A method for receiving a signal from a radio unit in a base station having at least one reception antenna is disclosed. The method includes receiving a reception signal via the reception antenna, and generating an output signal using the reception signal and a reception beam weight for a previous time; calculating a cost function using a desired reception signal transmitted from the radio unit among the reception signal and the generated output signal; calculating a trace vector using the calculated cost function and the reception signal; updating the reception beam weight using the trace vector for a next time; and generating a reception beam by applying the updated reception beam weight.