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Partial discharge detection performance using multi-cylindrical slots antenna with parasitic suppression patch for power transforme

Abstract

This paper focused on analyzing multi-cylindrical slots performance combining with parasitic suppression patch for partial discharge detection. Both proposed slots antenna and conventional monopole are simulated using CST Microwave Studio software before being fabricated and tested with real partial discharge signal. Performance comparison will be focused on scattering parameter, radiation pattern and surface current distribution. Both antennas are subjected to a partial discharge signal from lab scaled power transformer for the field test. Based on the result, the proposed performed better in both simulation and field testing with the dual-frequency operation, with better gain improvement by 14%. For the field test, the proposed antenna generated better detection result with reduced noises by 50%.

Keywords

Microstrip antenna; Noise suppression; Parasitic patch; Partial discharge; Power transformer