

## Claims

[Claim 1]

A portable communication device comprising:  
a processor positioned in a first printed circuit board;  
a communication circuit; and  
an antenna module comprising:  
a second printed circuit board;  
a first antenna and a second antenna positioned in the second printed circuit board;  
a first transmission-reception circuit positioned in the second printed circuit board, the first transmission-reception circuit comprising a power amplifier for amplifying a signal to be transmitted through the first antenna, and a first low noise amplifier for amplifying a signal received through the first antenna, the power amplifier forming a portion of a transmission path electrically connected with the communication circuit and the first antenna, the first low noise amplifier forming a portion of a first reception path electrically connected with the communication circuit and the first antenna, wherein the transmission path or the first reception path in the first transmission-reception circuit is selectively provided by the communication circuit; and  
a first reception circuit positioned in the second printed circuit board, wherein the first reception circuit does not comprise a power amplifier for amplifying a signal to be transmitted through the second antenna, and comprises a second low noise amplifier for amplifying a signal received through the second antenna, the second low noise amplifier forming a portion of a second reception path electrically connected with the communication circuit and the second antenna.

[Claim 2]

The portable communication device of claim 1, further comprising:  
a second transmission-reception circuit positioned in the second printed circuit board;  
a second reception circuit positioned in the second printed circuit board;  
a first coupler electrically connected with the first transmission-reception circuit and the second transmission-reception circuit; and  
a second coupler electrically connected with the first reception circuit and the second reception circuit.

[Claim 3]

The portable communication device of claim 2, further comprising:

- a first front end chip in which the first transmission-reception circuit, the second transmission-reception circuit, and the first coupler are positioned; and
- a second front end chip in which the first reception circuit, the second reception circuit, and the second coupler are positioned.
- [Claim 4] The portable communication device of claim 2, further comprising:  
a front end chip in which the first transmission-reception circuit, the second transmission-reception circuit, and the first coupler are positioned; and  
a radio frequency integrated circuit (RFIC) in which the first reception circuit, the second reception circuit, and the second coupler are positioned.
- [Claim 5] The portable communication device of claim 2, further comprising:  
a first front end chip in which the first transmission-reception circuit and the second transmission-reception circuit are positioned;  
a second front end chip in which the first reception circuit and the second reception circuit are positioned; and  
an RFIC in which the first coupler and the second coupler are positioned.
- [Claim 6] The portable communication device of claim 2, further comprising a radio frequency integrated circuit (RFIC) in which the first transmission-reception circuit, the second transmission-reception circuit, the first coupler, the first reception circuit, the second reception circuit, and the second coupler are positioned.
- [Claim 7] The portable communication device of claim 2, further comprising a third antenna and a fourth antenna which are positioned in the second printed circuit board,  
wherein the third antenna is electrically connected with the second transmission-reception circuit,  
wherein the fourth antenna is electrically connected with the second reception circuit.
- [Claim 8] The portable communication device of claim 7, wherein the first antenna and the third antenna are configured to operate as a first antenna array with respect to a wireless signal received by the communication circuit, and  
wherein the second antenna and the fourth antenna are configured to operate as a second antenna array with respect to the wireless signal.
- [Claim 9] The portable communication device of claim 8, wherein the processor

forms at least a portion of a communication processor, and wherein the communication processor is configured to: form a first beam by using the first transmission-reception circuit, the second transmission-reception circuit, and the first antenna array; and form a second beam by using the first reception circuit, the second reception circuit, and the second antenna array.

[Claim 10] The portable communication device of claim 9, wherein the communication processor is further configured to: perform an operation of forming the first beam such that the first beam faces a first surface of the portable communication device; and perform an operation of forming the second beam such that the second beam faces a second surface different from the first surface.

[Claim 11] The portable communication device of claim 1, wherein the first antenna is positioned to face a first surface of the portable communication device, wherein the second antenna is positioned to face a second surface different from the first surface, wherein the first transmission-reception circuit is positioned to face a third surface which is opposite to the first surface, and wherein the first reception circuit is positioned to face a fourth surface which is opposite to the second surface.

[Claim 12] The portable communication device of claim 1, wherein the second printed circuit board comprises a first rigid circuit board portion, a second rigid circuit board portion, and a flexible circuit board portion connected between the first rigid circuit board portion and the second rigid circuit board portion, wherein the first antenna and the first transmission-reception circuit are positioned in the first rigid circuit board portion, and wherein the second antenna and the first reception circuit are positioned in the second rigid circuit board portion.

[Claim 13] The portable communication device of claim 1, wherein the first antenna and the second antenna are configured to operate as an antenna array with respect to a wireless signal received by the communication circuit.

[Claim 14] The portable communication device of claim 1, wherein the first transmission-reception circuit comprises a first semiconductor formed with a first material, and wherein the first reception circuit comprises a second semiconductor

[Claim 15]

formed with a second material different from the first material.

An antenna module comprising:

a printed circuit board;

a first antenna and a second antenna positioned in the printed circuit board;

a transmission-reception circuit positioned in the printed circuit board, the transmission-reception circuit comprising a power amplifier for amplifying a signal to be transmitted through the first antenna, and a first low noise amplifier for amplifying a signal received through the first antenna, the power amplifier forming a portion of a transmission path electrically connected with a communication circuit and the first antenna, the first low noise amplifier forming a portion of a first reception path electrically connected with the communication circuit and the first antenna, wherein the transmission path or the first reception path in the transmission-reception circuit is selectively provided by the communication circuit; and

a reception circuit positioned in the printed circuit board, wherein the reception circuit does not comprise a power amplifier for amplifying a signal to be transmitted through the second antenna, and comprises a second low noise amplifier for amplifying a signal received through the second antenna, the second low noise amplifier forming a portion of a second reception path electrically connected with the communication circuit and the second antenna.