

geographical limitations of traditional AM and FM radio. Most traditional radio signals extend only 30 or 40 miles from their source, and radio listeners were forced to change stations as they traveled in and out of range.

3. Satellite radio eliminates these geographic restrictions. With satellite radio, instead of broadcasting directly from a ground station, a radio broadcaster transmits its signal more than 22,000 miles away to a satellite, which then transmits the signal back to radio receivers installed in cars and homes nationwide.

4. Satellite radio operates by transmitting a signal from a satellite orbiting the planet to terrestrial radio receivers or ground repeaters. However, because the satellite and the ground receivers and repeaters are moving at different relative speeds, the signal can become disrupted in a process known as “channel fading.” To reduce the effect of channel fading—and thereby ensure the clarity of satellite broadcasts—Fraunhofer developed certain multicarrier modulation (“MCM”) technologies for use in satellite radio broadcasting. MCM is a method of transmitting data by splitting it into several components and sending each of the components over separate carrier signals. Fraunhofer’s novel inventions contributed to the development of a satellite radio system that permit listeners to access hundreds of music, news, and entertainment broadcasts anywhere in the United States, with absolute clarity.

5. Fraunhofer has sought to protect its hard work and ingenuity by seeking and obtaining extensive intellectual property protection for its innovations. As of the end of 2015, Fraunhofer held a portfolio of more than 6,500 patent families. This portfolio includes more than 1,500 issued United States patents on Fraunhofer’s inventions, including more than 50 directly related to Fraunhofer’s work on satellite communications, such as

patented inventions relating to signal transmission, data coding, and receiver processing, among others.

6. Sirius XM is the only satellite radio provider in the United States. It broadcasts hundreds of radio channels from studios in New York City, Washington, D.C., Nashville, Memphis, and Los Angeles to more than 30.6 million subscribers across the country. In addition to the subscription service, Sirius XM also sells and supplies satellite radio receiver units directly to consumers and to major auto manufacturers for pre-installation into new vehicles.

7. Sirius XM is capitalizing on Fraunhofer's innovation and success by making, selling, and using satellite radios and subscription satellite radio services that infringe Fraunhofer's patents. Sirius XM is utilizing Fraunhofer's patented inventions without license or authority from Fraunhofer.

8. Fraunhofer has brought this action to remedy Sirius XM's infringement.

PARTIES

9. Plaintiff Fraunhofer is a non-profit corporation organized and existing under the laws of the Federal Republic of Germany, with its principal place of business at Postfach 20 07 33, 80007 Munich, Germany.

10. Defendant Sirius XM is a corporation organized and existing under the laws of Delaware with its principal place of business at 1221 Avenue of the Americas, New York, New York 10020. Upon information and belief, Sirius operates through an agent, The Corporation Trust Company, with its principal place of business at 1209 Orange Street, Wilmington, Delaware 19801.

JURISDICTION AND VENUE

11. This is an action for patent infringement arising under the patent laws of the United States of America, 35 U.S.C. § 1, *et seq.*, including 35 U.S.C. § 271. This Court has subject matter jurisdiction over the claims of patent infringement alleged in this Complaint under 28 U.S.C. §§ 1331 and 1338(a).

12. This Court has personal jurisdiction over Sirius XM because it is organized and existing under the laws of Delaware. Furthermore, Fraunhofer is informed and believes, and on that basis alleges, that Sirius has committed and continues to commit acts of infringement in Delaware in violation of 35 U.S.C. § 271 by, among other things, using, selling, and offering to sell infringing products and services in this judicial district.

13. Venue in the District of Delaware is proper pursuant to 28 U.S.C. §§ 1391(b) and (c) because, among other reasons, Sirius XM resides and is subject to personal jurisdiction in this judicial district. Furthermore, a substantial part of the events or omissions giving rise to claims alleged herein occurred in this judicial district. Sirius XM has committed acts of infringement in this judicial district by, among other things, marketing, selling, and offering for sale infringing products and services in this judicial district.

FACTUAL BACKGROUND

14. Fraunhofer's investment in research and development has resulted in more than 1,500 patents recognized by the United States Patent and Trademark Office. This case involves four of those patents.

15. Fraunhofer is the owner of the entire right, title, and interest in and to U.S. Patent No. 6,314,289 ("the '289 Patent"), entitled "Apparatus and Method for Transmitting Information and Apparatus and Method for Receiving Information," which was duly issued

on November 6, 2001. Fraunhofer holds the exclusive rights to bring suit with respect to any past, present, and future infringement of the '289 Patent. A copy of the '289 Patent is attached as Exhibit A hereto.

16. Fraunhofer is the owner of the entire right, title, and interest in and to U.S. Patent No. 6,931,084 (“the '1084 Patent”), entitled “Differential Coding and Carrier Recovery for Multicarrier Systems,” which was duly issued on August 16, 2005. Fraunhofer holds the exclusive rights to bring suit with respect to any past, present, and future infringement of the '1084 Patent. A copy of the '1084 Patent is attached as Exhibit B hereto.

17. Fraunhofer is the owner of the entire right, title, and interest in and to U.S. Patent No. 6,993,084 (“the '3084 Patent”), entitled “Coarse Frequency Synchronization in Multicarrier Systems,” which was duly issued on January 31, 2006. Fraunhofer holds the exclusive rights to bring suit with respect to any past, present, and future infringement of the '3084 Patent. A copy of the '3084 Patent is attached as Exhibit C hereto.

18. Fraunhofer is the owner of the entire right, title and interest in and to U.S. Patent No. 7,061,997 (“the '997 Patent”), entitled “Method and Apparatus for Fine Frequency Synchronization in Multi-Carrier Demodulation Systems,” which was duly issued on June 13, 2006. Fraunhofer holds the exclusive rights to bring suit with respect to any past, present, and future infringement of the '997 Patent. A copy of the '997 Patent is attached as Exhibit D hereto.

19. The '289, '1084, '3084, and '997 Patents are directed to apparatuses and methods used to receive and decode encoded satellite signals, identify any “channel fading” effects, such as offsets in the phase shift, frequency, or amplitude of the signal waves, and

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