CLAIMS

1. A wireless communication device, comprising:

a sensing antenna for sensing communication by a primary user;

a first transmission antenna;

a second transmission antenna;

a first transmitting unit that generates a transmission signal to be transmitted from the first transmission antenna;

a second transmitting unit that generates a transmission signal to be transmitted from the second transmission antenna and that cancels, in the sensing antenna, a transmission signal from the first transmission antenna;

a digital signal processing unit that suppresses the transmission signal from the first transmission antenna, from a received signal of the sensing antenna; and

a sensing unit that detects communication by a primary user on the basis of the received signal of the sensing antenna that has been processed by the digital signal processing unit~~.~~,

wherein the digital signal processing unit suppresses the transmission signal from the first transmission antenna by minimum mean square error estimation in which a recursive least squares algorithm is used.

2. The wireless communication device according to claim 1,

wherein transmission implemented in use of the first transmission antenna and sensing implemented in use of the sensing antenna are performed simultaneously.

3. The wireless communication device according to claim 1 or 2,

wherein a distance between the first transmission antenna and the sensing antenna is greater than a distance between the second transmission antenna and the sensing antenna.

4. The wireless communication device according to any of claims 1 to 3,

wherein the first transmission antenna and the sensing antenna are disposed according to a positional relationship in which communication between these two antennas is non-line-of-sight communication.

~~5. The wireless communication device according to any of claims 1 to 4,~~

~~wherein the digital signal processing unit suppresses the transmission signal from the first transmission antenna by minimum mean square error estimation in which a recursive least squares algorithm is used.~~

~~6~~5. A sensing method in a wireless communication device for detecting communication by a primary user while performing wireless communication as a secondary user,

the method comprising:

a step of receiving a wireless signal using a sensing

antenna;

a step of transmitting a transmission signal from a first transmission antenna;

a step of transmitting, from a second transmission antenna, a signal that cancels, in the sensing antenna, the transmission signal from the first transmission antenna;

a step of suppressing the transmission signal from the first transmission antenna, from a received signal of the sensing antenna; and

a step of detecting communication by a primary user on the basis of the received signal, from which the transmission signal from the first transmission antenna has been suppressed~~.~~,

wherein in the step of suppressing the transmission signal from the first transmission antenna, from a received signal of the sensing antenna, the transmission signal from the first transmission antenna is suppressed by minimum mean square error estimation in which a recursive least squares algorithm is used.

~~7~~6. The sensing method according to claim ~~6~~5,

wherein transmission implemented in use of the first transmission antenna and sensing implemented in use of the sensing antenna are performed simultaneously.

~~8. The sensing method according to claim 6 or 7,~~

~~wherein in the step of suppressing the transmission~~

~~signal from the first transmission antenna, from a received signal of the sensing antenna, the transmission signal from the first transmission antenna is suppressed by minimum mean square error estimation in which a recursive least squares algorithm is used.~~