

DUAL FREQUENCY MULTI-PURPOSE MOISTURE SENSOR BASED ON MICROSTRIP PATCH ANTENNA

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ABSTRACT

In order to device a sensor system that is capable of measuring moisture content of diverse agriculture products and crops (i.e. natural rubber latex, liquids, etc), a dual frequency sensor system has to be developed .The original idea of taking a large number of measurements (based on near field reflection method) at two different frequencies in the X-Band (8.48 and 11.65 GHz) is the driving motive for this research. The replacement of the conventional open horn antenna with microstrip radiating patches will make the sensor more versatile and compact. With the appropriate correlation, a calibration equation was found that instantly gives independent moisture content and/or dry mass content of the sample under consideration regardless of other intervening factors (i.e. measuring the moisture content of a sample independent of its bulk density). The sensor works with a laptop pc. The design and development of software using a graphical programming language (Lab View) helped analyze, manipulate and manage the huge set of data collected. The software provided error correction and incorporated the calibration of the system in order to display numerically and graphically the properties of the sample under test.

<http://journal.masshp.net/wp-content/uploads/Journal/2004/M.M.Ghretli%2082-89.pdf>

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