

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner,

v.

TQ DELTA, LLC,
Patent Owner.

Case IPR2016-01020
Patent 9,014,243 B2

Before SALLY C. MEDLEY, KALYAN K. DESHPANDE, and
TREVOR M. JEFFERSON, *Administrative Patent Judges*.

DESHPANDE, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Cisco Systems, Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–25 of U.S. Patent No. 9,014,243 B2 (Ex. 1001, “the ’243 patent”). Paper 2 (“Pet.”). TQ Delta, LLC (“Patent Owner”) filed a corrected Preliminary Response. Paper 6 (“Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” After considering the Petition, the Preliminary Response, and associated evidence, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of claims 1–25 of the ’243 patent. Thus, we authorize institution of an *inter partes* review of claims 1–25 of the ’243 patent.

A. Related Proceedings

Petitioner indicates that the ’243 patent is the subject of several proceedings. *See* Pet. 1.

B. 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:

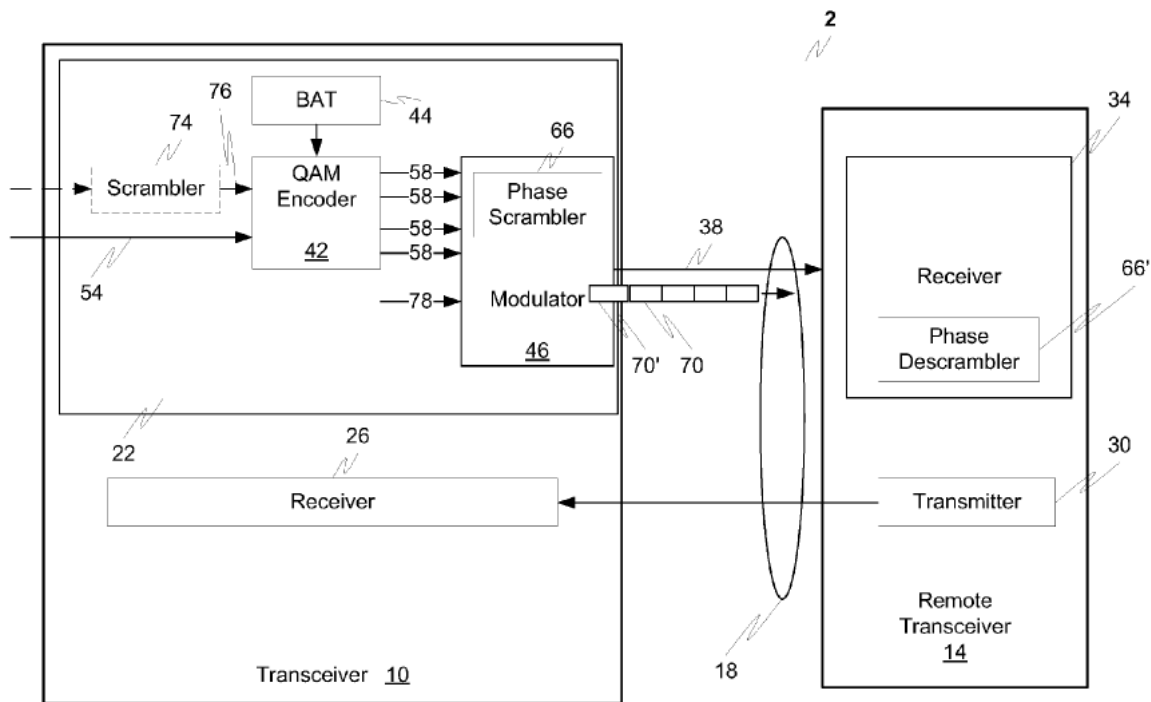


FIG. 1

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 8 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.

C. Illustrative Claim

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.

D. The Alleged Grounds of Unpatentability

The information presented in the Petition sets forth proposed grounds of unpatentability of claims 1–25 of the '243 patent under 35 U.S.C.

§ 103(a) as follows (*see* Pet. 8–52):¹

References	Claims Challenged
Shively ² and Stopler ³	1–3, 7–9, 13–16, and 20–22
Shively, Stopler, and Gerszberg ⁴	4–6, 10–12, 17–19, and 23–25

II. ANALYSIS

A. Claim Construction

The Board interprets claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *see* *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142–46 (2016). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the

¹ Petitioner supports its challenge with the Declaration of Jose Tellado, PhD. (Ex. 1009).

² U.S. Patent No. 6,144,696; issued Nov. 7, 2000 (Ex. 1011) (“Shively”).

³ U.S. Patent No. 6,625,219 B1; issued Sept. 23, 2003 (Ex. 1012) (“Stopler”).

⁴ U.S. Patent No. 6,424,646 B1; issued July 23, 2002 (Ex. 1013) (“Gerszberg”).

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