



IP broadcasting to handheld devices based on DVB-T

DVB-H is the latest development from the DVB Project targeting handheld, battery powered devices such as mobile telephones, PDAs, etc..

Based on DVB-T's excellent mobile performance, it answers need to ensure reliable, high speed, high data rate reception. Here's how...

DVB-H Handheld

When DVB-T was first published in 1997, it wasn't designed to target mobile receivers. However, following very positive experimental results, DVB-T mobile services have been launched in Singapore and Germany, with extensive commercial trials elsewhere. Indeed, with the advent of diversity antenna receivers, services which target fixed reception can now largely be received on the move as well. So why DVB-H?

Battery life! Despite the success of mobile DVB-T reception, the major concern with any handheld device is that of battery life. The current and projected power consumption of DVB-T front ends is too high to support

handheld receivers that are expected to last from one to several days on a single charge.

The other major requirements for DVB-H were an ability to receive 15Mbit/s in an 8MHz channel and in a wide area single frequency network (SFN) at high speed. These requirements were drawn up after much debate and with an eye on emerging convergence devices providing video services and other broadcast data services to 2.5G and 3G handheld devices. Furthermore, all this should be possible while maintaining maximum compatibility with existing DVB-T networks and systems.

Technical Characteristics

In order to meet the above requirements, the DVB-H specification includes:

Time-Slicing

Rather than continuous data transmission as in DVB-T, DVB-H employs a mechanism where bursts of data are received at a time - a so-called IP datacast carousel. This means that the receiver is inactive for much of the time, and can thus, by means of clever control signalling, be "switched off". The result is a power saving of some 90% and more in some cases.

4K-mode

With the addition of a 4K mode with some 3409 active carriers, DVB-H benefits from the compromise between the high-speed small-area SFN capability of 2K DVB-T and the lower speed but larger area SFN of 8K DVB-T. In addition, with the aid of enhanced in-depth interleavers in the 2K and 4K modes, DVB-H has even better immunity to ignition interference.

MPE-FEC

The addition of an optional, multiplexer level, forward error correction scheme means that DVB-H transmissions can be even more robust. This is advantageous when considering the hostile environments and poor (but fashionable!) antenna designs typical of handheld receivers.

Compatibility with DVB-T

Like DVB-T, DVB-H can be used in 6, 7 and 8 MHz channel environments. However, a 5MHz option is also specified for use in non-broadcast environments. A key initial requirement, and a significant feature of DVB-H, is that it can co-exist with DVB-T in the same multiplex. Thus, an operator can choose to have 2 DVB-T services and one DVB-H service in the same overall DVB-T multiplex.

What of ATSC and ISDB-T?

2004 is all about mobile and portable multimedia. This sidelines the single carrier (8-VSB) ATSC system from the US. ISDB-T, developed and now deploying in Japan, has a mode which could offer mobile datacasting services, but concerns about battery power, receiver cost and system complexity remain. DVB-T is deployed in some 50 countries and, with DVB-H, now provides a powerful tool to address new markets for DVB services.

DVB-H and 3G

Broadcasting is an excellent way of reaching many users with a single (configurable) service. DVB-H combines broadcasting with a set of measures to ensure that the target receivers can operate from a battery and on the move, and is thus an ideal companion to 3G telecommunications, offering symmetrical and asymmetrical bi-directional multimedia services.



DVB-H trials

DVB-H trials are an important element in system verification. Trials are now underway in Germany (Berlin), Finland (Helsinki) and US (Pittsburgh). Such trials will help frequency planning, and improve understanding of the complex issue of interoperability with telecommunications networks and services. In the meantime, the DVB-H documentation is being standardised through ETSI. The draft specification is available now on the DVB website.

From trials to services

DVB-H is generating significant interest in the broadcast and telecommunications worlds, and DVB-H services are expected to start as early as 2005. Indeed, one senior mobile telecommunications industry analyst is quoted as saying that he expects to see 100 million DVB-H capable handsets in 2007, growing to 300 million by 2009.



Nokia 7700 - Prototype DVB-H GPRS handset

More information: www.dvb.org

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