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Ehrenborg, Casimir; Fridén, Jonas; Kristensson, Gerhard

2015

Total number of authors:
3

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Casimir Ehrenborg[1], **Jonas Fridén**[2], and **Gerhard Kristensson**[1]

[1] Department Electrical and Information Technology Lund University, Box 118, SE-221 00 Lund, Sweden,
e-mail: {casimir.ehrenborg, gerhard.kristensson}@eit.lth.se
[2] Ericsson Research, Ericsson AB, Gothenburg, Sweden,
email: jonas.friden@ericsson.com

The radiation center was introduced by Fridén and Kristensson in [1]. The need to define this parameter arose from the ambiguity of the phase center definition. The phase center is traditionally calculated by manually selecting a region in the main lobe of the radiation pattern, and minimizing the phase of the co-polarized field component. The choice of angular region to use is not obvious, and automatic calculation of beam width is hard to implement as a robust numerical algorithm. In contrast, the radiation center algorithm presented in [1] provides a unique point corresponding to the minimum of the squared angular momentum of the field.

This presentation investigates results from radiation center and phase center calculations for canonical antennas with frequencies varying inside their operational bands. The two methods are compared and evaluated against the expected phase center positions and the radiation center is investigated as a replacement parameter to the phase center. In [1] the radiation center was calculated using measured data with unknown errors in the absolute position of the antenna in the coordinate system. Therefore, in this study the concept is applied to simulated far-field patterns wherein the position of the antenna is known.

References

[1] J. Friden and G. Kristensson. Calculation of antenna radiation center using angular momentum. *Antennas and Propagation, IEEE Transactions on*, **61**(12), 5923–5930, Dec 2013.