

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SIRIUS XM RADIO INC.,  
Petitioner,

v.

FRAUNHOFER-GESELLSCHAFT ZUR  
FÖRDERUNG DER ANGEWANDTEN  
FORSCHUNG E.V.,  
Patent Owner.

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Case No. \_\_\_\_\_  
Patent No. 6,931,084

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**DECLARATION OF DR. DAVID LYON IN SUPPORT OF PETITION  
FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 6,931,084**

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## PETITIONER'S EXHIBIT LIST

EXHIBIT NO.	DESCRIPTION
<b>Exhibit-1001</b>	U.S. Patent No. 6,931,084 (the “1084 Patent”) titled, Differential Coding and Carrier Recovery for Multicarrier Systems, issued on August 16, 2005
<b>Exhibit-1002</b>	Declaration of David Lyon, Ph.D., in support of Petition for <i>Inter Partes Review</i> of U.S. Patent 6,931,084, dated February 21, 2018 (“Lyon Dec.”)
<b>Exhibit-1003</b>	Prosecution History of U.S. Patent No. 6,931,084 (excerpts)
<b>Exhibit-1004</b>	U.S. Patent No. 5,166,924 (“Moose ‘924”) titled, Echo Cancellation in Multi-Frequency Differentially Encoded Digital Communications, issued on November 24, 1992
<b>Exhibit-1005</b>	U.S. Patent No. 5,732,105 (“Andren”) titled, Method of Estimating Signal Quality in a DPSK Demodulator, issued on March 24, 1998
<b>Exhibit-1006</b>	U.S. Patent No. 6,341,123 (“Tsujiishita”) titled, Digital Audio Broadcasting Receiver, issued on January 22, 2002
<b>Exhibit-1007</b>	P. H. Moose, <i>Differential Modulation and Demodulation of Multi-Frequency Digital Communications Signals</i> , IEEE, pp. 273-77, 1990 (“Moose 1990”)
<b>Exhibit-1008</b>	U.S. Patent No. 5,732,113 (“Schmidl”) titled, Timing and Frequency Synchronization of OFDM Signals, issued on March 24, 1998
<b>Exhibit-1009</b>	U.S. Patent No. 5,940,450 (“Koslov”) titled, Carrier Recovery Method and Apparatus, issued on August 17, 1999
<b>Exhibit-1010</b>	P. Robertson and S. Kaiser, <i>Analysis of the Effect of Phase-Noise in Orthogonal Frequency Division Multiplex (OFDM) Systems</i> , IEEE Xplore, pp. 1652-57, February 1995 (“Robertson”)

EXHIBIT No.	DESCRIPTION
<b>Exhibit-1011</b>	P. H. Moose, <i>A Technique for Orthogonal Frequency Division Multiplexing Frequency Offset Correction</i> , IEEE Transactions on Communications, vol. 42, No. 10, pp. 2908-14, October 1994 (“Moose 1994”)
<b>Exhibit-1012</b>	B. P. Lathi, <i>Modern Digital and Analog Communication Systems</i> , The Dryden Press, Saunders College Publishing, 2nd Ed., pp. 12-13, 223-24, 234-35, 1989 (“Lathi”)
<b>Exhibit-1013</b>	J. G. Proakis, <i>Digital Communications</i> , McGraw Hill, Inc., 2nd Ed. 1989, Sec. 3.1.1, pp. 149-51 (“Proakis”)
<b>Exhibit-1014</b>	W. Zou and Y. Wu, <i>COFDM: An Overview</i> , IEEE Transactions on Broadcasting, Vol. 41, No. 1, pp. 1-8, March 1995 (“Zou”)
<b>Exhibit-1015</b>	P. H. Moose, <i>Differentially Coded Multi-Frequency Modulation for Digital Communications</i> , Signal Processing V: Theories and Applications, Proceedings of EUSIPCO-90, pp. 1807-10, September 18-21, 1990
<b>Exhibit-1016</b>	U.S. Patent No. 5,444,697 (the “697 Patent”) titled, Method and Apparatus for Frame Synchronization in Mobile OFDM Data Communication, issued on August 22, 1995
<b>Exhibit-1017</b>	IEEE Xplore web archive denoting, P. H. Moose, Differential Modulation and Demodulation of Multi-Frequency Digital Communications Signals, IEEE, pp. 273-77, 1990 (“Moose 1990”), available at <a href="http://ieeexplore.ieee.org/document/117428/">http://ieeexplore.ieee.org/document/117428/</a>

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