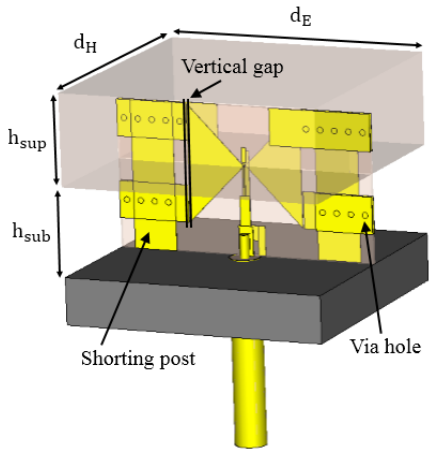

Fig. 2. Unit cell of proposed array.

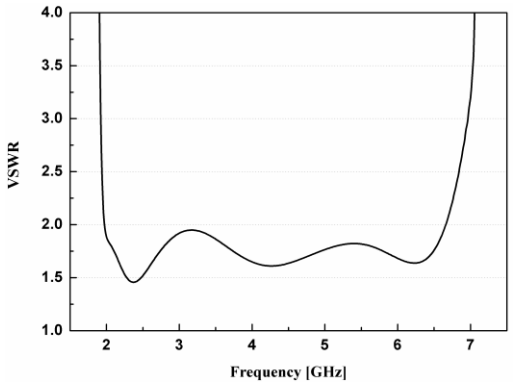

Fig. 3. VSWR of proposed TCA.

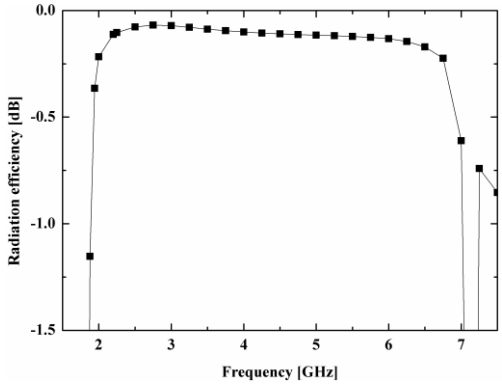

Fig. 4. Radiation efficiency of proposed TCA.

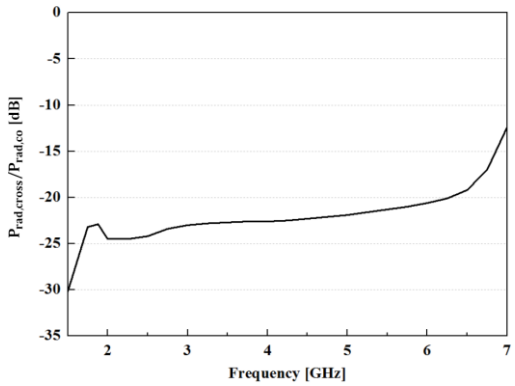

Fig. 5. Ratio of cross- to co-polarization radiated power from infinite unit cell of proposed array.

The VSWR of the proposed array antenna is shown in Fig. 3. As shown in Fig. 3, when the infinite × infinite array, the impedance bandwidth is 3.37:1. The radiation efficiency is presented in Fig. 4. The radiation loss is lower than 0.4 dB over the operation frequency band. In Fig. 5, the ratio of cross-polarization to co-polarization radiated power, according to the Ludwig's 3rd definition, is presented. With regard to the polarization ratio, the cross-polarization power is less -20 dB than co-polarization power. Thus the majority radiating power is co-polarized.

4. Conclusion

We proposed low-profile, broadband TCA antenna which consists of ground plane, vertically standing dipole array with vertical gap, and the superstrate. The height of the proposed array is 1/12.7 λ, and external feeding structure is not necessary. The impedance bandwidth is 3.37:1 with low radiation loss < 0.4dB and low cross polarized radiating power.

Acknowledgment

This research was supported by Center for Advanced Meta-Material (CAMM) funded by the Ministry of Science, ICT, and Future Planning as Global Frontier Project (CAMM-2014M3A6B3063708).

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