Freescale USB Stack v3.2.0
Release Notes

PRODUCT:	Freescale USB Stack
PRODUCT VERSION:	3.2.0
DESCRIPTION:	Freescale USB Stack, version 3.2.0
RELEASE DATE:	March 15th , 2012

© Freescale Semiconductor Inc., 2012. All rights reserved.

How to Reach Us:

Home Page:
www.freescale.com

Web Support:
http://www.freescale.com/support

USA/Europe or Locations Not Listed:
Freescale Semiconductor, Inc.
Technical Information Center, EL516
2100 East Elliot Road
Tempe, Arizona 85284
1-800-521-6274 or +1-480-768-2130
www.freescale.com/support

Europe, Middle East, and Africa:
Freescale Halbleiter Deutschland GmbH
Technical Information Center
Schatzbogen 7
81829 Muenchen, Germany
+44 1296 380 456 (English)
+46 8 52200080 (English)
+49 89 92103 559 (German)
+33 1 69 35 48 48 (French)
www.freescale.com/support

Japan:
Freescale Semiconductor Japan Ltd.
Headquarters
ARCO Tower 15F
1-8-1, Shimo-Meguro, Meguro-ku,
Tokyo 153-0064
Japan
0120 191014 or +81 3 5437 9125
support.japan@freescale.com

Asia/Pacific:
Freescale Semiconductor China Ltd.
Exchange Building 23F
No. 118 Jianguo Road
Chaoyang District
Beijing 100022
China
+86 10 5879 8000
support.asia@freescale.com

For Literature Requests Only:
Freescale Semiconductor Literature Distribution Center
P.O. Box 5405
Denver, Colorado 80217
1-800-441-2447 or +1-303-675-2140
Fax: +1-303-675-2150
LDCForFreescaleSemiconductor@hibbertgroup.com

Information in this document is provided solely to enable system and software implementers to use Freescale Semiconductor products. There are no express or implied copyright licenses granted hereunder to design or fabricate any integrated circuits or integrated circuits based on the information in this document.

Freescale Semiconductor reserves the right to make changes without further notice to any products herein. Freescale Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Freescale Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. “Typical” parameters that may be provided in Freescale Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including “Typicals”, must be validated for each customer application by customer’s technical experts. Freescale Semiconductor does not convey any license under its patent rights nor the rights of others. Freescale Semiconductor products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Freescale Semiconductor product could create a situation where personal injury or death may occur. Should Buyer purchase or use Freescale Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold Freescale Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Freescale Semiconductor was negligent regarding the design or manufacture of the part.

Freescale™ and the Freescale logo are trademarks of Freescale Semiconductor, Inc.
All other product or service names are the property of their respective owners.

© Freescale Semiconductor, Inc. 2012. All rights reserved.

Table of Contents

Freescale USB Stack v3.2.0 Release Notes i

1 Read Me First 2

1.1 Requirements 2

2 What Is New? 4

3 Release Contents 5

4 Known Issues and Limitations 6

5 Device, Host and On-The-Go Supported Platforms Overview 7

5.1 DEVICE 7

5.2 HOST 8

5.3 OTG 9

1 Read Me First

This release note documents the Freescale USB Stack version 3.2.0 released for Freescale ColdFire, HCS08 and Kinetis ARM® CortexM4 microcontroller families.

1.1 Requirements

1.1.1 Development Tools

This Freescale USB Stack Release was compiled and tested with the following development tools:

- CodeWarrior Development Studio for Microcontrollers Version 10.2
  - Support available for Kinetis, ColdFire and HCS08 devices

- IAR Embedded Workbench for ARM Version 6.30
  - Support available for Kinetis ARM® CortexM4 devices

1.1.2 Desktop System Requirements

The system requirements are defined by the development tools requirements. There are no special host system requirements for hosting the Freescale USB Stack distribution itself.

Minimum PC configuration:
As required by Development and Build Tools

Recommended PC configuration:
2 GHz processor – 2 GB RAM - 2 GB free disk space.

Software requirements:
OS: As required by Development and Build tools (Windows XP SP2 or later)

1.1.3 Embedded Target Platforms Requirements

The Freescale USB Stack in this release supports the evaluation boards mentioned below. There are no special requirements for the target hardware which would be out of scope of what each board requires for its operation (power supply, cabling, jumper settings etc). More details about board-specific setup for USB operation are available in the “USBUG.pdf” document.

Evaluation boards supported:

Kinetis ARM® Cortex M4

- TWR-K40X256 Evaluation Board
- TWR-K60N512 Evaluation Board
- TWR-K53N512 Evaluation Board
- TWR-K70FN1M Evaluation Board
- TWR-K20DX50 Evaluation Board
- TWR-K40D72M Evaluation Board
- TWR-K20D72M Evaluation Board

ColdFire V1

- TWR-MCF51JE Evaluation Board
- TWR-MCF51MM Evaluation Board
- TWR-MCF51JF Evaluation Board
- EVB51JM128 Evaluation Board
- DEMOJM Evaluation Board with MCF51JM128 Flexis daughter card

ColdFire V2

- M52221DEMO Evaluation Board
- M52259EVB Evaluation Board
- M52259DEMOKIT Evaluation Board
- TWR-MCF52259 Evaluation Board
- M52277EVB Evaluation Board

HCS08

- TWR-S08MM128 Evaluation Board
- TWR-S08JE128 Evaluation Board
- DEMOJM Evaluation Board with MC9S0851JM16 Flexis daughter card
- DEMOJM Evaluation Board with MC9S0851JS16 Flexis daughter card
- DEMOJM Evaluation Board with MC9S0851JM60 Flexis daughter card

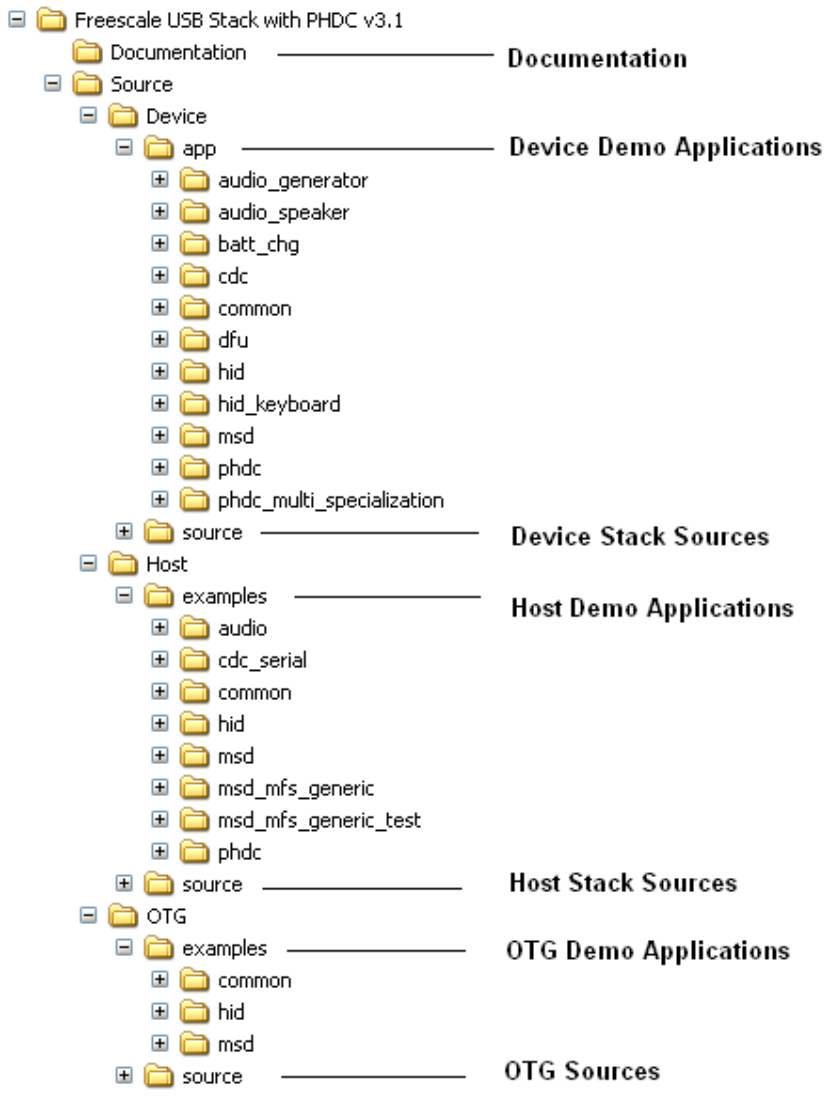
2 What Is New?

This section describes the major changes and new features implemented in this maintenance release.

- Kinetis K70 USB high speed device, Enhanced Host Control Interface (EHCI) and high speed USB On-The-Go support on the TWR-K70FN1M plus TWR-SER2 board setup
- Kinetis K20 and K40 72MHz devices on TWR-K40D72M and TWR-K20D72M boards support in the stack and applications
- Kinetis K70 USB full speed applications on the IAR Embedded Workbench IDE

3 Release Contents

This section gives an overview about the release folder structure.



4 Known Issues and Limitations

- Because of dynamic memory allocation needs, the limited SRAM available on some devices might not be sufficient to run some host and On-The-Go applications. Also, memory usage and heap management differences may appear depending on the tool chain (IDE) used.
- Because the TWR-K20DX50 board has the D+ and D- USB lines hardwired to the on-board micro-USB connector, the OTG and DCD (battery charging) support has not been tested using a MAX3353 charge pump circuit. The OTG and DCD support in the applications included in this package is based on designs which include a MAX3353 circuit, which is used for VBUS detection purposes.
- The USB high speed device and EHCI support on K70 requires the TWR-SER2 peripheral board for the SMSC USB3300 ULPI transceiver circuit mounted on it. This board should be used in a TWR setup with the TWR-K70FN1M controller tower board.

5 Device, Host and On-The-Go Supported Platforms Overview

This release supports the USB stack and example applications for USB classes for a variety of HCS08, ColdFire and Kinetis microcontrollers. The matrices of supported demo applications on devices and IDEs are found below.

5.1 DEVICE

5.1.1 HCS08

DEVICE	PART				
CLASS	MC9S08JE128	MC9S08JS16	MC9S08JM60	MC9S08JM16	MC9S08MM128
CDC	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1
HID	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1
Audio	CW 6.3, CW 10.1	N/A	CW 6.3, CW 10.1	N/A	CW 6.3, CW 10.1
Battery Charging	N/A	N/A	N/A	N/A	N/A
DFU	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1
MSD	CW 6.3, CW 10.1	N/A	CW 6.3, CW 10.1	N/A	CW 6.3, CW 10.1
PHDC	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1

5.1.2 ColdFire

DEVICE	PART						
CLASS	MCF51JE256	MCF51JM128	MCF51MM256	MCF51JF128	MCF52259	MCF52221	MCF52277
CDC	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1
HID	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1
Audio	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	N/A
Battery Charging	N/A	N/A	N/A	CW 10.1	N/A	N/A	N/A
DFU	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1
MSD	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1
PHDC	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1

5.1.3 Kinetis

DEVICE	K20	K40	K50	K60	K70
CLASS	PK20X128VLH MK20DX256VLL7	MK40N512VMD100 MK40DX256VLL7	MK53N512CMD100	MK60N512VMD100	PK70FN1M0VMJ12
CDC	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
HID	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
Audio	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
Battery Charging	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
DFU	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
MSD	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
PHDC	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3

5.2 HOST

5.2.1 HCS08

No host applications are available for HCS08 architectures due to memory limitations.

5.2.2 ColdFire

HOST	PART						
CLASS	MCF51JE256	MCF51JM128	MCF51MM256	MCF51JF128	MCF52259	MCF52221	MCF52277
CDC	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1
HID	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1
Audio	CW 6.3, CW 10.1	N/A	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	N/A
FAT FS	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	N/A
MSD	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1
PHDC	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 6.3, CW 10.1	CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1	CW 7.2, CW 10.1

5.2.3 Kinetis

HOST	K20	K40	K50	K60	K70
CLASS	PK20X128VLH MK20DX256VLL7	MK40N512VMD100 MK40DX256VLL7	MK53N512CMD100	MK60N512VMD100	PK70FN1M0VMJ12
CDC	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
HID	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
Audio	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
FAT FS	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
MSD	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
PHDC	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3

5.3 OTG

5.4 Kinetis

OTG	K20	K40	K50	K60	K70
CLASS	PK20X128VLH MK20DX256VLL7	MK40N512VMD100 MK40DX256VLL7	MK53N512CMD100	MK60N512VMD100	PK70FN1M0VMJ12
HID	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3
MSD	CW 10.2, IAR EW 6.3	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.1, IAR EW 6.2	CW 10.2, IAR EW 6.3

5.5 ColdFire

OTG	PART	
CLASS	MCF51JF128	MCF51JM128
HID	CW 10.1	CW 10.1
MSD	CW 10.1	CW 10.1