

# The Linear Array 2x1 of Slot Monopoles for 6-8.5 GHz UWB Standard

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**The aim of the research:** design 2x1 linear array of slot monopoles for 6-8.5 GHz UWB Standard.

## SINGLE SLOT MONOPOLE DESIGN

**Substrate:** Taconic RF-35, thickness 0.762 mm, electrical permittivity  $\epsilon_r = 3.5$ , electrical loss  $\tan \delta = 0.0018$ . The multistep slot structure and microstrip transformer have been chosen for broadband matching. All the simulations were performed in Keysight ADS MOMENTUM environment.

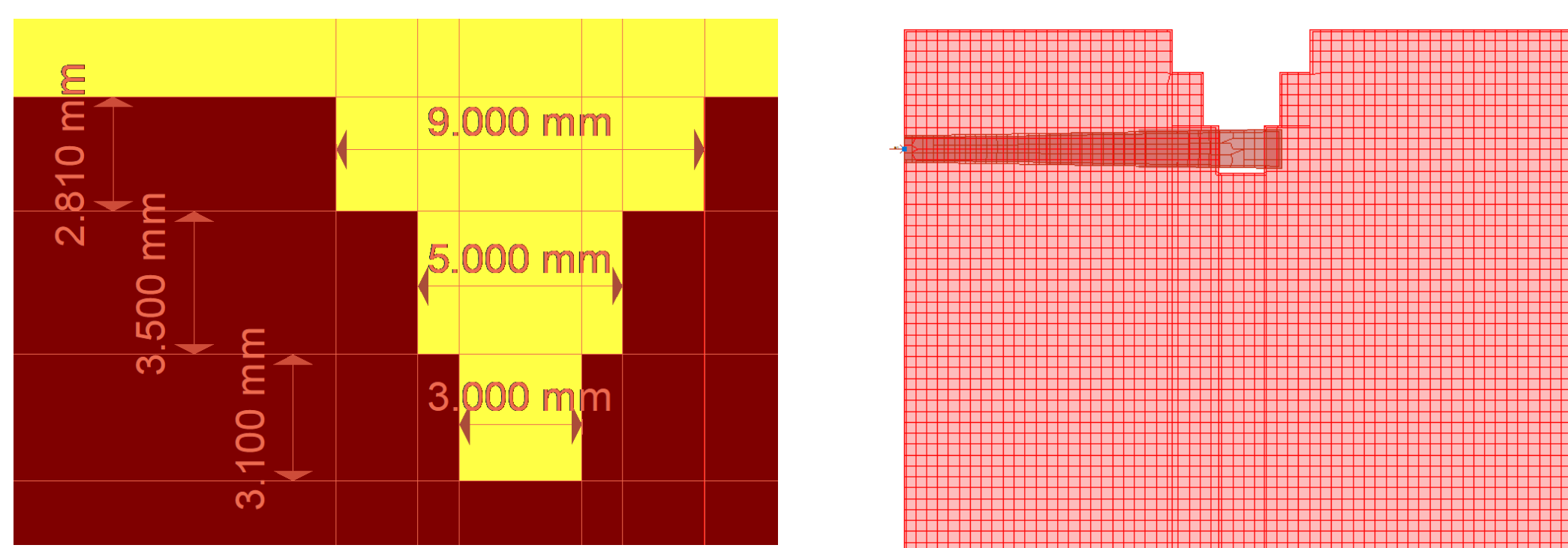


Fig. 1. Single slot monopole design: stepped slot (left), the layout of the monopole (right)

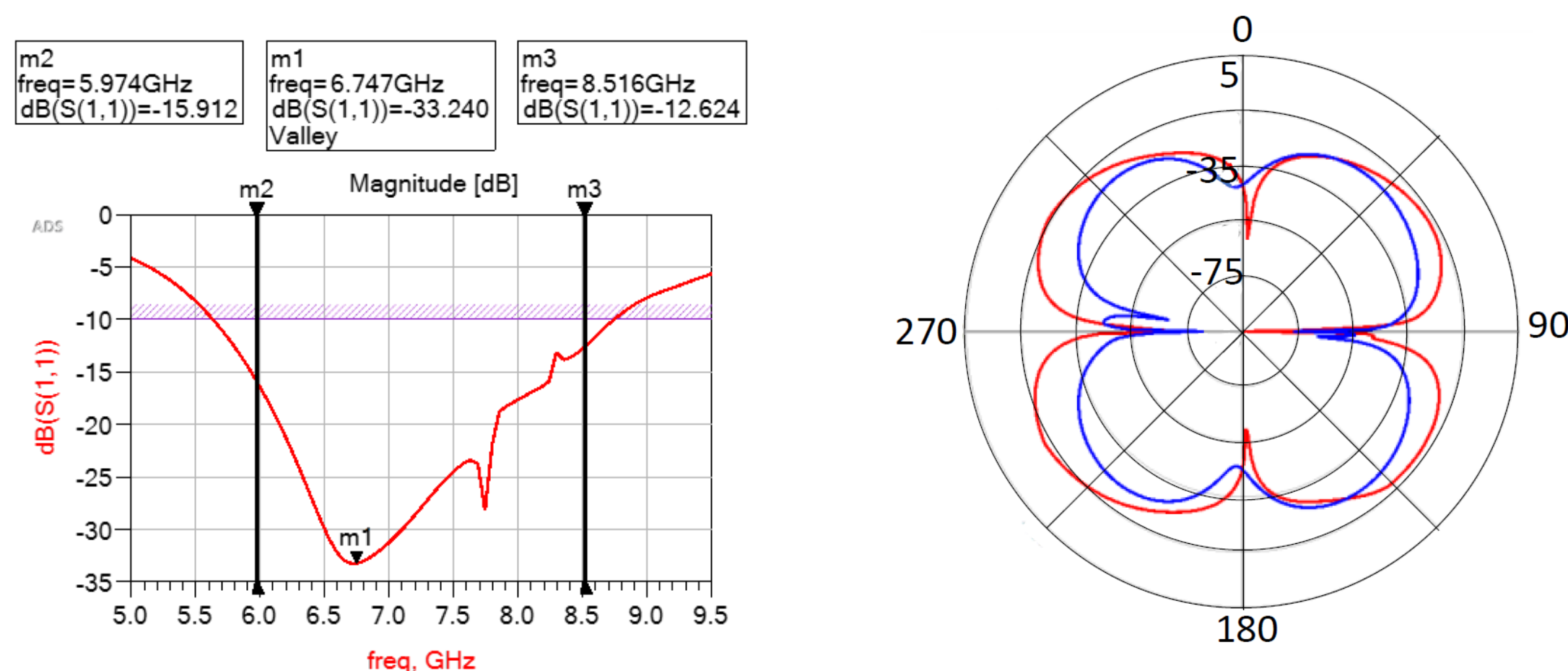


Fig. 2. The simulated parameters of the single monopole: the reflection coefficient (left), the radiation patterns for the frequency  $f = 7.25$  GHz (E-plane – red, H-plane – blue) (right)

## THE ARRAY OF 2x1 SLOT MONOPOLES DESIGN

Several feeding structures were simulated and the final one has been chosen for fabrication.

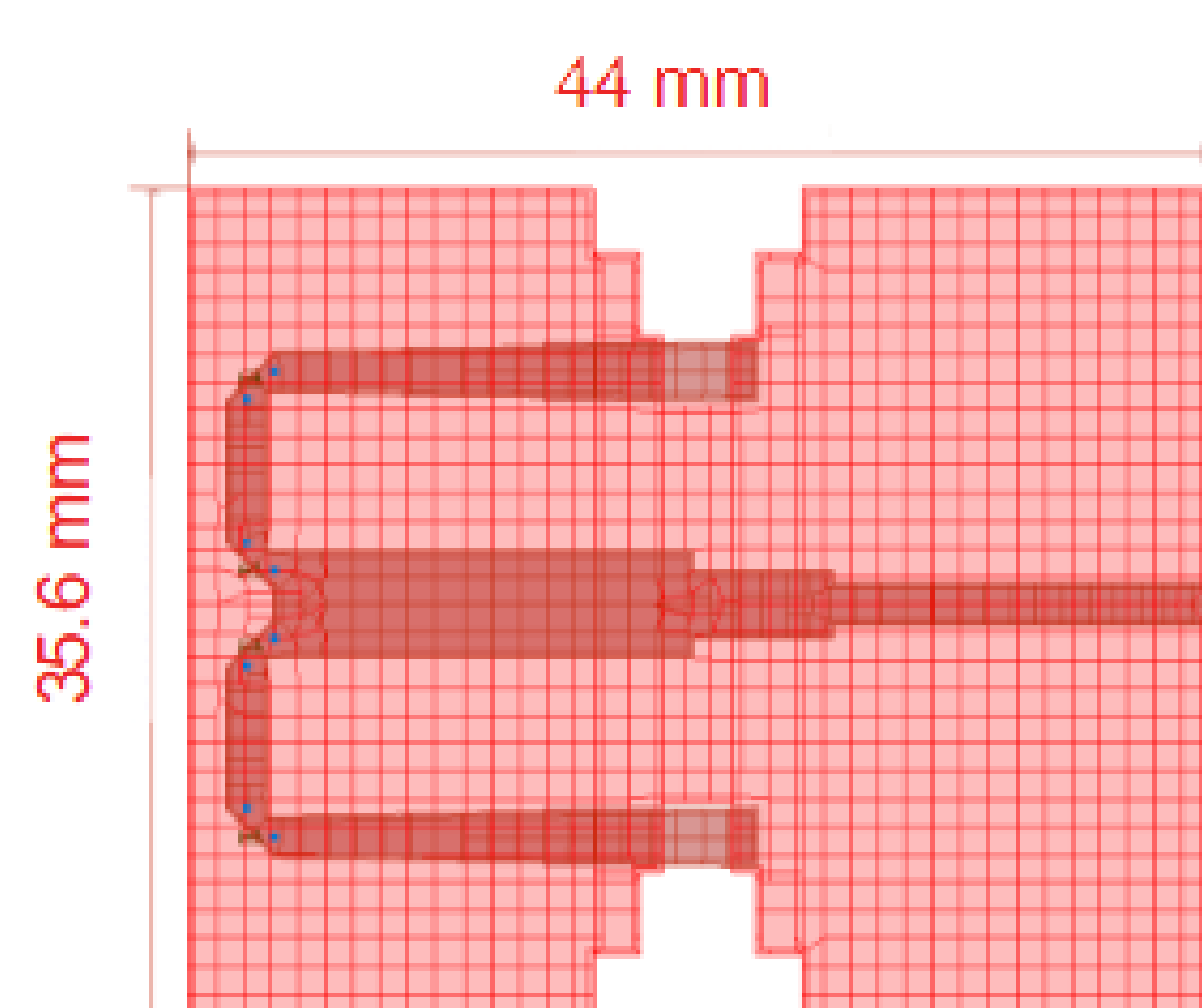


Fig. 3. The layout of the final design of 2x1 slot monopole array

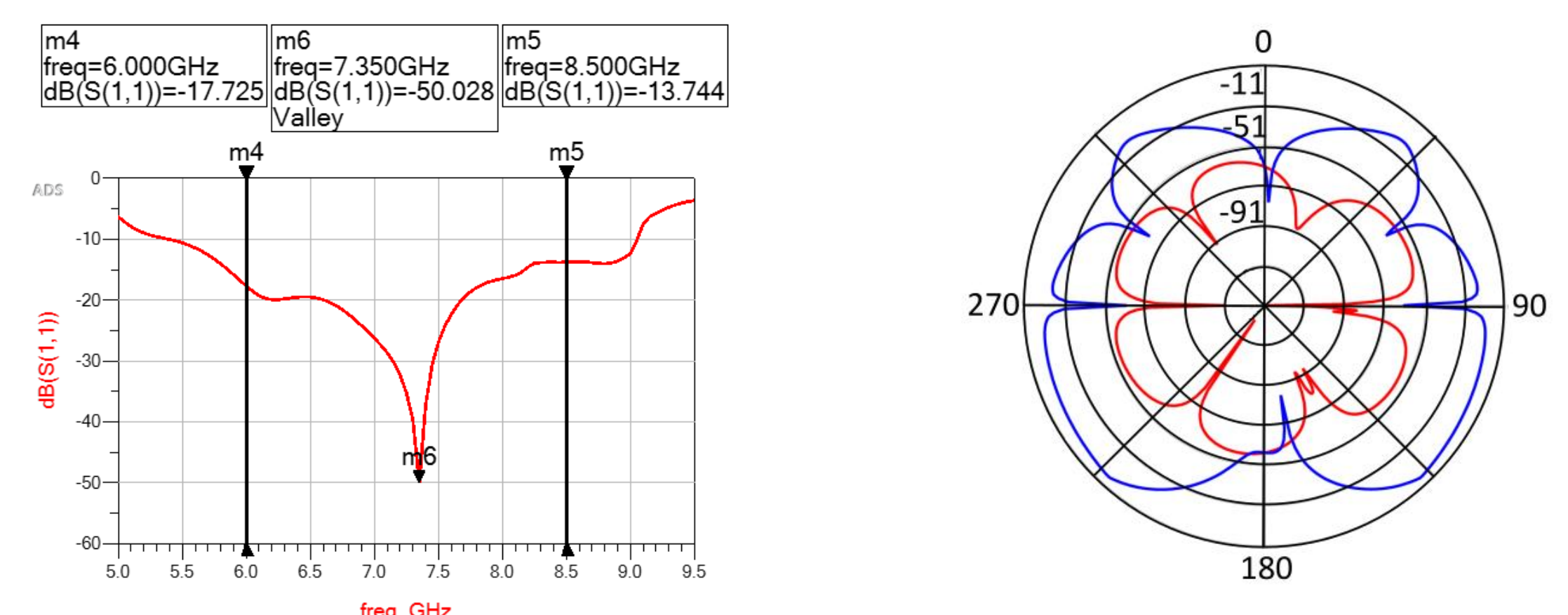


Fig. 4. The simulated parameters of the array: the reflection coefficient (left), the radiation patterns for frequency 7.25 GHz (E-plane – red, H-plane – blue) (right)

## RESULTS OF MEASUREMENTS

The single slot monopole and the array were fabricated and their parameters were measured.

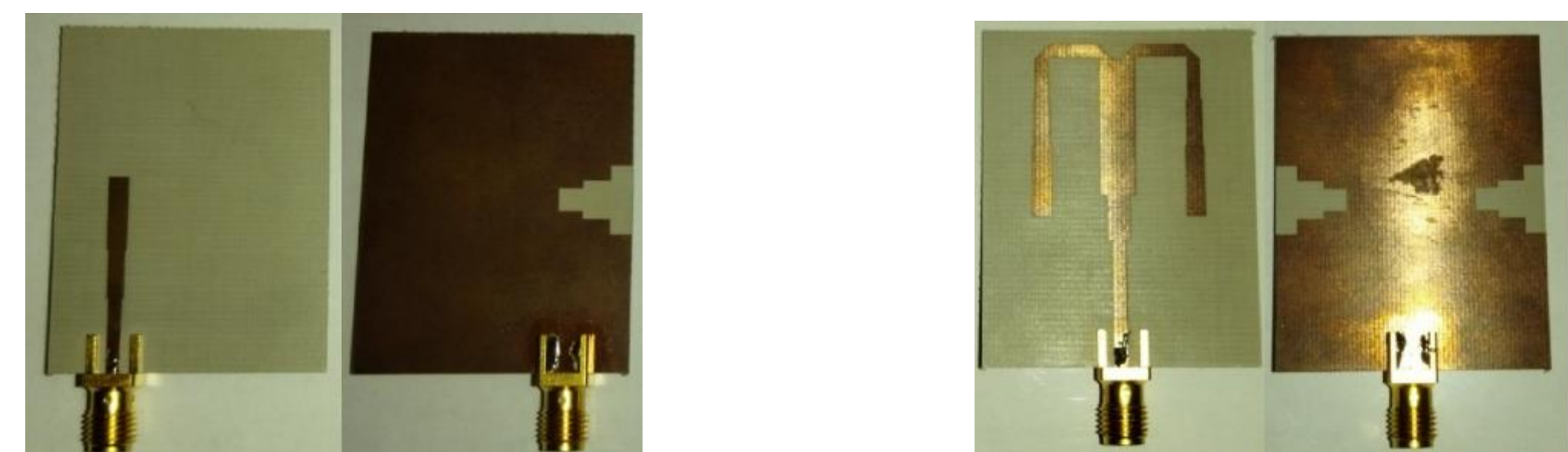


Fig. 5. The photographs of manufactured: the single slot monopole (left), 2x1 array of the slot monopoles (right)

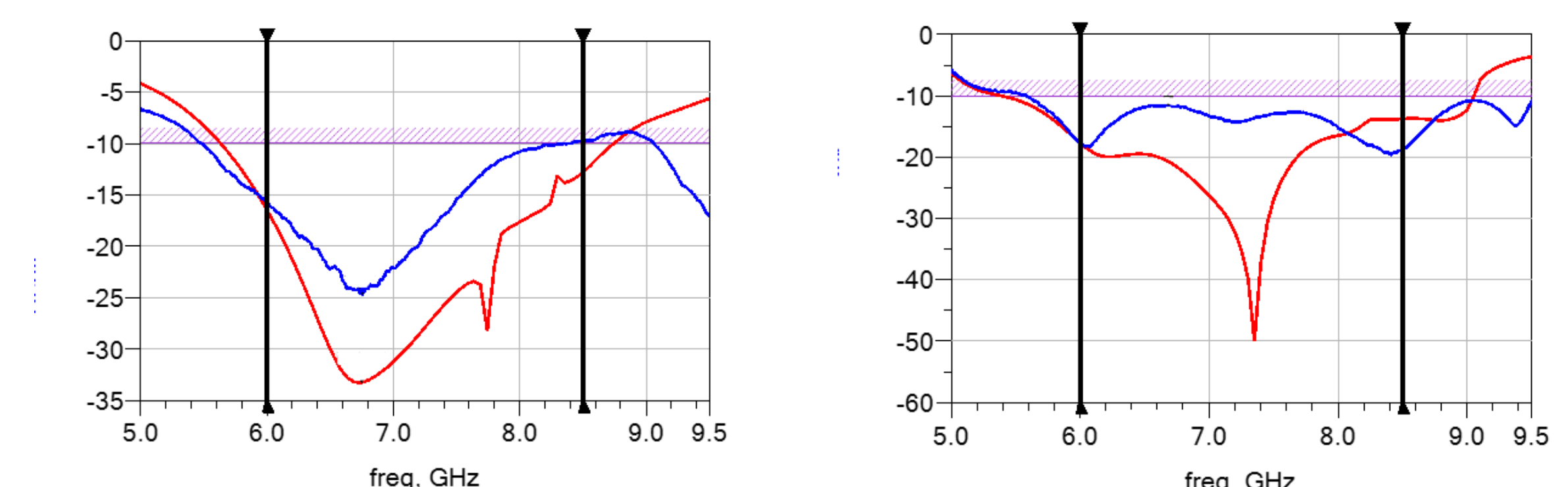


Fig. 6. The reflection coefficients: simulated (red line) and measured (blue line) for: the single slot monopole (left), 2x1 slot monopole array (right)

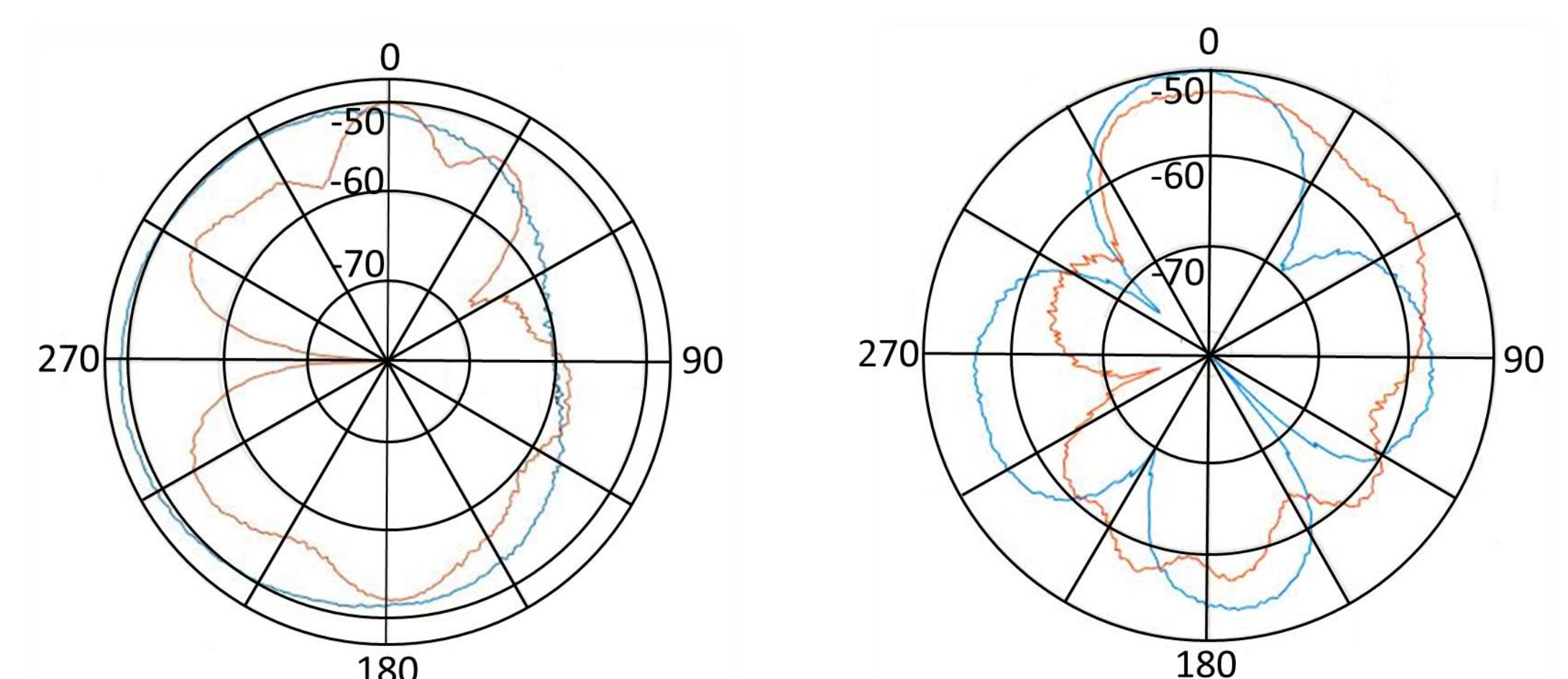


Fig. 7. The measured radiation patterns for the frequency  $f = 7.25$  GHz: E-plane (green line) and H-plane (brown line) for the single slot monopole (left), E-plane (brown line) and H-plane (green line) and for 2x1 slot monopole array (right)