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SERVICE MANUAL

SERVICE MANUAL 19X & 19LTD 40 CHANNEL CB



Cobra Communications Product Group
DYNASCAN CORPORATION

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Chicago, Illinois 60635

TABLE OF CONTENTS 19X / 19 LTD

<u>PAGE NUMBER</u>	<u>DESCRIPTION</u>
1	Table of Contents
<u>19X</u>	
2	Unit Specifications & Frequency Listing
3	Test Equipment Set-up
4	Block Diagram
5-7	Alignment Procedures
8	Parts Layout Main PCB (top view) w/foil patterns
9	Parts Layout Main PCB (bottom view) w/foil patterns
9	Parts Layout Sub. Ass'y PCB (bottom view) w/foil patterns
10	Added Parts View (top)
11	Voltage Chart for I.C.'S & Voltage Chart for Transistors
12-13	Logic Table for IC'S
14	Semiconductor Pin Configuration
15-16	Schematic
17-18	Internal Diagram - IC'S
19	Wiring Diagram
20	Notes
21-22	Mechanical Exploded Views
23-26	Parts List
<u>19LTD</u>	
27	Unit Specifications & Frequency Listing
28	Test Equipment Set-up
29	Block Diagram
30-32	Alignment Procedures
33	Alignment Layout
34	Parts Layout Main PCB (top view)
35	Parts Layout Sub. Ass'y PCB (top view) w/foil patterns
36	Parts Layout Main PCB (bottom view)
37	Bottom Copper Foil Pattern - Main PCB
38	Added Parts View (bottom)
39	Voltage Chart for I.C.'S & Voltage Chart for Transistors
40-41	Logic Table for IC'S
42	Semiconductor Pin Configuration
43-44	Schematic
45-47	Internal Diagram - IC'S
48	Notes
49-50	Wiring Diagram
51-53	Parts List

19X
UNIT SPECIFICATION & FREQUENCY LISTING

GENERAL

Channels: 40
 Frequency Range: 26.965 to 27.405 MHz.
 Frequency Control: Phase Lock Loop (PLL) synthesizer.
 Frequency Tolerance: 0.005%
 Operating Temperature Range: -30°C to +50°C.
 Microphone: Plug-in type; dynamic.
 Input Voltage: 13.8V DC nom. (positive or negative ground).
 Current Drain: *Transmit*: AM full mod., 1.5A. (maximum)
Receive: (Squelched, 0.25A; full audio output 1.0A. (nominal)
 Size: 7-1/2"D x 5-3/16"W x 2-1/8"H.
 Weight: 3 pounds.
 Antenna Connector: UHF, SO-239.
 Semiconductors: 13 transistors, 17 diodes, 3 integrated circuits.
 Meter: Illuminated; indicates relative power output and received signal strength.

TRANSMITTER

Power Output: 4 watts.
 Modulation: High- and low-level, Class B amplitude modulation.
 Frequency Response: 300 - 3000 Hz.
 Output Impedance: 50 ohms, unbalanced.

RECEIVER

Sensitivity: Less than 1μV for 10dB(S+N)/N.
 Selectivity: 6 dB @ 7 KHz, 55dB @ 10 KHz.
 Image Rejection: 80 dB typical.

Adjacent-Channel Rejection: 60 dB typical.
 IF Frequencies: Double conversion, 1st: 10.695 MHz.
 2nd: 455 KHz.
 Automatic Gain Control: Less than 10dB change in audio output for inputs from 10 to 50,000 microvolts.
 (AGC): Adjustable; threshold less than 1μV.
 Squelch: 4 watts.
 Audio Output Power: 300 - 3000 Hz.
 Frequency Response: Less than 7% @ 3 watts @ 1000 Hz.
 Distortion: 8 ohms, round.
 Built-in Speaker: 8 ohms; disables internal speaker when connected.
 External Speaker: (Not Supplied)

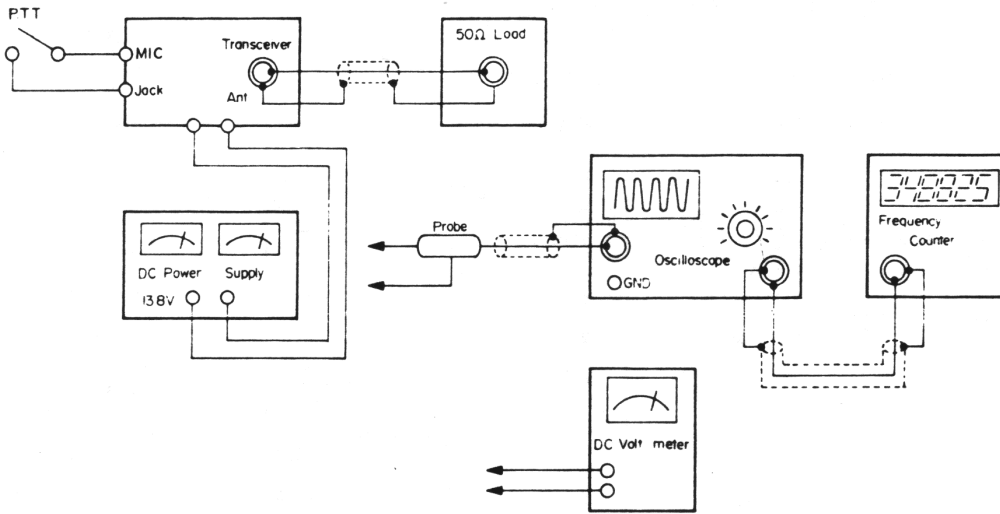
PA SYSTEM

Power Output: 4 watts into external speaker.
 External Speaker for PA: 8 ohms; when PA-CB switch is in PA, the PA speaker also monitors the receiver; separate jack (Not Supplied)

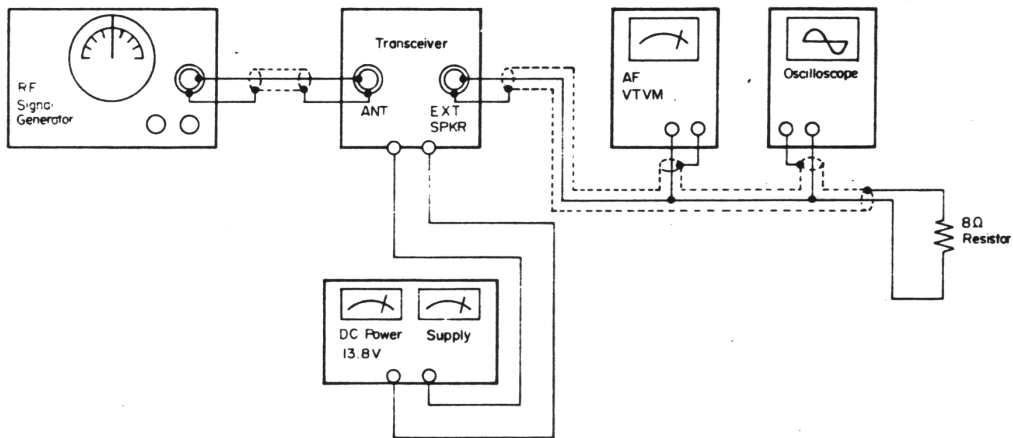
CLASS D CB CHANNELS

Channel	MHz	Channel	MHz	Channel	MHz
1	26.965	11	27.085	21	27.215
2	26.975	12	27.105	22	27.225
3	26.985	13	27.115	23	27.255
4	27.005	14	27.125	24	27.235
5	27.015	15	27.135	25	27.245
6	27.025	16	27.155	26	27.265
7	27.035	17	27.165	27	27.275
8	27.055	18	27.175	28	27.285
9	27.065	19	27.185	29	27.295
10	27.075	20	27.205	30	27.305
				31	27.315
				32	27.325
				33	27.335
				34	27.345
				35	27.355
				36	27.365
				37	27.375
				38	27.385
				39	27.395
				40	27.405

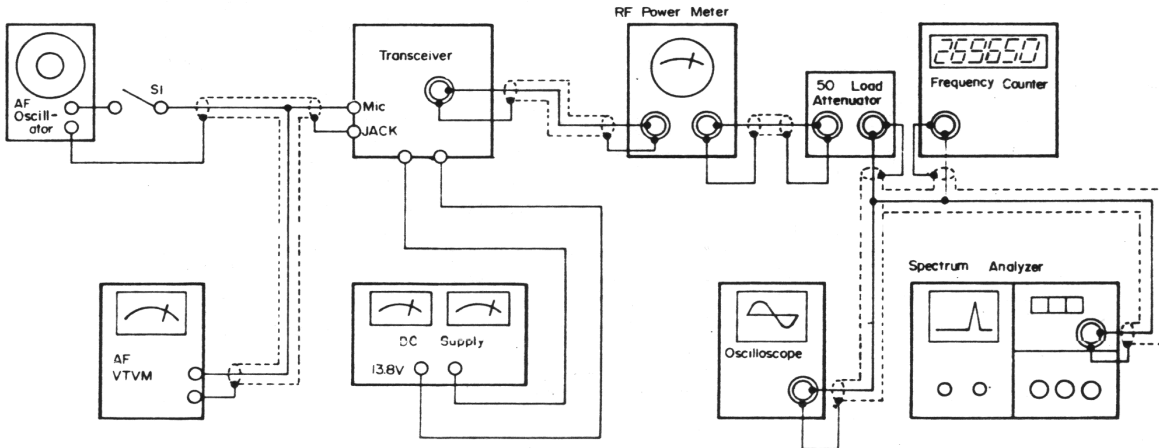
PLL AND CARRIER SECTION



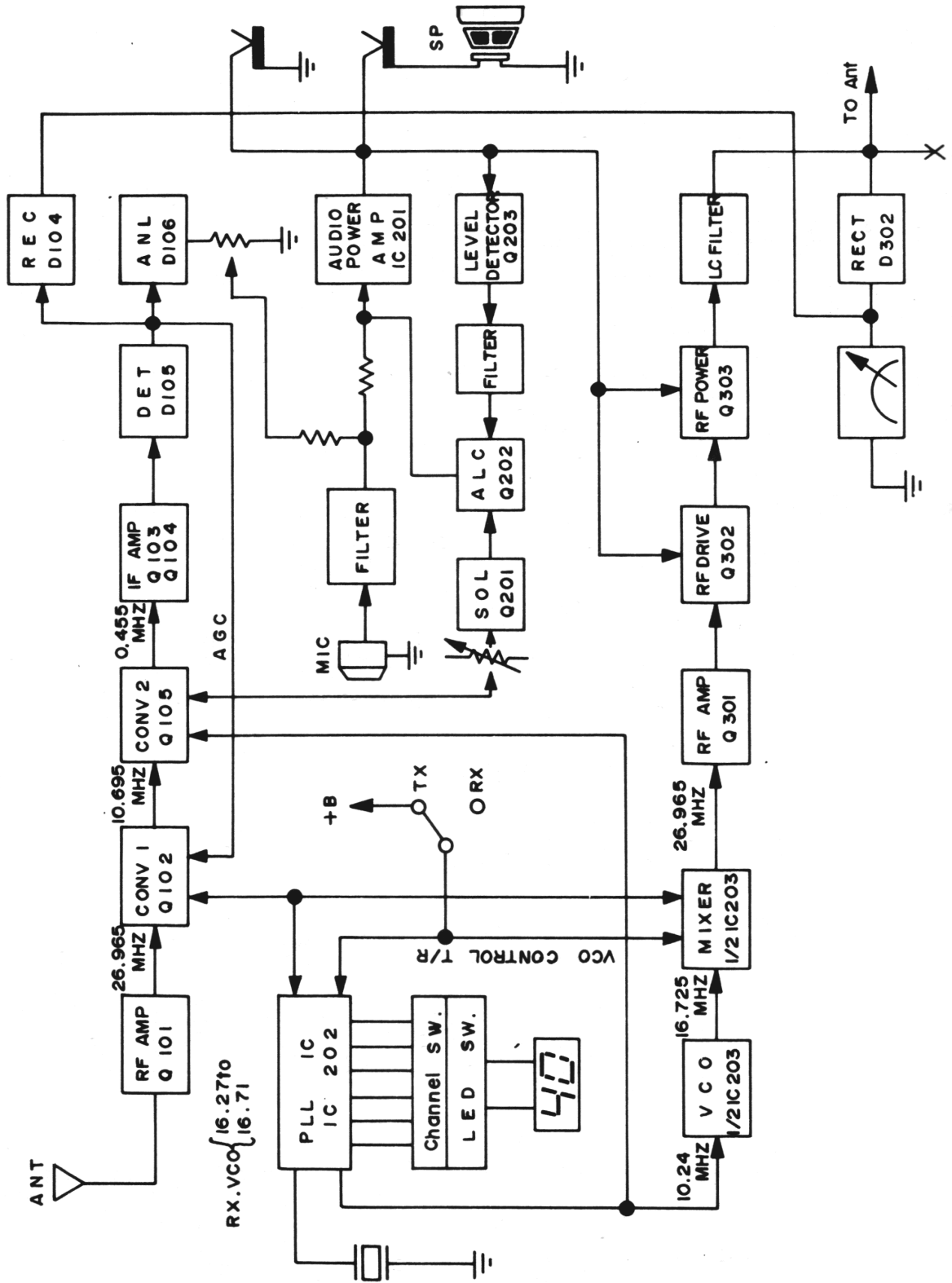
RECEIVER SECTION



TRANSMITTER SECTION



19X
BLOCK DIAGRAM



ALIGNMENT PROCEDURES

19X

ALIGNMENT INSTRUCTIONS

Caution: Use isolation transformer or observe polarity when connecting test equipment. Maintain line voltage at 120V AC. Allow a 15-minute warm-up period. Adjustments made with a 13.8 volt DC input. Connect low sides of test equipment to ground unless specified otherwise. Connect a 50-ohm dummy load or antenna before keying transmitter. Connect microphone.

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of frequency counter to pin 12 of IC-202.	Channel 19		Check for 10.240 Mhz.
Input of DC meter between TP-1 and ground Pin 17 IC-202.	Channel 40 Transmit	L-203	Adjust for 500V DC
Input of DC meter between TP-1 and ground.	Channel 1 Receive		Check for approx. 1.5 VDC on ch. 1.

TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector. NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of oscilloscope to the base of Q-301 and ground.	Channel 19 Transmit	L-204, L-301 L-304	Adjust for maximum amplitude on oscilloscope.
Input of oscilloscope to the collector of Q-302 and ground.	Channel 19 Transmit	L-303	Adjust for maximum amplitude on oscilloscope.
Input of RF wattmeter to antenna input.	Channel 19 Transmit	L-304, L-305 L-306	Adjust for maximum output.
Input of RF wattmeter to antenna input.	Channel 19 Transmit	L-303, L-302 L-301	Adjust for maximum output.
Input of RF wattmeter to antenna input.	Channel 19 Transmit	L-306	Adjust for 4.0 watts output maximum.
Input of RF wattmeter to antenna input.	Channels 1 & 40 Transmit		Check for balance of power out on channel 1 & 40.

TRANSMITTER ADJUSTMENTS

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector. NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.			
TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of frequency counter to the antenna load.	All channels Transmitt		Check for proper frequency on all channels.
Input of oscilloscope to antenna output. Apply a 20mV, 1000hz to the microphone input circuit.	Channel 19 Transmitt	RV-201	Adjust for 85% modulation.
Input of RF wattmeter to the antenna input.	Channel 19 Transmitt	RV-202	Adjust so that transmitt power meter agrees with RF wattmeter.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil. Adjust volume control to obtain a suitable indication. Set generator output low enough to prevent AGC limiting. Preset controls as follows unless otherwise noted: Squelch, MINIMUM, ANL, Off.			
TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uF capacitor to input of L-104, 455 khz, 1000hz @ 30% modulation.	Channel 19 Receive - No squelch.	L-104, L-105 L-106, L-107	Adjust for maximum output.
Output of signal generator to antenna input. 27.185Mhz, 1000hz @ 30% modulation.	Channel 19 Receive - No squelch.	L-101, L-102 L-103	Adjust for maximum output.

RECEIVER ADJUSTMENTS

Connect an AC VTVM or AF wattmeter across speaker voice coil. Adjust volume control to obtain a suitable indication. Preset controls as follows, unless otherwise noted: Squelch MINIMUM, ANL Off.			
TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator to antenna input. 27.185Mhz, 1000hz @ 30% modulation, 1000uV.	Channel 19 Receive - full squelch	RV-101	Adjust so that squelch just breaks.

ALIGNMENT PROCEDURES CONT'D
19X

RECEIVER ADJUSTMENTS (CONT'D)

TEST EQUIPMENT	TRANCEIVER	ADJUST	REMARKS
Output of signal generator to antenna input. 27.185Mhz, 1000hz @ 30% modulation, 100uV.	Channel 19	RV-103	Adjust for 9 on signal meter.

19X

ADDED PARTS VIEW (Top)

