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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
62/569,923	10/09/2017	Maurice Shelton	50334-PRO

CONFIRMATION NO. 8114

23589
Hovey Williams LLP
10801 Mastin Blvd., Suite 1000
Overland Park, KS 66210



Date Mailed: 10/18/2017

Improper Submission of Authorization to Permit Access to Application by Participating Offices under 37 CFR 1.14(h)(1) (Priority Document Exchange)

The Authorization to Permit Access to Application-As-Filed by Participating Offices under 37 CFR 1.14(h)(1) (authorization to permit access to application via priority document exchange) submitted on 10/09/2017 in the above-identified application is not accepted because:

- It was not properly signed. If applicant still wishes to provide authorization to permit access under 37 CFR 1.14(h)(1), applicant must submit a properly signed authorization (e.g., PTO/SB/39).

Any authorization should be submitted prior to filing a subsequent foreign application with a participating intellectual property office in which priority is claimed to the above-identified U.S. application to ensure that it is likely that the participating foreign intellectual property office will be successful in its attempt to retrieve a copy of the U.S. priority application from the Office.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/Nguyen/



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
62/569,923	10/09/2017	Maurice Shelton	50334-PRO

CONFIRMATION NO. 8114

23589
Hovey Williams LLP
10801 Mastin Blvd., Suite 1000
Overland Park, KS 66210



Date Mailed: 10/18/2017

**Improper Submission of Authorization to Permit
Access to Search Results under 37 CFR 1.14(h)(2)**

The Authorization to Permit Access to the Search Results from the instant application under 37 CFR 1.14(h)(2) (authorization to permit access to search results) submitted on 10/09/2017 in the above-identified application is not accepted because:

- It was not properly signed. If applicant still wishes to provide authorization to permit access to the search results under 37 CFR 1.14(h)(2), applicant must submit a properly signed authorization (e.g., PTO/SB/69).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/Inguyen/



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
62/569,923	10/09/2017		130	50334-PRO		

23589
Hovey Williams LLP
10801 Mastin Blvd., Suite 1000
Overland Park, KS 66210

CONFIRMATION NO. 8114
FILING RECEIPT



Date Mailed: 10/18/2017

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Maurice Shelton, Buffalo, KS;

Applicant(s)

Maurice Shelton, Buffalo, KS;

Power of Attorney: None

Permission to Access Application via Priority Document Exchange: No

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 10/17/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 62/569,923**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

page 1 of 3

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

ASSIGNMENT

WHEREAS, I, Maurice Shelton, of Buffalo, KS, have invented certain new and useful improvements in

ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR

for which I am about to make application for Letters Patent of the United States; and

WHEREAS, Kustom Signals, Inc., a corporation duly organized under the laws of the State of Kansas, and having its principal place of business at 9652 Loiret Boulevard, Lenexa, KS 66217, is desirous of acquiring an interest in, to, and under said invention, said Application and any and all Letters Patent which may be granted for or upon said invention in the United States of America and all countries foreign thereto.

NOW, THEREFORE, to all whom it may concern be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, Maurice Shelton, have sold, assigned, and transferred, and by these presents do sell, assign, and transfer unto said Kustom Signals, Inc., the full and exclusive right, title, and interest, throughout the world, in, to, and under the following:

- (a) said invention as fully set forth and described in said application;
- (b) said application, including the right to claim priority to said application;
- (c) any and all patent applications which claim the priority (directly or indirectly) of said application and have been, or may be, filed in the United States or any country foreign thereto, or via any international treaty or convention, together with all the rights to file and make any priority claims in connection with said later-filed applications;
- (d) any and all inventions disclosed or claimed in such later-filed applications;
- (e) any and all refilings, divisionals, and continuations of said later-filed applications;
- (f) any and all patents which may issue from said later-filed applications, refiling, divisionals and continuations; and
- (g) any and all reissues and extensions of, and additions to, any patents assigned herein.

ALL of the above shall be held and enjoyed by said Kustom Signals, Inc. for its own use and behoof, and for its successors, legal representatives, and assigns, to the full end of the term for

which said Letters Patent may be granted, and I do hereby authorize and request the Commissioner of Patents and Trademarks to issue said Letters Patent in accordance with this Assignment.

Assignor(s) further agree to execute all paperwork and provide any other requested, non-monetary assistance in procuring, perfecting, enforcing, and/or defending Assignee's rights in the rights assigned herein.

Executed this 9 day of October, 2017.

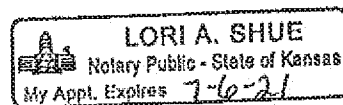
Maurice Shelton
Maurice Shelton

STATE OF Kansas)
) SS.
COUNTY OF Neosho)

On this 9th day of October, 2017, before me personally appeared, Maurice Shelton, to me known to be the person described in and who executed the foregoing instrument, and duly acknowledged to me that executed the same for the uses and purposes therein set forth.

Lori A. Shue
Notary Public

My Commission Expires: July 6, 2021



Name of Company hereby declares it accepts the rights and property hereby assigned and transferred to it.

Kustom Signals, Inc.
By Frederick S. Perry
Print: FREDERICK S. PERRY
Title: PRESIDENT

Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR			
First Named Inventor/Applicant Name:	MAURICE SHELTON			
Filer:	Thomas B. Luebbering/Rachel Nichols			
Attorney Docket Number:	50334-PRO			
Filed as Small Entity				
Filing Fees for Provisional				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
PROVISIONAL APPLICATION FILING FEE	2005	1	130	130
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				130

Electronic Acknowledgement Receipt

EFS ID:	30602787
Application Number:	62569923
International Application Number:	
Confirmation Number:	8114
Title of Invention:	GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR
First Named Inventor/Applicant Name:	MAURICE SHELTON
Customer Number:	23589
Filer:	Thomas B. Luebbering/Rachel Nichols
Filer Authorized By:	Thomas B. Luebbering
Attorney Docket Number:	50334-PRO
Receipt Date:	09-OCT-2017
Filing Date:	
Time Stamp:	17:27:06
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$ 130
RAM confirmation Number	101017INTEFSW00014542190522
Deposit Account	190522
Authorized User	Rachel Nichols

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)
 37 CFR 1.20 (Post Issuance fees)
 37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	PTO_ADS_50334- PRO_975485-1.PDF	1835510	no	8
			a84de184d92ca1aae01cd6b059eecd5f79b6e541		
Warnings:					
Information:					
2		PTO_Application_50334- PRO_975505-1.PDF	180411	yes	17
			70b6b6ff605f1cdb8b8bba9de6b5cc72a6b4b46270		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	14	
	Claims		15	17	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	PTO_Drawings_50334- PRO_975499-1.PDF	327194	no	6
			26801f1958dd7fe6f3f1f764d49d565f75af2cac		
Warnings:					
Information:					
4	Assignee showing of ownership per 37 CFR 3.73	PTO_373c_Stmt_50334- PRO_975490-1.PDF	116642	no	3
			7d265087500d3e830ff04d28ed9f50e879cd4e6		
Warnings:					
Information:					
5	Miscellaneous Incoming Letter	PTO_Assignment_50334- PRO_975463-1.PDF	1046249	no	2
			6da5799bb3276f73b71769c97873cdb84bed7c9		
Warnings:					
Information:					

6	Fee Worksheet (SB06)	fee-info.pdf	29795	no	2
			903ce8a4a34bc5e41d6ace062ccbea7f43d07d8c		

Warnings:

Information:

Total Files Size (in bytes):	3535801
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	50334-PRO
		Application Number	
Title of Invention	GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor	1				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Maurice		Shelton			
Residence Information (Select One) • US Residency Non US Residency Active US Military Service						
City	Buffalo	State/Province	KS	Country of Residence	US	
Mailing Address of Inventor:						
Address 1	17227 2300 Road					
Address 2						
City	Buffalo	State/Province	KS			
Postal Code	66717	Country	US			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add						

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).	
☐ An Address is being provided for the correspondence information of this application.	
Customer Number	23589
Email Address	Add Email Remove Email

Application Information:

Title of the Invention	GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR		
Attorney Docket Number	50334-PRO	Small Entity Status Claimed	☒
Application Type	Provisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	6	Suggested Figure for Publication (if any)	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	50334-PRO
		Application Number	
Title of Invention	GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR		

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	23589		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status		Remove
Application Number	Continuity Type	Prior Application Number
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.		Add

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	50334-PRO
		Application Number	
Title of Invention	GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR		

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	50334-PRO
		Application Number	
Title of Invention	GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	50334-PRO
		Application Number	
Title of Invention	GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant	1	Remove
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section. Clear		
☒ Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:		
Name of the Deceased or Legally Incapacitated Inventor:		
If the Applicant is an Organization check here. ☒		
Organization Name	Kustom Signals, Inc.	
Mailing Address Information For Applicant:		
Address 1	9652 Loiret Boulevard	
Address 2		
City	Lenexa	State/Province
Country	US	Postal Code
Phone Number		Fax Number
Email Address		
Additional Applicant Data may be generated within this form by selecting the Add button. Add		

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	50334-PRO
		Application Number	
Title of Invention	GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR		

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	50334-PRO
		Application Number	
Title of Invention	GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR		

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GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR

[0001] The present invention relates to Traffic Radar Systems for law enforcement and related applications, and more particularly to GPS assisted Traffic Radar Systems with Digital Signal Processing (DSP).

ABSTRACT OF THE DISCLOSURE

[0002] A DSP based Traffic Radar System (TRS) utilizing data from a GPS receiver or other constellation module to steer or assist the DSP signal processing search of the Doppler return information for the patrol vehicle's radar return signal to improve accuracies. This constellation data can also be used to automatically change the mode of operation of the TRS between moving and stationary modes and to enhance other features of the TRS disclosed herein.

BACKGROUND OF THE INVENTION

[0003] Traffic Enforcement Systems utilizing Doppler radar technology have been in use for many years. Law Enforcement agencies deploy these Traffic Radar Systems (TRS) as a tool in the enforcement of vehicle speed regulations. Systems for detecting and displaying radar target data are well known. For example, U.S. Patent Number 5,528,246 "TRAFFIC RADAR WITH DIGITAL SIGNAL PROCESSING" issued to Henderson et al. and incorporated herein in its entirety by reference describes using of digital signal processing to determine patrol and target speeds in an area zone in the front or in the rear of the patrol vehicle. Henderson discloses resolving the patrol speed from frequency spectrum processing of the radar Doppler return using frequency and magnitude criteria.

[0004] U.S. Patent Number 6,023,236 "SPEEDOMETER ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADAR" issued to Shelton, owned by the assignee of the present application,

teaches a method to improve the patrol speed signal processing by using data from the vehicle's electronic speedometer to steer the DSP frequency domain signal processing. This patent is also incorporated herein in its entirety by reference. This method reduces the inaccuracies of the patrol speed readings from blowing rain or snow speed, from large cosine returns from objects close to the side of the roadway, or other operational conditions. The method also reduces patrol speed anomalies from releasing the transmitting antenna from standby mode including: shadowing effect when strong returns are received from other vehicles traveling in the same direction as the patrol vehicle, but at different speeds; or combining effect of the patrol speed being combined with the speed of another approaching vehicle.

[0005] When operating the TRS in any of the moving operations, all radar target speed calculations are based on a relative offset value from the patrol vehicle speed. An important improvement of the Shelton method is the electronic speedometer signal interfaced to the TRS gives an 'independent' patrol speed verification of the radar's Doppler patrol speed. This gives added confidence in the calculated target speed reading. Another improvement taught by Shelton is to use the vehicle's electronic speedometer data to detect when the vehicle is stationary and when it is in motion.

[0006] There are limitations in the method described by Shelton of using the vehicle's electronic speedometer as the independent speed sensor. One limitation is that the electronic speedometer signal is a hardware signal that must be found in the vehicle's wiring harness and interfaced to the TRS. This interface process usually involves taking the vehicle to the automobile dealership to have a technician make the connection to the speedometer signal. In some modern vehicles the electronic speedometer signal is no longer available and the interface cannot be completed.

[0007] Another limitation is the electronic speedometer signal outputs a certain number of pulses for a distance the patrol vehicle travels. But each vehicle model may have a different

relationship to the number of pulses per certain distance traveled. Therefore, the TRS must be synchronized or it must 'learn' this relationship in each vehicle when installed or on each power-up. If the radar is moved to a new vehicle the hardware interface to the signal and the synchronization process must be repeated.

SUMMARY OF THE INVENTION

[0008] An advantageous improvement in the present invention is to allow for a method of interfacing to an 'independent' patrol vehicle speed sensor that is not dependent on hardware interfacing into the vehicle electronics.

[0009] Another improvement in the invention is to allow a method of sensing patrol vehicle speed that is independent of the vehicle type and model.

[0010] Another improvement of the invention is a method of sensing patrol vehicle speed that does not require synchronization when the TRS is moved from one vehicle to another.

[0011] In an embodiment of the present invention, the aforesaid improvements are addressed by a Traffic Radar System (TRS) that provides an interface and data processing to a GPS module. This system determines the patrol vehicle speed through a combination of constellation data and radar return.

[0012] An important object of the present invention is to provide a method and apparatus for determining when the patrol vehicle is moving or stationary and switch the mode of operation accordingly.

[0013] Another important object of the present invention is to provide a method and apparatus of using the independent GPS sensor data for determining a search window to guide or steer the DSP processing of the radar measured speed of the patrol vehicle.

[0014] A further important object of the present invention is to provide a method and apparatus for determining a more reliable patrol vehicle speed reading.

[0015] In embodiments of the invention, the GPS output data messages are an input communication stream to the DSP radar unit. The signal processing system of the TRS converts the 'Speed Over Ground' value from the GPS data to a frequency index in the Doppler band of the radar signal. This frequency index is used as the center of a search window. The system searches for the patrol radar return signal within the search window. Once the patrol vehicle speed is found, other target signals can be found and their speeds accurately determined. If the radar is operating in the moving mode and the patrol vehicle comes to a stop, the GPS 'Speed Over Ground' data value will be at or very near zero and the radar automatically switches to the stationary mode. On the other hand, if the radar is operating in the stationary mode and the patrol vehicle starts moving, the GPS 'Speed Over Ground' value will be non-zero and the radar can automatically switch to the moving mode. This automatic switching of modes is known as Auto-Mode switching. If there is no data being received from the GPS or the GPS has marked the 'Data Valid Status' as invalid, a search for the patrol vehicle radar return is conducted using methods known in prior art.

[0016] Other advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings, to set forth by way of illustration and example, of embodiments of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] Fig. 1 -- System Block Diagram

[0018] Fig. 2 -- System Firmware Initialization Block Diagram

[0019] Fig. 3 -- System Main Loop Processing Firmware Block Diagram

[0020] Fig. 4 – RMC Message Chart

[0021] Fig. 5 – Moving Mode, Same Direction Signal Return

[0022] Fig. 6 – Operator Display of Patrol and Target Speeds

[0023] Fig. 7 – Example of Locked Speeds Events Record

DETAILED DESCRIPTION

[0024] The following detailed description of embodiments of the invention is intended to describe aspects of the invention in sufficient detail to enable those skilled in the art to practice the invention. Other embodiments can be utilized and changes can be made without departing from the scope of the invention. The following detailed description is, therefore, not to be taken in a limiting sense. The scope of the present invention is defined only by claims presented in subsequent regular utility applications, along with the full scope of equivalents to which such claims are entitled.

[0025] In this description, references to “one embodiment,” “an embodiment,” or “embodiments” mean that the feature or features being referred to are included in at least one embodiment of the technology. Separate references to “one embodiment”, “an embodiment”, or “embodiments” in this description do not necessarily refer to the same embodiment and are also not mutually exclusive unless so stated and/or except as will be readily apparent to those skilled in the art from the description. For example, a feature, step, etc. described in one embodiment may also be included in other embodiments, but is not necessarily included. Thus, the present technology can include a variety of combinations and/or integrations of the embodiments described herein.

[0026] Turning to the drawings, Fig. 1 depicts a simplified block diagram of the Traffic Radar System (TRS). This example illustrates the current state of the art. Block 102 is the forward

facing, Front radar transceiver antenna assembly. Both microwave transmit and receive functions are housed in this assembly. Block 110 is the rearward facing Rear radar transceiver antenna assembly. In this embodiment, the transceivers may be Kustom Signals Inc. 35.5 GHz Ka-Band antenna assemblies. The antenna assembly transmits a single microwave signal frequency towards moving and stationary targets. A portion of the microwave signal is reflected by the targets and is received by the antenna assembly's receiver. The received signal is a composite of all the signals reflected by the moving and stationary targets. The receiver output signals are connected to the DSP processing assembly block 106. The DSP processing assembly converts the received signals from the time domain to the frequency domain. The frequency of the signals from the targets is directly proportional to the targets' speeds.

[0027] The DSP processing assembly is interfaced to the GPS module 104. The interface between the DSP and the GPS provides two-way communications. Data from the DSP to the GPS can be used to control the output data messages from the GPS. The data from the GPS to the DSP contains the data values used for the independent speed sensor measurement and other improvement that will be described herein. The GPS block 104 can be a GPS constellation module only, or to increase coverage and accuracy, a multi-constellation module can be used. In the current embodiment, a multi-constellation (GPS / GLONASS) module, the SE868K3-A GNSS module provided by Telit Wireless Solutions is used.

[0028] The DSP processing assembly 106 is connected to the user's display, block 108 and a remote control unit, block 112. The remote control can be interfaced to the system via wired, IR, or RF signals.

[0029] Fig. 2 depicts a simplified block diagram of the firmware routines used in an embodiment to initialize the GPS module. Block 200 represents the operator powering up the TRS system. During block 202, the firmware initializes the functions of the General Purpose Input Output (GPIO) ports of the DSP device. In one embodiment, the DSP device is from the RX64M family of high-performance microcontrollers from Renesas Electronics. The serial port that will be used for the GPS communications is initialized during block 204. Once the DSP part and ports have been initialized communication with the GPS module can begin. The default output communications from the GPS modules contain several types of constellation messages. The messages are output at a one second period rate and at 9600 baud bit rate. An improvement in the GPS communications is to limit the constellation message to a certain type, increase the output update rate to higher than once per second, and to increase the baud rate. Blocks 206 through 210 send MTK NEMA command messages to the GPS module to make these improvements. Block 206 sends the MTK206 command message with data to set the GPS module output message type to the RMC message only (Recommended Minimum Specific GNSS data). This greatly shortens the amount of data coming from the GPS and allows for more updates per second. Included in the RMC message from the GPS is the 'Speed Over Ground' data. This data is the speed the patrol vehicle is travelling and will be used for several of the improvements in this invention, including setting the search window limits for the DSP to look for the patrol speed frequency in the radar return spectrum. At the default output rate of once per second there can be a lot of change in the 'Speed Over Ground' value if the patrol vehicle is accelerating or deaccelerating. This can lead to the search window not being in the most accurate location for tracking a patrol vehicle that is changing speed. During block 208, the DSP sends the MTK300 command message to the GPS to

increase the set interval between position fixes to 5 times per second. The GPS will now send the RMC message, containing the 'Speed Over Ground' data, five times a second. This will provide a more accurate search window. To increase the message processing efficiency, in block 210 the DSP sends the GPS the MTK210 command with data that increases the communication bit rate from 9600 to 57600. The GPS is now initialized to the preferred operation for this invention. Block 212 represents entering into the main radar processing loop.

[0030] Fig. 3 is a simplified block diagram of the radar main processing loop. The details of Doppler radar processing are well known and well documented in the prior art. This block diagram is specifically to illustrate how the GPS data adds improvements and enhancements to the processing in accordance with aspects of the present invention. Block 302 depicts the entry into the radar processing main loop. When the entire loop has been executed, the firmware will return to this point and begin the main loop again. In block 304, the DSP firmware processes the received data message from the GPS. Fig. 4 depicts a chart of the RMC message data sent from the GPS module. The firmware in block 304 parses this data message into firmware variables to be used in following processing blocks. In particular, the Data Valid Status field is parsed and stored in a variable to indicate if the navigation data in the RMC is valid or invalid. The latitude, longitude, and Course over ground fields are parsed and saved as location and course direction firmware variables for an enhancement in the current embodiment for Events logging. The Speed over ground field is parsed and saved in a firmware variable for use in following patrol search and automatic mode switching routines. The UTC time and UTC date fields are parsed and saved in firmware variables to enhance the Events logging and the Certification features disclosed by the assignee in publication number

'US 2014/0362231 A1', which is hereby incorporated into the present application in its entirety by reference. This publication discloses a Certification feature, used to notify the user when recertification of the TRS device is required. A Real Time Clock (RTC) circuit is used as the method to keep track of when the device was last certified and when the next certification testing is required. A limitation of this prior invention is the time keeping of the RTC is prone to drift and must be maintained by a back-up battery when the TRS is not connected to the power source. If the back-up battery is depleted, the current time and date are lost. In embodiments of the current invention, the Certification feature uses the UTC time and date from the processed GPS date to track the when the device was certified and when the next certification is required.

[0031] In block 306, the DSP firmware converts the Speed over ground variable from Knots units, sent in the RMC message, to the firmware Miles-Per-Hour (MPH) variable 'gps.fSpeedMph' and Kilometer-per-hour (km/h) firmware variable 'gps.fSpeedKmh' for use in following routines. The firmware in block 306 converts the gps.fSpeedMph variable value to an equivalent frequency bin number in the frequency domain of the Doppler radar return signal spectra. The conversion formula to convert the speed value to the frequency bin value will depend on the frequency band of the microwave transmission. This frequency bin number is known to the firmware as the 'uiSensorPatrolIndex' variable. Block 306 sets the patrol speed search window limits to a tolerance around the uiSensorPatrolIndex value. In the current embodiment the search window is set to plus or minus five MPH of the uiSensorPatrolIndex bin.

[0032] Block 308 of the firmware determines if the Moving / Stationary mode of operation should be changed based on the 'gps.fSpeedMph' variable found in block 306. If the system

is in the Moving mode of operation and the `gps.fSpeedMph` value shows the vehicle speed is currently zero or very near zero, the firmware switches the operation to the Stationary mode without requiring action from the operator. If the system is in the stationary mode of operation and the `gps.fSpeedMph` value shows the vehicle speed is currently non-zero, the firmware switches the operation to the Moving mode without requiring action from the operator. In practice, the Auto-Mode switching is improved by setting tolerances and time requirements on the switching. In the current invention, the firmware switches the operation from moving to stationary mode when the `gps.fSpeedMph` value has been found to be less than 1.1 MPH for four consecutive loop readings. And the operation is switched from stationary to moving when the `gps.fSpeedMph` reading value has been greater than 3.1 MPH for four consecutive loop readings. This improves rejection of jitter in the stationary GPS positioning data.

[0033] Block 310 pertains to the gathering and storage of the digitized Doppler return signals. A long sequence of digitized samples is placed in a memory buffer. The firmware represent in block 312 converts the stored samples from block 310 to the frequency domain spectrum using Fast Fourier Transform (FFT) routines.

[0034] Block 314 DSP firmware starts the normal Patrol search processing, where the frequency domain spectrum is searched for the patrol vehicle return. This invention greatly improves the results of that search by setting the limits of the search window. Fig. 5 illustrates the frequency spectrum of a typical radar return in moving mode same direction operation with a patrol vehicle signal (504) and a target signal (502) from a vehicle travelling close in distance and in the same direction to the patrol vehicle. Without the benefits of the invention of the search limiting window, the DSP firmware might easily confuse the (502) signal to be

the Patrol vehicle return. But with the invention, a search window (506) is set to limit the area of search for the patrol vehicle signal, in which only the correct signal (504) is present.

[0035] With the patrol vehicle signal accurately found the firmware searches the spectrum for target signals as depicted by block 316.

[0036] Block 318 converts the frequency bin numbers of the patrol and target signals to absolute speed units of measure. Typically the units of measure are in MPH or Km/h. Accurate target speed measurements are an important aspect of this invention. In moving mode operation the frequency of the Doppler target return signal is the relative speed of the target to the patrol vehicle speed. The absolute target speeds values that are displayed to the user are calculated from the relative speed offset to the patrol speed. To get accurate target speeds readings, the patrol speed reading must also be accurate. This invention increases the accuracy of the patrol speed search and thus increases the accuracy of the target speed results.

[0037] The firmware associated with block 320 Block displays the patrol and target speed readings, calculated in block 318, to the operator. Fig. 6 illustrates an example of the patrol and target speed displayed to the operator. The target speed value (602), in this case 80 MPH, is the target speed of the vehicle travelling in the same direction as the patrol vehicle. The patrol vehicle speed value (606) is 65 MPH. The symbol depicted by (604) is an enhancement of this invention to indicate the radar patrol speed reading of 65 is verified by an independent speed sensor.

[0038] In the last block 322 depicted in the Main Loop diagram, the DSP firmware determines if any events should be logged to memory. An important aspect of this invention is to use the firmware variables parsed from the GPS RMC message to store events in non-volatile memory to be displayed to the operator or to be downloaded from the TRS device to another computer

or electronic device to be stored. In the current embodiment of the invention, firmware parameters can be set to log an event with any combination of the following; each new target speed reading, when the operator locks the speed readings (which is typical during a traffic citation), when the operator conducts the system test procedure, when a system error is detected, when any part of the system firmware is updated.

[0039] Fig. 7 illustrates the example of the stored Events Record, in the current embodiment, when the operator locks the speed readings. Item (702) is the column of field titles in the event record. Item (704) is the column of field data that is related to each title in the record. The first entry is the Record Number. This is an on-going sequential number that is calculated by the DSP firmware and is an increment of one from the previous record. This record number may be cleared when the Events Log is downloaded to another device. The second entry is the type of record; in this case the record was initiated by the speeds being locked. The third entry is the Coordinated Universal Time (UTC) time. These values are from the firmware variables processed from the GPS RMC message. The forth entry is the UTC date; again these values are from the firmware variables processed from the GPS RMC message. The fifth entry is the patrol vehicle location data. This data is from the firmware variables processed from the Latitude and Longitude data fields in the GPS RMC message. The sixth entry is the patrol vehicle course of travel. This data is from the firmware variable processed from the Course over ground data field in the GPS RMC message. The seventh entry is the DSP calculated speed of the patrol vehicle from the Doppler radar return. The eighth entry is the DSP calculated speed of the target vehicle from the Doppler radar return. The ninth entry is the operating mode of the system when the event occurred. It can be seen from this example that the event record information is greatly enhanced by this invention addition of the GPS data.

[0040] When the firmware finishes the Log Events block 322 it loops back to the start of the Main Loop Processing block 320 and the loop process begin again.

The following are potentially novel aspects of the present invention:

1. Providing a method of independent speed sensor interfaced to the TRS that does not require connection to the vehicle hardware.
2. Providing a method and apparatus of interfacing an independent speed sensor interfaced to the TRS that is independent of vehicle type or model.
3. Using the Speed over ground data from the processed GPS message to set the limits of the Doppler patrol search window.
4. Using the Speed over ground data from the processed GPS message to determine automatic mode switching of the Moving / Stationary modes of operation.
5. Processing GPS message data and using UTC time and date to enhance the TRS certification feature.
6. Processing the GPS message data and using the position data, UTC time data, UTC date data, and Course over ground data for entry into a stored Events log.

The following are exemplary claims for aspects of the invention:

1. A Traffic Radar System (TRS) comprising:

at least one transceiver antenna assembly configured for transmitting signals from a patrol vehicle and receiving signals reflected back toward the patrol vehicle;

a speed sensor independent of the transceiver antenna assembly and any speed sensors of the patrol vehicle for determining a speed of the patrol vehicle; and

a processing assembly for receiving and analyzing output signals from the radar transceiver antenna assembly and the speed sensor for determining an operational mode of the TRS based on the speed of the patrol vehicle as determined by the speed sensor.
2. The TRS of claim 1, further comprising a display for displaying speed information provided by the processing assembly.
3. The TRS of claim 1, wherein the processing assembly automatically switches between a moving mode and a stationary mode based on the speed of the patrol vehicle as determined by the speed sensor.
4. The TRS of claim 1, wherein the speed sensor is a GPS receiver.

5. A Traffic Radar System (TRS) comprising:
 - at least one transceiver antenna assembly configured for transmitting signals from a patrol vehicle and receiving signals reflected back toward the patrol vehicle;
 - a speed sensor independent of the transceiver antenna assembly and any speed sensors of the patrol vehicle for determining a speed of the patrol vehicle; and
 - a processing assembly for receiving and analyzing output signals from the radar transceiver antenna assembly and the speed sensor for determining a search window to assist in determination of a measured speed of a target vehicle.
6. The TRS of claim 5, further comprising a display for displaying speed information related to the measured speed.
7. The TRS of claim 5, wherein the processing assembly automatically switches between a moving mode and a stationary mode based on a speed of the patrol vehicle as determined by the speed sensor.
8. The TRS of claim 5, wherein the speed sensor is a GPS receiver.

Although the invention has been described with reference to the particular embodiments, it is noted that equivalents may be employed and substitutions made herein without departing from the scope of the invention.

Fig. 1 System Block Diagram

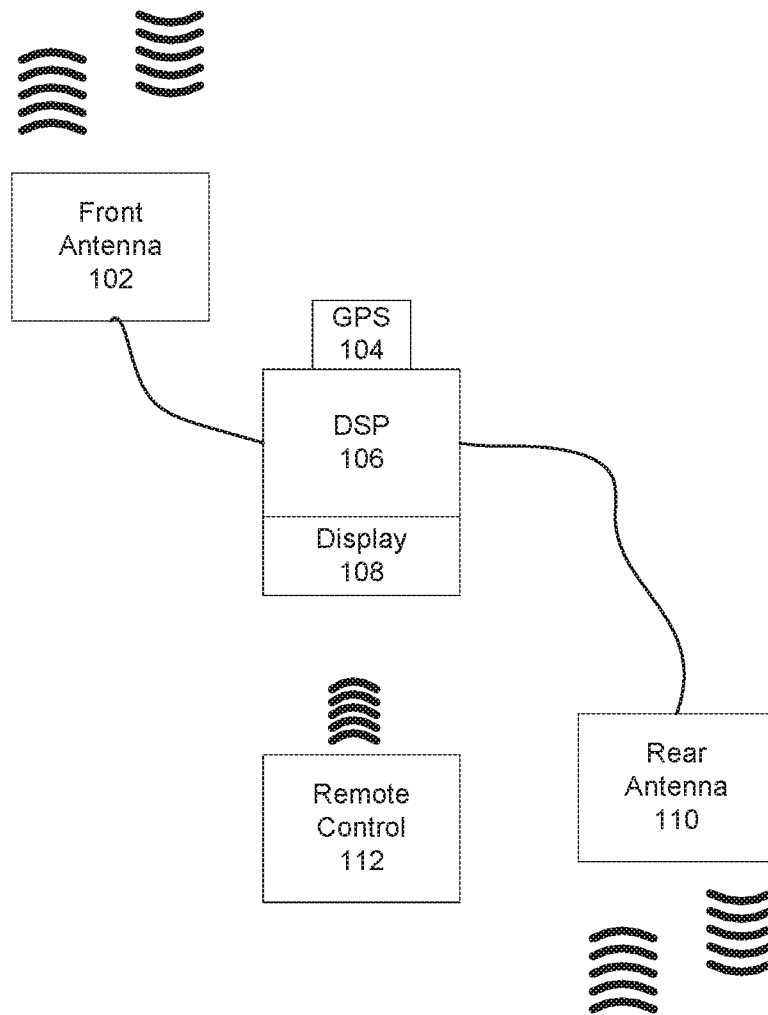


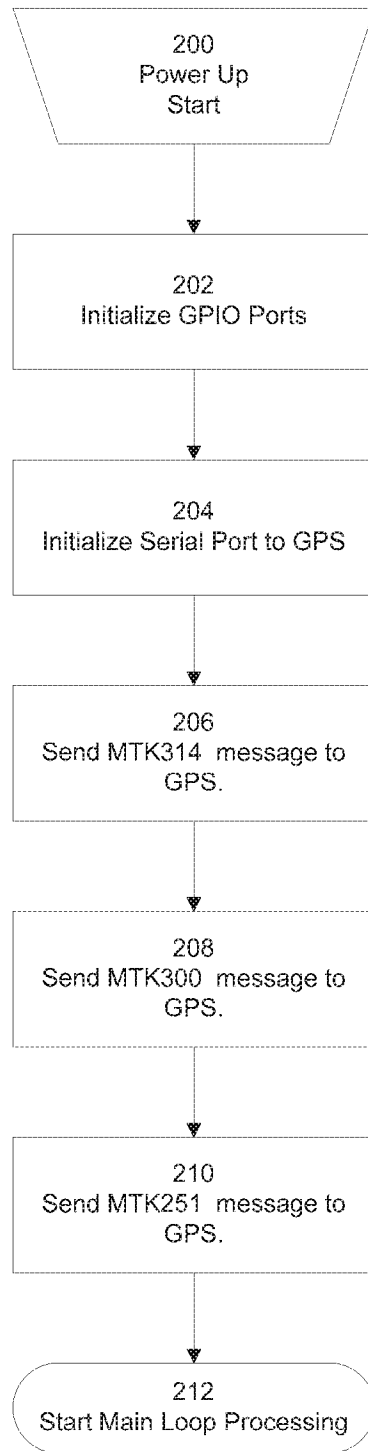
Fig. 2 System Firmware Initialization Block Diagram

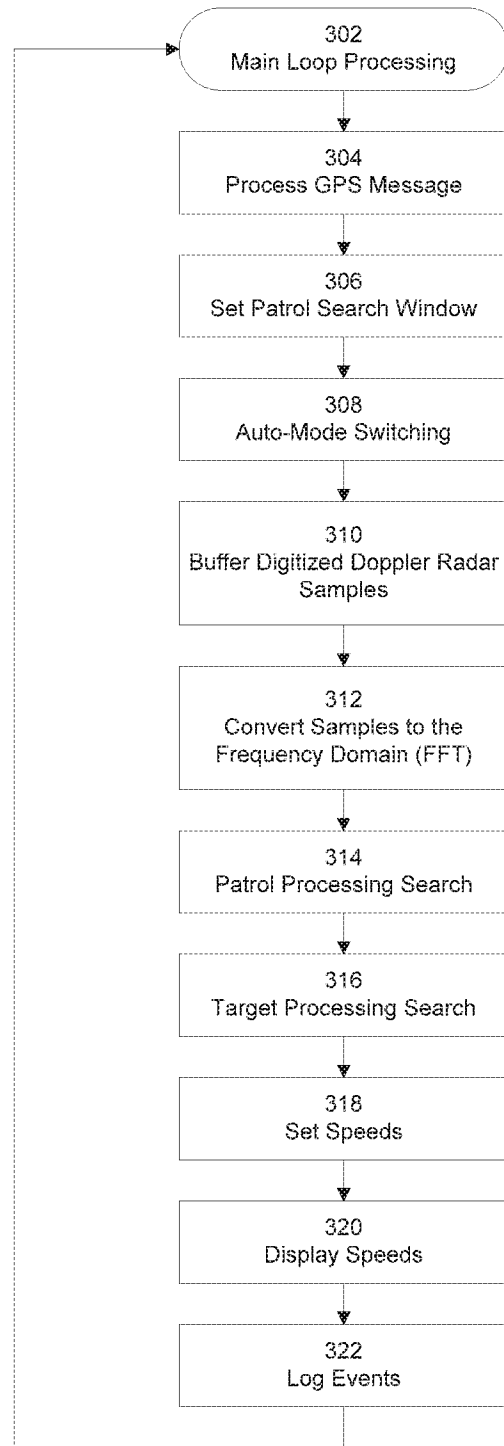
Fig. 3 System Main Loop Processing Firmware Block Diagram

Fig. 4 RMC Message Chart

Field	Example	Comments
Preamble	\$	Start of sentence
Talker ID	GP	Navigation System GP=GPS GL=GLONASS GN=Global Navigation BD= BeiDou (COMPASS)
Sentence ID	RMC	Recommended Minimum Specific GNSS Data
UTC Time	082653.100	hhmmss.ss (hours, minutes, seconds)
Data Valid Status	A	A = Data valid V = Navigation receiver warning (data invalid)
Latitude	2446.4768	ddmm.mmm (degrees and minutes)
N/A Indicator	N	N = North, S = South
Longitude	12100.0344	dddmm.mmm (degrees and minutes)
E/W Indicator	E	E = East, W = West
Speed over ground	0.00	Knots
Course over ground	128.42	Degrees true
UTC Date	270705	ddmmyy (day, month, year)
Magnetic variation		Degrees magnetic
Magnetic variation		E = East, W = West
Mode Indicator	A	A = Autonomous mode D = Differential mode E = Estimated (dead reckoning) mode M = Manual input mode S = Simulator mode N = Data not valid
End of Data Fields	*	Asterisk delimiter
Checksum	67	Two character hexadecimal value
Terminator	<CR><LF>	End of sentence sequence

Fig. 5 Moving Mode, Same Direction Operation, Signal Return of Patrol Vehicle and 1 Target

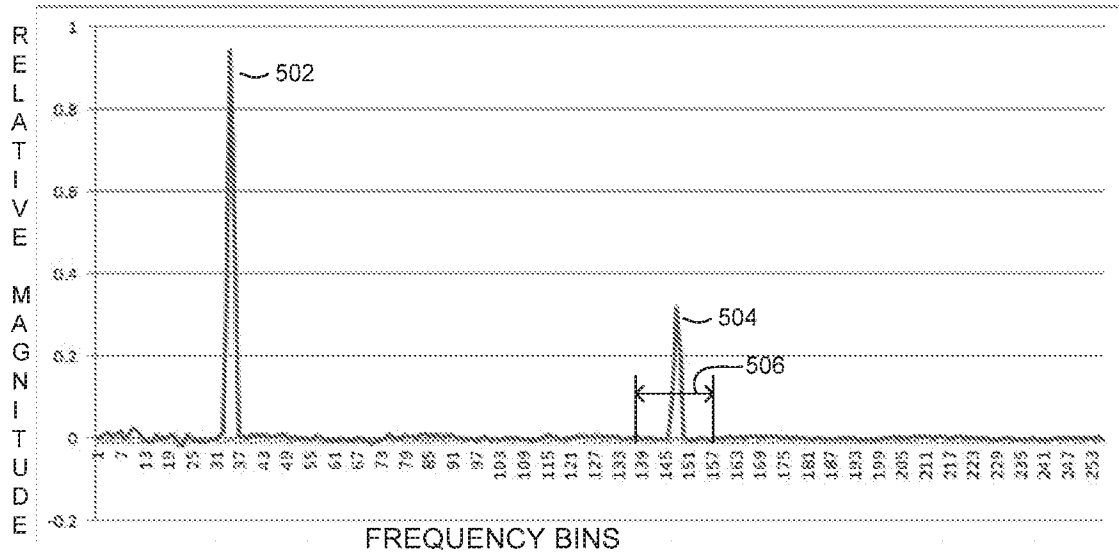


Fig. 6 Operator Display of Patrol and Target Speeds

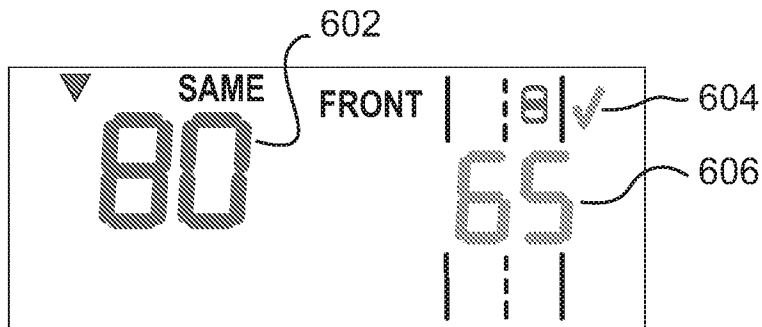


Fig. 7 Example of Locked Speeds Events Record

Record Number:	00101
Record Type:	Locked Speeds Event
UTC Time:	09:14:32
UTC Date:	27-09-2017
Location:	37.6792 N, 95.4572 W
Patrol Course:	273 Degrees
Patrol Speed:	65 MPH
Target Speed:	80 MPH
Operating Mode:	Moving Same Direction

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STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: SHELTON, Maurice

Application No./Patent No.: _____ Filed/Issue Date: _____

Titled: GPS ASSISTED PATROL SPEED SEARCH FOR DSP TRAFFIC RADARKUSTOM SIGNALS, INC., a CORPORATION

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

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5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
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6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/THOMAS B. LUEBBERING/

Signature

THOMAS B. LUEBBERING

Printed or Typed Name

10-09-2017

Date

37874

Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.