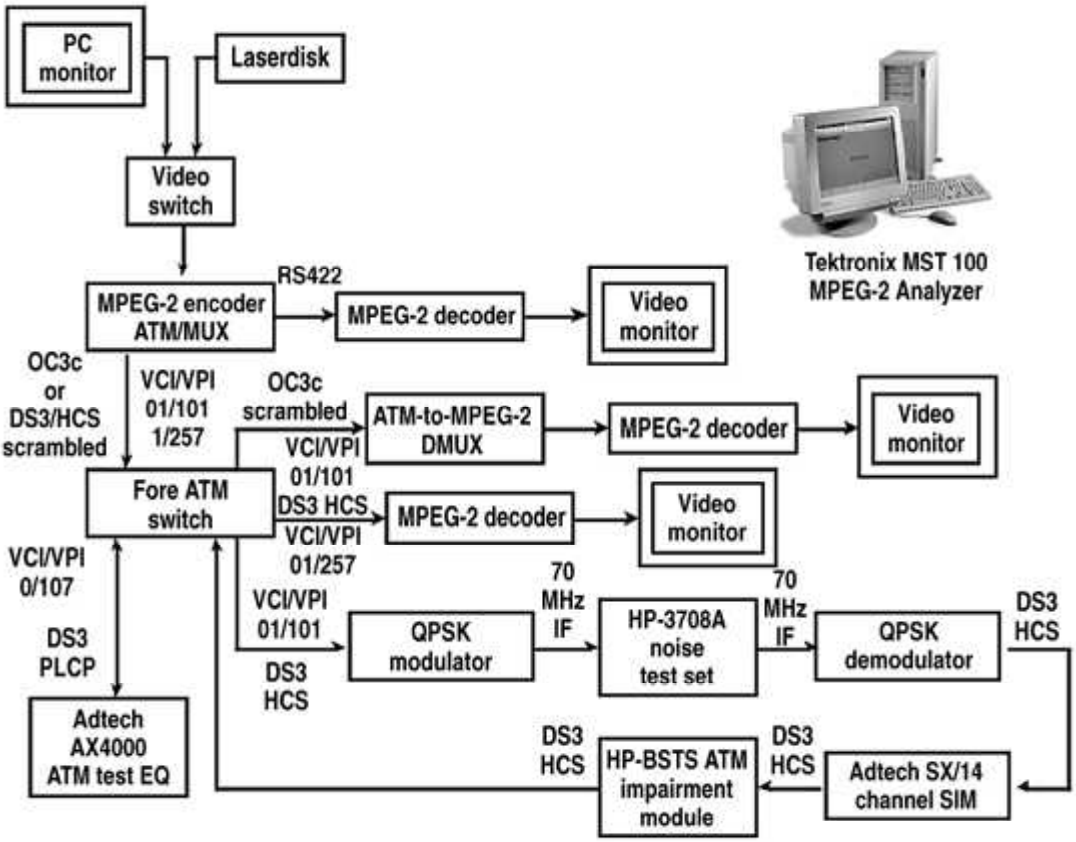
Asynchronous Transfer Mode Quality-of-Service Testing

In support of satellite-ATM interoperability, researchers at the NASA Lewis Research Center performed asynchronous transfer mode (ATM) quality-of-service experiments using MPEG-2 (ATM application layer 5, AAL5) over ATM over an emulated satellite link. The purpose of these experiments was to determine the free-space link quality necessary to use the ATM protocol to transmit high-quality multimedia information. The experimental results have been submitted to various International Telecommunications Union (ITU) study groups in order to improve and modify current standards and recommendations for the telecommunications industry.

Quality-of-service parameters for Class I, stringent class requirements for ITU-T I.356 are currently being debated. The experimental results presented will help to establish these quality-of-service thresholds. This material will also be useful in the development of the ITU-R WP-4B's Draft Preliminary New Recommendation on the Transmission of Asynchronous Transfer Mode Traffic via Satellite (Rec. S.atm). The results show that ITU-T Recommendation I.356 Class I, stringent ATM applications will require better link quality than currently specified-specifically, cell loss ratios of better than 1.0×10^{-8} and cell error ratios of better than 1.0×10^{-7}.



Test setup for MPEG-2 over ATM (further explanation).

The diagram shows the setup for these tests. This testbed, which is extremely flexible, can be easily expanded to run over actual satellite and terrestrial links since we have direct ATM connections to the high data rate terminal of NASA's Advanced Communication Technology Satellite (ACTS) and to the NASA Research and Education Network (NREN).

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