

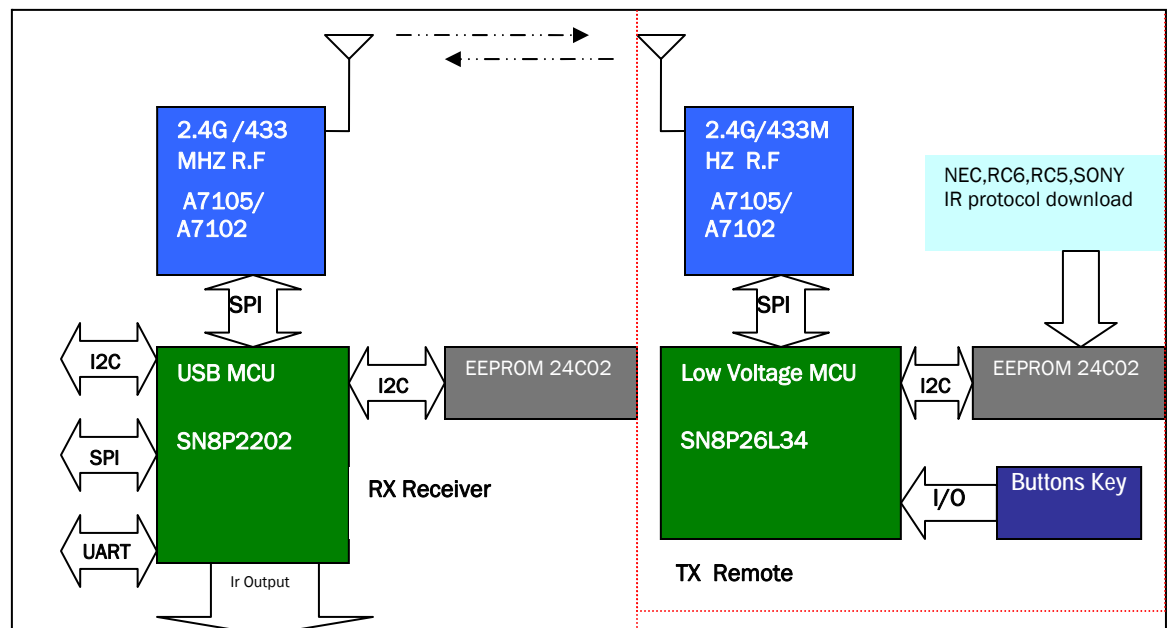
## 433MHZ/2.4GHz Wireless Remote solution

### Description :

- Support 16Key Button ,Max 48 Key
- Support 2 RF transceiver
  - 2.4GHZ: AMICCOM A7105 FSK R.F transceiver,500Kbps
  - 433MHZ: AMICCOM A7102 FSK R.F transceiver,150Kbps
- Support FHSS (Frequency-hopping spread spectrum )
  - 2.4GHZ: 8 Channels Frequency-hopping ;
  - 433MHZ: 4 Channels Frequency-hopping.
- Support Maximum transmission power
  - 2.4GHZ: 0dbm;
  - 433MHZ: 0dbm~15dbm
- Support R.F transmission distance:
  - 2.4GHZ: 20m
  - 433MHZ: 20m~100m
- Support Maximum user ID:
  - 2.4GHZ:32bit
  - 433MHZ: 32bit
- Support Auto ACK & Auto Retransmit
- Support Noise Chancel reject :
  - RSSI (Received Signal Strength Indicator)
  - 2.4GHZ: RSSI Channel Detect
  - 433MHZ: RSSI Channel Detect
- Support SPI, I2C , UART ,IR Interface for system access
- Support Easy Transmitter & Receiver ID Acknowledge
- Working Voltage
  - TX: DC1.8V~3V ;
  - RX: DC 3.3V or 5V
- Working temperature : 0°C ~ 70 °C °
- Support IR Protocol
  - ITT Protocol, JVC Protocol, NEC Protocol, Nokia NRC17
  - Sharp Protocol, Sony SIRC, Philips RC-5, Philips RC-6,
  - Philips RC-MM, Philips RECS80, RCA Protocol, X-Sat



### Function Block



## SONIX SN8P2202

### USB Low Speed Microcontroller



#### Features

- Memory: 6K\*16 Bits OTP ROM, 256\*8 Bits RAM
- System Clock: Internal 6MHz RC, External 6MHz Crystal/Ceramic, Internal 16KHz RC
- System Clock: Internal 6MHz RC, External 6MHz Crystal/Ceramic, Internal 16KHz RC
- Max. 6MHz Execution Rate (1T Speed)
- USB 1.1 Low Speed, 4 Endpoints
- 2 Channel PS/2
- Timer: T0/TC0 Timer/Counter, 0.5s RTC
- Timer Capture: T1/T2 8-bit timer multi-edge trigger
- Operating Mode: Normal Mode, Slow Mode, Green Mode, Sleep Mode

## SONIX SN8P26L34

### Low Voltage Micro-controller



#### Features

- OTP ROM size: 8K \* 16 bits. RAM size: 240 \* 8 bits
- High Performance/ Low Voltage: 4MIPS at 1.8V
- Two 8-bit Timers
- T0 : Basic Timer Including RTC Function
- TC0 : Timer / Counter / PWM / Buzzer Output/IR output
- 2 Analog Comparator for Battery Voltage Detect
- Build-in Internal 8MHz  $\pm 2\%$  RC Type Oscillator
- IT instruction structure
- LVD for Power On and Brown Out Reset

## Amiccom A7105

Low power R.F 2.4GHz  
FSK Transceiver

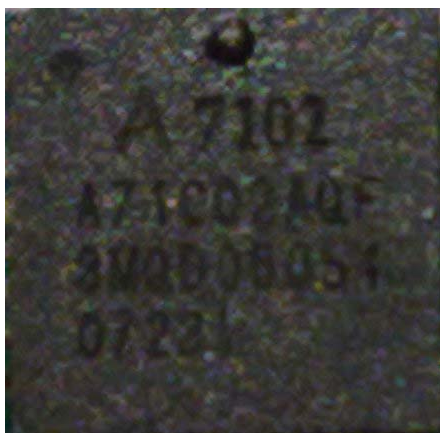


### Features

- Frequency bands: 2400 – 2483MHz ISM band.
- FSK and GFSK Modulation
- Low current consumption: RX:16 mA
- Low current consumption: TX:19 mA (output power 0dBm)
- Programmable RF output power: up to 0 dBm.
- On chip regulator, supply voltage 1.9 ~ 3.6V.
- On chip low power RC oscillator.
- Low current (< 1uA) in sleep mode and need only one crystal while working together with MCU.
- High sensitivity (-100dBm@250Kbps, -96dBm@500Kbps, )
- Programmable data rate up to 500Kbps
- Support 4- wire(SPI) or 3- wire interface to access FIFO data, command and register setting
- Package handling hardware includes preamble, sync word, FEC, CRC data whitening and Manchester coding.
- Separate 64 – byte RX and TX FIFOs
- Support FIFO extension function and up to 256 bytes.
- Easy to use with an low cost MCU
- Fast settling time synthesizer for frequency hopping system.
- Digital RSSI output for clear channel indication
- Digital temperature output
- Build in 1 channel ADC for detect external analog element.
- Build in **WWS(wireless wakeup system)** for reduce power consumption of battery.
- Support Frequency compensation scheme to make use the low cost (low accuracy) crystal.

## Amiccom A7102

Low power R.F 433MHZ  
FSK Transceiver



- Frequency bands: 315MHz/433MHz
- Programmable RF output power: up to 15dBm
- Low power consumption:  
RX:12mA, TX:20mA@0dBm
- Supply voltage 2.2 ~ 3.6V
- Programmable data rate up to 150kbps
- No external SAW Filter
- Optional RTC function
- On chip 8-bit ADC
- Integrated temperature sensor
- RSSI (Received Signal Strength Indicator)
- Programmable channel filter bandwidth
- Programmable carrier sense indicator
- RX clock recovery
- Frame synchronization recognition
- Optional FEC/CRC/data whitening
- Optional Manchester Data
- 64 bytes TX/RX FIFO buffer
- Extended FIFO up to 256 bytes
- Small 5x5 mm QFN32 package

## 2.4GHz R.F module

### MD7105-A06 DIP R.F 2.4G Module



#### Electrical specification

Item	Specification	Remark
Supply voltage	1.9V~3.6V	
Current consumption	1uA (typical) @Sleep mode 0.3mA (typical) @Idle mode 1.7mA (typical) @Stand-by mode 9mA (typical) @PLL Mode 16mA (typical) @Rx mode 20mA (typical) @Tx mode (Pout = 0dBm)	
Frequency	2400 – 2483 MHz	ISM band
Transmit output power	0 dBm @ room temperature	typical
Rx sensitivity	-105 dBm (typical) @ 10Kbps mode, Dev = 40 KHz -100 dBm (typical) @ 250Kbps mode, Dev = 93 KHz -96 dBm (typical) @ 500Kbps mode, Dev = 186 KHz	BER ≤ 1E-3
Modulation	FSK or GFSK	
Transmission distance	18 meter	BER ≤ 1E-3, with dipole antenna
Interface	5 pin 2mm header, 6 pin 2mm header	
Dimension	12.7mm(L) x 13mm(W) x 2mm(H)	
Operating temperature	-40 ~ 85 °C	

### MD7105-A04 SMD R.F 2.4G Module

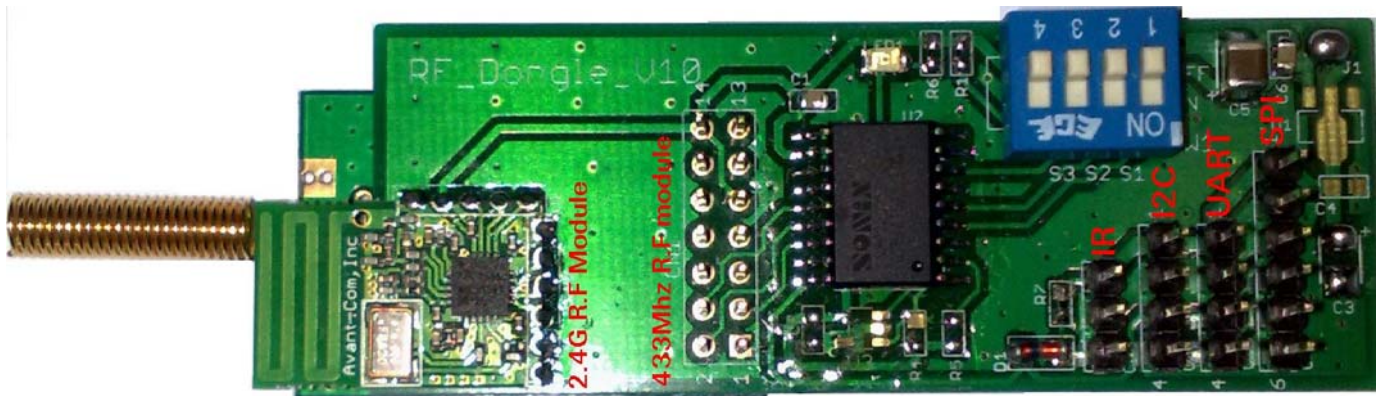


#### Electrical specification

Item	Specification	Remark
Supply voltage	1.9V~3.6V	
Current consumption	1uA (typical) @Sleep mode 0.3mA (typical) @Idle mode 1.7mA (typical) @Stand-by mode 9mA (typical) @PLL Mode 16mA (typical) @Rx mode 20mA (typical) @Tx mode (Pout = 0dBm)	
Frequency	2400 – 2483 MHz	ISM band
Transmit output power	0 dBm @ room temperature	typical
Rx sensitivity	-105 dBm (typical) @ 10Kbps mode, Dev = 40 KHz -98 dBm (typical) @ 250Kbps mode, Dev = 93 KHz -94 dBm (typical) @ 500Kbps mode, Dev = 186 KHz	BER ≤ 1E-3
Modulation	FSK or GFSK	
Transmission distance	18 meter	BER ≤ 1E-3
Interface	4X2 pin 2.45mm header	
Dimension	23.3mm(L) x 12.4mm(W) x 4.2mm(H)	
Operating temperature	-40 ~ 85 °C	



## Receiver dongle Pin out & Photo



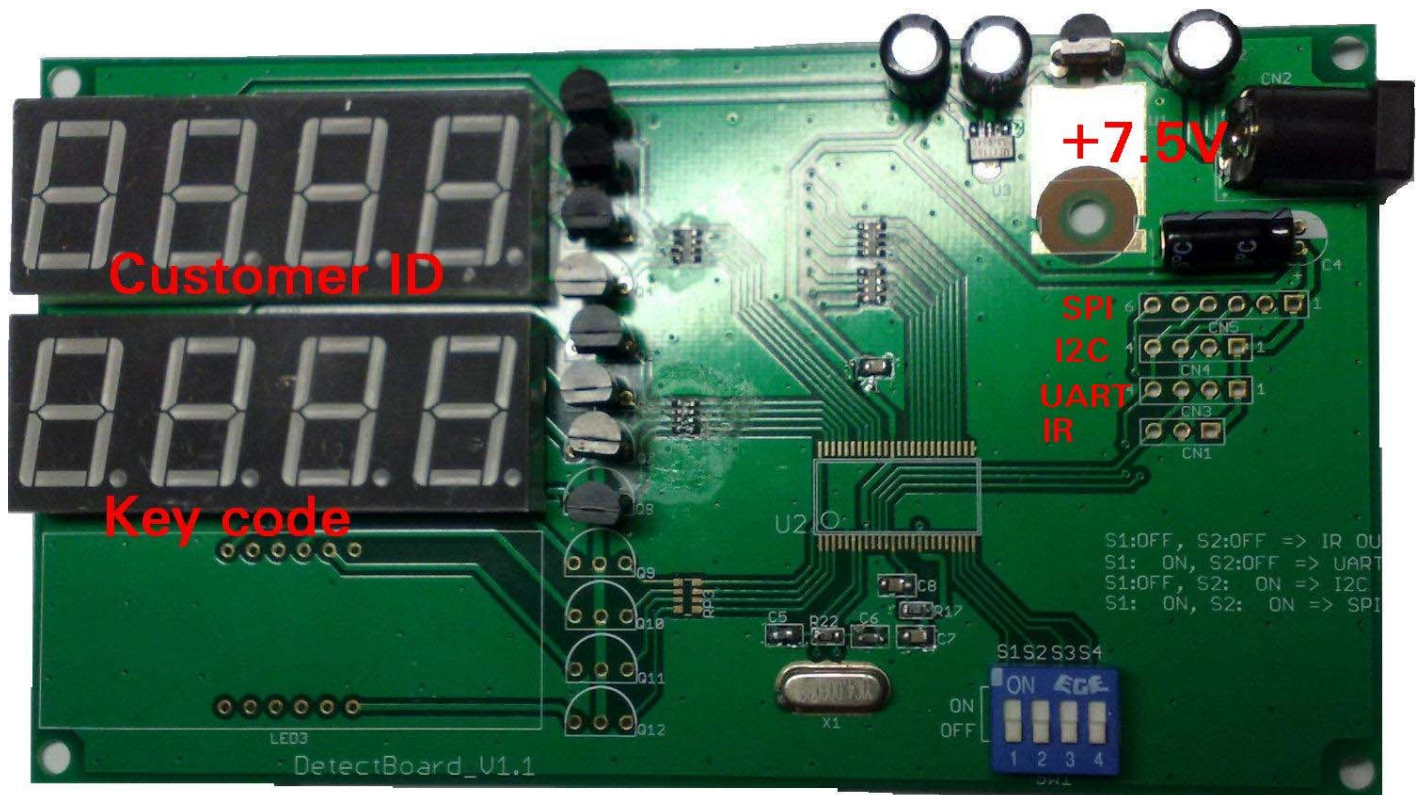
### P.S

- 1.同時只能插上一個R.F MODULE!! 2.4G OR 433M 其中一個
2. Dongle & detect board 的 DIP Switch 必須設定一致介面

S3	0	Normal Mode
	1	Test Mode

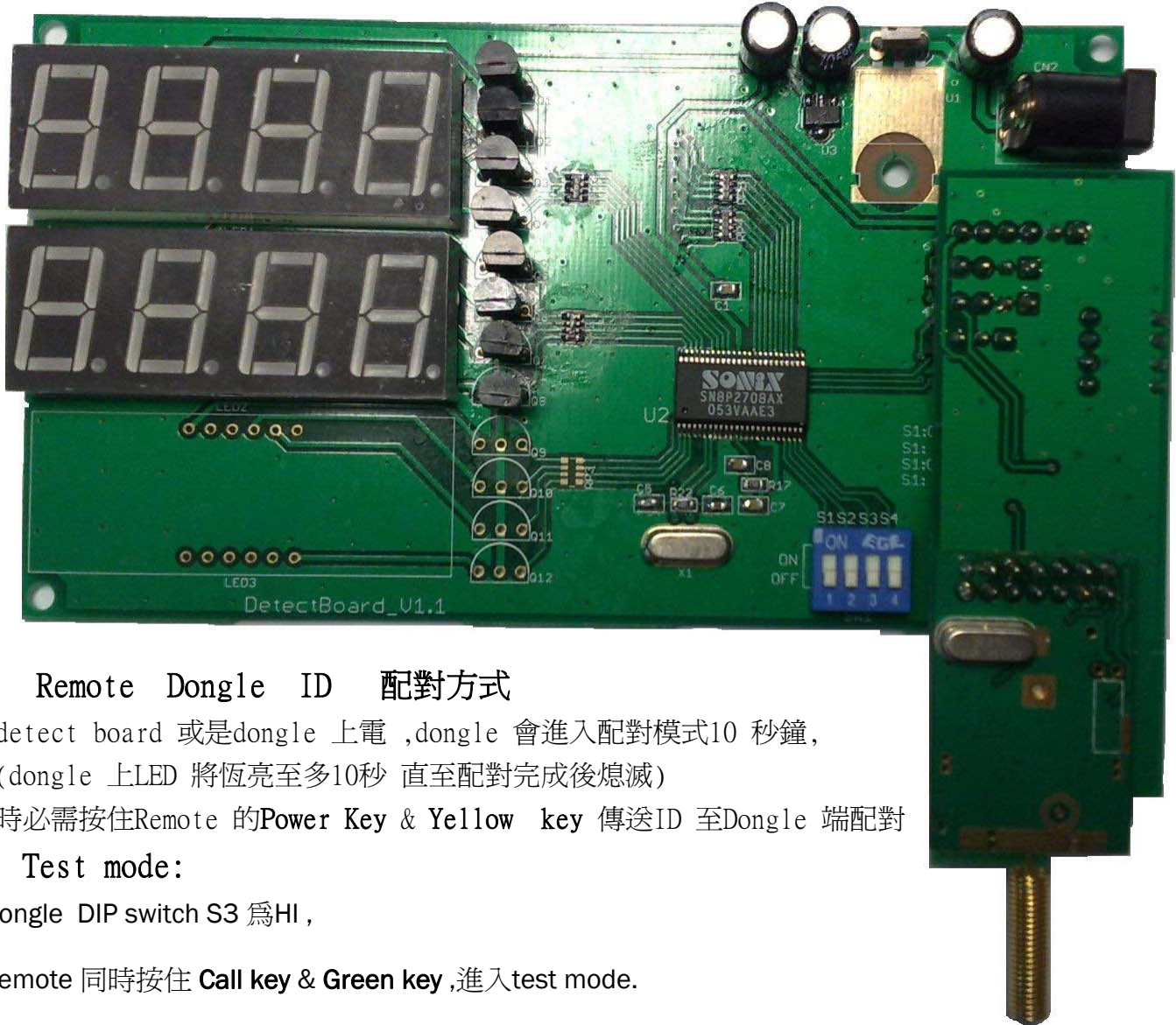
S1	S2	Interface
0	0	IR
0	1	I2C
1	0	UART
1	1	SPI

## Detect board Pin out & Photo





## Operation Photo



### P.S Remote Dongle ID 配對方式

1. 將detect board 或是dongle 上電 ,dongle 會進入配對模式10 秒鐘,  
(dongle 上LED 將恆亮至多10秒 直至配對完成後熄滅)
2. 同時必需按住Remote 的Power Key & Yellow key 傳送ID 至Dongle 端配對

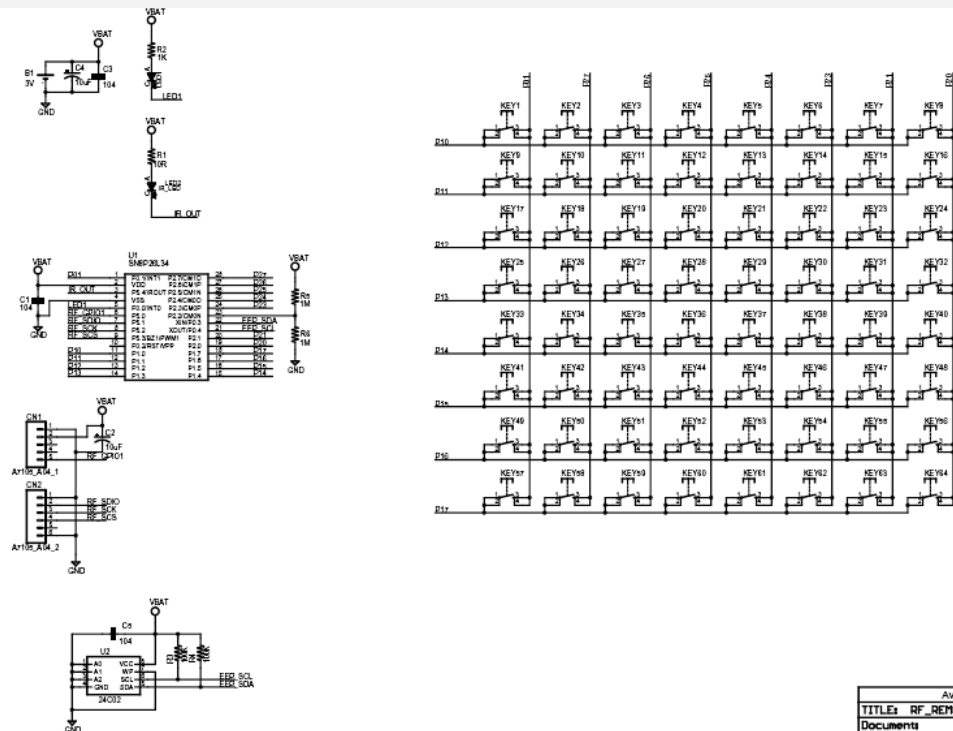
#### Test mode:

- Dongle DIP switch S3 為HI ,
- Remote 同時按住 Call key & Green key ,進入test mode.

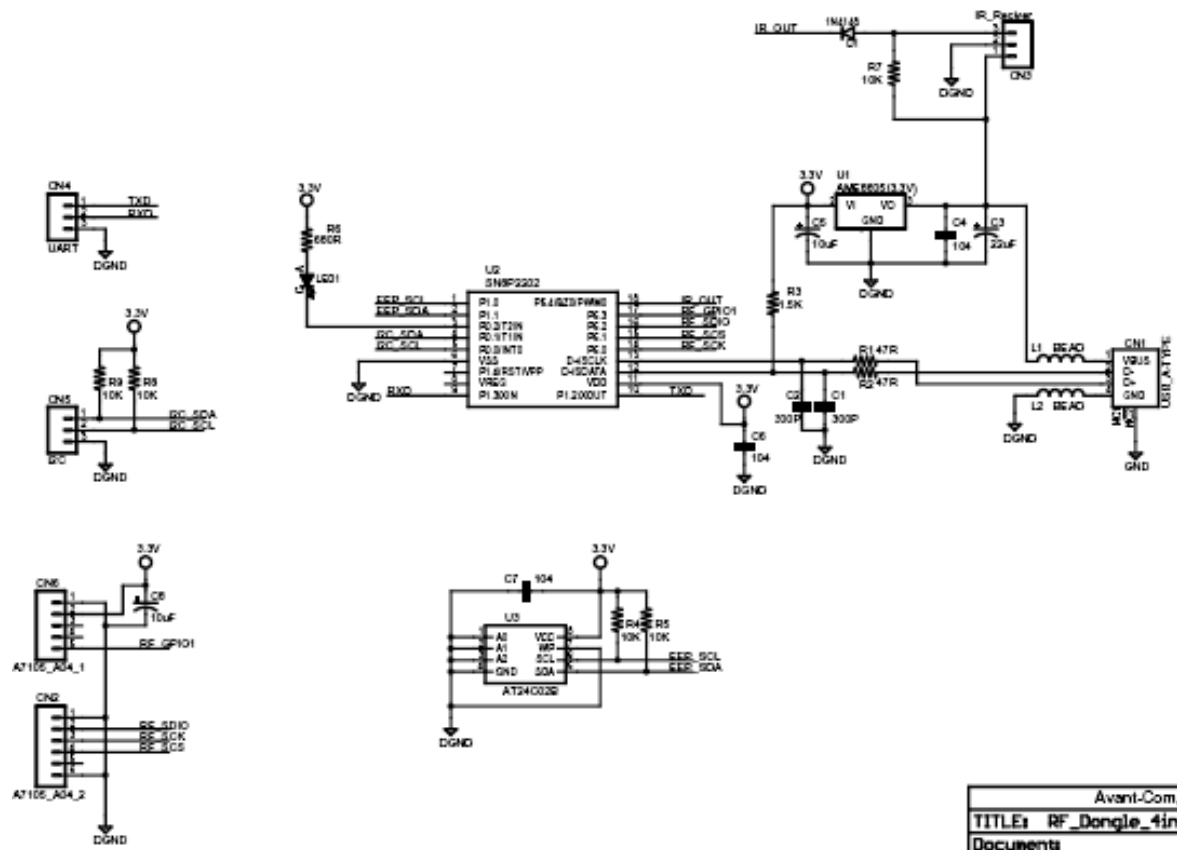


## 2.4GHz Wireless Remote solution

### TX Remote schermatic



### RX schematic



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