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LG Display/FENWICK 801 California Street Mountain View, CA 94041			JANSEN II, MICHAEL J	
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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* YOON JONG CHOI, KEUK SANG KWON,  
SEUNG CHUL PARK, and NAM KYUN CHO

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Appeal 2019-002752  
Application 14/584,008  
Technology Center 2600

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Before ROBERT E. NAPPI, JOHNNY A. KUMAR, and BETH Z. SHAW,  
*Administrative Patent Judges.*

SHAW, *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, 5–9, 12–16, and 19–27. *See* Final Act. 1. 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 LG Display Co., Ltd. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to a display device with integrated touch screen. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A display device with integrated touch screen, the display device comprising:

a panel configured to include a plurality of electrodes, wherein the panel is division-driven in a display driving mode and a touch driving mode during one frame period including at least a first display period, a second display period, a first non-display period, and a second non-display period;

a display driver IC configured to apply a common voltage to the plurality of electrodes during the first and second display periods of said one frame period in the display driving mode, data voltages being applied to pixels of the panel during the first and the second display periods of said one frame period and not being applied to the pixels of the panel during the first and second non-display periods of said one frame period; and

an ROIC configured to apply, to the plurality of electrodes, a touch scan signal for a first duration in the first non-display period of said one frame period but not apply the touch scan signal to the plurality of electrodes during the second non-display period of said one frame period when the touch driving mode is a first touch driving mode, and apply, to the plurality of electrodes, the touch scan signal for a second duration in both the first and the second non-display periods when the touch driving mode is a second touch driving mode,

wherein the first touch driving mode is an idle driving mode, and the second touch driving mode is an active driving mode, and

wherein the first duration is shorter than the second duration.

REJECTION

Claims 1, 5–9, 12–16, and 19–27 are rejected under 35 U.S.C. § 103 as being unpatentable over Noguchi (US 2012/0050217 A1; published Mar.

1, 2012), Yamazaki (US 2015/0144920 A1, published May 28, 2015), and Butler (US 2016/0216833 A1, published July 28, 2016). Final Act. 8.

## OPINION

Independent claim 1 recites, in part:

apply, to the plurality of electrodes, a touch scan signal for a first duration in the first non-display period of said one frame period but not apply the touch scan signal to the plurality of electrodes during the second non-display period of said one frame period when the touch driving mode is a first touch driving mode, and apply, to the plurality of electrodes, the touch scan signal for a second duration in both the first and the second non-display periods when the touch driving mode is a second touch driving mode,

wherein the first touch driving mode is an idle driving mode, and the second touch driving mode is an active driving mode, and

wherein the first duration is shorter than the second duration.

An example of these features are described in Figure 4 and paragraphs 52–58 and 71–77 of the Specification. The touch scan signal is provided to the touch electrodes for a first duration in one of the two non-display periods (when display is OFF), but not in the other one of the two non-display periods (even though the display is OFF), but where the touch scan signal is provided to the touch electrodes for a second duration in both of the two non-display periods (when display is OFF) in the touch active mode, with the first duration being shorter than the second duration.

Appellant argues that none of the cited references teach or suggest that the touch scan signal is provided to the touch electrodes for a first duration in one of the two non-display periods (when display is OFF), but not in the other one of the two non-display periods (even though the display

is OFF), but where the touch scan signal is provided to the touch electrodes for a second duration in both of the two non-display periods (when display is OFF) in the touch active mode, with the first duration being shorter than the second duration. Appeal Br. 5, 6.

The Examiner finds that “Noguchi does not appear to teach an idle period where a touch period is skipped.” Ans. 11. The Examiner finds that Yamazaki and Butler teach the disputed limitations. Final Act. 11–12; Ans. 11–14. The Examiner explains that Noguchi teaches one frame period having two touch periods and two display periods. Ans. 14. The Examiner concludes that skipping a touch period, regardless of the definition given to the term “one frame period,” is a technique known in the art used to save power in an integrated touch display. *Id.*

Upon review of the record, we find that Yamazaki, in Figure 12B and paragraph 186, teaches skipping touch driving every *other* frame. Yamazaki teaches that while displaying 60 frames within 1 second, the touch operation occurs only in 30 frames within 1 second, skipping the touch operation every other entire frame. Yamazaki, Fig. 12B, ¶ 186. We agree with Appellant that the cited portions of Yamazaki therefore do not describe the concept of skipping touch driving during an idle period *within one frame period*. Yamazaki discloses skipping touch driving every other frame, but does not describe the concept of skipping touch driving during an idle period within one frame period.

Appellant proffers a construction of “frame” or “frame period” as a “time period between two consecutive Vsync pulses during [which] the entire display is refreshed once.” *See* Reply Br. 2, 6 (citing Choi Declaration). The Examiner considers this definition unreasonable, but does not offer another explicit claim construction for “frame” or “frame period.”

*See* Ans. 5–8. We need not reach the issue of the nuances of the VESA standard cited in the Choi Declaration in this appeal, however, because the claim itself defines one frame period as “including at least a first display period, a second display period, a first non-display period, and a second non-display period.” The claim language requires

an ROIC configured to apply, to the plurality of electrodes, a touch scan signal for a first duration in the first non-display period of said one frame period but not apply the touch scan signal to the plurality of electrodes during the second non-display period of said one frame period when the touch driving mode is a first touch driving mode.

Figure 12B of Yamazaki does not teach this limitation because Yamazaki teaches that each period 1F, 2F, . . . 60F in the display element is one full frame period. Yamazaki ¶¶ 180–186 (“consecutive frame periods”).

Moreover, although Butler teaches power saving by skipping a touch period, Butler’s system as depicted on page 13 of the Answer shows each alternative touch period is in a different frame (“Frame n-1,” “Frame n,” “Frame n+1”). Ans. 13; *see also* Butler ¶ 104 (“touch sensitive device can operate every two or three frames”). We agree with Appellant that the cited portion of Butler therefore does not teach a touch operation is skipped during a part of a frame but still occurs during another part of that same frame. Reply Br. 11. Therefore, Butler also does not teach “not apply the touch scan signal to the plurality of electrodes during the second non-display period of said one frame period when the touch driving mode is a first touch driving mode,” as recited in claims 1, 9, and 16.

Accordingly, on this record, we do not sustain the rejection of independent claims 1, 9, and 16. For the same reasons, we do not sustain the rejection of the remaining pending dependent claims.

CONCLUSION

We reverse the rejection of claims 1, 5–9, 12–16, and 19–27 under § 103.

DECISION SUMMARY

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 5–9, 12–16, 19–27	103	Noguchi, Yamazaki, Butler		1, 5–9, 12–16, 19–27

REVERSED