

268 Title: Experimental characterization of hexaferrite ceramics from 100 GHz to 1 THz using vector network analysis and terahertz-time domain spectroscopy

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Abstract: Gyrotropic, magnetically-hard hexaferrite ceramics, are a very promising material for deployment as quasioptical nonreciprocal devices at high frequencies (90 GHz). In this paper, a quasioptical measurement bench driven by a vector-network analyzer and a terahertz (THz) time domain spectroscopy measurement system are used in conjunction to characterize a thin (2.02 mm thickness) hexaferrite plate for two orthogonal states of beam polarization. From these data, the intrinsic circular-polarization transmittance for each state (or case), of polarization, left and right, is computed. Inherent magneto-optical constants of the plate over the range of 100 GHz to 1 THz are then determined. Analysis reveals low attenuation of the hexaferrite ceramics over millimeter and submillimeter wave bands.