

Description

E01-NYT-02 is a 100mW industrial-grade wireless transceiver integrated data transmission module with high speed (maximum air speed is up to 2Mbps) and high stability working in 2.4GHz frequency. The module uses NORDIC original nRF24L01P RF chip and RFX2401C power amplifier chip, built-in LNA with receiving sensitivity increased by 10dBm and works in the 2.402GHz ~ 2.482GHz ISM band. It has good spectrum characteristics, small harmonics, small channel crosstalk, ultra-small size. All are Murata original B level material, it is the industrial standard model.

Electrical characteristics

NO.	Parameter name	Parameter values	Abstract
1	RF chip	nRF24L01P	Nordic
2	Operate frequency	2.402GHz~2.482GHz	Adjustable, 1MHz step by step
3	Supply Voltage	1.8~3.6VDC	Voltage higher than 3.6V will damage the module permanently
4	Communication level	0.7VCC~5V	VCC means the module's supply voltage
5	Air rate	250k~2Mbps	3 levels adjustable (250kbps, 1Mbps, 2Mbps)
6	Turn off current	1.0uA	Set nRF24L01P as power down, CE as low level
7	Sending current	150Ma@dBm	Power supply must be more than 250mA
8	Receiving current	23mA	CE=1
9	Communication Interface	SPI	The maximum rate is up to 10Mbps
10	RSSI support	Not support	Only supports simple packet-loss statistics
11	Receiving sensitivity	-94dBm@250kps	See the chip manual for details
12	Operation temperature	-40~+85℃	Industrial grade
13	Storage temperature	-40~+125℃	Industrial grade
14	Operation humidity	10%~90%RH	No condensation

Pin Description

Pin No.	Pin name	Pin orientation	Pin use
1	VCC		Power supply, range 1.8-3.6V, 3.3V is recommend, it is suggested to increase the external ceramic filter capacitor
2	CE	Input	The module controls the pin, please see nRF24L01P Datasheet
3	CSN	Input	The module chip selection pin is used to start an SPI communication
4	SCK	Input	Module SPI bus clock
5	MOSI	Input	Module SPI data input pin
6	MISO	Output	Module SPI data output pin
7	IRQ	Output	Module interrupt signal output, Active low
8	GND		Ground, connected to the power supply reference ground
★For module's pin definition, software-driven and communication protocol please see Nordic official <nRF24L01P Datasheet> ★			

Regulatory Module Integration Instructions

2.2 List of applicable FCC rules

This device complies with part 15.249 of the FCC Rules. According to the definition of mobile and fixed device is described in Part 2.1091(b), this device is a mobile device.

2.3 Summarize the specific operational use conditions

This module can be used in household electrical appliances as well as lighting

equipments. The input voltage to the module should be nominally 3.3V VDC ,typical

value 3.3VDC and the ambient temperature of the module should not exceed 85°C.

This module using only one kind of antennas with maximum gain is 1.5dBi .Other antenna arrangement is not covered by this certification.

The antenna is not field replaceable. If the antenna needs to be changed, the certification should be re-applied.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

This module complies with FCC radiation exposure limits set forth for an uncontrolled environment .

2.7 Antennas

Module only contains one chip antenna. No additional external connectors.

2.8 Label and compliance information

The outside of final products that contains this module device must display a label

referring to the enclosed module. This exterior label can use wording such as: “Contains

Transmitter Module FCC ID: 2ABTR-E01-NYT-02”, or “Contains FCC ID: 2ABTR-E01-NYT-02”,

Any similar wording that expresses the same meaning may be used.

2.9 Information on test modes and additional testing requirements

a) The modular transmitter has been fully tested by the module grantee on the required number of channels, modulation types, and modes, it should not be necessary for the host installer to re-test all the available transmitter modes or settings. It is recommended that the host product manufacturer, installing the modular transmitter, perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits (e.g., where a different antenna may be causing additional emissions).

b) The testing should check for emissions that may occur due to the intermixing of emissions with the other transmitters, digital circuitry, or due to physical properties of the host product (enclosure). This investigation is especially important when integrating multiple modular transmitters where the certification is based on testing each of them in a stand-alone configuration. It is important to note that host product manufacturers should not assume that because the modular transmitter is certified that they do not have any responsibility for final product compliance.

c) If the investigation indicates a compliance concern the host product manufacturer is obligated to mitigate the issue. Host products using a modular transmitter are subject to

all the applicable individual technical rules as well as to the general conditions of operation in Sections 15.5, 15.15, and 15.29 to not cause interference. The operator of the host product will be obligated to stop operating the device until the interference has been corrected

2.10 Additional testing, Part 15 subpart B disclaimer

The final host / module combination need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device.

The host integrator installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation and should refer to guidance in KDB 996369.

Frequency spectrum to be investigated

For host products with certified modular transmitter, the frequency range of investigation of the composite system is specified by rule in Sections 15.33(a)(1) through (a)(3), or the range applicable to the digital device, as shown in Section 15.33(b)(1), whichever is the higher frequency range of investigation.

Operating the host product

When testing the host product, all the transmitters must be operating. The transmitters can be enabled by using publicly-available drivers and turned on, so the transmitters are active. In certain conditions it might be appropriate to use a technology-specific call box (test set) where accessory devices or drivers are not available.

When testing for emissions from the unintentional radiator, the transmitter shall be placed in the receive mode or idle mode, if possible. If receive mode only is not possible then, the radio shall be passive (preferred) and/or active scanning. In these cases, this would need to enable activity on the communication BUS (i.e., PCIe, SDIO, USB) to ensure the unintentional radiator circuitry is enabled. Testing laboratories may need to add attenuation or filters depending on the signal strength of any active beacons (if applicable) from the enabled radio(s). See ANSI C63.4, ANSI C63.10 and ANSI C63.26 for further general testing details.

FCC Statement

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