

ESRX Module Description

1. Overview

ESRX is a new generation of wireless control module from esRadio Technology, mainly used for wireless control of film and television and stage equipment with DMX512 or RDM.

Features :

- Wireless DMX512, with low latency over long distances
- High refresh rate
- 18.5mm x 33.5mm
- Antenna connector IPEX
- Firmware OTA

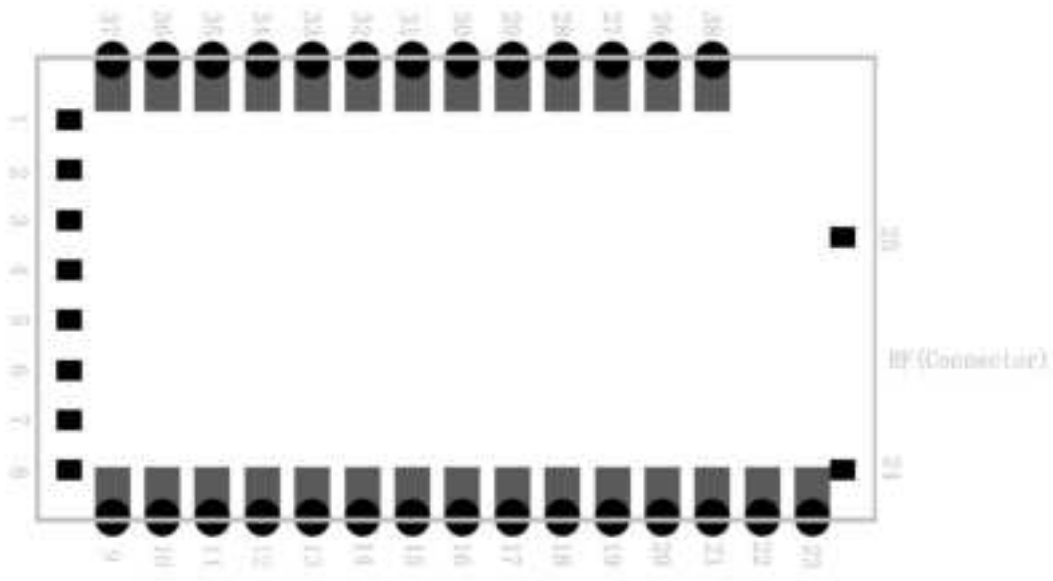
2. Pin Assignments

This section describes the pin assignments and functions.

The ESRX module PCBA is showed as follow :



The ESRX pin assignment is as follows :



Pin Functions

Pin	Name	Pin type	Description
1	VSS	Power	Ground(0V)
2	IRQ	Digital output	Interrupt signal,active low
3	CS	Digital input	Chip select,active low
4	SCK	Digital input	SPI clock
5	MOSI	Digital input	SPI Master Out,Slave In
6	MISO	Digital output	SPI Master In,Slave Out
7	VSS	Power	Ground(0V)
8	DMX_TXD	Digital output	DMX TXD
9	VSS	Power	Ground(0V)
10	RS485_DE	Digital output	RS485 driver control signal
11	RS485_RE	Digital output	RS485 driver control signal
12	DMX_RXD	Digital input	DMX RXD(3.3V max)
13	RDI_LVL0	Digital output	Radio level LED
14	RDI_LVL1	Digital output	Radio level LED
15	RDI_LVL2	Digital output	Radio level LED
16	RDI_LVL3	Digital output	Radio level LED

17	RDI_LVL4	Digital output	Radio level LED
18	RDM	Digital output	RDM LED
19	DMX	Digital output	DMX LED
20	N.C	No connection	Do not connect
21	N.C	No connection	Do not connect
22	VSS	Power	Ground(0V)
23	VSS	Power	Ground(0V)
24	VSS	Power	Ground(0V)
25	VSS	Power	Ground(0V)
26	VSS	Power	Ground(0V)
27	VSS	Power	Ground(0V)
28	SCL	Digital input/output	I2C clock to RGB LED driver ¹
29	SDA	Digital input/output	I2C data to RGB LED driver ¹
30	VSS	Power	Ground(0V)
31	N.C	No connection	Do not connect
32	LINK_SW	Digital input	Link control switch input
33	STATUS_LED	Digital output	Status LED
34	LINKED	Digital output	Linked to transmitter LED
35	RF_LINK	Digital output	RF link LED
36	VDD	Power	Power supply (3.3V)
37	VSS	Power	Ground(0V)
38	ARB	Digital input	Arbitration function while using other 2.4G WIFI module in one system
ANT	RF ANT	RF	Antenna connector

¹ If using RGB LED, it should be pulled high to VCC through a 4.7K ohm resistor.

FCC Warning

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

FCC Part 15.247

2.3 Specific operational use conditions

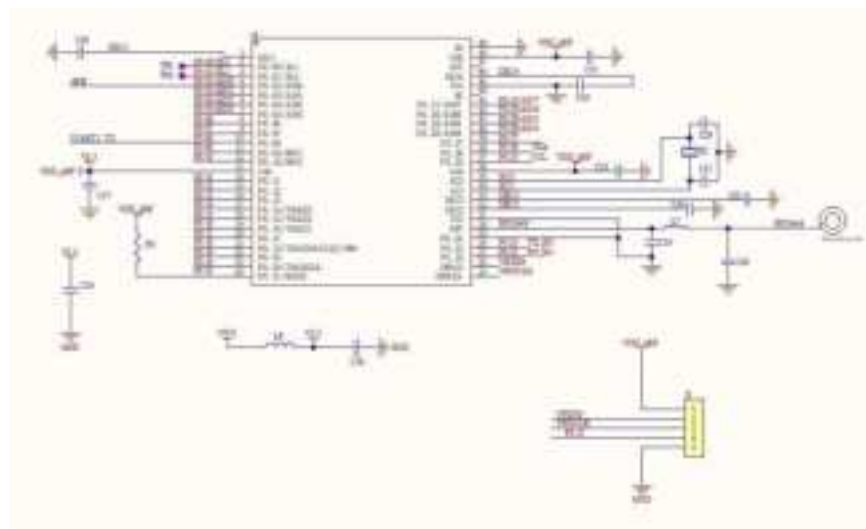
This transmitter/module and its antenna(s) must not be co-located or operating in conjunction with any transmitter. This information also extends to the host manufacturer's instruction manual.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

It is as trace antenna which is not used on the module.



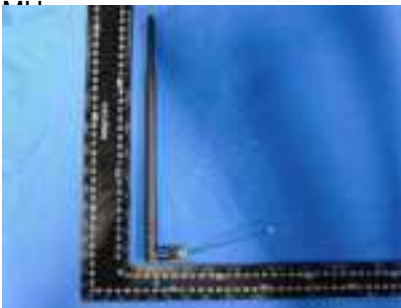
2.6 RF exposure considerations

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This compliance to FCC radiation exposure limits for an uncontrolled environment, and minimum of 20cm separation between antenna and body.

The host product manufacturer would provide the above information to end users in their end-product manuals.

2.7 Antennas

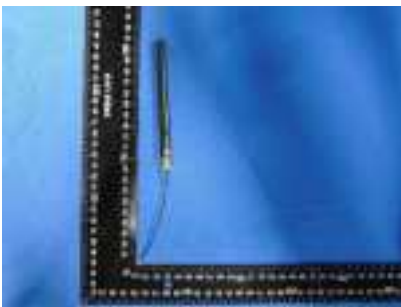
ROB antenna-2; 7.0dBi; 2402 – 2480



FPC antenna; 3.5dBi; 2402 – 2480 MHz



ROB antenna-1; 3.0dBi; 2402 – 2480 MHz



2.8 Label and compliance information

The end product must carry a physical label or shall use e-labeling followed KDB 784748 D01 and KDB 784748 stating “Contains Transmitter Module FCC ID: 2BRM7-ESRX.

2.9 Information on test modes and additional testing requirements

For more information on testing, please contact the manufacturer.

2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.247) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed when contains digital circuitry.

2.11 Note EMI Considerations

Note that a host manufacture is recommended to use D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties

2.12 How to make changes

Since only Grantees are permitted to make permissive changes, it is recommended that module manufactures provide contact information and some guidance to host providers in the integration instructions if they expect their module will be used differently than granted.

Module manufacturer contact: Sichuan esRadio Technology Co., Ltd

Tel: +86-18190706392

E-mail: suli@esradio.cn

FCC Statements

(OEM) Integrator has to assure compliance of the entire end-product incl. the integrated RF Module. For 15 B (§15.107 and if applicable §15.109) compliance, the host manufacturer is required to show compliance with 15 while the module is installed and operating.

Furthermore the module should be transmitting and the evaluation should confirm that the module's intentional emissions (15C) are compliant (fundamental / out-of-band). Finally the integrator has to apply the appropriate equipment authorization (e.g. Verification) for the new host device per definition in §15.101.

Integrator is reminded to assure that these installation instructions will not be made available to the end-user of the final host device.

The final host device, into which this RF Module is integrated has to be labeled with an auxiliary label stating the FCC ID of the RF Module, such as "Contains FCC ID: 2BRM7-ESRX ".

The Integrator will be responsible to satisfy SAR/ RF Exposure requirements, when the module integrated into the host device.

Module statement

The single-modular transmitter is a self-contained, physically delineated, component for which compliance can be demonstrated independent of the host operating conditions, and which complies with all eight requirements of § 15.212(a)(1) as summarized below.

- 1) The radio elements have the radio frequency circuitry shielded.
- 2) The module has buffered modulation/data inputs to ensure that the device will comply with Part 15

requirements with any type of input signal.

- 3) The module contains power supply regulation on the module.
- 4) The module contains a permanently attached antenna.
- 5) The module demonstrates compliance in a stand-alone configuration.
- 6) The module is labeled with its permanently affixed FCC ID label.
- 7) The module complies with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.
- 8) The module complies with RF exposure requirements.

NOTE: 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

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.

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.