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(54) **TP ON/IN CELL-TYPE ORGANIC ELECTROLUMINESCENT DISPLAY DEVICE HAVING INTEGRATED NFC ANTENNA**

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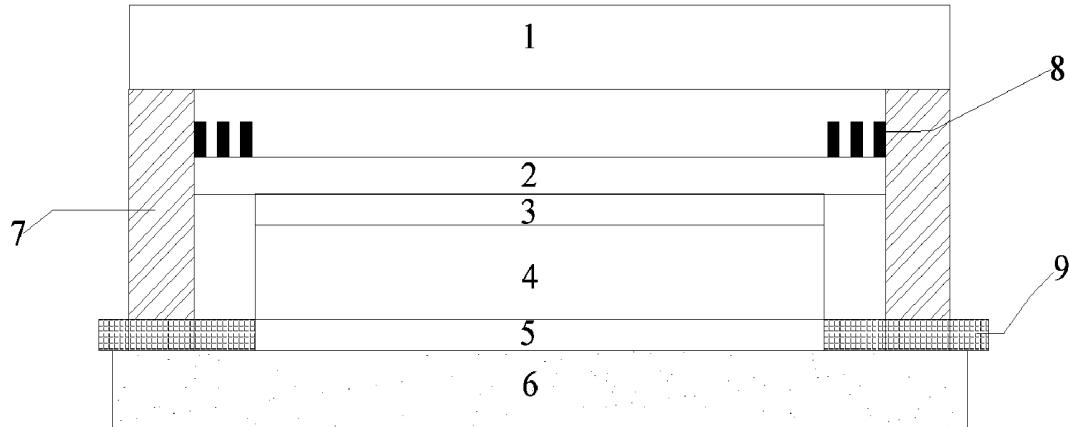
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(57) **ABSTRACT**

An organic light-emitting diode display integrated with a near field communication antenna is provided. The organic light-emitting diode display is a TP on-cell or in-cell organic light-emitting diode display, the near field communication antenna is disposed on a display screen of the organic light-emitting diode display, and a near field communication interface is built on an output circuit of the display screen and is connected to a control mainboard of the display screen.



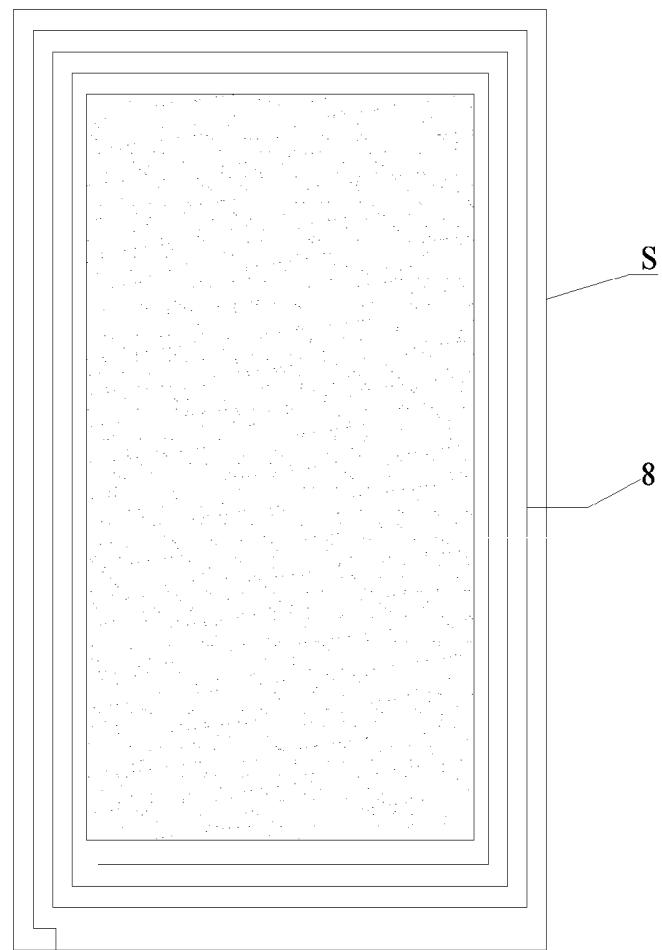


Figure 1a

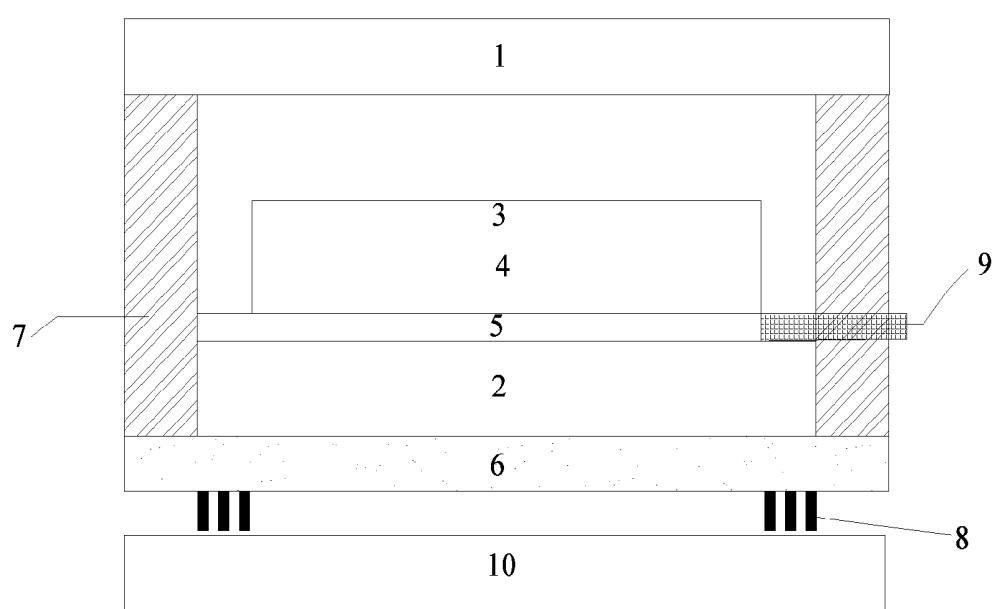


Figure 1b

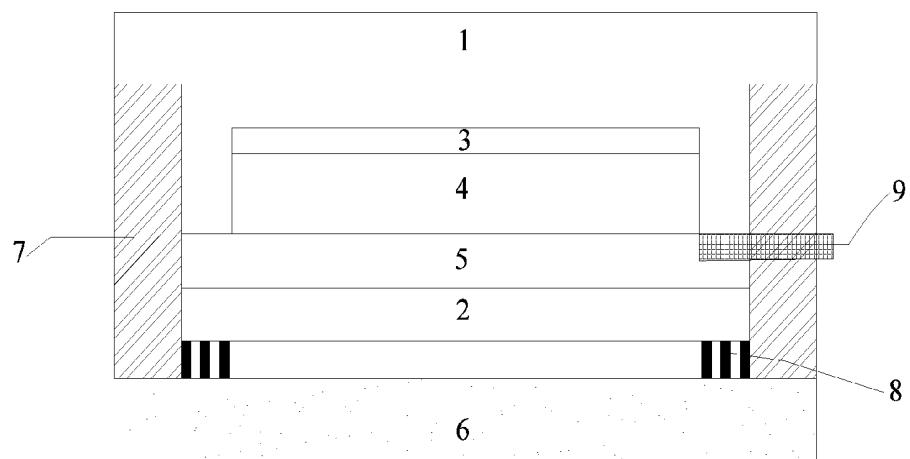


Figure 2

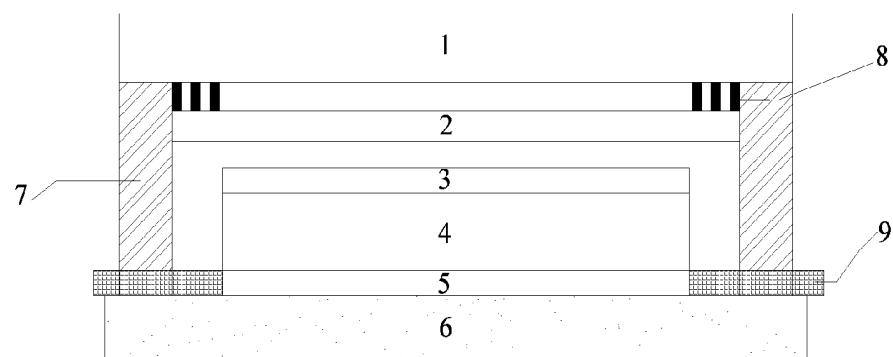


Figure 3

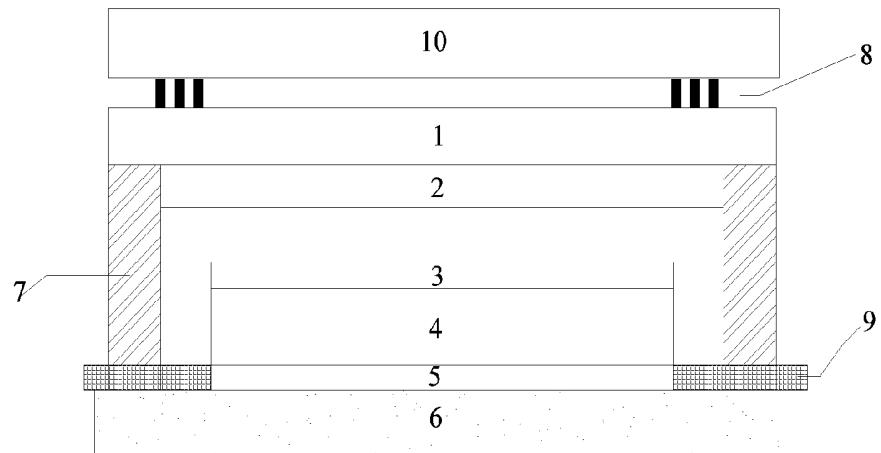


Figure 4

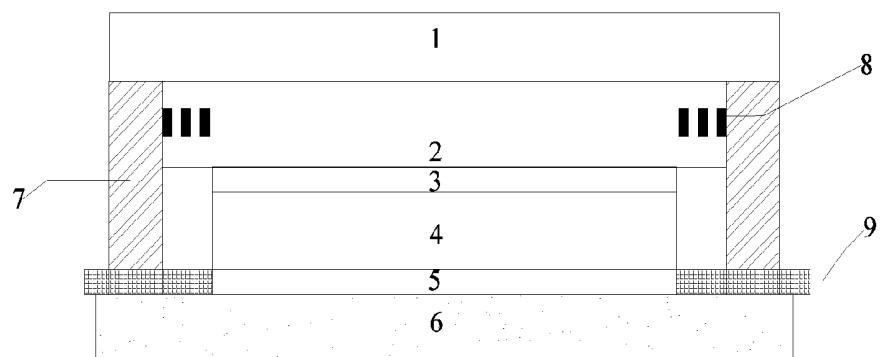


Figure 5

TP ON/IN CELL-TYPE ORGANIC ELECTROLUMINESCENT DISPLAY DEVICE HAVING INTEGRATED NFC ANTENNA

[0001] The present application claims the priority to Chinese Patent Application 201220145136.8, entitled “DISPLAY SCREEN”, filed on Apr. 6, 2012 with the State Intellectual Property Office of People’s Republic of China, and claims the priority to Chinese Patent Application 201210232611.X, entitled “TP ON/IN CELL ORGANIC LIGHT-EMITTING DIODE DISPLAYER INTEGRATED WITH NFC ANTENNA”, filed on Jul. 5, 2012 with the State Intellectual Property Office of People’s Republic of China, which are incorporated herein by reference in entirety.

FIELD OF TECHNOLOGY

[0002] The present disclosure relates to the technical field of near field communication, in particular to an organic light-emitting diode (OLED) display integrated with a near field communication (NFC) antenna, and particularly to a touch panel (TP) on/in cell organic light-emitting diode display.

BACKGROUND

[0003] Near Field Communication (NFC) technology is a necessary technology for electrical products in the future and has a large market. In existing NFC products, the antenna is generally disposed on one side of a battery or adhered in a shell, in a common way of forming a coil with metal wiring on a Printed Circuit Board (PCB) or a Flexible Printed Circuit (FPC) and then adhering the PCB or the FPC, which has the coil, to the battery or the shell. Disadvantage of the existing NFC products mainly is that: with frequent disassembly and assembly of the battery and the shell, wiring of the NFC antenna is prone to wear off or to have a problem of inaccurate alignment, which eventually causes deterioration of antenna signal and affects the function of the NFC products. In addition, the antenna of the NFC product is normally located inside the shell of the electrical product, and in a case of metal shell, signal transmission of the NFC signal may be affected; therefore the choice of strong metal for the shell of the electrical product is limited.

[0004] For example, lots of electrical products equipped with a NFC antenna and an organic light-emitting diode (OLED) display have above problems. The so-called OLED is a kind of emerging flat-panel display which has advantages of active luminescence, high contrast, fast response, and thin and light design, and is known as a new generation of display that may displace liquid crystal display (LCD). The principle of light emitting in the OLED is that functional layers including a charge injection layer, a charge transfer layer and a luminous layer are disposed between an anode and a cathode, and the OLED may emit light through applying a proper voltage between the electrodes. At present, an organic light-emitting diode display having a touch function mainly includes “In-cell” and “On-cell” structures. In the “On-cell” structure which is becoming popular, a touch sensing layer is separated from an integrated circuit (IC) layer integrated with a second electrode; in the “In-cell” structure, the touch sensing layer is integrated with the IC layer integrated with the second electrode.

[0005] In the unreasonable way of disposing a NFC antenna for an electrical product, which is equipped with the NFC antenna and an organic light-emitting diode display, wiring of the NFC antenna is prone to wear off or to have an

inaccurate alignment, which may cause deterioration of signal quality and may limit the choice for a shell of the electrical product. Since the integration of the NFC antenna is allowable in the process of producing the organic light-emitting diode display, it is desirable to design a new organic light-emitting diode display integrated with a NFC antenna to solve above problems.

SUMMARY

[0006] In view of this, the disclosure is to provide an organic light-emitting diode display integrated with a NFC antenna, which may prevent wiring of the antenna from wearing off or inaccurate alignment and is beneficial to ensure quality of antenna signal. In addition, for an electrical product equipped with the organic light-emitting diode display, signal is transferred through a facade of the display, and the material of a shell is not limited due to the NFC antenna.

[0007] To solve above technical problems, a technical solution is provided in the disclosure as follows. An organic light-emitting diode display integrated with a NFC antenna is a TP on-cell or in-cell organic light-emitting diode display, the NFC antenna is disposed on a display screen of the organic light-emitting diode display, and a NFC interface is built on an output circuit of the display screen and is connected to a control mainboard of the display screen.

[0008] Preferably, the organic light-emitting diode display is a TP on cell organic light-emitting diode display, a display screen of the TP on cell organic light-emitting diode display includes a protective element, a touch sensing layer, a first electrode, an organic luminous functional layer, an integrated circuit layer integrated with a second electrode, and a substrate sequentially, where an output wire is led out from the second electrode, the NFC antenna is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

[0009] Preferably, the NFC antenna is disposed on an inner surface of the protective element and is located in a light blocking area at circumference of the touch sensing layer.

[0010] Preferably, the NFC antenna is disposed at circumference of an outer surface of the protective element and covers an insulation protection film.

[0011] Preferably, the NFC antenna is disposed on the touch sensing layer located at inner side of the protective element and is located in a light blocking area at circumference of the touch sensing layer, with an insulation protection layer provided to insulate the near field communication antenna from the touch sensing layer at desirable insulation places.

[0012] Preferably, the organic light-emitting diode display is a TP on cell organic light-emitting diode display, a display screen of the TP on cell organic light-emitting diode display includes a protective element, a first electrode, an organic luminous function layer, an integrated circuit layer integrated with a second electrode, a touch sensing layer and a substrate sequentially, where an output wire is led out from the second electrode, the NFC antenna is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

[0013] Preferably, the NFC antenna is disposed on an inner surface of the substrate and is located in a light blocking area at circumference of the touch sensing layer.

[0014] Preferably, the organic light-emitting diode display is a TP in cell organic light-emitting diode display, a display screen of the TP in cell organic light-emitting diode

displayer includes a protective element, a first electrode, an organic luminous function layer, an integrated circuit layer in which a touch sensing layer and a second electrode are integrated, and a substrate sequentially, where an output wire is led out from the second electrode, the NFC antenna is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

[0015] Preferably, the NFC antenna is disposed between the substrate and the integrated circuit layer in which the touch sensing layer and the second electrode are integrated, or the NFC antenna is disposed at circumference of an outer surface of the substrate and covers an insulation protection film.

[0016] Preferably, the organic light-emitting diode display is a TP in cell organic light-emitting diode display, a display screen of the TP in cell organic light-emitting diode display includes a protective element, a touch sensing layer, a first electrode, an organic luminous function layer, a second electrode and a substrate sequentially, where an output wire is led out from the second electrode, the NFC antenna is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

[0017] Preferably, the NFC antenna is in a form of a multi-turn coil made from conductive material wiring, the multi-turn coil is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

[0018] Preferably, the NFC antenna is made from low-resistance wiring such as silver, copper or aluminum.

[0019] Preferably, the multi-turn coil is wound in an annular shape matching with a product outer contour.

[0020] Preferably, the multi-turn coil is wound in a rectangle or circle shape.

[0021] Preferably, a side of the multi-turn coil, which is closer to inner part of the organic light-emitting diode display, is covered by a layer of transparent ferrite material.

[0022] Compared to conventional technology, in an organic light-emitting diode display integrated with a NFC antenna according to the disclosure, the NFC antenna is directly disposed on the organic light-emitting diode display. The NFC interface is built on an output circuit of the display screen and is connected to a control mainboard, therefore the NFC interface is fixed after assembly and is not frequently assembled and disassembled, and signal quality deterioration and reception failure due to wearing off and inaccurate alignment of the NFC antenna interface are avoided. In addition, a solution is provided for facilitating reception of NFC signal from a display plane of the display or for application to the case that the NFC signal must be received from the display plane of the display. In addition, for an electrical product equipped with the organic light-emitting diode display, signal is transferred through facade of the display, and the material of a shell is not limited due to the NFC antenna.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] FIG. 1a is a front view showing assembling position for a NFC antenna on a display screen in an organic light-emitting diode display integrated with the NFC antenna according to embodiment 1 of the disclosure;

[0024] FIG. 1b is a schematic diagram showing assembling structure for the NFC antenna in the organic light-emitting diode display integrated with the NFC antenna according to embodiment 1 of the disclosure;

[0025] FIG. 2 is a schematic diagram showing assembling structure for a NFC antenna in an organic light-emitting diode display integrated with the NFC antenna according to embodiment 2 of the disclosure;

[0026] FIG. 3 is a schematic diagram of assembling structure for a NFC antenna in an organic light-emitting diode display integrated with the NFC antenna according to embodiment 3 of the disclosure;

[0027] FIG. 4 is a schematic diagram of assembling structure for a NFC antenna in an organic light-emitting diode display integrated with the NFC antenna according to embodiment 7 of the disclosure; and

[0028] FIG. 5 is a schematic diagram of assembling structure for a NFC antenna in an organic light-emitting diode display integrated with the NFC antenna according to embodiment 5 of the disclosure;

[0029] In FIGS. 1a~5:

[0030] 1. protective element; 2. touch sensing layer; 3. first electrode; 4. organic luminous functional layer; 5. second electrode; 6. substrate; 7. sealing material; 8. NFC antenna; 9. output wiring; 10. insulation protection film.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0031] The basic idea of the disclosure is that a NFC antenna is disposed on a display screen of an organic light-emitting diode display, of which a NFC interface is built on an output circuit of the display screen and is connected to a control mainboard of the display screen.

[0032] For better understanding of the technical solutions of the present disclosure by those skilled in the art, the technical solutions according to embodiments of the disclosure are described clearly and completely in the following in conjunction with the appended drawings.

[0033] In the following embodiments, FIG. 1 represents a TP on cell organic light-emitting diode display, in which a touch sensing layer 2 and a second electrode 5 are integrated together; FIG. 2~FIG. 5 represent TP on cell organic light-emitting diode displays, in which a touch sensing layer 2 and a second electrode 5 are separated; the embodiments are described respectively as follows.

Embodiment 1

[0034] FIG. 1a and FIG. 1b represent an assembling structure of a NFC antenna in an organic light-emitting diode display integrated with the NFC antenna according to embodiment 1 of the disclosure. The organic light-emitting diode display integrated with a NFC antenna is a TP in cell organic light-emitting diode display, of which a display screen S includes a protective element 1 (either a combination of a rear cover and desiccant, or the film encapsulation), a first electrode 3 (normally a transparent cathode), an organic luminous functional layer 4 (including an injection layer, luminous material, a hole injection layer, etc.), a second electrode 5 (normally a transparent anode), a touch sensing layer 2 (TP Sensor) and a transparent substrate 6. The touch sensing layer 2 and the second electrode 5 are integrated in an integrated circuit layer. The substrate is normally made of glass; the second electrode 5 is normally an ITO transparent conductive film which leads out an output wiring 9; the first electrode 3 is normally made of Al, Ag, Mg or alloy; the protective element 1 normally includes a rear cover of glass; sealant glue 7 or other sealing material between the protective element 1 and

the substrate **6** normally is UV glue; specifically, connection is that the substrate **6** and the rear cover of the protective element **1** are encapsulated through sealant glue **7**, with the first electrode **3** and the second electrode **5** being disposed in the inner chamber and the organic luminous functional layer **4** being disposed between the two electrodes.

[0035] Specific placement of the NFC antenna **8** is shown in FIG. 1b. The NFC antenna **8** is disposed between the substrate **6** and an integrated circuit layer in which the touch sensing layer and the second electrode are integrated, or the NFC antenna is disposed on a light blocking area at circumference of an inner surface of the substrate (specifically located in the light blocking area at circumference of the touch sensing layer) and covers the insulation protection film **10**. The NFC antenna **8** is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

[0036] Specifically, an ink layer or other light blocking layer is printed at circumference of an outer surface of the substrate **6**; the NFC antenna **8** is in a form of a multi-turn coil made from metal (silver, copper, aluminum) wiring or other low-resistance wiring (such as carbon), and the multi-turn coil is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material. The multi-turn coil is wound in a rectangle or circle shape or other annular shape matching with outer contour of the display product; a side of the multi-turn coil, which is closer to inner part of the organic light-emitting diode display, is covered by a layer of transparent ferrite material to enhance magnetic field induction intensity. Such wiring may be implemented by using existing equipment, and will not incur new investment.

[0037] In addition, an antenna matching circuit (not shown) is provided for the NFC antenna **8**. The antenna matching circuit includes a charge-discharge module and an impedance module connected to the charge-discharge module, where the charge-discharge module includes capacitors connected in series or in parallel, and the impedance module includes resistors connected in series or in parallel. Therefore, power matching of the NFC antenna **8** is implemented through the antenna matching circuit.

Embodiment 2

[0038] FIG. 2 represents an assembling structure of a NFC antenna in an organic light-emitting diode display integrated with the NFC antenna according to embodiment 2 of the disclosure. Different from embodiment 2, the organic light-emitting diode display integrated with a NFC antenna in this embodiment is a TP on cell organic light-emitting diode display, of which a touch sensing layer **2** is separated from an integrated circuit layer integrated with a second electrode **5**. A display screen of the TP on cell organic light-emitting diode display includes a protective element **1**, a first electrode **3**, an organic luminous function layer **4**, an integrated circuit layer integrated with a second electrode **5**, an insulating layer (not shown), a touch sensing layer **2** and a substrate **6** sequentially, where an output wire is led out from the second electrode, the NFC antenna is led to an output circuit of the display screen for the organic light-emitting diode display through conductive material.

[0039] Difference of disposed position for the NFC antenna **8** lies in that the NFC antenna **8** is disposed at circumference of an inner surface of the substrate **6**, and the NFC antenna **8** is led to the output circuit of the display screen for the organic

light-emitting diode display through conductive material; other structures are the same as the those according to embodiment 1 and are not described.

Embodiment 3

[0040] FIG. 3 represents an assembling structure of a NFC antenna in an organic light-emitting diode display integrated with the NFC antenna according to embodiment 3 of the disclosure. The organic light-emitting diode display integrated with a NFC antenna is a TP on cell organic light-emitting diode display, of which a touch sensing layer is separated from an integrated circuit layer integrated with a second electrode. A display screen of the TP on cell organic light-emitting diode display includes a protective element **1**, a touch sensing layer **2**, a first electrode **3**, an organic functional layer **4**, an integrated circuit layer integrated with a second electrode **5**, and a substrate **6** sequentially, where an output wire is led out from the second electrode **5**, and the NFC antenna is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

[0041] The protective element **1** may be in a structure of a combination of a transparent rear cover and desiccant; the touch sensing layer **2** is located between the protective element **1** and the first electrode **3**; the NFC antenna **8** is disposed on the inner surface of the protective element **1** and is located in a light blocking area at circumference of the touch sensing layer **2**, and the NFC antenna **8** is led to an output circuit of the display screen for the organic light-emitting diode display through conductive material. Specifically, an ink layer or other light blocking layer is printed at circumference of the inner surface of the protective element **1**; the NFC antenna **8** is in a form of a multi-turn coil made from metal (silver, copper, aluminum) wiring or other low-resistance wiring (such as carbon), and the multi-turn coil is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

[0042] The NFC antenna according to the embodiment is disposed on the protective element **1** without desiccant and an insulating layer, and other structures are the same as those according to embodiment 1 and embodiment 2 and are not described.

Embodiment 4

[0043] FIG. 4 represents an assembling structure of a NFC antenna in an organic light-emitting diode display integrated with the NFC antenna according to embodiment 4 of the disclosure. The same as the embodiment 3, the organic light-emitting diode display integrated with a NFC antenna is a TP on cell organic light-emitting diode display, of which the touch sensing layer **2** is located between the protective element **1** and the first electrode **3**, is a TP on cell organic light-emitting diode display as the one according to embodiment 3; the difference is that the NFC antenna **8** is disposed at circumference of the outer surface of the protective element **1** and covers an insulation protection film **10**; the NFC antenna **8** is led to an output circuit of the display screen for the organic light-emitting diode display; other structures are the same as those according to embodiment 3 and are not described.

Embodiment 5

[0044] FIG. 5 represents an assembling structure of a NFC antenna in an organic light-emitting diode display inte-

grated with the NFC antenna according to embodiment 5 of the disclosure. The same as the embodiments 3 and 4, the organic light-emitting diode display integrated with a NFC antenna is a TP on cell organic light-emitting diode display, of which the touch sensing layer 2 is located between the protective element 1 and the first electrode 3; the difference is that the NFC antenna 8 is disposed on the touch sensing layer 2 located at inner side of the protective element 1 and is located in a light blocking area at circumference of the touch sensing layer 2, with an insulation protection layer provided to insulate the NFC antenna 8 from the touch sensing layer 2 at desirable insulation places. The NFC antenna 8 is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material; other structures are the same as those according to embodiment 3 or embodiment 4 and are not described.

[0045] By the way, the protective element in the structure of the combination of the rear cover and desiccant may be replaced directly by using film encapsulation, which may protect the organic light-emitting diode display as well; the type of the protective element may be chosen as needed and is not described.

[0046] According to above embodiments, the NFC antenna 8 is directly disposed on the organic light-emitting diode display. The NFC interface is built on an output circuit of the display screen and is connected to a control mainboard (not shown), therefore the NFC interface is fixed after assembly and is not frequently assembled and disassembled, and signal quality deterioration and reception failure due to wearing off and inaccurate alignment of the NFC antenna interface are avoided. In addition, a solution is provided for facilitating reception of NFC signal from a display plane of the display or for application to the case that the NFC signal must be received from the display plane of the display. In addition, for an electrical product equipped with the organic light-emitting diode display, signal is transferred through facade of the display, and the material of a shell is not limited due to the NFC antenna.

[0047] The organic light-emitting diode display integrated with a NFC antenna according to the disclosure, for which functions of a display screen and a NFC antenna are combined, is more competitive in the market.

[0048] Preferred embodiments of the disclosure are set forth above. It should be noted that the preferred embodiments should not be seen as a limitation to the disclosure, and scope of the disclosure should be subjected to the appended claims. Some modifications and improvements may be made by those skilled in the art within the spirit and scope of the disclosure and these modifications and improvements fall in the scope of the disclosure.

1. An organic light-emitting diode display integrated with a near field communication antenna, wherein the organic light-emitting diode display is a touch panel TP on-cell or in-cell organic light-emitting diode display, the near field communication antenna is disposed on a display screen of the organic light-emitting diode display, and a near field communication interface is built on an output circuit of the display screen and is connected to a control mainboard of the display screen.

2. The organic light-emitting diode display integrated with a near field communication antenna according to claim 1, wherein the organic light-emitting diode display is a TP on cell organic light-emitting diode display, the display screen of the TP on cell organic light-emitting diode display

comprises a protective element, a touch sensing layer, a first electrode, an organic luminous functional layer, an integrated circuit layer integrated with a second electrode, and a substrate sequentially, an output wire is led out from the second electrode, and the near field communication antenna is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

3. The organic light-emitting diode display integrated with a near field communication antenna according to claim 2, wherein, the near field communication antenna is disposed between the protective element and the touch sensing layer, with an insulation protection layer provided to insulate the near field communication antenna from the touch sensing layer at desirable insulation places, and the near field communication antenna is located in a light blocking area at circumference of the touch sensing layer.

4. The organic light-emitting diode display integrated with a near field communication antenna according to claim 2, wherein, the near field communication antenna is disposed at circumference of an outer surface of the protective element and covers an insulation protection film.

5. The organic light-emitting diode display integrated with a near field communication antenna according to claim 1, wherein the organic light-emitting diode display is a TP on cell organic light-emitting diode display, the display screen of the TP on cell organic light-emitting diode display comprises a protective element, a first electrode, an organic luminous functional layer, an integrated circuit layer integrated with a second electrode, a touch sensing layer and a substrate sequentially, an output wire is led out from the second electrode, the near field communication antenna is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

6. The organic light-emitting diode display integrated with a near field communication antenna according to claim 5, wherein the near field communication antenna is disposed between the substrate and the touch sensing layer and is located in a light blocking area at circumference of the touch sensing layer, or the near field communication antenna is disposed on an outer surface of the substrate in the light blocking area at circumference of the touch sensing layer and covers an insulating protection layer.

7. The organic light-emitting diode display integrated with a near field communication antenna according to claim 1, wherein the organic light-emitting diode display is a TP in cell organic light-emitting diode display, the display screen of the TP in cell organic light-emitting diode display comprises a protective element, a first electrode, an organic luminous functional layer, an integrated circuit layer in which a touch sensing layer and a second electrode are integrated, and a substrate sequentially, an output wire is led out from the second electrode, and the near field communication antenna is led to the output circuit of the display screen for the organic light-emitting diode display through conductive material.

8. The organic light-emitting diode display integrated with a near field communication antenna according to claim 7, wherein the near field communication antenna is disposed between the substrate and the integrated circuit layer in which the touch sensing layer and the second electrode are integrated, or the near field communication antenna is disposed at circumference of an outer surface of the substrate and covers an insulation protection film.

9. The organic light-emitting diode display integrated with a near field communication antenna according to claim

1, wherein the near field communication antenna is in a form of a multi-turn coil made from conductive material wiring, the multi-turn coil is led to the output circuit of the display screen for the organic light-emitting diode display by conductive material.

10. The organic light-emitting diode display integrated with a near field communication antenna according to claim 9, wherein, the multi-turn coil is wound in an annular shape matching with a product outer contour.

11. The organic light-emitting diode display integrated with a near field communication antenna according to claim 9, wherein a side of the multi-turn coil, which is closer to an inner part of the organic light-emitting diode display, is covered by a layer of transparent ferrite material.

12. The organic light-emitting diode display integrated with a near field communication antenna according to claim 9, wherein the multi-turn coil is wound in a rectangle or circle shape.

13. The organic light-emitting diode display integrated with a near field communication antenna according to claim 9, wherein the near field communication antenna is made from low-resistance wiring comprising silver, copper or aluminum.

14. The organic light-emitting diode display integrated with a near field communication antenna according to claim 10, wherein a side of the multi-turn coil, which is closer to an inner part of the organic light-emitting diode display, is covered by a layer of transparent ferrite material.

15. The organic light-emitting diode display integrated with a near field communication antenna according to claim 10, wherein the multi-turn coil is wound in a rectangle or circle shape.

16. The organic light-emitting diode display integrated with a near field communication antenna according to claim 10, wherein the near field communication antenna is made from low-resistance wiring comprising silver, copper or aluminum.

* * * * *

专利名称(译)	具有集成NFC天线的tp内置/内置单元型有机发光显示设备		
公开(公告)号	US20150041786A1	公开(公告)日	2015-02-12
申请号	US14/384662	申请日	2013-02-06
[标]申请(专利权)人(译)	信利半导体有限公司		
申请(专利权)人(译)	信利半导体有限公司.		
当前申请(专利权)人(译)	信利半导体有限公司.		
[标]发明人	LI JIANHUA CHEN XUEBIN		
发明人	LI, JIANHUA CHEN, XUEBIN		
IPC分类号	H01L27/32 H04B5/00		
CPC分类号	H01L27/3225 H04B5/0081 H01L27/323 H01Q1/22 H01Q1/44 H01Q7/00 G02F1/13306 G02F1/133345 G02F1/13338 G02F1/133512 G02F1/133514 G02F1/1368 G02F1/167 G09G3/344 G09G2370/00 H01L27/124 H01Q1/2258 H01Q1/2266 H01Q1/2283 H01Q1/40 H01Q1/50 H05B45/60 H05K1/181 H05K1/189 H05K2201/10098 H05K2201/10151		
优先权	201220145136.8 2012-04-06 CN 201210232611.X 2012-07-05 CN		
其他公开文献	US9520639		
外部链接	Espacenet USPTO		

摘要(译)

提供了与近场通信天线集成的有机发光二极管显示器。有机发光二极管显示器是TP on-cell或in-cell有机发光二极管显示器，近场通信天线设置在有机发光二极管显示器的显示屏上，并且近场通信接口构建在显示屏的输出电路上，并连接到显示屏的控制主板。

