
BlueNRG-1, BlueNRG-2 SDK compatibility matrixes

Introduction

This document describes the BlueNRG-1, BlueNRG-2 development kits (STSW-BLUENRG1-DK) and the BlueNRG-1 development kit (STSW-BNRG_V1-DK) compatibility matrixes. Each compatibility matrix provides the following information:

- Development kit version and release date
- Development kit supported devices
- Development kit supported Bluetooth® Low Energy stack version

In addition to this, a dedicated section describes possible incompatibilities in specific use cases.

1 STSW-BLUENRG1-DK, STSW-BNRG_V1-DK releases and main features

The STSW-BLUENRG1-DK and STSW-BNRG_V1-DK releases and main distinctive features are reported, respectively, in [Table 1](#) and [Table 2](#).

Table 1. STSW-BLUENRG1-DK releases and main features

STSWBLUENRG1-DK release number	Release date	Bluetooth LE stack version	Main features
3.2.3	12/16/2022	v2.1f	BlueNRG-1, BlueNRG-2 + BLE specifications 5.2 + modular configuration
3.2.2	10/15/2021	v2.1e	BlueNRG-1, BlueNRG-2 + BLE specifications 5.2 + modular configuration
3.2.1	4/30/2020	v2.1c	BlueNRG-1, BlueNRG-2 + BLE specifications 4.2 + modular configuration
3.2.0	3/6/2020	v2.1b	BlueNRG-1, BlueNRG-2 + BLE specifications 4.2 + modular configuration
3.1.0	12/14/2018	v2.1a	BlueNRG-1, BlueNRG-2 + BLE specification 4.2 + modular configuration
3.0.0	6/22/2018	v2.1	BlueNRG-1, BlueNRG-2 + BLE specifications 4.2 + modular configuration
2.6.0	12/18/2017	v2.0	BlueNRG-1, BlueNRG-2 + BLE specifications 4.2 + 2.4 GHz radio proprietary support
2.5.0	6/27/2017	v2.0	BlueNRG-1, BlueNRG-2 + BLE specifications 4.2
2.4.0	6/14/2017	v2.0	BlueNRG-1 + BLE specifications 4.2
2.3.0	12/2/2016	v1.0a	BlueNRG-1 + BLE specifications 4.0
2.2.0	10/7/2016	v1.0a	BlueNRG-1 + BLE specifications 4.0
2.1.0	7/5/2016	v1.0	BlueNRG-1 + BLE specifications 4.0

Table 2. STSW-BNRG-V1-DK releases and main features

STSW-BNRG_V1-DK release number	Release date	Bluetooth LE stack version	Main features
1.0.0	10/20/2017	v1.1	BlueNRG-1 BLE specifications 4.0

The main features column identifies the STSW-BLUENRG1-DK and STSW-BNRG_V1-DK software package release families, and defines the main guidelines to migrate an user application to the latest available software package. Refer to related software packages release notes for more detailed information.

2 The BlueNRG-1, BlueNRG-2 development kit compatibility matrixes

The STSW-BLUENRG1-DK development kit supports both the BlueNRG-1 and the BlueNRG-2 devices. The following table (where x = supported, - = not supported) describes the STSW-BLUENRG1-DK compatibility matrix.

Table 3. STSW-BLUENRG1-DK compatibility matrix

STSW-BLUENRG1-DK release number ⁽¹⁾	Release date	BLE stack version	BlueNRG-1 cut 1.1 ⁽²⁾⁽³⁾	BlueNRG-1 cut 1.3 ⁽²⁾⁽³⁾	BlueNRG-2 cut 1.0 ⁽²⁾⁽³⁾	BlueNRG-2 cut 1.2 ⁽²⁾⁽³⁾
3.2.3	12/16/2022	v2.1f	x	x	x	x
3.2.2	10/15/2021	v2.1e	x	x	x	x
3.2.1	04/30/2020	v2.1c	x	x	x	x
3.2.0	03/06/2020	v2.1b	x	x	x	x
3.1.0	12/14/2018	v2.1a	x	x	x	x
3.0.0	06/22/2018	v2.1	x	x	x	x
2.6.0	12/18/2017	v2.0	x	-	x	-
2.5.0	06/27/2017	v2.0	x	-	x	-
2.4.0	06/14/2017	v2.0	x	-	x	-
2.3.0	12/02/2016	v1.0a	x	-	x	-
2.2.0	10/07/2016	v1.0a	x	-	x	-
2.1.0	07/05/2016	v1.0	x	-	x	-

1. Customers using the STSW-BLUENRG1-DK prior to 3.0.0 with the BLUENRG-1 cut 1.3 and the BLUENRG-2 cut 1.2 can experience some problems, as BOR is not enabled upon the initialization phase.
2. Refer to [Table 5](#) for the cut recognition
3. Refer to [Section 3](#) to make a final assessment for the software development kit and the device compatibility.

The STSW-BNRG_V1-DK development kit supports only the BlueNRG-1 device. The related compatibility matrix is detailed in [Table 4](#) (where x = supported, - = not supported).

Table 4. STSW-BNRG_V1-DK development kit compatibility matrix

STSW-BNRG_V1-DK release number ⁽¹⁾	Release date	BLE stack version	BlueNRG-1 cut 1.1 ⁽²⁾⁽³⁾	BlueNRG-1 cut 1.3 ⁽²⁾⁽³⁾	BlueNRG-2 cut 1.0 ⁽²⁾⁽³⁾	BlueNRG-2 cut 1.2 ⁽²⁾⁽³⁾
1.0.0	10/20/2017	v1.1	x	-	-	-

1. NRND (not recommended for new design)
2. Refer to [Table 5](#) for the cut recognition
3. Refer to [Section 3](#) to make a final assessment for the software development kit and the device compatibility.

[Table 5](#) provides the device identification information about the BlueNRG-1, BlueNRG-2 devices.

Table 5. Device identification

Device	Identification information of the device ⁽¹⁾	Device cut
BlueNRG-1	0x00000111	1.1
	0x00000113	1.3
BlueNRG-2	0x00000100	1.0

Device	Identification information of the device ⁽¹⁾	Device cut
BlueNRG-2	0x00000112	1.2

1. Value as read from CKGEN_SOC - DIE_ID register (0x4090001C)

3 Compatibility issues in specific use cases

This section describes a list of known compatibility issues in specific use cases. The content must be read in conjunction with The BlueNRG-1, BlueNRG-2 development kit compatibility matrixes, to make a final assessment for the software development kit (SDK) and the device compatibility.

Each specific compatibility issue is provided with the following information:

- **Description:** description of the compatibility issue
- **Impact:** effect on the customer product of the compatibility issue
- **Context:** describe under which conditions the compatibility issue occurs, i.e. which SDK and the device combination impacted and under which conditions
- **Severity:** scale of severity, in five degrees
 1. Catastrophic defect
 2. Impaired functionality
 3. Failure of non-critical aspects
 4. Defect of minor significance
 5. Very minor defect
- **Workaround:** possible workaround, if available
- **Solution:** proper solution, if available

3.1 BOR_Config issue

Table 6. STSW-BLUENRG1-DK BOR_Config issue

Issue information	Issue information details	Notes
Description	BOR_Config variable is shared between OTA service manager and Bluetooth LE application. Each time the device wakes up from sleep mode, the code starts execution from the OTA service manager FW and it reads the shared variable BOR_Config to execute some operations. If the BOR_Config variable on the user application is allocated on a different address the stored values are not consistent and this could cause a RAM memory corruption with hard fault.	
Impact	RAM memory corruption and user application hard fault.	
Context	Bluetooth LE applications using OTA service manager framework, the STSW-BLUENRG1-DK v3.0.0 or v3.1.0, BlueNRG-1 cut 1.3 or the BlueNRG-2 cut 1.2.	
Severity	1: Catastrophic defect (application is in hard fault)	
Workaround	<p>Customer needs to modify the user application. The BOR_Config variable should be allocated in a reserved RAM region at the same address of OTA service manager as follows:</p> <ol style="list-style-type: none"> Open the map file of the OTA service manager FW and read the address of the BOR_config variable: bor_config_address Modify the system_bluenrg1.c by replacing volatile uint8_t BOR_config[7]; with <pre>SECTION(".BOR_config") REQUIRED(volatile uint8_t BOR_config[7]);</pre> Change the user application linker file by adding section for BOR_Config variable at specific address: <ul style="list-style-type: none"> IAR icf: <pre>/*BOR_config Block */ define block BOR_config_block with alignment = 4, size = 8 { section .BOR_config}; keep {section .BOR_config}; place at address mem: bor_config_address { block BOR_config_block, };</pre> KEIL sct: <pre>BOR_config_block bor_config_address 8 { *.o (.BOR_config) }</pre> 	
Solution	Migrate user application to the latest STSW-BLUENRG1-DK (the related linker files properly handle the BOR_Config variable)	Refer to STSW-BLUENRG1-DK basic migration guidelines

4 References

Table 7. References

Name	Title/description
AN5187	The BlueNRG-1, BlueNRG-2 improving robustness
ES0454	The BlueNRG-1 device limitations
ES0436	The BlueNRG-2 device limitations

Appendix A

A.1 STSW-BLUENRG1-DK basic migration guidelines

This section describes some general basic migration guidelines to port a customer application to a newer software development kit (SDK) version (STSW-BLUENRG1-DK). Key informations:

- Migration within the same major version family is easier (i.e. SDK 2.x to SDK 2.x or SDK 3.x to SDK 3.x).
- Migrating user application is easier if customer must not have change the linker file and the files under Library directory provided by ST.
- It is recommended to migrate to the latest available SDK (current version is V3.2.3).

A set of general basic guidelines is provided as follows:

1. Refer to Table 1 for information about SDKs compatibility matrix versus the BlueNRG-1, BlueNRG-2 device cuts (which SDKs can be used on which device cuts).
2. Refer to the recommendations in AN5187 *The BlueNRG-1, BlueNRG-2 improving robustness*.
3. The STSW-BLUENRG1-DK v3.x.x, supporting the BlueNRG-1, BlueNRG-2 devices and Bluetooth LE stack v2.1x family, migration of a user application can be simply performed by moving the user application folder under the STSW-BLUENRG1-DK v3.2.3, Projects\BLE_Examples folder. The user should also check the related IDE linker file to align to the latest one (if needed), and then recompile.
4. The STSW-BLUENRG1-DK v2.x.x, supporting the BlueNRG-1, BlueNRG-2 devices and Bluetooth LE stack v2.0, migration of a user application, can be performed by moving the user demo folder under the STSW-BLUENRG1-DK v3.2.3, Projects\BLE_Examples folder. The user should also check the related IDE linker file to align to the latest one (if needed) and add the specific modular configuration option. (**BLE_STACK_CONFIGURATION=BLE_STACK_FULL_CONFIGURATION** if full stack features are needed or **BLE_STACK_CONFIGURATION=BLE_OTA_BASIC_CONFIGURATION** to select the OTA service support with data length extension).
5. The STSW-BLUENRG1-DK v2.x.x, supporting the BlueNRG-1, BlueNRG-2 devices and Bluetooth LE stack v1.x, migration of a user application, can be performed by moving the user demo folder under the STSW-BLUENRG1-DK v3.2.3, Projects\BLE_Examples folder. The user should also check the related IDE linker file to align to the latest one (if needed) and add the specific modular configuration option (**BLE_STACK_CONFIGURATION=BLE_STACK_FULL_CONFIGURATION** if full stack features are needed or **BLE_STACK_CONFIGURATION=BLE_OTA_BASIC_CONFIGURATION** to select the OTA service support with data length extension). Further, the user should follow the Bluetooth LE stack migration guidelines from v1.x to v2.x provided within the STSW-BLUENRG1-DK, Docs\BlueNRG1_BLE_stacks_migration folder.

Note: Further customizations may be needed when moving to the latest STSW-BLUENRG1-DK SW package.

A.2 STSW-BNRG_V1-DK basic migration guidelines

This section provides some general basic migration guidelines to port a customer application built on the STSW-BNRG_V1-DK to a newer software development kit (SDK) version (STSW-BLUENRG1-DK). Key informations

- Refer to the “Migration guidelines from BlueNRG-1 DK 2.3.0 to BlueNRG-1_V1 DK 1.0.0” document available on the STSW-BNRG_V1-DK software package installation path:
 - \Docs\BlueNRG1_V1_migration_b_l_e__v1__migration_8h.html.
- Refer to information provided on STSW-BLUENRG1-DK basic migration guidelines.

Revision history

Table 8. Document revision history

Date	Version	Changes
27-Apr-2020	1	Initial release.
04-May-2020	2	Updated Table 1.
25-Sep-2020	3	Updated Table 1. Added STSW-BLUENRG1-DK, STSW-BNRG_V1-DK releases and main features, Compatibility issues in specific use cases, Section 3.1 BOR_Config issue , Section 4 References , STSW-BLUENRG1-DK basic migration guidelines and STSW-BNRG_V1-DK basic migration guidelines.
11-Oct-2021	4	Updated Table 1 and STSW-BLUENRG1-DK basic migration guidelines.
16-Dec-2022	5	Introduced Bluetooth Low Energy stack v2.1f, and STSW_BLUENRG1-DK. Updated Table 1. STSW-BLUENRG1-DK releases and main features and Table 3. STSW-BLUENRG1-DK compatibility matrix. Updated Section A.2 STSW-BNRG_V1-DK basic migration guidelines . Minor text edits across the whole document.

Contents

1	STSW-BLUENRG1-DK, STSW-BNRG_V1-DK releases and main features	2
2	The BlueNRG-1, BlueNRG-2 development kit compatibility matrixes	3
3	Compatibility issues in specific use cases	5
3.1	BOR_Config issue	6
4	References	7
Appendix A		8
A.1	STSW-BLUENRG1-DK basic migration guidelines	8
A.2	STSW-BNRG_V1-DK basic migration guidelines	8
	Revision history	9

List of tables

Table 1.	STSW-BLUENRG1-DK releases and main features	2
Table 2.	STSW-BNRG-V1-DK releases and main features.	2
Table 3.	STSW-BLUENRG1-DK compatibility matrix.	3
Table 4.	STSW-BNRG_V1-DK development kit compatibility matrix	3
Table 5.	Device identification	3
Table 6.	STSW-BLUENRG1-DK BOR_Config issue	6
Table 7.	References	7
Table 8.	Document revision history	9

IMPORTANT NOTICE – READ CAREFULLY

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgment.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2022 STMicroelectronics – All rights reserved