



WE866Cx M.2 Interface Adapter

HW User Guide

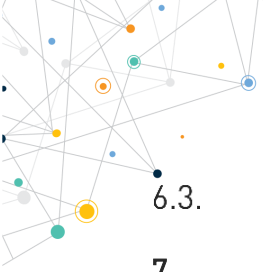
1VV0301533 Rev. 3 – 2022-03-10

APPLICABILITY TABLE

PRODUCTS
WE866C3
WE866C6

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1. INTRODUCTION

1.1. Scope

The scope of this document is to describe the M.2 interface board, which is the basic form of the WE866Cx Development platform.

1.2. Audience

This document is intended for Telit customers, especially system integrators, about to implement their applications using the Telit WE866Cx module.

1.3. Contact Information, Support

For general contact, technical support services, technical questions and report of documentation errors contact Telit Technical Support at:

- TS-EMEA@telit.com
- TS-AMERICAS@telit.com
- TS-APAC@telit.com
- TS-SRD@telit.com
- TS-ONEEDGE@telit.com

Alternatively, use:

<https://www.telit.com/contact-us>

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

<https://www.telit.com>

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates the user feedback on our information.

1.4. Symbol Conventions



Danger: This information **MUST** be followed, or catastrophic equipment failure or personal injury may occur.



Warning: Alerts the user on important steps about the module integration.



Note/Tip: Provides advice and suggestions that may be useful when integrating the module.



Electro-static Discharge: Notifies the user to take proper grounding precautions before handling the product.

Table 1: Symbol Conventions

All dates are in ISO 8601 format, that is YYYY-MM-DD.

1.5. Related Documents

- WE866C3 Hardware Design Guide, 1VW0301495
- WE866C6 Hardware Design Guide, 1VW0301658
- Telit Evaluation Board Hardware User Guide, 1VW0301249
- LE910Cx Multi Technology Interface Board TLB Hardware User Guide, 1VW0301508
- LE910Cx AT Command Reference Guide, 80502ST10950A

2. GENERAL DESCRIPTION

The M.2 Card provides the customer, the means to evaluate the WE866Cx Wi-Fi module capability, and an interface with the LE910Cx.

It is designed to interface the Telit LE910Cx module family on an IFBD with the Telit Generic Evaluation Board (EVB) and thus forming a complete Development Kit of LE910Cx.

2.1. Pairing Information Exchange

Figure 1, shows the top view of the M.2 Card mounted with WE866Cx module.



Figure 1: M.2 Card Top View

The card has no components on the bottom side.

2.2. Mounting Example on MT IFBD (MTB)

Figure 2, shows the M.2 plugged into the MTB.



Figure 2: M.2 Plugged into MTB

2.3. Detailed Description

This section provides details about the M.2 card, its connections and specifications.

2.3.1. M.2 Specification

The M.2, formerly known as the Next Generation Form Factor (NGFF), is a specification from 2013 for internally mounted computer expansion cards and associated connectors.

The Specification details the buses that can be exposed through the M.2 connector. The buses are PCI Express 3.0, Serial ATA (SATA) 3.0, and USB 3.0, which is backward compatible with USB 2.0. As a result, M.2 modules can integrate multiple functions, including the following device classes: Wi-Fi, Bluetooth, satellite navigation, near field communication (NFC), digital radio, Wireless Gigabit Alliance (WiGig), wireless WAN (WWAN), and solid-state drives (SSDs).

An M.2 module is installed into a mating connector provided by the host's circuit board, and a single mounting screw secures the module into place. Components may be mounted on either side of the module, with the actual module type limiting how thick the components can be; the maximum allowable thickness of components is 1.5 mm per side. Different host-side connectors are used for single and double-sided M.2 modules, providing different amounts of space between the M.2 expansion card and the host's PCB. The PCB of an M.2 module provides a 75-position edge connector. Depending on the type of module, certain pin positions are removed to present one or more keying notches.

2.3.2. WE866Cx M.2 Card

The WE866Cx M.2 card follows the below M.2 specification:

- SDIO based Socket 1
- 2230 size type
- Key type E

This form-factor card specification is intended to support Wireless Connectivity devices including combinations of Wi-Fi, BT, NFC, and/or GNSS.

The card includes a U.FL miniature RF connector for connecting a compatible Wi-Fi antenna.

3. M.2 CARD PINOUT

Table 2, describes the connector pin naming as well as the mapping and usage of each signal of the M.2 WIFI card.

M.2 Connector Pin Number	M.2 Pin Name	M.2 Spec Description	WE866Cx Usage
1	GND	GND	GND
3	USB_D+	USB2.0	NC
5	USB_D-		NC
7	GND	GND	GND
9	SDIO CLK	WIFI_SDIO_CLK	WIFI_SDIO_CLK
11	SDIO CMD	WIFI_SDIO_CMD	WIFI_SDIO_CMD
13	SDIO DATA0	WIFI_SDIO DATA0	WIFI_SDIO DATA0
15	SDIO DATA1	WIFI_SDIO DATA1	WIFI_SDIO DATA1
17	SDIO DATA2	WIFI_SDIO DATA2	WIFI_SDIO DATA2
19	SDIO DATA3	WIFI_SDIO DATA3	WIFI_SDIO DATA3
21	SDIO WAKE#	WIFI_WAKEUP	WOW (0)
23	SDIO RESET#	WIFI_RESET	WL_EN (I) & BT_EN (I)
25	ADD-IN CARD KEY E		
27			
29			
31			
33	GND	GND	GND
35	PERp0	PCIe_RX0_P	NC
37	PERn0	PCIe_RX0_N	NC
39	GND	GND	GND
41	PETp0	PCIe_TX0_P	NC
43	PETn0	PCIe_TX0_N	NC
45	GND	GND	GND
47	REFCLKp0	PCIe_CLK0_P	NC
49	REFCLKn0	PCIe_CLK0_N	NC
51	GND	GND	GND
53	CLKREQ0#	CLOCK REQUEST FROM CARD	NC
55	PEWAKE0#	PCIe WAKE#	NC

M.2 Connector Pin Number	M.2 Pin Name	M.2 Spec Description	WE866Cx Usage
57	GND	GND	GND
59	PERp1	PCI_RX1_P	NC
61	PERn1	PCI_RX1_N	NC
63	GND	GND	GND
65	PETp1	PCI_TX1_P	NC
67	PETn1	PCI_TX1_N	NC
69	GND	GND	GND
71	REFCLKp1	PCIe_CLK0_P	NC
73	REFCLKn1	PCIe_CLK0_N	NC
75	GND	GND	GND
2	3.3V	Card Main Power. Generated on IFBD from VBATT	VDD_3.3V
4			
6	LED_1#	Card Status 1	NC
8	PCM_CLK/I2S SCK	BT_AUDIO	I2S_SCK (I)
10	PCM_SYNC/I2S WS		I2S_SYNC (I)
12	PCM_OUT/I2S SD_OUT		I2S_SDO (O)
14	PCM_IN/I2S SD_IN		I2S_SDI (I)
16	LED_2#	Card Status 2	NC
18	GND	GND	GND
20	UART WAKE#	CARD_WAKEUP_HOST	NC
22	UART TXD	BT_TXD	HCI_TXD (O)
24	ADD-IN CARD KEY E		
26			
28			
30			
32	UART RXD	BT_RXD	HCI_RXD (I)
34	UART RTS	BT_RTS	HCI_RTS (O)
36	UART CTS	BT_CTS	HCI_CTS (I)
38	VENDOR_1	VENDOR_1	NC
40	VENDOR_2	VENDOR_2	VDDIO (1.8V from IFBD)
42	VENDOR_3	VENDOR_3	VDDIO (1.8V from IFBD)
44	COEX3	Coexistence RFU	NC

M.2 Connector Pin Number	M.2 Pin Name	M.2 Spec Description	WE866Cx Usage
46	COEX_TXD	WCI_TXD	WCI_TXD (O)
48	COEX_RXF	WCI_RXD	WCI_RXD (I)
50	SUSCLK	32KHz Clock in	LF_CLK_IN (I)
52	PERST0#	CARD_MAIN RESET	NC
54	W_DISABLE2	BT_PWRDN	NC
56	W_DISABLE1	WIFI_PWRDN	NC
58	I2C_DATA	I2C (For NFC)	NC
60	I2C_CLK		NC
62	ALERT#	IRQ To Host	NC
64	RFU	RFU	NC
66	UIM_SWP	NFC SWP (for SE)	NC
68	UIM_POWER_SNK	SIM POWER OUT	NC
70	UIM_POWER_SRC	SIM POWER IN	NC
72	3.3V	Card Main Power. Generated on IFBD from VBATT.	VDD_3.3V
74			

Table 2: M.2 Connector (J1)

4. COMPONENT ASSEMBLY DIAGRAM

4.1. Assembly Diagram

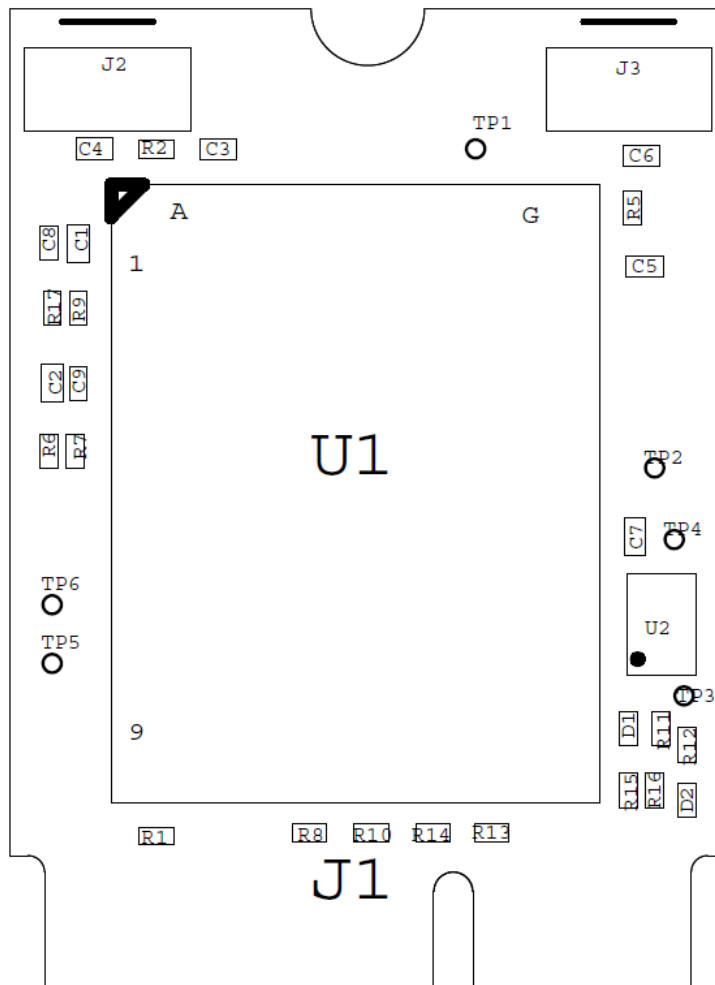


Figure 3: Component Diagram Top View

5. SCHEMATICS

Parts which are labelled as “DNP” in the schematic are not assembled.

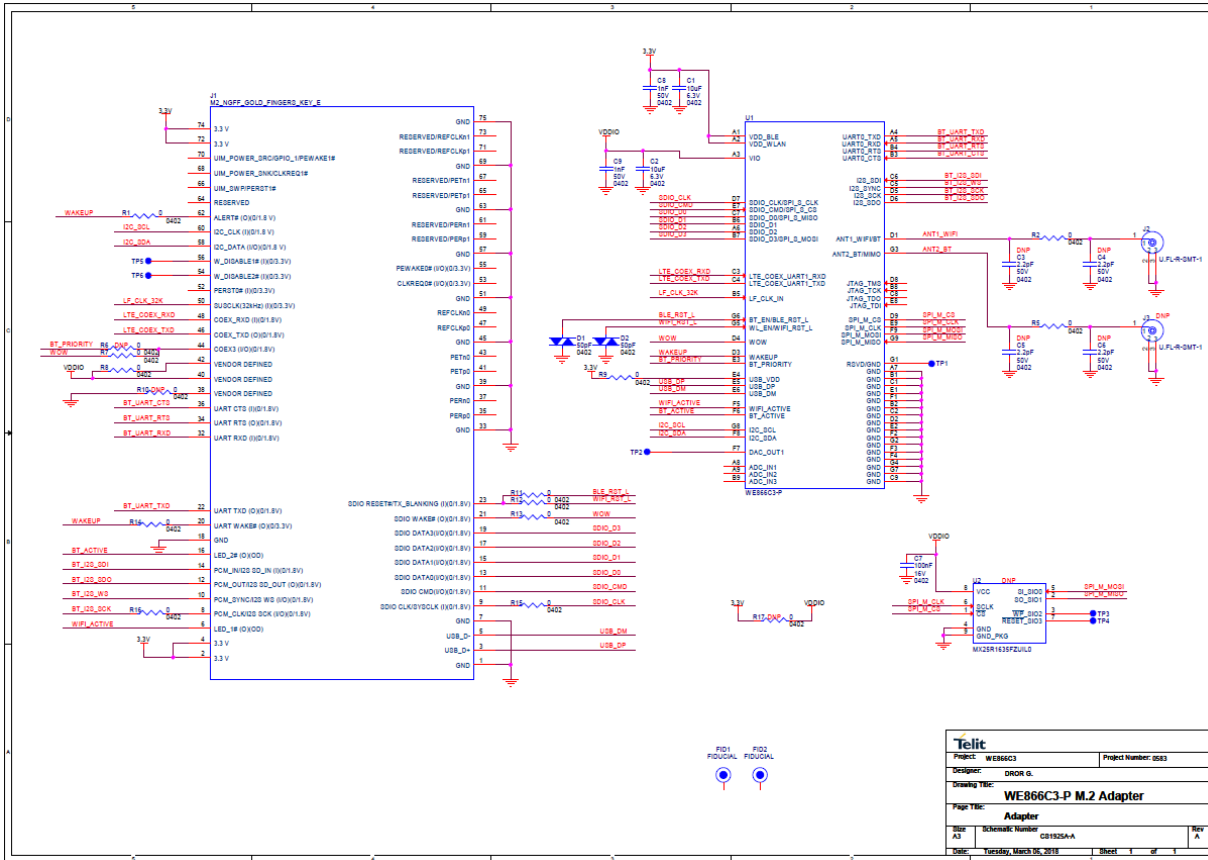


Figure 4: Schematic

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6.3. Safety Recommendations

Make sure the use of this product is allowed in your country and in the environment required. The use of this product may be dangerous and has to be avoided in areas where:

- it can interfere with other electronic devices, particularly in environments such as hospitals, airports, aircrafts, etc.
- there is a risk of explosion such as gasoline stations, oil refineries, etc. It is the responsibility of the user to enforce the country regulation and the specific environment regulation.

Do not disassemble the product; any mark of tampering will compromise the warranty validity. We recommend following the instructions of the hardware user guides for correct wiring of the product. The product has to be supplied with a stabilized voltage source and the wiring has to be conformed to the security and fire prevention regulations. The product has to be handled with care, avoiding any contact with the pins because electrostatic discharges may damage the product itself. Same cautions have to be taken for the SIM, checking carefully the instruction for its use. Do not insert or remove the SIM when the product is in power saving mode.

The system integrator is responsible for the functioning of the final product. Therefore, the external components of the module, as well as any project or installation issue, have to be handled with care. Any interference may cause the risk of disturbing the GSM network or external devices or having an impact on the security system. Should there be any doubt, please refer to the technical documentation and the regulations in force. Every module has to be equipped with a proper antenna with specific characteristics. The antenna has to be installed carefully in order to avoid any interference with other electronic devices and has to guarantee a minimum distance from the body (20 cm). In case this requirement cannot be satisfied, the system integrator has to assess the final product against the SAR regulation.

The equipment is intended to be installed in a restricted area location.

The equipment must be supplied by an external specific limited power source in compliance with the standard EN 62368-1:2014.

The European Community provides some Directives for the electronic equipment introduced on the market. All of the relevant information is available on the European Community website:

https://ec.europa.eu/growth/sectors/electrical-engineering_en

7. GLOSSARY

EVB	Evaluation Board
GPIO	General-purpose Input/Output
IFBD	Interface Board
MTB	Multi Technology Interface Board
SD	Secure Digital
UART	Universal asynchronous receiver transmitter
UMTS	Universal mobile telecommunications system
USB	Universal serial bus

8. DOCUMENT HISTORY


Revision	Date	Changes
3	2022-03-10	Template updated
2	2020-05-26	Changed template Changed the document name to "WE866Cx M.2 Interface Adapter Hardware User Guide" to incorporate WE866C6 module.
1	2018-05-14	First issue

From Mod.0818 rev.3



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