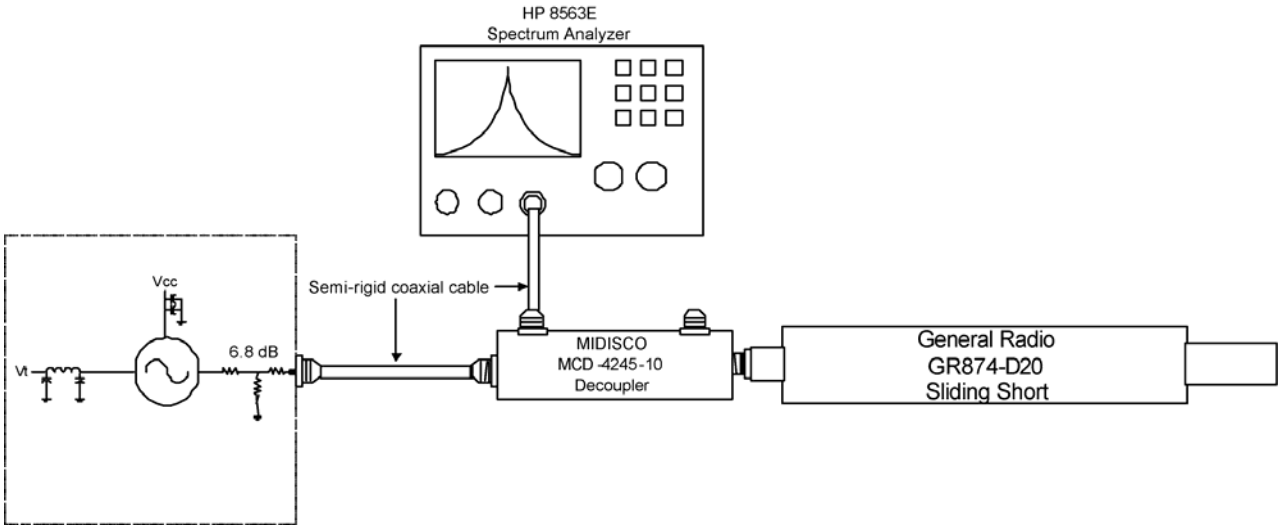
Pulling Measurement of Z-COMM VCOs

The pulling response of Z-COMM VCOs is directly affected by improper matching and insufficient isolation. The frequency variation due to load mismatching is defined as pulling. Measured pulling performance of Z-COMM VCOs can be verified using the pulling test setup and procedure described in the following.

The pulling response of Z-COMM VCOs is measured with a sliding short having a typical VSWR of 1.7:1 or 14 dB return loss. The sliding short is rotated 0 to 2π so the load undergoes a complete phase change. Figure 1 shows the standard test setup for measuring the pulling performance of the VCOs.

Figure 1: Test Setup for Measuring Pulling Performance



Procedure:
Adjust the sliding short tuning stub such that the output of the VCO is matched to a 50Ω load.

1. Set the VCO to its proper supply and tuning voltages noting the decoupling capacitors to remove any RF leakage.
2. Center the output frequency in the middle of the analyzer and set the frequency span to twice the specified pulling value of the VCO.
3. Pull the sliding short so that a load mismatch occurs. The sliding short should be adjusted so the load undergoes a complete 0 to 2π phase change. Measure the difference between the maximum and minimum frequency. This is the pulling specification.
4. Pulling performance may vary in the operating frequency band so it is recommended to measure the response at several different frequencies within the specified bandwidth.

For additional information regarding load matching refer to the following application note:
AN-102 Proper Output Loading of Z-COMM VCOs

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