Keysight Technologies 85320A/B Mixer Modules 2 to 26.5 GHz

This is Operating and Service Guide for the 85320A/B 2 to 26.5 GHz Mixer Modules.

KEYSIGHT

OPERATING AND SERVICE GUIDE

Notices

Trademark Acknowledgments

n/a

Manual Part Number

85020-90001

Edition

Edition 2, October 30, 2023

Printed in USA/Malaysia

Published by:
Keysight Technologies
1400 Fountaingrove Parkway
Santa Rosa, CA 95403

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CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

NOTE

A **NOTE** calls the user's attention to an important point or special information in the text.

NOTICE: This document contains references to Agilent Technologies. Agilent's former Test and Measurement business has become Keysight Technologies. For more information, go to **www.keysight.com.**

Keysight 85320A/B
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Getting Assistance from Keysight

Contacting Keysight

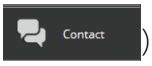
Assistance with test and measurements needs and information on finding a local Keysight office are available on the Web at:
http://www.keysight.com/find/assist

If you do not have access to the Internet, please contact your Keysight field engineer.

NOTE

In any correspondence or telephone conversation, refer to the Keysight product by its model number and full serial number. With this information, the Keysight representative can determine whether your product is still within its warranty period.

If You Have Problems With the Upgrade Kit Contents

Keysight stands behind the quality of the upgrade kit contents. If you have problems with any item in the kit, refer to www.keysight.com and the **Contact Keysight** (

) link.

KEYSIGHT TECHNOLOGIES

General Information

The Keysight 85320A test mixer and Keysight 85320B reference mixer operate from 2 to 26.5 GHz. They are designed for use with the Keysight 85309B Distributed Frequency Converter. These mixers work with the Keysight 85309B to down convert RF frequencies to the 20 MHz IF signal required by the N5222A network analyzer.

In fundamental mode, the LO signal must be 20 MHz away from the incoming RF signal. This mode has better sensitivity than the third harmonic mode, but is limited in operation to the highest LO frequency available at the mixer inputs (18 GHz).

In the third harmonic mode, the mixer uses the third harmonic of the LO to convert RF frequencies to the 20 MHz IF signal. This mode has less sensitivity than the fundamental mode, but allows you to measure RF signals three times higher than the maximum LO frequency.

85320A Test Mixer

The test mixer has a “diplexer” circuit that allows both LO and IF signals to travel through a single cable. This is convenient because both signals can travel through a rotary joint. This circuit works in conjunction with an identical diplexer in the 85309B.

85320B Reference Mixer

The reference mixer has a diode detector built into it. This circuit detects the LO input power, and outputs a proportional voltage. The detected voltage should be connected to the 85309B (which displays the voltage on its front panel). This detector voltage is used to set the LO power to precisely the correct level. When the LO power is correct, the detector voltage will match that shown on the label mounted on the mixer.

Specifications and Physical Characteristics

Frequency Range

Fundamental Mode: 2 to 18 GHz

Third Harmonic Mode: 6 to 26.5 GHz

Maximum Input Levels

Do not exceed the following levels at either mixer input:

Maximum DC voltage at input: 10 V

Maximum RF Level at RF or LO inputs (damage level): +26 dBm

Minimum LO Input Level

Table 1 Mixer LO Signal Power Level

LO Frequency	Minimum Power	Typical Power	Maximum Power
1 – 18 GHz	+7.5 dBm	+11 dBm	+12 dBm

Conversion Loss

The typical performance values shown apply to the mixer modules themselves. This performance data is intended to help customers who wish to build their own custom downconverters.

Table 2 85320A/B Conversion Loss

Frequency Range	LO Harmonic	Typical Loss	Maximum Loss
1 – 2 GHz	1	18.0 dB	22 dB
2 – 3 GHz	1	12.0 dB	16 dB
3 – 5 GHz	1	11.0 dB	15 dB
5 – 18 GHz	1	14.7 dB	17 dB
6 – 8 GHz	3	23.8 dB	26 dB
8 – 16 GHz	3	26.5 dB	28 dB
16 – 26.5 GHz	3	28.5 dB	33 dB

Connector Types

85320A/B: Type-N female except for RF Input (3.5 mm male)

Environmental Characteristics

Operating conditions: 0 °C to +55 °C

Non-operating conditions: -40 °C to +75 °C; 5 to 90% relative humidity, non-condensing

Net Weight

85320A: 615 g (1.35 lb.)

85320B: 840 g (1.85 lb.)

Size

85320A: width: 83 mm (3.25 in)

height: 122 mm (4.8 in)

depth: 33 mm (1.3 in)

85320B: width: 92 mm (3.6 in)

height: 185 mm (7.3 in)

depth: 25 mm (1.0 in)

Rebuilt/Exchange Parts

You can obtain rebuilt mixer modules through the rebuilt-exchange program. These factory rebuilt (repaired and tested) mixers meet all specifications required of a new unit. They are offered on an exchange (trade-in) basis only. The defective mixer must be returned for credit, so rebuilt-exchange mixers are not suitable for stock or spares.

Here is how to use the exchange program:

1. Order a rebuilt mixer from Keysight (see the following part number listing).
2. You will receive the rebuilt mixer in a reusable shipping box – open it carefully because you must return the old mixer in the same box. Take the return address label out of the shipping box.
3. Insert the faulty mixer into the box and seal the box with tape.
4. Inside the U.S.A., place the return address label on top of the old shipping label. If shipping outside the U.S.A., do not use the preprinted label; instead, address the box to the nearest Keysight office.

Table 3 Mixer LO Signal Power Level

LO Frequency	Minimum Power	Typical Power	Maximum Power
1 – 18 GHz	+7.5 dBm	+11 dBm	+12 dBm

Mixer Module	Rebuilt Part Number
85320A	85320-69001
85320B	85320-69002

Compression (Nominal)

This sections contains nominal compression information for using the 85320A/B Test Set Mixer with 85309B LO/IF distribution units.

Table 4 Compression Level (Nominal)[a]

System Parameter	GHz	1-2	2-3	3-5	5-18	6-18[b]	8-16[b]	6-26.5[b]
Compression Level (at 0.1 dB)	-dBm	12	18	19	17	8	6	1

a. Nominal compression calculated from N5264B 0.1dB compression point and using the default 85309B configuration.
b. 3rd Hamonic Mode.

Edition 2, October 30, 2023

85320-90001

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