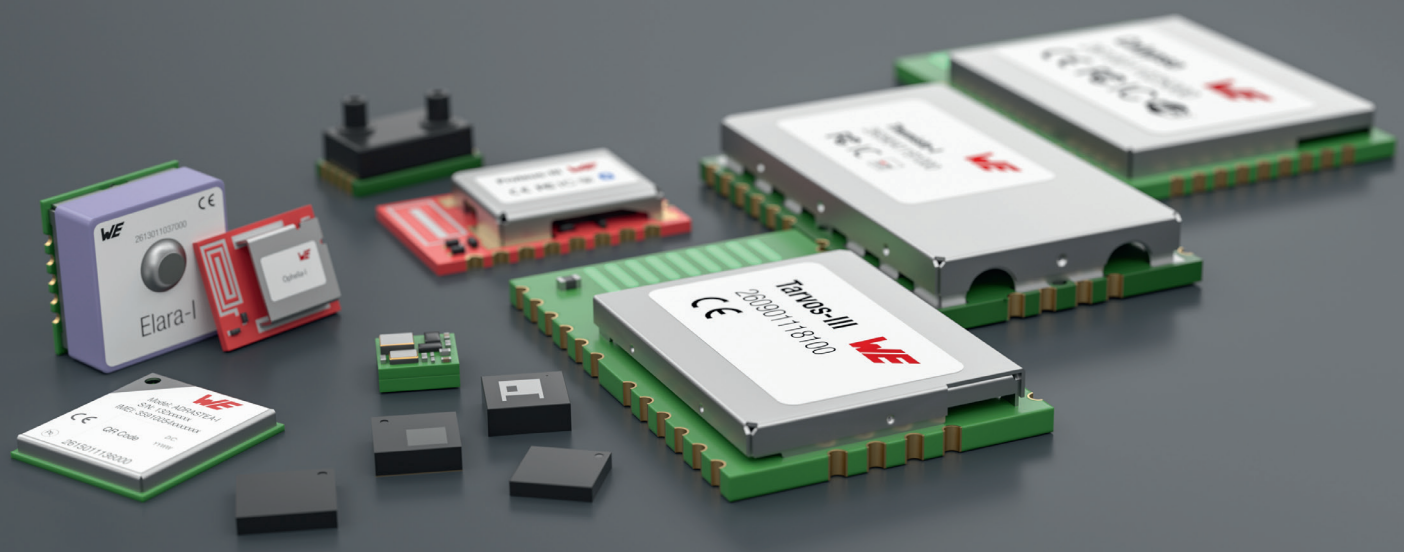

User manual

Mini evaluation board for radio module Ophelia-IV

2621119022001

Version 1.0

December 9, 2025

WÜRTH ELEKTRONIK MORE THAN YOU EXPECT

Contents

1 Abbreviations

Abbreviation	Name	Description
BDM	Business Development Engineer	Support and sales contact person responsible for limited sales area
BYOF	Build Your Own Firmware	Radio module without firmware, to be used to develop custom firmware
ESD	Electro Static Discharge	
EV	Evaluation	
FTDI	Future Technology Devices International	USB to serial converter chip
GND	Ground	Ground signal level that corresponds to 0 V
HIGH	High signal level	Digital voltage level that is detected as high by the module
I/O	Input/Output	
JTAG	Joint Test Action Group	Flash interface for the micro controller
LED	Light Emitting Diode	
LFCLK	Low Frequency Clock	
LFXO	Low Frequency crystal Oscillator	
LOW	Low signal level	Digital voltage level that is detected as low by the module
NFC	Near Field Communication	
PC	Personal Computer	
PCB	Printed Circuit Board	
RF	Radio Frequency	Describes everything relating to the wireless transmission
SMA	SubMiniature version A	
SWD	Serial Wire Debug	Flash und debug interface
THT	Through-Hole Technology	
UART	Universal Asynchronous Receiver Transmitter	Universal Asynchronous Receiver Transmitter allows communicating with the module of a specific interface
USB	Universal Serial Bus	
VDD	Voltage Drain Drain	Supply voltage

2 Revision history

Manual version	HW version	Notes	Date
1.0	1.0	• Initial version	December 2025

3 Supported radio module

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

Order code	Product name	Description
2621011022000	Ophelia-IV	BYOF radio module with DTM (Direct Test Mode) firmware

Table 3: Compatibility

Order code	Product name
2621119022001	Mini evaluation board Ophelia-IV

Table 4: Order code

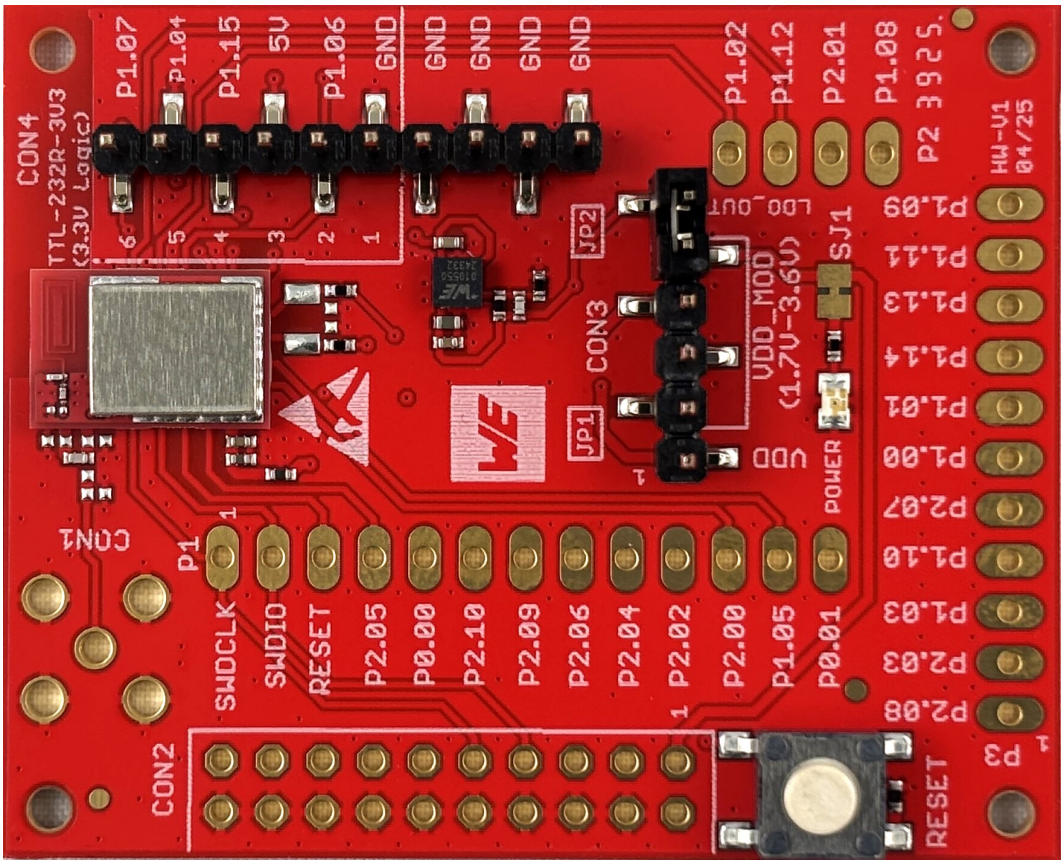

Figure 1: Product image

Content 2621119022001	Quantity
Mini evaluation board Ophelia-IV on-board using PCB antenna connection	1

Table 5: Content mini evaluation board Ophelia-IV

4 Functional description

The mini evaluation board is an intuitive, application oriented and cost effective EV board version to evaluate Ophelia-IV radio module. It offers the user the possibility to develop hardware and software for the corresponding radio module.

By default, the mini evaluation board is assembled with the minimum required pin headers to take the module into operation. The necessary components shall be assembled by the user based on the need and application.

The mini evaluation board is designed for both non-experienced and experienced developers. While it offers basic testing functionality out of the box, full evaluation of the radio module requires additional accessories and simple soldering to enlarge test scope of the radio module.

Accessories required to test full scope of the radio module are:

- Assembly components (see Table 6) and soldering equipment

All pins are available on pads where a pin header can be soldered in. The pins that are needed for minimal pin configuration are available on already equipped headers, e.g. to connect a micro controller or a PC and to set jumpers to choose operating modes of the radio module.

4.1 Software support

The Ophelia-IV radio module is part of the nRFConnect SDK [1] and Zephyr OS [2, 3]. Thus, when developing a firmware based on these SDKs, the *Ophelia-IV* can be selected as underlying hardware in the project settings. This allows to compile the firmware for the Ophelia-IV mini EV.
For more information refer to ANR030 [4] and ANR036 [5].

5 Development board

5.1 Block diagram

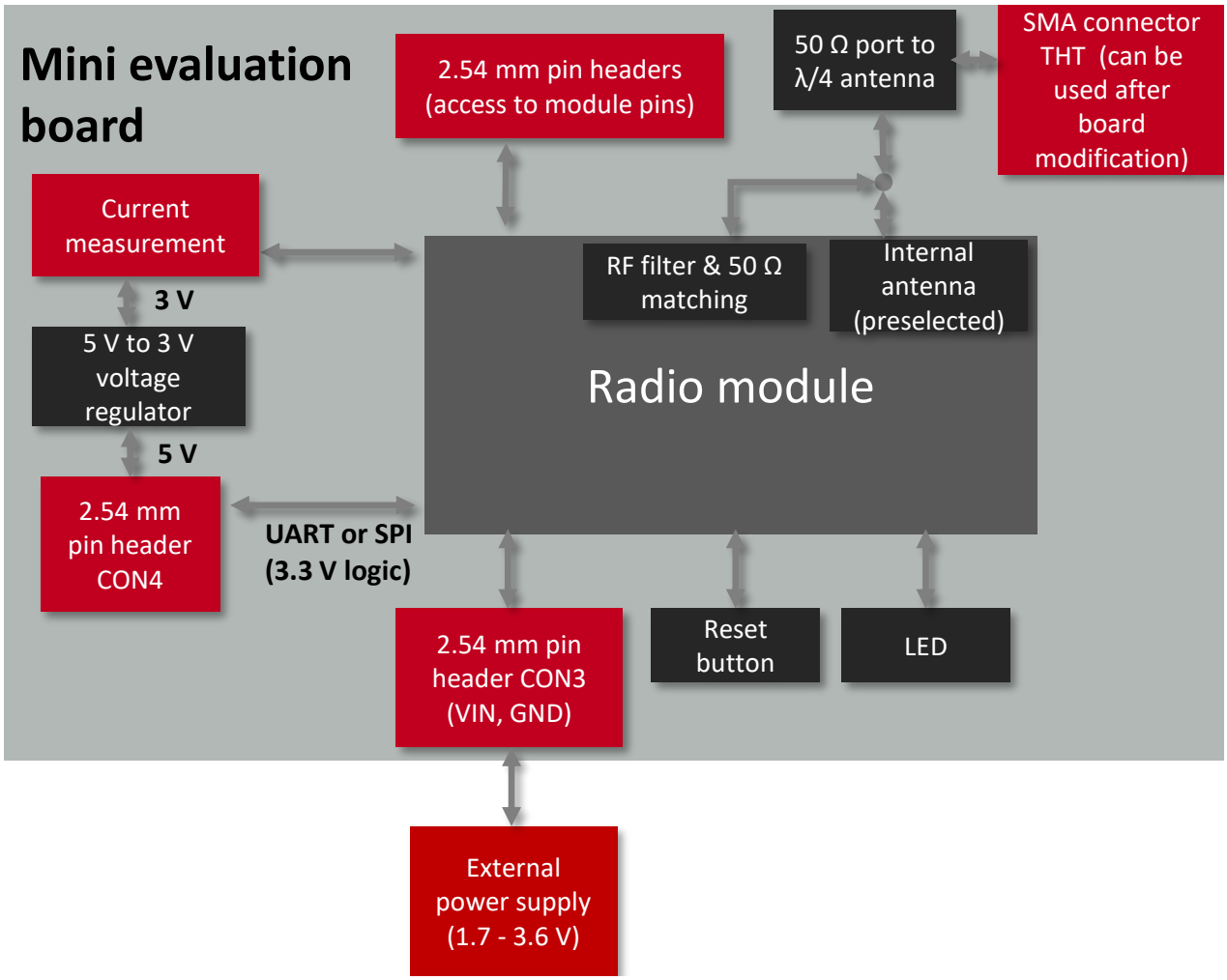

Figure 2: Block diagram

5.2 Additional assembly

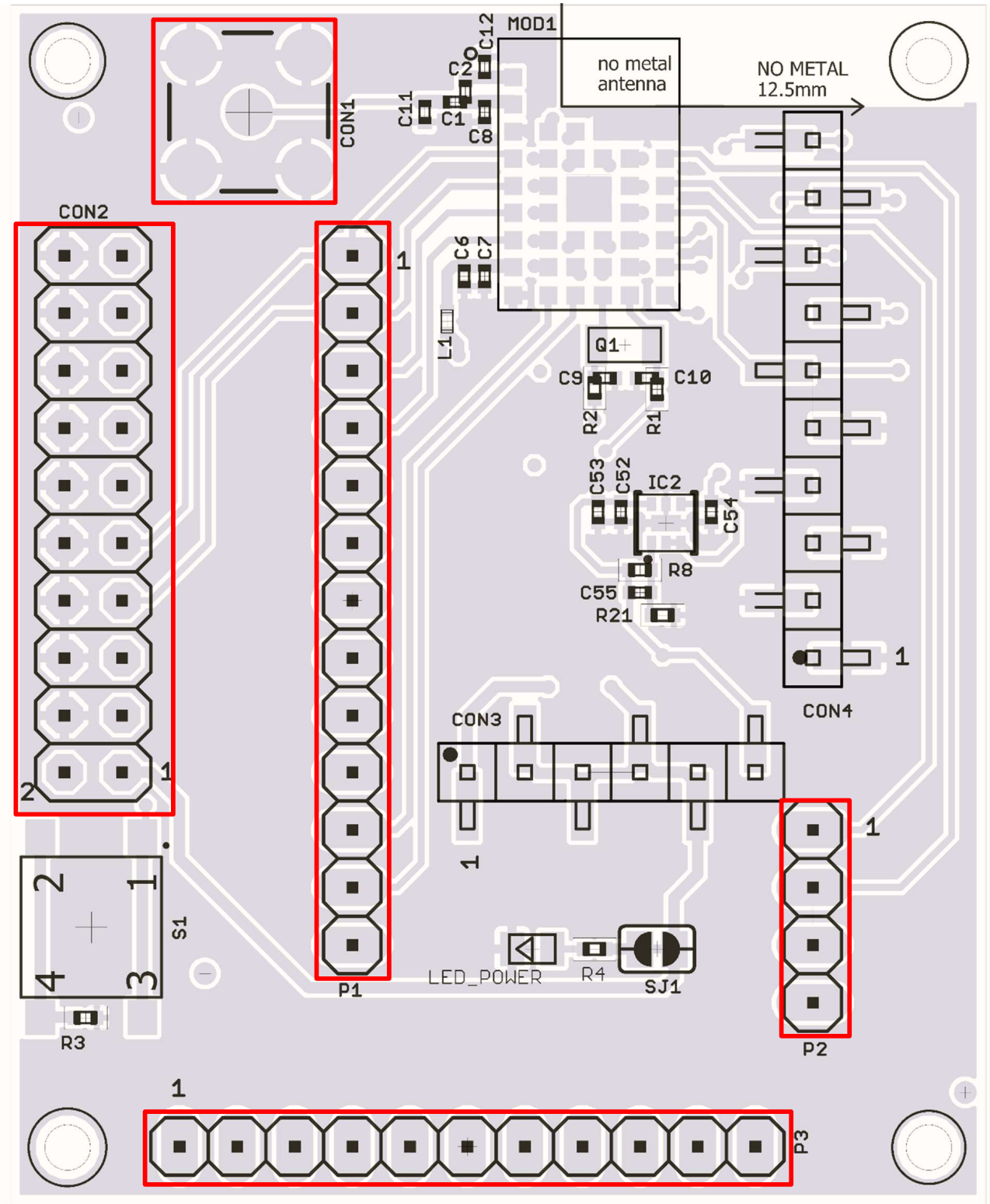

Figure 3: Additional assembly

The Table 6 lists the additional assembly components for mini evaluation board. All the components listed in Table 6 are THT components.

Placeholder	Function	Pins	WE article number
P1	Module GPIO access pins	1X13	*61301311121*
P2	Module GPIO access pins	1X4	*61300411121*
P3	Module GPIO access pins	1X11	*61301211121*
CON1	External antenna connection	5	*60312002114503*
CON2	Debugging interface	2X10	*61302021121*

Table 6: Additional assembly components

Holes with 2 mm diameter on all the four corners are available for spacer or standoff connections.

5.3 Connectors and ports

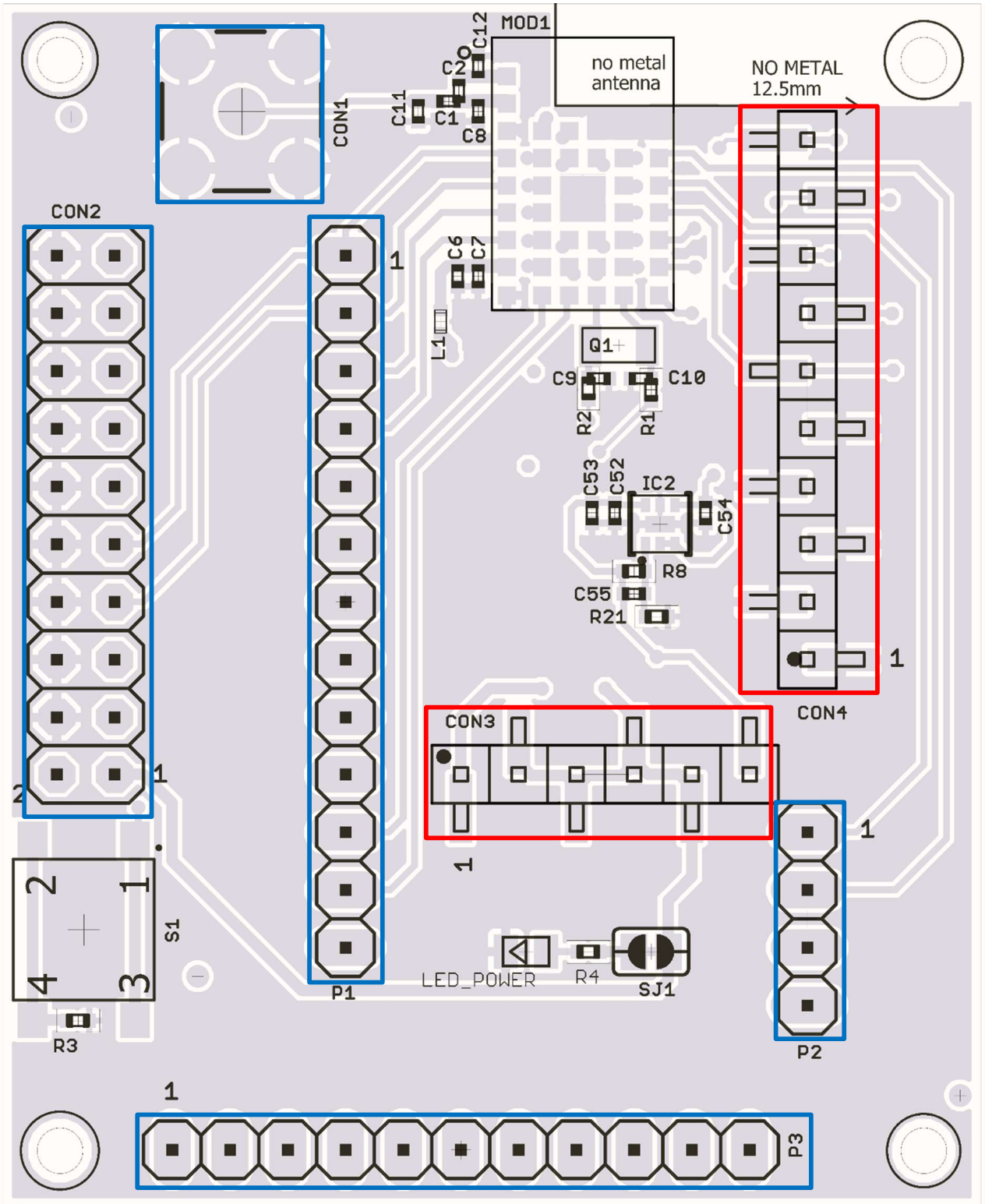

Figure 4: Connectors

5.3.1 P1: Module communication access pins

P1	nRF54L15	Ophelia-IV
1	SWDCLK	Module pad 4
2	SWDIO	Module pad 5
3	/RESET	Module pad 6
4	P2.05	Module pad 7
5	P0.00	Module pad A1
6	P2.10	Module pad A2
7	P2.09	Module pad A3
8	P2.06	Module pad A4
9	P2.04	Module pad A5
10	P2.02	Module pad A6
11	P2.00	Module pad 10
12	P1.05	Module pad 11
13	P0.01	Module pad B1

Table 7: Pin header P1

5.3.2 P2: Module communication access pins

P2	nRF54L15	Ophelia-IV
1	P1.02	Module pad 18
2	P1.12	Module pad 19
3	P2.01	Module pad 14
4	P1.08	Module pad 15

Table 8: Pin header P2

5.3.3 P3: Module communication access pins

P3	nRF54L15	Ophelia-IV
1	P2.08	Module pad B2
2	P2.03	Module pad B5
3	P1.03	Module pad C5
4	P1.10	Module pad C2
5	P2.07	Module pad B6
6	P1.00	Module pad 12
7	P1.01	Module pad 13
8	P1.14	Module pad D5
9	P1.13	Module pad D4
10	P1.11	Module pad D3
11	P1.09	Module pad D2

Table 9: Pin header P3

5.3.4 CON1: SMA

SMA connector is used to connect an external antenna. The 2.4 GHz antenna Himalia (2600130021) is fully compatible with the radio module and supports optimal performance.

CON1	Connection
Inner	Module RF pin
Outer	4 x GND

Table 10: Connector CON1: SMA

5.3.4.1 Smart antenna

The so called "smart antenna" solution allows to use the external antenna or internal antenna of the radio module just via mounting external components to the module.

By default, internal PCB antenna connection is used. In order to use the internal PCB antenna of the module, a 22 pF capacitor (0402) on position C2 shall be populated. C1 shall be removed, C8 and C11 should be left unpopulated.

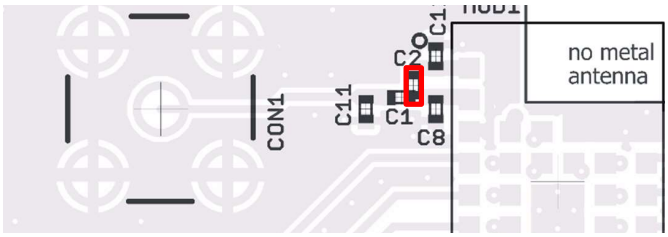

Figure 5: Capacitor connection to internal antenna

In order to use an external SMA antenna, 22 pF capacitor (0402) on position C1 shall be populated. C2 shall be removed, C8, C11 and C12 should be left unpopulated.

Optional: Experts have the possibility to use C1, C8 and C11 for additional filtering or fine tuning to the actually used antenna. C1 = 22 pF rematches the module to the mini evaluation board providing best performance at the SMA connector.

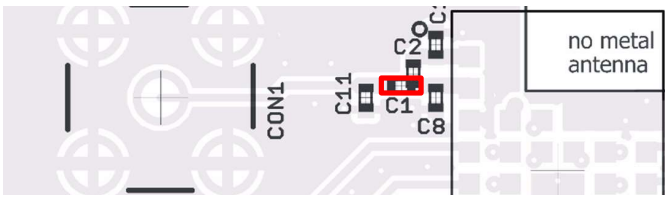

Figure 6: Capacitor connection to external antenna

As external antenna the Himalia [6] antenna has been qualified.

5.3.5 CON2: Debugging Interface-2x10 pin header

CON2	Function	Board connection
1	VDD	Module pad 8 VDD
7	SWDIO	Module pad 5 SWDIO
9	SWCLK	Module pad 4 SWCLK
15	/RESET	Module pad 6 RESET
4,6,8,10,12,14,16,18,20	GND	GND
2,3,5,11,13,17,19	-	-

Table 11: Connector CON2: JTAG debugging interface

5.3.6 CON3: External power supply and current measurement

CON3	Function	Board connection
1	VDD	Module pad 8 VDD
2	VDD_MOD	External power supply connection (1.7 V - 3.6 V)
3	VDD_MOD	External power supply connection (1.7 V - 3.6 V)
4	VDD_MOD	External power supply connection (1.7 V - 3.6 V)
5	VDD_MOD	External power supply connection (1.7 V - 3.6 V)
6	LDO_OUT	Voltage regulator output

Table 12: Connector CON3

All the information related to the power supply are described in chapter 5.6.1.

5.3.7 CON4: External power supply and module communication access pins

CON4	Function	Board connection
1	GND	GND
2	GND	GND
3	GND	GND
4	GND	GND
5	GND	GND
6	P1.06	Module pad 17
7	5V	External power supply connection (5V)
8	P1.15	Module pad D6
9	P1.04	Module pad C6
10	P1.07	Module pad 16

Table 13: Connector CON4

Ophelia-IV and Proteus-IV module share the same hardware platform. CON4 pin header pins 5 to 10 are used to connect the TTL-232R-3V3 FTDI cable, if Proteus-IV firmware is programmed on the hardware. CON4 pin header can also be used for direct host connection.

5.4 Jumpers

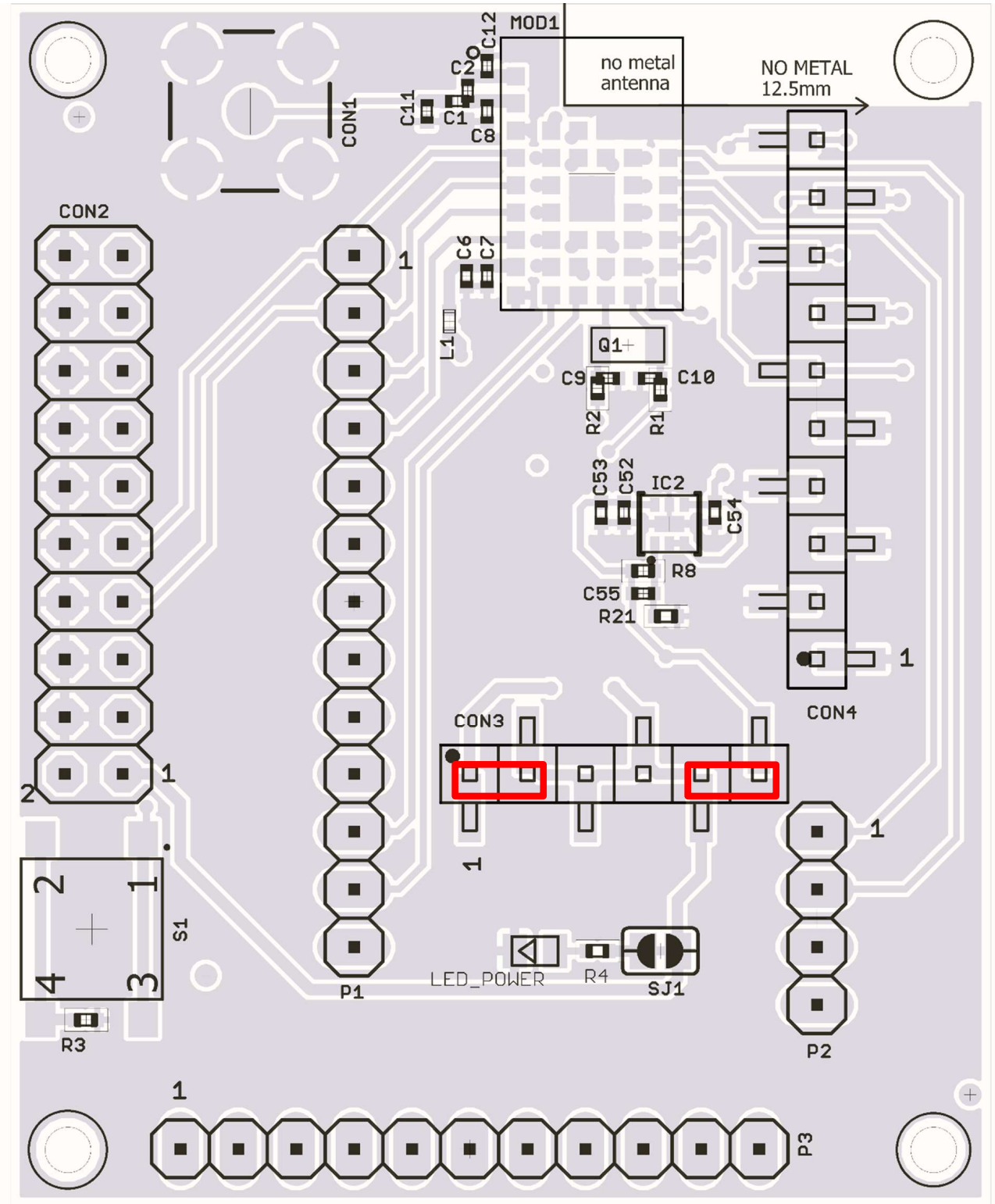

Figure 7: Default jumpers placement

5.4.1 CON3: External power supply / Current measurement

CON3	Function	Default state
Pin (1-2)	Current measurement	set
Pin (5-6)	Internal power supply through onboard voltage regulator	set

Table 14: Jumpers

5.4.2 Current measurement

By default, a jumper is set on Pin (1-2) of connector CON3. For current measurement the jumper can be removed and a current meter can be connected instead to the connector CON3 Pin (1-2).

CON3	Function
1	VDD
2	VDD_MOD

Table 15: Pin header CON3

When supplying the EV-Board with an FTDI cable via CON4, be aware that the voltage level of the UART lines of the FTDI cable may differ from the voltage level of the radio module. Thus, especially when measuring very low currents (e.g. sleep current), there may be residual currents.

5.5 Reset button

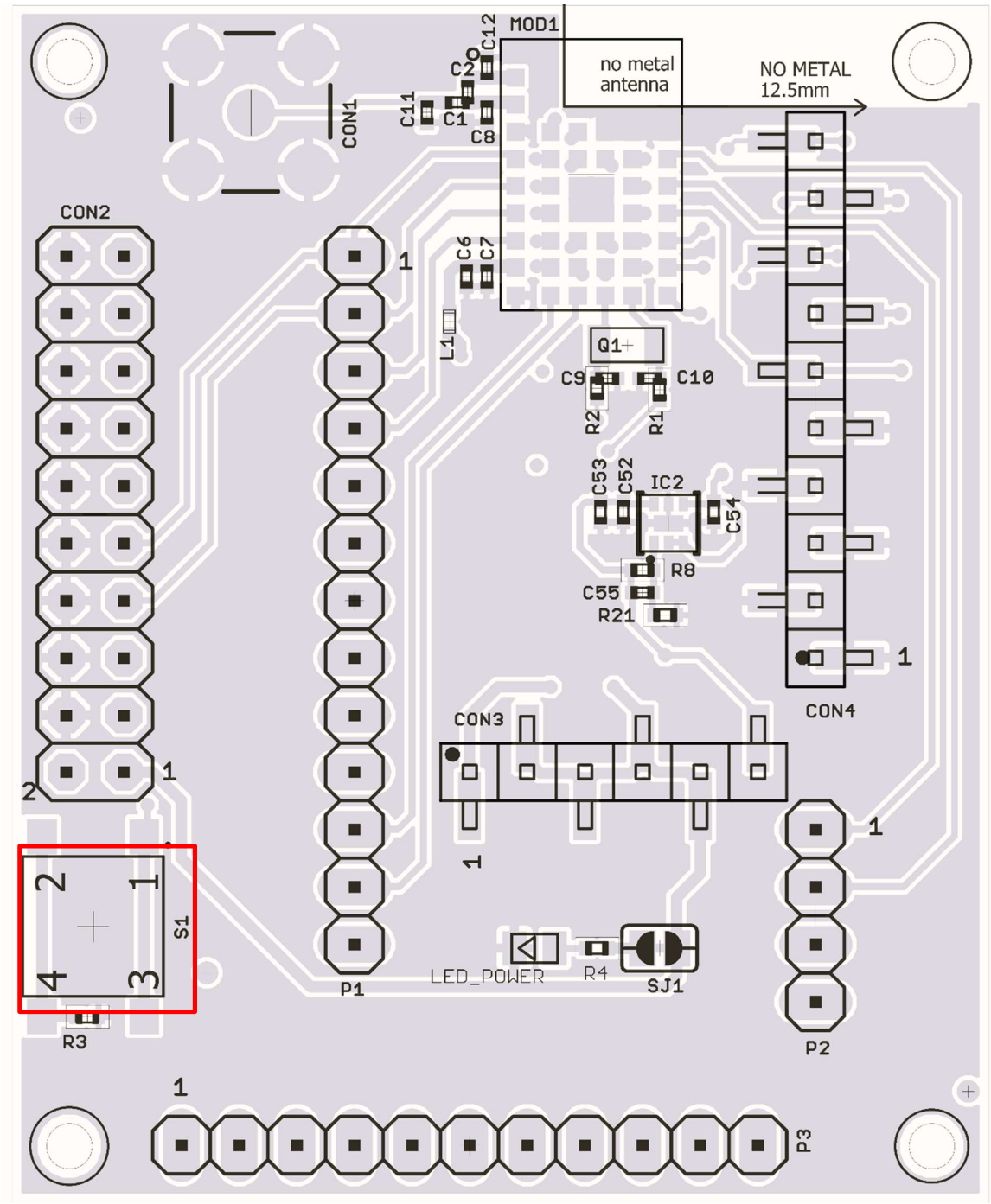

Figure 8: Buttons

5.5.1 RESET button

On IC level, the active low reset input is configured with a pull up resistor. The module provides a */RESET* pin that is connected to this button, so that the module can be restarted properly. Refer to the module specific manual for detailed information [7].

5.6 Function blocks

5.6.1 Power supply

The mini evaluation board can be powered either by TTL-232R-3V3 cable or by an external power supply. The Table 16 lists the connection for different power supply options:

No	Power supply	Supply @	Onboard voltage regulator	Multimeter or jumper
1	TTL-232R-3V3 cable	CON4	Active (Jumper on CON3 Pin 5-6)	Connected on CON3 Pin 1-2
2	External supply	CON4 dedicated pins Pin 7: 5 V, Pin 1 to 5: GND	Active (Jumper on CON3 Pin 5-6)	Connected on CON3 Pin 1-2
3	External supply	CON4 dedicated pins Pin 1 to 5: GND CON3 dedicated pins Pin 3 to 5: 3 V	Inactive (No jumper on CON3 Pin 5-6)	Connected on CON3 Pin 1-2

Table 16: Power supply option

5.6.1.1 Connector CON4, power supply through TTL-232R-3V3

The mini evaluation board can be powered by TTL-232R-3V3 cable through CON4 connector. TTL-232R-3V3 cable powers the board with 5 V supply. The integrated voltage regulator regulates the connected 5 V down to 3 V and supplies the remaining parts of the circuit.

By default the jumper is set on pin (5-6) of CON3, to use the onboard integrated voltage regulator.

The jumper on pin (5-6) of CON3 shall be removed if the external power supply on CON3 (VDD_MOD: 1.7 V - 3.6 V) is used.

For current measurement the current meter is connected to CON3, Pin 1 (*VDD*) to Pin 2 (*VDD_MOD*).

5.6.1.2 Connector CON4, power supply through dedicated pins

The mini evaluation board can be powered by an external power supply through connector CON4 Pin 7 (*5 V*) and Pin 1 to 5 (*GND*). Figure 9 is illustrating this.

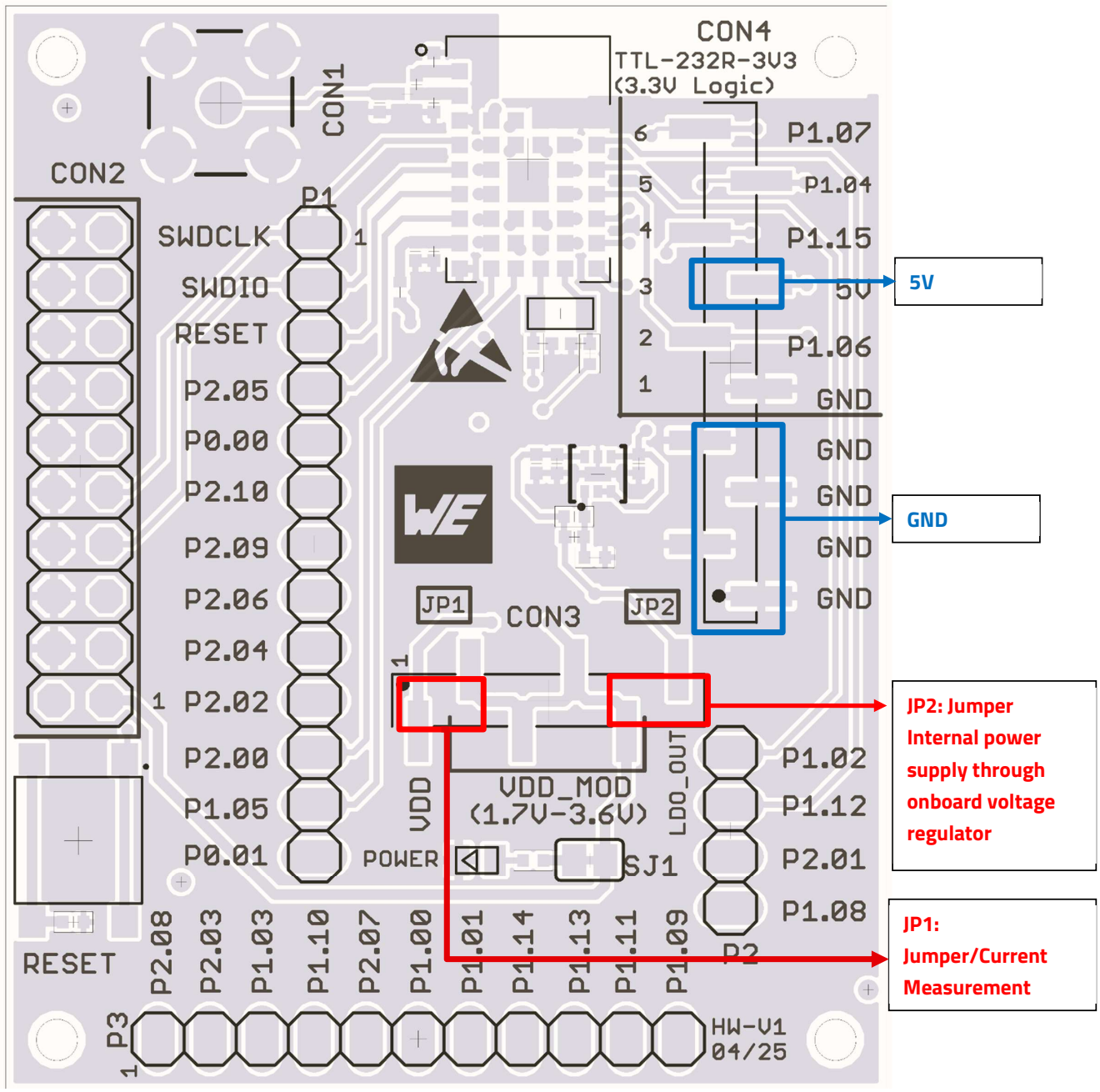

Figure 9: Power supply corresponding to Table 16 No 1 and 2

5.6.1.3 Connector CON3, power supply through external source

The mini evaluation board can be powered by an external power supply (1.7 V - 3.6 V) through the connector CON3 Pin 2 to 5 (*VDD_MOD*) and connector CON4 Pin 1 to 5 (*GND*).

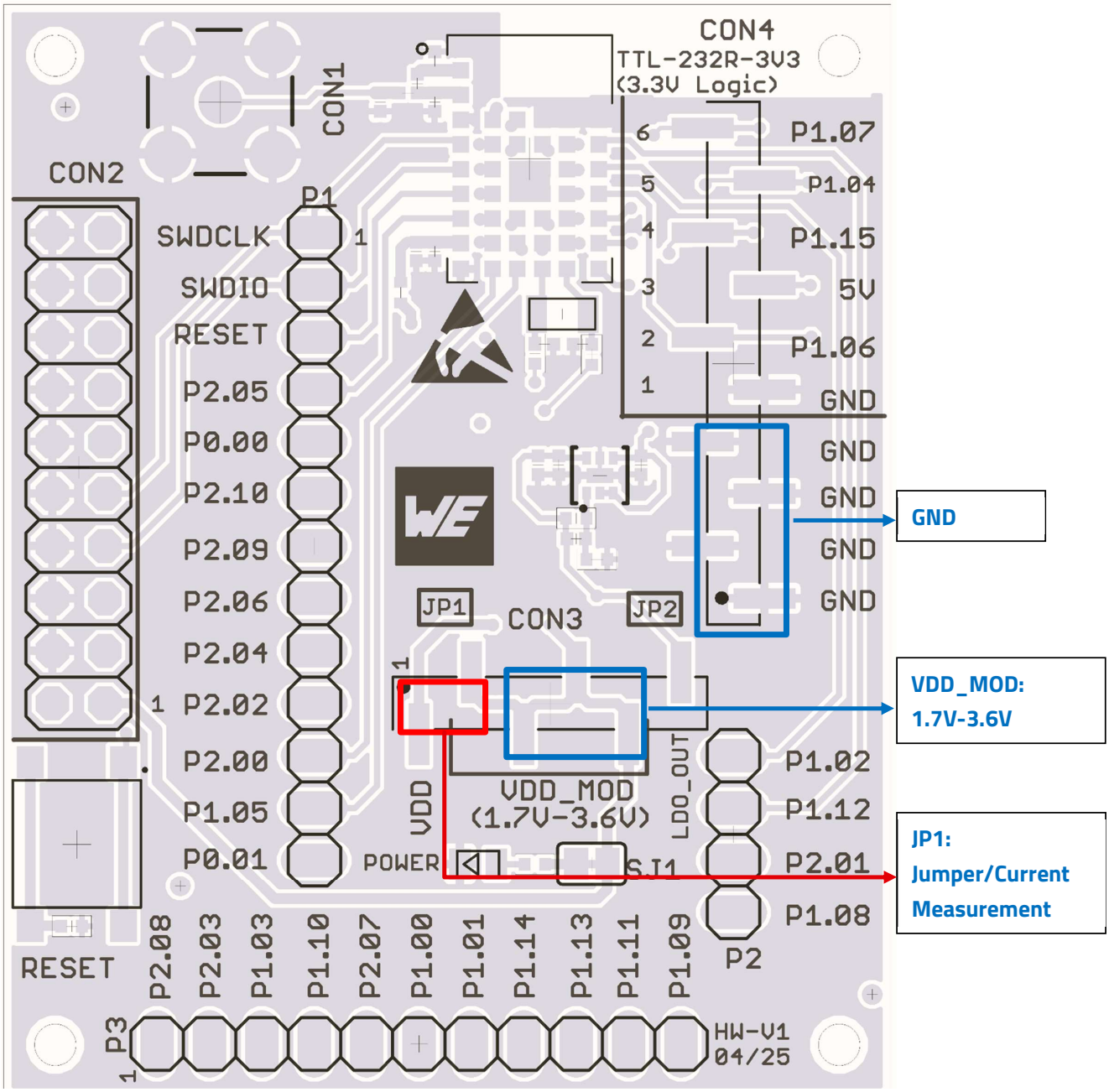

Figure 10: Power supply corresponding to Table 16 No 3

STOP

The jumper on pin (5-6) of CON3 shall be removed if the external power supply on CON3 (VDD_MOD: 1.7 V - 3.6 V) is used.

5.6.2 LFXO crystal

For higher LFCLK accuracy (better than ±250 ppm), a low frequency crystal oscillator of 32.768 kHz (LFXO) shall be used. A crystal, 3.2 ×1.6 mm package, for example *830009706*, can be placed on mini evaluation board to position Q1. The needed load capacitance can be reached with capacitors C9 and C10, 0402 package.

nRF54L15 pin P1.00/XL1 and P1.01/XL2 are connected to module pad 12 and 13, respectively. If an LFXO is assembled to the mini evaluation board, the resistors R1 and R2 shall be removed, therefore the pin functions is no longer available. Refer to the figure 11 for necessary modification.

STOP By default, Q1, C9, C10 shall not be assembled and R1, R2 shall be assembled.

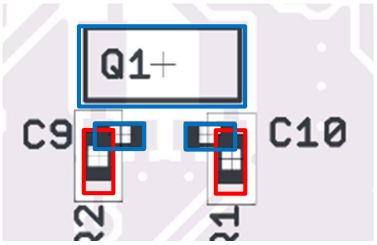

Figure 11: LFXO assembly

To use the LFXO function, Q1, C9, C10 shall be assembled and R3 ,R5 are not assembled.

The input capacitance of the pad 12 and 13 are 3 pF. The values of C9 and C10 can be calculated as follows. The load capacitance of LFXO is given by

$$C_l = \frac{C9_l * C10_l}{C9_l + C10_l} \tag{1}$$

If $C9_l$= $C10_l$ = C, then

$$C_l = \frac{C}{2} \tag{2}$$

whereas,

$$C9 = C - C_{XL1} - C_{PCB} \tag{3}$$

$$C10 = C - C_{XL2} - C_{PCB} \tag{4}$$

C_l = Load capacitance of LFXO crystal.
C_{XL1} = Input capacitance of Pad 12 (3 pF)

C_{XL2} = Input capacitance of Pad 12 (3 pF)
C_{PCB} = Parasitic capacitance of PCB
Parasitic capacitance of the PCB can vary depending on design and track length. It can vary from 0.5 pF to 2 pF.

For the crystal *830009706* with load capacitance of 9 pF and parasitic capacitance of 2 pF, the values of C9 and C10 results in 13 pF which was also tested on mini evaluation board.

Depending on parasitic capacitance of PCB, a capacitance of 13 pF may be a good starting value for C9 and C10.

5.6.3 Programming interface

The mini evaluation board provides solder pads for 2×10 pin connector. It can be used to connect directly to a JTAG flash adapter used for development. Take care of the correct orientation of the flash adapter. The recommended flash adapter is one of the "Segger J-Link" family.

5.7 Schematic - Ophelia-IV mini evaluation board

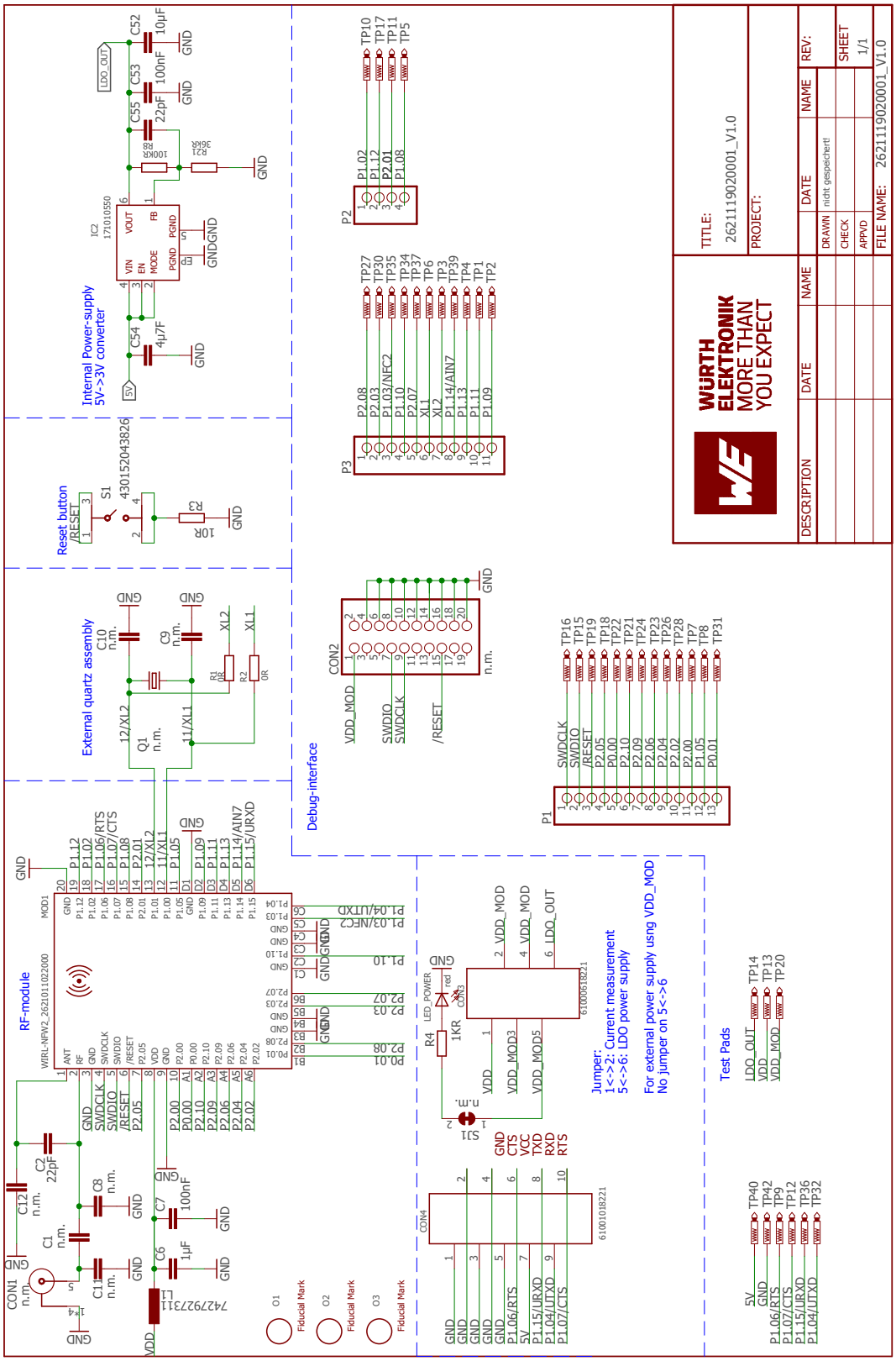

Figure 12: Schematic sheet

5.8 Layout

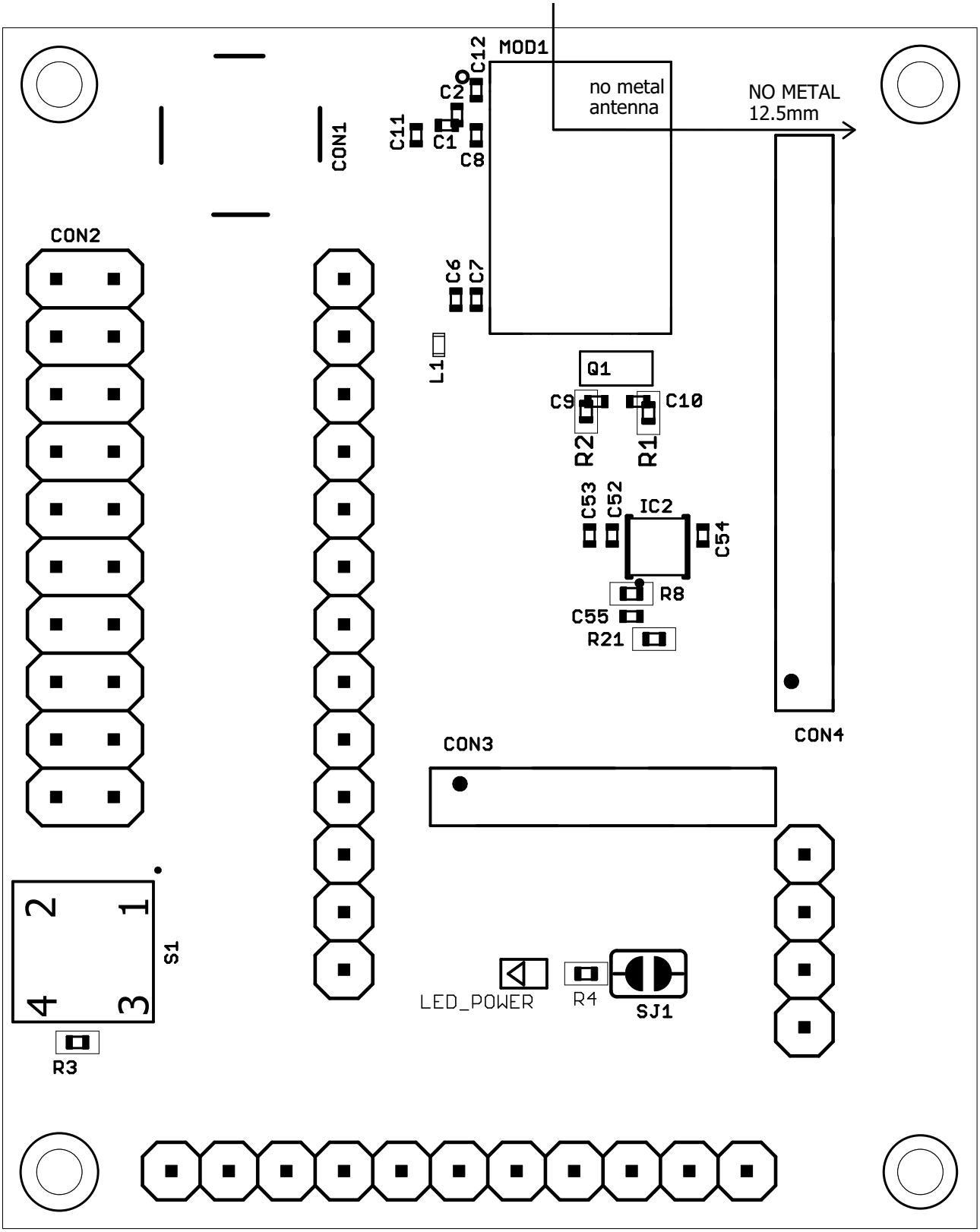

Figure 13: Assembly diagram

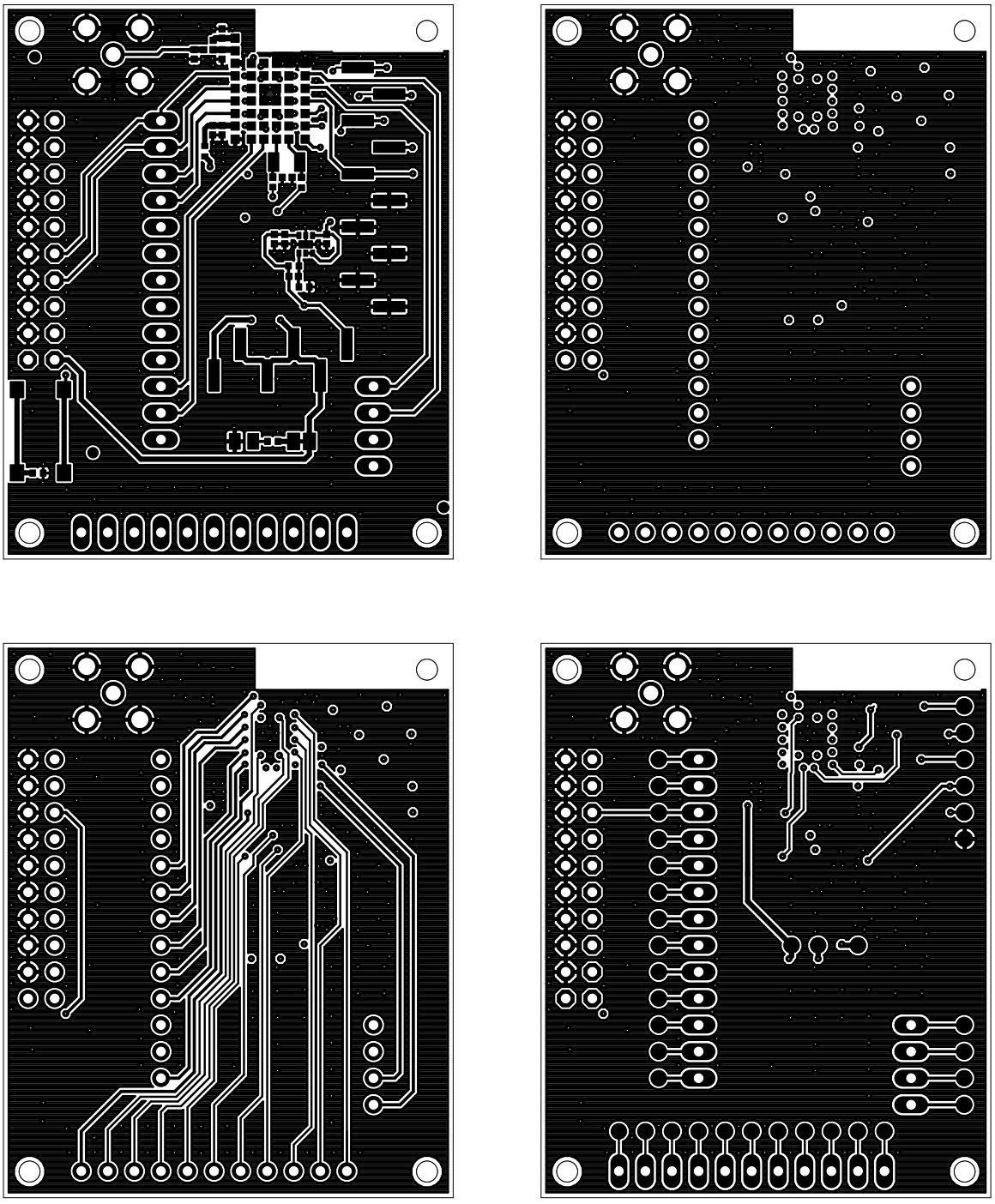

Figure 14: Top, bottom & internal layers

5.9 Bill of materials

Part	Value	Package	MANUFACTURER	NR
C1	n.m.	C0402_IPC		
C2	22pF	C0402_IPC	Würth Elektronik	885392005114
C6	1µF	C0402_IPC	Würth Elektronik	885012105012
C7	100nF	C0402_IPC	Würth Elektronik	885012205037
C8	n.m.	C0402_IPC		
C9	n.m.	C0402_IPC		
C10	n.m.	C0402_IPC		
C11	n.m.	C0402_IPC		
C12	n.m.	C0402_IPC		
C52	10µF	C0402_IPC	Würth Elektronik	885012105020
C53	100nF	C0402_IPC	Würth Elektronik	885012205037
C54	4µ7F	C0402_IPC	Würth Elektronik	885012105008
C55	22pF	C0402_IPC	Würth Elektronik	885012005057
CON1	n.m.	60312002114503		60312002114503
CON2	n.m.	2X10		61032021121
CON3	61030618221	61030618221	Würth Elektronik	61030618221
CON4	61031018221	61031018221	Würth Elektronik	61031018221
IC2	171010550	MAGI³C-VDMM_17101	Würth Elektronik	171010550
L1	7427927311	L0402_WE_FERRIT	Würth Elektronik	7427927311
LED_POWER	red	0805	Würth Elektronik	150080RS75000
MOD1	2621011020001	WE-FP-4++	Würth Elektronik	2621011020001
P1	n.m.	1X13		61301311121
P2	n.m.	1X04		61300411121
P3	n.m.	1X11		61301211121
Q1	n.m.	CC7V-T1A	Würth Elektronik	830009706
R1	0R	R0402_IPC	Yageo	RC0402FR-070RL
R2	0R	R0402_IPC	Yageo	RC0402FR-070RL
R3	10R	R0402_IPC	Yageo	RC0402FR-0710KL
R4	1KR	R0402_IPC	Yageo	RC0402FR-071KL
R8	100KR	R0402_IPC	Yageo	RC0402FR-07100KL
R21	36kR	R0402_IPC	Yageo	RC0402FR-0736KL
S1	430152043826	430152043826	Würth Elektronik	430152043826

Figure 15: BOM

6 Regulatory compliance information

6.1 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.

6.2 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".

6.3 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.

7 References

[1] Nordic Semiconductor. nRF Connect SDK. https://www.nordicsemi.com/Products/Development-software/nRF-Connect-SDK.

[2] Zephyr OS on GitHub. https://github.com/zephyrproject-rtos/zephyr.

[3] Zephyr Organization. https://zephyrproject.org/.

[4] Würth Elektronik. Application note 30 - nRFConnect. https://www.we-online.com/ANR030.

[5] Würth Elektronik. Application note 36 - Build your own firmware - getting started with Zephyr. https://www.we-online.com/ANR036.

[6] Würth Elektronik. Himalia. https://www.we-online.com/catalog/en/WIRL_ACCE_2600130021.

[7] Würth Elektronik. Ophelia-IV user manual. https://www.we-online.de/katalog/de/manual/2621011022000.

8 Important notes

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

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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.

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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.

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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.

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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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All the rights for contractual products produced by Würth Elektronik eiSos GmbH & Co. KG on the basis of ideas, development contracts as well as models or templates that are subject to copyright, patent or commercial protection supplied to the customer will remain with Würth Elektronik eiSos GmbH & Co. KG. Würth Elektronik eiSos GmbH & Co. KG does not warrant or represent that any license, either expressed or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, application, or process in which Würth Elektronik eiSos GmbH & Co. KG components or services are used.

General terms and conditions
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*.

9 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.

Exclusion of further rights and rights of use for intellectual property of 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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11 License terms

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