United States Court of Appeals for the Federal Circuit

WI-LAN, INC.,
Plaintiff-Appellant

v.

APPLE INC.,
Defendant-Cross Appellant

2014-1437, -2014-1485

Appeals from the United States District Court for the Eastern District of Texas in Nos. 2:11-cv-00068-JRG, 2:12-cv-00600-JRG, Judge J. Rodney Gilstrap.

Decided: January 8, 2016

ROBERT A. COTE, McKool Smith, P.C., New York, NY, argued for plaintiff-appellant. Also represented by SAMUEL FRANKLIN BAXTER, Marshall, TX; JASON BLACKSTONE, RICHTER DARRYL BURKE, SETH R. HASENOUR, ROSEMARY T. SNIDER, Dallas, TX; DIRK D. THOMAS, Washington, DC.

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Menlo Park, CA; ANDREW D. SILVERMAN, New York, NY; ASHLEE N. LIN, MIGUEL JESUS RUIZ, MARK C. SCARSI, Milbank, Tweed, Hadley & McCloy, LLP, Los Angeles, CA.

Before REYNA, WALLACH, and HUGHES, *Circuit Judges.*

REYNA, *Circuit Judge.*

Wi-LAN, Inc. ("Wi-LAN") is the assignee of U.S. Patent No. RE37,802 ("'802 patent"), which concerns a wireless data communication technique called "Multi-Code Direct-Sequence Spread Spectrum" (MC-DSSS). Wi-LAN asserts that the patented technique is embodied in several modern wireless communications standards.

On February 2, 2011, Wi-LAN sued Apple Inc. ("Apple") and other technology companies in the United States District Court for the Eastern District of Texas for infringing claims 1 and 10 of the '802 patent by manufacturing and selling products complying with various wide-area communication standards. A jury found that Apple did not infringe and that the claims are invalid. The district court denied Wi-LAN's motion for judgment as a matter of law ("JMOL") and for a new trial with respect to infringement, but it granted Wi-LAN's motion for JMOL of no invalidity.

Wi-LAN appeals the trial court's denial of JMOL and its motion for a new trial on infringement, and Apple cross-appeals the grant of JMOL of no invalidity. Because the jury's verdict of non-infringement was supported by substantial evidence, we *affirm* the district court's denial of JMOL as to non-infringement. Because the trial court's JMOL determination of no invalidity was based on a post-verdict reconstruction of the claims, we *reverse* the district court's grant of JMOL of no invalidity.

I. BACKGROUND

A. The Patented Technology

Wireless communication devices use radio waves to communicate digital data by modulating the frequency, amplitude, or phase of those waves according to pre-established patterns. Each pattern communicates a respective "symbol" corresponding to a given combination of bits. J.A. 3546. Devices that detect the radio waves can observe and interpret the modulation patterns to recover the transmitted symbols.

"Direct-Sequence Spread Spectrum" (DSSS) is a prior art modulation technique that prevents third parties from intercepting and interpreting radio communications. Using DSSS, a radio transmitter "spreads" a signal across a band of frequencies by multiplying the signal against a pseudo-random signal called "pseudo-noise." The pseudo-noise signal corresponds to a particular code, such that a receiver with a corresponding code can "invert" (i.e., reverse) the spreading to recover the original signal. A third party scanning the spectrum would detect only what appears to be natural ambient noise, while the intended recipient could use the corresponding code to detect and decode the communication. A drawback of DSSS is that each communication occupies an entire band of frequency, which makes it difficult for multiple users to transmit data simultaneously.

"Code Division Multiple Access" (CDMA) is another prior art modulation technique that addresses the bandwidth shortcomings of DSSS by allowing multiple users to transmit on the same band using different spreading codes. Under CDMA, the signals from the multiple users form a combined noise-like signal, and each receiver can use its respective code to recover the communications intended for it from the combined signal.

The '802 patent discloses a "multi-code" variation of DSSS (MC-DSSS), which enhances throughput by permitting a single transmitter to utilize multiple codes simultaneously. '802 patent col. 1 l. 66 – col. 2 l. 5. The specification describes two embodiments, corresponding to Figures 1 and 4 respectively.

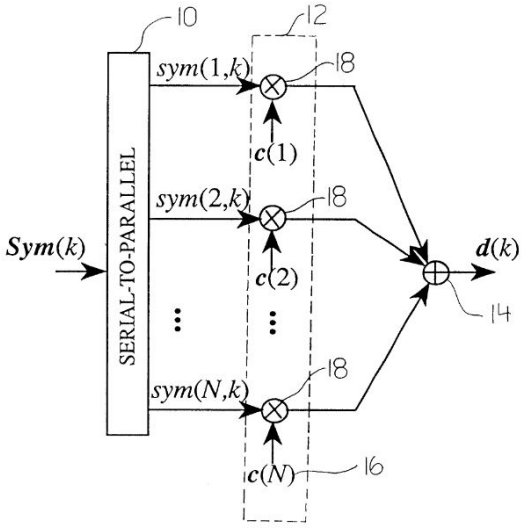

FIGURE 1

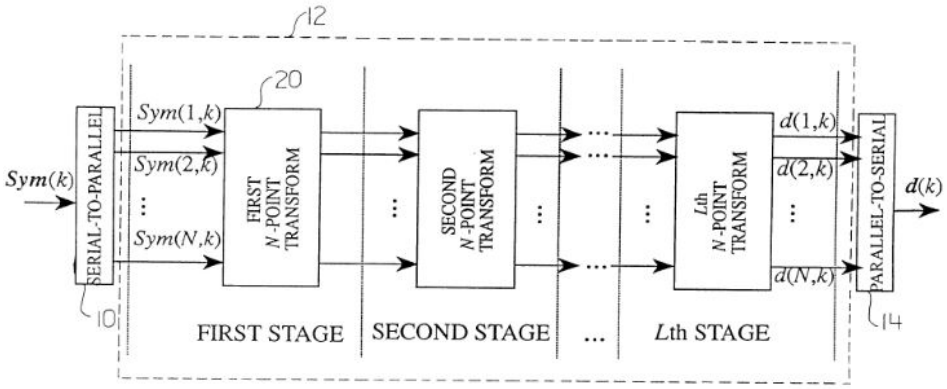

FIGURE 4

The embodiment of Figure 1 includes: (1) a converter 10 for converting a stream of data symbols into multiple sets

of N data symbols each, (2) a computing means 12 that operates on the sets of data symbols to produce "modulated data symbols corresponding to an invertible randomized spreading of the stream of data symbols" and (3) a combiner 14 for combining the modulated data symbols for transmission. *Id.* Fig. 1, col. 4 ll. 1–7. The computing means modulates each data symbol using a respective DSSS code, which may be derived using a series of mathematical transforms, as shown in Figure 3. *Id.* col. 4 ll. 7–12, col. 4 ll. 29–34. The patent lists a dozen exemplary mathematical transforms, including the complex "randomizer transform" of Figure 8. *Id.* col. 4 l. 66 – col. 5 l. 12. In the alternative embodiment of Figure 4, the computing means modulates the N data symbols by applying the transforms directly to the N data symbols rather than indirectly via the DSSS codes. *Id.* col. 4 ll. 38–43.

Asserted claim 1 recites a transceiver for transmitting data using three components:

> 1. A transceiver for transmitting a first stream of data symbols, the transceiver comprising:
>
> a converter for converting the first stream of data symbols into plural sets of N data symbols each;
>
> first computing means for operating on the plural sets of N data symbols to produce modulated data symbols corresponding to an invertible randomized spreading of the first stream of data symbols; and
>
> means to combine the modulated data symbols for transmission.

The claimed transceiver includes a "converter" for converting a stream of data symbols into multiple sets of data symbols, where each set includes N symbols. Second, the transceiver includes a "computing means" for operating on the sets to produce "modulated data symbols corre-

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