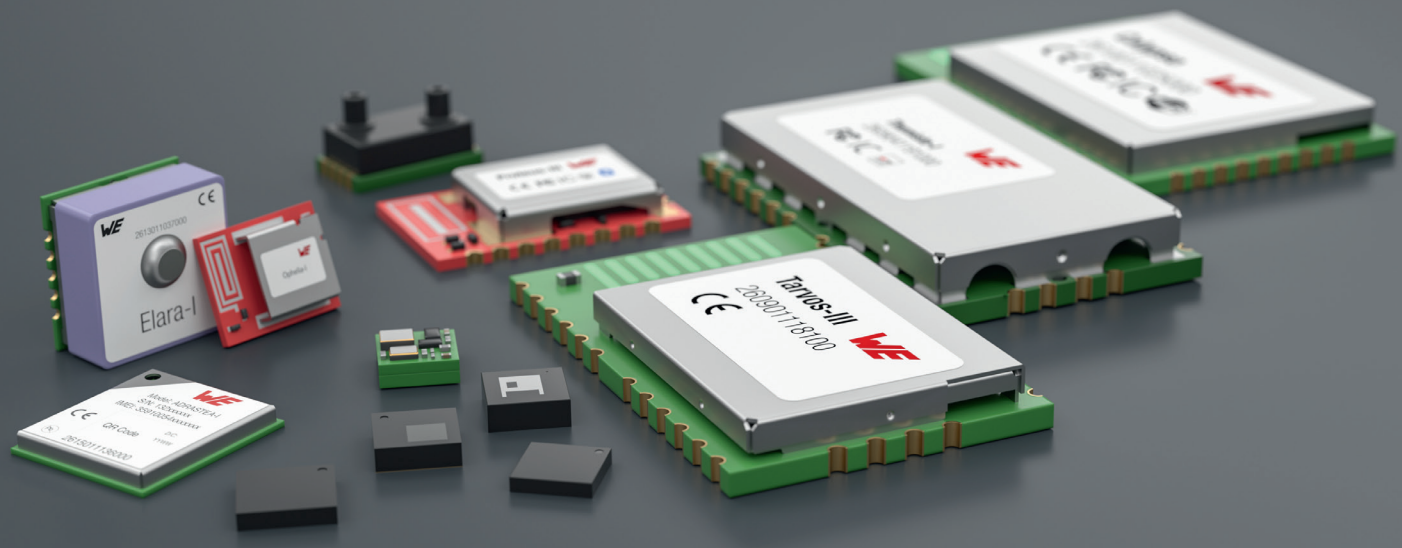

User manual

Evaluation board/kit for radio modules Stephano-I and Orthosie-I

2617029022001, 2617029025001

Version 1.3

December 1, 2025

WÜRTH ELEKTRONIK MORE THAN YOU EXPECT

****

MUST READ

Check for firmware updates

Before using the product, make sure you use the most recent firmware version, data sheet, and user manual. This is especially important for Wireless Connectivity products that were not purchased directly from Würth Elektronik eiSos. A firmware update on these respective products may be required.

We strongly recommend including the possibility of a firmware update in the customer system design.

Contents

1 Abbreviations

Abbreviation	Name	Description
BDM	Business Development Manager	Support and sales contact person responsible for limited sales area
BYOF	Build Your Own Firmware	Radio module without firmware to develop custom firmware
EV (board/kit)	Evaluation (board/kit)	
HIGH	High signal level	Signal level of the VDD
LED	Light Emitting Diode	
LOW	Low signal level	Signal level of the ground
MCU	MicroController Unit	
RF	Radio Frequency	Describes everything relating to the wireless transmission
UART	Universal Asynchronous Receiver Transmitter	Protocol for the exchange of data in series between two devices
VDD	Supply voltage	

2 Revision history

Manual version	HW version	Notes	Date
1.0	1.0	• Initial version.	May 2024
1.1	1.0	• Added chapter `Marking`. • Added description of available baud rates supported by the FTDI chipset.	October 2024
1.2	1.0	• Updated Table 7: Connector overview.	June 2025
1.3	1.0	• • Update chapter `Terms of Use for Würth Elektronik eiSos GmbH & Co. KG EV-Boards, evaluation kits and evaluation modules.`	November 2025

3 Supported radio modules

The EV-Board described in this manual can be used to evaluate the following products:

WE order code	Description
2617011022000	BYOF radio module Orthosie-I [1]
2617011025000	WiFi and Bluetooth® LE combo module Stephano-I [2]

Table 3: Compatibility

The EV-Kits can be ordered using the following order codes:

WE order code	Description
2617029022001	EV-Kit Orthosie-I
2617029025001	EV-Kit Stephano-I

Table 4: Order codes

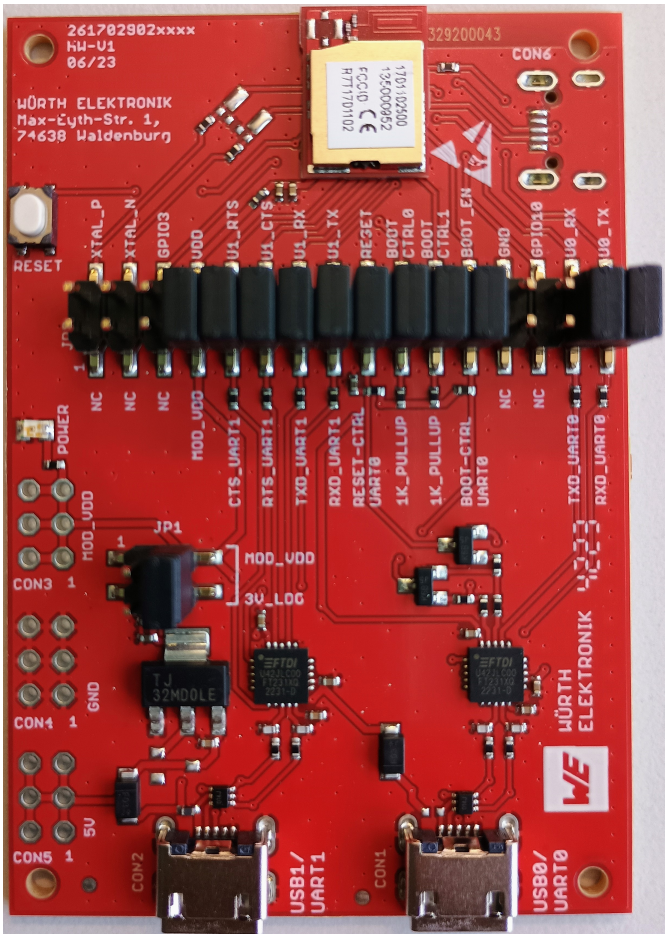

Figure 1: Stephano-I EV-Board

Kit content 2617029022001	Quantity
EV-Board with Orthosie-I	1
USB2 A to microUSB cable	2

Table 5: Content Orthosie-I EV-Kit

The Orthosie-I EV-Kit needs two cables as opposed to the Stephano-I EV-Kit: one cable is used for power supply and the second cable for flashing of the module. The Stephano-I EV-Kit only needs one cable for power supply.

Kit content 2617029025001	Quantity
EV-Board with Stephano-I	1
USB2 A to microUSB cable	1

Table 6: Content Stephano-I EV-Kit

4 Functional description

The EV-Board offers the user the possibility to develop hard- and software for the compatible radio module. It can be connected to a USB port of a PC.

For the connection to an MCU system, the development board is equipped with a multi-pin connector, which is connected to all pins of the radio module. Jumpers allow the module to be disconnected from components, such as the USB interface, which are not required.

Refer to our YouTube channel:
www.youtube.com/user/WuerthElektronik/videos for video tutorials, hands-ons and webinars relating to our products. Our channel will be updated regularly with new content.

4.1 Taking into operation

To run the EV-Board, the jumpers need to be placed on the default location. The default location of jumpers can be found in 5.2. Before using the EV-Kit it must be assured that the jumpers are placed in the correct position.

The corresponding FTDI driver package (*www.ftdichip.com/Drivers/VCP.htm*) has to be installed on your PC.

The USB1 connector can be used to power up the radio module and to communicate with the Stephano-I's AT command based firmware. Refer to the module user manual [2] for detailed module specific quick-start instructions. For Orthosie-I, USB1 is only used to supply the device with power.

The USB0 connector with the flash circuit behind allows to re-program the Espressif chipset with PC tools, like "Espressif flash download tool", or to control special test firmware provided by Espressif.

Refer to the Espressif documentation for further information: AT command documentation for Stephano-I [3], examples for Stephano-I [4] and Espressif tools download page [5].

5 Development board

5.1 Block diagram

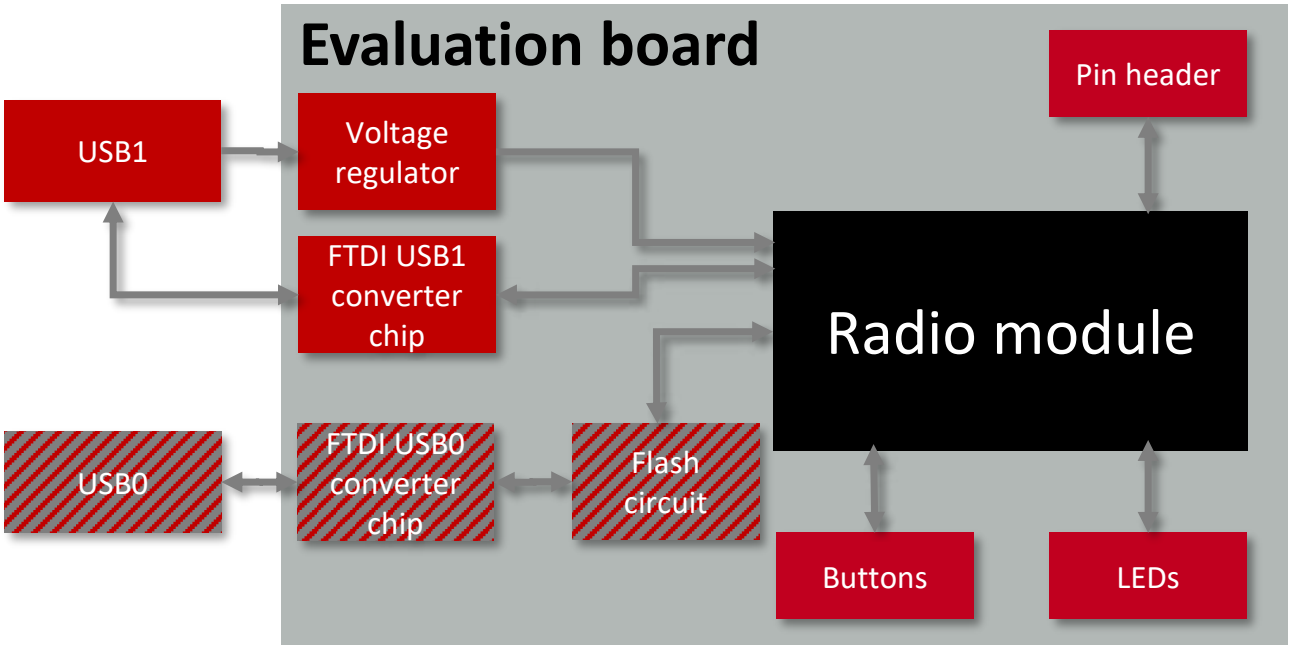

Figure 2: Block diagram

The flash circuit between the FTDI USB0 converter chip and the radio module is a circuit with transistors and resistors needed for flashing and/or erasing the chipset.

5.2 Jumpers, connectors and pin headers

The following figure shows the default positioning (marked in red) of all jumpers on the EV-Board. This section also contains the details to any jumper connection that is supported by the EV-Board. Before using the board, make sure that the jumper setting is correct.

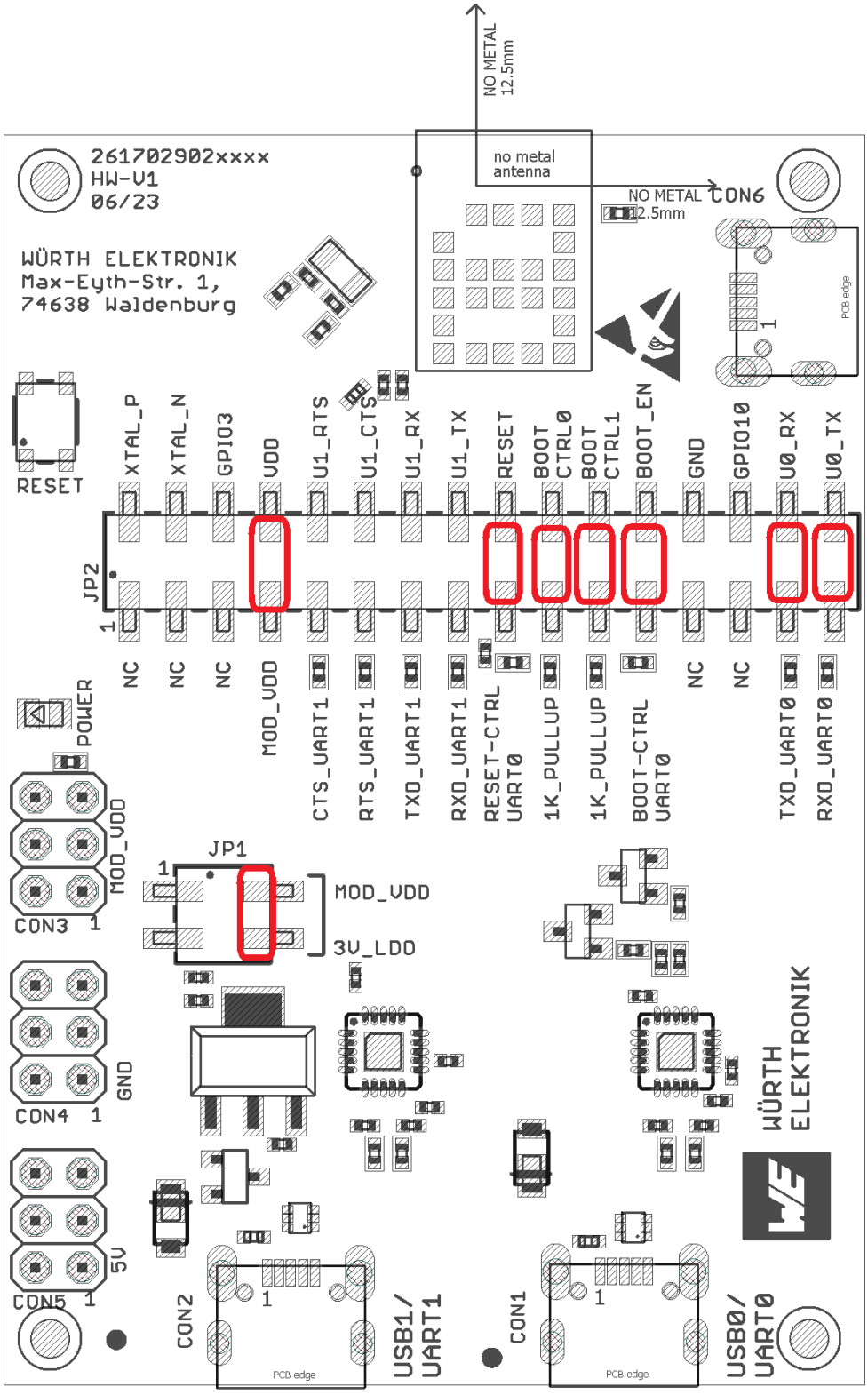

Figure 3: Orthosie-I: Default configuration of jumpers

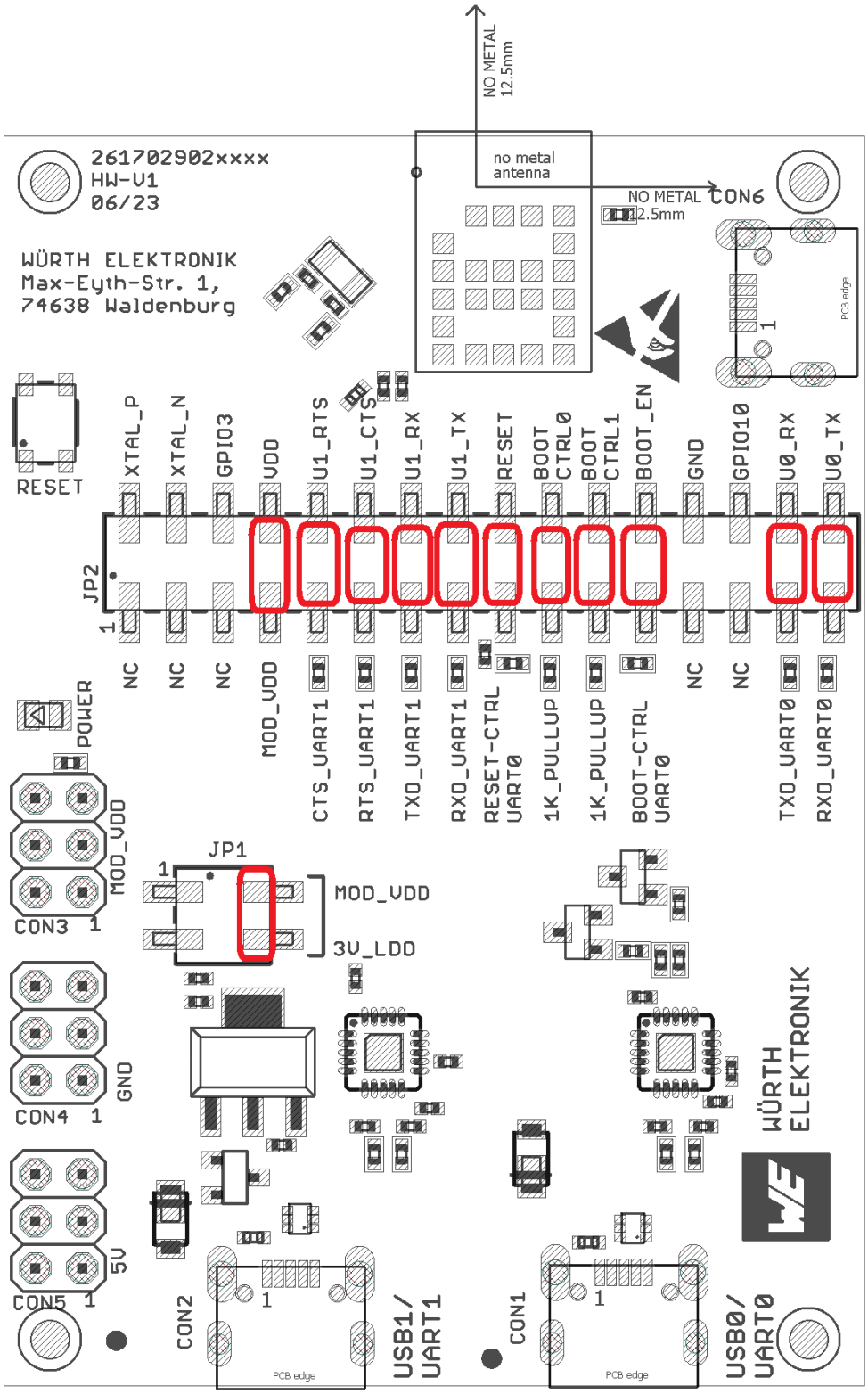

Figure 4: Stephano-I: Default configuration of jumpers

JP1	Function	Jumper set (default)
2,4	LDO power supply	Yes
2,4	External power supply	No
1	Not connected	
3	Not connected	

Table 7: Jumper JP1

JP2	Pin (Module Function)	Jumper set (default) Stephano-I	Jumper set (default) Orthosie-I
1,2	NC to XTAL_P	No	No
3,4	NC to XTAL_N	No	No
5,6	NC to GPIO3	No	No
7,8	Current measurement bridge	Yes	Yes
9,10	GPIO4 (/U1_RTS) to /CTS-FTDI0	Yes	No
11,12	GPIO5 (/U1_CTS) to /RTS-FTDI0	Yes	No
13,14	GPIO6 (/U1_RX) to /TX-FTDI0	Yes	No
15,16	GPIO7 (/U1_TX) to /RX-FTDI0	Yes	No
17,18	CHIP_EN (/RESET) to /Reset-FTDI	Yes	Yes
19,20	GPIO2 (BOOT_CTRL0) to 1kΩ pull-up	Yes	Yes
21,22	GPIO8 (BOOT_CTRL1) to 1kΩ pull-up	Yes	Yes
23,24	GPIO9 (BOOT_EN) to BOOT_CTRL	Yes	Yes
25,26	NC to GND	No	No
27,28	NC to GPIO10	No	No
29,30	GPIO20 (/U0_RX) to /TX-FTDI0	Yes	Yes
31,32	GPIO21 (/U0_TX) to /RX-FTDI0	Yes	Yes

Table 8: Jumper JP2

5.3 Connectors and pin headers

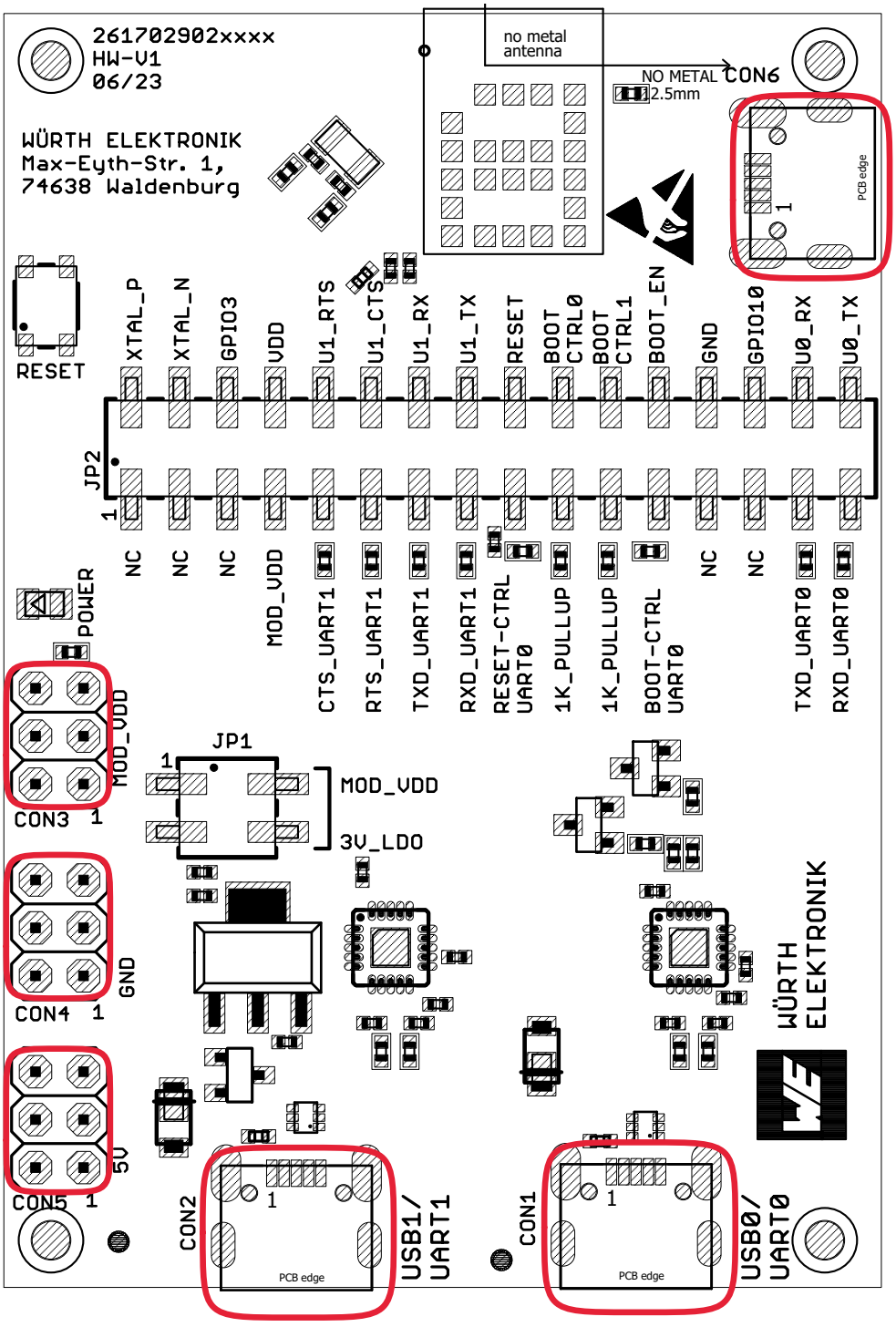

Figure 5: Connectors

Connector	Function
CON1	Debug USB0 for flashing
CON2	Application USB1 for communication and power supply
CON3	External power supply VDD (not mounted)
CON4	External power supply GND (not mounted)
CON5	External power supply 5 V (not mounted)
CON6	USB Serial (Pin 25, 26 of ESP32-C3)

Table 9: Connector overview

5.4 Buttons

5.4.1 Reset button

The reset button is connected to the active low */RESET* pin of the MCU. It can be used to set the module to sleep or to reset it. For more details, refer to the radio module's user manual [2].

In case the */RESET* pin is used to set the radio module to sleep mode, remove the jumper on JP2 pin 17,18 to disconnect the pull-up resistor.

5.5 Function blocks

5.5.1 Power supply

The development board can be operated via USB1. The integrated voltage regulator regulates the connected 5 V down to 3.3 V, with which the remaining parts of the circuit are supplied. When the power is connected, the power LED will be on.

5.5.1.1 External power supply

If no jumper is set on JP1, an external 3.3 V power supply can be connected to CON3 (MOD_VDD).

5.5.1.2 Bus powered, power supply through USB1

If the jumper is set on JP1, the radio module is powered via USB1 connector.

5.5.2 Current measurement

By default, the jumper 7-8 on connector JP2 is set to supply the radio module with power. 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 LED may be active, as it is connected prior to the current measurement bridge, in order not to distort the module's power consumption.

To achieve the stated low power current, the module pins must be terminated as stated in the module specific manual [2].

5.5.3 UART1 / USB1

The UART1 of the module is used for communicating with the module per AT commands. It can be connected to the USB1 converter by setting the bridge to JP2 and is available on the USB1 jack, so that the module can be connected directly to a PC. Using the FTDI-driver, the PC will show a virtual COM-Port, which can be used to communicate with the module.
In order to establish a stable UART communication between the FTDI USB to UART converter and the radio module's chipset, the difference between the baud rates of each entity must not exceed the respective immunity level. Both devices use an internal clock to generate the configured UART baud rate. Due to the fixed clock frequency, only specific baud rates can be run without frequency error.
To figure out which baud rates of the radio module can be evaluated using the FTDI USB to UART converter (FT232R or FT231X), it is important to know the real baud rate B with its introduced error. To get them, the FTDI's clock of 3000 kHz must be divided by the respective prescaler P:

$$B = \frac{3000}{P} \text{ [kBaud]}$$

The supported prescalers P can be chosen as:

$$P \in \{1, 1.5\} \text{ or } P = 2 + (N \cdot 0.125) \text{ with } N \in \{0, 1, 2, 3, 4, \ldots\}$$

When a baud rate is configured in the FTDI USB to UART converter, the prescaler is chosen that meets the closest baud rate. In that case, the real baud rate differs from the configured one, introducing a UART clock error, which may lead to UART communication issues.

Example: In case the desired baud rate $B_{desired} = 1250$ kBaud, the desired prescaler is $P_{desired} = \frac{3000}{1250} = 2.4$. The closest prescaler P is determined by $P = 2 + (N \cdot 0.125) = 2.375$ with $N = 3$. This results in a real baud rate $B = \frac{3000}{2.375} = 1263$ kBaud, which introduces an error of $\frac{B - B_{desired}}{B_{desired}} = 1.04$ % with respect to the desired baud rate.

Desired baud rate [kBaud]	Closest prescaler P	Real baud rate B [kBaud]	Error [%]
3000	1	3000	0
2500	1.5	2000	-20
2000	1.5	2000	0
1500	2	1500	0
1250	2.375	1263	1.04
1411.764706	2.125	1411.764706	0
⋮	⋮	⋮	⋮
1000	3	1000	0
921.6	3.25	923.0769231	0.16
⋮	⋮	⋮	⋮
230.4	13	230.7692308	0.16
⋮	⋮	⋮	⋮
115.2	26	115.3846154	0.15
⋮	⋮	⋮	⋮

38.4	78.125	38.4	0
⋮	⋮	⋮	⋮
19.2	156.25	19.2	0
⋮	⋮	⋮	⋮
9.6	312.5	9.6	0
⋮	⋮	⋮	⋮

Table 10: Example baud rates

5.5.4 UART0 / USB0

The UART0 of the module is used for flashing and debugging purposes. It can be connected to the USB0 converter by setting the bridge to JP2 and is available on the USB0 jack, so that the module can be connected directly to a PC. Using the FTDI-driver, the PC will show a virtual COM-Port, which can be used to communicate with the module.

5.5.5 UART direct

If an MCU is to be connected to the module, remove the bridges on JP2. The UART can be connected directly on the pin strip JP2 (all even numbered pins). The module RXD line must be handled accordingly by your host (i.e. pulled up while inactive and during module boot-up). Check that the */RESET* pin and boot pins are on the correct level to start-up the application. Beware of I/O level incompatibility. The host must obey the values stated in the module's manual [2]. Especially the I/O level restrictions must be implemented by a host system (i.e. using a level shifter to use the allowed I/O levels).

5.5.6 Programming interface

The radio module can be programmed by the integrated serial bootloader. To use that, the UART0 as well as the */RESET* and */BOOT_EN* must be driven accordingly. The EV-Board implements the needed hardware layout of these pins, such that the USB0 interface can be used with the corresponding flash software tools.

5.6 Schematic

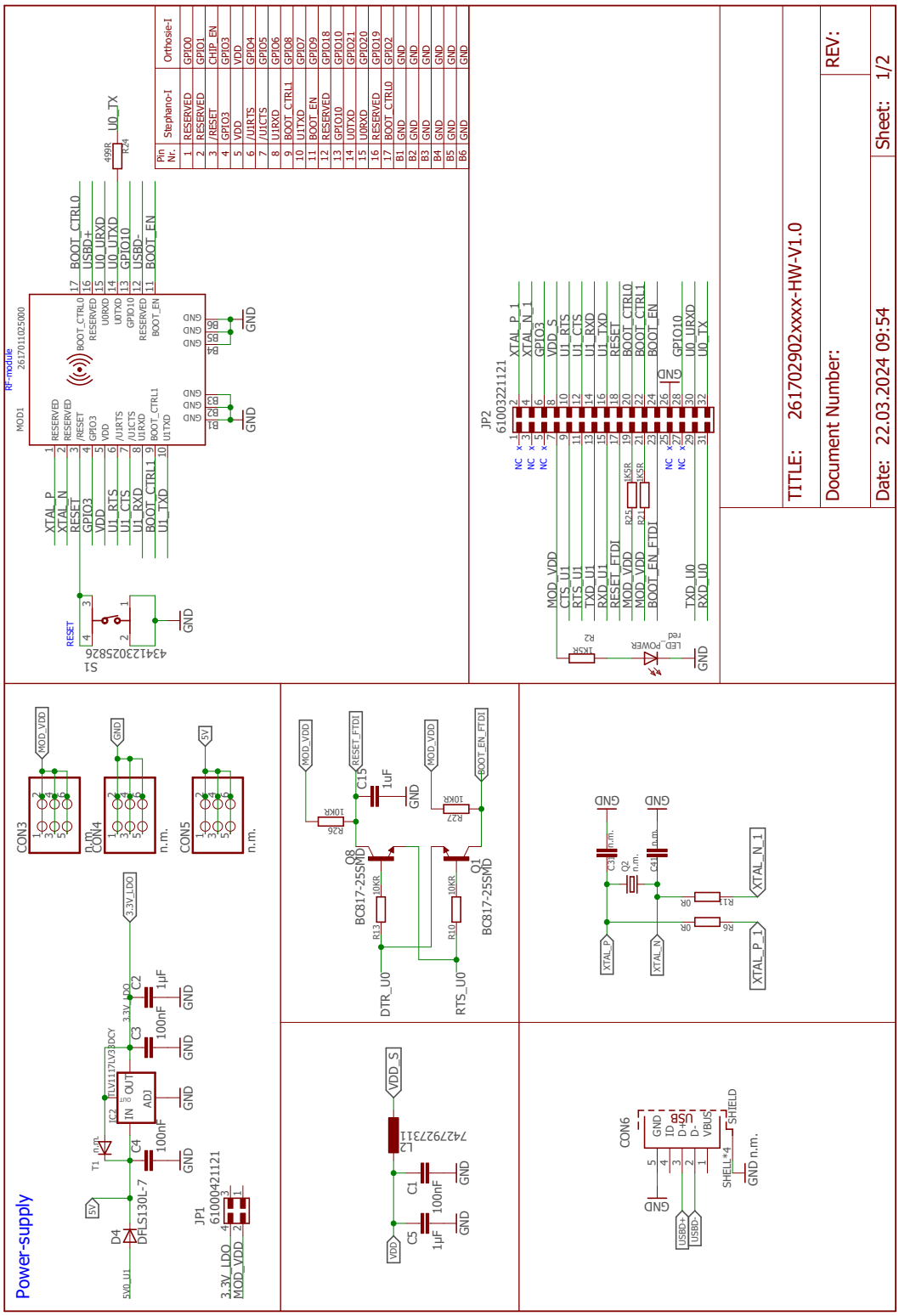

Figure 6: Circuit diagram (part 1)

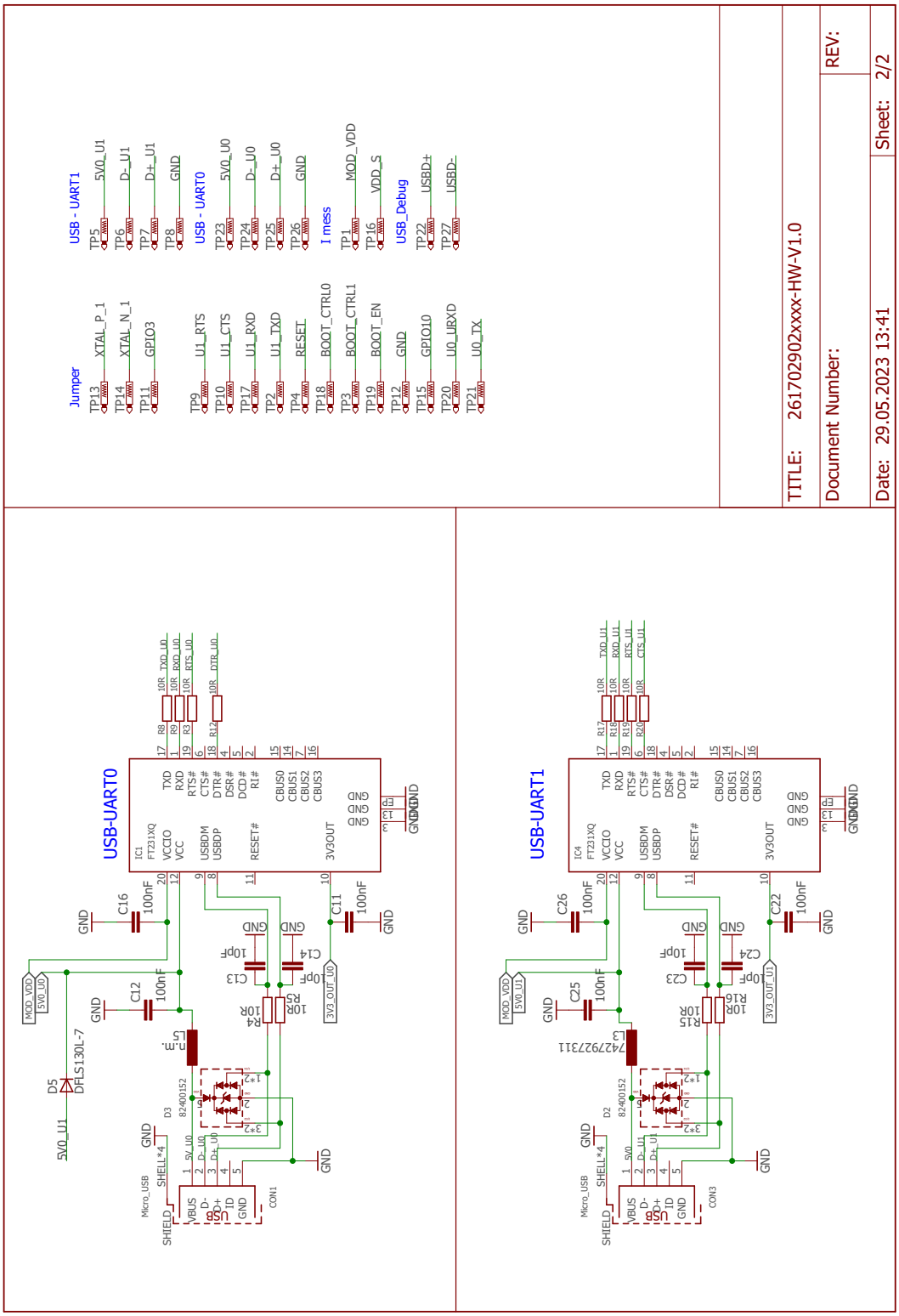

Figure 7: Circuit diagram (part 2)

5.7 Full layout

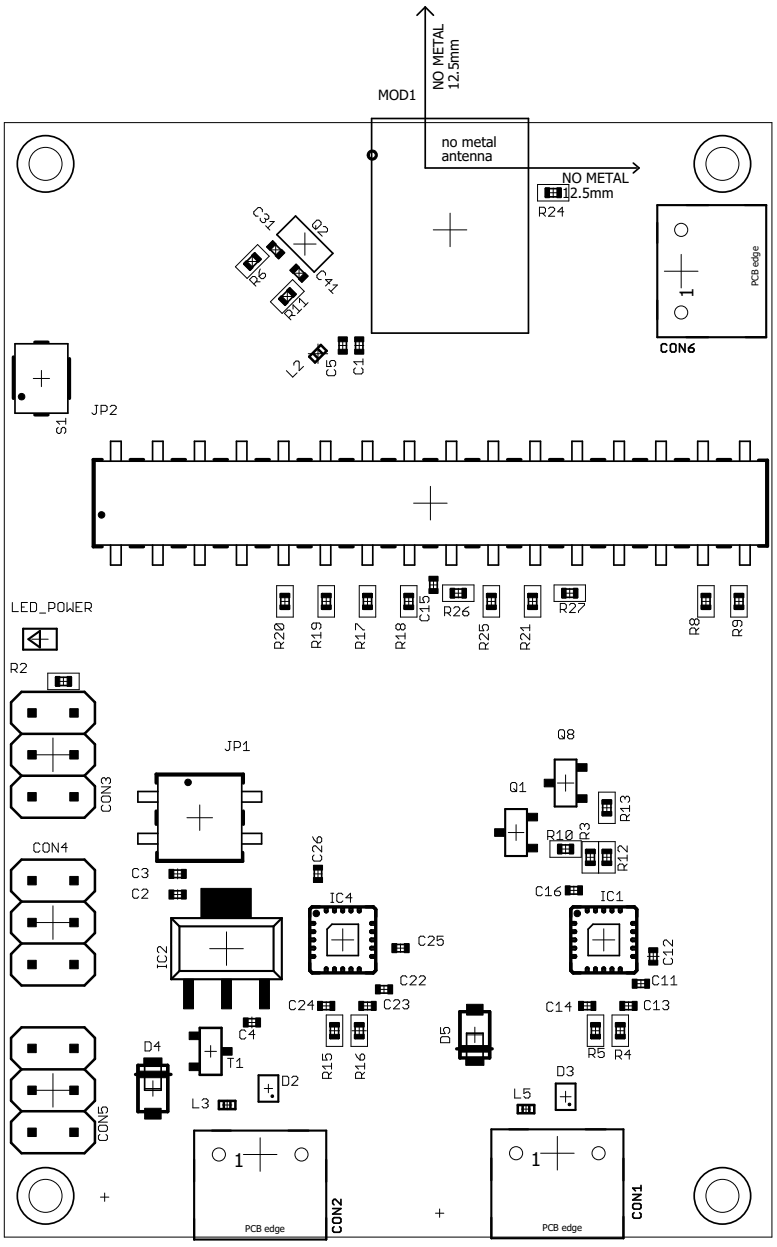

Figure 8: Assembly diagram

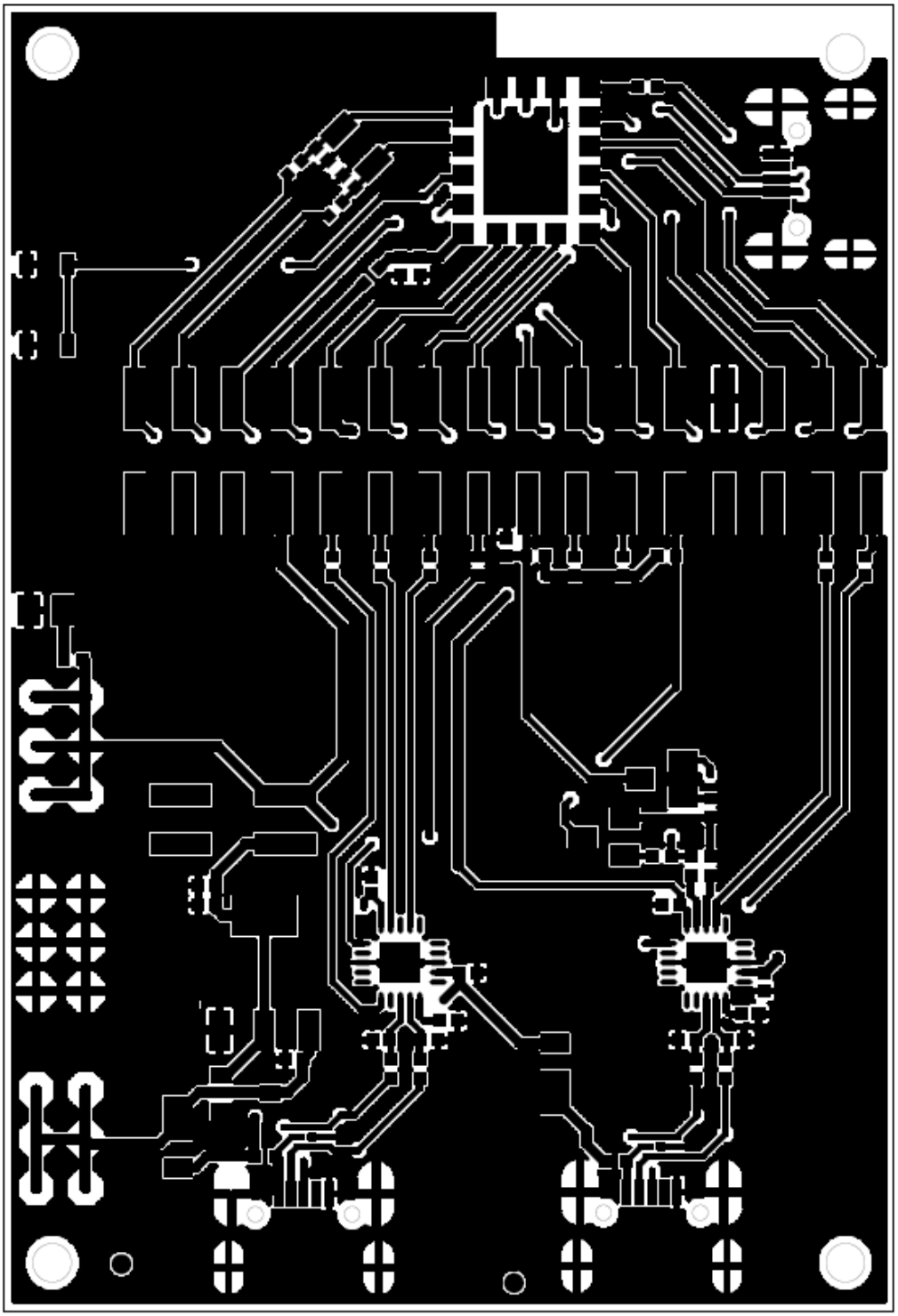

Figure 9: Top layer

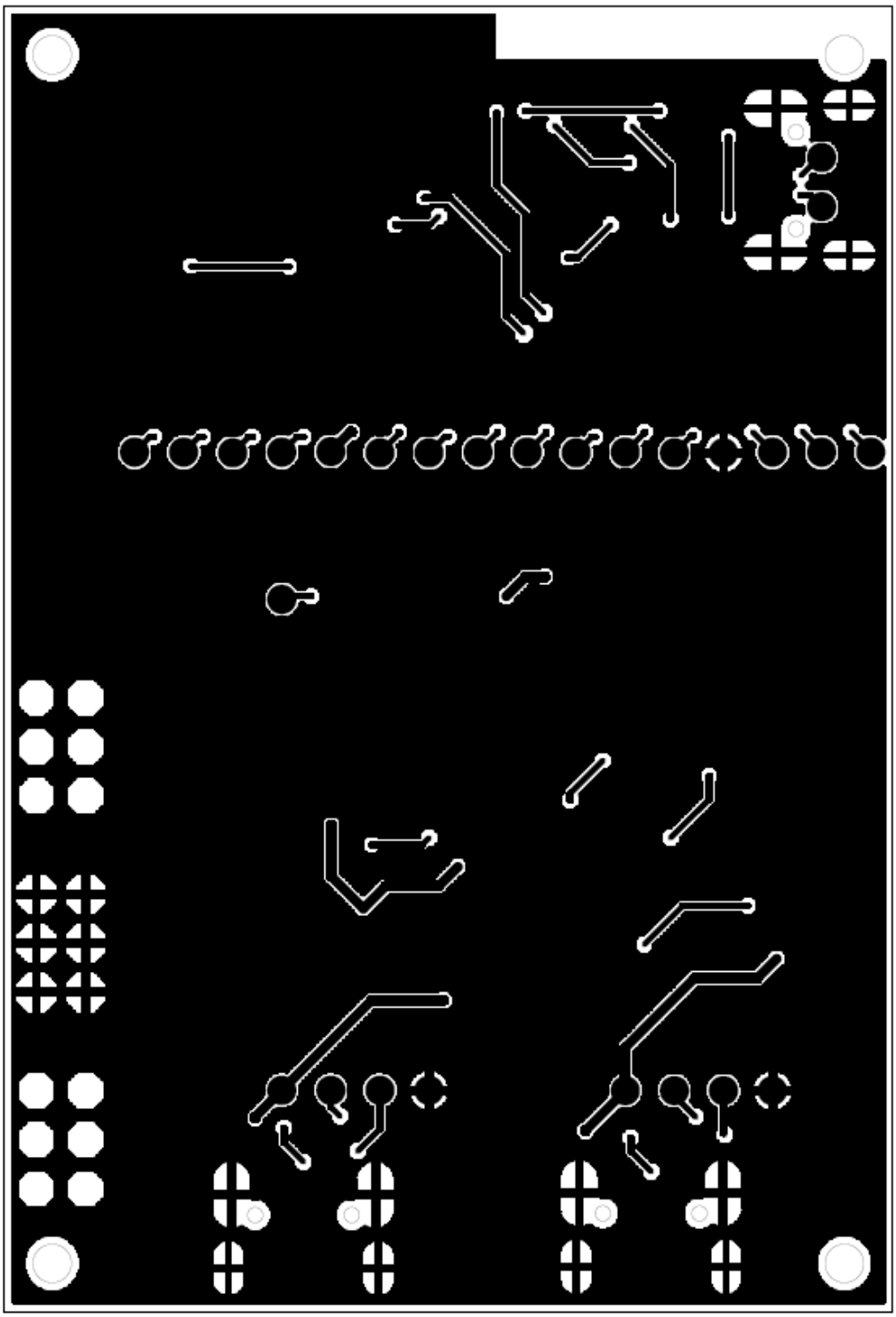

Figure 10: Bottom layer

5.8 Bill of materials

Part	Value	Package	MANUFACTURER	NR
MOD1	Stephano-I / Orthosie-I	WE-FP-7	Würth Elektronik	2617011025000 / 2617011025000
C1	100nF	C0402_IPC	Würth Elektronik	885012205037
C2	1µF	C0402_IPC	Würth Elektronik	885012105012
C3	100nF	C0402_IPC	Würth Elektronik	885012205037
C4	100nF	C0402_IPC	Würth Elektronik	885012205037
C5	1µF	C0402_IPC	Würth Elektronik	885012105012
C6	n.m.	C0402_IPC		
C7	n.m.	C0402_IPC		
C8	n.m.	C0402_IPC		
C9	22pF	C0402_IPC	Würth Elektronik	885012005057
C10	n.m.	C0402_IPC		
C11	100nF	C0402_IPC	Würth Elektronik	885012205037
C12	100nF	C0402_IPC	Würth Elektronik	885012205037
C13	10pF	C0402_IPC	Würth Elektronik	885012005055
C14	10pF	C0402_IPC	Würth Elektronik	885012005055
C15	1uF	C0402_IPC	Würth Elektronik	885012105012
C16	100nF	C0402_IPC	Würth Elektronik	885012205037
C22	100nF	C0402_IPC	Würth Elektronik	885012205037
C23	10pF	C0402_IPC	Würth Elektronik	885012005055
C24	10pF	C0402_IPC	Würth Elektronik	885012005055
C25	100nF	C0402_IPC	Würth Elektronik	885012205037
C26	100nF	C0402_IPC	Würth Elektronik	885012205037
C31	n.m.	C0402_IPC		
C41	n.m.	C0402_IPC		
CON1	Micro_USB	629105150521	Würth Elektronik	629105150521
CON2	Micro_USB	629105150521	Würth Elektronik	629105150521
CON6	n.m.	629105150521		
CON3	n.m.	2X03		
CON4	n.m.	2X03		
CON5	n.m.	2X03		
D2	82400152	WE-TVS_SOT563	Würth Elektronik	82400152
D3	82400152	WE-TVS_SOT563	Würth Elektronik	82400152
D4	DFLS130L-7	SOD123_POWERDI	Diodes incorporated	DFLS130L-7
D5	DFLS130L-7	SOD123_POWERDI	Diodes incorporated	DFLS130L-7
IC1	FT231XQ	QLP20	FTDI	FT231XQ-R
IC2	TLV1117LV33DCY	SOT223-4	TI	TLV1117LV33DCY
IC4	FT231XQ	QLP20	FTDI	FT231XQ-R
JP1	61000421121	61000421121	Würth Elektronik	61000421121
JP2	61003221121	61003221121	Würth Elektronik	61003221121

6 Marking

6.1 Lot number

The 15 digit lot number is printed in numerical digits as well as in form of a machine readable bar code. It is divided into 5 blocks as shown in the following picture and can be translated according to the following table.

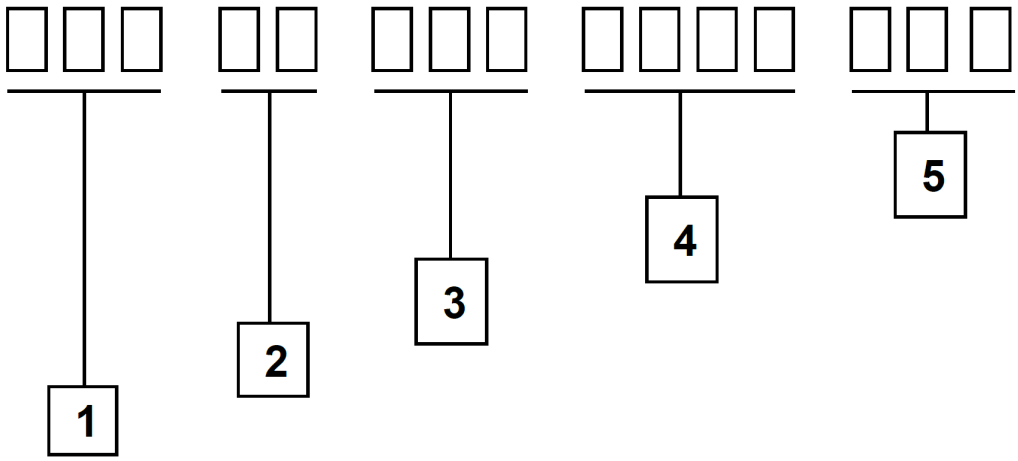

Figure 11: Lot number structure

Block	Information	Example(s)
1	eiSos internal, 3 digits	438
2	eiSos internal, 2 digits	01
3	Radio module hardware version, 3 digits	V2.4 = 024, V12.2 = 122
4	Date code, 4 digits	1703 = week 03 in year 2017, 1816 = week 16 in year 2018
5	Radio module firmware version, 3 digits	V3.2 = 302, V5.13 = 513

Table 11: Lot number details

As the user can perform a firmware update the printed lot number only shows the factory delivery state. The currently installed firmware can be requested from the module using the corresponding product specific command. The firmware version as well as the hardware version are restricted to show only major and minor version not the patch identifier. Block 5 is not applicable for products without firmware.

7 Regulatory compliance information

7.1 European Conformity

Pursuant to Article 1 (2.) of the EU directive 2014/53/EU, Article 1 (2.) the directive does not apply to equipment listed in Annex I (4.): custom-built EV-Kits designed for professionals to be used solely at research and development facilities for such purposes.

7.2 FCC

Pursuant to §2.803 (c) of Title 47 Chapter I Subchapter A Part 2 Subpart I, the EV-Kit falls under the FCC exception. Therefore it is marked as "For evaluation only; not FCC approved for resale".

7.3 Exemption clause

Relevant regulation requirements are subject to change. Würth Elektronik eiSos does not guarantee the accuracy of the before mentioned information. Directives, technical standards, procedural descriptions and the like may be interpreted differently by the national authorities. Equally, the national laws and restrictions may vary with the country. In case of doubt or uncertainty, we recommend that you consult with the authorities or official certification organizations of the relevant countries. Würth Elektronik eiSos is exempt from any responsibilities or liabilities related to regulatory compliance.

Notwithstanding the above, Würth Elektronik eiSos makes no representations and warranties of any kind related to their accuracy, correctness, completeness and/or usability for customer applications. No responsibility is assumed for inaccuracies or incompleteness.

8 References

[1] Würth Elektronik. Orthosie-I user manual. https://www.we-online.de/katalog/de/manual/2617011022000.

[2] Würth Elektronik. Stephano-I user manual. https://www.we-online.de/katalog/de/manual/2617011025000.

[3] Espressif. AT command documentation for Stephano-I, version 3.2.0.0. https://docs.espressif.com/projects/esp-at/en/release-v3.2.0.0/esp32c3/index.html.

[4] Espressif. Examples for Stephano-I, version 3.2.0.0. https://docs.espressif.com/projects/esp-at/en/release-v3.2.0.0/esp32c3/AT_Command_Examples/index.html.

[5] Espressif. Espressif tools download page. https://www.espressif.com/en/support/download/other-tools.

9 Important notes

The following conditions apply to all goods within the wireless connectivity and sensors product range of Würth Elektronik eiSos GmbH & Co. KG:

General customer responsibility
Some goods within the product range of Würth Elektronik eiSos GmbH & Co. KG contain statements regarding general suitability for certain application areas. These statements about suitability are based on our knowledge and experience of typical requirements concerning the areas, serve as general guidance and cannot be estimated as binding statements about the suitability for a customer application. The responsibility for the applicability and use in a particular customer design is always solely within the authority of the customer. Due to this fact, it is up to the customer to evaluate, where appropriate to investigate and to decide whether the device with the specific product characteristics described in the product specification is valid and suitable for the respective customer application or not. Accordingly, the customer is cautioned to verify that the documentation is current before placing orders.

Customer responsibility related to specific, in particular safety-relevant applications
It has to be clearly pointed out that the possibility of a malfunction of electronic components or failure before the end of the usual lifetime cannot be completely eliminated in the current state of the art, even if the products are operated within the range of the specifications. The same statement is valid for all software source code and firmware parts contained in or used with or for products in the wireless connectivity and sensor product range of Würth Elektronik eiSos GmbH & Co. KG. In certain customer applications requiring a high level of safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health, it must be ensured by most advanced technological aid of suitable design of the customer application that no injury or damage is caused to third parties in the event of malfunction or failure of an electronic component.

Best care and attention
Any product-specific data sheets, manuals, application notes, PCNs, warnings and cautions must be strictly observed in the most recent versions and matching to the products revisions. These documents can be downloaded from the product specific sections on the wireless connectivity and sensors homepage.

Customer support for product specifications
Some products within the product range may contain substances, which are subject to restrictions in certain jurisdictions in order to serve specific technical requirements. Necessary information is available on request. In this case, the Business Development Engineer (BDM) or the internal sales person in charge should be contacted who will be happy to support in this matter.

Product improvements
Due to constant product improvement, product specifications may change from time to time. As a standard reporting procedure of the Product Change Notification (PCN) according to the JEDEC-Standard, we inform about major changes. In case of further queries regarding the PCN, the Business Development Engineer (BDM), the internal sales person or the technical support team in charge should be contacted. The basic responsibility of the customer as per section 9 and 9 remains unaffected.
All software like ¨wireless connectivity SDK¨, ¨Sensor SDK¨ or other source codes as well as all PC software tools are not subject to the Product Change Notification information process.

Product life cycle
Due to technical progress and economical evaluation, we also reserve the right to discontinue production and delivery of products. As a standard reporting procedure of the Product Termination Notification (PTN) according to the JEDEC-Standard we will inform at an early stage about inevitable product discontinuance. According to this, we cannot ensure that all products within our product range will always be available. Therefore, it needs to be verified with the Business Development Engineer (BDM) or the internal sales person in charge about the current product availability expectancy before or when the product for application design-in disposal is considered. The approach named above does not apply in the case of individual agreements deviating from the foregoing for customer-specific products. The approach named above does not apply in the case of EV-Boards. EV-Boards may be changed without any notification.

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Unless otherwise agreed in individual contracts, all orders are subject to the current version of the "General Terms and Conditions of Würth Elektronik eiSos Group", last version available at *www.we-online.com*.

10 Terms of Use for Würth Elektronik eiSos GmbH & Co. KG EV-Boards, evaluation kits and evaluation modules

Würth Elektronik eiSos GmbH & Co. KG provide you as a user with technical data (including data sheets), design resources (including reference designs), recommendations for use or other design recommendations, web tools, safety information and other information in the form of evaluation-boards, -kits or -modules (hereinafter jointly referred to as "EVB") in accordance with the terms and conditions contained here. The EVB is provided in the "as is" state. WE disclaims all express and implied warranties, in particular those concerning the suitability for a certain purpose, the absence of defects or non-violation of third-party rights. The EVB is intended for experienced developers to develop

their application with WE components. As a user, you are solely responsible for: (1) selection of the appropriate WE components for the application, (2) design, validation and testing the application, and (3) assurance that the application meets the applicable standards and all other safety requirements and other applicable requirements. WE may change the EVB without prior notice. WE grants you permission to use the EVB only for developing an application suitable for using WE components. Any other duplication, representation or transfer of the EVB is expressly prohibited. WE does not grant any licenses for the use of the intellectual property rights from WE or third parties. WE is fully indemnified from all claims, damages, costs, losses and liabilities arising from the misuse of this EVB The WE components are provided in accordance with WE's conditions of sale or other applicable conditions available either at *https://katalog.we-online.com* or in conjunction with such WE components. WE's provision of the EVB does not constitute an extended warranty in relation to the WE components.

General warnings
Do not touch the EVB when it is live, and allow charged components, such as capacitors, to discharge completely before handling the EVB. Depending on the individual application, high voltages can occur on the EVB and some components can reach temperatures above 50 °C. Even after disconnecting the EVB from the power source, these conditions remain for a significant time. Please ensure that the appropriate safety precautions are taken when installing and operating this EVB, as one of the following may occur if you handle or use this EVB without observing the relevant safety precautions: - Death - Serious injury - Electric shock - Electric burns - Severe heat burns -
When using the EVB, you undertake to read the instructions for use in full together with the relevant information supplied and/or available on the homepage *www.we-online.de/wcs-manuals* before putting this EVB into operation. The following points have to be observed in particular:
- Do not touch the EVB while it is live.
- The EVB must be fully assembled and all devices to be tested must be connected before voltage is applied to the EVB.
- The EVB should never be left unattended during operation.
- Capacitors must be completely discharged. The capacitors must be actively discharged using a suitable resistor.

Protection against static electricity
Use the unpackaged product only in ESD protected areas. Wear the ESD personal protective equipment prescribed for these areas. Ground all conductive components, including personnel, as prescribed in ESD protected areas. Ensure that the product is only used by trained personnel.

Purpose and use
The EVB is not a finished product and is not intended for general use by the consumer. The EVB is intended exclusively for use in the evaluation of WE components in the lab or in development environments by highly qualified technicians or engineers, familiar with the risks involved in handling electrical or mechanical components, systems and subsystems. The use of the EVB is your full and independent responsibility. The EVB is expressly not intended to be installed in a terminal device or to be part of a terminal device in whole or in part. WE reserves the right, at its own discretion, to make corrections, improvements, adjustments or other changes to the EVB or to discontinue the EVB. The EVB is not intended for use in devices and applications for which a higher safety and reliability standard is prescribed. It is also not approved for use in safety-relevant applications or where personal injury or fatal consequences must be expected in the event of failure.

Operation of the EVB
The EVB may only be operated within the specifications and environmental parameters recommended by WE, as described in the instructions for use. Exceeding the specified parameters (including, but not limited to, input and output voltage, current, power, and ambient conditions) may result in damage to property. If you have questions about these electrical parameters, please contact WE at (regulatory-compliance@we-online.com) prior to connecting peripheral electronics (including the input voltage and intended loads). Any load outside a certain power range may lead to negative consequences, including, but not limited to, unintended or inaccurate evaluations or possibly permanent damage to the EVB or the electronics connected to it. Please ensure that the appropriate safety precautions are taken when working with the EVB, as serious injuries, including severe or even fatal injuries from electric shock or electric burns, may occur if you do not follow the appropriate safety precautions. Under no circumstances should the EVB be touched while live. When the EVB is connected to a power source, some of its components are electrically charged and/or have temperatures above 50 °C. This condition also applies for a short time after disconnecting from the supply voltage until the capacitors are completely discharged and hot components have cooled down. These components include connectors, linear regulators, switching transistors, heat sinks, resistors, diodes, inductors and other components, which can be identified from the documentation in the instructions for use. As with all electronic lab work, only qualified persons with knowledge of electronic performance evaluation, measurement and diagnostic tools, should use the EVB.

Hazards and warnings
Before putting the EVB into operation, please read the instructions for use and especially the various hazards and warnings described therein. The instructions for use contain important safety information on voltages and temperatures. You take full responsibility and liability for the proper and safe handling of the EVB. You agree to comply with all safety requirements, rules and regulations related to the use of the EVB. You also take full responsibility for: (1) establishing safeguards to ensure that the use of the EVB does not cause damage to property, personal injury or death, even if the EVB does not function as described, intended or expected, (2) the test setup in which the EVB is integrated, all safety requirements, rules and regulations and also that no damage to property, personal injury or other hazardous situation occurs even if the EVB fails, and (3) ensuring the safety of all activities performed by you or your employees when using the EVB. In particular, this means that the technical rules VDE [German Electrical Engineering, Electronic and Information Technology Association] 0105-100 and BGI [German trade association information] 891 (or corresponding applicable safety regulations outside Germany) for the operation of electrical test setups must be observed, the test area is protected against unauthorized access or accidental touching, current limitations, and emergency stop mechanisms are functional and test setups are never operated unattended. If you have any questions about the safe use of the EVB, please contact WE at *regulatory-compliance@we-online.com* for more information.

Your responsibility with regard to the applicable laws
- You are responsible for being sufficiently informed about and complying with all international, national, state and local applicable laws, rules and regulations that apply to the handling or use of the EVB by you or your employees.
- The EVB generates, uses and radiates radio frequency energy, but has not been tested for conformity with the limits applicable to the product category, which are applicable according to the European Union regulations for protection against radio frequency interference. Operation of the EVB may cause interference with radio communication. In this case, the costs incurred for necessary measures to remedy the interference are to be borne by the user.

As the EVB is not a finished product, it may not comply with applicable regulatory, safety or certification standards that are normally as-

sociated with other products, such as Directive 2011/65/EC of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of hazardous substances and Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). You take full responsibility for compliance with such standards that apply to the EVB. You also take responsibility for the proper disposal of the components and materials of the EVB.

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WE ensures that the EVB meets the specifications given in the instructions for use (within the deviations stated therein) for a period of 12 months from the date of purchase and functions in accordance with the instructions for use. On the basis of the underlying statutory provisions, WE shall rectify defects or offer free replacement of the EVB to which damage occurs that is evidently attributable to a defect for which WE is responsible and is at fault. A warranty claim is subject to the user having complied with the statutory duties of inspection and notification of defects and that the EVB has been received by WE no later than ten (10) days after expiry of the warranty period. This warranty is not transferable to others. This warranty does not apply to defects or impairments in performance resulting from incorrect use, use contrary to WE's instructions, improper installation, improper operation or misuse. WE accepts no liability whatsoever for the failure of equipment or other items not manufactured by or for WE, including, but not limited to, equipment or items to which the EVB is attached or for which the EVB is used. WE DOES NOT GRANT ANY WARRANTIES OR ASSURANCES WHATSOEVER, EXPRESS OR IMPLIED, WITH RESPECT TO THE EVB, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MARKETABILITY OR SUITABILITY FOR A PARTICULAR PURPOSE.

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12 License terms

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