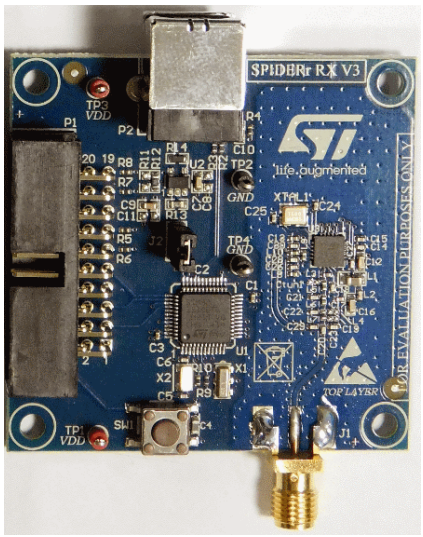
STDES-ERH002V1

Data brief

Wireless receiver board of the kit STDES-IDS003V1 and STDES-IDS002V1



Product summary
STDES-ERH002V1: Wireless receiver board of the kits STDES-IDS003V1 and STDES-IDS002V1
STDES-IDS002V1: SPIDEr™ Autonomous wireless multi-sensor node powered by PV cells and based on SPV1050
STDES-IDS003V1: SPIDEr™ Autonomous wireless multi-sensor node powered by TEG and based on SPV1050
SPV1050: Ultra low power energy harvester and battery charger with embedded MPPT and LDOs
STSW-IDS002V1: GUI for STEVAL-ISV021V1, STDES-IDS002V1 and STDES-IDS003V1

Features

- When used in conjunction with the STDES-ERH001V1 or STDES-ERH003V1 companion board, it forms an autonomous wireless sensor node based on the SPV1050 ULP energy harvester and battery charger
- Compatible with the user-friendly STSW-IDS002V1 software for remote reading of sensors and monitoring of electrical parameters
- All ST components are:
  - CE Certified
  - RoHS and China RoHS compliant
  - WEEE compliant

Description

The STDES-ERH002V1 application example mounts a low power microcontroller and RF Sub-1 GHz receiver for wireless transmission.

The STDES-ERH002V1 is part of the STDES-IDS002V1 and STDES-IDS003V1 kits.

Together with the STDES-ERH001V1 or STDES-ERH003V1 companion board included in the STDES-IDS003V1 and STDES-IDS002V1 kits, respectively, they represent an example of autonomous wireless multi sensor nodes powered by TEG or PV panels, respectively.

Both kits include a second STDES-ERH001D companion board which allow the GUI to display the electrical characteristics of the harvesting (TEG or PV panel) module and battery, SPV1050 conversion efficiency and MPPT accuracy.

The dedicated STSW-IDS002V1 provides a user-friendly GUI able to show the data sensed by the STDES-ERH001V1 or STDES-ERH003V1 and received by the STDES-ERH002V1.

1 Bill of material

Table 1. **Bill of material**

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
1	5	C1, C2, C3, C15, C17	100nF	Capacitor	MURATA	GCM155R71C104KA55
2	1	C4	22µF	Capacitor	TDK	C1608X5R0J226M
3	2	C5, C6	6pF	Capacitor	MULTICOMP	MCCA000087
4	1	C7	100nF	Capacitor	KEMET	C0603C104K5RACTU
5	0	C8, C11 (DNM)	-	Capacitor	-	-
6	3	C9, C12, C16	1µF	Capacitor	MURATA	GCM188R71E105KA64
7	1	C10	4.7µF	Capacitor	YAGEO	CC0603KRX5R5BB475
8	1	C13	100pF	Capacitor	MURATA	GRM1555C1H101JZ01D
9	3	C14, C18, C26	330pF	Capacitor	YAGEO	CC0402KRX7R9BB331
10	0	C19, Ctun1 (DNM)	-	Capacitor	-	-
11	2	C20, C29	220pF	Capacitor	MURATA	GRM1555C1H221JA01D
12	1	C21	7pF	Capacitor	MURATA	GJM1555C1H7R0BB01D
13	1	C22	2.4pF	Capacitor	MURATA	GRM1555C1H2R4WA01D
14	1	C23	3.6pF	Capacitor	MURATA	GRM1555C1H3R6CA01D
15	2	C24, C25	18pF	Capacitor	MULTICOMP	MC0402N180J500CT
16	1	C27	10nF	Capacitor	MURATA	GCM155R71H103KA55
17	1	C28	1.5pF	Capacitor	MURATA	GRM1555C1H1R5WA01D
18	1	C30	2pF	Capacitor	MULTICOMP	MC0402N2R0C500CT
19	1	J1	5pin, 50Ω	Socket for Antenna	RS	526-5785
20	1	J2	1 row, 2 way	2 pins plug	TOPTECK	PH1S25-140GB 6/3-L
21	1	L1	10µH	Inductor	MURATA	LQM21FN100M70L
22	1	L2	27nH	Inductor	COILCRAFT	0402CS-27NXGLU
23	1	L3	100nH	Inductor	MURATA	LQG15HSR10J02
24	0	L4 (DNM)	-	Inductor	-	-
25	1	L5	3.6nH	Inductor	MURATA	LQG15HN3N6S02
26	1	L6	5.1nH	Inductor	MURATA	LQG15HN5N1S02
27	1	L7	0Ω	Resistor	YAGEO	RC0402JR-070RL
28	1	L8	18nH	Inductor	MURATA	LQG15HN18NJ02
29	2	L9, L10	15nH	Inductor	MURATA	LQG15HN15NJ02
30	1	P1	2 rows, 20 ways	JTAG	TE CONN	2-1634689-0
31	1	P2	Socket USB-B	Socket USB-B	TE CONN	292304-1
32	2	R2, R3	10Ω	Resistor	TE CONN	CRG0402F10R
33	1	R4	1MΩ	Resistor	YAGEO	RC0402FR-071ML
34	4	R5, R6, R7, R8	10kΩ	Resistor	YAGEO	RC0402FR-0710KL
35	1	R9	560Ω	Resistor	YAGEO	RC0402FR-07560RL

Item	Q.ty	Ref.	Part / Value	Description	Manufacturer	Order code
36	1	R10	0Ω	Resistor	YAGEO	RC0402JR-070RL
37	0	R11 (DNM)	-	Resistor	-	-
38	1	R12	9.76kΩ	Resistor	VISHAY	CRCW06039K76FKEA
39	1	R13	5.6kΩ	Resistor	TE CONN	CRGH0603J5K6
40	1	R14	0.01Ω	Resistor	YAGEO	PF0603FRE7T0R01Z
41	1	SW1	PUSH BUTTON	RESET BUTTON	DIPTRONICS	DTSM-61NVT-R
42	2	TP1, TP3	RED Test Point	Test Point	KEYSTONE	5000
43	2	TP2, TP4	BLACK Test Point	Test Point	KEYSTONE	5001
44	1	U1	32MHz MCU	MCU	ST	STM32L151CBT6
45	1	U2	85mA LDO	Voltage Regulator	ST	ST715MR
46	1	U3	Sub 1GHz transceiver	Wireless Transceiver	ST	SPIRIT1QTR
47	1	X1	4MHz Oscillator	Crystal Oscillator	MURATA	CSTCR4M00G53Z-R0
48	1	X2	32MHz Crystal Oscillator	Crystal Oscillator	ABRACON CORPORATION	ABS07-32.768KHZ-6-T
49	1	XTAL1	50MHz Crystal	Crystal Oscillator	TXC	7M-50.000MAAJ-T
50	1	-	868MHz to 915MHz SMA ANTENNA	ANTENNA	LPRS	WR868
51	1	-	USB TYPE A USB TYPE B	USB CABLE	RS	815-8466

2 Schematic

Figure 1. **STDES-ERH002V1 schematic (1 of 2)**

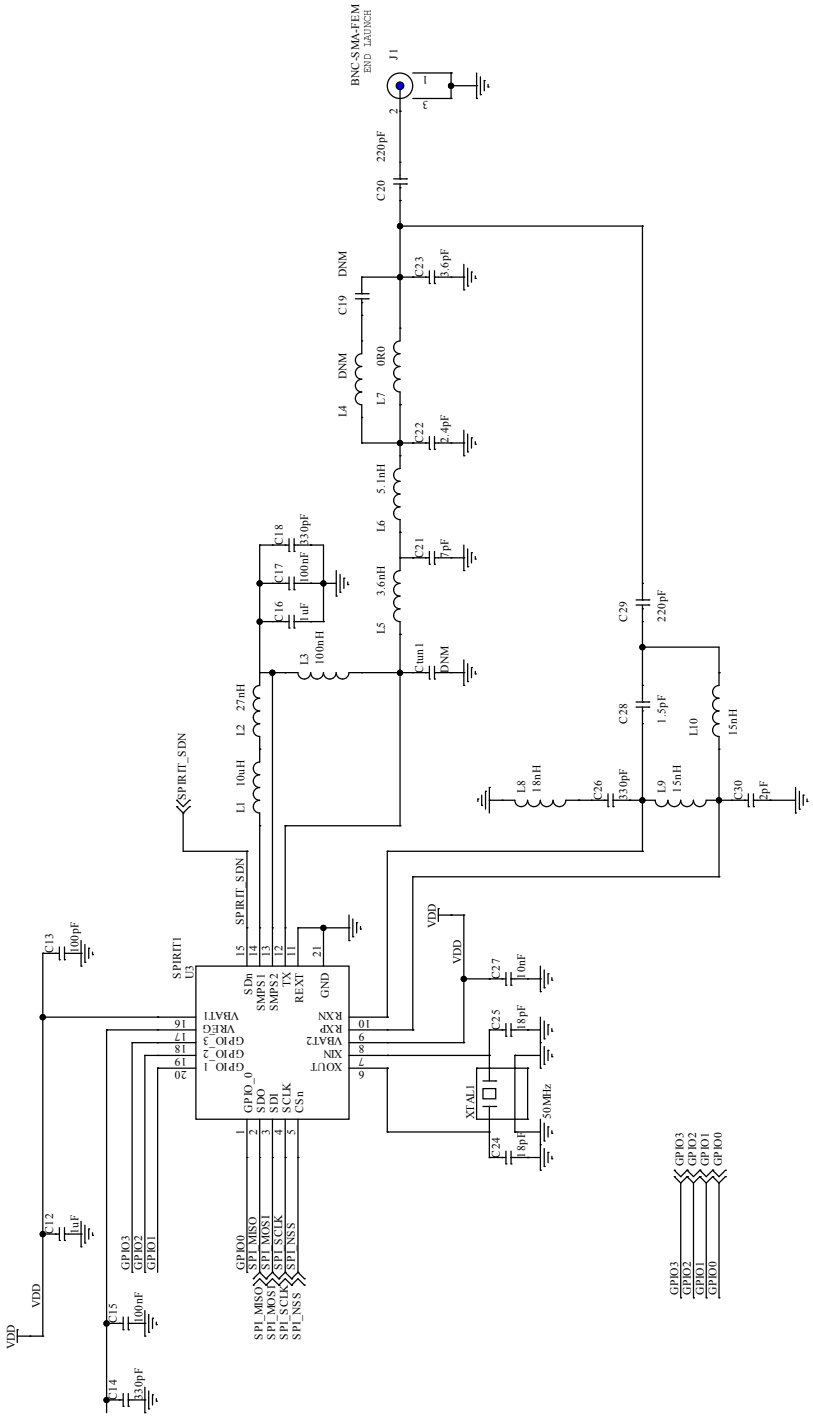
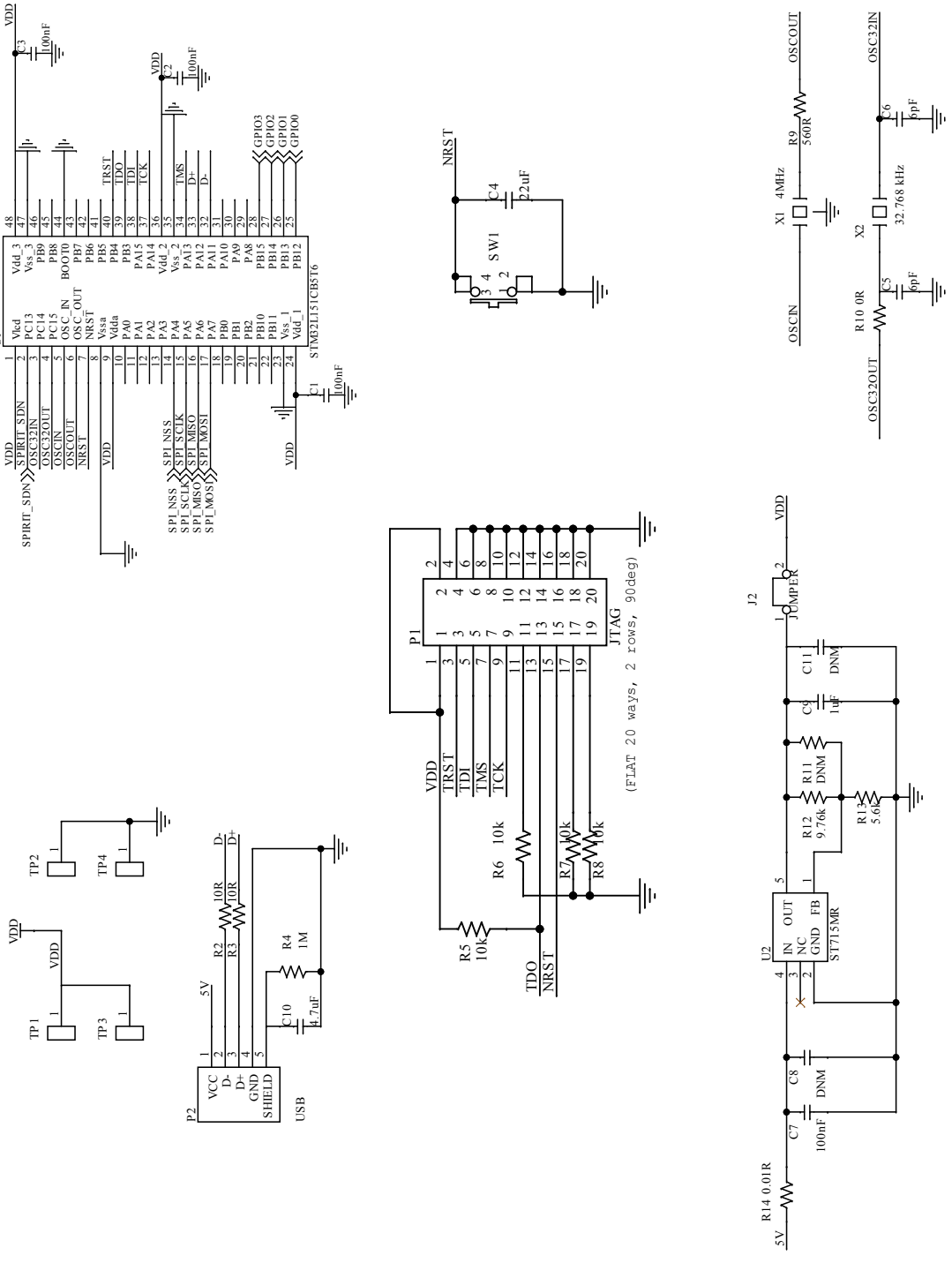


Figure 2. **STDES-ERH002V1 schematic (2 of 2)**



Revision history

Table 2. **Document revision history**

Date	Version	Changes
05-Oct-2018	1	Initial release.