OMTP

LOCAL CONNECTIVITY: DATA CONNECTIVITY

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CONTENTS

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1 INTRODUCTION

1.1 DOCUMENT PURPOSE

This document defines some recommended classes for a physical data connector. These classes are intended to be referenced by OMTP operators in their Terminal requirements for Terminal vendors. They also work as technical guidelines for companies producing the data local connectivity related platforms and component technologies.

1.2 BUSINESS RATIONALE

Currently, a typical Terminal portfolio of an operator consists of dozens of Terminals, complemented with a huge number of different peripherals such as headsets for voice calls, car kits, data cables, etc. The variety of different peripherals is necessary due to the different physical connectors used in the Terminals. This fragmentation creates unnecessary cost for the whole value chain, limits the freedom of selection of an end user, and restricts competition by creating barriers of market entry.

Reaching an industry agreement on standard data connectivity solutions, still leaving room for innovation, may streamline the whole value chain and provide end users with a larger choice of the most popular peripherals. They will also be able to use their legacy home entertainment and PC equipment. This also may create a new market opportunity for peripheral vendors, which may benefit the end users and support convergence-related operator business cases such as music delivery.

1.3 INTENDED AUDIENCE

These recommendations are intended to be referenced by OMTP operators in their Terminal requirement specifications. They also work as technical guidelines for companies producing the data local connectivity related platforms and component technologies.

1.4 CONVENTIONS

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC2119 [1].

- MUST: This word, or the terms "REQUIRED" or "SHALL", mean that the definition is an absolute requirement of the specification.

- MUST NOT: This phrase, or the phrase "SHALL NOT", mean that the definition is an absolute prohibition of the specification.

- SHOULD: This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

- SHOULD NOT: This phrase, or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behaviour is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behaviour described with this label.

- MAY: This word, or the adjective "OPTIONAL", mean that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option MUST be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option MUST be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides.)

The requirements within this document are uniquely identified using the following format:

LCD-####, where:

- LCD is the 3-letter acronym identifying the subject of this OMTP document (Local Connectivity, Data Connectors).

- #### is a 4 digit number that identifies the requirement (e.g. 0010) and which is to be unique within the document.

2 LOCAL CONNECTIVITY: DATA CONNECTORS

This document describes classes for wired data connectivity. The goal of these requirements is to guarantee an optimal data connectivity experience.

Wired data connectivity consists of a connector in the mobile Terminal that has mechanical and electrical characteristics.

- Electrical characteristics refer to the electrical compatibility in the connectors.

- Mechanical characteristics refer to the material, dimensions, and electrical conductors of the connectors.

3 USE CASES

3.1 USE CASE 1

An end user can use a standard data connector to connect to any compliant mobile Terminal to a PC or entertainment system.

3.2 USE CASE 2

An end user can use a digital headset with a standard data connector to connect with any compliant mobile Terminal. The connector is easy to use in mobile situations and durable enough for daily use.

3.3 USE CASE 3

An operator can use a standard data connector to access and modify the Terminal data of any compliant Terminal, including re-flashing the Terminal.

3.4 USE CASE 4

The Terminal can be charged using the data connector when no other charging option is available.

3.5 USE CASE 5

The user has a data enabled Terminal that can be connected to a computer for use as a modem. The user may use the HSxPA capabilities in their Terminal.

3.6 USE CASE 6

The user has a Terminal with high speed UICC interface and he is able to access UICC services and data using a computer.

3.7 USE CASE 7

The user can stream the following kinds of digital media over the data connector:

- Standard Definition (SDTV) video
- High Definition (HDTV) video
- Digital Audio
- Digital Still Pictures

3.8 USE CASE 8

The user has a Terminal and wishes to connect with a Car-Kit.

3.9 USE CASE 9

The user has a Terminal and wishes to automatically synchronise audio, video and other data with portable electronic devices and in-home and in-vehicle audio/video systems.

4 DATA CONNECTIVITY REQUIREMENTS

4.1 MECHANICAL

Due to the situation in USB standards evolution, OMTP defines two classes for physical data connectivity. However, it is a common view of participating companies that the industry will gradually shift to using Class OMTP ConD1 for standard data connectivity, and the Class OMTP ConD2 will only be used in exceptional cases in the future.

4.1.1 CLASS OMTP COND1

REQ. ID	REQUIREMENT
LCD-0010	*Micro USB class* The data connector SHALL be implemented in line with the physical characteristics for USB micro B or micro AB receptacle(s) and USB micro A or B plug as defined in "Universal Serial Bus Micro-USB Cables and Connectors Specification v1.0" Chapter 4 [2].

4.1.2 CLASS OMTP COND2

REQ. ID	REQUIREMENT
LCD-0020	*Mini USB class* The data connector SHALL be implemented in line with the physical characteristics for USB mini B receptacle or USB mini B plug as defined in "USB 2.0 Specification Engineering Change Notice (ECN) #1: Mini-B connector" Chapter 6 [3]. *It is currently anticipated that option OMTP ConD2 will NOT be RECOMMENDED in future releases of this document.*

4.2 ELECTRICAL

4.2.1 HOST/DEVICE MODE

In conjunction with the above OMTP classes one of the standard USB modes is specified.

REQ. ID	REQUIREMENT
LCD-0030	*Terminal as USB OTG A-device (acting as host or peripheral): Mobile Terminal has AB receptacle and A plug is*

REQ. ID	REQUIREMENT
	inserted. If a USB A plug is present then the electrical characteristics SHALL be compliant with the relevant specifications in "USB 2.0 OTG Supplement v1.3" Section 5.1 [4].
LCD-0040	*Terminal as USB OTG B-device (acting as host or peripheral): Mobile Terminal has AB receptacle and B plug is inserted.* If a USB B plug is present then the electrical characteristics SHALL be compliant with the relevant specifications in "USB 2.0 OTG Supplement v1.3" Section 5.2 [4].
LCD-0050	*Terminal as USB B-device: Mobile Terminal has B receptacle and B plug is inserted.* If a USB B plug is present then the electrical characteristics SHALL be compliant with the relevant specifications in "Universal Serial Bus Specification 2.0" Chapter 7 [5].

4.2.2 SPEED CLASSES

In conjunction with the above OMTP classes one of the standard USB speeds must be specified.

REQ. ID	REQUIREMENT
LCD-0060	*USB Low speed (1.5 Mbit/s)* USB 2.0 Low speed "Universal Serial Bus Specification 2.0" Section 7.1 [5]. *It is currently anticipated that option LCD-0060 will NOT be RECOMMENDED in future releases of this document.*
LCD-0070	*USB Full speed (12 Mbit/s)* USB 2.0 Full speed "Universal Serial Bus Specification 2.0" Section 7.1 [5].
LCD-0080	*USB High speed (480 Mbit/s)* USB 2.0 High speed "Universal Serial Bus Specification 2.0" Section 7.1 [5].

4.2.3 CHARGING

REQ. ID	REQUIREMENT
LCD-0090	The UE SHALL be able to charge its battery using power available from the USB bus in line with the "Battery charging specification" [6] in both the following use cases: • Use case 1: Terminal is connected to USB host. • Use case 2: Terminal is connected to USB dedicated charger.

4.3 GENERAL

REQ. ID	REQUIREMENT
LCD-0100	The UE SHALL still be in compliance with all the implemented parts of the referenced standards and SHALL implement all parts of the referenced standards required to be compliant with "USB 2.0 adopters agreement" [7].

5 FURTHER WORK

OMTP should consider enhancements to this document by evaluating use cases 7, 8 and 9 further.

6 DEFINITION OF TERMS

TERM	DESCRIPTION
TERMINAL	Used as an alternative term for a cellular telephone or handset.

7 ABBREVIATIONS

ABBREVIATION	DESCRIPTION
HDMI	High Definition Multimedia Interface
HDTV	High Definition Television
HSDPA	High Speed Downlink Packet Access
HSUPA	High Speed Uplink Packet Access
HSxPA	HSDPA and HSUPA
OMTP	Open Mobile Terminal Platform
OTG	On-the-Go
SDTV	Standard Definition Television
UE	User Equipment
UICC	Universal Integrated Circuit Card
USB	Universal Serial Bus

8 REFERENCED DOCUMENTS

No.	DOCUMENT	AUTHOR	DATE
1	RFC 2119 - Key words for use in RFCs to Indicate Requirement Levels	IETF	March 1997
2	Universal Serial Bus Micro-USB Cables and Connectors Specification v 1.0	USB Forum	12-Jan-2007
3	USB 2.0 Specification Engineering Change Notice (ECN) #1: Mini-B connector	USB Forum	20-Oct-2000
4	On-The-Go Supplement to the USB 2.0 Specification v1.3	USB Forum	05-Dec-2006
5	Universal Serial Bus Specification 2.0	USB Forum	27-Apr-2000
6	Battery charging specification 2.0	USB Forum	08-Mar-2007
	Device Class Specification Adopters Agreement	USB Forum	As signed
7	USB 2.0 adopters agreement	USB Forum	As signed by parties
	USB OTG adopters amendment	USB Forum	14-Mar-2007

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