

REDISTRIBUTION OF FIELDS INSIDE A SINGLE MODE CAVITY DURING H-FIELD HEATING OF FERRITES

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The location of two H_{\max} regions along the side walls of the TE_{103} single mode cavity has made convenient to measure and study changes in magnetic field rather than electric field during a field heating experiment. A probe consisting of a small loop antenna (dia. ~ 4 mm) at one end of a 50 ohm copper cable, nearly half a meter long was designed to profile magnetic fields inside the cavity. The other end of the cable was connected to a Schottky barrier diode (BAT-46) which was fed into a current meter. This measured current is proportional to magnetic field and very well indicates the distribution of fields inside the cavity. Experiments were conducted by placing the loop close to the Fe_3O_4 sample and away from the sample during H-field heating. In this talk, theory, probe design, measurement details, the variation in probe current with time will be elaborately discussed. In addition to the above, application of this technique to other ferrite materials will also be discussed.