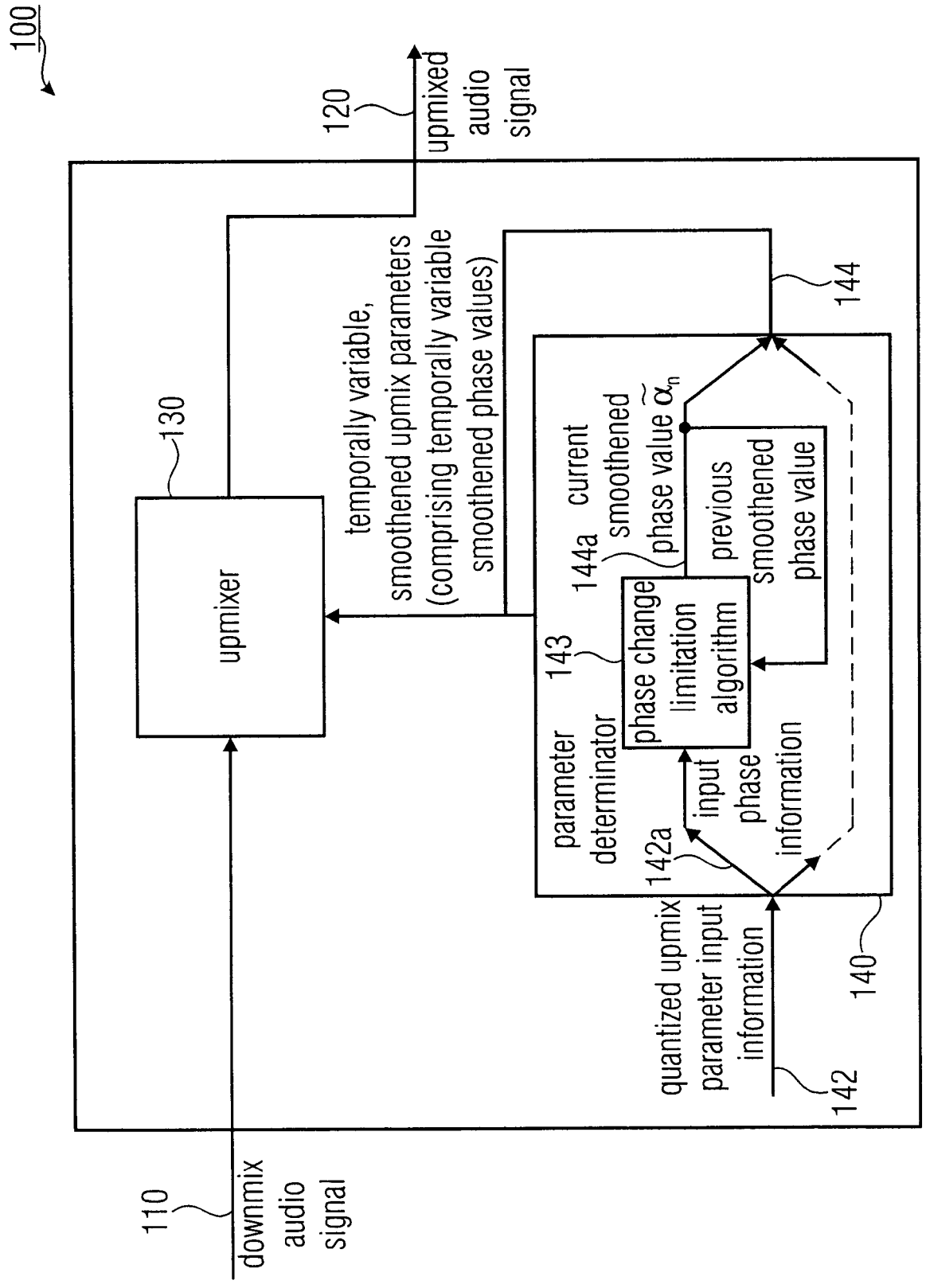

100
120
upmixed audio signal
130
upmixer
temporally variable, smoothened upmix parameters (comprising temporally variable smoothened phase values)
144
parameter determinator
143
144a current smoothened phase value $\tilde{\alpha}_n$
phase change limitation algorithm
previous smoothened phase value
142a input phase information
quantized upmix parameter input information
142
140
110
downmix audio signal

FIG 1

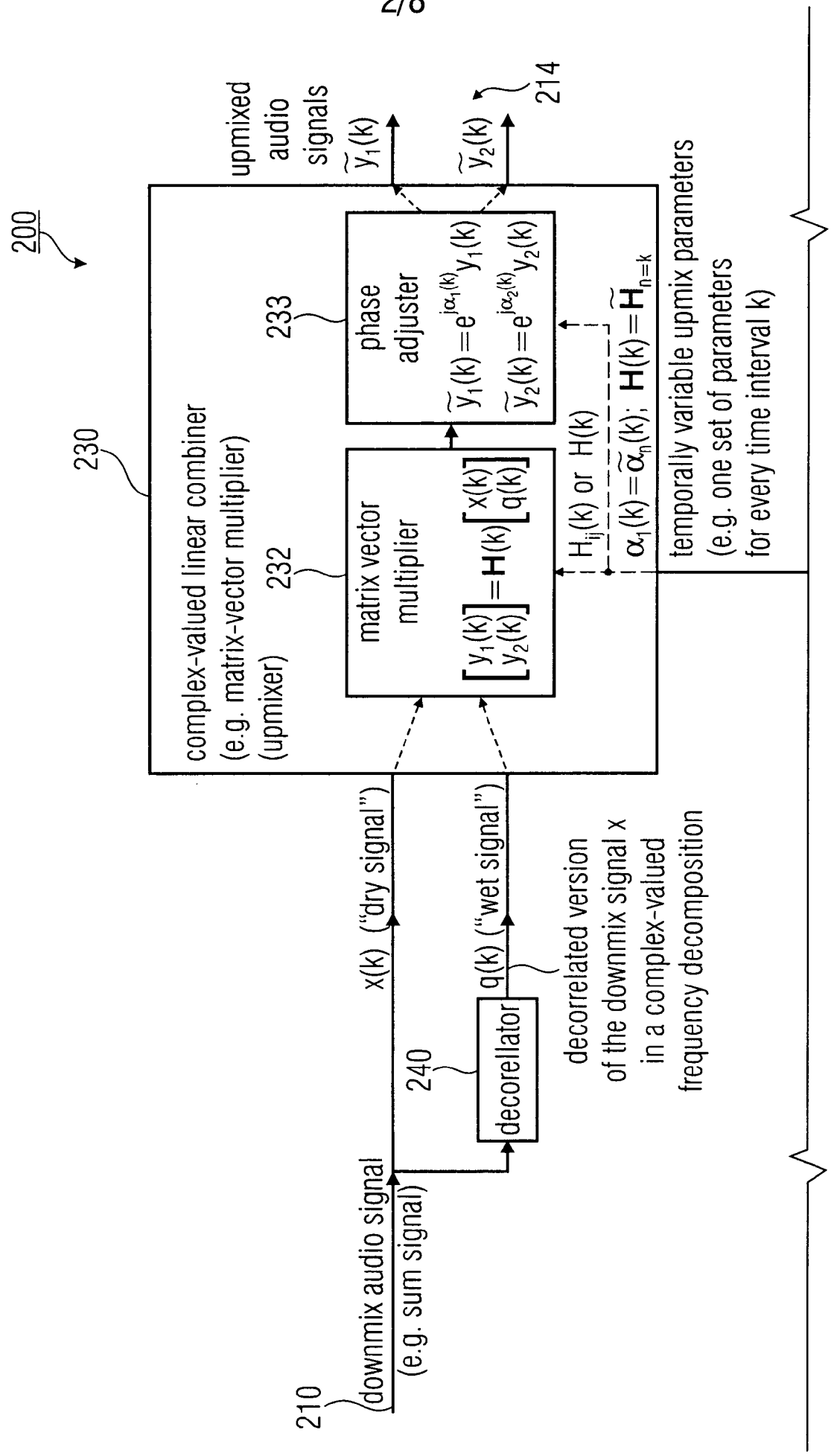


FIG 2A

FIG 2A | FIG 2B

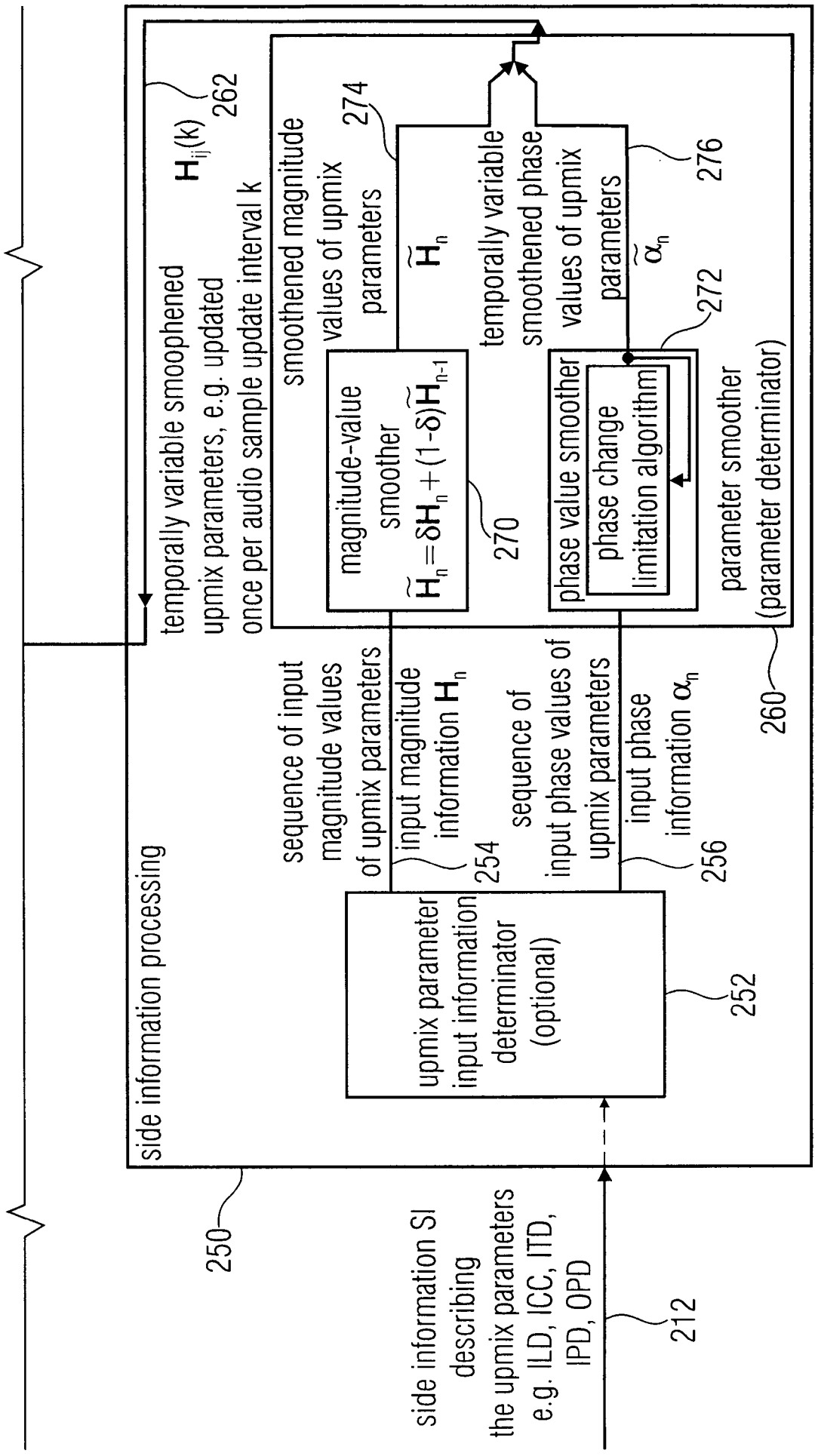


FIG 2B

FIG 2A | FIG 2B

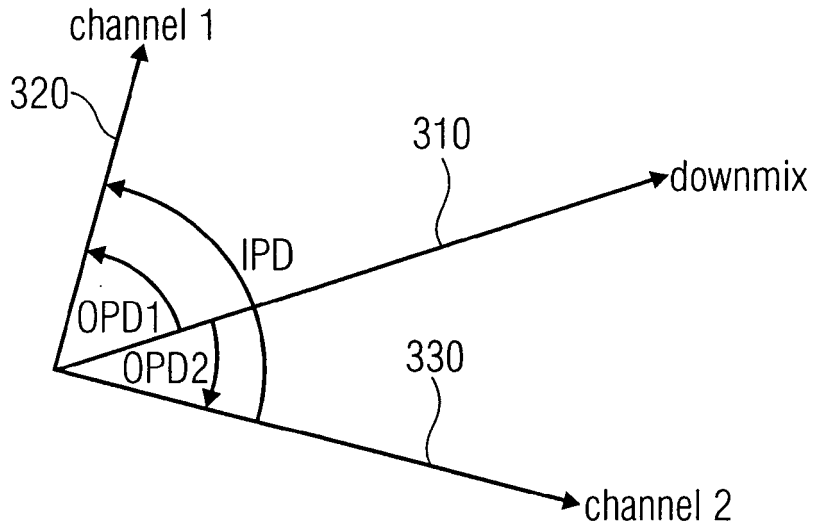
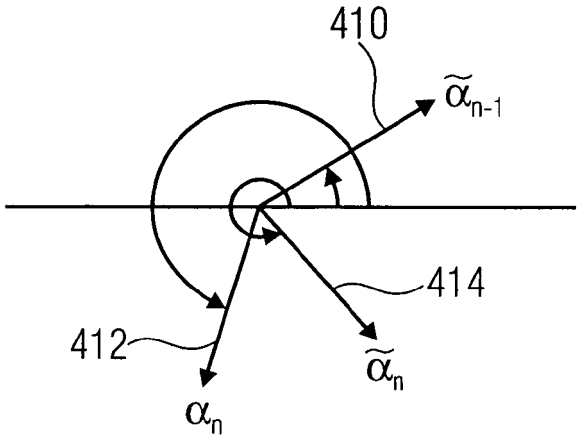


FIG 3



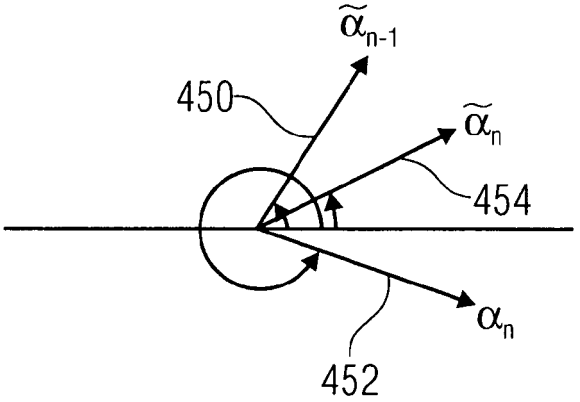
$\delta = 0.5$

$(\alpha_n - \tilde{\alpha}_{n-1}) > \pi$

$\delta\alpha_n + (1-\delta)\tilde{\alpha}_{n-1} < 2\delta\pi$

(modulo case)

FIG 4A

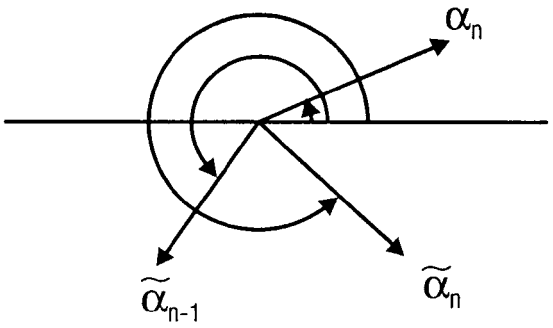


$\delta = 0.5$

$(\alpha_n - \tilde{\alpha}_{n-1}) > \pi$

$\delta\alpha_n + (1-\delta)\tilde{\alpha}_{n-1} > 2\delta\pi$

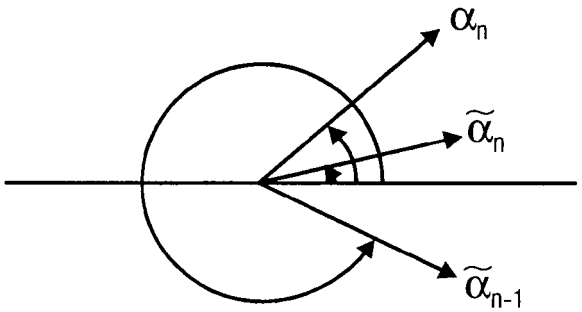
FIG 4B



$$(\alpha_n - \tilde{\alpha}_{n-1}) < -\pi$$

$$\delta\alpha_n + (1-\delta)\tilde{\alpha}_{n-1} < (1-\delta)2\pi$$

FIG 5A



$$(\alpha_n - \tilde{\alpha}_{n-1}) < -\pi$$

$$\delta\alpha_n + (1-\delta)\tilde{\alpha}_{n-1} > (1-\delta)2\pi$$

(modulo case)

FIG 5B

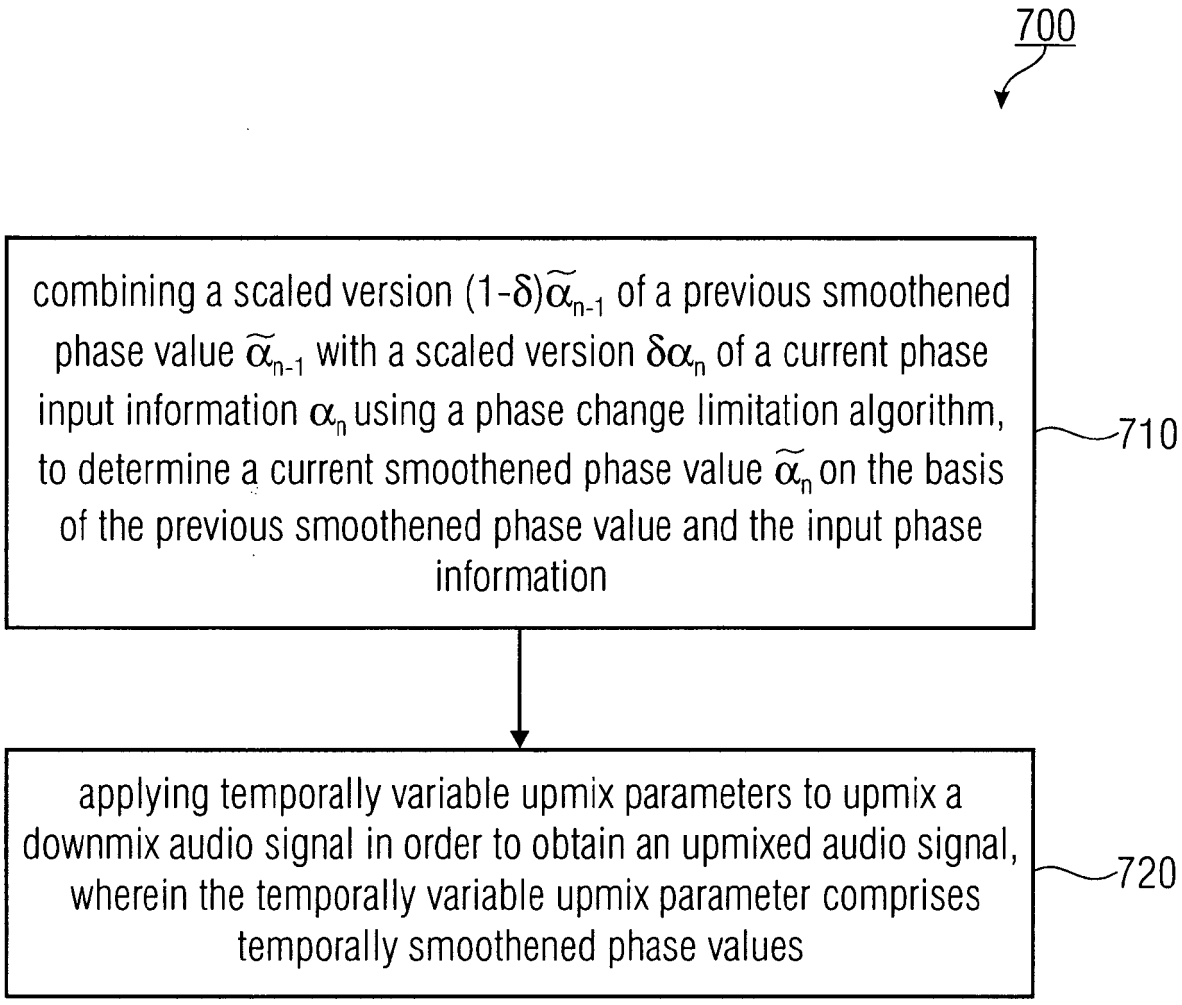

700
combining a scaled version $(1-\delta)\tilde{\alpha}_{n-1}$ of a previous smoothened phase value $\tilde{\alpha}_{n-1}$ with a scaled version $\delta\alpha_n$ of a current phase input information α_n using a phase change limitation algorithm, to determine a current smoothened phase value $\tilde{\alpha}_n$ on the basis of the previous smoothened phase value and the input phase information
710
applying temporally variable upmix parameters to upmix a downmix audio signal in order to obtain an upmixed audio signal, wherein the temporally variable upmix parameter comprises temporally smoothened phase values
720

FIG 6

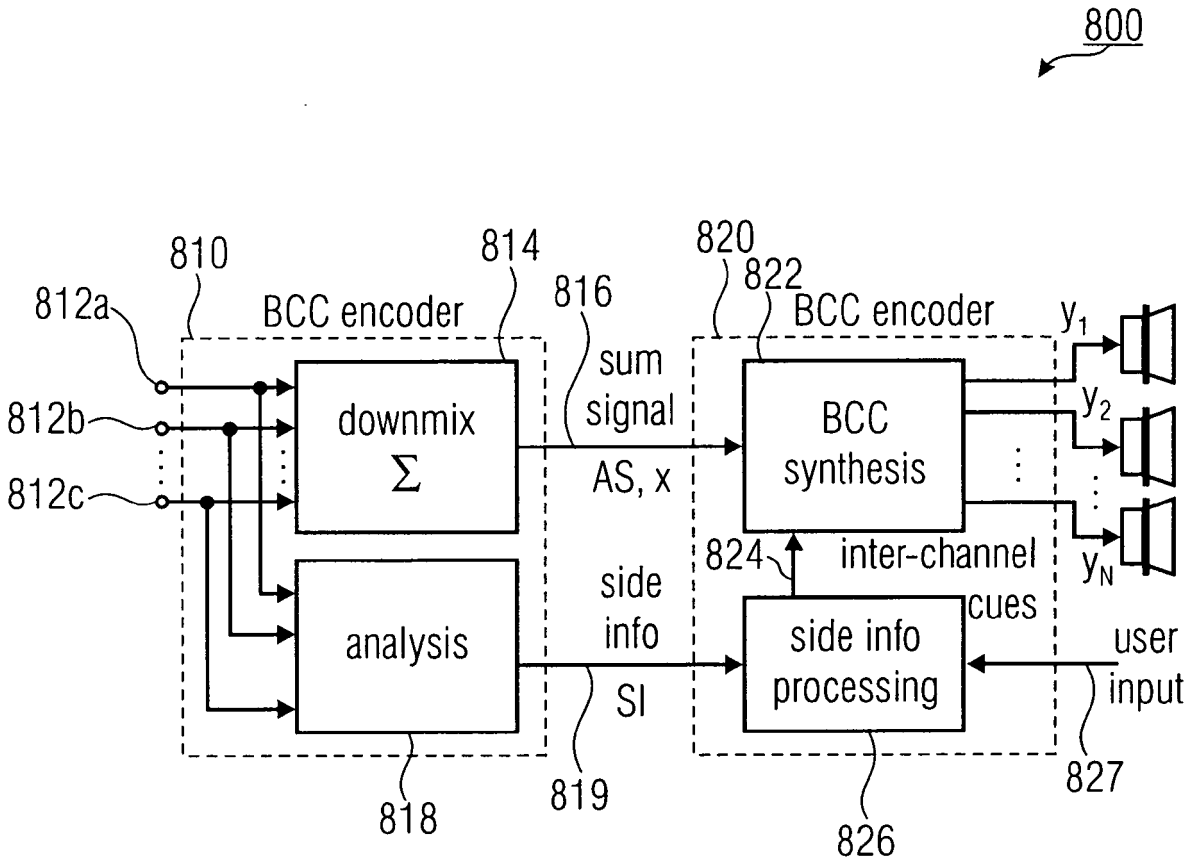

800
810
812a
812b
812c
BCC encoder
814
downmix
Σ
analysis
816
sum
signal
AS, x
side
info
SI
818
819
820
822
BCC encoder
BCC
synthesis
824
inter-channel
cues
side info
processing
826
user
input
827
y1
y2
yN

FIG 7