

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT5887242

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
BEI-SHING LIEN	12/17/2019
JAW-JUINN HORNG	06/21/2019
TAI-CHENG LEE	11/05/2019
PANG-YEN CHIN	12/17/2019
RECEIVING PARTY DATA	
Name:	TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD.
Street Address:	NO. 8, LI-HSIN ROAD 6, HSINCHU SCIENCE PARK
City:	HSIN-CHU
State/Country:	TAIWAN
Postal Code:	300-77
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	16175561
CORRESPONDENCE DATA	
Fax Number:	(619)744-2201
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
Phone:	215-979-1000
Email:	cagrifone@duanemorris.com
Correspondent Name:	DUANE MORRIS LLP (TSMC) IP DEPARTMENT
Address Line 1:	30 SOUTH 17TH STREET
Address Line 4:	PHILADELPHIA, PENNSYLVANIA 19103-4196
ATTORNEY DOCKET NUMBER:	P20170874US00/N1085-01732
NAME OF SUBMITTER:	RICHARD C. KIM
SIGNATURE:	/Richard C. Kim/
DATE SIGNED:	12/29/2019
Total Attachments: 2	
source=N1085-01732 Assignment#page1.tif	
source=N1085-01732 Assignment#page2.tif	

ATTORNEY DOCKET NO.: P20170874US00/N1085-01732

ASSIGNMENT AND AGREEMENT

For value received, we, **Bei-Shing LIEN, Jaw-Juinn HORNG, Tai-cheng ^{Lee}KEE,** and **Pang-yen CHIN**, hereby transfer to **Taiwan Semiconductor Manufacturing Co., Ltd.**, with its principal place of business located at No. 8, Li-Hsin Road 6, Hsinchu Science Park, Hsin-Chu 300-77, Taiwan, Republic of China, and its successors, assigns and legal representatives, the entire right, title and interest, for the United States of America, in and to certain inventions related to **SYSTEMS AND METHODS FOR DIGITAL EXCESS LOOP DELAY COMPENSATION IN A CONTINUOUS TIME DELTA SIGMA MODULATOR**, described in non-provisional patent application S.N. 16/175,561 filed October 30, 2018, and under any and all Letters Patent and any divisions, continuations, continuations-in-part, reexamination certificates, reissues, and extensions thereof, or claiming priority therefrom that may be granted in the United States for said inventions; and we also concurrently hereby sell, assign and transfer to Taiwan Semiconductor Manufacturing Co., Ltd. the entire right, title and interest in and to said inventions for all countries foreign to the United States, including all rights of priority arising from the application aforesaid, and all the rights and privileges under any and all forms of protection, including Letters Patent, that may be granted in said countries foreign to the United States for said inventions.

We authorize Taiwan Semiconductor Manufacturing Co., Ltd. to make application for such protection in its own name and maintain such protection in any and all countries foreign to the United States, and to invoke and claim for any application for patent or other form of protection for said inventions, without further authorization from us, any and all benefits, including the right of priority provided by any and all treaties, conventions, or agreements.

We hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of Taiwan Semiconductor Manufacturing Co., Ltd. to apply for patent or other form of protection for said inventions and to claim the aforesaid benefit of the right of priority.

We request that any and all patents for said inventions be issued to Taiwan Semiconductor Manufacturing Co., Ltd. in the United States and in all countries foreign to the United States, or to such nominees as Taiwan Semiconductor Manufacturing Co., Ltd. may designate.

ATTORNEY DOCKET NO.: P20170874US00/N1085-01732

We agree that, when requested, we shall, without charge to Taiwan Semiconductor Manufacturing Co., Ltd. but at its expense, sign all papers, and do all acts which may be necessary, desirable or convenient in connection with said applications, patents, or other forms of protection.

Inventor No. 1

Dated: 2019.12.17

Bei-Shing Lien

Bei-Shing LIEN

Address: No. 8, Li-Hsin Road 6, Hsinchu Science Park, Hsinchu City 300-77, Taiwan (R.O.C.)

Inventor No. 2

Dated: 2019.6.21

Jaw-Juinn Horng

Jaw-Juinn HORNG

Address: 2F, Number 31-1, 145 Lane, BaoShan Road, Hsinchu 300, Taiwan (R.O.C.)

Inventor No. 3

Dated: 2019.11.5

Tai-Cheng Kee

Tai-Cheng KEE

Address: 5F, No. 11, Lane 26, Kuan-fu North Road, Hsinchu City 300, Taiwan (R.O.C.)

Inventor No. 4

Dated: 2019.12.17

Pang Yen Chin

Pang-Yen CHIN

Address: Rm, 2, 10F, No. 130, Jingcheng Rd., West District, Taichung City 403, Taiwan (R.O.C.)