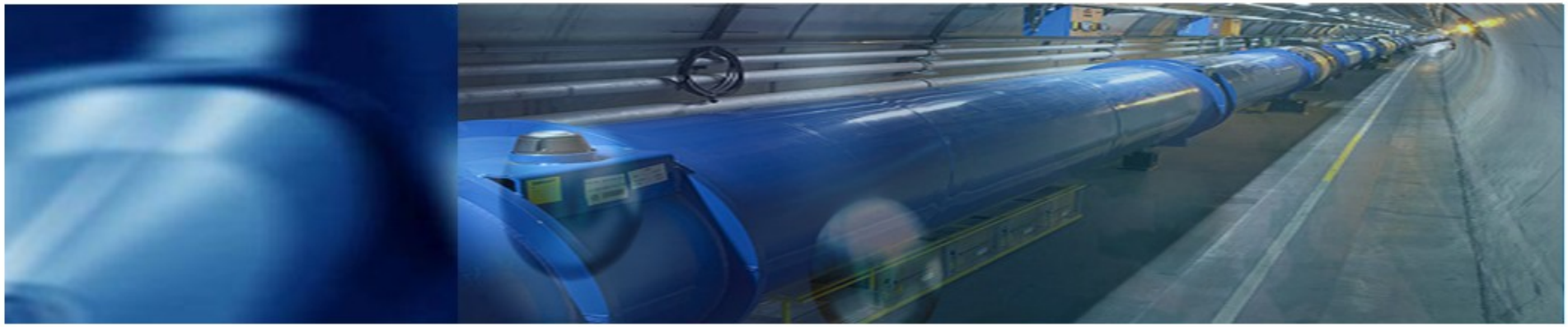
AnME Lab. of Accelerator & Medical Engineering

Progress on FEV7/8 at SKKU



S.H. LEE, H.J. CHOI

SKK UNIVERSITY

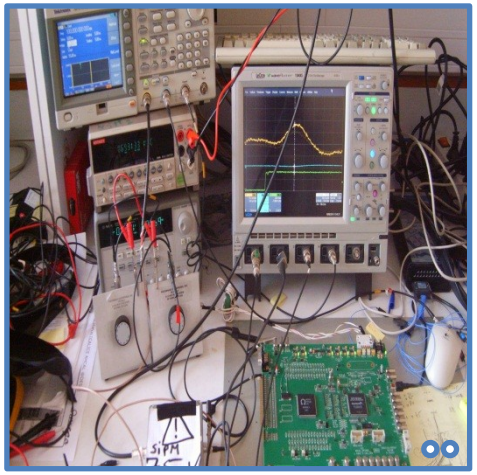
Contents

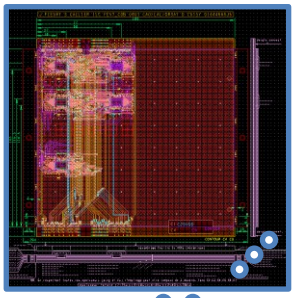
Introduce

CALICE Project

In particle physics, French scientists
from Laboratoire de l'Accélérateur Linéaire (CNRS-IN2P3/Université Paris Sud)
and Laboratoire Leprince-Ringuet (CNRS-IN2P3/Ecole Polytechnique)
collaborate actively with Korean institutes to develop new detectors
for the future **International Linear Collider** which is scheduled
to start operation in 2020.

Research in the Omega





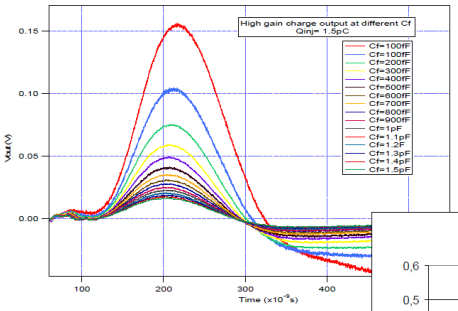
Research in Omega Measurement FEV7 Mechanical LAL

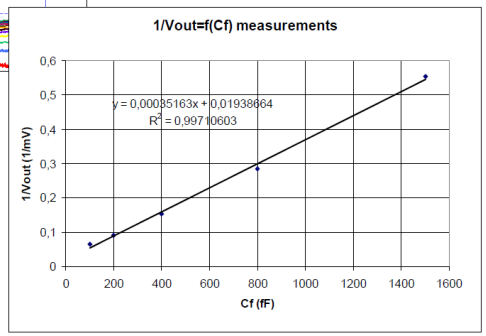
During 5 months
in 2010,
I stayed in Omega
to research about
read-out chips and
FEV boards.

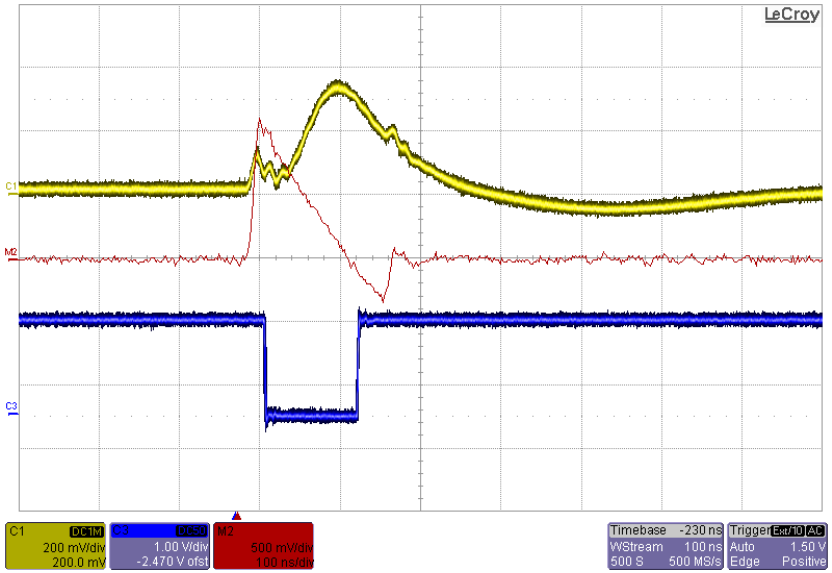
Ms. Choi stayed
during 2 months, also.

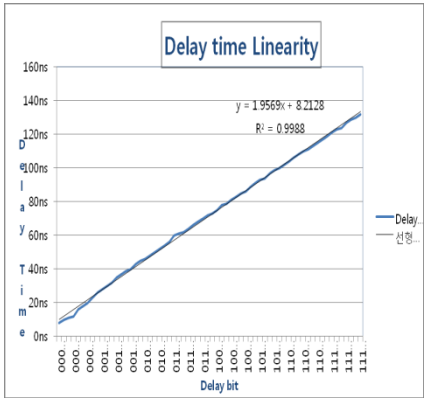
Co-work is really
helpful
both Korea and France
to go on the research
about CALICE project.

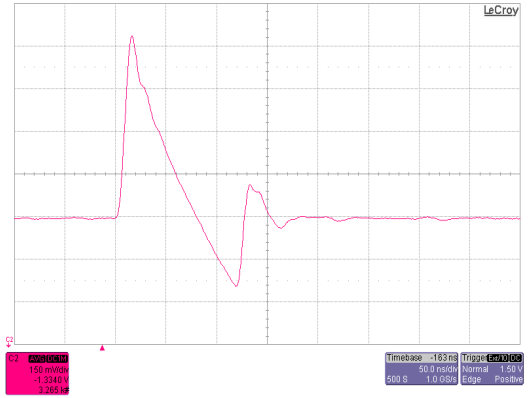
Measurement of SPIROC 1 test board











Measurement of SPIROC 1 test board of analog signal.

Energy measurement

Time measurement

Trigger delay

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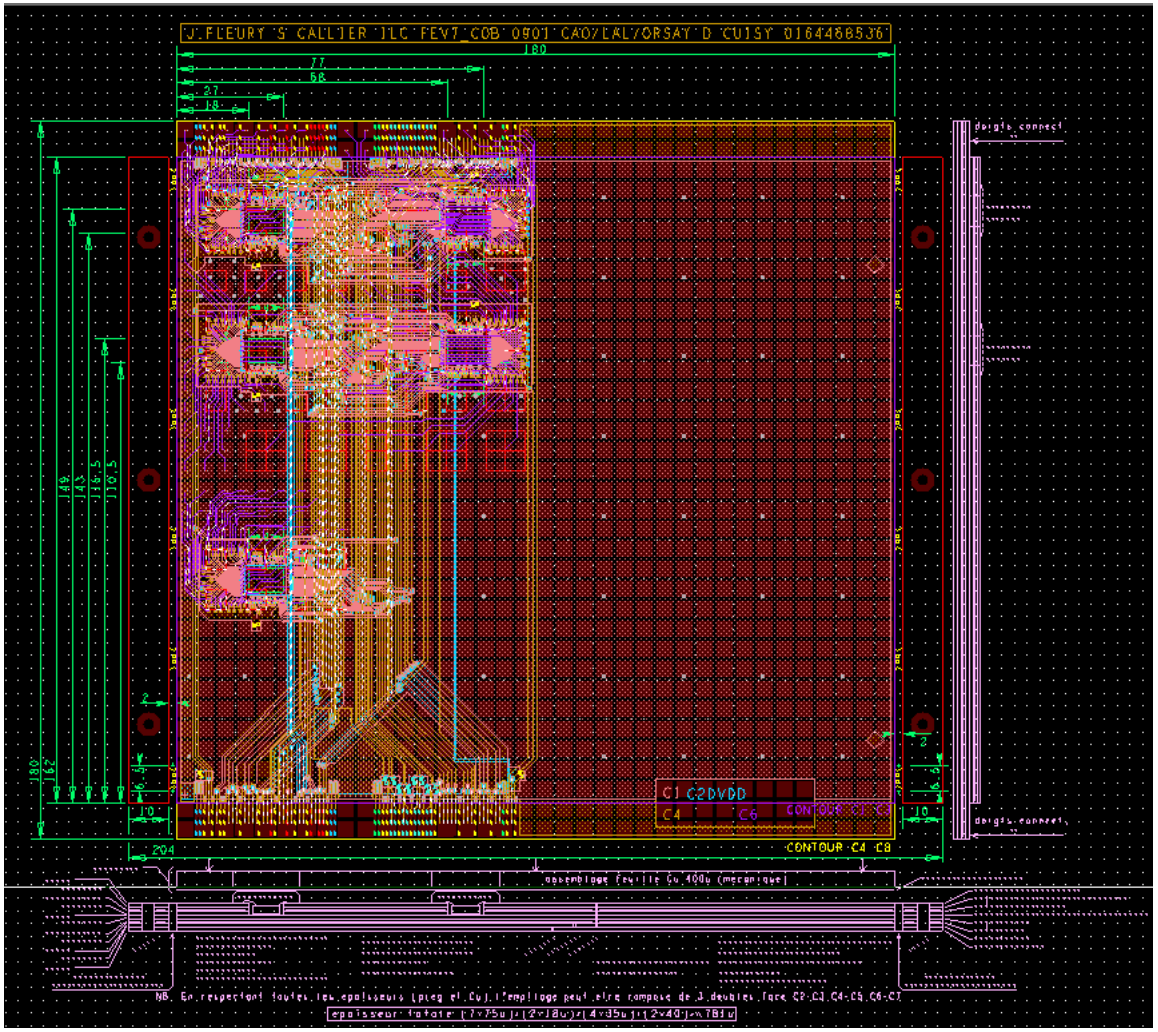
Design of FEV7 PCB



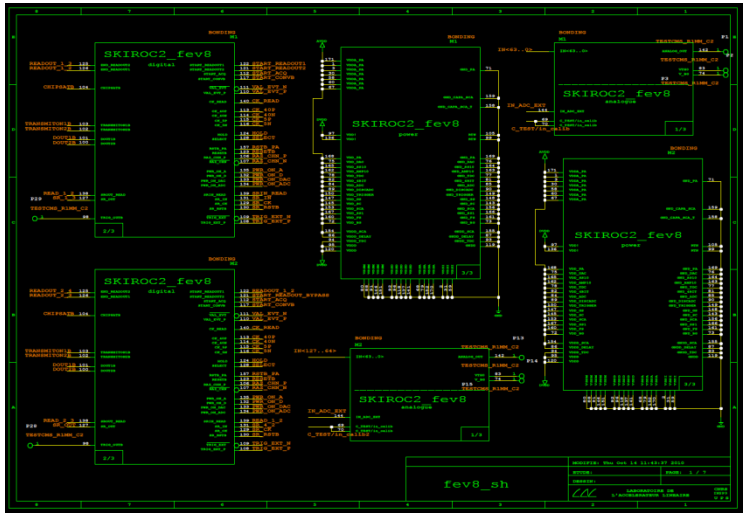
FEV7 CIP
FEV7 COB1
FEV7 COB2

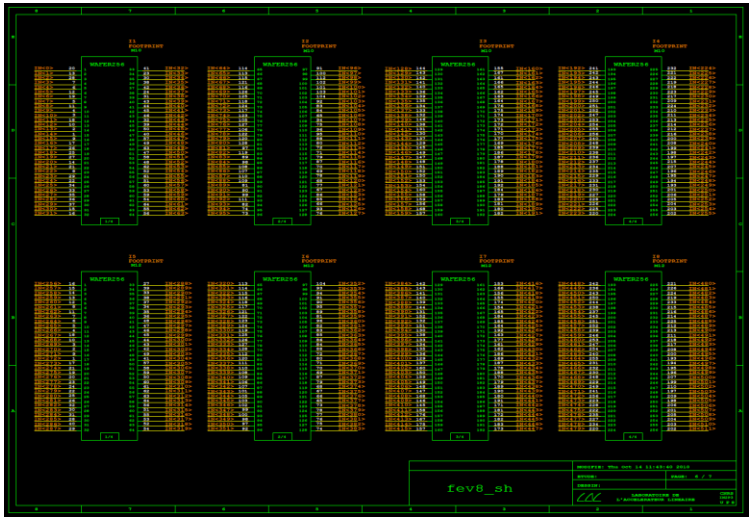
FEV7 COB1 with 5chips

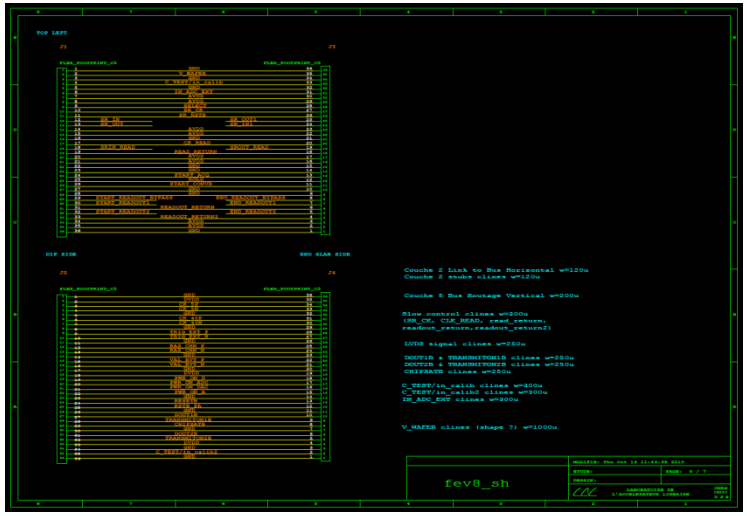
Purpose

1. Understand how to operate the board.
2. Become familiar with tools.
3. Design FEV7 boards.
4. Design new versions for manufacturing in Korea.

Design of FEV8 Schematic





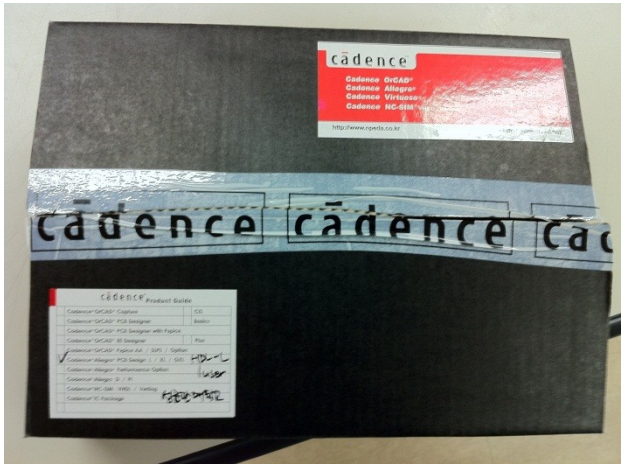


The next version of FEV board.

It will used for ECAL.
16 SKIROC2 chips
The final version of FEV board.

Laurens : 8 chips in only a left side.
Ms. Choi : 16 chips in both sides.

Progress at SKKU



1. Tools
   Allegro Design Entry 16.3 HDL L
   Allegro SI/PI
   NI LabView 10.1
   Tools for designing chips

2. Find some companies
   to make boards

Unfortunately,
Some problems have occurred!

Some Problems

Technical problems

- very small diameter of vias and complicated structure to make

- digging some space to insert each chip(COB, COB2)

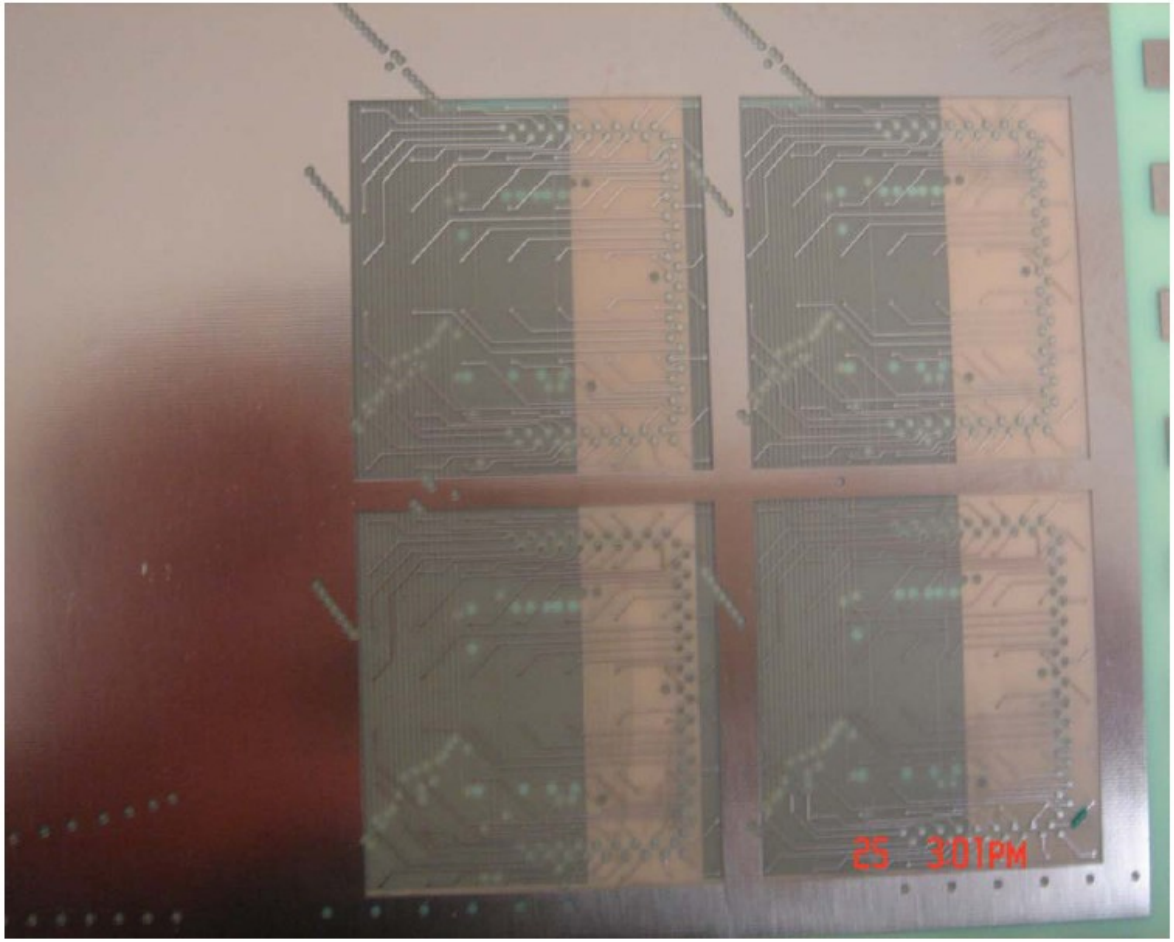
Economical problems

- extremely difficult to success

- commercial production

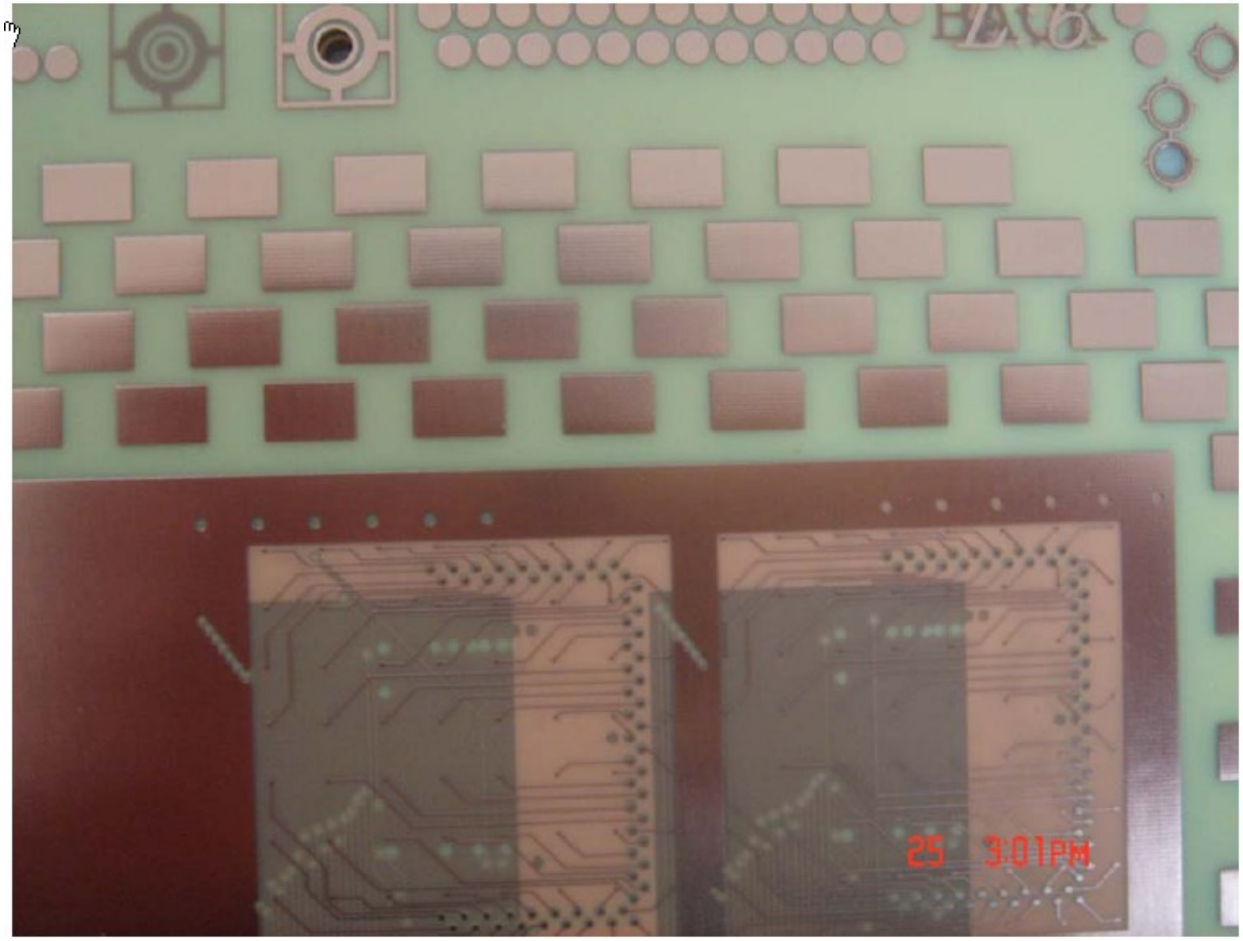
Some Problems

Manufactured board in Korea



Some Problems

Manufactured board in Korea



Some Problems

Problems

1. Spark at signal circuit
2. Leakage the current between conductors at the boards
3. Cut the circuit lines

Improvement

1. Bilaminar PP
2. Adjustment of conductor thickness
3. Strengthen insulation

Q & A

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