Review of: "Investigations on Input Impedance and Radiation Pattern of a UWB Antenna for Microwave Imaging"

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Potential competing interests: No potential competing interests to declare.

The manuscript presents the design of a reflector-backed UWB antenna, a preliminary parametric study of the influence of design parameters on antenna performance, and some characteristics of a selected "optimal" antenna, such as input impedance, radiation pattern, etc. It is positive that fabrication of a hardware mock-up and experimental validation has been performed. The introduction is relatively verbose since designs and results from previous publications are reproduced in detail. The scientific novelty of the proposed design over the State-of-the-Art is, however, not sufficiently explained since other similar UWB antenna designs, as well as the addition of a reflector, are known from the literature. In addition, the reviewer recommends the following measures to improve the overall quality of the article:

- There are some minor language issues; the manuscript should be checked for grammar and wording errors.
- The title is somewhat misleading since the paper is less focused on the thorough and substantial investigation of the fundamental relations of input impedance or radiation pattern but on a special design of a UWB antenna for the given application of microwave imaging. In the view of the reviewer, a more suitable title would be, for instance, "Design of [a UWB Antenna for Microwave Imaging]."
- The description of the simulated or measured results shown in the figures and their analysis is very concise. Both figure captions and text paragraphs should be more explicit and describe what is shown.
- There is a math formatting error in the Shannon Channel capacity in the first formula; similar issues are also visible in later formulas.
- There is a discrepancy between the radiation pattern shape in fig. 19, which shows a local minimum at the=0°, and fig. 22, which has a maximum at this point. Is it due to a different choice of components of the electric field vector?
- The measured and simulated return loss in fig. 24 are not in very good agreement - what is the explanation? There is no significant justification given in the text.
- The figures presenting simulation and measurement results are often in different scales and graphical representations. To better compare the quality of the designs, it would be better to see both results side-by-side or in the same figure.