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[54] CIRCUIT FOR TAPE DUPLICATION IN VIDEO TAPE RECORDER

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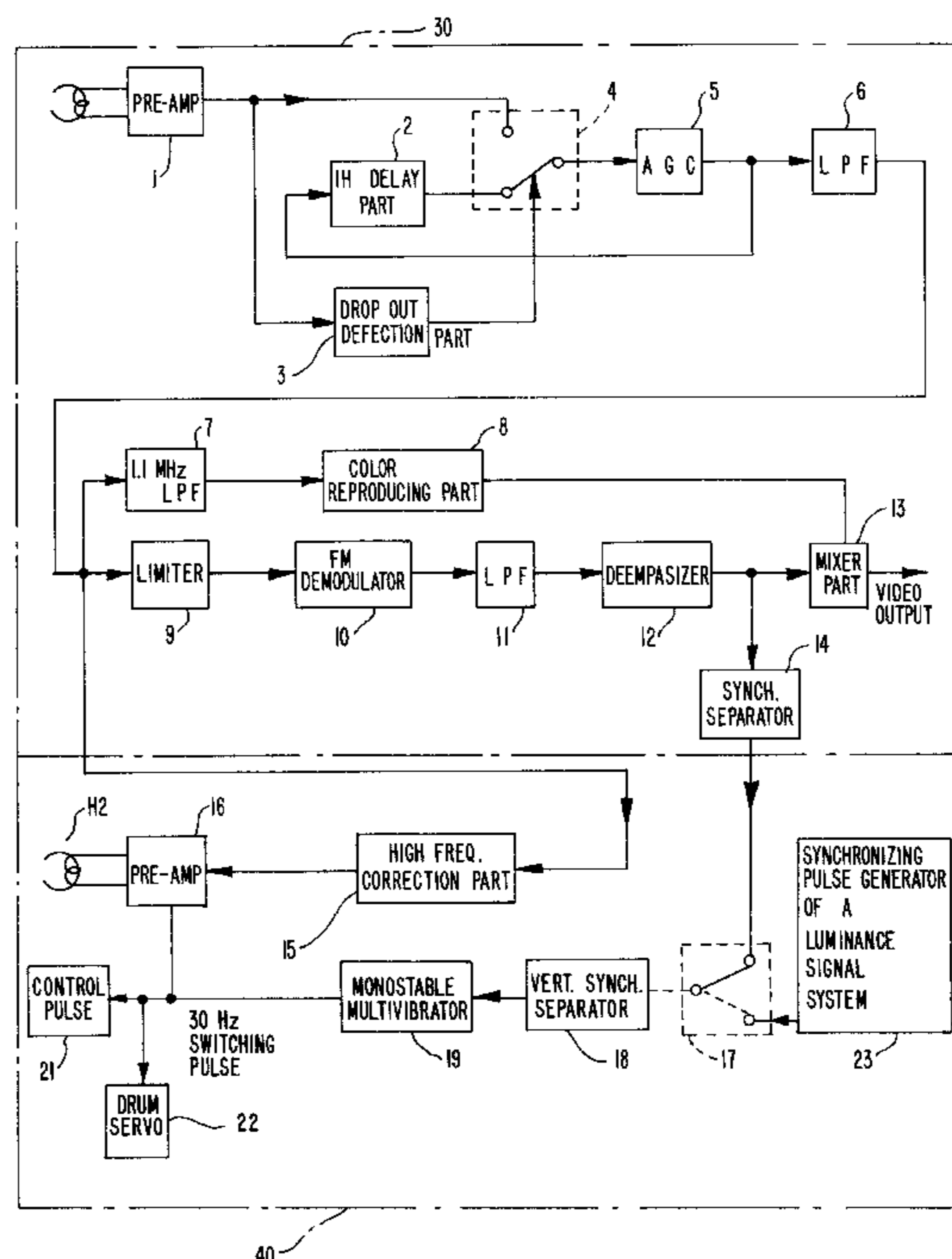
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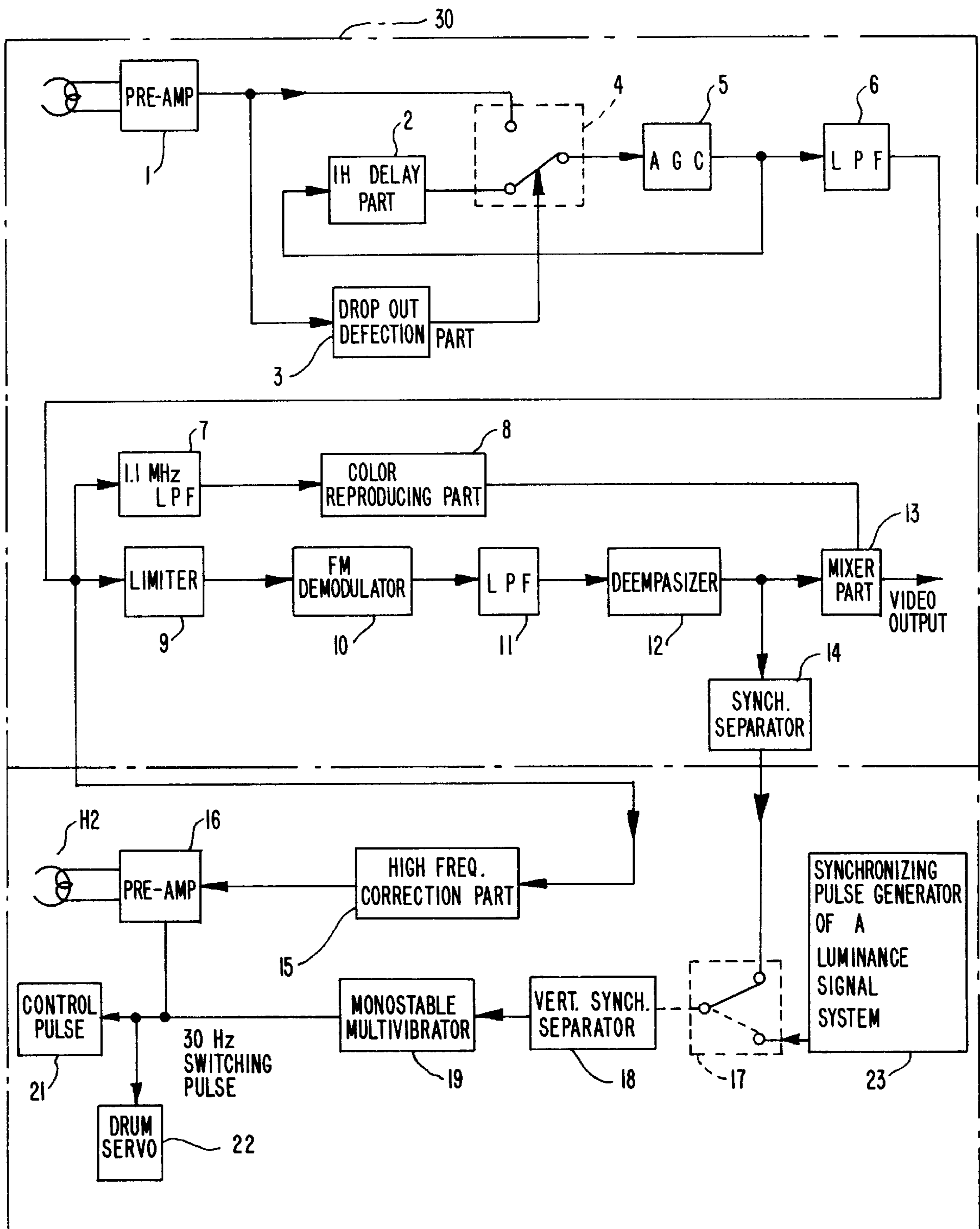
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[57] ABSTRACT

The invention provides a FM signal transfer-recording system of VTR including; a RF output signal through the low pass filter of the reproduction set is applied to the pre-amp through the high frequency compensation part of the record set, and a synchronization signal separated at the synchronization-separating part of the reproduction set generates a switching pulse of 30 Hz through 1 switch, horizontal synchronization-separating part and monostable multivibrator of the record set in order to synchronize control pulse part and the drum servo. Recording directly the reproduced RF signal without FM demodulation and modulation and applying the synchronization signal of the reproduction set to the record set so as to synchronize control pulse and the drum servo with the synchronization signal or the reproduction set may be possible and removing the screen blazing generated due to FM demodulation and modulation may be attained according to the present invention.

55 Claims, 1 Drawing Sheet





40 FIG. 1

CIRCUIT FOR TAPE DUPLICATION IN VIDEO TAPE RECORDER

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

BACKGROUND OF THE INVENTION

The present invention relates to a circuit for tape duplication in video tape recorder, particularly to a system which can reduce picture degradation occurring in the case of tape duplication, by recording directly the read signal from a tape on another tape without FM modulation or demodulation.

Generally, if the image signal recorded on a tape is picked-up at a head, and the amplified and FM modulated signal becomes a luminance signal through FM demodulation, and after the color signal of low band (625 KHz+500 KHz) is demodulated, and the luminance signal and color signal are summed to be a composite image signal as a reproduction method of VTR, then after this composite image signal is received, the luminance signal and the color signal are separated from the composite image signal, and the separated signals are recorded again on a tape through FM modulation and the low frequency modulation for the color signal, as a recording method for a VTR, but in the conventional case when duplicating the VTR tape, the duplication can be achieved through reproduction and recording steps so that picture degradation is caused.

That is, in case of the duplication of a VTR tape, the FM modulated signal and the low band modulated color signal are recorded through the FM demodulation and modulation, so that the picture quality can be subjected to greater deterioration since picture degradation is caused as the duplicating operation is repeated.

SUMMARY OF THE INVENTION

The present invention has been made in consideration of this and has for one of its objects to provide a circuit for tape duplication in video tape recorder in which the duplication operation can be carried out by transmitting directly a RF signal from low pass filter to the high-frequency correction part and synchronizing the switching pulse of the record set with the synchronizing signal of the reproduction set, without the FM modulation and demodulation, and the picture degradation can be prevented at the same time.

The object of the present invention can be achieved through the following operations: the amplified FM carrier signal at the pre-amp. of the reproduction set is compensated by the drop-out compensation, and it is signal-processed through the reproduction loop including a limiter and a FM modulator, on the other hand, the FM carrier signal is directly applied to the pre-amp. of the record set and is recorded, and the FM demodulated signal is applied to the record set after the separation of synchronization, and the switching pulse of 30 Hz is made up by separating the vertical synchronizing signal, and it is synchronized with the synchronization signal of the reproduction set so that the duplication of a tape can be directly carried out without FM modulation and demodulation processing.

According to the present invention, there is provided a circuit for tape duplication in video tape recorder in which a RF output signal through the low-pass filter of the reproduction set is applied to the pre-amp through the high frequency correction part of the record set, and a separated synchronizing signal at the synchronization signal separa-

tion part (in short synchronizing separation part) of the reproduction set generates the switching pulse of 30 Hz through the switch, the vertical synchronizing separation part and a monostable multivibrator of the record set so that the control pulse part and the drum servo can be synchronized.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a circuit diagram of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The present invention will now be described in more detail with reference to the accompanying figure.

The present invention is composed of two major parts: the reproduction set **30** for reproducing the signal on a tape, and the record set **40** for recording the output signal of the reproduction set **30**. The reproduction set **30** and the record set **40** can be composed of either two different VTR's or only on VTR of the double deck type.

First, the reproduction set **30** is identical with the conventional reproduction signal-processing block, where the signal picked up at a head **H1** is amplified through a pre-amp **1** and is applied to AGC (automatic gain controller) **5** through a switch **4**, but if a drop-out occurs at some part, the drop-out detecting part **3** connects the switch **4** as shown in the figure, so that the 1H delayed signal through 1H delay part **2** is applied to AGC **5**, and after the output of AGC **5** passes a low pass filter **6**, it also passes a low pass filter **7** of cut-off frequency 1.1 MHz so that the color signal is transferred to the mixer **13**, from the color reproduction part **8**, and at the same time, after the output of the low pass filter **6** is limited through the limiter **9**, thereby becoming a suitable level for demodulation, and the limited signal is applied to the synchronizing separation part **14** and a mixer **13** through the FM demodulator **10**, a low pass filter **11**, and a deemphasizer **12**, and the luminance signal and the color signal are summed up at the mixer **13**, thereby producing the video signal, and the synchronizing signal is separated at the synchronizing separation part **14**.

And the RF output signal (FM signal plus low band modulated color signal) of the low pass filter **6** in reproduction set **30** is corrected through the high frequency correction part **15** of the record set **40**, and it is recorded at the head **H2** through a pre-amp **16**, the synchronizing signal of the synchronizing separation part **14** generates the switching pulse of 30 Hz through a switch **17**, a vertical synchronizing separation part **18**, and monostable multivibrator **19**, so that the control pulse **21**, the drum servo **22**, and a pre-amp-**16** are controlled by the switching pulse.

At this time, in case of a normal VTR operation, the synchronization signal from a synchronizing signal generator of luminance signal system **23** is selected to be used by the switch **17**, but in case of the duplication of a tape, the synchronizing signal of the synchronizing signal separation part **14** is used by a selection of the switch **17**.

The present invention like this can use either two different VTR's or only a VTR of double-deck type, and the VTR tape can be duplicated without the picture degradation.

To explain in detail, first, the pre-amp **1** amplifies the FM modulated luminance signal and the low-band modulated color signal picked up at the head **H1** and this RF signal (FM modulated signal plus low-band modulated signal) is directly applied to AGC **5** through the switch **4** when the RF signal is normal, but if the drop-out occurs in the RF signal, the 1H delayed RF signal by the 1H delay part **2** is applied to AGC **5**.

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At this time, the drop-out detector **3** transmits the only FM main carrier frequency component of RF signal level, and if the level is low, then it is regarded as a drop-out, and the switch is connected as shown in the figure thereby applying the 1H delayed signal by the 1H delay part **2** the AGC **5**.

And, the low pass filter **6** is controlled to transmit the only necessary component of the output of the low pass filter **1**, and the RF signal through the low pass filter **6** is applied to the low pass filter **7** of cut-off frequency 1.1 MHz so that the only low-band modulated color signal(629 KHz±500 KHz) **10** can be transmitted, and this color signal is applied to a mixer **13** through the color signal reproduction part **8**.

Also, the output of the low pass filter **6** is applied to a limiter **9** so that it is limited to a suitable level for the FM demodulation, and the luminance signal is applied to a mixer **13** and the synchronizing separation part **14** through the FM demodulator **10**, the low pass filter **11**, and the deemphasizer **12**.

Thus, the luminance signal and the color signal are summed at the mixer **13** so that the video signal is generated transmitting the recorded contents on monitor for seeing and hearing, and the synchronizing separation part **14** separates the synchronization signal.

The reproduction set which performs such operations is identical with the conventional VTR.

In case of the present invention, the RF output signal of the low pass filter **6** and the separated synchronization signal at the synchronizing separation part **14** are directly connected to the record set **40**. That is, the high frequency correction part **15** of the record set **40** receives the RF signal transmitted from the low pass filter **6** and records it at the head **H2** through the pre-amp **16** after determining the blazed high frequency components, and the synchronizing signal separated at the synchronizing separation part **14** of the reproduction set **30** generates the switching pulse of 30 Hz through the switch **17**, the vertical synchronizing separation part **18**, and monostable multivibrator **19**.

The switching pulse of 30 Hz can be recorded on the control track of a tape through the control pulse part **21**, and it is applied to the drum servo **22**, thereby controlling the servo of the drum speed, and also applied to the pre-amp **16** for channel switching of the recorded signal.

At this time, the switch **17** is converted for applying the synchronizing signal separated at the synchronizing separation part **14** to the vertical synchronizing separation part **18** in case of the duplication of a tape, and the switch is converted to a normal position in the case of conventional operation of the VTR so that the synchronizing signal **23** of the luminance signal system can be applied to the vertical synchronizing separation part **18**.

As mentioned above, the first set of the present invention reproduces the program to be copied, and the second set records it, so that the present invention can be composed of a double deck, and the state of the reproduced signal in the reproduction set **30** can be conformed on monitor.

This reproduced RF signal is applied to the record set **40** after the drop-out compensation, and the synchronizing signal separated at the synchronizing separation part **14** is also applied to the record set **40**.

Thus, after the record set **40** corrects the RF signal applied from the reproduction set **30** through the high frequency correction part **15**, the record set **40** records it at the head **2** through the pre-amp **16**, also after the synchronizing signal separated at the synchronizing separation part **14** of the reproduction set **30** separates again the vertical synchroni-

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zation signal through the vertical synchronizing separation part **18**, and it generates the switching pulse of 30 Hz through the monostable multivibrator, and the switching signal of 30 Hz can be recorded on the control track of a tape, also it is applied to pre-amp **16** for the channel switching of the recorded signal.

As mentioned above, the present invention can remove the picture degradation generated due to the FM demodulation and modulation by recording directly the reproduced RF signal without FM demodulation and modulation and applying the synchronizing signal of the reproduction set to the record set so that the control pulse and the drum servo can be synchronized with the synchronization signal of the reproduction set.

The invention is in no way limited to the embodiment described hereinabove. Various modifications of disclosed embodiment as well as other embodiments of the invention will become apparent to persons skilled in the art upon reference to the description of the invention. It is therefore contemplated that the appended claims will cover any such modifications or embodiments as fall within the true scope of the invention.

What is claimed is:

1. A circuit for tape duplication in a video tape receiver, comprising:

a reproduction set comprising:

a low pass filter for filtering a radio frequency signal; and

synchronizing signal separating means for separating a synchronizing signal, from the radio frequency signal filtered by said low pass filter, to generate a first signal; and

a record set comprising:

a pre-amp for receiving the radio frequency signal from said low pass filter through a high frequency compensation circuit; and

a switch for receiving the first signal from said synchronization-separating part and passing the first signal through a vertical synchronizing signal separating means and a monostable multivibrator to generate a switching pulse for synchronizing a control pulse means and a drum servo.

2. A circuit for tape duplication for a video tape recorder from one tape to another tape without demodulation of a frequency modulated signal, comprising:

a video tape reproduction component including means for passing a low pass radio frequency output signal having a frequency modulated signal and a low band signal and means for separating a first synchronization signal from said radio frequency output signal; and

a video tape recording component including means for separating a *vertical* synchronization signal from said first synchronization signal, means for generating a switching pulse signal from said vertical synchronization signal, and means for applying said switching pulse signal to control operation of a tape drum within said recording component.

3. A method for reducing picture degradation during copying in a video tape recorder, comprising the steps of:

amplifying a first signal detected at a first video head in a first amplifying step;

controlling the gain of said first signal;

filtering said first signal in a first filtering step;

limiting said first signal, after said first filtering step to a first level for demodulation to produce a second signal;

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performing a second filtering operation on said first signal, after said first filtering step, to produce a third signal;

demodulating the second signal and filtering the demodulated second signal;

mixing said filtered demodulated second signal and said third signal for producing a fourth video signal;

amplifying said first signal, after said first filtering step, prior to recording by a second video head in a second amplifying step;

recording the amplified first signal;

separating a synchronizing signal from said filtered demodulated second signal;

producing a switching pulse from said separated synchronizing signal; and

applying said switching pulse to said amplifying stage to allow channel switching of the amplified first signal.

4. A method as claimed in claim 3, further comprising the step of controlling the gain of a delayed signal combined with the first signal, when a low level of a main carrier frequency of the first signal is detected, to compensate for the low level.

5. A method as claimed in claim 4, wherein the delayed signal is a delay of the gain controlled first signal.

6. A method as claimed in claim 5, wherein said synchronizing signal is not applied to produce said switching pulse when the video tape recorder is not in a recording mode.

7. A frequency modulation signal transfer recording system of a video tape recorder, comprising:

reproduction means for directly transmitting both an image signal received from a recorded signal reproduced by a head of the video tape recorder and a synchronizing signal; and

recording means for receiving said image signal and said synchronizing signal, converting the synchronizing signal to a switching pulse generated in said recording means and applying the switching pulse to the transmitted image signal to eliminate picture degradation.

8. A system of a video tape recorder as claimed in claim 7, wherein said reproduction [set] means comprises:

first filter means for limiting the frequency of the image signal; and

sync separating means for separating [a synchronous] the synchronizing signal, from the image signal limited by said first filter means.

9. A system of a video tape recorder as claimed in claim 8, wherein *drop-out* detection means determines if the image signal is below a predetermined level before enabling application of said image signal to said first filter means.

10. A system of a video tape recorder as claimed in claim 9, further comprising means for controlling gain of the image signal before limiting in said first filter means.

11. A system of a video tape recorder as claimed in claim 10, further comprising delay means for compensating the image signal, through a feedback loop to apply a delayed image signal to the means for controlling gain, when the image signal is determined to be below the predetermined level by said drop-out detection means.

12. A system of a video tape recorder as claimed in claim 11, further comprising a limiter and demodulator coupled to receive the limited image signal for generating a brightness signal before separating the synchronous signal.

13. A system of a video tape recorder as claimed in claim 11, further comprising:

second filter means to further limit the limited image signal to produce a color signal; and

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means for mixing the color signal with the brightness signal to produce a video output.

14. A system of a video tape recorder as claimed in claim 8, wherein said recording means comprises:

high frequency compensation means for correcting the limited image signal, from said first filter means, before recording the corrected image signal through a pre-amplifier;

means for generating a switching pulse, from said synchronous signal, for channel switching of the corrected image signal and eliminating picture degradation when recording; and

means for coupling said synchronous signal to said means for generating based on a mode of operation of the video tape recorder.

15. A system of a video tape recorder as claimed in claim 14, further comprised of means for controlling the speed of a tape drum on the basis of said switching pulse.

16. A frequency modulation signal transfer recording system of a video tape recorder, comprising:

high frequency compensation means for correcting a received radio frequency signal for recording by a head through a pre-amplifier means; and

switching pulse means for synchronously generating, from a received synchronizing signal, a switching pulse and applying said switching pulse to said pre-amplifier means, when the video tape recorder is in a record mode, to eliminate picture degradation.

17. A system of a video tape recorder as claimed in claim 16, further comprised of a drum servo for channel switching of a recorded signal, wherein the speed of said drum servo is controlled by said switching pulse.

18. A system of a video tape recorder as claimed in claim 16, further comprised of:

switch means; and

a brightness signal system coupled to transmit a brightness signal to said switching pulse means through said switch means when the video tape recorder is not in a record mode.

19. A system of a video tape recorder as claimed in claim 16, further comprised of [a] reproducing means coupled to said system for transmitting said radio frequency signal and said synchronizing signal to said system.

20. A system of a video tape recorder as claimed in claim 18, wherein said switching pulse means is further comprised of:

vertical synchronization separating means, coupled to receive the synchronizing signal or brightness signal, for separating a vertical synchronization signal therefrom; and

monostable multivibrator means, coupled to receive the vertical synchronization signal, for generating the switching pulse.

21. A frequency modulation signal transfer-recording system of a video tape recorder, comprising:

reproduction means for reproducing a program to be copied, comprising:

first pre-amp means for amplifying a first signal received from a head on the video tape recorder;

drop out detection means for determining if the first signal, amplified by said first pre-amp means, is below a certain level;

delay means for compensating the first signal upon detection, by said drop out detection means, of the first signal being below said certain level;

first switch means for connecting said first pre-amp means or said delay means to an automatic gain controller, based on the detection of a low signal; said automatic gain controller controlling the gain of the first signal or the compensated first signal to produce a gain controlled first signal; first filter means for filtering the gain controlled first signal for producing a filtered first signal; second filter means for separating a color signal contained in the first signal from the filtered first signal; limiter means for limiting the filtered first signal to a level suitable to demodulation; demodulator means for demodulating the limited first signal for producing a demodulated signal; a mixer for mixing the color signal separated from the first signal and the demodulated signal, producing a video signal; and synchronization separating means for generating a synchronization signal from the demodulated signal; and

recording means for recording the reproduced program to be copied, comprising:

high frequency compensation means for correcting the filtered first signal, from said first filter means, for recording through a second pre-amp means;

second switch means for connecting said synchronization signal to a switching pulse means based on a mode of operation of the video tape recorder; and said switching pulse means generating a switching pulse used in channel switching during recording.

22. A method for reducing picture degradation during copying in a video tape recorder, comprising the steps of: amplifying a first signal detected at a first video head in a first amplifying step;

controlling the gain of said first signal;

filtering said first signal in a first filtering step;

limiting said first signal, after said first filtering step, to a first level for demodulation to produce a second signal;

performing a second filtering operation on said first signal, after said first filtering step, to produce a third signal;

demodulating the second signal and filtering the demodulated second signal;

mixing said filtered demodulated second signal and said third signal to produce a fourth video signal;

amplifying said first signal, after said first filtering step, prior to recording by a second video head in a second amplifying step;

recording the amplified first signal;

separating a synchronizing signal from said filtered demodulated second signal; and

producing a switching pulse from said separated synchronizing signal.

23. A method as claimed in claim 22, further comprising the step of controlling the gain of a delayed signal combined with the first signal, when a low level of a main carrier frequency of the first signal is detected, to compensate for the low level.

24. A method as claimed in claim 23, wherein the delayed signal is a delay of the gain controlled first signal.

25. A method as claimed in claim 24, wherein said synchronizing signal is not applied to produce said switching pulse when the video tape recorder is not in a recording mode.

26. A frequency modulation signal transfer recording system of a video tape recorder, comprising:

reproduction means for directly transmitting both an image signal received from a recorded signal reproduced by a head of the video tape recorder and a synchronizing signal; and

recording means for receiving said image signal and said synchronizing signal, and for converting the synchronizing signal to a switching pulse generated in said recording means.

27. A system of a video tape recorder as claimed in claim 26, wherein said reproduction means comprises:

first filter means for limiting the frequency of the image signal; and

sync separating means for separating a synchronous signal from the image signal limited by said first filter means.

28. A system of a video tape recorder as claimed in claim 27, wherein said reproduction means comprises drop-out detection means for determining if the image signal is below a predetermined level before enabling application of said image signal to said first filter means.

29. A system of a video tape recorder as claimed in claim 28, further comprising means for controlling gain of the image signal before limiting in said first filter means.

30. A system of a video tape recorder as claimed in claim 29, further comprising delay means for compensating the image signal, through a feedback loop, to apply a delayed image signal to the means for controlling gain, when the image signal is determined to be below the predetermined level by said drop-out detection means.

31. A system of a video tape recorder as claimed in claim 30, wherein said reproduction means further comprises a limiter and demodulator coupled to receive the limited image signal for generating a brightness signal before separating the synchronous signal.

32. A system of a video tape recorder as claimed in claim 30, wherein said reproduction means further comprises:

second filter means to further limit the limited image signal to produce a color signal; and

means for mixing the color signal with the brightness signal to produce a video output.

33. A system of a video tape recorder as claimed in claim 27, wherein said recording means comprises:

high frequency compensation means for correcting the limited image signal, from said first filter means, before recording the corrected image signal through a pre-amplifier;

means for generating a switching pulse, from said synchronous signal, for channel switching of the corrected image signal and eliminating picture degradation when recording; and

means for coupling said synchronous signal to said means for generating said switching pulse based on a mode of operation of the video tape recorder.

34. A system of a video tape recorder as claimed in claim 33, further comprised of means for controlling the speed of a tape drum on the basis of said switching pulse.

35. A frequency modulation signal transfer recording system of a video tape recorder, comprising:

high frequency compensation means for correcting a received radio frequency signal for recording by a head through a pre-amplifier means; and

switching pulse means for synchronously generating, from a received synchronizing signal, a switching pulse.

36. A system of a video tape recorder as claimed in claim 35, further comprised of a drum servo for channel switching

of a recorded signal, wherein the speed of said drum servo is controlled by said switching pulse.

37. A system of a video tape recorder as claimed in claim 35, further comprised of:

switch means; and

a brightness signal system coupled to transmit a brightness signal to said switching pulse means through said switch means when the video tape recorder is not in a record mode.

38. A system of a video tape recorder as claimed in claim 35, further comprised of reproducing means coupled to said system for transmitting said radio frequency signal and said synchronizing signal to said system.

39. A system of a video tape recorder as claimed in claim 37, wherein said switching pulse means is further comprised of:

vertical synchronization separating means, coupled to receive the synchronizing signal or brightness signal, for separating a vertical synchronization signal therefrom; and

monostable multivibrator means, coupled to receive the vertical synchronization signal, for generating the switching pulse.

40. A frequency modulation signal transfer-recording system of a video tape recorder, comprising:

reproduction means for reproducing a program to be copied, comprising:

first pre-amp means for amplifying a first signal received from a head on the video tape recorder;

drop out detection means for determining if the first signal, amplified by said first pre-amp means, is below a certain level;

delay means for compensating the first signal upon detection, by said drop out detection means, of the first signal being below said certain level;

first switch means for connecting one of said first pre-amp means and said delay means to an automatic gain controller, based on the detection of a low signal;

said automatic gain controller controlling the gain of one of the first signal and the compensated first signal to produce a gain controlled first signal;

first filter means for filtering the gain controlled first signal to produce a filtered first signal;

second filter means for separating a color signal contained in the first signal from the filtered first signal;

limiter means for limiting the filtered first signal to a level suitable to demodulation;

demodulator means for demodulating the limited first signal for producing a demodulated signal;

a mixer for mixing the color signal separated from the first signal and the demodulated signal, producing a video signal; and

synchronization separating means for generating a synchronization signal from the demodulated signal; and

recording means for recording the reproduced program to be copied, comprising:

high frequency compensation means for correcting the filtered first signal, from said first filter means, and for recording said filtered first signal through a second pre-amp means; and

second switch means for connecting said synchronization signal to a switching pulse means based on a mode of operation of the video tape recorder.

41. A circuit for duplicating a first video tape onto a second video tape without demodulation and modulation of luminance signals, said circuit comprising:

means for reproducing frequency modulated luminance signals and low-band modulated color signals from said first video tape, and for providing said frequency modulated luminance signals and said low-band modulated color signals; and

means for recording said frequency modulated luminance signals and said low-band modulated color signals provided by said reproducing means on said second video tape; wherein said frequency modulated luminance signals and said low-band modulated color signals reproduced from said first video tape are directly transferred to be recorded on said second video tape without frequency demodulation of said frequency modulated luminance signals.

42. A circuit as claimed in claim 41, wherein said reproducing means comprises means for demodulating said frequency modulated luminance signals and said low-band modulated color signals to provide a composite video signal as a video output for a video monitor.

43. A circuit as claimed in claim 41, wherein said demodulating means comprises:

color reproducing means for generating demodulated color signals from said low-band modulated color signals; and

frequency demodulator and synchronization signal separating means for generating demodulated luminance signals by demodulating said frequency modulated luminance signals, and for generating synchronization signals; and

wherein said recording means comprises drum servo means for controlling rotation of a drum having record head means in response to said synchronization signals, said record head means for recording said frequency modulated luminance signals and said low-band modulated color signals on said second video tape.

44. A circuit as claimed in claim 41, wherein said reproducing means comprises synchronization signal separating means for generating synchronization signals in response to said frequency modulated luminance signals; and wherein said recording means comprises drum servo means for controlling rotation of a drum having record head means in response to said synchronization signals, said record head means for recording said frequency modulated luminance signals and said low-band modulated color signals on said second video tape.

45. A circuit as claimed in claim 41, wherein said reproducing means comprises synchronization signal separating means for generating synchronization signals in response to said frequency modulated luminance signals; and

wherein said recording means comprises:

means for generating vertical synchronization signals in response to said synchronization signals generated by said synchronization signal separating means;

monostable multivibrator means for generating switching pulses in response to said vertical synchronization signals; and

drum servo means for controlling rotation of a drum having record head means in response to said switching pulses, said record head means for recording said frequency modulated luminance signals and said low-band modulated color signals on said second video tape.

46. A circuit for duplicating a first video tape onto a second video tape without demodulation and modulation of luminance signals, said circuit comprising:

means for reproducing frequency modulated luminance signals and low-band modulated color signals from said first video tape, for providing said frequency modulated luminance signals and said low-band modulated color signals, and comprising:

color reproducing means for generating demodulated color signals from said low-band modulated color signals,

frequency demodulator and synchronization signal separating means for generating demodulated luminance signals by demodulating said frequency modulated luminance signals and for generating synchronization signals, and

means for mixing said demodulated luminance signals with said demodulated color signals to provide a composite video signal as a video output for a video monitor; and

means for recording said frequency modulated luminance signals and said low-band modulated color signals provided by said reproducing means on said second video tape; wherein said frequency modulated luminance signals and said low-band modulated color signals reproduced from said first video tape are directly transferred to be recorded on said second video tape without frequency demodulation of said frequency modulated luminance signals, said recording means comprising:

means for generating vertical synchronization signals in response to said synchronization signals generated by said synchronization signal separating means,

monostable multivibrator means for generating switching pulses in response to said vertical synchronization signals, and

drum servo means for controlling rotation of a drum having record head means in response to said switching pulses, said record head means for recording said frequency modulated luminance signals and said low-band modulated color signals on said second video tape.

47. A video tape recorder having a tape duplication without video signal demodulation capability, said video tape recorder comprising:

a reproduction section for reproducing frequency modulated luminance signals and modulated color signals from a first video tape, and for providing said frequency modulated luminance signals and said modulated color signals on an output signal path;

a recording section for receiving said frequency modulated luminance signals and said modulated color signals from said output signal path, and for recording said frequency modulated luminance signals and said modulated color signals on a second video tape.

48. A video tape recorder as claimed in claim 47, wherein said reproduction section comprises means for generating synchronization signals from said frequency modulated luminance signals.

49. A video tape recorder as claimed in claim 48, further comprised of said recording section controlling a drum servo of a head drum in response to said synchronization signals.

50. A video tape recorder as claimed in claim 47, wherein said reproduction section comprises:

means for generating demodulated luminance signals by demodulating said frequency modulated luminance signals; and

synchronization separation means for separating synchronization signals from said demodulated luminance signals.

51. A video tape recorder as claimed in claim 50, wherein said recording section comprises:

a head drum for recording said frequency modulated luminance signals and said modulated color signals on said second video tape; and

a drum servo of controlling rotation of said head drum in response to said synchronization signals.

52. A video tape recorder as claimed in claim 49, wherein said reproduction section further comprises:

means for generating demodulated color signals by demodulating said modulated color signals; and

means for mixing said demodulated color signals and said demodulated luminance signals to generate composite video signals for provision to a video monitor.

53. A method for duplicating a first video tape onto a second video tape in a video tape recorder without video signal demodulation, said method comprising:

reproducing frequency modulated luminance signals and modulated color signals from said first video tape;

providing said frequency modulated luminance signals and said modulated color signals on an transfer signal path to a recording section;

receiving said frequency modulated luminance signals and said modulated color signals in said recording section; and

recording said frequency modulated luminance signals and said modulated color signals on a second video tape in said recording section.

54. A method as claimed in claim 53, further comprising: generating demodulated luminance signals by demodulating said frequency modulated luminance signals; separating synchronization signals from said demodulated luminance signals; and

controlling rotation of a head drum recording said frequency modulated luminance signals and said modulated color signals on said second video tape in response to said synchronization signals.

55. A method as claimed in claim 54, further comprising: generating demodulated color signals by demodulating said modulated color signals;

means for mixing said demodulated color signals and said demodulated luminance signals to generate composite video signal; and

providing said composite video signals a video monitor.