

# Comblines Antenna for Lower Hybrid Current Start-up Experiments in Tokyo Spherical Tokamak-2

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Non-inductive plasma current start-up and sustainment are necessary for future applications of the spherical tokamak (ST), such as a volumetric neutron source or a demonstration power plant. Because of very high dielectric constants in high-beta ST plasmas, the Lower Hybrid Wave (LHW) is not considered for current drive. However, it may be useful during the initial plasma current start-up phase if the density could be kept low enough. Plasma current start-up experiments using the LHW (up to 400 kW at 200 MHz) are planned on the TST-2 spherical tokamak at the University of Tokyo. For this experiment, the comblines antenna which was used on JFT-2M [1-3], appropriately modified for use on TST-2 (Fig. 1), will be used.

The transmission characteristics were measured by a network analyzer. As shown in Fig 2, this comblines antenna has a good band-pass characteristic.

## [References]

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2. Moeller C.P. *et al* 1993 *Proc. 10th Top. Conf. on Radio Frequency Power in Plasmas (Boston, 1993)* (Woodbury, NY: AIP Press) *AIP Conf. Proc.* **289** 323
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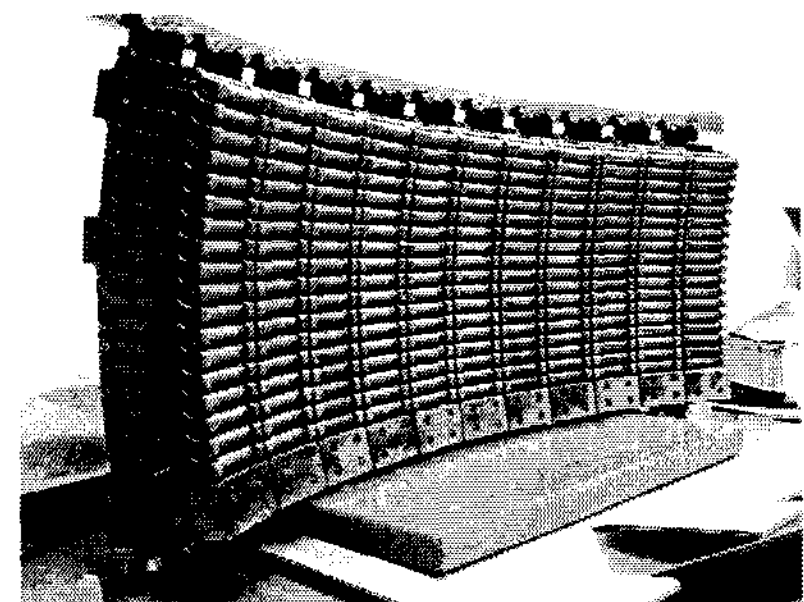


Figure 1. The modified comblines antenna array.

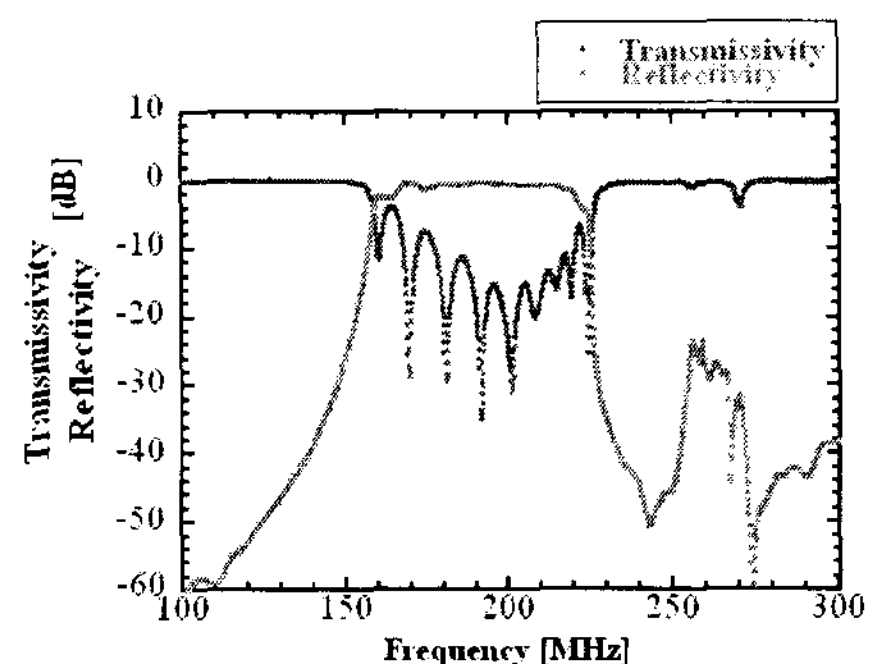


Figure 2. Dependences of the transmissivity (blue) and reflectivity (red) on frequency.