DRM+

Some of the details behind the next generation of DRM (looks like it is going to be known as DRM+) are now appearing. On the face of it DRM+ is looking a lot like IBOC with both hybrid and all digital modes being defined. Also like IBOC separate configurations are being tabled for both AM and FM. The current DRM specification has no VHF-FM mode and the only hybrid AM mode actually is use is the compact one that has one sideband in SSB analogue and the other sideband in digital. However DRM has higher bandwidth modes that use the adjacent channels for the digital signal. For a standard 9 kHz AM signal up to 18 kHz additional spectrum can be allocated to the digital signal. This is the same as AM2 mode below.

DRM-AM

DRM+ is now considering or highlighting two 'new' hybrid modes: AM1 with a 15 kHz bandwidth where 5 kHz (probably 4.5 kHz in Europe and elsewhere) is allocated to the analogue signal and 10 kHz (9 kHz in Europe) to DRM. This is a variation on the current simulcast mode that works within a European AM bandwidth of 9 kHz with a 50:50 allocation to analogue and DRM. 15 kHz will work OK in certain regions that operate on a nominal 30 kHz spacing between powerful AM signals but will not be so easy to introduce in Europe.

AM2 with a 27 kHz bandwidth (outside Europe this would be a 30 kHz bandwidth) just like the IBOC hybrid AM mode. It is not clear if this is a multiplex which is essentially two 15 kHz ensembles or a traditional AM signal with 9 kHz allocated to the AM signal and 18 kHz given over to the digital signal. As shown above this is not really a new idea.

DRM-FM

Here the thinking seems to cover both full digital and hybrid modes:

Full digital is considering both a 50 kHz (let's call this FM1) and a 100 kHz mode (FM2). the capacity of the multiplex will depend on the encoding used. Using 16-QAM for the main payload, FM1 would allow one stereo audio channel at very good quality and about four of these could fit into a current FM channel that has a nominal bandwidth of 200 kHz. FM2 in 16-QAM could accommodate one stereo audio channel at CD quality and probably a single mono channel both using AAC. In summary FM1 in a standard FM channel could transmit 4 near FM quality audio programmes whilst FM2 could carry 2 CD quality plus 2 lower quality programmes.

Using 64-QAM FM1 could carry one audio channel at CD quality and about four of these could fit into a current FM channel that has a nominal bandwidth of 200 kHz. FM2 could accommodate two stereo audio channels at CD quality and probably a single lower quality mono channel both using AAC. In summary FM1 in a standard FM channel could transmit 4 CD quality audio programmes whilst FM2 could carry 4 CD quality plus some data services. The Hybrid FM mode considers bandwidths of 250 or 300 kHz that does demand that some existing analogue broadcasts are cleared from Band II. The hybrid mode allocates 200 kHz to analogue and either 50 or 100 kHz to digital. This does mean that DRM+ does not fit neatly into existing channel spacing whereas IBOC does.