

REVIEWER'S REPORT

Manuscript No.: IJAR-54631

Title: Frequency Response Of Thin Toroidal Inductors: A Hybrid Approach Combining Theory, Simulation And Measurement

Recommendation:

Accept as it is

Accept after minor revision...yes.....

Accept after major revision

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		yes		
Techn. Quality		yes		
Clarity		yes		
Significance		yes		

Reviewer Name: Dr.Shaweta Sachdeva

Detailed Reviewer's Report

1. The hybrid methodology combining analytical modeling, simulation, and experimentation is well-conceived, but the novelty compared to prior studies on toroidal inductors should be emphasized more clearly.
2. The paper could strengthen its contribution by discussing the limitations of HFSS simulation at very high frequencies beyond 10 MHz.
3. Analytical derivations (Equations 1–9) are sound but should include boundary conditions and error margins for model validation.
4. The authors may include uncertainty analysis or error bars in Figures 10 and 11 to quantify experimental deviations.
5. The fabrication process of the 200 μm ferrite toroid is innovative; however, repeatability and mechanical stability tests could enhance reliability.
6. The discussion section should elaborate on how this hybrid approach can be generalized to other ferrite materials or inductor geometries.
7. The measurement section should specify environmental conditions (temperature, humidity) that could affect impedance analyzer accuracy.
8. The interpretation of inductance stability and resistance variation lacks detailed correlation with the material's magnetic losses or eddy current effects.
9. The conclusion should suggest how the derived models can be integrated into design tools or automated optimization processes.
10. Some equations lack numbering continuity and proper explanation of parameters; these should be reviewed for clarity.
11. Figures should be properly captioned with measurement units, scales, and legends (especially Figures 4–11).
12. Ensure consistent font size and alignment across tables and figures for better readability.
13. Justify all paragraphs and ensure uniform line spacing throughout the manuscript.
14. Reference formatting should follow the journal's style strictly (check punctuation, italics, and DOI inclusion).

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15. The introduction can be shortened by merging overlapping sentences about the motivation for high-frequency inductors.
16. Abstract could include numerical findings (e.g., specific frequency ranges or quantitative results) for clarity.
17. The "Methodology and Materials" section could benefit from subheadings for better structural flow.
18. The "Discussion" section should explicitly address how the proposed model improves upon previous works cited.
19. Add proper labeling and numbering for all figures to maintain sequence continuity.
20. Verify that all symbols in equations are defined when first introduced (e.g., r_0 , μ_r , γ).