Mitteilungen aus dem Institut für Nachrichtentechnik der
Technischen Universität Braunschweig

Band 13

Dirk Jaeger, Christoph Schaaf
(Editors)

High Performance Data Transmission on Cable
– Technology, Implementation, Networks –

This publication is co-sponsored by

SEVENTH FRAMEWORK PROGRAMME

Shaker Verlag
Aachen 2010

Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at http://dnb.d-nb.de.

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Printed in Germany.

ISBN 978-3-8322-9242-3
ISSN 1865-2484

Shaker Verlag GmbH • P.O. BOX 101818 • D-52018 Aachen
Phone: 0049/2407/9596-0 • Telefax: 0049/2407/9596-9
Internet: www.shaker.de • e-mail: info@shaker.de

DVB-C2:
High Performance Data Transmission on Cable
– Technology, Implementation, Networks –

The publication contains contributions of the following experts:

Nr.	Title of Chapter	Author	Company
1	Introduction	PETER SIEBERT	DVB Project
2	Commercial Requirements	BART BRUSSE	Contest Consultancy
3	Architecture	CHRISTOPH SCHAAF	Kabel Deutschland
4	Input Processing	FRANK HERMANN	Panasonic
5	FEC Processing, Bit-interleaving & Mapping	Marten Kabutz	Thomson (Technicolor)
6	PLPs and Data Slices	JÖRG ROBERT	Institut für Nachrichten-technik, TUBS
7	Time Interleaving	WOO SUK KO	LG
8	Frequency Interleaving	SAM ATUNGSIRI	SONY
9	Usage of Pilots	TAKU YAMAGATA	Imagination Technologies
10	Framing	LOTHAR STADELMEIER	SONY
11	L1 & L2 Signalling and Preamble Structure	SANG-CHUL MOON	LG
12	Preamble Signal Protection Mechanisms	SEHO MYUNG	Samsung
13	OFDM Generation, RF Characteristics, Receiver Implementation	MICHAEL HEISENBERG	Kathrein
14	Simulation and Validation	PHILIPP HASSE	Institut für Nachrichten-technik, TUBS
15	System Aspects and Performance	DIRK JAEGER	Institut für Nachrichten-technik, TUBS
16	Network Planning	JAN DE NIJS	TNO
17	Head-end Architectures	ERNST FREESE	BLANKOM Digital
18	Implementation Scenarios	PETER FLÖTGEN	Unitymedia

Preface from the Editors

With the introduction of digital broadcasting some 15 years ago, the era of converging electronic media services entered the cable market. DVB-C was the first digital transmission standard applied in broadband cable networks. The 64-QAM constellation was commonly utilized as state of the art modulation technique supporting the transmission of 6 bit per symbol while allowing cable operators to transmit 6 digital TV channels instead of a single analogue TV channel through a physical 8 MHz cable channel. This achievement was a major step increasing the capacity of the networks.

The idea of operating a single digital cable system for full service provision triggered a development aiming at an integration of DVB-C in the Data Over Cable Service Interface Specification (DOCSIS®). The so-called EuroDOCSIS system has been using DVB-C for downstream transmission while adding upstream as well as MAC functionality. Through the application of this system in cable, DVB-C was used to not only provide television services but also telephony and fast Internet access. The commercial success of DVB-C is attested by the hundreds of millions products sold on world wide scale.

Over the last years the user demand for bandwidth has been growing permanently and estimations of various media intelligence companies are forecasting that this trend will continue to happen in the years to come. This hunger for bandwidth prompted the cable operators to further upgrade their networks which have been evolving from broadcast delivery media to broadband telecommunications infrastructures.

In 2007, a group of cable operators approached the DVB project with the request to create a new DVB standard for physical downstream transmission in cable networks. The standard should provide a significant increase in spectral efficiency as well as a flexible applicability of IP services. DVB experts groups were formed in 2008. The DVB Commercial Module prepared Commercial Requirements and the DVB Technical Module developed a technical specification for high performance data transmission on cable systems called DVB-C2.

The development started with a Study Mission giving a clear positive answer to the questions whether techniques have been evolved during the last 15 years, which legitimate the efforts to prepare the new standard and justify the assumption that a subsequent commercial introduction would become a commercial success. DVB's Call for Technology resulted in various responses which were combined to a final solution eventually agreed end of 2009.

At the time of publication of this book, the DVB-C2 standard is complete, approved, and published as DVB Blue Book A138 as well as European Standard EN 302 769. A first revised version of the standard incorporating minor modifications is underway. Implementers have started to develop DVB-C2 compliant equipment and first prototypes were exhibited at ANGA Cable 2010.

This book has the objective to provide a profound knowledge base on the DVB-C2 system gathered from DVB experts who have been actively involved in the development of the standard. This knowledge of the standardized techniques is accompanied by results of the work produced by the researchers engaged in the ReDeSign project which was co-funded by the European Union in the course of the EU's 7th Framework Programme.

The book takes the reader back to the origins of DVB-C2 by explaining the work process carried out by DVB to create the standard and introducing the Commercial Requirements which constitute the basis for the technical development. The major part of the book is dedicated to explain in great detail the individual techniques forming DVB-C2 and why they were selected. The third part presents additional information which gives DVB-C2 users practical data instrumental in producing standard compliant products and using these products in a real life environment, respectively.

Finally the book is seen as secondary literature accompanying the DVB-C2 standard (EN 302 769) itself as well as the DVB-C2 Implementation Guideline (TS 102 991).

Dirk Jaeger

Institut für Nachrichtentechnik,
TU Braunschweig
Chairman ReDeSign

Christoph Schaaf

Kabel Deutschland

Chairman DVB TM-C2

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