Technical Descriptions 1/4

1. Type of Emission : 110KF3E
2. Frequency Range : 470.125MHz – 565.875MHz
3. Operating Power : 20mW
4. Maximum Power Rating : 250mW
5. The DC voltage and DC current rating of the final radio frequency amplifying device :
   Collector voltage : 5.0VDC
   Collector current : 14mADC
6. Tune-up procedure at specific operating power levels:
   Refer to page 2/4.
7. A description of circuit for determining and stabilizing frequency :
   Refer to page 3/4.
8. A description of circuits for suppression of spurious radiation :
   Refer to page 4/4.

Tune-up procedure at specific operating power levels:

(1) Vcc voltage of RF AMP block

DC-DC converter output is +5V constant. It supplies Vcc of the RF AMP block.
Voltage regulator output is +3.3V constant. It supplies Vcc of the VCO(CP300).

(2) Measurement of RF power output.

RF power output is measured at output terminal (CN301).

VCO(CP300) output is applied to RF AMP block and the output is applied to L.P.F.and isolator. So RF power output is decided by VCO and RF AMP block output power, L.P.F. insertion loss and isolator insertion loss.

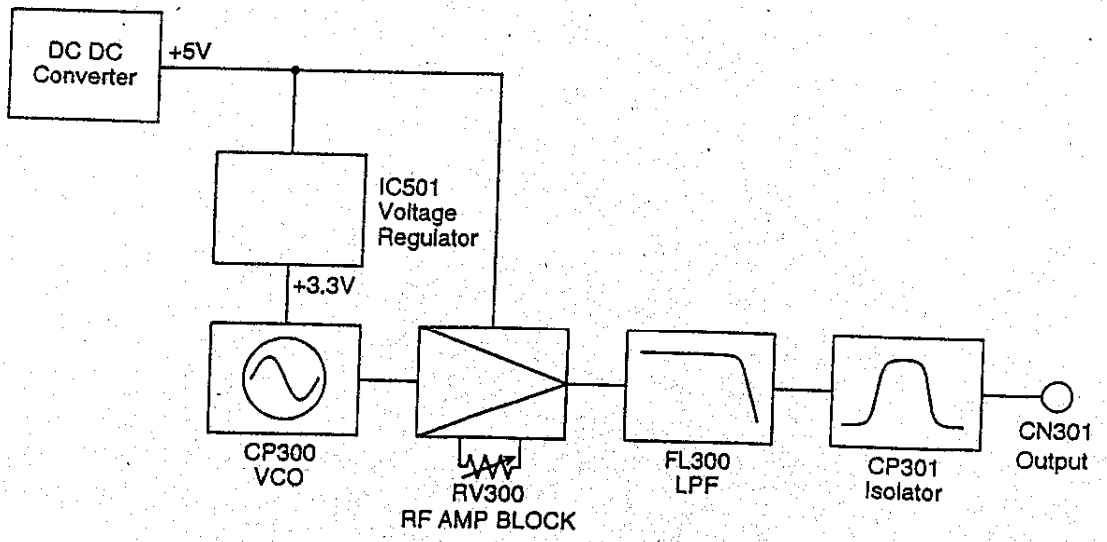
1) VCO RF output power is -1.5 ~ +2.0dBm(at 50Ω load) at 3.3V power supply voltage.

2) Adjust RV300 so that RF AMP block output power is 12-15dBm(at 50Ωload) when RF AMP block input power is -1.5 ~ +2.0dBm and 5V power supply voltage.

3) L.P.F. insertion loss is less than 0.6dB.

4) Isolator insertion loss is 0.5 ~ 0.9dB.

Therefore RF output power is 20mW(±2mW) by adjusting RV300.



A description of circuitry for determining and stabilizing frequency:

Determination and stability of frequency on PLL synthesizer

1. Divide the oscillation frequency[f] from the VCO(CP300) by a prescaler[1/M](IC300). A counter[1/A](IC300) and N counter[1/N](IC300) and apply it [fr'] to a phase detector.

$$fr' = \frac{1}{MN+A} f \quad \text{---- (1)}$$

2. The integrated output signal of the phase detector, which is taken by the phase difference from[fr'] to a reference oscillator[fr], and use the signal as the control voltage for the VCO.

3. With the above 1 and 2(loop 1 through 2), the circuit maintains its balance.

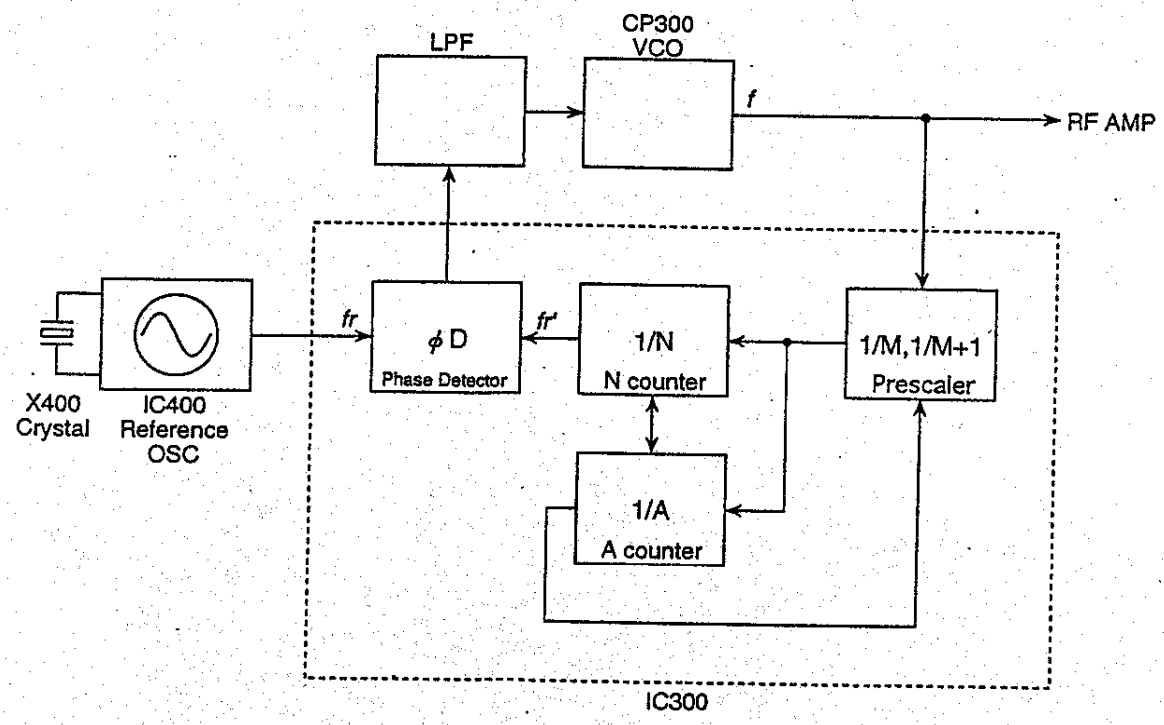
$$fr = fr' \quad \text{---- (2)}$$

by expression of (1), (2)

$$f = (MN+A)fr \quad \text{---- (3)}$$

4. Therefore transmitting frequency[f] is determined by [M], [N], [A], [fr] and stability is decided by stability of reference frequency[fr].

5. Stability of the reference frequency[fr] is ±35ppm(by stability of X'tal(X400) spec). So stability of transmitting frequency[f] is ±50ppm(0.005%).



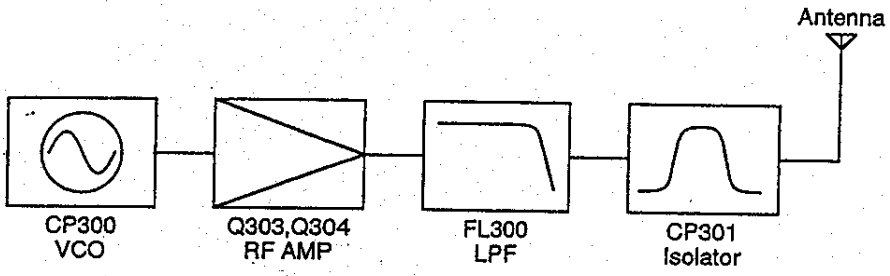
FCC ID: AK8WRT822 B1

A description of circuits for suppression of spurious radiation:

1. Radiation of higher harmonics are suppressed by installation of low pass filter (FL300) and isolator (CP301) in the next to a RF AMP.

2. By introducing direct oscillation system of transmitting frequency by the VCO (CP300), RF AMP are straightly amplified. So there is no spurious caused by frequency multiplier.

3. Shield of the VCO (CP300) and the RF AMP block suppress spurious emission radiated from the transmitter chassis.



WRT-822B List of Defference Parts

REF NO.	Description	U14	U18	U22	U26
	Frequency (MHz)	470.125 - 493.875	494.125 - 517.875	518.125 - 541.875	542.125 - 565.875
CP300	VCO	MVU-482S	MVU-506S	MVU-530S	MVU-554S
CP301	Isolator	SI-10SL0482M	SI-10SL0506M	SI-10SL0530M	SI-10SL0554M