

## Dual radio BLE and Sub-1GHz development kit for Sigfox™ and LPWAN protocols with BlueNRG-1 and S2-LP



### Features

- WS2118-00 Sigfox™ BLE module (Jorjin):
  - Embedded BlueNRG-132 Bluetooth low energy SOC based on ultra-low power Arm® Cortex®-M0 (up to +8 dBm BLE RF output power, excellent receiver sensitivity -88 dBm)
  - Embedded S2-LPQTR ultra-low power sub-1 GHz transceiver tuned for 826-958 MHz frequency bands (up to +16 dBm sub-1GHz RF output power, excellent receiver sensitivity down to -130 dBm, modulation schemes: 2-(G)FSK, 4-(G)FSK, OOK, and ASK, air data rate from 0.1 to 500 kbps, ultra-low power consumption: (7 mA RX, 10 mA TX @ +10 dBm ), low duty cycle RX/TX operation mode, automatic acknowledgement, retransmission, and timeout protocol engine)
  - BALF-NRG-01D3 50 Ω integrated balun, matching network and harmonics filter companion device of BlueNRG-1
  - Low power and wide supply voltage range: 2.0 to 3.6 V
  - Dimensions: 22 mm(l) x 24 mm(w) x 2.8 mm(h)
  - Operating temperature range: -40 °C to +85 °C
  - U.FL RF interface connectors
- USB interface
- Arduino™ Uno V3 connectors
- JTAG debug connectors
- Antennas: 2.4 GHz and Sub-1 GHz
- USB cable
- RoHS compliant and China RoHS compliant
- CE compliant
- WEEE compliant

### Description

The **STEVAL-FKI001V1** development kit is a cost-effective tool to help you design solutions based on Sigfox™, Bluetooth® low energy and sub-1GHz technologies.

The kit features a fully programmable module WS2118 (by Jorjin), which embeds the **BlueNRG-1** system-on-chip for Bluetooth® low energy functionality and the **S2-LP** transceiver for sub-1GHz functionality such as LPWAN protocols.

This development effectively combines Bluetooth low energy features with the connection capacity of Sigfox wide-area networks.

It includes examples and recommendations regarding the simultaneous use of the two protocols. Very low active RF and MCU current, and low-power mode current consumption provide excellent battery lifetime, allowing operation with coin cell batteries and energy-harvesting applications.

The STEVAL-FKI001V1 evaluation board uses the Arduino interface to help development, as it is compatible with ST Arduino shield boards featuring MEMS motion sensors, environmental sensors, and Time-of-Flight (ToF) ranging sensors.

Summary table	
Dual radio BLE and Sub-1GHz development kit for Sigfox™ and LPWAN protocols with BlueNRG-1 and S2-LP	STEVAL-FKI001V1
ultra-low power, high performance, sub-1GHz transceiver	S2-LP
Bluetooth low energy wireless system-on-chip	BlueNRG-1

# 1 Schematic diagram

Figure 1. STEVAL-FKI001V1 board schematic (1 of 2)

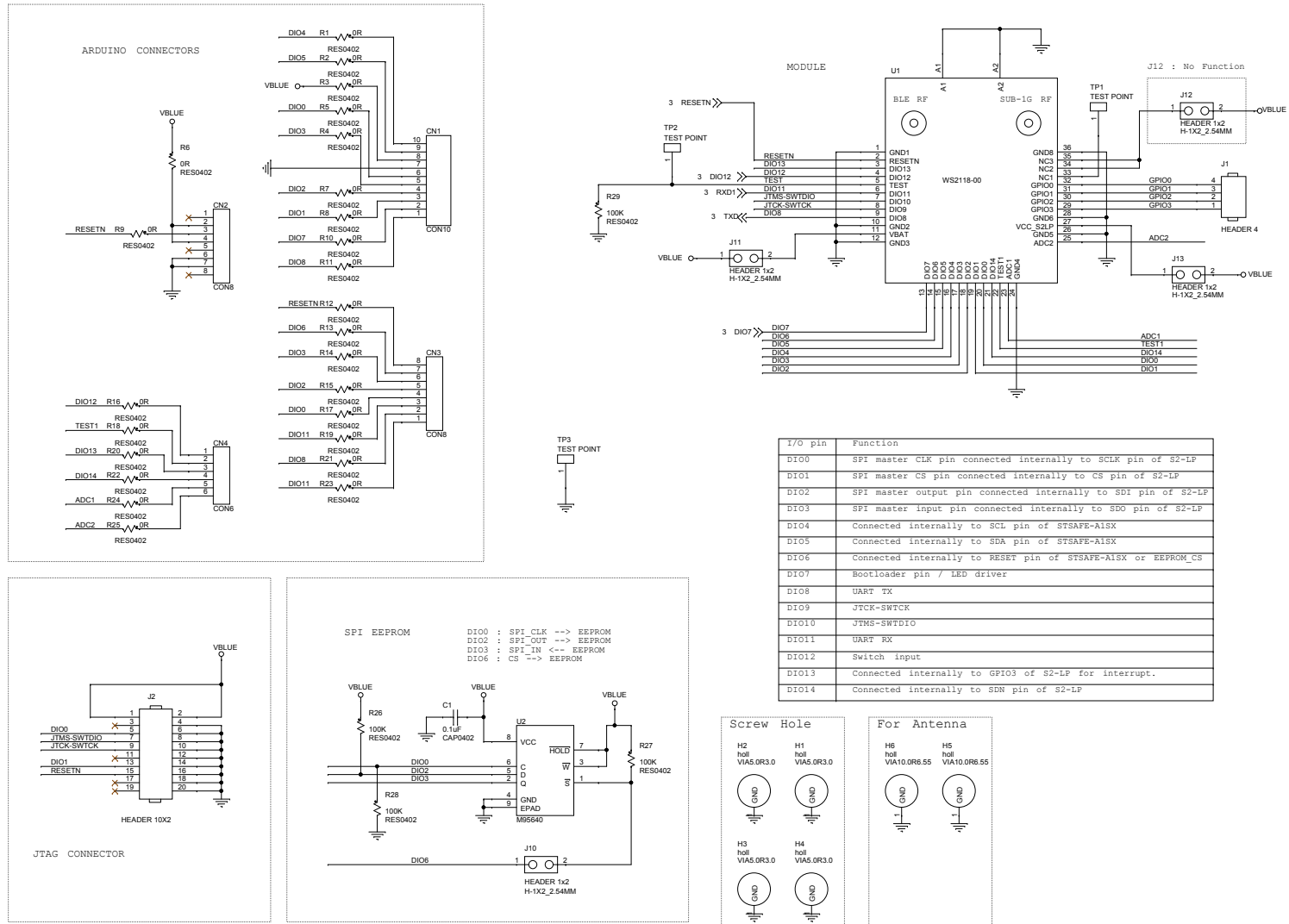
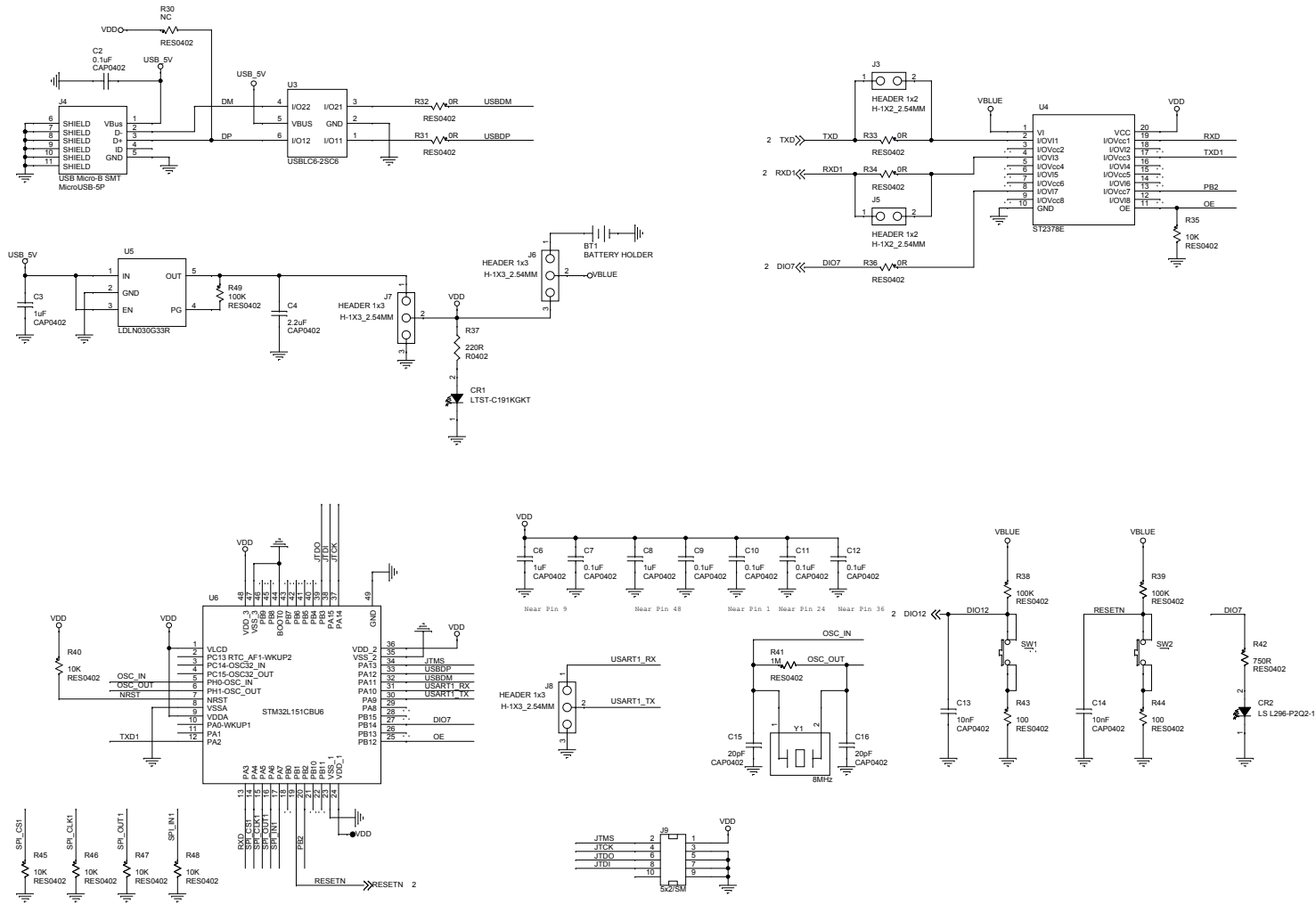


Figure 2. STEVAL-FKI001V1 board schematic (2 of 2)



## Revision history

**Table 1. Document revision history**

Date	Version	Changes
18-Oct-2018	1	Initial release.
11-Dec-2018	2	Update <a href="#">Section 1 Schematic diagrams</a> and cover image

**IMPORTANT NOTICE – PLEASE 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 acknowledgement.

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. 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.

© 2018 STMicroelectronics – All rights reserved