504358120 05/09/2017

PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
YI-LIN CHUANG	04/13/2017
CHIH-TIEN CHANG	04/13/2017
KUAN-HUA SU	04/13/2017
SZU-JU HUANG	04/14/2017

RECEIVING PARTY DATA

Name:	TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY LTD.	
Street Address:	NO.8, LI-HSIN RD. 6, HSINCHU SCIENCE PARK	
City:	HSINCHU	
State/Country:	TAIWAN	

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15492326

CORRESPONDENCE DATA

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SIGNATURE:	/Anthony King/
DATE SIGNED:	05/09/2017

Total Attachments: 2

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PATENT 504358120 REEL: 042301 FRAME: 0329

Your Ref.: P20161397US00

US ONLY

ASSIGNMENT

WHEREAS, I(we), <u>CHUANG</u>, <u>YI-LIN</u>, <u>CHANG</u>, <u>CHIH-TIEN</u>, <u>SU</u>, <u>KUAN-HUA</u> and <u>HUANG</u>, <u>SZU-JU</u> whose post office address(es) appear(s) below, hereinafter referred to as ASSIGNOR, have invented certain new and useful invention entitled

METHOD AND SYSTEM FOR TIMING OPTIMIZATION WITH DETOUR PREDICTION

(hereinafter referred to as the INVENTION) for which an a is executed on even date herewith unless at least one of t ☐ United States Design Patent was ☐ executed on:	application for United States Letters Patent /Utility Patent the following is checked:
☑ filed on: 20 April 2017 Set ☐ established by PCT International Patent Applica United States of America	
☐ issued onas U.S. Patent N	[o.;
WHEREAS, TAIWAN SEMICONDUCTOR MAN address is NO.8. LI-HSIN RD. 6. HSINCHU	NUFACTURING COMPANY LTD. whose post office SCIENCE PARK, HSINCHU, TAIWAN, R.O.C.
	iring the entire right, title and interest in and to the same in
ASSIGNOR, by these presents do sell, assign and transfe and to said INVENTION and application throughout the	leration, receipt of which is hereby acknowledged, I (we) or unto said ASSIGNEE, the entire right, title, and interest in United States of America, including any and all Letters on-in-part and reissue of said application for the full term or priority rights under any International Convention.
ASSIGNOR further covenants that no assignments, or entered into which would conflict with this Assignme	sale, agreement or encumbrance has been or will be made
filing, prosecution and maintenance of said application said INVENTION, including additional documents that me said INVENTION, all without further consideration. As ASSIGNEE'S expense, to identify and communicate to Assignee's expense, to identify and communicate to Assignee in Invention that are within Assignor's prestimony on behalf of Assignee that lawfully may maintenance, litigation and defense of any patent approximately.	uments that legally may be required in connection with the or any other patent application(s) in the United States for any be required to affirm the rights of ASSIGNEE in and to SSIGNOR also agrees, without further consideration and a SSIGNEE at ASSIGNEE'S request documents and information possession or control, and to provide further assurances and be required of ASSIGNOR in respect of the prosecution oblication or patent encompassed within the terms of this strument shall extend to ASSIGNOR'S heirs, executors
and all Letters Patent referred to above to ASSIGNEE, as the same, for ASSIGNEE'S sole use and behoof; and for t	he Commissioner of Patents and Trademarks to issue any the ASSIGNEE of the entire right, title and interest in and to the use and behoof of ASSIGNEE'S legal representatives and Letters Patent may be granted, as fully and entirely as the nment and sale not been made.
Assignor Name CHUANG, YI-LIN	Address 2F., NO.28, LN. 40, HULIN ST., XINYI DIST., TAIPEI CITY 110, TAIWAN (R.O.C.)
Signature of Assignor	Date of Signature (X) And 12 and 17
(X) Vintra Una Name of Witness (optional)	Name of Witness (optional)
Singular of Winner (autions)	Street City Co. C. C.
Signature of Witness (optional)	Signature of Witness (Optional)

PATENT REEL: 042301 FRAME: 0330

Assignor Name CHANG, CHIH-TIEN	Address 2F., NO.86, PUDING 3RD RD., EAST DIST., HSINCHU CITY 300, TAIWAN (R.O.C.)
Signature of Assignor (X) Chil Fin Chony Name of Witness (optional)	Date of Signature (X) Spy (3. >017) Name of Witness (optional)
Signature of Witness (optional)	Signature of Witness (Optional)

Assignor Name SU, KUAN-HUA	Address 20F10, NO. 188, GUANXIN RD., EAST DIST., HSINCHU CITY 300, TAIWAN (R.O.C.)
Signature of Assignor (X) Kuthhhaa Sh Name of Witness (optional)	Date of Signature (X) Apr. 13 >017 Name of Witness (optional)
Signature of Witness (optional)	Signature of Witness (Optional)

Assignor Name HUANG, SZU-JU Sznju Ifnong	NO. 6, LANE 7, YI-MING ROAD 1ST SEC. TIEN-HSIN DICT, HSIN-PU TOWN, HSINCHU COUNTY, TAIWAN (R.O.C.)
Signature of Assignor (X) Szuju Juan J	Date of Signature (X) Apr. 14, 217
Name of Witness (optional)	Name of Witness (optional)
Signature of Witness (optional)	Signature of Witness (Optional)