

## **NARRATIVE STATEMENT**

### **I. INTRODUCTION AND BACKGROUND**

Pursuant to Section 5.61 of the Commission's rules, 47 C.F.R. § 5.61 (2006), Sirius Satellite Radio Inc. ("Sirius") requests an experimental Special Temporary Authority for 60 days, commencing on the date of grant but no later than January 4, 2008, to operate transmitting equipment in the Wireless Communications Services ("WCS") bands (2305-2320 MHz and 2345-2360 MHz). The purpose of this experiment is to research the impact on satellite radio receivers from transmissions in these bands, which are adjacent to the band allocated for satellite radio. The results of these experiments are intended to help Sirius respond to the Commission's request for such data in its pending rulemaking regarding satellite radio terrestrial repeaters and WCS operations. The following information is provided in support of this request.

### **II. PURPOSE OF EXPERIMENTATION**

Sirius is one of two licensed SDARS providers in the United States. Sirius provides service to millions of subscribers and provides high-quality radio programming nationwide. Sirius delivers its service primarily through the use of three non-geostationary satellites. In addition to these satellites, and as contemplated by the international and domestic table of frequencies,<sup>1</sup> Sirius also uses a network of approximately 160 terrestrial repeaters to ensure consistent service throughout the United States. Currently, those repeaters are operated under Special Temporary Authority issued by the International Bureau and there are no rules that specifically govern the operation of satellite radio terrestrial repeaters.

The Commission recently released a Notice of Proposed Rulemaking and Second Notice of Proposed rulemaking seeking "additional comment on the appropriate rules and policies for licensing [SDARS] terrestrial repeaters" and considering "changes to the rules governing WCS licensees."<sup>2</sup> In particular, the Commission seeks comment on (1) a proposal by Sirius to adopt a ground based emission limit for SDARS and WCS operations and (2) a proposal by the WCS licensees to allow 2000 kW average EIRP terrestrial repeater and WCS base station operations and 20 watt average power WCS subscriber station operations.<sup>3</sup>

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<sup>1</sup> See 47 C.F.R. §2.106 n. 5.396, n. US327.

<sup>2</sup> See *Amendment of Part 27 of the Commission's Rules to Govern Operation of Wireless Communications Services in the 2.3 GHz Band; Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band*, WT Dkt No. 07-293, IB Dkt. No 95-91, GEN Dkt. No. 90-357, RM No. 8610, Notice of Proposed Rulemaking and Second Further Notice of Proposed Rulemaking, FCC 07-215 (rel. Dec. 18, 2007).

<sup>3</sup> See *id.* ¶¶ 15-25.

Sirius anticipates filing comments in response to the Commission's Second NPRM and NPRM. The Commission has requested that "[a]ll comments...be supported with technical analysis and a realistic assessment of the impact on all relevant services."<sup>4</sup> In order to support its comments and comply with the Commission's request, Sirius plans to undertake the instant experiments to determine the impact on Sirius' and XM's satellite radio reception caused by the operation of uplink devices in the WCS band. Sirius' experiments are designed to determine the impact of such units under actual, operational conditions and under a variety of circumstances.

The equipment that Sirius plans to operate pursuant to this STA will emulate the operation of a 20 W WiMax uplink device in the WCS bands. Sirius will test the impact of overload and intermodulation interference and out-of-band emissions from such devices on Sirius and XM satellite radio receivers. Sirius will undertake these experiments in a number of different geographic areas to emulate "real-world" scenarios in which a satellite radio receiver might come into proximity with WCS uplink devices. Undertaking these tests will allow Sirius to collect important data and to determine how different variables, such as WCS subscriber station power, spectral proximity, and separation distance, affect the reception of satellite radio signals by customers of both SDARS licensees.

In addition, Sirius has requested authorization for multiple sites in order to get a more complete picture of the potential for interference to SDARS reception. SDARS systems utilize signals delivered from multiple platforms to provide the highly reliable service expected by our customers. In order to collect comprehensive data regarding WCS interference it is necessary to ensure that the tests cover a mixture of signal delivery conditions involving multiple satellite and repeater signal combinations. Accordingly, a number of locations with different anticipated signal conditions have been selected to allow for the performance of interference tests under a broad range of real world conditions. In addition, as the initial testing will be conducted in the winter, multiple locations have been provided in New Jersey to allow for certain locations being inaccessible due to unforeseen weather conditions.

Sirius submits that the public interest, necessity and convenience are served by grant of this experimental STA. The Commission has requested comment on these issues and has requested that parties submit technical showings to support those comments. In order to come to accurate conclusions regarding satellite radio and WCS operations, both Sirius and the Commission will require accurate, real-world information that can only be generated through experiments of this kind.

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<sup>4</sup> See e.g. ¶ 23.

### **III. TECHNICAL SPECIFICATIONS**

**Frequency Bands:** 2305-2320 MHz  
2345-2360 MHz

Tests will be conducted in 5 MHz channels of the WCS A, B, C and D blocks

Each test channel is 5 MHz wide. Specifically the channelization is:

- A: 2305-2310 MHz, 2350-2355 MHz
- B: 2310-2315 MHz, 2355-2360 MHz
- C: 2315-2320 MHz
- D: 2345-2350 MHz

Frequency stability will be compliant with Section 27.54 of the Commission's rules.

#### **Emissions:**

The equipment will be used to transmit two signal formats.

#### **Signal format #1**

CW

**Emission designator:** 10K0N0N

#### **Signal format #2**

Wimax 802.16e

Transmitter 99% power bandwidth 5 MHz

Type of modulation: BPSK, 4QAM, 16QAM, 64QAM

Type of multiplexing: OFDM

Maximum transmitter duty cycle in normal use, 65%, 100% in test

**Emission designator:** 5M0W7W

#### **Equipment Data:**

#### **Locations:**

1. Sirius Satellite Radio Facility, 989 Lenox Drive, Lawrenceville, NJ, 08648
  - o 40-17-17.0 N, 74-42-33.5 W (10 km radius)
2. Prospertown Lake, Rt. 537, Ocean County, NJ
  - o 40-8-6.7 N, 74-27-30.0 W

3. Manasquan Reservoir, Windeler Road, Howell, NJ
  - 40-10-16.6 N, 74-12-10.2 W
4. XM Satellite Radio Facility, 3161 SW 10<sup>th</sup> St, Deerfield Beach, FL 33442
  - 26-18-15.2 N, 80-8-47.6 W (5 km radius)
5. 24 Vernon Crossing Road, Vernon, NJ
  - 74-29-37.2W, 41-12-46.7N
6. Highway US441, Palm Beach County, FL
  - 26-42-36.0 N, 80-25-12.0 W (10 km radius)

The tests will be run from temporary fixed and mobile locations. For all sites except Site 1 (Lawrenceville, NJ), Site 4 (Deerfield Beach, FL), and Site 6 (Highway US441) the locations will be centered at and within a 1 km radius of the sites. For Site 1 and Site 6, the locations will be centered at and within a 10 km radius of the site. For Site 4, the locations will be centered at and within a 5 km radius of the site. Exhibit A provides topographic and aerial views of the sites.

**Antenna Height:**

The antenna will be operated at a height not to exceed 19.685 feet (6 meters).

**Equipment:**

The equipment used in this experiment is prototypical, and is designed specifically to generate representative signals in the WCS band for the purpose of testing potential interference to SDARS receivers. The transmitter equipment will comply with Section 27.53 of the Commission’s rules governing out-of-band emission limits on WCS equipment.

The specific equipment to be used includes:

<i>Signal Generator:</i>	Agilent Signal Generator, Model E4438C
<i>Transmit Antenna:</i>	The transmit antenna will have an omnidirectional gain pattern with an associated nominal gain of 0dBi.

**Antenna Beamwidth:** Omni-Directional

**Output Power:** 80 watts Peak Maximum (TPO)

**ERP:** 12.2 Watts Peak maximum  
(20 Watts EIRP peak power, consistent with Section 27.50(a)(2)) .

**IV. INTERFERENCE SAFEGUARDS**

Sirius recognizes that the operation of this equipment must not cause harmful interference to authorized facilities. Sirius is not aware of any WCS operations in the areas where it plans to undertake testing. In addition, Sirius will operate its equipment at very low power, for limited periods, and only in the locations listed above. Therefore, Sirius does not anticipate any interference with authorized facilities. Should interference occur, however, Sirius will resolve the interference, including, if necessary, discontinuing operation.

**V. CONCLUSION**

The authorization of this experimental STA would serve the public interest, convenience, and necessity by allowing Sirius to collect data that is essential for the Commission to establish rules for WCS and satellite radio operations.