



Submission to:

The Australian Broadcasting Corporation (Restoring Shortwave Radio) Bill 2017

From DRM Consortium

The Digital Radio Mondiale (DRM) Consortium has noted with some concern the fact that ABC has ceased broadcasts in short wave (SW).

At the same time, we are aware of the rollout of DAB+ digital standard in your vast country and know that at present some large conurbations along the shores of Australia are covered by digital radio signals. Once people go out of the DAB+ broadcast areas, those signals are not accessible any longer.

Some research shows that only 3.5 million people out of 12 million living in mainland state capital cities can receive digital radio signals (DAB+), whereas 9 million people cannot. In a democratic country like Australia, where each citizen has the same rights, we feel it is important that the public broadcaster, ABC, extends the reach of digital radio also to the outback, so that the entire population of Australia enjoys the benefits and advantages of new and advanced free to air radio technology and improved, exciting content.

No IP, DVB –T or satellite solution has been proven to be as effective as terrestrial digital audio broadcasting.

This can be achieved very efficiently by using the DRM standard in short wave (SW) but also in medium wave (MW). We are aware that Australia has many AM transmitters, which could either be upgraded to DRM or, if too old, can be replaced with new and more energy efficient ones.

There has been some recent acquisition of eight (8) new AM transmitters by Broadcast Australia (ABC) that can deliver DRM digital radio. If we understand correctly, currently in Australia there are:

- a. 36 AM and 601 FM national analogue transmitters with no local content
- b. 225 AM (medium wave) and 1600 FM regional and local commercial and community stations transmitters

At present DRM transmissions cover half of the world, as many countries have already opted for the DRM digital radio standard (also in SW). The interest and implementation of DRM in countries across the globe will ensure that low cost DRM receivers will become widely available, once countries order such receivers. The programme schedules of some of the broadcasters can be found on our website:

http://www.drm.org/?page_id=151

India, the second largest radio market in the world, in terms of population, is rolling out DRM successfully. They have already installed 35 MW transmitters and 2 SW transmitters. Approximately 600 million Indians are covered by DRM signals. **Pakistan, Nepal, Taiwan, and lately Indonesia**, have developed or taken a great interest in the DRM standard. Indonesia successfully tested DRM in medium wave last year and has become an active member of the DRM community. Pakistan has successfully installed the first DRM+ transmitter and 20 more have been ordered. Indonesia is also very interested in the full DRM standard (DRM for AM – DRM30 and DRM for local coverage – DRM+).



Technical Facts

DRM is one non-proprietary global standard and can carry up to **3 digital radio programmes** along with **data services** on a single radio frequency.

- DRM is the complete, internationally recognised solution for digitising radio recommended by international organisations such as ITU and ETSI.
- It can utilise the existing transmission infrastructure of a broadcaster for a more energy efficient service (up to 80% energy savings!), allowing the radio broadcaster to stay in control of their own broadcast infrastructure (studios, transmitters, antennas) without having to rely on expensive third party multiplex services.

As an example, if one 100 kW analogue transmitter with a given earth conductivity, covers an area 600 kilometres wide, the same transmitter, but DRM enabled, can cover the same area using only 40 kW. It is also very important to note that the broadcasters will use this reduced power (hence energy consumption) for broadcasting not only one programme, as in analogue, but for two or three programmes in parallel using the same frequency band with exceptional improvements in sound quality. In addition, the broadcasters can add to these programmes another channel for multimedia services, such as texts, pictures, very short video clips and slideshows to enhance the content of their programmes. All this can be achieved also in multiple languages or dialects at the reduced power consumption, as just explained.

FM in the VHF bands are very popular in recent years but over large territories, FM analogue broadcasts can be quite expensive due to their energy consumption and the infrastructure needed to cover such larger territories. By contrast, DRM using the Medium Wave frequencies can avoid such high costs. Just as an example, if for the same area of 600 kilometres in diameter there is a need of around 15-20 FM transmitters (depending on the power of those FM transmitters), one single 100 kW DRM MW transmitter can cover that same area using only 40 kW power. DRM is thus five times more cost-effective than analogue FM.

- DRM is the first digital radio standard to embrace the latest high efficiency audio codec, the latest in the MPEG AAC family of audio codecs, xHE-AAC, allowing for a natural fit with all modern digital devices. This delivers very high sound quality at even very low bites, which is a huge advantage for radio broadcasts - for example via mobile phones.
- The existing transmission infrastructure of a broadcaster needs in many instances only to be upgraded, not necessarily be replaced, which leads to important savings.
- DRM supports single frequency network operation (SFN) to serve a region or even the whole country on a single broadcast frequency for optimised listener coverage.
- DRM is an indispensable tool for emergency warnings and alerts in case of disasters, as well as for traffic information on highways

DRM comprises two major configurations/modes which share the same features and benefits:

DIGITAL radio mondiale

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1. **DRM for the AM bands** (called 'DRM30') intended for broadcasts on short, medium and long wave up to 30 MHz and offering FM like quality sound over large and medium large territories within a country (and beyond). It is ideal for large to medium sized broadcasters who intend to cover large territories, like ABC for instance.

Benefits of digital short and medium wave

- a. DRM runs on all frequency bands, both AM and VHF. By using DRM in AM (medium wave and short wave), broadcasters can cover very large areas and reach people in remote territories easily and efficiently. This should be a huge advantage for Australia.
- b. DRM allows broadcasters, in many instances, to only upgrade their transmission infrastructure, thus cutting a lot of costs related to the purchase of completely new equipment. (This upgrade capability applies to both DRM in AM, as well as for DRM in the VHF bands).
- c. DRM works seamlessly with other standards, like DAB/DAB+, both being complementary systems, developed roughly by the same specialists. This makes it easier to produce multi-standard receivers incorporating both the full DRM as well as DAB+. DRM can also be implemented (ideally for a short period of time!) in simulcast mode, so that there is no interruption in broadcasting until full digital signals are available.
- d. Substantial energy cost reductions (**between 50% to 80%**) when using a transmitter for up to 3 programmes and one data channel per frequency, instead of one programme in analogue. A 100kW transmitter can replace around 15 FM transmitters using only 40kW of its power over a distance of 600 km
- e. Emergency Warning System in case of disasters
- f. Listeners select the broadcaster by name not by a 5-digit number. This allows the broadcaster to control the frequency of the transmissions for the most reliable reception, i.e. day/night switching, seasonal changes.
- g. Slideshow including the ability to show coloured maps
- h. Multi-lingual broadcasts from a single transmitter and multi-lingual multi line text (Journaline)
- i. High quality stereo sound free of crackling, noise other broadcasters and distortion
- j. Electronic Program Guide and the ability to programme recording on a SD card.

2. **DRM for the VHF bands above 30 MHz** (called 'DRM+') is tailored for local (cities) and smaller regional coverage with broadcaster-controlled transmissions. It is suitable for local commercial as well as for community stations wishing to focus on their local area, using the languages/dialects of those territories and broadcasting specific local content.

Receivers

The impetus gained in India with the DRM roll-out by All India Radio, has prompted receiver manufacturers to plan and produce standalone desktop receivers, such as Avion (India made), Gospell (China) and Titus II by Patronx (USA). The latter is the most modern approach as it is software driven (SDR) and can accommodate all digital radio standards in addition to analogue. According to Titus II, their receivers can be produced in the countries interested to acquire such devices



International car manufacturers such as Hyundai, Maruti Suzuki and Mahindra have already incorporated DRM receivers in their vehicles, now for sale in India. Five more car manufacturers are currently working on placing DRM radios in their cars.

Recommendations

Considering the main points about DRM listed above, we believe that ABC should maintain their short wave and medium wave frequencies and upgrade them from analogue to include also the DRM standard. This can help them greatly to cover the large territories of Australia. With only a few high-power transmitters this can be achieved successfully and, possibly, at a fraction of the costs associated with hundreds, if not thousands, of totally new FM/DAB+ transmitters dotted around.

Adding DRM to the existing DAB+ structures already in place in some cities, would allow Australia to achieve what many other countries have not managed to do, i.e., to cover **fully** their territories (see Europe for instance). DRM and DAB+ are complementary open systems, developed roughly by the same specialists over the years, specifically to answer the needs of any type or size of broadcaster. This is exactly where DRM can respond to the needs of all broadcasters, large or small, community, public or commercial.

To demonstrate the capabilities of the DRM30 mode of the DRM standard, it would be beneficial to start a trial in one of the regions you are targeting. Such a trial could be the best tool to experience, check and learn about the performance of the standard.

The DRM Consortium would be delighted to give more details about the value-chain of the DRM technology to the Australian Parliament, Regulator working closely with ABC and other broadcasters, so that they get a complete picture of the benefits DRM can bring to such a vast country like Australia.

About the DRM Consortium

The DRM (Digital Radio Mondiale) Consortium was set up in 1998 with the support of EBU and ABU. It is an international **not-for-profit organisation** made up of over 100 broadcasters (BBC, Radio France, The Voice of Russia, RRI, PBC, Radio Vaticana), network providers (Babcock in the UK, Sentech in South Africa), transmitter and receiver manufacturers (Ampegon, BT Broadcast Transmitters, Continental Electronics, GatesAir, Nautel, RFmondial, Thomson Broadcast, Transradio, Communications Systems Inc.), universities, broadcasting unions and research Institutes (such as Fraunhofer IIS in Germany, the Technical University Budapest), etc. The Consortium benefits also from the support of dynamic national DRM groups and platforms in India, Brazil, Germany, Indonesia, Pakistan, South Africa and Norway.

For more information please check: www.drm.org or write to:

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