

## Curved Metamaterial Absorber using Surface Impedance Gradient

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The cloaking research has been considerable attention for various applications such as stealth technology, thermal detector, and cloaking sensor. With the advent of metamaterial approaches, cloaking technology has been developed in order to improve bulky size and less-than-stellar performance. The thin height property of metamaterial is suitable in order to attach on the curved surface.

In this paper, we present a metamaterial gradient absorber for the curved surface which is composed of the split ring cross resonators, metallic plane and the dielectric substrate. On the flat surface, the direction of incident wave is vertical on all points of the surface. However, when the wave enters on the curved surface, the unit cells except the center of the absorber are corresponded oblique incidence. As a result of oblique incidence, the operating frequency is shift and necessary to adjust the frequency with controlling the wire length and gap distance. The unit cells array of metamaterial absorber for curved surface is divided into three groups whose impedances are optimized at each incident angle.

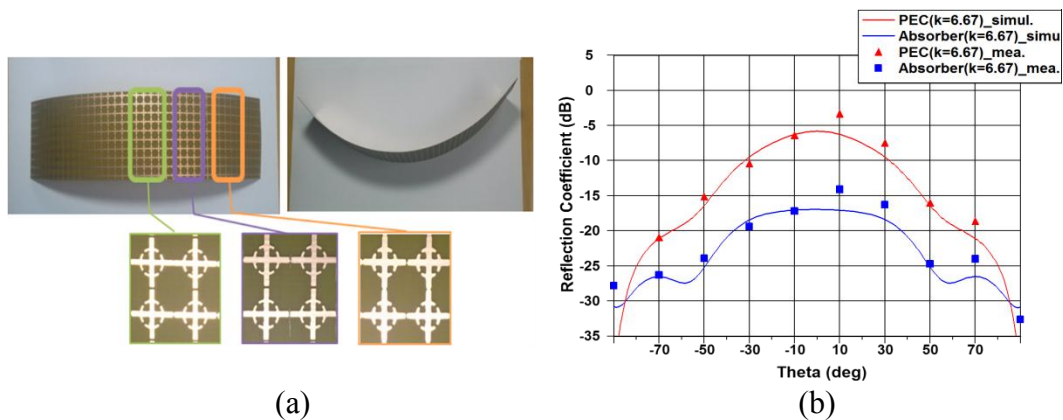


Fig. 1. (a) Picture of the proposed absorber prototype  
(b) Simulated and measured reflection coefficients of the proposed absorber and the metallic surface.

Fig. 1 shows the picture of the proposed absorber prototype and the reflection coefficients. The proposed absorber can achieve 11.4 dB of additional RCS reduction compared to the metal conductor.

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