

# 1984 NAB BROADCAST ENGINEERING CONFERENCE PROCEEDINGS

## CONTENTS

### RADIO PRODUCTION TECHNIQUES

Defining S/N Specifications in Audio Tape Machines, Charlie Bates.....	1
Specialised Trucks for Radio Remote Pick-Ups, Duncan MacEwan.....	8

### RADIO ENGINEERING

Spurious Emission Measurements of Common Site FM Transmitter Installations Using Separate Co-Located Antenna Systems, Warren Shulz.....	17
Design and Application of a Multiplexed 9 Station FM Antenna for the Senior Road Tower Group, R.E. Fisk.....	37
Recent Developments in Radial Ground Systems for AM Broadcasting, Arch Doty.....	52
Aural Broadcast STL Systems Design, John A. Moseley.....	69
Audio Grounds for Hum and RFI Elimination, L. Scott Hochberg.....	78
The Effects of Transient Overvoltages on Broadcast Facilities, Jerry Whitaker.....	83

### IMPLEMENTING TELEVISION MULTICHANNEL SOUND

Stereo Audio Production for TV, James F. Gibbings.....	99
Phase Considerations in Stereo TV Production, Post Production and Transmission, Mark Shubin.....	107
Stereo Audio Production and Post Production for Television, Douglas F. Dickey.....	114
Rationale for Implementation of the Second Audio Program Channel, Kevin Dauphinee.....	123
Transmitter Conversion for TV Multichannel Sound, Gregory L. Best.....	130
Monitoring TV Multichannel Sound, Joseph C. Wu.....	141

## TELEVISION PRODUCTION ENGINEERING

Montage Picture Processing: An Interactive Production Tool for Producing Television and Motion Picture Programming, Ron Barker.....	149
Mirage -- The Production of an Illusion, Richard Taylor.....	152
Electronic Graphics Production: Still Store Usage in Television, Frank Alioto.....	161
A Digital Line Array Telecine, Ray Matchell.....	167
Using Small Diameter Pickup Tubes for High Quality Television Production, V. Rao.....	181

## AM/FM ALLOCATIONS

International and Domestic Aspects of Recent AM Band Revisions, Wally Johnson.....	188
--	-----

## RADIO SUBCARRIERS

The Effects of Increased Deviation on Adjacent FM Channel Interference, Harrison Klein, Michael Rau and John Kean.....	193
Transmitter Performance Requirements for Subcarrier Operation, John T.M. Lyles, Mukunda B. Shrestha.....	208
Innovative Use of AM Subcarriers, Bill Holbrow, Rex Trobridge.....	223
Paging Via FM Subcarriers, Steven C. Shapiro.....	233
ARI - Automatic Radio Information System, Gerald LeBow, Hans Duekick....	262
Data Transmission via FM Subcarriers, Eric Small.....	273

## TELEVISION NEW TECHNOLOGY

MERPS - A New Generation of Multicassette Machines, Rupert Stow.....	282
The RCA CCD-1 Broadcast Color Camera, Dennis J. Woywood.....	290
Reduced Bandwidth Requirements for Compatible HDTV, Dr. William Glenn, K.G. Glenn, J. Marcinka, R. Dhein, I.C. Abrahams.....	297
A Compatible HDTV System, A.A. Goldberg, R.H. McMann.....	306

## SATELLITE SYSTEMS

Terrestrial Interference Suppression Using IF Filters and Phase Cancellation, William P. Johnson.....	315
High Performance Multibeam Torus Antenna for Accessing C and Ku Band Satellites, Marvin D. Shoemake.....	329

## MULTICHANNEL TELEVISION SOUND: THE BTSC SYSTEM

The EIA Multichannel Sound Laboratory, Carl Olson.....	339
TV Receiver Design Options for Multichannel Sound, Lee Hoke, Jr. ....	347
The Zenith Multichannel TV Sound System, Carl G. Eilers.....	351
The dbx TV Companding System for Multichannel TV Sound, Leslie B. Tyler, Mark F. Davis and William A. Allen.....	369

## UHF EFFICIENCY

Recent Developments in High Efficiency Klystron, Howard Foster.....	387
Improved Efficiency Klystrons in UHF TV Transmitters, Charles F. Smiley and Gregory L. Best.....	396
UHF Transmitter Retrofit for Efficiency and Reliability, R. Wayne Estabrook.....	410
Achievable Parameters for UHF Transmission Lines, Spencer Smith.....	423
UHF Taboo Performance of an Advanced Technology Television Receiver, Hector Davis.....	429

## NON-IONIZING RADIATION

Electromagnetic Energy Policy Alliance - A Source of Facts, John M. Osepchuk.....	439
---	-----

## BROADCAST AUXILIARY

A Review of the Broadcast Auxiliary Service, Michael C. Rau.....	451
Spectrum Conservation With High Performance SSB Microwave Carriage of Multiple TV Signals, Dr. Thomas Straus, R.T. Hsu, W.C. Margiotta.....	466
Propagation Characteristics for the New 18 GHz Aural Broadcast Band, Steven R. Smith.....	476
Non-Translating Repeaters for ABSTL/ICR Microwave Systems, John Kean.....	484

## RADIO - NEW TECHNOLOGY

Field Test Results of a New Phase/Amplitude Correction System for AM Directional Antennas, Grant Bingeman and Walter C. Jamieson.....	493
Switched Diversity for Mobile FM Broadcast Reception, William R. Rambo..	508
Computer Optimized Directional Antenna Patterns Improve AM Coverage, Glenn Clark and Edward Schober.....	515
AM Field Strength Measurements by Air, Lyndon Willoughby.....	531
Amplitude Compandered Sideband - What's in it for Broadcasters?, Ralph Haller.....	544
Windloading and its Effect on Design of Antennas, Seymour Donner.....	553
Use of Microprocessors for Monitoring, Control, and Diagnostics of Transmitters: What to Expect and What Not to Expect, Whit Smith.....	559

## SATELLITES AND DIGITAL TRANSMISSION

Digital Transmission of High Quality Sound Programs -- A Practical Approach, Chieu Nguyen, Kevin Flynn, Glenn Muth.....	567
Minimum Bandwidth High Quality Digital Audio Transmission System, Susumu Takahasi, Masanori Tanaka, Hiromi Kameda, Masaya Ishikawa.....	583

## ADVANCED TELEVISION SYSTEMS

Improved NTSC- Compatible, Kerns H. Powers.....	592
High Definition Television: The European Broadcaster's Perspective, Charles Sandbank, David Wood and Peter Rainger.....	596

## BROADCAST INTERFERENCE

Proposed Solution to the Channel 6/FM Educational Interference Problem, Jules Cohen.....	612
Land Mobile Interference From Channels 14 and 69 - Issues and Solutions, William King.....	621
Broadcast Interference to Aeronautical Radionavigation and Communications, Ralph Justus.....	627

## SPECTRUM MANAGEMENT

A Framework for a Decentralized Radio Service, Alex Felker, Kenneth Gordon.....	641
---	-----