

**Product Description**

The RWF111 is an integrated RF Front End Module designed for 802.11 b/g WLAN applications at 2.4-2.5 GHz. The device consists of an integrated Power Amplifier, LNA and Switch. This module supports a data rate of 54 Mbps and is capable of delivering linear power at 16 dBm for 802.11g and 19dBm for 802.11b with a very low current. It can deliver a max. output power of 23dBm @ 0dBm Pin. The FEM is fully matched internally to a 50ohm input/output impedance.

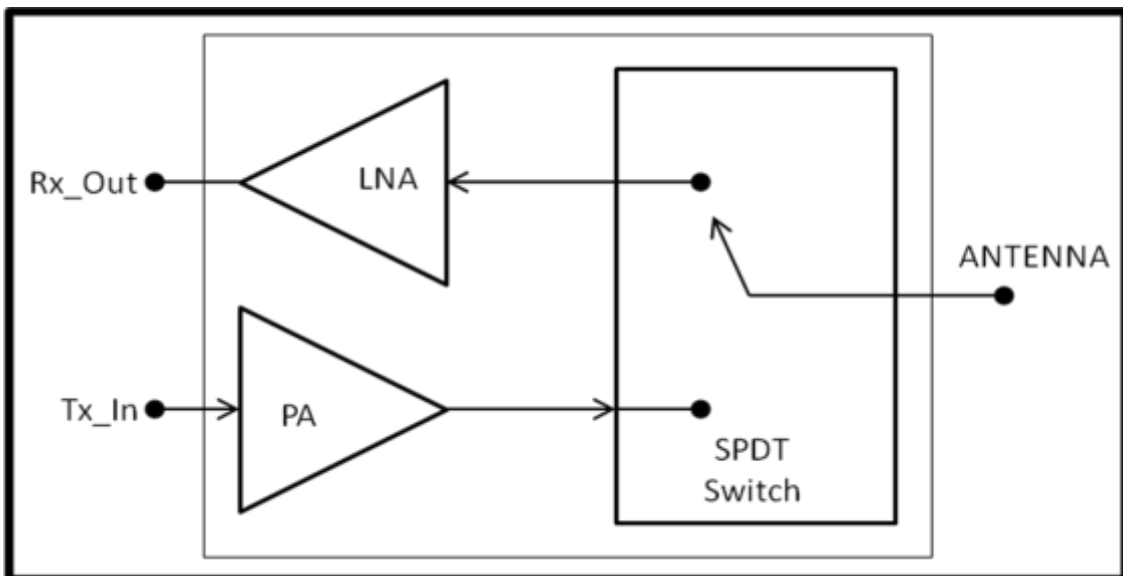
**Application**

- 802.11b DSSS WLAN
- 802.11g OFDM WLAN
- 2.4GHz Cordless Phones
- 2.4GHz ISM Radios
- 2.4GHz Digital Home Wireless Audio/Video
- IEEE 802.15.4 and ZigBee Systems
- Wireless Audio Systems
- Wireless Consumer Systems
- Wireless Sensor Networks
- All 2.4GHz ISM Band Systems
- Wireless Industrial Systems

**Features**

- Frequency range of 2.4 GHz to 2.5 GHz
- Integrated PA/LNA/SPDT switch
- 802.11b/g Operation
- 802.11g/54 Mbps- 4% EVM at Pout=16dBm with a very low current
- Pout = 23 dBm @ Pin 0dBm, Vcc 3.6V
- Integrated Power Detector
- Operation from 2.9 V to 4.5V
- Package: 3.0 x 3.0 x 0.75mm<sup>3</sup> QFN16 Package

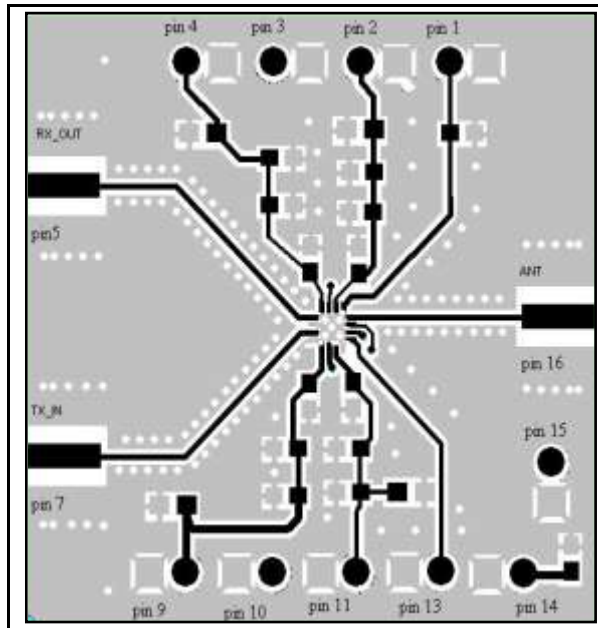
**Functional Block Diagram**



**Absolute Ratings**

RF Input Power: +5 dBm  
 Operating Temp. Range: -40 to +85°C

**Evaluation Board**



**Pin Configuration**

Pin No.	Name	Description
1	V_Cnt12 3.6 / 0 V	Enable/ Disable the switch in receive path with logic high 3.6V and logic low 0V
2	LNA_EN 2.2 – 3.0 / 0 V	Low Noise Amplifier Enable pin. A digital control signal with logic high (power up) and logic low (power down) is used to turn the device on and off.
3	LNA_Reg 2.85 – 3.3 V	Supply voltage for bias circuits of Low Noise Amplifier
4	LNA_Vcc 3.6 V	Drain supply voltage for Low Noise Amplifier
5	Rx_Out	RF output power from Low Noise Amplifier
6	GND	RF Ground
7	Tx_In	RF input power for power amplifier
8	GND	RF Ground
9	PA_EN 2.2 – 3.0 / 0 V	Power Amplifier Enable pin. A digital control signal with logic high (power up) and logic low (power down) is used to turn the device on and off.
10	PA_Reg 2.85 – 3.3 V	Supply voltage for bias circuits of Power Amplifier
11	PA_Vcc 3.6 V	Drain supply voltage for Power Amplifier
12	GND	RF Ground
13	V_PD	DC voltage corresponding to the RF output power from Power Amplifier
14	Vt 0.2 V	Control Voltage for switch irrespective of Tx/Rx path on
15	V_Cnt11 3.6 / 0 V	Enable/ Disable the switch in transmit path with logic high 3.6V and logic low 0V
16	ANTENNA	RF Output/Input for transmit and receive path respectively

### To Turn-On Transmit Channel

- Step 1: Apply 3.6 V(DC) to pin 15 and 0.2 V(DC) to Pin 14 and ground the pin 1. This will turn-on the Switch in transmit mode and turn-off the receive chain.
- Step 2: Now apply 2.2 V(DC) to pin 9 and 2.85 - 3.3 V(DC) to pin 10. The voltage at pin 10 should be regulated. This will turn-on the bias circuit of the power amplifier in the transmit path.
- Step 3: Provide the RF input signal to pin 7 and then apply 3.6 V (DC) to pin 11. This will turn-on the power amplifier and hence the transmit channel would be ready to take results from pin 16.

\* The evaluation board should not have any other connections to turn-on the transmit channel.

### To Turn-On the Receive Channel

- Step 1: Apply 3.6 V(DC) to pin 1 and 0.2 V(DC) to Pin 14 and ground the pin 15. This will turn-on the switch in receive mode and turn-off it's transmit line.
- Step 2: Now apply 2.2 V(DC) to pin 2 and 2.85 - 3.3V(DC) to pin 3. The voltage at pin 3 should be regulated. This will turn-on the bias circuit of the low noise amplifier in the receive path.
- Step 3: Provide RF input signal to pin 16 and then apply 3.6 V (DC) to pin 4. This will turn-on the low noise amplifier and hence the receive channel would be ready to take results from pin 5.

\* The Evaluation board should not have any other connections to turn-on the Receive channel.

**Note:** We recommend use of Battery for DC voltages to achieve a good performance and before applying any positive voltage, first connect the DUT ground to the supply ground. All the supply grounds should be common.

**Caution:** When using external power supplies additional decoupling capacitors (10uF & 100nF) are required on Vcc lines to remove power supply hums.

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#### Product Preview

The document contains information from the product concept specification. RF Arrays Inc. reserves the right to change information at any time without notification.

#### Preliminary Information

The document contains information from the design target specification. RF Arrays Inc. reserves the right to change information at any time without notification.

#### Production testing may not include testing of all parameters.

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