

Inside Innovation – August 05 2008 – Norman Apsley

Digital Radio Mondiale

It's holiday time again but, however much we want to get away, we like to keep some link with things back home. Newspapers and the Internet are all very well but for me it's the radio and the BBC World Service.

For that reason, I was delighted to read that the agreements are coming together for Digital Radio Mondiale, or DRM, the short wave equivalent of Digital Audio Broadcasts, DAB.

In the early days of radio, the carrier frequency was low and the audio signal was transmitted by simply varying the intensity or amplitude of the radio wave or AM. The Broadcaster sent out as much power as possible, while the makers of receivers went to all sorts of lengths to pick up the weak signals. Kids could even make simple crystal sets to listen to Radio Luxembourg under the bedclothes.

The requirements of TV and the desire to cut out the hissing, popping and fading of the AM bands increased the carrier frequencies until today when we need microwaves to bring us our favourite digital shows from satellite. Ironically, however, to send signals beyond the curve of the Earth at these high frequencies, you need the satellites or else many repeaters all round the world. You see, an advantage of the early systems for global communication, is that the atmosphere has a band of charged particles at about 100km high. This is the Ionosphere, which is dense enough to reflect low frequency radio. A well-aimed beam can be bounced between Ionosphere and earth many times to establish a link even as far away as Australia.

Much of the early work on the Ionosphere was carried out at Queen's University; indeed, I recall in the Sixties, that a Professor there regularly won the coveted accolade of most cited paper in the world. I wondered why at the time but with hindsight it's obvious; the military, the space scientists and the growing community of communicators all needed to know his work.

The Ionosphere is affected dramatically by the solar wind, so users of short wave radios are obliged to hunt the dozen or so bands to see if their favourite station is available to them at that place and time. An irritating ritual in the 21st Century. DRM promises an easier way of keeping in touch on holiday, listening to familiar voices like Bola Mosuro, who, by the way, studied at the University of Ulster!

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