the spaces allocated to the respective items associated with said electronic shelf labels.

PRESENTATION OF THE INVENTION

The present invention aims at determining the distribution of electronic shelf labels of a sales area.

For this purpose, according to an aspect, the present disclosure refers to a method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas of said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of radiofrequency beacons configured to repeatedly transmit synchronized radio signals, the expected arrangement of the electronic tags in the sales area being described by a planogram configured to comprise association data between each label identifier and an expected position within the gondolas of the sales area, said method comprising the steps according to which,

- a portable terminal provided with a radiofrequency location module receives radio signals transmitted by the radiofrequency beacons and determines data derived from the radio signals by means of said radiofrequency location module;

- at an acquisition time, the portable terminal acquires the identifier of an electronic shelf label from said electronic shelf label;

- the portable terminal transmits to a central computer server the acquired label identifier, and the

data derived from the radio signals previously received from the plurality of radiofrequency beacons at the acquisition time,

- the central computer server determines association data between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the radio signals received at the acquisition time, the position thus determined being specific to said electronic shelf label.

According to another aspect, the present disclosure refers to a method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas of said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of luminaires configured to repeatedly transmit synchronized light signals, the expected arrangement of the electronic tags in the sales area being described by a planogram configured to comprise association data between each label identifier and an expected position within the gondolas of the sales area, said method comprising the steps according to which,

- a portable terminal equipped with a positioning module receives light signals transmitted by the luminaires and determines data derived from the light signals by means of said positioning module;

- at an acquisition time, the portable terminal acquires the identifier of an electronic shelf label from said electronic shelf label;

- the portable terminal transmits to a central computer server the acquired label identifier, and the data derived from the light signals received from the plurality of luminaires at the acquisition time,

- the central computer server determines the association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the light signals received at the acquisition time, the position thus determined being specific to said electronic shelf label.

According to another aspect, the present disclosure refers to a system for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said system comprising:

- a central computer server, comprising a planogram configured to comprise association data between each of a plurality of label identifiers and an expected position within gondolas of the sales area,

- a plurality of radiofrequency beacons configured to repeatedly transmit synchronized radio signals,

- a portable terminal provided with a radiofrequency location module configured to receive the radio signals and determine data derived from the radio signals by means of said radiofrequency location module, the portable terminal being further adapted to acquire, at an acquisition time, an identifier of an

electronic shelf label from said electronic shelf label,

and to transmit to the central computer server the label identifier and the data derived from the radio signals received at the acquisition time,

the central computer server being configured to determine association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the radio signals received at the acquisition time, the position thus determined being specific to said electronic shelf label.

According to another aspect, the present disclosure refers to a system for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said system comprising:

- a central computer server, comprising a planogram configured to comprise association data between each of a plurality of label identifiers and an expected position within gondolas of the sales area,
- a plurality of luminaires configured to repeatedly transmit synchronized light signals,
- a portable terminal equipped with a positioning module configured to receive the light signals and determine data derived from the light signals by means of said positioning module, the portable terminal being furthermore adapted to acquire, at an acquisition time,

an identifier of an electronic shelf label from said electronic shelf label,

and to transmit to the central computer server the label identifier and the data derived from the light signals received at the acquisition time,

the central computer server being configured to determine association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the light signals received at the acquisition time, the position thus determined being specific to said electronic shelf label.

In an example, there is provided a method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels distributed in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of radiofrequency beacons configured to transmit radio signals, said method comprising the steps according to which,

- a portable terminal provided with a radiofrequency location module receives radio signals transmitted by a plurality of radiofrequency beacons and determines data derived from the radio signals by means of said radiofrequency location module;
- at an acquisition time, the portable terminal acquires the identifier of an electronic shelf label from said electronic shelf label;
- the portable terminal transmits to a central computer server the label identifier and the data

derived from the signals received at the acquisition time,

- the central computer server determines association data between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the radio signals received at the acquisition time.

By providing for a determination of the information enabling the location precisely at the acquisition time, the method makes it possible to effectively determine the location of an electronic shelf label in a simple and resource–saving manner. In particular, the fact that it is the portable terminal that both receives radio signals and acquires the label identifier makes it possible to ensure greater accuracy in the location of the electronic shelf label corresponding to the identifier compared to a method in which it would be the portable terminal that would send the radio signals and the radiofrequency beacons that would receive them.

In an example, the method according to the disclosure is advantageously but optionally supplemented by the following features, taken alone or in any of their technically possible combinations:

- the portable terminal also acquires an identifier of an item associated with the electronic shelf label and transmits said item identifier to the central computer server as well as the label identifier and the data derived from the radio signals received at the acquisition time, and the central computer server determines association data between the electronic shelf label, the position of the electronic shelf label and the item associated with said electronic shelf label;
- each electronic shelf label is provided with a radiofrequency peripheral device and the portable terminal acquires the identifier of the electronic shelf label by establishing a radiofrequency communication with said electronic shelf label;

- each electronic shelf label is provided with an element for visually representing the label identifier, and the portable terminal comprises an optical reader adapted to read said visual representation element and acquire the label identifier;

- the radiofrequency location module determines the location of the portable terminal from the radio signals transmitted by the radiofrequency beacons by measuring the propagation time of the respective signals of said radiofrequency beacons, and the data derived from the radiofrequency signals are position data;

- the location data are position coordinates;

- the data derived from the radiofrequency signals are reception time measurements of said signals, and the location of the portable terminal is determined by the central computer server from said time measurements;

- the sales area includes a plurality of shelves carrying the electronic shelf labels, said shelves defining aisles therebetween, and radiofrequency beacons are arranged in the extension of aisles of the sales area;

- for each of a plurality of aisles, a radiofrequency beacon is arranged on each side of the extension of the aisle;

- the radiofrequency beacons emit pulses over a frequency band greater than 500 MHz according to the Ultra wideband technique.

In an example, the disclosure also relates to a method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels distributed in said sales area, each of said electronic shelf labels being associated with an item,

each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of luminaires configured to transmit light signals,

the expected arrangement of the electronic tags in the sales area being described by a planogram configured to comprise association data between each of a plurality of label identifiers and an expected position within shelves of the sales area,

said method comprising the steps according to which,

- a portable terminal equipped with a positioning module receives light signals transmitted by several luminaires and determines data derived from the light signals by means of said positioning module;

- at an acquisition time, the portable terminal acquires the identifier of an electronic shelf label from said electronic shelf label;

- the portable terminal transmits to a central computer server the label identifier and the data derived from the signals received at the acquisition time,

- the central computer server determines the association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the light signals received at the acquisition time, the position thus determined being specific to said electronic shelf label.

In an example, the disclosure also relates to a system for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels distributed in

said sales area, each of said electronic shelf labels being associated with an item,

each of said electronic shelf labels being provided with a label identifier specific thereto,

said system comprising:

- a central computer server,

- a plurality of radiofrequency beacons configured to transmit radio signals,

- a portable terminal provided with a radiofrequency location module configured to receive the radio signals and determine data derived from the radio signals by means of said radiofrequency location module, the portable terminal being further adapted to acquire, at an acquisition time, an identifier of an electronic shelf label from said electronic shelf label,

and to transmit to the central computer server the label identifier and the data derived from the signals received at the acquisition time,

the central computer server being configured to determine association data between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the radio signals received at the acquisition time.

Preferably, the system is configured to implement a location method according to the disclosure.

In an example, the disclosure also relates to a system for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels distributed in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto,

said system comprising:

- a central computer server, comprising a planogram configured to comprise association data between each of a plurality of label identifiers and an expected position within shelves of the sales area,

- a plurality of luminaires configured to transmit light signals,

- a portable terminal equipped with a positioning module configured to receive the light signals and determine data derived from the light signals by means of said positioning module, the portable terminal being further adapted to acquire, at an acquisition time, an identifier of an electronic shelf label from said electronic shelf label,

and to transmit, to the central computer server, the label identifier and the data derived from the signals received at the acquisition time,

the central computer server being configured to determine association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the light signals received at the acquisition time, the position thus determined being specific to said electronic shelf label.

Preferably, this system is configured to implement a location method according to the disclosure.

PRESENTATION OF THE FIGURES

Other features, objects and advantages of the invention will become more apparent from the following description, which is purely illustrative and non-restrictive, and which should be read with reference to the appended drawings among which:

CLAIMS

1. A method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas of said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of radiofrequency beacons configured to repeatedly transmit synchronized radio signals,

the expected arrangement of the electronic tags in the sales area being described by a planogram configured to comprise association data between each label identifier and an expected position within the gondolas of the sales area,

said method comprising the steps according to which,

- a portable terminal provided with a radiofrequency location module receives radio signals transmitted by the radiofrequency beacons and determines data derived from the radio signals by means of said radiofrequency location module;

- at an acquisition time, the portable terminal acquires the identifier of an electronic shelf label from said electronic shelf label;

- the portable terminal transmits to a central computer server the acquired label identifier, and the data derived from the radio signals previously received from the plurality of radiofrequency beacons at the acquisition time,

- the central computer server determines association data between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the radio signals received at the

acquisition time, the position thus determined being specific to said electronic shelf label.

2. The method according to claim 1, wherein the portable terminal also acquires an identifier of an item associated with the electronic shelf label and transmits said item identifier to the central computer server as well as the label identifier and the data derived from the radio signals received at the acquisition time, and the central computer server determines association data between the electronic shelf label, the position of the electronic shelf label and the item associated with said electronic shelf label.

3. The method according to any of the preceding claims, wherein the determined position for the electronic shelf label is determined, among predefined spots, as the nearest spot to the portable terminal.

4. The method according to claim 3, wherein the determined position for the shelf tag is defined as the combination of a reference of the gondola, a number of a shelf and a distance along a rail.

5. The method according to any of the preceding claims, wherein each electronic tag shelf is provided with a radiofrequency peripheral device and the portable terminal acquires the identifier of the electronic tag shelf by establishing a radiofrequency communication with said electronic shelf label.

6. The method according to claim 5, wherein the radiofrequency peripheral device comprises an antenna

and an NFC–type (Near Field Communication) electronic chip.

7. The method according to any of claims 1 to 4, wherein each electronic shelf label is provided with an element for visually representing the label identifier, and the portable terminal comprises an optical reader adapted to read said visual representation element and acquire the label identifier.

8. The method according to any of the preceding claims, wherein the radiofrequency location module determines the location of the portable terminal from the radio signals transmitted by the radiofrequency beacons by measuring the propagation time of the respective signals of said radiofrequency beacons, and the data derived from the radiofrequency signals are position data.

9. The method according to claim 8, wherein the location data are position coordinates.

10. The method according to any of claims 1 to 7, wherein the data derived from the radiofrequency signals are reception time measurements of said signals, and the location of the portable terminal is determined by the central computer server from said time measurements.

11. The method according to any of the preceding claims, wherein the gondolas define aisles therebetween, and radiofrequency beacons are arranged in the extension of aisles of the sales area.

12. The method according to the preceding claim, wherein for each of a plurality of aisles, a

radiofrequency beacon is arranged on each side of the extension of the aisle.

13. The method according to the preceding claim, wherein the radiofrequency beacons emit pulses over a frequency band greater than 500 MHz according to the Ultra wideband technique.

14. A method for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas of said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto, said sales area comprising a plurality of luminaires configured to repeatedly transmit synchronized light signals,

the expected arrangement of the electronic tags in the sales area being described by a planogram configured to comprise association data between each label identifier and an expected position within the gondolas of the sales area,

said method comprising the steps according to which,

- a portable terminal equipped with a positioning module receives light signals transmitted by the luminaires and determines data derived from the light signals by means of said positioning module;

- at an acquisition time, the portable terminal acquires the identifier of an electronic shelf label from said electronic shelf label;

- the portable terminal transmits to a central computer server the acquired label identifier, and the data derived from the light signals received from the plurality of luminaires at the acquisition time,

- the central computer server determines the association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the light signals received at the acquisition time, the position thus determined being specific to said electronic shelf label.

15. A system for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto,
said system comprising:

- a central computer server, comprising a planogram configured to comprise association data between each of a plurality of label identifiers and an expected position within gondolas of the sales area,

- a plurality of radiofrequency beacons configured to repeatedly transmit synchronized radio signals,

- a portable terminal provided with a radiofrequency location module configured to receive the radio signals and determine data derived from the radio signals by means of said radiofrequency location module, the portable terminal being further adapted to acquire, at an acquisition time, an identifier of an electronic shelf label from said electronic shelf label,
and to transmit to the central computer server the label identifier and the data derived from the radio signals received at the acquisition time,

the central computer server being configured to determine association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the radio signals received at the acquisition time, the position thus determined being specific to said electronic shelf label.

16. The system according to claim 15, wherein the central computer server is configured to determine a position of the electronic shelf label corresponding to the combination of a gondola reference, a number of a shelf and a distance along a rail.

17. The system according to any of claims 15 or 16, said system being configured to implement the method according to any one of claims 1 to 13.

18. A system for locating electronic shelf labels in a sales area, said sales area having a plurality of electronic shelf labels affixed to gondolas in said sales area, each of said electronic shelf labels being associated with an item, each of said electronic shelf labels being provided with a label identifier specific thereto,
said system comprising:

- a central computer server, comprising a planogram configured to comprise association data between each of a plurality of label identifiers and an expected position within gondolas of the sales area,
- a plurality of luminaires configured to repeatedly transmit synchronized light signals,
- a portable terminal equipped with a positioning module configured to receive the light signals and

determine data derived from the light signals by means of said positioning module, the portable terminal being furthermore adapted to acquire, at an acquisition time, an identifier of an electronic shelf label from said electronic shelf label,
and to transmit to the central computer server the label identifier and the data derived from the light signals received at the acquisition time,
the central computer server being configured to determine association data in the planogram between the electronic shelf label identified by the label identifier and one position of said electronic shelf label determined from the data derived from the light signals received at the acquisition time, the position thus determined being specific to said electronic shelf label.

19. The system according to claim 18, wherein the luminaires comprise light emitting diodes, and the light signals carry VLC (Visible Light Communications) codes.