P1394b UTP working group - January 1998

- Scope
  - Binary NRZ signalling
  - 8B10B encoding
  - S100 only (122.88 MBaud)
  - 50m target
  - 600 mV launch and 200 mV sensitivity
    - ✓ allows P1394b UTP to be implemented by using P1394b electrical short haul copper drivers/receivers operating at S100 together with appropriate and simple passive external isolating components
    - ✓ avoids having to develop special transceivers for UTP
  - Cat 5 UTP
  - No equalization
- Current draft reflects this scope
  - some holes need to be filled
  - need to validate the spec for functionality, robustness and that it allows simple implementations which pass FCC Class B
- Approach
  - treat the reach (50m) as the variable
    see if we can reach this distance with the other parameters

P1394b UTP5 decisions and issues etc - 1

- need isolation transformers at both ends
  - these need to match impedances (1394 110 Ohms, Cat 5 100 Ohms)
  - also needed for Class B and RF rejection
- higher lever start-up issue to ensure selection of correct speed
  - see usage model discussions
- Electrical spec - use of equalisation
  - external passive equalisers help and are cheap
  - next meeting - eye-diagrams from simulation of signal with passive equalisers, measurements?
  - lower sensitivity for S100 is possible if this helps
  - spec could allow longer reach with external active equalisation
    - ✓ specify equalisation as part of the cable plant
- No of connectors - electrical spec to support 4 mated pairs, better if 6
- Edge-rates
  - may need slower edge rates than are used in S800 for cross-talk and emissions considerations
  - but the passive components may do this for us anyway
- Jitter budget

P1394b UTP5 - issues - 2

- RJ-45 or 1394 wall-plate?
  - can't just use passive transformers in the wall plate or in a dongle
    - if the wall plate is 1394, then it does not support DS mode so it will not work if the user connects it to a P1394a device
    - if the wall plate is RJ-45 then the user needs an adapter cord which adapts it to a 1394 connector, which still does not support DS
  - 1394 wall plate implies use of subPHY behind the wall plate
  - RJ-45 wall plate implies use of subPHY in a dongle
  - CAT 5 plus wall-plates are already installed, so we must define a spec which allows them to be used (Note, this is NOT the preferred usage model)
- Pin allocations for RJ-45
  - probably use the two outer pairs (better signal integrity) - pins 1/2 and 7/8
  - check to ensure benign behaviour from misconfiguration (connection to ethernet etc etc)
  - which is transmit and which is receive??? (which is TPB and which is TPA)
- Cross-overs
  - building CAT5 installations are wired with NO cross-over
  - use star wiring and put the crossover in the wiring closet
  - for room-room direct then put the cross-over in the wall plate at one end
  - only one patch cord definition
- Open issues and further thought required here