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(54) Temporary download

(57) The present invention relates to a digital tachograph, and a method for a tachograph, comprising a user data secondary memory for storing of user related data and a secondary memory control means for communication of user related data between the user data primary memory, or the tachograph memory, and the user data secondary memory.

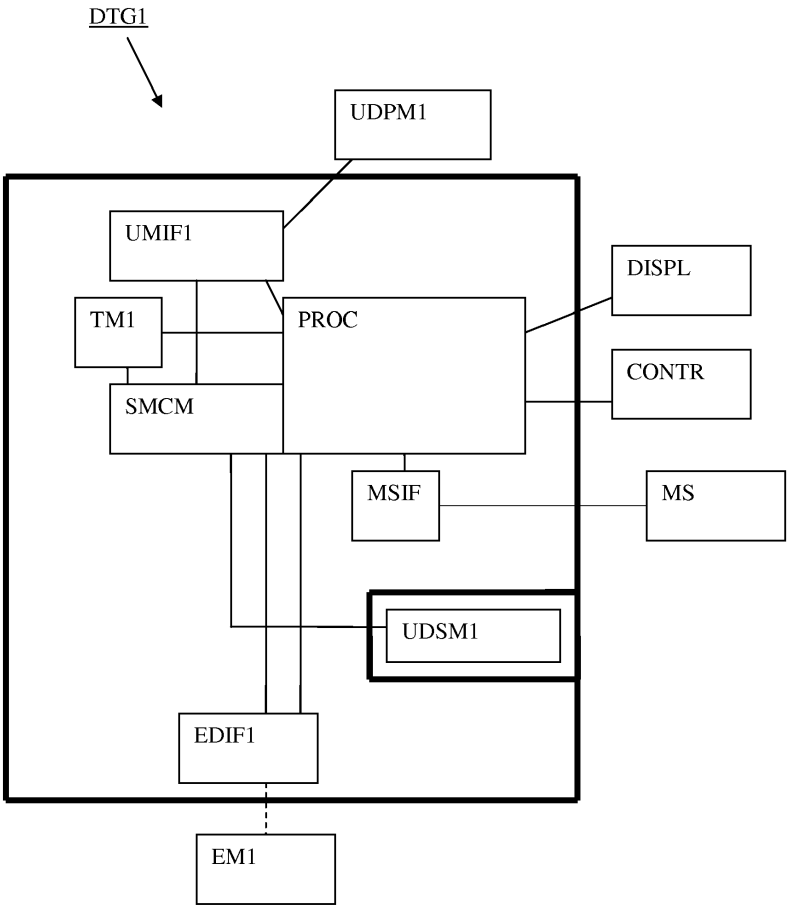

FIG 1

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Description

FIELD OF INVENTION

[0001] The present invention relates generally to digital tachographs and particularly to a digital tachograph comprising a memory for user related data.

BACKGROUND

[0002] Digital tachographs are like analogue tachographs used for gathering information relating to the usage of a vehicle, and to collection of driver activities, such as driving hours, vehicle speed, distance traveled, start time, finish time, rest time, driver identity, starting location and finishing location.

[0003] Driver cards are required to identify a driver driving a vehicle, and also to store recorded data about the driver's activities and other data associated to driving. Different regulations require periodically download and backup data from the driver card, so that records of driving can be stored for several years, and be shown to law enforcement authorities at request.

[0004] Today this can be done in two ways:

1. download data from the driver card via the tachograph, either through the front connector interface or via a wireless interface,

2. download data from the driver card to a dedicated card holder and download equipment

[0005] This put restriction on drivers and other users and how to handle driver cards.

SUMMARY OF THE INVENTION

[0006] An object of the present invention is to provide a tachograph and a method facilitating handling user related data.

[0007] This object, among others, is according to the present invention attained by a digital tachograph and a method, respectively, as defined by the appended claims.

[0008] The invention discloses a tachograph suitable for being installed in a vehicle comprising a user identification interface suitable for cryptographically secured data communication with a user data primary memory, means for identifying a user data primary memory connected to the user identification interface and a tachograph memory (TM1) suitable for storing user related data.

[0009] The invention introduces a user data secondary memory control means (SMCM) for downloading user related data between the user data primary memory and/or the tachograph memory to the user data secondary memory.

[0010] In different embodiments, as defined by the claims, the downloading of data depends on different circumstances, e.g. manual inputs, time intervals, marked data, and different status in memories and the tachograph. In another embodiment the user data secondary memory is detachable. In another embodiment the user data secondary memory has different memory fields for different users. This fields could be created automatically or manually.

[0011] One advantage with the invention is that it is possible to free memory space at the user data primary memory by downloading data to the user data secondary memory.

[0012] Another advantage of the invention is that user related data can be downloaded to the external memory EM1 without having the driver data primary memory UDPM1 present. This is possible because the user related data could be temporary stored on the user data secondary memory UDSM1 and be downloaded from this memory instead.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The objects, advantages and effects as well as features of the present invention will be more readily understood from the following detailed description of exemplary embodiments of the invention when read together with the accompanying drawings, in which:

Fig. 1 schematically illustrates a digital tachograph according to the present invention.

Fig. 2 illustrates a memory for storing user related data.

DETAILED DESCRIPTION OF EMBODIMENTS

[0014] While the invention covers various modifications and alternative constructions, embodiments of the invention are shown in the drawings and will hereinafter be described in detail. However it is to be understood that the specific description and drawings are not intended to limit the invention to the specific forms disclosed. On the contrary, it is intended that the scope of the claimed invention includes all modifications and alternative constructions thereof falling within the spirit and scope of the invention as expressed in the appended claims.

[0015] Fig. 1 describes a tachograph DTG1 according to the present invention.

[0016] The tachograph comprises a control function PROC for handling functions in the tachograph. The tachograph could also comprises different tachograph basic functions e.g. means for storing driver related data, arithmetic units for different calculations, clock functions, encryptions functions and signing of data functions. These functions could be integrated in the control function or distributed in the tachograph.

[0017] The tachograph also comprises means and in-

terface UMIF1 for identification of user data primary memory UDPM1. The speed of the vehicle could be received from a GPS or a motion sensor MS placed in the gear box of the vehicle. The tachograph comprises means MSIF for collecting vehicle related data from a connected motion sensor MS or a GPS. The tachograph also comprises means for storing driver related data on a connected user data primary memory UDPM1. Those functions could be integrated in the control function PROC or distributed in separate building blocks.

[0018] The tachograph DTG1 also comprises at least one tachograph memory TM1 for storing data. A user interface could be integrated in the tachograph DTG1 or placed externally. The user interface consist in this particular embodiment of controls CONTR and a display DISP. The user of a tachograph could be a driver of course but also other users as e.g. codrivers, service personal or similar.

[0019] User related data could be anything related to the user one way or another, e.g. speed of the vehicle, location of the vehicle or the driver, driver activities or events, driving time, rest time or different authorizations and encryptions keys. This type of data, e.g. speed or activities, could also be associated to a certain time.

[0020] This embodiment comprises the following interfaces which all could be wired or wireless:

- A motion sensor interface MSIF for cryptographically secured data communication of data related to the motion of a vehicle. This data could e.g. be received from a motion sensor MS situated in the gear box of a vehicle or a GPS function.

- An user data primary memory interface UMIF1 for cryptographically secured data communication with a user data primary memory UDPM1

- A data download interface EDIF1 for data communication with an external memory EM1.

[0021] The user data primary memory UDPM1 is a memory where user related data is stored. It could be in form of a driver card or anything similar. The memory can be identified by the tachograph and driver related data can be stored on this memory.

[0022] Different reasons make it necessary to download data from the user data primary memory to an external memory EM1 with certain intervals. This could be done via the data download interface EDIF1 but other solutions are of course also possible. The detachable user data primary memory UDPM1 could for example be connected to a dedicated external downloading equipment.

[0023] The invention introduces a driver data secondary memory UDSM1 for storing user related data. This memory could temporary store user related data downloaded from e.g. the user data preliminary memory.

[0024] The tachograph comprises secondary memory control means SMCM for communication of user related data from the user data primary memory UDPM1 or the tachograph, e.g. from the tachograph memory TM1, and the user data secondary memory UDSM1.

[0025] The secondary memory control means could have several functions. User related data can be downloaded from the user data primary memory or directly from the tachograph to the driver data secondary memory with regular time intervals or triggered by different events, e.g. direct user interaction, usage patterns, triggered by conditions in system state or depending on data from tachograph external interfaces. It can also dedicate specific memory fields, MF11, MF12, MF13, fig 2, in the user data secondary memory to specific user data primary memories. If a new user data primary memory is connected the tachograph could automatically dedicate a field in the user data secondary memory for that particular driver data primary memory.

[0026] The tachograph can also comprise means to keep track on what driver data is on which memory, external memory EM1, user data primary memory USPM1, user data secondary memory UDSM1 or the tachograph memory TM1, and if there is any duplication of data. For example, if data has been downloaded to the external memory EM1 or the user data secondary memory the tachograph could inform the user of the situation or automatically chose to not download the same data again.

[0027] The user data secondary memory can be volatile or nonvolatile, and shared with or separate from other physical or logical memory areas in the tachograph. Downloading from the user data primary memory to the user data secondary memory could automatically be performed while the user data primary memory is connected to the tachograph. This download is preferably completed before the user data primary memory is disconnected.

[0028] In one particular embodiment the tachograph only downloads user related data to the user data secondary memory which has not yet been downloaded to the external memory. Another possibility is that the tachograph only downloads data to the user data secondary memory which has not been downloaded to that memory already. The tachograph can use information on the user data primary memory which denotes what data has been downloaded to separate download equipment to prevent the same data from being downloaded multiple times and thus provide better efficiency. The tachograph could also mark data on the driver data primary memory as downloaded in order to similarly provide better efficiency.

[0029] Another function could be that the user can chose if the user data primary memory should be downloaded to the user data secondary memory. When a card is inserted into the tachograph there could be a question or a possibility to deactivate this possibility. Another possibility is that downloading from the user data primary memory to the user data secondary memory starts when the memory space of the user data primary memory is below a certain level.

[0030] Another useful function could be a warning sys-

tem. There could be a warning when memory space in the driver data primary memory is below a certain level. The user could then choose if he wants to download data from the user data primary memory to the user data secondary memory.

[0031] One advantage of the invention is that user related data can be downloaded to the external memory EM1 without having the driver data primary memory UDPM1 present. This is possible because the user related data could be stored on the user data secondary memory UDSM1 and be downloaded from this memory instead. Another advantage is that it is possible to free memory space at the user data primary memory by downloading data to the user data secondary memory.

[0032] Another advantage is that user related data from the user data secondary memory can be downloaded with or without the actual user data primary memory being connected, through the same means as regular downloads from the tachograph. Normal data privacy protection rules and regulations, e.g. company locks, can apply during download.

[0033] Fig 2 illustrates an embodiment of a user data secondary memory UDSM2 that can be used with a tachograph according the invention. It comprises a memory MEM1 comprising different memory fields MF11, MF12, MF13 to be associated to different identified driver data primary memories.

[0034] One example of a method according to the invention comprises the steps of:

- connect a user data primary memory to a tachograph
- identify the user data primary memory
- associate the user data primary memory with a memory field MF12 in a user data secondary memory
- if user data on the user data primary memory is not already on the user data secondary memory, download said data to said memory

[0035] The method could further comprise the step of:

- download new user related data to the associated memory field MF12 in the user data secondary memory, e.g. while the vehicle, in which the tachograph is installed, is driven by the user associated to the user data primary memory.

[0036] It will be obvious that the present invention may be varied in a plurality of ways. Such variations are not to be regarded as departure from the scope of the present invention as defined by the appended claims. All such variations as would be obvious for a person skilled in the art are intended to be included within the scope of the present invention as defined by the appended claims.

Claims

1. A tachograph suitable for being installed in a vehicle comprising:

   - a user identification interface (UMIF1) suitable for cryptographically secured data communication with a user data primary memory (UDPM1)
   - means for identifying a user data primary memory connected to the user identification interface,
   - a tachograph memory (TM1) suitable for storing user related data,

   characterized in that the tachograph comprises:

   - a user data secondary memory (UDSM1) for temporary storing of user related data
   - secondary memory control means (SMCM) for downloading user related data between the user data primary memory and/or the tachograph memory to the user data secondary memory

2. A tachograph according to any of the preceding claims comprising means for downloading user data from the user data secondary memory to an external memory EM1.

3. A tachograph according to any of the preceding claims comprising a graphic user interface (DISPL) and means for displaying at least part of the content of the user data secondary memory on said graphic user interface.

4. A tachograph according to any of the preceding claims configured to download user data from the user data primary memory and/or the tachograph memory to the user data secondary memory depending on input from a user interface.

5. A tachograph according to any of the preceding claims configured to download user data from the user data primary memory and/or the tachograph memory to the user data secondary memory on regular time intervals.

6. A tachograph according to any of the preceding claims comprising means for mark and/or detect which user related data that have been downloaded to a user data secondary memory and/or an external memory.

7. A tachograph according to any of the preceding claims where the user data secondary memory comprises at least two memory fields (MF11, MF12), and at least one of them is associated to a specific user data primary memory.

8. A tachograph according to claim 7 where the tachograph automatically creates a user specific memory field (MF11) when a user data primary memory is connected for the first time and associate said user specific memory field to the connected user data primary memory for using said user specific memory field for future communication of user data related to a the connected user data primary memory.

9. A tachograph comprising means for signing user related data and store said signed data on the user data secondary memory.

10. A tachograph according to any of the preceding claims comprising an encryption unit and/or a decryption unit suitable for encrypt and decrypt data communication.

11. A tachograph according to any of the preceding claims comprising a user interface (CONTR, DISPL), or an interface for data communication with a user interface, said user interface comprises a display and/or controls for displaying and/or handling user related data.

12. A tachograph according to any of the preceding claims comprising a printer, or an interface for data communication with a printer, for printing out user related data.

13. A tachograph according to any of the preceding claims whereas the user data secondary memory is detachable from the tachograph.

14. A tachograph according to any of the preceding claims whereas secondary memory control means (SMCM) can be configured by a user of the tachgraph to exclude certain user data primary memory from communication with the user data secondary memory.

15. A method in a tachograph according to any of the proceeding claims comprising the steps of:

- connect a user data primary memory to a tachograph
- identify the user data primary memory
- associate the user data primary memory with a memory field in a user data secondary memory
- if user data on the user data primary memory is not already on the user data secondary memory, download said data to said memory.

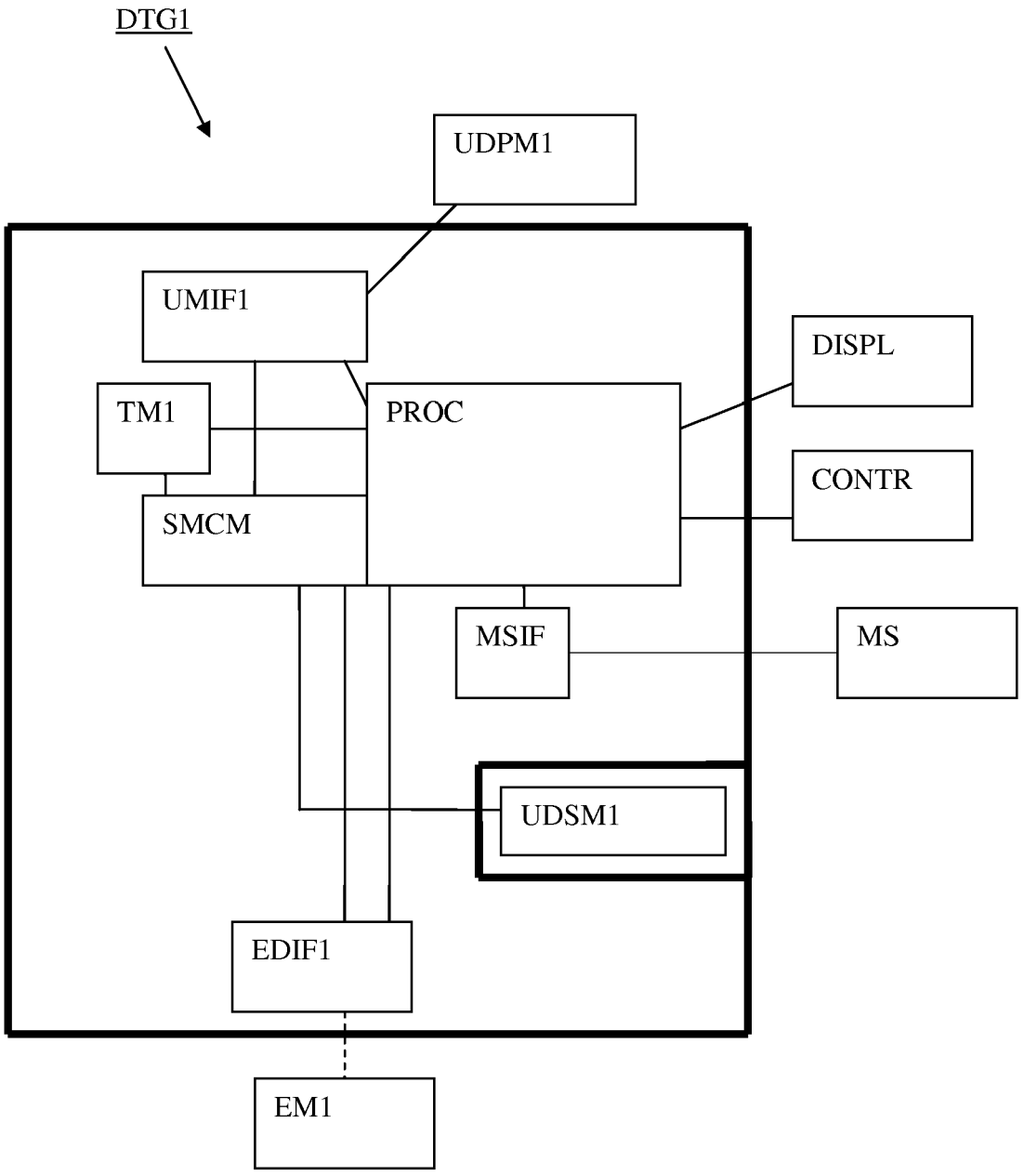
DTG1
UDPM1
UMIF1
DISPL
TM1
PROC
CONTR
SMCM
MSIF
MS
UDSM1
EDIF1
EM1

FIG 1

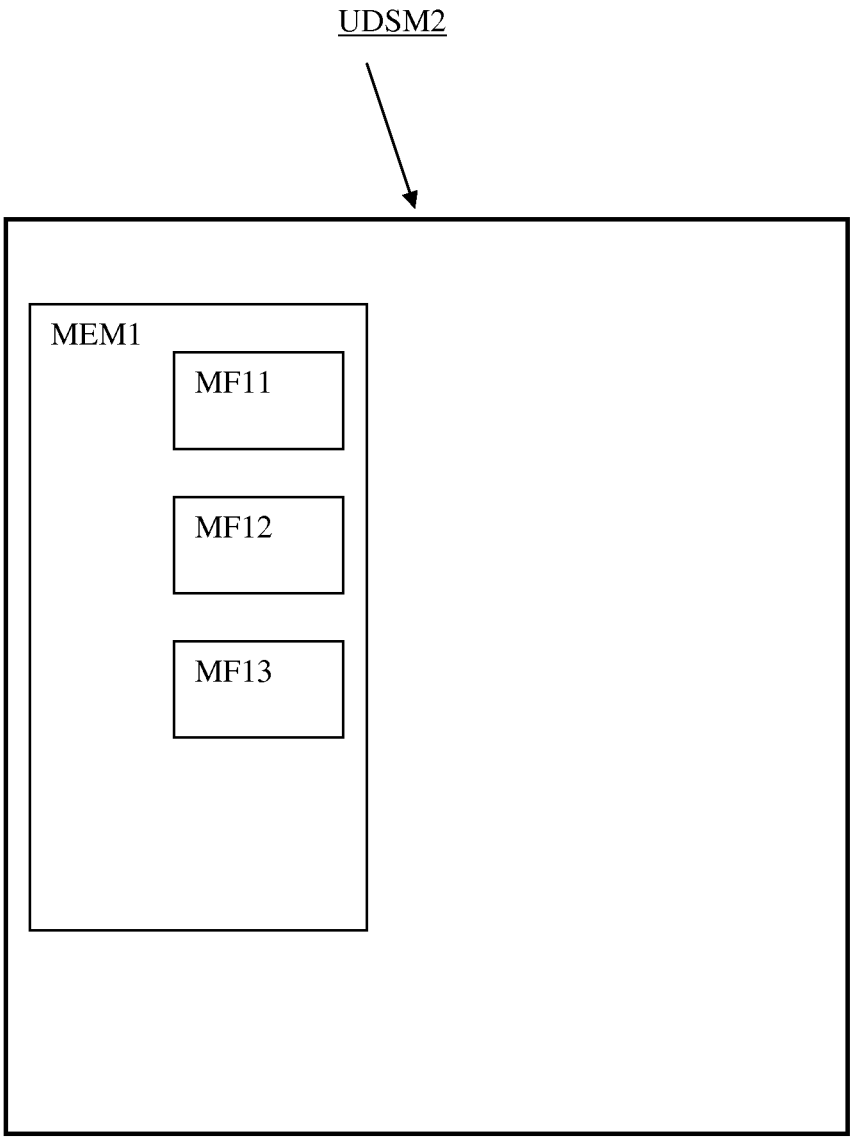

FIG 2

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PARTIAL EUROPEAN SEARCH REPORT

under Rule 62a and/or 63 of the European Patent Convention. This report shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number
EP 10 15 4294

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	FR 2 878 355 A1 (ACTIA SA [FR]) 26 May 2006 (2006-05-26) * page 7, line 19 - page 8, line 24 * * page 12, line 22 - page 22, line 17 * * figures 3,4 * -----	1-6, 10-15	INV. G07C5/08
Y	US 2007/050106 A1 (CHINNADURAI MANOKAR [US]) 1 March 2007 (2007-03-01) * paragraph [0008] * * paragraph [0019] - paragraph [0026] * * figures 1,2 * -----	1-6, 10-15	
A	US 2008/059701 A1 (ESFANDABADI RIAZ H [DE]) 6 March 2008 (2008-03-06) * paragraph [0002] * * paragraph [0017] - paragraph [0022] * * figures 1,3 * -----	1-8, 10-15	
A	EP 1 914 691 A1 (JAPAN AUTOMOBILE RES INST [JP]; HORIBA LTD [JP]) 23 April 2008 (2008-04-23) * paragraph [0033] - paragraph [0046] * * paragraph [0063] - paragraph [0077] * * figures 4-6 * -----	1-8, 10-15	

TECHNICAL FIELDS SEARCHED (IPC)

G07C

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

Place of search	Date of completion of the search	Examiner
Munich	22 June 2010	Bocage, Stéphane

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04E07)

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INCOMPLETE SEARCH
SHEET C

Application Number
EP 10 15 4294

Claim(s) completely searchable:
1-8, 10-15

Claim(s) not searched:
9

Reason for the limitation of the search:

Rule 62a
In reply to the communication under Rule 62a dated 29.01.2010, the applicant fail to indicate clearly the basis of which the search is to be carried out (Guidelines B-VIII-6 4.1 and 4.2). However, the amendment of claim 9 is taken as an indication of what the applicant wants the EPO to search, namely claim 1 of the present European patent application. Consequently, the search will be carried out on the basis of the first claim of the present European application and will not cover the second independent claim in the apparatus category, namely claim 9 (Guidelines B-III-7 3.11; B-IV-3 2.1).

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 15 4294

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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22-06-2010

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