

**RFI Test
Compressors Monitoring System
Luis Quintero
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1 Equipment list

Equipment:

- Compressors Monitoring System - CMS

Spectrum Analyzer:

- Agilent E4445A Spectrum Analyzer, 601 channels, pre-amp off.

ETS Model 7405 probes[1]:

- Magnetic field, No. 902, Res. Freq. $1.5GHz$, H/E Rejection 29dB.
- Electric field, No. 904, Res. Freq. $> 1GHz$, H/E Rejection 30dB.

2 Procedure and Frequency Ranges

This test was done after replacing the metallic contact between the CMS box and its cover. The Ethernet switch was not shielded inside the box.

The Acopian 24WB210 - 24VDC Mini encapsulated switching regulated power supply (see Figure 1) was shielded using adhesive metallic tape (see Figure 2).



Figure 1: Acopian 24WB210.

The CMS was tested with the cover closed and bands 18-27 in Table 1. All the spans were fixed to 250MHz (416kHz channel bandwidth - BW) for this test.

3 Results

Please, check the results in these files:

- Probe No. 902 - closed box:
20110415_cms.closed.902.pdf
- Probe No. 904 - closed box:
20110415_cms.closed.904.pdf

Figures 3 and 4 show the results before (bands 13-17, 14 Apr 2011) and after the box reinforcement and power supply shielding.



Figure 2: Shielded Acopian 24WB210.

Table 1: Frequency Ranges, CF=Center Freq.

Band No.	CF (GHz)	BW (GHz)
13	0.2500	0.5000
14	0.7500	0.5000
15	1.2500	0.5000
16	1.7500	0.5000
17	2.2500	0.5000
18	0.1250	0.2500
19	0.3750	0.2500
20	0.6250	0.2500
21	0.8750	0.2500
22	1.1250	0.2500
23	1.3750	0.2500
24	1.6250	0.2500
25	1.8750	0.2500
26	2.1250	0.2500
27	2.3750	0.2500

4 Conclusions

- The magnetic field interference was reduced considerably after the shielding, but the electric field maintain its behavior/intensity.
- The electric field looks stronger after the shielding, but the channel bandwidth in this is half the size of the test before.

References

[1] ETS LINDGREN, *ETS Near-Field Probe Set Model 7405*.

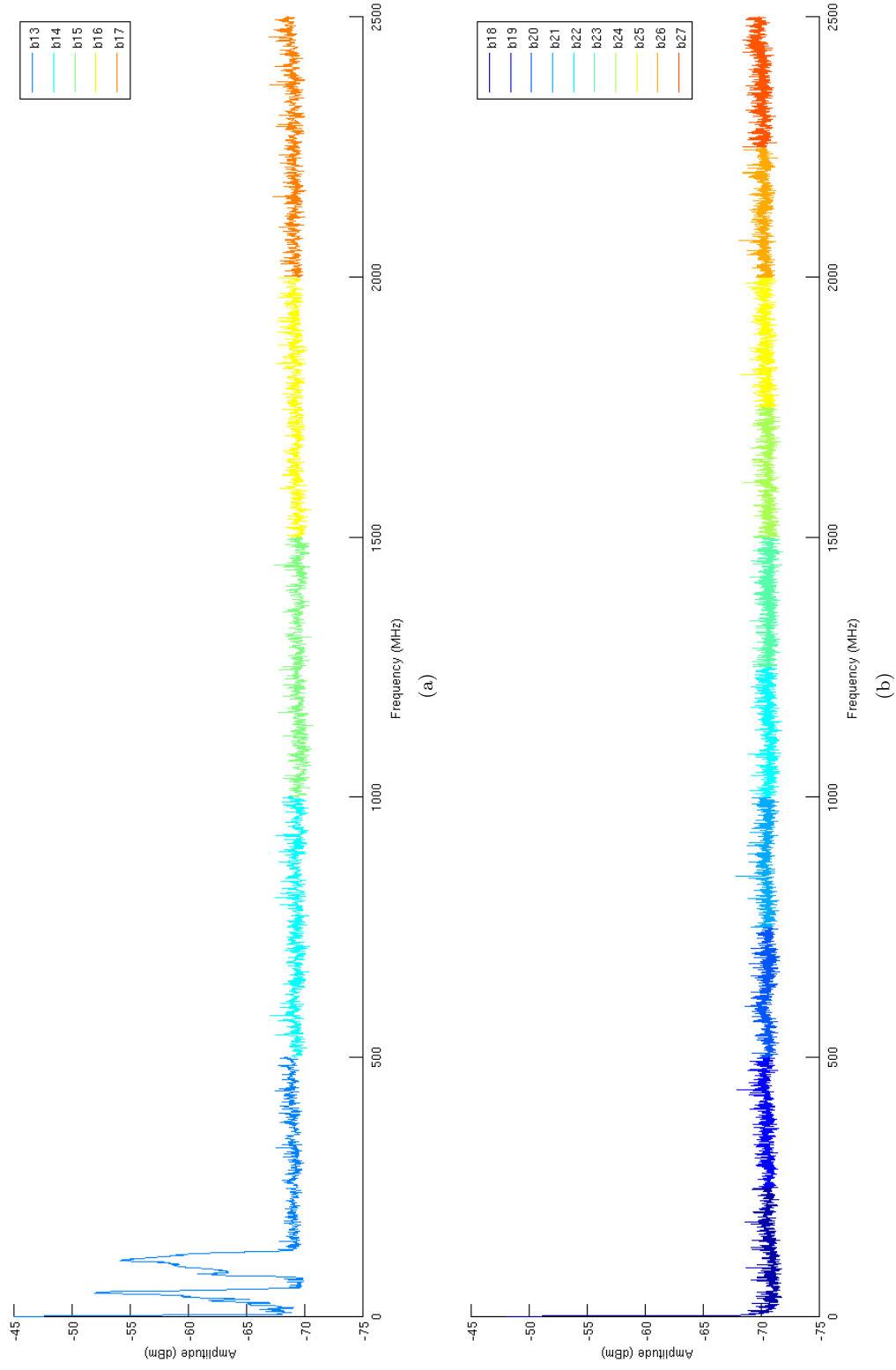


Figure 3: Magnetic Field, (a) Before shielding, (b) After shielding.

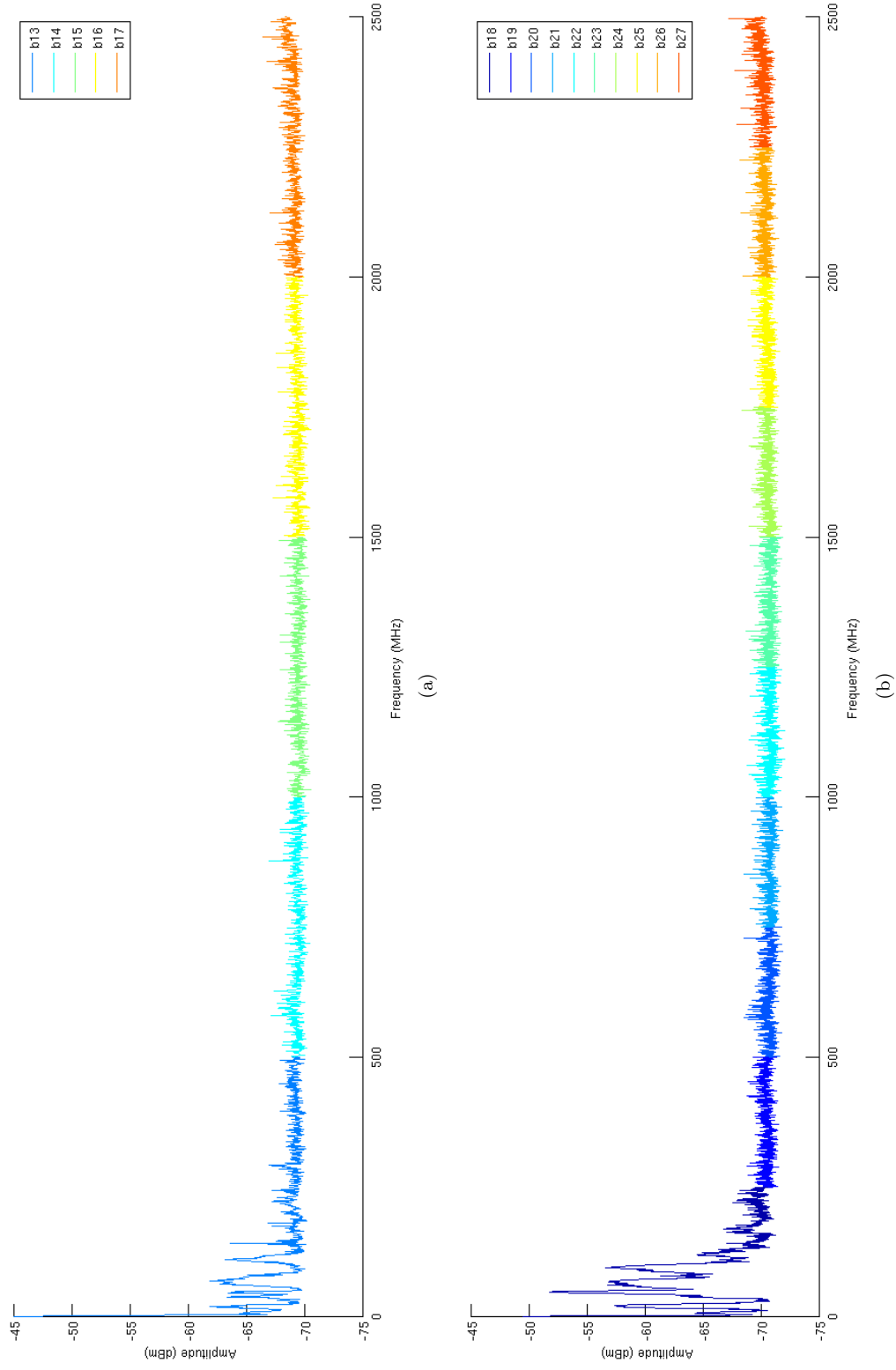


Figure 4: Electric Field, (a) Before shielding, (b) After shielding.