



EM130 EMPOWER MODULE

USER GUIDE

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Revision A
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Geospatial Division

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Global technical support

To request detailed technical assistance for Trimble solutions, contact: trimble_support@trimble.com

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Manufacturer's Name: Trimble Inc.

Manufacturer's Address: 4408 Gibson Dr, Tipp City, OH 45371

Declares, under our sole responsibility, that the product:

Model Number(s): 123655

Spectrum and maximum power: WiFi Halow 802.11ah 23dBm

Product Antenna and Gain

Table I

List of antenna information				Gain
Components	Frequency (MHz)	Antenna type	Brand	Main
WLAN	902-928	OMNIDIRECTIONAL SWIVEL DIPOLE	Radiall/Larsen	2dBi

Safety

Power requirement

I/O module connector

DC power Input 5V, Current 1.5A

Operating ambient temperature Max: 40°C

Power supply safety

WARNING – Use only AC and vehicle adapters intended for the device. Other external power sources may damage your product and void the warranty.

I Ensure the input voltage on the adapter matches the voltage in your location. Ensure the adapter has prongs compatible with your outlets.

I The AC power supply is designed for indoor use only. Avoid using the AC power supply in wet areas.

I Unplug the power supply from power when not in use.

I Do not short the output connector.

Service safety

WARNING – Do not attempt to take apart, open, service, or modify the product, accessories, or power supply. Doing so could present the risk of electric shock or other hazard. Any evidence of any attempt to open and/or modify this device, including any peeling, puncturing, or removal of any of the labels, will void the Limited Warranty.

Safe environments of use

WARNING – Areas with potentially explosive atmospheres are often, but not always, posted and can include fueling areas, such as below decks on boats, fuel or chemical transfer or storage facilities, or areas where the air contains chemicals or particles, such as grain dust, or metal powders. When you are in such an area, turn off your device, and do not remove or install battery chargers, AC adapters, or any other accessory. In such areas, sparks can occur and cause an explosion or fire.

Distraction

WARNING – Using the device in some circumstances can distract you and may cause a dangerous situation. Observe rules that prohibit or restrict the use of devices (for example, avoid operating the device while driving a vehicle).

Recycling information

You should dispose of this product and accessories properly according to local laws and regulations. Because this product contains electronic components, it must be disposed of separately from household waste. When the product reaches its end of life, contact your local Trimble reseller to learn about disposal and recycling options for your area.

Recycling in Europe

The symbol at right means that according to local laws and regulations your product and/or its battery shall be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. The separate collection and recycling of your product and/or its battery at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

For Information about recycling Trimble WEEE (Waste Electrical and Electronic Equipment) products that run on electrical power go to http://www.trimble.com/Corporate/Environmental_Compliance.aspx.

To recycle Trimble WEEE products call +31 497 53 24 30, and ask for the "WEEE Associate". or mail a request for recycling instructions to:

Trimble Europe B.V. & Trimble International B.V.

Industrieweg 187a

5683 CC Best

The Netherlands

Regional compliance



Australia and New Zealand

This product conforms with the regulatory requirements of the Australian Communications and Media Authority (ACMA) Telecommunications, Radiocommunications and EMC Labelling Notices, thus satisfying the requirements for RCM marking and sale within Australia and New Zealand.

Europe



This device complies with Directive 2014/53/EU (RED) issued by the Commission of the European Community. A minimum separation distance of 20cm must be maintained between the user's body and the device.

This Trimble product has been tested and found to comply with all requirements for CE Marking and sale within the European Economic Area (EEA). The device has Bluetooth and wireless LAN approval and satisfies the requirements for Radio and Telecommunication Terminal Equipment specified by European Council Directive 1999/5/EC. These requirements provide reasonable protection against harmful interference when the equipment is operated appropriately in a residential or commercial environment.

Frequency bands and Powers

a. Frequency band(s) in which the radio equipment operates; Please see above table in "Product Antenna and Gain"

b. Maximum radio-frequency power transmitted in the frequency band(s) in which the radio equipment operates; Please see the above table in "Product Antenna and Gain"



BE	BG	CZ	DK
DE	EE	IE	EL
ES	FR	HR	IT
CY	LV	LT	LU
HU	MT	NL	AT
PL	PT	RO	SI
SK	FI	SE	UK

Components and accessories

Accessories and components including software which allows the radio equipment to operate as intended. Manufacturers only have to describe those accessories and components including software if they: - have an influence on the conformity of the radio equipment, and

- are intended to be installed or changed by the user without the control of the manufacturer.

The instructions shall also include information required as above.

Accessories example:

If the radio equipment is delivered without an antenna, then the technical features of the antenna that may be used in conjunction with the radio equipment shall be provided to the user. This information could be the generic characteristics of a given antenna type or a reference to a specific antenna(s) available on the market.

CAUTION - Only approved accessories may be used with this equipment. In general, all cables must be high quality, shielded, correctly terminated and normally restricted to two meters in length. Power supplies approved for this product employ special provisions to avoid radio interference and should not be altered or substituted. Unapproved modifications or operations beyond or in conflict with these instructions for use may void authorization by the authorities to operate the equipment.

European declaration of conformity

In all cases assessment of the final product is in compliance with the Essential Requirements of the RED Directive 2014/53/EU LVD 2014/35/EU EMC 2014/53/EU RED Articles 3.1(a) and (b), safety and EMC respectively, as well as any relevant Article 3.2 requirements. An up-to-date DoC is available upon request or can be found at Trimble.com.

Importer of Record

Trimble European Regional Fulfillment Center
Logistics Manager
Trimble Europe B.V. & Trimble International
B.V. industrieweg 187a
5683 CC Best, The Netherlands

Importer of Record

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Trimble EC

Trimble Germany
Am Prime Parc 11
65479 Raunheim
Germany



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Recycling information

You should dispose of the device and accessories properly according to local laws and regulations. Because the device contains electronic components, it must be disposed of separately from household waste. When the device reaches its end of life, contact your local Trimble reseller to learn about disposal and recycling options for your area.

Recycling in Europe



The symbol above means that according to local laws and regulations your product and/or its battery shall be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. The separate collection and recycling of your product and/or its battery at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

For information about recycling Trimble WEEE (Waste Electrical and Electronic Equipment) products that run on electrical power go to http://www.trimble.com/corporate/about_WEEE_ROHS_initiatives.aspx.

To recycle Trimble WEEE products call +31 497 53 24 30, and ask for the "WEEE Associate". or mail a request for recycling instructions to:

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Industrieweg 187a
5683 CC Best

The Netherlands

Canada

IC: 5817A-123655

This radio transmitter has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device. Cet émetteur radio (identifier l'appareil par numéro de certification) a été approuvé par l'industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous avec le gain maximum admissible indiqué. Types d'antennes non inclus dans cette liste, ayant un gain supérieur au gain maximum indiqué pour cette type, sont strictement interdits pour une utilisation avec cet appareil.

Industry Canada statement

❶ This device complies with Industry Canada license-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 radio exempts 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.

❷ This Class B digital apparatus complies with Canadian ICES-003

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

❸ This device complies with RSS-310 of Industry Canada. Operation is subject to the condition that this device does not cause harmful interference

Cet appareil est conforme à la norme RSS-310 d'Industrie Canada. L'opération est soumise à la condition que cet appareil ne provoque aucune interférence nuisible

❹ This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter, except tested built-in radios

Cet appareil et son antenne ne doivent pas être situés ou fonctionner en conjonction avec une autre antenne ou un autre émetteur, exception faites des radios intégrées qui ont été testées.

❺ The County Code Selection feature is disabled for products marketed in the U.S./ Canada.

La fonction de sélection de l'indicatif du pays est désactivée pour les produits commercialisés aux États-Unis et au Canada.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus at us as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Industry Canada rules.

Les changements et modifications non expressément approuvés par le fabricant ou le détenteur de cet équipement peuvent annuler votre droit d'utiliser cet appareil en vertu des règles d'Industrie Canada.

License exempt

This device complies with Industry Canada license-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 radio exempts 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.

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This Category II radio communication device complies with Industry Canada Standard RSS -310.

Ce dispositif de radiocommunication de catégorie II respecte la norme CNR-310 d'Industrie Canada.

Detachable Antenna Usage

This radio transmitter (IC: 5817A-123655) has been approved by ISED to operate with the antenna type listed below with maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 5817A-123655) a été approuvé par ISED pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Approved antenna(s) list

List of antenna information				Gain
Components	Frequency (MHz)	Antenna type	Brand	Gain
Dipole Antenna	902-928	OMNIDIRECTIONAL SWIVEL DIPOLE	Radial/Larsen	2dBi

IC SAR warning

Radio Frequency (RF) Exposure Information

The information in this section applies to 121655 wireless products that are not intended to be operated close to human body.
Les informations contenues dans cette section s'appliquent aux produits sans fil 121655 qui ne sont pas destinés à être utilisés à proximité du corps humain.

The product complies with IC radiation exposure limits set forth for an uncontrolled environment when installed and operated with minimum distance of 20cm between the radiator and your body.

Produits Trimble sont conformes aux limites IC d'exposition aux rayonnements définies pour un environnement non contrôlé. Produits Trimble doivent être installés et utilisés avec distance minimum de 20cm.

U.S.

FCC ID: S9E-123655

Federal Communication Commission Interference 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, 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.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

For Mobile Device USAGE (>20cm/low power)

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FOR COUNTRY-CODE SELECTION USAGE (WLAN DEVICES)

Note: The country code selection is for non-U.S. models only and is not available to all U.S. models. Per FCC regulation, all Wi-Fi products marketed in the U.S. must be fixed to U.S. operation channels only.

Limited Warranty Terms and Conditions

Product Limited Warranty

Subject to the terms and conditions set forth herein, Trimble Inc. ("Trimble") warrants that for a period of two (2) years from date of purchase this Trimble product (the "Product") will substantially conform to Trimble's publicly available specifications for the Product and that the hardware and any storage media components of the Product will be substantially free from defects in materials and workmanship.

Product Software

Product software, whether built into hardware circuitry as firmware, provided as a standalone computer software product, embedded in flash memory, or stored on magnetic or other media, is licensed solely for use with or as an integral part of the Product and is not sold. The terms of the end-user license agreement, as included below, govern the use of the Product Software, including any differing limited warranty terms, exclusions and limitations, which shall control over the terms and conditions set forth in the limited Product warranty.

Warranty Remedies

If the Trimble Product fails during the warranty period for reasons covered by this limited warranty and you notify Trimble of such failure during the warranty period, Trimble will repair OR replace the non-conforming Product with new, equivalent to new, or reconditioned parts or Product, OR refund the Product purchase price paid by you, at Trimble's option, upon your return of the Product in accordance with Trimble's product return procedures then in effect.

How to Obtain Warranty Service

To obtain warranty service for the Product, it is recommended you contact your Trimble dealer. Alternatively, you may contact Trimble to request warranty service by emailing Repair_Services@Trimble.com. Please be prepared to provide: – your name, address, and telephone numbers;

- product name, part number and serial number;
- proof of purchase;
- an explanation of the problem.

The customer service representative may need additional information from you depending on the nature of the problem.

Warranty Exclusions and Disclaimer

This Product limited warranty shall only apply in the event and to the extent that (i) the Product is properly and correctly installed, configured, interfaced, maintained, stored, and operated in accordance with Trimble's applicable operator's manual and specifications, and; (ii) the Product is not modified or misused. This Product limited warranty shall not apply to, and Trimble shall not be responsible for, defects or performance problems resulting from (i) the combination or utilization of the Product with hardware or software products, information, data, systems, interfaces, or devices not made, supplied, or specified by Trimble; (ii) the operation of the Product under any specification other than, or in addition to, Trimble's standard specifications for its products; (iii) the unauthorized installation, modification, or use of the Product; (iv) damage caused by: accident, lightning or other electrical discharge, fresh or saltwater immersion or spray (outside of Product specifications); or exposure to environmental conditions for which the Product is not intended; (v) normal wear and tear on consumable parts (e.g., batteries); or (vi) cosmetic damage. Trimble does not warrant or guarantee the results obtained through the use of the Product or Software, or that software components will operate error-free.

NOTICE REGARDING PRODUCTS EQUIPPED WITH TECHNOLOGY CAPABLE OF TRACKING SATELLITE SIGNALS FROM SATELLITE-BASED AUGMENTATION SYSTEMS (SBAS) (WAAS, EGNOS, GAGAN, MSAS AND LUCH), OMNISTAR, BEIDOU, GPS, GALILEO OR GLONASS SATELLITES, OR FROM IALA BEACON SOURCES: TRIMBLE IS NOT RESPONSIBLE FOR THE OPERATION OR FAILURE OF OPERATION OF ANY SATELLITE-BASED POSITIONING SYSTEM OR THE AVAILABILITY OF ANY SATELLITE-BASED POSITIONING SIGNALS.

THE FOREGOING LIMITED WARRANTY TERMS STATE TRIMBLE'S ENTIRE LIABILITY, AND YOUR EXCLUSIVE REMEDIES, RELATING TO THE TRIMBLE PRODUCT. EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, THE PRODUCT, AND ACCOMPANYING DOCUMENTATION AND MATERIALS ARE PROVIDED "AS-IS" AND WITHOUT EXPRESS OR IMPLIED WARRANTY OF ANY KIND, BY EITHER TRIMBLE OR ANYONE WHO HAS BEEN INVOLVED IN ITS CREATION, PRODUCTION, INSTALLATION, OR DISTRIBUTION, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND NON INFRINGEMENT. THE STATED EXPRESS WARRANTIES ARE IN LIEU OF ALL OBLIGATIONS OR LIABILITIES ON THE PART OF TRIMBLE ARISING OUT OF, OR IN CONNECTION WITH, ANY PRODUCT. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW LIMITATIONS ON DURATION OR THE EXCLUSION OF AN IMPLIED WARRANTY, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

Limitation of Liability

TRIMBLE'S ENTIRE LIABILITY UNDER ANY PROVISION HEREIN SHALL BE LIMITED TO THE AMOUNT PAID BY YOU FOR THE PRODUCT. TO THE

MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL TRIMBLE OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGE WHATSOEVER UNDER ANY CIRCUMSTANCE OR LEGAL THEORY RELATING IN ANYWAY TO THE PRODUCTS, SOFTWARE AND ACCOMPANYING DOCUMENTATION AND MATERIALS, (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF DATA, OR ANY OTHER PECUNIARY LOSS), REGARDLESS OF WHETHER TRIMBLE HAS BEEN ADVISED OF THE POSSIBILITY OF ANY SUCH LOSS AND REGARDLESS OF THE COURSE OF DEALING WHICH DEVELOPS OR HAS DEVELOPED BETWEEN YOU AND TRIMBLE. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO YOU. NOTE: THE ABOVE TRIMBLE LIMITED WARRANTY PROVISIONS WILL NOT APPLY TO PRODUCTS PURCHASED IN THOSE JURISDICTIONS (E.G., MEMBER STATES OF THE EUROPEAN ECONOMIC AREA) IN WHICH PRODUCT WARRANTIES ARE THE RESPONSIBILITY OF THE LOCAL DEALER FROM WHOM THE PRODUCTS ARE ACQUIRED. IN SUCH A CASE, PLEASE CONTACT YOUR TRIMBLE DEALER FOR APPLICABLE WARRANTY INFORMATION.

Notice to Australian Purchasers - The Australian Consumer Law

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Trimble's warranty, as set out in the user manual accompanying this statement, or as described in the warranty card accompanying the Product you purchased, is in addition to any mandatory rights and remedies that you may have under the Australian Consumer Law.

Official Language

THE OFFICIAL LANGUAGE OF THESE TERMS AND CONDITIONS IS ENGLISH. IN THE EVENT OF A CONFLICT BETWEEN ENGLISH AND OTHER LANGUAGE VERSIONS, THE ENGLISH LANGUAGE SHALL CONTROL

Product specifications

Power	hot swappable, 5V ,Max Current. 1.5A
I/O	User replaceable module Standard: Charger/DC power-in, POGO port
Wi-Fi	802.11 ah, 902~928MHz
Environmental	MIL-STD-810G. Independently tested and certified for: • Operating temperature: -20 °C to +60 °C (-4 °F to +140 °F) • Humidity: 90 % RH temp cycle -20 °C/60 °C (-4 °F/140 °F) • Drop MIL-STD-810G, Method 516.7, Procedure IV • Water MIL-STD-810G, Method 506.6,Procedure I