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Applicant: PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

Applicant (for SE only): PHILIPS NORDEN AB [SE/SE];
Konbygatan 7, Kista, S-164 85 Stockholm (SE).

Inventor: DE BOT, Paulus, George, Maria; Groenewoud-
seweg 1, NL-5621 BA Eindhoven (NL).

Agent: DE JONGH, Cornelis, Dominicus; Internationaal Oc-
trooibureau B.V., P.O. Box 220, NL-5600 AE Eindhoven
(NL).

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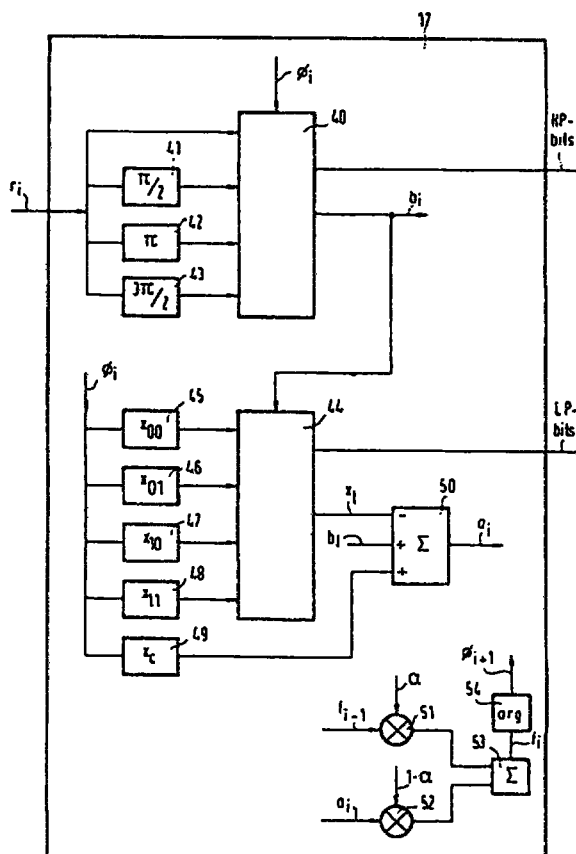
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Title: A DIGITAL COMMUNICATION SYSTEM AND A RECEIVER FOR USE IN SUCH A SYSTEM

Abstract

Known in a digital communication system (1) are phase recovery methods for QPSK modulated signals. It is proposed to extend such methods to multi-resolution QAM signals, which can be represented by rotationally invariant signal constellations. To this end, with each received symbol (r_i), a phase reference (ϕ_i) is determined. With respect to this phase reference (ϕ_i), a high priority-bit (HP-bits) constellation is determined, and with respect to this phase reference (ϕ_i), a sub-constellation (CLx) of low-priority bits (LP-bits) is constructed, the sub-constellation (CLx) being rotationally invariant. The sub-configuration (CLx) is translated to an origin (O) of the signal constellation, and then the low-priority-bits (LP-bits) are determined by determining a minimum squared Euclidean distance (E_d) of the rotated and translated received symbol (b_i') with respect to the rotated and translated sub-constellation. For a 2R(2,2)-QAM signal constellation a simple detection method is thus provided. The method can be made recursive, and can also be made recursive for more complicated signal constellations such as a 64-QAM signal constellation.



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