Generating and analyzing transport streams for DVB-H

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 1). 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 (search terms: DVM/DV-ASC/DV-DVBH)

[*] The “DVB-H Stream Library R&S®DV-DVH” 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®DVM400, 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 and 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.

Thomas Tobergte