



preamble of claim 1 of the '222 patent and, in context, read “a receiver for receiving electromagnetic signals having *amplitude and phase differential characteristics*.” A table of the Court’s original constructions and the parties’ proposed constructions is below.

<b>Claim Language</b>	<b>Wi-LAN’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>	<b>Court’s Construction</b>
<i>“amplitude and phase differential characteristics”</i>	“amplitude and phase distortions”  Alternative: “amplitude and phase differences in the received signal caused by the wireless channel”	“amplitude and phase characteristics resulting from differential modulation”	“characteristics of both the amplitude and the difference in phase resulting from differential modulation of the received data signals”
<i>“amplitude and phase differential”</i>	“amplitude and phase distortions”  Same alternative	“difference in amplitude and phase”	“amplitude and difference in phase resulting from differential modulation”
<i>“[phase] differential [characteristics]”</i>	“amplitude and phase distortions”  Same alternative	“characteristics resulting from differential modulation”	“difference in phase resulting from differential modulation”
<i>“estimated amplitude and an estimated phase differential”</i>	“amplitude and phase distortions”  Same alternative	“estimated difference in amplitude or phase between received data symbols”	“an estimated amplitude and an estimated difference in phase resulting from differential modulation”

Although the parties offered the phrase to the Court to construe, neither Plaintiff nor Defendants argued that the “amplitude and phase differential characteristics” phrase in the preamble was or was not a limitation on the claim. For seven months after the entry of the Court’s Claim Construction Order, the parties raised no issue with the Court’s Order. Then, a mere three weeks before jury selection, Plaintiff filed the present motion seeking “clarification”

that the “amplitude and phase differential characteristics” term from the preamble of claim 1 does not operate as a limitation, or, in the alternative, for the Court to reconsider its construction of that term. (Dkt. Nos. 870, 875.) This motion for clarification is the subject of the present Memorandum Opinion and Order.

## **II. LEGAL STANDARD**

Though Plaintiff has styled its motion as a “motion for clarification,” the Court concludes that the motion is actually a motion for reconsideration.<sup>1</sup> The grounds for granting a motion for reconsideration under Rule 59(e) include: “(1) an intervening change in controlling law; (2) the availability of new evidence not previously available; or (3) the need to correct a clear error of law or prevent manifest injustice.” *In re Benjamin Moore & Co.*, 318 F.3d 626, 629 (5th Cir. 2002). The Court has already set forth the general principles and standards governing claim construction in its original Claim Construction Order, (*see* Dkt. No. 469, 4-11.), and the Court incorporates those principles in this Memorandum Opinion and Order.

## **III. DISCUSSION**

The Court concludes there is reason to grant a motion for reconsideration. After reviewing its Claim Construction Order, the parties’ briefing, and the intrinsic record, the Court is convinced that it erred in its original construction of the term “phase differential,” which in turn erroneously narrowed the scope of the related claim terms.

The Court’s construction erroneously required the “phase differential” of claim 1 to be

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<sup>1</sup> Plaintiff fails to cite any cases outlining a different or special standard to be used for a motion for clarification as compared to a motion for reconsideration. On the other hand, some courts have resolved a motion for clarification under the same standard as a motion for reconsideration. *See Automated Bus. Cos. v. ENC Tech., Corp.*, Civ. No. H-06-1032, 2009 U.S. Dist. LEXIS 101031, at \*4 (S.D. Tex. Oct. 30, 2009). In any event, the Court believes that Plaintiff is attempting, under the guise of a motion for clarification, to have the Court reconsider the construction of a term that the Court has already construed.

caused by “differential modulation.” Differential modulation is a property of one of the many modulation schemes mentioned in the specification of the ‘222 patent and described in one of the patentee’s co-pending patent applications that became U.S. Patent No. 5,369,670 (“the ‘670 patent”).<sup>2</sup> See ‘222 patent, 5:30-35 (discussing multilevel differential phase shift keying symbols); ‘670 patent, 5:59-62 (discussing DQPSK). An electromagnetic signal’s amplitude and phase are inherent properties, similar to mass and temperature for matter. The phase differential, whether used as part of a modulation scheme or not, is the difference in phase between two signals. See ‘670 patent, 1:24-2:2 (discussing the “differential phase” in the context of “fade” and “signal degradation [which is] caused by multiple paths of the signal [and it] increases the probability of error in the reception of the signal by *altering the phase* of the received signal”) (emphasis added). The phase differential of a signal is modulated in phase modulated data transmission, with different phase differentials acting as “symbols” to convey data. See ‘670 patent, 4:11-14. In differential modulation, the difference between adjacent symbols carries the data, rather than the symbols themselves. ‘670 patent 4:11-14. Thus, while “phase differential” and “differential modulation” are both discussed in the intrinsic record, and the preferred embodiment employs differential modulation of the phase, these concepts are independent. The Court unnecessarily conflated the “differential” from “differential modulation” and the

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<sup>2</sup> Defendants even agree that the ‘670 patent is intrinsic evidence. In Defendants original claim construction reply brief, Defendants state:

In response to an Office Action during prosecution of the ’222 patent, the applicants referenced a co-pending application they had filed (which issued as U.S. Patent No. 5,369,670), to describe the claimed channel estimation technique. See Exh. 14 at Apr. 19, 1993 Information Disclosure Statement (W0000297) (“The pending application [for the ’670 patent] is relevant to the extent that it includes a description of the phase estimation technique disclosed in the present application”). The description of the channel estimator found in the ’670 patent is intrinsic evidence. See, e.g., *Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1346 (Fed. Cir. 2009); *Sys. Division, Inc. v. Teknek LLC*, 59 Fed. Appx. 333, 340 (Fed. Cir. 2003).

(Dkt. No. 402, at 17 n.10.).

“differential” from “phase differential” in reaching its prior construction.

In the Claim Construction Order, the Court supported its decision to reject Plaintiff’s proposed “distortion” construction by arguing that the patentee had chosen to use “differential” exclusively in the claims after having used both “distortion” and “differential” in the specification. (*See* Dkt. No. 469, 14.) The Court then reasoned, under the assumption that “differential” was used uniformly in the specification, that “differential” referred to the difference in phase between symbols in a differential phase modulation scheme. (*Id.* at 17-18.)

Upon review, however, the phase differential of the signal estimated by the channel estimator is a property of the channel and not of the modulation scheme employed by the transmitter. The specification states:

An estimate of the phase differential of the received signal is taken in the channel estimator 530, as described in more detail in relation to FIG. 7a and 7b below, and the estimated phase differential is supplied to the decoder-demodulator 532 to correct the received bits. The estimated phase differential is also supplied to a pre-distorter 534 in the transmitter. At the transmitter in the Base Station, the same blocks are incorporated as in the portable transmitter except that a pre-distorter is used to alter the phase of the D8PSK symbols to make the channel appear Gaussian (ideal) as opposed to a fading channel. The predistorter 534 receives a signal corresponding to the estimated *phase differential of the channel*. On the (believed reasonable) assumption that the channel is reciprocal, the signal being transmitted is predistorted with the estimated phase differential so that the received signal at the portable with which the [base station] is communicating will be corrected for any phase distortion *over the channel*.

‘222 patent, 9:43-61 (emphasis added). This passage, which describes the preferred implementation of the “channel estimator” in claim 1 of the ‘222 patent, makes clear that the phase differential estimated is the result of the channel distorting the signal and not differential modulation. This is clear because the specification is discussing the “phase differential *of the channel*” and correcting for phase distortion “over the channel.” *Id.* The estimated phase

differential is supplied to the decoder-demodulator to restore the originally modulated signal and allow for demodulation and recovery of the original signal. '222 patent, 9:45-48. The estimated phase differential is also supplied to a pre-distorter, as claimed in dependent claim 4 of the '222 patent, after modulation to compensate for fading in the channel to create the illusion of a Gaussian (ideal) channel. '222 patent, 18:10-15. The phase differential characteristic of the received signal of claim 1 is thus estimated and used to cancel out the phase differential caused by, for example, a fading channel. *See id.*<sup>3</sup> Thus, the phase differential characteristic must be caused by the channel and not by the modulation scheme employed by the transmitting device.

The Court also notes that in its discussion of the phase differential characteristic estimated in claim 1, the patentee uses the term “phase distortion” to refer to the phenomenon causing the phase differential. *See* '222 patent, 9:43-61 (quoted in full above). This contradicts the Court’s earlier finding that phase distortion and phase differential were distinct as used in the specification.

In their briefing, Defendants relied heavily upon the '670 patent and its discussion of differential modulation in arguing that the '222 patent must also require differential modulation. The Court has reviewed the '670 patent and concludes its disclosure actually supports Plaintiff’s position, and the '670 patent is particularly useful given that it is intrinsic evidence. The '670

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<sup>3</sup> The Court’s reasoning in this Memorandum Opinion and Order is also supported by the specification’s discussion of the “phase differential” in the '222 patent within the context of Local Area Networks (LAN). '222 patent, Columns 17-18. This discussion is helpful in this case because many of the accused infringing products relate to LANs. The specification states that the “pre-distorter is used to alter the envelope and phase of the D8PSK symbols to make the channel appear Gaussian (ideal) as opposed to a fading channel.” '222 patent, 18:10-15. The specification here also discusses how the “estimated phase differential is also supplied to a pre-distorter.” '222 patent, 18:7-10. The fact that the estimated phase differential is used to correct for fading in the channel provides support for the conclusion that phase differential in this context is not differences in phase resulting from differential modulation, as this Court stated in its original construction. This is because channel fading is not caused by differential modulation but instead degradation or distortion in the channel. *See* '670 patent, 1:25-65.

patent's principal disclosure is a method and apparatus for using phase estimation to demodulate a signal transmitted over a fading channel. This disclosure, which corresponds to the "channel estimator" of the '222 patent, details how the estimated phase differential is used to modify the received signal and produce a corrected signal. The claims of the '670 patent, unlike the claims of the '222 patent, also explicitly state the modulation schemes contemplated by each claim.<sup>4</sup>

The preamble of independent claim 1 of the '670 patent reads:

1. A method of processing an electromagnetic signal transmitted over a fading channel, in which information in the signal is carried by a phase differential of a number of frequency components of the electromagnetic signal

'670 patent, 33:15-19. This preamble explicitly describes frequency domain phase modulation, though not necessarily differential modulation.

The preamble of independent claim 2 of the '670 patent reads:

2. A method of processing a signal transmitted over a fading channel, the information in the signal being carried by the phase  $\phi(n)$  of a number of consecutive time instants of the signal

'670 patent, 33:48-51. This preamble explicitly describes time domain phase modulation, though not necessarily differential modulation.

The preamble of independent claim 7 of the '670 patent reads:

7. An apparatus for processing an electromagnetic signal transmitted over a fading channel, in which information in the signal is carried by a phase differential of a number of frequency components of the electromagnetic signal

'670 patent, 34:65-35:2. This preamble explicitly describes frequency domain phase modulation, though not necessarily differential modulation.

The claims of the '670 patent, written by the same inventors during the prosecution of

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<sup>4</sup> The Court is not construing the claims of the '670 patent and takes no position on whether the preamble language limits those claims.

the '222 patent, explicitly describe how data is modulated into transmitted signals. The received signal of the preamble of claim 1 of the '222 patent, on the other hand, requires only "characteristics," not "information," and the body of the claim is broad in describing "encoding" and "decoding" of information. The claims of the '670 patent also describe "phase differential" separately from the modulation schemes described in their preambles. *See, e.g.,* '670 patent, 33:40-47. One of ordinary skill in the art reading the '222 patent and the '670 patent would distinguish between phase modulation, differential modulation, and phase differential. One of ordinary skill in the art would also know that the phase differential estimated according to the methods and devices described by the '670 and '222 patents was the difference in phase caused by the wireless channel.

Additionally, the specification of the '670 patent itself supports the Court's corrected construction. When discussing the background and summary of the invention in the '670 patent, the patent discusses the problem of "fading," which is a type of signal degradation. '670 patent, 1:25-65. The specification then states that:

[T]he inventors have discovered that it is possible to relate the amplitude and *characteristics of the phase* of a radio signal transmitted over a *fading channel*, and that an estimation of the *phase differential* may be made from sampling the amplitude of the transmitted signal. The estimated phase differential may be used to modify or demodulate the received signal.

'670 patent, 2:43-39 (emphasis added). This makes clear the Court's previous construction was incorrect when it required phase differential to mean difference in phase resulting from differential modulation. Phase differential here is not being discussed in the context of differential modulation. Rather, phase differential is being discussed with respect to modifying the received signal in response to "fading," or an effect, caused by the channel. Further, the



language “*characteristics* of the channel” is used in the ‘670 patent specification here, but the term “characteristics” is not used in the specification of the ‘222 patent. The term “characteristics” in the ‘670 patent here is used with respect to phase differential caused by the fading channel and not with respect to differential modulation. This is particularly important given that the phrase the Court was asked to reconsider in the ‘222 patent claim 1 preamble was “amplitude and phase differential *characteristics*.” ‘222 patent, 19:9-13 (emphasis added). Thus, aside from claim 1, the only time “characteristics” was used in the ‘222 patent or the ‘670 patent the term was used with respect to effects caused by the channel (e.g., fading). This strongly influences the language the Court adopts for its new claim construction below.

Finally, the inventors also authored an article near the time the inventors were filing for the ‘222 patent and the ‘670 patent, and this article is referenced in the ‘670 patent. *See* ‘670 patent, 2:50-53 (referencing M. Fattouche & H. Zaghoul, *Estimation of Phase Differential of Signals Transmitted Over Fading Channels*, *Electronic Letters*, September, 1991, Vol. 27, No. 20, 1823-24.). This article further supports the Court’s new claim construction. The article concludes: “This method of *phase differential* estimation is currently being applied by the authors to compensate for the errors introduced *by the channel*, to combine signals received by two antennas, and to estimate the bit error rate for a signal transmitted over the channel.” M. Fattouche & H. Zaghoul, *Estimation of Phase Differential of Signals Transmitted Over Fading Channels*, *Electronic Letters*, September, 1991, Vol. 27, No. 20, at 1824, (emphasis added).

In light of the above, the Court reconsiders its prior construction and construes the disputed “phase differential” terms as follows:

<b>Claim Language</b>	<b>Court’s Prior Construction</b>	<b>Court’s Amended Construction</b>
<i>“amplitude and phase differential characteristics”</i>	“characteristics of both the amplitude and the difference in phase resulting from differential modulation of the received data signals”	“characteristics of both the amplitude and the difference in phase caused by the wireless channel”
<i>“amplitude and phase differential”</i>	“amplitude and difference in phase resulting from differential modulation”	“amplitude and difference in phase caused by the wireless channel”
<i>“phase differential”</i>	“difference in phase resulting from differential modulation”	“difference in phase caused by the wireless channel”
<i>“estimated amplitude and an estimated phase differential”</i>	“an estimated amplitude and an estimated difference in phase resulting from differential modulation”	“an estimated amplitude and an estimated difference in phase caused by the wireless channel”

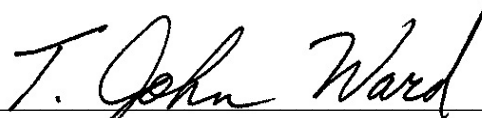
#### **IV. CONCLUSION**

Therefore, the Court concludes that “phase differential” should be construed to mean “difference in phase caused by the wireless channel,” “amplitude and phase differential characteristics” should be construed to mean “characteristics of both the amplitude and difference in phase caused by the wireless channel,” “amplitude and phase differential” should be construed to mean “amplitude and difference in phase caused by the wireless channel,” and “estimated amplitude and phase differential” should be construed to mean “an estimated amplitude and an estimated difference in phase caused by the wireless channel.” Plaintiff’s motion for clarification, (Dkt. No 870, 875), is GRANTED as a motion for reconsideration. The parties are ordered that they may not refer, directly or indirectly, to each other’s claim

construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. This opinion supersedes the Court's prior Claim Construction Order as to the "phase differential" terms construed above, and the parties are ordered to refrain from mentioning the Court's prior construction in front of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

It is so ORDERED.

SIGNED this 30th day of December, 2010.

A handwritten signature in black ink that reads "T. John Ward". The signature is written in a cursive style with a horizontal line underneath it.

T. JOHN WARD  
UNITED STATES DISTRICT JUDGE