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## 800 MHz Rebanding

### Lost in Transition

By James Shelton

The rationale for rebanding the 800 MHz public safety spectrum is well documented. The main driving force behind rebanding was the interference problems between adjacent commercial mobile radio services



(CMRS) operators and public safety operators. The out-of-band emissions (OOBE) interference includes situations when public safety agencies were licensed on channels adjacent to commercial operations. FCC report and orders (R&Os) appropriately documented the various interference cases and the difficulty in developing a precise cause and respective solution to correct the interference condition. However, because the cases and causes were critical to the well being of the agencies and public reliance on the public safety agencies, "interference abatement rules and procedures" were established through FCC R&O 04-168 that precede rebanding.

These rules and procedures provided an avenue for agencies to pursue if adjacent-channel interference was suspected via a mandated commercial carrier-based resolution plan. In theory, for National Public Safety Planning Advisory Committee (NPSPAC) licensees, this

adjacent-channel interference is a non-issue. However, something got lost in the transition.

#### The Reconfiguration Process

The intention for NPSPAC licensees is that frequency "neighbors" before rebanding will still be frequency neighbors after rebanding, because the NPSPAC band moves only after the channel 1-120 licensees complete their reconfiguration, at which time, all NPSPAC licenses move downward in the band by 15 megahertz. Each wave has a defined Phase 1 and Phase 2; with Phase 1 being the channel 1-120 moves

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and Phase 2 the NPSPAC license moves.

In March, the Region 8 regional planning committee (RPC) sent a letter to the FCC asking for clarification on the issue of co-channel and adjacent-channel interference in the NPSPAC band during the rebanding process. The issue wasn't who would be neighbors when the rebanding process was complete, but who would be neighbors during the interim period when Sprint Nextel swapped channels in and out of the new and old NPSPAC band.

When a NPSPAC licensee changes frequency, it may have Sprint Nextel as a co-channel and/or adjacent-channel operator. Ideally, Sprint Nextel should clear the co-channel and/or adjacent channel within a certain distance of the public safety licensed repeater and service area, but this hasn't been the case. When channels were checked before the equipment was retuned, Sprint Nextel signals were detected on channel.

As licensees move out of the current NPSPAC frequency spectrum, Sprint Nextel will look to occupy that spectrum. Then, a NPSPAC licensee may

have a new co-channel and/or adjacent-channel neighbor prior to moving, creating new interference situations. Theoretically, when the dust settles, all will be fine. This remains to be seen.

#### Problems

Both cases present potential interference problems that should be addressed proactively through an analysis completed under public safety agencies' rebanding efforts. Because the NPSPAC spectrum is under the planning and

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control of the respective RPC, deviation from the co-channel and adjacent-channel standards established by the RPC may impact the timing of a rebanding process. A public safety agency is likely to decline a frequency reband that will present performance issues and isn't in accordance with its RPC guidelines.

The R&O addressed this problem for the near term (prior to reconfiguration) by mandating the "interference abatement rules and procedures" required to be established by the CMRS carriers. Although this is a worthwhile intermediate step in the reconfiguration process, the agency in question must first suspect or identify an interference situation before mitigation can take place.

For rebanding licensees, this process effectively means a system that has gone through a reconfiguration and exhibits performance problems can't rule out adjacent-channel interference. In the context that CMRS (Sprint Nextel) operations may continue for some time in the new NPSPAC channel range, these problems may or may not reveal themselves during system testing (acceptance level, coverage, or otherwise).

## A Solution

A proactive process would be to conduct an OOBE analysis on the new frequency set, allowing an agency to

determine if an OOBE situation exists. This analysis isn't an extensive or expensive process and would have little or no impact on the current Transition Administrator (TA) obligations, reports, or tools. It involves sharing information regarding channel assignments, including adjacencies, which could simply involve using the online TA tool.

Currently, the tool allows for a 50-megahertz-wide search around a selected licensee's frequency. Public safety agencies would require confirmation the tool is up to date with CMRS frequency assignments, and that it can process both the old and new NPSPAC frequency assignments, which it currently can't do. A complete analysis may involve:

- A check using TA/FCC available online tools that may show no new adjacencies of concern, even during the interim period of transition;
- A geographical proximity analysis;
- Phone coordination between respective parties regarding channel usage/selection;
- A scenario that benefits both licensees; and
- An RF propagation study.

Noting text from the "PS Best Practices Guide," section V.B.1: "The most critical factor to preventing interference between public safety and CMRS systems is comprehensive advance planning and frequency coordination between commercial providers and

public safety communications entities." The key to this quote is "advance planning and frequency coordination," which is the approach outlined above.

To date, Sprint Nextel and the TA have been reluctant, and to my knowledge, never permitted "adjacent-channel analysis" in funding requests from public safety agencies via request for planning funding (RFPF) or the frequency reconfiguration agreement (FRA). In fact, Sprint Nextel and the TA don't have to take adjacent-channel interference into account for replacement channels.

For NPSPAC licensees, this limitation can result in unwanted and undetected interference in the current or new NPSPAC channel(s). NPSPAC licensees in all waves should be aware of this potential issue and take proactive steps to identify and address these situations. In the current environment, this activity must take place outside of rebanding because funding for adjacent- and co-channel interference analysis was rejected in the NPSPAC band. ■

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