02RF069 Water Fraction Measurement Using a RF Resonant Cavity Sensor

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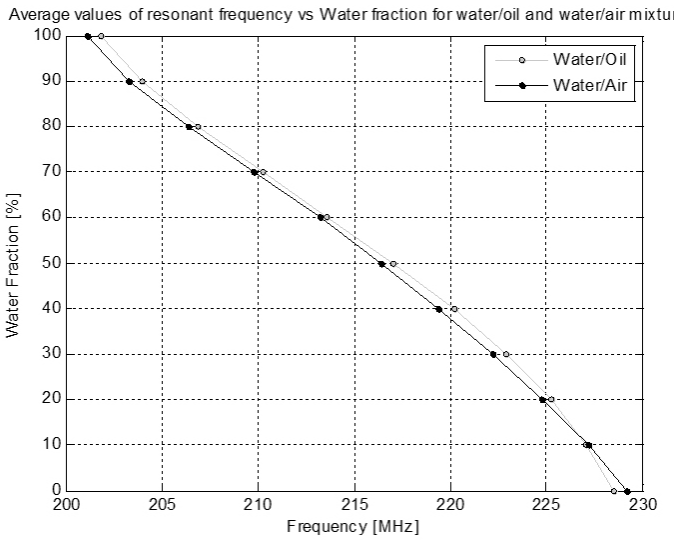
We have tested the working principle of water fraction measurement using a Radio Frequency (RF) resonant cavity. This technology allow us to determine the water fraction by the frequency shift of the first resonant peak in a non-intrusive way. The sensor operates with low power signals in the range of 100 through 400 MHz. Static measurements were done using a Scalar Network Analyzer (SNA) for water/oil and water/air static mixtures. The measurements uncertainty and the characteristics curves of the behavior sensor were computed.



Average values of the water-fraction as a function of the resonant frequency for water/oil and water/air mixtures.

02RF085 Characterization of the Propagation Channel on board Trains

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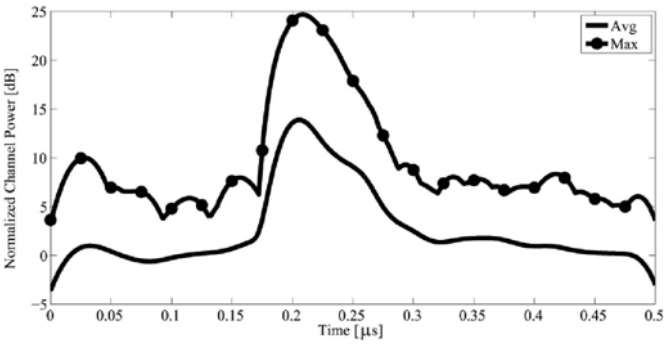
The paper is focused on the investigation of the propagation channel on board trains. Two main areas of interest are considered: 1) the study of the propagation channel in terms of propagation loss and multipath features; 2) the effects of external disturbance onto telecommunication signals, in terms of channel power variations with time and affected systems. Results related to the second topic extend the outcomes of a previous research, while those from the study about the first topic will be presented in the final paper. The main objective of the study is to investigate the availability of wireless infotainment and safety systems on board.

Keywords: propagation channel; multipath propagation; propagation losses; excess delay; delay spread; reliability; telecommunication system.



GSM900 average and maximum normalized channel power vs. time