



(12) **CORRECTED EUROPEAN PATENT APPLICATION**

published in accordance with Art. 158(3) EPC

Note: Bibliography reflects the latest situation

(15) Correction information:
Corrected version no 1 (W1 A1)
INID code(s) 72

(51) Int Cl.7: **H03D 7/14**

(48) Corrigendum issued on:
21.07.2004 Bulletin 2004/30

(86) International application number:
PCT/JP2001/006062

(43) Date of publication:
07.04.2004 Bulletin 2004/15

(87) International publication number:
WO 2003/009465 (30.01.2003 Gazette 2003/05)

(21) Application number: **01949963.1**

(22) Date of filing: **12.07.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**

• **JOBA, Hiroyuki, c/o MITSUBISHI DENKI K. K.**
Tokyo 100-8 310 (JP)

(71) Applicant: **MITSUBISHI DENKI KABUSHIKI
KAISHA**
Tokyo 100-8310 (JP)

(74) Representative: **Popp, Eugen, Dr. et al**
MEISSNER, BOLTE & PARTNER
Postfach 86 06 24
81633 München (DE)

(72) Inventors:
• **TAKAHASHI, Yoshinori,**
c/o MITSUBISHI DENKI K. K.
Tokyo 100-8310 (JP)

(54) **MIXER CIRCUIT**

(57) A frequency components signal LO of a local oscillation wave is input to the base of a transistor (1) configuring a local frequency multiplication unit (10) and a signal (\downarrow LO) opposite in phase to the local oscillation wave is input to the base of a transistor (2). The transistors (1, 2) have their collectors connected together and their emitters connected together, and each collector outputs a modulation signal. A reference transistor (3) is differentially connected to the transistors (1, 2). A load (6) is connected to the collector of each transistor (1-3) serving as an output of differential connection. Each differentially connected transistor (1-3) has its emitter with a collector connected thereto. A transistor (4) has its base receiving a modulated wave signal, and its emitter connected to a constant current source (5). A mixer circuit is thus configured.

FIG. 1

