

Testing and monitoring DVB-T2 signal feed via new T2-MI interface

An error in DVB-T2 signal feed to the transmitter can cause failure of the entire DVB-T2 network. For this reason, the established ETSI TR 101 290 DVB measurement guidelines have been expanded to include measurements for the new T2-MI interface. The instruments of the R&S®DVMS family monitor T2-MI signals by performing these newly defined measurements and even provide in-depth analysis of these signals.

Your task

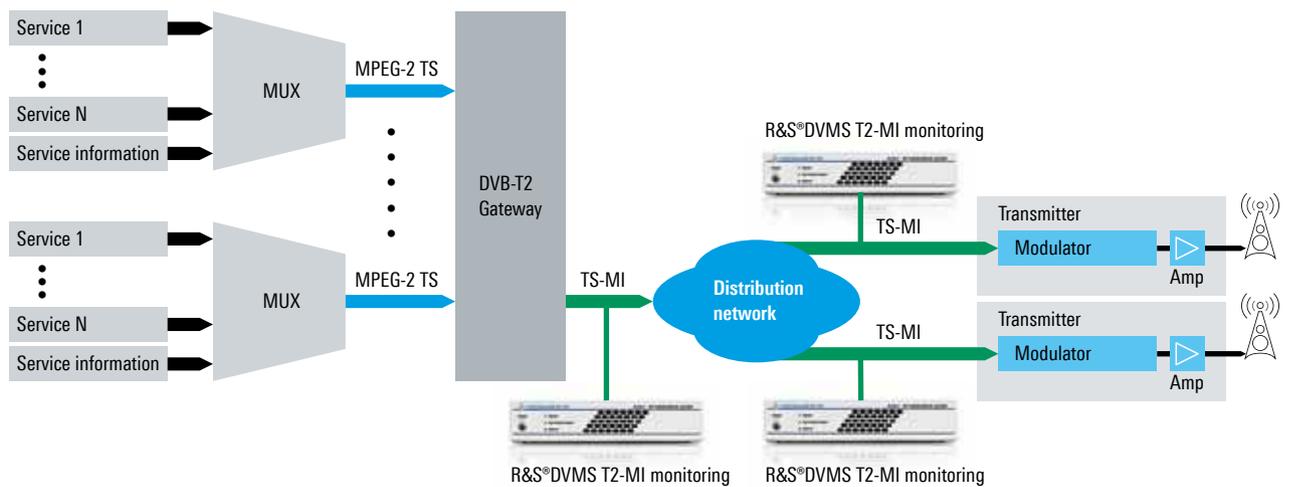
Along with the new DVB-T2 TV transmission standard, a new interface for feeding program and control data to the transmitter has been created – the DVB-T2 modulator interface (T2-MI). This interface defines the output from the DVB-T2 gateway and the input to the DVB-T2 modulator.

The integrity of the generated T2-MI signal must be ensured when the DVB-T2 gateway is commissioned and during its operation. Furthermore, correct distribution of the signal to the transmitter must be ensured. If errors occur, their cause must be identified quickly so that suitable action can be taken. If a faulty T2-MI signal reaches the modulator, this may cause failure of the transmitter.

T&M solution

The T2-MI signal is monitored continuously in 24/7 operation at the gateway output and the modulator input for data content and structural integrity. It is tapped via a TS ASI or IP interface. Although this T2-MI data stream is based on the MPEG-2 transport stream, it is considerably more complex.

T2-MI monitoring concept



The T2-MI data stream contains additional data layers and can therefore only be rudimentarily analyzed using conventional MPEG-2 transport stream analyzers. Real T2-MI monitoring or even in-depth analysis is not possible.

The new T2-MI option for the instruments of the R&S®DVMS family provides the desired functionality. This powerful and easy-to-operate function performs 18 measurements in line with the A14-1 amendment to the DVB measurement guidelines, thus ensuring reliable monitoring of the T2-MI signal. In addition, an integrated demultiplexer provides full insight into the structure of the T2-MI signal for further analysis if required.

Application

The R&S®DVMS instruments' intuitive user interface allows T2-MI monitoring and measurements to be configured quickly and in compliance with the guidelines, whether locally or by remote control. The results obtained during

continuous monitoring can be transferred automatically as SNMP traps to a higher-level network management system such as the R&S®TS4570. Alternatively, results are also available manually via the integrated web interface.

To ensure reliable operation of the DVB-T2 network as a whole, the instruments of the R&S®DVMS family offer even more: Parallel to monitoring the new T2-MI data stream, the higher-level MPEG-2 transport stream as well as each program of every included physical layer pipe are monitored using the tried-and-tested method in line with ETSI TR 101 290. Optionally, using the R&S®DVMS-B54 DVB-T2 receive module, the RF quality of the signal output by the transmitter can also be monitored.

See also:

www.rohde-schwarz.com/product/DVMS
www.rohde-schwarz.com/product/TS4570
www.rohde-schwarz.com/technology/DVB-T2

R&S®DVMS T2-MI monitoring solution

The screenshot displays the R&S DVMS4 software interface. On the left, there is a tree view with three main sections: 'SITE' containing 'R&S DVMS4' and 'Module 1' with 'Input 2 [ASI (T2-MI)]'; 'INPUT' containing a 'T2MI-Tree' with 'TS (ID not available)', 'T2MI TS (PID 4095)', and two 'T2MI BB Frame Group (ID 0)' and '(ID 1)' entries; and 'Service tree with all elements of a service' containing 'Data PLP Type 2 (ID 0)', 'TS (ID 1)', 'PSS/PSI', and various services like 'Service 1 [BBC R&D HD1]', 'Video AAC (ISO/IEC 14496-10)', 'Audio AAC (PID 112)', 'User Private PID', and 'M&M Packets (PID 0191)'. The main window shows 'Monitoring * Statistics & Log @: Data PLP Type 2 (ID 0) DVB [Config PLP 7]'. It features three columns of error counters: '1st Priority Error' (TS Sync, Sync Byte, PAT, Continuity Count, PID), '2nd Priority Error' (Transport, CRC, PAT, PCR Present, PCR Discontinuity, PKT, PTS Discontinuity), and '3rd Priority Error' (Repetition, Unref PID). An 'Extended Checks' section includes 'Of Field', 'TS ID Mismatch', 'TS Modification', 'CA Alternative', and 'TS Timestamp'. Below these is an event log table with columns for No., Time/Date, Class, Event, Detail, PID, and Packet ID. The log shows an event at 10:09:20.20... with Class 'Alarm' and Event 'Continuity Count - Packet order discontinuous'. The interface also includes a status bar at the bottom with 'Running' indicator and system information.

Input tree for selecting the signal input

T2-MI tree with the structured representation of the T2-MI elements and for selecting a service (baseband frame) for display in the service tree

Service tree with all elements of a service

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