ECEN 452 Lab 10 – Dielectric Probe Measurements

Apply the report template to discuss the theory, procedure, and sources of error for the dielectric probe measurements. In the results/discussion section, include the following plots:

e’ data for each material measured – These can be plotted on the same graph. Use dashed lines if two traces overlap significantly. Comment on the shape of the curves and compare to expected values for well-defined liquids (non-brand-name chemicals).

e' data for DI Water from 20MHz to 20GHz (in the Friday folder) – Comment on the shape of this curve and compare to expectations.

Questions to consider for the report:

Why do we use DI water as a calibration standard?

What can we do to improve the calibration process?

Can the dielectric probe be used for wideband or only narrowband measurements?

What kind of generalizations can you make based on the type of liquid (oil, alcohol, water-based solutions…) and their measured electrical properties?

Which liquids were considered “watered down” and which one had the highest water content (other than water itself)?