

(d)- (8) Instruction book:

UHF Synthesized Wireless Microphone

Model:

WRT-800A

Operating Instructions

Before using the unit, please read this manual thoroughly and retain it for future reference.

Owner's Record

The model and serial numbers are located at the body of the unit. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. WRT-800A

Serial No. _____

Notice for customers in the U.S.A.

Use of Sony wireless devices is regulated by the Federal Communications Commission as described in Part 74 subpart H of the FCC regulations and users authorized thereby are required to obtain an appropriate licence.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Notice for customers in Canada:

Use of Sony wireless devices is regulated by the Industry Canada as described in their Radio Standard Specification RSS-123.

A licence is normally required. The local district office of Industry Canada should therefore be contacted. When the operation of the device is within the broadcast band, the licence is issued on no-interference, no-protection basis with respect to broadcast signals.

Avis pour les clients au Canada:

L'usage des appareils sans-fil Sony est réglé par l'Industrie Canada comme décrit dans leur Cahier des Normes Radioélectriques CNR-123. Une licence est normalement requise. Le bureau de l'Industrie Canada doit être contacté. Lorsque l'opération de l'appareil est dans les limites de la bande de radiodiffusion, la licence est émanée sur la base de non-interférence, non-protection avec les signaux de radiodiffusion.

Table of contents

Precautions	3
Introduction.....	4
Features.....	5
Channels and Carrier Frequencies.....	6
Parts Identification.....	7
Power Supply.....	8
Channel Setting.....	9
Note on Microphone System Operation.....	9
Specifications.....	10

Precautions

- The unit is designed for use in ambient temperature range of 0°C to 50°C (32° F to 122° F).
- Do not place the unit on or near heat sources such as lighting equipment or a power amplifiers, or in a place subject to direct sunlight or excessive moisture.
In such places, the external finish or internal parts of the unit may be damaged.
- If the unit is used in a very humid or dusty place or in a place subject to an active gas, clean its surface as well as the connectors with a dry, soft cloth soon after use.
Lengthy use of the unit in such places or not cleaning it after its use in such places may shorten its life.
- When cleaning the unit, never use organic solvents such as thinners or benzine, which will damage the finish of the unit.
- The unit has been factory adjusted precisely. Do not tamper with its internal parts or attempt to repair it.

Introduction

The WRT-800A is a wireless microphone for an 800MHz band UHF synthesized wireless microphone system to be used for broadcast or movie production purpose.

The other system components include the WRT-810A/830A/867A UHF Synthesized Wireless Microphone, the WRT-805A/820A/860A UHF Synthesized Transmitter, the AN-820A UHF Antenna, the WD-820A/880A UHF Antenna Divider, and the WRR-800A/801A/820A/840A /850A/860A UHF Synthesized Diversity Tuner.

Features

Easy selection of 94 channels

With its sophisticated phase locked loop(PLL) circuit, the unit can operate on any one of 94 carrier frequencies selected by a simple operation.

Operation powered by easily available batteries

The built-in DC-DC converter allows stable operation, for about 16 hours continuously, with just one LR6(size AA) alkaline batteries.

Battery status information

This wireless microphone has capability of transmitting "Battery status information" to the WRR-800A/WRR-801A/WRR-850A.

The information is sent to the WRR-800A/801A/850A in approx. 1hour advance to battery exhaust so that they can safely replace batteries of the wireless microphone.

When the WRR-800A/801A/850A receives the information, the LED and the LCD on the panel start flashes.

RF carrier with tone signal

The unit transmits the RF carrier accompanied by a tone signal, enabling the tuner with a tone squelch circuit to take out only the target audio signal received.

Wide dynamic range and low noise

The compander(compressor/expander) system enables transmission over a wide dynamic range with minimum noise.

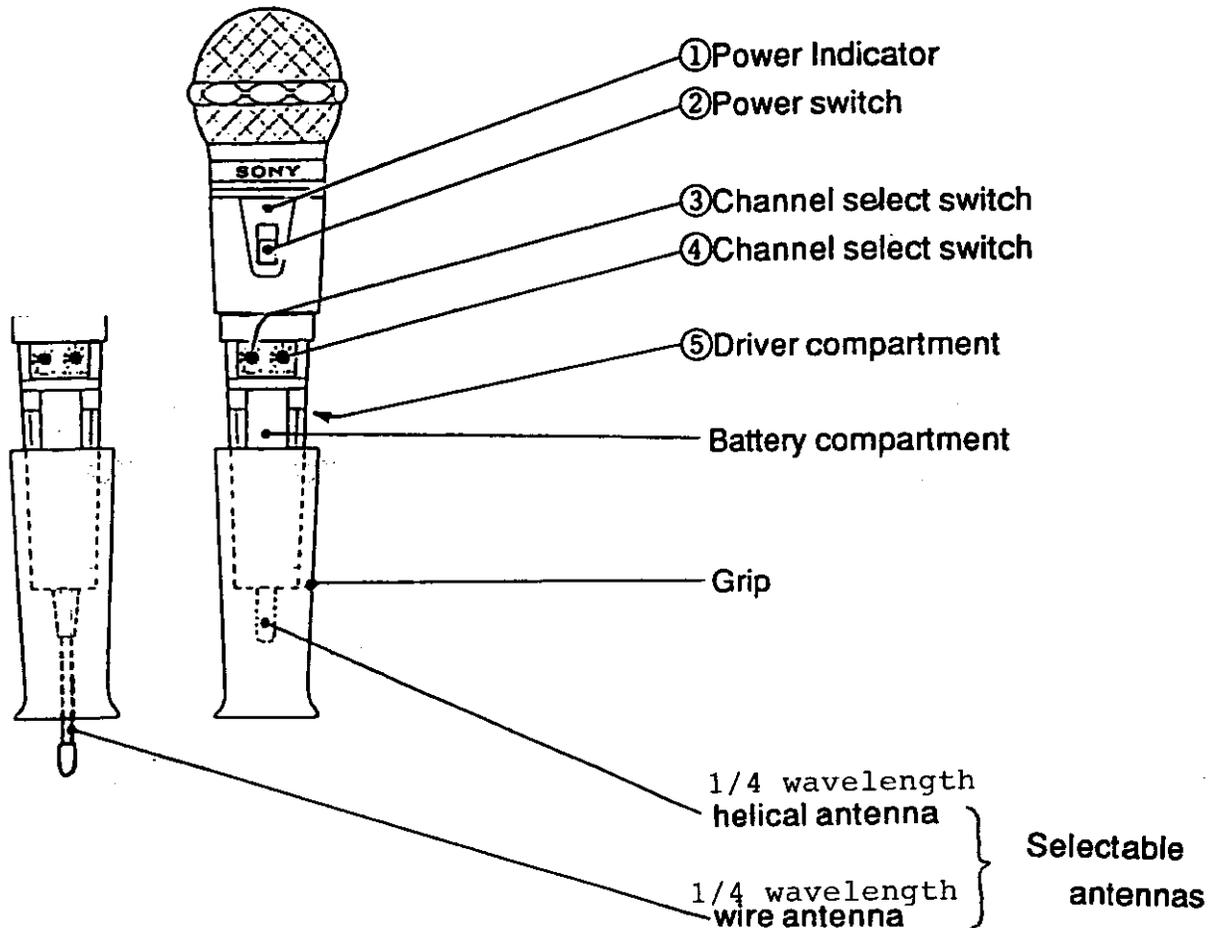
Channels and Carrier Frequencies

The WRT-800A can transmit on any selected wireless channel among those below.

Frequency (in MHz)

WRT-800A (64)				WRT-800A (66)				WRT-800A (68)			
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
64-01	770.125	65-01	776.125	66-01	782.125	67-01	788.125	68-01	794.125	69-01	800.125
64-02	770.250	65-02	776.250	66-02	782.250	67-02	788.250	68-02	794.250	69-02	800.250
64-03	770.375	65-03	776.375	66-03	782.375	67-03	788.375	68-03	794.375	69-03	800.375
64-04	770.500	65-04	776.500	66-04	782.500	67-04	788.500	68-04	794.500	69-04	800.500
64-05	770.625	65-05	776.625	66-05	782.625	67-05	788.625	68-05	794.625	69-05	800.625
64-06	770.750	65-06	776.750	66-06	782.750	67-06	788.750	68-06	794.750	69-06	800.750
64-07	770.875	65-07	776.875	66-07	782.875	67-07	788.875	68-07	794.875	69-07	800.875
64-08	771.000	65-08	777.000	66-08	783.000	67-08	789.000	68-08	795.000	69-08	801.000
64-09	771.125	65-09	777.125	66-09	783.125	67-09	789.125	68-09	795.125	69-09	801.125
64-10	771.250	65-10	777.250	66-10	783.250	67-10	789.250	68-10	795.250	69-10	801.250
64-11	771.375	65-11	777.375	66-11	783.375	67-11	789.375	68-11	795.375	69-11	801.375
64-12	771.500	65-12	777.500	66-12	783.500	67-12	789.500	68-12	795.500	69-12	801.500
64-13	771.625	65-13	777.625	66-13	783.625	67-13	789.625	68-13	795.625	69-13	801.625
64-14	771.750	65-14	777.750	66-14	783.750	67-14	789.750	68-14	795.750	69-14	801.750
64-15	771.875	65-15	777.875	66-15	783.875	67-15	789.875	68-15	795.875	69-15	801.875
64-16	772.000	65-16	778.000	66-16	784.000	67-16	790.000	68-16	796.000	69-16	802.000
64-17	772.125	65-17	778.125	66-17	784.125	67-17	790.125	68-17	796.125	69-17	802.125
64-18	772.250	65-18	778.250	66-18	784.250	67-18	790.250	68-18	796.250	69-18	802.250
64-19	772.375	65-19	778.375	66-19	784.375	67-19	790.375	68-19	796.375	69-19	802.375
64-20	772.500	65-20	778.500	66-20	784.500	67-20	790.500	68-20	796.500	69-20	802.500
64-21	772.625	65-21	778.625	66-21	784.625	67-21	790.625	68-21	796.625	69-21	802.625
64-22	772.750	65-22	778.750	66-22	784.750	67-22	790.750	68-22	796.750	69-22	802.750
64-23	772.875	65-23	778.875	66-23	784.875	67-23	790.875	68-23	796.875	69-23	802.875
64-24	773.000	65-24	779.000	66-24	785.000	67-24	791.000	68-24	797.000	69-24	803.000
64-25	773.125	65-25	779.125	66-25	785.125	67-25	791.125	68-25	797.125	69-25	803.125
64-26	773.250	65-26	779.250	66-26	785.250	67-26	791.250	68-26	797.250	69-26	803.250
64-27	773.375	65-27	779.375	66-27	785.375	67-27	791.375	68-27	797.375	69-27	803.375
64-28	773.500	65-28	779.500	66-28	785.500	67-28	791.500	68-28	797.500	69-28	803.500
64-29	773.625	65-29	779.625	66-29	785.625	67-29	791.625	68-29	797.625	69-29	803.625
64-30	773.750	65-30	779.750	66-30	785.750	67-30	791.750	68-30	797.750	69-30	803.750
64-31	773.875	65-31	779.875	66-31	785.875	67-31	791.875	68-31	797.875	69-31	803.875
64-32	774.000	65-32	780.000	66-32	786.000	67-32	792.000	68-32	798.000	69-32	804.000
64-33	774.125	65-33	780.125	66-33	786.125	67-33	792.125	68-33	798.125	69-33	804.125
64-34	774.250	65-34	780.250	66-34	786.250	67-34	792.250	68-34	798.250	69-34	804.250
64-35	774.375	65-35	780.375	66-35	786.375	67-35	792.375	68-35	798.375	69-35	804.375
64-36	774.500	65-36	780.500	66-36	786.500	67-36	792.500	68-36	798.500	69-36	804.500
64-37	774.625	65-37	780.625	66-37	786.625	67-37	792.625	68-37	798.625	69-37	804.625
64-38	774.750	65-38	780.750	66-38	786.750	67-38	792.750	68-38	798.750	69-38	804.750
64-39	774.875	65-39	780.875	66-39	786.875	67-39	792.875	68-39	798.875	69-39	804.875
64-40	775.000	65-40	781.000	66-40	787.000	67-40	793.000	68-40	799.000	69-40	805.000
64-41	775.125	65-41	781.125	66-41	787.125	67-41	793.125	68-41	799.125	69-41	805.125
64-42	775.250	65-42	781.250	66-42	787.250	67-42	793.250	68-42	799.250	69-42	805.250
64-43	775.375	65-43	781.375	66-43	787.375	67-43	793.375	68-43	799.375	69-43	805.375
64-44	775.500	65-44	781.500	66-44	787.500	67-44	793.500	68-44	799.500	69-44	805.500
64-45	775.625	65-45	781.625	66-45	787.625	67-45	793.625	68-45	799.625	69-45	805.625
64-46	775.750	65-46	781.750	66-46	787.750	67-46	793.750	68-46	799.750	69-46	805.750
64-47	775.875	65-47	781.875	66-47	787.875	67-47	793.875	68-47	799.875	69-47	805.875

Parts Identification



① Power Indicator (red LED)

Light when the Wireless Microphone is turned on.

Promptly replace the battery after go out the Power Indicator LED.

② Power switch

Turns the power of the Wireless Microphone ON or OFF.

③④ Channel select switches

Select the transmission channel. (Refer to Channel Setting)

⑤ Driver compartment

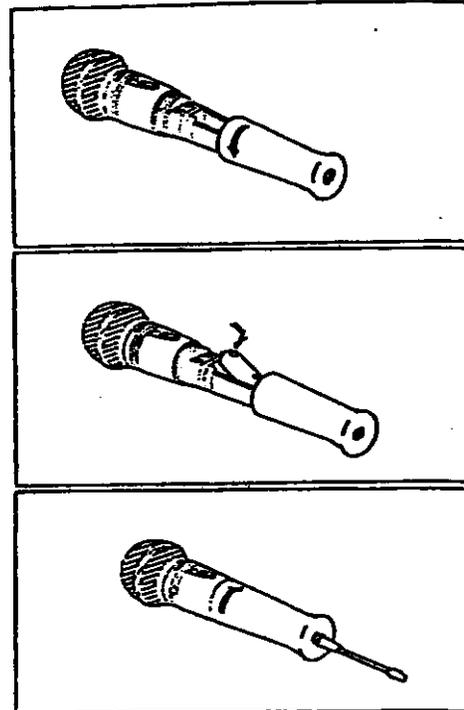
Put the supplied screw driver for channel selection away here.

Power Supply

The transmitter can operate on one LR6(size AA) alkaline battery continuously for about 16 hours at 25°C(77° F).

Inserting the battery

1. Twist the grip counterclockwise and slide down.
2. Inserting the battery with negative terminal downward , and push it firmly into the battery compartment against the spring.
3. Replace the grip.



Note : Please care to drop the grip because it is possible to remove from main unit.

Battery Indication

The power indicator LED of the microphone go off , indicating that the battery level is low. Promptly replace the battery after go off the power indicator LED when the power on.

●The battery indication on the WRR-800A/801A/850A starts flashing at same timing that go off the power indicator LED on this wireless microphone.

Notes on batteries

- Use new alkaline battery, and check the recommended use-by date on the bottom of the battery.
- Be careful to insert the battery with the correct polarity.
- When not using the wireless microphone for a long period, remove the batteries to avoid leakage. If a battery does leak, clean all leakage from the unit and insert new battery. Leakage left in the unit may cause poor battery contact. If there seems to be poor battery contact, consult your Sony dealer.

Channel Setting

Select the transmitting channel by the supplied screw driver.

③ Channel select switch

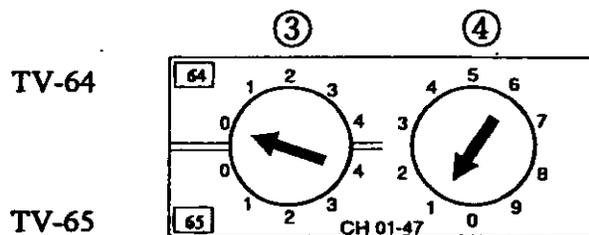
Select TV band and 10's digit of the transmitting channel.

④ Channel select switch

Select 1's digit of the transmitting channel.

Example

How to select to 64-01 channel.



③ Set to " 0 " position on TV-64 side.

④ Set to " 1 " position.

Notes on Microphone System Operation

● To operate with 2 or more channels, maintain a distance of at least 30cm (1 ft.) between each pair of transmitters.

For details of operation with 2 or more channels, refer to the operating Instructions for the WRR-810A UHF Synthesized Tuner and the WRR-800A/801A/820A/840A/850A/860A UHF Synthesized Diversity Tuners.

● Ensure that the tuners set to channels not being used are either tuned off or set to the minimum output level.

● When powering the transmitter on or off, to keep the noise to a minimum, set the audio output level from the tuner or mixer to a minimum.

● Powering the transmitter on without checking the channel selection first may interfere with the operation of other microphones/transmitters, if the current setting is already being used.

Specification**Transmitter and modulator section**

Oscillator	Crystal controlled PLL synthesizer
Carrier frequencies	(64)770.125 to 781.875 MHz (66)782.125 to 793.875 MHz (68)794.125 to 805.875 MHz
Tone signal	32.768 kHz
Type of emission	110KF3E
RF power output	5mW
Frequency stability	Within $\pm 0.005\%$
Spurious radiation	2.5 μ W or less
Type of antenna	1/4 wavelength wire or helical
Pre-emphasis	50 μ sec
Reference deviation	± 5 kHz (94dB SPL, 1kHz)
Frequency response	100 to 15,000 kHz
Signal-to-noise ratio	60 dB or more (A-weighted, with reference deviation at WRR-800A/801A/810A/820A/840A/850A/860A)
Maximum input	128 dB SPL (1kHz)
Microphone unit	Electret Condenser Microphone

Power section

Power requirement	1.5 VDC (One LR6/size AA alkaline battery)
Battery life	Approx. 12 hours at 25°C (77° F) with Sony LR6 alkaline battery

General

Operating temperature	0°C to +50°C (+32° F to +122° F)
Storage temperature	-30°C to +60°C (-22° F +140° F)
Dimensions	ϕ 55×216 mm (With 1/4 wavelength helical antenna) ϕ 55×285 mm (With 1/4 wavelength wire antenna)
Mass	Approx. 200g including battery

Supplied accessories

Microphone holder (1)
Stand adaptor PF1/2 to NS5/8 (1)
Screw driver (1)
Operating Instructions(1)

Design and specifications are subject to change without notice.

(d)-(9) Tune-up procedure at specific operating power levels:**(1) Vcc voltage of RF AMP block**

DC-DC converter output is +3V constant. It supplies Vcc of the RF AMP block.

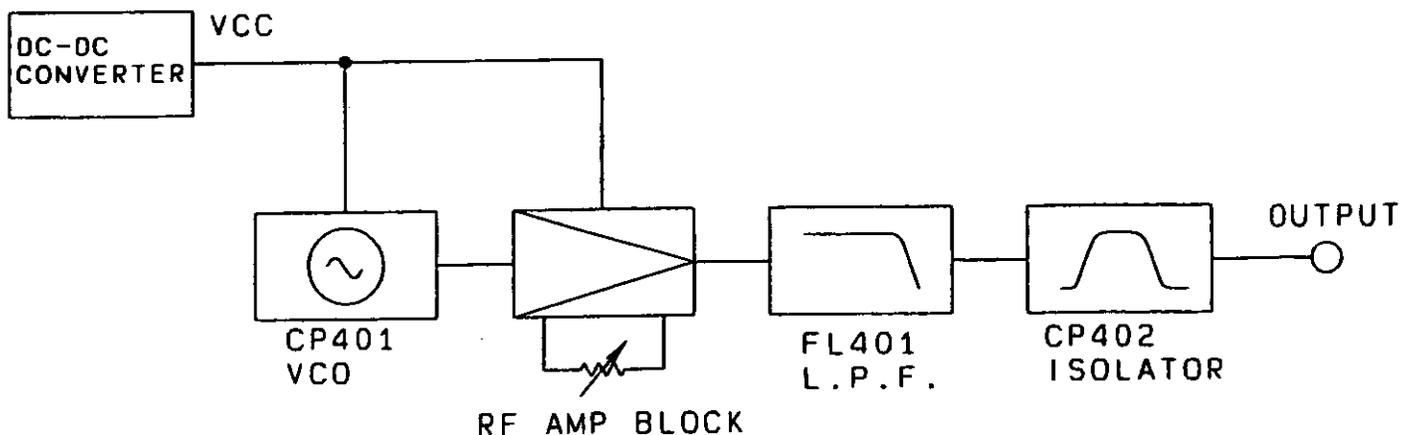
(2) Measurement of RF power output.

RF power output is measured at output terminal (CN401).

VCO(CP401) 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 $-1.5 \sim +2.0\text{dBm}$ (at $50\ \Omega$ load) at 3V power supply voltage.
- 2) Adjust RV401 so that RF AMP block output power is $5 \sim 9.0\text{dBm}$ (at $50\ \Omega$ load) when RF AMP block input power is $-1.5 \sim +2.0\text{dBm}$ and 3V power supply voltage.
- 3) L.P.F. insertion loss is less than 0.6dB.
- 4) Isolator insertion loss is $0.5 \sim 0.9\text{dB}$.

Therefore RF output power is $5\text{mW}(\pm 1\text{mW})$ by adjusting RV401.



(d)-(10)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(CP401) by a prescaler[1/M](IC401). A counter[1/A](IC401) and Ncounter[1/N](IC401) and apply it [fr'] to a phase detector.

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

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.

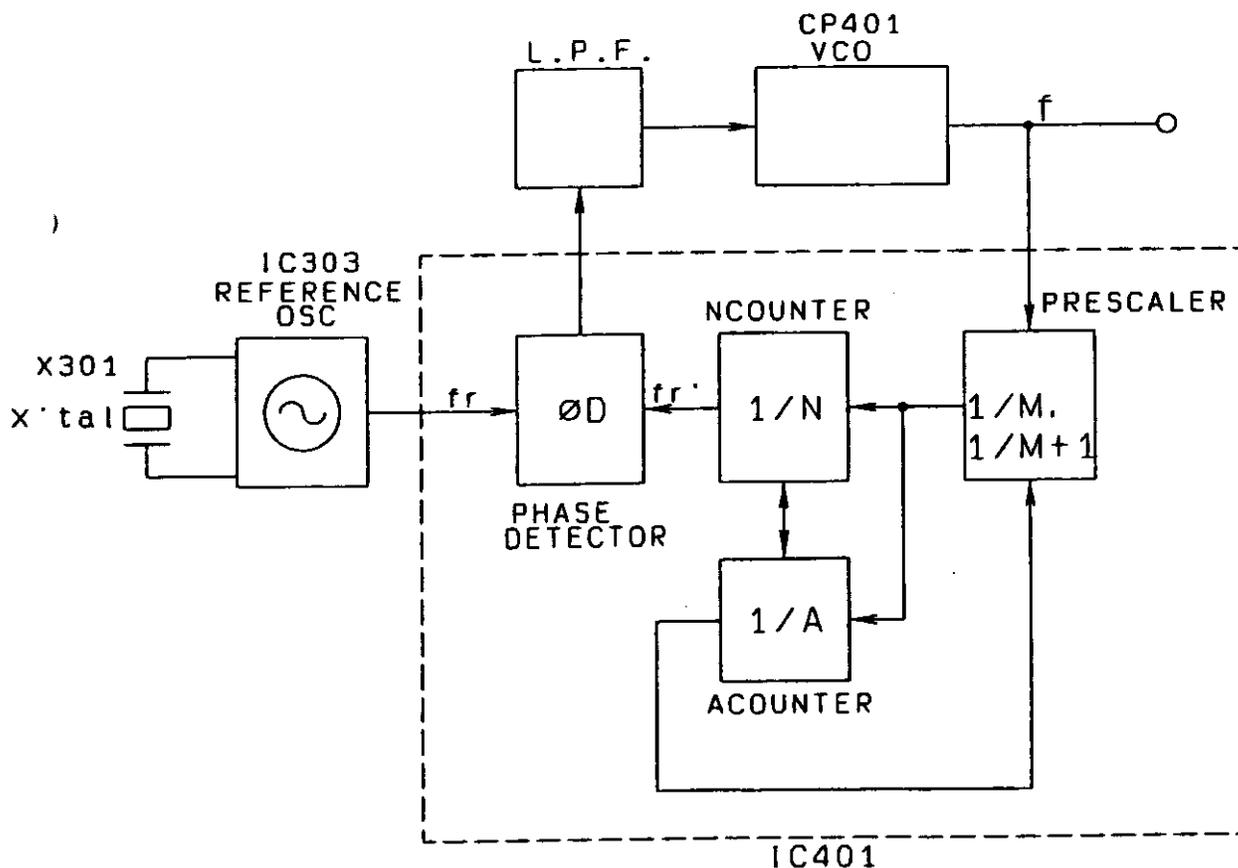
$$f r = f r' \quad \text{--- (2)}$$

by expression of (1), (2)

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

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 $\pm 35\text{ppm}$ (by stability of Xtal(X301) spec). So stability of transmitting frequency[f] is $\pm 50\text{ppm}$ (0.005%).



(d)-(11)A description of circuits for suppression of spurious radiation:

1. Radiation of higher harmonics are suppressed by installation of low pass filter and isolator in the next to a RF AMP.
2. By introducing direct oscillation system of transmitting frequency by the VCO, RF AMP are straightly amplified. So there is no spurious caused by frequency multiplier.
3. Shield of the VCO and the chassis with conductive paint suppress spurious emission radiated from the transmitter chassis.

