

**GigaDevice Semiconductor Inc.**

**GD32450Z-EVAL  
FreeRTOS  
Getting Started Guide**

Revision 1.1

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## Getting started with the GD32450Z-EVAL

This tutorial provides instructions for getting started with the GigaDevice GD32450Z-EVAL board. If you do not already have the GigaDevice GD32450Z-EVAL board, visit the [GigaDevice website](#) to purchase one.

Before you begin, you must configure AWS IoT and your FreeRTOS software to connect your development board to the AWS Cloud. For instructions, see [First steps](#) in FreeRTOS User Guide. Then download [FreeRTOS code](#) for GigaDevice from GitHub. In this tutorial, the path to the FreeRTOS download directory is referred to as `<amazon-freertos>`.

## Overview

This tutorial guides you through the following steps:

1. Install software on your host machine for developing and debugging embedded applications for your microcontroller board.
2. Compile the FreeRTOS demos application.
3. Set up GD32450Z-EVAL board.
4. Load the application image to your board and run the application.

## Set Up Your Development Environment

Using Keil MDK v5 to compile FreeRTOS demos for GD32450Z-EVAL board. You can download Keil MDK v5 at [Keil MDK](#) website. The Keil MDK v5 Essential, Plus, or Pro version should also work for the GD32F450 (Cortex-M4 core) MCU.

### To install the development tool for the GD32450Z-EVAL board

1. Download the Keil MDK.
2. Install the Keil MDK on your host machine by using your license. The Keil MDK includes the Keil µVision IDE, a C/C++ compilation toolchain, and the µVision debugger.
3. Install the GD32F4xx Series Pack file from Pack Installer window of Keil IDE, you can also get pack file from the GigaDevice website.

### Set up GD32450Z-EVAL board correctly

Make sure the jumper cap on the development board is set correctly. JP4, JP5, JP6 jump to 'Eth'. JP13 jump to 'Usart0'.

## Build the FreeRTOS Demo Project

1. Make sure the Keil MDK v5 is installed correctly.
2. Open aws\_demos folder in the `<amazon-freertos> \projects \gigadevice \gd32450z_eval \uvision` directory.
3. Double click GD32450Z\_EVAL.uvprojx project file to open demo project.
4. To make sure that your settings are correct to flash the chip, click the 'Options for Target' in the project navigation pane.
5. On the 'Device' tab, verify the chip type is set to GD32F450ZK.
6. On the 'Utilities' tab, verify that 'Use Target Driver for Flash Programming' is selected, then click 'Settings' and verify Programming Algorithm is chosen to 'GD32F4xx\_3MB FMC'.
7. On the 'Debug' tab, you can select the corresponding debugger as required. The default debugger is CMSIS-DAP Debugger.
8. Click 'Build' button in the project navigation pane after the above operations are completed.

## Run the FreeRTOS Demo Project

1. Click the 'Download' button in the project navigation pane to flash the program to the GD32450Z-EVAL board after the correct compilation.
2. You can view the demo running result through the serial port.

## To subscribe to the MQTT topic with the AWS IoT MQTT client

You can use the MQTT client in the AWS IoT console to monitor the messages that your device sends to the AWS Cloud

1. Sign in to the [AWS IoT console](#).
2. In the navigation pane, choose 'Test' to open the MQTT client.
3. In 'Subscription topic', enter `iotdemo/#`, and then choose 'Subscribe to topic'.