

Update from Si Strip Development

HG Zaunick, Bonn

PANDA-CM, Groningen, 31.08.2010

Irradiation

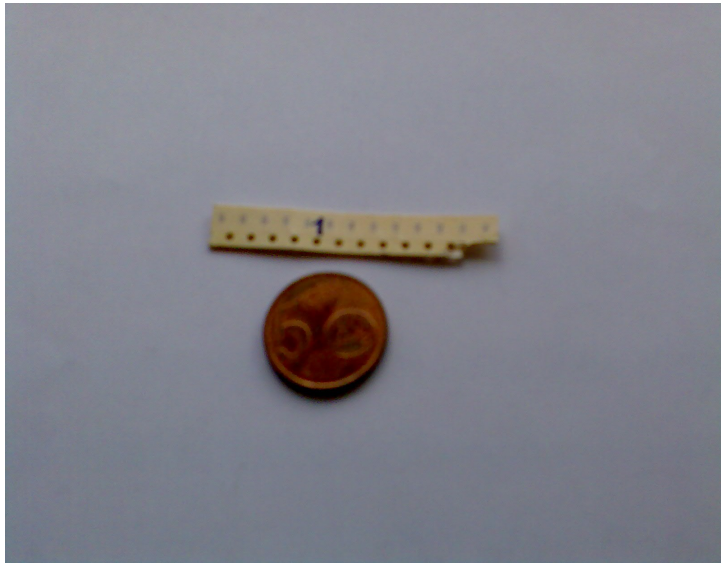


- Irradiation of ceramic capacitors, sizes 0603, 0402 and 0201
- Study degrading of parameters ($C, Q, R_s, R_p, I_{Leak}, V_{breakthrough}$) with applied fluence
- Flux: $\sim 10^{12} \text{ n} \cdot \text{s}^{-1} \cdot \text{cm}^{-2}$

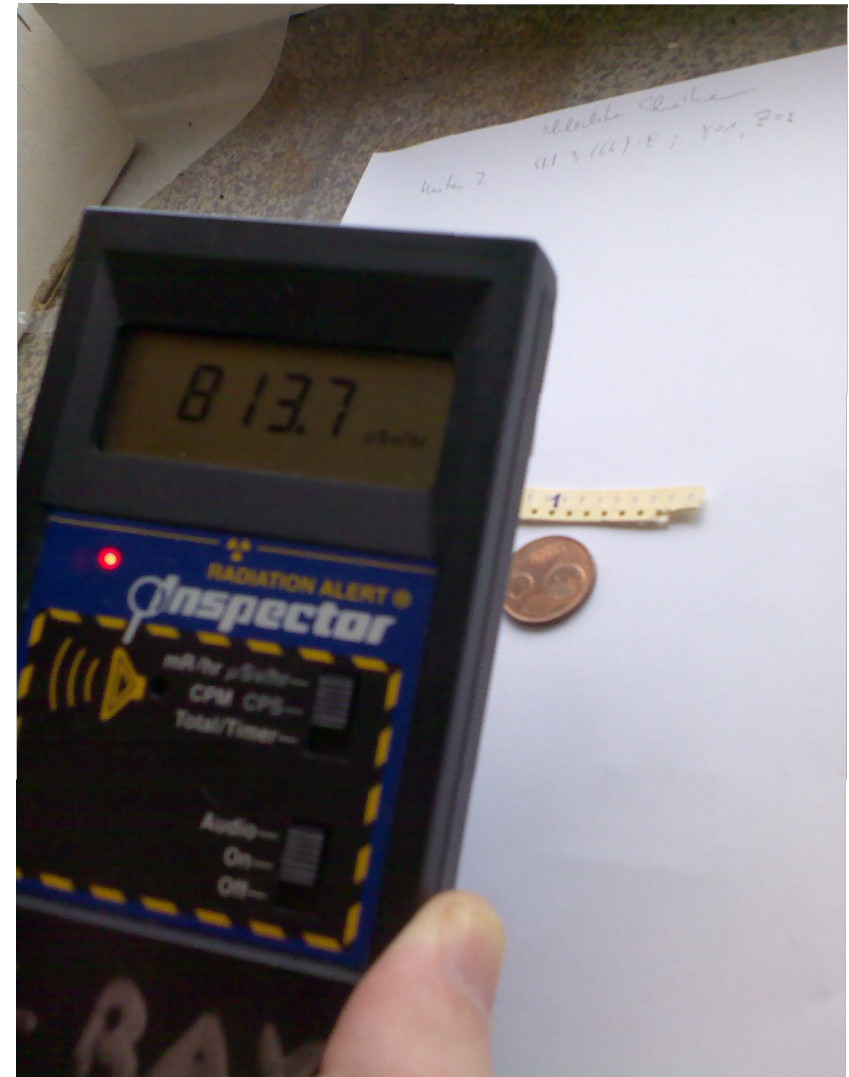

TUDelft

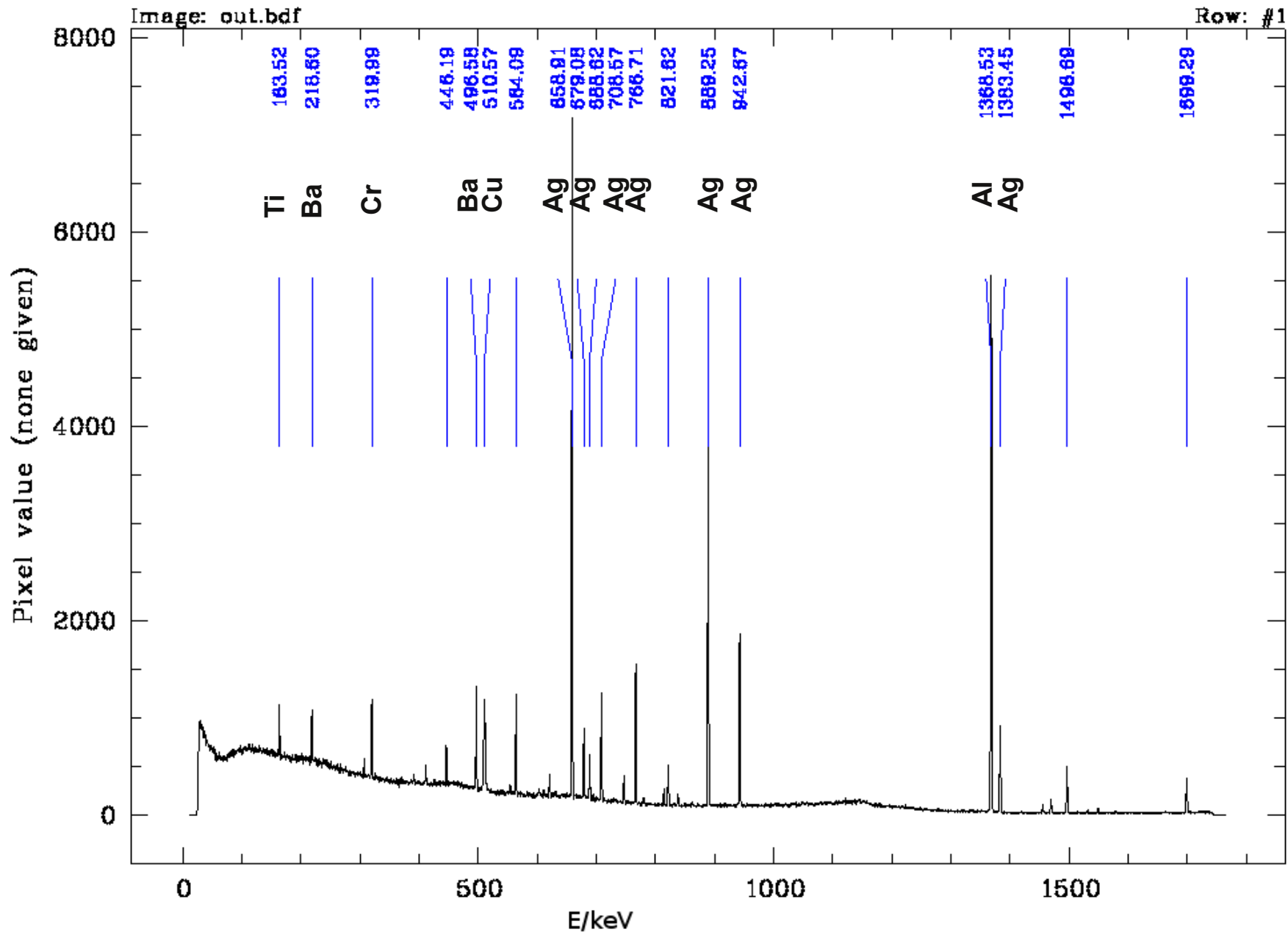
<http://www.nkrv.nl/centra/delft/>





- very strong activation of copper contact pads → no further (electrical) processing up to now (2 weeks EOB)
- Capacitors mechanical stable
- Reel tape (paper+plastic) extremely porous
- Gamma Spectrum at different EOB-times measured





DuPont™ Pyralux® AP All-Polyimide Flexible Laminate

A Family of High-Performance Adhesiveless Laminates
for Flexible Printed Circuit Applications



Product Description

Pyralux® AP double-sided, copper-clad laminate is an all-polyimide composite of polyimide film bonded to copper foil. This material system is ideal for multilayer flex and rigid flex applications which require advanced material performance, temperature resistance, and high reliability.

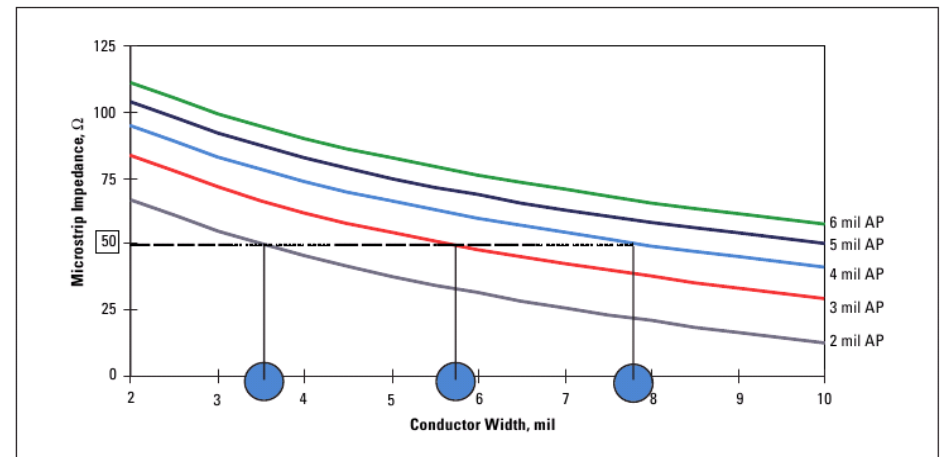
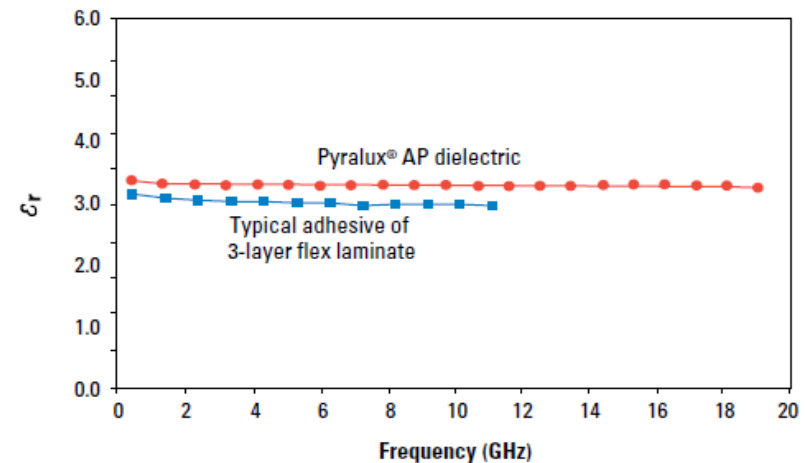
Offered in a full range of dielectric thicknesses, Pyralux® AP provides designers, fabricators, and assemblers a versatile option for a wide variety of flexible circuit constructions.

- Low CTE for rigid flex multilayers
- Excellent thermal resistance
- Thin Cu-clads with superior handling
- Unique thick-core product for controlled impedance
- Excellent dielectric thickness tolerance/electrical performance
- High Cu-polyimide adhesion strength
- Full compatibility with PWB industry processes, IPC 4204/11 certified
- III Q4V-0 III 706 180°C (356°F) max

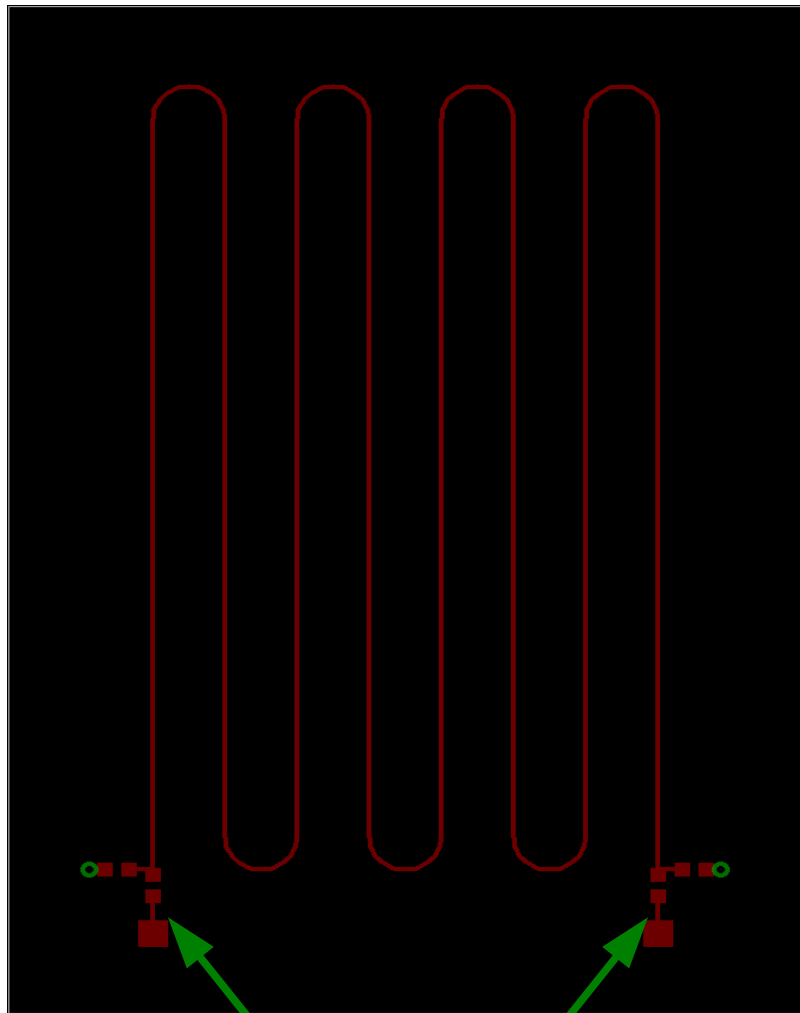
Table 1
Pyralux® AP Product Offerings*

Product Code	Dielectric Thickness, mil	Copper Thickness, μm (oz/ft ²)
AP 7163E**	1.0	9 (.25)
AP 7164E**	1.0	12 (.33)
AP 8515R	1.0	18 (0.5)
AP 9111R	1.0	35 (1.0)
AP 9212R	1.0	70 (2.0)
AP 7156E**	2.0	9 (.25)
AP 7125E**	2.0	12 (.33)
AP 8525R	2.0	18 (0.5)
AP 9121R	2.0	35 (1.0)
AP 9222R	2.0	70 (2.0)
AP 8535R	3.0	18 (0.5)
AP 9131R	3.0	35 (1.0)
AP 9232R	3.0	70 (2.0)
AP 8545R	4.0	18 (0.5)
AP 9141R	4.0	35 (1.0)
AP 9242R	4.0	70 (2.0)
AP 8555R	5.0	18 (0.5)
AP 9151R	5.0	35 (1.0)
AP 9252R	5.0	70 (2.0)
AP 8565R	6.0	18 (0.5)
AP 9161R	6.0	35 (1.0)
AP 9262R	6.0	70 (2.0)

*Add "R" to the end of the code to specify rigid-core product.



25 Ohm Microstripline Test Structure

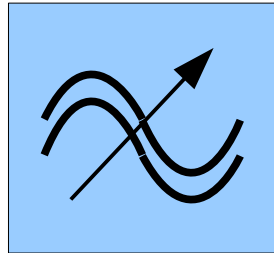


Impedance Transformers

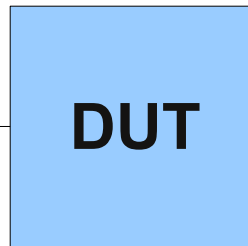


Etched on AP9121 2mil thick foil
Transmission μ Stripline, length 518mm

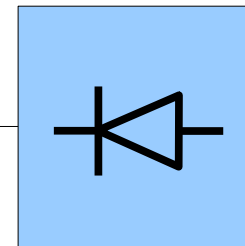
var. Frequency Generator



Marconi
2022C

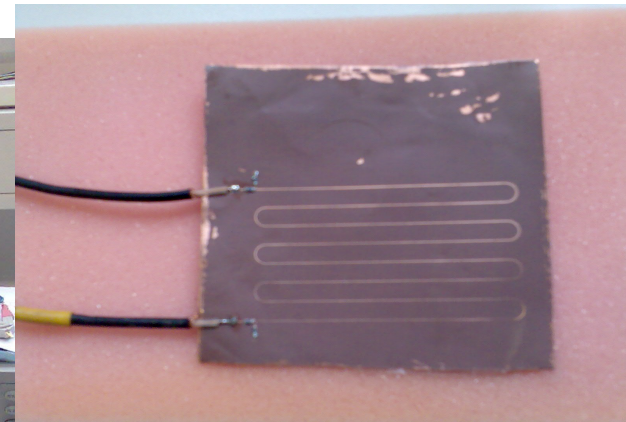
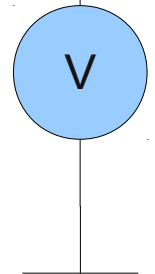


log. Power Detector



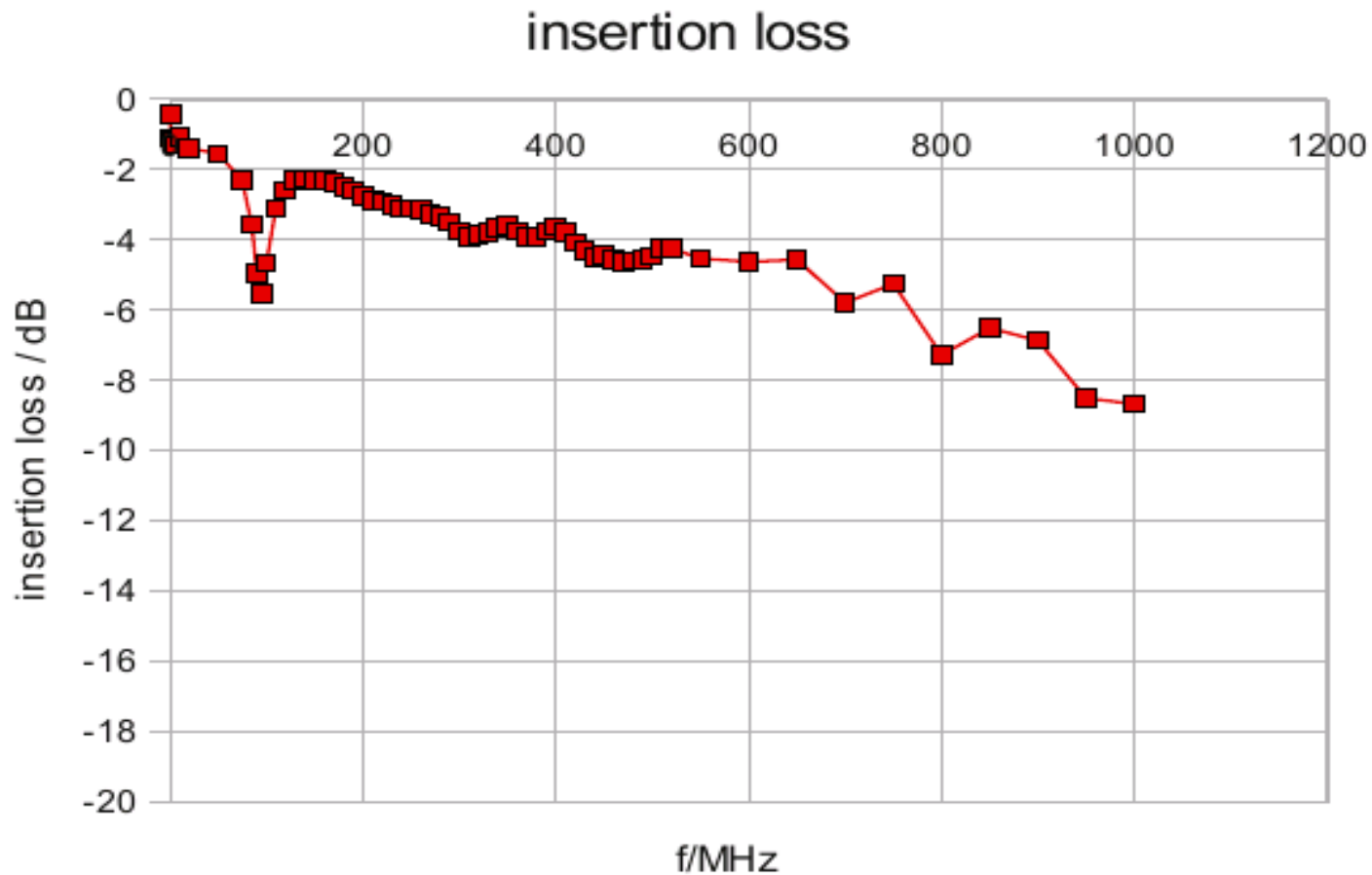
AD8307

DVM

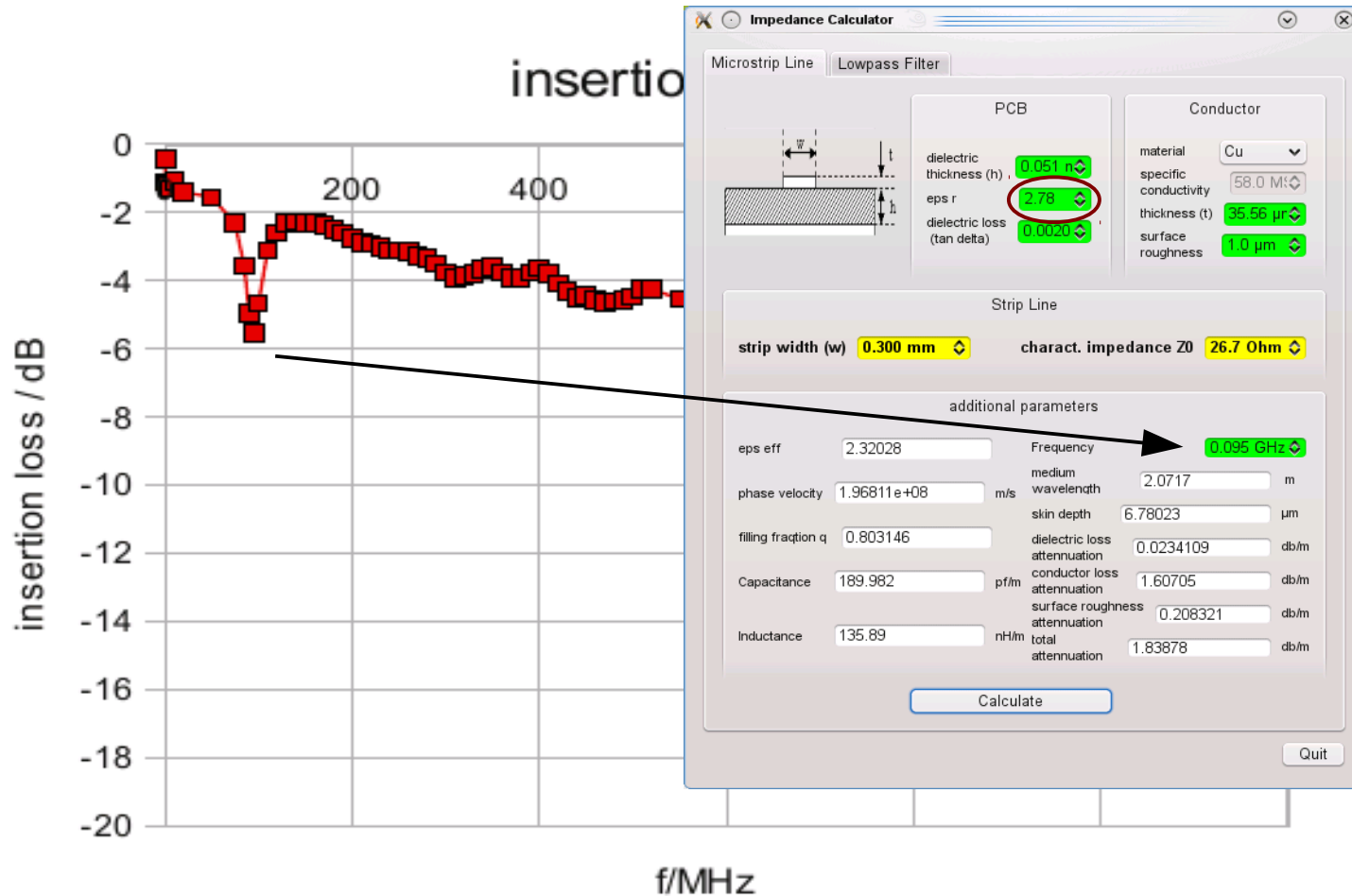


Setup for Measurement of
Frequency Behaviour

Determination of Insertion
Loss, Return Loss



- Impedance matching not perfect due to inaccurate etching process
→ resonance visible
- Dip corresponds to $\lambda/4$ -wavelength along the stripline
- flatness within 3dB up to >400MHz



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A Channel Multiplexer Chip for the MVD Strip Part

(Helmut Sohlbach, FH Iserlohn)

- First design for Xilinx Virtex4 FPGA
- Assuming n-XYTER Datastream
- configurable sensor-frontend mapping for spacial hit correlation
- Fast cluster finder
- Timing Simulations

