

Project No: /
Date: 2016.11.22
Rev: 1.0

承 认 书

Customer name: _____

Model: _____ RTL-01-V1.0

B&T P/N: _____

Spec.: _____ SINGLE-CHIP 802.11b/g/n 1T1R WLAN SoC Module

Sealed by corporation:

Compilation	Verify	Approval
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Sealed by customer:

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SPECIFICATION

SINGLE-CHIP 802.11b/g/n 1T1R WLAN SoC Module

RTL-01-V1.0

Version: V1.0

Change History of Revision

Revisio	Date	Contents of Revision Change	Compilation	Verify
1.0	2016.11.22	Initial release	任淑玲	邓亚明

1. Overview

The RTL-01-V1.0 is a highly integrated Wi-Fi SOC module, Main chip is RTL8710AF is a highly integrated single-chip low power 802.11n Wireless LAN (WLAN) network controller. It combines an ARM-CM3 MCU, WLAN MAC, a 1T1R capable WLAN baseband, and RF in a single chip. It also provides a bunch of configurable GPIOs which are configured as digital peripherals for different applications and control usage.

RTL-01-V1.0 integrates internal memories for complete WIFI protocol functions. The embedded memory configuration also provides simple application developments.

2. Features

General

- Package SMT22 (24x16mm²)
- CMOS MAC, Baseband PHY, and RF in a single chip for 802.11b/g/n compatible WLAN
- Complete 802.11n solution for 2.4GHz band

Standards Supported

- 802.11b/g/n compatible WLAN
- 802.11e QoS Enhancement (WMM)
- 802.11i (WPA, WPA2). Open, shared key, and pair-wise key authentication

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services

- WIFI Direct support
- Light Weight TCP/IP protocol

WLAN PHY Features

- 802.11n OFDM
- One Transmit and one Receive path (1T1R)
- 20MHz & 40MHz bandwidth transmission
- Short Guard Interval (400ns)
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble
- OFDM with BPSK, QPSK, 16QAM, and 64QAM modulation. Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6
- Maximum data rate 54Mbps in 802.11g and 150Mbps in 802.11n

Peripheral Interfaces

- 1 high speed UART interface with baud rate up to 4MHz
- 1 low speed UART interface
- 1 log UART with standard baud rate support
- 1 I2C interface
- 1 SPI supported with baud rate up to 10.4MHz (master).
- Maximum 16 GPIO pins

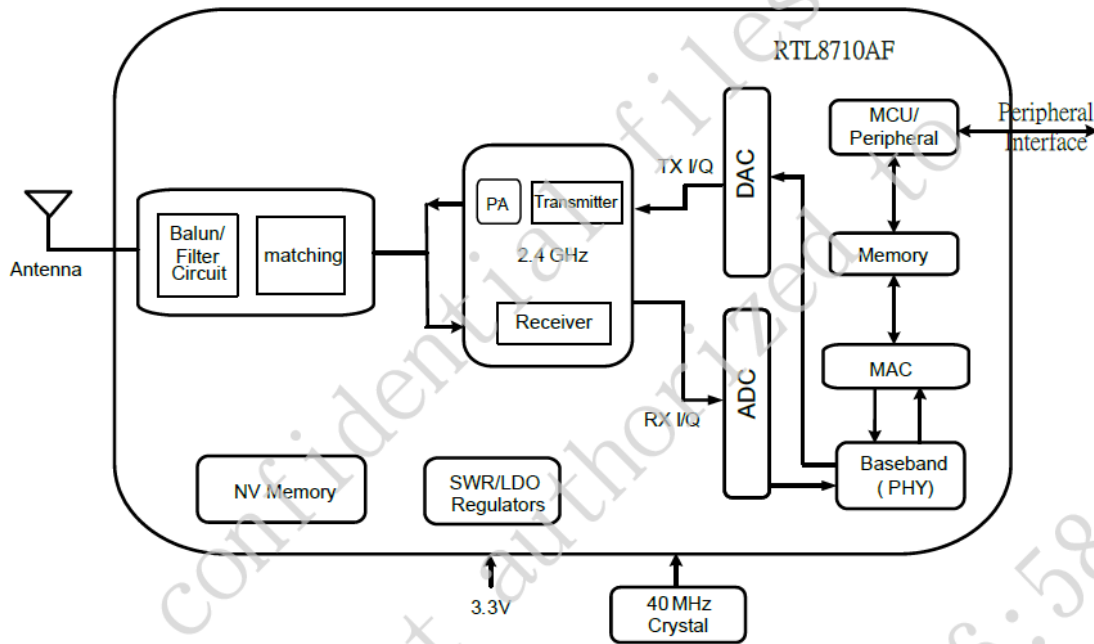
3. Applications

- M2M
- Smart LED
- Remote sensing

4. General Specification

Model	RTL-01-V1.0
Product Name	SoC WiFi module
Major Chipset	RTL8710AF
Standard	802.11 a/b/g/n
Interface	UART,I2C,SPI,GPIO
Power Supply	3.3±10%Vdc
Operating Temperature	-20 ~ +85° C ambient temperature
Storage Temperature	-40 ~ 125°C ambient temperature
Humidity	5 to 90 % maximum (non-condensing)
Dimension	17.5 x16.0x 2.5mm (LxWxH) ±0.2mm

5. Block Diagram



6. Electrical Specifications

1) DC Characteristics

Current Consumption	Min.	Typ.	Max.	Unit
DC 3.3V	-	30	300	mA

2) RF Characteristics for IEEE802.11b

Items	Contents			
Specification	IEEE802.11b			
Mode	CCK 11 Mbps			
Channel frequency	2412 ~ 2484 MHz			
Freq.Error(±15ppm)	±15 ppm			
RX (PER≤-76dBm@8%)	-82 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (17±2 dBm)		17		dBm
EVM (≤-18)		-22		dB

3) RF Characteristics for IEEE802.11g

Items	Contents			
Specification	IEEE802.11g			
Mode	OFDM 54Mbps			
Channel frequency	2412 ~ 2484 MHz			
Freq.Error(± 15 ppm)	± 15 ppm			
RX (PER \leq -65dBm@ 10%)	-67 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (14 \pm 2 dBm)		13		dBm
EVM (\leq -25)		-32		dB

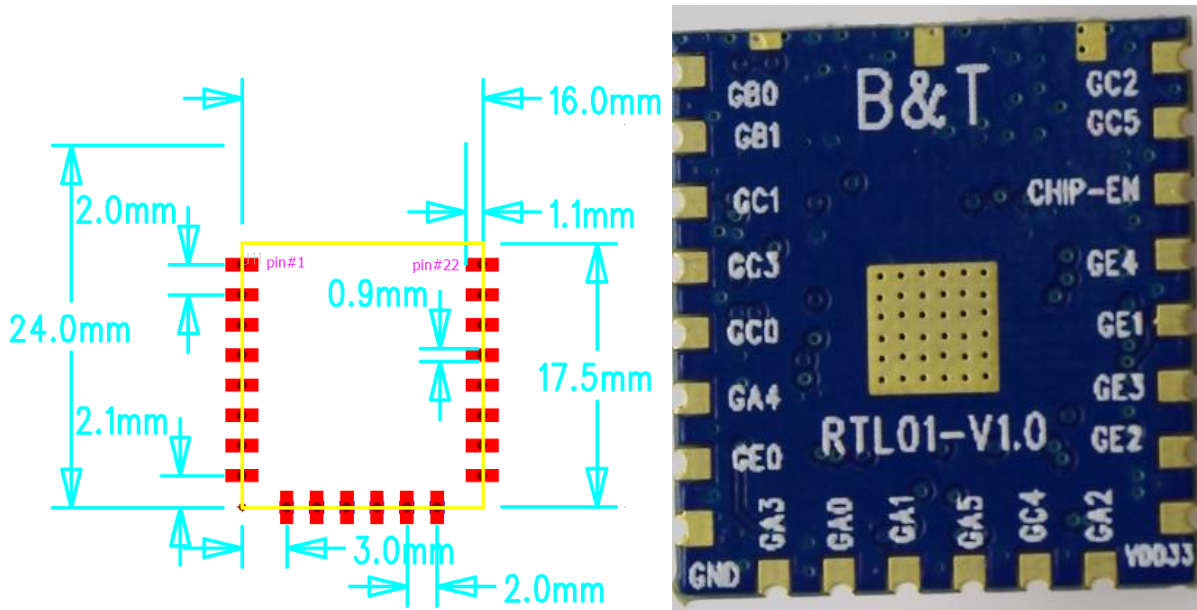
4) RF Characteristics for IEEE802.11n (BW20_MCS7)

Items	Contents			
Specification	IEEE802.11n BW20_MCS7			
Mode	BW20_MCS7 65 Mbps			
Channel frequency	2412 ~ 2484 MHz			
Freq.Error(± 15 ppm)	± 15 ppm			
RX (PER \leq -64dBm@ 10%)	-65 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (12 \pm 2 dBm)		12		dBm
EVM (\leq -28)		-32		dB

5) RF Characteristics for IEEE802.11n (BW40_MCS7)

Items	Contents			
Specification	IEEE802.11n BW40_MCS7			
Mode	BW40_MCS7 135 Mbps			
Channel frequency	2412 ~ 2484 MHz			
Freq.Error(± 15 ppm)	± 15 ppm			
RX (PER \leq -61dBm@ 10%)	-63 dBm			
TX Characteristics	Min.	Typ.	Max.	Unit
Power Level (12 \pm 2 dBm)		12		dBm
EVM (\leq -28)		-32		dB

7. Package Dimensions & Pin Definition



Pin No.	Definition	I/O	Description
1	GPIOC_2	IO	GPIO pin. The MUX function can be referred to Pin Function Table
2	GPIOC_5	IO	GPIO pin. The MUX function can be referred to Pin Function Table
3	CHIP_EN	I	Enable chip. 1: enable chip; 0: shutdown chip
4	GPIOE_4	IO	GPIO pin. The MUX function can be referred to Pin Function Table
5	GPIOE_1	IO	GPIO pin. The MUX function can be referred to Pin Function Table
6	GPIOE_3	IO	GPIO pin. The MUX function can be referred to Pin Function Table
7	GPIOE_2	IO	GPIO pin. The MUX function can be referred to Pin Function Table
8	VDD33	Power	3.3V INPUT
9	GPIOA_2	IO	GPIO pin. The MUX function can be referred to Pin Function Table
10	GPIOC_4	IO	GPIO pin. The MUX function can be referred to Pin Function Table
11	GPIOA_5	IO	GPIO pin. The MUX function can be referred to Pin Function Table
12	GPIOA_1	IO	GPIO pin. The MUX function can be referred to Pin Function Table
13	GPIOA_0	IO	GPIO pin. The MUX function can be referred to Pin Function Table

14	GPIOA_3	IO	GPIO pin. The MUX function can be referred to Pin Function Table
15	GND	Power	Ground
16	GPIOE_0	IO	GPIO pin. The MUX function can be referred to Pin Function Table
17	GPIOA_4	IO	GPIO pin. The MUX function can be referred to Pin Function Table
18	GPIOC_0	IO	GPIO pin. The MUX function can be referred to Pin Function Table
19	GPIOC_3	IO	GPIO pin. The MUX function can be referred to Pin Function Table
20	GPIOC_1	IO	GPIO pin. The MUX function can be referred to Pin Function Table
21	GPIOB_1	IO	GPIO pin. The MUX function can be referred to Pin Function Table
22	GPIOB_0	IO	GPIO pin. The MUX function can be referred to Pin Function Table

Pin Function Table						
PIN name	JTAG	UART Group	I2C Group	SPI Group	WL_LED	WKDT
GPIOA_0		UART2_IN				
GPIOA_4		UART2_OUT				
GPIOA_5						D_SBY0
GPIOB_0		UART-LOG_OUT				
GPIOB_1		UART_LOG_IN			WL_LED	D_SLP0
GPIOB_2			I2C3_SCL			
GPIOB_3			I2C3_SDA			
GPIOC_0		UART0_IN		SPI0_CS0		
GPIOC_1		UART0_CTS		SPI0_CLK		
GPIOC_2		UART0_RTS		SPI0_MOSI		
GPIOC_3		UART0_OUT		SPI0_MISO		
GPIOC_4			I2C1_SDA	SPI0_CS1		
GPIOC_5			I2C1_SCL	SPI0_CS2		
GPIOE_0	JTAG_TRST					
GPIOE_1	JTAG_TDI					
GPIOE_2	JTAG_TDO					
GPIOE_3	JTAG_TMS					
GPIOE_4	JTAG_CLK					

8. Application circuit reference

