

BlueNRG GUI SW package



Features

- Graphical user interface (GUI) PC application
- GUI tools:
 - Load history
 - Save history (csv file)
 - Save history as text (txt file)
 - Save as script (python file)
 - Save as C code (header and source files + IDE projects)
 - Stack Updater
 - IFR/device configuration
 - Flash motherboard FW
 - Bluetooth Low Energy (LE) over-the-air (OTA) firmware upgrade
 - Get version
 - Get production data
 - Set baud rate
- GUI windows:
 - ACI commands
 - ACI utilities
 - Scripts
 - Beacon
 - RF test
 - Throughput
- Standalone script launcher utility

Description

The **STSW-BNRGUI** software package consists of a graphical user interface (GUI) PC application that can be used to interact and evaluate the capabilities of the BlueNRG, BlueNRG-MS and BlueNRG-2N Bluetooth Low Energy network processors, which are low power Bluetooth® Low Energy ICs, compliant with the Bluetooth® specifications. It also supports the BlueNRG-1, BlueNRG-2 and the BlueNRG-LP Bluetooth Low Energy systems-on-chip: low power Bluetooth® Low Energy ICs that are compliant with the Bluetooth® specification, both in master and slave roles.

The GUI PC application can send standard and vendor-specific HCI commands to the selected device and received events from it via the ACI commands or ACI utility window. Commands and events can also be sent and received with scripts executed through the GUI script window. The list of the sent commands and received events can be saved on a file and then reloaded.

Furthermore, this list can be saved as a simple text file or as a python script, which can be customized by user and then run through the **STSW-BNRGUI** script engine.

Product summary	
BlueNRG GUI SW package	STSW-BNRGUI
Bluetooth® Low Energy/ wireless system-on-chip	BlueNRG-MS
	BlueNRG-1
	BlueNRG-2
	BlueNRG-2N
	BlueNRG-LP
Evaluation platform based on the BlueNRG-1/ BlueNRG-2/ BlueNRG-LP	STEVAL-IDB007V2
	STEVAL-IDB007V1M
	STEVAL-IDB008V2
	STEVAL-IDB008V1M
	STEVAL-IDB009V1
	STEVAL-IDB011V1
	STEVAL-IDB005V1
STEVAL-IDB006V1	
Applications	wireless connectivity

The [STSW-BNRGUI](#), save as C code utility allows user to store the current list of APIs and events on the BlueNRG GUI sent/received packets table as header and source files (C language), which can be used as starting point for user FW development. Complete set of toolchains projects (IAR, KEIL and Atollic where applicable) is also generated in order to allow user to store them on the BlueNRG-LP and BlueNRG-1/BlueNRG-2 SDK SW packages and on the BlueNRG, BlueNRG-MS (only IAR) SDK SW package frameworks.

The GUI PC application provides utilities to upgrade the STM32L1xx software image on the BlueNRG and BlueNRG-MS motherboards, as well as the BlueNRG and BlueNRG-MS stack images and relative IFR configurations. It also allows the BlueNRG-1, BlueNRG-2, BlueNRG-2N and BlueNRG-LP hardware parameter configuration. The [STSW-BNRGUI](#) also provides the Bluetooth LE over-the-air (OTA) firmware upgrade tool for the client side upgrade procedure. It supports the beacon feature to configure an ST beacon device and the RF test window to send or stop a tone and perform Bluetooth LE packet error rate (PER) tests using Bluetooth LE direct test mode (DTM) commands.

The throughput tab allows the Bluetooth LE stack throughput performance to be evaluated.

A standalone script launcher utility is also provided in the [STSW-BNRGUI](#) software package. This utility let you run a script through a PC DOS window outside the GUI PC application context. The GUI PC application and standalone script launcher utility support all the BlueNRG, BlueNRG-MS, BlueNRG-1, BlueNRG-2, BlueNRG-2N and BlueNRG-LP platform kits.

1 STSW-BNRGUI software package utilities

Figure 1. BlueNRG GUI

The screenshot displays the BlueNRG GUI interface. At the top, the window title is 'BlueNRG GUI vx.x.x'. Below the title bar is a menu bar with 'File', 'Tools', 'Settings', and 'Help'. A 'Port' dropdown is set to 'COM44 (ST DK)', with 'Open' and 'HW Reset' buttons. The main interface has several tabs: 'ACI Commands', 'ACI Utilities', 'Scripts', 'Beacon', 'RF Test', and 'Throughput'. The 'ACI Commands' tab is active, showing a list of commands on the left and a 'Command Packet' configuration table on the right. The 'Command Packet' table has columns for Parameter, Value, Literal, and Info. The parameters are: Opcode (0xF...), Parameter To... (0x00...), Role (0x01), Privacy Type (0x00), Device Name... (0x07), and Identity Addr... (0x00). Below the table is a 'Filter' section with checkboxes for 'SELECT ALL', 'GAP', 'L2CAP', 'GATT - ATT', 'HCI Test', 'HAL', and 'HCI'. At the bottom, there are 'Clear List', 'Update', and 'Autoscroll' checkboxes, and a 'Send' button. The bottom status bar shows 'Baudrate: 921600 (Only BlueNRG-LP)' and the date '2020-06-29'.

Command Packet Configuration:

Parameter	Value	Literal	Info
Opcode	0xF...	ACI GAP INIT	
Parameter To...	0x00...		
Role	0x01	Peripheral	Bitmap of allowed roles. Flags: 0x01: Peripheral 0x02: ...
Privacy Type	0x00	Privacy disabled	Specify if privacy is enabled or not and which one . Va...
Device Name...	0x07		Length of the device name characteristic Values: 0 ... 2...
Identity Addr...	0x00	Public Address	Specify which address has to be used as Identity Add...

Sent/Received Packets:

N.	Time	Type
0	18:06:...	ACI GAP INIT
1	18:06:...	HCI COMMAND COMPLETE EVENT

Packet Details:

Parameter	Value	Literal	Info
Opcode	0xF...	ACI GAP INIT	
Parameter To...	0x00...		
Role	0x01	Peripheral	Bitmap of allowed roles. Flags: 0x01...
Privacy Type	0x00	Privacy disabled	Specify if privacy is enabled or not a...
Device Name...	0x07		Length of the device name character...
Identity Addr...	0x00	Public Address	Specify which address has to be use...

Figure 2. Script launcher utility

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Command Prompt
C:\Users\UserName\ST\BlueNRG GUI x.x.x\Application>BlueNRG_Script_Launcher.exe -p COM7 -s "C:\Users\UserName\ST\BlueNRG
GUI x.x.x\Application\Scripts\BLE Beacon\BLE up v2_x\BLE_Beacon.py" -b 115200 -l

LOG: COM7 -> 08:26:46.930 -> HCI_READ_LOCAL_VERSION_INFORMATION
LOG: COM7 -> 08:26:46.936 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.805 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.806 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.811 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.812 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.815 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.815 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.819 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.821 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.825 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.825 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.829 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.831 -> HCI_COMMAND_COMPLETE_EVENT
LOG: COM7 -> 08:26:47.835 -> HCI_COMMAND_COMPLETE_EVENT

C:\Users\UserName\ST\BlueNRG GUI x.x.x\Application>

```

Revision history

Table 1. Document revision history

Date	Version	Changes
24-May-2016	1	Initial release.
24-Jun-2016	2	Added reference to BlueNRG-1 SoC.
19-Jun-2017	3	Added reference to BlueNRG-2 SoC.
29-Mar-2018	4	Updated Section Features and Section Description.
06-Mar-2020	5	Updated the cover page and Section 1 .
14-Jul-2020	6	Updated the cover page and the description. Updated Figure 1. BlueNRG GUI and Figure 2. Script launcher utility . Added reference to BlueNRG-LP SoC.
24-Aug-2020	7	Added reference to the BlueNRG-2N network coprocessor device.

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