

EXECUTIVE SUMMARY

As part of the overall spectrum management process, the National Telecommunications and Information Administration (NTIA) and the Federal Communications Commission (FCC) have developed radio regulations to help ensure that the various radio services operate compatibly in the same environment without unacceptable levels of radio frequency interference. These regulations generally focus on sharing spectrum and the interfering potential of transmitters. Less attention has been given to the regulation of receiver parameters and the associated non-cochannel interference issues.

In recent years, there have been a growing number of cases of non-cochannel interference that has been caused by inadequate performance of receivers instead of by transmitter performance. One element in the prevention of non-cochannel interference is the design and use of quality receivers that are less susceptible to interference. Receivers are often vulnerable to interference from non-cochannel signals because of inadequate selectivity. This has resulted in complaints of interference, sometimes requiring legitimate transmitting stations to cease or limit their operation even when a poor performing receiver is mainly at fault. In addition to interference problems, the lack of receiver standards has hindered efficient management of the spectrum by putting restraints on adjacent channel assignments in many areas.

The objective of this task is to undertake a broad review of receiver spectrum standards to characterize their status and to explore needs and options for promoting the use of more interference-robust receivers. The first phase includes the identification of existing standards, both mandatory and voluntary. This report presents the results of this first phase. The second phase will examine the underlying requirements, assess trade-offs among potential regulatory approaches and develop appropriate recommendations.

With the exception of certain television services, the FCC has not published receiver spectrum standards and has allowed the marketplace to determine the appropriate receiver specifications. Realizing that poorly designed receivers can cause interference and limit the number and type of transmitters that can operate within a given environment, the FCC is now considering the adoption of receiver standards. On March 13, 2003, the FCC adopted a Notice of Inquiry (NOI) to this effect. The NOI requests, *inter alia*, comments on standards that could be mandatory or voluntary.

NTIA, on the other hand, has receiver spectrum standards for most Federal users of the radio spectrum. NTIA has taken the approach that, for Federal users, the performance of both the transmitter and the receiver should be regulated. This approach to management of the radio spectrum emphasizes prevention of interference and improved spectrum management. Federal agencies generally comply with the NTIA standards, with some agencies implementing even stricter standards.

Industry associations and standards setting bodies have published receiver spectrum standards for some radio services. Many manufacturers adhere to these standards in the interest

of providing systems that perform adequately in adverse operational environments. However, few standards exist for many non-Federal services and frequency bands.

Many foreign countries have implemented receiver spectrum standards. Usually, rather than developing standards themselves, they adopt standards issued by the various international industry and inter-governmental associations.

The second phase of this study and follow-up work will include an examination of the need for standards, working with the FCC to establish standards or other means for preventing non-cochannel interference and promoting efficient use of the spectrum, updating the Federal standards in the NTIA manual, and the initiation of a program for greater promulgating emission characteristics in the Federal bands.