

# Study of the CSC noise at the disks

## Shield for CFEB input cables Proposal

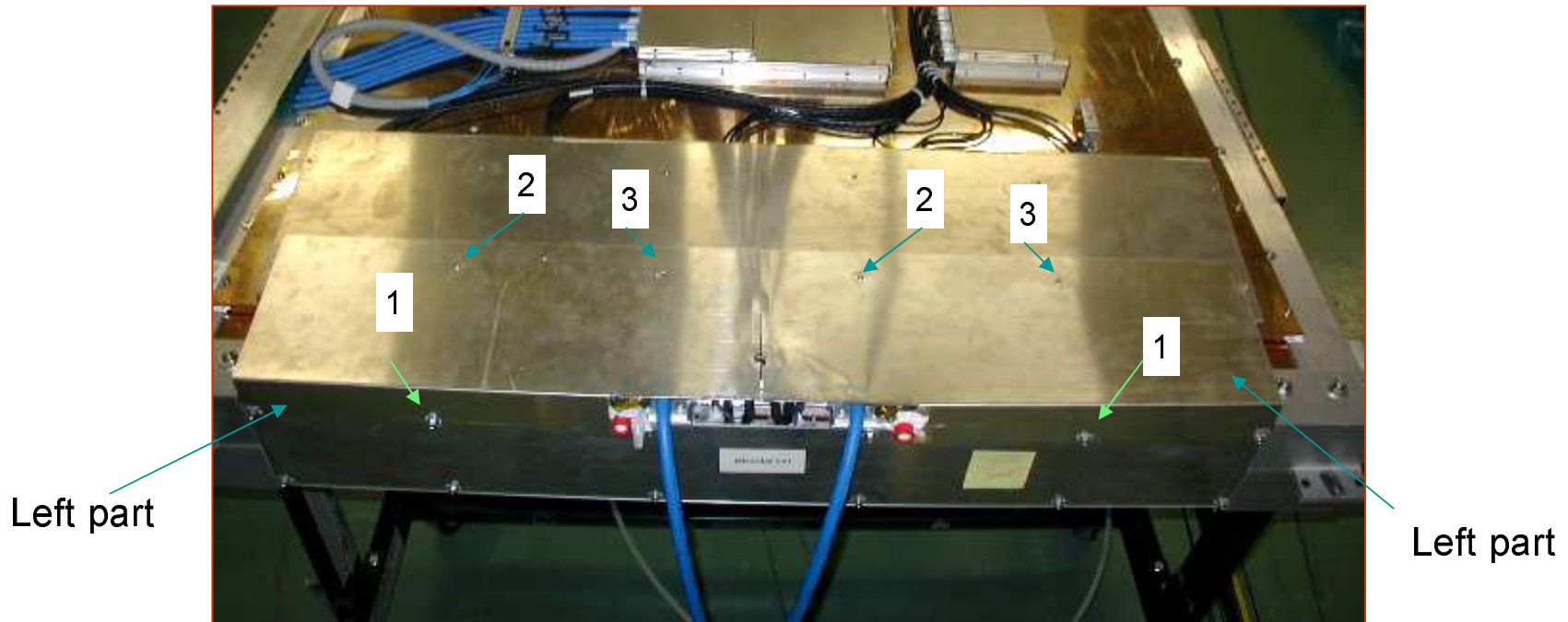
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*CMS EMU Meeting*

*CERN*

*March 15, 2005*

## External pickup noise proposed shield



This is two parts shield.

Material - aluminum 1 mm.

Each part installed individually.

Each part fixed with 3 screws.

Screw 1 better to replace with longer screw

Screws 2 and 3 –CFEB cover screws.

Shield may be installed on the bottom chambers

Shield installation time ~ 15 – 20 min.

# External pickup noise proposed shield

Shield installed on chamber ME-3/2/29

Alien cables  
Cables for  
ME-3/2/30



Shield left part

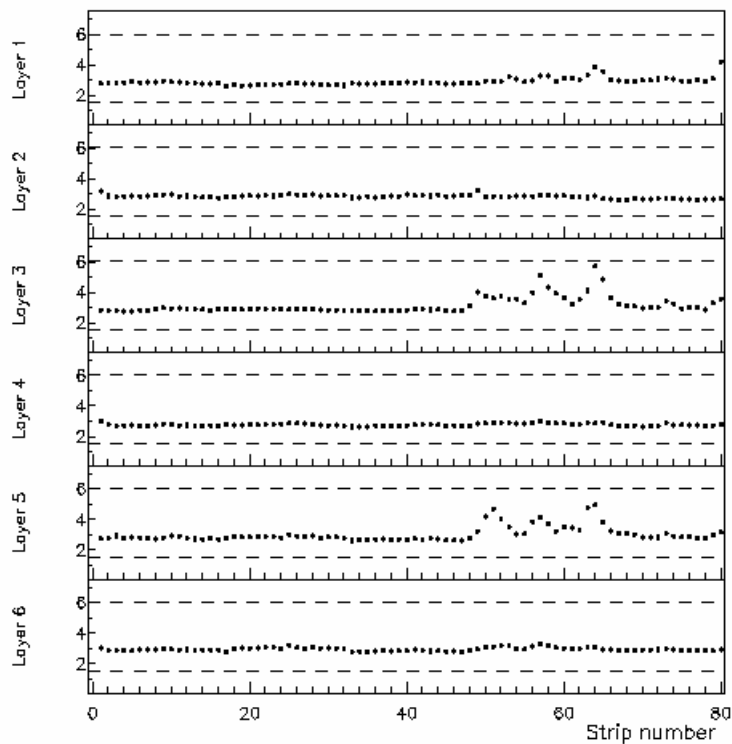
Shield right part

# External pickup noise proposed shield

## Shielding effect

### Noise before shielding

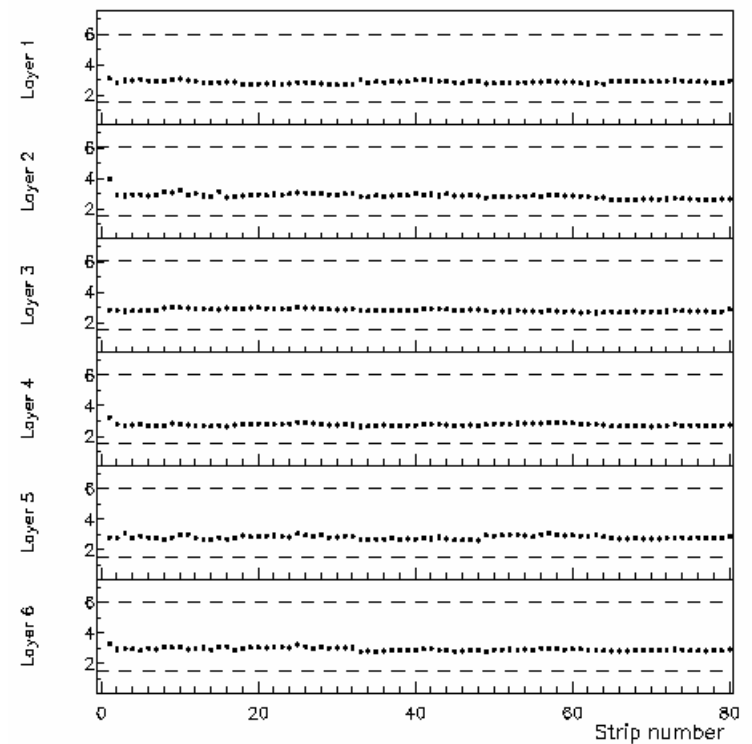
ANA DATE: 03/17/2005 09:25:44  
RUN DATE: 03/16/2005 09:34:48



ME234.2.004  
Test 15  
CFEB Noise test  
CFEB Noise  
/data/csczdata/cscdataz003866.dat

### Noise on shielded chamber

ANA DATE: 03/17/2005 09:18:16  
RUN DATE: 03/17/2005 09:16:56

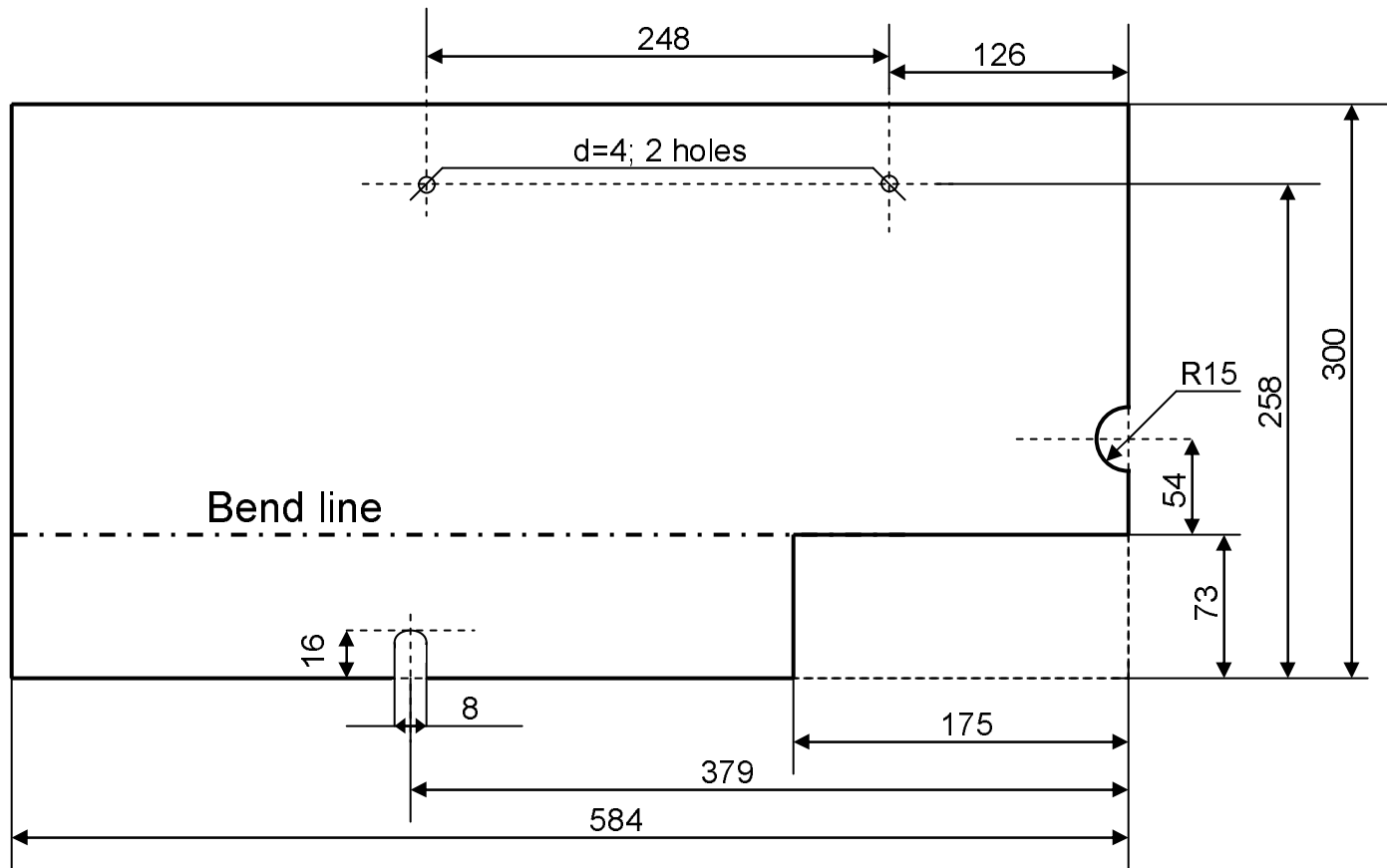


ME234.2.004  
Test 15  
CFEB Noise test  
CFEB Noise  
/data/csczdata/cscdataz003876.dat

# External pickup noise proposed shield

Proposed shield, left part.

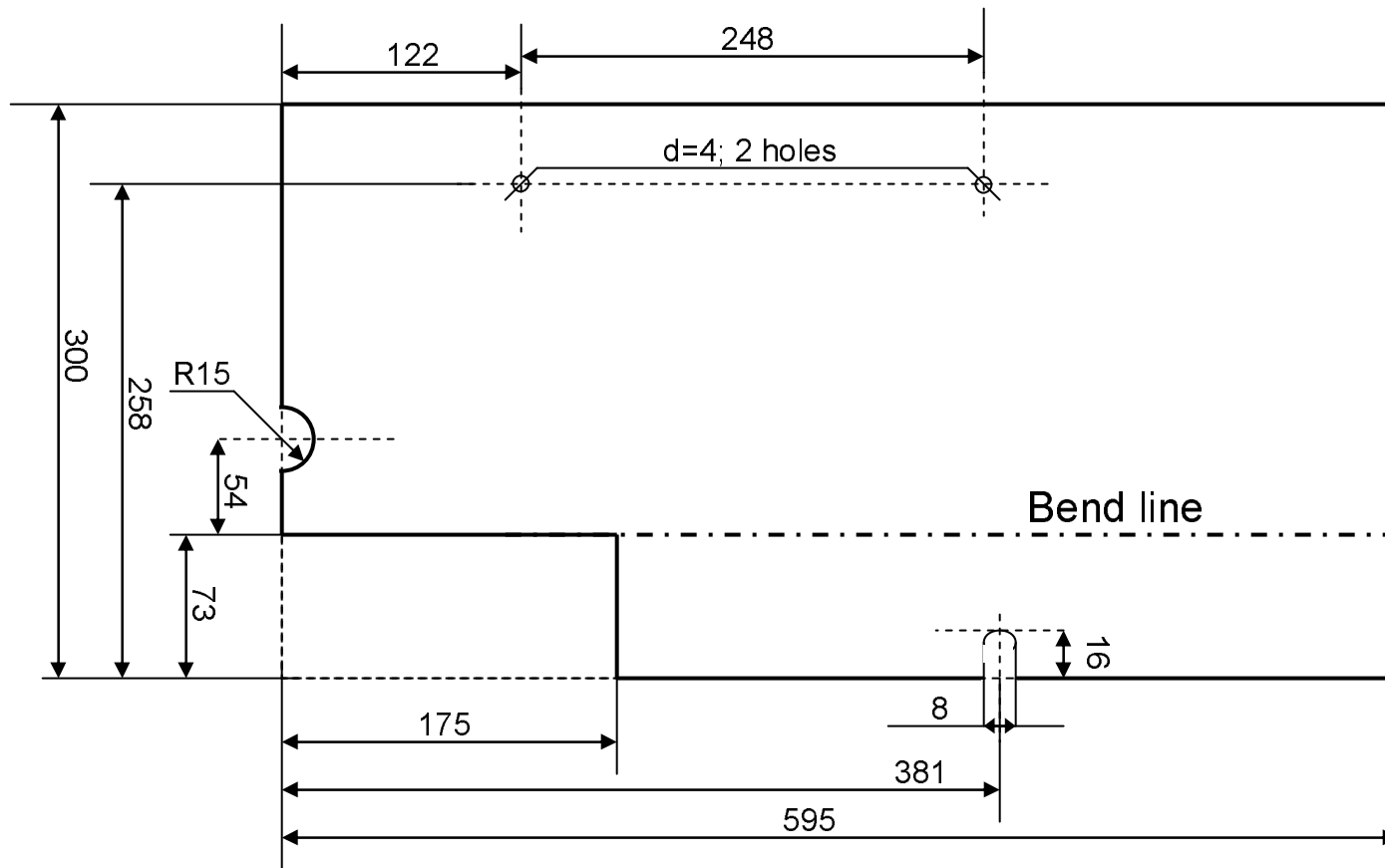
Not in scale.



# External pickup noise proposed shield

Proposed shield, right part.

Not in scale.



## External pickup noise summary

The external pickup noise is an external disturbances coming through the unshielded part of CFEB input cables and alien cables worked as a reradiator. Measured noise value is a function of noise source power and disk location relatively the noise source.

Sectored distribution of this noise we can explain as a coincidence of measured time and noise transmitting time. (Usually one segment is measured during 2-3 days, then setup is moved to the next place).

There are two ways to reduce that noise: put shield between input CFEB cables and alien wires, or move the alien wire far away. We observed about the same noise suppression result. But this is true for current situation.

Generally speaking, the shielding is a good solution for reducing this kind of noise. And it may be recommended for installation on all chambers.