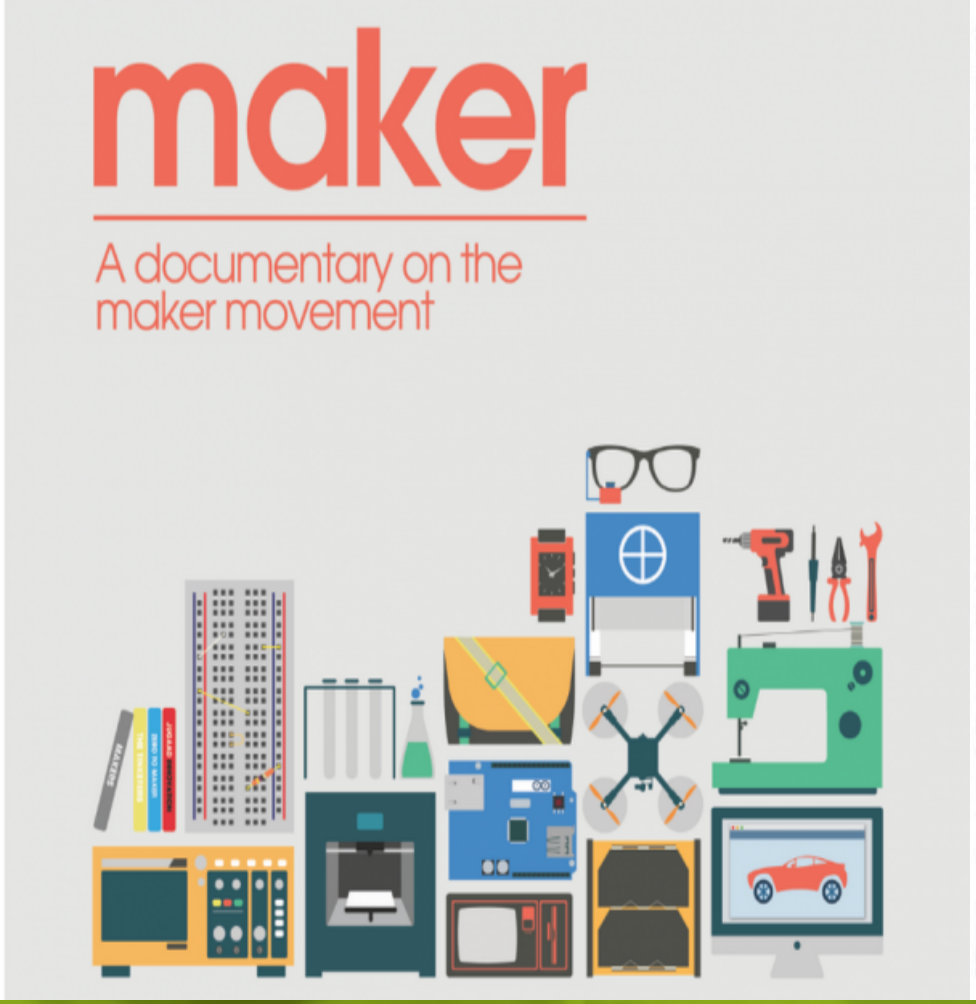
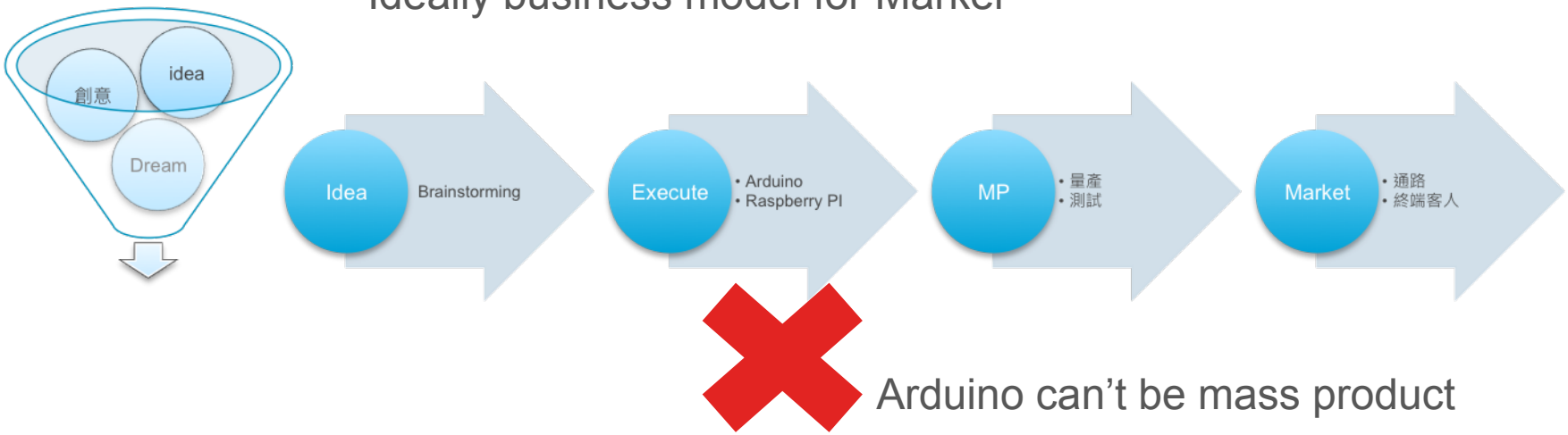


LoRA Marker 開發套件介紹 - Powen & Yanni &Michael (2016/08/11)

iFROG LAB

What we expectation and we Solved

Ideally business model for Marker



Arduino can't be mass product

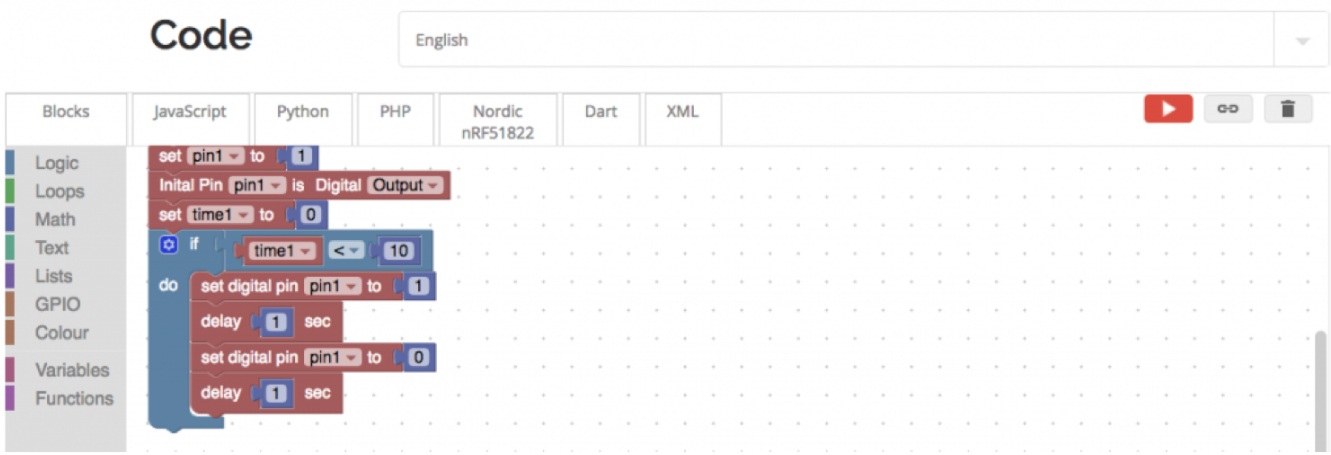
ICBlock

Real market 200+ embedded boards
e.g like ARM base Mcu(TI/Nordic/ST/Atmel)

iFROG LAB

ICBlock by iFroglab

- ICBlock is a Visual Programming for 200+ embedded boards Cross-platform build system without external dependencies to the OS software: 200+ embedded boards,15+ development platforms 10+ frameworks !



iFROG LAB

ICBlock 的架構

IC Block 圖形化網路界面

IC Blocky framework

Digital Input/Output, Analog Input, Output, UART, I2C, SPI, PWM, Logic, Loop

3rd Party Plugins

Rana Engine

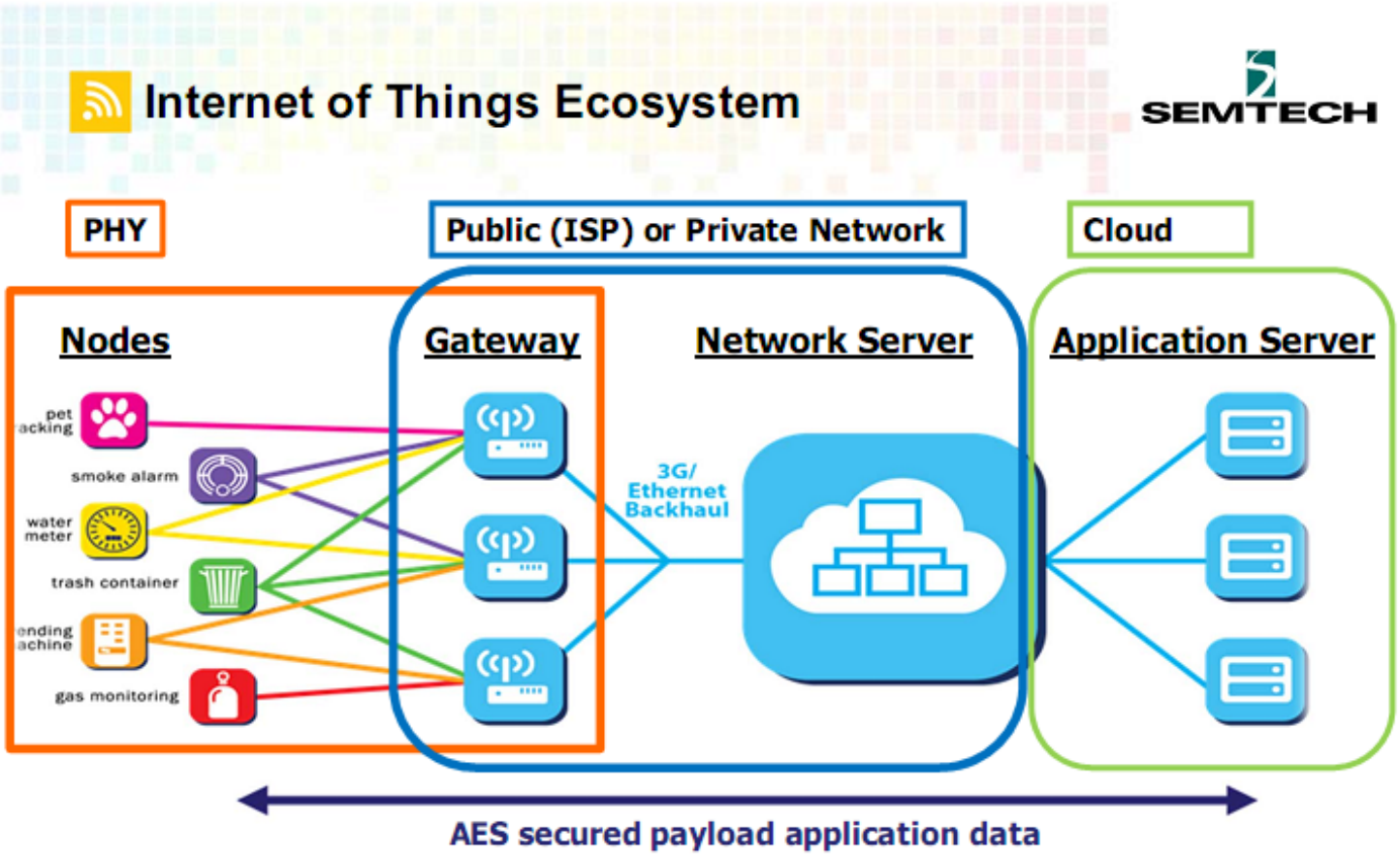
IC firmware SDK

Atmel AVR, Atmel SAM, TI MSP430, TI TIVA, Teensy, Freescale Kinetis, ST STM32, Nordic nRF51, NXP LPC, Espressif, Silicon Labs EFM32,

Linux_Arm, Native, Intel ARC32, Microchip PIC32

iFROG LAB

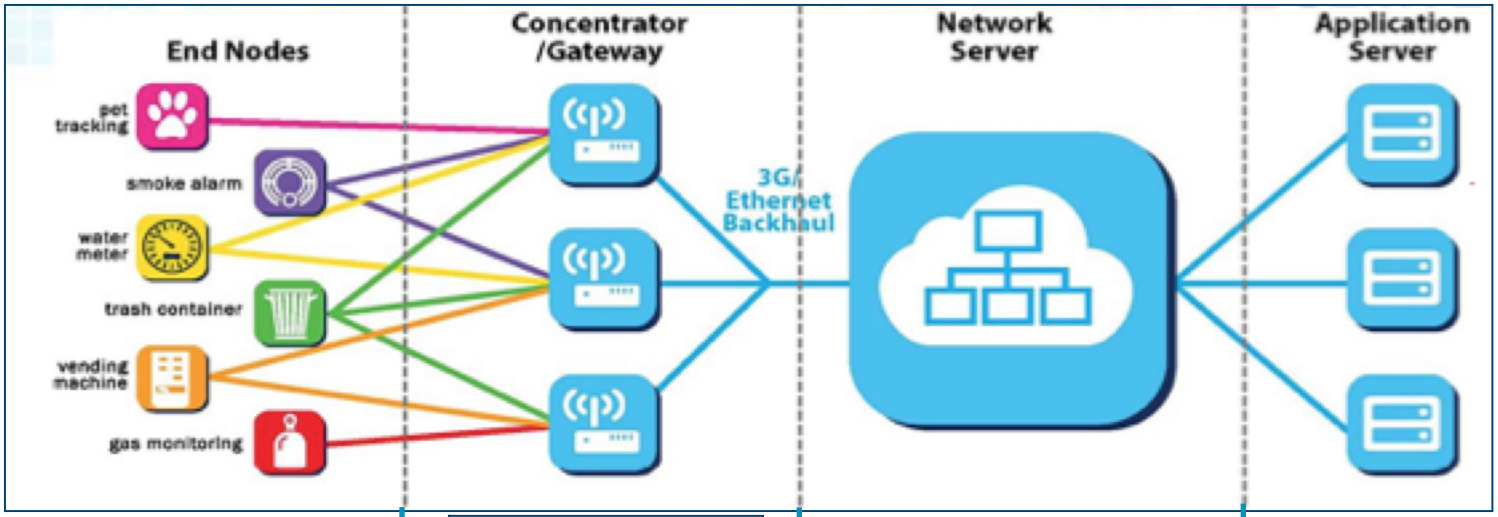
LORA of iOT



- Tracker (big volume)
- IoT Sensor Node (booming)

iFROG LAB

LORA of iForglab iOT image



LORAWan

WIFI of TCP/ MQTT

amazon web services™

Dropbox

iFROG LAB

iFROG LAB

iFROG LAB

iFROG LAB

IC Block with
BLE: F60
LORA: IL-LORA1272

IC Block with
WIFI module
ESP8266/
CC3200/4343W

IOT server for web

IOT NAS server

iFROG LAB

LORA Module

不含 MCU 的 LORA module

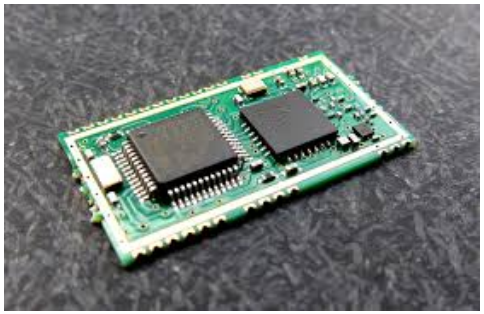
LoRa	
Module	SX1272
Dual Frequency Band	863-870 MHz (Europe)
	902-928 MHz (US)
Transmission Power	25 mW
Sensitivity	-134 dBm
Channels	8 (868MHz)
	13 (900MHz)
Range	LOS = 21km (13.4miles)
	NLOS = +2km (1.2miles)

有含 ST MCU 的 LORA Module

iFROG LAB

LORA Module with MCU

- MCU has support UART command

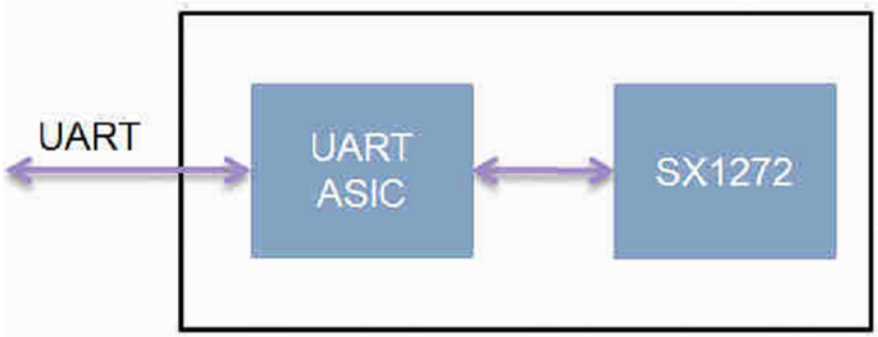


- Mcu doesn’t support UART command.

iFROG LAB

LORA with Mcu

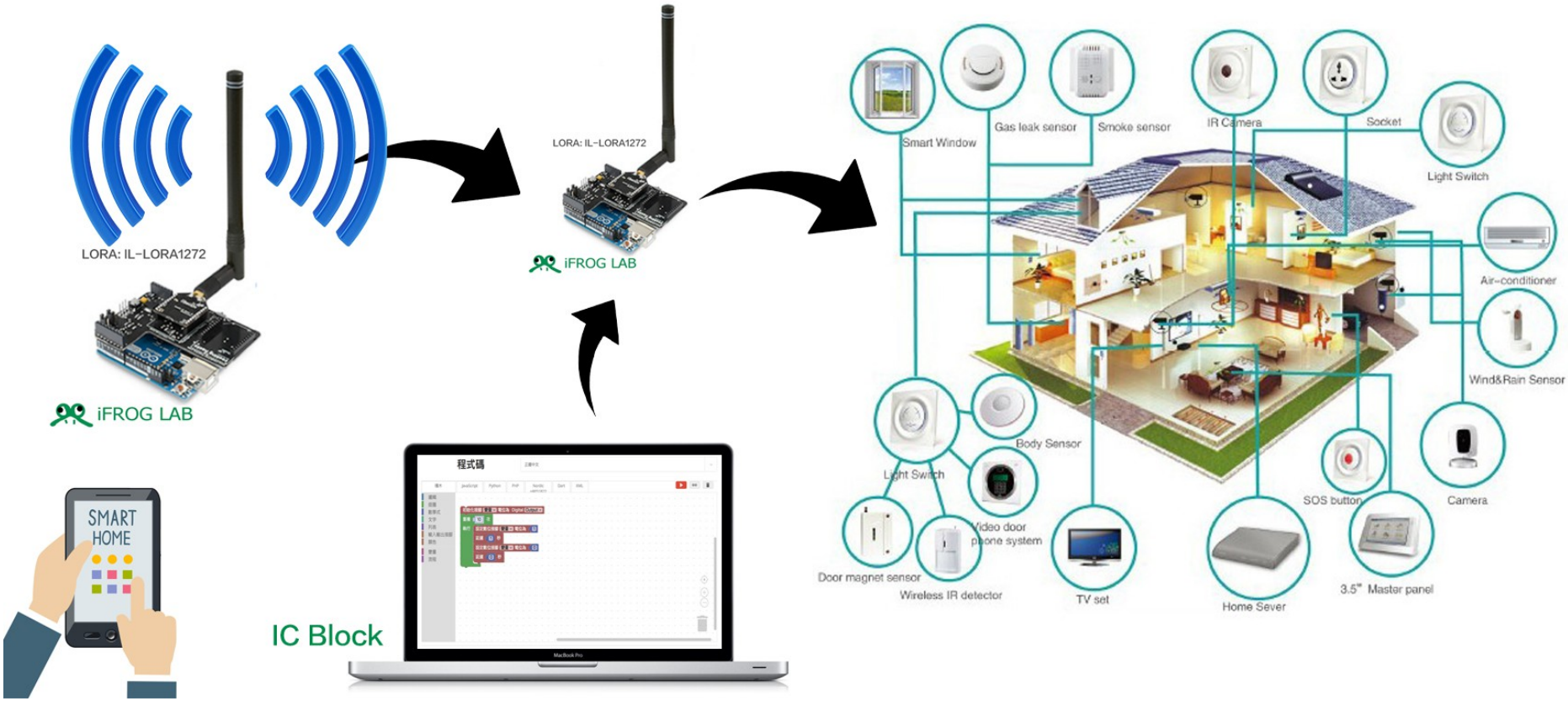
- iFroglab 所開發的” IL-LORA1272”
- 已內建 MCU 並且已將複雜的 register setting 轉換成簡單的 UART command.
- 這可以加速我們發展 LORA 相關技術 , 不需要有深厚的 RF 背景跟技術



iFROG LAB

LORA with iFroglab IC BLOCK

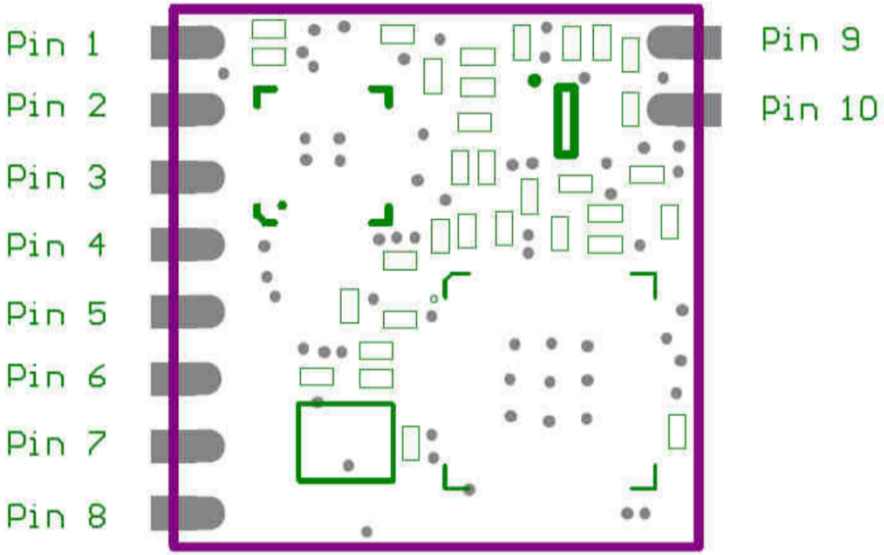
Home device programmable.

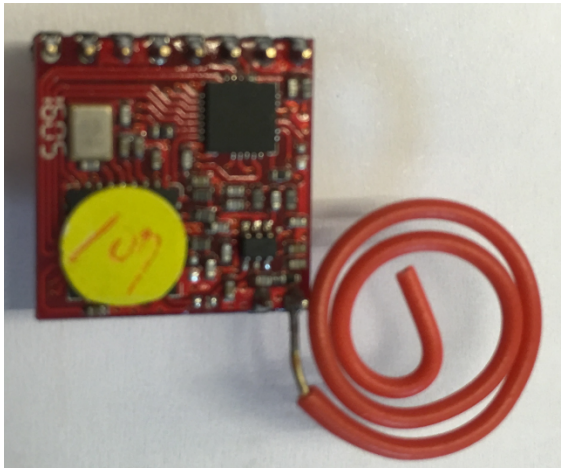


iFROG LAB

Lora with Mcu

- Pin Information





iFROG LAB

LORA with MCU

- Pin Information

Pin Name	Pin Type	Description
Pin 1	GND	
Pin 2	Host_IRQ	For RX mode Data ready → high level No data → low level (Note 1)
Pin 3	VDD	
Pin 4	EICK	NC (Note 2)
Pin 5	EIDA	NC (Note 2)
Pin 6	GND	
Pin 7	UART_TX	UTX: UART transmit output pin
Pin 8	UART_RX	URX: UART receive input pin
Pin 9	Antenna	External antenna connected pad
Pin 10	GND	

Note 1: Host_IRQ is always high level when RX data ready & it will change to low after Host read data.

Note 2: For F/W ISP (In System Program) & please reserve test pad.

LORA Module with MCU

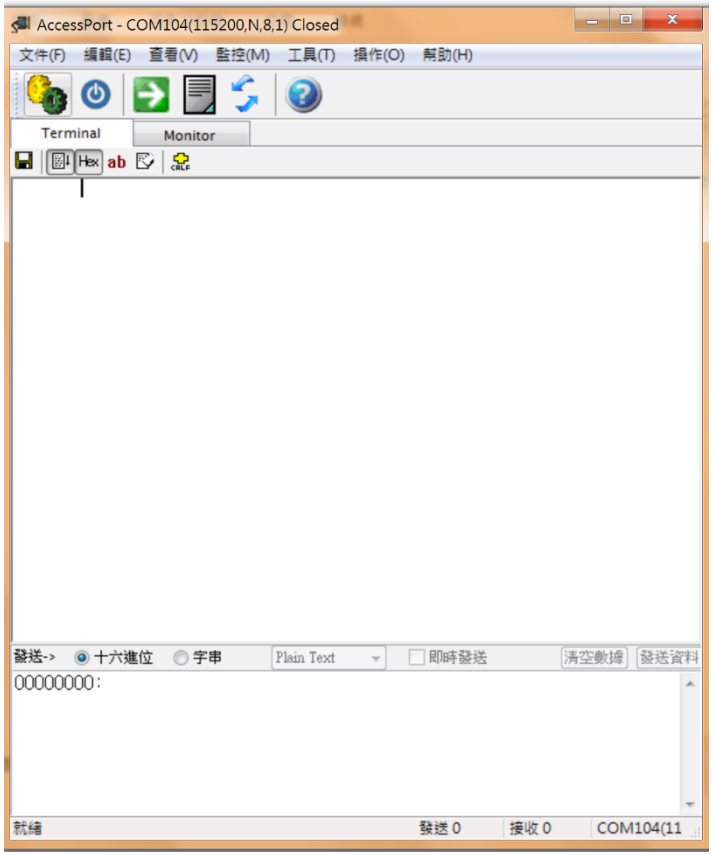
- UART Command List

	Headr Code :	SX1272 0xC1	SX1276 0xC2		115200	8,n,1										
	BYTE-1	BYTE-2	BYTE-3	BYTE-4	BYTE-5	BYTE-6	BYTE-7	BYTE-8	BYTE-9	BYTE-10	BYTE-11	BYTE-12	… …	BYTE-19	BYTE-20	
	Headr Code	Command	len	Data-1	Data-2	Data-3	Data-4	Data-5	Data-6	Data-7	Data-8	Data-9	… …	Data-16	Data-17	
讀取F/W版本及Chip ID																
PC -> MCU	0x80	0x00	0x00	CRC												SW Version。
PC <- MCU	0x80	0x80	0x02	Chip	Version	CRC										C1：Sx1272。
重置 & 初始化																
PC -> MCU	0xC1 0xC2	0x01	0x00	CRC												Reset (Lora Mode Default)。
PC <- MCU	0xC1 0xC2	0xAA	0x01	0x55	CRC											MCU收到資料回ACK。
讀取設定狀態																
PC -> MCU	0xC1 0xC2	0x02	0x00	CRC												RF Chip 設定值。
PC <- MCU	0xC1 0xC2	0x82	0x08	Mode	FreqH	FreqM	FreqL	Power	BW	CR	SF	CRC				Mod2 : Sleep(0x00)、StandBy(0x01)、Tx(0 Freq : FreqH&M&L * 61.035156。 Power : 2(0x00) ~ 17(0x0F)dBm。 BW:125k(0x01)、250k(0x2)、500k(0x3)。 CR:4/5(0x1)、4/6(0x2)、4/7(0x3)、4/8(0 SF:6(0x1)、7(0x2)、8(0x3)、9(0x4)、10(0
設定模式與頻率																
PC -> MCU	0xC1 0xC2	0x03	0x05	Mode	FreqH	FreqM	FreqL	Power	CRC							Mod2 : Sleep(0x00)、StandBy(0x01)、Tx(0 Freq : 860.00 ~ 1020.00MHz ; Default 915.0 Power : 2(0x00) ~ 17(0x0F)dBm ; Default 2
PC <- MCU	0xC1 0xC2	0xAA	0x01	0x55	CRC											MCU收到資料回ACK。

iFROG LAB

LORA Module with MCU

- Start the LORA module and demonstration
- H/W RSR23 to USB
- S/W AccessPoint tools



iFROG LAB

LORA Module with MCU

- Start LORA module and demonstration
- 第一步要先設定 TX(發設端)

- 1.Reset to Module
  - 0xC1 0X01 0X00

- 2.SET MODE FOR TX
  - 0XC1 0X03 0X02 0XE4 0XC0 0X00 0X03

- 3.Write Data to Buffer and set out
  - 0XC1 0X05 0X03 0X01 0X02 0X03
  - 0X03 ->data length
  - 0x01 0x02 0x03 <--Data

LORA Module with MCU

- Start LORA module and demonstration
- 第二步要先設定 RX(接收端)

- 1.Reset to Module
  - 0xC1 0X01 0X00
- 2.SET MODE FOR RX
  - 0XC1 0X03 0x03 0XE4 0XC0 0X00 0X03
- 3.Read Data from Buffer
  - 0XC1 0X06 0X00
- a read out example result
  - ->0XC1 0X86 0X03 0X01 0X02 0X03
  - 0X03 ->data length
  - 0x01 0x02 0x03 <--Data

Lora resource of iForglab

Personal Open source Business Explore Pricing Blog Support Search GitHub Sign in Sign up

Overview Repositories Public activity Follow

iFROG LAB

iFrogLab
iFrogLab

iFrogLab
Taiwan
http://www.ifroglab.com
Joined on 1 Oct 2015

Popular repositories

- **iFrogLab_F-60_UART** — iFrog Lab Bluetooth 4.0 BLE model F-60 UART sample code and official documents. 1 ★
- **IL-LORA1272** 1 ★
- **ArBle** — iFrogLab ArBle Shield, This project combines the brains of a Raspberry Pi with the brawn of an Arduino and... 0 ★
- **ArBleSample** 0 ★
- **blockly** — The web-based visual programming editor. 0 ★

2 contributions in the last year

iFROG LAB

Demo

Thank You !

iFROG LAB