FREQUENCY

STEP   UP
       DOWN

UP   SCAN
DOWN

DIGI-SCAN UFO

5 KHZ STEPS!

REDCO UFO APPLICATIONS

MODEL	TYPE	PLL CHIP USED	DIGI-SCAN REQUIRED
PRESIDENT			
Adams	S	858	RDS-1, UFO
Andrew J (old)	A	858	RDS-1, UFO
Dwight D (old)	A	858	RDS-1, UFO
Grant (old)	S	858	RDS-1, UFO
Honest Abe	A	858	RDS-1, UFO
John Q	A	858	RDS-1, UFO
Madison	S	858	RDS-1, UFO
Old Hickory	A	---	N/A
Teddy R	A	858	RDS-1, UFO
Washington	S	858	RDS-1, UFO
Zachary T	A	858	RDS-1, UFO
Washington (new)	S	8719	RDS-6, UFP
Zachary T	A	2816	N/A
Dwight D	A	2816	N/A
Grant	S	8719	RDS-5, UFO
McKinley	S	8719	RDS-6, UFO
Andrew J	A	2816	N/A
Thomas J	A	2816	N/A
Veep	A	9109	N/A
Madison	S	8719	RDS-5
COBRA			
21 GTL	A	TC9106	N/A
21 XLR	A	858	RDS-1*, UFO
25 GRL	A	TC9106	N/A
29 GTL	A	UPD2816	N/A
29 XLR	A	858	RDS-1*, UFO
32 XLR		5080	N/Z
77 XLR		858*	UFO
78 XLR		858*	UFO
87 GTL		2816	N/A
89 GTL		2816	N/A
132 XLR	S	TC5080P	UFO-T
135 XLR	S	TC5080P	UFO-T
138 XLR	S	858	RDS-1, UFO
139 XLR	S	858	RDS-1, UFO
140 GTL	S	8719	RDS-6, UFO
142 GTL	S	8719	RDS-6, UFO
158 GTL	S	8719	RDS-5, UFO
1000 GTL	A	2816	N/A
2000 GTL	S	8734	RDS-5, UFO

MODEL	TYPE	PLL CHIP USED	DIGI-SCAN REQUIRED
COURIER			
Caravelle 40-D	A	5104	N/A
Conquerer 40-D		SM5104	N/A
Gladiator	S	858	RDS-1, UFO[10]
Spartan	S	858	RDS-1, UFO[10]
Centourian	S	858	RDS-1, UFO[10]
FANNON			
Fanfare 350-F	S	858	RDS-1, UFO
HY GAIN			
623, 623A	S	Descrete	UFO[3]
MIDLAND			
78-976	S	PLL-02	RDS-02, UFO
78-999	S	PLL-02	RDS-02, UFO
79-893	S	858	RDS-1, UFO
79-892	S	PLL-02	RDS-02, UFO
79-900	S	8719	RDS-6, UFO
76-863	A	PLL-02	N/A 2 xtals
78-892	S	PLL-02	RDS-02, UFO
BOWMAN			
CB-950	S	PLL-02	RDS-02, UFO
PALOMAR			
SSB-500	S	145106	UFO[4]
SSB-500	S	7120	UFO
4100	A	02A	N/A 2 xtals
TEABERRY			
T Command	A	858	UFO, RDS-1[1]
Stalker 101	S	858	RDS-1, UFO
Stalker 102	S	858	RDS-1, UFO
Stalker 1 & 2	S	Descrete	UFO
REALISTIC			
TRC-449	S	858	RDS-1, UFO
TRC-455	S	858	RDS-1, UFO
TRC-458	S	858	RDS-1, UFO
TRC-457	S	858	RDS-1, UFO
TRC-57	S	Descrete	UFO[8]
ROBYN			
SB-505	S	8719	11.1125, RDS-6, UFO
SB-510D	S	858	RDS-1, UFO

MODEL	TYPE	PLL CHIP USED	DIGI-SCAN REQUIRED
ROBYN			
SB-505	S	8719	11.1125, RDS-6, UFO
SB-510D	S	858	RDS-1, UFO
SB-520D	S	858	RDS-1, UFO
SEARS			
663.38060600	A	858	RDS-1, UFO[1] [5]
934.38110700	S	SM5104	UFO[5]
934.38270700	S	SM5104	UFO
934.28360700	S	SM5104	UFO
RCA			
14T-303	A	PLL-02	N/A 2 xtal
NDI			
PC200	S	NDC-40013	UFO[6]
Johnson 9740	S	NDC-40013	UFO[6]
COLT			
1200	S	PLL-02	RDS-02, UFO
390		PLL-02	N/A 2 xtal
485	S	PLL-02	RDS-02
GEMTRONICS			
6TX-77	S	PLL-02	RDS-02, UFO
JC PENNEY			
981-6247	S	02A	RDS-02, UFO
981-6241	S	SM5104	UFO
PACE			
1000NC	S	40013	UFO
LAFAYETTE			
SSB-140	S	PLL-02	RDS-02, UFO
TRAM			
D-62	S	5080	UFO-T
D-80	S	8719	RDS-5, UFO[6]
D-64	S	NDC40013	UFO[6]
D-300	S	8719	RDS-5, UFO
BROWNING			
Baron	S	TC5080P	UFO-T
Mark IV	A	145106	UFO[7]
SBE			
27CB	S	Descrete	UFO[9]
39CB	S	Descrete	UFO[9]
40CB	S	Descrete	UFO[9]
SCOTT			
Dak 10	S	PLL-02	RDS-02, UFO

REDCO UFO APPLICATIONS

TYPICAL PROBLEMS ENCOUNTERED WITH 8719 & 8734 SYNTHESIZERS:
1. DOWN MIXER OUTPUT SIGNAL (TP-10)
   The Uniden 8719 & 8734 chassis have been found to have a rel-
   atively large difference in the amplitude of the down mixer
   signal available on TP-10. The UFO picks up this signal on
   Coax #1, amplifies the signal and compares it with an internal
   reference. Problems are encountered when the UFO does not
   get enough drive from the radio. This can cause an "out of lock"
   condition, and in this state the radio would be on some random
   frequency dependent only upon the FCO adjustment and not the
   UFO. To determine if an "out of lock" condition is caused by
   lack of drive, follow the procedure outlined on TA-002. A
   minimum of 3v peak to peak signal is required on Pin 2 for
   proper UFO operation. If the "out of lock" condition is caused
   by low drive, it can be cured by one of the following methods:
                    RADIO MODIFICATION
   a. Install a resistor from the base of TR-20 or Pin 10 of
       VCO chip to ground. This will improve the radio's gain
       by approximately 30%.
                    UFO MODIFICATION
   b. Short the capacitor (.01uf) connecting the amplifier to
       Pin 2 of the PLL chip. Remove the 4.7k resistor to the
       right of the .01uf cap previously mentioned and replace
       with a 68k resistor.

Modification b. has been put into production of all new UFO's
being manufactured as of 5-5-79.

2. VCO ADJUSTMENT
   For maximum range and a clean sounding radio it is highly
   recommended the VCO be aligned in the following manner:
   (Note: Us a non-metallic alignment tool)
   a. Set UFO to 28.000 MHz.
   b. Turn the VCO adjustment to a point where the radio is
       near 27.950.
   c. Align the VCO slug very slowly until the VCO just locks
   at 28.000 and do not turn the VCO past this point.

Other alignment procedures may cause loop filtering adjustments
to be very critical and the radio may not be clean over a wide
range of frequencies.

3. LOOP FILTERING
    The addition of a variable loop filter on 8719 & 8734 radios
    is occasionally a necessity. A variable loop filter allows
    the technician to vary the loop filtering and make up for
    variables present in synthesizer circuits of radios.
    Symptoms of the loop filtering being incorrect may be:
    distorted SSB, warble on SSB, difficult to clarify SSB, or,
    in extreme cases, squeal on AM and bleedover may be present.
    In most cases the problems described above are most easily
    cured by the addition of a variable loop filter consiting
    of a variable resistor (usually a trimpot) in series with an
    electrolytic capacitor. Values of 10uf & 10k have been used
    here at the factory quite successfully. This loop filter is
    added between TP9 and ground.
    Better results can be achieved by removing the capacitors
    inside the UFO which normally compose the loop filters. These
    capacitors are identified in the programming section of the
    instruction manual as they are removed for 858 installations.
    The loop filter is aligned for best SSB clarity,   If the
    resistance of the trimpot is too low, the radio will warble
    on higher frequencies; and, if the resistance is too high
   bleedover may be experienced on lower frequencies.
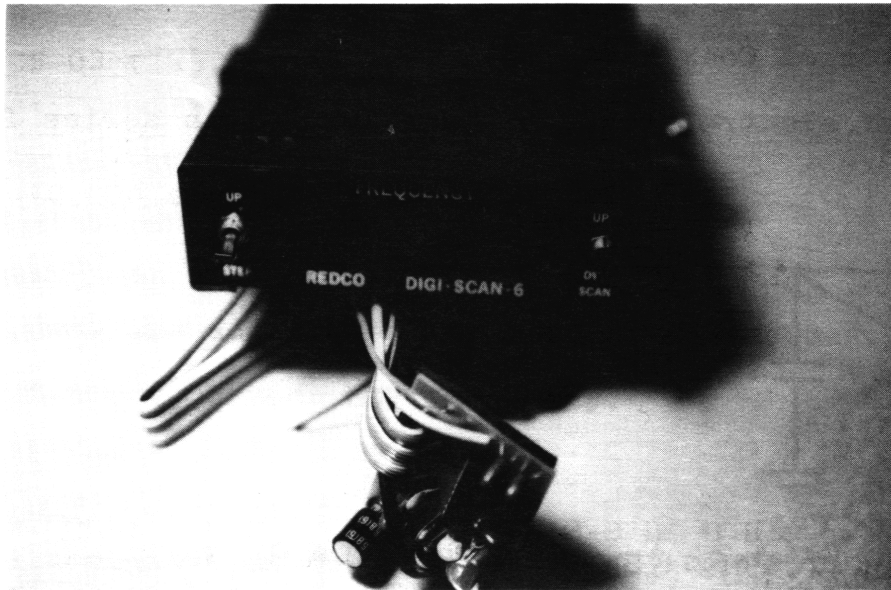
REDCO DIGI-SCAN 6

UFO INSTALLATION TO
BROWNING MARK IV A

1. Do not remove 145106 PLL chip.

2. Connect the center of Coax 1 to the Junction of R-708 and R-709.

3. Remove R-715 and C-734.

4. Connect the center of Coax 2 to TP-3.

5. Install a 10uf cap and 10k pot in series from TP-3 to ground.

6. Remove loop filtering capacitors in UFO as in 858 installation.

7. Cut the foil trace connecting to Pin 8 of the 145106 chip.

8. Connect the foil trace that was connected to Pin 8 to an 8v source.

   PROGRAM CODE: B B W W B B B B W W

UFO INSTALLATION TO
REALISTIC TRC 57

1. Hook center of Coax 1 to TP-4 (Junction R321 and R322).

2. Remove the 10k resistor connecting to TP3.

3. Hook center of Coax 2 to TP3.

4. Add a 10uf electrolytic cap and a 10k pot in series from TP3 to ground.
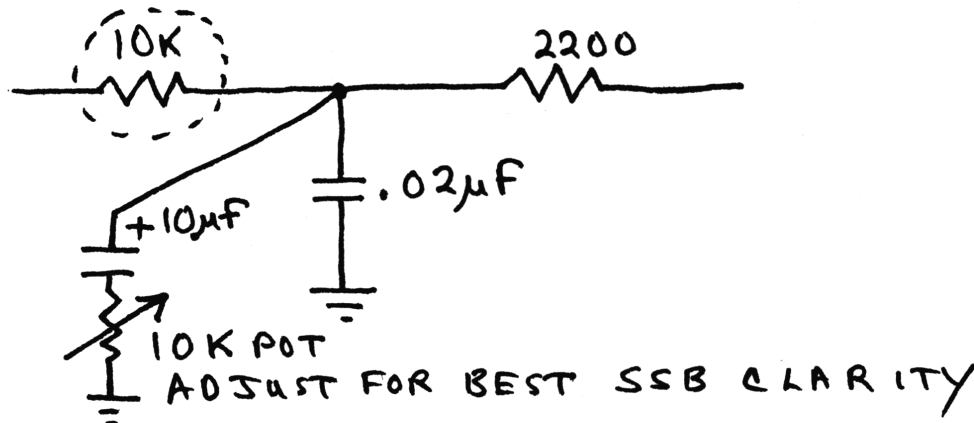
5. Align VCO for maximum range (L11)

6. Remove final RF amp.

   PROGRAM CODE: W B B B W W B W B B B B W W

46

UFO INSTALLATION TO
HY-GAIN 623-A

1. Remove VCO shield (L-603).

2. Replace 330pf cap (C634) with 100 pf.

3. Remove R-308.

4. Hook center of Coax 2 to the side of R-308 that goes to the connector (VCO control).

5. Hook center Coax 1 to Pin 1 of IC 301.

6. Install a 10uf electrolytic cap and a 10k pot in series from the center of Coax 2 to ground.

7. Remove V-501.

   PROGRAM CODE: B B B W   W B W B   B B B B   W W

UFO INSTALLATION TO
NDI-PC200

APPLICATIONS: Chassis using 40013 synthesizer Chip examples:
Tram D64, Pace 1000B, and Johnson 4740.

INSTALLATION:
1. Connect the center of Coax 1 to Pin 2 of the 40013 PLL chip.

2. Remove R-03 (1k).

3. Connect center of Coax 2 to the Junction R-02 and R-04.

4. Change 10.000 crystal Y1 to 10.240 MHz.

5. Remove CR-03.

6. Apply power and adjust L-5 for correct AM frequency.

7. Adjust L-6 for correct LSB frequency.

8. Remove Q705.

   PROGRAM CODE: B B B B   W B W W   B B B B   B B
NOTE: Part designations above refer to NDI-PC200.
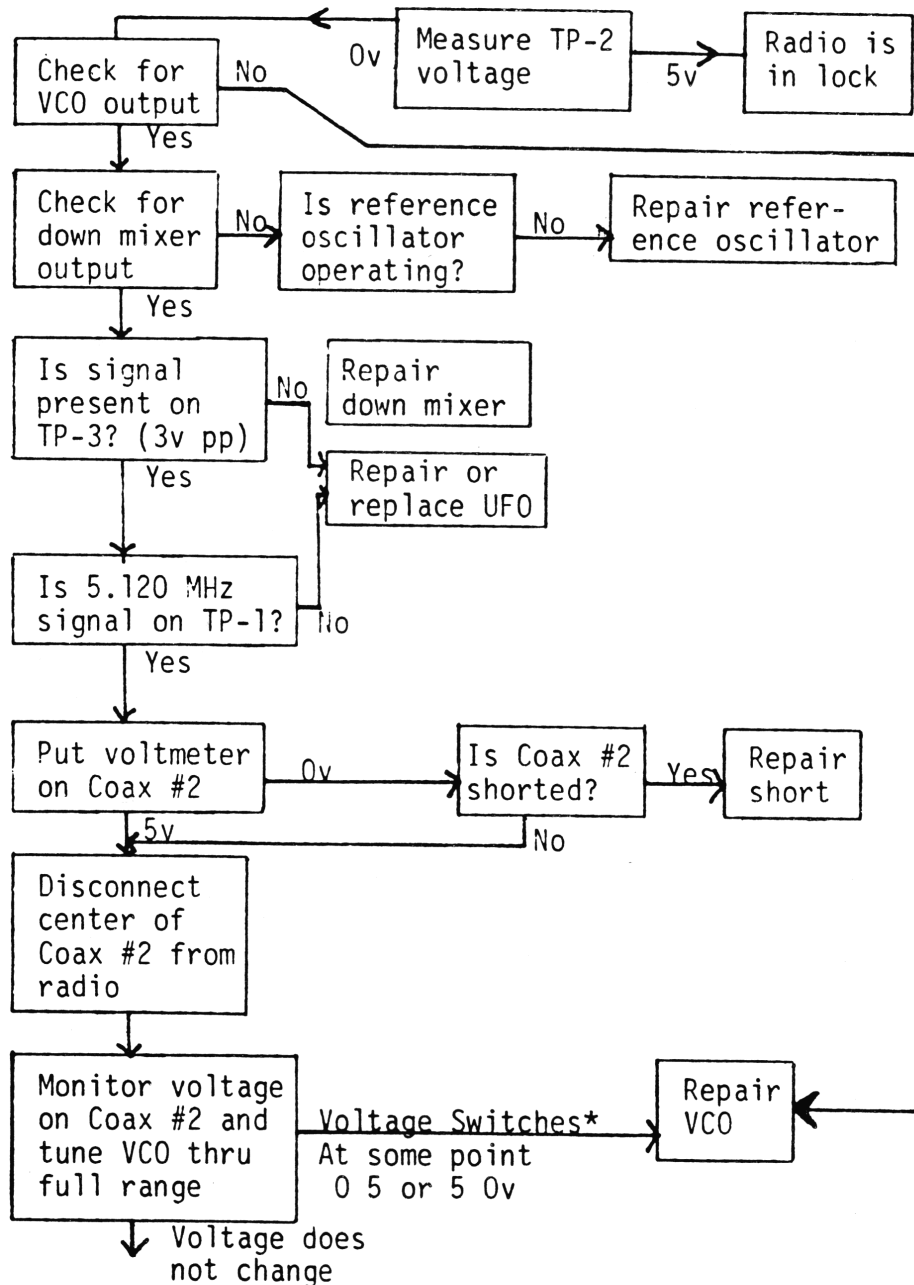   Part designations for Tram D64 are as follow: R-03 - R-903,
   R-02 - R-902, R-04 - R-904, CR-03 - CR-903,

   PROGRAM CODE: D-64   B B W B   B B W B   W W W W   WW

NOTE: USB will be 5 kc below the frequency display.

TROUBLESHOOTING AN OUT OF LOCK CONDITION

The following flow chart describes troubleshooting an out of lock
condition. Align the VCO for an operating frequency about 200 KHz
above the UFO setting. Program UFO correctly.

```
                              ┌──────────────┐         ┌──────────┐
                         0v   │ Measure TP-2 │    5v   │ Radio is │
            ┌─────────────────│ voltage      │────────▶│ in lock  │
            │                 └──────────────┘         └──────────┘
   ┌─────────────┐  No
   │ Check for   │────┐
   │ VCO output  │    │
   └─────────────┘    │
        │ Yes         │
        ▼             │
   ┌─────────────┐  No    ┌──────────────┐  No   ┌──────────────┐
   │ Check for   │───────▶│ Is reference │──────▶│ Repair refer-│
   │ down mixer  │        │ oscillator   │       │ ence oscillator│
   │ output      │        │ operating?   │       └──────────────┘
   └─────────────┘        └──────────────┘
        │ Yes
        ▼
   ┌─────────────┐  No    ┌──────────────┐
   │ Is signal   │───────▶│ Repair       │
   │ present on  │        │ down mixer   │
   │ TP-3? (3v pp)│       └──────────────┘
   └─────────────┘        ┌──────────────┐
        │ Yes             │ Repair or    │
        ▼                 │ replace UFO  │
   ┌─────────────┐        └──────────────┘
   │ Is 5.120 MHz│  No
   │ signal on TP-1?│──────┘
   └─────────────┘
        │ Yes
        ▼
   ┌─────────────┐  0v    ┌──────────────┐  Yes  ┌──────────┐
   │ Put voltmeter│──────▶│ Is Coax #2   │──────▶│ Repair   │
   │ on Coax #2  │        │ shorted?     │       │ short    │
   └─────────────┘        └──────────────┘       └──────────┘
        │ 5v                    │ No
        ▼
   ┌─────────────┐
   │ Disconnect  │
   │ center of   │
   │ Coax #2 from│
   │ radio       │
   └─────────────┘
        │
        ▼
   ┌─────────────┐  Voltage Switches*    ┌──────────┐
   │ Monitor voltage│  At some point     │ Repair   │
   │ on Coax #2 and │  0 5 or 5 0v ──────▶│ VCO      │
   │ tune VCO thru  │                     └──────────┘
   │ full range  │
   └─────────────┘
        │ Voltage does
        ▼ not change
```

As the VCO is adjusted through the frequency displayed by the UFO, the
voltage on Coax #2 should change its logic state.

OUT OF LOCK: In an "out of lock" condition varying the UFO
frequency setting will not change the radio frequency. A voltage
measurement on the TP-2 will quickly determine a locked or
unlocked condition, 0v for locked, 5v for unlocked.

LIMITED RANGE: An "out of lock" condition at the top or bottom
end of the band.

WARBLE: A warble is detected on SSB. This can cause SSB com-
nunications to be distorted or difficult to clarify.

RADIO OFF FREQUENCY BY A MUTIPLE OF 5KHz: Radio in lock but the
operating frequency is constantly off by some multiple of 5KHz.

RECEIVES 2 OR MORE CHANNELS AT ONCE: When receiving, the same
incoming signal can be heard on several frequencies.

WILL NOT LOCK WHEN POWER IS RESET: A radio may function normally
after re-alignment, but, when the power is turned off and then
turned on again, it may not relock. The reason this condition
can exist is as follows: Power is first applied and the UFO
circuitry has no input on Coax 1 because the VCO has not begun to
oscillate. The UFO senses the lack of input and puts out a high
(5v) state on Coax #2. The VCO then oscillates at its maximum
frequency, and because of inherent design its amplitude decreases
at higher frequencies; therefore, the down mixer output is low
and the UFO cannot get enough drive from the radio on Coax #1.
The PLL chip does not get enough drive and the loop is unable to
recover. The problem is solved by increasing the gain of the
down mixer or input amplifier or re-adjusting the VCO coil to a
point where the VCO will not run as high in frequency. Use the
VCO alignment suggested later in this text.

LOOP FILTERING: The addition of a variable loop filter on radios
is occasionally a necessity. A variable loop filter allows the
technician to vary the loop filtering and make up for variables
present in synthesizer circuits of radios.

Symptoms of the loop filtering being incorrect may be: distorted
SSB, warble on SSB, fifficult to clarify SSB, or, in extreme
cases, squeal on AM and bleedover may be present. In most cases
the problems described above are most easily cured by the addition
of a variable loop filter consisting of a variable resistor (usually
a trimpot) in series with an electrolytic capacitor. Values of
10uf and 10k have been used here at the factory quite successfully.
This loop filter is added between the center of Coax #2 and ground.

Better results can be achieved by removing the capacitors inside
the UFO which normally compose the loop filter. These capacitors
are identified in the programming section of the instruction
manual as they are removed for 858 installations.

The loop filter is aligned for best SSB clarity. If the resistance of the trimpot is too low, the radio will warble on higher frequencies; and. if the resistance is too high, bleedover may be experienced on lower frequencies.

GROUND CONNECTIONS: For proper operation the UFO must have a good ground loop to the radio. Best results are achieved by connecting the shields near the VCO and connecting the black wire to a ground near the voltage regulator.

BROKEN PC PADS: The pads under the PLL chip are sometimes damaged during chip removal. The 8v source is connected through one of the pads and the circuit must be complete through the pad to attain a locked condition on 8719 installations.

INSIDE LOOK AT UFO

FREQUENCY

UP
STEP
DOWN

UP
SCAN
DOWN

DIGI-SCAN UFO

5 KHz STEPS!
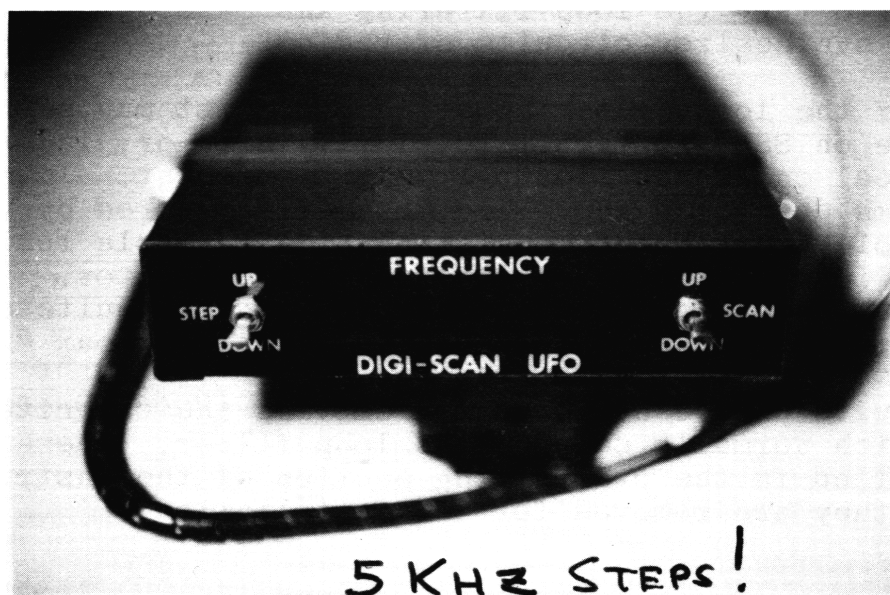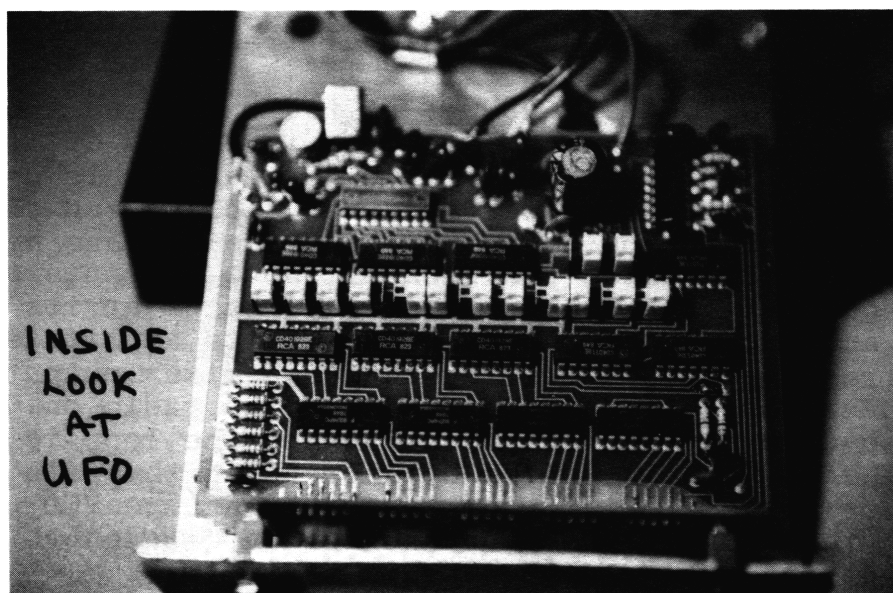
REDCO
MODEL MARK IV

The REDCO MARK IV RF Monitor is a high quality instrument for measuring Standing Wave Ratio (SWR),Transmitted power and percent modulation.

REDCO'S MARK IV is designed by Redco/Conductron for CB and Ham radio applications. Power scales are factory calibrated at 26MHz, (if desired the three power scales can be individually calibrated for any frequencies between 1Mhz and 250Mhz.).

The SWR and Modulation functions are broad-band and will operate from 1Mhz to 250Mhz.

THE MARK IV FEATURES:

RF power scales of 0-10, 0-100, 0-1000 watts, 5% accuracy

SWR scale displays SWR and percent reflected power.

Modulation displayed in % and decibels (-21db to +3db)

Precision 6-inch D'Arsonval multiscale meter,5ua, 2%accuracy

Directional forward power/reflected power discrimination= 30db (i.e. 1000 times)

Completely passive, requires no external power source

Inline operation. Will not disturb the tuning of your antenna system. Draws negligible power.

Uses standard UHF coaxial connectors.

REDCO'S Digi-Scan systems are manufactured as **receiving systems** only, **and to use them for transmission in the United States is in direct violation of the Federal Communications Commission.**

REDCO
MODEL MARK V

REDCO'S MARK V wattmeter is a 3 meter system to allow continuous monitoring of RF Power, SWR and modulation.

For accuracy and reliability a calibrated dial on the front panel can be set to any frequency from 3 Mhz to 250 Mhz. A frequency selector switch is provided to allow you to set your dial on any frequency you would like to operate within the spectrum frequencies of 50, 100, 150, 200, and 250Mhz. A special channel provided for CB operating frequencies.

Only REDCO/CONDUCTRON could design and manufacture such a technological breakthrough in the wattmeter field.

FEATURES:

1-The ultimate broad band from 3Mhz to 250Mhz, AM, CW, SSB operations

2-A passive system, no external power required

3-Unique solid state design provides negligible insertion loss 100%. Modulation readout extends from -20db to +3db. Modulation is a function of voice level. (This level can be adjusted to read 100% for best communication transmission).

4-Standing Wave Ratio readout is indicated on the SWR meter by means of a unique design balanced breech circuit, termination 50 Ohms (forward and reflected power ratio).

5-MARK V is simple to connect to your transceiver system by 2 coaxial connectors, and is inserted between the antenna and transmitter.

SPECIFICATIONS:

Frequency range*********************3MHz to 250MHz in 50MHz steps
Power*********************1000 watts CW, AM and 2000 watts Peak
                                    ENVELOPE POWER (SSB)
Power consumption******************************Passive & negligible
Modulation*********************************100%, -21db to +3db
SWR************************forward and reflective power ration
                                    to 1:3 and over
Meter movement********************three 3" D'Arsonval movement
                                    of 2% accuracy
Factory calibrated**********************from 3Mhz to 250Mhz
Accuracy**Better than 5%
Size**10" x 4½" x 4"