FCC ID : AK8WRT847B

Technical Descriptions

1.Type of Emission: 110KF3E

2.Frequency Range: 470.125MHz — 805.875MHz

3.Operating Power: 50mW

4.Maximum Power Rating: 250mW

5.The DC voltage and DC current rating of the final

   radio frequency amplifying device:

               Collector voltage: 5.8VDC

               Collector current: 30mADC

6.Tune-up procedure at specific operating power levels:

               Refer to page 2/6

7.A description of circuit for determining and stabilizing frequency:

               Refer to page 3/6

8.A description of circuit for suppression of spurious radiation:

               Refer to page 4/6

Tune-up procedure at specific operating power levels:

1.Vcc voltage of RF AMP block

DC-DC converter output is +5.8V constant. It supplies Vcc of the RF AMP block.

And it supplies Vcc of the VCO(CP401) through R410.

2.Measurement of RF power output.

RF power output is measured at output terminal(CN402)

VCO(CP401) output is applied to RF AMP block and the output is applied 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.
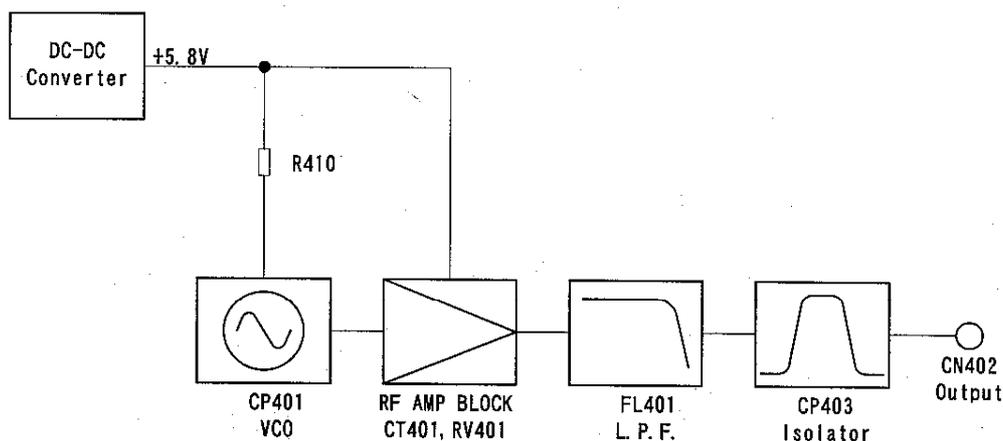
1)VCO RF output power is –1.5 ～ +2.0dBm(at 50Ω load) at 5.8V power supply voltage.

2)Adjust CT401 and RV401 so that RF AMP block output power is 16 – 19dBm(at 50Ωload) when RF AMP block input power is –1.5 ～ +2.0dBm and 5.8V 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 50mW(±5mW) by adjusting RV401.

A description of circuit for determining and stabilizing frequency:

Determination and stability of frequency on PLL synthesizer

1.Divide the oscillation frequency[f] from the VCO(CP401) by a prescaler [1/M](IC402).

A counter[1/A](IC402) and N counter[1/N](IC402) and apply it[fr'] to a phase detector.

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

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.
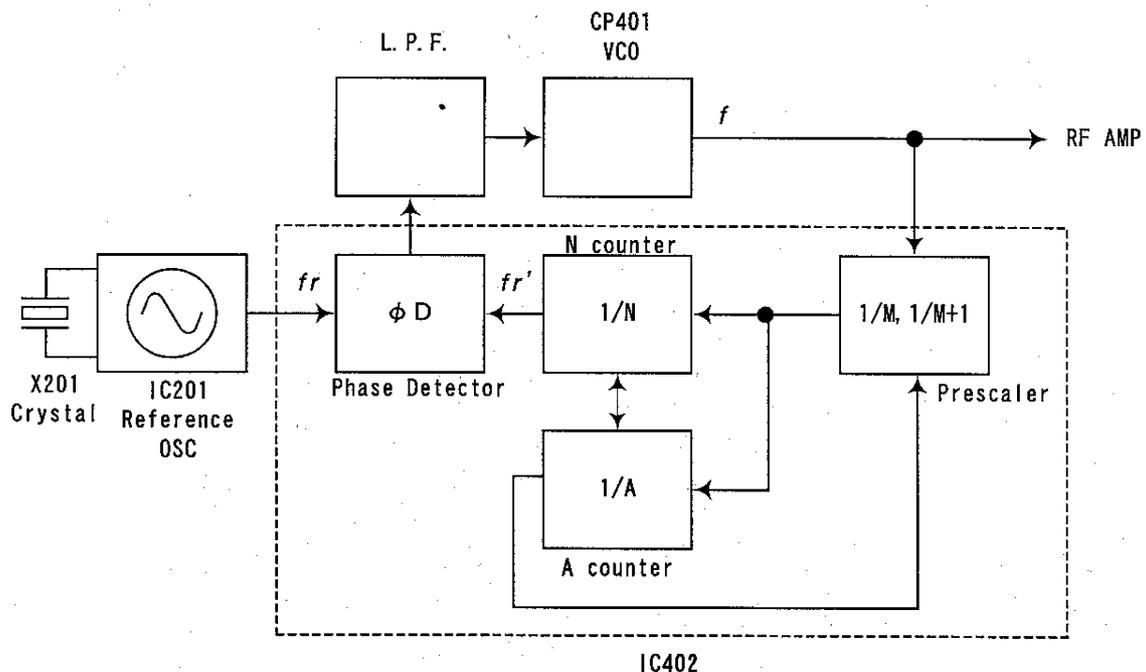
$$fr = fr' \qquad ----(2)$$

by expression of (1),(2)

$$f = (MN+A) fr \qquad ----(3)$$

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 reference frequency[fr] is ±35ppm(by stability of X'tal(X201) spec).

So stability of transmitting frequency[f] is ±50ppm(0.005%).

A description of circuit for suppression of spurious radiation:

1.Radiation of higher harmonics are suppressed by installation of low pass filter(FL401) and isolator (CP403) in the next to a RF AMP.

2.By introducing direct oscillation system of transmitting frequency by the VCO(CP401),RF AMP are straightly amplified. So there is no spurious caused by frequency multiplier.

Antenna

| CP401 | RF AMP BLOCK | FL401 | CP403 |
| VCO | Q404, Q405 | L. P. F. | Isolator |
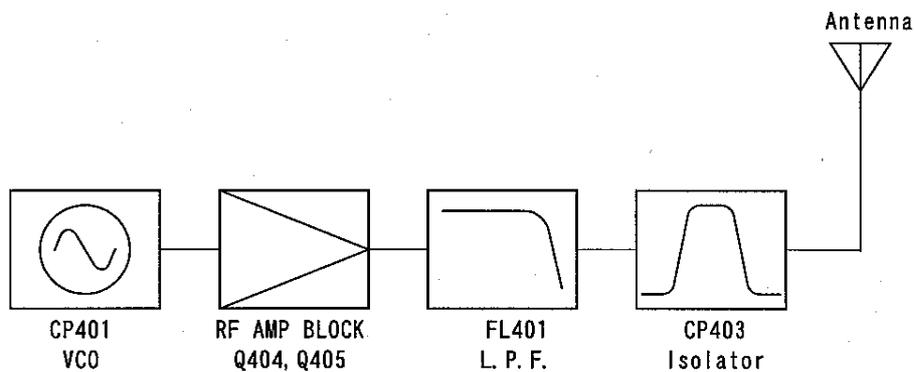
Complete circuit diagram :

〈 VCO circuit diagram 〉
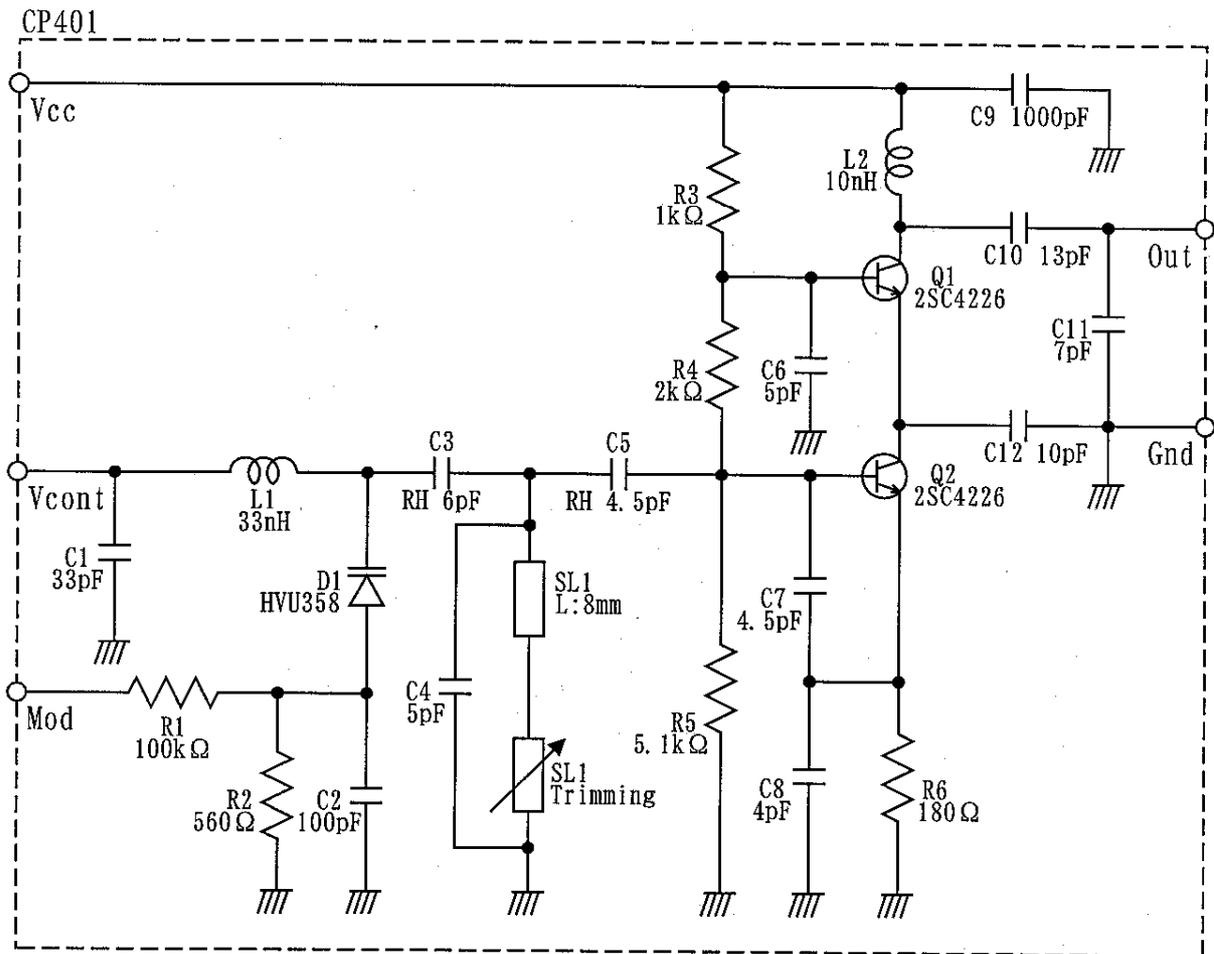
Electrical Parts Differentia List

MODEL   WRT-847B(U14) and WRT-847B(U42) and WRT-847B(U66)

Ref No	WRT-847B(U14)	WRT-847B(U42)	WRT-847B(U66)
C423	CAP, CERAMIC 2.0PF CK 1608	CAP, CERAMIC 1.0PF CK 1608	CAP, CERAMIC 1.0PF CK 1608
C425	CAP, CERAMIC 5.0PF CJ 1608	CAP, CERAMIC 3.0PF CJ 1608	CAP, CERAMIC 2.0PF CJ 1608
C429	CAP, CERAMIC 6.0PF CJ 1608	CAP, CERAMIC 4.0PF CJ 1608	CAP, CERAMIC 4.0PF CJ 1608
CP401	VCO:MVU-482S	VCO:MVU-650S	VCO:MVU-794S
CP403	ISOLATOR:SI-10SL0482M	ISOLATOR:SI-7SGL0650M	ISOLATOR:SI-7SGL0794M
L404	INDUCTOR, CHIP (K) 15NH	INDUCTOR, CHIP (K) 8.2NH	INDUCTOR, CHIP (K) 10NH
L407	INDUCTOR, CHIP (J) 27NH	INDUCTOR, CHIP (J) 6.8NH	INDUCTOR, CHIP (J) 6.8NH
L408	INDUCTOR, CHIP (J) 33NH	INDUCTOR, CHIP (J) 10NH	INDUCTOR, CHIP (J) 15NH
L409	INDUCTOR, CHIP (J) 22NH	INDUCTOR, CHIP (J) 15NH	INDUCTOR, CHIP (J) 8.2NH
R417	RES, CHIP 100 (1608)	RES, CHIP 22 (1608)	RES, CHIP 22 (1608)
R420	RES, CHIP 220 (1608)	RES, CHIP 180 (1608)	RES, CHIP 150 (1608)
R421	RES, CHIP 33 (1608)	RES, CHIP 10 (1608)	RES, CHIP 10 (1608)