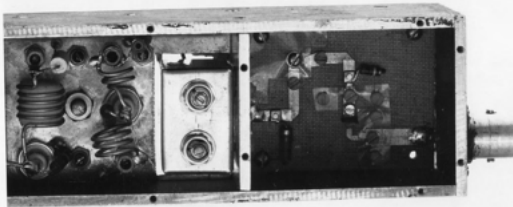


# Rapier FSB1 and FSB2

In the early 1970's STL had developed a very low noise 4GHz solid state radio, the Down the Hill Radio Link.

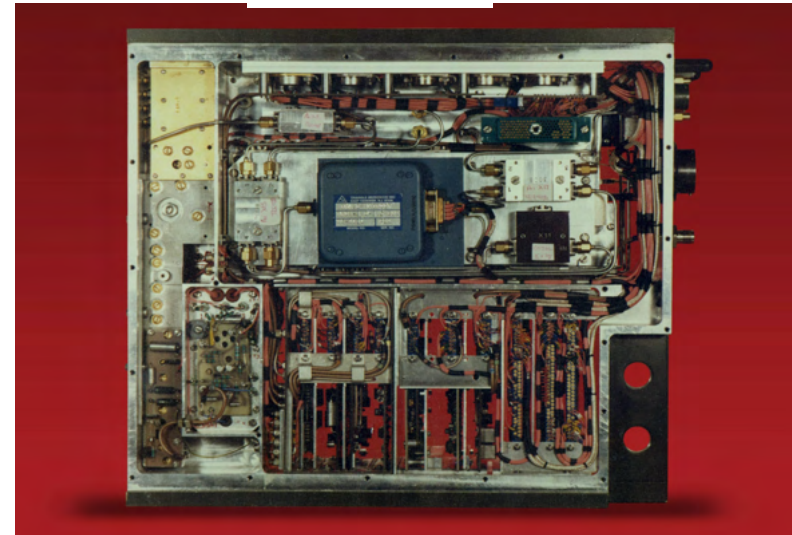
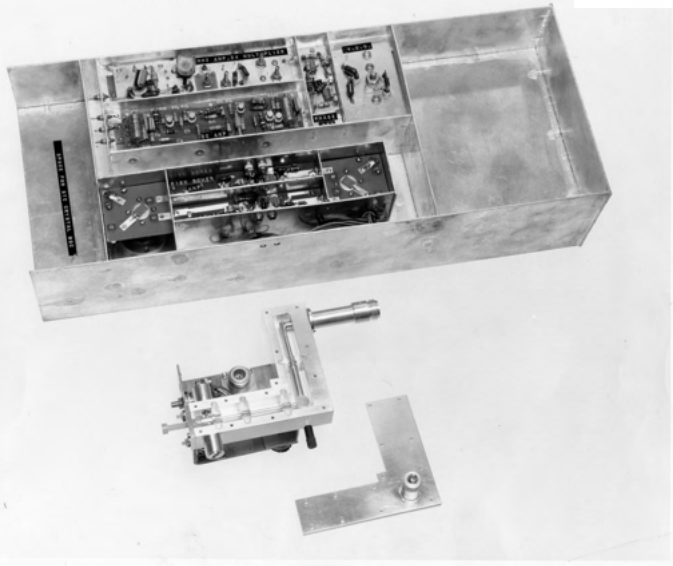
This attracted the attention of RRE who asked STL to develop the RF source for the FSA Rapier, the Solid State Drive Unit, SSDU.

This was the first of the STL developments for the Rapier FSA and these units went into production at STC Paignton. STC Paignton continued to develop the SSDU, eventually reaching the Mk6 variant.



**MK6 SSDU**

**4 GHz "Down The Hill" Low Noise R Modules**

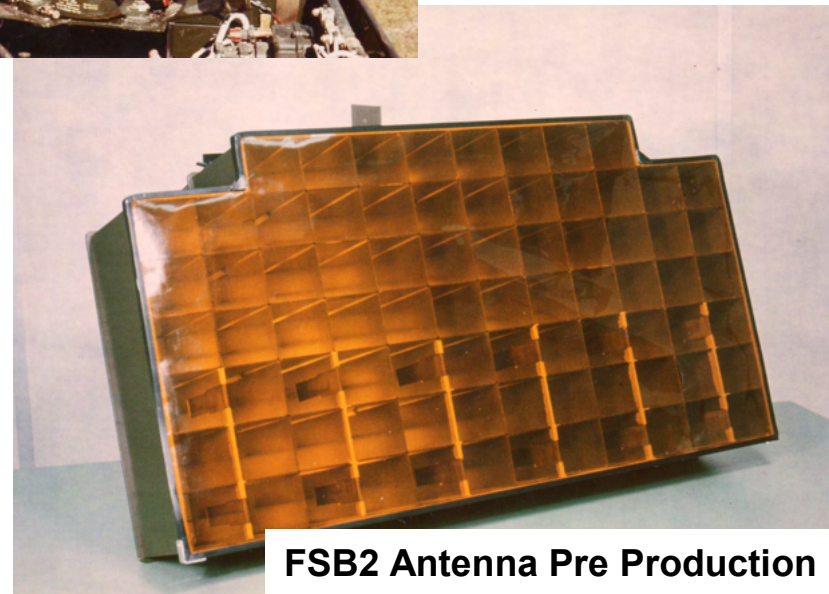
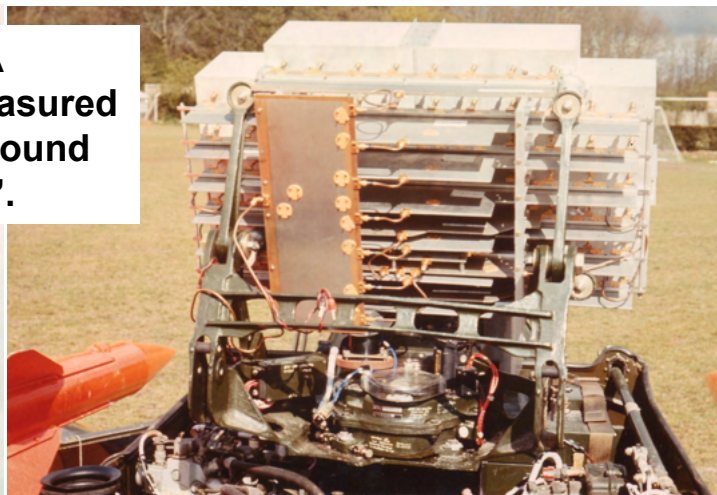


## Rapier FSB1 and FSB2

### The Rapier FSB Antenna

In the early 70s RSRE approached us to find out if we could build a better antenna for the Rapier surveillance radar than the then reflector antenna. This was a serious challenge as not only had the sidelobe levels to be better than anything that had been demonstrated before with such a small array, but also the array had to operate at two frequencies, L and S band.

FSB2 Antenna A  
Model being measured  
at STL sports ground  
"antenna range".



FSB2 Antenna Pre Production

# Rapier FSB1 and FSB2



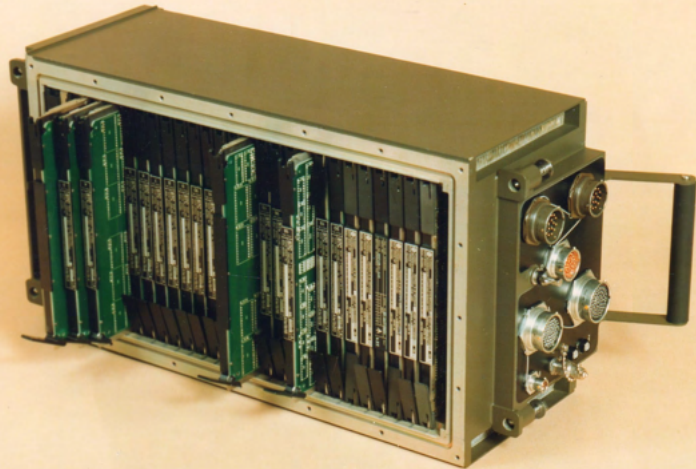
Rapier FSB2 Receiver

In 1980 RSRE came to see us and said " You should talk to the STL guys who are working on modems and digital filtering, I think you could use those techniques to make a better Doppler receiver".

This got us thinking that the same ASP ideas that originated in MLS and Low Angle Tracking could give Rapier FSB a 2 ½ D capability

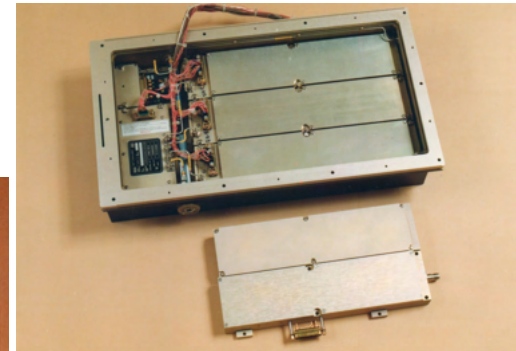
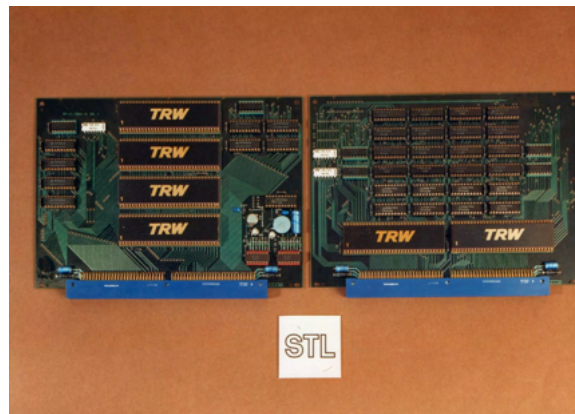
This led to us developing a modified antenna with 3 Rx beams, using two new beams orthogonal to the existing surveillance antenna (no loss to the surveillance beam) and developing a new 3-channel surveillance receiver that provided the existing azimuth accuracy with additional elevation angle data.

The receiver formed the required elevation beams for angle measurement in the digital receiver.



3 Channel Zero IF and Digital Signal Processors

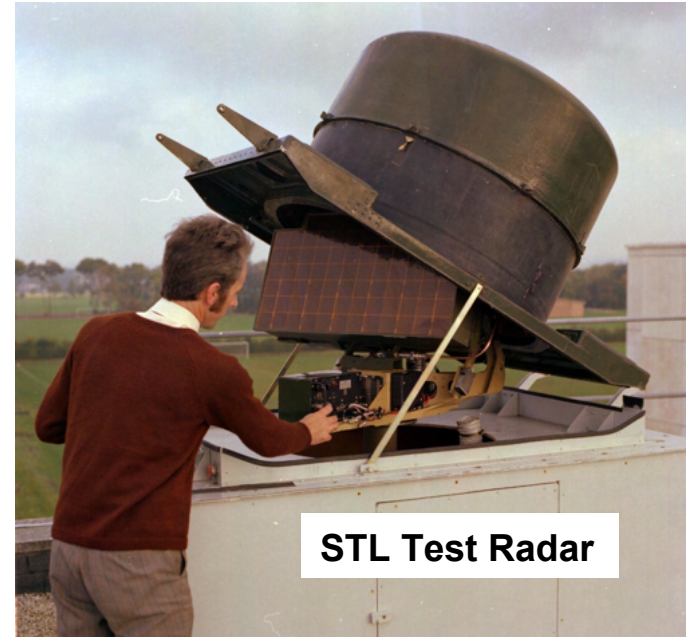
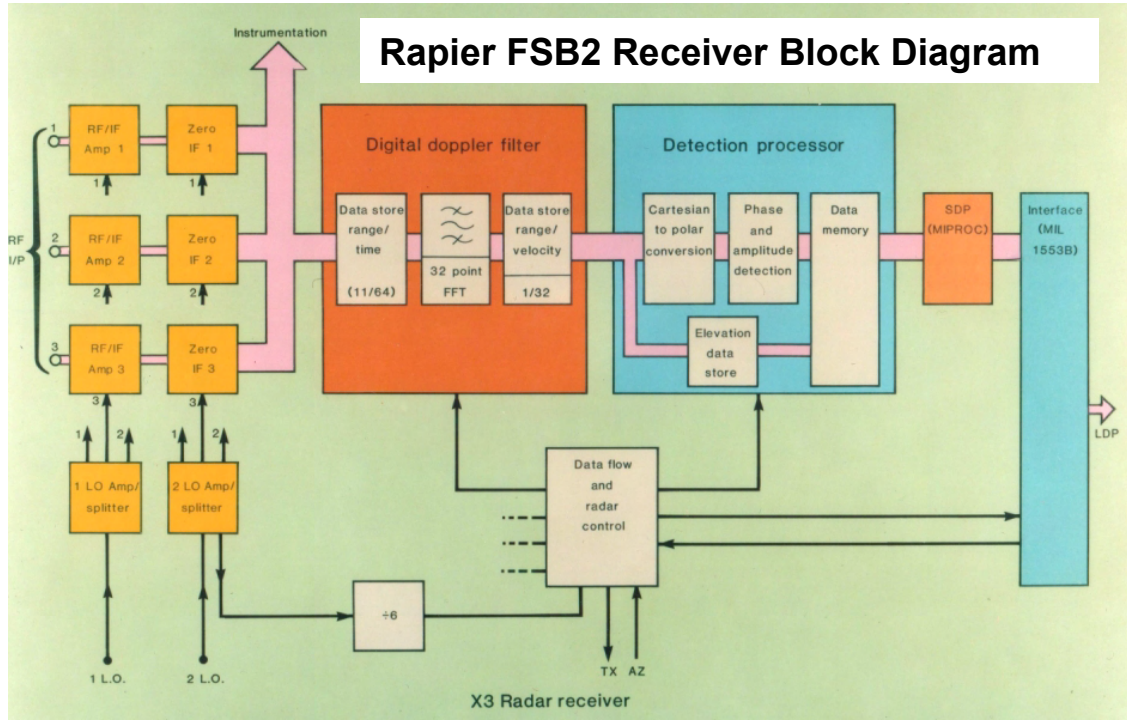
Digital Multiplier for FFT



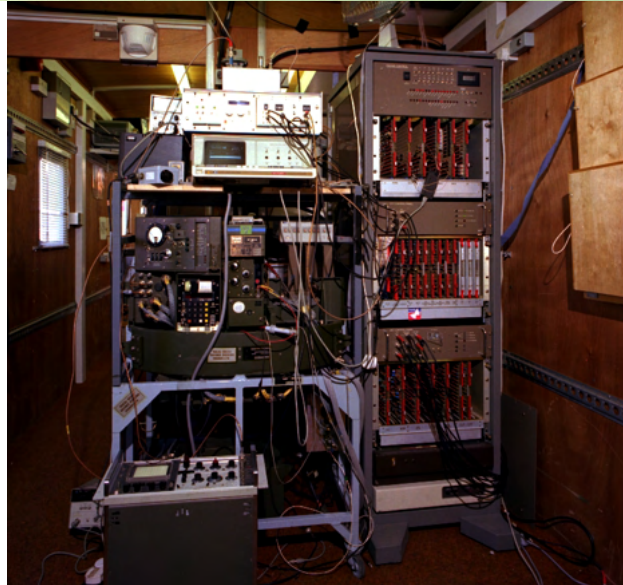
3 Channel RF/IF Unit

# Rapier FSB1 and FSB2

## Rapier FSB2 Receiver Block Diagram



## STL Test Radar



## Rapier Caravan Mobile Test Instrumentation Facility

