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# *2BVNN-SMARTCORE100 User Manual*

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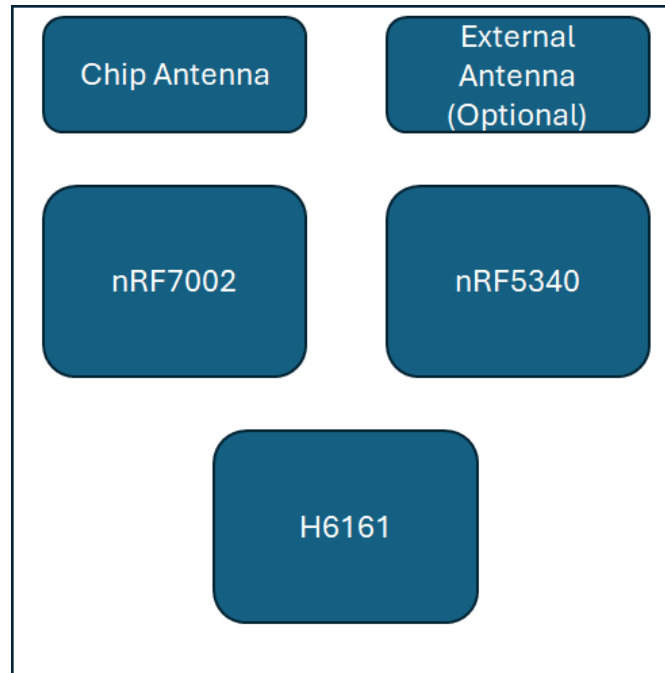
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## 1. About this User Manual

This document is intended to provide the usage of module 2BVNN-SMARTCORE100.

## 2. Introduction

2BVNN-SMARTCORE100 is a generic compact WiFi (2.4GHz and 5GHz) and Bluetooth Low Energy (BLE) module for large variety of IoT applications requiring full Linux Operating System (Ubuntu). 2BVNN-SMARTCORE100 is based on Allwinner Qual-core ARM Cortex SoC (H616), Nordic WiFi chipset (nRF7002) and Nordic BLE chipset (nRF5340).



### 2.1 Product Features

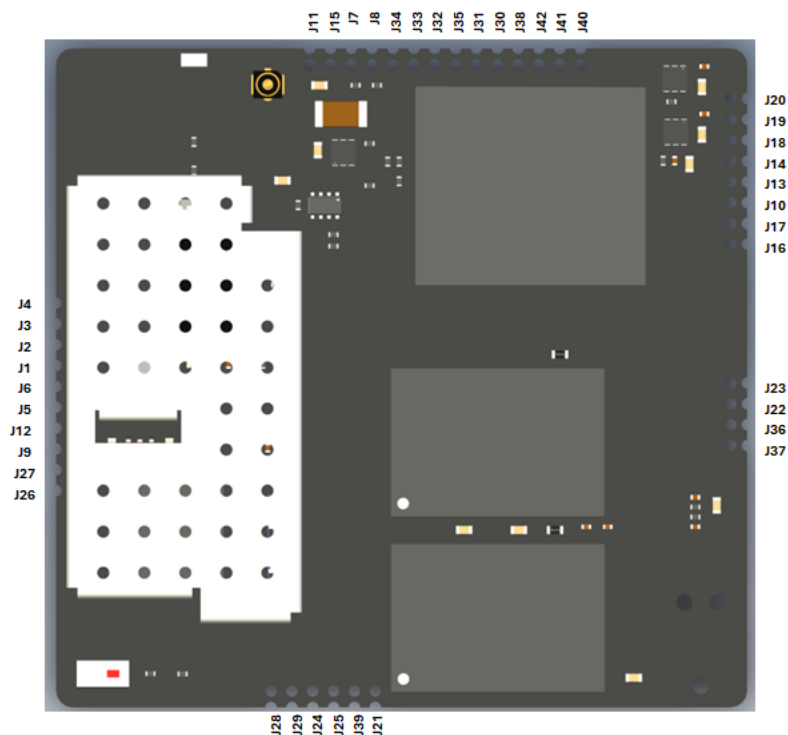
- Qual-Core 64-bit ARM Cortex A53 processor
- Support Trustzone
- Support Linux Operating System (Ubuntu)
- Support 2.4GHz & 5GHz
- Support 802.11a, 802.11b, 802.11g, 802.11ac (20MHz), 802.11ax (20MHz), 802.11n (20MHz)
- Up to 86Mbps PHY WiFi throughput
- Supports WiFi WEP/WPA/WPA2/WPA3 Personal/WPA3 Enterprise
- Supports STA, AP, WiFi Direct mode
- Support BLE v5.2 (Up to 1Mbps)

## 2.2 Fully integrated Linux Module

2BVNN-SMARTCORE100 has fully integrated all wireless features into Linux Operating System, Ubuntu 20.04. Users are not allowed to modify the built-in Operating System. Users can develop any Linux application, which would run on the module.

### 3. Module Integration Instructions

With the following pinout of the module, module schematic and the H616 datasheet, the module integrator can design the host device with this module.



#### 3.1 Pin Assignment

| Pin Name | Description |
|----------|-------------|
| J1       | SDC0-D0     |
| J2       | SDC0-D1     |
| J3       | SDC0-D2     |
| J4       | SDC0-D3     |
| J5       | SDC0-CMD    |
| J6       | SDC0-CLK    |
| J7       | SDA-PMIC    |
| J8       | SCL-PMIC    |
| J9       | 3.3V        |

|     |             |
|-----|-------------|
| J10 | GND         |
| J11 | 5V IN       |
| J12 | GND         |
| J13 | USB0-J616_P |
| J14 | USB0-H616_N |
| J15 | GND         |
| J16 | USB-H616_P  |
| J17 | USB-H616_N  |
| J18 | GND         |
| 19  | CPUX-UTX    |
| 20  | CPUX-URX    |
| 21  | GND         |
| 22  | I2C-3-SCL   |
| 23  | I2C-3-SDA   |
| 24  | I2C-0-SCL   |
| 25  | I2C-0-SDA   |
| 26  | I2C-1-SCL   |
| 27  | I2C-1-SDA   |
| 28  | I2C-2-SCL   |
| 29  | I2C-2-SDA   |
| 30  | UART2-TX    |
| 31  | UART2-RX    |
| 32  | SPI-0-SCLK  |
| 33  | SPI-0-MOSI  |

|    |            |
|----|------------|
| 34 | SPI-0-CS   |
| 35 | SPI-0-MISO |
| 36 | PWM-2      |
| 37 | PWM-1      |
| 38 | AP-RESET   |
| 39 | GPIO-1     |
| 40 | GPIO-2     |
| 41 | GPIO-3     |
| 42 | GPIO-4     |

| Antenna Type |                                |
|--------------|--------------------------------|
| BT ANT       | Antenna Gain:2.8dBi            |
| Wi-Fi ANT 1  | 2.4G Wifi Antenna Gain:2.8dBi  |
|              | 5.1G Wifi Antenna Gain:2.07dBi |
|              | 5.8G Wifi Antenna Gain:1.72dBi |
| Wi-Fi ANT 2  | 2.4G Wifi Antenna Gain:2.8dBi  |
|              | 5.1G Wifi Antenna Gain:4.0dBi  |
|              | 5.8G Wifi Antenna Gain:4.0dBi  |

This module is intended for OEM integrators only. Per FCC KDB 996369 D03 OEM Manual v01 guidance, the following conditions must be strictly followed when using this certified module:

KDB 996369 D03 OEM Manual v01 rule sections:

2.2 List of applicable FCC rules This module has been tested for compliance to FCC part15.247/Part 15.407

2.3 Summarize the specific operational use conditions

The module is tested for standalone mobile RF exposure use condition. Any other usage conditions such as co-location with other transmitter(s) or being used in a portable condition will need a separate reassessment through a class II permissive change application or new certification.

2.4 Single module procedures The EUT was tested inside a specific platform (model: SmartCore 100)and Single modular approval for this specific platform.

2.5 Antenna 1: Dipole Antenna;  
Antenna 2: Chip Antenna.  
Antenna designs Not applicable

2.6 RF exposure considerations This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. If the module is installed in a portable host, a separate SAR evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

2.7 Antennas

The following antennas have been certified for use with this module; antennas of the same type with equal or lower gain may also be used with this module. The antenna must be installed such that 20 cm can be maintained between the antenna and users. Antenna Type Antenna 1: Dipole Antenna;Antenna 2: Chip Antenna.

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following: “Contains FCC ID: 2BVNN-SMARTCORE100”. The grantee'sFCC ID can be used only when all FCC compliance requirements are met.

## 2.9 Information on test modes and additional testing requirements

This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with other transmitter(s) or portable use will require a separate class II permissive change re-evaluation or new certification.

## 2.10 Additional testing, Part 15 Subpart B disclaimer

This transmitter module is tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The final host will still need to be reassessed for compliance to this portion of rule requirements if applicable.

### **FCC Warning**

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.

NOTE 1: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### **FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.

This module certified that complies with RF exposure requirement under mobile or fixed condition, this module is to be installed only in mobile or fixed applications.

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

A fixed device is defined as a device is physically secured at one location and is not able to be easily moved to another location.

**Note 2:** Any modifications made to the module will void the Grant of Certification, this module is limited to OEM installation only and must not be sold to end-users, end-user has no manual instructions to remove or install the device, only software or operating procedure shall be placed in the end-user operating manual of final products.

**Note 3:** Additional testing and certification may be necessary when multiple modules are used.

**Note 4:** The module may be operated only with the antenna with which it is authorized. Any antenna that is of the same type and of equal or less directional gain as an antenna that is authorized with the intentional radiator may be marketed with, and used with, that intentional radiator.