# **The Monitoring and testing systems**

## **Introduction -**

There are various stages in the signal processing that require monitoring to ensure that there is no loss in the quality of video or audio provided by the DTH services. Automated monitoring devices analyze the data transport stream for any losses. Monitoring allows rapid isolation and debugging to rectify system faults. The system also can compare and analyze measurements and results to correct any recurring problems.

There are various types of monitoring equipment that is present at the DTH facility –

* BARCO monitoring equipment is used by Airtel for 24X7 monitoring for loss of quality in audio and video signals at the DTH facility at Manesar.
* Dolby Audio Analyzer ensures healthy transmission of the content by continuous real-time and post fault monitoring & analysis of services.
* The DVB/MPEG Transport Stream analyzer is an automated system used to monitor each uplink and downlink chain, giving detailed diagnosis and debugging capability to reduce error correction time.

The DTH testing lab plays a vital role in the development of new services and feedback before implementing them in the real system. Testing is essential in order to furnish various tasks and testing procedures related to new product development, evaluation and analysis of field issues the equipment purchase is required.

It is important that field teams carry installation tools that are accurate, for reduced realignment and revisit calls, to ensure good signal reception at the time of installation at customer premises.

Benchmarking with current market trends and products is also necessary to compare and ensure that similar problems are corrected without much delay.

Testing is also required in new product development and addition of new features and products for Airtel DTH customers.

This stage is in direct relation to in-house activities related to customer satisfaction aimed to reduce product failure and issues.

Airtel undertook the testing of a newly developed Handheld DVB-S2 satellite meter and wireless AV Tx/Rx (samples). This was aimed at developing tools to provide field teams with the most relevant & updated tools used in day-to-day installation activities. It would also help to recharge competitor STB and archive for benchmarking.

Investment in new monitoring equipment -

Investment in new monitoring equipment is driven by the need to bring the most advanced technology and innovation to the consumers. With the addition of millions of subscribers every year, the companies must expand & deliver services at the highest level. It is thus essential to monitor and analyze any problem in the network. This helps to achieve increased customer satisfaction and readies us for future evolution.

There may be various cases for installation of monitoring equipment -

* **To meet the rising demand for additional services:**

New equipment may be required when the existing infrastructure does not have the capacity for additional services.

The broadcast facility at Manesar provided uplink for 198 SD, 1HD and 4PPV channels. However, with plans to launch 20SD and 5HD channels the following year, it was seen that the present multiviewer card based monitoring system could not accommodate any additional services. Hence, new BARCO Monitoring Equipment was installed to check for quality and losses at each stage in any service, 24X7.

* Cost of additional equipment (GDAC, Audio & Video cards etc.)
* Project management fee
* **To improve and optimize performance in the system:**

Installation of an analysis engine enables reduced time-to-insight and diagnostics of system & services to deliver the best audio and video quality.

Earlier existing infrastructure did not support automated monitoring of Transport Stream, and A/V quality parameters were manually monitored. Transport Stream Analyzer, Picture Quality Analyzer & Dolby Audio Analyzer were installed to monitor A/V services at each uplink and downlink chain to ensure that there is no degradation in quality.

* Cost of instruments and equipment
* Required infrastructure
* Commissioning and test charges

**Testing at DTH Lab :**

Improve services and reliability through testing and tracking the issues in software and applications.

A software-based issue tracking system called Bugzilla was required to replace the tedious and error prone manual tracking of issues using Microsoft Excel. The DTH network had 11 STB types and STB has multiple software releases in a year. Hence the software based tracker would generate reports, provide bug capturing details, release wise and STB wise issue status, with easy maintenance and no loss of issues.