

TUNER, RF / TU / IF

TYPE 295P510A10
(VD025AR)

(For UL and FCC Applications)

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RF Modulator Technical Specifications Detail

SCOPE

The device, type 295P510A10 consists of RF modulator (RF converter) and Antenna switch (RF switch). When control switch is OFF (supply 0V or open), the output signal of RF modulator is not generated and TV signals which is supplied to the ANT input terminal is let to the ANT output terminal through the RF switch.

In this case, RF switch (Q1 and Q2) shall work as a high-pass filter (C20 to C22 and L5 to L7, $f_c = 54\text{MHz}$).

When control switch is ON (supply +5V DC), the output signal of the RF modulator is let to the ANT output terminal through the RF switch (Q3) but Q1 and Q2 of this switch cut off the signal and do not lead it to the ANT input terminal,

1) Type of Emission

Video Modulation Type : A5c

Polarity of Video Modulation : Negative

TV System : N. T. S. C.

Audio Modulation Type : F3. $\pm 25\text{KHz}$, $75\mu\text{S}$ pre-emphasis

2) Output frequency Range

Low CH : VHF Channel 3, (60MHz to 66MHz)

High CH : VHF Channel 4, (66MHz to 72MHz)

3) Range of Operating power : Fixed, 66dB μ Typ.

Means Provided for changing of Operating Power : Not Applicable

4) Maximum Power Rating (Into 75 ohms)

Low CH : 69dB μ

High CH : 69dB μ

5) Voltage and Current to Modulator : 5V DC, 35mA typ.

6) Function of Active Circuit Devices

IC1 : Video Clamper, Video Clipper, RF MIXER, RF Carrier Oscillator, FM Oscillator,
ANT SW Driver.

Q1, Q2, Q3 : RF Switcher

Type of Devices

IC1 : LA7161NM (SANYO) or Equivalent

Q1 to Q3 : 2SC4774 (ROHM) or Equivalent

The video carrier is made by the RF carrier oscillator (IC) PLL.

Then the RF carrier is supplied to the RF Mixer.

The audio signal is supplied to C4, R3 having 75 μ S pre-emphasis time constant. Then the audio signal is supplied to the FM Oscillator (IC).

The frequency modulated signal is supplied to RF Mixer (IC) and converted to the SOUND RF SIGNAL.

Then this signal and video modulator signal (PICTURE RF SIGNAL) is supplied to the ANT output terminal through the low-pass filter (C15, C17 and L2) and RF switch (Q3).

RF switch (Q1 and Q2) can attenuate the RF output signal enough to isolate the ANT input terminal both from the ANT output terminal and RF modulator output.

7) Tune Up Procedure over the Power Range or at Specific Operating

Power Level : Not Adjustable (※)

※ The consumer can not adjust it.

8) All Circuitry and Devices Provided for Determinating and Stabilizing Frequency :

To keep good stability of video carrier and audio carrier, PLL oscillator is used.

9) Any Circuitry or Devices Employed for Suppression of Spurious Radiation, for Limiting the Operating Power :

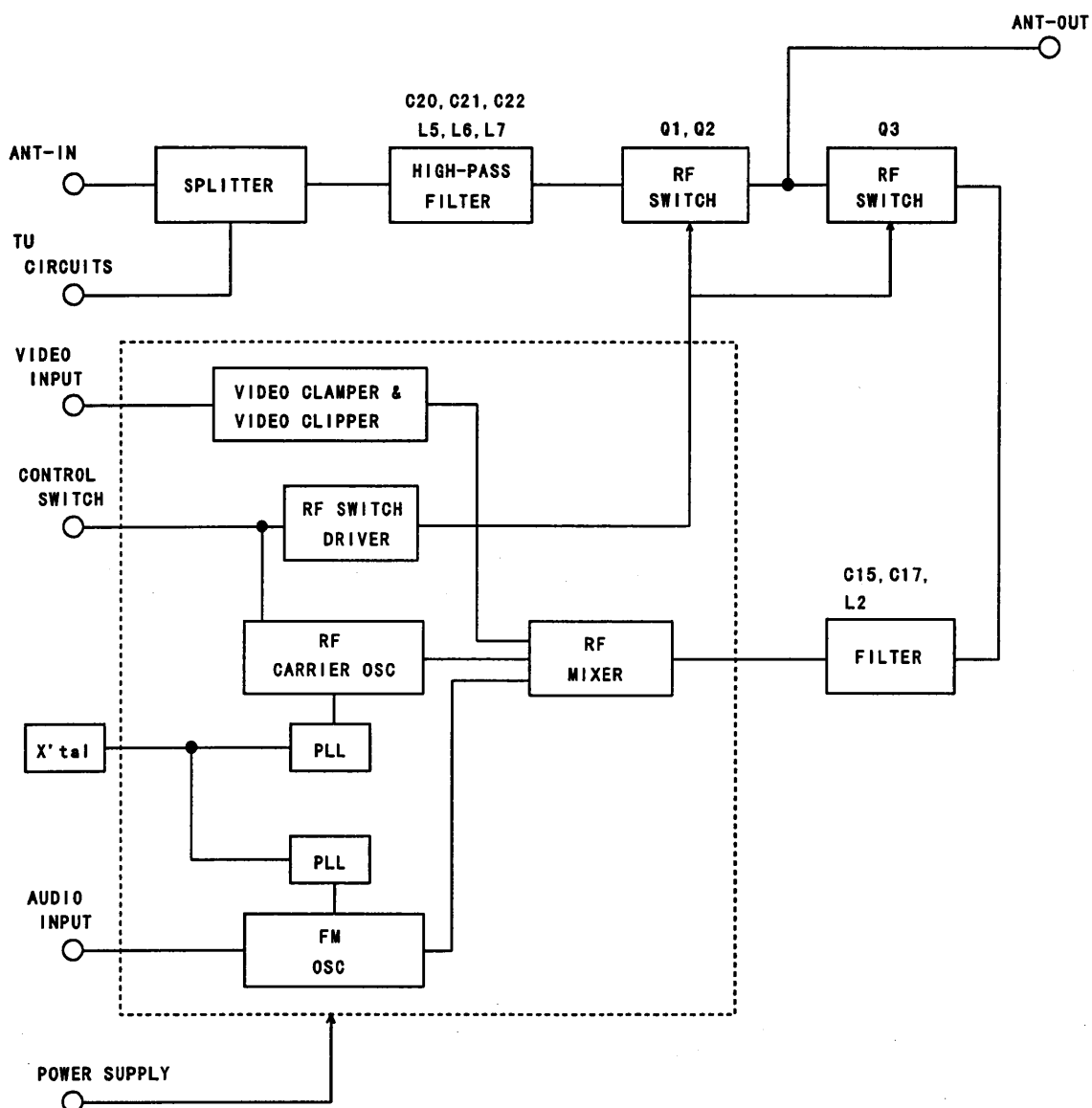
a) Suppression of Spurious Radiation

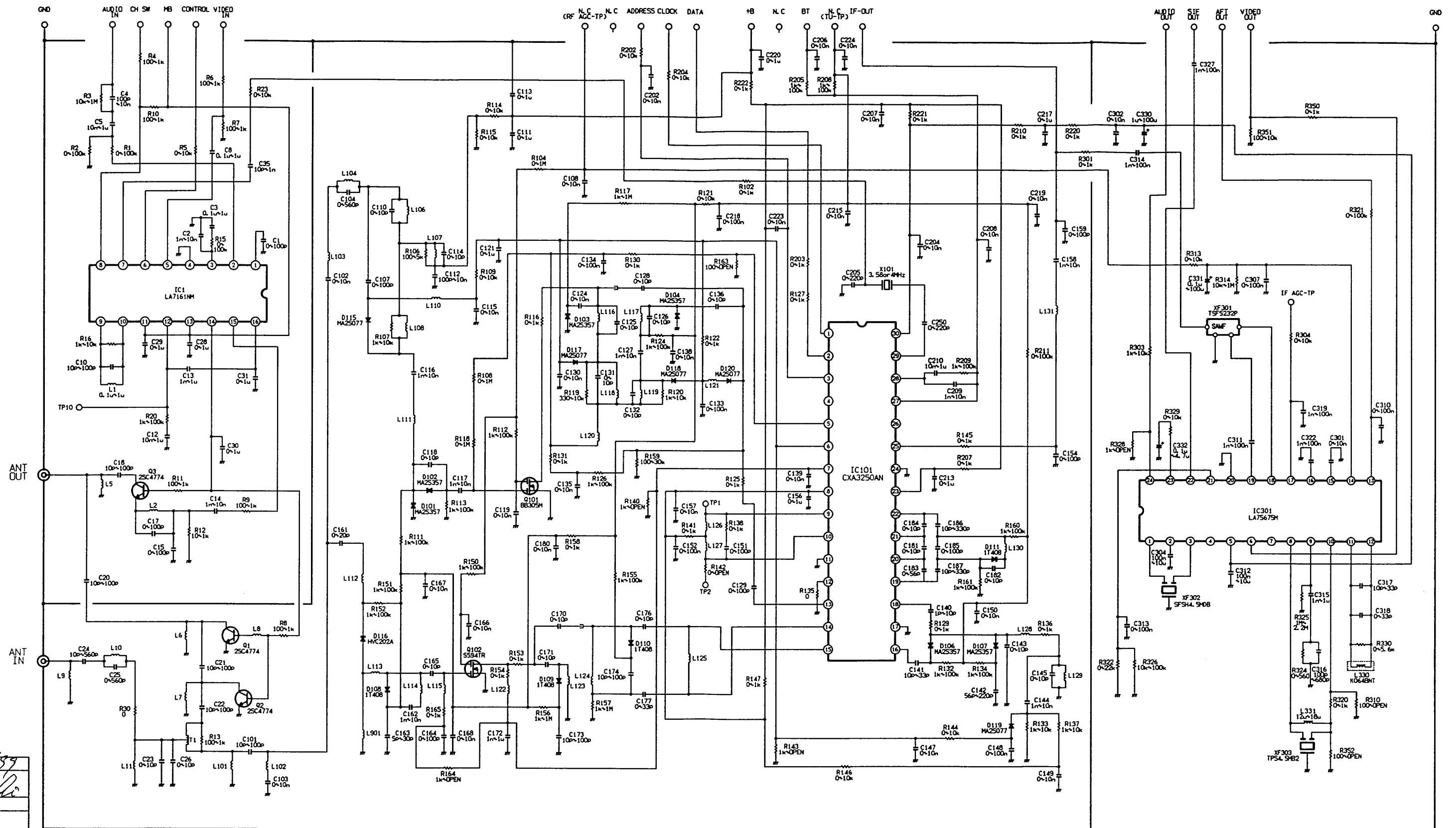
On the RF OUTPUT, there is low-pass filter to suppress spurious.

b) Limiting the Operating Power

The modulation degree is set with R6, R7 (Video)
and R1, R2 (Audio).

10) Block Diagram and Circuit Diagram : Attached.

BLOCK DIAGRAM



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 APPROVED
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 1998. 12. 03
 DESIGNED
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|--|---|--|---|
| Q1-Q3 : 2SC4774, 2SC4965, 2SC4713K | D101-D104, D106, D107 : MA25357, 1T403, 1T404, 1T408, BB664 | X101 : HC-49/U-S, HC-4949/U03, AT-51/4MHz, AT-49, AT-49/3, 58, AT-51/3, 58, HC-49/U-S3, 58 | IC1 : AN3117SA, HA11560FP, LA7161NH, LA7166 |
| Q101 : BB304M, BB305M, SMM4R01 | D113, D115, D117-D120 : MA25077, HVC277 | | IC101 : CXA3135AN, CXA3085AN, CXA3250AN |
| Q102 : BB101M, BB501M, SMM4R02, S594TR | D108-D111 : HVC306A, HVC306B, 1T408, 1T404 | XF301 : TSF5232P, M902A, TSF5221P, M1864M, M1867M, M1866M | IC301 : LA75675M, LA75675AM, LA7567BM, LA7567NM, LA7550S, MS2342AFD, MS2766FP, MS2767FP |
| | D116 : HVC202A9, 1T402, BB555 | XF302 : EFC54RSYSSA, SFSH4, S5NEB2, SFSH4, SMC, SFSH4, S508, SFSR4, SMC | |
| | | XF303 : TPS4, S5B2, TPS4, SMC, TPSR4, S5B2, EFC54RSYSS, EFC54RSYSSC | |