

PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT												
NATURE OF CONVEYANCE:	ASSIGNMENT												
CONVEYING PARTY DATA													
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>YEN-JEN CHEN</td> <td>11/29/2011</td> </tr> <tr> <td>I-TING LEE</td> <td>11/29/2011</td> </tr> <tr> <td>FENG WEI KUO</td> <td>11/29/2011</td> </tr> <tr> <td>HUAN-NENG CHEN</td> <td>11/29/2011</td> </tr> <tr> <td>CHEWN-PU JOU</td> <td>11/29/2011</td> </tr> </tbody> </table>		Name	Execution Date	YEN-JEN CHEN	11/29/2011	I-TING LEE	11/29/2011	FENG WEI KUO	11/29/2011	HUAN-NENG CHEN	11/29/2011	CHEWN-PU JOU	11/29/2011
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RECEIVING PARTY DATA													
Name:	TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD.												
Street Address:	NO. 8, LI-HSIN RD. VI												
Internal Address:	HSINCHU SCIENCE PARK												
City:	HSINCHU												
State/Country:	TAIWAN												
Postal Code:	300												
PROPERTY NUMBERS Total: 1													
<table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>14133982</td> </tr> </tbody> </table>		Property Type	Number	Application Number:	14133982								
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Application Number:	14133982												
CORRESPONDENCE DATA													
Fax Number:													
Phone:	7036841111												
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<i>Correspondence will be sent via US Mail when the email attempt is unsuccessful.</i>													
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Address Line 2:	SUITE 1400												
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ATTORNEY DOCKET NUMBER:	T5057-635A												

OP \$40.00 14133982

NAME OF SUBMITTER:	RANDY A. NORANBROCK
Signature:	/Randy A. Noranbrock/
Date:	12/19/2013
Total Attachments: 1 source=efiledassgn#page1.tif	

ASSIGNMENT

In consideration of the premises and other good and valuable consideration in hand paid, the receipt and sufficiency of which is hereby acknowledged, the undersigned,

- 1) Yen-Jen CHEN
- 2) I-Ting LEE
- 3) Feng Wei KUO
- 4) Huan-Neng CHEN
- 5) Chewn-Pu JOU

who has made a certain new and useful invention, hereby sells, assigns and transfers unto -

TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD. having a place of business at **No. 8, Li-Hsin Rd. VI, Hsinchu Science Park, Hsinchu 300, Taiwan R.O.C.**

its successors and assigns (hereinafter designated "ASSIGNEE") the entire right, title and interest for the United States of America as defined in 35 U.S.C. 100 in the invention entitled

PHASE FREQUENCY DETECTOR CIRCUIT

- (a) for which an application for United States Letters Patent was filed on 11/30/2011, and identified by United States Patent Application No. 13/308,274; or
- (b) for which an application for United States Letters Patent was executed on _____,

and the undersigned hereby authorizes and requests the United States Commissioner of Patents and Trademarks to issue any and all United States Letters Patent which may be granted therefore and any and all extensions, divisions, reissues, continuations, or continuations-in-part thereof, and the right to all benefits under the International Convention for the Protection of Industrial Property to the said ASSIGNEE, for its interest as ASSIGNEE, its successors, assigns and legal representatives; the undersigned agrees that the attorneys of record in said application shall hereafter act on behalf of said ASSIGNEE;

AND the undersigned hereby agrees to transfer a like interest, and to render all necessary assistance in making application for and obtaining original, divisional, reissued or extended Letters Patent of the United States, upon request of the said ASSIGNEE, its successors, assigns and legal representatives, and without further remuneration, in and to any improvements, and applications for patent based thereon, growing out of or related to the said invention; and to execute any papers by the said ASSIGNEE, its successors, assigns and legal representatives, deemed essential to ASSIGNEE's full protection and title in and to the invention hereby transferred.

SIGNED on the date indicated aside my signature:

1) Yen Jen Chen
Name: Yen-Jen CHEN

2011. 11. 29
Date:

2) I Ting Lee
Name: I-Ting LEE

2011. 11. 29
Date:

3) Feng wei kuo
Name: Feng Wei KUO

2011. 11. 29
Date:

4) Huan-Neng CHEN
Name: Huan-Neng CHEN

2011. 11. 29
Date:

5) Chewn-Pu JOU
Name: Chewn-Pu JOU

2011. 11. 29
Date: