

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.;
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner

v.

EMPIRE TECHNOLOGY DEVELOPMENT LLC,
Patent Owner.

Case No. IPR2024-00896
U.S. Patent No. 8,798,120

**PRELIMINARY REPLY IN SUPPORT OF SAMSUNG'S
PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,798,120**

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. PO’S NARROW IMPLIED CONSTRUCTION OF “IDLE POWER CONSUMPTION” SHOULD BE REJECTED	1
A. PO Seeks An Erroneous And Narrow Construction Of “Idle Power Consumption” To Overcome Prior Art.....	1
B. Petitioner Could Not Have Reasonably Foreseen PO’s Argument.....	3

LIST OF EXHIBITS¹

Ex. No.	Description
Ex-1001	U.S. Patent No. 8,798,120 (“the ’120 Patent”)
Ex-1002	Declaration of Dr. Matthew C. Valenti
Ex-1003	Curriculum Vitae of Dr. Matthew C. Valenti
Ex-1004	Prosecution History of the ’120 Patent (Application No. 12/727,049)
Ex-1005	U.S. Patent Publication No. 2006/0067263 (“Li”)
Ex-1006	Mohammad Z. Siam et al., <i>Adaptive Multi-antenna Power Control in Wireless Networks</i> , International Conference on Wireless Communications and Mobile Computing 875-880 (2006) (“Siam”)
Ex-1007	Shuguang Cui et al., <i>Modulation Optimization Under Energy Constraints</i> , 4 Institute of Electrical and Electronic Engineers International Conference on Communications 2805-2811 (2003) (“Cui-2003”)
Ex-1008	Esa Tirola and Juha Ylitalo, <i>Performance of a UMTS Uplink MIMO Scheme</i> , 1 Institute of Electrical and Electronic Engineers 58th Vehicular Technology Conference 657-661 (2003) (“Tirola”)
Ex-1009	U.S. Patent Publication No. 2007/0171808 (“Wu”)
Ex-1010	INTENTIONALLY LEFT BLANK
Ex-1011	INTENTIONALLY LEFT BLANK
Ex-1012	INTENTIONALLY LEFT BLANK
Ex-1013	INTENTIONALLY LEFT BLANK

¹ Four-digit pin citations that begin with 0 are to the branded numbers added by Samsung in the bottom right corner of the exhibits. All other pin citations are to original page, column, paragraph, or line numbers.

Ex. No.	Description
Ex-1014	INTENTIONALLY LEFT BLANK
Ex-1015	INTENTIONALLY LEFT BLANK
Ex-1016	INTENTIONALLY LEFT BLANK
Ex-1017	INTENTIONALLY LEFT BLANK
Ex-1018	INTENTIONALLY LEFT BLANK
Ex-1019	INTENTIONALLY LEFT BLANK
Ex-1020	Claim Mapping Table
Ex-1021	<i>Empire Technology Development LLC v. Samsung Electronics Co., Ltd., et al.</i> , Case No. 2:23-cv-00427, Infringement Contentions (E.D. Tex. Jan. 4, 2024).
Ex-1022	Declaration of Scott Delman dated Mar. 8, 2024 (Association for Computing Machinery)
Ex-1023	Declaration of Gordon Macpherson dated Apr. 27, 2024 (Institute of Electrical and Electronics Engineers, Incorporated)
Ex-1024	Screenshot of ACM website (Siam)
Ex-1025	Shuguang Cui et al., <i>Energy-Constrained Modulation Optimization</i> , 4 Institute of Electrical and Electronic Engineers Transactions of Wireless Communications 2349-2360 (Sept. 2005) (“Cui-2005”)
Ex-1026	Shuguang Cui et al., <i>Energy-Efficiency of MIMO and Cooperative MIMO Techniques in Sensor Networks</i> , 22 Institute of Electrical and Electronic Engineers Selected Areas in Communications 1089-1098 (Aug. 2004) (“Cui-2004”)
Ex-1027	INTENTIONALLY LEFT BLANK
Ex-1028	U.S. Patent Publication No. 2008/0095263 (“Xu”)
Ex-1029	Adam J. Tenenbaum et al., <i>Improved Sum-Rate Optimization in the</i>

Ex. No.	Description
	<i>Multiuser MIMO Downlink</i> , IEEE 984 (2008) (“Tenenbaum”)
Ex-1030	Runhua Chen et al., <i>Uplink Power Control in Multi-Cell Spatial Multiplexing Wireless Systems</i> , 6 IEEE Transactions of Wireless Communications 2700 (July 2007) (“Chen”)
Ex-1031	U.S. Patent Publication No. 2005/0250452 (“Walton”)
Ex-1032	Screenshot of CD contents from Cui-2003 presentation
Ex-1033	Bruno Bougard et al., <i>SmartMIMO: An Energy-Aware Adaptive MIMO-OFDM Radio Link Control for Next-Generation Wireless Local Area Networks</i> , EURASIP Journal on Wireless Communications and Networking (2007) (“Bougard”)
Ex-1034	Andreas F. Molisch et al., <i>MIMO Systems with Antenna Selection</i> , IEEE Microwave Magazine 46 (2004) (“Molisch”)
Ex-1035	Chan-Byoung Chae et al., <i>Adaptive Spatial Modulation for MIMO-OFDM</i> , IEEE Communications Society 87 (2004) (“Chae”)
Ex-1036	Kyeongjun Ko et al., <i>Low Complexity Multiuser MIMO Scheduling with Chordal Distance</i> , IEEE 80 (2008) (“Ko”)
Ex-1037	Alkan Soysal et al., <i>Optimizing the Rate of a Correlated MIMO Link Jointly over Channel Estimation and Data Transmission Parameters</i> , IEEE 74 (2008) (“Soysal”)
Ex-1038	U.S. Patent Publication No. 2005/0289367 (“Clark”)
Ex-1039	U.S. Patent Publication No. 2008/0186918 (“Tinnakornsriruphap”)
Ex-1040	Shuguang Cui et al., <i>Cross-Layer Energy and Delay Optimization in Small-Scale Sensor Networks</i> , 6 IEEE Transactions on Wireless Communications 3688 (2007) (“Cui-2007”)
Ex-1041	U.S. Patent No. 8,315,346 (“Kim”)
Ex-1042	Karama Hamdi et al., <i>Low-Complexity Antenna Selection and User Scheduling in Cognitive MIMO Broadcast Systems</i> , IEEE 4038

Ex. No.	Description
	(2008) ("Hamdi")
Ex-1043	Screenshot of CD contents from Tirola presentation
Ex-1044	Chulhan Lee et al., <i>Adaptive Mode Switching in the MIMO Broadcast Channel</i> , IEEE 711 (2008) ("Lee")
Ex-1045	Theodore S. Rappaport, <i>Wireless Communication, Principles and Practice</i> , Ch. 1, 1-24 (2nd ed., 2001)
Ex-1046	Defendants Samsung's Elecs. Co., Ltd. and Samsung Elecs. Am., Inc.'s Stipulation Regarding Invalidity Challenges in <i>Empire Technology LLC v. Samsung Elecs. Co., Ltd. et al.</i> , Case No. 2:23-cv-00427-JRG (E.D. Tex.) (Dkt. 44)
Ex-1047	Email from the Board authorizing Petitioner's Preliminary Reply (Oct. 3, 2024)
Ex-1048	Plaintiff Empire Tech. Development LLC's Disclosure of Proposed Terms and Claim Elements for Construction (Sept. 18, 2024)
Ex-1049	Plaintiff Empire Tech. Development LLC's Disclosure of Proposed Claim Constructions (Oct. 9, 2024)

I. INTRODUCTION

The Board authorized this paper by email on October 3, 2024. Ex-1047.

II. PO'S NARROW IMPLIED CONSTRUCTION OF "IDLE POWER CONSUMPTION" SHOULD BE REJECTED

A. PO Seeks An Erroneous And Narrow Construction Of "Idle Power Consumption" To Overcome Prior Art

PO asserts no term requires construction (Paper 11 at 10-11) yet distinguishes the asserted prior art by implicitly and narrowly construing "idle power consumption" in Claim 25 to mean power consumed only "when the circuitry of the device *is powered on* and waiting to transmit data over the communications channel." *Id.* at 29.² But the '120 Patent is not so narrow and does not require all circuitry to be "powered on" when evaluating idle power consumption. Specifically, the '120 Patent states "[e]ven if the idling transceivers *turn off their transmission chains, some idle power may be consumed* due to leakage current or other effects." Ex-1001, 3:5-7. In other words, it teaches that "idle power" is "consumed" even when the transmission chains of the transceivers are turned off. PO's narrow construction of "idle power consumption" excludes this express teaching of the '120 Patent and cannot be correct.

PO introduces this distinction between idle power consumed with all circuitry powered on and idle power consumed when transmission chain circuitry

² Emphasis is added herein unless otherwise specified.

is turned off—a distinction supported nowhere in the intrinsic record—in order to distinguish a “sleep” mode disclosed in the asserted Cui-2003 prior art reference. Specifically, Cui-2003 discloses that “when there is a signal to transmit all circuits work in active mode, when there is no signal to transmit they *work in sleep mode...*” where “circuits in the signal path are shut down...” Ex-1007, 0002. And “[i]n the sleep mode, the power consumption is dominated by the leaking current I_l of the switching transistors...” *Id.* Indeed, as explained in the Petition, a POSITA would have understood that in Cui-2003’s “sleep” mode, the mobile station is idle and not actively transmitting or receiving data but that a mobile station in sleep mode may nevertheless continue to consume power, at least through leakage current. Paper 3 at 49-52. Moreover, Cui-2003’s description of working in sleep mode, in which “power consumption is dominated by the leaking current” (Ex-1007, 0002) is nearly identical to the ’120 Patent’s disclosure that “idle power may be consumed due to leakage current” when the transmission chains are powered off. Ex-1001, 3:5-7.

PO’s citations to the ’120 Patent to explain “idle power consumption” (Paper 11 at 29) simply describe an example of idle time (“*may* be waiting to send data”) and the power consumption during this time but provide no support for the contention that all circuitry must be powered on during the “idle time.” Nor is there support in the File History, which states claims are allowed due to lack of

“consideration of power during idle periods” in the considered art (Ex-1004, 0189) but states nothing about whether all circuitry must be powered during idle periods.

PO's reliance on extrinsic evidence (Paper 11 at 31-34) is unavailing, as it cannot overcome the '120 Patent's express inclusion, in its discussion of “idle power consumption,” of leakage current during periods when the transmission chain is powered off. Ex-1001, 3:5-7. Extrinsic evidence distinguishing a sleep mode from an idle mode is irrelevant where (i) the '120 Patent uses the term “idle” broadly to include both, and (ii) where Cui-2003 discusses a “sleep” mode consistent with the '120 Patent's description of “idle time” and never discusses an “idle” mode distinct from its “sleep” mode.

PO's allegation that Petitioner and its expert admit that PO's interpretation of idle mode is correct (Paper 11 at 29) tellingly omits the beginning of the quoted sentence, which would show that Petitioner is discussing the *receiver* and not the *transmission* chain. PO's narrow construction should be rejected.

B. Petitioner Could Not Have Reasonably Foreseen PO's Argument

PO's “idle power consumption” claim construction argument is contrary to the intrinsic evidence and to PO's disclosure of terms for claim construction in the associated district court litigation, which asserts that no term of the '120 Patent requires construction. Ex-1048, Ex-1049. Petitioner could not, therefore, have anticipated this argument.

U.S. Patent No. 8,798,120
Petitioner's Preliminary Reply

Respectfully Submitted,

/s/ William M. Fink

William M. Fink (Reg. No. 72,332)

CERTIFICATE OF SERVICE

I hereby certify that on October 10, 2024, I caused a true and correct copy of the foregoing PRELIMINARY REPLY IN SUPPORT OF SAMSUNG'S PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,798,120 to be served electronically on counsel for Patent Owner at the following addresses:

Nathaniel Browand
Milbank LLP
55 Hudson Yards
New York, NY 10001
Email: nbrowand@milbank.com

Christopher Gaspar
Milbank LLP
55 Hudson Yards
New York, NY 10001
Email: cgaspar@milbank.com

Dated: October 10, 2024

Respectfully submitted,

/s/ William M. Fink
William M. Fink (Reg. No. 72,332)
O'Melveny & Myers LLP
1625 Eye Street, NW
Washington, DC 20006
Telephone: (202) 383-5300
Fax: (202) 383-5414
Email: tfink@omm.com
Attorney for Petitioner