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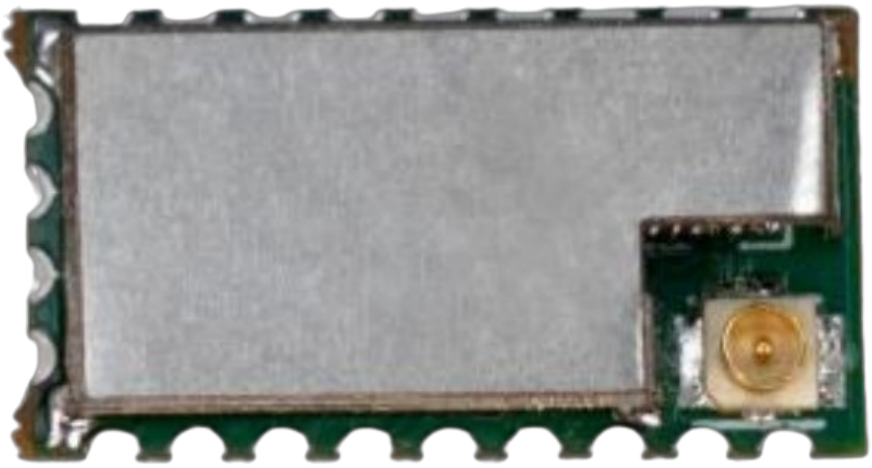
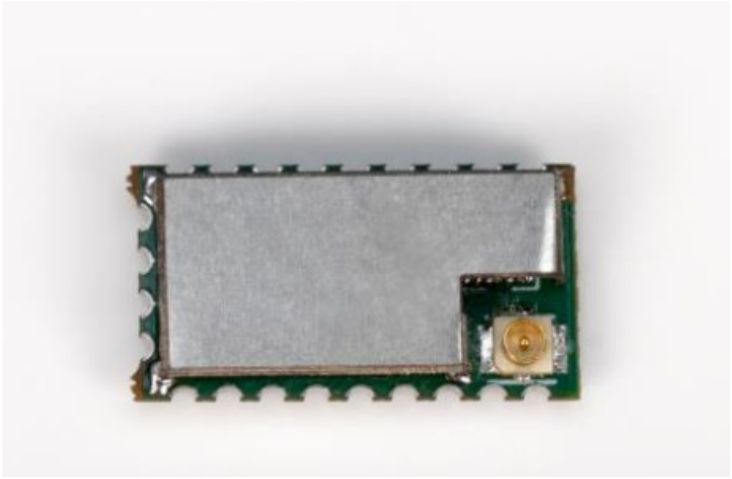
Transmission Dynamics®

Transmission Dynamics JRD-1171 BLE Module



General Description



The JRD-1171 BLE module is a high-performance Bluetooth Low Energy (BLE) transceiver based on the Nordic Semiconductor nRF52840 SoC. It integrates a Power Amplifier (PA) and Low Noise Amplifier (LNA) to enhance transmission range and reception sensitivity. The module features a u.FL connector for external antenna support, making it ideal for applications requiring extended range and reliable communication.

Applications

- IoT Devices
- Industrial Automation
- Asset Tracking
- Wireless Sensor Networks

Features

- SoC: Nordic Semiconductor nRF52840
- Protocol Support: Bluetooth 5.3 (BLE), Thread, Zigbee, ANT, IEEE 802.15.4
- **Integrated Components:**
  - PA for increased transmission power
  - LNA for enhanced reception sensitivity
- Antenna Interface: u.FL connector for external antenna
- Operating Voltage: 2.7V to 5.5V
- Transmit Power: Up to +3.8 dBm (with PA)
- Receive Sensitivity: -103 dBm @ 1 Mbps BLE
- MCU: 32-bit ARM Cortex-M4 with FPU @ 64 MHz
- Memory: 1MB Flash, 256KB RAM

- Interfaces:
- GPIOs
- UART
- SWD
- USB 2.0 Full-Speed
- Security Features: Arm CryptoCell-310, AES- 128/256, SHA, RNG
- Operating Temperature: -40°C to +85°C

Electrical Characteristics

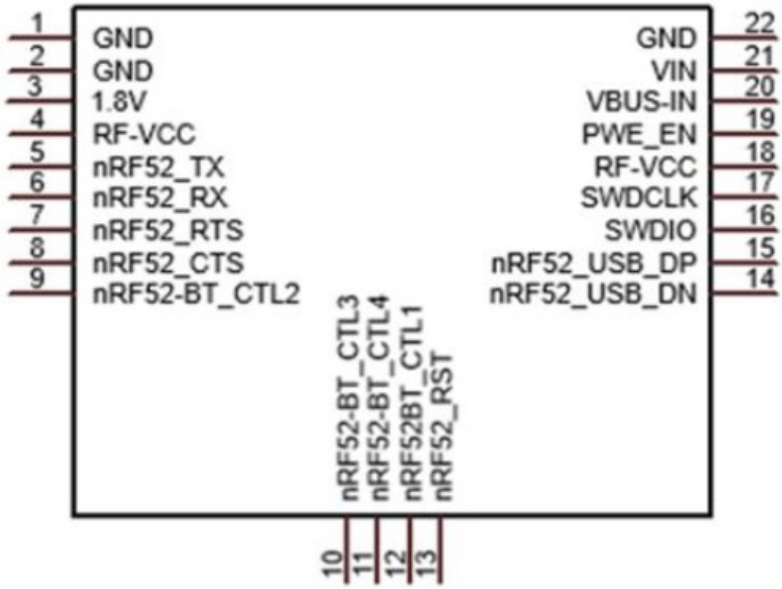
Absolute Maximum Ratings

Parameter	Min	Max
Supply Voltage (VIN)	-0.3V	+6V
VBus	-0.3V	+5.5V
Storage Tempera- ture	-40°C	125°C
RF Input Power		-1 dBm
GPIO Voltage	-0.3V	3.3V

Recommended Operating Conditions

Parameter	Min	Typ	Max
Supply Voltage	2.7V	3.3V	5.5V
Operating Temperature	-40°C	25°C	85°C
RF Output Power	–	+3.8 dBm	–

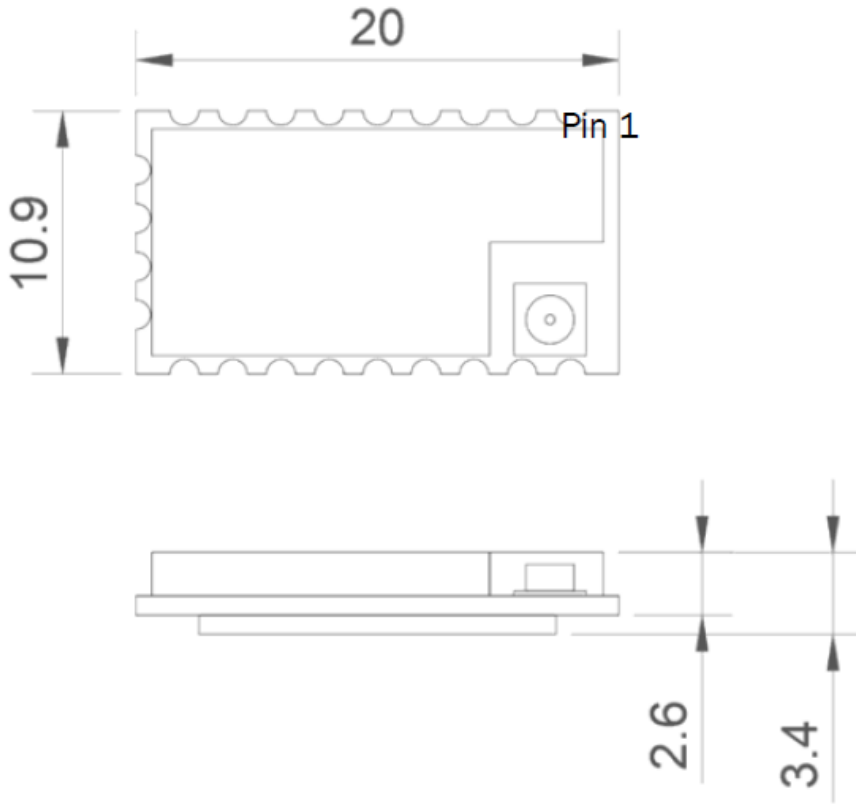
Pin Configuration



Pin Name	Pin Number	Description	Pin Name	Pin Number	Description
GND	1, 2, 11	System ground	nRF52-CTL1	12	GPIO
1.8V	3	Internally generated 1.8V rail	nRF52_RST	13	Module reset pin, active low
RF-VCC	4, 18	Internally generated 3V rail supplying module core	nRF52_USB_DN	14	USB Negative
nRF52_TX	5	UART transmit output	nRF52_USB_DP	15	USB Positive
nRF52_RX	6	UART receive input	SWDIO	16	Single Wire Debug data in/out
nRF52_RTS	7	UART flow control re- quest to send	SWDCLK	17	Single Wire Debug clock

nRF52_CTS	8	UART flow control clear to send	PWE_EN	19	Module power enable, active high
nRF52-BT_CTL2	9	GPIO/Bootloader	VBUS-IN	20	5V USB VBUS input
nRF52-BT_CTL3	10	GPIO	VIN	21	Main power input
nRF52-BT_CTL4	11	GPIO			

Mechanical Dimensions



All dimensions are in mm

Regulatory Information

Region	Regulatory ID

USA	2BNX4-JRD1171
Canada	33610-JRD1171

FCC WARNING

ISED:

This radio transmitter 33610-JRD1171 was approved by Innovation, Science and Economic Development (ISED) Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

To maintain compliance with RSS-102 RF Exposure guidelines, This equipment should be installed and operated with minimum 20cm distance between the radiator and your body: Use only the supplied antenna.

	Manufacturer	Model	Type	Peak Gain	
	Fanstel Corp.	ANT060	Whip	6 dBi	
	Poynting	Puck-5-V1 (Port 1)	PCB Monopole	5 dBi	

FCC

RF Exposure and Transmission Power Compliance

The JRD-1171 BLE Module complies with the FCC Part 15.247 RF exposure limits set forth for an uncontrolled environment. The module operates in the 2.4 GHz ISM band

using Bluetooth Low Energy (2.402 GHz to 2.48 GHz and supports output power up to +3.8 dBm when used with the integrated PA.

To ensure compliance with FCC RF exposure requirements:

- The module must be installed to provide a minimum separation distance of 20 cm from all persons.
- The module must not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures.

Intended Use Environment

The JRD-1171 BLE Module is intended for use in embedded wireless systems operating under the following environmental conditions:

- Operating Temperature: -40°C to +85°C
- Humidity: 10% to 90% non-condensing
- Input Voltage Range: 2.7V to 5.5V

The module is suitable for integration into industrial, consumer, and commercial electronic products requiring wireless BLE connectivity.

Limitations and Restrictions

- This module is limited to operation in the 2402–2480 MHz frequency band (BLE).
- It must be used with a designated PCB layout and antenna configuration to maintain compliance.
- This module is not approved for life-support or critical safety systems without further regulatory certification.
- This module uses a u.FL connector and must be used with approved antennas types only.
- The maximum gain of the external antenna must not exceed the maximum gain of the antenna of the same type used during testing.
- Use of higher gain antennas is prohibited unless further evaluation is performed.

EMC Requirements and Host Integration

Manufacturer	Model	Type	Peak Gain
Fanstel Corp.	ANT060	Whip	6 dBi
Poynting	Puck-5-V1 (Port 1)	PCB Monopole	5 dBi

ensure continued compliance with FCC Part 15 regulations:

- The host system must be evaluated for radiated spurious emissions if any changes are made to the module layout, antenna, or shielding.
- A separate EMC evaluation of the host product must be conducted if the module is used outside of its certified configuration.
- The host device must include adequate RF shielding and grounding as recommended in the reference design.

FCC Regulatory Statements

FCC ID: 2BNX4-JRD1171 This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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.

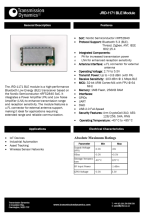
Modifications: Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

- Transmission Dynamics 1 Innovation Way,
- www.transmissiondynamics.com
- **T:** +44 (0) 191 58 000 58
- **E:** sales@jrdltd.co.uk

FAQ

- **Q: What is the intended use environment for the JRD-1171 BLE Module?**
  A: The JRD-1171 BLE Module is intended for use in embedded wireless systems operating under specific environmental conditions.
- **Q: How does the module ensure compliance with FCC RF exposure requirements?**
  A: The module complies with FCC Part 15.247 RF exposure limits for uncontrolled environments by operating in the 2.4 GHz ISM band and supporting output power up to +3.8 dBm with the integrated PA.
- **Q: What are the limitations and restrictions of the JRD-1171 BLE Module?**
  A: The module has EMC requirements and specific host integration guidelines to ensure continued compliance with FCC regulations.

Documents / Resources

	Transmission Dynamics JRD-1171 BLE Module [pdf] Owner's Manual 2BNX4-JRD1171, 2BNX4JRD1171, JRD-1171 BLE Module, JRD-1171, BLE Module, Module

References

- User Manual

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2BNX4-JRD1171, 2BNX4JRD1171, BLE module, JRD-1171, JRD-1171 BLE Module, Module, Transmission Dynamics

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