

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 February 2004 (19.02.2004)

PCT

(10) International Publication Number
WO 2004/014670 A3

(51) International Patent Classification⁷: **B60C 23/04**

(21) International Application Number:
PCT/IB2003/003739

(22) International Filing Date: 7 August 2003 (07.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/214,501 8 August 2002 (08.08.2002) US

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant: MARCONI INTELLECTUAL PROPERTY (US) INC. [US/US]; 1000 Marconi Drive, Warrendale, PA 15086-7502 (US).

Published:
— with international search report

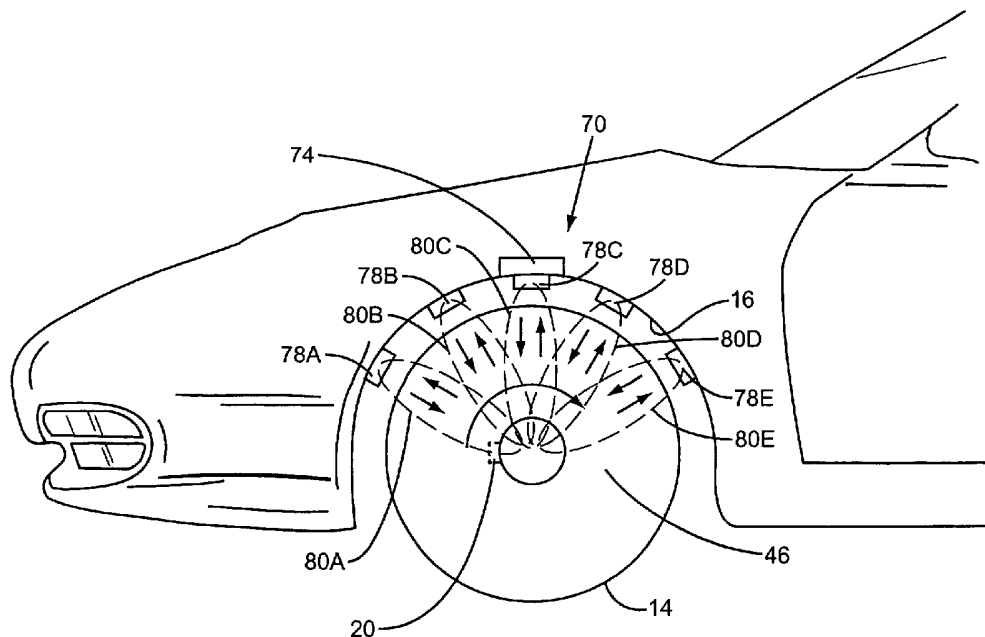
(72) Inventor: FORSTER, Ian, James; 31 Great Cob, Springfield, Chelmsford, Essex CM1 5LA (GB).

(88) Date of publication of the international search report:
1 July 2004

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TAG READER FOR TYRE CONDITION MONITORING



(57) Abstract: A tyre sensor (20) that communicates to a remote interrogator (22) in one of two modes depending on the nature of the interrogation. The interrogator (22) may be distributed throughout a vehicle if needed for design options. Further, the interrogator (22) only interrogates the transponder when the interrogator has reason to believe that the transponder (20) is in range of the interrogator. The interrogator and transponder may be configured to operate in different modes for communication during operation of the tyre (14) on a vehicle and during nonoperation. The transponder may communicate tyre condition information to the interrogator concerning environmental or other information sensed about the tyre (14).

WO 2004/014670 A3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 03/03739

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 B60C23/04		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) IPC 7 B60C		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 087 930 A (KULKA HARVEY J ET AL) 11 July 2000 (2000-07-11) column 5 - column 6 figures 1-10 -----	1-11
X	EP 1 026 015 A (SCHRADER BRIDGEPORT INTERNATIO) 9 August 2000 (2000-08-09) the whole document -----	1,6
A	EP 1 187 346 A (SIEMENS AUTOMOTIVE CORP LP) 13 March 2002 (2002-03-13) figures 1-3 -----	1,6
A	US 5 661 651 A (DYKEMA KURT A ET AL) 26 August 1997 (1997-08-26) figures 7,11 -----	1,6
<input type="checkbox"/> Further documents are listed in the continuation of box C.		
<input checked="" type="checkbox"/> Patent family members are listed in annex.		
° Special categories of cited documents :		
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.	
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search <p style="text-align: center;">7 November 2003</p>	Date of mailing of the international search report <p style="text-align: center;">09.03.04</p>	
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer <p style="text-align: center;">Billen, K</p>	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 03/03739

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-11

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11

Multi-mode communication by identifying the type of modulation of an interrogating signal

2. claims: 12-32

Using the circumferential location of the transponder as a criteria for interrogating the transponder

3. claims: 33-38

Arrangement of a plurality of transmit antennas about a wheel well

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 03/03739

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6087930	A	11-07-2000	AT 223815 T 15-09-2002
			BR 9506855 A 23-09-1997
			CA 2183235 A1 24-08-1995
			CN 1141613 A ,B 29-01-1997
			DE 69528158 D1 17-10-2002
			DE 69528158 T2 28-05-2003
			EP 0746475 A1 11-12-1996
			JP 3235792 B2 04-12-2001
			JP 9509488 T 22-09-1997
			WO 9522467 A1 24-08-1995

EP 1026015	A	09-08-2000	US 2002003474 A1 10-01-2002
			EP 1026015 A2 09-08-2000

EP 1187346	A	13-03-2002	EP 1187346 A2 13-03-2002

US 5661651	A	26-08-1997	NONE
