

# **Generic FSK Link Layer Software for the Kinetis MKW36A/MKW35A/MKW35Z/MKW36Z Wireless Microcontrollers, Version 1.1.6**

## **Release Notes**

### **1 Overview**

These release notes pertain to the Generic FSK Link Layer software that was developed for the Kinetis MKW36A/MKW35A/MKW35Z/MKW36Z wireless microcontrollers, and the associated development board FRDM-KW36. These notes pertain to the Generic FSK Link Layer Software version 1.1.6.

### **Contents**

Generic FSK Link Layer Software for the Kinetis MKW36A/MKW35A/MKW35Z/MKW36Z Wireless Microcontrollers, Version 1.1.6.....	1
1 Overview .....	1
2 Release Contents .....	2
3 What's New and Change Log .....	3
3.1 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.6 Changes .....	3
3.2 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.5 Changes .....	3
3.3 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.4 Changes .....	3
3.4 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.3 Changes .....	4
3.5 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.2 Changes .....	4
3.6 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.1 Changes .....	4
3.7 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.0 Changes .....	4
4 Software Deployment Considerations.....	4
5 Embedded System Considerations.....	5
6 Known Limitations.....	5
7 Documentation Included in this Package.....	6
8 GENFSK LL Applications Memory Footprints .....	7



## 2 Release Contents

The NXP Kinetis MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software version 1.1.6 main wireless connectivity components are listed in the table below.

**Table 1. Release Contents**

(File   Folder) Name	Description
boards/[board]/wireless_examples/genfsk/connectivity_test	GENFSK Connectivity Test example application
middleware/wireless/genfsk_1.1.6	Generic FSK Link Layer code
doc/wireless	Wireless connectivity documentation
middleware/wireless/framework_5.4.6/Common	Connectivity Framework common files
middleware/wireless/framework_5.4.6/FSCI	Freescal Serial Connectivity Interface
middleware/wireless/framework_5.4.6/LowPower	Low Power Module
middleware/wireless/framework_5.4.6/MemManager	Memory Manager
middleware/wireless/framework_5.4.6/Messaging	Messaging API
middleware/wireless/framework_5.4.6/NVM	Non Volatile Memory support
middleware/wireless/framework_5.4.6/OtaSupport	Over-The-Air Programming support files
middleware/wireless/framework_5.4.6/Panic	Panic module
middleware/wireless/framework_5.4.6/RNG	Random Number Generator wrapper
middleware/wireless/framework_5.4.6/SerialManager	Serial Manager for various interface
middleware/wireless/framework_5.4.6/Shell	Shell/Console module
middleware/wireless/framework_5.4.6/TimersManager	Timers Manager module
middleware/wireless/framework_5.4.6/SecLib	Security Library

Please refer to <http://www.nxp.com/connectivity> for more information on NXP wireless connectivity platforms.

## 3 What's New and Change Log

This section describes the major changes and new features implemented in the Generic FSK Link Layer software releases:

### 3.1 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.6 Changes

- This version corresponds to the Maintenance Release 3 build of the MKW36A/MKW35A/MKW35Z/MKW36Z GENFSK LL Software.
  - Framework updates
  - Bug fixing

### 3.2 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.5 Changes

- This version corresponds to the Maintenance Release 2 build of the MKW36A/MKW35A/MKW35Z/MKW36Z GENFSK LL Software.
  - Framework updates
  - Bug fixing
  - XCVR Driver update
    - Disabled CYCLE\_SLIP and FREQ\_TARGET to cleanup TX modulation during preamble
    - Enabled Zero Fdev feature as a compile option
    - Fixed error in bbfdac\_step calculation that causes magnified errors in TZA step calculations
    - Included RSIM register read workaround to prevent compiler optimizations from causing a hard fault. Affected on gcc
    - Fix to prevent BLE signals interfering with DCOC DAC trim
    - Fixed incorrect OSR bitfield accesses. Affected the dma\_capture routines only

### 3.3 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.4 Changes

- This version corresponds to the Maintenance Release 1 build of the MKW36A/MKW35A/MKW35Z/MKW36Z GENFSK LL Software.
  - Support for KW36 D-Flash memory

### **3.4 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.3 Changes**

- This version corresponds to the RFP (Ready for Production) build of the MKW35A GENFSK LL Software.
  - Modified BSD-3 Clear Clause in BSD3 Clause

### **3.5 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.2 Changes**

- This version corresponds to the PRC (Production Ready Candidate) build of the MKW35A GENFSK LL Software.
  - Radio performances improvements
  - Memory optimizations

### **3.6 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.1 Changes**

- This version corresponds to the PRC (Production Ready Candidate) build of the MKW35A GENFSK LL Software. This is the first release for this enablement software.
  - Bug fixes
  - Radio performances improvements

### **3.7 MKW36A/MKW35A/MKW35Z/MKW36Z Generic FSK Link Layer Software v1.1.0 Changes**

- This version corresponds to the EAR build of the MKW35A GENFSK LL Software. This is the first release for this enablement software. Some of its major new features are listed below:
  - FRDM-KW36 board support

## **4 Software Deployment Considerations**

- The Generic FSK Link Layer applications in this package have been built in a Kinetis SDK version 2 environment, making use of the FreeRTOS kernel and microcontroller peripheral drivers included in this SDK. This package includes a full build of the Kinetis SDK v2.2 for Kinetis MKW36A/MKW35A/MKW35Z/MKW36Z.

- IAR Embedded Workbench for ARM® v8.32.4 was used to build and test the Generic FSK Link Layer example applications IDE projects included in this release.
- MCUXpresso IDE v11.0.1 was used to build the Bluetooth low energy associated example applications IDE projects.

## 5 Embedded System Considerations

- This release supports the FRDM-KW36 evaluation board
- The FRDM-KW36 board features a composite USB device called OpenSDA which serves as debugger interface and as USB to serial converter via a virtual COM port application. Several firmware images can be programmed on the OpenSDA device, among which:  
<https://github.com/mbedmicro/CMSIS-DAP>  
<https://www.segger.com/opensda.html>
- If your FRDM-KW36 board is configured for the buck mode of the DCDC converter inside the microcontroller, the firmware too needs to be configured for these modes of the DCDC, by setting the following defines: *gDCDC\_Enabled\_d* to 1 and *APP\_DCDC\_MODE* to *gDCDC\_Mode\_Buck\_c*, in the *app\_preinclude.h* header file.

## 6 Known Limitations

- This release supports only the IAR Embedded Workbench IDE and MCUXpresso IDE toolchain, the FreeRTOS kernel and a bare-metal non-preemptive task scheduler. Other RTOSes and toolchains supported in the KSDK have not been tested with this release.
- Maximum file path length in Windows® 7 Operating System: Windows OS 7 imposes a 260-character maximum length for file paths. The same limitation influences the command line for build tools in various toolchains, which cannot exceed 8191 characters. When deploying this package, it is recommended to place it in a directory close to the root of the disk drive to prevent the limitations described above. The recommended location is the C:\NXP folder."
- When using the localization demo application, testing PDE after Time of Flight will introduce inaccuracy for following Time of Flight measurements. Workaround: re-run Time of Flight calibration after PDE testing.

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## 7 Documentation Included in this Package

The following connectivity-supporting documentation is included in this package:

- *Generic FSK Link Layer Quick Start Guide.pdf*
- *Generic FSK Link Layer API Reference Manual.pdf*
- *Generic FSK Localization Software.pdf*

For detailed reference documentation on this software package, please visit  
<https://nxp.com/infocenter>

## 8 GENFSK LL Applications Memory Footprints

The following table lists the memory footprint of a typical GENFSK-based application:

<b>Application – Connectivity Test</b>		
<b>Configuration - FreeRTOS, IAR Embedded Workbench, FRDM-KW36</b>		
	RAM [bytes]	Flash [bytes]
Application code	1,437	15,752
KSDK	68	4,513
Connectivity Framework	10,669	19,507
RTOS	6,672	5,486
GENFSK	217	7,144
<b>Total</b>	<b>19,063</b>	<b>52,402</b>

<b>Application – Connectivity Test</b>		
<b>Configuration - FreeRTOS, MCUXpresso IDE, FRDM-KW36</b>		
	RAM [bytes]	Flash [bytes]
Application code	584	28,000
KSDK	72	4,132
Connectivity Framework	10,521	20,057
RTOS	6,672	5,838
GENFSK	217	7,125
<b>Total</b>	<b>18,066</b>	<b>65,152</b>

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