

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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BROADCOM CORPORATION,  
Petitioner,

v.

WI-FI ONE, LLC,  
Patent Owner.

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Case IPR2013-00601  
Patent 6,772,215 B1

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Before KARL D. EASTHOM, KALYAN K. DESHPANDE, and  
MATTHEW R. CLEMENTS, *Administrative Patent Judges*.

CLEMENTS, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

## I. INTRODUCTION

Broadcom Corporation (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1, 2, 4, 6, 8, 15, 22, 25, 26, 29, 32, 34, 45, 46, 49, 52, and 54 (the “challenged claims”) of U.S. Patent No. 6,772,215 B1 (Ex. 1001, “the ’215 patent”). Paper 3 (“Pet.”). Telefonaktiebolaget L. M. Ericsson<sup>1</sup> (“Patent Owner”) filed an election to waive its Preliminary Response. Paper 22. On March 10, 2014, we instituted an *inter partes* review of all challenged claims on certain grounds of unpatentability alleged in the Petition. Paper 29 (“Dec. to Inst.”).

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 40, “PO Resp.”) to which Petitioner filed a Reply (Paper 49, “Pet. Reply”). Patent Owner filed a Motion to Exclude (Paper 53), which Petitioner opposed (Paper 58). Patent Owner filed a Reply to Petitioner’s Opposition to its Motion to Exclude. Paper 59. Oral hearing was held on December 8, 2014.<sup>2</sup>

The Board has jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

Petitioner has shown, by a preponderance of the evidence, that claims 1, 2, 4, 6, 8, 15, 22, 25, 26, 29, 32, 34, 45, 46, 49, 52, and 54 of the ’215 patent are unpatentable. Patent Owner’s Motion to Exclude is denied.

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<sup>1</sup> On July 11, 2014, Patent Owner filed an Updated Mandatory Notice indicating that the ’215 patent had been assigned to Wi-Fi One, LLC, and that Wi-Fi One, LLC and PanOptis Patent Management, LLC were now the real parties-in-interest. Paper 43.

<sup>2</sup> A transcript of the oral hearing is included in the record as Paper 65.

### A. Related Proceedings

Petitioner and Patent Owner indicate that the '215 patent is involved in a case captioned *Ericsson Inc. v. D-LINK Corp.*, Civil Action No. 6:10-cv-473 (E.D. Tex.) (“D-Link Lawsuit”), and in an investigation at the U.S. International Trade Commission captioned *In the Matter of Certain Electronic Devices, Including Wireless Communication Devices, Tablet Computers, Media Players and Televisions, and Components Thereof*, ITC Inv. No. 337-TA-862. Pet. 1–2; Paper 6, 1. Patent Owner also identifies an appeal at the Federal Circuit captioned *Ericsson Inc. v. D-LINK Corp.*, Case Nos. 2013-1625, -1631, -1632, and -1633. Paper 6, 1. Petitioner also filed two petitions for *inter partes* review of related patents: IPR2013-00602 (U.S. Patent No. 6,466,568) and IPR2013-00636 (U.S. Patent No. 6,424,625).

### B. The '215 Patent

The '215 patent relates to the telecommunications field and, in particular, to a method for minimizing feedback responses in Automatic Repeat Request (ARQ) protocols. Ex. 1001, 1:14–17. When data is conveyed between nodes in a network, certain algorithms are used to recover from the transmission of erroneous data and the loss of data between the nodes. *Id.* at 1:20–23. An algorithm commonly used is referred to as an ARQ protocol. *Id.* at 1:23–25. Each node, or peer entity, in a network includes a receiver and a sender. *Id.* at 1:26–29. The units of data conveyed between peer entities commonly are referred to as Protocol Data Units (“PDUs”). *Id.* at 1:29–30. The basic function of an ARQ protocol is to allow the receiver to request that the sender retransmit PDUs that were lost

during transmission or contained errors. *Id.* at 1:33–37. The receiver can inform the sender about which PDUs were received correctly and/or can inform the sender about which PDUs were *not* received correctly. *Id.* at 1:38–41. When the sender receives this information, it retransmits the “lost” PDUs. *Id.* at 1:41–42. Several ARQ protocols, such as Stop-and-Wait ARQ, Go-back-N ARQ, and Selective-Repeat ARQ, existed at the time that the ’215 patent was filed and were well known. *Id.* at 2:17–21.

Figure 1 of the ’215 patent is reproduced below.

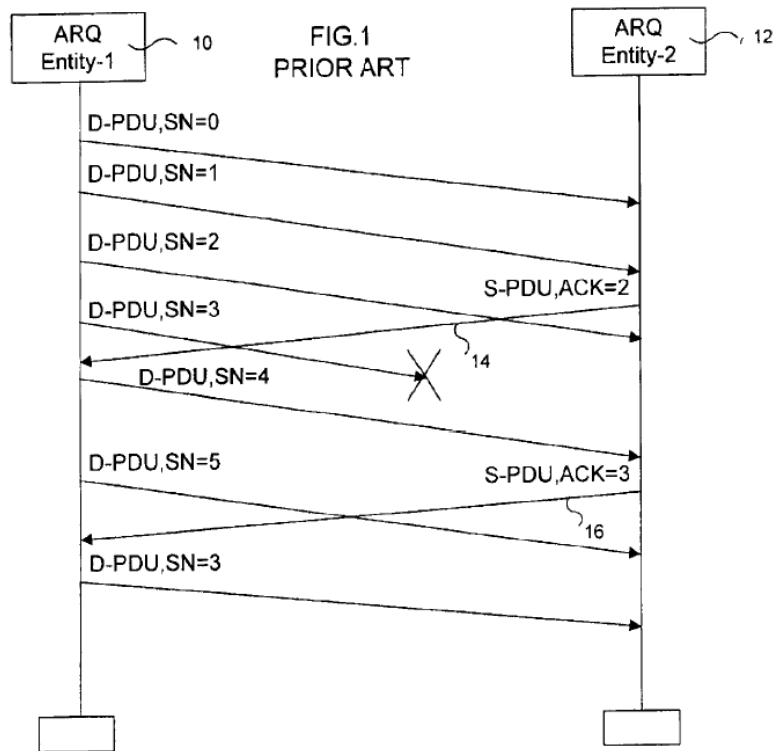


Figure 1 illustrates the use of ARQ protocols. *Id.* at 2:22–23. A sequence of transmitted Data-PDUs (“D-PDUs”) and Status-PDUs (“S-PDUs”) is shown. *Id.* at 2:28–29. A D-PDU includes user data, a sequence number (“SN”), and possibly piggybacked error control information. *Id.* at 2:29–31. The sequence number (“SN”) is associated with each D-PDU to identify that

specific D-PDU. *Id.* at 2:32–34. An S-PDU includes status information but no user information. *Id.* at 2:31–32.

According to the '626 patent, two main methods were used in the prior art for coding the SNs within S-PDUs: (1) a list of SNs to be retransmitted; and (2) a bitmap to represent the SNs to be retransmitted. *Id.* at 2:48–52. As such, known S-PDUs included a format identifier that could be used by a receiver to distinguish between the different PDU formats.

Figures 2 and 3 of the '215 patent are reproduced below:

FIG. 2  
PRIOR ART

PDU_format=S-PDU
Length=5
SN=3
SN=4
SN=5
SN=9
SN=16

FIG. 3  
PRIOR ART

PDU_format=S-PDU
SSN=2
BITMAP=0100001111111000

Figure 2 shows an S-PDU that uses the list method to code SNs. *Id.* at 2:60–62. Figure 3 shows an S-PDU that uses the bitmap method to code SNs. *Id.* at 3:18–19. According to the '215 patent, a significant problem with existing ARQ protocols is that fixed length messages are used, which leads to a waste of bandwidth because unnecessary overhead information is transmitted. *Id.* at 3:46–50; *see also id.* at Table 1, 4:1–13. According to the '215 patent, a significant need existed for a method that can be used to minimize the size of S-PDUs in an ARQ protocol or, if it is not possible to fit all SNs into a single S-PDU, to maximize the number of SNs in an S-PDU with limited size. *Id.* at 4:33–38.

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