[108] As an example, when the electronic device 400 is in the folded state (folded state 1310 of FIGS. 13A to 13D), the first part 401 and the second part 402 may approach or come in contact with each other based on the fold position. In order to prevent the damage or disconnection of the flexible printed circuit board 500 in a folding part (e.g., fold position) of the electronic device 400, the first part 510 of the flexible printed circuit board 500 may be disposed in the folding part (e.g., fold position) of the electronic device 400. That is, the first part 510 of the flexible printed circuit board 500 may be disposed to at least overlap the hinge structure 480.

[109] Further, when the electronic device 400 is in the flat state (e.g., flat state 1320 of FIGS. 14A, 14B, and 14C, the first part 401 and the second part 402 may be unfolded and may be spaced apart from each other based on the fold position. In order to prevent the damage or disconnection of the flexible printed circuit board 500 in a part (e.g., fold position) where the flexible printed circuit board 500 is folded and then is unfolded, the first part 510 of the flexible printed circuit board 500 may be disposed in the part (e.g., fold position) where the electronic device 400 is unfolded. That is, the first part 510 of the flexible printed circuit board 500 may be disposed to at least overlap the hinge structure 480.

[110] The flexible printed circuit board 500 (e.g., foldable FRC) may be formed with a thickness of about 50 μm. Here, the first part 510 (e.g., bent part) and the second part 520 (e.g., non-bent part) may be formed to have different thicknesses (refer to FIG. 5). As an example, the first part 510 (e.g., bent part) may be formed with a thickness of about 50 to 60 μm. The first part 510 (e.g., bent part) may be formed with one or more layers having a thickness of about 60 μm or less. As an example, the second part 520 (e.g., non-bent part) may be formed with a thickness of about 70 μm. Since the second part 520 (e.g., non-bent part) is laminated as one or more layers, there are no thickness restrictions.

[111] According to an embodiment, on a first side of the flexible printed circuit board 500 (e.g., foldable FRC), the first connector 501 connected to the transceiver 462 of the first printed circuit board may be formed. On a second side of the flexible printed circuit board 500 (e.g., foldable FRC), the second connector 502 connected to the transceiver 462 of the second printed circuit board may be formed. The first printed circuit board of the first part 401 and the second printed circuit board of the second part 402 may be electrically connected to each other by the flexible printed circuit board 500 (e.g., foldable FRC). Transmission/reception of a control signal

【CLAIMS】

【Claim 1】

An electronic device comprising:

a hinge structure;

a flexible display configured to be folded or unfolded by the hinge structure;

a first part and a second part coupled to the hinge structure, the first part and the second part being configured to approach each other to face each other when being folded by the hinge structure and to be spaced apart from each other when being unfolded by the hinge structure;

a first printed circuit board disposed on the first part;

a second printed circuit board disposed on the second part; and

a flexible printed circuit board configured to electrically connect the first printed circuit board and the second printed circuit board to each other,

wherein the flexible printed circuit board includes:

a first area configured to be bent in response to folding or unfolding of the electronic device; and

a second area positioned around the first area and configured not to be bent in response to the folding or unfolding of the electronic device,

wherein the first area and the second area have different thicknesses,

wherein the first area includes a single conductive signal wiring layer, and the second area includes a plurality of conductive signal wiring layers,

wherein the first area further includes:

a dielectric layer disposed on the single conductive signal wiring layer;

a first flexible copper clad laminate (FCCL) protection layer disposed on the dielectric layer; and

a first air gap formed between the dielectric layer and the first FCCL protection layer, and

wherein the first area further includes:

a second FCCL protection layer disposed below the single conductive signal wiring layer;

a third FCCL protection layer disposed below the second FCCL protection layer; and

a second air gap formed between the second FCCL protection layer and the

third FCCL protection layer.

【Claim 2】

The electronic device of claim 1, wherein the single conductive signal wiring layer comprises main radio frequency (RF) signal wirings and main ground wirings, and

wherein the main RF signal wirings and the main ground wirings are disposed on the same layer.

【Claim 3】

The electronic device of claim 2, wherein the plurality of conductive signal wiring layers comprises:

a first signal wiring layer including a first flexible copper clad laminate (FCCL) conductive layer on which a plurality of first RF signal wirings and a plurality of first ground wirings are formed;

a second signal wiring layer including a second FCCL conductive layer on which a plurality of second RF signal wirings and a plurality of second ground wirings are formed; and

a third signal wiring layer including a third FCCL conductive layer on which a plurality of third RF signal wirings and a plurality of third ground wirings are formed.

【Claim 4】

The electronic device of claim 3, wherein the plurality of first RF signal wirings and the plurality of first ground wirings are disposed on the same layer,

wherein the plurality of second RF signal wirings and the plurality of second ground wirings are disposed on the same layer,

wherein the plurality of third RF signal wirings and the plurality of third ground wirings are disposed on the same layer, and

wherein the plurality of first RF signal wirings, the plurality of second RF signal wirings, and the plurality of third RF signal wirings are disposed on different layers.

【Claim 5】

The electronic device of claim 4, further comprising at least one via electrically connecting the plurality of first ground wirings and the plurality of third ground wirings to the main ground wirings.

【Claim 6】

The electronic device of claim 4, wherein the single conductive signal wiring layer and the second signal wiring layer are disposed on the same plane.

【Claim 7】

The electronic device of claim 3, wherein the second area further includes:

a first adhesive layer configured to adhere the first signal wiring layer and the second signal wiring layer to each other; and

a second adhesive layer configured to adhere the second signal wiring layer and the third signal wiring layer to each other.

【Claim 8】

The electronic device of claim 7, wherein the first signal wiring layer further includes the first FCCL protection layer disposed below the first FCCL conductive layer,

wherein the second signal wiring layer further includes the second FCCL protection layer disposed below the second FCCL conductive layer, and

wherein the third signal wiring layer further includes the third FCCL protection layer disposed on the third FCCL conductive layer.

【Claim 9】

The electronic device of claim 7, wherein the first air gap and the first adhesive layer are positioned at least partially on the same plane.

【Claim 10】

The electronic device of claim 7, wherein the dielectric layer and the first adhesive layer are positioned at least partially on the same plane.

【Claim 11】

The electronic device of claim 7, wherein the second air gap and the second adhesive layer are positioned at least partially on the same plane.

【Claim 12】

The electronic device of claim 1,

wherein the first area is formed of one or more layers having, in combination, a first thickness, and

wherein the second area has a second thickness greater than the first thickness.

【Claim 13】

The electronic device of claim 12, wherein the first area at least partially overlaps the hinge structure.