UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC. AND TELEFONAKTIEBOLAGET
LM ERICSSON,
Petitioner

v.

INTELLECTUAL VENTURES II LLC,
Patent Owner

Patent 7,269,127

Title: METHODS AND APPARATUS FOR MULTI-CARRIER COMMUNICATIONS WITH VARIABLE CHANNEL BANDWIDTH

IPR Case No. IPR2014-01185

SUPPLEMENTAL DECLARATION OF ZYGMUNT J. HAAS, PH.D. UNDER 37 C.F.R. § 1.68 ON BEHALF OF PETITIONER

I, Zygmunt Haas, do hereby declare:

1. My background and qualifications are detailed in ¶¶ 5-13 in my previous declaration submitted as exhibit ERIC-1009 in this IPR, i.e., IPR2014-01185.

2. In the preparation for this declaration, I have studied:

(1) The '127 Patent, ERIC-1001;

(2) U.S. Patent No. 5,732,113 ("Schmidl"), ERIC-1002;

(3) U.S. Patent No. 6,411,649 ("Arslan"), ERIC-1003;

(4) U.S. Provisional Application 60/322,786, filed Sept. 17, 2001 ("Mody Provisional"), ERIC-1035;

(5) The excerpts from Ex. 2001, Declaration of Dirk Hartogs, provided by counsel for Ericsson in Appendix A; and

(6) The excerpts from ERIC-1034, Deposition of Dirk Hartogs, Ph.D., provided by counsel for Ericsson cited herein.

3. My understanding of the relevant legal standards remain the same as submitted in my previous declaration, ERIC-1009, ¶¶ 14-17.

Dr. Hartogs mischaracterizes the claim term "insert pilot symbols into data blocks"

4. Patent Owner's expert, Dr. Hartogs, interprets the claim term "insert pilot symbols into data blocks" as "insert pilot symbols into at least one data

block." That is, Dr. Hartogs asserts that the claim requires that pilot symbols be inserted into a discrete data block, not into (or among) a set of data blocks. For example, Dr. Hartogs states that "[t]he pilot symbols are frequency domain symbols inserted into a data block in the frequency domain." Hartogs Decl., ¶ 41. But Dr. Hartogs goes further and asserts that the term "insert pilot symbols into data blocks" excludes any embodiments that would result in a separate pilot symbol in the time domain. Dr. Hartogs is incorrect on this point.

5. Dr. Hartogs, repeatedly explains that the '127 patent does not support embodiments that would result in a separate pilot symbol in the time domain. For example,

> Q. So is it your opinion then that pilot symbols don't show up as complete symbols in the time domain in the '127 patent?
>
> …
>
> A. I believe that's correct.

Hartogs Depo, 136:19-23. And also:

> Q. So is it then your opinion that, unlike training symbols, which show up in the time domain as time domain OFDM symbols, the pilot symbols would never show up in the time domain as a separate and distinct OFDM time domain symbol?
>
> A. As long as data was being provided to the system, that's correct.

Hartogs Depo, 139:21-140:4.

6. Dr. Hartog's position that there would never be a separate and distinct pilot symbol in the time domain is in direct contradiction to the '127 patent for several reasons. First and most glaringly, U.S. Provisional Application 60/322,786 ("Mody Provisional"), which is incorporated by reference into the '127 patent, explicitly shows that the inventors intended for there to be separate time-domain pilot symbols. For example, Mody Provisional explains that ***"[p]ilots in the form of known OFDM symbols*** are sent for at least Q symbol periods (QT_s) in order to obtain a unique solution for the channel coefficient estimates. … The OFDM symbol period is given by $T_s = NT+T_g$, where $1/T$ is the sample rate into the OFDM modulator." ERIC-1035, p. 2. Since the pilot symbols are "known OFDM symbols," this implies that they are known to the receiver, do not contain any user data in the frequency domain, and contain only pilot symbols in the frequency domain. Thus, Mody Provisional discloses separate OFDM pilot symbols in the time domain.

7. Mody Provisional's description of pilot symbols as separate time-domain symbols is consistent with the '127 patent specification. For example, referring to the time domain, the '127 patent explains:

> ***Training symbols*** are typically ***added as prefixes to the data structures*** (e.g., at the beginning of frame structure) to enable training (i.e., time and frequency synchronization) between the transmitter and receiver of a MIMO communication system. These ***training symbols***

> ***can be referred to as preambles and are part of the preamble structures***. Space-time signal structures are constructed using STP for training symbols and data symbols individually. Furthermore, ***pilot structures (or pilots) are symbols*** that are also constructed by STP and ***have the same structure as preambles [training symbols]***. However, instead of being placed as a prefix to the data structure, the ***pilot structures are periodically arranged within groups of data symbols***.

ERIC-1001, 2:10-25. Thus, pilot symbols have the same structure as training symbols (also known as preambles) in the time domain, but the pilot symbols are arranged within groups of data symbols, as opposed to being at the beginning of a transmission.

8. Dr. Hartogs explains that it is conceivable that during transmission of data blocks, an entire block in the frequency domain could be filled with pilots, but he would call the resulting time-domain symbol a training symbol, which is in direct contradiction to the passage from the '127 patent quoted above.

> Q. Is there a limit to how many bills [*sic* – pilots] could be adjacent to one another in a particular data block the way you've represented it here?
>
> A. Only -- I'd say the only limitations here are put up by the cleverness of the implementer. ***Obviously, if you get to the point where you have the entire block filled with pilots, then it really has just become another training symbol*** and you probably have enough information to just reinitialize your transmission.

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