

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte GRANT CHRISTIANSEN, KARL KIRK NORTHRUP,  
ROBERT CLAIR KELLER,  
JOSE LUIS MELENDEZ and JOHN LING WING SO

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Appeal No. 2004-2153  
Application No. 09/923,510

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ON BRIEF

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Before FRANKFORT, MARTIN, and MACDONALD, Administrative Patent Judges.

FRANKFORT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 9, 10, 12 through 14 and 22 through 25, all of the claims remaining in the application.

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Appellants' invention is directed to an optical wireless link providing a modulated light beam for conveying data packets and beam alignment control packets time multiplexed into a single packet stream, and to a system for communicating such a packet stream between first and second data devices. Independent claims 9 and 22 are representative of the subject matter on appeal and a copy those claims can be found in the Appendix to appellants' brief.

The prior art references relied upon by the examiner in rejecting the claims on appeal are:

Willebrand	6,239,888	May 29, 2001
Reichman et al. (Reichman)	6,535,716	Mar. 18, 2003 (filed: June 15, 1999)

Claims 9, 10, 12 through 14 and 22 through 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Willebrand in view of Reichman.

Rather than attempt to reiterate the examiner's full commentary with regard to the above-noted § 103 rejection and the conflicting viewpoints advanced by appellants and the examiner regarding that rejection, we make reference to the examiner's answer (Paper No. 11, mailed January 29, 2004) for the reasoning

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in support of the rejection, and to appellants' brief (Paper No. 10, filed October 14, 2003) and reply brief (Paper No. 12, filed March 29, 2004) for the arguments thereagainst.

#### OPINION

In reaching our decision in this appeal, we have given careful consideration to appellants' specification and claims<sup>1</sup>, to the applied prior art references, and to the respective positions articulated by appellants and the examiner. As a consequence of our review, we have made the determination that the examiner's § 103 rejection will not be sustained. Our reasoning follows.

In the rejection of claims 9, 10, 12 through 14 and 22 through 25 under 35 U.S.C. § 103(a), the examiner urges (answer, pages 3-7) that Willebrand discloses a system for optical communication of a data stream between first and second data devices generally like that claimed by appellants and includes an optical wireless link that provides data and control information

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<sup>1</sup>Notwithstanding the examiner's indication on page 2 of the answer that the copy of the appealed claims appearing in the Appendix to appellants' brief is correct, we note that a copy of claim 14, which both appellants and the examiner indicate to be part of this appeal, does not appear in the Appendix. Dependent claim 14 appears in appellants' original submission of claims filed August 6, 2001.

multiplexed onto a single modulated light beam. However, the examiner notes that the optical communication system of Willebrand differs from appellants' claimed subject matter in that Willebrand fails to specifically teach data and control information which are transmitted in packets and fails to teach data packets time division multiplexed with control packets into a single packet stream. To account for these differences the examiner looks to Reichman, urging that

...it is clear that Willebrand teaches that data and control information are multiplexed onto a single modulated light beam (reference numerals 24,46 in Figure 11, column 13[,] lines 12-16, column 15[,] lines 6-10). Furthermore, Willebrand teaches that control and data signals are encoded with each other and that a variety of different techniques are known and available for encoding and decoding information onto a from a [sic] fundamental wavelength (column 6[,] lines 37-48). One skilled in the art would clearly have recognized that one of the well known methods of coding and decoding signals with one another is via time division multiplexing. Reichman, in the same field of endeavor, teaches it is well known in the art to time division multiplex control and data packets onto a single frequency (column 4[,] lines 54-62). It is clear that the teachings of Willebrand (column 6[,] lines 37-48 and reference numeral 46,48 in Figure 11) and the teachings of Reichman (column 4[,] lines 54-62) would have suggested time division multiplexing of data and control packets to one skilled in the art. One skilled in the art would have been motivated to time division multiplex control and data packets in order

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to have the ability to send control information at predetermined intervals of time. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have time division multiplexed control and data packets, as taught by Reichman, in the device of Willebrand (answer, page 4).

From the foregoing, it appears the examiner is of the view that it would have been obvious to one of ordinary skill in the art at the time of appellants' invention to make a wholesale substitution of time division multiplexing, like that mentioned in Reichman, for the frequency/wave division multiplexing specifically called for and used in Willebrand. However, our review of the disclosures and teachings of the two patents relied upon by the examiner does not support any such sweeping substitution of one form or type of multiplexing for another in the optical communication system disclosed by Willebrand.

The disclosure in Willebrand (e.g., col. 6, lines 37-47) specifically discusses conducting optical signals over the free-space (24) and the fiber links (26) therein using laser beams whose fundamental frequency or wavelength "is encoded by signals of other frequencies which contain the information to be communicated," and generally refers to this as "wave division

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multiplexing (WDM)." Column 3, line 50+ of Willebrand also highlights the use of erbium doped fiber amplifiers (ERDAs) and expressly notes that the broad band amplification of ERDAs around a 1.55 um fundamental frequency allows the ERDAs to be integrated into systems using wavelength division multiplexing (WDM), resulting in the ability to communicate separate information at different wavelengths simultaneously in a single optical fiber and avoiding the need for electro-optical conversions. Columns 4 and 5 of Willebrand describe additional "important improvements" in the optical communication network therein resulting from the use of ERDAs, e.g., allowing operation of an optical communication network with free-space links at a fundamental wavelength which is compatible with or approximately equal to the fundamental wavelength typically used in long-haul optical fiber communication systems and allowing the operation of free-space links at laser wavelengths which are safer to human eyesight but with sufficient link power margin to avoid many of the adverse influences of atmospheric attenuation and divergence.

Appellants argue, and we strongly agree, that despite all the examiner's comments, it is clear that Willebrand purposefully

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contemplates frequency division multiplexing as the general mechanism for encoding data/information to be communicated by laser beams over the free-space links (24) therein and provides reasons why this form of multiplexing is desirable. Because of this, it is our view that one of ordinary skill in the art considering the teachings of Reichman along with those in Willebrand pointed to by the examiner would not have been led to make a wholesale substitution of time division multiplexing for the frequency division multiplexing used in Willebrand's laser communication system.

Since we have determined that the teachings and suggestions in the prior art specifically relied upon by the examiner would not have made the subject matter as a whole of independent claims 9 and 22 on appeal obvious to one of ordinary skill in the art at the time of appellants' invention, we must refuse to sustain the examiner's rejection of those claims under 35 U.S.C. § 103(a). It follows that the examiner's rejection of dependent claims 10, 12, 13, 14 and 23 through 25 under 35 U.S.C. § 103(a) on the basis of those same teachings in the prior art will likewise not be sustained.

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Accordingly, the decision of the examiner to reject claims 9, 10, 12 through 14 and 22 through 25 of the present application under 35 U.S.C. § 103(a) is reversed.

In addition to the foregoing, we REMAND this application to the examiner for a decision on the record as to whether or not a rejection of any of claims 9, 10, 12 through 14 and 22 through 25 would be appropriate based on a somewhat different consideration of the combined teachings of Willebrand and Reichman. More specifically, we point the examiner to the disclosure in Willebrand (e.g., columns 12-15) regarding the use of a separate wavelength for transmitting network status, control, and management information over free-space links (24) and, particularly, the disclosure at column 13, line 65 through column 15, line 10. We first ask the examiner to consider whether the disclosure at column 13, line 65 through column 14, line 25 of Willebrand (wherein unique identifiers for the various head stations and separate addressing of each link head station are discussed in the context of status, control, and management information communication) actually suggests the use of data packets and control packets time division multiplexed into a

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single packet stream or not, and, notwithstanding the outcome of that inquiry, to further consider whether it would have been obvious to one of ordinary skill in the art at the time of appellants' invention (based on the combined teachings of Willebrand and Reichman) to utilize time division multiplexing to transmit the noted status, control and management information over the single specific wavelength signal disclosed in Willebrand in a single packet stream, especially since Willebrand does not appear to provide any specific disclosure concerning how these three different types of information are to be carried on the reserved separate wavelength signal.

REVERSED AND REMANDED

CHARLES E. FRANKFORT	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
	)	
JOHN C. MARTIN	)	APPEALS AND
Administrative Patent Judge	)	
	)	INTERFERENCES
	)	
	)	
ALLEN R. MACDONALD	)	
Administrative Patent Judge	)	

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