Testing Primary Rate Physical Layer and Links with Duet

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Application Note ANDUET_1

Testing the World's Digital Networks

TrendCommunications

TESTING PHYSICAL LAYER AND LINK QUALITY.

1.Determining system link quality - Layer 1 Statistics on the auroraDuet

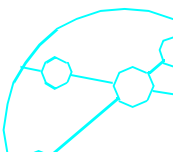
When a call fails or call set-up problems exist it is extremely useful to have an instant readout of the physical layer quality indicators to help isolate customer equipment problems. The auroraDuet offers ‘hotkey’ access to view instantly the error counts and messages to G.703 and G.704 specifications. This function is available in both monitor and simulation test modes.

The table below details some of the available statistics that can be viewed in real time on the auroraDuet when connected to the link.

NOS	No incoming signal has been detected
AIS	Alarm Indication Signal has been received
LOS	Loss Of frame Synchronisation
RAI	Remote Alarm Indication has been received
CRC	Cyclic Redundancy Check 4 (CRC4) errors have
E	been detected.
SLIPS	E-bit errors from the far end.
FAS	Frame timeslot slips
ERRORS	Displays errors in the FAS word
NFAS	Displays errors in the NFAS word
ERRORS	Records the number of HDB3 code violations
HDB3 CV	encountered.

Error counts registered against CRC4, FAS / NFAS, E or HDB3 CV may indicate signal degradation problems such as low signal levels, excessive EMI or impedance mismatches causing excessive reflections.

Recorded timeslot slippage under the SLIP count indicate master clock synchronisation problems in the local exchange or international interface. This SLIP problem is particularly common on inter-continental links.



2.Testing the 2Mbit/S cable quality - Layer 1 testing on the auroraDuet

When installing coaxial or twisted pair cabling for 2Mbit/S links or when all else fails in resolving problems on an existing link, the cable 'digital quality' will need to be determined. This can be achieved by terminating each end of the link (receive and transmit paths) with an auroraDuet running a wide-band bit-error-rate-test (BERT) across the link.

The auroraDuet will allow the cable to be divided into 32 timeslots with framing over timeslot 0. The remaining timeslots may then have a 64kbit/S BERT attached to provide an n x 64kbit/S BERT of approximately 2Mbit/S.

Using this function the quality of the cabling may be quickly understood and hence its suitability for carrying 2Mbit/S signalling conforming to G.703. This test allows quick set-up using hotkeys and a graphical timeslot map of the link along with the ability to send results via the serial communications port for printing or storage.

The functionality detailed above is available in the latest release of auroraDuet software. Please contact your Local Vendor or the Trend Communications Ltd Customer Support Hotline (tel: +44 1628 851085) for further information.