

Broadcasting to Handhelds

Digital Terrestrial Mobile TV



What is DVB-H?

DVB-H is a technical specification for the transmission of digital TV to handheld receivers such as mobile telephones and PDAs. Published as a formal standard (EN 203 204) by ETSI in November 2004, it is a physical layer specification designed to enable the efficient delivery of IP-encapsulated data over terrestrial networks. The creation of DVB-H, which is closely related to DVB-T, also entailed modifications of some other DVB standards dealing with data broadcasting, Service Information, etc. It can be used as a bearer in conjunction with the DVB-IPDC systems layer specifications or alternatively with the OMA BCAST specifications. A non-proprietary open standard, DVB-H has broad support across the industry and services are now on air in more than ten countries.

Background

When the possibility of a dedicated DVB specification for broadcasting to handhelds was first discussed, it was in the context of the proven mobile performance of DVB-T, the widely adopted standard for digital terrestrial TV. The key applications considered were mobile TV, video streaming in general and file downloads, all targeted at handheld receivers that would operate with a limited battery life and in difficult reception conditions. As usual, the work of DVB's Technical Module was based closely on a set of Commercial Requirements. The most important of these were that there should be a significant power saving in the receiver compared to DVB-T, excellent performance and robustness in a cellular environment, and enhanced support for single antenna reception in single frequency networks (SFNs).

How does it work?

DVB-H is an extension of DVB-T with some backwards compatibility, i.e., it can share the same multiplex with DVB-T. It uses a mechanism called multi-protocol encapsulation (MPE), making it possible to transport data network protocols on top of MPEG-2 transport streams. A forward error correction (FEC) scheme is used in conjunction with this to improve the robustness and thus mobility of the signal. In addition to the 2k and 8k modes available in DVB-T, a 4k mode is added to DVB-H giving increased flexibility for network design. A short "in-depth" interleaver was introduced for 2k and 4k modes that leads to better tolerance against impulsive noise (helping to achieve a similar level of robustness to the 8k mode).

(continued overleaf)

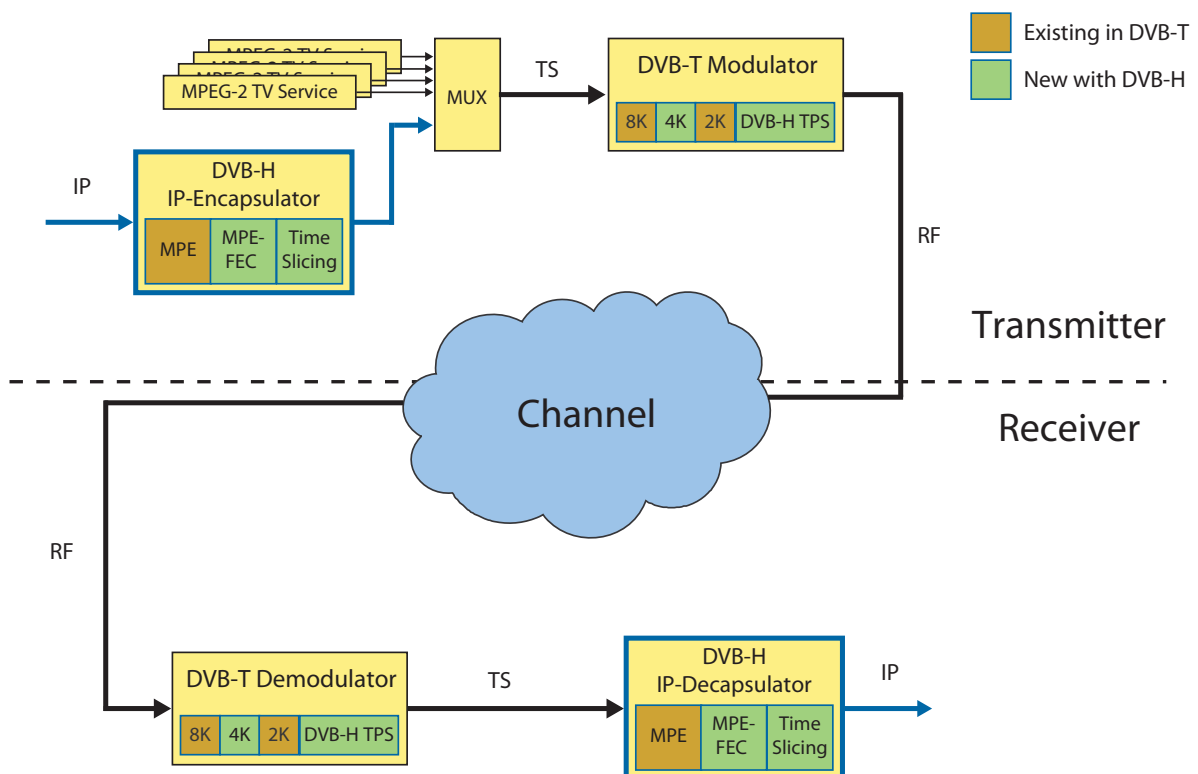


Figure 1. Additions brought to the DVB-T system by DVB-H

Another essential element of DVB-H is Time Slicing, the main technique used to achieve the required power savings. Each individual TV service in a DVB-H signal is transmitted in bursts allowing the receiver to go into sleep mode, only waking up when the service to which it is “tuned” is transmitted. For handheld devices this can add up to very significant power savings in the front-end. For battery life and thermal balance this is a key functionality. Statistical multiplexing is also possible in DVB-H, ensuring optimum use of bandwidth to deliver services. DVB-H is designed for use in Bands III, IV and V as well as L-band.

Market Deployment

DVB-H mobile TV services are on air in Italy, Finland, Switzerland, Austria, the Netherlands, Vietnam, Malaysia, India, the Philippines, Albania, Nigeria, Kenya and Namibia. More than fifty DVB-H technical and commercial trials have taken place all over the world and further commercial launches are expected in France, Russia, Indonesia, Taiwan and elsewhere. As analogue switch-off proceeds across Europe, the spectrum released in the UHF bands will enable the widespread deployment of DVB-H networks.

In March 2008 the European Commission endorsed DVB-H as the recommended standard for mobile TV in Europe, instructing EU member states to encourage its implementation. Also in March 2008, patent management company Sisvel announced the establishment of a joint licensing programme for patents essential to the implementation of DVB-H. Such a “patent pool” provides clarity for manufacturers wishing to include DVB-H technology in their products. The DVB Project always endeavours to ensure that technology included in its standards is made available to implementers on fair, reasonable and non-discriminatory terms, although it is not directly involved in the patent pooling process itself.

Next Steps for DVB-H

The DVB-H standard is fully specified and published. Some additional work is ongoing within the DVB Project revising the DVB-IPDC systems layers following extensive implementation experience. Such work includes efforts towards harmonisation with the OMA BCASST specifications. As with all elements of DVB-H, once finalised, the work is standardised as quickly as possible to facilitate implementers.

DVB has also published a specification called DVB-SH (Satellite services to Handhelds), introducing the option of using satellites operating in the S-band below 3GHz as part of the mobile TV chain. DVB-SH is also designed to utilise the DVB-IPDC systems layer specifications and thus complements the DVB-H specification. (See separate DVB-SH Fact Sheet.)

Links

- www.dvb-h.org – DVB’s mobile TV website; information about service launches and useful technical documentation
- www.etsi.org – all DVB standards are available for download directly from the ETSI website
- www.dvb.org – the main website of the DVB Project