

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

FUJITSU LIMITED,)	
)	
Plaintiff,)	
)	
v.)	No. 09 C 4530
)	
TELLABS, INC.,)	
TELLABS OPERATIONS, INC., and)	
TELLABS NORTH AMERICA, INC.,)	
)	
Defendants.)	

MEMORANDUM OPINION AND ORDER GRANTING
TELLABS’ MOTION FOR SUMMARY JUDGMENT
OF INVALIDITY OF U.S. PATENT NO. 5,526,163

JAMES F. HOLDERMAN, District Judge:

U.S. Patent No. 5,526,163 (the “‘163 Patent”) is owned by plaintiff Fujitsu Limited and allegedly infringed by defendants Tellabs, Inc., Tellabs Operations, Inc., and Tellabs North America, Inc. (“Tellabs”).¹ Pending before the court is Tellabs’ “Motion for Summary Judgment of Invalidity of U.S. Patent No. 5,526,163.” (Dkt. No. 390-1.) For the reasons set forth below, Tellabs’ motion for summary judgment is granted in its entirety.

BACKGROUND

The ‘163 Patent is titled “Optical Amplifier and Optical Communication System with Optical Amplifier Using Pumping Light Beam.” (‘163 Patent, cover at [54].) The ‘163 Patent has a filing date of March 8, 1995, but claims a priority date of August 31, 1989, based on the

¹ Tellabs North America, Inc. was added as a defendant to the First Amended Complaint (Dkt. No. 449) on December 15, 2011, while the parties were in the process of briefing Tellabs’ pending motion for summary judgment. Tellabs’ attorneys thereafter signed the reply brief (Dkt. No. 524 (“Tellabs’ Reply”)) and the sur-sur-reply brief (Dkt. No. 560 (“Tellabs’ Sur-Sur-Reply”)) on behalf of all three Tellabs defendants.

filing date of its counterpart Japanese application. ('163 Patent, cover at [30].) As this court has previously explained, optical amplifiers are:

devices used throughout long-haul optical fiber networks to increase the power level of the transmitted optical signals as they travel from node to node in the network.

* * *

In a typical configuration of an optical amplifier, a pump light beam signal, usually supplied by a laser, and an input data signal are coupled together in an optical coupler. This combined signal travels through an [sic] rare earth doped fiber, such as an erbium-doped fiber. The pump light beam energizes the erbium-doped fiber, and the data signal receives gain. In other words, the power, in the form of the absorbed pump light, is transferred to the optical signal and produces "gain," i.e., amplifying the input signal so that the signal has more power at the output than it had at the input.

(Dkt. No. 379 ("9/29/2011 Order") at 52-53 (citations omitted).) The asserted claims at issue generally focus on "controlling the output power of a semiconductor laser used to pump an optical amplifier." (*Id.* at 68.)

Fujitsu alleges infringement of Claims 5, 6, and 24 of the '163 Patent (the "Asserted Claims"). Claims 5 and 24 are independent claims of the '163 Patent, and Claim 6 depends from Claim 5. This court previously construed the disputed claim terms of the '163 Patent in September 2011. (*See* 9/29/2011 Order at 69-77 (construing the term "a first optical coupler" in Claim 5 and declining to construe the term "coupling" in Claim 24).) Set forth below is the relevant claim language from the Asserted Claims of the '163 Patent, with the claim term "first optical coupler" emphasized in italics and the court's claim construction inserted in brackets:

5. An optical amplifier, comprising:

a semiconductor laser which emits a pumping light beam;

a rare earth element doped optical fiber having an input end and an output end;

a *first optical coupler* [a device that combines or splits optical signals] to input an optical signal and the pumping light beam to the input end of said optical fiber;

a second optical coupler which splits an output optical signal from the output end of said rare earth element doped fiber into first and second output optical signals;

a level detector which detects a level of the second output optical signal; and

a power control circuit which controls an output level of said semiconductor laser based on the detected level.

6. An optical amplifier according to claim **5**, further comprising:

an optical isolator arranged between the output end of said rare earth element doped optical fiber and said second optical coupler.

* * *

24. A method of amplifying an optical signal by an optical fiber, doped with a rare-earth element and having an input end and an output end, comprising the steps of:

emitting a pumping light beam;

coupling the optical signal to the input end of the optical fiber;

coupling the pumping light beam to either the input end or the output end of the optical fiber;

splitting an output optical signal from the output end of the optical fiber into first and second output optical signals; and

controlling an output level of the emitted light beam based on the second output optical signal.

(‘163 Patent, col. 8 ll.1-20; col. 12 ll. 1-14.)

In its pending motion for summary judgment of invalidity of the ‘163 Patent, Tellabs argues that the Asserted Claims of the ‘163 Patent are invalid because they were anticipated by certain alleged prior art or, in the alternative, because they were made obvious by the alleged prior art. (Dkt. No. 390-1 (“Tellabs’ SJ Mot.”).) Specifically, Tellabs relies on two items of

alleged prior art: the “Wakabayashi Paper” and the “Toba Paper.” The Wakabayashi Paper² is a two-page technical article that was “authored by Hiroharu Wakabayashi and others at KDD Meguro R&D Laboratories . . . [and] presented on July 21, 1989 at the Seventh International Conference on Integrated Optics and Optical Fiber Communication in Kobe, Japan (‘IOOC Conference’).” (Dkt No. 390-2 (“Tellabs’ SJ Mem.”) at 3.) The Toba Paper³ is a three-page technical article that was “written by H. Toba and others at NTT Transmission Systems Laboratories and NTT Optoelectronics Laboratories . . . [and] published on July 6, 1989 in Electronics Letters.” (Tellabs’ SJ Mem. at 4.) It is undisputed that both alleged prior art references were publically accessible prior to the August 31, 1989 priority date of the ‘163 Patent. (See Dkt. No. 393 (“Tellabs’ SMF”) ¶¶ 10-14; Dkt. No. 476 (“Fujitsu’s SMF Resp.”) ¶¶ 10-14.)

Tellabs argues that the Wakabayashi Paper anticipates Claims 5 and 24 of the ‘163 Patent under 35 U.S.C. § 102(a) by explicitly disclosing “each of the six elements of claim 5 and each of the five steps of claim 24 exactly as recited in those claims.” (Tellabs’ SJ Mem. at 12; 12-23.) Tellabs further argues that dependent Claim 6 is rendered obvious under 35 U.S.C. § 103(a) by the disclosures set forth in the Wakabayashi Paper and the Toba Paper in combination, along with the knowledge of a person of ordinary skill in the art at the time of the claimed invention, e.g. on August 31, 1989. (*Id.* at 23-30.)

Fujitsu Limited contends that the Wakabayashi Paper fails to disclose “a power control circuit which controls an output level of said semiconductor laser based on the detected level”

² H. Wakabayashi, et al., *First Sea Trial of an Optical Amplifier Submarine Cable System*, IOOC ’89 Technical Digest, Vol. 5 (Post-Deadline Papers), 21B2-4 (PD), pp. 66-67 (1989). (Tellabs’ SJ Mem., Buckman Decl., Ex. 4 (Dkt. No. 390-10 at “1 of 48” through “4 of 48” (“Wakabayashi Paper”)).)

³ H. Toba, et al., *16-Channel Optical FDM Distribution/Transmission Experiment Utilising Er³⁺-Doped Fibre Amplifier*, Electronics Letters, Vol. 24, No. 14, at 885-887 (July 6, 1989). (Tellabs’ SJ Mem., Buckman Decl., Ex. 6 (Dkt. No. 390-10 at “15 of 48” through “18 of 48” (“Toba Paper”)).)

within the meaning of Claim 5 of the '163 Patent and fails to disclose the step of “controlling an output level of the emitted light beam based on the second output optical signal” within the meaning of Claim 24. (Dkt. No. 464 (“Fujitsu’s Resp.”) at 1-3.) Fujitsu Limited also asserts that “neither Wakabayashi nor Toba . . . recognize the particular problem solved by the isolator of Claim 6.” (*Id.* at 3.)

LEGAL STANDARD

Under Federal Rule of Civil Procedure 56(a), summary judgment is appropriate “if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” Fed. R. Civ. P. 56(a). The court’s role in reviewing a motion for summary judgment is simply “to determine based on the record whether there is a genuine issue of material fact requiring trial.” *Costello v. Grundon*, 651 F.3d 614, 636 (7th Cir. 2011). In performing this analysis, the court views the evidence in the light most favorable to the nonmovant. *Berry v. Chicago Transit Authority*, 618 F.3d 688, 691 (7th Cir. 2010). The court does not, however, “weigh the evidence or decide which inferences should be drawn from the facts.” *Costello*, 651 F.3d at 636. If there is no genuine issue of material fact requiring trial, summary judgment is appropriate in favor of the movant. *Berry*, 618 F.3d at 690-91.

While patents are presumed to be valid, claims of patent infringement are subject to the defense of invalidity. 35 U.S.C. § 282. A patent is invalid if its claimed subject matter is anticipated or obvious, as defined by statute. *See generally* 35 U.S.C. §§ 102, 103. “The presumption of validity . . . requires those challenging validity to introduce clear and convincing evidence on all issues relating to the status of a particular reference as prior art.” *Sandt Technology, Ltd. v. Resco Metal & Plastics Corp.*, 264 F.3d 1344, 1350 (Fed. Cir. 2001).

“[S]ummary judgment is inappropriate if a trier of fact applying the clear and convincing standard could find for either party.” *Oney v. Ratliff*, 182 F.3d 893, 895 (Fed. Cir. 1999).

ANALYSIS

The court begins with a brief description of the disclosures set forth in the Wakabayashi Paper. The Wakabayashi Paper generally reports on the first “sea trial” of “an optical amplifier submarine cable system,” whereby the experimental system “was laid on the sea bed of 3,000 m sea depth near Hachijou Island” in the Pacific Ocean. (Wakabayashi Paper at 66 §§ 1-2.) The sea trial was undertaken “with a view to evaluating the fundamental feasibility [of an optical amplifier submarine cable system] and clarifying the actual performance in the field.” (*Id.* at 66 § 1.) The Wakabayashi Paper concluded that “the feasibility of the practical use in the near future was confirmed.” (*Id.* at 67 § 4.) The optical communication system disclosed in the Wakabayashi Paper included a submarine repeater constructed in two different configurations: one that utilized a semiconductor TWA optical amplifier (“SLA”) and one that utilized an erbium-doped fiber laser optical amplifier (“FLA”). (*Id.* at 66 §§ 1-2.) Additional details of the Wakabayashi Paper’s disclosures are discussed below.

1. Anticipation

“[D]etermining whether a prior art reference discloses each and every limitation of the claim expressly or inherently is a factual question . . . contingent on the proper claim construction.” *Akamai Tech., Inc. v. Cable & Wireless Internet Servs., Inc.*, 344 F.3d 1186, 1192 (Fed. Cir. 2003) (internal citation omitted). “[T]he dispositive question regarding anticipation is whether one skilled in the art would reasonably understand or infer from the prior art reference’s teaching that every claim [limitation] was disclosed in that single reference.” *Id.* at 1192-93 (quoting *Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368 (Fed. Cir. 2003)).

To succeed at the summary judgment stage, “a moving party seeking to invalidate a patent . . . must submit such clear and convincing evidence of facts underlying invalidity that no reasonable jury could find otherwise.” *TriMed, Inc. v. Stryker Corp.*, 608 F.3d 1333, 1340 (Fed. Cir. 2010) (quoting *SRAM Corp. v. AD-II Eng’g, Inc.*, 465 F.3d 1351, 1357 (Fed. Cir. 2006)).

For the reasons set forth below, viewing the evidence in the light most favorable to Fujitsu Limited and applying the clear and convincing standard of evidence, the court finds that there are no genuine issues of material fact regarding the extent of the disclosures in the Wakabayashi Paper, and that Tellabs is entitled to judgment of invalidity as a matter of law on Claims 5 and 24⁴ of the ‘163 Patent.

Claim 5 recites, in relevant part, “a second optical coupler which splits an output optical signal from the output end of [the “rare earth element doped optical fiber” element] into first and second optical signals” and “a level detector which detects a level of the second output optical signal.” (‘163 Patent, col. 8 ll.9-13.) It is undisputed that the Wakabayashi Paper discloses these elements of Claim 5 in its optical amplifier submarine cable system, as discussed in detail below. (See Tellabs’ SMF ¶¶ 38-41; Fujitsu’s SMF Resp. ¶¶ 38-41.) Claim 5 further recites “a power control circuit which controls an output level of [the “semiconductor laser” element] based on the detected level [of the second output optical signal].” (‘163 Patent, col. 8 ll.14-15.) The parties’ disagreement in this case centers on whether a person of ordinary skill in the art in August 1989 would understand the Wakabayashi Paper to disclose Claim 5’s power control circuit element.

On its face, the Wakabayashi Paper discloses that the “[o]utput power” of the optical amplifiers used in the sea trial was “controlled to be constant” by an automatic power control

⁴ The court agrees with Tellabs that “each method step recited in claim 24 directly corresponds to the function recited for a structural element in claim 5.” (Tellabs’ SJ Mem. at 12.) Accordingly, the court’s analysis of Claim 5 is equally applicable to Claim 24.

(“APC”) circuit. (Wakabayashi Paper at 66 § 2.) Specifically, the APC circuit in the Wakabayashi Paper detected a “10 kHz pilot tone which was superimposed on high speed digital signals” and “controlled the optical amplifiers such that the pilot tone becomes constant.” (*Id.*) The parties do not dispute that the Wakabayashi Paper’s APC circuit controls the output level of the laser element of the erbium-doped fiber laser optical amplifier used in the sea trial, (*see, e.g.,* Fujitsu’s SMF Resp. ¶¶ 42-43), but they do dispute whether this control feature of the Wakabayashi Paper’s APC circuit is “based on the detected level [of the second output optical signal],” as required by Claim 5.

Figure 2 of the Wakabayashi Paper shows a block diagram of the repeater used in the sea trial, including both the SLA (upper left) and FLA (upper right) optical amplifier configurations:

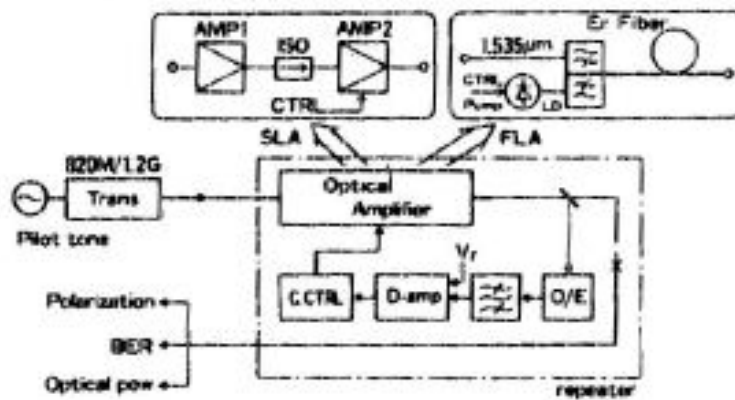


Figure-2 Schematic diagram of optical submarine repeater

(Wakabayashi Paper at 67.)

As Tellabs’ expert Dr. A. Bruce Buckman explains, the erbium-doped fiber laser optical amplifier labeled “FLA” in Figure-2 can be understood to represent the contents of the box labeled “Optical Amplifier” in the configuration of the Wakabayashi Paper’s repeater that is relevant to the court’s analysis. (Dkt. No. 394 (“Buckman Decl.”) ¶¶ 15-16.)

Dr. Buckman has identified the Wakabayashi Paper's APC circuit in Figure-2 as annotated below:

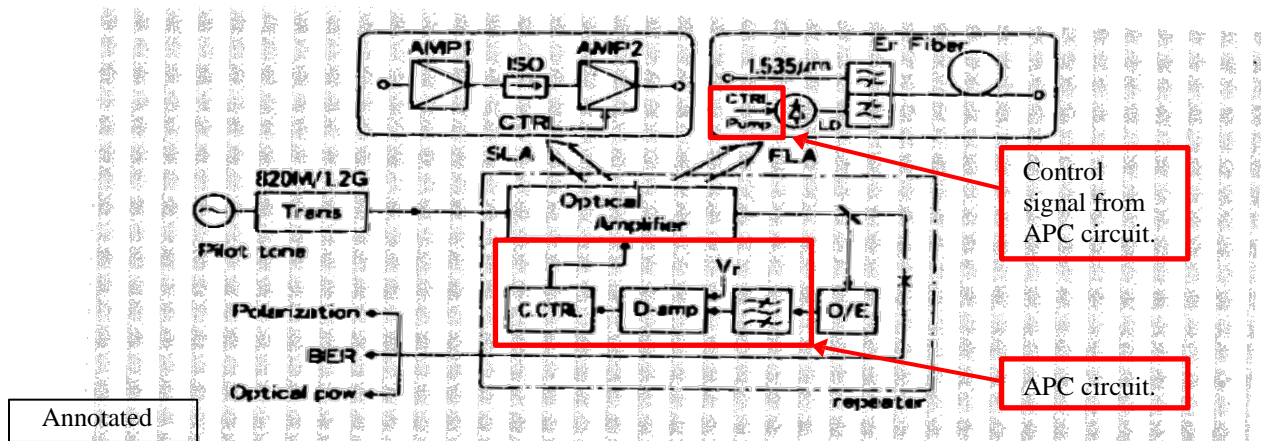



Figure-2 Schematic diagram of optical submarine repeater

(Dkt. No. 394 (“Buckman Decl.”) ¶ 56.) As Dr. Buckman explains, the output optical signal from the erbium-doped fiber laser optical amplifier (“Optical Amplifier” in Figure-2) is further split into two different output optical signals. (See generally *id.* ¶¶ 46-52.) The first output optical signal is tested for polarization, bit error rate (“BER”), and optical power measurements. (*Id.* ¶¶ 47-48.) “The other signal resulting from the split is sent to a box labeled ‘O/E,’ which is a label commonly used in the industry to denote an optical-to-electrical converter.” (*Id.* ¶ 48.) The input for the Wakabayashi Paper’s APC circuit comes from this optical-to-electrical converter. (*Id.* ¶ 61.)

Claim 5 recites a power control circuit that operates “based on the detected level [of the second output optical signal].” (‘163 Patent, col. 8 ll.14-15.) According to Dr. Buckman, the optical-to-electrical converter feeding into the Wakabayashi Paper’s APC circuit “detect[s] an input optical signal” from the “second output optical signal” using a “photodetector” and then “output[s] an electrical signal . . . proportional to the power, *i.e.*, the level, of the input optical signal that is detected.” (Buckman Decl. ¶¶ 53-54.) Accordingly, in Dr. Buckman’s opinion,

“because the input to the APC circuit is the signal output by the optical-to-electrical conversion element, the operation of the APC circuit is ‘based on the detected level [of the second output optical signal],’ as required by claim 5.” (*Id.* ¶ 62.)

Fujitsu Limited’s expert, Dr. Alan E. Willner, disputes Dr. Buckman’s conclusion, but not the material facts, on this point. According to Dr. Willner, the control feature of Wakabayashi Paper’s APC circuit is actually based on the detected level of only *part of* the second output optical signal, e.g., the pilot tone, and not on the “optical data signal” that he asserts is required by Claim 5. (Dkt. No. 467 (“Willner Decl.”) ¶¶ 33-34.) Specifically, after the optical-to-electrical converter in the Wakabayashi Paper converts the entire second output optical signal into an electrical signal, the electrical signal passes through a “band-pass” filter that “functions to pass the electrical representation of the pilot tone power through while blocking the vast majority of the electrical representation of the optical data signal power.” (Willner Decl. ¶ 33; *see also* Buckman Decl. ¶ 58, n.3 (identifying the pilot tone filter in Figure-2 as the symbol ).) In Dr. Willner’s words, “Wakabayashi’s band-pass filter effectively **discards the optical data signal** detected by Wakabayashi’s ‘O/E’ converter.” (Willner Decl. ¶ 33 (emphasis in original).) In this manner, according to Dr. Willner, “Wakabayashi definitely avoids use of the optical data signal itself to control his feedback loop,” relying only on the pilot tone. (*Id.* ¶ 34.)

The court agrees with Tellabs that the distinction drawn by Dr. Willner regarding the “optical data signal” is not required by the plain language of Claim 5. Claim 5 requires an “optical signal” and a “pumping light beam” at the input end of the optical fiber, as well as an “output optical signal” at the output end of the optical fiber. (‘163 Patent, col. 8 ll.6-11.) Viewing the facts in the light most favorable to Fujitsu Limited, the court accepts that a person of

ordinary skill in the art in August 1989 would have understood both the input “optical signal” and the “output optical signal” to include, at least in part, what Dr. Willner refers to as a “data signal” or “signal light beam,” consistent with the overall aim of an optical communication system. (*See* Willner Decl. ¶ 19 n.1 (“The optical data signal contains the data being transmitted over the optical transport system, and the purpose of the amplifier is to insure that the data signal has sufficient power to transit the span between amplifier nodes and still be recovered.”).) Nevertheless, Claim 5 does not require the “second output optical signal” (emerging after the split of the “output optical signal” into the “first and second output optical signals”) to include the original data signal. The only requirement of the “second output optical signal” is that it is split from the “output optical signal.” (‘163 Patent, col. 8 ll.9-11.) The method or manner of splitting the “output optical signal” is not specified, and the “second output optical signal” is not required to contain the original input “optical signal” (e.g. the “data signal” or “signal light beam”) or any other particular content.

The fact that “[t]he ‘163 disclosure refers to detecting the ‘signal light beam’ . . . and using the detected level of the optical ‘signal light beam’ to govern the operation of the APC,” (Willner Decl. ¶ 23 (citing ‘163 Patent, col. 5 ll.36-60)), does not sufficiently limit the scope of Claim 5’s claim language beyond its ordinary and customary meaning. The ‘163 Patent does not include language explicitly redefining “second output optical signal” in any particular manner, such as when a patentee acts as “its own lexicographer.” *Thorner v. Sony Computer Entertainment Am. LLC*, 669 F.3d 1362, 1365-66 (Fed. Cir. 2012) (“It is not enough for a patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee must ‘clearly express an intent’ to redefine the term.”) (citation omitted). The specifications of the ‘163 Patent also do not include “expressions of manifest

exclusion or restriction” limiting the scope of the ‘163 Patent to the particular embodiment disclosed in Figure 6 of the ‘163 Patent. *Id.* at 1366. As the Federal Circuit has explained, “It is likewise not enough that the only embodiments, or all of the embodiments, contain a particular limitation. We do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do that.” *Id.* Ultimately, “[i]t is the claims that define the metes and bounds of the patentee’s invention.” *Id.* at 1367. According to the plain language of Claim 5, “use of the optical data signal itself,” (Willner Decl. ¶ 34), is not required by Claim 5’s power control circuit.

Claim 5 only requires that the control feature of the power control circuit be “based on the detected level [of the second output optical signal].” (‘163 Patent, col. 8 ll.14-15.) As noted above, it is undisputed that the Wakabayashi Paper’s optical-to-electrical converter detects the power level of the “second output optical signal” and converts the detected power level of this signal into an electrical signal “having a magnitude proportional to the level of the optical signal that is detected.” (Tellabs’ SMF ¶ 40; Fujitsu’s SMF Resp. ¶ 40.) In other words, it is an undisputed fact that the electrical signal output from the optical-to-electrical converter represents “the detected level” of the “second output optical signal.” The only remaining question is whether the control feature of the Wakabayashi Paper’s APC circuit is “based on” this electrical signal.

Dr. Buckman asserts that the control feature of the Wakabayashi Paper’s APC circuit is “based on” the electrical signal output by the optical-to-electrical converter, because that signal is the input to the Wakabayashi’s APC circuit. (*See* Buckman Decl. ¶ 62; *see also* Tellabs’ Reply at 5 (“An algorithm that processes an input achieves a result that is ‘based on’ that input.”).) Tellabs also takes the position that, because Claim 5 does not recite “a limitation

requiring the control function to operate using any particular portion . . . of a detected optical signal,” the power control circuit element in Claim 5 can reasonably be considered “based on” the detected optical signal as long as it uses “all of any portion or component thereof.” (Tellabs’ Reply at 5.) Initially, Fujitsu Limited seemed to take a contrary position, appearing to argue that Claim 5 requires the power control circuit to be “based on” the entire “second output optical signal” without additional processing or filtering. (See, e.g., Willner Decl. ¶ 36 (opining that “one of ordinary skill in the art in August 1989 would commonly have understood the ‘power control circuit’ of Claim 5 to control the pumping light beam laser ‘based on’ the detected level of the **composite optical signal** (including the optical data signal) detected by the level detector” (emphasis in original)).) Fujitsu Limited, however, clarified in its later briefing that despite its emphasis on the phrase “composite optical signal” in the above sentence, its argument is limited to the parenthetical “including the optical data signal.” In fact, Fujitsu Limited conceded in its “Reply in Support of Its Motion for Summary Judgment of Infringement of Claims 5 and 6 of U.S. Patent No. 5,526,163,” (Dkt. No. 1027 (“Fujitsu’s Infr. Reply”)), that “Fujitsu has never precluded what Tellabs calls ‘filtering’ in Claim 5, as long as control of the claimed semiconductor laser is based on some level of detected power of the optical signal which actually carries the data being amplified in the optical amplifier.” (Fujitsu’s Infr. Reply at 2.) As Dr. Willner stated in his November 20, 2012 deposition, the detected level of the second output optical signal “*can be electrically filtered afterwards* as long as the feedback loop is based on the optical data signal.” (*Id.* at 4 (citing Willner. Dep. Tr. (11/20/12), pp. 284:19-285:10) (emphasis added).) Ultimately, according to Fujitsu Limited, “[w]hat is relevant is the source of the power detected by the photodiode and used to control the semiconductor laser.” (*Id.* at 6.)

The court, for the reasons set forth earlier in this opinion, has rejected Fujitsu Limited's argument that the "second output optical signal" in Claim 5 is required to include the original "data signal" or "signal light beam." (*Supra*, at 10-12.) Setting aside that aspect of Dr. Willner's opinion, which is an extrinsic opinion regarding claim construction and is inconsistent with the intrinsic evidence of the patent and its prosecution, the parties' experts in this case agree that the control feature of the Wakabayashi Paper's APC circuit is "based on" the electrical signal output by the optical-to-electrical converter as required by Claim 5, because the "second output optical signal" is the source of the power detected by the optical-to-electrical converter and input to the Wakabayashi Paper's APC circuit. (Buckman Decl. ¶ 62; Willner Decl. ¶ 33.)

Based on the above analysis and the undisputed facts of this case, the court finds that no reasonable jury could conclude that Tellabs has failed to meet its burden of proving by clear and convincing evidence that a person of ordinary skill in the art would understand the Wakabayashi Paper to disclose every limitation of Claims 5 and 24 of the '163 Patent. The court therefore grants Tellabs' motion for summary judgment of invalidity with respect to these two claims as being anticipated.

2. Obviousness

Dependent Claim 6 adds one additional element to independent Claim 5: "an optical isolator arranged between the output end of said rare earth element doped optical fiber and said second optical coupler." ('163 Patent, col. 8 ll.16-20.) According to Tellabs, "[t]he prior art reference referred to as 'the Toba Paper' teaches and discloses the use, application, and placement of optical isolators at the input and output ends of an erbium-doped optical fiber in order to avoid the adverse effects caused by optical reflections," thus rendering Claim 6 obvious. (Tellabs' SJ Mem. at 4.) Fujitsu Limited argues that "it would not have been obvious to take the

teachings of Toba and combine them with those of Wakabayashi to arrive at Claim 6,” because “there is no evidence that one of ordinary skill in the art in August 1989 would have recognized the problem solved by Claim 6.” (Fujitsu’s Resp. at 16, 17.)

Section 103(a) bars an inventor from obtaining a patent “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103(a). “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l Co. v. Telefax Inc.*, 550 U.S. 398, 416 (2007). Accordingly, “[i]f a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.” *Id.* at 417. “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 419-20. On the other hand, the court should not limit its analysis to “the problem motivating the patentee,” because “any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *KSR*, 550 U.S. at 420.

The test for obviousness under § 103 is an “expansive and flexible approach” involving four factors: (1) the scope and content of the prior art; (2) the differences between the asserted claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations of nonobviousness, if any. *Id.* at 406-07, 415 (confirming that the factors identified in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), “continue to define the inquiry that controls”). “Generally, a party seeking to invalidate a patent as obvious must demonstrate by clear and convincing evidence that a skilled artisan would have been motivated

to combine the teaching of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *OSRAM Sylvania, Inc. v. Am. Induction Tech., Inc.*, 701 F.3d 698, 706 (Fed. Cir. 2012) (quoting *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007)).

a. Scope and Content of the Prior Art

It is undisputed that the Toba Paper discloses an experimental set-up wherein “[o]ptical isolators were inserted at the input and output ports of the fibre amplifier to avoid lasing.” (Toba Paper at 886, col. 1 (*see also id.* Fig. 1).) It is further undisputed that “lasing” is “an undesirable condition when caused by optical reflections,” and that optical isolators function to “filter out optical reflections in an optical communication system.” (Tellabs’ SMF ¶ 49; Fujitsu’s SMF Resp. ¶ 49.)

Fujitsu Limited does not dispute that it was well known to a person of ordinary skill in the art in August 1989 that “optical reflections adversely affect and impair the performance of erbium-doped optical fiber amplifiers.” (Tellabs SJ Mem. at 26 (citing Buckman Decl. ¶¶ 87-91).) Fujitsu Limited also does not dispute that numerous prior art references also disclose “that optical isolators solved the problems caused in erbium-doped optical fiber amplifiers by optical reflections.” (*Id.* (citing Buckman Decl. ¶¶ 82-107).)

Fujitsu Limited does argue, however, that none of the prior art references cited by Tellabs⁵ “teaches the arrangement of Claim 6 wherein an optical isolator is arranged between the

⁵ In addition to the Toba Paper, Tellabs cites four “additional examples” of prior art references demonstrating the knowledge of a person of ordinary skill in the art in August 1989. They are: U.S. Patent No. 4,178,073; “the Iqbal Paper” (M. Z. Iqbal, et al., *An 11 Gb/s, 151 km Transmission Experiment Employing a 1480 nm Pumped Erbium-doped In-line Fiber Amplifier*, IOOC ’89 Technical Digest, Post-Deadline Papers, 20PDA-7, pp. 24-25 (1989) (Buckman Decl., Ex. 8); the “Giles Paper” (C.R. Giles, et al., *2-Gbit/s Signal Amplification at $\lambda = 1.53 \mu\text{m}$ in an Erbium-Doped Single-Mode Fiber Amplifier*, J. Lightwave Tech., Vol. 7, No. 4, at 651-656 (Apr. 1989) (Buckman Decl., Ex. 9); and the “Inoue Paper” (K. Inoue, et al., *Mutual Signal Gain Saturation in Er^{3+} -Doped Fibre Amplifier Around $1.54\mu\text{m}$ Wavelength*, Electronics Letters, Vol. 25, No. 9, at 595-595 (April 27, 1989) (Buckman Decl., Ex. 10).

output end of and [sic] EDF and an optical coupler.” (Fujitsu’s Resp. at 17.) According to Fujitsu Limited, this arrangement creates “an entirely different problem” than the problems caused by optical reflections in erbium-doped optical fiber amplifiers generally. (*Id.*) Fujitsu Limited does not cite any factual support for this argument. Fujitsu Limited’s expert, Dr. Willner, opines that “[o]ptical couplers of the type specified in Claim 6 . . . do not themselves cause significant amounts of reflection,” and that a person of ordinary skill in the art therefore would not have “recognized this problem in the first place.” (Willner Decl. ¶ 42.) Dr. Willner does not dispute, however, that the purpose of the optical isolator in Claim 6 is to protect the erbium-doped optical amplifier from the optical reflections that are caused by the optical coupler, and that this function of an optical isolator—to protect erbium-doped optical amplifiers against optical reflections—was disclosed in the prior art references cited by Tellabs.

b. Differences Between Claim 6 and the Toba Paper

As noted by Tellabs, “the Toba Paper explicitly teaches and discloses the use and application of optical isolators at the input end and the output end of an erbium-doped optical fiber amplifier.” (Tellabs’ SJ Mem. at 26; *see also* Toba Paper at 886, col. 1.) The only difference between Claim 6 and the set-up in the Toba Paper is that Claim 6 requires the optical isolator to be “between” the output end of the erbium-doped optical fiber and the second optical coupler. (‘163 Patent, col. 8 ll.16-20.) The Toba Paper does not disclose the optical coupler portion of this arrangement from Claim 6. (*See* Toba Paper Fig. 1; *see also* Fujitsu’s Resp. at 16 (“Toba shows an optical isolator on the output side of the EDF between the EDF and a long length of single mode fiber (labeled ‘SMF’ in Toba).”).) The court therefore agrees with Fujitsu Limited that a reasonable jury could find “[o]ne of ordinary skill in the art in August of 1989 would not have learned anything from Toba to cause them to believe that the optical coupler in

the FLA configuration of Wakabayashi was a source of reflections that required an optical isolator.” (Fujitsu’s Resp. at 17 (citing Willner Decl. ¶ 43).) That, however, does not end the analysis.

c. The Level of Ordinary Skill in the Pertinent Art

This court previously defined a person of ordinary skill in the art in August 1989 to “have at least a Master’s degree in electrical engineering or physics and two to five years of experience in the field of optical fiber transmission systems and the components for such systems.” (9/29/11 Order at 53-54.)

Fujitsu Limited argues that the authors of the Wakabayashi Paper “certainly had a great deal more than ordinary skill in the art at the time of invention, . . . [but] were not concerned with the reflections caused by the coupler on the output side of the EDF.” (Fujitsu Resp. at 16.) For purposes of the pending motion for summary judgment, the court accepts Fujitsu Limited’s position that the authors of the Wakabayashi Paper were likely individuals of ordinary skill or greater in the art as defined by the court, although Fujitsu Limited has not submitted any information about their educational backgrounds or their years of experience in the field of optical fiber transmission systems and the components for such systems.

d. Secondary Considerations of Nonobviousness

Fujitsu Limited has likewise not set forth any secondary considerations of nonobviousness in its briefing before the court, other than its conclusory assertion that no individual of ordinary skill in the art identified the optical reflections caused by the second optical coupler to be a problem.

e. Obviousness Analysis

As noted above, it is ultimately Tellabs' burden to prove by clear and convincing evidence "that a skilled artisan would have been motivated to combine the teaching of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so." *OSRAM Sylvania*, 701 F.3d at 706. At the summary judgment stage, the court views all disputed questions of fact in the light most favorable to Fujitsu Limited.

The difficulty with Fujitsu Limited's argument is that it focuses on the *problem* and not how inventive the solution stated in Claim 6 really is when measured against the "known options within his or her technical grasp" of a person of ordinary skill in the art. *KSR*, 550 U.S. at 421. According to the '163 Patent's description, "The optical isolator **34** [shown in Fig. 6] is provided for preventing oscillation from occurring due to gain of the rare-earth-doped fiber **28** as the result of formation of a resonator structure in the optical path including the rare-earth-doped fiber **28**." ('163 Patent, col. 5 ll.40-44.)

As articulated by the U.S. Supreme Court,

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.

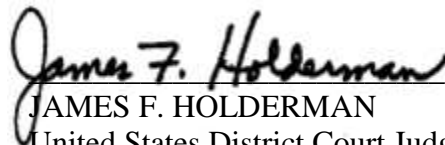
KSR, 550 U.S. at 421. In this case, Tellabs has produced undisputed evidence establishing the material fact that there was a general design need "for optical isolators to solve problems caused in erbium-doped optical fiber amplifiers by optical reflections," (Tellabs' SJ Mem. at 28 (citing Buckman Decl. ¶¶ 79, 86-109)), and that the use of optical isolators, which are one-way lightwave filters, for the purpose of solving optical reflection problems was well understood in

August 1989. (Tellabs' SJ Mem. at 26 (citing Buckman Decl. ¶¶ 92-107).) Fujitsu Limited has produced no evidence to raise a material dispute of fact that putting an optical isolator between the erbium-doped fiber optical amplifier and the second optical coupler to "prevent" the adverse effects of any optical reflections caused by the second optical coupler as claimed in Claim 6 of the '163 Patent is anything other than among the "finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue." *KSR*, 550 U.S. at 421. Based on the record before the court, viewing the facts in the light most favorable to Fujitsu Limited, the court concludes that no reasonable jury could find that Tellabs has failed to meet its burden of proving by clear and convincing evidence that Claim 6 of the '163 Patent is invalid as obvious. The court therefore grants Tellabs' motion for summary judgment of invalidity with respect to Claim 6 on the grounds of obviousness.

CONCLUSION

For the reasons set forth above, Tellabs' "Motion for Summary Judgment of Invalidity of U.S. Patent No. 5,526,163" (Dkt. No. 390-1) is granted in its entirety. Fujitsu Limited's "Motion for Summary Judgment of Infringement of Claims 5 and 6 of U.S. Patent No. 5,526,163" (Dkt. No. 606) is denied as moot.

ENTER:



JAMES F. HOLDERMAN
United States District Court Judge

Date: August 20, 2013