UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

SPX CORPORATION,

Plaintiff,

vs.

Case No. 06-14888
Hon. David M. Lawson
Magistrate Judge Steven D. Pepe

BARTEC USA, LLC, BARTEC AUTO ID LTD., SCHRADER-BRIDGEPORT INTERNATIONAL, INC., MYERS TIRE SUPPLY DISTRIBUTION, INC.,

Defendants.
_____/

OPINION AND ORDER CONSTRUING CLAIMS AND MODIFYING CASE MANAGEMENT ORDER

In this patent infringement action, plaintiff SPX Corporation (SPX) alleges that Bartec USA, LLC (Bartec) copied its design for a handheld tool used in servicing tires on motor vehicles equipped with remote tire monitoring systems. The design and function of the device is described in U.S. Patent 6,904,796 (the '796 patent). The '796 patent contains four figures and a twelve-column specification, and it asserts twenty-two claims. The parties have reached substantial agreement on several of the limitations in the claim terms, but there remain disputes as to other terms. A hearing was held on October 25, 2007 at which the parties made their presentations. The Court determines that the claim terms will be construed as set forth below.

I. The Tool Described by the '796 Patent

The tool described in the '796 patent is a handheld device designed to assist mechanics in changing and rotating tires in vehicles equipped with remote tire monitoring systems (RTMS). Although RTMS is not a novel development (the first vehicle equipped with RTMS was a 1986

Porsche), it has proliferated in recent years. *See* Tire Pressure Monitoring System *at* http://en.wikipedia.org/wiki/Tire_Pressure_Monitoring_System (last visited Oct. 22, 2007). Therefore, motor vehicle technicians must work on RTMS-equipped vehicles with increasing frequency, and tools that make the task more efficient are useful. One difficulty in rotating tires on RTMS-equipped vehicles is that the system must be re-calibrated following rotation.

When tires with RTMS are first installed, the vehicle's on-board computer recognizes the position of each tire, and data corresponding to those tires (e.g., air pressure and temperature) is communicated to the computer and presumably reported to the driver. However, when the tires are rotated, the on-board computer does not automatically recognize that a change has occurred; without further action, the computer will continue to report changes in the various tires as if they remained in their former positions. So after a mechanic rotating tires on an RTMS-equipped vehicle swaps the tires, the mechanic must re-calibrate the system by activating each tire sensor and associating the tire sensor's discrete identification with its location on the vehicle. '796 Patent at 1:55-67, 2:1-7. The tire sensors communicate with the on-board computer by way of radio signal sent to a receiver on the vehicle. '796 Patent at 1:18-23. To rotate tires properly, the mechanic puts the receiver into "learn mode" and activates the tire sensors in a sequence specified by the vehicle manufacturer. '796 Patent at 1:40-47. The tire sensors then transmit their respective sensor identifications to the vehicle's receiver, informing the on-board computer of their new positions. '796 Patent at 1:64-67, 2:1-7.

Rotating tires with RTMS is further complicated by the fact that the way in which tire sensors are activated varies with the manufacturer. '796 Patent at 38-40. A tire sensor may be activated by a magnet, a change in air pressure, or by a radio frequency signal in the form of a

continuous wave signal or a modulated signal. *Id.* at 2:23:37. The unique feature of the tool described in the '796 patent is its ability to interact with tire sensors that use any of these methods of activation. *Id.* at 2:49-64. In other words, the '796 patent envisions a single tool of universal applicability, eliminating the need to acquire a range of tools to work on RTMS vehicles. *Id.* at 2:6-64. As the patent abstract puts it:

> A tire positioning tool is provided that can be utilized to work with remote tire monitoring systems made by different manufacturers. The tire positioning tools are capable of activating RTMS tire sensors using one of a plurality of methods. Tire positioning tools can be manufactured that are ca[pa]ble of receiving signals from RTMS tire sensors using a plurality of different frequencies. Tire positioning tools can be manufactured that are also capable of transmitting data to a RTMS receiving unit and/or receiving data from a RTMS receiving unit using a plurality of signal frequencies. Using the provided tire positioning tool, a technician tasked to install a new tire or to rotate tires can utilize a single tool to work with remote tire monitoring systems made by different manufacturers.

'796 Patent at 1.

In addition to re-calibrating tire sensors on a range of vehicles, the patented tool also has the ability to receive tire sensor signals itself. The purpose of this feature appears to be two-fold: (1) in order to know when the tire sensor signals have been transmitted, the tool must be able to receive those signals and report them to the technician; and (2) after receiving tire sensor signals, the tool may display information about the tire, such as air-pressure.

The '796 patent contains four figures and a twelve-column specification, and it asserts twenty-two claims. The specification recites the invention's background by referring to the fact that manufacturers of vehicles equipped with RTMS do not use uniform methods or means of detecting tire status parameters or communicating that data to on-board display units. The display units indicate tire data for each tire by its position on the vehicle. "A technician installing new tires on a vehicle or changing the positions of tires (that is, rotating tires) on a vehicle can program the

vehicle's RTMS receiving unit to associate the tires on the vehicle with their tire positions by first putting the receiving unit into learn mode or programming mode and then activating the tire sensors in a sequence specified by the manufacturer of the RTMS receiving unit." '796 Patent at 1:41-47. The specification explains:

> As each tire sensor is activated, it transmits a signal ("tire sensor signal") to the receiving unit. The tire sensor signal will typically contain a unique ID that identifies the particular tire . . . that is transmitting the tire sensor signal. The receiving unit associates this unique ID with the position of the tire from which the signal is being transmitted. In this manner, the receiving unit learns the position of each tire as it is being activated.

'796 Patent at 1:63-2:3. According to the invention summary:

> The present invention provides for a tire positioning tool that can be utilized to work with remote tire monitoring systems made by different manufacturers. Tire positioning tools of the present invention are capable of activating RTMS tire sensors using one of a plurality of means. Preferred tire positioning tools of the present invention are capable of receiving signals of a plurality of frequencies transmitted by activated RTMS tire sensors. Preferred tire positioning tools of the present invention are also capable of transmitting data to a RTMS receiving unit and/or receiving data from a RTMS receiving unit using one of a plurality of signal frequencies. In this manner, a technician asked to install a new tire or to rotate tires can utilize a single tool to work with remote tire monitoring systems made by different manufacturers.

'796 Patent at 2:49-64.

The specification then recites a detailed description of the preferred embodiment of the invention, which is supplemented by four figures. The operation of the tool is as follows: First, the technician turns on the tool's power by pressing the "start" button. *See* '796 Patent at Fig. 2; *id.* at 11:30-33. Second, the technician attempts to activate the first tire sensor by using one of the various means available (i.e., by creating a magnetic field, by letting air out of the tire through use of the valve core depressor, or by sending a continuous wave or modulated signal). *See id.* at Fig 2; *id.* at 11:33-44. If successful, the tire sensor will transmit a signal to both the vehicle receiving unit and

the patented tool. *See id.* at Fig. 2; *id.* at 1:63-67, 2:7, 2:49-64, 6:43-65, 7:24-31, 12:3-9 ; *id.* at clms. 7-20. Moreover, the tool will record the means used when successful and automatically default to that means for the remaining tires. *Id.* at 11:45-67, 12:1-2. To accomplish the bare minimum of re-calibrating the RTMS system during tire rotation, the technician will repeat step two at each tire. *See id.* at Fig. 2; *id.* at 1:63-67, 2:1-7, 12:38-47. Along the way, the signal sent from the tire sensor will also transmit information regarding the tire (e.g., air pressure), which will then be displayed on the tool. *Id.* at 8:23-36, 10:57-65. If, however, the technician wishes to use the tool to communicate directly with the vehicle's receiving unit, she may do so. *See id.* at Fig. 2; *id.* at 8:24-26, 8:53-55, 9:10-12, 9:50-55, 10:2-5; *id.* at clm. 16. In this way, the technician may re-calibrate the system and input new data into the receiving unit. *See* '796 Patent at 9:50-54 ("In this manner, preferred tire positioning tools of the present invention can receive a signal from an activated RTMS tire sensor, decode the signal, add additional data such as tire position as necessary or desired, encode the data, and transmit the encoded data via a signal to the vehicle's receiving unit."). It is clear, therefore, that the tool "can interact with a vehicle's receiving unit by both receiving signals from and transmitting signals to the vehicle's receiving unit." '796 Patent at 10:2-5.

The specification concludes with the following claims:

> **1.** A tool comprising a plurality of means for activating remote tire monitoring system tire sensors, the plurality of means selected from the group consisting of a magnet, a valve core depressor, means for generating continuous wave signals, and means for generating modulated signals, wherein the tool is capable of activating a plurality of tire sensors, each of the plurality of tire sensors utilizing a different method for activating the said tire sensor.
>
> **2.** The tool of claim 1, wherein the tool comprises a magnet and at least one means for generating a continuous wage signal.
>
> **3.** The tool of claim 1, wherein the tool comprises a magnet and at least one means for generating a modulated signal.

4. The tool of claim 1, wherein the tool comprises at least one means for generating a continuous wave signal and at least one means for generating a modulated signal.

5. The tool of claim 1, wherein the tool comprises a plurality of means for generating continuous wave signals.

6. The tool of claim 1, wherein the tool comprises a plurality of means for generating modulated signals.

7. A tool, comprising:

a plurality of means for activating remote tire monitoring system tire sensors, the plurality of means selected from the group consisting of a magnet, a valve core depressor, means for generating continuous wave signals, and means for generating modulated signals; and

a means for receiving tire sensor signals,

wherein the tool is capable of activating a plurality of tire sensors, each of the plurality of tire sensors utilizing a different method for activating the said tire sensor.

8. The tool of claim 7, wherein the means for receiving tire sensor signals is selected from the group of means capable of receiving tire sensor signals at frequencies of 125 KHz, 13.56 MHz, 315 MHz, 433 MHz, 848 MHz, 916 MHz, and 2.4 Ghz.

9. A tool comprising:

a plurality of means for activating remote tire monitoring system tire sensors, the plurality of means selected from the group consisting of a magnet, a valve core depressor, means for generating continuous wave signals, and means for generating modulated signals; and

a plurality of means for receiving tire sensor signals,

wherein the tool is capable of activating a plurality of tire sensors, each of the plurality of tire sensors utilizing a different method for activating the said tire sensor.

10. The tool of claim 9, wherein the plurality of means for receiving tire sensor signals is selected from the group of means capable of receiving tire sensor

signals at frequencies of 125 KHz, 13.56 MHz, 315 MHz, 433 MHz, 848 MHz, 916 MHz, and 2.4 GHz.

11. A tool, comprising:

a plurality of means for activating remote tire monitoring system tire sensors, the plurality of means selected from the group consisting of a magnet, a value core depressor, means for generating continuous wave signals, and means for generating modulated signals;

a means for receiving tire sensor signals; and

display apparatus for displaying data received from tire sensor signals,

wherein the tool is capable of activating a plurality of tire sensors, each of the plurality of tire sensors utilizing a different method for activating the said tire sensor.

12. The tool of claim 11, wherein the display apparatus is a LED device, a LCD device, or a VF device.

13. A tool, comprising:

a plurality of means for activating remote tire monitoring system tire sensors, the plurality of means selected from the group consisting of a magnet, a valve core depressor, means for generating continuous wave signals, and means for generating modulated signals;

a means for receiving tire sensor signals; and

a means for transmitting signals to remote tire monitoring system receiving units,

wherein the tool is capable of activating a plurality of tire sensors, each of the plurality of tire sensors utilizing a different method for activating the said tire sensor.

14. The tool of claim 13, wherein the means for transmitting signals to remote tire monitoring receiving units is selected from the group of means capable of transmitting signals at frequencies of 125 KHz, 13.56 MHz, 315 MHz, 433 MHz, 848 MHz, 916 MHz, and 2.4 Ghz.

15. A tool comprising:

a plurality of means for activating remote tire monitoring system tire sensors, the plurality of means selected from the group consisting of a magnet, a valve core depressor, means for generating continuous wave signals, and means for generating modulated signals;

a means for receiving tire sensor signals;

a means for transmitting signals to remote tire monitoring system receiving units; and

a means for receiving signals transmitted by remote tire monitoring system receiving units,

wherein the tool is capable of activating a plurality of tire sensors, each of the plurality of tire sensors utilizing a different method for activating the said tire sensor.

16. A tool comprising:

a means for receiving tire sensor signals; and

a means for transmitting signals to remote tire monitoring system receiving units,

wherein the tool is capable of adding data to a received tire sensor signal and transmitting the said added data to a remote tire monitoring system receiving unit.

17. A method, comprising the steps of:

attempting to activate a remote tire monitoring system tire sensor using a first means for activating remote tire monitoring system tire sensors;

waiting to receive a tire sensor signal;

attempting to activate the remote tire monitoring system tire sensor using a different means for activating remote tire monitoring system tire sensors if no tire sensor signal has been received; and

repeating the waiting step and the second attempting step until either a tire sensor signal is received or no different means for activating remote tire monitoring system tire sensors is available.

18. A method, comprising the steps of:

attempting to activate a remote tire monitoring system tire sensor using a first means for activating remote tire monitoring system tire sensors;

waiting to receive a tire sensor signal;

attempting to activate the remote tire monitoring system tire sensor using a different means for activating remote tire monitoring system tire sensors if no tire sensor signal has been received;

recording the most recent means used for attempting to activate the remote tire monitoring tire sensor if a tire sensor signal is received; and

repeating the waiting step and the second attempting step until either a tire sensor signal is received or no different means for activating remote tire monitoring system tire sensors is available.

19. A method, comprising the steps of:

attempting to activate a first remote tire monitoring system tire sensor using a first means for activating remote tire monitoring system tire sensors;

waiting to receive a tire sensor signal;

attempting to activate the first remote tire monitoring system tire sensor using a different means for activating remote tire monitoring system tire sensors if no tire sensor signal has been received;

recording the most recent means used for attempting to activate the remote tire monitoring tire sensor if a tire sensor signal is received;

repeating the waiting step and the second attempting step until either a tire sensor signal is received or no different means for activating remote tire monitoring system tire sensors is available; and

activating a second remote tire monitoring system tire sensor using the recorded means.

20. A method comprising the steps:

activating a remote tire monitoring system tire sensor;

receiving a tire sensor signal containing data from the activated tire sensor; and

transmitting some or all of the data received from the tire sensor to a remote tire monitoring system receiving unit, wherein the activating step, the receiving step, and the transmitting step are all performed by a single tool, and wherein the tool comprises a plurality of means for activating remote tire monitoring system tire sensors.

21. The method of claim 20, wherein the data transmitted to the remote tire monitoring system includes additional data added to the data received from the remote tire monitoring tire sensor.

22. The method of claim 21, wherein the additional data includes the tire position of the remote tire monitoring system tire sensor.

'796 Patent at clms. 1-22.

II. Commercial Developments

The plaintiff in this case, SPX Corporation, did not actually invent the tool described in the '796 patent. Instead, the tool was invented by associates of G-5 Electronics, Inc., a small "think-tank company" located in Troy, Michigan. *See* Pl.'s Cl. Const. Br., Ex. 1, '796 Patent. The patent application was filed on April 21, 2003, and the PTO awarded the patent on June 14, 2005. *Id.* at 1. G-5 introduced the tool covered by the '796 Patent in late 2004. *See* Pl.'s Cl. Const. Br., Ex. 2, G-5 Ad. Bartec USA, LLC followed suit and introduced a similar product in late 2005. *See* Pl.'s Const. Br., Ex. 3, Bartec Ad. In 2006, SPX purchased the '796 patent from G-5 for "multiple millions of dollars." Pl.'s Cl. Const. Br. at 1. Photos of the tools offered by Bartec and SPX demonstrate their similarity, at least in terms of outside appearance. *Compare* Pl.'s Cl. Const. Br., Ex. 2, G-5 Ad. *with* Pl.'s Const. Br., Ex. 3, Bartec Ad.

III. Agreed and Disputed Claim Terms

The parties stipulated to the construction of some of the limitations in the claims, and by the time of the hearing held on October 25, 2007, they agreed on several others. The stipulated construction of the respective terms are set forth in the following chart:

Affected Claim(s)	**Claim Limitation**	**Stipulated Construction**
1-22	tire sensor	a sensor and transmitter unit associated with a tire of a vehicle
1-22	tire sensor signals	a signal from a tire sensor representing information about the tire
1-15; 20-22	A plurality of means for activating remote tire monitoring system tire sensors, the plurality of means selected from the group consisting of a magnet, a valve core depressor, means for generating continuous wave signals, and means for generating modulated signals	2 or more different means selected from the following: [1] a magnet, [2] a valve core depressor, [3] means for generating continuous wave signals, and [4] means for generating modulated signals, for activating remote tire monitoring system tire sensors.
13-16; 20-22	remote tire monitoring system receiving unit	a receiver separated from the tire sensors for receiving tire sensor signals
17-19	first means for activating remote tire monitoring system tire sensors	[1] a magnet, [2] a valve core depressor, [3] means for generating continuous wave signals, or [4] means for generating modulated signals, for activating remote tire monitoring system tire sensors

17-19	a different means for activating remote tire monitoring system tire sensors	[1] a magnet, [2] a valve core depressor, [3] means for generating continuous wave signals, or [4] means for generating modulated signals, for activating remote tire monitoring system tire sensors that is different from the first means

The claim limitations to which the parties agreed by the time of the hearing are as follows:

Affected Claim(s)	**Claim Limitation**	**Agreed Construction**
1-15	activating remote tire monitoring system tire sensors	causing the RTMS tire sensor to activate and transmit a tire sensor signal
1-15	wherein the tool is capable of activating a plurality of tire sensors, each of the plurality of tire sensors utilizing a different method for activating the said tire sensor	wherein the tool is capable of activating two or more tire sensors where the method for activating one tire sensor is different than the method for activating another tire sensor
11-12	display apparatus for displaying data received from tire sensor signals	display apparatus for displaying data received from tire sensor signals in a manner making it readable to the technician
16	the tool is capable of adding data to a received tire sensor signal	the tool is capable of receiving a tire sensor signal and adding data to the received signal
16	transmitting the said added data to a remote tire monitoring system receiving unit	transmitting the said added data to a remote tire monitoring system receiving unit

17-18	recording the most recent means used for attempting to activate the remote tire monitoring tire sensor if a tire sensor signal is received	recording the most recent attempted means for activating RTMS tire sensors if a tire sensor signal is received
20-22	single tool	one tool

The Court adopts the foregoing agreed construction of the terms stated above, and it is so **ORDERED**.

The disputed claim terms identified by the parties are summarized in the table below:

Affected Claim(s)	**Claim Limitation**	**Plaintiff's Construction**	**Defendants' Construction**
1-15	means for generating continuous wave signals	frequency generating circuitry, an amplifier or driver circuit, and an inductor (plus equivalents thereof) for generating continuous wave signals for activating remote tire monitoring system tire sensors	indefinite
1-15	means for generating modulated signals	a microprocessor in addition to frequency generating circuitry, an amplifier or driver circuit, and an inductor (plus equivalents thereof) for generating modulated signals for activating remote tire monitoring system tire sensors	indefinite

7-8; 11-16	means for receiving tire sensor signals	an antenna connected to receiving circuitry or a receiver (plus equivalents thereof) for receiving tire sensor signals	a receiver for receiving tire sensor signals (no equivalents)
9-10	a plurality of means for receiving tire sensor signals	an antenna connected to receiving circuitry or receiver(s) (plus equivalents thereof) for receiving tire sensor signals at two or more frequencies	two or more receivers for receiving tire sensor signals (no equivalents)
13-16	means for transmitting signals to remote tire monitoring system receiving units	an antenna connected to transmitting circuitry or a transmitter (plus equivalents thereof) for transmitting signals to remote tire monitoring system receiving units	a transmitter for transmitting signals to remote tire monitoring system receiving units (no equivalents)
15	means for receiving signals transmitted by remote tire monitoring system receiving units	an antenna connected to a receiver(s) (plus equivalents thereof) for receiving signals transmitted by remote tire monitoring system receiving units	a receiver for receiving signals transmitted by remote tire monitoring system receiving units (no equivalents)

The arguments as to each of these disputes are set forth in the discussion of the claim limitations that follows.

IV. Governing Law

The patent claims define the invention "to which the patentee is entitled the right to exclude." *Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004) (citing *Aro Mfg., Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 339 (1961)). When

there is a dispute as to the meaning of a claim term or an allegation that a claim is ambiguous, courts must "construe claims by considering the evidence necessary to resolve [such] disputes . . . to assign a fixed, unambiguous, legally operative meaning to the claim." *Liquid Dynamics Corp. v. Vaughan Co., Inc.*, 355 F.3d 1361, 1367 (Fed. Cir. 2004) (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Claim construction and interpretation is a question of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

A. General Rules of Claim Construction

"The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims." *DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1322 (Fed. Cir. 2001) (internal quotations omitted). The process begins with consideration of the patent itself because "[i]t is a bedrock principle of patent law that the claims of a patent define the invention." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (internal quotations omitted).

The words used in a claim are generally "deemed to have their ordinary and customary meaning in their normal usage in the field of the invention." *Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1306 (Fed. Cir. 2003). That is, the terms of a claim presumptively bear the meaning that would be given them by one of ordinary skill in the art at the time of invention. *Research Plastics, Inc. v. Fed. Packaging Corp.*, 421 F.3d 1290, 1295 (Fed. Cir. 2005). This presumption may be overcome, however, "where the patentee chooses to be his or her own lexicographer by clearly setting forth a definition for a claim term in the specification" or where the written description and drawings of the invention indicate that "the patentee has disclaimed subject matter or has otherwise limited the scope of the claims." *Anchor Wall*, 340 F.3d at 1306.

In addition, a given claim should not be construed in an isolated or piecemeal fashion since "[i]t is presumed that the person of ordinary skill in the art read the claim in the context of the entire patent, including the specification, not confining his understanding to the claim at issue." *Research Plastics*, 421 F.3d at 1295. As the Federal Circuit has summarized,

> [u]ltimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description will be, in the end, the correct construction.

Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250 (Fed. Cir. 1998) (internal citation omitted). Of course, the Court's task is limited to construing claim terms that are controverted. *Vivid Technologies v. American Science & Engineering, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (stating that "only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy").

In addition to the words set forth in the patent, "a court 'should also consider the patent's prosecution history.'" *Phillips*, 415 F.3d at 1317 (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996)). The prosecution history is considered "intrinsic evidence" and "consists of the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent." *Ibid.* "Like the specification, the prosecution history provides evidence of how the PTO and the inventor understand the patent." *Ibid.* On the other hand, "because the prosecution history represents an ongoing negotiation between the PTO and the application, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Ibid.*

Although not as probative as intrinsic evidence, the Federal Circuit has also "authorized district courts to rely on extrinsic evidence, which 'consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.'" *Ibid.* (quoting *Markman,* 52 F.3d at 980). Technical dictionaries can be particularly helpful because they provide sound evidence of "the way in which one of skill in the art might use the claim terms." *Id.* at 1318. Likewise, expert testimony can be useful insofar as it "provide[s] background on the technology at issue, . . . explain[s] how an invention works, . . . ensure[s] that the court's understanding of the technical aspects of the patent is consistent with that of a person with skill in the art, [and] establish[es] that a particular term in the patent or the prior art has a particular meaning in the pertinent field." *Ibid.*

B. Means-Plus-Function

Some of the disputed claims are defined in terms of means plus function to incorporate a structure as part of the invention (but not unique to it) without identifying that structure in the claims. Federal statutory law governs construction of claim limitations drafted as "means-plus-function" limitations and permits broad claiming ability in such cases:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, ¶ 6. When a claim includes the word "means," it is presumed that the statutory mandate of § 112, ¶ 6 applies. *Rodime PLC v. Seagate Technology, Inc.*, 174 F.3d 1294, 1302 (Fed. Cir. 1999). However, this presumption is overcome in two situations. *Ibid.* "First, a claim element that uses the word 'means' but recites no function corresponding to the means does not invoke § 112, ¶ 6." *Ibid.* "Second, even if the claim element specifies a function, if it also recites sufficient

structure or material for performing that function, § 112, ¶ 6 does not apply." *Ibid. See also Linear Technology Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319 (Fed. Cir. 2004). In addition, when the word "means" is not used, a reverse presumption arises that the element is not to be construed in accordance with § 112, ¶ 6. *John D. Watts v. XL Sys.*, 232 F.3d 877, 880 (Fed. Cir. 2000).

"Once a court concludes that a claim limitation is a means-plus-function limitation, two steps of claim construction remain: 1.) the court must first identify the function of the limitation; and 2.) the court must then look to the specification and identify the corresponding structure for that function." *Biomedino, LLC v. Waters Technologies Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007). If there is no structure in the specification pertaining to the means-plus-function limitation in the claim, the claim will be deemed invalid for indefiniteness. *Ibid.* In such instances, the inventor has breached the terms of the bargain envisioned in § 112, ¶6: "[I]n return for generic claiming ability, the applicant must indicate in the specification what structure constitutes the means." *Id.* at 948. "'If the specification is not clear as to the structure that the patentee intends to correspond to the claimed function, then the patentee has not paid the price but is rather attempting to claim in functional terms unbounded by any reference to structure in the specification.'" *Ibid.* (quoting *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211 (Fed. Cir. 2003)).

On the other hand, "[w]hile the specification must contain structure linked to claimed means, this is not a high bar." *Id.* at 950. "All one needs to do in order to obtain the benefit of [§ 112, ¶ 6] is to recite some structure corresponding to the means in the specification, as the statute states, so that one can readily ascertain what the claim means." *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1382 (Fed. Cir. 1999). A party contending that a claim is invalid for indefiniteness must prove, by clear and convincing evidence, "that the specification lacks adequate disclosure of

structure to be understood by one skilled in the art as able to perform the recited functions." *Intel Corp. v. VIA Technologies, Inc.*, 319 F.3d 1357, 1366 (Fed. Cir. 2003).

When § 112, ¶ 6 applies, the protected structure is not only that disclosed in the specification but also "equivalents thereof." 35 U.S.C. § 112, ¶ 6; *see also Al-Site Corp. v. VSI Int'l*, 174 F.3d 1308, 1320 (Fed. Cir. 1999). Nevertheless, the protection afforded by this rule is not as broad as it may sound. *See Al-Site Corp.*, 174 F.3d at 1320; Patent Law & Practice § 5.III.C (3d ed. 2001). "An equivalent structure or act under § 112 cannot embrace technology developed after the issuance of the patent," and "the accused device must perform the *identical* function as recited in the claim element." *Al-Site Corp.*, 174 F.3d at 1320 (emphasis added). *See also id.* at 1320-21 (distinguishing the equivalents rule of § 112, ¶ 6 from the "doctrine of equivalents," which "may be satisfied when the function performed by the accused device is only substantially the same").

C. Person of Ordinary Skill in the Art

Because the claim terms must be construed according to their meaning to one skilled in the art at the time of the invention, one task in construing the claims is identifying such a hypothetical individual. *Ferguson Beaurergard/Logic Controls v. Mega Sys., LLC*, 350 F.3d 1327, 1338 (Fed. Cir. 2003) (stating that claim terms "are examined through the viewing glass of a person skilled in the art"). Of course, the parties dispute the qualifications of such a person. The plaintiff believes that the proper definition in this case is an individual with an electronics background and a year of experience working with tire pressure sensors of a particular manufacturer. The defendant contends that the level of ordinary skill in this art requires an individual who has a working understanding of radio frequency (rf) communication in identification technology systems including the transmitters and receivers incorporated in the invention and the way in which these components activate and

operate. The defendant believes the person must have a Bachelor's degree (or equivalent) in electronics or electrical engineering and two to three years industry experience in designing, developing, or testing rf identification components or systems, and an understanding of or general familiarity with the components, communication protocol, operations, and environment of an RTMS. This issue ultimately will be for the jury to decide, but the Court will resolve it tentatively for the purpose of construing the claims. *See Alza Corp. v. Mylan Labs, Inc.*, 464 F.3d 1286, 1289 (Fed. Cir. 2006) (labeling ordinary skill in the art "an underlying factual question"); *accord Pharma Stem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1359-60 (Fed. Cir. 2007); *see also Dippin' Dots, Inc. v. Mosey*, 476 F.3d 1337, 1343 (Fed. Cir. 2007) (stating that jury's determination of obviousness is reviewed *de novo* and underlying factual determinations, including the level of ordinary skill in the art, are reviewed for substantial evidence).

"The person of ordinary skill in the art is a hypothetical person who is presumed to know the relevant prior art." *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In ascertaining this skill level, the Court may consider a number of factors, including the "the educational level of the inventor; the type of problems encountered in the art; the prior art solutions to those problems; the rapidity with which innovations are made; the sophistication of the technology[;] and the educational level of workers in the field." *Helifix, Ltd. v. Blok-Lok, Ltd.*, 208 F.3d 1339, 1347 (Fed. Cir. 2000); *see also In re GPAC*, 57 F.3d at 1579 (quoting *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962-63 (Fed. Cir. 1986)).

After considering the relevant factors in light of the evidence submitted by the parties, the Court believes that the defendants' description of the person of ordinary skill in the art is accurate. The defendants' proposed definition does not mandate possession of a B.S. in electronics or

electrical engineering; it simply states such credential is a good proxy for possession of the requisite knowledge. This is an accurate assessment. The plaintiffs have cited the fact that one of the inventors of the '796 patent (Kenny Thomas) has a degree in advertising, and another (Robert Gilling) has only a high school education. However, it is not clear how much input these individuals had in the design of the patented tool, and, at least as to Mr. Thomas, it is doubtful that he actually qualifies as one of ordinary skill in the art. When asked whether the patented tool used a different protocol depending on the type of tire sensor, Thomas responded that his "understanding" was that it did, but he stressed that he was not sure whether he was qualified to speak on the matter. Pl.'s Cl. Const. Br., Ex. 20, Thomas Dep. at 10. On the other hand, to the extent that Thomas has the requisite knowledge despite not having a degree in the relevant field, it appears this may be a product of special circumstances: Thomas owns a company that is a "contract manufacturer of diagnostic equipment that is sold into the automobile industry." *Id.* at 11. Apart from Thomas and Gilling, the other inventors possess university degrees in electrical engineering. *See* Pl.'s Cl. Const. Br., Ex. 18, Pacsai Dep. at 12; Ex. 19, Szasz Dep. at 5-6.

Moreover, the Court finds that the plaintiff's definition is simply too vague. "[A]n electronics background and a year of experience working with tire pressure sensors of a particular manufacturer" provides little insight into the actual knowledge and experience of an individual. For instance, someone could have worked with tire pressure sensors for a year, and yet have no knowledge of the inner workings of the tools that activate those sensors. Knowing to push a button and knowing the effects of that action is quite different than knowing what happens inside the tool and the precise ways with which the tool interacts with the sensors and receiving unit. Therefore, the defendants' suggestion – that the person of ordinary skill in the art would have knowledge of "(i)

the components which comprise the transmitters and receivers and the way in which these components activate and operate; (ii) the transmission of signals from a transmitter in the system; and (iii) the reception of signals by a receiver in the system" – seems far more helpful. Therefore, the Court will adopt the defendants' proposed definition for the purpose of construing the claims.

V. Discussion of the Disputed Claims

A. Equivalents

Several of the claims are stated as means plus function, which suggests, of course, that the limitation includes the structure identified in the specification plus equivalents. The defendant contends that the plaintiff may not claim equivalents, however, because the plaintiff failed to comply with the terms of this Court's scheduling order setting a deadline for identifying all equivalent structures. The Court's scheduling order, originally issued on March 14, 2007 and then modified on August 22, 2007, stated that each party must furnish its proposed claim construction statement on or before August 15, 2007. *See* Orig. and Mod. Sched. Orders [dkt #s 15 and 98] at 1. In describing the contents of that statement, the Court's order provided that, for each claim, the submitting party needed to provide an analysis "defining and identifying equivalents asserted." Orig. and Mod. Sched. Orders at 2. Although that statement is clear, the parties expressed some confusion over other parts of the scheduling order, so on September 27, 2007, the Court granted the parties' joint motion for clarification.

The clarifying order provided that the parties would file their joint claim construction statement and respective *Markman* briefs on or before October 3, 2007, with response briefs due on October 8, 2007. Order Granting Mot. for Clar. [dkt # 106] at 2. The Court's order was silent on the issue of proposed claim construction statements because the parties had expressed no confusion

with respect to that issue. It is not readily apparent to the Court, therefore, why the plaintiff did not identify equivalents in its proposed claim construction statement. In that statement, the plaintiff set forth its proposed claim constructions, many of which included the language, "plus equivalents thereof." Defs.' Cl. Const. Br., Ex. A, Pl.'s Proposed Claim Const. St. at 3-5. The plaintiff did not, however, identify the nature of those equivalents. It was not until October 3, 2007, when the plaintiff filed its *Markman* brief, that it identified a "microprocessor" as the equivalent of "frequency generating circuitry" and a "transceiver" as the equivalent of a "receiver." Pl.'s Cl. Const. Br. at 21 n.8, 28 n.14. The plaintiff violated the terms of the scheduling order, but since the defendants have not even suggested that they were prejudiced, the Court believes the claim construction should proceed with consideration of these two equivalents.

However, because the plaintiff has disclosed no further equivalents, it will be barred from asserting any additional equivalents in the future. The plaintiff appears to believe that, the Court's order notwithstanding, it had no obligation to identify equivalents because "the scope of equivalents . . . is a factual question for the jury." Pl.'s Cl. Const. Br. at 21 n.8 (citing *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1268-69). In making this assertion, the plaintiff has missed the point of the scheduling order and fails to apprehend the Court's authority to establish deadlines for the orderly progress of the litigation. It is true that "[w]hether an accused device infringes a § 112, ¶ 6 claim as an equivalent is a question of fact," *Odetics, Inc.*, 185 F.3d at 1268, so it would be improper for the Court to determine, at the claim construction stage, whether an alleged equivalent in fact qualifies as such. *See* Patent Law & Practice § 5.III.C ("Determining whether a particular means for performing the recited function is a § 112, ¶ 6 equivalent has not been treated as a claim construction issue."). However, this does not mean that the Court oversteps its bounds in ordering

the parties to *identify* alleged equivalents and thereby state the fact issues that will require resolution. The plaintiff has cited no law to the contrary. Any further attempt to expand the range of equivalents will not be permitted absent a modification of the scheduling order for good cause shown.

As to merits of the issue, the Court cannot accept the defendants' invitation to hold as a matter of law that a "microprocessor" cannot be an equivalent of "frequency generating circuitry." As noted, adjudicating the validity of a proffered equivalent is not a task for the Court during claim construction. *See Odetics, Inc.*, 185 F.3d at 1268; Patent Law & Practice § 5.III.C. The defendants contend that a "microprocessor" cannot be equivalent to "frequency generating circuitry" because it was disclosed in the specification but not linked to the function performed by frequency generating circuitry – generating continuous wave signals. However, the law cited by the defendants in fact undermines their position. In *Medical Instrumentation and Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205 (Fed. Cir. 2003), the Federal Circuit held that when structure is disclosed in the specification and linked to one function but not another, it is impermissible for a district court to construe that structure as *additional* corresponding structure *to the latter function*. *See id.* at 1216 ("In the past, we have rejected similar attempts to include as additional corresponding structure for a particular function a structure that is dislcosed in the specification but is not associated with the particular claimed function."). But that is not presented by the competing constructions in this case. The plaintiff has not claimed that a microprocessor works *in conjunction* with frequency generating circuitry to produce continuous wave signals, but has claimed that it is the *equivalent* of frequency generating circuitry. The *Medical Instrumentation* decision did not turn on the identification of equivalents; it was concerned with "additional corresponding structure." *Medical Instrumentaion*,

344 F.3d at 1216; *see also ibid.* (rejecting claim of additional corresponding structure in the form of software "where the specification clearly links the framegrabber and CVP to the converting function, but does not link software to that function, though software is disclosed in the specification"). Although the distinction between equivalents and additional corresponding structure is, perhaps, a fine one, it is significant. Coupled with the rule that the existence of an equivalent is a question for the jury, *See Odetics, Inc.*, 185 F.3d at 1268; Patent Law & Practice § 5.III.C, the Court finds that the *Medical Instrumentation* decision counsels against deciding that a microprocessor cannot be an equivalent of frequency generating circuitry.

B. "*Means for generating continuous wave signals*"

The parties agree that this claim limitation is in means-plus-function format, invoking the rubric of § 112, ¶ 6. However, the defendants contend that the limitation should be deemed void for indefiniteness. The Court finds that the defendants have failed to carry their burden of proving by clear and convincing evidence "that the specification lacks adequate disclosure of structure to be understood by one skilled in the art as able to perform the recited function[]." *Intel Corp.*, 319 F.3d at 1366.

Initially, it is clear that the structure proffered by the plaintiff – "frequency generating circuitry, an amplifier or driver circuit, and an inductor" – is linked to the recited function in the specification – generating a continuous wave signal. In fact, it does not appear that the defendants dispute this idea; they simply claim that the structure is too vague. In relevant part, the specification provides:

> Means for generating CW [continuous wave] signals at a specific frequency are known in the art and any means known in the art can be utilized for generating a CW signal in tire positioning tools of the present invention. One means for producing a CW signal in tire positioning tools of the present invention is to include frequency

> generating circuitry to generate the CW signal and then amplify the CW signal with an amplifier or a driver circuit.

'796 Patent at 5:11-18. Figure 1, a technical diagram of the tool, contains icons corresponding to these devices, and it also references an inductor. *See* '796 Patent at Fig. 1; *see also id.* at 10:22-25 ("Frequency generator **108**, amplifier **110**, and inductor **112** are used to send signals for activating RTMS tire sensors (that is, activation signals).")

The defendants contend that this disclosure of structure is insufficient for purposes of § 112, ¶ 6. Both parties have cited *Linear Technology Corp. v. Impala Linear Corp.*, 379 F.3d 1311 (Fed. Cir. 2004), as relevant to the question whether a "circuit" or "circuitry" can be an adequate structure for purpose of § 112, ¶ 6. The Court finds that case is helpful to the plaintiff's position, but does not resolve the matter entirely.

In *Linear Technology*, the district court held during claim construction that a claim containing the word "circuit" was in means-plus-function format (even though the word "means" was not used in the claim), and § 112, ¶ 6 had not been satisfied. *Linear Technology*, 379 F.3d at 1319. On appeal, the Federal Circuit held that this was error because the claim did not include the word "means," therefore the claim limitation presumptively was not a means-plus-function limitation, and the defendant failed to rebut the presumption. However, on the way to that conclusion, the court held that "the term 'circuit' connotes structure." *Id.* at 1320. "Thus, when the structure-connoting term 'circuit' is coupled with a description of the circuit's operation, sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art." *Ibid.*

Nonetheless, *Linear Technology* does not stand for the proposition that "circuitry" is always sufficient structure for purposes of § 112, ¶ 6. The *Linear Technology* court decided only whether § 112, ¶ 6 applied, not whether it had been satisfied. Furthermore, the claim description of the

operation of the circuitry in that case was quite detailed when compared to that in the case at bar. Therefore, although *Linear Technology* militates in favor of the plaintiff's position, the Court's analysis cannot rest on that decision alone.

In addition, however, extrinsic evidence supports the view that a skilled artisan would understand "frequency generating circuitry" to amount to structure sufficient to perform the recited function. *See Biomedino, LLC*, 490 F.3d at 953. A declaration was filed by Gregory W. Davis, who holds a Ph.D. in Mechanical Engineering from the University of Michigan, teaches in the area of automotive engineering, and has "substantial experience in the design of electrical communications for automotive applications." Pl.'s Cl. Const. Br., Ex. 14, Davis Dec. at ¶ 3. Mr. Davis, who was not an inventor of the patented tool and appears to have no other potential for bias, averred as follows:

> I understand that the defendants claim that "frequency generating circuitry" is not an identification of structure. I disagree with that assertion. The structure described is "circuitry" which is commonly understood in basic electronics to identify structure. The term "circuit" is commonly defined as a structure. For example, the Dictionary of Computing 75 (4th Ed. 1996) defines "circuit" as "the combination of a number of electrical devices and conductors that, when interconnected to form a conducting path, fulfill some desired function." The Modern Dictionary of Electronics 116 (7th Ed. 1999) defines "circuit" as "the interconnection of a number of devices in one or more closed paths to perform a desired electrical or electronic function. Examples of simple circuits are high- or low-pass filters, multivibrators, oscillators, and amplifiers." When the term "circuitry" is coupled with a description of the circuit's operation, in this case "frequency generating," a specific structure is clearly identified to one skilled in the basic electronics art. When the term "frequency generating circuitry" is used, one of skill in the art would easily be able to identify the structure. "Frequency generating circuitry" is very common to one skilled in electronics, is simple to construct, and is learned early in electronics training as a rudimentary circuit. In fact, "frequency generating circuitry" is so common in the electronics art, that some have used the term "oscillator" to refer to the same circuit. Indeed, Newton's Telecom Dictionary defines "oscillator" as an: "electronic circuit that creates a single frequency signal."

Id. at ¶ 12. Based on this testimony and the patent document itself, the Court concludes that the defendants have not met their burden of proving by clear and convincing evidence "that the specification lacks adequate disclosure of structure to be understood by one skilled in the art as able to perform the recited function[]." *Intel Corp.*, 319 F.3d at 1366.

Finally, the defendants have asserted an anemic challenge to the structural terms "an amplifier or driver circuit, and an inductor" stated in the specification. *See* Defs.' Cl. Const. Br. at 20-21. The defendants do not contend that these terms do not amount to structure, but they suggest that the terms are not linked to the recited function – "generating continuous wave signals." Although this argument may appear meritorious when a portion of the specification is read in isolation, it fails when the specification is read in context. *See* '796 Patent at 5:11-18. The defendants contend that "means for generating continuous wave signals" must be strictly limited to "frequency generating circuitry" because the specification indicates that the circuitry *generates* the signal, and the amplifier or driver circuit simply *amplify* it after the fact. Defs.' Cl. Const. Br. at 21. However, it is clear from the language of the claims that "generating" a continuous wave signal includes amplification as well. Whenever the language "means for generating continuous wave signals" appears in a claim, it is always surrounded by other, significant words. Claim 9, for instance, claims in relevant part

> A tool, comprising:
>
> a plurality of means for activating remote tire monitoring system tire sensors, the plurality of means selected from the group consisting of a magnet, a valve core depressor, means for generating continuous wave signals, and means for generating modulated signals.

'796 Patent at Cl. 9. Therefore, it is clear that "means for generating continuous wave signals" is just one form of "means for activating remote tire monitoring system tire sensors." To accomplish

this successfully, the specification and accompany figures indicate that the continuous wave signal must be produced *and* amplified. *See* '796 Patent at 10:22-25 ("Frequency generator **108**, amplifier **110**, and inductor **112** are used to send signals for activating RTMS tire sensors (that is, activating signals)).

Therefore, the Court will adopt the plaintiff's construction, limited to the one equivalent it has identified, i.e., a microprocessor. The claim terms noted above will be construed to mean "frequency generating circuitry (plus the alleged equivalent, a microprocessor), an amplifier or driver circuit, and an inductor for generating continuous wave signals for activating remote tire monitoring system tire sensors."

C. *"Means for generating modulated signals"*

The defendants contend that this claim must be declared void for indefiniteness because the designation of the corresponding structure as "a microprocessor" is insufficient. The defendants argue that, when the disclosed structure is a microprocessor or computer, an algorithm must also be disclosed; and no algorithm has been identified in the specification. The Court agrees.

The structure disclosed in the specification for "generating modulated signals" is as follows:

> Means for generating modulated signals at a specific frequency are known in the art and any means known in the art can be utilized for generating a modulated signal in tire positioning tools of the present invention. One means for producing a modulated signal in tire positioning tools of the present invention is to include a microprocessor in addition to frequency generating circuitry. As is known in the art, the microprocessor can provide the modulation to the frequency generator circuitry. An amplifier or driver circuit can also be included to amplify the signal.

'796 Patent at 5:48-57. Figure 1, a technical illustration of the tool's overall structure, shows a microprocessor connected to a power supply, receivers, transmitters, a display device, and a frequency generator. '796 Patent at Fig. 1.

It is now well settled that "[a] computer-implemented means-plus-function term is limited to the corresponding structure disclosed in the specification, and the corresponding structure is the algorithm." *Harris Corp. v. Ericsson, Inc.*, 417 F.3d 1241, 1253 (Fed. Cir. 2005); *see also Tehrani v. Hamilton Medical, Inc.*, 331 F.3d 1355, 1361-62 (Fed. Cir. 2003); *WMS Gaming, Inc. v. Intl Game Tech.*, 184 F.3d 1339, 1348-49 (Fed. Cir. 1999). This rule also applies to a "means-plus-function limitation implemented by a microprocessor." *Harris Corp.*, 417 F.3d at 1253. The plaintiff does not contest this rule, but it insists it merely applies when the *only* disclosed structure for performing the recited function is a microprocessor or computer, and it does not apply when the structure consists of a microprocessor working alongside other apparatuses. The Court cannot accept that argument: nothing in the Federal Circuit decisions commends this interpretation, and the plain language of the applicable cases in fact cuts against it. Since the claim at issue is a microprocessor-implemented means-plus-function term, disclosure of an algorithm is required.

That leaves the issue of what constitutes an algorithm. The requirement of an algorithm "does not mean that the patentee must disclose specific source code for the computer. And, the term 'algorithm' is not limited to a formula of mathematical symbols." *Finisar Corp. v. The DirecTV Group, Inc.*, 416 F. Supp. 2d 512, 518 (E.D. Tex. 2006). On the other hand, simply stating that the microprocessor or computer performs the function in the claim is not tantamount to disclosing an algorithm. *See ibid.* (rejecting alleged disclosure of algorithm on the grounds that it was "nothing more than a restatement of the function, as recited in the claim") Rather, the patentee must at least disclose the basic steps that the microprocessor takes to enable one skilled in the art to determine the limitations on what is claimed. *See Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1381-82 (Fed. Cir. 2001); *In re Dossel*, 115 F.3d 942, 946-47 (Fed. Cir. 1997); *see also Harris Corp.*, 417

F.3d at 1254; *Finisar Corp.*, 416 F. Supp. 2d at 518-19. This can be accomplished in a number of ways. "For example, the steps, formula, or procedures to be performed by the computer might be expressed textually, or shown in a flow chart." *Finisar Corp.*, 416 F. Supp. 2d at 518.

In the present case, no algorithm has been disclosed, and therefore the microprocessor-implemented means-plus-function claim is void for indefiniteness. The closest the specification comes to disclosing an algorithm is the statement that "the microprocessor can provide the modulation to the frequency generator circuitry." '796 Patent at 5:54-56. But this is simply restating the function recited in the underlying claim. The function in the claim is "generating modulated signals." *See, e.g.*, '796 Patent at cl. 9. Although one might argue that "providing the modulation" to the frequency generating circuitry is not a pure restatement of the function (since the signal is produced by the circuitry and not the microprocessor), that argument must fail. "Providing modulation" cannot, under any reasonable understanding, be considered an algorithm because that phrase describes *what* the microprocessor does, not *how* that task is accomplished. Therefore, although "a precise mathematical formula or flow chart" is not required, *Finisar Corp.*, 416 F. Supp. 2d at 519, the disclosure in this case is inadequate, and the claim limitation fails for indefiniteness.

D. *"Means for receiving tire sensor signals"*

The parties agree that the term denotes a means-plus-function claim, and the defendants have not asserted indefiniteness. The only question is whether an antenna should be included in the corresponding structure.

The specification states:

> Preferred tire positioning tools of the present invention can also receive tire sensor signals. Preferred tire positioning tools of the present invention will comprise *an antenna connected to receiving circuitry* capable of receiving a single frequency, a

> single receiver capable of receiving a plurality of frequencies, or multiple receivers each of which is capable of receiving a single frequency.

'796 Patent at 7:27-35 (emphasis added). Figure 1 shows an antenna connected to two receivers set at different frequencies, and it contains a notation that other receivers can be installed as well. '796 Patent at Fig. 1; *see also* '796 Patent at 10:33-43 (stating, *inter alia*, that "[a]ntenna **116** is designed to receive signals from either a RTMS tire sensor or a RTMS receiving unit").

The defendants have not offered any reason for excluding an antenna from the structure, and the Court cannot think of one. The specification and related figure plainly disclose an antenna attached to receivers as the means for receiving tire sensor signals, and the claim will be construed accordingly.

E. *"A plurality of means for receiving tire sensor signals"*

The parties agree that this is a means-plus-function claim, but they dispute both the function and structure of this claim. The defendants state that the only disclosed structure for receiving tire sensor signals is two or more receivers, and they state that the function simply is the receipt of tire sensor signals. The plaintiff, on the other hand, argues that a "plurality of means for receiving tire sensor signals" has been defined in the specification and the Court must adopt that meaning. The Court agrees with the plaintiff.

The Federal Circuit has recognized the right of the patentee to be his own lexicographer. *Finnigan Corp. v. Int'l Trade Com'n*, 180 F.3d 1354, 1364 (Fed. Cir. 1999). Therefore, a patentee is free to "define [a] term in a manner different from its plain meaning." *Sextant Avionique, S.A. v. Analog Decives, Inc.*, 172 F.3d 817, 825 (Fed. Cir. 1999). "[A]s long as the special definition of the term is clearly stated in the specification or file history," the Court's role is limited to pronouncing that definition as the acquired meaning. *See Vitrionics Corp.*, 90 F.3d at 1582; *Voice*

Tech. Group, Inc. v. VMC Systems, Inc., 164 F.3d 605, 614-15 (Fed. Cir. 1999) ("When the meaning of a term as used in a patent is clear, that is the meaning that must be applied in the construction of the claim and in the infringement analysis."); Patent Law & Practice § 5.I.A.2 (3d ed. 2001).

Here, there can be no question that the patentees invoked their lexicographic rights, as they expressly defined "a plurality of means for receiving tire sensor signals" in the specification. After describing the structure, the specification states that, "if a tire positioning tool of the present invention comprises means for receiving tire sensor signals at a plurality of frequencies then the tire position tool comprises a plurality of means for receiving tire sensor signals." '796 Patent at 7:47-51. Therefore, to the extent the defendants resist defining the function in "a plurality of means for receiving tire sensor signals" as structure "for receiving tire sensor signals at two or more frequencies," the specification clearly forecloses such resistance.

As to the exact structure that accomplishes this function, the specification likewise supports the plaintiff's offering of "an antenna connected to receiving circuitry or receiver(s)." The defendants argue that the structure must be limited to two or more receivers, but the specification shows that a single receiver may receive tire sensor signals at multiple frequencies. The defendants also resist inclusion of an antenna, but, as before, this position lacks merit. The specification provides:

> Preferred tire positioning tools of the present invention will comprise *an antenna connected to receiving circuitry* capable of receiving tire sensor signals. The receiving circuitry may comprise a single receiver capable of receiving a plurality of frequencies, or multiple receivers each of which is capable of receiving a single frequency.
>
> . . .
>
> Typically, preferred tire positioning tools will be capable of receiving a plurality of frequencies of tire sensor signals. This can be accomplished by including a plurality

> of receivers into tire positioning tools of the present invention, wherein each receiver is designed to receive a signal of a particular frequency. Alternatively, this can be accomplished by including a single receiver capable of receiving multiple frequencies.

'796 Patent at 7:29-36, 52-59 (emphasis added). Based on this language and the definition set forth above, the Court finds that the plaintiff's proposed construction is accurate.

F. *"Means for transmitting signals to remote tire monitoring system receiving units"*

The parties agree that this claim is in means-plus-function format, and they agree that the function needs no construction. The only question is the nature of the corresponding structure, which can be quickly resolved by reference to the specification. In pertinent part, the specification provides:

> Preferred embodiments of tire positioning tools of the present invention will additionally comprise means for transmitting signals to RTMS receiving units. Such means will typically comprise an antenna connected to transmitting circuitry for transmitting signals . . . . The transmitting circuitry may comprise a single transmitter capable of transmitting a single frequency, a single transmitter capable of transmitting a plurality of frequencies, or multiple transmitters each of which is capable of transmitting a single frequency.

'796 Patent at 8:53-62.

The defendants have failed to offer any legitimate reason for excluding an antenna as part of the structure. As to the inclusion of "transmitting circuitry," the defendants state that this is simply "restating the function," and they argue that the only disclosed structure is a transmitter. Defs.' Cl. Const. Br. at 29. However, the Court has found that "circuitry" qualifies as structure, and so the Court rejects the defendants' argument that "transmitting circuitry" merely restates the function. However, the plaintiff's construction will be modified to reflect the fact that "[t]he transmitting circuitry may comprise a single transmitter . . . . *or multiple transmitters*," '796 Patent at 8:58-61 (emphasis added), and to reflect the Court's ruling limiting equivalents. Therefore, the

Court will construe the term to mean "an antenna connected to transmitting circuitry or transmitter(s) for transmitting signals to remote tire monitoring system receiving units, with no equivalents."

G. *"Means for receiving signals transmitted by remote tire monitoring system receiving units"*

The parties' dispute with regard to this phrase centers around the propriety of including an antenna, the number of receivers, and the plaintiff's right to equivalents. The parties agree that § 112, ¶ 6 applies, and they agree that the function is properly stated in the claim limitation as a structure "for receiving signals transmitted by remote tire monitoring system receiving units." '796 Patent at Cl. 15.

The specification reveals that the purpose of the tool's ability to receive signals from receiving units, as opposed to signals transmitted by tire sensors, is to enable it to communicate directly with the receiving unit. With that background in mind, however, it is clear that the structure linked to "receiving signals transmitted by remote tire monitoring system receiving units" includes an antenna. Figure 1 shows an antenna connected to receivers set at two different frequencies, and the specification provides that

> Antenna **116** is designed to receive signals from either a RTMS tire sensor or a RTMS receiving unit. **FIG. 1** illustrates an embodiment of a tire positioning tool comprising two receivers, the first receiver **118** is capable of receiving signals at a frequency of 315 MHz, and the second receiver **120** is capable of receiving signals at a frequency of 433 MHz. The ellipses between the two receivers is an indication that other embodiments of tire position tools may comprise additional receivers capable of receiving signals at other frequencies.

'796 Patent at 10:34-43.

On the other hand, it is equally clear that "means for receiving signals transmitted by remote tire monitoring system receiving units" is limited to a single receiver, not multiple receivers. The

specification plainly indicates that multiple receivers (or one receiver capable of receiving more than one frequency) constitute a "plurality of means," but the claim at issue is for "means" alone. *See* '796 Patent at Cl. 15. According to the specification,

> Similar to having means for receiving tire sensor signals at multiple different frequencies, preferred embodiments of tire positioning tools of the present invention may also include means for receiving signals transmitted by RTMS receiving units. In this manner, the tire positioning tool can interact with a vehicle's receiving unit by both receiving signals from and transmitting signals to the vehicle's receiving unit. Different makes of RTMS receiving units may transmit different frequencies of signals. *Thus, each different frequency of such signal that tire positioning tools of the present invention are capable of receiving constitutes a different means for receiving signals. That is, if a tire positioning tool of the present invention comprises means for receiving signals from RTMS receiving units at a plurality of different frequencies then the tire position tool comprises a plurality of means for receiving such signals.*

'796 Patent at 9:65-57, 10:1-12 (emphasis added).

The plaintiff has argued successfully that a "plurality of means" in the context of "receiving tire sensor signals" includes one or more receivers, such that the structure is capable of receiving multiple frequencies. The plaintiff cannot construe the term "means" to denote the same thing. The specification defines a "plurality of means" in a similar fashion in the context of receiving signals sent by receiving units. Therefore, the claim for "means" alone must be limited to one receiver (able to receive a single frequency); two receivers would necessarily imply the ability to receive two or more frequencies, bringing the structure into the realm of "a plurality of means." This interpretation honors the language in the specification, and is particularly strong given the distinction elsewhere between "means" and "a plurality of means."

Finally, for reasons stated earlier, the plaintiff will be limited to the alleged equivalent of a transmitter. Therefore, the disputed term will be construed to mean "an antenna connected to a

receiver (plus the alleged equivalent, a transceiver) for receiving signals transmitted by remote tire monitoring system receiving units.

VI. Conclusion

For the reasons stated above, the Court adopts the constructions of the claim terms agreed by the parties. The Court determines that the disputed claim terms shall have the construction discussed above.

Accordingly, it is **ORDERED** that the following disputed terms in the '796 patent are construed as follows:

A. "Means for generating continuous wave signals" is construed to mean "frequency generating circuitry (plus the alleged equivalent, a microprocessor), an amplifier or driver circuit, and an inductor for generating continuous wave signals for activating remote tire monitoring system tire sensors";

B. "Means for generating modulated signals" is void for indefiniteness;

C. "Means for receiving tire sensor signals" is construed to mean "an antenna connected to receiving circuitry or a receiver (plus the alleged equivalent, a transceiver) for receiving tire sensor signals";

D. "A plurality of means for receiving tire sensor signals" is construed to mean "an antenna connected to receiving circuitry or receiver(s) (plus the alleged equivalent, transceiver(s)) for receiving tire sensor signals at two or more frequencies";

E. "Means for transmitting signals to remote tire monitoring system receiving units" is construed to mean "an antenna connected to transmitting circuitry or transmitter(s) for

transmitting signals to remote tire monitoring system receiving units, with no equivalents"; and

F. "Means for receiving signals transmitted by remote tire monitoring system receiving units" is construed to mean "an antenna connected to a receiver (plus the alleged equivalent, a transceiver) for receiving signals transmitted by remote tire monitoring system receiving units."

It is further **ORDERED** that the Case Management and Scheduling Order is **MODIFIED** with respect to the deadline for filing dispositive motions, and the new deadline is **January 22, 2007**. The balance of the Case Management and Scheduling Order shall remain in effect.

s/David M. Lawson
DAVID M. LAWSON
United States District Judge

Dated: January 7, 2008

PROOF OF SERVICE

The undersigned certifies that a copy of the foregoing order was served upon each attorney or party of record herein by electronic means or first class U.S. mail on January 7, 2008.

s/Felicia M. Moses
FELICIA M. MOSES