

Test installation NEMP RS 105: Requirement concerning the ground plane

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1. Introduction

The ground plane of the antenna must be made with a good conductive material, ideally made of one piece of copper sheet. In many situations, especially outside, the full metal sheet must be replaced by galvanised iron sheets or by a metallic mesh. This document establishes the general requirement concerning the construction of the ground plane, especially those made with a metallic mesh.

2. Material

The material must have a good conductivity, especially on the surface. Therefore copper and brass is ideal. Due to weather conditions, it is usually better to use a steel mesh coated with zinc or a steel galvanised mesh.

3. Dimensions

The aperture of the mesh must be as small as possible. We recommend less than 20 mm. The diameter of the wire must be 1.5 mm or more.

4. Type of the mesh

As a rule, the wires must be connected in each crossing, by a soldering or by the galvanisation if any. The RF current cannot correctly flow if the crossings are not correctly connected (by a solder).



Figure 1 : mesh without solder (bad).



Figure 2 : chicken wire without solder (bad).

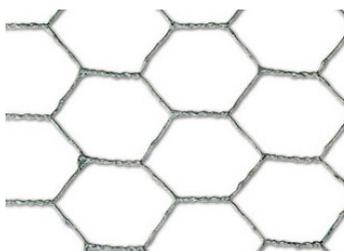


Figure 3 : chicken wire with solder (good).



5. Shape of the mesh

The current better flows if it directly flows without any curves. Therefore a square mesh is better than a hexagonal one.

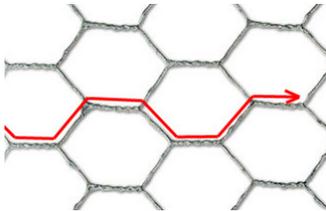


Figure 4 : hexagonal wire with solder.

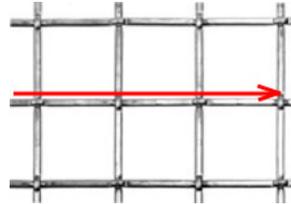


Figure 5 : square mesh with solder.

6. Number and type of connexions

Because the full ground plane cannot be made of only one piece, each piece of mesh must be correctly connected with the others. We recommend a good and reliable connexion every 10 cm. The next pictures give an example of tools which can be used to connect the wires and the preferred process (here: a tool used in the reinforced concrete construction). The overlay of the sheets of mesh must be minimum 10 cm.

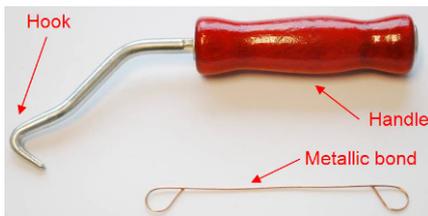


Figure 6 : tools and material for the bonding.

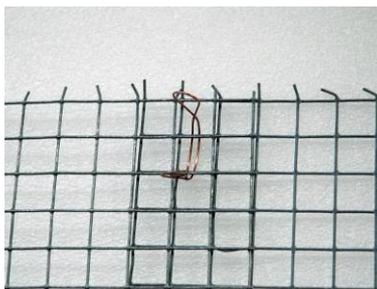


Figure 7 : installation of the bond.



Figure 8 : rotation of the bond.

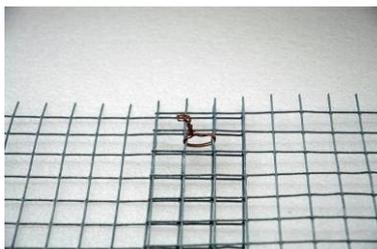


Figure 9 : bond in place.

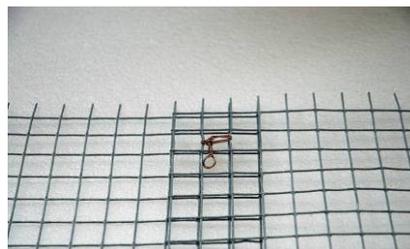


Figure 10 : bond bend to the bottom