

Circuit Description

1. The interface circuit: CMH-1658

This circuit has four functions as follow,

- a. The magnetron heater voltage control
The magnetron heater voltage, X1, is controlled by the PW signal that is supplied from NBL-315 and +9V that is supplied from CBA-170. The controlled voltage is provided to CPA-209A
- b. The receiver band width control
BS1, BS2 and BS3 are controlled by PW signal that is supplied form NBL-315. The BS signals are provided to NRG-213A.

	BS1	BS2	BS3
Wide Band	OFF	OFF	ON
Middle Band	OFF	ON	OFF
Narrow Band	ON	OFF	OFF

Table 1. BS signal

- c. The pulse with control
PW1, PW2 and PW3 are controlled by PW signal that is supplied from NBL-315. The PW1/2/3 signals are provided to CCB-542.

	PW1	PW2	PW3
0.08usec / 1700Hz	Low	Low	Low
0.25usec/1700Hz	High	Low	Low
0.75usec/860Hz	High	High	Low
1.0usec/650Hz	High	High	High

Table 2. PW1/2/3 signal

Low: 0V, High: +24V

2. The power supply circuit: CBA-170

This circuit generates +9V, +24V, +12V, +5V from +65V that is supplied from NBL-315. The generated voltage is provided to the other circuits in the scanner

unit. The block diagram is shown as below.

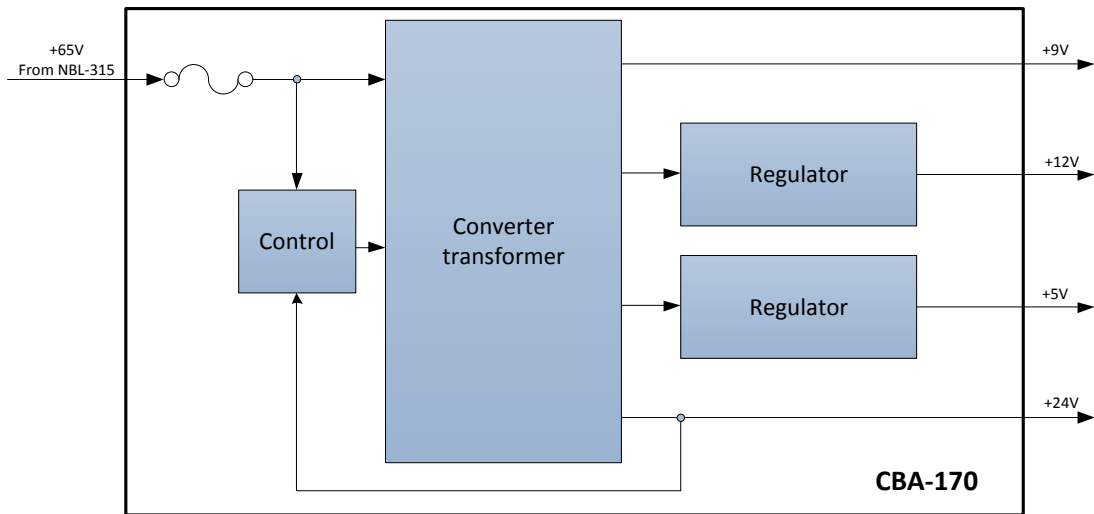


Figure 1. The block diagram of CBA-170

3. Modulator unit: NMA-195A

This unit consists of magnetron, pulse transformer, three CPA-209A and CCB-542 as the below diagram.

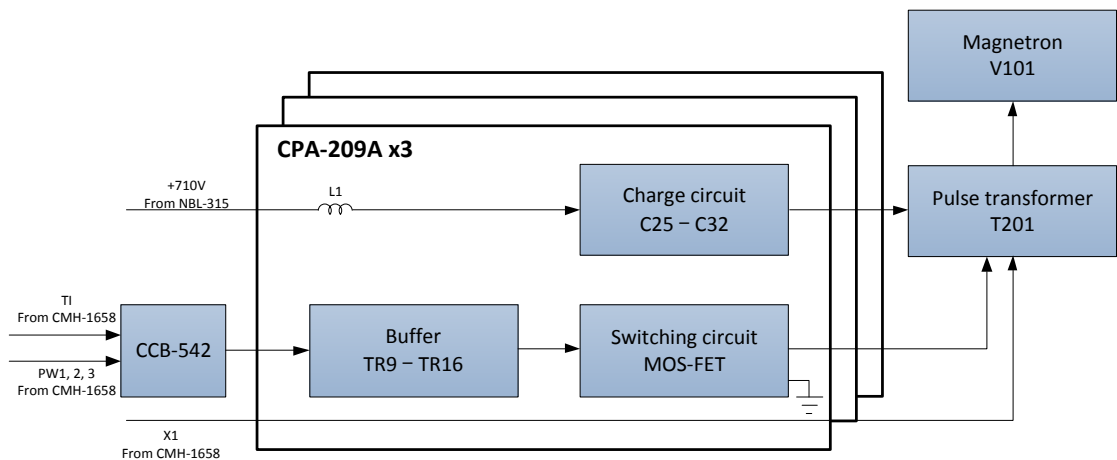


Figure 2. The block diagram of modulator unit

When the radar is turned on to stand-by mode, DC+710V is supplied from NBL-315 to the charge circuit on CPA-209A and X1 that is heater voltage is provided from CMH-1658 to magnetron. When the radar system state is in the transmission mode, the TI signal is input from CMH-1658 to switching circuit. The MOS-FET is switching +710V to the pulse transformer. The pulse transformer converts +710V into -10kV for oscillating the magnetron.

The magnetron is not controlled by an active frequency oscillator. The power limitation is determined by the magnetron specification and the current amplitude to the magnetron. The switching circuit (MOS-FET) and pulse transformer on the modulator circuit controls the current amplitude, but it is not active. The specification of the power range has a nominal value of $\pm 50\%$.

The radar transmitted pulse is not modulated by any information.

4. Receiver: NRG-213A

The receiver consists of IF circuit: CAE-499-2 and the front end: CAF-595-1 as below.

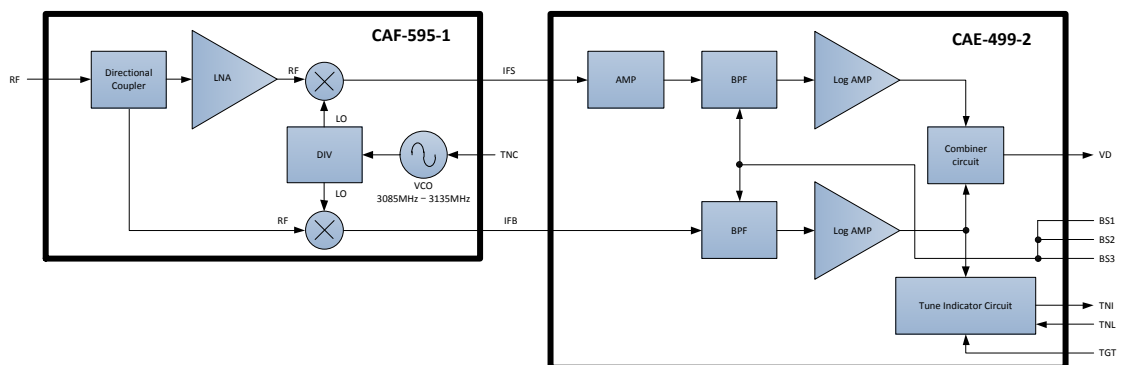


Figure 3. The block diagram of receiver

The RF signal is divided to two lines by the directional coupler. The RF signals are input to each mixer and converted to IF=60MHz by the local signal that is controlled by TNC. These IF signal are input to CAE-499-2.

The input IF signal, 60MHz, from frontend is separated to the high power signal and low power signal.

The low power signal is amplified via amplifier block, band pass filter and logarithmic amplifier. The high power signal is amplified by the same method as the low power signal but it is not same parts. After amplifying the two signals, they are combined by the combiner circuit part. The combined signal is output as the video signal from receiver circuit block.

The high power signal is also input to the tune indicator circuit block. After input the signal, it is detected as DC voltage by detection circuit part and peak hold circuit part. For stabilizing the tune indicate voltage, the main bang of the signal is only used and the other signal is suppressed by the TGT signal.