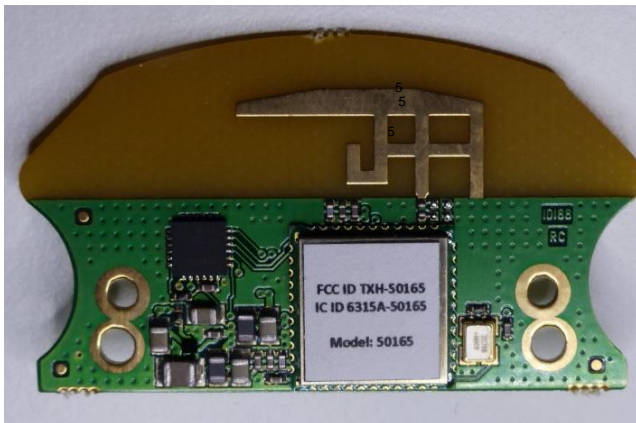# COGNEX

Wireless Module 50165
Integration Manual

Revision: Rev04
Date: 2022/01/10
Model: 50165
Trademark: COGNEX

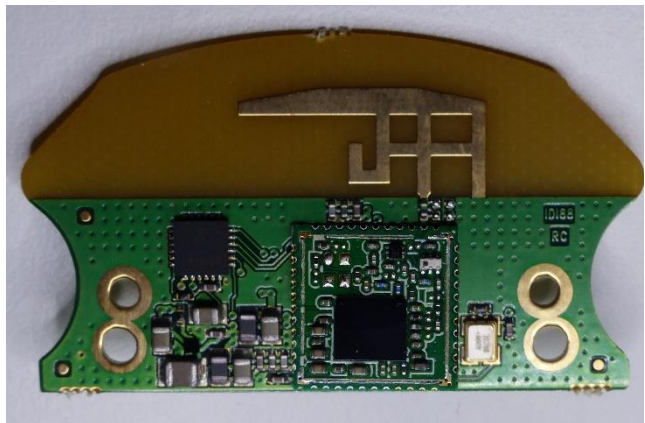# 1 Description:

General

The 50165 wireless module is designed based on B-Link BL-M3455AT1(BL-6255) using a Cypress CYW43455 chipset. It operates in 2.4GHz band for BT classic/ BT LE and WiFi and in the 5GHz band for Wifi. The module supports standard SDIO v3.0 interfaces, backward compatible with SDIO v2.0 and supports a high-speed UART interface.

Front Side With Shield

Front Side Without Shield
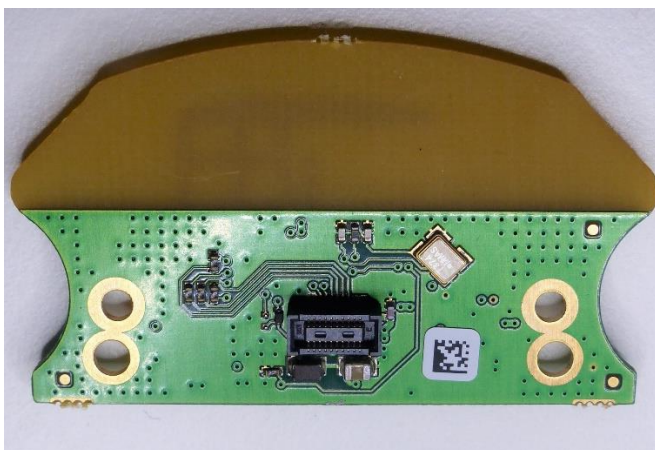
Back Side

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The module uses a PCB antenna that provides with max 3.4 dBi gain in the frequency range from 2412-2472 MHz and 5.18-5.835GHz.

Features
☐ Supports with SDIO2.0/3.0;
☐ Supports a high-speed UART interface for Bluetooth 4.1
☐ Supports IEEE 802.11a/b/g/n/ac
☐ Operating frequencies: 2.4~2.4835GHz & 5.18-5.835GHz
☐ Build in PCB Antenna with 3.4 dBi gain

Applications
☐ Cognex DM8700 series Handheld Readers
☐ Cognex DM8700 series Base Stations

2 Functional Block Diagram

The 50165 has two crystals. One 32.768 kHz low power oscillator for low power mode timing and one 37.4 MHz reference clock. Via the connector the module is powered with 5VDC and internally 3.3VDC are generated and filtered. The wireless connectivity is based on the B-Link BL-M3455AT1(BL-6255) chip.
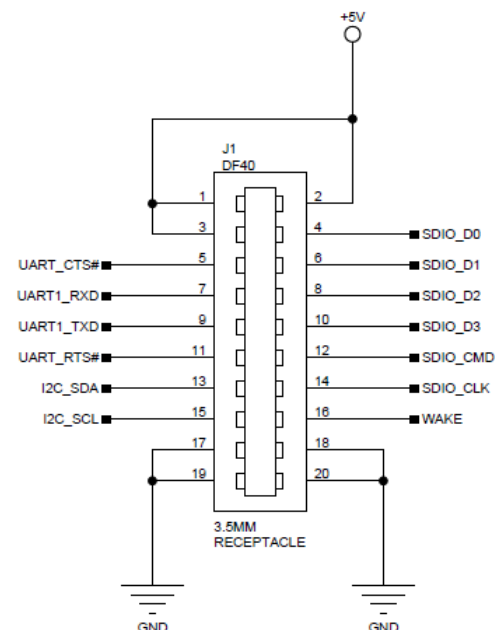
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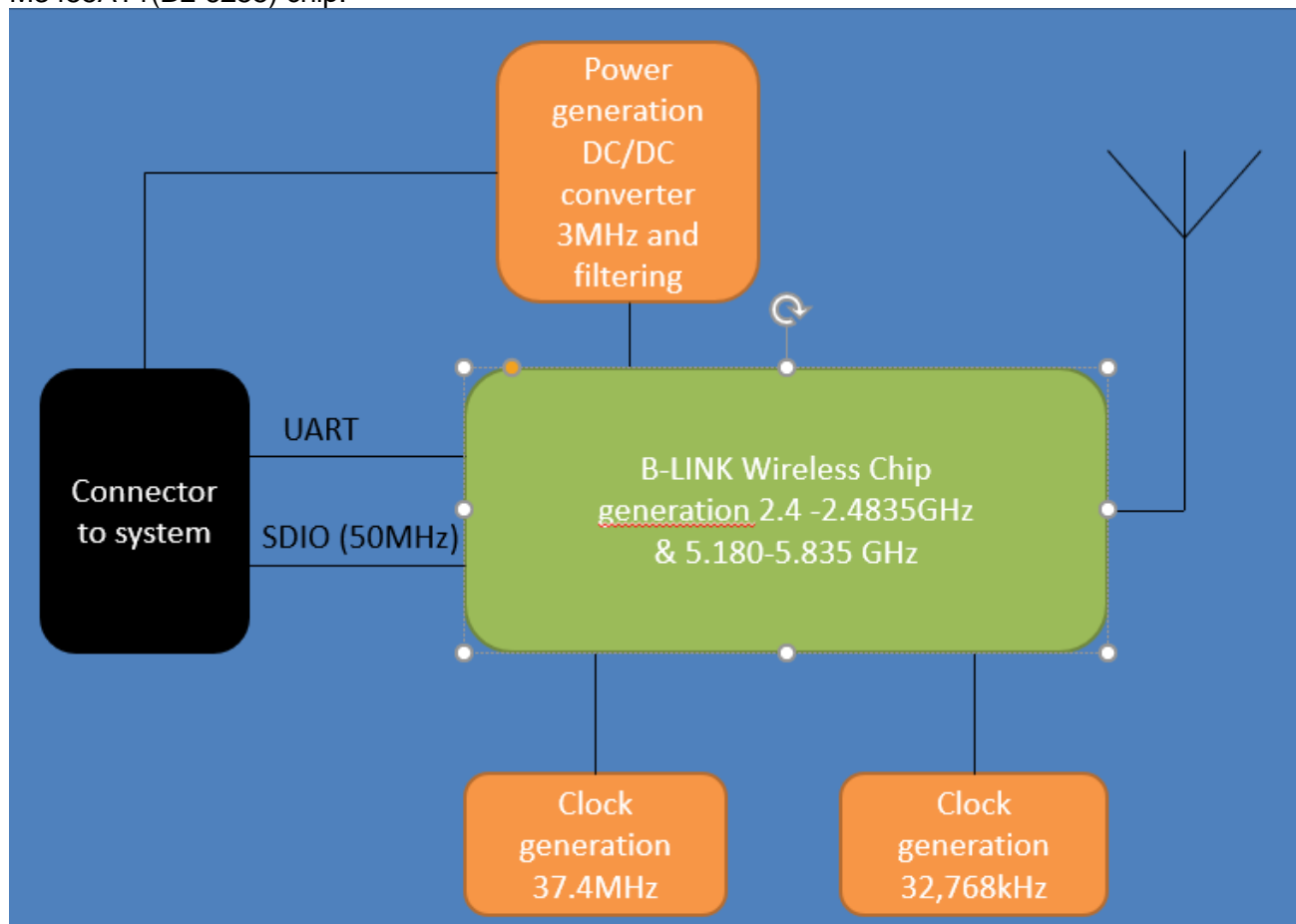
3 Antenna Specification

Frequency (MHz)	2412	2437	2472
Ant. Port Input Pwr. (dBm)	0.0	0.0	0.0
Tot. Rad. Pwr. (dBm)	-1.4	-1.1	-1.1
Peak EIRP (dBm)	3.0	3.4	3.4
Directivity (dBi)	4.4	4.5	4.6
Efficiency (dB)	-1.4	-1.1	-1.1
Efficiency (%)	72.0	77.1	77.0
Gain (dBi)	3.0	3.4	3.4

Frequency (MHz)	5180	5260	5320	5400	5500	5600	5700	5825
Ant. Port Input Pwr. (dBm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tot. Rad. Pwr. (dBm)	-3.0	-2.6	-2.3	-2.1	-1.5	-1.7	-2.1	-2.8
Peak EIRP (dBm)	2.1	2.2	2.7	3.1	3.4	3.2	2.4	2.3
Directivity (dBi)	5.1	4.8	5.0	5.2	4.9	4.9	4.5	5.1
Efficiency (dB)	-3.0	-2.6	-2.3	-2.1	-1.5	-1.7	-2.1	-2.8
Efficiency (%)	49.9	54.7	58.2	61.3	71.6	67.8	61.5	52.2
Gain (dBi)	2.1	2.2	2.7	3.1	3.4	3.2	2.4	2.3

4 Pin Assignments

Pin	Function	Description
1	+5V	Main power source input
2	+5V	Main power source input
3	+5V	Main power source input
4	SDIO_D0	SDIO Interface
5	UART_CTS	UART Interface
6	SDIO_D1	SDIO Interface
7	UART1_RXD	UART Interface
8	SDIO_D2	SDIO Interface
9	UART1_TXD	UART Interface
10	SDIO_D3	SDIO Interface
11	UART_RTS	UART Interface
12	SDIO_CMD	SDIO Interface
13	I2C_SDA	I2C interface
14	SDIO_CLK	SDIO Interface
15	I2C_SCL	I2C interface
16	WAKE	Module wake-up host
17	GND	Ground
18	GND	Ground
19	GND	Ground
20	GND	Ground

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5 Application Information

Supported Platforms:
Cognex products using Linux based operating systems based on ARM CPU framework.

Integration Information:
UART
50165 provides with a high-speed 4-wire CTS/RTS UART interface. It is compatible with the industry standard 16550 UART.

SDIO
50165 provides support for SDIO version 3.0, including the new UHS-I modes:
DS: Default speed (DS) up to 25 MHz, including 1- and 4-bit modes (3.3 V signaling).
HS: High speed up to 50 MHz (3.3 V signaling).

Mechanical
For integration in Cognex Handheld Readers keep a minimum clearance of 1.6mm and a maximum clearance of 2mm between outer round shape of the module and Readers main plastic housing. Main housing thickness should be 3.7 +/-1mm
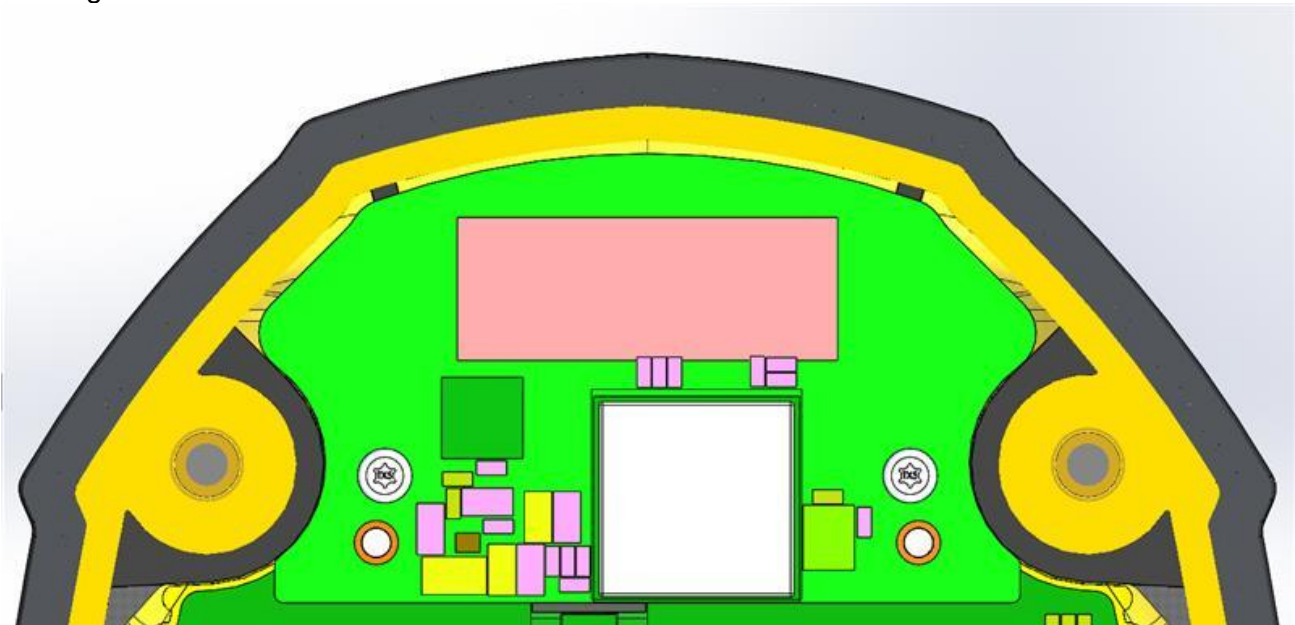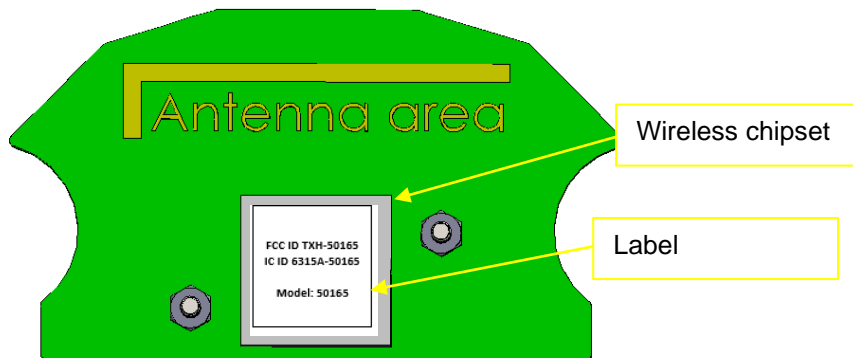

For integration in Cognex Base Stations use part number 1000001866 underneath the 50165

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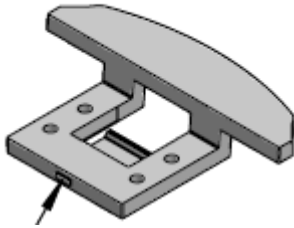
Or at least a similar supporting structure underneath the module in the same shape made of Makrolon 2405 and 4.9 +/- 0.1mm thickness.

Labeling

The module is labeled with FCC ID, IC ID and model name:

Antenna area

Wireless chipset

FCC ID TXH-50165
IC ID 6315A-50165

Model: 50165

Label

Integrators have to label End-devices with:
Contains FCC ID: TXH-50165;
             IC: 6315A-50165

Labeling shall be clear and legible and shall resist the effects of the cleaning agents specified by the End-device Manual.

Warnings:

FCC § 15.19 Labelling requirements
This device complies with part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). 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.

FCC § 15.21 Information to user
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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FCC RF Exposure:

To comply with FCC RF exposure requirements, a minimum separation distance of 35mm must be maintained between the user's hand and the integral antenna of the device during normal handling of the device.

For more information about RF exposure, please visit the FCC website at www.fcc.gov

ISED Statements (Canada)

Le présent appareil est conforme aux Innovation, Science and Economic Development Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ESD CAUTION: Although this module is designed to be as robust as possible, Electrostatic Discharge (ESD) can damage this module. It must be protected from ESD at all times and handled under the protectionof ESD.