

## Evaluating the **ADMV7420** 81 GHz to 86 GHz, E-Band, Low Noise Downconverter SiP

### FEATURES

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

### EVALUATION KIT CONTENTS

- ADMV7420-EVALZ
- Connector jumpers

### EQUIPMENT NEEDED

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

### ADMV7420-EVALZ PHOTOGRAPH

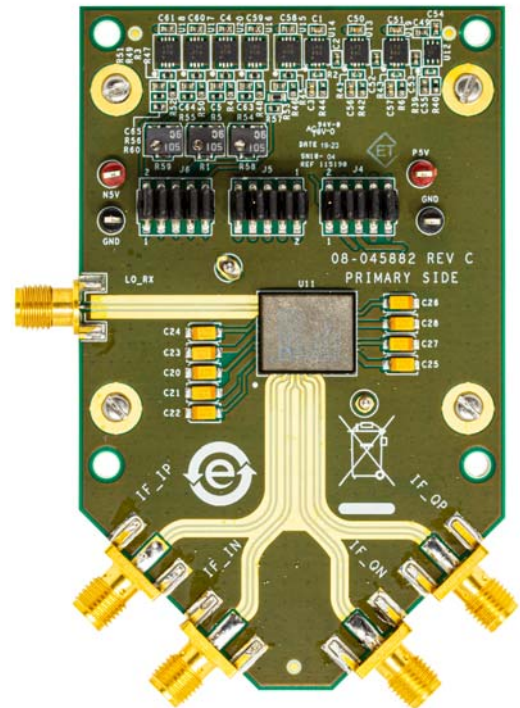


Figure 1.

20885-001

### GENERAL DESCRIPTION

The ADMV7420-EVALZ incorporates the [ADMV7420](#) with low dropout (LDO) regulators, potentiometers, and a waveguide back plate to allow quick and easy evaluation of the [ADMV7420](#). The LDO regulators allow the [ADMV7420](#) to be powered on by  $\pm 5$  V dc supplies.

The [ADMV7420](#) is a fully integrated system in package (SiP) inphase/quadrature (I/Q) downconverter that operates at an RF input frequency range of 81 GHz to 86 GHz and an intermediate frequency (IF) output frequency range of dc to 2 GHz.

For full details, see the [ADMV7420](#) data sheet, which must be used in conjunction with this user guide when using the ADMV7420-EVALZ.

**TABLE OF CONTENTS**

Features .....	1	Evaluation Board Setup .....	3
Evaluation Kit Contents.....	1	Quick Start Procedure .....	3
Equipment Needed.....	1	Evaluation Board Schematics.....	4
ADMV7420-EVALZ Photograph.....	1	Ordering Information.....	6
General Description .....	1	Bill of Materials.....	6
Revision History .....	2		

**REVISION HISTORY**

11/2019—Revision A: Initial Version

## EVALUATION BOARD SETUP

### QUICK START PROCEDURE

The ADMV7420-EVALZ is equipped with LDO regulators to provide drain and gate biases. Only +5 V dc and -5 V dc power supplies are required to power up the chip. Note that the evaluation board is tuned to achieve a typical current level.

To ensure that damage does not occur to the device, use the following sequence to power up the ADMV7420-EVALZ:

1. Place jumpers on all pins of the J5 and J6 connectors.
2. Place jumpers on all pins of the J4 connector, except Pin 1 and Pin 2.

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

To power down the chip, use the following sequence:

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

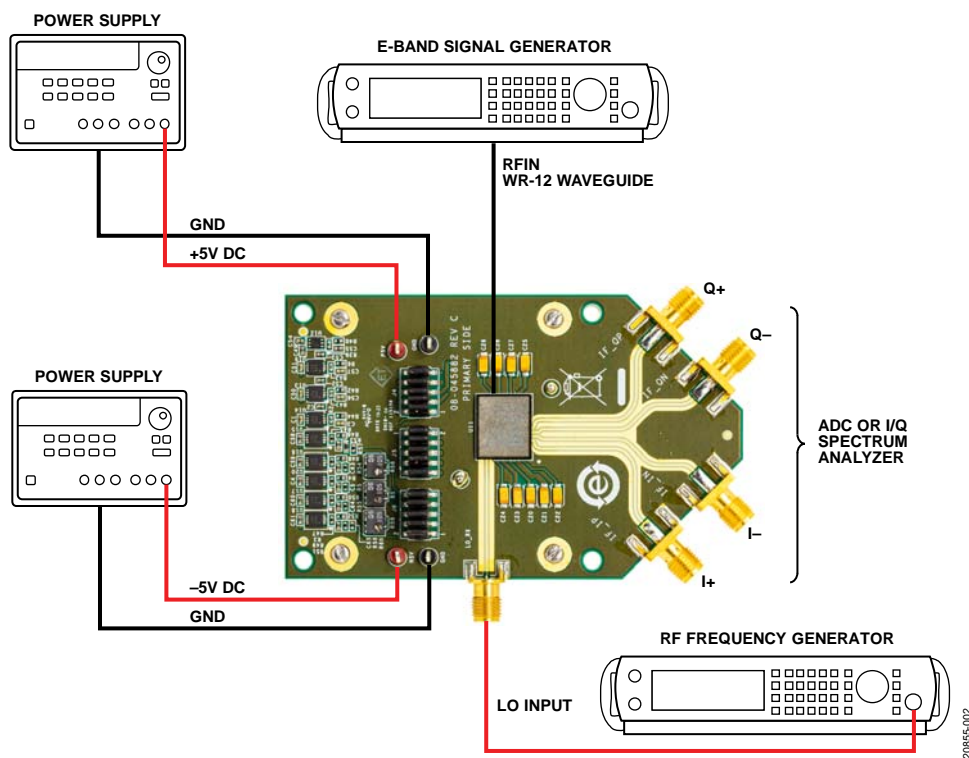


Figure 2. ADMV7420-EVALZ Lab Bench Setup

20855-002

EVALUATION BOARD SCHEMATICS

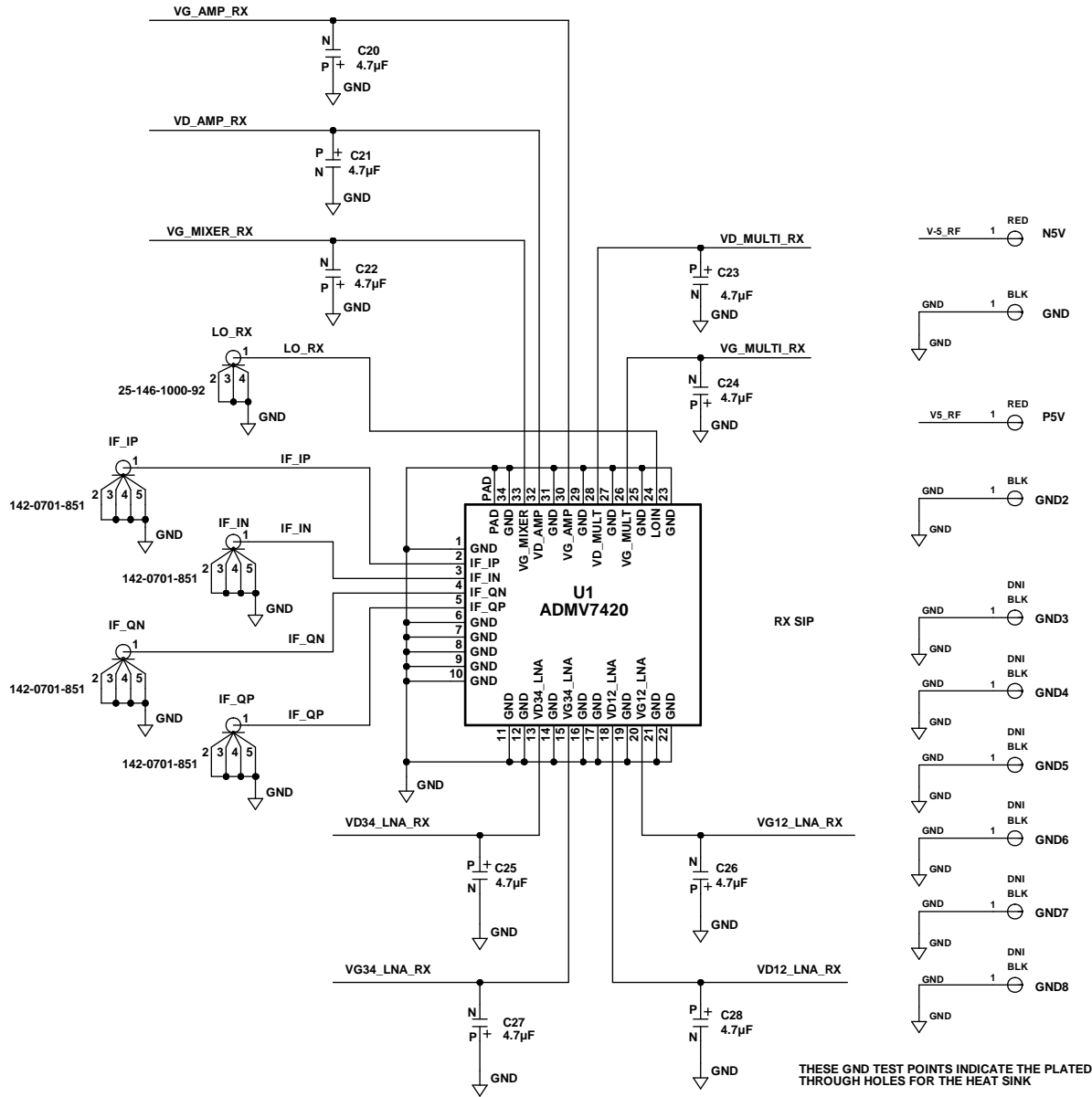


Figure 3. ADMV7420-EVALZ Schematic



## ORDERING INFORMATION

## BILL OF MATERIALS

Table 1.

Qty	Designators	Description	Part Number
6	C1, C3, C50, C51, C56, C57	Capacitors, ceramic, 4.7 $\mu$ F	GRM155R60J475ME87D
4	C2, C52 to C54	Capacitors, ceramic, 1 nF	CGA2B2X7R1H102K050BA
9	C20 to C28	Capacitors, tantalum, 4.7 $\mu$ F	TAJA475K020RNJ
12	C4, C5, C49, C55, C58 to C65	Capacitors, ceramic, 2.2 $\mu$ 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 $\Omega$	SM-42TW501CT-ND
4	R2, R39, R41, R43	Resistors, chip, 4.99 k $\Omega$	TNPW04024K99BEED
5	R3, R45, R47, R49, R51	Resistors, chip, 499 $\Omega$	ERJ-2RKF4990X
6	R4, R40, R46, R48, R50, R52	Resistors, chip, 20 k $\Omega$	ERJ-2RKF2002X
2	R6, R42	Resistors, chip, 2.15 k $\Omega$	ERJ-2RKF2151X
1	R44	Resistor, chip, 7.5 k $\Omega$	ERJ-2RKF7501X
4	R5, R54 to R56	Resistors, chip, 100 $\Omega$	ERJ-2RKF1000X
1	R53	Resistor, chip, 14 $\Omega$	ERJ-3EKF14R0V
1	R57	Resistor, chip, 43 $\Omega$	ERJ-2RKF43R0X
1	R60	Resistor, chip, 475 $\Omega$	ERJ-2RKF4750X
1	U1	E-Band low noise downconverter, SiP, 81 GHz to 86 GHz	ADMV7420
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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