Quick Start Guide
60GHz Long-Range Client Node
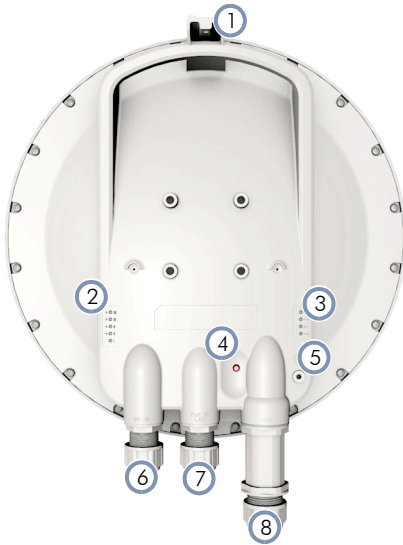HVIN/PMN:MLTG-CN LR

Edge-corE ®

Package Contents

1. 60GHz Long-Range Client Node MLTG-CN LR
2. 1 x 48 VDC 0.5 A passive PoE injector
3. 1 x Power cord
4. 1 x DC connector plug
5. 3 x Cable glands
6. Documentation QR-code card

Overview

1. Scope mount
2. Alignment/Signal Strength LED Indicators
   - Link established but misaligned: Up to 2 LEDs indicate the directions for alignment fine-tuning.
   - Link established and correctly aligned: Up to 5 LEDs indicate the signal strength. More LEDs mean greater signal strength.
3. System LED Indicators:
   - 60G: On (60GHz wireless link), Blinking (activity).
   - 2.5G: On (2.5G port link), Blinking (activity)
   - SFP: On (SFP port link), Blinking (activity)
   - PWR: Slow blink during boot up. Steady on when ready.
4. Reset button:
   - A 3-second press restarts the device.
   - A 10-second press resets to factory defaults.
5. Grounding Screw
6. DC IN Port
7. 2.5G port (PoE In)
8. 1Gbps SFP Port

Interface	MAC Address
2.5G Port	Ethernet MAC (Printed on the device's label)
SFP Port	Ethernet MAC + 1
60 GHz	Ethernet MAC + 2

| No. of LEDs	RSSI (dBm)
5	-56 or higher
4	-57 ~ -59
3	-60 ~ -62
2	-63 ~ -65
1	-66 or lower

Installation

Warning: For a safe and reliable installation, use only the accessories and screws provided with the device. Use of other accessories and screws could result in damage to the unit. Any damages incurred by using unapproved accessories are not covered by the warranty.

Avertissement: Pour une installation sûre et fiable, utilisez uniquement les accessoires et les vis fournies avec l'appareil. L'utilisation d'autres accessoires et vis pourrait endommager l'appareil. Les dommages causés par l'utilisation d'accessoires non approuvés ne sont pas couverts par la garantie.

1 Ground the MLTG-CN LR
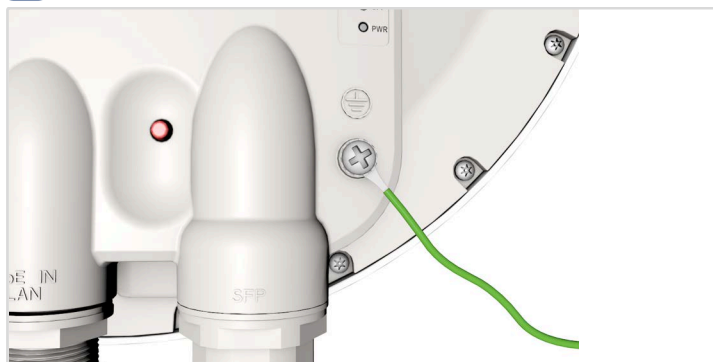
Ground the MLTG-CN LR by connecting a ground wire to the grounding point on the device and to nearby good earth.

2 Make Network Connections

2.5G Port
Connect outdoor-rated Category 5e or better cable to the 2.5Gbps RJ-45 port. Be sure to use the included weatherproof port cover.

Note: The 2.5G Port connection provides PoE power to the unit.

SFP Port
Install a 1Gbps fiber transceiver in the SFP port and then connect outdoor-rated fiber cable to the transceiver port. The following list of Edgecore transceivers are supported:

- ET4202-SX
- ET4202-LX
- ET4202-EX
- ET4202-ZX

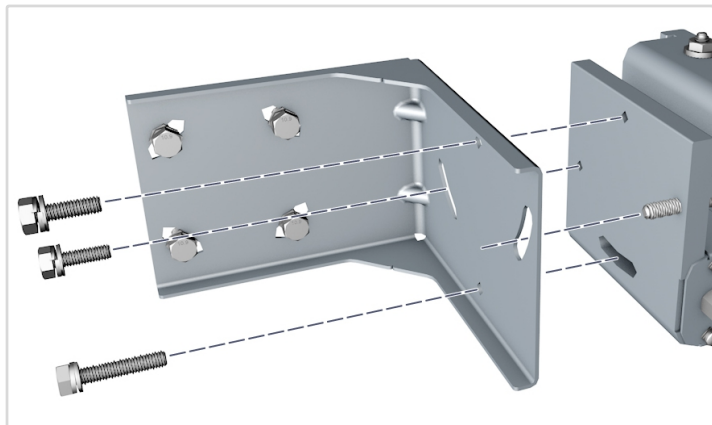Be sure to use the included weatherproof port cover.

3 Mount the MLTG-CN LR

Two optional precision brackets—ICC-BRACKET-LR and ICC-BRACKET-LC—are designed for pole mounting and provide additional degrees of movement for antenna alignment.
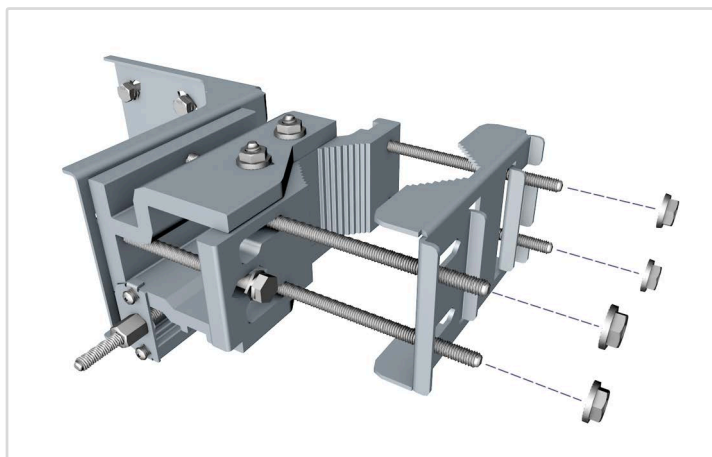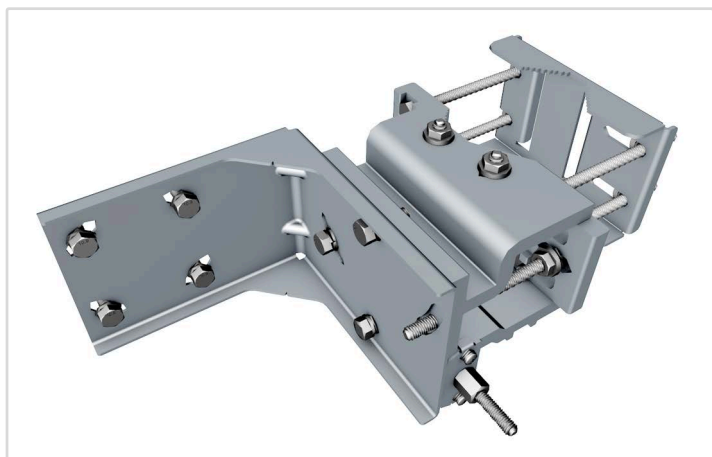
a. Using the LR Precision Bracket

ℹ️ **Note:** M8 bolts require a 13 mm wrench.

1. Attach the two main sections of precision bracket using two M8 25 mm bolts, flat washers, and spring-lock washers.
2. Use the M8 40 mm bolt with flat and spring-lock washers to attach the bracket to the vertical-adjustment mechanism.


3. Seat the four M8 125 mm bolts in the main assembly so that the bolt heads are held in the assembly grooves and are unable to turn.
4. Place the pole-attachment bracket over the bolts and secure them with four M8 lock nuts. (The pole attachment bracket needs to be removed and re-attached when mounting on a pole)
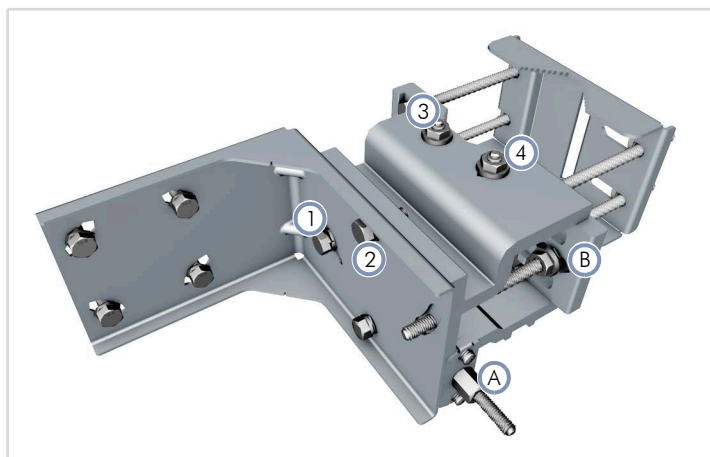

5. Ensure all four position-locking bolts on the LR Precision Bracket are tight before installing.
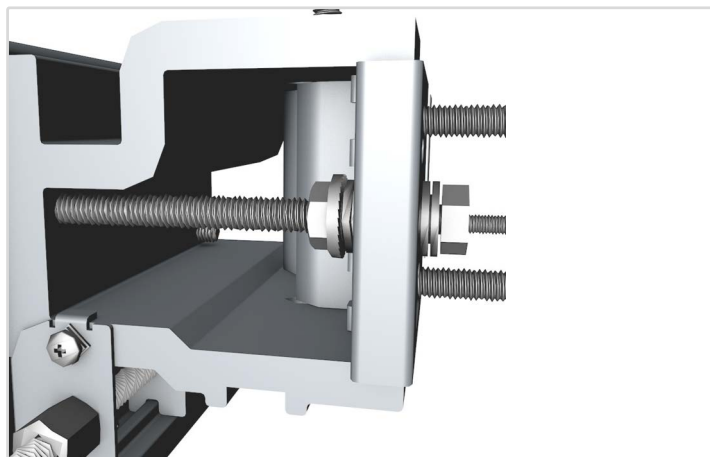
6. Before aiming, ensure the horizontal adjustment bolt and nut is tightened. The bracket is shipped with the nut in a loose position.
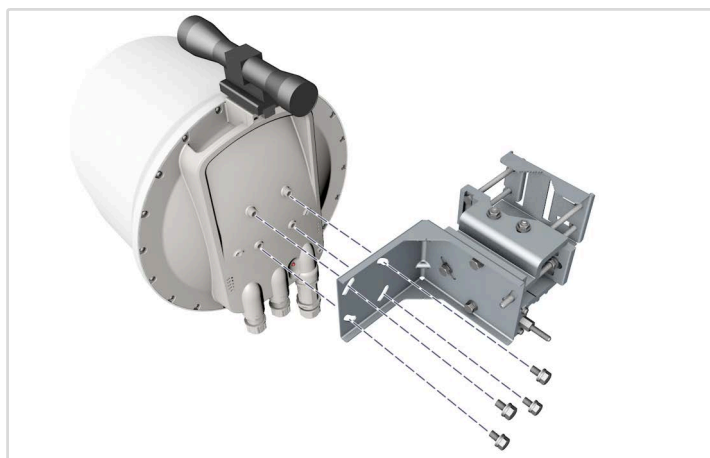
7. Install the LR Precision Bracket onto the MLTG-CN LR using four M8 15 mm bolts, spring-lock washers, and flat washers.

ℹ️ **Note:** Do not adjust bolts A and B without first loosening 1, 2, 3, and 4 respectively.
Note: It is recommended to only adjust one axis (A for vertical or B for horizontal) at a time.
Note: The device has a scan range of +/-3° for azimuth and elevation, and a 1° beam width. Fine-tune the direction to be in the +/-1° range for optimal performance.

8. Use a general visual estimate or the optical scope for initial alignment before starting on other adjustments.
9. Loosen the horizontal adjustment bolts 3 and 4. Use fine-tune bolt "B" to optimize the horizontal position. Re-tighten bolts 3 and 4.
10. Loosen the vertical adjustment bolts 1 and 2. Use fine-tune bolt "A" to optimize the vertical position. Re-tighten bolts 1 and 2.

11. Repeat steps 9 and 10 until the alignment position is optimized.
12. Ensure all bolts are fully tightened and remove the alignment scope (if installed).

b. Using the LC Precision Bracket

1. Thread the included steel hose clamps through the eyelets on the back of the LC Precision Bracket and then lightly fasten them around the pole. Both hose clamps must be used for pole mounting.
2. Align the MLTG-CN LR antenna with the peer node before tightening the clamps securely.

3. Install the LC Precision Bracket onto the MLTG-CN LR using the included four M8 10 mm bolts.

ℹ **Note:** Do not adjust bolts A and B without first loosening 1, 2, 3, and 4 respectively.
Note: It is recommended to only adjust one axis (A for vertical or B for horizontal) at a time.
Note: The device has a scan range of +/-3° for azimuth and elevation, and a 1° beam width. Fine-tune the direction to be in the +/-1° range for optimal performance.
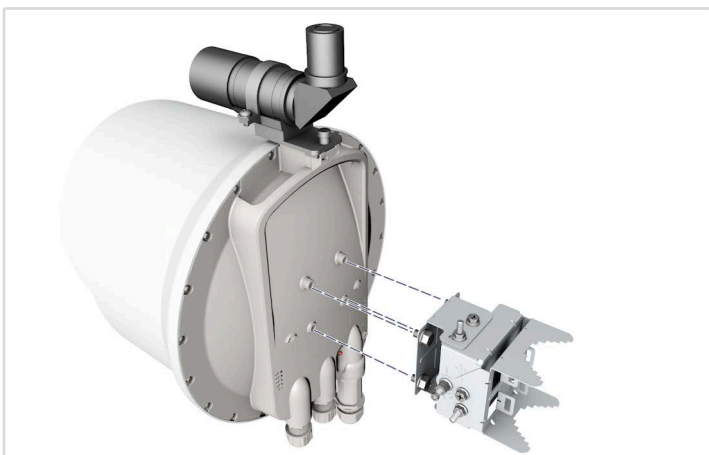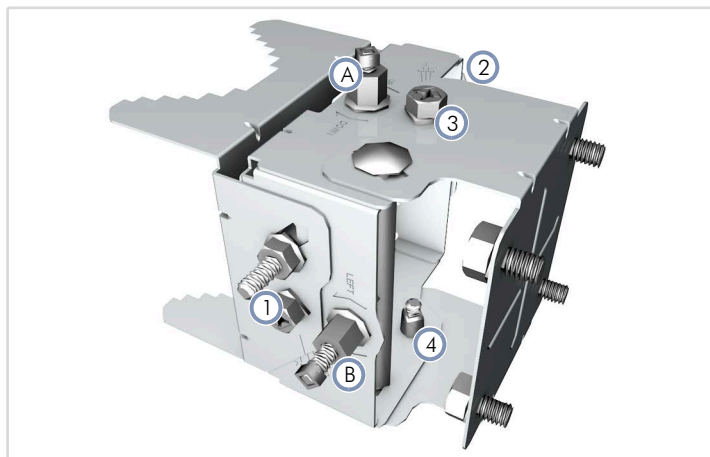
4. Use a general visual estimate or the optical scope for initial alignment before starting on other adjustments.
5. Loosen the horizontal adjustment bolts 3 and 4. Use fine-tune bolt "B" to optimize the horizontal position. Re-tighten bolts 3 and 4.
6. Loosen the vertical adjustment bolts 1 and 2. Use fine-tune bolt "A" to optimize the vertical position. Re-tighten bolts 1 and 2.
7. Repeat steps 5 and 6 until the alignment position is optimized.
8. Ensure all bolts are fully tightened and remove the alignment scope (if installed).

4 Use an Alignment Scope

Using the ICC-SCOPE-9x50 Alignment Scope (ordered separately) is strongly recommended for alignment. To install, place the scope on top of the MLTG-CN LR housing and secure it with its thumb screw.

The MLTG-CN LR can also accommodate a Picatinny Rail and corresponding widely available laser sights.

5 Connect Power

a. Passive PoE Injector

Connect the other end of the outdoor-rated Ethernet cable from the Uplink (PoE) port to the PoE injector (passive) supplied in the package.

b. DC Power

Wire the included DC terminal plug to a 24-56 VDC, 1 A source to provide power to the MLTG-CN LR. Note the connection polarity from left to right:

1. Positive (+)
2. Negative (–)

6 Verify Power is On
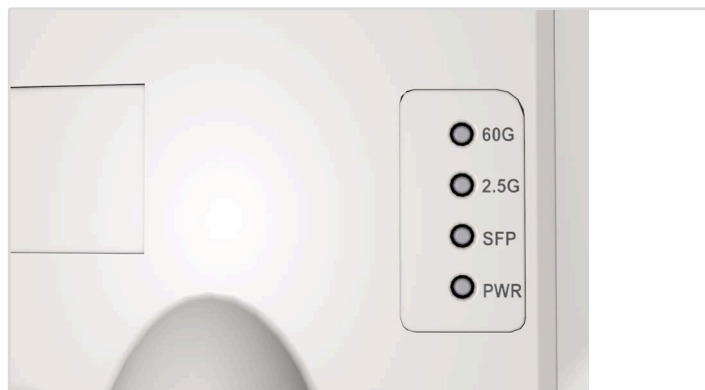
Check the PWR LED
The PWR LED should blink slowly during boot-up and be on when operating normally.

7 Verify Alignment
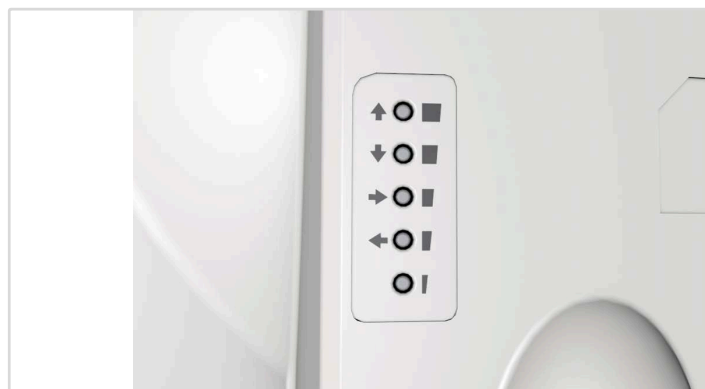
Check the Alignment LEDs
The alignment-assist LEDs indicate directions for fine-tuning. Refer to "3. Mount the MLTG-CN LR" for instructions on how to adjust the mounting bracket accordingly.

> **i** **Note:** The LEDs' function changes when a link is aligned successfully within a +/- 1° range. They stop indicating alignment directions and start indicating signal strength.

8 Access the Web User Interface

a. Using the 2.5G (PoE In) Port

1. Connect a PC directly to the MLTG-CN LR's 2.5G port.
2. Set the PC IP address to be on the same subnet as the MLTG-CN LR LAN port default IP address. The PC address must start 192.168.1.x with subnet mask 255.255.255.0).
3. Enter the MLTG-CN LR's default IP address of 192.168.1.20 into the web browser address bar.
4. Log in to the web interface using default settings:
   Username = admin
   Password = admin

b. Using the SFP Port

1. Connect a PC directly to the MLTG-CN LR's SFP port.
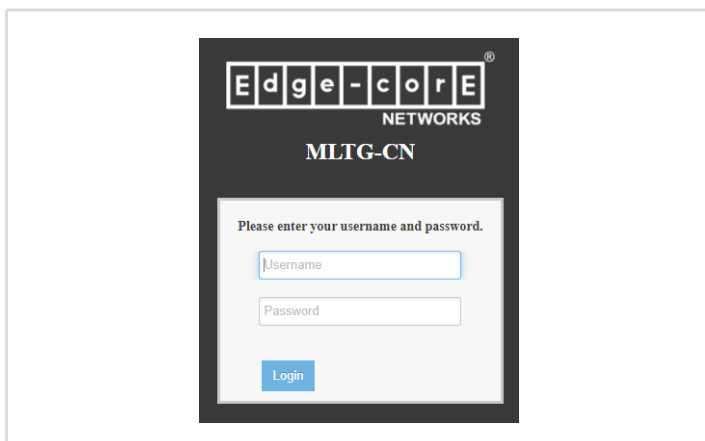2. Set the PC IP address to be on the same subnet as the MLTG-CN LR LAN port default IP address. The PC address must start 192.168.2.x with subnet mask 255.255.255.0).
3. Enter the MLTG-CN LR's default IP address of 192.168.2.1 into the web browser address bar.
4. Log in to the web interface using default settings:
   Username = admin
   Password = admin

Safety and Regulatory Information

FCC Class B

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 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 device is not to be operated on aircraft except for the conditions listed on FCC CFR 15.255 (b).

IMPORTANT NOTE:
FCC 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 193 cm between the radiator and your body.

IC 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.

Cet appareil contient des émetteurs / récepteurs exempts de licence qui sont conformes au (x) RSS (s) exemptés de licence d'Innovation, Sciences et Développement économique Canada. L'opération est soumise aux deux conditions suivantes: (1) Cet appareil ne doit pas provoquer d'interférences. (2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

IMPORTANT NOTE:
IC Radiation Exposure Statement:

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 193 cm between the radiator and your body.

This device is not to be operated on aircraft except for the conditions listed on ISED RSS-210 Annex J.1.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 193 cm de distance entre la source de rayonnement et votre corps.

CE Statement

This equipment complies with EU radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 126 cm between the radiator and your body.

All operational modes:
60 GHz: 802.11ad, 802.11ay

The frequency and maximum transmitted power limit in EU are listed as below:
57-66 GHz: 55 dBm

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

The abbreviations of the countries, as prescribed in above table, where any restrictions on putting into service or any requirements for authorization of use exist.

CE

CE Mark Declaration of Conformance for EMI and Safety (EEC)

This information technology equipment is in compliance with the Directive 2014/53/EU and Directive 2014/35/EU.

The Declaration of Conformity (DoC) can be obtained from www.edge-core.com -> support -> download.

Japan VCCI Statement

この装置は、クラスB機器です。この装置は、住宅環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。　　　　VCCI－B

Warnings and Cautionary Messages

Warning: This product does not contain any serviceable user parts.
Warning: Installation and removal of the unit must be carried out by qualified personnel only.
Warning: When connecting this device to a power outlet, connect the field ground lead on the tri-pole power plug to a valid earth ground line to prevent electrical hazards.

Caution: Wear an anti-static wrist strap or take other suitable measures to prevent electrostatic discharge when handling this equipment.
Caution: Do not plug a phone jack connector in the RJ-45 port. This may damage this device.
Caution: Use only twisted-pair cables with RJ-45 connectors that conform to FCC standards.

警告和注意訊息

警告：本產品不包括任何可由用戶維修的零件。
警告：安裝或拆卸本裝置時，必須由合格的人員進行操作。
警告：將本裝置連接至電源插座時，將三極電源插座上的基地場導線連接至有效的接地線，以防止出現電氣危險。

注意：應佩戴防靜電腕帶或採取其他有效措施，以防止在操作本設備時出現靜電放電。
注意：切勿將電話插頭插入 RJ-45 埠。否則可能導致裝置損壞。
注意：請僅使用帶有 RJ-45 連接器的符合 FCC 的雙絞線。

BSMI (Taiwan)

警告使用者：
此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

BSMI Taiwan

警告使用者：此為甲類資訊技術設備，於居住環境中使用，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。
電氣方面的安全性
- 為避免可能的電擊造成嚴重損害，再搬動產品之前，請先將產品電源線暫時從電源插座中拔掉。
- 當您要加入硬體裝置到系統中或者要移除系統中的硬體裝置時，請務必先連接該裝置的訊號線，然後再連接電源線。可能的話，在安裝硬體裝置之前先拔掉產品的電源供應器電源線。
- 當您要從主機板連接或拔除任何的訊號線之前，請確定所有電源線已事先拔掉。
- 請確定電源供應器的電壓設定已調到本國 / 本區域所使用的電壓標準值。若您不確定您所屬區域的供應電壓值為何，那麼請就近詢問當地的電力公司人員。
- 如果電源供應器已損壞，請不要嘗試自行修復。請將之交給專業技術服務人員或經銷商來處理。

操作方面的安全性
- 在使用產品之前，請確定所有的排線、電源線都已正確地連接好。若您發現有重大的瑕疵，請盡速連絡您的經銷商。
- 為避免發生電氣短路情形，請務必將所有沒用到的螺絲、迴紋針及其他零件收好，不要遺留在主機板上或產品主機中。
- 灰塵、溼氣以及劇烈的溫度變化都會影響主機板的使用壽命，因此請盡量避免放置在這些地方。
- 請勿將產品主機放置在容易搖晃的地方。
- 若在本產品的使用上有任何的技術性問題，請和經過檢定或有經驗的技術人員聯絡。

使用注意事項
- 在您開始操作本系統之前，請務必詳閱以下注意事項，以避免因為人為的疏失造成系統損傷甚至人體本身的安全。
- 使用前，請檢查產品各部份組件是否正常，以及電源線是否有任破損，或是連接不正確的情形發生。
- 如果有任何破損情形，請盡速與您的授權經銷商連絡，更換良好的線路。
- 產品放置的位置請遠離灰塵過多，溫度過高，太陽直射的地方。
- 保持機器在乾燥的環境下使用，雨水、溼氣、液體等含有礦物質將會腐蝕電子線路。
- 使用時，請務必保持周遭散熱空間，以利散熱。
- 使用前，請檢查各項周邊設備是否都已經連接妥當再開機。
- 避免邊吃東西邊使用，以免污染機件造成故障。
- 請避免讓紙張碎片、螺絲及線頭等小東西靠近產品之連接器、插槽、孔位等處，避免短路及接觸不良等情況發生。
- 請勿將任何物品塞入產品內，以避免引起機件短路或電路損毀。
- 產品開機一段時間之後，散熱片及部份 IC 表面可能會發熱、發燙，請勿用手觸摸，並請檢查系統是否散熱不良。

- 在安裝或移除周邊產品時請先關閉電源。
- 電源供應器如果發生損壞，切勿自行修理，請交由授權經銷商處理。
- 產品的機殼、鐵片大部份都經過防割傷處理，但是您仍必須注意避免被某些細部鐵片尖端及邊緣割傷，拆裝機殼時最好能夠戴上手套。

當你有一陣子不使用產品時，休假或是颱風天，請關閉電源之後將電源線拔掉。

限用物質含有情況標示聲明書
Declaration of the Presence Condition of the Restricted Substances Marking

設備名稱：60G 長距接取器		型號（型式）：MLTG-CN LR			
Equipment Name		Type Designation (Type)			
單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols				
	鉛 (Pb)	汞 (Hg)	鎘 (Cd)	六價鉻 (Cr*6)	多溴聯苯 (PBB)	多溴二苯醚 (PBDE)
電路板組件 PCBA	－	○	○	○	○	○
機殼 Chassis	○	○	○	○	○	○
組合線 Cable ass'y	○	○	○	○	○	○
電源供應器 Power Supply	－	○	○	○	○	○

備 考 1. "超出 0.1 wt %" 及 "超出 0.01 wt %" 係指限用物質之百分比含量超出百分比含量基準值。

N o t e 1: "Exceeding 0.1 wt %" and "exceeding 0.01 wt %" indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備 考 2. "○" 係指該項限用物質之百分比含量未超出百分比含量基準值。

N o t e 2: "○" indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備 考 3. "－" 係指該項限用物質為排除項目。

N o t e 3: The "－" indicates that the restricted substance corresponds to the exemption.

NCC 警語

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

Hardware Specifications

AP Chassis

Size (WxDxH)	355 x 355 x 315 mm (13.98 x 13.98 x 12.40 in)
Weight	3 kg (6.61 lb)
Temperature	Operating: -40° C to 60° C (-40° F to 140° F) Storage: -40° C to 70° C (-40° F to 158° F)
Humidity	Operating: 5% to 95% (non-condensing)

Network Interfaces

Ports	2.5G Ethernet Port (PoE IN) SFP Port
60 GHz	802.11ay

Power Supply

48 VDC Input (non-standard)	24 V to 56 V, 1 A Max
PoE Input	45.6 V to 50.4 V, 500 mA Rated
Power Consumption	15.9 W max.

Regulatory Compliances

Radio	EN 303 722 V1.2.0 EN 62311 (MPE) 47 CFR FCC Part 15.255 RSS-210 RSS-102 Issue 5 (MPE) MIC Article 2 Paragraph 1 Item 19—4-2 NCC LP0002 ACMA AS/NZS 4268
Emissions	EN 301 489-1 V2.1.1 EN 301 489-17 V3.1.1 Part 15 subpart B Class B (ANSI C63.4-2014) ICES-003 VCCI-CISPR 32 CNS 13438 AS/NZS CISPR 32:2015
Safety	EN 62368-1: 2014+ A11: 2017 IEC 60950-1: 2005, AMD1: 2009, AMD2: 2013 IEC 60950-22: 2016 IEC 60529-1: 1989+ AMD1: 1999+ AMD2: 2013CSV (IP66) CNS 14336-1

Manufacturer

Address	Accton Technology Corporation 1, Creation 3rd Rd., Hsinchu Science Park, Hsinchu 30077, Taiwan, R.O.C.
Website	https://www.edge-core.com/

Warranty Information and Technical Support

Registering your product enables you to receive a more efficient warranty service. Be sure to register at www.edge-core.com.