JNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD
QUALCOMM INCORPORATED,
Petitioner,
v.
UNM RAINFOREST INNOVATIONS,
Patent Owner.
INTER PARTES REVIEW OF
U.S. PATENT NO. 8,265,096 B2 Case IPR2021-00375

DECLARATION OF DR. SUMIT ROY, Ph.D. Ex. 1002



TABLE OF CONTENTS

I.	INTRODUCTION5						
II.	BACKGROUND AND QUALIFICATIONS						
III.	MATERIALS RELIED UPON10						
IV.	SUMMARY OF OPINIONS						
V.	LEGAL STANDARDS						
	A.	Legal Standards for Prior Art					
	B.	Legal Standard for Priority Date15					
	C.	Legal Standard for Anticipation					
	D.	Legal Standard of Obviousness					
VI.	CLA	CLAIM CONSTRUCTION					
VII.	LEV	EL O	F ORDINARY SKILL IN THE ART	24			
VIII.	BACKGROUND ON THE STATE OF THE ART						
	A.	Ove	rview of Cellular Communication Systems	25			
	B.	Ove	rview of Broadband Wireless Communication Systems	28			
		1.	First-Generation Broadband Systems	29			
		2.	Second-Generation Broadband Systems and OFDM	30			
	C.	Ove	Overview of 802.16/WiMAX				
		1.	History of 802.16	32			
		2.	Frame Structure of 802.16	35			
		3.	OFDM in 802.16	39			
		4.	OFDMA in 802.16	42			
	D.	D. 802.16/WiMAX and Mobility					
IX.	THE CHALLENGED '096 PATENT						
	A.	A. Background and '096 Patent Specification47					
	B. Overview of the '096 Patent Prosecution History48						
X.	OVERVIEW OF THE PRIOR ART REFERENCES						
	A. Overview of "Talukdar" (Ex. 1012)50						
	B.	B. Overview of "Li" (Ex. 1016)53					



	C.	Ove	rview	v of Nystrom (Ex. 1017)	55	
XI.	SPE	CIFIC	GRO	DUNDS OF CHALLENGE	57	
	A.	Ground 1: Claims 1-4 and 6-7 were rendered obvious by Talukdar i View of Li				
		1.	Cla	aim 1	58	
			a)	1[pre]: "A method of constructing a frame structure for data transmission, the method comprising"		
			b)	1[a]: "generating a first section comprising data configuring a first format compatible with a first communication system using symbols"		
			c)	1[b]: "generating a second section following the first section, the second section comprising data configured second format compatible with a second communication system using symbols, wherein the first communication system's symbols and the second communication systems symbols co-exist in one transmission scheme"	on 1 m's	
			d)	1[c]: "and wherein: the second format is compatible with the second communication system configured to support higher mobility than the first communication system, wherein each symbol in the second communication system as a shorter symbol period than that in the first communication system"	rt tem	
			e)	1[d]: "generating at least one non-data section containing information describing an aspect of data in at least one the first section and the second section"	of	
			f)	1[e]: "combining the first section, the second section are the at least one non-data section to form the frame structure"		
		2.	Cla	aim 2	94	
		3.	Cla	aim 3	97	
		4.	Cla	aim 4	99	
		5.	Cla	aim 6	.100	
		6.	Cla	aim 7	.102	
	B.	Gro	und 2	2: Talukdar and Nystrom Rendered Claim 8 Obvious	.103	



	1.	8[c]: "and wherein the second communication system has pilot symbols that are denser than those in the first communication		
		system"	104	
XII.	SECONDA	RY CONSIDERATIONS	113	
XIII.	CONCLUSI	ION	113	

APPENDIX A (Curriculum Vitae)



I. INTRODUCTION

- 1. My name is Sumit Roy, and I have been retained by counsel for Petitioner Qualcomm Incorporated ("Qualcomm" or "Petitioner") as an expert witness to provide assistance regarding U.S. Patent No. 8,265,096 ("the '096 Patent"). Specifically, I have been asked to consider the validity of claims 1-4 and 6-8 of the '096 Patent (the "Challenged Claims") in view of prior art, anticipation and obviousness considerations, and understanding of a person of ordinary skill in the art ("POSA") as it relates to the '096 Patent. I have personal knowledge of the facts and opinions set forth in this declaration, and believe them to be true. If called upon to do so, I would testify competently thereto.
- 2. I am being compensated for my time at my standard consulting rate of \$650 per hour. I am also being reimbursed for expenses that I incur during the course of this work. My compensation is not contingent upon the results of my study, the substance of my opinions, or the outcome of any proceeding involving the challenged claims. I have no financial interest in the outcome of this matter or on the pending litigation between Petitioner and Patent Owner.
- 3. My opinions are based on my years of education, research and experience, as well as my investigation and study of relevant materials, including those cited herein.



DOCKET

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.

