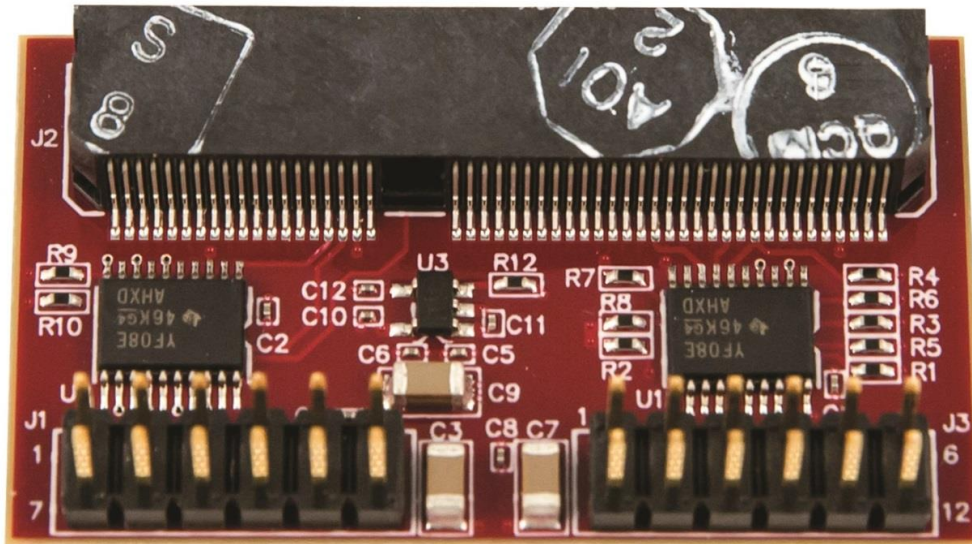

WiLink™ 8

Pmod Adaptor

(Wi-Fi & Bluetooth interface board)

Hardware User Guide

Revision 1.0
15 Dec 2014



1 Introduction

The TI WiLink™ 8 Pmod Adaptor is used to interface WiLink™ 8 Wi-Fi and Bluetooth/BLE evaluation boards from Texas Instruments via a Pmod compatible interface to “Zed-series” Avnet boards (MicroZed, Zedboard, PicoZed).

At this time the following two boards from TI are supported:
WL1835MODCOM8B (2.4 GHz) and
WL1837MODCOM8I (2.4 GHz/5.0 GHz, Industrial temperature grade)

The WiLink™ 8 board provides the necessary voltage level translations to and from Pmod compatible interfaces.

1.1 Features

The WiLink™ 8 Adaptor facilitates the use of TI’s [WL1835MODCOM8B](#) Wi-Fi and BT/BLE module.

Features of this wireless solution include the following:

- WLAN, Bluetooth, BLE on a module board
- WLAN 2.4 GHz SISO (20- and 40-MHz channels), 2.4-GHz MIMO (20-MHz channels)
- Support for BLE dual mode
- Seamless integration with Xilinx Zynq, TI Sitara and other application processors
- Can be used with Avnet Zynq based boards or TI AM335X general-purpose EVM
- WLAN and Bluetooth, BLE cores are software and hardware compatible with prior WL127x, WL128x and CC256x offerings, facilitating an easy migration to device.
- Shared HCI transport for Bluetooth and BLE over UART and SDIO for WLAN.
- Wi-Fi / Bluetooth single antenna co-existence
- Built-in chip antenna as well as U.FL RF connectors for optional external 2.4-GHz band antenna
- Bidirectional 3.3V & 1.8V voltage level translation on each Pmod connector.
- VCCPmod power input – 3.3VDC on each Pmod connector
- On board 1.8V Linear LDO regulator ensures reliable VIO voltage, current and noise margins.

1.2 Interfaces

- Two Pmod male headers connections J1 and J3.
- J2 surface mount WL1835 COM module interface connector.

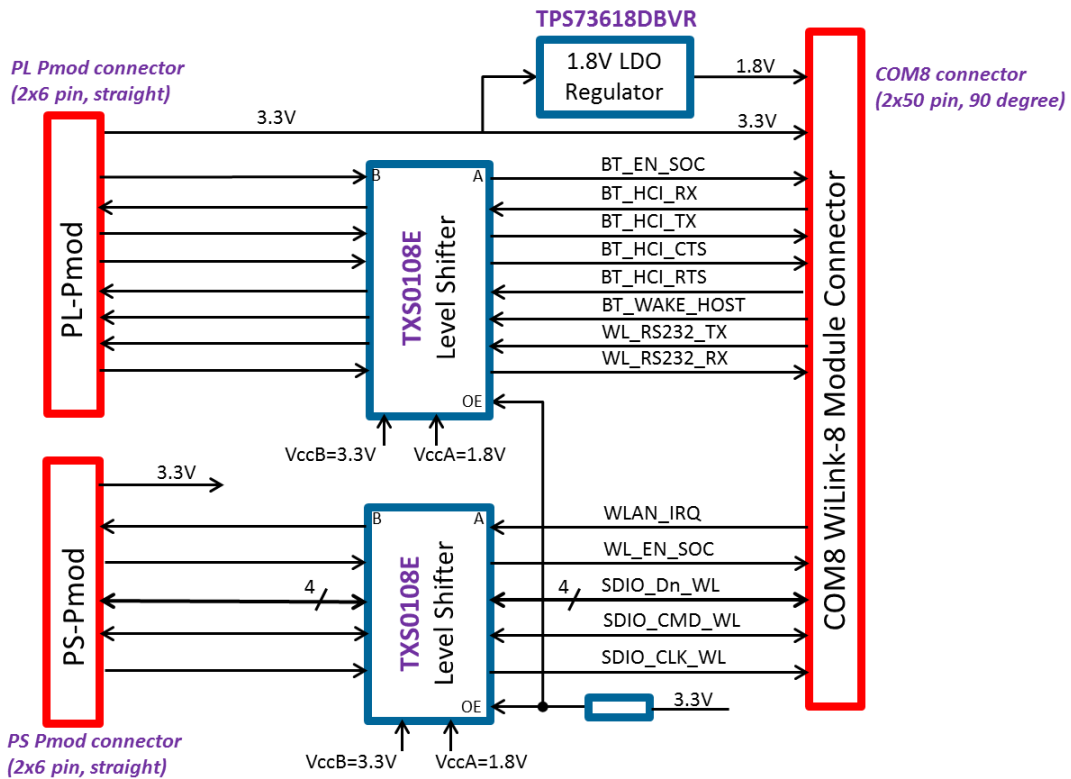


Figure 1 – TI WiLink™ 8 Block Diagram

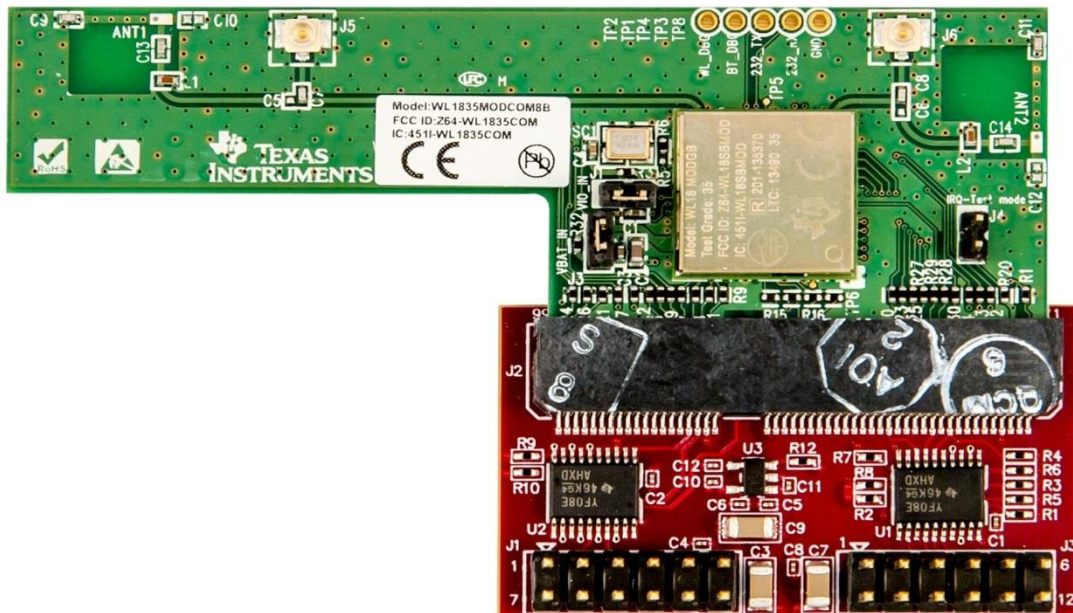


Figure 2 – TI WiLink™ 8 Module with TI WL module attached

1.3 Pmod-PS (SDIO based WLAN Interface)

- SDIO 4-lane interface routed via Zynq MIO pins
- 3.3V logic levels, signal names at the Pmod connectors as shown below are suffixed with an “_X” (as they connect to Xilinx device)

Wi-Fi Interface		FPGA
Pmod Pin#	Signal Name	In/Out
1	SDIO_D1_WL_X	IO
2	SDIO_D0_WL_X	IO
3	SDIO_CMD_WL_X	Out
4	SDIO_CLK_WL_X	Out
7	WLAN_IRQ_X	In
8	WL_EN_SOC_X	Out
9	SDIO_D2_WL_X	IO
10	SDIO_D3_WL_X	IO

Table 1 – Pmod-PS Interface Connections

1.4 Pmod-PL (UART based BT/BLE Interface)

- UART interface routed via Zynq EMIO pins
- 3.3V logic levels, signal names are suffixed with “_X” (as they connect to Xilinx device)

Bluetooth Interface		
Pmod Pin#	Signal Name	In/Out
1	BT_HCI_CTS_X	In
2	BT_HCI_TX_X	Out
3	BT_HCI_RX_X	In
4	BT_HCI_RTS_X	Out
7	BT_EN_SOC_X	In
8	BT_WAKE_HOST_X	Out
9	WL_RS232_TX_X	Out
10	WL_RS232_RX_X	In

Table 2 – Pmod-PS Interface Connections

1.5 COM8 100 pin Wireless Module Connector

- Edge-Connector with 2x50 contacts (2-100 on component side, 1-99 on underside)
- Only a subset of these signals are required to be routed on the Adaptor for full functionality.

COM Module Connector		WL1835	Comments
COM Pin#	Signal Name	In/Out	
4	WL_EN_SOC	In	
11	WL_RS232_TX	Out	
13	WL_RS232_RX	In	
15	WL_UART_DBG	IO	TP1
20	SDIO_CLK_WL	In	
24	SDIO_CMD_WL	In	
26	SDIO_D0_WL	IO	
28	SDIO_D1_WL	IO	
30	SDIO_D2_WL	IO	
32	SDIO_D3_WL	IO	
34	WLAN_IRQ_WL	Out	Wi-Fi Interrupt
52	BT_AUD_CLK	IO	TP2
54	BT_AUD_FSYNC	IO	TP3
56	BT_AUD_IN	In	TP4
58	BT_AUD_OUT	Out	TP5
66	BT_HCI_TX	Out	
68	BT_HCI_RX	In	
70	BT_HCI_CTS	In	
72	BT_HCI_RTS	Out	
74	BT_WAKE_HOST	Out	wake the host from Bluetooth
76	BT_UART_DBG	IO	TP7
78	GPIO9	IO	User GPIO
89	BT_EN_SOC	In	
93	BT_FUNC2	IO	TP11
96	GPIO11	IO	TP8
98	GPIO12	IO	TP9
100	GPIO10	IO	TP10
5, 7,	VCCPmod	In	3.3V
8	VIO	In	1.8V
2, 3, 6, 9, 18, 19, 22, 37, 42, 47, 60, 63, 64, 77, 83, 87, 92, 95, 97	GND	GND	GND

Table 3 – Pmod-PS Interface Connections

1.6 Power

1.6.1 Power Input

The board is powered via the Pmod J1 and Pmod J3 connector. Both 3.3V rails are joined on one VCCPmod plane.

1.6.2 Voltage Regulator

The 1.8V precision LDO regulator is a TI TPS73618DBVR SOT23-5 IC. This part features a very low drop out voltage (200mV max at full current) and a high current source capability (400mA) for its form factor. The device also features a 1% output precision under all line, load and thermal conditions. For further device information please see the TI datasheet.

The table below shows the minimum required voltage rails, currents, and tolerances.

Table 3 – Voltage Rails w/ Current Estimates

Voltage (V)	Tolerance	IC	Notes
3.3V (VCCPmod)	10%	N/A	Pmod Vin, <1000mA
1.8V VCCIO	1%	U3, TPS73618DBV	400mA capable

1.6.3 Bypassing/Decoupling

The TI WiLink™ 8 follows the recommended decoupling techniques per each manufacturer's datasheet.

2 Mechanical

2.1 Dimensions:

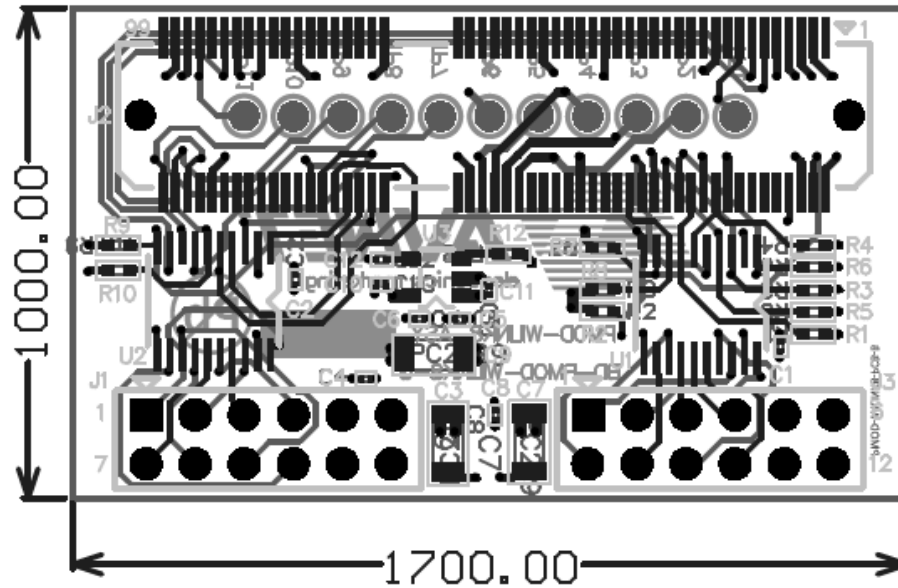


Figure 5: TI WiLink-8 Dimensions (mils)

2.2 Weight:

The weight of the WiLink™ 8 adaptor is 8 grams (~0.25 ounces) standalone and 15 grams (~0.5 oz) with a TI Wi-Fi module inserted.