

Rugged Handheld Computer

- EA660 -



User's Manual

Version 1.4

Revision History

Date	Change Description	Version
20230802	First Published Version	V1.0
20230904	Remove IP	V1.1
20230918	Add "Temporary not supported" Term Add UKCA Mark/ Statement Add FCC/IC warning statement	V1.2
20231004	Add Power Descriptions Modify WLAN spec	V1.3
20231011	Update Preface Descriptions Update Power Descriptions Delete Optional Accessories	V1.4

Preface

About This Manual

Thank you for purchasing the Unitech product.

This manual explains how to install, operate and maintain our product.

No part of this publication may be reproduced or used in any form, or by any electrical or mechanical means, such as photocopying, recording, or information storage and retrieval systems, without permission in writing from the manufacturer. The material in this manual is subject to change without notice.

Regulatory Compliance Statements

FCC Warning Statement

This device 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 with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with 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.
1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
 2. This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. To maintain compliance with FCC RF exposure requirements, avoid direct contact to the transmitting antenna during transmitting.
 3. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment.
 4. Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

FCC Label Statement

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

RF Radiation Exposure Statement

For body contact during operation, this device has been tested and meets FCC RF exposure guidelines when used with an accessory that contains no metal and that positions the handset a minimum of 1.0 cm from the body.

Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

IC Statements

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radioexempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

(i) Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

Devices shall not be used for control of or communications with unmanned aircraft systems

Les dispositifs ne doivent pas être utilisés pour commander des systèmes d'aéronef sans pilote ni pour communiquer avec de tels systèmes.

IC Radiation Exposure Statement

This EUT is compliance with SAR for general population/uncontrolled exposure limits in IC RSS-102 and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528 and IEC 62209. This equipment should be installed and operated with minimum distance 10 mm between the radiator and your body. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet appareil est conforme aux limites d'exposition DAS incontrôlée pour la population générale de la norme CNR-102 d'Industrie Canada et a été testé en conformité avec les méthodes de mesure et procédures spécifiées dans IEEE 1528 et IEC 62209. Cet appareil doit être installé et utilisé avec une distance minimale de 10mm entre l'émetteur et votre corps. Cet appareil et sa ou ses antennes ne doivent pas être co-localisés ou fonctionner en conjonction avec tout autre antenne ou transmetteur.

European Conformity Statement

Unitech Electronics co., Ltd herewith declares that the Unitech product is in compliance with the essential requirements and all other provisions of the RED 2014/53/EU directive.

The declaration of conformity is available for download at :
<https://portal.Unitech.eu/public/Safetyregulatorystatement>

UK Declaration of Conformity (DoC)

Hereby, unitech electronics co., ltd. declares that the radio equipment type Rugged Handheld Computer is in compliance with UK Radio Equipment Regulations 2017(RER 2017 (SI 2017/1206)).

The full text of the UK declaration of conformity is available at the following internet address: <https://www.ute.com>

UKCA Mark Warning



CE RF Exposure Compliance

For body-worn operation, this device has been tested and meets the ICNIRP guidelines and the European Standard EN 62209-2, for use with dedicated accessories, SAR is measured with this device at a separation of 0.5 cm to the body, while transmitting at the highest certified output power level in all frequency bands of this device. Use of other accessories which contain metals may not ensure compliance with ICNIRP exposure guidelines.

CE Mark Warning



RoHS Statement



This device conforms to RoHS (Restriction Of Hazardous Substances) European Union regulations that set maximum concentration limits on hazardous materials used in electrical and electronic equipment.

Waste electrical and electronic equipment (WEEE)



Unitech has set up a policy and process to meet the 2012/19/EU concerning electronic waste disposal.

For more detailed information of the electronic waste disposal of the products you have purchased from Unitech directly or via Unitech's resellers, you shall either contact your local supplier or visit us at :

<https://portal.Unitech.eu/public/WEEE>

Taiwan NCC Warning Statement

低功率電波輻射性電機管理辦法

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。應避免影響附近雷達系統之操作。高增益指向性天線只得應用於固定式點對點系統。

SAR標準值2.0W/KG，送測產品實測值為：0.395 (W/KG)

注意事項：

1. 使用過度恐傷害視力。
2. 使用30分鐘請休息10分鐘；未滿2歲以下幼兒不看螢幕，2歲以上每天看螢幕不要超過1小時。
3. 減少電磁波影響，請妥適使用。

Note:

Within the 5.25-5.35 GHz band, U-NII devices will be restricted to indoor operations to reduce any potential for harmful interference to co-channel MSS operations.

Devices shall not be used for control of or communications with unmanned aircraft systems.

Laser Information

The Unitech product is certified in the U.S. to conform to the requirements of DHHS/CDRH 21CFR Subchapter J and to the requirements of IEC 60825-1. Class II and Class 2 products are not considered to be hazardous. The Unitech product contains internally a Visible Laser Diode (VLD) whose emissions do not exceed the maximum limits as set forth in the above regulations. The scanner is designed so that there is no human access to harmful laser light during normal operation, user maintenance or prescribed service operations.

The laser safety warning label required by the DHHS/IEC for the Unitech product's optional laser scanner module is located on the memory compartment cover, on the back of the unit.

* Laser information only applies to the products with laser components.

CAUTION! Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light. Use of optical instruments with the scanner, including binoculars, microscopes, and magnifying glasses, with will increase eye damage. This does not include eyeglasses worn by the user.

LED Information

The Unitech product contains LED indicator(s) or LED ring whose luminance is not harmful to human eyes during normal operation, user maintenance or prescribed service operations.

*LED information only applies to the products with LED components.

Battery Notice

1. To guarantee optimal performance, it is recommended that rechargeable batteries be replaced every year, or after 500 charging cycles are completed. It is normal for the battery to balloon or expand after one year or 500 cycles. Although it does not cause damage, it cannot be used again and must be disposed of according to the location's safe battery disposal procedures.
2. If a battery performance decreases more than 20%, the battery is at the end of its life cycle. Stop use and ensure the battery is disposed of properly.
3. The length of time that a battery lasts depends on the battery type and how the device is used. Conserve the battery life by doing the following:
 - Avoid fully uncharging the battery because this places additional strain on it. Several partial uncharges with frequent charges are better than a fully uncharged battery. Charging a partially charged battery does not cause harm to the unit.
 - Keep the battery cool. Avoid hot vehicles. For prolonged storage, keep the battery at a 40% charge level.
 - Do not leave the battery uncharged and unused for an extended period of time, the battery will wear out and the longevity of the battery will be at least half of one with frequent charges.
4. Protect battery life by not over or under charging the battery.
5. Please do not leave battery unused for long time without charging it. It is recommended to charge the battery to at least 30% every six months to ensure optimal performance and longevity. Despite Unitech's safety precautions, the battery pack may begin to change shape. If so, stop using it immediately. Please check to see if you are using a proper power adapter to charge the battery or contact your service provider for service.
6. If you cannot charge the battery after it has been idle for an extended period of time and it begins to heat up, please do not try to charge it. It may not be functional anymore.
7. Please only use the original battery from Unitech. Using a third party battery can damage our products. Please note that when such damage occurs, it is not covered by Unitech's warranty policy.

CAUTION!

- RISK OF EXPLOSION IF BATTERY IS REPLACED INCORRECTLY.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
- 電池若未正確更換，可能會爆炸。請用原廠建議之同款或同等級的電池來更換。請依原廠指示處理廢電池。請依製造商說明書處理用過之電池
- 如果更換不正確之電池行事會有爆炸的風險
請依製造商說明書處理用過之電池

Battery charge notice

It is important to consider temperature when the battery pack is charging. Charging is most efficient at normal room temperature or in a slightly cooler environment. It is essential that batteries are charged within the stated range of 0°C to 40°C. Charging batteries outside of the specified range could damage the batteries and shorten their life cycle.

CAUTION! Do not charge batteries at a temperature lower than 0°C. This will make the batteries unstable and dangerous. Please use a battery temperature detecting device for a charger to ensure a safe charging temperature range.

CAUTION! To ensure the unit working properly, please keep all connectors away from the contaminants staying inside of them such as dust, grease, mud, and water. The negligence may cause the unit with no communication, short circuited, overheated and so on.

CAUTION! If the connector is damaged, please ensure the connector is being fully repaired before use the unit to avoid causing short circuited.

Storage and safety notice

Although charged batteries may be left unused for several months, their capacity may be depleted due to build up of internal resistance. If this happens, they will require recharging prior to use. Batteries may be stored at temperatures between -20°C to 60°C, however they may deplete more rapidly at higher temperatures. It is recommended to store batteries at room temperature.

** The message above only applies to the usage of the removable batteries.
For the products with non-removable batteries / without batteries, please refer to the specification of each product.*

Product Operation and Storage Notice

The Unitech product has applicable operation and storage temperature conditions. Please follow the limitation of suggested temperature conditions to avoid failure, damage or malfunction.

** For applicable temperature conditions, please refer to the specification of each product.*

Adapter Notice

1. Please do not leave the power adapter in the socket when it is not connected to your Unitech product for charging.
2. Please remove the power adapter when the battery is fully recharged.
3. The bundled power adapter that comes with your Unitech product is not meant to be used outdoors. An adapter exposed to water or rain, or a very humid environment can cause damage to both the adapter and the product.
4. Please only use the bundled power adapter or same specification of adapter to charge your Unitech product. Using the wrong power adapter can damage your Unitech product.

** The message above only applies to the product connected to the adapter.
For the products without using the adapters, please refer to the specification of each product.*

Hearing Damage Warning

To prevent possible hearing damage, do not listen at high volume levels for long periods.



Figure 1 – Warning label (IEC 60417-6044)

Worldwide Support

Unitech's professional support team is available to quickly answer questions or assist with technical-related issues. Should an equipment problem occur, please contact the nearest Unitech regional service representative.

For complete contact information please visit the Web sites listed below:

Taipei, Taiwan – Headquarters Tel: +886-2-89121122 E-mail: info@hq.ute.com Address: 5F, No. 136, Lane 235, Baoqiao Road, Xindian District, New Taipei City 231, Taiwan (R.O.C.) Website: http://www.ute.com	Europe Tel: +31-13-4609292 E-mail: info@eu.ute.com Address: Kapitein Hatterasstraat 19,5015 BB, Tilburg, the Netherlands Website: http://eu.ute.com
China Tel: +86-59-2310-9966 E-mail: info@cn.ute.com Address: Room401C, 4F, RIHUA International Mansion, Xinfeng 3rd Road, Huoju Hi-tech District, Xiamen, Fujan , China Website: http://cn.ute.com	Japan Tel: +81-3-62310896 E-mail: info@jp.ute.com Address: Tosei Building 3F.,18-10 Nihonbashi-Hakozakicho, Cyuouku, Tokyo, 103-0015, Japan Website: http://jp.ute.com
Asia & Pacific / Middle East Tel: +886-2-27911556 E-mail: info@apac.ute.com info@india.ute.com info@mideast.ute.com Address: 4F., No. 236, ShinHu 2nd Rd., NeiHu Chiu, 114, Taipei,Taiwan Website: http://apac.ute.com / http://mideast.ute.com	Latin America Tel: +52-55-5171-0528 E-mail: info@latin.ute.com Address: 17171 Park Row, Suite 210 Houston, TX 77084USA (Rep.) Website: http://latin.ute.com
North America Tel: +1-714-8916400 E-mail: info@us.ute.com / info@can.ute.com Address: 6182 Katella Ave, Cypress, CA 90630, USA Website: http://us.ute.com	Please scan QR Code to visit us : 

Warranty Policy

The following items covered under the Unitech Limited Warranty are free from defects during normal use:

The warranty period is varied from each country. Please consult with your supplier or Unitech local office for actual length of warranty period to your purchased product.

Warranty becomes void if equipment is modified, improperly installed or used, damaged by accident or neglect, or if any parts are improperly installed or replaced by the user.

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Chapter 1 - Overview

1.1 Package

Please make sure the following contents are in the EA660 gift box. If something is missing or damaged, please contact your Unitech representative.

The Package Contents

- EA660 Rugged Handheld Computer
- Battery
- Quick Start Guide

1.2 Product Detail

EA660 Product View

Top View



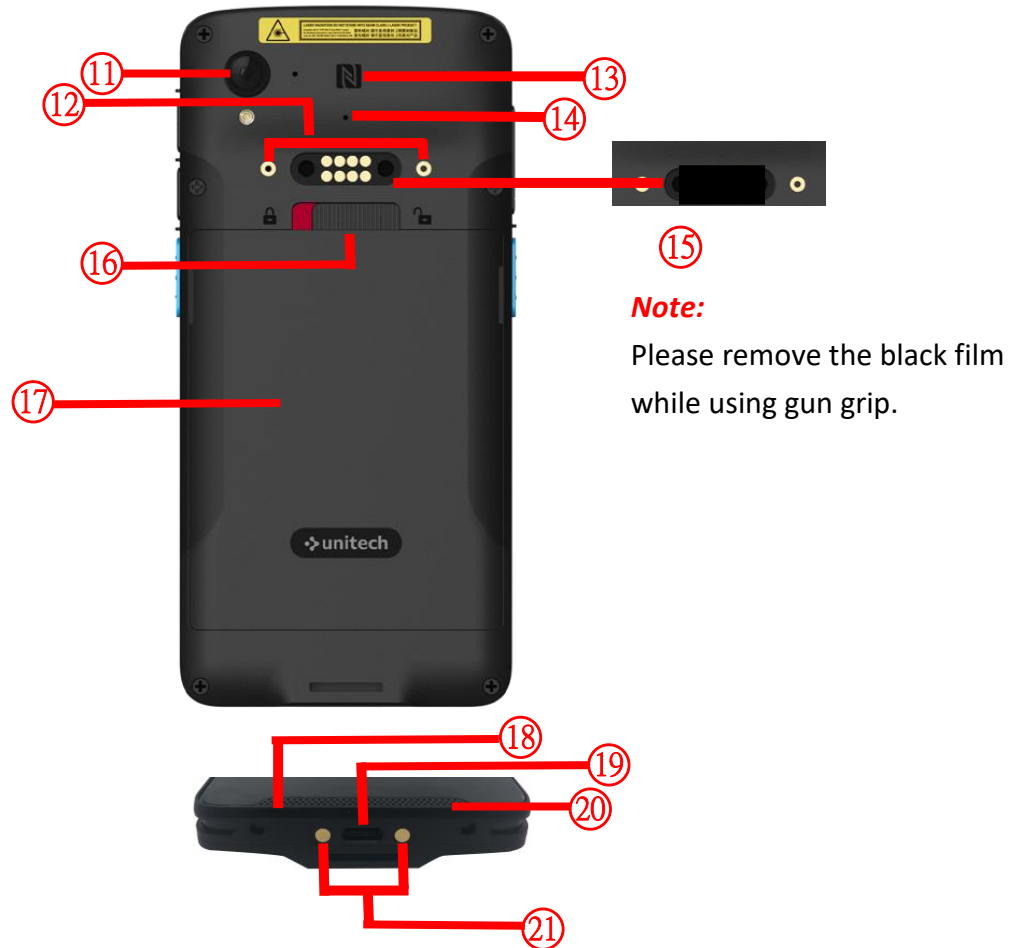
Left View

Right View

1. Barcode Scanner Window
2. Receiver
3. Front Camera
4. LED Indicator
5. Volume Key

6. Scanner Trigger Key
7. Power Key
8. Programmable Key
9. Scanner Trigger Key

Rear View



Bottom View

- | | |
|--|--|
| 11. Rear Camera | 17. Battery Cover |
| 12. Hand Strap Holes | 18. Microphone |
| 13. NFC | 19. USB Type-C Hole |
| 14. Microphone (sub) | 20. Speaker |
| 15. Pogo Pin for gun grip
(Temporary not supported) | 21. Pogo Pin for cradle
(Temporary not supported) |
| 16. Battery Latch | |

1.3 Specifications

System Features	
CPU	2.4GHz, Qualcomm® Snapdragon™ 4490, 64bits Octa-core Processor
Memory	6GB RAM / 128 GB Flash, UFS
OS	Android 13 with GMS & AER certified
Languages support	Multiple languages
Display	
Screen Size	6", 18:9 Full-HD (2160 x 1080) color screen, Backlight 630 nits
Touchpanel	Gorilla® Glass 7 Glass, Multi-Touch User Interface with Capacitive, stylus (5.5mm) , glove mode, wet-finger Compatibility
Keypad	
5 keys- Programmable function button;dual dedicated scan buttons; Volume up/down buttons; on/off button	
Camera	
5MP front camera, 16 MP Rear with auto-focus function and Flash Light	
Indicator Type	
LEDs, Vibrator, Speaker	
Symbologies	
Support all major 1D & 2D barcodes	
RFID	
HF	Support HF/NFC Frequency 13.56Mhz Support: ISO14443A/B, ISO15693, Mifare, Felica(ISO/IEC18092) compliance
Power Source	
Main Battery	3.87V, 5000mAH Li-ion battery Support warm swap
Regulatory Approvals	
CE, FCC, NCC, VCCI, TELEC, CCC, SRRC, RoHS, CEC, BQB, N-Mark	

Communication	
Bluetooth®	Bluetooth® 5.2
WLAN	WLAN 6E, 2.4GHz & 5GHz & 6Ghz IEEE 802.11a/b/g/n/ac/ax (MIMO 2X2, Support DBS) Security WPA3, WPA2, WPA & WEP
WWAN	5G NR: n1, n2, n3, n5, n7, n8, n12, n20, n28, n34, n38, n39, n40, n41, n48, n66, n77, n78, n79 4G LTE (FDD): B1, B2, B3, B4, B5, B7, B8, B12, B13, B17, B19, B20, B28, B34, B48, B66 LTE (TDD): B38, B39, B40, B41 3G WCDMA/UMTS/HSPA+ :B1(2100MHz), B2(1900MHz), B4(1700MHz), B5(850MHz), B8(900MHz) 2G GSM/GPRS/EDGE: B2(PCS1900), B3(DCS1800), B5(GSM850), B8(GSM900) Support Data, SMS and Voice capabilities Support 4X4 MIMO LTE B14/ 5G n14
GPS	GPS/GLONASS/Gallileo/BeiDou (L1+L5)
Sensors	G-sensor(Accelerometer), Proximity + Light Sensor, E-Compass, Gyroscope sensor
I/O Interfaces	
USB	USB 3.1 (type-C) support USB OTG Support Ethernet/USB-Host via cradle
OTG	Yes, over USB Type-C
POGO PIN	PogoPin backside: Support Gun-grip, UHF reader PogoPin bottom: Charging via cradle
SIM Slot	Dual nano SIM Slot
Expansion slot	MicroSD, up to 1TB
Audio	One speaker (95±3dB @ 10cm), One receiver , Dual noise-cancelling microphones, Smart PA
Enclosure	
Dimensions	162.9 mm x 77mm x 14.9mm
Weight	approx. 269g

Environmental	
Operating temperature	-20°C to 60°C
Storage temperature	- 40°C to 70°C (without battery)
Charging temperature	0°C to 45°C
Relative Humidity	5% ~ 95% (Non-Condensing)
Drop Specification	1.5 meter, 1.8 meter with boot case
Vibration/Tumble test	MIL-STD 810G
Software	
MDM Software	SOTI, AirWatch and MoboLink
Accessories	
<ul style="list-style-type: none"> ■ Stylus (5.5mm) ■ Coiled Strap ■ Standard Gun Grip ■ RG660 UHF Gun Grip ■ Single Slot Charging Cradle ■ Single Slot USB Cradle 	<ul style="list-style-type: none"> ■ Single Slot Ethernet Cradle ■ Multi-Slot Terminal Charging Cradle ■ Multi-Slot Ethernet Cradle ■ 4-Slot Battery Charger

Android is a trademark of Google LLC.

Note:

The device is restricted to indoor use only when operating in the 5250-5350 MHz / 5945 to 6425MHz(for LPI) frequency range.

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

Radio type / Description		Maximum Power
GSM	GSM900	32.5dBm
	DCS 1800	30.5dBm
UMTS	FDD 1	25dBm
	FDD 5	25dBm
	FDD 8	25dBm
LTE	FDD 1	24dBm
	FDD 3	24dBm
	FDD 5	25dBm
	FDD 7	24dBm
	FDD 8	25dBm
	FDD 20	25dBm
	FDD 28	25dBm
	FDD 34	24dBm
	TDD 38	24dBm
	TDD 40	25dBm
	TDD 41	24dBm
5G NR	NR n1	24dBm
	NR n3	24dBm
	NR n5	24dBm
	NR n7	24dBm
	NR n8	24dBm
	NR n20	24dBm
	NR n28	24dBm
	NR n34	24dBm
	NR n38	24dBm
	NR n40	24dBm
	NR n41	26dBm
	NR n77	27dBm
	NR n78	26dBm
WLAN 2.4GHz	2400-2483.5 MHz	18.82dBm (EIRP)
WLAN 5GHz	5150-5250 MHz	18.11dBm (EIRP)

	5250-5350 MHz	18.11dBm (EIRP)
	5470-5725 MHz	17.79dBm (EIRP)
	5725-5850 MHz	12.93dBm (EIRP)
WLAN 6GHz	5945-6425 MHz	LPI: 15.89dBm (EIRP) VLP: 12.95dBm (EIRP)
Bluetooth	Bluetooth	5.62dBm (EIRP)
RFID	NFC	-17dBuA/m at 10m

1.4 Getting Started

1.4.1 Remove the Battery Cover

1. Push the Battery Latch all the way to the right (unlock) then release, the battery cover will pop up.



2. Grab the battery cover from the groove and remove it upwards.



WARNING! *There is a risk of fire and burns if the battery is handled improperly. DO NOT disassemble, crush, puncture, short external contacts, or dispose the battery pack in fire or water. DO NOT attempt to open or service the battery. Dispose of used batteries according to local recycling guidelines in your area.*

1.4.2 Install the Battery Cover

Align the battery cover with the battery compartment and install from the bottom, then press down until you hear a click sound.

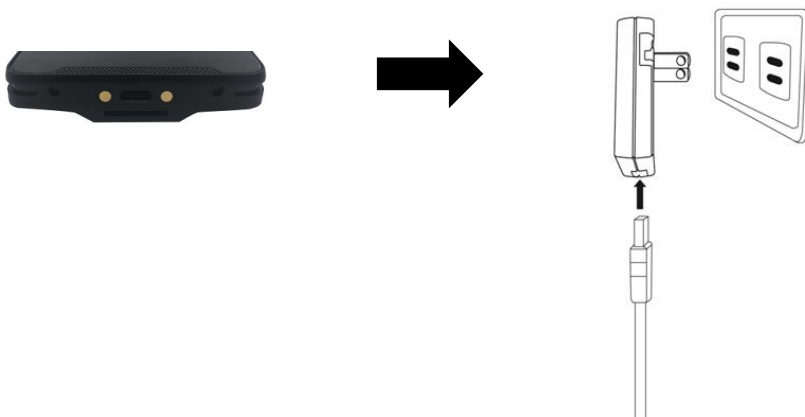


1.4.3 Charging the Battery

Before using the terminal for the first time, you need to charge it for about 24 hours. For the regular use, you can charge the terminal with QC (quick charge) USB type-C cable and QC adapter for within 2.5 hours to full capacity. It takes within 4 hours to charge the terminal with the cradle to full capacity.

Connect the type C USB cable to the USB port on EA660 and the other end of the USB cable. Please connect to AC power adapter into the electrical outlet on the USB plug.

The charging LED indicator on EA660 is turning red when it is in charging state. The green light is on after the battery is fully charged.



1.4.4 Turning on Terminal for the First Time

It is recommend to fully charge EA660 before first use. You can now start up your device to set up the languages, WLAN setting, date and time.

Power Button

Turn ON your device by pressing the power button on the side of the terminal.



1.4.5 Checking LED status

	LED	Description
Terminal	Red Light	<ul style="list-style-type: none"> ■ Battery Charging ■ Twinkling to indicate battery low status(less than 15%)
	Green Light	<ul style="list-style-type: none"> ■ Battery Fully charged ■ Barcode scan good read
	Blue Light	Message
	All of LEDs can be controlled by software API	If scanner app is running, LED control by scanner app.
	No LED (Red and Green) display when battery is out (even AC IN)	

Checking Battery Status

If the battery level becomes low in the course of normal use, a status icon appears on the device screen indicating low or very low battery status. In both cases, please back up your data, and then recharge your device as soon as possible.