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(12) **United States Patent**  
**Uchida**

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(54) **MOBILE COMMUNICATION SYSTEM**

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(22) Filed: **Jan. 5, 2001**

**Related U.S. Application Data**

(63) Continuation of application No. PCT/JP99/03239, filed on Jun. 17, 1999.

(51) **Int. Cl.**<sup>7</sup> ..... **H04B 7/185; H04B 7/01; H04Q 7/20**

(52) **U.S. Cl.** ..... **455/13.1; 455/502; 455/67.6; 455/426; 455/552; 455/448; 455/440; 455/12.1**

(58) **Field of Search** ..... 455/12.1, 13.1, 455/13.2, 13.4, 11.1, 427, 428, 430, 15, 60.502, 552, 553, 426, 432, 435, 436, 448, 440, 444, 517; 370/519; 375/267, 354

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,239,671 A \* 8/1993 Linquist et al. .... 455/13.1  
5,950,127 A \* 9/1999 Nitta et al. .... 455/426  
6,181,952 B1 \* 1/2001 Murata ..... 455/552  
6,256,497 B1 \* 7/2001 Chambers ..... 455/432 X

**FOREIGN PATENT DOCUMENTS**

JP 58-131842 8/1983

JP 59-6642 1/1984  
JP 5-130001 5/1993  
JP 6-338849 12/1994  
JP 7-75344 8/1995

**OTHER PUBLICATIONS**

Radiocommunication Study Groups, Doc. 4-9S/TEMP/30(Rev.1)-E, Inter. Telecommunications Union, Jan. 13, 1997, pp. 1-25.

Hase, Yoshihiro, et al., "A Novel Broadband Access Network Using Stratospheric Wireless Communication Platforms", Technical Report of IEICE, SST97-93, Sep. 1997, pp. 75-80, Tokyo, Japan.

\* cited by examiner

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(57) **ABSTRACT**

In cases where a radio communication is performed between a ground radio base station and a subscriber station, when a delay time J passes after the transmission of a radio wave from the ground radio base station to a stratospheric platform base station, another radio wave relating to the same information as that indicated by the radio wave is transmitted from the ground radio base station to the subscriber station. Therefore, in the subscriber station, a phase of the radio wave directly transmitted from the ground radio base station is synchronized with a phase of the radio wave transmitted from the ground radio base station through the stratospheric platform base station. Accordingly, the subscriber station can change over from one radio wave, of which the strength is weakened, to another radio wave.

**15 Claims, 10 Drawing Sheets**

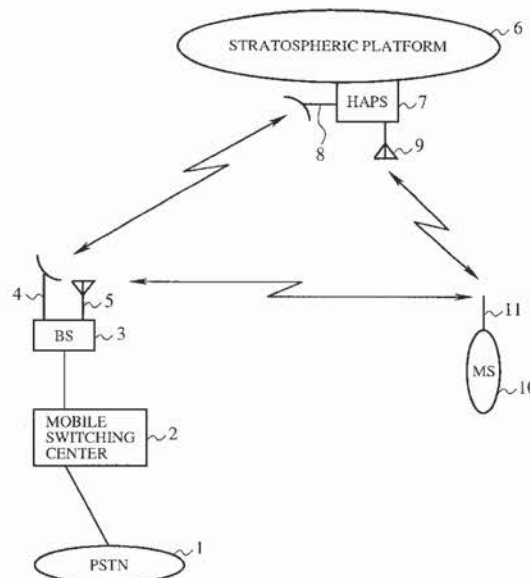


FIG. 1

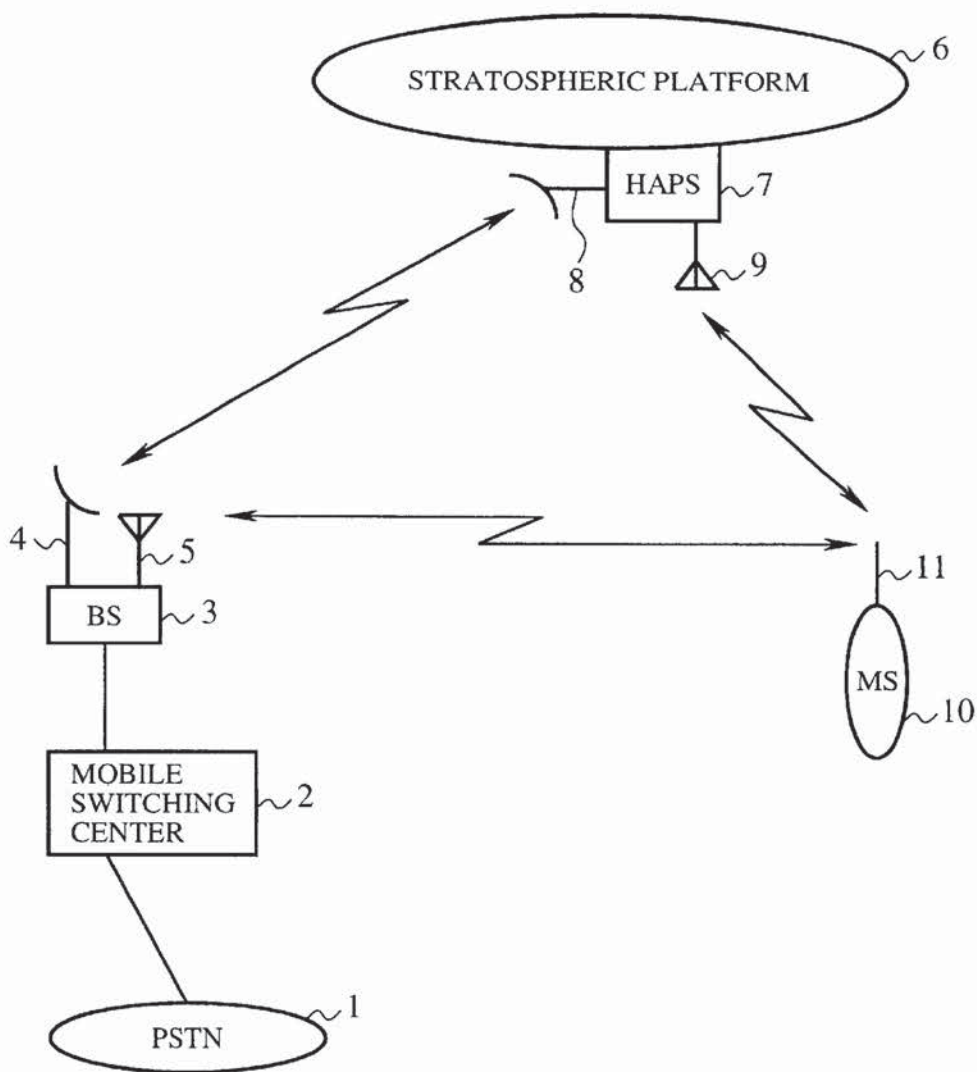
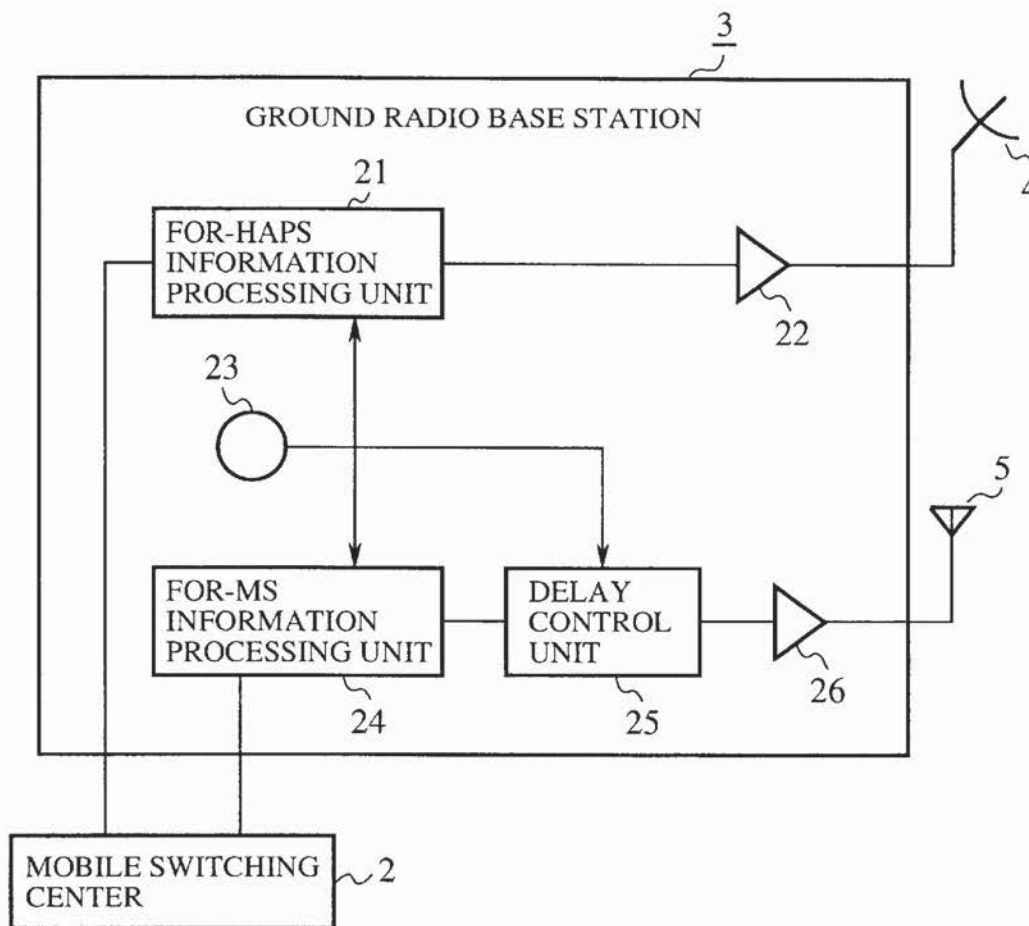


FIG.2



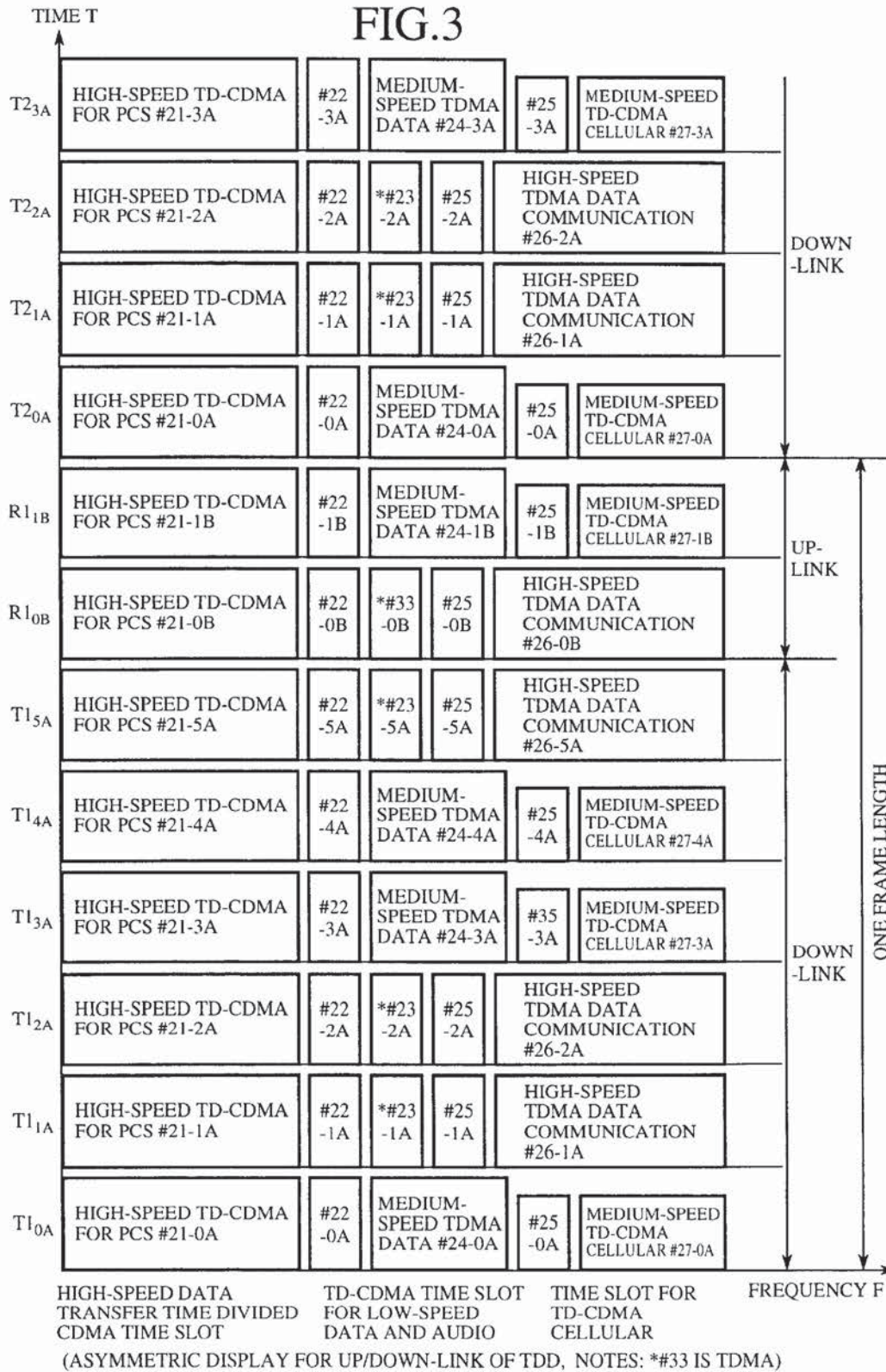
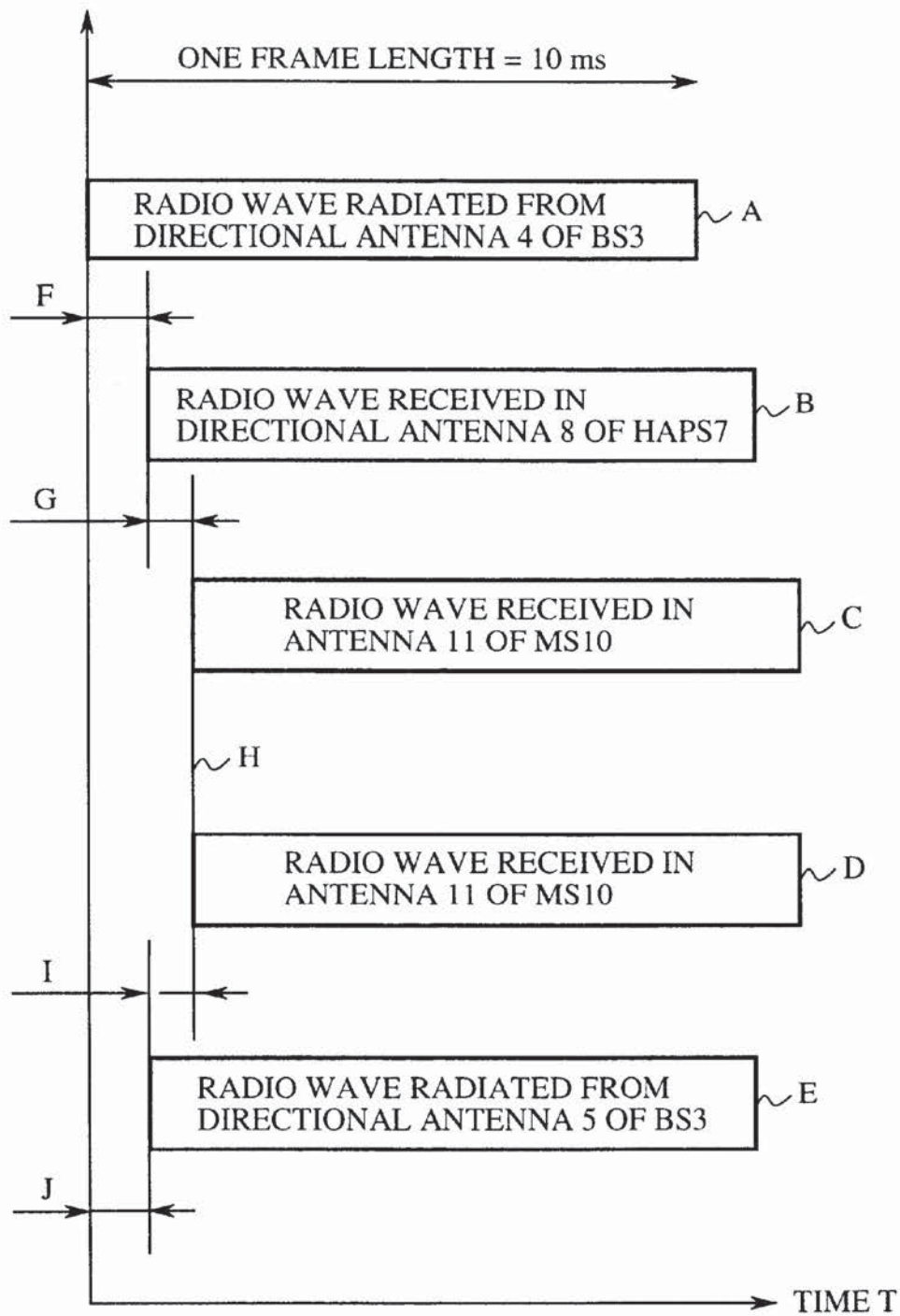


FIG.4



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