4G Smart Handheld Terminal

MC51S User Manual

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Chapter 1 Introduction

1.1 Introduction

The Chainway MC51S is a new-generation 4G large-screen smart handheld terminal built for efficient frontline operations, integrating powerful computing capability, high-speed wireless communication, and multi-function data capture. Powered by a high-performance processor and a 6-inch HD display (FHD optional), it supports 4G, Wi-Fi standards IEEE 802.11a/b/g/n/ac/ax (with 802.11ax corresponding to Wi-Fi 6), and Bluetooth 5.1, meeting the demands of high-frequency data transmission and network stability in complex operating environments.

Barcode scanning is optional, and NFC is supported. These data capture options make the MC51S suitable for business scenarios including retail, warehousing, electric power, and asset management. The device helps enterprises improve operational efficiency and achieve a stable mobile application experience.

1.2 Battery Precautions

- Do not leave the battery idle for a long time, whether inside the product device or in storage. If the battery has been in use for 6 months, check the charging status or dispose of the battery properly.
- The battery service life is typically two to three years, with 300–500 charge cycles. A complete charge cycle means fully charged, fully discharged, and then fully charged again.
- The service life of a rechargeable battery is limited and it will gradually lose its ability to hold a charge. This loss (aging) is irreversible. When the battery loses capacity, the service life (runtime) will shorten.
- When the battery is not in use or left idle, it continues to slowly (automatically) discharge. Check the battery charging status frequently, and refer to the user manual for instructions on how to check the battery charging indicator.
- Observe and record a fully charged battery that is not in use. Use the runtime of a new battery as the baseline and compare it with batteries that have been in service longer. Battery runtime varies depending on the product configuration and applications.
- Check the battery charging status regularly.
- When the battery runtime drops to about 80% of the original runtime, the battery charging time will noticeably increase.

Note: Replacing the battery with an incorrect model may cause an explosion. Be sure to dispose of used batteries according to the instructions.

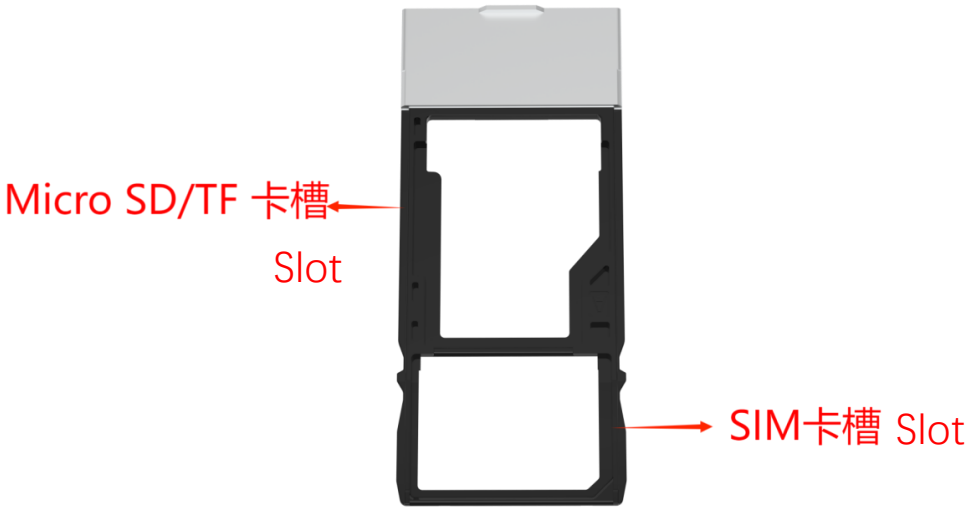
Chapter 2 Device Appearance and Function Overview

2.1 Device Appearance

Standard version

2.2 Installing the Micro SD/TF and SIM Cards

The card slots are located as follows:



2.3 Battery Charging

Charge the battery through the USB port using the original adapter. Do not use adapters of other brands to charge the device.

2.4 Keys and Function Area Overview

The standard MC51S has a power key, two scan keys, a volume (+/-) key, and a multifunctional key. When fitted, the optional 2D scan engine is at the top of the device. The rear camera and flash are on the back, with the NFC recognition area below the camera on versions that support NFC.

Key Description:

Key	Description
1. Power Key	Located on the right side of the device, used to power the device on/off.
2. Custom Key	Located on the right side of the device, used to customize key functions.
Right Scan Key	Located on the right side of the device, used for barcode scanning.
Volume Key	Located on the left side of the device, Volume +/-
Left Scan Key	Located on the left side of the device, used for barcode scanning.

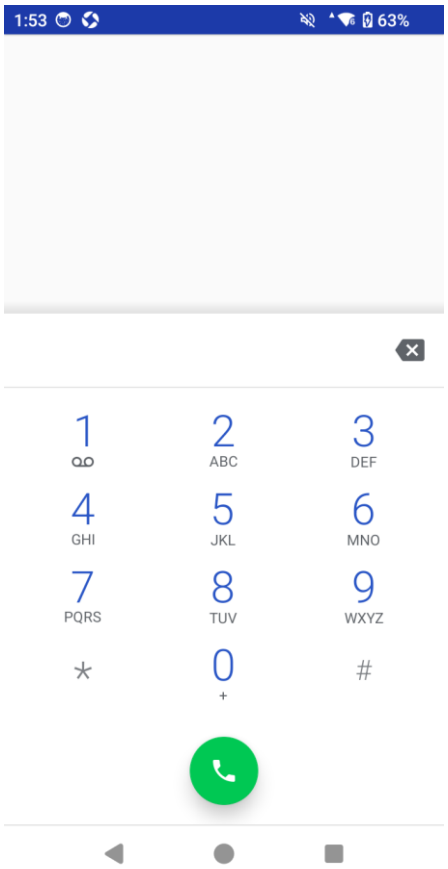
Key Description Illustration

Chapter 3 Phone Function

3.1 Making a Call

1. Tap the phone icon to enter the dial interface, which consists of three parts.
2. Tap the number keys to enter the phone number.
3. Tap the call key to make a call.
4. Tap the hang-up key to end the call.

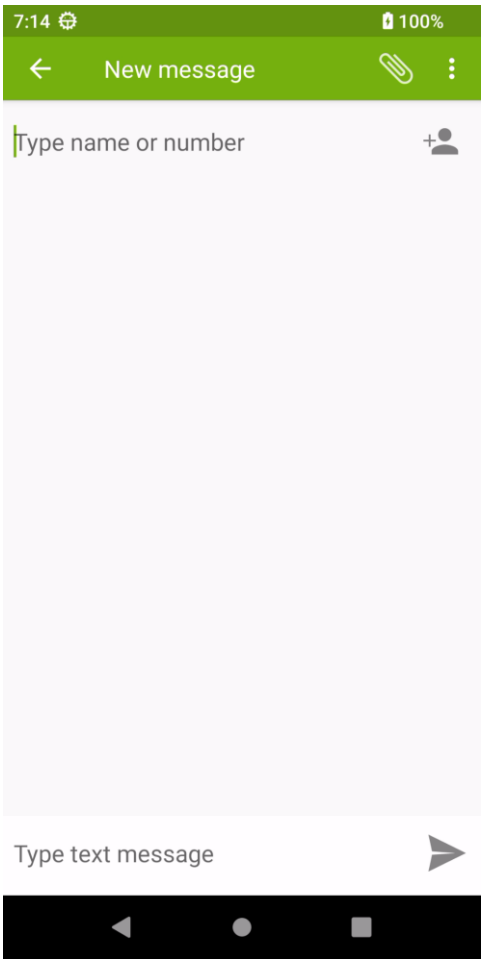
Dial interface



3.2 SMS and MMS

1. Tap the messaging icon to open the SMS window.
2. Tap to compose a message.
3. Tap to select a contact.
4. Tap to attach pictures or videos.

SMS interface



Chapter 4 KeyboardEmulator — Barcode Reading/Writing

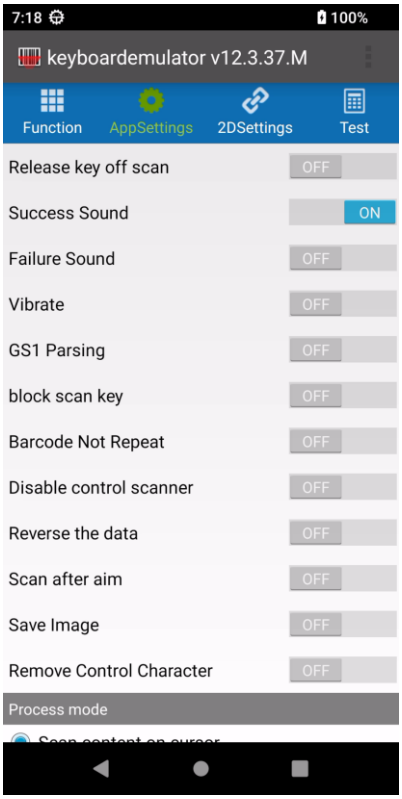
Use the KeyboardEmulator software to scan barcodes and QR codes.

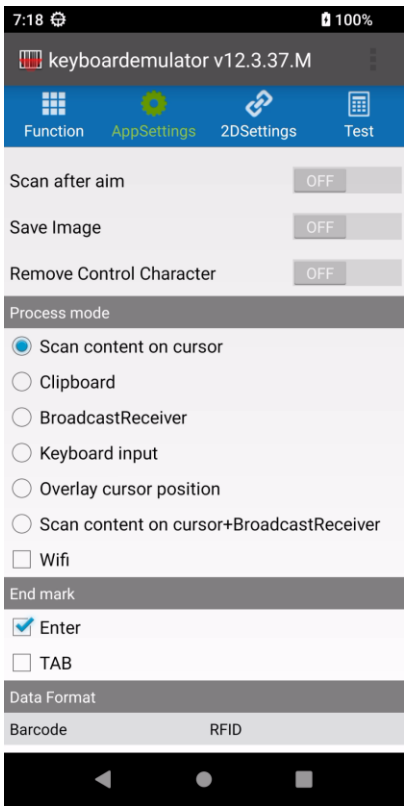
4.1 Function

Turn off the "Enable scan assistant" switch, check "Barcode 2D", tap a number under "KeyCode" to display the cursor, press a handle key or a side key on the device to configure the key value, then turn the "Enable scan assistant" switch back on.

4.2 Application Settings

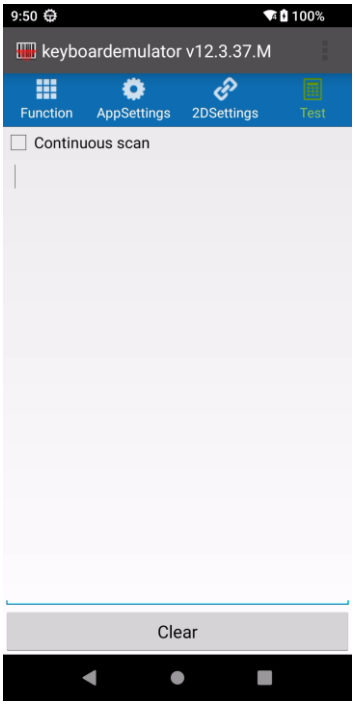
Configure the relevant settings of the KeyboardEmulator function, including processing mode, suffix, etc., as needed.





4.3 Test

After configuration, you can perform scan test verification on the Test screen in the navigation bar.



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

1D Barcode — incorrect vs. correct

2D Barcode — incorrect vs. correct

Chapter 5 Other Functions in AppCenter

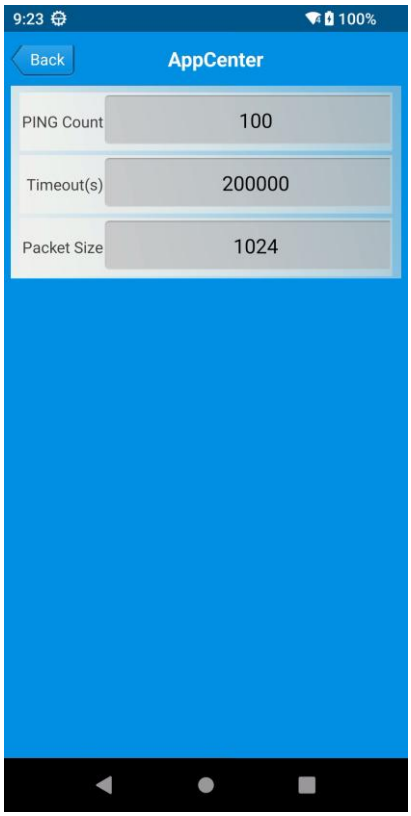
AppCenter includes NFC, positioning, network testing, and device sensor checks. The commonly used functions are described below. To use other functions, open AppCenter, tap the upper-left corner of the main page, and tap Configure to select them.

5.1 NFC

In the handheld device's AppCenter, open "NFC" to read tags and write information.

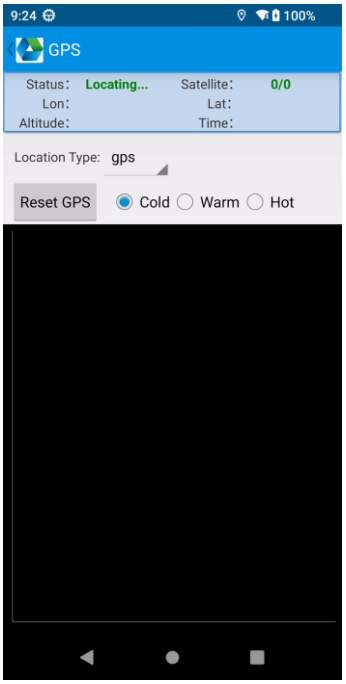
5.2 PING Tool

1. In the handheld device's AppCenter, open "PING Test".
2. Set PING parameters and select an external/internal address.



5.3 GPS

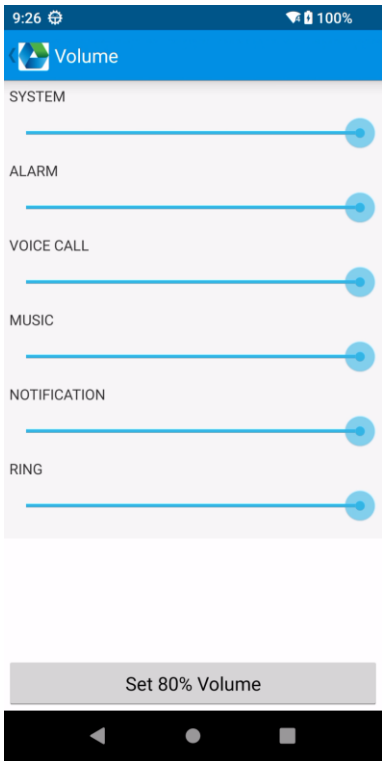
1. In the handheld device's AppCenter, open "GPS Positioning Test".
2. Set GPS parameters and obtain GPS data information.



5.4 Volume Settings

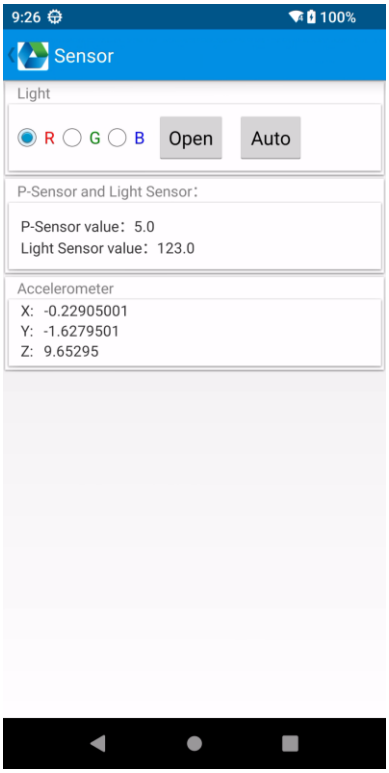
1. In the handheld device's AppCenter, open "Volume Settings".

2. Set the volume as needed.



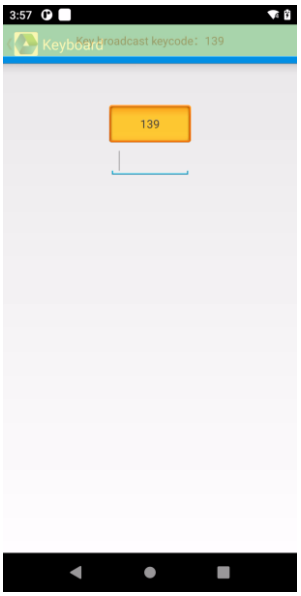
5.5 Sensors

1. In the handheld device's AppCenter, open "Sensors".
2. Test the sensors as needed.



5.6 Key Test

1. In the handheld device's AppCenter, open "Key Test".
2. Set and test the key values of the device.



5.7 Network Signal

1. In the handheld device's AppCenter, open "Network Signal".

2. Test the Wi-Fi/mobile signal as needed.

5.8 Scanning

1. In AppCenter (press the multi-function key and the scan key at the same time to bring up the AppCenter menu), open "1D Barcode Test" or "2D Barcode Test".

2. Tap the "Scan" button or use the scan key to start scanning. You can also set the auto-interval parameter.

Chapter 6 Device Specifications

Physical Parameters

Item	Specification
Dimensions	Standard version: 161.0 x 77.8 x 15.5 mm
Weight	Standard version: 297 g (including battery)
Display	6-inch, 1440 x 720; optional 2160 x 1080 FHD version
Touch Screen	Corning Gorilla Glass; supports multi-touch and operation with gloves or wet hands
Keypad	1 Power Key + 2 Scan Keys + 1 Volume (+/-) Key + 1 Multifunctional Key
Battery	Removable 5000 mAh main battery (with fuel gauge); supports QC3.0 fast charging and battery hot swap
Expansion Slot	1 SIM slot and 1 SIM/TF slot; eSIM supported (optional)
Communication Interface	USB 3.0, Type-C, supports OTG, with water droplet detection Bottom contacts: 2-pin contacts for charging Rear contacts: 2-pin handle key extension; optional 12-pin expansion
Audio	2 microphones (1 for noise cancellation), 1 speaker
Sensors	G-sensor, light sensor, proximity sensor, geomagnetic sensor, and gyroscope/accelerometer 2-in-1 sensor
Camera	Front 5 MP camera; rear 16 MP camera with autofocus (with flash)

Performance Parameters

Item	Specification
CPU	Octa-core, 2.8 GHz
Operating System	Android 16.0
RAM + ROM	UFS, 4 + 64 GB / 8 + 256 GB (optional)
Max Expansion	MicroSD card expansion up to 256 GB (supports 512 GB ultra-capacity cards)

Environmental

Item	Specification
Operating Temperature	-20°C to 50°C
Storage Temperature	-40°C to 70°C
Humidity	5% RH to 95% RH (non-condensing)
Drop Specification	Passes 1.5 m drop test per MIL-STD-810H (US military standard)

Tumble Test	0.5 m, 1000 cycles, complies with IEC standard
Sealing	Host IP67 per IEC sealing specifications
ESD Protection	±15 kV air discharge, ±8 kV contact discharge

Data Communication

Item	Specification
WWAN (Global)	2G: GSM/EDGE/GPRS (850/900/1800/1900) 3G: WCDMA (B1/B2/B4/B5/B8) 4G: LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B17/B20/B25/B26/B28A/B28B LTE-TDD: B34/B38/B39/B40/B41
WLAN	IEEE 802.11a/b/g/n/ac/ax (802.11ax corresponds to Wi-Fi 6); fast roaming supported
VoLTE	Supports VoLTE HD video and voice calls
Bluetooth	Bluetooth 5.1; headset support
GNSS	Integrated GPS, BeiDou, GLONASS, and Galileo; supports A-GPS

Data Capture

Item	Specification
Barcode Scan Engine (Optional)	Zebra: SE4710, SE55; CM60
NFC	Operating frequency: 13.56 MHz Protocols: ISO14443A/B, ISO15693, NFC-IP1, NFC-IP2, etc. Tag standards: M1 cards (S50, S70), CPU cards, NFC tags, etc. Read/write distance: 2-4 cm

Chapter 7 Statement

This document is protected by copyright law. Any form of reproduction, modification, distribution, or display of part or all of this document without authorization is an infringement.

This document is intended to provide users with instructions for using the MC51S device. The information and guidelines described in this document are based on the best of our knowledge and on the situation known to the author at the time of writing. However, because the device may be upgraded, evolved, or subject to other changes, please note that the content in this document may become outdated. We will do our best to ensure that the information in this document is accurate, but we cannot guarantee the completeness, accuracy, or timeliness of the information.

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

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CE Maintenance

1.Use careful with the earphone maybe excessive sound pressure from earphones and headphones can cause hearing loss.

2.Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

3.The product shall only be connected to a USB interface of version Type-C. 4.Adapter shall be installed near the equipment and shall be easily accessible. 5.EUT Operating temperature range: 0° C to 40° C .

6.Adapter: The plug considered as disconnect device of adapter

Power supply and ADP(rating):

Input: AC 100-240V 50/60Hz 0.6A

Output: DC 5.0V 3.0A or 9.0V 2.0A or 12.0V 1.5A 18.0W

7.The device complies with RF specifications when the device used at 5mm you’re your body. 8.To prevent possible hearing damage. Do not listen at high volume levels for long periods.

This product may be used in the following European member states subject to the following restrictions. For products that operate in the frequency band 5.150 to 5.350 GHz, wireless access systems (WAS), including radio local area networks (RLANs), shall be restricted to indoor use.

	AT	BE	BG	CH	CY	CZ	DE	DK	EE	EL	ES
	FI	FR	HR	HU	IE	IS	IT	LI	LT	LU	LV
	MT	NL	NO	PL	PT	RO	SE	SI	SK	TR	

Declaration of Conformity

Shenzhen Chainway Information Technology Co., Ltd hereby declares that this Mobile Data Terminal is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. In accordance with Article 10(2) and Article 10(10),This product is allowed to be used in all EU member states.

Frequency Bands:
GSM 900: 880 MHz to 915 MHz
GSM1800: 1710 MHz to 1785 MHz
WCDMA Band I: 1920 MHz to 19780 MHz
WCDMA Band VIII: 880 MHz to 915 MHz
LTE Band 1: 1920 MHz to 1980 MHz
LTE Band 3: 1710 MHz to 1785 MHz
LTE Band 7: 2500 MHz to 2570 MHz
LTE Band 8: 880 MHz to 915 MHz
LTE Band 20: 832 MHz to 862 MHz
LTE Band 28: 703 MHz to 736 MHz
LTE Band 34: 2010MHz to 2025MHz
LTE Band 38: 2570 MHz to 2620 MHz
LTE Band 40: 2305 MHz to 2400MHz
LTE Band 41: 2496 MHz to 2690MHz
WLAN 802.11b/g/n/ax20: 2412 MHz to 2472MHz
WLAN 802.11a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80: 5150 MHz to 5250 MHz
WLAN 802.11a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80: 5250 MHz to 5350 MHz
WLAN 802.11a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80: 5470 MHz to 5725 MHz
WLAN 802.11a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80: 5725 MHz to 5850 MHz
Bluetooth: 2402 MHz to 2480 MHz
GPS: 1575.42 MHz ± 1.023 MHz
BDS: 1561.098MHz
GLONASS: 1602 MHz
GALILEO: 1575.42 MHz
NFC: 13.56MHz

Max power:
GSM 900: 33.39dBm
GSM1800: 22.96dBm
WCDMA Band I: 22.77dBm
WCDMA Band VIII: 23.24dBm
LTE Band 1: 23.42dBm
LTE Band 3: 23.35dBm
LTE Band 7: 23.06dBm
LTE Band 8: 23.61dBm
LTE Band 20: 23.34dBm
LTE Band 28: 24.11dBm
LTE Band 34: 22.37dBm
LTE Band 38: 22.47dBm
LTE Band 40: 22.12dBm
LTE Band 41: 22.39dBm
2.4GHz WLAN: 16.62dBm
5GHz WLAN: 15.45dBm
5.8GHz WLAN: 11.45dBm
Bluetooth: 7.44dBm
BLE: 7.20dBm
NFC: -6.48dBuA/m at 3m

Federal Communication Commission Interference Statement
FCC ID: 2AC6AMC51S

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.

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Radiation Exposure Statement:

This device meets the government's requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health. The SAR limit of USA (FCC) is 1.6 W/kg averaged. Device types: Mobile Data Terminal (FCC ID: 2AC6AMC51S) has also been tested against this SAR limit. SAR information can be viewed on-line at http://www.fcc.gov/oet/ea/fccid/. Please use the device FCC ID number for search. This device was tested simulation typical 0mm to head and 10mm to body. To maintain compliance with FCC RF exposure requirements, use accessories should maintain a separation distance between the user's bodies mentioned above, use 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.