2010 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting

(BMSB 2010)

Shanghai, China
24 – 26 March 2010

IEEE Catalog Number: CFP10BRO-PRT
ISBN: 978-1-4244-4461-8

TABLE OF CONTENTS

SESSION WAM-A – FIELD TRIALS (1)

HDTV Field Trials Using DVB-T and DVB-T2 Broadcasting Systems 1
I. Eizmendi, G. Prieto, G. Berjon-Eriz, M. Vélez, S. Correia, A. Arrinda, P. Angueira

Field Trial for Brazilian DTV Using Space Diversity 6
C. Akamine, F. Yamada, G. Bedicks Jr., C. E. da S. Dantas, F. Sukys, R. E. Motoyama, R. de M. Maroja, G. de M. Valeria, E. L. Horta

Coverage Design and Field Testing for Shanghai Metro TV System 17
L. Zhang, X. Xia, C. Jin

Effects of Distinct Signaling over the Reserved Symbols in DFS per Transmitter on Legacy ATSC Receivers 23
H. Lim, S. I. Park, W. Seo, D. Choi, Y. Wu, H. M. Kim

SESSION WAM-B – AUDIO TECHNOLOGY AND INTERACTIVE TV

Loudness and Auditory Masking Compensation for Mobile TV 26
M. C. Sack, S. Buchinger, W. Robitza, P. Hummelbrunner, M. Nezveda, H. Hlavacs

Device-Properties-Based Modular Podcasting Using Mobile Broadcast Networks 32
P. Steckel

Implementation of an Object Audio System Based on MPEG-4 Audio Lossless Coding on DSP 37
C. S. Cho, J. Kim, H. S. Shin, B. H. Choi

Live Immerse Video-Audio Interactive Multimedia 42
A. Aggoun, A. Mehanna, E. Tsekleves, J. Cosmas, J. Loo

SESSION WPM-1A

Fast Iterative Method for Joint Synchronization Based on Cyclic Training Sequence 47
L. He, F. Yang, K. Peng

Protection Ratio between ATSC Digital Broadcasting and WiBro Systems 52
H. Park, D. Kang, J. Yeun, W. Oh

Cognitive Radio HDTV Multi-Vision System in the 700 MHz UHF TV Band 55
M. Murroni, V. Popescu

Web-based Real Time Content Processing and Monitoring Service for Digital TV Broadcast 58
Z. Liu, D. Gibbon, B. Shahraray

SESSION WPM-1B – NETWORKING (1)

Power-Friendly Access Network Selection Strategy for Heterogeneous Wireless Multimedia Networks 64
R. Trestian, O. Ormond, G. Muntean

Optimal Zero-Forcing Design of Precoders and Decoders for Multiuser Cooperative Networks 69
C. Zhao, W. Huang, T. Wang

Effective Content Delivery Method for File-based Broadcast System over Satellite Broadcasting Channels 74
S. Aoki, K. Aoki, M. Yamamoto

DOCSIS Based Ingress Noise Blocker (DNB) 80
J. Hsue

SESSION WPM-1C – VIDEO CODING AND PROCESSING

Robust Peer-to-Peer Video Streaming Based on Multiple Description Coding 105
M. Quaresma, Â. M. Arrifano, M. Pereira, M. M. Freire, M. Antonini

New Techniques for Next Generation Video Coding 111
L. Liu, R. Cohen, H. Sun, A. Vetro, X. Zhuang

Distributed Video Coding Without Channel Codes 117
G. Huchet, D. Wang
Error Concealment Using Block-based Scale-Invariant Features 122
C. Yao, X. Yang, G. Zhai, G. Xue, X. Lu

SESSION WPM-2A – MOBILE TV

End-to-End System Performance of IMB 126
Z. Wang, P. Darwood, N. Anderson
Evaluation of Indoor Penetration Loss and Floor Loss for a DVB-H Signal at 514 MHz 132
D. Plets, W. Joseph, L. Verloock, E. Tanghe, L. Martens
Semi-automatic Creation of Graphically-rich Mobile Television Services and Applications Using an XHTML Browser and J2ME 138
M. Liu, E. Tsekleves, J. Cosmas
A Real Convergence of Mobile TV and Mobile Communication 145
J. Park

WPM-2B – DVB-T2

Laboratory Tests for Testing DVB-T2 Mobile Performance 175
G. Berjon-Eriz, I. Eizmendi, M. Vélez, G. Prieto, S. Correia, A. Arrinda, P. Angueira
Efficient Pilots Pattern Design for Multiple Antenna Systems 180
J. Choi, J. Baek, J. Seo
Improved Robustness for Channel Estimation without Pilots for DVB-T2 184
L. Martínez, J. Robert, H. Meuel, L. Sobrón, M. Mendicute
Optimizing the DVB-T2 System for Mobile Broadcast 189
L. Kondrad, I. Bouazizi, M. Gabbouj

SESSION WPM-2C – CONTENT PROTECTING AND ADAPTATION

Improved Spread Transform Dither Modulation-based Watermark Algorithm Based on Step Projection 194
X. Li, J. Liu, J. Sun, Z. Sun, H. Hu, L. Zhang
An Adaptive Rate Control for Faster Bitrate Shaping in x264 Based Video Conferencing 199
M. Semsarzadeh, M. J. Langroodi, M. R. Hashemi
Progressive Watermarking on 3D Meshes 203
H. Chen, Y. Chen
A Context-Based Approach to Crop and Scale Video for Broadcast Applications 210
J. Deigmoeller, T. Itagaki, G. Stoll, N. Just

PLENARY 2

Current Status on Super HDTV Development in Japan 219
T. Kuroda

SESSION TAM-A – MIMO/OFDM

Hybrid-band Relay Based Underwater Video Broadcasting Systems with Applications to Entertainment and Exploration 242
C. Chen, H. Hou, C. Shu
Wideband Video Transmission MIMO-OFDM Plateform using LLR-based Adaptive Hierarchical Modulation 247
Y. Cheng, W. Li, H. Chou, Y. Huang
A Layered Spatial Modulation Technique for MIMO-OFDM Systems 253
S. U. Hwang, S. Jeon, J. Choi, J. Seo
Performance Analysis of OFDMA Uplink Synchronization Based on Phase Shift of Channel Responses between Adjacent Subcarriers 258
D. Piao, Z. Wang, Z. Yang

SESSION TAM-B – NETWORKING (2)

First Results of a Field Trial to Evaluate the Impact of Wind Turbines on DTV Reception Quality 262
I. Angulo, U. Gil, D. De La Vega, Y. Wu, P. Angueira, C. Fernández
Empirical Analysis of Medium Wave Field Strength Prediction in Urban Environments 267
U. Gil, I. Peña, I. Angulo, P. Angueira, D. de la Vega, D. Guerra
SFN Gain Estimations Based On Frequency Response 272
E. Kroon, J. T. J. Penttinen
Static Delays Optimization to Reduce Self-Interference in DVB-T Networks 278
M. García-Lozano, S. Ruiz-Boqué, F. Minerva

SESSION TAM-C – CHANNEL CODING AND MODULATION

Optimization of Rateless Coding for Multimedia Multicasting 284
Y. Cao, S. D. Blostein, W. Chan
Component-Interleaved Alamouti Coding with Rotated Constellations for Signal Space Diversity 290
S. Jeon, J. Lee, I. Kyung, M. Kim
An Improved Decoding for Constellation Rotation QOSTBC Concatenates RS Code Using Interference Cancellation 296
Z. Yan, Y. Yang, M. Ma, Y. Lu
Effective Video Content Distribution by Combining TCP with Adaptive FEC Coding 300
T. Porter, X. Peng

SESSION TPM-A – DTV (2)

Single Frequency Network – "The Asset for Spectrum Efficient Broadcasting" 305
G. Faria
Choice of Physical Layer Code Rate and Modulation for DVB-SH 331
M. Breiling, A. Heuberger, E. Eberlein, A. Vargas
Multi-standard Integrated Network Convergence for Global Mobile and Broadcast Technologies 337
G. Yin, Y. Xue, L. Diao, J. Li, L. Gu, J. Song
Transmitter Identification of ATSC DTV under Mobile Environment 345
B. Liu, Y. Wu, B. Rong, G. Gagnon, C. Nadeau, M. S. El-Tanany, L. Gui, W. Zhang
Convergence of Broadcast and Broadband Services on DVB-C2 351
P. Hasse, D. Jaeger, J. Robert

SESSION TPM-B – PROPAGATION AND COVERAGE

iPAS: An User Perceived Quality-based Intelligent Prioritized Adaptive Scheme for IPTV in Wireless Home Networks 357
Z. Yuan, H. Venkataraman, G. Muntean
An Open System Architecture for New Multimedia Services in Core Networks 363
J. Wang, D. Q. Bell, R. Katzur, P. Carrillo, R. Pal
Dynamic Pause Time Calculation Method in MAC Layer Flow Control 368
M. Hayasaka, T. Sekiyama, S. Oshima, T. Sakuraba
The Performance Study of IEEE 802.11e EDCF in Channel Error Environments 373
J. Wen, C. Weng, C. Chen
Routing: Why Less Intelligence Sometimes is More Clever 378
M. Karl, M. Gorius, T. Herfet

SESSION TPM-C – 3D AND MULTI-VIEW VIDEO

Distortion Analysis and Error Concealment for Multi-view Video Transmission 384
Y. Zhou, C. Hou, R. Pan, Z. Yuan, L. Yang
Fast Mode Decision for Non-Anchor Picture in Multiview Video Coding 389
T. Kuo, Y. Lai, Y. Lo
A Phase Matching and Region Segmentation Stereo Depth Mixed Extraction Algorithm 394
S. Liu, J. Zhou, M. Wu

Matlab Traffic and Network Flow Model for Planning Impact of 3D Applications on Networks 399
J. Cosmas, J. Loo, A. Aggoun, E. Tsekleves
Implementation of Simple UMHexagon Search Algorithm in Stereoscopic Video Encoding 406
B. Wang, C. Hou, Y. Wei, Z. Yuan

POSTER SESSION

DTV, COVERAGE AND TRIALS

The Novel Approach to Support Multimedia Services over DTMB System 411
F. Yang, X. Wang, K. Peng, Y. Li, S. Tang, J. Song
Additional Data Transmission Scheme Using TxID Signal for ATSC System 416
D. Kang, H. Park, S. I. Park, H. M. Kim, W. Oh
An Improved LUT Based DPD Technique for Nonlinear HPA in ATSC DTV System 419
J. Lee, S. Jeon, J. Kim, H. J. Ryu, Y. Suh, H. Mok, M. Kim
Geometric Capacity Studies for DTV Transmitter Identification Using Kasami Sequences 423
X. Feng, H. Wu, Y. Wu
On Digital TV Broadcasting Coverage Scheme in Carriages of Chinese High Speed Railway 429
J. Xiong, L. Gui, B. Liu, Y. Ge
DVB-T2 Modulator Design Supporting Multiple PLP and Auxiliary Streams 433
S. Correia, M. Vélez, G. Prieto, I. Eizmendi, G. Berjon-Eriz, C. Fernández, J. L. Ordiales

MULTIMEDIA NETWORKING

Performance of an Adaptive Multimedia Mechanism in a Wireless Multi-user Environment 439
R. Trestian, O. Ormond, G. Muntean
Fair Multimedia Streaming Over Communication Networks with Multi-path Routing 444
R. Zhang, W. Mao
Evaluation of H.264/AVC Error Resilience in HD IPTV Applications 449
W. Li, O. Issa, H. Liu

VIDEO PROCESSING

Dynamically Adjustable and Scalable ROI Video Coding 454
D. Grois, E. Kaminsky, O. Hadar
A Fast and Efficient H.264 Error Concealment Technique Based on Coding Modes 459
S. Yang, J. Tsai
Video Transmission over IEEE 802.11n WLAN with Adaptive Aggregation Scheme 463
H. Zheng, G. Chen, L. Yu
Fast Implementation of Wyner-Ziv Video Codec Using GPGPU 468
R. Oh, J. Park, B. Jeon
Implementation of a Fixed-point MPEG-4 Scalable Lossless Coding Encoder 473
C. S. Cho, Y. Kim, H. S. Shin, B. H. Choi
Eliminating Periodical Key Frame in Online Lecture Broadcasting by Peer-Assisted Reference Frame Synchronization 478
W. Xie, C. Lu, Z. Zhang, L. Jin, R. Shen
Transmission Protocol for Stereoscopic Video Based on H.264 484
B. Wang, C. Hou, Y. Wei, Z. Yuan

IMAGE PROCESSING AND CONTENT PROTECTION

Real-time Foreground Detection Based on Tempo-spatial Consistency Validation and Gaussian Mixture Model 489
Q. Yan, Y. Xu, X. Yang, L. Traversoni
Adaptive Edge-Oriented Depth Image Smoothing Approach for Depth Image Based Rendering 493
P. Lee, Effendi
Edge Region Color Autocorrelogram: A New Low-level Feature Applied in CBIR 498
X. Chen, X. Yang, R. Zhang, A. Liu, S. Zheng

Re-ranking Image Search Results by Multiscale Visual Saliency Model 502
J. Huang, X. Yang, R. Zhang, X. Fang
A Hybrid Scheme of Robust and Fragile Watermarking for H.264/AVC Video 506
T. Kuo, Y. Lo

TRANSMISSION AND CHANNEL CODING

Hybrid Error Correction Schemes under Strict Delay Constraints: Framework, Optimization and Analysis 512
G. Tan, T. Herfet
An Adaptive Digital Predistorter with Iterative Noise Cancelation 518
S. Jeon, J. Kim, J. Lee, H. J. Ryu, Y. Suh, H. Mok, M. Kim
An ITD Based Automatic Digital Modulation Recognition Algorithm for Broadband Mobile Multimedia Communication System 523
X. Li, B. Tian, J. An, X. Wang, Y. Wu, K. Yi
A Modulation Parameter Transmission Method Using PN511 Sequence in Hierarchically Modulated T-DMB System 528
J. Bae, Y. Kim, J. Lim, Y. J. Song, S. I. Lee, D. Han
ICI Compensation for Interleaved OFDMA with Carrier Frequency Offsets 533
D. Chang, Y. Lai, Y. Hsu
Coarse Carrier and Timing Synchronization for Interleaved OFDMA Uplink System 538
R. Miao, J. Sun, L. Gui, J. Xiong
A Novel Constellation Extension For Reduction of Peak-to-Average-Power Radio in OFDM Systems 543
L. Guan, T. Jiang, Y. Zhou, C. Li
FDPM Aided Decision Directed Channel Estimation with VSSNLMS-based Predictor for OFDM Systems 547
O. O. Oyerinde, S. H. Mneney
Scenario Dependence of MIMO Techniques 553
J. Tissari, J. Paavola, J. Poikonen
An Investigation into the Properties of the ML-NVE in Asynchronous OFDM Systems 557
Y. Yang, W. Huang, H. Chen, C. Li, H. Li
A Novel Combined PAPR Reduction and Channel Estimation Approach for OFDM Systems 562
A. T. Ho, J. Helard, Y. Nasser

PLENARY 3

Technical Trends of Next Generation Ultra High Definition Video-compression, Transmission Technologies and Their Standardizations 567
T. Murakami

SESSION FAM-A – FIELD TRIALS (2)

Mobile Satellite Broadcasting with Angle Diversity – Performance Evaluation Based on Measurements 601
D. Arndt, A. Ihlow, A. Heuberger, T. Heyn, E. Eberlein, R. Prieto-Cerdeira
Field Test Results of Distributed Translator Network for ATSC Terrestrial DTV System 609
S. I. Park, H. Eum, J. Seo, H. M. Kim, S. I. Lee, Y. Wu
The Mechanism Research and Field Testing of SFN Signal Delay Adjustment in Shanghai 614
Y. Dai

SESSION FAM-B – IPTV

Developing Applications for EBIF and Tru2Way™ 618
R. M. Arlein, R. D. Gaglianello, D. Liu, L. Spergel
CurioView: TV Recommendations Related to Content Being Viewed 624
H. Sumiyoshi, M. Sano, J. Goto, T. Mochizuki, M. Miyazaki, M. Fujii, M. Shibata, N. Yagi
IPTV 2.0 from Triple Play to Social TV 630
H. Zhang, H. Nguyen, I. M. Bilasco, G. M. Lee, H. Wang

SESSION FAM-C – QUALITY EVALUATION

Performing QoE-measurements in an Actual 3G Network 635
I. Ketykó, K. De Moor, W. Joseph, L. Martens, L. De Marez
QoS Harmonization for Home Networks 641
G. Bhatti, Y. Wang, J. Zhang, F. M. Matsubara, K. Asai, S. Miura, S. Akatsu
Video Quality Assessment Based on Data Hiding for IEEE 802.11 Wireless Networks 646
M. C. Q. Farias, M. M. Carvalho

PANEL DISCUSSION

Technology Trends and the Future of Broadband Multimedia 652
U. Reimers
Author Index