Abstracts

Application of Ferrite to Electromagnetic Wave Absorber and its Characteristics (Jan. 1971 [T-MTT])

Y. Naito and K. Suetake. "Application of Ferrite to Electromagnetic Wave Absorber and its Characteristics (Jan. 1971 [T-MTT])." 1971 Transactions on Microwave Theory and Techniques 19.1 (Jan. 1971 [T-MTT]): 65-72.

An electromagnetic wave absorber utilizing ferrite or rubber ferrite composed of ferrite powder and rubber is described. In our investigation, the existence of a matching frequency f/sub m/ and a matching thickness t/sub m/ has been found. The terms f/sub m/ and t/sub m/ mean that the ferrite which is backed with a conducting plate can be a perfect absorber only under the conditions that the frequency of the incident wave is f/sub m/ and that the thickness of the ferrite is t/sub m/.Each ferrite has two matching frequencies f/sub m1/, f/sub m2/, (f/sub m1<f/sub m2/) and two matching thicknesses t/sub m1/, t/sub m2/, respectively. The f/sub m1/ of solid ferrite cannot be beyond 2 GHz. Through the development of rubber ferrite, the upper limit of f/sub m1/ can be overcome and f/sub m2/ ranges from 4 to 12 GHz. The matching thickness t/sub m1/ is a simple function of Snoek's value S and ranges from 4 to 10 mm regardless of f/sub m1/. The superiority of ferrite or rubber ferrite to lossy dielectric material as an absorber has been noticed in the frequency range under 7.5 GHz. The characteristics of matched load at 77°K was investigated with success.

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