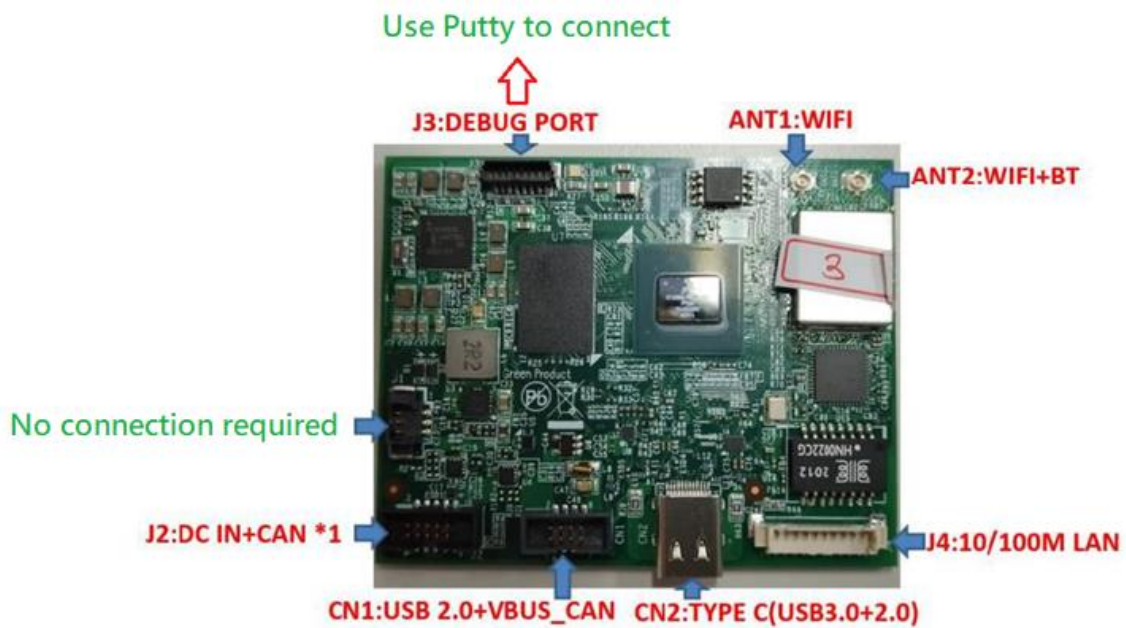


Laerdal Medical AS CAN CPU MODULE 2 20-19560

Simple operation manual

1. PCBA connection configuration

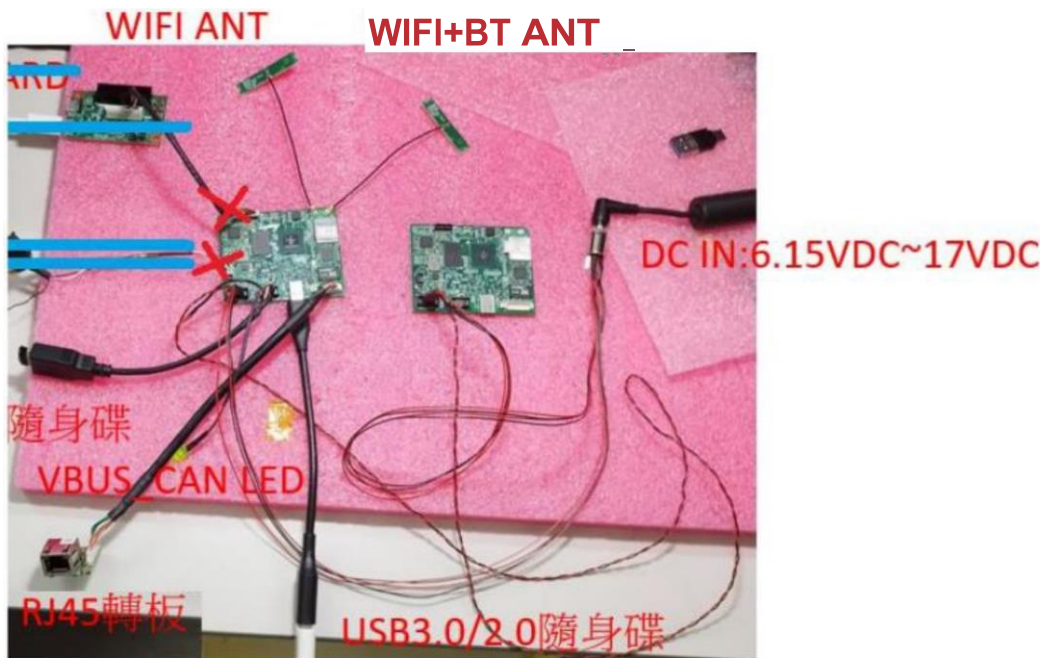
PCBA TOP SIDE



PCBA BOTTOM SIDE



2. Connection :



3. Putty_v0.78 Setup

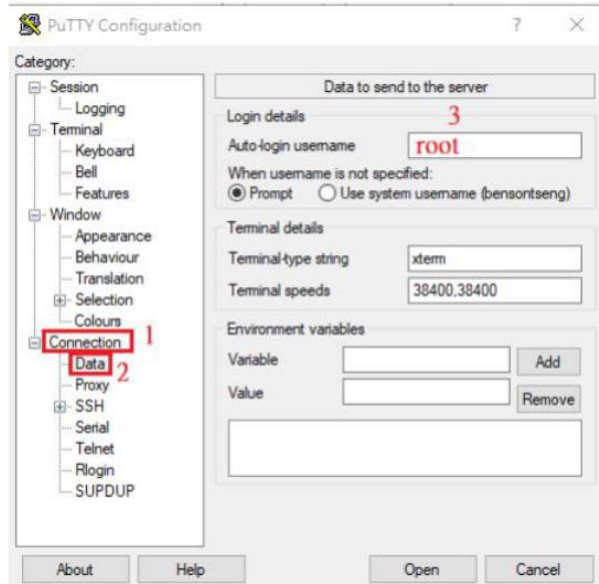
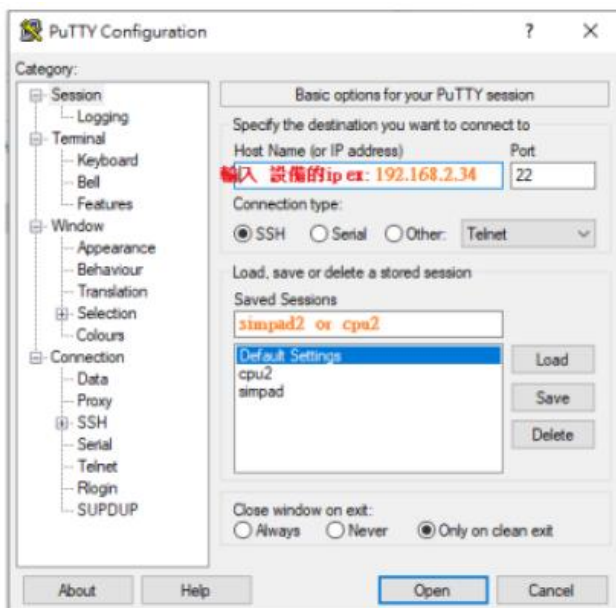
Step 1: Unzip the attachment.

Step 2: Run putty.exe

Step 3: Enter the IP location and product name.

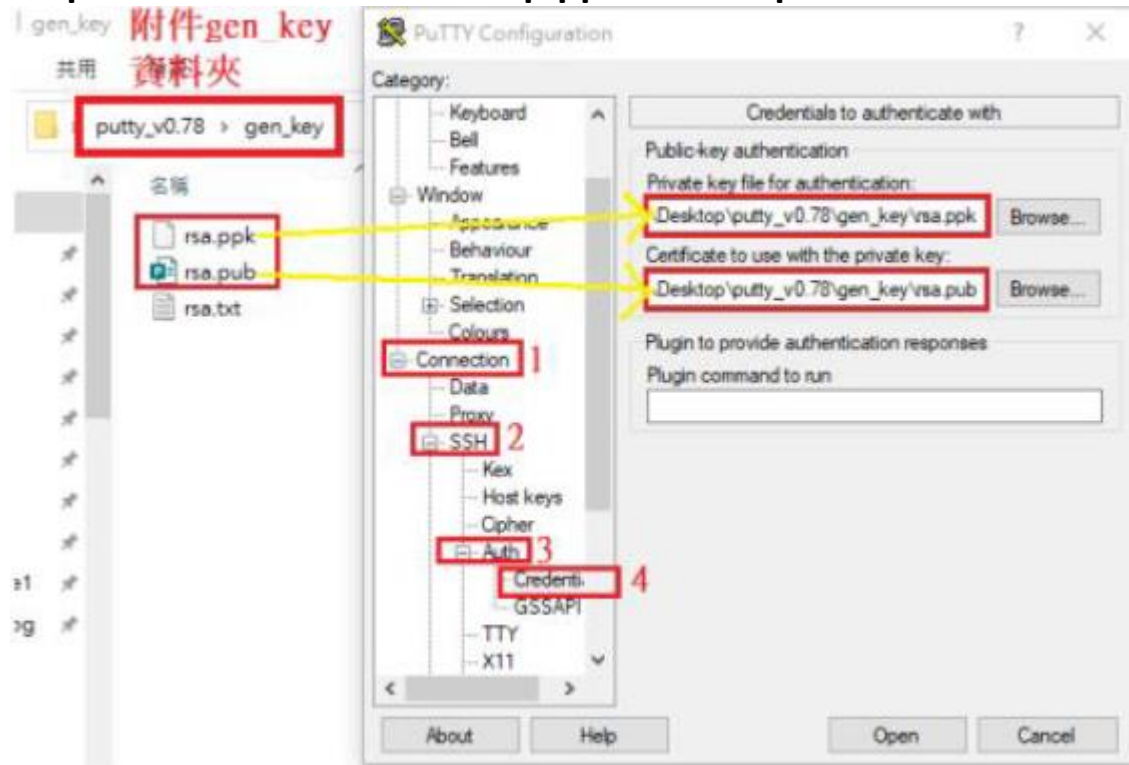
putty_v0.78 >

名稱	修改日期	類型	大小
gen_key	2023/6/1 上午 10:31	檔案資料夾	
putty.exe	2023/5/26 上午 09:10	應用程式	1,610 KB
puttygen.exe	2023/5/25 下午 01:28	應用程式	946 KB

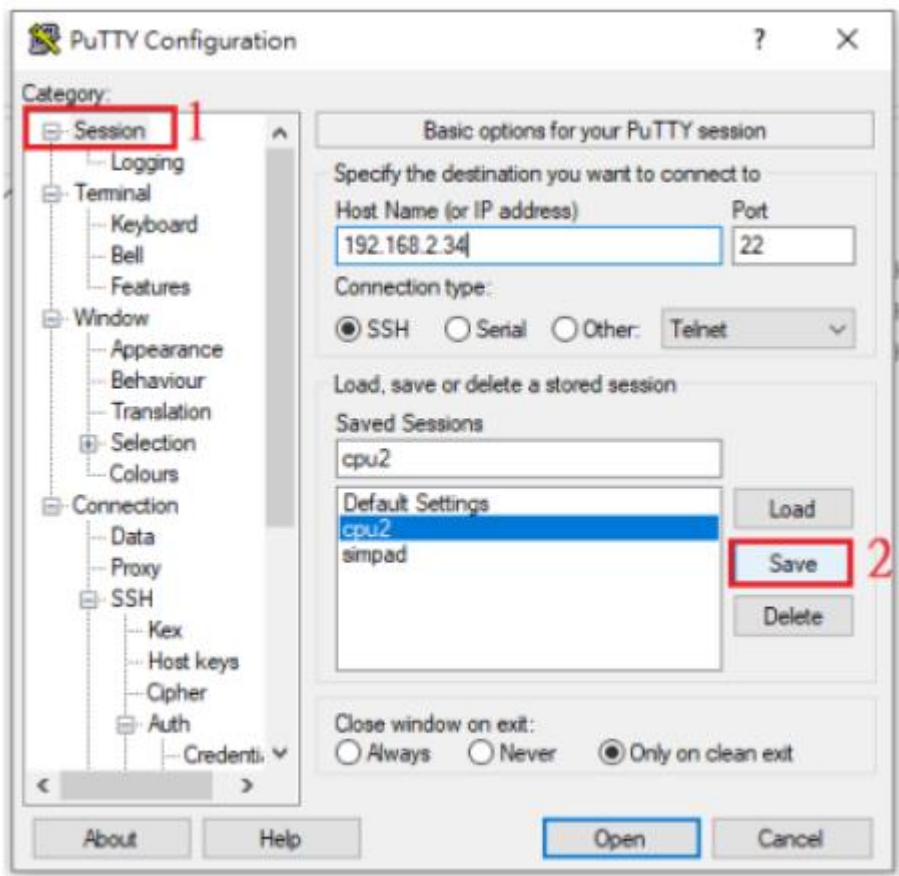


Step 4: Enter root.

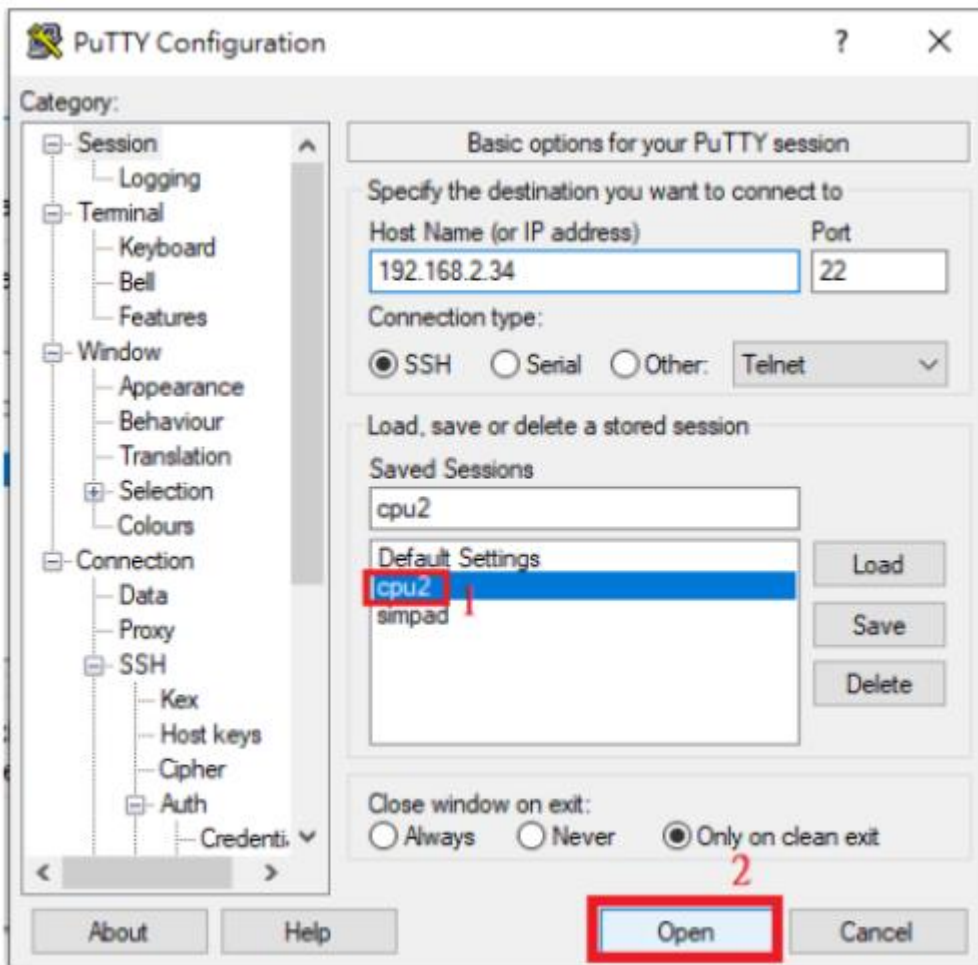
Step 5: Select attachments rsp.ppk and rsa.pub



Step 6: Go back to Session, press Save.



Step 7: Go back to CPU2, press Open



3 Product Specifications

■ CPU Module2_MB		
Feature	Items	Description
✓ PCB	PCB	◆ 55 x 70 LAY:6 THICKNESS:1.6mm
✓ Processor	CPU	◆ i.MX8M PLUS Quad lite ◆ NXP P/N: MIMX8ML4DVNLZAB, Cortex- A53 4 Cores, 1.8 GHz, 0 to 95°C,
✓ Memory	Type	◆ LPDDR4 2GB
✓ Storage	Mass storage	◆ Minimum 16 GByte non-volatile data storage
	ROM	◆ SPI FLASH ROM 64Mb
✓ PMIC	PMIC	◆ PMIC FOR i.MX8 PLUS - NXP:PCA9450CHNY
✓ RTC	RTC	◆ The unit have a RTC to be able to keep system time and date while the main CPU is turned off.
✓ Ethernet	Requirement	◆ Minimum 10BASE-T and 100BASE-TX full duplex according to IEEE802.3 ◆ Auto MDI / MDI-X (IEEE 802.3ab) ◆ Duplex mode auto negotiation
	Controller	◆ Microchip: KSZ9031
	Connector	Interconnect cable connector ◆ Aces Electronic Co, 85205-1070L, 1.25mm S/T Wire to board connector 10 ckt ◆ Mates with Aces Electronic Co, 85206-1000 ◆ Interconnect pin out shown to the right
✓ CAN	Requirement	◆ Minimum 1 independent high-speed (1Mbit) CAN interface ◆ ISO 11898-2:2003 ◆ Software switchable 120R CAN termination required.
	Connector	◆ CAN interface and power input

✓ USB Type-C	Requirement	<ul style="list-style-type: none"> ◆ 1x USB Type-C ◆ Support for dual role device (DRP) ◆ Support USB2.0 ,3.0
	Power	<ul style="list-style-type: none"> ◆ USB output voltage: 5V, max 900mA ◆ The port shall have over current protection
	Device List	<ul style="list-style-type: none"> ◆ Supports the following USB devices from software: <ul style="list-style-type: none"> ◆ - USB HID device ◆ - USB Mass Storage device ◆ - USB Serial port device ◆ - USB Hub ◆ - USB Ethernet devices ◆ - USB Audio devices
✓ USB Port #2	Requirement	<ul style="list-style-type: none"> ◆ 1x 6pin USB connector support 1.5A <ul style="list-style-type: none"> - Pitch2.0mm S/T Wire to board connector ◆ USB 2.0 ◆ Connector Pinout show to the right [TBD]
	Power	<ul style="list-style-type: none"> ◆ VBUS_USB output voltage: 5V, max 900mA <ul style="list-style-type: none"> - The port shall have over current protection ◆ VBUS_CAN : output voltage: Unregulated input voltage: 4.5V-17V, max1.5A <ul style="list-style-type: none"> - The voltage enable shall be controllable from SW - Default state at startup is output OFF
	Device List	<ul style="list-style-type: none"> ◆ See as USB Type-C for list of USB host support
✓ Wifi/BT	Requirement	<p>Wifi: minimum Wifi 5 with PCIe interface</p> <ul style="list-style-type: none"> ◆ Standards: Wi-Fi 5 or better (IEEE 802.11 a/b/g/n/ac) ◆ Frequency band: 2.4 GHz and 5 GHz ◆ Radio parameters: DFS on 5 GHz ◆ Antenna configuration: Dual antennas for split RX/TX or diversity RX (MIMO/MISO) <p>BT: minimum 5.0 with PCM interface</p> <ul style="list-style-type: none"> ◆ Minimum Bluetooth 5.2 ◆ Radio control: SW shall be able to turn off TX radio (RF kill) ◆ PCM audio interface shall be connected to the CPU

		<p>Antenna: TE:2-2118909 Wi-Fi 6/ 6E TRIPLE BAND EMBEDDED ANTENNA</p> <table border="1" data-bbox="611 304 1450 934"> <tr> <td>Frequency Range (MHz)</td> <td>2400-2500</td> <td>5150-5875</td> <td>5925-7125</td> </tr> <tr> <td>VSWR</td> <td>< 1.9:1</td> <td>< 1.8:1</td> <td>< 2.2:1</td> </tr> <tr> <td>Average Efficiency</td> <td>80%</td> <td>69%</td> <td>66%</td> </tr> <tr> <td>Peak Gain</td> <td>4.3dBi</td> <td>4.3dBi</td> <td>5.0dBi</td> </tr> <tr> <td>Average Gain</td> <td>-1.0dBi</td> <td>-1.6dBi</td> <td>-1.9dBi</td> </tr> <tr> <td>Power Handling</td> <td colspan="3">10 Watt cw</td> </tr> <tr> <td>Feed Point Impedance</td> <td colspan="3">50 ohms unbalanced</td> </tr> <tr> <td>Polarization</td> <td colspan="3">Linear</td> </tr> <tr> <td>Size</td> <td colspan="3">40.0 mm x 8.0 mm x 1.0 mm</td> </tr> <tr> <td>Weight</td> <td colspan="3">< 2.3 g</td> </tr> <tr> <td>Mounting</td> <td colspan="3">Adhesive Tape</td> </tr> <tr> <td>Mating Connectors</td> <td colspan="3">MHF and MHF4L-type Refer to page 5</td> </tr> <tr> <td>Cable (Coaxial)</td> <td colspan="3">1.13mm Dia. Refer to page 5</td> </tr> <tr> <td>Operating Temperature</td> <td colspan="3">-40 to +85°C</td> </tr> <tr> <td>Storage Temperature</td> <td colspan="3">-40 to +85°C</td> </tr> <tr> <td>Hazardous Materials</td> <td colspan="3">A certificate of conformance is available from the product page on TE website.</td> </tr> </table>	Frequency Range (MHz)	2400-2500	5150-5875	5925-7125	VSWR	< 1.9:1	< 1.8:1	< 2.2:1	Average Efficiency	80%	69%	66%	Peak Gain	4.3dBi	4.3dBi	5.0dBi	Average Gain	-1.0dBi	-1.6dBi	-1.9dBi	Power Handling	10 Watt cw			Feed Point Impedance	50 ohms unbalanced			Polarization	Linear			Size	40.0 mm x 8.0 mm x 1.0 mm			Weight	< 2.3 g			Mounting	Adhesive Tape			Mating Connectors	MHF and MHF4L-type Refer to page 5			Cable (Coaxial)	1.13mm Dia. Refer to page 5			Operating Temperature	-40 to +85°C			Storage Temperature	-40 to +85°C			Hazardous Materials	A certificate of conformance is available from the product page on TE website.		
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	Module	<ul style="list-style-type: none"> ◆ Murata: LBEE5XV1YM 																																																																
✓ LED	Requirement	<ul style="list-style-type: none"> ◆ For debug and development purposes ◆ Green light to indicate the system is booting and running ◆ RGB programmable LED from CPU to indicate SW status 																																																																
✓ Power	Requirement	<ul style="list-style-type: none"> ◆ Input voltage range: 6.15VDC – 17VDC (Standard voltage: 12VDC) <ul style="list-style-type: none"> - The input voltage shall be measured at the pins of the input connector - Reverse polarity and over-current protection - ESD protection on the power signals ◆ The unit shall power up minimum 500 ms after the supply voltage rises above the minimum input voltage ◆ The unit shall power up when power is present ◆ The unit shall be able to measure the input voltage and input current. 																																																																
✓ ON/OFF Connector	Requirement	<ul style="list-style-type: none"> ◆ Connector pin-out shown to the right <ul style="list-style-type: none"> - Connect SW to ground to turn on the unit - Activating SW longer than 5-10 seconds will force power off the unit 																																																																

		<ul style="list-style-type: none"> ◆ The SWITCH input shall withstand the full max 17V input voltage non-destructively. It is close to the VBAT signal where a short circuit is foreseeable misuse
✓	Debug connector	<p>Requirement</p> <ul style="list-style-type: none"> ◆ Connector to a separate debug breakout board for development purposes. ◆ An external breakout debug board shall be available providing access to <ul style="list-style-type: none"> - UART serial console - Necessary debug control signals (boot pin)
✓	Environment	<p>Requirement</p> <ul style="list-style-type: none"> ◆ Temperature and Humidity <ul style="list-style-type: none"> - Operating temperature range: 0°C to +60°C ambient temperature - Operating humidity: 5% – 90% relative humidity (R.H.), condensing - Storage and shipment temperature range: -20°C to +85°C ◆ Air pressure/Altitude <ul style="list-style-type: none"> - The CPU module2 operate as intended in altitudes from sea level to altitude of 3500 m ◆ Thermal <ul style="list-style-type: none"> - The CPU module2 have provisions for implementing temperature transport when used with the high-performance option of the CPU (TBD). ◆ Unwanted Substances <ul style="list-style-type: none"> - The CPU module2 compliant with RoHS Directive (2011/66/EU) and REACH Regulation (1907/2006). <p>Evidence of compliance shall be a signed declaration.</p> ◆ Flammability resistance <ul style="list-style-type: none"> - The PCB have flammability class V0 according to UL94. ◆ Vibration and shock <ul style="list-style-type: none"> - IEC60068-2-6

✓ Certification	Requirement	<ul style="list-style-type: none"> ◆ Safety: <ul style="list-style-type: none"> - US/Canada, LVD: IEC/62368-1 second edition - EU/UK, CB: IEC/EN62368-1 second edition ◆ EMC: <ul style="list-style-type: none"> - US/Canada, FCC/IC: FCC 15B/ICES-003 - EU/UK, CE/UKCA: EN 55032/35, EN301489-1/-17, BS EN 55032 /35(UKCA) - NZ/AUS, RCM: AS/NZS CISPR 32 - Japan, VCCI: VCCI CISPR 32 - Korea, KC(EMC+RF): KC ◆ RF: <ul style="list-style-type: none"> - US, FCC: FCC 15C - Canada, IC: RSS-247 - EU/UK, CE/UKCA: EN300328+EN301893/ FDS, EN 62311 / EN62471 - China, SRRC: CMIIT - NZ/AUS, RCM: AS/NZS 4268 - Japan, VCCI: MIC 2.4G+5G+BT+BLE
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- **This product is not suitable for user operation and will be assembled, sold and shipped by Laerdal before sale.**

- **RF Exposure warning**

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

- **Radio Frequency (RF) Exposure Information**

The radiated output power of the Wireless Device is below the Innovation, Science and Economic Development Canada (ISED) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized. This device has also been evaluated and shown compliant with the IC RF Exposure limits under mobile exposure conditions. (Antennas are greater than 20cm from a person's body).

- **Informations concernant l'exposition aux fréquences radio (RF)**

La puissance de sortie rayonnée de l'appareil sans fil est inférieure aux limites d'exposition aux radiofréquences d'Innovation, Sciences et Développement économique Canada (ISDE). L'Appareil sans fil doit être utilisé de telle manière que le potentiel de contact humain pendant le fonctionnement normal soit minimisé.

Cet appareil a également été évalué et démontré conforme aux limites d'exposition RF IC dans des conditions d'exposition mobile. (Les antennes sont à plus de 20 cm du corps d'une personne).

US

Federal Communications Commission (FCC) 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.

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

the interference by one or more of the following measures:

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

CAN CPU Module 2

Contains FCC ID: QHQ-LB1YM



Cautions

- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

The use of shielded I/O cables is required

when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC rules.

RF Exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

For Country Code Selection Usage (WLAN Devices)

Notes

- The country code selection is for non-US models only and is not available to all US models. Per FCC regulation, all WiFi products marketed in US must be fixed to US operation channels only.
- Changes or modifications not covered in this manual must be approved in writing by the manufacturer's Regulatory Engineering Department. Changes or modifications made without written approval may void the user's authority to operate this equipment.

Canada

Industry Canada Rules

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.

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.



Cautions for WLAN 5GHZ Device:

- 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.
- The maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall comply with the e.i.r.p. limit.
- The maximum antenna gain permitted for devices in the band 5725-5850 MHz shall comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate.
- The worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in Section 6.2.2(3) shall be clearly indicated.
- Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.



Avertissement:

- 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.
- Le gain maximal d'antenne permis pour les dispositifs utilisant les bandes 5250-5350 MHz et 5470-5725 MHz doit se conformer à la limite de p.i.r.e.
- Le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5725-5850 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.

Les pires angles d'inclinaison nécessaires

pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, et énoncée à la section 6.2.2 3), doivent être clairement indiqués.

De plus, les utilisateurs devraient aussi être

avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

Canadian ICES-003 Statement

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.

Radio Frequency (RF) Exposure Information

The radiated output power of the Wireless Device is below the Innovation, Science and Economic Development Canada (ISED) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized. This device has also been evaluated and shown compliant with the IC RF Exposure limits under mobile exposure conditions. (Antennas are greater than 20cm from a person's body).

Informations concernant l'exposition aux fréquences radio (RF)

La puissance de sortie rayonnée de l'appareil sans fil est inférieure aux limites d'exposition aux radiofréquences d'Innovation, Sciences et Développement économique Canada (ISDE). L'Appareil sans fil doit être utilisé de telle manière que le potentiel de contact humain pendant le fonctionnement normal soit minimisé. Cet appareil a également été évalué et démontré conforme aux limites d'exposition RF IC dans des conditions d'exposition mobile. (Les antennes sont à plus de 20 cm du corps d'une personne).

The County Code Selection feature is disabled for products marketed in the US/Canada. La fonction de sélection du code de pays est désactivée pour les produits distribués aux États-Unis ou au Canada.

CAN CPU Module 2
Contains IC ID: 20263-LB1YM

EU

This product is in compliance with the essential requirements of Council Directive 2014/53/EU on Radio Equipment (RED).

UK

UKCA (U.K. Conformity Assessed): This product complies with the requirements of U.K. legislation of Radio Equipment Regulations (S.I. 2017/1206).