Two-Watt Radios Find Home in UHF Band

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Many times we like to think that bigger is better, and sometimes it's true. Take Big Gulp Cups, ballpark franks and SUVs, for example. But when it comes to getting spectrum for a land mobile system, many times success in finding spectrum depends on getting small. In many populated areas where the spectrum is congested, you have to be creative about finding usable frequencies. For example, there are usable channels available in the UHF band for low-power use.

Background:

Before refarming, the 462/467 MHz band, the offsets in the old Manufacturing Radio Service (Group B in FCC Rule 90.267), could be used for either voice or data on a co-primary basis. With the two-watt power limit, these frequencies were reused by mini-repeaters. For example, Toyota in Kentucky used these frequencies throughout its facility to voice dispatch employees. Boeing used them, as well, in the aircraft construction areas to maintain contact with employees. Some of the users had them set up as fixed stations. Coors brewery in Golden, Colorado, used them for fixed-telemetry in tracking the flow of the beer through the plant.

In the mid-1990s, the Commission was looking to promote low-power data applications. With refarming, the Manufacturing Radio Service was consolidated with the Industrial/ Business Pool. The frequencies are now also narrowband (12.5 kilohertz), designated data-primary channels and are available with a limit of 6 watts ERP and 20-foot antenna.

Solutions:

I view these channels as one of the success stories of the refarming proceeding. Today, these frequencies are providing spectrum homes for many new systems, because of the flexibility in the rules. There is two-watt equipment available and it can be licensed mobile only, base/mobile, repeater and fixed control. This spectrum gives some users an alternative to using a 10-watt radio, which is harder to coordinate on clear spectrum.

We have suggested 462/467 for golf course irrigation, airline ground operations, crane operations, railroad yard communications, security in malls, housekeeping in hotels, construction, schools, grounds upkeep. In many cases, having voice as secondary doesn't pose a problem for the users. For example, the airline communications coordination was for voice, which worked because of the way airports are separated geographically from other users.

A Word to the Wise:

We have experienced a number of applicants — most recently one at a school and the other at hotel — asking for their 2-watt radios to be coordinated on Group C channels, which are reserved for nationwide itinerant use. The FCC defines "itinerant" as using a radio at no particular fixed location. It is not for 24/7 communications at a company's permanent facilities. Personnel that travel from factory to factory or store to store can use them, but they may not use them at a location all the time. The radios can be used at a construction site, but for no longer than a year. You couldn't use itinerants at the "Big Dig" in Boston (that lasted how many years?), for example.

There was one retailer that got itself coordinated on the itinerant channels for store communications and received a visit from the FCC. Not a pleasant experience. In cases where people have asked us for Group C for permanent communications, we have steered them to the Group B frequencies discussed above, and they work just fine.

An Alternate Low-Power Option

Another option for low-power communications are the Group A frequencies, also in the 450 MHz band. There are 50 pairs available — 10 nationwide and 40 within 50 miles of the top 100 cities. They can be used Data or voice on a co-primary basis. The base station limitation is 20 watts ERP with an antenna height of 75 feet and mobiles can't exceed 6 watts ERP. We have selected them for universities, shopping malls and sports arenas. In fact, we were able to find trunked channels in Group A for the new baseball stadium in Houston. If we had tried to go high-power in a major metropolitan area, we wouldn't have found suitable frequencies.

Conclusion

In many major metropolitan areas, spectrum congestion is the name of the game. So the new rule of thumb is to lower the power of your system as much as possible to give us the best opportunity to fit your system in. Many manufacturers provide 2-watt portables that work well in these low-power frequency allocations. □