UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD
SAMSUNG ELECTRONICS CO., LTD. Petitioner
v.
BELL NORTHERN RESEARCH, LLC Patent Owner
Patent No. 8,416,862





### TABLE OF CONTENTS

I.	INTRODUCTION			1	
II.	MANDATORY NOTICES			1	
III.	PAYMENT OF FEES				
IV.	GRO	UNDS	FOR STANDING	2	
V.	PREC	CISE R	RELIEF REQUESTED AND GROUNDS RAISED	3	
VI.	LEVE	EL OF	ORDINARY SKILL	6	
VII.	THE	'862 P	PATENT	7	
VIII.	CLAI	М СО	NSTRUCTION	8	
IX.	DETAILED EXPLANATION OF GROUNDS				
	A.	Grou	nd 1: Claims 9, 11, and 12 are Obvious over <i>Roh</i> in view of		
		Malts	sev and Haykin	8	
		1.	Claim 9	8	
		2.	Claim 11	32	
		3.	Claim 12	35	
	B.	Grou	nd 2: Claim 10 is Obvious over Roh in view of Maltsev,		
		Hayk	in, and Yang	36	
		1.	Claim 10	36	
	C.	Ground 3: Claims 9, 11, and 12 are Obvious over Lin in view of			
		Haykin and Maltsev39			
		1.	Claim 9	39	
		2.	Claim 11	62	
		3.	Claim 12	63	
	D.	Grou	nd 4: Claim 10 is Obvious over Lin in view of Haykin,		
		Malts	sev, and Yang	63	
		1.	Claim 10	63	

# Petition for *Inter Partes* Review Patent No. 8,416,862

X.	DISC	CRETIONARY DENIAL IS NOT APPROPRIATE HERE	67
	A.	The Board Should Not Exercise Discretion Under § 314(a) To	
		Deny the Petition	67
	B.	The Board Should Not Exercise Discretion Under § 325(d) To	
		Deny the Petition	69
XI.	CON	ICLUSION	70



### LIST OF EXHIBITS

Ex. 1001	U.S. Patent No. 8,416,862
Ex. 1002	Declaration of Dr. Leonard J. Cimini
Ex. 1003	Curriculum Vitae of Dr. Leonard J. Cimini
Ex. 1004	Prosecution History of U.S. Patent No. 8,416,862
Ex. 1005	U.S. Patent Application No. 11/168,793
Ex. 1006	U.S. Provisional Application No. 60/673,451
Ex. 1007	U.S. Provisional Application No. 60/698,686
Ex. 1008	Roh et al., "An Efficient Feedback Method for MIMO Systems with Slowly Time-Varying Channels," volume 2 of <i>Proceedings of 2004 IEEE Wireless Communications and Networking Conference</i> , March 21-25, 2004, Atlanta, GA ("Roh")
Ex. 1009	U.S. Patent No. 7,570,696 to Maltsev et al. ("Maltsev")
Ex. 1010	Haykin et al., Modern Wireless Communications ("Haykin")
Ex. 1011	Yang et al., "Reducing the Computations of the SVD Array Given by Brent and Luk," Proceedings of SPIE, vol. 1152, Advanced Algorithms and Architectures for Signal Processing IV, November 14, 1989 ("Yang")
Ex. 1012	U.S. Patent No. 7,492,829 to Lin et al. ("Lin")
Ex. 1013	Sadrabadi <i>et al.</i> , "A New Method of Channel Feedback Quantization for High Data Rate MIMO Systems," volume 1 of <i>GLOBECOM</i> '04 <i>IEEE Global Telecommunications Conference</i> , November 29 – December 3, 2004, Dallas, Texas ("Sadrabadi")
Ex. 1014	[RESERVED]
Ex. 1015	U.S. Patent No. 5,258,995 to Su et al. ("Su")
Ex. 1016	Ansari et al., "Unified MIMO Pre-Coding based on Givens Rotation"



Ex. 1017	U.S. Patent No. 7,742,546 to Ketchum et al. ("Ketchum-546")
Ex. 1018	U.S. Patent No. 7,236,748 to Li et al. ("Li")
Ex. 1019	Declaration of Dr. Ingrid Hsieh-Yee
Ex. 1020	[RESERVED]
Ex. 1021	Excerpt of <u>The Authoritative Dictionary of IEEE Standard Terms</u> (7 <sup>th</sup> ed., IEEE Press 2000)
Ex. 1022	Stuber et al., "Broadband MIMO-OFDM Wireless Communications," Proceedings of the IEEE, Vol. 92, No. 2, Feb. 2004 ("Stuber")
Ex. 1023	U.S. Patent Application Publication No. 2004/0087324 to Ketchum <i>et al.</i> (" <i>Ketchum-324</i> ")
Ex. 1024	[RESERVED]
Ex. 1025	Excerpt of Strang, et al., <u>Linear Algebra and Its Applications</u> (2 <sup>nd</sup> ed., Academic Press 1980) ("Strang")
Ex. 1026	Rebuttal Declaration of Dr. Vijay K. Madisetti, Ph.D. in Support of Plaintiff's Claim Constructions, <i>Bell Northern Research</i> , <i>LLC v. ZTE Corp.</i> , No. 3:18-cv-01786-CAB-BLM (S.D. Cal.), Dkt. 88-14
Ex. 1027	Plaintiff's Opposition to Defendants' Joint Motion for Summary Judgment on Indefiniteness, <i>Bell Northern Research</i> , <i>LLC v. ZTE Corp.</i> , No. 3:18-cv-01786-CAB-BLM (S.D. Cal.), Dkt. 99
Ex. 1028	BNR's Infringement Contentions against Samsung in <i>Bell Northern Research, LLC v. Samsung Electronics Co. Ltd.</i> , No. 2:19-cv-00286-JRG (E.D. Tex.)
Ex. 1029	U.S. Patent No. 5,986,973 to Jericevic et al. ("Jericevic")
Ex. 1030	Yang <i>et al.</i> , "Reducing the Computations of the Singular Value Decomposition Array Given by Brent and Luk," J. Matrix Anal. Appl., Vol. 12, No. 4, pp. 713-725, Oct. 1991 ("Yang II")
Ex. 1031	U.S. Patent No. 6,112,195 to Burges ("Burges")



# DOCKET A L A R M

# 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.

