

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LG ELECTRONICS, INC.,
Petitioner,

v.

CONSTELLATION DESIGNS, LLC,
Patent Owner.

Case No. IPR2023-00228
U.S. Patent No. 10,693,700

**DECLARATION OF ALBERT GUILLÉN I FÀBREGAS REGARDING
PATENT OWNER'S PRELIMINARY RESPONSE FOR *INTER PARTES*
REVIEW OF US 10,693,700**

TABLE OF CONTENTS

I. Introduction2

II. Qualifications2

III. Materials Considered4

IV. IEEE International Symposium on Information Theory in Nice,
France.....5

V. De Gaudenzi.....7

 A. *De Gaudenzi Uses Only APSK Constellations*7

 1. *De Gaudenzi Describes Maintaining Uniform Phase and
 Varying a Ring Ratio of an APSK*9

 2. *De Gaudenzi’s Teachings are focused on APSK
 constellations and Not QAM constellations*..... 10

 3. *De Gaudenzi Describes and is Applicable to Non-
 Hierarchical Constellations* 12

VI. *De Gaudenzi’s Optimization Technique Cannot Easily Be Applied to
 Optimize a Hierarchical and Rectangular QAM Constellation* 13

I, Dr. Guillén i Fàbregas, hereby declare as follows:

I. Introduction

1. My name is Albert Guillén i Fàbregas. I have been retained in the above-referenced *inter partes* review proceeding by Constellation Designs, LLC, to evaluate United States Patent No. 10,693,700 (the “’700 patent”) against certain references that are presented by the Petitioner. As detailed in this report, it is my opinion that the Petition does not establish that any of the challenged claims are anticipated or rendered obvious by the references presented by the Petitioner. If requested by the Patent Trial and Appeal Board, I am prepared to testify at trial about my opinions expressed herein.

II. Qualifications

2. I have over twenty years of experience in the field of information theory, coding theory and digital communications. I am currently an Associate Professor in Information and Data Science at the Department of Engineering, University of Cambridge. In my work and research, I have researched and written about Information Theory, Communication Theory, Coding Theory, and Statistical Inference.

3. Prior to my appointment at the University of Cambridge, I held appointments at the New Jersey Institute of Technology, Telecom Italia, European

Space Agency, Institut Eurécom, University of South Australia, Universitat Pompeu Fabra (ICREA Research Professor) and the University of Cambridge.

4. I studied and received a Telecommunication Engineering Degree and a Electronics Engineering Degree from Universitat Politècnica de Catalunya and Politecnico di Torino, respectively in 1999. I obtained my Ph.D. in Communication Systems from École Polytechnique Fédérale de Lausanne in 2004.

5. In addition to my undergraduate and graduate level studies and academic qualifications, I have also received Starting and Consolidator Grants from the European Research Council. Additionally, I am a member of the Young Academy of Europe, Fellow of the Institute of Electrical and Electronics Engineers (IEEE), Fellow of the Institute of Mathematics and its Applications (IMA), Editor of Foundations and Trends in Communications and Information Theory (Now Publishers) and previously of the IEEE Transactions on Information Theory (2013-2020) and IEEE Transactions on Wireless Communications (2007-2011). I was a General co-Chair of the 2016 IEEE International Symposium on Information Theory, Barcelona, July 2016 and a Technical Program Committee (TPC) co-chair of the 2013 IEEE Information Theory Workshop, Sevilla, Sept. 2013. Additionally, I am a TPC co-chair of the 2023 IEEE International Symposium on Information Theory, Taiwan.

6. I have authored or co-authored over two hundred (200) publications and technical reports in the areas of digital communications, information theory, coding theory, wireless communications, and statistical inference. My publication and patents are listed on my curriculum vitae, which is attached hereto as EX2013.

7. As a result of my background in information theory and digital communications, I have extensive knowledge regarding the state of the technical art in this area at the time of filing of the '700 patent.

8. One of my papers was cited and relied upon by Petitioner. Specifically, I am co-author of the De Gaudenzi reference *De Gaudenzi* cited by the Petitioner as EX1014, an article titled "Turbo-coded APSK modulations design for satellite broadband communications" which was published in International Journal of Satellite Communications and Networking, Vol. 24, 2006 at pp. 261-281.

III. Materials Considered

9. In preparing this declaration, I have reviewed the specification and claims of U.S. Patent No. 10,693,700 ("700 Patent" (EX1001)) and the file history of the '700 patent (EX1002). I understand the '700 patent was issued on June 23, 2020 from U.S. Patent Application No. 16/726,037, which forms part of a chain of continuations including application Ser. No. 12/156,989 filed Jun. 5, 2008 and

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.