DS11843

RHF4T003 Handheld Field Tester Datasheet

V1

Document information

Info	Content
Keywords	RHF4T003，LoRaWAN ,RF performance、Shot battery discharge curve
Abstract	This document is the datasheet of the RHF4T003 handheld Field tester.

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Description

The RHF4T003 is a signal quality test instrument based on the standard LoRaWAN wireless communication protocol。Automatically switch to the network mode, the LCD display shows the current data transmission and reception status, signal quality and current position GPS information in real time.The RSSI, SNR LinkMargin and GPS information of the current signal are saved in the built-in memory card for further analysis by the user.

This specification mainly describes the relevant performance and application information of the handheld Field tester.

Application

The handheld Field tester is mainly used for the field construction test of LoRa network.LoRa and LoRaWAN guide the relevant personnel in network planning and network optimization or assess the quality of network planning during the actual field engineering deployment process.

Feature

♦ Features:

Support for LORa/LoRaWAN communication

LCD /uplink rssi snr/downlink rssi snr

GPS accurate positioning, positioning data uploaded to the cloud

Real-time monitoring of ambient temperature

High-precision membrane buttons, a variety of parameters can be configured

Calculate the packet loss rate

♦ High Performance:

RHF0M003-LF20:

TXOP=20dBm@434MHz/470MHz

RHF0M003-HF20:

TXOP=20dBm@868MHz/915MHz

♦ Support global LoRaWAN protocol ：

EU868;US915 and US915 Hybrid;CN779;EU433;AU915;CN470 and CN470 Prequel;AS923;KR920;IN865;

♦ Interface： MINI USB

♦ Endurance： Continuous work over 8H

♦ Storage： 8G sd

♦ Battery Capacity： 1150mAh

♦ Size： 167*67*27mm

1 Overview

The RHF4T003 handheld roadside meter is embedded with RHF0M003-LF20 and RHF0M003-HF20 LoRa modules. It can realize 20dBm@LF band (434MHz/470MHz) and 20dBm@HF band (868MHz/915MHz) free switching. Built-in high-precision GPS module captures current latitude and longitude information for accurate positioning in real time。The built-in temperature sensor accurately detects current ambient temperature changes. The LCD screen can display information such as time, battery level, and SD card status. In the test mode, LoRa data transmission and reception, downlink rssi snr, GPS information will be displayed on the LCD screen in real time. The user can judge the current test result through the screen information, and comprehensively evaluate whether the location of the gateway deployment and the location of the node deployment are optimal through the current test result.

1.1 Schematic diagram

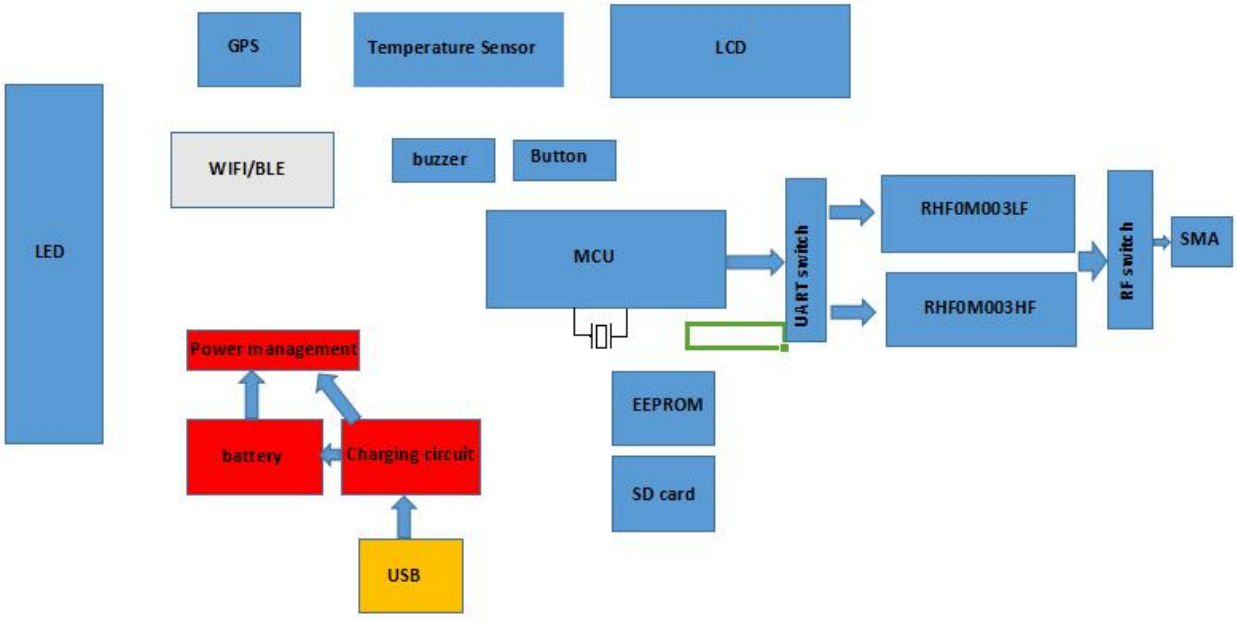

Figure 1 schematic diagram

2 Electrical Characteristics

2.1 working conditions

Item	Description	Min	Typ	Max	Unit
VCC	Power supply	3.0	3.7	5.0	V
Iα	Average supply cuuent	/	130	/	mA
Ic	Charging current		800	1000	mA
Vc	Charging power	4.2	5	5.5	V
T1mr	Operating temperature	-20	/	+70	℃
T2mr	Storage temperature	-40	/	+85	℃
Pmr	RF input signal			+10	dBm

Table 1 working conditions

2.2 Maximum Ratings

Item	Description	Min	Max	Unit
VCC	Power supply	-0.3	5.5	V
Ic	Charging current		1.2	A
Vc	Charging power	3.8	6	V
Pmr	RF input signal		+10	dBm

Table 2 maximum ratings

3 Product Specifications

Items	Parameter	Specifications	Unit
Hardware	module	LoRa module、GPSmoudle、WIFI/BLEmoudle	
	sensor	Temperature Sensor	
	Kernel	STM32476X	
	clock	12MHz	
	size	167*67*27	mm
	interface	Mini USB	
	Power supply	Rechargeable built-in lithium battery	
	storage	SD memory card	
	Standby current (interview screen)	21.8	mA
	Shutdown leakage current	36	uA
	Transmit power	20dBm max@434MHz/470MHz	dBm

		20dBm max @868MHz/915MHz		dBm
	Receiving sensitivity	-139dBm @SF12, BW125kHz, 434MHz/470MHz		dBm
		-137dBm @SF12, BW125kHz, 868MHz/915MHz		dBm
	TTFF (Open area)	30		s
	ESD	Contact discharge	±4KV	
		Air discharge	±4kV	
software	system	RT Thread		
	Firmware upgrade	USB upgrade		
	User configuration	HFT_Config_tool.exe		
	SD card file system	FAT32		

Table 3 Product Specifications

4 RF characteristics

4.1 434MHz/470MHz RF characteristics

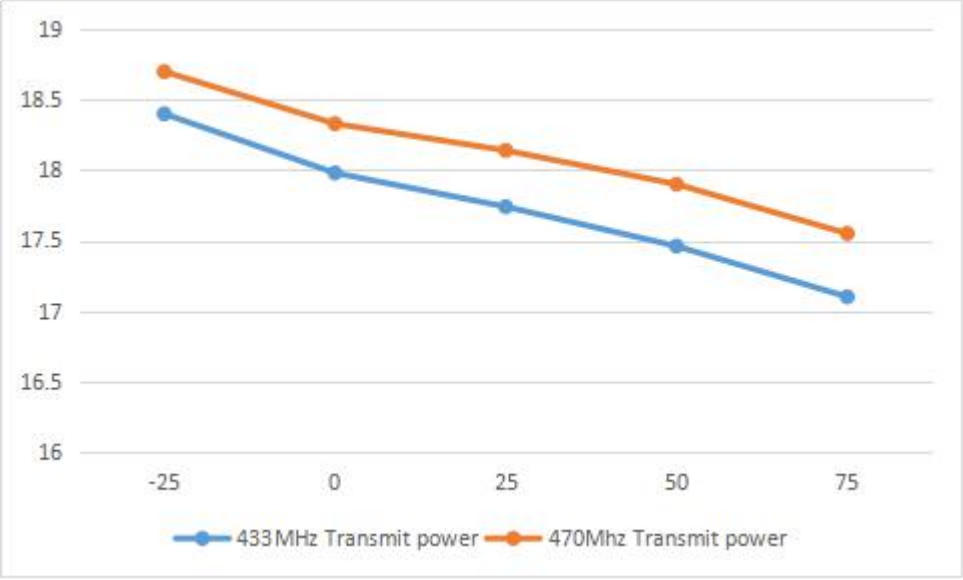

Figure 2 Transmit power vs ambient temperature

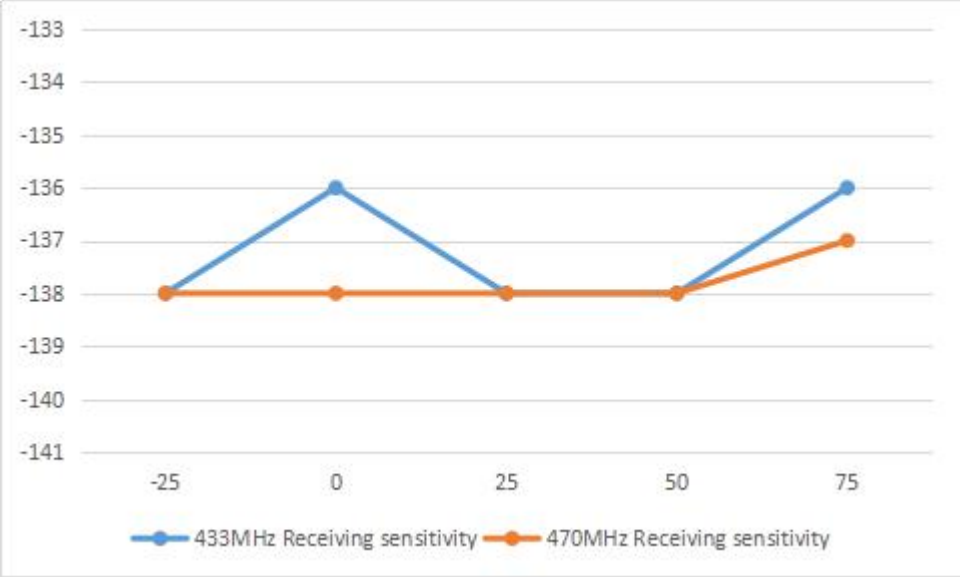

Figure 3 Receiving sensitivity(SF12, 125kHz) vs ambient temperature

4.2 868MHz RF characteristics

Figure 4 Transmit power vs ambient temperature

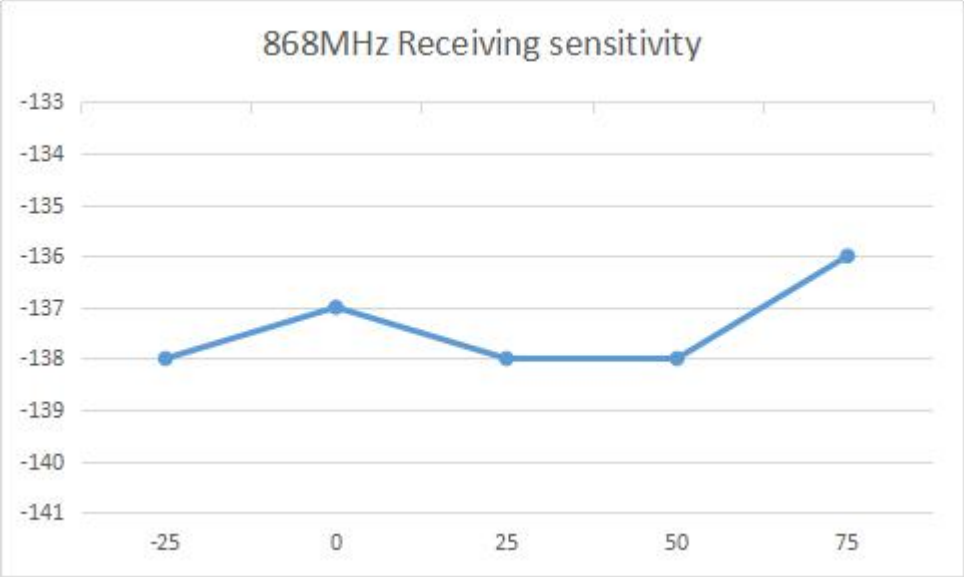

Figure 5 Receiving sensitivity(SF12, 125kHz) vs ambient temperature

5 battery discharge curve

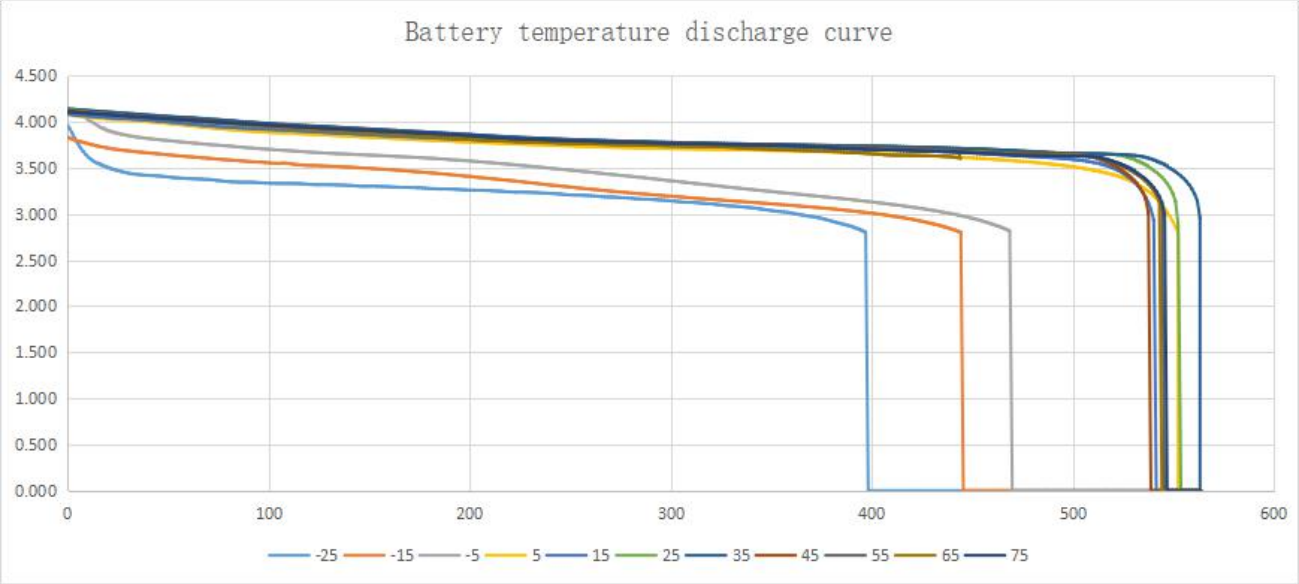

Figure 6 Battery temperature discharge curve

6 Antenna characteristics

6.1 433MHz Antenna parameter

Frequency	E Total. dB(dBi)	Efficiency( )	SWR
430MHz	0.73	72%	1.59
433MHz	1.02	77%	1.37
434MHz	1.09	78%	1.31
436MHz	0.98	75%	1.18
437MHz	N/A	N/A	1.10
440MHz	0.92	75%	1.07

Table 4 433MHz Antenna parameter

6.2 470MHz Antenna parameter

Frequency	E Total. dB(dBi)	Efficiency( )	SWR
470MHz	0.74	72%	1.81
480MHz	0.90	75%	1.32
490MHz	0.27	69%	1.33
500MHz	0.13	61%	1.64
510MHz	0.02	57%	1.91

Table 5 470MHz Antenna parameter

6.3 868MHz Antenna parameter

Frequency	E Total. dB(dBi)	Efficiency( )	SWR
868MHz	0.57	51%	1.71
878MHz	0.96	55%	1.48
888MHz	0.96	55%	1.33
898MHz	0.82	53%	1.50
908MHz	0.91	51%	1.83
915MHz	0.96	51%	2.16

Table 6 868MHz Antenna parameter

7 Shape

Size：167*67*27mm (Without antenna)

8 Ordering Information

Technical support: Support@RisingHF.com
Sale:
China: Salescn@RisngHF.com
Overseas: Salesww@RisingHF.com

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