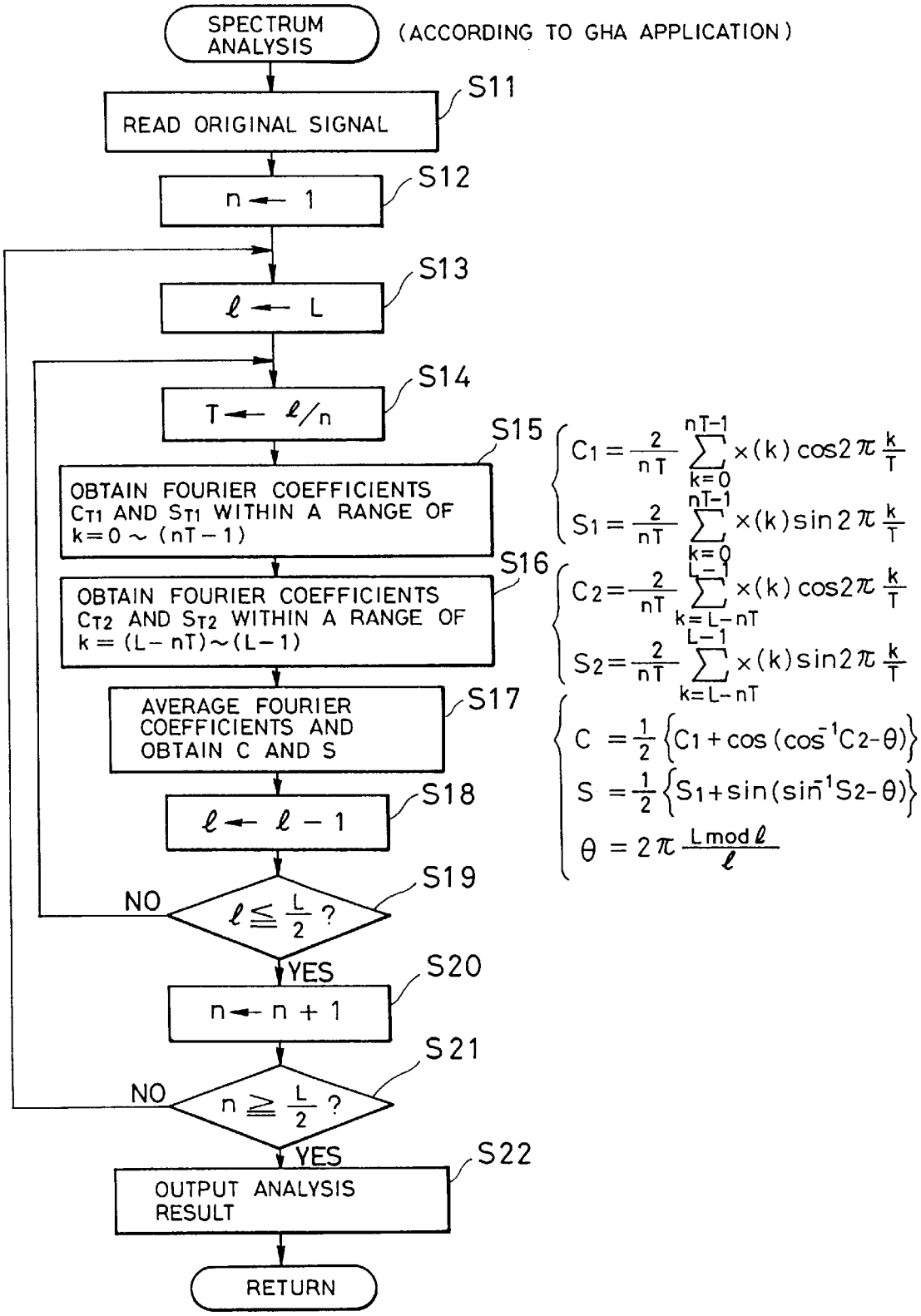
FIG. 2


SPECTRUM ANALYSIS
(ACCORDING TO GHA APPLICATION)
S11
READ ORIGINAL SIGNAL
S12
n ← 1
S13
ℓ ← L
S14
T ← ℓ/n
S15
OBTAIN FOURIER COEFFICIENTS C_{T1} AND S_{T1} WITHIN A RANGE OF k=0 ~ (nT−1)
S16
OBTAIN FOURIER COEFFICIENTS C_{T2} AND S_{T2} WITHIN A RANGE OF k = (L−nT)~(L−1)
S17
AVERAGE FOURIER COEFFICIENTS AND OBTAIN C AND S
S18
ℓ ← ℓ − 1
S19
ℓ ≦ L/2 ?
NO
YES
S20
n ← n + 1
S21
n ≧ L/2 ?
NO
YES
S22
OUTPUT ANALYSIS RESULT
RETURN
$C_1 = \frac{2}{nT}\sum_{k=0}^{nT-1} x(k)\cos 2\pi\frac{k}{T}$
$S_1 = \frac{2}{nT}\sum_{k=0}^{nT-1} x(k)\sin 2\pi\frac{k}{T}$
$C_2 = \frac{2}{nT}\sum_{k=L-nT}^{L-1} x(k)\cos 2\pi\frac{k}{T}$
$S_2 = \frac{2}{nT}\sum_{k=L-nT}^{L-1} x(k)\sin 2\pi\frac{k}{T}$
$C = \frac{1}{2}\{C_1 + \cos(\cos^{-1}C_2 - \theta)\}$
$S = \frac{1}{2}\{S_1 + \sin(\sin^{-1}S_2 - \theta)\}$
$\theta = 2\pi\frac{L \bmod \ell}{\ell}$