EVALUATION BOARD MANUAL

FOR RADIO MODULES

EV order code	Module order code	Marketing Name
2610019225001	261001102500x	Calypso

VERSION 1.3

MARCH 11, 2019

Revision history

Document version	HW version	Notes	Date
1.0	1.0	• Initial version	November 2018
1.1	2.0	• editorial changes	January 2019
1.2	2.0	• Added chapter `Regulatory compliance information`	February 2019
1.3	2.0	• Added Marketing name • Added Product image in chapter `Supported radio modules`	March 2019

Abbreviations and abstract

Abbreviation	Name	Description
FSE	Field Sales Engineer	Support and sales contact person responsible for limited sales area
HIGH	High signal level	
LOW	Low signal level	
RF	Radio frequency	Describes everything relating to the wireless transmission.
UART	Universal Asynchronous Receiver Transmitter	Universal Asynchronous Receiver Transmitter allows communicating with the module of a specific interface.
VDD	Supply voltage	

Contents

1 Supported radio modules

The Calypso evaluation board is exclusively for the Calypso module:

WE order code	Description
261001102500x	WLAN IEEE 802.11 b/g/n radio module with smart antenna configuration

Table 1: Compatibility

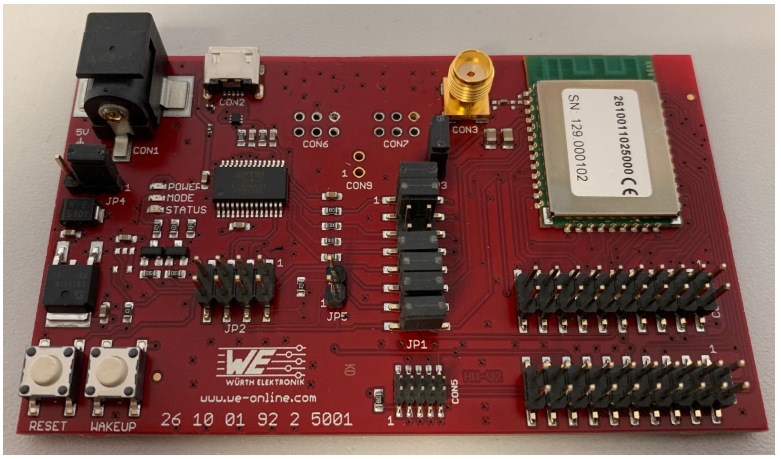

Figure 1: Product image

2 Functional description

The evaluation board offers the user the possibility to develop hard- and software for the compatible radio module. It can be connected to an USB port of a PC and provides a serial (virtual) COM port for interfacing the communication interface of the module.

Due to high peak power consumption of the Calypso radio module, this evaluation board must be operated with external power supply or an external powered USB Hub that can provide the peak current.

For the connection to a micro controller system the development board is equipped with a multi-pin connector which is connected to all pins of the RF module. Jumpers allow the module to be disconnected from components such as the USB interface which are not required in the customers end application.

Feel free to check our youtube channel:
www.youtube.com/user/WuerthElektronik/videos for video tutorials, hands-ons and webinars relating to our products.

2.1 Taking into operation

Before starting to work with the evaluation board make sure that,

- The jumpers on the EV board are placed on the default locations.
- FTDI driver package is installed on the PC. The latest version of the drivers can be downloaded from (*www.ftdichip.com/Drivers/VCP.htm*). Please use the setup executable package or follow the install instructions from FTDI.
- A stable and adequately dimensioned voltage source is connected to the power jack or external power source.
- Evaluation board is connected to the PC via USB-cable.
- COM port is detected and installed on the PC. The (COM) port name of the evaluation board can be found using the device manager on Windows and the display message (dmesg) on Linux. For example, the evaluation board might appears as "COM12" on windows and "/dev/ttyUSB0" on Linux.
- A terminal program like hterm for Windows has to be run and the corresponding COM port chosen and opened using the default UART settings of the mounted radio module (e.g. 921600 baud, 8e1).
- To ensure a proper start-up of the module after applying VCC to the evaluation board the reset button should be pressed to perform a reset and clean restart before proceeding.

A detailed module specific quick start instruction is available in the module reference manual.

3 Development board

3.1 Block diagram

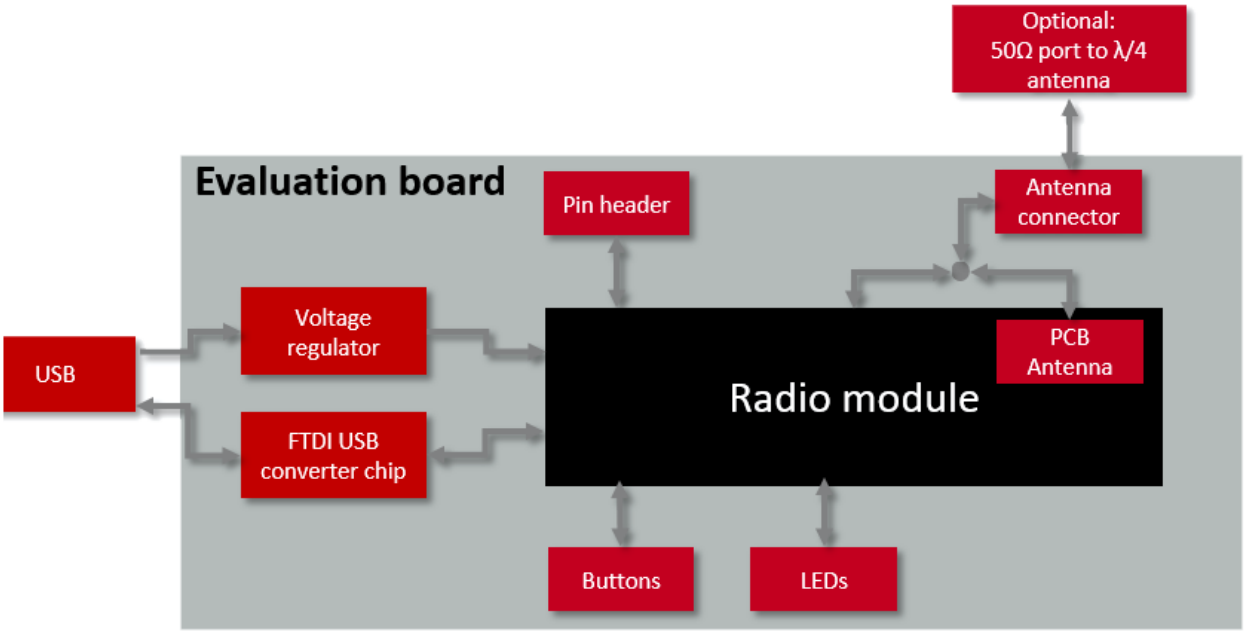

Figure 2: Block diagram

3.2 Overview

The evaluation board is equipped with a number of jumpers and connectors. This allows the user to access to every signal/pin enabling complete evaluation of the radio module. In the following a detailed description of the jumpers and connectors is provided. As a quick reference, a table of all jumpers and connectors with the corresponding signals are printed on the back of the evaluation board.

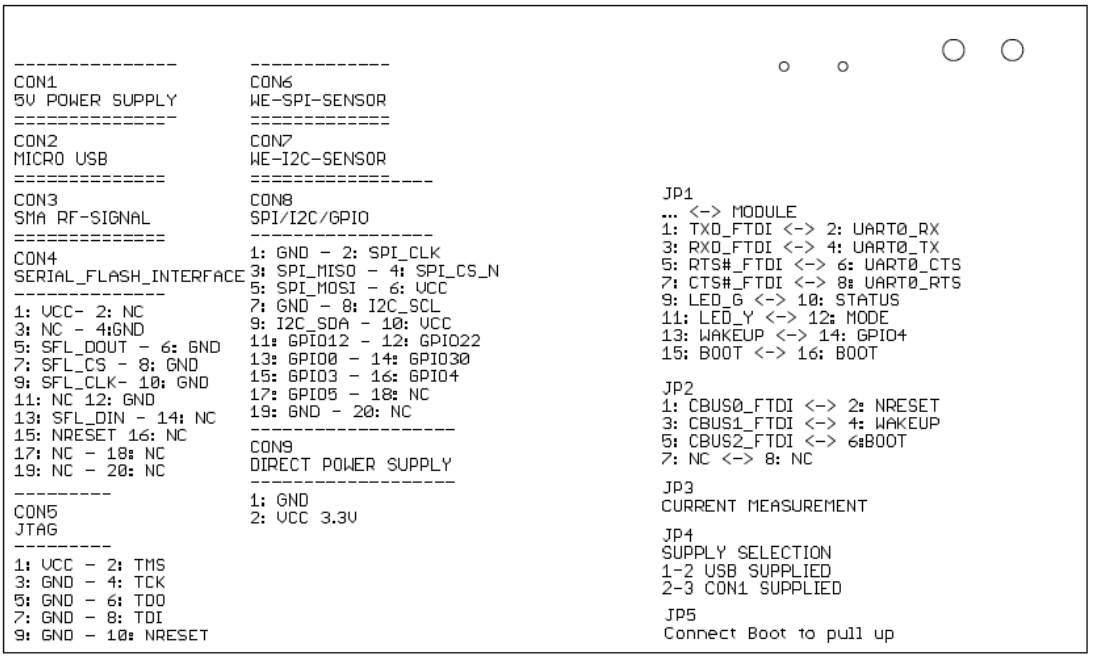

Figure 3: Quick Reference - Table of connectors and jumper

3.3 Jumpers

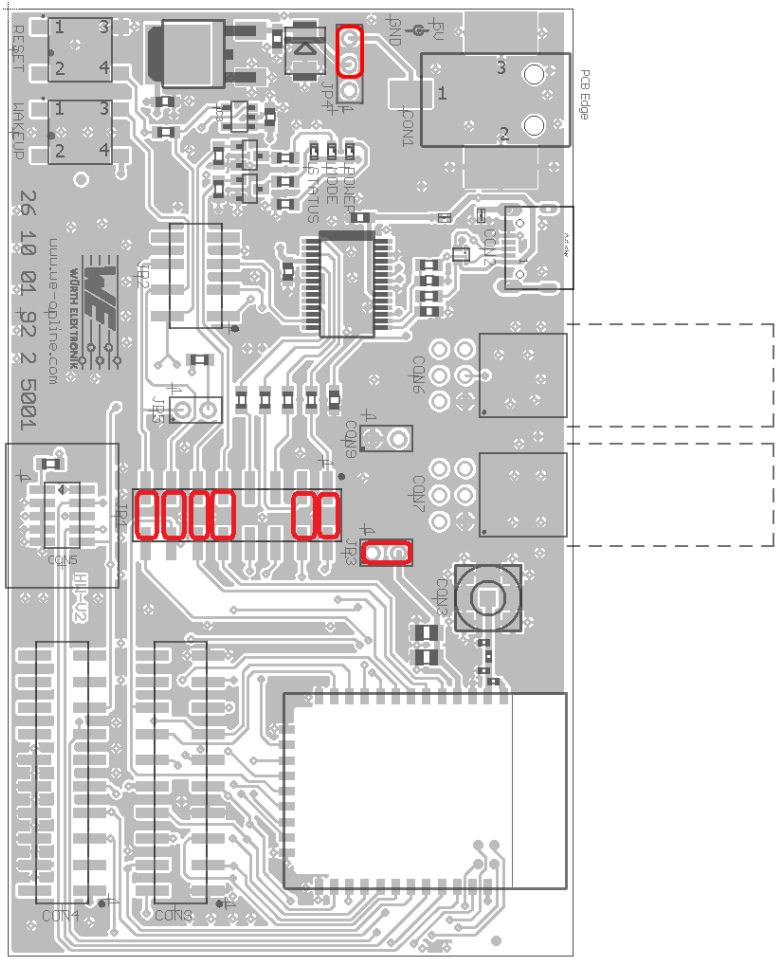

Figure 4: Jumpers, defaults

3.3.1 JP1

JP1 enables connection to functionally essential signals including the primary UART interface, *BOOT*, *WAKE_UP* as well as the status indication signals *STATUS_IND_x*. In its default configuration, the UART interface is connected to the USB via serial-USB (FTDI) adapter, *BOOT* to the push button and the *STATUS_IND_x* to the two LEDs.

JP1	Module Pin Function	Jumper set (default)
1,2	*URXD*	Yes
3,4	*UTXD*	Yes
5,6	*/RTS*	No
7,8	*/CTS*	No
9,10	*STATUS_IND_0*, *LED_G*	Yes
11,12	*STATUS_IND_1*, *LED_Y*	Yes
13,14	*WAKE_UP*	Yes
15,16	*BOOT*	Yes

3.3.2 JP2

JP2 allows *nReset*, *WAKE_UP* and the *BOOT* to be optionally driven from PC via the FTDI *CBUSx* pins.

JP2	Module Pin Function	Jumper set (default)
1,2	*nReset*, *CBUS0*	No
3,4	*WAKE_UP*, *CBUS1*	No
5,6	*BOOT*, *CBUS2*	No
7,8	not connected	No

3.3.3 JP3

JP3 allows connection of an ammeter in series with the power supply to measure the current consumption of the radio module.

JP3	Module Pin Function	Jumper set (default)
1,2	Connect VCC to voltage regulator output	Yes

3.3.4 JP4

JP4 determines the source of the supply voltage.

JP4	Module Pin Function	Jumper set (default)
1,2	Connect LDO to USB 5V	No
2,3	Connect LDO to CON1 (barrel socket)	Yes

3.3.5 JP5

JP5 connects the *BOOT* pin to a logic HIGH level.

With JP5 set, the module will not start any of it's implemented application modes and will not behave as explained in the manual.

JP5	Module Pin Function	Jumper set (default)
1,2	BOOT Pin to pull up	No

3.4 Connectors and pin headers

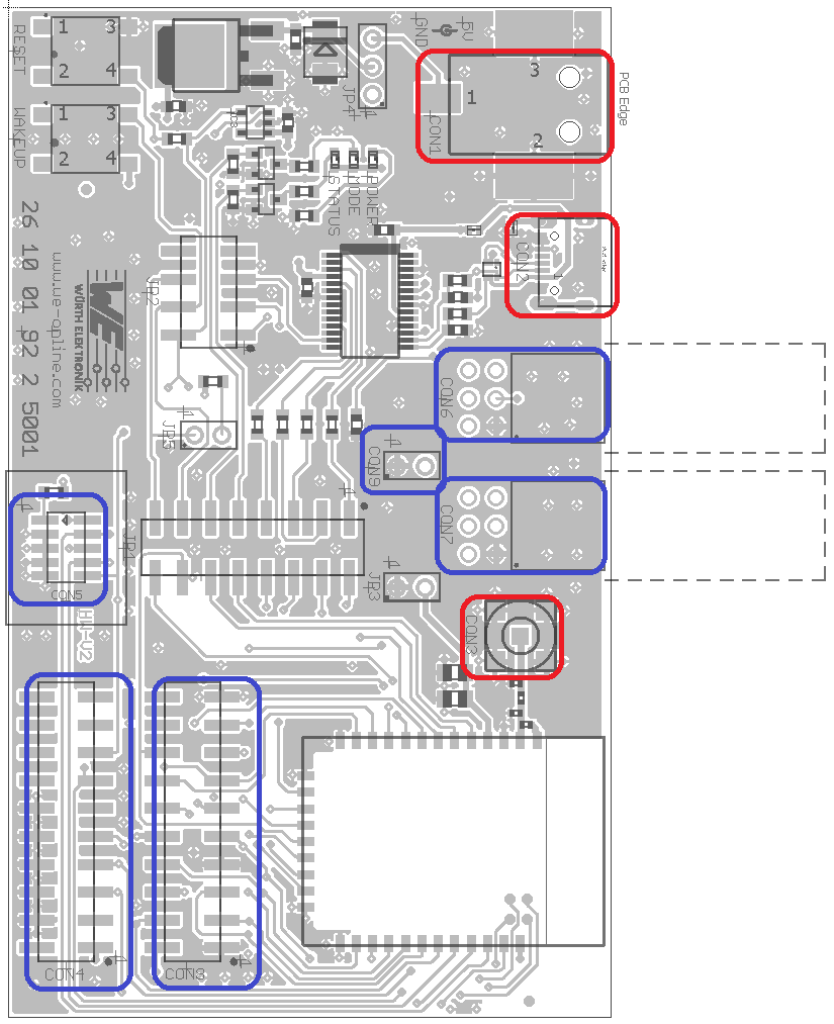

Figure 5: Connectors

The connectors marked red in figure 5 needs to be connected appropriately to ensure essential functionality of the module. The connectors marked blue can be optionally connected to additional equipment and/or are reserved future functions.

In this chapter, all available pins and connectors are described. This does not mean that these functions are or can be enabled in the firmware version currently running on the module.

3.4.1 CON1

CON1 is a barrel connector socket that can be used to provide the supply voltage through a 5.5 x 2.1 mm barrel connector plug.

CON1	Function
Inner	5V
Outer	GND

3.4.2 CON2

Connector CON2 is a micro-USB socket that enables connection to PC via standard micro-USB cable.

CON2	Function
	Micro-USB connector for host connection and VCC bus supply

3.4.3 CON3

Connector CON3 (SMA receptacle) is used to connect an external antenna.

Capacitor C1 has to be populated and C13 not populated to be able to use the external antenna.

In order use the on-board PCB antenna, capacitor C13 has to be populated and C1 not populated to be able to use the external antenna.

CON3	Function
Inner	RF signal
Outer	GND

3.4.4 CON4

Connector CON4 is the serial flash interface used in the production for programming.

CON4	Function	CON4	Function
1	*VCC*	2	Not connected
3	Not connected	4	*GND*
5	*SFL_DOUT*	6	*GND*
7	*SFL_CS*	8	*GND*
9	*SFL_CLK*	10	*GND*
11	Not connected	12	*GND*
13	*SFL_DIN*	14	Not connected
15	*nRESET*	16	Not connected
17	Not connected	18	Not connected
19	Not connected	20	Not connected

3.4.5 CON5

Connector CON5 is the JTAG debugging interface. It can be used in case of custom firmware development with "debug" firmware and is locked when using a "production" firmware.

CON5	Function	CON5	Function
1	*VCC*	2	*TMS*
3	*GND*	4	*TCK*
5	*GND*	6	*TDO*
7	*GND*	8	*TDI*
9	*GND*	10	*nRESET*

3.4.6 CON6

Connector CON6 is the SPI interface to connect a Würth Elektronik Sensor Board. The interface is not yet enabled in the firmware.

CON6	Function	CON6	Function
1	*GND*	2	*SPI_CLK*
3	*SPI_MOSI*	4	*SPI_CS_N*
5	*SPI_MISO*	6	*VCC*

3.4.7 CON7

Connector CON7 is the I2C interface to connect a Würth Elektronik Sensor Board. The interface is not yet enabled in the firmware.

CON7	Function	CON7	Function
1	*GND*	2	*I2C_SCL*
3	*I2C_SDA*	4	Not connected
5	*GPIO*	6	*VCC*

3.4.8 CON8

On Connector CON8 several module pins are available.

CON8	Function	CON8	Function
1	*GND*	2	*SPI_CLK*
3	*SPI_MISO*	4	*SPI_CS_N*
5	*SPI_MOSI*	6	*VCC*
7	*GND*	8	*I2C_SCL*
9	*I2C_SDA*	10	*VCC*
11	*GPIO12*	12	*GPIO22*
13	*GPIO0*	14	*GPIO30*
15	*GPIO3*	16	*GPIO4*
17	*GPIO5*	18	Not connected
19	*GND*	20	Not connected

3.4.9 CON9

Connector CON9 enables connection of an external power supply directly to the radio module and thereby the possibility to test the application power source.

The supply voltage connected here has to be between 2.1V and 3.6V. Refer to the module specific manual for more details.

When connecting power to CON9 the Jumper on JP4 should not be set.

CON9	Function	CON9	Function
1	*GND*	2	*VCC*

3.5 Buttons

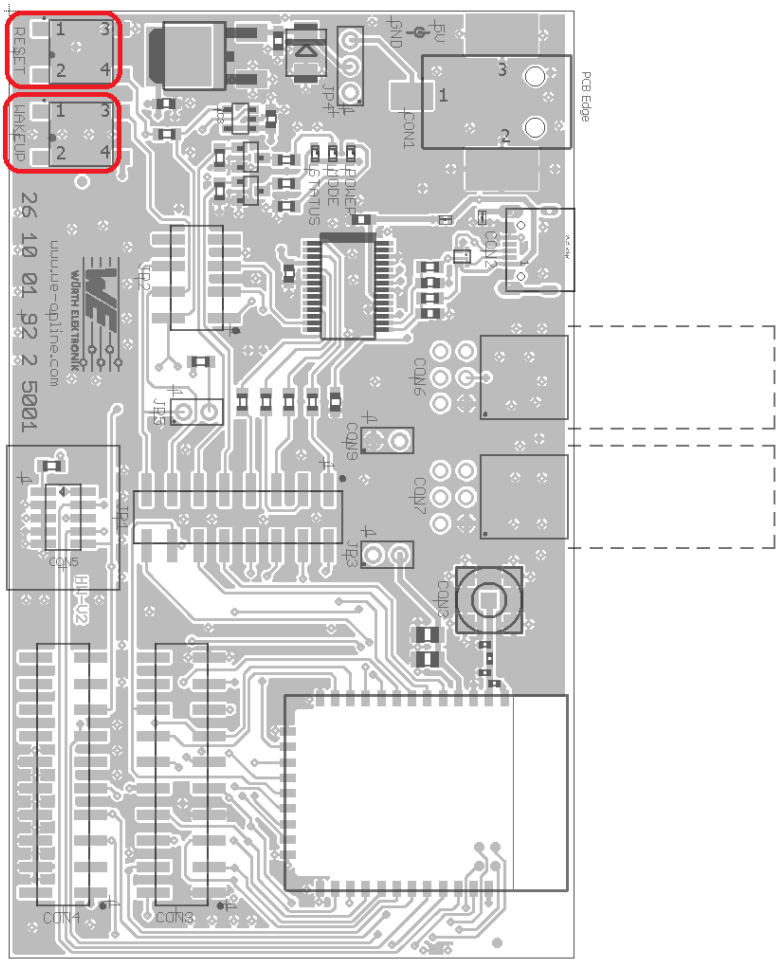

Figure 6: Buttons

3.5.1 *nRESET* button

Internally the active low reset input of the micro processor is connected via a RC combination with the power supply to ensure a proper startup of the module. Please refer to the module specific manual for detailed information.

3.5.2 Wake-up button

The wake-up button is connected to *WAKE_UP* pin in order to trigger wake up of the module from sleep mode. Please refer to the module specific manual for detailed information.

3.6 LEDs

This evaluation board has three LEDs

3.6.1 Power

An active power LED indicates that the power supply to the evaluation board is active. See Section 3.7.1 for more details.

3.6.2 Mode

The mode LED is connected to the *STATUS_IND_0* pin of the module and indicates specific events based on the application mode. Please refer to the module specific manual for detailed information.

3.6.3 Status

The status LED is connected to the *STATUS_IND_1* pin of the module and indicates specific events based on the application mode. Please refer to the module specific manual for detailed information.

3.7 Function blocks

3.7.1 Power supply

The development board can be run and supplied via USB when the module's current draw is not exceeding the USB specification. The integrated voltage regulator regulates the connected USB voltage 5V down to 3.3V and supplies the remaining parts of the circuit. If the evaluation board is power sourced the power *LED1* lights up.

3.7.2 JP3 - Current measurement

By default, JP3 is set for normal operation. If a current meter is connected in place of the jumper, the power consumption of the radio module can be measured.
If the meter is not attached and the bridge is not set, the module will not receive a supply voltage. However, the power *LED1* may be active, as it is connected prior to the current measurement bridge in order not to distort the module's power consumption measurement.

3.7.3 UART via USB

The UART of the module can be connected to the USB converter by setting the corresponding jumpers on JP1. In this case it is available on the USB jack. Using the FTDI-driver the PC will show a virtual COM-Port which can be used to communicate with the module.

The USB cable length shall not exceed 3 meters.

3.7.4 UART direct

If a micro-controller is to be connected to the module, remove the corresponding jumpers on JP1. The UART can be connected directly on pin 2 and pin 4 on JP1. The module *RXD* line must be handled accordingly by your host (i.e. pulled up while inactive and during module boot-up).

Beware of IO level incompatibility. The host must obey the values stated in the module's manual. Especially the IO level restrictions must be implemented by a host system (i.e. using a level shifter to use the allowed IO levels).

3.8 Schematic

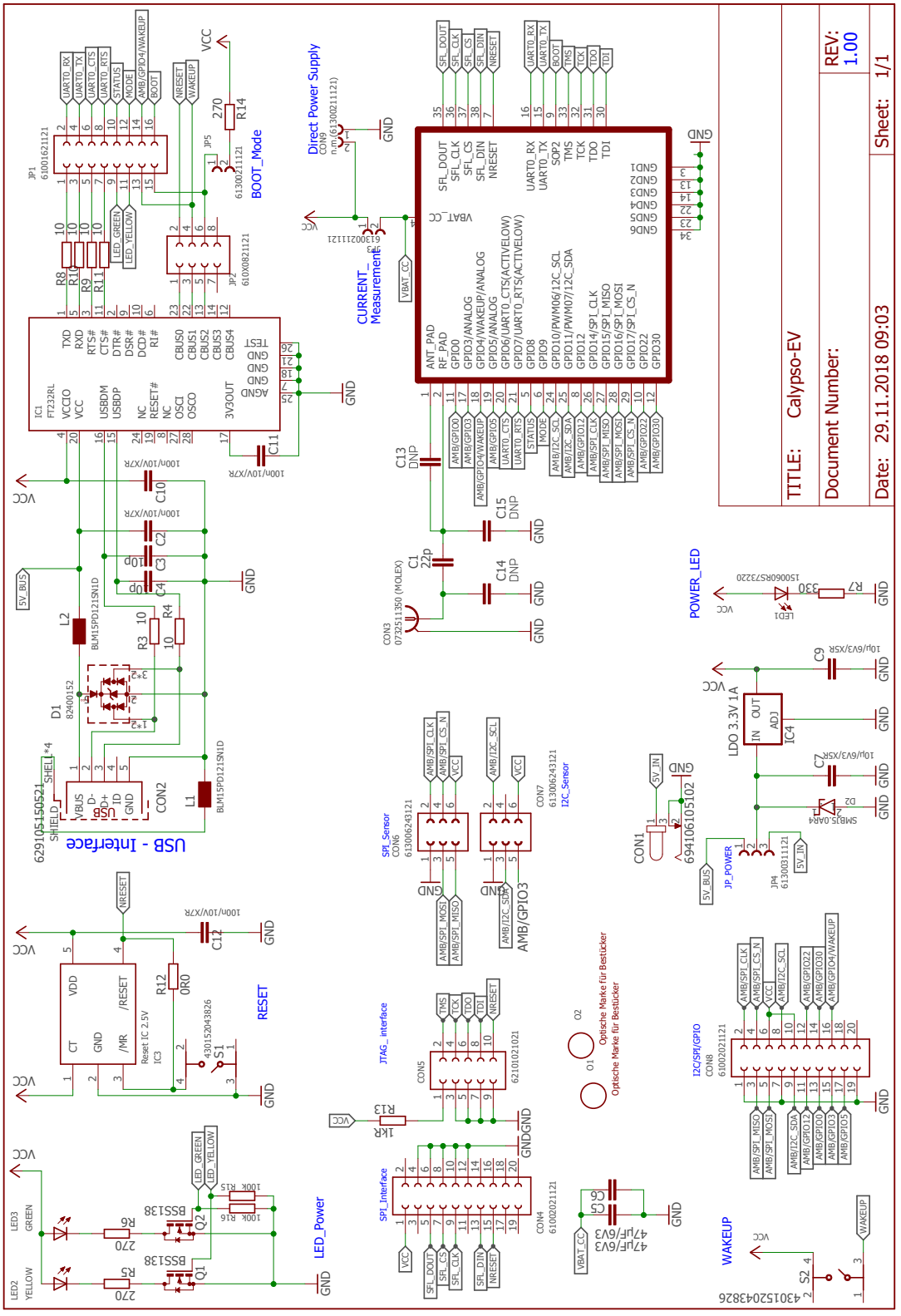

Figure 7: Circuit diagram

3.9 Layout

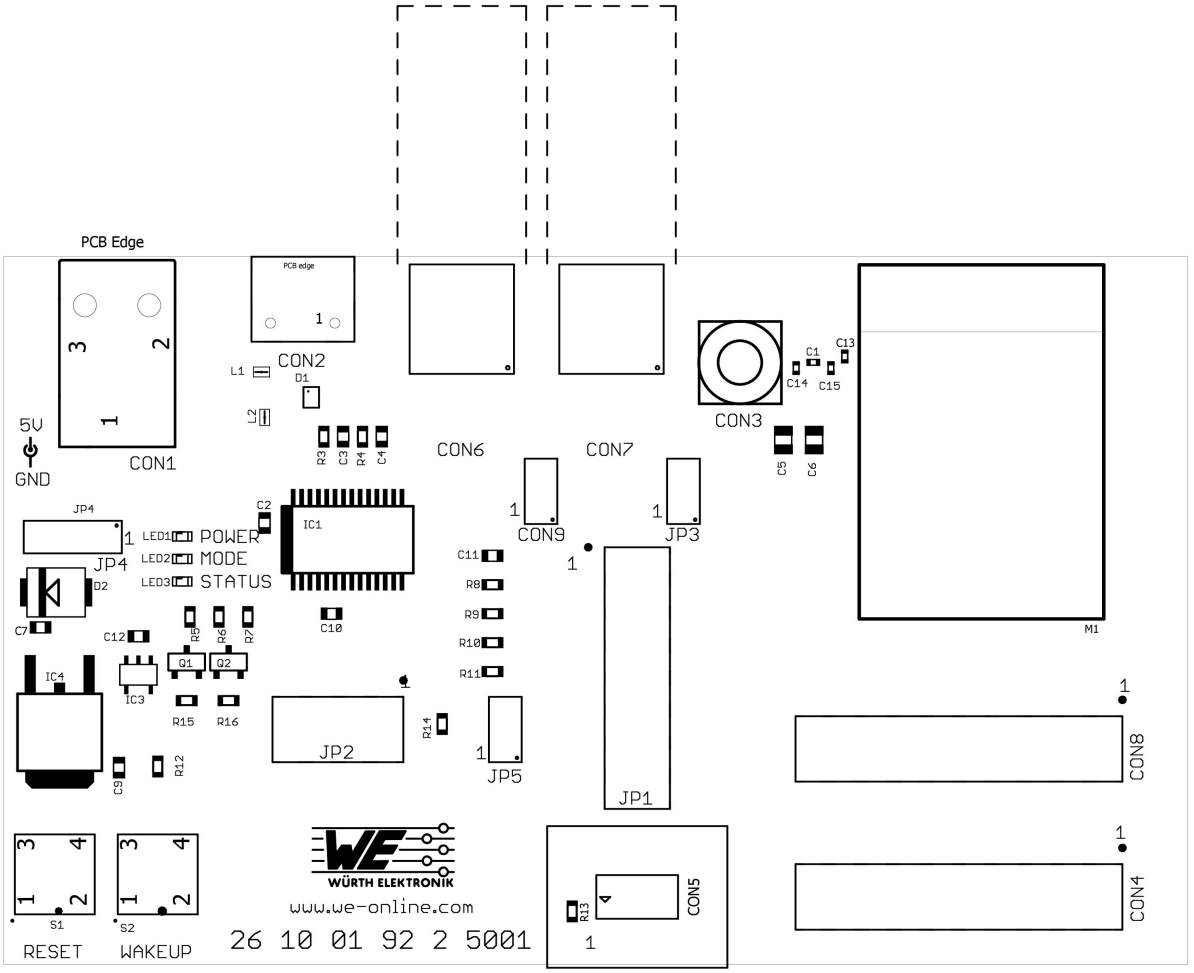

Figure 8: Assembly diagram

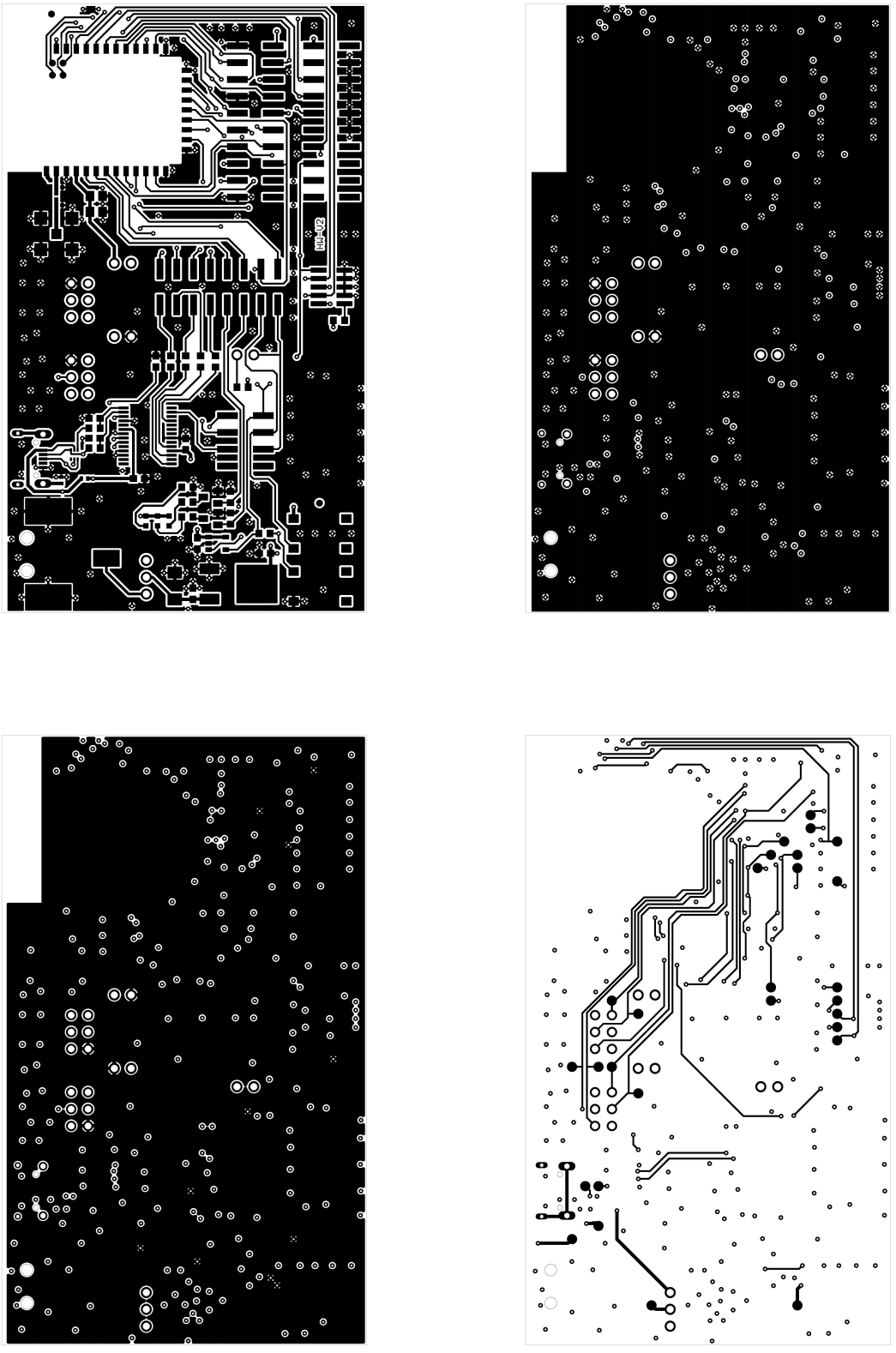

Figure 9: Top, inner & bottom Layers

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7.6 Limitation of liability

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You agree to hold us harmless from any third-party claims related to your usage of the Würth Elektronik eiSos ' products with the incorporated Firmware. Würth Elektronik eiSos disclaims any liability for any alteration, development created by you or your customers as well as for any combination with other products.

7.7 Applicable law and jurisdiction

Applicable law to this license agreement shall be the laws of the Federal Republic of Germany. Any dispute, claim or controversy arising out of or relating to this license agreement shall be resolved and finally settled by the court competent for the location of Würth Elektronik eiSos ' registered office.

7.8 Severability clause

If a provision of this license agreement is or becomes invalid, unenforceable or null and void, this shall not affect the remaining provisions of the agreement. The parties shall replace any such provisions with new valid provisions that most closely approximate the purpose of the agreement.

7.9 Miscellaneous

This license agreement constitutes the entire understanding and merges all prior discussions between the parties relating to this license agreement.
No ancillary verbal agreements have been made and no such agreements shall be valid. Any additions and amendments to this license agreement shall require the written form in order to be binding.
We recommend you to be updated about the status of new firmware, which is available on our website or in our data sheet, and to implement new firmware in your device where appropriate. In case only firmware is provided, we expressly exclude the automatic receipt of PCN information. Thus, new firmware will also not be provided automatically.
By ordering a wireless connectivity Product, you accept this license agreement in all terms.

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Internet of Things

Monitoring & Control

Automated Meter Reading

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Стандарт Электрон Связь

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

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С нами вы становитесь еще успешнее!

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