

DAB-XPlorer

A set of tools to analyse DAB data streams



Key features:

- ◆ Modular system consisting of hard- and software tools
- ◆ Hardware ETI interface and receiver hardware available
- ◆ Analysis of DAB multiplex on ETI, EDI and RF signal
- ◆ Presentation of parameters in Google Earth
- ◆ Measuring of synchronism in SFNs
- ◆ Recording of ETI files from on-air signals

Range of applications:

- ◆ ETI analysis for broadcasters
- ◆ Transmitter setup
- ◆ Coverage measuring
- ◆ SFN test
- ◆ Test of transmitter components
- ◆ Receiver test

Description

For historical reasons the term DAB-XPlorer stands for two things a) the DAB-XPlorer software suite providing a collection of software tools to analyse DAB data streams and b) for the DAB-XPlorer hardware providing an ETI/RDI-to-USB interface. Originally, both the software and the hardware have been one product, the DAB-XPlorer, developed and manufactured by Ingenieurbüro Mulka. In the course of the evolution of this product, the software was modified and extended to support additional hardware products from other vendors. At this time the DAB-XPlorer software suite supports and can be delivered with

- ◆ the ETI/RDI-to-USB converter DAB-XPlorer from Ingenieurbüro Mulka,
- ◆ all Ethernet interfaces that can be used to receive EDI data streams,
- ◆ the DAB test receiver UEB400-DXP provided under the trademark VAD, and
- ◆ the products of VDL's DABSTOR family.

The DAB-XPlorer software application is modular. The following tools are available:

- ◆ Ensemble Viewer
- ◆ ETI-XPlorer
- ◆ FIC-XPlorer
- ◆ FIC-XTractor
- ◆ PRBS-Analyzer
- ◆ Message Viewer
- ◆ Recorder / Player / Timeshift Buffer
- ◆ RDI-ETI-Converter
- ◆ GPS-Campaign-Converter
- ◆ Triggered Recorder

Together with the various hardware options, the software modules can be combined to support a great variety of use cases by broadcasters, transmitter network operators and manufacturers.

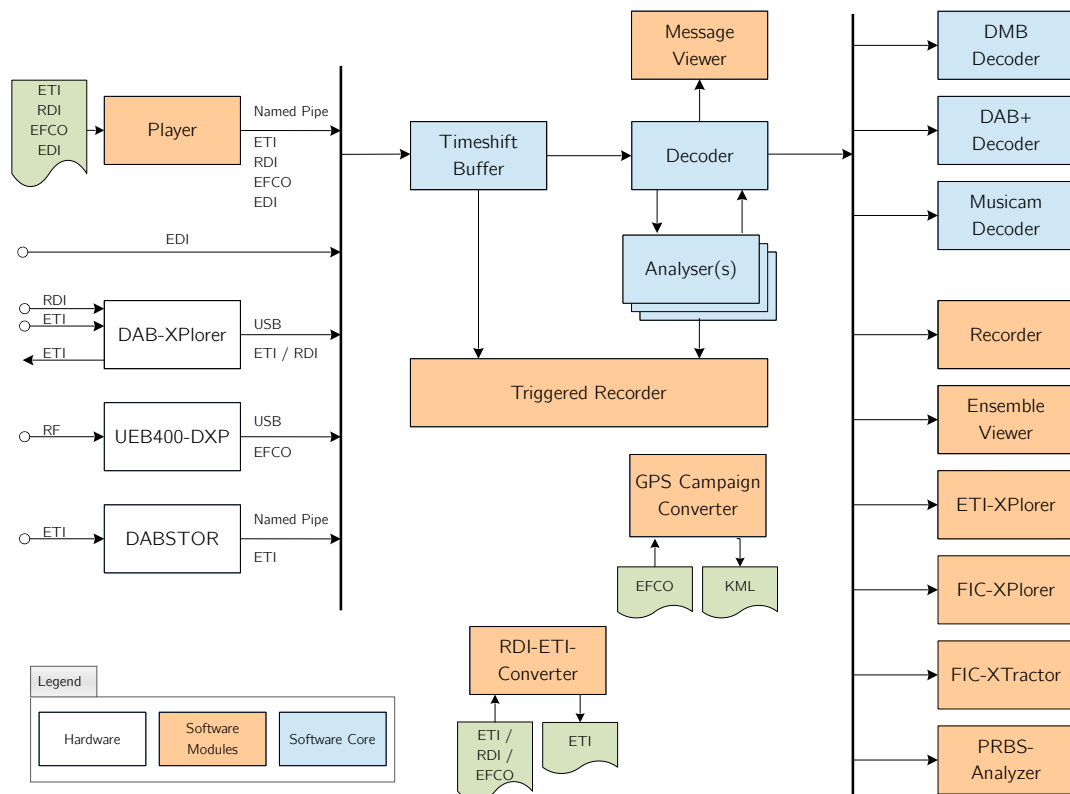
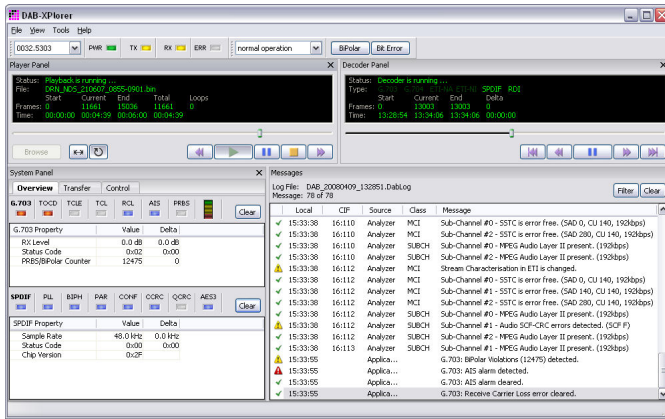


Figure 1: Overview of the hard- and software modules of the DAB-XPlorer family



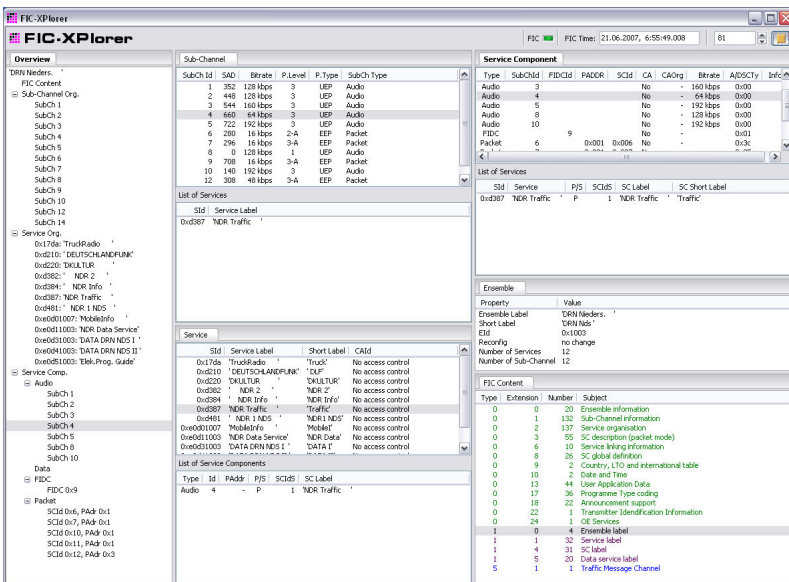
DAB-XPlorer

- ◆ System Panel
- ◆ Recorder / Replayer
- ◆ Decoder / Time shift
- ◆ Message list with results of analyses



ETI-XPlorer

- ◆ Overview
- ◆ Error status, error counter
- ◆ Timing of TIST-NA/LI
- ◆ Sub-Channel list
- ◆ Graphical overview of CU allocation



FIC-XPlorer

- ◆ MCI overview
- ◆ FIC overview
- ◆ Ensemble Information
- ◆ Various views on MCI:
 - Sub-Channel View
 - Service View
 - Component View

Overview of deliverable hard- and software components

Hardware components

DABXP-CM

USB dongle CodeMeter with 2 GByte flash

DABXP-HWU

DAB-XPlorer hardware

- G.703 / SPDIF to USB converter box
- USB 2.0 A/B cable

UEB400DXP-HWU

DAB(+)/DMB test receiver with USB and GPS

- DAB receiver
- antenna for VHF band III and L-band
- active GPS antenna
- wall power supply 230V AC to 12 V DC
- USB 2.0 A/B cable

UEB400-DXP-specific software options

UEB400DXP-REC

Recorder, player, and configuration for UEB400-DXP

- configuration, tuning, scanning, receiver status, FIC- BER, MSC-BER, RSSI level
- recording and playback of EFCO
- service, sub-channel and SC list
- decoding of the selected audio sub-channel (MUSICAM)

UEB400DXP-OAN

Option Analyser (ETI-XPlorer, FIC-XPlorer, and SFN)

- EFCO/RDI/ETI Decoder/Analyser
- ETI-XPlorer, FIC-XPlorer, Messages-Viewer
- measurement of the SFN

Software options

DABXP-BASIC

Option Recorder, Player, ETI-XPlorer, and FIC-XPlorer

- configuration, hardware status
- recording and playback of ETI, RDI, and EFCO
- service, sub-channel and SC list
- decoding of the selected audio sub-channel (MUSICAM)
- EFCO/RDI/ETI Decoder/Analyser
- ETI-XPlorer, FIC-XPlorer, and Messages-Viewer

DABXP-OCO

Option RDI/EFCO/ETI Converter. Converter of RDI, EFCO, ETI-NI, ETI-NA, ETI-LI files with off-line analysis, replacement and post-processing

- converting to ETI-NI or ETI-NA
- offline analysis of the data stream, analysing results may be exported as XML file
- optional extracting of the FIC or sub-channel content
- changing of DAB transmission mode
- replacement of labels and sub-channel content by file content
- replacement of sub-channel content by PRBS
- insertion of bit or frame errors

DABXP-OPL

Option DAB+/FEC/Streaming. DAB+ audio decoder, analysis of FEC, sub-channel streaming, EDI decoder

- DAB+ audio decoder incl. VIA licence
- analysing errors within the DAB+ Fire-Code, RS-Code or AU-CRC (requires ETI-XPlorer)

- analysing errors within the DMB RS-Code (requires ETI-XPlorer)
- sub-channel streaming to external decoders via UDP
- decoding of EDI streams via UDP
- analysing errors within the Enhanced Packet Mode RS-Code or Packet-CRC (requires ETI-XPlorer)

DABXP-OPR

Option PRBS Analyser. Real-time PRBS analyser

- displays the signal level over the time
- displays the Viterbi-BER and RS-BER over the time
- displays the error position (error bitmap) within the sub-channel over the time

DABXP-OXT

Option FIC-XTractor. Analyser of the Fast Information Channel on bit-stream level like a protocol analyser

- frame oriented list of received FIGs
- FIG list sorted by type or extension
- database oriented list of received FIGs, all doublets are removed from the view, gets statistic of the FIGs
- tree view of the decoded FIG

DABXP-OCC

Option GPS Campaign Converter. Converter of EFCO to KML

- displays the measured data on the map of Google Earth

DABXP-OTR

Option Triggered Recorder

- ETI recording triggered by an external event

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