



Product data sheet

NU54 Manual

Operational description

Model No.

NCRB54N01VC / NCRB54N01VI

NCRB54N01AC / NCRB54N01AI

NCRB54N01C / NCRB54N01I





1. Introduction

This manual provides essential information for integrating **NCRB54N01VI/VC/AI/AC/I/C (NU54)**, a NUCODE wireless module, into a host device.

- The module is based on the Nordic nRF54L05/10/15 chipset, supporting 2.4GHz ISM band.
- It uses an external antenna via a U.FL connector and can be deployed in mesh.

2. Key Features

- Frequency:** 2.4GHz ISM band
- Chipset:** Nordic nRF54L05/10/15
- External Antenna:** U.FL connector, recommended gain $\leq +4\text{dBi}$
- Power Requirements:** 3.3V ($\pm 5\%$ recommended), some I/Os may be 1.8V
- Interface:** UART (primary wireless serial communication), additional GPIO if needed

3. Installation & Integration

Power Connection

- Provide a stable 3.3V($\pm 5\%$) DC supply to the module.
- If certain I/Os run at 1.8V, ensure the host PCB includes appropriate regulation or level shifting.

Antenna Attachment

- Connect an antenna (U.FL) with a recommended gain of $+4\text{dBi}$ or less.
- Using a higher-gain or different antenna may require additional regulatory approval.
- Physical Placement
- Mount the module where interference from metallic parts or wiring is minimized.
- Observe the 20 cm RF exposure requirement in the final product design and installation.

UART Communication

- Match the default UART baud rate and pin mapping with the host firmware.
- Flow control is recommended for stable wireless serial communication.

4. FCC Compliance

4.1 Compliance Statement (Part 15.19(a)(3))

"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."

4.2 Changes/Modifications Warning (Part 15.21)

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

4.3 Class B Digital Device Information (Part 15.105 Example)

"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. ... (snip) ... if this equipment does cause harmful interference to radio or television reception, 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."

4.4 RF Exposure (MPE) & Host Labeling

- This module should be installed/operated with a minimum distance of 20 cm between the radiator and users in an uncontrolled environment.
- The final host device must display a label such as "Contains FCC ID: [2BH6E-NCRB54N01VI]."



5. Performance & Cautions

- Environmental & Antenna Considerations
- Maximum transmit/receive performance may vary depending on installation environment, wiring, and antenna gain.
- Use only an approved antenna with gain at or below the tested limit.
- Firmware Updates
- Only use officially approved firmware for updates; unauthorized modifications can void certification.
- EMC Shield
- An EMC shield is installed beneath the module; avoid damaging or removing it during mounting.
- Integrator Instructions (KDB 996369 D03, §§2.2–2.12)
- (a) Installation & Operating Conditions
 - Maintain required separation distance (e.g., 20 cm in an uncontrolled environment).
 - Avoid placing the module near large metallic structures or high-noise components.
- (b) Host Labeling
 - Ensure final host products carry the appropriate “Contains FCC ID” label if required.
 - The label must be permanently affixed and clearly visible.
- (c) User Guide Requirements
 - Instruct end users about permissible operating conditions, FCC warnings, and any antenna-use restrictions.
 - Include mandatory FCC statements in the final product’s user manual.
- (d) EMC & RF Exposure Testing
 - The host manufacturer may need to retest the final product (EMC and/or RF exposure) to confirm continued compliance.
 - Changes to enclosure, antenna type/gain, or device configuration may require new approvals.
- (e) Approved Antenna Types
 - Only use antennas consistent with the module’s original approval or gain level.
 - Any antenna outside the certified scope may necessitate a permissive change filing.

6. Maintenance & Support

Handle the module in an ESD-safe environment.

- Keep the module away from water or high-humidity conditions (not waterproof or dustproof).
- For technical assistance, contact us using the information below.

7. Contact Information

Company: NUCODE

Address: 704ho, Gasan-Digital-1ro, Geumcheon-Gu, Seoul, South Korea

Email: info@nucode.co.kr

