

Instruction Manual

Product Name: WakeCap Anchor Node
Product Model: WC-NODE-A
Document No.: HW-SPEC-TS-WC-NODE-A



Revision History

Revision	Date	Description	Author
1.0	2025-09-04	Initial Release	Rami Nassouh

1. Product Description

The WakeCap Anchor Node (WC-NODE-A) is a fixed wireless mesh router designed for deployment on construction and industrial sites. It enables network coverage extension and improves positioning accuracy of helmet and asset nodes within the 2.4 GHz WakeCap mesh. Anchors are strategically installed based on project size, coverage, and density requirements.

2. Technical Specifications

Item	Description
Dimensions	147 × 131 × 43 mm
Design	Rugged plastic enclosure with gasket seal
Connectivity	BLE 2.4 GHz SoC, ARM Cortex-M4F, +4 dBm
NFC	Embedded NFC Type 2 Tag (ISO 14443-3A)
Device ID	Unique 8–10 digit identifier
Motion Sensing	12-bit ±4g accelerometer
Environment Sensing	Onboard temperature/humidity sensor
Battery	3.6V 19Ah ER34615 Lithium D-cell, replaceable, 10–12 year life (typical)
Output	Buzzer
Operating Temp	pending
Ingress Protection	pending
Certifications	pending

3. Typical Use Cases

- Extending mesh network coverage across large or complex worksites
- Backbone for positioning accuracy of helmet and asset nodes
- Infrastructure-level network reliability
- NFC tap-to-identify

4. Maintenance Procedures

4.1 Preventive Guidelines

- Inspect housing regularly for cracks, water ingress, or corrosion.
- Verify gasket integrity during inspections.
- Avoid exposure to solvents, oils, or high-pressure water jets.
- Confirm NFC readability and dashboard reporting during site audits.

4.2 Battery Replacement

Battery Type: 3.6V 19Ah ER34615 Lithium D-cell (non-rechargeable)

Estimated Life: 10–12 years depending on reporting interval

Replacement Steps:

1. Move device to a designated safe maintenance area.
2. Unscrew the four stainless steel M4 hex screws on the enclosure (torque 1.5 Nm).
3. Remove enclosure cap and carefully disconnect PCB JST battery connector.
4. Remove depleted D-cell.
5. Insert new D-cell in correct polarity orientation.
6. Reconnect JST cable to PCB battery connector.
7. Ensure gasket is properly seated before resealing the enclosure.
8. Tighten M4 screws to 1.5 Nm torque.
9. Verify boot-up by NFC tapping the device to read status.

Notes: Use ESD-safe tools and dispose of lithium batteries properly.

4.3 Cleaning Instructions

- Use soft cloth with mild soap and water.
- Do not use solvents, alcohol-based cleaners, or abrasive pads.
- Ensure humidity membrane is kept clear of debris.

4.4 Firmware Updates

Firmware is not user-updatable. If required, updates are deployed remotely via the mesh. For update verification, contact WakeCap support.

5. Troubleshooting Guide

Symptom	Possible Cause	Solution
Anchor offline	Battery depleted	Replace D-cell (Section 4.2)
	Out of network coverage	Reposition closer to anchors/gateway
	Water ingress / hardware fault	Quarantine unit, contact support
Weak signal	Poor antenna placement	Reinstall higher, away from metal
Intermittent operation	Low battery / unstable link	Check dashboard, replace battery
	High interference	Review anchor density, reposition
NFC not reading	Dirt or surface obstruction	Clean NFC area
	Antenna damage	Inspect, replace if needed

6. Safety & Compliance

- Ingress Protection: pending
- Compliance: pending
- Battery Safety: Use only ER34615 D-cell. Do not short-circuit, recharge, or expose to fire.

FCC Warning Statement:

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.
- 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.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your 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.

The device has been evaluated to meet general RF exposure requirement.