

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CONTINENTAL AUTOMOTIVE SYSTEMS, INC.,  
Petitioner,

v.

WASICA FINANCE GMBH & BLUEARC FINANCE AG,  
Patent Owner.

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Case IPR2014-00295  
Patent 5,602,524

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Before RAMA G. ELLURU, SCOTT A. DANIELS, and  
JEREMY M. PLENZLER, *Administrative Patent Judges*.

PLENZLER, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

I. INTRODUCTION

A. *Background*

Continental Automotive Systems, Inc. (“Petitioner”) filed a corrected Petition to institute an *inter partes* review of claims 1–21 of U.S. Patent No. 5,602,524 (Ex. 1001, “the ’524 patent”). Paper 6 (“Pet.”). The Petition was supported by a declaration from Ray Mercer, Ph.D. Ex. 1010 (“Mercer Declaration”). Wasica Finance GmbH and BlueArc Finance AG (collectively, “Patent Owner”) did not file a Preliminary Response. In our Decision on Institution (Paper 11, “Dec.”), we instituted trial for claims 1–3 and 5–21 on the following grounds:

| References                           | Basis | Claims                                    |
|--------------------------------------|-------|---|
| Oselin <sup>1</sup>                  | § 102 | 1, 2, 5, 6, 9, 10, 13, 15, 18, 19, and 21 |
| Oselin                               | § 103 | 1, 2, 5, 6, 9–11, 13, 15, 18, 19, and 21  |
| Oselin and Williams <sup>2</sup>     | § 103 | 3, 7, 8, and 20                           |
| Oselin and Schultz <sup>3</sup>      | § 103 | 12 and 16                                 |
| Oselin and Barabino <sup>4</sup>     | § 103 | 14  |
| Oselin, Schultz, and Li <sup>5</sup> | § 103 | 17  |

*Id.* at 31–32.

<sup>1</sup> Italian Patent No. 1219753, published May 24, 1990 (Ex. 1003, “Oselin”). Citations to this reference refer to its English translation (Ex. 1004).

<sup>2</sup> U.S. Patent No. 5,109,213, issued Apr. 28, 1992 (Ex. 1005, “Williams”).

<sup>3</sup> U.S. Patent No. 5,083,457, issued Jan. 28, 1992 (Ex. 1006, “Schultz”).

<sup>4</sup> U.S. Patent No. 4,067,376, issued Jan. 10, 1978 (Ex. 1008, “Barabino”).

<sup>5</sup> U.S. Patent No. 4,912,463, issued Mar. 27, 1990 (Ex. 1007, “Li”).

During trial, Patent Owner filed a Patent Owner Response (Paper 27, “PO Resp.”), which was accompanied by an expert declaration from Scott Andrews (Ex. 2006, “Andrews Declaration”). Petitioner filed a Reply to the Patent Owner Response. Paper 29 (“Pet. Reply”). An oral hearing was held on March 9, 2015. A transcript of the hearing has been entered into the record. Paper 40 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a).

We determine that Petitioner has shown, by a preponderance of the evidence, that claims 1–3, 5, 10–19, and 21 of the ’524 patent are unpatentable. Petitioner, however, has not established, by a preponderance of the evidence, that claims 6–9 and 20 of the ’524 patent are unpatentable.

#### *B. Related Proceedings*

The ’524 patent is the subject of the following co-pending federal district court cases: *Wasica Finance GmbH v. Continental Automotive Systems US, Inc.*, Case No. 1-13-cv-01356 (D. Del.); and *Wasica Finance GmbH v. Schrader International, Inc.*, Case No. 1-13-cv-01353 (D. Del.). Pet. 1; Paper 9, 2.

#### *C. The ’524 Patent*

The ’524 patent is titled “Device for Monitoring the Air-Pressure in Pneumatic Tires Fitted on Vehicle Wheels.” Figure 1 of the ’524 patent, reproduced below, illustrates a vehicle including an exemplary monitoring device.

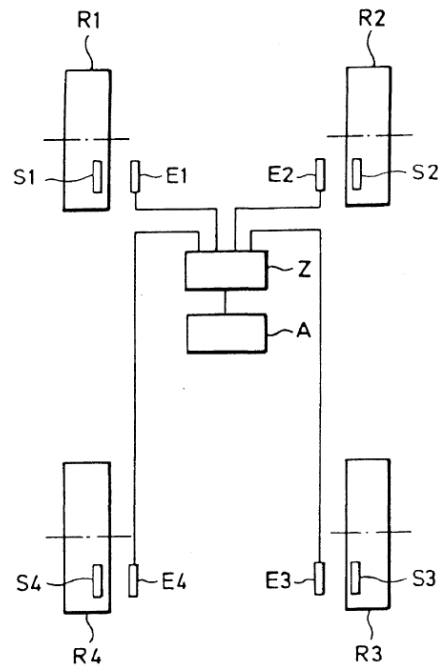


FIG.1

Figure 1 is a schematic illustration of a vehicle including wheels R1–R4; transmitting devices S1–S4, fixed to wheels R1–R4, respectively; a receiving device, including receivers E1–E4, fixed on the vehicle body; central control device Z; and display device A.

Transmitting devices S1–S4 send signals corresponding to each of wheels R1–R4, respectively, to the receiving device. Ex. 1001, 6:63–64, 8:42–43. Figure 3 illustrates the composition of the signals and is reproduced below.

| PREAMBLE | IDENTIFICATION-SIGNAL | DATA   | POST-AMBEL |
|----------|-----------------------|--------|------------|
| 16 BIT   | 32 BIT                | 24 BIT | 4 BIT      |

FIG.3

Figure 3, above, is an example of the signals sent by transmitting devices S1–S4 in the form of a table depicting the portions of the signals (preamble, identification-signal, data, post-amble). *Id.* at Fig. 3. In the example provided, the preamble has 16 bits that enable receiving parts E1–E4 to synchronize with the signals. *Id.* at 6:65–7:9. Each identification signal is a binary number having 32 bits that contains an identification characteristic specific to corresponding transmitting device S1–S4. *Id.* Each data signal has 24 bits that contains the measured pressure value in binary form, and each post-amble is 4 bits that completes the signal. *Id.*

As illustrated in Figure 1, the receiving device may include receivers E1–E4 near each wheel R1–R4, respectively, for each transmitting device S1–S4, respectively. *Id.* at 7:64-66, Fig. 5. Alternatively, the receiving device may be common to all transmitting devices S1–S4 and may be accommodated in a transportable housing. *Id.* at 11:29–35, Fig. 6. In either embodiment, the receiving device can be switched between a normal operating mode and a pairing mode. *Id.* at 9:57–60, 12:16–18. During the pairing mode, the receiving device stores the identification signal from each transmitting device S1–S4. *Id.* at 10:1–27, 11:7–15, 12:16–27.

During operation, the receiving device evaluates the signals provided by transmitting devices S1–S4 and determines whether the identification-signal portion matches the identification signal stored in the receiving device. *Id.* at 8:42–47. The '524 patent explains that the matching can include the identification signal and the stored reference signal being identical or having another predetermined mathematical relationship. *Id.* at 8:55–57. If the receiving device determines that the signals match, the data

portion of the signals provided by transmitting devices S1–S4 are evaluated.  
*Id.* at 8:47–49.

Claim 1 is independent, with claims 2, 3, and 5–21 depending from claim 1. Claim 1 illustrates the claimed subject matter and is reproduced below:

1. A device for monitoring the air pressure in the air chamber of pneumatic tires fitted on vehicle wheels comprising:
    - a pressure measuring device mounted on a vehicle wheel which measures the air pressure in the air chamber of the wheel [a]nd outputs an electrical pressure signal representative of the air pressure in the vehicle wheel;
    - a transmitter mounted to the vehicle wheel which receives the electrical pressure signal output from the pressure measuring device and sends out a pressure transmitting signal corresponding to said air pressure;
    - a receiver associated with the transmitter and mounted at a distance to the vehicle wheel which receives the pressure transmitting signal transmitted from the associated transmitters
    - a display device which is connected with the receiver and displays data as numbers or symbols which have been taken from the pressure transmitting signal received from the receiver;
- wherein the transmitter comprises an emitter-control device which controls the emittance of the pressure transmitting signal and a signal-generating device which generates an identification signal which is unique for the transmitter and clearly identifies same;

- the emitter-control device works such that the identification signal is transmitted at least once before or after the emittance of the pressure transmitting signal;
- the receiver comprises at least a memory in which is stored an identification reference signal related to the associated transmitter in accordance with a predetermined relationship criteria;
- the receiver comprises a comparison device which checks if an identification signal transmitted from a transmitter has the relationship criteria to identification reference signal stored in the receiver, and that further processing of the pressure transmission signal taken from the receiver only takes places if the identification signal received by the receiver and the identification reference signal stored in the receiver fulfill the relationship criteria;
- the identification reference signal stored in the receiver is changeable in order that the identification signal from the associated transmitter matches the identification reference signal of the receiver; and
- the receiver is connected with a switching device which enables the receiver to switch over from normal operating mode, in which the air pressure is monitored, to pairing mode, in which the receiver collects the identification signal of the transmitter and stores this as an identification signal.

*Id.* at 13:19–14:3.

#### *D. Claim Construction*

The '524 patent is expired. *See* Pet. 12; PO Resp. 1. “[T]he Board’s review of the claims of an expired patent is similar to that of a district

court’s review.” *In re Rambus, Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012). Specifically, because the expired claims of the patent are not subject to amendment, we apply the principle set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)), that “words of a claim ‘are generally given their ordinary and customary meaning,’” as understood by a person of ordinary skill in the art in question at the time of the invention. “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).

1. “*pressure measuring device*”

Claim 1 requires “a pressure measuring device . . . which measures the air pressure . . . [a]nd outputs an electrical pressure signal representative of the air pressure in the vehicle wheel.” Petitioner did not offer an explicit construction for this limitation. *See* Pet. 12–15.

Patent Owner contends that the limitation “requires that the pressure measuring device mounted on a vehicle wheel outputs an electrical signal that portrays or symbolizes a quantitative value of the measured air pressure (i.e., an absolute pressure value or another numeric value in units of force per area) in the wheel.” PO Resp. 6 (citing Ex. 2006 ¶ 40). Patent Owner contends that the limitation, therefore, requires the pressure sensor to output “a numeric value of the pressure, not merely an on/off switch for an alarm/no-alarm category indicator” (i.e., the pressure sensor cannot be a switch-based pressure sensor). *Id.* at 6–7. Patent Owner alleges that



“[e]very embodiment described in the ’524 patent includes measuring a quantitative value of the pressure and outputting an electrical signal that portrays or symbolizes that measured quantitative value . . . not merely an on/off switch for an alarm/no-alarm category indicator.” *Id.* Petitioner disagrees, and explains that “the ’524 patent also describes measuring pressure with a switch-based pressure sensor described in EP-A-0417712 (Ex. 1024) or EP-A-0417704 (Ex. 1025).” Pet. Reply 2 (citing Ex. 1002,<sup>6</sup> 5:1–14; Ex. 1021, 1:40–43; Ex. 1018 ¶¶ 17–21).

The issue presented here is whether the scope of “pressure measuring device” excludes a switch-based pressure sensor. Initially, we note that the discussion of EP-A-0417712 and EP-A-0417704 (Exhibits 1024 and 1025, respectively) in the cited portion of the ’524 patent (i.e., Ex. 1001, 5:1–14) includes a discussion of “monitoring” tire pressure. Patent Owner, however, acknowledges that “the [’524] patent . . . uses the terms [monitor and measure] interchangeably” and notes that “[i]t is not crystal clear how to distinguish between the two.” Tr. 36:15–17. Regardless of whether “monitoring” and “measuring” are intended to have the same meaning in the ’524 patent, the ’524 patent expressly discusses “measuring” with a switch-based pressure sensor when describing “*measur[ing]* the tire air-pressure by way of *pressure sensors* arranged on the vehicle wheels, which *measurement signal* is then displayed in a suitable way to the driver . . . for example, in DE-3930479 A1.” Ex. 1001, 1:45–49 (emphasis added).

In addition, the German reference (DE-3930479 A1) discussed in the ’524 patent corresponds to U.S. Patent No. 5,040,561 (Ex. 1021, “the ’561

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<sup>6</sup> Petitioner’s citation appears to be a typographical error, and should, instead, refer to Exhibit 1001 (the ’524 patent).

patent”), which is cited by Petitioner to support the contention that “the ’524 patent also describes measuring pressure with a switch-based pressure sensor.” Pet. Reply 2 (citing Ex. 1021, 1:40–43). The cited portion of the ’561 patent describes a “continuously biased diaphragm [] arranged to actuate a switching means due to an anomal tire pressure, and said switching means will activate the transmitter means” (i.e., a switch-based pressure sensor). Ex. 1021, 1:40–43. Thus, the ’524 patent describes a “pressure measuring device” as including either a device outputting a numeric value of air pressure or a switch-based device that indicates an anomalous pressure condition (e.g., high or low pressure).

Accordingly, we do not accept Patent Owner’s overly narrow construction of “pressure measuring device.” Instead, consistent with the specification of the ’524 patent, we determine that the “pressure measuring device” recited in the claims can include at least a switch-based pressure sensor or a pressure sensor that outputs a numeric value of pressure.

## 2. “*bit sequence*”

Claim 9 requires “a transmission of at least a 4 bit sequence” including a first bit sequence, a second bit sequence, a third bit sequence, and a fourth bit sequence. Petitioner did not offer an explicit construction for this limitation. *See* Pet. 12–15.

Patent Owner contends that the term “sequence” means a string of *multiple* bits. PO Resp. 11 (emphasis added). Patent Owner notes that “[e]very embodiment described in the ’524 patent refers to bit sequences as including a series of multiple bits.” *Id.* Patent Owner additionally notes that “[t]his interpretation of ‘bit sequence’ is also supported by the dictionary

definition of the word ‘sequence’ as ‘a series of items that have been sequenced.’” *Id.* (citing Ex. 2005, 468–469).

Petitioner contends that “[t]o remain consistent with the plain and ordinary meaning of ‘at least a 4 bit *sequence*,’ the first, second, third, and fourth bit *sequences* recited in claim 9 must be able to comprise a single bit.” Pet. Reply 12 (emphasis added).

We are not persuaded by Petitioner’s contentions. Petitioner acknowledges that the plain meaning of “sequence” is more than one. *See* Tr. 26:1–4. For example, when discussing the meaning of the term “sequence” as “one thing following another” (i.e., implying a requirement of more than one) at oral hearing, Petitioner stated: “I would agree that in the dictionary it generally uses those types of definitions, but the way that this claim was drafted, and the claim appears how it appears, it uses the term at least a four-bit sequence.” *Id.* Contrary to Petitioner’s contentions, the plain language of claim 9 requires eight or more bits (i.e., at least two bits for each of a first bit sequence, a second bit sequence, a third bit sequence, and a fourth bit sequence), which Petitioner acknowledges would be “at least a 4 bit sequence,” as required by the claim. *See id.* at 25:1–6. Petitioner has failed to apprise us of any disclosure in the ’524 specification that provides a meaning for “sequence” where a single item, such as a single bit, would constitute a sequence. As Patent Owner notes, the specification of the ’524 patent consistently uses the term “sequence” to refer to multiple bits. *See, e.g.,* Ex. 1001, 4:27–29.

Accordingly, we construe a “bit sequence” as requiring two or more bits, which is consistent with its plain meaning and use in the specification of the ’524 patent.

3. “*emittance*”

Claim 17 recites that “each transmitter comprises a detector device which recognizes emittance of a predetermined switching signal.” Petitioner did not offer an explicit construction for this claim term. *See* Pet. 12–15.

Patent Owner contends that “emittance” “means energy that is radiated or sent out representative of a predetermined switching signal.” PO Resp. 13. More specifically, Patent Owner contends that “emit” requires wireless transmission, and that this construction is consistent with both the plain and ordinary meaning of “emit” and its use in the specification of the ’524 patent. *Id.* Petitioner responds that “[t]he plain and ordinary meaning of ‘emit,’ however, does not require wireless transmission.” Pet. Reply 10.

Although Patent Owner identifies several examples in the specification of the ’524 patent that discuss emitting a wireless signal, Patent Owner fails to identify anything that requires “emit” to be a transmission of a wireless signal. *See* PO Resp. 13 (citing Ex. 1001, 3:12–14, 8:42–44, 10:60–62). Patent Owner’s contention that “[t]he ordinary and customary meaning of ‘emit’ (‘send out (heat, light, vapour, etc.)’) and ‘emissive’ (‘having the power to radiate light, heat, etc.’) are also consistent with the above-mentioned usage in the ’524 patent” are unpersuasive. *Id.* (citing Ex. 2003, 383; Ex. 2006 ¶ 118). The cited testimony from Mr. Andrews generally reiterates Patent Owner’s contentions, which we find unpersuasive. Ex. 2006 ¶ 118.

The dictionary definition of “emit” cited by Patent Owner defines the term as “send out,” and provides non-limiting examples of sending out “heat, light, vapour, etc.” Ex. 2003, 383. Patent Owner fails to identify, and

we do not see, anything further in the record that would limit “emit” to sending out wireless transmissions.

Accordingly, we construe “emittance” as something sent out, such as a signal, which may be sent by a wired or wireless transmission.

## II. ANALYSIS

### A. *Anticipation by Oselin*

We have reviewed the Petition, the Patent Owner Response, and Petitioner’s Reply, as well as the relevant evidence discussed in those papers. We are persuaded that Petitioner has established, by a preponderance of the evidence, that claims 1, 2, 5, 10, 13, 15, 18, 19, and 21 are anticipated by Oselin. Petitioner has failed to establish, however, that claims 6 and 9 are anticipated by Oselin.

#### 1. *Overview of Oselin*

Oselin describes a system for transmitting tire pressure signals from transmitters on a vehicle’s wheels to a receiver. Ex. 1004, 2.<sup>7</sup> Oselin explains that “[e]ach of the tires of the motor vehicle is associated with a pressure sensor P (figure 2), and a related transmitter 10” that sends a signal to “the radiofrequency stage of a receiver 20.” *Id.* at 5–6. Oselin discusses “a signaling group 300, the function of which is to notify the driver of the motor vehicle that certain operating conditions have arisen,” and explains that the driver notifications “can include both visual units and acoustic units (buzzers).” *Id.* at 18–19.

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<sup>7</sup> The page numbers of Exhibit 1004 referenced in this decision are the original page numbers of Exhibit 1004 found on the bottom center of the page.

Oselin describes the transmitted signals from the transmitters to the receiver as coded signals. *Id.* at 6. In the example provided in Oselin, the coded signal is a binary code including twenty symbols  $S_1$ – $S_{20}$ . *Id.* The symbols allow the receiver to distinguish between transmissions from the receiver's vehicle and transmissions from other vehicles. *Id.* at 8.

Symbols  $S_1$ – $S_4$  include data associated with the transmitter issuing the coded signal to identify the sensor and associated tire from which the message is generated. *Id.* Symbols  $S_5$ – $S_{16}$  include data associated with the receiver to identify the receiver and the central unit to which the message is sent. *Id.* Symbols  $S_{17}$ – $S_{20}$  include data specifying the nature of the message. *Id.* at 9. In an example provided in Oselin, symbol  $S_{17}$  identifies a test procedure, such as a learning phase; symbol  $S_{18}$  identifies an anomalous tire pressure level; symbol  $S_{19}$  identifies a low battery charge; and symbol  $S_{20}$  indicates that the transmitter is functioning normally. *Id.* at 9, 17, 18. Symbols  $S_1$ – $S_{20}$  may be preceded by an initial symbol,  $S_0$ , which is used as a synchronization signal between the transmitters and the receiver. *Id.* at 6.

Oselin explains that symbols  $S_1$ – $S_4$  can be coded manually in each transmitter using a dip switch. *Id.* at 10, 22. Symbols  $S_5$ – $S_{16}$ , however, are generated as a pseudorandom string of values by each transmitter during the learning phase. *Id.* at 21–22. The learning phase is an initial phase where the receiver stores identifying characteristics of the transmitters, including symbols  $S_5$ – $S_{16}$ . *Id.* Oselin explains that due to the pseudorandom nature of symbols  $S_5$ – $S_{16}$ , it is extremely unlikely that two transmitters have the same string of values associated with symbols  $S_5$ – $S_{16}$ . *Id.* at 22, 24. During the learning phase, the transmitters send the string of symbols  $S_1$ – $S_{20}$  to the receiver, with symbol  $S_{17}$  indicating the learning phase, and symbols  $S_1$ – $S_{16}$

being stored in memory of the receiver. *Id.* at 23. After the learning phase is complete, the receiver only recognizes messages from transmitters when the string of symbols  $S_5$ – $S_{16}$  matches the corresponding string stored in the receiver’s memory.

2. *Claim 1*

As discussed above, claim 1 is directed to “[a] device for monitoring the air pressure in . . . tires” including “a pressure measuring device,” “a transmitter,” “a receiver,” and “a display.” We have reviewed, and are persuaded by, Petitioner’s contentions regarding the disclosure of Oselin relative to this claim.

For example, Oselin discloses that “[e]ach of the tires of the motor vehicle is associated with a pressure sensor P” (Ex. 1004, 5), which Petitioner contends corresponds to the “pressure measuring device” recited in claim 1 (Pet. 18). Specifically, Oselin discloses that pressure “sensor P detects the air pressure in the tire, and depending on the pressure level detected, orders the movement of a switch I.” Ex. 1004, 5. Oselin explains that

sensor P can be configured as to keep the switch I in a “floating” position while the pressure detected remains within an acceptable range, and to bring one of the two ends of the switch into contact with the ground M of transmitter 10 when the air pressure inside the tire reaches an anomalous level, that is, a lower threshold (insufficient pressure) or an upper threshold (excessive pressure).

*Id.*

Patent Owner responds that Oselin’s “sensor P” does not constitute a “pressure measuring device” as required by the claim because it “does not output a quantitative value of an air pressure in the tire, but instead, it

incorporates a traditional contact switch I to communicate either an ‘acceptable’ category or an ‘anomalous’ category.” PO Resp. 16. Patent Owner’s argument is unpersuasive because it relies on an improper construction of “pressure measuring device.” As noted above, we determine that the recited “pressure measuring device” is met by a switch-based pressure sensor, which Patent Owner acknowledges is disclosed by Oselin. *See id.* at 16–18.

Patent Owner further argues that “Oselin’s pressure sensor P does not output an electrical pressure signal representative of the air pressure because its output cannot distinguish between anomalous pressures that are too high and anomalous pressures that are too low.” *Id.* at 18. The claim, however, does not require any sort of resolution for the pressure signal. As Patent Owner acknowledges (*see id.*), Oselin’s “pressure sensor P” outputs a signal indicating an anomalous *pressure* event (i.e., pressure is too low or too high) (Ex. 1004, 5). Thus, Oselin’s “pressure sensor P” outputs a signal representative of air pressure (i.e., representing that *air pressure* is either too low or too high).

Patent Owner offers similar arguments in response to Petitioner’s contentions regarding the “transmitter” recited in claim 1. Claim 1 requires that the “transmitter . . . receives the electrical pressure signal output from the pressure measuring device and sends out a pressure transmitting signal corresponding to said air pressure.” Petitioner contends that Oselin’s transmitter 10 satisfies this limitation by receiving the signal indicating anomalous air pressure from “pressure sensor P” and sending a signal indicating the anomalous air pressure. Pet. 18. Patent Owner does not dispute that Oselin discloses a transmitter that receives a signal indicating an



anomalous air pressure. *See* PO Resp. 19–23. Rather, Patent Owner contends that Oselin does not meet this limitation because the “pressure transmitting signal corresponding to said air pressure” recited by the claim requires a specific air pressure value, not “‘an alarm message’—a simple on/off alarm flag” provided by the signal indicating the anomalous air pressure condition. *Id.* at 19–20. This argument is unpersuasive for the reasons set forth above regarding the “pressure measuring device” limitation (i.e., “pressure measuring device” does not exclude a switch-based pressure sensor).

Patent Owner does not dispute Petitioner’s contentions regarding the other limitations of claim 1, which we find persuasive, as noted above.

For these reasons, Petitioner has established, by a preponderance of the evidence, claim 1 is anticipated by Oselin.

*3. Claims 2, 5, 13, 15, 19, and 21*

Claims 2, 5, 13, 15, 19, and 21 depend from claim 1, and Patent Owner does not dispute Petitioner’s contentions regarding these claims specifically. Based on our review of Petitioner’s contentions regarding these claims (*see* Pet. 23, 26–29), we are also persuaded that Petitioner has established, by a preponderance of the evidence, that claims 2, 5, 13, 15, 19, and 21 are anticipated by Oselin.

*4. Claim 6*

Claim 6 depends from claim 1 and further recites that “transmission of the signals from the transmitter to the receiver is carried out with electromagnetic waves of constant frequency acting as carrier waves.” Petitioner contends that Oselin discloses transmitters 10 using a constant frequency. Pet. 24 (citing Ex. 1004, 8). The cited portion of Oselin explains

that “the transmissions from the sensors 10 use structurally analogous signals, on a frequency that is the working frequency common to the oscillators 11 of all transmitters 10 of the group of the receiver 20.” Ex. 1004, 8.

Patent Owner argues that Oselin’s “common” frequency does not correspond to the “constant frequency” recited in claim 6 and, instead, describes “the same center frequency of the carrier waves, which would vary in the case of frequency shift keying.” PO Resp. 24–25. Patent Owner contends that “the claimed ‘constant’ frequency carrier waves refer to a characteristic of individual transmissions rather than a shared frequency to which multiple transmitters are tuned” and that “the claimed ‘constant’ frequency carrier waves . . . are constant, for example, when using phase shift keying.” *Id.* at 25.

Petitioner responds that “Oselin explicitly discloses that encoding may be achieved ‘using any modulating scheme.’” Pet. Reply 6 (quoting Ex. 1004, 6). At oral hearing, Petitioner acknowledged that Oselin fails to explicitly state that it uses constant frequency carrier waves. Tr. 21:19–24. Petitioner reasons that because phase shift keying and frequency shift keying each were well-known, Oselin contemplates phase shift keying and, therefore, anticipates the “constant frequency” carrier waves recited in the claim. Pet. Reply 6; Tr. 21:19–24.

We are not persuaded that Oselin’s general disclosure that “any modulation scheme” may be used anticipates the specific features of claim 6, which requires the use of “constant frequency” carrier waves. Accordingly, Petitioner has failed to establish, by a preponderance of the evidence, that Oselin anticipates claim 6.

*5. Claim 9*

Claim 9 depends from claim 1 and further recites “every transmission from transmitter to receiver is completed with a transmission of at least a 4 bit sequence” that includes a first bit sequence, a second bit sequence, a third bit sequence, and a fourth bit sequence. Petitioner contends that the claimed “bit sequence” may be a single bit. Pet. 24–25; Pet. Reply 12–13. For example, Petitioner contends the claim requires that “the second, or third bit sequence is a data sequence which represents the measured pressure signal,” and Petitioner contends this is met by Oselin’s symbol  $S_{18}$ . Pet. 24; Pet. Reply 12.

Petitioner’s contentions are unpersuasive. Oselin explains that “symbols  $S_1 \dots S_{20}$ , each  $\dots$  may assume two different values (the logic positions ‘0’ and ‘1’),” each of which is “a logical binary symbol associated with one bit of data.” Ex. 1004, 6. As noted above, we construe “bit sequence” as requiring two or more bits. Accordingly, Petitioner has failed to establish, by a preponderance of the evidence, claim 9 is anticipated by Oselin.

*6. Claim 10*

Claim 10 depends from claim 1 and further recites that “the transmitter comprises a timer device and is controlled in such a way that the pressure measuring device measures pressure in predetermined, significantly constant time intervals.” Oselin describes a “periodic operations check, [where] each transmitter 10 sends a respective message with the symbol  $S_{20}$  at logic level ‘1’ at intervals established by the division factor of the circuit 104” (Ex. 1004, 27), which Petitioner contends corresponds to

“measure[ing] pressure in predetermined, significantly constant time intervals,” as required by claim 10 (Pet. 25).

Patent Owner initially responds with arguments similar to those presented with respect to claim 1 (i.e., Oselin’s pressure sensor does not measure pressure) (PO Resp. 29), which are unpersuasive for the reasons discussed above. Patent Owner additionally argues that “[t]his ‘periodic operations check’ is used by Oselin to determine that the transmitters are functioning properly; the operations check has nothing to do with pressure measurement.” *Id.* at 30. Patent Owner acknowledges that “[t]he transmissions sent by the transmitter 10 may be periodic,” but contends that “Oselin [does not] teach or suggest that pressure measurements or pressure detection functions are performed periodically.” *Id.*

Petitioner responds, and Patent Owner’s expert, Mr. Andrews, agrees that “pressure sensor P” in Oselin is constantly sensing the tire pressure by responding to the applied force. Pet. Reply 13; Ex. 1016, 85:1–17. Petitioner explains that “a POSITA would understand that a measurement occurs whenever the transmitter samples the data produced by the pressure measuring device,” and “*Oselin*’s circuit 14 samples the pressure sensor P’s data (and encodes as bit S<sub>18</sub>) each time a pressure transmitting signal is generated by encoder 17.” Pet. Reply 13–14 (citing Ex. 1018 ¶¶ 64–66; Ex. 1004, 10–11). We are persuaded by Petitioner’s contentions.

Specifically, we are persuaded that bit S<sub>18</sub> is sampled when the periodic operations check occurs and is included in the transmission signal for the periodic operations check (i.e., the signal where bit S<sub>20</sub> is set at “1”). Therefore, Petitioner has established sufficiently that Oselin discloses at

least one situation in which pressure sensor P “measures pressure in predetermined, significantly constant time intervals.”

Accordingly, Petitioner has established, by a preponderance of the evidence, claim 10 is anticipated by Oselin.

#### 7. Claim 18

Claim 18 depends from claim 1 and further recites that “the signal transmitted from the transmitter contains further additional information, which in evaluation of the signal in the receiver, allows recognition of a false transmission as a fault and should the need arise, a correction of this fault.” Petitioner contends that the inclusion of bit  $S_{20}$  in Oselin’s signal meets the limitations of claim 18. Pet. 27. Patent Owner responds that bit  $S_{20}$  “is not arranged to allow error correction *by Oselin’s receiver 20.*” PO Resp. 32 (emphasis added). Patent Owner’s argument is not commensurate with the scope of the claim.

The plain language of claim 18 requires that the signal is evaluated in the receiver and “*allows* recognition of a false transmission as a fault and should the need arise, a correction of this fault.” (Emphasis added). There is no requirement that *the receiver* corrects the fault. We are persuaded that the evaluation of the signal including bit  $S_{20}$  in Oselin allows “recognition of a false transmission as a fault and should the need arise, a correction of this fault.” For example, Oselin explains that “by periodically reading the column  $S_{20}$  of the memory 200, the arithmetic logic unit 201 can . . . order a corresponding warning signal to be sent to the driver of the motor vehicle.” Ex. 1004, 29. Thus, we are persuaded that Oselin’s signal, which includes bit  $S_{20}$  and is evaluated in receiver 20, “*allows* recognition of a false

transmission as a fault and should the need arise, a correction of this fault,” as recited by claim 18 (emphasis added).

Accordingly, Petitioner has established, by a preponderance of the evidence, claim 18 is anticipated by Oselin.

*B. Obviousness over Oselin*

We have reviewed the Petition, the Patent Owner Response, and Petitioner’s Reply, as well as the relevant evidence discussed in those papers. We are persuaded that Petitioner has established, by a preponderance of the evidence, claims 1, 2, 5, 10, 11, 13, 15, 18, 19, and 21 would have been obvious over Oselin. Petitioner has failed to establish, however, that claims 6 and 9 would have been obvious over Oselin.

*1. Claims 1, 2, 5, 10, 13, 15, 18, 19, and 21*

As noted above, we are persuaded that Petitioner has established, by a preponderance of the evidence, claims 1, 2, 5, 10, 13, 15, 18, 19, and 21 are anticipated by Oselin. Because anticipation is the epitome of obviousness, a disclosure that anticipates under 35 U.S.C. § 102 also renders the claim unpatentable under 35 U.S.C. § 103.<sup>8</sup> *See In re Fracalossi*, 681 F.2d 792, 794 (CCPA 1982); *In re Meyer*, 599 F.2d 1026, 1031 (CCPA 1979); *In re Pearson*, 494 F.2d 1399, 1402 (CCPA 1974). Accordingly, we conclude that Petitioner also has demonstrated, by a preponderance of the evidence, claims 1, 2, 5, 10, 13, 15, 18, 19, and 21 are unpatentable as obvious over Oselin.

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<sup>8</sup> Patent Owner does not allege any secondary considerations to overcome a case of obviousness.

2. *Claims 6 and 9*

In our Decision on Institution, we instituted trial for claims 6 and 9 on this ground based on Petitioner's allegations that Oselin teaches each element of claims 6 and 9. *See* Dec. 17. As explained above, after considering Patent Owner's arguments and evidence presented after our Decision on Institution, we are not persuaded that Oselin teaches the limitations recited in these claims.

The Petition does not propose any specific rationale for a conclusion that claim 6 would have been obvious in view of Oselin other than alleging, generally, "to the extent that any of the variances in claim scope are not necessarily shown by the support included in the above claim chart, such variances would have obvious to a POSITA based on the level of ordinary skill in the pertinent art as it existed at the purported time of the invention." Pet. 29.

The Petition offers the same conclusory rationale for the alleged obviousness of claim 9 in view of Oselin, but additionally alleges, generally, "for claim 9, a POSITA would have found the particular bit sequence arrangement to be a mere design choice." *Id.* Petitioner's contentions regarding design choice do not address sufficiently the deficiencies in Oselin's teachings noted above. For example, the contentions do not address that Oselin's symbol  $S_{18}$  is a single bit rather than a sequence. No further explanation is offered, in the Petition, to support the alleged obviousness of these claims.

Petitioner's Reply fails to cure these deficiencies, as it simply alleges that "it would be obvious to use a multi-bit sequence for the measured pressure signal, or for the preamble or postamble." Pet. Reply 13. No

persuasive explanation is offered, however, as to why a multi-bit sequence would have been obvious to use for Oselin's alarm message. Oselin's transmission uses "symbols  $S_1 \dots S_{20}$ , each of which may assume two different values (the logic positions '0' and '1')" (Ex. 1004, 6), and "[t]he alarm message concerning the tire pressure is expressed by the presence (for example) of logic value of '1' in the position of symbol  $S_{18}$ " (*id.* at 30).

A determination that claims would have been obvious to an ordinary artisan "cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). The required "articulated reasoning with some rational underpinning" is missing from the Petition.

Accordingly, Petitioner has not established, by a preponderance of the evidence, that claims 6 and 9 would have been obvious over Oselin.

### 3. Claim 11

Claim 11 depends from claim 1 and further recites that the electrical pressure signal representative of the pressure measurement is converted to a transmitting signal and is sent before a next pressure measurement is carried out, and a random circuit is provided which allows the time interval *between the pressure measurement and emittance* of the measured pressure signal to be randomly independent. (Emphasis added). Petitioner identifies pages 6 and 12–13 of Oselin and contends that "a [person of ordinary skill in the art] would have understood that an electrical pressure signal is converted to a transmitting signal and sent before a next pressure measurement is carried out, and that the intervals set by timing circuit 103 would be randomly independent of the measurement." Pet. 26, 29.



Patent Owner responds that “Oselin does not discuss any time interval that dictates the time between a pressure measurement and emittance of a measured pressure signal, let alone a time interval that is ‘randomly independent.’” PO Resp. 40. Patent Owner acknowledges, however, that “Oselin is concerned with randomly setting a time interval for repeated transmissions of a message at each transmitter, so that different transmitters on a vehicle will repeatedly transmit their messages at different rates, and therefore at different times.” *Id.* at 41. Patent Owner’s argument is based on the time interval between the pressure measurement and the initial emittance in Oselin.

At oral hearing Petitioner argued that claim 11 does not require the time interval to be the interval between the pressure measurement and the initial emittance. Tr. 86:17–24. We agree. Claim 11 simply requires “the time interval between the pressure measurement and emittance of the measured pressure signal to be randomly independent.” It does not specify *which* emittance. Thus, the “time interval” recited in claim 11 could be that between the measurement and the second emittance in the repeating transmission.

As noted above, and acknowledged by Patent Owner (PO Resp. 41), Oselin sets the constant interval between repeated transmissions randomly (Ex. 1004, 12–13). Regardless of whether the time interval between the pressure measurement and an initial transmission in Oselin is “randomly independent,” the time interval between the pressure measurement and the second transmission, for example, would be “randomly independent” based on setting the constant time interval randomly in Oselin.

Accordingly, Petitioner has established, by a preponderance of the evidence, claim 11 would have been obvious over Oselin.

*C. Obviousness over Oselin and Williams*

We have reviewed the Petition, the Patent Owner Response, and Petitioner’s Reply, as well as the relevant evidence discussed in those papers. We are persuaded that Petitioner has established, by a preponderance of the evidence, claim 3 would have been obvious over Oselin and Williams. Petitioner has failed to establish, however, that claims 7, 8, and 20 would have been obvious over Oselin and Williams.

*1. Overview of Williams*

Williams describes a tire pressure monitoring system that evaluates vehicle tire pressure, and explains that “[f]alse alarms are essentially eliminate[d] . . . through a required match in digital source identification information between wheel attachable units of a given vehicle with a vehicle attachable unit of the same vehicle.” Ex. 1005, Abstract.

Figure 1 of Williams illustrates an exemplary wheel attachable unit, and is reproduced below.

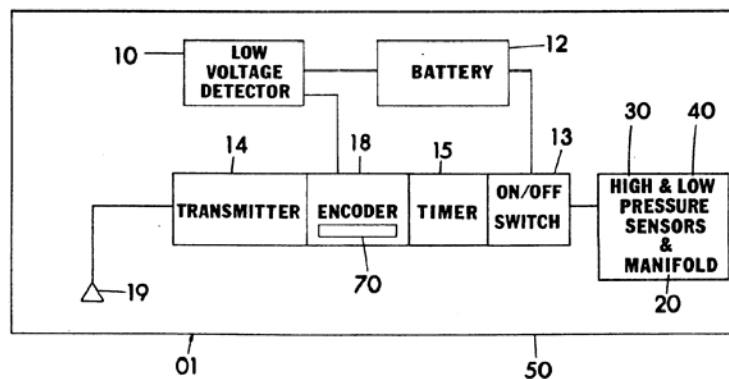


FIG. 1

Figure 1 is a schematic functional block diagram of wheel attachable unit 01.

Wheel attachable unit 01 includes high pressure sensor 30, low pressure sensor 40, encoder 18, and transmitter 14. *Id.* at 6:14–37. Encoder 18 generates information identifying the wheel to which wheel attachable unit 01 is attached, the transmission source, as well as information regarding the pressure condition of the wheel, and communicates the information to transmitter 14. *Id.* at 6:32–34, 7:6–11. Encoder 18 includes dip switch bus 70, illustrated in Figure 10, and is reproduced below.

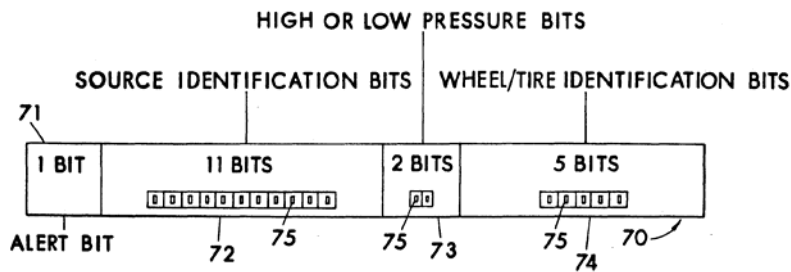


FIG. 10

Figure 10 is a schematic illustration of dip switch bus 70. Dip switch bus 70 has factory or user preset functions, bit assignments and a bit string generation for alert 71, transmission source identification 72, high or low pressure status 73, and wheel identifications 74. *Id.* at 6:58–62.

Figure 9 of Williams illustrates an exemplary vehicle attachable unit, and is reproduced below.

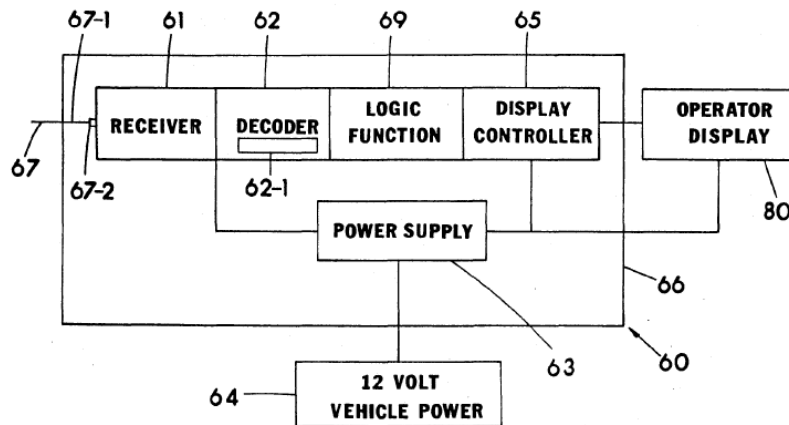


FIG. 9

Figure 9 is a schematic block diagram of vehicle attachable unit 60. Vehicle attachable unit 60 includes receiver 61, decoder 62, and logic function 69. Williams explains that vehicle attachable unit 60 contains electronic components and circuits, which will receive, compare, process, and communicate the information from wheel attachable unit 01 to display 80. *Id.* at 7:14–18. Decoder 62 includes DIP switch bus 62–1, similar to DIP switch bus 70 of wheel attachable unit 01, as well as eleven source identification DIP switches, an equal number to that of wheel attachable unit 01. *Id.* at 11:62–67. In place of the seven DIP switches for the high or low pressure and wheel identification, logic function 69, such as a microprocessor, is used to manipulate the incoming information from decoder 62 and relay it to display controller 65. *Id.* at 12:1–6.

### 2. Claim 3

Claim 3 depends from claim 1 and further recites that “at least the emitter-control device and the signal-generating device of the transmitter are combined in a first microprocessor device which is controlled by a program stored in a memory.” Petitioner contends that encoder 18 in Williams

teaches the “emitter-control device and the signal-generating device of the transmitter” recited in claim 3, and “is contained in microprocessor device which is controlled by a program stored in a memory” as required by the claim. Pet. 32 (citing Ex. 1005, 11:45–48). Petitioner reasons that one skilled in the art would have been motivated to combine the teachings of Oselin and Williams because the references are from the same field as the claimed invention and are both pertinent to the problem faced by the inventors of the ’524 patent, “communicating both source identification and tire pressure information to a central display device of a vehicle.” Pet. 32 (citing Ex. 1004, 5–6; Ex. 1005, 11:51–12:37). Dr. Mercer testifies that one skilled in the art would have found it obvious and cost-effective to combine the emitter-control device and signal-generating device in a single microprocessor controlled by a program stored in memory, such as the memory of the transmitter or a memory associated with the microprocessor described by Williams. Ex. 1010 ¶ 125. Dr. Mercer further testifies that “such a decision would be an obvious design choice from the systems taught by *Williams* and *Oselin*.” *Id.*

Patent Owner does not dispute that encoder 18 in Williams includes an “emitter-control device and the signal-generating device of the transmitter,” as required by claim 3. Instead, Patent Owner argues that “[Petitioner] identifies [encoder 18] as teaching the ‘signal generating device,’ but *not* as teaching the ‘emitter-control device.’” PO Resp. 43 (citing Pet. 47). This argument is misplaced, as the cited portion of the Petition is directed to a different challenge, on which we did not institute trial. *See* Pet. 44, 47 (directed to obviousness over the combination of

Williams and Heitschel); Dec. 30 (denying grounds based on obviousness over Williams and Heitschel).

We are persuaded that the combined teachings of Williams, including that “the ‘generated’ digital information from encoder 18 could conceivably be read from a mini-computer” (Ex. 1005, 11:45–47), and Oselin would have rendered obvious the limitations of claim 3. Although Patent Owner contends that Dr. Mercer’s testimony as to the rationale for the combination proposed by Petitioner is conclusory and entitled to no weight (PO Resp. 44), Patent Owner fails to even address Petitioner’s reasoning that cost concerns would have provided a reason for the proposed modification.

Based on this record, we are persuaded that Petitioner has established, by a preponderance of the evidence, that one skilled in the art would have combined the teachings of Oselin and Williams, and that these combined teachings meet the limitations of claim 3.

Accordingly, Petitioner has established, by a preponderance of the evidence, claim 3 would have been obvious over Oselin.

### *3. Claims 7, 8, and 20*

Claims 7, 8, and 20 each depend from claim 6. As noted above, Petitioner has failed to establish, by a preponderance of the evidence, that claim 6 is unpatentable over Oselin and Petitioner has not asserted that Williams cures the deficiencies discussed above in regards to Oselin. For at least these reasons, Petitioner also fails to establish that claims 7, 8, and 20 would have been obvious over the combination of Oselin and Williams.

#### *D. Obviousness over Oselin and Schultz*

We have reviewed the Petition, the Patent Owner Response, and Petitioner’s Reply, as well as the relevant evidence discussed in those

papers. We are persuaded that Petitioner has established, by a preponderance of the evidence, claims 12 and 16 would have been obvious over Oselin and Schultz.

*1. Overview of Schultz*

Schultz describes a remotely actuated transducer and a display unit. Ex. 1006, 1:6–12. Schultz explains that the transducer includes a tire pressure sensor, which provides a signal indicative of tire pressure, and that the signal is received by the display unit. *Id.* at 3:7–14. The display unit includes a processor, which extracts information from the signal and manipulates the information into a form suitable for generating indicia on a display of the display unit. *Id.* at 3:45–50. Schultz explains that the display unit remains in a “dormant” state until powered up by the user in order to conserve energy. *Id.* at 4:5–7. Schultz explains that the transducer also operates in “active” and “dormant” states. *Id.* at 5:50–52. When the display unit is powered up, the processor of the display unit issues a “wake-up” command to activate the transducer, which subsequently sends a signal indicative of tire pressure back to the display unit. *Id.* at 4:31–55.

*2. Claims 12 and 16*

Claims 12 and 16 depend from claim 1, and Patent Owner does not dispute Petitioner’s contentions regarding these claims specifically. Based on our review of Petitioner’s contentions regarding these claims (*see* Pet. 34–37), we are also persuaded that Petitioner has established, by a preponderance of the evidence, claims 12 and 16 would have been obvious over the combination of Oselin and Schultz.

*E. Obviousness over Oselin and Barabino*

We have reviewed the Petition, the Patent Owner Response, and Petitioner’s Reply, as well as the relevant evidence discussed in those papers. We are persuaded that Petitioner has established, by a preponderance of the evidence, claim 14 would have been obvious over Oselin and Barabino.

*1. Overview of Barabino*

Barabino is directed to tire pressure warning systems. Ex. 1008, 1:12–16. Barabino describes a tire pressure signaling device secured to a valve stem and configured to leak a small amount of air through passages in the device to produce a sonic or ultrasonic signal when pressure within a tire is either above or below a predetermined limit. *Id.* at 2:38–42, 3:16–37. The signal is detected by a sensor mounted in close proximity to the tire. *Id.* at 3:25–27, 36–37. Barabino explains that a sensor is mounted in each wheel well of the vehicle and that all sensors are connected to a common signal processor providing output to a display. *Id.* at 5:33–34, 36–40.

*2. Claim 14*

Claim 14 depends from claim 1 and further recites that “a receiver is associated with every pressure measurement device and transmitter fixed to a wheel of the vehicle whereby the signals received by each receiver are conveyed to the display device which is a central display device for all receivers.” Petitioner contends that Barabino teaches this limitation. Pet. 38 (citing Ex. 1008, 5:31–40, 6:31–39). Petitioner reasons that “[a person of ordinary skill in the art] would have found the inclusion of multiple receivers for each transmitting device an obvious and well-known design choice.” Pet. 39 (citing Ex. 1010 ¶ 140).



Patent Owner responds that “[o]ne of ordinary skill in the art . . . would have had no reason to incorporate the pickup sensors 64 into Oselin’s RF system.” PO Resp. 51. This argument is unpersuasive because Petitioner does not propose incorporating Barabino’s pickup sensors 64 into Oselin. Rather, Petitioner relies on Barabino to support the contention that using multiple receivers was well-known and such a modification to Oselin’s system (i.e., to use multiple receivers) would be a design choice. *See* Pet. 39. Based on the evidence presented, we are persuaded by Petitioner’s contentions that it would have been obvious to use multiple receivers in Oselin’s system.

Accordingly, Petitioner has established, by a preponderance of the evidence, claim 14 would have been obvious over the combination of Oselin and Barabino.

*F. Obviousness over Oselin, Schultz, and Li*

We have reviewed the Petition, the Patent Owner Response, and Petitioner’s Reply, as well as the relevant evidence discussed in those papers. We are persuaded that Petitioner has established, by a preponderance of the evidence, claim 17 would have been obvious over Oselin, Schultz, and Li.

*1. Overview of Li*

Li is directed to a remote control apparatus including a transmitter and a receiver, and a coding system for the transmitter and receiver. Ex. 1007, 1:5–8. Li describes the remote control apparatus as applying to a variety of applications including television receivers, garage doors, security systems, and other devices. *Id.* at 1:9–11. The transmitter can be switched between a normal mode and a changing mode, where an identification code is changed,

either manually or randomly, and stored in memory. *Id.* at 3:24–29, 3:62–4:12, 4:56–5:2. The receiver also can be switched from a normal mode to a changing mode, where the signal received from the transmitter is stored in memory as a new address code. *Id.* at 5:38–44.

## 2. Claim 17

Claim 17 depends from claim 1 and further recites that “each transmitter comprises a detector device which recognizes emittance of a predetermined switching signal and, therefore, switches the transmitter into a pairing mode in which the identification signal and an additional signal indicating the pairing mode is emitted.” Petitioner cites the combination of Schultz’s “active” and “dormant” transmitter states and the “wake-up signal” from the receiver with Li’s transmitter being changeable between a normal mode and a changing mode to support the conclusion of obviousness. Pet. 40–41 (citing Ex. 1006, 5:50–54, 5:67–6:3; Ex. 1007, 2:21–24, 32–37). Petitioner additionally cites Oselin’s disclosure of a pairing mode indication by symbol  $S_{17}$  in the transmitted signal. Pet. 41 (citing Ex. 1004, 17).

Patent Owner does not challenge Petitioner’s rationale for combining the teachings of Oselin, Schultz, and Li (*see* Pet. 40–41; Ex. 1010 ¶¶ 141–147), which we find persuasive. Rather, Patent Owner argues that “[t]he ‘wake-up’ command in Schultz does not cause any device to be placed ‘into a pairing mode in which the identification signal and an additional signal indicating the pairing mode is emitted,’ as required by claim 17.” PO Resp. 53. This argument is unpersuasive because Petitioner proposes a further modification based on Li for the pairing mode feature. *See* Pet. 41 (“*Li* discloses that the transmitter is switched into a changing or pairing mode in which the identification signal [is] emitted.”). Patent Owner’s arguments

relative to Li are based on a construction of “emittance” that requires *wireless* transmission, which we did not adopt as explained above. Based on the evidence presented, we are persuaded by Petitioner’s contentions that the combined teachings of Oselin, Schultz, and Li would have rendered the limitations of claim 17 obvious and that one skilled in the art would have combined those teachings.

Accordingly, Petitioner has established, by a preponderance of the evidence, that claim 17 would have been obvious over Oselin, Schultz, and Li.

### III. SUMMARY

Petitioner has demonstrated, by a preponderance of the evidence that claims 1–3, 5, 10–19, and 21 of the ’524 patent are unpatentable. Petitioner has failed to establish, by a preponderance of the evidence that claims 6–9 and 20 are unpatentable.

### IV. ORDER

For the reasons given, it is

ORDERED that

A. Claims 1, 2, 5, 10, 13, 15, 18, 19, and 21 are unpatentable as anticipated by Oselin;

B. Claims 1, 2, 5, 10, 11, 13, 15, 18, 19, and 21 are unpatentable as obvious over Oselin;

C. Claim 3 is unpatentable as obvious over Oselin and Williams;

D. Claims 12 and 16 are unpatentable as obvious over Oselin and Schultz;

E. Claim 14 is unpatentable as obvious over Oselin and Barabino;

F. Claim 17 is unpatentable as obvious over Oselin, Schultz, and Li; and

FURTHER ORDERED that parties to the proceeding seeking judicial review of this final written decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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