

Interactive comment on “HF performance of electric field sensors aboard the RESONANCE satellite” by M. Sampl et al.

M. Sampl et al.

manfred.sampl@ieee.org

Received and published: 20 March 2015

1 What are the limits of applicability of the proposed method?

In the resonance regime of the respective antennas the predictions of the numerical calculations are not as precise as for frequency sufficiently away from the resonances. Furthermore, the plasma sheath is not included in the simulations. It is usually taken into account by suitable virtual impedances at the antenna feeds, cf. Gurnett et al. (2004) or Bale et al. (2008).

C327

2 What changes in the model will be taking into account the resonance phenomena?

Investigation of the antenna system close to resonances requires the model to be very accurate, in particular the antenna feed zones and the base capacitances have to be known precisely. With an accurate representation of the final geometry and receiver connection, a good approximation of the behaviour of the antenna characteristics around the resonances is possible.

3 Whether it is possible to apply this approach to low- and high-density magnetized plasma conditions such as on the Moon and Jupiter.

We have to consider two classes of effects: the plasma sheath effects and the bulk plasma influence. The former is implemented in the numerical simulations as mentioned above, the latter by a dielectric constant which differs from that in vacuum. However, the dielectric constant significantly changes along the trajectory since the plasma density is not constant. This requires an own study of the location-dependence of the plasma influence, which is beyond the scope of the present paper.

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., 4, 683, 2014.

C328