

## High performance OFDM systems for digital video broadcasting-terrestrial (DVB-T)

Mr Y. A. LAFTA<sup>1</sup> and Dr. P. JOHNSON<sup>2</sup>

School of engineering, Liverpool John Moores University, Byrom Street, Liverpool, L3 3AF, UK

[Y.Lafta@2008.ljmu.ac.uk](mailto:Y.Lafta@2008.ljmu.ac.uk)

### Abstract

Digital wireless communication has become one of the most exciting research topics in the electrical and electronic engineering field due to the explosive demands for high-speed wireless services, such as cellular video conferencing. Digital video broadcasting-terrestrial-second generation (DVB-T2) has been demonstrated to provide services with very high spectral efficiency and improved performance. Also, OFDM systems have been deployed in mobile networks for their spectral efficiency and optimum bit error rate. Among the OFDM systems, wavelet based systems have been demonstrated to have improved bandwidth and channel performance. In this paper the authors demonstrate that very high spectral efficiency, BER and PAPR can be achieved by employing DWT-DAPSK scheme with the DVTB-T2 system. It is demonstrated in this paper that including companding with this system results in further reduction of PAPR.

### 1 Introduction

#### 1.1 Orthogonal Frequency Division Modulation (OFDM) Systems

The layered transmission technology that is used to support the multi-service in DVB-T (Digital Video Broadcasting-Terrestrial) with different priorities is not suitable for mobile applications because of its low mobility and high-power consumption. DVB-H (Digital Video Broadcasting-Handheld) system addresses those issues, which is especially developed for mobile services and provides high-speed.

Recent research investigations identify the OFDM to be suitable for the upcoming DVB-H system and wireless communication systems due to its excellent robustness to frequency-selective fading channels [4] - [6].

The OFDM scheme provides an efficient means to handle high-speed data streams. This is because the OFDM system uses multi-carrier modulation (MCM) technique which divides the entire data stream into several small numbers of lower data-rate subcarrier data streams, thus reducing the frequency selective fading [15].

Service providers working towards 4G communication systems are continuously

Correspondence should be addressed to YHYA LAFTA on  
[Y.Lafta@2008.ljmu.ac.uk](mailto:Y.Lafta@2008.ljmu.ac.uk)















