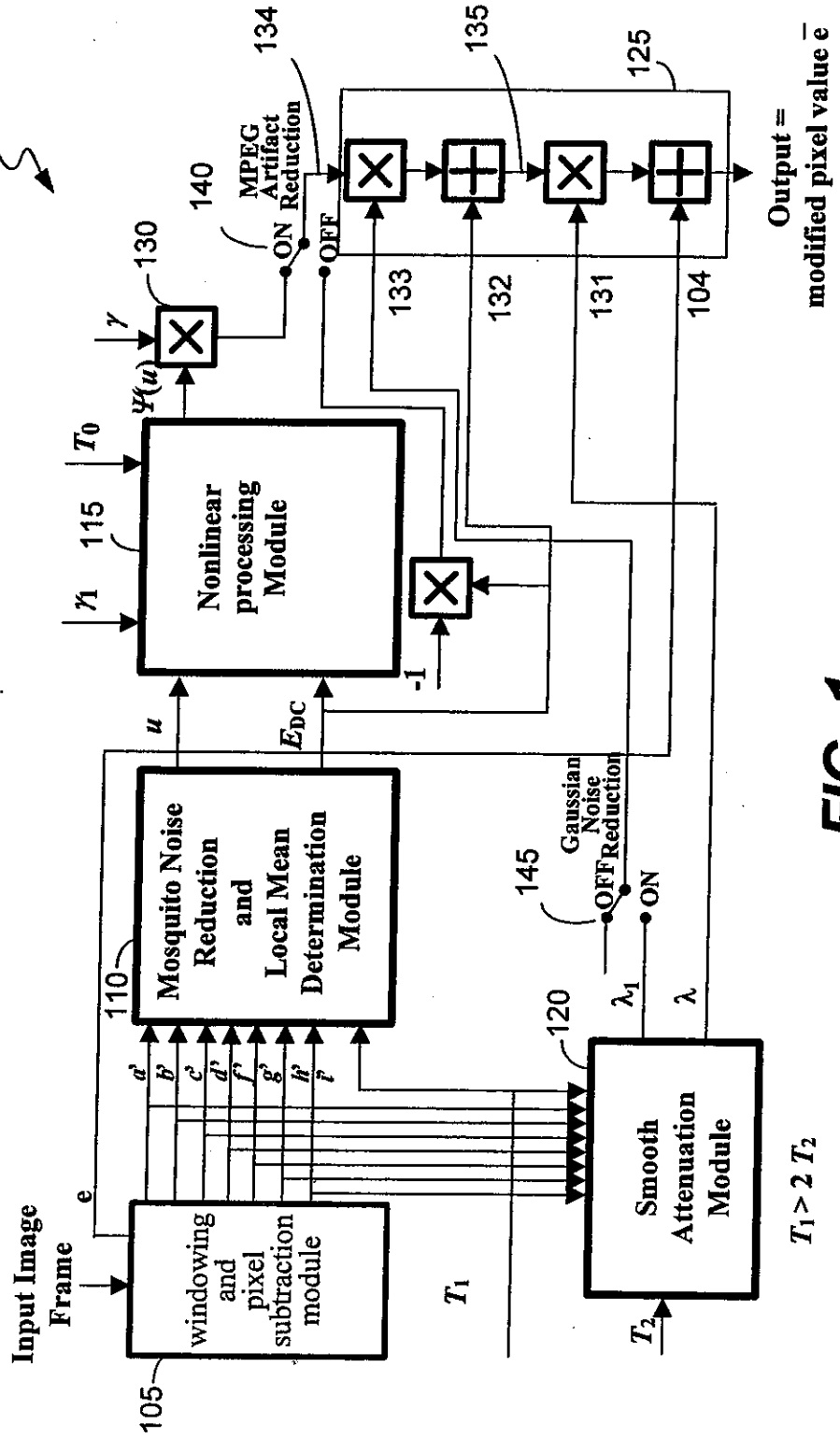

100
Input Image Frame
e
windowing and pixel subtraction module
105
a'
b'
c'
d'
f'
g'
h'
i'
Mosquito Noise Reduction and Local Mean Determination Module
110
u
E_{DC}
Nonlinear processing Module
115
T_0
γ_1
γ
$\Psi(u)$
130
MPEG Artifact Reduction
140
ON
OFF
134
-1
133
132
131
104
135
125
Output = modified pixel value $\bar{e}$
Gaussian Noise Reduction
145
OFF
ON
λ_1
λ
120
Smooth Attenuation Module
T_1
T_2
$T_1 > 2\,T_2$

FIG. 1

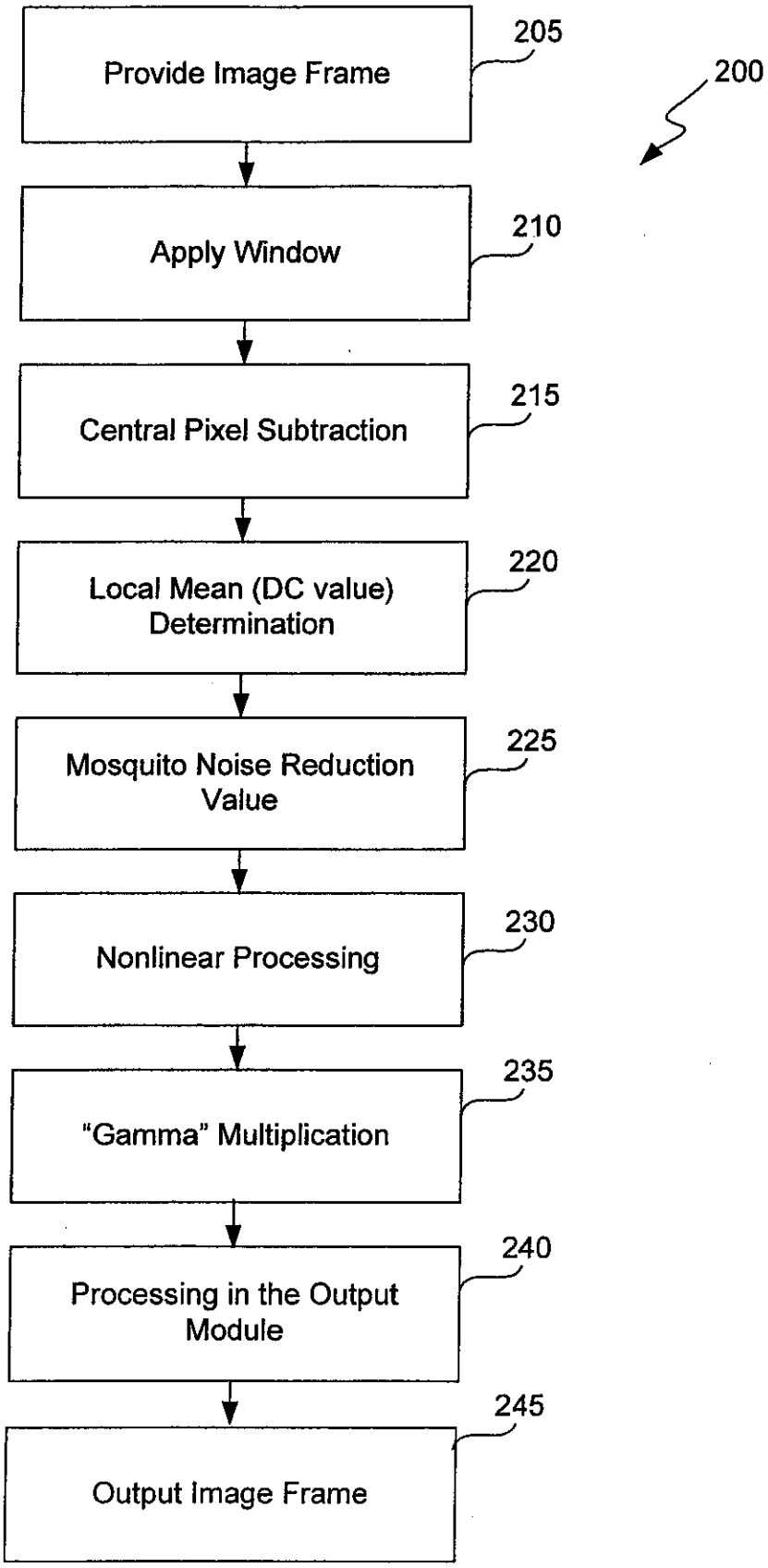

Provide Image Frame
205
200
Apply Window
210
Central Pixel Subtraction
215
Local Mean (DC value) Determination
220
Mosquito Noise Reduction Value
225
Nonlinear Processing
230
"Gamma" Multiplication
235
Processing in the Output Module
240
Output Image Frame
245

FIG. 2

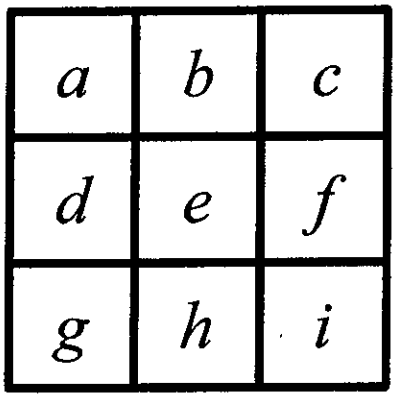


FIG. 3A

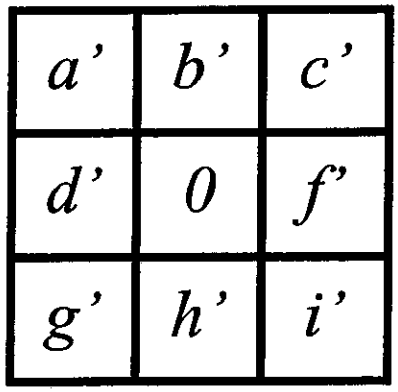


FIG. 3B

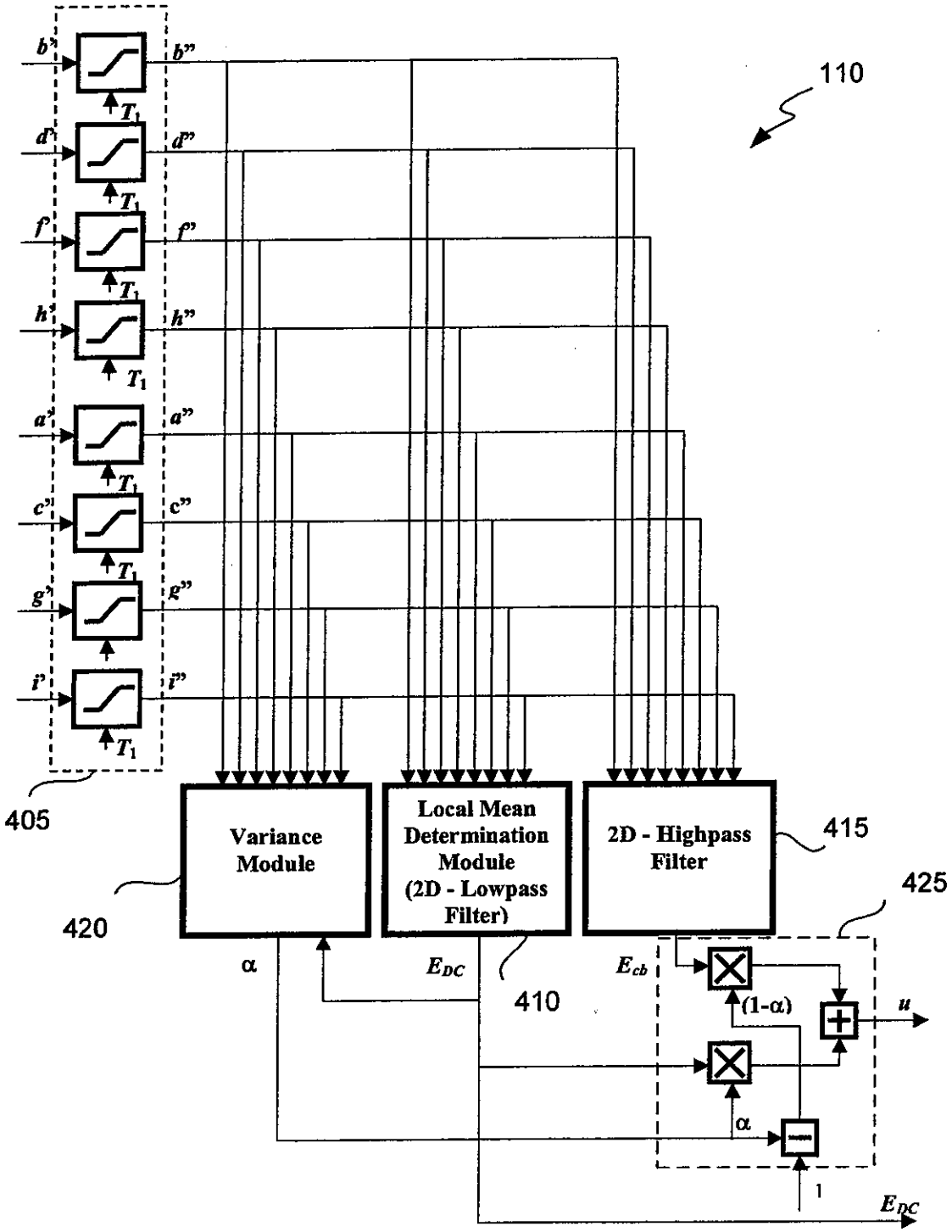

110
b'
b"
d'
d"
f'
f"
h'
h"
a'
a"
c'
c"
g'
g"
i'
i"
T1
405
Variance Module
Local Mean Determination Module (2D - Lowpass Filter)
2D - Highpass Filter
415
420
425
410
α
EDC
Ecb
(1-α)
u
1

FIG. 4

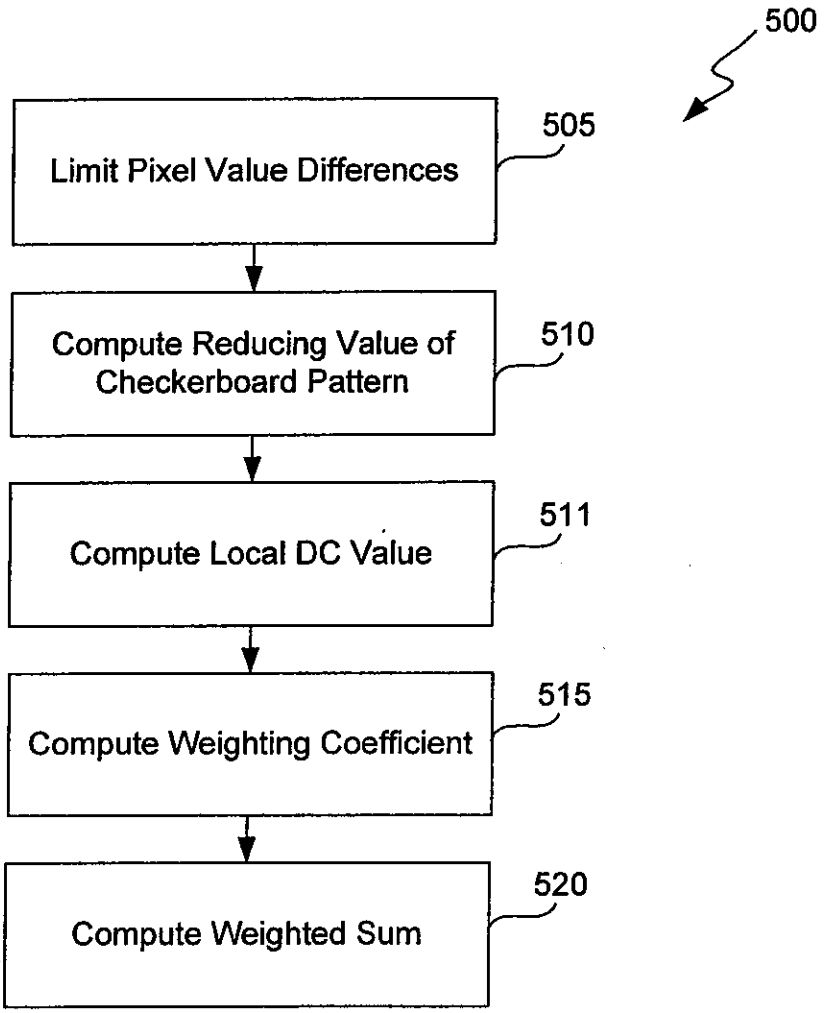

500
Limit Pixel Value Differences
505
Compute Reducing Value of Checkerboard Pattern
510
Compute Local DC Value
511
Compute Weighting Coefficient
515
Compute Weighted Sum
520

FIG. 5

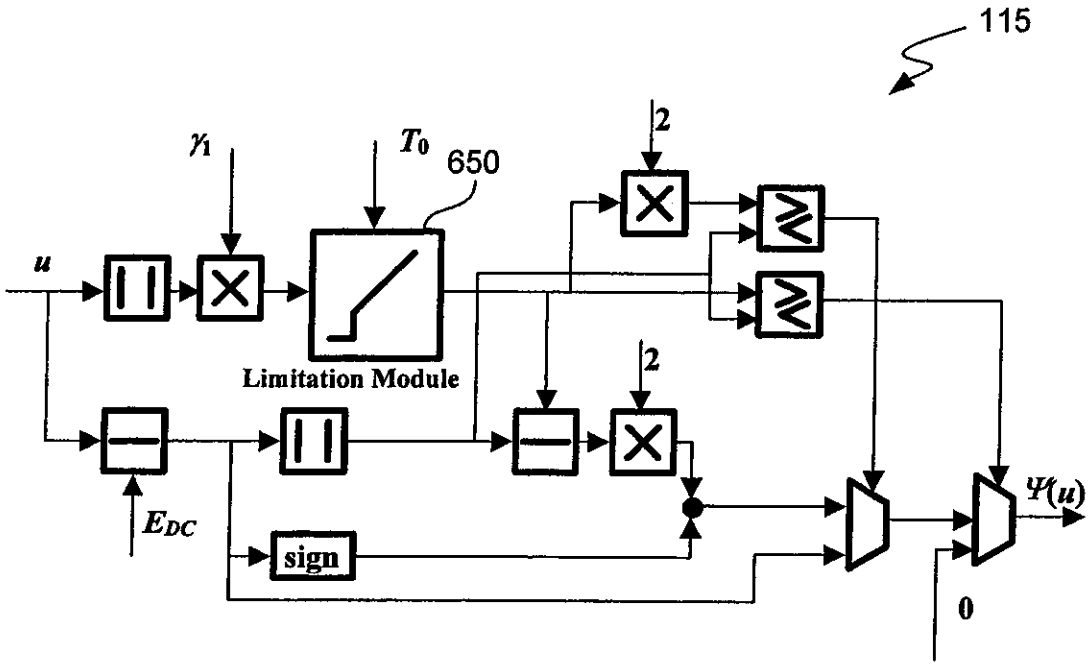

115
γ_1
T_0
650
2
u
Limitation Module
2
E_{DC}
sign
$\Psi(u)$
0

FIG. 6A

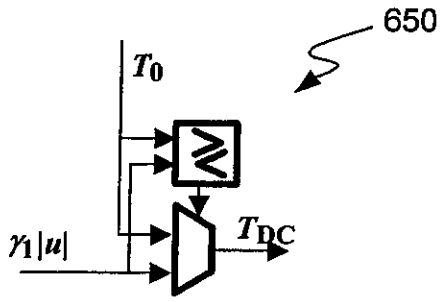

650
T_0
$\gamma_1|u|$
T_{DC}

FIG. 6B

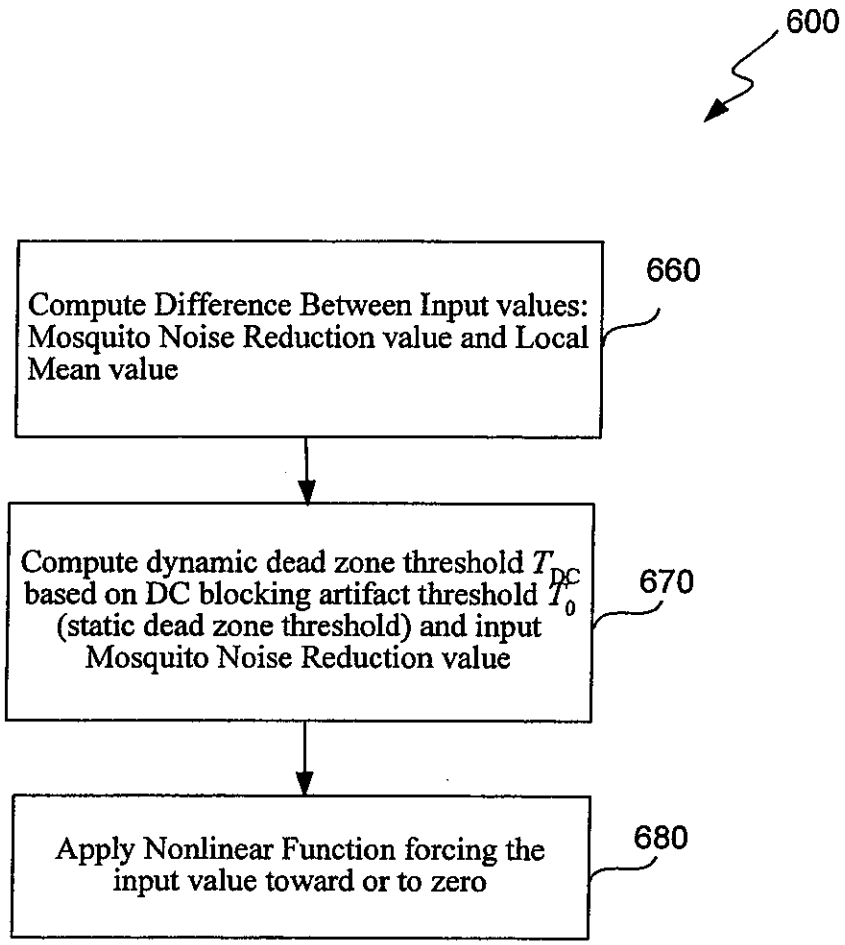

600
Compute Difference Between Input values: Mosquito Noise Reduction value and Local Mean value
660
Compute dynamic dead zone threshold T_{DC} based on DC blocking artifact threshold T_0 (static dead zone threshold) and input Mosquito Noise Reduction value
670
Apply Nonlinear Function forcing the input value toward or to zero
680

FIG. 6C

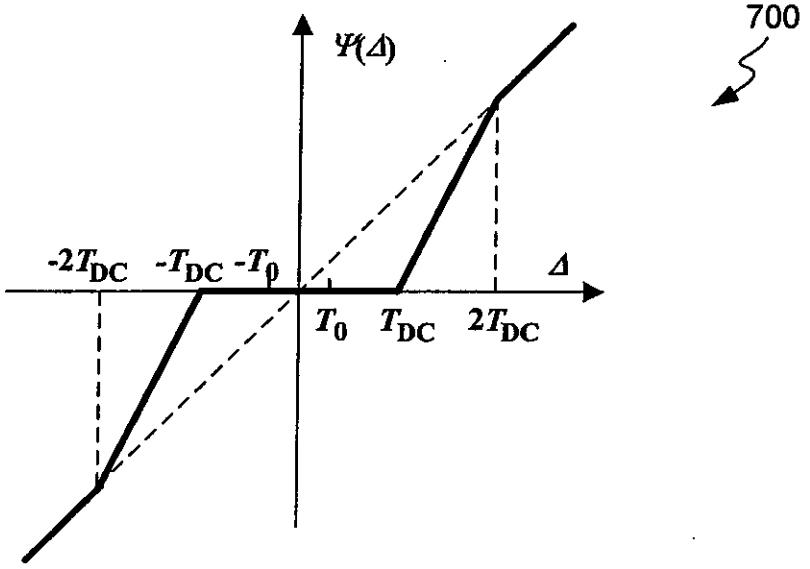


FIG. 7

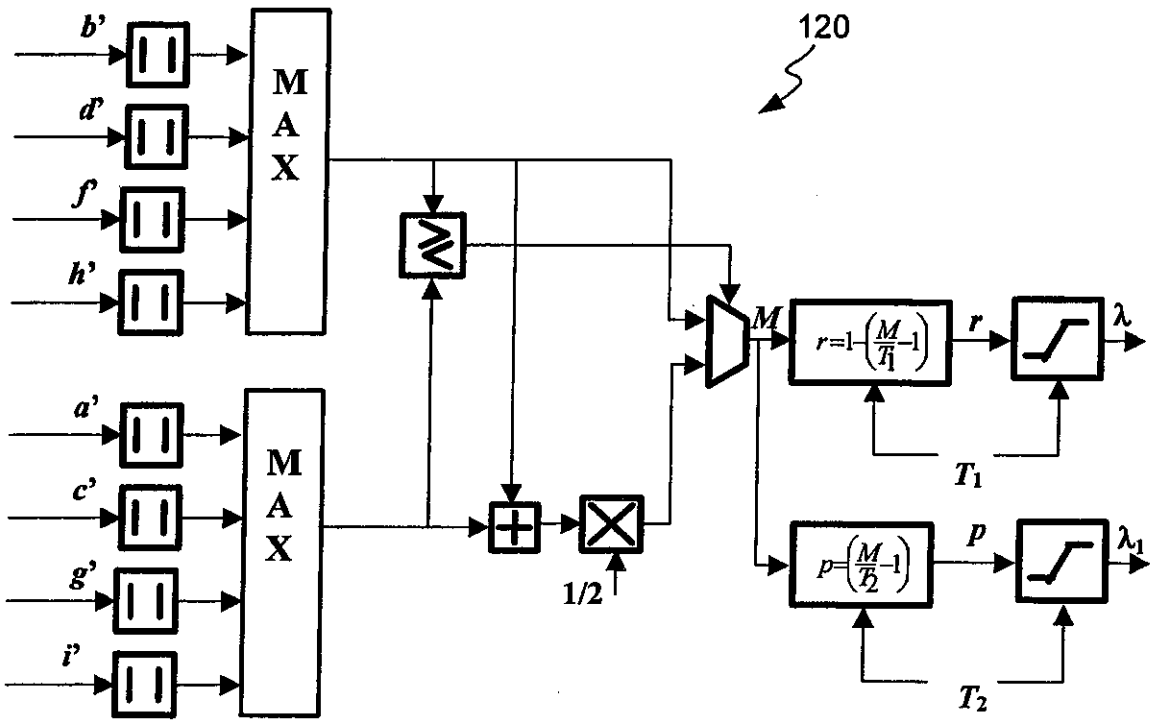


FIG. 8A

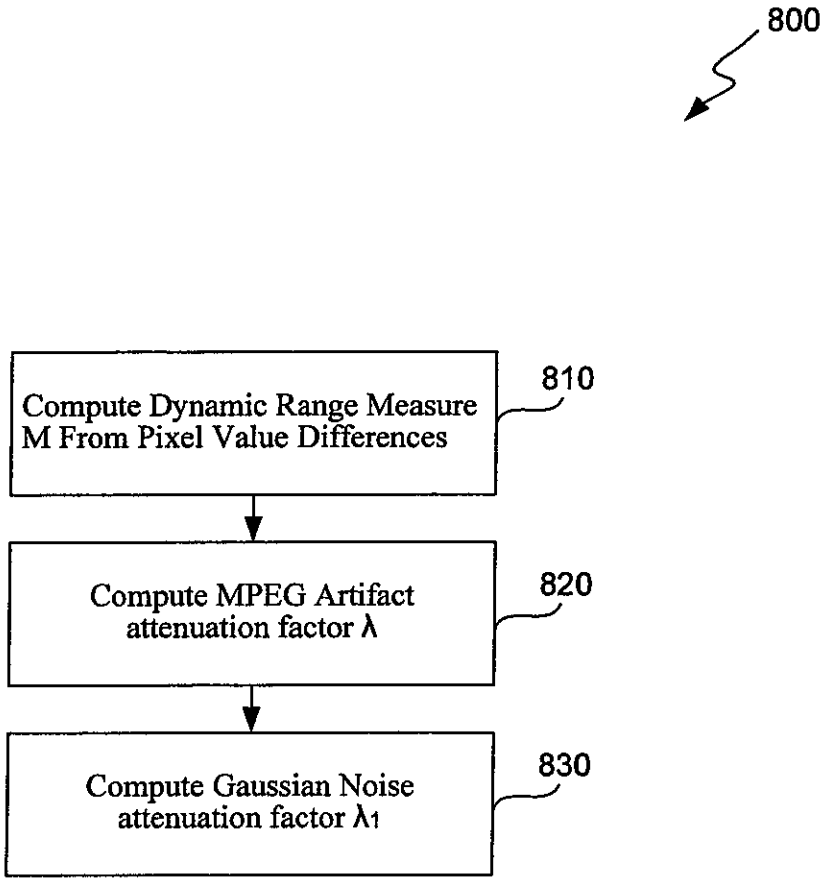

800
Compute Dynamic Range Measure M From Pixel Value Differences
810
Compute MPEG Artifact attenuation factor λ
820
Compute Gaussian Noise attenuation factor λ1
830

FIG. 8B

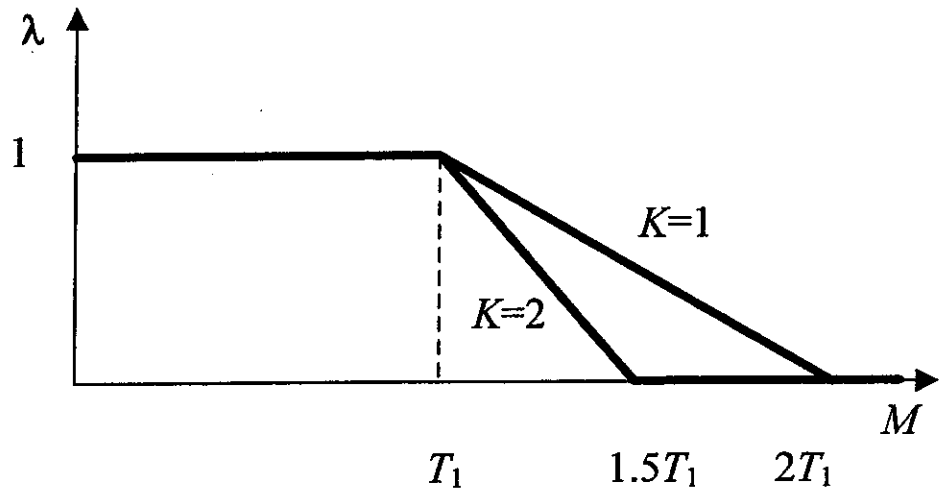


FIG. 9A

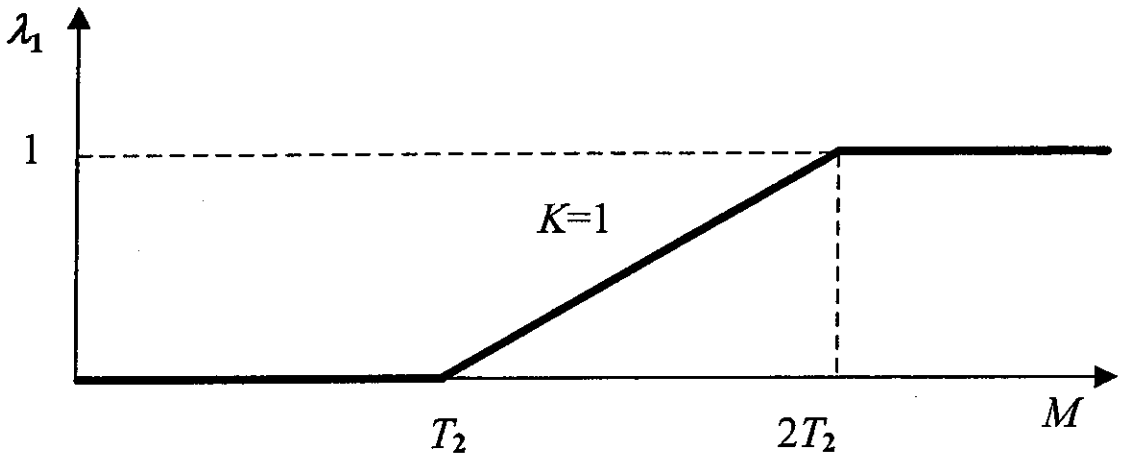


FIG. 9B

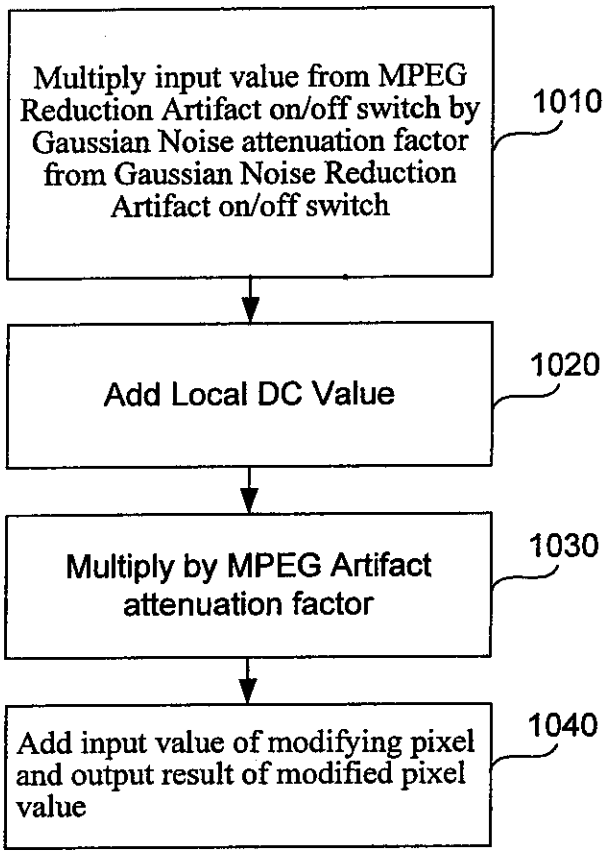

Multiply input value from MPEG Reduction Artifact on/off switch by Gaussian Noise attenuation factor from Gaussian Noise Reduction Artifact on/off switch
1010
1000
Add Local DC Value
1020
Multiply by MPEG Artifact attenuation factor
1030
Add input value of modifying pixel and output result of modified pixel value
1040

FIG. 10