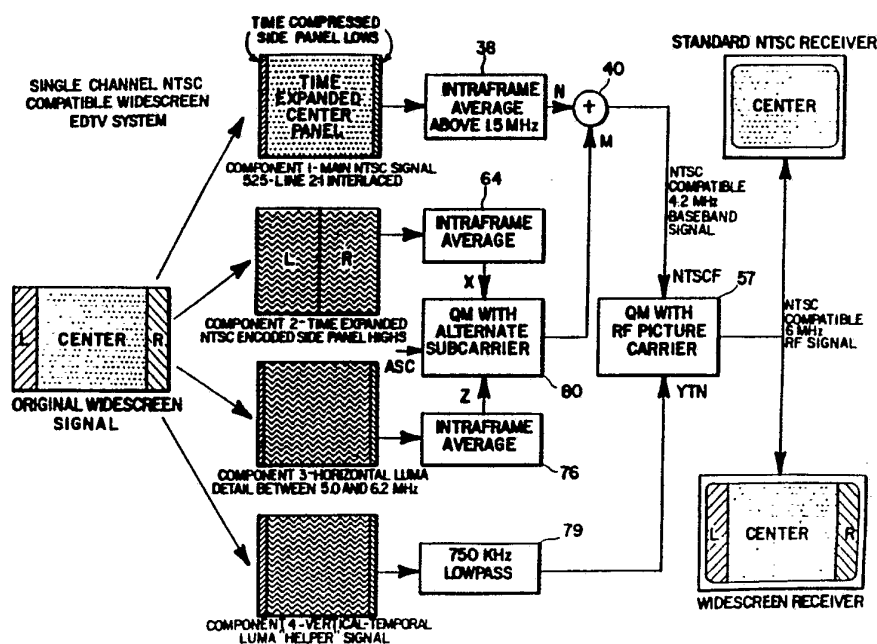




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(54) Title: TELEVISION SIGNAL ENCODED WITH AUXILIARY VERTICAL-TEMPORAL INFORMATION



(57) Abstract

A system for encoding a progressive scan widescreen EDTV signal so as to be compatible with a standard NTSC receiver develops an auxiliary signal (YT) containing vertical-temporal information derived from image field difference information of the progressive scan signal. The auxiliary signal facilitates the conversion of the encoded NTSC compatible signal (NTSCF) to progressive scan format in a widescreen progressive scan receiver.

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AMENDED CLAIMS

[received by the International Bureau on 13 March 1989 (13.03.89);
original claims 8, 9 and 17 cancelled; claims 1,2,3,6,7 amended; claims 10-16 amended
and renumbered as claims 8-15; new claim 16 added; other claims unchanged (4 pages)]

1. A system for processing a television-type signal comprising:

means (10-16) for providing an initial
5 television-type signal with a progressive scanning format;
means (17a,17b,17c) for converting said initial
progressive scanning television signal to one with an
interlaced scanning format, said converted interlaced
television signal subject to being re-converted to a
10 progressive scanning format; wherein to facilitate such
re-conversion said system includes
means (17c) responsive to said initial
television signal for developing an auxiliary signal
component (YT) comprising first frame difference
15 information derived from first and second adjacent
progressive scan frames of said initial television signal,
and second frame difference information derived from said
second frame and an adjacent third progressive scan frame
of said initial television signal.

20 2. A system according to claim 1, wherein
said auxiliary signal (IF,QF,YF) contains
information representative of a difference between said
first frame difference information and said second frame
difference information.

25 3. A system according to claim 1, wherein
said auxiliary signal component (YT) is derived
from first second and third picture elements spatially
aligned in a temporal direction, and is combined with said
converted television signal in a single signal channel to
30 produce a combined signal.

4. A system according to claim 1, and further
comprising
means (79) for lowpass filtering said auxiliary
signal component.

5. A system according to claim 4, wherein said lowpass filtering means (79) exhibits a cut-off frequency below a chrominance frequency band.

5 6. A system according to claim 1, wherein said auxiliary signal component (YT) and said converted television signal (NTSCF) quadrature modulate (57) an RF carrier.

10 7. A system according to claim 1, wherein said initial television signal (IF,QF,YF) is representative of a widescreen image having a side panel portion and a main panel portion, and having an overall aspect ratio greater than that of a standard television image.

15 8. A system according to claim 3, and further comprising television signal receiving means (1320) for receiving said combined signal; and means (1370) for developing an image representative signal in response to said received
20 combined signal.

9. A system according to claim 1, wherein said initial television signal comprises an image picture element A in a progressive scan image frame, an intermediate picture element X spatially aligned with
25 picture element A in a succeeding adjacent progressive scan image frame, and a picture element B spatially aligned with picture element X in a succeeding adjacent progressive scan image frame; and said auxiliary signal component (YT) comprises
30 information derived from a difference between a value of said picture element X and an average value of said picture elements A and B in accordance with the expression $X - (A+B)/2$.

10. A system according to claim 1, wherein
said initial television signal includes
luminance (YF) and chrominance information (IF,QF); and
said auxiliary signal component (YT) is derived
5 from said luminance information (YF).

11. A system for receiving a television-type
signal including a component representative of image
information to be displayed with an interlaced line
scanning format, and including an auxiliary signal
10 component (YTN) containing first frame difference
information derived from first and second adjacent
progressive scan frames of a corresponding television
signal exhibiting a progressive line scanning format, and
second frame difference information derived from said
15 second field and an adjacent third progressive scan frame
of said corresponding television signal exhibiting a
progressive line scanning format, said system comprising
means (1322) for separating said television
signal into said interlaced line scanning component and
20 said auxiliary component;
a video signal processing channel (1342-1354)
for processing said interlaced line scanning component;
means (1350,1352,1354) included in said channel
for converting said interlaced line scanning image
25 component into a progressive line scanning component and
means (1360) for coupling said auxiliary
component to said channel to facilitate the conversion of
said interlaced line scanning component into said
progressive line scanning component.

12. A system according to claim 11, wherein
said image representative component (NTSCF) of
said received television signal includes luminance and
chrominance information; and
said auxiliary signal component (YTN) is derived
35 from said luminance information.

13. A system according to claim 11, wherein
said image representative component (NTSCF) of
said television signal includes information representative
of a widescreen image having a side panel portion and a
5 main panel portion, and having an image aspect ratio
greater than that of a standard television image;
said video signal processing channel includes
means (1344) for translating said widescreen image
information; and
10 said converting means (1350-1354) responds to
said translated widescreen image information.

14. A system according to claim 11, wherein
said auxiliary component includes information
representative of a difference between said first frame
15 difference information and said second frame difference
information.

15. A system according to claim 11, wherein
said separating means includes an RF demodulator
for demodulating an RF carrier signal quadrature modulated
20 by said auxiliary component.