

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 March 2003 (06.03.2003)

PCT

(10) International Publication Number
WO 03/019831 A2

- (51) International Patent Classification⁷: **H04H 9/00**
- (21) International Application Number: PCT/US02/12333
- (22) International Filing Date: 19 April 2002 (19.04.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/313,816 22 August 2001 (22.08.2001) US
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- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, 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, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, 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, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— *without international search report and to be republished upon receipt of that report*
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: TELEVISION PROXIMITY SENSOR

(57) **Abstract:** A system and a method for determining whether a television is on and in near proximity is provided. The system includes a television, an audio sensor, an analog-to-digital converter, and a digital signal processor. The audio sensor, which may be portable by a member of the television audience, is situated in the same room as the television. When the television is turned on, the television emits an audio signal, the audio sensor detects the audio signal, the analog-to-digital converter converts the audio signal into a set of digital audio samples, and the digital signal processor processes the set of digital audio samples. The system may also include an amplifier to amplify the detected audio signal and to provide the amplified signal to the analog-to-digital converter. The processing may include measuring a first power level of the audio signal at a first frequency, measuring a second power level of the audio signal at a second frequency, measuring a third power level of the audio signal at a third frequency, computing a ratio of the first power level to a sum of the first, second, and third power levels, and comparing the computed ratio to a predetermined first threshold value. The digital signal processor may also continuously update the measurements of the first, second and third power levels and compare the most recent measurement of the first power level to a predetermined second threshold value. When either the computed ratio is greater than or equal to the first threshold value of the first power level is greater than or equal to the second threshold value, it may be determined that the television is turned on. When the computed ratio is less than the first threshold value and the first power level is less than the second threshold value, it may be determined that the television is turned off.

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