Abstracts

High-impedance electromagnetic surfaces with a forbidden frequency band (Comments and reply)

K. Kumar, D. Sievenpiper, Lijun Zhang, R.F. Jimenez Broas, N.G. Alexopolous and E. Yablonovitch. "High-impedance electromagnetic surfaces with a forbidden frequency band (Comments and reply)." 2001 Transactions on Microwave Theory and Techniques 49.1 (Jan. 2001 [T-MTT] (Mini-Special Issue on 2000 Radio-Frequency Integrated Circuits (RFIC) Conference and Automatic Radio Frequency Techniques Group (ARFTG) Meeting)): 228-228.

For the original paper see ibid., vol. 47, no. 11, p. 2059-2074 (1999). In the aforementioned paper the authors used a jar of water as a substitute for a human's head and then made a statement that the dielectric constant of water is similar to most human tissues. The commenter disagrees with this statement. In reply the authors also disagree with the comments, pointing out that while a jug of water and a human head may differ significantly in function, they differ little in form from the perspective of an electromagnetic field, and the substitution of one for the other offers simple insight into antenna performance near a high-dielectric lossy mass. They concede that the dielectric constant of water is roughly 1.5 times that of average human tissue. However, they believe that this neither invalidates their observation that antenna performance is significantly affected by the presence of a watery mass, nor their statement that one may expect similar degradation of performance near a human head.

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