

5G high-performance large-screen smart handheld terminal

MC51 User Manual



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Chapter 1 Introduction

1.1 Introduction

Chainway MC51 is our latest 5G high-performance large-screen smart handheld terminal. The device is built with more advanced technology, powerful processing chip, 6-inch high-definition display, excellent 5G and Wi-Fi 6E network communications, etc., providing your front-line employees with better performance mobile office solutions.

The device supports two forms: built-in UHF and gun-type UHF. It uses the self-developed UHF module based on Impinj chip and supports Impinj Gen2X, with better UHF performance. The device has multiple data collection functions such as barcode scanning, RFID reading, NFC, etc., and can be widely used in business scenarios such as retail stores, warehouse sorting, power inspection, and fixed asset management.

1.2 Battery precautions

- Do not leave the battery idle for too long, either in the production equipment or in the warehouse. If the battery has been used for 6 months, check the charging status or dispose of the battery properly.
- The battery life is generally two to three years, and the battery can be charged 300 to 500 times. A complete charging cycle means fully charging, fully discharging, and then fully charging again.
- Rechargeable batteries have a finite life and gradually lose their ability to hold a charge. This amount of loss (aging) is irreversible. As the battery loses capacity, its service life (run time) decreases.
- When the battery is not in use or idle, the battery continues to discharge slowly (automatically). Check the battery charge status frequently and refer to the user manual for instructions on how to charge the battery.
- Observe and record an unused, fully charged battery. Base runtime on new battery and compare to older battery. Battery runtime will vary based on product configuration and application.
- Check the battery charge status regularly.
- After the battery runtime drops below approximately 80% of the original runtime, the battery charging time increases significantly.

- CAUTION: There is a risk of explosion if the battery is replaced with an incorrect type. Always dispose of used batteries according to the instructions.

Chapter 2 Equipment Appearance and Function

Introduction

2.1 Equipment Appearance



Basic device style

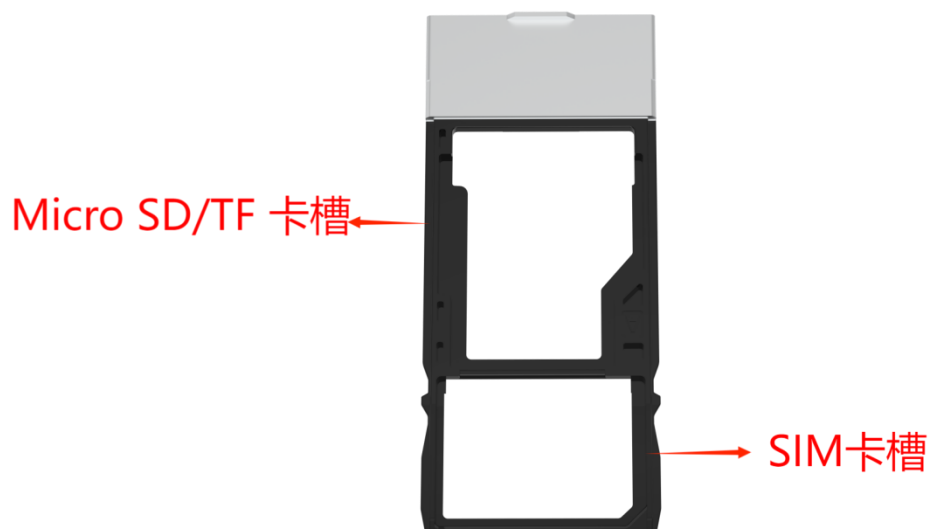


Gun-type UHF style

Built-in UHF style

2.2 Install Micro SD / TF and SIM card

The locations of the card slots are as follows:



2.3 Battery Charging

adapter to charge the battery via the USB port . Do not use other brands of adapters to charge the device .

2.4 Buttons and Function Area Display

Taking the basic version of MC51 device as an example, the device buttons are divided into 6 side buttons , there is a two-dimensional scanning head on the top of the body, a high-definition camera and flash at the back of the body, and below the camera is the NFC recognition area.

Button Description:

button		describe
Side	1. Power button	Located on the right side of the device , used to turn

buttons		the device on and off.
	2. Customize buttons	Located on the right side of the device, used to customize button functions.
	3. Right Scan Key	Located on the right side of the device , used for barcode scanning.
	4. Volume button	Located on the left side of the device, volume + / -
	5. Left Scan Key	Located on the left side of the device , used for barcode scanning.



Button Instructions Diagram

Chapter 3 Telephone Functions

3.1 Make a call



1. Click the icon to enter the dialing interface, which contains three parts:

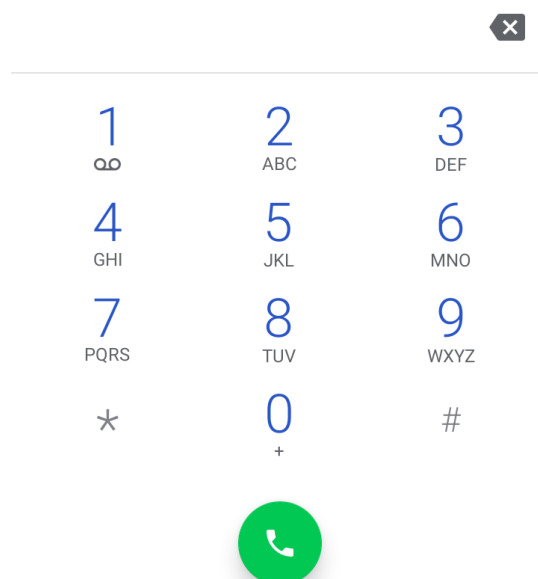
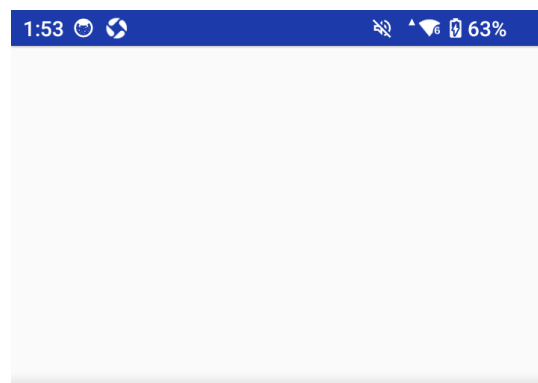
2. Press the number keys to enter the phone number;



3. Click to make a call;



4. Click Hang Up to end the call;



3.2 SMS and MMS



1. Click to  open the SMS window;



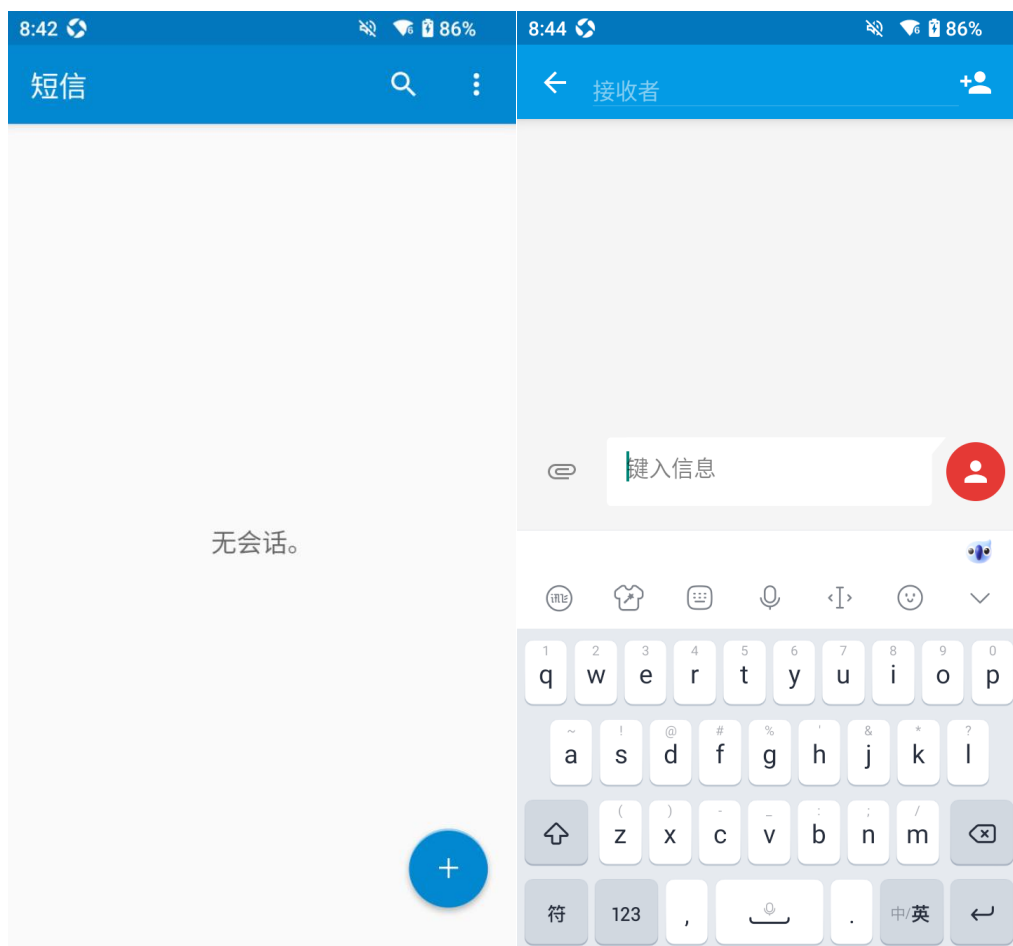
2. Click , to edit the message ;



3. Tap  and select a contact ;



4. Click  to add pictures and videos;



Chapter 4 Keyboard Assistant – Barcode Reading and Writing

The key assistant can be directly used in multiple usage environments and output formats, including prefix/suffix/Enter/Tab , etc.

For more detailed function introduction, please contact relevant technical support personnel, who will provide the Key Assistant usage instruction document.



Note: Please scan the barcode correctly, otherwise the scan will fail;

一维条码



正确



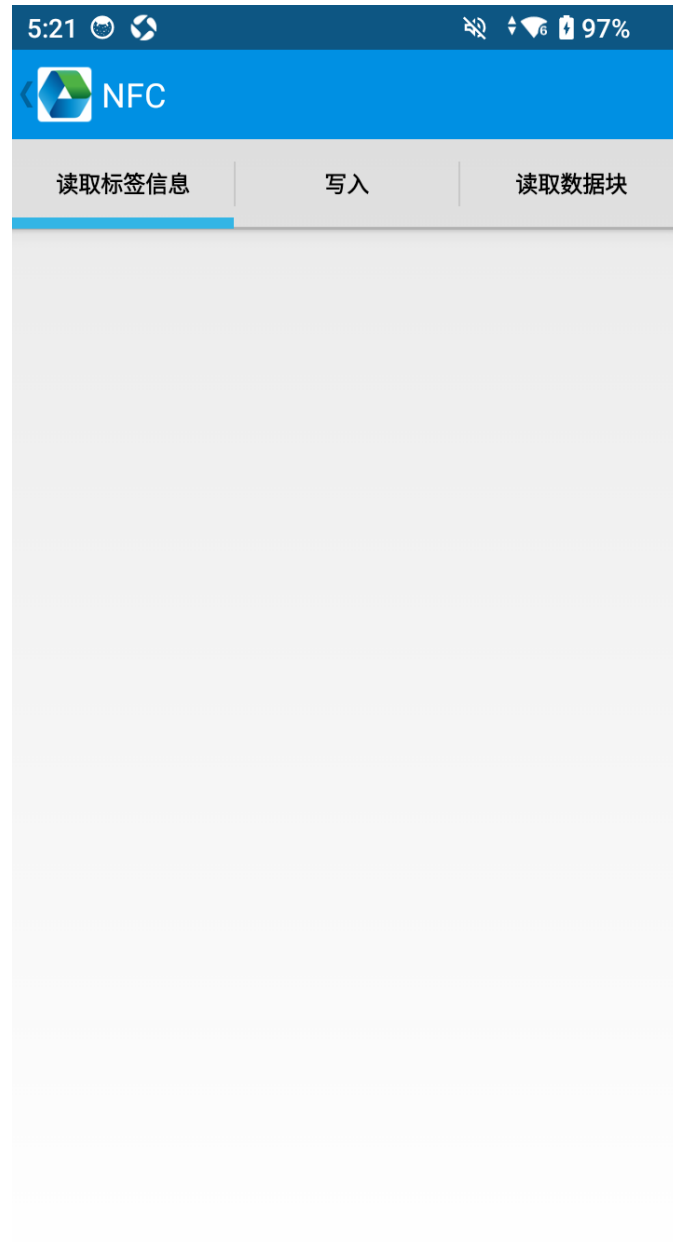
错误



Chapter 5 RFID Reader/Writer

5.1 NFC

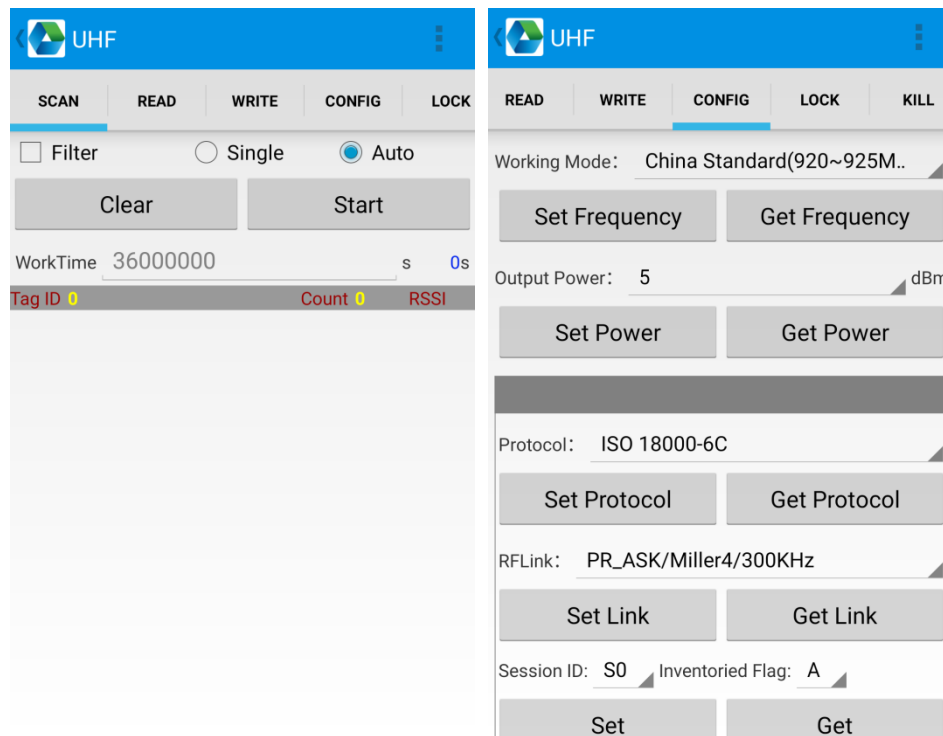
In the handset App Center , turn on " NFC " to read tags and write information.



5.2 UHF (optional)

In the App Center application of the handheld device , open " UHF " to read tag information, set UHF functions, read and write tags, etc.

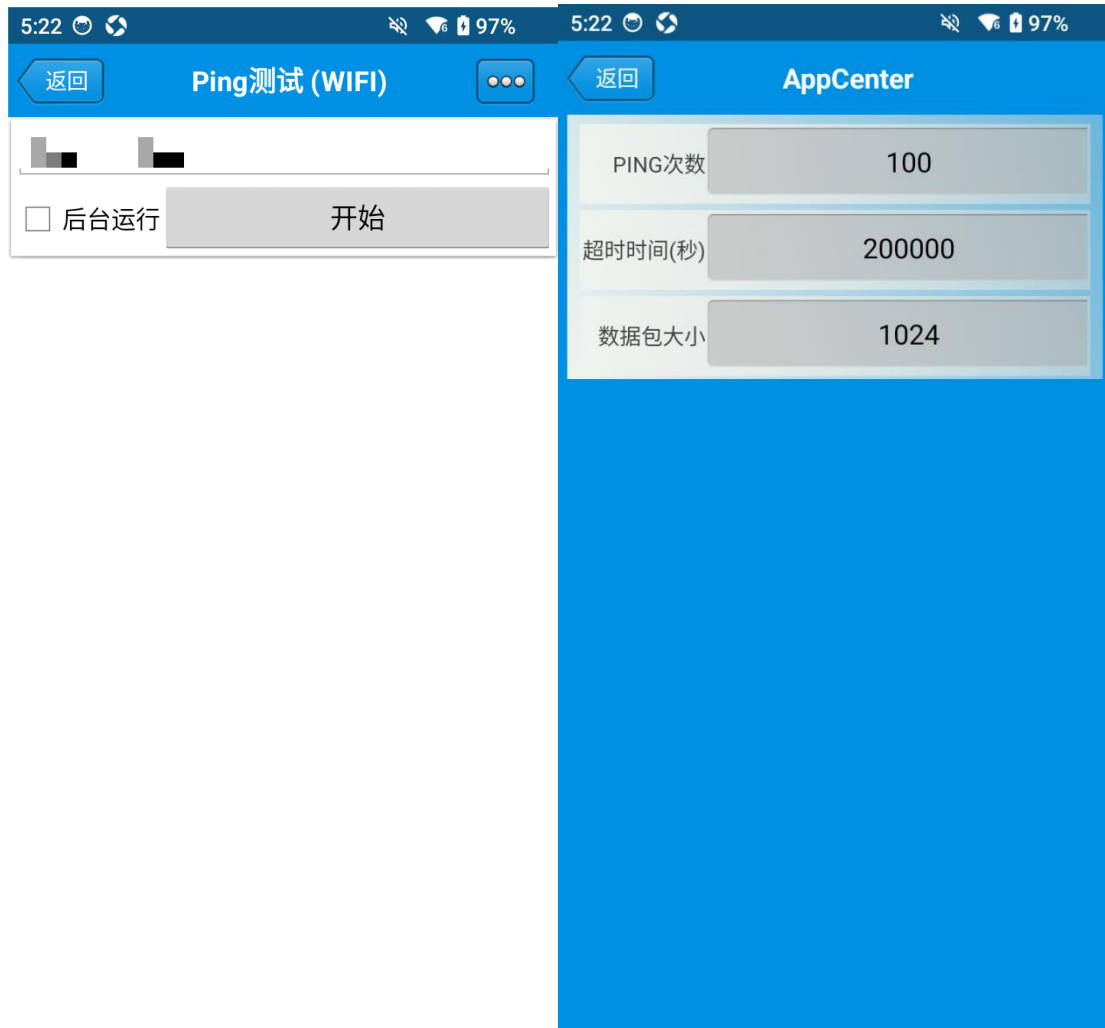
Note: If you need UHF operation guidance or need to use DEMO, please contact technical support personnel, thank you!



Chapter 6 Other functions of APP Center

6.1 PING tool

1. In the handheld App Center, open the "PING test";
2. Set PING parameters and select external/internal address;



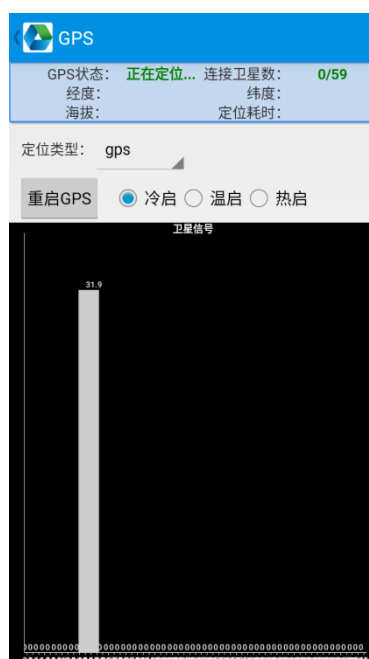
6.2 Bluetooth

1. In the handheld App Center, open "Bluetooth Print Test";
2. In the list of found devices, tap the device you want to connect to pair;
3. Select the printer and click "Print" to start printing the content;



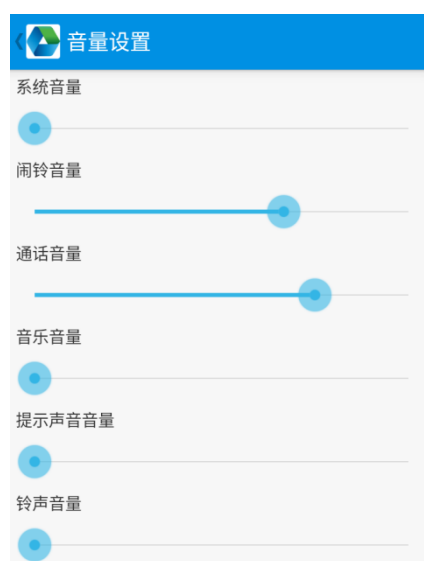
6.3 GPS

1. In the App Center of the handheld device, open "GPS Positioning Test";
2. Set GPS parameters and obtain GPS data information;



6.4 Volume setting

1. In the App Center of the handheld device, open "Volume Settings";
2. Set the volume according to your needs;



6.5 Sensors

1. In the App Center of the handheld device, open "Sensor";
2. Detect sensors according to needs;



6.6 Key test

1. In the App Center of the handheld device, open "Key Test";
2. Set and test the main values of the equipment;

6.7 Network Signals

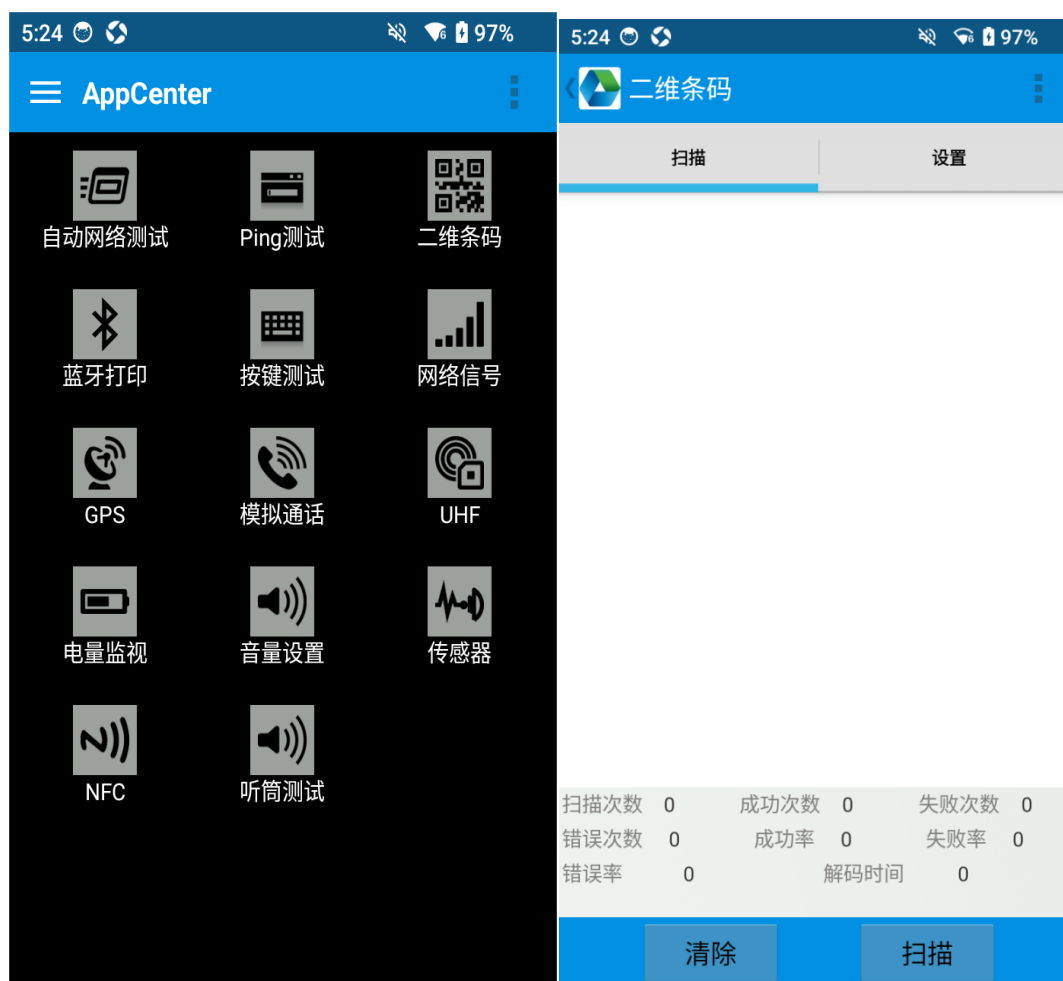
1. In the App Center of the handheld device, open "Network Signal";
2. Test WIFI/mobile signal as required;



6.8 Scan

1. In the App Center (press the multi-function button and the scan button at the same time to bring up the App Center menu), open "1D barcode test" or "2D barcode test" ;

2. Click the "Scan" button or use the scan button to start scanning.
You can also set automatic interval parameters .



7 Equipment Specifications

Physical parameters	
size	Basic version : 161.0 x 77.8 x 15.5 mm Clip version: 165.0 x 83.8 x 138.0 mm - in UHF version: 161.0 x 77.8 x 15.5 mm (29.2 mm at the thickest)
weight	Basic version: 297g (including battery) Back clip version: 707g (including battery) Built-in UHF version: 323g (including battery)
Display	6-inch HD full screen (18:9), resolution 1440 x 720
keyboard	1 power button + 2 scan buttons + 2 volume buttons + 1 custom
Battery	The host has a removable battery of 5000mAh (with fuel meter), supports QC3.0 fast charging and RTC, supports battery management
Expansion slots	Two SIM card slots or TF card slots, choose two out of three ;
Audio	2 microphones, 1 for noise cancellation, on the back; 1
sensor	Gravity sensor, distance sensor, light sensor, geomagnetic
Camera	5MP front camera, 13MP rear camera, auto focus (flash)
Performance parameters	
CPU	Qualcomm octa-core, 2.4 GHz
operating system	Android 14.0
RAM + ROM	4 +64 GB / 6 +128 GB (optional) / 8+128 GB (optional)
Communication	USB Type-C, USB 3.1, OTG
Maximum capacity	expansion MicroSD card is 256 GB (supports ultra-high capacity
Usage Environment	
Operating	-20 °C to 50 °C
Storage temperature	-40 °C to 70 °C
humidity	5%RH-95%RH (no condensation)
Drop specifications	Within the operating temperature range, all six sides can withstand multiple drops from a height of 1.5 meters onto concrete
Rolling test	Rolling continuously for 1000 times 0.5 meters, 6 contact surfaces still run stably after rolling, meeting IEC rolling

Sealed environment	IP6 7 , meets IEC sealing specifications
Electrostatic	±15KV air discharge, ±8KV contact discharge
Data Communication	
W WAN	2G: GSM/EDGE/GPRS (850/900/1800) 3G: W CDMA (B1/B5/B8) 4G: FDD-LTE (B1/B3/B5/B7/B8/B20/B28A/B28B) TDD-LTE (B34/B38/B39/B40/B41) 5G: N1/N3/N5/N7/N8/N20/N28/N38/N40/N41/N77/N78/N79
WLAN	2.4G/5G dual-band, support 802.11 a/b/g/n/ac/ax 6E; IPV4, IPV6 ; support 2*2MIMO antenna; fast roaming: PMKID caching, 802.11r, OKC;
Bluetooth	Bluetooth 5. 2
GNSS	Integrated GPS, Beidou, GLONASS and Galileo, supports AGPS,
Data collection	
Barcode scanning	Zebra: SE4710 , SE5500; CM60
NFC	Working frequency 13.56MHz ; Protocol standards: ISO14443A/B, ISO15693, NFC-IP1, NFC-IP2,
RFID UHF 1 (optional, UHF back clip)	Engine: CM-710, based on Impinj E710 chip Antenna parameters: circular polarization antenna (4dbi) Operating frequency: 920-925 MHz / 902-928 MHz / 865-868 MHz Protocol standard: EPC C1 GEN2/ISO18000-6C Impinj Gen2X : Support
RFID UHF 2 (optional, UHF built-in)	Engine: CM- 5N , based on Impinj E510 chip Antenna parameters: circular polarization antenna (0dbi) Operating frequency: 920-925 MHz / 902-928 MHz / 865-868 MHz Protocol standard: EPC C1 GEN2/ISO18000-6C Impinj Gen2X : Support
Development Environment	
SDK	Become a terminal software development kit
Development Language	Java
Development Tools	Eclipse/Android Studio

Chapter 8 Statement

This document is protected by copyright law. Any unauthorized reproduction, modification, distribution or display of part or all of this document is an infringement.

This document is intended to provide users with instructions for using the MC51 device . The information and guidelines described in the document are based on our best knowledge and are based on the author's knowledge at the time of writing. However, as the device may be upgraded, evolved, or otherwise changed, please be aware that the content in the document may become outdated. We will do our best to ensure that the information in the document is accurate, but we cannot guarantee the completeness, accuracy, and timeliness of the information.

This document is for reference and guidance purposes only and does not provide any form of guarantee or warranty. The author is not responsible for any misunderstanding, incorrect operation, loss or damage. For more information on this document or support on using the application, please refer to the official website or contact the technical support team.

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CE:

Due to the used enclosure material, the product shall only be connected to a USB

Interface of version 2.0 or higher. The connection to so called power USB is prohibited.

Warning:- replacement of a battery with an incorrect type that can defeat a safeguard;

- disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion;

- leaving a battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas; and

- a battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas.

The SAR limit of Europe is 2.0 W/kg for the head and Body, 4.0W/kg for the limbs. Device types Mobile Data Terminal MC51 has also been tested against this SAR limit. The highest SAR value reported under this standard during product certification for use when properly worn on the body is 1.240W/kg, limbs is 2.602W/kg and head is 0.782W/kg. This device was tested for typical body-worn operations with the back of the handset kept 0.5cm from the body. To maintain compliance with RF exposure requirements, use accessories that maintain a 0.5cm separation distance between the user's body and the back of the handset. The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with RF exposure requirements, and should be avoided.

The device for operation in the band 5150 – 5350 MHz (for IC: 5150-5250MHz) is

only for indoor use to reduce the potential for harmful

interference to co-channel mobile satellite systems.

	AT	BE	BG	CH	CY	CY	DE	DK
	EE	EL	ES	FI	FR	HR	HU	IE
	IS	IT	LI	LT	LU	LV	MT	NL
	PL	PT	RO	SE	SI	SK	TR	UK(NI)
	UK							

Frequency bands and power

	Bands	Operation Frequency	Max.Power
GSM	850	824-849 MHz	26.5 dBm
	900	880-915MHz	26.5 dBm
	1800	1710-1785MHz	25.0 dBm
WCDMA	1	1920-1980MHz	24.0 dBm
	5	824-849 MHz	24.5 dBm
	8	880-915MHz	24.5 dBm
LTE	1	1920-1980MHz	24 dBm
	3	1710-1785MHz	24.5dBm
	5	824-849MHz	24.5dBm
	7	2500-2570MHz	24.5dBm
	8	880-915MHz	24.5dBm

	20	832-862MHz	24.5dBm
	28	703-748MHz	24.5dBm
	34	2010~2025Mhz	24.5dBm
	38	2570-2620MHz	24.5dBm
	39	1880-1920MHz	24.5dBm
	40	2300-2400MHz	24 dBm
	41	2540-2640MHz	24.5 dBm
NR	N1	1920 ~ 1980 MHz	24.5 dBm
	N3	1710 ~ 1785 MHz	25.0 dBm
	N5	824 ~ 849 MHz	24.5 dBm
	N7	2500-2570MHz	25.0 dBm
	N8	880 ~ 915 MHz	24.5 dBm
	N20	832 ~ 862 MHz	24.5 dBm
	N28	703 ~ 748 MHz	24.0 dBm
	N38	2570-2620MHz	25.0 dBm
	N40	2300-2400MHz	24.5 dBm
	N41	2540-2640MHz	27.5 dBm
	N77	3300 ~ 4200 MHz	26.5 dBm
	N78	3300 ~ 3800 MHz	26.5 dBm
	N79	4400 ~ 5000 MHz	27 dBm

Bluetooth	2.4 GHz	2402-2480 MHz	EIRP14.37 dBm
Wi-Fi	2.4 GHz	2412-2472MHz	EIRP 19.68 dBm
	5G Hz	5180-5240MHz	EIRP 19.88 dBm
		5260-5320MHz	EIRP 19.73 dBm
		5500-5700MHz	EIRP 19.28 dBm
		5745-5825MHz	EIRP 13.89 dBm
	6G Hz	5955-6415MHz	EIRP 19.83dBm
GNSS		1559-1610MHz	-
		1164-1215MHz	-
NFC		13.56MHz	-10.15dBuAm@10m

This product can be used across EU member states.

EU Regulatory Conformance

Hereby, Shenzhen Chainway Information Technology Co., Ltd declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

For the declaration of conformity, visit the Web site
<https://www.chainway.net/certification>.



FCC statements:

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or changes to this equipment. Such modifications or changes could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The SAR limit of USA (FCC) is 1.6 W/kg averaged over one gram of tissue. Device

types MC 51 (FCC ID: 2AC6AMC51) has also been tested against this SAR limit.

The highest SAR value reported under this standard during product certification for use when properly worn on the body is 0.792W/kg and for head is 0.608 W/kg. This device was tested for typical body - worn operations with the back of the handset kept 10mm from the body.

To maintain compliance with FCC RF exposure requirements, use accessories that maintain a 5mm separation distance between the user's body and the back of the handset. The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be Avoided.