

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOYOTA MOTOR CORPORATION,
Petitioner,

v.

CELLPORT SYSTEMS, INC.,
Patent Owner.

Case IPR2015-00634
Patent 5,479,479

Before JAMESON LEE, JAMES B. ARPIN, and SCOTT C. MOORE,
Administrative Patent Judges.

LEE, *Administrative Patent Judge.*

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

I. INTRODUCTION

A. Background

Toyota Motor Corporation (“Petitioner”) filed a Petition (Paper 2, “Pet.”) to institute *inter partes* review of claims 1–29 of expired U.S. Patent No. 5,479,479 (Ex. 1001, “the ’479 patent”). Cellport Systems, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”).

Upon consideration of the Petition and Preliminary Response, we are not persuaded, under 35 U.S.C. § 314(a), that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of any of claims 1–29 of the ’479 patent. Accordingly, we do not institute an *inter partes* review of any claim of the ’479 patent.

B. Related Matters

The ’479 patent has been asserted in two lawsuits in the United States District Court for the District of Colorado. Pet. 3; Paper 4, 2.

C. References Relied Upon

Petitioner relies on the following references:¹

¹ Petitioner also relies on the Declaration of John Villasenor (Ex. 1004).

Reference		Date	Exhibit
Boatwright	US 5,465,207	Issued: Nov. 7, 1995 Filed: Sep. 21, 1992	Ex. 1002
Mansell	US 5,223,844	Issued: June 29, 1993 Filed: Apr. 17, 1992	Ex. 1014
Hoto	US 5,410,541	Issued: Apr. 25, 1995 Filed: May 4, 1992	Ex. 1015
Guy	US 5,187,591	Filed: Feb. 16, 1993 Filed: Jan. 24, 1991	Ex. 1016
Thompson	US 5,444,855	Issued: Aug. 22, 1995 Filed: Apr. 17, 1992	Ex. 1017
RS-485	<i>Standard for Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems</i> , RS-485, Electronic Industries Association (April 1983)	April 1983	Ex. 1011

D. The Asserted Grounds

Petitioner asserts the following grounds of unpatentability:²

Reference(s)	Basis	Claims Challenged
Boatwright, RS-485, and Mansell	§ 103(a)	1, 2, 4, 6–19, 21–25, and 27–29
Boatwright, RS-285, ³ Mansell, and Hotto	§ 103(a)	3 and 5
Boatwright, RS-285, ⁴ Mansell, and Guy	§ 103(a)	20
Boatwright, RS-285, ⁵ Mansell, and Thompson	§ 103(a)	26
Mansell and RS-485	§ 103(a)	1, 2, 4, 6–12, 15–19, 22–24, and 27–29

II. ANALYSIS

A. The '479 Patent

The '479 patent relates to transmitting and receiving digital information through an air link. Ex. 1001, Title. The specific disclosure

² Petitioner's identification of "RS-285" in the grounds of unpatentability identified in the table above appears to be a typographical error. Patent Owner has regarded "RS-285" as referring, instead, to RS-485. Hereinafter, we will state and regard these grounds as based on RS-485, not "RS-285."

³ See note 2, *supra*.

⁴ See note 2, *supra*.

⁵ See note 2, *supra*.

pertains to sending and receiving digital data between a plurality of peripheral devices, through a cellular telephone, to remote devices. *Id.* at Abstr. One aspect of the '479 patent concerns providing a universal interface to different kinds of cellular phones in the form of an adaptor cable that provides for selectable coding to identify the type of the attached phone, and the application environment for that aspect of the invention can be that of a car kit environment. *Id.* at 2:40–55. Another aspect of the '479 patent concerns using a controller attached to a common bus to which a plurality of peripheral devices also are attached to permit digital data to be communicated to and from the peripheral devices via a wireless telephone. *Id.* at 3:30–44. Figure 15 of the '479 patent is reproduced below:

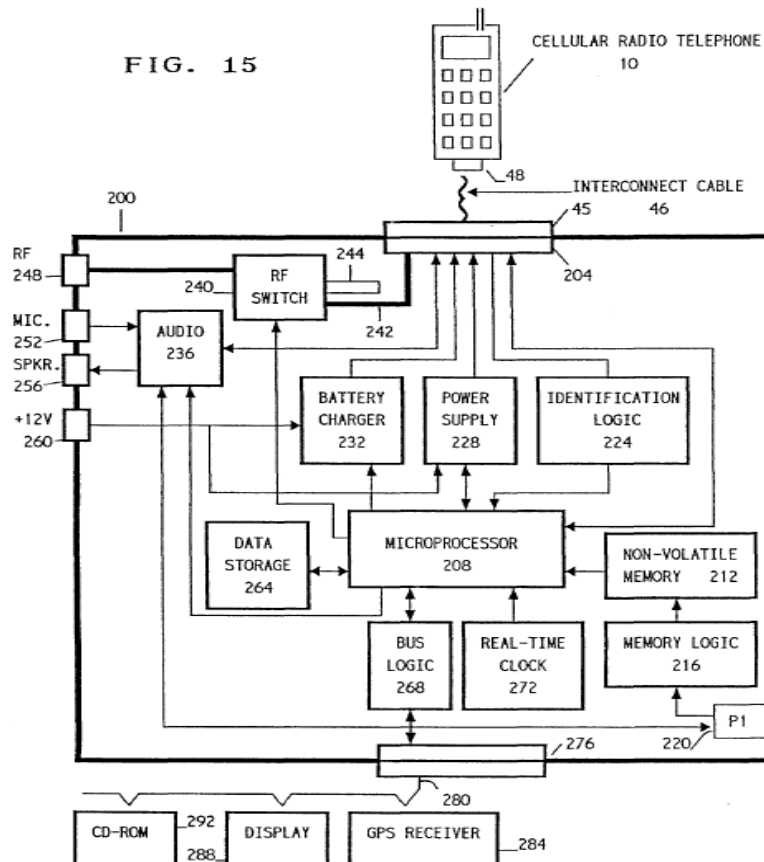


Figure 15 shows cellular phone 10 connected to car kit controller 200 through an interconnect cable having universal connector 45 that connects with car kit connector 204. *Id.* at 10–17. Car kit controller 200 includes bus logic 268 to control common bus 280 to which peripheral devices CD ROM 292, display 288, and GPS Receiver 284 are connected. *Id.* at 59–61.

With regard to operation of the system, the '479 patent states:

In operation, cellular phone 10 may receive RF signals containing data addressed to one of the peripheral devices. The data is passed via interconnect cable 46 to microprocessor 208. Microprocessor 208 formats the data according to the needs of the peripheral device to which the data is addressed. The data is then either buffered or passed directly through bus connector 276 to the appropriate peripheral device [on] bus 280.

Car kit controller 280 further comprises circuitry to allow this process to be reversed to allow any of the peripheral devices to send data through car kit controller 200 and cellular phone 10 and out of the car using RF signals. Accordingly, a duplex digital path is provided between bus 280 and cellular phone 10, for allowing digital information to be transmitted through car kit controller 200 in either direction.

Id. at 12:39–54.

Claims 1 and 17 are the only independent claims and are reproduced below. Other challenged claims depend, directly or indirectly from claim 1 or claim 17.

1. A method for transferring digital information over an air link relative to a plurality of peripheral devices communicating with a common bus, comprising:
receiving signals having digital information from an air link
using circuitry contained in a housing;

obtaining said digital information from said signals, said signals also including control information related to identifying at least a first of a plurality of peripheral devices, said digital information to be received by said first of said plurality of peripheral devices, *with said digital information to be received by said first peripheral device first being received by and outputted from a peripheral device controller having a processor*, each of said plurality of peripheral devices having an address and each of said peripheral devices being communicable with each of all of the other of said plurality of peripheral devices and said peripheral device controller being addressable by each of said plurality of peripheral devices;

determining an identification of said first peripheral device that is to receive said digital information;

sending said digital information to said first peripheral device using a signal conducting common bus that each of said plurality of peripheral devices communicates with, said common bus being located externally of said circuitry housing;

making a determination automatically including without operator intervention that second digital information associated with a second peripheral device is to be transmitted using said circuitry;

transferring said second digital information from said second peripheral device to said peripheral device controller;

and

transmitting said second digital information from said circuitry through the air link to a remote device *after receiving said second digital information by said peripheral device controller.*

17. An apparatus for controlling the transfer of digital information carried through an air link, comprising:

circuitry contained in a housing for receiving and transmitting signals carried through an air link;

a plurality of peripheral devices, each of said peripheral devices for receiving and/or outputting information and at least some of said plurality of peripheral devices, including a first peripheral device, for inputting and/or outputting digital information;

a peripheral device controller communicating with each of said plurality of peripheral devices, said peripheral device controller receiving digital information from said circuitry and determining an identity of said first peripheral device for receiving said digital information, said peripheral device controller including *processing means* and *in which said digital information to be received by said first peripheral device is first received by and outputted from said peripheral device controller;*

first means for interconnecting said circuitry with said peripheral device controller; and

second means for interconnecting said peripheral device controller and each of said plurality of peripheral devices, said second means including a signal conducting common bus that each of said peripheral devices communicates with, said common bus being located externally of said circuitry housing, each of said plurality of peripheral devices having an address and each of said peripheral devices communicable with each of all of the other of said plurality of peripheral devices and said peripheral device controller being addressable by each of said plurality of peripheral devices, wherein digital information is able to be transferred, free of control by said peripheral device controller processor, between each of said plurality of peripheral devices including between

said first peripheral device and a second peripheral device and is also able to be transferred from said peripheral device controller to each of said plurality of peripheral devices.

Id. at 16:62–17:32, 18:47–19:18 (emphases added).

B. Claim Construction

The '479 patent is expired. We construe expired patent claims according to the standard applied by the district courts. *See In re Rambus*, 694 F.3d 42, 46 (Fed. Cir. 2012). Specifically, we apply the principles set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

The words of a claim are generally given their ordinary and customary meaning, and that is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *See Phillips*, 415 F.3d at 1312–1313. Claims are not interpreted in a vacuum but are a part of and read in light of the specification. *See Slimfold Mfg. Co. v. Kinkead Indus., Inc.*, 810 F.2d 1113, 1116 (Fed. Cir. 1987). Although it is improper to read a limitation from the specification into the claims, the claims still must be read in view of the specification of which they are a part. *See Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1347 (Fed. Cir. 2004).

*“first means for interconnecting said
circuitry with said peripheral device controller”*

Claim 17 recites: “first means for interconnecting said circuitry with said peripheral device controller.” The phrase includes the word “means.” Thus, the phrase presumptively is a means-plus-function element under 35 U.S.C. § 112, paragraph 6,⁶ and is construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof. *Williamson v. Citrix Online, LLC*, 2015 WL 3687459, at *9 (en banc) (Fed. Cir. June 16, 2015). First, we identify the recited function performed by this means-plus-function element. It is “interconnecting said circuitry with said peripheral device controller.” The corresponding structure in the Specification of the ’479 patent is the interconnect cable shown in Figures 14 and 15, together with connector 48 at one end configured to attach to particular circuitry and universal connector 45 for attaching to parts having different connecting configurations. Ex. 1001, 6:36–40, 7:15–20, 9:59–61, 10:10–18. Each of the disclosed embodiments in the ’479 patent includes the universal connector. We determine that the corresponding structure for this means is a cable with a connector at each of two ends, one of the two connectors being a universal connector having a structure as described in the Specification of the ’479 patent, such as that

⁶ Paragraphs 1 through 6 of § 112 was replaced with §§ 112(a) through 112(f) when § 4(c) of the Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284, 329 (2011)(“AIA”) took effect on September 16, 2012. Because the patent application resulting in the ’479 patent was filed before the effective date of the AIA, we will refer to the pre-AIA version of 35 U.S.C. § 112.

shown in Figure 9. A more specific construction is not necessary for this decision.

“processing means”

Claim 17 recites that said peripheral device controller includes “processing means.” The term “processing means” includes the word “means.” Thus, the term presumptively is a means-plus-function limitation under 35 U.S.C. § 112, paragraph 6, and is construed to cover the corresponding structure, material, or acts described in the Specification and equivalents thereof. Patent Owner asserts that there is no recited function for this element. Prelim. Resp. 10. We disagree. The function recited is “processing.” Although the recited function is broad, it nevertheless is a recited function. Because the function recited is broad, however, the corresponding structure described in the Specification is not limited to microprocessor 208 shown in Figures 14 and 15, but also includes identification logic 224. The Specification describes:

When cellular phone 10 is initially connected to car kit controller 200, identification logic 224 samples the pins of universal connector 45 through car kit connector 204 in order to determine the model of cellular phone 10. Two processes for determining the model of cellular phone 10 through sampling of universal connector 45 are detailed above with respect to FIGS. 7 and 8. Upon sampling of the pins of universal connector 45, identification logic 224 receives coded information, regarding the model of cellular phone 10, which it provides to microprocessor 208. Microprocessor 208 then performs a table look-up of data stored in non-volatile memory 212.

Ex. 1001, 10:18–30. Identification logic 224, together with

microprocessor 208, performs the recited “processing.” Therefore, we determine that the corresponding structure for this means includes identification logic, such as identification logic 224 shown in Figure 14 and 15.

“circuitry contained in a housing for receiving and transmitting signals carried through an air link”

Claim 17 recites “circuitry contained in a housing for receiving and transmitting signals carried through an air link.” This phrase does not include the word “means.” Thus, the phrase presumptively is not a means-plus-function limitation under 35 U.S.C. § 112, paragraph 6. *Williamson*, 2015 WL at *6. However, that presumption can be overcome, such as when the phrase does not recite sufficiently definite structure. *Id.* at *7. That is the case here.

First, we note that, as recited, the housing is not a part of the circuitry. It is the generic “circuitry” that is for receiving and transmitting signals carried through an air link. The Specification does not provide a definition for the word “circuitry.” The word “circuitry,” however, is so broad that it does not convey any definite structure. See MCGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, 355, 615 (4th ed. 1989) (Defining “circuitry” as “[t]he complete combination of circuits used in an electrical and electronic system or piece of equipment” and “circuit” or “electric circuit” as “[a] path or group of interconnected paths capable of carrying electric current.”) (Ex. 3001). In the field of digital data processing, virtually everything that performs an operation constitutes circuitry.

Accordingly, we construe this phrase (exclusive of the words “in a housing”) as a means-plus-function element under 35 U.S.C. § 112, paragraph 6. The function recited is “receiving and transmitting signals carried through an air link.” The corresponding structure described in the Specification is a cellular phone or cellular radio telephone. Ex. 1001, Figs. 14, 15, 8:35, 9:59–61, 10:10–16.

*C. Alleged Obviousness of Claims 1, 2, 4, 6–19, 21–25,
and 27–29 over Boatwright, RS-485, and Mansell*

Boatwright

Boatwright discloses peripheral devices and data terminals on a vehicle, which are coupled together in a local area network, in which access to the peripheral devices and data terminals are provided through a common bus. Ex. 1002, Abstr. In a preferred embodiment, the vehicle is a forklift truck, and a portable data terminal and a set of peripheral devices are arranged on the vehicle and connected via a local area network. *Id.* at 3:46–49. Figure 1 of Boatwright is reproduced below:

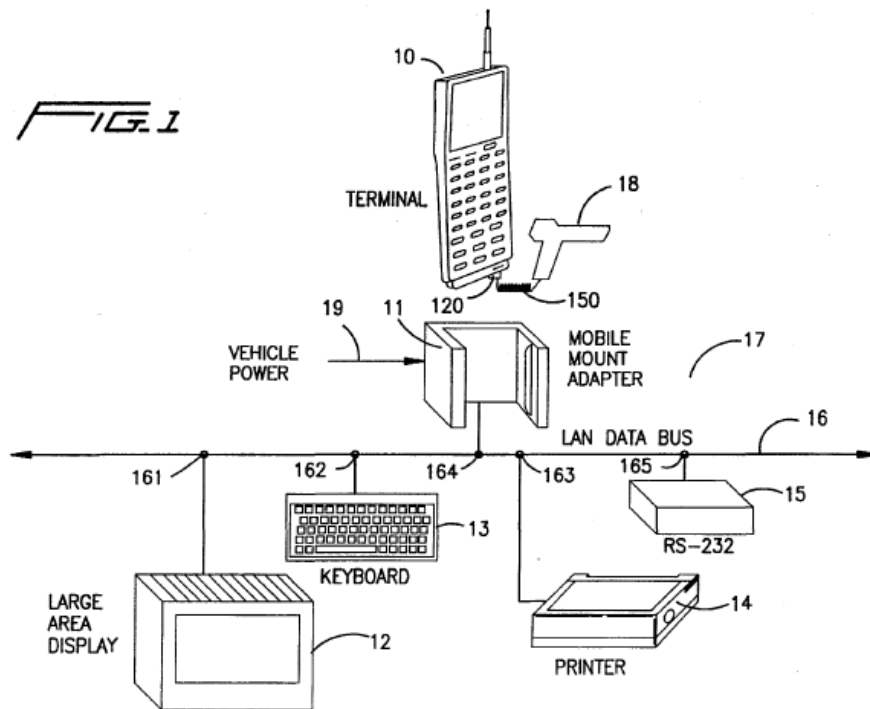


Figure 1 shows an onboard system including portable battery operated data terminal 10 which may be connected through adapter 11, and peripheral devices 12 (display), 13 (keyboard), and 14 (printer). *Id.* at 5:42–44. The data terminal and the peripheral devices are connected to local area network data bus 16. *Id.* at 5:46–47. Adapter 11 releasably accommodates portable data terminal 10 which receives and stores data obtained by optical bar code scanner or RF tag scanner 18. *Id.* at 49–52. Boatwright describes another embodiment that can employ multiple data terminals 10 connected to common bus 16. *Id.* at 6:4–6. Common bus 16 also is connected RS-232 interface means 15. *Id.* at 8–10. RS-232 interface means 15 effects data exchange between data terminals and peripheral devices on common bus 16, and a host computer system overseeing a plurality of vehicles. *Id.* at 11–13.

Boatwright describes that a number of data terminals may be coupled to common bus 16 via adapters and that the multiple terminals can share the peripheral devices on the vehicle. *Id.* at 39–44. Boatwright describes that communication is enabled from terminal to terminal and from any terminal to RS-232 interface means 15. *Id.* at 6:8–10.

Figure 4, reproduced below, illustrates a similar embodiment, specifically for a delivery truck application. *Id.* at 6:47–49.

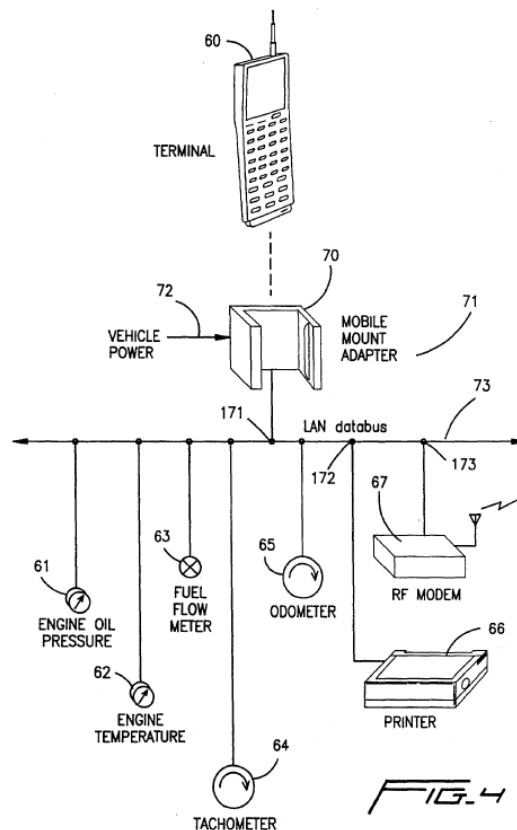


Figure 4 illustrates an embodiment suitable for a delivery truck application, in which peripheral devices 61–67 include engine oil sensor 61, engine temperature sensor 62, fuel flow meter 63, tachometer 64, odometer 65, and printer 66. *Id.* at 6:47–49. In this embodiment, RF coupling means 67, a

wireless modem, effects communication from the terminals and devices on the common bus to and from a remote host computer. *Id.* at 56–62.

Boatwright describes that even the embodiment of Figure 1 may include such a wireless RF modem. *Id.* at 6:62–63.

According to Boatwright, for either the embodiment of Figure 1 or Figure 4, there is a LAN (“local area network”) controller. *Id.* at 6:19–21, 6:52–56. It is described that the LAN controller can be disposed within any terminal, RS-232 interface means 15, RF coupling means 67, or even printer 49. *Id.* at 6:19–21, 6:27–32, 6:44–45, 6:56–62.

Analysis

Claim 1 recites:

said digital information to be received by said first peripheral device first being received by and outputted from a peripheral device controller having a processor,

Ex. 1001, 17:5–8.

In that regard, claim 17 similarly recites:

said digital information to be received by said first peripheral device is first received by and outputted from said peripheral device controller;

Id. at 18:63–65.

Claim 1 additionally recites:

transferring said second digital information from said second peripheral device to said peripheral device controller; and

transmitting said second digital information from said circuitry through the air link to a remote device after receiving said second digital information by said peripheral device controller.

Id. at 17:26–32.

As indicated above, each of claims 1 and 17 recites that digital information to be received by the first peripheral device first be received by and outputted from the peripheral device controller, and claim 1 further recites transferring digital information from a second peripheral device to the peripheral device controller prior to transmitting that digital information through the air link. For reasons discussed below, Petitioner’s accounting of these limitations of claim 1 and claim 17 as satisfied by Boatwright is deficient.

First, with regard to receiving signals via an air link and obtaining digital information from the signals, Petitioner’s analysis with regard to claim 1 (Pet. 17) mixes RF coupling means 67 with the network controller which may be contained within RF coupling means 67. Although RF coupling means 67 receives signals and outputs digital information, the network controller contained within RF coupling means 67 does not necessarily take part in that activity. The same deficiency exists for Petitioner’s analysis with regard to claim 17. *See* Pet. 34–35. All activities of RF coupling means 67 are not automatically attributable to the network controller contained in RF coupling means 67. For instance, RF coupling means 67 may include a protocol converter, similar to RS-232 components 15 and 37. Ex. 1002, 6:19–21.

Second, with regard to claim 1’s requirement of the peripheral device controller first receiving information that is intended for a peripheral device, Petitioner cites to Boatwright, for this disclosure: “The network controller [within RF coupling means 67] . . . may contain a special buffer memory for

storing data for one or more terminals” Pet. 17 (citing Ex. 1002, 7:1–3). With regard to the similar requirement in claim 17, Petitioner does the same by referring to its argument in the context of claim 1. *Id.* at 35.

The cited text is taken out of context. The entire sentence reads: “The network controller when separate from the terminal may contain a special buffer memory for storing data for one or more terminals which may be temporarily disconnected from the network.” Ex. 1002, 7:1–4.

As discussed above, data terminals in Boatwright are portable and may be removed from respective adapters that connect to the common bus. The cited disclosure of Boatwright conveys that, when the terminals are disconnected from the common bus, the network controller may store the data that is intended for them. Claim 1, however, recites “a plurality of peripheral devices *communicating* with a common bus” (emphasis added). Claim 17 recites to a common bus that “each peripheral device *communicates* with” (emphasis added). Claim 17 further recites “a peripheral device *communicating* with each of said plurality of peripheral devices” (emphasis added). Assuming that Boatwright’s terminal is a peripheral device, the configuration required by claims 1 and 17 is not met when the terminal is disconnected from the common bus. Thus, although the network controller may store information intended for disconnected data terminals, that is not sufficient to meet the requirement that the information to be received by the peripheral device is first received by and outputted from the peripheral device controller. Disconnected terminals are not communicating with either the common bus or the peripheral device controller.

Third, with regard to claim 1's requirement of transmitting information to the peripheral controller and thereafter transmitting that information through the air link, Petitioner's analysis again mixes RF coupling means 67 with the network controller which may be contained within RF coupling means 67. Pet. 19. As noted above, although RF coupling means 67 receives information, the network controller contained within RF coupling means 67 does not necessarily receive that same information prior to transmission of the information over an air link.

Fourth, according to claim 17, the peripheral device controller is a component separate from the "circuitry" that receives and transmits signals through an air link, because claim 17 recites: "said peripheral device controller receiving digital information *from said circuitry*." Ex. 1001, 18:58–60 (emphasis added). That also is the configuration for the other disclosed embodiments in the '479 patent. In Petitioner's application of Boatwright, the peripheral device controller is either RF coupling means 67 or the network controller contained within RF coupling means 67. Pet. 34–35. In either case, Boatwright's peripheral device controller would not be a separate component *from the circuitry* that receives and transmits signals through the air link, RF coupling means 67. Consequently, Petitioner has not adequately accounted for the relationship between the recited circuitry and peripheral device controller.

Fifth, claim 17 recites "first means for interconnecting said circuitry with said peripheral device controller." Ex. 1001, 18:66–67. We have determined that the corresponding structure for this means is a cable with a connector at each of two ends, one of the two connectors being a universal

connector having a structure as described in the Specification of the '479 patent, such as that shown in Figure 9. Petitioner's accounting of this limitation in its claim chart (Pet. 35) is deficient, because Petitioner identifies neither a cable nor a universal connector, and because Petitioner does not explain any equivalence between what it has identified and a cable having on one end thereof a universal connector.

Sixth, claim 17 recites "circuitry contained in a housing for receiving and transmitting signals carried through an air link." We have construed this recitation as a means-plus-function element under 35 U.S.C. § 112, paragraph 6, and determined that its corresponding structure in the Specification of the '479 patent is a cellular phone or cellular radio telephone. Petitioner fails to show, sufficiently, that Boatwright's RF coupling means 67, shown as RF modem 67 in Figure 4 of Boatwright, is the same as or equivalent to a cellular phone or a cellular radio telephone.

Finally, claim 17 recites "processing means." As discussed above, we have determined that the corresponding structure for this means includes identification logic such as identification logic 224 shown in Figures 14 and 15 of the '479 patent. Petitioner has not accounted for this identification logic when reading claim 17 onto the disclosure of Boatwright.

Petitioner's reliance on RS-485 and Mansell do not make up for the above-noted deficiencies in claims 1 and 17. Moreover, claims 2, 4, 6–16, 18, 19, 21–25, and 27–29 depend, directly or indirectly, from claim 1 or claim 17 and Petitioner's challenges to these claims suffer from the same deficiencies as the challenges to claims 1 and 17. For the foregoing reasons, Petitioner has not shown a reasonable likelihood that it would

prevail in establishing that any of claims 1, 2, 4, 6–19, 21–25, and 27–29 would have been obvious over Boatwright, RS-485, and Mansell.

*D. Alleged Obviousness of Claims 3 and 5
over Boatwright, RS-485, Mansell, and Hotto*

Claim 3 depends from claim 2 which depends from claim 1. Claim 5 depends from claim 1. Petitioner relies on Hotto to account for the respective features added by these dependent claims relative to the claims on which they depend. Petitioner's reliance on Hotto, however, does not cure the deficiencies discussed above with regard to the disclosure of Boatwright.

Accordingly, Petitioner has not shown a reasonable likelihood that it would prevail in establishing the unpatentability of any of claims 3 and 5 as unpatentable over Boatwright, RS-485, Mansell, and Hotto.

*E. Alleged Obviousness of Claim 20
over Boatwright, RS-485, Mansell, and Guy*

Claim 20 depends from claim 19, which depends from claim 18, which depends from claim 17. Petitioner relies on Guy to account for the features added by claim 20 relative to the subject matter of claim 19. Petitioner's reliance on Guy does not cure the deficiencies discussed above with regard to the disclosures of Boatwright.

Accordingly, Petitioner has not shown a reasonable likelihood that it would prevail in establishing the unpatentability of claim 20 as unpatentable over Boatwright, RS-485, Mansell, and Guy.

*F. Alleged Obviousness of Claim 26 over
Boatwright, RS-485, Mansell, and Thompson*

Claim 26 depends from claim 25, which depends from claim 17. Petitioner relies on Thompson to account for the features added by claim 26 relative to the subject matter of claim 25. As noted above with respect to Petitioner's reliance on Hotto, Petitioner's reliance on Thompson also does not cure the deficiencies discussed above with regard to the disclosure of Boatwright.

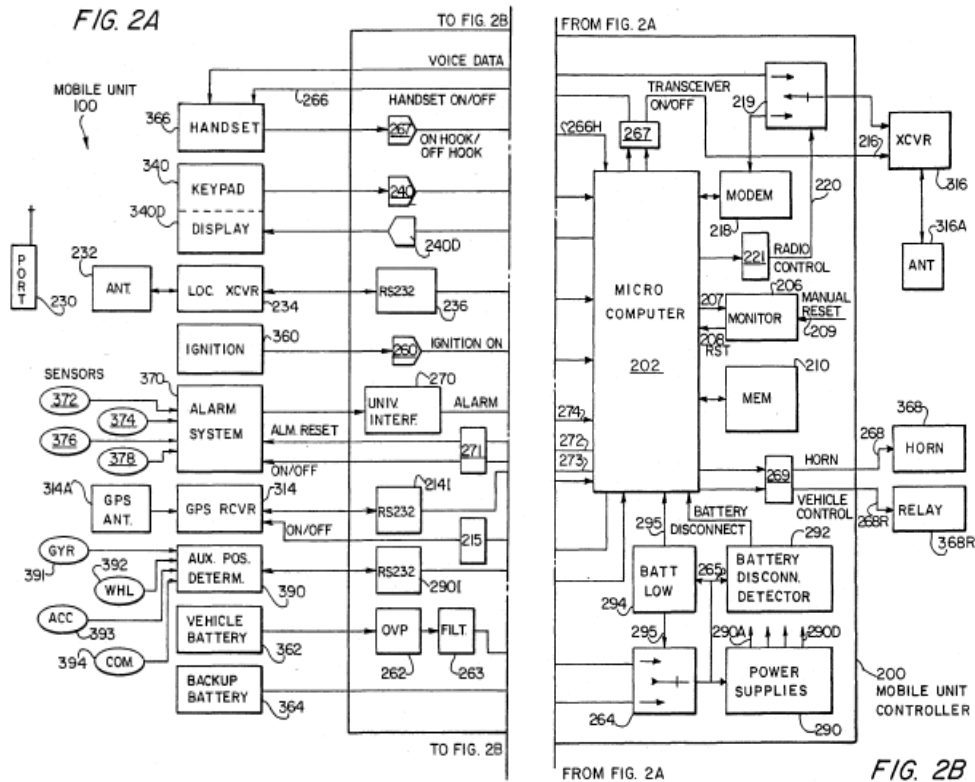
Accordingly, Petitioner has not shown a reasonable likelihood that it would prevail in establishing the unpatentability of claim 26 as unpatentable over Boatwright, RS-485, Mansell, and Thompson.

*G. Alleged Obviousness of Claims 1, 2, 4, 6–12,
15–19, 22–24, and 27–29 over Mansell and RS-485*

Mansell

Mansell discloses a vehicle monitoring system including a mobile unit. Ex. 1014, 2:55–56. The mobile unit onboard a vehicle includes an input unit which is responsive to an event or condition associated with the vehicle, and which serves to provide information describing the event or condition. *Id.* at 2:57–60. The mobile unit also has a GPS receiver that is responsive to navigation signals transmitted by a satellite navigation system, and which provides information describing the vehicle's location based on the navigation signals. *Id.* at 60–64. The mobile unit further includes a mobile unit controller including a cellular telephone transmitter for transmitting information onto a cellular telephone communications link. *Id.* at 64–68. Information transmitted on the cellular link includes that which

describes a vehicle event or condition, and information describing the vehicle's location. *Id.* at 3:1–7. Mansell's Figures A and 2B are reproduced below, in side-by-side manner:



Figures 2A and 2B collectively illustrate mobile unit 100 and mobile unit controller 200. Mobile unit 100 includes alarm system 370, connected to “trunk lid open” sensor 374, “hood open” sensor 376, and “glass breakage” sensor 378. *Id.* at 11:15–22. An alarm signal would be provided from alarm system 370 to microcomputer 202 in mobile unit controller 200. *Id.* at 12:48–52. Mobile unit 100 includes GPS receiver 314 and auxiliary position determining unit 390. The auxiliary position determining unit is connected to gyroscope 391, accelerometer 393, compass 394, and differential wheel rotation sensor 392, and may calculate the present location of the vehicle by

using dead reckoning or other conventional extrapolation algorithms. *Id.* at 9:54–66. Keypad 340 is provided in mobile unit 100, to serve as a human interface. *Id.* at 10:43–44. Mobile unit controller 200 is connected to transceiver 316, which is connected to cellular telephone antenna 316A. *Id.* at 10:25–27.

RS-485

RS-485 is titled: “Standard for Electrical Characteristics of Generators and Receivers for use in Balanced Multipoint Systems.” Ex. 1011, 1. The lead paragraph in the “Scope” section of RS-485 reads as follows:

This standard specifies the electrical characteristics of generators and receivers that may be employed when specified for the interchange of binary signals in multipoint interconnection of digital equipment. When implemented within the guideline of this standard, multiple generators and receivers may be attached to a common interconnecting cable.

Ex. 1011, 6. The last paragraph in the “Scope” section of RS-485 reads:

Any devices which are represented as complying with limits established by this standard shall meet the applicable specifications within the ranges of those factors which are described as appropriate for the operation of the equipment; such as power supply voltages, ambient temperature, and humidity.

Id. Thus, RS-485 provides the characteristics of various electrical parameters, including their limits, for generators and receivers that may be attached to a common line.

Analysis

In claim 1, the plurality of peripheral devices are referred to as “communicating with a common bus.” Ex. 1001, 16:63–64. Claim 17 similarly recites that each of the plurality of peripheral devices “communicates with” a “common bus.” *Id.* at 19:3–5. Petitioner acknowledges that, in *Mansell*, the disclosed peripheral devices do not communicate with each other. Ex. 1014, 45. As shown above in Figures 2A and 2B, each of the keypad, alarm system, GPS receiver, auxiliary position determining unit, etc., has its own input path to microcomputer 202 of mobile unit controller 200.

Petitioner’s argument regarding the “common bus” is this:

Although *Mansell* does not expressly disclose that all peripherals can communicate with each other, it would have been obvious to combine *Mansell* with the RS-485 bus protocol, which teaches this limitations. Indeed, *Mansell* discloses that an RS-485 compatible bus is preferred at least for communication with the keypad. *Id.* at 13:27–31. It therefore would have been obvious to program *all* peripheral devices to communicate with each other via an RS-485 bus since doing so would have simplified the need for alternate communication protocols for devices other than the keypad.

As explained above, RS-485 provides a multidrop bus where “[a]ny of the slave devices on an RS-485 bus can communicate with any other [of] 32 slave devices without going through a master device.” Ex. 1018. RS-485 is described as a “simple hardware bus.” Ex. 1019, U.S. Patent No. 5,274,311 to Littlejohn at Abstract. RS-485 is also very well known and relatively easy to implement. See Ex. 1004 at ¶¶ 33–46, 159–97.

Pet. 45.

We are not persuaded by Petitioner's argument, which is misplaced in several respects. Mansell does not disclose that an RS-485 compatible bus is preferred for communicating with the keypad, as Petitioner states, in the sense that other peripheral units are expected to communicate with the keypad. Instead, Mansell states:

Preferably, line driver 240 employs the RS-485 interface standard, *allowing substantial noise tolerance over the pathway* from the keypad in the passenger compartment to the Mobile Unit controller in the trunk of the vehicle.

Ex. 1014, 13:27–31 (emphasis added). The above-quoted text concerns only line driver 240, which is illustrated in Figure 2A. The electrical characteristics adopted within the driver, according to Mansell, are for reducing noise and do not change the direct connection between the keyboard 340 and microcomputer 202 to a common bus also making a connection to all other peripheral units.

Patent Owner correctly notes that Petitioner's assertion (Pet. 45) that “*Mansell* discloses that an RS-485 compatible bus is preferred at least for communication with the keypad” is not adequately supported by Mansell. Prelim. Resp. 41. As is pointed out by Patent Owner, there is no disclosure in Mansell as to whether the line driver should be connected to a common bus to which other peripheral devices also are connected; instead, Mansell only discloses that the internal specifications of the line driver, for noise reduction purposes, comply with the standard set forth in RS-485. Prelim. Resp. 37–38. We further agree with the following observation of Patent Owner:

Mansell really describes a communication line for the use of reducing noise between a peripheral device such as a keypad and the microcomputer. The only reason set forth for using such an interface is for noise reduction.

Id. at 41. Patent Owner also correctly notes that Petitioner has pointed to no reason for Mansell's keypad to receive signals from other devices. *Id.* at 43.

With regard to RS-485, we have noted above that it sets standards for electrical characteristics of generators and receivers that *may* be connected to a common bus. It neither teaches nor suggests what specific devices should or should not be connected to a common bus. Thus, the lack of teaching in Mansell that the peripheral devices are connected to a common bus is not remedied by Petitioner's reliance on RS-485. Although the peripheral devices "may be" or "can be" rearranged to be connected to a common bus, that does not constitute sufficient rationale to support a conclusion of obviousness. To support an adequate basis for combining teachings, there has to be articulated reasoning with rational underpinnings. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Petitioner has not articulated sufficient reasoning with such rational underpinnings.

Citing Exhibit 1018, Petitioner asserts that RS-485 provides a multidrop bus where "[a]ny of the slave devices on an RS-485 bus can communicate with any other [of] 32 slave devices without going through a master device." Pet. 45. The Declaration of John Villasenor does the same. Ex. 1004 ¶ 44. Petitioner's list of Exhibits identify Exhibit 1018 as:

National Instruments, "A Quick Comparison of RS-232, RS-422, and RS-485 Serial Communication Interfaces."

Pet. iv. The Declaration of John Villasenor refers to Exhibit 1018 as a white paper from “National Instruments.” Ex. 1004, ¶ 44. Exhibit 1018, as filed in the Board’s Patent Review Processing System, however, is U.S. Patent No. 5,334,974, and does not contain the quoted text.

In any event, the quoted text does not help Petitioner’s position because RS-485 does not contain this text and, as discussed above, RS-485 does not describe which peripheral devices should or should not be configured on a common bus. Also, as discussed above, Mansell describes using a particular line driver that meets RS-485 standard, to achieve noise reduction, rather than to communicate with other peripheral devices. Mansell does not describe peripheral devices arranged on a common bus.

The quoted text, even assuming that the underlying paper has been filed by Petitioner to indicate what a RS-485 common bus *may* do, does not provide reasoning with rational underpinnings to configure Mansell’s peripheral devices on a common bus, where Petitioner, as here, articulates no need or desire, stemming from Mansell, for the peripheral devices to be communicating with each other. Mansell’s peripheral devices are not arranged on a common bus and have no identified need to communicate with each other.

Petitioner’s analysis with respect to claim 17 and the claims depending therefrom has two additional deficiencies discussed below.

First, claim 17 recites “first means for interconnecting said circuitry with said peripheral device controller.” Ex. 1001, 18:66–67. We have determined that the corresponding structure for this means is a cable with a connector at each of two ends, one of the two connectors being a universal

connector having a structure as described in the specification of the '479 patent, such as that shown in Figure 9. Petitioner's accounting of this limitation in its claim chart (Pet. 55) is deficient, because it identifies neither a cable nor a universal connector and because it does not explain any equivalence between what it has identified and a cable having a universal connector on one end thereof.

Second, claim 17 recites "processing means." As discussed above, we have determined that the corresponding structure for this means includes identification logic such as identification logic 224 shown in Figures 14 and 15 of the '479 patent. Petitioner has not accounted for this identification logic when reading claim 17 onto the teachings of Mansell.

For the foregoing reasons, we are not persuaded that Petitioner has shown a reasonable likelihood that claims 1, 2, 4, 6–12, 15–19, 22–24, and 27–29 are unpatentable, under 35 U.S.C. § 103, over Mansell and RS-485.

III. CONCLUSION

Petitioner has not established a reasonable likelihood that it would prevail in showing the unpatentability of any of claims 1–29 of the '479 patent.

IV. ORDER

It is

ORDERED that the Petition is *denied*, and no *inter partes* review is instituted as to any claim of the '479 patent.

IPR2015-00634
Patent 5,479,479

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