

November 5, 2012



# TV TechCheck



The Weekly NAB Newsletter for Television Broadcast Engineers

## Avoiding Broadband/Broadcast Interference: A Tale of Two Countries

On October 24 2012, over-the-air television in the United Kingdom became all-digital when the last analogue transmitter operating in Northern Ireland was shut off, ending a phased-in cessation of analog broadcasting that began in October 2007 and progressed steadily over the past five years as different regions of the country were transitioned fully to digital. The analog switch-off has freed up spectrum capacity in the 800 MHz band, which will be used for 4G mobile services. Known as “the digital dividend,” these frequencies will be auctioned by Ofcom, the UK’s regulatory agency, beginning early in 2013.

In July 2012, Ofcom issued a [Statement](#) titled “Assessment of future mobile competition and award of 800 MHz and 2.6 GHz,” following up on a decision proposed in February 2012. Of particular interest in the Statement is the section on digital television “coexistence,” referring to the top of the DTV band being immediately adjacent to the allocation of new mobile services in the 800 MHz band. At issue is the interference that new mobile broadband service may have on reception of digital television in the adjacent band. The Ofcom technical analysis showed that, based on the 40% of households in the UK that use over-the-air reception (i.e., the UK Freeview service) as their only means of accessing television programming, up to 900,000 OTA-only households could lose some or all of their TV channels due to the introduction of mobile broadband service in the 800 MHz band immediately adjacent to the DTV band.

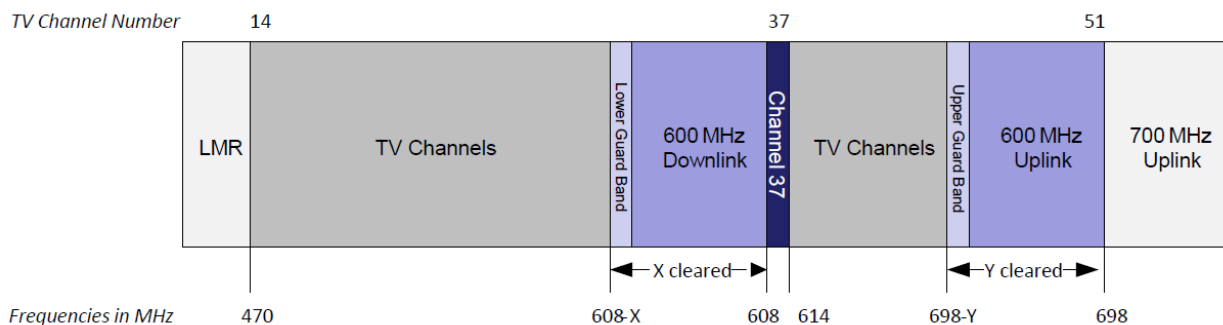
The solution offered by Ofcom was to form a new organization, funded by the 800 MHz mobile broadband service licensees, nominally called MitCo (a reference to mitigation of interference), which would manage the prevention of interference for existing DTV viewers. Beyond being an information and education source for consumers, MitCo would provide and/or install filters fitted for TV receivers to viewers thereby offering protection from the 800 MHz signals. £180 million (approximately \$292 million) would be made available to MitCo by the 800 MHz licensees and MitCo would be monitored by an Oversight Board set up by the UK Government.

On October 18, the U.K.’s “big four” mobile phone operators – Everything Everywhere (EE), Telefónica (owner of O2), Three and Vodafone – stepped up to the challenge and announced that they have formed a jointly-controlled company called Digital Mobile Spectrum Ltd (DMSL), which will act as the Ofcom-proposed Mitco entity. DMSL will be responsible for ensuring that consumers can continue to receive clear Freeview DTV signals following the roll out of 4G mobile services in the 800MHz spectrum band being planned for Spring 2013. It is anticipated that many viewers will be able to fit the free supplied filters on their television sets themselves, but some will require a visit from a knowledgeable installer. In any case, a high priority has been established for protecting UK television viewers from interference by mobile broadband transmitters. A similar spectrum situation exists in the U.S. with the immediate adjacency of DTV channel 51 with mobile service providers operating just above channel 51. However, the specifics are somewhat different than in the UK and the solutions proposed are different as well. Mobile network operators are concerned that high power television operations on channel 51 may be potential strong interferers to the adjacent mobile broadband service in the vicinity of the channel 51 transmitter. Even though the rules for development and auction of the 700 MHz band were set and agreed prior to the auction, AT&T and others have more recently suggested to the FCC that high power transmissions on channel 51 should be phased out in order to have a “guard band” for the lower 700 MHz band operators. The FCC imposed a freeze on new or modified DTV facilities on channel 51 in 2011. With the channel 51 situation as somewhat of a cautionary tale, in the recent FCC NPRM on incentive auctions in docket 12-268, a nominal 6 MHz “guard band” between broadcast and mobile broadband services is proposed as part of the repacking and reallocation plan associated with the incentive auction process.

The FCC’s “lead” band plan (alternative band plans are also presented), as described in the NPRM released by the FCC on October 2, is shown below:

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The amount of spectrum made available is auction-dependent. The uplink spectrum begins at channel 51 (698 MHz) and expands downward while the downlink spectrum begins at channel 36 (608 MHz) and expands downward. Five megahertz blocks are proposed for wireless broadband with channels paired where possible. To mitigate broadband-broadcast interference, 6 megahertz guard bands between the auctioned spectrum and the broadcast TV spectrum are proposed. These guard bands would also be available for unlicensed use. Since the new service will be divided in 5 MHz blocks and TV service is based on 6 MHz channels, there may be some “left-over” spectrum, depending on how much spectrum is ultimately cleared – the Commission proposes to add this extra spectrum to the guard bands in order to align the blocks. The 205 pages of the NPRM and statements from the FCC Commissioners can be downloaded [here](#). Comments are due December 21, 2012 and reply comments are due February 19, 2013.

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