

Progress on the CSIRO Multi-Channel Testbed

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Abstract

A switched RF MIMO channel sounder is now operational at the CSIRO ICT Centre. The next step in the development of MIMO hardware is a four to eight channel simultaneous MIMO system for use in Space-Time Processing research.

Applications:

- fast MIMO channel characterisation with unsynchronised TX and RX
- establishment of statistical descriptions of various classes of MIMO channels
- spatial characterisation of co-channel interference for evaluating various "smart antenna" schemes
- general interference characterisation
- reference channel synthesis for S/W simulations and H/W equipment testing
- quasi-real-time performance verification of algorithms
- co-processor hardware for speeding up software simulations=20
- testing of real-time FPGA and ASIC implementations in actual channel environments.

Summary of Progress:

- Eight channel base band hardware acquired
- Base band signal capture or generation in blocks of 128Mbytes
- Four channel spectrum analyser implemented on base band hardware
- 5 GHz transmitter design complete
 - Main board manufactured, half populated and debugged
 - All system components acquired and being assembled
- 5 GHz receiver design complete
 - Subsystems debugged, Boards being populated
 - All system components acquired and being assembled