

Exhibit 3



(12) **United States Patent**
Nakao et al.

(10) **Patent No.:** **US 8,199,792 B2**
(45) **Date of Patent:** **Jun. 12, 2012**

(54) **RADIO COMMUNICATION APPARATUS AND RESPONSE SIGNAL SPREADING METHOD**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **13/280,190**

(22) Filed: **Oct. 24, 2011**

(65) **Prior Publication Data**
 US 2012/0039258 A1 Feb. 16, 2012

Related U.S. Application Data

(63) Continuation of application No. 13/165,538, filed on Jun. 21, 2011, which is a continuation of application No. 12/593,904, filed as application No. PCT/JP2008/001526 on Jun. 13, 2008, now Pat. No. 8,009,721.

(30) **Foreign Application Priority Data**

Jun. 15, 2007 (JP) 2007-159580
 Jun. 19, 2007 (JP) 2007-161966

(51) **Int. Cl.**
H04B 1/00 (2006.01)
(52) **U.S. Cl.** **375/146**
(58) **Field of Classification Search** **375/130,**
375/146, 260, 295; 370/208-210
 See application file for complete search history.

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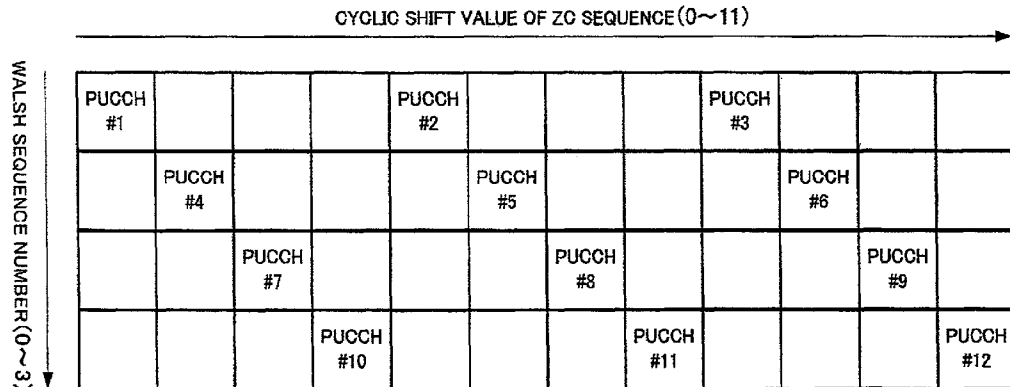
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(57) **ABSTRACT**

A wireless communication apparatus capable of minimizing the degradation in separation characteristic of a code multiplexed response signal. In this apparatus, a control part (209) controls both a AC sequence to be used in a primary spreading in a spreading part (214) and a Walsh sequence to be used in a secondary spreading in a spreading part (217) so as to allow a very small circular shift interval of the ZC sequence to absorb the interference components remaining in the response signal; the spreading part (214) uses the ZC sequence set by the control part (209) to primary spread the response signal; and the spreading part (217) uses the Walsh sequence set by the control part (209) to secondary spread the response signal to which PC has been added.

24 Claims, 15 Drawing Sheets



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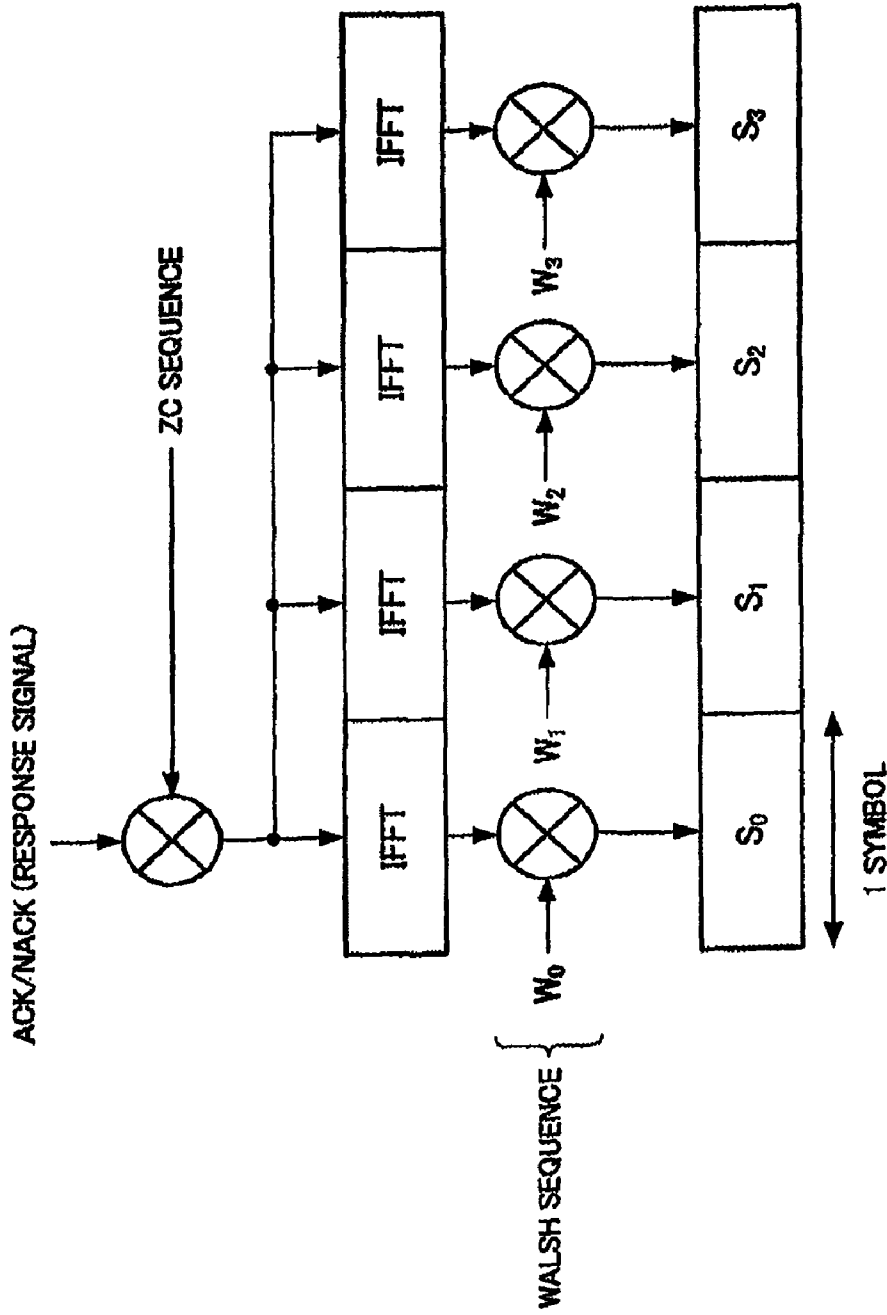


FIG.1 (Prior Art)

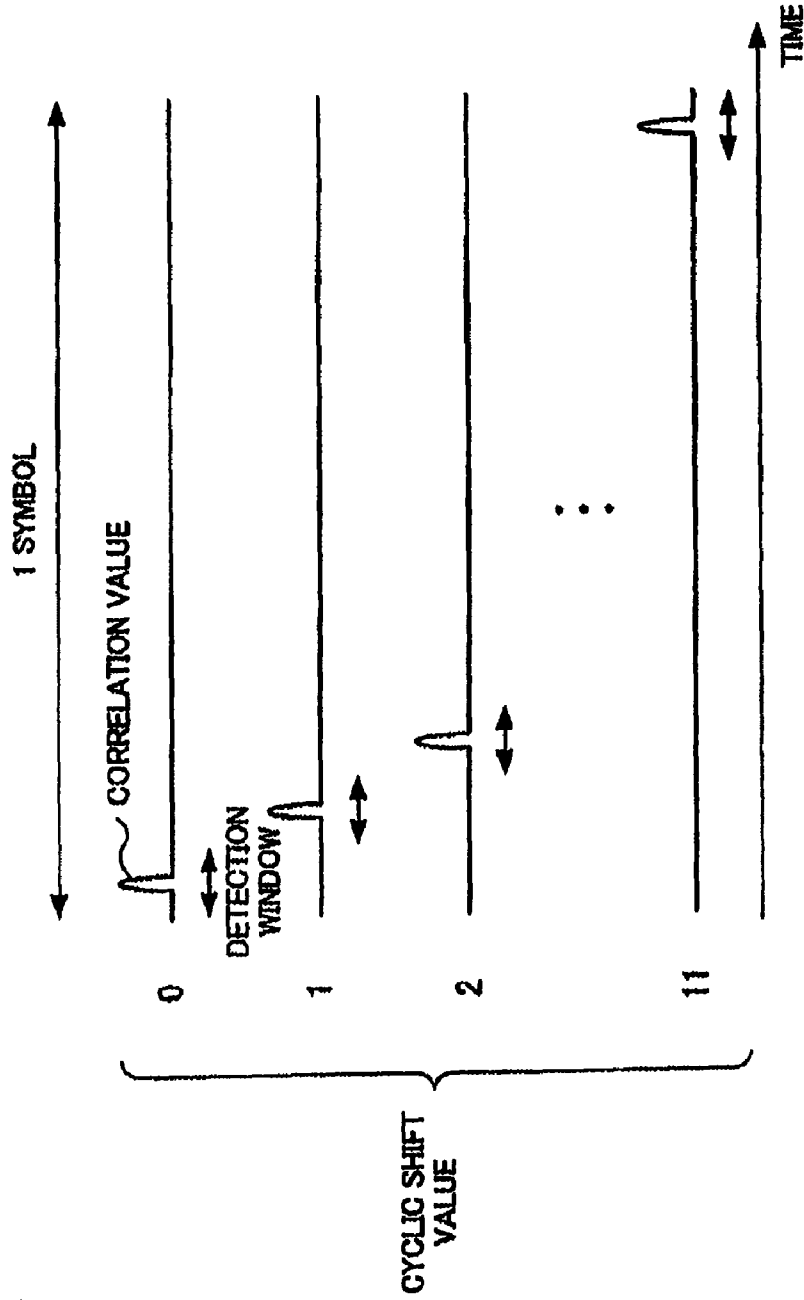


FIG.2 (Prior Art)

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