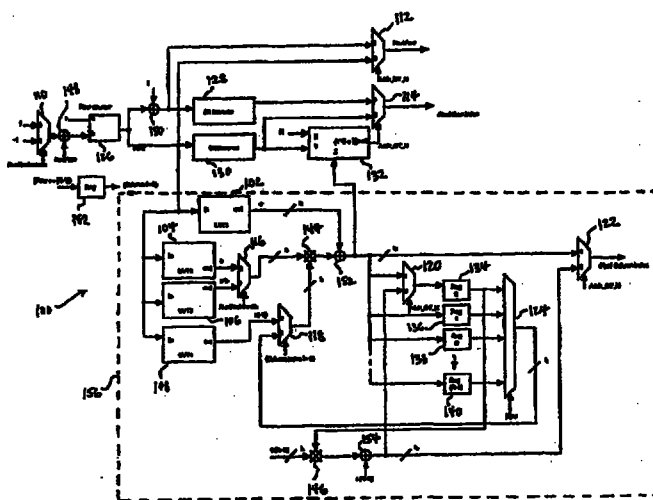




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : H03M 13/27	A1	(11) International Publication Number: WO 00/35103 (43) International Publication Date: 15 June 2000 (15.06.00)
(21) International Application Number: PCT/US99/28580 (22) International Filing Date: 3 December 1999 (03.12.99) (30) Priority Data: 09/205,511 4 December 1998 (04.12.98) US (71) Applicant: QUALCOMM INCORPORATED [US/US]; 5775 Morehouse Drive, San Diego, CA 92121-1714 (US). (72) Inventors: ROWITCH, Douglas, N.; 2009 De Mayo Road, Del Mar, CA 92014 (US). LING, Funyun; 11382 Will Creek Road, San Diego, CA 92131 (US). (74) Agents: MILLER, Russell, B. et al.; Qualcomm Incorporated, 5775 Morehouse Drive, San Diego, CA 92121-1714 (US).	(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	

(54) Title: TURBO CODE INTERLEAVER USING LINEAR CONGRUENTIAL SEQUENCES



(57) Abstract

A turbo code interleaver (100) using linear congruential sequences may be employed as a two-dimensional interleaver (16) in a turbo coder (10) that also includes first and second constituent encoders (12, 14). The interleaver (16) and the first encoder (12) are each configured to receive input bits. The first encoder (12) produces output symbols (22, 24) therefrom. The interleaver (16) receives the input bits (20) sequentially by row. A linear congruential sequence recursion algorithm within the interleaver (16) serves to pseudo-randomly rearrange, or shuffle, the bits within each row of the interleaver (16). The bits (26) are then output from the interleaver sequentially by column. The second encoder (14) is configured to receive the interleaved bits from the interleaver. The second encoder (14) produces output symbols (28) therefrom. The two streams of output symbols (22, 24) are multiplexed together, with appropriate puncturing. If desired, the linear congruential recursion sequence can be generated in reverse. Also if desired, a bit reversal technique can be used in the interleaver (16) to rearrange, or shuffle, the rows of the interleaver (16).