

README

The firmware images provided in the zip files are meant to be used to upgrade BlueNRG-MS device firmware version.

The zip file content is as follow:

- `bluenrg_7_1_e_Mode_2-16MHz-XO32K_4M.c`: suitable for BlueNRG-MS firmware reprogramming during manufacturing in volume of customer boards.
- `bluenrg_7_1_e_Mode_2-16MHz-XO32K_4M.img`: suitable for BlueNRG-MS firmware programming on bench with ST GUI for prototype bring up and characterization.

BlueNRG-MS firmware update from external microcontroller:

This section provide information on how to reprogram the BlueNRG-MS firmware using SPI commands from the external microcontroller. This method is suitable for updating the BlueNRG-MS firmware during manufacturing of customer board since allow to reach the fastest reprogramming time. Customer who has completed a bring-up of their prototypes having a system with good SPI access should be able to perform BlueNRG-MS firmware upgrade without any issue.

Since ST BlueNRG-MS comes pre-programmed with a production-ready stack image (whose version could change at any time without notice), customer can improve manufacturing time by checking the firmware version before proceeding to firmware reprogramming. An example code, can be as follow:

```
getBlueNRGVersion (&hw_version, &version);
if (version < desired_version) { #Allow to enjoy backward compatibility
    program_device(fw_image, sizeof(fw_image));
}
program_IFR();

getBlueNRGVersion (&hw_version, &version);
if (version != desired_version) { #Allow to use only a fixed version
    program_device(fw_image, sizeof(fw_image));
}
program_IFR();
```

Step by step instructions are as follow (valid for BLUENRG-DK 1.8.0 or later):

1. Download the BLUENRG-DK SW package available on <http://www.st.com/bluenrg-ms> web page (Design Resources, STSW-BLUENRG-DK Setup for BlueNRG Kits)
2. Open the IAR project
Projects\Projects_STD_Library\BlueNRG_Stack_IFR_Updater\EWARM_BlueNRG_MS\BlueNRG_Stack_IFR_Updater.eww.
3. Select the `Stack_updater` workspace
4. Copy file `bluenrg_7_1_e_Mode_2-16MHz-XO32K_4M.c` in the directory
Projects\Projects_STD_Library\BlueNRG_Stack_IFR_Updater\src
5. Select the file `BlueNRG_Stack_IFR_Updater_main.c` and replace the code fragment as follow:

```
#if BLUENRG_MS
#if (USER_DEFINED_PLATFORM == USER_EVAL_PLATFORM) /* Used for X-NUCLEO-IDB05A1 (BlueNRG-MS): 32
```

```
MHZ clock */
#include "bluenrg_7_1_e_Mode_2-32MHz-XO32K_4M.c"
#else
#include "bluenrg_7_1_e_Mode_2-16MHz-XO32K_4M.c"
#endif
#else
#include "bluenrg_6_4_Mode_2-16MHz-XO32K.c"
#endif
```

to:

```
#include "bluenrg_7_1_e_Mode_2-16MHz-XO32K_4M.c"
```

6. Build and download the built image to the STEVAL kit. Running the program will update BlueNRG-MS firmware image. If everything is ok, the LED D1 blinks, otherwise LED D2 blinks.

NOTES:

1. The BlueNRG-MS stack updater demonstration supports the BlueNRG-MS kit platforms based on STM32L1x microcontroller, but it is easily portable on any other microcontroller since it is based on basic SPI transaction without any asynchronous events.
2. Header and sources files are available on `Projects\Projects_STD_Library\BlueNRG_Stack_IFR_Updater` folder and user can port them to the selected microcontroller and platform.

BlueNRG firmware update using ST GUI

This method is suitable to update BlueNRG-MS firmware on bench during bring up and characterization of customer application board.

Step by step instructions are as follow (valid for BLUENRG-DK 1.8.0 or later):

Download the BlueNRG DK SW package available on <http://www.st.com/bluenrg-ms> web page (Design Resources, STSW-BLUENRG-DK Setup for BlueNRG Kits)

1. Open the BlueNRG GUI on the BlueNRG DK software package (BLUENRG_GUI.exe on Application folder)
2. Connect the BlueNRG-MS platform to the PC USB port
3. Load the prebuilt Virtual COM image `BlueNRG_VCOM_x_x.hex` available on the Firmware folder using the GUI, tools, and Flash motherboard firmware utility provided that the BlueNRG-MS kit platform is in DFU mode (on the Projects folder, an IAR project is also available for building and downloading the Virtual COM image through JTAG).
4. On the BlueNRG GUI, select the associated COM port and click on the Open button
5. Go to Tools -> BlueNGR Updater
6. Using the Browse.. tab, select `bluenrg_7_1_e_Mode_2-16MHz-XO32K_4M.img` and launch update procedure. This image has default parameters for the recommended 16 MHz crystal and use Mode 2.
7. After the procedure is completed, Go to Tools -> Get Version for checking BlueNRG-MS FW version is updated to expected version.