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Table with columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
Row 1: 14/728,919, 06/02/2015, Joseph J. Kakande, 4100-817288-US, 1487
Row 2: 114592, 7590, 01/08/2020, EXAMINER BARUA, PRANESH K
Row 3: Nokia Technologies Oy, C/O Davidson Sheehan LLP, 6836 Austin Center Blvd., Suite 320, Austin, TX 78731, ART UNIT 2637, PAPER NUMBER
Row 4: NOTIFICATION DATE 01/08/2020, DELIVERY MODE ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOSEPH J. KAKANDE

Appeal 2019-000901
Application 14/728,919
Technology Center 2600

Before, ROBERT E. NAPPI, JOHN A. EVANS, and JUSTIN BUSCH,
Administrative Patent Judges.

BUSCH, *Administrative Patent Judge.*

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1, 2, 7–10, 14–16, and 20–25. Claims 6, 19, and 26 are indicated as containing allowable subject matter. Ans. 3. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Alcatel-Lucent USA, Inc. Appeal Br. 1.

CLAIMED SUBJECT MATTER

Appellant’s disclosure “relates generally to optical networks and, more particularly, to transceivers in optical networks.” Spec. ¶ 2. According to the Specification, the invention reduces optical receiver cost and power consumption “by implementing a multi-endpoint optical receiver that includes an analog switch to receive a plurality of analog electric signals generated by a corresponding plurality of photodetectors and selectively provide one of the plurality of analog electric signals for conversion to a digital electrical signal.” Spec. ¶ 18; *see* Spec., Abstract.² Rejected claims 1, 9, and 15 are independent claims. Claim 1 is reproduced below:

1. An apparatus, comprising:
 - a plurality of optical/electrical (O/E) converters to couple to a corresponding plurality of optical fibers;
 - an analog switch to receive a plurality of analog electric signals generated by the plurality of O/E converters and to selectively provide one of the plurality of analog electric signals for conversion to a digital electrical signal; and
 - a controller to provide a control signal to the analog switch, wherein the control signal indicates the one of the plurality of analog electric signals, and wherein the analog switch asserts at least one loss-of-signal (LOS) signal to the controller in response to at least one of the plurality of analog electric signals having a value that is below a threshold value; and wherein the controller provides the control signal having a value

² We note that each pending claim (including claims 6, 19, and 26) recites “the analog switch asserts at least one loss-of-signal (LOS) signal to the controller in response to at least one of the plurality of analog electric signals having a value that is below a threshold value.” Appeal Br. 11–16 (Claims Appendix). Notably, the Figures do not depict, and the Specification does not describe, switches detecting and/or signaling an LOS. Rather, the Figures and Specification indicate an amplifier detects and signals the LOS. Spec. ¶¶ 38–41, Fig. 8.

determined based on the at least one LOS signal and priorities of individual ones of the O/E converters.

REJECTIONS

Claims 1, 8, 9, 15, 16, 22, and 24 stand rejected under 35 U.S.C. § 103 as obvious in view of Dahlfort (US 2014/0140689 A1; May 22, 2014), Takeda (US 2015/0229411 A1; Aug. 13, 2015), Agazzi (US 2011/0081152 A1; Apr. 7, 2011), and Natori (US 2006/0120718 A1; June 8, 2006). Final Act. 4–13.

Claims 2 and 10 stand rejected under 35 U.S.C. § 103 as obvious in view of Dahlfort, Takeda, Agazzi, Natori, and Raza (US 2010/0211664 A1; Aug. 19, 2010). Final Act. 13–15.

Claims 7, 14, and 20 stand rejected under 35 U.S.C. § 103 as obvious in view of Dahlfort, Takeda, Agazzi, Natori, and Watanabe (US 2005/0226628 A1; Oct. 13, 2005). Final Act. 15–17.

Claims 21, 23, and 25 stand rejected under 35 U.S.C. § 103 as obvious in view of Dahlfort, Takeda, Agazzi, Natori, and Cannon (US 2004/0131353 A1; July 8, 2005). Final Act. 17–20.

ANALYSIS

The Examiner finds a combination of Dahlfort, Takeda, Agazzi, and Natori teaches or suggests every limitation recited in independent claims 1, 9, and 15. Final Act. 4–12. Of particular relevance to this Appeal, the Examiner finds Dahlfort teaches or suggests an apparatus comprising multiple O/E converters coupled to optical fibers, an analog switch to receive multiple analog electric signals generated by the O/E converters and to *selectively provide one of the received signals*, and a controller to provide a control signal to the switch *indicating the one of the received signals*. Final

Act. 4 (citing Dahlfort ¶ 33, Figs. 2B, 3B). The Examiner finds Dahlfort fails to teach an analog switch asserting a loss-of-signal (LOS) signal to the controller in response to an analog signal being below a threshold value and providing a control signal based upon the LOS signal, but finds Takeda teaches this subject matter. Final Act. 5 (citing Takeda ¶¶ 76, 82, Fig. 9). The Examiner concludes it would have been obvious to a person of ordinary skill in the art to incorporate Takeda's LOS detector functionality into Dahlfort's switch functions in order to send a control signal based on the "LOS signal so that the apparatus can be aware of losses during transmission and take precautionary steps to fix the loss in order to reduce congestion or loss of communication." Final Act. 5. The Examiner further finds Takeda teaches using a detected loss of signal to prevent damage to a photodetector and explains that it was well understood that an optical receiver with a damaged photodetector would not properly detect signals, which would lead to loss of communication. Ans. 4 (citing Takeda ¶ 97).

Appellant argues combining Dahlfort and Takeda, as the Examiner proposes, still fails to teach an "analog switch asserts at least one loss-of-signal (LOS) signal to the controller in response to at least one of the plurality of analog electric signals having a value that is below a threshold value," as recited in the claims. Appeal Br. 5–6; Reply Br. 2–4. Appellant further argues the Examiner's asserted rationale for combining Dahlfort's and Takeda's teachings are not supported by a rational underpinning and the Examiner's rationale does not explain why a person of ordinary skill in the art would have further modified the proposed combination (i.e., the combination resulting from incorporating Takeda's teachings into Dahlfort's switch) so that Dahlfort's switch would have used the LOS signal to select

one of the electrical inputs received from the O/E converters. Appeal Br. 6–8; Reply Br. 4.

Dahlfort discloses optical transceiver including, among other elements, an analog switch that selects one of two photo detectors (e.g., an avalanche photodiode or Positive Intrinsic negative (ADP/PIN)). Dahlfort ¶ 33, Fig. 3B. Dahlfort depicts and describes the switch as receiving incoming light from the two PDs and selecting one of the signals to output to a linear amplifier and trans impedance amplifier (LA/TIA). Dahlfort ¶ 33, Fig. 3B.

Takeda relates to systems and methods for controlling variable optical attenuators (VOAs) in optical receivers. Spec., Abstract. Takeda discloses that VOAs may help protect photodiodes (PDs), which are one type of photodetector, from damage caused by being exposed to “an input optical power beyond a rated value.” Takeda ¶ 4. Specifically, the VOAs may attenuate the power to which the photodiodes are exposed “by feedback-controlling a loss amount” (the loss amount is referred to as a VOA loss) so “the reception power of the PD does not exceed the rated value.” Takeda ¶ 4. Takeda’s VOA receives a wavelength-division multiplexed (WDM) signal via an optical transmission line and, based on a control signal, adjusts the WDM signal’s power and outputs a power-adjusted signal to a demultiplexer. Takeda ¶¶ 35–36. The demultiplexer then provides the power-adjusted demultiplexed optical signals to respective optical receivers “such that an input optical power supplied to each of the optical receivers 33 does not exceed an upper limit (a maximum reception level) of an available range for the optical receiver[s] 33.” Takeda ¶¶ 36, 38. To determine the power adjustment, a controller monitors the input optical power to the VOA

and adjusts the VOA loss as necessary so the input power to the optical receivers does not exceed the maximum reception level. Takeda ¶ 37. Takeda includes a loss-of-signal detector for PD and outputs an LOS signal to the controller that may alter the control signal the controller sends to the VOA. Takeda ¶¶ 76, 82–84, 87.

We agree with Appellant that the Examiner has not sufficiently explained how the proposed combination of Dahlfort and Takeda teaches or suggests the particular relationship and arrangement recited in independent claim 1 and commensurately recited in independent claims 9 and 15. Specifically, the entire point of Takeda's cited teachings is to attenuate an optical signal (while reducing delay in cancelling an LOS state when the previously lost signal is recovered) to prevent damage to the PDs.

Thus, even accepting the Examiner's findings regarding Dahlfort's and Takeda's teachings, the Examiner's proposed combination results in Dahlfort's system including a variable optical attenuator that, based at least in part on an LOS signal asserted by an LOS detector, attenuates an incoming optical signal *prior to* passing the optical signals to photodetectors. The Examiner has not explained sufficiently how incorporating Takeda's teachings into Dahlfort's system would result in an analog switch that selects one of multiple received optical signals based on a control signal from a controller, wherein that control signal was based on an LOS signal received from the analog switch, as recited in independent claims 1, 9, and 15.

Accordingly, on this record, we reverse the Examiner's rejection of independent claims 1, 9, and 15 under 35 U.S.C. § 103 as obvious in view of Dahlfort, Takeda, Agazzi, and Natori. Claims 2, 7, 8, 10, 14, 16, and 20–25 ultimately depend from one of claims 1, 9, and 15, and incorporate the

limitations of the respective independent claim. The Examiner finds Raza teaches or suggests additional limitations in claims 2 and 10, Watanabe teaches or suggests additional limitations recited in claims 7, 14, and 20, and Cannon teaches or suggests additional limitations recited in claims 21, 23, and 25. The Examiner, however, does not find any of Raza, Watanabe, and Cannon cure the identified deficiency with respect to the independent claims. Nor does the Examiner provide any further explanation for any of the dependent claims regarding this deficiency. Therefore, for the same reasons, we also reverse the Examiner’s rejection of dependent claims 2, 7, 8, 10, 14, 16, and 20–25 under 35 U.S.C. § 103 as obvious.

CONCLUSION

The Examiner’s rejection of claims 1, 2, 7–10, 14–16, and 20–25 under 35 U.S.C. § 103 is reversed.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1, 8, 9, 15, 16, 22, 24	103	Dahlfort, Takeda, Agazzi, Natori		1, 8, 9, 15, 16, 22, 24
2, 10	103	Dahlfort, Takeda, Agazzi, Natori, Raza		2, 10
7, 14, 20	103	Dahlfort, Takeda, Agazzi, Natori, Watanabe		7, 14, 20
21, 23, 25	103	Dahlfort, Takeda, Agazzi, Natori, Cannon		21, 23, 25
Overall Outcome				1, 2, 7–10, 14–16, 20–25

Appeal 2019-000901
Application 14/728,919

REVERSED