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(54) **REFRIGERATOR WITH WIRELESS COMMUNICATION FUNCTION**

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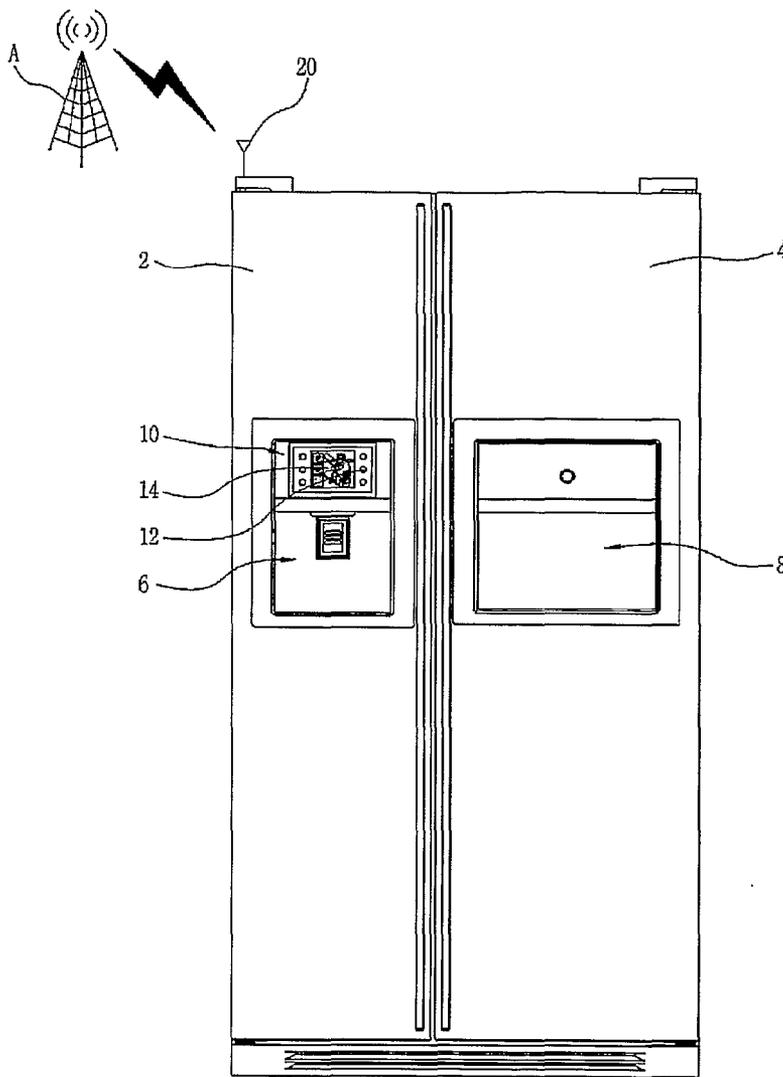
(57) **ABSTRACT**

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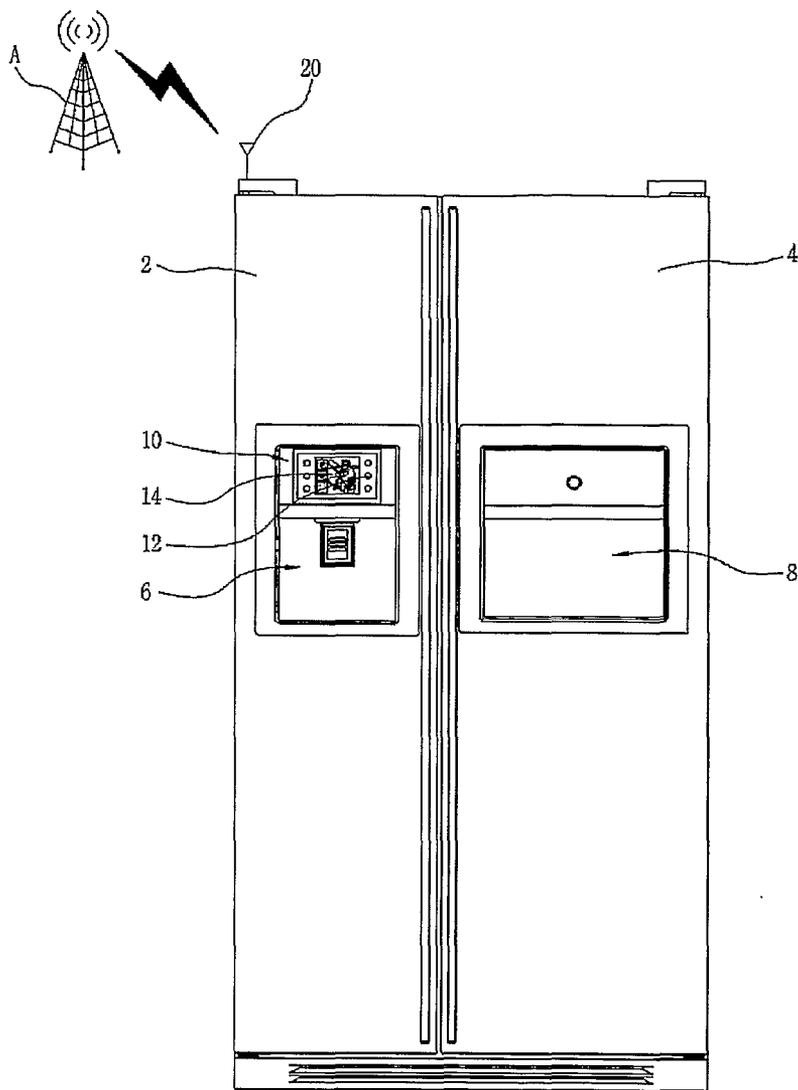
The present invention discloses a refrigerator with a wireless communication function which can receive data and information by a wireless signal. The refrigerator with the wireless communication function includes a reception module (20) mounted at one side of the refrigerator, for receiving a wireless signal, and a display (14) means for displaying an image and sound according to the received wireless signal.

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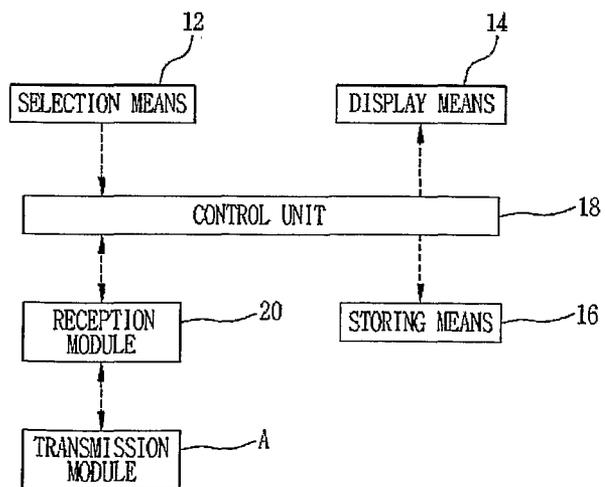
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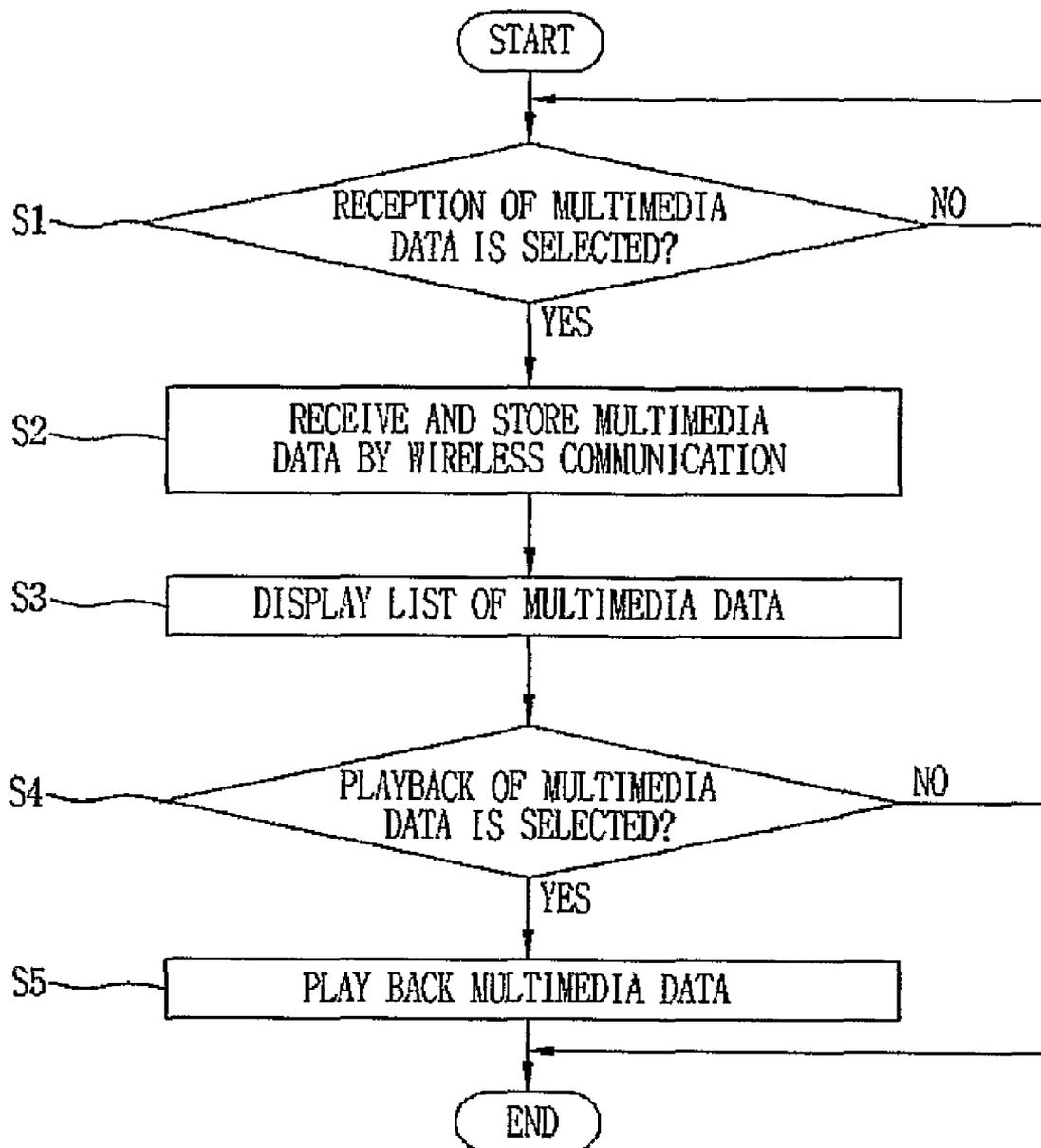
[Fig. 1]



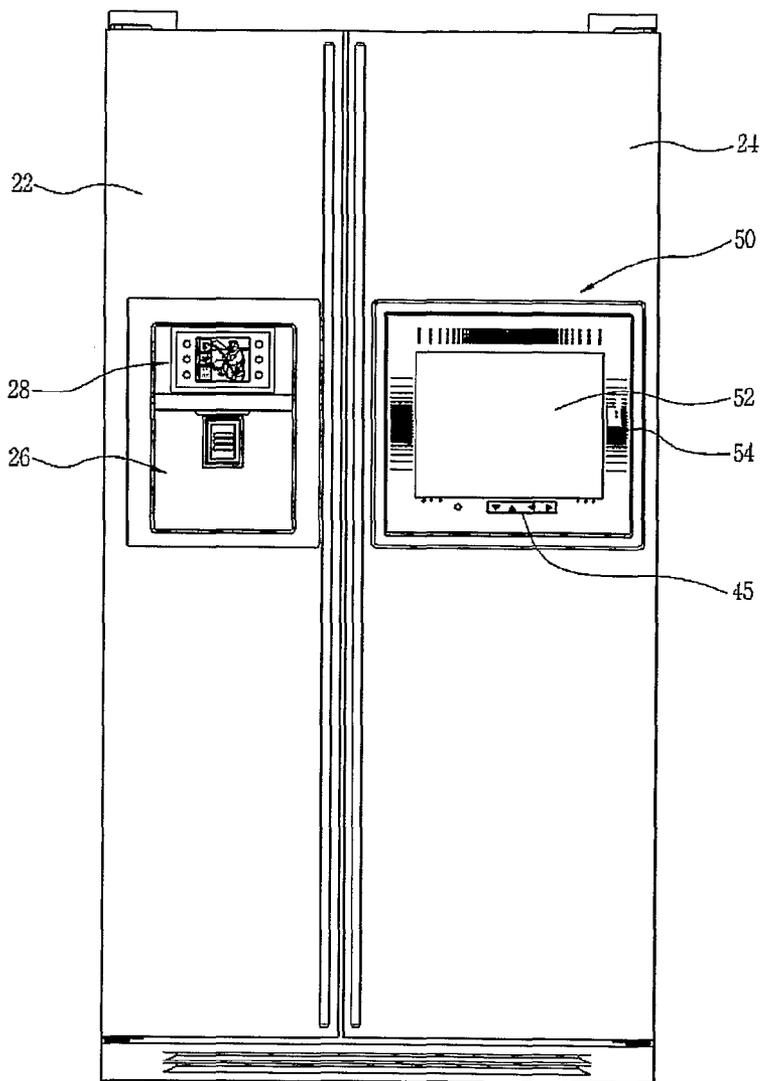
[Fig. 2]



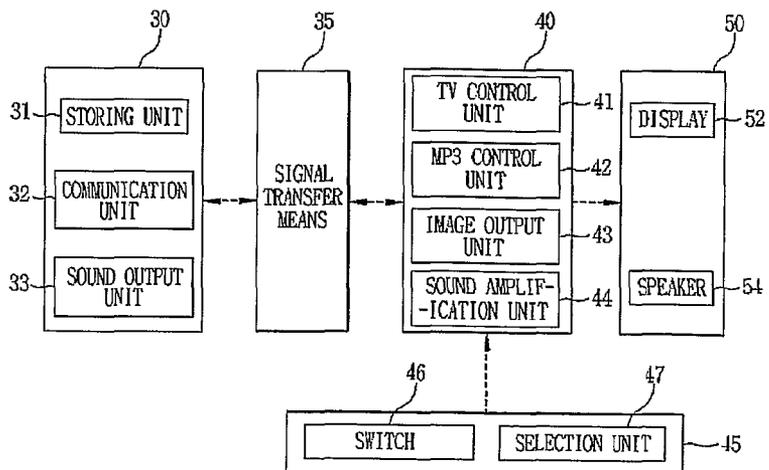
[Fig. 3]



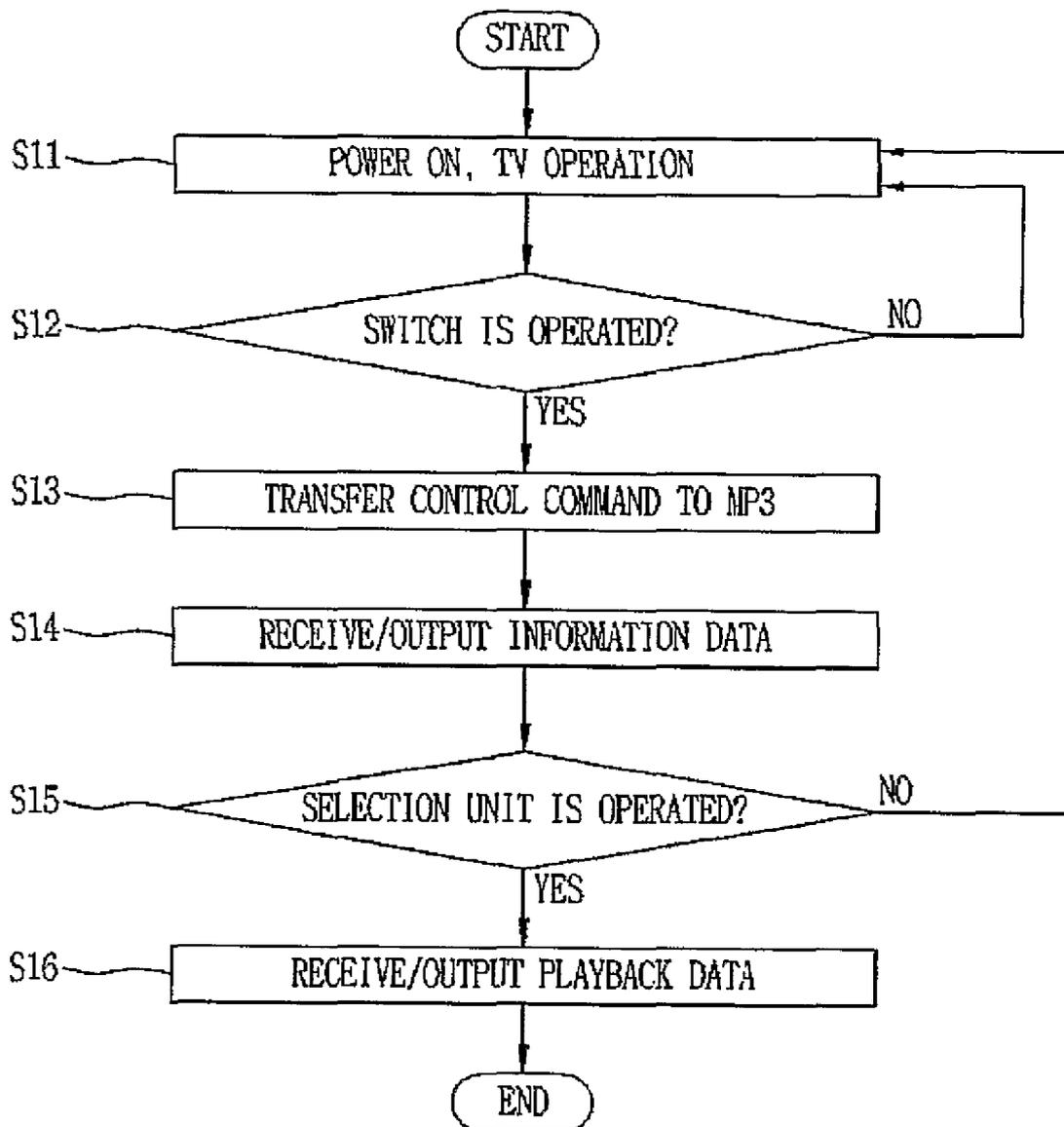
[Fig. 4]



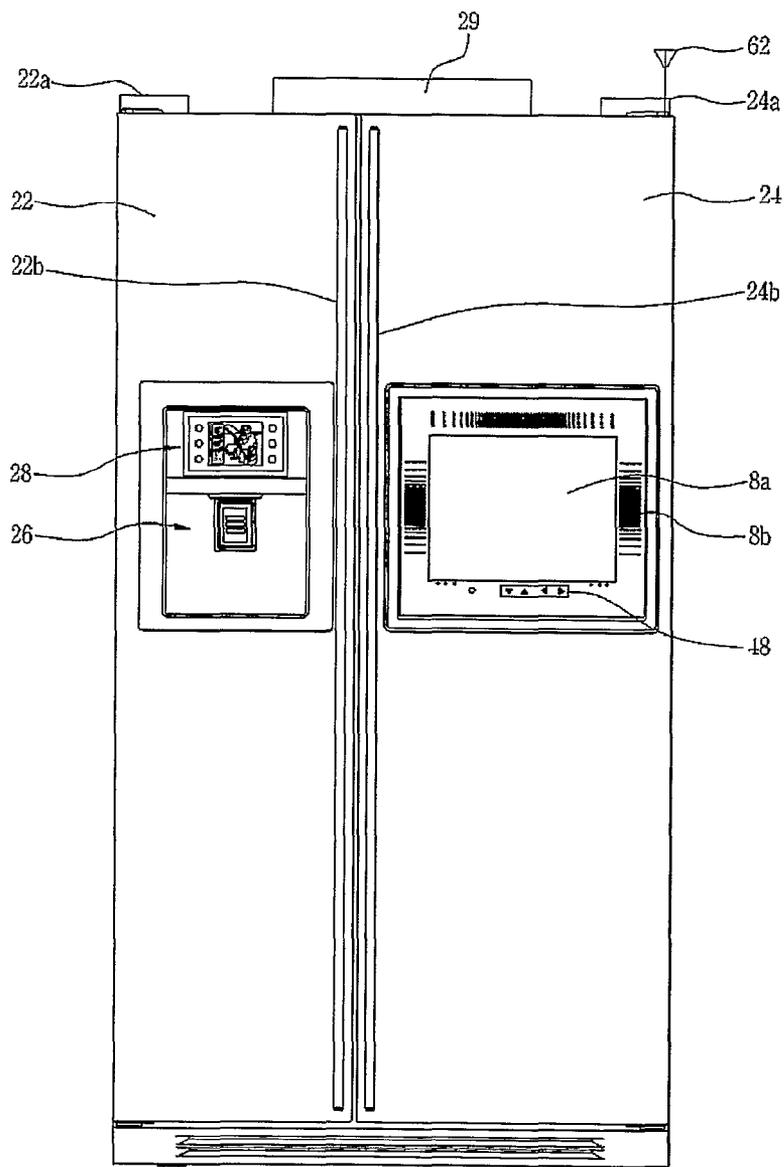
[Fig. 5]



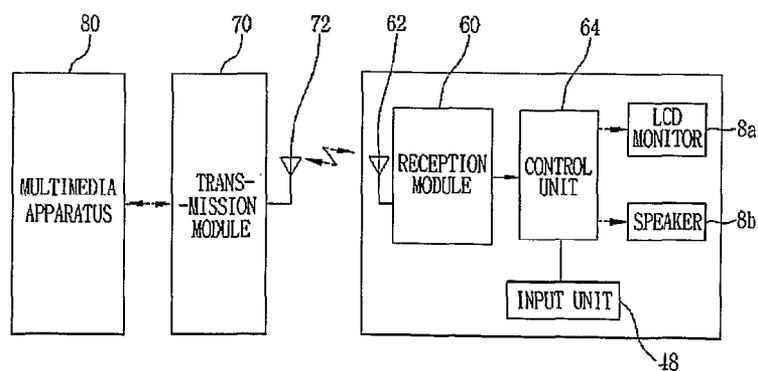
[Fig. 6]



[Fig. 7]



[Fig. 8]



REFRIGERATOR WITH WIRELESS COMMUNICATION FUNCTION

TECHNICAL FIELD

[0001] The present invention relates to a refrigerator with a wireless communication function which can receive data and information by a wireless signal.

BACKGROUND ART

[0002] In general, a refrigerator is an apparatus for keeping the food fresh for an extended period of time. The refrigerator includes a freezing chamber for freezing the food, a refrigerating chamber for refrigerating the food, and a freezing cycle for cooling the freezing chamber and the refrigerating chamber. The operation of the refrigerator is controlled by a built-in control unit.

[0003] The refrigerator is the most basic widely-used core element of a kitchen space. The refrigerator has been gradually enlarged in size due to increase of consumption and influence of the western life style.

[0004] Nowadays, the kitchen space is not simply a space for eating, but a living space for eating and conversation of family members. It is thus necessary to change the refrigerator which is the core element of the kitchen space in quality and quantity with the size enlargement, so that the family members can easily use the refrigerator.

[0005] The multimedia tendency of electronic products has been accelerated with the rapid development of information and communication technologies. It is expected that the electric home appliances will perform not one or two functions but associated functions.

[0006] For example, if a computer is coupled to the refrigerator and a liquid crystal display (LCD) is adhered to a refrigerator door, the user can watch TV and enjoy the internet by accessing a web site.

[0007] The LCD installed on the refrigerator door can display not only the current temperature and operation state of the refrigerator but also the keeping state of the food, nutrition information and cooking information.

[0008] Accordingly, in order to satisfy various demands of the user, the refrigerator is required to receive various multimedia data through a wireless communication network and provide the data to the user.

DISCLOSURE OF INVENTION

Technical Problem

[0009] The present invention is achieved to solve the above problems. An object of the present invention is to provide a refrigerator with a wireless communication function which can select and receive multimedia data through a wireless communication network.

Technical Solution

[0010] Another object of the present invention is to provide a refrigerator with a wireless communication function which can select and receive a TV signal and multimedia data, so that the user can watch TV or multimedia.

[0011] Yet another object of the present invention is to provide a refrigerator with a wireless communication function which can wirelessly receive a playback signal from an external multimedia apparatus, and output the playback signal.

[0012] In order to achieve the above-described objects of the invention, there is provided a refrigerator with a wireless communication function, including: a reception module mounted at one side of the refrigerator, for receiving a wireless signal; and a display means for displaying an image and sound according to the received wireless signal.

[0013] In another aspect of the present invention, there is provided a refrigerator with a wireless communication function, including: the refrigerator; and a reception module mounted at one side of the refrigerator, for receiving a playback signal from an external multimedia apparatus by wireless communication.

[0014] In yet another aspect of the present invention, there is provided a refrigerator with a wireless communication function, including: a TV reception device built in the refrigerator, for receiving and reproducing a TV signal; a signal transfer means for transferring information of multimedia data and playback data between an external apparatus and the TV reception device; a selection means for selecting one of reproduction of the TV signal and playback of the multimedia data; and an output means for outputting one of reproduction of the TV signal and playback of the multimedia data from the TV reception device according to selection of the selection means.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The present invention will become better understood with reference to the accompanying drawings which are given only by way of illustration and thus are not limitative of the present invention, wherein:

[0016] FIG. 1 is a front view illustrating a refrigerator with a wireless communication function in accordance with a first embodiment of the present invention;

[0017] FIG. 2 is a block diagram illustrating the refrigerator of FIG. 1;

[0018] FIG. 3 is a flowchart showing the operation of the refrigerator of FIG. 1;

[0019] FIG. 4 is a front view illustrating a refrigerator with a wireless communication function in accordance with a second embodiment of the present invention;

[0020] FIG. 5 is a block diagram illustrating the refrigerator of FIG. 4;

[0021] FIG. 6 is a flowchart showing the operation of the refrigerator of FIG. 4;

[0022] FIG. 7 is a front view illustrating a refrigerator with a wireless communication function in accordance with a third embodiment of the present invention; and

[0023] FIG. 8 is a block diagram illustrating the refrigerator of FIG. 7.

MODE FOR THE INVENTION

[0024] A refrigerator with a wireless communication function in accordance with the preferred embodiments of the present invention will now be described in detail with reference to the accompanying drawings.

[0025] FIG. 1 is a front view illustrating a refrigerator with a wireless communication function in accordance with a first embodiment of the present invention, and FIG. 2 is a block diagram illustrating the refrigerator of FIG. 1.

[0026] Referring to FIGS. 1 and 2, in the refrigerator with the wireless communication function, a freezing chamber door 2 and a refrigerating chamber door 4 are hinge-coupled to a refrigerator main body (not shown) having a freezing

chamber and a refrigerating chamber at both sides, an ice supply device **6** for supplying ice or cold water is installed on the freezing chamber door **2**, and a home bar **8** for easily supplying beverages is installed on the refrigerating chamber door **4**.

[0027] A freezing cycle (not shown) consisting of a compressor, a condenser, a capillary tube or an electronic expansion valve, and an evaporator is built in one side of the refrigerator main body. A cool air circulation fan (not shown) is provided to supply the cool air heat-exchanged in the evaporator side to the freezing chamber or the refrigerating chamber. The whole components are operated by a control unit **18** for controlling the operation of the refrigerator.

[0028] A display **10** for controlling the operation of the refrigerator and displaying the operation state of the refrigerator is installed at the upper portion of the ice supply device **6**. A reception module **20** for wirelessly receiving multimedia data, namely, a wireless signal through a communication network **A** is installed on the top surface of the refrigerator main body. The reception module **20** stores the received multimedia data in the control unit **18**, or plays back the data through the display **10**.

[0029] The multimedia data are formed by combining the associated data such as characters, images, graphics, audio and video. At least two kinds of multimedia data can be selected, edited and outputted as the wanted information of the user.

[0030] In detail, the display **10** includes a selection means **12** for deciding reception of the multimedia data using the reception module **20**, and a display means **14** for displaying the multimedia data related information.

[0031] The selection means **12** can be formed in a button or touch screen type. The selection means **12** includes an input unit which is a kind of button for receiving the reception decision of the multimedia data, and can further include a search keyboard for searching for the multimedia data.

[0032] The display means **14** includes an LCD monitor for displaying information of the multimedia data, and playing back an image signal of the multimedia data, and a speaker for playing back an audio signal of the multimedia data. The operation of the display means **14** is controlled by the control unit **18**, for displaying a menu for displaying the information of the multimedia data and controlling playback of the multimedia data.

[0033] In addition, the selection means **12** includes buttons for controlling the operation of the refrigerator, and the display means **14** displays the operation state of the refrigerator by the control unit **18**.

[0034] The reception module **20** receives a wireless signal from a multimedia data supply server through the wireless communication network **A**. Here, the reception module **20** receives the wireless signal of the air, extracts the multimedia data from the wireless signal, and transfers the multimedia data to the control unit **18**.

[0035] Preferably, in addition to an antenna for receiving the wireless signal, the reception module **20** includes a decoder for converting the wireless signal into the multimedia data recognizable by the control unit **18**, and a storing means **16** for storing the multimedia data, or a communication unit for communicating with the control unit **18**.

[0036] That is, the reception module **20** can be formed as a relatively small printed circuit board (not shown) on which the antenna (not shown), a plurality of chipsets and electronic components have been installed. Although the printed circuit

board is built in, the antenna is exposed to the top surface of the refrigerator main body, for easily receiving the wireless signal of the air.

[0037] The control unit **18** receives the user input from the selection means **12**, transmits the multimedia data through the reception module **20**, and stores the multimedia data in the storing means **16**. The storing means **16** can be formed in the control unit **18**.

[0038] The control unit **18** displays the information of the multimedia data such as a name, capacity, etc. in each list through the display means **14**, or plays back the image information and sound information of the multimedia data through the display means **14**.

[0039] The control unit **18** can be formed as part if a main control unit (not shown) for controlling the operation of the refrigerator, or comprised of a driving circuit (not shown) for receiving power from the main control unit, a communication unit (not shown) for receiving the multimedia data by wire/wireless communication with the reception module **20**, a memory (not shown) which is the storing means **16** for storing the multimedia data from the communication unit, and an output conversion unit (not shown) for converting the multimedia data into information data or playback data.

[0040] The control unit **18** is built in one side of the refrigerator main body to be wire or wireless-connected to the reception module **20** and wire-connected to the display means **14**.

[0041] FIG. 3 is a flowchart showing the operation of the refrigerator of FIG. 1.

[0042] When reception of the multimedia data is selected, the multimedia data are received by the wireless communication, and stored (refer to S1 and S2).

[0043] Here, reception of the multimedia data can be selected by the request of the user using the selection means **12**. In addition, the reservation can be periodically set in the control unit **18** to automatically select reception of new multimedia data.

[0044] Accordingly, when reception of the multimedia data is selected, the control unit **18** receives the wireless signal of the air from the wireless communication network **A** by using the reception module **20**, converts the wireless signal into the multimedia data through a Codec, and stores the multimedia data in the storing means **16**.

[0045] The multimedia data are formed by combining the associated data such as characters, images, graphics, audio and video. The representative example of the multimedia data is MP3 data containing at least character data and audio data.

[0046] The newly-received or previously-stored multimedia data are displayed in each list (refer to S3).

[0047] In the same manner, the multimedia data can be displayed in each list by the request of the user using the selection means **12**. In addition, the reservation can be set in the control unit **18** to automatically display new multimedia data in each list.

[0048] The information of the multimedia data such as a name and a capacity is displayed in each list by characters on the LCD monitor of the display means **14**.

[0049] When the user selects playback of the wanted multimedia data, the multimedia data are converted into playback data and outputted (refer to S4 and S5).

[0050] In detail, the user selects the multimedia related menu among the menus displayed on the display means **14** through the selection means **12**. When the information of the multimedia data is displayed in each list on the display means

14, the user selects the specific multimedia data through the selection means **12**, and plays back the multimedia data.

[0051] The user can search for the specific multimedia data through the selection means **12**, and select and play back the multimedia data.

[0052] In order to play back the multimedia data, the control unit **18** converts the multimedia data into the playback data such as image data and sound data by using the Codec, and outputs the playback data through the display means **14**. The user can listen to or watch the wanted multimedia data.

[0053] FIG. **4** is a front view illustrating a refrigerator with a wireless communication function in accordance with a second embodiment of the present invention, and FIG. **5** is a block diagram illustrating the refrigerator of FIG. **4**.

[0054] As illustrated in FIGS. **4** and **5**, in the refrigerator with the wire communication function, a freezing chamber door **22** and a refrigerating chamber door **24** are hinge-coupled to a refrigerator main body (not shown) having a freezing chamber and a refrigerating chamber at both sides, an ice supply device **26** for supplying ice or cold water is installed on the freezing chamber door **22**, an operation panel **28** for controlling the operation of the refrigerator is installed at the upper portion of the ice supply device **26**, and a TV-shaped output means **50** for enabling TV watching or playback of another multimedia is installed on the refrigerating chamber door **24**.

[0055] A freezing cycle (not shown) consisting of a compressor, a condenser, a capillary tube or an electronic expansion valve, and an evaporator is built in one side of the refrigerator main body. A cool air circulation fan (not shown) is provided to supply the cool air heat-exchanged in the evaporator side to the freezing chamber or the refrigerating chamber. The whole components are operated by a control unit (not shown) for controlling the operation of the refrigerator.

[0056] A TV reception device **40** is provided to selectively enable TV watching or multimedia playback through the output means **50**. An external apparatus is connected to the TV reception device **40** through a signal transfer means **35**, and a selection means **45** for selecting one of TV watching and multimedia playback is also connected to the TV reception device **40**.

[0057] Exemplary external apparatuses include a cassette player, a CD player, an MP3 player, a video player and a DVD player. In this embodiment, it is presumed that the external apparatus is the MP3 player **30**.

[0058] In detail, the MP3 player **30** can be detachably connected to the TV reception device **40** through the signal transfer means **35**, or built in the refrigerator.

[0059] The MP3 player **30** includes a storing unit **31** for storing MP3 data and a Codec, a communication unit **32** for receiving a control command from the TV reception device **40**, and a sound output unit **33** for converting the specific MP3 data into playback sound data by the Codec and outputting the sound data according to the control command received by the communication unit **32**.

[0060] The MP3 player **30** has a terminal connected to the signal transfer means **35**. In addition, the MP3 player **30** can convert the MP3 data into the sound data by the Codec and output the sound data, regardless of the control command of the TV reception device **40**, by adding a data transmission related button (not shown).

[0061] The signal transfer means **35** enables the MP3 player **30** and the TV reception device **40** to recognize the

mutual contact and transfer the control command, information data, and playback data such as sound data or image data to each other.

[0062] The signal transfer means **35** is divided into a first connection line (not shown) for transferring the control command from the TV reception device **40** to the MP3 player **30**, and receiving the information data and contact recognition, and a second connection line (not shown) for transferring the playback data from the MP3 player **30** to the TV reception device **40**.

[0063] The signal transfer means **35** is formed as a kind of cable. Terminals connected respectively to the MP3 player **30** and the TV reception device **40** are formed at both ends of the signal transfer means **35**.

[0064] The TV reception device **40** includes an antenna (not shown) for receiving a TV signal which is a predetermined frequency band wireless signal of the air through a broadcasting communication network, and a TV control unit **41** for receiving and reproducing the TV signal.

[0065] The TV reception device **40** also includes an MP3 control unit **42** for transferring the control command by communication with the communication unit **32** of the MP3 player **30**, an image output unit **43** for outputting image data to the output means **50**, and a sound amplification unit **44** for amplifying sound data and outputting the sound data to the output means **50**.

[0066] The TV reception device **40** can be formed as a relatively small printed circuit board (not shown) on which the antenna (not shown), a plurality of chipsets and electronic components have been installed.

[0067] The selection means **45** includes a switch **46** connected to the TV reception device **40**, for switching a TV function into an MP3 player function by selection of the user, and a selection unit **47** for adjusting a channel and a volume and displaying or selecting the playback list by the operation of the user during the execution of the TV function or the MP3 function.

[0068] The switch **46** is connected to the TV control unit **41** and the MP3 control unit **42**. When the switch **46** is turned on, the TV control unit **41** is turned off to stop the TV function, and the MP3 control unit **42** is turned on to operate the MP3 player function. When the switch **46** is turned off, the TV control unit **41** and the MP3 control unit **42** are conversely operated.

[0069] The selection means **45** can be buttons exposed to the output means **50**, or a remote controller for performing long distance control.

[0070] The output means **50** is installed on the refrigerating chamber door **24**, and connected to the TV reception device **40**. The output means **50** includes a display **52** such as an LCD monitor for displaying an image, and a speaker **54** for outputting a sound.

[0071] The display **52** is connected to the image output unit **43**, for reproducing the TV signal as an image, or displaying the information data and/or image data of the MP3 data, and the speaker **54** is connected to the sound amplification unit **44**, for reproducing the TV signal as a sound, or displaying the sound data of the MP3 data.

[0072] FIG. **6** is a flowchart showing the operation of the refrigerator of FIG. **4**.

[0073] First, power is supplied to operate the TV (refer to S11).

[0074] In more detail, when power is inputted to the TV reception device 40, the TV control unit 41 is turned on, but the MP3 control unit 42 is turned off.

[0075] Therefore, when the TV control unit 41 receives the specific frequency band wireless TV signal from the broadcasting communication network, and reproduces the wireless TV signal through the image output unit 43 and the sound amplification unit 44, the TV image is displayed on the display 52 and the TV sound is outputted through the speaker 54.

[0076] The channel, volume, etc. can be adjusted through the selection unit 47. The user can watch TV through the display 52 and the speaker 54 installed on the refrigerating chamber door 24.

[0077] While the TV is operated, if the switch 46 is operated to convert the TV function into the MP3 function, the control command is transferred to the MP3 player 30, and the information data of the MP3 data are received and outputted (refer to S12, S13 and S14).

[0078] After the MP3 player 30 is connected to the TV reception device 40 through the signal transfer means 35, when the switch 46 is operated, the TV function is converted into the MP3 function. Here, the TV reception device 40 recognizes connection of the MP3 player 30 through the signal transfer means 35, and changes its function according to the operation of the switch 46. If the TV reception device 40 does not recognize connection of the MP3 player 30, even if the switch 46 is operated, the TV reception device 40 does not change its function.

[0079] In detail, when the TV reception device 40 recognizes connection of the MP3 player 30 through the signal transfer means 35, the MP3 control unit 42 of the TV reception device 40 transfers the control command to the communication unit 32 of the MP3 player 30. The communication unit 32 of the MP3 player 30 transfers the information data of the MP3 data stored in the storing unit 31 of the MP3 player 30 to the MP3 control unit 42 of the TV reception device 40.

[0080] The information data of the MP3 data received by the MP3 control unit 42 of the TV reception device 40, such as a name, a playback time and a capacity, is displayed in each list on the display 52 through the image output unit 43 of the TV reception device 40.

[0081] As soon as the MP3 player 30 is connected to the TV reception device 40, the above operation can be automatically carried out. In addition, when the user makes an input request through the selection unit 47, the above operation can be performed to display the information data of the MP3 data on the display 52.

[0082] Besides the MP3 player 30, various external multimedia apparatuses can be connected to the TV reception device 40 through the signal transfer means 35. The information data of the multimedia data can be displayed in the same manner.

[0083] When the selection unit 47 is operated to select the specific MP3 data, the playback data of the MP3 data are received and outputted (refer to S15 and S16).

[0084] The user can select and play back the wanted MP3 data through the selection unit 47, by referring to the information data of the MP3 data on the display 52.

[0085] In more detail, when playback of the specific MP3 data is selected by the selection unit 47, the MP3 control unit 42 of the TV reception device 40 transfers a playback related control command for the specific MP3 data to the communication unit 32 of the MP3 player 30. The communication unit 32 of the MP3 player 30 transfers the playback data of the

MP3 data stored in the storing unit 31 of the MP3 player 30 to the MP3 control unit 42 of the TV reception device 40.

[0086] Here, the playback data of the MP3 data are obtained by converting the MP3 data by the Codec to be directly played back into image data and sound data. The image data can be words of a song or a music video, and the sound data can be the song itself.

[0087] The playback data of the MP3 data received by the MP3 control unit 42 of the TV reception device 40 are outputted through the image output unit 43 and the sound amplification unit 44 of the TV reception device 40. The image data are displayed on the display 52, and the sound data are outputted through the speaker 54.

[0088] In the same manner, the screen, volume, etc. can be adjusted through the selection unit 47. The user can enjoy the MP3 through the display 52 and the speaker 54 installed on the refrigerating chamber door 24.

[0089] FIG. 7 is a front view illustrating a refrigerator with a wireless communication function in accordance with a third embodiment of the present invention, and FIG. 8 is a block diagram illustrating the refrigerator of FIG. 7.

[0090] As depicted in FIGS. 7 and 8, in the refrigerator with the wire communication function, a freezing chamber door 22 and a refrigerating chamber door 24 are hinge-coupled to a refrigerator main body (not shown) having a freezing chamber and a refrigerating chamber at both sides, an ice supply device 26 for supplying ice or cold water is installed on the freezing chamber door 22, an operation panel 28 for controlling the operation of the refrigerator is installed at the upper portion of the ice supply device 26, and an LCD monitor 8a and a speaker 8b, namely, a kind of multimedia player for enabling TV watching or playback of another multimedia is installed on the refrigerating chamber door 24.

[0091] A freezing cycle (not shown) consisting of a compressor, a condenser, a capillary tube or an electronic expansion valve, and an evaporator is built in one side of the refrigerator main body. A cool air circulation fan (not shown) is provided to supply the cool air heat-exchanged in the evaporator side to the freezing chamber or the refrigerating chamber. The whole components are operated by a control unit (not shown) for controlling the operation of the refrigerator.

[0092] A reception module 60 for receiving a playback signal from another multimedia apparatus 80, and outputting the playback signal through the LCD monitor 8a and the speaker 8b is installed at the upper portion of the refrigerator main body. The reception module 60 receives the playback signal by wireless communication with a transmission module 70 of the external multimedia apparatus 80.

[0093] The reception module 60 is connected to a control unit 64. The control unit 64 is connected to the LCD monitor 8a and the speaker 8b of the refrigerator. The transmission module 70 is detachably installed in the multimedia apparatus 80, such as a cassette player, a CD player, an MP3 player, a video player and a DVD player. The reception module 60 and the transmission module 70 are formed in a pair to perform wireless communication.

[0094] The reception module 60 can be formed as a printed circuit board (not shown) on which an antenna 62 for receiving the playback signal, a plurality of chipsets and electronic components have been installed. However, the antenna 62 can be individually formed from the printed circuit board.

[0095] Accordingly, preferably, the antenna 62 of the reception module 60 is installed outside the refrigerator to

improve reception of the playback signal, and the printed circuit board of the reception module 60 is built in one side of the refrigerator.

[0096] In more detail, although not seen, the antenna 62 of the reception module 60 can be installed on the top surface of the refrigerator main body to improve reception of the playback signal.

[0097] For example, the antenna 62 of the reception module 60 can be exposed to or built in a hinge cover 22a or 24a for hinge-connecting the freezing chamber door 22 or the refrigerating chamber door 24 to the refrigerator main body, or a control box 29 for housing the control unit 64.

[0098] However, if the antenna 62 of the reception module 60 cannot be installed on the top surface of the refrigerator, namely, if the gap between the refrigerator and the ceiling is narrow, or if the refrigerator is a built-in type refrigerator, the antenna 62 of the reception module 60 can be installed on the front surface of the freezing chamber door 22 or the refrigerating chamber door 24.

[0099] For example, the antenna 62 of the reception module 60 can be installed on the freezing chamber door 22 or the refrigerating chamber door 24. As the antenna 62 of the reception module 60 comes into the vision field of the user, it is preferably built in the freezing chamber door 22 or the refrigerating chamber door 24.

[0100] On the other hand, as identical to the reception module 60, the transmission module 70 can be formed as a printed circuit board (not shown) on which an antenna 72 for transmitting the playback signal, a plurality of chipsets and electronic components have been installed, and detachably installed in an output terminal of the multimedia apparatus 80.

[0101] As soon as the transmission module 70 is installed in the multimedia apparatus 80, the transmission module 70 can automatically receive and transmit the playback signal. In addition, the transmission module 70 can transmit the playback signal by a special input request.

[0102] The multimedia apparatus 80 includes a decoder for converting the multimedia data into the playback signal. When the transmission module 70 receives the playback signal from the multimedia apparatus 80 and transmits the playback signal, the reception module 60 receives the playback signal and applies the playback signal to the control unit 64. The control unit 64 outputs the playback signal through the LCD monitor 8a and the speaker 8b. Therefore, special data or standard standardization is not required between the multimedia apparatus 80 and the LCD monitor 8a and the speaker 8b of the refrigerator.

[0103] In another case, the transmission module 70 includes an encoder for converting a playback signal into a transmission signal. The reception module 60 making a pair with the transmission module 70 includes a decoder for converting the transmission signal into the playback signal. Here, special data or standard standardization is not required between the multimedia apparatus 80 and the LCD monitor 8a and the speaker 8b of the refrigerator which include the transmission module 70 and the reception module 60.

[0104] The control unit 64 is connected to an input unit 48, for performing control according to a playback signal selection command inputted by the user. When the user intends to receive the playback signal by the reception module 60 and apply the playback signal to the control unit 64, the input unit 48 acquires the corresponding selection command from the user. In addition, the input unit 48 acquires a cancel command

for the selection command from the user. According to the selection of the user, the reception module 60 receives the playback signal, and the LCD monitor 8a and the speaker 8b display and output the playback signal.

[0105] The functions of the input unit 48 can be performed by the operation panel 28.

[0106] As discussed earlier, in accordance with the present invention, the refrigerator with the wireless communication function allows the user to rapidly easily receive and playback the multimedia data. The product value of the refrigerator can be improved by satisfying various demands of the user.

[0107] The refrigerator with the wireless communication function can cut down the production cost, by playing back the playback data without a special playback component for outputting the playback data. Moreover, the refrigerator allows the user to easily selectively enjoy the TV function and the multimedia function in the kitchen, thereby improving the convenience and satisfying various demands of the user.

[0108] The refrigerator with the wireless communication function can playback various multimedia data, thereby improving the convenience and satisfying various demands of the user.

[0109] The special stand standardization is not required between the refrigerator and the multimedia apparatus. Therefore, the present invention can be applied to various products regardless of the specifications of the products.

[0110] Although the preferred embodiments of the present invention have been described, it is understood that the present invention should not be limited to these preferred embodiments but various changes and modifications can be made by one skilled in the art within the spirit and scope of the present invention as hereinafter claimed.

1. A refrigerator with a wireless communication function, comprising:

- a reception module mounted at one side of the refrigerator, for receiving a wireless signal; and
- a display means for displaying an image and sound according to the received wireless signal.

2. The refrigerator with the wireless communication function of claim 1, wherein the wireless signal comprises at least one of multimedia data, a playback signal and a TV signal.

3. The refrigerator with the wireless communication function of claim 2, comprising a means for playing back or converting the multimedia data into the image and sound.

4. The refrigerator with the wireless communication function of claim 1 comprising a reception selection means for deciding reception of the wireless signal.

5. A refrigerator with a wireless communication function, comprising:

- a reception module for wirelessly receiving multimedia data through a communication network; and
- a selection means for deciding reception of the multimedia data using the reception module.

6. The refrigerator with the wireless communication function of claim 5, wherein the selection means comprises an input unit for receiving the reception decision of the multimedia data from the user.

7. The refrigerator with the wireless communication function of claim 5, further comprising a storing means for storing the multimedia data received by the reception module.

8. The refrigerator with the wireless communication function of claim 5, further comprising a display means for displaying the multimedia data as a menu screen.

9. A refrigerator with a wireless communication function, comprising:

the refrigerator; and

a reception module mounted at one side of the refrigerator, for receiving a playback signal from an external multimedia apparatus by wireless communication.

10. The refrigerator with the wireless communication function of claim **9**, wherein the reception module is installed on the top surface of the refrigerator.

11. The refrigerator with the wireless communication function of claim **10**, wherein the reception module is installed on a hinge cover installed at a connection portion between a refrigerator door and a top surface of a refrigerator main body, for hinge-coupling the refrigerator door to the refrigerator main body.

12. The refrigerator with the wireless communication function of claim **10**, wherein the reception module is installed at an installation portion of a control box on the top surface of the refrigerator.

13. The refrigerator with the wireless communication function of claim **9**, wherein the reception module comprises an antenna, and the antenna is installed on the front surface of the refrigerator.

14. The refrigerator with the wireless communication function of claim **13**, wherein the antenna of the reception module is built in a handle installed on the refrigerator door.

15. The refrigerator with the wireless communication function of claim **9**, further comprising a multimedia player installed on the refrigerator, for outputting a playback signal received by the reception module.

16. A refrigerator with a wireless communication function, comprising:

a TV reception device built in the refrigerator, for receiving and reproducing a TV signal; a signal transfer means for transferring information of multimedia data and playback data between an external apparatus and the TV reception device;

a selection means for selecting one of reproduction of the TV signal and playback of the multimedia data; and an output means for outputting one of reproduction of the TV signal and playback of the multimedia data from the TV reception device according to selection of the selection means.

17. The refrigerator with the wireless communication function of claim **16**, wherein the signal transfer means makes the TV reception device recognize connection of the external apparatus, and transfers a control command of the TV reception device to the external apparatus.

18. The refrigerator with the wireless communication function of claim **16**, wherein the signal transfer means transfers the playback data obtained by converting the multimedia data by a Codec from the external apparatus to the TV reception device according to the control command of the TV reception device.

19. The refrigerator with the wireless communication function of claim **18**, wherein the external apparatus is detachably installed in the TV reception device through the signal transfer means.

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