

# Generating and analyzing transport streams for DVB-H

**The DVB-H standard has been specified for supplying broadband data services to mobile terminals. In contrast to DVB-T, the emphasis is on robust transmission, support of mobile reception and saving energy in terminals. Rohde&Schwarz provides new software and options for generating and analyzing DVB-H transport streams.**

## Key features of DVB-H

Transport streams for DVB-H are based on the structure of DVB-T transport streams, and may include services that are compatible with both DVB-T and DVB-H. The IP/MAC notification table (INT) signals whether a DVB-H service is included in the transport stream.

In DVB-H, the IP data (payload) belonging to a service is transmitted via multi-protocol encapsulation (MPE), a method that describes the transport of IP data in MPEG-2 data streams. A typical application is the transmission of video data with low resolution (e.g. H.264-coded). The IP data is divided into blocks of data called sections for transport. A high level of error protection is ensured on the transmission path by means of special error protection data, which is transmitted in its own sections together with the payload (MPE-FEC). The service provider defines the proportion of protection data to payload.

The introduction of DVB-H also included the introduction of time slicing, where the data of a DVB-H service is transmitted in bursts. The service provider defines the distances between the bursts and the length of each burst within a range specified by the standard. Time slicing reduces energy consumption in the receiver since the receiver can switch off its receiving unit between bursts.

## Transport streams from library or by means of software

To test DVB-H-compatible terminals, you need transport streams with the above characteristics. Rohde&Schwarz meets this need by offering a DVD with a large collection of transport streams with contents coded in different ways and a wide variety of parameters for time slicing [\*].

However, some applications require customer-specific transport streams, such as in the following cases:

- ◆ When special contents are used
- ◆ When customized DVB-H parameters are applied
- ◆ When DVB-H services are combined with special DVB-T programs, etc

To enable you to make your own transport streams, Rohde&Schwarz offers the Advanced Stream Combiner R&S®DV-ASC software option. With just a few keystrokes, you can generate DVB-H-compatible transport streams with your own parameters. R&S®DV-ASC is an expansion of the tried-and-tested Stream Combiner R&S®DVG-B1 for generating MPEG-2 transport streams for various transmission methods such as DVB-T, DVB-S, DVB-C and ATSC.

The DVB-H interface in R&S®DV-ASC is intended for IP data saved in files. You can use your own IP data or select from a large collection which comes with the DVB-H Stream Library DVD<sup>1)</sup>. The software automatically inserts or calculates all DVB-H characteristics. FIG 1 shows the user interface of the Advanced Stream Combiner software; the screenshot in the foreground shows the window for setting time slicing and FEC parameters.

More information and a demo version of the R&S®DV-ASC software at [www.rohde-schwarz.com](http://www.rohde-schwarz.com) (search terms: DVM/DV-ASC/DV-DVBH)

[\*] The "DVB-H Stream Library R&S®DV-DVBH" DVD is available from any Rohde&Schwarz office.

1) The replay of these contents is only possible if the DVB-H Stream Library option is enabled on the instruments used.

The transport streams that have been generated by using the software and also the transport streams of the ready-made library can be replayed with the generators in the Broadcast Test System R&S®SFU and the Digital Video Measurement System R&S®DVM 400, as well as with the DTV Recorder Generator R&S®DVRG.

## Analysis functions

The measurement functions of the R&S®DVM family have also been expanded to enable you to analyze all DVB-H-specific features:

- ◆ Correct signaling and integration into the transport stream
- ◆ Interpretation of the INT
- ◆ Detailed syntax analysis und interpretation of the MPE sections
- ◆ Evaluation of error protection
- ◆ Time slicing measurement with graphical display (FIG 2)
- ◆ Data extraction and video content decoding (if codec is known)

All functions mentioned above are available with the Data Broadcast Analysis R&S®DVM-K11 option for all instruments of the R&S®DVM family. The base units can already recognize DVB-H services and measure the data rate (PID level). You can use the In-Depth Analysis R&S®DVM-K10 option to interpret the INT.

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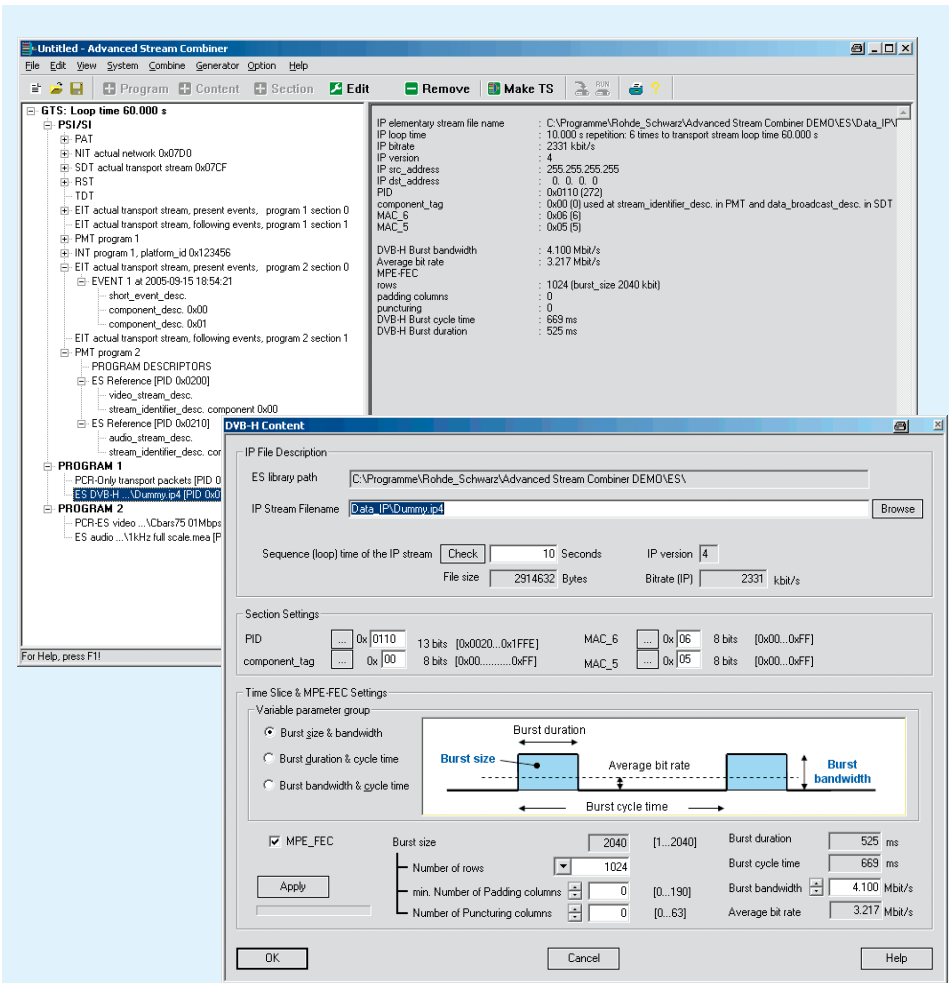


FIG 1 Setting of the DVB-H parameters with the Advanced Stream Combiner R&S®DV-ASC software option.

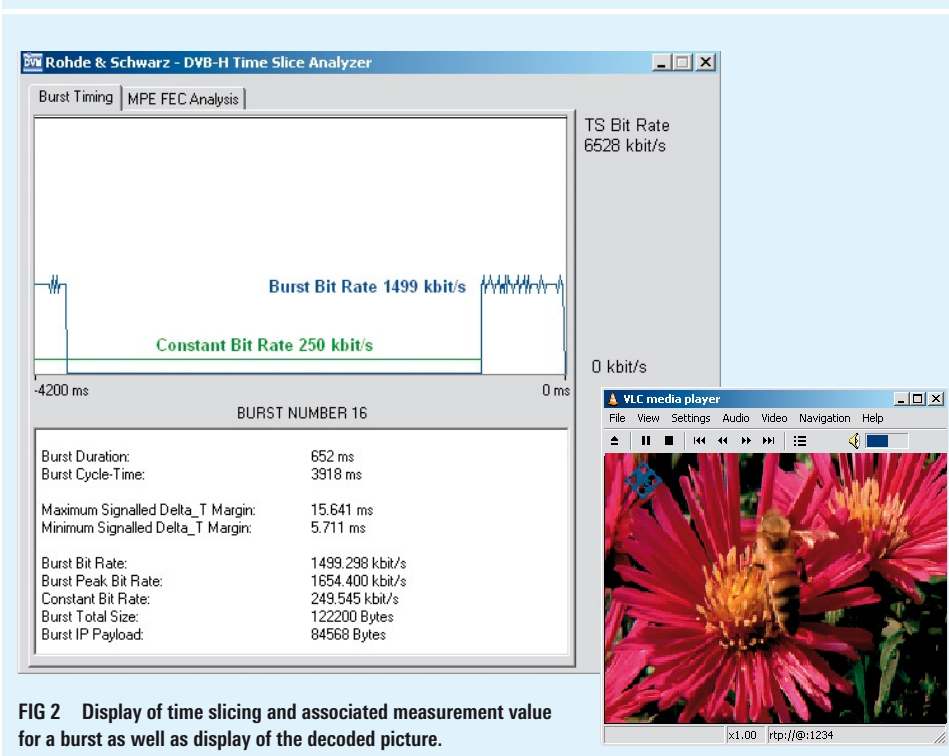


FIG 2 Display of time slicing and associated measurement value for a burst as well as display of the decoded picture.