

## Experimental Verification of Wave Focusing Reflector for Radiative Type Wireless Power Transfer

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In a microwave-radiation-type wireless power transfer (WPT) technology, not only high power-transfer-efficiency but also low electromagnetic interference (EMI) are required. If the WPT technology is applied to a “line-of-sight (LOS)” state, then a high-gain antenna is effective for the two issues. However, if the technology is applied to a “non-line-of-sight (NLOS)”[1], then a high-gain antenna is not appropriate. Some obstacles between one or some transmitting and receiving points cause a NLOS state. In a NLOS state, a reflector is effective for realizing of high power-transfer-efficiency[2-4]. On the other hand, a reflector causes high EMI since electromagnetic wave is scattered by a reflector even if a high-gain antenna is used.

For overcoming of this issue, our research group proposes a wave focusing reflector[5]. A wave focusing reflector has three reflectors with each different size. Each reflector is composed of some metal patches on a PTFE-based substrate. In this paper, a wave focusing reflector operating at 2.4 GHz is fabricated and a performance of the reflector are experimentally verified by measuring of some radiation characteristics. Design parameters of a fabricated wave focusing reflector is shown in Fig.1. Designed focusing point is at  $(x, y, z) = (0 \text{ mm}, -430 \text{ mm}, +500 \text{ mm})$ . In an experiment, radiation pattern and magnitude and phase of an electric field distribution around the reflector are measured. Measured results show that the fabricated reflector has a focusing point near the designed focusing point.

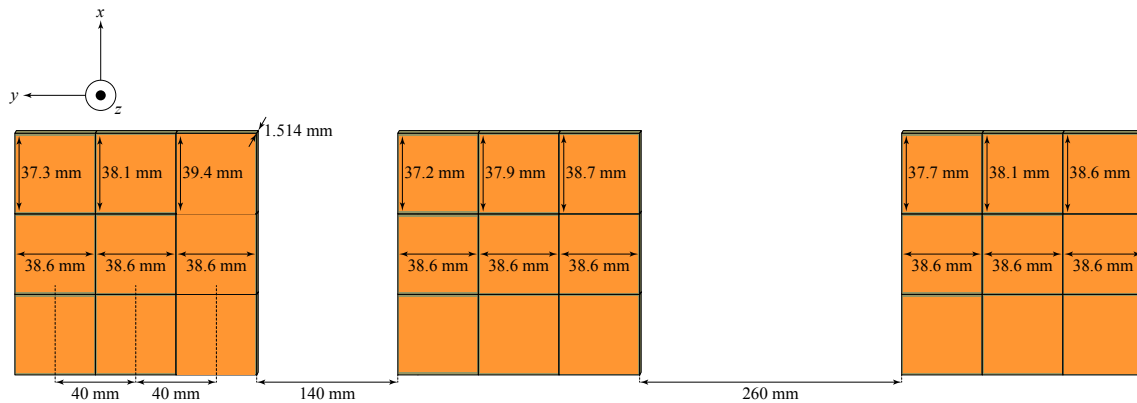


Figure 1. Design parameters of a fabricated wave focusing reflector

## References

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