

9612147-0



PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

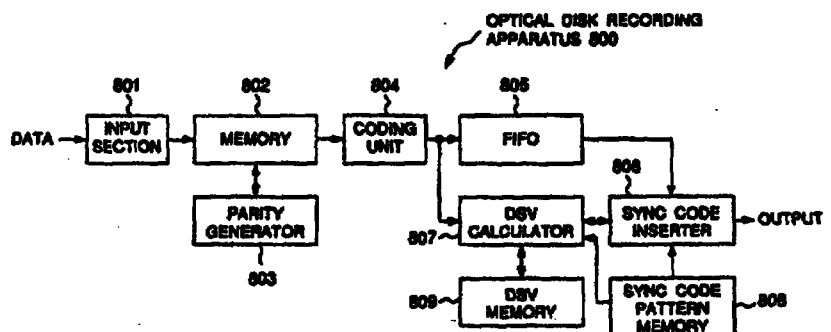
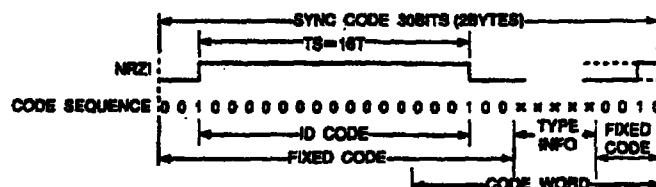
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

|                                                                                                                                                                                                                                                                                                                                                                                            |  |                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (51) International Patent Classification 6:<br><b>G11B 20/14, H03M 5/14, G11B 27/30</b>                                                                                                                                                                                                                                                                                                    |  | (11) International Publication Number:<br><b>WO 96/31881</b>                                                                                                                                                                                                                                                                                                |
| <b>A1</b>                                                                                                                                                                                                                                                                                                                                                                                  |  | (43) International Publication Date: 10 October 1996 (10.10.96)                                                                                                                                                                                                                                                                                             |
| (21) International Application Number: <b>PCT/JP96/00879</b>                                                                                                                                                                                                                                                                                                                               |  | (81) Designated States: AU, BR, CA, CN, JP, KR, MX, NO, RU, (SG) VN, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).<br><br><b>Published</b><br>With international search report.<br>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. |
| (22) International Filing Date: 1 April 1996 (01.04.96)                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                             |
| (30) Priority Data:<br>7/77974 3 April 1995 (03.04.95) JP<br>7/267485 16 October 1995 (16.10.95) JP                                                                                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                                             |
| (71) Applicants: MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD. [JP/JP]; 1006, Oaza Kadoma, Kadoma-shi, Osaka 571 (JP). KABUSHIKI KAISHA TOSHIBA [JP/JP]; 72, Horikawa-cho, Saiwai-ku, Kawasaki-shi, Kanagawa 210 (JP).                                                                                                                                                                          |  |                                                                                                                                                                                                                                                                                                                                                             |
| (72) Inventors: TANAKA, Shin-ichi; 10-1-C-403, Fukakusa Hotta-cho, Fushimi-ku, Kyoto-shi, Kyoto 612 (JP). SHIMADA, Toshiyuki; 11-11, Kanokodai Kitamachi 4-chome, Kita-ku, Kobe-shi, Hyogo 651-15 (JP). KOJIMA, Tadashi; 77-19, Tomiokanishi 4-chome, Kanazawa-ku, Yokohama-shi, Kanagawa 236 (JP). HIRAYAMA, Koichi; 7-10, Gumisawa 1-chome, Totsuka-ku, Yokohama-shi, Kanagawa 245 (JP). |  |                                                                                                                                                                                                                                                                                                                                                             |
| (74) Agents: AOYAMA, Tamotsu et al.; Aoyama & Partners, IMP Building, 3-7, Shiromi 1-chome, Chuo-ku, Osaka-shi, Osaka 540 (JP).                                                                                                                                                                                                                                                            |  |                                                                                                                                                                                                                                                                                                                                                             |

(54) Title: RECORDING MEDIUM, DATA TRANSMISSION METHOD AND APPARATUS, AND DATA REPRODUCTION METHOD AND APPARATUS

(57) Abstract

A data transmission apparatus for transmitting an original data has a converter for converting the original data to sequential data codes. The data code is formed by a combination of HIGH level binary codes and LOW level binary codes. The maximum length of continuous binary codes of one level, such as HIGH level, in the data codes is limited to  $T_{max}$ , e.g., to 14T, in which T is a unit length representing one binary code, and the minimum length of continuous binary codes of one level, such as HIGH level, in the data codes is limited to  $T_{min}$ , e.g., 3T. A generator generates a synchronization code. The synchronization code is formed by a combination of HIGH and LOW level binary codes. The synchronization code comprises an identifier having continuous binary codes of one level, such as HIGH level, with a predetermined length 16T which is 2T greater than  $T_{max}$ . An inserter inserts the synchronization code intermittently in the sequential data codes.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

|    |                          |    |                                          |    |                          |
|----|--------------------------|----|------------------------------------------|----|--------------------------|
| AM | Armenia                  | GB | United Kingdom                           | MW | Malawi                   |
| AT | Austria                  | GE | Georgia                                  | MX | Mexico                   |
| AU | Australia                | GN | Guinea                                   | NE | Niger                    |
| BB | Barbados                 | GR | Greece                                   | NL | Netherlands              |
| BE | Belgium                  | HU | Hungary                                  | NO | Norway                   |
| BF | Burkina Faso             | IE | Ireland                                  | NZ | New Zealand              |
| BG | Bulgaria                 | IT | Italy                                    | PL | Poland                   |
| BJ | Benin                    | JP | Japan                                    | PT | Portugal                 |
| BR | Brazil                   | KE | Kenya                                    | RO | Romania                  |
| BY | Belarus                  | KG | Kyrgyzstan                               | RU | Russian Federation       |
| CA | Canada                   | KP | Democratic People's Republic<br>of Korea | SD | Sudan                    |
| CF | Central African Republic | KR | Republic of Korea                        | SE | Sweden                   |
| CG | Congo                    | KZ | Kazakhstan                               | SG | Singapore                |
| CH | Switzerland              | LI | Liechtenstein                            | SI | Slovenia                 |
| CI | Côte d'Ivoire            | LK | Sri Lanka                                | SK | Slovakia                 |
| CM | Cameroon                 | LR | Liberia                                  | SN | Senegal                  |
| CN | China                    | LT | Lithuania                                | SZ | Swaziland                |
| CS | Czechoslovakia           | LU | Luxembourg                               | TD | Chad                     |
| CZ | Czech Republic           | LV | Latvia                                   | TG | Togo                     |
| DE | Germany                  | MC | Monaco                                   | TJ | Tajikistan               |
| DK | Denmark                  | MD | Republic of Moldova                      | TT | Trinidad and Tobago      |
| EE | Estonia                  | MG | Madagascar                               | UA | Ukraine                  |
| ES | Spain                    | ML | Mali                                     | UG | Uganda                   |
| FI | Finland                  | MN | Mongolia                                 | US | United States of America |
| FR | France                   | MR | Mauritania                               | UZ | Uzbekistan               |
| GA | Gabon                    |    |                                          | VN | Viet Nam                 |