

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

ANDREA ELECTRONICS CORP.,
Patent Owner

Patent No. 6,049,607

Issued: April 11, 2000

Filed: September 18, 1998

Inventor: Joseph Marash and Baruch Berdugo

Title: INTERFERENCE CANCELING METHOD AND APPARATUS

Inter Partes Review No. IPR2017-00628

**Petition for *Inter Partes* Review of
U.S. Patent No. 6,049,607**

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1. Claims 1 and 25 Are Anticipated by Chu26

- a) *“An interference canceling [apparatus / method] for canceling, from a target signal generated from a target source, an interference signal generated by an interference source”*26
- b) *“[a main input for] inputting said target signal”*27
- c) *“[a reference input for] inputting said interference signal”*28
- d) *“[a beam splitter for] beam-splitting said target signal into a plurality of band-limited target signals and beam-splitting said interference signal into band-limited interference signals, wherein the amount and frequency of band-limited target signals equal the amount and frequency of band-limited interference signals, whereby for each band-limited target signal there is a corresponding band-limited interference signal”*29
- e) *“[an adaptive filter for] adaptively filtering, each band-limited interference signal from each corresponding band-limited target signal.”*30

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1001	U.S. Patent No. 6,049,607, “Interference Canceling Method And Apparatus,” to Joseph Marash and Baruch Berdugo, issued on Apr. 11, 2000 (“the ’607 Patent”)
1002	Prosecution History of U.S. Patent Application No. 09/157,035 which issued as U.S. Patent No. 6,049,607
1003	Declaration of Bertrand Hochwald
1004	[RESERVED]
1005	U.S. Patent No. 5,263,019, “Method And Apparatus For Estimating The Level of Acoustic Feedback Between A Loudspeaker And Microphone,” to Peter L. Chu, issued on Nov. 16, 1993 (“Chu”)
1006	<i>Andrea Electronics Corporation v. Apple Inc.</i> , Case No. 2:16-cv-05220-JMA-SIL, Affidavit of Service and Complaint for Patent Infringement (E.D.N.Y.)
1007	Walter Kellermann “Strategies for Combining Acoustic Echo Cancellation and Adaptive Beamforming Microphone Arrays” (1997) (“Kellermann”)
1008	S.C. Douglas, “A Family of Normallized LMS algorithms,” IEEE Signal Processing Letters, pp. 49-51 (1994) (“Douglas”)
1009	R. E. Crochiere <i>et al.</i> , “Multirate Digital Signal Processing,” Prentice Hall, Englewood Cliffs, N.J. (1983) (“Crochiere”)
1010	P.P. Vaidyanathan, “Multirate Digital Filters, Filter Banks, Polyphase Networks, and Applications A Tutorial,” Proceedings of the IEEE, Vol. 78, No. 1, January 1990 (“Vaidyanathan”)
1011	<i>In re Certain Audio Processing Hardware and Software and Products Containing Same</i> , Inv. No. 337-TA-949, Claim Construction Order (U.S.I.T.C. Jan. 27, 2016) (“949 CC Order”)
1012	<i>In re Certain Audio Processing Hardware and Software and Products Containing Same</i> , Inv. No. 337-TA-949, Complainant

Exhibit #	Description
	Andrea Electronics Corp.'s Initial Claim Construction Brief (U.S.I.T.C. Oct. 19, 2015) ("Andrea CC Br.")
1013	<i>In re Certain Audio Processing Hardware and Software and Products Containing the Same</i> , Inv. No. 337-TA-949, Claimant Andrea Electronics Corp.'s Reply Claim Construction Brief (U.S.I.T.C. Nov. 2, 2015) ("Andrea Reply CC Br.")
1014	U.S. Copyright Office, "Copyright Basics"
1015	U.S. Copyright Office, Copyright Record for "1997 IEEE International Conference On Acoustics, Speech, and Signal Processing (Apr. 21, 1997)"
1016	B. Widrow, et al., "Adaptive Antenna Systems," Proceedings of the IEEE, Vol. 55, No. 12, pp. 2143-59 (Dec. 1967)
1017	Schobben et al., "Transparent communication," IEEE Benelux Signal Processing Chapter Symposium, pp. 171-74 (1998)
1018	Weiss et al., "On the optimality of subband adaptive filters," Applications of Signal Processing to Audio and Acoustics, 1999 IEEE Workshop, pp. 59-62 (1999)
1019	bin Abdul Rahman, Abdul Wahab, "Speech Enhancement IN Vehicular Environment," Ph.D. Dissertation, school of Applied Science, Nanyang Technological University, Singapore (1997)
1020	<i>In the Matter of Certain Audio Processing Hardware, Software, and Products Containing The Same</i> , Inv. No. 337-TA-1026, Verified Complaint Against Apple Inc. and Samsung Inc. Under Section 337 of the Tariff Act of 1930, as Amended (U.S.I.T.C. Sept. 19, 2016)

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