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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
15/377,842 12/13/2016 Ping Li SKYWRKS.280C3 1052

20995 7590 02/27/2017
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

NGUYEN, HIEU P

ART UNIT PAPER NUMBER

2842

NOTIFICATION DATE DELIVERY MODE

02/27/2017

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com



The present application is being examined under the pre-AIA first to invent provisions.

### **DETAILED ACTION**

#### ***Double Patenting***

Claims 1-20 are rejected on the ground of nonstatutory obviousness-type **double patenting** as being unpatentable over claims 1-20 of U.S. Patent No. 9,136,803. Although the conflicting claims are not identical, they are not patentably distinct from each other because all of the limitations of the present claims are present in the patented claims.

#### ***Claim Rejections - 35 USC § 103***

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 8-12, 14-17, 19 and 20 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over **WAKITA et al.** (U.S. 8,692,619).

Regarding claims 1 and 10, WAKITA et al. (hereinafter, **Ref~619**) discloses (see Figures 1-6 and related text for details) a mobile device/method comprising:

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a transceiver configured to generate a radio frequency signal (at 101 of Fig. 1 and a power amplifier enable signal (Vcont disposed at 143 of Fig. 1) as seen/expected;

a power amplifier (103 of Fig. 1) configured to provide amplification to the radio frequency signal, the power amplifier configured to receive a bias signal (disposed at base of transistor 103 of Fig. 1) that biases the power amplifier; and

a bias circuit (at least 111 and/or 112 and/or 203 of Fig. 1 can be read as the claimed bias circuit OR at least it is functionally equivalent to it) configured to receive the power amplifier enable signal and to generate the bias signal, the bias circuit including a gain correction circuit (122 of Fig. 1 can be read as the claimed circuit OR at least it is functionally equivalent to it) configured to generate (via output of 202 of Fig. 1) a correction current in response to activation of the power amplifier enable signal, and a primary biasing circuit (111 of Fig. 1) configured to generate the bias signal based on the correction current and the power amplifier enable signal as expected, **meeting claims 1 and 10.**

Regarding claim 2, Ref~619 discloses the mobile device of claim 1 wherein the primary bias circuit includes a first transistor (107 of Fig. 1), the correction current configured to change a current flowing through the first transistor as expected, **meeting claim 2.**

Regarding claim 3, Ref~619 discloses the mobile device of claim 2 wherein the primary bias circuit further includes a resistor (131 of Fig. 1), the first transistor configured to receive the power amplifier enable signal via the resistor as seen/expected, **meeting claim 3.**

Regarding claim 4, Ref~619 discloses the mobile device of claim 2 wherein the primary bias circuit further includes a second transistor (151 of Fig. 1) electrically coupled to the first

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transistor and configured to provide the bias signal to the power amplifier as expected, **meeting claim 4.**

Regarding claim 5, Ref~619 discloses the mobile device of claim 1 wherein the power amplifier includes an output configured to provide a wireless local area network signal, the power amplifier enable signal operable to pulse the output of the power amplifier as also expected depending on specifications/applications, **meeting claim 5.**

Regarding claims 6 and 12, Ref~619 discloses the mobile device wherein the gain correction circuit includes a time-dependent signal generator (at least 202 of Fig. 1 can be read as the claimed generator) configured to generate a control current in response to activation of the power amplifier enable signal, and a current amplifier (120 and/or 119 of Fig. 1 can be read as the claimed amplifier) configured to generate the correction current by amplifying the control current as seen/expected, **meeting claims 6.**

Regarding claim 8, Ref~619 discloses the mobile device of claim 6 wherein the current amplifier is configured to receive the power amplifier enable signal as expected, **meeting claim 8.**

Regarding claim 9, Ref~619 discloses the mobile device of claim 6 wherein the time-dependent signal generator receives the power amplifier enable signal at an input (at based of transistor 120) and generates the control current at an output (emitter of transistor 119 of Fig. 1), the time-dependent signal generator including a capacitor (121 of Fig. 1) and a first resistor (162 of Fig. 1) electrically connected in a first electrical path from the input to the output as expected, **meeting claim 9.**

Regarding claim 10, Ref~619 discloses the mobile device of claim 9 wherein the time-dependent signal generator further includes a second resistor (131 of Fig. 1) electrically connected in a second electrical path from the input to the output as seen/expected, **meeting claim 10.**

Regarding claims 14-17, 19 and 20, limitations from these claims can be rejected in the same manner as described above in claims 1-6 and 8-10, since same features with similar language are being presented here, in addition to the fact that it would have been obvious to employ the claimed “integrated” circuit attached to the claimed “package substrate” as well-known and/or widely-used in the field in order to at least minimize space and/or cost...etc., **meeting claim 14-17, 19 and 20.**

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hieu Nguyen whose telephone number is 571-272-8577. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Robert Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Hieu Nguyen/  
Primary Examiner  
Group Art Unit: 2842

<b>Notice of References Cited</b>	Application/Control No. 15/377,842	Applicant(s)/Patent Under Reexamination LI ET AL.	
	Examiner HIEU NGUYEN	Art Unit 2842	Page 1 of 1

**U.S. PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A US-8,692,619 B2	04-2014	Wakita; Kazuya	H03F1/0261	330/289
B	US-				
C	US-				
D	US-				
E	US-				
F	US-				
G	US-				
H	US-				
I	US-				
J	US-				
K	US-				
L	US-				
M	US-				

**FOREIGN PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
N					
O					
P					
Q					
R					
S					
T					

**NON-PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)				
U					
V					
W					
X					

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

## EAST Search History

## EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L7	414	(burst boost transient) and EVM	USPAT	OR	OFF	2017/02/17 14:59
L8	62	(burst boost transient) and EVM and 330/\$.ccls.	USPAT	OR	OFF	2017/02/17 14:59
L9	145	(burst boost transient) and EVM and 330/\$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/17 15:00
L10	148	(burst boost transient start\$up) and EVM and 330/\$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/17 15:00
L11	23	(burst boost transient start\$up) and mirror and EVM and 330/\$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/17 15:01
L12	14	(burst boost transient start\$up) and mirror and EVM and 330/285,296,298,288-289.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/17 15:01
L13	320	(burst boost transient start\$up) and mirror and 330/285,296,298,288-289.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/17 15:01
L14	86	(burst boost transient start\$up) and mirror and (RC (time adj constant)) and 330/285,296,298,288-289.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/17 15:02
L15	197	(burst boost transient start\$up) and bias\$4 and (RC (time adj constant)) and 330/285,296,298,288-289.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/17 15:06
S1	50	(boost\$4 with current) and 330/285,296,289.ccls.	USPAT	OR	OFF	2017/02/16 20:55
S2	10	(boost\$4 with current) and RC and 330/285,296,289.ccls.	USPAT	OR	OFF	2017/02/16 20:55
S8	3	(boost\$4 with current) and EVM and 330/\$.ccls.	USPAT	OR	OFF	2017/02/16 21:13
S11	15	(boost\$4 with current) and EVM	USPAT	OR	OFF	2017/02/16 21:13
S12	204	burst and EVM	USPAT	OR	OFF	2017/02/16


						21:15
S13	3	burst and DEVM	USPAT	OR	OFF	2017/02/16 21:15
S14	3	burst and (dynamic adj EVM)	USPAT	OR	OFF	2017/02/16 21:16
S15	3	burst and (dynamic adj error adj vector)	USPAT	OR	OFF	2017/02/16 21:16
S16	11	burst and (dynamic adj error adj vector)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/02/16 21:16

**EAST Search History (Interference)**

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**2/ 17/ 2017 3:09:36 PM**

**C:\ Users\ hnguyen35\ Documents\ EAST\ Workspaces\ 15377842.wsp**

<b>Search Notes</b>  	<b>Application/Control No.</b>  15377842	<b>Applicant(s)/Patent Under Reexamination</b>  LI ET AL.
	<b>Examiner</b>  HIEU NGUYEN	<b>Art Unit</b>  2842

CPC- SEARCHED		
Symbol	Date	Examiner

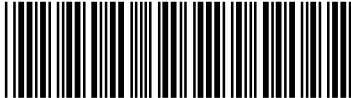
CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
330	285	02/17/2017	hn
330	296	02/17/2017	hn
330	288	02/17/2017	hn
330	289	02/17/2017	hn

SEARCH NOTES		
Search Notes	Date	Examiner
EAST	02/17/2017	hn

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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<b><i>Index of Claims</i></b>  	<b>Application/Control No.</b> 15377842	<b>Applicant(s)/Patent Under Reexamination</b> LI ET AL.
	<b>Examiner</b> HIEU NGUYEN	<b>Art Unit</b> 2842

✓	<b>Rejected</b>
=	<b>Allowed</b>

-	<b>Cancelled</b>
÷	<b>Restricted</b>

N	<b>Non-Elected</b>
I	<b>Interference</b>

A	<b>Appeal</b>
O	<b>Objected</b>

Claims renumbered in the same order as presented by applicant
  CPA
  T.D.
  R.1.47

CLAIM		DATE							
Final	Original	02/17/2017							
	1	✓							
	2	✓							
	3	✓							
	4	✓							
	5	✓							
	6	✓							
	7	✓							
	8	✓							
	9	✓							
	10	✓							
	11	✓							
	12	✓							
	13	✓							
	14	✓							
	15	✓							
	16	✓							
	17	✓							
	18	✓							
	19	✓							
	20	✓							

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Inventors	:	Ping Li et al.
App. No.	:	15/377,842
Filed	:	December 13, 2016
For	:	APPARATUS AND METHODS FOR BIASING OF POWER AMPLIFIERS
Examiner	:	Nguyen, Hieu P.
Art Unit	:	2842
Conf. No.	:	1052

**AMENDMENT AND RESPONSE TO NON-FINAL OFFICE ACTION****Mail Stop Amendment**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action dated February 27, 2017, please consider the following items:

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this paper.

**Remarks** begin on page 7 of this paper.

### AMENDMENTS TO THE CLAIMS

Please amend claims 1, 7, 9, 11, 14, 18, and 19. Please cancel claims 6, 8, 12, 13, and 17.  
Please add claims 21-25.

1. (Currently Amended) A mobile device comprising:
  - a transceiver configured to generate a radio frequency signal and a power amplifier enable signal;
  - a power amplifier configured to provide amplification to the radio frequency signal, the power amplifier configured to receive a bias signal that biases the power amplifier; and
  - a bias circuit configured to receive the power amplifier enable signal and to generate the bias signal, the bias circuit including a gain correction circuit configured to generate a control current ~~correction current~~ in response to activation of the power amplifier enable signal and to mirror the control current to generate a correction current, and a primary biasing circuit configured to generate the bias signal based on the correction current and the power amplifier enable signal.
2. (Original) The mobile device of claim 1 wherein the primary bias circuit includes a first transistor, the correction current configured to change a current flowing through the first transistor.
3. (Original) The mobile device of claim 2 wherein the primary bias circuit further includes a resistor, the first transistor configured to receive the power amplifier enable signal via the resistor.
4. (Original) The mobile device of claim 2 wherein the primary bias circuit further includes a second transistor electrically coupled to the first transistor and configured to provide the bias signal to the power amplifier.

5. (Original) The mobile device of claim 1 wherein the power amplifier includes an output configured to provide a wireless local area network signal, the power amplifier enable signal operable to pulse the output of the power amplifier.

6. (Canceled)

7. (Currently Amended) The mobile device of claim [[6]] 1 wherein the gain correction circuit ~~current amplifier~~ includes a current mirror configured to generate the correction current by mirroring the control current, the current mirror configured to receive the power amplifier enable signal.

8. (Canceled)

9. (Currently Amended) The mobile device of claim [[6]] 1 wherein the gain correction circuit includes a time-dependent signal generator that receives the power amplifier enable signal at an input and generates the control current at an output, the time-dependent signal generator including a capacitor and a first resistor electrically connected in a first electrical path from the input to the output.

10. (Original) The mobile device of claim 9 wherein the time-dependent signal generator further includes a second resistor electrically connected in a second electrical path from the input to the output.

11. (Currently Amended) A method of power amplifier biasing, the method comprising:

generating a radio frequency signal and a power amplifier enable signal using a transceiver;

providing amplification to the radio frequency signal using a power amplifier;

generating a control ~~correction~~-current in response to activation of the power amplifier enable signal using a gain correction circuit;

mirroring the control current to generate a correction current using the gain correction circuit;

generating a bias signal based on the correction current and the power amplifier enable signal using a primary biasing circuit; and  
biasing the power amplifier using the bias signal.

12. (Canceled)

13. (Canceled)

14. (Currently Amended) A packaged module comprising:

a package substrate; and

an integrated circuit attached to the package substrate and including a power amplifier configured to provide amplification to a radio frequency signal and a bias circuit configured to receive a power amplifier enable signal and to generate a bias signal that biases the power amplifier, the bias circuit including a gain correction circuit configured to generate a control current ~~correction current~~ in response to activation of the power amplifier enable signal and to mirror the control current to generate a correction current, and a primary biasing circuit configured to generate the bias signal based on the correction current and the power amplifier enable signal.

15. (Original) The packaged module of claim 14 wherein the primary bias circuit includes a first transistor, the correction current configured to change a current flowing through the first transistor.

16. (Original) The packaged module of claim 15 wherein the primary bias circuit further includes a resistor, the first transistor configured to receive the power amplifier enable signal via the resistor.

17. (Canceled)

18. (Currently Amended) The packaged module of claim 17 wherein the gain correction circuit ~~current amplifier~~ includes a current mirror configured to generate the correction current by mirroring the control current, the current mirror configured to receive the power amplifier enable signal.

19. (Currently Amended) The packaged module of claim 17 wherein the gain correction circuit includes a time-dependent signal generator that receives the power amplifier enable signal at an input and generates the control ~~correction~~ current at an output, the time-dependent signal generator including a capacitor and a first resistor electrically connected in a first electrical path from the input to the output.

20. (Original) The packaged module of claim 19 wherein the time-dependent signal generator further includes a second resistor electrically connected in a second electrical path from the input to the output.

21. (New) The packaged module of claim 15 wherein the primary bias circuit further includes a second transistor electrically coupled to the first transistor and configured to provide the bias signal to the power amplifier.

22. (New) The method of claim 11 wherein generating the bias signal includes changing a current flowing through a first bipolar transistor of the primary biasing circuit based on the correction current, and providing the power amplifier enable signal to a collector and a base of the first bipolar transistor via a first resistor of the primary biasing circuit.

23. (New) The method of claim 22 wherein generating the bias signal further includes providing the power amplifier enable signal to an emitter of the first bipolar transistor via a second resistor of the primary biasing circuit.

24. (New) The method of claim 22 wherein generating the bias signal further includes generate a bias current using an emitter of a second bipolar transistor of the primary biasing

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**Filing Date:** December 13, 2016

circuit, the second bipolar transistor including a base coupled to the base of the first bipolar transistor.

25. (New) The method of claim 11 wherein mirroring the control current includes receiving the control current at an input of a current mirror and providing the correction current at an output of the current mirror, the method further including controlling the current mirror using the power amplifier enable signal.

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**Filing Date:** December 13, 2016

## **REMARKS**

This paper is filed in response to the non-final Office Action dated February 27, 2017. The Office Action rejected claims 1-6, 8-12, 14-17, 19, and 20 under pre-AIA 35 U.S.C. § 103(a) and rejected claims 1-20 on the grounds of nonstatutory double patenting.

As set forth above, claims 1, 7, 9, 11, 14, 18, and 19 have been amended. Additionally, claims 6, 8, 12, 13, and 17 have been canceled and claims 21-25 have been added. Support for the amendments can be found throughout the application as filed, including, for example, in figures 4 and 5 and in paragraphs [0065]-[0083] of the specification. No new matter is being added. Applicant respectfully requests entry of the amendments and reconsideration of the application in view of the following remarks.

### **Discussion of Rejections under pre-AIA 35 U.S.C § 103(a)**

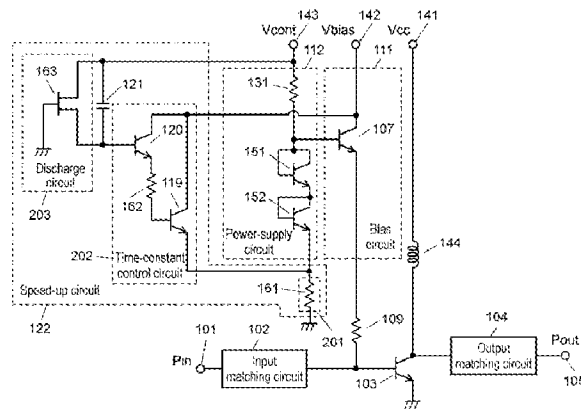
The Office Action rejected claims 1-6, 8-12, 14-17, 19 and 20 under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Wakita et al. (US 8,692,619).

#### **Claim 1**

The cited art does not disclose or suggest the combination of features recited in amended claim 1. For example, amended claim 1 recites “a bias circuit configured to receive the power amplifier enable signal and to generate the bias signal, the bias circuit including a gain correction circuit configured to generate a control current in response to activation of the power amplifier enable signal and to mirror the control current to generate a correction current, and a primary biasing circuit configured to generate the bias signal based on the correction current and the power amplifier enable signal.”

In rejecting prior claim 1, the Office Action asserted that elements 111, 112, and/or 203 shown in Figure 1 of Wakita (reproduced below) can be read as the claimed bias circuit or its functional equivalent. (Office Action at 3).

FIG. 1



However, Wakita does not disclose or suggest “a bias circuit configured to receive the power amplifier enable signal and to generate the bias signal, the bias circuit including a gain correction circuit configured to generate a control current in response to activation of the power amplifier enable signal and to mirror the control current to generate a correction current, and a primary biasing circuit configured to generate the bias signal based on the correction current and the power amplifier enable signal,” as recited in claim 1.

Moreover, Applicant respectfully asserts that **Wakita does not qualify as prior art**. For example, the Office Action indicates that the “present application is being examined under the pre-AIA first to invent provisions.” (Office Action at 2). However, Wakita does not appear to qualify as prior art under any section of pre-AIA 35 U.S.C § 102.

For example, U.S. 8,692,619 to Wakita published on April 8, 2014, which is after the effective filing date of the present application. Thus, Wakita is not prior art under pre-AIA 35 U.S.C. § 102(a) or pre-AIA 35 U.S.C. § 102(b).

Furthermore, Wakita does not appear to qualify as prior art any other section of pre-AIA 35 U.S.C § 102.

For example, “The prior art date of a reference under pre-AIA 35 U.S.C. 102(e) may be the international filing date if the international filing date was on or after November 29, 2000, the international application designated the United States, and the international application was published by the World Intellectual Property Organization (WIPO) under the Patent Cooperation Treaty (PCT) Article 21(2) in the **English language**.” (MPEP § 706.02(a)(2), emphasis added). Although Wakita claims priority to PCT/JP2012/000758, filed February 6, 2012, and to Japanese app. no. 2011-029168, filed February 4, 2011, the priority applications do not appear to have

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been published in English. Thus, U.S. 8,692,619 to Wakita does not appear to qualify as prior art to the present application under pre-AIA 35 U.S.C. § 102(e).

For at least all of the reasons set forth above, Applicant respectfully requests withdrawal of the rejection of claim 1.

#### **Claims 2-5, 7, 9-11, 14-16, and 18-25**

For at least all of the reasons discussed above, claims 2-5, 7, 9-11, 14-16, and 18-25 are also allowable. As such, Applicant respectfully requests withdrawal of the rejections and the allowance of claims 1-5, 7, 9-11, 14-16, and 18-25.

#### **Discussion of Non-Statutory Double Patenting Rejections**

The Office Action rejected claims 1-20 on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 9,136,803.

Applicant will address this non-statutory double patenting rejection at a time when all pending claims are determined to be otherwise allowable. Accordingly, Applicant respectfully requests that the Examiner hold the non-statutory double patenting rejections in abeyance.

#### **No Disclaimers or Disavowals**

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

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**Co-Owned Applications of Assignee**

Applicant wishes to draw the Examiner's attention to the following co-owned applications of the present application's assignee.

<b>Docket No.</b>	<b>Application No. (Patent No.)</b>	<b>Title</b>	<b>Filed (Issued)</b>
SKYWRKS.280A	13/468,749 (US 8,717,101)	APPARATUS AND METHODS FOR BIASING POWER AMPLIFIERS	05-10-2012 (05-06-2014)
SKYWRKS.280C1	14/242,150 (US 9,136,803)	APPARATUS AND METHODS FOR BIASING A POWER AMPLIFIER	04-01-2014 (09-15-2015)
SKYWRKS.280C2	14/825,053	APPARATUS AND METHODS FOR POWER AMPLIFIER BIASING	08-12-2015
SKYWRKS.280WO	PCT/US2012/037065	APPARATUS AND METHODS FOR BIASING POWER AMPLIFIERS	05-19-2012
SKYWRKS.280CN	201280033348.X (ZL201280033348.X)	APPARATUS AND METHODS FOR BIASING POWER AMPLIFIERS	01-03-2014 (09-21-2016)
SKYWRKS.280HK	14104216.4	APPARATUS AND METHODS FOR BIASING POWER AMPLIFIERS	05-02-2014
SKYWRKS.280KR	10-2013-7031862	APPARATUS AND METHODS FOR BIASING POWER AMPLIFIERS	11-29-2013
SKYWRKS.280TW	TW 101117000 (1519061)	APPARATUS AND METHODS FOR BIASING POWER AMPLIFIERS	05-11-2012 (01-21-2016)
SKYWRKS.280TWD1	TW 104133412	APPARATUS AND METHODS FOR BIASING POWER AMPLIFIERS	10-12-2015

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: May 16, 2017

By: /David Trossen/

David Trossen  
Registration No. 59,406  
Attorney of Record  
Customer No. 20995  
(415) 954-4114

25363426

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**INFORMATION DISCLOSURE STATEMENT**

Inventors	:	Ping Li et al.
App. No.	:	15/377,842
Filed	:	December 13, 2016
For	:	APPARATUS AND METHODS FOR BIASING OF POWER AMPLIFIERS
Examiner	:	Nguyen, Hieu P.
Art Unit	:	2842
Conf. No.	:	1052

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**References and Listing**

Pursuant to 37 CFR 1.56, an Information Disclosure Statement listing references is provided herewith. Copies of any listed foreign and non-patent literature references are being submitted.

**No Disclaimers**

To the extent that anything in the Information Disclosure Statement or the listed references could be construed as a disclaimer of any subject matter supported by the present application, Applicant hereby rescinds and retracts such disclaimer.

**Timing of Disclosure**

This Information Disclosure Statement is being filed after receipt of a First Office Action, but before the mailing date of a Final Action and before the mailing date of a Notice of Allowance. This Statement is accompanied by the fees set forth in 37 CFR 1.17(p). The Commissioner is hereby authorized to charge any additional fees which may be required or to credit any overpayment to Account No. 11-1410.

**Application No.:** 15/377,842  
**Filing Date:** December 13, 2016

Respectfully submitted,  
KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: May 16, 2017

By: /David Trossen/

David Trossen  
Registration No. 59,406  
Attorney of Record  
Customer No. 20995  
(415) 954-4114

25837444  
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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>	Application No.	15/377,842
	Filing Date	December 13, 2016
	First Named Inventor	Ping Li et al.
	Art Unit	2842
<i>(Multiple sheets used when necessary)</i>	Examiner	Nguyen, Hieu P.
SHEET 1 OF 1	Attorney Docket No.	SKYWRKS.280C3

<b>U.S. PATENT DOCUMENTS</b>					
Examiner Initials	Cite No.	Document Number <i>Number - Kind Code (if known)</i> Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	9,667,203	05-30-2017	Li et al.	
	2	2009/0212863	08-27-2009	Ishimaru	

<b>FOREIGN PATENT DOCUMENTS</b>						
Examiner Initials	Cite No.	Foreign Patent Document <i>Country Code-Number-Kind Code</i> Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T <sup>1</sup>

<b>NON PATENT LITERATURE DOCUMENTS</b>			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>1</sup>

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Examiner Signature	Date Considered
<p><b>*Examiner:</b> Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.</p>	

T<sup>1</sup> - Place a check mark in this area when an English language Translation is attached.

## Electronic Patent Application Fee Transmittal

<b>Application Number:</b>	15377842
<b>Filing Date:</b>	13-Dec-2016
<b>Title of Invention:</b>	APPARATUS AND METHODS FOR BIASING OF POWER AMPLIFIERS
<b>First Named Inventor/Applicant Name:</b>	Ping Li
<b>Filer:</b>	David R. Trossen/Alanna Wai
<b>Attorney Docket Number:</b>	SKYWRKS.280C3

Filed as Large Entity

### Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
<b>Miscellaneous-Filing:</b>				
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				

**Extension-of-Time:**  
Page 26 of 36

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Miscellaneous:</b>				
Submission- Information Disclosure Stmt	1806	1	180	180
<b>Total in USD (\$)</b>				<b>180</b>

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	29220371
<b>Application Number:</b>	15377842
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	1052
<b>Title of Invention:</b>	APPARATUS AND METHODS FOR BIASING OF POWER AMPLIFIERS
<b>First Named Inventor/Applicant Name:</b>	Ping Li
<b>Customer Number:</b>	20995
<b>Filer:</b>	David R. Trossen/Gustavo Lopez
<b>Filer Authorized By:</b>	David R. Trossen
<b>Attorney Docket Number:</b>	SKYWRKS.280C3
<b>Receipt Date:</b>	16-MAY-2017
<b>Filing Date:</b>	13-DEC-2016
<b>Time Stamp:</b>	13:33:05
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$180
RAM confirmation Number	051617INTEFSW13341400
Deposit Account	111410
Authorized User	Gustavo Lopez

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

<b>File Listing:</b>					
<b>Document Number</b>	<b>Document Description</b>	<b>File Name</b>	<b>File Size(Bytes)/ Message Digest</b>	<b>Multi Part /.zip</b>	<b>Pages (if appl.)</b>
1		OAR_SKYWRKS-280C3.pdf	97109  79d50ffef130bde53e4d4224e6711d2b34c840c	yes	10
<b>Multipart Description/PDF files in .zip description</b>					
<b>Document Description</b>			<b>Start</b>	<b>End</b>	
Amendment/Req. Reconsideration-After Non-Final Reject			1	1	
Claims			2	6	
Applicant Arguments/Remarks Made in an Amendment			7	10	
<b>Warnings:</b>					
<b>Information:</b>					
2		IDS_SKYWRKS-280C3.pdf	47523  b2865dad6e8b55c1a1060fa881d69135b71ac410	yes	3
<b>Multipart Description/PDF files in .zip description</b>					
<b>Document Description</b>			<b>Start</b>	<b>End</b>	
Transmittal Letter			1	2	
Information Disclosure Statement (IDS) Form (SB08)			3	3	
<b>Warnings:</b>					
<b>Information:</b>					
3	Fee Worksheet (SB06)	fee-info.pdf	30732  898031843d718871082970cdae33bd7c13ab1936	no	2
<b>Warnings:</b>					
<b>Information:</b>					
<b>Total Files Size (in bytes):</b>			175364		

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875	Application or Docket Number <b>15/377,842</b>	Filing Date <b>12/13/2016</b>	<input type="checkbox"/> To be Mailed
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ENTITY:  LARGE  SMALL  MICRO

**APPLICATION AS FILED – PART I**

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>				
			TOTAL	

\* If the difference in column 1 is less than zero, enter "0" in column 2.

**APPLICATION AS AMENDED – PART II**

	(Column 1)	(Column 2)	(Column 3)	RATE (\$)	ADDITIONAL FEE (\$)	
<b>AMENDMENT</b>	<b>05/16/2017</b>	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))					
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
				TOTAL ADD'L FEE	<b>0</b>	

	(Column 1)	(Column 2)	(Column 3)	RATE (\$)	ADDITIONAL FEE (\$)	
<b>AMENDMENT</b>		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total (37 CFR 1.16(i))	*	Minus	**	=	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))					
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
				TOTAL ADD'L FEE		

\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.  
 \*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".  
 \*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE  
/MARSHA RICHARDS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

**Notice of Allowability**

**Application No.**

15/377,842

**Applicant(s)**

LI ET AL.

**Examiner**

HIEU NGUYEN

**Art Unit**

2842

**AIA (First Inventor to File)  
Status**

No

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

- 1.  This communication is responsive to 10/13/2017.  
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.
- 2.  An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 3.  The allowed claim(s) is/are 1-5,7,9-11, 14-16 and 18-25. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).
- 4.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

**Certified copies:**

- a)  All    b)  Some    \*c)  None of the:
  - 1.  Certified copies of the priority documents have been received.
  - 2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

- 5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.  
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
- 6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- 1.  Notice of References Cited (PTO-892)
- 2.  Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
- 3.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
- 4.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
- 5.  Examiner's Amendment/Comment
- 6.  Examiner's Statement of Reasons for Allowance
- 7.  Other \_\_\_\_\_.

/HIEU NGUYEN/  
Primary Examiner, Art Unit 2842

The present application is being examined under the pre-AIA first to invent provisions.

### **DETAILED ACTION**

#### **Terminal Disclaimer**

The terminal disclaimer filed on 10/13/2017 has been reviewed and is accepted.

#### ***Allowable Subject Matter***

Claims 1-5, 7, 9-11, 14-16, and 18-25 are allowed.

The following is an examiner's statement of reasons for allowance:

Claims 1-5, 7, 9 and 10 are allowed over the prior art of record. The prior art of record considered individually or in combination, fails to fairly teach or suggest the claimed circuit comprising, among other limitations and unobvious limitations of "...and to mirror the control current to generate a correction current..." structurally and functionally interconnected with other limitations in the manner as cited in the claim.

Claims 11 and 22-25 are allowed over the prior art of record. The prior art of record considered individually or in combination, fails to fairly teach or suggest the claimed method comprising, among other limitations and unobvious limitations of "...mirroring the control current to generate a correction current using the gain correction circuit..." structurally and functionally interconnected with other limitations in the manner as cited in the claim.

Claims 14-16 and 18-21 are allowed over the prior art of record. The prior art of record considered individually or in combination, fails to fairly teach or suggest the claimed circuit comprising, among other limitations and unobvious limitations of "...and to mirror the control

Art Unit: 2842

current to generate a correction current...” structurally and functionally interconnected with other limitations in the manner as cited in the claim.

### *Conclusion*

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hieu P. Nguyen whose telephone number is 571-272-8577. The examiner can normally be reached on M-F: 8 A.M - 5P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Robert Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Hieu Nguyen/  
Primary Examiner  
Group Art Unit: 2842

Application/Control Number: 15/377,842  
Art Unit: 2842

Page 4

/H.P.N/

PTO/SB/08 Equivalent

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>	Application No.	15/377,842
	Filing Date	December 13, 2016
	First Named Inventor	Ping Li et al.
	Art Unit	2842
<i>(Multiple sheets used when necessary)</i>	Examiner	Nguyen, Hieu P.
SHEET 1 OF 1	Attorney Docket No.	SKYWRKS.280C3

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number <i>Number - Kind Code (if known)</i> Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
/H.P.N/	1	9,667,203	05-30-2017	Li et al.	
/H.P.N/	2	2009/0212863	08-27-2009	Ishimaru	

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Cite No.	Foreign Patent Document <i>Country Code-Number-Kind Code</i> Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T <sup>1</sup>

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>1</sup>

25837434  
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Examiner Signature	/HIEU P NGUYEN/	Date Considered	07/12/2017
<p><b>*Examiner:</b> Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.</p>			

T<sup>1</sup> - Place a check mark in this area when an English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.P.N/