

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

In re Patent of: Byron Hourmand  
U.S. Patent No.: 5,796,183 Attorney Docket No.: 39521-0062IP4  
Issue Date: August 18, 1998  
Appl. Serial No.: 08/601,268  
Filing Date: January 31, 1996  
Title: CAPACITIVE RESPONSIVE ELECTRONIC SWITCHING  
CIRCUIT

**SECOND DECLARATION OF DR. PHILLIP WRIGHT**

1. My name is Dr. Phillip Wright. I am Managing Director and Chief Analyst at WRT Associates. A summary of my qualifications and my curriculum vitae were attached to my previous declaration (APPLE-1003). For the sake of brevity, I will not describe my qualifications again in the present declaration, as they have not materially changed.

2. In writing this Declaration, I have considered the following: my own knowledge and experience, including my work experience in communications, consumer electronics, mobile handsets, displays, engineering services and defense electronics.; and my experience in working with others involved in those fields. In addition, I have analyzed the following publications and materials, in addition to other materials I cite in my declaration:

- Paper 12 - Board's Institution Decision (“Decision”)
- Paper 16 - Patent Owner's Response (“Response”)
- Ex. 2004 – Declaration of Dr. Darran Cairns

3. I have been retained on behalf of Apple Inc. to offer technical opinions relating to U.S. Patent No. 5,796,183 (“the ’183 Patent” or APPLE-1001), and prior art references relating to its subject matter.

4. Counsel has informed me that I should consider these materials through the lens of a person having ordinary skill in the art related to the ’183 Patent at the time of the earliest purported priority date of the ’183 Patent, and I have done so during my review of these materials. I understand the ’183 Patent issued on August 18, 1998 from U.S. Patent Application No. 08/601,268 (“the ’268 application”), filed January 31, 1996. *See* APPLE-1002. There is no claim to an earlier priority application. It is therefore my understanding that the earliest priority date purported by the ’183 patent is January 31, 1996 (hereinafter the “Critical Date”).

5. In this declaration, I apply the same definition of a person of ordinary skill in the art as of the Critical Date of the ’183 patent (hereinafter a “POSITA”) included in my prior declaration.

6. I am familiar with the knowledge and capabilities of a POSITA as noted above. Specifically, my experience working in industry and with designers and engineers practicing in industry has allowed me to become directly and personally familiar with the level of skill of individuals and the general state of the art.

7. I have no financial interest in either party or in the outcome of this proceeding. I am being compensated for my work as an expert on an hourly basis, for all tasks involved. My compensation is not dependent in any manner on the outcome of these proceedings or on the content of my opinions.

8. My opinions, as explained below, are based on my education, experience, and background in the fields discussed above. Unless otherwise stated, my testimony below refers to the knowledge of a POSITA in the fields as of the Critical Date.

### **Analysis**

9. When a circuit is being designed, the circuit designer will select component values to include in the circuit based on the design objectives of the circuit designer. For example, when selecting an oscillator for use in a circuit, the designer will select the oscillator at least partially based on the frequency of the output signal produced by the oscillator. When a fixed frequency oscillator is selected, the circuit designer can also select the frequency produced by that oscillator. A POSITA would have understood that by selecting specific component values that he or she can design an oscillator that produces a specific frequency. Accordingly, when the circuit designer designs a circuit that includes an oscillator, such as the touch circuit of Chiu, the circuit designer selects the frequency

produced by that oscillator from the range of frequencies that can be obtained by varying component values.

10. Patent Owner's expert Dr. Cairns agreed with this characterization during his deposition. *See* APPLE-1033, 29:1-5 (“Q:...if you were designing a circuit that included an oscillator, you would select an oscillator knowing its frequency, correct? A: Yes.”), 29:6-16 (“Q: And the rest of the circuit would be designed to handle the signal of that frequency, correct...? A: ...you would design the system so that it...worked with the oscillator that you had.”), 30:7-12 (“Q: So if an oscillator appears in a circuit, it's safe to say that it was selected at the design stage for that circuit? A:... at the design stage, you would plan on the oscillator and the components that were in there.”).

11. There were also oscillators that produced periodic signals of different frequencies as of the Critical Date. For example, Chiu describes different oscillators that produced frequencies “greater than 150 kHz and preferably in the range of between 150 kHz and 500 kHz.” APPLE-1005, 2:27-30 (describing that). Even the '183 patent describes “those skilled in the art” were aware of oscillators producing different frequencies. Ex. 1001, 14:22-33. When a circuit designer designs a particular oscillator (and a particular frequency of that particular oscillator), he or she selects the particular frequency from multiple possible frequencies.

12. In my opinion, the selection of the oscillator component during the design of the Chiu circuit necessarily includes the selection of a frequency. The combination of Chiu and Schwarzbach consequently teaches “a ‘selection’ [of a frequency] that occurs during the design of a touch circuit.”

13. The '183 patent recites the following:

As will be apparent to those skilled in the art, the values of the resistors and capacitors utilized in oscillator 200 may be varied from those disclosed above to provide for different oscillator output frequencies. As discussed above, however, oscillator 200 is preferably constructed so as to output a square wave having a frequency of 50 kHz or greater, and more preferably, of 800 kHz or greater. In some cases it may be necessary to use lower gain bandwidth product transistors or filtration to achieve a softer roll-off of the square edges to reduce high frequency noise emissions. When this is done the amplitude of the oscillator voltage can be increased to compensate. APPLE-1001, 14:22-33.

14. This passage does not describe varying an oscillator frequency during operation of a touch touch circuit, and a POSITA would not have understood it to describe a variable frequency oscillator.

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