User manual

LM832 Wi-Fi & BT Dual Mode Combi Module

SDIO interface for WLAN

HS-UART interface for Bluetooth

Version: 1.0
Release date: 20160705

General Specification

Model Name	**LM832-0474**
Product Name	LM832 Wi-Fi & BT Dual Mode Combi Module ※SDIO interface for WLAN and HS-UART interface for Bluetooth
Standards	IEEE 802.11b/g/n/d/e/h/i Bluetooth v2.1+EDR/ v3.0/ v3.0+HS/ v4.1
Data Transfer Rate	WLAN: 802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: MCS0 to 7 for HT20MHz Bluetooth: Basic rate: 1Mbps Enhanced data rate: 2, 3 Mbps High Speed: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
Modulation Method	WLAN: 802.11b: CCK, DQPSK, DBPSK 802.11g: 64QAM, 16QAM, QPSK, BPSK 802.11n: 64QAM, 16QAM, QPSK, BPSK Bluetooth: 8DPSK, π/4 DQPSK, GFSKFSK
Operating Channel	WLAN 2.4GHz: 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan BT 2.4GHz: Ch. 0 to 78
Frequency Range	2.4GHz ISM band (2.400GHz to 2.4835 GHz)
Spread Spectrum	WLAN IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) WLAN IEEE 802.11g/n: OFDM (Orthogonal Frequency Division Multiplexing) Bluetooth: FHSS (Frequency Hopping Spread Spectrum)
RF Output Power (tolerance ±1.5dBm)	WLAN: 17dBm – 802.11b@11Mbps 15dBm – 802.11g@6Mbps 15dBm – 802.11g@54Mbps 13dBm – 802.11n@MCS0_HT20 13dBm – 802.11n@MCS7_HT20 Bluetooth: Output Power : Class1
Network architecture	WLAN: Ad hoc mode (Peer-to-Peer) Infrastructure mode Software AP WiFi Direct BT: Pico Net Scatternet
Receiver Sensitivity	WLAN: -76dBm – 802.11b@11Mbps -65dBm – 802.11g@54MBps -64dBm – 802.11n@MCS7_HT20 Bluetooth: -89dBm@1Mbps -90dBm@2Mbps -83dBm@3Mbps
OS Support	Windows XP/ Linux/ Android
Security	WLAN: WEP, WPA Personal, WPA2 Personal, WMM, WMM-PS(U-APSD), WMM-SA, WAPI, AES(Hardware Accelerator), TKIP(host-computed), CKIP(SW Support)

	BT: Simple Paring
Bus interface	WLAN: SDIO 2.0 BT: High Speed UART
Operating Temperature	-20 ~ 60° C ambient temperature 5 to 90 % (non-condensing)
Storage Temperature	-20 ~ 70°C ambient temperature 0 to 95 % (non-condensing)
Dimension	19 x 12 x 2 mm (LxWxH)

1. Power Supply

The module supports SDIO bus power level DC 3.3V, 2.8V or 1.8V. If the voltage level of SDIO bus is DC 3.3V, like most PC or NB, then CM-43438-V1 can be powered by this single DC 3.3V from SDIO bus. But if the voltage level of SDIO bus is DC 2.8V or 1.8V, most the embedded platforms.

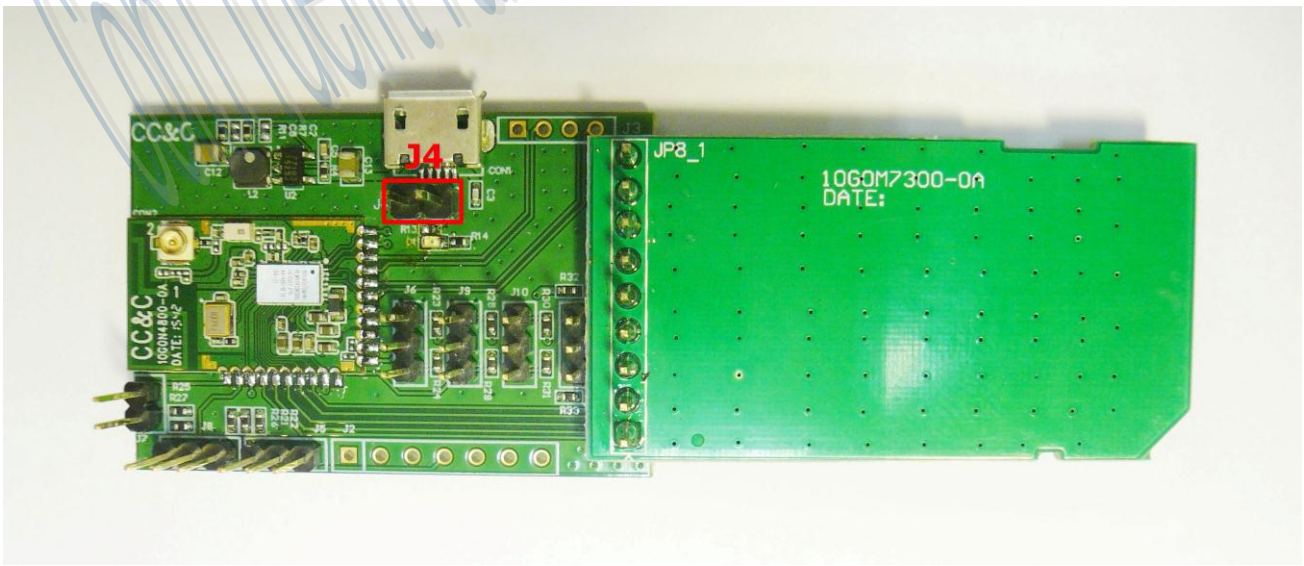
SDIO bus power Supply	3.3V	2.8V	1.8V
Jumper 4	Short Jumper4 (Plug in jumper connector)	Open Jumper4 (Remove jumper connector)	Open Jumper4 (Remove jumper connector)

WiFi interface and SDIO bus power option

The WiFi interface on LM832-0474 is SDIO, and it works under different SDIO bus power conditions such as DC 3.3V, 2.8V or 1.8V.

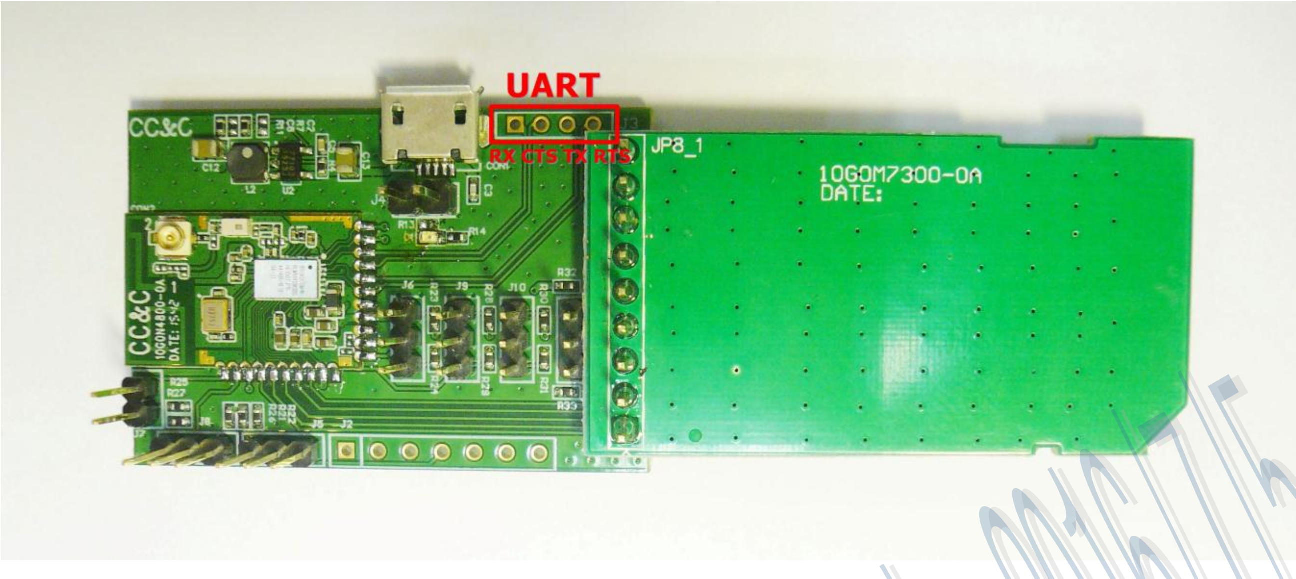
Please open the connector of J4 to provide an additional DC 3.3V power supply to CM-43438-V1 when it be used under SDIO bus power of DC 2.8V or 1.8V(The additional DC 3.3V is supplied from a PWM circuit from power of micro-USB, so remember to connect DC power into the micro-USB).

Please close the connector of J4 when SDIO bus power is DC 3.3V.



Bluetooth interface

The Bluetooth interface on LM832-0474 is through UART, provided signal of UART Tx, Rx, RTS, CTS pins.



2. Power on sequence

1. Use an USB cable to connect the USB connector of EVB to a PC USB port, to supply DC 5V to EVB.
2. Plug in SD adapter into your target platform.
3. Your platform will acknowledge the CM-43438-V1 module.

FCC Warning

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.

Note 1: This module certified that complies with RF exposure requirement under mobile or fixed condition, this module is to be installed only in mobile or fixed applications.

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

Note 2: Any modifications made to the module will void the Grant of Certification, this module is limited to OEM installation only and must not be sold to end-users, end-user has no manual instructions to remove or install the device, only software or operating procedure shall be placed in the end-user operating manual of final products.

Note 3: The device must not transmit simultaneously with any other antenna or transmitter.

Note 4: To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. For example, if a host was previously authorized as an unintentional radiator under the Supplier’s Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is responsible for ensuring that the after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements. Since this may depend on the details of how the module is integrated with the host, LM Technologies Ltd. shall provide guidance to the host manufacturer for compliance with the Part 15B requirements.

Note 5: FCC ID label on the final system must be labeled with “Contains FCC ID: VVXLM832-0474” or “Contains transmitter module FCC ID: VVXLM832-0474”.

The transmitter module must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the host product. LM Technologies Ltd. is responsible for the compliance of the module in all final hosts.