

wide band, closest frequency separation for interferer and carrier, etc.)?

- What measures of performance translate into good, acceptable, or poor operational metrics?
- Could manufacturers agree on performance categories and could quantifiable ranges be established for these categories? How many categories would be needed and where should the threshold for acceptable performance be set among those categories?

17. Digital technologies, in particular, provide flexibility for controlling almost all aspects of transceiver performance. Many receiver parameters can be software controlled, perhaps in response to specific interference in the signal environment. One example is frequency agile transceivers with automated transmitter power and frequency control. The design of the systems that these transceivers are used with provides for control of the frequency and signal strength used for operation. Advanced antenna technology coupled with system design techniques such as diversity, in terms of space, angle, frequency and time could also be used to enhance reception. We seek comments on whether and how system design elements that would enhance radio receiver performance should be incorporated into our receiver guidelines/standards program. In particular we seek comment on the elements of system design that should be included in receiver guidelines/standards and how we could limit the impact of receiver guidelines/standards on system design flexibility.

Incorporation of Receiver Interference Immunity Performance Guidelines and Standards Into Spectrum Policy

18. We seek information and comment on how best to incorporate receiver interference immunity performance specification into our paradigm for management of the radio spectrum. Initially, we envision that there could be three principal approaches for implementing measures for improving receiver performance: Voluntary industry standards; guidelines promulgated by the Commission, either in technical publications or as advisories in the rules; and mandatory standards adopted into the rules. As a general matter, we would prefer to rely primarily on voluntary programs that are supported and managed by industry, in conjunction with user groups as appropriate, to establish and maintain guidelines and standards for receiver immunity performance, rather than

formally incorporate them into our regulatory programs. We believe that this approach provides the greatest flexibility for those developing and producing products to modify and update technical guidelines and standards in response to changes in technology, consumer desires, and economic conditions. We also believe that spectrum users have an incentive to reach voluntary agreements that provide for additional spectrum use. For example, the PCS industry has developed more rigorous standards than the Commission has imposed. On the other hand, we recognize that under a voluntary approach, if owners of non-conforming receivers experience interference, this might produce an incumbency problem that may limit efficient use of the spectrum. We seek comment on these issues.

19. At the same time, we will need to maintain a cooperative relationship with those managing voluntary standards to ensure that they provide the performance levels necessary to support more efficient use of the radio spectrum. There may also be instances where for various reasons it might be necessary or desirable for the Commission to exercise a greater role in the development and management of guidelines or standards. In such cases we would prefer an approach by which the Commission would maintain the specified guidelines or standards in either an FCC technical publication, such as the "OET Bulletin" series or an advisory in the rules. Finally, there may be some cases where it will be necessary to incorporate the specifications of the standard into our rules. We request comment on the following questions with regard to the manner in which to incorporate receiver guidelines and standards into our rules:

- What approaches should the Commission use for implementing receiver immunity performance into its spectrum policies? Commenting parties are specifically invited to submit additional measures to augment the three approaches suggested above or to suggest completely different plans.
- What benchmarks should the Commission use in determining the approach it should use in implementing specific receiver interference immunity performance guidelines or standards into its spectrum policies?
- With what organizations should the Commission work with to develop receiver performance requirements?
- How should standards or guidelines be implemented for services in which

licensees have control over the receivers that are used, such as the cellular and PCS services, and in which they do not have control over the receivers, such as broadcast services?

- What are the cost implications of the various options for approaches for incorporating receiver interference immunity into our spectrum policies in terms of both cost of equipment and flexibility for users/system designers?
- We also seek comment on how to enforce any receiver standards.

20. We also request comment on the criteria that should be used in determining how to specify the form of immunity guidelines or standards. Guidelines/standards can be in the form of performance criteria that apply to the functional capabilities of a device or of design specifications for the manufacture of portions of a device. In general, we believe it is desirable to continue the Commission's traditional preference to specify guidelines/standards as performance criteria, and to make such guidelines/standards voluntary rather than mandatory. This approach gives manufacturers freedom to design the internal configurations of their products to compete on both price and functionality. However, there may be instances where it would be more appropriate to specify guidelines/standards for the design of some or all of the features of a device that affect interference immunity. We request comment on the forms in which we should specify receiver interference immunity performance guidelines/standards and invite commenting parties to submit suggestions for alternative forms of specifying receiver interference immunity performance guidelines/standards. We also request comment on the circumstances under which any given form should be employed. Finally, we ask how should the public be informed of the interference immunity performance of receivers and the relevant guidelines for specific types of radio operation, *i.e.*, how would consumers know about receiver performance in order to make informed decisions?

21. We also seek comment on the relationship between the appropriateness of receiver standards and models used to manage the spectrum. Limiting transmitter in-band power and spill-over into adjacent bands and areas, together with the definition of assigned frequency bands and areas, provide substantial definition to the interference environment in which licensees must design their