

**NVIDIA Jetson EEPROM Layout Guide**

**Overview**

* **EEPROM Types**:
  + **Module EEPROM**: Stores module-specific data (e.g., part number, MAC addresses).
  + **Carrier Board EEPROM**: Stores carrier board-specific data (e.g., serial number, Ethernet MAC).
* **Size**: Both EEPROMs are **256 bytes**.
* **Endianness**: All numeric values and MAC addresses are stored in **little-endian format**.

**Module EEPROM Layout**

|  |  |  |
| --- | --- | --- |
| **Byte Range** | **Content** | **Notes** |
| **0** | Major version (e.g., 0x01) | Incremented for backward-incompatible changes. |
| **1** | Minor version (e.g., 0x00) |  |
| **2–3** | Length of board ID data | Specifies the length of subsequent board ID fields. |
| **4–19** | Reserved | Do not modify. |
| **20–49** | Product Part Number | Format: 699-cnnnn-pppp-vvv r.0 (e.g., 699-83448-0002-000 C.0). |
| **50–55** | Wi-Fi MAC Address | Default NVIDIA MAC. If unused, set to 0x00 or 0xFF. |
| **56–61** | Bluetooth MAC Address |  |
| **62–67** | Secondary Wi-Fi MAC Address |  |
| **68–73** | Gigabit Ethernet MAC Address |  |
| **74–88** | Asset Tracking Number | Unique serial number padded with 0x00 or 0xFF. |
| **89–149** | Reserved | For NVIDIA internal use. Do not modify. |
| **150–153** | Block Signature ("NVCB") | If missing, defaults to NVIDIA MAC addresses. |
| **154–155** | Structure Length (28 bytes) | From byte 150 to 177. |
| **156–157** | Type Signature ("M1") | Specifies MAC address format. |
| **158–159** | Version (0x0000) |  |
| **160–165** | Customer Wi-Fi MAC Address | Overwritable section. |
| **166–171** | Customer Bluetooth MAC Address |  |
| **172–177** | Customer Gigabit Ethernet MAC Address |  |
| **178–254** | Reserved | For future use. |
| **255** | CRC-8 Checksum | Computed for bytes 0–254. |

**Carrier Board EEPROM Layout**

* Similar structure to the module EEPROM but with slight differences:
  + **Bytes 150–153**: Must contain "NVCB" to enable customer-overwritable fields.
  + **Bytes 172–177**: Gigabit Ethernet MAC address (starting address for system interfaces).
  + **Byte 178**: Number of Ethernet MAC addresses (e.g., 1).

**Key Notes**

1. **MAC Address Format**:
   * Example MAC 00:04:4b:01:02:03 is stored as:

Byte 50: 0x03, Byte 51: 0x02, ..., Byte 55: 0x00

1. **Customer-Overwritable Section**:
   * Modify **bytes 150–177** to set custom MAC addresses.
   * Ensure block signature ("NVCB") and structure length (28) are correct.
2. **Reserved Sections**:
   * Bytes 89–149 and 179–254 are reserved. Do not read or modify.

**Troubleshooting**

* **MAC Address Not Updating**:
  + Verify "NVCB" signature (bytes 150–153) and structure length (bytes 154–155).
  + Ensure CRC-8 checksum (byte 255) is valid.
* **EEPROM Tools**:
  + Use [tegra-eeprom-tool](https://github.com/OE4T/tegra-eeprom-tool) for read/write operations.

**References**

1. [NVIDIA Jetson EEPROM Layout Documentation](https://docs.nvidia.com/jetson/archives/r34.1/DeveloperGuide/text/HR/JetsonEepromLayout.html)
2. [Jetson EEPROM Troubleshooting Forum](https://forums.developer.nvidia.com/t/jetson-eeprom-layout-clarification/265583)

This document consolidates EEPROM structure, usage, and troubleshooting for NVIDIA Jetson devices. For custom carrier boards, ensure cvb\_eeprom\_read\_size is configured correctly in device trees.

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