



Agilent
85320A/B
Mixer Modules
2 to 26.5 GHz

Operating and Service
Manual



85320-90001



Agilent Technologies

Notices

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CAUTION

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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.

General Information

The Agilent 85320A test mixer and Agilent 85320B reference mixer operate from 2 to 26.5 GHz. They are designed for use with the Agilent 85309B Distributed Frequency Converter. These mixers work with the Agilent 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 1-1 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 1-2 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 Agilent (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 pre-printed label; instead, address the box to the nearest Agilent office.

Table 1-3 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

Contacting Agilent

Assistance with test and measurement needs and information on finding a local Agilent office are available on the Web at:

www.agilent.com/find/assist

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