

equipment certification requirements of Part 90, Subpart R of our rules, 47 CFR part 90, Subpart R. In developing these proposals, the NCC considered recommending a metropolitan statistical area interference environment and a less stringent rural service area interference environment. However, it concluded that all of the receivers operating on the interoperability channels of the newly allocated 700 MHz public safety band should meet the metropolitan environment standard partly because of their public safety nature, and partly because of the inherent difficulty of enforcing a rule that specifies that certain radios can be used only in certain geographic areas. The NCC also decided not to specify receiver standards for radios operating on the non-interoperability channels in the 700 MHz public safety band since the technologies to be used in that portion of the band are not fully known. It deferred to the marketplace on that issue. We request comment on the possible use of similar approaches, including the reliance on a national committee process for development of receiver immunity standards for other public safety bands.

**27. Satellite services**—Satellite receivers must be very sensitive to low level received signals and therefore can be adversely affected by communications systems in adjacent bands. They can also experience interference from low level ambient noise sources that are below the minimum sensitivity level of receivers used in other types of radio services. Satellite communications systems are currently used for radionavigation, mobile communications, broadcast video and audio services, and fixed services. Each of these types of service has its own operating considerations and some are much more robust with respect to interfering signals than others. For example, fixed satellite systems that operate with geo-stationary orbit (GSO) satellites may use high gain antennas that provide high levels of signal, thus mitigating the relatively low level of the received signal. Fixed receivers used with direct broadcast satellite services also use dish antennas that provide considerable gain. However, mobile satellite receivers and mobile satellite radionavigation receivers use antennas that provide relatively low gain and thus must have very high levels of sensitivity to provide service. In the fixed satellite services, the use of high gain directional antennas provides a form of increased system selectivity because potentially interfering sources not located in the

main beam of the antenna are attenuated. We seek information on a number of issues concerning interference immunity guidelines/standards for satellite services, as follows.

- How should satellite receiver interference immunity performance guidelines/standards provide protection against interference to low received signal levels?
- In the fixed satellite services, should antenna directionality be considered integral to any receiver interference immunity performance guidelines/standards?
- What parameters of satellite receiver performance should be subject to minimum guidelines/standards for immunity to interference and how should we establish such guidelines/standards?
- What values should be specified for the parameters of satellite receiver interference immunity performance?
- To what extent are the reliability needs of the various types of satellite services different and how should these differences be treated in establishing minimum performance guideline/standards? In addition are there any differences in specifications that are needed due to differences between fixed and mobile satellite services, and are different specifications needed for receivers used with low-Earth orbit (LEO) satellite systems than for receivers needed for GSO systems?

**28. Mobile services**—Mobile radio services include a broad range of systems operating on the land, the seas, and in the air. Specific services range from the mobile systems of the Commercial Mobile Radio Services, to business radios and “push to talk” operations, to maritime safety and communications systems, and to aviation communications systems for commercial and private air traffic. While these systems vary in their sophistication and operating ranges, all mobile receivers typically experience varying signal levels throughout their service area. For example, where a mobile unit is close to its base station, both the mobile and base station can operate with signal levels high enough to support operation. At the other extreme, when a mobile unit is operating near the edge of its operating range, both the mobile unit and its base station will receive relatively weaker signals. Mobile receivers also face operating complications such as reflected signals, or “multipath,” and varying levels of undesired and potentially interfering signals that vary

depending on their location and operating frequency. In addition to these operating challenges, mobile handsets designers must place a large premium on light weight and small size. Thus, mobile systems, and handset units in particular, constitute one of the most demanding challenges in minimizing interference.

29. We believe it is appropriate to examine mobile receiver immunity performance in the light of our changing spectrum management policies, and particularly to determine whether the operation of these devices and spectrum efficiency could be enhanced by development of minimum receiver performance specifications. We request comment on the need for mobile radio immunity guidelines/standards and responses to the following questions on this issue:

- What minimum interference immunity performance would be appropriate for mobile service receivers and how those minimums compare to the performance of existing mobile service receivers?
- Should mobile receivers be subjected to more stringent minimum performance requirements than receivers for other communications services, given the higher variation in operating environment conditions experienced in the course of mobile operation? Would the specifications established under such an approach have an impact on the practical requirements of mobile equipment for small size and light weight?
- To what extent are the reliability needs of the various types of mobile radio services different and how should these differences be treated in establishing minimum performance guidelines/standards?

**30. Fixed terrestrial services**—Fixed terrestrial services include point-to-point and point-to-multipoint facilities. Point-to-point operations usually use highly directional transmit and receive antennas in order to minimize the potential for receiving interference and causing interference to others. Such operations are typically used for private or common carrier communications links, often as part of a bi-directional system with a transmitter and receiver at each end of the link. Point-to-multipoint operations sometimes use sectorized antennas that transmit in a broadcast-like mode to receivers used at fixed locations. The fixed receivers use highly directional antennas that are pointed at the transmitting antenna. Point-to-multipoint operations are generally used for one-way distribution of communications, including, for