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Rao et al.

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(54) **WIRELESS DEVICES WITH TRANSMISSION CONTROL AND MULTIPLE PATHS OF COMMUNICATION**

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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.: **14/139,817**

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Related U.S. Application Data

(63) Continuation of application No. 12/912,607, filed on Oct. 26, 2010, now Pat. No. 8,824,434, which is a continuation of application No. 10/940,428, filed on Sep. 13, 2004, now Pat. No. 7,848,300, which is a continuation of application No. 09/617,608, filed on Jul. 17, 2000, now Pat. No. 7,286,502, which is a continuation-in-part of application No. 09/281,739, filed on Jun. 4, 1999, now Pat. No. 6,169,789.

(51) **Int. Cl.**
H04W 4/00 (2009.01)

(52) **U.S. Cl.**
USPC **370/338**; 370/352

(58) **Field of Classification Search**
CPC G06F 3/023
See application file for complete search history.

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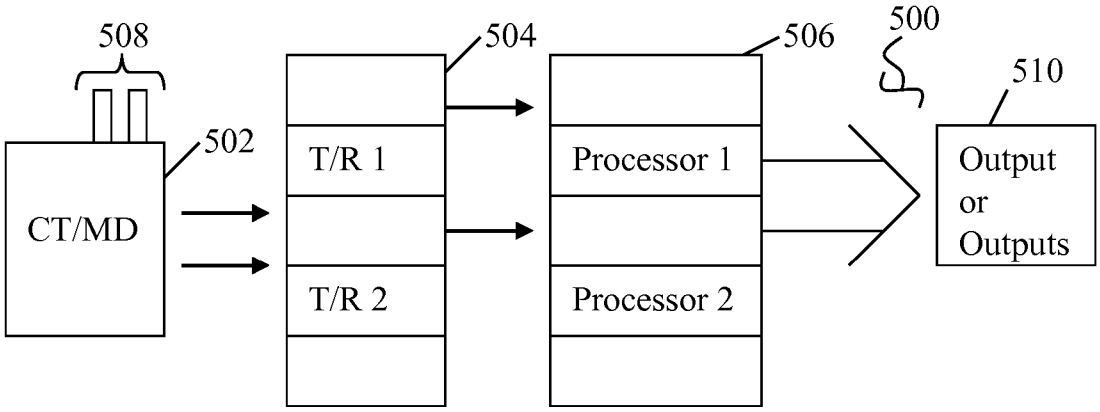
Primary Examiner — Phirin Sam

(57) **ABSTRACT**

A method and apparatus in which multiple Internet Protocol (IP) based wireless data transmissions are simultaneously provided between a wireless device and a server, including providing multiple antennas, multiple T/R units, multiple processors and multiple I/O ports on the wireless device. The method includes receiving multiple IP data packets on the I/O ports at substantially the same time, and sending multiple data packets from the wireless device to the server, whereby the transmission rate between the wireless device and the server is increased.

30 Claims, 5 Drawing Sheets



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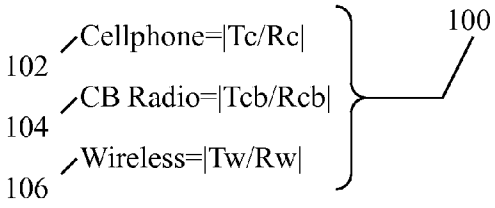

FIG. 1A
-Prior Art-

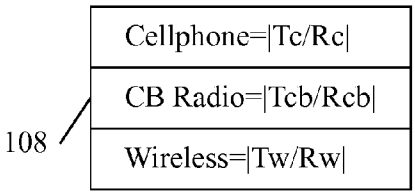

FIG. 1B

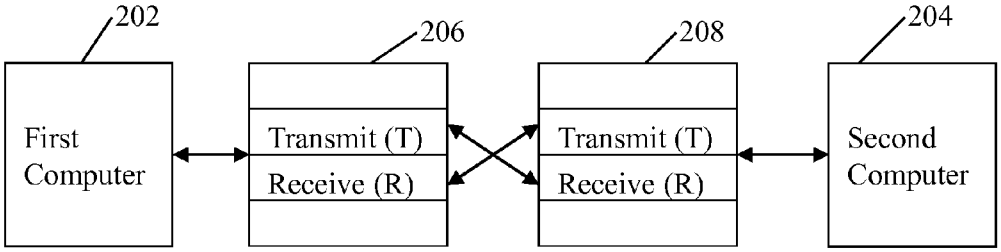

FIG. 2

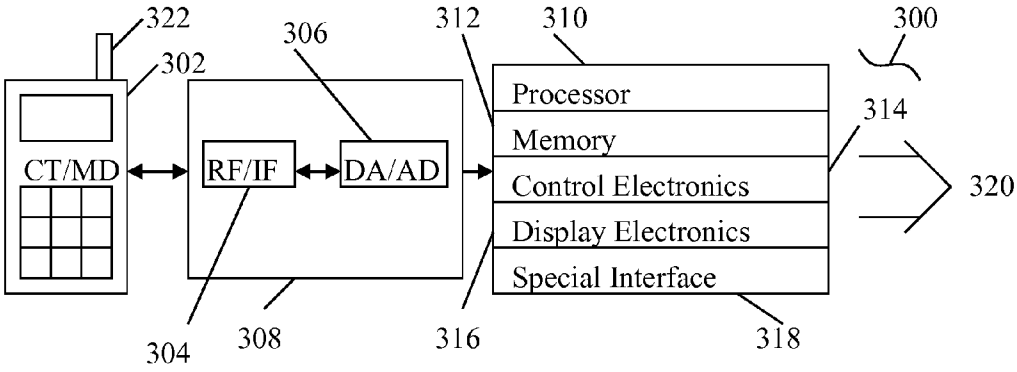

FIG. 3
-Prior Art-

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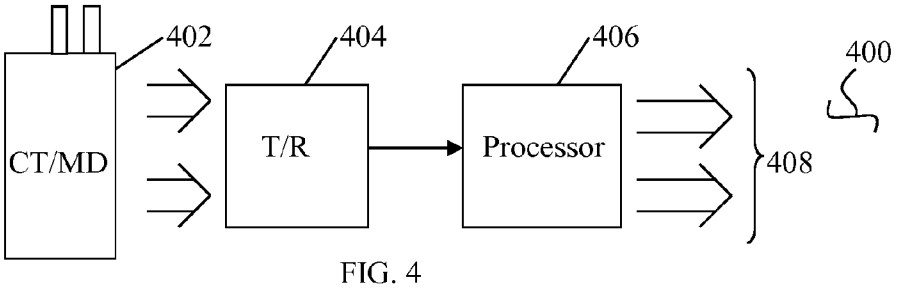

FIG. 4

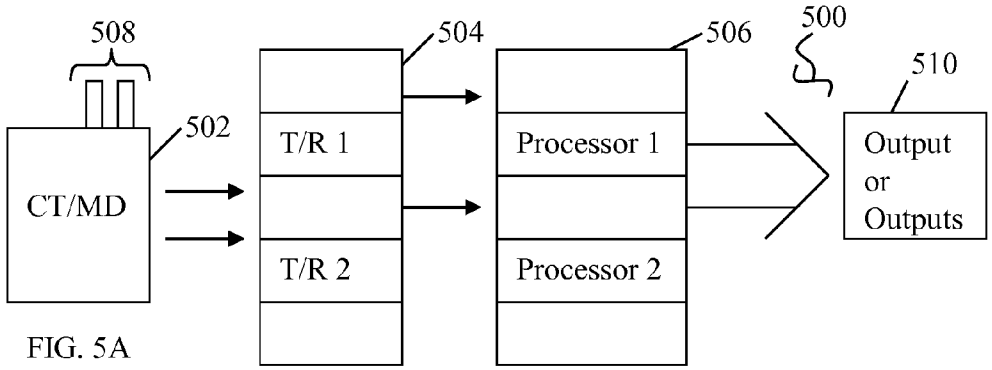

FIG. 5A

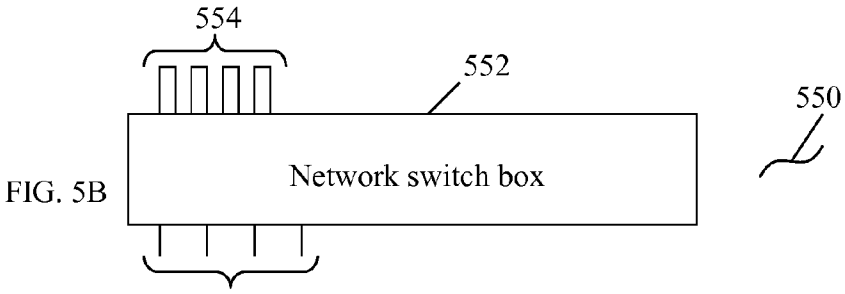

FIG. 5B

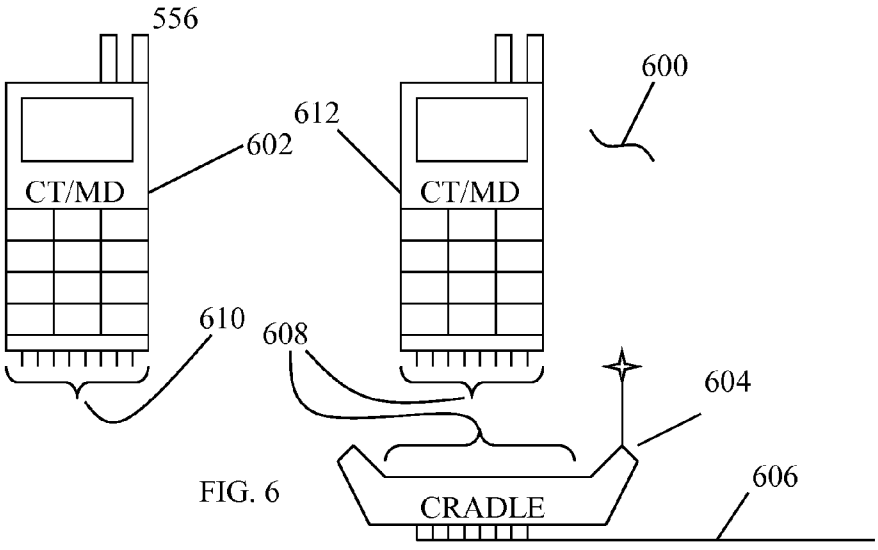

FIG. 6

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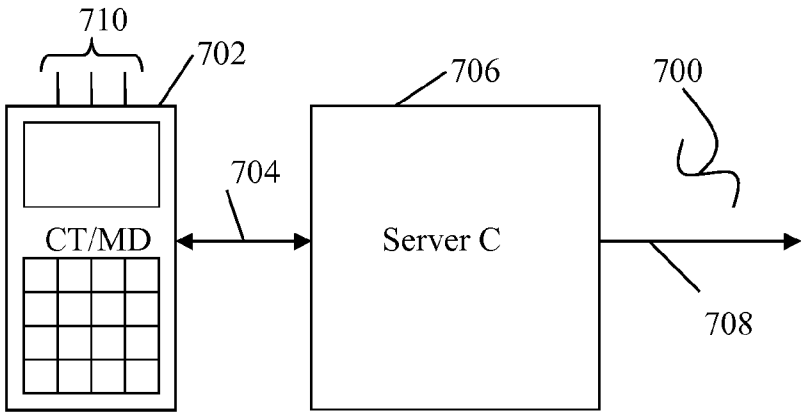

FIG. 7

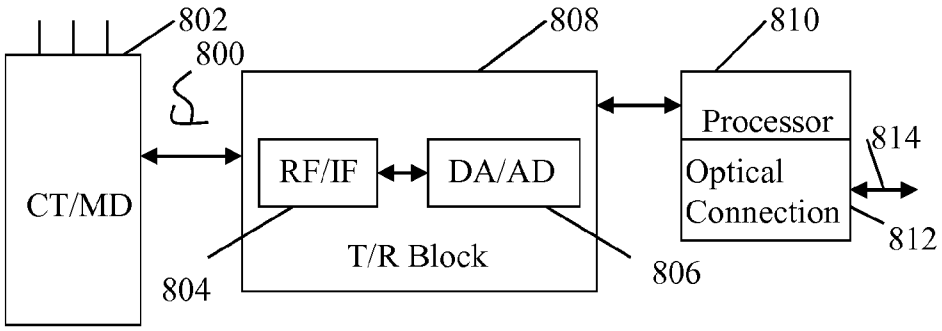

FIG 8

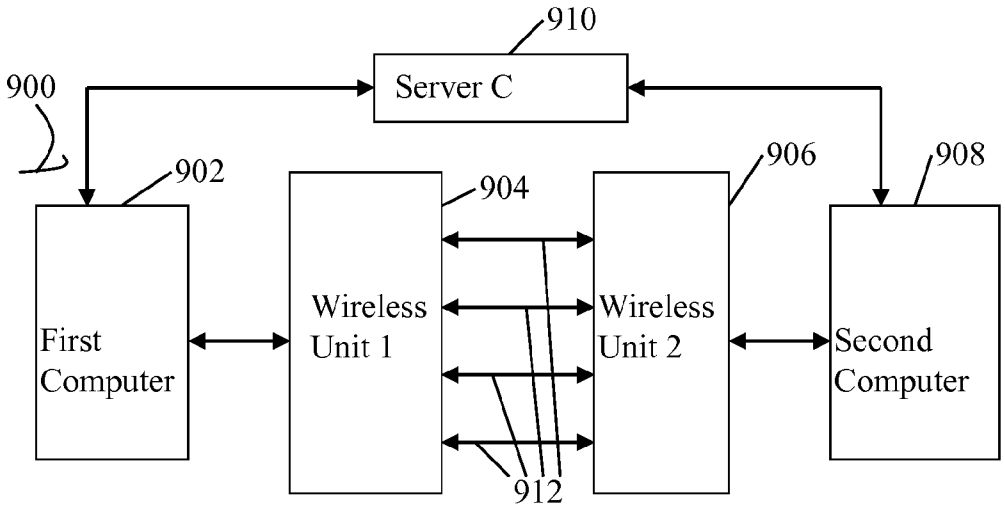

FIG. 9

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