

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC. and ARRIS GROUP, INC.,
Petitioner,

v.

TQ DELTA, LLC,
Patent Owner.

Case IPR2016-01007¹
Patent 8,432,956 B2

Before SALLY C. MEDLEY, TREVOR M. JEFFERSON, and
MATTHEW R. CLEMENTS, *Administrative Patent Judges*.

JEFFERSON, *Administrative Patent Judge*.

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

¹ ARRIS Group, Inc., who filed a Petition in IPR2017-00422, has been joined in this proceeding.

I. INTRODUCTION

On November 4, 2016, we instituted *inter partes* review based upon the ground asserted in the Petition (Paper 2, “Pet.”) by Cisco Systems, Inc. (“Petitioner”), challenging claims 1–10 of U.S. Patent No. 8,432,956 B2 (Ex. 1001, “the ’956 patent”) and a Preliminary Response to the Petition (Paper 7, “Prelim. Resp.”) filed by TQ Delta, LLC (“Patent Owner”). Decision to Institute (Paper 8, “Dec.”). We instituted *inter partes* review on the ground that claims 1–10 of the ’956 patent are unpatentable under 35 U.S.C. § 103(a) over Milbrandt,² Hwang,³ and ANSI T1.413.⁴ Dec. 22–23; *see* Pet. 7–8 (setting forth grounds).

Following institution, Patent Owner filed a Patent Owner’s Response (Paper 13, “PO Resp.”) and Petitioner filed a Reply (Paper 16, “Reply”). With respect to the Reply, Patent Owner filed a paper listing portions of Petitioner’s Reply it deemed beyond the proper scope of a reply. Paper 21. Petitioner filed a response to Patent Owner’s listing. Paper 25.

Patent Owner filed an objection to Petitioner’s evidence (Paper 18) and a Motion to Exclude (Paper 28, “PO Mot. Exc.”), Petitioner filed an Opposition (Paper 32, “Pet. Opp. Exc.”), and Patent Owner filed a Reply (Paper 35, “PO Reply Exc.”). Patent Owner also filed a Motion for

² U.S. Patent No. 6,636,603 B1; issued Oct. 21, 2003 (Ex. 1011) (“Milbrandt”).

³ U.S. Patent No. 6,590,893 B1; issued July 8, 2003 (Ex. 1013) (“Hwang”).

⁴ AMERICAN NATIONAL STANDARDS INSTITUTE, *Network and Customer Installation Interfaces – Asymmetric Digital Subscriber Line (ADSL) Metallic Interface*, 1–186 (1995) (ANSI T1.413-1995) (Ex. 1014) (“ANSI T1.413”).

Observation (Paper 30) to which Petitioner filed a Response (Paper 33). We held a consolidated hearing on August 3, 2017, for this case and related cases, and a transcript of the hearing is included in the record. Paper 37 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that the challenged claims are unpatentable. Patent Owner’s Motion to Exclude is *dismissed*.

A. Related Proceedings

The parties state that the ’956 patent has been asserted in *TQ Delta LLC v. Comcast Cable Commc’ns LLC*, Case No. 1:15-cv-00611-RGA (D. Del.); *TQ Delta LLC v. Coxcom LLC et al.*, Case No. 1:15-cv-00612-RGA (D. Del.); *TQ Delta LLC v. DirecTV LLC*, Case No. 1:15-cv-00613-RGA (D. Del.); *TQ Delta LLC v. DISH Network Corp. et al.*, Case No. 1:15-cv-00614-RGA (D. Del.); *TQ Delta LLC v. Time Warner Cable Inc., et al.*, Case No. 1:15-cv-00615-RGA (D. Del.); *TQ Delta LLC v. Verizon Servs. Corp.*, Case No. 1:15-cv-00616-RGA (D. Del.); *TQ Delta LLC v. 2Wire, Inc.*, Case No. 13-cv-1835-RGA (D. Del.); *TQ Delta LLC v. Zhone Techs., Inc.*, Case No. 13-cv-1836-RGA (D. Del.); *TQ Delta LLC v. ZyXEL Commc’ns, Inc. and ZyXEL Commc’ns Corp.*, Case No. 13-cv-02013-RGA (D. Del.); *TQ Delta LLC v. ADTRAN, Inc.*, Case No. 1:14-cv-00954-RGA (D. Del.); *ADTRAN, Inc. v. TQ Delta LLC*, 15-cv-00121-RGA (D. Del.); *Arris Group, Inc. v. TQ Delta, LLC*, IPR2016-00428; *Arris Group, Inc. v.*

TQ Delta, LLC, IPR2016-00429; and Arris Group, Inc. v. TQ Delta, LLC, IPR2016-00430. Paper 6, 3–4; Pet. 1–2.

B. The '956 Patent (Ex. 1001)

The '956 patent generally describes “exchanging diagnostic and test information between transceivers over a digital subscriber line.” Ex. 1001, 1:62–66. A transceiver or modem (remote terminal (RT)) is located at a customer premises downstream from a central office (CO), while a transceiver or modem is also located upstream from the customer premises at the CO. *Id.* at 2:1–5. Figure 1, below, is a functional block diagram of the communication system of the invention.

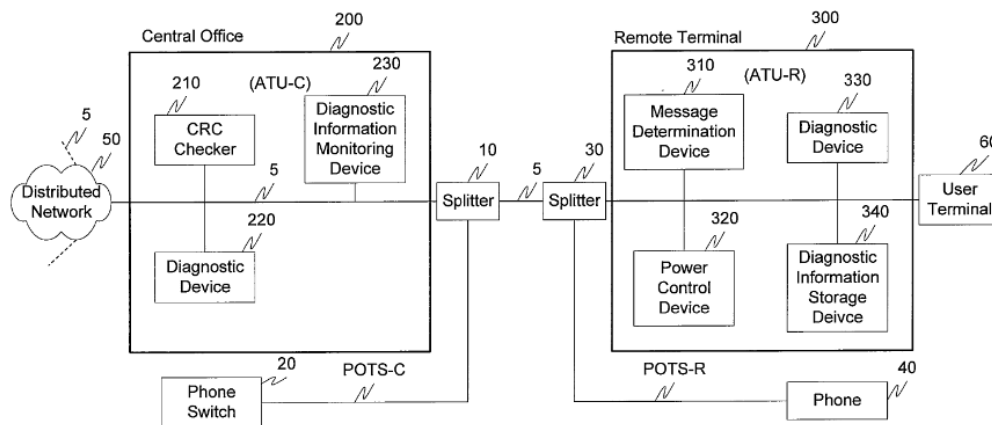


Fig. 1

Figure 1, reproduced above, shows modem components associated with the diagnostic link mode, that comprise central office (CO) modem 200 and remote terminal (RT) modem 300, both connected via link 5 to splitter 10 to phone switch 20 and splitter 30 to phone 40. *Id.* at 4:61–5:7. CO modem 200 includes CRC checker 210, diagnostic device 220, and diagnostic information monitoring device 230. *Id.* The RT modem 300 includes

message determination device 310, power control device 320, diagnostic device 330 and diagnostic information storage device 340. *Id.*

“In the diagnostic link mode, the RT modem sends diagnostic and test information in the form of a collection of information bits to the CO modem.” *Id.* at 3:50–52. In one method, system diagnostic and test information are exchanged using multiple carriers with a higher order quadrature amplitude modulation (QAM) with more than 1 bit per carrier. *Id.* at 3:56–59.

C. Illustrative Claims

Claims 1, 3, 5, 7, and 9 of the '956 patent are independent. Claims 1, 5, and 9 are illustrative and reproduced below (Ex. 1001, 8:47–58, 9:8–18, 10:3–28):

1. A transceiver capable of transmitting diagnostic information over a communication channel using multicarrier modulation comprising:

a transmitter portion capable of transmitting a message, wherein the message comprises one or more data variables that represent the diagnostic information, wherein bits in the message are modulated onto DMT symbols using Quadrature Amplitude Modulation (QAM) with more than 1 bit per subchannel and wherein at least one data variable of the one or more data variables comprises an array representing power level per subchannel information.

5. In a transceiver capable of transmitting diagnostic information over a communication channel using multicarrier modulation, a method comprising:

transmitting a message, wherein the message comprises one or more data variables that represent the diagnostic information, wherein bits in the message are

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