



DRM - 2014 Update

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HFCC

Sofia, Bulgaria

24-29 August, 2014

HFCC





**Fostering Digital
Radio In the
World**
The Role of DRM

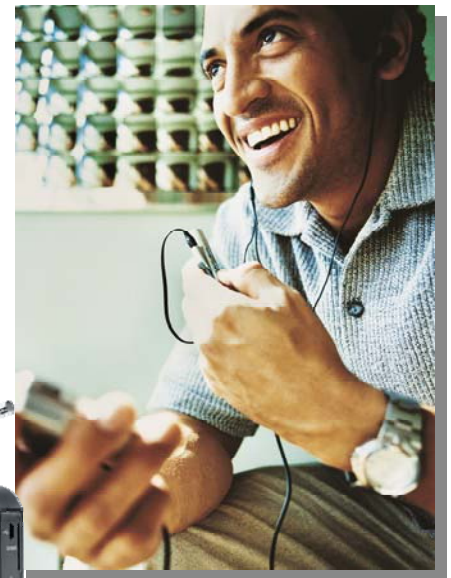




What is DRM?

- **Digital Radio Mondiale (DRM)** global open digital radio for **all frequency bands** (AM and VHF)
 - **DRM30:** DRM below 30 MHz.
i.e. LF, MF, HF (or LW, MW, SW) – *the AM bands*
 - **DRM+:** DRM above 30 MHz
i.e. VHF (Band I, II, III) – *including the FM band*
- **DRM system** for **large geographic areas, rural** and **local** markets and **on the move**
Low power local service option available
- **DRM receivers** simple , easy to use, with better audio quality and multimedia applications
- DRM complements and **works seamlessly** with other digital standards

GLOBAL, GREEN, OPEN, EFFICIENT STANDARD





DRM for all Bands



DRM above 30 MHz VHF
(Band I, II – FM band, III)

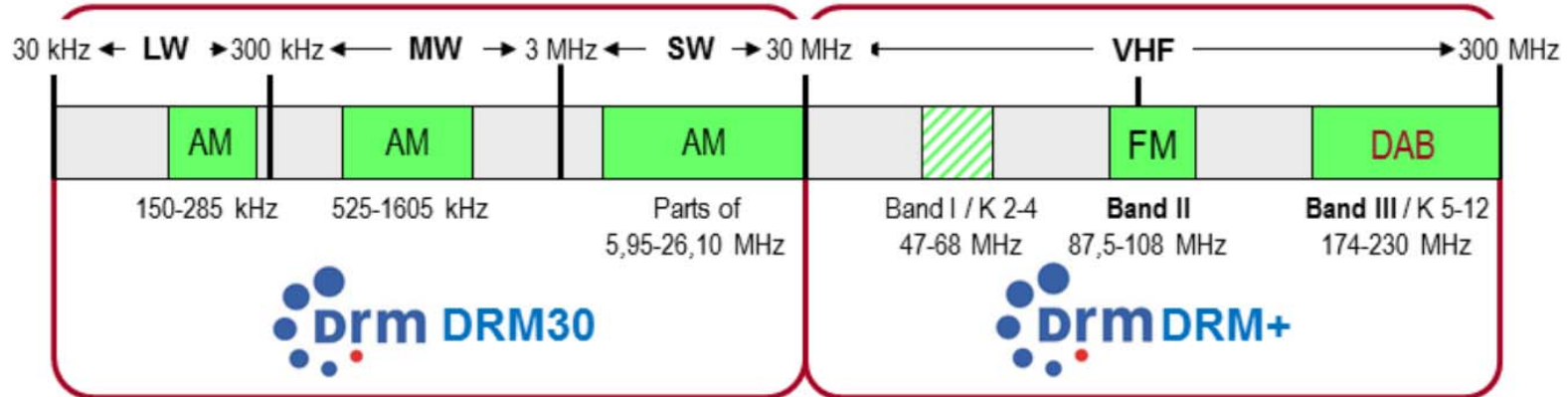


30MHz

DRM below 30 MHz LF, MF, HF
(or LW, MW, SW) – the AM bands



DRM



BOTH MODES (DRM30 and DRM+) OF THE DRM STANDARD SHARE ALL DRM FEATURES!



DRM - DRM30 Mode

- **Originally developed as a digital broadcast standard for the AM bands**
 - Using similar techniques developed for Digital Terrestrial Broadcast Television (DVBT)
 - **ETSI standard ratified** in 2003
 - **Endorsed by the ITU** in 2002
- **Covers large areas using a single frequency**: good for rural coverage and on the move
- **One service per frequency**: no need to use multiplexes which incur high costs for usage and maintenance
- **Easier tuning and selection of programming**: e.g. station selection by brand not frequency, automatic switching between different transmitters and standards for continuous service
- Offering **FM like sound quality** (no more fading, crackling)
- **Low power local service option** available: regulated by ITU, HFCC for community and event radio
- **Many modes of operation** (levels of ruggedness) to counter propagation issues in MW/SW
- **Green** with significant energy and cost savings



DRM - DRM+ Mode

- **Most recent global digital radio broadcasting option**
 - **Endorsed by the ITU** in 2011 - ITU-R Rec. BS.1114 (system), ITU-R Rec. BS.1660 (planning parameters)
 - **ETSI** standard ratified in 2009
- **More content and choice:** up to four programmes on one frequency
- **Worldwide spectrum compatibility:** 100 kHz bandwidth
- **Useful content bit rate:** 37-186Kbps
- **Easier tuning and selection of programming:** e.g. station selection by brand not frequency
automatic switching between different transmitters and standards for continuous service
- **Worldwide tests:** already tested in Asia Pacific, Europe and Latin America



DIGITAL radio mondiale

The FUTURE of global radio

Selection of DRM Consortium Members

AMPEGON



JVC KENWOOD



THOMSON



Continental Electronics



RFmondial



The not-for-profit DRM Consortium supports and promotes the DRM Standard and its take-up globally



Summary - DRM Key Features

- **More choice** for listeners
 - Up to 4 programmes on 1 frequency
 - Simulcast analog / digital
- **Excellent audio quality**
 - No distortion
 - Stereo and 5.1 surround sound
- **Multimedia Applications**
 - Great listener benefits
 - Extra revenue opportunities for broadcasters
- **Good coverage area and robust signal**
 - Supporting SFN (Single Frequency Networks)
 - Green and energy efficient
- **Automatic tuning**
 - By station name, no longer by frequency
 - Re-tunes when leaving coverage area
- **Emergency warning & alert**
 - All stations switch, present audio and text information





Summary - DRM Multimedia Applications



DRM Text Messages

Passive offering, programme labels (Unicode) updates triggered by broadcaster

MOT Slideshow

Programme accompanying images + animation

Journaline

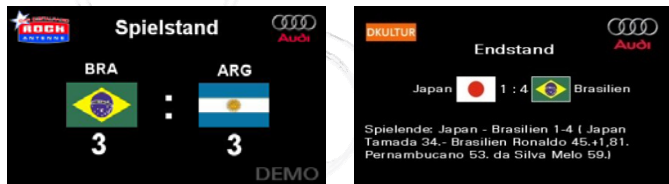
Text based information service (Unicode), supporting all classes of receivers, triggers interactivity and geo-awareness

EPG – Electronic Program Guide

What's up now & next;
Search for programs and schedule recording

TPEG / TMC Traffic Information

Diveemo – Small scale video service



→ Great listener benefits & additional revenue source!



A DRM Year: Technical

A DRM Year: Technical
xHE-AAC – recommended by (ITU) and ETSI
in January 2014



Digital Radio Mondiale (DRM);
System Specification



DRM Introduction and
Implementation Guide

www.drm.org

UPDATED



DRM Audio Quality

DRM Has Adopted MPEG xHE-AAC

MPEG xHE-AAC is added to the DRM system specification, replacing the speech-only codecs HVXC and CELP.

→ HE-AAC v2 also remains as a valid audio codec option for DRM

Benefits:

- Unrestricted audio content even in most robust DRM configurations
- More services in a single transmission signal
- Aligns with latest technology for mobile phones



DRM Audio Quality

DRM Has Adopted MPEG xHE-AAC

* **Play Fraunhofer demo file.**



Slide 17 DRM-xHE-AAC-Demo_v3_20130913.avi



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The **FUTURE** of global radio

DRM Key Markets



India

Population – 1.2 Billion

Public Service Broadcaster - All India Radio

- Transmitters – 574
- MW – 144, SW – 48 & FM - 382
- Domestic Coverage – Almost 100%
- External Services – 72 Hrs/day in 27 Languages (15 Foreign & 12 Indian)

Private FM Broadcasters – 245 Stations

- Coverage – About 30%
- Expansion Planned – 839 Stations

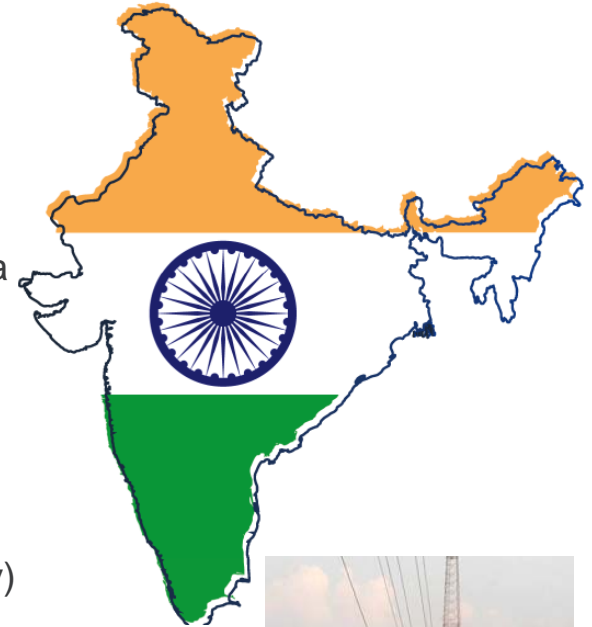
Community Radio Stations - 167

Internet Users – Over 220 Million





India



- **April 2010** the Indian government announced the adoption of DRM for India
 - DRM trials: in SW (DRM30) in 2007 and in DRM+ in 2011
 - Regular DRM service started from SW Transmitter at Delhi in 2009
 - Oct. 2011 All India Radio increased DRM SW to 16 hours/day
- **All India Radio** is renewing and replacing half their transmitters (146) with digital ones (72 transmitters of which 8 transmitters are on the air today)
- **In Oct 2013** All India Radio published a [tender for 800 DRM digital consumer receivers](#)
- Follow up the AIR digital roll out on:
<http://allindiaradio.gov.in/Services/Digital%20Transmission/Pages/simple.aspx>
- **India dedicated information page** on http://www.drm.org/?page_id=2494





India

- **Transmitter Rollout is in Full Swing to be completed by December 2014**

Dec 2013: 4 x 100kW to Vijayawada, Tiruchirapalli, Patna, and Varanasi.

Jan 2014: 4 x 200kW to Chennai, Bangalore, Dharwad and Ajmer.

March 2014: 4 x 100kW to Mumbai A, Mumbai B, Panaji and Pune.

April 2014: 3 x 300kW to Dibrugarh, Rajkot and Suratgarh.

May 2014: 5 x 200kW to Kolkata A, Ahmedabad, Jabalpur, Siliguri and Itanagar

June 2014: 3 x 100kW to Kolkata B, Ranchi and Passighat.

- **Tender for 800 receivers – 1st phase finished**
- **Car testing – already in Gujarat (Rajkot 1,000 megawatt, MW)**
- **Testing done in Chennai in pure DRM last week**
- **Interest in the EWF and TPEG functions of DRM**

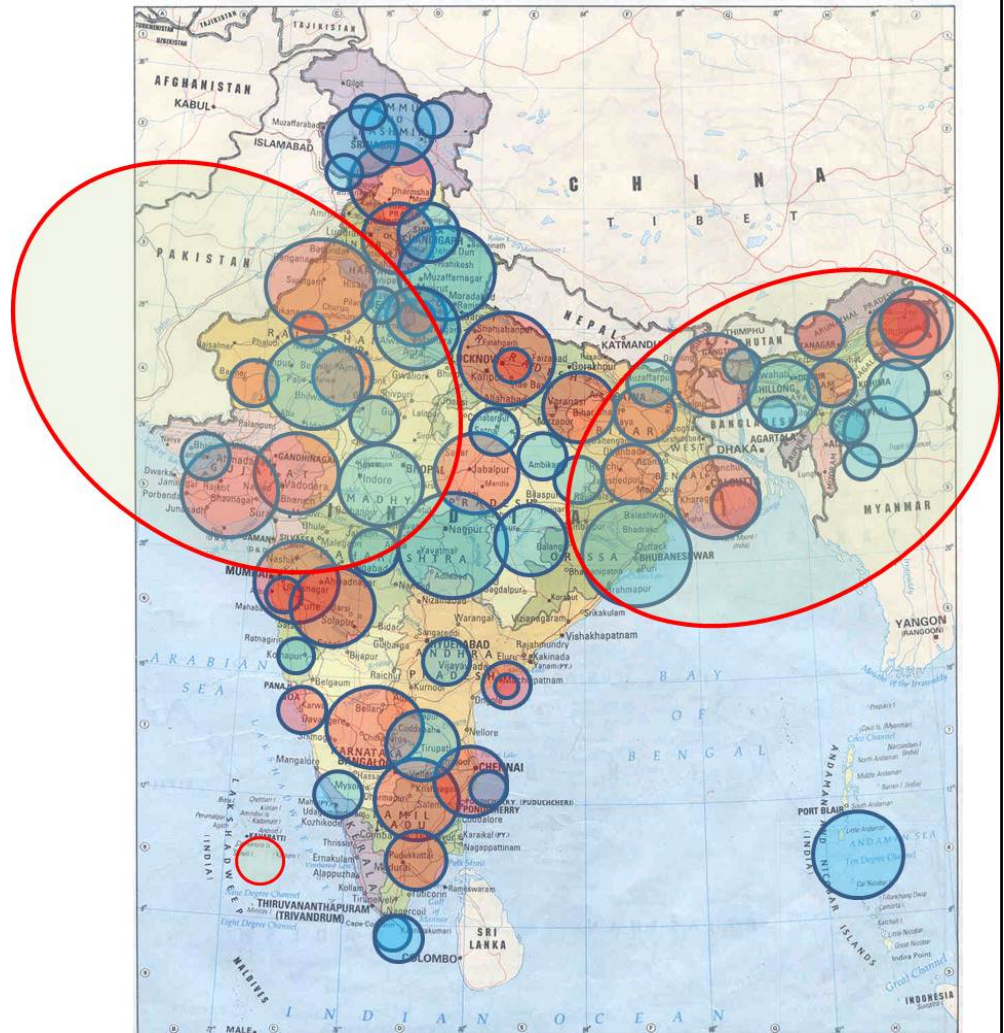
The screenshot shows the DRM India website. At the top, there is a navigation menu with links: "About Us", "What is DRM Digital Radio?", "What can I hear?", and "News". Below the navigation is the DRM logo and the text "DRM India". A breadcrumb trail reads "Home » DRM India". The main content area features a "DRM in India" section with a sub-header "DIGITAL radio mondiale" and a photo of a group of people. Below this, there is a paragraph explaining that the DRM Consortium has created a webpage to bring together useful information about India and All India Radio's (AIR) plans for the launch of DRM digital radio in the country. It is noted as being of interest to the wider digital radio community and especially receiver manufacturers, distributors and retailers. A map of India is shown with a legend indicating "Digital Transmitters currently on air in India, including area and population covered (to be updated regularly)". A link is provided to "Click here to view map of current on air transmitters of All India Radio". A "NEW" banner reads "Click here for current AIR DRM (SW) Transmitters". Below this is a news article titled "Indian Manufacturer makes progress to produce DRM receiver" with a sub-header "All India Radio's (AIR) DRM Rollout Plan. AIR broadcasts in 23 languages and 146 dialects. AIR covers 92% of the Indian territory, reaching 99% of its people. AIR's Migration to digital radio webpage where the Indian national broadcaster officially announces its commitment to rolling out DRM in the country." A link is provided to "You can have a look at AIR's DRM coverage India". Another link is provided for "Report of the Expert Committee on Power Share by Smt V/India - 24th January 2014 (Statements on DRM digital radio roll-out in India)". At the bottom, there is a "DRM Coverage in India" section with links to "Current AIR DRM (SW) Transmissions India", "AIR Domestic DRM Broadcast Schedules", "DRM International Broadcasts received in India", and "Table of Transmitters deployed in India". A final link is provided for "Confederation of Indian Industry (CII) event in India focuses on manufacturing opportunities - click here to download seminar presentations".



India



When completed in 2014, over 70% of the Indian population will be covered by DRM30 broadcasts of All India Radio





Brazil

- **DRM Tests** over last 5 years
- **DRM30** (MW, FM low/high power and SW)
- **DRM+** in the FM band high and low power in June 2012
- **Test reports** at: <http://www.conexaominicom.mc.gov.br>
<http://tinyurl.com/o7gr3ep>
- **DRM Brazil Platform** launched in October 2012
- The DRM Consortium contributes/supports consultations within Digital Radio Council, the Ministry of Communications and the Brazilian Parliament
- Digitisation decision now expected in 2014





Brazil

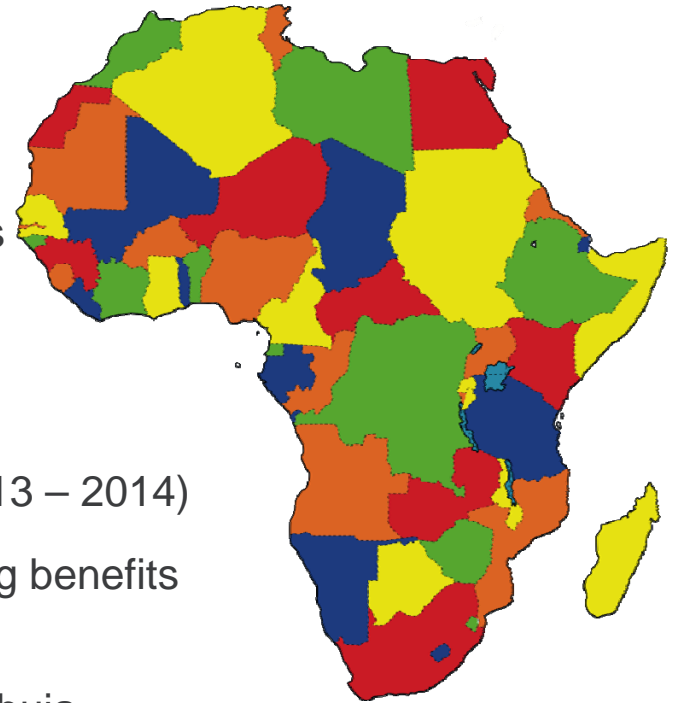
Only SW and MW can reach the Amazon and Brazil rural zones.
DRM can bring to those populations the content and all the benefits of digital radio





Africa

- Significant interest in DRM in **Southern Africa** in last 2 years
- **DRM30 tests** started or in preparation in several countries
- SW DRM transmissions in October 2011 and July 2013
- DRM Consortium attends regularly **major SABA events** (2013 – 2014)
- **Increasing African countries** attracted to DRM broadcasting benefits (such as Mozambique, Botswana, Zambia)
- **Nigeria** adopted DRM and is broadcasting for abroad from Abuja since March 2012
- **Mozambique, Zambia, Botswana and Tansania** are showing great interest in DRM.
- **Algeria** adopted DRM and installed transmitters in 2013





Southern Africa

- **Launch of the DRM Southern Africa Platform** in Pretoria in June 2014 to promote DRM across Southern Africa
- **Radio Pulpit** has made history by leading the South African radio broadcasting industry into the digital era with the **first LIVE digital medium wave broadcast in South Africa**
- DRM Consortium has **attended major events in South Africa** and **contributed to a S. Africa government consultation** including holding a comprehensive workshop with live BBC broadcast from Ascension Island in July 2013 and April 2014
- DRM30 (MW) test launched in July 2014 in Pretoria and part of Johannesburg
- Car industry, receiver and equipment manufacturers show interest





DRM South Africa trial - Outline

- Broadcasting on AM 1440kHz from Kameeldrift, Pretoria
- Broadcasting 10kW DRM using a Low Profile Antenna
- Coverage area, greater Pretoria and parts of Johannesburg
- Broadcasting of up to two services on one AM frequency
- Radio Pulpit is main sponsor and license holder
- Broadcom cc provides site and technical services
- Sentech provides alternative low profile antenna
- Test & Measurement conducted by Sentech and Broadcom cc

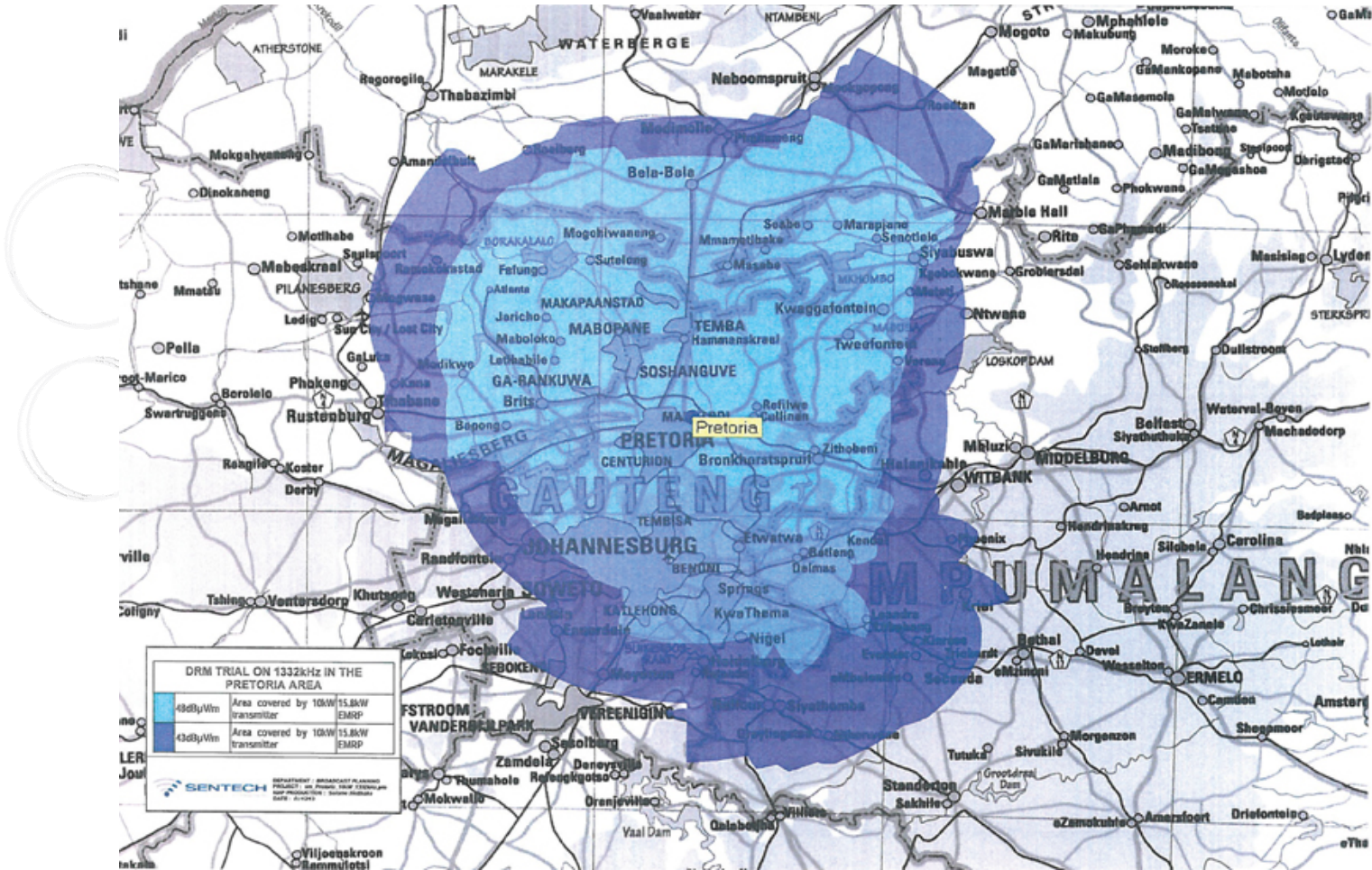


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The FUTURE of global radio

Southern African Platform

DRM Trial – Expected Coverage (10kW)





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The **FUTURE** of global radio

DRM Test Site Kameeldrift Pretoria





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The **FUTURE** of global radio

25 kWatt DRM Transmitter and Equipment Installed





DRM TRIAL - Timeline

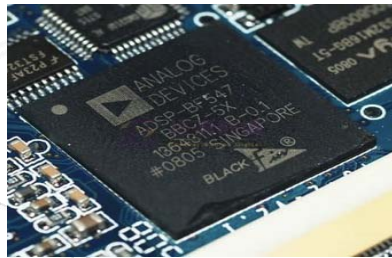
- DRM trial preparation completed and ready
- DRM Technical trial started July 1, 2014
- DRM Program trial starting September 2014
- Low profile antenna evaluation starting February 2015
- DRM trial to continue up to May 2015





DRM Chipsets

 ANALOG DEVICES



KeyStone
Semiconductor



 MIRICS

siano

NXP I-DMB and DRM

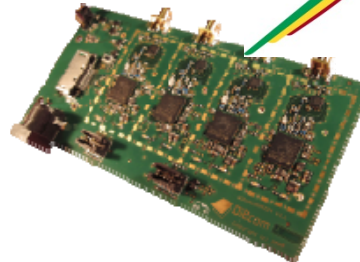


DiBcom

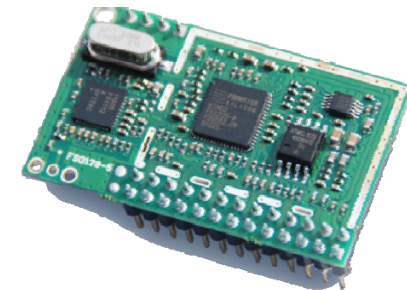


Parrot

move wireless



 FRONTIER SILICON



 Octopus

Receivers being worked on. First Indian DRM receiver ready to be unveiled.



DRM Platforms

They are “satellites” of the Consortium connected but independent!



Indian Platform -
Honorary Chairman Mr. Y Pal
Indian Newsletter
Indian page



German Platform
Oldest platform
Website
Activities like recent comparison study DRM+ and DAB+



Brazilian Platform
Chairman – Mr. Rafael Diniz



Southern African Platform
Launched July 2014
Chairman – Dr. Roelf Petersen

Russian Group – Renewed interest
American NASB – Looking at digital SW



DRM Recent Activities



DRM GA – 26th/27th March

- Hosted by the BBC (London, UK)
- Open to non-members for the first time
- Hands on experience of DRM showcase



SABA – Digital Radio Broadcasting Summit in Cape Town - 22nd /24th April

- DRM Workshop
- BBC/Babcock live DRM30 SW Broadcast



NASB Meeting – 15th/16th May

Christopher Rumbaugh of DRM USA (blog) in Oregon
George Ross of Trans World Radio, KTWR in Guam
and Calvin Carter of CEC



CBA GA – Glasgow, Scotland 13th May

- DRM Speaking slot
- DRM Marketing materials and display



DRM presentation – 22nd April

- Sharad Sadhu presentation
- good press coverage



ABU Climate Change Conference 4th-6th June

- DRM Broadcast part of BBC/Babcock bloc
- EWF of DRM – presentation



Broadcast Asia Singapore 17th-20th June

- DRM Members present
- New Announcements



3rd July - Applied Science (FH) Kaiserslautern Symposium -The Way to Digital Broadcast by DAB and DRM+ for Local Radio and Community Media



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DRM Activities – Coming up



RAI Amsterdam

Conference 11-15 September 2014

Exhibition 12-16 September 2014

DRM events at IBC 2014

“DRM:Global Radio with Benefits”

Southern Africa Platform Workshop



16-17 October 2014

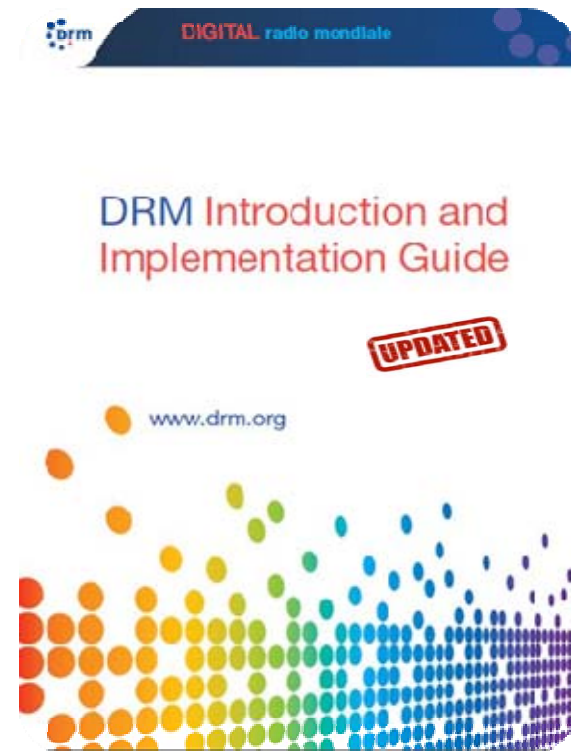


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All you need to know about DRM – Free

DRM Introduction and Implementation Guide (DIG)

Download from: www.drm.org





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More Information on DRM



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