

# Student Contest 2024

Student Contest 2024 sponsored by the German Chapter of the IEEE EMC Society

**Start date:** 01.04.2024

**End date:** 30.11.2024

**Eligible participants:**

Students of Electrical Engineering and Information Technology or similar subjects with Bachelor degree or below

**Contact:**

Send the completed solution sheet via email to: Prof. Dr.-Ing. Matthias Hampe, m.hampe@ostfalia.de



Please download the CST model and the free CST Learning Edition using the QR codes on the left.



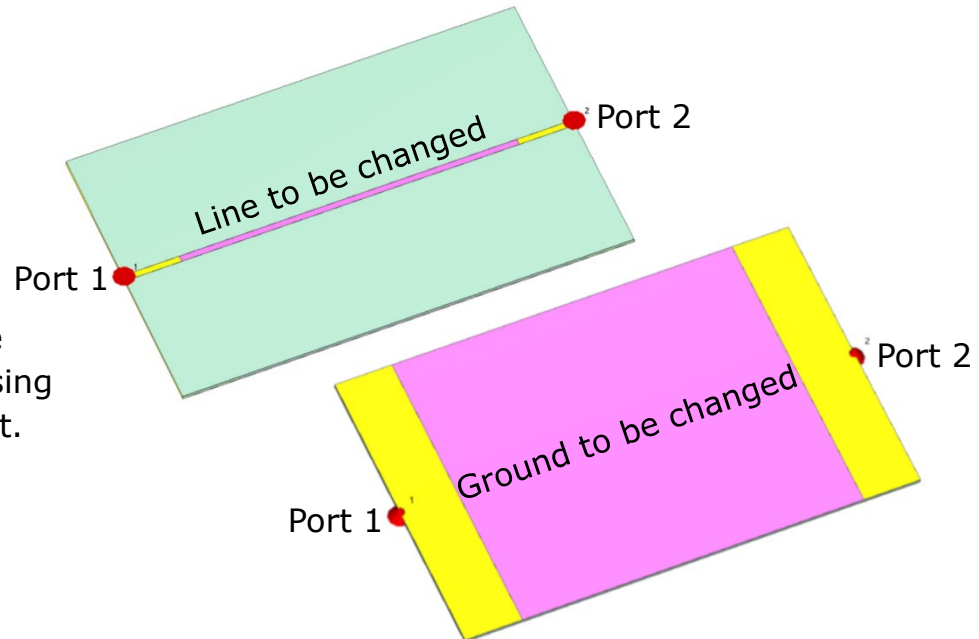
Alternatively click here:

[CST Model](#)

[CST Learning Edition](#)

## Maximize the radiated emissions!

The picture below shows a simple microstrip line. Radiated emissions are low with such an ideal arrangement. Add typical PCB layout errors in the middle part of the line so that the radiation is maximized.

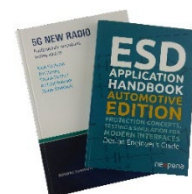


## Maximize the radiated emissions - task and rules:

1. Add or remove any conductor sections in the middle part of the PCB between the connection contacts of the ports so that the radiated power is maximized at 1 GHz. The addition of components or similar is prohibited. You may find helpful literature using the search term "PCB design guidelines for EMI and EMC".
2. At least half the input power must be transmitted from port 1 to port 2 at 1 GHz.
3. If necessary, simulation settings can be adjusted, in particular the mesh resolution.
4. Main evaluation criteria are the radiated power as well as the peak field strength at 1 GHz together with the power transmitted from port 1 to port 2. In addition, the elegance of the solution is assessed together with the justification for the changes made.

## What is there to win, besides fame and honor:

- 1st price: Winner certificate and EMC book voucher 200 €, IEEE EMC Society Membership 1 year.
- 2nd price: Certificate and EMC book voucher 100 €.
- 3rd price: Certificate and EMC book voucher 50 €.



# Solution Sheet 2024

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**Participants, up to 3 students:**

**Email address of contact person:**

**Power radiated at 1 GHz:**

**uW**

**Peak field strength from probes at 1 GHz:**

**mV/m**

**Transmission coefficient  $s_{21}$  at 1 GHz :**

**(greater than 0.707)**

**Why did you add or remove which conductor sections?**

**Why does your modified PCB emit particularly high power?**

**It is permissible to submit more detailed explanations in an additional PDF file.**

**Submit your CST simulation file along with your explanations.**