

MAX1477X Evaluation Kit

Evaluates: MAX14774, MAX14779

General Description

The MAX1477X evaluation kit (EV kit) provides a proven design to evaluate the MAX14774, a quad single-pole/single-throw (SPST), or the MAX14779, a dual single-pole/double-throw (SPDT) Beyond-the-Rails™ analog switch. The MAX1477XEVKIT# is fully assembled and tested and comes populated with the MAX14774ATP+.

The MAX1477XEVKIT# can also be used to evaluate the MAX14779ATP+. See the [Configure the MAX1477X EV Kit](#) section for more information.

Features

- Supports evaluating both MAX14774 and MAX14779
- SMA Connectors for Analog Inputs and Outputs
- Jumpers at EN_ Digital Control Inputs for Easy Channel Configuration
- Test Points for All Digital and Analog Signals
- Fully Assembled and Tested
- Proven PCB Layout

Quick Start

Required Equipment

- MAX1477XEVKIT#
- Two DC power supplies
- Digital multimeter
- Function generator
- Digital oscilloscope

Procedure

The MAX1477X EV kit is fully assembled and tested. Follow the steps to verify board operation.

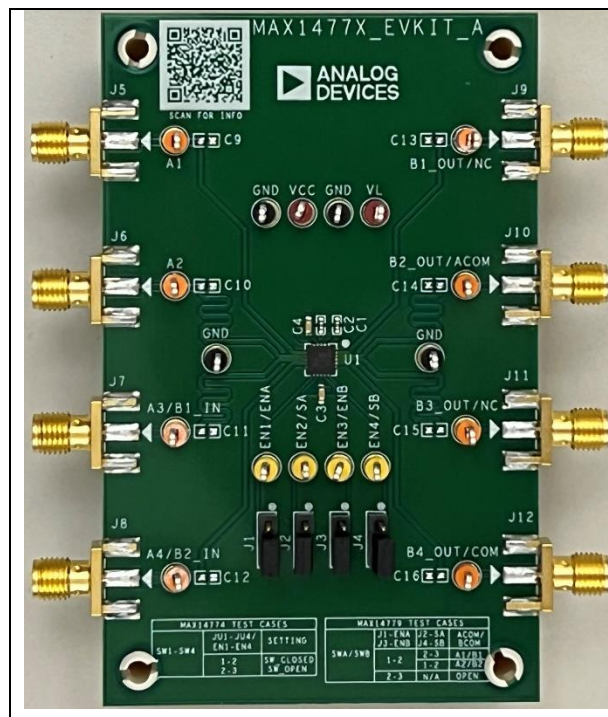
1. Connect two power supplies to the MAX1477XEVKIT#. Set the first supply voltage to +5V and connect it to the VCC test point. Set the second supply voltage to +3.3V and connect it to the VL test point. Connect the returns of the power supplies to the GND test point.
2. Connect the function generator output to SMA connector J5 or test point A1. Connect the oscilloscope probe to SMA connector J9 or test point B1_OUT/NC. Connect the ground returns of the power supplies to the GND test point(s).
3. Set the function generator output to a 1MHz sine wave with an amplitude of $\pm 5V$.
4. Verify that all jumpers are in their default positions as shown in [Table 1](#).

Beyond-the-Rails is a trademark of Maxim Integrated Products, Inc.

319-100910; Rev 0; 05/22

5. Turn on both power supplies and ensure that the supplies have less than 5mA (max) current.
6. Turn on the function generator and verify that no waveform is captured by the oscilloscope (switch is open).
7. Move the shunt at J1 from position 2-3 to position 1-2. Verify that the voltage at the EN1/ENA test point is 3.3V.
8. Observe that the digital oscilloscope captures a 1MHz, $\pm 5V$ sine wave (switch is closed).
9. Move the function generator output to SMA connector J6 or test point A2. Move the oscilloscope probe to SMA connector J10 or test point B2_OUT/ACOM.
10. Verify that the oscilloscope does not capture any waveform (switch is open).
11. Move the shunt at J2 from position 2-3 to position 1-2. Verify that the voltage at the EN2/SA test point is 3.3V.
12. Observe the digital oscilloscope captures a 1MHz, $\pm 5V$ sine wave (switch is closed).
13. Repeat steps 9-12 to verify the functionalities of all four channels.

EV Kit Photo



[Ordering Information](#) appears at the end of data sheet



Table 1. MAX1477X EV Kit Shunt Positions and Functions

| JUMPER | ASSOCIATED TEST POINT | SHUNT POSITION | MAX14774 FUNCTION** | MAX14779 FUNCTION |
|--------|-----------------------|----------------|--|--|
| J1 | EN1/ENA | 1-2 | Connect EN1 to V_L and close the switch 1. | Connect ENA to V_L and enable the switch A. SA selects the switch. |
| | | 2-3* | Connect EN1 to GND and open the switch 1. | Connect ENA to GND and disable the switch A. SA is transparent. |
| J2 | EN2/SA | 1-2 | Connect EN2 to V_L and close the switch 2. | Connect SA to V_L and connect A2 to ACOM, only when ENA is high. |
| | | 2-3* | Connect EN2 to GND and open the switch 2. | Connect SA to GND and connect A1 to ACOM, only when ENA is high. |
| J3 | EN3/ENB | 1-2 | Connect EN3 to V_L and close the switch 3. | Connect ENB to V_L and enable the switch B. SB selects the switch. |
| | | 2-3* | Connect EN3 to GND and open the switch 3. | Connect ENB to GND and disable the switch B. SB is transparent. |
| J4 | EN4/SB | 1-2 | Connect EN4 to V_L and close the switch 4. | Connect SB to V_L and connect B2 to BCOM, only when ENB is high. |
| | | 2-3* | Connect EN4 to GND and open the switch 4. | Connect SB to GND and connect B1 to BCOM, only when ENB is high. |

*Default position.

**The MAX14774ATP+ is installed at U1 by default.

Detailed Description of Hardware

The MAX14774 quad SPST and the MAX14779 dual SPDT Beyond-the-Rails switches support switching analog signals of up to $\pm 25V$ using a single 3.0V to 5.5V supply. The MAX14774 is a quad SPST switch with four EN_ control inputs, and the MAX14779 is a dual SPDT switch with two EN_ and two S_ control inputs.

The MAX1477X EV kit accepts a wide $\pm 25V$ analog signal range with one single power supply at V_{CC} from 3.0V to 5.5V. A logic supply with a range of 1.62V to 5.5V at V_L is used to set the control signal level.

The MAX1477X EV kit provides necessary jumpers and connectors to accommodate the evaluation of both MAX14774 and MAX14779. Control inputs can be configured high or low using the on-board jumpers, or directly from the test points. Each analog channel can be accessed from the SMA connector as well as the test point associated with them.

The MAX1477X EV kit has four control inputs to either enable the switch (MAX14774) or enable and select between analog inputs (MAX14779). Do not leave the digital inputs floating. See [Table 1](#) for the MAX1477X EV Kit jumper settings as well as the control inputs logic.

Configure the MAX1477X EV Kit

The MAX1477XEVKIT# can be used to evaluate either MAX14774 or MAX14779. The EV kit is populated with MAX14774ATP+ by default. Engineer can request a sample of MAX14779ATP+ to be soldered on the EV kit.

Refer to [Table 1](#) for the control inputs logic of the MAX14774 or MAX14779; use the relations in [Table 2](#) to determine the test point functions when evaluating MAX14774 or MAX14779.

Table 2. MAX1477XEVKIT# Test Points

| TEST POINT | ASSOCIATED JUMPER/SMA | U1 INSTALLED WITH MAX14774* | U1 INSTALLED WITH MAX14779 |
|----------------------------|-----------------------|-----------------------------|----------------------------|
| CONTROL SIGNAL | | | |
| EN1/ENA | J1 | Enable input 1 | Enable input A |
| EN2/SA | J2 | Enable input 2 | Select input A |
| EN3/ENB | J3 | Enable input 3 | Enable input B |
| EN4/SB | J4 | Enable input 4 | Select input B |
| ANALOG INPUT/OUTPUT | | | |
| A1 | J5 (SMA) | A1 input | A1 input |
| A2 | J6 (SMA) | A2 input | A2 input |
| A3/B1_IN | J7 (SMA) | A3 input | B1 input |
| A4/B2_IN | J8 (SMA) | A4 input | B2 input |
| B1_OUT/NC | J9 (SMA) | B1 output | Do not use |
| B2_OUT/ACOM | J10 (SMA) | B2 output | ACOM output |
| B3_OUT/NC | J11 (SMA) | B3 output | Do not use |
| B4_OUT/BCOM | J12 (SMA) | B4 output | BCOM output |

*Default option.

Ordering Information

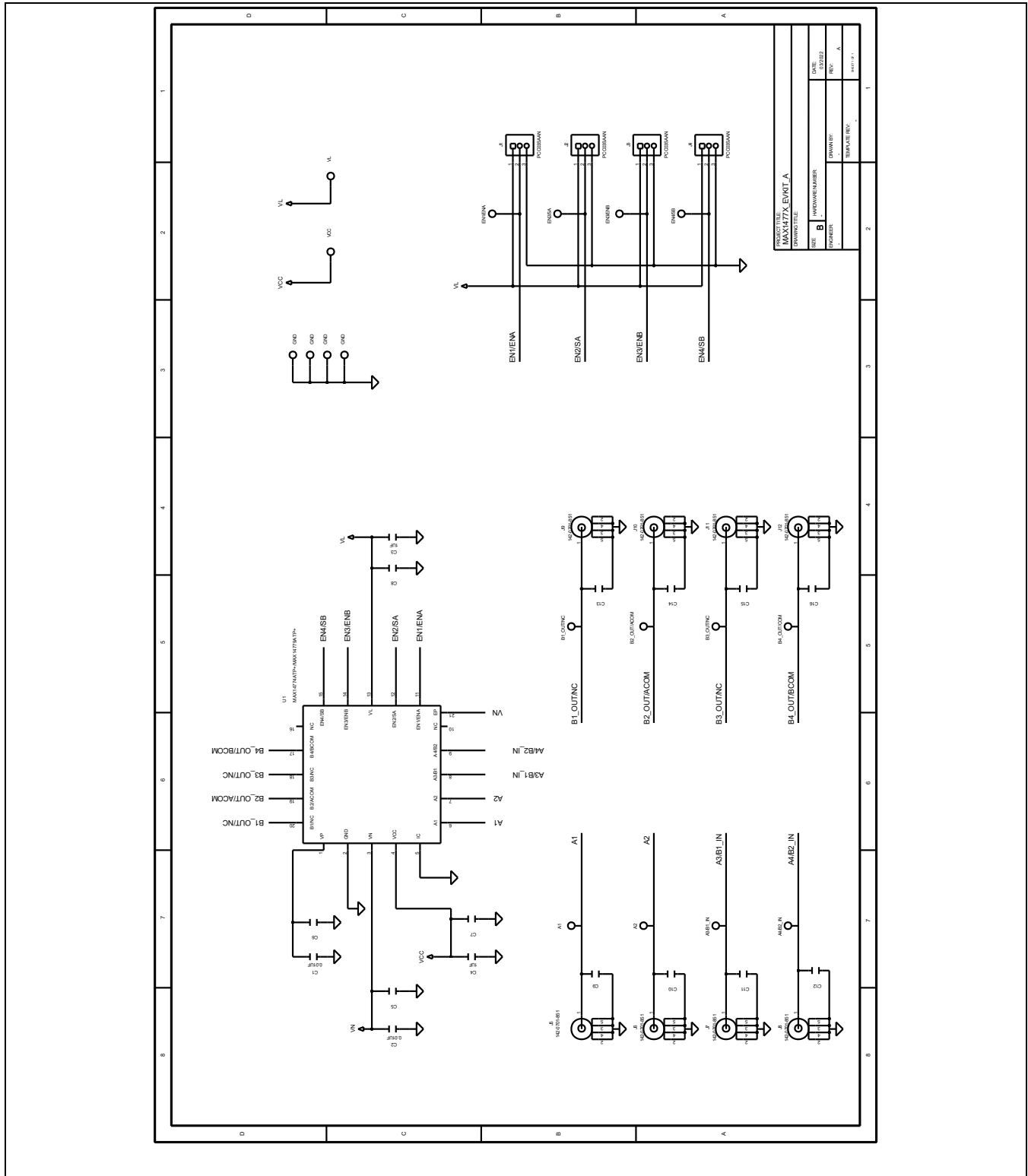
| PART | TYPE |
|----------------|--------|
| MAX1477XEVKIT# | EV Kit |

#Denotes RoHS compliance.

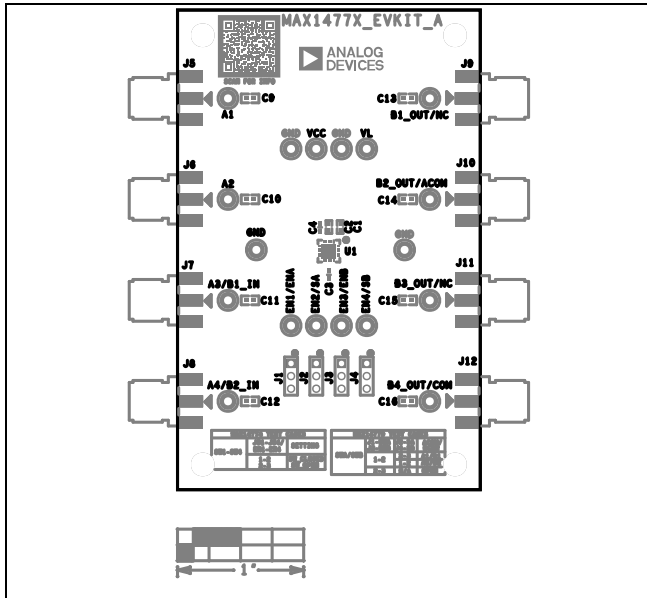
MAX1477X EV Kit Bill of Materials

| ITEM | REF_DES | DNP | QTY | MFG PART# | MFR. | VALUE | DESCRIPTION |
|------|--|-----|-----|------------------------------------|--|----------------------|--|
| 1 | A1, A2, A3/B1_IN, A4/B2_IN, B1_OUT/NC, B2_OUT/ACOM, B3_OUT/NC, B4_OUT/COM | - | 8 | 5013 | KEYSTONE | N/A | TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; ORANGE; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; |
| 2 | C1, C2 | - | 2 | HMK105B710 3KVHFE | TAIYO YUDEN | 0.01UF | CAP; SMT (0402); 0.01UF; 10%; 100V; X7R; CERAMIC |
| 3 | C3, C4 | - | 2 | GCM188R71 C105KA64 | MURATA | 1UF | CAP; SMT (0603); 1UF; 10%; 16V; X7R; CERAMIC |
| 4 | EN1/ENA, EN2/SA, EN3/ENB, EN4/SB | - | 4 | 5014 | KEYSTONE | N/A | TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; YELLOW; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; |
| 5 | GND, GND1- GND3 | - | 4 | 5011 | KEYSTONE | N/A | TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; |
| 6 | J1-J4 | - | 4 | PCC03SAAN | SULLINS | PCC03 SAAN | CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS; -65 DEGC TO +125 DEGC |
| 7 | J5-J12 | - | 8 | 142-0701-851 | JOHNSON COMPONEN TS | 142- 0701- 851 | CONNECTOR; END LAUNCH JACK RECEPTACLE; BOARDMOUNT; STRAIGHT THROUGH; 2PINS; |
| 8 | SPACER1- SPACER4 | - | 4 | 9032 | KEYSTONE | 9032 | MACHINE FABRICATED; ROUND-THRU HOLE SPACER; NO THREAD; M3.5; 5/8IN; NYLON |
| 9 | SU1-SU4 | - | 4 | S1100-B; SX1100-B; STC02SYAN | KYCON; SULLINS ELECTRONI CS CORP. | SX1100 -B | TEST POINT; JUMPER; STR; TOTAL LENGTH=0.24IN; BLACK; INSULATION=PBT; PHOSPHOR BRONZE CONTACT=GOLD PLATED |
| 10 | U1 | - | 1 | MAX14774AT P+ | MAXIM | MAX14 774ATP + | EVKIT PART - IC; MAX14774ATP+; PACKAGE OUTLINE DRAWING: 21-100172; PACKAGE LAND PATTERN: 90-0409 |
| 11 | VCC, VL | - | 2 | 5010 | KEYSTONE | N/A | TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; RED; PHOSPHOR BRONZE WIRE SIL; |
| 12 | PCB | - | 1 | MAX1477X | MAXIM | PCB | PCB:MAX1477X |
| 13 | C5-C16 | DNP | 0 | N/A | N/A | N/A | CAPACITOR; 0603 PACKAGE; GENERIC |

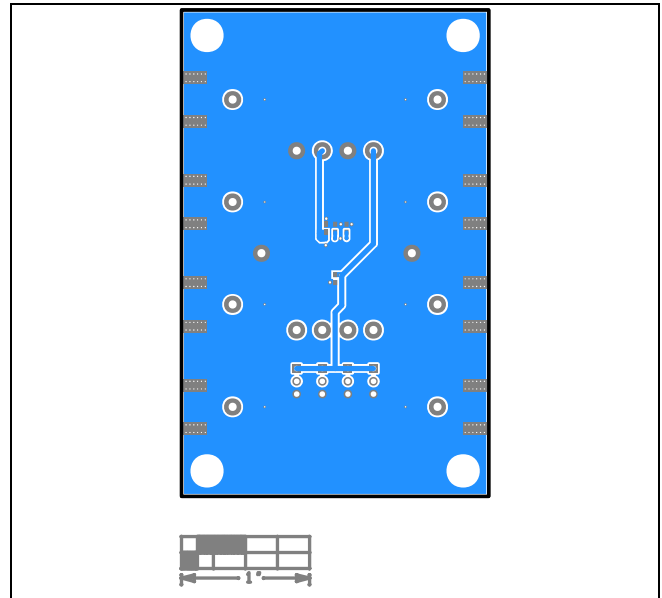
MAX1477X EV Kit Schematic



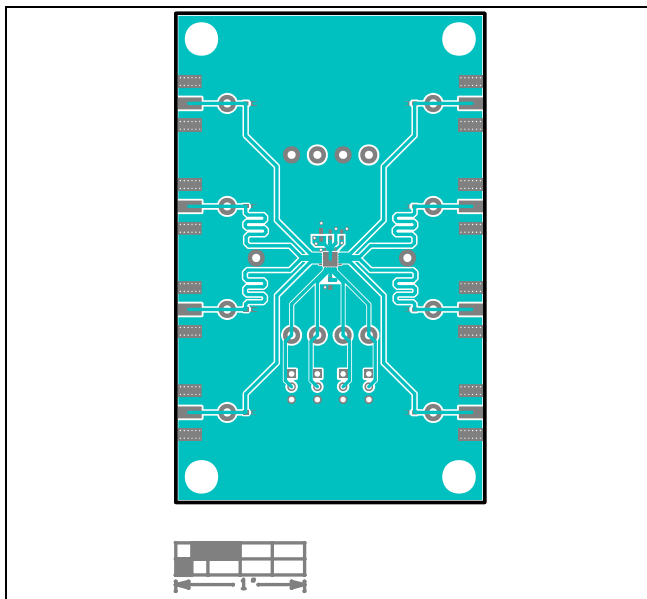
MAX1477X EV Kit PCB Layout



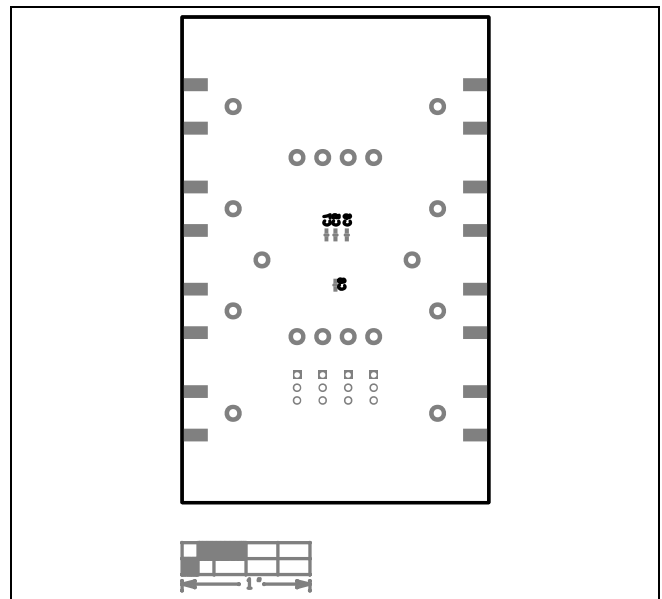
MAX1477XEVKIT# Component Placement--Top Silkscreen



MAX1477XEVKIT# PCB Layout--Bottom



MAX1477XEVKIT# PCB Layout--Top



MAX1477XEVKIT# Component Placement--Bottom Silkscreen