[Released on the Web]

RX Family

Program Using FIR Filter to Perform Frequency Band Judgement

Overview

RX Family Sample Program Using FIR Filter to Perform Frequency Band Judgement has been released on the web.

The product is available free of charge.

1. Features

This application note describes an example of the use of the FIR filter API from the RX Family DSP library. The sample program described in this application note is configured as shown in Figure 1. The analog signal input to the RX140 undergoes A/D conversion and normalization, after which it is divided into three channels for processing by the FIR filter. The results of FIR filter processing are then used to make a judgement of the frequency band of the input signal. The judgement result is indicated by LEDs. See Figure 2.
Utilizing the Waveform rendering function of e^2 studio, the input and output signals to the FIR filter are displayed graphically. See Figure 3. These are designed so that the effect of the FIR filter can be intuitively understood.
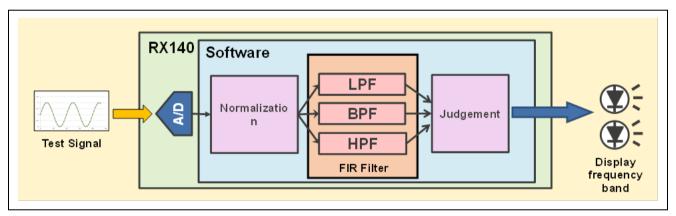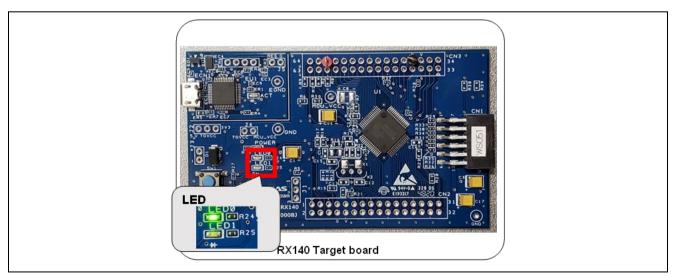

Figure 1 System outline diagram

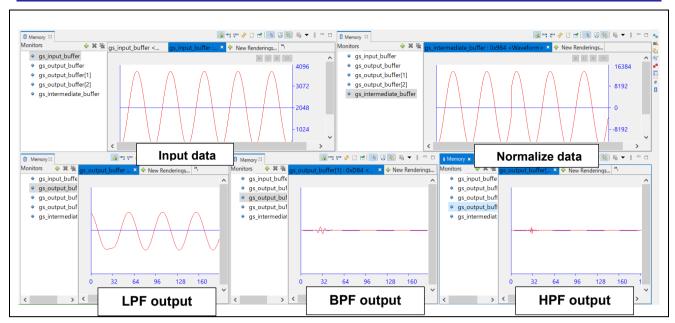Figure 2 Judgment result display by LED on Target Board for RX140

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Figure 3 Visualization of the effects of FIR filters by the waveform display function of e^2 studio

The sample program implements FIR filter processing using 16-bit fixed-point data, 32-bit fixed-point data, or single-precision floating-point data. The application note describes the case of the default setting, which performs processing using 16-bit fixed-point data.

2.   Supported Devices

RX140 group

3.   Operating Environment

The following shows the operating environment. For details, refer to "1.3 Operating Environment" in the application note.

- ・   Integrated development environment: e^2 studio 2021-10 or later
- ・   Toolchain: C/C++ Compiler Package for RX Family V3.03 or later

4.   Obtaining the Product

Obtain the product from the URL below.

https://www.renesas.com/document/scd/rx-family-sample-program-using-fir-filter-perform-frequency-band-judgement-rev100-sample-code?r=1169201
RX Family Sample Program Using FIR Filter to Perform Frequency Band Judgement

5.   Related websites

DSB Library for RX Family (introduction of the DSP library)

https://www.renesas.com/software-tool/dsp-library-rx-family

Revision History

		Description	
Rev.	Date	Page	Summary
1.00	Feb.01.22	-	First edition issued

Corporate Headquarters

TOYOSU FORESIA, 3- 2- 24 Toyosu,

Koto-ku, Tokyo 135- 0061, Japan

www.renesas.com

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