

Evaluating the **ADMV7410** E-Band Low Noise Downconverter SiP, 71 GHz to 76 GHz

FEATURES

- Simple power-up with on-board LDO regulators
- Option to bypass LDO regulators with connector jumpers

EVALUATION KIT CONTENTS

- ADMV7410-EVALZ
- Connector jumpers

EQUIPMENT NEEDED

- +5 V and -5 V dc power supplies
- Baseband signal generator
- RF signal generator
- E-band spectrum analyzer
- WR-12 waveguide

ADMV7410-EVALZ PHOTOGRAPH

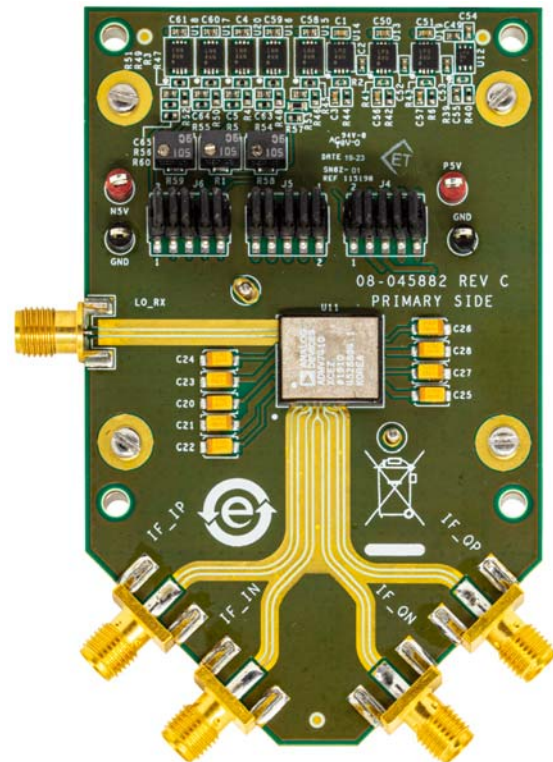


Figure 1.

GENERAL DESCRIPTION

The ADMV7410-EVALZ incorporates the **ADMV7410** with low dropout (LDO) regulators, potentiometers, and a waveguide back plate to allow quick and simple evaluation of the **ADMV7410**. The LDO regulators allow the **ADMV7410** to be powered on by ± 5 V dc supplies.

The **ADMV7410** is a fully integrated system in package (SiP), inphase/quadrature (I/Q) downconverter that operates at an intermediate frequency (IF) output range of dc to 2 GHz and an RF input range of 71 GHz to 76 GHz.

The **ADMV7410** data sheet provides full specifications for the **ADMV7410**. Consult the **ADMV7410** data sheet in conjunction with this user guide when using the ADMV7410-EVALZ.

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REVISION HISTORY

11/2019—Revision A: Initial Version

EVALUATION BOARD SETUP

QUICK START PROCEDURE

The ADMV7410-EVALZ is equipped with LDO regulators to provide biases for all drains and gates. Only +5 V dc and -5 V dc power supplies are needed to power up the chip. Note that the ADMV7410-EVALZ is tuned in factory to achieve a typical current level. To ensure that damage does not occur, use the following sequence to power up the ADMV7410-EVALZ:

1. Place jumpers on all pins of J5 and J6.
2. Place jumpers on all pins of J4 except Pin 1 and Pin 2.

3. Connect a -5 V dc power supply to the N5V test point and ground the supply to the nearest GND test point.
4. Connect the 5 V dc power supply to the P5V test point.
5. Turn on the -5 V supply and then the +5 V supply.
6. Place jumpers on Pin 1 and Pin 2 of J4.

To power down the chip, use the following sequence:

1. Turn off the 5 V supply.
2. Turn off the -5 V supply.

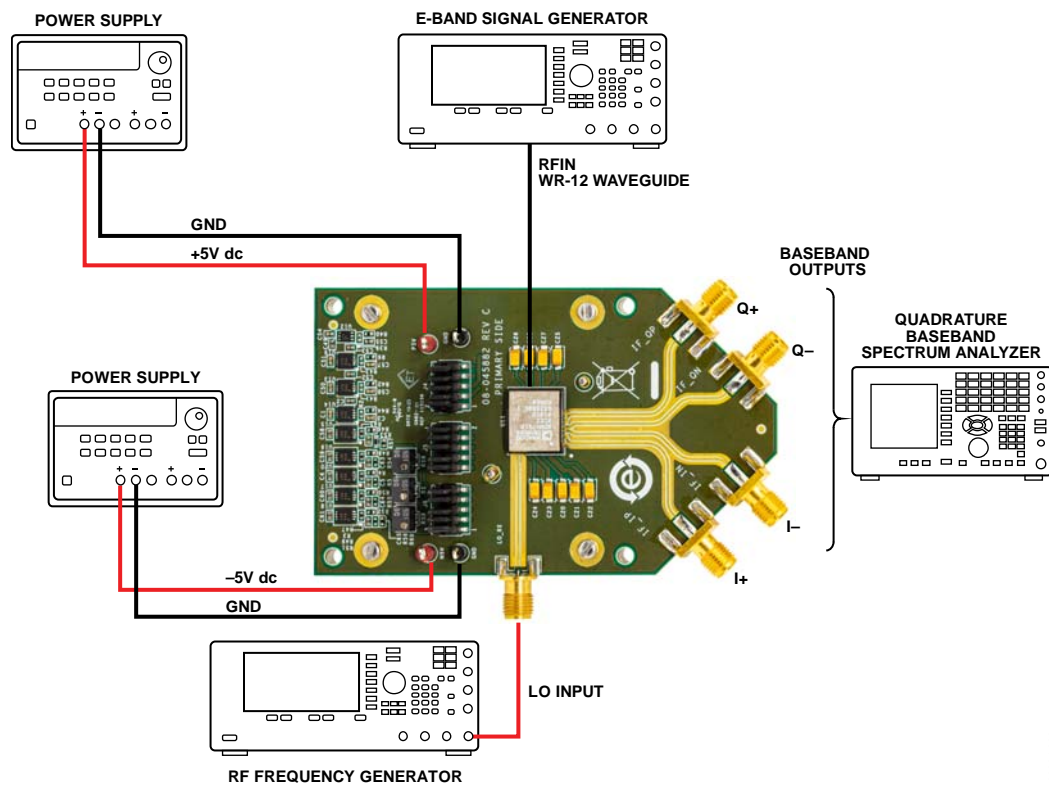
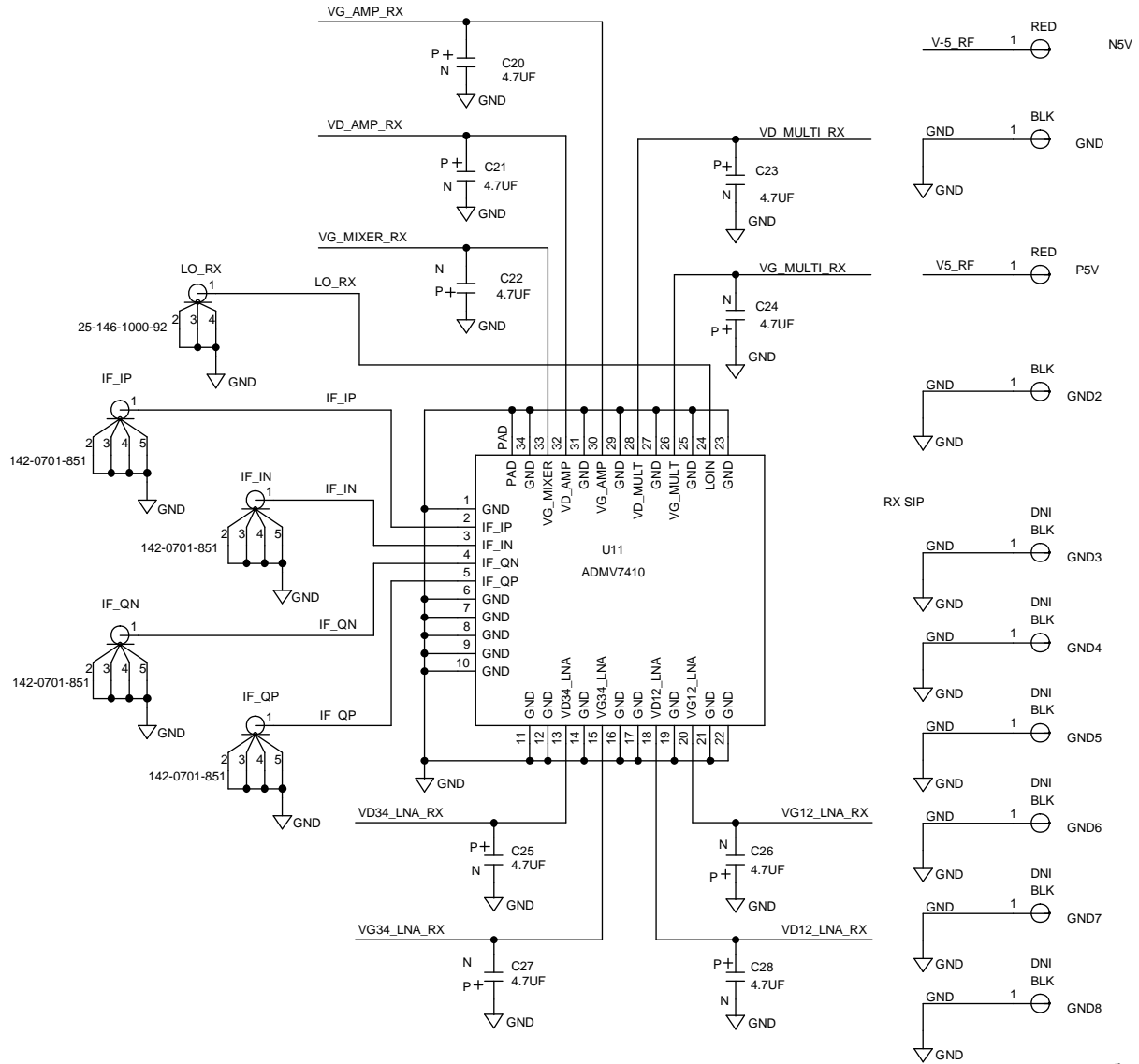


Figure 2. ADMV7410-EVALZ Lab Bench Setup

20884-002

EVALUATION BOARD SCHEMATICS



THESE GND TEST POINTS INDICATE THE PLATED THROUGH HOLES FOR THE HEAT SINK

20884-003

Figure 3. ADMV7410-EVALZ Schematic

20894-004

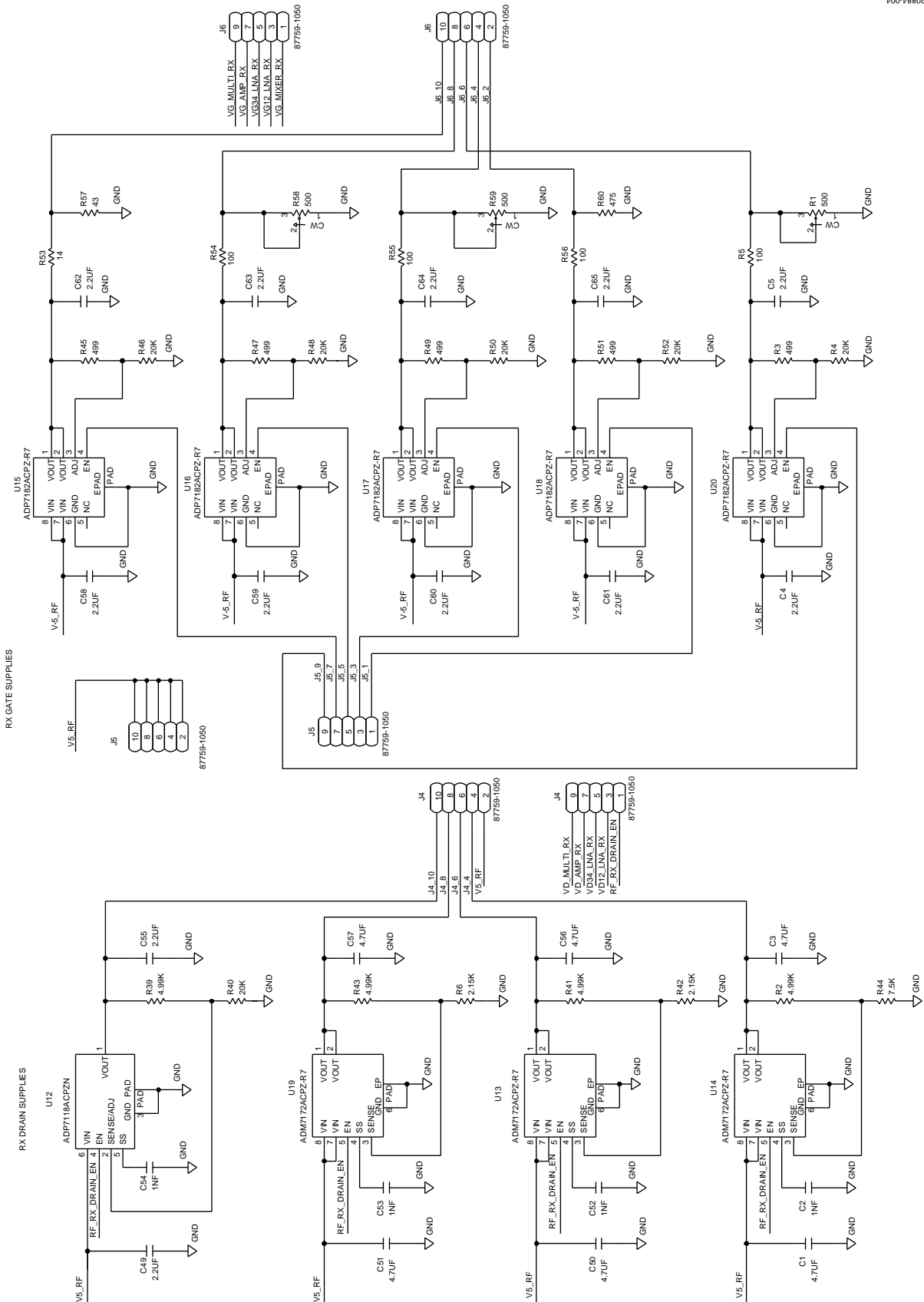


Figure 4. ADMV7410-EVALZ Drain and Gate Supplies

ORDERING INFORMATION

Table 1. Bill of Materials

Qty	Designators	Description	Part Number
6	C1, C3, C50, C51, C56, C57	Capacitors, ceramic, 4.7 μ F	GRM155R60J475ME87D
4	C2, C52 to C54	Capacitors, ceramic, 1 nF	CGA2B2X7R1H102K050BA
9	C20 to C28	Capacitors, tantalum, 4.7 μ F	TAJA475K020RNJ
12	C4, C5, C49, C55, C58 to C65	Capacitors, ceramic, 2.2 μ F	C1005X5R0J225K050BC
2	GND, GND2	Test points	TP-104-01-00
4	IF_IN, IF_IP, IF_QN, IF_QP	Connectors, SMA	142-0701-851
3	J4 to J6	Connectors, miniature, 2 mm	87759-1050
1	LO_RX	Connector, RF, 2.92 mm	25-146-1000-92
2	N5V, P5V	Test points	TP-104-01-02
3	R1, R58, R59	Resistors, chip, 500 Ω	SM-42TW501CT-ND
4	R2, R39, R41, R43	Resistors, chip, 4.99 k Ω	TNPW04024K99BEED
5	R3, R45, R47, R49, R51	Resistors, chip, 499 Ω	ERJ-2RKF4990X
6	R4, R40, R46, R48, R50, R52	Resistors, chip, 20 k Ω	ERJ-2RKF2002X
2	R6, R42	Resistors, chip, 2.15 k Ω	ERJ-2RKF2151X
1	R44	Resistor, chip, 7.5 k Ω	ERJ-2RKF7501X
4	R5, R54 to R56	Resistors, chip, 100 Ω	ERJ-2RKF1000X
1	R53	Resistor, chip, 14 Ω	ERJ-3EKF14R0V
1	R57	Resistor, chip, 43 Ω	ERJ-2RKF43R0X
1	R60	Resistor, chip, 475 Ω	ERJ-2RKF4750X
1	U11	E-band low noise downconverter, SiP, 71 GHz to 76 GHz	ADMV7410
1	U12	20 V, 200 mA, low noise, complementary metal-oxide semiconductor (CMOS) LDO linear regulator	ADP7118ACPZN
3	U13, U14, U19	6.5 V, 2 A, ultralow noise, high power supply rejection ratio (PSRR), fast transient response CMOS LDO regulators	ADM7172ACPZ-R7
5	U15 to U18, U20	-28 V, -200 mA, low noise linear regulators	ADP7182ACPZ-R7

**ESD Caution**

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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