Ground Void Dimensions for USB Type-C Receptacle	121
Figure 3-61 Recommended Differential Near-End and Far-End Crosstalk Limits between D+/D- Pair and TX/RX Pairs.....	123
Figure 3-62 Recommended Limits for Differential-to-Common-Mode Conversion.....	124
Figure 3-63 IMR Limit as Function of ILfitatNq for USB Type-C to Legacy Cable Assembly	129
Figure 3-64 IRL Limit as Function of ILfitatNq for USB Type-C to Legacy Cable Assembly.....	129
Figure 3-65 Cable Assembly Shielding Effectiveness Testing.....	133
Figure 3-66 Shielding Effectiveness Pass/Fail Criteria.....	134
Figure 3-67 LLCR Measurement Diagram.....	135
Figure 3-68 Temperature Measurement Point.....	136
Figure 3-69 Example Current Rating Test Fixture Trace Configuration	137
Figure 3-70 Example of 4-Axis Continuity Test Fixture	139
Figure 3-71 Torque Force Application Distance for Right-Angle Plugs.....	141
Figure 3-71 Example Wrenching Strength Test Fixture for Plugs without Overmold.....	142
Figure 3-72 Reference Wrenching Strength Continuity Test Fixture.....	142
Figure 3-73 Example of Wrenching Strength Test Mechanical Failure Point	143
Figure 3-74 Wrenching Strength Test with Cable in Fixture.....	143
Figure 3-75 USB Type-C Cable Receptacle Flange Example.....	145
Figure 3-76 EMC Guidelines for Side Latch and Mid-Plate.....	146
Figure 3-77 EMC Finger Connections to Plug Shell.....	147
Figure 3-78 EMC Pad Connections to Receptacle Shell	147
Figure 3-79 Examples of Connector Apertures.....	148
Figure 3-80 Recommended Minimum Spacing between Connectors.....	148
Figure 3-81 Recommended Minimum Plug Overmold Clearance	149
Figure 3-82 Cable Plug Overmold and an Angled Surface.....	149
Figure 4-1 Cable IR Drop.....	153
Figure 4-2 Cable IR Drop for powered cables.....	153
Figure 4-3 Logical Model for Single-Lane Data Bus Routing across USB Type-C-based Ports.....	161
Figure 4-4 Logical Model for USB Type-C-based Ports for a Single-Lane Direct Connect Device.....	161
Figure 4-5 Pull-Up/Pull-Down CC Model.....	163
Figure 4-6 Current Source/Pull-Down CC Model.....	163
Figure 4-7 Source Functional Model for CC1 and CC2	166
Figure 4-8 Source Functional Model Supporting <i>USB PD</i> PR_Swap.....	167
Figure 4-9 Sink Functional Model for CC1 and CC2	167
Figure 4-10 Sink Functional Model Supporting <i>USB PD</i> PR_Swap and VCONN_Swap	168
Figure 4-11 DRP Functional Model for CC1 and CC2.....	169
Figure 4-12 Connection State Diagram: Source.....	174
Figure 4-13 Connection State Diagram: Sink	175
Figure 4-14 Connection State Diagram: Sink with Accessory Support	176
Figure 4-15 Connection State Diagram: DRP	177

Figure 4-16 Connection State Diagram: DRP with Accessory and Try.SRC Support	178
Figure 4-17 Connection State Diagram: DRP with Accessory and Try.SNK Support.....	179
Figure 4-18 Connection State Diagram: Charge-Through VPD	180
Figure 4-19 Sink Power Sub-States	203
Figure 4-20 Passive Cable eMarker State Diagram.....	205
Figure 4-21 Active Cable eMarker State Diagram.....	205
Figure 4-22 Cable Ra Management State Diagram	206
Figure 4-23 Source to Sink Functional Model.....	209
Figure 4-24 Source to DRP Functional Model.....	210
Figure 4-25 DRP to Sink Functional Model.....	211
Figure 4-26 DRP to DRP Functional Model – CASE 1	212
Figure 4-27 DRP to DRP Functional Model – CASES 2 & 3.....	213
Figure 4-28 Source to Source Functional Model	215
Figure 4-29 Sink to Sink Functional Model.....	215
Figure 4-30 DRP to VPD Model	216
Figure 4-31 Example DRP to Charge-Through VPD Model	217
Figure 4-32 Source to Legacy Device Port Functional Model	224
Figure 4-33 Legacy Host Port to Sink Functional Model.....	224
Figure 4-34 DRP to Legacy Device Port Functional Model	225
Figure 4-35 Legacy Host Port to DRP Functional Model.....	226
Figure 4-36 Sink Monitoring for Current in Pull-Up/Pull-Down CC Model.....	229
Figure 4-37 Sink Monitoring for Current in Current Source/Pull-Down CC Model.....	230
Figure 4-38 <i>USB PD</i> over CC Pins	231
Figure 4-39 <i>USB PD</i> BMC Signaling over CC	231
Figure 4-40 USB Type-C Cable's Output as a Function of Load for Non-PD-based USB Type-C Charging.....	235
Figure 4-41 0 – 3 A <i>USB PD</i> -based Charger USB Type-C Cable's Output as a Function of Load	236
Figure 4-42 3 – 5 A <i>USB PD</i> -based Charger USB Type-C Cable's Output as a Function of Load	236
Figure 4-43 Electronically Marked Cable with VCONN connected through the cable	242
Figure 4-44 Electronically Marked Cable with SOP' at both ends	242
Figure 4-45 Example Charge-Through VCONN-Power USB Device Use Case	245
Figure 4-46 Example Source Implementation.....	247
Figure 4-47 Exiting from <i>Attached.SRC</i> with slow discharging VBULK	248
Figure 4-48 Exiting from <i>Attached.SRC</i> with fast discharging VBULK	248
Figure 4-49 DRP Timing.....	249
Figure 4-50 Pull-Up/Pull-Down Voltage Detection Model.....	251
Figure 4-51 Current Source Voltage Detection Model	251
Figure 5-1 <i>USB4</i> Discovery and Entry Flow Model.....	262
Figure 5-2 <i>USB4</i> Hub with <i>USB4</i> Host and Device Connection Flow Alignment	270
Figure 5-3 <i>USB4</i> Hub with <i>USB 3.2</i> Host and <i>USB4</i> Device Connection Flow Alignment	271
Figure 5-4 <i>USB4</i> Hub with <i>USB4</i> Host and <i>USB 3.2</i> Device Connection Flow Alignment	272
Figure 5-5 <i>USB4</i> Hub with <i>USB 3.2</i> Host and Device Connection Flow Alignment	273
Figure 5-6 <i>USB4</i> Hub with <i>USB4</i> Host and DP Alt Mode Device Connection Flow Alignment	274
Figure 5-7 <i>USB4</i> Hub with <i>USB 3.2</i> Host and DP Alt Mode Device Connection Flow Alignment	275
Figure 6-1 Active Cable Topologies	281
Figure 6-2 SuperSpeed USB Electrical Test Points	284
Figure 6-3 SuperSpeed USB Compliance Test Setup	284
Figure 6-4 Compliance Points Definition.....	287
Figure 6-5 RX Differential Return-Loss Mask.....	288
Figure 6-6 Re-timer-based Active Cable Compliance Test Setup	289
Figure 6-7 Example of Transmitter Frequency Variation During Clock Switching.....	291
Figure 6-8 Active Cable Functional Test Setup.....	292

Figure 6-9 Linear Re-driver-based Active Cable Compliance Setup	293
Figure 6-10 Gain Parameters Specified for the Linear Re-driver Active Cable	296
Figure 6-11 OUTPUT_NOISE Limit Versus $IL_{fitat}Nq$	297
Figure 6-12 Gain Parameters for <i>USB4</i> Gen4 LRD Active Cables	300
Figure 6-13 <i>USB4</i> LRD Active Cable Snooping of TxFFE Negotiation	305
Figure 6-14 <i>USB4</i> State Machine per Channel (<i>Informative</i>)	306
Figure 6-15 <i>USB4</i> Gen4 CL1/CL2 Exit Flow with LRD Active Cable	308
Figure 6-16 <i>USB4</i> Symmetric to Asymmetric Transition	309
Figure 6-17 <i>USB4</i> Asymmetric to Symmetric Transition	311
Figure 6-18 OIAC <i>USB PD</i> Message Forwarding	324
Figure 6-19 OIAC Successful Data Role Swap	327
Figure 6-20 OIAC Rejected Data Role Swap	327
Figure 6-21 OIAC Wait Data Role Swap	328
Figure 6-22 OIAC Initiator Reject Data Role Swap	328
Figure 6-23 OIAC Initiator Wait Data Role Swap	329
Figure 6-24 OIAC Discovery – Phase 1	331
Figure 6-25 OIAC Reboot – Phase 2	332
Figure 6-26 OIAC Plug-A Configured as DFP – Phase 3	333
Figure 6-27 OIAC Plug-A Configured as UFP – Phase 3	334
Figure 6-28 OIAC Plug-A No Connection Possible Billboard – Phase 3	335
Figure 6-29 OIAC Plug-A State Diagram Part 1 (Phase 1 and 2)	336
Figure 6-30 OIAC Plug-A State Diagram Part 2 (Phase 3)	337
Figure 6-31 OIAC Plug-B State Diagram	343
Figure 6-32 Illustration of Usages for OIAC that Require an Adapter or Hub	350
Figure A-1 Electrolytic Liquid Corrosion Example	352
Figure A-2 Corrosion Mitigation in Pull-Up/Pull-Down CC Model	353
Figure A-3 Corrosion Mitigation in Current Source/Pull-Down CC Model	353
Figure A-4 Corrosion Mitigation in Current Source/Pull-Down CC Model with Alternate Mitigation	353
Figure A-5 Liquid Detection by Leakage Measurement	354
Figure A-6 Liquid Detection by Pulsed Measurement	355
Figure A-7 Example Measurement of a Dry Port	356
Figure A-8 Example Measurement of a Port with Reverse Osmosis Water	356
Figure A-9 Example Measurement of a Port with Tap Water	357
Figure A-10 Example Measurement of a Port with Artificial Sweat	357
Figure A-11 Example Measurement of a Port with Ocean Water	358
Figure A-12 Example Liquid Detect Pin(s)/Pad(s) Location Area	359
Figure A-13 Example Liquid Detect Pad Along All Connector Pins	359
Figure A-14 Example Liquid Detect Pins Adjacent to $V_{BUS}/SBU/CC$	360
Figure A-15 Example Liquid Detect Connector Surface Mount View	360
Figure B-1 USB Type-C Debug Accessory Layered Behavior	361
Figure B-2 DTS Plug Interface	361
Figure B-3 Connection State Diagram: DTS Source	363
Figure B-4 Connection State Diagram: DTS Sink	364
Figure B-5 Connection State Diagram: DTS DRP	365
Figure B-6 TS Sink Power Sub-States	369
Figure D-1 Active Cable Model (Single Port, Top Mount Receptacle)	383
Figure D-2 Model Architecture	383
Figure D-3 Heat Sources and Heat Flow Paths	384
Figure D-4 Vertically Stacked Horizontal Connectors 3x1 Configuration (VERT)	385
Figure D-5 Horizontally Stacked Vertical Connectors 1x3 Configuration (HZ90)	386
Figure D-6 Horizontally Stacked Horizontal Connectors 1x3 Configuration (HORZ)	386

Figure D-7 <i>USB 3.2</i> Single-Lane 3A Active Cable in a 3-Port Configuration.....	387
Figure D-8 <i>USB 3.2</i> Single-Lane 5A Active Cable in a 3-Port Configuration.....	387
Figure D-9 Impact of Overmold Power P_0 and Thermal Boundary Temperature T_{MB} at 3 A VBUS in a Single Port Configuration	389
Figure D-10 Impact of Overmold Power P_0 and Thermal Boundary Temperature T_{MB} at 5 A VBUS in a Single Port Configuration	389
Figure D-11 <i>USB 3.2</i> Active Cable Dongle Design (One End Shown)	390
Figure D-12 <i>USB 3.2</i> Dual-Lane 3A Active Cable in a 3-Port Configuration.....	390
Figure D-13 <i>USB 3.2</i> Dual-Lane 5A Active Cable in a 3-Port Configuration.....	391
Figure D-14 Example: Additional Heat Spreader on Receptacle in Host or Device	392
Figure D-15 Example: Heat Sinking on Chassis of Host or Device.....	392
Figure E-1 Pins Available for Reconfiguration over the Full-Featured Cable	394
Figure E-2 Pins Available for Reconfiguration for Direct Connect Applications	394
Figure E-3 Alternate Mode Implementation using a USB Type-C to USB Type-C Cable	396
Figure E-4 Alternate Mode Implementation using a USB Type-C to Alternate Mode Cable or Device.....	396
Figure E-5 USB DisplayPort Dock Example	398
Figure E-6 <i>USB4</i> DFP Mode Entry Flow Example.....	400
Figure F-1 <i>TBT3</i> Discovery Flow	404
Figure H-1 Arcing Damage to USB Type-C VBUS Contacts	420
Figure H-2 Arcing Due to Discharge.....	421
Figure H-3 Arcing Prevention During Sink Discharge by Limiting Slew Rate	423
Figure H-4 Arcing Prevention During Sink Discharge by Load Removal.....	425

Tables

Table 2-1 Summary of power supply options.....	43
Table 3-1 USB Type-C Standard Cable Assemblies.....	46
Table 3-2 USB Type-C Legacy Cable Assemblies	47
Table 3-3 USB Type-C Legacy Adapter Assemblies	47
Table 3-4 USB Type-C Receptacle Interface Pin Assignments.....	78
Table 3-5 USB Type-C Receptacle Interface Pin Assignments for <i>USB 2.0</i> -only Support	79
Table 3-6 USB Type-C Standard Cable Wire Assignments	81
Table 3-7 USB Type-C Cable Wire Assignments for Legacy Cables/Adapters.....	82
Table 3-8 Reference Wire Gauges for standard USB Type-C Cable Assemblies.....	83
Table 3-9 Reference Wire Gauges for standard USB Type-C to Legacy Cable Assemblies	83
Table 3-10 USB Full-Featured Type-C Standard Cable Assembly Wiring.....	85
Table 3-11 <i>USB 2.0</i> Type-C Standard Cable Assembly Wiring.....	86
Table 3-12 USB Type-C to <i>USB 3.1</i> Standard-A Cable Assembly Wiring	88
Table 3-13 USB Type-C to <i>USB 2.0</i> Standard-A Cable Assembly Wiring	89
Table 3-14 USB Type-C to <i>USB 3.1</i> Standard-B Cable Assembly Wiring	90
Table 3-15 USB Type-C to <i>USB 2.0</i> Standard-B Cable Assembly Wiring	91
Table 3-16 USB Type-C to <i>USB 2.0</i> Mini-B Cable Assembly Wiring.....	92
Table 3-17 USB Type-C to <i>USB 3.1</i> Micro-B Cable Assembly Wiring	93
Table 3-18 USB Type-C to <i>USB 2.0</i> Micro-B Cable Assembly Wiring	94
Table 3-19 USB Type-C to <i>USB 3.1</i> Standard-A Adapter Assembly Wiring	95
Table 3-20 USB Type-C to <i>USB 2.0</i> Micro-B Receptacle Adapter Assembly Wiring	96
Table 3-21 Differential Insertion Loss Examples for USB TX/RX with Twisted Pair Construction	97
Table 3-22 Differential Insertion Loss Examples for USB TX/RX with Coaxial Construction	98
Table 3-23 Key Parameters in COM Configuration File	114
Table 3-24 Electrical Requirements for CC and SBU Wires.....	115

Table 3-25 Coupling Matrix for Low Speed Signals.....	115
Table 3-26 Maximum Mutual Inductance (M) between VBUS and Low Speed Signal Lines	118
Table 3-27 USB D+/D- Signal Integrity Requirements for USB Type-C to USB Type-C Passive Cable Assemblies.....	120
Table 3-28 USB Type-C Mated Connector Recommended Signal Integrity Characteristics (<i>Informative</i>)	122
Table 3-29 USB Type-C Receptacle Connector Signal Integrity Characteristics for <i>USB4</i> Gen3 (<i>Normative</i>) ..	125
Table 3-30 USB D+/D- Signal Integrity Requirements for USB Type-C to Legacy USB Cable Assemblies (<i>Normative</i>).....	126
Table 3-31 Design Targets for USB Type-C to <i>USB 3.1</i> Gen2 Legacy Cable Assemblies (<i>Informative</i>).....	127
Table 3-32 USB Type-C to <i>USB 3.1</i> Gen2 Legacy Cable Assembly Signal Integrity Requirements (<i>Normative</i>)	128
Table 3-33 USB D+/D- Signal Integrity Requirements for USB Type-C to Legacy USB Adapter Assemblies (<i>Normative</i>).....	130
Table 3-34 Design Targets for USB Type-C to <i>USB 3.1</i> Standard-A Adapter Assemblies (<i>Informative</i>)	131
Table 3-35 USB Type-C to <i>USB 3.1</i> Standard-A Receptacle Adapter Assembly Signal Integrity Requirements (<i>Normative</i>).....	132
Table 3-36 Current Rating Test PCB.....	137
Table 3-37 Maximum DC Resistance Requirement (<i>Normative</i>).....	137
Table 3-38 Force and Moment Requirements	140
Table 3-39 Environmental Test Conditions	143
Table 3-40 Reference Materials	144
Table 4-1 USB Type-C List of Signals	151
Table 4-2 VBUS Source Characteristics	154
Table 4-3 VBUS Sink Characteristics	155
Table 4-4 USB Type-C Source Port's VCONN Requirements Summary.....	156
Table 4-5 VCONN Source Characteristics.....	156
Table 4-6 Cable VCONN Sink Characteristics.....	157
Table 4-7 VCONN-Powered Accessory (VPA) Sink Characteristics.....	158
Table 4-8 VCONN-Powered Device (VPD) Sink Characteristics	159
Table 4-9 USB Type-C Port Interoperability.....	162
Table 4-10 Source Perspective	164
Table 4-11 Source (Host) and Sink (Device) Behaviors by State	164
Table 4-12 Recommended Implementation of Try.SRC and Try.SNK for Dual-Role Ports with Preferred Roles	171
Table 4-13 <i>USB PD</i> Swapping Port Behavior Summary.....	171
Table 4-14 Use of Power and Data Role Swaps for Dual-Role Ports with Preferred Roles.....	172
Table 4-15 Power Role Behavioral Model Summary	172
Table 4-16 Source Port CC Pin State.....	181
Table 4-17 Sink Port CC Pin State.....	181
Table 4-18 Mandatory and Optional States	207
Table 4-19 Precedence of Power Source Usage	227
Table 4-20 USB Type-C Current Advertisement and PDP Equivalent.....	229
Table 4-21 Sink Maximum Current Limit When Attached to CTVPD	232
Table 4-22 Example Charge-Through VPD Sink Maximum Currents based on VBUS Impedance and GND Impedance.....	233
Table 4-23 Examples of 4-port Shared Capacity Group and Power Sharing Policies.....	239
Table 4-24 SOP' and SOP'' Timing.....	242
Table 4-25 Charge-Through VPD CC Impedance (RccCON) Requirements	244
Table 4-26 CTVPD Charge-Through Port VBUS Bypass Requirements	244
Table 4-27 Source CC Termination (Rp) Requirements.....	245
Table 4-28 Sink CC Termination (Rd) Requirements	246

Table 4-29	Powered Cable Termination Requirements	246
Table 4-30	CC Termination Requirements for Disabled state, ErrorRecovery state, and Unpowered Source.....	246
Table 4-31	SBU Termination Requirements.....	246
Table 4-32	VBUS and VCONN Timing Parameters.....	247
Table 4-33	DRP Timing Parameters.....	249
Table 4-34	CC Timing Parameters	250
Table 4-35	Sink CC Pin Voltages for Connect Detection for Rd and Clamp Voltage $\pm 20\%$	254
Table 4-36	Sink CC Pin Voltages for Connect and Current Advertisement Detection for Rd $\pm 10\%$	254
Table 4-37	Source CC Pin Voltages for All Current Advertisements using a Pull-Up current.....	255
Table 4-38	Source CC Pin Voltages for Pull-Up Resistance to 5 V.....	256
Table 4-39	Source CC Pin Voltages for Pull-Up Resistance to 3.3 V	257
Table 4-40	CC Pin Clamping Voltage.....	257
Table 5-1	Certified Cables Where <i>USB4</i> -compatible Operation is Expected.....	264
Table 5-2	Fallback Mapping <i>USB4</i> Functions to USB Device Class Types.....	276
Table 5-3	USB Billboard Device Class Availability Following <i>USB4</i> Device Entry Failure.....	277
Table 6-1	<i>USB4</i> Cable Identity Summary.....	279
Table 6-2	Active Cable Features.....	280
Table 6-3	Active Cable SBU Requirements.....	281
Table 6-4	Active Cable Power-on Requirements	282
Table 6-5	Maximum <i>USB 3.2</i> U0 Delay	283
Table 6-6	<i>USB 3.2</i> U-State Requirements	283
Table 6-7	Active Cable <i>USB 3.2</i> Stressed Source Swing, TP1.....	285
Table 6-8	Active Cable <i>USB 3.2</i> Stressed Source Jitter, TP1.....	285
Table 6-9	Active Cable <i>USB 3.2</i> Input Swing at TP2 (<i>Informative</i>).....	286
Table 6-10	Active Cable <i>USB 3.2</i> Output Swing at TP3 (<i>Informative</i>).....	286
Table 6-11	Compliance Points Definition.....	287
Table 6-12	<i>USB4</i> CL-State Requirements for Active Cables	289
Table 6-13	Re-timer-based <i>USB4</i> Active Cable Output Specifications Applied for All Speeds (at TP3')	290
Table 6-14	Stressed Receiver Conditions for <i>USB4</i> Gen2 and Gen3 Cable Compliance Testing (at TP2).....	292
Table 6-15	Linear Re-driver-based Active Cable Output Parameters	294
Table 6-16	Input Signal at TP2 for Compliance Testing.....	295
Table 6-17	<i>USB4</i> Gen4 LRD-based Active Cable ILfitMask Limits	299
Table 6-18	<i>USB4</i> Gen4 LRD-based Active Cable Wiring Diagram for Compliance	301
Table 6-19	<i>USB4</i> Gen4 Active Cable SBx Transaction Snooping.....	302
Table 6-20	<i>USB4</i> LRD Active Cable Logical Timing Parameters	303
Table 6-21	<i>USB4</i> LRD Tuning Register Snooping.....	312
Table 6-22	Cable Temperature Requirements.....	313
Table 6-23	OIAC <i>USB PD</i> Message Handling.....	320
Table 6-24	Recommended OIAC Sink_Capabilities PDO (SOP) on Initial Connection	321
Table 6-25	Recommended OIAC Sink_Capabilities PDO (SOP) on Active Connection.....	321
Table 6-26	Recommended OIAC Active Sink RDO (SOP)	322
Table 6-27	OIAC <i>USB PD</i> Message Timing.....	325
Table 6-28	Port and Plug Capabilities.....	330
Table 6-29	<i>USB 3.2</i> U-State Requirements.....	350
Table 6-30	<i>USB4</i> CL-State Requirements for OIAC	351
Table A-1	Example Measurement Test Conditions	355
Table B-1	DTS to TS Port Interoperability.....	362
Table B-2	Rp/Rp Charging Current Values for a DTS Source.....	369
Table B-3	Mandatory and Optional States.....	371
Table D-1	Heat Sources and Heat Dissipation Example (1.5 W cable and 5 A)	384

Table D-2 <i>USB 3.2</i> Active Cable Design Single Port Case Study at 35 °C Ambient and 60 °C Thermal Boundary (Single Lane).....	385
Table D-3 <i>USB 3.2</i> Active Cable Design Single Port Case Study at 35 °C Ambient and 60 °C Thermal Boundary (Dual Lane).....	388
Table E-1 USB Safe State Electrical Requirements	397
Table E-2 USB Billboard Device Class Availability Following Alternate Mode Entry Failure	397
Table E-3 Alternate Mode Signal Noise Ingression Requirements.....	397
Table F-1 <i>TBT3</i> Passive Cable Discovery Identity VDO Responses.....	405
Table F-2 <i>TBT3</i> Passive Cable VDO for <i>USB PD</i> Revision 2.0, Version 1.3.....	406
Table F-3 <i>TBT3</i> Passive Cable VDO for <i>USB PD</i> Revision 3.0, Version 1.2.....	406
Table F-4 <i>TBT3</i> Active Cable Discovery Identity VDO Responses	407
Table F-5 <i>TBT3</i> Active Cable VDO for <i>USB PD</i> Revision 2.0, Version 1.3	408
Table F-6 <i>TBT3</i> Active Cable VDO 1 for <i>USB PD</i> Revision 3.0, Version 1.2	408
Table F-7 <i>TBT3</i> Active Cable VDO 2 for <i>USB PD</i> Revision 3.0, Version 1.2	409
Table F-8 <i>TBT3</i> Device Discovery Identity VDO Responses.....	410
Table F-9 <i>TBT3</i> Discover SVID VDO Responses.....	411
Table F-10 <i>TBT3</i> Device Discover Mode VDO Responses	412
Table F-11 <i>TBT3</i> Cable Discover Mode VDO Responses.....	413
Table F-12 <i>TBT3</i> Cable Enter Mode Command.....	414
Table F-13 <i>TBT3</i> Device Enter Mode Command	415
Table F-14 <i>TBT3</i> Cable Functional Difference Summary	417
Table G-1 Linear Fit Pulse Extraction Parameters.....	419
Table I-1 USB Type-C Product Example Clarifying Notes.....	430
Table I-2 <i>USB PD</i> Encoding Guidelines for Example Products.....	433

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Aces	JST Mfg. Co., Ltd.	Pericom
Fairchild Semiconductor	Korea Electric Terminal	Semtech Corporation
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Industrial Technology Research Institute (ITRI)	Motorola Mobility LLC	SMK Corporation
	PalCONN/PalNova (Palpilot International Corp.)	Toshiba Corporation
Joinsoon Electronics Mfg. Co. Ltd.		

Revision History

Release	Date	Description
1.0	August 11, 2014	Initial Release
1.1	April 3, 2015	Reprint release including incorporation of all approved ECNs as of the revision date plus editorial clean-up.
1.2	March 25, 2016	Reprint release including incorporation of all approved ECNs as of the revision date plus editorial clean-up.
1.3	July 14, 2017	Reprint release including incorporation of all approved ECNs as of the revision date plus editorial clean-up.
1.4	March 29, 2019	Reprint release including incorporation of all approved ECNs as of the revision date plus editorial clean-up.
2.0	August 2019	New release primarily for enabling USB4 over USB Type-C connectors and cables. Also includes incorporation of all approved ECNs as of the revision date plus editorial clean-up.
2.1	May 2021	New release primarily for enabling Extended Power Range (EPR) and defining EPR cables aligning with USB Power Delivery Specification R3.1 V1.0. Also includes incorporation of all approved ECNs as the revision date plus editorial clean-up.
2.2	October 2022	New release primarily for enabling USB4 Version 2.0 (80 Gbps) over USB Type-C connectors and cables. Also includes incorporation of all approved ECNs as of the revision date plus editorial clean-up.
2.3	October 2023	New release primarily for <i>deprecating</i> the Audio Adapter Accessory Mode and <i>replacing it with</i> the Liquid Corrosion Mitigation Mode , and for updating the Multi-port Charger Shared Capacity definition and behaviors. Also includes incorporation of all other approved ECNs as of the revision date. Note: this release was created using a newly developed document template that includes some style adjustments and editorial clean-up.
2.4	October 2024	Reprint release including incorporation of all approved ECNs as of the revision date plus editorial clean-up.

1 Introduction

With the continued success of the USB interface, there exists a need to adapt USB technology to serve newer computing platforms and devices as they trend toward smaller, thinner, and lighter form-factors. Many of these newer platforms and devices are reaching a point where existing USB receptacles and plugs are inhibiting innovation, especially given the relatively large size and internal volume constraints of the Standard-A and Standard-B versions of USB connectors. Additionally, as platform usage models have evolved, usability and robustness requirements have advanced, and the existing set of USB connectors were not originally designed for some of these newer requirements. This specification establishes a new USB connector ecosystem that addresses the evolving needs of platforms and devices while retaining all the functional benefits of USB that form the basis for this most popular computing device interconnect.

1.1 Purpose

This specification defines the USB Type-C® receptacles, plug and cables.

The USB Type-C Cable and Connector Specification is guided by the following principles:

- Enable new and exciting host and device form-factors where size, industrial design and style are important parameters
- Work seamlessly with existing USB host and device silicon solutions
- Enhance ease of use for connecting USB devices with a focus on minimizing user confusion for plug and cable orientation

The USB Type-C Cable and Connector Specification defines a receptacle, plug, cable, and detection mechanisms that are compatible with existing USB interface electrical and functional specifications. This specification covers the following aspects that are needed to produce and use this new USB cable/connector solution in newer platforms and devices, and that interoperate with existing platforms and devices:

- USB Type-C receptacles, including electro-mechanical definition and performance requirements
- USB Type-C plugs and cable assemblies, including electro-mechanical definition and performance requirements
- USB Type-C to legacy cable assemblies and adapters
- USB Type-C-based device detection and interface configuration, including support for legacy connections
- **USB Power Delivery** optimized for the USB Type-C connector

The USB Type-C Cable and Connector Specification defines a standardized mechanism that supports **Alternate Modes**, such as repurposing the connector for docking-specific applications.

1.2 Scope

This specification is intended as a supplement to the existing **USB 2.0**, **USB 3.2**, **USB4®** and **USB Power Delivery** specifications. It addresses only the elements required to implement and support the USB Type-C receptacles, plugs and cables.

Normative information is provided to allow interoperability of components designed to this specification. **Informative** information, when provided, may illustrate possible design implementations.

1.3 Related Documents

USB 2.0 Universal Serial Bus Revision 2.0 Specification

This includes the entire document release package.

USB 3.2 Universal Serial Bus Revision 3.2 Specification

This includes the entire document release package.

USB 3.1 Legacy Cable and Connector Specification, Revision 1.0

USB4 USB4 Specification, Version 2.0, June 2023

(including posted errata and ECNs)

TBT3 Chapter 13 of USB4 Specification, Version 2.0, June 2023

USB PD USB Power Delivery Specification, Revision 2.0, Version 1.3, January 12, 2017

USB Power Delivery Specification, Revision 3.2, Version 1.1, October 2024

(including posted errata and ECNs)

USB BB USB Billboard Device Class Specification, Revision 1.2.2, January 29, 2021

USB BC Battery Charging Specification, Revision 1.2, March 15, 2012

(including posted errata and ECNs)

DP AM DisplayPort™ Alt Mode on USB Type-C Standard, Version 2.1a, August 2024

All USB-specific documents are available for download at <http://www.usb.org/documents>.

The **DisplayPort Alt Mode** specification is available from VESA (<http://www.vesa.org>).