

**Apple et al v. INVT SPE LLC**  
**U.S. Patent No. 7,764,711**

**IPR2018-01476**  
**Oral Hearing, January 14, 2020**

## Key Disputes

1. **Claim Construction.** The challenged claims require simultaneous use of transmit diversity (TD) and spatial multiplexing (MIMO)
2. **Substantive Failure.** The asserted references fail to teach “simultaneous” TD and MIMO, where TD is used for a “specific” [higher priority] data item
3. **Motivation to combine.** Failed to meet burden to show why POSITA would expect success, particularly where Huang teaches away
4. **Secondary Considerations** At least some weight

# U.S. Patent No. 7,764,711

**(12) United States Patent**  
**Sudo**

(10) Patent No.: **US 7,764,711 B2**  
 (45) Date of Patent: **Jul. 27, 2004**

54) **CDMA TRANSMISSION APPARATUS AND CDMA TRANSMISSION METHOD** 6,603,796 B1 8/2003 Kondo  
 6,662,024 B2\* 12/2003 Walton et al. 45  
 6,751,187 B2\* 6/2004 Walton et al. 3  
 6,771,706 B2\* 8/2004 Ling et al. 3  
 6,778,612 B1 8/2004 Lozano et al. 3

75) Inventor: **Hiroaki Sudo, Yokohama (JP)**

73) Assignee: **Panasonic Corporation, Osaka (JP)**

\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 48 days.

(21) Appl. No.: **11/767,124**

(22) Filed: **Jun. 22, 2007**

(65) **Prior Publication Data**  
 US 2007/0253506 A1 Nov. 1, 2007  
 PCT International Search Report dated Aug. 17, 2004.

**Related U.S. Application Data**  
 (63) Continuation of application No. 10/522,980, filed as application No. PCT/JP2004/006154 on Apr. 28, 2004, now Pat. No. 7,251,469.

(30) **Foreign Application Priority Data**  
 May 9, 2003 (JP) 2003-132133

(51) **Int. Cl.**  
**H04L 1/00** (2006.01)

(52) **U.S. Cl.** 370/480; 370/342

(58) **Field of Classification Search** 370/342; 370/345; 441, 334, 336, 337, 343, 267, 347; 370/445; 265, 480, 208; 455/562.1, 575.7, 455/552.1, 553.1, 101-103, 132, 277.2, 561.2, 455/452.1, 452.2, 342; 375/299, 349, 347, 375/267, 265, 260

See application file for complete search history.

(56) **References Cited**  
 U.S. PATENT DOCUMENTS  
 5,504,775 A 4/1996 Choudy et al.

**6 Claims, 5 Drawing Sheets**

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## The '711 Patent

1. A transmitting apparatus employing a MIMO (multi-input/multi-output) scheme of transmitting a plurality of data items for a same receiving apparatus using a plurality of antennas in parallel, the transmitting apparatus comprising:  
a mapping section that maps the plurality of data items to at least one of the plurality of antennas; and  
a transmitting section that transmits the plurality of data items using the at least one of the plurality of antennas to the receiving apparatus,  
wherein the mapping section generates a replica data item by replicating a specific data item of the plurality of data items, and maps the plurality of data items to the at least one of the plurality of antennas such that the specific data item and the replica data item are transmitted from different antennas at a same time.

6. A transmitting method employing a MIMO (multi-input/multi-output) scheme of transmitting a plurality of data items for a same receiving apparatus using a plurality of antennas in parallel, the transmitting method comprising:  
a mapping step of mapping the plurality of data items to at least one of the plurality of antennas; and  
a transmitting step of transmitting the plurality of data items using the at least one of the plurality of antennas to the receiving apparatus,  
wherein, in the mapping step, a replica data item is generated by replicating a specific data item of the plurality of data items, and the plurality of data items are mapped to the at least one of the plurality of antennas such that the specific data item and the replica data item are transmitted from different antennas at a same time.

## The '711 Patent – Problem To Be Solved

### BACKGROUND ART

An MIMO (Multi-Input/Multi-Output) communication is attracting attention as a technology for realizing communications of large-volume data such as images in recent years. In the MIMO communication, different items of transmission data (substreams) are transmitted from a plurality of antennas on a transmitting side and the plurality of items of transmission data mixed along a propagation path is separated into the original items of transmission data on a receiving side using a propagation path estimated value (e.g. see FIG. 4 in the Unexamined Japanese Patent Publication No. 2002-44051).

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