Single Carrier Multi-Tone Modulation Scheme

Roman M. Vitenberg
Guarneri Communications Ltd , Israel
roman@guarneri-communications.com

Abstract **—**

In this paper, we propose a modulation scheme, which can improve the performance of a variety of wired and wireless communication systems. We call this scheme "Single Carrier Multi-Tone" (SCMT) because it is a name well describes the physical principles on which it is made. This scheme was developed based on a study known SC-FDMA, OFDM and SC-FDE technologies. The aim of this research was to improve the performance of existing communication systems for terrestrial television broadcasting. The proposed modulation scheme combines the advantages of known technologies and devoid of their shortcomings. The several key characteristics of the SCMT are illustrated by the results of MATLAB simulation.

Keywords **— SC FDMA, OFDM, TV Broadcasting, SC FDE, ATSC, PAR, QAM, VSB, multipath, single carrier, Multi-tone.**

Mr. **Roman M. Vitenberg** was born in St. Petersburg (Russia), 1946. He received MS degree in electronics at **Saint - Petersburg State University of Telecommunications, Russia, 1968. His professional experience includes developing T1/E1 system (1970), analog IC's of a 16 bit ADC (1976), theoretical work in the field of delta-modulation (1980).**

From 1990 he works in Israel, where he developed one of first ADSL modems, several mixed ASIC's for communication systems. From 2000 he works over new methods of modulation . He is the inventor of 21 patents and author of several IEEE papers in the field of wavelet modulation. He is co-founder of Coppergate Communications , of Wavetone Technologies, and of Guarneri Communications Ltd. Now Mr. Vitenberg works over a new Single Carrier Multi-tone Modulation for ATSC 3.0 Project.