

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Unlicensed Operation in the TV Broadcast Bands)	ET Docket No. 04-186
)	
Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band)	ET Docket No. 02-380
)	

COMMENTS OF SPRINT NEXTEL CORPORATION

Sprint Nextel hereby submits these Comments in response to the Public Notice titled “The Office of Engineering and Technology Announces the Release of Reports of Initial Measurements on TV White Space Devices,” DA 07-3457 (Jul. 31, 2007).

The two OET Reports announced in this Public Notice, OET Report FCC/OET 07-TR-1006 (Prototype Devices Report)¹ and OET Report FCC/OET 07-TR-1005 (Direct Pickup Report),² as well as the earlier-released OET Report FCC/OET 07-TR-1003 (Interference Rejection Thresholds Report),³ provide compelling evidence that unlicensed devices, particularly personal/portable unlicensed devices, should not be permitted to operate in TV white spaces.

The Interference Rejection Threshold Report showed that interference rejection on DTV receivers was worse than the guidelines recommended by the ATSC and worse than the receiver performance assumptions on which the current DTV interference protection criteria are based.⁴

¹ Initial Evaluation of the Performance of Prototype TV-Band White Space Devices, OET Report FCC/OET 07-TR-1006 (Jul. 31, 2007) (“Prototype Devices Report”).

² Direct-Pickup Interference Tests of Three Consumer Digital Cable Television Receivers Available in 2005, OET Report FCC/OET 07-TR-1005 (Jul. 31, 2007) (“Direct Pickup Report”).

³ Interference Rejection Thresholds of Consumer Digital Television Receivers Available in 2005 and 2006, OET Report FCC/OET 07-TR-1003 (Mar. 30, 2007) (“Interference Rejection Thresholds Report”).

⁴ *Id.* at xi.

In response to that Report, MSTV and NAB commented that: 1) all TV band devices must operate outside the protected contour of both co- and adjacent TV channels; 2) spectrum sensing mechanisms are inadequate to prevent a TV band device from transmitting on an occupied television channel; and 3) the Commission must base protection of DTV reception on protection ratios calculated to protect viewers from interference when they receive a weak but acceptable signal.⁵ MSTV and NAB concluded that “Simply put, the Commission should not allow the introduction of any non-fixed (*i.e.*, personal/portable) device,”⁶ noting that such devices can be operated anywhere, including indoors and in close proximity to televisions.

The new Prototype Devices Report confirms that the prototype spectrum sensing devices simply cannot ensure that television viewers, as well as other current users of the television band, will not receive interference. Prototype A was highly inaccurate as to whether a receivable analog or digital television signal was present.⁷ While Prototype B generally could reliably detect DTV under laboratory conditions, Prototype B’s sensing performance “declines very rapidly as the signal levels are reduced.”⁸ Furthermore, its supplier indicated that Prototype B was not suitable for field testing, raising real questions as to whether the laboratory test results have any relevance in determining whether television viewers and other incumbent users of the TV band would receive interference.⁹

The Prototype Devices Report also documents the extremely long scan times that would be required by spectrum sensing devices to check the presence of signals on all television channels. Scan times of 4-14 minutes would be entirely inadequate for consumer devices that

⁵ Comments of MSTV and NAB to the OET Measurement Report on DTV Receiver Interference Rejection Capabilities at 3-4 (Apr. 30, 2007).

⁶ *Id.* at 9.

⁷ Prototype Devices Report at 56-57.

⁸ *Id.* at viii.

⁹ *Id.* at 56.

can be moved on a regular basis.¹⁰ These scan times are far too long to ensure that intermittent users of the television bands, including wireless microphones and land mobile systems, would be protected from interference. The Prototype Devices Report also indicates that interference to television reception on co- and adjacent channels could extend for distances well over 50 meters from a low power transmitter.¹¹ Because personal/portable devices can be located anywhere, and because they are likely to be used by consumers in the same locations as consumers use television receivers, the Commission should not permit personal/portable devices in TV white spaces.

The Direct Pickup Report makes it even more clear that personal/portable devices, and indeed unlicensed devices in general, should not be permitted in TV white spaces. The tests demonstrate that television receivers also are susceptible to direct pickup interference.¹² This means that, even if it could properly determine that a watchable television signal is not present (something that does not appear possible today), an unlicensed device is still likely to cause interference to cable television viewers located nearby.

Rather than authorize unlicensed operations in TV white spaces, the Commission should instead authorize licensed, fixed operations. Such operations can be easily designed to avoid interference to television transmissions. A fixed service licensee of TV white space spectrum could ensure that its transmitters are not located in areas where interference could be caused to the over-the-air reception of broadcast television signals, as well as other land mobile, medical telemetry and wireless microphone operations in the band provided the locations of such operations are known. Fixed service licensees generally rely on highly directional antennas to deliver signals between transmitters and receivers. These antennas would significantly reduce

¹⁰ See *id.* at vii, 14-15.

¹¹ See *id.* at x.

¹² Direct Pickup Report at 3.

the power that is transmitted towards homes and other locations where television direct pickup interference could occur. These antennas could also facilitate sharing of the spectrum with wireless microphones and medical telemetry devices.

While other fixed service spectrum is available at much higher frequencies, the TV white spaces offer the potential for new point-to-point links that could operate over longer ranges, allowing broadband services to be deployed more easily and with greater cost efficiency to consumers, particularly in rural areas. Many wireless service providers are making plans to offer new 3G and 4G broadband services to consumers using the various mobile services bands, such as BRS/EBS at 2.5 GHz, WCS at 2.3 GHz, AWS at 1.7/2.1 GHz, and 700 MHz. These providers are going to have significant needs for backhaul circuits to support the delivery of broadband services to consumers as well as public safety users of these bands. As a result, there will likely be significant demand for TV white space spectrum if it were made available through auction, and American taxpayers would be compensated for the high value of this spectrum (something that will not happen if it were designated for unlicensed use).

The Commission, in its First Report and Order and Further Notice of Proposed Rulemaking in this proceeding, asked whether transmitters operating in the TV white spaces should be licensed.¹³ The focus to date, however, has been almost entirely on whether unlicensed use should be permitted. The OET Reports confirm that such operations are not feasible, and the Commission should move quickly to allocate the TV white spaces spectrum for

¹³ *First Report and Order and Further Notice of Proposed Rule Making*, FCC 06-156, at ¶ 3 (Oct. 12, 2006).

licensed fixed services in order to ensure that the existing television, land mobile, public safety, wireless microphone, and medical telemetry use of the band is adequately protected.

Respectfully submitted,

SPRINT NEXTEL CORPORATION

/s/ Richard Engelman

Michele C. Farquhar
Maggie Sklar
Hogan & Hartson LLP
555 Thirteenth Street NW
Washington, DC 20004
(202) 637-5663
Counsel for Sprint Nextel Corporation

August 15, 2007

Trey Hanbury
Director, Government Affairs
Richard Engelman
Director, Spectrum Resources,
Government Affairs
Sprint Nextel Corporation
2001 Edmund Halley Drive
Reston, VA 20191
(703) 433-8124