Application Note

Akademie věd České republiky
Ústav teorie informace a automatizace AV ČR, v.v.i.

STM32 Nucleo-H743ZI with Adafruit 1.8" TFT Shield V2

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Revision history

Rev.	Date	Author	Description
0	05.16.2019	L. Kohout	Initial version
1			
2			

Content

Acknowledgement

signal processing
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1   Introduction

The STM32 Nucleo-H743ZI board [1] supports only Adafruit 1.8" TFT Shield V1 [2], this information is valid as of 05. 06. 2019. This application note shows how to modify Adafruit 1.8" TFT Shield V2 [2] to be compatible with STM32 Nucleo-H743ZI board. It also provides SW examples for STM32Cube_FW_H7_V1.4.0 firmware package [3].

2   Used Tools and Resources

- STM32 Nucleo-H743ZI [1].

- Adafruit 1.8" TFT Shield V2 [2].

- STM32Cube_FW_H7_V1.4.0 package is a firmware package for STM32H7 Series. It is downloadable from the STMicroelectronics web page [3]. The package gathers together all the generic embedded software components required to develop an application on STM32H7 microcontrollers.

- STM32-Nucleo-H743ZI-Adafruit-1.8-TFT-shield-V2 package provided with this application note, the package content can be seen in Section 4.

- The System Workbench toolchain, called SW4STM32 [4]. It is a free multi-OS software development environment based on Eclipse, which supports the full range of STM32 microcontrollers and associated boards.

3   Implementation

1. Modify Adafruit 1.8" TFT Shield V2 according to Figure 1.

2. Download STM32Cube_FW_H7 package from its web page:

   https://www.st.com/en/embedded-software/stm32cubeh7.html.

   Current version of the package is 1.4.0 (05. 16. 2019). Decompress the package zip file. It creates folder called STM32Cube_FW_H7_V1.4.0. The package path will be referenced as *$STM32Cube_path$* in this text.

3. Download and install SW4STM32 System Workbench toolchain. To download the tool, go to the OpenSTM32 webpage: http://www.openstm32.org/HomePage.
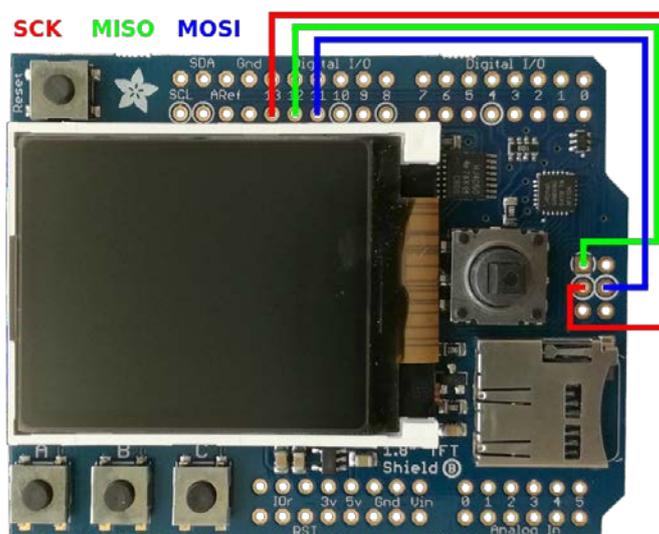

Figure 1: Adafruit 1.8" TFT Shield V2 modifications.

4. Connect a micro USB cable to the STM32 Nucleo H743ZI board with Adafruit 1.8" TFT Shield V2. This connection provides a programming interface and a power supply.

5. Unpack the STM32-Nucleo-H743ZI-Adafruit-1.8-TFT-shield-V2 package to the *$STM32Cube_path$*. The package contains two examples, *Demonstrations-V2* and *BSP-V2*. Their destination folders are:

    a. $STM32Cube_path$/Projects/NUCLEO-H743ZI/Demonstrations-V2

    b. *$STM32Cube_path$/Projects/NUCLEO-H743ZI/Examples/BSP-V2*

6. Open SW4STM32. Select path to workspace

    a. *$STM32Cube_path$/Projects/NUCLEO-H743ZI/Demonstrations-V2/SW4STM32*

    b. *$STM32Cube_path$/Projects/NUCLEO-H743ZI/Examples/BSP-V2/SW4STM32*

7. Import project into the workspace. From the SW4STM32 menu select: *File/Import…/General/Existing Projects into Workspace*. Select root directory, click on *Browse…* button. Click on *OK* button. Click on *Finish* button

8. Compile the application, from the menu select *Project/Build All* (*CTRL+B*).

9. Download the compiled application to the board, from the menu select *Run/Run* (*CTRL+F11*). In the dialog window select *Ac6 STM32 C/C++ Application* and click on *OK* button.

10. On the STM32 Nucleo H743ZI board push *RESET* button. Figure 2 shows an example of the running application on the STM32 Nucleo H743ZI board with Adafruit 1.8" TFT Shield V2.
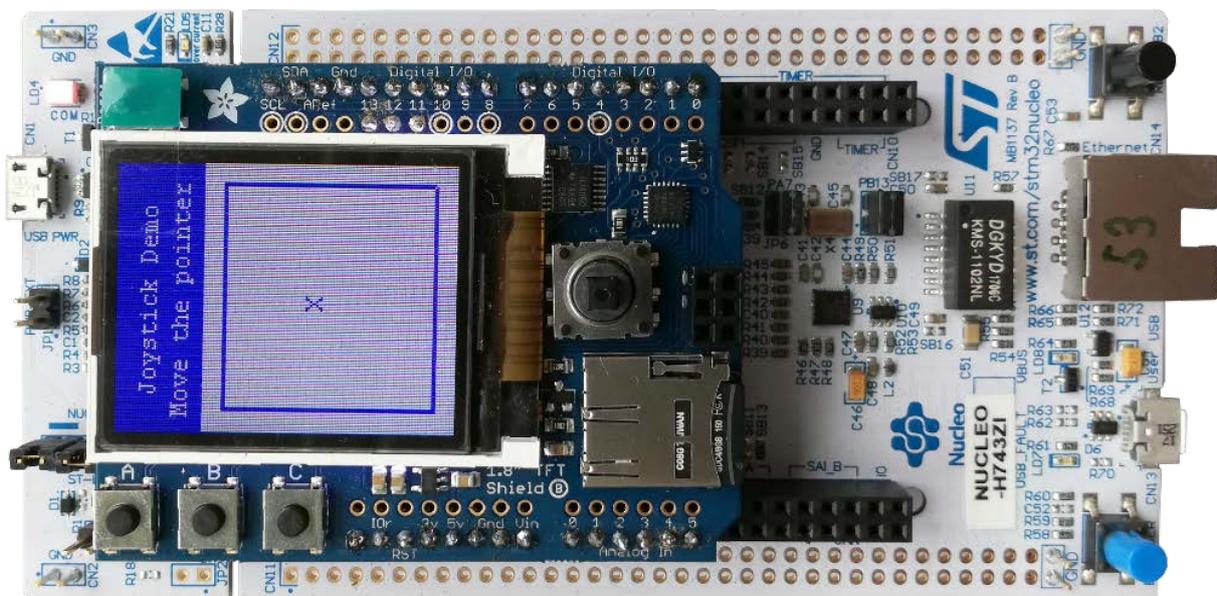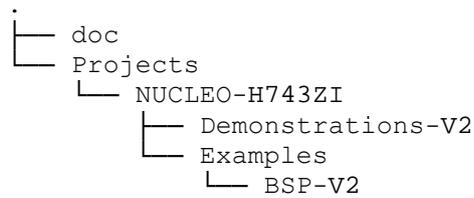

Figure 2: STM32 Nucleo H743ZI board with Adafruit 1.8" TFT Shield V2 and running application.

4 Package content

```
.
├── doc
└── Projects
    └── NUCLEO-H743ZI
        ├── Demonstrations-V2
        └── Examples
            └── BSP-V2
```

5 References

[1] STMicroelectronics, „STM32 Nucleo-144 boards User manual UM1974," 12 2017. [Online]. Available: https://www.st.com/resource/en/user_manual/dm00244518.pdf.

[2] Adafruit, „1.8" TFT Display Breakout and Shield," 10 02 2019. [Online]. Available: https://cdn-learn.adafruit.com/downloads/pdf/1-8-tft-display.pdf?timestamp=1558009255.

[3] STMicroelectronics, „STM32CubeH7," [Online]. Available: https://www.st.com/en/embedded-software/stm32cubeh7.html. [05 2019].

[4] OpenSTM32, „OpenSTM32 Community," [Online]. Available: http://www.openstm32.org/HomePage. [05 2019].

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