UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.
Petitioner

v.

LYNK LABS, INC.
Patent Owner

Patent No. 10,750,583

PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 10,750,583

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I. INTRODUCTION

Samsung Electronics Co., Ltd. ("Petitioner" or "Samsung") requests *inter partes* review of claims 8-10 and 15-18 (the "challenged claims") of U.S. Patent No. 10,750,583 ("the '583 patent") (Ex. 1001) assigned to Lynk Labs, Inc. ("PO"). For the reasons below, the challenged claims should be found unpatentable and canceled.

II. MANDATORY NOTICES

Real Parties-in-Interest: Petitioner identifies the following as the real parties-in-interest: Samsung Electronics Co., Ltd., Samsung Electronics America, Inc.

Related Matters: The '583 patent is at issue in the following matters:

- *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, No. 1-21-cv-02665 (N.D. Ill.) (seeking declaratory judgment of non-infringement as to the '583 patent and also U.S Patent Nos. 11,019,697, 10,506,674, 10,492,252, 10,499,466, 10,966,298, 10,492,251, 10,687,400, 10,517,149, 10,154,551, and 10,652,979) ("Illinois Litigation").

The '583 patent claims priority to, *inter alia*, two provisional applications (U.S. Provisional Application Nos. 60/547,653 filed February 25, 2004 and 60/559,867 filed April 6, 2004. The following patents claim the same benefit of priority to the '653 and '867 applications and have corresponding IPR proceedings:

- U.S. Patent No. 8,531,118 at issue in *Acuity Brands Lighting, Inc., v. Lynk Labs, Inc.*, IPR2016-01133 (terminated);
- U.S. Patent No. 10,506,674 at issue in *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, IPR2021-01299 (pending);
- U.S Patent No. 11,019,697 at issue in *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, IPR2021-01300 (pending);
- U.S Patent No. 10,492,252 at issue in *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, IPR2021-01345 (pending);
- U.S Patent No. 10,499,466 at issue in *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, IPR2021-01346 (pending);
- U.S Patent No. 10,966,298 at issue in *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, IPR2021-01347 (pending);
- U.S Patent No. 10,652,979 at issue in *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, IPR2021-01576 (pending);
- U.S Patent No. 10,154,551 at issue in *Home Depot USA, Inc. v. Lynk Labs, Inc.*, IPR2021-01367 (pending) and *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, IPR2021-01575 (pending);
- U.S. Patent No. 10,492,251 at issue in *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, IPR2022-00051 (pending), *Samsung Electronics Co., Ltd. v. Lynk*

Labs, Inc., IPR2022-00052 (pending), and *The Home Depot USA, Inc. et al. v. Lynk Labs, Inc.*, IPR2021-01369 (pending);

- U.S Patent No. 10,517,149 at issue in *Samsung Electronics Co., Ltd. v. Lynk Labs, Inc.*, IPR2022-00098 (pending), and *The Home Depot USA, Inc. et al. v. Lynk Labs, Inc.*, IPR2022-00023 (pending).

Counsel and Service Information: Lead counsel: Naveen Modi (Reg. No. 46,224), and Backup counsel are (1) Joseph E. Palys (Reg. No. 46,508), (2) Arvind Jairam (Reg. No. 62,759), (3) Mark Consilvio (Reg. No. 72,065), (4) Howard Herr (*pro hac vice* admission to be requested). Service information is Paul Hastings LLP, 2050 M St., Washington, D.C., 20036, Tel.: 202.551.1700, Fax: 202.551.1705, email: PH-Samsung-LynkLabs-IPR@paulhastings.com. Petitioner consents to electronic service.

Petitioner is concurrently filing another IPR petition challenging claims of the '583 patent.[1]

[1] Petitioner concurrently submits a separate paper (consistent with the Trial Practice Guide Update, July 2019), explaining why the filing of multiple petitions should not be a basis for discretionary denial under 35 U.S.C. § 314.

III. PAYMENT OF FEES

The PTO is authorized to charge any fees due during this proceeding to Deposit Account No. 50-2613.

IV. GROUNDS FOR STANDING

Petitioner certifies that the '583 patent is available for review and Petitioner is not barred or estopped from requesting review on the grounds identified herein.

V. PRECISE RELIEF REQUESTED AND GROUNDS

Claims 8-10 and 15-18 should be canceled as unpatentable based on the following grounds:

Ground 1: Claims 8-10, 15, and 18 are unpatentable under § 103(a) as being obvious over *Piepgras* (Ex. 1030), *Michael* (Ex. 1008), and *Butler* (Ex. 1016);

Ground 2: Claim 16 is unpatentable under § 103(a) as being obvious over *Piepgras*, *Michael*, *Butler*, and *Schultz* (Ex. 1032); and

Ground 3: Claim 17 is unpatentable under pre-AIA 35 U.S.C. § 103(a) as being obvious over *Piepgras*, *Michael*, *Butler*, and *Naskali* (Ex. 1010); and

The '583 patent issued August 18, 2020 from Application No. 16/449,273 filed June 21, 2019, and claims priority via a chain of applications to eight provisional applications. Petitioner does not concede that the '583 patent is entitled to any of the claimed priority applications, but for purposes of this proceeding only,

assumes the critical date for the '583 patent is February 25, 2004, which is the earliest date of eight provisional applications.

Butler published on February 20, 2003. *Michael* published on April 7, 1987. Thus each qualifies as prior art under pre-AIA 35 U.S.C. § 102(b).

Schultz, a U.S. patent application publication, was filed December 2, 2003 and published on June 2, 2005. *Naskali*, a U.S. patent, was filed October 27, 2003 and published on February 20, 2007. Thus each qualifies as prior art at least under pre-AIA 35 U.S.C. § 102(e).

Piepgras, also a U.S. patent application publication, was filed September 17, 2002 and published on July 24, 2003. *Piepgras* thus qualifies as prior art at least under §102(a) and/or §102(e).

None of these references were considered during prosecution. (Ex. 1001, References Cited; *see generally* Ex. 1004.)

VI. LEVEL OF ORDINARY SKILL

A person of ordinary skill in the art as of the claimed priority date of the '583 patent ("POSITA") would have had at least a bachelor's degree in electrical engineering, computer engineering, computer science, physics, or the equivalent, and two or more years of experience with LED devices and/or related circuit design,

or a related field. (Ex. 1002, ¶¶20-21.)[2] More education can supplement practical experience and vice versa. (*Id.*)

VII. OVERVIEW OF THE '583 PATENT

While the '583 patent purports to identify an invention directed to an LED device/system having various features (*e.g.,* Ex. 1001, 4:25-10:67, 13:34-67), the claims are broadly directed to a lighting device having a combination of known components and features (*id.*, 28:19-29:4). The '583 patent was allowed on first action during prosecution (Ex. 1004, 133-139), with the Examiner providing a statement of reasons for allowance that **does not even relate to any of the issued claims** (*compare* Ex. 1004, 138, *with* Ex. 1001, 27:17-28:37). After the first Notice of Allowance, the Examiner issued a corrected Notice of Allowability (Ex. 1004, 185-186), and then issued another corrected Notice of Allowability that included an unexplained Examiner's Amendment (*id.*, 197-200). However, even with the Examiner's Amendment, the claims merely recite assorted combinations of features already known in the prior art, which does not impart patentability. *See In re Gorman*, 933 F.2d 982, 986 (Fed. Cir. 1991) ("The criterion ... is not the number of references, but what they would have meant to a person of ordinary skill in the field

[2] Petitioner submits the declaration of R. Jacob Baker, Ph.D., P.E. (Ex. 1002), an expert in the field of the '583 patent. (Ex. 1002, ¶¶1-19; Ex. 1003.)

of the invention."). (*Infra* §IX; Ex. 1002, ¶¶54-56, 58-84; *see also id.*, ¶¶22-53 (citing, *inter alia*, Exs. 1011-1012, 1014, 1017-1018, 1030-1031, 1034, 1041-1045, 1088-1094; *see generally* Ex. 1004, Exs. 1051-1070.)

VIII. CLAIM CONSTRUCTION

The Board only construes the claims when necessary to resolve the underlying controversy. *Toyota Motor Corp. v. Cellport Systems, Inc.*, IPR2015-00633, Paper No. 11 at 16 (Aug. 14, 2015) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). For purposes of this proceeding, Petitioner believes that no special constructions are necessary to assess whether the challenged claims are unpatentable over the asserted prior art.[3] (Ex. 1002, ¶57.)

[3] Petitioner reserves all rights to raise claim construction and other arguments, including challenges under 35 U.S.C. §§ 101 or 112, in district court as relevant to those proceedings. *See, e.g.*, *Target Corp. v. Proxicom Wireless, LLC*, IPR2020-00904, Paper 11 at 11–13 (November 10, 2020). A comparison of the claims to any accused products in litigation may raise controversies that are not presented here given the similarities between the references and the patent.

IX. DETAILED EXPLANATION OF GROUNDS[4]

A. Ground 1: Claims 8-10, 15, and 18 Are Obvious Over *Piepgras* in View of *Michael* and *Butler*

1. Claim 8

a) A lighting device comprising:

To the extent limiting, *Piepgras* discloses this limitation. (Ex. 1002, ¶¶58-71, 85-93.) Regarding Figure 1, *Piepgras* discloses "a lighting system or device 500" including, *inter alia*, LEDs 4, controllers 3 that control the LEDs, and processor 2. (Ex. 1030, ¶[0088].)

[4] Section IX references exhibits other than the asserted prior art for each ground. Such exhibits in the respective grounds reflect the state of the art known to a POSITA at the time of the alleged invention consistent with the testimony of Dr. Baker.

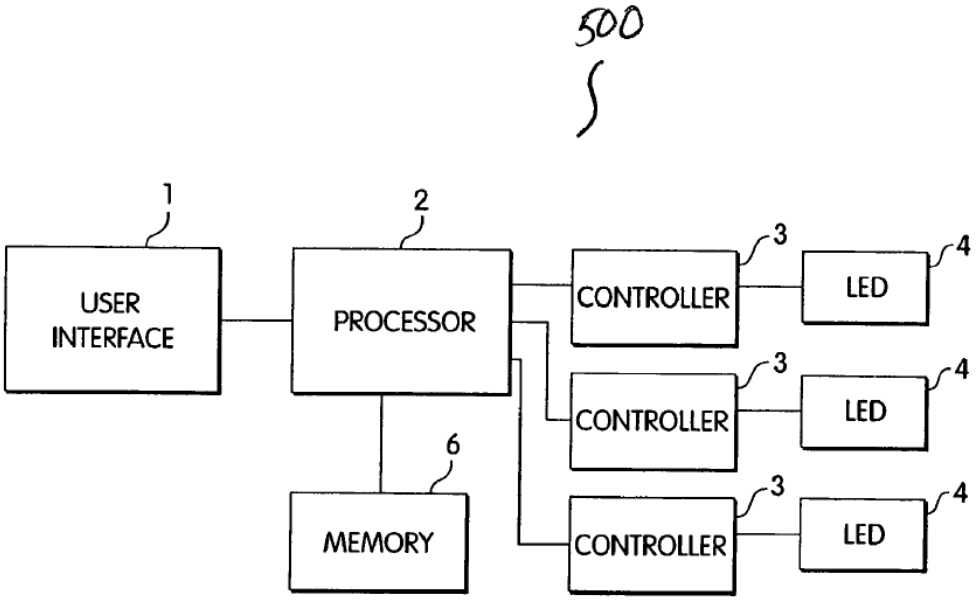

Fig. 1

(*Id.*, FIG. 1; *id.*, ¶¶[0033], [0088]-[0093] (describing Figure 1), [0094]-[0098], FIGS. 2A-2B, [0099]-[0105]; Ex. 1002, ¶¶86-87.)

Piepgras discloses several examples of specific lighting applications implemented using device 500. (Ex. 1030, Title, Abstract, ¶¶[0083]), [0106]-[0241], FIGS. 3-54; Ex. 1002, ¶88.) Device 500 (Figure 1) is a general arrangement implemented with the various lighting device examples described throughout *Piepgras*.[5] (Ex. 1002, ¶88; *e.g.,* Ex. 1030, ¶[0106] (FIG. 3 example "include[s] the

[5] To the extent it is argued that *Piepgras*' embodiments are distinct, the challenged claims would have been obvious over the asserted prior art as explained herein because a POSITA would have found it obvious to configure any of *Piepgras*'

components described above with reference to FIG. 1, and may operate according to the techniques described above and with reference to FIGS. 2A-2B"), ¶¶[0107]-[0110] (*e.g.*, key chain and spotlight examples described with reference to Figure 4-6), ¶¶[0121], [0149] (applications of device 500 described by FIGS. 1, 2A-2B), FIGS. 7-8, 11, 16-17, 22-23, 34, 39, 41A-41C, 50, ¶¶[0111]-[0113], [0119], [0131], [0133], [0143]-[0147], [0168]-[0169], [0180], [0183], [0216].)

As one example of a lighting device, *Piepgras* discloses a spotlight 100 shown in Figure 6 (below). (Ex. 1030, ¶[0110] ("FIG. 6 shows a spotlight according to the principles of the invention.").)

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identified embodiments with features from *Piepgras*' other related embodiments given the express relationships called out by *Piepgras*. (Ex. 1002, ¶88.) Indeed, a POSITA would have had multiple reasons to consider the collective teachings in *Piepgras* to configure a lighting device as explained below, and would have done so with a reasonable expectation of success given *Piepgras*' descriptions of a working device and processes. (*Id.*; *e.g.*, §§IX.A.1(b)-(h), IX.A.2-5.)

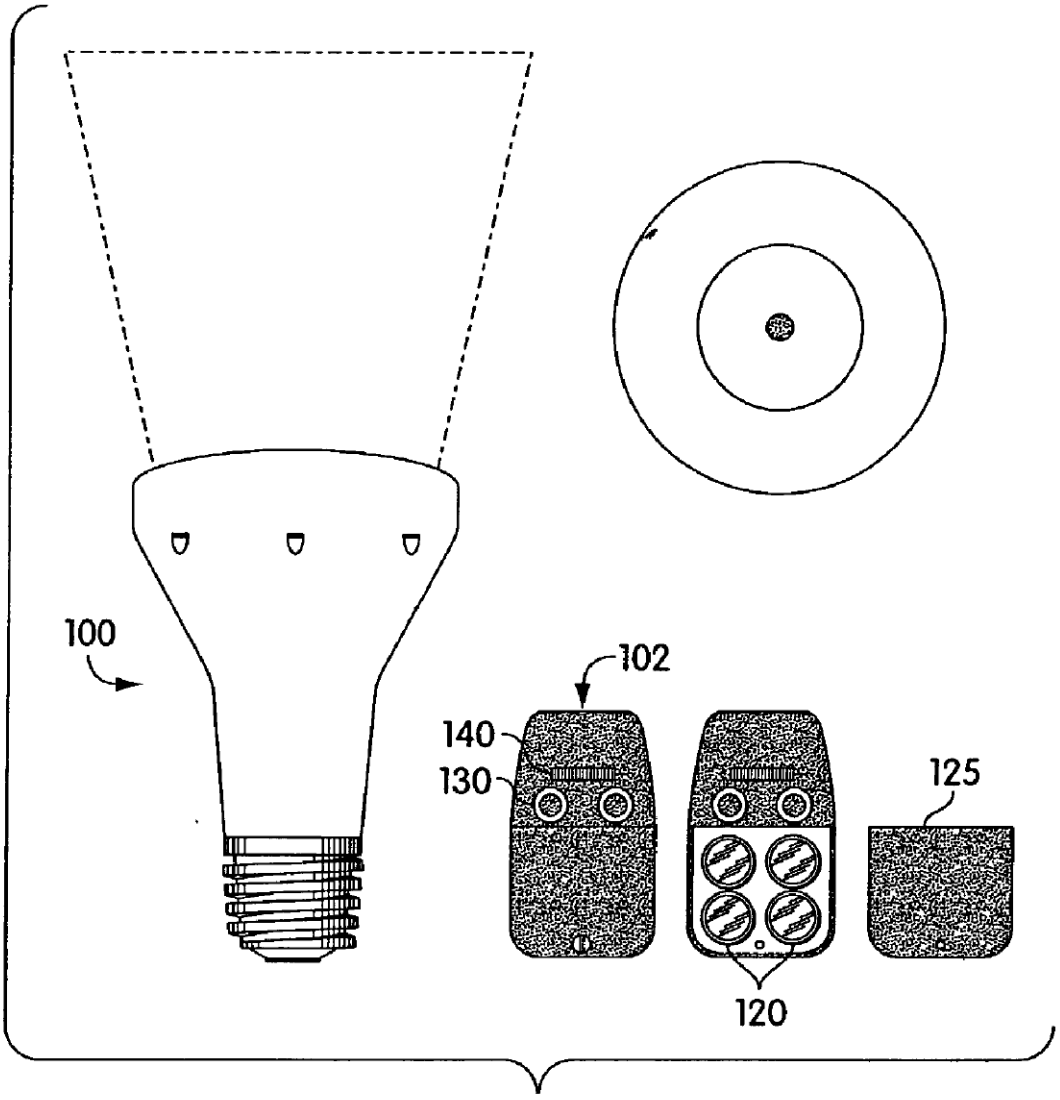


Fig. 6

(*Id.*, FIG. 6; *see also id.*, ¶¶[0038] ("FIG. 6 shows a spotlight according to the principles of the invention"), [0110] (describing Figure 6); Ex. 1002, ¶89.)

Piepgras discloses that the spotlight 100 of Figure 6 is "similar to the spotlight of FIG. 5," shown below. (Ex. 1030, ¶[0110]))

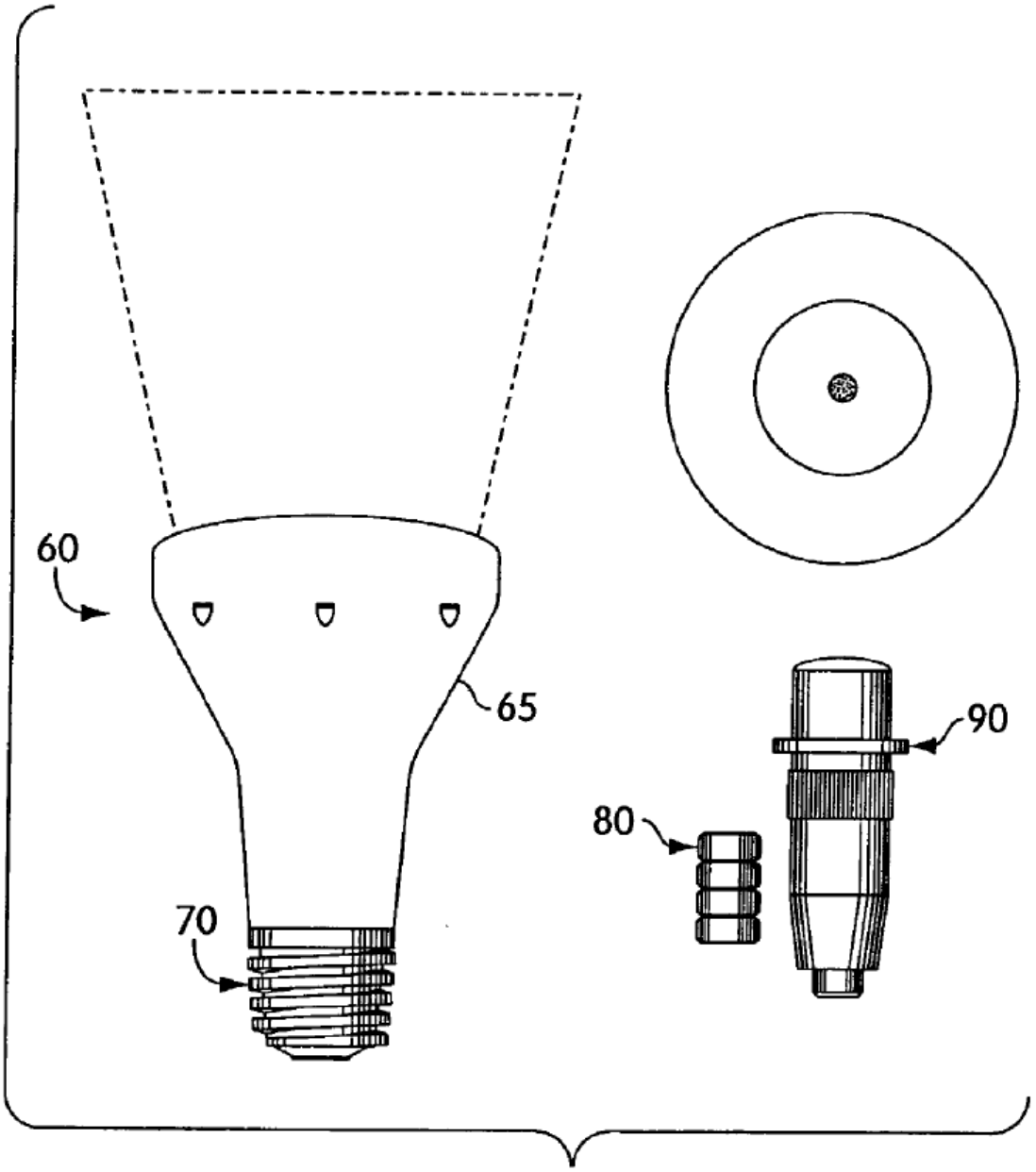


Fig. 5

(Ex. 1030, FIG. 5.)

Figure 5 of *Piepgras* shows a spotlight 60 that "may include a system such as that depicted in FIG. 1 for controlling a plurality of LEDs within the spotlight 60, and may operate according to the techniques described above with reference to FIGS. 2A-2B." (*Id.*, ¶[0108].)[6] Therefore, a POSITA would have understood that spotlight 100 (shown in Figure 6) includes device 500 of Figure 1 of *Piepgras*. (*Id.*, FIG. 1; *id.*, ¶¶[0033], [0088]-[0093] (describing Figure 1), [0094]-[0105], FIGS. 2A-2B; Ex. 1002, ¶¶90-91.)

Piepgras further discloses with reference to Figure 6 that "remote user interface 102 may be remote from the spotlight 100, and may transmit control information to the spotlight 100 using, for example, an infrared or radio frequency communication link, with corresponding transceivers in the spotlight 100 and the remote user interface 102." (Ex. 1030, ¶[0110]; *see also id.*, Abstract ("Any of the foregoing devices may be equipped with various types of user interfaces (both 'local' and 'remote') to control light generated from the device."); Ex. 1002, ¶92.)

A POSITA would have understood that the disclosures relating to device 500 are applicable to the various exemplary lighting device implementations, and that

[6] A POSITA would have understood that "spotlight 10" at paragraph [0110] is a typographical error, based on the description of "spotlight 100" elsewhere in the paragraph. (Ex. 1030, ¶[0110]; Ex. 1002, ¶91.)

such implementation(s), *e.g.*, spotlight 100, discloses a "lighting device." (*Infra* §§IX.A.1(b)-(h); Ex. 1002, ¶93.) A POSITA would have understood that spotlight 100 is the same as spotlight 60, with added functionality enabling remote control of the spotlight. (Ex. 1002, ¶93.) Additionally, a POSITA would have understood that device 500 within spotlight 100 also discloses a "lighting device." (*Id.*)

b) a data communication circuit having at least one antenna;

Piepgras in view of *Michael* discloses or suggests this limitation. (Ex. 1002, ¶¶94-104.) As discussed for limitation 8(a), *Piepgras*' spotlight 100 ("lighting device") includes device 500 of Figure 1. (§IX.A.1(a); Ex. 1030, ¶¶[0088], [0108], [0110].) Device 500 comprises an LED circuit including "one or more LEDs 4," *e.g.*, as shown in Figure 1 of *Piepgras* (discussed above, *see* §IX.A.1(a)). As explained for limitation 8(a), *Piepgras*' spotlight 100 includes an RF transceiver for wireless control of the spotlight. (Ex. 1030, ¶[0110] ("Remote user interface 102...may transmit control information to the spotlight 100 using, for example, [a] **radio frequency communication link, with corresponding transceivers in the spotlight 100** and the remote user interface 102.").) A POSITA would have understood that *Piepgras*' spotlight, which includes a transceiver for communicating using a radio frequency (RF) communication link, includes a data communication circuit. (Ex. 1002, ¶94.) For example, a POSITA would have known that a transceiver for an RF communication system (as in *Piepgras*) includes electrical

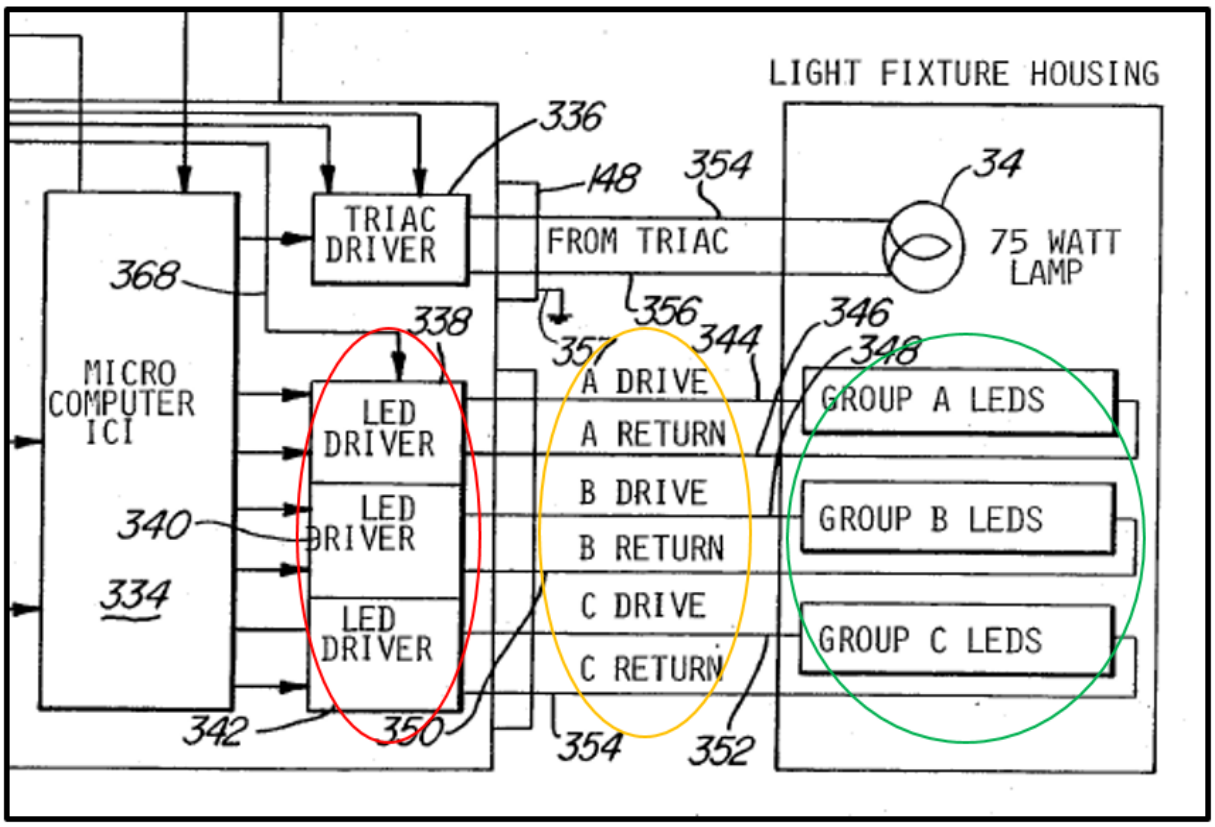
components that require current, which must flow in a circuit, and that by disclosing transmission of "control information" for remotely controlling lighting device 500 (Ex. 1030, ¶[0110]), *Piepgras* discloses a *data* communication circuit as claimed. (Ex. 1002, ¶94.)

A POSITA would have understood that *Piepgras*' data communication circuit includes an antenna. (*Id.*, ¶95.) For example, a POSITA would have had this understanding because without an antenna to convert received RF radiation to electrical signals, RF communication as described in *Piepgras* cannot occur. (Ex. 1047, 49; Ex. 1048, 110; Ex. 1002, ¶95.) Indeed, a POSITA would have understood that an antenna is a basic requirement of a wireless communication system, especially one using RF communications like that disclosed by *Piepgras*. (Ex. 1002, ¶95.)

Nonetheless, while *Piepgras* does not explicitly disclose that its data communication circuit of spotlight 100 has at least one antenna, it would have been obvious in view of *Michael* to implement such features. (*Id.*, ¶96.) *Michael* "relates to lighting assemblies" and discloses (like *Piepgras* and the '400 patent) LED-based lighting. (Ex. 1008, 1:5-7; *see also id.*, Title ("Lighting Assembly"), 7:20-8:47 (describing circuitry relating to lighting assembly); Ex. 1030, FIG. 1, ¶[0088]; Ex. 1002, ¶96.) Accordingly, a POSITA contemplating implementing *Piepgras*'

lighting system would have had reason to consider the teachings of *Michael*. (Ex. 1002, ¶96.)

Michael discloses a lighting assembly that includes LED drivers (red below) coupled to LEDs (green below) via drive/return lines (orange), as shown below in excerpted/annotated Figure 12.



(Ex. 1008, FIG. 12 (excerpted/annotated); *see also id.*, 7:20-21 ("The control assembly for the invention lighting assembly is seen in block diagram in FIG. 12."), 7:35-40 ("Six pin connector 146 includes a drive line 344 controlling the LEDs of light element group A; a return line 346 for light group A; a drive line 348 controlling

light group B; a return line 350 for light group B; a drive line 352 controlling light group C; and a return line 354 for light group C."); Ex. 1002, ¶97.)

Michael discloses an antenna 438 (red below) for implementing wireless communication that enables an operator to remotely control the LED lighting assembly. (Ex. 1008, 8:23-24 ("Keyboard 378 performs the operator interface function."), 8:54-58 ("The described lighting fixture assembly ... provide[s] the operator with the ability to ... actuate the various lighting assemblies on the lighting fixture...."), 10:48-61, FIG. 15 (below); Ex. 1002, ¶98.)

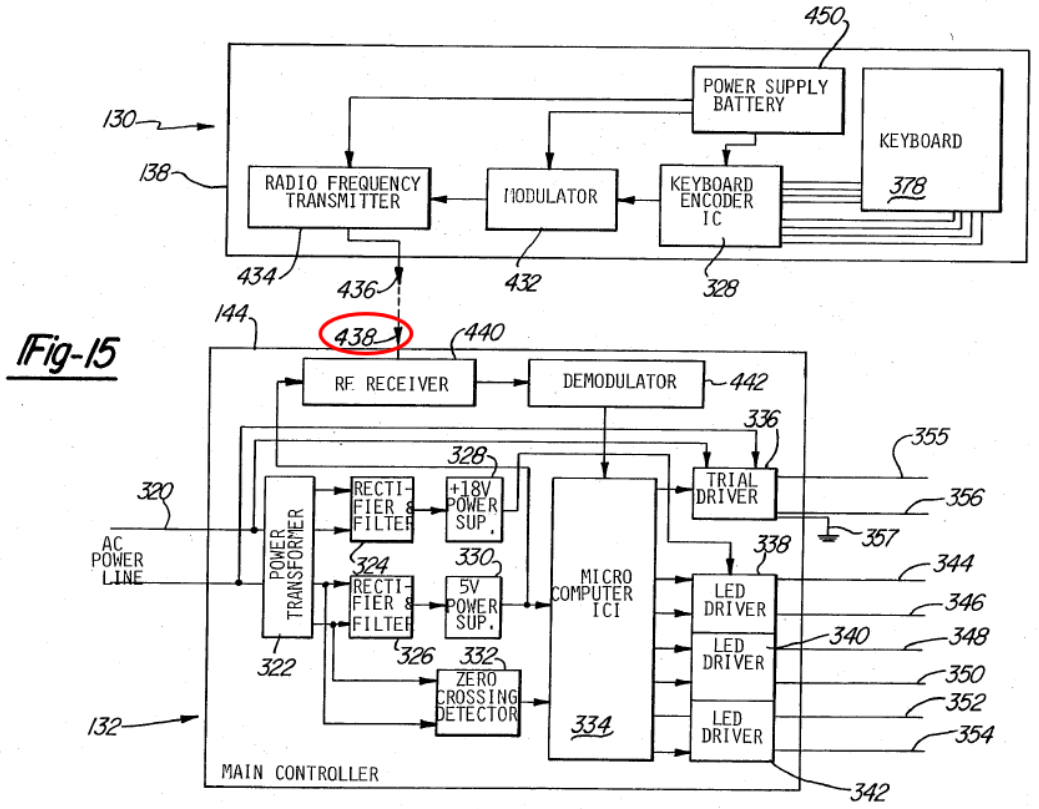


Fig-15

(Ex. 1008, FIG. 15 (antenna 438 annotated in red); Ex. 1002, ¶98.)

Michael describes antenna 438 as receiving data that is used to control the LEDs of the lighting assembly. (Ex. 1002, ¶99.) For example, *Michael* explains that keyboard 378 is coupled to keyboard encoder IC 328, which provides an encoded signal that is modulated and transmitted to antenna 438, and "[t]he signal received on antenna 438 is inputted to a radio frequency receiver 440 ... [which] outputs to a demodulator 442 which outputs to microcomputer 334." (Ex. 1008, 10:48-58.) As shown above in Figure 15, microcomputer 334 is coupled to LED drivers 338/340/342, which drive LEDs shown in Figure 14. (Ex. 1002, ¶99.)

A POSITA would have understood that *Michael* discloses a data communication circuit comprising antenna 438. (*Id.*, ¶100.) For example, *Michael* discloses AC power lines 320 (at left in Figure 15 above) and a circuit ground 357 (at right in Figure 15). (Ex. 1008, FIG. 15, 7:41-43 ("ground line 357"), 8:11 ("AC line voltage").) *Michael* also describes various aspects of circuitry (*see generally id.*, 4:58-9:37), including disclosing that "a forward current flows ... from a drive terminal through the circuit board to the appropriate LED load" (*id.*, 9:53-55), and further disclosing that the LED drivers shown in Figure 15 are coupled to LEDs as shown in Figure 12. (Ex. 1002, ¶100; *see also* Ex. 1008, FIG. 12 (excerpted/annotated above), 7:35-40 ("Six pin connector 146 includes a drive line 344 controlling the LEDs of light element group A; a return line 346 for light group A; a drive line 348 controlling light group B; a return line 350 for light group B; a

drive line 352 controlling light group C; and a return line 354 for light group C.").) Thus, a POSITA would have understood that *Michael*'s controller 132 (Ex. 1008, FIG. 15), in conjunction with antenna 438 and the LEDs of Figure 12, discloses a data communication circuit comprising an LED circuit and an antenna. (Ex. 1002, ¶100.)

In light of *Piepgras* and *Michael*, a POSITA would have been motivated to configure *Piepgras*' spotlight 100 ("lighting device" discussed above for limitation 8(a)) to include a data communication circuit having at least one antenna. (*Id.*, ¶101.) For example, a POSITA would have found it beneficial and predictable to implement an antenna—a fundamental component (known decades before the alleged invention of the '400 patent) of a wireless communication system—in *Piepgras*' lighting device, which includes a transceiver for RF communication (as discussed above). (Ex. 1030, ¶[0110], FIG. 6.) Given that *Piepgras* discloses remotely controlling its spotlight using an RF communication link, a POSITA would have been motivated to configure a data communication circuit having at least one antenna. (Ex. 1002, ¶101.)

A POSITA would have been skilled at circuit design/implementation and would have found such a configuration to be a predictable and feasible implementation for supporting *Piepgras*' wireless remote control of LED lighting (discussed above), particularly because it was well known to configure circuitry in

such a manner for wireless control of lighting. (Ex. 1005, FIGS. 2-5, 7 (showing printed circuit board 142 and circuit comprising lamp driver and antenna), 4:7-16, 4:48-50 ("FIG. 7 shows the embedded antenna 140, which is a metal trace put on the printed circuit board (PCB) 142."); Ex. 1002, ¶102.) For example, a POSITA would have recognized that such a configuration would have predictably leveraged existing design principles and technologies. (Ex. 1002, ¶102.) Indeed, *Wacyk* (Ex. 1005) demonstrates the existing approach of implementing a data communications circuit (*e.g.*, as shown by the radio and RF signal below in Figures 7-8) that includes an antenna. (*Id.*)

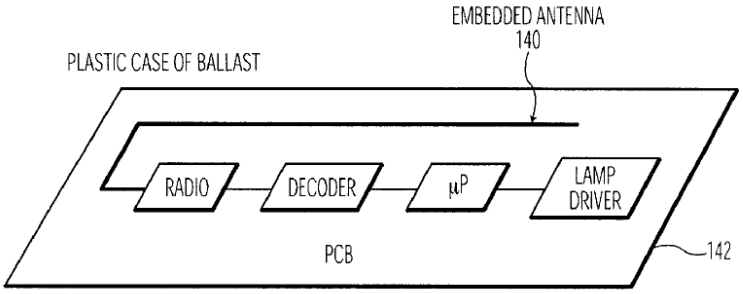


FIG. 7

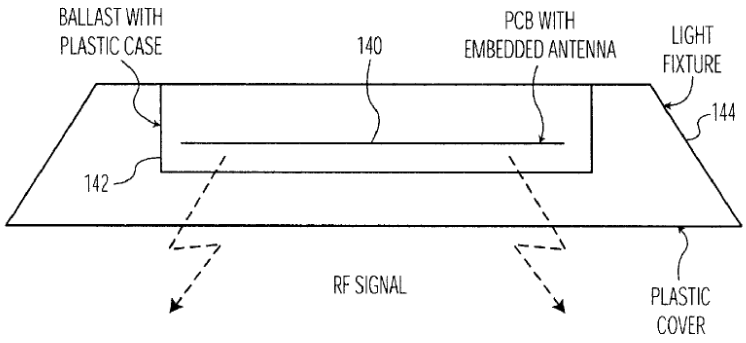


FIG. 8

(*Id.*, FIGS. 7-8.)

Further, where device 500 is the "lighting device" (§IX.A.1(a)), it would have been obvious to configure device 500 to include a data communication circuit having at least one antenna, for reasons similar to those discussed above. (Ex. 1002, ¶103.) For example, a POSITA would have recognized that such a configuration would have predictably facilitated lighting control, which would have been a relevant and readily appreciated role for device 500 given that it includes controllers that control LEDs. (*Id.*)

A POSITA would have found each of the above configurations (implementing the features of limitation 8(b)) to be a combination of known components and technologies, according to known methods, to produce a predictable circuit arrangement. (Ex. 1002, ¶104.) *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). Accordingly, a POSITA would have had a reasonable expectation of success implementing such configurations. (Ex. 1002, ¶104.)

c) an LED circuit array having at least two independently controlled LED circuits, each LED circuit having at least one LED;

Piepgras (as modified above in view of *Michael*) in view of the state of the art discloses or suggests this limitation. (Ex. 1002, ¶¶105-112.) As discussed for limitation 8(a), *Piepgras* discloses that spotlight 100 ("lighting device") includes device 500 comprising LEDs 4 controlled by controllers 3, as shown below in Figure 1. (§IX.A.1(a); Ex. 1030, ¶[0088] ("[S]ignals may be converted by the controllers

3 into a form suitable for driving the LEDs 4, which may include controlling the current, amplitude, duration, or waveform of the signals impressed on the LEDs 4.").)

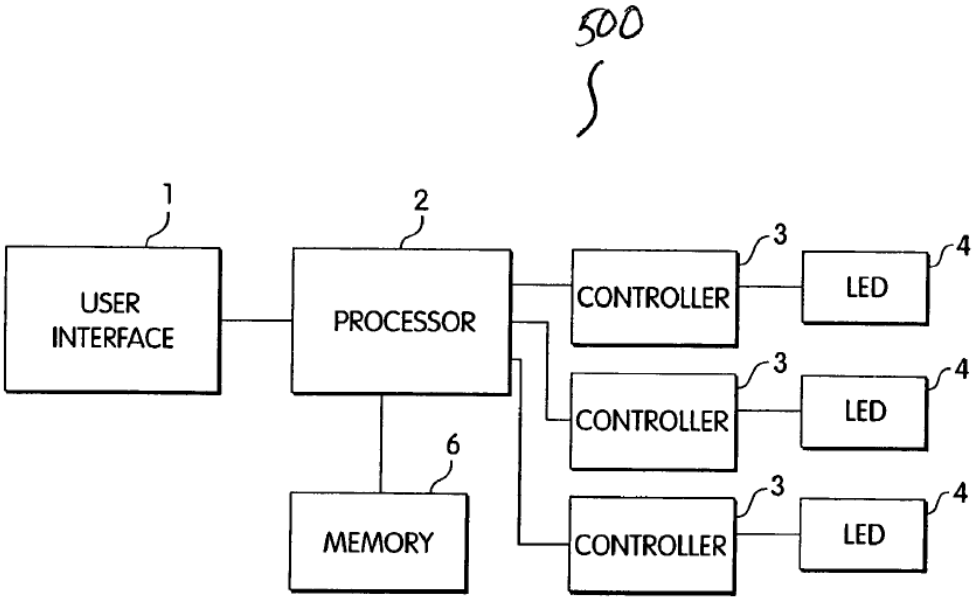


Fig. 1

(Ex. 1030, FIG. 1.)

A POSITA would have understood that *Piepgras* discloses LED circuits that include LEDs 4. (Ex. 1002, ¶106.) For example, a POSITA would have had this understanding because *Piepgras*' LEDs receive current (and voltage, and power), and a circuit is needed in order to achieve such electrical attributes. (Ex. 1030, ¶¶[0088] ("driving the LEDs 4, which may include controlling the current, amplitude, duration, or waveform of the signals impressed on the LEDs 4"), [0090] ("The controller 3 generally regulates the current, voltage and/or power through the

LED…."); Ex. 1002, ¶106.) Indeed, a POSITA would have known that without a circuit, current cannot flow. (Ex. 1002, ¶106.)

Piepgras further discloses that its lighting device includes *at least two independently controlled LED circuits, each LED circuit* having at least one LED. (*Id.*, ¶107.) For example, a POSITA would have understood that Figure 1 of *Piepgras* (above) shows controllers that independently control respective LED circuits that include LEDs 4. (Ex. 1030, FIG. 1; Ex. 1002, ¶107.) *Piepgras* describes "controlling the LEDs 4 independently" and further describes that different colors of emitted light "may be driven through separate controllers." (Ex. 1030, ¶[0090].) Thus, *Piepgras* discloses at least two independently controlled LED circuits. (Ex. 1002, ¶107.) *Piepgras* describes "driv[ing] several LEDs 4 in series where [] sufficient power output" is available, and also describes "driv[ing] single LEDs 4," and thus a POSITA would have understood that each LED circuit has at least one LED. (Ex. 1030, ¶[0090]; Ex. 1002, ¶107.)

A POSITA would have understood that such disclosures are consistent with *Piepgras*' descriptions regarding various lighting application examples. (Ex. 1030, FIG. 18, ¶[0135] ("The individual LEDs 1804 of the plurality of LEDs 1804 can...be independently controlled."), FIG. 31, ¶[0160] (explaining that rope light 3100 of FIG. 31 "may include a plurality of LEDs or LED subsystems 3102 according to the description provided in reference to FIGS. 1 and 2A-2B," *i.e.*, including device 500,

and describing "LED dies of different colors [] packaged together in each LED subsystem 3102, **with each die individually controllable**" and "a number of LED subsystems 3102 [] controlled by a common signal so that **a length of tube 3104 ... may appear to change color at once**"); Ex. 1002, ¶108.)

To the extent *Piepgras* does not explicitly disclose that its spotlight ("lighting device" discussed for limitation 8(a)) includes an LED circuit *array having* at least two independently controlled LED circuits, each LED circuit having at least one LED, it would have been obvious in view of *Piepgras*' disclosures and the state of the art to implement such features. (Ex. 1002, ¶109.) For example, a POSITA would have known that *Piepgras*' LED circuits, which include independently controlled LED circuits each having at least one LED (as discussed above), would predictably have been arranged as an LED circuit *array having* at least two independently controlled LED circuits, given that LED circuit arrays were well known. (Ex. 1037, Abstract ("series array of light emitting diodes"), ¶¶[0002] ("arrays of semiconductor light emitting devices"), [0007] ("array of electrically isolated LEDs"), [0009] ("array of LEDs"); Ex. 1038, Abstract (describing an "LED array circuit (30b) [that] includes a number of series connected LED pairs (32)"), 1 ("**It is known in the art to use a light emitting diode (LED) array** ... . Such arrays are disclosed, for example, in [various patents], the complete disclosures of which are hereby incorporated herein by reference. **An LED array can provide many**

advantages...”), 4 (“AC line powered LED array”), 9 (“[A]n LED array circuit 30 ... includes an array of LEDs 31...”), FIG. 4 (showing LED array circuit 30); Ex. 1050, Abstract (disclosing “**LED array circuits**”) and “**LED arrays**”), 4:13-23 (“LED array products”), 8:25-27 (“[T]he instant invention comprises: ... LED arrays….”); Ex. 1002, ¶109.)

Thus, given the knowledge of a POSITA regarding the state of the art and the teachings of *Piepgras*, a POSITA would have found it beneficial to implement the claimed LED circuit *array having* at least two independently controlled LED circuits as in limitation 8(c), *e.g.*, to leverage an existing technology that was “known in the art” and that “provide[d] many advantages.” (Ex. 1038, 1; Ex. 1002, ¶110.) For example, a POSITA would have found such an array arrangement useful for implementing lighting with multiple LEDs. (Ex. 1002, ¶110.) Indeed, a POSITA would have recognized that when using multiple LEDs, it would have been predictable to arrange the LEDs/LED circuits in some manner, and an array would have been a known, predictable option for such an arrangement. (*Id.*)

Further, where device 500 is the “lighting device” (§IX.A.1(a)), the device includes an “LED circuit array” as claimed for the same reasons discussed above for the spotlight exemplary lighting device. (Ex. 1002, ¶111.) Likewise, it would have been obvious to configure device 500 to implement an LED circuit *array having* at least two independently controlled LED circuits, for similar reasons as discussed

above (regarding reasons for modifying the system 500 implemented in the above-discussed spotlight lighting device), to facilitate lighting provided by device 500. (*Id.*, ¶111.)

The above configurations would have been straightforward for a POSITA to implement, and a POSITA would have implemented them with a reasonable expectation of success, given a POSITA's skill at designing/implementing circuits and given that such an array was a well-known arrangement of LED circuits, as explained above. (Ex. 1002, ¶112.) Moreover, the '583 patent does not describe any criticality or novelty associated with such an "array." (*See generally* Ex. 1001; Ex. 1002, ¶112.)

d) an LED circuit driver capable of independently providing power to one or more of the at least two independently controlled LED circuits in the LED circuit array;

Piepgras (as modified above) discloses or suggests this limitation. (Ex. 1002, ¶¶113-117.) *Piepgras*' spotlight 100 ("lighting device") comprises device 500, which includes controllers 3 connected to LEDs 4, processor 2, other components (memory 6), and associated circuitry coupling the components. (Ex. 1030, FIG. 1 (below).)

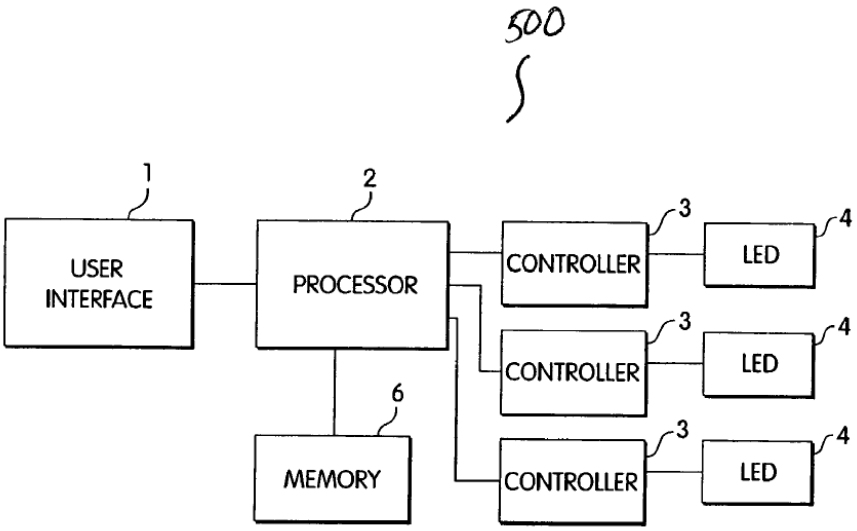


Fig. 1

For example, *Piepgras* describes controllers 3 driving LEDs 4. (Ex. 1030, ¶¶[0088], [0090] ("The controller 3 generally **regulates the current, voltage and/or power through the LED**, in response to signals received from the processor 2."); *id.*, ¶¶[0085]-[0086] ("LED" may refer to single LED package, multiple "LEDs" etc.), [0090], [0094]-[0105], FIGS. 2A-2B; Ex. 1002, ¶140.) "[P]rocessor 2 and controller 3 may be incorporated into one device," which "**drive[s] several LEDs 4** in series where it has sufficient **power output**, or the device may **drive single LEDs 4** with a corresponding number of outputs." (Ex. 1030, ¶[0090]; Ex. 1002, ¶140.)

Piepgras discloses that its LED driver (*e.g.*, controller(s) 3 or in conjunction with processor 2) drives LEDs, which require circuitry as explained above for limitation 8(c) (§IX.A.1(c)), and thus the LED driver is an LED *circuit* driver. (Ex. 1002, ¶114.) As shown above in Figure 1, a POSITA would have understood that

the LED circuit driver is capable of independently providing power (*e.g.*, using a respective controller) to each LED 4, and thus to one or more of the at least two above-discussed independently controlled LED circuits in the LED circuit array of the modified *Piepgras-Michael* device. Moreover, because limitation 8(d) requires the capability to provide power to "**one** or more" of the above-discussed LED circuits, the capability to independently provide power to *one* of the LED circuits suffices to meet this limitation, and a POSITA would have understood that *Piepgras*' LED circuit driver is capable of independently providing power to one ("one or more") of the at least two independently controlled LED circuits.[7] (*Id.*) Likewise, the controllers 3 in conjunction with processor 2 also provide an LED circuit driver that is capable of independently providing power to one or more of the LED circuits for similar reasons discussed here and above for limitation 8(c). (*Id.*; §IX.A.1(c).)

A POSITA would have understood that such disclosure in *Piepgras* regarding device 500 is consistent with the rope light example of Figure 31, for example. (Ex. 1002, ¶115.) For example, *Piepgras* discloses with reference to Figure 31 that "a

[7] Indeed, *Piepgras* discloses that "a number of LED subsystems may be controlled by a common signal so that a length of tube 3104 ... may appear to change color at once," and such disclosure is just like PO's contention in district court that color-changing functionality necessarily meets this limitation. (Ex. 1084, 5; Ex. 1083.)

length of tube 3104 ... may appear to change color at once." (Ex. 1030, ¶[0160].) A POSITA would have understood that *Piepgras* achieves such color-changing by providing power to LED circuits independently, *e.g.*, so that some LEDs (of a first color) can be turned on (to emit light) while other LEDs (of a second color) are turned off. (Ex. 1002, ¶116.) A POSITA would have understood that in the modified *Piepgras-Michael* device discussed above for limitation 8(c) (§IX.A.1(c)), the LED circuit driver is capable of independently providing power to one or more of the at least two independently controlled LED circuits *in the LED circuit array*, because the modified *Piepgras-Michael* device includes an array arrangement of the at least two independently controlled LED circuits. (Ex. 1002, ¶116.)

Further, where device 500 is the "lighting device" (§IX.A.1(a)), device 500 includes an LED circuit driver as claimed in limitation 8(d) for the same reasons discussed above for the spotlight "lighting device." (*Id*., ¶117.)

e) wherein the data communication circuit, the LED circuit array, and the driver are integrated into the lighting device;

Piepgras-Michael discloses or suggests this limitation. (Ex. 1002, ¶¶118-119.) A POSITA would have understood that the LED circuit array of the modified *Piepgras* lighting device discussed for limitation 8(c) (§IX.A.1(c)) is integrated into spotlight 100 ("the lighting device"). For example, a POSITA would have understood that the data communication circuit (discussed for limitation 8(b),

§IX.A.1(b)) that the modified *Piepgras-Michael* spotlight 100 ("lighting device") comprises is integrated into the spotlight. (Ex. 1002, ¶118.) As discussed for limitation 8(b), *Piepgras* discloses that the lighting device includes a data communication circuit integrated therein for enabling remote control of lighting. (§IX.A.1(b); Ex. 1002, ¶118.) A POSITA would have understood that the LED circuit array (and the driver, too) is similarly integrated into spotlight 100 ("lighting device") because for the reasons discussed for limitation 8(c) and as shown above in Figure 1, controllers 3, LEDs 4, and processor 2 are components of device 500, which is part of spotlight 100 as explained above for limitation 8(a). (§§IX.A.1(a)-(d); Ex. 1030, FIG. 1; Ex. 1002, ¶118.)

Further, where device 500 is the "lighting device" (§IX.A.1(a)), it would have been obvious in view of *Piepgras* and *Michael* to integrate the data communication circuit, the LED circuit array, and the driver into device 500 for similar reasons as discussed above, *e.g.*, to facilitate operation of the system the device 500 is implemented (*e.g.*, spotlight 100, and others). (Ex. 1002, ¶119.) A POSITA would have found such a configuration to be straightforward and would have had a reasonable expectation of success implementing it for the reasons discussed for limitations 8(b)-8(d). (§§IX.A.1(b)-(d); Ex. 1002, ¶119.)

f) wherein the lighting device can transmit data signals to or receive the data signals from at least one portable telecommunications device;

Piepgras (as modified above) discloses or suggests this limitation. (Ex. 1002, ¶¶120-125.) For instance, as discussed for limitations 8(a) and 8(b), *Piepgras* discloses that spotlight 100 ("lighting device" discussed for limitation 8(a)) includes a remote user interface 102 ("at least one telecommunications device") (red below) for remotely controlling spotlight 100. (§§IX.A.1(a)-(b); Ex. 1030, ¶[0110] (describing remote user interface 102).)

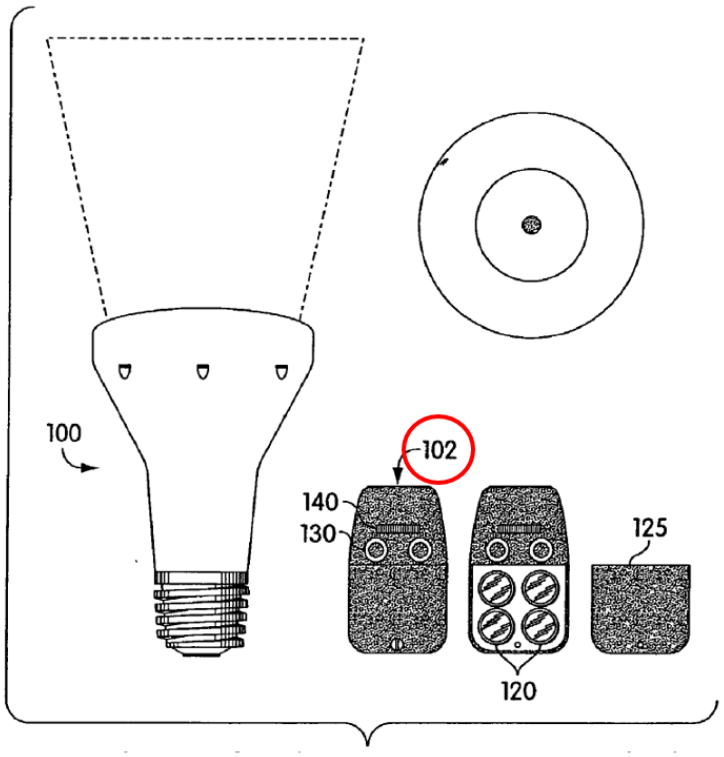


Fig. 6

(Ex. 1030, FIG. 6 (annotated); Ex. 1002, ¶120.) "[R]emote user interface 102 may be remote from the spotlight 100, and may transmit **control information** to the

spotlight 100 using, for example, an infrared or radio frequency communication link, with corresponding transceivers in the spotlight 100 and the remote user interface 102." (Ex. 1030, ¶[0110].) A POSITA would have understood that remote user interface 102 is a *telecommunications device*, because it includes a transceiver for communicating control information with spotlight 100. Thus, device 500 as modified above and included in spotlight 100 is configured to transmit data signals to or receive data signals (*e.g.*, control information which necessarily must include data to facilitate remote control) from remote interface 102, which is a "telecommunications device." (Ex. 1002, ¶120.) A POSITA would have recognized that device 500 includes the controllers 3 that control the LEDs (as described above) and thus the control information (data signals) received by user interface 102 would facilitate such remote control.

Indeed, *Piepgras* explains that "user interfaces for **any of the devices shown in** FIGS. [32-38] **as well as other figures** may be implemented as a software driven graphical user interface, a **personal digital assistant (PDA)**, a **mobile remote-control interface**, etc." (Ex. 1030, ¶[0177]; Ex. 1002, ¶121.) Because *Piepgras* describes the foregoing disclosure as being applicable to "other figures," a POSITA would have understood that it is applicable to lighting applications of various figures, including the remote **user interface** 102 of Figure 6. (Ex. 1002, ¶121.) Such a user interface may "generate and communicate signals to various lighting devices"

(Ex. 1030, ¶[0177]), which is consistent with the "control information" communicated by user interface 102 of FIG. 6 (*id.*, ¶[0110]), and thus a POSITA would have understood such features to be associated with the remote "control" of the lighting device in the lighting device (*e.g.*, device 500 operations of controlling lighting by the LEDs in the device). (Ex. 1002, ¶121.)

Thus, a POSITA would have understood that spotlight 100 ("lighting device"), which includes a transceiver (which a POSITA would have understood to include functionality of a transmitter and a receiver, hence the word "transceiver") can transmit data signals to or receive the data signals from remote user interface 102 ("at least one...telecommunications device"). (*Id.*, ¶122.) A POSITA would have understood, for example, that the data communication circuit of the *Piepgras-Michael* device discussed for limitation 8(b) is configured to communicate with (*e.g.*, transmit data to or receive the data from) the remote user interface. (§IX.A.1(b); Ex. 1002, ¶122.)

Further, where device 500 is the "lighting device" (§IX.A.1(a)), it would have been obvious to configure device 500 so that it can transmit data signals to or receive the data signals from remote user interface 102 ("at least one...telecommunications device"), for similar reasons as discussed above. (Ex. 1002, ¶123.) For example, given device 500 can be implemented in various systems (including the spotlight example discussed above (§IX.A.1(a)), a POSITA would have found it predictable

to configure device 500, which controls LEDs, so that it can transmit/receive such data signals in order to support remote lighting control functionality as disclosed and contemplated in *Piepgras*. (Ex. 1002, ¶123.)

To the extent *Piepgras-Michael* does not explicitly disclose that *device 500* ("the lighting device") is configured to transmit data signals to or receive the data signals from remote user interface 102 ("at least one...telecommunications device"), it would have been obvious to implement such a feature. (*Id.*, ¶124.) For example, as discussed above and shown above in Figure 1, system 500 includes controllers 3 for controlling the LEDs and as explained, the Figure 6 lighting system provides a "remote user interface" 102 that communicates "control information" via transceivers in interface 102 and spotlight 100. (Ex. 1030, ¶[0110].) Therefore, given that *Piepgras* discloses remote control of lighting, a POSITA would have been motivated to configure system 500 to receive the data signals from the remote user interface 102, so that such data signals can be appropriately used for controlling the LEDs that provide the lighting. (*Id.*) This would have been a straightforward configuration for a POSITA to implement, as a POSITA would have been skilled at designing various types of electronic circuits/systems, and implementing transmission and reception of data signals in various contexts. (*Id.*) Such a skilled person would have found the above configuration to be feasible to implement with a reasonable expectation of success, particularly because *Piepgras* describes system

500 as being included in spotlight 100. (Ex. 1030, ¶¶[0108], [0110]; Ex. 1002, ¶124.)

A POSITA would have understood that *Piepgras*' remote interface ("telecommunications device") is portable. (Sections IX.A.1(a)-(b); Ex. 1002, ¶125.) As explained, *Piepgras* shows a "**remote**" interface 102 (Ex. 1030, FIG. 6), and explains that such user interfaces can be implemented as a **PDA** or "**mobile** remote control interface." (Ex. 1030, ¶[0177]; *see also* Section IX.A.1(a)) A POSITA would have further understood that a PDA was known to be a portable telecommunications device. (Ex. 1002, ¶125; Ex. 1023, ¶[0004]; Ex. 1024, ¶[0004] ("With the variety of **portable** electronic products, PDA applications have become more and more popular.").) As such, the "telecommunications device" in the *Piepgras-Michael* combination is portable. And even if not apparent or disclosed, for reasons similar to those explained above, it would have been obvious to implement the "telecommunications device" in the *Piepgras-Michael* combination to be portable to provide known mobile remote control functionality expected with an interface like that contemplated and disclosed by *Piepgras*. (Ex. 1002, ¶125.) Such understandings exist in both scenarios, where the spotlight example of FIGS. 5-6 is the "lighting device," or where device 500, as implemented in systems facilitating such remote control functionalities (including the spotlight example), is the lighting device. (*Id.*)

g) wherein the portable telecommunications device comprises a circuit that can detect a human touch via capacitive sensing, wherein the circuit of the portable telecommunications device is configured to detect the human touch via capacitive sensing, and

Piepgras-Michael in view of *Butler* discloses or suggests this limitation.[8] (Ex. 1002, ¶¶126-137.) As discussed for limitations 1(a)-(b) and 1(f), the *Piepgras-Michael* system discloses/suggests a portable remote user interface ("the portable telecommunications device") used for remotely controlling spotlight 100. (Sections IX.A.1(a)-(b), (f).)

However, *Piepgras-Michael* does not explicitly disclose that the portable remote user telecommunications device comprises a circuit that can detect a human touch via capacitive sensing wherein the circuit is configured to detect the human

[8] The '583 patent does not describe a "portable telecommunications device compris[ing] a circuit that can detect a human touch via capacitive sensing, wherein the circuit of the portable telecommunications device is configured to detect the human touch via capacitive sensing." (*See generally* Ex. 1001; Ex. 1002, ¶126.) Petitioner reserves the right to challenge the definiteness of this claim in other proceedings, including challenges in light of potential interpretations under 35 U.S.C. § 112. For purposes of this proceeding, Petitioner demonstrates that the prior art discloses or suggests this limitation based on the language of the claim.

touch via capacitive sensing. Nevertheless, it would have been obvious in view of the disclosures of *Piepgras* and *Butler* and the knowledge of a POSITA to configure and use a remote user interface 102 with such features.[9] (Ex. 1002, ¶127.)

As explained, *Piepgras* discloses features that use remote user interfaces, such as a PDA. (Section IX.A.1(f); Ex. 1030, ¶[0177].) Thus, a POSITA would have had multiple reasons to contemplate various ways to implement a remote control device to facilitate the remote lighting control of the lighting device discussed above. (Ex. 1002, ¶128.) As such, a POSITA would have found *Butler* as relevant guidance for such configurations. *Butler* describes a handheld remote control device that is used for controlling another device, *e.g.*, a television, and in this manner is similar to *Piepgras*' disclosure of a handheld remote control device (*e.g.*, PDA) for controlling another device (*e.g.*, *Piepgras*' LED lighting device). (Ex. 1016, Abstract ("providing touch screen capability on interactive television systems and associated remote control devices"), ¶¶[0005] ("The remote control is typically a hand held device that communicates with the television apparatus and/or a set top box by an Infrared (IR) or other link."), [0020] ("remote control"); Ex. 1002, ¶128.)

[9] The '583 patent does not describe any meaningful distinction between a circuit that "can detect a human touch via capacitive sensing" and a circuit that "is configured to detect the human touch via capacitive sensing." (Ex. 1002, ¶127.)

Therefore, a POSITA contemplating implementing the *Piepgras-Michael* lighting device would have had reason to consider the teachings of *Butler*, *e.g.*, for guidance regarding implementing *Piepgras*' remote control of lighting. (Ex. 1002, ¶129.)

Butler describes techniques for providing improved user input capability using its remote control. (Ex. 1016, Title ("Method and system for providing **improved user input capability** for interactive television"), Abstract ("providing touch screen capability"), ¶¶[0001] ("techniques for providing user input capability for interactive program content over television"), [0029] ("[I]nteractive television system 100 may provide interactivity to users, such as permitting the user to select a program, turn the system on and off, and the like. Such capabilities may be provided using an EPG [electronic program guide] displayed on the screen of television 154 and/or on the remote control 158."); Ex. 1002, ¶130.) For example, *Butler* discloses that its remote control detects human touch for acquiring input from a user, and further discloses capacitive sensing as a way to detect the human touch. (Ex. 1016, ¶¶[0020] ("Embodiments provide interactive capability by using a **touch screen**.... [E]mbodiments ... employ presence sensitive devices [which] can be a ... **capacitive touch screen**.... [A] touch screen emulates the operation of a mouse to select areas of the screen to activate. Specific embodiments may be preferably implemented on ... a remote control...."), [0026] ("the remote control will also include touch screen capability."), [0028] ("An optional associated remote control

158, which can optionally have a corresponding **touch screen** overlay 159 can be provided."), FIG. 1A (annotated below); Ex. 1002, ¶131.)

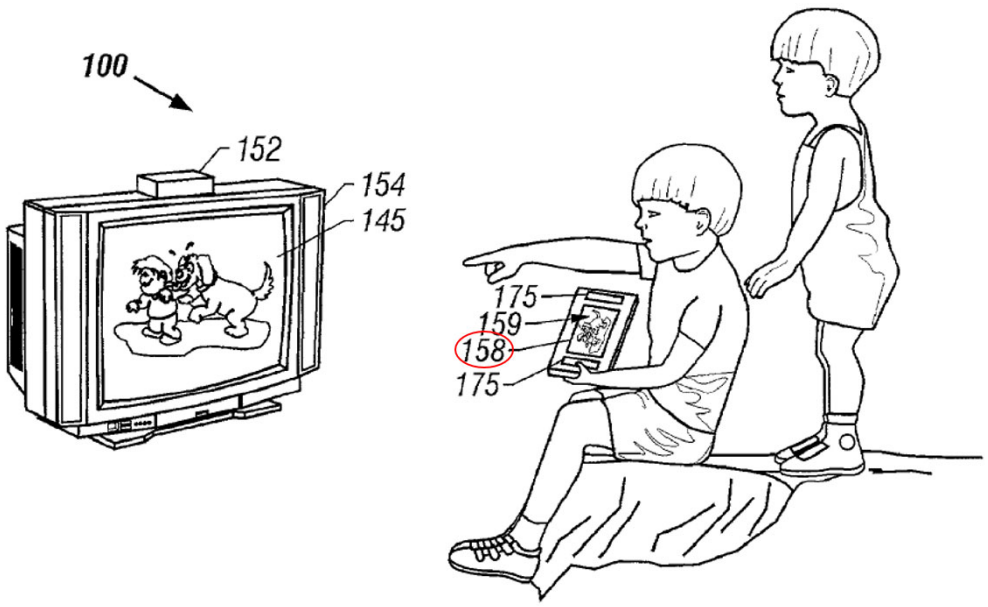


FIG. 1A

(Ex. 1016, FIG. 1A (remote control 158 annotated in red); Ex. 1002, ¶131.)

Butler explains benefits associated with using a touch screen. (Ex. 1016, ¶[0021] ("Touch access enables specific embodiments to be especially suitable for children or adults with impaired motor abilities because children instinctively touch something they want and using a touch screen is much easier than using a mouse or a device with small buttons, such as a standard remote control, for a disabled person. ... People with impaired vision capabilities may use a touch screen to enlarge an area or have the text read to them by the interactive system."); Ex. 1002, ¶132.) Additionally, a POSITA would have recognized that touch screens facilitate

convenient user input for a variety of users besides the ones described in *Butler*, because touch screens were well known in the art. (Ex. 1006, ¶[0030] ("Input/output components 206 include a variety of input devices that have previously been found on mobile devices such as a touch-sensitive screen...."); *see also id.*, ¶[0024] (disclosing that mobile device 200 includes input/output components 206), FIGS. 1 (showing input/output components 206), 3 (above; showing display screen 304); Ex. 1002, ¶133.)

A POSITA would have understood that *Butler*'s portable remote control necessarily comprises a *circuit that can* detect a human touch via capacitive sensing, wherein the *circuit is configured to* detect the human touch via capacitive sensing. (Ex. 1016, FIG. 1A, ¶[0005] ("The remote control is typically a hand held device that communicates with the television apparatus and/or a set top box by an Infrared (IR) or other link."); Ex. 1002, ¶134.) For example, a POSITA would have had such an understanding because it was well known that capacitive sensing requires sensing capacitance, which is an attribute of a circuit, and in any event must include touch sensing circuitry to provide such features. (Ex. 1006, ¶[0037] ("[T]he touch sensors are **capacitive touch sensors** that are divided into two regions. ... When a user touches either section 300 or 302, the **capacitance** associated with the touched section changes indicating that the user has touched the device."); Ex. 1002, ¶134.) Moreover, *Butler*'s disclosures are consistent with the well known use of touch

sensor technologies for providing user input for controlling devices, like those of *Piepgras*. (*See e.g.*, Ex. 1090, FIGS. 3A, 9, 1:44-50, 2:17-37, 5:53-4:4; Ex. 1091, ¶¶[0011]-[0013], FIGS. 1, 8, 9 ¶¶[0014], [0036], [0041] [0052], [0064]; Ex. 1092, ¶¶[0107], [0116], [0132] (known capacitive touch pad products); Ex. 1089, Title, Abstract, 2:42-46, 12:18-22; Ex. 1002, ¶48.)

In light of *Piepgras*' and *Butler*'s disclosures, a POSITA would have been motivated to configure or implement within *Piepgras-Michael*'s combination a remote user interface ("telecommunications device") that includes a circuit that can detect a human touch via capacitive sensing and that is configured to detect the human touch via capacitive sensing, such as touch sensors or a touch screen. (Ex. 1002, ¶135.) For example, a POSITA would have found providing such human touch detection features in the remote control interface used by the lighting system (*e.g.*, FIG. 6 of *Piepgras*) would have improved the system because it would have beneficially added versatility in how a user could remotely control the lighting system via well-known user friendly touch sensing technologies. (*Id.*) A POSITA would found such a configuration predictable and feasible, given that *Butler* describes such capacitive touch tensing and particularly given that touch detection was well known for portable devices, including PDAs, which *Piepgras* describes as an example of the remote user interface. (Ex. 1030, ¶[0177]; Ex. 1023, ¶¶[0005] ("display of the PDA is usually a touch-control display"), [0016] ("display 101 ...

can be a touch-control screen"); Ex. 1024, ¶[0005] ("touch panel 11"), FIG. 1 (showing touch panel 11); Ex. 1002, ¶135.) A POSITA would have found using *capacitive* sensing to be to be a predictable way of implementing such touch detection input features in such a remote control device in the *Piepgras-Michael* system, especially in light of *Butler* and a POSITA's state-of-the-art knowledge. (Ex. 1006, ¶[0037]; Ex. 1002, ¶135.)

For similar reasons, a POSITA would have had the capability to implement this configuration with a reasonable expectation of success. (Ex. 1002, ¶136.) Such a configuration would have been straightforward to implement, as it would have involved the use of known components and technologies and techniques (*e.g.*, capacitive touch detection circuitry in a remote control device) that would have predictably led to a remote user interface (*e.g.*, remote user interface 102) with convenient user touch input features. (*Id.*) *KSR*, 550 U.S. at 416.

The above understandings and reasons are applicable to both scenarios, *e.g.*, where the spotlight example of FIGS. 5-6 is the "lighting device," or where device 500, as implemented in systems facilitating such remote control functionalities (including the spotlight example), is the lighting device. (Ex. 1002, ¶137.)

h) wherein the portable telecommunications device further comprises at least one LED that provides light based upon detection of the human touch.

The *Piepgras-Michael-Butler* combination in view of the state of the art

discloses or suggests this limitation. (Ex. 1002, ¶¶138-143.) As discussed for limitation 8(f), *Piepgras-Michael* discloses that its lighting device is remotely controlled by the modified portable telecommunications device, and as discussed for limitation 8(g), the *Piepgras-Michael-Butler* combination discloses that the portable telecommunications device can detect a human touch. (Section IX.A.1(f)-(g).) While the *Piepgras-Michael-Butler* combination does not explicitly disclose that the portable telecommunications device *comprises at least one LED that provides light based upon detection of the human touch*, it would have been obvious in view of the state of the art to configure the portable telecommunications device to implement such features. (Ex. 1002, ¶138.)

It was well known to a POSITA to implement a touch screen as an *LED* touch screen. (*Id.*, ¶¶139-140.) For example, *Swartz* and *Hack* disclose features consistent with such state-of-the-art knowledge about the known use of LED touch screens. (Ex. 1007 (*Swartz*), ¶¶[0080] ("touch screen display" for a portable computing device shown in Figure 17 of *Swartz* (below)), [0048] (describing using "a flat panel type display," *e.g.*, "**light emitting diode (LED) displays** such as Organic LED"); Ex. 1009 (*Hack*), ¶¶[0013] ("The display can be touch responsive."), [0014] ("The display can include a plurality of [OLEDs]."), FIG. 2A (showing portable computing device), Abstract ("hand-held, portable communications device"); Ex. 1022, FIG. 2 (showing touch sensor 202), ¶¶[0037] (describing capacitive touch sensor 202),

[0038]-[0039] ("display 204 can be [an] organic light emitting diode (OLED) display"); Ex. 1002, ¶139.) *Swartz* further demonstrates that it was known to implement an LED touch screen in a PDA. (Ex. 1007, ¶[0087] ("[T]he wrist unit and the CPU unit may be combined into a single control unit, which in itself may become a PDA..."); Ex. 1002, ¶140.)

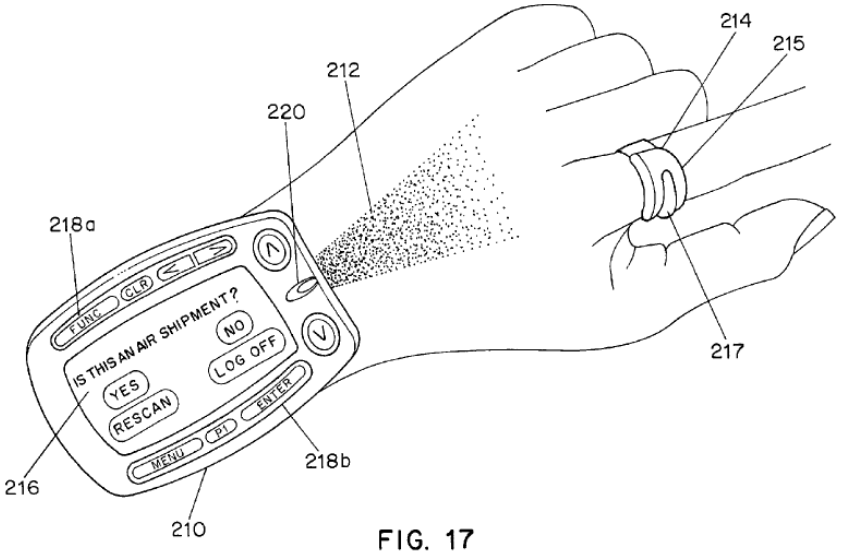


FIG. 17

(Ex. 1007, FIG. 17.)

A POSITA would have understood that configured in the above-described manner, the above-discussed modified portable telecommunications device would use an LED touch display and thus when touched, the LED(s) of the display would change (*e.g.*, turning on and/or changing interface content). Thus, a POSITA would have understood that at least one LED in such a display would provide light based upon detection of the human touch, consistent with that known in the art. (Ex. 1009,

¶[0013] ("The display can provide touch signals to the processor and the processor can perform responsive operations in response to receiving the touch signals."); Ex. 1002, ¶141.)

A POSITA would have recognized that such a configuration of the portable telecommunications device would have been a predictable way to implement a touch screen, and a POSITA would have found such usage of conventional technology to be desirable for promoting reliability and ease of implementation. (*Id.*, ¶142.) A POSITA would have been capable of implementing an LED touch screen, as it was well known, as explained above (including in the context of portable devices such as a PDA), and would have had a reasonable expectation of success implementing such a configuration, as it would have been a mere combination of known components and technologies, according to known methods, to produce predictable results. (*Id.*) *KSR*, 550 U.S. at 416.

The above understandings and reasons are applicable to both scenarios, *e.g.*, where the spotlight example of FIGS. 5-6 is the "lighting device," or where device 500, as implemented in systems facilitating such remote control functionalities (including the spotlight example), is the lighting device. (Ex. 1002, ¶143.)

2. Claim 9

a) The lighting device of claim 8, wherein the data communication circuit is configured to transmit data to or receive the data from the portable telecommunications device.

Piepgras-Michael-Butler discloses or suggests this limitation for at least the reasons discussed above regarding limitation 8(f) and the reasons below. (§IX.A.1(f); Ex. 1002, ¶¶144-145.) For example, as explained for limitation 8(b), the *Piepgras-Michael* device includes a data communication circuit having at least one antenna. (§IX.A.1(b).) Given that the *Piepgras-Michael-Butler* device discussed for claim 8 communicates wirelessly with the portable telecommunications device (including transmitting data signals to it and receiving data signals from it), a POSITA would have understood that the data communication circuit of the *Piepgras-Michael-Butler* device is configured to transmit data to and receive the data from the portable telecommunications device, and thus meets the limitation of claim 9. (Ex. 1002, ¶144.) For example, a POSITA would had this understanding because it was well known that an antenna is used for transmitting and receiving data signals wirelessly, and the data communication circuit of the combined *Piepgras-Michael-Butler* device has the antenna. (*Id.*)

The above understandings and reasons are applicable to both scenarios, *e.g.*, where the spotlight example of Figures 5-6 is the "lighting device," or where device

500, as implemented in systems facilitating such remote control functionalities (including the spotlight example), is the lighting device. (Ex. 1002, ¶145.)

3. Claim 10

a) The lighting device of claim 8, wherein at least one LED in the at least one LED circuit is configured to transmit data to or receive the data from the portable telecommunications device.

The '583 patent does not disclose an *LED* configured to transmit data to or receive data from a portable telecommunications device. (*See generally* Ex. 1001.) PO has asserted that claim 10 is met by a user "control[ling] compatible lighting devices." (Ex. 1084, 8-9.) Under that interpretation, *Piepgras-Michael-Butler* discloses or suggests this limitation.[10] (Ex. 1002, ¶¶146-147.) For example, a POSITA would have understood that at least one LED in the *Piepgras-Michael-Butler* device discussed for claim 8 is configured to receive the data ("transmit data to or receive the data") from the above-discussed portable telecommunications device, because the portable telecommunications device is used for remotely controlling LED lighting provided by the lighting device (as explained for

[10] For purposes of this proceeding, Petitioner assumes that this claim is intended to recite "at least one LED in the at least two independent controlled LED circuits" recited in limitation 8(d). Petitioner reserves the right to challenge this claim under § 112 in other proceedings.

limitations 8(b) and 8(f)). (§§IX.A.1(b), (f); Ex. 1002, ¶146.) A POSITA would have understood that the LEDs in the lighting device are in the LED circuits ("at least one LED circuit") discussed for limitation 8(c). (§IX.A.1(c); Ex. 1002, ¶146.)

The above understandings and reasons are applicable to both scenarios, *e.g.*, where the spotlight example of FIGS. 5-6 is the "lighting device," or where device 500, as implemented in systems facilitating such remote control functionalities (including the spotlight example), is the lighting device. (Ex. 1002, ¶147.)

4. Claim 15

a) The lighting device of claim 8, wherein the portable telecommunications device further includes at least one OLED.

The *Piepgras-Michael-Butler* combination in view of the state of the art discloses or suggests this limitation. (Ex. 1002, ¶¶148-153.) As discussed for claim 8, *Piepgras* discloses LEDs and the *Piepgras-Michael-Butler* combination discloses a portable telecommunications device including an LED touch screen. (§§IX.A.1(a), (c), (h).) While the *Piepgras-Michael-Butler* combination does not explicitly disclose that the portable telecommunications device includes at least one OLED (i.e., an *organic* LED), it would have been obvious in view of the state of the art to implement this feature. (Ex. 1002, ¶148.)

It was well known to a POSITA that OLEDs (a circuit component that was a type of LED) were used in various contexts, including in portable

telecommunications devices. (*Id.*, ¶149.) For example, as discussed above for limitation 8(h), *Swartz* demonstrates that it was known to implement an OLED in a portable computing device shown in Figure 17 (below) of *Swartz*, and describes using "a flat panel type display," *e.g.*, "light emitting diode (LED) displays such as **Organic LED.**" (Ex. 1007, ¶[0048]; *id.*, FIG. 17 (below); §IX.A.1(h); Ex. 1002, ¶149).

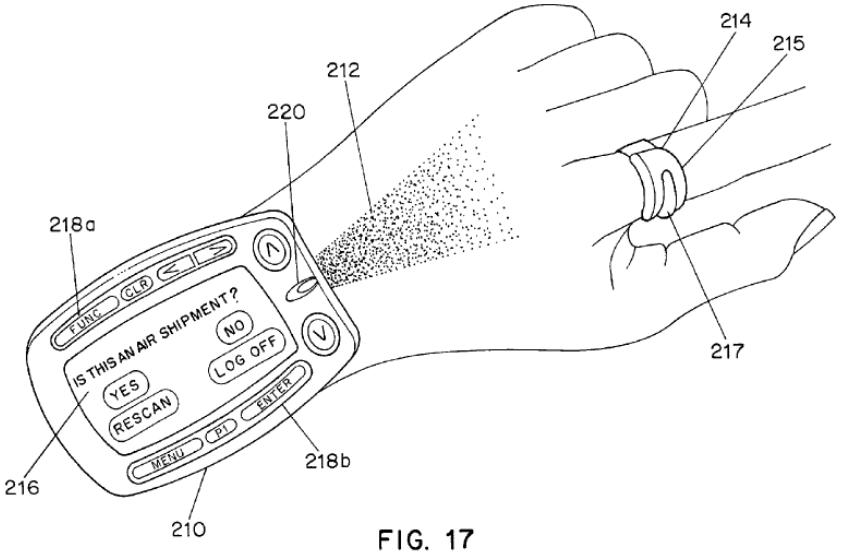


FIG. 17

(Ex. 1007, FIG. 17.)

Similarly, *Hack* discloses a portable communications device 100 (Ex. 1009, FIG. 2A, Abstract) that includes a display 106 having a display screen 110 (*id.*, FIG. 2A, ¶[0063]) "compris[ing] a plurality of pixels 109" (*id.*, ¶[0063]) comprising "light emitting elements," which are "[p]referably, ... high efficiency, **organic light emitting devices (OLEDs)**." (*Id.*; *see also id.*, ¶¶[0063]-[0064], [0066], [0071]-[0072], [0076].) Indeed, *Hack* explains that OLEDs were known at the time (*id.*,

¶[0063]) and further discloses the use of OLEDs for backlighting a display. (*Id.*, ¶[0072] ("[A] flexible OLED backlight can be used to illuminate a flexible LCD to provide a flexible backlit LCD."); Ex. 1002, ¶150.)

In light of such knowledge of a POSITA regarding the state of the art, a POSITA would have been motivated and found it obvious to configure the *Piepgras-Michael-Butler* portable telecommunications device to comprise at least one OLED. (Ex. 1002, ¶151.) A POSITA would have found such a configuration beneficial. (*Id.*) For example, OLEDs were a known, high-performance technology, *e.g.*, for use in an OLED display or for providing backlighting, both of which would have been relevant, predictable features to include in the portable telecommunications device. (Ex. 1009, ¶¶[0071] ("OLED display technology is preferred for use on such flexible substrates because of, among other reasons, its very low substrate temperature during deposition, as well as its high brightness at low power levels."), [0072] ("OLED backlight"), [0076] ("OLED technology is preferred because of the very small pixel size that can be attained (such as the so-called 'nanopixels,' for example)."); Ex. 1002, ¶151.) A POSITA would have sought to leverage an existing, reliable technology (such as OLED) for implementing a display in the portable telecommunications device, which a POSITA would have understood includes a display (*e.g.*, touch screen) as explained above. (Ex. 1002, ¶151.) Additionally, a POSITA would have found the usage of a backlight desirable for promoting

readability, and would have found an OLED to be a predictable manner of implementing a backlight. (Ex. 1022, ¶[0039] ("backlight 206 ... enhance[s] readability in all lighting conditions"); Ex. 1002, ¶151.)

A POSITA would have been capable of implementing the above configuration and would have had a reasonable expectation of success implementing it, as it would have been a combination of known components and technologies, according to known methods, to produce the predictable result of using a known display technology (OLED) in a portable telecommunications device having a touch display (as explained above for limitation 8(g)). (Ex. 1002, ¶152.) *KSR*, 550 U.S. at 416.

The above understandings and reasons are applicable to both scenarios, *e.g.*, where the spotlight example of FIGS. 5-6 is the "lighting device," or where device 500, as implemented in systems facilitating such remote control functionalities (including the spotlight example), is the lighting device. (Ex. 1002, ¶153.)

5. Claim 18

a) The lighting device of claim 8, wherein the lighting device further comprises: integrated circuitry that allows adjustment of a brightness of the at least one LED circuit.

Piepgras-Michael-Butler in view of the state of the art discloses or suggests

this limitation.[11] (Ex. 1002, ¶¶154-162.) *Piepgras* discloses with reference to Figure 8 an example lighting application including a light bulb 180, shown below:

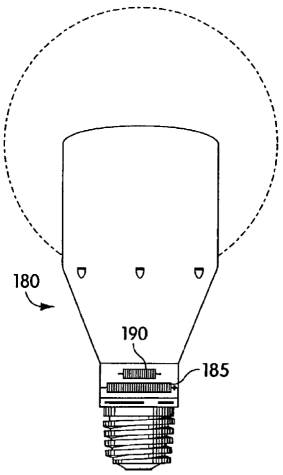


Fig. 8

(Ex. 1030, FIG. 8; *see also id.*, ¶¶[0111]-[0114]; Ex. 1002, ¶154.)

Piepgras explains that "light bulb 180 is similar to the light bulb 150 of FIG. 7" (Ex. 1030, ¶[0112]), which includes LEDs (*id.*, ¶[0111]). *Piepgras* explains that "[m]any incandescent lighting systems have dimming control that is realized through changes to applied voltages," and discloses dimming *Piepgras*' light bulb 180 that includes LEDs. (Ex. 1030, ¶[0114] (disclosing that a "look-up table may contain

[11] For purposes of this proceeding, Petitioner assumes that this claim is intended to recite "at least one LED circuit of the at least two independently controlled LED circuits" of limitation 8(d), instead of "the at least one LED circuit." Petitioner reserves the right to challenge this claim under § 112 in other proceedings.

full brightness control signals and these control signals may be communicated to the LEDs when a **power dimmer** is at 100%"); *see also id.*, ¶[0113].) *Piepgras* explains that "[a] portion of the [look-up] table may contain **80% brightness control signals** and may be used when the input voltage to the lamp is reduced to 80% of the maximum value," and a "**processor** may continuously change a parameter with a program as the input voltage changes." (*Id.*; Ex. 1002, ¶155.) *Piepgras* describes that "[t]he lighting instructions could be used to **dim the illumination** from the lighting system," and a POSITA would have understood that the dimming is achieved by the processor, which must include circuitry because it includes electrical components that require power, which is conveyed using a circuit. (*Id.*; Ex. 1002, ¶156.) *Piepgras* discloses that "light bulb 150 may include a system such as that depicted in FIG. 1," *i.e.*, system/device 500, and thus a POSITA would have understood that the processor used for dimming is processor 2 of device 500 in light bulb 180, which is described as similar to light bulb 150. (Ex. 1030, ¶[0111]; Ex. 1002, ¶156.)

Thus, *Piepgras*' processor allows adjustment of a brightness of lighting provided by LEDs. (Ex. 1002, ¶157.) A POSITA would have understood that processors, including *Piepgras*' processor that performs dimming, are implemented with *integrated* circuitry. (Ex. 1031, 150 ("Figure 11.7 shows a complex integrated circuit. It is in fact the central processor unit of a computer."), 151 ("an example of

a large-scale integrated circuit, a microprocessor"); Ex. 1002, ¶157.)

To the extent the *Piepgras-Michael-Butler* combination does not explicitly disclose that spotlight 100 ("the lighting device") comprises integrated circuitry that allows adjustment of a brightness of the at least one LED circuit, it would have been obvious to implement this feature in the *Piepgras-Michael-Butler* device. (Ex. 1002, ¶158.) As discussed above, *Piepgras* discloses that its lighting application for Figure 8 includes circuitry that allows adjustment of a brightness of LEDs. (*Id.*) *Piepgras*' disclosures are consistent with the state-of-the-art knowledge at the time regarding dimming features in lighting devices like that described by *Piepgras*. (*See, e.g.*, Ex. 1019, Title, Abstract (disclosing a "dimmer switch assembly" and "control circuit" that can decrease the intensity of a light source), FIGS. 1-10, 1:13-19, 3:23-51, 5:17-6:24; Ex. 1020, Abstract, FIGS. 1-3, ¶¶[0029] ("dimmer switch 82"), [0037] ("DC dimmer switch 82 may also be installed in a wall of the area to be illuminated, it may be incorporated into the DC light switch or it may be located within the bright white LED light fixture 20."); Ex. 1095, Abstract ("Each time the lamp is touched the power to the bulb increases by one step, typically in the sequence OFF, DIM, INTERMEDIATE, FULL, OFF."); Ex. 1002, ¶50.) In light of the disclosures/suggestions of *Piepgras* and the state-of-the-art knowledge of such features, a POSITA would have been motivated to, and found it predictable to, implement such features in spotlight 100, particularly because spotlight 100, like

light bulb 180, includes device 500 comprising LEDs 4 and processor 2. (Ex. 1002, ¶158.) A POSITA would have thus found it feasible and beneficial to implement such features in spotlight 100. (*Id.*)

Additionally, integrated circuitry design/implementation concepts were well known to a POSITA and indeed were fundamental to numerous electronic systems, including LED lighting systems. (Ex. 1031, 144-153; Ex. 1002, ¶159.) A POSITA would have been skilled at implementing various types of integrated circuits and would have found it predictable to implement, in spotlight 100 ("the lighting device"), integrated circuitry that implements dimming functionality like that claimed in claim 18 and described in *Piepgras*. (Ex. 1002, ¶159.)

Further, where device 500 is the "lighting device" (§IX.A.1(a)), it would have been obvious to configure device 500 to include integrated circuitry that allows adjustment of a brightness of the at least one LED circuit, for similar reasons as discussed above. (Ex. 1002, ¶160.) For example, given that device 500 includes processor 2, LEDs 4, and controllers 3 for controlling (*e.g.*, dimming) the LEDs, a POSITA would have found such an implementation to be a predictable way of implementing the lighting control described in *Piepgras*. (*Id.*)

A POSITA would have found the above implementations straightforward, as they were a basic application of integrated circuitry to achieve known control of an

LED circuit. (*Id.*, ¶161.) Similarly, a POSITA would have had a reasonable expectation of success regarding such implementations. (*Id.*)

The above understandings and reasons are applicable to both scenarios, *e.g.*, where the spotlight example of FIGS. 5-6 is the "lighting device," or where device 500, as implemented in systems facilitating such remote control functionalities (including the spotlight example), is the lighting device. (Ex. 1002, ¶162.)

B. Ground 2: Claim 16 Is Obvious Over *Piepgras* in View of *Michael*, *Butler*, and *Schultz*

1. Claim 16

a) The lighting device of claim 8, wherein the at least one LED circuit is mounted on a reflective printed circuit board.

The *Piepgras-Michael-Butler* combination in view of *Schultz* discloses/suggests this limitation.[12] (Ex. 1002, ¶¶58-76, 163-168.) As discussed for limitation 8(c), *Piepgras* discloses an LED circuit. (§IX.A.1(c).) *Piepgras* further discloses that "[t]he term 'LED' includes ... chip on **board** LEDs," which a POSITA would have understood to refer to LEDs mounted on a circuit board or similar

[12] For purposes of this proceeding, Petitioner assumes that this claim is intended to recite "at least one LED circuit of the at least two independently controlled LED circuits" of limitation 8(d), instead of "the at least one LED circuit." Petitioner reserves the right to challenge this claim under § 112 in other proceedings.

substrate/base structure. (Ex. 1030, ¶[0085]; Ex. 1002, ¶164.) Such features were consistent with the common knowledge and expectation by a POSITA to mount circuits/components on a supporting base (*e.g.*, substrate). (Ex. 1002, ¶164; Ex. 1014, 15:15-16:10, FIG. 1; Ex. 1035, 1:60-2:5; Ex. 1015, FIGS. 13, 25, 13:1-22, 17:3-38; Ex. 1017, FIG. 15, ¶¶[0032], [0147] (circuit board mounting LED lamp components).) While the *Piepgras-Michael-Butler* combination does not explicitly disclose that the above-described LED circuit is mounted on a reflective printed circuit board, it would have been obvious in view of *Schultz* to implement such features. (Ex. 1002, ¶¶164.)

For example, it was known to use reflective substrates to provide a supporting base that enhances the illumination of LED circuits. (Ex. 1002, ¶165.) Indeed, *Schultz* discloses LED illumination systems (Ex. 1032, ¶¶[0002]-[0010]), and thus would have been considered by a POSITA when contemplating *Piepgras*' device/system. (Ex. 1002, ¶165.) *Schultz* discloses that by mounting LED dies on a reflective circuit board, "the utilization of the light is improved" as opposed to use with non-reflective circuit boards. (Ex. 1032, ¶[0048]; *id.*, ¶[0047].) Accordingly, a POSITA would have similarly been motivated by *Schultz*'s teachings to address the problem of unutilized light due to absorption or scattering by the substrate that would mount the LED circuit in the *Piepgras-Michael-Butler* combination. (Ex. 1002, ¶165.)

Thus, in light of the state-of-the-art knowledge and the guidance provided by *Schultz*, a POSITA would have been motivated, and found obvious, to configure the *Piepgras-Michael-Butler* lighting device to mount the LED circuit on a reflective printed circuity board in order to provide a mechanical support for facilitating implementation of the device with enhanced lighting characteristics via reflective material on the board. (*Id.*, ¶166.) A POSITA would also have been so motivated given *Schultz*'s guidance and the knowledge of a POSITA regarding increasing the optical efficiency of the lighting system and mounting LED circuits on boards. (*Id.*, ¶167; Ex. 1014, 15:15-16:10 (known mounting of components, including LEDs on printed circuit board), 12:29-33; Ex. 1018, 6:6-12; Ex. 1012, Abstract, ¶¶[0018], [0034], [0079] ("Chip-on-board LED Exit Signs"), [0081], [0083]; Ex. 1033, 16:24-45; Ex. 1015, FIGS. 13, 25, 13:1-22, 17:3-38.) Such a modification would have been no more than the predictable use of known lighting design techniques (*e.g.*, adding a reflective layer to a substrate or forming the substrate from a reflective material) and components according to their established functions. (Ex. 1002, ¶167.) *KSR*, 550 U.S. at 417.

Given the knowledge of a POSITA and disclosures of *Schultz* and the knowledge of a POSITA, a POSITA would have had a reasonable expectation of success in implementing such a modification—especially given it would have involved the use of known technologies/techniques to predictably produce an LED

lighting device that benefited from known properties of reflective base structures, as suggested by *Schultz* and known in the art. (Ex. 1002, ¶168.)

C. Ground 3: Claim 17 Is Obvious Over *Piepgras* in View of *Michael*, *Butler*, and *Naskali*

1. Claim 17

a) The lighting device of claim 8, wherein the portable telecommunications device is configured to receive power wirelessly.

While the *Piepgras-Michael-Butler* combination does not explicitly disclose that the above "portable telecommunications device" is configured to receive power wirelessly, it would have been obvious in view of *Naskali* and the state of the art to implement this feature. (Ex. 1002, ¶¶58-71, 77-84, 169-176.)

A POSITA would have been aware of, and considered the known use and benefits, of providing power wirelessly to devices. (Ex. 1002, ¶¶51-53; Ex. 1093, 1:10-12 ("[i]t is, of course, known in principle to transmit power and data using radio waves"); *id.*, Title, Abstract, FIG. 2, 1:10-12, 3:19-25, 4:12-14, 6:12-14; Ex. 1094, 5:39-66 (describing "receiv[ing] power from an electromagnetic (EM) energy source" and "a coil for the receipt of electromagnetic energy"); Ex. 1093, Abstract, FIGS. 1-2, 3:19-23, 4:12-14, 6:3-5.) *Naskali* describes such features consistent with such knowledge. For example, *Naskali* "relates to a charging system and, more particularly, to a charging system for a portable electronic device" such as a PDA. (Ex. 1010, 1:14-16; *see also id.*, Title ("Charging Device With an Induction Coil),

Abstract ("A charging device including ... a first induction coil ... ; and an induction core [having] a portion which ... is adapted to removably couple with a second induction coil of a **portable electronic device**...."), 1:18-24 ("The use of battery operated **portable electronic devices** has been increasing, such as ... PDAs.... Problems associated with the discharge of batteries in portable electronic devices has, thus, been increasing. Likewise, the need to recharge batteries of portable electronic devices while away from the home or office has increased."), 4:45-47 ("the second portable electronic device comprises a **PDA 22**"), FIG. 2 (showing PDA 22); Ex. 1002, ¶170.)

Naskali explains that it was known even at the time to charge a portable device wirelessly. (Ex. 1002, ¶171.) For example, Figure 1 of *Naskali* (annotated below) "shows a portable telephone 1 being charged by a contactless charging system, based upon **electromagnetic induction**, which is **known to exist in the prior art**." (Ex. 1010, 1:36-39.) As shown below in Figure 1, telephone 1 includes an induction core 9 (green below) located in an induction coil 2 that wirelessly receives electromagnetic energy from a coil 7 having an induction core 6 (red below), so that charger 3 wirelessly charges telephone 1. (*Id.*, FIG. 1, 1:48-54 ("With the prior art charging system shown in FIG. 1, a spacing 5 is provided between the primary side coil 7 and the secondary side coil 2. The charger 3 comprises a first induction core 6 located in the primary side coil 7. The telephone 1 comprises a second induction

core 9 located in the secondary side coil 2. Because of the spacing 5, the induction cores 6, 9 are spaced from each other."); Ex. 1002, ¶171.)

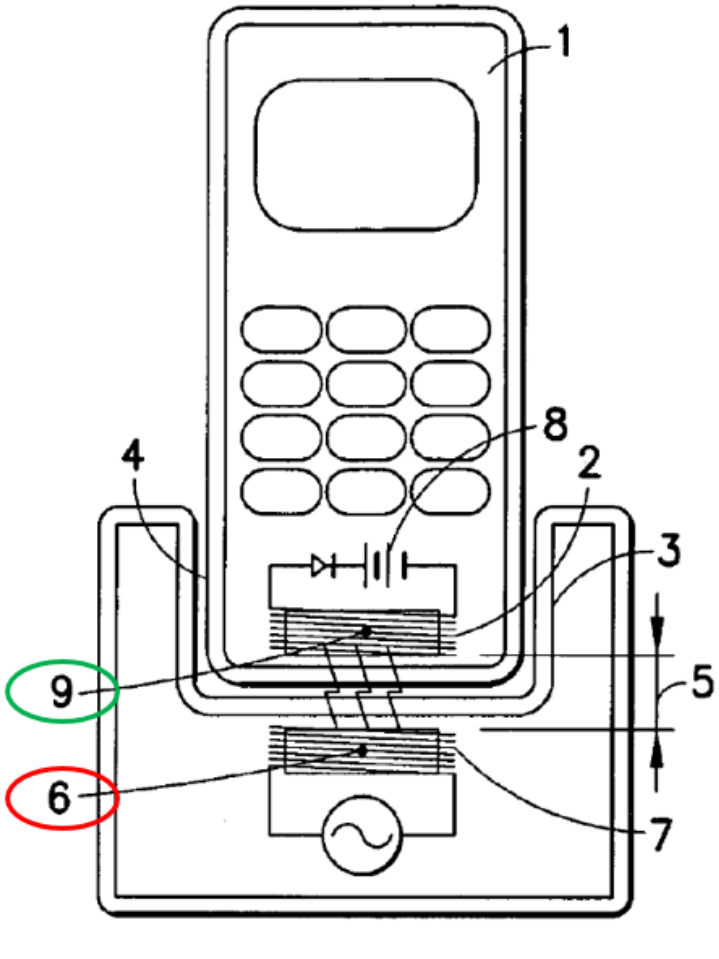


FIG. 1
PRIOR ART

(Ex. 1010, FIG. 1 (annotated); *see also id.*, 3:40-42 ("FIG. 1 is a schematic diagram of a conventional system of a battery charger stand used for charging a battery in a portable telephone by induction."); Ex. 1002, ¶171.)

Naskali discloses with reference to Figure 2 a charging system 10 that includes a charging device 16 for charging a portable electronic device 18, *e.g.*, "PDA 22" (red below). (Ex. 1010, 4:24-26, 4:32-51.)

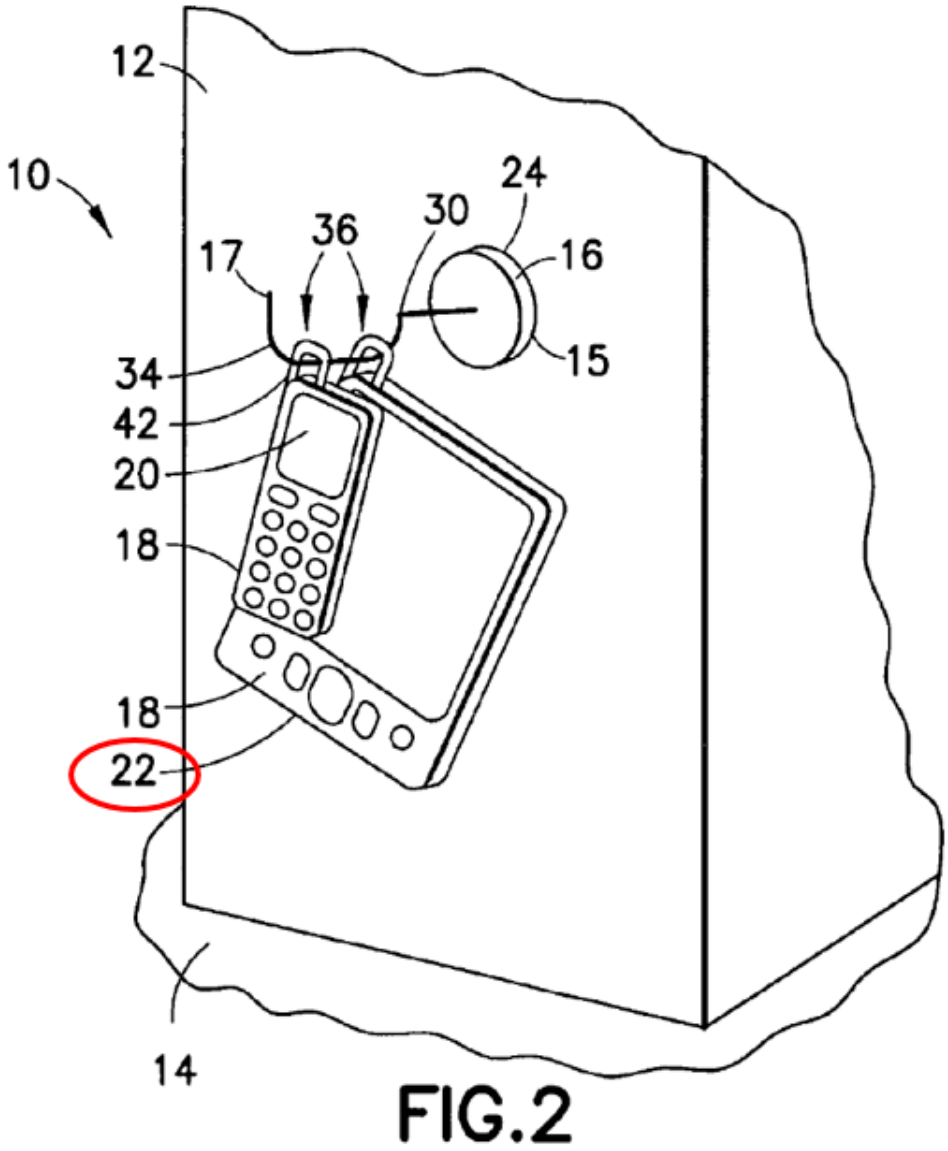


FIG.2

(Ex. 1010, FIG. 2 (annotated); *see also id.*, 3:44-45 ("FIG. 2 is a perspective view of a charging system incorporating features of the present invention."); Ex. 1002, ¶172.)

Figure 3 of *Naskali* shows coils 26 (green below) and 40 (red below) of charging device 16 and electronic device 18, respectively, for wirelessly charging electronic device 18 based on power from power feed portion 28, *e.g.*, an AC voltage source. (Ex. 1010, 4:52-55 ("the charging device 16 generally comprises a main section 15 ... compris[ing] ... a primary side coil 26"), 5:35-36 ("Each of the portable electronic devices 18 comprise a ... secondary side coil 40.").)

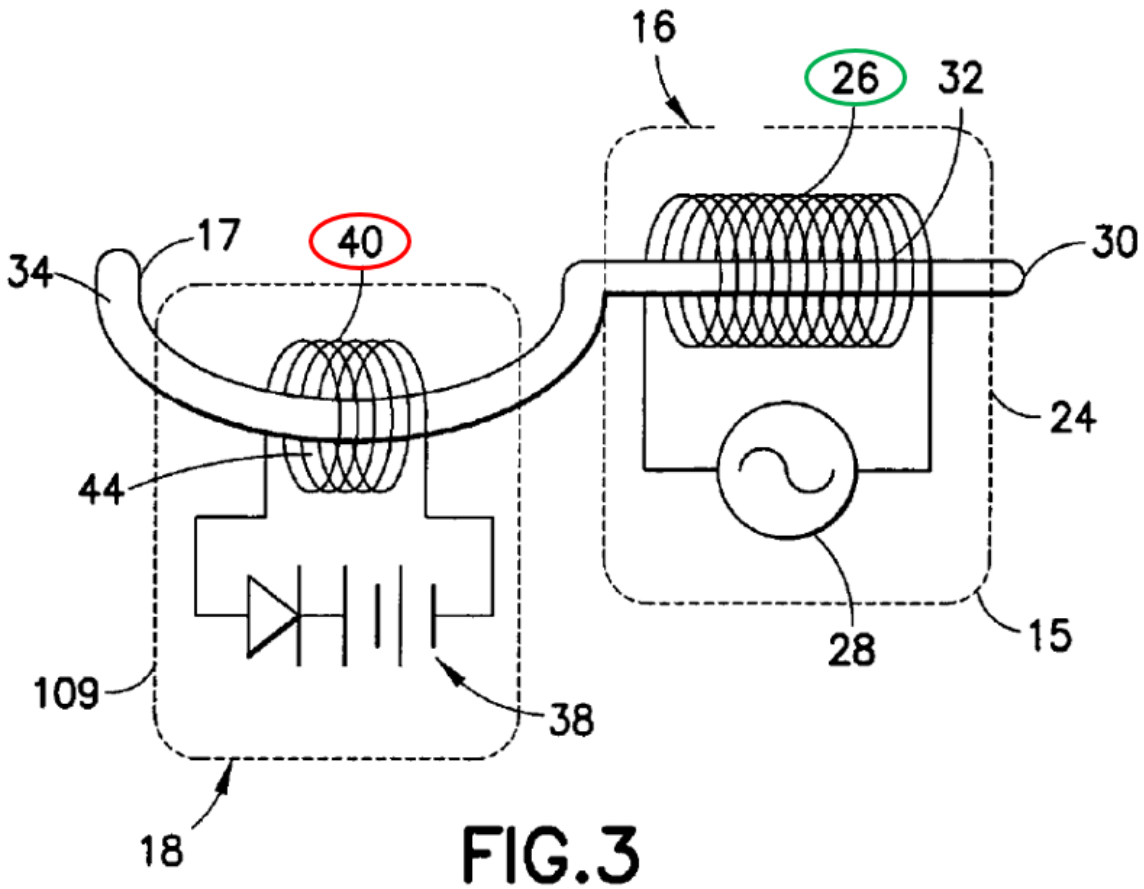


FIG.3

(Ex. 1010, FIG. 3 (annotated); *see also id.*, 3:46-47 ("FIG. 3 is a diagrammatic view of two components of the system shown in FIG. 2."), 4:52-5:52 (describing Figure 3); Ex. 1002, ¶173.)

Naskali explains that charging system 10 implements wireless power transfer to PDA 22 via electromagnetic induction. (Ex. 1010, 5:60-66 ("When the power feed portion 28 provides an AC voltage, a magnetic flux is generated in the induction core 30. A voltage is induced across the secondary side coil 40 by the action of **electromagnetic induction**. Because the secondary side coil 40 is connected to the rechargeable battery 38, the rechargeable battery 38 can be recharged."); Ex. 1002, ¶174.)

In light of *Naskali*'s disclosures, a POSITA would have been motivated to configure the above-described "portable telecommunications device" of the *Piepgras-Michael-Butler* system to use a rechargeable battery that can receive power wirelessly. (Ex. 1002, ¶175.) For example, *Piepgras* explains that user interface 102 can be battery operated (further demonstrating portability). (Ex. 1030, ¶[0108].) And like a PDA (as *Piepgras* explains is an example of a remote control user interface, *see* Section IX.A.1(f)) and other mobile electronic devices, such a device requires power. Thus, a POSITA would have found it obvious to configure the "telecommunications device" to use rechargeable battery source that is configured to be recharged (*e.g.*, receive power) wirelessly (*e.g.*, as an alternative to or complementing a wired power approach). (Ex. 1010, 1:18-24; Ex. 1002, ¶175.)

Thus, a POSITA, who would have been knowledgeable of such features/circuits, would have been capable of designing or using a remote control

user interface (with touch detection and OLED display as noted above) with wireless power features. (Ex. 1002, ¶176.) Such a POSITA would have found the above configuration feasible and predictable, and would have had a reasonable expectation of success implementing it, particularly given *Naskali*'s disclosures regarding charging system 10 and that wireless power transfer technologies and concepts were well known. (Ex. 1002, ¶176.)

X. THE CIRCUMSTANCES WEIGH AGAINST DISCRETIONARY DENIAL

An evaluation of the factors under *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (Mar. 20, 2020) (precedential), favors institution notwithstanding the concurrent Illinois Litigation (§II).

First factor. Petitioner intends to seek a stay of the Illinois Litigation upon institution. The Board has explained it will not speculate as to the outcome of such unresolved issues before a district court, *Google LLC et al. v. Parus Holdings, Inc.*, IPR2020-00847, Paper 9 at 12-13, and this factor is neutral where no such stay motion has yet been filed, *Hulu LLC v. SITO Mobile R&D IP, LLC*, IPR2021-00298, Paper 11 at 10-11 (May 19, 2021). Accordingly, this factor does not weigh in favor of discretionary denial.

Second factor. Regarding the Illinois Litigation, the court has not set a trial

date.[13] (Exs. 1075, 1076, 1086-1087.) There has not been significant resource investment by the court and the parties, particularly compared to the resource expenditures leading up to a trial. Moreover, any trial (if it occurs) would likely only occur at least 102 weeks after the service of the complaint (and indeed the complaint has been amended twice)—and thus after a final written decision in this IPR. (Ex. 1079, 1-2 (document available at Northern District of Illinois website, estimating "Case Ready for Trial" 102 weeks after complaint served); Ex. 1076, 8 (Dkt. #16 showing summons returned May 19, 2021).)

Third factor. The minimal investment by the court and parties in the Illinois Litigation weighs against discretional denial. Discovery is at an early stage. Expert discovery is not open, no depositions have occurred, and no substantive efforts toward claim construction have begun. In short, little has happened and the most resource intensive period in the district court case will occur after the institution decision in this proceeding. (*See* Exs. 1076, 1086.) This alone weighs against denial. *See*, *e.g.*, *Hulu*, IPR2021-00298, Paper 11 at 13.

Fourth factor. In the Illinois Litigation, PO has asserted only claims 8-10 and 16–17 of the '583 patent, while this Petition challenges claims 8-10 and 15-18, so the Illinois Litigation will not resolve the validity issues disputed here. (§IX; Ex.

[13] PO motion to transfer the Illinois-Litigation to Texas was denied. (Ex. 1085.)

1083, 2-5; Ex. 1084, 2-11.) Furthermore, to mitigate any potential concerns, Petitioner stipulates that it will not pursue invalidity of the '251 patent in district court based on any instituted IPR grounds in this proceeding.

Fifth factor. That Petitioner is a party to the Illinois Litigation does not outweigh the other factors that strongly weigh against discretionary denial.

Sixth factor. Petitioner diligently filed this Petition with strong grounds (*supra* §IX) **within three months** of PO's assertion of the '583 patent (Ex. 1082, pp. 53-56, 67), **within two months** of PO's amended infringement contentions in the Illinois Litigation (Ex. 1083), and **more than nine months before** the statutory deadline for filing an IPR (Ex. 1082, 67). Such diligence weighs against exercising discretion. *See*, *e.g.*, *Hulu*, IPR2021-00298, Paper 11 at 13; *Facebook, Inc. v. USC IP P'ship, L.P.*, IPR2021-00033, Paper 13 at 13.

Further, the '583 patent issued on first office action without any substantive prior art analysis of the ultimately issued claims. (Ex. 1004, 178, 198, 199.) Institution is thus consistent with the significant public interest against "leaving bad patents enforceable." *Thryv, Inc. v. Click-To-Call Techs., LP*, 140 S. Ct. 1367, 1374 (2020). Moreover, this Petition is the ***sole*** challenge to claims 8-10 and 15-18 to the '583 patent before the Board—a "crucial fact" favoring institution. *Google LLC v. Uniloc 2017 LLC*, IPR2020-00115, Paper 10 at 6 (PTAB May 12, 2020).

Accordingly, based on a "holistic view of whether efficiency and integrity of the system are best served," the facts here weigh against exercising discretion denial. *Samsung Elecs. Co. Ltd. v. Dynamics Inc.*, IPR2020-00505, Paper 11 at 15 (Aug. 12, 2020). At a minimum, factors 2, 3, 4, and 6 (or combinations thereof) outweigh factors 1 (neutral) and 5, and thus favor institution.

XI. CONCLUSION

Accordingly, Petitioner requests institution of IPR for the challenged claims based on the specified grounds.

Respectfully submitted,

Dated: October 28, 2021 By: /Joseph E. Palys/
Joseph E. Palys (Reg. No. 46,508)
Counsel for Petitioner

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 10,750,583 contains, as measured by the word-processing system used to prepare this paper, 12,365 words. This word count does not include the items excluded by 37 C.F.R. § 42.24 as not counting towards the word limit.

Respectfully submitted,

Dated: October 28, 2021

By: /Joseph E. Palys/
Joseph E. Palys (Reg. No. 46,508)
Counsel for Petitioner

CERTIFICATE OF SERVICE

I hereby certify that on October 28, 2021, I caused a true and correct copy of the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 10,750,583 and supporting exhibits to be served via express mail on the Patent Owner at the following correspondence address of record as listed on PAIR:

K&L Gates LLP-Chicago
P.O. Box 1135
Chicago IL 60690

By: /Joseph E. Palys/
Joseph E. Palys (Reg. No. 46,508)