

**Before the  
Federal Communications Commission  
Washington, DC 20554**

In the Matter of )  
 )  
Additional Spectrum for Unlicensed Devices )  
Below 900 MHz and in the 3 GHz Band ) ET Docket No. 02-380

**COMMENTS OF RADIOSHACK CORPORATION**

**Introduction**

RadioShack Corporation welcomes the opportunity to participate in this proceeding and share its unique perspective with the Commission. RadioShack strongly supports the Commission's efforts to modify its rules to provide additional spectrum for new and innovative unlicensed devices. With over 7,200 stores nationwide, RadioShack is one of the largest and oldest retailers of consumer electronics products in the United States. It is estimated that 94% of all Americans live or work within 5 minutes of a RadioShack store or dealer and that approximately 1,000,000 customers visit a RadioShack store each day.

RadioShack is perhaps the nation's largest retailer of unlicensed consumer electronics products, including cordless telephones, FRS and CB radios, scanners, walkie-talkies, wireless home networking systems, wireless and wired computer peripherals, computers, PDAs, weather radios, wireless weather stations, wireless home automation systems, wireless home security systems, CD and DVD players, VCRs, video RF modulators, wireless audio and video distribution systems, and remote control toys, to name a few.

Furthermore, RadioShack is also one of the top volume retailers of equipment for use within licensed services. These products include cellular telephones, GMRS and business band radios, amateur radios, satellite television systems, and television sets.

## Discussion

### Spectrum Usage and Restrictions

RadioShack supports the Commission's efforts to open the television broadcast bands and the 3 GHz band to unlicensed intentional radiators. As did the Commission's past actions<sup>1</sup>, opening up additional spectrum for unlicensed devices under this action will allow the development of new and innovative types of unlicensed devices. Doing so would be beneficial to consumers, businesses, and the economy. In general, RadioShack recommends that unlicensed devices should be permitted to operate within the television broadcast bands and the 3 GHz band, provided the devices operating in these bands incorporate the appropriate RF collision avoidance technology necessary to ensure interference protection of licensed services. The only exceptions to this recommendation are the 608-614 MHz and the 54-72 MHz frequency bands.

RadioShack believes the 608-614 MHz frequency band should remain restricted to afford the Wireless Medical Telemetry Service and radio astronomy operations the same level of protection that they currently enjoy. The reasons for the continuation of this protection are the same as those used to initially protect these unique and sensitive authorized services, namely that the Wireless Medical Telemetry Service involves communications related to safety-of-life, and that radio astronomy operations involve communications that utilize very low signal levels.<sup>2</sup>

RadioShack strongly believes and recommends that the 54-72 MHz frequency band should be granted restricted status due to the potential for interference to set-top boxes, such as RF modulators, that operate on channels 3 and 4. Use of such devices is frequently the consumer's preferred, and most cost effective, choice for taking advantage of newer technologies, such as DVD players, without incurring the expense of replacing their existing television receiver.

Since many popular unlicensed devices are portable products, attempts to place geographic restrictions on the usage of these devices in border areas near Canada and Mexico (as well as

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<sup>1</sup> See *First Report and Order* in GEN Docket No. 87-389, 4 FCC Rcd. 3493 (1989). See also Memorandum Opinion and Order in GEN Docket No. 87-389, 5 FCC Rcd. 7314 (1990).

<sup>2</sup> *Id.*

near any “sensitive” areas within the U.S.) are likely to be ineffective if imposed on the user as an attempt to control behavior; i.e., telling them where they can and cannot use their devices.

Therefore, as the Commission considers what geographical restrictions, if any, should be placed on unlicensed devices operating in the television broadcast bands and the 3 GHz band, hardware and/or firmware/software based solutions should be “ground-ruled in” as the preferred method(s) of ensuring compliance with such restrictions.

For similar reasons, attempts to prevent interference within these bands by limiting the number of unlicensed devices allowed to operate within a spectrum band would likely be very unpopular with consumers. As a practical matter, enforcement of such a quantity limitation seems to be virtually impossible.

RadioShack believes and recommends that no application restrictions should be placed upon operations of unlicensed devices in the TV broadcast bands, nor should any special restriction be put into place to facilitate the DTV transition. However, if application restrictions such as the “good neighbor” policy recommended in the Spectrum Policy Task Force Report remain under consideration, RadioShack encourages the Commission to consider the need for relatively long transition periods based upon estimates of a product’s useful life to the consumer. Thereby allowing continued usage of existing devices in the bands in which they presently operate. Unlike business users that update their technology on a relatively periodic basis, consumers generally use their devices or products until they cease to operate. Therefore, an adequate transition period is particularly important for consumer products in view of their long-life and turnover rates. Without an adequate transition period, consumers would be seriously disadvantaged in the event certain systems or devices were no longer permitted to operate on the frequencies for which they were manufactured.

#### RF Collision Avoidance and Interference Protection

The Commission notes in its NOI<sup>3</sup>, that the various television broadcast band channels throughout the U.S. are potentially available for use by unlicensed devices because of the 10s- to 100s-kilometers separation distances required to prevent interference between co-channel and adjacent channel stations. As a result, the specific channel frequencies available and the

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<sup>3</sup> See *Notice of Inquiry* in ET Docket No. 02-380, 17 FCC Rcd. 25632 (2002).

exact number of channels available vary by geographic location. Therefore, whatever method(s) are used to protect the television broadcast bands from harmful interference (which RadioShack refers to collectively to as RF collision avoidance techniques) must be capable of accounting for these geographic differences. In short, the devices must know where they are and/or must know the RF environment they are operating in.

RadioShack believes the specific RF collision avoidance technique(s) used to protect the television broadcast band from harmful interference should be determined by the unlicensed device manufacturers, within generally accepted parameters identified by the Commission. By allowing the use of multiple collision avoidance techniques, both hardware and software based, the Commission will maximize the manufacturers' ability to better balance the competing needs of implementing the best interference technique for a particular application with the need to produce the product in the most cost effective manner possible. "Smart" technology options that are technically feasible today (although they may add significant cost to the product) include:

- 1) Listen-before-talk and listen-during-transmit functions implemented together would allow unlicensed devices to search for an unoccupied channel prior to transmission, allow the device to "detect" a licensed service beginning transmission, and either pause its own operations until the channel is again unoccupied or shift its own operations to another unoccupied channel.
- 2) User reconfigurable system hardware configurations combined with GPS-based location sensing to allow higher transmission power in rural areas, and force lower transmission power in urban (or other congested signal) areas.

Regardless of the technique(s) approved for use, the level of collision avoidance protection required to be implemented should not be a one-size-fits-all regulation. Instead, tiered standards requiring varying levels of collision avoidance should be implemented based upon the likelihood of the particular devices causing harmful interference.

By regulating unlicensed devices in this manner, it should be possible to allow the devices to operate with a power of greater than 1 watt in the TV broadcast bands, and all other permissible bands of operation, provided that the devices incorporate appropriate RF collision avoidance technology.

## **Conclusion**

RadioShack Corporation applauds the Commission for their efforts to provide additional spectrum for use by unlicensed devices. Doing so with a minimum amount of regulation will allow electronics manufacturers to continue to provide innovative products to the consumer. RadioShack looks forward to continued participation in this proceeding and to sharing its perspective with the Commission via comments to forthcoming NPRMs concerning specific changes to the rules pertaining to unlicensed devices.

Respectfully submitted,

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