DVB S2 SATELLITE

Most advanced satellite delivery possible

DVB-S2 is the latest advanced satellite transmission technique from DVB, improving on and expanding the range of applications possible with DVB's tried and trusted DVB-S.

" DVB-S2 is so powerful that in the course of our lifetime, we will never need to design another system"

Brave words, but what is DVB-S2?

DVB-S2 and DVB-S

There are already many millions of DVB-S IRDs deployed all over the world. DVB-S2 is designed to benefit from technology advances to meet the more exacting requirements of satellite broadcasting today.

DVB-S2 provides:

- 30% greater efficiency than DVB-S;
- an increased range of applications by combining the functionality of DVB-S (for direct-to-home applications), and DVB-DSNG (for professional applications);
- techniques such as adaptive coding to maximise the usage of value satellite transponder resources.

And it is as cheap to implement as DVB-S was when it was first deployed in 1994. DVB-S2 has reached its goals in many ways exceeded all expectations!

DVB-S2 Application Areas

In order to cope with an expanded range of applications typical of DVB satellite channel coding and modulation, DVB-S2 is designed to be used in the following application areas:

Broadcast Services (BS)

BS is covered today with DVB-S, but with the added flexibility of VCM (Variable Coding and Modulation) enabling different levels of protection for each service (e.g. robust SDTV, with less-robust HDTV). There are also BC-BS (backwards compatible broadcast services) for added interoperability with DVB-S decoders, and a more optimised NBC-BS (non-backwards compatible).

Interactive Services (IS)

IS is designed to be used with existing DVB return channel standards (e.g. RC-PSTN, RCS, etc.), DVB-S2 can operate in CCM (constant coding & modulation) and ACM (Adaptive Coding and Modulation) modes. ACM enables each receiving station to control the protection around the traffic addressed to it.

Digital TV Contribution and Satellite News Gathering (DTVC/DSNG)

DTVC/DSNG builds on the DVB-DSNG standard, facilitating point-to-point, or point-to-multipoint communications of single or multiple MPEG transport streams using either CCM, or ACM modes.

Other Professional Applications (PS)

These include for example data content distribution/trunking: this mode is generally reserved for professional point-to-point and point-to-multipoint applications using the CCM, VCM or ACM techniques described above.

Technical Characteristics

With increased flexibility requirements, and a wish to design a system which on average would yield 30% performance gains over DVB-S, DVB-S2 has the following characteristics:

Modulation Modes

There are 4 modulation modes: QPSK, 8PSK for broadcast applications through non-linear satellite transponders driven near to saturation. 16APSK and 32APSK are more geared towards professional applications requiring semi-linear transponders. The latter schemes trade-off power efficiency for much greater throughput.

Bandwidth and Roll-off:

For tighter bandwith shaping, DVB-S2 adds roll-off factors of "alpha"=0.25 and "alpha"=0.20 to the DVB-S traditional roll-off of "alpha"=0.35

Forward Error Correction

DVB-S2 uses a powerful FEC system based on concatenation of BCH (Bose-Chaudhuri-Hocquenghem) with LDPC (Low Density Parity Check) inner coding. The result is performance which is at times only 0.7dB from the Shannon limit. The choice of FEC parameters depends on the system requirements. With VCM and ACM, the code rates can be changed dynamically, on a frame by frame basis.

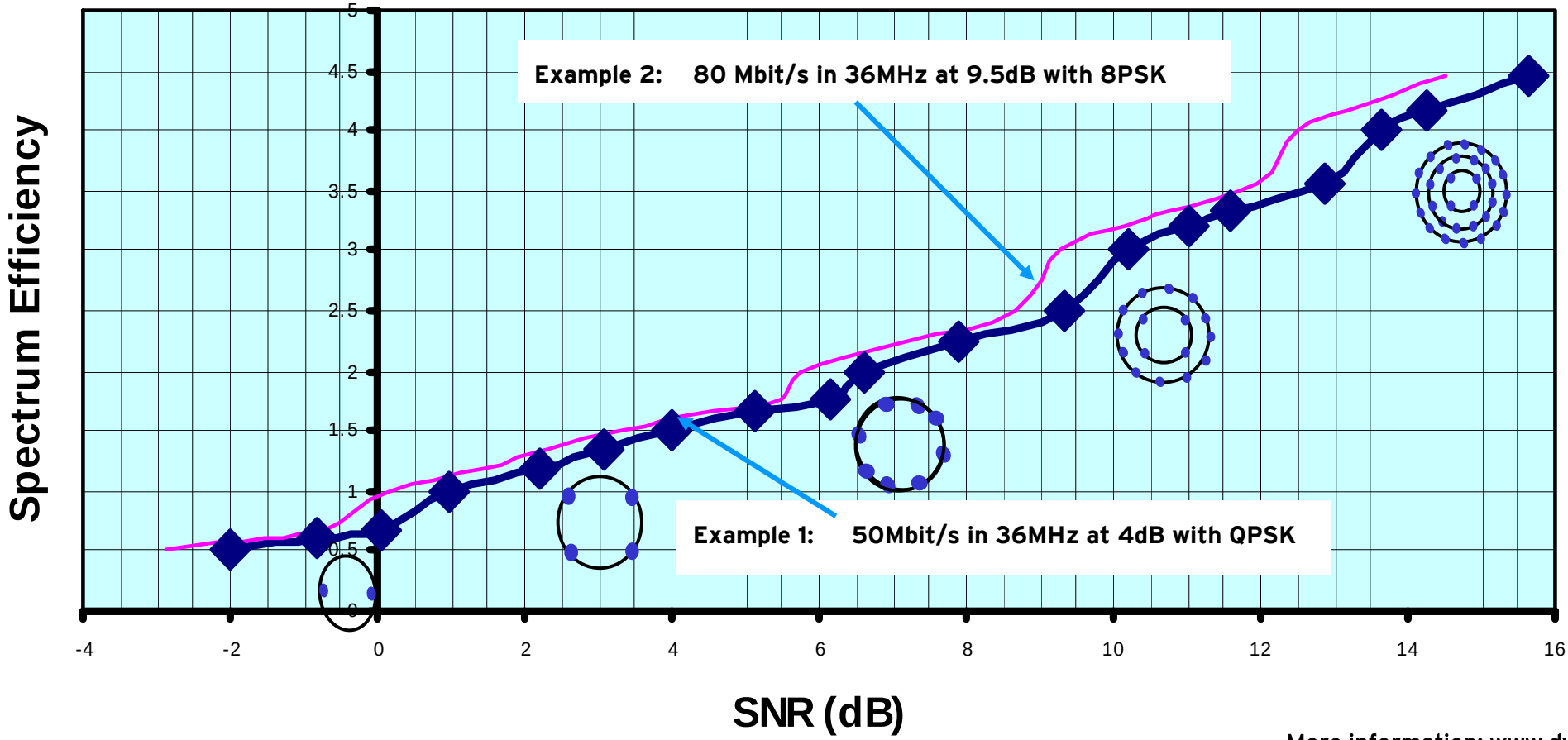
What about the Performance?

DVB-S2 promises spectral efficiencies between 0.5 bit/s/Hz through to 4.5bit/s/Hz providing high flexibility for the satellite operator.

DVB-S2 can operate at carrier-to-noise ratios from -2dB (yes - below the noise floor) with QPSK through to +16dB using 32APSK. Operating at low carrier-to-noise ratios, receiver synchronisation may become a problem and DVB-S2 provides for optional "pilots" to help the carrier recovery system.

Typical Applications

With the advent of new source coding techniques, e.g. Microsoft Windows Media 9, MPEG-4 Part 10 / AVC, DVB-S2 provides the ideal platform for the delivery of advanced video and audio to consumers. DVB-S2 is thus particularly well suited to the delivery of HDTV.



More information: www.dvb.org

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