



# JOINT SADIBA /NAB DAB+ DIGITAL RADIO TRIAL IN SOUTH AFRICA



Presented to the WorldDAB General Assembly  
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# Introduction

- SADIBA - Southern African Digital Broadcasting Association was established as an industry driven, member based non-profit organisation to facilitate the introduction of appropriate digital broadcasting services in Southern Africa in a coordinated manner.
  - Recently became a member of the WorldDAB
- NAB - National Association of Broadcasters
  - Representing Radio and TV broadcasters (Public, Commercial and Community) as well as signal distributors and industry associates



# Historical context

- 2012 Joint SADIBA/NAB Digital Radio DAB+ trial Working (WG) Group established
- Trial open to members of SADIBA and NAB
- Currently 77 members participate in the WG
- Sentech was chosen as the signal distributor
- SABC successfully applied for a Trial licence on behalf of the SADIBA/NAB radio broadcasters
- A Rules of Operation document for the trial was compiled and signed by all participants
- The WG liaised and involved members of the Automobile Manufactures in the trial
- Contacted Receiver Manufacturers



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# Why a DAB+ Trial in South Africa

- The South African Radio Industry saw a need to keep radio relevant in the digital age
- There is “NO” spare high power FM spectrum available for new entrants or the expansion of existing FM services in SA’s major metropolitan areas – DAB+ will create extra channels and allow for the expansion of services
- DAB+ technology is well established worldwide and growing
- Numerous success stories in the world
- DAB+ receivers are widely available
- Traditional Radio listening is not being replaced by Internet Radio





# Advantages of DAB+ identified

Provides the following benefits:

- Efficient use of frequency spectrum, Multiple channel capability (up to 20 Channels) all have the same power
- Economical - Lower transmitter power per audio service
- Advanced Audio Quality
- Consistent quality of Reception
- Retains the FM capability of Portable and Mobile Coverage
- Enhanced service offerings, including data (Visual radio with information displayed on screens)



# The Purpose of the DAB+ Trial

To test and evaluate DAB+ technology against the following criteria:

- End to end technical functionality (studio to receiver)
- Extent of portable mobile coverage (moving vehicle)
- Signal permeability – building penetration
- Effects of vehicle penetration loss
- Interference and clutter on coverage (high rise buildings)
- Demonstrate value added services, Dynamic Label System (DLS) and Colour Slideshows
- Field testing typical professional and consumer equipment
- Testing Audio quality at different data bit rates
- Testing the concept of Pop-Up Stations on DAB+

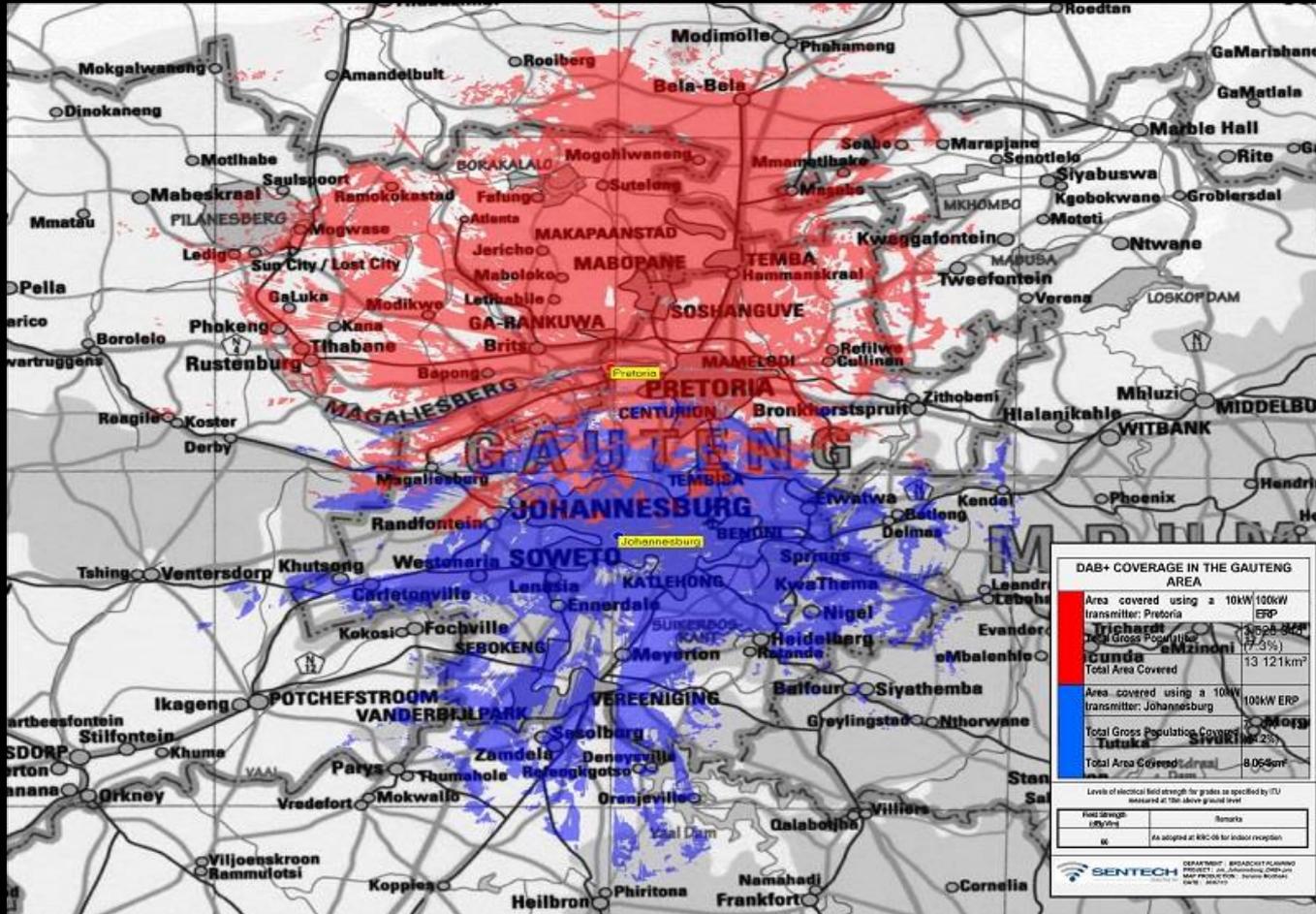


# Details of South African DAB+ Trial

- Trial consists of 2 transmitting stations 10kW (100kW ERP) in Johannesburg (Horizontal Polarised) and Pretoria (Vertical Polarised) in the Province of Gauteng.
- Operate as (Single Frequency Network) SFN on VHF Channel 13 F 239,200MHz
- The total area covered by the trial is about 21km<sup>2</sup> and the total gross population covered is about 11 million (22% of total SA population)
- This however is a closed trial (not for commercial purposes thus limiting public participation)
- 18 stereo channels are currently available, with a 19<sup>th</sup> to be added shortly allowing various radio services from the Public, Commercial and Community sectors to participate.
- Radio services will be rotated to give each broadcaster a chance to trial where required. Not all the broadcasters will be from the Gauteng province and a third of the mux is reserved for Community Broadcasters.
- Data capabilities to be fully trialled Slideshow, DLS (Dynamic Label Segment), Surround Sound, Service following, Dynamic System configuration, Emergency warning function.



# DAB+ Coverage in Gauteng





# Brixton Transmitter site and Sentech Test Vehicle





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# The Actual Trial

- Original trial licence granted in November 2013 to commence on 1 April 2014
- Start date of licence moved to 3<sup>rd</sup> November 2014
- Trial on air in Johannesburg on the 3<sup>rd</sup> November 2014 using “1<sup>st</sup> Gen” DAB at 2kW TX power with 5 services.
- Start of network verification process to obtain initial readings to show the increased terrestrial coverage to be gained by switching to DAB+ about 2dB
- Reminded participants of the “bubble and squeak” artefacts caused by using the “1<sup>st</sup> Gen” DAB standard at poor signal strengths
- Network switched to DAB+ on 12 December 2014





# The Actual Trial

- WhatsApp Technical Discussion Group setup for quick liaison between participants
- More audio services added during Feb 2015
- 6 Dynamic Slideshows plus static ones added
- DLS added to all audio services
- Extensive Johannesburg 2kW/5kW/10kW network verification process completed
- Johannesburg/Pretoria 2kW SFN live on 31<sup>st</sup> March 2015.
- An initial 2kW SFN network verification process started
- Extensive Pretoria, 2kW/5kW/10kW network verification process now completed.



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# Audio and Data Testing

- 27 May 2015 Start of the appointed panel to conduct audio quality tests as a function of bit-rate allocation
- Tested Audio quality from 32kbps to 128kbps at 48khz sample rate with various broadcasting formats
- Tested Spectral Bandwidth Replication , Parametric Stereo
- Tested Data speeds at 8Kbps and 16Kbps





# DAB+ Receiver Testing

- WG compiled a receiver testing template
- Divided into two main areas
  - Receiver Functionality Testing
  - RF Testing Specialising in lab testing
  - FEC Rates other than 3A





# Over 400 different consumer devices available





# Current Status

- 18 radio stations in operation on the Mux
- Brixton Tower is transmitting at 10KW
- Pretoria is now transmitting at 10KW in SFN
- Broadcasters are testing various ways of sending their signals to the tower to get optimal audio quality
- Broadcasters are testing different value adds in terms of Program Associated Data and resolving some of the bugs that are plaguing the systems



# Next steps

- Apply for a two month extension from ICASA.
- Submitted a completed report on the findings of the Johannesburg portion of the trial to ICASA. Report available on SADIBA web site <http://www.sadiba.org>
- Apply for a new 1 year trial licence to complete phase 2 and 3 of the trial in 2016.
- Receive delegates from all invited SADC Countries to witness the trial at first hand.
- Fast track framework for the establishment of Digital radio policy and regulation.
- Motivate the Regulator to issue an (Invitation to Apply) which will lead to Commercial launch of Digital Radio.



# Questions / Information

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