Abstracts

A Pre-TR Tube for High Mean Power Duplexing

D.W. Downton and P.D. Lomer. "A Pre-TR Tube for High Mean Power Duplexing." 1960 Transactions on Microwave Theory and Techniques 8.6 (Nov. 1960 [T-MTT]): 654-659.

A gas discharge tube for transmit-receive switching capable of handling average power levels up to at least 25 kw at 3000 Mc is described. The discharge is excited in the annular space between two concentric silica tubes and recovery time is controlled by the dimensions and gas pressure. In this way, a tube with constant characteristics during life has been achieved. The tube is mounted in a thick resonant iris, and sparking is avoided by using accurately ground silica mounted in a precision-bore hole. The arc loss of the tube in this form of mount is less than 0.1 db at 5 Mw peak 10 kw average, and the recovery time is about 100 µsec to 3 db. The attenuation is about 30 db, and the insertion loss is less than 0.1 db. Performance of this form of tube is discussed for average power levels of up to 50 kw in a phase-shift duplexer and 25 kw in a balanced duplexer, and the expected performance during life is also considered. Lives in excess of 10,000 hours are deduced from extrapolated data obtained with radioactive krypton in tubes operating at 10 kw average.

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