

A Point-to-Multipoint Transceiver Module in LTCC Multilayer Technology for 24.5 to 26.5 GHz

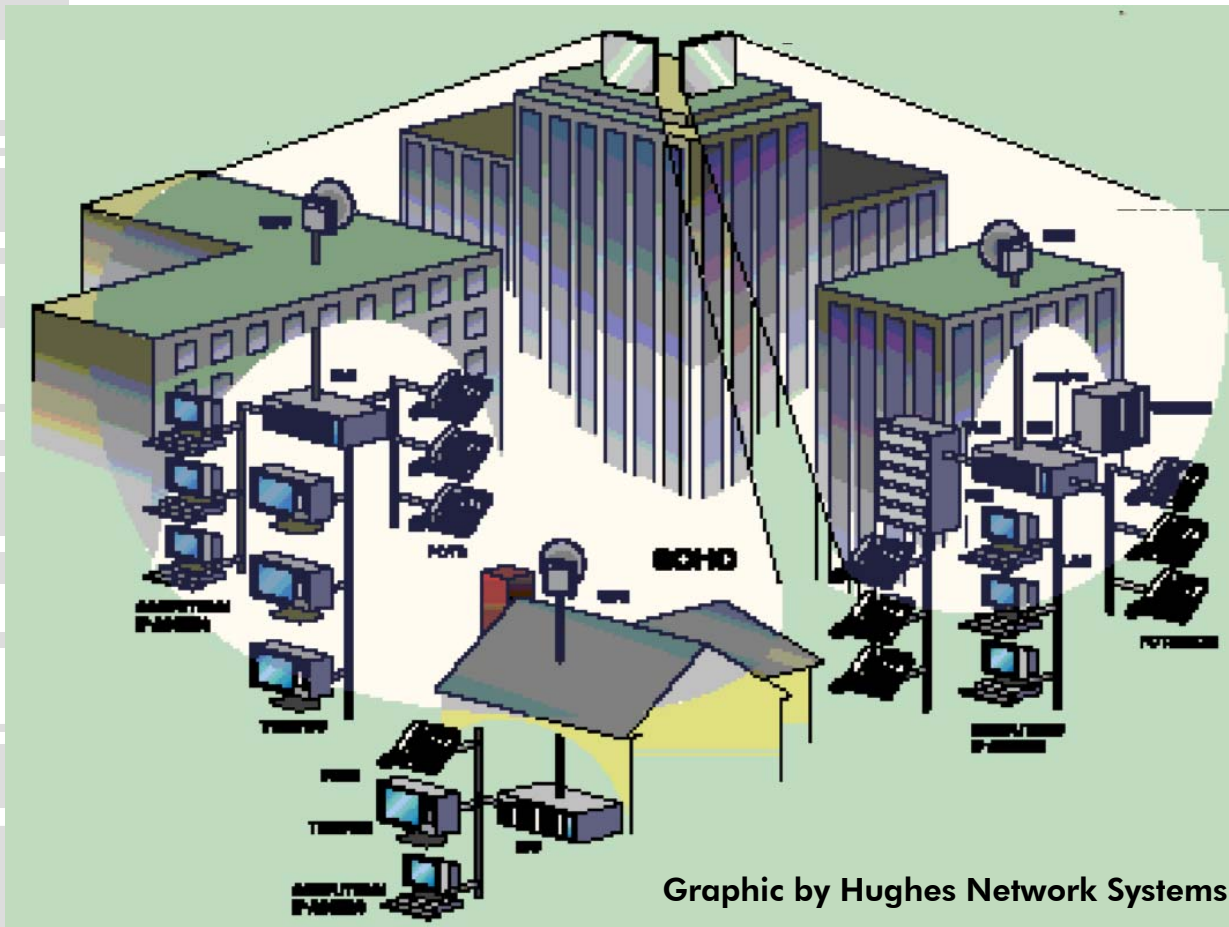
a result of

The logo for the RAMP project, featuring the word "RAMP" in a bold, blue, sans-serif font. The text is contained within a white rectangular box with a dashed border, which is tilted at an angle.

Rapid Manufacture of Microwave and Power Modules
Brite-Euram III Project (BE-97-4883)

Digital Radio Relay System

LMDS: Local Multipoint Distribution Service

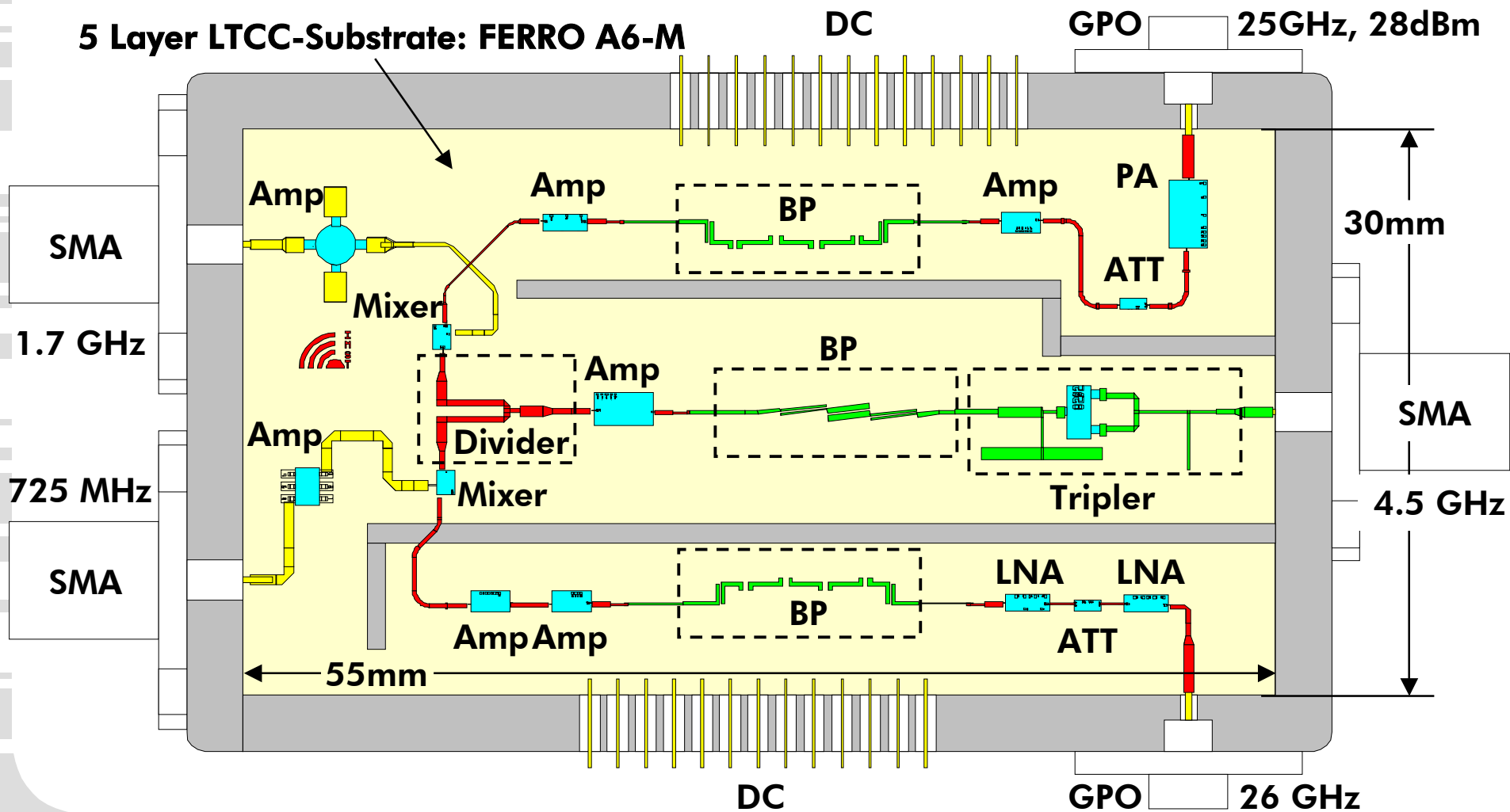


Public or private cellular networks ...

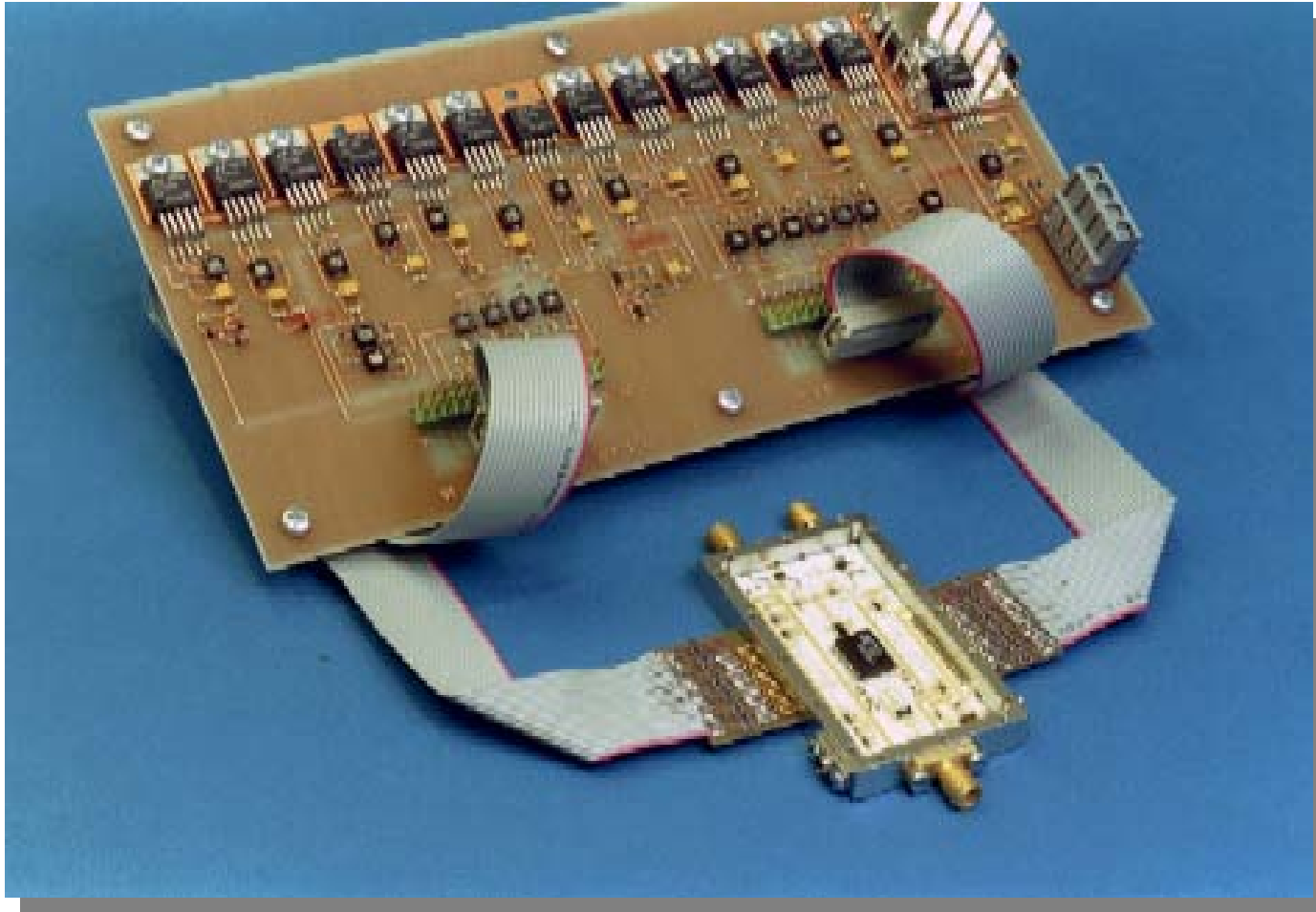
P-MP Radio Systems
in terrestrial Fixed Services:
24.25 to 29.5 GHz

CEPT/ERO
T/R 13-02:
24.5 to 26.5 GHz

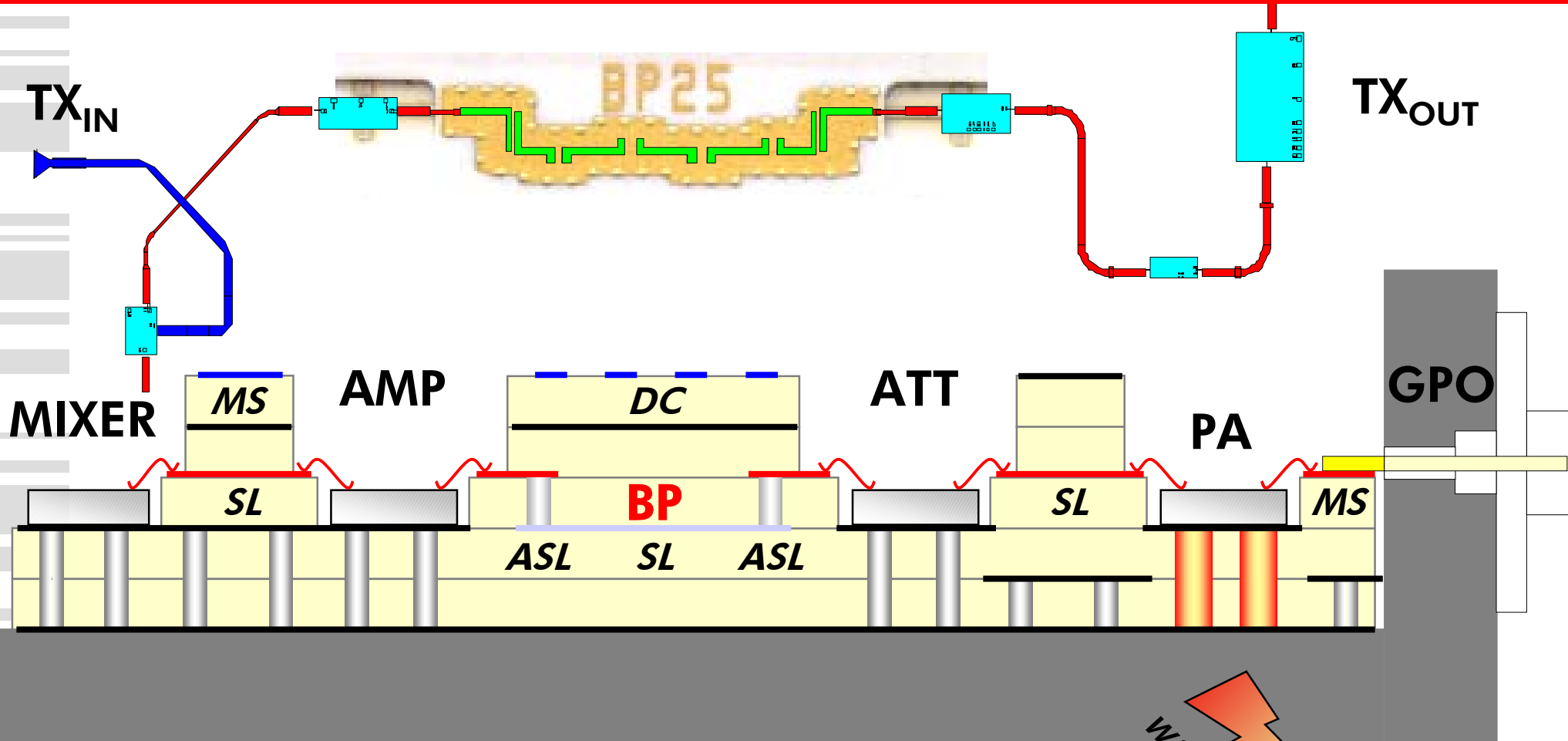
P-to-MP: 24.5 ... 26.5 GHz





Tx/Rx-Module + DC-Supply



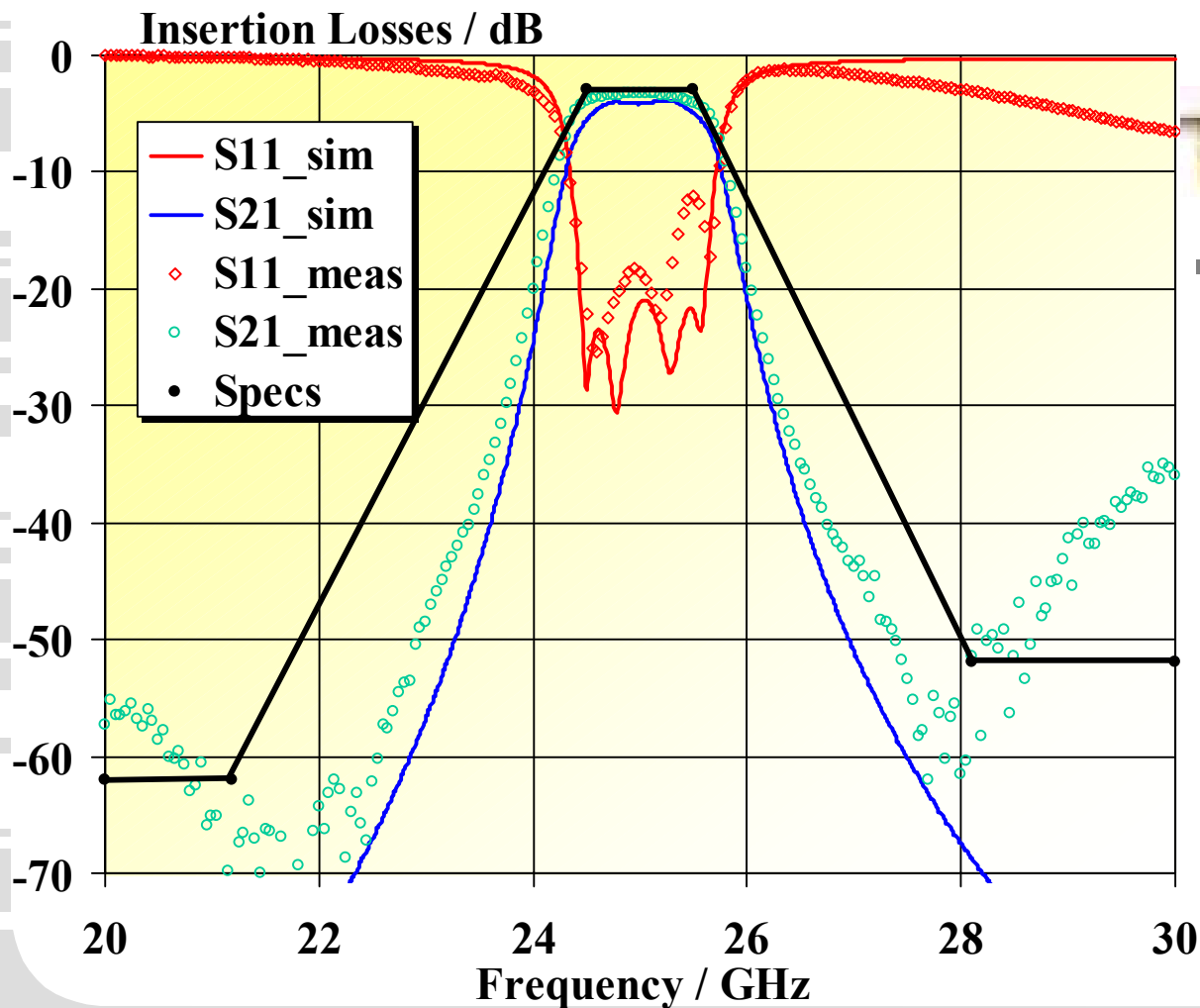
Transmit Path



MS Microstrip Line
SL Stripline
ASL Asymmetric Stripline
DC DC Line

Ground —————
GND-Via 
Thermal Via 

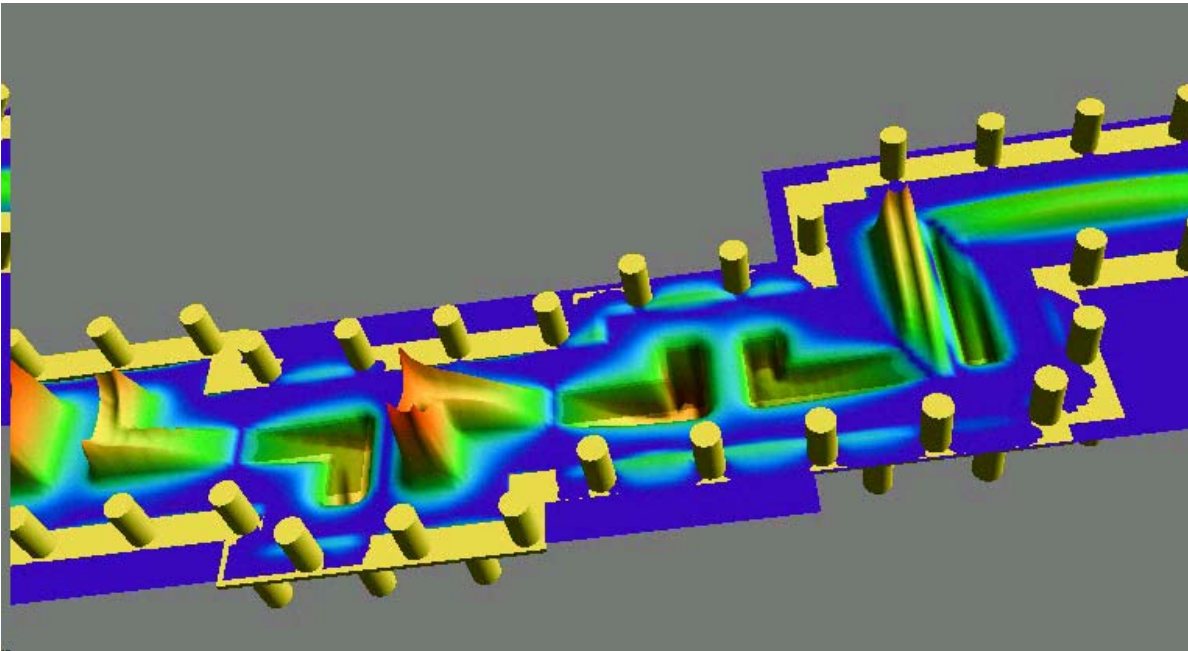
25 GHz BP-Filter



Comparison:

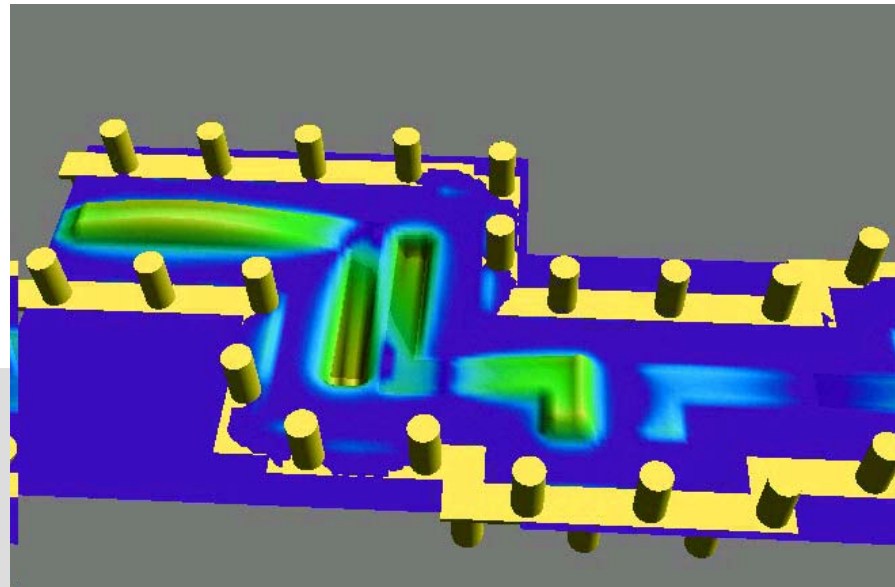
- ↪ Specifications
- ↪ 3D-Simulation with EMPIRE
- ↪ S-Parameter-Measurement
- ➔ excellent Agreement

Filter Animation

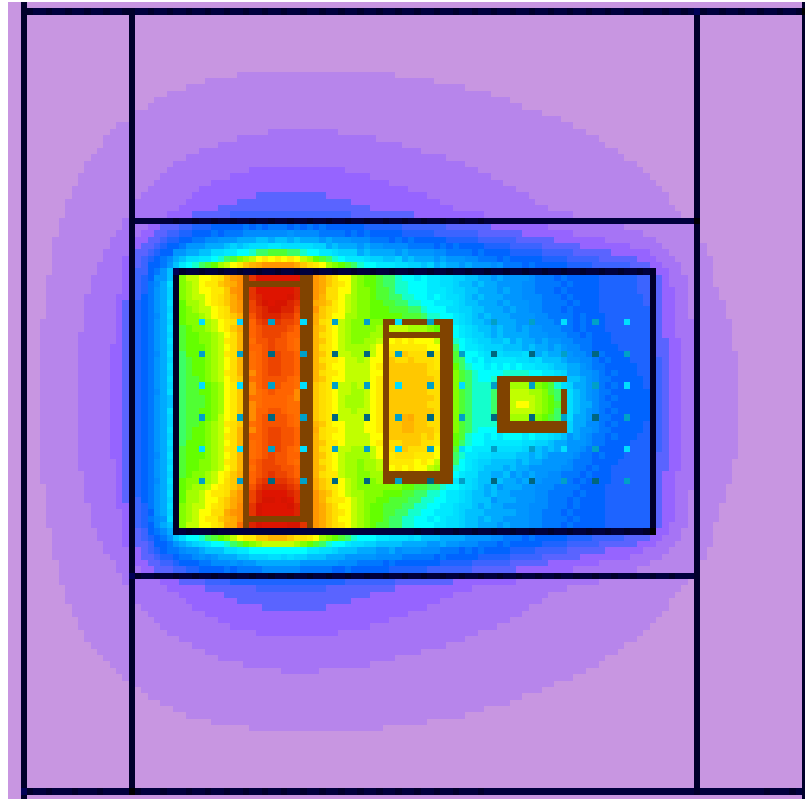


Passband @ 25 GHz

Stopband @ 23 GHz



Junction to Case Simulation



$$T_{\text{case}} = 80 \text{ }^{\circ}\text{C}$$

21 Thermal Vias

$$\underline{T_{\text{max}}} = 110.2 \text{ }^{\circ}\text{C}$$

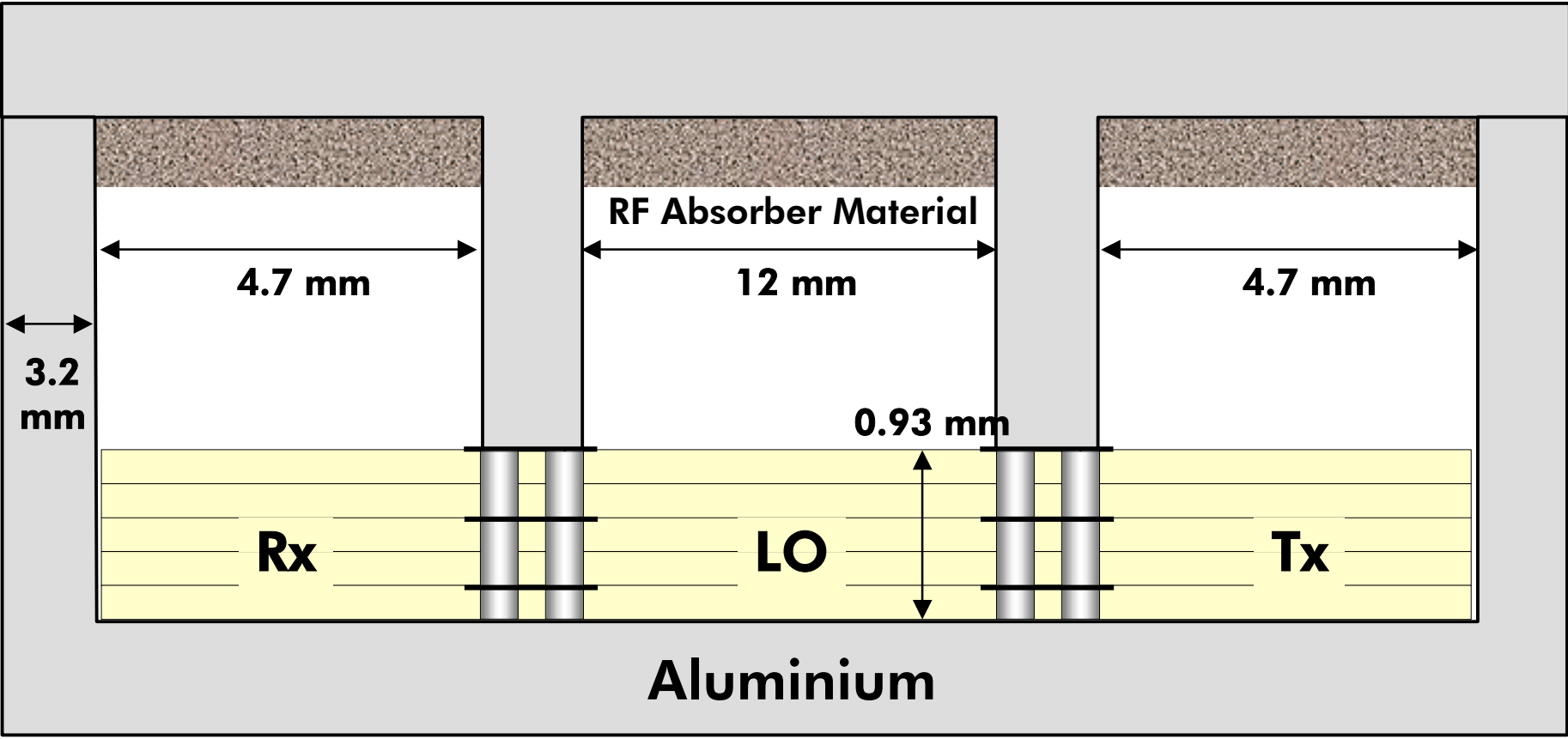


$$\underline{R_{\text{th}}(j-c)} = 12.5 \text{ }^{\circ}\text{C/W}$$



IMST

Packaging and Shielding



Package + Connectors

