



the westbury community development centre
IT 4455/00



Interim Report of a DRM Mode E Trial in South Africa

V1.4

Release Date: 08 July 2017

Project Partners:

Kofifi Media Group, Roodepoort, South Africa

BluLemon, Edenvale, South Africa

CR Electronics, Springs, South Africa

Genssoft Technologies, Midrand, South Africa

British Broadcasting Corporation, London, UK

Fraunhofer IIS, Erlangen, Germany

1. Executive Summary

The Westbury Community Development Centre Trust (WECODEC), license holder of Kofifi FM 97.2, a community radio station in Westbury, South-West Johannesburg, with support from the British Broadcasting Service (BBC) and Fraunhofer Institute for Integrated Circuits, initiated a trial broadcast project to evaluate the Digital Radio Mondiale (DRM) system in the VHF Bands (also referred to as DRM Mode E or DRM+).

A 2-fold trial frequency spectrum license has been issued by ICASA for Johannesburg on 101.25MHz and Carnavon on 64.0MHz and became effective on 03 March 2017 for a period of 8 months. The license may be extended for a maximum of another 6 months if the need arises. Transmissions have started in Johannesburg from end of March 2017. Transmissions in Carnavon will start at a later stage as site preparations are not finalized yet.

So far mobile measurements have taken place in 4 radial directions as well as a round trip and various additional mobile measurement excursions with both professional and (pre-) consumer receiver equipment. The main technical objectives of the trial – acquiring evidence of no interference with adjacent FM channels and evaluation of the propagation characteristics of the signal – have so far successfully been achieved. This interim report that has been requested by ICASA contains all propagation maps and measurement results so far. However, a more detailed report at the end of the trial period will document the findings in further particulars.

Apart from the technical evaluation, our trial is also intended to evaluate the benefits for the broadcasters, listeners and economic environment.

For the Johannesburg transmission we are using a Nautel 2.5kW transmitter operating at 175W resulting in an estimated ERP of 500W on our stacked 4 vertical dipole antenna located at Rahima Moosa Hospital in Coronationville with an approximate antenna height of 70m above ground level. Although mobile reception is still impacted by prematurity of receivers without an appropriate AGC mechanism, audio decoding was possible at almost all predicted areas and beyond and showed a similar or better behaviour than FM audio reception of the analogue signal that is transmitted from the same site depending on the terrain.

Power consumption per channel is significantly lower than FM.

Both adjacent channels – RSG Pretoria on 101.0MHz and RSG Johannesburg (Brixton) on 101.5MHz were not interfered by our transmissions whilst an analogue allocation of the same frequency (101.25MHz) is not possible. Hence it was demonstrated that the existing FM spectrum could accommodate a large number of additional DRM radio channels without impacting existing services.

The other way around it was also demonstrated that the adjacent channel RSG on 101.5MHz transmitting at 33kW ERP (18dB stronger) did not impact the reception of our signal even at a difficult indoor scenario.

Along 3 audio services using the latest xHE-AAC audio codec, various text and data services including Journaline are broadcasted and were successfully decoded with both professional and consumer receivers. These will be evaluated further during the course of the trial.

This interim report can already be used for evaluation of the DRM system in the VHF Band (DRM+).