DVB-NGH: The Next Generation of Digital Broadcast Services to Handheld Devices

4
Author(s)

David Gómez-Barquero ; Catherine Douillard ; Peter Moss ; Vittoria Mignone

View All Authors

Abstract:
This paper reviews the main technical solutions adopted by the next-generation mobile broadcasting standard DVB-NGH, the handheld evolution of the second-generation digital terrestrial TV standard DVB-T2. The main new technical elements introduced with respect to DVB-T2 are: layered video coding with multiple physical layer pipes, time-frequency slicing, full support of an IP transport layer with a dedicated protocol stack, header compression mechanisms for both IP and MPEG-2 TS packets, new low-density parity check coding rates for the data path (down to 1/5), nonuniform constellations for 64 Quadrature Amplitude Modulation (QAM) and 256QAM, 4-D rotated constellations for Quadrature Phase Shift Keying (QPSK), improved time interleaving in terms of zapping time, end-to-end latency and memory consumption, improved physical layer signaling in terms of robustness, capacity and overhead, a novel distributed multiple input-single output transmit diversity scheme for single-frequency networks (SFNs), and efficient provisioning of local content in SFNs. All these technological solutions, together with the high performance of DVB-T2, make DVB-NGH a real next-generation mobile multimedia broadcasting technology. In fact, DVB-NGH can be regarded the first third-generation broadcasting system because it allows for the possibility of using multiple input-multiple output antenna schemes to overcome the Shannon limit of single antenna wireless communications. Furthermore, DVB-NGH also allows the deployment of an optional satellite component forming a hybrid terrestrial-satellite network topology to improve the coverage in rural areas where the installation of terrestrial networks could be uneconomical.

Published in: IEEE Transactions on Broadcasting (Volume: 60, Issue: 2, June 2014)

Page(s): 246 - 257

INSPEC Accession Number: 14362350

Date of Current Version: 08 May 2014

DOI: 10.1109/TBC.2014.2313073

ISSN Information:

Publisher: IEEE

Sponsored by: IEEE Broadcast Technology Society

Keywords

IEEE Keywords
Digital video broadcasting, Mobile communication, MIMO, Radio frequency, Robustness, Multiplexing

INSPEC: Controlled Indexing
video coding, antenna arrays, digital video broadcasting, IP networks, MIMO communication, mobile handsets, multimedia communication, next generation networks, parity check codes, phase shift keying, telecommunication network topology, telecommunication signalling

INSPEC: Non-Controlled Indexing
terrestrial networks, digital broadcast services, handheld devices, next-generation mobile broadcasting standard, second-generation digital terrestrial TV standard DVB-T2, next-generation mobile broadcasting standard DVB-NGH, layered video coding, multiple physical layer pipes, time-frequency slicing, IP transport layer, protocol stack, header compression mechanisms, MPEG-2 TS packets, IP packets, low-density parity check coding, 256 QAM, 64 quadrature amplitude modulation, 4-D rotated constellations, quadrature phase shift keying, QPSK, interleaving, zapping time, end-to-end latency, memory consumption, physical layer signaling, single-frequency networks, distributed multiple input-single output transmit diversity, technological solutions, next-generation mobile multimedia broadcasting technology, first third-generation broadcasting system, multiple input-multiple output antenna schemes, Shannon limit, single antenna wireless communications, optional satellite component forming, hybrid terrestrial-satellite network topology, rural areas

Author Keywords
time-frequency slicing, ATSC 3.0, DVB-NGH, DVB-T2, FoBTV, hybrid terrestrial satellite, mobile TV, MIMO, MISO, rotated constellations, single carrier OFDM

Authors

David Gómez-Barquero
iTEAM Research Institute, Universitat Polit?cnica de Val?ncia, Valencia, Spain