

Features

- STM32F103 microcontroller as bridge between communication protocols
- SPWF01SA.11 module for Wi-Fi communication:
 - 2.4 GHz IEEE 802.11 b/g/n Wi-Fi
 - Pre-certified RF module (FCC, IC, CE)
 - Integrated TCP/IP
 - AT commands
 - TLS/SSL for end-to-end security
 - Over-the-air firmware updates
- SP1ML-868 module for Sub-GHz RF communication:
 - 868 MHz ETSI-certified module
 - Based on Sub-GHz SPIRIT1 transceiver, STM32L1 ULP MCU and balun (BALF-SPI-01D3)
 - Chip antenna
 - Simple AT commands
- SPBT2632 module for Bluetooth communication:
 - Bluetooth® Classic 3.0 version
 - AT commands
 - CE, FCC, IC, TELEC certified
 - Low-power mode supported
- Supports NFC communication with the CR95HF and 13.56 MHz inductive etched antenna
- Configuration using a PC GUI (by request) through USB VCOM
- Android application to access sensor node data via Bluetooth on request
- Works as a root node for the mesh network using sensor node evaluation board (part number STEVAL -IDI002V2/3V2)
- RoHS compliant

Description

The STEVAL-IDI004V2 wireless bridge evaluation kit is an Internet of Things (IoT) Home Bridge which supports the Wi-Fi, Sub-GHz, Bluetooth and NFC communication protocols. The device is suitable for various smart home, smart city and industrial applications.

The system uses an STM32F103 microcontroller as a bridge between the various communications modules. The Wi-Fi, Bluetooth and Sub-GHz certified modules are connected through a UART interface to the STM32 microcontroller. The NFC transceiver module is connected through an SPI interface.

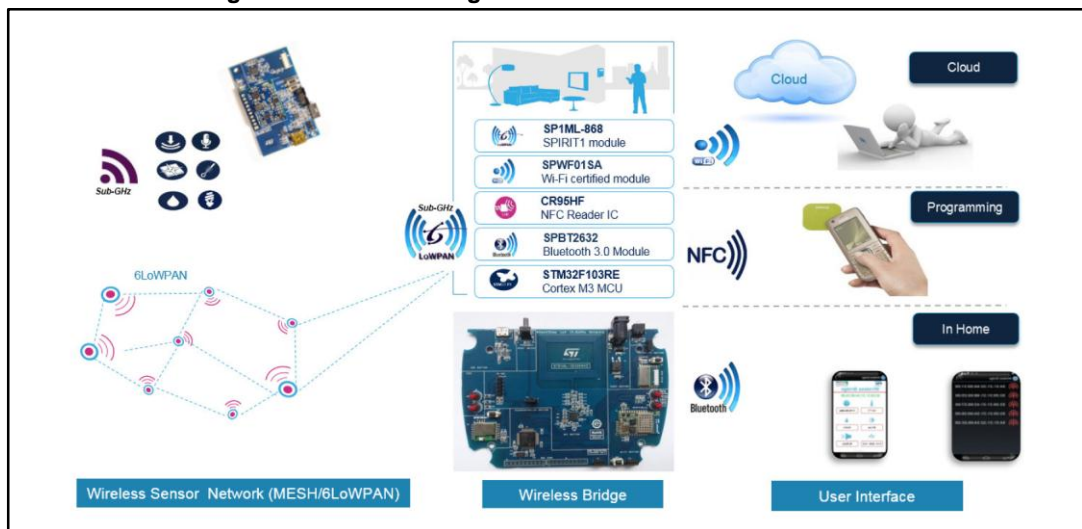
Detailed description

The evaluation kit supports the following communication protocols:

1. Wi-Fi communication @ 2.4 GHz IEEE 802.11 b/g/n using the SPWF01SA
2. Sub GHz communication @ 868 MHz low power RF using the SP1ML-868
3. Bluetooth communication @ 2.4 GHz, v3.0 compliant using the SPBT2632C2A
4. NFC communication @ 13.56 MHz using the CR95HF

The board can be connected to the PC through a USB VCOM interface. The Wi-Fi configuration parameters and the mesh node configuration can be programmed through the available PC GUI (by request). Debug log messages can also be collected through the GUI. The sensor data from any node in the mesh network (6LoWPAN Contiki 3.0) is accessible through an Android application over a Bluetooth interface. The board is powered by a 5 V, 1 A wall adapter. The status of the various communication interfaces is indicated using five LEDs mounted on the board.

Figure 1: Wireless Bridge WiFi/NFC/BT/RFSUBGHz scenario



1 Schematic diagrams

Figure 2: Microcontroller section

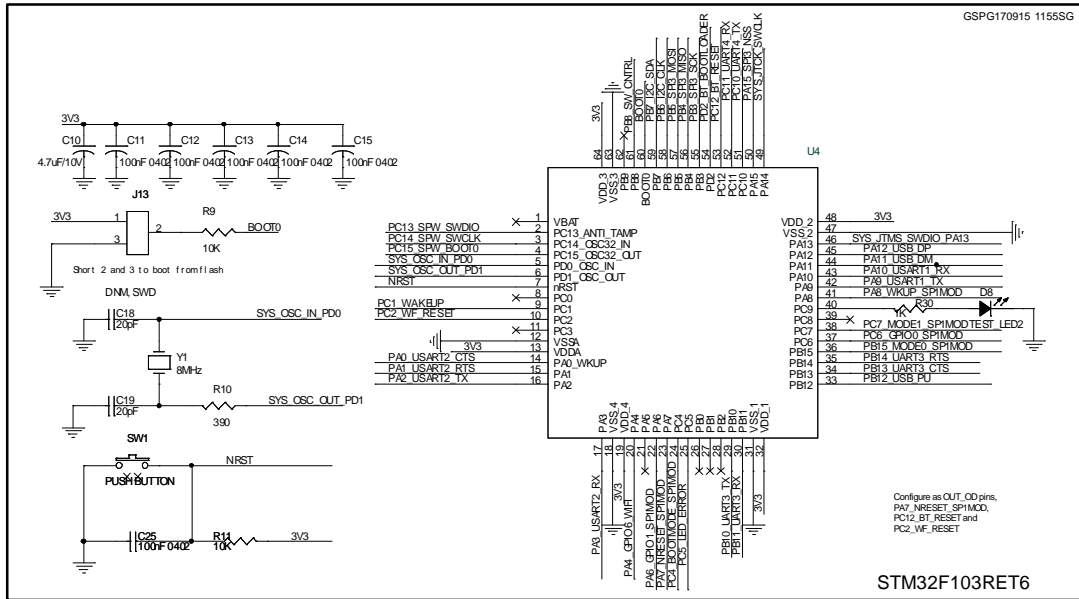


Figure 3: NFC section

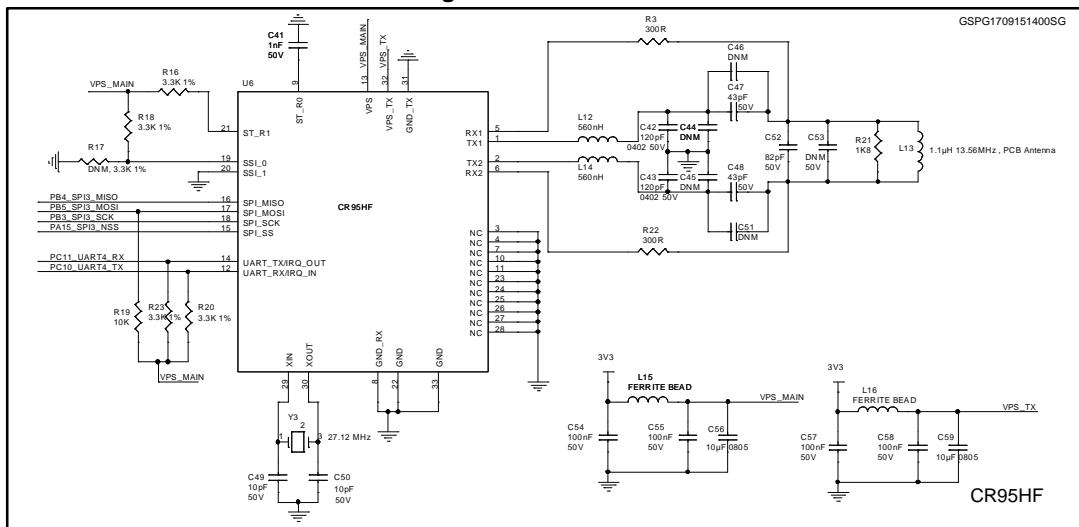


Figure 4: BT section

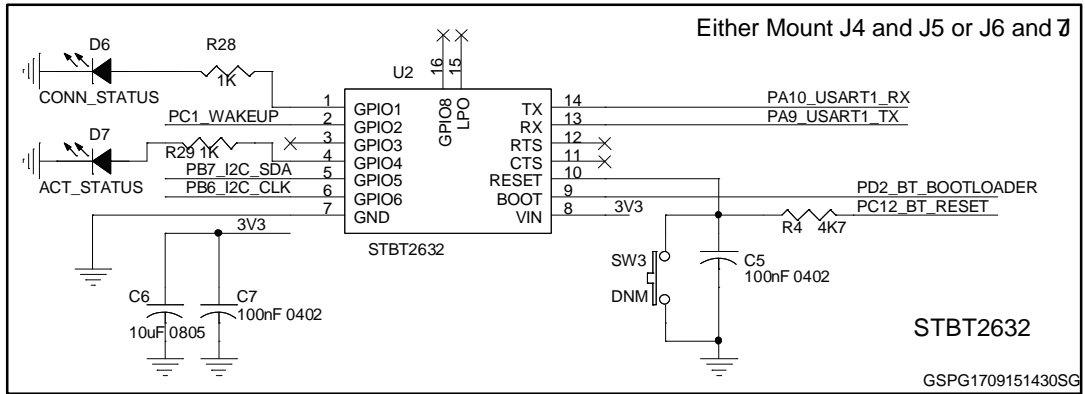


Figure 5: Wi-Fi section

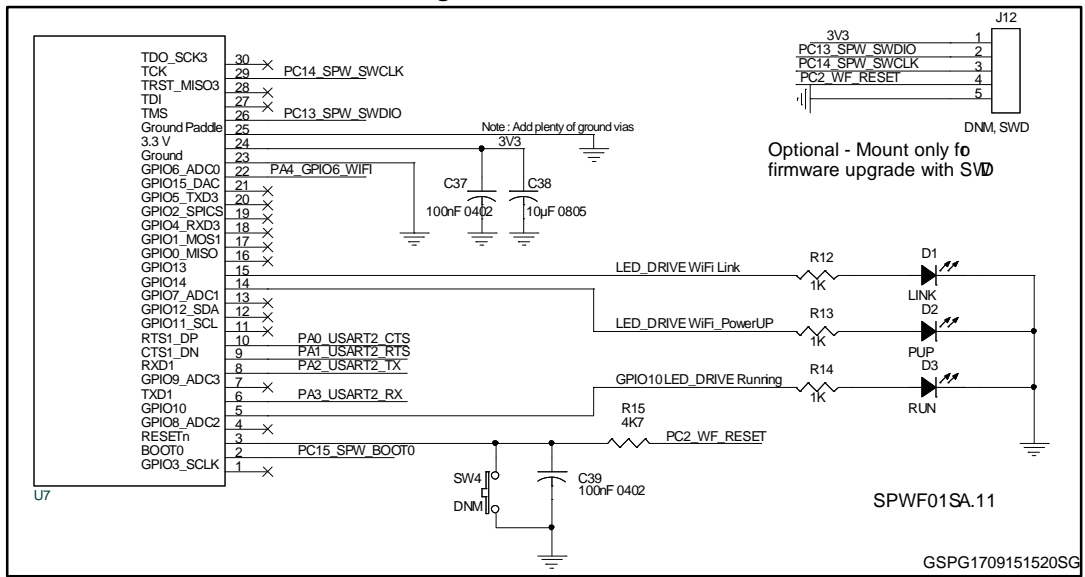


Figure 6: Sub GHz section

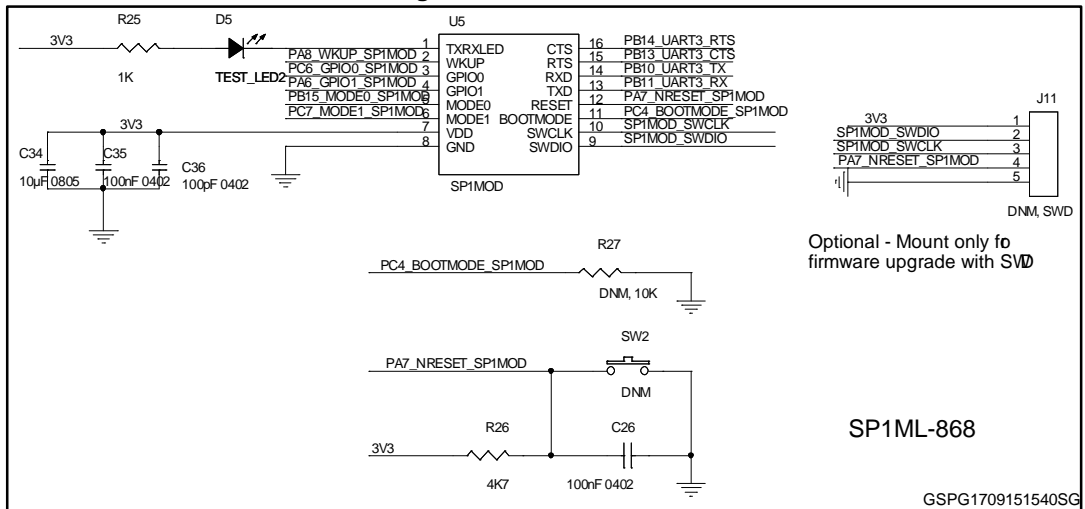


Figure 7: Power supply section

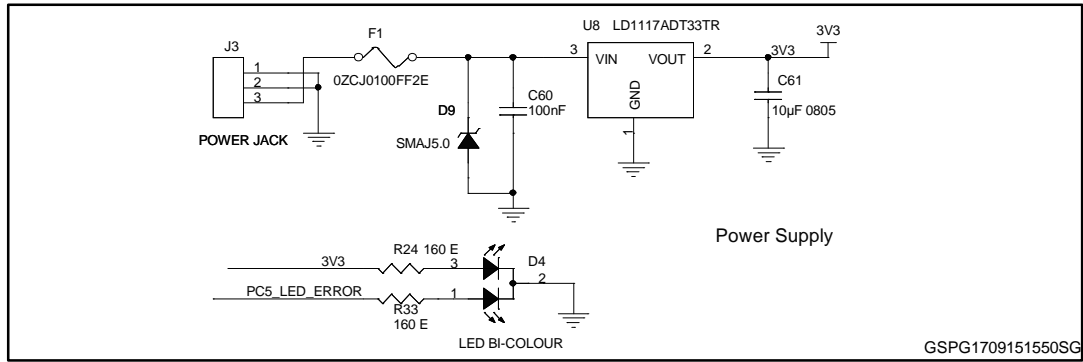


Figure 8: NFC transceiver section (1 of 2)

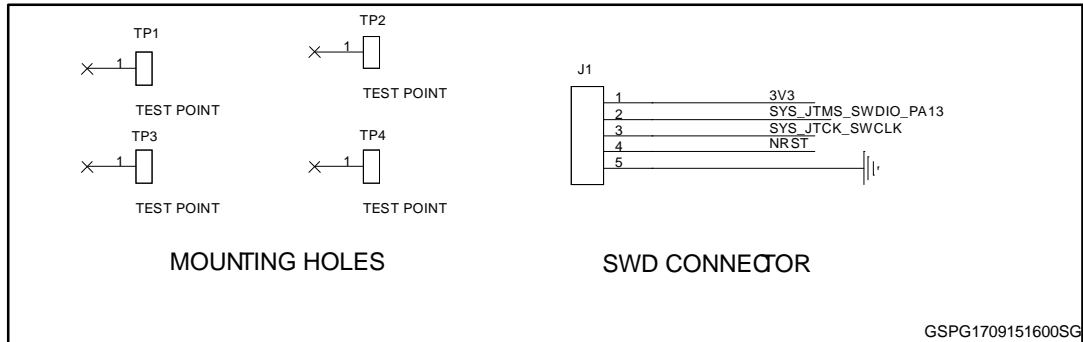


Figure 9: NFC transceiver section (2 of 2)

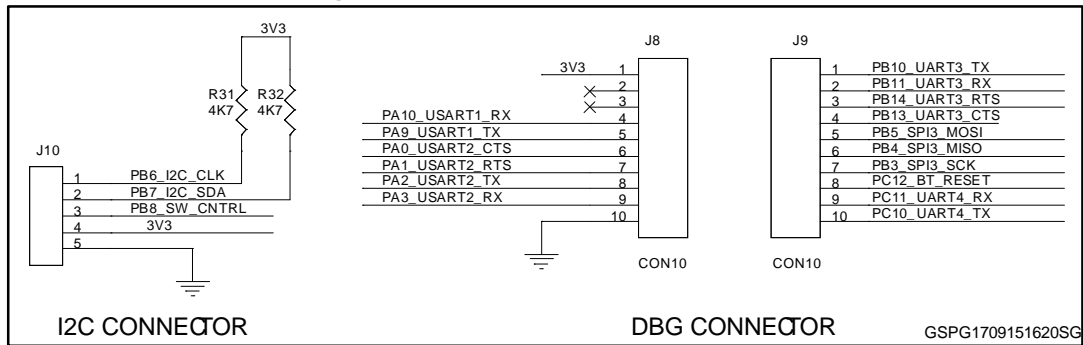
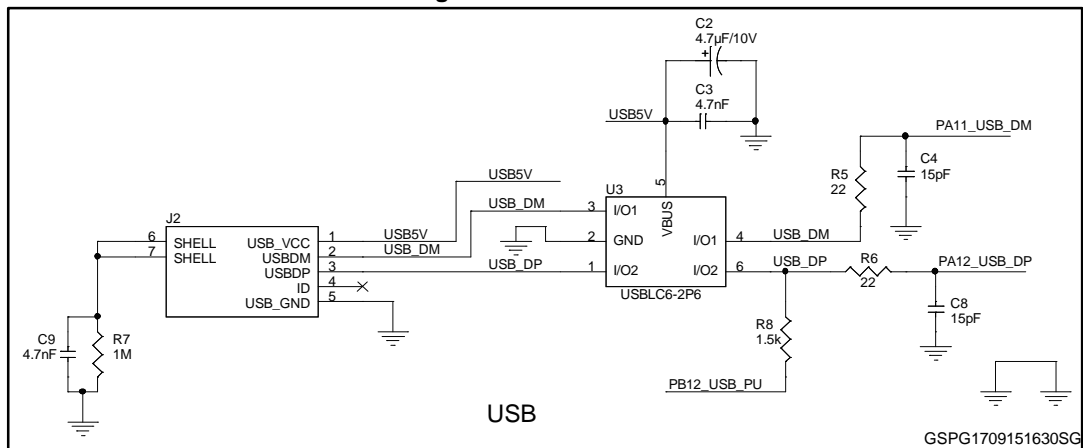


Figure 10: USB section



2 Revision history

Table 1: Document revision history

Date	Version	Changes
01-Oct-2015	1	Initial release.
17-Dec-2015	2	Updated title on the cover page.

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