USB Power Delivery ENGINEERING CHANGE NOTICE

Title: iCapChange Removal
Applied to: USB Power Delivery Specification Revision 2.0 Version 1.2

Brief description of the functional changes:
Removal of the iCapChange parameter from the set of Sink requirements. The Sink defined parameters iLoadStepRate, iLoadReleaseRate, and the negotiated current level provide the necessary definition for the Sink's current draw characteristics.

Benefits as a result of the changes:
Removing iCapChange eliminates an unnecessary limitation originally put on the Sink with respect to its current draw from the Source. Removing iCapChange will allow Sinks more freedom to manipulate their load current as long as the parameters iLoadStepRate, iLoadReleaseRate and the negotiated current level are met.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
Removing the iCapChange parameter does not negatively affect the existing revision and systems that currently conform to the USB specification.

An analysis of the hardware implications:
To meet iCapChange, Sinks may have implemented commonly known circuit or power system design methods to control current draw during start up or load changes. These methods, if implemented, will no longer be necessary to meet iCapChange.

An analysis of the software implications:
None.

An analysis of the compliance testing implications:
The iCapChange parameter will no longer need to be verified during compliance testing.

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Actual Change

(a). Section 7.2.2, Page 217

From Text:

The Sink bulk capacitance that is within the ***cSnkBulk*** max or ***cSnkBulkPd*** max limits is allowed to change to support a newly negotiated power level. The capacitance can be changed when the Sink enters Sink Standby or during a voltage transition or when the Sink begins to operate at the new power level. Regardless of when the change occurs, the capacitance change shall occur in such a manner that does not introduce a V_{BUS} transient current greater than ***iCapChange***. During a Power Role Swap the Default Sink shall transition to Swap Standby before operating as the new Source. Any change in bulk capacitance required to complete the Power Role Swap shall occur during Swap Standby.

To Text:

The Sink bulk capacitance that is within the ***cSnkBulk*** max or ***cSnkBulkPd*** max limits is allowed to change to support a newly negotiated power level. The capacitance can be changed when the Sink enters Sink Standby or during a voltage transition or when the Sink begins to operate at the new power level. Changing the Sink bulk capacitance shall not cause a transient current on V_{BUS} that violates the present Contract. During a Power Role Swap the Default Sink shall transition to Swap Standby before operating as the new Source. Any change in bulk capacitance required to complete the Power Role Swap shall occur during Swap Standby.

(6). Section 7.4.2, Page 265, Table 7-23

From Text:

The Sink Electrical Parameters that shall be followed are specified in Table 7-23 and Table 4-4.

Table 7-23 Sink Electrical Parameters

Parameter	Description	MIN	TYP	MAX	UNITS	Reference
***cSnkBulk*[1]**	Sink bulk capacitance on V_{BUS} at attach.	1		10	µF	Section 7.2.2
***cSnkBulkDB*[1]**	Bulk capacitance on V_{BUS} when acting as a Sink during Dead Battery.	1		10	µF	Section 7.2.9.3
cSnkBulkPd	Bulk capacitance on V_{BUS} a Sink is allowed after a successful negotiation.	1		100	µF	Section 7.2.2
iCapChange	Transient current allowed to flow when the Sink changes its bulk capacitance.			10	mA	Section 7.2.2
iLoadStepRate	Load step di/dt. Refer to ***[USBType-C1.0]*** Section 3.7.3.3.2 for cable details.			150	mA/µs	Section 7.2.6

To Text (removal of the iCapChange parameter from the table):

The Sink Electrical Parameters that shall be followed are specified in Table 7-23 and Table 4-4.

Table 7-23 Sink Electrical Parameters

Parameter	Description	MIN	TYP	MAX	UNITS	Reference
cSnkBulk[1]	Sink bulk capacitance on V_{BUS} at attach.	1		10	µF	Section 7.2.2
cSnkBulkDB[1]	Bulk capacitance on V_{BUS} when acting as a Sink during Dead Battery.	1		10	µF	Section 7.2.9.3
~~***iCapChange***~~	~~Transient current allowed to flow when the Sink changes its bulk capacitance.~~			~~10~~	~~mA~~	~~Section 7.2.2~~
cSnkBulkPd	Bulk capacitance on V_{BUS} a Sink is allowed after a successful negotiation.	1		100	µF	Section 7.2.2
iLoadStepRate	Load step di/dt. Refer to ***[USBType-C1.0]*** Section 3.7.3.3.2 for cable details.			150	mA/µs	Section 7.2.6