# R&S®FS-Z60/75/90/110

# Getting Started

**NOTICE**

**Risk of mixer damage**

Before initial use of the harmonic mixer, be sure to read all safety instructions provided on the Documentation CD carefully and make sure that the following conditions and precautions are met:

- Provide sufficient mechanical and electrostatic protection during storage or transportation of the mixer. Heavy shocks can cause damage to the diodes in the mixer.
- Avoid electrostatic discharges near the connectors to protect the mixer diodes.
- Do not apply a torque exceeding 100 Ncm when connecting the LO/IF and IF cables; this may damage the LO/IF and IF connectors (SMA).
- Do not check the function of the diodes by means of an ohmmeter. The diodes can be destroyed by the battery voltage.
- Signal levels at the mixer's RF port and the LO port must be within the ranges specified in the data sheet; otherwise the mixer may be damaged. If the signal level to be measured is not known, perform a test measurement of the DUT with a waveguide attenuator and a power meter first.
- If cables other than the ones supplied with the B21 are used for IF and LO signals, ensure that they have a low insertion loss and that the connection is as short as possible. If the insertion loss in the LO path increases, the LO level of the mixer decreases, resulting in a higher conversion loss and thus a reduced dynamic range.
- Do not stress the cables used to provide the LO signal and to tap the IF to avoid cable damage.
- When the mixer is not in use, cover the LO/IF and IF connectors (SMA), as well as the RF port (waveguide) with the provided caps to prevent environmental impact which may cause damage to the mixer.

Failure to meet these conditions may cause damage to the mixer or other devices in the test setup.

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Test and Measurement

Getting Started

# Preparing for Use

To prepare a measurement with the harmonic mixer, connect the mixer and the instrument in the specified order (also indicated in Figure -1) using the cables supplied with the B21 option.

1. Connect the waveguide flange of the harmonic mixer to the DUT.

   **Note:** Do not connect the cables to the mixer yet to protect them from mechanical stress.

2. Connect the coaxial cable(s) to the LO OUT / IF IN port of the instrument.

   For 3 port mixers, connect another cable to the IF IN port of the instrument.

   **Note**: Connect each cable to the analyzer first before connecting it to the mixer. This makes sure that the coax cables are not charged electrostatically when connected to the mixer, which protects the mixer diodes against possible electrostatic discharge.

3. Connect the coaxial cable(s) from the LO OUT / IF IN port of the instrument to the LO/IF SMA connector (2 port type) or the LO SMA connector (3 port type) of the harmonic mixer.

   For 3 port mixers, additionally connect the cable from the IF IN port of the instrument to the IF port of the mixer.

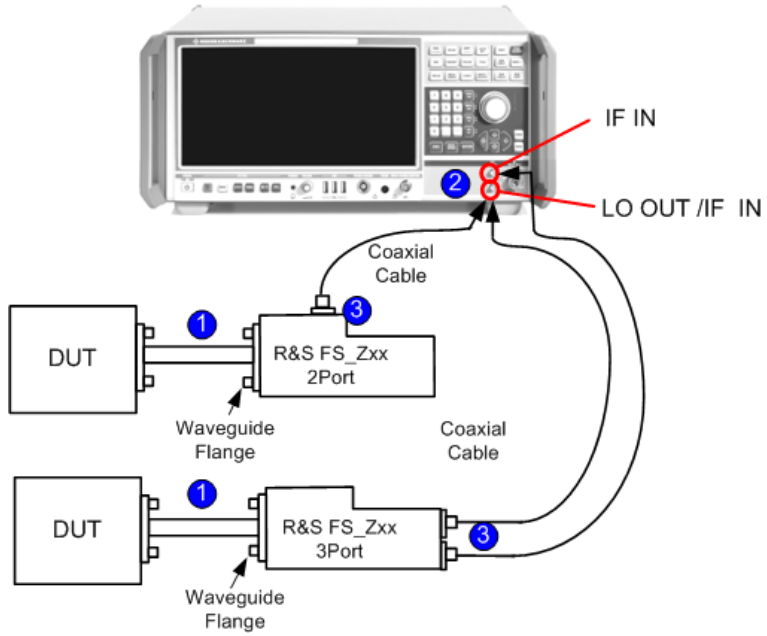


***Figure -1: Measurement setup using a harmonic mixer***

**Ensuring measurement accuracy**

To ensure correct measurement and avoid signal distortion, note the following:

- The ambient temperature must not exceed the range specified in the data sheet.
- Do not loosen the screws of the mixer and at the SMA connector. Otherwise the calibration data becomes invalid and measurements may provide inaccurate results. The mixer can only be repaired by the manufacturer.
- Connect the flanges of the waveguides between the mixer and the DUT without offsets or air gaps (e.g. due to canting). Do not soil or scratch the contact surface of the waveguide flange. Only proper connections ensure accurate measurements.