

THE DIGITAL VIDEO BROADCASTING SYSTEM

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ABSTRACT

Among the five terrestrial digital broadcast systems standardised during the last five years (i.e.: DAB-T, DVB-T, ISDB-T, ATSC-8VSB and the forthcoming DRM), four are based on a variant of the Coded Orthogonal Frequency Division Multiplex modulation (COFDM).

The European DVB-T standard includes a large number of transmission modes to cover a wide variety of broadcast situations :

- ✓ The hierarchical modulation allows to organise a single RF channel in two virtual circuits, each carrying a dedicated multiplex with a dedicated protection, as it has been demonstrated during the recent NAB 2000 convention in Las Vegas,
- ✓ The COFDM intrinsic resistance to multi-path propagation allows to operate a network of transmitters on the same Radio Frequency channel, then to constitute a so-called Single Frequency Network (SFN),
- ✓ the incredible robustness offered by some DVB-T transmission modes make possible to broadcast from one to three Digital TV programmes (5 .. 15 Mbps) to Mobile receivers even in motion at several hundreds km/h,

This presentation intends to highlight how these features have been made possible by the DVB-T standard and its COFDM modulation scheme.

Following a tutorial introduction of the DVB-T COFDM signal, SFN operation, Hierarchical Modulation & Mobile capability are presented and commented.

Why so much countries have chosen COFDM based systems ? The author intends to highlight the magic's of the COFDM, which have driven these choices.