

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION**

AMERICAN GNC CORPORATION,

Plaintiff,

v.

ZTE (USA) INC., and
ZTE (TX) INC.

Defendants.

Civil Action No. 4:17-cv-00620-ALM-
KPJ

AGNC'S OPENING CLAIM CONSTRUCTION BRIEF

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I. Introduction and Background of the Patents

American GNC Corporation (“AGNC”) was founded in 1986 and specializes in inventing advanced and innovative technologies to solve contemporary problems within the fields of guidance, navigation, control and communications (GNCC). AGNC has received numerous contracts from both the Department of Defense sector and NASA. AGNC has obtained more than 79 patents.¹ AGNC’s patented solutions are now commonly found on handheld consumer devices (e.g. phones) and in their navigation applications.

AGNC’s seven Patents-in-Suit can be summarized as follows:

Patent	Components Recited	Priority Date	Claims Asserted
6,311,555	Gyroscope	Nov. 17, 1999	49
6,415,227	Positioning through GPS and map database	Nov. 27, 1999	1, 2, 3, 36
6,508,122	Gyroscope	Sep. 16, 1999	1
6,516,283	IMU (3-axis gyroscope; 3-axis accelerometer; and a compass/magnetometer)	May 24, 2000	1, 3
6,671,648	IMU (3-axis gyroscope and 3-axis accelerometer)	Jan. 4, 2000	1, 4
6,697,758	IMU (3-axis gyroscope and 3-axis accelerometer)	Aug. 18, 1999	1
6,792,353	Positioning through IMU, GPS, map database	Sep. 26, 2000	1, 2, 3, 6, 7

The attached declaration from AGNC’s expert, Brian Messenger, provides necessary background for understanding the inventions claimed. Ex. 1 at ¶¶ 8-27. Notably, ZTE has not identified any claim construction expert or provided any expert opinion (e.g. declaration) supporting its proposals and claim construction discovery closed two weeks ago.

¹ Ching-Fang Lin, a named inventor, founded AGNC and held a PhD. in computer, information, and control engineering from the University of Michigan. Dr. Lin led the effort to introduce over 30 GNCC products. Dr. Lin’s many awards include NASA Space Act Award Recognition for Inventions and Scientific and Technical Exceptional Contributions.

II. Law of Claim Construction

Claim construction is a matter of law for the court, *Markman v. Westview Instr., Inc.*, 52 F.3d 967, 977 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996). It can depend on underlying factual determinations. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 834 (2015).

The focus of claim construction is on “what one of ordinary skill in the art at the time of the invention would have understood the term to mean.” *Markman*, 52 F.3d at 986. There is a “heavy presumption” that a claim term has its plain and ordinary meaning as one of ordinary skill would have understood it at the time of the patent filing. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002). Federal Circuit law requiring that claim terms presumptively be given their ordinary meaning relates to “the ordinary meaning in the context of the claims.” *Gemstar-TV Guide Int’l, Inc. v. Int’l Trade Com’n*, 383 F.3d 1352, 1367 (Fed. Cir. 2004) (emphasis added). In some cases, “the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005).

The threshold requirement for construing a term is showing some ambiguity in the claim language. *E.g., Liquid Dynamics Corp. v. Vaughan Co., Inc.*, 355 F.3d 1361, 1367 (Fed. Cir. 2004). The purpose of claim construction is to clarify legitimate ambiguities, not to rewrite the claims using different words. *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999).

The Federal Circuit has emphasized that “the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Phillips*, 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir.

2004)). The claims themselves are the most important guidance as to the meaning of claim terms, and the context in which a term appears in the claim can be highly instructive to its meaning. *Id.* at 1314. It is the function of the claims, not the specification, to set forth the limits of the patentee's claims. *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (*en banc*).

The specification informs and teaches; it does not define the legal scope of protection. *See Phillips*, 415 F.3d at 1323 (“[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments.”). It is improper to limit claims based on embodiments appearing in the specification when the claim language is broader. *Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994). The *Phillips* Court reasoned that “persons of ordinary skill in the art rarely would confine their definitions of terms to the exact representations depicted in the embodiments.” *Id.* Thus, “it is improper to read limitations from a preferred embodiment described in the specification...into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *EPOS Techs. Ltd. v. Pegasus Techs. Ltd.*, 766 F.3d 1338, 1341 (Fed. Cir. 2014). *See also Kara Tech., Inc. v. Stamps.com, Inc.*, 582 F.3d 1341, 1348 (Fed. Cir. 2009) (Claims should not be interpreted by importing limitations from the specification into the claims.).

A court may receive extrinsic evidence in the form of expert testimony to educate itself about the invention and the relevant technology, or to establish that a term in the patent has a particular meaning in the pertinent field. *Phillips*, 415 F.3d at 1318. *See also Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308-09 (Fed. Cir. 1999). The court should consider such testimony in the context of the intrinsic evidence and may not use it to arrive at a claim

construction that contradicts the construction mandated by the intrinsic evidence. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583-84 (Fed. Cir. 1996).

Although the specification, prosecution history, and extrinsic evidence are available as tools for construing disputed claim terms, “the claim construction inquiry . . . begins and ends in all cases with the actual words of the claim.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998) (citations omitted).

III. Disputed Claim Terms

1. “vehicle” (’555 pat. claim 49)

AGNC’s Proposed Construction	ZTE’s Proposed Construction
“a carrier: a means of carrying or transporting something”	“a self-propelled device or structure for transporting persons or goods, such as a motor vehicle”

Dictionaries, including those contemporaneous to the filing date of the patented invention, show the ordinary meaning of “vehicle.” These definitions include:

Definition	Source
“2: an agent of transmission: CARRIER” “4: a means of carrying or transporting something as a: MOTOR VEHICLE b: a piece of mechanized equipment”	Ex. 5, Merriam-Webster’s Collegiate Dictionary 10th Edition, 1999
“Any means in or by which someone or something is carried or conveyed: <i>a motor vehicle</i> ”	Ex. 4, Random House Webster’s College Dictionary, 1991, revised 1997, updated edition 2005 ²
“1. Any means in or by which someone or something is carried or conveyed: <i>a motor vehicle</i> ”	Ex. 6, Random House Kernerman Webster’s College Dictionary 2010

By way of relevant background, the ’555 patent describes its field of invention as:

² This dictionary provides “Common Meanings First To Find The Right Meaning Faster.” Ex. 4 at 1. AGNC relies on the first, and most common, meaning.

The present invention relates to an angular rate producer, and more particularly to an angular rate producer with microelectromechanical system (MEMS) technology to measure *vehicle* angular rate.

Ex. 7 at 1:8-11. Within that field, the '555 patent specification discloses “typical applications” for measuring “vehicle angular rate” that include:

automobiles, railway vehicles, miniature land vehicles, robots, unmanned ground vehicles, *personal navigators*, and military land vehicles.

Ex. 7 at 12:55-58 (emphasis added). A phone is certainly included within a “personal navigator” and, therefore, is specifically disclosed.

AGNC’s proposed construction is consistent with these plain and ordinary meanings, which were known, used, and understood by one of ordinary skill in the art as of 1999. AGNC’s expert, Brian Messenger, explains that one of ordinary skill would understand that the '555 patent uses the words “carrier” and “vehicle” synonymously. Ex. 1 at ¶76. Mr. Messenger has opined that, consistent with these definitions, one of ordinary skill in the art would have understood the term “vehicle” to mean “a carrier: a means of carrying or transporting something.” Ex. 1 at ¶75.

In the case *AGNC v. LG* pending in the Southern District of California (3:17-cv-1090) that concerns the same patent claims, Defendant LG has proposed the same or very similar constructions to those that ZTE has proposed here for 12 terms herein. ZTE has disclosed no claim construction expert opinion here and claim construction discovery is closed. In the LG case, LG’s expert, Scott Andrews, agreed with AGNC that a “vehicle” is a “conveyance that is used to transport or move things.” Ex. 2 at 74:5-7. He opined that a “vehicle carries something else other than itself” and that the plain and ordinary meaning of a vehicle is “a mobile thing for carrying other things.” *Id.* at 75:22-23, 81:12-13. He did not disagree with any of the dictionary definitions above and opined that the definition “any means by way someone or something is

carried or conveyed” is “very reasonable” and “common” and “a reasonable common meaning.” *Id.* at 77:12-78:3, 80:25-81:6. He also opined that “means of carrying or transporting something” was “a reasonable definition” and “a known definition.” *Id.* at 85:1-15.³

Despite this, ZTE’s proposed construction seeks to limit the term “vehicle” to require that it must be “self-propelled.” ZTE’s dictionary definitions do not support its construction. More importantly, there is nothing in the claim (or even the ’555 specification) that would support this limitation. Notably, ZTE’s proposal would exclude bicycles, buggies, rickshaws, red wagons, and many other common vehicles. Although he attempted to draw some distinctions, LG’s expert, Andrews, generally conceded the inescapable: that most of these are considered “vehicles” to one of ordinary skill in the art. Ex. 2 at 96:24. For that reason, in the LG case, LG has seemingly withdrawn its proposed “self-propelled” requirement (3:17-cv-1090 Dkt. No. 91 p. 8 n. 5.) but ZTE has not withdrawn that proposal in this case.

ZTE also proposes the additional requirement that “vehicle” must be limited to a “device or structure for transporting persons or goods.” The requirement of a “device or structure” also lacks any basis in the patent. Whether something is a “device or structure” is unclear and is more confusing than helpful.

Moreover, all parties agree, consistent with the dictionary definitions shown above, that a “motor vehicle” is one example of a vehicle and no party is arguing that “vehicle” is limited to “motor vehicle.”⁴ To the extent that ZTE seeks to limit “vehicle” to use in a car or other motor

³ On redirect, LG’s litigation counsel led its expert Mr. Andrews to opine that a “vehicle” does not include a person or a phone, and although he equivocated, he later agreed that “a person could be a vehicle.” *Id.* at 181:22-182:8. .

⁴ LG’s expert agreed that “vehicle” includes more than a motor vehicle. *Id.* at 100:3-7.

vehicle, or to exclude a construction that would include phones or people, this is inconsistent with ZTE's proposed construction. ZTE has been unable to offer any proposed construction that would reflect this position. ZTE has been unable to point to any dictionary definition that excludes people and phones. ZTE provides no expert declaration supporting any construction that would exclude people and phones. This is because, to one of ordinary skill in the art (and even laypeople) there is no such definition; one of ordinary skill would understand "vehicle" to mean a carrier or any means of carrying or transporting something, especially in the context of the '555 patent's disclosures above. Ex. 1 at ¶¶ 74-75. ZTE's proposed construction should be rejected.

2. "said vehicle" ('648 pat. claim 4)

AGNC's Proposed Construction	ZTE's Proposed Construction
"a carrier: a means of carrying or transporting something"	Indefinite To the extent construed, the term "vehicle" should be consistent with the construction of "vehicle" for the '555 patent: "a self-propelled device or structure for transporting persons or goods, such as a motor vehicle."

Claim 4 of the '648 patent recites:

A micro inertial measurement unit, as recited in claim 1, wherein said X axis, Y axis and Z axis angular rate electrical signals produced from said angular producer are analog angular rate voltage signals ***directly proportional to angular rates of a carrier carrying said micro inertial measurement unit***, and said X axis, Y axis and Z axis acceleration electrical signals produced from said acceleration producer are analog acceleration voltage signals ***directly proportional to accelerations of said vehicle***.

Ex. 11 (emphasis added). In this claim, "said vehicle" refers back to the "carrier carrying said micro inertial measurement unit." The "carrier" is the implicit antecedent basis. This is consistent with AGNC's proposed construction for "vehicle" above and the basis for it.

Nonetheless, ZTE has taken the position that the term “said vehicle” in claim 4 of the ’648 patent is indefinite because the exact same word, “vehicle,” does not appear earlier in the claim and, therefore, it lacks an explicit antecedent basis, allegedly rendering claim 4 of the ’648 patent invalid as indefinite. ZTE bears the burden of proving invalidity by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. Partnership*, 131 S. Ct. 2238, 2242 (2011).

ZTE’s position is incorrect. The Manual of Patent Examining Procedure (MPEP) Section 2173.05(e) states that the failure to provide *explicit* antecedent basis for terms does not render a claim indefinite. It is well-established Federal Circuit law that an antecedent basis for a claim term can be present by implication. *E.g. Energizer Holdings, Inc. v. Int’l Trade Comm’n*, 435 F.3d 1366, 1370-71 (Fed. Cir. 2006); *Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1359 (Fed. Cir. 2001); *Slimfold Mfg. Co. v. Kinkead Indus., Inc.*, 810 F.2d 1113, 1116 (Fed. Cir. 1987); and *Cross Medical Products v. Medtronic Sofamor Danek*, 424 F.3d 1293, 1319 (Fed. Cir. 2005). The definiteness requirement does not mandate “absolute precision.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014).⁵

The relevant standard is whether “the scope of a claim would be reasonably ascertainable by those skilled in the art.” MPEP § 2173.05(e). If so, the claim is not indefinite. Here, the only expert’s opinion in the record is that the scope of the claim is reasonably ascertainable by those skilled in the art. Mr. Messenger has opined that a skilled artisan would understand that “said vehicle” refers back to the “carrier carrying said micro inertial measurement unit” earlier in the claim and would understand the scope of the claim with reasonable certainty. Ex. 1 at ¶¶ 82-83.

⁵ Under the *Nautilus* standard, a claim is sufficiently definite if “a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Id.* at 2129.

ZTE again offers no expert testimony on this issue and given the standard—the view of one of ordinary skill in the art—AGNC’s uncontradicted evidence is dispositive. Even further, however, in the LG case, LG’s expert essentially conceded that one of skill in the art would understand that in this claim, the “vehicle” and the “carrier” refer to the same thing, as follows:

Q Okay. So understanding that, in this instance of Claim 4, wouldn't one of ordinary skill in the art understand that when a carrier is used and when said vehicle is used later in the claim that it's actually referring to one in the same thing, whatever is carrying the inertial measurement unit?

A Well, notwithstanding the fact that it's not my job to correct the claim and it refers to something as said which hasn't been said, what I would take away from this is that the carrier that is being referred to earlier and the carrier carrying said micro-inertial measurement unit would have to be a vehicle, but not that the vehicle was a carrier.

Ex. 2 at 89:12-24. The same LG expert also agreed that there are “two ways that one could read this” claim to have the claim “not suffer from a lack of antecedent basis” and “either of those [interpretations] would work.” Ex. 2 at 90:9-91:23. He agreed that understanding the word “vehicle” to mean “carrier” would “make sense” in the context of the claim and specification. *Id.* at 92:23-93:11. ZTE’s indefiniteness argument should be rejected.

3-4. “said measured position” (’227 pat. claim 36 and ’353 pat. claim 6) and “said global positioning system receiver” (’227 pat. claim 36)

Term	AGNC’s Proposed Constructions	ZTE’s Proposed Constructions
said measured position	One of skill in the art at the time of invention would, with reasonable certainty, understand “said measured position” so as to be informed about the scope of the ’227 and ’353 inventions with reasonable certainty.	Indefinite
said global positioning system receiver	One of skill in the art at the time of invention would, with reasonable certainty, understand “said global positioning system receiver” so as to be informed about the scope of the ’227 and ’353 inventions with reasonable certainty.	Indefinite

By way of context, '227 patent claim 36, reads, in relevant part:

(a) receiving *a position of a user from a position determination device*;

...

(c) retrieving geospatial data from a geospatial map database based on *said measured position from said global positioning system receiver* by using . . .

(emphasis added). Similar to the discussion above about the term “said vehicle,” ZTE also alleges that “said measured position” and “said global positioning system receiver” are indefinite, relying on the lack of an explicit antecedent basis. Antecedent basis is again implicit and the scope of the claim is reasonably ascertainable by those skilled in the art. Mr. Messenger opined that one of ordinary skill in the art understands that “said measured position from said global positioning system receiver” is referring to the “position of a user from a position determination device” mentioned earlier in the claim. Ex. 1 at ¶95. That is, the global positioning receiver is the position determination device and the measured position is the position of a user from the position determination device. *Id.*

Similarly, for the '353 patent claims, one of ordinary skill in the art understands that “said measured position from said inertial measurement unit/global positioning system device” is referring to the “position of a user from an inertial measurement unit/global positioning system device” mentioned earlier in the claim. Ex. 1 at ¶98. That is, the measured position is the position of a user from the inertial measurement unit/global positioning system device. Ex. 1 at ¶98.

5. “said position, attitude, and heading angle measurements” (’283 patent claim 1)

AGNC’s Proposed Construction	ZTE’s Proposed Construction
Plain and ordinary meaning to one of skill in the art at the time of invention.	Indefinite
If construed: position, attitude and heading angle measurements computed by a position, attitude, and heading processor using the inputs of the three-axis digital angular increments and three-axis velocity increments	

’283 patent claim 1 concludes by reciting a “position, attitude, and heading processor” that uses three inputs to compute motion measurements including position, attitude and heading angle measurements: (1) three-axis digital angular increments (2) three-axis digital velocity increments and (3) position, attitude and heading angle measurements, as follows:

a position, attitude and heading processor connected with said angular rate producer, said acceleration producer and said Earth's magnetic field detector, so as to use said three-axis digital angular increments, said three-axis digital velocity increments and ***said position, attitude and heading angle measurements*** to compute motion measurements including position, attitude and heading angle measurements.

In earlier claim elements, claim 1 recites how two of the inputs, the “three-axis digital angular increments” and the “three-axis digital velocity increments” are derived, as follows:

1. A core inertial measurement unit, comprising:
 an angular rate producer producing X axis, Y axis and Z axis angular rate electrical signals;
 an acceleration producer producing X axis, Y axis and Z axis acceleration electrical signals;
 an angular increment and velocity increment producer converting said X axis, Y axis and Z axis angular rate electrical signals into three-axis digital angular increments and converting said X axis, Y axis and Z axis acceleration electrical signals into three-axis digital velocity increments;

ZTE argues that the third input, “said position, attitude and heading angle measurements” is indefinite, apparently because claim 1 does not provide the same level of explanation for how these measurements are derived. ZTE’s position is incorrect because it overlooks what the specification explicitly teaches and how one of ordinary skill would understand the claim.

In one embodiment, the ’283 specification teaches “a position, attitude, and heading processor” that “compute[s] position, attitude and heading angle measurements” using the inputs of the “three-axis digital angular increments and three-axis velocity increments” in the claim:

a position, attitude, and heading processor 80, adapted to further connect with the angular rate producer 5, the acceleration producer 10, and the Earth's magnetic field detector 96 to compute position, attitude and heading angle measurements using the three-axis digital angular increments and three-axis velocity increments,

Ex. 10, 25:26-34; *see* also Figure 27. The ’283 patent’s specification discloses another embodiment that teaches the same thing, i.e. using the “position, attitude, and heading processor” to compute position, attitude and heading angle measurements using the inputs earlier in claim 1:

Moreover, a position attitude and heading processor **80** is adapted to further connect with the core IMU of the present invention to compute position, attitude and heading angle measurements using the three-axis digital angular increments and three-axis velocity increments to provide a user with a rich motion measurement to meet diverse needs.

Ex. 10, 8:27-32.

Consistent with the disclosures above, one of ordinary skill in the art would understand the “said position, attitude and heading angle measurements” to be the “position, attitude and heading angle measurements” that inherently result from the use of the recited “position, attitude and heading processor” using the inputs of the three-axis digital angular increments and three-axis velocity increments in the claim. Ex. 1 at ¶105. One of ordinary skill in the art, of course, knows what “position, attitude and heading angle measurements” are and for that reason the claim is not required to provide any further explanation. *Id.* at ¶106.

6-7. “digital angular increments” and “digital velocity increments” (’648 pat. claim 1, ’758 pat. claim 1, ’283 pat. claim 1)

AGNC’s Proposed Construction	ZTE’s Proposed Construction
Plain and ordinary meaning to one of skill in the art at the time of invention.	“accumulated changes in [angle]/[velocity] over a predetermined time interval expressed in digital form”
If construed, “changes in [angle]/[velocity] expressed digitally.”	

The terms “digital angular increments” and “digital velocity increments” should be given their plain and ordinary meaning to one of skill in the art in the context of the claims. Each word in each phrase is readily understandable. The parties have even agreed on a construction for “digital,” which is “not analog; as opposed to analog.” Dkt. No. 102-1 at 15. The phrases as a whole are also readily understandable and require no construction by this Court. ZTE has not identified any ambiguity in these terms, a threshold requirement for the term to be construed. *E.g., Liquid Dynamics Corp.*, 355 F.3d at 1367; *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 905 (Fed. Cir. 2004) (finding no ambiguity and declining to construe term).

However, in the event that this Court does construe “digital angular increments” and “digital velocity increments,” AGNC’s proposed constructions of “changes in [angle]/[velocity] expressed digitally” are consistent with the ordinary meaning in the context of the claims.

By contrast, ZTE apparently takes issue with the word “increment.” AGNC submits that “increment” is a known term that presents no ambiguity. Consistent with that idea, Mr. Messenger has opined that one of skill in the art would understand “increment” means a change or a change from a prior value to a current value. Ex. 1 at ¶86. Also consistent with that understanding, LG’s expert agreed at deposition that in ordinary use, increment means “the amount of change that has occurred in whatever is being measured” or a “change from a prior

value to a current value.” Ex. 2 at 150:20-152:8. He agreed that this was a common definition for increment. *Id.* at 151:24-152:1.

Despite all of the above, ZTE proposes to add additional limitations to the unambiguous phrases by reading the features of examples disclosed in the specification into the claims as additional requirements. ZTE’s proposed additional limitations are: (1) not just changes in angle or velocity, but ***accumulated*** changes in angle or velocity and (2) the changes in angle or velocity must be ***over a predetermined time interval***. ZTE relies on the “preferred embodiment” proposing to impose the features of this one example as additional requirements of the claims:

integrating the three-axis angular rate analog voltage signals and three-axis acceleration analog voltage signals for a predetermined time interval to accumulate the three-axis angular analog voltage and three-axis velocity voltage as raw three-axis angular increment and three-axis velocity increment for the predetermined time interval to remove the noise signals

Ex. 12, ’758 pat., 6:25-31. But, the ’758 and ’283 patents both disclose multiple embodiments and not all embodiments contain these features. *See*, e.g. Ex. 10, ’283 pat., 25:3-4 (disclosing “a second preferred embodiment”).

It is legally improper to read features of the embodiments into the claims. The specification informs and teaches; it does not define the legal scope of protection. *Phillips*, 415 F.3d at 1316. It is improper to limit claims based on embodiments in the specification when the claim language is broader. *Electro Med. Sys., S.A.*, 34 F.3d at 1054; *EPOS Techs. Ltd.*, 766 F.3d at 1341. *See also Kara Tech., Inc.*, 582 F.3d at 1348 (claims should not be interpreted by importing limitations from the specification into the claims).

In addition, ZTE’s proposed definition seeks to import features from dependent claims into claim 1. For example, claim 21 of the ’283 patent, which indirectly depends on independent claim 1, adds the limitations of integrating “for a predetermined time interval to accumulate”

angular and velocity increments. ZTE's proposed construction violates the doctrine of claim differentiation; when different words or phrases are used in separate claims, a difference in meaning and scope is presumed. *See e.g., Comark Communications, Inc. v. Harris*, 156 F.3d 1182, 1187 (Fed. Cir. 1998); *SRI Int'l*, 775 F.2d at 1122 ("It is settled law that when a patent claim does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim in determining either validity or infringement"); and *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F. 3d 1352, 1357-58 (Fed. Cir. 2004). Reading in limitations from a dependent claim into claim 1 where they are not present would be improper.

ZTE's proposed limitation to a "predetermined time interval" also adds confusion and ambiguity to an unambiguous claim term. There is no dispute that the changes in angle or velocity will be with reference to some time interval. However, there is no legal basis to require that the time interval must be "predetermined" and that word begs the question of what it requires. *See, e.g., Ex. 15 at 155:16-156:11*. ZTE's proposal should be rejected.

8-10. "converting said X axis, Y axis and Z axis angular rate electrical signals into three-axis digital angular increments and converting said X axis, Y axis and Z axis acceleration electrical signals into three-axis digital velocity increments" ('283 pat. claim 1), "converting said three-axis angular rate signals into digital angular increments and converting said three-axis acceleration signals into digital velocity increments" ('758 pat. claim 1), and "said X axis, Y axis and Z axis angular rate electrical signals and said X axis, Y axis and Z axis acceleration electrical signals are converted into digital angular increments and digital velocity increments respectively" ('648 pat. claim 1)

AGNC's Proposed Construction	ZTE's Proposed Constructions
Long phrase inappropriate for construction. Plain and ordinary meaning to one of skill in the art at the time of invention.	'283: "integrating said X axis, Y axis and Z axis angular rate electrical signals for a predetermined time interval to determine accumulated changes in three-axis angle over that time interval and then digitizing the accumulated changes to form three-axis digital angular increments, and integrating said X axis, Y axis and Z axis acceleration electrical signals for a predetermined time interval to determine accumulated changes in three-axis

	velocity over that time interval and then digitizing the accumulated changes to form three-axis digital velocity increments” ’758: “integrating said three-axis angular rate signals over a predetermined time and then digitizing the integrated values to form digital angular increments, and integrating said three-axis acceleration signals over a predetermined time interval and then digitizing the integrated values to form digital velocity increments” ’648: “said X axis, Y axis and Z axis angular rate electrical signals and said X axis, Y axis and Z axis acceleration electrical signals are respectively integrated for a predetermined time interval to form accumulated changes in angle and in velocity over that time interval, which are then digitized to form digital angular increments and digital velocity increments, respectively”
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“Converting” and “converted” are also terms with an ordinary meaning to one of ordinary skill in the art (and the layman); there is no ambiguity in the terms “converting” or “converted” in the context of the claims that requires this Court to construe them. ZTE has not demonstrated that there is any ambiguity in these terms, a threshold requirement for the terms to be construed.

Consistent with plain and ordinary meaning, Mr. Messenger has also opined that one of skill in the art would understand “converting” means the process of changing something from one form to another and “converted” means “changed from one form to another.” Ex. 1 at ¶88. ZTE again offers no expert opinion but LG’s expert agreed that, in ordinary use, “convert” means “to change something” or “changing something from one form to another.” Ex. 2 at 160:17-162:5. He agreed that “converting” is “the process of changing something from one form to another.” *Id.* at 161:12-13. He agreed that in his work, he was familiar with instances of “converting” from one form to another. Ex. 2 at 169:1-173:10.

Despite this, ZTE asks this Court to re-write this portion of the claims using different words. But, the purpose of claim construction is to clarify legitimate ambiguities, not to simply

rewrite the claims using different words. *See, e.g., K-2 Corp.*, 191 F.3d at 1364 (“Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee.”). ZTE’s proposed constructions, using the words “integrating” or “integrated” and “digitizing” or “digitized” are no more clear than the language of the claim terms that the patentee chose that define the property right, i.e. “converting” and “converted.”

ZTE’s proposed constructions again improperly seek to treat the preferred embodiment as though it were the claim. For example, in the “Detailed Description Of The Preferred Embodiment,” with references to Figure 3 and 4, the specification states that “[i]n *some applications*” (Ex. 12, ’758 pat., 6:21) there is a step that is consistent with ZTE’s proposed construction. Ex. 12, ’758 pat., 6:25-7:61. But again, importing features of the disclosed preferred embodiment and imposing them as requirements of the claims is prohibited.

ZTE’s real request is to limit the claims to a specific order of steps, proposing to require integrating before digitizing by including the phrase “and then.” For example, ZTE’s proposed construction for the ’758 patent is:

integrating said three-axis angular rate signals over a predetermined time **and then** digitizing the integrated values to form digital angular increments, and integrating said three-axis acceleration signals over a predetermined time interval **and then** digitizing the integrated values to form digital velocity increments.

As an important initial matter, ’758 patent, claim 1 itself imposes no required order. ZTE’s proposal violates Federal Circuit law that a “claim is not limited to performance of the steps in the order recited.” *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1345 (Fed. Cir. 2008). ZTE points to nothing in the claim imposing any specific order or required sequence.

As purported support for its proposed limitation, ZTE relies on the example in Figure 7, from the detailed description of the preferred embodiment. In citing to the discussion in Column 7 of the '758 patent, ZTE overlooks that the patent teaches:

Step 2.3 **can be may be** implemented by an analog/digital converter 660, as shown in Fig. 7, and the step 2.3 further comprises:
2.3A digitizing the raw three-angular increment and velocity increment voltage values into digital three-angular increment and velocity increment values.

Ex. 12 at 7:1-7 (emphasis added). Contrary to ZTE's position that the specification suggests that there is only one way of converting, the very next portion of the specification explains that the integrating and digitizing steps can be done in a number of ways, using multiple configurations, known in the art:

In applications, the above amplifying, integrating, analog/digital converter and oscillator **can be** built with circuits, including Application Specific Integrated Circuits (ASIC) a printed circuit board.

(Id. at 7:8-11.) (emphasis added). This is consistent with Mr. Messenger's explanation that one of skill in the art would understand that multiple circuit configurations can accomplish these functions, and in many orders. Ex. 1 at 90-92.

11. "means for blending measurements" ('353 pat. claims 1, 7)

AGNC's Proposed Construction	ZTE's Proposed Construction
Function: blending measurements from said micro IMU and said GPS receiver	Function: blending measurements from said micro IMU and said GPS receiver
Structure: Kalman filter or equivalents	Structure: Indefinite

The parties agree on the function, but disagree on the structure. AGNC has identified the structure above (Kalman filter), while ZTE takes the position that the structure is indefinite (and the claim is therefore invalid). ZTE bears the burden of showing the claim is invalid by clear

and convincing evidence. *See Microsoft Corp.*, 131 S. Ct. at 2242.⁶

After the claimed function is identified, the court must determine what structure is disclosed in the specification that corresponds to the claimed function. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1351 (Fed. Cir. 2015). With respect to a means-plus-function term, the term is indefinite only “if a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim.” *Id.* at 1352. Here, however, indefiniteness is not an issue because the ’353 patent explicitly discloses a structure that performs the function of blending measurements from an IMU and a GPS receiver, as follows:

the Kalman filter that blends the measurements from the micro IMU and GPS receiver to further correct navigation errors

Ex. 13 at 16:34-35. The specification also discloses:

a Kalman filter **303** for blending measurements from a micro IMU **301** and a GPS receiver **302** to deliver an integrated navigation solution

Ex. 13 at 18:65-67; *see* also Figure 9 and 16:5-14. AGNC’s proposed structure is the same as the structure that the specification explicitly provides and links to the function.

A Kalman filter is a well-known and often used structure and algorithm, especially in the navigation industry, as Mr. Messenger explains. Ex. 1 at ¶¶ __. One text explains that Kalman filters were introduced in 1961 and by at least 1993, “Kalman filters are commonly found in navigation, tracking and industrial control problems as well.” Ex. 16. A search of Google patents reveals that “Kalman filter” has been used over 38,000 times, including in many patents

⁶ To satisfy the definiteness requirement of 35 U.S.C. § 112(b), “a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc.*, 134 S. Ct. at 2129.

assigned to ZTE entities.

ZTE cannot deny that a Kalman filter was well known structure in the art. ZTE takes the position that the claim term is nonetheless indefinite for alleged failure to disclose *sufficient* structure. However, the relevant legal standard is whether one of ordinary skill would be able to recognize the structure in the specification and associate it with the corresponding function in the claim. Even though the relevant legal standard *requires* evidence of the view of one of ordinary skill in the art, ZTE has disclosed no expert at all and has provided no declaration or other opinion from one of ordinary skill. AGNC's uncontradicted evidence is dispositive.

With respect to ZTE's argument that the structure is not sufficient, there is no basis to impose any requirement that the '353 patent disclose *how* the Kalman filter performs the "blending" function because the Kalman filter was undisputedly already known to one of skill in the art. The Federal Circuit rejected such a requirement in *Typhoon Touch Techs., Inc. v. Dell, Inc.*, 659 F.3d 1376, 1383-85 (Fed. Cir. 2011), holding that patent not indefinite. In that case, the claim term was "means for cross-referencing said responses with one of said libraries of said possible responses." The Federal Circuit held that "it suffices if the specification recites in prose the algorithm to be implemented by the programmer." *Id.* at 1386. In *Typhoon*, as here, the "defendants have directed us to no evidence that a programmer of ordinary skill in the field would not understand how to implement this function." *Id.* at 1385. It was enough that a programmer would recognize a known program and understand how to implement this function; disclosure of the "computer code is not required." *Id.* at 1385.

The Federal Circuit also declined to require disclosure of further detail for a well-known structure in *S3 Inc. v. NVIDIA Corp.*, 259 F.3d 1364, 1371 (Fed. Cir. 2001). There, the only structure disclosed was a "selector" and the disclosure was limited to a box labelled "SEL" in a

figure. The inventor of the patent and the expert witnesses testified that “persons of skill in this field would readily recognize that the selector as shown in the specification is an electronic device such as a simple multiplexer, whose structure is well known.” *Typhoon*, 659 F.3d at 1370. In that case, the evidence showed that “a selector is of well known electronic structure and performs a common electronic function, and is readily implemented from the description in the specification.” *Id.* at 1371. The Federal Circuit declined to hold the patent claim indefinite despite lack of detail in the specification because the evidence was that a selector was a well-known structure that performs a common function.

To the extent that ZTE seeks to rely on the declaration of LG’s expert, Dr. Michalson’s, opinion, AGNC notes that his testimony is not credible because it is inconsistent with his own prior writings. For example, LG’s expert, Dr. Michalson, acknowledged that “Kalman filters” are “conventional” and implied that Kalman filters are “widely used” in a 2001 paper and presentation. Ex. 14; Ex. 1 ¶¶ 40-72. AGNC submits that Dr. Michalson’s deposition further confirmed that his position in that related litigation is inconsistent with his prior writings and is not credible. Ex. 3 at 41:3-56:15.

12. “tile index file” (’227 pat. claims 1, 36 and ’353 pat. claims 1, 6)

AGNC’s Proposed Construction	ZTE’s Proposed Construction
“file that contains an index of tiles”	“a file that contains data that represents the spatial extent of the database and the scheme for correlating a subdivided geographic area with its corresponding tile”

Based on the plain and ordinary meaning of the phrase, the “tile index file” is simply a file that contains an index of tiles. Again, the words are readily understandable and ZTE has

identified no ambiguity. There is no basis to overcome the heavy presumption of plain meaning and AGNC believes that “correlating” is more confusing than the original term.

The claims themselves provide guidance as to the meaning of “tile index file.” For example, claim 1 of the ’227 patent (as well as claim 36 and the ’353 patent claims) already requires that the “tile index file stores geographic extent information of tiles,” as follows:

retrieving geospatial data from a geospatial map database based on said measured position from said global positioning system receiver by using a tile index file, wherein said ***tile index file stores geographic extent information of tiles which are geographically subdividing a coverage solely for a purpose of enhancing data management***; wherein a geographic extent of an access area is compared with said geographic extent of said tiles to derive a plurality of involved tiles for said access area. . .

Ex. 8. ZTE has not proposed to construe what it means to store “geographic extent information of tiles.” Nonetheless, AGNC agrees with ZTE that, in the context of the claims and the specification, “tile index file stores geographic extent information of tiles” means that the Tile index file contains “the scheme for correlating a subdivided geographic area with its corresponding tile.”

However, there is no basis for ZTE’s additional proposed requirement that the tile index file must “contain[] data that represents the spatial extent ***of the database***.” ZTE’s proposal conflicts with the claim itself, which requires only that the “tile index file stores geographic extent information ***of tiles***.” The specification uses the term “geospatial extent ***of a database***” to refer to the geographical areas covered by the tile database. Ex. 8 at 5:12-18. Here, by contrast, the claim instead uses the term “geographic extent information ***of tiles***.” ZTE’s proposed construction should be rejected.

13. “time-space filtering” (’227 pat. claims 1, 36 and ’353 pat. claims 1, 6)

AGNC’s Proposed Construction	ZTE’s Proposed Construction
“deriving a displaying position for a user based on the measured position and retrieved geospatial data, wherein the measured position, a previous position, and a previous velocity are used to derive a true position for the user”	“deriving a user’s position by calculating a distance from a user’s true position to a map feature (e.g., a road) and either (1) setting the user’s position at the true position if the distance is greater than a predetermined distance, or (2) setting the user’s position at the map feature if the distance is less than the predetermined distance”

The claims themselves make clear what “time-space filtering” is and how it is performed.

For example, the third element of claim 1 of the ’227 patent recites:

performing time-space filtering based on said measured position and said retrieved geospatial data from said geospatial map database to derive a displaying position for a user; wherein said measured position and a previous position and a previous velocity are used to derive a true position for said user. . .

Ex. 8. AGNC’s proposal flows directly from the claim language; based on the claim language, “time-space filtering” is “deriving a displaying position for a user based on the measured position and retrieved geospatial data, wherein the measured position, a previous position, and a previous velocity are used to derive a true position for the user.” ZTE has not demonstrated that there is any ambiguity in this term in the context of the claims. *E.g. Gemstar-TV Guide Int’l, Inc. v. Int’l Trade Com’n*, 383 F.3d 1352, 1367 (Fed. Cir. 2004) (claim terms should presumptively be given “the ordinary meaning *in the context of the claims*”) (emphasis added).

ZTE again asks this Court to re-write the claim to impose examples from the specification as requirements of the claims. ZTE’s proposed construction conflicts with the most important evidence of meaning, the claim language itself. For example, ZTE cites to a portion of the “preferred embodiment” that teaches:

The time-space filtering process comprises a geospatial database 38, a road retrieval module 421, a position sensor 50, a position estimation and prediction module 422, a map matching process module 423, and a position display module 424.

....

When distance from the user's true position to the road is less than the threshold, the user's tracking mark will be moved from the calculated true position to the road. This is reasonable to understand that the user must be travelling on the road. If distance from the user's true position to the road is larger than the threshold, the user's tracking mark will be displayed at the calculated true position.

Ex. 8, '227 pat. at 13:44-14:14. The '227 and '353 patents disclose other embodiments. *See*, e.g., '227 pat., 2:31-34 ("FIG. 2 is a block diagram illustrating the GPS based geospatial map navigation process according to an alternative mode of the preferred embodiments of the present invention.").

ZTE also neglects the fact that the dependent claims recite LG's additional proposed limitations. For example, '227 pat., claim 23 recites:

(c-3) computing a distance from said true position of said user to a road neighboring said true position of said user; and (c-4) comparing said distance from said true position of said user to said road neighboring said true position of said user with a threshold, wherein said threshold is preset based on an accuracy of said global positioning system receiver, and said position mark of said user is displayed on said road when said distance from said true position of said user to said road neighboring said true position of said user is less than said threshold, wherein said position mark of said user is displayed at said calculated true position when said distance from said true position of said user to said road neighboring of said true position of said user is larger than said threshold.

The limitations of dependent claims cannot be read into independent claims. ZTE's proposed construction violates the doctrine of claim differentiation; when different words or phrases are used in separate claims, a difference in meaning and scope is presumed. *See e.g., Comark Communications, Inc. v. Harris*, 156 F.3d 1182, 1187 (Fed. Cir. 1998); *SRI Int'l*, 775 F.2d at 1122 ("It is settled law that when a patent claim does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim in determining either

validity or infringement”); and *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F. 3d 1352, 1357-58 (Fed. Cir. 2004) (broad meaning of claim term in patent-in-suit demonstrated by other patents in the family more narrowly claiming details of a disclosed embodiment). ZTE’s construction is incorrect.

**14-15. “displaying position” (’227 pat. claims 1, 36 and ’353 pat. claims 1, 6)
“true position” (’227 pat. claims 1, 36 and ’353 pat. claims 1, 6)**

Term	AGNC’s Proposed Construction	ZTE’s Proposed Construction
displaying position	“position derived based on the measured position and retrieved geospatial data”	“a position of the user that is displayed on the map”
true position	“position of a user derived by using the measured position, a previous position, and a previous velocity”	“a position calculated by averaging the user’s measured position and the user’s predicted position, which is estimated using the user’s previous position and the user’s previous velocity”

The claims themselves provide the meaning of “displaying position” and “true position.”

For example, the third element of claim 1 of the ’227 patent provides:

performing time-space filtering based on said measured position and said retrieved geospatial data from said geospatial map database to derive a displaying position for a user; wherein said measured position and a previous position and a previous velocity are used to derive a true position for said user. . .

Thus, the “displaying position” for a user is derived from the measured position and geospatial data and the “true position” for a user is derived from the measured position, a previous position, and a previous velocity.

ZTE has not identified any ambiguity in these terms in the context of the claims, a threshold requirement for the terms to be construed. Nonetheless, if construed, AGNC’s proposals are consistent with the ordinary meaning in the context of the claim.

ZTE’s proposed constructions seek to read in additional requirements not present in the claims. ZTE’s proposed constructions again conflict with claim language itself, asking the Court

to re-write the claims to add additional requirements to the claim. Specifically, ZTE's proposed constructions first ask to limit "true position" in to an "averaged" position. ZTE relies on the following example from the preferred embodiment section of the specification, which discloses averaging in that example:

The user's true position is provided by the following process:

$$P_t = (P_p + P_m) / 2$$

Where P_t is the true position, P_p is the predicted position calculated in the position estimation and prediction module 422, P_m is the user's position measured by the position sensor.

Ex. 8 at 13:61-14:2.

Yet, the '227 patent specification makes clear that the described embodiments are only the preferred embodiments, not all embodiments of the inventions. *See*, e.g., Ex. 8, '227 pat., 2:31-34 ("FIG. 2 is a block diagram illustrating the GPS based geospatial map navigation process according to an alternative mode of the preferred embodiments of the present invention."). Because an applicant is entitled to claim the full scope of the invention supported by the specification, it is improper to limit claims to the details of a disclosed embodiment when, as here, the claim language is broader, as discussed above.

ZTE also ignores the fact that the dependent claims recite ZTE's additional proposed limitations. For example, '227 pat., claim 22 recites:

calculating a true position of said user based on said predicted position of said user and said measured position from said global positioning system receiver, wherein said true position of said user is ***an average position*** of said predicted position of said user and said measured position from said global positioning system receiver.

Ex. 8 (emphasis added).

ZTE also asks to add an additional claim limitation – that the displaying position is actually displayed “on the map.” ZTE’s proposal for displaying conflicts with the claim language itself. For example, in terms of “displaying”, ’227 pat. claim 1 only requires displaying a “trajectory” of the user on a “graphic displaying unit.” The other claims make their own recitations of what must be displayed and where but generally do not require any “map” display.

Moreover, dependent ’227 pat., claim 3 recites the actual step of *displaying* a position of the user to the user on the “graphic displaying unit” as follows:

An enhanced global positioning system and map navigation process, as recited in claim 2, after the step (c), *further comprising a step of **displaying** an accurate position of said user on said graphic displaying unit as a mark.*

Again, the limitations of dependent claims cannot be read into independent claims. This Court should adopt AGNC’s proposed constructions.

16-17. “dither driver signals” (’122 pat. claim 1) and “dither drive signal” (’555 pat. claim 49)

Term	Patent and Claim	AGNC’s Proposed Construction	ZTE’s Proposed Construction
dither driver signals	’122 pat. claim 1	signals used to oscillate, or vibrate, an inertial element, in the angular rate <i>sensor</i> unit	continuous or periodical electrical signal, such as voltage, with predetermined frequency and amplitude to keep inertial elements oscillating with a constant momentum
dither drive signal	’555 pat. claim 49	signal used to oscillate, or vibrate, <i>at least one set of</i> inertial elements in the angular rate <i>detecting</i> unit	same as ZTE’s proposal above

Mr. Messenger’s declaration provides relevant background context explaining how MEMS vibratory gyroscopes operate. Ex. 1 at ¶¶ 8-20, 28-39. MEMS vibratory gyroscopes consist of electronic components as well as mechanical components (the inertial element(s) also called proof mass(es)). The inertial elements are inside the angular rate sensor (or detecting)

unit. The inertial elements are driven to oscillate (also called vibrate or dither). When the inertial elements are oscillating, they will displace when angular rotation is experienced. Sensing this displacement allows the gyroscope to output the angular rate. Mr. Messenger explained that, at a general level, the drive signals (e.g., dither driver signals and dither drive signal) are responsible for the dither motion (vibration or oscillation) of the inertial element(s). Ex.1 at ¶¶ 14, 17. In the LG case, LG’s expert Scott Andrews also acknowledged that “dither” means to oscillate. Ex. 2 at 22:11-23:1. He also agreed that a skilled artisan would understand that these claimed signals cause the inertial elements (or proof masses) to move. Ex. 2 at 25:8-24, 35:2-3, 64:25-65:3. AGNC understands that the parties are in agreement on these baseline points.

At the next level of detail, these two terms, although they appear grammatically similar, are used in two different claims in two different patents, and, for that reason, AGNC has proposed two different constructions. (ZTE proposes the same construction for both terms.) The claims themselves are the most important determinant of the meaning of claim’s terms. The two different claims themselves recite different features, therefore providing a different meaning for each claim term, as follows:

'122 pat. claim 1	'555 pat. claim 49
<i>an angular rate sensor unit receiving dither driver signals</i> , capacitive pickoff excitation signals and a displacement restoring signal and outputting angle rate signals in response to motion of said carrier and dither motion signals;	(a) receiving <i>dither drive signal</i> to maintain an oscillation of <i>at least one set of inertial elements</i> in an angular rate detecting unit <i>with constant momentum</i> , and producing angular motion-induced signals with respect to said vehicle angular rate and inertial element dither motion signals;
a digital signal processing system analyzing said digital low frequency inertial element displacement signals and feeding back said dither driver signals to said angular rate sensor unit	(c) inputting said digital element displacement signals into a digital processing system and producing said <i>dither drive signal</i> for locking high-quality factor <i>frequency and amplitude</i> of said oscillating <i>inertial elements</i> in said angular rate detecting unit.

a) “dither driver signals” in the ’122 patent claim 1

As shown above, claim 1 of the ’122 patent provides: (1) that the angular rate sensor unit receives “dither driver signals,” and that a digital signal processing system (2) analyzes digital low frequency inertial element displacement signals and (3) feeds back “dither driver signals” to the angular rate sensor unit. Therefore, claim 1 instructs that “dither driver signals” drive (e.g., are used to cause) the dither (vibration or oscillation) of inertial elements.

AGNC’s proposed construction is the result of the meaning in the claim itself as one of ordinary skill in the art would have understood it. “Dither driver signals” are “signals used to oscillate, or vibrate, an inertial element in the angular rate sensor unit.” AGNC understands that this basic meaning is undisputed. LG’s expert agreed that one of ordinary skill in the art would understand that a “dither drive signal” “would be a signal that would be being used to cause the proof masses to dither.” Ex. 2 at 64:25-65:3; *see also* 70:23-71:4 (calling AGNC’s proposed construction “reasonably descriptive.”)

ZTE's proposed construction improperly seeks to go beyond that, proposing to add in several additional requirements not in the '122 patent claim. First, ZTE proposes to add in the requirement of "constant momentum" from the '555 patent claim into the '122 patent claim, where it is not. Next, ZTE also improperly proposes to add in examples from the '555 patent specification into the '122 patent claims, as two additional requirements: (1) that the signal be "continuous or periodical" and (2) that the signal have "predetermined frequency and amplitude."

ZTE relies on the disclosure of one "*objective*" (of several) for the inventions in the '**555 patent**:

Another objective of the present invention is to provide an angular rate producer with microelectromechanical system (MEMS) technology for measuring vehicle angular rate, which comprises:

a digital processing system for outputting dither drive energy which is a kind of continuous or periodical electrical signal, such as voltage, with predetermined frequency and amplitude . . .

Ex. 7 at 2:35-43.⁷ As discussed at length above, limiting the claims to one disclosed objective for some of the inventions in a patent is legally incorrect. Here, it is even more improper because the limitation comes from a different patent's specification and is not in the '122 patent.

Also, ZTE's proposal to include "such as voltage" and "predetermined" will only confuse the jury. For example, "predetermined" begs the question when exactly must the frequency and amplitude be determined. Therefore, this Court should adopt AGNC's proposed construction.

⁷ The description of the "objective" discusses "dither drive energy." "Energy" and "signal" are not the same thing and to impose this description as a definition would be non-sensical.

b) “dither drive signal” in the ’555 patent claim 49

To account for the different context of the ’555 patent claim, AGNC has proposed to construe “dither drive signal” as a “signal used to oscillate, or vibrate, *at least one set of* inertial elements in the angular rate *detecting* unit.”

In the different context of the ’555 patent, AGNC agrees that the portion of ZTE’s proposed construction relating to the requirement of “constant momentum” is consistent with the claim. However, given that the term for construction is only “dither drive signal” and not the whole phrase, and given that the rest of the claim phrase already explicitly recites it, AGNC does not believe the element needs to be re-stated in the claim construction for “dither drive signal.”

Just as AGNC explained above, ZTE’s proposed additional requirements, here, that (1) that the signal be “continuous or periodical” and (2) that the signal have “predetermined frequency and amplitude” represent an improper request to read in “objectives” from the ’555 specification into the claims, as two additional requirements. ’555 patent claim 49 does disclose “producing said dither drive signal for locking high-quality factor *frequency and amplitude* of said oscillating inertial elements in said angular rate detecting unit,” but, it does not require “predetermined frequency and amplitude.” As above, “predetermined” begs the question when exactly must the frequency and amplitude be determined and will only further confuse the jury. ZTE’s proposed construction should be rejected and AGNC’s proposed construction should be adopted.

18. “capacitive pickoff excitation signals” (’122 pat. claim 1)

AGNC’s Proposed Construction	ZTE’s Proposed Construction
“electrical signals that provide electrical energy (i.e. excitation) into the angular rate sensor unit’s pickoff capacitors”	“phase reference signals from an oscillator applied to the angular rate sensor unit’s pickoff capacitors”

Mr. Messenger's declaration provides relevant background context from the perspective of one of ordinary skill in the art. Ex. 1 at ¶¶ 8-20, 28-35. In order for a MEMS vibratory gyroscope to output angular rate, the displacement of the oscillating inertial elements must first be determined. This displacement is typically sensed (e.g., picked off) by capacitors. The change in capacitance is used to determine the angular rotation experienced by the gyroscope. Based on his experience, Mr. Messenger explained that one of ordinary skill in the art would read and understand the term "capacitive pickoff excitation signals" to mean "electrical signals that provide electrical energy (i.e. excitation) into the angular rate sensor unit's pickoff capacitors." *Id.* at ¶33.

Consistent with Messenger's explanation, LG's expert agreed that he understood the phrase as signals applied to determine the change in capacitance and that the signals excite capacitive pickoffs. Ex. 2 at 42:1-45:2. LG's expert opined that one of ordinary skill in the art would understand that the signal that is used to measure the capacitance "would have a direct impact on the value being measured." *Id.* at 45:2-46:7.

Again, AGNC and ZTE agree on the baseline meaning of the term, but ZTE again proposes to read in additional requirements not present into independent claim 1 (and in conflict with it). First, ZTE seeks to limit the signal to a signal from an "oscillator" and not from any other source. Second, ZTE also proposes to require that the signal must be a "phase reference signal," which would require this same signal to serve a second purpose, i.e. acting as a phase reference for a different component (e.g. a demodulator).

For both of its proposed limitations, ZTE cites to the example in Figure 6 and the description of that figure in the section "Detailed Description of the Preferred Embodiment" which discloses:

receiving the capacitive pickoff excitation signals as phase reference signals from an oscillator

Ex. 9, '122 pat. at 8:20-22. Limiting the claims to the preferred embodiments violates blackletter law, as discussed at length above.

ZTE's proposed limitations are not present in independent claim 1. Instead, dependent claim 5 recites what is not in claim 1: "a demodulator circuit, which is connected to said first high-pass filter circuit, receiving said capacitive pickoff excitation signals *as phase reference signals from an oscillator.*" Different claims should be presumed to cover different inventions. See e.g., *Comark Communications, Inc. v. Harris*, 156 F.3d 1182, 1187 (Fed. Cir. 1998); *SRI Int'l*, 775 F.2d at 1122 ("It is settled law that when a patent claim does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim in determining either validity or infringement"); and *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F. 3d 1352, 1357-58 (Fed. Cir. 2004) (broad meaning of claim term in patent-in-suit demonstrated by other patents in the family more narrowly claiming details of a disclosed embodiment). Reading in limitations from dependent claims into claim 1 where they are not present would be improper. This Court should adopt AGNC's proposed construction.

19. "displacement restoring signal" ('122 pat. claim 1)

AGNC's Proposed Construction	ZTE's Proposed Construction
"signal that is used to restore displacement of the inertial element(s)"	"a signal that is formed by integrating an angular rate signal output and then is amplified to form a driving signal fed back to the angular rate sensor unit"

In the context of claim 1 of the '122 patent, one of ordinary skill in the art would understand that for the MEMS vibratory gyroscope to provide an accurate angular output in a next iteration (after the inertial element has displaced due to angular rotation), the inertial

element needs to be restored to an equilibrium position so that the next iteration reading does not include the error of the previous displacement. Ex. 1 at ¶¶ 8-20, 36-39.

The descriptive language of the term itself, and claim 1 of the '122 patent, make clear to one of ordinary skill in the art that “displacement restoring signal” is a signal that is used to restore the displacement of the inertial element. Claim 1 recites: “a central circuitry . . . outputting . . . digital low frequency inertial element displacement signals” and “an angular rate sensor unit receiving . . . a displacement restoring signal.” Based on the claim itself (and how one of ordinary skill in the art would understand it), AGNC has proposed that “displacement restoring signal” be construed as a “signal that is used to restore displacement of the inertial element(s).”

ZTE’s proposed construction seeks to read in several additional requirements not present in the claims. Specifically, ZTE improperly seeks to add the limitations that the “displacement restoring signal” (1) formed by integrating an angular rate signal output and (2) is amplified to form a driving signal fed back to the angular rate sensor unit.

In support of ZTE’s first proposal, ZTE purports to rely on Figure 6, and the description of Figure 6 including at 8:61-64, which discloses: “a low-pass filter 225, connected to the demodulator 224, for removing the high frequency noises of the amplitude signal of the in-phase differential angle rate signal to forms angular rate signal output.” Ex. 9. But, Figure 6 is again part of the '122 patent’s “Detailed Description of the Preferred Embodiment” and it remains improper to import requirements from the preferred embodiment into the claims. It is undisputed that the “displacement restoring signal” *may* be formed from the angular rate signal output, but there is no basis to impose a requirement that it *must* be.

ZTE also neglects '122 patent dependent claim 7 (which is dependent on unasserted

claim 3 and, indirectly, on claim 1), which recites: “an integrator, which is connected with said low-pass filter, integrating said angular rate signal to form a displacement restoring signal without an offset.” Asserted claim 1 recites no similar claim element. Reading in a limitation from a different claim is, again, legally incorrect.

ZTE’s purported support for its other proposed limitations, that the “displacement restoring signal” is amplified to form a driving signal fed back to the angular rate sensor unit, is premised on similar citations, and suffers from identical flaws. ZTE relies on another portion of the specification’s disclosure of the preferred embodiment through Figure 6, which includes “a driver amplifier 227, connected to the integrator 226, for amplifying the displacement restoring signal without an offset to form a driving signal to the angular rate sensor unit.” Ex. 9 at 9:1-4. Dependent claims 7 and 8 make a similar recitation. In addition to the same legal errors described above, notably, claim 1 of the ’122 patent nowhere discloses an integrator or a driver amplifier and claim 1 cannot be limited to require those elements where they are not present.

Based on the plain meaning of the claim terms themselves, the driver signals drive and the “displacement restoring signal” restores the inertial elements to where they were before. ZTE’s proposed requirement that the “displacement restoring signal” must be “used to drive the angular rate sensor unit” makes the claims more confusing, at best, and potentially misleading to the jury. In agreement with that concept, LG’s expert, Scott Andrews, conceded at deposition that the “displacement restoring signal” is “[c]ertainly not driving [the angular rate sensor unit’s inertial element] in the same way that the dither drive signals drive it.” Ex. 2 at 64:8-10.

ZTE’s additional proposed limitations are legally improper and factually incorrect. Therefore, AGNC’s proposed construction should be adopted.

20. “Consistent and repeatable angular rate signals” (’555 patent claim 49)

AGNC’s Proposed Construction	ZTE’s Proposed Construction
Plain and ordinary meaning to one of skill in the art at the time of invention. If construed: angular rate signals that result from processing by (1) angle signal loop circuitry or (2) dither motion control circuitry or (3) an oscillator	Indefinite

Consistent with the ’555 patent specification at 2:15-21, 2:23-30, and 7:66-8:4, Mr. Messenger has opined that one of ordinary skill would understand that one of the goals of the patented inventions was improved accuracy and stability of the angular rate signals. Ex. 1 at ¶¶ 110-112.

As one way to achieve those goals, ’555 patent claim 49 part (b) recites:

(b) converting said angular motion-induced signals from said angular rate detecting unit in an interfacing circuitry into ***consistent and repeatable angular rate signals*** that are proportional to said vehicle angular rate, and converting said inertial element dither motion signals from said angular rate detecting unit in said interfacing circuitry into digital element displacement signals with predetermined phase

As shown, in the relevant portion of the claim, the “interfacing circuitry” is “converting” angular motion-induced signals into “consistent and repeatable angular rate signals.”

Consistent with claim 49, the ’555 specification discloses an example of the “interfacing circuitry” by reference to the embodiment Figure 6:

Referring to FIG. 6, the interfacing circuitry 20 comprises a dither motion control circuitry 21, an angle signal loop circuitry 22 and an oscillator 23.

Ex. 7 at 9:21-23.

The specification teaches that one way that the “interfacing circuitry” performs the “converting” is through demodulation:

The interfacing circuitry 20 converts the angular motion-induced signals into angular rate signals, for example, demodulating the AC voltage into DC voltage proportional to the input angular rate. . . .

Ex. 7 at 9:3-5. The '555 specification also discloses another example in which the “angle signal loop circuitry” portion of the interfacing circuitry processes the angular motion-induced signals into angular rate signals:

The angle signal loop circuitry receives the angular motion-induced signals from the vibrating type angular rate detecting unit 10 and reference pickoff signals from oscillator 23, and transforms the angular motion-induced signals into angular rate signals.

Ex. 7 at 9:29-32. The specification makes clear that one aspect the processing and converting that the angle signal loop circuitry performs is the removal of noise from the signal. For example, with reference to Figure 7, the specification discloses:

Referring to FIG. 7, the angle rate signal loop circuitry 22 comprises a high-pass filter circuit 2201, a voltage amplifier circuit 2205, an amplifier and summer circuit 2210, a demodulator 2215, and a low-pass filter 2220.

The high pass filter circuit 2210 is connected to the vibrating type angular rate detecting unit 10 for receiving the angular motion-induced signals by a high-pass filter circuit 2201 and **removing low frequency noise of the angular motion-induced signals**, which are AC voltage signals output from vibrating type angular rate detecting unit 10, to form filtered angular motion-induced signals;

The low-pass filter 2220, which is connected to the demodulator 2215, **removes the high frequency noise of the amplitude signal of the in-phase differential angle rate signal to form the angular rate signal output.**

Ex. 7 at 9:37-63.

The next portion of the specification discloses another example of the angle rate signal loop circuitry processing that aids in restoring the displacement of the inertial elements in the angular rate detecting unit:

In order to obtain improved performance, including scale factor linearity, the angle rate signal loop circuitry 22 further comprises an integrator 2225 connected with the low-pass filter 2220 for integrating the angular rate signal to form a

displacement restoring signal, and a driver amplifier 2230 connected to the integrator 2225 for amplifying the displacement restoring signal to form a driving signal, including a retorque signal, to the vibrating type angular rate detecting unit 10 to maintain the inertial elements of the vibrating type angular rate detecting unit 10 without offset.

Id. at 9:64-10:7.

The specification also discloses examples of the dither motion control circuitry or oscillator performing the following processing:

The dither motion control circuitry 21 receives the inertial element dither motion signals from vibrating type angular rate detecting unit 10 and reference pickoff signals from an oscillator 23, and produces digital inertial element displacement signals with known phase.

Ex. 7 at 9:24-28. Mr. Messenger has opined that this is another example of the components in the interfacing circuitry performing processing that makes the angular rate signals more accurate and stable. Ex. 1 at ¶ 119.

Mr. Messenger has opined that in the context of the '555 patent claim 49, one of ordinary skill in the art would have no problem understanding “consistent and repeatable angular rate signals.” Ex. 1 at ¶ 121. He also agreed the phrase means angular rate signals that result from processing by interfacing circuitry, which includes (1) angle signal loop circuitry or (2) dither motion control circuitry or (3) an oscillator.⁸ Ex. 1 at ¶¶ 109-121. ZTE has provided no expert opinion supporting its argument that the phrase is indefinite.

21. “Displaying an accurate position of said user” ('227 pat. claim 3, '353 pat. claim 3)

AGNC's Proposed Construction	ZTE's Proposed Construction
Plain and ordinary meaning to one of skill in the art at the time of invention.	Indefinite

⁸ Notably, the interfacing circuitry may include an oscillator, but an oscillator is not required by claim 49.

By way of context, '227 claim 1 recites, in step c:

(c) performing time-space filtering based on said measured position and said retrieved geospatial data from said geospatial map database to derive a displaying position for a user; wherein said measured position and a previous position and a previous velocity are used to derive a true position for said user;

'227 patent claim 2 depends on claim 1 and claim 3 depends on claim 2, and 1. Claim 3 recites:

3. An enhanced global positioning system and map navigation process, as recited in claim 2, after the step (c), further comprising a step of ***displaying an accurate position of said user*** on said graphic displaying unit as a mark.

Consistent with claim 3, the '227 specification discloses:

The time-space filtering module 42 is used to fully fuse the GPS data and the geospatial map data. The time-space filtering technique is a valuable solution for enhanced navigation process which assures that the user's tracking mark is on the road and track the user correctly and high accurately.

Ex. 8, 4:32-36. ZTE contends this phrase “displaying an accurate position of said user” in dependent claim 3 is indefinite, apparently on the purported grounds that whether the position is “accurate” depends on a person’s purely subjective opinion, relying on *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir. 2005), which was abrogated by *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120 (2014). In *Datamize*, the claim term at issue was “aesthetically pleasing.”

By contrast, here, the requirements and examples in the written descriptions of the '227 and '353 patents would have allowed a skilled artisan to know the scope of the claimed invention with reasonable certainty. E.g. *Sonix Tech. Co. v. Publications Int'l, Ltd.*, 844 F.3d 1370, 1376 (Fed. Cir. 2017). The '227 and '353 patents themselves provide an objective standard or determining if the claim term is met. For example, the '227 patent specification discloses:

The position accuracy provided by a GPS receiver ***is roughly 100 meters*** when only Coarse/Acquisition (C/A) code is employed and the Selective Availability

(SA) is on. For personal navigation this position accuracy need to be enhanced. To obtain enhanced navigation function and accuracy, other navigation data should be incorporated in the navigation process, such as a geospatial database.

Ex. 8, 2:5-11 (emphasis added). The '353 patent makes a similar disclosure:

The position accuracy provided by a GPS receiver *is roughly 100 meters* when only Coarse/Acquisition (C/A) code is employed and the Selective Availability (SA) is on. For personal navigation this position's accuracy needs to be enhanced. To obtain enhanced navigation function and accuracy, other navigation data should be incorporated in the navigation process, such as an inertial measurement unit (IMU) and a geospatial database.

Ex. 13, 3:63-67 through 4:1-3 (emphasis added). The '353 patent also discloses a second, alternative, objective indicator of accuracy, as follows:

American GNC Corporation further developed a hand-held navigator, U.S. provisional patent pending No. 60/167825, entitled "Self-Contained Positioning Method and System Thereof for Hand-Held Navigator". The main objective of that invention is to provide self-contained positioning methodology and a system with reasonable size and weight and power consumption for hand-held operation to determine position for a user on land with high accuracy. The hand-held navigator invention has evolved from the coremicro™ IMU, patent pending. The navigator can receive but not rely on GPS signal and DGPS signals for a highly accurate positional solution. Without GPS/DGPS signals, the hand-held navigator also provides highly accurate positional solution, with *an accuracy of better than 1 percent of the distance traveled*.

Ex. 13, 4:23-37 (emphasis added). Thus, based on the disclosures in the specifications, it is clear that the step of "displaying an accurate position of said user on said graphic displaying unit as a mark" is satisfied when either the position displayed to the user is within 100 meters of the user's actual position or the position displayed has an accuracy of better than 1 percent of the distance traveled.

22-23. “An enhanced global positioning system and map navigation process” (’227 pat. claims 1, 2, 3, 36); “An enhanced inertial measurement unit/global positioning system and map navigation process” (’353 pat. claims 1, 2, 3, 6, 7);

Term	AGNC’s Proposed Construction	ZTE’s Proposed Construction
An enhanced global positioning system and map navigation process	Plain and ordinary meaning to one of skill in the art at the time of invention.	Indefinite
An enhanced inertial measurement unit/global positioning system and map navigation process	Plain and ordinary meaning to one of skill in the art at the time of invention.	Indefinite

ZTE alleges that these terms are indefinite on the purported grounds that “enhanced” is a subjective term that depends on a person’s purely subjective opinion. This is not so. By way of relevant context and for example, claim 1 of the ’227 patent, in relevant part recites:

1. An *enhanced global positioning system and map navigation process*, comprising said steps of. . .

ZTE’s position overlooks the teachings of the specifications, which disclose that in the context of the patents, the GPS and map navigation process is enhanced when data beyond that provided by a GPS receiver is used:

The position accuracy provided by a GPS receiver is roughly 100 meters when only Coarse/Acquisition (C/A) code is employed and the Selective Availability (SA) is on. *For personal navigation this position accuracy need to be enhanced. To obtain enhanced navigation function and accuracy, other navigation data should be incorporated in the navigation process, such as a geospatial database.*

Ex. 8, 2:5-11 (emphasis added). In the context of the claims, the GPS and map navigation process is “enhanced” because data beyond that provided by a conventional GPS alone is incorporated into the navigation process.

Similarly, the '353 patent teaches that IMU/GPS and map navigation process is “enhanced” when it uses location information provided by an IMU/GPS integrated system:

The present invention relates generally to a geospatial database access and query method, and more particularly to a map and Inertial Measurement Unit/Global Positioning System (IMU/GPS) navigation process. *With the location information provided by an IMU/GPS integrated system, the geospatial database operations, such as database access and query, are sped up. With the map data from a geospatial database, the navigation performance and accuracy are enhanced.*

Ex. 13, 1:17-25 (emphasis added).

24. “Enhancing data management” ('227 pat. claims 1, 36 and '353 pat. claims 1, 6)

Term	AGNC’s Proposed Construction	ZTE’s Proposed Construction
enhancing data management	One of skill in the art at the time of invention would, with reasonable certainty, understand “enhancing data management” so as to be informed about the scope of the '227 and '353 inventions with reasonable certainty. If construed: speeding up database access or query; or dividing data into units small enough to fit on the desired hardware platform and memory	Indefinite

'227 patent claim 1 recites:

(b) retrieving geospatial data from a geospatial map database based on said measured position from said global positioning system receiver by using a tile index file, wherein said tile index file stores geographic extent information of tiles which are geographically subdividing a coverage solely for a purpose of *enhancing data management*; wherein a geographic extent of an access area is compared with said geographic extent of said tiles to derive a plurality of involved tiles for said access area . . .

ZTE contends that “enhancing data management” is indefinite apparently on the purported grounds that whether data management is “enhanced” depends solely on a person’s subjective opinion. The specification discloses that when the map database can be queried faster than without the use of tiles subdividing the geographic area, data management is enhanced. For example, the specification discloses:

With the location information provided by a GPS receiver, the geospatial database operations, such as database access and query, are speeded up.

Ex. 8 at 1:24-26. The specification also discloses:

Primitive access for untiled coverages can be performed on the whole geographic extent of the database. Primitive access for tiled coverage will be done through two continuous procedures as follows: 1) the GPS-based tile finding procedure is applied to find the involved tiles, and 2) the geometric and cartographic primitive access is done on the regional extent of an individual involved tile at the corresponding tile subdirectory. This GPS based primitive access strategy *speeds up the search procedure of the primitive*.

Ex. 7 at 4:62-67 through 5:1-3; *see* also 1:24-26. The specification also discloses that when the map geographic data is split into units small enough to fit on the desired hardware platform and media, data management is enhanced. As relevant background context, at the time of the invention, it was a challenge to cost effectively provide sufficient memory and processing power in handheld devices to store and process large mapping files. Ex. 1 at ¶134. For example, the ’227 patent discloses:

A geospatial database has a big volume of spatial and text data which are organized in a file system or in tabular fashion. The data is used by the user to query spatial information and associated features and text descriptions. Due to the amount of a geospatial database, there exists difficulty to efficiently perform database access and query.

Ex. 8. at 1:29-34. The ’227 patent’s “invention features both portability and ease-of-use.” Ex. 8 at 2:55-56. The patent also discloses that one “major application invention is for personal

navigation.” *Id.* at 3:14-15. As one way to address the problem of working with a large volume of data on a portable device, the specification discloses:

Global scale databases inevitably consist of large amounts of data. In processing the geographic data, entire files often need to be managed in memory, imposing a definite limit on database size. Tiling is the method used to break up geographic data into spatial units ***small enough to fit within the limitations of the desired hardware platform and media.***

Tiling means geographically subdividing a coverage solely for the purpose of enhancing data management, a coverage subdivided in such a manner is then referred to as a tiled coverage.

Ex. 8 at 4:43-52 (emphasis added). Thus, the specification discloses that when the map geographic data is split into units small enough to fit on the desired hardware platform and media, data management is enhanced.

Consistent with the patent’s disclosures, one of ordinary skill in the art, Mr. Messenger, has opined that one of skill in the art would understand the meaning of “enhancing data management” with reasonable certainty. Ex. 1 at ¶137. In the context of the claim, data management is enhanced when the map database can be queried faster than without the use of tiles subdividing the geographic area and is also enhanced when the map geographic data is split into units small enough to fit on the desired hardware platform and media. Ex. 1 at ¶137.

AGNC’s position here is consistent with the Federal Circuit’s holding in *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 761 F.3d 1329, 1340 (Fed. Cir. 2014) where the Federal Circuit declined to find “enhance” indefinite and affirmed the district court’s construction of “enhance” consistent with the specification’s repeated recitation of the advantages of distributed enhancement.

IV. Conclusion

AGNC respectfully requests that this Court adopt its proposed claim constructions as set forth above.

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CERTIFICATE OF SERVICE

The undersigned certifies that all counsel of record who have consented to electronic service are being served with a copy of this document via the Court's CM/ECF system on February 21, 2018.

/s/ Alison Aubry Richards_____