



Measuring Audiences. Delivering Intelligence.

Personal People Meter (PPM)

by

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Outline of the PPM Presentation

- BBM & PPM History
- Survey methods
 - Diary
 - PPM
- The PPM System
- How the PPM watermark process works
- Equipment installed at the station
- After the installation is complete
- Credits
- Q & A
- Lunch

History

- BBM Canada – since 1944
 - Member owned non-profit service
- 2004 – PPM technology, Montreal & Quebec
 - Pilot project
- 2006 – BBM – Nielsen Media Research
 - Cooperative venture
- 2008 – Radio & TV Rollout
 - Vancouver, Calgary, Edmonton, Toronto
- 2009 – Survey panels operational
 - Autumn
- 2010 – ???

Audience measurement

- Diary method
 - Manual entries
 - 15 minute resolution
 - 30 day latency



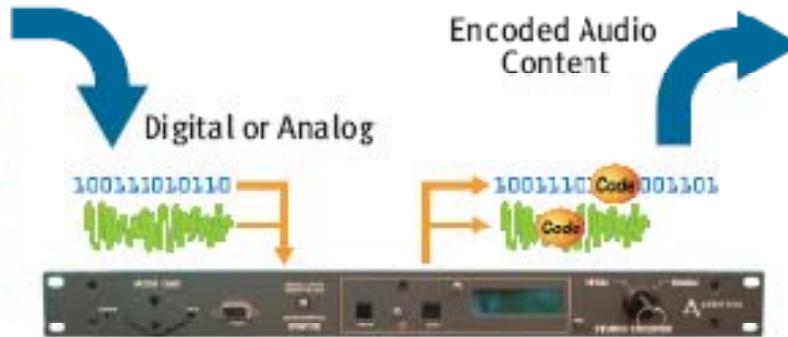
Audience measurement

- Personal People Meter (PPM)
 - Audio watermark
 - Portable, Hands free
 - Resolution: 1 minute
 - Latency: 1 day
 - Next day for special events
 - Time shift reporting
 - Media platforms:
 - TV, Radio, Webcast, Podcast, IPTV, Retail, Arenas
 - Place of listening
 - Home, car, office
 - Electronic reporting
 - modem



PPM in Action

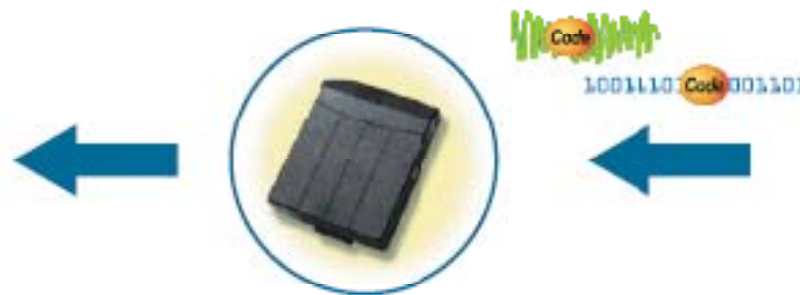
Audio Content/Studio Feed



Transmission/Broadcast



Data Transferred to Central Processing System



Audience measurement

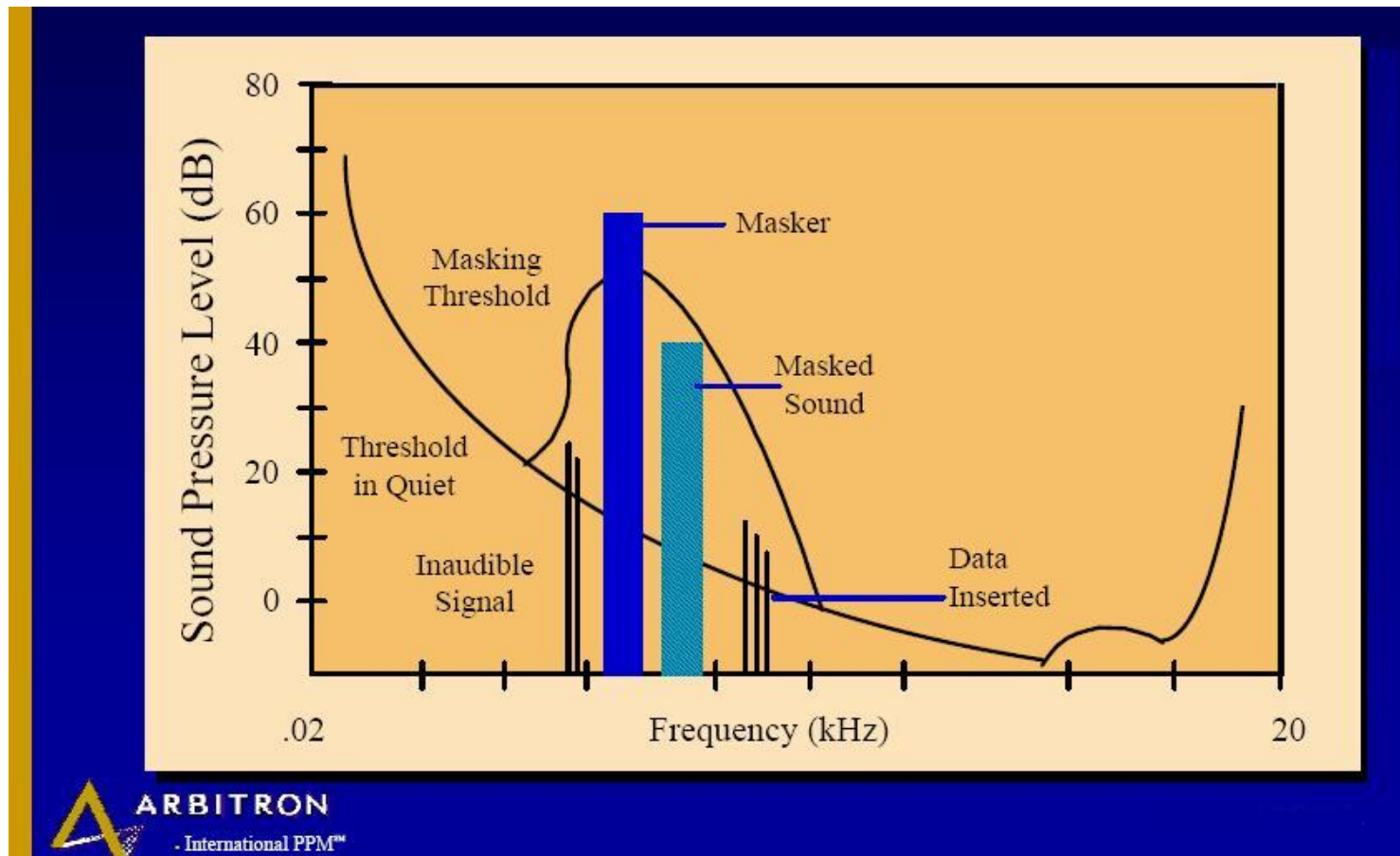
- Analysis
 - PPM Survey Panels
- Homes
 - Demographic mix of children, parents, grandparents
- Home Equipment
 - PPM, Docking station, Modem
 - Headphone adaptor

How PPM audio watermarking works

- Psychoacoustic mask
 - Strong sounds mask adjacent frequencies
 - ID & Time stamp coding inaudible to human ear
 - Cannot be detected by golden ears
 - Detected by electronic ear
 - Sensitive microphone
 - Digital Signal Processor (DSP)
- Cannot encode silence or a test tone
 - Codes masked by program audio
- Results
 - Inaudibility and transparency
 - Robust in the presence of noise
 - Resilient to tampering

How PPM audio watermarking works

Psychoacoustic masking



Equipment Installed at the Station

- Encoders
 - Signal type
 - Analog
 - Digital AES
 - Embedded SDI
 - Audio format
 - Mono
 - Stereo
 - Surround 5.1
 - Supplementary Audio Program (SAP)
 - Descriptive Video (DV)
 - Dolby-E (Future)

Encoders

Analog
Encoder

Digital AES
Encoder

Media-SDI /
Media-AES(8)
Encoder



Encoders (cont'd)

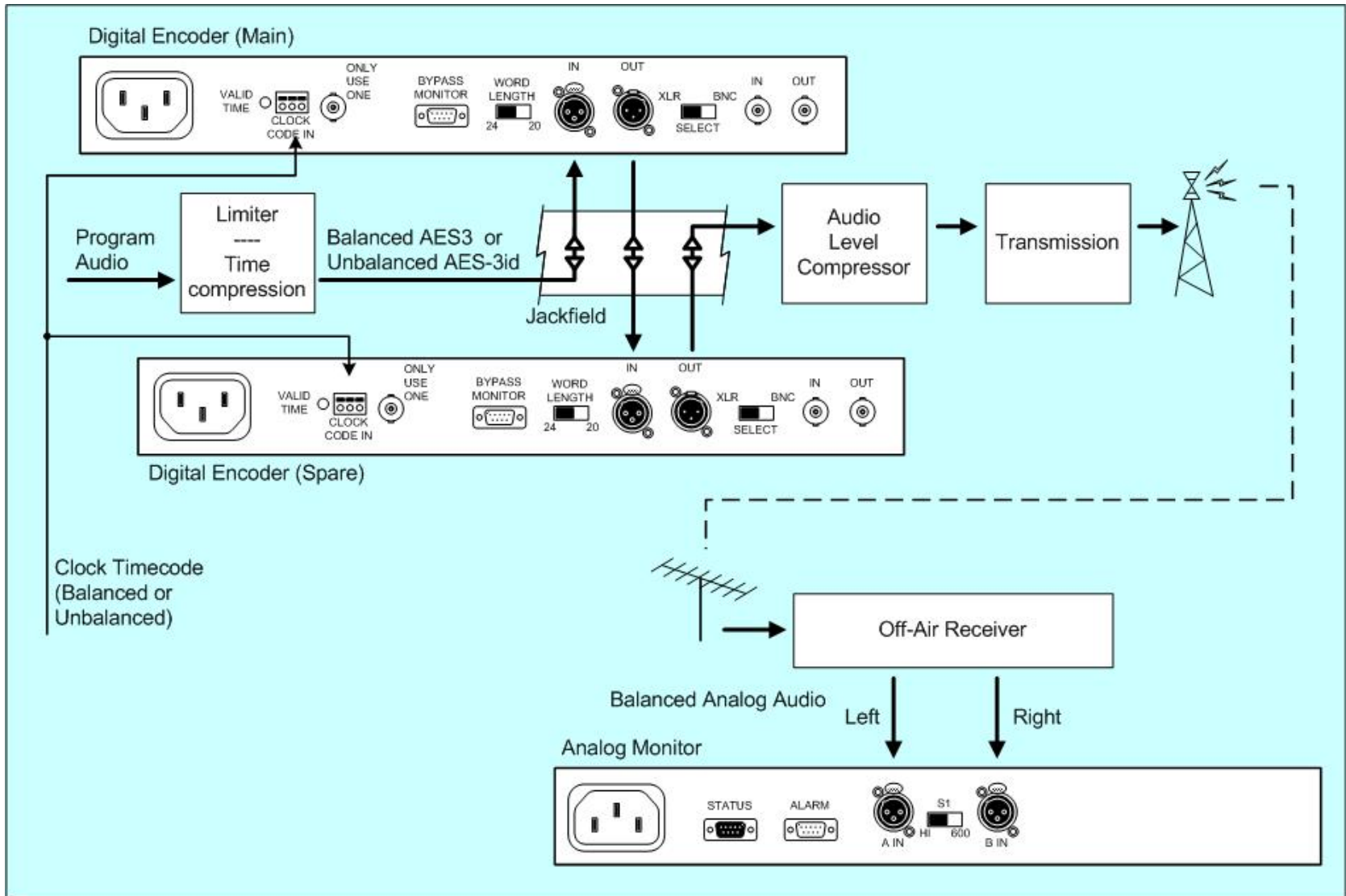
- Encoder parameters
 - Audio level: 0 VU
 - Analog: +4 dBu (0 dBu minimum)
 - Digital: -20 dBFS
 - Encoding layers
 - Network, Local
 - Time stamp: UTC
 - SMPTE, DQS, ESE, Torpey, NPR, ...
 - Encoding latency
 - AES: 5 to 7 audio samples at 48 kHz
 - SD-SDI: 6 us
 - HD-SDI: 0.1 us

Equipment Installed at the Station

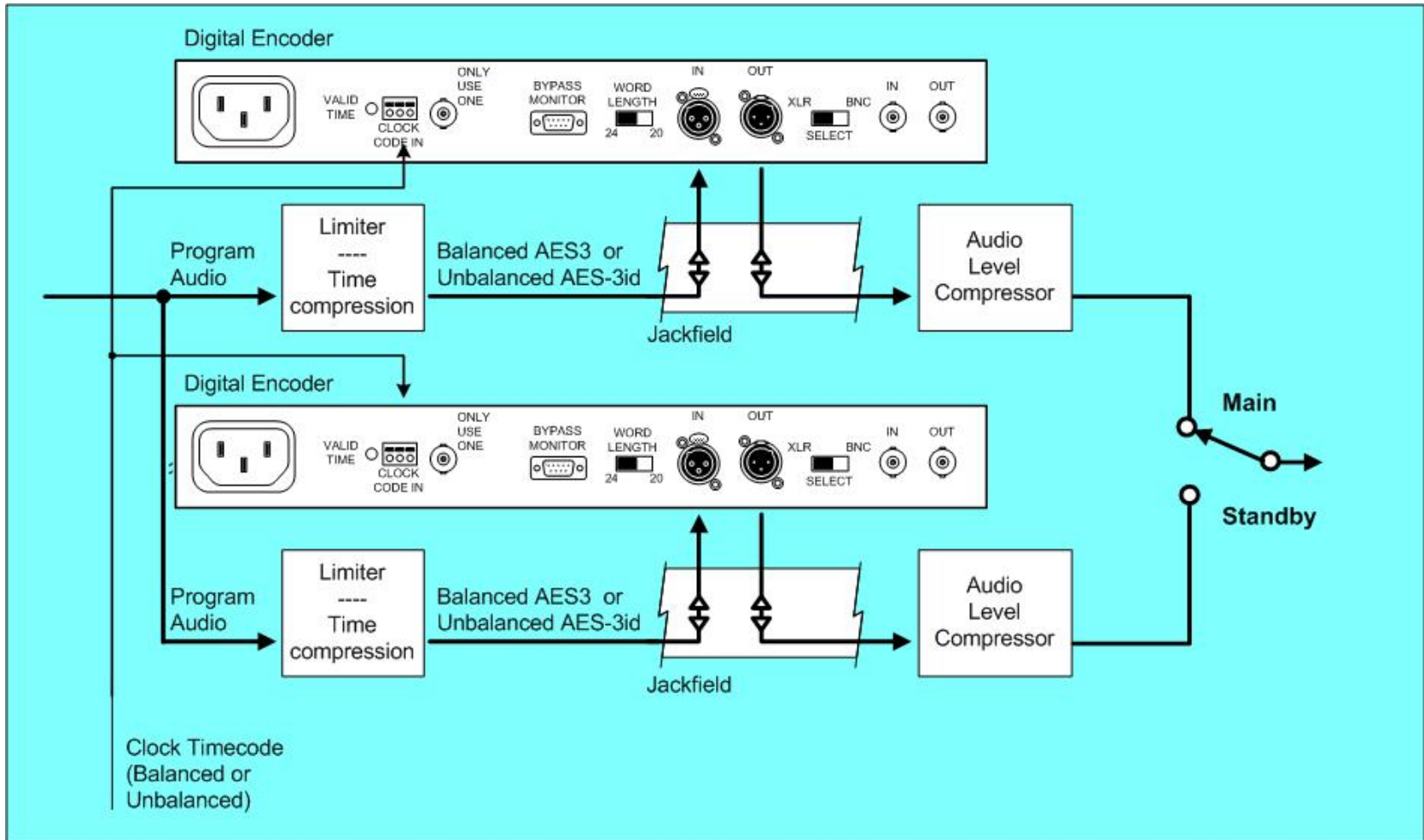
- Monitor
 - Analog
 - Confirmation
 - Contact closure



Encoder / Monitor Installation



Encoder Installation – Dual Signal Chain



When the Station Installation is Complete

- Problems
 - Audio or Video
 - Viewers will complain
 - not Encoding
 - No ratings = Commercially Off-Air = No \$\$\$
- Train technical staff to monitor and react
 - Monitor in conspicuous place
 - Audible alarm turned on
 - What to do if alarm sounds
- Encoding Help line: 1-800-272-0757

Bibliography

Documents available for download from the PPM Engineering Portal:

[< PPMEngineering.bbmNielsen.ca >](http://PPMEngineering.bbmNielsen.ca)

- PPM Fact sheet for engineers
- PPM System Backgrounder
- Critical Band Encoding Technology Audio Encoding System
- Manuals
 - For each model of Encoder or Monitor
- New Installation Planning & Survey
- Others

Contacts

- Contacts
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 - Email: sscott@bbm.ca
 - Toronto – Bob Torpey
 - Montreal – Gilles Hurtubise
 - Calgary / Edmonton – t.b.a
 - Vancouver – t.b.a.
 - Encoding Help line: 1-800-272-0757
 - www.bbm.ca

Credits

- CCBE
- The staff at BBM
 - Bob Torpey
 - Samina Mariani
 - Many others
- Richard Fiasconaro – Arbitron
- You

Thank you

Q & A

- Copies of the presentation slides will be available on the CCBE web site and the BBM Engineering Portal
- Q & A
- We invite you to visit our hospitality suite to discuss the PPM system and your requirements in greater detail. **BBM suite 327**