Trials@uspto.gov
571-272-7822

Paper No. 9
Entered: October 26, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC., DISH NETWORK, LLC,
COMCAST CABLE COMMUNICATIONS, LLC,
COX COMMUNICATIONS, INC.,
TIME WARNER CABLE ENTERPRISES LLC,
VERIZON SERVICES CORP., and ARRIS GROUP, INC.,
Petitioner,

v.

TQ DELTA, LLC,
Patent Owner.

Case IPR2016-01020[1]
Patent 9,014,243 B2

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

CLEMENTS, *Administrative Patent Judge*.

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

---

[1] DISH Network, LLC, who filed IPR2017-00254, and Comcast Cable Communications, LLC, Cox Communications, Inc., Time Warner Cable Enterprises LLC, Verizon Services Corp., and ARRIS Group, Inc., who filed IPR2017-00418, have been joined in this proceeding. Paper 14; Paper 15.

I. INTRODUCTION

In this *inter partes* review, instituted pursuant to 35 U.S.C. § 314, Cisco Systems, Inc. ("Petitioner") challenges claims 1–25 ("the challenged claims") of U.S. Patent No. 9,014,243 B2 (Ex. 1001, "the '243 patent"), owned by TQ Delta, LLC ("Patent Owner"). 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. Procedural History

Petitioner filed a Petition requesting an *inter partes* review of claims 1–25 of the '243 patent. Paper 2 ("Pet."). Patent Owner filed a Preliminary Response. Paper 6. On November 4, 2016, we instituted *inter partes* review of claims 1–25 of the '243 patent under 35 U.S.C. § 103(a)[2] on the following grounds. Paper 7 ("Inst. Dec."), 16.

References	Claims
Shively[3] and Stopler[4]	1–3, 7–9, 13–16, and 20–22
Shively, Stopler, and Gerszberg[5]	4–6, 10–12, 17–19, and 23–25

[2] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. §§ 102 and 103. Because the '243 patent has an effective filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA versions of 35 U.S.C. §§ 102 and 103.
[3] U.S. Patent No. 6,144,696; issued Nov. 7, 2000 (Ex. 1011, "Shively").
[4] U.S. Patent No. 6,625,219 B1; issued Sept. 23, 2003 (Ex. 1012, "Stopler").
[5] U.S. Patent No. 6,424,646 B1; issued July 23, 2002 (Ex. 1013, "Gerszberg").

Thereafter, Patent Owner filed a Patent Owner Response (Paper 12, "PO Resp."), to which Petitioner filed a Reply (Paper 17, "Reply"). Pursuant to an Order (Paper 21), Patent Owner filed a listing of alleged statements and evidence in connection with Petitioner's Reply deemed to be beyond the proper scope of a reply. Paper 22. Petitioner filed a response to Patent Owner's listing. Paper 29.

Patent Owner filed a Motion to Exclude (Paper 28), Petitioner filed an Opposition (Paper 33), and Patent Owner filed a Reply (Paper 37). Patent Owner also filed a Motion for Observation (Paper 27) to which Petitioner filed a Response (Paper 34).

We held a consolidated hearing on August 3, 2017, for this case and related Case IPR2016-01021, and a transcript of the hearing is included in the record. Paper 39 ("Tr.").

B. Related Proceedings

The parties indicate that the '243 patent is the subject of several district court cases. Pet. 1; Paper 5, 2–3; Paper 10.

C. The '243 patent (Ex. 1001)

The '243 patent discloses multicarrier communication systems that lower the peak-to-average power ratio (PAR) of transmitted signals. Ex. 1001, 1:26–29. A value is associated with each carrier signal, and a phase shift is computed for each carrier signal based on the value associated with that carrier signal. *Id.* at 2:36–40. The computed phase shift value is combined with the phase characteristic of that carrier signal to substantially scramble the phase characteristics of the carrier signals. *Id.* at 2:40–43.

Figure 1 illustrates the multicarrier communication system and is reproduced below:

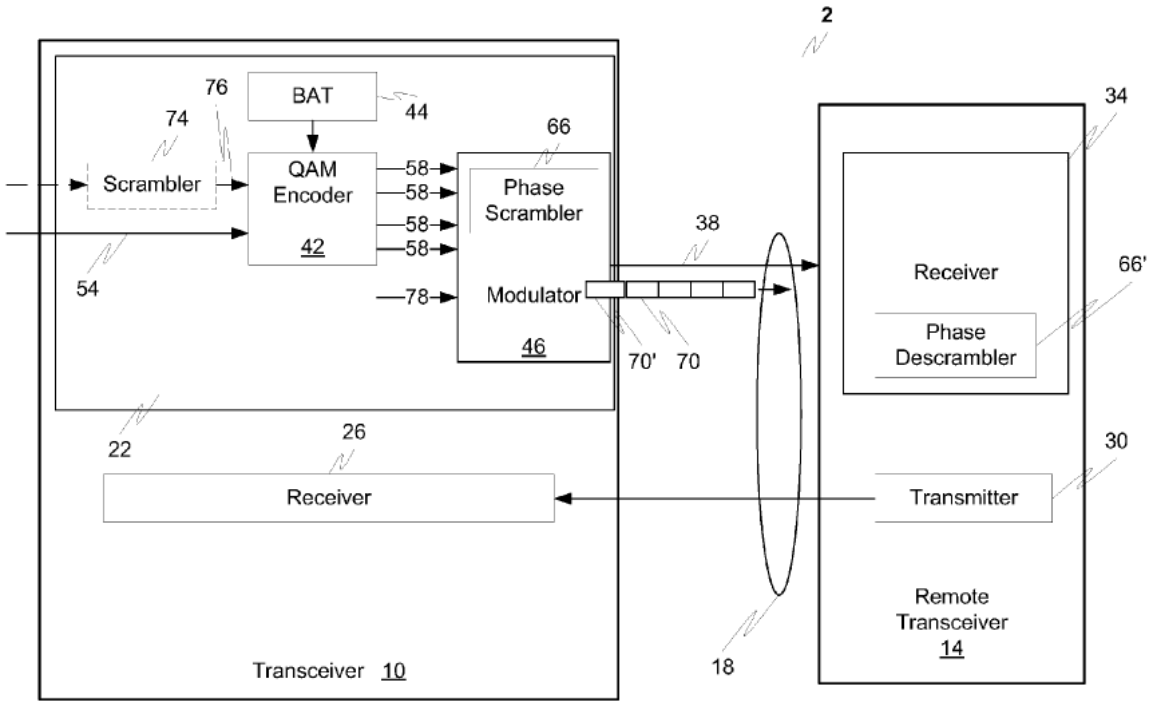

FIG. 1

Figure 1 illustrates the multicarrier communication system, digital subscriber line (DSL) communication system 2 includes discrete multitone (DMT) transceiver 10 communicating with remote transceiver 14 over communication channel 18 using transmission signal 38 having a plurality of carrier signals. *Id.* at 3:25–29. DMT transceiver 10 includes DMT transmitter 22 and DMT receiver 26. *Id.* at 3:29–30. Remote transceiver also includes transmitter 30 and receiver 34. *Id.* at 3:30–32. DMT transmitter 22 transmits signals over communication channel 18 to receiver 34. *Id.* at 3:38–41.

DMT transmitter 22 includes quadrature amplitude modulation (QAM) encoder 42, modulator 46, bit allocation table (BAT) 44, and phase scrambler 66. QAM encoder 42 has a single input for receiving serial data bit stream 54 and multiple parallel outputs to transmit QAM symbols 58

generated by QAM encoder 42 from bit stream 54. Modulator 46 provides DMT modulation functionality and transforms QAM symbols 58 into DMT symbols 70. *Id.* at 4:10–13. Modulator 46 modulates each carrier signal with a different QAM symbol 58, and, therefore, this modulation results in carrier signals having phase and amplitude characteristics based on QAM symbol 58. *Id.* at 4:13–16. Modulator 46 also includes phase scrambler 66 that combines a phase shift computed for each QAM-modulated carrier signal with the phase characteristics of that carrier signal. *Id.* at 4:29–32.

D. Illustrative Claims

Petitioner challenges claims 1–25 of the '243 patent. Pet. 8–52. Claims 1, 7, 13, and 20 are independent claims. Claims 2–6 depend from independent claim 1, claims 8–12 depend from independent claim 7, claims 14–19 depend directly or indirectly from independent claim 13, and claims 21–25 depend from independent claim 20. Claim 1 is illustrative of the claims at issue and is reproduced below:

> 1. A method, in a multicarrier communications transceiver comprising a bit scrambler followed by a phase scrambler, comprising:
>
> scrambling, using the bit scrambler, a plurality of input bits to generate a plurality of scrambled output bits, wherein at least one scrambled output bit is different than a corresponding input bit;
>
> scrambling, using the phase scrambler, a plurality of carrier phases associated with the plurality of scrambled output bits;
>
> transmitting at least one scrambled output bit on a first carrier; and
>
> transmitting the at least one scrambled output bit on a second carrier.

Ex. 1001, 10:58–11:4.

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.