COM6L-BLE

User Guide

Last updated
August 30th, 2012

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1 Introduction

1.1 Purpose & Scope

The purpose of this document is to provide details regarding the setup and use of the COM6L-BLE board. This document covers a description of the COM6L-BLE board and its features.

1.2 Applicable Documents

- *TiWi-BLE Datasheet* (*330-0087)*
- *LSR 2.4 GHz Antenna Datasheet (330-0016)*

1.3 Revision History

Date	Change Description	Revision
8-30-2012	Initial release	1.0

Table 1 Revision History

2 COM6L-BLE Board Description

The COM6L-BLE Board is an evaluation platform for the LS Research TiWi-BLE 802.11 b/g/n Wi-Fi, Bluetooth, and Bluetooth Low Energy (BLE) module.

Interfacing to the TiWi-BLE module mounted to the COM6L-BLE board is made through the 100 pin card-edge connector. This connector is a common interface to many of Texas Instruments MPU development platforms.

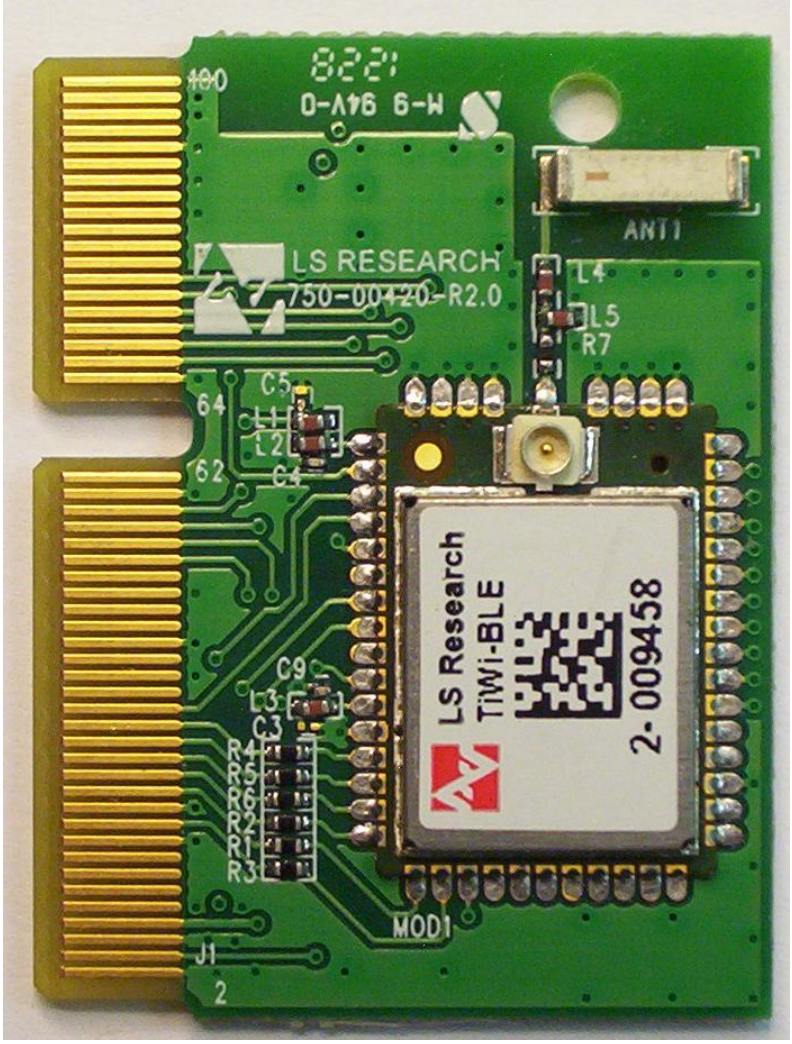

Figure 1 COM6L-BLE Board with TiWi-BLE Module (Top View)

3 COM6L-BLE Board Hardware

3.1 Antennas

The COM6L-BLE board has two antenna options:

1) On-board chip antenna.
2) External dipole antenna used in combination with U.FL to Reverse Polarity SMA cable, via the U.FL connector on the TiWi-BLE module.

	Part Number	Description
	LS Research 001-0001	2.4 GHz Dipole Antenna with Reverse Polarity SMA Connector
	LS Research 080-0001	U.FL to Reverse Polarity SMA Bulkhead Cable 105mm
	Johanson 2450AT43B100	2.4 GHz Ceramic Chip Antenna

Table 2 COM6L-BLE External Antenna Solution

3.1.1 Dipole Antenna

The LSR 001-0001 2.4 GHz Dipole Antenna is used in conjunction with the LSR 080-0001 U.FL to Reverse Polarity SMA Cable, and the Hirose U.FL connector mounted to the TiWi-BLE module, to provide an externally mounted antenna solution for the COM6L board. This is the default configuration that the COM6L-BLE comes with.

Since this module and its associated set of approved antennas has been certified by the FCC and Industry Canada (IC) as a Modular Radio, the end user is authorized to integrate this module into an end-product, and is solely responsible for the Unintentional Emissions levels produced by the end-product.

3.1.2 Chip Antenna

The default configuration uses the on module U.FL connector and dipole antenna. To use the off module chip antenna the 0 ohm resistor R7 needs to be populated. See Figure 2, Figure 3, and Section 3.5.

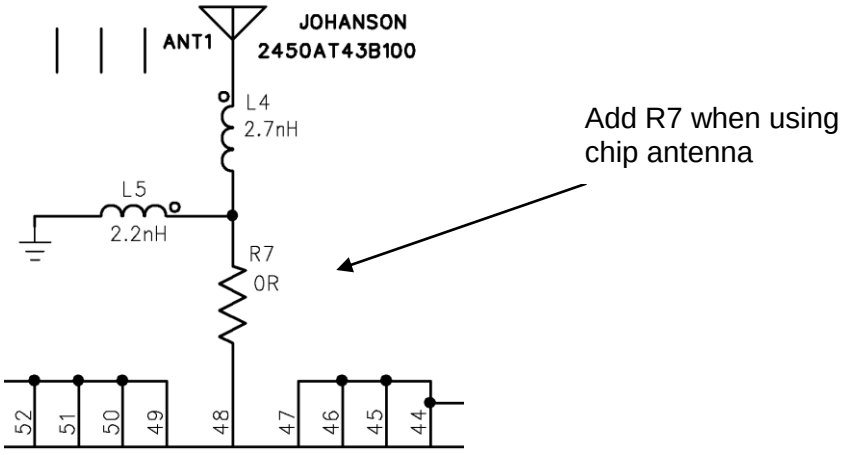

Figure 2 Selecting Antenna Option

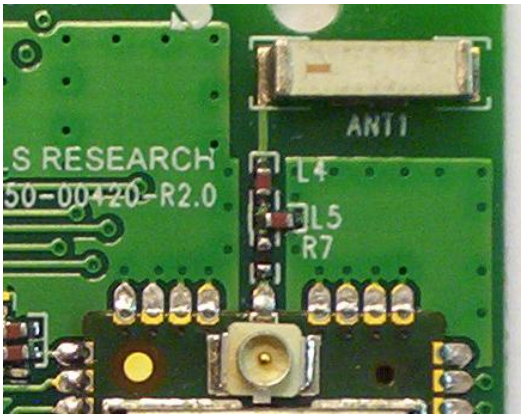

Figure 3 COM6L-BLE Antenna Closeup

3.2 Connectors

The primary connector on the COM6L Board is the 100 pin (50 on each side) edge connector J1. It is integral to the PCB and mates with Samtec connector MEC6-150-02-L-D-RA1.

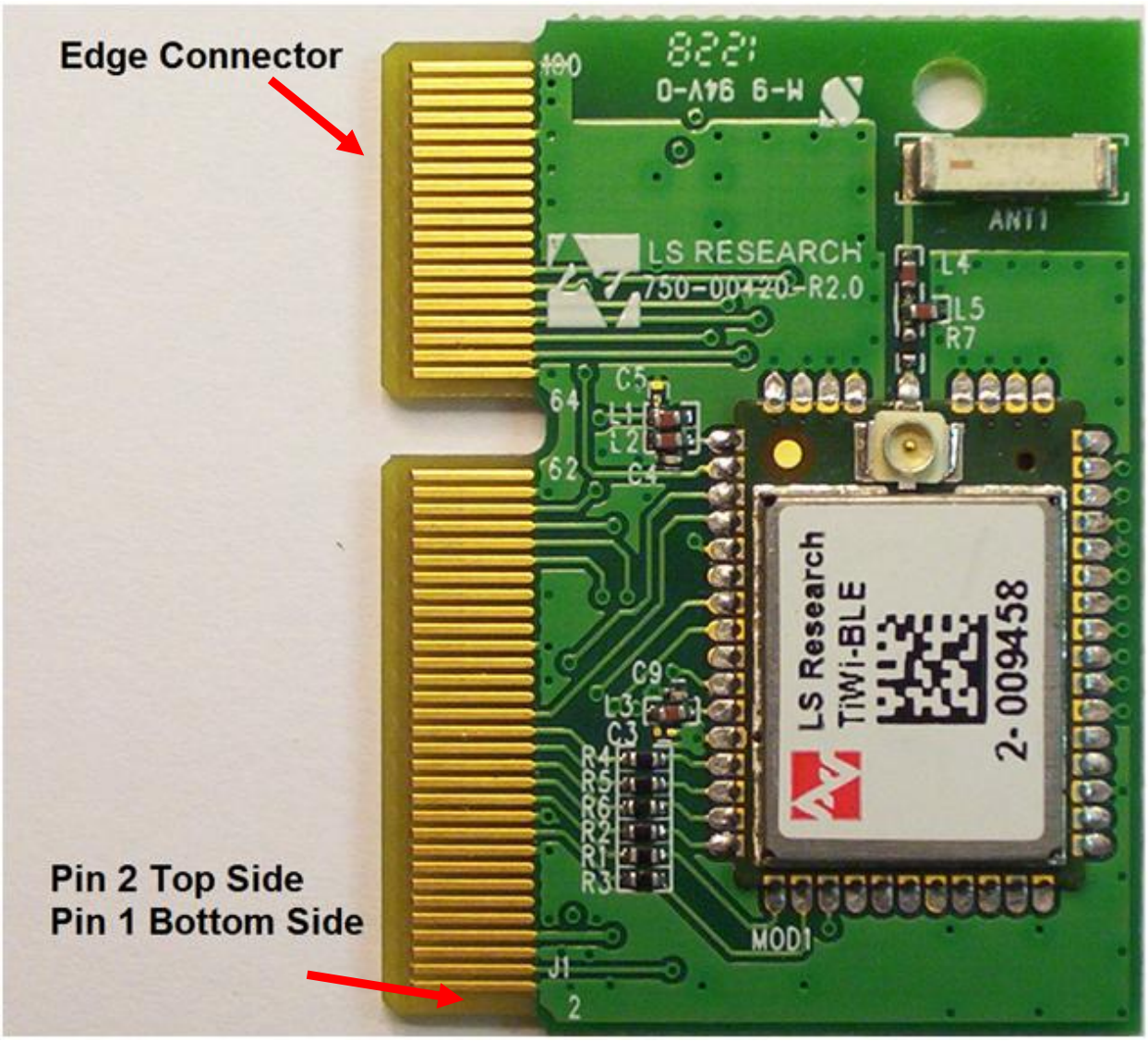

Figure 4 COM6L-BLE Board Cnnector

Figure 5 COM6L-BLE Mating Connector (Samtec MEC6-150-02-L-D-RA1)

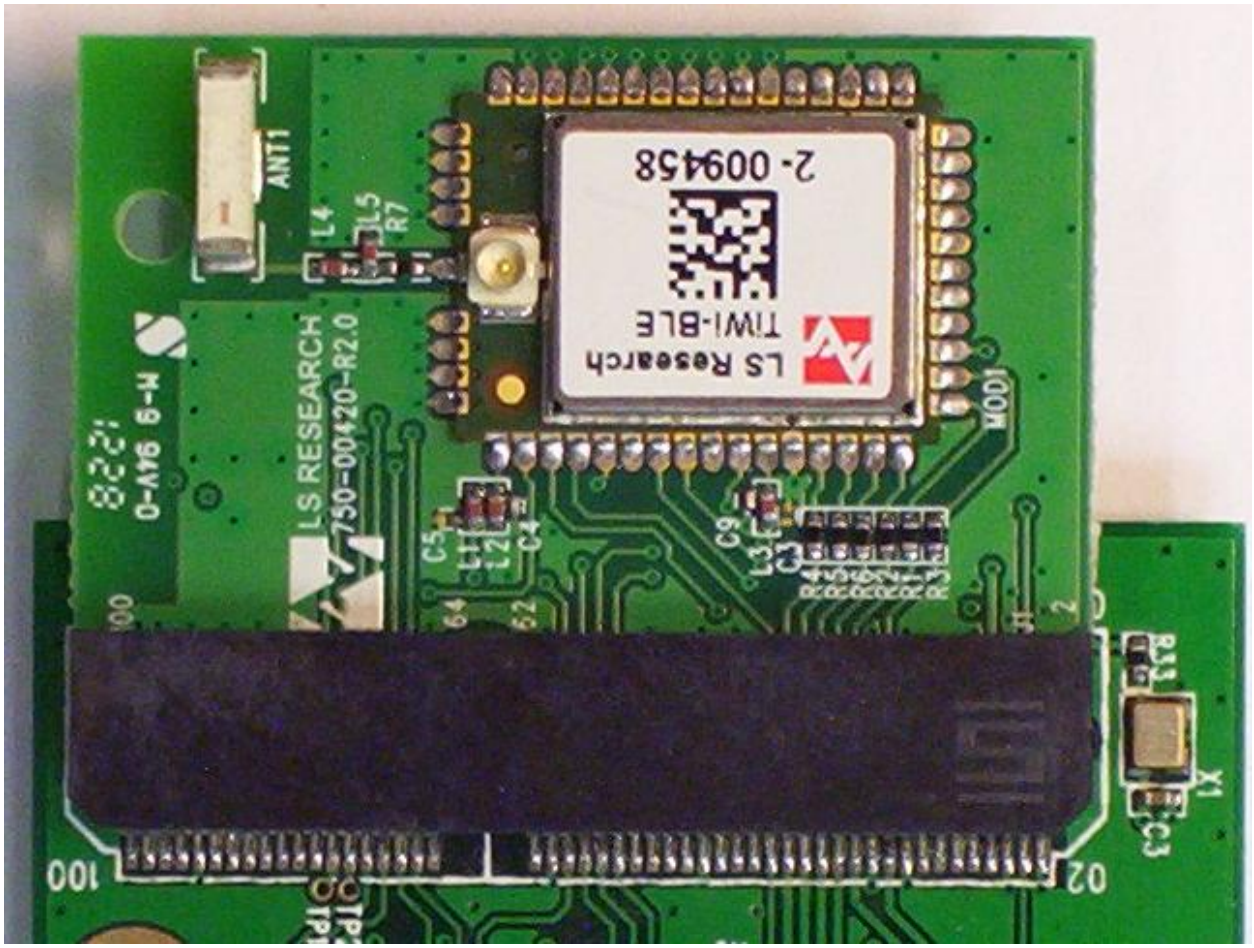

Figure 6 COM6L-BLE Attached to Host PCB with Mating Connector

3.3 Required Signals for COM6L-BLE Connector

Not all pins on the COM6L-BLE edge connector are used for the TiWi-BLE module. Table 3 outlines the active pins. All pins not specifically listed in Table 3 are left unconnected on the COM6L-BLE PCB.

Connector Pin	Name	Description
1	SLOW_CLK	SLEEP CLOCK (32 kHz), 1.8 VDC DIGITAL DOMAIN
2	GND	Ground
3	GND	Ground
4	WLAN_EN	WLAN Enable
5	3V6	3.6 VDC Nominal (3.0-4.8 VDC)
6	GND	Ground
7	3V6	3.6 VDC Nominal (3.0-4.8 VDC)
8	1V8	POWER SUPPLY FOR 1.8 VDC DIGITAL DOMAIN
9	GND	Ground
11	WL_RS232_TX	WLAN TEST UART TX (*)
13	WL_RS232_RX	WLAN TEST UART RX (*)
15	WL_UART_DGB	WL_UART_DBG
18	GND	Ground
19	GND	Ground
20	SDIO_CLK	SDIO_CLK HOST PULL UP REQUIRED
22	GND	Ground
24	SDIO_CMD	SDIO_CMD HOST PULL UP REQUIRED
26	SDIO_D0	SDIO INTERFACE, HOST PULL UP REQUIRED
28	SDIO_D1	SDIO INTERFACE, HOST PULL UP REQUIRED
30	SDIO_D2	SDIO INTERFACE, HOST PULL UP REQUIRED
32	SDIO_D3	SDIO INTERFACE, HOST PULL UP REQUIRED
34	WLAN_IRQ	WLAN Interrupt Request
37	GND	Ground
42	GND	Ground
47	GND	Ground
52	AUD_CLK	PCM I/F or FM_I2S_CLK (*)
54	AUD_FSYNC	PCM I/F or FM_I2S_FSYNC

Connector Pin	Name	Description
56	AUD_IN	PCM I/F or FM_I2S_DI (*)
58	AUD_OUT	PCM I/F or FM_I2S_DO (*)
60	GND	Ground
63	GND	Ground
64	GND	Ground
66	HCI_TX	Bluetooth UART TX
68	HCI_RX	Bluetooth UART RX
70	HCI_CTS	Bluetooth UART CTS
72	HCI_RTS	Bluetooth UART RTS
74	HOST_WU	Host Wake Up
76	BT_UART_DBG	Bluetooth UARTD (DEBUG) (*)
87	GND	Ground
89	BT_EN	Bluetooth Enable
93	BT_WAKE_UP	Bluetooth Wake Up/ DC2DC mode (*)
95	GND	Ground
97	GND	Ground

Table 3 TiWi-BLE Edge Card Pinout

(*) indicates that pin is capable of bidirectional operation, but is used as the type shown.

All pins not specifically listed in Table 3 **are left unconnected on the COM6L-BLE PCB.**

3.4 Connecting COM6L-BLE Board to Host Platform

The COM6L-BLE Board is intended to allow for evaluation of and early development with a TiWi-BLE module. The interface to COM6L-BLE Board meets all the requirements of the Texas Instruments COM (Connectivity On Module) solutions. The COM6L-BLE with the TiWi-BLE module can be readily interfaced to the following Texas Instruments MPU Platforms:

- BeagleBoard (with COM6L to BeagleBoard Adapter Card)
- BeagleBoard-xM (with COM6L to BeagleBoard Adapter Card)
- Mistral OMAP35x
- Mistral AM37x Board
- Centaurus AM387x

Information about the specific Platforms can be found at the following web sites:

Wireless Connectivity Solutions

Low Power RF & Wireless Connectivity Section of the TI E2E Support Community

Texas Instruments Embedded Processors Wiki

beagleboard.org

Mistral Solutions

3.5 Schematic

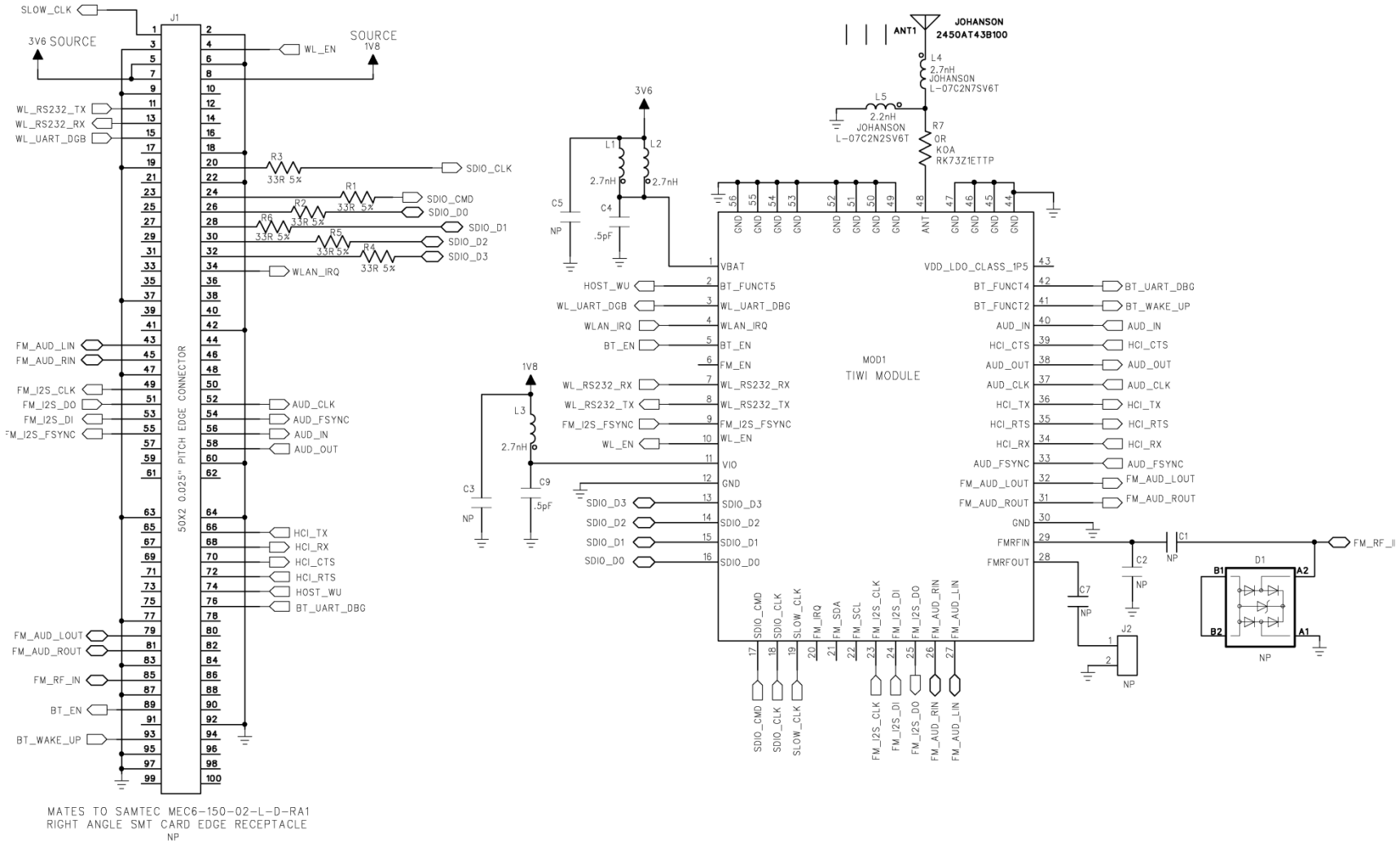

Figure 7 COM6L-BLE Board Schematics

3.6 Bill Of Material (BOM)

Reference Designator	Description
D1	LOW CAPACITANCE ESD SUPPRESSOR FOR USB
J1	50X2 0.025" PITCH EDGE CONNECTOR
J3	2 PIN 0.1" HEADER
MOD1	TIWI-BLE U.FL MODULE
PCB1	BARE PRINTED CIRCUIT BOARD
R1 R2 R3 R4 R5 R6	THICK FILM 0402 SMT RESISTOR

Table 4 COM6L-BLE Board BOM

4 Contacting LS Research

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