Release Notes

CodeWarrior™ Development Studio for Microcontrollers v10.3

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1 What's New

Freescale's CodeWarrior for Microcontrollers v10.3 integrates the development tools for the ColdFire®, ColdFire+, DSC, Kinetis, Qorivva, PX, RS08, S08 and S12Z architectures into a single product based on the Eclipse open development platform. Eclipse offers an excellent framework for building software development environments and is a standard framework used by many embedded software vendors.

Architectures supported in this version of the tools for the first time are:

- Kinetis L Series
- S12Z

Many new derivatives for other architectures have also been added. See details below.

Major new features of this release include:

- Simplified C/C++ and Debug perspectives focus on basic tasks needed for embedded development
- Commander view gives you one click access to many basic tasks
- MQX-Lite RTOS is a Processor Expert component that allows you to add a lightweight kernel to your Kinetis project*
- Processor Expert hardware perspective allows you to build and share board configurations
- ARM Ltd. gcc compiler support for Kinetis L and K Series families
- Eclipse IDE 3.7.1 (Indigo)

* MQX-Lite RTOS tested with Kinetis MKL1x and MKL2x devices.

The new product features include the following:

1.1 General

1.1.1 Features

- Migrated to Eclipse 3.7.1 and CDT 8.0.1
- Build configuration and debug configuration names are simplified.
- Debug configurations are filtered to only show the current project's configurations
- Modular installer allows selection of the architecture support needed (RS08/S08, S12Z, ColdFire, DSC, Kinetis, Qorriva/PX) during the installation process. If installation is done from DVD, the selected architecture support is accessed and installed. If installation is done via WEB, the selected architecture support is downloaded and installed automatically. Additional architectures can be installed through Install New Software feature.
- Added ability to create a library project for all supported architectures:
    - V1 ColdFire /ColdFire+/ V2-V4 ColdFire
    - DSC
    - Kinetis ('GCC-ARM' and 'FSL-ARM' Build Tools selection)
    - Qorivva/PX
    - S12Z
    - Sensors
- Updated EWL makefiles to use relative path for debug paths.
- Casting registers to types

- Debugger engine allows updates without Eclipse restart
- Consolidate User-Defined Target Types support
- Symbol labels are displayed before source lines in disassembly view
- Added command echo on/off to Debugger Shell
- Added offline register viewer, so an arbitrary hex binary data file can be loaded to inspect "register details"
- Improved functionality for setting breakpoints at a specific address - breakpoints are set according to memory space
- Added Restart action to Debug View toolbar
- Added ability to unprotect flash memory using the Simple Flash ("Flash File To Target") tool
- Added ability to display struct/array types for vectorial registers in Register View
- Extended DWARF reader to provide unmangled support for C++
- Improved debugging of optimized code – extend evaluation of variables when expression of location has complex operation with frame base
- Added ability to specify target working directory for Linux application debugging.
- Breakpoint instances are persistent after restart
- Added option to show/hide warning/alert messages
- Added "Documentation" shortcut to allow direct access to MCU\Help\PDF folder.
- Integrated support for MQX 3.8.1 including MQX New Project Wizard and task aware debug (TAD) (Kinetis, ColdFire, PX)
- Added ability to export/import Processor Expert component settings
- Added ability to export/apply board configuration settings
- Integrated crcgen.exe utility, which generates a CRC for S08/V1 ColdFire medical devices (JE, MM families). These devices have a bootloader.
- Added ability to unsecure and unprotect ColdFire V1, DSC, Kinetis, Qorriva, PX, RS08, S08 devices
- Added ability to program flash on all supported architectures (RS08/S08, S12Z, ColdFire, ColdFire+, DSC, Kinetis, Qorivva, PX) with the P&E run control devices.
- Updated OSBDM/OSJTAG firmware to include support for CDC virtual serial port.

1.1.2 Bug Fixes

- MTWX43411: The Black Box Crash tool allows users to gather information, which can be provided to the CodeWarrior support team to debug CodeWarrior crashes. This information includes the following:
  - Debug Engine crash dumps
  - eclipse logs
  - protocol logs (ccs/ccssim)
  - console logs
- MTWX51669: The default project include paths were saved in .cproject according to the CCW plugin.xml (and these path included the path-relative variables). The paths were initially displayed, however, by making them absolute and then resolving based upon a different set of variables, so project-relative paths changes to PROJECT_LOC and layout-relative paths were likely reported as absolute paths. Further, any additional user paths were not saved to .cproject and were lost when project was closed and then reopened.

- MTWX44966: Syntax error no longer reported when using an interrupt keyword with a number or macro.
- MTWX46503: Syntax parser in eclipse IDE no longer reports a syntax error for using @(address) for ColdFire.
- MTWX51955: Able to define a new Path variable relative to another path variable. Characters $,{ and } are not kept in the path variable definition.
- MTWX53678: IDE's error & warnings parser correctly parses the ARM gcc error and warning format, and displays them correctly in the IDE.
- MTWX53679: CodeWarrior IDE provides code colorization and syntax error reporting implemented by Eclipse. If false syntax errors are being reported, a user-accessible switch to turn the feature on/off will be defaulted to "off."
- MTWX47865: Help > Tips and Tricks…' menu added MCU10.x FAQ to the list.
- MTWX53483: Added an option in the New Project Wizard for Power Architecture to ask the user if build references should be set up for the different cores so building one core will build all cores automatically.
- MTWX50671: Improved Tool Chain Editor panel to allow persistence of build settings when switching among compatible toolchains.
- ENGR226961: Addressed error which occured when comparing two STL stacks
- ENGR218989: ARM assembler generates warning for msr APSR for v6m

1.1.3 Documentation

- What's New
  - **Targeting Manual** (Debugger) is now available under Help > Help Contents > CodeWarrior for Microcontrollers V10.x > Targeting Microcontrollers. The PDF version is available at <CWinstallDir>/MCU/Help/PDF.
    - Refer to Chapter 2: IDE changes - Provides an overview of the changes made to simplify the overall look and feel of the CodeWarrior Development Studio for Microcontrollers v10.3 user interface.
    - Refer to Appendix A: How to - Provides a list of steps to perform the following.
      - Convert Kinetis Project to use newlib instead of EWL
      - Switch Between Decoupled Parallel and Lock-Step Modes
      - Set up UART Connections
  - **Porting Freescale ARM Projects to ARM GCC** is a new guide that describes the steps to port Freescale ARM Assembly Code to GCC ARM Assembly Code. It is available under Help > Help Contents > CodeWarrior for Microcontrollers V10.x > Targeting Microcontrollers. The PDF version is available at <CWinstallDir>/MCU/Help/PDF.
  - **MQX Lite Real-Time Operating System User Guide** (new)
- Common Manuals
  - Microcontrollers V10.x Quick Start (updated)
  - Ethernet TAP Probe Quick Start
  - CodeWarrior Common Features Guide (updated)
  - Microcontrollers V10.x Profiling and Analysis Users Guide
  - MISRA-C:2004 Compliance Exceptions for the HCS08, RS08, ColdFire, Kinetis and Power Architecture Processors Libraries for Microcontrollers V10.x
  - EWL C Reference Manual

  - EWL for C++ Reference Manual
- Run Control Manuals
  - Ethernet TAP Users Guide
  - USB TAP Users Guide
  - Open Source BDM-JM60 Users Guide
- Processor Expert Manuals
  - Processor Expert Components Manual
  - Processor Expert User Manual (updated)
  - Device initialization User Manual (updated)
  - Processor Expert RTOS Adapter Developer's Guide (updated)
  - Component Development Environment (CDE) User Guide (updated)
  - Component Development Environment (CDE) Getting Started Guide (updated)
  - Component Development Environment (CDE) RTOS User Guide (updated)
- Application Notes
  - AN3859 – Adding Device(s) to the CodeWarrior Flash Programmer for Microcontrollers V10.x
  - AN3967 – How to Write Flash Programming Applets for Microcontrollers V10.x
  - AN4421 – Using CodeWarrior Diff Tool
  - AN4331 – Enabling OSBDM DLLs
- Microcontrollers 10.x FAQ Guide (updated)
- CodeWarrior IDE - Quick Reference Card

1.2 ColdFire/ColdFire+

1.2.1 Features

- Added support for IPA optimization for program level in command line tools
- P&E run control support (Cyclone Max, TraceLink, USB Multilink, USB Multilink Universal/FX)
  - Added support for the following devices:
    - MCF521x, MCF528x
    - MCF52100, MCF5211x,
    - MCF5221x, MCF5222x, MCF5223x, MCF5225x
    - MMA9550
  - Updated support for MCF51EM256 and MCF51EM128 to address OSBDM run control issue
  - Updated MCF51EM128 FLASH programming algorithm to support memory map with FLASH at 0x20000.
  - Improved TraceLink download speed
  - Option provided for the user to set TraceLink buffer size (default is 128KB)
- Flash programming improvements – downloading flash images for debug no longer requires "target tasks". Flash programming is now handled as part of the download/debug process. Importing earlier CW MCU 10 projects (10.0, 10.1, 10.2), will continue to use target tasks. If you wish to convert the project to use the more efficient download/debug process, please make the following changes.

  In the .mem file set the memory attribute for Flash memory from 'Read' to 'ReadWrite'. For example

from
range 0x00000000 0x0007FFFF 4 Read // 512 KByte of Flash
to
range 0x00000000 0x0007FFFF 4 ReadWrite // 512 KByte of Flash

In the debug launch configuration make the following changes - go to the Debugger > Download tab
- Disable the option 'Execute Tasks'
- Enable 'Perform Standard Download'.
- Since P&E performs a verify in the run control software, you can disable 'Verify' for 'First' and 'Subsequent' downloads.

- Added support for the following devices:
  - FXLC95000 (Supervisor mode)

1.2.2 Bug Fixes

- Fixed code generation for a obfuscated pointer access: *ptr=(struct_variable.f >= (!(~a)));
- Fixed compiler misbehavior while optimizing the code: while(MCF_DSPI0_SR & 0xF000) { /*...*/ }
- Fixed memory allocation algorithm in the standard library (EWL)
- P&E Tracelink bug fixed to ensure reading trace data does not block the user's ability to cancel the action.

1.2.3 Documentation

- ColdFire Assembler Reference Manual for Microcontrollers V10.x (updated)
- ColdFire Build Tools Reference Manual for Microcontrollers V10.x (updated)
- AN4316 – Configuring Compiler Options for Optimal Performance of ColdFire Devices
- AN4329 – Relocating Code and Data Using LCF for ColdFire Architecture

1.3 Digital Signal Controller (DSC)

1.3.1 Features

- Inline assembly support in compiler for 56800EX instructions.
- New 'intrinsics_56800EX.h' added to MSL directory tree with the following intrinsic library functions (added using the 56800EX inline assembly support): V3_L_mult_int, V3_L_mac_int, V3_L_mult, V3_L_mac, V3_LL_mult_int, V3_LL_mult. Use existing -V3 compiler option to enable inline assembly support for 56800EX instructions.
- Linker automatically sets executable type to V3 type, if at least one input object file is of V3 type.
- Linker automatically issues a warning message when user-defined memory areas overlap.
- Added ability to set watchpoints through Modules/Outline views
- DSC devices can be used in debug mode even if the shared JTAG pins are programmed for GPIO.
- Automated flash programming scripts using basic commands control internal flash on DSC devices. Commands include blankcheck, checksum, device, disconnect, dump, erase, image, protect, secure, verify, write.

- Speed improvement in setting up breakpoints.
- Added support for the following devices:
  - MC56F81xx
  - MC56F823xx
  - MC56F827xx
- Trace and profile support for following devices:
  - MC56F823xx
  - MC56F827xx
- P&E run control support (Cyclone Max, P&E Cable DSC, USB Multilink, USB Multilink Universal/FX)
  - Added support for the following devices:
    - MC56F812x
    - MC56F813x
    - MC56F814x
    - MC56F815x
    - MC56F816x
    - MC56F823xx
    - MC56F827xx
  - Added support for power dialog callback

1.3.2 Bug Fixes

- ENGR213442: Fixed bug in a peephole optimization function , which caused the compiler to crash when optimization level was set to O2 or higher.
- ENGR188299: Fixed low-precision printf issues for double values when SLLD is on.
- ENGR185021: Fixed internal compiler error for switch-cases involving long data type locals, for O2 or higher optimization levels.
- ENGR218081: Fixed compiler issue of missing debug info for inline ASM functions.
- ENGR225135: Fixed the wrong ‘sections-Overlap linker warnings’ generation issue for ‘internal xRAM data mirror’ sections.

1.3.3 Documentation

- 56800/E (DSC) Assembler Reference Manual for Microcontrollers V10.x (updated)
- 56800/E (DSC) Build Tools Reference Manual for Microcontrollers V10.x (updated)

1.4 Kinetis

1.4.1 Features

- ARM gcc compiler support for Kinetis K and L families. It is based on ARM Ltd. 2012q1 source release (https://launchpad.net/gcc-arm-embedded/).
- Improved stability and usability of compiler
- EWL C/C++ libraries for ARM Ltd. gcc compiler targeting both Kinetis K and L families
- Support for Bit-manipulation Engine through header file - BME.h.
- Kinetis example projects, which are configured to use the ARM Ltd. gcc compiler.

- Hardware floating point support for all Kinetis K Series devices with hardware FPU.
- Full debugger functionality with improved performance for Kinetis L Series, including flash programming support for internal flash.
- Bit-level information is provided in the debugger's register views (register detail support) for all Kinetis L Series devices.
- Debugger support for all available processor general purpose, special purpose and memory mapped registers for Kinetis L Series devices.
- Trace and profiling support for the Kinetis L Series Micro Trace Buffer
- Debugger is able to detect low power modes and automatically re-establish connection with Kinetis L Series devices when it returns to run mode. Debugger logic is restored after exit from very low-leakage modes (VLLSx).
- Target connection support to Open Source SDA circuit.
- Memory configuration files updated to protect against burst accesses across memory boundary at address 0x2000'0000.
- Processor Expert and Device Initialization support for the following Kinetis K families:
  - MK10, MK20, MK30, MK40, MK5x and MK60 (100MHz, v2.x)
  - MK10, MK20, MK30, MK40, MK5x (72MHz)
  - MK12D, MK22D (50 MHz)
- Processor Expert and Device Initialization support for the following Kinetis L families:
  - MKL04, MKL05, MKL14, MKL15, MKL24, MKL25 (48MHz)
- MQX Lite RTOS support for Kinetis family. Examples are available for Kinetis L family.
- New Processor Expert components:
  - TimerInt_LDD
  - BitIO_LDD
  - BitsIO_LDD
  - ExtInt_LDD
  - PWM_LDD
  - TImerOut_LDD
  - TSS_Library
- Support for High- level components to allow easy migration to Logical Device Drivers.
- Improved stepping speed for code generated with the gcc compiler. Improvement is most visible in functions that have local variables stored in registers.
- P&E run control support (Cyclone Max, TraceLink, USB Multilink, USB Multilink Universal/FX)
  - Added support for the following devices:
    - MKL0x, MKL1x, MKL2x
    - MK12D, MK22D
    - MK10D, MK20D, MK30D, MK40D, MK5xD (72 MHz)
    - MK10D, MK20D, MK30D, MK40D, MK5xD, MK60D (72 MHz)
  - Improved TraceLink download speed
  - Option provided to set TraceLink buffer size (default is 128KB)
  - Cyclone MAX updated to add SWD support for Kinetis devices.

1.4.2 Bug Fixes

- ENGR210584: ARM Ltd. gcc Compiler - Does not remove debug information when performing dead code elimination
- ENGR186858: Freescale ARM Compile - EWL updated so the linker does not expect __SP_INIT to be defined when EWL heap allocation is not used.
- ENGR209215: Freescale ARM Compiler - EWL updated so linker defines __HEAP_START.
- ENGR212121: Freescale ARM Compiler - Fixed optimization bug, which generated incorrect instruction.
- P&E Tracelink bug fixed to ensure reading trace data does not block the user's ability to cancel the action.

1.4.3 Documentation

- Kinetis Assembler Reference Manual for Microcontrollers V10.x (updated)
- Kinetis Build Tools Reference Manual for Microcontrollers V10.x (updated)
- AN4498 – Creating CodeWarrior Linker Command File (LCF) for Kinetis
- AN4416 – CodeWarrior Build Tools Options for Optimal Performance on Kinetis Cores

1.5 Qorivva/PX

1.5.1 Features

- Improved generation of debug information.
- Improved stability and usability of compiler.
- Added support for the following devices:
  - MPC5604E
  - MPC560xB/C/D
  - MPC564xA
  - MPC564xB/C
  - MPC5676R
- Added support for SPE2
- Added support for heterogeneous cores of the same architecture (e.g. Z0, Z4, Z6, Z7 cores on MPC56xx devices), so core registers that are different between the two cores can be accessed.
- INTC_INTERRUPTS_REQUEST_VECTOR_TABLE_SIZE macro is computed depending on the selected Qorivva/PX device

1.5.2 Bug Fixes

- ENGR00223125: When stepping on a PXN20 platform, interrupts are disabled to ensure that proper code flow does not get interrupted by unintended interrupts.

1.5.3 Documentation

- Power Architecture Processors Build Tools Reference Manual for Microcontrollers V10.x (updated)
- Signal Processing Engine Auxiliary Processing Unit Programming Interface Manual for Power Architectures Processors (updated)
- AN4497 – Creating CodeWarrior Linker Command File (LCF) for Qorivva/PX

- AN4095 – CodeWarrior Build Tools Options for Optimal Performance on the Power Architecture e200 Core

1.6 S08

1.6.1 Features

- Added compiler option to support recursive search paths
- Added new assembler option (-Lrefs) to emit symbol cross reference information.
- Added support for the following devices:
  - MC13234C
  - MC13237C
  - MPXY8500
  - MPXY8600
  - S08RAx
  - S08RNxx
- Added Processor Expert and Device Initialization support for following devices:
  - S08PA60, S08PA32, S08PA16, S08PA16, S08PA4, S08PA2
  - S08PL60, S08PL32, S08PL16, S08PL16, S08PL4, S08PL2
  - S08PT60, S08PT32, S08PT16, S08PT16
- Added Trace and profile support for following devices:
  - S08PA60, S08PA32, S08PA16, S08PA16, S08PA4, S08PA2
  - S08PL60, S08PL32, S08PL16, S08PL16, S08PL4, S08PL2
  - S08PT60, S08PT32, S08PT16, S08PT16
- P&E run control support (Cyclone Pro, USB Multilink, USB Multilink Universal/FX)
  - Added support for the following devices:
    - 9S08PA2,9S08PA4
    - 9S08PL2,9S08PL4

1.6.2 Bug Fixes

- Fixed wrong application of a HCS08 peephole optimization when calling a subroutine.
- Enable P&E run control device to read 9S08PT memory while the device is running
- ENGR00220310 – S08 full chip simulation modified so code does not hang when device is configured to run off of TCLK clock source.

1.6.3 Documentation

- HCS08/RS08 Assembler Reference Manual for Microcontrollers V10.x (updated)
- HCS08 Build Tools Reference Manual for Microcontrollers V10.x (updated)
- RS08 Build Tools Reference Manual for Microcontrollers V10.x (updated)
- HC(S)08/RS08 Build Tools Utilities Manual for Microcontrollers V10.x
- AN4188 – RS08 Upper Memory Access
- AN4414 – CodeWarrior Build Tools Options for Optimal Performance on HCS08 Cores
- AN4415 – CodeWarrior Build Tools Options for Optimal Performance on RS08 Cores

1.7 S12Z

1.7.1 Features

- Added support for the following devices:
  - S12ZVH128, ZVH64
  - S12ZVMC128, S12ZVMC64, S12ZVML128, S12VML64
- Support for interrupts with index - using non-standard interrupts with index will allow interrupts to be placed from C code directly in corresponding interrupt vector entry
- Improved generation of debug information for C++ code situations and functions defined in header files
- Enhanced applicability of high-level optimizations
- Improved low-level compiler optimizations: common sub-expression elimination, constant propagation, copy propagation, optimized switch generation, branch tail merge, peephole optimizations
- Intrinsic support for ABS / QMULS / QMULU / SAT
- Improved backward compatibility with HC(S)12 with respect to bitfield allocation, code/data/const segment allocation, generation of entry/exit/return code, absolute variables
- Improved code generation for bitfields, condition handling, access to data structures
- C++ support
- Full inline assembly support
- Full debugger support for S12Z devices, including flash programming
- Trace and profile support for S12Z devices
- Added Processor Expert and Device Initialization support for the following devices:
  - S12ZVH128, ZVH64
  - S12ZVMC128, S12ZVMC64, S12ZVML128, S12VML64

1.7.2 Bug Fixes

- Fixed compiler to correctly handle increment / decrement operations on enum types

1.7.3 Documentation

- S12Z Assembler Manual
- S12Z Build Tools Reference Manual

2 System Requirements

2.1 Recommended Configuration

- 2.6 GHz Pentium® compatible processor or better
- 4 GB RAM
- 3GB (When the installer is run directly from a DVD)
- 5GB (When the software installer is downloaded)
- 400MB on Windows system disk
- DVD drive for installation

- USB port for communications with target hardware
- Ethernet port for communications with target hardware (optional)

2.2 Operational Minimum Configuration

- 1.8 GHz Pentium® compatible processor or better
- 2 GB RAM
- 3GB (When the installer is run directly from a DVD)
- 5GB (When the software installer is downloaded)
- 400MB on Windows system disk
- DVD drive for installation
- USB port for communications with target hardware

2.3 Host Operating System Support

- Microsoft® Windows XP 32-bit and 64-bit (Professional Edition)
- Microsoft Windows 7 32-bit and 64-bit (Home Premium Edition and Professional Edition)
- Microsoft Windows 8 32-bit and 64-bit (Home Premium Edition and Professional Edition)

3 Product WEB page

CodeWarrior Development Studio for Microcontrollers v10.3 is available for download at http://www.freescale.com/cwmcu10.

4 Installation and Licensing

To install CodeWarrior Development Studio for Microcontrollers v10.3, double-click the installation package and a wizard will guide you through the installation process. An Evaluation license is automatically installed with your product and you do not need to register it. This license allows you to develop projects as Professional Edition during the evaluation period. After 30 days, the license works as a Special Edition license (free permanent, but feature limited) which supports unlimited assembly code, up to 64KB of C code for S08/RS08, V1 ColdFire/ColdFire+, Kinetis L Series derivatives; up to 128KB of C code for V2-V4 ColdFire and Kinetis K Series derivatives; and up to 512KB of C code for Qorivva and PX derivatives.

5 Technical Support

All CodeWarrior issues are tracked through Freescale's normal Service Request Process. To report feature requests (enhancements) or defects for CodeWarrior Development Studio for Microcontrollers v10.3, please submit a Service Request.

1. Go to http://www.freescale.com/support
2. Log in.
3. On the resulting MyFreescale page, click Enter a Service Request
4. Choose category Software Product Support
5. Choose topic CodeWarrior
6. Click Next.
7. Provide the required information. You may attach a file up to 10 MB in size to the SR. You may also specify email addresses of people you would like to keep notified on the progress of the SR.

Separate multiple email addresses with commas. Depending on the nature of the issue (defects require more information) you may need to provide some or all of the information listed below.

- **Type:** pick from Question, Defect Report, Feature Request
- **Subject:** be short and descriptive
- **Description:** details your question, defect or feature request
- **Severity:** choose from Medium, High, or Critical
- **Target:** specify the hardware microcontroller/microprocessor family involved
- **Reproducibility:** choose from Always, Rarely, Sometimes, Unknown
- **Steps to Reproduce:** be precise so we can reproduce the problem
- **Expected Result**: what you expedted to happen
- **Observed Result**: what actually happened
- **Product:** CW for Microcontrollers
- **Root Cause/Nature:** enter root cause (e.g. software defect)
- **RTOS:** enter the RTOS being used (e.g. NA)
- **Major:** 10
- **Minor:** 3
- **Patch:** N/A
- **Component:** enter component (e.g. Debugger)
- **Host:** enter host operating system

Please note:
The Product field must be set to CW for Microcontrollers. This will allow the appropriate Freescale personnel to find SRs related to this project very easily, follow up as needed, report on them, and gather statistics on how the product is doing.

8. When finished, click Submit.

After Submit is selected, a confirmation page will be displayed with the SR number. You will also receive a confirming email sent to the address specified in your Freescale account.

Appendix A: Known issues and Workarounds

Issue ID	Description
General	
ENGR00210394	**Description:** When importing projects with invalid characters (e.g. “/”) in the Connection Name for a Debug Configuration, the "Name not valid as a file name" error message will be displayed. **Workaround:** Enter a Connection Name that only uses valid characters. For example: replace the "/" character with "_".
ENGR00222114	**Description:** Unable to build a project when the filename includes a Unicode character. **Workaround:** Do not include Unicode characters in project filenames, which are not supported in the Windows language version installed.
ENGR00223034	**Description:** An error occurs when two source files have the same name but a different extension (e.g. ASM and C files). **Workaround:** Rename the source files so that they do not share the same name.
DSC	
ENGR00226381	**Description:** X memory above 7FFF is not available with Small Data Model **Workaround:** Small Data Model only allows access up to 0x7fff. Use Large Data Model if extended data access is required.
ENGR00235878	**Description:** An error is displayed, if “clean” is selected before rebuilding the DSC library project. **Workaround:** Clean the project by manually removing the binary files.
Kinetis	
ENGR00211209 ENGR00216931 ENGR00221263	**Description:** The GCC Kinetis compiler generates wrong location for local variables when optimization is enabled. Incorrect values are displayed in the variable view. **Workaround:** During debug phase compile the project with optimization disabled (-O0). For release/production code compile the project with optimization -O1 or higher. This will ensure smallest code size for your project.
ENGR00226941	**Description:** Segger J-Link support is not available for MKL04Z8M4, MKL05Z8M4, MKL04Z16M4 and MKL05Z16M4 derivatives **Workaround:** None. Segger flash algorithms do not work for Kinetis L Series derivatives with 1KB/2KB of RAM.
ENGR00226765 ENGR00233703	**Description:** Trace and profile support is not available for Kinetis MK20DX256, MK11D, MK12D, MK21D, and MK22D derivatives **Workaround:** None. This support will be added in the next release.
ENGR00229966	**Description:** Cannot collect trace when both software and hardware trace points are set. **Workaround:** None. The use of mixed hardware and software trace points is not supported.
ENGR00235365	**Description:** When tracing compiled ARM gcc code, some function names may not displayed in the Critical Code viewer. **Workaround:** The corresponding address listed in the Critical Code viewer is the correct address for the function. Use the MAP file to cross reference the address to determine the function name.
Qorivva/PX	
ENGR00205746	**Description:** No Eclipse project available to rebuild EWL Libraries for Qorivva architecture.

	Workaround: Use command line to build EWL Libraries as described in Build Tools Reference manual.
ENGR00226941	**Description:** Core_0 "On Demand" reset doesn't work as expected when debugging a MPC5676R FLASH target and core_0 is selected in the launch configuration. **Workaround:** Since Core_0 controls Core_1, always use system reset.
ENGR00233491	**Description:** During RAM debug sessions on multi-core Qorivva devices, an issue arises when a software breakpoint is set and only enabled for one core. The PC is not properly updated following resume and halt commands. **Workaround:** Ensure that a given software breakpoint is enabled in both cores, which is the default setting.
RS08/S08	
ENGR00184839	**Description:** Debugger Flash programming will fail if the application downloaded has overlapping memory ranges. The debugger will display a "Failed to resume target process" error. **Workaround:** Check the linker options and remove the -WmsgSd1100 -WmsgSd1912 options so the linker reports overlapping memory ranges.
ENGR00235139	**Description:** Default optimization for S08 projects produces incorrect code for switch case. **Workaround:** Disable one or both of the following optimizations: - Branch tail merge optimization (-OnB=t) - Peephole for unused loads optimization (-OnP=h) This issue will be fixed with a compiler update in Q1 2013.
S12Z	
ENGR00233021	**Description:** Trace data and timeline information are not captured for S12Z projects, which have less than three (3) function calls in main(). **Workaround:** Ensure main() includes three or more function calls for change of program flow.
MQX	
ENGR00195659	**Description:** When importing MQX v3.8.1 projects for ColdFire boards, some sub files may not be located and cause an error message to be displayed **Workaround:** Locate the file(s) or edit the source lookup path to include the correct path to the MQX installation.
ENGR00210485	**Description:** MQX 3.8.1 projects for PXN2020, PXS2010 and PXS3020 boards may not operate correctly (e.g. not stop at main function). **Workaround:** Manually set the path to the initialization files in the CW installation - {MCU10.3Beta2Dir}\MCU\PA_Support\Initialization_Files\px. This issue is addressed in MQX 4.0.
ENGR00222240	**Description:** The MQX New Project Wizard allows a simple usb_dcd example project to be built for PXS30, which fails to build**.** **Workaround:** The PXS30 does not have a USB module; therefore, the usb_dcd example is not appropriate for this device.

Appendix B: MQX Integration

1 MQX v3.8 was developed to work with CW MCU v10.1. It is not supported in CW MCU v10.3.

2 MQX v3.8.1 was developed to work with CW MCU v10.2. It has been tested and confirmed to work with CW MCU v10.3.

3 MQX v4.0 was developed to work with CW MCU v10.2 and CW MCU v10.3.

4 MQX Lite RTOS is integrated with CW MCU v10.3. It supports Kinetis L Series devices. To create a new project with MQX-Lite RTOS do the following:

- Select **New MQX-Lite Project** in the Commander View.
- Name the project.
- Select a Kinetis device in the Devices dialog
- Select a connection in the Connections dialog
- Select preferred language and build tools options
- A Processor Expert project will be created with the **MQX-Lite** component.
- Configure the **MQX-Lite** component.
- Add and configure other peripheral components to the project.
- Select **Generate Processor Expert Code icon** in the Components View.
- Add your application code to the project.

5 MQX 3.8.1 task-aware debug is integrated with CW MCU v10.3 and will be automatically installed.

6 MQX 4.0 task-aware debug is available as a plug-in for CW MCU v10.3. This plug-in can be used with MQX or MQX-Lite. To install the plug-in do the following:

- Select **Install New Software** in the **Help** menu.
- Select “FSL MCU Eclipse Update Site – http://freescale.com/lgfiles/updates/Eclipse/MCU10_3/com.freescale.mcu.updatesite”
- Select **MCU v10.3 Updates for MQX**.

Appendix C: Performance Considerations

CodeWarrior Development Studio for Microcontrollers v10.3 is a powerful tool chain. The following suggestions will help keep the CodeWarrior tools running at a respectable performance level.

1 To maximize performance, the CodeWarrior tools should be installed on a computer with the recommended system configuration. While the tools will operate on a computer with the minimum configuration, the limited hardware will restrict its ability to function at desired performance levels.
2 Close unused projects. Eclipse caches files for all open projects in the workspace. If you need multiple projects open, try to limit the number of projects to no more than 10.
3 The Eclipse IDE provides several options that provide user assistance tools. These options, however, use memory and cpu bandwidth. If performance is slow and you do not need these options, turn them off.
   - Scalability options configure how eclipse deals with large source files.
     - Scalability options
       - Editor live parsing – impacts parsing while typing, Outline view, semantic highlighting, folding, etc.
       - Semantic highlighting – C/C++ identifiers are colored
       - Syntax coloring – coloring of keywords, comments and literals
       - Parsing-based content assist proposals – content assist proposals which require parsing the file
       - Content assist auto activation – content assist activated automatically on trigger sequences, like '.', '::' or '->'.
     - To disable:
       - Click menu ‘Windows’ -> ‘Preference’
       - Expand ‘C/C++’ -> ‘Editor’ -> ‘Scalability’
       - Uncheck ‘enable scalability options’
   - Content Assist Auto Activation can reduce the number of keystrokes a developer must type to create code. The Content Assist plug-in consists of components that predict what a developer will type, based on the current context, scope and prefix.
     - To disable:
       - Click menu ‘Windows’ -> ‘Preference’
       - Expand ‘C/C++’ -> ‘Editor’ -> ‘Content Assist’
       - Uncheck all the options for ‘Auto Activation’