

UiO : University of Oslo

IN5230 - Mandatory Task 2

Teaching Assistant: Pål Gunnar Hogganvik (paalgh@ifi.uio.no)



Deadline for delivery

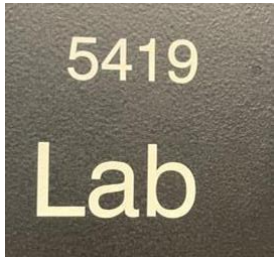
- October 23 @ 08:00.



Image is borrowed from Internet!

Electro-Magnetic Interferance (EMI)

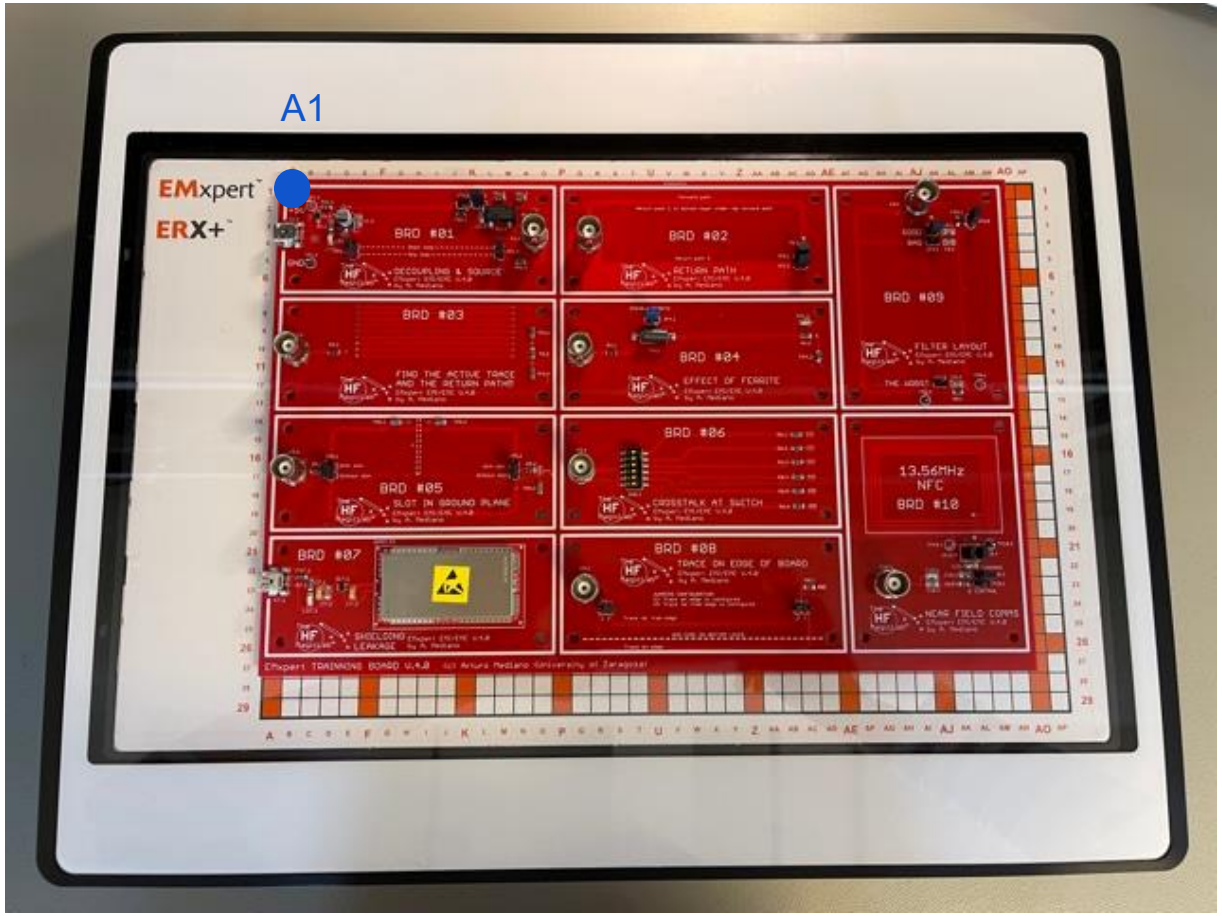
- Provided Materials
  - EMxpert Scanner
  - Demo Board
  - Laptop



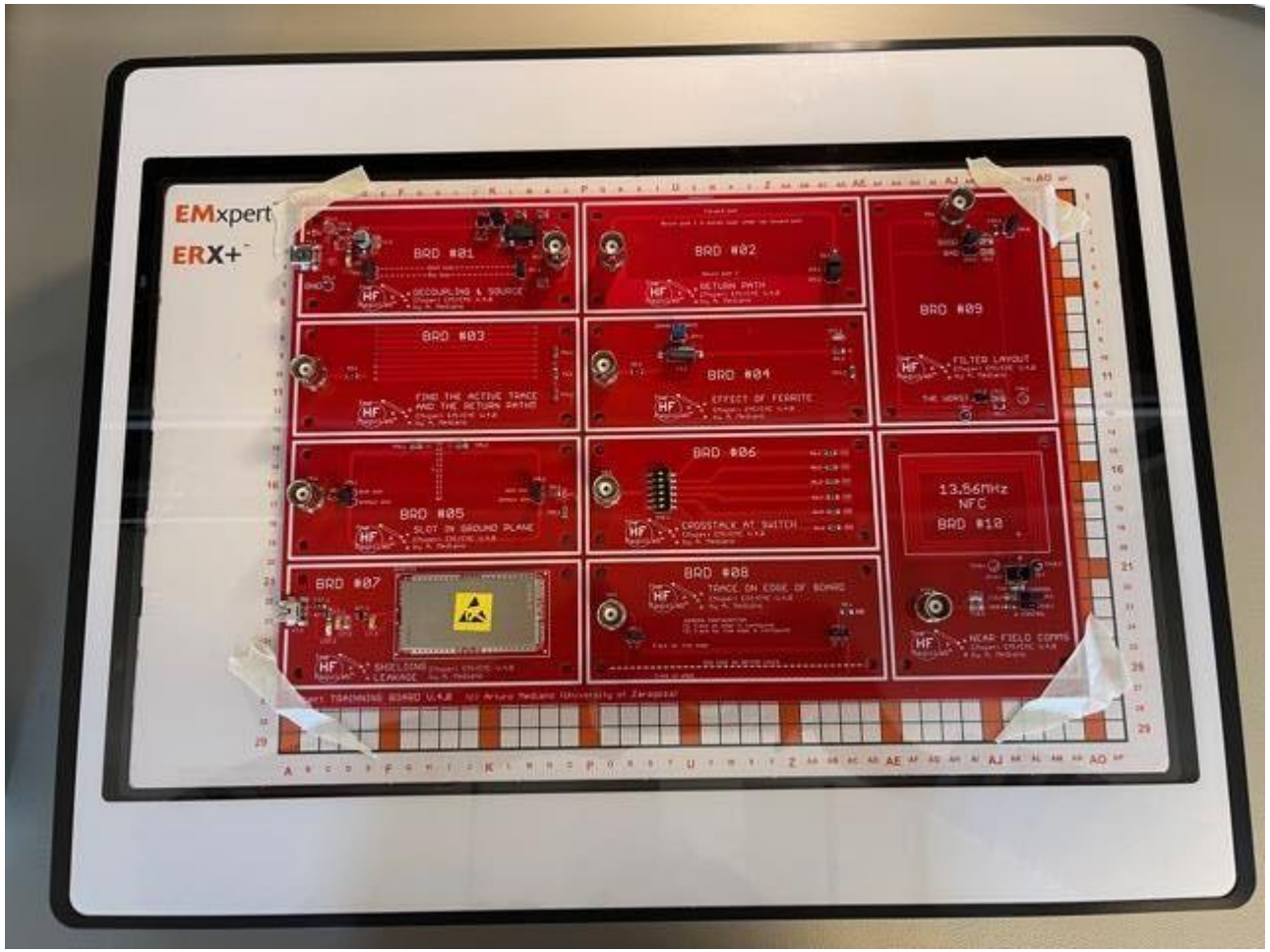
- You will need a USB stick to get data off the lab-laptop!

EMxpert Scanner





EMxpert Scanner



Paper tape for fixing the board on the scanner.

EMxpert Scanner





USB Charger for powering up the boards.

Laptop

- username: stoy, password: stoystoy
- C:\IN5230stud/2025
  - GroupN_user1_user2
- EMxpert64 Program

Scanning Type

- Spectral Scan
  - Scanning the PCB at some locations in a wide frequency range.
- Spatial Scan
  - Scanning a selection of locations at a certain frequency.

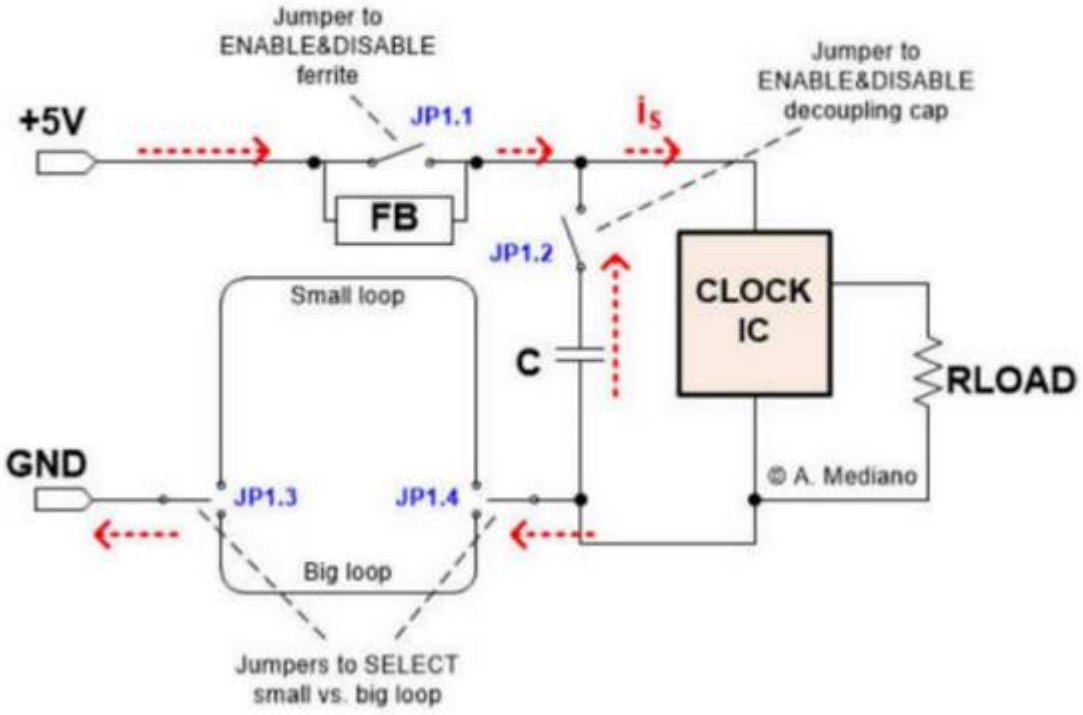
The boards in this exercise

- BRD#01
- BRD#06
- BRD#07
- BRD#10
- For PhD: BRD#08

BRD#01

- Protecting the power supply from EM field generated by the IC clock by:
  - Decoupling capacitor
  - Small loop
  - Ferrite Bead*

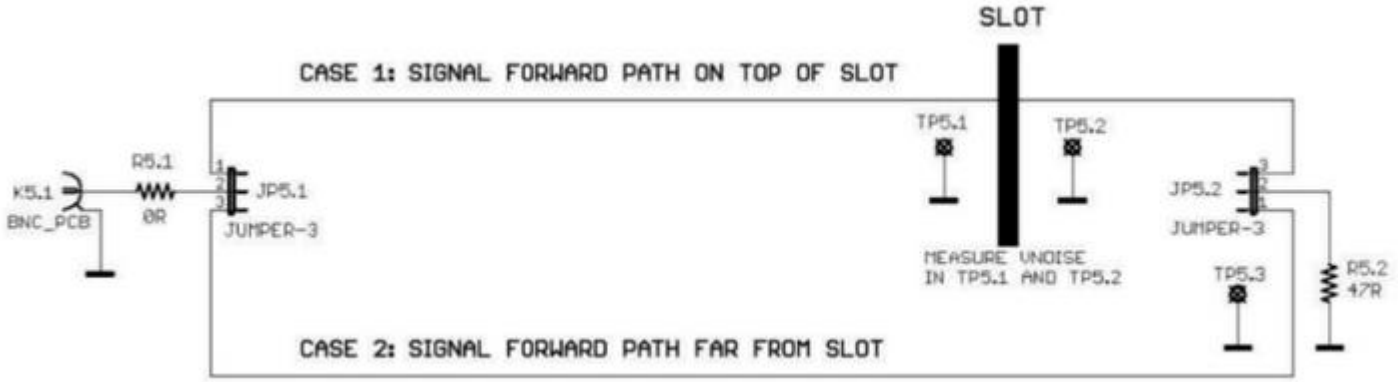




* FB suppresses high-frequency electronic noise in electronic circuits.

BRD#05

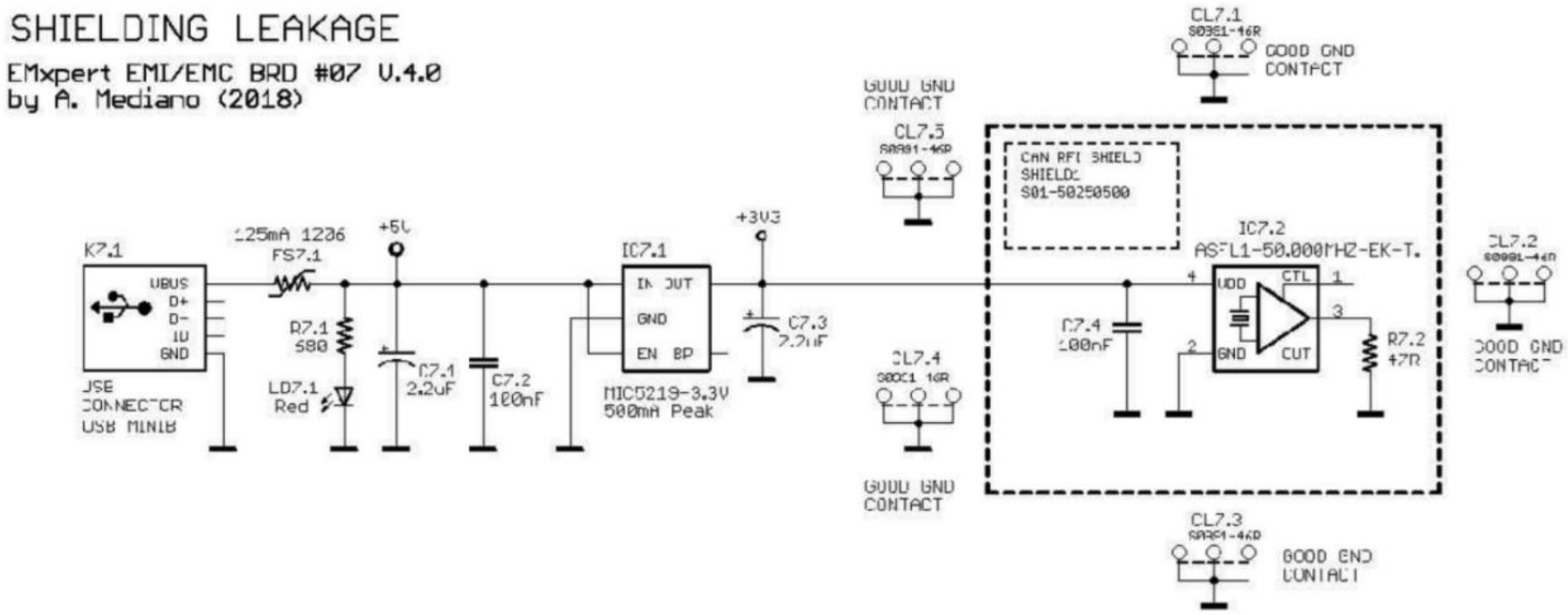
- Routing the signal over the slot on the ground plane is dangerous!



High frequency signal tries to return in the same direction as the forward path.

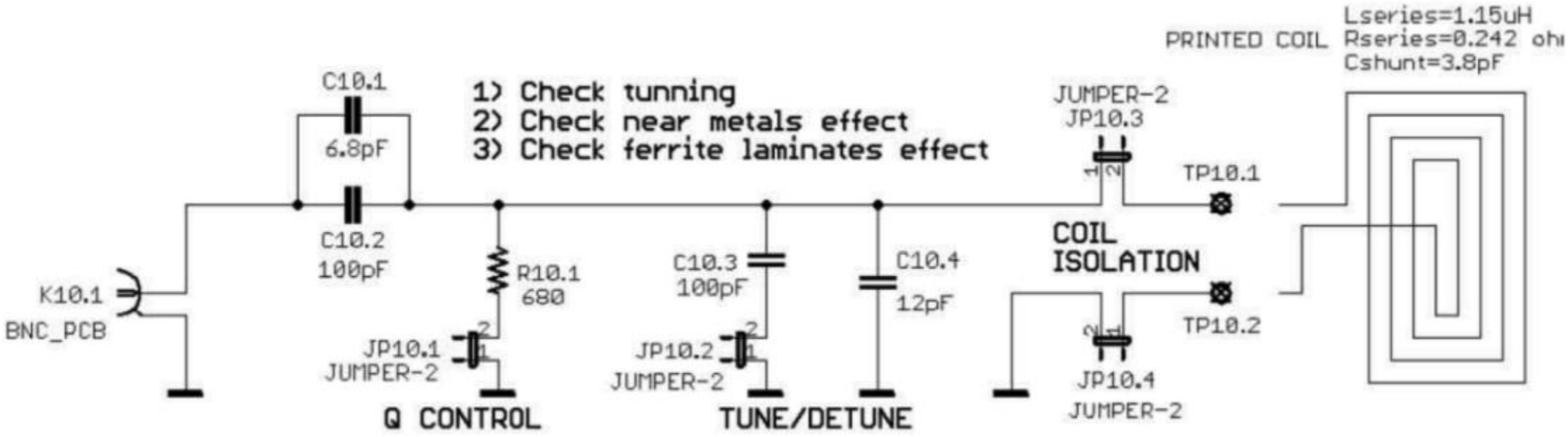
BRD#07

Shielding reduces the EMI!



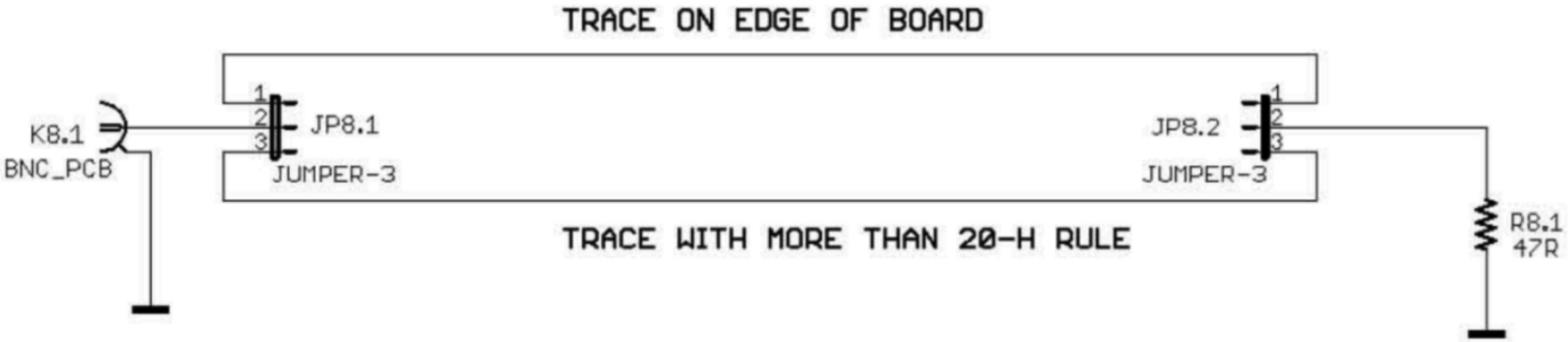
BRD#10

Testing the performance of the NFC antenna by EM scanner.



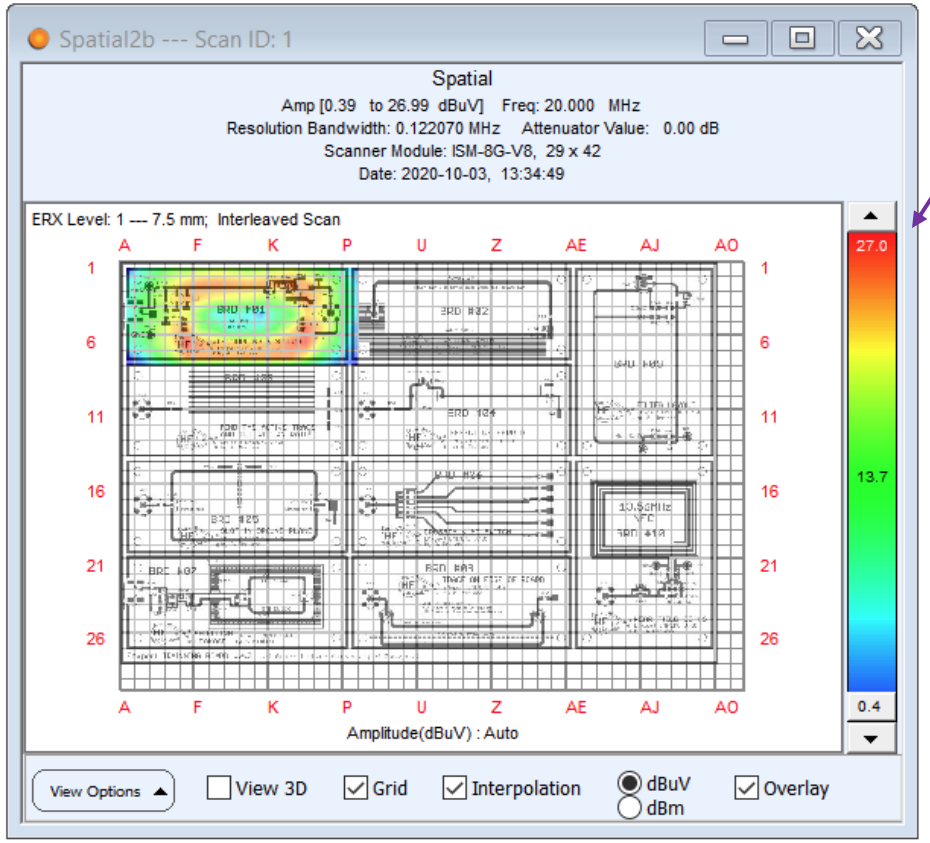
BRD#08, PhD

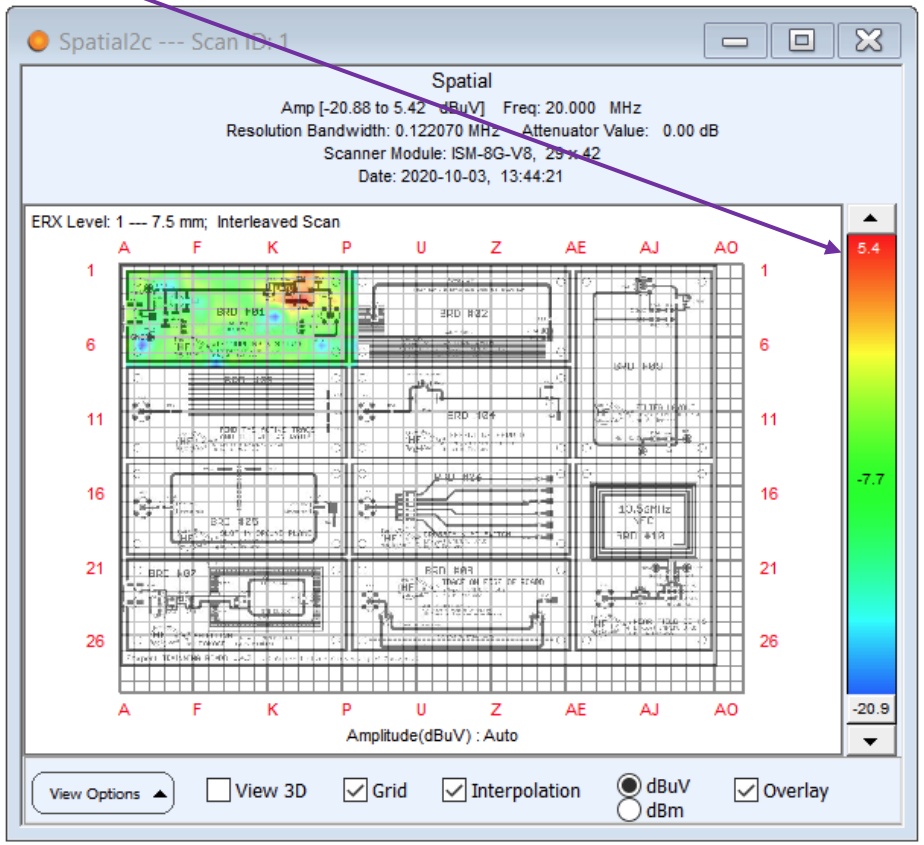
Critical signal near the edge of the board is not a good option causing fringing effect.



Scaling

Bad Scaling





Enjoy 😊