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

Amiya Bhusana Sahoo

Potential competing interests: No potential competing interests to declare.

Comments and suggestions:

The manuscript is supposed to present **Investigations of Input Impedance and Radiation Pattern of a UWB Antenna for Microwave Imaging**. A comprehensive study and simulation results are presented. However, some important points are addressed below to improve the quality of the publication.

1. The article is very lengthy occupying 37 pages. There are unnecessary spaces and the size of the figures is very large. Since it is a research article rather than a review article, it should be a maximum 10-15 pages.
2. In the abstract it is written, **"The antenna demonstrates good impedance bandwidth (S_{11}≤ -10dB) from about 4GHz to 10.6GHz, except in the case when the widthW of the T-shaped stub was varied.**" There must be space between 4 and GHz; 10.6 and GHz; width and W, etc. Throughout the article, the space between 'frequency and GHz' should be given.
3. The alignment of the paragraphs should be justified, currently it is left aligned.
4. In the Introduction section '**Shannon-Hartley' formula:** It should be written in equation editor. In this formula S/N ratio is not properly aligned.
5. In related work section it is written "**This antenna, designed by Zhu et al. (2011), can also be seen as the composition of a UWB slot antenna excited by a fork-shaped tuning stub, which is the reference antenna 2**". The figures of reference antenna 1 and 2 should be given show that a clear understanding can be possible.
6. Figure 2 is so large it is taking 1 and half page. It should be small. Similarly care should be taken for size of all figures.
7. In the '**Increasing the Gain of a Semiconductor Slot UWB Antenna Using FSS** subsection, it is written that "**There is an increase over the entire frequency band in the antenna gain with the use of a dual-layer FSS reflector**". But from Figure 10 it is seen that the improvement is not significant. Only in low frequency region there is an improvement in the bandwidth.
8. The **symbols** shown in Table 1, 2, 3 should be clearly explained.
9. In Results and Analysis section it is written '**it can be seen from the return loss plot shown in Figure 21 that the proposed antenna operates almost over the entire UWB band (3.1-10.6GHz) except at lower frequencies of 3.1-4GHz**." But Figure 21 is a Far field gain plot at 8 GHz frequency. Please correct the Figure number it is referring. It is not Figure 21.
10. Authors should know the difference between **return loss** and **S_{11}.** Since return loss is **-20 log(reflection coefficient)** it will be a positive quantity. But S_{11} in dB is 20 log(reflection coefficient) it is a negative quantity. So in Fig

23, 24 refer to S_{11} in dB not the return loss. Reference: https://ieeexplore.ieee.org/document/5162049. Figure 23, 24 captions should be updated.

11. **Other references** are not refereed anywhere in the article.
12. The year of the references is not mentioned. Should include up-to-date references
13. Present the **schematic of the equivalent circuit** of the proposed antenna and discuss how the use of FSS impacts the equivalent circuit.
14. Comparison of the obtained results with existing published literature should be given.
15. Meticulous proofreading for English writing on both grammar and clarity is necessary. Proofreading for English writing can be done with some standard software such as grammerly, ginger, etc.