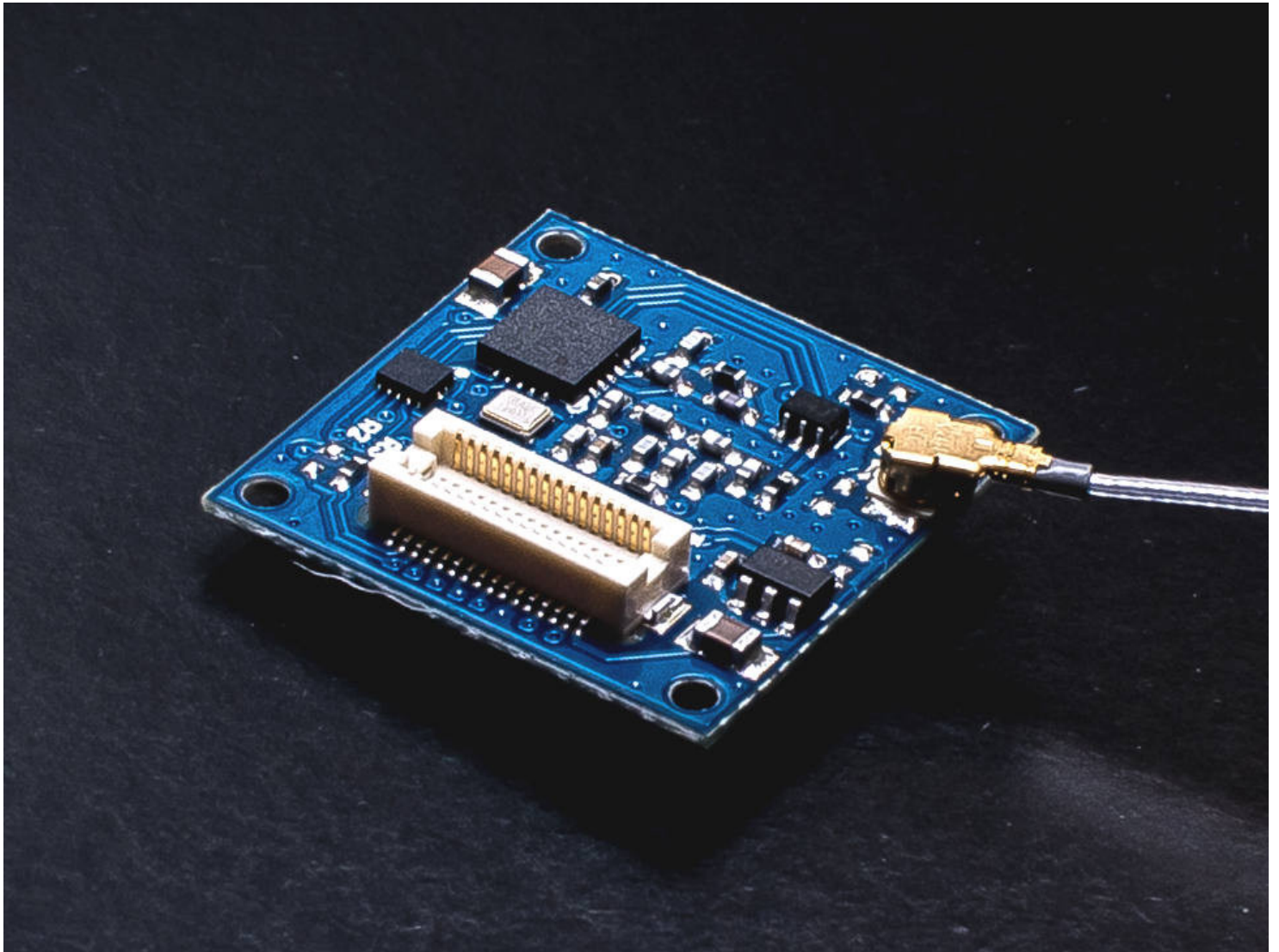


# 433MHZ Long Range Radio TinyShield - ASD2162-R

 [tinycircuits.com/collections/communication/products/433mhz-long-range-radio-tinshield](https://tinycircuits.com/collections/communication/products/433mhz-long-range-radio-tinshield)



## DESCRIPTION

This long range radio TinyShield is based around the very popular Silicon Labs SI4432 radio transceiver - the same transceiver as used by the HopeRF RFM22B module. The TinyShield is set to operate at 433MHz and can transmit at up to +20dBm and is very easy to use. This transceiver allows for long range communication between radios and is designed for an open field range of up to 500 meters, which makes this great for long range sensors or RC control (like drones and vehicles).

An U.FL antenna connection is included on the board, along with a 433MHz whip antenna. The TinyShield incorporates level shifters and a local power supply to ensure proper and safe operation over the entire TinyDuino operating voltage range up to 5V.

To learn more about the **TinyDuino Platform**, click [here](#)

# TECHNICAL DETAILS

To see what other TinyShields this will work with or conflict with, check out the [TinyShield Compatibility Matrix](#)

## Si4432 Transceiver Specs

- Frequency: 433MHz
- Sensitivity: -121 dBm
- Output power range: +20 dBm Max
- Data Rate: 0.123 to 256 kbps
- FSK, GFSK, and OOK modulation
- Ultra low power shutdown mode
- Wake-up timer
- Auto-frequency calibration (AFC)
- Configurable packet handler
- Preamble detector
- TX and RX 64 byte FIFOs

## TinyDuino Power Requirements

- Voltage: 3.0V - 5.5V
- Current:
  - Receive: 18.5mA
  - Transmit (+13 dBm): 30mA
  - Receive (+20 dBm): 85mA
  - Sleep: 1uA
  - Due to the current, this board cannot be run using the TinyDuino coin cell option

## Pins Used

### SPI Interface used

- **3 - SPI\_IRQ:** This signal is the interrupt output from the radio transceiver and into the TinyDuino.
- **7 - SPI\_CS:** This signal is the SPI chip select for the radio transceiver.
- **11 - MOSI:** This signal is the serial SPI data out of the TinyDuino and into the radio transceiver.
- **12 - MISO:** This signal is the serial SPI data out of the radio transceiver and into the TinyDuino.
- **13 - SCLK:** This signal is the serial SPI clock out of the TinyDuino and into the radio transceiver.

## Dimensions

- Board: 20mm x 20mm (.787 inches x .787 inches)

- Board: Max Height (from lower bottom TinyShield Connector to upper top TinyShield Connector): 5.11mm (0.201 inches)
  - Board Weight: 1.15 gram (.04 ounces)
  - Antenna Length: 177mm (7.0 inches)
  - Antenna Weight: 0.26 grams (0.009 ounces)
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## Notes

- For best range, the antenna should not be close to metal or coiled up.
  - You can use different antennas with this board, they need to be 433Mhz with a U.FL connector on them.
  - We've tested these at low data rates up to ~500 meters/1640 feet on the ground with the included antenna! However range will vary greatly depending on local 433MHz noise, obstructions, height above ground, and other factors.
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