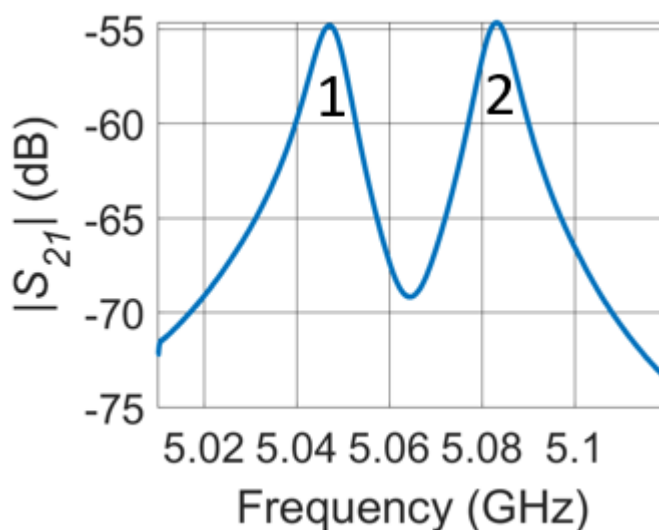


MICROWAVE CHARACTERIZATION OF FERRITES

MPR CAVITY



We offer the most accurate and highly repeatable resonant fixture dedicated to the characterization of the room temperature intrinsic **ferromagnetic linewidth (ΔH)** of low-magnetic-loss ferrite **spheres**. The presented fixture consists of a **rectangular 5-GHz-cavity** and a **hand-held tunable magnet**. The device is equipped with specialized **software** based on a **novel electrodynamic model** extracting ΔH of the material under test from the frequency and Q -factor of **split modes** measured for an appropriate vertical position of the magnet knob.



The measurement is performed when the split modes 1 and 2 are symmetric

The whole measurement setup consists of a computer, where the software is installed, connected to a vector network analyzer (such as PNA-X N5245A, Keysight) or a Q-meter. The setup operates by leveraging the coupling between the 5-GHz-cavity mode and the ferrite sphere mode. The **sample must be strongly coupled** with the cavity mode, resulting in **mode splitting**, to make the measurement with the presented fixture possible. Therefore, broad-ferromagnetic-linewidth samples, for which mode splitting will not occur, cannot be characterized with this fixture. Moreover, due to the applied quartz tube holding the ferrite sphere, the diameter of the sample must be **$D < 1.5$ mm**.

Below are exemplary samples which can or cannot be measured in the fixture:

ΔH (Oe)	Diameter D (mm)	Saturation magnetization M_s (Gs)	Is the sample measurable?
0.2	0.5	1800	Yes
3	1.4	1200	Yes
16	1.2	1700	Yes
20	1	1800	No

Customizations are possible for all specifications provided in this leaflet, e.g. the use of a 10 GHz cavity.