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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* DOLPHIN ABESSOLO BIDZO,  
JANUSZ TOMASZ KLIMCZAK, DETLEF CLAWIN, and  
RADU MIRCEA SECAREANU

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Appeal 2019-006298  
Application 15/705,017  
Technology Center 2800

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Before JEFFREY T. SMITH, CHRISTOPHER C. KENNEDY, and  
MICHAEL G. McMANUS, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 1–8, which constitute all the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as NXP B.V. Appeal Br. 1.

## STATEMENT OF THE CASE

Appellant's invention is generally directed to electro-static discharge (ESD) protection for use in a radio frequency (RF) application. (Spec. 1.) Independent claim 1 is representative of the appealed subject matter and is reproduced below:

1. An electrostatic discharge, ESD, protection structure formed within a semiconductor substrate of an integrated circuit device; the integrated circuit device comprising:

a radio frequency domain;

a digital domain; and

the ESD protection structure characterized by:

an intermediate analog domain, located between the radio frequency domain and the digital domain, which comprises at least one radio frequency, RF, passive or active device that exhibits an impedance characteristic that increases as a radio frequency of operation increases.

Claims Appendix.

The following rejections are presented for our review:<sup>2</sup>

I. Claims 1, 2, 5, and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lai (US 2016/0225758 A1, Aug. 4, 2016) in view of Vanysacker (US 2008/0218920 A1, Sept. 11, 2008).

II. Claims 3, 4, and 6 are rejected under 35 U.S.C. § 103(a) as unpatentable over Lai in view of Vanysacker and further in view of Kireev (US 2013/0176647 A1, July 11, 2013).

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<sup>2</sup> The complete statement of the rejections on appeal appears in the Final Action. (Final Act. 2–7.)

III. Claim 7 is rejected under 35 U.S.C. § 103(a) as unpatentable over Lai in view of Vanysacker in further view of Chen (US 2007/0085144 A1, Apr. 19, 2007).

#### OPINION

We consider the record to determine whether Appellant has identified reversible error in the Examiner's rejection. *See In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (“[I]t has long been the Board's practice to require an applicant to identify the alleged error in the examiner's rejections,” citing *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential)).

The Examiner finds Lai teaches most aspects of the claimed invention including an electrostatic discharge (ESD) protection structure formed within an integrated circuit device (100) comprising: a radio frequency domain (106), a digital domain (102) wherein the ESD protection structure comprises an intermediate analog domain (108) located between the radio frequency domain and the digital domain. (Final Act. 3.) The Examiner acknowledges that Lai does not disclose that the intermediate domain includes “at least one radio frequency, RF, passive or active device that exhibits an impedance characteristic that increases as a frequency of operation increases,” as recited by claim 1. The Examiner relies on Vanysacker for teaching an ESD protection structure formed within a semiconductor substrate of an integrated circuit device (200) comprising a radio frequency domain (203) and a digital domain (202), and an intermediate domain (210), located between the radio frequency domain and the digital domain. (Final Act. 3.) The Examiner finds Vanysacker's arrangement allows “an ESD current to travel through the intermediate

domain, and further allow for better intermediate domain protection with lower line resistance at the impedance which can be a significant advantage in some high speed applications between the two different voltage domains.” (Final Act. 3; Vanysacker ¶ 36, Fig 2.) The Examiner concludes it would have been obvious to one of ordinary skill in the art to modify Lai’s device to have at least one radio frequency (RF) passive or active device that exhibits an impedance characteristic that increases as a frequency of operation increases in the device to obtain the advantages described by Vanysacker. (Final Act. 3–4.)

Appellant argues Lai and Vanysacker do not teach or suggest an intermediate analog domain, located between the radio frequency domain and the digital domain as required by claim 1. (Appeal Br. 3–6.) Appellant argues the Lai reference is silent regarding any teachings of RF domains and Lai explicitly teaches that the analogue domain includes the power rail 106 and the ground rail 108 but does not teach or suggest any RF domains. (Appeal Br. 4–5.) Appellant argues Vanysacker relates to an inter-domain ESD protection circuit between two different voltage domains but is entirely silent regarding any discussion of RF devices. (Appeal Br. 5.)

We limit our discussion to the Lai and Vanysacker references as argued by Appellant. The Examiner cited additional prior art to address various other limitations of the appealed claims.

Upon consideration of the evidence of record and each of Appellant’s contentions as set forth in the Appeal Brief, as well as the Reply Brief, we determine that Appellant has demonstrated reversible error in the Examiner’s rejections of claims 1–8.

The dispositive issue on appeal is:

Did the Examiner err reversibly in determining that the combination of Lai and Vanysacker teaches or suggests an intermediate analog domain, located between the radio frequency domain and the digital domain, which comprises at least one radio frequency passive or active device that exhibits an impedance characteristic that increases as a radio frequency of operation increases as required by independent claim 1?<sup>3</sup>

We agree with Appellant that the Examiner erred reversibly in the determination of obviousness for independent claim 1. The Examiner bears the initial burden of presenting a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (quoted with approval in *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007)).

As Appellant argues, Lai and Vanysacker do not teach or suggest an intermediate analog domain, located between the radio frequency domain and the digital domain as required by claim 1. (Appeal Br. 3–6.) The Examiner relies on Lai element 106 as disclosing a radio frequency domain. However, Lai discloses “[t]he analogue domain includes an analogue domain power rail 106.” (Lai, ¶ 44.) The Examiner has failed to establish that an analog domain is indistinct from a radio frequency domain as utilized by the claimed invention. Vanysacker teaches an impedance element provided between ground voltages of two voltage domains (Vanysacker,

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<sup>3</sup> We limit our discussion to claim 1, the only independent claim.

¶ 36.) Thus, the combination of Lai and Vanysacker fails to teach or suggest an intermediate analog domain located between the radio frequency domain and the digital domain as required by independent claim 1.

Accordingly, we REVERSE the Examiner's prior art rejections of claims 1–8 under 35 U.S.C. § 103(a) for the reasons the Appellant presents and we give above.

### CONCLUSION

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 2, 5, 8	103(a)	Lai, Vanysacker		1, 2, 5, 8
3, 4, 6	103(a)	Lai, Vanysacker, Kireev		3, 4, 6
7	103(a)	Lai, Vanysacker, Chen		7
<b>Overall Outcome</b>				1–8

REVERSED