

### Change the battery step-by-step



Ensure that the tablet is turned off.

1. Push the six locking mechanisms of the cover to the unlock position.
2. Remove the cover of the battery compartment.
3. Push the two locking levers and the locking mechanism of the battery to the unlock position.
4. Remove the battery.
5. To insert the battery, attach the connector side of the battery into the compartment at an angle and then lower the other side to engage the connector.
6. Push the two locking levers and the locking mechanism of the battery to the lock position.
7. To reattach the cover of the battery compartment, insert the side with the latches first.
8. Push the six locking mechanisms of the cover to the lock position.  
 The IP rating is only ensured if the battery compartment is attached correctly!
9. Turn on the tablet.

### 6.2.3

## Charging the Battery

### Charge battery step-by-step



## 6.3

## Power Functions

### Turning the tablet on and off

1. To turn on the device, firmly press and hold the top right power key until the boot screen appears.
2. To turn off the device. Tap and hold the power key. Select the Power off option to shutdown.
3. With the device turned on, press the power key to turn off the screen and go into sleep mode. Press the power key again to wake the device. Swipe upwards on the screen to unlock.



If the device has been idle for a period of time, the screen will automatically turn off and go into sleep mode.

## 6.4

## Working with the Memory Device

### 6.4.1

### Working with the microSD Card and Nano SIM Card

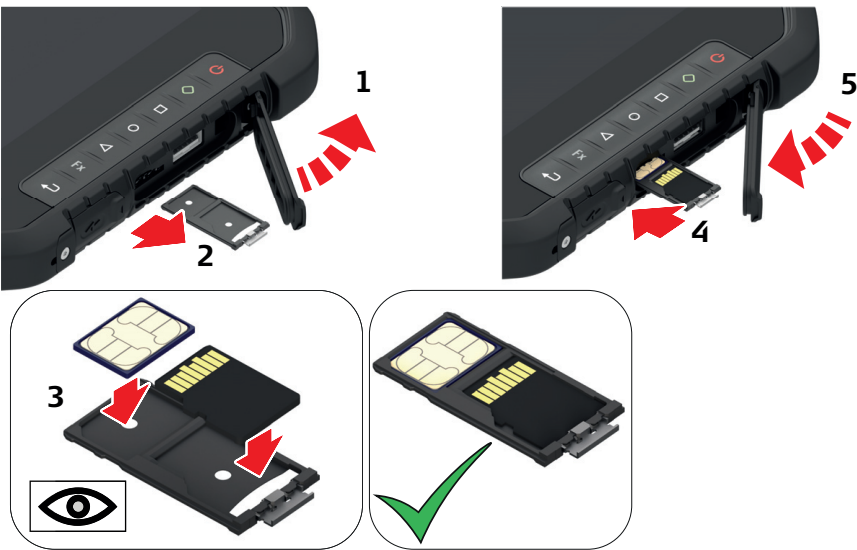


- Keep the card dry.
- Use it only within the specified temperature range.
- Do not bend the card.
- Protect the card from direct impacts.



Failure to follow these instructions could result in data loss and/or permanent damage to the card.

Insert and remove the microSD card and Nano SIM card step-by-step



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Inserting/removing a card while the CSX8 is turned on can result in permanent damage to the card. Only insert/remove a card when the CSX8 is switched off.

Switch off the tablet.

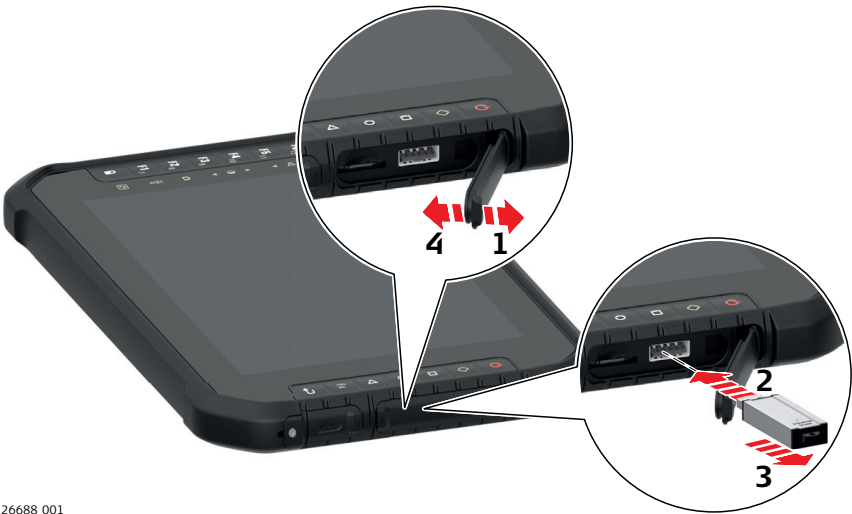
1. Open the protection cap of the card compartment.
2. Remove the SIM and microSD card holder.
3. Place the cards into the card holder, the chips facing downwards.
4. Insert the card holder to the card compartment.
5. Close the protection cap of the card compartment.

The IP rating is only ensured if all protection caps on the device are properly closed.  
No water proofing and dust proofing can be guaranteed if the protection caps are not properly closed.

6.4.2

Working with a USB Memory Stick

Insert a USB stick step-by-step



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The USB stick can be inserted into a slot on the right small side of the tablet. Refer to [3.4 CSX8 Components](#).

1. Open the protection cap of the card compartment.
2. Insert the USB stick into the slot.
3. After working with the USB stick, remove the USB stick.
4. Close the protection cap of the card compartment.



The IP rating is only ensured if all protection caps on the device are properly closed.  
No water proofing and dust proofing can be guaranteed if the protection caps are not properly closed.

## 6.5

### Working under different environmental conditions

#### Working under different environmental conditions

The device is capable to work under extreme environmental conditions. However, it might be necessary to fine-tune the touch behavior to guarantee optimal working conditions.

To adjust the touch screen sensitivity go to

**Settings - Accessibility - Touch mode options.**

Touch mode options are:

**Normal mode:** Maximum 10 point touch support

**Glove mode:** Maximum 5 point touch support

**Rain mode:** Maximum 2 point touch support

Under severe conditions where the touch technology will simply reach the end of its limits, it is possible to lock the touch-panel completely by pressing the **LOCK** button on the bottom left corner and use an USI 2.0 compatible active stylus which is active under all 3 modes. (Stylus not provided with the unit)

## 7 Care and Transport

### 7.1 Transport

#### Transport in a road vehicle

Never carry the product loose in a road vehicle, as it can be affected by shock and vibration. Always carry the product in its container and secure it.

For products for which no container is available use the original packaging or its equivalent.

#### Shipping

When transporting the product by rail, air or sea, always use the complete original Leica Geosystems packaging, container and cardboard box, or its equivalent, to protect against shock and vibration.

#### Shipping, transport of batteries

When transporting or shipping batteries, the person responsible for the product must ensure that the applicable national and international rules and regulations are observed. Before transportation or shipping, contact your local passenger or freight transport company.

### 7.2 Storage

#### Product

Respect the temperature limits when storing the equipment, particularly in summer if the equipment is inside a vehicle. Refer to [8 Technical Data](#) for information about temperature limits.

#### Li-Ion batteries

- Refer to [8 Technical Data](#) for information about storage temperature range
- Remove batteries from the product and the charger before storing
- After storage recharge batteries before using
- Protect batteries from damp and wetness. Wet or damp batteries must be dried before storing or use
- A storage temperature range of 0 °C to +30 °C / +32 °F to +86 °F in a dry environment is recommended to minimize self-discharging of the battery
- At the recommended storage temperature range, batteries containing a 40% to 50% charge can be stored for up to one year. After this storage period the batteries must be recharged

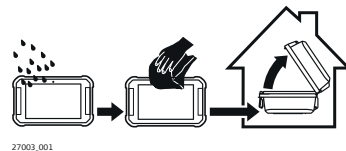
### 7.3 Cleaning and Drying

#### Product and accessories

- Use only a clean, soft, lint-free cloth for cleaning. If necessary, moisten the cloth with water or pure alcohol. Do not use other liquids; these may attack the polymer components.

#### Damp products

Dry the product, the transport container, the foam inserts and the accessories at a temperature not greater than 40 °C/104 °F and clean them. Remove the battery cover and dry the battery compartment. Do not repack until everything is dry. Always close the transport container when using in the field.



|                                        |                                                                                            |
|----------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Cables and plugs</b>                | Keep plugs clean and dry. Blow away any dirt lodged in the plugs of the connecting cables. |
| <b>Connectors with dust caps</b>       | Wet connectors must be dry before attaching the dust cap.                                  |
| <b>Battery charger</b>                 | Use only a clean, soft, lint-free cloth for cleaning.                                      |
| <b>Keypad, touch screen and labels</b> | To clean ink marks from the keypad, touch screen or from labels, use isopropyl alcohol.    |

## 8 Technical Data

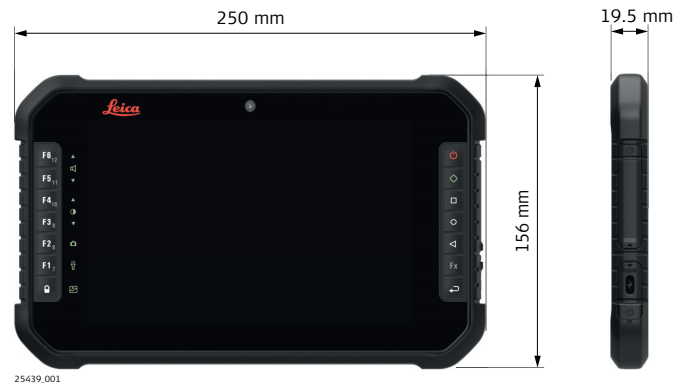
### 8.1 CSX8

#### Control unit

| Type             | Description                                                                                                             |
|------------------|-------------------------------------------------------------------------------------------------------------------------|
| Operating system | Android 12                                                                                                              |
| Processor        | Qualcomm SM4350-AC                                                                                                      |
| Graphics         | Qualcomm Adreno 619 GPU                                                                                                 |
| Display          | 8" IPS screen<br>WUXGA 1200 × 1920 sunlight readable screen<br>500 nits brightness                                      |
| Touch technology | Multi capacitive screen<br>Supported operations<br>Finger<br>USI 2.0 active stylus                                      |
| Sound            | Integrated sealed speaker with dual noise reducing microphones                                                          |
| Camera           |                                                                                                                         |
| Rear             | 32 MP, auto focus lens with dual LED flash light                                                                        |
| Front            | 8 MP, fixed focus lens                                                                                                  |
| RAM              | 8 GB LPDDR4X                                                                                                            |
| Internal storage | 256 GB Flash UFS 2.2                                                                                                    |
| External storage |                                                                                                                         |
| MicroSD          | Maximum 256 GB                                                                                                          |
| USB Type-C       | USB3.1, Charging, OTG                                                                                                   |
| USB Type-A       | USB2.0 Host                                                                                                             |
| GNSS             | Dual Frequency receiver supporting<br>Beidou<br>Galileo<br>GLONASS<br>NavIC<br>GPS<br>QZSS                              |
| WLAN             | 802.11 a/b/g/n/ac (2.4 & 5GHz)                                                                                          |
| Bluetooth        | BT5.1 BLE with enhanced filtering                                                                                       |
| Cellular         | 5G<br>FR1 N1/3/20/28/41/77/78/79<br>FDD<br>B1/2/3/4/5/7/8/12/13/17/20/25/28<br>TDD<br>B38/39/40/41<br>3G<br>B1/B2/B5/B8 |

### Dimensions

#### CSX8



### Weight

| Type        | Weight [kg] |
|-------------|-------------|
| CSX8 tablet | 0.730       |

### Memory devices

Data can be stored on the microSD card, USB stick or on the internal memory.

### Power

| Type | Consumption [A] | External supply voltage                                                  |
|------|-----------------|--------------------------------------------------------------------------|
| CSX8 | 0.7             | Input: 100-240 V~50/60Hz<br>Output: 5.0V/3.0A or 9.0V/2.0A or 12.0V/1.5A |

### Internal battery

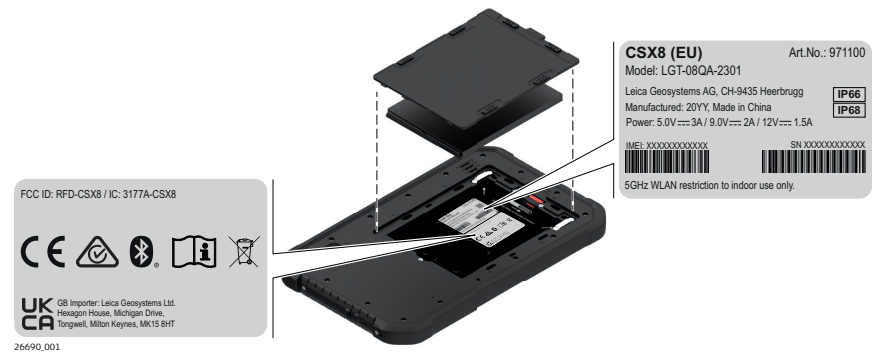
| Type   | Battery | Voltage | Capacity | Operating time, typical*       |
|--------|---------|---------|----------|--------------------------------|
| GEB256 | Li-Ion  | 3.8 V   | 8200 mAh | > 8 h<br>(using a new battery) |

\* Operating time depends on use of wireless communication devices, display use and brightness, processor drain and ambient temperature.

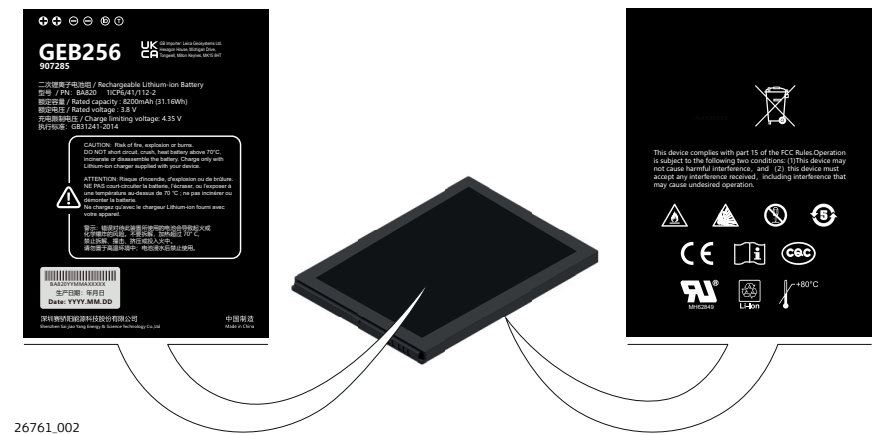
### Interfaces

| Type | USB Host                                                                                        | Bluetooth                                                         | RF antenna pass-through                                                    | WiFi                                                                                  |
|------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| CSX8 | <ul style="list-style-type: none"><li>• USB Type A (v2.0)</li><li>• USB Type C (v3.1)</li></ul> | <ul style="list-style-type: none"><li>• Class 1 BT V5.1</li></ul> | <ul style="list-style-type: none"><li>• WWAN GNSS</li><li>• WLAN</li></ul> | <ul style="list-style-type: none"><li>• 802.11 a/b/g/n/ac (2.4 &amp; 5 GHz)</li></ul> |

Labelling  
CSX8



Labelling GEB256



Antennas

| Type      | Antenna                                       | Gain [dBi] |
|-----------|-----------------------------------------------|------------|
| WLAN      | Flexible Planar Inverted F Antenna (FlexPIFA) | 2          |
| Bluetooth | Flexible Planar Inverted F Antenna (FlexPIFA) | 2          |

Product characterist-  
ics

| Hardware version | Software version |
|------------------|------------------|
| PCB V1.02        | RLC00.50.B8.01   |

Power range

- Restriction: WLAN 5150 MHz – 5250 MHz, only for indoor use.
- Non-European radio frequency bands and/or technologies supported by the equipment were not part of the assessment and are marked in *italic*.

UMTS / LTE part

| Mode              | Characteristics                                       |
|-------------------|-------------------------------------------------------|
| Frequency band(s) | WCDMA (FDD I, II, XIX)                                |
|                   | LTE (FDD 1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 20, 25, 28) |
|                   | (TDD 38, 39, 40, 41)                                  |

## Frequency bands, output power

| Mode        |              | Characteristics |
|-------------|--------------|-----------------|
| Power class | WCDMA<br>LTE | 3               |

| Type                        | Frequency band [MHz]  | Output power <sup>1)</sup> [dBm] | Country restrictions      |
|-----------------------------|-----------------------|----------------------------------|---------------------------|
| Bluetooth                   | 2402–2480             | 5.90                             |                           |
| Bluetooth LE                | 2402–2480             | 4.74                             |                           |
| WLAN 2.4 GHz                | 2412–2472             | 16.23                            |                           |
| WLAN 5.2 GHz                | 5180–5240             | 18.00                            | See <a href="#">Japan</a> |
| SRD 5.8 GHz                 | 5745–5825             | 13.74                            | See <a href="#">Japan</a> |
| WCDMA Band I                | 1920–1980             | 23.03                            |                           |
| WCDMA Band III              | 1710–1785             | 24.77                            |                           |
| WCDMA Band VIII             | 880–915               | 23.17                            |                           |
| LTE Band 1                  | 1920–1980             | 23.15                            |                           |
| LTE Band 3                  | 1710–1785             | 23.01                            |                           |
| LTE Band 7                  | 2500–2570             | 23.29                            |                           |
| LTE Band 8                  | 880–915               | 23.04                            |                           |
| LTE Band 20                 | 832–862               | 23.66                            |                           |
| LTE Band 28                 | 703–748               | 23.66                            |                           |
| LTE Band 32 (download only) | 1452–1496             | n/a <sup>2)</sup>                |                           |
| LTE Band 38                 | 2570–2620             | 23.16                            |                           |
| LTE Band 40                 | 2300–2400             | 22.71                            |                           |
| GPS L1                      | 1575.42               | n/a <sup>2)</sup>                |                           |
| GPS L2                      | 1227.6                | n/a <sup>2)</sup>                |                           |
| GLONASS L1                  | 1598.0625 - 1605.3750 | n/a <sup>2)</sup>                |                           |
| GLONASS L2                  | 1242.9375 - 1248.6250 | n/a <sup>2)</sup>                |                           |
| Galileo E1                  | 1575.42               | n/a <sup>2)</sup>                |                           |
| Galileo E5a                 | 1176.45               | n/a <sup>2)</sup>                |                           |
| BeiDou B1                   | 1575.42               | n/a <sup>2)</sup>                |                           |
| BeiDou B2                   | 1176.45               | n/a <sup>2)</sup>                |                           |
| NavIC L5                    | 1176.45               | n/a <sup>2)</sup>                |                           |
| QZSS L1                     | 1575.42               | n/a <sup>2)</sup>                |                           |

## SAR limits EU

The maximum results of Specific Absorption Rate (SAR) have found during testing are as follows:

<sup>1)</sup> Conducted power for mobile technologies and EIRP for other technologies.

<sup>2)</sup> Not applicable

| Frequency band                 | Body<br>(0mm Gap)                    | SAR <sub>10g</sub> Limit<br>[W/kg] |
|--------------------------------|--------------------------------------|------------------------------------|
|                                | Maximum SAR <sub>10g</sub><br>[W/kg] |                                    |
| GSM                            | 0.721                                | 2.0                                |
| WCDMA                          | 0.915                                | 2.0                                |
| LTE                            | 0.880                                | 2.0                                |
| NR                             | 0.088                                | 2.0                                |
| EN-DC                          | 0.560                                | 2.0                                |
| WLAN (2.4GHz)                  | 0.160                                | 2.0                                |
| WLAN (5GHz)                    | 0.317                                | 2.0                                |
| Bluetooth                      | 0.057                                | 2.0                                |
| Simultaneous Transmis-<br>sion | 1.372                                | 2.0                                |

## SAR limits USA

The maximum results of Specific Absorption Rate (SAR) have found during testing are as follows:

| Frequency band                 | Body<br>(0mm Gap)                   | SAR <sub>1g</sub> Limit<br>[W/kg] |
|--------------------------------|-------------------------------------|-----------------------------------|
|                                | Maximum SAR <sub>1g</sub><br>[W/kg] |                                   |
| GSM                            | 0.747                               | 1.6                               |
| WCDMA                          | 0.723                               | 1.6                               |
| LTE                            | 0.783                               | 1.6                               |
| 5G NR                          | 0.094                               | 1.6                               |
| 5G NR EN-DC                    | 0.673                               | 1.6                               |
| WLAN (5GHz)                    | 0.392                               | 1.6                               |
| WLAN (2.4GHz)                  | 0.160                               | 1.6                               |
| Bluetooth                      | 0.054                               | 1.6                               |
| Simultaneous Transmis-<br>sion | 1.528                               | 1.6                               |

## EU



Hereby, Leica Geosystems AG declares that the radio equipment type CSX8 is in compliance with Directive 2014/53/EU and other applicable European Directives.

The full text of the EU declaration of conformity is available at the following Internet address: <http://www.leica-geosystems.com/ce>.

The low band 5.15-5.35 GHz is for indoor use only.



AT, BE, BG, CH, CY, CZ, 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

 **CAUTION**

This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

**USA**

FCC ID: RFD-CSX8  
Part 15 B/C/E, 22, 24, 27

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, it may cause harmful interference to radio communications.

However, there is no guarantee that interference does 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 the 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.

Changes or modifications not expressly approved by Leica Geosystems for compliance could void the user's authority to operate the equipment.

**Canada**

CAN ICES-003 B/NMB-003 B  
IC: 3177A-CSX8

**Canada Compliance Statement**

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference
2. This device must accept any interference, including interference that may cause undesired operation of the device

### Canada Déclaration de Conformité

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement

### Japan

5.2 GHz / 5.3 GHz band is restricted to indoor use due to the Radio Law.

- This device is granted pursuant to the Japanese Radio Law (電波法) and the Japanese Telecommunications Business Law (電気通信事業法).
- This device should not be modified (otherwise the granted designation number will become invalid).

### Others

The conformity for countries with other national regulations has to be approved prior to use and operation.

## 8.3

### Environmental Specifications

#### Environmental specifications

#### Temperature

| Type | Operating temperature [°C] | Storage temperature [°C] |
|------|----------------------------|--------------------------|
| CSX8 | -20 to +60                 | -40 to +70               |

#### Protection against water, dust and sand

| Type | Protection                                                                                                                                                                                                                                                                                                                                                             |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CSX8 | IP66 & IP68 (IEC 60529)<br> CSX8 is in compliance with IP68 only when protection caps and battery cover are closed.<br>IP6x: Dust tight.<br>IPx6: Water projected in powerful jets.<br>IPx8: Protected against continuous immersion in water.<br>Tested for 1 hour in 1.50 m depth. |

 The IP rating is only ensured if all protection caps on the device are properly closed.  
No water proofing and dust proofing can be guaranteed if the protection caps are not properly closed.

#### Pollution degree

| Type | Pollution degree                                      |
|------|-------------------------------------------------------|
| CSX8 | 4<br>Electrical equipment for indoor and outdoor use. |

#### Humidity

| Type | Protection                 |
|------|----------------------------|
| CSX8 | 0 - 95% RH, non-condensing |

**Altitude**

| Type | Usage     | Range (above sea level) |                |
|------|-----------|-------------------------|----------------|
|      |           | [m]                     | [ft]           |
| CSX8 | Operation | -1000 to 8848           | -3280 to 29028 |
|      | Storage   | -1000 to 16000          | -3280 to 52493 |

**Sound level**

| Type | Value      |
|------|------------|
| CSX8 | < 70 db(A) |

**Software Licence Agreement**

This product contains software that is preinstalled on the product, or that is supplied to you on a data carrier medium, or that can be downloaded by you online according to prior authorisation from Leica Geosystems. Such software is protected by copyright and other laws and its use is defined and regulated by the Leica Geosystems Software Licence Agreement, which covers aspects such as, but not limited to, Scope of the Licence, Warranty, Intellectual Property Rights, Limitation of Liability, Exclusion of other Assurances, Governing Law and Place of Jurisdiction. Please make sure, that at any time you fully comply with the terms and conditions of the Leica Geosystems Software Licence Agreement.

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**Open Source information**

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The software on the product may contain copyright-protected software that is licenced under various open source licences.

Copies of the corresponding licences

- are provided together with the product (for example in the About panel of the software)
- can be downloaded on <http://opensource.leica-geosystems.com>

If foreseen in the corresponding open source licence, you may obtain the corresponding source code and other related data on <http://opensource.leica-geosystems.com>.

Contact

[opensource@leica-geosystems.com](mailto:opensource@leica-geosystems.com) in case you need additional information.

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## Appendix A

## Appendix

### A.1

### Appendix A: Operating Frequencies EU (CE)

#### 2G (EU)

| Description                   | Type                                     | Details                    |
|-------------------------------|------------------------------------------|----------------------------|
| Supported Networks            | GSM<br>GPRS<br>EDGE                      |                            |
| Supported Bands               | GSM900                                   |                            |
| Frequency range [MHz]         | Transmit<br>Receive                      | 880 - 915<br>925 - 960     |
|                               | DCS1800<br>Transmit<br>Receive           | 1710 - 1785<br>1805 - 1880 |
| Nominal conducted power [dBm] | GSM900<br>GSM1800<br>EDGE900<br>EDGE1800 | 33<br>29<br>26<br>26       |
| Modulation type               | GMSK<br>8PSK                             |                            |
| Antenna type                  | FPC                                      |                            |
| GPRS/EDGE Class               | 12                                       |                            |

#### 3G (EU)

| Description                   | Type                          | Details                    |
|-------------------------------|-------------------------------|----------------------------|
| Supported Networks            | WCDMA<br>HSDPA<br>HSUPA       |                            |
| Supported Bands               | Band 1                        |                            |
| Frequency range [MHz]         | Transmit<br>Receive           | 1920 - 1980<br>2110 - 2170 |
|                               | Band 8<br>Transmit<br>Receive | 880 - 915<br>925 - 960     |
| Nominal conducted power [dBm] | Band 1<br>Band 8              | 24<br>25                   |
| Modulation type               | BPSK<br>QPSK<br>16QAM         |                            |
| Antenna type                  | FPC                           |                            |

#### 4G (EU)

| Description     | Type        | Details                                                                                                          |
|-----------------|-------------|------------------------------------------------------------------------------------------------------------------|
| Supported Bands | E-UTRA Band | FDD Band 1<br>FDD Band 3<br>FDD Band 7<br>FDD Band 8<br>FDD Band 20<br>FDD Band 28<br>TDD Band 38<br>TDD Band 40 |

| Description                   | Type               | Details                    |
|-------------------------------|--------------------|----------------------------|
|                               | E-UTRA CA Band     | TDD Band 38<br>TDD Band 40 |
| Frequency range [MHz]         | FDD-LTE Band 1     |                            |
|                               | Transmit           | 1920 - 1980                |
|                               | Receive            | 2110 - 2170                |
|                               | FDD-LTE Band 3     |                            |
|                               | Transmit           | 1710 - 1785                |
|                               | Receive            | 1805 - 1880                |
|                               | FDD-LTE Band 7     |                            |
|                               | Transmit           | 2500 - 2570                |
|                               | Receive            | 2620 - 2690                |
|                               | FDD-LTE Band 8     |                            |
|                               | Transmit           | 880 - 915                  |
|                               | Receive            | 925 - 960                  |
|                               | FDD-LTE Band 20    |                            |
|                               | Transmit           | 832 - 862                  |
|                               | Receive            | 791 - 821                  |
|                               | FDD-LTE Band 28    |                            |
|                               | Transmit           | 703 - 748                  |
|                               | Receive            | 758 - 803                  |
|                               | TDD-LTE Band 38    |                            |
|                               | Transmit           | 2570 - 2620                |
|                               | Receive            | 2570 - 2620                |
|                               | TDD-LTE Band 40    |                            |
|                               | Transmit           | 2300 - 2400                |
|                               | Receive            | 2300 - 2400                |
|                               | TDD-LTE CA Band 38 |                            |
|                               | Transmit           | 2570 - 2620                |
|                               | Receive            | 2570 - 2620                |
|                               | TDD-LTE CA Band 40 |                            |
|                               | Transmit           | 2300 - 2400                |
|                               | Receive            | 2300 - 2400                |
| Nominal conducted power [dBm] | FDD-LTE Band 1     | 23                         |
|                               | FDD-LTE Band 3     | 23                         |
|                               | FDD-LTE Band 7     | 24                         |
|                               | FDD-LTE Band 8     | 24                         |
|                               | FDD-LTE Band 20    | 24                         |
|                               | FDD-LTE Band 28    | 23                         |
|                               | TDD-LTE Band 38    | 23                         |
|                               | TDD-LTE Band 40    | 24                         |
|                               | TDD-LTE CA Band 38 | 22                         |
|                               | TDD-LTE CA Band 40 | 24                         |
| Modulation type               | QPSK<br>16QAM      |                            |
| Antenna type                  | FPC                |                            |

## 5G (EU)

| Description           | Type     | Details                                                                                                                                                                                                                                  |
|-----------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supported Bands       | SA Band  | N1<br>N3<br>N20<br>N28<br>N41<br>N77<br>N78                                                                                                                                                                                              |
|                       | NSA Band | DC_1A_N28A<br>DC_1A_N77A<br>DC_1A_N78A<br>DC_3A-N28A<br>DC_3A-N77A<br>DC_7A_N28A<br>DC_8A_N77A<br>DC-28A_N78A<br>DC_3A-N1A<br>DC_8A-N1A<br>DC_1A-N3A<br>DC_8A-N3A<br>DC_20A-N3A<br>DC_1A-N41A<br>DC_3A-N41A<br>DC_40A-N1A<br>DC_40A_N78A |
| Frequency range [MHz] | N1       |                                                                                                                                                                                                                                          |
|                       | Transmit | 1920 - 1980                                                                                                                                                                                                                              |
|                       | Receive  | 2110 - 2170                                                                                                                                                                                                                              |
|                       | N3       |                                                                                                                                                                                                                                          |
|                       | Transmit | 1710 - 1785                                                                                                                                                                                                                              |
|                       | Receive  | 1805 - 1880                                                                                                                                                                                                                              |
|                       | N20      |                                                                                                                                                                                                                                          |
|                       | Transmit | 832 - 862                                                                                                                                                                                                                                |
|                       | Receive  | 791 - 821                                                                                                                                                                                                                                |
|                       | N28      |                                                                                                                                                                                                                                          |
|                       | Transmit | 703 - 748                                                                                                                                                                                                                                |
|                       | Receive  | 758 - 803                                                                                                                                                                                                                                |
|                       | N41      |                                                                                                                                                                                                                                          |
|                       | Transmit | 2496 - 2690                                                                                                                                                                                                                              |
|                       | Receive  | 2496 - 2690                                                                                                                                                                                                                              |
|                       | N77      |                                                                                                                                                                                                                                          |
|                       | Transmit | 3300 - 4200                                                                                                                                                                                                                              |
|                       | Receive  | 3300 - 4200                                                                                                                                                                                                                              |
|                       | N78      |                                                                                                                                                                                                                                          |
|                       | Transmit | 3300 - 3800                                                                                                                                                                                                                              |
|                       | Receive  | 3300 - 3800                                                                                                                                                                                                                              |

| Description                   | Type                 | Details |
|-------------------------------|----------------------|---------|
| Nominal conducted power [dBm] | N1                   | 24      |
|                               | N3                   | 24      |
|                               | N20                  | 24      |
|                               | N28                  | 23      |
|                               | N41                  | 28      |
|                               | N77                  | 27      |
|                               | N78                  | 27      |
|                               | 1A_N28A              | 23      |
|                               | 1A_N77A              | 25      |
|                               | 1A_N78A              | 25      |
|                               | 3A_N28A              | 25      |
|                               | 3A_N77A              | 24      |
|                               | 7A_N28A              | 24      |
|                               | 8A_N77A              | 24      |
|                               | 28A_N78A             | 24      |
| Modulation type               | UL & DL up to 256QAM |         |
| Antenna type                  | FPC                  |         |

#### Bluetooth® (EU)

| Description                   | Type                            |
|-------------------------------|---------------------------------|
| Radio Technology              | Bluetooth V5.1                  |
| Frequency range [MHz]         | 2402 - 2480                     |
| Nominal conducted power [dBm] | 7                               |
| Modulation type               | GFSK<br>$\pi/4$ -DQPSK<br>8DPSK |
| Antenna type                  | FPC                             |

#### WiFi 2.4 GHz (EU)

| Description                   | Type                                          | Details                    |
|-------------------------------|-----------------------------------------------|----------------------------|
| Supported Standards           | 802.11b/g/n (HT20)<br>802.11n (HT40)          |                            |
| Frequency range [MHz]         | 802.11b/g/n (HT20)<br>802.11n (HT40)          | 2412 - 2472<br>2422 - 2462 |
| Nominal conducted power [dBm] | 13                                            |                            |
| Modulation type               | CCK<br>OFDM<br>QPSK<br>BPSK<br>16QAM<br>64QAM |                            |
| Antenna type                  | FPC                                           |                            |

#### WiFi 5 GHz (EU)

| Description         | Type                                           |
|---------------------|------------------------------------------------|
| Supported Standards | 802.11a<br>802.11n (HT20/40)<br>802.11ac-VHT80 |

| Description                   | Type                                     |
|-------------------------------|------------------------------------------|
| Frequency range [MHz]         | 5745 - 5825                              |
| Nominal conducted power [dBm] | 12                                       |
| Modulation type               | QPSK<br>BPSK<br>16QAM<br>64QAM<br>256QAM |
| Antenna type                  | FPC                                      |

## A.2

## Appendix B: Operating Frequencies US/CAN

### 2G (US/CAN)

| Description                   | Type                                                                | Details                                              |
|-------------------------------|---------------------------------------------------------------------|------------------------------------------------------|
| Supported Networks            | GSM<br>GPRS<br>EDGE                                                 |                                                      |
| Supported Bands               | GSM/GPRS/EDGE 850                                                   |                                                      |
| Frequency range [MHz]         | Transmit<br>Receive<br>GSM/GPRS/EDGE<br>1900<br>Transmit<br>Receive | 824 - 849<br>869 - 894<br>1850 - 1910<br>1930 - 1990 |
| Nominal conducted power [dBm] | GSM850<br>GSM1900<br>EDGE850<br>EDGE1900                            | 34<br>31<br>28<br>27                                 |
| Modulation type               | GMSK<br>8PSK                                                        |                                                      |
| Antenna type                  | FPC                                                                 |                                                      |
| GPRS/EDGE Class               | 12                                                                  |                                                      |

### 3G (US/CAN)

| Description                   | Type                                                       | Details                                              |
|-------------------------------|------------------------------------------------------------|------------------------------------------------------|
| Supported Networks            | WCDMA<br>HSDPA<br>HSUPA                                    |                                                      |
| Supported Bands               | WCDMA Band 2                                               |                                                      |
| Frequency range [MHz]         | Transmit<br>Receive<br>WCDMA Band 5<br>Transmit<br>Receive | 1850 - 1910<br>1930 - 1990<br>824 - 849<br>869 - 894 |
| Nominal conducted power [dBm] | Band 1<br>Band 8                                           | 24<br>25                                             |
| Modulation type               | BPSK<br>QPSK<br>16QAM                                      |                                                      |

## 4G (US/CAN)

| Description  | Type | Details |
|--------------|------|---------|
| Antenna type | FPC  |         |

| Description           | Type               | Details                                                                          |
|-----------------------|--------------------|----------------------------------------------------------------------------------|
| Supported Bands       | FDD-LTE            | Band 2<br>Band 4<br>Band 5<br>Band 7<br>Band 12<br>Band 13<br>Band 17<br>Band 25 |
|                       | TDD-LTE            | Band 38<br>Band 40<br>Band 41                                                    |
| Frequency range [MHz] | FDD-LTE Band 2     |                                                                                  |
|                       | Transmit           | 1850 - 1910                                                                      |
|                       | Receive            | 1930 - 1990                                                                      |
|                       | FDD-LTE Band 4     |                                                                                  |
|                       | Transmit           | 1710 - 1755                                                                      |
|                       | Receive            | 2110 - 2155                                                                      |
|                       | FDD-LTE Band 5     |                                                                                  |
|                       | Transmit           | 824 - 849                                                                        |
|                       | Receive            | 869 - 894                                                                        |
|                       | FDD-LTE Band 7     |                                                                                  |
|                       | Transmit           | 2500 - 2570                                                                      |
|                       | Receive            | 2620 - 2690                                                                      |
|                       | FDD-LTE Band 12    |                                                                                  |
|                       | Transmit           | 699 - 716                                                                        |
|                       | Receive            | 729 - 746                                                                        |
|                       | FDD-LTE Band 13    |                                                                                  |
|                       | Transmit           | 777 - 787                                                                        |
|                       | Receive            | 746 - 756                                                                        |
|                       | FDD-LTE Band 17    |                                                                                  |
|                       | Transmit           | 704 - 716                                                                        |
|                       | Receive            | 734 - 746                                                                        |
|                       | FDD-LTE Band 25    |                                                                                  |
|                       | Transmit           | 1850 - 1915                                                                      |
|                       | Receive            | 1930 - 1995                                                                      |
|                       | TDD-LTE Band 38    |                                                                                  |
|                       | Transmit           | 2570 - 2620                                                                      |
|                       | Receive            | 2570 - 2620                                                                      |
|                       | TDD-LTE CA Band 38 |                                                                                  |
|                       | Transmit           | 2570 - 2620                                                                      |
|                       | Receive            | 2570 - 2620                                                                      |
|                       | TDD-LTE Band 40    |                                                                                  |
|                       | Transmit           | 2305 - 2315                                                                      |
|                       | Receive            | 2305 - 2315                                                                      |

| Description                   | Type               | Details     |
|-------------------------------|--------------------|-------------|
| Nominal conducted power [dBm] | TDD-LTE CA Band 40 |             |
|                               | Transmit           | 2350 - 2360 |
|                               | Receive            | 2350 - 2360 |
|                               | TDD-LTE Band 41    |             |
|                               | Transmit           | 2496 - 2690 |
|                               | Receive            | 2496 - 2690 |
|                               | TDD-LTE CA Band 41 |             |
|                               | Transmit           | 2496 - 2690 |
|                               | Receive            | 2496 - 2690 |
|                               | FDD-LTE Band 2     | 24          |
|                               | FDD-LTE Band 4     | 24          |
|                               | FDD-LTE Band 5     | 24          |
|                               | FDD-LTE Band 7     | 24          |
|                               | FDD-LTE Band 12    | 23          |
|                               | FDD-LTE Band 13    | 24          |
|                               | FDD-LTE Band 17    | 24          |
|                               | FDD-LTE Band 25    | 24          |
|                               | TDD-LTE Band 38    | 23          |
|                               | TDD-LTE CA Band 38 | 22          |
|                               | TDD-LTE Band 40    | 25          |
|                               | TDD-LTE CA Band 40 | 24          |
|                               | TDD-LTE Band 41    | 23          |
|                               | TDD-LTE CA Band 41 | 23          |
| Modulation type               | QPSK<br>16QAM      |             |
| Antenna type                  | FPC                |             |

## 5G (US/CAN)

| Description           | Type     | Details           |
|-----------------------|----------|-------------------|
| Supported Bands       | SA Band  | N41<br>N77<br>N78 |
| Frequency range [MHz] | N41      |                   |
|                       | Transmit | 2496 - 2690       |
|                       | Receive  | 2496 - 2690       |
|                       | N77      |                   |
|                       | Transmit | 3450 - 3550       |
|                       | Receive  | 3450 - 3550       |
|                       | N77      |                   |
|                       | Transmit | 3700 - 3980       |
|                       | Receive  | 3700 - 3980       |
|                       | N78      |                   |
|                       | Transmit | 3450 - 3550       |
|                       | Receive  | 3450 - 3550       |
|                       | N 78     |                   |
|                       | Transmit | 3650 - 3700       |
|                       | Receive  | 3650 - 3700       |
|                       | N78      |                   |
|                       | Transmit | 3700 - 3800       |
|                       | Receive  | 3700 - 3800       |

| Description                   | Type                | Details                                    |
|-------------------------------|---------------------|--------------------------------------------|
| Nominal conducted power [dBm] | N41                 | 25                                         |
|                               | N77_3450 - 3550 MHz | 24                                         |
|                               | N77_3700 - 3980 MHz | 25                                         |
|                               | N78_3450 - 3550 MHz | 23                                         |
|                               | N78_3650 - 3700 MHz | 24                                         |
|                               | N78_3700 - 3800 MHz |                                            |
|                               |                     |                                            |
|                               |                     |                                            |
|                               |                     |                                            |
| Modulation type               | DFT-s-OFDM          | PI/2 BPSK QPSK<br>16QAM<br>64QAM<br>256QAM |
|                               | CP-OFDM             | QPSK<br>16QAM<br>64QAM<br>256QAM           |
| Antenna type                  | FPC                 |                                            |

#### Bluetooth® (US)

| Description                   | Type                      |
|-------------------------------|---------------------------|
| Radio Technology              | Bluetooth V5.0 (BLE mode) |
| Frequency range [MHz]         | 2402 - 2480               |
| Nominal conducted power [dBm] | 6                         |
| Modulation type               | GFSK                      |
| Antenna type                  | FPC                       |

#### Bluetooth® (CAN)

| Description                   | Type                      | Description                  |
|-------------------------------|---------------------------|------------------------------|
| Radio Technology              | Bluetooth V5.0 (BLE mode) | Bluetooth V5.0 (BR/EDR mode) |
| Frequency range [MHz]         | 2402 - 2480               | 2402 - 2480                  |
| Nominal conducted power [dBm] | 6                         | 9                            |
| Modulation type               | GFSK                      | GFSK<br>π/4-DQPSK<br>8DPSK   |
| Antenna type                  | FPC                       | FPC                          |

#### WiFi 2.4 GHz (US/CAN)

| Description           | Type               | Details     |
|-----------------------|--------------------|-------------|
| Supported Standards   | 802.11b/g/n (HT20) |             |
|                       | 802.11n (HT40)     |             |
| Frequency range [MHz] | 802.11b/g/n (HT20) | 2412 - 2462 |
|                       | 802.11n (HT40)     | 2422 - 2452 |

**WiFi 5 GHz  
(US/CAN)**

| Description                   | Type                                          | Details |
|-------------------------------|-----------------------------------------------|---------|
| Nominal conducted power [dBm] | 16                                            |         |
| Modulation type               | CCK<br>OFDM<br>QPSK<br>BPSK<br>16QAM<br>64QAM |         |
| Antenna type                  | FPC                                           |         |

| Description                   | Type                                                          | Details                                                  |
|-------------------------------|---------------------------------------------------------------|----------------------------------------------------------|
| Supported Standards           | 802.11a<br>802.11n (HT20/40)<br>802.11ac-VHT80                |                                                          |
| Frequency range [MHz]         | 802.11a<br>802.11n (HT20)<br>802.11n (HT40)<br>802.11ac-VHT80 | 5150 - 5250<br>5250 - 5350<br>5470 - 5725<br>5725 - 5850 |
| Nominal conducted power [dBm] | 15                                                            |                                                          |
| Modulation type               | QPSK<br>16QAM<br>64QAM<br>256QAM                              |                                                          |
| Antenna type                  | FPC                                                           |                                                          |

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