Robyn XL-ONE Owner's Manual

ROBYN INTERNATIONAL INC.

MODEL XL-ONE ®

5 WATT 23 CHANNEL
CITIZENS BAND TRANSCEIVER
SOLID STATE

ROBYN INTERNATIONAL INC.

ROBYN EQUIPMENT GUARANTEE

ROBYN INTERNATIONAL agrees to repair or replace, without charge, any equipment, parts, or accessories which are defective as to workmanship or materials and which are returned to ROBYN transportation prepaid, provided:

(1) Notice of claimed defect is given ROBYN INTERNATIONAL in writing within 90 days from the date of purchase and goods are returned in accordance with ROBYN instructions.

(2) Any failure due to use of equipment in excess of that contemplated in normal operations shall not be deemed a defect within the meaning of these provisions.

The guarantee of these paragraphs is void if the equipment is altered or repaired by others than ROBYN INTERNATIONAL or its authorized representatives.

ROBYN INTERNATIONAL reserves the right to make any change in design or to make addition to, or improvements in, ROBYN products without imposing any obligations upon ROBYN to install the changes in previously manufactured ROBYN products.

No other warranties, expressed or imlied, shall be applicable to this equipment and the foregoing shall constitute the Buyer's sole right and remedy under the agreements contained in these paragraphs. In no event shall ROBYN have any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials, or from any other cause.

WARRANTY REPAIRS

If it should be necessary to return equipment or materials under the above guarantee, direct your correspondence to:

ROBYN INTERNATIONAL, INC.,
Service Repair Department
Northland Drive
Rockford, Michigan 49341
P.O. Box 478

Give full particulars including the applicable details listed below. If an item is thought to be defective, such notice must give full information as to nature of defect and identification of part considered defective. Upon receipt of this notice, ROBYN INTERNATIONAL will promptly advise you with instructions for returning the equipment or materials.

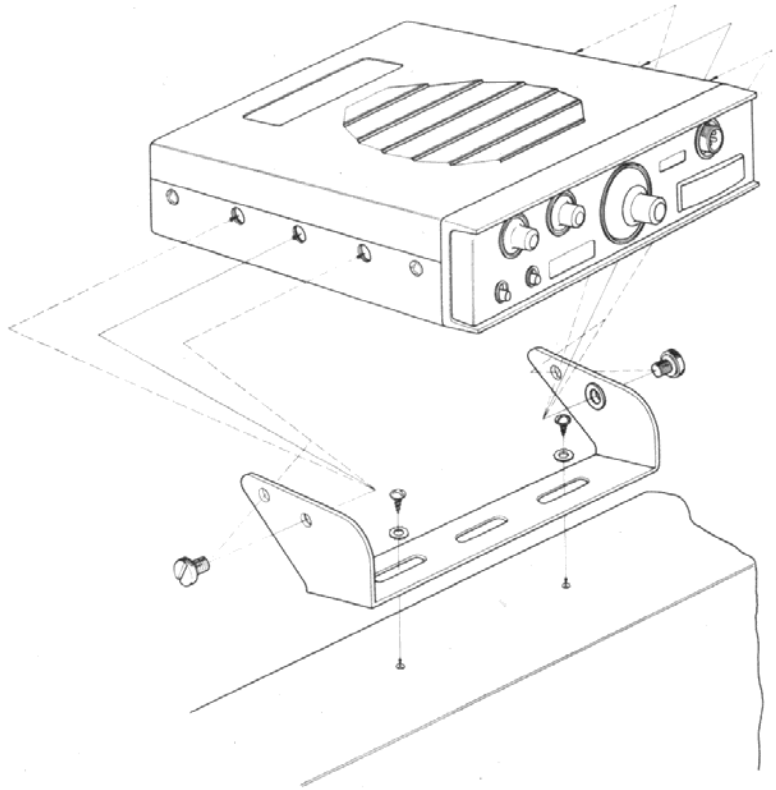
Failure to follow these instructions will cause us unnecessary delay in handling your returned merchandise.

INFORMATION NEEDED

1. Type, number, and name of equipment.
2. Sales receipt or copy to validate date of purchase.
3. Nature of trouble, cause if known, and hours of service.
4. Complete instructions detailing work to be done by us.
5. Your name and return address.
6. Method of shipment by which the equipment should be returned.

It is important to use the same protective packing and to include a copy of the above information when returning the unit to us for service or repairs.

MOUNTING INSTRUCTIONS



MOBILE INSTALLATIONS

A location in the car or truck should be chosen carefully for convenience of operation and non-interference with normal driving functions. Mounting may be under the dash or instrument panel or any place a secure installation can be made. The carrying handle again serves as the mounting bracket or additional perforated straps or brackets may be used as desired. The 12-volt cable may be connected to any convenient terminal but preferably to the igniton switch to prevent unauthorized persons from operation of your unit. With this method the unit will only operate when your key is turned on. Engine ignition interference should not be a problem and vehicles equipped with standard broadcast radios will have enough suppression to eliminate ignition interference. If interference is present, any skilled auto radio repairman should be able to eliminate it for you. A 1.0 mfd condenser connected between the generator armature post and ground will help greatly.

BASE STATION INSTALLATIONS

For base station use, the AC power Adapter is recommended. When this power supply is used, simply connect the red (+) and black (−) terminals on the power supply to the (+) and (−) leads on the adapter. Do not attempt to operate this transceiver by connecting directly to 110 Volts AC.

ANTENNA INSTALLATION

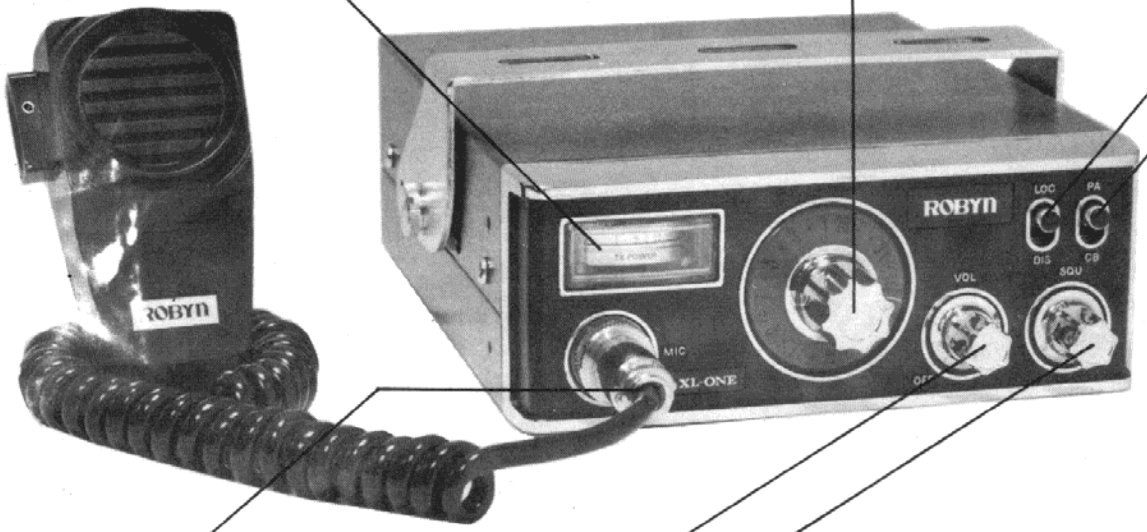
BASE STATION:

When the Transceiver is used as a base station, any Citizens Band beam, dipole, ground plane or vertical antenna may be used. A ground plane type will provide greater coverage and, since it is essentially non-directional, it is ideal in base station to mobile operation. From base station to base station, or point to point operation, a directional beam will give greater distance even under adverse condition. The range of the transceiver depends basically on the height of the antenna and, whenever possible, select the highest location within F.C.C. limits. (These regulations limit the antenna height to 20 feet above an existing structure). Generally a maximum of 26 feet of lead-in cable should be used due to line losses. However, a desirable antenna location may justify the loss in extra lead-in length.

MOBILE ANTENNAS:

A vertical whip antenna is best suited for mobile use. A non-directional antenna must be used for best results in any case. The base loaded whip antenna will normally provide effective communication. For greater range and more reliable operation, a full quarter-wave whip should be used. Either of these antennas use the metal car body as a ground plane and the shield of the base lead as well as the metal case of the transceiver should be grounded. A standard antenna connector (type SO 239) is provided on the transceiver for easy connection to a standerd PL 259 cable termination.

FRONT VIEW



SIGNAL / TRANSMIT POWER METER

CHANNEL SELECTOR

LOCAL-DISTANCE SELECTOR

PA-CB SELECTOR

PUBLIC ADDRESS SPEAKER

EXTERNAL SPEAKER

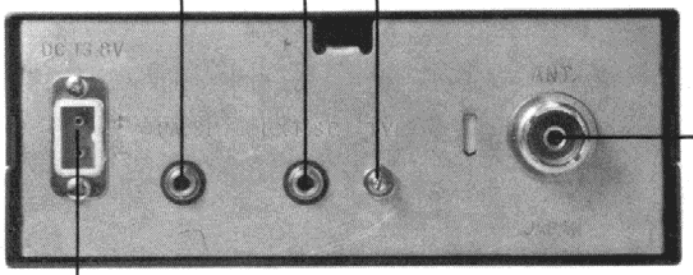
TVI TRAP

MICROPHONE CONNECTOR

SQUELCH CONTROL

OFF-ON VOLUME CONTROL

BACK VIEW



D.C. POWER SOCKET

ANTENNA CONNECTOR

CONTROLS

VOLUME CONTROL AND OFF-ON SWITCH

The volume control varies the sound output of the loudspeaker. It also functions as "off-on" switch. Clockwise rotation increases volume.

CHANNEL SELECTOR SWITCH:

Tuning the receiver and transmitter is simultaneous by rotating the 23 channel selector switch. Set switch to desired channel 1 to 23 as indicated directly on switch knob.

SQUELCH CONTROL:

The squelch control is designed to reduce excessive noise (such as high line interference, ignition noise, etc.) This control must be set when only noise, no signal is heard. Turn the control fully clockwise and increase the volume until noise or a signal is heard. When only noise is present, turn the squelch control counterclockwise unitl the noise is blanked out.

PUBLIC ADDRESS SWITCH:

In the "PA" position, your transceiver is converted to a public address system. A convenient pin jack on the back panel is provided for connection to any standard 8 ohm PA speaker.

PRESS-TO-TALK MICROPHONE:

The receiver and transmitter are controlled by the press-to-talk switch on the microphone. Press in this switch and the transmitter is activated. Release this switch to receive. When transmitting, hold microphone 3 to 4 inches from mouth and speak clearly and in a normal voice.

SIGNAL-TRANSMIT POWER METER:

A combination meter on front panel provides a constant visual monitor of incoming "Signal Strength" when receiving and "Relative Output Power" when transmitting.

LOCAL-DISTANCE SWITCH:

Local-distance switch on the local side is for strong signal coming and distance side is for weak signal coming.

SPECIFICATIONS

GENERAL

Dimensions	:	5-7/8" x 2-3/8" x 7-1/16"
Weight	:	approx. 4.41 lbs.
DC Power consumption	:	a) Receive (stand by) 220mA
		b) Transmit (100% Mod.) 1.5A
Channels	:	23
Semi-conductors	:	18-Transistor and 7-diode.
Operating condition	:	a) Ambient temperature −10℃～50℃
		b) Relative humidity +35℃ 95% or less

RECEIVER

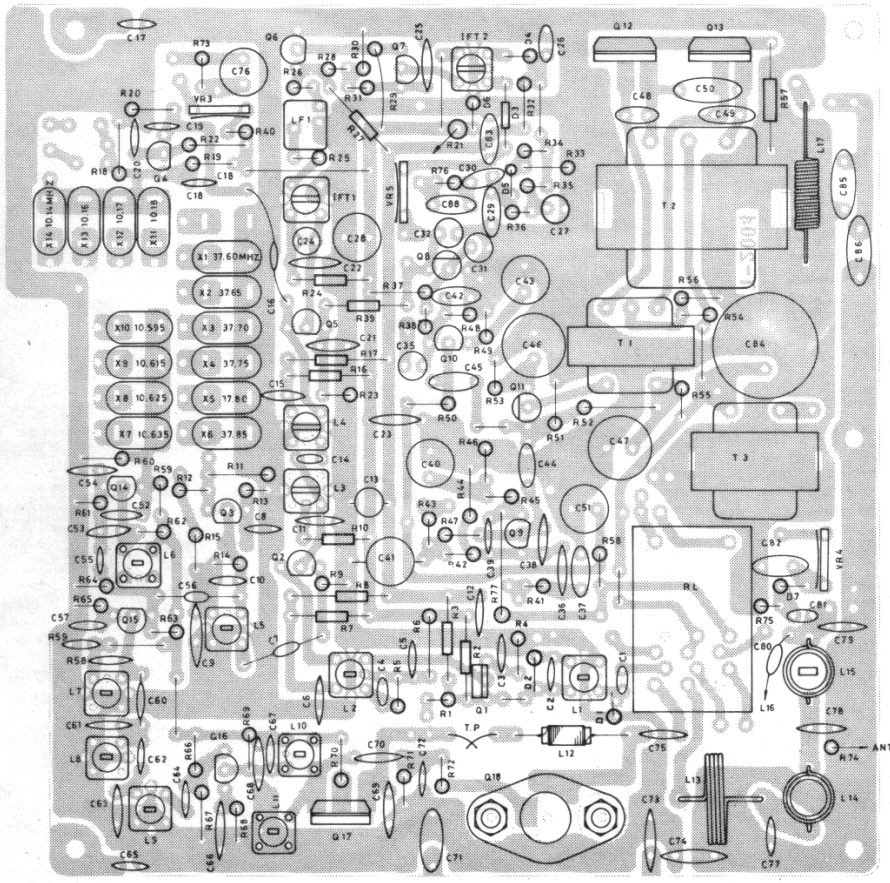
Receiving system	:	Double conversion superheterodyne.
Intermediate freq	:	1st 10.595MHz～10.635MHz, 2nd.... 455KHz
Sensitivity	:	s/n 10db or more at 0.6uV input.
Adjacent channel rejection	:	50db or more.
Image rejection	:	45db or more.
Power output	:	Not to exceed 4 watts.
		(distortion factor 10%)

TRANSMITTER

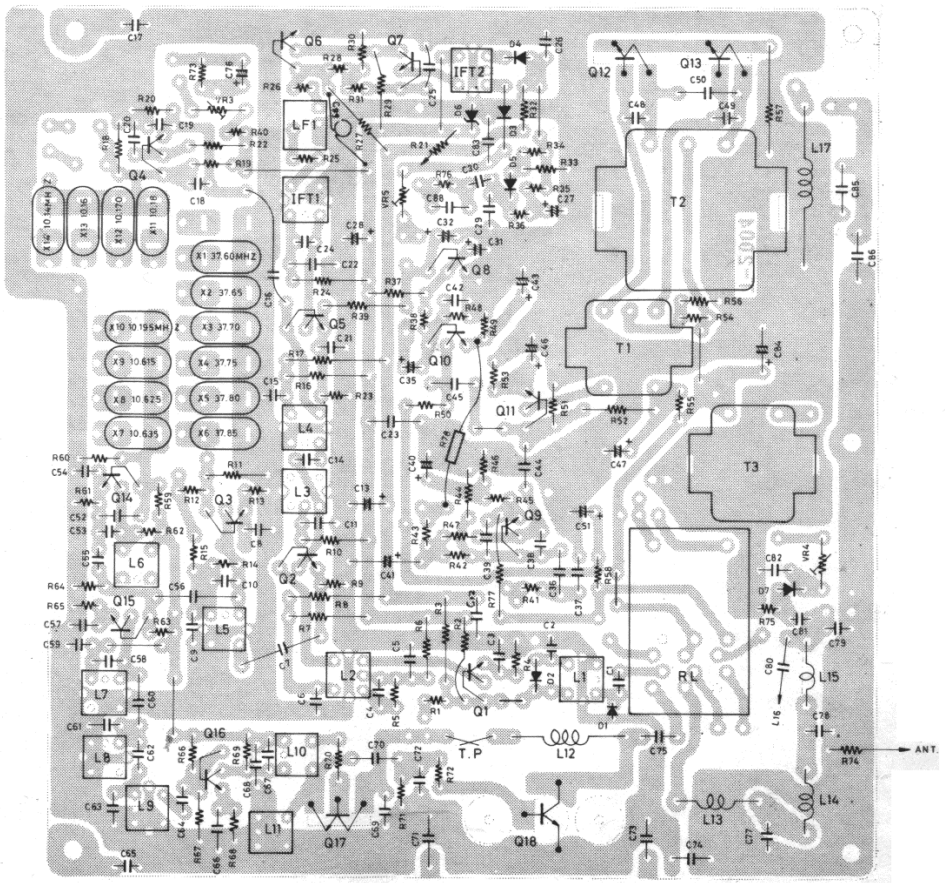
Power input	:	5 watts
Final efficiency	:	60% or more
Modulation	:	100%
Spurious and harmonics	:	30uW or less
Frequency tolerance	:	±0.005% or less
Antenna coupling	:	50 ohms

XL-ONE PARTS LAYOUT

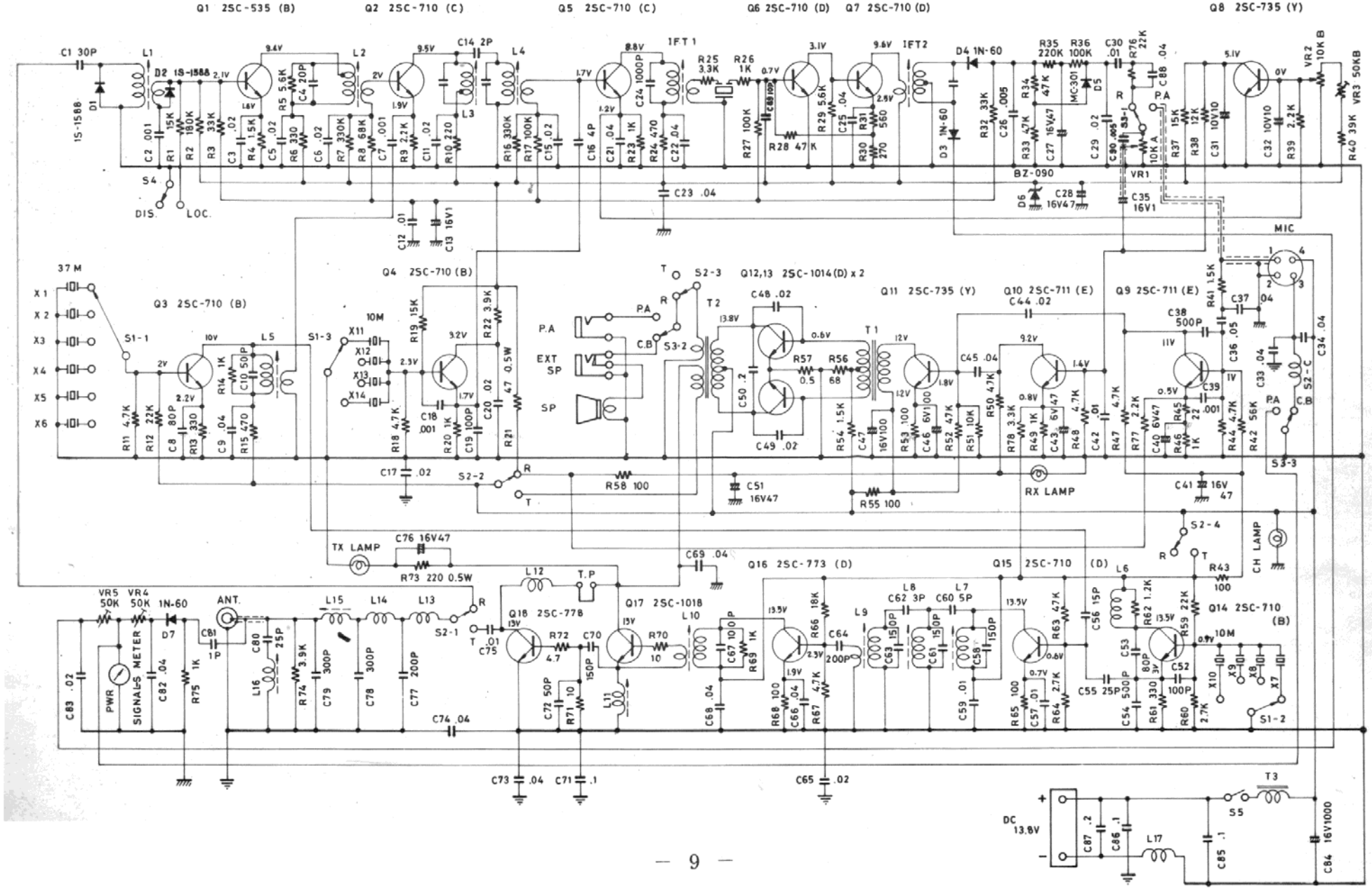
FRONT VIEW



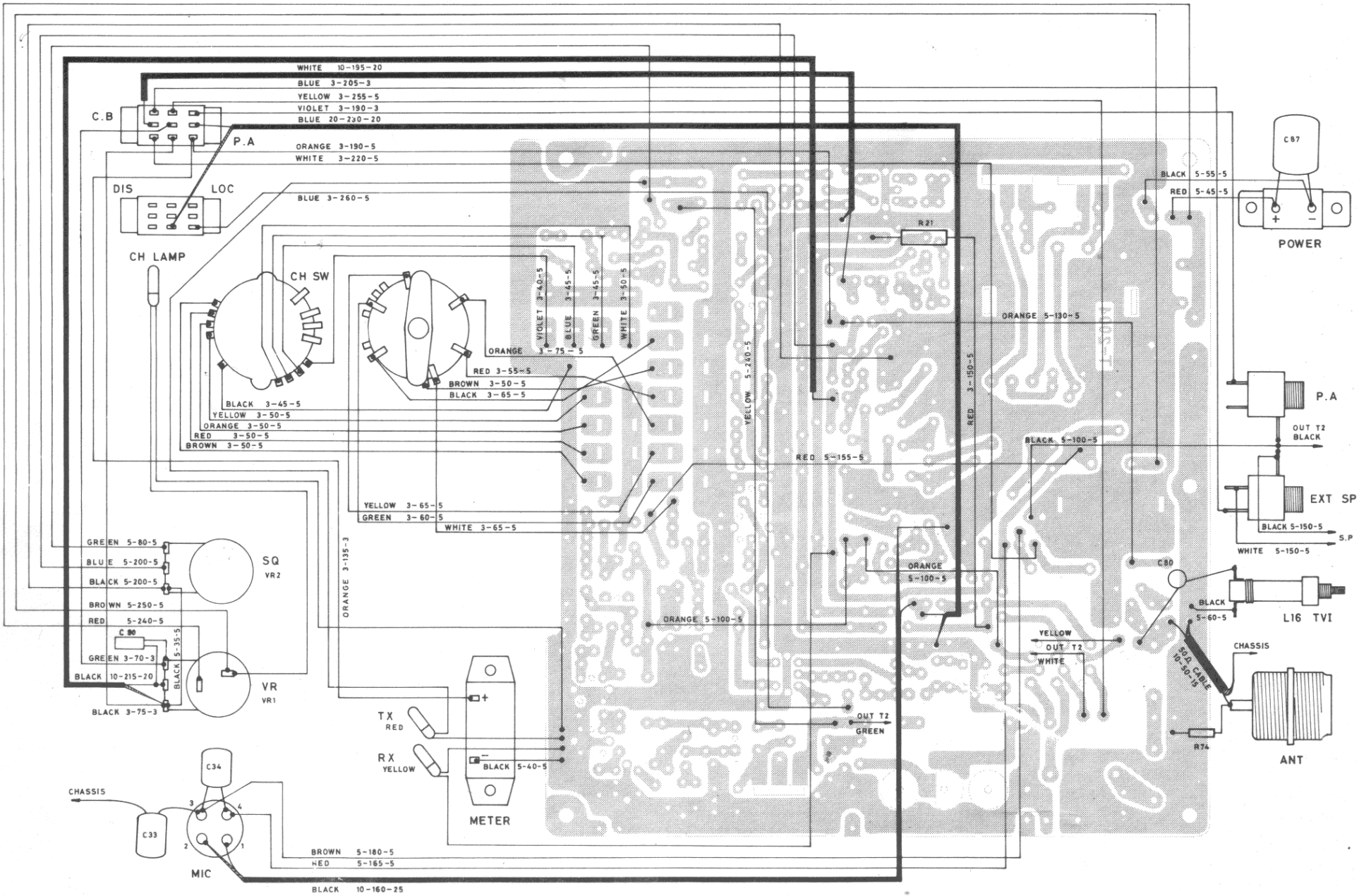
BACK VIEW



SCHEMATIC DIAGRAM



WIRING DIAGRAM



FREQUENCY SYNTHESIZING SYSTEM

This transceiver employs a method whereby 14 crystals are used in various arrangements to produce 23 fundamental oscillator frequencies (see Table A) This arrangement, known as frequency synthesis, permits full 23 channel crystal-controlled operation on both transmit and receive using relatively few crystals.

The tables which follow show the particular crystals used for each channel. It should be noted that failure of one crystal will lead to malfunction on a number of channels — not just one. If malfunction on a number of channels is experienced therefore, refer to Table A,B,C, which will offer a quick means of determining which crystal may have failed.

FOR EXAMPLE;

If you would not be able to operate this frequency synthesis transceiver on channel 1 position only, you might see that Table A shows CH-1 (26.965MHz) frequency being mixed X-1 (37.600MHz) with X-7 (10.635MHz) in case of transmitting, and the Table B shows CH-1 frequency being mixed X-1 with X-11 in case of receiving. Thus you will find out that one or more crystals of X-1, X-7, X-11 will be defective for operation on channel 1.

TABLE C

CRYSTAL NO.	Osc. FREQUENCY	CHANNELS USED
X-1	37.600MHz	1 2 3 4
X-2	37.650	5 6 7 8
X-3	37.700	9 10 11 12
X-4	37.750	13 14 15 16
X-5	37.800	17 18 19 20
X-6	37.850	21 22 23
X-7	10.635	1 5 9 13 17 21
X-8	10.625	2 6 10 14 18 22
X-9	10.615	3 7 11 15 19
X-10	10.595	4 8 12 16 20 23
X-11	10.180	1 5 9 13 17 21
X-12	10.170	2 6 10 14 18 22
X-13	10.160	3 7 11 15 19
X-14	10.140	4 8 12 16 20 23

TRANSMITTER TABLE A

CHANNEL NO.	CHANNEL FREQUENCY	CRYSTAL COMBINATION	SYNTHESIZED FREQUENCY
1.	26.965 MHz	$X_1 - X_7$	26.965 MHz
2.	26.975	$X_1 - X_8$	26.975
3.	26.985	$X_1 - X_9$	26.985
4.	27.005	$X_1 - X_{10}$	27.005
5.	27.015	$X_2 - X_7$	27.015
6.	27.025	$X_2 - X_8$	27.025
7.	27.035	$X_2 - X_9$	27.035
8.	27.055	$X_2 - X_{10}$	27.055
9.	27.065	$X_3 - X_7$	27.065
10.	27.075	$X_3 - X_8$	27.075
11.	27.085	$X_3 - X_9$	27.085
12.	27.105	$X_3 - X_{10}$	27.105
13.	27.115	$X_4 - X_7$	27.115
14.	27.125	$X_4 - X_8$	27.125
15.	27.135	$X_4 - X_9$	27.135
16.	27.155	$X_4 - X_{10}$	27.155
17.	27.165	$X_5 - X_7$	27.165
18.	27.175	$X_5 - X_8$	27.175
19.	27.185	$X_5 - X_9$	27.185
20.	27.205	$X_5 - X_{10}$	27.205
21.	27.215	$X_6 - X_7$	27.215
22.	27.225	$X_6 - X_8$	27.225
23.	27.255	$X_6 - X_{10}$	27.255

RECEIVER TABLE B

CHANNEL NO.	CHANNEL FREQUENCY	1st LOCAL Osc XTAL	2nd LOCAL Osc XTAL	2nd LOCAL Osc XTAL FREQ.	IF-2 FREQ.
1.	26.965 MHz	X_1	X_{11}	10.180 MHz	455 KHz
2.	26.975	X_1	X_{12}	10.170	455
3.	26.985	X_1	X_{13}	10.160	455
4.	27.005	X_1	X_{14}	10.140	455
5.	27.015	X_2	X_{11}	10.180	455
6.	27.025	X_2	X_{12}	10.170	455
7.	27.035	X_2	X_{13}	10.160	455
8.	27.055	X_2	X_{14}	10.140	455
9.	27.065	X_3	X_{11}	10.180	455
10.	27.075	X_3	X_{12}	10.170	455
11.	27.085	X_3	X_{13}	10.160	455
12.	27.105	X_3	X_{14}	10.140	455
13.	27.115	X_4	X_{11}	10.180	455
14.	27.125	X_4	X_{12}	10.170	455
15.	27.135	X_4	X_{13}	10.160	455
16.	27.155	X_4	X_{14}	10.140	455
17.	27.165	X_5	X_{11}	10.180	455
18.	27.175	X_5	X_{12}	10.170	455
19.	27.185	X_5	X_{13}	10.160	455
20.	27.205	X_5	X_{14}	10.140	455
21.	27.215	X_6	X_{11}	10.180	455
22.	27.225	X_6	X_{12}	10.170	455
23.	27.255	X_6	X_{14}	10.140	455

GENERAL OPERATING INSTRUCTIONS

CAUTION:

Before operating this transceiver, you are required by law to read and thoroughly understand part 95 of the F.C.C. rules and regulations.

Check to see if the proper connections have been made on power cable, antenna system and microphone and that the correct cables have been used. Be sure that the transceiver is adequately grounded (if not mounted directly to a metal surface).

Select the channel on which you wish to operate by rotating the Channel Selector Switch to the desired channel.

To transmit, press the push-to-talk switch and hold it down. Speak directly into microphone. Release this switch to receive. Actual receive and transmitting power should be monitored by watching the SIGNAL-TRANSMIT POWER METER and using the switch provided for this purpose.

When using squelch at the right side of front panel, the squelch will not work if the knob were turned counter-clockwise all the way; and a noise will be emitted from speaker when there is no input signal received.

By gradually turning the knob clockwise, noise will disappear and the squelch will start to work. Kept at this stage, the squelch will automatically be disengaged as signal comes in, and the receiver will restore its regular receiving condition catching the signal.

When the signal ceases, the receiver will be driven into squelch and noise will disappear. Do not turn the knob too much clockwise as a weak received signal can not be heard by over engagement. You have to adjust the control to fit the strength and weakness of the squelch when only a weak input signal is received.

PARTS LIST

Parts number.	Description.
2−20001	Front panel.
2−20003	Case, Upper.
2−20004	Case, bottom.
3−20005	Mounting bracket.
4−20006	Channel lamps.
4−20007	Volume knob (2 pcs.)
4−20009	Channel dial.
4−10010	Heat sink plate(A).
4−10015	Red plastic plate for channel illumination.
	Screw bind M3 x 6.
	Screw bind M2.6 x 5.
	Screw bind M2.3 x 4.
	Dish screw M2.6 x 6.
	Instruction Manual.
	Mike hangers.
2SC71(B)	Transistor.
2SC711(E)	〃
2SC773	〃
2SC778	〃 with insulator.
2SC1018	〃 with insulator.
2SC1014	〃 with insulator.
MC301	Diode.
BZ−090	Zenor diode.
ETC−1003	Antenna coil.
ETC−1004	RF coil.
ETC−1020	First IF coil.
ETC−1033A	Second IF coil.
ETC−1033C	〃 〃
ETC−1002	37 MHz oscillator coil.
ETC−1034	10.6 MHz oscillator coil.
ETC−1001	27 MHz filter coil. (1).
ETC−1002	〃 〃 〃 (2).
ETC−1016	Buffer coil. (1).
ETC−1017	Buffer coil. (2)
ETC−1031	L. P. F. coil. (1).
ETC−1032	Hi-frequency choke coil.
ETC−1037B	L. P. F. coil. (2)
ETC−1037A	〃 (3)
ETC−1039	Hi-frequency choke coil.
LF−B6	Ceramic filter.
ETC−1038	TVI trap.
	Printed circuit board.
ETC−1002	Choke transformer.
	Output modulation transformer.
	Slide switch. 3P2T. (2)
ETS−1001	Rotary switch. Shaft length 25MM.
	Variable resistor 10K ohms (B).
	〃 〃 10K ohms (A) with switch.

Parts number.	Description.
	Speaker 90MM.
	Meter.
	3.5ϕ jack with nut.
	Insulator washer for jack.
	Microphone.
	Pilot lamp, for channel indication.
	Pilot lamp (Y) for meter.
	Pilot lamp (R) for meter.
MH−4	Relay with socket and pin.
CN−3352	2F type consent for power source.
	Each of crystal.
	Mylar condenser 0.22uF −10% 50V.
	Styrolle condenser. 1000uF.
	Electrolytic condenser 1000uF.
	Metal resistor ½ W 0.5 ohms.
	Semi-fixed variable resistor.

FEDERAL COMMUNICATIONS COMMISSIONS REQUIREMENTS

Your new Robyn transceiver is a combination receiver-transmitter designed and built for licensed Class D operation on any of the 23 frequencies designated as citizens band channels by the Federal Communications Commission. You are required to read and understand Part 95 of the F.C.C. rules and regulations prior to operation of this unit. Part 95 regulations are available for $2.00 from the Superintendent of Documents, Government Printing Office, Washington. D.C. 20402. You are also required to complete F.C.C. form 505 and submit it to the F.C.C. in order to receive your license to operate this unit. F.C.C. regulations will be violated if you transmit with this unit prior to receipt of your license.

NOTE

The technical information, diagrams, and charts provided in this manual are supplied for the use of a qualified holder of a first or second class radiotelephone license in servicing this transceiver. It is the users responsibility to see that this unit is operating at all times in accordance with the F.C.C. Citizens Radio Service regulations.

If you install or service your own transceiver, do not attempt to make any transmitter tuning adjustment. Transmitter adjustments are prohibited by the F.C.C. unless you hold a first or second class radiotelephone license or are in the presence of a person holding such a license. A Citizens Band or Amateur license is not sufficient.

ROBYN INTERNATIONAL INC. HEREBY
CERTIFIES THAT THIS UNIT HAS BEEN DESIGNED
AND MANUFACTURED IN ACCORDANCE WITH VOL. 6,
PART 95 OF THE CURRENT F.C.C. RULES AND REGULATIONS
AS OF THE DATE OF MANUFACTURE.

ROBYN INTERNATIONAL INC.
Rockford, Michigan 49341, U.S.A.

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