FF5 - MCF5225X implementation + MQX

This course covers MCF5225X ColdFire MCUs, for instance the MCF52259

OBJECTIVES

- Courses detail the hardware implementation of the MCF5225x MCU.
- Courses focuse on low level programming of the ColdFire V2 core.
- The training helps become familiar with CodeWarrior IDE.
- Practical exemples of internal software drivers are provided.
- More detailed course description available on request at info@ac6-training.com

*New: *** Write your First Freescale MQX™ RTOS application ****

Prerequisites

- Experience of a 32 bit processor or DSP is mandatory.

Related courses

- Ethernet and switching, reference N1
- USB 2.0, reference IP2
- CAN bus, reference IA1

Plan

INTRODUCTION TO MCF52259

Overview

- Coldfire roadmap
- MCF52259 umbrella device
- 5225X block diagram
- Pinout
- Memory mapped I/O organization

CORE ARCHITECTURE

- V2 pipeline
- Addressing modes
- Branch, data transfer, arithmetic, logic, shift & rotate, bit instructions

- Mac instructions
- C to assembly interface
- Section definition, parameterizing the linker command file
- Exception management
- Internal SRAM
- 5225X cache operation
- Power management

DEBUG FACILITIES

- Intrusive vs non-intrusive debug
- BDM port
- Hardware breakpoints
- Trace port

PLATFORM

RESET

- Reset sources
- Clocking
- Reset control flow
- Chip Configuration Module [CCM]
- Requirements of the boot routine

SYSTEM PERIPHERALS

- SCM
- The interrupt controller
- The Edge Port Module
- Watchdog timer module
- Programmable Interrupt Timer Modules

THE DMA CONTROLLER

- Channel prioritization
- Bandwidth control
- Transfer termination
- Utilization of DMA timers

HARDWARE IMPLEMENTATION

- Dynamic bus sizing
- Address decoding
- Data transfer sequence
- Burst cycles

MEMORY

- The Flash memory controller
- The SRAM
- The Mini-FlexBus

INTEGRATED I/Os

COMMUNICATION CONTROLLERS

- The UART Module
- The QSPI
- The I2C controller
- The FlexCAN controller
- The USB OTG controller
- The Fast Ethernet Controller

Exercice : *With Freescale MQX™ software solutions*

CRYPTOGRAPHY

- Cryptographic Acceleration Unit (CAU)
- Random Number Generator (RNG)

Renseignements pratiques

Durée : 4 jours
Prix : 1950 € HT