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Road #378, Baton Rouge, LA 70808 (US).(72) Inventor: LITTLE, Jack, R.; 912 Holystone Drive, Baton
Rouge, LA 70808-5108 (US).(74) Agent: RUNNELS, John H.; Taylor, Porter, Brooks &
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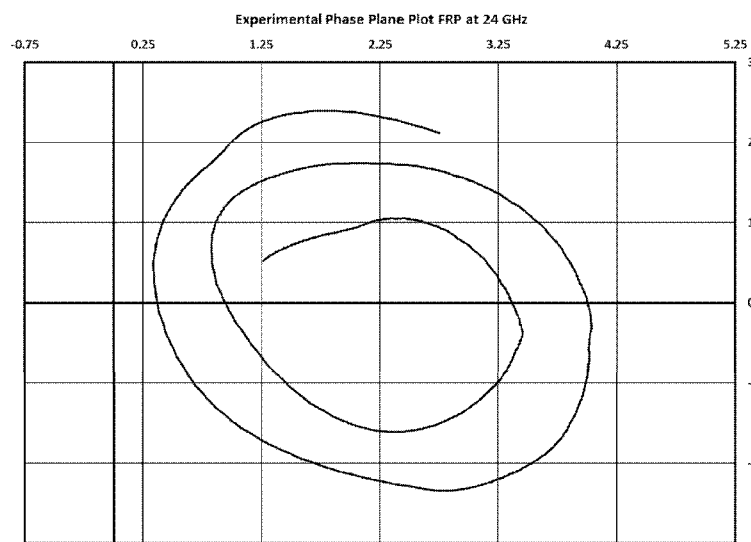
(54) Title: NONDESTRUCTIVE, ABSOLUTE DETERMINATION OF THICKNESS OF OR DEPTH IN DIELECTRIC MATERI-
ALS

Fig. 5

(57) Abstract: Enhanced measurement of thickness in bulk dielectric materials is disclosed. Microwave radiation is partially reflected at interfaces where the dielectric constant changes (e.g., the back wall of a part). The reflected microwaves are combined with a portion of the outgoing beam at each of at least two separate detectors. A pair of sinusoidal or quasi-sinusoidal waves results. Thickness or depth measurement is enhanced by exploiting the phase and amplitude relationships between multiple sinusoidal or quasi-sinusoidal standing waves at detectors sharing a common microwave source. These relationships are used to determine an unambiguous relationship between the signal and the thickness or depth.