TECHNICAL CHARACTERISTICS OF RF MODULE CR107D

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AMENDMENTS REGISTER

Description of amendments	Ref.	Issue	Date
Issue I: first issue	-	I	03/08/21

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1. Product Scope

CR107D WM-Bus 169MHz double channel RF Module is a standard product according with European Wireless MBUS protocol of EN13757-3 and EN13757-4(mode N). It is dedicated to Wireless MBUS application, its output power up to 500 mW in 169.400~169.475MHz ISM band. It is mostly used for data changing between concentrator, ammeter, water meter, gas meter and heat energy meter.

The module has two channels. Channel_1 both has receive and transmit function, Channel_2 only has receive function. It can simultaneous receive two channels in same time.

It has very low consumed power and better receiver sensitivity.

2. Technical Specs and Features

2.1. Technical Specs

The CR107D 169MHz module is a complete solution from serial interface to RF interface. It has a digital part and a RF part. According with EN13757-3 and EN13757-4，N mode of master.

Mechanical Characteristics:

Size	38x53mm
Height	14.3mm
Weight	10g
Components	All components on one side of the PCB

2.2. Technical Features

Features Specifications					
Items	Min	Typical	Max	Unit	Description
Operating Voltage	3.6	5	5.3	V	DC Power
RF Output impedance		50		Ω	
ANT Gain					
Frequency Range	169.4		169.475	MHz	±25ppm
Frequency tolerance			+/-1.5	kHz	@12.5 kHz
Frequency tolerance			+/-4.25	kHz	@50 kHz
Numbers of 12.5 kHz channel spacing		6			
Numbers of 50 kHz channel spacing		1			
Numbers of 25 kHz channel spacing		3			
RF Data rate/modulation		2.4/GFSK		kbps	@12.5 kHz
		4.8/GFSK		kbps	@12.5 kHz
		19.2/4GFSK		kbps	@50 kHz
		TBD		kbps	@25kHz
UART baud rate	2400		230400	Baud	

TX Specifications					
Items	Min	Typical	Max	Unit	Description
TX power	20		27	dBm	programmable
2nd harmonic			-36		
3rd/ harmonic			-54	dBm	
RX Specifications					
Items	Min	Typical	Max	Unit	Description
Sensitivity (2.4 kbps)	-116	-112	-110	dBm	
Blocking	30	74		dB	@+/- 1 MHz
	35	79		dB	@+/- 2 MHz
	60	81		dB	@+/- 10 MHz
Adjacent Channel Rejection		52		dB	
Alternate Channel Selectivity		57		dB	
Power Supply					
TX current		600	800	mA	@27dBm Output
RX current		32	40	mA	
Temperature range					
temperature range	-40		+85	℃	

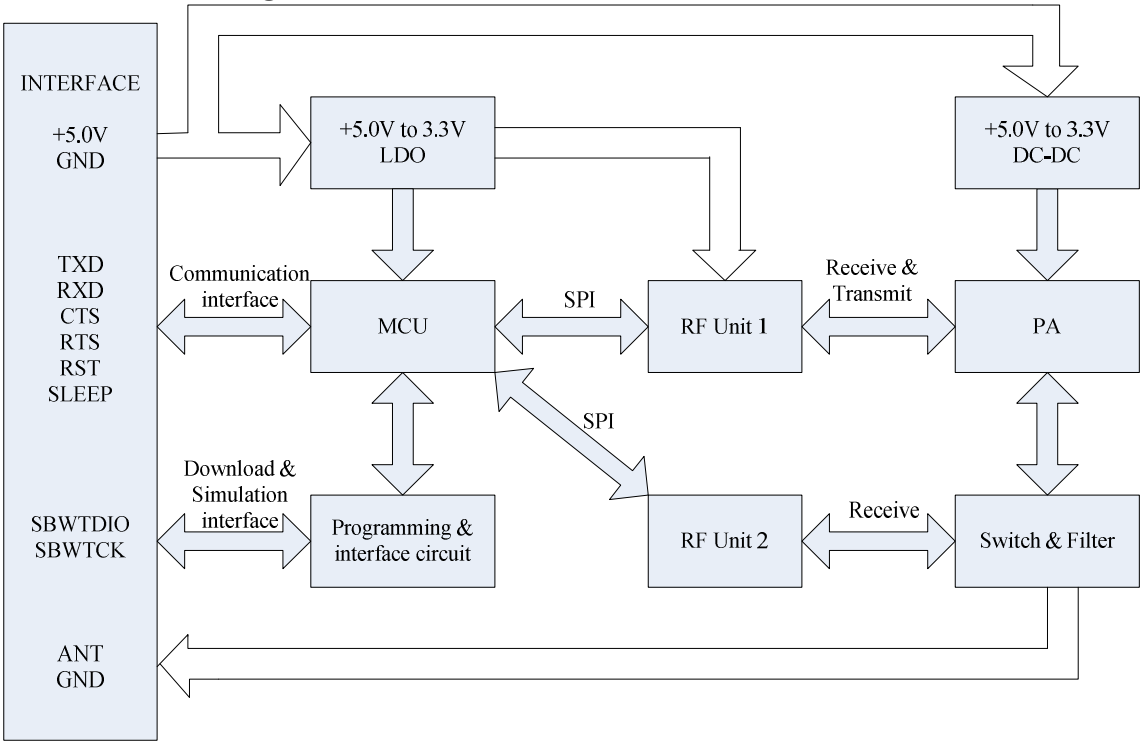
2.3. RoHS compliance

CR107D module must conform with RoHS-2 (2011/65/UE) directive. It is under the CM responsibility to supply all the necessary declarations to achieve the full compliance.

2.4. Life Time

Life time：In general condition，operating more than 10 years.

3. Functional Diagram



4. Working Principles

CR107D RF Module is pin board, it's very easy to install, its shape, size and interface see figure 1, figure 2.

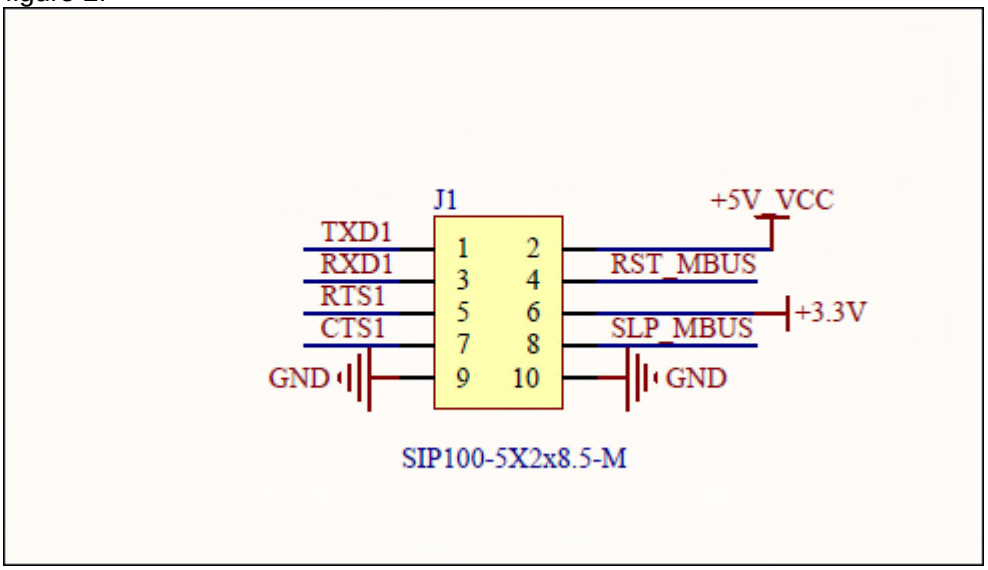


Figure1 DIP of the module

PIN descriptions：

PIN	Signal	Descriptions
J1-1	TXD	Peripheral Transmit of Serial Communication
J1-2	VCC	Power Source (+5V)
J1-3	RXD	Peripheral Receive of Serial Communication
J1-4	RST	Reset (Active Low)
J1-5	RTS	Request To Send
J1-6	+3.3V	Power Source (+3.3V)
J1-7	CTS	Clear To Send
J1-8	Sleep	To Sleep Mode (Active High)
J1-9	GND	Ground
J1-10	GND	Ground

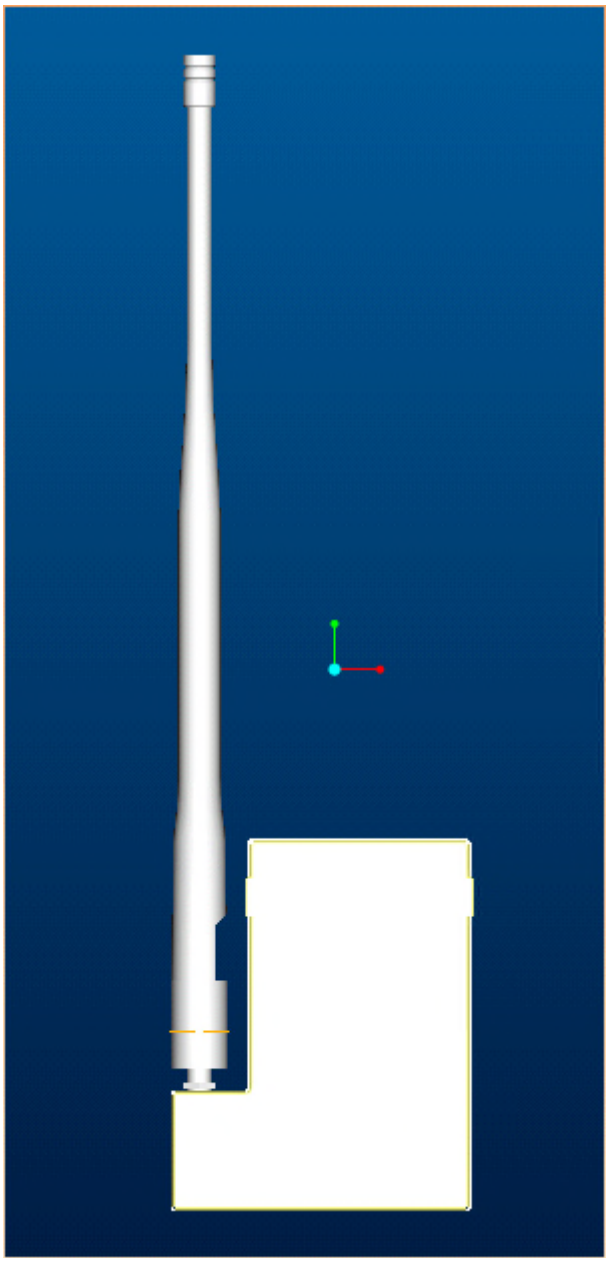


Figure 2 TOP view

5. Installation and Usage

5.1. Installation

This module is a pin board, only one side can be infixed, veracity of the pad position.

5.2. Usage

Notice：

- The module is static component, must be care for it.
- The operating voltage must be lower than 5.3V.
- The RF out does not open or short in operating mode.

6. Transportation & Storage

The modules should be placed on pallet and the height should not exceed 5 layers. The storage condition should be clean, with an environmental temperature of between -55°C and +85°C, relative humidity of less than 95% and with an absence of rusty matter in the air.