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(21) International Application Number: PCT/SE99/01694 (22) International Filing Date: 24 September 1999 (24.09.99) (30) Priority Data: 09/173,803 16 October 1998 (16.10.98) US (71) Applicant: TELEFONAKTIEBOLAGET LM ERICSSON (publ) [SE/SE]; S-126 25 Stockholm (SE). (72) Inventor: HELLBERG, Richard; Forellvägen 14, 111, S-141 47 Huddinge (SE). (74) Agent: ERICSSON RADIO SYSTEMS AB; Patent Sup- port/Ericsson Research, S-164 80 Stockholm (SE).		(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, 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: ODD-TRANSFORM FAST CONVOLUTION (57) Abstract The present invention relates generally to the problem of filtering, decimation or interpolation and frequency conversion in the digital domain, and more particularly to the use of the stand-alone or improved modified fast convolution algorithm in wideband multichannel receiver, channelization, and transmitter, de-channelization structures of a radio communication system. The invention consists of essentially 3 steps: making sure that we use different overlaps on consecutive blocks that, on average, give the same overlap on both the input and output ends; aligning the signal in consecutive blocks of time; and compensating for phase shifts due to frequency shifting. The essence of the invention is that it decouples the input and output transform lengths in the fast convolution algorithm from each other and from the overlap, making it possible to use any transform length on the input together with any transform length on the output and at the same time use any overlap. This provides an enormous amount of freedom compared with the limitations of state of the art.		