

Ferrite Test Cavity for Muses, T. KATAYAMA, S. WATANABE, CNS; N. INABE, T. OHKAWA, K. OHTOMO, M. WAKASUGI, RIKEN; Y. CHIBA, I. WATANABE(*), TOSHIBA - A Booster Synchrotron Ring (BSR) is proposed for a storage ring system named MUSES (Multi-Use Experimental Storage rings) in RI beam factory project in Institute of Physical and Chemical Research (RIKEN). It is necessary to develop a ferrite cavity with frequency range from 25 MHz to 53 MHz. The required voltage is 25 kV. In order to investigate the various types of ferrite, we designed a measurement system consisting of a test cavity, a power supply for ferrite bias current (2500 A) and an RF amplifier (3 kW). The structure of the test cavity is made up of three stems: one coaxial cylinder with one ferrite, one variable condenser and one fixed stub. These three stems are connected by one box, from which RF power is fed into the cavity. The bias current conductor is wound ten times around the ring of the ferrite and the parts of the conductor near the ferrite can be separated for exchanging ferrites. The calculation by transmission line approximation shows that this test cavity has the resonance in the frequency with 20 MHz - 60 MHz and the specific permeability of ferrite with 2-17 by adjusting the capacitance of the variable condenser.

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