D-Lev Kit Coil / AFE Box Configurations

The following is for a horizontal slab type enclosure with minimum dimensions. The cardboard box being used here as a guide is 400mm wide, which is about as narrow as I would recommend. The pitch rod would normally be attached to the far right, the volume loop attached to the near left. The pitch box length is 100mm, and the volume box is a bit longer at 110mm.

Note that the “hot” end of the coil & box is that which has the banana jack, the “cold” end has the ribbon cable protruding. The coil itself inside is located opposite to that of the antenna wire banana jack and ribbon cable. You can see this with a flashlight if the boxes are 3D printed with translucent plastic.

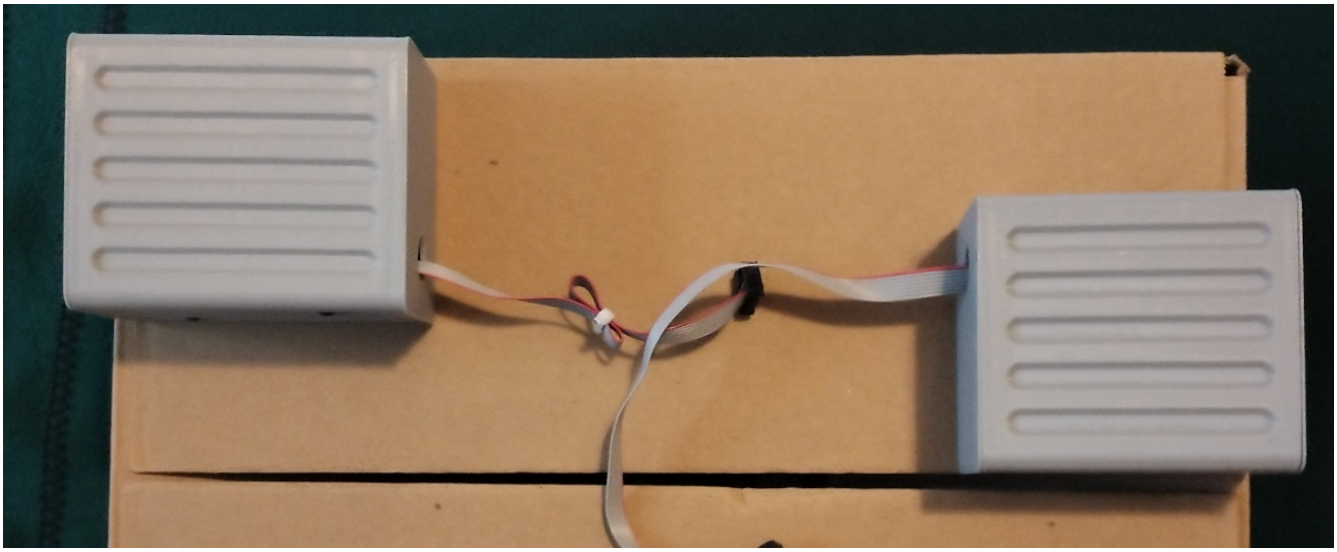

Figure 1. This configuration is fairly ideal because it places the hot ends of the coils as far away from each other as possible, and near to their respective antennas. The coil ends which are nearest to each other are the cold ends, which is also desirable. There is plenty of room for the antenna mounts inside, should they substantially protrude into the cabinet.

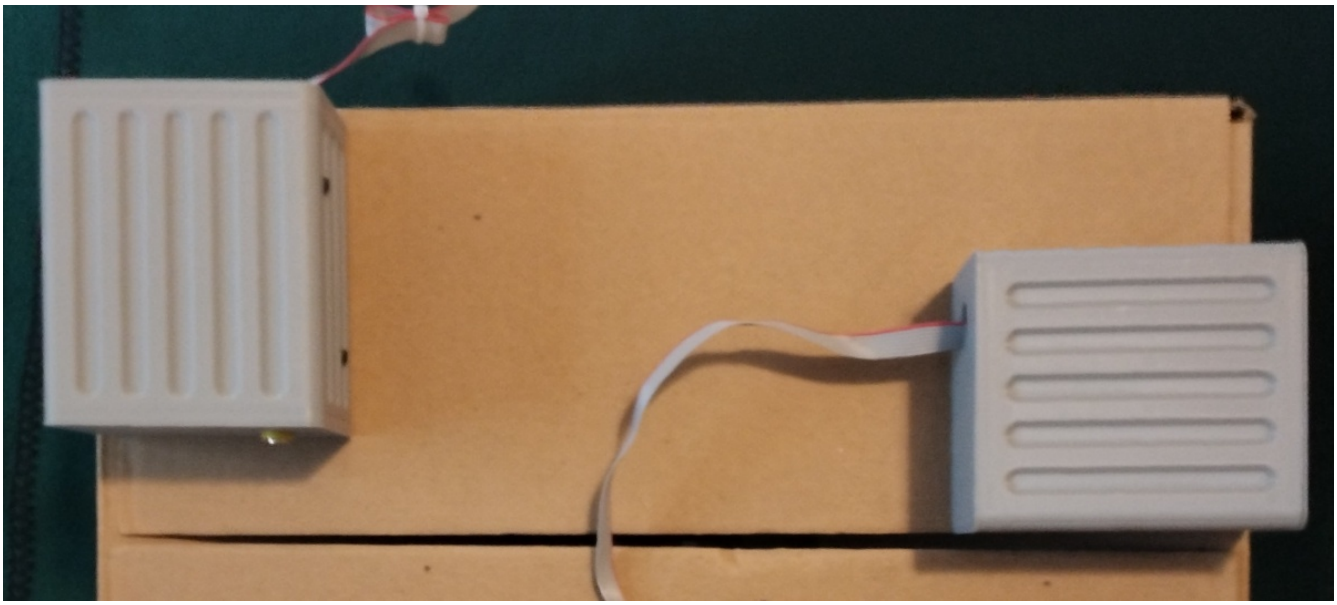

Figure 2. Here the volume box is rotated 90 degrees counterclockwise which might help to minimize magnetic interaction, and the hot end of the volume coil is then positioned nearest to the volume antenna. Volume loop antenna mount clearance could be a problem.

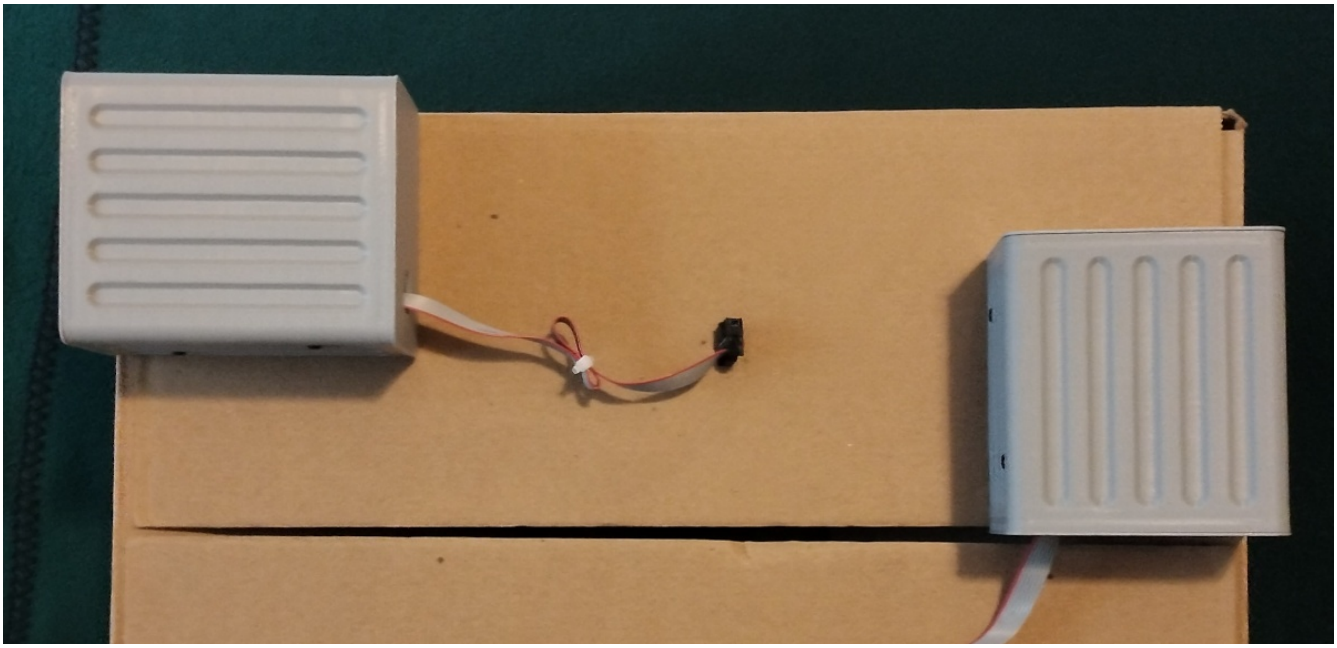

Figure 3. Here the pitch box is rotated 90 degrees counterclockwise which might also help to minimize magnetic interaction. The hot end of the pitch coil is then positioned nearest to the pitch antenna.

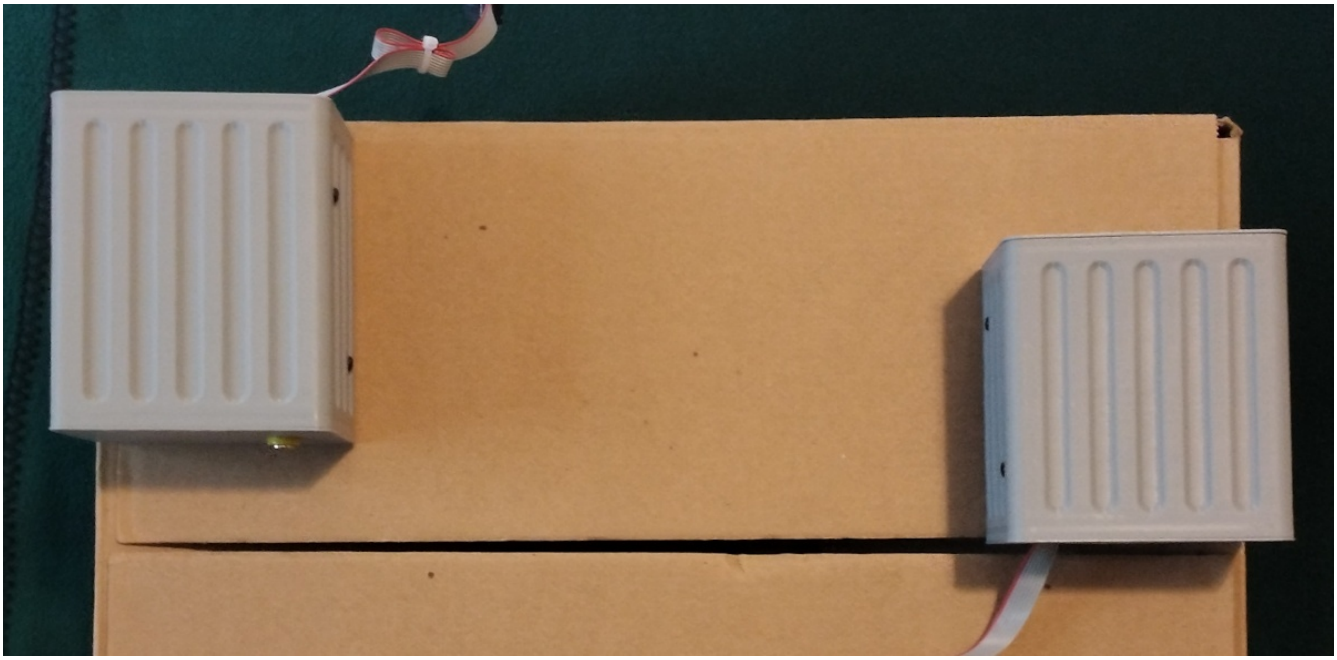

Figure 4. Here both boxes are rotated 90 degrees counterclockwise which places both of the coils inside the boxes as far apart as possible in terms of bulk volume, and the hot ends of both coils are positioned nearest to their respective antennas. But the volume loop antenna mount clearance could be troublesome.

The coils are air-core, so the magnetic field isn't concentrated as much as a ferrite core would provide, hence the need to keep them separated. The electric fields can also interact, so we keep the antennas separated as well. These interactions are inverse square, so there are diminishing returns once the interaction has been sufficiently minimized.

One should take care to minimize digital interference as well by keeping all of the ribbon cables separate from each other, including that of the LED tuner. The pitch box can be

located fairly close to the tuner without too much interference, though you may want to orient the box so that the coil inside is farthest from the tuner.

If the enclosure has a small lid with a smaller volume than the bottom, consider using the enclosure upside down and mounting everything in the larger volume side. This will locate all kit modules and antenna mounts in the now top of the box, with the bottom relatively free of mounts and wires and such, which can help keep strain off the cables when the enclosure is opened, and help to keep the cables neat and tidy when it is closed.

Consider using a boom microphone stand to give the slab an angle, which can improve the viewing of the LCD and tuner, as well as impart some height differential between the volume and pitch antennas. Mount the microphone flange somewhat nearer to the back of the enclosure so that gravity will tend to keep it level when angled.