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Paper 12
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD,
Petitioner,

v.

UUSI, LLC d/b/a NARTRON,
Patent Owner.

Case IPR2016-00908
Patent 5,796,183

Before THOMAS L. GIANNETTI, CARL M. DEFRANCO, and KAMRAN JIVANI, *Administrative Patent Judges.*

JIVANI, *Administrative Patent Judge.*

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Petitioner Samsung Electronics Co., Ltd. filed, on April 15, 2016, a request for *inter partes* review of claims 37–41, 43, 45, 47, 48, 61–67, 69, 83–86, 88, 90, 91, 94, 96, 97, 99, 101, and 102 (the "Challenged Claims") of U.S. Patent No. 5,796,183 ("the '183 patent"). Paper 2 ("Petition" or "Pet."). On July 20, 2016, Patent Owner UUSI, LLC d/b/a Nartron filed a Preliminary Response. Paper 10 ("Prelim. Resp.").

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless it is determined that there is "a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Based on the information presented in the Petition and Preliminary Response, we are persuaded that there is a reasonable likelihood Petitioner would prevail with respect to claims 40, 41, 43, 45, 47, 48, 61–67, 69, 83–86, 88, 90, 91, 94, 96, 97, 99, 101, and 102. We are not persuaded, however, that there is a reasonable likelihood Petitioner would prevail with respect to claims 37–39.

Accordingly, we institute *inter partes* review of claims 40, 41, 43, 45, 47, 48, 61–67, 69, 83–86, 88, 90, 91, 94, 96, 97, 99, 101, and 102 on the grounds specified below. Our factual findings and conclusions at this stage of the proceeding are based on the evidentiary record developed thus far. This is not a final decision as to patentability of claims for which *inter partes* review is instituted. Further, we decline to institute *inter partes* review of claims 37–39 for the reasons set forth below.

II. BACKGROUND

A. The '183 patent (Ex. 1001)

The '183 patent relates to a "capacitive responsive electronic switching circuit used to make possible a 'zero force' manual electronic switch." Ex. 1001, 1:6–9. According to the '183 patent, zero force touch switches have no moving parts and no contact surfaces that directly switch loads. *Id.* at 1:40–41. Instead, such switches detect an operator's touch and use solid state electronics to switch loads or activate mechanical relays. *Id.* at 1:42–44. "A common solution used to achieve a zero force touch switch has been to make use of the capacitance of the human operator." *Id.* at 3:12–14. The '183 patent recites three methods of capacitive touch switches use to detect an operator's touch, one of which relies on the change in capacitive coupling between a touch terminal and ground. *Id.* at 3:14–15, 3:44–46. In this method, "[t]he touch of an operator then provides a capacitive short to ground via the operator's own body capacitance that lowers the amplitude of oscillator voltage seen at the touch terminal." *Id*. at 3:52–56. Significantly, the operator of a capacitive touch switch using this method need not come in conductive contact with the touch terminal. *Id*. at 3:57–59. Rather, the operator needs only to come into close proximity of the switch. *Id.*

The '183 patent recognizes that placing the capacitive touch switches described above in dense arrays can result in unintended actuations. *Id*. at 3:65–4:3. One method of addressing this problem known in the art involves placing guard rings around each touch pad. *Id*. at 4:4–10. Another known method of addressing this problem is to adjust the sensitivity of the touch pad to a point where the operator's finger must entirely overlap a touch terminal. *Id*. at 4:10–14. "Although these methods (guard rings and

sensitivity adjustment) have gone a considerable way in allowing touch switches to be spaced in comparatively close proximity, a susceptibility to surface contamination remains as a problem." *Id*. at 4:14–18.

The '183 patent seeks to overcome the problem of unintended actuation of small capacitive touch switches "by using the method of sensing body capacitance to ground in conjunction with redundant detection circuits." *Id*. at 5:33–35. Specifically, the '183 patent's touch detection circuit operates at frequencies at or above 50 kHz, and preferably at or above 800 kHz, in order to minimize the effects of surface contamination on the touch pads. Operating at these frequencies also improves sensitivity, allowing close control of the proximity required for actuation of small sized touch terminals in a close array, such as a keyboard. *Id*. at 5:48–57.

The '183 patent has been subject to two reexaminations: *Ex Parte* Reexamination Control Nos. 90/012,439, certificate issued April 29, 2013 ("Reexam 1") and 90/013,106, certificate issued June 27, 2014 ("Reexam 2"). Claims 37, 38, and 39 were added to the '183 Patent during Reexam 1 and all other Challenged Claims were added during Reexam 2. *See generally* Exs. 1005 and 1006.

B. Illustrative Claims

Petitioner presents its arguments concerning Ground I primarily in the context of independent claim 37. Pet. 39–60 (referring to Petitioner's analysis of claim 37 and its dependent claims 38 and 39). Patent Owner similarly presents its arguments primarily in the context of independent claim 37. Prelim. Resp. 33. Claims 37 and 40 illustrate the claimed subject matter and are reproduced below with bracketed material added.

37. A capacitive responsive electronic switching circuit for a controlled device comprising:

[37a] an oscillator providing a periodic output signal having a predefined frequency, wherein an oscillator voltage is greater than a supply voltage;

[37b] a microcontroller using the periodic output signal from the oscillator, the microcontroller selectively providing signal output frequencies to a closely spaced array of input touch terminals of a keypad, the input touch terminals comprising first and second input touch terminals;

[37c] the first and second touch terminals defining areas for an operator to provide an input by proximity and touch; and

[37d] a detector circuit coupled to said oscillator for receiving said periodic output signal from said oscillator, and coupled to said first and second touch terminals, said detector circuit being responsive to signals from said oscillator via said microcontroller and a presence of an operator's body capacitance to ground coupled to said first and second touch terminals when proximal or touched by the operator to provide a control output signal for actuation of the controlled device, said detector circuit being configured to generate said control output signal when the operator is proximal or touches said second touch terminal after the operator is proximal or touches said first touch terminal.

40. A capacitive responsive electronic switching circuit comprising:

[40a] an oscillator providing a periodic output signal having a predefined frequency;

[40b] a microcontroller using the periodic output signal from the oscillator, the microcontroller selectively providing signal output frequencies to a plurality of small sized input touch terminals of a keypad, wherein the selectively providing comprises the microcontroller selectively providing a signal output frequency to each row of the plurality of small sized input touch terminals of the keypad;

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