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<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; border: none; padding: 5px;"> <p>(21) International Application Number: PCT/US99/03286</p> <p>(22) International Filing Date: 23 February 1999 (23.02.99)</p> <p>(30) Priority Data: 09/027,742 23 February 1998 (23.02.98) US</p> <p>(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 09/027,742 (CON) Filed on 23 February 1998 (23.02.98)</p> <p>(71) Applicant (for all designated States except US): TROPIAN, INC. [US/US]; Suite 150, 20813 Stevens Creek Boulevard, Cupertino, CA 95014 (US).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): McCUNE, Earl, W. [US/US]; 2252 Sutter Avenue, Santa Clara, CA 95050 (US).</p> <p>(74) Agent: URE, Michael, J.; Burns, Doane, Swecker & Mathis, L.L.P., P.O. Box 1404, Alexandria, VA 22313-1404 (US).</p> </td> <td style="width: 50%; vertical-align: top; border: none; padding: 5px;"> <p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, 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, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, 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).</p> <p>Published With international search report.</p> </td> </tr> </table>			<p>(21) International Application Number: PCT/US99/03286</p> <p>(22) International Filing Date: 23 February 1999 (23.02.99)</p> <p>(30) Priority Data: 09/027,742 23 February 1998 (23.02.98) US</p> <p>(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 09/027,742 (CON) Filed on 23 February 1998 (23.02.98)</p> <p>(71) Applicant (for all designated States except US): TROPIAN, INC. [US/US]; Suite 150, 20813 Stevens Creek Boulevard, Cupertino, CA 95014 (US).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): McCUNE, Earl, W. [US/US]; 2252 Sutter Avenue, Santa Clara, CA 95050 (US).</p> <p>(74) Agent: URE, Michael, J.; Burns, Doane, Swecker & Mathis, L.L.P., P.O. Box 1404, Alexandria, VA 22313-1404 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, 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, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, 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).</p> <p>Published With international search report.</p>
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<p>(54) Title: QUADRATURE-FREE RF RECEIVER FOR DIRECTLY RECEIVING ANGLE MODULATED SIGNAL</p> <div style="text-align: center; margin: 20px 0;"> <pre> graph LR S["s(t)"] --> J(()) J --> AGC["SLOW AGC 401"] J --> LIM["LIMITER 405"] AGC --> ED["ENVELOPE DETECTOR 403"] LIM --> PD["PHASE DETECTOR 407"] ED --> A["A(t)"] PD --> Phi["phi(t)"] </pre> </div>				
<p>(57) Abstract</p> <p>The present invention, generally speaking, provides a quadrature-free RF receiver for directly receiving RF signals such as angle modulated signals. Various embodiments of the receiver use a digital phase detector (407) together with well-known RF components: a limiter (405), an envelope detector (403), a slow Automatic Gain Control (AGC) circuit (401), a fast AGC circuit, etc. Demodulation may be non-coherent or coherent. The approach followed is to handle the underlying non-linearities of the demodulation process within the circuitry itself, rather than relegating the non-linearities to a separate signal processing step. No I and Q signals are obtained, and no coordinate conversions are performed, offering the potential for space saving, increased accuracy, and especially power savings. Depending on the nature of the modulation employed, either circuitry relating to amplitude recovery or circuitry relating to phase recovery may be dispensed with. As in quadrature systems, the mixing step must remain the same regardless of the characteristics of the modulation employed.</p>				