

DRM and international broadcasting

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International broadcasters and equipment manufacturers are joining forces for the introduction of DRM, a universal non-proprietary digital broadcasting system for the AM band.

May 2003

Kiev, Ukraine: the British, German and US ambassadors warn Ukraine against restricting the rebroadcasting of the BBC, Deutsche Welle and Voice of America. Amendments to the law on TV and radio broadcasting, to be passed by the Ukrainian parliament in September, could result in a ban on relays of Western radio stations.

September 2002

Abidjan, Côte d'Ivoire: local FM relays of the BBC World Service (WS), Radio France Internationale (RFI) and Gabon-based Africa No. 1 go off air after "unknown people" destroy the technical installations of the three international broadcasters.

November 1997

Kinshasa, Democratic Republic of Congo: the authorities suspend local FM rebroadcasts of programmes of the BBC, Radio France Internationale and Voice of America.

April 1996

Saudi-owned satellite TV company Orbit Communications signs the death warrant of BBC Arabic TV – a commercially-funded channel produced by the BBC, but distributed by Orbit – after unilaterally terminating its distribution contract for this channel with BBC Worldwide Television.

April 1994

Rupert Murdoch drops BBC World TV from its STAR TV satellite line-up covering north Asia and China, only months after saying that satellite TV was an “unambiguous threat to totalitarian regimes everywhere”. Murdoch later admitted taking this step to please Beijing.

Political risks

These are some examples of the potential political risks faced by international broadcasters when they hand over distribution of their signals to commercial or local gatekeepers or operators, a trend which has gained significant ground in the past 10 years or so.

Furthermore, international broadcasters may also find themselves facing difficulties of another nature in the future, such as having to pay more for the use of a limited resource (frequencies). The costs of rebroadcasting agreements are already far too high for many medium-size international broadcasters, effectively curtailing their audiences in some countries. This may even endanger their long-term survival: faced with an ever-declining audience they could eventually face funding cuts from their stakeholders.

In the case of television broadcasts, distant delivery can easily be achieved by independent satellite broadcasting.

Short wave

When radio listeners find themselves cut off from local FM relays they can always turn to short wave (SW) to listen to broadcasts no longer available locally.

International broadcasters have traditionally relied on SW broadcasts to reach listeners in distant places and in countries where freedom of information is seriously curtailed or non-existent. They have also used –

but to a lesser extent – medium wave (MW) in certain regions (the Middle East in particular).

In vast countries with some sparsely populated areas – such as Russia – where FM broadcasts may prove costly and unpractical, AM (SW, MW and LW) broadcasts are also widely used for domestic broadcasts. However, if they offer the very significant advantage of travelling long distances, SW (and MW) broadcasts also present serious drawbacks.

Audio quality, in particular, suffers from the interference from other stations transmitting on the same or nearby frequencies and other problems such as multipath, Doppler shift or fading.

Rebroadcasting

In order to curb these shortcomings, international broadcasters have invested heavily in improving the quality of their signals (through new SW transmitters and aerials) and, where possible, have sought agreements for local MW or FM relays of their signals in a number of countries. This trend gained momentum in the 1990s.

RFI and its Arabic-language service Radio Monte Carlo Moyen-Orient have 106 relays and over 300 rebroadcasting partners worldwide. The BBC World Service, for its part, has some 2,000 rebroadcasting partners in the world and its programmes are available on FM in 138 capital cities. About a third of its audience of 150 million now listens to its broadcasts via local MW or FM relays.

However, this leaves some 100 million still listening to the World Service on SW, but the relative share of listeners tuning in to SW to receive BBC WS broadcasts (or other international programmes) is likely to decline in the long run.

Thus, improving SW reception quality is critical to slow this trend and to the future of international broadcasting, for the BBC WS as well as for other operators.

DRM Consortium

Aware of this long-term risk, a number of international broadcasters and equipment manufacturers have been working for years to introduce a universal non-proprietary digital system for the AM broadcasting bands below 30 MHz. Together they set up the Digital Radio Mondiale (DRM) Consortium in 1998 to develop this new technology.

The list of broadcasting organizations which have joined the consortium so far – to name but a few: All India Radio, the BBC, Deutsche Welle, IBB/Voice of America, Radio Canada International, Radio France Internationale, Radio Netherlands, Voice of Russia, Radio Sweden International, Vatican Radio – shows that most international broadcasters are backing the system. More are expected to join DRM in the near future. DRM’s initial success is understandable given the benefits it offers to both broadcasters and listeners, among the most significant:

- interference-free reception;
- near-FM audio quality with an AM reach, allowing a wide range of audio content including music;
- easy to use receivers (essential for AM where propagation conditions require frequent retuning);
- low-cost, low consumption receivers to become available fairly rapidly;
- wide choice of receivers;
- flexible use of sets (mobile reception possible – unlike satellite reception);
- lower transmitting costs (less power required);
- possibility of carrying associated data transmission;
- open standard allowing future enhancements;

- designed to fit in with the existing broadcast band plan;
- more efficient use of the frequency spectrum, allowing more services.

Jamming

The introduction of this new technology in the field of international broadcasting, however, raises a number of issues for broadcasters and listeners alike.

One of these is the access to programmes. In the past governments that wanted to shield their citizens from what they considered to be dangerous foreign propaganda used deliberate harmful interference, also known as “jamming”, to block programmes from international broadcasters.

Jamming has significantly diminished following the collapse of the Soviet Union, although some international broadcasters have claimed that their programmes were still being jammed by certain governments.

In October 2002, the BBC World Service reported that its SW broadcasts in the Uzbek language were being jammed by the Chinese government. Cuba is also reportedly regularly jamming broadcasts from the US-run surrogate stations Radio and TV Martí.

Generally speaking, jamming SW radio broadcasts requires large installations and is costly. Furthermore, jamming can be overcome by broadcasting on additional frequencies and using more powerful transmitters.

DRM can operate successfully at lower signal to interference (or noise) levels than standard AM. So, in that sense it is less vulnerable to jamming. It will take more power to knock out a DRM signal. But, in practical terms, anyone

who wishes to jam a radio signal can do so.

However, experts point to another technical possibility to prevent access to unwanted programmes broadcast in DRM mode: modifications to sets designed to make them capable to receive certain frequencies only and to block all others. This would be possible in closely-controlled markets only.

Launch

In April 2003 Deutsche Welle was the first international broadcaster to announce that it would start airing 12 hours a day of programmes in German and English to target regions in Europe on 16 June, when live DRM broadcasts will begin officially during the International Telecommunication Union’s World Radio Conference 2003 in Geneva. On that day the landscape of international broadcasting will change dramatically.



Second-generation DRM-capable world-band receiver from Coding Technologies GmbH

Other broadcasters quickly followed Deutsche Welle: Radio Netherlands, Swedish Radio International, DeutschlandRadio, Radio France Internationale all announced the launch of their DRM broadcasts.

Future

A limited number of sets – mainly based on modified high-end receivers – is currently available, these are mainly used for testing.

A world-band consumer receiver has been developed by Coding Technologies together with the BBC and German device manufacturer AFG. It is based on a modular system design made up around standard components. It is a production-ready OEM receiver sample integrated in the case of a commercially available Sangean multiband radio receiver.

A DRM Software Radio, designed for private use, which is a downscaled version of an existing professional receiver, can also be bought.

Given its obvious advantages for both international broadcasters and listeners, DRM should have a brilliant future.

However, the real test of its success will be the ability of the DRM consortium – which includes a number of equipment manufacturers – to introduce fairly rapidly reasonably priced receivers which will in turn build up audience for short-wave listening.

International broadcasting in the future will not rely to the same extent as in the past on short-wave broadcasts but it will continue to reach a growing number of listeners via relays or rebroadcasting partners. Radio – short-wave radio – will be just one in a number of ever more numerous platforms – computers, mobile devices, etc. – used. DRM, however, should ensure it remains one of the most popular ones.