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**UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY**

**CAMBRIDGE MOBILE TELEMATICS,
INC.,**

**Plaintiff and Counter-
Defendant,**

v.

SFARA, INC.,

**Defendant and
Counter-Plaintiff.**

Case No. 3:23-cv-01368-RK-RLS

(Filed Electronically)

**SFARA, INC.’S DISCLOSURE OF
ASSERTED CLAIMS AND INFRINGEMENT CONTENTIONS**

Pursuant to Local Patent Rule 3.1 and the Pretrial Scheduling Order (Dkt. 35),
Defendant and Counter-Plaintiff, Sfara, Inc. (“Sfara”) hereby makes the following

SFARA, INC.’S DISCLOSURE OF
ASSERTED CLAIMS AND INFRINGEMENT CONTENTIONS

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disclosure of asserted claims and infringement contentions to Plaintiff and Counter-Defendant Cambridge Mobile Telematics, Inc. (“CMT”)

These disclosures and infringement contentions are based on Sfara’s current interpretation of U.S. Patent Nos. 8,989,952 and 9,333,946 (collectively, the “Sfara Asserted Patents”), and public information describing the Accused Instrumentalities. Sfara reserves the right to amend its disclosures and contentions based on claim construction proceedings and this Court’s claim construction rulings, rulings by other courts in related cases, information obtained through discovery and/or otherwise as this case progresses, any proceedings before the United States Patent and Trademark Office in connection with Sfara’s patents, and any other permissible reason under this Court’s rules.

A. Identification of infringed claims.

Pursuant to Local Patent Rule 3.1(a), the asserted claims of the Sfara Asserted Patents include those claims identified in the attached claim charts. Sfara identified these asserted claims based on its current and preliminary understanding and reserves the right to supplement its identification of infringed claims as discovery proceeds, including identifying additional claims.

Sfara accuses CMT of directly infringing under 35 U.S.C. § 271(a) each of the following claims of the Sfara Asserted Patents (hereinafter referred to as the “§ 271(a) Claims”):

- Claims 1-18 of the ‘952 patent.

- At least, claims 1-6, 8-13, and 15-20 of the '946 patent.

Sfara accuses CMT of inducing infringement under 35 U.S.C. § 271(b) each of the following claims of the Sfara Asserted Patents (hereinafter referred to as the “§ 271(b) Claims”):

- Claims 1-18 of the '952 patent.
- At least, claims 1-6, 8-13, and 15-20 of the '946 patent.

Sfara accuses CMT of contributory infringement under 35 U.S.C. § 271(c) with respect to each of the following claims of the Sfara Asserted Patents (hereinafter referred to as the “§ 271(c) Claims”):

- Claims 1-18 of the '952 patent.
- At least, claims 1-6, 8-13, and 15-20 of the '946 patent.

CMT directly and indirectly infringes the above-listed claims of the Sfara Asserted Patents by making, using, offering for sale, selling, and/or importing in or into the United States products and services covered (either literally or under the doctrine of equivalents), by inducing their customers and end users to make, use, sell, import or offer for sale the Accused Instrumentalities as detailed in the attached claim charts and/or by offering for sale, selling, and/or importing in or into the United States products and services that are components of products and services covered by the asserted claims of the Sfara Asserted Patents. (*See Exhibits A-B.*)

Sfara incorporates fully here its factual and infringement allegations set forth in its Counterclaims (*see* Dkt. 12 at ¶¶ 28-80).

B. Identification of accused instrumentalities.

Pursuant to Local Patent Rule 3.1(b), Sfara identifies the Accused Instrumentalities based on its preliminary understanding of information currently available to Sfara. This preliminary understanding is obtained at least through Sfara's independent investigation of CMT's products and services.

Sfara reserves the right to supplement its infringement contentions as discovery proceeds and CMT produces documents/information that are either required under the Court's local rules or are responsive to Sfara's discovery requests, including identifying additional accused instrumentalities, which have features similar to the specific products, services and systems set forth below. In due course, after receiving discovery of products, services, and systems made, used, sold, offered for sale and/or imported by CMT in the United States, Sfara may supplement these disclosures as applicable.

In addition to CMT's products, services, and systems specifically charted, the Accused Instrumentalities include CMT's products, services, and systems or those products, services, and systems of entities that CMT acquired or will acquire, that operate in the same manner and/or are structurally the same as the products, services, and systems identified in the attached claim charts. CMT's products, services, and systems that operate in the same manner and/or are structurally the same as the products, services, and systems in the attached claim charts infringe for the same reasons as those charted products, services, and systems. For example, these disclosures should be understood to explicitly relate to CMT's making, use, importation, sales, and

offers to sell, as well as their inducement of others to make, use, import, sell, or offer to sell any system, product and/or service that utilizes any of CMT's technology as a component, including without limitation CMT's SDK and API products, systems, and/or features. These disclosures should be understood to apply to any such component, system, product and/or service whether CMT has publicly disclosed such component, system, product and/or service or not.

The identified Accused Instrumentalities also include CMT's products, services, and systems that are considered sold in the United States according to the Federal Circuit's decision in *Carnegie Mellon Univ. v. Marvell Tech. Group. Ltd.*, No. 2014-1492 (Aug. 4, 2015) and *Cal. Inst. of Tech. v. Broadcom Ltd.*, 25 F.4th 976, 993 (Fed. Cir. 2022).

Subject to the foregoing and based on information currently available, Sfara identifies at least the following, including all reasonably similar variants or improvements, as the "Accused Instrumentalities":

- "CMT's Telematics Platform" as that term is used and understood by CMT and is used in Sfara's Counterclaims (Dkt. 12 at ¶ 26) and the attached claim charts;
- the following specifically listed products, services, and systems, as well as all products and services, including products and services made, used, sold, imported, and/or offered for sale by third parties, (e.g., CMT's customers, software development partners, CMT's white labeling

customers/partners, CMT's insurance industry partners, etc.) which are related thereto or use any of the following as a component:

- CMT's DriveWell Platform,
- DriveWell Fusion Platform,
- DriveWell Fleet,
- DriveWell Auto,
- DriveWell Tag,
- DriveWell SDK,
- DriveWell Risk,
- DriveWell Crash & Claims,
- DriveWell Engage,
- Advanced Risk,
- CMT's API,
- CMT's cloud platform,
- CMT's Mobile Apps, including, but not limited to,
 - DriveWell Go,
 - DriveWell Fleet,
 - OpenRoad,
 - Safest Driver,
 - DriveStudy,
 - Trip Tester,

- FuelStar,
- DriveScape Dashcam,
- CMT's White-Label Mobile Apps, including, but not limited to,
 - Marmalade Insurance,
 - State Auto 360,
 - State Auto 360 Mobile,
 - DriveRight Mobile,
 - MercuryGo,
 - RideWell, and
 - 1st Central Connect.

C. Charts identifying claim limitations in the accused instrumentalities.

Pursuant to Local Patent Rule 3.1(c), Sfara provides the attached claim charts (*See* Exhibits A-B), which identify where to find each element of each asserted claim within the Accused Instrumentalities. These claim charts provide CMT with the requisite reasonable notice by identifying instrumentalities that incorporate or reflect the recited claim elements. As such, these charts serve a notice function, and do not present every possible permutation or theory of Sfara's infringement case.

The claim charts are not intended to be an expert report on infringement or provide detailed analysis of the claim terms or infringement. Sfara will disclose and produce an expert report regarding infringement with appropriate analysis pursuant to Fed Rules Civ Proc R 26(2), applicable federal and local rules, and this Court's orders.

These charts include publicly available documentary evidence by way of example and not limitation.

The asserted claims include elements that are implemented, at least in part, by confidential information to which Sfara has not had access. In some instances, the information used in them are, at least in part, not publicly available. An analysis of CMT's (or other third parties') technical information may be necessary to more fully identify all infringing features and functionality. Accordingly, pursuant to the Court's Pretrial Scheduling Order, (Dkt. 35) Sfara reserves the right to supplement these charts once such information is made available to Sfara.

Furthermore, Sfara reserves the right to revise these charts, as appropriate, upon issuance of the Court's Claim Construction Order, including the identification of whether any such differences between the Accused Instrumentalities and the claims are insubstantial and whether the Accused Instrumentalities read on the claim elements under the doctrine of equivalents.

D. Induced infringement.

Pursuant to Local Patent Rule 3.1(d) Sfara contends that the above-listed claims alleged to be indirectly infringed under 35 U.S.C. § 271(b) in section A, (The "§ 271(b) Claims") are indirectly infringed by CMT. On information and belief, since at least 2016, CMT including but not limited to, Mr. Brad Cordova, was aware of the Sfara Asserted Patents and their relevance to the business activities of TrueMotion and CMT, including with respect to its promotion and support of the Accused Instrumentalities. CMT was

unquestionably aware of the asserted patents and claims on or after June 7, 2023 when Sfara served its counterclaims. On information and belief, at least since 2016 (and unquestionably after June 7, 2023), CMT knowingly encouraged, and continues to encourage, its customers and/or end-users to directly infringe the § 271(b) Claims, including by CMT's actions that include, without limitation, instructing, supporting, and encouraging its customers and/or end-users to use CMT's Telematics Platform through the publishing, distribution, and propagation of user guides,¹ advertisements,² blog posts,³ live events,⁴ promotional materials,⁵ and technical support.⁶

On information and belief, at least since its knowledge of the Sfara Asserted Patents, CMT knows (or should know) the acts CMT induced its customers and/or end-users to take, including the use, making, selling, and offering for sale of the Accused Instrumentalities, constitute patent infringement and CMT's encouraging acts resulted in and continue to result in direct infringement of the § 271(b) Claims by those

¹ See e.g., <https://www.stateauto.com/public/files/Fleet%20Safety%20360%20App-Tag%20App%20Install%20Guide%20for%20DRIVERS.pdf>. (Last accessed August 21, 2023).

² See e.g., <https://www.youtube.com/@cambridgemobiletelematics2253>. (Last accessed August 21, 2023).

³ See e.g., <https://www.cmtelematics.com/news-and-insights/>. (Last accessed August 21, 2023).

⁴ See e.g., <https://twitter.com/cmtelematics/status/1461046480807112704?cxt=HHwWgMC9jZGC18YoAAAA>. (Last accessed August 21, 2023).

⁵ See e.g., <https://www.cmtelematics.com/who-we-are/what-our-partners-say/>. (Last accessed August 21, 2023).

⁶ See e.g., https://www.cmtelematics.com/wp-content/uploads/2020/11/Summary-of-Technical-Support_Rev-Oct-2020.pdf. (Last accessed August 21, 2023).

customers and/or end-users practicing each element of the below-listed claims. On information and belief, CMT instructs and continues to instruct its customers and/or end-users to use each of the Accused Instrumentalities including, without limitation, through CMT's website, which provides information about, access to, and support for, using and making the Accused Instrumentalities. On information and belief, CMT's customers and/or end-users directly infringe each of the § 271(b) Claims through their use, making, selling, and offering for sale of the Accused Instrumentalities in accordance with CMT's promotion, instruction, and encouragement.

On information and belief, CMT is in violation of 35 U.S.C. § 271(b) and has been indirectly infringing and continues to indirectly infringe the § 271(b) Claims by knowingly and specifically intending to induce infringement by others (including, without limitation, CMT's customers, CMT's software development partners, CMT's white labeling customers/partners, CMT's insurance industry partners, and CMT's end-users) and possessing specific intent to encourage infringement by the same.

E. Contributory infringement.

Pursuant to Local Patent Rule 3.1(d) Sfara contends that the above-listed claims alleged to be indirectly infringed under 35 U.S.C. § 271(c) in Section A, (the "§ 271(c) Claims") are indirectly infringed based on acts of CMT and one or more third parties including, without limitation, CMT's customers, CMT's software development partners, CMT's white labeling customers/partners, CMT's insurance industry partners, and CMT's end-users. On information and belief, (since at least 2016, CMT including but not

limited to, Mr. Brad Cordova, was aware of the Sfara Asserted Patents and their relevance to the business activities of TrueMotion and CMT. CMT was unquestionably aware of the asserted patents and claims on or after June 7, 2023, when Sfara served its counterclaims.

At least since 2016, and unquestionably after June 7, 2023, CMT has contributed to the infringement of the § 271(c) Claims, pursuant to 35 U.S.C. Section 271(c) by using, making, importing, selling, and/or offering for sale the Accused Instrumentalities, or has others perform such acts on its behalf, specifically so that the Accused Instrumentalities will be used in an infringing manner by others, including use detailed in the attached charts, by one or more third parties including, without limitation, CMT's customers, CMT's software development partners, CMT's white labeling customers/partners, CMT's insurance industry partners, and CMT's end-users. Further, the Accused Instrumentalities were designed specifically to be used in a manner that infringes the § 271(c) Claims. For example, and without limitation, CMT's Mobile Apps, CMT's White-Labeled Mobile Apps, CMT's APIs, and CMT's SDK products and services are material components of the inventions claimed in the § 271(c) Claims. When CMT's Mobile Apps, CMT's White-Labeled Mobile Apps, CMT's APIs, and CMT's SDK components are used, and/or incorporated into other systems or devices, the § 271(c) Claims are infringed, as described in the attached charts. Moreover, as shown by CMT's website, in which no non-infringing use of the CMT's Mobile Apps, CMT's White-Labeled Mobile Apps, CMT's APIs, and CMT's SDK is described, there is no other

substantial use for the CMT's Mobile Apps, CMT's White-Labeled Mobile Apps, CMT's APIs, and CMT's SDK. Thus, the CMT's Mobile Apps, CMT's White-Labeled Mobile Apps, CMT's APIs, and CMT's SDK are material parts of the inventions claimed in the § 271(c) Claims that, when used, result in infringement. As a result of CMT's selling, and/or offering for sale of the Accused Instrumentalities to other entities, the other entities use these products for their intended purpose and according to their instructions with the result that such entities, such as CMT's customers and users of the Accused Instrumentalities, directly infringe the § 271(c) Claims, literally or under the doctrine of equivalents, for the reasons stated above. CMT's applications and platforms are specially made and adapted for this use in an infringing manner, are not staple articles of commerce, and do not have substantial non-infringing uses.

F. Literal infringement and infringement under the doctrine of equivalents.

Pursuant to Local Patent Rule 3.1(e), Sfara contends that the Accused Instrumentalities literally infringe the above-asserted claims of the Sfara Asserted Patents as more specifically explained in the attached claim charts. Further, to the extent that any element is not practiced literally, Sfara asserts infringement under the doctrine of equivalents, to the extent that the difference between any component of any product and any claim element is insubstantial. In other words, to the extent literal infringement is purportedly absent, the Accused Instrumentalities identified in the attached claim charts perform substantially the same function of the invention recited in the claims, in substantially the same way to achieve substantially the same result. Sfara reserves the

right to add allegations of infringement under the doctrine of equivalents or amend its doctrine of equivalents allegations in response to discovery, CMT's claim construction and non-infringement positions, claim construction proceedings, this Court's claim construction rulings, rulings by other courts in related cases or any proceedings before the United States Patent and Trademark Office regarding Sfara's patents.

G. Patent priority dates.

Pursuant to Local Patent Rule 3.1(f), Sfara identifies below the priority dates to which it contends the asserted claims of the Sfara Asserted Patents are entitled:

- The asserted claims of the '952 patent are entitled to a priority date (*i.e.*, earliest date of invention) at least as early as December 21, 2012.
- The asserted claims of the '946 patent are entitled to a priority date (*i.e.*, earliest date of invention) at least as early as December 21, 2012.

H. Sfara's Practicing Instrumentalities.

Pursuant to Local Patent Rule 3.1(g), Sfara reserves its right to rely upon its products as embodying all or some of the asserted claims and identifies at least the following instrumentalities which practice claims of the Sfara Asserted Patents:

Sfara's Practicing Instrumentalities	Practiced Claims of the '952 Patent	Practiced Claims of the '946 Patent
Apio SDK Products	1-18	At least, 1-6, 8-13, and 15-20
Driversiti SDK Products	1-18	At least, 1-6, 8-13, and 15-20

Sfara's SDK and Cloud Offerings (and white-labeled third-party applications comprising same)	1-18	At least, 1-6, 8-13, and 15-20
Driversiti/Apio Fleet	1-18	At least, 1-6, 8-13, and 15-20
Sfara Guardian	1-18	At least, 1-6, 8-13, and 15-20
Companion Mobile Safety	1-18	At least, 1-6, 8-13, and 15-20
Brainy/Quest	1-18	At least, 1-6, 8-13, and 15-20

I. CMT's Willful Infringement

Pursuant to Local Patent Rule 3.1(g), Sfara presently contends that CMT's direct and indirect acts of infringement detailed above were, and are, willful. More specifically, Sfara contends that (1) CMT willfully infringed the asserted claims of the Sfara Asserted Patents; (2) that CMT knew of the Sfara Asserted Patents as a part of the party's interactions in 2016; (3) that CMT knew and acknowledged, including at least through the statements of Mr. Vance Loiselle, that it needed a license to the Sfara Asserted Patents; (4) that CMT knowingly, deliberately, and intentionally made the decision to infringe the Sfara Asserted Patents despite not obtaining a license to the Sfara Asserted Patents; (5) CMT's action with respect to the Sfara Asserted Patents were inconsistent with the standards of behavior for its industry; (6) CMT intentionally copied Sfara's technological innovations; (7) CMT knowingly, deliberately, and intentionally misused, copied, and misappropriated Sfara's confidential information

and used that information in furtherance of its willful infringement; (8) CMT's willful infringement was motivated in part by its inability to compete with Sfara's technology without resorting to infringement; (9) CMT's knowing, deliberate, and intentional breach of its contractual confidentiality and non-disclosure obligations evidences that its infringement of the Sfara Asserted patents was knowing, deliberate, intentional, and willful and (10) CMT's knowing, deliberate, and intentional omissions and misrepresentations to the USPTO concerning material prior art developed by Sfara and about the true inventorship of its IP, evidences that its infringement of the Sfara Asserted patents was knowing, deliberate, intentional, and willful.

Sfara reserves the right to amend and/or supplement its contentions herein as this case proceeds through discovery and additional facts concerning CMT's willful infringement are made known to it.

J. Document production.

Pursuant to Local Patent Rule 3.2, documents bearing production numbers SFARA_000001 to SFARA_001208 is being served herewith. Sfara is presently collecting and reviewing additional documents that may be relevant to these disclosures and contentions and will produce such documents during discovery. Sfara's current document production is a good faith disclosure of the relevant documents identified to date and is not meant to represent all relevant evidence on any topic and Sfara reserves the right to rely upon all produced, discovered, or disclosed documents, testimony and information in this case.

Pursuant to Local Patent Rule 3.2(g), Sfara identifies at least the following bates ranges as applicable to the following subsections of Local Patent Rule 3.2:

Relevant Subsection of Local Patent Rule 3.2	Bates Range
Subsection 3.2(a)	N/A
Subsection 3.2(b)	N/A
Subsection 3.2(c)	SFARA_000001 to SFARA_000660
Subsection 3.2(d)	SFARA_000661 to SFARA_000693
Subsection 3.2(e)	SFARA_000694 to SFARA_000845
Subsection 3.2(f)	SFARA_000846 to SFARA_001208

Dated: August 21, 2023

Respectfully submitted,

/s/ Oded Burger

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the above and foregoing document has been served on counsel of record for Defendant via electronic mail on August 21, 2023.

/s/ Oded Burger
Oded Burger

Exhibit A

Claim Chart For Infringement of U.S. Patent No. 8,989,952 by CMT's Accused Instrumentalities

Claim 1	CMT's Accused Instrumentalities
A device for use with a vehicle, said device comprising:	One or more of the Accused Instrumentalities is/is/includes a device for use with a vehicle. One or more of the Accused Instrumentalities is also used within mobile devices, such as smartphones or tablets. One or more of the Accused Instrumentalities is capable of, and intended to be, used with a vehicle. It “gathers sensor data from millions of IoT devices—including smartphones, proprietary tags, connected vehicles, dashcams, and third-party devices—and fuses them with contextual data to create a unified view of vehicle and driver behavior.” https://www.cmtelomatics.com/safe-driving-technology/how-it-works/. (Last accessed August 21, 2023). CMT hosts and runs mobile applications for use on Android and iOS platforms that are deployed on drivers’ smartphones. https://apps.apple.com/us/developer/cambridge-mobile-telematics-inc/id655601790?see-all=i-phone-apps (Last accessed August 21, 2023); https://play.google.com/store/apps/developer?id=Cambridge+Mobile+Telematics&hl=en_US&gl=US (Last accessed August 21, 2023).

Every company has unique business needs. Our goal was to develop a solution that meets the unique needs of all of our partners. DriveWell products can be used separately or together to develop a user-forward mobile telematics program that is right for your business and drivers.

DriveWell SDK



Collect meaningful sensor data and harness CMT's expertise in your own app

DriveWell Tag



Collect vehicle and crash data with a wireless, easy-to-install device

DriveWell Score



Measure driver risk with scoring models based on millions of trips and billions of miles

DriveWell Engage



Increase customer engagement and motivate users to improve

DriveWell Fleet



Reduce fleet risk and costs with the mobile phone and DriveWell Tag

<https://www.cmtelomatics.com/blog/drivewell-assess-risk-and-encourage-safer-driving/>. (Last accessed August 21, 2023).

What Data is Collected?

The following data is required to accurately assess driving risk and motivate drivers to improve

Smartphone app

- **Accelerometer data** helps identify mileage and is used in the calculation of phone motion, screen interaction, and acceleration-based (hard braking, acceleration, and excessive speeding events)
- **Gyroscope data** is used in the calculation of phone motion, screen interaction, and acceleration-based events

DriveWell Tag

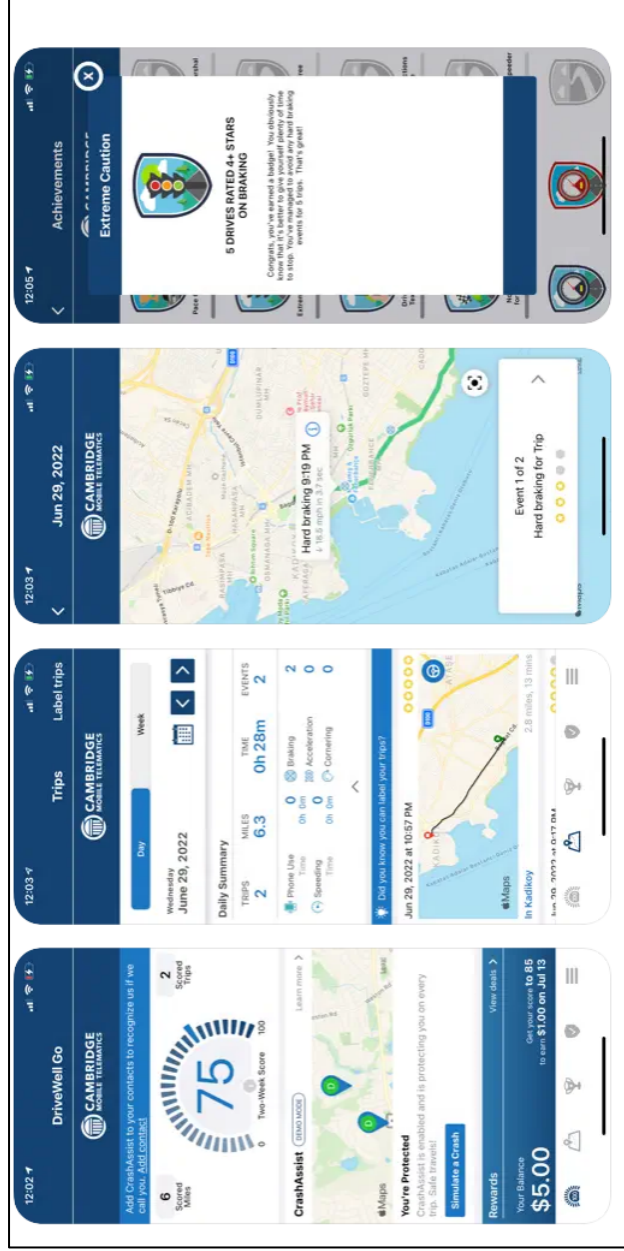
- **High-frequency accelerometer data** detects when and how the vehicle is moving, is used to calculate overall mileage, and identifies acceleration-based events

What smartphone permissions are required?

- **Location:** to collect GPS data
- **Bluetooth:** to connect to the Tag
- **Motion & activity:** helps to detect when a trip starts & stops

https://content.naic.org/sites/default/files/call_materials/NAIC%203-30-21.pdf. (Last accessed August 21, 2023).

For example, CMT’s mobile applications “automatically detect[] when driving starts and stops, and uses the phone’s sensors to measure your vehicle’s driving dynamics.” <https://apps.apple.com/us/app/drivewell-go/id655601647> (Last accessed August 21, 2023); <https://apps.apple.com/ky/app/drivewell-fleet/id1485885494> (Last accessed August 21, 2023).



<https://apps.apple.com/us/app/drivewell-go/id655601647>. (Last accessed August 21, 2023).

On information and belief, one or more of the Accused Instrumentalities is described, in part, in U.S. Patent No. 10,246,037 (the “’037 Patent”), assigned to CMT. The ’037 Patent describes a method and system for automatically generating a documentation of a vehicle crash. The ’037 Patent states that “the telematics device includes a mobile device.” ’037 Patent at 2:48–49. The mobile device can obtain telematics data associated with a vehicle by, for example, “using GPS, accelerometers, barometers, gyroscopes, or other sensors and modules built into the mobile device 204.” *Id.* at 6:1–8.

a mode-determining component operable to detect whether the device is in the vehicle and to generate an in-vehicle signal;	One or more of the Accused Instrumentalities includes a mode-determining component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) operable to detect whether the device is in the vehicle and to generate an in-vehicle signal. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensor(s), sensor data, and/or mobile processor(s) to detect “whether a user is driver or passenger (or in a car at all),” and generate an in-vehicle signal (e.g., indicating the device is in a vehicle). https://news.mit.edu/2016/startup-smartphone-app-safe-driving-0105. (Last accessed August 21, 2023).  Provide excellent user experience Apps automatically start and stop trips without user action and capture sensor data with minimal battery impact. https://www.cmtelomatics.com/cmt-mobile-sdk/. (Last accessed August 21, 2023).
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	Value for Drivers Like We're Not Even There... • Automatic trip recording and classification for low driver effort • Minimal battery and data usage for high user satisfaction • Location data is only collected for trip recording to ensure driver privacy https://www.cmtlematics.com/cmt-mobile-sdk/. (Last accessed August 21, 2023). For example, CMT's DriveWell app “<i>automatically detects when driving starts and stops</i>, and uses the phone’s sensors to measure your vehicle’s driving dynamics.” https://apps.apple.com/us/app/drivewell-go/id655601647. (Last accessed August 21, 2023).
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a first detecting component detect a first parameter and to generate a first detector signal based on the first detected parameter; and	One or more of the Accused Instrumentalities includes a first detecting component (e.g., software module(s) using smartphone sensor(s) (e.g., accelerometer and/or gyroscope, shown in the orange box below), sensor data, and/or mobile processor(s)) operable detect a first parameter (e.g., change in velocity, delta-v) and to generate a first detector signal based on the first detected parameter. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior Accelerometer Identifies phone position with anti-based motion sensing. Gyroscope Works with accelerometer to determine position of phone. Magnetometer Measures magnetic fields. GPS Identifies phone location with multiple satellites. Barometer Measures air pressure. Proximity sensor Determines the proximity of the phone to nearby objects. Ambient Light Measures the amount of light near the phone. https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).
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How DriveWell Crash Works

DriveWell Crash leverages advanced machine learning techniques and sensor data from smartphones and IoT devices to detect car crashes.



Step 1

Sensors from a smartphone or IoT device detect a car crash



Step 2

CMT's on-phone crash algorithms analyze the data and verify that there was a crash.



Step 3

CMT uses crash APIs to alert your systems with critical crash data like location, time, driver ID, crash intensity, g-force, and speed.



Step 4

You choose how to respond. Proactively send help to the scene of the crash or start the claims process.

<https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

a second detecting component operable detect a second parameter and to generate a second detector signal based on the second detected parameter;	One or more of the Accused Instrumentalities includes a second detecting component (e.g., software module(s) using smartphone sensor(s) (e.g., accelerometer, shown in the orange box below), sensor data, and/or mobile processor(s)) operable detect a second parameter (e.g., acceleration) and to generate a second detector signal based on the second detected parameter. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior Accelerometer Identifies phone position with anti-based motion sensing. (Highlighted in orange box) Gyroscope Works with accelerometer to determine position of phone. Magnetometer Measures magnetic fields. GPS Identifies phone location with multiple satellites. Barometer Measures air pressure. Proximity sensor Determines the proximity of the phone to nearby objects. Ambient Light Measures the amount of light near the phone. https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).
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How DriveWell Crash Works

DriveWell Crash leverages advanced machine learning techniques and sensor data from smartphones and IoT devices to detect car crashes.



Step 1

Sensors from a smartphone or IoT device detect a car crash



Step 2

CMT's on-phone crash algorithms analyze the data and verify that there was a crash.



Step 3

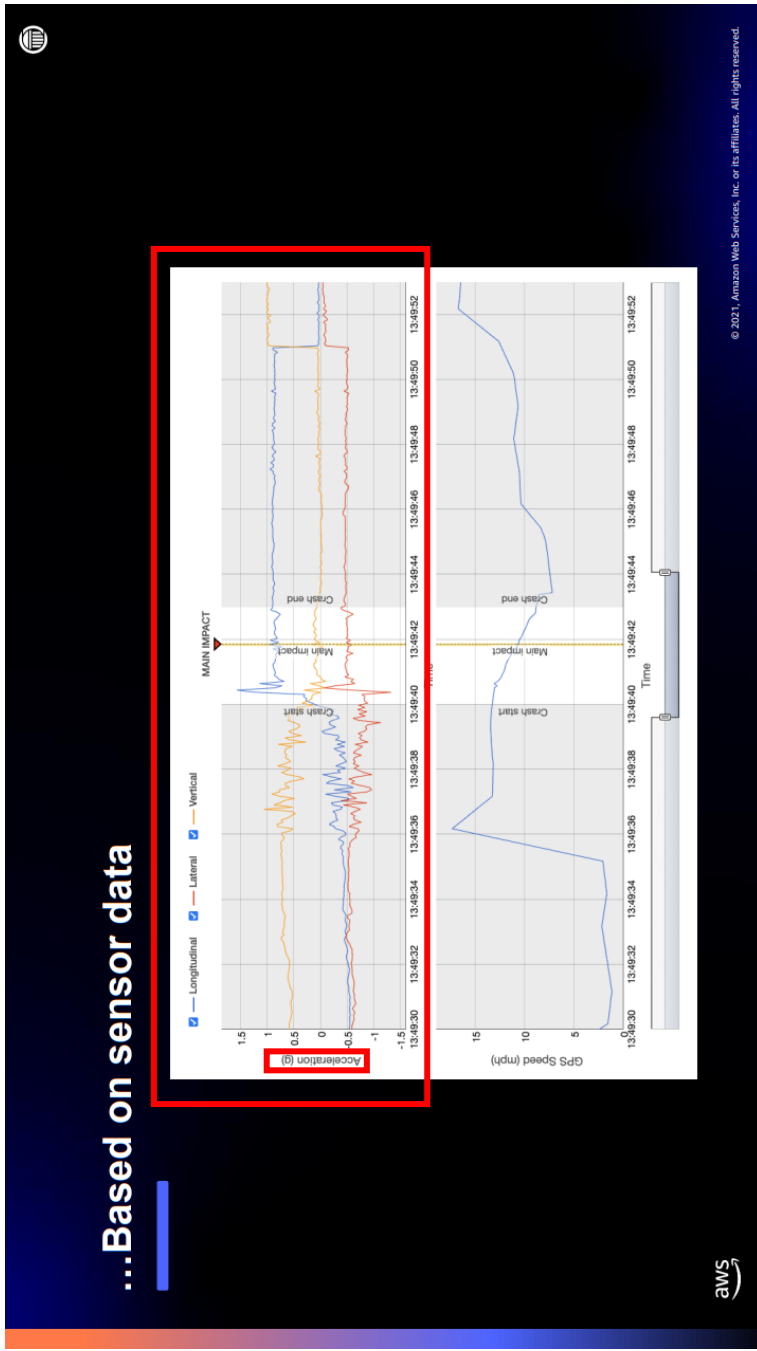
CMT uses crash APIs to alert your systems with critical crash data like location, time, driver ID, crash intensity, g-force, and speed.



Step 4

You choose how to respond. Proactively send help to the scene of the crash or start the claims process.

<https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

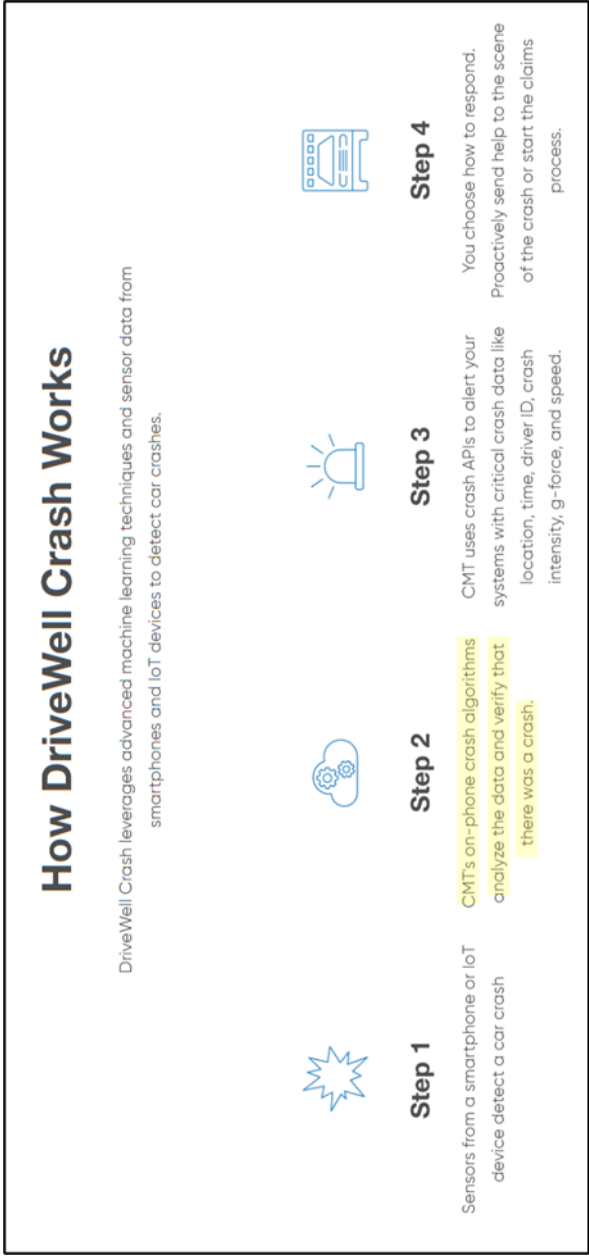


https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

wherein said mode-determining component is further operable to generate a crash mode signal based on the in-vehicle signal, the first detector signal and the second detector signal.

The mode-determining component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) in one or more of the Accused Instrumentalities is further operable to generate a crash mode signal based on the in-vehicle signal, the first detector signal and the second detector signal.

“DriveWell Crash leverages advanced machine learning techniques and sensor data from smartphones and IoT devices to detect car crashes.” <https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

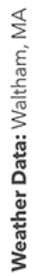


<https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

Crash ID: 1	Trip Id: 20003019	Driver Id: 2000301	Vehicle Id: 50	Crash time: 9/2/2017, 3:35:26.	Crash location: 42.366681 -71.237827	Crash duration: Validated?: no
-------------	-------------------	--------------------	----------------	--------------------------------	--------------------------------------	--------------------------------

Crash ID: 1	Trip Id: 20003019	Driver Id: 2000301	Vehicle Id: 50	Crash time: 9/2/2017, 3:35:26.	Crash location: 42.366681 -71.237827	Crash duration: Validated?: no
-------------	-------------------	--------------------	----------------	--------------------------------	--------------------------------------	--------------------------------

The driver was traveling at 49 km/h at 15:35:26 on the 2017/09/02. At 15:35:28 a collision occurred on the left side of the vehicle while the vehicle was traveling at 47.0 km/h. The collision event ended at 15:35:30 when the vehicle reached a speed of 28 km/h. The vehicle was yawing during the crash. The driver did not continue on their trip after the crash event.



Humidity: 57%
Pressure: 1015 hPa
Wind: 14 km/h SSE
Day or Night: Day
Sun Facing Driver: No
Solar Position: 280.0 Az, 4.0 Alt

Speed Before Crash	49 km/h
Speed At Impact	47 km/h
Speed After Impact	28 km/h
Delta-V	-21 km/h
Mean Acceleration	20 m/s ²

Speed Before Crash	49 km/h
Speed At Impact	47 km/h
Speed After Impact	28 km/h
Delta-V	-21 km/h
Mean Acceleration	20 m/s ²

Crash Duration	3.87s
Number of Impacts	1
Evasive Maneuver	No Reaction
Yaw During Crash	No

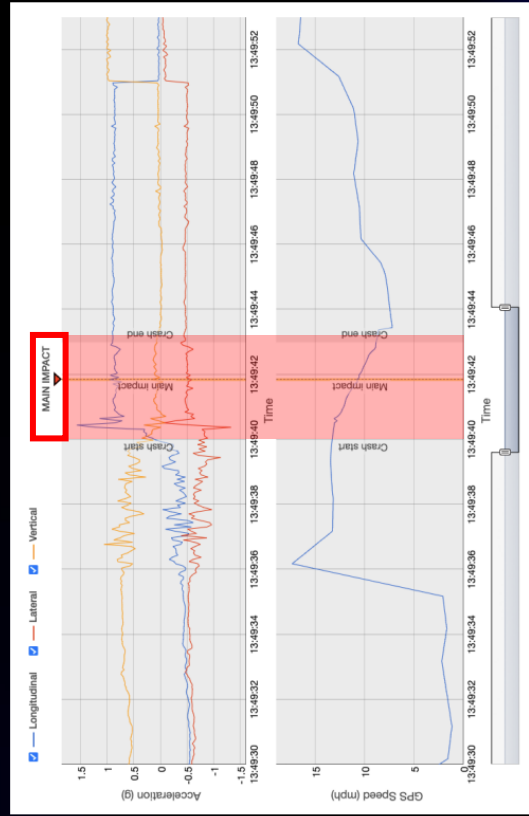
Crash Duration	3.87s
Number of Impacts	1
Evasive Maneuver	No Reaction
Yaw During Crash	No

Airbag Deployed	No
Vehicle Rollover	No
Driven Post Crash	No

Airbag Deployed	No
Vehicle Rollover	No
Driven Post Crash	No

August 21, 2023).

...Based on sensor data



aws

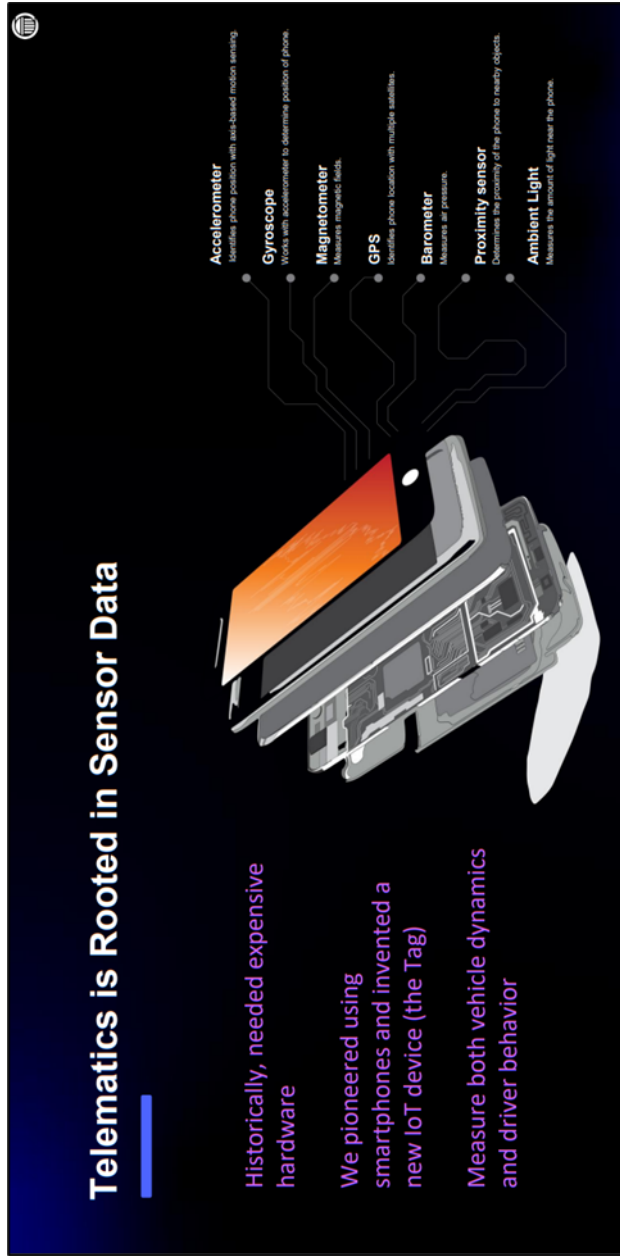
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https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

Claim 2	CMT's Accused Instrumentalities
The device of claim 1, wherein said first detecting component is operable to detect, as the first parameter, one of the group consisting of magnetic fields in any of three dimensions, of three dimensions, electric fields in any of three dimensions, three dimensions, electro-magnetic fields in any of three dimensions, acceleration in any of three dimensions, angular velocity in any of three dimensions, angular acceleration in any of three dimensions, geodetic position, sound, temperature, vibrations in any of three dimensions, pressure in any of three dimensions, contents of surrounding atmosphere, a change in electric fields in any of three dimensions, a change in magnetic fields in any of three dimensions, a change in angular acceleration in any of three dimensions, a change in geodetic position in any of three dimensions, a change in sound, a change in temperature, a change in vibrations in any of three dimensions, a change in pressure in any of three dimensions, a change in biometrics, a change in contents of surrounding atmosphere, a change in electric fields in any of three dimensions, a change in magnetic fields in any of three	See claim 1. The first detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) is operable to detect, as the first parameter, one of the group consisting of magnetic fields in any of three dimensions, electric fields in any of three dimensions, electro-magnetic fields in any of three dimensions, velocity in any of three dimensions, acceleration in any of three dimensions, angular velocity in any of three dimensions, angular acceleration in any of three dimensions, geodetic position, sound, temperature, vibrations in any of three dimensions, pressure in any of three dimensions, contents of surrounding atmosphere, a change in electric fields in any of three dimensions, a change in magnetic fields in any of three dimensions, a change in electro-magnetic fields in any of three dimensions, a change in velocity in any of three dimensions, a change in acceleration in any of three dimensions, a change in angular velocity in any of three dimensions, a change in angular acceleration in any of three dimensions, a change in geodetic position in any of three dimensions, a change in sound, a change in temperature, a change in vibrations in any of three dimensions, a change in pressure in any of three dimensions, a change in biometrics, a change in contents of surrounding atmosphere and combinations thereof.

dimensions, a change in electro-magnetic fields in any of three dimensions, a change in velocity in any of three dimensions, a change in acceleration in any of three dimensions, a change in angular velocity in any of three dimensions, a change in angular acceleration in any of three dimensions, a change in geodetic position in any of three dimensions, a change in sound, a change in temperature, a change in vibrations in any of three dimensions, a change in pressure in any of three dimensions, a change in biometrics, a change in contents of surrounding atmosphere and combinations thereof.

One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors.



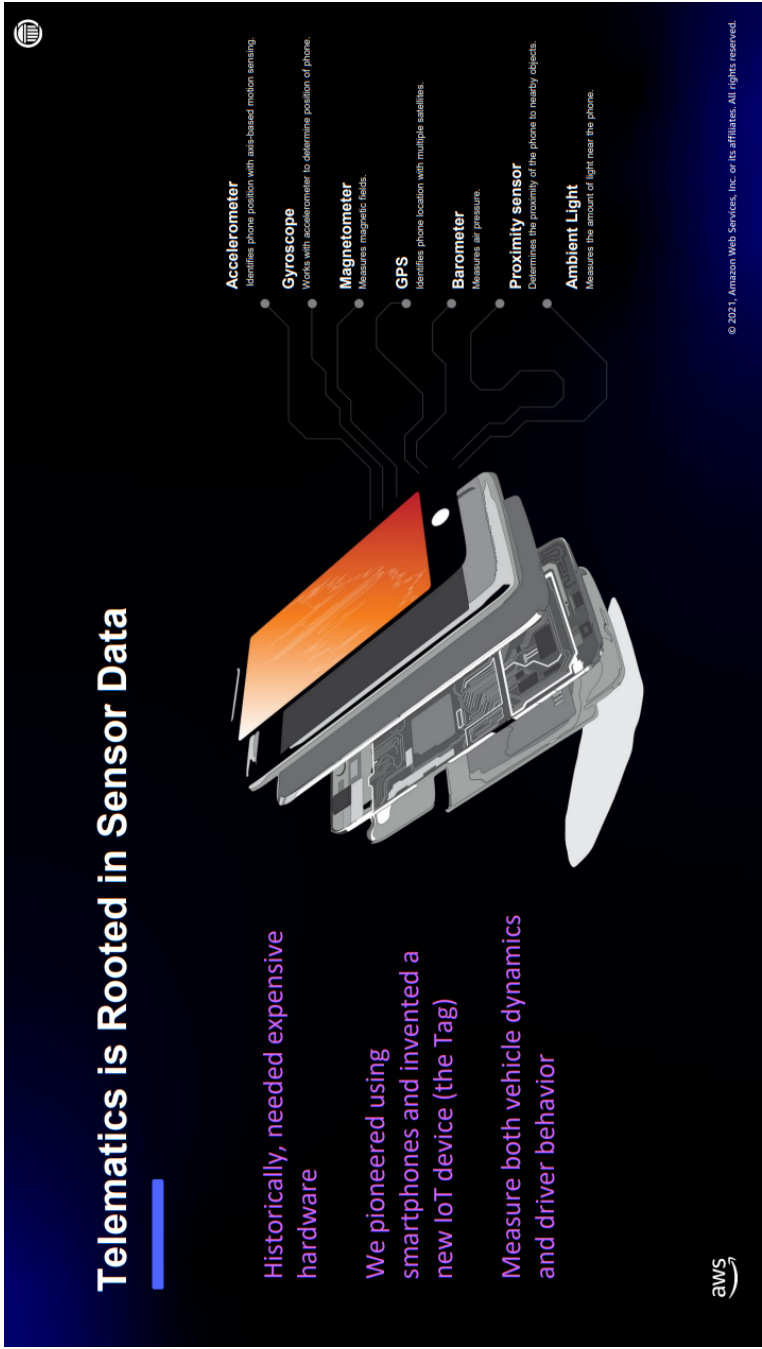
https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).

The first detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) is operable to detect, for example, at least magnetic fields/a change in magnetic fields in any of three dimensions via a magnetometer; acceleration/change in acceleration in any of three dimensions via an accelerometer; and angular velocity/change in angular velocity in any of three dimensions via a gyroscope.

The '037 Patent states that a mobile device can obtain telematics data associated with a vehicle by, for example, "using GPS, accelerometers, barometers, gyroscopes, or other sensors and modules built into the mobile device 204." '037 Patent at 6:1-8.

"Based on the telematics data, one or more metrics are determined associated with the vehicle during the vehicle crash period." *Id.* at 1:26-28.

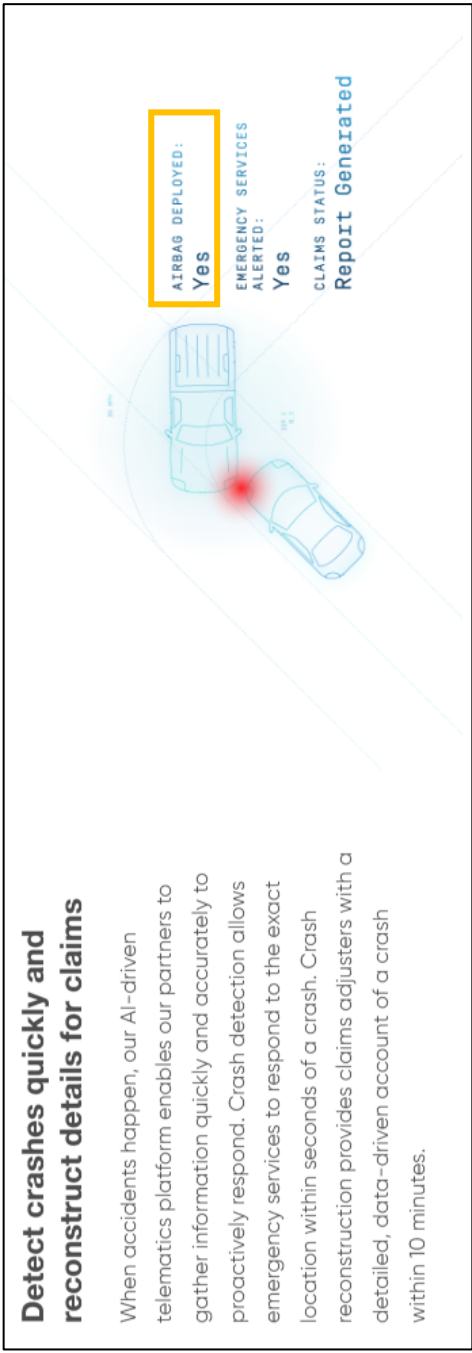
“The one or more metrics include at least one of a crash duration, a number of impacts, a mean acceleration, a yaw during the vehicle crash, a direction of vehicle impact, an indication of airbag deployment, an indication of vehicle rollover, an indication of a vehicle maneuver, an indication of whether the vehicle was driven post-crash, and an indication of environmental conditions during the vehicle crash.” *Id.* at 2:34-41.

Claim 3	CMT's Accused Instrumentalities
The device of claim 2, wherein said first detecting component is operable to detect, as the first parameter, a parameter associated with deployment of an airbag within the vehicle.	See claim 2. The first detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) is operable to detect, as the first parameter, a parameter associated with deployment of an airbag within the vehicle. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors.  https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).

“The CMT ClaimCenter Accelerator provides telematics and contextual data to expedite first notice of loss with data prefill and enhances the adjuster’s coverage review and investigation processes. Adjusters receive key data elements like date, time, and crash location, **airbag indicator**, speed at impact, and more. Adjusters can also read a short natural language crash description.” https://marketplace.guidewire.com/s/product/cmt-telematics-accelerator-for-claimcenter/01t3n00000GfLGYAA3?language=en_US. (Last accessed August 21, 2023).

Detect crashes quickly and reconstruct details for claims

When accidents happen, our AI-driven telematics platform enables our partners to gather information quickly and accurately to proactively respond. Crash detection allows emergency services to respond to the exact location within seconds of a crash. Crash reconstruction provides claims adjusters with a detailed, data-driven account of a crash within 10 minutes.



The diagram illustrates a vehicle crash scenario. A car is shown with a red impact point on its side. A status box in the top right corner displays the following information: 'AIRBAG DEPLOYED: Yes', 'EMERGENCY SERVICES ALERTED: Yes', and 'CLAIMS STATUS: Report Generated'.

<https://www.cmttelematics.com/safe-driving-technology/how-it-works/>. (Last accessed August 21, 2023).

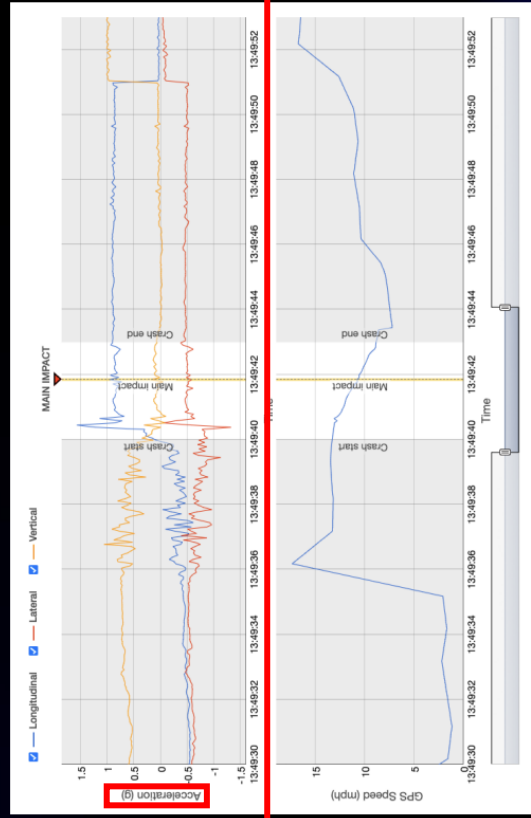
The ’037 Patent states that a mobile device can obtain telematics data associated with a vehicle by, for example, “using GPS, accelerometers, barometers, gyroscopes, or other sensors and modules built into the mobile device 204.” ’037 Patent at 6:1-8.

“Based on the telematics data, one or more metrics are determined associated with the vehicle during the vehicle crash period.” *Id.* at 1:26-28.

“The one or more metrics include at least one of a crash duration, a number of impacts, a mean acceleration, a yaw during the vehicle crash, a direction of vehicle impact, **an indication of airbag deployment**, an indication of vehicle rollover, an indication of a vehicle maneuver, an indication of whether the vehicle was driven post-crash, and an indication of environmental conditions during the vehicle crash.” *Id.* at 2:34-41.

Claim 4	CMT’s Accused Instrumentalities
The device of claim 2, wherein said first detecting component is operable to detect, as the first parameter, acceleration along a single axis, and	See claim 2. The first detecting component (e.g., software module(s) using smartphone sensor(s) (e.g., accelerometer), sensor data, and/or mobile processor(s)) is operable to detect, as the first parameter, acceleration along a single axis. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. Telematics is Rooted in Sensor Data Accelerometer Identifies phone position with anti-based motion sensing. Gyroscope Works with accelerometer to determine position of phone. Magnetometer Measures magnetic fields. GPS Identifies phone location with multiple satellites. Barometer Measures air pressure. Proximity sensor Determines the proximity of the phone to nearby objects. Ambient Light Measures the amount of light near the phone. Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior aws © 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved. https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).

...Based on sensor data

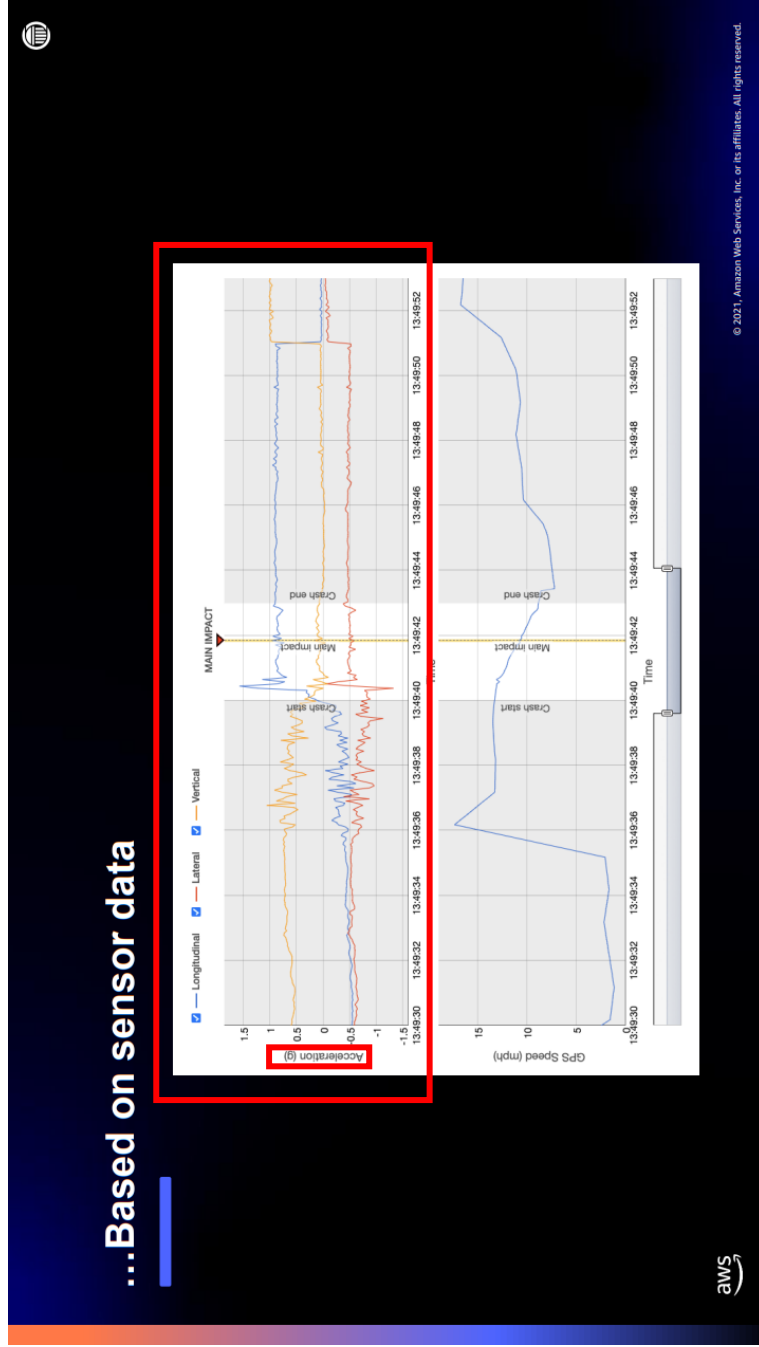


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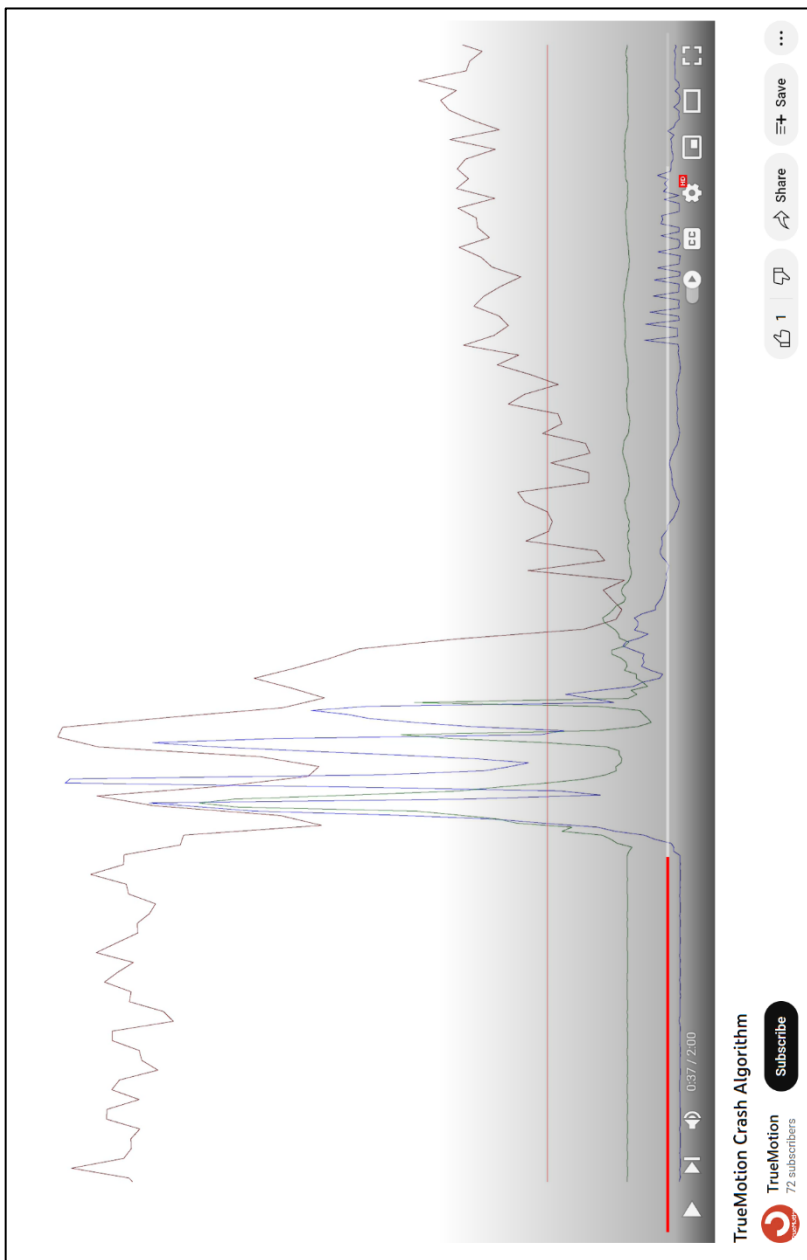
https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

The first detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) is operable to generate the first detector signal when the detected acceleration along the single axis is equal to or greater than a predetermined value.

wherein said first detecting component is operable to generate the first detector signal when the detected acceleration along the single axis is equal to or greater than a predetermined value.

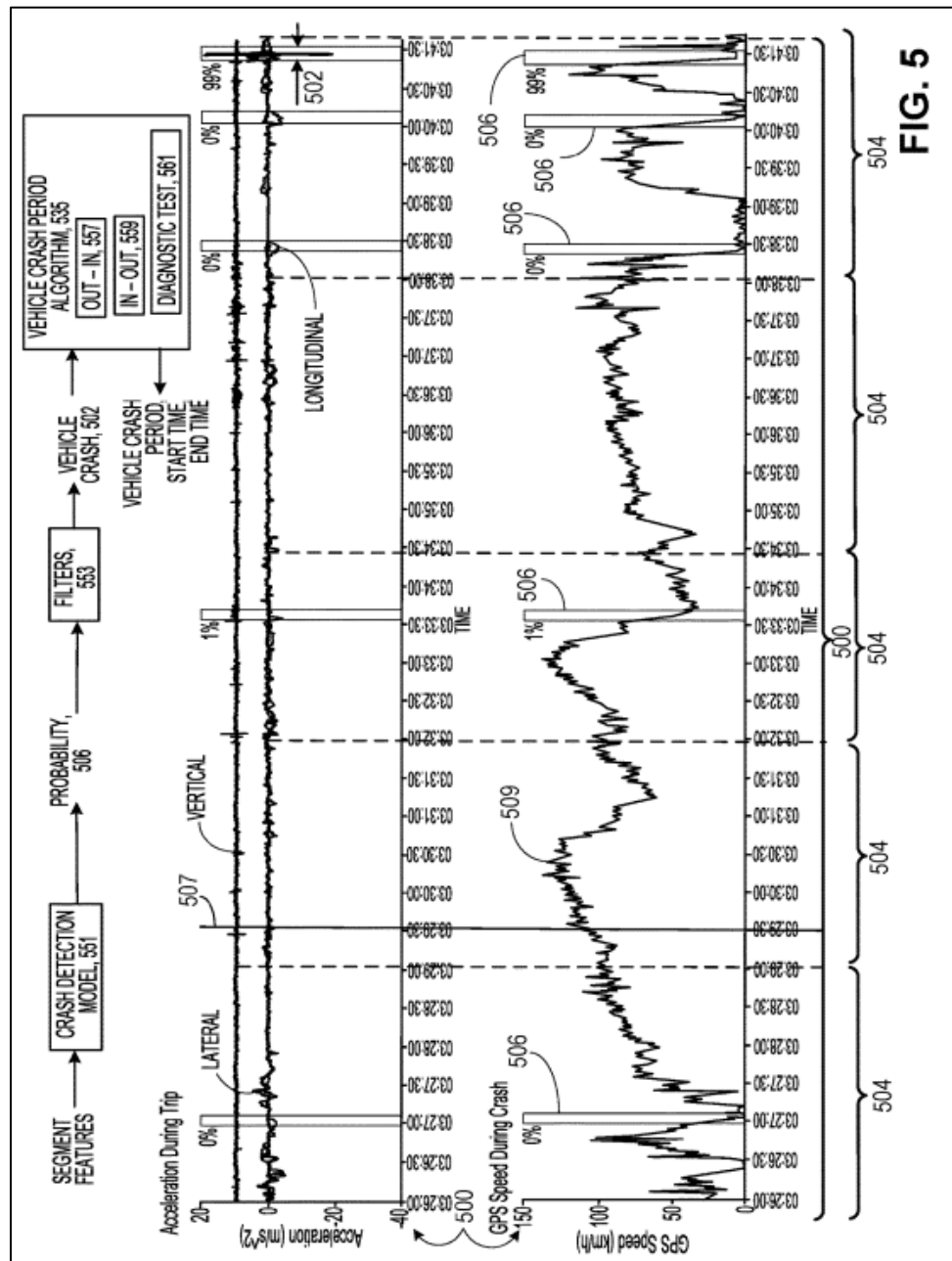


https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).



<https://www.youtube.com/watch?v=xfs22yuEe04>. (Last accessed August 21, 2023).

Figure 5 of the '037 Patent (shown below) “includes acceleration data 505 (along three axes, longitudinal, latitudinal, and vertical) at successive times 507 during the vehicle trip (the upper graph) and the GPS speeds 509 determined at successive times 507 during the vehicle trip, including during portions of the vehicle crash period.” ’037 Patent at 7:53-59.



“The out-in method may start with a wide (overly long duration) estimate of the vehicle crash period and may narrow the period until it matches what we call the true duration of the vehicle crash period 508. For instance, the out-in method may begin by partitioning the trip 500 into estimated “before-crash,” “crash,” and “after-crash” segments. Any segment that ends more than 10 seconds (for example) prior to a start time of the vehicle crash 502 is designated a before-crash segment. Any segment that begins within 10 seconds (for example) after the start time of the vehicle crash period is designated a crash segment. Any segment that begins more than 10 seconds (for example) after the start time of the vehicle crash is designated as an after-crash segment. The start time of the estimated vehicle crash period may be increased (e.g., moved later in time) until the algorithm encounters a sample of the telematics data 504 that **satisfies a predetermined threshold**, *such as acceleration data that differs in any axis by more than 4 m/s² (for example) from the average oriented acceleration of the before-crash segment*, or until the process reaches the start time of the estimated vehicle crash period 508. In addition, the end time of the estimated vehicle crash period may be decreased (moved earlier in time) until the algorithm encounters a sample of the telematics data 504 that satisfies a predetermined threshold, such as acceleration data that differs by more than 4 m/s² in any axis from the average oriented acceleration of the after-crash segment, or until the algorithm reaches the end time of the vehicle crash period 508. The start and end times of the resulting vehicle crash segment may define the out-in estimate of the vehicle crash period 508 for the particular vehicle crash 502.” *Id.* at 12:54-13:17.

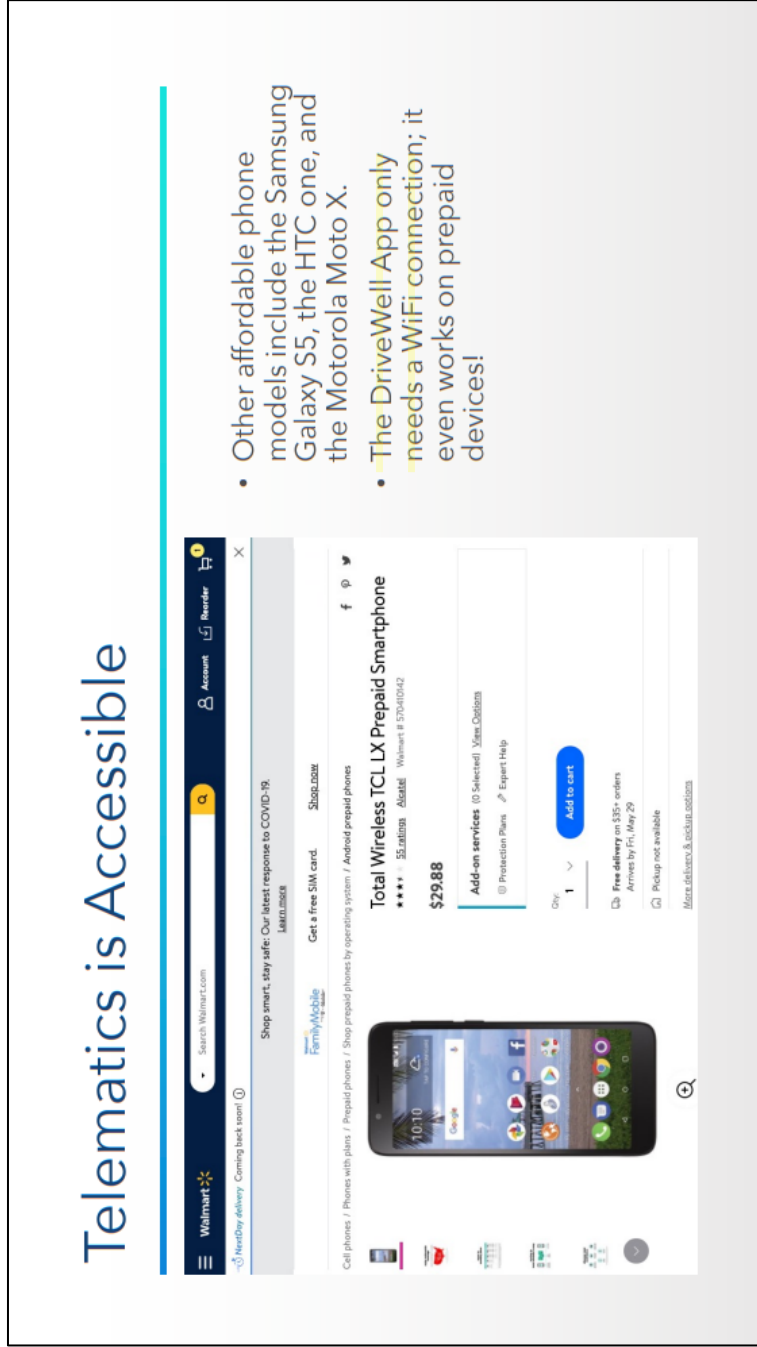
Claim 5

The device of claim 1, further comprising a communication component operable to wirelessly communicate with a network.

CMT's Accused Instrumentalities

See claim 1.

One or more of the Accused Instrumentalities includes a communication component (e.g., software module(s) using a cellular/wi-fi transceiver) operable to wirelessly communicate with a network.



https://content.naic.org/sites/default/files/call_materials/NAIC%203-30-21.pdf. (Last accessed August 21, 2023).



Crash Detector provides **real-time notification** of a vehicle crash to send roadside assistance to policyholders when they need it most. Providing critical details like GPS location, time, and driver identification, Crash Detector enables insurers to save valuable time in emergency situations and improve the customer experience with added services. Plus, insurers can receive an earlier and more accurate First Notice of Loss with immediate crash notifications.

<https://www.cmt telematics.com/blog/claims-studio-reconstruct-and-detect-crashes/>. (Last accessed August 21, 2023).

Proactive claims outreach

Receive an earlier and more accurate First Notice of Loss with initial alerts of crash. **Call or send a push notification to the driver to confirm the crash and kick-start a claim.** You can even pre-fill crash details from Claims Reporter in your claims app, so customers can easily start a claim from their phones.

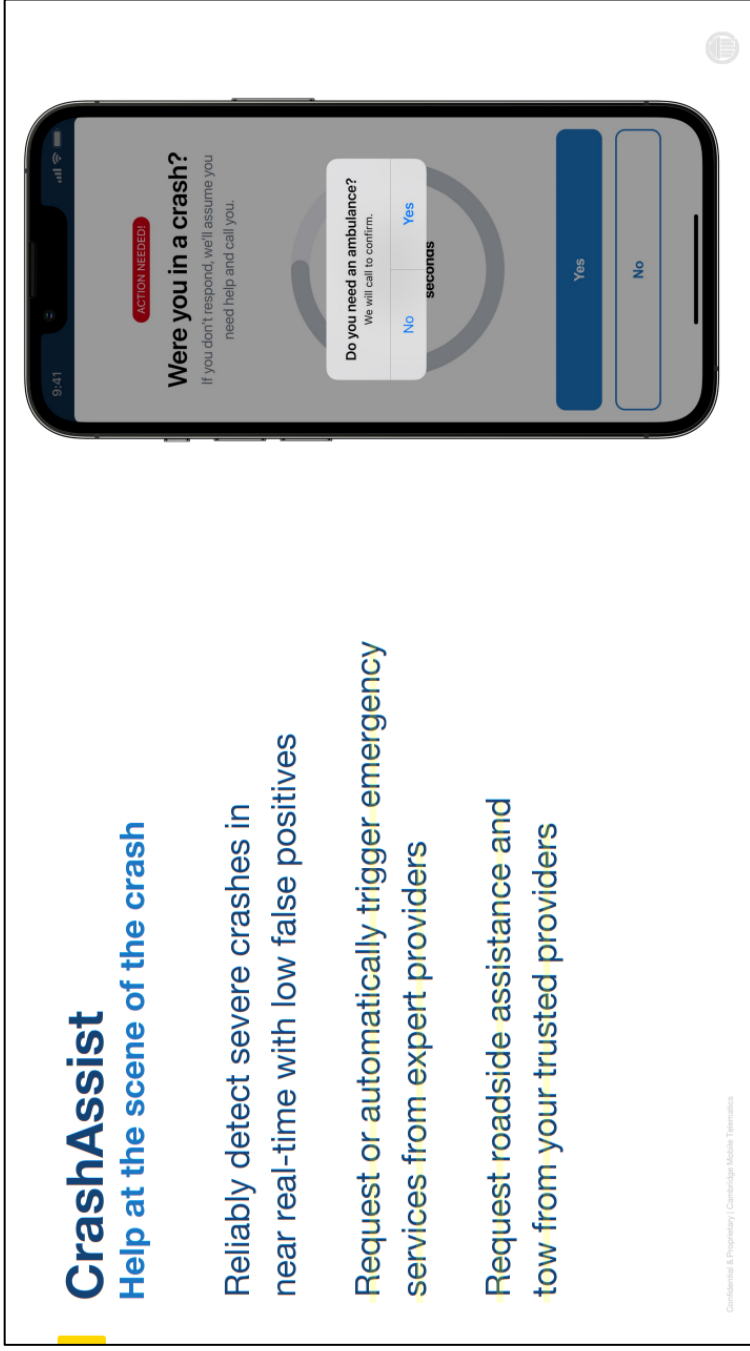
<https://www.cmt telematics.com/claims-reporter/>. (Last accessed August 21, 2023).

CrashAssist

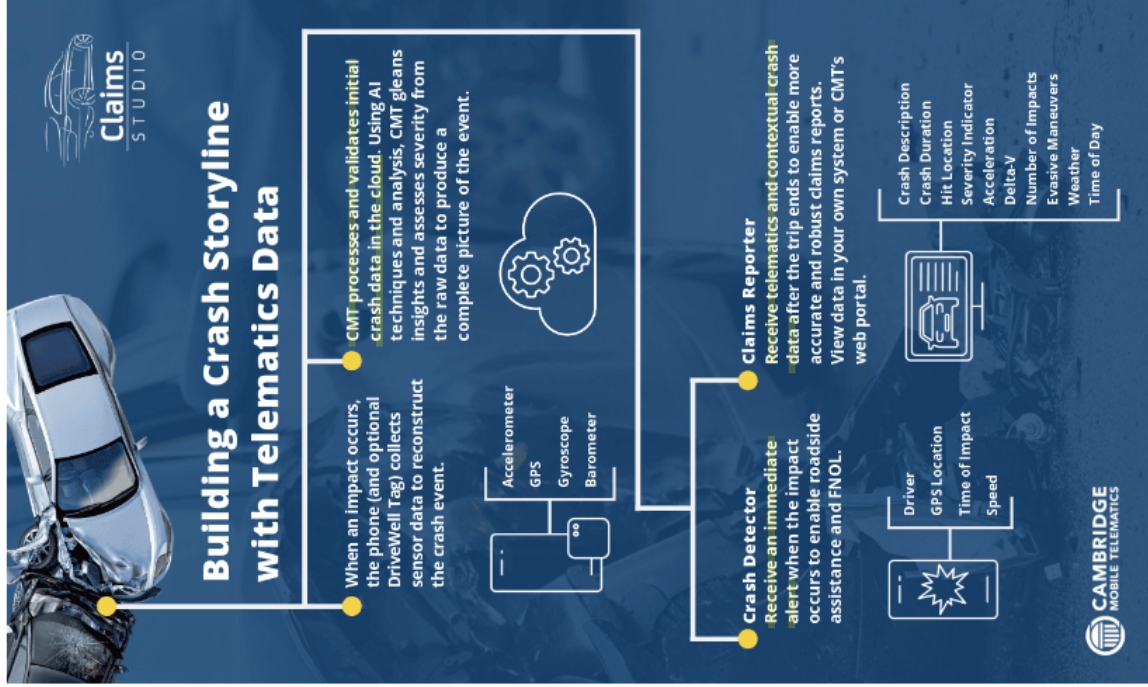
Help at the scene of the crash

- Reliably detect severe crashes in near real-time with low false positives
- Request or automatically trigger emergency services from expert providers
- Request roadside assistance and tow from your trusted providers

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http://cap.csail.mit.edu/sites/default/files/session-pdfs/Madden_Machine%20Learning%20%26%20AI%20at%20Cambridge%20Mobile%20Telematics.pdf. (Last accessed August 21, 2023).



<https://www.cmttelematics.com/blog/claims-studio-reconstruct-and-detect-crashes/>. (Last accessed August 21, 2023).

Claim 6	CMT's Accused Instrumentalities
The device of claim 1, further comprising: an operating component operable to operate in a first mode and a second mode, wherein said operating component is operable to switch from operating in the first mode to operating in the second mode based on the crash mode signal.	See claim 1. One or more of the Accused Instrumentalities includes an operating component (e.g., software module(s) using mobile processor(s)) operable to operate in a first mode (e.g., recording mode) and a second mode (e.g., crash mode), wherein the operating component is operable to switch from operating in the first mode to operating in the second mode based on the crash mode signal. In a first mode of operation (e.g., recording mode), one or more of the Accused Instrumentalities gathers e.g., sensor data from the user's smartphone to track/record driving behaviors. What You Get With the DriveWell SDK ✓ Automatic Trip Recording ✓ Identifying Driver versus Passenger ✓ Identifying Car Trips versus Other Transport Modes ✓ Measuring Risky Events (Including Phone Distraction!) ✓ Displaying Trip Details in the App https://www.cmtelomatics.com/cmt-mobile-sdk/. (Last accessed August 21, 2023).

How in-app scoring works



Step 1

Risky driving events are detected and measured per trip



Step 2

Each trip receives a star rating so the driver can quickly identify areas of improvement



Step 3

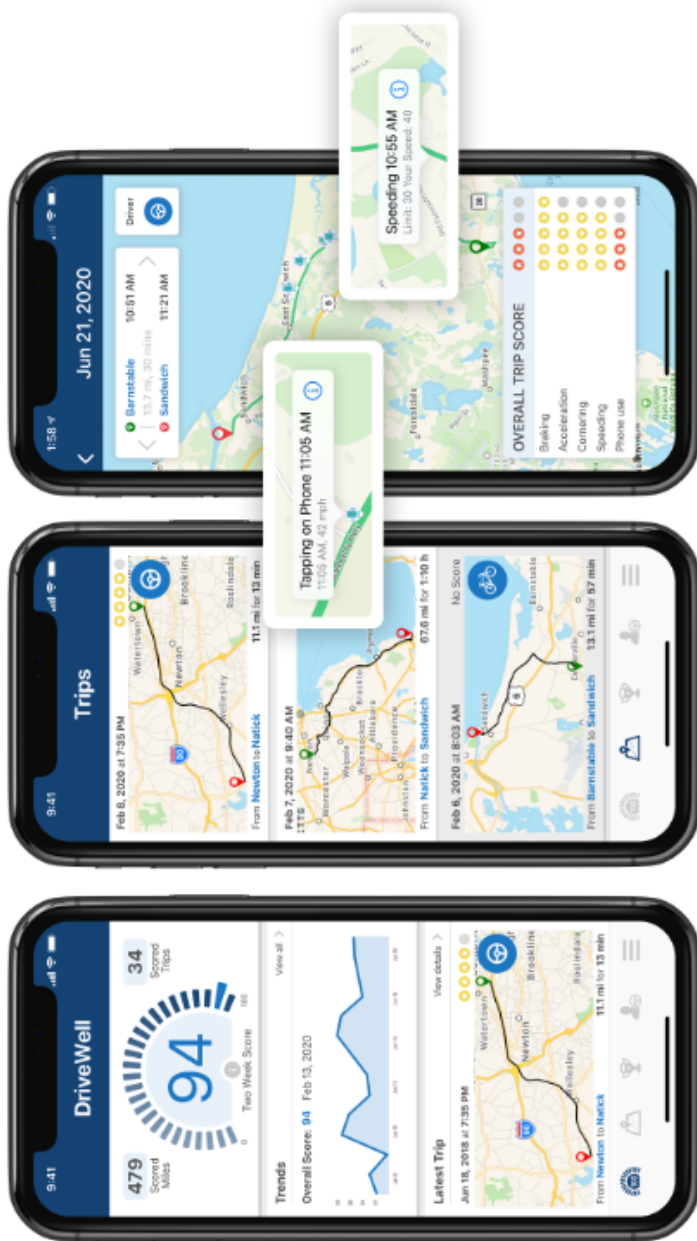
An overall Behavioral Score is regularly calculated over a short-term assessment period



Step 4

The Behavioral Score is surfaced to the driver in the app, enabling rewards, achievements, and other features

<https://www.cmtelomatics.com/drivewell-score/>. (Last accessed August 21, 2023).



<https://www.cmtlematics.com/drivewell-score/>. (Last accessed August 21, 2023).

Upon detection of a crash (e.g., crash mode), e.g., based on a crash mode signal, one or more of the Accused Instrumentalities “sends help in near real time, drive digital adoption, and unlocks proactive claims and automation.”

DriveWell Crash & Claims

DriveWell Crash & Claims detects car crashes and sends help in near real time, drives digital adoption, and unlocks proactive claims and automation.

<https://www.cmtelomatics.com/safe-driving-technology/product-suite/#drivewell-risk>. (Last accessed August 21, 2023).

How DriveWell Crash Works

DriveWell Crash leverages advanced machine learning techniques and sensor data from smartphones and IoT devices to detect car crashes.



Step 1

Sensors from a smartphone or IoT device detect a car crash



Step 2

CMT's on-phone crash algorithms analyze the data and verify that there was a crash.



Step 3

CMT uses crash APIs to alert your systems with critical crash data like location, time, driver ID, crash intensity, g-force, and speed.



Step 4

You choose how to respond. Proactively send help to the scene of the crash or start the claims process.

<https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

Claim 7	CMT's Accused Instrumentalities
A method for use with a vehicle, said method comprising:	One or more of the Accused Instrumentalities performs a method for use with a vehicle. One or more of the Accused Instrumentalities “gathers sensor data from millions of IoT devices—including smartphones, proprietary tags, connected vehicles, dashcams, and third-party devices—and fuses them with contextual data to create a unified view of vehicle and driver behavior.” https://www.cmtelematics.com/safe-driving-technology/how-it-works/. (Last accessed August 21, 2023). CMT hosts and runs mobile applications for use on Android and iOS platforms that are deployed on drivers’ smartphones. https://apps.apple.com/us/developer/cambridge-mobile-telematics-inc/id655601790?see-all=i-phone-apps (Last accessed August 21, 2023); https://play.google.com/store/apps/developer?id=Cambridge+Mobile+Telematics&hl=en_US&gl=US (Last accessed August 21, 2023).

Every company has unique business needs. Our goal was to develop a solution that meets the unique needs of all of our partners. DriveWell products can be used separately or together to develop a user-forward mobile telematics program that is right for your business and drivers.

DriveWell SDK



Collect meaningful sensor data and harness CMT's expertise in your own app

DriveWell Tag



Collect vehicle and crash data with a wireless, easy-to-install device

DriveWell Score



Measure driver risk with scoring models based on millions of trips and billions of miles

DriveWell Engage



Increase customer engagement and motivate users to improve

DriveWell Fleet



Reduce fleet risk and costs with the mobile phone and DriveWell Tag

<https://www.cmtelomatics.com/blog/drivewell-assess-risk-and-encourage-safer-driving/>. (Last accessed August 21, 2023).

What Data is Collected?

The following data is required to accurately assess driving risk and motivate drivers to improve

Smartphone app

- **Accelerometer data** helps identify mileage and is used in the calculation of phone motion, screen interaction, and acceleration-based (hard braking, acceleration, and excessive speeding events)
- **Gyroscope data** is used in the calculation of phone motion, screen interaction, and acceleration-based events

DriveWell Tag

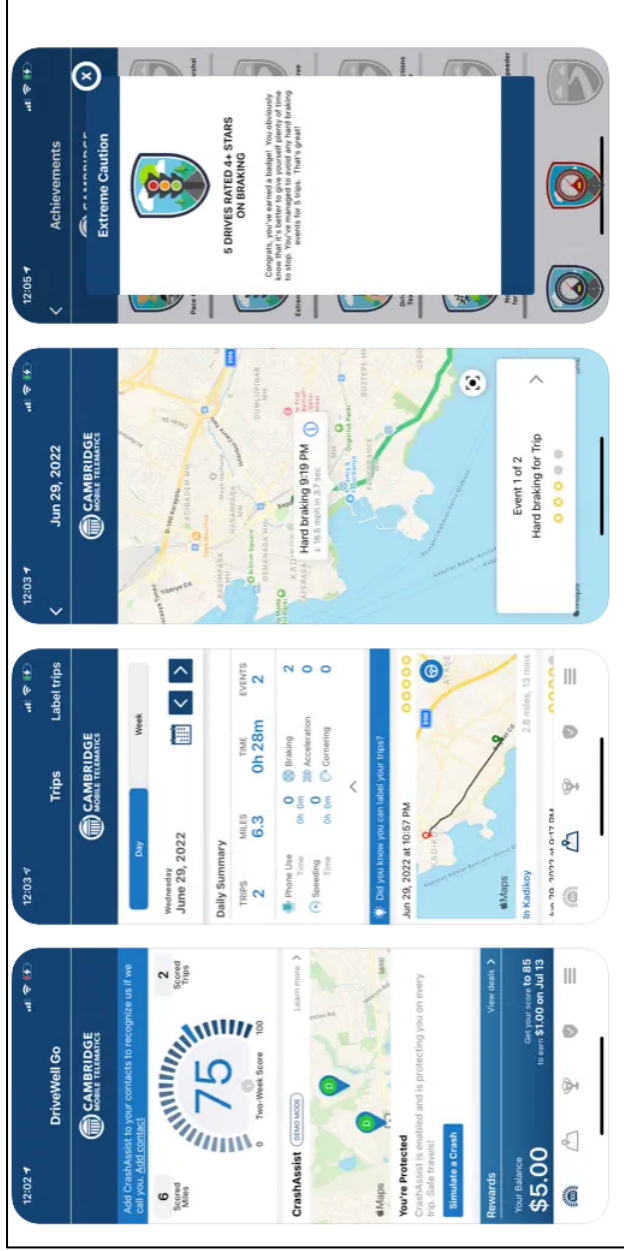
- **High-frequency accelerometer data** detects when and how the vehicle is moving, is used to calculate overall mileage, and identifies acceleration-based events

What smartphone permissions are required?

- **Location:** to collect GPS data
- **Bluetooth:** to connect to the Tag
- **Motion & activity:** helps to detect when a trip starts & stops

https://content.naic.org/sites/default/files/call_materials/NAIC%203-30-21.pdf. (Last accessed August 21, 2023).

For example, CMT’s mobile applications “automatically detect[] when driving starts and stops, and uses the phone’s sensors to measure your vehicle’s driving dynamics.” <https://apps.apple.com/us/app/drivewell-go/id655601647> (Last accessed August 21, 2023); <https://apps.apple.com/ky/app/drivewell-fleet/id1485885494> (Last accessed August 21, 2023).



<https://apps.apple.com/us/app/drivewell-go/id655601647>. (Last accessed August 21, 2023).

On information and belief, one or more of the Accused Instrumentalities is described, in part, in U.S. Patent No. 10,246,037 (the “’037 Patent”), assigned to CMT. The ’037 Patent describes a method and system for automatically generating a documentation of a vehicle crash. The ’037 Patent states that “the telematics device includes a mobile device.” ’037 Patent at 2:48–49. The mobile device can obtain telematics data associated with a vehicle by, for example, “using GPS, accelerometers, barometers, gyroscopes, or other sensors and modules built into the mobile device 204.” *Id.* at 6:1–8.

detecting, via a mode-determining component, whether the mode-determining component is in the vehicle; generating, via the mode-determining component, an in-vehicle signal;	One or more of the Accused Instrumentalities detects, via a mode-determining component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)), whether the mode-determining component is in the vehicle. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensor(s), sensor data, and/or mobile processor(s) to detect “whether a user is driver or passenger (or in a car at all)” and generate an in-vehicle signal (e.g., indicating the device is in a vehicle). https://news.mit.edu/2016/startup-smartphone-app-safe-driving-0105. (Last accessed August 21, 2023).
	Provide excellent user experience Apps automatically start and stop trips without user action and capture sensor data with minimal battery impact. https://www.cmt telematics.com/cmt-mobile-sdk/. (Last accessed August 21, 2023).

	Value for Drivers Like We're Not Even There... • Automatic trip recording and classification for low driver effort • Minimal battery and data usage for high user satisfaction • Location data is only collected for trip recording to ensure driver privacy https://www.cmtlematics.com/cmt-mobile-sdk/. (Last accessed August 21, 2023). For example, CMT's DriveWell app “<i>automatically detects when driving starts and stops</i>, and uses the phone’s sensors to measure your vehicle’s driving dynamics.” https://apps.apple.com/us/app/drivewell-go/id655601647. (Last accessed August 21, 2023).
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detecting, via a first detecting component, a first parameter; generating, via the first detecting component, a first detector signal based on the first detected parameter;	One or more of the Accused Instrumentalities detects, via a first detecting component (e.g., software module(s) using smartphone sensor(s) (e.g., accelerometer and/or gyroscope, shown in the orange box below), sensor data, and/or mobile processor(s)), a first parameter (e.g., change in velocity, delta-v), and generates, via the first detecting component, a first detector signal based on the first detected parameter (e.g., change in velocity, delta-v). One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior Accelerometer Identifies phone position with anti-based motion sensing. Gyroscope Works with accelerometer to determine position of phone. Magnetometer Measures magnetic fields. GPS Identifies phone location with multiple satellites. Barometer Measures air pressure. Proximity sensor Determines the proximity of the phone to nearby objects. Ambient Light Measures the amount of light near the phone. https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).
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How DriveWell Crash Works

DriveWell Crash leverages advanced machine learning techniques and sensor data from smartphones and IoT devices to detect car crashes.



Step 1

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Step 2

CMT's on-phone crash algorithms analyze the data and verify that there was a crash.



Step 3

CMT uses crash APIs to alert your systems with critical crash data like location, time, driver ID, crash intensity, g-force, and speed.



Step 4

You choose how to respond. Proactively send help to the scene of the crash or start the claims process.

<https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

detecting, via a second detecting component, a second parameter; generating, via the second detecting component, a second detector signal based on the second detected parameter; and	One or more of the Accused Instrumentalities detects, via a second detecting component (e.g., software module(s) using smartphone sensor(s) (e.g., accelerometer, shown in the orange box below), sensor data, and/or mobile processor(s)), a second parameter (e.g., acceleration), and generates, via the second detecting component, a second detector signal based on the second detected parameter. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).
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How DriveWell Crash Works

DriveWell Crash leverages advanced machine learning techniques and sensor data from smartphones and IoT devices to detect car crashes.



Step 1

Sensors from a smartphone or IoT device detect a car crash



Step 2

CMT's on-phone crash algorithms analyze the data and verify that there was a crash.



Step 3

CMT uses crash APIs to alert your systems with critical crash data like location, time, driver ID, crash intensity, g-force, and speed.

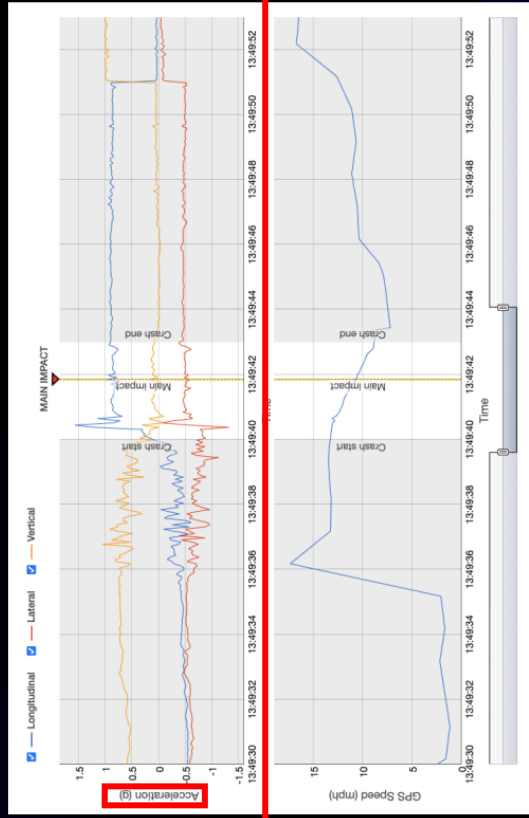


Step 4

You choose how to respond. Proactively send help to the scene of the crash or start the claims process.

<https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

...Based on sensor data



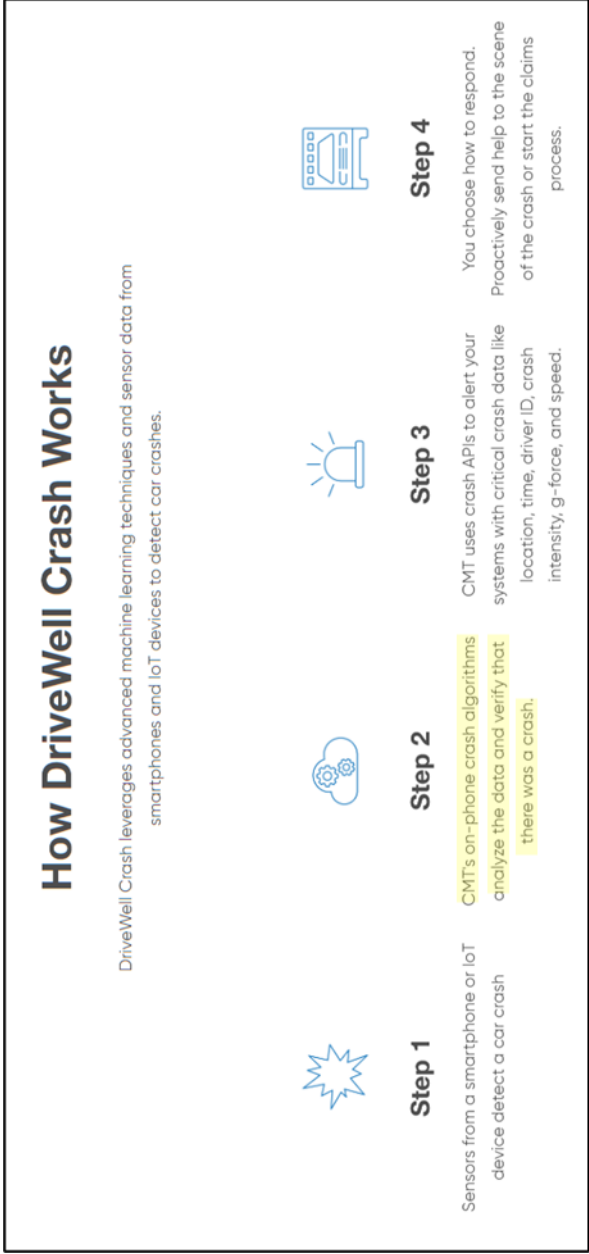
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https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

generating, via the mode-determining component, a crash mode signal based on the in-vehicle signal, the first detector signal and the second detector signal.

One or more of the Accused Instrumentalities generates, via the mode-determining component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)), a crash mode signal based on the in-vehicle signal, the first detector signal and the second detector signal.

“DriveWell Crash leverages advanced machine learning techniques and sensor data from smartphones and IoT devices to detect car crashes.” <https://www.cmtelomatics.com/crash-detector/>.



<https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

Crash ID: 1	Trip Id: 20003019	Driver Id: 2000301	Vehicle Id: 50	Crash time: 9/2/2017, 3:35:26.	Crash location: 42.366681 -71.237827	Crash duration: Validated?: no
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Crash Description

The driver was traveling at 49 km/h at 15:35:26 on the 2017/09/02. At 15:35:28 a collision occurred on the left side of the vehicle while the vehicle was traveling at 47.0 km/h. The collision event ended at 15:35:30 when the vehicle reached a speed of 28 km/h. The vehicle was yawing during the crash. The driver did not continue on their trip after the crash event.

Hit Location



Weather Data: Waltham, MA

Humidity: 57%
Pressure: 1015 hPa
Wind: 14 km/h SSE
Day or Night: Day
Sun Facing Driver: No
Solar Position: 280.0 Az, 4.0 Alt

Speed Info

Speed Before Crash	49 km/h
Speed At Impact	47 km/h
Speed After Impact	28 km/h
Delta-V	-21 km/h
Mean Acceleration	20 m/s ²

Crash Info

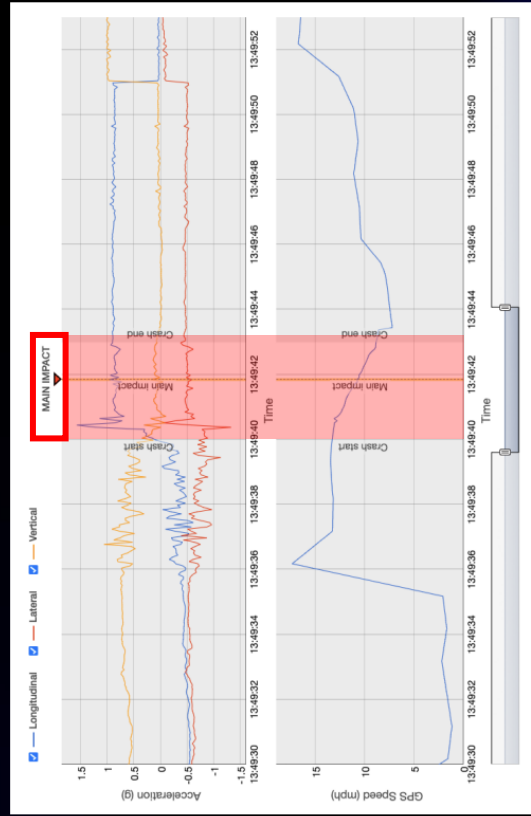
Crash Duration	3.87s
Number of Impacts	1
Evasive Maneuver	No Reaction
Yaw During Crash	No

Vehicle Info

Airbag Deployed	No
Vehicle Rollover	No
Driven Post Crash	No

<https://apnews.com/article/technology-business-smartphones-0e1197c6cb0b4673a27979ceccc61290>. (Last accessed August 21, 2023).

...Based on sensor data



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https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

Claim 8	CMT's Accused Instrumentalities
The method of claim 7, wherein said detecting a first parameter comprises detecting one of the group consisting of magnetic fields in any of three dimensions, electric fields in any of three dimensions, electro-magnetic fields in any of three dimensions, velocity in any of three dimensions, acceleration in any of three dimensions, angular velocity in any of three dimensions, angular acceleration in any of three dimensions, geodetic position, sound, temperature, vibrations in any of three dimensions, pressure in any of three dimensions, biometrics, contents of surrounding atmosphere, a change in electric fields in any of three dimensions, a change in magnetic fields in any of three dimensions, a change in	See claims 7 and 2.

electro-magnetic fields in any of three dimensions, a change in velocity in any of three dimensions, a change in acceleration in any of three dimensions, a change in angular velocity in any of three dimensions, a change in angular acceleration in any of three dimensions, a change in geodetic position in any of three dimensions, a change in sound, a change in temperature, a change in vibrations in any of three dimensions, a change in pressure in any of three dimensions, a change in biometrics, a change in contents of surrounding atmosphere and combinations thereof.

Claim 9	CMT's Accused Instrumentalities
The method of claim 8, wherein said detecting a first parameter comprises detecting a parameter associated with deployment of an airbag within the vehicle.	See claims 8 and 3.
Claim 10	CMT's Accused Instrumentalities
The method of claim 8, wherein said detecting a first parameter comprises detecting acceleration along a single axis, and wherein said generating a first detector signal comprises generating the first detector signal when the detected acceleration along the single axis is equal to or greater than a predetermined value.	See claims 8 and 4.
Claim 11	CMT's Accused Instrumentalities
The method of claim 7, further comprising wirelessly communicating, via a communication component, with a network.	See claims 7 and 5.

Claim 12	CMT's Accused Instrumentalities
The method of claim 7, further comprising: operating an operating component in a first mode; and switching operation of the operating component from the first mode to a second mode based on the crash mode signal.	See claims 7 and 6.

Claim 13	CMT's Accused Instrumentalities
A non-transitory, computer-readable media having computer-readable instructions stored thereon, for use with a vehicle, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method comprising:	One or more of the Accused Instrumentalities is/includes a non-transitory, computer-readable media having computer-readable instructions stored thereon, for use with a vehicle. One or more of the Accused Instrumentalities is also used within mobile devices, such as smartphones or tablets. One or more of the Accused Instrumentalities is capable of, and intended to be, used with a vehicle. It “gathers sensor data from millions of IoT devices—including smartphones, proprietary tags, connected vehicles, dashcams, and third-party devices—and fuses them with contextual data to create a unified view of vehicle and driver behavior.” https://www.cmtelomatics.com/safe-driving-technology/how-it-works/. (Last accessed August 21, 2023). CMT hosts and runs mobile applications for use on Android and iOS platforms that are deployed on drivers’ smartphones. https://apps.apple.com/us/developer/cambridge-mobile-telematics-inc/id655601790?see-all=i-phone-apps (Last accessed August 21, 2023); https://play.google.com/store/apps/developer?id=Cambridge+Mobile+Telematics&hl=en_US&gl=US (Last accessed August 21, 2023).
	Smartphones include memory which stores instructions, and processors which are capable of executing the instructions.

Every company has unique business needs. Our goal was to develop a solution that meets the unique needs of all of our partners. DriveWell products can be used separately or together to develop a user-forward mobile telematics program that is right for your business and drivers.

DriveWell SDK



Collect meaningful sensor data and harness CMT's expertise in your own app

DriveWell Tag



Collect vehicle and crash data with a wireless, easy-to-install device

DriveWell Score



Measure driver risk with scoring models based on millions of trips and billions of miles

DriveWell Engage



Increase customer engagement and motivate users to improve

DriveWell Fleet



Reduce fleet risk and costs with the mobile phone and DriveWell Tag

<https://www.cmtelomatics.com/blog/drivewell-assess-risk-and-encourage-safer-driving/>. (Last accessed August 21, 2023).

What Data is Collected?

The following data is required to accurately assess driving risk and motivate drivers to improve

Smartphone app

- **Accelerometer data** helps identify mileage and is used in the calculation of phone motion, screen interaction, and acceleration-based (hard braking, acceleration, and excessive speeding events)
- **Gyroscope data** is used in the calculation of phone motion, screen interaction, and acceleration-based events

DriveWell Tag

- **High-frequency accelerometer data** detects when and how the vehicle is moving, is used to calculate overall mileage, and identifies acceleration-based events

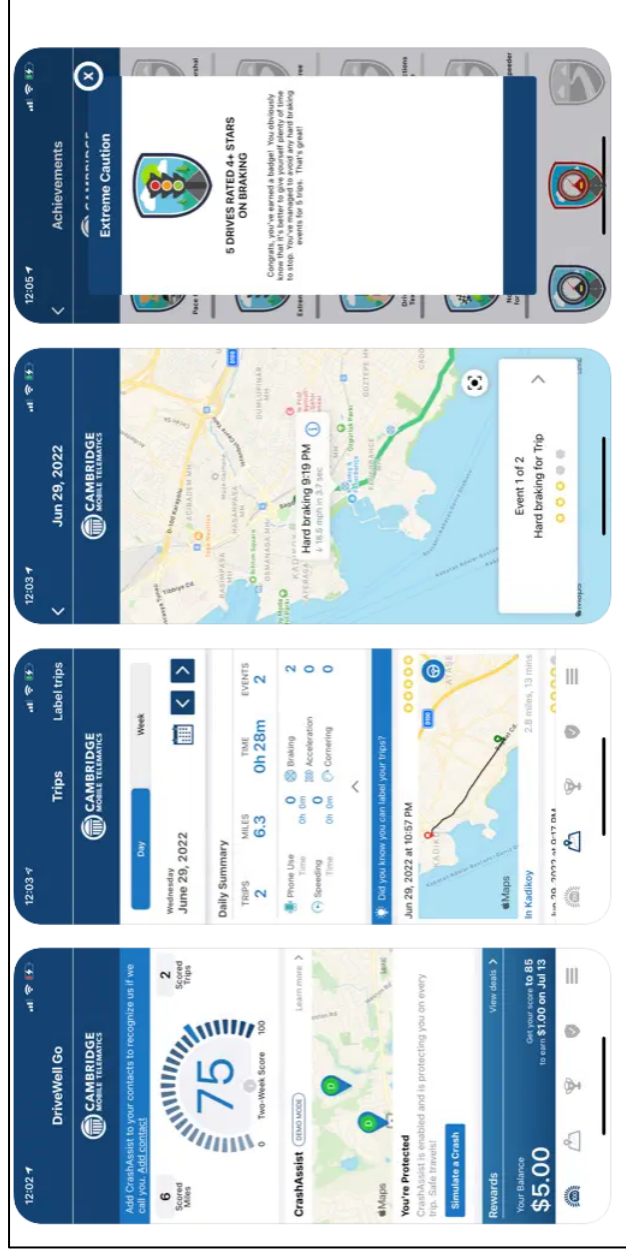
What smartphone permissions are required?

- **Location:** to collect GPS data
- **Bluetooth:** to connect to the Tag
- **Motion & activity:** helps to detect when a trip starts & stops

- **GPS data** helps detect when the vehicle is moving, provide a view of the trip route, and determines the speed limits encountered for speeding events, but location is not its own measurement

https://content.naic.org/sites/default/files/call_materials/NAIC%203-30-21.pdf. (Last accessed August 21, 2023).

For example, CMT’s mobile applications “automatically detect[] when driving starts and stops, and uses the phone’s sensors to measure your vehicle’s driving dynamics.” <https://apps.apple.com/us/app/drivewell-go/id655601647> (Last accessed August 21, 2023); <https://apps.apple.com/ky/app/drivewell-fleet/id1485885494> (Last accessed August 21, 2023).



<https://apps.apple.com/us/app/drivewell-go/id655601647>. (Last accessed August 21, 2023).

On information and belief, one or more of the Accused Instrumentalities is described, in part, in U.S. Patent No. 10,246,037 (the “’037 Patent”), assigned to CMT. The ’037 Patent describes a method and system for automatically generating a documentation of a vehicle crash. The ’037 Patent states that “the telematics device includes a mobile device.” ’037 Patent at 2:48–49. The mobile device can obtain telematics data associated with a vehicle by, for example, “using GPS, accelerometers, barometers, gyroscopes, or other sensors and modules built into the mobile device 204.” *Id.* at 6:1–8.

detecting, via a mode-determining component, whether the mode-determining component is in the vehicle; generating, via the mode-determining component, an in-vehicle signal	One or more of the Accused Instrumentalities detects, via a mode-determining component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)), whether the mode-determining component is in the vehicle, and generates, via the mode-determining component, an in-vehicle signal. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensor(s), sensor data, and/or mobile processor(s) to detect “whether a user is driver or passenger (or in a car at all),” and generate an in-vehicle signal (e.g., indicating the device is in a vehicle). https://news.mit.edu/2016/startup-smartphone-app-safe-driving-0105. (Last accessed August 21, 2023).
	Provide excellent user experience Apps automatically start and stop trips without user action and capture sensor data with minimal battery impact. https://www.cmt telematics.com/cmt-mobile-sdk/. (Last accessed August 21, 2023).

	Value for Drivers Like We're Not Even There... • Automatic trip recording and classification for low driver effort • Minimal battery and data usage for high user satisfaction • Location data is only collected for trip recording to ensure driver privacy https://www.cmtlematics.com/cmt-mobile-sdk/. (Last accessed August 21, 2023). For example, CMT's DriveWell app “<i>automatically detects when driving starts and stops</i>, and uses the phone’s sensors to measure your vehicle’s driving dynamics.” https://apps.apple.com/us/app/drivewell-go/id655601647. (Last accessed August 21, 2023).
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detecting, via a first detecting component, a first parameter; generating, via the first detecting component, a first detector signal based on the first detected parameter;	One or more of the Accused Instrumentalities detects, via a first detecting component (e.g., software module(s) using smartphone sensor(s) (e.g., accelerometer and/or gyroscope, shown in the orange box below), sensor data, and/or mobile processor(s)), a first parameter (e.g., change in velocity, delta-v), and generates, via the first detecting component, a first detector signal based on the first detected parameter (e.g., change in velocity, delta-v). One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior Accelerometer Identifies phone position with anti-based motion sensing. Gyroscope Works with accelerometer to determine position of phone. Magnetometer Measures magnetic fields. GPS Identifies phone location with multiple satellites. Barometer Measures air pressure. Proximity sensor Determines the proximity of the phone to nearby objects. Ambient Light Measures the amount of light near the phone. https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).
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How DriveWell Crash Works

DriveWell Crash leverages advanced machine learning techniques and sensor data from smartphones and IoT devices to detect car crashes.



Step 1

Sensors from a smartphone or IoT device detect a car crash



Step 2

CMT's on-phone crash algorithms analyze the data and verify that there was a crash.



Step 3

CMT uses crash APIs to alert your systems with critical crash data like location, time, driver ID, crash intensity, g-force, and speed.



Step 4

You choose how to respond. Proactively send help to the scene of the crash or start the claims process.

<https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

detecting, via a second detecting component, a second parameter; generating, via the second detecting component, a second detector signal based on the second detected parameter;	One or more of the Accused Instrumentalities detects, via a second detecting component (e.g., software module(s) using smartphone sensor(s) (e.g., accelerometer, shown in the orange box below), sensor data, and/or mobile processor(s)), a second parameter (e.g., acceleration), and generates, via the second detecting component, a second detector signal based on the second detected parameter. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior Accelerometer Identifies phone position with anti-based motion sensing. (Highlighted in orange box) Gyroscope Works with accelerometer to determine position of phone. Magnetometer Measures magnetic fields. GPS Identifies phone location with multiple satellites. Barometer Measures air pressure. Proximity sensor Determines the proximity of the phone to nearby objects. Ambient Light Measures the amount of light near the phone. https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).
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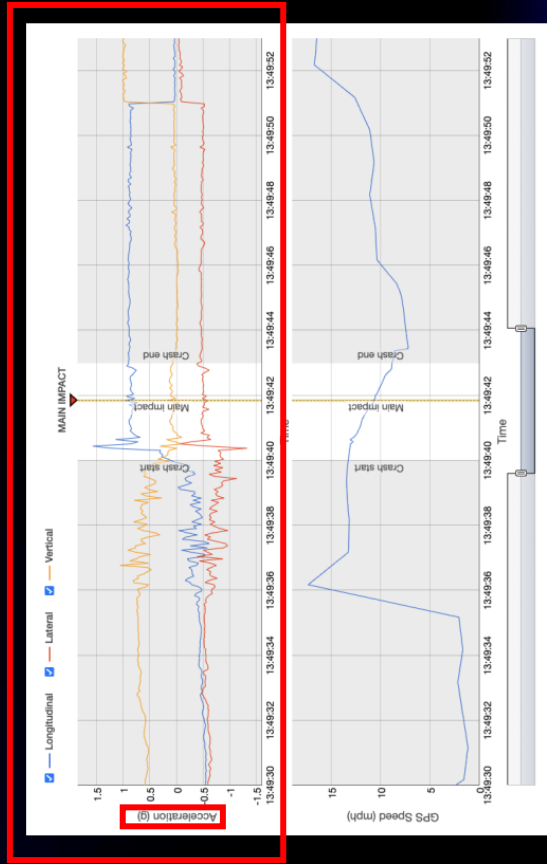


Step 4

You choose how to respond. Proactively send help to the scene of the crash or start the claims process.

<https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

...Based on sensor data

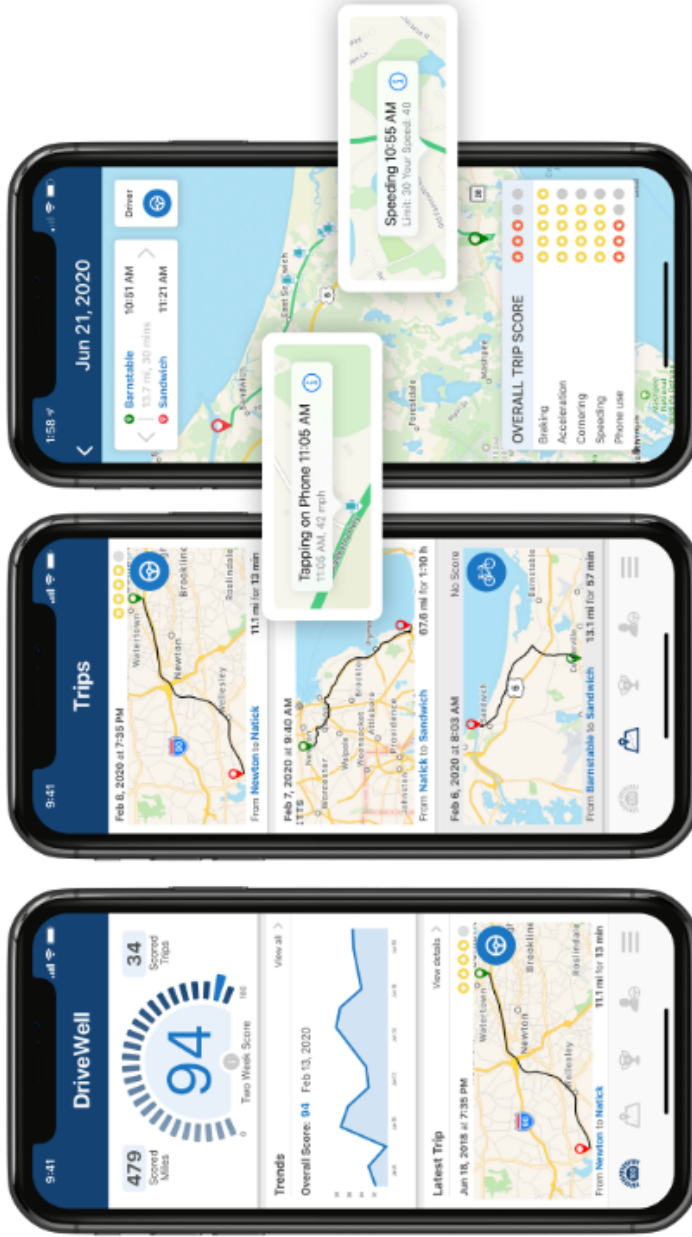


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https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

operating an operating component in a first mode;	One or more of the Accused Instrumentalities operates an operating component (e.g., software module(s) using mobile processor(s)) in a first mode (e.g., recording mode). In a first mode of operation (e.g., recording mode), one or more of the Accused Instrumentalities gathers e.g., sensor data from the user's smartphone to track/record driving behaviors. What You Get With the DriveWell SDK ✓ Automatic Trip Recording ✓ Identifying Driver versus Passenger ✓ Identifying Car Trips versus Other Transport Modes ✓ Measuring Risky Events (Including Phone Distraction!) ✓ Displaying Trip Details in the App https://www.cmtelomatics.com/cmt-mobile-sdk/. (Last accessed August 21, 2023). How in-app scoring works  Step 1 Risky driving events are detected and measured per trip Step 2 Each trip receives a star rating so the driver can quickly identify areas of improvement Step 3 An overall Behavioral Score is regularly calculated over a short-term assessment period Step 4 The Behavioral Score is surfaced to the driver in the app, enabling rewards, achievements, and other features https://www.cmtelomatics.com/drivewell-score/. (Last accessed August 21, 2023).
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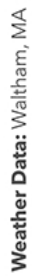
<https://www.cmtelenatics.com/drivewell-score/>. (Last accessed August 21, 2023).

generating, via the mode-determining component, a crash mode signal based on the in-vehicle signal, the first detector signal and the second detector signal; and	One or more of the Accused Instrumentalities generates, via the mode-determining component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)), a crash mode signal based on the in-vehicle signal, the first detector signal, and the second detector signal. “DriveWell Crash leverages advanced machine learning techniques and sensor data from smartphones and IoT devices to detect car crashes.” https://www.cmtelomatics.com/crash-detector/. (Last accessed August 21, 2023). How DriveWell Crash Works DriveWell Crash leverages advanced machine learning techniques and sensor data from smartphones and IoT devices to detect car crashes. <table><tr><td></td><td></td><td></td><td></td></tr><tr><td>Step 1</td><td>Step 2</td><td>Step 3</td><td>Step 4</td></tr><tr><td>Sensors from a smartphone or IoT device detect a car crash</td><td>CMT's on-phone crash algorithms analyze the data and verify that there was a crash.</td><td>CMT uses crash APIs to alert your systems with critical crash data like location, time, driver ID, crash intensity, g-force, and speed.</td><td>You choose how to respond. Proactively send help to the scene of the crash or start the claims process.</td></tr></table> https://www.cmtelomatics.com/crash-detector/. (Last accessed August 21, 2023).					Step 1	Step 2	Step 3	Step 4	Sensors from a smartphone or IoT device detect a car crash	CMT's on-phone crash algorithms analyze the data and verify that there was a crash.	CMT uses crash APIs to alert your systems with critical crash data like location, time, driver ID, crash intensity, g-force, and speed.	You choose how to respond. Proactively send help to the scene of the crash or start the claims process.
													
Step 1	Step 2	Step 3	Step 4										
Sensors from a smartphone or IoT device detect a car crash	CMT's on-phone crash algorithms analyze the data and verify that there was a crash.	CMT uses crash APIs to alert your systems with critical crash data like location, time, driver ID, crash intensity, g-force, and speed.	You choose how to respond. Proactively send help to the scene of the crash or start the claims process.										

Crash ID: 1	Trip Id: 20003019	Driver Id: 2000301	Vehicle Id: 50	Crash time: 9/2/2017, 3:35:26.	Crash location: 42.366681 -71.237827	Crash duration: Validated?: no
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Crash ID: 1	Trip Id: 20003019	Driver Id: 2000301	Vehicle Id: 50	Crash time: 9/2/2017, 3:35:26.	Crash location: 42.366681 -71.237827	Crash duration: Validated?: no
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The driver was traveling at 49 km/h at 15:35:26 on the 2017/09/02. At 15:35:28 a collision occurred on the left side of the vehicle while the vehicle was traveling at 47.0 km/h. The collision event ended at 15:35:30 when the vehicle reached a speed of 28 km/h. The vehicle was yawing during the crash. The driver did not continue on their trip after the crash event.



Humidity: 57%
Pressure: 1015 hPa
Wind: 14 km/h SSE
Day or Night: Day
Sun Facing Driver: No
Solar Position: 280.0 Az, 4.0 Alt

Speed Before Crash	49 km/h
Speed At Impact	47 km/h
Speed After Impact	28 km/h
Delta-V	-21 km/h
Mean Acceleration	20 m/s ²

Speed Before Crash	49 km/h
Speed At Impact	47 km/h
Speed After Impact	28 km/h
Delta-V	-21 km/h
Mean Acceleration	20 m/s ²

Crash Duration	3.87s
Number of Impacts	1
Evasive Maneuver	No Reaction
Yaw During Crash	No

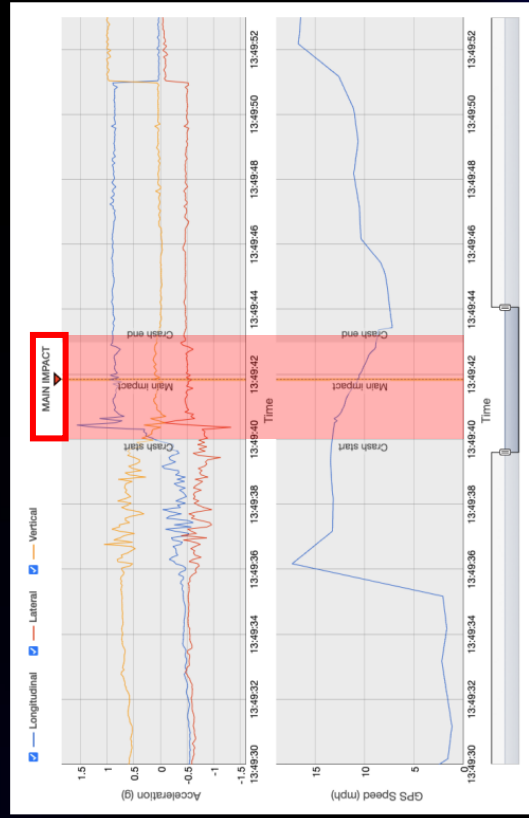
Crash Duration	3.87s
Number of Impacts	1
Evasive Maneuver	No Reaction
Yaw During Crash	No

Airbag Deployed	No
Vehicle Rollover	No
Driven Post Crash	No

Airbag Deployed	No
Vehicle Rollover	No
Driven Post Crash	No

<https://apnews.com/article/technology-business-smartphones-0e1197c6cb0b4673a27979ceccc61290>. (Last accessed August 21, 2023).

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https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

switching operation of the operating component from the first mode to a second mode based on the crash mode signal.	One or more of the Accused Instrumentalities switches operation of the operating component (e.g., software module(s) using mobile processor(s)) from the first mode (e.g., recording mode) to a second mode (e.g., crash mode) based on the crash mode signal. Upon detection of a crash (e.g., crash mode) e.g., based on a crash mode signal, one or more of the Accused Instrumentalities “sends help in near real time, drives digital adoption, and unlocks proactive claims and automation.” DriveWell Crash & Claims DriveWell Crash & Claims detects car crashes and sends help in near real time, drives digital adoption, and unlocks proactive claims and automation. https://www.cmtelomatics.com/safe-driving-technology/product-suite/#drivewell-risk. (Last accessed August 21, 2023).
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How DriveWell Crash Works

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Step 4

You choose how to respond. Proactively send help to the scene of the crash or start the claims process.

<https://www.cmtelomatics.com/crash-detector/>. (Last accessed August 21, 2023).

Claim 14	CMT's Accused Instrumentalities
The non-transitory, computer-readable media of claim 13, wherein the computer-readable instructions are capable of instructing the computer to perform the method such that said detecting a first parameter comprises detecting one of the group consisting of magnetic fields in any of three dimensions, electric fields in any of three dimensions, electro-magnetic fields in any of three dimensions, velocity in any of three dimensions, acceleration in any of three dimensions, angular velocity in any of three dimensions, angular acceleration in any of three dimensions, geodetic position, sound, temperature, vibrations in any of three dimensions, pressure in any of three dimensions, biometrics,	See claims 13 and 2.

contents of surrounding atmosphere, a change in electric fields in any of three dimensions, a change in magnetic fields in any of three dimensions, a change in electro-magnetic fields in any of three dimensions, a change in velocity in any of three dimensions, a change in acceleration in any of three dimensions, a change in angular velocity in any of three dimensions, a change in angular acceleration in any of three dimensions, a change in geodetic position in any of three dimensions, a change in sound, a change in temperature, a change in vibrations in any of three dimensions, a change in pressure in any of three dimensions, a change in biometrics, a change in contents of surrounding atmosphere and combinations thereof.

Claim 15	CMT's Accused Instrumentalities
The non-transitory, computer-readable media of claim 14, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method such that said detecting a first parameter comprises detecting a parameter associated with deployment of an airbag within the vehicle.	See claims 14 and 3.
Claim 16	CMT's Accused Instrumentalities
The non-transitory, computer-readable media of claim 14, wherein the computer-readable instructions are capable of instructing the computer to perform the method such that said detecting a first parameter comprises detecting acceleration along a single axis, and said generating a first detector signal comprises generating	See claims 14 and 4.

the first detector signal when the detected acceleration along the single axis is equal to or greater than a predetermined value.	
Claim 17	CMT's Accused Instrumentalities
The non-transitory, computer-readable media of claim 13, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method further comprising wirelessly communicating, via a communication component, with a network.	See claims 13 and 5.
Claim 18	CMT's Accused Instrumentalities
The non-transitory, computer-readable media of claim 13, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform	See claims 13 and 6.

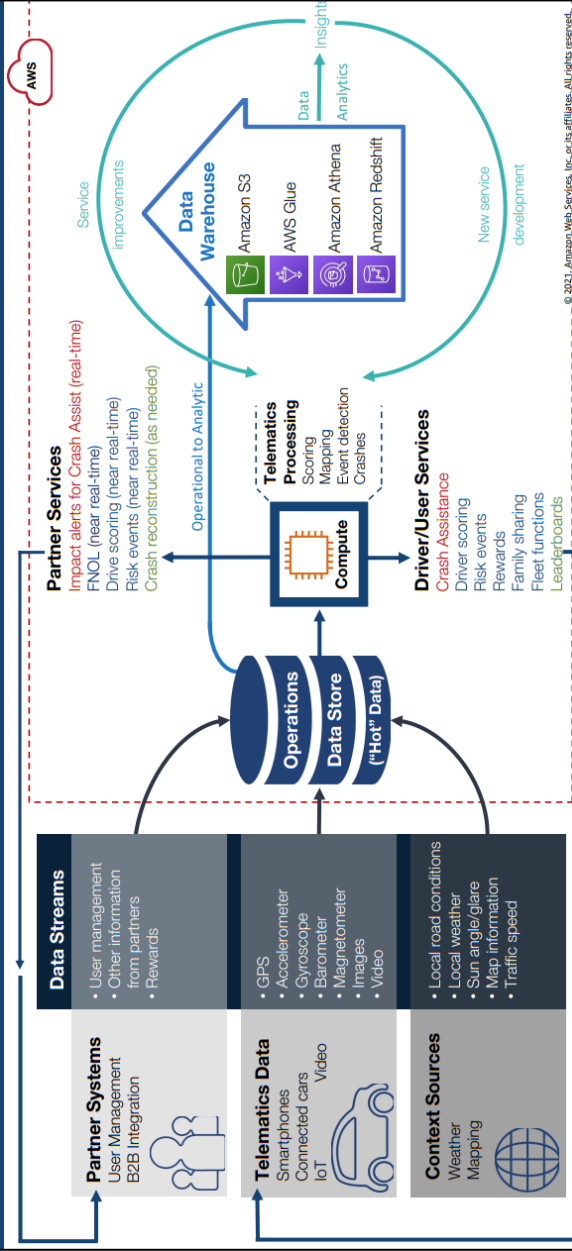
the method further comprising: operating an operating component in a first mode; and switching operation of the operating component from the first mode to a second mode based on the crash mode signal.

Exhibit B

Claim Chart For Infringement of U.S. Patent No. 9,333,946 by CMT’s Accused Instrumentalities

Claim 1	CMT’s Accused Instrumentalities
A device, for use with a database, said device comprising:	One or more of the Accused Instrumentalities is/includes a device for use with a database. One or more of the Accused Instrumentalities is also used within mobile devices, such as smartphones or tablets. One or more of the Accused Instrumentalities is capable of, and intended to be, used with a database. It “gathers sensor data from millions of IoT devices—including smartphones, proprietary tags, connected vehicles, dashcams, and third-party devices—and fuses them with contextual data to create a unified view of vehicle and driver behavior.” https://www.cmtelematics.com/safe-driving-technology/how-it-works/. (Last accessed August 21, 2023). CMT hosts and runs mobile applications for use on Android and iOS platforms that are deployed on drivers’ smartphones. https://apps.apple.com/us/developer/cambridge-mobile-telematics-inc/id655601790?see-all=i-phone-apps (Last accessed August 21, 2023); https://play.google.com/store/apps/developer?id=Cambridge+Mobile+Telematics&hl=en_US&gl=US (Last accessed August 21, 2023). Driver’s smartphone may implement a protocol stack to communicate with remote servers.

Telematics Processing Architecture



https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

Every company has unique business needs. Our goal was to develop a solution that meets the unique needs of all of our partners. DriveWell products can be used separately or together to develop a user-forward mobile telematics program that is right for your business and drivers.

DriveWell SDK		Collect meaningful sensor data and harness CMT's expertise in your own app
DriveWell Tag		Collect vehicle and crash data with a wireless, easy-to-install device
DriveWell Score		Measure driver risk with scoring models based on millions of trips and billions of miles
DriveWell Engage		Increase customer engagement and motivate users to improve
DriveWell Fleet		Reduce fleet risk and costs with the mobile phone and DriveWell Tag

<https://www.cmtelomatics.com/blog/drivewell-assess-risk-and-encourage-safer-driving/>. (Last accessed August 21, 2023).

What Data is Collected?

The following data is required to accurately assess driving risk and motivate drivers to improve

Smartphone app

- **Accelerometer data** helps identify mileage and is used in the calculation of phone motion, screen interaction, and acceleration-based (hard braking, acceleration, and excessive speeding events)
- **Gyroscope data** is used in the calculation of phone motion, screen interaction, and acceleration-based events

DriveWell Tag

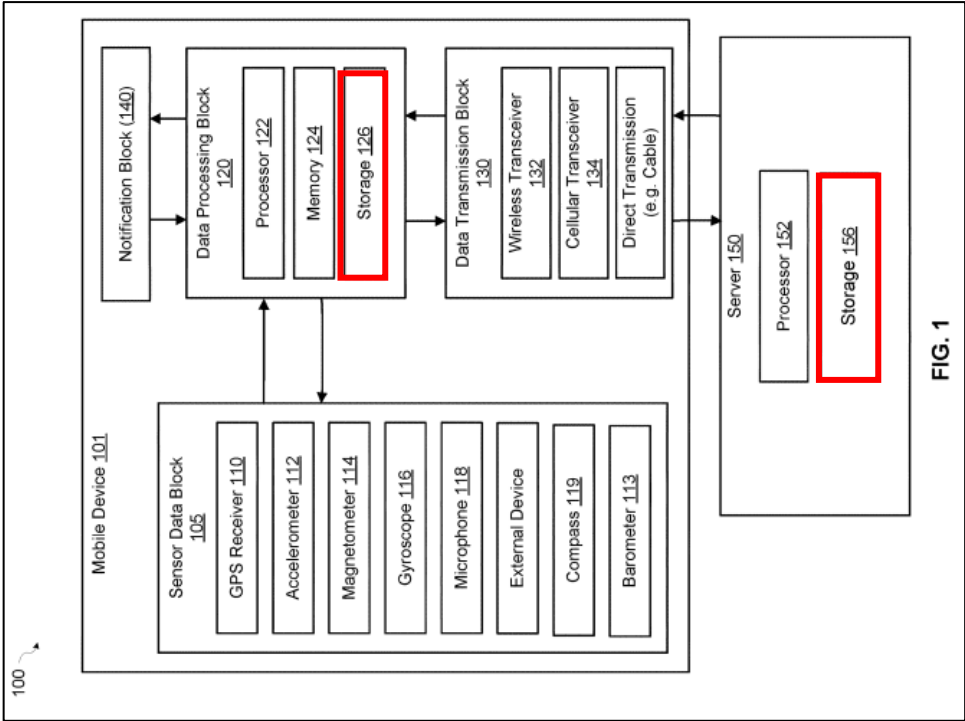
- **High-frequency accelerometer data** detects when and how the vehicle is moving, is used to calculate overall mileage, and identifies acceleration-based events

What smartphone permissions are required?

- **Location:** to collect GPS data
- **Bluetooth:** to connect to the Tag
- **Motion & activity:** helps to detect when a trip starts & stops

https://content.naic.org/sites/default/files/call_materials/NAIC%203-30-21.pdf. (Last accessed August 21, 2023).

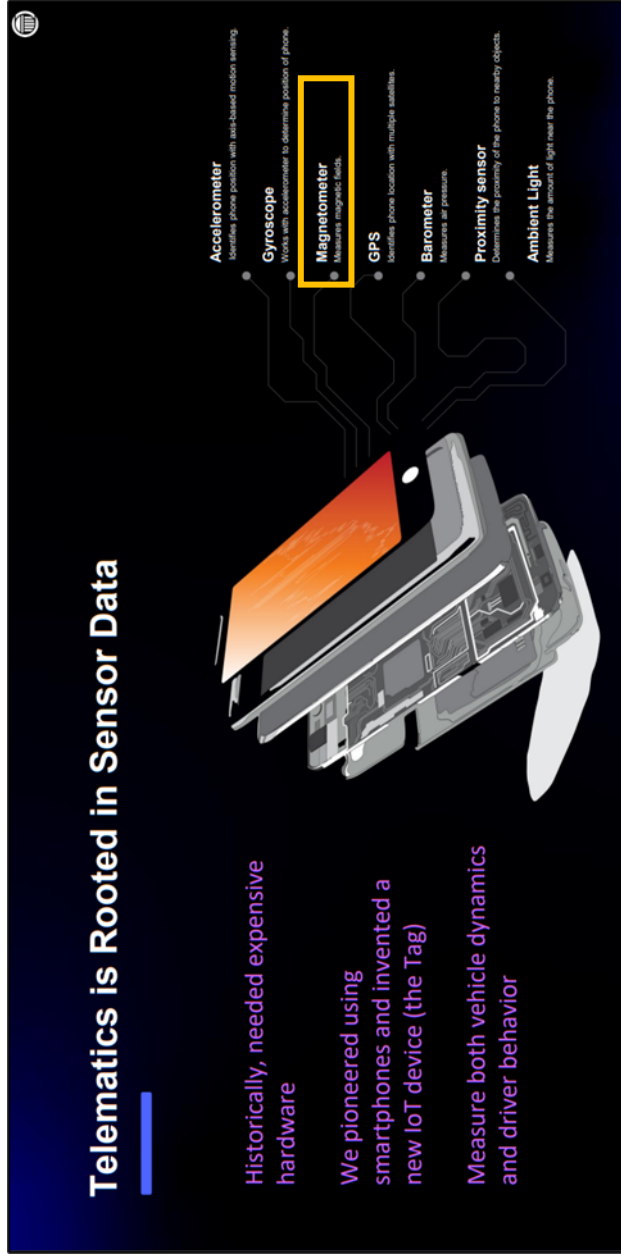
On information and belief, one or more of the Accused Instrumentalities is described, in part, in U.S. Patent Application No. 2023/0143632 (the “’632 Application”), assigned to CMT. The ’632 Application describes a system and method for determining a transportation mode via the acquisition of magnetometer and speed data from a mobile device. Figure 1 of the ’632 Application (shown below) illustrates a system diagram of a transportation mode determination system, including storage 126 and storage 156 (shown in the red boxes).



a field-detecting component operable to detect at least one of an electric field, a magnetic field and an electro-magnetic field and to generate a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field;

One or more of the Accused Instrumentalities includes a field detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) operable to detect at least one of an electric field, a magnetic field, and an electromagnetic field and to generate a detected field signature based on the detected one of an electric field, a magnetic field, and an electro-magnetic field.

One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a magnetic field within a vehicle, and to generate a detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car) based on the detected magnetic field.



https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies." One or more of the Accused Instrumentalities then "performs spectral analysis on a magnitude of the magnetometer data," and "calculates an energy [generates a detected field signature] for each of the one or more frequencies using the spectrum analysis."

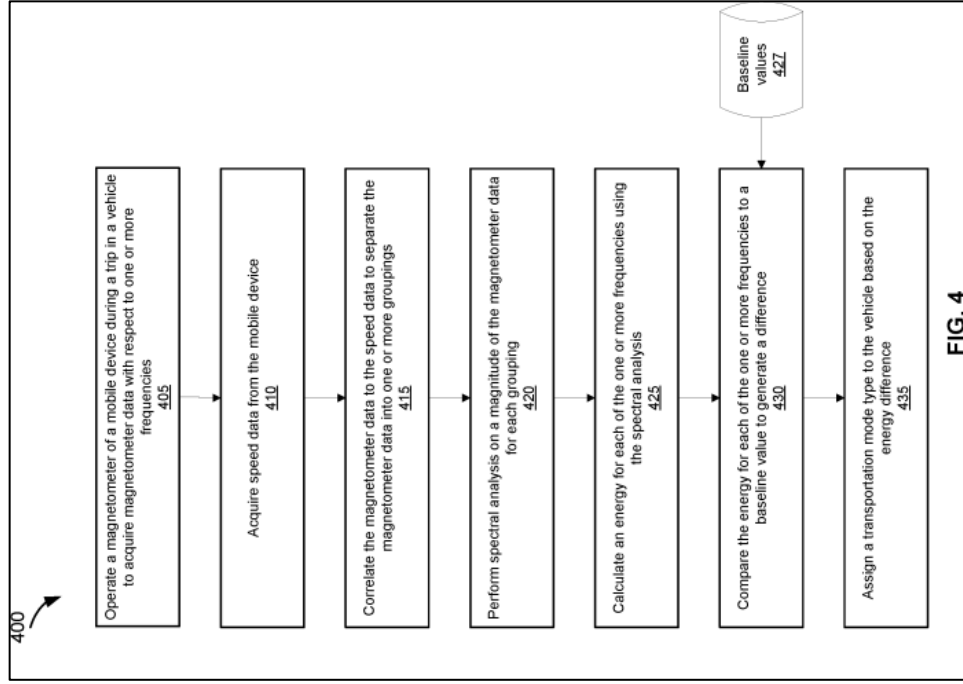


FIG. 4

Figure 5 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a car as measured by a magnetometer of a mobile device. "This data may be used for baseline values." '632 Application at [0069].

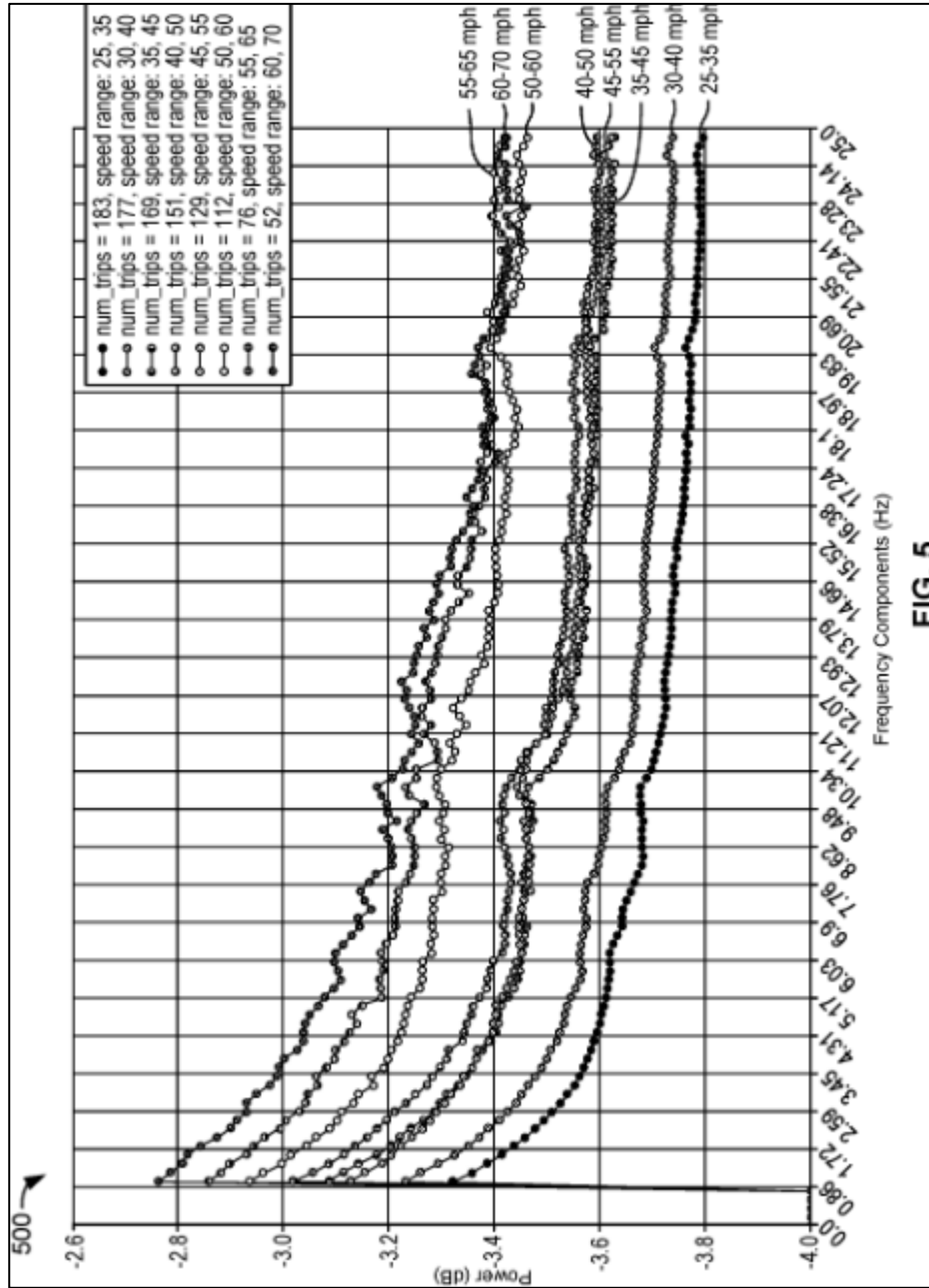


Figure 6 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a bus as measured by a magnetometer of a mobile device.

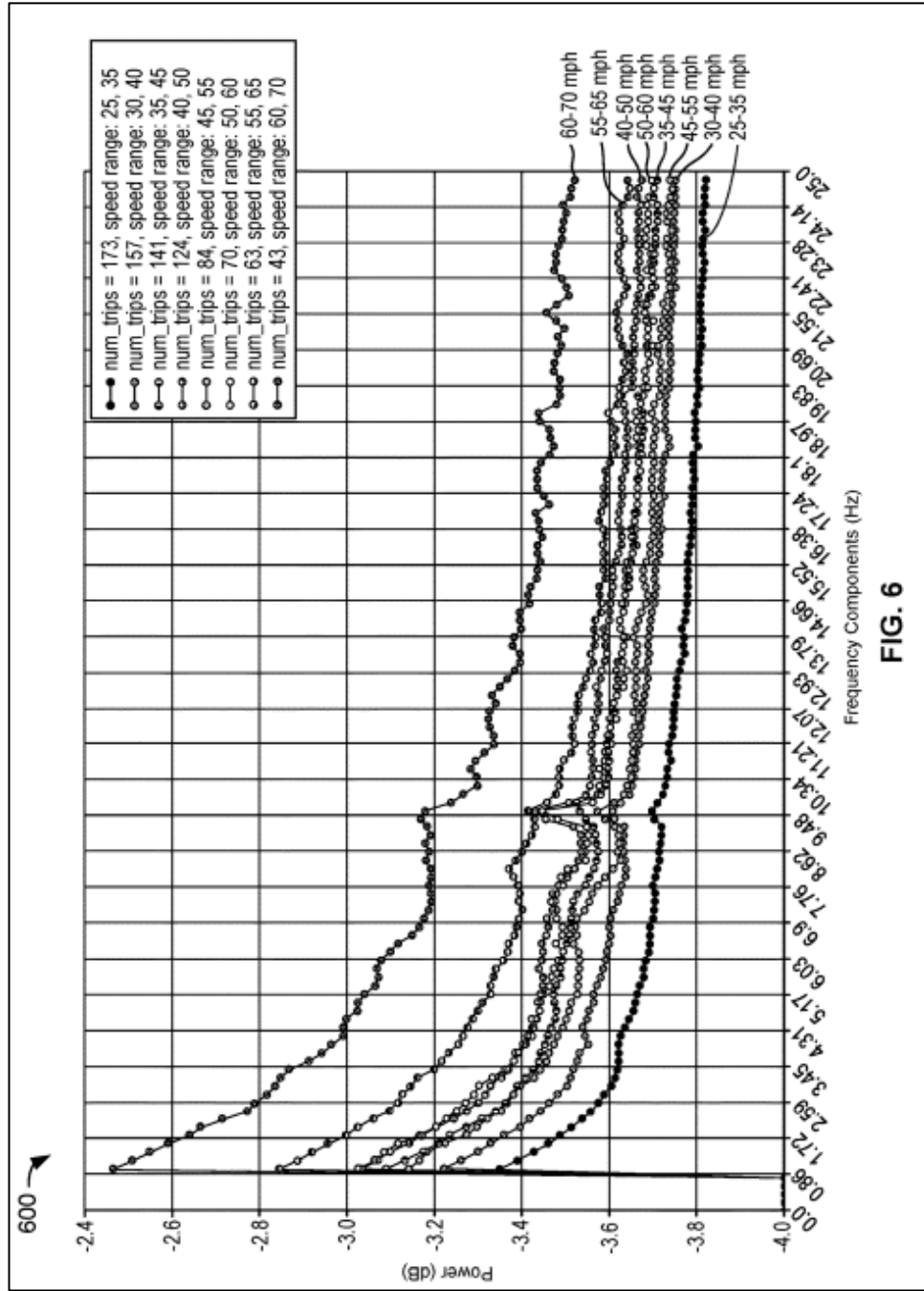


Figure 7 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a train as measured by a magnetometer of a mobile device.

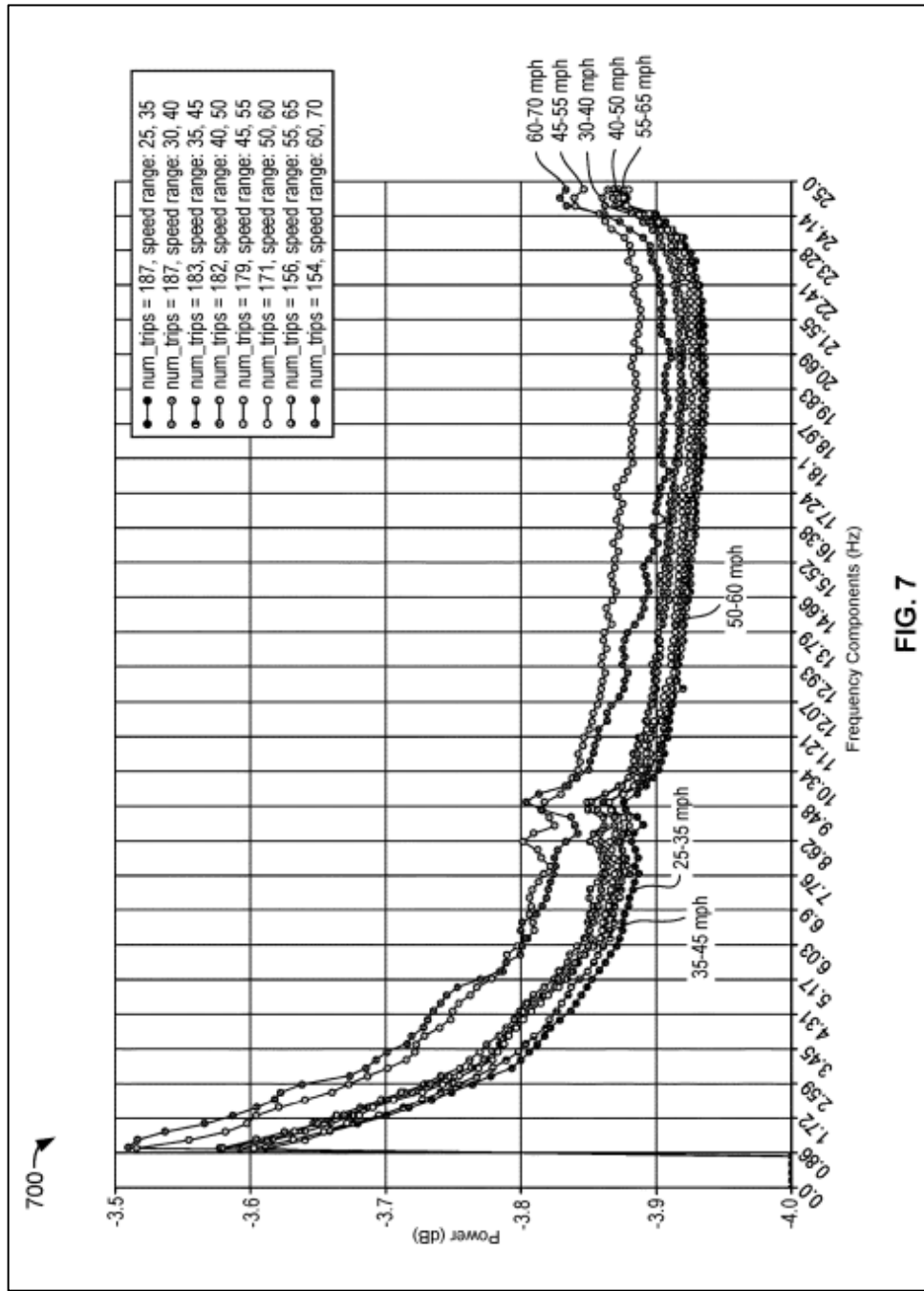
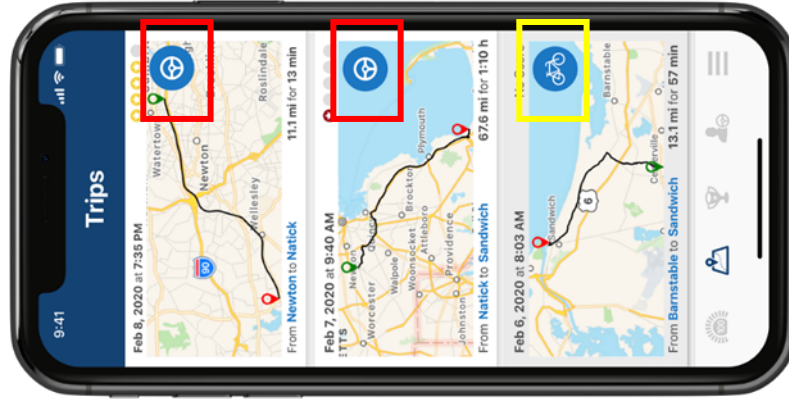


FIG. 7

an input component operable to input the detected field signature into the database;

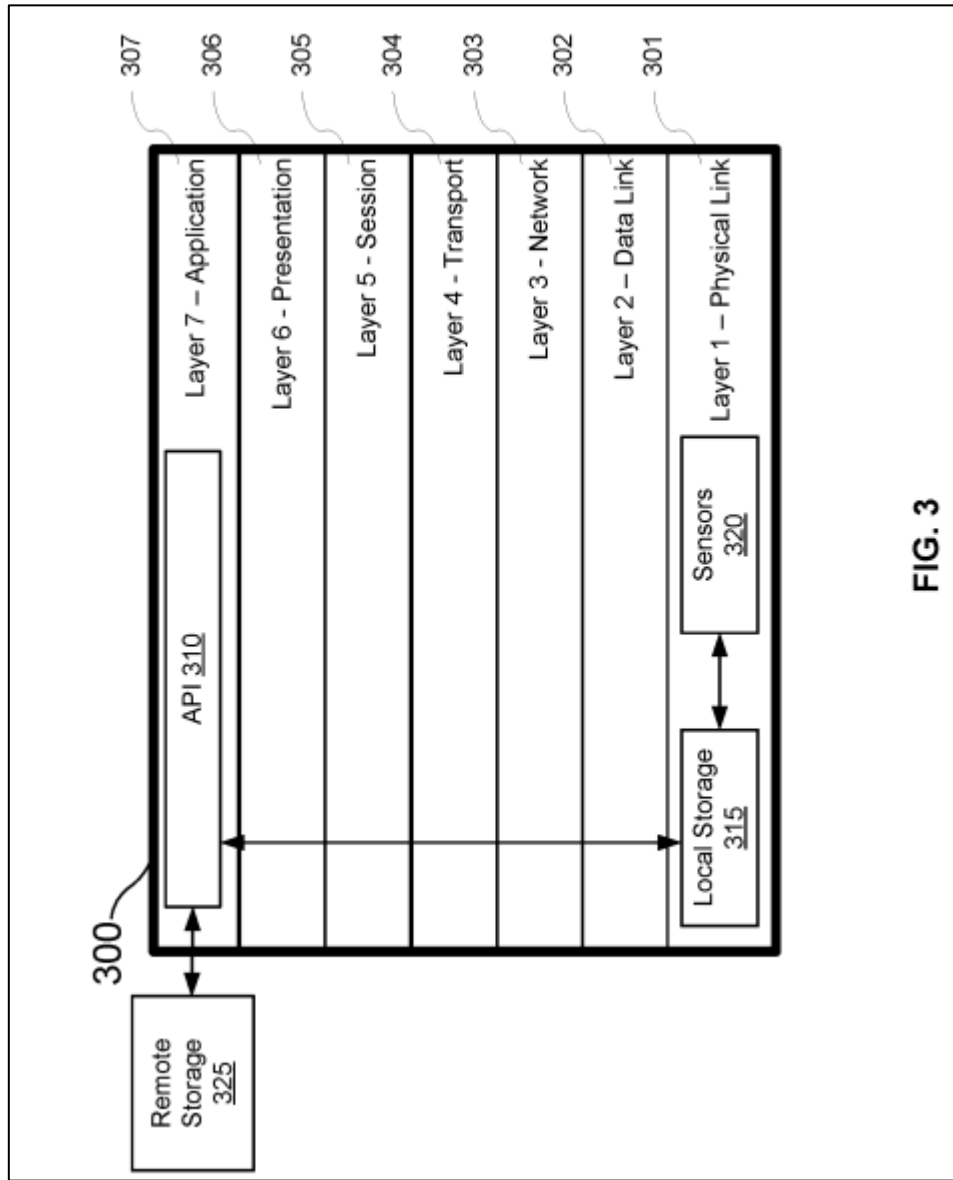
One or more of the Accused Instrumentalities includes an input component (e.g., software module(s) using graphic user interface and/or application programming interface (API)) operable to input the detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car) into the database.

One or more of the Accused Instrumentalities collects sensor data (e.g., magnetometer data) from the user's smartphone during a trip. As shown below, one or more of the Accused Instrumentalities allows users to label trips indicating, for example, that the data collected throughout the trip (e.g., magnetometer data) is associated with a detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car (shown in the red boxes) or bicycle (shown in the yellow box).



<https://www.cmtelomatics.com/cmt-mobile-sdk/>. (Last accessed August 21, 2023).

Figure 3 of the '632 Application illustrates a block diagram of a protocol stack 300 that may be implemented by the mobile device.



“The application layer 307 may interact with a user (e.g., *via receiving user inputs* and presenting outputs) and software applications implementing a communication component.” ’632 application at [0049]. “API 310 *may be in communication with remote storage 325, such as the storage 156 of the server 150.*” *Id.* at [0050]. “In some embodiments, data collected by the sensors 320 may be stored in local storage 315.” *Id.* at [0056].

an accessing component operable to access the detected field signature from the database;

One or more of the Accused Instrumentalities includes an accessing component (e.g., software module(s) using mobile processor(s)) operable to access the detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car) from the database.

As shown in Figure 4 of the '632 Application, for example, the smartphone processor must access the detected field signature (e.g., baseline values 427, shown in the red box) in order to “compare[] the energy of different transportation modes,” to “the energy at each frequency component as calculated.” ’632 Application at [0061].

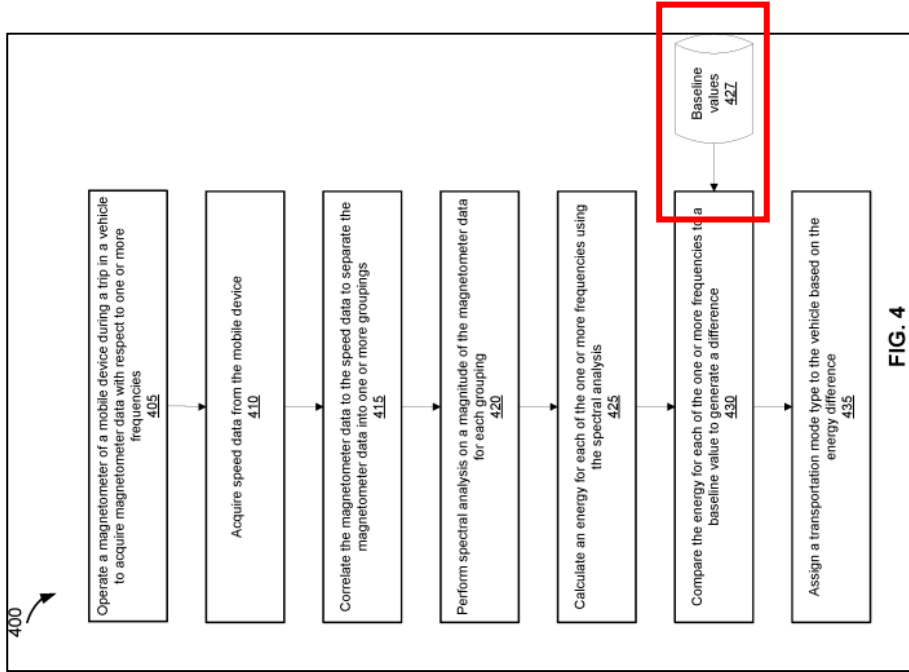


FIG. 4

a comparing component operable to generate a comparison signal; and	One or more of the Accused Instrumentalities includes a comparing component (e.g., software module(s) using mobile processor(s)) operable to generate a comparison signal (e.g., indicating a difference(s) between magnitudes/energy of the magnetometer data between a second detected field signature and a detected field signature). A comparison signal may be generated by comparing a plurality of signals. The signals may include measured signals, predetermined field signatures, and/or a predetermined field signature and measured signal.
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As shown in Figure 4 of the '632 Application (below), at block 430, one or more of the Accused Instrumentalities "compares the energy for each of the one or more frequencies to a baseline value to generate a difference."

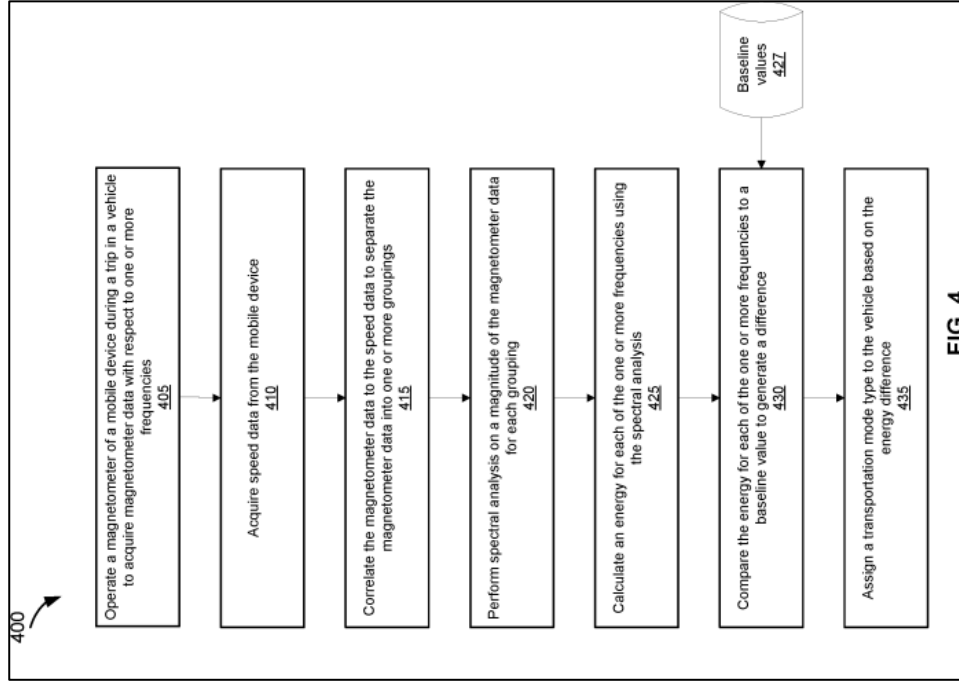


FIG. 4

“At block 430, the energy for each of the one or more frequency components may be compared to a baseline value 427 to generate an energy difference. The baseline value 427 may be the energy at each frequency component associated with different modes of transportation. For example, a train may have a certain energy at a certain frequency component, a bus may have a different energy at the certain frequency component, a car may have still another energy at the certain frequency component, and so forth. The processor of the mobile device may cause the energy at each frequency component as calculated to be compared to the energies of the different transportation modes at the same frequency component as the measurement.” ’ 632 Application at [0061].

an identifying component operable to identify one of an item and a location based on the comparison signal,

One or more of the Accused Instrumentalities includes an identifying component (e.g., software module(s) using mobile processor(s)) operable to identify one of an item (e.g., a mode of transportation, such as a car, motorcycle, bicycle, train, bus) and a location (e.g. driver/passenger side of the vehicle) based on the comparison signal.

What You Get With the DriveWell SDK

- ✓ Automatic Trip Recording
- ✓ Identifying Driver versus Passenger
- ✓ Identifying Car Trips versus Other Transport Modes
- ✓ Measuring Risky Events (Including Phone Distraction!)
- ✓ Displaying Trip Details in the App

<https://www.cmtelomatics.com/cmt-mobile-sdk/>. (Last accessed August 21, 2023).

As shown in Figure 4 of the '632 Application (below), at block 435, one or more of the Accused Instrumentalities "assigns a transportation mode type to the vehicle [identifies an item] based on the energy difference [based on the comparison signal]."

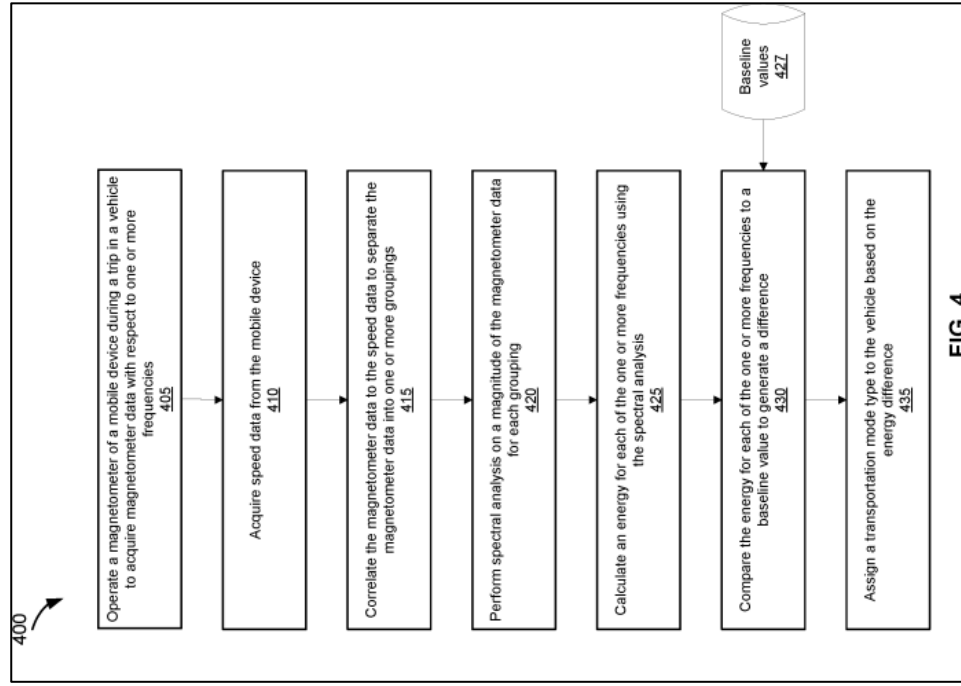


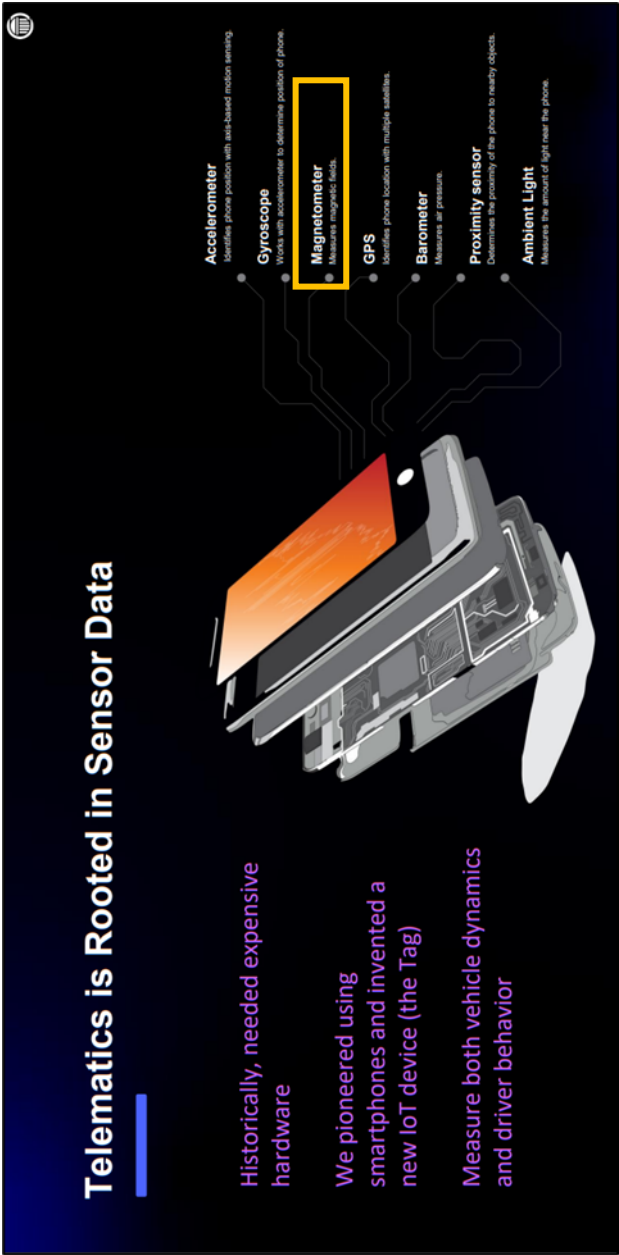
FIG. 4

“At block 435, a transportation mode type may be assigned to the vehicle based on the difference. The transportation mode associated with the smallest difference in energy at a majority or a threshold number of frequencies may be assigned. The processor of the mobile device may determine the difference between the measured energy values and the baseline values for the different transportation modes at corresponding frequency components. The processor may determine the transportation mode having the smallest difference in energy from the measured values at a specified number of frequency components as the transportation mode type to be assigned.” ’632 Application at [0062].

wherein said field-detecting component is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field, and

The field-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) in one or more of the Accused Instrumentalities is further operable to detect a second one of an electric field, a magnetic field and an electro-magnetic field and to generate a second detected field signature (e.g., magnetometer data signature associated with e.g., a current mode of transportation) based on the detected second one of an electric field, a magnetic field and an electro-magnetic field.

One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a second one of a magnetic field within a vehicle, and to generate a second detected field signature (e.g., magnetometer data signature associated with e.g., a current mode of transportation) based on the detected second magnetic field.



https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies." One or more of the Accused Instrumentalities then "performs spectral analysis on a magnitude of the magnetometer data," and "calculates an energy [generates a detected field signature] for each of the one or more frequencies using the spectrum analysis."

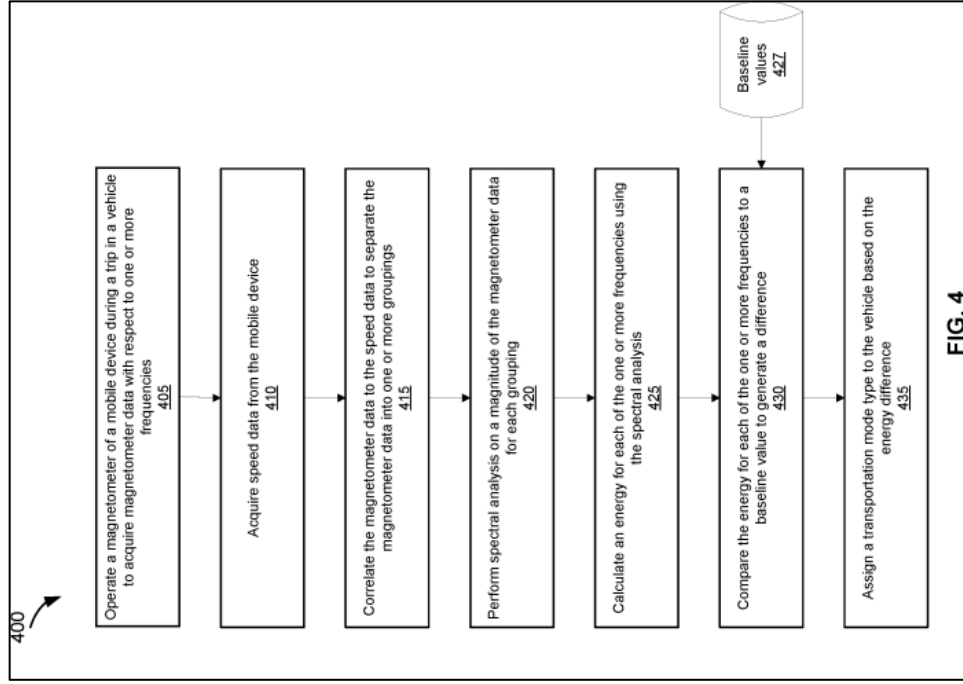


Figure 5 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a car as measured by a magnetometer of a mobile device.

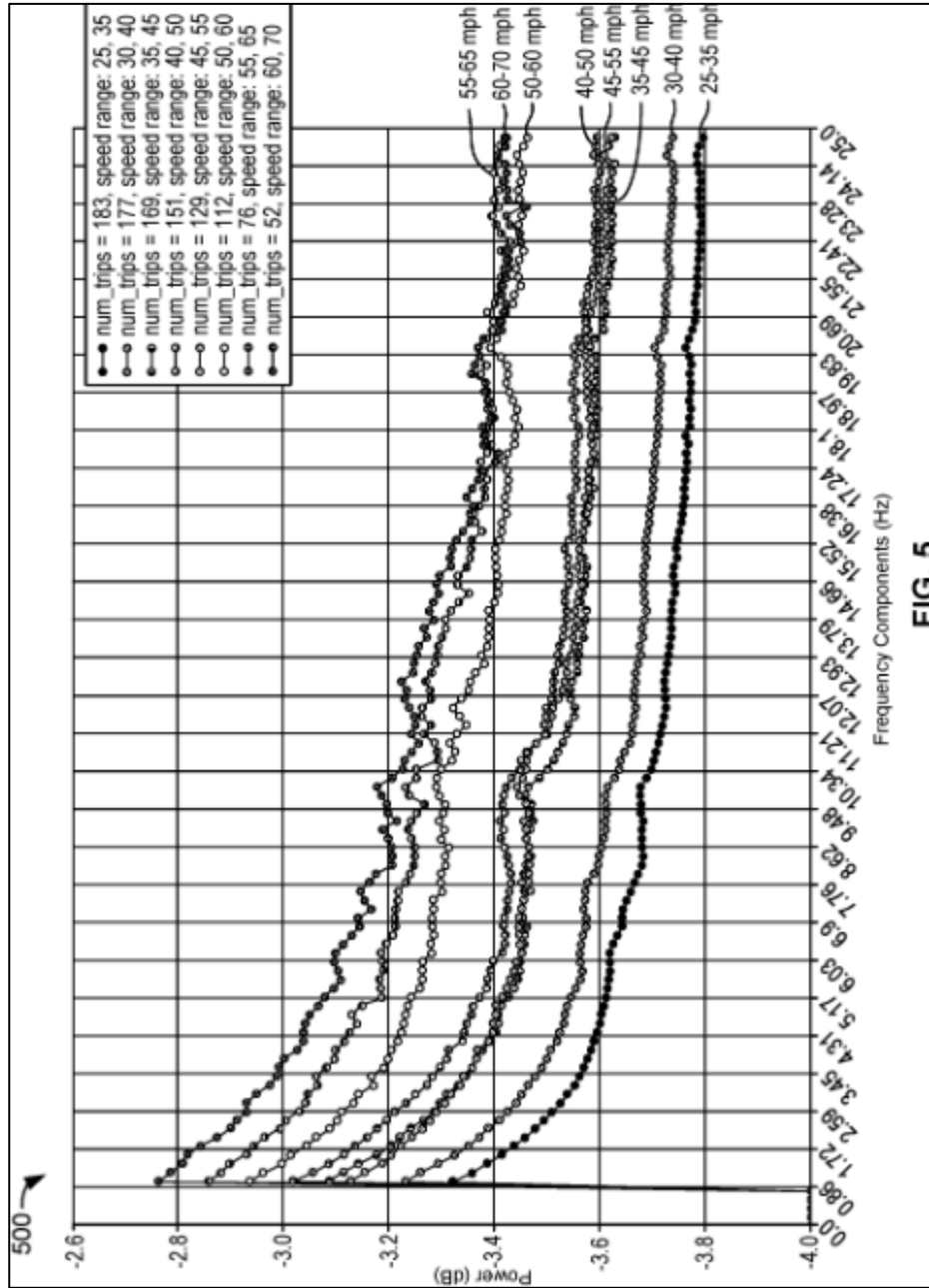


FIG. 5

Figure 6 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a bus as measured by a magnetometer of a mobile device.

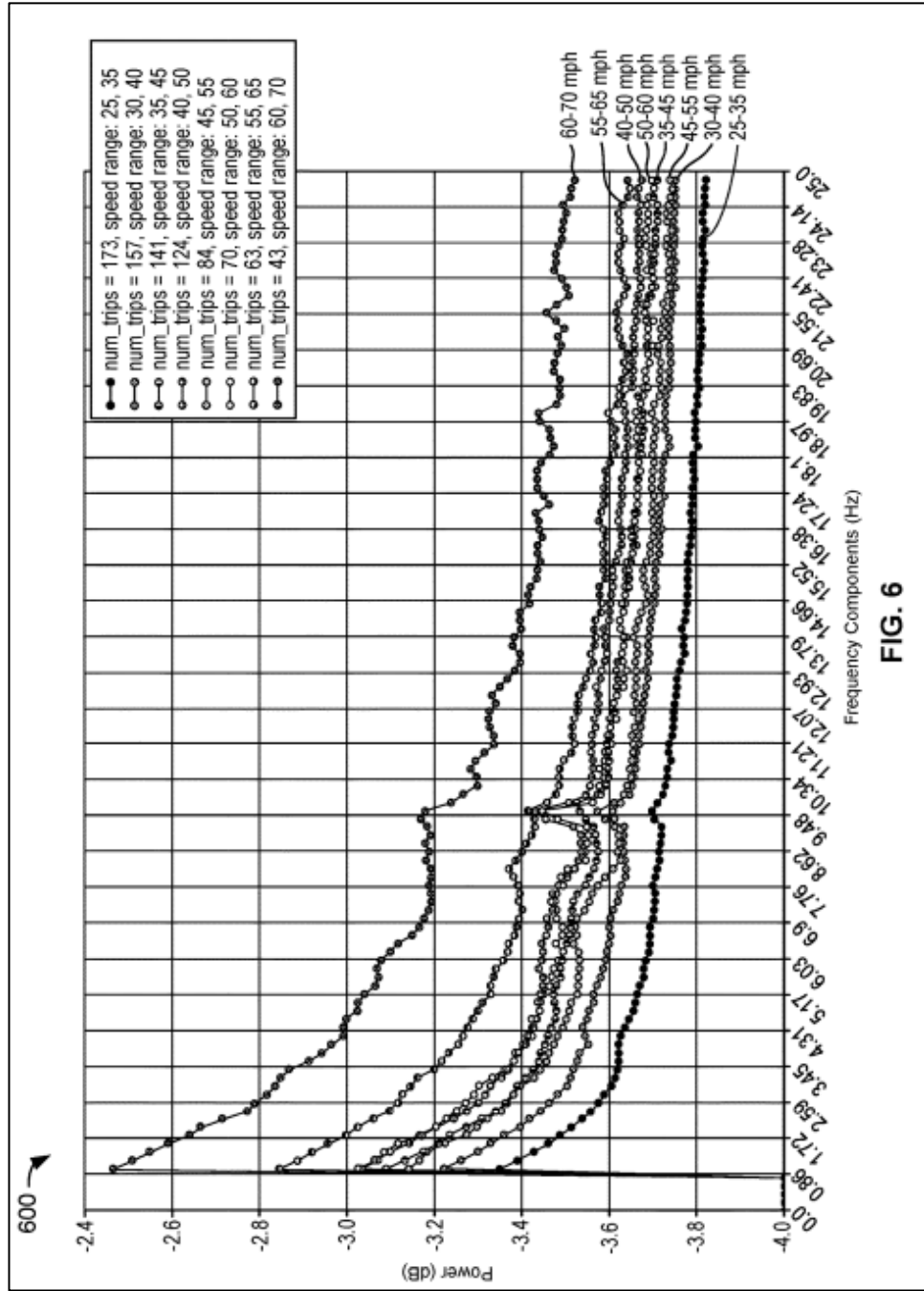


FIG. 6

Figure 7 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a train as measured by a magnetometer of a mobile device.

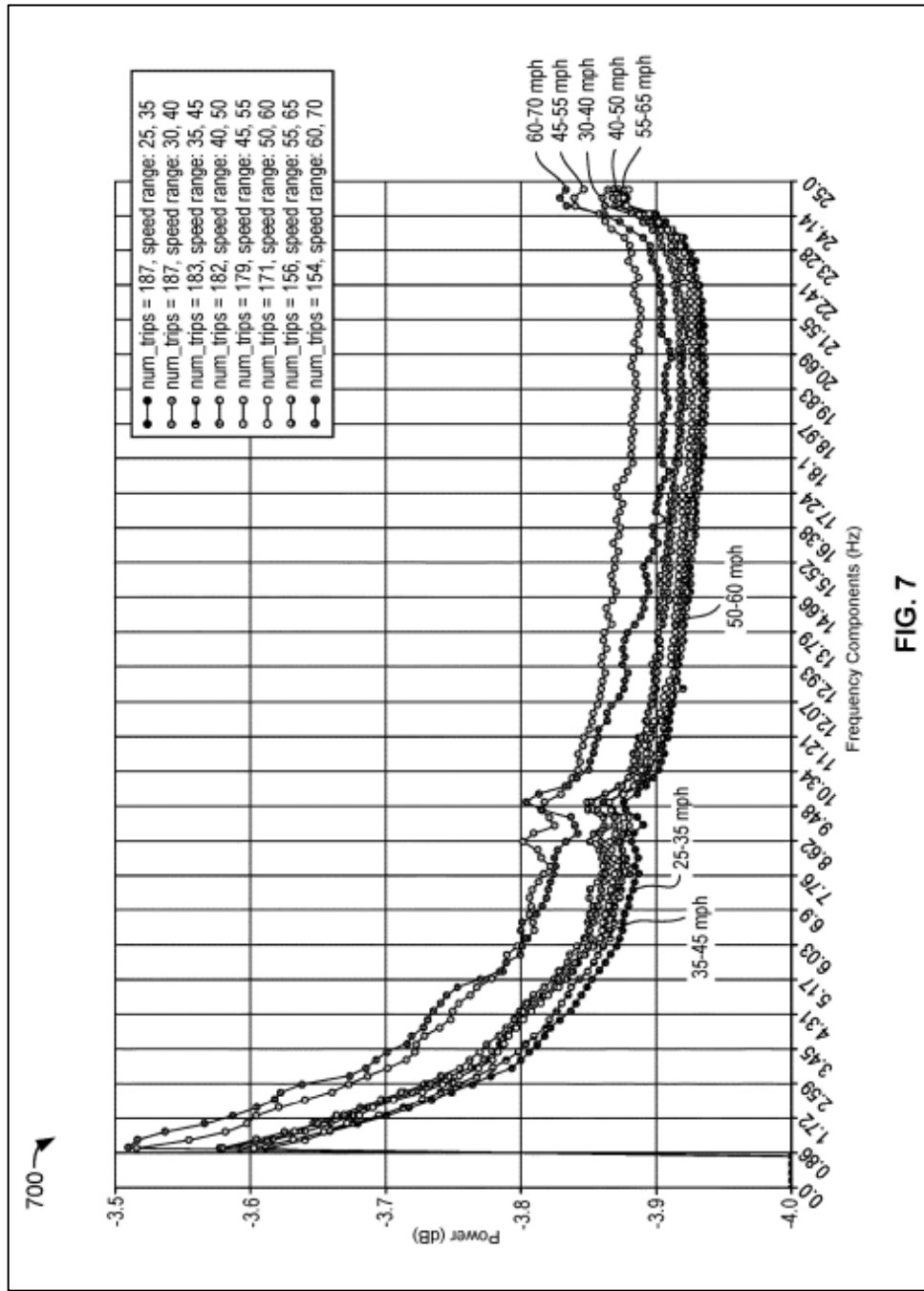


FIG. 7

wherein said comparing component is operable to generate the comparison signal based on a comparison of the detected field signature and the second detected field signature.	The comparing component (e.g., software module(s) using mobile processor(s)) in one or more of the Accused Instrumentalities is operable to generate the comparison signal based on a comparison of the detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car/baseline value) and the second detected field signature (e.g., magnetometer data signature associated with e.g., a current mode of transportation). In this way, one or more of the Accused Instrumentalities “determines whether [the device is] in a car or some other mode of transport like a bus or a motorcycle or a bicycle or a boat...” https://agencychecklists.com/2018/04/10/cmt-telematics-2018-22735/. (Last accessed August 21, 2023).
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As shown in Figure 4 of the '632 Application (below), at block 430, one or more of the Accused Instrumentalities "compares the energy for each of the one or more frequencies to a baseline value to generate a difference."

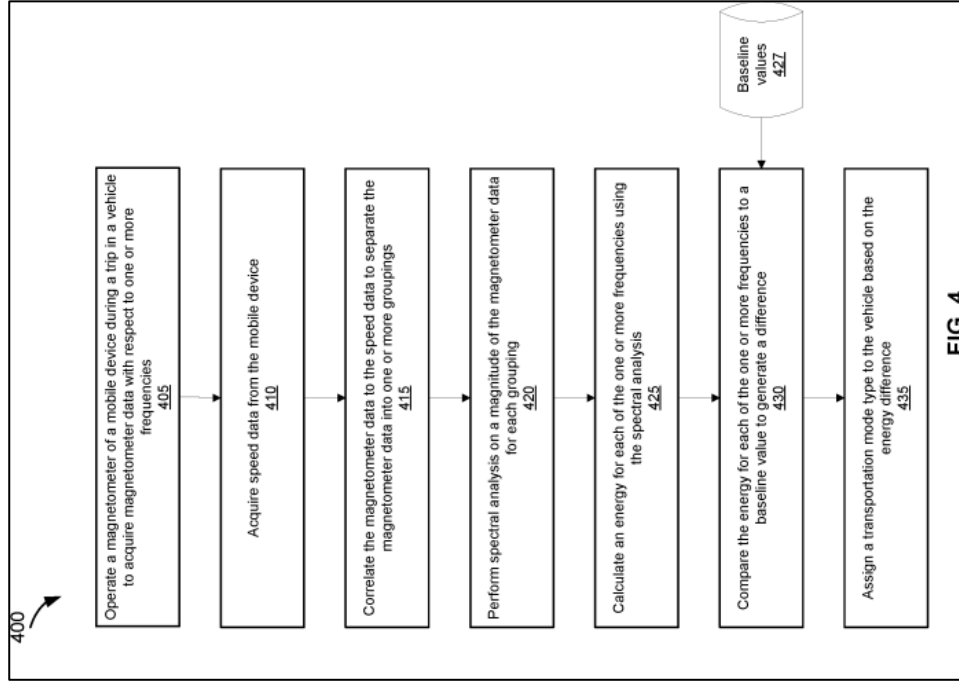
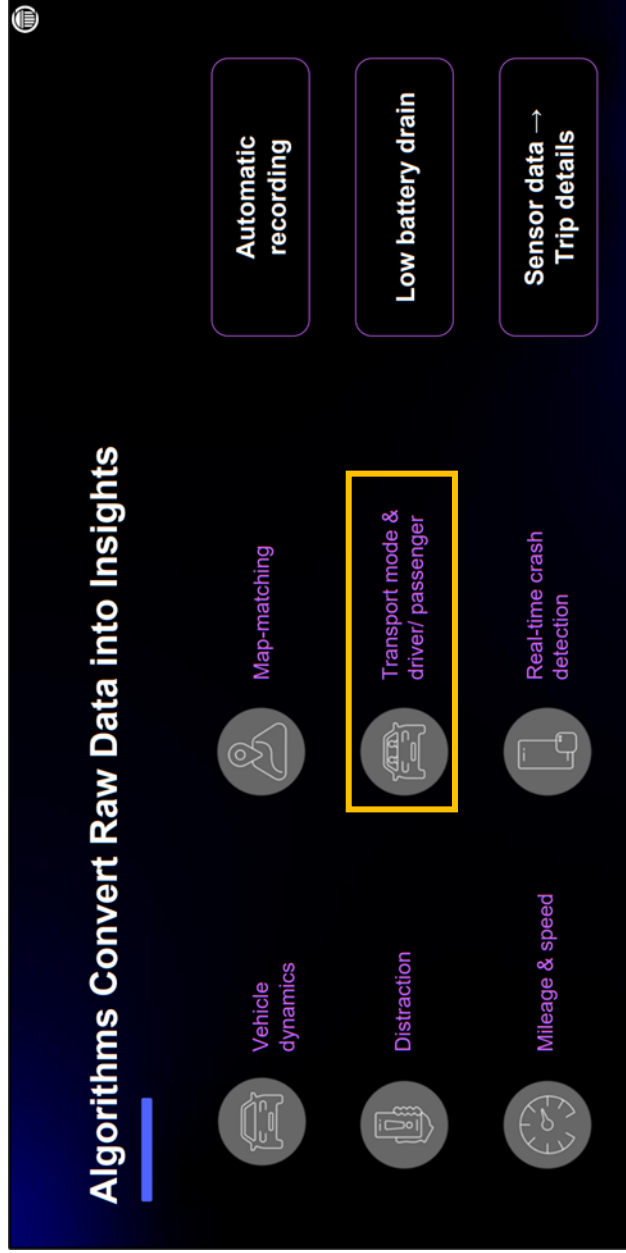


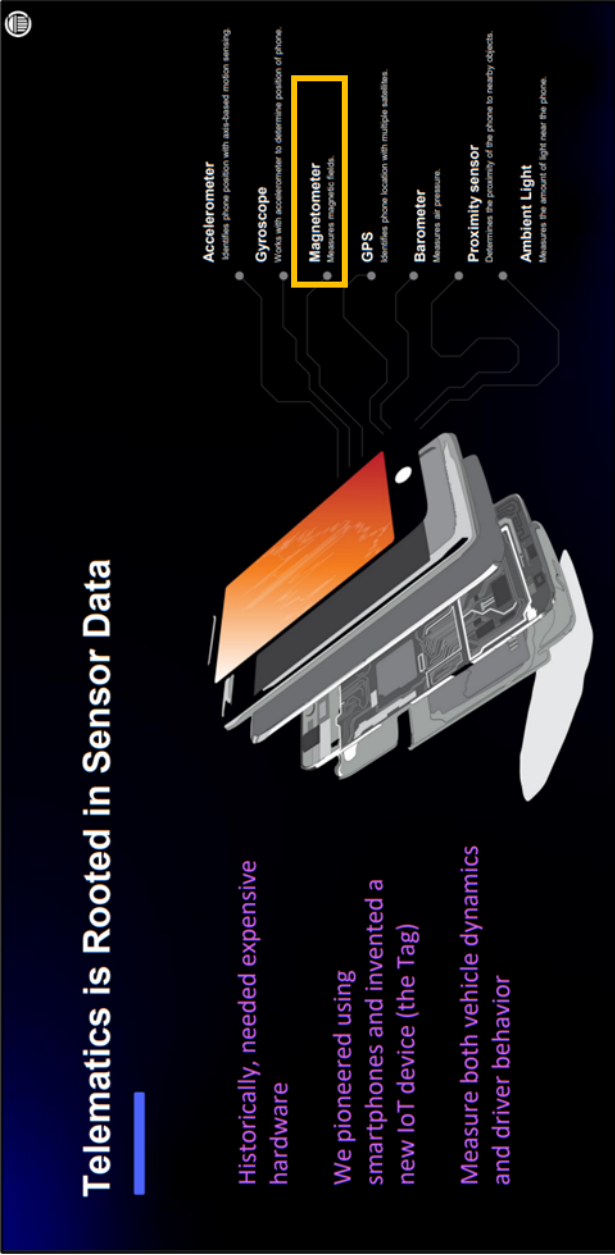
FIG. 4

“At block 430, the energy for each of the one or more frequency components may be compared to a baseline value 427 to generate an energy difference. The baseline value 427 may be the energy at each frequency component associated with different modes of transportation. For example, a train may have a certain energy at a certain frequency component, a bus may have a different energy at the certain frequency component, a car may have still another energy at the certain frequency component, and so forth. The processor of the mobile device may cause the energy at each frequency component as calculated to be compared to the energies of the different transportation modes at the same frequency component as the measurement.” ’632 Application at [0061].

“As can be seen in FIGS. 5-7, the power at similar frequency components for a car, a bus, and a train may be highly variable across the different modes of transportation. Thus, by comparing a magnetometer reading at a given frequency component and speed to the powers for that frequency component and speed in FIGS. 5-7, a difference between the reading and the baseline values may be generated. The transportation mode associated with the lowest difference may be assigned as the type of vehicle associated with the trip.” *Id.* at [0070].



https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

Claim 2	CMT's Accused Instrumentalities
The device of claim 1, wherein said field-detecting component is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.	See claim 1. The field-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) in one or more of the Accused Instrumentalities is operable to detect the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a magnetic field within a vehicle.
 Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior Accelerometer Identifies phone position with accel-based motion sensing Gyroscope Works with accelerometer to determine position of phone Magnetometer Measures magnetic fields GPS Identifies phone location with multiple satellites Barometer Measures air pressure Proximity sensor Determines the proximity of the phone to nearby objects Ambient Light Measures the amount of light near the phone	https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).

As described in the '632 Application, the field-detecting component (e.g., software modules using smartphone sensor(s) (e.g., magnetometer), sensor data, and/or mobile processor(s)) can detect the e.g., magnetic field as a function over a period of time.

“At block 415, the magnetometer data may be correlated to the vehicle speed data to separate the magnetometer data into one or more groupings. For example, the processor of the mobile device may *cause the magnetometer data to be separated into groupings based on the vehicle speed data acquired by the one or more sensors of the mobile device at the time the magnetometer data was acquired*. The groupings of the magnetometer data may be formed based on ranges of vehicle speed, for example, magnetometer data acquired during a vehicle speed range of 25-35 mph, magnetometer data acquired during a vehicle speed range of 35-45 mph, magnetometer data acquired during a vehicle speed range of 45-55 mph, magnetometer data acquired during a vehicle speed range of 55-65 mph, magnetometer data acquired during a vehicle speed range of 65-75 mph, etc.).” ‘632 Application at [0059].

“If the type of vehicle is other than a car, the method may, in some embodiments, further include operating the one or more sensors of the mobile device at a first frequency before assigning the type to the vehicle, and operating the one or more sensors at a second frequency lower than the first frequency after assigning the type to the vehicle” *Id.* at [0064].

“In some embodiments, the sensors may continue to operate at a reduced frequency and/or be disabled until a change of speed is detected by a sensor of the mobile device. For example, if a vehicle is identified as a train traveling at a speed of 70 mph and a speed of 0 mph is detected followed by a speed of 45 mph, the sensors may begin to operate more frequently in order to make a new transportation mode determination.” *Id.* at [0065].

Claim 3	CMT's Accused Instrumentalities
The device of claim 1, further comprising: a parameter-detecting component operable to detect a parameter and to generate a parameter signal based on the detected parameter,	See claim 1. One or more of the Accused Instrumentalities includes a parameter-detecting component (e.g., software module(s) using smartphone sensor(s) (e.g., accelerometer), sensor data, and/or mobile processor(s)) operable to detect a parameter (e.g., acceleration) and to generate a parameter signal based on the detected parameter (e.g., acceleration). One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors.
	Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior Accelerometer Identifies phone position with axis-based motion sensing. Gyroscope Works with accelerometer to determine position of phone. Magnetometer Measures magnetic fields. GPS Identifies phone location with multiple satellites. Barometer Measures air pressure. Proximity sensor Determines the proximity of the phone to nearby objects. Ambient Light Measures the amount of light near the phone. © 2021 Amazon Web Services, Inc. or its affiliates. All rights reserved. https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).

The '632 Application states that one or more of the Accused Instrumentalities "analyze[s] the data to determine acceleration vectors for the vehicle." Figure 10 of the '632 Application, for example, illustrates a plot of acceleration versus frequency for a bus at various speeds as measured by an accelerometer of a mobile device. '632 Application at [0075].

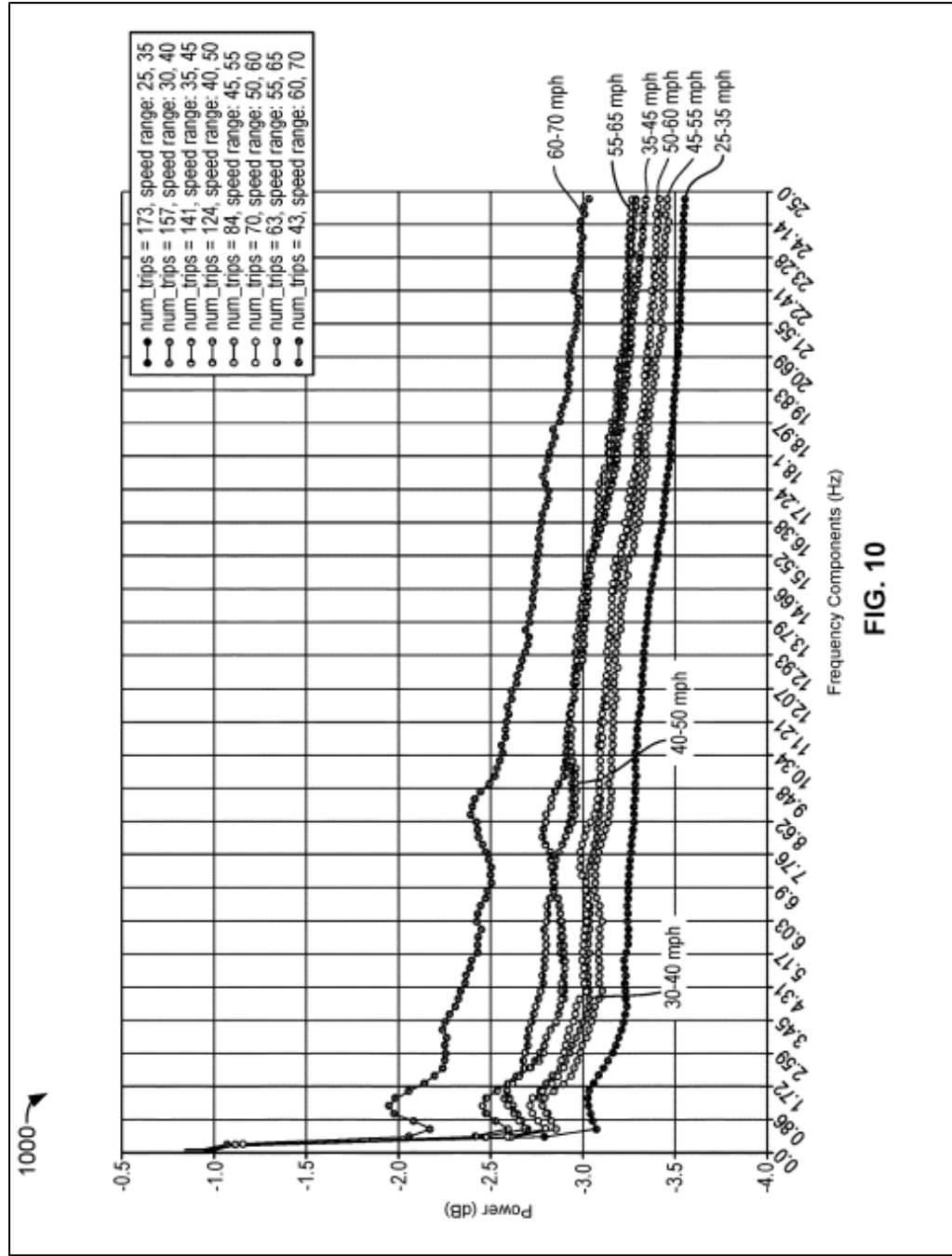


FIG. 10

wherein said identifying component is operable to identify the one of an item and a location based additionally on the parameter signal.	The identifying component (e.g., software module(s) using mobile processor(s)) in one or more of the Accused Instrumentalities is operable to identify the one of an item (e.g., a mode of transportation, such as a car, motorcycle, bicycle, train, bus) and a location based additionally on the parameter signal (e.g., based on acceleration). The '632 Application states that “while differences exist in the accelerometer spectral features for the three transit modes (i.e., bus, car, and train), the differences may not be as significant as the differences seen in magnetometer data. However, using both magnetometer and <i>accelerometer</i> spectral features <i>may result in more accurate classification of transit modes</i>. For example, it may be possible to build an algorithm for transit mode classification that consumes magnetometer and <i>accelerometer spectral features</i>. The combination of magnetometer and accelerometer spectral features may provide more accurate classification than spectral features obtained from a magnetometer or an accelerometer as standalone sensors.” ’632 Application at [0076].
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As shown in Figure 4 of the '632 Application (below), at block 410, one or more of the Accused Instrumentalities "acquire[s] speed data from the mobile device." "The vehicle speed data may be acquired, for example, from a GPS receiver (such as the GPS receiver 110 of FIG. 1), from an *accelerometer* (such as the *accelerometer 112 of FIG. 1*), and/or the like." '632 Application at [0058].

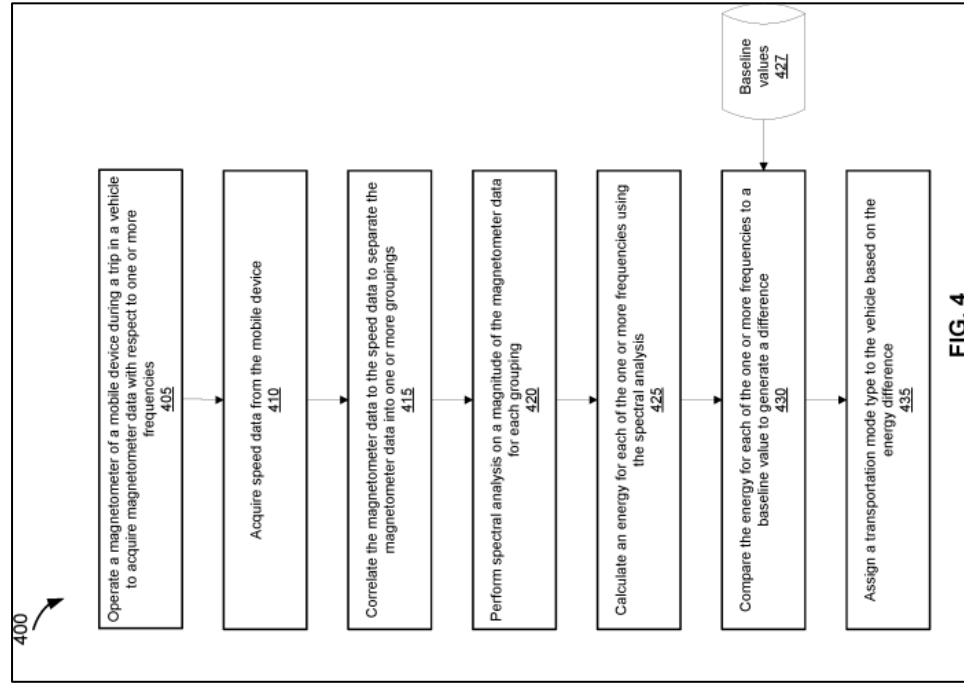
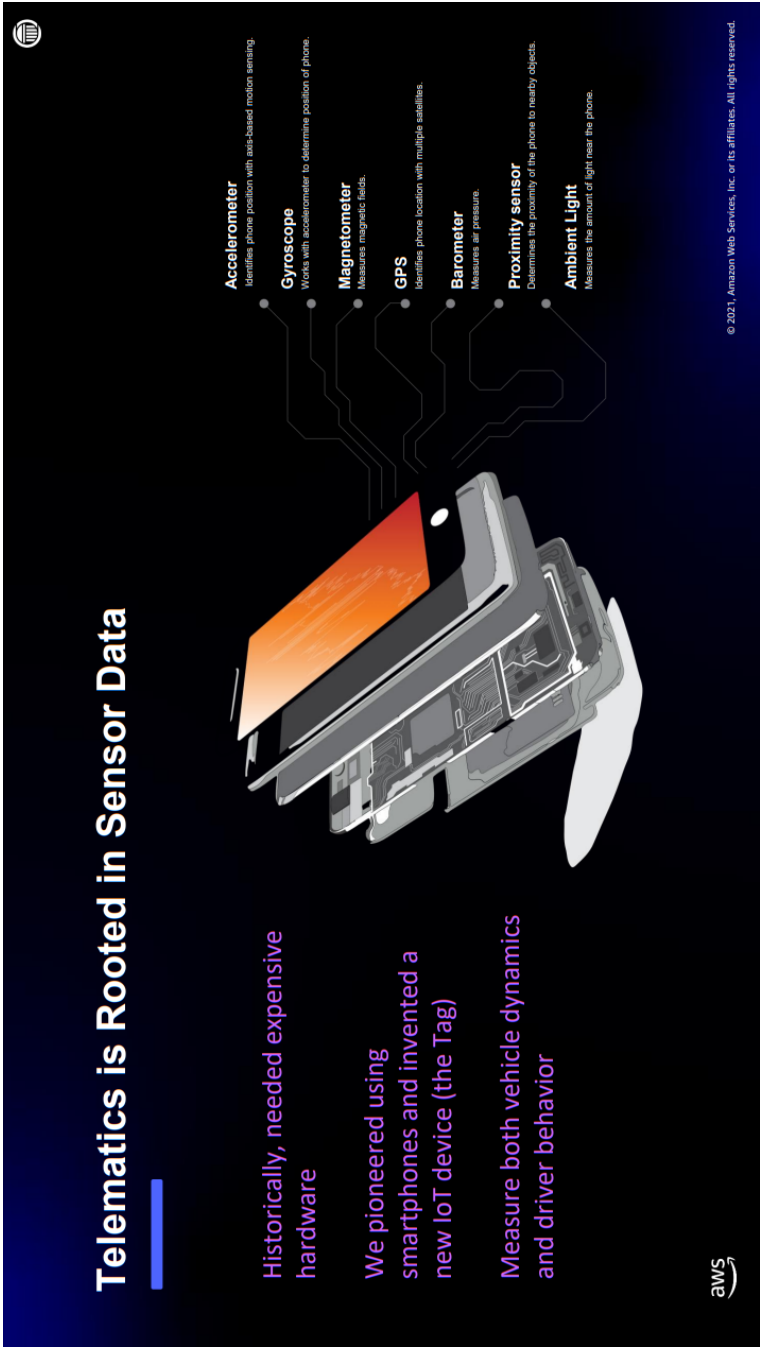


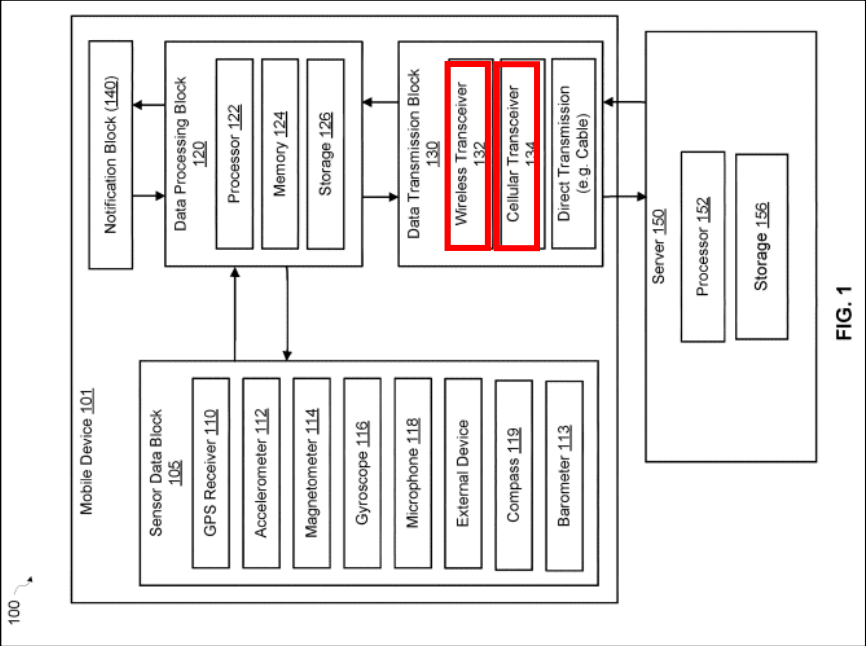
FIG. 4

"[B]y comparing a magnetometer reading at a given frequency component *and speed* to the powers for that frequency component and speed in FIGS. 5-7, a difference between the reading and the baseline values may be generated." *Id.* at [0070].

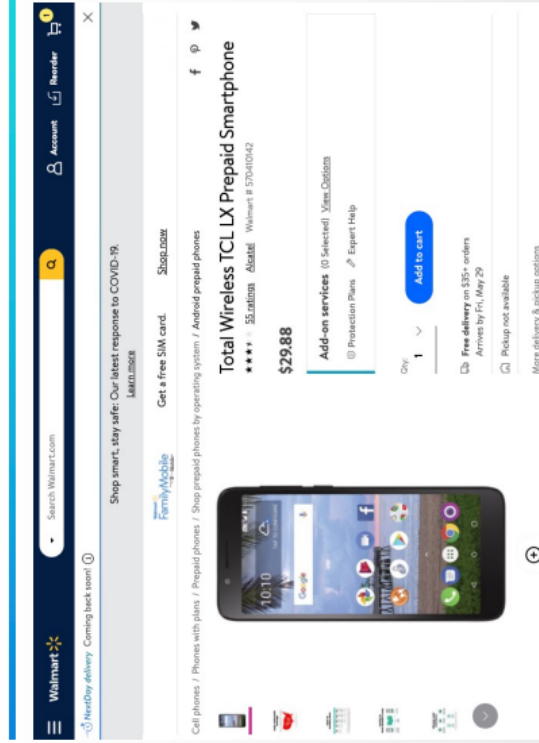
Claim 4	CMT's Accused Instrumentalities
The device of claim 3, wherein said parameter-detecting component is operable to detect, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.	See claim 3. The parameter-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) is operable to detect, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors.  The infographic titled "Telematics is Rooted in Sensor Data" features a central illustration of a smartphone with its internal components exposed. To the left, three bullet points state: "Historically, needed expensive hardware", "We pioneered using smartphones and invented a new IoT device (the Tag)", and "Measure both vehicle dynamics and driver behavior". To the right, a list of sensors is provided, each with a brief description: Accelerometer (Identifies phone position with axis-based motion sensing), Gyroscope (Works with accelerometer to determine position of phone), Magnetometer (Measures magnetic fields), GPS (Identifies phone location with multiple satellites), Barometer (Measures air pressure), Proximity sensor (Determines the proximity of the phone to nearby objects), and Ambient Light (Measures the amount of light near the phone). The AWS logo is in the bottom left corner, and the copyright notice "© 2021 Amazon Web Services, Inc. or its affiliates. All rights reserved." is in the bottom right corner. https://dl.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).

“[A] variety of mobile devices including sensors such as accelerometers 112, magnetometers 114, gyroscopes 116, compasses 119, barometers 113, location determination systems such as global positioning system (GPS) receivers 110, communications capabilities, and the like are included within the scope of the present disclosure.” ’632 Application at [0041].

“In some embodiments, external data (e.g., weather) can be retrieved and correlated with collected driving data.” *Id.* at [0045].

Claim 5 The device of claim 1, further comprising a communication component operable to wirelessly communicate with a network.	CMT's Accused Instrumentalities See claim 1. One or more of the Accused Instrumentalities includes a device further comprising a communication component (e.g., software module(s) using cellular/wireless transceiver) operable to wirelessly communicate with a network. Figure 1 of the '632 Application (shown below) illustrates a system diagram of a transportation mode determination system, including a wireless transceiver 132, and a cellular transceiver 134 (shown in the red boxes).  FIG. 1
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Telematics is Accessible



- Other affordable phone models include the Samsung Galaxy S5, the HTC one, and the Motorola Moto X.
- The DriveWell App only needs a WiFi connection; it even works on prepaid devices!

https://content.naic.org/sites/default/files/call_materials/NAIC%203-30-21.pdf. (Last accessed August 21, 2023).

Claim 6	CMT's Accused Instrumentalities
The device of claim 1, wherein said field-detecting component is operable to detect a magnetic field,	See claim 1. The field detecting component (e.g., software module(s) using smartphone sensor(s) (e.g., magnetometer), sensor data, and/or mobile processor(s)) in one or more of the Accused Instrumentalities is operable to detect a magnetic field. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a magnetic field within a vehicle. Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior Accelerometer Identifies phone position with axis-based motion sensing. Gyroscope Works with accelerometer to determine position of phone. Magnetometer Measures magnetic fields. GPS Identifies phone location with multiple satellites. Barometer Measures air pressure. Proximity sensor Determines the proximity of the phone to nearby objects. Ambient Light Measures the amount of light near the phone. https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).

As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies." One or more of the Accused Instrumentalities then "performs spectral analysis on a magnitude of the magnetometer data," and "calculates an energy [generates a detected field signature] for each of the one or more frequencies using the spectrum analysis."

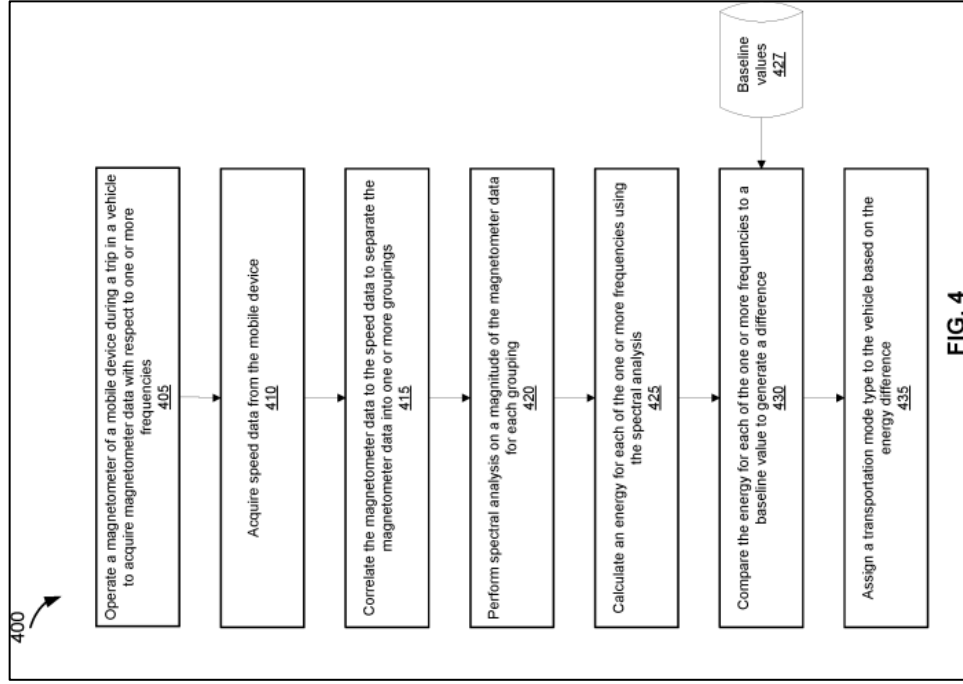


FIG. 4

Figure 5 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a car as measured by a magnetometer of a mobile device. "This data may be used for baseline values." '632 Application at [0069].

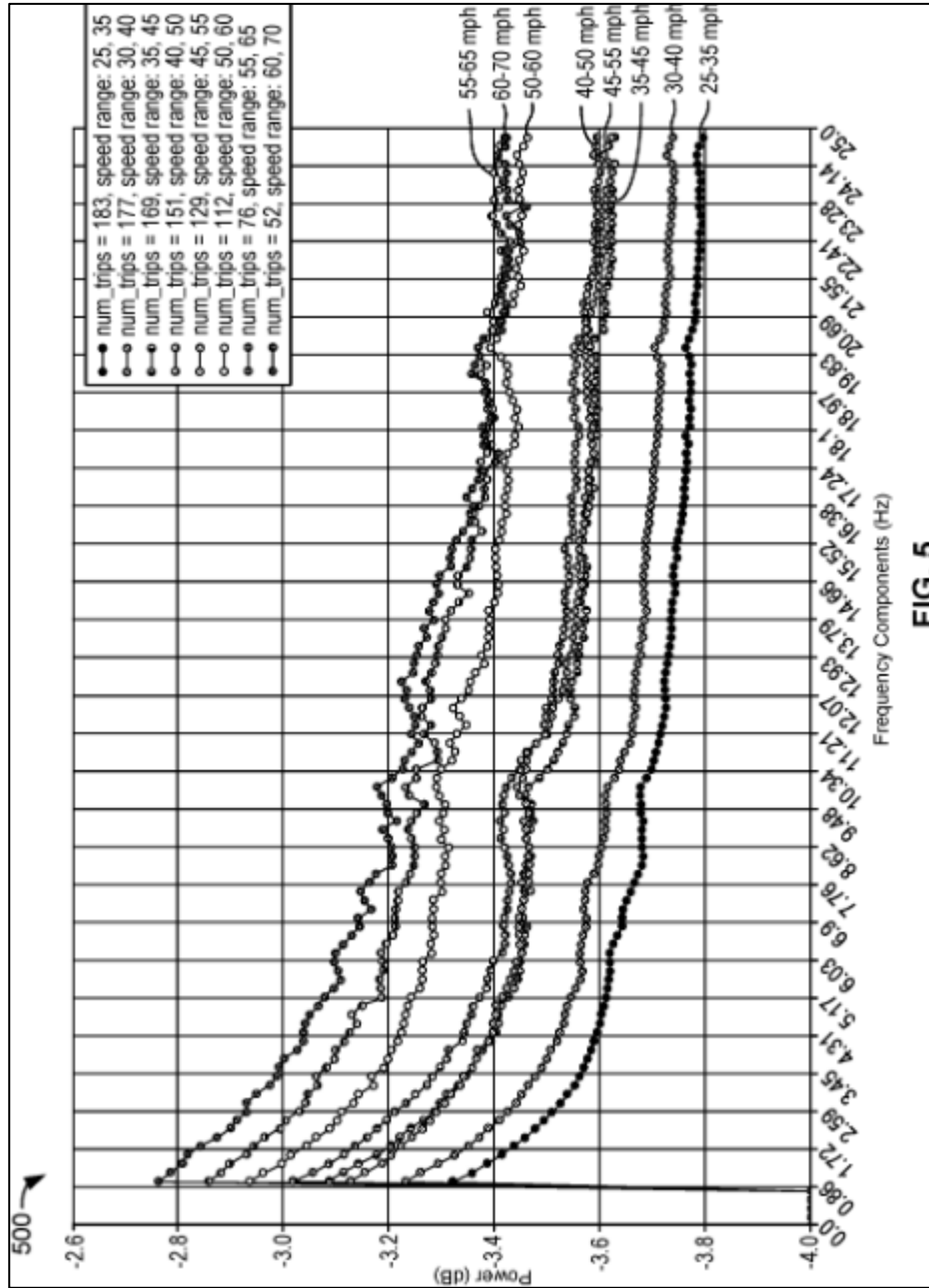


Figure 6 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a bus as measured by a magnetometer of a mobile device.

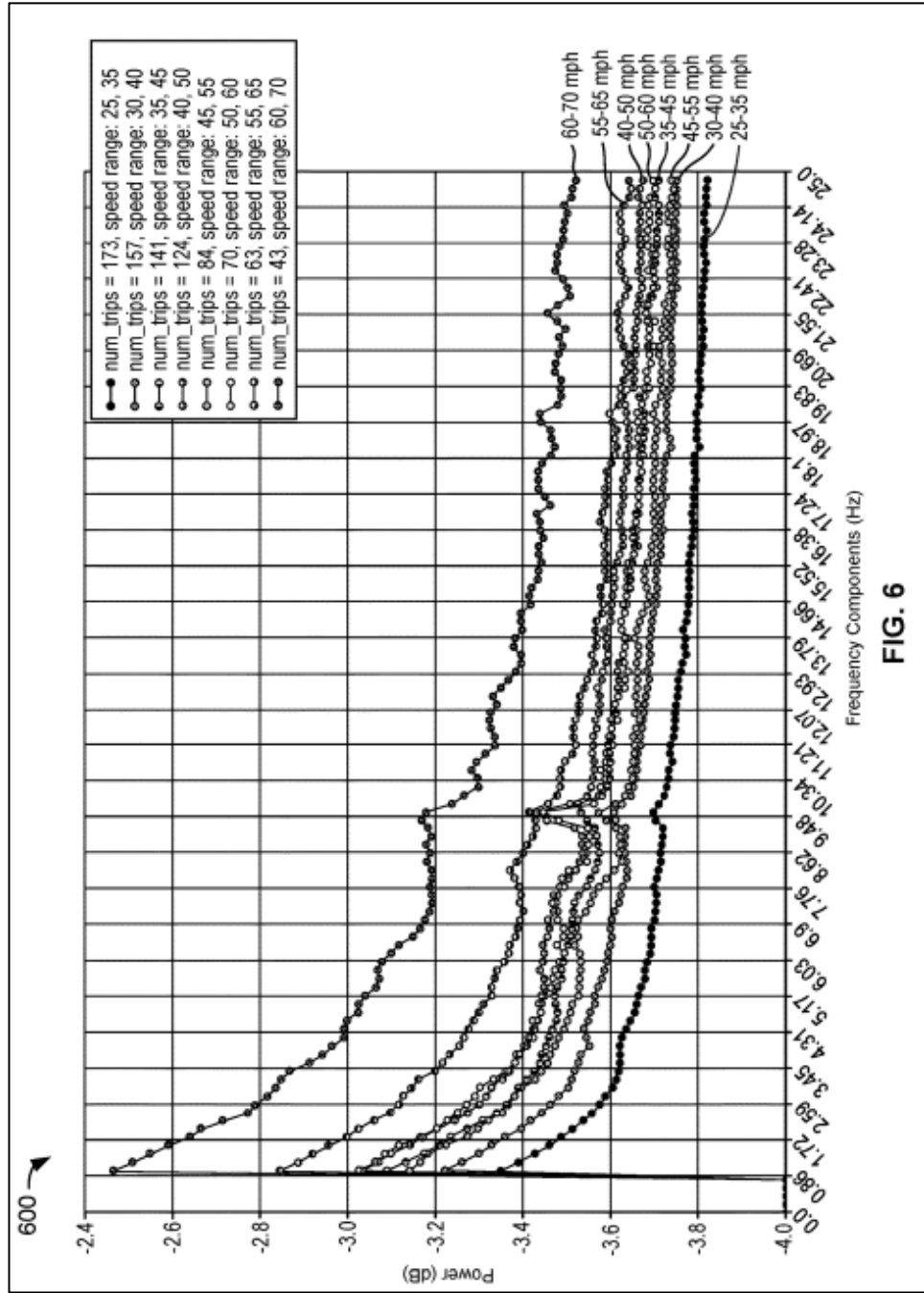


Figure 7 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a train as measured by a magnetometer of a mobile device.

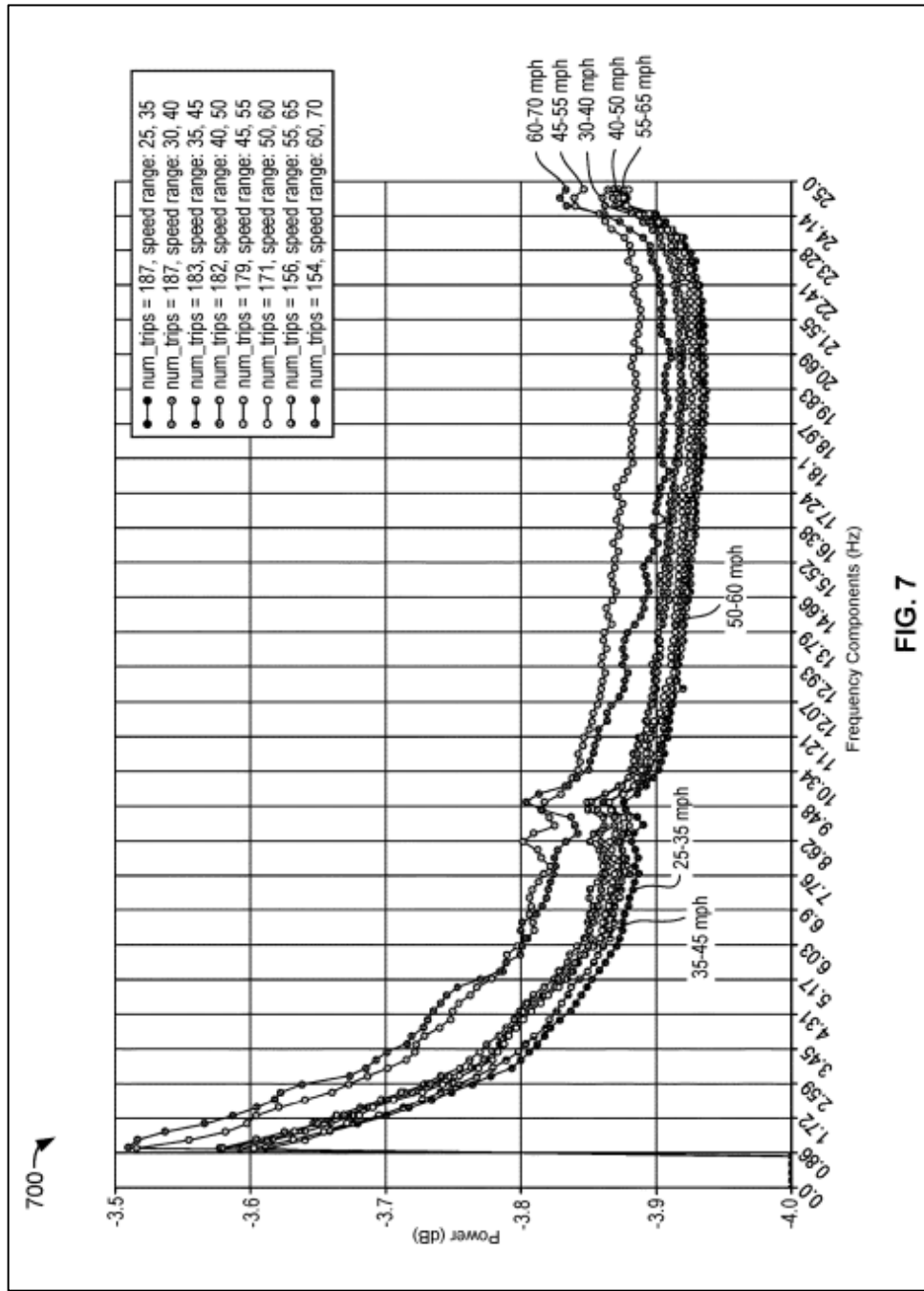
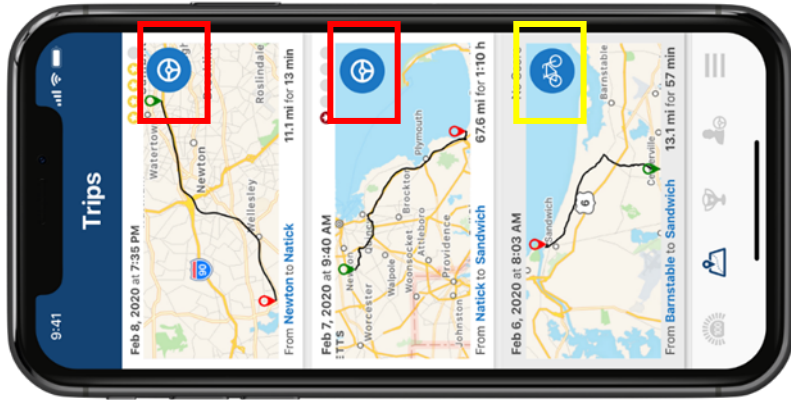


FIG. 7

wherein said input component is further operable to input an association between a vehicle and the detected magnetic field,

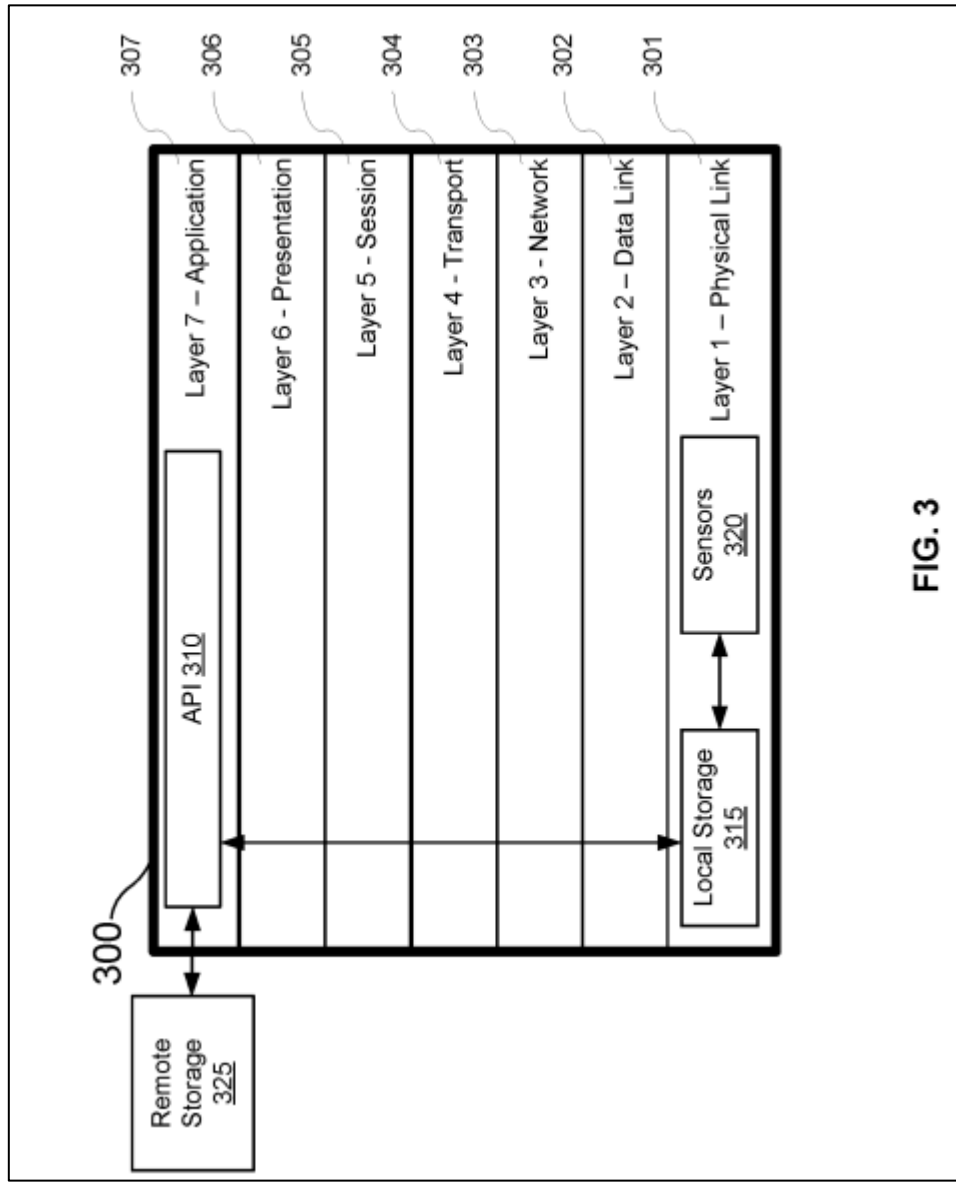
The input component (e.g., software modules using graphic user interface and/or application programming interface (API)) in one or more of the Accused Instrumentalities is further operable to input an association between a vehicle and the detected magnetic field.

One or more of the Accused Instrumentalities collects sensor data (e.g., magnetometer data) from the user's smartphone during a trip. As shown below, one or more of the Accused Instrumentalities allows users to label trips indicating, for example, that the data collected throughout the trip (e.g., magnetometer data) is associated with a detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car (shown in the red boxes) or bicycle (shown in the yellow box).



<https://www.cmtelomatics.com/cmt-mobile-sdk/>. (Last accessed August 21, 2023).

Figure 3 of the '632 Application illustrates a block diagram of a protocol stack 300 that may be implemented by the mobile device.



“The application layer 307 may interact with a user (e.g., *via receiving user inputs* and presenting outputs) and software applications implementing a communication component.” ’632 application at [0049]. “API 310 *may be in communication with remote storage 325, such as the storage 156 of the server 150.*” *Id.* at [0050]. “In some embodiments, data collected by the sensors 320 may be stored in local storage 315.” *Id.* at [0056].

wherein said field-detecting component is further operable to detect a second magnetic field and to generate a second detected field signature based on the detected second magnetic field, and	The field-detecting component (e.g., software module(s) using smartphone sensor(s) (e.g., magnetometer), sensor data, and/or mobile processor(s)) in one or more of the Accused Instrumentalities is further operable to detect a second magnetic field and to generate a second detected field signature (e.g., magnetometer data signature associated with e.g., a current mode of transportation) based on the detected second magnetic field. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a second magnetic field within a vehicle, and to generate a second detected field signature (e.g., magnetometer data signature associated with e.g., a current mode of transportation) based on the detected second magnetic field.
	Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior  Accelerometer Identifies phone position with accel-based motion sensing Gyroscope Works with accelerometer to determine position of phone Magnetometer Measures magnetic fields GPS Identifies phone location with multiple satellites Barometer Measures air pressure Proximity sensor Determines the proximity of the phone to nearby objects. Ambient Light Measures the amount of light near the phone. https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).

As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies." One or more of the Accused Instrumentalities then "performs spectral analysis on a magnitude of the magnetometer data," and "calculates an energy [generates a detected field signature] for each of the one or more frequencies using the spectrum analysis."

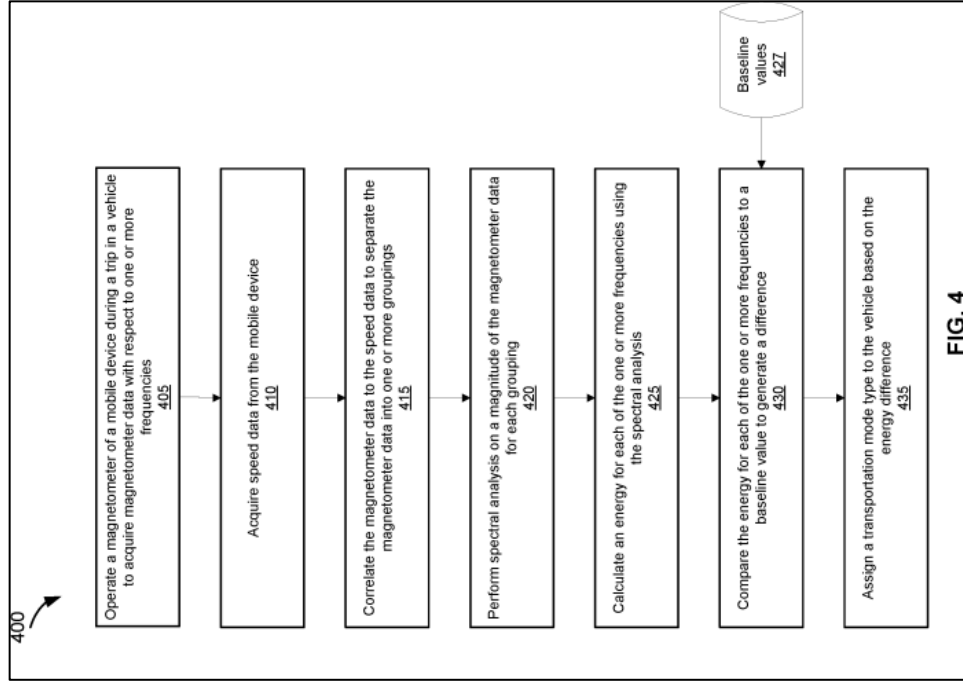


Figure 5 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a car as measured by a magnetometer of a mobile device.

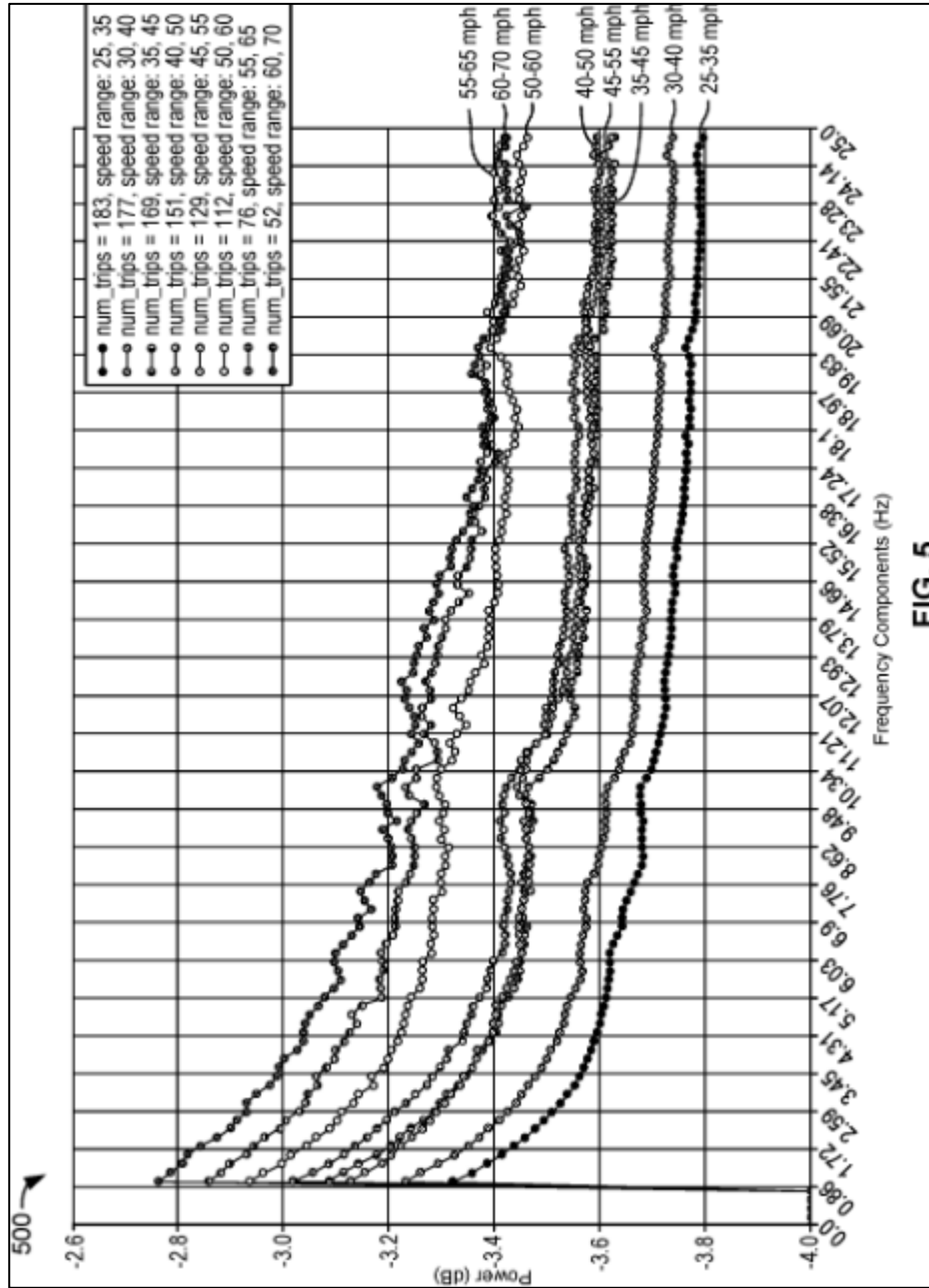


FIG. 5

Figure 6 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a bus as measured by a magnetometer of a mobile device.

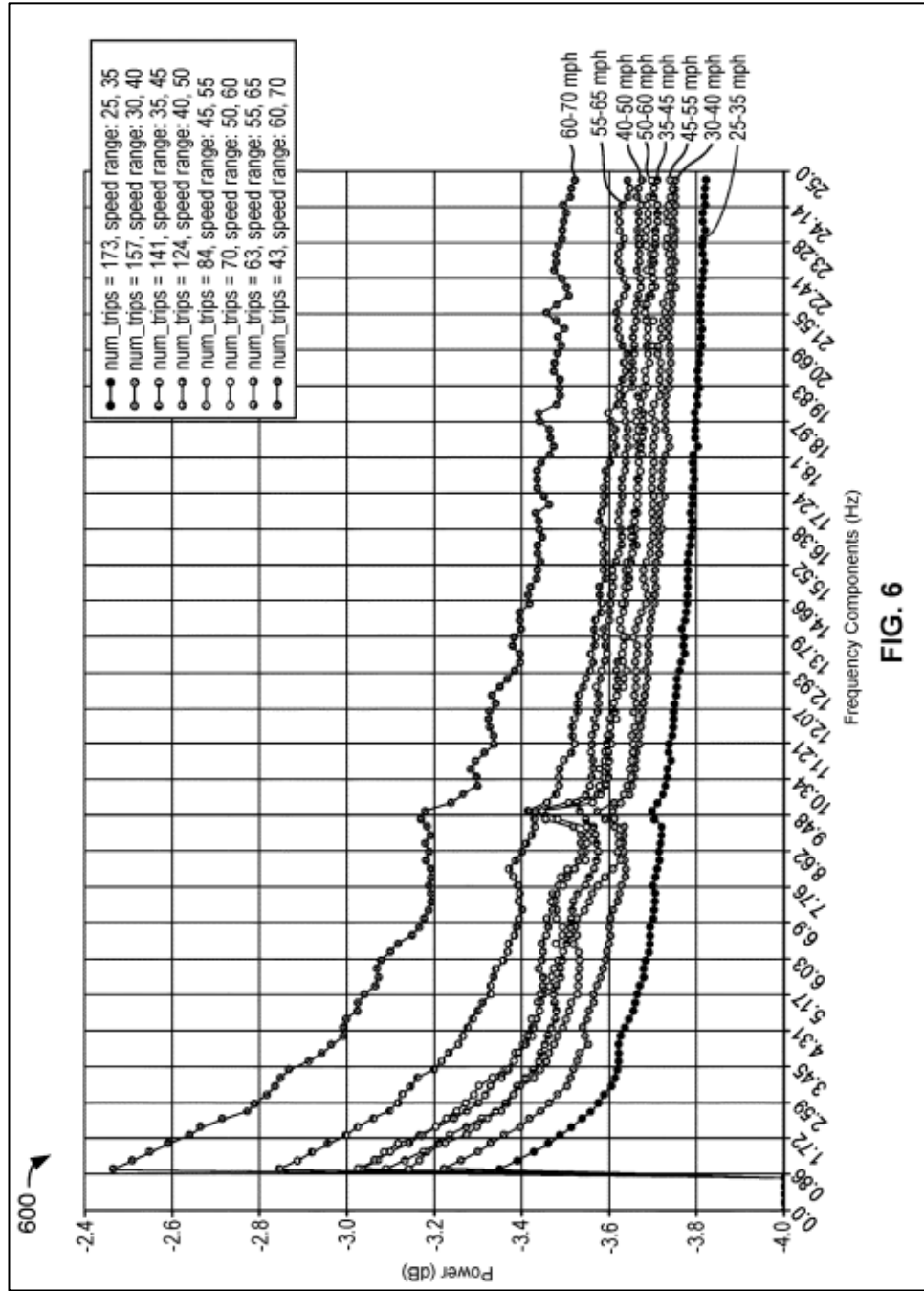


FIG. 6

Figure 7 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a train as measured by a magnetometer of a mobile device.

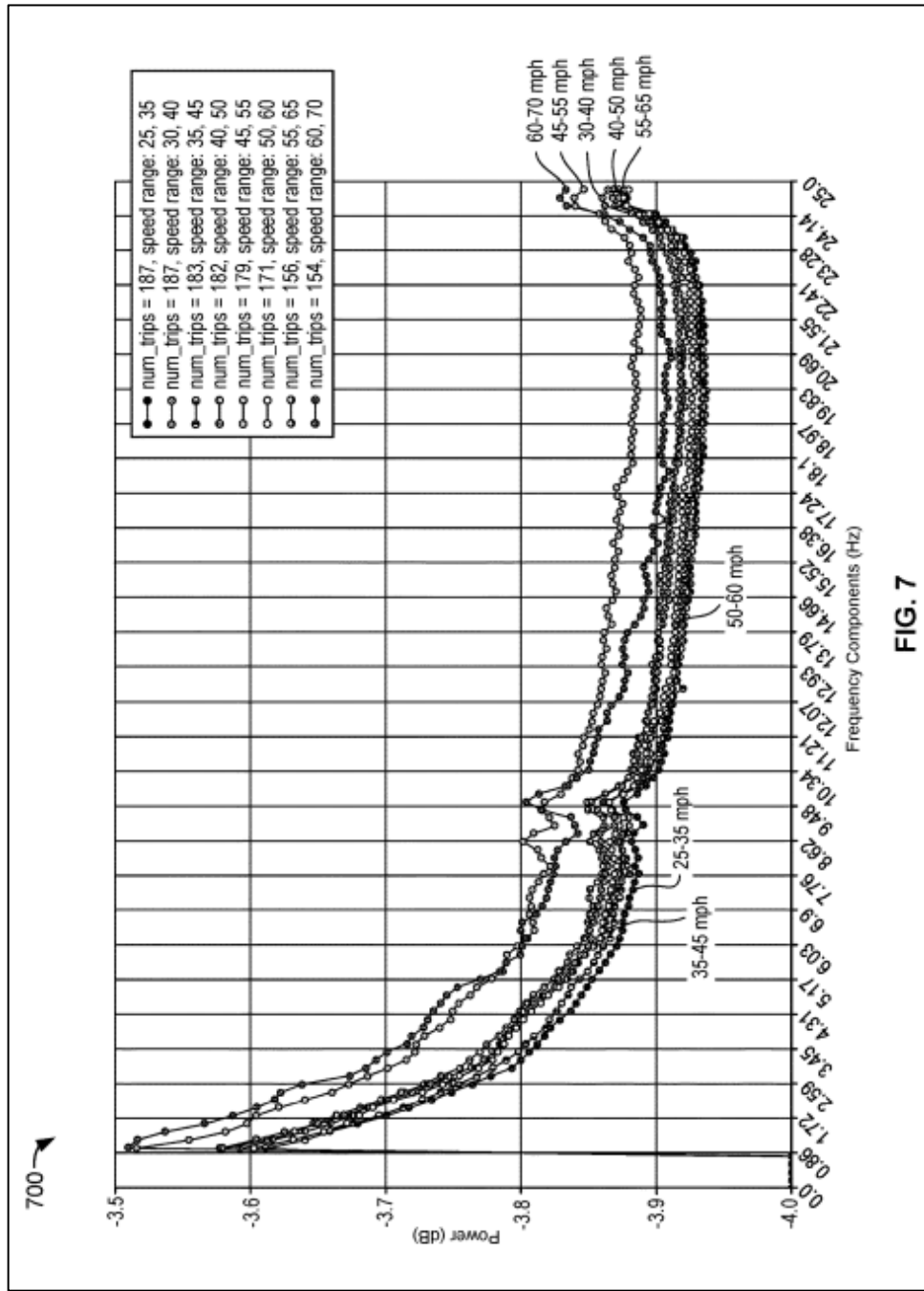


FIG. 7

wherein said identifying component is further operable, based on the association, to identify the vehicle as the item.

The identifying component (e.g., software module(s) using mobile processor(s)) in one or more of the Accused Instrumentalities is further operable, based on the association, to identify the vehicle as the item.

What You Get With the DriveWell SDK

- ✓ Automatic Trip Recording
- ✓ Identifying Driver versus Passenger
- ✓ Identifying Car Trips versus Other Transport Modes
- ✓ Measuring Risky Events (Including Phone Distraction!)
- ✓ Displaying Trip Details in the App

<https://www.cntelematics.com/cmt-mobile-sdk/>. (Last accessed August 21, 2023).

As shown in Figure 4 of the '632 Application (below), at block 435, one or more of the Accused Instrumentalities "assigns a transportation mode type to the vehicle [identifies an item] based on the energy difference."

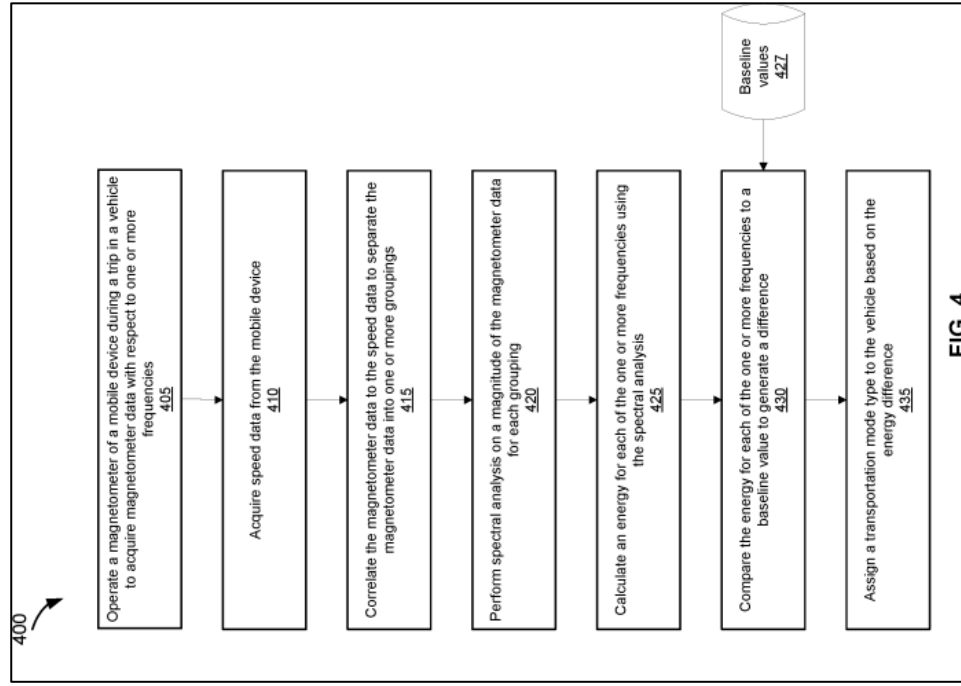


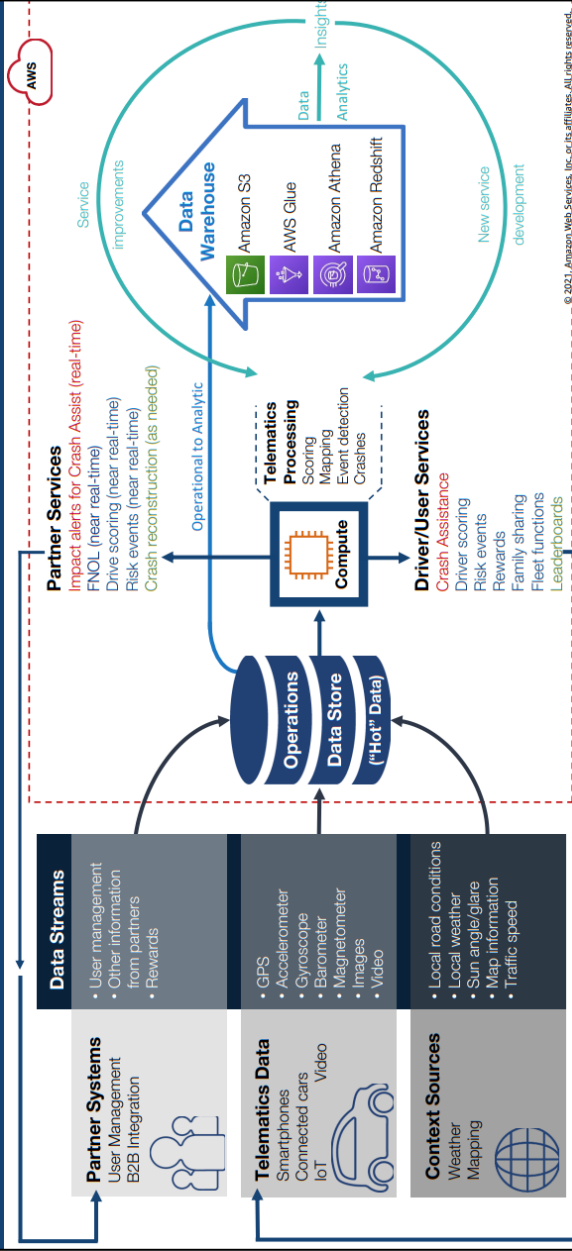
FIG. 4

“At block 435, a transportation mode type may be assigned to the vehicle based on the difference. The transportation mode associated with the smallest difference in energy at a majority or a threshold number of frequencies may be assigned. The processor of the mobile device may determine the difference between the measured energy values and the baseline values for the different transportation modes at corresponding frequency components. The processor may determine the transportation mode having the smallest difference in energy from the measured values at a specified number of frequency components as the transportation mode type to be assigned.” ’632 Application at [0062].

“The type of vehicle may be, for example, a car, a train, a bus, a ferry, a subway, an airplane, and/or the like.” *Id.* at [0063].

Claim 8	CMT's Accused Instrumentalities
A method, for use with a database, said method comprising:	One or more of the Accused Instrumentalities performs a method, for use with a database. One or more of the Accused Instrumentalities “gathers sensor data from millions of IoT devices—including smartphones, proprietary tags, connected vehicles, dashcams, and third-party devices—and fuses them with contextual data to create a unified view of vehicle and driver behavior.” https://www.cmtelomatics.com/safe-driving-technology/how-it-works/. (Last accessed August 21, 2023). CMT hosts and runs mobile applications for use on Android and iOS platforms that are deployed on drivers’ smartphones. https://apps.apple.com/us/developer/cambridge-mobile-telematics-inc/id655601790?see-all=i-phone-apps (Last accessed August 21, 2023); https://play.google.com/store/apps/developer?id=Cambridge+Mobile+Telematics&hl=en_US&gl=US (Last accessed August 21, 2023). Driver’s smartphone may implement a protocol stack to communicate with remote servers.

Telematics Processing Architecture



https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

Every company has unique business needs. Our goal was to develop a solution that meets the unique needs of all of our partners. DriveWell products can be used separately or together to develop a user-forward mobile telematics program that is right for your business and drivers.

DriveWell SDK  Collect meaningful sensor data and harness CMT's expertise in your own app	DriveWell Tag  Collect vehicle and crash data with a wireless, easy-to-install device	DriveWell Score  Measure driver risk with scoring models based on millions of trips and billions of miles
DriveWell Engage  Increase customer engagement and motivate users to improve	DriveWell Fleet  Reduce fleet risk and costs with the mobile phone and DriveWell Tag	

<https://www.cmttelematics.com/blog/drivewell-assess-risk-and-encourage-safer-driving/>. (Last accessed August 21, 2023).

What Data is Collected?

The following data is required to accurately assess driving risk and motivate drivers to improve

Smartphone app

- **Accelerometer data** helps identify mileage and is used in the calculation of phone motion, screen interaction, and acceleration-based (hard braking, acceleration, and excessive speeding events)
- **Gyroscope data** is used in the calculation of phone motion, screen interaction, and acceleration-based events

DriveWell Tag

- **High-frequency accelerometer data** detects when and how the vehicle is moving, is used to calculate overall mileage, and identifies acceleration-based events

What smartphone permissions are required?

- **Location:** to collect GPS data
- **Bluetooth:** to connect to the Tag
- **Motion & activity:** helps to detect when a trip starts & stops

https://content.naic.org/sites/default/files/call_materials/NAIC%203-30-21.pdf. (Last accessed August 21, 2023).

On information and belief, one or more of the Accused Instrumentalities is described, in part, in U.S. Patent Application No. 2023/0143632 (the “’632 Application”), assigned to CMT. The ’632 Application describes a system and method for determining a transportation mode via the acquisition of magnetometer and speed data from a mobile device. Figure 1 of the ’632 Application (shown below) illustrates a system diagram of a transportation mode determination system, including storage 126 and storage 156 (shown in the red boxes).

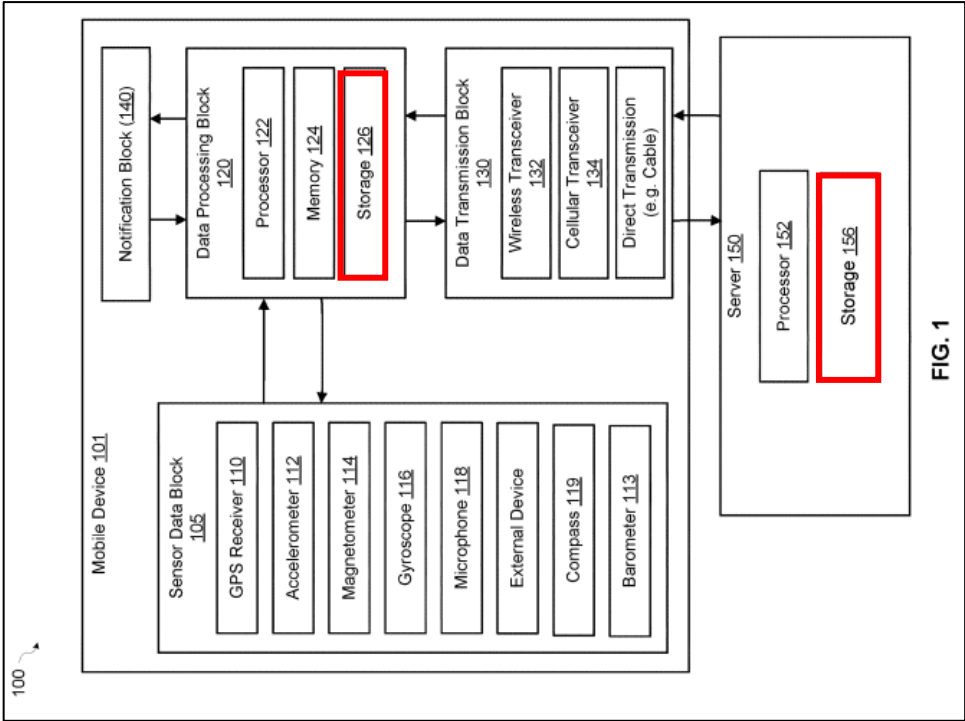
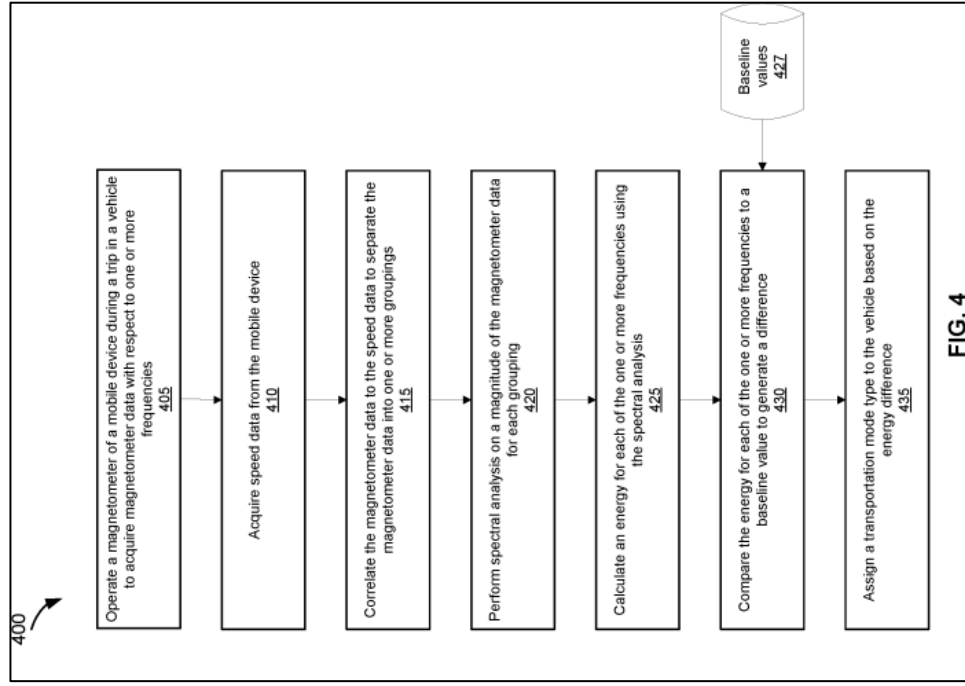


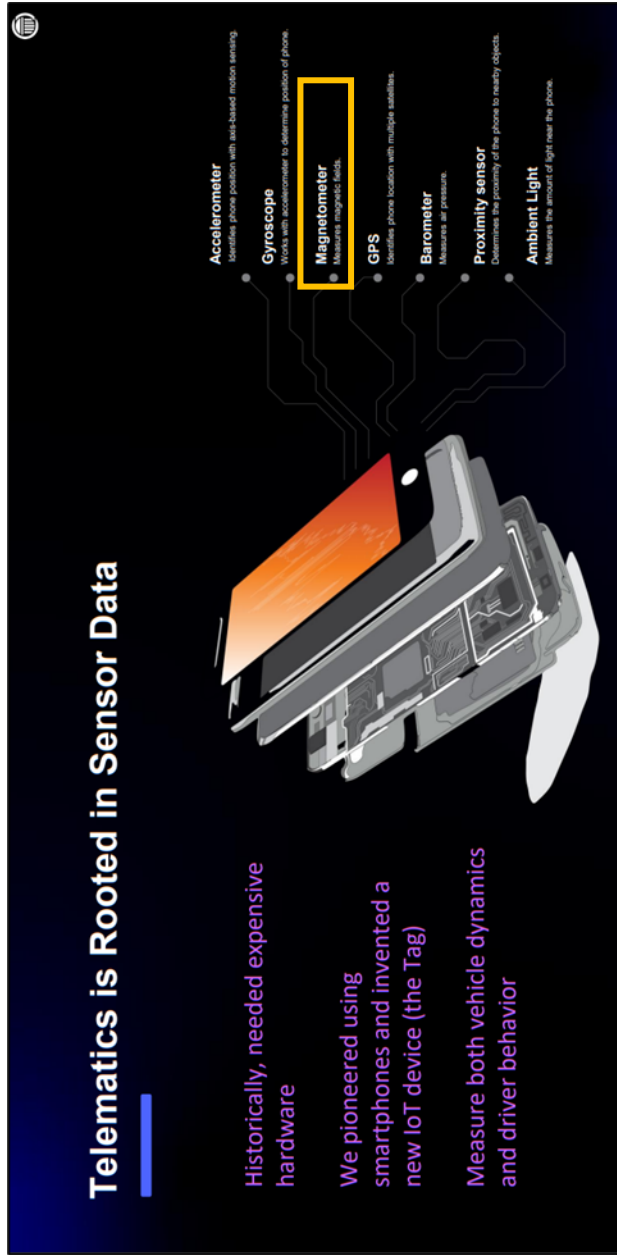
Figure 4 of the '632 Application is a flowchart illustrating a transportation mode determination method.



detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field;

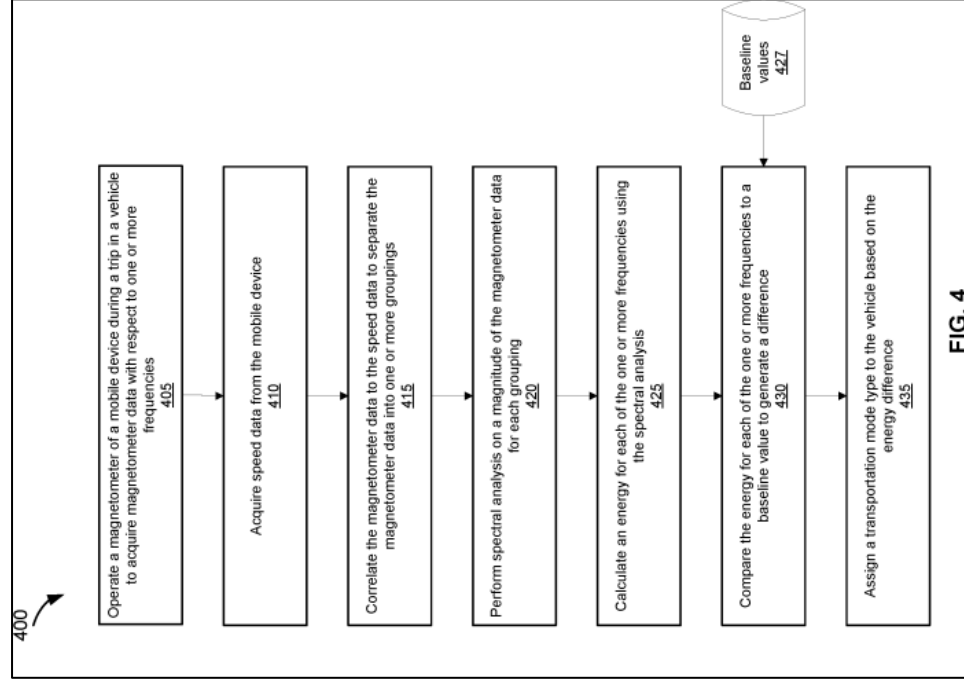
One or more of the Accused Instrumentalities detects, via a field-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)), at least one of an electric field, a magnetic field and an electro-magnetic field.

One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a magnetic field within a vehicle.



https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies."



generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field;	One or more of the Accused Instrumentalities generates, via the field-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)), a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a magnetic field within a vehicle, and to generate a detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car) based on the detected magnetic field.
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As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies." One or more of the Accused Instrumentalities then "performs spectral analysis on a magnitude of the magnetometer data," and "calculates an energy [generates a detected field signature] for each of the one or more frequencies using the spectrum analysis."

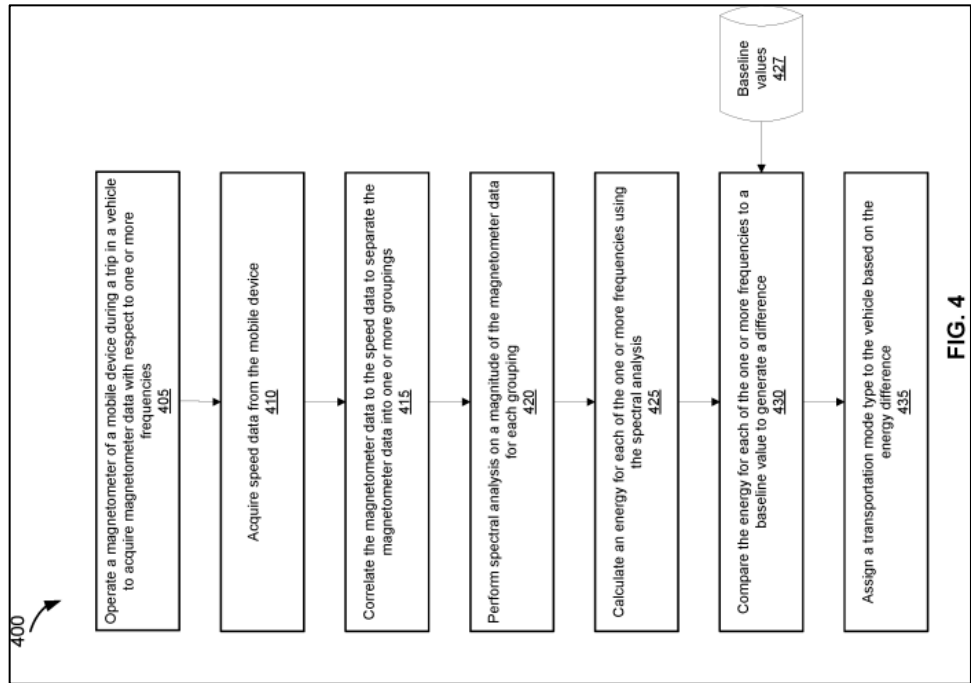


FIG. 4

Figure 5 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a car as measured by a magnetometer of a mobile device. "This data may be used for baseline values." '632 Application at [0069].

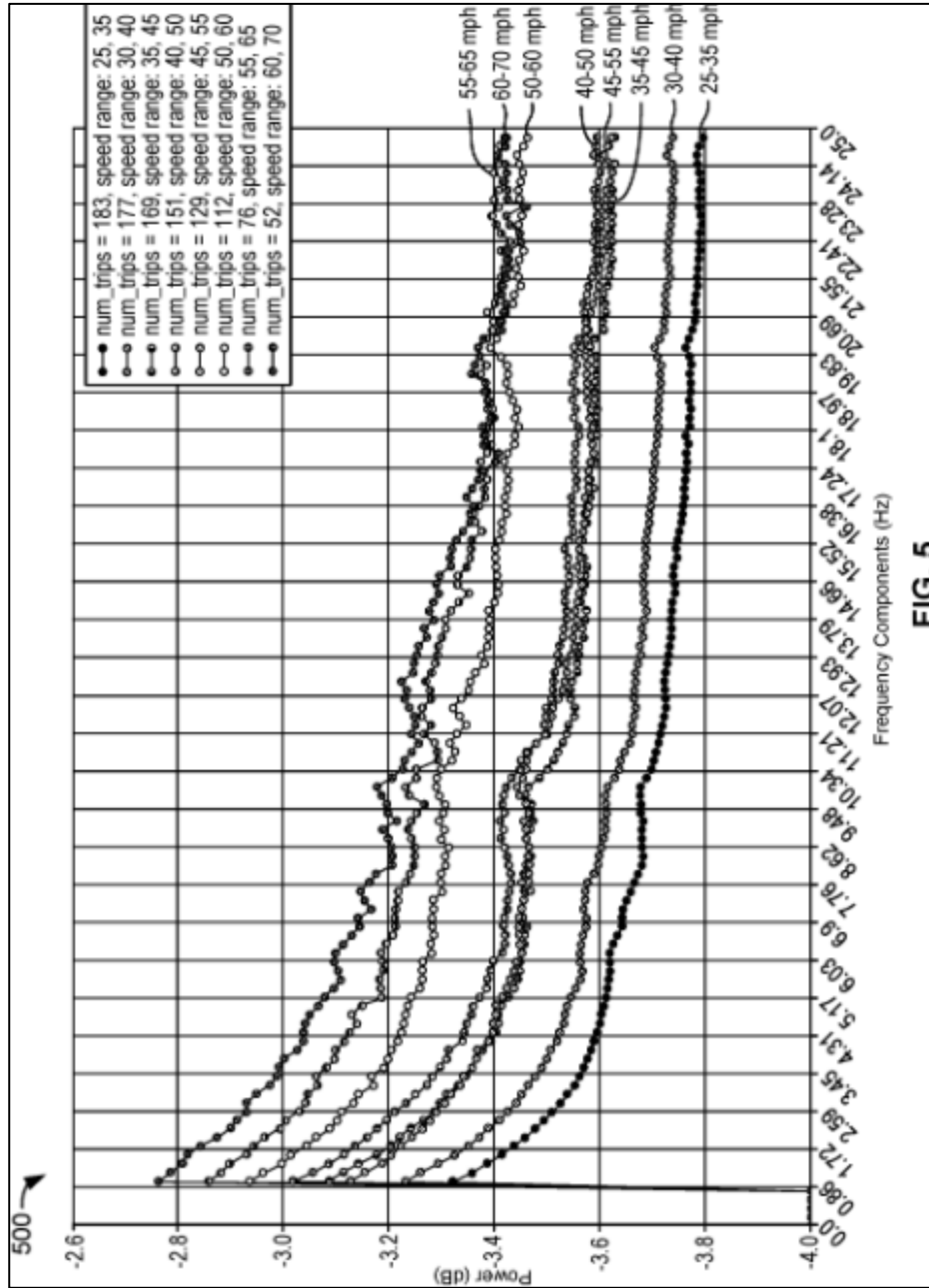


Figure 6 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a bus as measured by a magnetometer of a mobile device.

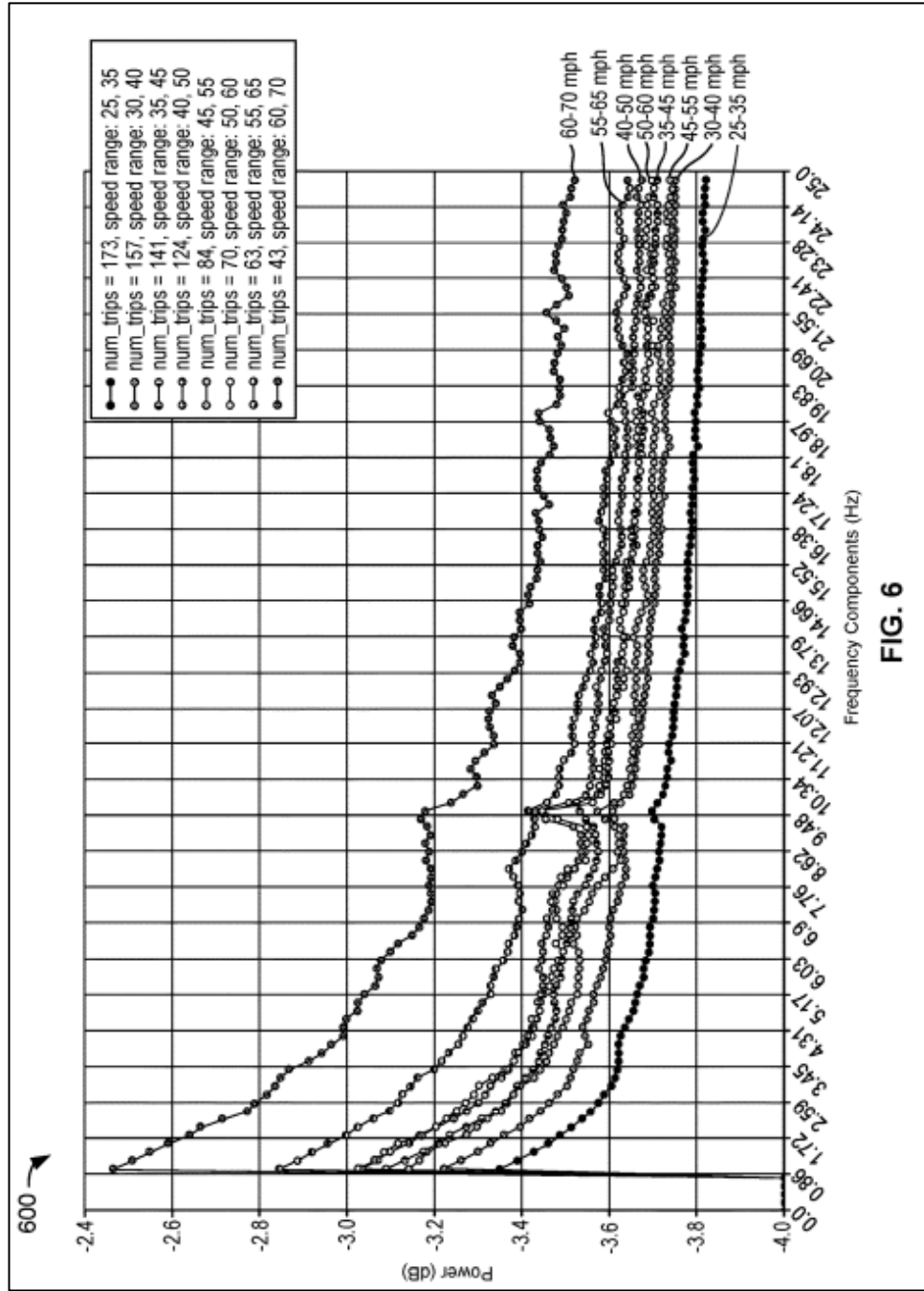


FIG. 6

Figure 7 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a train as measured by a magnetometer of a mobile device.

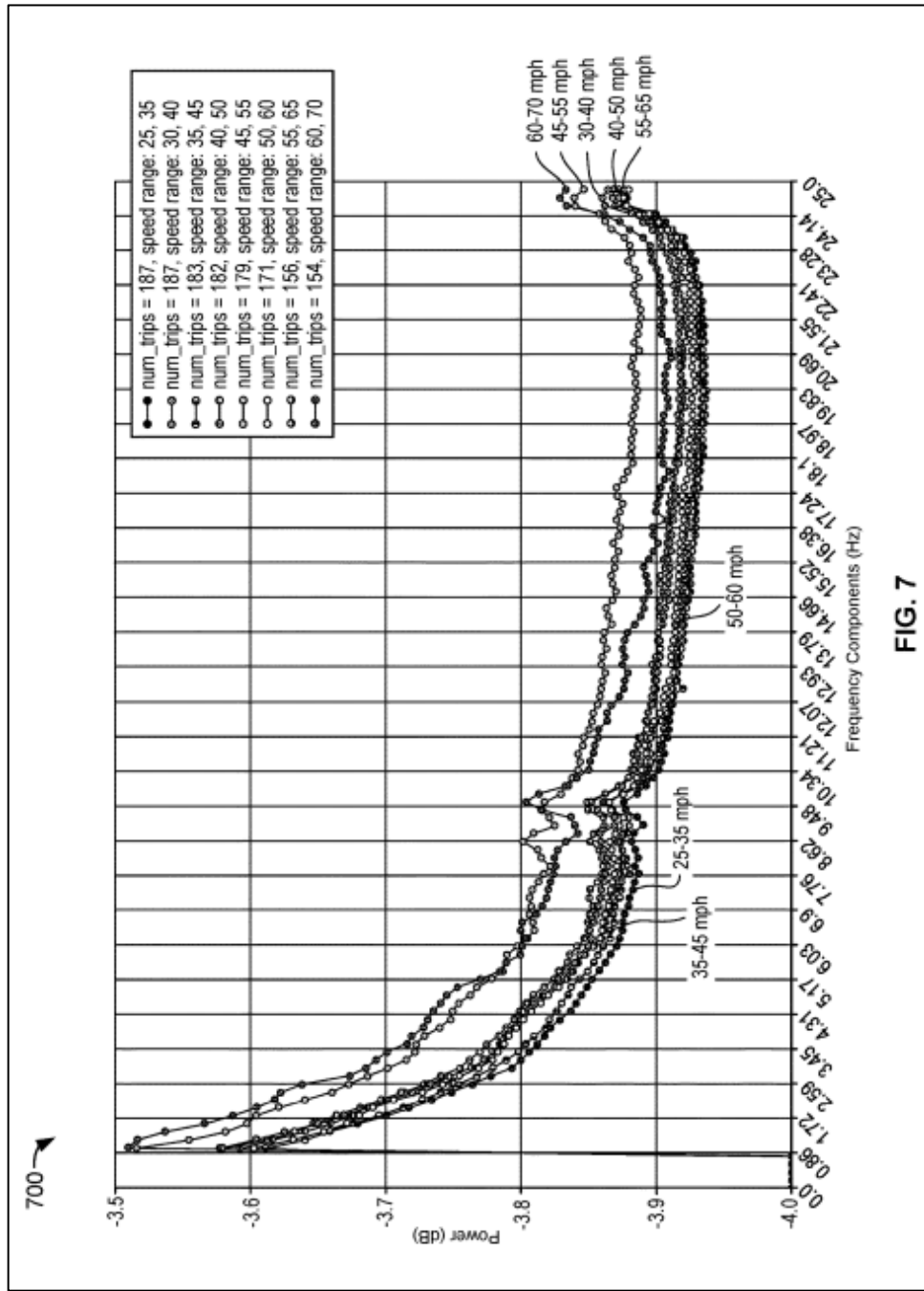
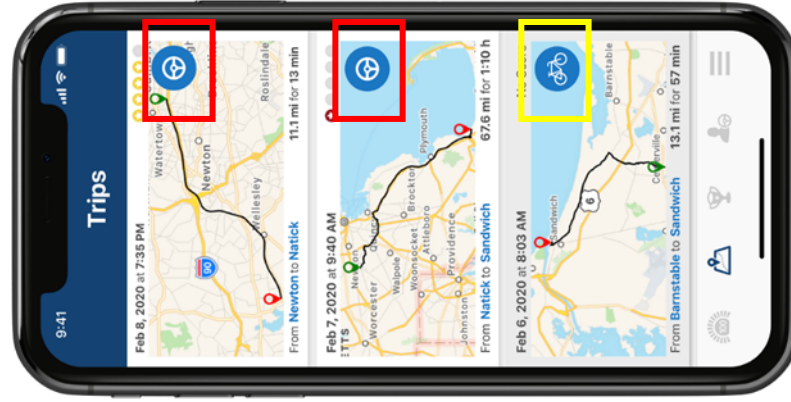


FIG. 7

inputting, via an input component, the detected field signature into the database;

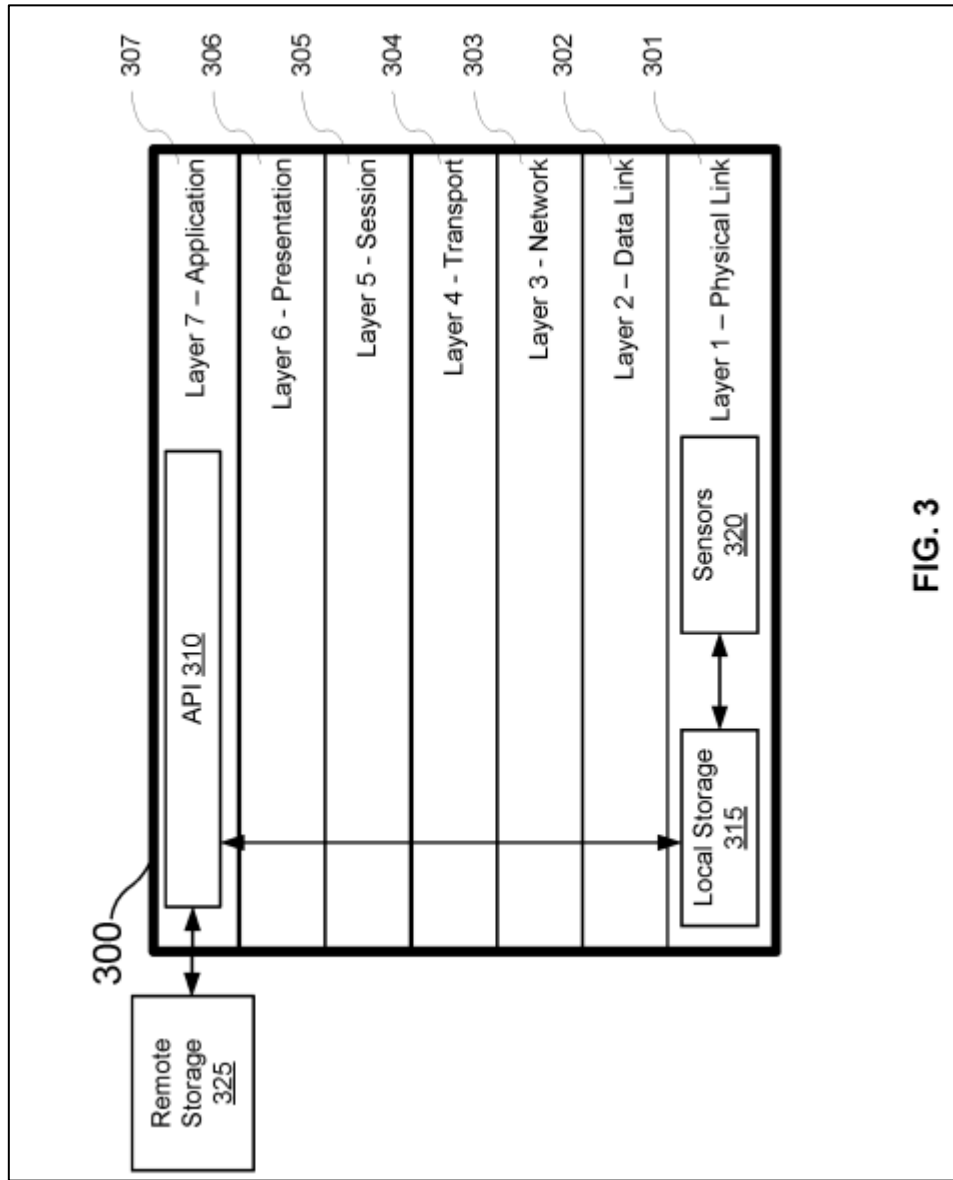
One or more of the Accused Instrumentalities inputs, via an input component (e.g., software module(s) using graphic user interface and/or application programming interface (API)), the detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car) into the database.

One or more of the Accused Instrumentalities collects sensor data (e.g., magnetometer data) from the user's smartphone during a trip. As shown below, one or more of the Accused Instrumentalities allows users to label trips indicating, for example, that the data collected throughout the trip (e.g., magnetometer data) is associated with a detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car (shown in the red boxes) or bicycle (shown in the yellow box).



<https://www.cmtelomatics.com/cmt-mobile-sdk/>. (Last accessed August 21, 2023).

Figure 3 of the '632 Application illustrates a block diagram of a protocol stack 300 that may be implemented by the mobile device.



“The application layer 307 may interact with a user (e.g., *via receiving user inputs* and presenting outputs) and software applications implementing a communication component.” ’632 application at [0049]. “API 310 *may be in communication with remote storage 325, such as the storage 156 of the server 150.*” *Id.* at [0050]. “In some embodiments, data collected by the sensors 320 may be stored in local storage 315.” *Id.* at [0056].

accessing, via an accessing component, the detected field signature from the database;

One or more of the Accused Instrumentalities accessing, via an accessing component (e.g., software module(s) using mobile processor(s)) the detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation) the database.

As shown in Figure 4 of the '632 Application, for example, the smartphone processor must access the detected field signature (e.g., baseline values 427, shown in the red box) in order to "compare[] the energy of different transportation modes," to "the energy at each frequency component as calculated." '632 Application at [0061].

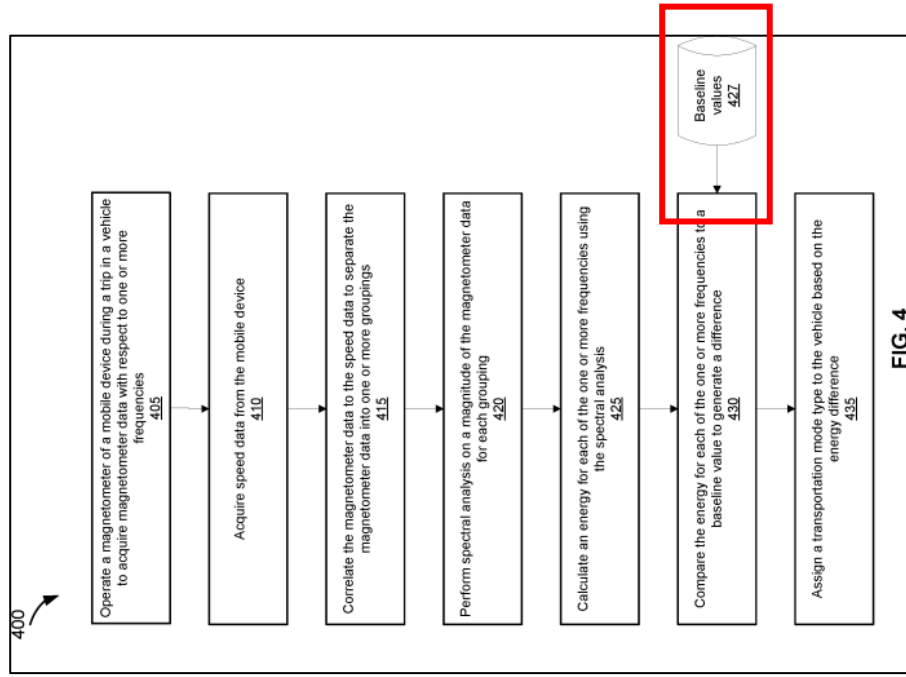
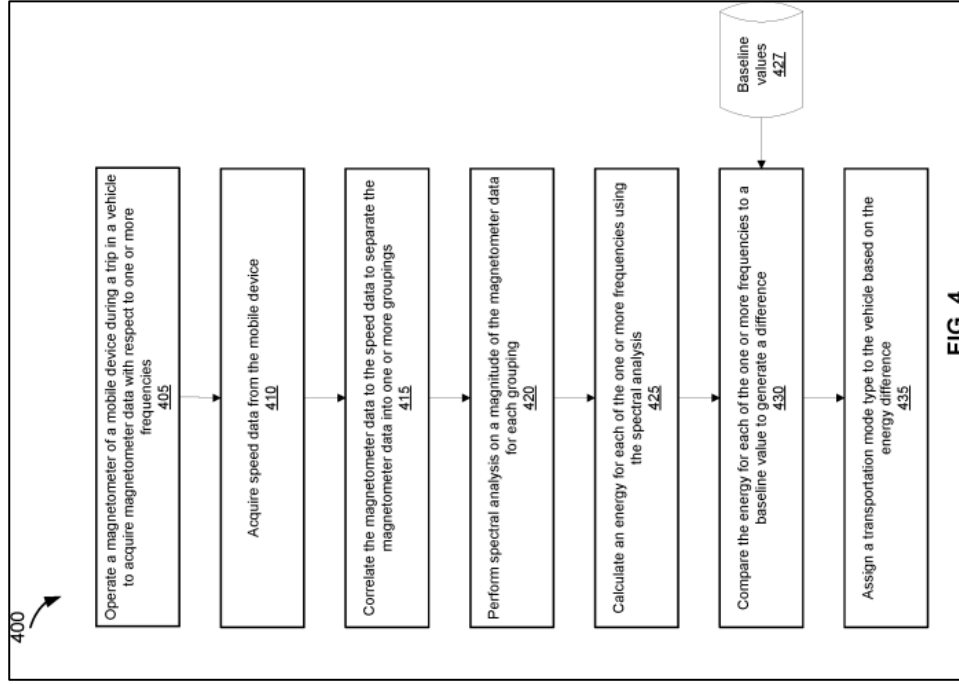


FIG. 4

generating, via a comparing component, a comparison signal;	One or more of the Accused Instrumentalities generates, via a comparing component (e.g., software module(s) using mobile processor(s)) a comparison signal. A comparison signal may be generated by comparing a plurality of signals. The signals may include measured signals, predetermined field signatures, and/or a predetermined field signature and measured signal.
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As shown in Figure 4 of the '632 Application (below), at block 430, one or more of the Accused Instrumentalities "compares the energy for each of the one or more frequencies to a baseline value to generate a difference."



“At block 430, the energy for each of the one or more frequency components may be compared to a baseline value 427 to generate an energy difference. The baseline value 427 may be the energy at each frequency component associated with different modes of transportation. For example, a train may have a certain energy at a certain frequency component, a bus may have a different energy at the certain frequency component, a car may have still another energy at the certain frequency component, and so forth. The processor of the mobile device may cause the energy at each frequency component as calculated to be compared to the energies of the different transportation modes at the same frequency component as the measurement.” ’ 632 Application at [0061].

identifying, via an identifying component, one of an item and a location based on the comparison signal;

One or more of the Accused Instrumentalities identifies, via an identifying component (e.g., software module(s) using mobile processor(s)) one of an item (e.g., a mode of transportation, such as a car, motorcycle, bicycle, train, bus) and a location (e.g., driver/passenger side of the vehicle) based on the comparison signal.

What You Get With the DriveWell SDK

- ✓ Automatic Trip Recording
- ✓ Identifying Driver versus Passenger
- ✓ Identifying Car Trips versus Other Transport Modes
- ✓ Measuring Risky Events (Including Phone Distraction!)
- ✓ Displaying Trip Details in the App

<https://www.cmtlematics.com/cmt-mobile-sdk/>. (Last accessed August 21, 2023).

As shown in Figure 4 of the '632 Application (below), at block 435, one or more of the Accused Instrumentalities "assigns a transportation mode type to the vehicle [identifies an item] based on the energy difference [based on the comparison signal]."

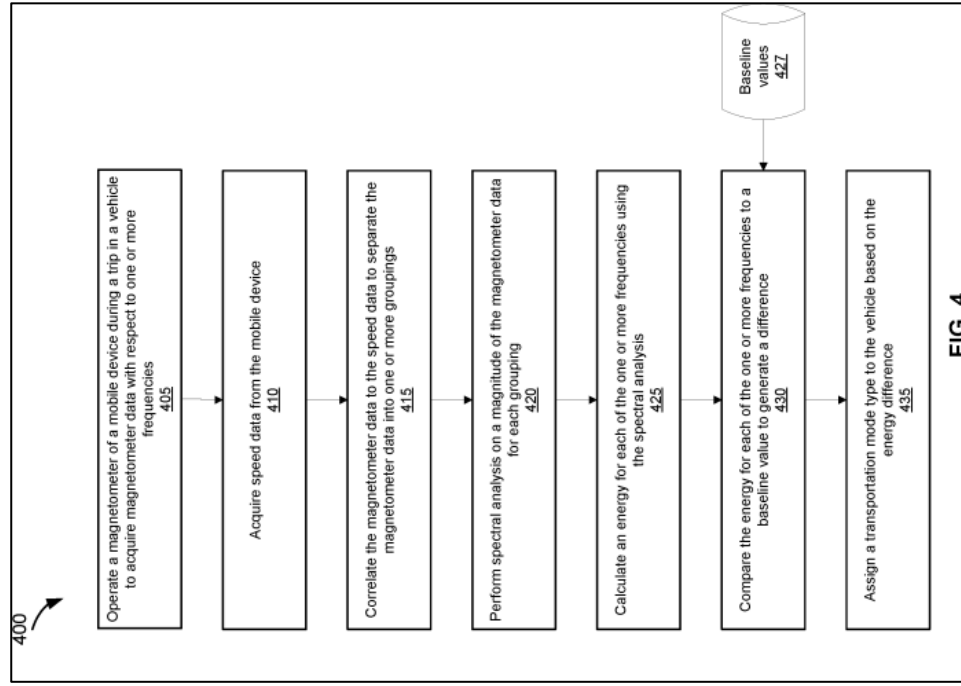


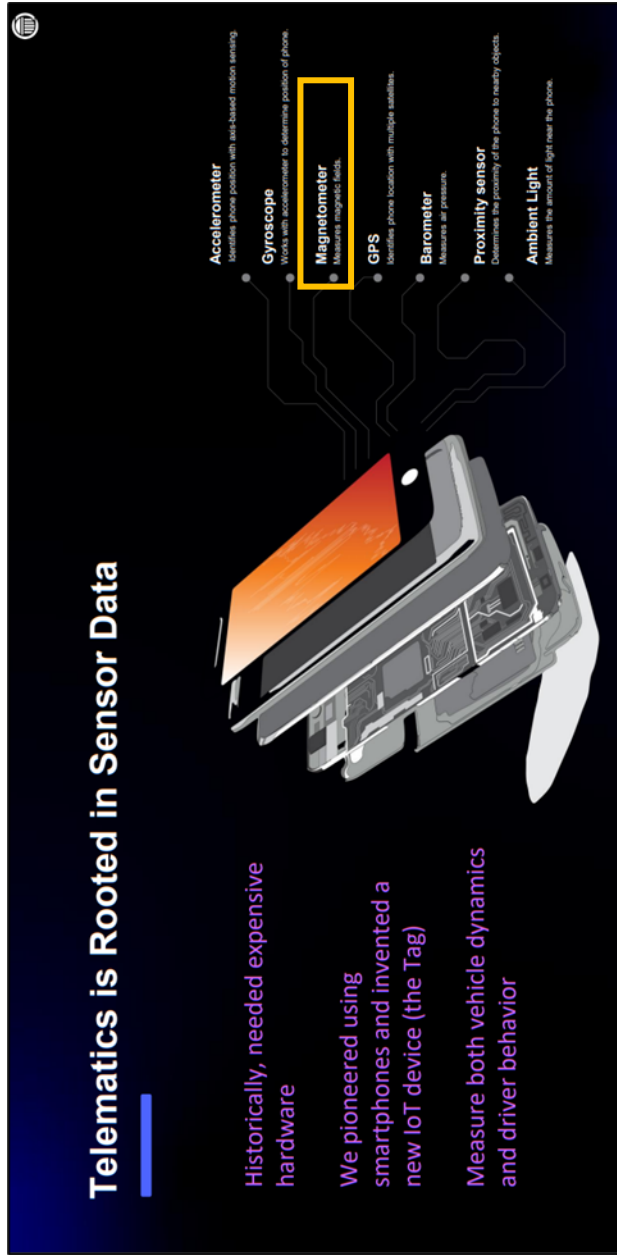
FIG. 4

“At block 435, a transportation mode type may be assigned to the vehicle based on the difference. The transportation mode associated with the smallest difference in energy at a majority or a threshold number of frequencies may be assigned. The processor of the mobile device may determine the difference between the measured energy values and the baseline values for the different transportation modes at corresponding frequency components. The processor may determine the transportation mode having the smallest difference in energy from the measured values at a specified number of frequency components as the transportation mode type to be assigned.” ’632 Application at [0062].

detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field; and

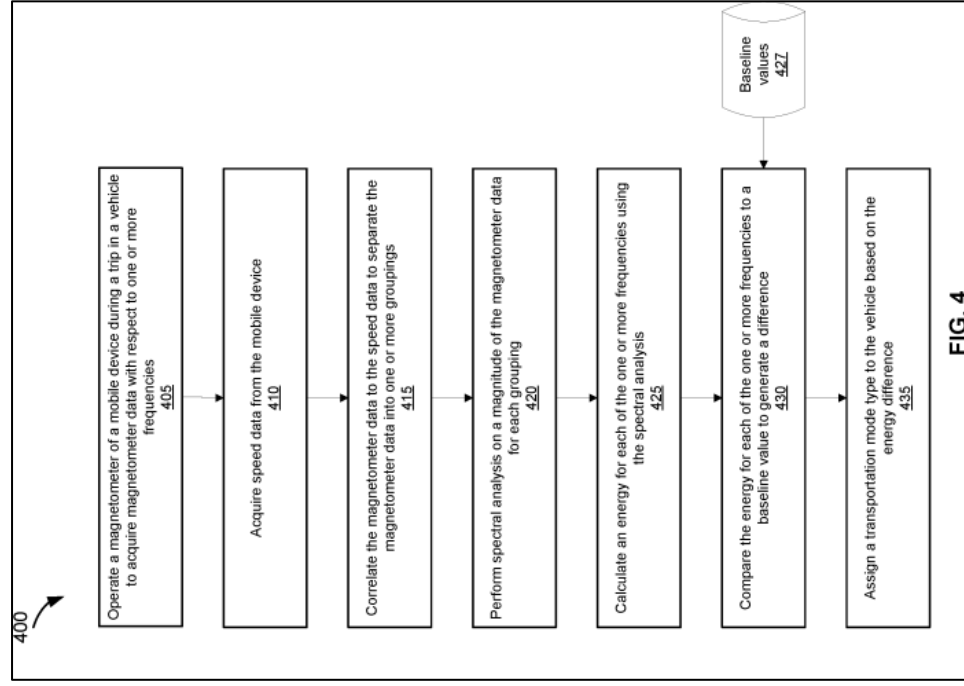
One or more of the Accused Instrumentalities detects, via the field-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) a second one of an electric field, a magnetic field and an electro-magnetic field.

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As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies."



generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field, and an electro-magnetic field,	One or more of the Accused Instrumentalities generates, via the field-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)), a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a magnetic field within a vehicle, and to generate a second detected field signature (e.g., magnetometer data signature associated with e.g., a current mode of transportation) based on the detected second one of a magnetic field.
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As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies." One or more of the Accused Instrumentalities then "performs spectral analysis on a magnitude of the magnetometer data," and "calculates an energy [generates a detected field signature] for each of the one or more frequencies using the spectrum analysis."

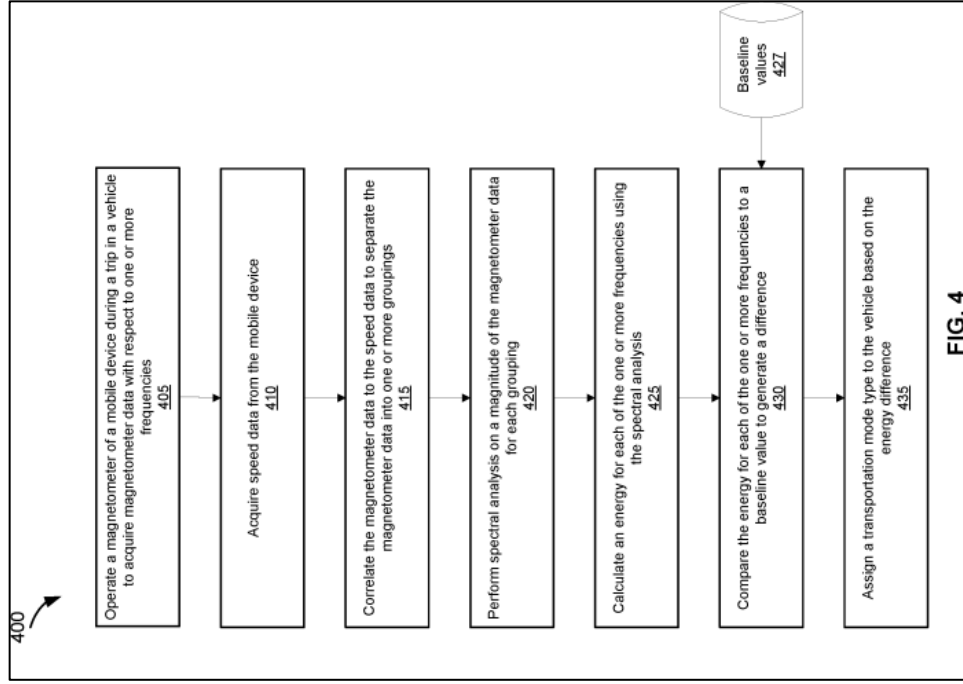


FIG. 4

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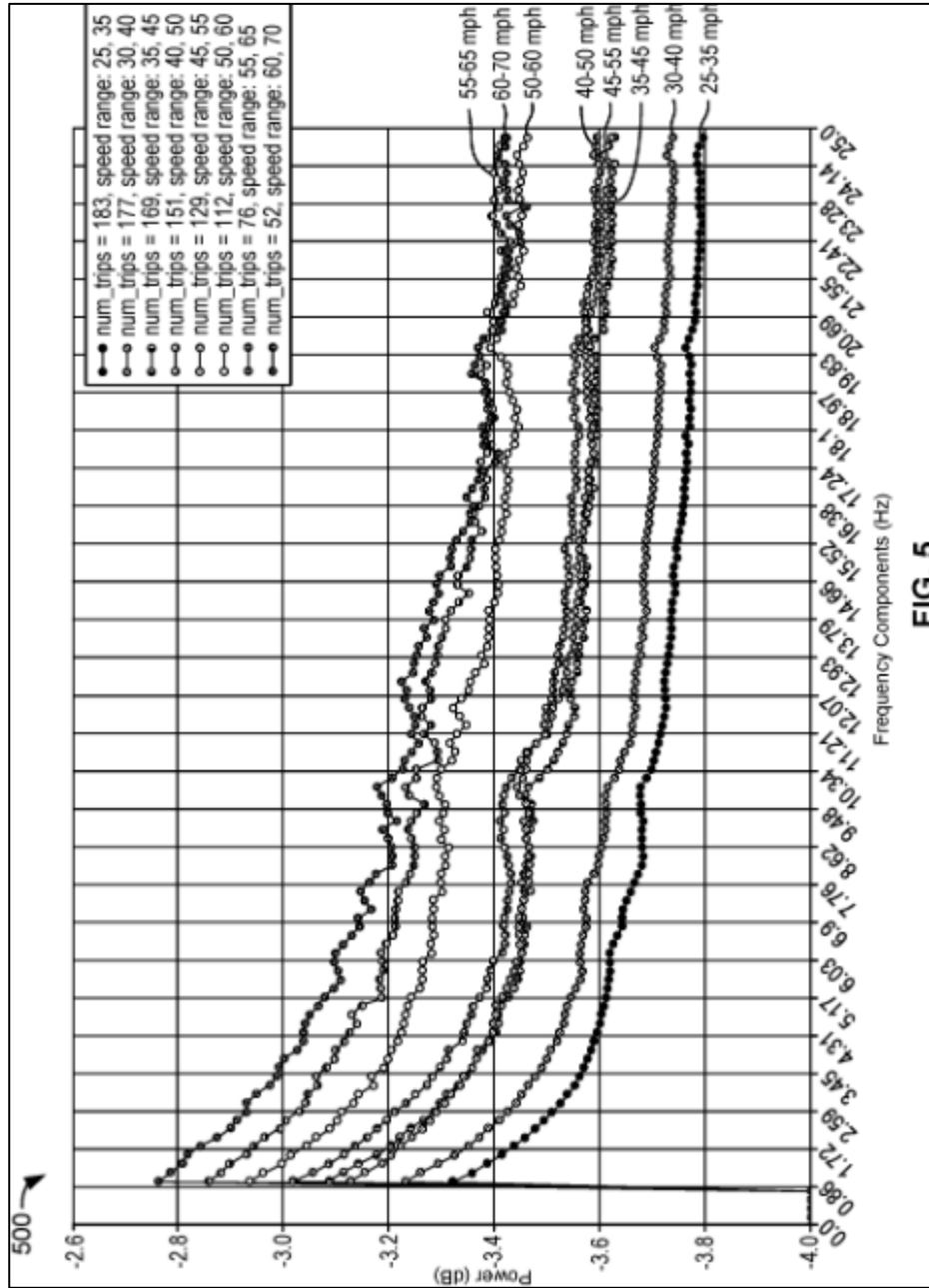


Figure 6 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a bus as measured by a magnetometer of a mobile device.

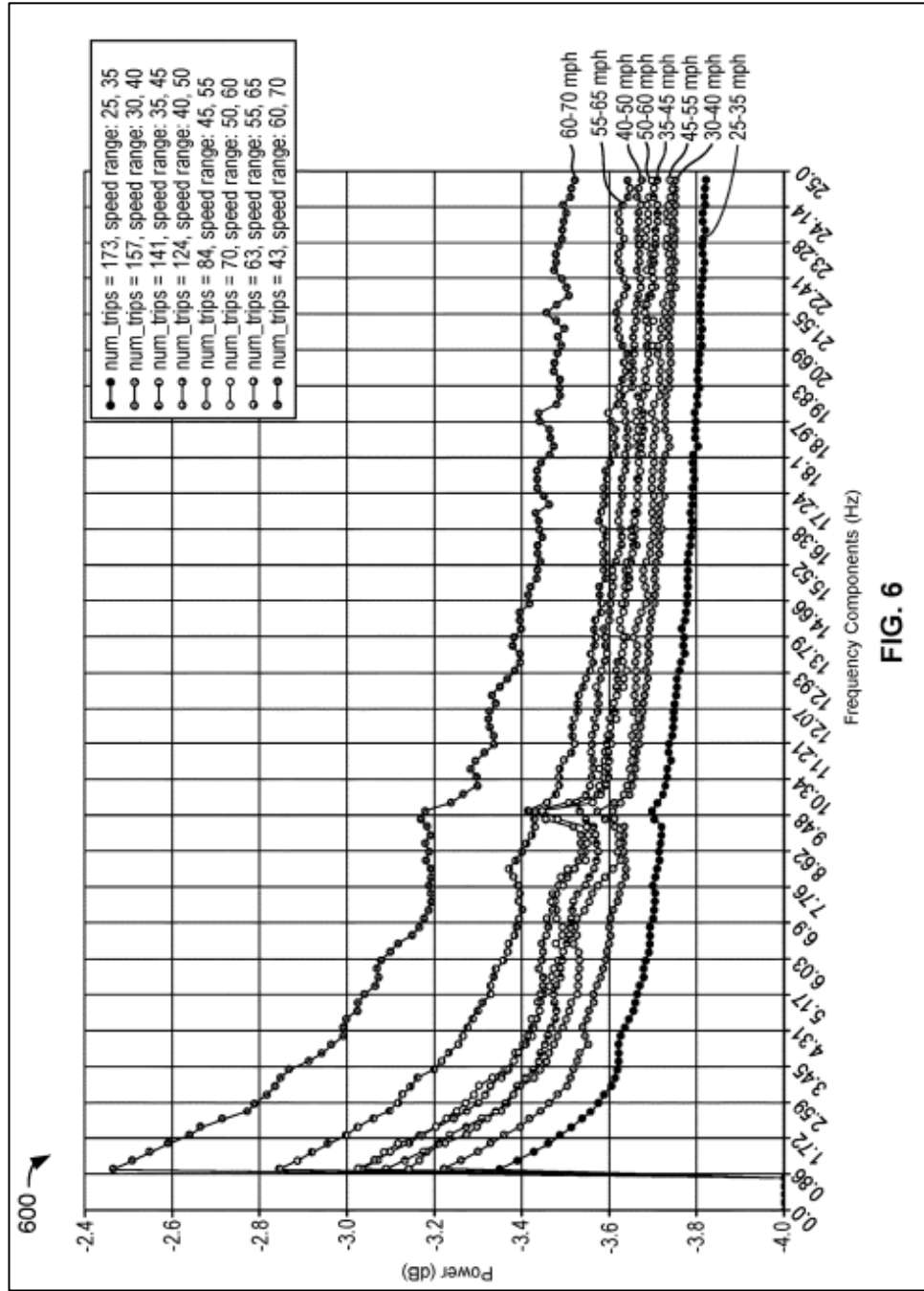


FIG. 6

Figure 7 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a train as measured by a magnetometer of a mobile device.

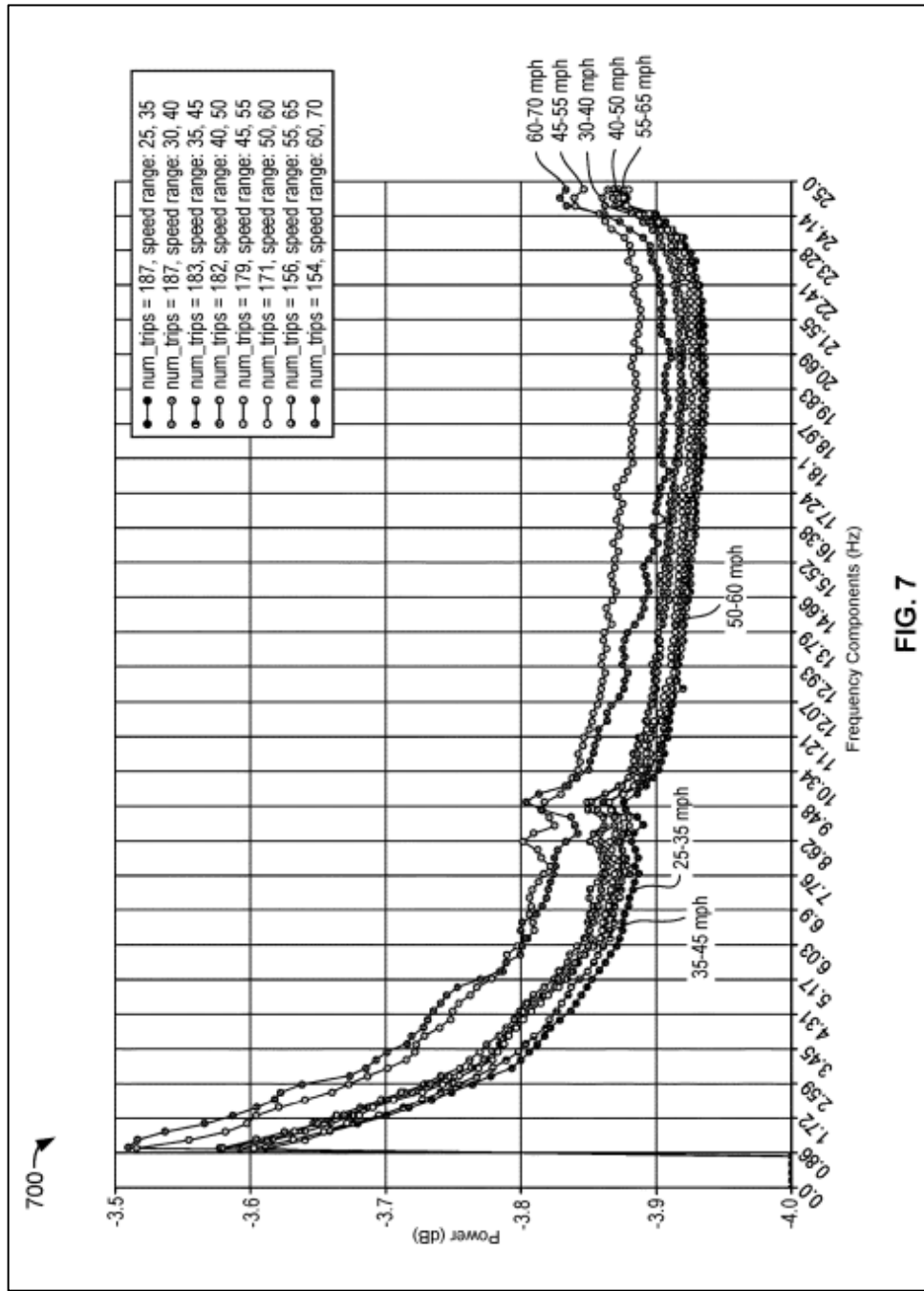
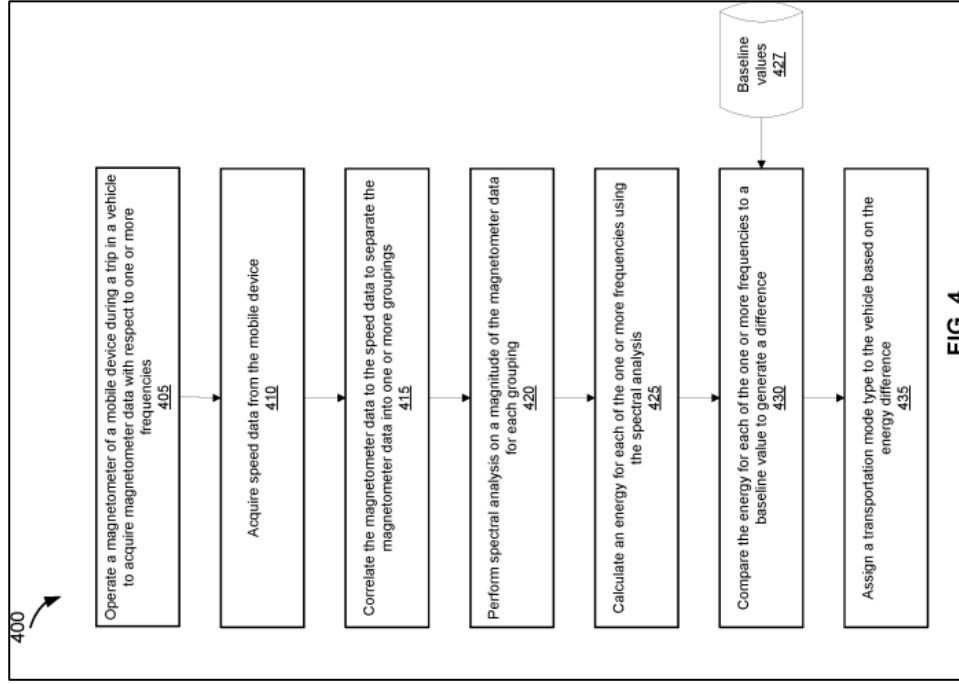


FIG. 7

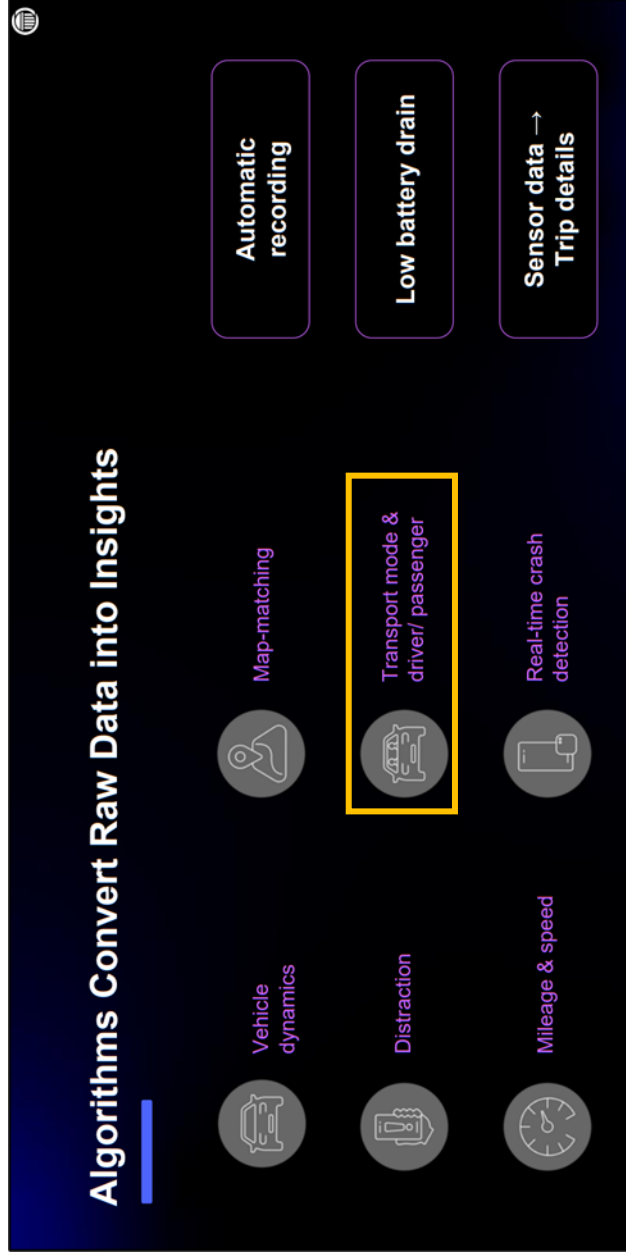
wherein generating comparison comprises the comparison signal based on a comparison of the detected field signature and the second detected field signature.	One or more of the Accused Instrumentalities generates the comparison signal based on a comparison of the detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car/baseline value) and the second detected field signature (e.g., magnetometer data signature associated with e.g., a current mode of transportation). In this way, one or more of the Accused Instrumentalities “determines whether [the device is] in a car or some other mode of transport like a bus or a motorcycle or a bicycle or a boat...” https://agencychecklists.com/2018/04/10/cmt-telematics-2018-22735/. (Last accessed August 21, 2023).
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As shown in Figure 4 of the '632 Application (below), at block 430, one or more of the Accused Instrumentalities "compares the energy for each of the one or more frequencies to a baseline value to generate a difference."



“At block 430, the energy for each of the one or more frequency components may be compared to a baseline value 427 to generate an energy difference. The baseline value 427 may be the energy at each frequency component associated with different modes of transportation. For example, a train may have a certain energy at a certain frequency component, a bus may have a different energy at the certain frequency component, a car may have still another energy at the certain frequency component, and so forth. The processor of the mobile device may cause the energy at each frequency component as calculated to be compared to the energies of the different transportation modes at the same frequency component as the measurement.” ’632 Application at [0061].

“As can be seen in FIGS. 5-7, the power at similar frequency components for a car, a bus, and a train may be highly variable across the different modes of transportation. Thus, by comparing a magnetometer reading at a given frequency component and speed to the powers for that frequency component and speed in FIGS. 5-7, a difference between the reading and the baseline values may be generated. The transportation mode associated with the lowest difference may be assigned as the type of vehicle associated with the trip.” *Id.* at [0070].



https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

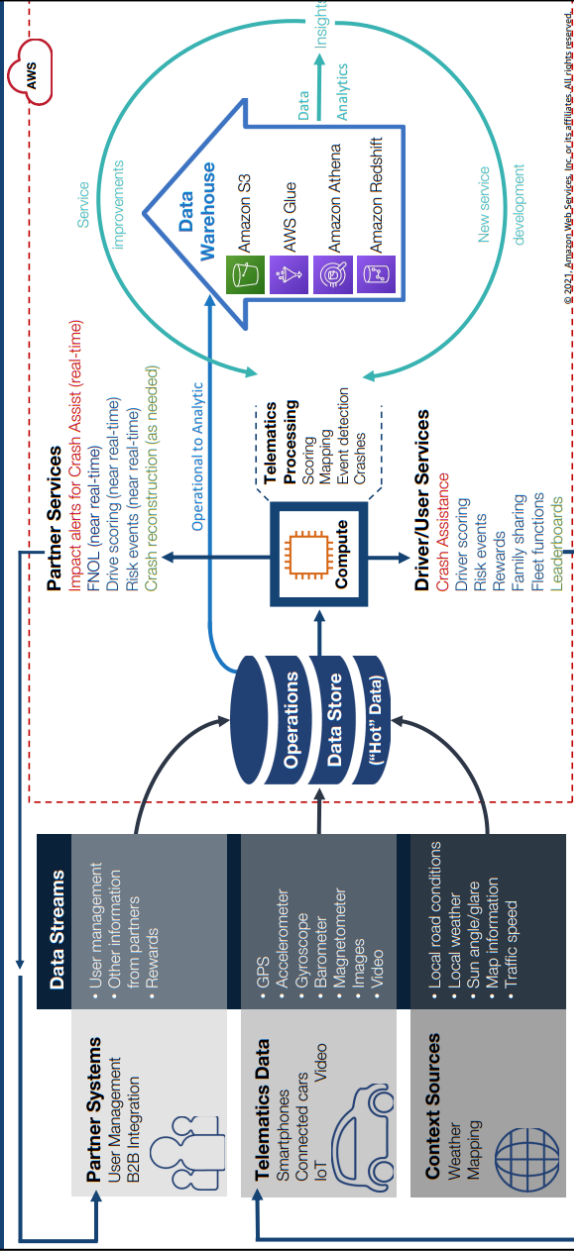
Claim 9	CMT's Accused Instrumentalities
The method of claim 8, wherein said detecting comprises detecting the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.	See claims 8 and 2.
Claim 10	CMT's Accused Instrumentalities
The method of claim 8, further comprising: detecting, via a parameter-detecting component, a parameter; and generating, via the parameter-detecting component, a parameter signal based on the detected parameter,	See claims 8 and 3.
wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal.	See claims 8 and 3.
Claim 11	CMT's Accused Instrumentalities
The method of claim 10, wherein said detecting a parameter	See claims 10 and 4.

comprises detecting, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position, sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.	
Claim 12	CMT's Accused Instrumentalities
The method of claim 8, further comprising wirelessly communicating, via a communication component, with a network.	See claims 8 and 5.
Claim 13	CMT's Accused Instrumentalities
The method of claim 8, further comprising: inputting, via the input component is further operable to input an association; and	See claims 8 and 6.
identifying, via the identifying component, a vehicle,	See claims 8 and 6.

wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field,	See claims 8 and 6.
wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field,	See claims 8 and 6.
wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field,	See claims 8 and 6.
wherein said generating a second detected field signature comprises generating a second detected field signature based on the detected second magnetic field, and	See claims 8 and 6.
wherein said identifying a vehicle comprises identifying,	See claims 8 and 6.

based on the association, the vehicle as the item.	
Claim 15	CMT's Accused Instrumentalities
A non-transitory, tangible, computer-readable media having computer-readable instructions stored thereon, for use with a database, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method comprising:	One or more of the Accused Instrumentalities is/includes a non-transitory, computer-readable media having computer-readable instructions stored thereon, for use with a database. One or more of the Accused Instrumentalities is capable of, and intended to be, used with a database. It “gathers sensor data from millions of IoT devices—including smartphones, proprietary tags, connected vehicles, dashcams, and third-party devices—and fuses them with contextual data to create a unified view of vehicle and driver behavior.” https://www.cmtelomatics.com/safe-driving-technology/how-it-works/. (Last accessed August 21, 2023). CMT hosts and runs mobile applications for use on Android and iOS platforms that are deployed on drivers’ smartphones. https://apps.apple.com/us/developer/cambridge-mobile-telematics-inc/id655601790?see-all=i-phone-apps (Last accessed August 21, 2023); https://play.google.com/store/apps/developer?id=Cambridge+Mobile+Telematics&hl=en_US&gl=US (Last accessed August 21, 2023). Driver’s smartphone may implement a protocol stack to communicate with remote servers. Smartphones include memory which stores instructions, and processors which are capable of executing the instructions.

Telematics Processing Architecture



https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

Every company has unique business needs. Our goal was to develop a solution that meets the unique needs of all of our partners. DriveWell products can be used separately or together to develop a user-forward mobile telematics program that is right for your business and drivers.

DriveWell SDK  Collect meaningful sensor data and harness CMT's expertise in your own app	DriveWell Tag  Collect vehicle and crash data with a wireless, easy-to-install device	DriveWell Score  Measure driver risk with scoring models based on millions of trips and billions of miles
DriveWell Engage  Increase customer engagement and motivate users to improve	DriveWell Fleet  Reduce fleet risk and costs with the mobile phone and DriveWell Tag	

<https://www.cmttelematics.com/blog/drivewell-assess-risk-and-encourage-safer-driving/>. (Last accessed August 21, 2023).

What Data is Collected?

The following data is required to accurately assess driving risk and motivate drivers to improve

Smartphone app

- **Accelerometer data** helps identify mileage and is used in the calculation of phone motion, screen interaction, and acceleration-based (hard braking, acceleration, and excessive speeding events)
- **Gyroscope data** is used in the calculation of phone motion, screen interaction, and acceleration-based events

DriveWell Tag

- **High-frequency accelerometer data** detects when and how the vehicle is moving, is used to calculate overall mileage, and identifies acceleration-based events

What smartphone permissions are required?

- **Location:** to collect GPS data
- **Bluetooth:** to connect to the Tag
- **Motion & activity:** helps to detect when a trip starts & stops

https://content.naic.org/sites/default/files/call_materials/NAIC%203-30-21.pdf. (Last accessed August 21, 2023).

On information and belief, one or more of the Accused Instrumentalities is described, in part, in U.S. Patent Application No. 2023/0143632 (the “’632 Application”), assigned to CMT. The ’632 Application describes a system and method for determining a transportation mode via the acquisition of magnetometer and speed data from a mobile device. Figure 1 of the ’632 Application (shown below) illustrates a system diagram of a transportation mode determination system, including storage 126 and storage 156 (shown in the red boxes).

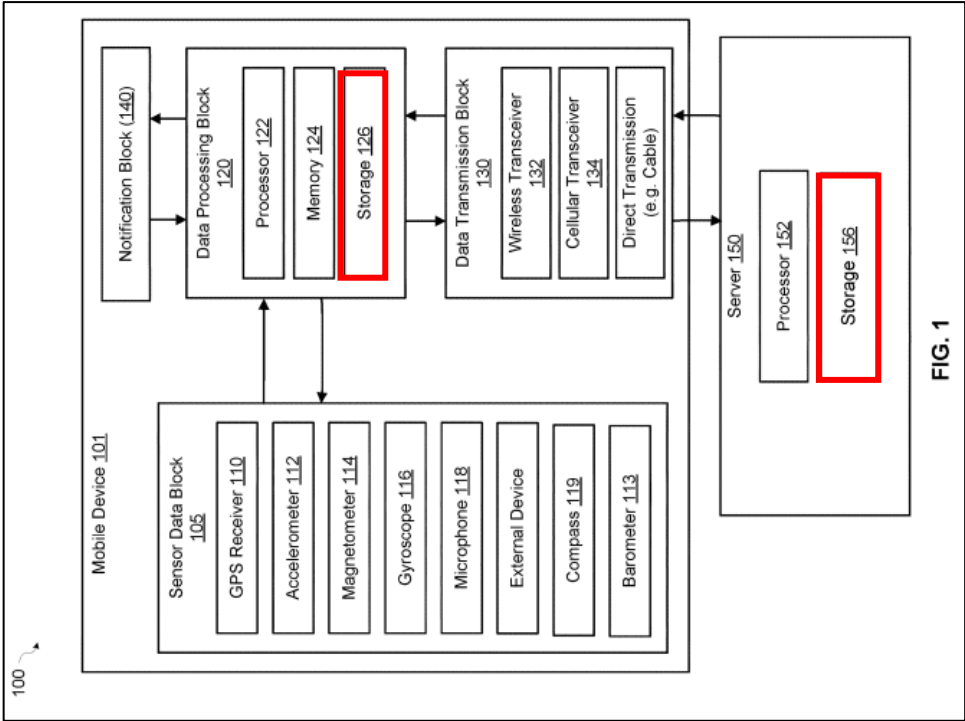
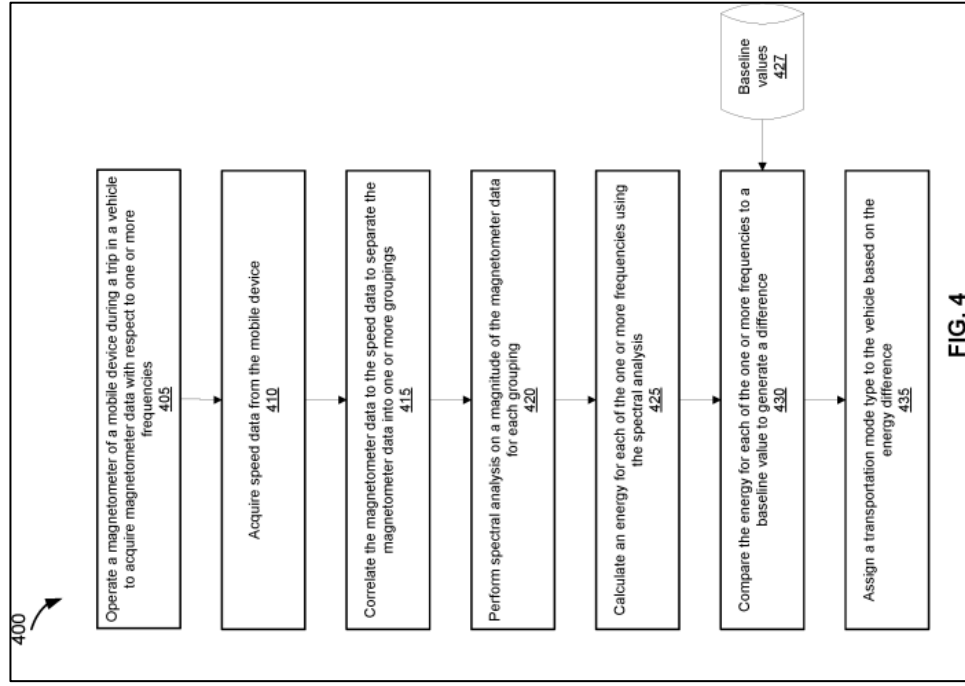
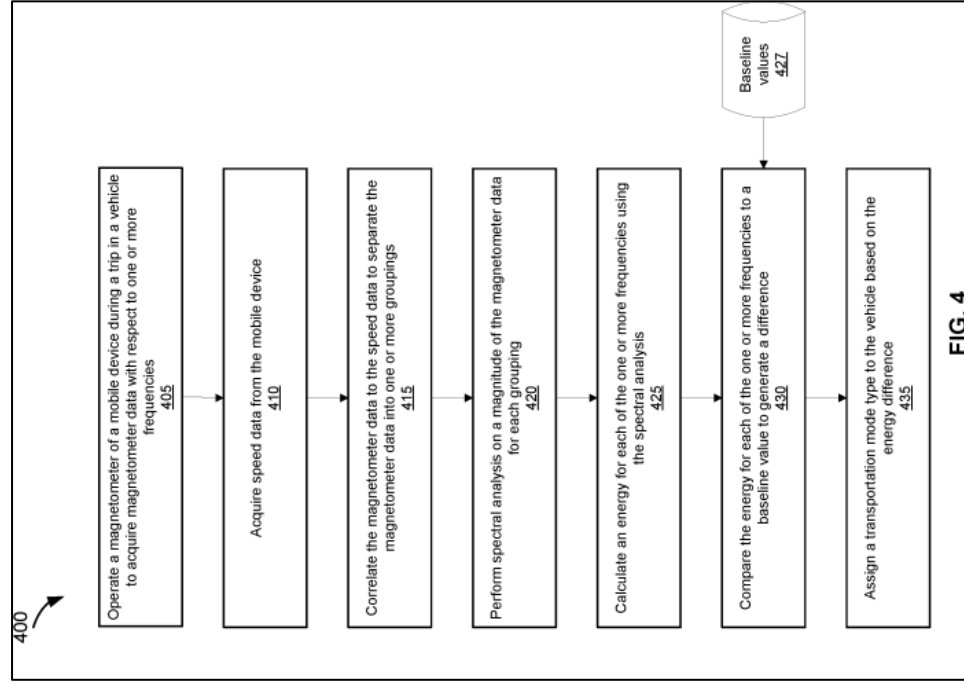


Figure 4 of the '632 Application is a flowchart illustrating a transportation mode determination method.



detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field;	One or more of the Accused Instrumentalities detects, via a field-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)), at least one of an electric field, a magnetic field and an electro-magnetic field. One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a magnetic field within a vehicle. Telematics is Rooted in Sensor Data Historically, needed expensive hardware We pioneered using smartphones and invented a new IoT device (the Tag) Measure both vehicle dynamics and driver behavior Accelerometer Identifies phone position with sea-based motion sensing Gyroscope Works with accelerometer to determine position of phone Magnetometer Measures magnetic fields GPS Identifies phone location with multiple satellites Barometer Measures air pressure Proximity sensor Determines the proximity of the phone to nearby objects Ambient Light Measures the amount of light near the phone https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf. (Last accessed August 21, 2023).
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As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies."



generating, via the field-detecting component, a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field;	One or more of the Accused Instrumentalities generates, via the field-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)), a detected field signature based on the detected one of an electric field, a magnetic field and an electro-magnetic field. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a magnetic field within a vehicle, and to generate a detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car) based on the detected magnetic field.
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As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies." One or more of the Accused Instrumentalities then "performs spectral analysis on a magnitude of the magnetometer data," and "calculates an energy [generates a detected field signature] for each of the one or more frequencies using the spectrum analysis."

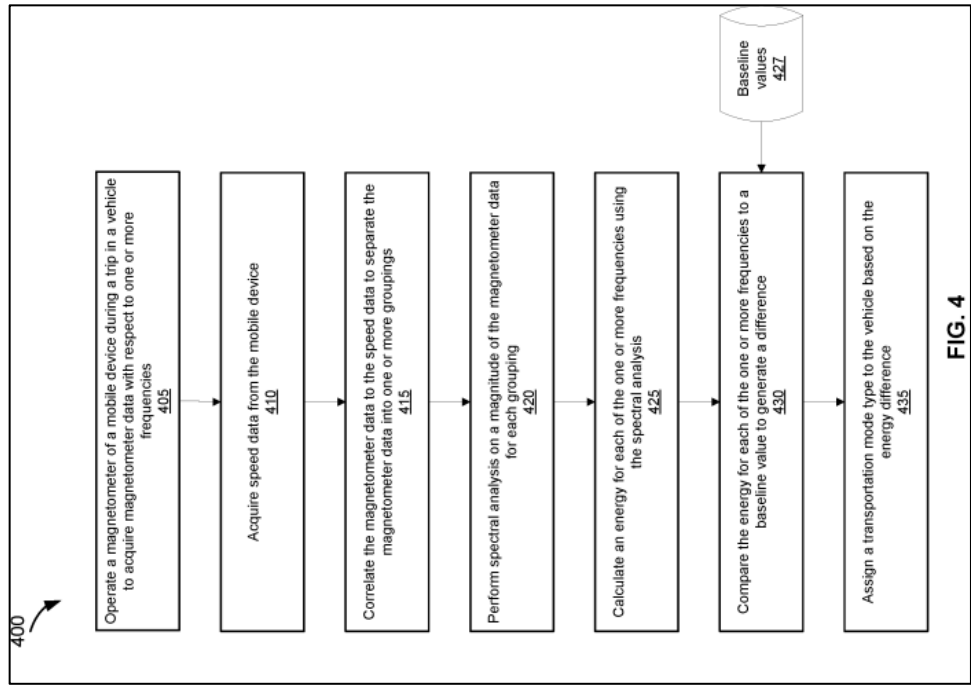


Figure 5 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a car as measured by a magnetometer of a mobile device. "This data may be used for baseline values." '632 Application at [0069].

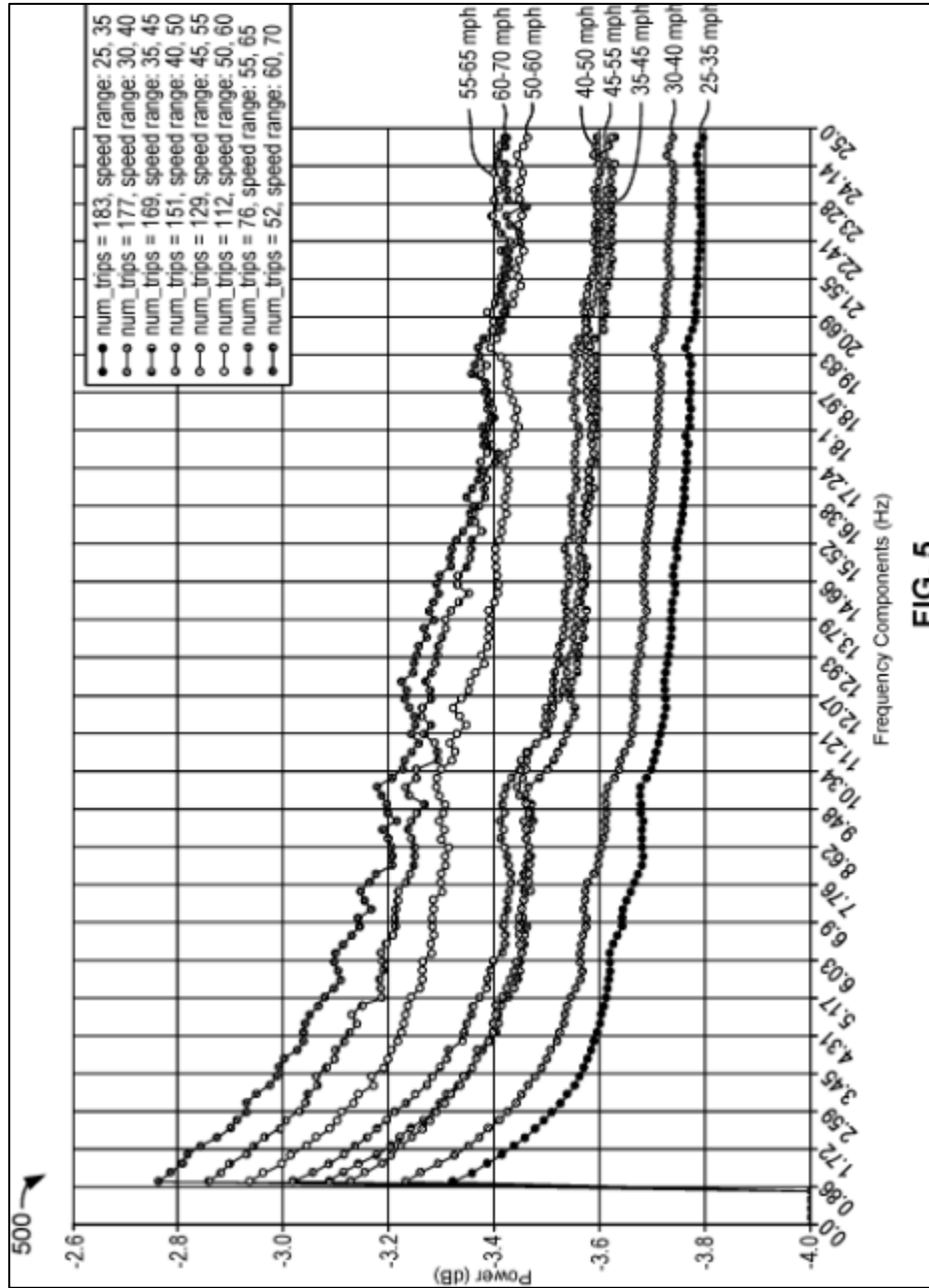


Figure 6 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a bus as measured by a magnetometer of a mobile device.

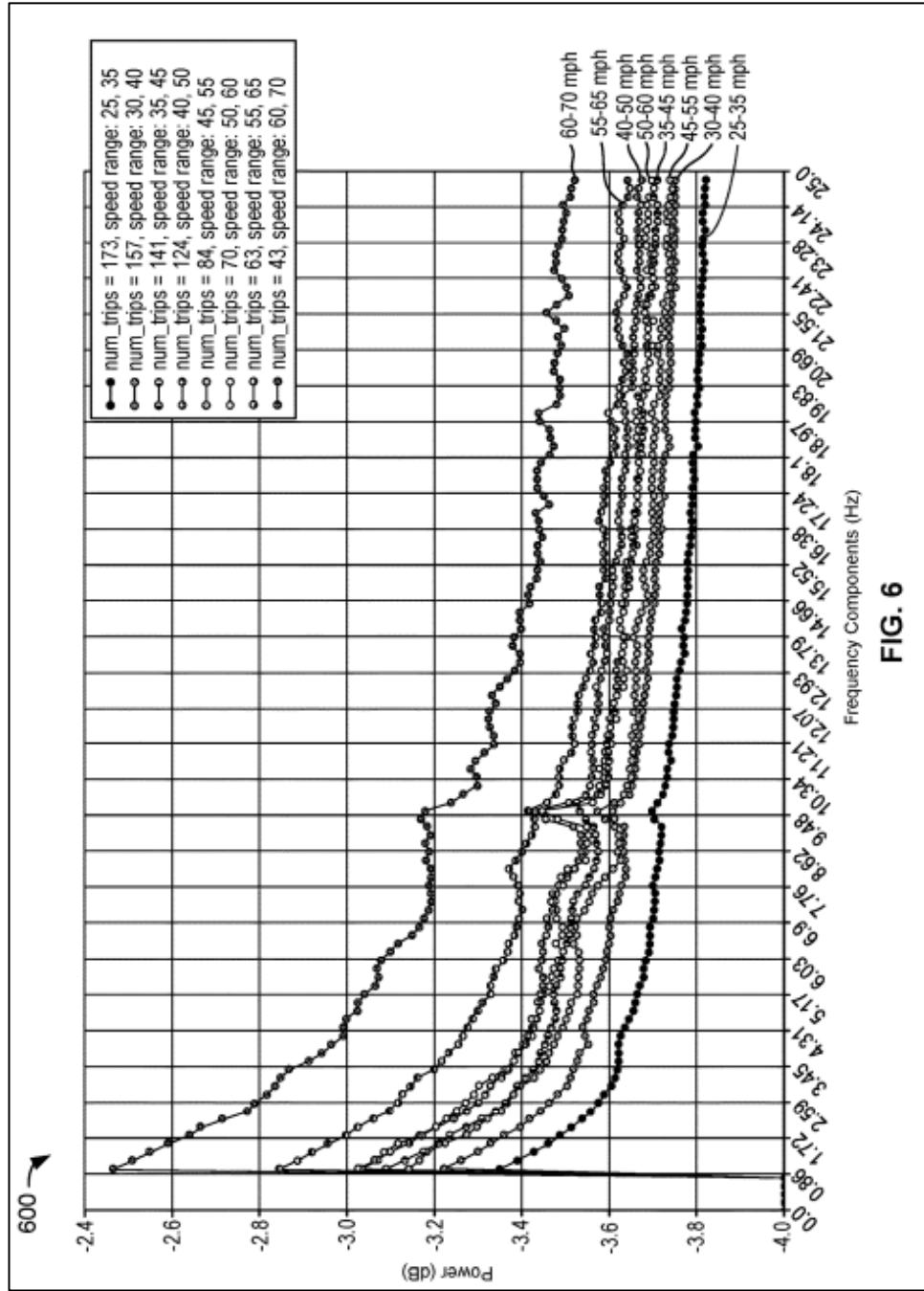


Figure 7 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a train as measured by a magnetometer of a mobile device.

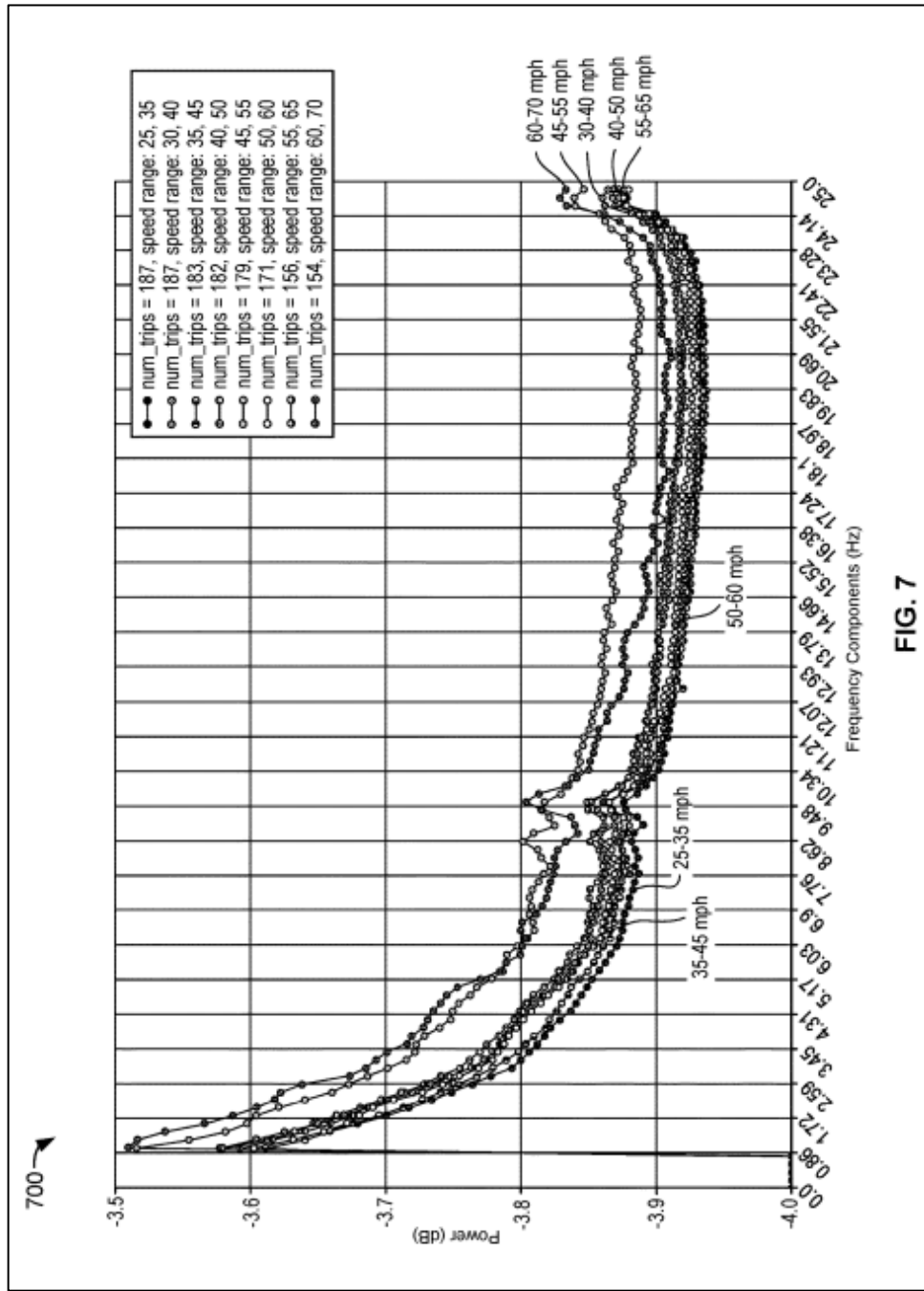
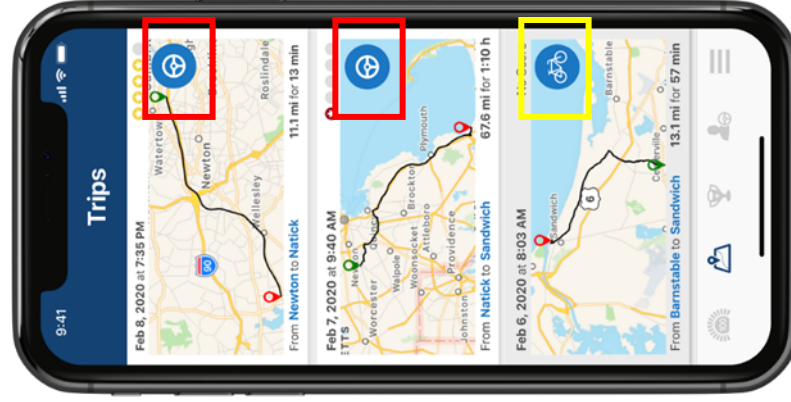


FIG. 7

inputting, via an input component, the detected field signature into the database;

One or more of the Accused Instrumentalities inputs, via an input component (e.g., software module(s) using graphic user interface and/or application programming interface (API)), the detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car) into the database.

One or more of the Accused Instrumentalities collects sensor data (e.g., magnetometer data) from the user's smartphone during a trip. As shown below, one or more of the Accused Instrumentalities allows users to label trips indicating, for example, that the data collected throughout the trip (e.g., magnetometer data) is associated with a detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation, such as a car (shown in the red boxes) or bicycle (shown in the yellow box).



<https://www.cmtelomatics.com/cmt-mobile-sdk/>. (Last accessed August 21, 2023).

Figure 3 of the '632 Application illustrates a block diagram of a protocol stack 300 that may be implemented by the mobile device.

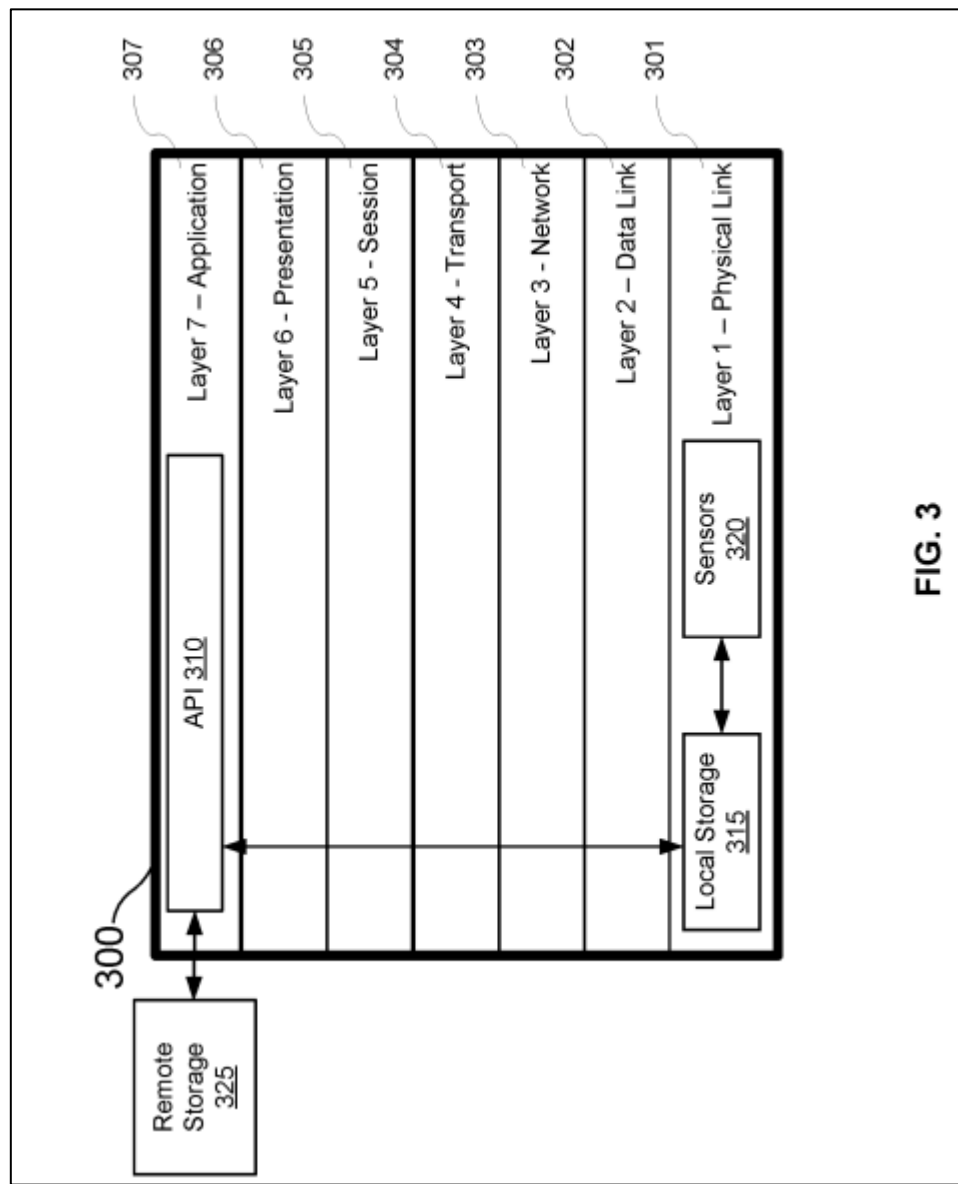


FIG. 3

“The application layer 307 may interact with a user (e.g., *via receiving user inputs* and presenting outputs) and software applications implementing a communication component.” ’632 application at [0049]. “API 310 may be in communication with remote storage 325, such as the storage 156 of the server 150.” *Id.* at [0050]. “In some embodiments, data collected by the sensors 320 may be stored in local storage 315.” *Id.* at [0056].

accessing, via an accessing component, the detected field signature from the database;

One or more of the Accused Instrumentalities accessing, via an accessing component (e.g., software module(s) using mobile processor(s)) the detected field signature (e.g., magnetometer data signature associated with e.g., a particular mode of transportation) the database.

As shown in Figure 4 of the '632 Application, for example, the smartphone processor must access the detected field signature (e.g., baseline values 427, shown in the red box) in order to "compare[] the energy of different transportation modes," to "the energy at each frequency component as calculated." '632 Application at [0061].

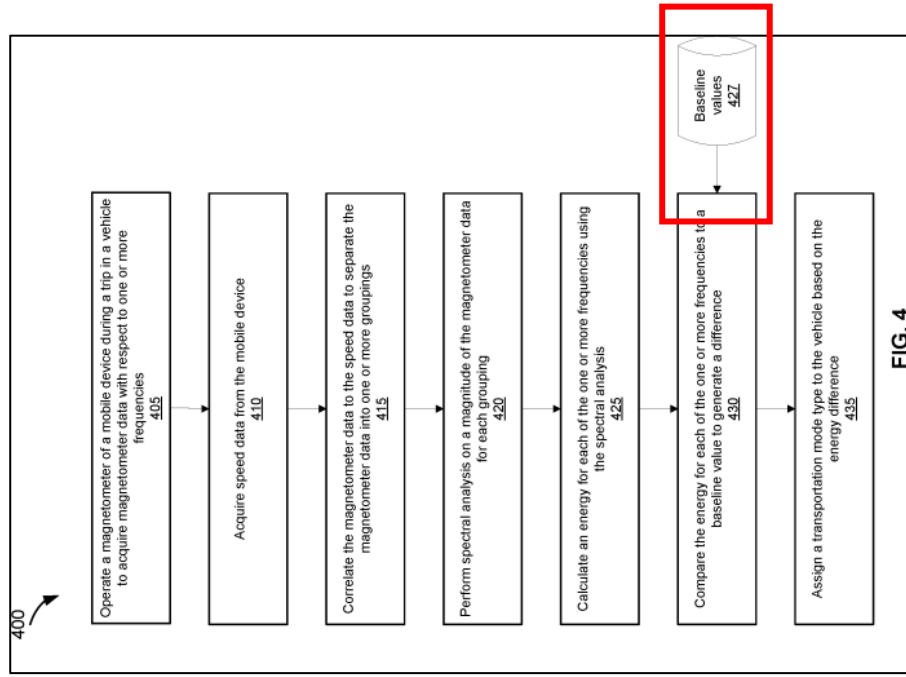
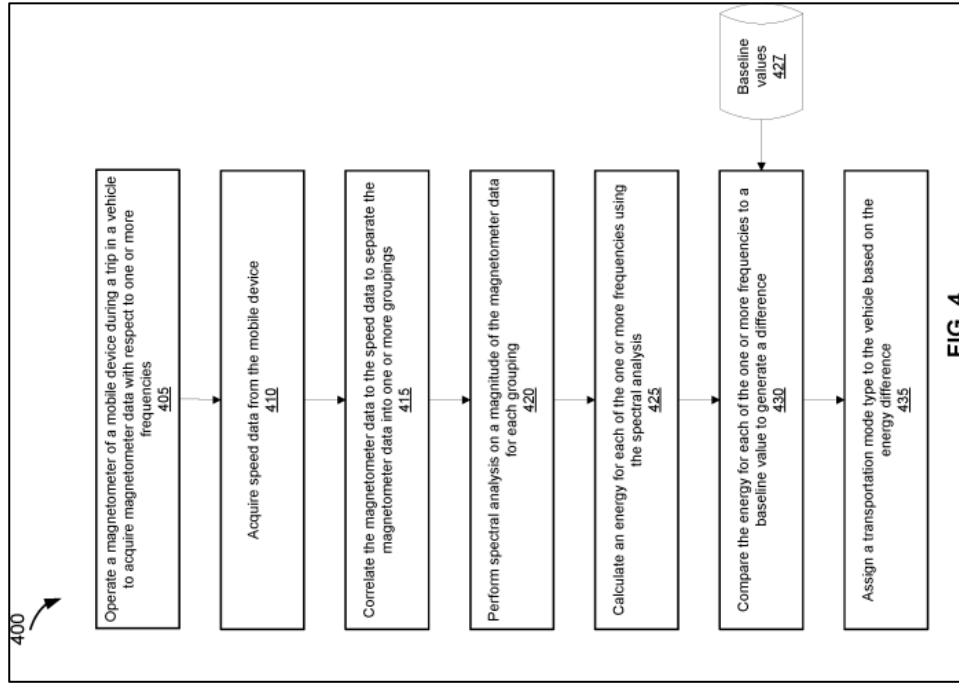


FIG. 4

generating, via a comparing component, a comparison signal;	One or more of the Accused Instrumentalities generates, via a comparing component (e.g., software module(s) using mobile processor(s)) a comparison signal. A comparison signal may be generated by comparing a plurality of signals. The signals may include measured signals, predetermined field signatures, and/or a predetermined field signature and measured signal.
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As shown in Figure 4 of the '632 Application (below), at block 430, one or more of the Accused Instrumentalities "compares the energy for each of the one or more frequencies to a baseline value to generate a difference."



“At block 430, the energy for each of the one or more frequency components may be compared to a baseline value 427 to generate an energy difference. The baseline value 427 may be the energy at each frequency component associated with different modes of transportation. For example, a train may have a certain energy at a certain frequency component, a bus may have a different energy at the certain frequency component, a car may have still another energy at the certain frequency component, and so forth. The processor of the mobile device may cause the energy at each frequency component as calculated to be compared to the energies of the different transportation modes at the same frequency component as the measurement.” ’ 632 Application at [0061].

identifying, via an identifying component, one of an item and a location based on the comparison signal;

One or more of the Accused Instrumentalities identifies, via an identifying component (e.g., software module(s) using mobile processor(s)) one of an item (e.g., a mode of transportation, such as a car, motorcycle, bicycle, train, bus) and a location (e.g., driver/passenger side of the vehicle) based on the comparison signal.

What You Get With the DriveWell SDK

- ✓ Automatic Trip Recording
- ✓ Identifying Driver versus Passenger
- ✓ Identifying Car Trips versus Other Transport Modes
- ✓ Measuring Risky Events (Including Phone Distraction!)
- ✓ Displaying Trip Details in the App

<https://www.cmtelomatics.com/cmt-mobile-sdk/>. (Last accessed August 21, 2023).

As shown in Figure 4 of the '632 Application (below), at block 435, one or more of the Accused Instrumentalities "assigns a transportation mode type to the vehicle [identifies an item] based on the energy difference [based on the comparison signal]."

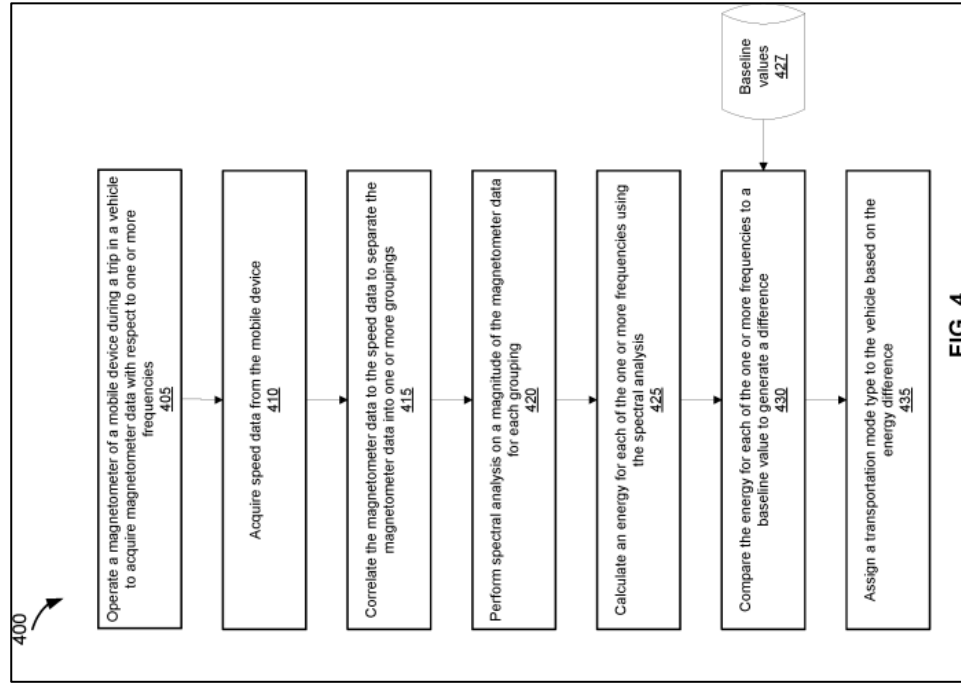


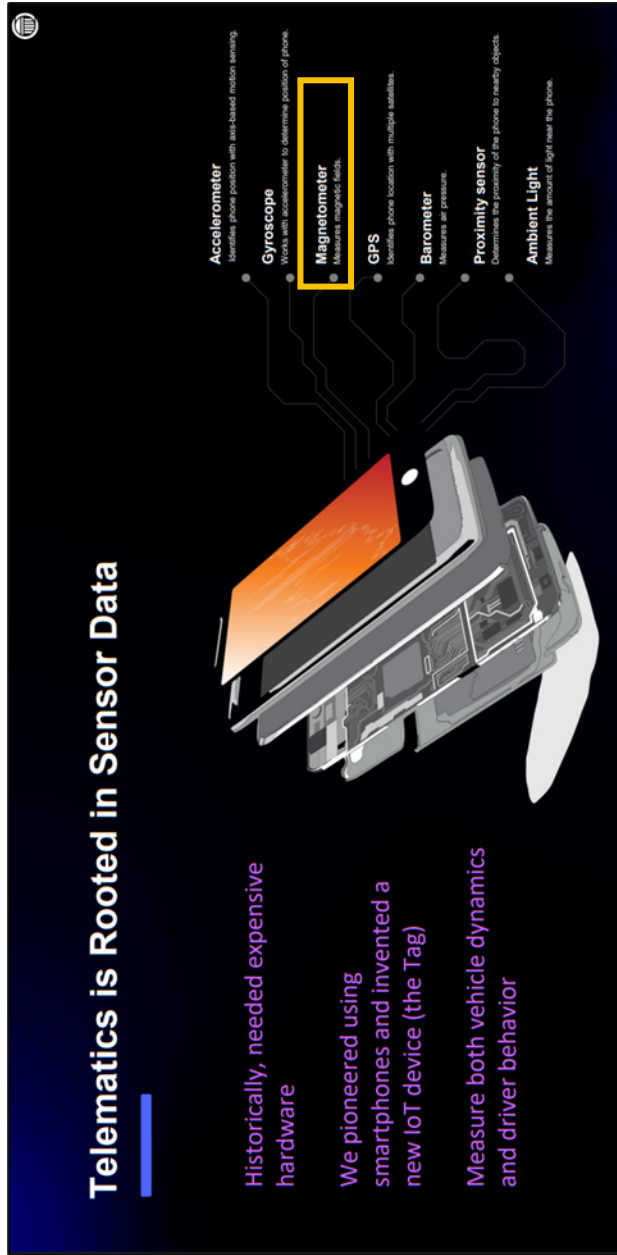
FIG. 4

“At block 435, a transportation mode type may be assigned to the vehicle based on the difference. The transportation mode associated with the smallest difference in energy at a majority or a threshold number of frequencies may be assigned. The processor of the mobile device may determine the difference between the measured energy values and the baseline values for the different transportation modes at corresponding frequency components. The processor may determine the transportation mode having the smallest difference in energy from the measured values at a specified number of frequency components as the transportation mode type to be assigned.” ’632 Application at [0062].

detecting, via the field-detecting component, a second one of an electric field, a magnetic field and an electro-magnetic field; and

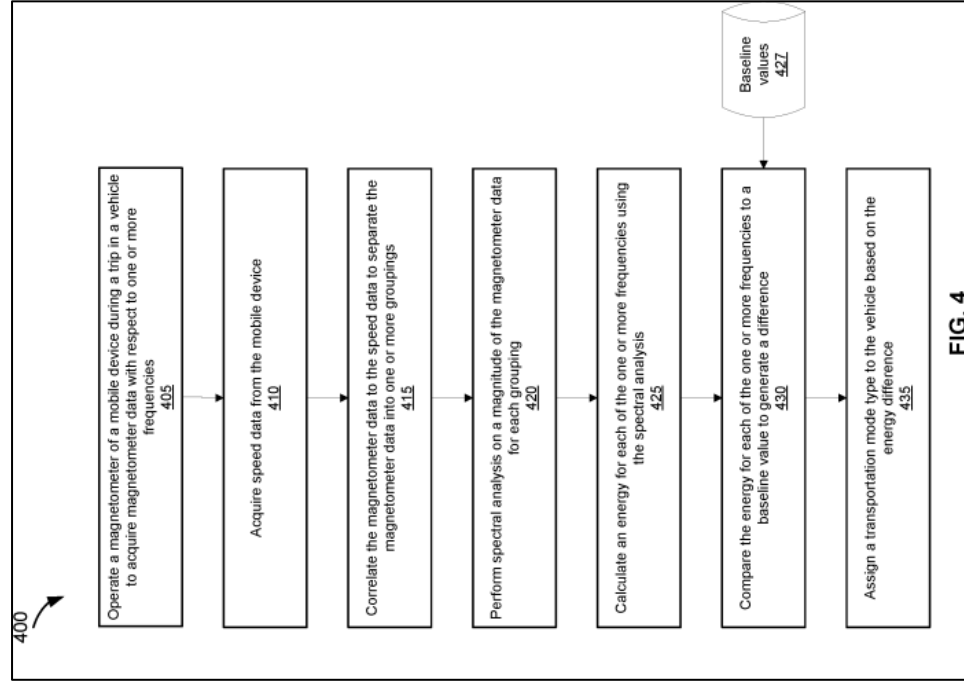
One or more of the Accused Instrumentalities detects, via the field-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)) a second one of an electric field, a magnetic field and an electro-magnetic field.

One or more of the Accused Instrumentalities operates on smartphones having a variety of embedded sensors. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a second one of a magnetic field within a vehicle.



https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies."



generating, via the field-detecting component, a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field,	One or more of the Accused Instrumentalities generates, via the field-detecting component (e.g., software module(s) using smartphone sensor(s), sensor data, and/or mobile processor(s)), a second detected field signature based on the detected second one of an electric field, a magnetic field and an electro-magnetic field. One or more of the Accused Instrumentalities uses e.g., software module(s) with smartphone sensors (e.g., magnetometer), sensor data (e.g., magnetometer data), and/or mobile processor(s) to detect a magnetic field within a vehicle, and to generate a second detected field signature (e.g., magnetometer data signature associated with e.g., a current mode of transportation) based on the detected second magnetic field.
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As shown in Figure 4 of the '632 Application (below), one or more of the Accused Instrumentalities "operates a magnetometer of a mobile device during a trip in a vehicle to acquire magnetometer data [detects a magnetic field] with respect to one or more frequencies." One or more of the Accused Instrumentalities then "performs spectral analysis on a magnitude of the magnetometer data," and "calculates an energy [generates a detected field signature] for each of the one or more frequencies using the spectrum analysis."

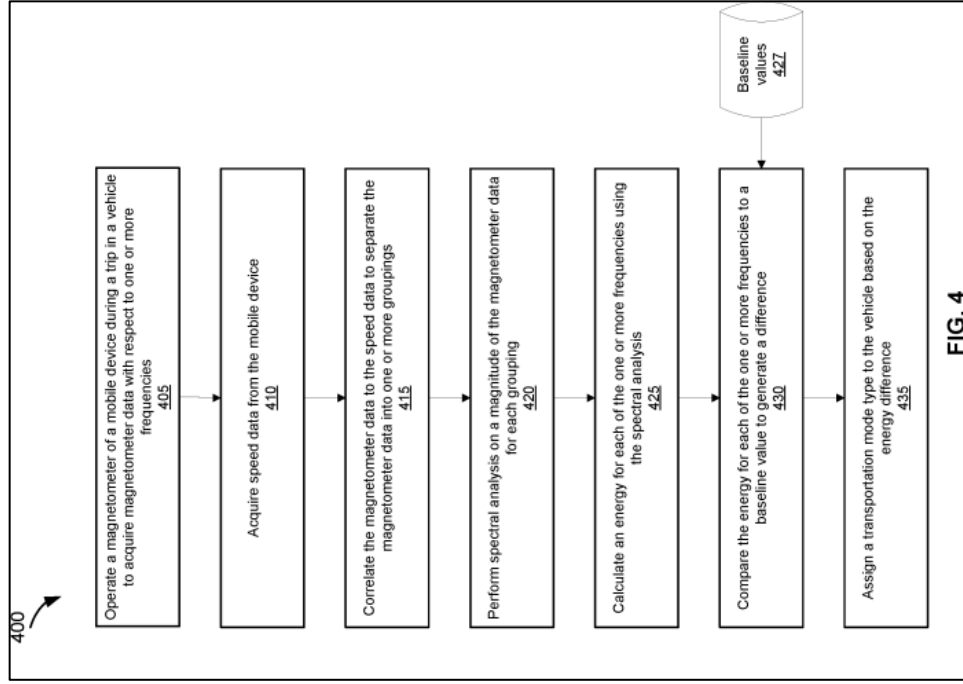


FIG. 4

Figure 5 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a car as measured by a magnetometer of a mobile device. "This data may be used for baseline values." '632 Application at [0069].

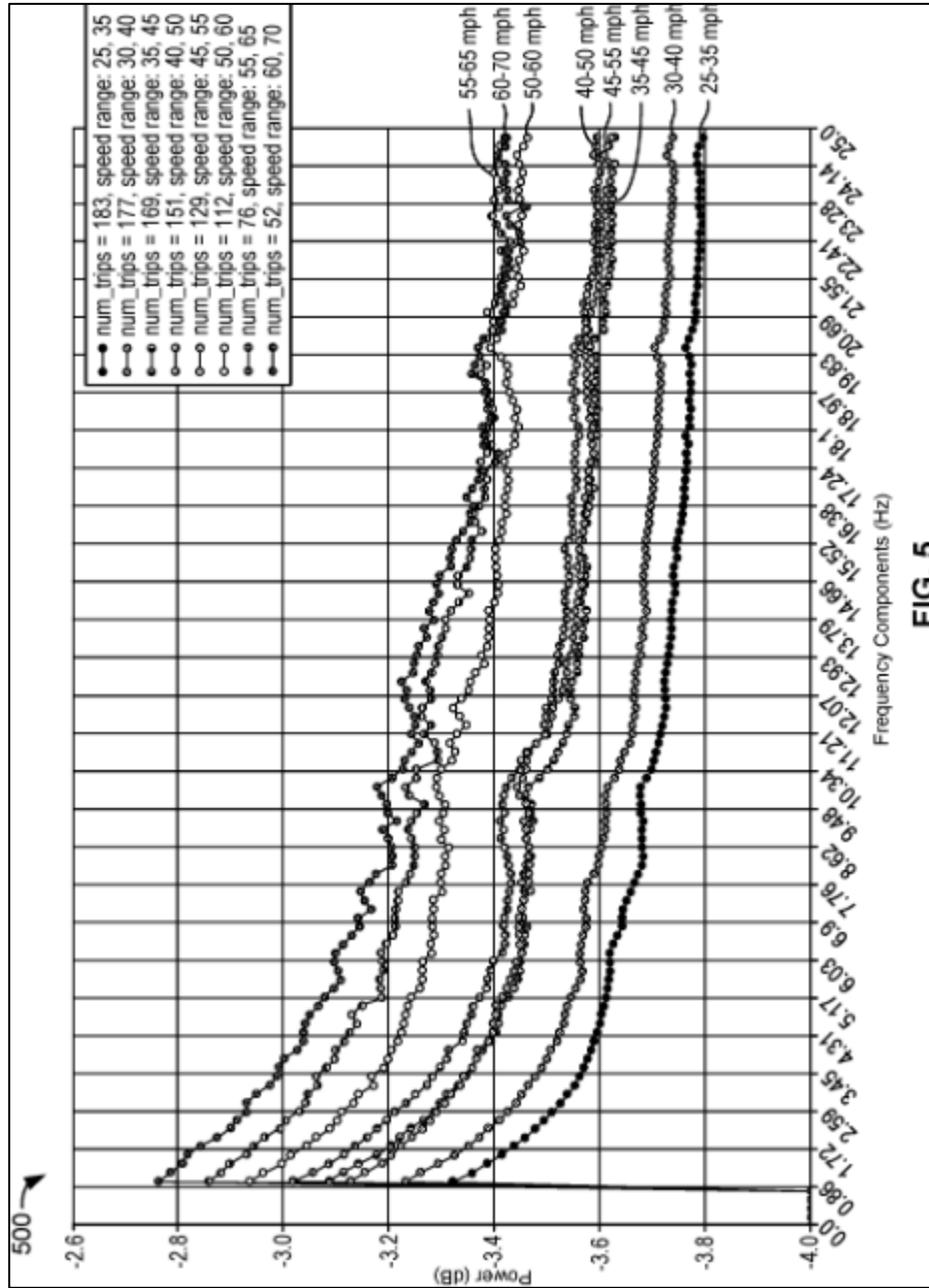


Figure 6 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a bus as measured by a magnetometer of a mobile device.

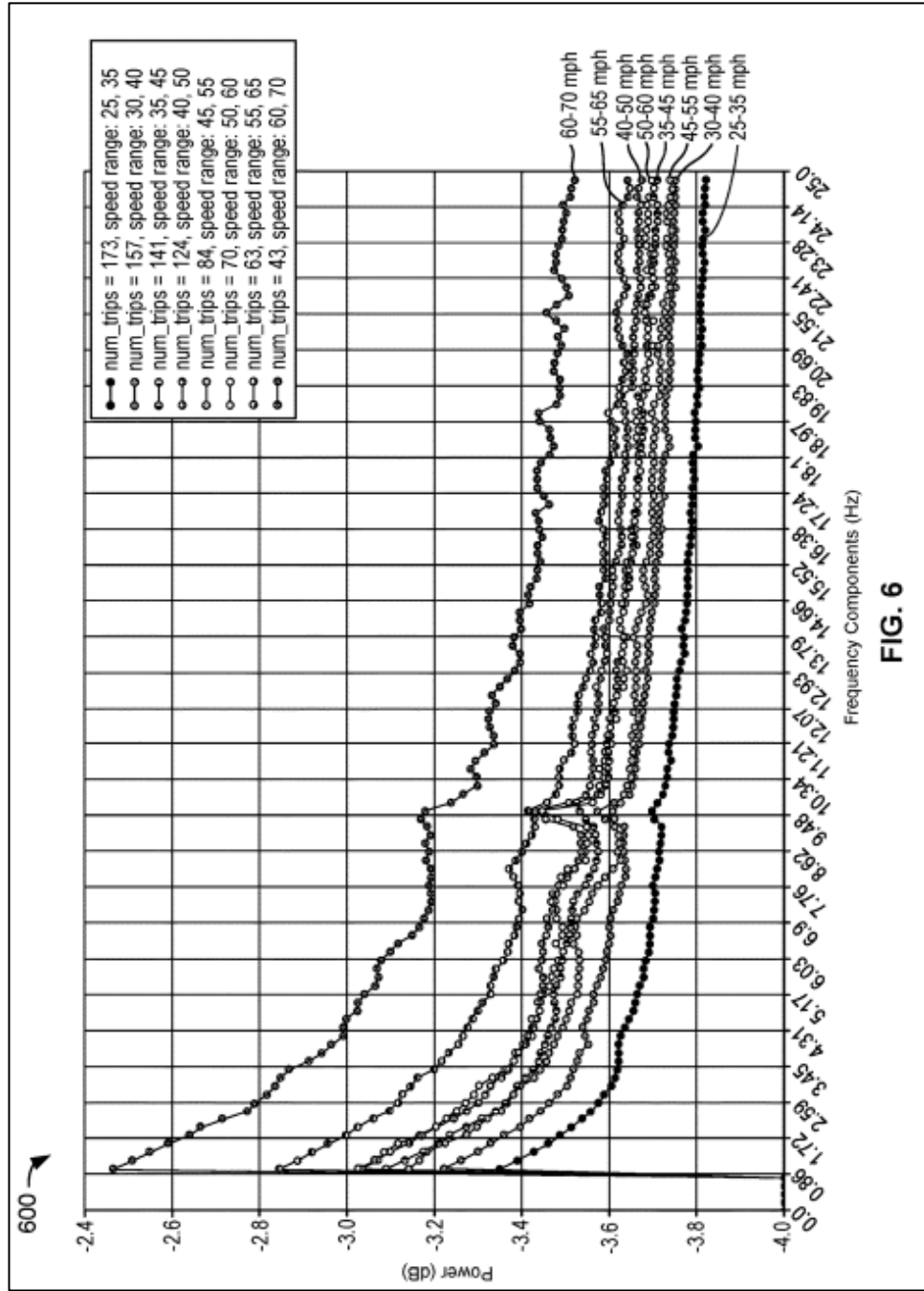


FIG. 6

Figure 7 of the '632 Application, shown below, illustrates a plot of power versus frequency at various speeds of a train as measured by a magnetometer of a mobile device.

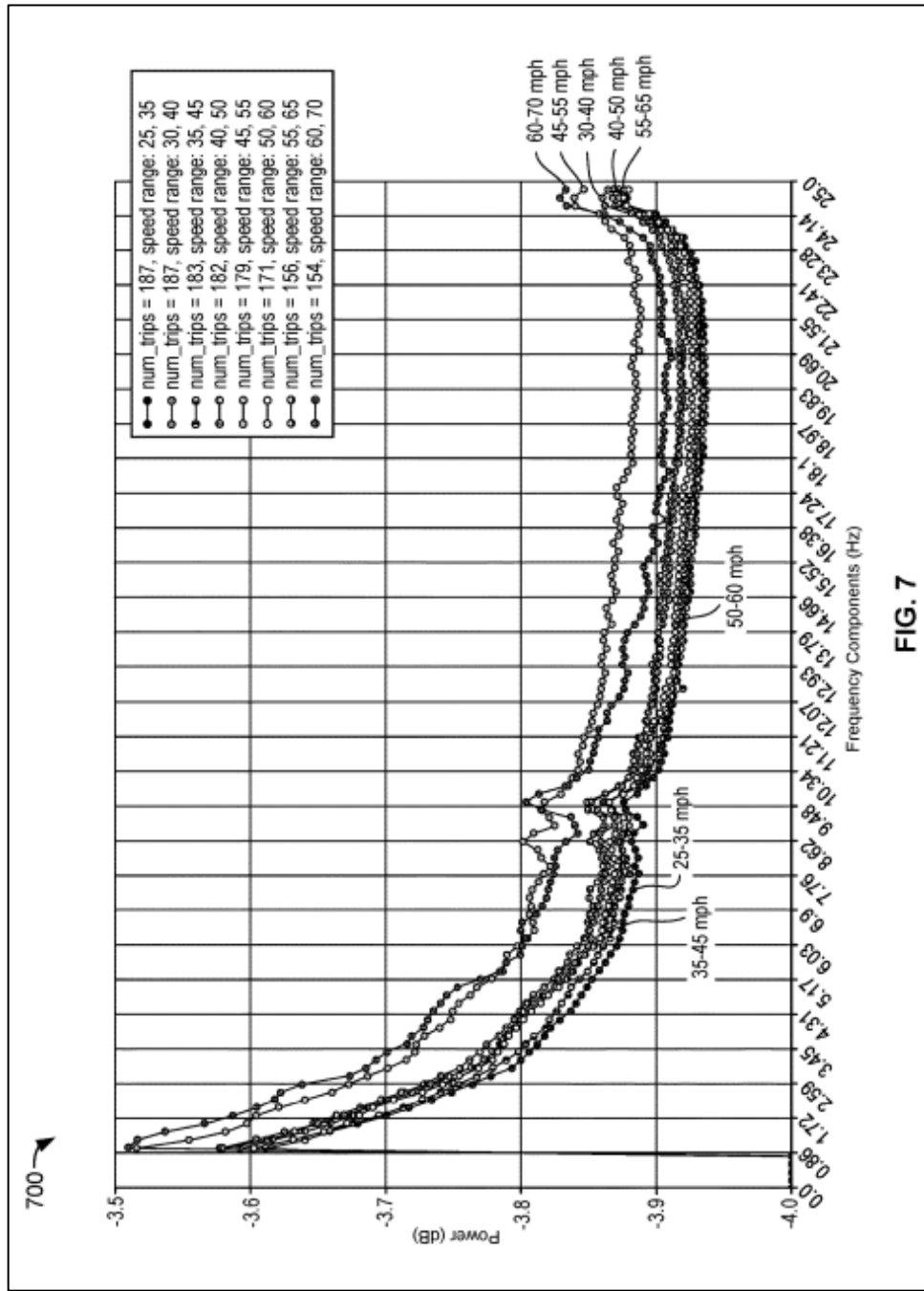
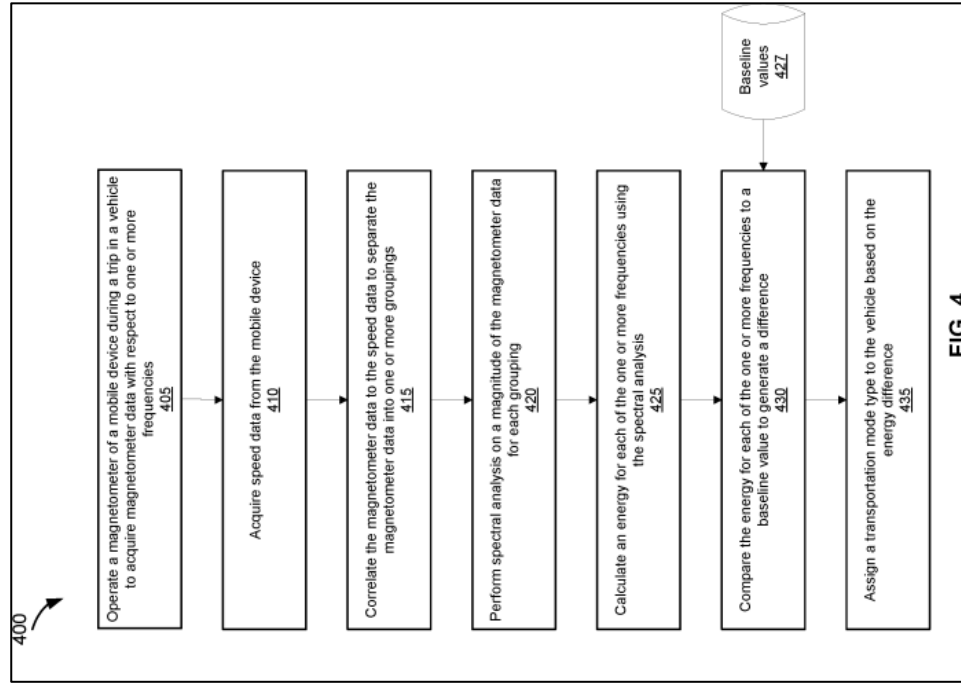


FIG. 7

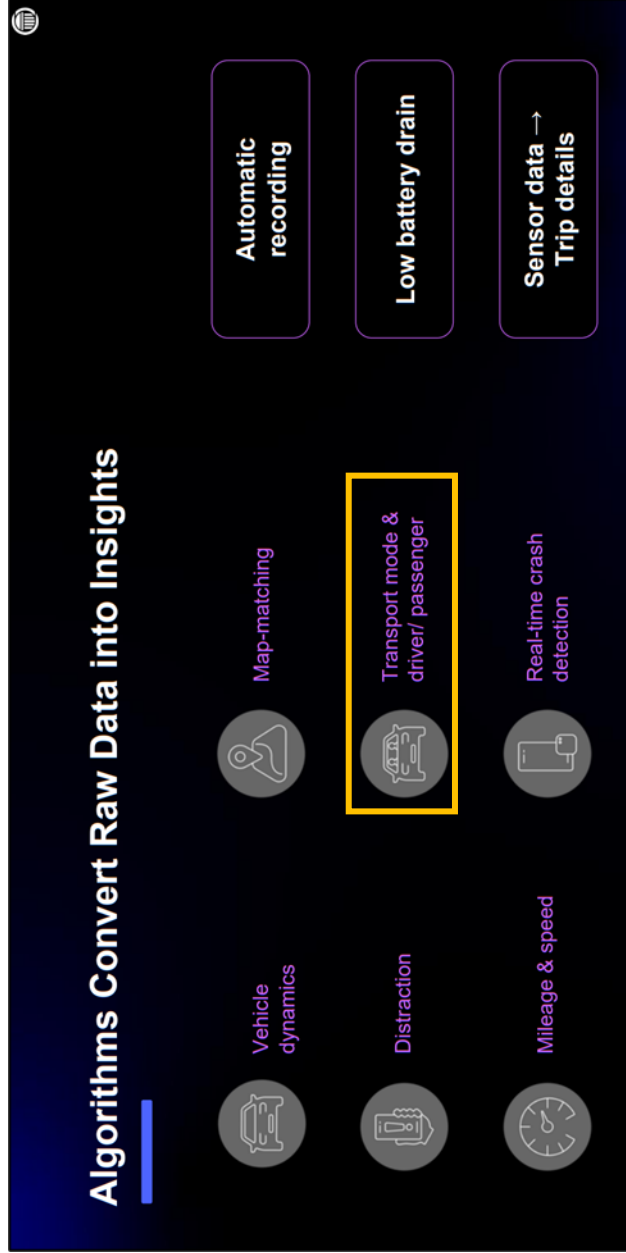
wherein generating comparison comprises the comparison signal based on a comparison of the detected field of the detected signature and the second detected field signature.	One or more of the Accused Instrumentalities generates the comparison signal based on a comparison of the detected field signature (e.g., magnetometer data signature associated with e.g., a first mode of transportation, such as a car/baseline value) and the second detected field signature (e.g., magnetometer data signature associated with e.g., a current mode of transportation). In this way, one or more of the Accused Instrumentalities “determines whether [the device is] in a car or some other mode of transport like a bus or a motorcycle or a bicycle or a boat....” https://agencychecklists.com/2018/04/10/cmt-telematics-2018-22735/. (Last accessed August 21, 2023).
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As shown in Figure 4 of the '632 Application (below), at block 430, one or more of the Accused Instrumentalities "compares the energy for each of the one or more frequencies to a baseline value to generate a difference."



“At block 430, the energy for each of the one or more frequency components may be compared to a baseline value 427 to generate an energy difference. The baseline value 427 may be the energy at each frequency component associated with different modes of transportation. For example, a train may have a certain energy at a certain frequency component, a bus may have a different energy at the certain frequency component, a car may have still another energy at the certain frequency component, and so forth. The processor of the mobile device may cause the energy at each frequency component as calculated to be compared to the energies of the different transportation modes at the same frequency component as the measurement.” ’632 Application at [0061].

“As can be seen in FIGS. 5-7, the power at similar frequency components for a car, a bus, and a train may be highly variable across the different modes of transportation. Thus, by comparing a magnetometer reading at a given frequency component and speed to the powers for that frequency component and speed in FIGS. 5-7, a difference between the reading and the baseline values may be generated. The transportation mode associated with the lowest difference may be assigned as the type of vehicle associated with the trip.” *Id.* at [0070].



https://d1.awsstatic.com/events/reinvent/2021/Using_privacyfirst_data_processing_to_make_drivers_smarter_STP207.pdf.
(Last accessed August 21, 2023).

Claim 16	CMT's Accused Instrumentalities
The non-transitory, tangible, computer-readable media of claim 15, wherein the computer-readable instructions are capable of instructing the computer to perform the method such that said detecting comprises detecting the at least one of an electric field, a magnetic field and an electro-magnetic field as a function over a period of time.	See claims 15 and 2.
Claim 17	CMT's Accused Instrumentalities
The non-transitory, tangible, computer-readable media of claim 15, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method further comprising: detecting, via a parameter-	See claims 15 and claim 3.

detecting component, a parameter; and	
generating, via the parameter-detecting component, a parameter signal based on the detected parameter,	See claims 15 and claim 3.
wherein said identifying comprises identifying the one of an item and a location based additionally on the parameter signal.	See claims 15 and claim 3.
Claim 18	CMT's Accused Instrumentalities
The non-transitory, tangible, computer-readable media of claim 17, wherein the computer-readable instructions are capable of instructing the computer to perform the method such that said detecting a parameter comprises detecting, as the parameter, one of the group consisting of a velocity, acceleration, angular velocity, angular acceleration, geodetic position,	See claims 17 and claim 4.

sound, temperature, vibrations, pressure, biometrics, contents of surrounding atmosphere and combinations thereof.	
Claim 19	CMT's Accused Instrumentalities
The non-transitory, tangible, computer-readable media of claim 15, the computer-readable instructions being capable of being read by a computer and being capable of instructing the computer to perform the method further comprising wirelessly communicating, via a communication component, with a network.	See claims 15 and claim 5.
Claim 20	CMT's Accused Instrumentalities
The non-transitory, tangible, computer-readable media of claim 15, the computer-readable instructions being capable of instructing the computer to	See claims 15 and claim 6.

perform the method further comprising: inputting, via the input component is further operable to input an association; and	
identifying, via the identifying component, a vehicle,	See claims 15 and claim 6.
wherein said detecting, via a field-detecting component, at least one of an electric field, a magnetic field and an electro-magnetic field comprises detecting detect a magnetic field,	See claims 15 and claim 6.
wherein said inputting an association comprises inputting an association between a vehicle and the detected magnetic field,	See claims 15 and claim 6.
wherein said detecting a second one of an electric field, a magnetic field and an electro-magnetic field comprises detecting a second magnetic field,	See claims 15 and claim 6.
wherein said generating a second	See claims 15 and claim 6.

detected field signature comprises generating a second detected field signature based on the detected second magnetic field, and wherein said identifying a vehicle comprises identifying, based on the association, the vehicle as the item.	
	See claims 15 and claim 6.