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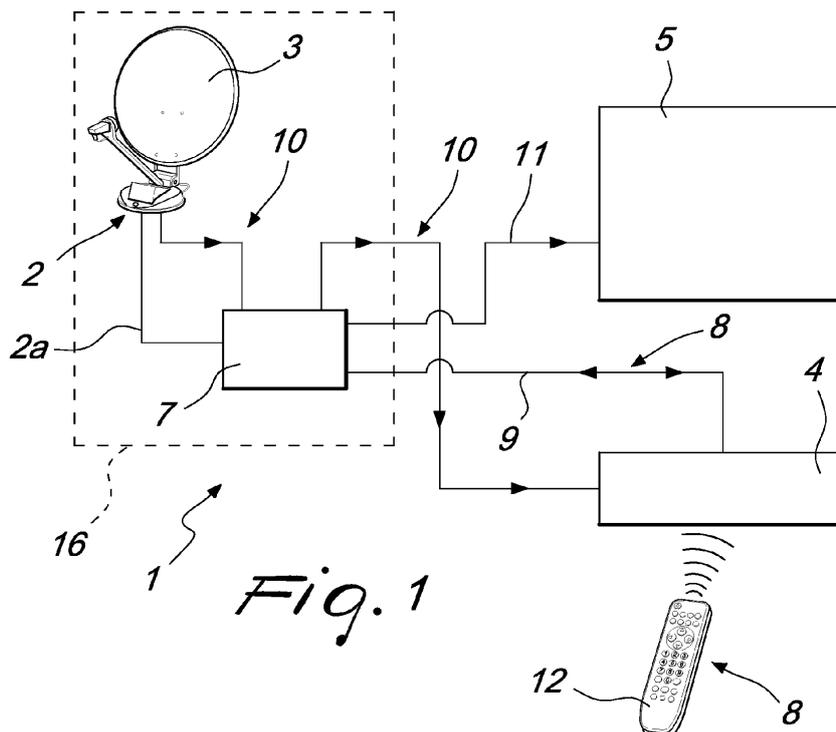
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(54) **Satellite television kit**

(57) Satellite television kit, particularly for camper vans, caravans, trucks, articulated trucks and similar vehicles, which comprises means (2) for moving at least one satellite antenna (3) with motorized pointing, for selective modification of its orientation. The antenna (3) is controlled by a satellite receiver (4), for decoding the signal sent by a satellite, and to be able to consequently view it on a satellite television set (5) that can be connected to the receiver (4), which in turn is provided with

a user interface (6) for the selection, by a user, of the channel to be displayed on the television screen (5). The receiver (4) is associated with a unit (7) for controlling the movement means (2) through an HDMI connection (8), in order to transfer, to the control unit (7), the request to point to a predefined satellite, as a function of a choice made by the user by way of the user interface (6) of the receiver (4).



Description

[0001] The present invention relates to a satellite television kit.

[0002] As is known, in the field of telecommunications, small parabolic antennae are widely used which are capable of receiving TV broadcasts from satellites placed in geostationary orbit around the earth.

[0003] According to some implementation solutions, such antennae are fixed, and are thus adapted to receive the signal transmitted by a satellite which is arranged in a predefined region of the sky, toward which they must be oriented.

[0004] Furthermore, it appears evident that such type of device is wholly unsuitable for use on camper vans, caravans, and similar means for transport, in which one or more people can stay, watching TV programs through an antenna located on the roof of the vehicle, which sends the received signal to a television set which is accommodated inside the vehicle itself.

[0005] In fact, for example if the vehicle is moved hundreds (or thousands) of kilometers, then an inconvenient manual repositioning of the fixed antenna will be necessary, an activity that is evidently wholly impracticable for the ordinary user, both for practical reasons and, especially, owing to the necessity to perform complex actions, which require the intervention of trained personnel.

[0006] For the same reasons, antennae of the type explained above do not make it possible, equally evidently, to freely choose the satellite from which to receive the television signal (of the many satellites capable of offering such a service, placed in orbit in different positions).

[0007] Therefore, television sets accommodated inside the above-mentioned vehicles are connected to satellite antennae with motorized pointing: these antennae are associated with movement means of various types, which make it possible to vary their orientation, in order to keep them pointed toward the satellite of interest and/or in order to be able to freely choose the satellite from which to receive the signal.

[0008] Usually, in order to execute the pointing, inside the vehicle a control unit is installed which is capable of actuating the motor and/or the other elements adapted to the movement of the antenna. The control unit is further provided with a user interface, which enables the user to select the satellite toward which he or she wants the antenna to be oriented: once such information is sent to the unit, the latter is capable of initiating the movement of the antenna, which stops upon reaching the correct orientation, at which the signal, sent by the selected satellite and received by the antenna, can be transmitted, through a coaxial cable, to the satellite receiver (or to the decoder). The receiver, connected to the television set, can thus enable the use of the signal, and thus the viewing of the channels, which are transmitted by the satellite which the antenna points to, on the screen of the television set.

[0009] Such implementation solution is not however

devoid of drawbacks.

[0010] In fact it appears evident that the adoption of the solution described above involves, for the user, the necessity to operate with a plurality of separate components (the control unit with the corresponding user interface, for the choice of the satellite, and the satellite receiver and/or the television set, for the choice of the channel), thus often making the use of the satellite television set inconvenient and impractical.

[0011] Moreover, it must be noted that the use of the device according to the methods described above requires an adequate level of technical expertise of the user, in order to be able to knowledgeably evaluate and choose the satellite to be pointed at with the antenna.

[0012] The aim of the present invention is to solve the above-mentioned problems, by providing a kit that enables the use of a satellite television set in a practical and easy manner.

[0013] Within this aim, an object of the invention is to provide a satellite television kit that has a low number of components.

[0014] A further object of the invention is to provide a kit that can be easily used even by users with no special technical skills.

[0015] Another object of the invention is to provide a kit that ensures a high reliability of operation.

[0016] Another object of the invention is to provide a kit that can be easily implemented using elements and materials that are readily available on the market.

[0017] Another object of the invention is to provide a kit that is low-cost and safe in application.

[0018] This aim and these objects are achieved by a satellite television kit, particularly for camper vans, caravans, trucks, articulated trucks and similar vehicles, comprising means for moving at least one satellite antenna with motorized pointing, for selective modification of its orientation, said antenna being controlled by a satellite receiver, for decoding the signal sent by a satellite, and for consequently viewing it on a satellite television set that can be connected to said receiver, said receiver being provided with a user interface for the selection, by a user, of the channel to be displayed on the television screen, **characterized in that** said receiver is associated with a unit for controlling said movement means through an HDMI connection, for the transfer, to said control unit, of the request to point to a predefined satellite, as a function of a choice made by the user by way of said user interface of said receiver.

[0019] Further characteristics and advantages of the invention will become more apparent from the description of two preferred, but not exclusive, embodiments of the kit according to the invention, illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a schematic diagram of the kit according to the invention, in the first embodiment;

Figure 2 is a schematic diagram of the kit according to the invention, in the second embodiment.

[0020] With reference to the figures, the reference numeral 1 generally designates a satellite television kit, particularly suitable for camper vans and caravans, but also for trucks, semi-trailer trucks and similar vehicles, which can be moved over large distances but which also offer the possibility to one or more people of staying inside it (so for example, the kit 1 can also be installed on small or large boats).

[0021] The kit 1 thus comprises means 2 of moving at least one satellite antenna 3 with motorized pointing: such antenna 3 can thus be associated, for example, with a polar rotator or with a piston actuator with polar frame (comprised in the means 2), in order to allow the selective modification of its orientation, and thus be able to vary at will the region of space that it is pointing at.

[0022] The antenna 3 is further controlled by a satellite receiver 4 (for example a digital decoder), which is capable of decoding the signal sent from a satellite that the antenna 3 points to, in order to enable it to be used on a satellite television set 5 that can be connected to the receiver 4, which in turn is provided with a user interface 6 for the selection, by a user, of the channel to be displayed on said television screen 5.

[0023] It should thus be noted from this point onward that the kit 1 according to the invention can be produced and/or sold independently of a specific television set 5, or the production and/or sale can be conducted of kits 1 comprising respective television sets 5 as well (and optionally already included in the standard fitting-out of the camper van or caravan, for example), while remaining within the scope of protection claimed herein.

[0024] According to the invention, the receiver 4 is associated with a unit 7 for controlling the above-mentioned movement means 2 by way of an HDMI connection 8 (High-Definition Multimedia Interface, a 100% digital commercial standard for interfacing high-definition audio and video signals), so as to enable, thanks to the HDMI connection 8, the transfer, to the control unit 7, of the request to point to a predefined satellite, as a function of a choice made by the user by way of the user interface 6 of the receiver 4.

[0025] For example, the control unit 7 can be associated with the rotator or with the actuator of the antenna 3 by way of a motor cable 2a (which is in turn comprised in the movement means 2).

[0026] It thus appears evident from this point onward that, by way of resorting to the kit 1 according to the invention, the user is required only to interact with the receiver 4, both with regard to the choice of the channel to view on the television set 5, and with regard to controlling the movement of the antenna 3, thus making the use of the kit 1 and of the satellite television set 5 very practical and easy, and thus achieving from this point onward the set objectives.

[0027] More specifically, according to the preferred embodiment, the receiver 4 is provided with a database, which can be updated manually or by way of connection to the internet, for automatically associating each chan-

nel that can be selected by the operator by way of the user interface 6 with the respective satellite that is assigned to its transmission.

[0028] In this manner, as a consequence of the choice of channel made by the user, the receiver 4 transfers, to the control unit 7, the request to point to the appropriate satellite (without the user necessarily being aware of this information), thus enabling the optimal use of the kit 1, and of the satellite television set 5, even by people lacking special technical skills and information on which channels are transmitted by each satellite.

[0029] Conveniently, the HDMI connection 8 comprises an additional communications protocol, which ensures the exchange of further information between the receiver 4 and the antenna 3, of the type of information regarding the operating status of the antenna 3, any inability to perform pointing, and the like; such information can thus be subsequently, and conveniently, viewed on the television set 5.

[0030] More specifically, the above-mentioned communications protocol is implemented on an optional channel of the CEC ("Consumer Electronics Control") type of the HDMI connection 8.

[0031] According to a first embodiment, shown in Figure 1 by way of non-limiting example of the application of the invention, the receiver 4 is associated with the control unit 7 by way of a first HDMI cable 9 (which in such embodiment constitutes the aforementioned HDMI connection 8), so as to transfer, as previously mentioned and in a first operating mode of the receiver 4 and of the control unit 7, the request to point to the predefined satellite (as a function of the choice of the channel made by the user by way of the user interface 6 of the receiver 4) and thus initiate the search for it by way of the antenna 3.

[0032] In such embodiment, the kit 1 further comprises at least one first coaxial cable 10, which is interposed between the antenna 3 and the receiver 4. In this manner, once the desired orientation of the antenna 3 is reached, in the first operating mode, and thus the antenna points at the satellite of interest, it is possible to transmit the signal sent by the satellite to the receiver 4. From here, the signal sent by the satellite, and decoded by the receiver 4, can be transmitted to the television set 5, in order to allow the viewing of the selected channel, thanks to a second HDMI cable 11 which is interposed between the control unit 7 and the television set 5 and can be selectively connected to the first HDMI cable 9, in a second operating mode of the receiver 4 and of the control unit 7. In such second mode, the signal travels through the first HDMI cable 9 and, in series, the second HDMI cable 11, until it arrives at the television set 5.

[0033] Conveniently, as can be seen in Figure 1, the user interface 6 comprises a remote control 12 which is associated with a respective sensor comprised in the receiver 4, in order to be able to acquire information on the choice of channel made by the user, thus making the use of the kit 1 according to the invention even easier and more practical.

[0034] In a second embodiment, shown in Figure 2 for the purposes of example, which does not exhaust the possible forms falling under the scope of protection claimed herein, the receiver 4 and the television set 5 are integrated in a single apparatus 13, which is associated by way of a third HDMI cable 14 (which in such embodiment constitutes the above-mentioned HDMI connection 8) with the control unit 7, for the transfer, to the latter, of the request to point to the predefined satellite, as a function of the choice made by the user by way of the user interface 6 of the receiver 4, and thus the initiation of the search by way of the antenna 3.

[0035] After reaching the desired orientation, and having thus pointed the antenna 3 at the satellite corresponding to the channel selected by the user, the signal sent by the satellite can be transmitted to the television set 5, for use thereof, by means of a second coaxial cable 15, which is interposed between the antenna 3 and the apparatus 13.

[0036] Also in this second embodiment, similarly to the observations for the first, positively the user interface 6 comprises a remote control 12 which is associated with a respective sensor comprised in the apparatus 13, for acquiring information corresponding to the choice of channel made by the user and for making the use of the kit 1 according to the invention easier and more practical for the user.

[0037] In any case, it must be noted that the possibility is not excluded of using different types of user interfaces 6 for the receiver 4 (for example, interfaces constituted by simple buttons arranged along an outer fascia of the receiver 4, or comprising applications for smartphones, which make it possible to remotely control the receiver 4, and thus the unit 7, from the user's cellular telephone).

[0038] Operation of the kit according to the invention is thus evident from the foregoing explanation: the user who, inside the camper van or caravan (or other vehicle), wishes to watch a channel on their television set 5, can make their choice by way of the remote control 12, thus activating the receiver 4 which transmits the pointing request to the control unit 7 of the means 2 of moving the antenna 3, thus initiating the search until the correct orientation is reached (which is, naturally, variable as a function both of the selected satellite and of the position of the vehicle on the earth).

[0039] Thus, having pointed the antenna 3 toward the desired satellite, it is possible to receive the corresponding signal, by way of the antenna 3, and transfer it to the receiver 4 and from here to the television set 5 (be it integrated with the receiver 4, as in the solution in Figure 2, or separate from it, as in the solution in Figure 1).

[0040] The kit 1 thus enables the use of a satellite television set 5 in a practical and easy manner, by reducing the number of activities required of the user and thus limiting the necessity of interaction with the various devices, while furthermore reducing the number of necessary components, which can be identified as an antenna assembly 16 (constituted, as can be seen from the fig-

ures, by the antenna 3, by the respective movement means 2, and by the control unit 7, with the associated wiring), which is associated by way of an HDMI connection 8 with a receiver 4, which in turn is connected to (or integrated with) a television set 5.

[0041] Moreover, thanks to the database with which the receiver 4 is provided, the user can activate the movement of the antenna 3 in order to search for the satellite, until the correct orientation is reached, by way of what is called the "direct call" method, i.e. solely by selecting the desired channel, leaving to the receiver 4 the task of associating that channel with the corresponding satellite, thus further contributing to the simplicity of use, which requires no technical skill nor knowledge of the various satellites offering television broadcasts.

[0042] In practice it has been found that the kit according to the invention fully achieves the set aim, in that the use of an HDMI connection between the receiver and the control unit of the means of moving the antenna, in order to be able to transfer, to the control unit, the request to point to a predefined satellite, as a function of a choice made by the user by way of the user interface of the receiver, makes it possible to provide a kit that ensures a practical and easy use of a satellite television set.

[0043] The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0044] In the embodiments illustrated, individual characteristics shown in relation to specific examples may in reality be interchanged with other, different characteristics, existing in other embodiments.

[0045] In practice, the materials employed, as well as the dimensions, may be any according to requirements and to the state of the art.

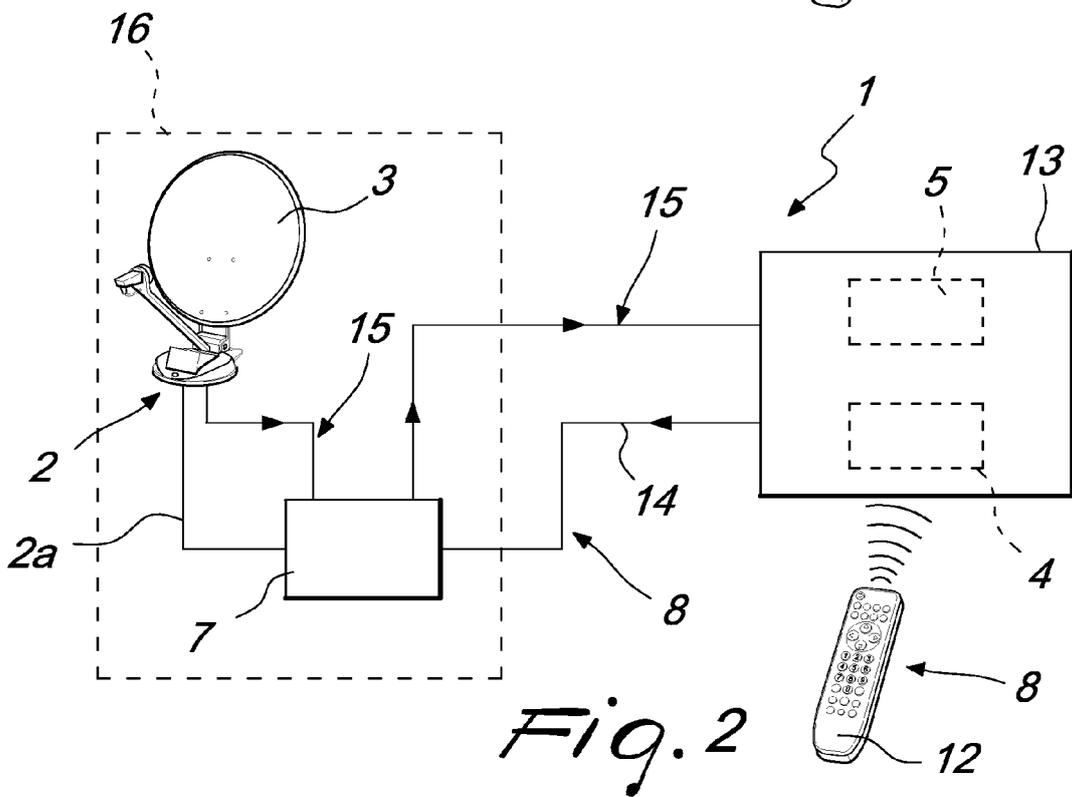
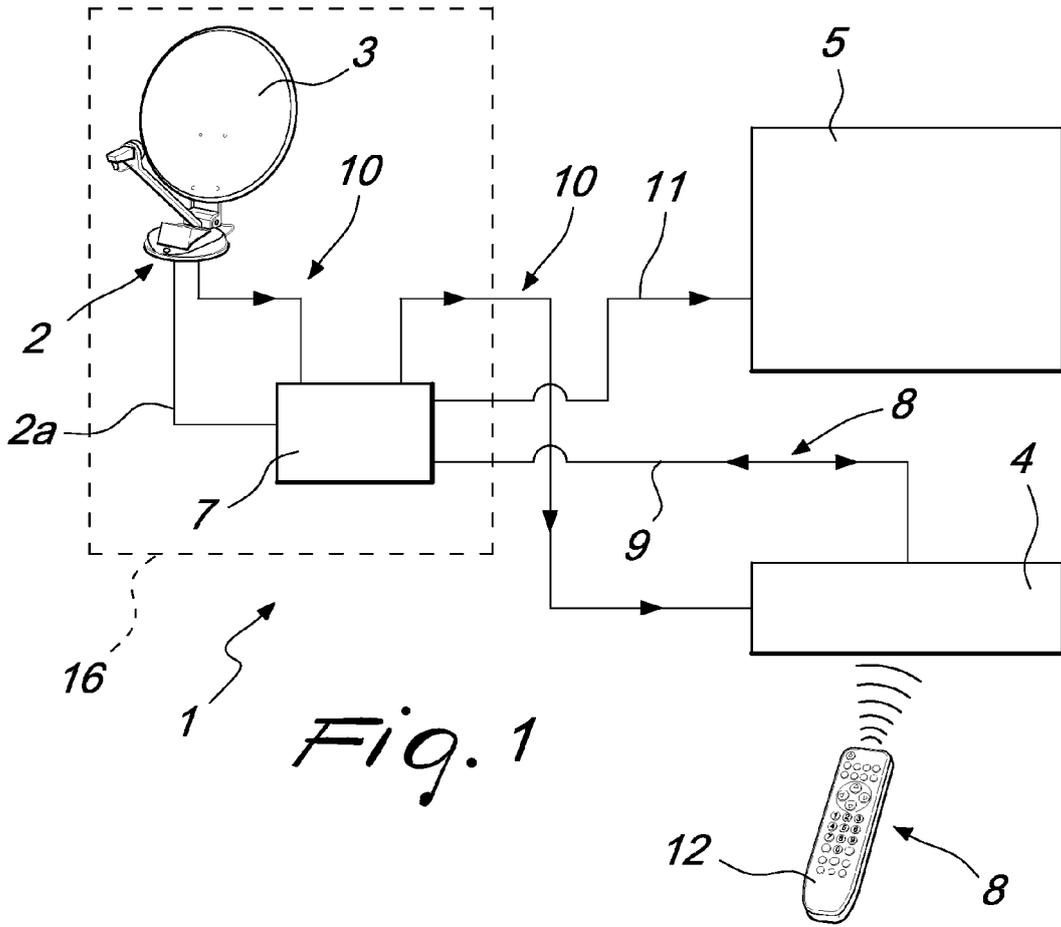
[0046] The disclosures in Italian Patent Application No. BO2012A000649 from which this application claims priority are incorporated herein by reference.

[0047] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A satellite television kit, particularly for camper vans, caravans, trucks, articulated trucks and similar vehicles, comprising means (2) for moving at least one satellite antenna (3) with motorized pointing, for selective modification of its orientation, said antenna (3) being controlled by a satellite receiver (4), for decoding the signal sent by a satellite, and for consequently viewing it on a satellite television set (5)

- that can be connected to said receiver (4), said receiver (4) being provided with a user interface (6) for the selection, by a user, of the channel to be displayed on the television screen (5), **characterized in that** said receiver (4) is associated with a unit (7) for controlling said movement means (2) through an HDMI connection (8), for the transfer, to said control unit (7), of the request to point to a predefined satellite, as a function of a choice made by the user by way of said user interface (6) of said receiver (4).
2. The kit according to claim 1, **characterized in that** said receiver (4) is provided with a database, for the automatic association of each channel that can be selected by way of said user interface (6) with the respective satellite, which is designed to transmit the selected channel, for the transfer to said control unit (7) of the pointing request as a function of the choice of a channel made by the user.
 3. The kit according to claims 1 and 2, **characterized in that** said HDMI connection (8) comprises an additional communications protocol for the exchange of additional information between said receiver (4) and said antenna (3), of the type of information regarding the operating status of said antenna (3), any inability to perform pointing, and the like, said information being displayable on said television set (5).
 4. The kit according to one or more of the preceding claims, **characterized in that** said communications protocol is implemented on an optional channel of the CEC type of said HDMI connection (8).
 5. The kit according to one or more of the preceding claims, **characterized in that** said receiver (4) is associated, by way of a first HDMI cable (9), with said control unit (7), for the transfer of the request to point to the predefined satellite, in a first operating mode of said receiver (4) and of said control unit (7).
 6. The kit according to claim 5, **characterized in that** it comprises at least one first coaxial cable (10), which is interposed between said antenna (3) and said receiver (4), for the transmission of the signal sent by the satellite, and pointed from said antenna (3), to said receiver (4), a second HDMI cable (11) being interposed between said control unit (7) and the television set (5) and being selectively able to be connected to said first HDMI cable (9), in a second operating mode of said receiver (4) and of said control unit (7), for the transmission of the signal sent by the satellite and decoded by said receiver (4) to the television set (5).
 7. The kit according to claim 6, **characterized in that** said user interface (6) comprises a remote control (12) associated with a respective sensor comprised in said receiver (4), for acquiring the information relating to the channel choice made by the user.
 8. The kit according to one or more of claims 1 to 4 and as an alternative to claim 5, **characterized in that** said receiver (4) and said television set (5) are integrated in a single apparatus (13), which is associated by means of a third HDMI cable (14) with said control unit (7), for the transfer of the request to point to the predefined satellite, as a function of the choice made by the user by way of said user interface (6) of said receiver (4), at least one second coaxial cable (15) being interposed between said antenna (3) and said apparatus (13), for the transmission of the signal sent by the satellite, and pointed from said antenna (3), to said receiver (4), and the consequent viewing on said television set (5).
 9. The kit according to claim 8, **characterized in that** said user interface (6) comprises a remote control (12) associated with a respective sensor comprised in said apparatus (13), for acquiring the information relating to the channel choice made by the user.



**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 16 9990

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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28-06-2013

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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