

minimal technical requirements necessary to avoid interference to licensed and incumbent services. We believe that these actions could have significant benefits to the economy, businesses and consumers by allowing the development of new and innovative types of unlicensed devices.

2. Unlicensed transmitters may be operated under the provisions of part 15 of the Commission's rules. Part 15 transmitters generally operate on frequencies shared with authorized services and at relatively low power. Operation of a part 15 transmitter is subject to the conditions that the device not cause interference to authorized services, and that the device must accept any interference received. The Commission made two significant changes to part 15 in the 1980's that enabled the development of new types of unlicensed devices and led to increased use of these devices.

3. The first significant change, in 1985, was to permit spread spectrum transmitters to operate on an unlicensed basis in certain bands allocated for Industrial, Scientific and Medical (ISM) equipment. Specifically, such transmitters are permitted to operate in the 902–928 MHz, 2400–2483.5 MHz and 5725–5850 MHz bands. Spread spectrum transmitters spread their energy over a wide bandwidth, which increases resistance to interference and can allow multiple transmitters to share the same spectrum. Such transmitters are permitted to operate with a power of up to one watt, which is considerably higher than the maximum power permitted for other part 15 devices. This allows for significantly greater transmission range than other part 15 devices. In addition, the relatively wide bandwidth permitted for spread spectrum transmitters makes them useful for applications such as high speed data transmission. There are no limitations in the rules on the types of applications for which spread spectrum devices can be used, provided they comply with the technical requirements. The adoption of the spread spectrum rules was a major step in providing increased flexibility for unlicensed transmitters. Subsequent changes to these rules permit increased data speeds and higher gain antennas to allow greater transmission range, and apply to a broader range of spread spectrum transmitters.

4. The second significant change to part 15 was a major revision in 1989. Under this revision, unlicensed transmitters are permitted to operate on almost any frequency, provided they meet relatively tight emission limits. They are not permitted to operate in

certain designated "restricted bands," and are generally prohibited from operating in the TV broadcast bands, except for remote control devices and medical telemetry transmitters. Specific types of unlicensed transmitters can operate in certain frequency bands. In addition to spread spectrum transmitters in the ISM bands, non-spread spectrum transmitters can operate in the ISM bands for any type of application at lower power levels than spread spectrum transmitters. The 1985 and 1989 revisions of part 15 have provided substantially increased flexibility in the types of unlicensed devices that can be developed, and led to the large numbers of unlicensed devices currently available today.

5. The Commission's Spectrum Policy Task Force conducted a comprehensive review of spectrum policy which included a public notice seeking comment on, among other issues, whether additional spectrum should be made available for unlicensed use. In addition, the Task Force held a public workshop on unlicensed spectrum use. In response to the public notice, a significant number of parties stated that additional spectrum should be made available for unlicensed use. Further, these parties indicated a general perception that the creation of unlicensed bands has been very successful in allowing the introduction of new technology and that additional unlicensed bands would create more such opportunities.

6. We believe that we should consider permitting additional flexibility to help enable the development of new and innovative types of unlicensed devices, such as power levels greater than the one watt maximum currently permitted for Part 15 devices and/or high gain antennas to enable greater transmission range. We have identified two possible candidate bands for such expanded unlicensed operation: the television broadcast bands and the 3650–3700 MHz band.

#### TV Broadcast Bands

7. The unused portions of the TV spectrum appear to be a suitable choice for expanded unlicensed operation for several reasons. There is significant bandwidth available because each TV channel is 6 MHz wide, and multiple vacant channels are generally available in an area to provide greater bandwidth. Allowing unlicensed devices to operate on TV channels that are not being used in a particular area would be a more efficient use of the spectrum.

Unlicensed use of this spectrum as opposed to licensed use appears to be appropriate because the operating

power levels of unlicensed devices are generally lower than the power levels used in commercial mobile radio services, making it easier for unlicensed devices to identify and operate on unused frequencies without causing interference to authorized services. Further, the frequencies and amount of unused TV spectrum vary from location to location and could change over time as TV stations or other authorized services are added or change frequency, potentially complicating the licensing of commercial services in unused TV spectrum. We note also that the unlicensed uses we identify in this *NOI* are not intended to limit future licensed use or to guarantee spectrum access rights for this band. We seek comment on the following questions concerning the use of the TV broadcast bands by unlicensed devices.

- Should new unlicensed devices be permitted to operate within any portions of the TV bands, and if so, which portions? Are there any other bands where new unlicensed devices could be permitted to operate?

- Should the use of certain channels by unlicensed device not be permitted? For example, channel 37 is allocated for radio astronomy operations and the Wireless Medical Telemetry Service, and unlicensed operations on this channel may not be appropriate because of special interference concerns associated with the sensitive nature of radio astronomy reception and the critical safety function of medical telemetry equipment. In addition, there are concerns about possible interference to channels 2, 3 and 4 because they are used for, or are adjacent to, the output channels of VCRs and other set-top boxes. Further, spectrum currently allocated to channels 52–69 (698–806 MHz) has been reallocated and has been or will be licensed for new services. Should unlicensed operations be permitted in the reclaimed spectrum?

- Should there be geographic restrictions on where unlicensed operation in the TV bands is permitted, such as in areas where co-channel or adjacent channel television, Private Land Mobile Radio Service (PLMRS) or Commercial Mobile Radio Service (CMRS) is present, or in the border areas near Canada and Mexico?

- What restrictions, if any, should be placed on the applications or numbers of unlicensed devices that would be permitted in the TV broadcast bands, and why would such restrictions be needed? For example, should applications be limited to fixed uses?

- Are any special, temporary restrictions needed to ensure that unlicensed devices do not impact the