Lab 1 Conventional Directional Coupler
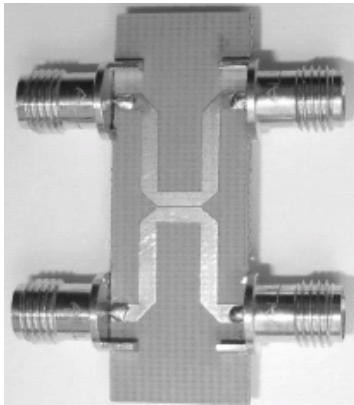

Figure: Test model of the directional coupler in the MURENA motion sensor [Sanna(2018)]

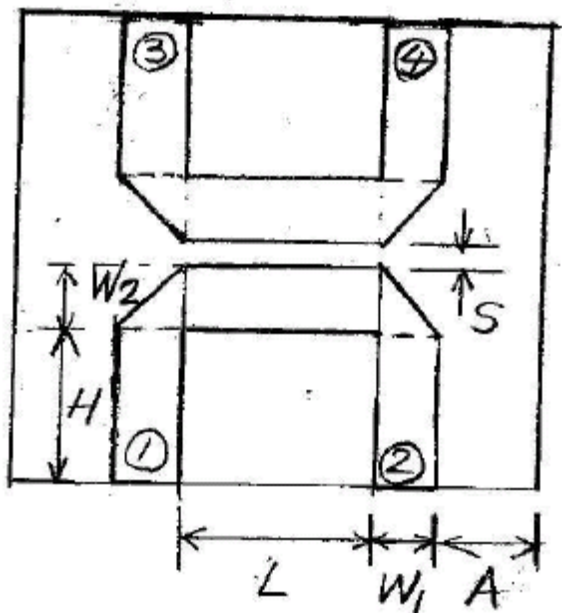
Figure: A 10.5-GHz direction coupler. Substrate: $\square= 3.5$, $\tan\square\ 0.003$, $h = 0.752$, $t = 0.035$; Coupler: $W_1 = 1.7$, $W_2 = 1.4$, $S = 0.2$, $L = 4.2$, $A = 2.2$, $H = 4.5$ (unit: mm). When the port 1 is the input, the ports 3 and 4 are the coupled and isolated ports respectively.

1. Make the structure

2. Simulate the structure with wave-port source.

3. Plot S11, S21, S31, S41 at 9-12 GHz.

4. Find the following values at 10.5 GHz.

    Insertion loss = (   ) dB

    Coupling = (   ) dB

    Directivity = (   ) dB