【CLAIMS】

1. An electronic device comprising:

a first antenna;

a second antenna;

a first power supply circuit;

a second power supply circuit;

a first front-end module (FEM) including:

a first power amplifier (PA) electrically connected to the first antenna, and

a switch; and

a second FEM including a second PA electrically connected to the second antenna;

wherein the switch is controlled to:

connect the first power supply circuit to the first PA and the second PA so as to provide a first voltage through the first FEM from the first power supply circuit to the second PA included in the second FEM while the first voltage is provided from the first power supply circuit to the first PA included in the first FEM; and

connect the second power supply circuit to the first PA and the second PA so as to provide a second voltage through the first FEM while the second voltage is provided from the second power supply circuit to the first PA included in the first FEM.

2. The electronic device of claim 1, wherein the first FEM further includes:

a first terminal configured to electrically connected to the first power supply circuit and the switch;

a second terminal configured to electrically connected to the second power supply circuit and the switch; and

a third terminal electrically connected to the second PA and the switch.

3. The electronic device of claim 2, wherein the switch is configured to provide a first electrical connection between the first terminal and the first PA or a second electrical connection between the second terminal and the first PA.

4. The electronic device of claim 2, herein the third terminal is connected to a node between the first PA and the switch.

5. The electronic device of claim 2, wherein the first FEM further includes another switch distinct from the switch, the other switch configured to refrain from electrically connecting the first PA and the switch while electrically connecting the second PA and the switch.

6. The electronic device of claim 1, further comprising:

a third FEM connected to the first power supply circuit and including a third PA that is electrically connected to the first power supply circuit;

a fourth FEM connected to the second power supply circuit and including a fourth PA that is electrically connected to the second power supply circuit.

7. The electronic device of claim 6, further comprising at least one processor,

wherein the at least one processor is configured to support dual connectivity or carrier aggregation, by:

transmitting a signal from the first PA or the second PA and a signal from the third PA, in a connection state in which the second power supply circuit is connected to the first PA and the second PA through the switch, or

transmitting a signal from the first PA or the second PA and a signal from the fourth PA, in a connection state in which the first power supply circuit is connected to the first PA and the second PA through the switch.

8. The electronic device of claim 6, further comprising at least one processor,

wherein the at least one processor is configured to:

receive a control message from a first external electronic device while a signal is transmitted to the first external electronic device using the third PA electrically connected to the first power supply circuit;

based on the control message, identify a PA for a signal to be transmitted, among the first PA, the second PA, and the fourth PA, while the signal is transmitted to the first external electronic device using the third PA, and

connect the second power supply circuit to the first PA and the second PA through the switch, on condition that the PA is the first PA or the second PA.

9. The electronic device of claim 8, wherein the signal transmitted using the third PA is transmitted to the first external electronic device according to a first communication scheme; and

wherein the signal transmitted using the PA is transmitted to a second external electronic device, according to a second communication scheme.

10. The electronic device of claim 8, wherein the at least one processor is configured to refrain from electrically connecting the second power supply circuit to the first PA and the second PA through the switch based on the identifying that the PA for the signal to be transmitted to the second electronic device according to the second communication scheme is the fourth PA.

11. The electronic device of claim 1, wherein the at least one processor is configured to:

receive a control message from a first external electronic device while a signal is transmitted to the first external electronic device using the fourth PA,

based on the control message, identify a PA for a signal to be transmitted, among the first PA, the second PA, and the third PA, while the signal is transmitted using the fourth PA, and

electrically connect the first power supply circuit to the first PA and the second PA through the switch, on condition that the PA is the first PA or the second PA.

12. The electronic device of claim 11, wherein the signal transmitted using the fourth PA is transmitted to the first external electronic device according to a first communication scheme; and

wherein the signal transmitted using the PA is transmitted to a second external electronic device according to a second communication scheme.

13. The electronic device of claim 1, further comprising:

a third antenna; and

a third FEM including a third PA connected to the third antenna;

wherein the switch is controlled to connect both the first power supply circuit and the second power supply circuit to the third PA so as to transmit a signal using the third PA operating based on a combination of the first voltage provided from the first power supply circuit and the second voltage provided from the second power supply circuit.

14. A front-end module (FEM) comprising:

a substrate;

a power amplifier (PA), disposed on the substrate, electrically connectable to an antenna;

a first terminal configured to connect to a first power supply circuit outside the FEM;

a second terminal configured to connect to a second power supply circuit outside FEM;

a third terminal configured to connect to another PA outside the FEM; and

a switch, disposed on the substrate, configured to provide a first connection between the first terminal and the PA in the FEM or a second connection between the second terminal and the PA in the FEM;

wherein the third terminal is connected to a node between the switch and the PA such that electrical power from the first power supply circuit is provided to the other PA, while the electrical power from the first power supply circuit is provided to the PA in the FEM through the first connection formed using the switch, and electrical power from the second power supply circuit is provided to the other PA, while the electrical power from the second power supply circuit is provided to the PA in the FEM through the second connection formed using the switch.

15. The FEM of claim 14, wherein the switch is further configured to connect both the first terminal and the second terminal to the third terminal.

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