



# PremierWave® 2050 Through-Hole Adapter Integration Guide

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This equipment has to be tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

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.

This device is intended only for OEM Integrators. The OEM integrator should be aware of the following important considerations.

## Labeling of the End Product

The label on the end product incorporating the PremierWave 2050 module must clearly state that it contains an FCC-approved RF module. Canada and Japan also require a similar statement.

For example, "This product contains RF transmitter ID # (put FCC, IC, CMIIT, and/or Japan module grant numbers here)." The label must include the ID numbers for the regions where the end product is installed. The grant numbers are below.

- ◆ PremierWave 2050 FCC ID number: R68PW2050
- ◆ PremierWave 2050 IC ID number: 3867A-PW2050
- ◆ PremierWave 2050 Japan ID numbers: 201-152843
- ◆ PremierWave 2050 China SRRC CMIIT ID: 2015AJ6847 (M)

## RSS-GEN Sections 7.1.4 and 7.1.5 Statement for Devices with Detachable Antennas

This device has been designed to operate with the antennas listed in the Certificate, and having a maximum gain of 5.5 dBi. Antennas not included in this list or having a gain greater than 5.5 dBi are strictly prohibited for use with this device, unless system level approval is gained. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

## Integration Notes

This module is authorized under limited module approval specific to mobile host equipment. The antenna must be installed with a 20 cm space maintained between the antenna and users.

The transmitter module may not be co-located with any other transmitter or antenna.

As long as the two conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end product for any additional compliance requirements required with this module installed (for example, digital device emission, PC peripheral requirements, etc.)

In the event that these conditions cannot be met (for example certain laptop configurations, general purpose PCMCIA or similar cards, or co-location with another transmitter) and obtaining a separate FCC authorization will be required, then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product (including the transmitter).

Changes or modifications to this device not explicitly approved by Lantronix will void the user's authority to operate this device and will void all warranties.

**Note:** *With the purchase of any PremierWave 2050 family product, the OEM agrees to an OEM firmware license agreement that grants the OEM a non-exclusive, royalty-free firmware license to use and distribute the binary firmware image provided, only to the extent necessary to use the PremierWave 2050 hardware. For further details, please see the PremierWave 2050 OEM firmware license agreement.*

**Note:** *Please refer to the PremierWave 2050 802.11ac Embedded Wi-Fi Gateway Datasheet, available at [www.lantronix.com/support/documentation](http://www.lantronix.com/support/documentation), for the full compliance specification and requirements.*

## Warranty

For details on the Lantronix warranty policy, please go to our Web site at [www.lantronix.com/support/warranty](http://www.lantronix.com/support/warranty).

## Revision History

Date	Rev.	Comments
August 2017	A	Initial document.

For the latest revision of this product document, please check our online documentation at [www.lantronix.com/support/documentation](http://www.lantronix.com/support/documentation).

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## Table of Contents

Intellectual Property _____	2
Contacts _____	2
Disclaimer _____	2
Labeling of the End Product _____	3
Integration Notes _____	4
Warranty _____	4
Revision History _____	4
List of Figures _____	6
List of Tables _____	6
<b>1: Introduction</b> _____	<b>7</b>
About the Integration Guide _____	7
Additional Documentation _____	8
<b>2: Functional Description</b> _____	<b>9</b>
PremierWave 2050 Features _____	9
PremierWave 2050 (PW20503) Block Diagram _____	11
Signal Descriptions _____	12
Antenna Interface _____	14
Antenna Placement _____	16
Serial Interface _____	16
Ethernet Interface _____	18
LEDs _____	20
General Purpose I/O Pins _____	20
Reset Pins _____	21
<b>3: PCB Footprint and Module Dimensions</b> _____	<b>22</b>
Access CAD Files _____	22
MSD (Moisture Sensitive Device) Control for the Module _____	24
Product Information Label _____	24
Evaluation Board Schematic _____	25

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## List of Figures

Figure 2-1 PremierWave 2050 (PW20503) Dimensions and Views	10
Figure 2-2 PremierWave 2050 (PW20503) Block Diagram	11
Figure 2-3 PremierWave 2050 (PW20503) Pin Locations in mm (inch)	14
Figure 2-4 Reverse-SMA to U.FL (Long) (Lantronix Part Number 500-180-R-ACC)	15
Figure 2-5 U.FL to U.FL Cable (Lantronix Part Number 500-181-R-ACC)	15
Figure 2-6 Reverse-SMA to U.FL (short) (Lantronix Part Number 500-182-R-ACC)	15
Figure 2-7 Serial Port Example	17
Figure 2-8 Ethernet Connections to an External 10/100 RJ45 Magnetic Jack (J5)	19
Figure 2-9 Recommended Use of SHDN Signal to Shut Off External Power Rail	21
Figure 3-1 PremierWave 2050 (PW20503) Recommended Footprint in mm (inch)	22
Figure 3-2 PremierWave 2050 (PW20503) Module Dimensions	23
Figure 3-3 PremierWave 2050 Product Label	24
Figure 3-4 Evaluation Board Schematic (1 of 6)	25
Figure 3-5 Evaluation Board Schematic (2 of 6)	26
Figure 3-6 Evaluation Board Schematic (3 of 6)	27
Figure 3-7 Evaluation Board Schematic (4 of 6)	28
Figure 3-8 Evaluation Board Schematic (5 of 6)	29
Figure 3-9 Evaluation Board Schematic (6 of 6)	30

## List of Tables

Table 1-1 PremierWave 2050 Through-Hole Adapter Integration Guide Sections	7
Table 2-1 PremierWave 2050 Part Numbers	9
Table 2-2 PremierWave 2050 (PW20503) PCB Interface Signals	12
Table 2-3 PremierWave 2050 External Antenna Options	14
Table 2-4 PremierWave 2050 Serial Port Signals	16
Table 2-5 Example RS232 Connections (Serial Transceiver Required)	17
Table 2-6 Example RS422/485 Connections (Serial Transceiver Required)	18
Table 2-7 Ethernet Port Signals	19
Table 2-8 PremierWave 2050 Wi-Fi Status LED Output Signals	20
Table 2-9 Ethernet Interface PremierWave 2050 Serial Port Signals	20
Table 2-10 PremierWave 2050 Reset Signals	21

# 1: Introduction

## About the Integration Guide

This integration guide provides the information needed to integrate the Lantronix® PremierWave® 2050 through-hole footprint into customer-printed circuit boards. The PremierWave 2050 through-hole footprint (Lantronix model number PW20503), is an adapter within the PremierWave 2050 family products designed to be installed on an adapter board. This integration guide is intended for engineers responsible for integrating the PremierWave 2050 through-hole adapter into their product. This document provides instruction for connecting to the various module pin function groups as well as general module placement and mounting. For detailed technical and compliance specifications please refer to the *PremierWave 2050 802.11ac Embedded Wi-Fi Gateway Datasheet* available at [www.lantronix.com/support/documentation](http://www.lantronix.com/support/documentation).

The table below describes the integration guide sections.

**Table 1-1 PremierWave 2050 Through-Hole Adapter Integration Guide Sections**

Section	Description
PremierWave 2050 Features	Provides an overview of the module functions and mechanical drawing
PremierWave 2050 Block Diagram	Shows the module functional blocks
Signal Descriptions	Provides signal descriptions and pinout information
Antenna Interface	Lists the antennas pre-certified for use with the module
Antenna Placement	Provides a general recommendation for antenna placement
Using the RF1 Signal Pin	This section is reserved for a future off module antenna connection option
Serial Interface	Provides an example on how to connect the unit to external RS232/485/422 networks
Ethernet Interface	Gives an example on how to connect the module Ethernet
USB Device Port	Provides an example on how to connect the unit up as a USB device port
USB Host Port	Provides an example on how to connect the module USB host ports
LEDs	Describes the module LED connections
General Purpose IO Pins	Describes the module GPIO connections
Reset Pins	Describes the module RESET, DEFAULT, and WAKE pins
Mounting Instructions and PCB Footprint	Provides the module PCB footprint and solder profile
Product Information Label	Provides an image and description of the unit label contents
Evaluation Board Schematic	Provides the PremierWave 2050 evaluation board schematic.

## Additional Documentation

Visit the Lantronix web site at [www.lantronix.com/support/documentation](http://www.lantronix.com/support/documentation) for the latest documentation and the following additional documentation.

<b>Document</b>	<b>Description</b>
<b><i>PremierWave 2050 802.11ac Embedded Wi-Fi Gateway Integration Guide</i></b>	Provides hardware descriptions and diagrams for the PremierWave 2050 module.
<b><i>PremierWave 2050 802.11ac Embedded Wi-Fi Gateway Datasheet</i></b>	Provides unit description and all technical and compliance specifications for the module.
<b><i>PremierWave 2050 802.11ac Embedded Wi-Fi Gateway User Guide</i></b>	Provides information needed to configure, use, and update the PremierWave 2050 firmware.
<b><i>PremierWave 2050 802.11ac Embedded Wi-Fi Gateway Evaluation Kit Quick Start Guide</i></b>	Provides the steps for getting the PremierWave 2050 and PremierWave 2050 evaluation kit up and running.
<b><i>PremierWave 2050 802.11ac Embedded Wi-Fi Gateway Evaluation Kit User Guide</i></b>	Provides a detailed description of the PremierWave 2050 evaluation kit hardware.
<b><i>Notification Soldering Profile and Washing</i></b>	Provides guidance in developing a manufacturing assembly process for various Lantronix embedded products.



## 2: Functional Description

The PremierWave 2050 gateway is a series of embedded gateways offering reliable and always on 5G (802.11ac) embedded Wi-Fi connectivity for business critical applications.

With multiple host interfaces and production ready turnkey software and modular RF certification, the PremierWave 2050 gateway accelerates the deployment and availability of simple and robust WLAN connectivity for embedded IoT products and solutions.

This integration of secure high performance Wi-Fi makes this very suitable for deployments within the retail/point of service (POS), medical, logistics and warehousing applications as well as in industrial instrumentation such as printers, weigh scales, and automation controllers.

**Table 2-1 PremierWave 2050 Part Numbers**

Part Number	Description
PW205030001B	PremierWave 20503, 802.11ac Embedded Wi-Fi Gateway, dual U.FL, ind. temp, Bulk
PWGG2051000K	PremierWave 2050 evaluation kit, 802.11ac Embedded Wi-Fi Gateway, dual U.FL

**Note:** Please see the *PremierWave 2050 802.11ac Embedded Wi-Fi Gateway Integration Guide for the LGA footprint variant of the PremierWave 2050.*

### PremierWave 2050 Features

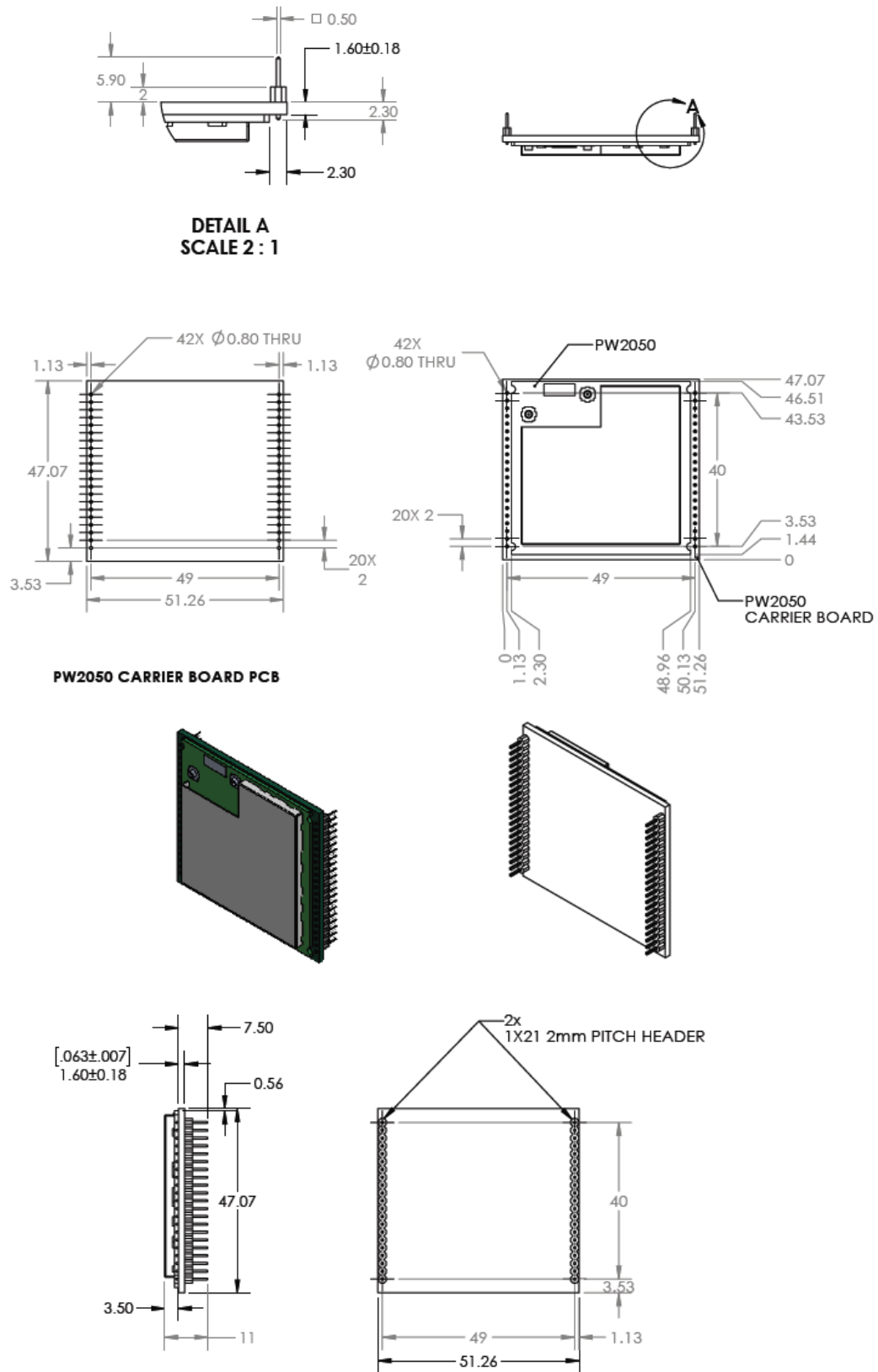
The PremierWave 2050 module is built around a 400 Mhz ARM9 processor with 32 MB of DDR2 DRAM and 128 MB of embedded flash memory. Network connections are provided by a dual band 802.11 ac/b/g/n WLAN radio and 10/100Mbps Ethernet MAC and PHY.

The PremierWave 2050 also supports the following:

- ◆ 400 Mhz ARM9 CPU
- ◆ 32 MB DDR2 DRAM
- ◆ 128 MB NAND Flash
- ◆ 802.11 ac/bgn wireless with option for on module antenna or on module U.FL
- ◆ On module 10/100 Mbps Ethernet MAC/PHY. External magnetic and RJ45 required.
- ◆ Two 3.3V serial interface
- ◆ Power supply filters
- ◆ Reset circuit
- ◆ Integrated wake up and shutdown for sleep and standby states
- ◆ Dedicated two wire serial port for debug

The PremierWave 2050 requires +5V DC power and is designed to operate in an extended temperature range. (See the *PremierWave 2050 802.11ac Embedded Wi-Fi Gateway Datasheet* available at [www.lantronix.com/support/documentation](http://www.lantronix.com/support/documentation) for all technical specifications.)

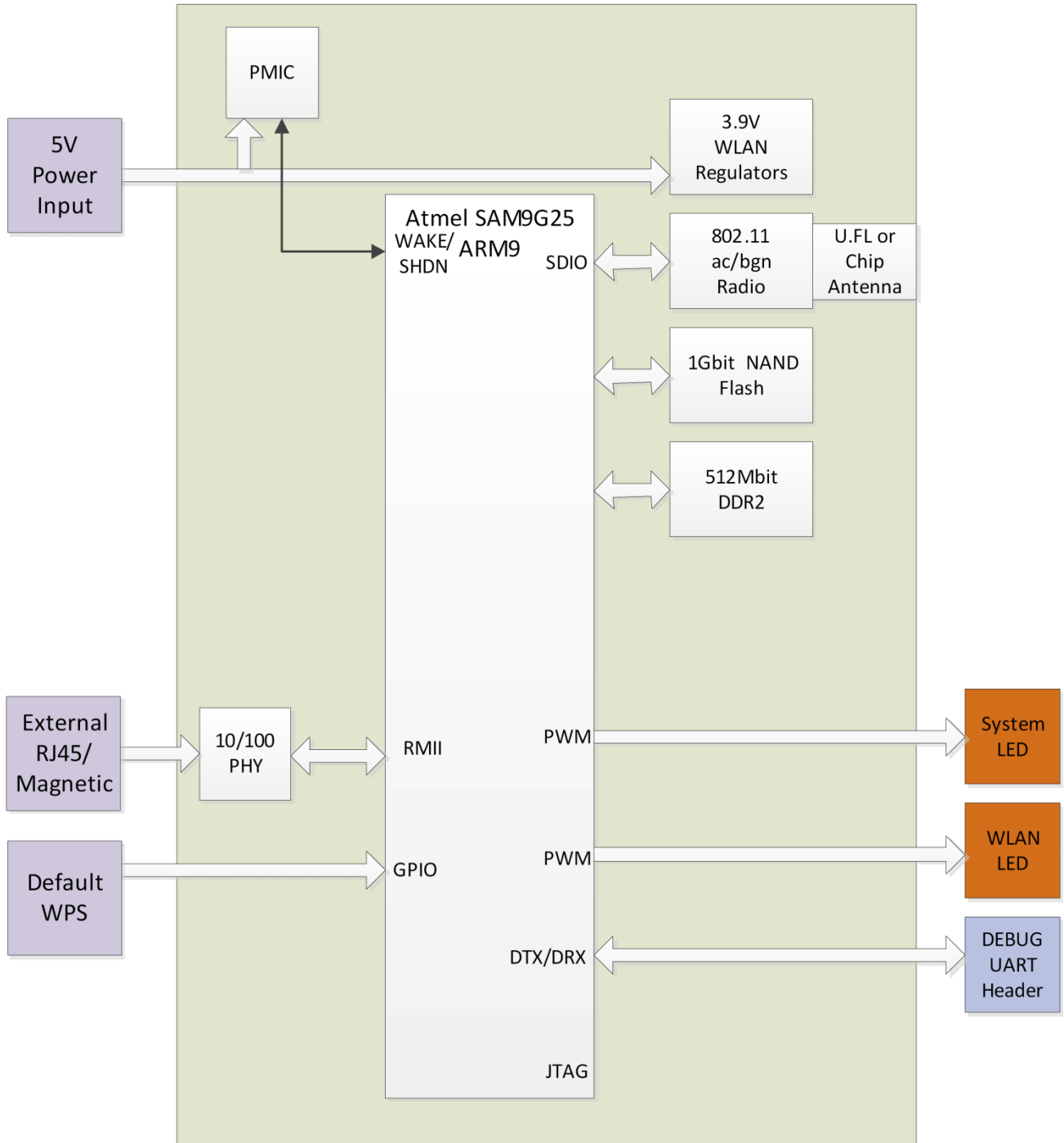
Figure 2-1 PremierWave 2050 (PW20503) Dimensions and Views



## PremierWave 2050 (PW20503) Block Diagram

The following drawing is a block diagram of the PremierWave 2050 showing the relationships of the components.

Figure 2-2 PremierWave 2050 (PW20503) Block Diagram



## Signal Descriptions

The PremierWave 2050 has a serial interface compatible with data rates up to 921,600 bps. All of the logic IO pins are 3.3V tolerant. The serial signals usually connect to an internal device, such as a UART. For applications requiring an external cable running with RS-232 or RS422/485 voltage levels, the PremierWave 2050 must interface to a serial transceiver chip.

An on-module 10/100 Mbps Ethernet MAC and PHY are included on the module. For connection to an external Ethernet network, external magnetics and an RJ45 are required.

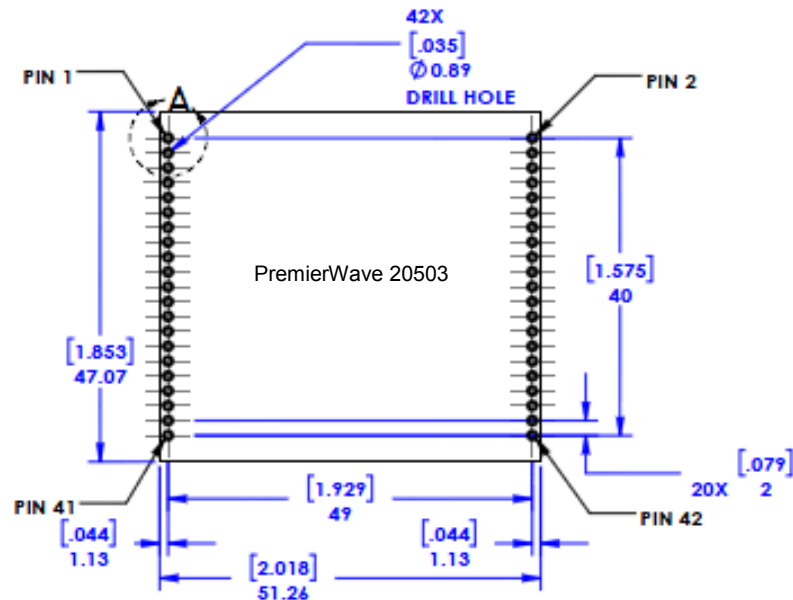
**Table 2-2 PremierWave 2050 (PW20503) PCB Interface Signals**

Pin Number	Signal Name	Primary Function	Reset State	Internal Pull-up /Pull-down	Driver Strength
1	RESET	Unit hardware reset, active low. Drive low to reboot unit		35K PU	
2	GROUND	Signal ground. Connect to ground plane			
3	DEFAULT	Unit reset to default, active low. Drive low for 7 seconds or longer to reset unit to default settings.		35K PU	
4	WAKE	CPU wake up input. Module wakes from low power state on a rising edge		100K PU	
5	TXD1	UART1 serial transmit data output			
6	ETX+	Ethernet TX (Positive)			
7	RTS1	UART1 serial ready to send output			
8	ETX-	Ethernet TX (Negative)			
9	RXD1	UART1 Serial receive data input			
10	ETCT	Center tap connection for Ethernet TX pair			
11	CTS1	UART1 clear to send input			
12	ERCT	Center tap connection for Ethernet RX pair			
13	CP1	Reserved for future GPIO			
14	ERX+	Ethernet RX (Positive)			
15	CP2	Reserved for future GPIO			
16	ERX-	Ethernet RX (Negative)			
17	CP3	Reserved for future GPIO			
18	LINK	LED function for WLAN link indication, active low			
19	CP4	Reserved for future GPIO			
20	ACT	Ethernet link/activity LED, active low for link, toggle for activity.			
21	TXD2	UART2 serial transmit data output			
22	WLAN	System status LED, active high			
23	RTS2	UART2 serial ready to send output			

Pin Number	Signal Name	Primary Function	Reset State	Internal Pull-up /Pull-down	Driver Strength
24	CP11	Reserved for future GPIO			
25	RXD2	UART2 serial receive data input			
26	SHDN	Indicates when module is in Standby state. Use to power off external devices			
27	CTS2	UART2 clear to send input			
28	CP6_I2CSCL	Reserved for future GPIO			
29	CP7	Reserved for future GPIO			
30	CP5_I2CDATA	Reserved for future GPIO			
31	CP9	Reserved for future GPIO			
32	5V	5V power input. Connect to power plane			
33	CP10	Reserved for future GPIO			
34	5V	5V power input. Connect to power plane			
35	CP8	Reserved for future GPIO			
36	5V	5V power input. Connect to power plane			
37	DBTX	Debug UART serial transmit data output			
38	GROUND	Signal ground. Connect to ground plane			
39	GROUND	Signal ground. Connect to ground plane			
40	GROUND	Signal ground. Connect to ground plane			
41	DBRX	Debug UART serial receive data input			
42	GROUND	Signal ground. Connect to ground plane			

Note 1: The logic IO pins are 3.3V tolerant.

Figure 2-3 PremierWave 2050 (PW20503) Pin Locations in mm (inch)



## Antenna Interface

The PremierWave 2050 module has been certified using the external antennas listed below. Per FCC guidelines, the PremierWave 2050 Wi-Fi certification remains valid if using an antenna of similar type to the antennas below. If using an antenna of similar type to one of the antennas below, but from a different manufacturer part number the antenna gain must be equal to or less than specified in the table. Refer to the *PremierWave 2050 802.11ac Embedded Wi-Fi Gateway Datasheet*, available at [www.lantronix.com/support/documentation](http://www.lantronix.com/support/documentation), for full compliance instructions and information. Consult with your certification lab for more details.

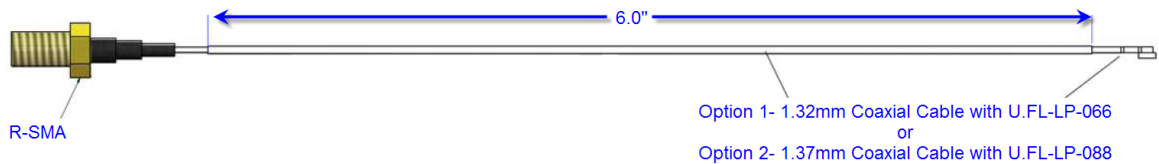
Table 2-3 PremierWave 2050 External Antenna Options

Antenna Type	Peak Gain Typical	Lantronix Part Number	Vendor	Vendor Part Number	Approved Region
PCB Strip Antenna with 50 mm cable to U.FL connector With tape backing	2.5dBi, 2.39 GHz to 2.49 GHz 5 dBi, 4.9 GHz to 5.9 GHz	XPW100A003-01-B 50 piece bulk pack	Ethertronics	1001077	FCC, IC, EU, AUS/NZS, JPN, China, Mexico
PCB Strip Antenna with 50 mm cable to U.FL connector Without tape backing	2.5dBi, 2.39 GHz to 2.49 GHz 5dBi, 4.9Ghz to 5.9Ghz		Ethertronics	1000668	FCC, IC, EU, AUS/NZS, JPN, China, Mexico
Swivel type antenna, with RP-SMA(M) connector	2 dBi, 2.4 GHz to 2.5 GHz, 2 dBi, 5.15 GHz to 5.85 GHz	930-033-R-ACC 50 piece bulk pack	Wanshih	WSS002	FCC, IC, EU, AUS/NZS, JPN, China, Mexico
Swivel type antenna, with RP-SMA(M) connector	3.8 dBi, 2.4Ghz to 2.5Ghz, 5.5 dBi, 4.9 GHz to 5.8Ghz		Taoglas	GW.71.5153 (Not for EU use)	FCC, IC, AUS/NZS, JPN, China, Mexico

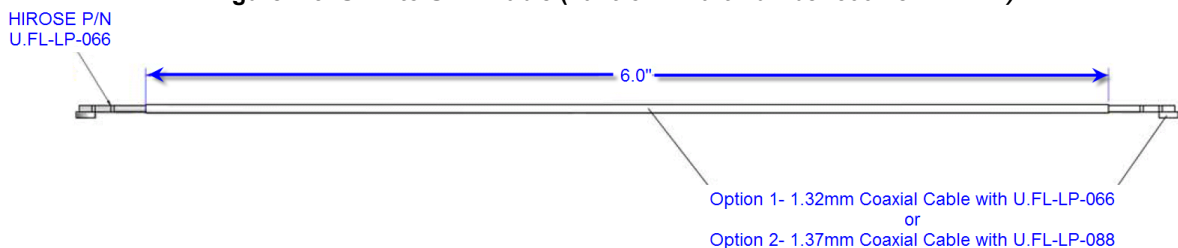
**Note:** The PCB strip antenna is available from Ethertronics with or without adhesive tape backing for mounting to a plastic case. The antennas Lantronix supplies include an adhesive backing. For the component without tape backing a non-conductive double sided adhesive tape can be used to fix the antenna in place. The Ethertronics part numbers listed above come with a 50 mm U.FL cable attached to the PCB strip antenna. The 50 mm cable length is the minimum allowed cable length for use with the PremierWave 2050. For similar PCB strip antennas with longer cables consult with Ethertronics ([www.ethertronics.com](http://www.ethertronics.com)).

Lantronix provides a U.FL to Reverse SMA antenna cable in with the evaluation board and sample kits for development work. These cables can be purchased from Lantronix for production or supplied by an RF cable manufacturer. External antennas can be purchased from an antenna vendor. Components for cable design should be selected for low loss over the entire 2.4 GHz to 5.9 GHz signal range. The cable target impedance should be 50 ohms.

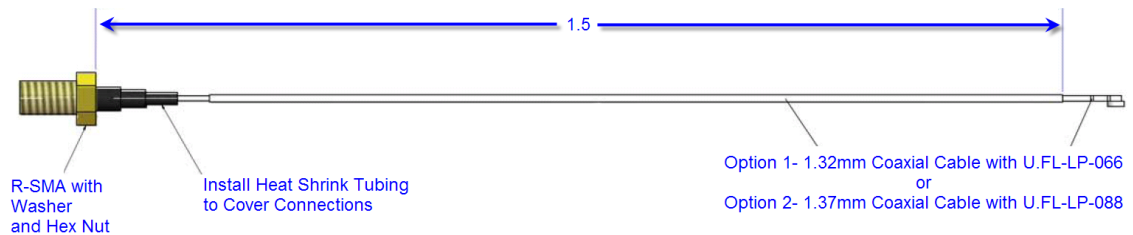
**Figure 2-4 Reverse-SMA to U.FL (Long) (Lantronix Part Number 500-180-R-ACC)**



**Figure 2-5 U.FL to U.FL Cable (Lantronix Part Number 500-181-R-ACC)**



**Figure 2-6 Reverse-SMA to U.FL (short) (Lantronix Part Number 500-182-R-ACC)**



## Antenna Placement

When designing the PremierWave 2050 to a mating board, it is important to consider the final installation of the module and its location with respect to connecting access points. The antenna should be placed so that it has as clear as possible path to the connecting access point for maximum range. Avoid placing the antenna such that it is blocked by metal walls or ground planes of adjacent circuit boards.

## Serial Interface

The PremierWave 2050 has two external serial interfaces. The signal levels on the serial interface are 3.3V tolerant. The serial interfaces require an external transceiver in order to connect to external RS232, RS485, or RS422 networks. The signals of the Serial Ports may be connected as shown in the reference schematic below. The transceiver shown in the reference schematic is an Exar product, part number SP336. This transceiver is a multiprotocol RS232, RS485, RS422 transceiver. Single protocol transceivers may be used as required. The PremierWave 2050 interface may also be directly connected to the UART interface of an external CPU.

**Table 2-4 PremierWave 2050 Serial Port Signals**

Signal	Module Pin	Description
TXD1	5	Serial transmit data output
RTS1	7	Serial ready-to-send / serial transmit enable output
RXD1	9	Serial receive data input
CTS1	11	Serial clear-to-send input
TXD2	21	Serial transmit data output 2
RTS2	23	Serial ready-to-send / serial transmit enable output
RXD2	25	Serial receive data input 2
CTS2	27	Serial clear-to-send input



Figure 2-7 Serial Port Example

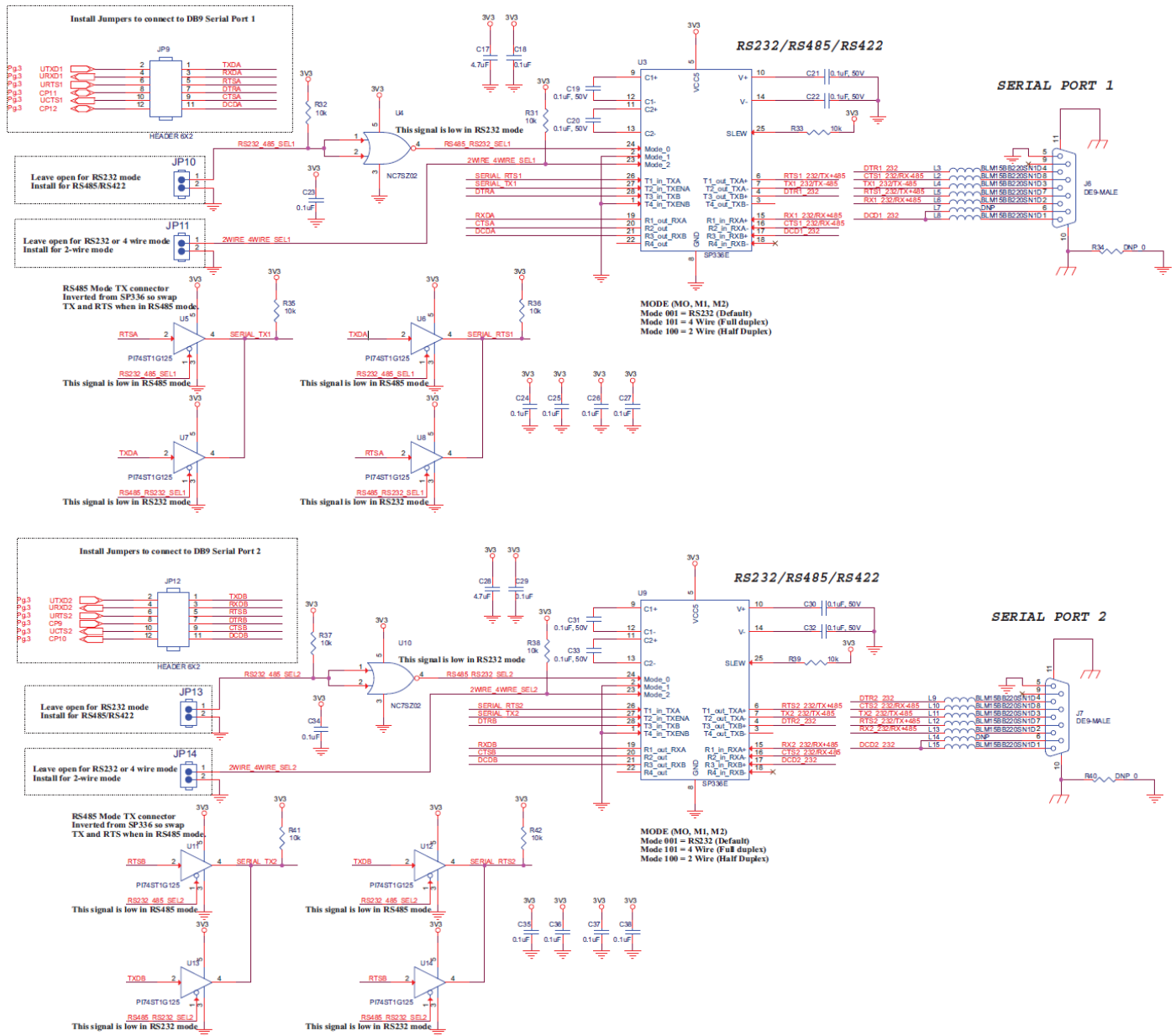


Table 2-5 Example RS232 Connections (Serial Transceiver Required)

PremierWave 2050 Signal		DTE Connector		DCE Connector			
Signal (Logic)	Description	DB9	DB25	Signal	DB9	DB25	Signal
RxDx	Data In	2	3	RxDx	3	2	TXDx
TxDx	Data Out	3	2	TxDx	2	3	RxDx
RTSx	H/W Flow Control Output	7	4	RTSx	8	5	CTSx
CTSx	H/W Flow Control Input	8	5	CTSx	7	4	RTSx
CPx	Modem Control Input	1	8	DCDx	4	20	DTRx
CPy	Modem Control Output	4	20	DTRx	1	8	DCDx

**Table 2-6 Example RS422/485 Connections (Serial Transceiver Required)**

PremierWave 2050 Signal (logic)	Description	RS485 Signal	DB25 4 Wire	DB25 2 Wire	DB9 4 wire	DB9 2 wire
TXDx	Data Out	TX+485	14	14	7	7
TXDx	Data Out	TX-485	15	15	3	3
RXDx	Data In	RX+485	21	14	2	7
RXDx	Data In	RX-485	22	15	8	3
RTSx	TX Enable					
CPx	RS485 Select					
CPy	RS485 2-wire					

**Note:** The IO pins for PremierWave 2050 are set to floating input on power up until configured by unit firmware. An external 100K ohm pull-up may be required on the serial transmit signal to prevent downstream UART devices from detecting false characters on initial power up.

## Ethernet Interface

The PremierWave 2050 provides a 10/100 Mbps Ethernet interface for connection to an external network through external magnetics and an external RJ45. The figure below shows the Ethernet connections to a 10/100 Ethernet RJ45 Jack with Magnetics, J5 in the figure. The BELFUSE RJ45 magnetic jack is part number 08B0-1D1T-06-F.

The Ethernet differential pair signals, ERXM/ERXP and ETXM/ETXP should be routed as 100-ohm differential pairs on a layer next to the signal ground plane. The use of vias on these signals should be minimized. Center tap signals RXCT and TXCT should be routed with at least 20 mil trace thickness. The area underneath the RJ45 magnetic jack should be void of all signals and planes. The connector shield should be connected to chassis. It is recommended that 1206 resistor pads from chassis ground to signal ground be placed next to each of the shield tabs. The resistor pads allow for 0 ohm jumper, ferrite beads, or decoupling caps to be installed as needed for EMI/EMC improvement.

The Ethernet LED signals should be routed to discrete LEDs or to the LED pins on the RJ45 through 220 ohm or larger resistors. The LED signals are active low.

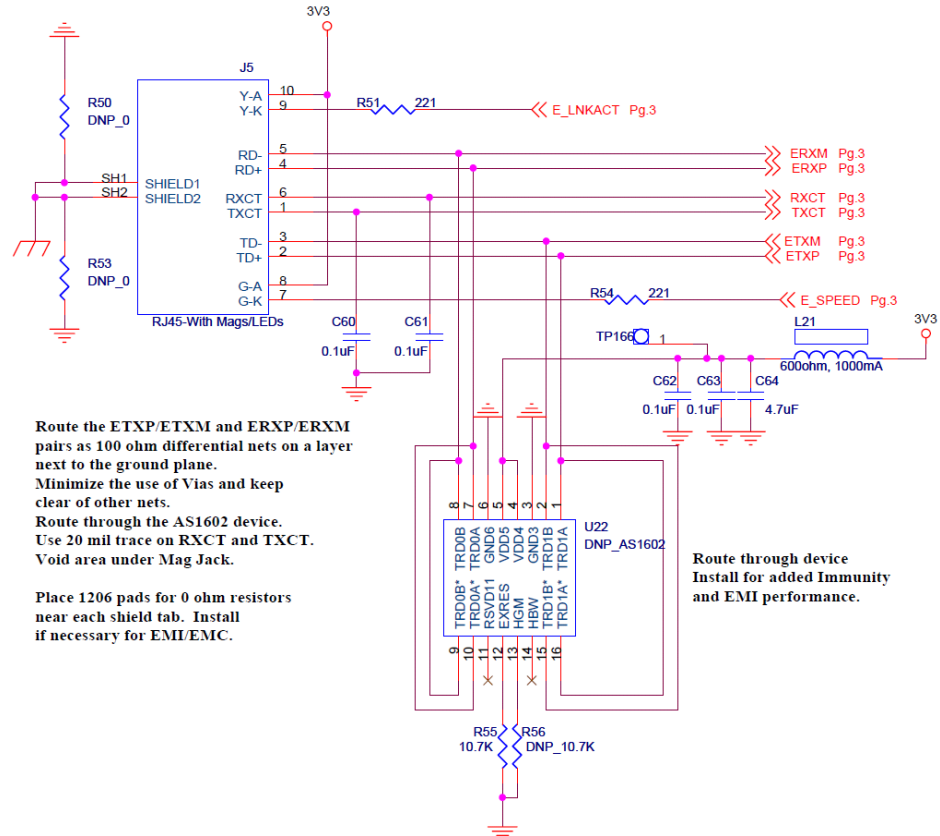
Also shown in the figure is an optional active choke that can be used to improve ESD, EFT, and EMI/EMC performance in harsh environments. The device is shown as U22 in the figure and is made by Akros Silicon, part number AS1602. This device features route through pin assignments allowing for the Ethernet differential signal pairs to be routed without altering the trace impedance or adding vias. Due to this routing the device could be installed or depopulated as needed. Lantronix has performed all certification to FCC Class B without U22 populated.

The Ethernet signals may be left disconnected if unused.

Table 2-7 Ethernet Port Signals

Pin Name	Description	PremierWave 2050 Pins	Signal Requirement	RJ45 MagJack Belfuse, 08B0-1D1T-06-F Pin assignment
ERXM	Ethernet Receive Negative signal.	16	100 ohm differential pair with ERXP	5
ERXP	Ethernet Receive Positive signal.	14	100 ohm differential pair with ERXM	4
ETXM	Ethernet Transmit Negative signal.	8	100 ohm differential pair with ETXP	3
ETXP	Ethernet Transmit Positive signal.	6	100 ohm differential pair with ETXM	2
RXCT	Center tap for receive pair.	12	Route > 20 mil width	6
TXCT	Center tap for transmit pair	10	Route > 20 mil width	1
Chassis	Unit chassis	-	RJ45 connector shield	Shield tabs
E_LNKACT	Link / activity LED. Active low. Solid for link, blink for activity.	20	Route to LED cathode through 220 ohm or greater.	9
E_SPEED	Link Speed Active low for 100Mbps, Off (high) for 10Mbps.	18	Route to LED cathode through 220 ohm or greater.	7
3V3	3.3 V power		3.3V power, connect to LED anodes.	8, 10

Figure 2-8 Ethernet Connections to an External 10/100 RJ45 Magnetic Jack (J5)



Route the ETXP/ETXM and ERXP/ERXM pairs as 100 ohm differential nets on a layer next to the ground plane. Minimize the use of Vias and keep clear of other nets. Route through the AS1602 device. Use 20 mil trace on RXCT and TXCT. Void area under Mag Jack.

Place 1206 pads for 0 ohm resistors near each shield tab. Install if necessary for EMI/EMC.

Route through device Install for added Immunity and EMI performance.

## LEDs

The PremierWave 2050 contains several external signals that are intended to drive external status LEDs. The LEDs are listed below. The signals may be connected as shown in the reference schematic figure below.

**Note:** The System LED usually remains **on**. When the **Default** button is pressed for 7 seconds, the System LED starts blinking every second to indicate the default button can be released to complete resetting the unit to factory default. The unit reboots after release of the **Default** button. A lit WLAN LED indicates the STA interface is associated with an access point.

**Table 2-8 PremierWave 2050 Wi-Fi Status LED Output Signals**

Signal	Pin	Description
SYS_LED	22	System status LED, active high
WLAN_LED	18	LED function for WLAN link indication, active low
ETH LINK/ACT	20	Ethernet link ON (Active low) Ethernet activity Blink (toggle)

## General Purpose I/O Pins

PremierWave 2050 contains 13 pins which may be used as configurable inputs or outputs. Listed below are the configurable I/O pins. These pins are 3.3V tolerant.

**Table 2-9 Ethernet Interface PremierWave 2050 Serial Port Signals**

Signal	Pin	Description PremierWave 2050	Reset State
CP1	13	Configurable I/O	Input
CP2/INT	15	Configurable I/O-SPI interrupt input	Input
CP3	17	Configurable I/O- SPI MISO	Input
CP4	19	Configurable I/O-SPI MOSI	Input
CP5	30	Configurable I/O	Input
CP6	28	Configurable I/O	Input
CP7	29	Configurable I/O-SPI Clock	Input
CP8	35	Configurable I/O-SPI Chip Select	Input
CP9	31	Configurable I/O	Input
CP10	33	Configurable I/O	Input
CP11	24	Configurable I/O	Input

**Note:** These pins are reserved for GPIO on a future software release.

## Reset Pins

The PremierWave 2050 has two signals for use as reset signals. Signal EXT\_RESET# is a hardware controlled input signal that will reboot the PremierWave 2050 processor when asserted low. Signal DEFAULT# is polled by the PremierWave 2050 software. When DEFAULT# is asserted low for seven seconds, the unit will reset the system to the default manufacturing settings and reboot the unit. PremierWave 2050 has an additional signal that can be used to wake up the unit processor when the unit is in a sleep or power down state. The SHDN signal is active when the module is in the shutdown state. Use the SHDN signal to gate off external logic when the module is in the shutdown state to minimize power

**Table 2-10 PremierWave 2050 Reset Signals**

Signal	Pin	Description	Reset State
EXT_RESET#	1	Unit hardware reset, active low. Drive low for 50ms to reboot unit. Signal should be driven high or left floating after reset.	Input
DEFAULT#	3	Unit reset to default, active low. Drive low for 6 seconds or longer to reset unit to default settings.	Input
WAKE	4	CPU wake up input. Module wakes from low power state on a rising edge. Refer to user guide for WAKE pin configuration options.	Input
SHDN	26	Indicates when module is in Standby state. Use to power off external devices. See evaluation board schematic for recommended connections.	

**Figure 2-9 Recommended Use of SHDN Signal to Shut Off External Power Rail**

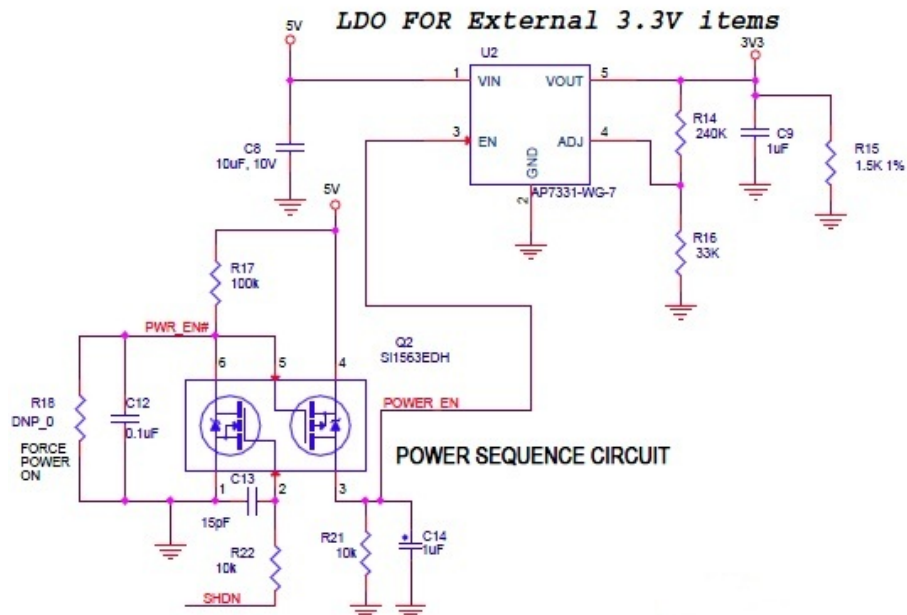
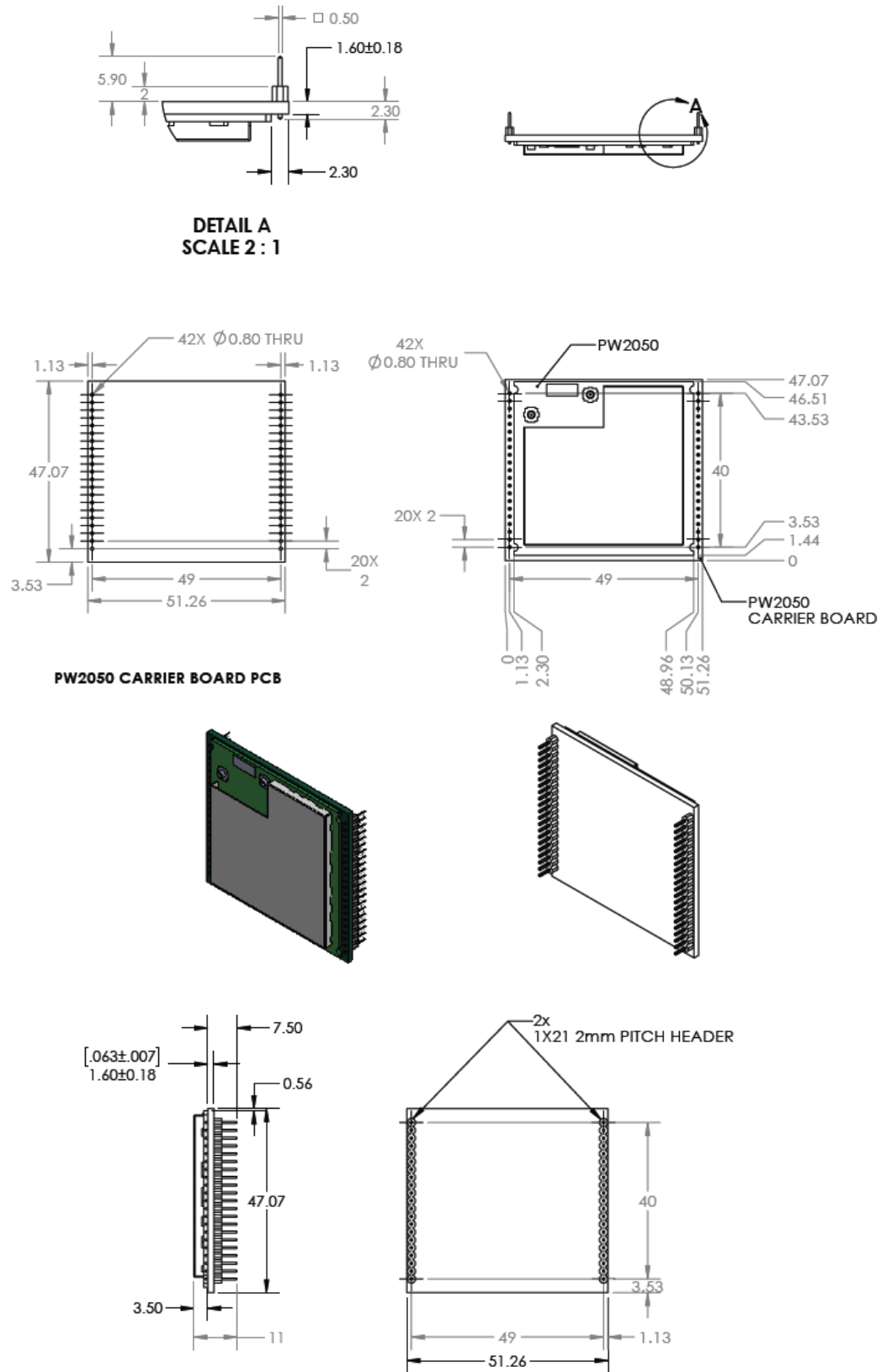




Figure 3-2 PremierWave 2050 (PW20503) Module Dimensions



## MSD (Moisture Sensitive Device) Control for the Module

1. The PremierWave 2050 is a moisture sensitive device; the MSL level is 3.
2. Modules to be subjected to reflow solder or other high temperature processes must be mounted within 168 hours of opening the vacuum containment bag in factory conditions.
3. The module requires baking before mounting, if:
  - a. The Humidity Indicator Card reads  $>10\%$  when read at  $23 \pm 5^\circ\text{C}$
  - b. The MSL3 are not met
4. If baking is required, optional condition as below (refer to IPC/JEDEC J-STD-033):
  - a. Bake 9 hours @  $125^\circ\text{C}$  (Tray base)
  - b. Bake 33 hours @  $90^\circ\text{C}/\leq 5\%\text{RH}$  (Tray base)
  - c. Bake 13 days @  $40^\circ\text{C}/\leq 5\%\text{RH}$  (Tape/Reel base)

**Note:** After baking, the floor time of module should be recalculated.

## Product Information Label

The product information label contains important information about your specific unit, such as its part number, revision, manufacturing date code, product model, country of origin, datamatrix barcode and MAC address.

Figure 3-3 PremierWave 2050 Product Label





## Evaluation Board Schematic

Figure 3-4 Evaluation Board Schematic (1 of 6)

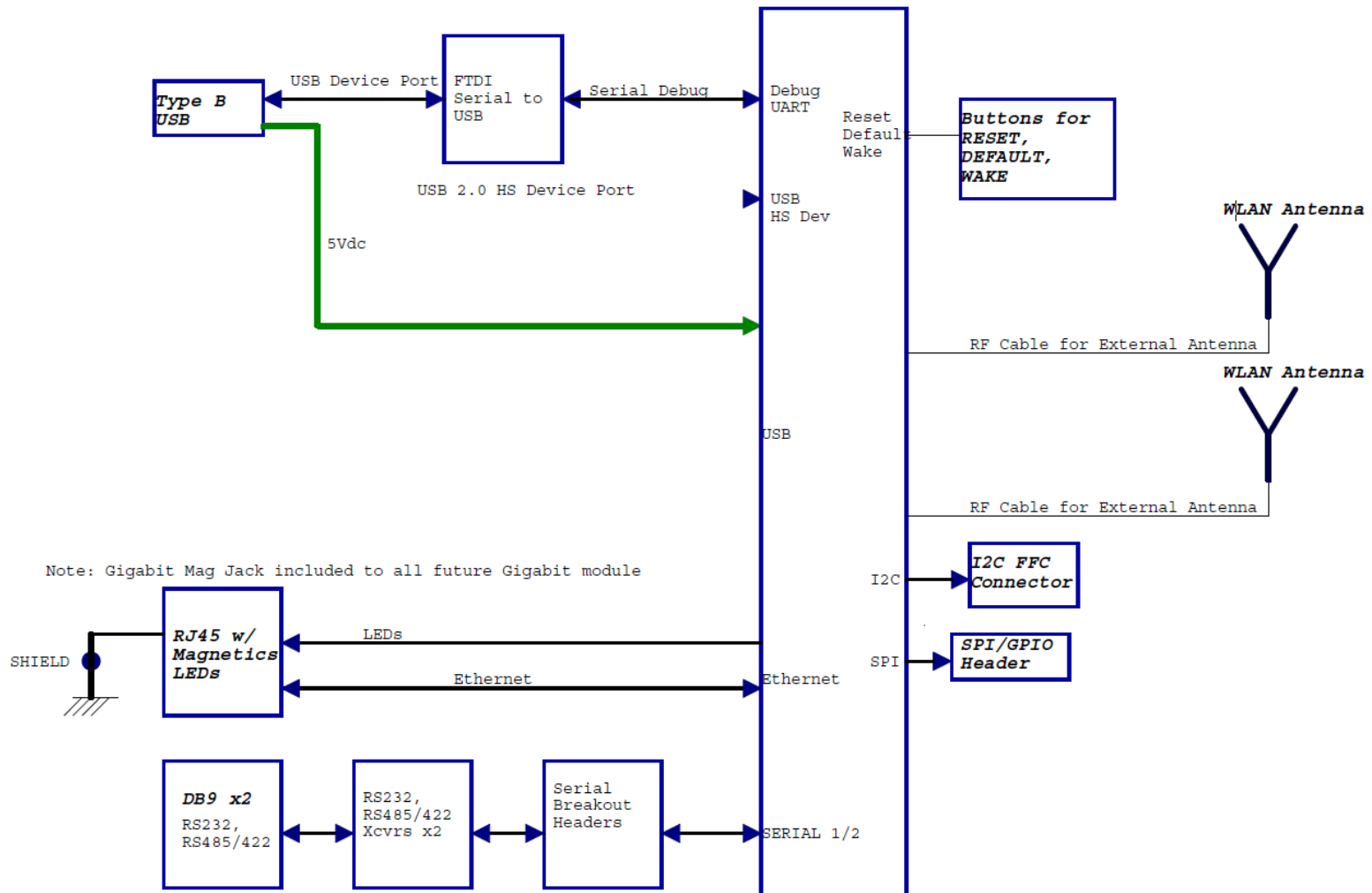


Figure 3-5 Evaluation Board Schematic (2 of 6)

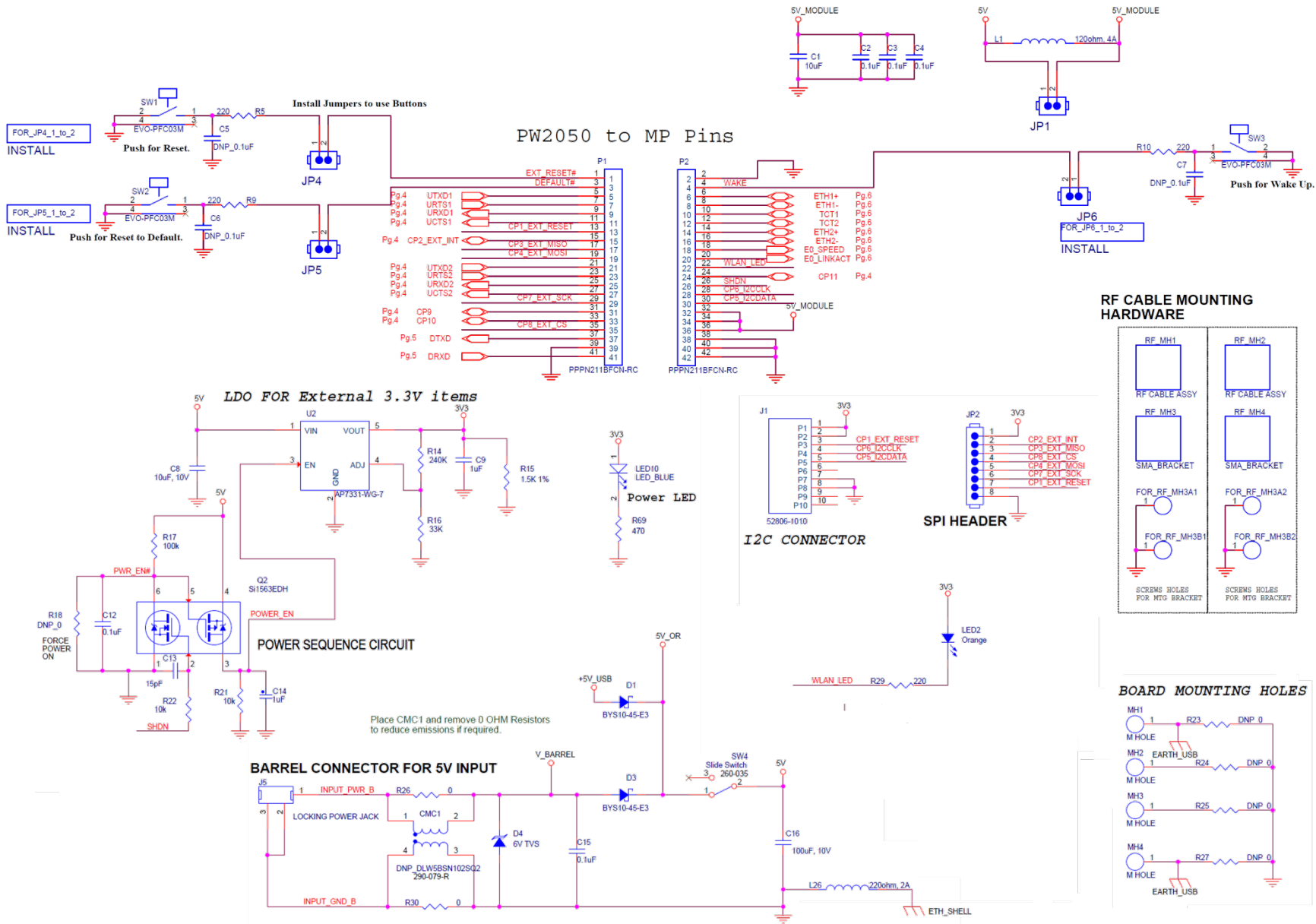


Figure 3-6 Evaluation Board Schematic (3 of 6)

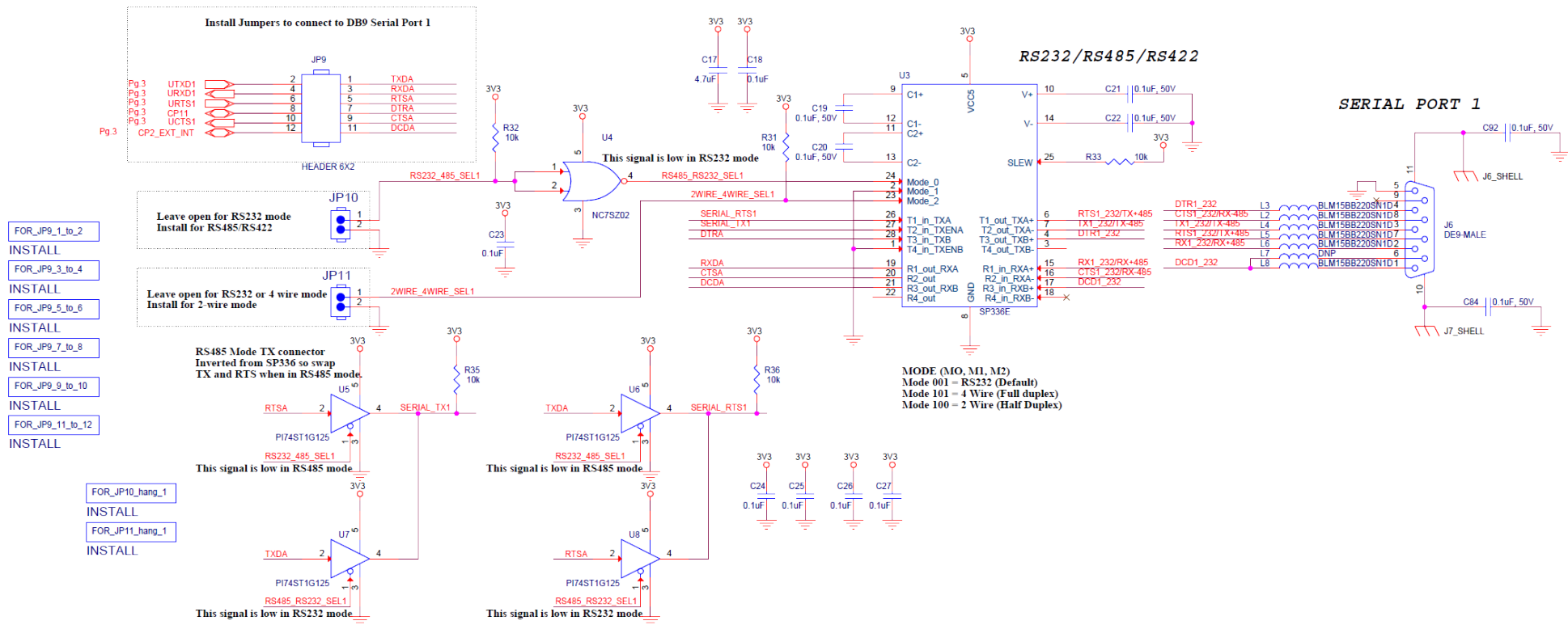


Figure 3-7 Evaluation Board Schematic (4 of 6)

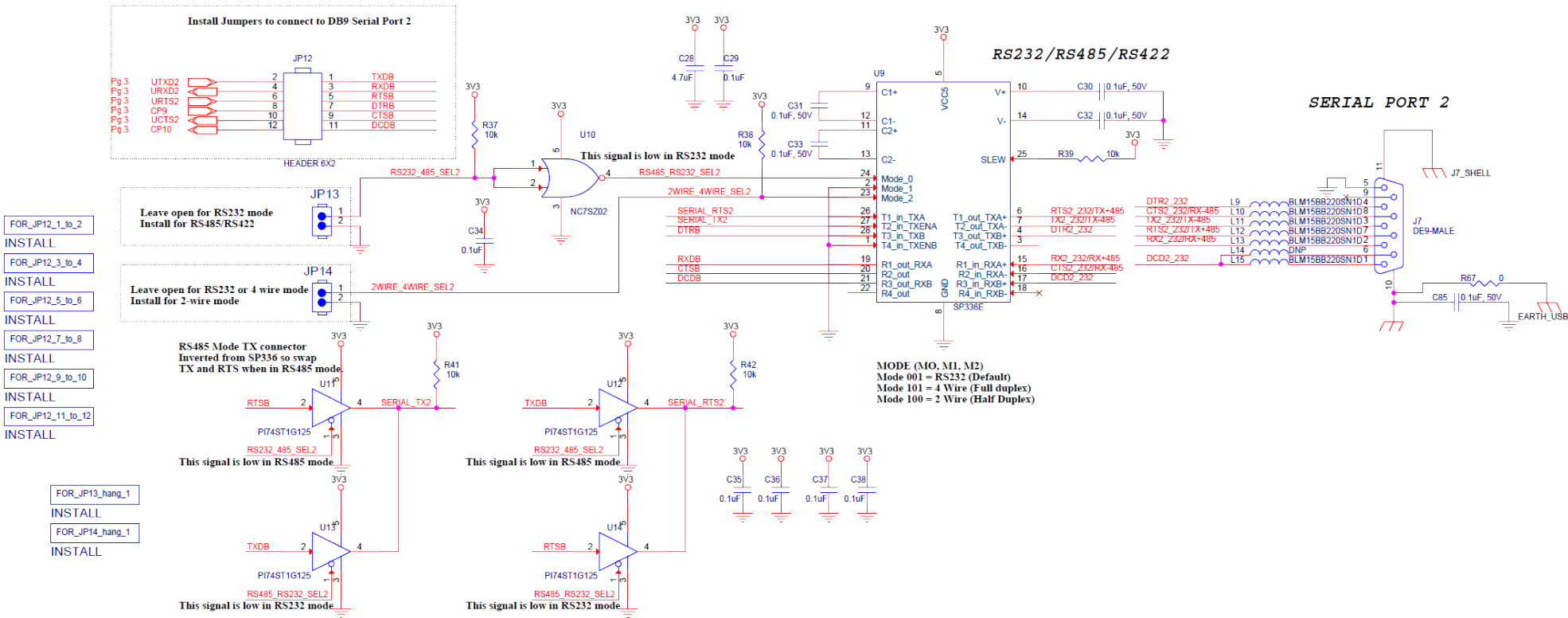


Figure 3-8 Evaluation Board Schematic (5 of 6)

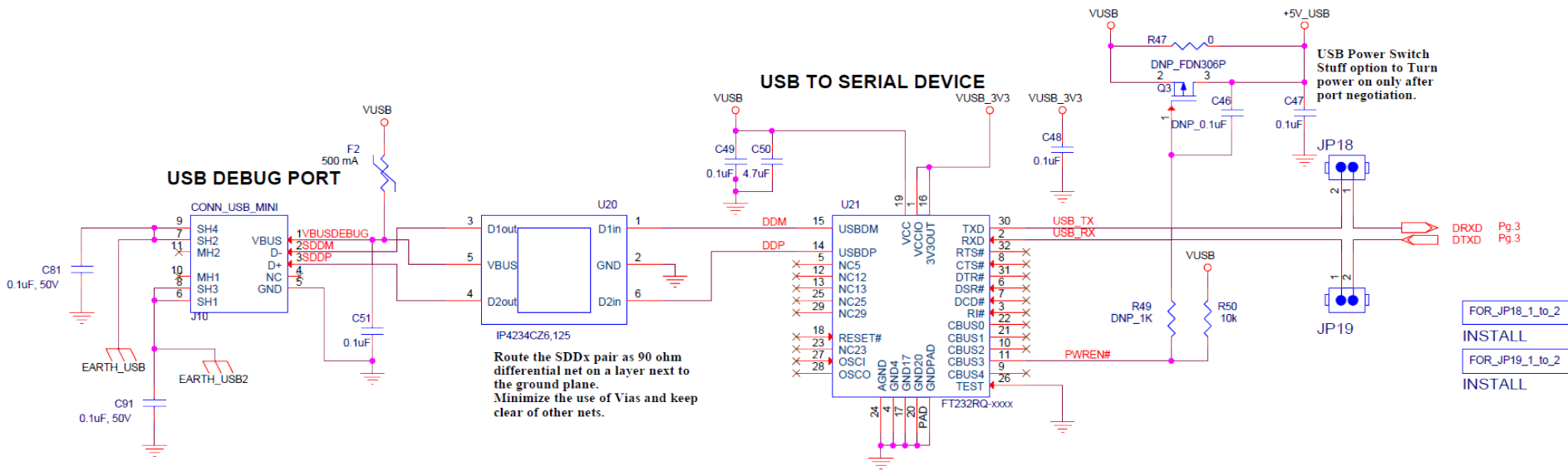


Figure 3-9 Evaluation Board Schematic (6 of 6)

