AN216535

WICED™ Studio 4
CYW92070xV3_EVAL Evaluation Board Hardware User Manual

Associated Part Family: CYW2070x

This document describes the CYW92070xV3_EVAL board and provides various pins, jumpers, switches, ports, and test points to access the CYW2070x to perform development, debug, evaluation, and troubleshooting.

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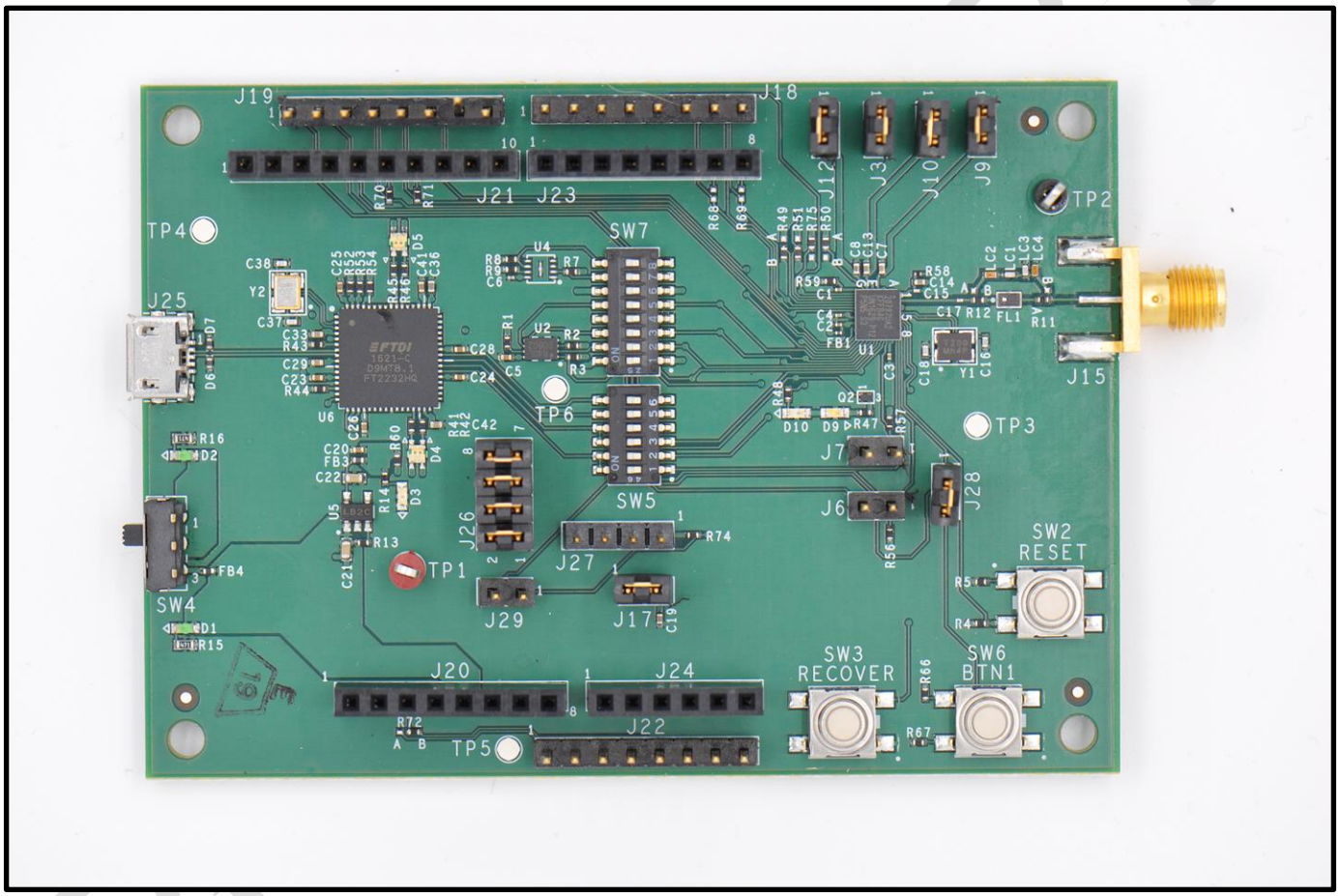
1 Product Description

The CYW2070x (CYW20706 and CYW20707) is a monolithic, single chip, Bluetooth (BT) dual-mode System-on-a-Chip (SoC) that includes a baseband processor, an ARM® Cortex™-M3 processor and an integrated transceiver. As the CYW20706, it is a fully embedded device running an embedded BT stack with support for embedded user applications developed with WICED Studio. As the CYW20707, it is a standalone BT Controller that communicates with an external MCU with an external BT stack via the HCI UART.

The Cypress CYW92070xV3_EVAL board (Figure 1) is an evaluation board that provides various pins, jumpers, switches, ports, and test points to access the CYW2070x to perform debug, evaluation, and troubleshooting.

Figure 1. CYW92070xV3_EVAL Board

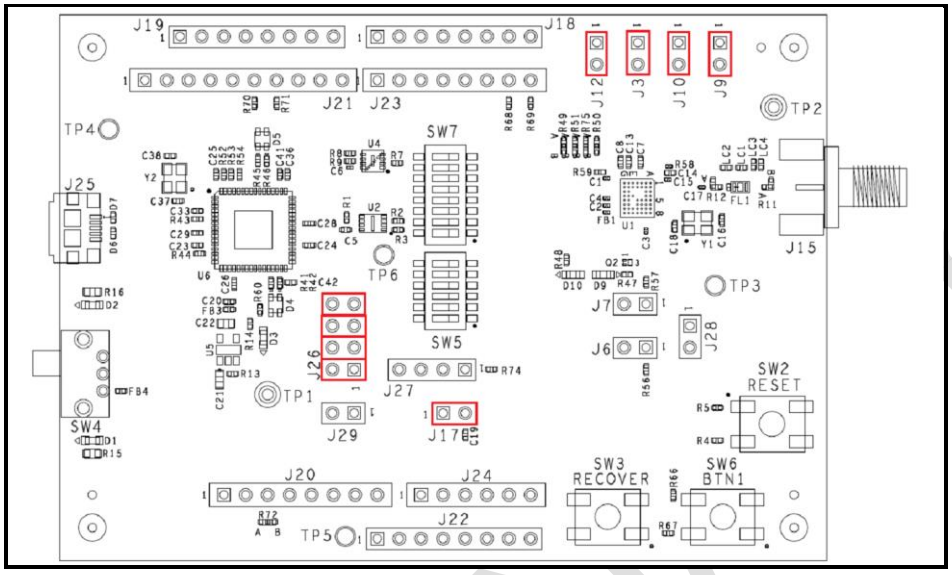


2 Board Layout

Figure 2 shows the location of key jumpers and switches on the CYW92070xV3_EVAL board.

Note: Default jumper settings are identified in red.

Figure 2. CYW92070xV3_EVAL Evaluation Board Layout and Component Locations



3 DIP Switch Setup

Figure 2 shows the location for SW5, a switch that is used to configure PUART. Settings are shown in Table 1.

Table 1. SW5 DIP Switch Settings

DIP	State	Description
1	OFF	Use P2 as PUART_RX
2	OFF	Use P33 as PUART_RX
3	OFF	Use P0 as PUART_TX
4	OFF	Use P31 as PUART_TX
5	OFF	Use P3 as PUART_CTS
6	OFF	Use P30 as PUART_RTS

Note: Only one of DIP switches 1 or 2 can be turned ON (but never both), and only one of DIP switches 3 or 4 can be turned ON (but never both).

Figure 2 shows the location for SW7, a switch that is used to configure serial flash and authentication IC connections. Settings are shown in Table 2.

Table 2. SW7 DIP Switch Settings

Dip	Default State	Description
1	OFF	Power serial flash from VDDIO
2	OFF	MISO connection between CYW and serial flash
3	OFF	MOSI connection between CYW and serial flash
4	OFF	CS connection between CYW and serial flash
5	OFF	CLK connection between CYW and serial flash
6	OFF	Power authentication IC from VDDIO
7	OFF	SDA connection between CYW and authentication IC
8	OFF	SCL connection between CYW and authentication IC

For applications requiring serial flash memory, enable the on-board serial flash by setting SW7 positions 1-6 to the ON position. For applications that do not require serial flash access, set these to the OFF position.

Authentication IC U4 is DNI by default. If the user decides to install this, then SW7 positions 7-8 should be placed in the ON position for proper connection. If authentication IC is not used, set these to the OFF position.

4 Jumper and Switch Settings

See Figure 2 for the jumpers and switch locations. Table 3 (below) shows the CYW92070xV3_EVAL board jumper and switch settings.

Table 3. CYW92070xV3_EVAL Board Jumper and Switch Settings

Jumper/Switch	State	Comment
J3	Shorted	Power supply to BT_VDDO
J6	Open	Short SCL to I2S_DO/SCL/P3
J7	Open	Short SDA to I2S_DI/SDA
J9	Shorted	Input of the internal 1.2V LDO
J10	Shorted	Input of the internal 2.5V LDO
J12	Shorted	Output of the internal 1.2V LDO
J17	Shorted	Power to VDDIO domain from the on-board 3.3V LDO regulator
J26		
1 and 2	Shorted	Connects UART_RX to FTDI TX
1 and 2	Shorted	Connects UART_TX to FTDI RX
1 and 2	Shorted	Connects UART_CTS to FTDI RTS
1 and 2	Shorted	Connects UART_RTS to FTDI CTS

Jumper/Switch	State	Comment
J28	Open	Use SW6 as input to GPIO P30
J29	Open	Connect GPIO P15 to FTDI2 RX for debug
SW2	–	Reset
SW3	–	Recovery
SW4	1 (OFF)	Power switch: 1: OFF 3: ON
SW5	Open	See Table 1
SW6	–	Generic button
SW7	Open	See Table 2

Table 4 shows the CYW92070xV3_EVAL board headers.

Table 4. CYW92070xV3_EVAL Board Headers

Header	Description
J18	CYW test header - SPI, UART
J19	CYW test header - GPIO
J20	Arduino shield connection
J21	Arduino shield connection
J22	CYW test header: GPIO, Reset, I2S, PWM
J23	Arduino shield connection
J24	Arduino shield connection
J27	Debug interface

5 Current Consumption Measurement

Table 5 shows the low-power Bluetooth classic modes current measured for different sleep modes in three different scenarios.

Table 5. Low-Power Bluetooth Current

Mode	J9	J3	Total	Units
No scans enabled + sleepmode	0.114	0.084	0.198	mA
Page scan enabled + sleepmode	0.328	0.083	0.411	mA
Sniff link 1.28s, 4 attempts, 0 timeout, no scans + sleepmode	1.250	0.084	1.334	mA

Table 6 lists the jumper locations for measuring current.

Note: Remove the listed jumper and measure the current across the exposed pins.

Table 6. Current Measurements

To Measure...	Remove the Jumper and Measure Across...
VDDIO	J3
1.2V LDO input	J9
2.5V LDO input	J10
1.2V LDO output	J12
Entire CYW2070x	J17

6 Configuring the Board for COEX Testing

To configure the board for COEX testing, the following HW change must be made:

- Remove R48 (Refer to Figure 2 for component location).
- Make sure J28 is not installed (Default configuration is not installed).

7 Further Information

For further information on the CYW92070xV3_EVAL hardware board, refer to the following documents available as part of WICED Studio and available for download at the Cypress Support Community website [1]:

- CYW92070xV3_EVAL-Schematic [2]
- CYW2070x Hardware Interface and Selection and Programming [3]

Document History

Document Title: AN216535 - CYW92070xV3_EVAL Evaluation Board Hardware User Manual

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Revision	Submission Date	Description of Change
*A	11/14/2016	Updated part numbers, added references, removed schematics
**	10/03/2016	Initial revision

References

[1] Cypress Support Community (http://community.cypress.com/)

[2] Bluetooth SoC for Embedded Wireless Devices: CYW92070xV3_EVAL Schematic

[3] CYW2070x Hardware Interface Selection and Programming (AN216761)

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