

UNITED STATES PATENT AND TRADEMARK OFFICE

---

**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

---

WAVES AUDIO, LTD  
Petitioner

v.

ANDREA ELECTRONICS CORPORATION  
Patent Owner

**Case: IPR2016-00474**

**Patent 6,049,607**

**AMENDED PETITION FOR *INTER PARTES* REVIEW OF  
U.S. PATENT NO. 6,049,607**

Amended Petition For *Inter Partes* Review of U.S. Patent No. 6,049,607  
Afforded Filing Date: January 16, 2016

|                  |   |
|------------------|---|
| In re Patent of: | Joseph Marsh, et al.                        |
| U.S. Patent No.: | 6,049,607                                   |
| Issue Date:      | April 11, 2000                              |
| Serial No.:      | 09/157,035                                  |
| Filing Date:     | September 18, 1998                          |
| Title:           | Interference Canceling Method and Apparatus |

**Submitted via Electronic Filing**  
**Mail Stop PATENT BOARD**  
**Patent Trial and Appeal Board**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, VA 22313-1450**

**AMENDED PETITION FOR *INTER PARTES* REVIEW  
OF U.S. PATENT NUMBER 6,049,607 UNDER 35 U.S.C. §§ 311-319**

Waves Audio Ltd. (“Waves” or “Petitioner”) hereby requests *Inter Partes* Review of Claims 1-4, 8, 25-28 and 32 in United States Patent Number 6,049,607 (“the ’607 Patent,” Exhibit 1001) owned by Andrea Electronics Corporation, LLC (“Andrea” or “Patentee”). A detailed statement supporting the petition follows.

The present Amended Petition is being filed to address the defects noted in the Notice of Filing Date Accorded to Petition mailed January 22, 2016. The requisite fee accompanied Petitioner’s initial Petition. If any additional fee is necessary the Director is authorized to charge Deposit Account No. 50-5159. This document has been served on the Patent Owner as reflected in the accompanying Certificate of Service.

TABLE OF CONTENTS

|      |   |   |
|------|---|---|
| I.   | MANDATORY NOTICES .....   | 1 |
| II.  | PAYMENT OF FEES .....   | 3 |
| III. | STANDING .....  | 3 |
| IV.  | REQUEST TO HOLD CLAIMS 1-4, 8, 25-18 and 32 OF THE '607<br>PATENT UNPATENTABLE.....             | 3 |
| A.   | The Alleged Invention Of The '607 Patent .....  | 4 |
| B.   | Summary Of The Prosecution History Of The '607 Patent .....                                     | 4 |
| V.   | CLAIM CONSTRUCTION .....  | 5 |
| A.   | Broadest Reasonable Construction.....   | 5 |
| B.   | “interference signal” (claims 1-2 and 25-26).....   | 6 |
| C.   | “adaptive filter” (claims 1, 3, 4, 8, 25, 27, 28 and 32) .....                                  | 6 |
| D.   | “target signal” (claims 1, 2, 25, 26 and 27).....   | 6 |
| E.   | “reference signal” (claims 2, 4, 5, 12, 26, 28, 29 and 37).....                                 | 6 |
| F.   | “main signal” (claims 5, 8, 12, 29, 32 and 36).....   | 7 |
| G.   | “transform function” (claims 9, 33).....  | 7 |
| H.   | “main input for inputting said target signal / inputting said target<br>signal” (claims 1)..... | 7 |
| I.   | “band limited...signals” (claims 1, 3, 25 and 27) .....   | 7 |
| J.   | “reference input for inputting said interference signal” (claims 1, 2,<br>4, 26 and 28) .....   | 7 |
| K.   | “cancelling” (claims 1 and 25) .....  | 8 |
| L.   | “beam splitting/beam splitter” (claims 1 and 25).....   | 8 |
| M.   | “beam selector” (claims 8 and 32).....  | 8 |

Amended Petition For *Inter Partes* Review of U.S. Patent No. 6,049,607  
Afforded Filing Date: January 16, 2016

|       |   |    |
|-------|---|----|
| VI.   | PRIOR ART TO THE '345 PATENT FORMING THE BASIS FOR THIS PETITION .....  | 8  |
| A.    | Prior Art Documents .....   | 8  |
| B.    | Summary Of Unpatentability Arguments .....  | 10 |
| VII.  | FOUNDATIONS FOR UNPATENTABILITY OF EACH CLAIM .....   | 12 |
| A.    | Ground 1: Claims 1-4 and 25-28 Are Unpatentable Under 35 U.S.C. § 102(b) As Being Anticipated By Chu 307.....   | 12 |
| B.    | Ground 2: Claims 1-4 and 25-28 Are Unpatentable Under 35 U.S.C. § 102(a) As Being Anticipated By Nakagawa.....  | 20 |
| C.    | Ground 3: Claims 1, 2, 8, 25, 26 and 32 are Unpatentable Under 35 U.S.C. § 103(a) as Being Obvious over Chu 307 in view of Chu 1995. ....             | 28 |
| D.    | Ground 4: Claims 1-3, 8, 25-27 and 32 Are Unpatentable Under 35 U.S.C. § 103(a) As Being Obvious over Chu 1993 in view of Chu 1995.....               | 38 |
| E.    | Ground 5: Claims 8 and 32 Are Unpatentable Under 35 U.S.C. § 103(a) As Being Obvious over Chu 307 or Nakagawa or Dreiseitel in view of Griffiths..... | 49 |
| F.    | Ground 6: Claims 8 and 32 are Unpatentable Under 35 U.S.C. § 103(a) As Being Obvious Over Chu '307 or Nakagawa in view of Provencher.....             | 51 |
| G.    | Ground 7: Claims 8 and 32 are Unpatentable Under 35 U.S.C. § 103(a) As Being Obvious Over Chu 307 or Nakagawa in view of Huang. ....                  | 53 |
| VIII. | CONCLUSION .....  | 54 |

**PETITIONER’S EXHIBIT LIST**

| <b>Description</b>  | <b>Exhibit #</b> |
|---|------------------|
| 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”)                                  | 1001             |
| Prosecution History of U.S. Patent Application No. 09/157,035 which issued as U.S. Patent No. 6,049,607   | 1002             |
| Table 1 – List Of Each Challenged Claim Element Annotated With Its Claim Number and A Reference Letter  | 1003             |
| Petitioner’s List of Related Litigation Matters, And Patents at Issue   | 1004             |
| Petitioner’s List of IPR Petitions and Challenged Patent Claims of the Andrea Patents   | 1005             |
| U.S. Patent No. 5,305,307 (“Chu 307”)   | 1006             |
| U.S. Patent No. 5,774,561 (“Nakagawa”)  | 1007             |
| Pia Dreiseitel, Eberhard Hänslar, and Henning Puder, “Acoustic Echo and Noise Control – A Long Lasting Challenge,” Signal Processing Conference (EUSIPCO), Sept. 8-11, 1998, (“Dreiseitel”) | 1008             |
| Chu, “Desktop MIC Array for Teleconferencing.” I.E.E.E., 1995, (“Chu 1995”)   | 1009             |
| Peter L. Chu, “Weaver SSB Subband Acoustic Echo Canceller,” 1993 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, pp. 8-11 (“Chu 1993”)                           | 1010             |

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.