





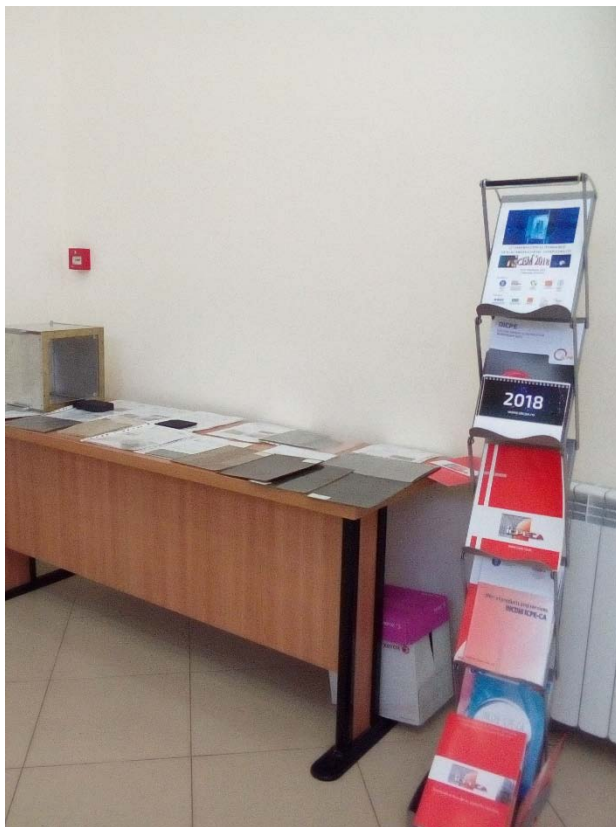














11th International Workshop on Electromagnetic Compatibility
Targoviste, Romania, 19-21 September 2018

Study of the electromagnetic shields

Ionut Balan, Cristian Moran, Alexandru Eros Patroi
National Institute for Research and Development in Electrical Engineering ICPE-CA, Bucharest-3, 030138, Romania

In this paper we present some composite materials, that can be used for electromagnetic shielding. It is known that the materials used for shielding are made of ferromagnetic and non-ferrous shields. In the case of non-ferromagnetic shields, their shielding effectiveness, they can be considered electromagnetic shielding, given as the metallic reinforcing the reinforcement, the reinforcing iron of the buildings.

In this experiment we study a composite samples with the size of 210 x 280 mm and thickness between 2-4 mm and 3 mm. The samples contain powders of metals (Fe, FeSi, Ni, Ag, Cu) in different granulations, mixed with Silicon rubber and 1 layer of carbon fabric tissue.

Table 1
The attenuation values between 1-18 GHz

Sample	Material	Thickness (mm)	Attenuation (dB)
1	Fe	2	10
2	FeSi	2	12
3	Ni	2	15
4	Ag	2	18
5	Cu	2	20
6	Fe	3	15
7	FeSi	3	18
8	Ni	3	22
9	Ag	3	25
10	Cu	3	28
11	Fe	4	20
12	FeSi	4	23
13	Ni	4	27
14	Ag	4	30
15	Cu	4	33

To determine the attenuation, we used the following equipment: signal generator, Spectrum analyzer and also, attenuator in a shielded box. The obtained attenuation values versus frequency are shown in Figure 1 and 2.

From the seen that sample 1 show a good attenuation in the frequency range 3-10 GHz with a maximum value of 47 dB. The other 3 samples show a good attenuation in the frequency range 4-17 GHz.

