KYODO

OPERATION, INSTALLATION & SERVICE MANUAL

FOR

VHF FM BASE/REPEATER STATION RADIO

KG110-15A/B50K SERIES

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II. PARTS LIST

1. INTRODUCTION

This service manual is published for the information and guidance of the personnel responsible for the operation, maintenance, and installation of KG110-15A/B50K, called KG110 hereinafter, VHF FM radios, our most recently developed KG110 series versions for multiple applications - i.e., Simplex/Duplex Base, Repeater, or Channel-Combined Simplex Base and Repeater stations by mere jumpering, in a wide variety of system configurations.

Our preceding models of the KG110 series have been welcomed by worldwide markets for the past decade to gain a great deal of appreciation for their versatile functions, users' convenience, and maximum utilities with the availability of many optional units.

Our newest models, KG110, retain all the advantages of the preceding models, but have achieved further improvements to meet state-of-the-art performance and sophisticated designs called for the demand of ever-advancing radiotelephone services.

Accordingly, this service manual describes the operation, maintenance, and installation of the four KG110-15A/B50K models as listed below.

Model	Frequency Range	Channel Spacing	RF Power Output
KG110-15A50K( )	136 - 155MHz	20/25/30kHz	Up to 50W
KG110-15A50K( )-N	136 - 155MHz	12.5kHz	"
KG110-15B50K( )	146 - 174MHz	20/25/30kHz	"
KG110-15B50K( )-N	146 - 174MHz	12.5kHz	"

* EXACT MODEL INSCRIPTION
As example: KG110-15A50K□□□-□

Station Mode
R=Repeater Only
SB=Simplex Base
BR=Base & Repeater
DBR=Duplex Base & Repeater

Channel Spacing

-N only in case of 12.5kHz channel spacing

Whereas, Model KG110-15A50KBR-N
for 136-150MHz band, 50W, RF power output, base & repeater station mode, and 12.5kHz channel spacing.

2. FEATURES

These newly developed VHF FM BASE/REPEATER STATION RADIOS have the outstanding features as will be detailed.

2-1 Easy Maintenance

The basic theory and circuit designs of these KG110 series models generally conform to those of our mobile radios, KG105 and KG107.

Monitoring facilities for the five essential functions are provided on the front panel.

That is, RX Local Level, S-Meter, TX Drive Level, TX Power, and TX SWR can always be checked by front-panel-mounted LED indicators.

All units of which any KG110 radio is composed are of plug-in construction to facilitate rapid repair or replacement at the job site in case of malfunction.

2-2 Easy Alteration of Channel Frequencies

The channel frequencies are controlled by the Synthesizer System to enable programming up to a maximum of 99 channels.

Each of the TX and RX units contains one EP-ROM (2764D) and these 99 channel frequencies can be easily written, rewritten, or erased by means of these EP-ROMs.

Since the reference frequency is controlled by TCXO (Temperature-Controlled Crystal Oscillator) that guarantees frequency tolerances of 5 ppm (option 2.5 ppm) for ambient temperatures ranging from -30° to +80°C, stable operation of the KG110 can be expected.

2-3 Simplex/Duplex Operation

The KG110 can be operated easily as a simplex/duplex base, or repeater station by jumpering connection inside of the radio.

Furthermore, an optional PCB when used can realize a channel-combined Base/Repeater station, provided a separate control unit (BP-110) be used for switching the duplex filtering circuit to Base mode by means of a coaxial relay.

2-4 No Possibility for Service Interruption during Power Failure

Besides 13.6V DC output, the AC Power Supply Unit (PS110) is equipped with the storage battery trickle charge output. With a storage battery externally connected to this output terminal, a continuous charge is available to maintain the battery in a fully charged state.

In case of commercial power failure, power is instantly switched to the battery power source by a relay to continue a radiotelephone service without interruption.

The primary power supply voltage of either 100 to 120V AC or 200 to 240V AC can be easily selected by easy jumpering connections within the power supply unit.

2-5 Heavy Duty TX Power Amplifier

The transmitter output can be varied freely from 25W to 50W. A heatsink made of die-cast is installed on the transceiver unit to absorb and dissipate heat, ensuring consecutive 24-hour transmitting operation.

All of the driver output, the transmitter output, and the SWR values can be monitored by means of CHECK switches and LED indicators.

2-6 Broad Bandwidth Properties for TX/RX

An extremely wide bandwidth can be secured with the KG110 by suitably adjusting TX/RX units. Readjustment for frequency alteration is quite simple. This relieves the administration personnel of their efforts for parts replacement or for the need of many stocked parts.

Version A	136 to 155 MHz
Version B	146 to 174 MHz

2-7 Squelch Tail Elimination

RX unit mounts, same as the mobile radios KG105 and KG107, BBD IC to eliminate the squelch tail noise, thereby improving audibility.

In cases where the KG110 is used as a repeater station, the squelch tail noise incoming from a mobile unit will be superimposed upon that from a repeater station. Therefore, this facility will be of great help in eliminating the squelch tail noise from the communication signals.

2-8 TX Carrier Delay Circuit

This circuit is to hold the transmission state for a predetermined time interval at the termination of transmission in the repeater mode.

When the KG110 is placed in a weak electric field intensity, this circuit helps improve communication stability

The predetermined time interval can be variably set from 0 to 20 seconds. In base station mode, this function is automatically released.

2-9 Transmitter Time Limiter (TTL) Circuit

TX unit incorporates the TTL circuit as a standard in order to prevent a person from occupying a channel too long a time interval.

There are two alternative time-limiting ways with this circuit: One is to limit the time for one call and the other is to limit a time interval as counted from the start of the repeating function.

Each is capable of setting the time interval in 15 steps at maximum in units of either 15 or 30 seconds.

3. STANDARD COMPOSITION FOR BASE/REPEATER STATION

The standard BASE/REPEATER STATION equipment may be suitably broken down into the following:

3-1 Base/Repeater Station

	Name	Q'ty
(1)	VHF FM Radio	1
(2)	Hand Microphone, KD-357M	1
	inclusive of:	
	(a) one fixed bracket	
	(b) four pairs of washers and self-tapping screws	
(3)	Rubber Cushion for Bottom Cover	4
(4)	EP-ROM, 2764D	2
(5)	Wrench	1
(6)	Jumper	5

3-2 Power Supply Unit

(1)	Power Supply Unit, PS110	1
(2)	AC Cable	1
(3)	DC Cable for KC110	1
(4)	Battery Cable	1
(5)	AC Fuse, 5A	1
(6)	DC Fuse, 15A	2
(7)	AC Lamp, AC-283	1
(8)	Rubber Cushion for Bottom Cover	4

4. OPTIONS

The undermentioned optional units are prepared for the new models and will be delivered at your request. These options will provide excellent solutions in making your radiotelephone systems more convenient, attractive, and efficient in a wide variety of system configurations proposed by the user.

4-1 Duplexer

Any repeater station equipped with a single antenna system calls for the installation of a duplexer.

Since the duplexer specifications vary widely according to channel spacing and TX/RX frequency separation requirements, ask our engineering advice as to your particular needs for the duplexer.

4-2 Band Pass Filter (BPF) and Band Reject Filter (BRF)

Installation of these filters might be necessary depending on the channel spacing, frequencies used, and station site conditions such as interference effects of the existence of stray radio-wave originating sources.

Ask our engineering solutions for particular specifications of these filters.

4-3 5-Tone Encoder/Decoder PCBs

(1) For Base Station

When KG110 operates as a simplex or duplex base station, 10-5T(A) 5-Tone Encoder/Decoder incorporated in KG110 will permit access to any distant station, a mobile radio or a portable radio, by selective calling.

Pressing "TONE" switch provided on the front panel enables any one of a maximum of 1,000 stations to be selectively called. By pressing "#" switch, a group call is capable. Note that the decoder is complete with the voice auto-reset function.

(2) For Repeater Station

Where KG110 operates as a repeater station, 10-5T(D) 5-Tone Decoder incorporated in KG110 will enable the repeater station to open - i.e., to initiate starting, by means of both the carrier frequency and the tone signal. (Relay Transmitter Keying)

4-4 CTCSS PCBs

(1) For Base Station

When KG110 operates as a simplex base station, incorporation in KG110 of 10-QCT(A) CTCSS PCB can display the function of CTCSS Encoder/Decoder. As combined with channel frequency, ENC/DEC frequency can be set.

(2) For Repeater Station

When KG110 operates as a repeater station, incorporation of 10-QCT(D) CTCSS PCB enables the repeater station function to "Open" by the carrier frequency and the CTCSS tone signal. As combined with channel frequency, ENC/DEC frequency can be set. (Relay Transmitter Keying)

4-5 Community Repeater Tone Panel

This panel is for use at repeater stations in providing community radiotelephone users with multiple radiotelephone service on a shared basis.

It is complete with the following functions:

- o Availability of any EIA tone frequency from 67 to 250.3 Hz.
- o Repeating audio processing
- o Re-generated CTCSS tone
- o Adjustable transmitter carrier delay
- o Adjustable transmitter time limiter
- o Relay transmitter keying

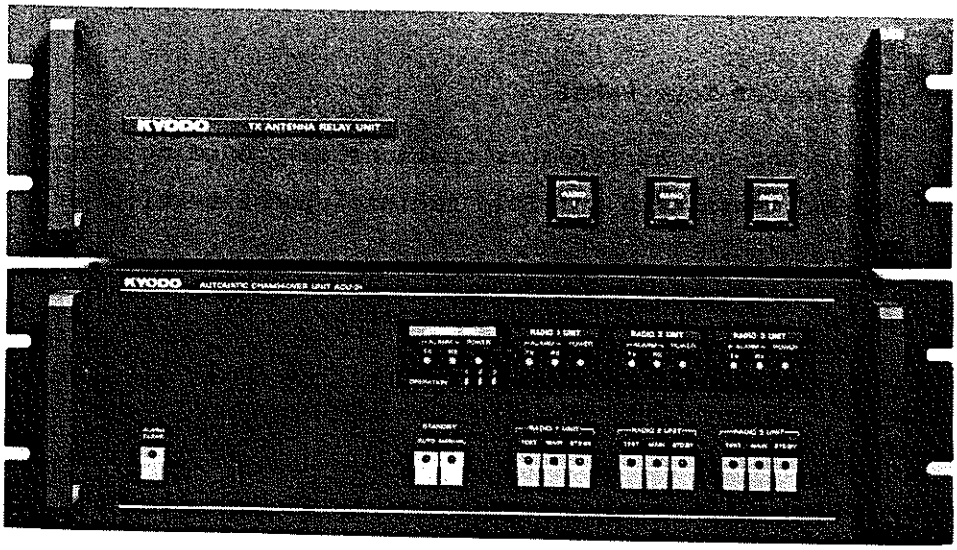
Sections 4-3, 4-4 and 4-5 may be conveniently summed up as listed below.

KG110 Operating Mode / Tone System	Base Station	Repeater Relay Transmitter Keying	Through Repeater
5-Tone System	10-5T(A)	10-5T(D)	Through
CTCSS System	10-QCT(A)	10-QCT(D)	Repeater Tone Panel

4-6 Automatic Changeover Unit, ACU-31

When any base/repeater station operates on a basis of 3 working radios and 1 standby radio principle (3+1 system, standard), the ACU-31 unit will be capable of switching over the frequency of failed radio to the same frequency of standby multichannel radio on condition that the switching criteria be met.

The ACU-31 system is composed of signalling Logic Unit for changeover operation and Antenna System Changeover unit.

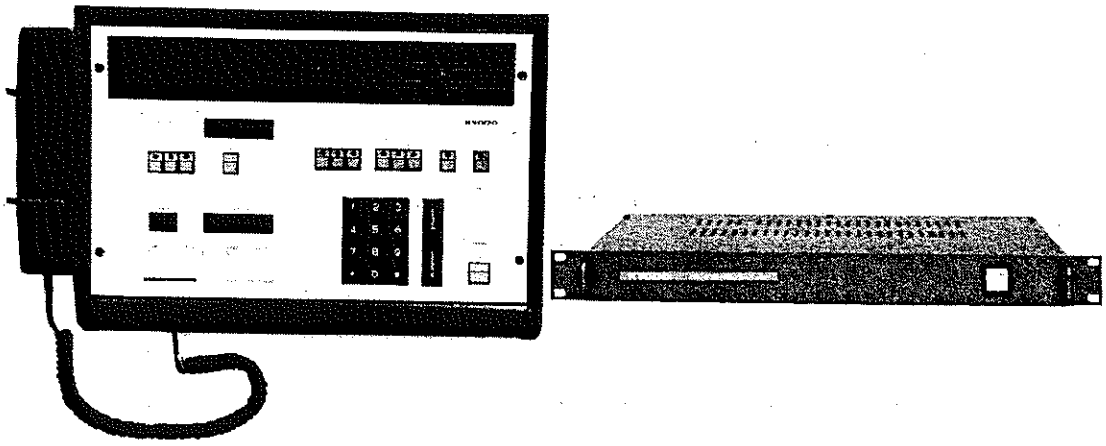


4-7 Remote Control System, KBC-2000

The KBC-2000 Remote Control Unit to be installed at a controlling position is intended to control the base/repeater station from a remote site by using 2-wire telephone lines. Composed of a control unit handled by the operator and an Interface Unit for controlling an unattended Base/Repeater station. Incidentally, EEA 10-tone system is used as controlling signal so that radios can be stably and rapidly controlled.

The KBC-2000 is complete with the following function availability.

- o Up to 99 channels can be controlled.
- o Manual changeover operation (with ACU-31)
- o CTCSS encoder ON/OFF control (with CTCSS UNIT)
- o Power switch ON/OFF control
- o 4-step squelch control
- o Base/Repeater mode control
- o 5-digit, 5-tone encoding
- o Phone patch facility
- o 5-digit ANI (5-TONE CCIR or ZVEI and 3-MEMORY).



Remote Control Unit

Interface Unit

4-8 Desk Top Microphone

4-9 19-Inch Rack with Slide Rails

Various kinds of 19-inch DIN size racks with slide rails are prepared in view of maximum convenience for the users. In installation, ask Kyodo's engineering advice.

4-10 High Stability TCXO, GFS-210X

KG110 incorporates, as a standard, TCXO, GFS-210W, with 5 ppm frequency tolerances from -30°C to +80°C throughout.

Where more rigorous tolerances are called for depending on the users' request for the narrower spacing requirements or regulations, please so notify. Kyodo is ready to furnish 2 ppm TCXO, GFS-210X.

4-11 Channel-Combined Base/Repeater Mode Switching System, BRC-110

The BRC-110 system is designed to operate one radio either in a base station mode or in a repeater station mode as designated according to the channel.

The system is composed of logic PCB for controlling data and a unit for switching the antenna system.

This unit is subject to change in the circuit designs, etc. depending on the user's system requirements.

4-12 Subscriber Telephone & Radio Interface Unit, STR-110

Installed in a base station, this unit is to provide an interface between subscriber telephones and a plurality of duplex mobile radios without the intervention of manual operations.

Since only one telephone line can be shared with many mobile radios, efficient utilization of the telephone line becomes essential.

Although any mobile radios can call up subscriber telephones individually by the DTMF signal, mobile radios cannot be called up individually from the subscriber telephones.

5. SPECIFICATIONS

5-1 General

Station mode	:	Simplex base, repeater, duplex base, duplex base/repeater, and channel-combined base and repeater
Mode of operation	:	Single or dual frequency simplex system, or duplex system with a duplexer or two antennas
Frequency range	:	Version A ~~136-155MHz~~ 66 - 80 MHz Version B ~~146-174MHz~~ 70 - 88 MHz
Number of channels	:	Up to 99 synthesis programmed channels
Switchable channel bandwidth	:	3MHz
Channel spacing	:	Narrow-band 12.5kHz Wide-band 20, 25 or 30kHz
Duplex TX/RX frequency separation	:	0.5MHz minimum
Duty cycle	:	Continuous
Antenna impedance	:	50 ohms
Transmit time limiter (TTL)	:	Provided as standard
Environmental conditions	:	Ambient temperature -30°C to +80°C Relative humidity 95% at +35°C
Dimensions and weight	:	Transceiver Unit / Power Supply Unit
		482 mm width / 482 mm width
		132 mm height / 132 mm height
		350 mm depth / 350 mm depth
		12.2 kg / 10.6 kg

5-2 Transmitter

RF power output	:	~~25~~ ~~50~~ watts (standard) MAX 20 W ~~1~~ ~~50~~ watts with two-stage switch selection (option)
Maximum frequency deviation	:	Narrow-band ±2.5kHz Wide-band ±5kHz
Oscillation system	:	Direct PLL synthesizer system
Type of crystal unit	:	TCXO
Frequency stability	:	±0.0005% with standard TCXO, ±0.0002% with optional TCXO
Frequency response	:	Within +1, -3dB of 6dB/octave pre-emphasis from 0.3 to 3kHz, 1kHz reference
Signal to noise ratio	:	More than 50dB at 1kHz 70% modulation
Modulation distortion	:	Less than 3% at 1kHz 70% modulation
Spurious and harmonics	:	More than 70dB down below rated power
AF input	:	-34dBm ±3dB (local control) -8dBm ±3dB/600 ohms (remote control)

5-3 Receiver

Receiving system	:	Double conversion superheterodyne
Intermediate frequency	:	1st IF 21.6MHz 2nd IF 455kHz
Frequency stability	:	±0.0005% with standard TCXO, ±0.0002% with optional TCXO
Sensitivity	:	Less than 0.5μV for 20dB noise quieting Less than 0.35μV for 12dB SINAD
Squelch sensitivity	:	Less than 0.25μV
Modulation acceptance	:	±7.0kHz
Selectivity	:	More than 70dB at 25kHz point
Blocking	:	More than 90dB at ±1MHz point
Intermodulation	:	More than 70dB
Spurious responses	:	More than 80dB, 100dB available with the use of optional band pass filter (BPF).

AF response : Within +1, -3dB of 6dB/octave de-emphasis from 0.3 to 3kHz, 1kHz reference

AF output : More than 2 watts into 4 ohm load for local control
0dBm ±3dB for remote control

AF distortion : Less than 5% at 1kHz 70% modulation

Signal to noise ratio : More than 50dB at 1kHz 70% modulation

5-4 Power Supply

Power source : 13.6V DC ±20% negative ground, and 100-120V AC, or 200-240V AC, 50/60Hz by the use of PS110 power supply unit

Power consumption :

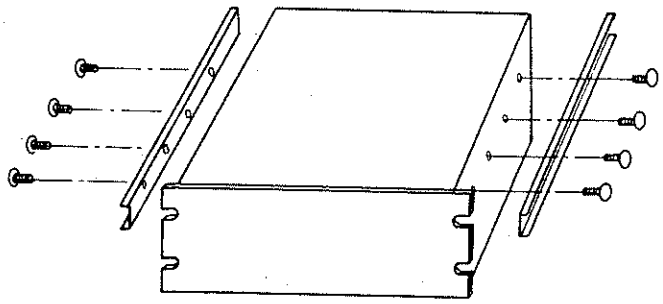
Operation	AC	DC
Standby	13VA	0.7A
Receiving	18VA	1A
Transmitting		
at 5W	45VA	2.5A
at 10W	65VA	3.5A
at 25W	110VA	6A
at 50W	220VA	12A

Trickle charge current : 0.5A

6. INSTALLATION

6-1 Rack and Desk Top Installation

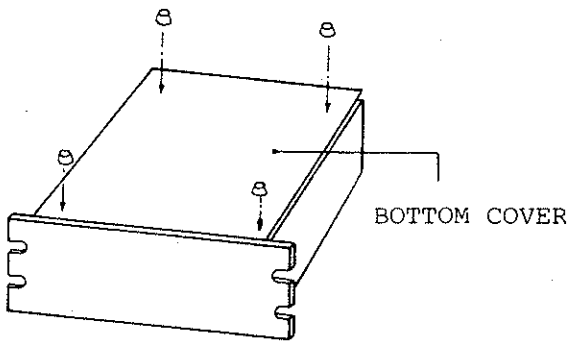
In case of rack mounting, install side rails (option) on both sides of the KG110 as illustrated:



Also install slide rails on the rack side as instructed in the rack fabrication manual.

Then, install the KG110, utilizing front panel holes and mounting screws and nuts.

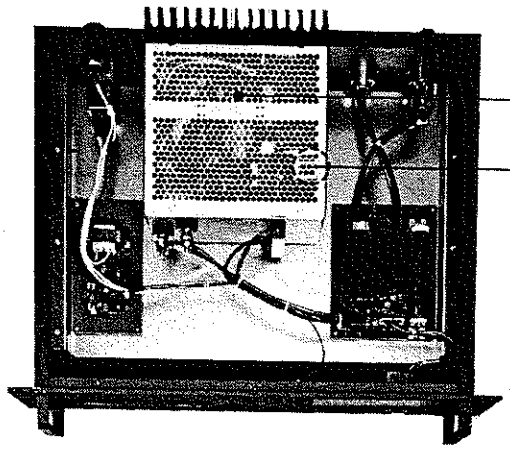
When the KG110 is used as a desk top radio, attach four rubber cushions to the bottom cover of KG110 and PS110.



6-2 AC Power Supply

PS110 AC Power Supply is usually set to 200-240V AC, 50/60Hz as shipped from the factory. If desired to change it to 100-120V AC at the job site, proceed as follows:

Remove the cover of KRV-300 power supply unit and perform rejumpering for AC voltage changeover as illustrated.



6-3 Electrical Connections

(1) Interconnect DC OUTPUT connector on PS110 and DC INPUT connector on KG110 with the 3-pin cable (accessory).

(2) In connecting the backup storage battery to BATT INPUT connector, use the 2-pin, 5-meter cable (accessory).

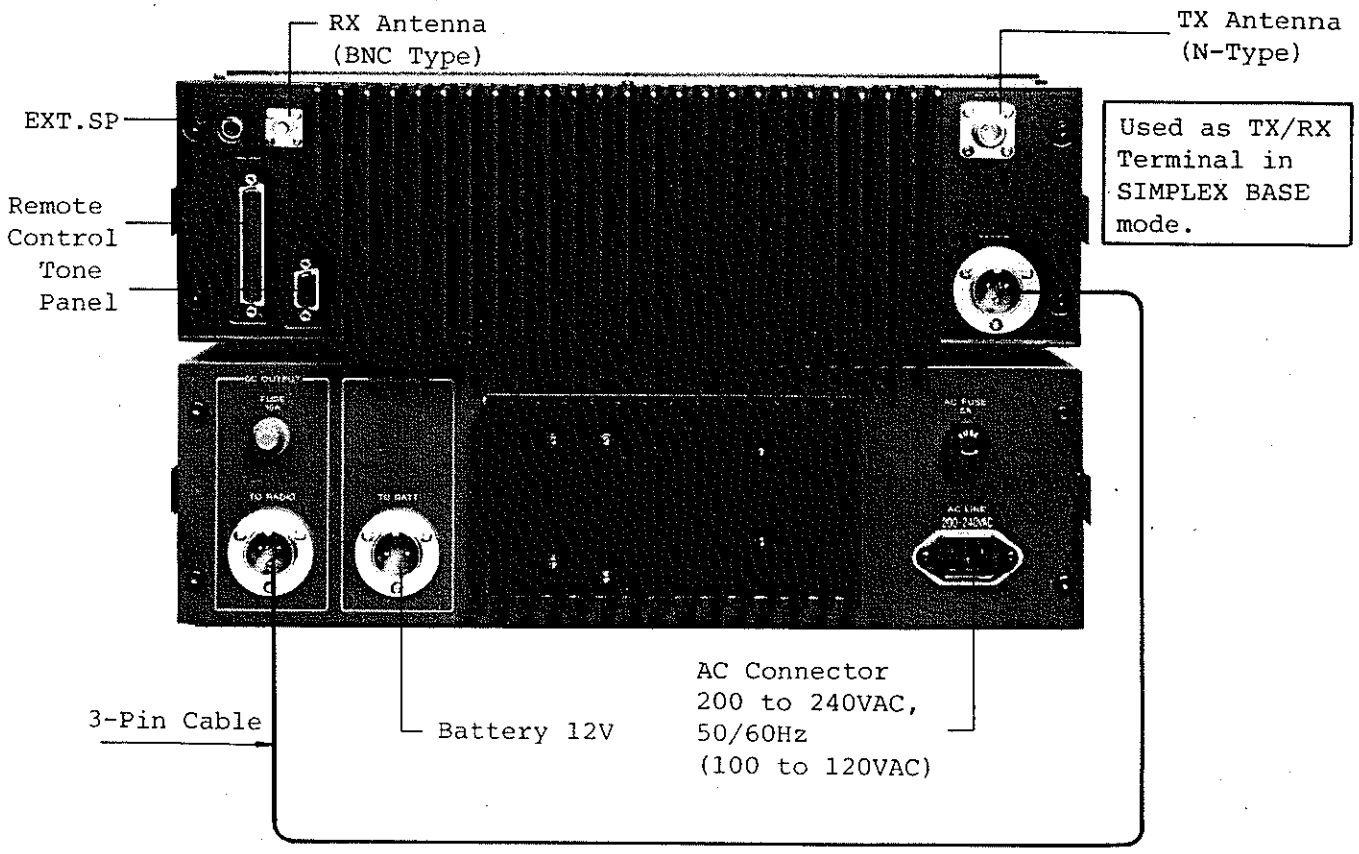
(3) Connect N type connector and BNC connector on KG110 to the TX antenna and RX antenna, respectively.

For a simplex base station, a coaxial relay is attached at the side of TX ANT and hence, RX ANT terminal is unused.

(4) EXT SP terminal is used when an external speaker is installed or the receiving signal intensity is measured.

(5) 37-pin terminal is used for remote control, or when Automatic Changeover Unit is used, or when channel-combined base/repeater mode is switched.

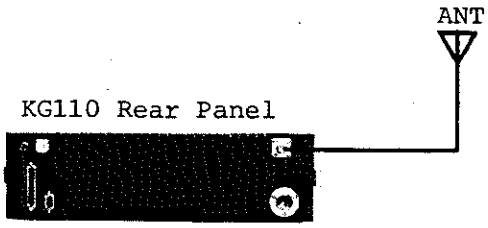
(6) 9-pin TONE PANEL terminal is used to connect Tone Panel (option). Where the 3 + 1 automatic changeover unit is used together with the Tone Panel, the Tone Panel must be connected to the 3 + 1 changeover unit side.



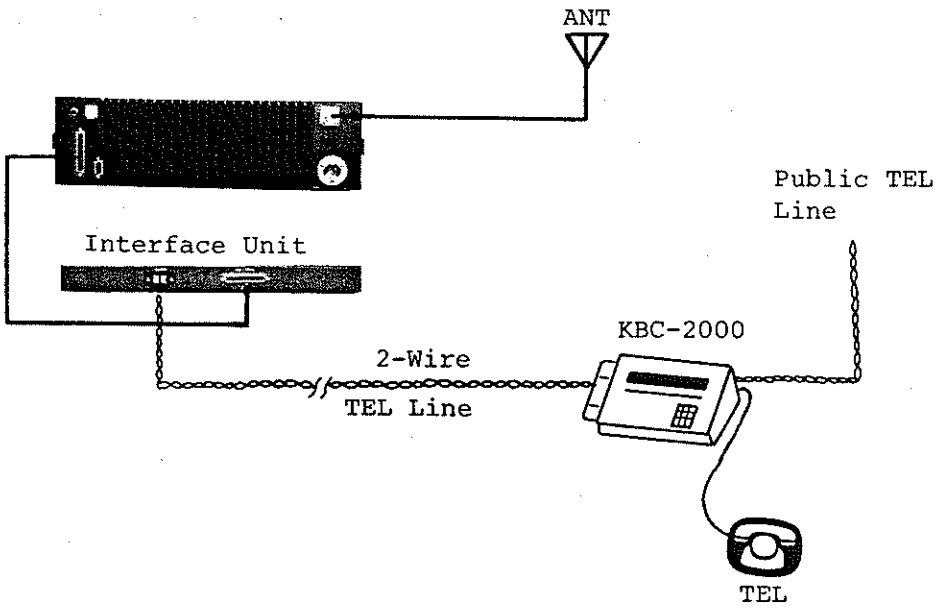
Note: Connect GND pin of AC connector to earth, when installed.

7. SYSTEM CONFIGURATIONS

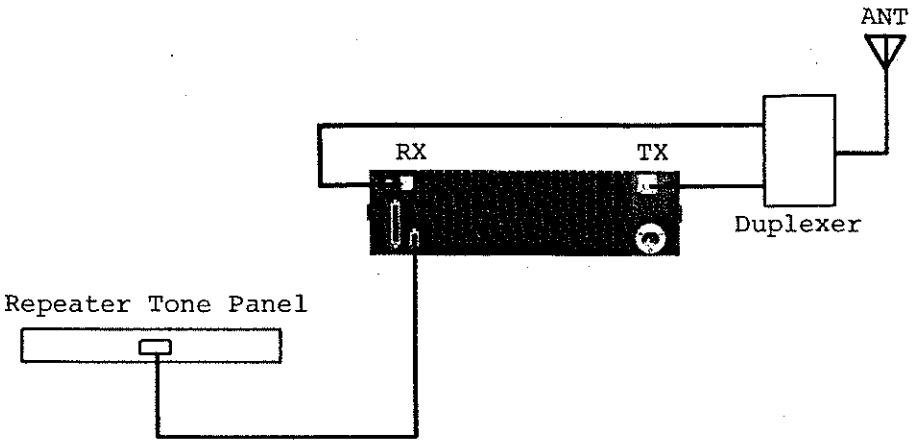
(1) Simplex Base Station Mode:



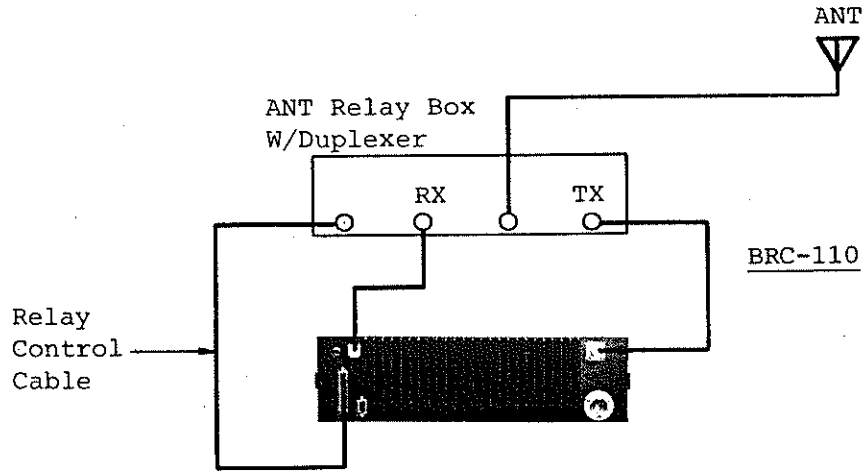
(2) Simplex Base Station Mode with Remote Control



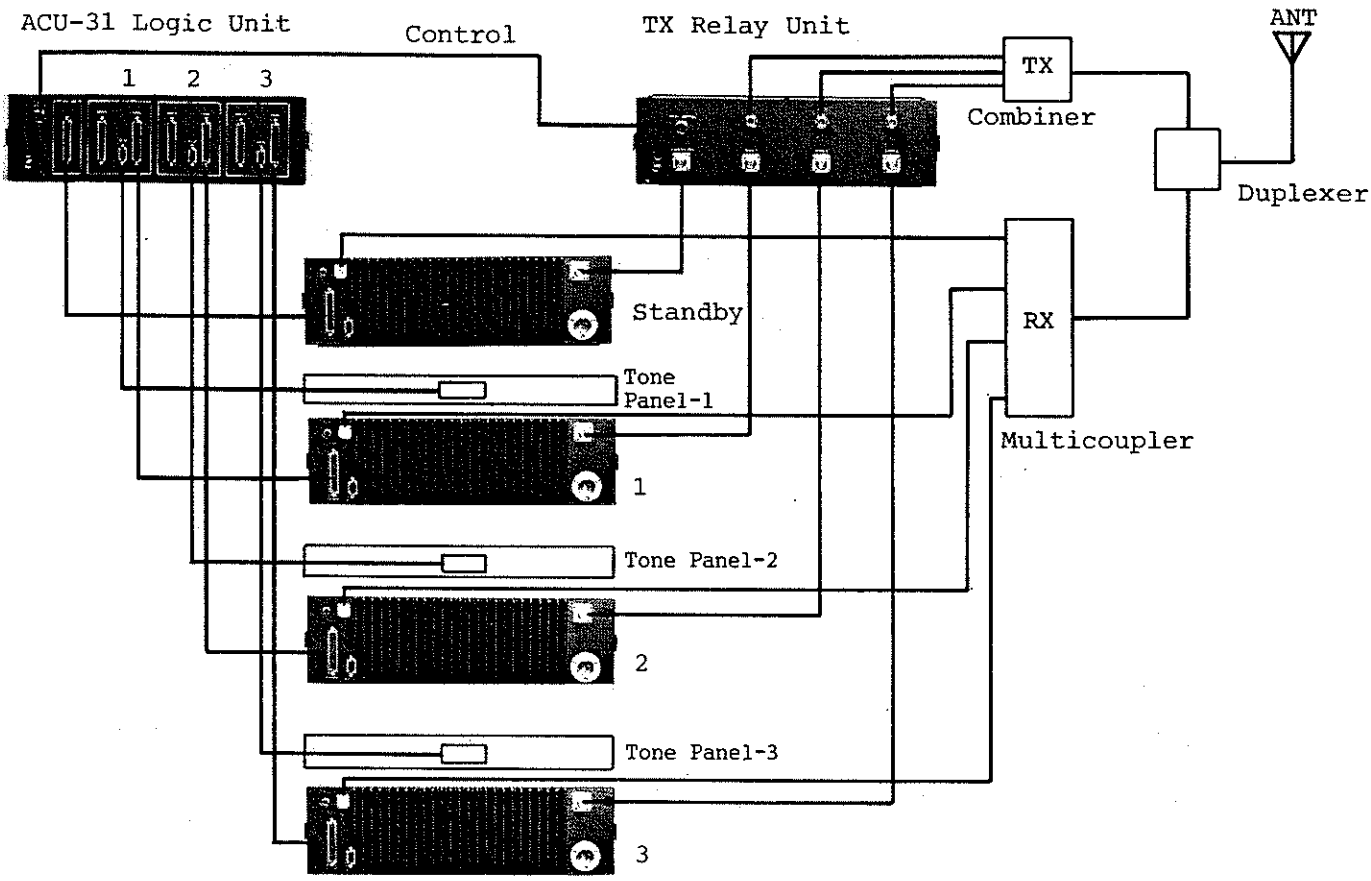
(3) Repeater Station Mode with Repeater Tone Panel



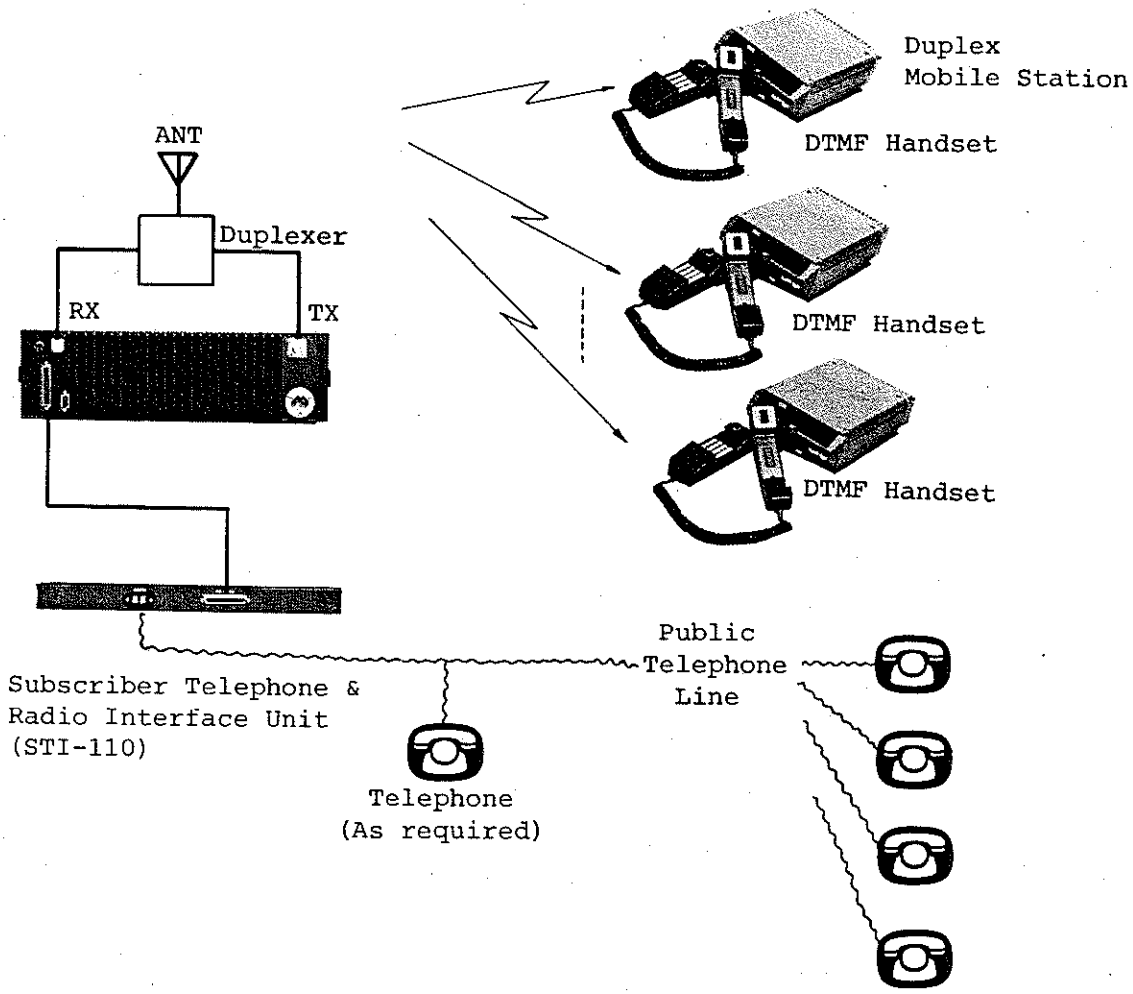
(4) Channel-Combined Base and Repeater Mode



(5) 3 + 1 System Automatic Changeover Unit with Tone Panel



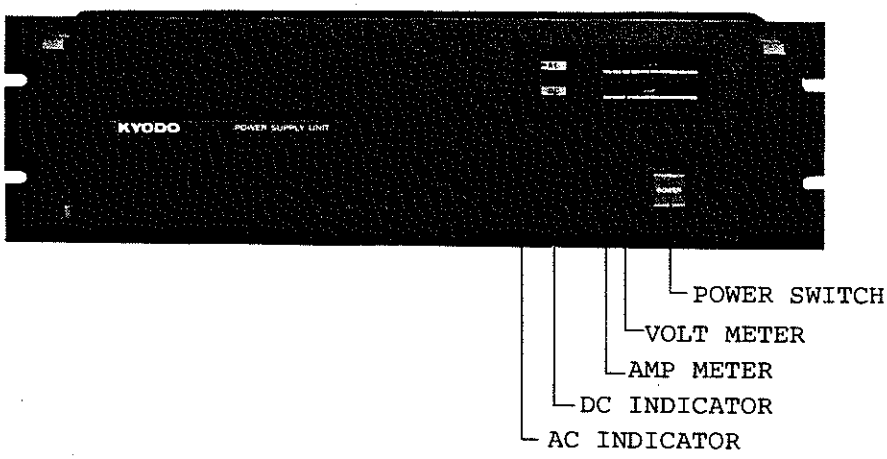
(6) Subscriber Telephones & Radio Network Interface Mode



8. OPERATING INSTRUCTIONS

The proper operations of the KG110 VHF FM Radios and PS110 Power Supply Unit will be outlined in connection with the controls, switches, indicators, etc.

8-1 PS110 Power Supply Unit



(1) AC INDICATOR ..... Glows "orange" on application of AC input power, regardless of AC voltage, 100 or 200V.

Remains unlit in battery operation only.

(2) DC INDICATOR ..... Glows "green" when DC output appears.

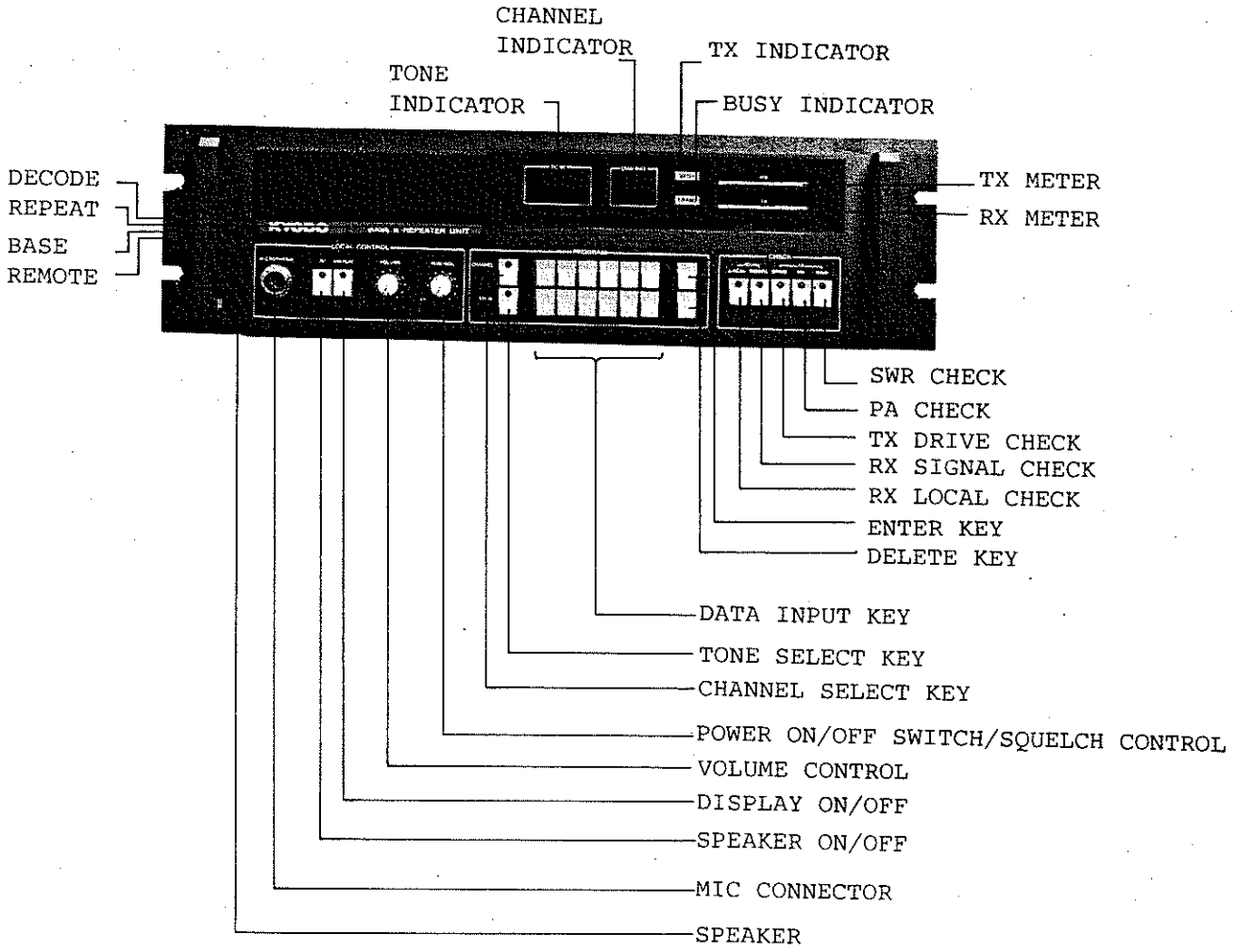
(3) POWER SW ..... To turn power source ON/OFF. Glows "green" when power is ON.

Glows "green" even if power fuse is blown, but in this case, DC INDICATOR remains unlit.

(4) VOLT METER ..... 7 ±1 segments out of ten segments should glow for 13.6V DC. Check for proper output voltage.

(5) AMP METER ..... 7 ±1 segments out of ten should glow for output current of 10A.

One segment should glow even at no load.


CHANNEL INDICATOR
TX INDICATOR
TONE INDICATOR
BUSY INDICATOR
DECODE
REPEAT
BASE
REMOTE
TX METER
RX METER
SWR CHECK
PA CHECK
TX DRIVE CHECK
RX SIGNAL CHECK
RX LOCAL CHECK
ENTER KEY
DELETE KEY
DATA INPUT KEY
TONE SELECT KEY
CHANNEL SELECT KEY
POWER ON/OFF SWITCH/SQUELCH CONTROL
VOLUME CONTROL
DISPLAY ON/OFF
SPEAKER ON/OFF
MIC CONNECTOR
SPEAKER

(1) SPEAKER ..... Rated 8Ω/1W. Insertion of EXT. SP jack provided on the rear panel, disconnects speaker circuit.

(2) MIC CONNECTOR .... Be sure to connect KD-357M hand microphone as standard into this connector. Note that a desk top microphone is an option.

A handset is also supplied upon request.

(3) SPEAKER ON/OFF SW ... To turn speaker ON/OFF. SW-inbuilt LED "red" for "ON".

(4) DISPLAY ON/OFF SW ... To conserve unnecessary power consumption in an unattended base/repeater station, this SW is turned ON.

All indicator lights should go out when SW is turned ON, but KG110 operation remains unchanged.

In "ON" period, SW-inbuilt LED glows "red".

(5) VOLUME ..... To control speaker sound.

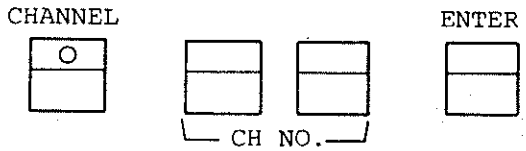
(6) SQL/POWER ON/OFF CONTROL ..... Turning this control fully counterclockwise turns OFF power supply.

Turning this control clockwise makes the squelch action more effective.

Set to a point at which noise becomes none.

The POWER/SQUELCH function becomes invalid in repeater or remote control mode.

(7) CHANNEL SELECTION ..... To set CHANNEL, press keys in the following sequence:



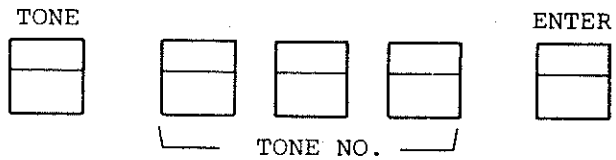
Note that only one data key needs pressing for CH 1 to CH 9.

If CH NO. key is erroneously pressed after pressing CHANNEL, press DELETE and then, CH NO. key correctly. If no data is incoming EP-ROM after CH has been set, CHANNEL INDICATOR flashes. Also note that this CHANNEL SELECTION setting fails to work in remote control mode.

(8) TONE SELECTION ... Pressing this key enables 5-TONE ENCODE NO. setting.

This function is valid in remote control mode as well.

In setting, press keys in the following sequence:



In resetting TONE NO., press DELETE key and see that TONE NO. goes out from display. Then, set once more.

[GROUP CALL]

To actuate "A" tone using GROUP CALL frequency, use DATA INPUT key [*] as follows:

Example

3 9 [5] [4] [*] → Group Call from 39540 to 39549

3 9 [*] [*] [*] → Group Call from 39000 to 39999

(9) RX LOCAL CHECK ... To verify RX VCO output level. 7 ±1 segments should glow under normal conditions.

(10) RX SIGNAL CHECK .. To indicate receiver's detected output. So adjusted that full segments will glow for 40dBμV input as shipped from the factory.

(11) TX DRIVE CHECK ... To verify the DRIVE level in transmitting periods. 7 ±1 segments should glow for TX unit's output of 200mW.

(12) PA CHECK ..... On pressing this key, the TX output can be checked. 7 ±1 segments should glow for PA output of 50W.

(13) SWR CHECK ..... On pressing this key, the SWR of Antenna System is indicated. If normal, one or two segments should glow. Nine to ten should glow if Antenna is shorted or open.

(14) TRANS INDICATOR .. This indicator should glow "red" in transmitting periods.

(15) BUSY INDICATOR ... To glow in busy operation in receiving periods.

(16) CHANNEL INDICATOR ..... To indicate CH NO. Flashes for unprogrammed channels.

(17) TONE INDICATOR ... To glow only when 5-Tone Encoder/Decoder (option) is installed. Digitally input the tone according to the tone selection.

(18) "DECODE" INDICATOR ..... On decoding the tone signal when 5-Tone Encoder/Decoder is installed, this indicator glows.

(19) "REPEATER" INDICATOR ..... Glows in case of Repeater Station mode.

(20) "BASE" INDICATOR ..... Glows in case of Simplex/Duplex Base Station mode.

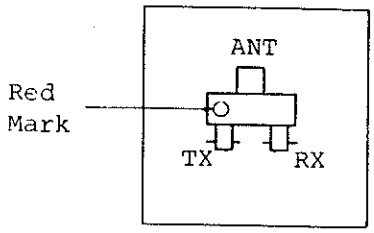
(21) "REMOTE" INDICATOR ..... Glows when KG110 operates on a remote control basis as a result of connecting Remote Control Unit (KBC-2000) or Automatic Changeover Unit (ACU-31).

9. JUMPERING INSTRUCTIONS

Various kinds of jumpering connections are prepared for the KG110 for their individual or compound connections in order to meet a variety of system configurations and operational modes. Any operational mode that has been once set at the factory will have to be changed, once in a while, at the job site, as a matter of fact. Your careful reading of this section is desired for a thorough comprehension of each jumpering point for maximal utilization and convenience of your radiotelephone service.

(1) Coaxial Relay

This relay is necessary when KG110 operates as a simplex base station.

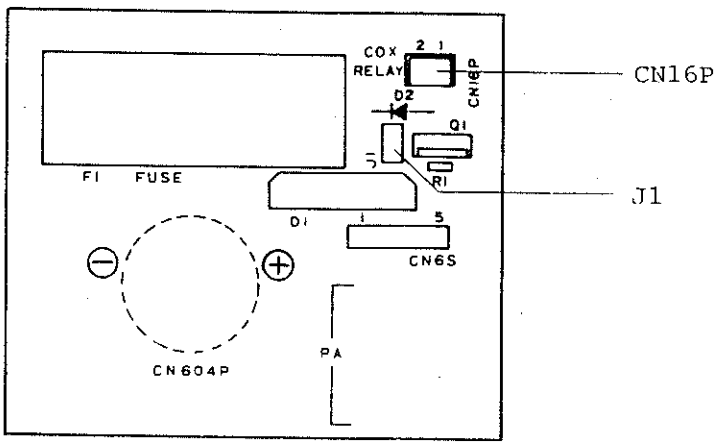


Coaxial Relay

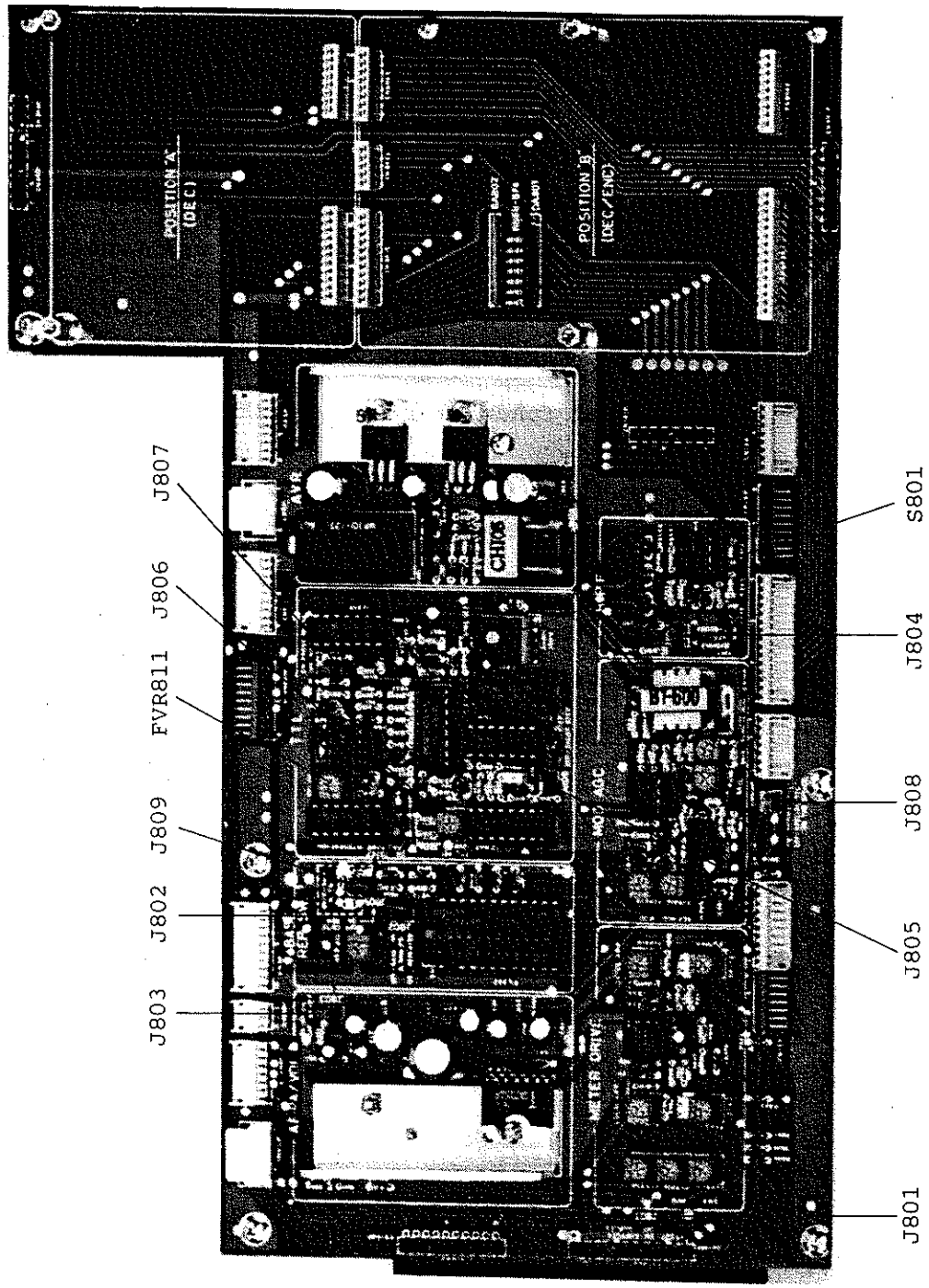
Red mark denotes TX side. Green mark denotes RX side. Connect TX and RX output/input cables respectively to these terminals.

Also plug 2-Pin Connector of Relay Drive Circuit into plug CN16P on Power Supply PCB.

To operate KG110 as a duplex base station or a repeater station with the coaxial relay installed, insert Jumper J1, to keep the relay on the MAKE side (TX side).



(2) Jumpering Positions on Terminal Unit PCB



a) J801 AUD10 CUT-OFF

To decide whether receiver output is cut-off or kept alive in transmitting periods.

ON : Audio CUT-OFF in TX period. (Simplex base station)

OFF : Audio kept alive in TX period. (Duplex base or repeater station)

b) J802 BASE/REPEATER CONTROL

To control Base/Repeater mode control relay. With jumper ON, relay operates to become Repeater mode. Jumper should remain uninserted to operate the Base/Repeater function externally.

In repeater mode, the following functions become effective:

- ☐ Press control function due to SQL OUT.
- ☐ "REPEATER" INDICATOR glows.
- ☐ Transfer of receiver output (0dBm) to repeating modulation.
- ☐ Transfer of the Variable Squelch Circuit to the internal semi-fixed setting.
- ☐ Function of the Press Delay Circuit becomes effective.

c) J803 SP ON/OFF

To turn ON/OFF SP within KG110. Set to SP ON usually.

ON : SP ON

OFF : SP OFF

d) J804 HPF

Where KG110 mounts Tone Squelch PCB, 10-QCT(A), or Tone Panel, this HPF jumper is to eliminate DISC output tone component.

A-side : When 10-QCT(A) or Tone Panel is mounted.

B-side : When no Tone Squelch PCB is mounted (THROUGH).

e) J805 TTL TIME STEP

This jumper is to arrange the step time setting when KG110 is operated by the TTL (Transmitter Time Limiter) circuit.

ON : 1 STEP = 30 seconds

OFF : 1 STEP = 15 seconds

Incidentally, TTL steps can freely be varied in sixteen (0 to 9 plus A to F) steps with DIP SW, S801. In other words, 30 x 15 = 450 seconds max. (7 min. 30 sec.) for J805 "ON". 15 x 15 = 225 seconds (3 min. 45 sec.) for J805 "OFF". At step "0", TTL time becomes "0"- i.e., "no TTL".

f) J806 TTL MODE

This jumper is to select either of the two alternativs:

Whether one press-to-talk time, for instance, should be taken as TTL TIME or one conversation time should be taken as TTL TIME.

The latter case is effective only when 10-5T(D) 5-TONE DECODER for Repeater Press Key is installed in KG110.

ON : 1 STEP TTL MODE

OFF : INTEGRATION TTL MODE

g) J807 PRESS DELAY CONTROL

This jumper is to hold (or extend) a transmission time interval by an optionally preset time at the termination of conversation in repeating periods.

ON : PRESS DELAY

OFF : NO DELAY

In case of "ON", the time can be set to 20 seconds, max., with FVR811 (without steps). (Usually set to 9 ±1 seconds before shipment.)

h) J808 PRESS SW CONTROL

To prevent all transmitting functions from being controlled by the microphone press-to-talk signal, when a particular TTL mode is set with PCB (option) or a function such as 10-5T(A) Encoder/Decoder having a call signal is provided.

ON : Mic press-to-talk SW only is effective (no other options)

OFF : 10-5T(A) or special TTL is installed.

i) J809 JUMPER FOR COMMUNITY REPEATER OPERATION

Where KG110 operates as a community repeater with the addition of Tone Panel (option), this jumper is to prevent KG110 from becoming TX mode merely because of signal reception. The microphone press-to-talk function works irrespective of this jumpering.

ON : When operated as a normal repeater (i.e., without Tone Panel), or, when operated with 10-QCT(D)/10-5T(D).

OFF : When Tone Panel is used for Community Repeater.

JUMPERING CHART FOR TYPICAL SYSTEM CONFIGURATIONS

Mode	OPTION																		
	10-5T (A)	10-5T (D)	10-QCT (A)	10-QCT (D)	TONE PANEL	KBC-2000	ACU-31	STR-110	BRC-110	J801	J802	J803	J804	J805	J806	J807	J808	J809
Simplex Base Station Mode	-	-	-	-	-	-	-	-	-	ON	OFF	ON	B	*1	ON	ON	ON	ON
	o	-	-	-	-	-	-	-	-	ON	OFF	ON	B	*1	ON	ON	OFF	ON
	-	-	o	-	-	-	-	-	-	ON	OFF	ON	A	*1	ON	ON	ON	ON
	-	-	Δ	-	-	o	-	-	-	ON	OFF	ON	A	*1	ON	ON	ON	ON
Base & Repeater Station Mode	-	-	-	-	-	-	-	-	o	OFF	OFF	ON	B	*1	ON	ON	ON	ON
	-	-	-	Δ	-	-	-	-	o	OFF	OFF	ON	A	*1	ON	ON	ON	ON
	-	-	-	-	-	o	-	-	o	OFF	OFF	ON	B	*1	ON	ON	ON	ON
Repeater Station Mode	-	-	-	-	-	-	-	-	-	OFF	ON	ON	B	*1	ON	ON	ON	ON
	-	o	-	-	-	-	-	-	-	OFF	ON	ON	B	*1	OFF	ON	ON	ON
	-	-	-	o	-	-	-	-	-	OFF	ON	ON	A	*1	ON	ON	ON	ON
	-	-	-	-	o	-	-	-	-	OFF	ON	ON	A	*1	ON	ON	ON	*2
	-	-	-	-	o	-	o	-	-	OFF	ON	ON	A	*1	ON	ON	ON	*2
	-	-	-	-	o	o	o	-	-	OFF	OFF	ON	A	*1	ON	ON	ON	*2
	-	-	-	-	-	o	-	-	-	OFF	OFF	ON	B	*1	ON	ON	ON	ON
	-	-	-	-	o	o	-	-	-	OFF	OFF	ON	A	*1	ON	ON	ON	*2
	-	-	-	-	-	o	o	-	-	OFF	OFF	ON	B	*1	ON	ON	ON	ON
Duplex Base Station Mode	o	-	-	-	-	-	-	-	-	OFF	OFF	ON	B	*1	ON	ON	OFF	ON
	-	-	Δ	-	-	-	-	-	-	OFF	OFF	ON	A	*1	ON	ON	ON	ON
	-	-	-	-	-	o	-	-	-	OFF	OFF	ON	B	*1	ON	ON	ON	ON
	-	-	Δ	-	-	o	-	-	-	OFF	OFF	ON	A	*1	ON	ON	ON	ON
	-	-	-	-	-	-	-	o	-	OFF	OFF	ON	B	*1	ON	ON	ON	ON

LEGEND:

Δ : Standard function needs modification.

o : Standard function.

*1 : Select ON or OFF.

*2 : OFF when Tone Panel is used for Community Repeater.

10. CIRCUIT DESCRIPTION

10-1 PLL Section

The 12.00MHz output frequency from the RX-UNIT-mounted reference oscillator (TCXO) is divided into 1:16 to obtain the 750kHz strobe signal to become the reference frequency division input and the frequency division data input to the PLL IC (MC145146).

In order to share the reference frequency between TX and RX, the 750kHz strobe signal is received from RX UNIT with the TX UNIT.

The 750kHz strobe signal is counted up by IC and its data output becomes the data latch address signals for the EP-ROM and PLL IC.

The PLL IC (MC145146) needs 29-bit data for one frequency. The data is divided into eight sets each of 4 bits and they are applied in parallel to the PLL IC.

Therefore, the frequency-determining data are input in eight addresses for each RX channel or TX channel as regards the addresses of the EP-ROM.

Since the one-address data is input to the PLL IC as short a time interval as 1/750kHz, data recognition for the input of one frequency data is accomplished within as brief a time as 1 x 8/750kHz.

Furthermore, since the data is being refreshed at all times, the data can easily be altered with the same timing, even when the channel is changed.

Also, since the transmit and receive data are written into separate EP-ROMs, write-in operation, or programming, is feasible, even if the transmit and receive frequencies are different from each other.

Since the reference frequency division ratio can also be designated by ROM, division ratios ranging 3 to 4,096 of 750kHz are theoretically feasible. Be sure to adopt either 6.25kHz, 10kHz or 12.5kHz as the reference.

The RF signal from VCO is frequency-divided into 1:64 (1:32 in case of Low-Band VHF) before application to PLL IC and further, undergoes frequency division according to the ROM data and phase comparison with the reference frequency.

The phase difference signal passes through the low-pass filter to become a DC voltage to control the oscillation frequency of VCO.

10-2 VCO Section

This section incorporates oscillation circuits independently incorporated in TX and RX units. Whereas Q201 (RX VCO) is for use with RX 1st local oscillator (LO) (F-21.6MHz), Q401 (TX VCO) is to initiate oscillations at the transmit frequency.

These two VCOs when used for a simplex base station are switched over by means of a press-to-talk switch, but they operate simultaneously when used for a duplex base station.

Control for either alternative is enabled by Jumper J801 in the terminal board.

Either oscillator output is amplified by the buffer amplifier IC μPC1651 to become the input signal to amplifier Transistor 2SC2753 and a part of the prescaler IC μPC571C. The RX LO signal is amplified by Q202 to cause the 1st mixer DBM-1 to drive.

The transmit signal is amplified by Q402 and the amplified signal becomes the input signal to the TX section. The PLL circuit when unlocked causes Q203 and Q204 in case of RX section or Q403, Q404 in case of TX Section to operate, thereby turning "OFF" the TX output.

10-3 RX Section

The RF input signal incoming from the antenna passes through the antenna coaxial relay, and the bandpass filter (BPF-1) in succession to undergo amplification by Q1. The amplified signal passes through the bandpass filter (BPF-2) to be applied as the input to the DBM-1 (diode, double-balanced mixer).

The DBM-1 is to mix the amplified RF signal with the 1st local oscillator (LO) signal to develop the 1st IF signal at 21.6MHz as its mixed output.

The output signal is further amplified by Q102, followed by still further amplification by Q103 after the initially amplified signal being applied to the crystal filter (XF101). The finally amplified signal is applied to IC107 as its input. At IC107, the 1st IF signal at 21.6MHz is converted into 455kHz through the 2nd mixer. The 455kHz signal passes through the 455kHz ceramic filter (CF101) to obtain an AF signal via the limiting amplifier and discriminating circuit.

The AF signal is then separated into the audio signal and the noise signal necessary for squelch control.

The audio signal passes through the lowpass filter IC108 (1/2), the delay circuit consisting of Q106, Q107, and IC109, the lowpass filter Q108, and the highpass filter of IC110 (1/2), the integrating circuit of IC110 (1/2), and the squelch gate circuit Q111 in succession to undergo 0dBm power amplification by IC111. The BTL 0dBm signal is applied to the Final Power Amp TA7252.

The squelch noise signal undergoes amplification by IC107 and IC108 (1/2) and detection by DC, to become a DC signal.

The DC signal passes through the switching circuit consisting of IC107 and Q104 to obtain the SQL OUT signal.

10-4 TX Section

The RF signal from VCO is amplified by Transistors Q301, Q302 to serve as power for driving the RF power amplifier module. The amplified RF signal, on the other hand, becomes a signal for driving the DRIVE meter. The signal amplified by the module is further amplified by the final-stage RF power amplifier consisting of the stripline to become the RF power output ranging from 50W to 60W.

The output is radiated from the antenna via the low-pass filter and coaxial antenna relay.

Part of the module output undergoes detection and DC amplification for feeding back to the 1-stage amplifier to become a control signal for the output power.

Even if the antenna is mismatched, reflected waves can be detected, causing the module input power to decrease and the module to be protected from damage.

The transceiver unit is equipped with a heatsink for sufficiently dissipate generated heat. This enables a consecutive 24-hour transmission capability.

The detected control signal is amplified to become a power alarm and a SWR alarm for controlling the Automatic Changeover Unit. The power alarm operates on reaching one-half the rated power, while the SWR alarm operates when the ANTENNA is open or shorted. No sooner than the two alarms work, LED (D606) glows "red".

10-5 Modulator Section

An audio signal produced by a human voice radiated to the MIC undergoes amplification by the ALC (Automatic Level Control) amplifier IC I803 (M51304) and IC804 (NJM4556).

Standard input level to the MIC is rated at 1kHz, -34dBm, while that in case of remote control is rated at 1kHz, -8dBm.

The amplified audio signal passes through the preemphasis circuit consisting of C356 and R346 before it is amplitude-limited by the limiting amplifier IC309 (1/2). The amplitude-limited signal passes through the lowpass filter consisting of L310 and L311 to become a modulating signal to be applied to the gate of TX VCO FET (Q401).

On the other hand, the 5-Tone Encode signal undergoes modulation without preemphasis, while the CTCSS Encode signal undergoes modulation without passing through the limiting amplifier and the preemphasis circuit.

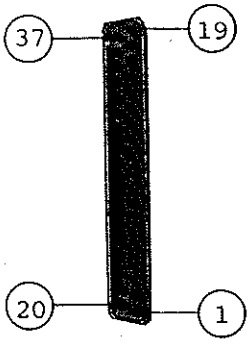
10-6 Description of Remote Control

10-6-1 37-Pin D-SUB Connector for Remote Control

Provided on the rear panel of KG110 radio, the 37-PIN D-SUB CONNECTOR has 37 pins whose functions are as follows:

(36) (37) 13.6V DC

(18), (19), (7) GND



Rear Side View

(23) A1
(22) A2
(21) A3
(20) A4
(1) A5
(2) A6
(3) A7
For CH DATA

(4) ROM DATA ... 5V voltage emerges on this pin after ER-ROM is programmed.

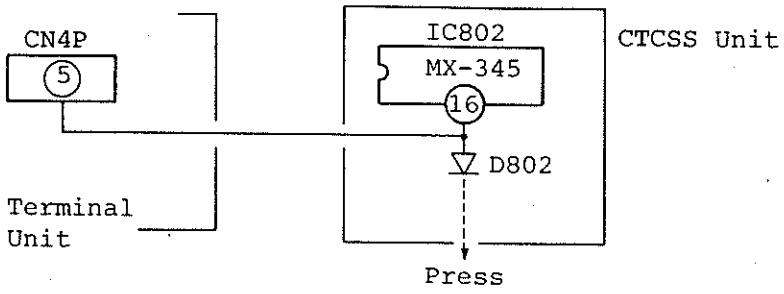
CH1 is preceded by all "0's".
CH128 is preceded by all "1's".
"0" = open or 0V
"1" = 5V to 13.6V

(5)	ENCODE	...	CTCSS Tone Encode signal is available from this pin. Used in connecting TONE PANEL to AUTOMATIC CHANGEOVER UNIT.
(6)	DISC OUT	...	CTCSS Decode input signal is available. Used in connecting TONE PANEL to AUTOMATIC CHANGEOVER UNIT.
(8)	REMOTE	...	When controlled externally from a remote controlling position, KG110 is grounded. When this signal is grounded, all of POW SW, SQL CONTROL, and CH can only be controlled from remote control side (i.e., fail to be controlled from KG110 side). Note in this case that LED "REMOTE" on KG110 front panel glows.
(9)	BUSY	...	8V voltage emerges on this pin during receive period. 0V emerges when KG110 is in standby status.
(10)	VOL (-)	...	Volume control common.
(11)	VOL	...	For volume control use. Use type 10K-B Volume.
(12)	SQL	...	For SQL control use. Use type 10K-B Volume
(13), (14)	AF OUT	...	To obtain RX 0dBm output. A -6dBm output is available between either (13) or (14) pin and GND.
(15)	PRESS	...	When grounded, KG110 radio operates in TX mode.

(16) SP ... An AF output of either 4W/4Ω or 2W/8Ω at max. is available.

(24), (25), (26) ... No connection.

(27) CTCSS ON ... A signal for ON/OFF controlling CTCSS ENCODE Signal is available from Remote Control Unit KBC-2000. No wiring being provided within KG110, as a rule, wiring must be installed (either at the site or before shipment) to make this signal available.



Connect across CN4P (5) pin on Terminal Unit and IC802 (MX-345) (16) pin on CTCSS Unit and remove D802.

(28), (29) BASE 1, BASE 2 ... To obtain a signal for automatically or manually changing-over one to the other of two KG110 radios where KBC-2000 Remote Control Unit is connected to ACU-31 Automatic Changeover Unit. The Control is processed between ACU-31 and Interface Unit.

(30) AUX 2 (BASE REP) ... A signal for switching KG110 between BASE and REPEATER STATION modes from the REMOTE CONTROL UNIT is available. Provided with the same function as possessed by J802 in KG110. When grounded, KG110 is placed in REPEATER STATION mode. When open, it is placed in BASE STATION mode.

(31) AUX 1 ... No connection.

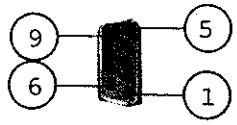
(32) TX ALARM ... This signal is used as a TX alarm for the ACU-31. The TX alarm signal voltage ranges from 5 to 6 volts when TX power is reduced to one-half or ANTENNA is open or shorted.

(33), (34) MODULATION INPUT ... Standard modulation input is 1kHz, -8dBm.

(35) POW SWITCH ... To operate POW SWITCH on a REMOTE CONTROL basis. When grounded, KG110 power switch turns "ON".

10-6-2 9-Pin D-SUB Connector for Tone Panel

Provided on the rear panel of KG110, the 9-Pin D-SUB Connector has nine pins whose functions are as follows:



Rear Side View

(1) +13.6V DC is available.

(2) No connection.

(3) DISC IN ... CTCSS DECODE input signal is incoming.

(4) No connection.

(5) PRESS ... When grounded, KG110 is placed in TX mode.

(6) No connection.

(7), (8) GND

(9) TONE OUT ... CTCSS TONE ENCODE signal is available.

11. MAINTENANCE INSTRUCTIONS

11-1 General

The KG110 radio has been designed to ensure a high degree of reliability over a long trouble-free service life without maintenance efforts.

However, occasional inspections and adjustments are required to maintain the radio in the optimal conditions.

11-2 Necessary Tools and Measuring Equipment

It is recommended that the undermentioned measuring equipment and maintenance tools be properly stored in your maintenance shop for ready use:

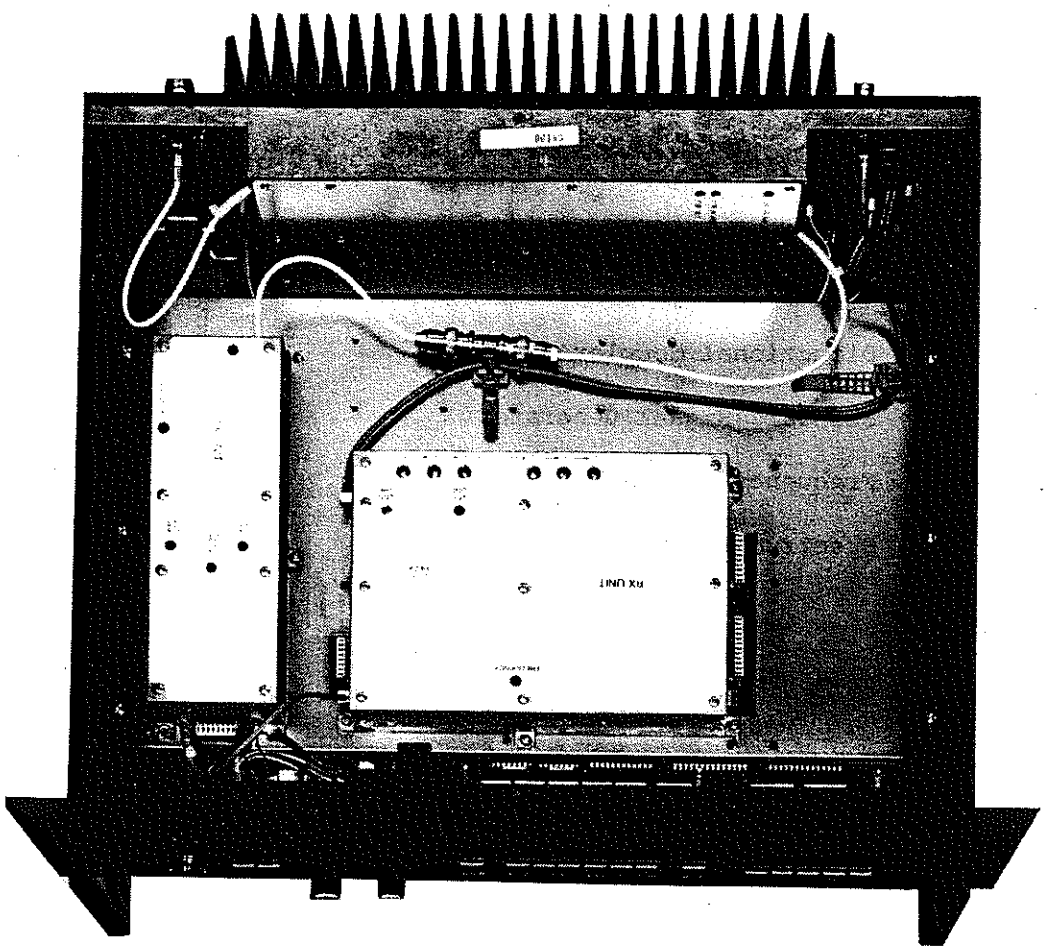
1. Circuit Tester
2. RF Power Meter
3. Vacuum-Tube Voltmeter
4. AF Generator (600 ohms, 100 through 10,000 Hz)
5. Linear Detector
6. Distortion Meter/Level Meter
7. Directional Coupler
8. Standard Signal Generator
9. Frequency Counter
10. Spectrum Analyzer

11-3 Precautions in Inspection and Adjustment

1. Always use standard-tip screwdrivers that best fit core slots in adjustment. Be very slow and cautious in turning the cores.

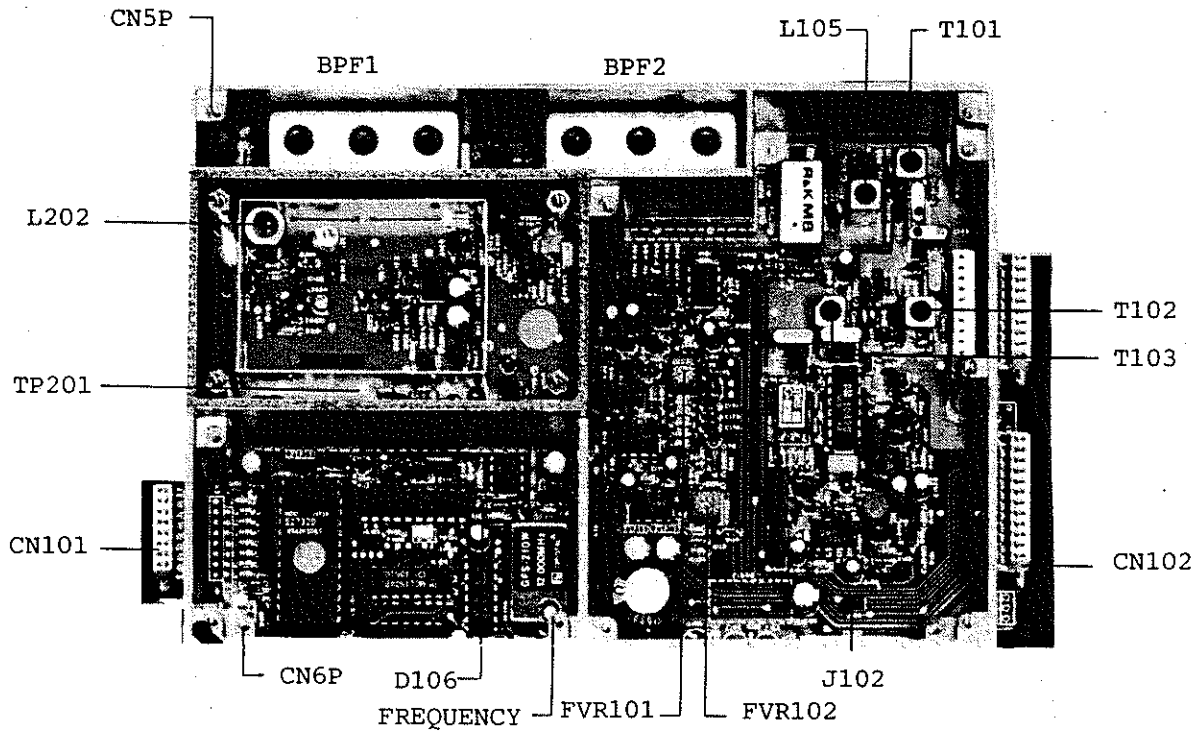
2. In adjusting the VCO, never turn trimmer capacitors or cores with an ordinary screwdriver. Be sure to use an RF screwdrivers. Otherwise, adjustments may result in failure due to the effect of stray capacitances.

3. Keep all measuring instruments well calibrated at all times for availability of accurate measurements.



11-4

11-4-1 RX VCO/PLL Adjustment



RX MAIN UNIT

(1) Connect a Voltmeter to TP201 and adjust L202 to read 3V on the Voltmeter.

(2) Adjust the trimmer in TCXO to obtain an output frequency of 750kHz from CN6P. (No need for adjustment at the site, if the frequency tolerances of the TCXO remain within ±1ppm at room temperature.)

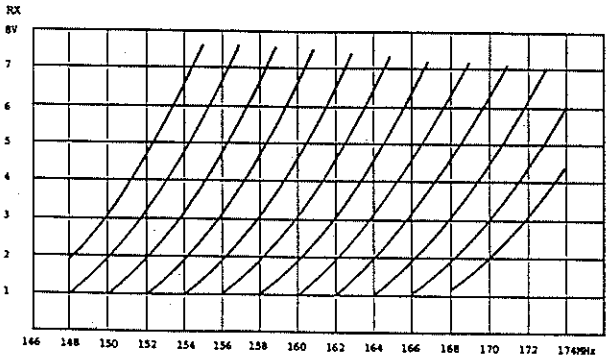
PRECAUTIONS:

The radio performs trouble-free operation within the VCO voltage range, 1 to 5V, as read on a voltmeter connected to TP201.

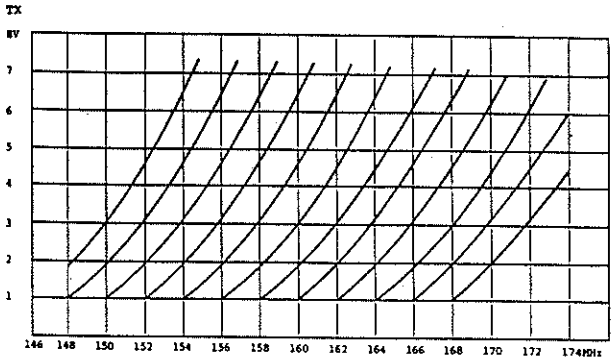
Adjust trimmer capacitor to read 3V (mid-position) on the voltmeter in case of single channel.

In case of multichannel, verify VCO voltages for the lowest and the highest frequencies and perform centering so that all fall between 1 and 5V. IF VCO is unlocked in this case, LED (D106) should glow.

Be sure to refer to the RX/TX characteristic curve in adjusting VCO.



RX FREQ - VCO VOLTAGE



TX FREQ - VCO VOLTAGE

11-4-2 Adjustment of RX Section

In adjusting the RX Unit singly (without being fixed in KG110), exercise care for the following:

- o J102 turned "ON" Be sure to turn it "OFF" before installing in KG110.
- o Connect a 10kΩ PULL DOWN resistor array to CN101.

(1) RF Stage Adjustment

Adjust BPF1 and BPF2 for maximum sensitivity points (with a screwdriver).

A better result can be obtained by measurement using a tracking generator.

Note: Where the KG110 operates as a base station with a wide RX bandwidth, notify us in advance a wider bandwidth BPF you desire. As shipped from the factory, a standard 3MHz bandwidth BPF is mounted.

(2) IF Stage Adjustment

(1) L105 and T101: Adjust to sensitivity maxima.

(2) T102 and T103: Adjust to SINAD sensitivity maxima, with 1kHz, 70% MOD signal applied to Antenna.

(3) AF Stage Adjustment

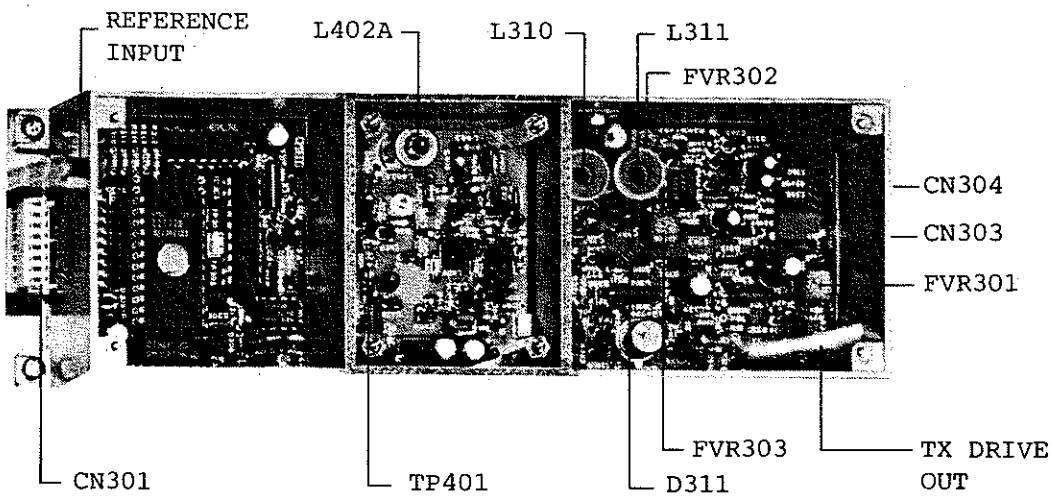
A BTL (Balanced Transformer Line) output obtains from IC111 (NJM2073) as the AF output. The AF output is usually measured with a transformer connected. In the absence of a transformer, adjust between the one-side line and GND.

With a 1kHz 70% modulation signal from a SG applied as input to CN5P, adjust FVR102 so as to make the output level between (8) and (9) of CN102 equal to 0dBm, or adjust FVR102 to obtain -6dBm between (8) or (9) and GND.

(4) RX 3kHz Frequency Response Adjustment

Apply a 1kHz 20% modulation signal from a SG to CN5P, calibrate the receive output level to 0dB, raise the modulation frequency to 3kHz, 20% modulation, and adjust FVR101 to obtain the receive output level of -9.5 ±0.5dB.

11-4-3 TX VCO/PLL Adjustment



(1) Connect a Voltmeter to TP401 and adjust L402A to read 3V.

(2) TCXO for the reference frequency generation is not provided in TX unit; connect RX unit or apply a 750kHz 4 to 8Vp-p signal to the PLL.

PRECAUTIONS:

The radio performs trouble-free operation within the VCO voltage range, 1 to 5V, as read on a voltmeter connected to TP401.

Adjust trimmer capacitor to read 3V (mid-position) on the voltmeter in case of single channel.

In case of multichannel, verify VCO voltages for the lowest and the highest frequencies and perform centering so that all fall between 1 and 5V. If VCO is unlocked in this case, LED (D311) should glow.

11-4-4 TX Main Unit Adjustment

> In adjusting TX Unit singly (without being fixed in KG110), exercise care for the following:
>
> o Connect a 10kΩ PULL DOWN resistor array to CN301.
>
> o Apply a REFERENCE 750kHz signal.

(1) DRIVE Output Adjustment

Connect a power meter to TX DRIVE output and adjust FVR301 to read 200 ±10mW.

(2) MODULATION Adjustment (Install TX Unit on the KG110)

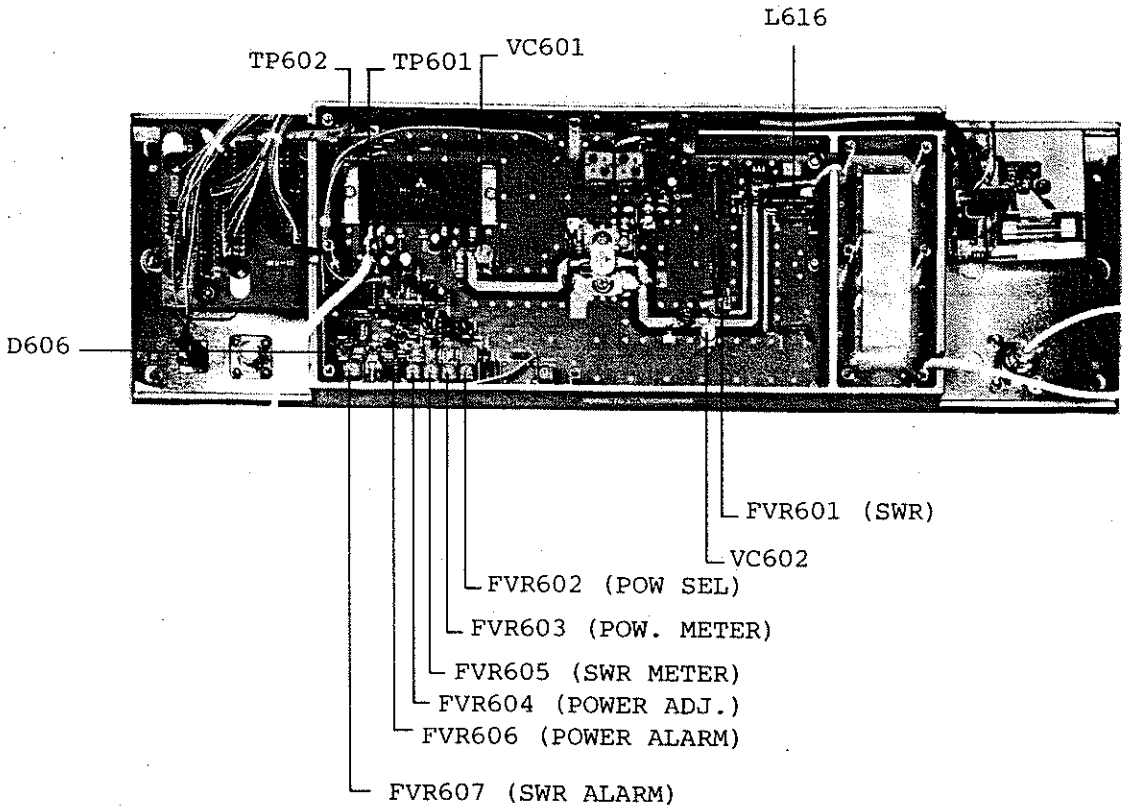
Apply a 1kHz, -34dBm signal from an Audio Generator to MIC connector and adjust FVR303 for a 70% modulation.

Then, raise the input level to 1kHz, -14dBm and adjust FVR302 for a maximum deviation. Repeat this procedure a few times.

(3) Adjustment of TX Frequency Response

Adjust L310 and L311 for a +9.5 ±1dB deviation when a REFERENCE 1kHz, 20% modulation signal is varied to a 3kHz, 20% modulation signal.

11-4-5 PA Unit Adjustment



(1) POWER Adjustment

Maximize POWER with FVR604 and take a balancing in turning between VC601 and VC602 for an in-band output in excess of 50W.

Then, fix VC601 and VC602 in position to manipulate them no more. Finally, adjust FVR604 to obtain the rated output of 50W.

(2) SWR Adjustment

Adjust FVR601 to minimize the L616 line voltage as read on a voltmeter.

(3) SWR ALARM Adjustment

LED (D606) should remain unlit for the rated power, as a rule. Adjust FVR607 to provide a visual alarm when ANTENNA is open or shorted.

(4) POWER ALARM Adjustment

With FVR604 set to obtain one-half the rated power, adjust FVR606 to cause LED (D606) to glow under this condition. After adjustment, be sure to restore FVR604 to the initial rated power position.

(5) LOW POWER Adjustment

The KG110 is designed to be capable of modifying as HI-LOW switching on front panel. (But, in order for this facility to be feasible, an additional relay must be installed at the user's request.)

Then, set a "LOW" state output to a desired output with FVR602.

(6) POWER METER Adjustment

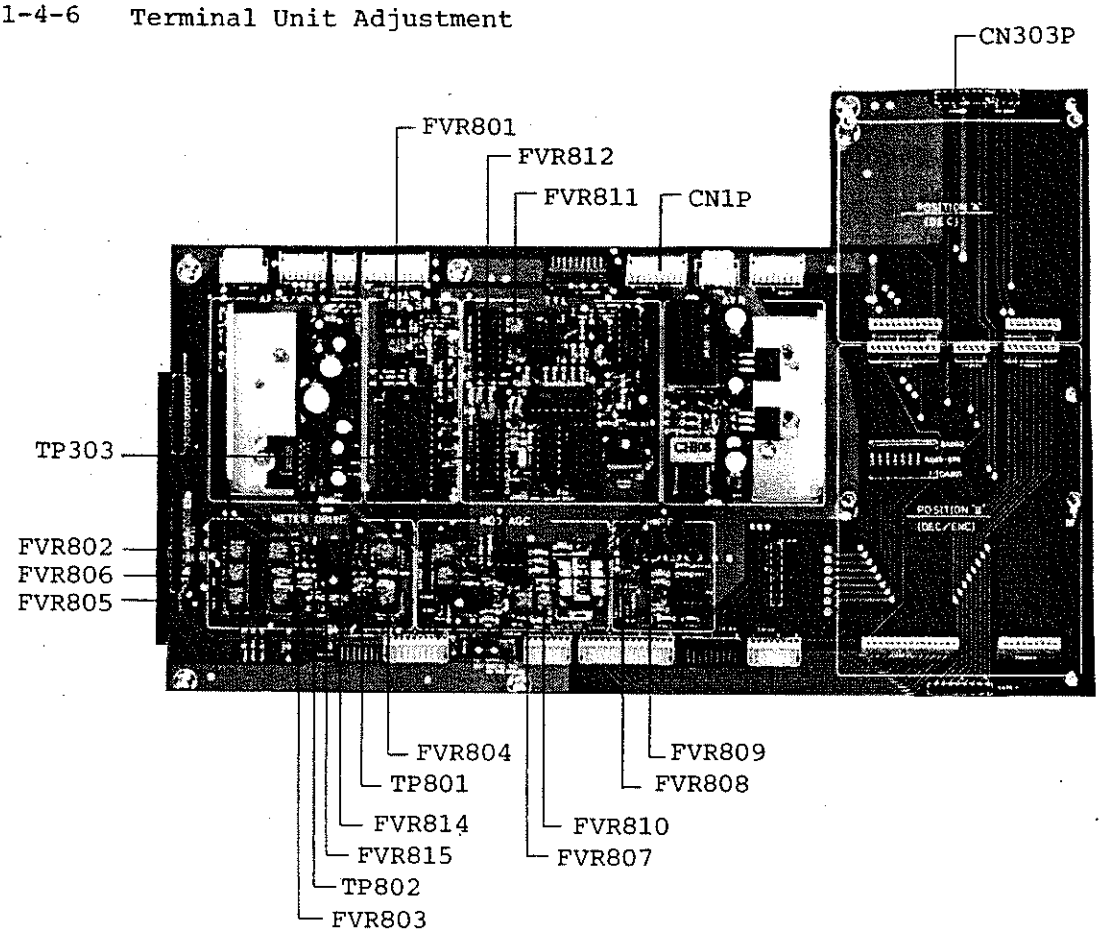
Adjust FVR603 to obtain TP601 voltage of 5.5V under rated power output conditions.

(7) SWR METER Adjustment

Adjust FVR605 to obtain TP602 voltage of 1.3V for rated power and TP602 voltage of 7.3V when ANTENNA is open.

Note:	Items (2), (3), (4), (6), and (7) have been adjusted at the factory before shipment. No need for readjustment at the site, unless a trouble occurs

11-4-6 Terminal Unit Adjustment



Terminal Unit is designed not only for overall interconnections of TX Unit, RX Unit, PA Unit, Control Panel Unit, and optional units, but also for incorporating the undermentioned functional facilities.

(1) Main AVR Unit

(2) Transmitter Time Limiter

(3) TX Carrier Delay Unit

(4) BASE/REPEATER Changeover Relay Unit

(5) Local AF AMP Unit

(6) Modulation AGC Unit

(7) Meter Drive AMP/Meter Sensitivity Adjustment Function for Meters

(8) HPF Unit for CTCSS Use

(1) Transmitter Time Limiter

With a Frequency Counter connected to TP803, adjust FVR812 to read a frequency of 4kHz.

(2) TX Carrier Delay Unit

With the KG110 in repeater mode (J802 ON), adjust FVR811 to set the delay time properly by operating the MIC press-to-talk switch. The delay time is set to 9 ±1 sec. as shipped from the factory.

(3) Repeater Squelch Level Setting

Place KG110 in repeater mode and adjust FVR801 so that SQL opens at the SINAD ratio of 12dB.

(4) Modulation AGC Unit

With the MIC input set at 1kHz, -34dBm, adjust FVR807 to obtain a -8dBm output level from pins (1) and (2) of connector CN303. Then, raise MIC input level to 1kHz, -14dBm and adjust FVR809 to obtain an output level of +2dBm.

(REPEATER MODULATION Adjustment)

Apply a 1kHz, 70% modulation, 40dBμV signal from a SG as input and adjust FVR808 to obtain a 70% modulation.

(REMOTE MODULATION Adjustment)

Apply a 1kHz, -8dBm signal as input to pins (6) and (7) of CN1P or pins (33) and (34) of D-SUB connector and adjust FVR810 to obtain a 3.5kHz deviation.

(5) Meter Drive AMP Adjustment

[S-METER]

Apply a 40dB signal from a SG as input and adjust FVR802 so that the entire segments (ten) of the meter glow.

[POWER METER]

Adjust FVR806 so that seven segments of the meter glow for the rated output.

[SWR METER]

Adjust FVR805 so that ten segments glow upon pressing [SWR] SW, with ANTENNA open-circuited, and one segment glows for the rated load.

[RX LOCAL LEVEL METER]

Connect a voltmeter to TP802 and adjust FVR815 to read 5.5V. Then, adjust FVR803 so that seven segments of the meter glow in RX mode upon pressing [LOCAL] SW.

[TX DRIVE LVEL METER]

Connect a voltmeter to TP801 and adjust FVR814 to read 5.5V. Then, adjust FVR804 so that seven segments of the meter glow in TX mode upon pressing [DRIVE] SW.

Adjustments (1), (4) and (5) have been finished at the factory before shipment. NO need for further adjustments at the site, if no trouble occurs.

11-4-7 Adjustment for PS110 Power Supply Unit

(1) Adjustment of DC Power Supply Voltage

Adjust the semi-fixed resistor (V. ADJ) on the panel of PS Unit KRV-300 to obtain a DC output voltage of 13.6V.

(2) VOLTAGE METER Adjustment

Adjust FVR4 so that seven segments of the meter glow for the rated voltage of 13.6V.

(3) CURRENT METER Adjustment

- o Make sure that the entire segments (ten segments) of the meter glow with FVR2 maximized under full load conditions (13.6V, 10A).
- o Adjust FVR1 to a point at which METER that has been lit goes out suddenly.
- o Further, turn FVR2 counterclockwise to a minimum point.
- o Finally, adjust FVR3 so that seven segments of the meter glow.

11-5 Voltage Chart

(1) RX UNIT, PLL

REF.	DESCRITION	FUNCTION	BASE	EMITTER	COLLECTOR
Q101	2SC2407		0.77 V	0 V	6.56 V
Q103	2SC2669		2.2 V	1.55 V	6.6 V
Q104	2SC2458	SQ OPEN	0.66 V	0 V	0 V
		TIGHT	0 V	0 V	8.0 V
Q105	RN2202	SQ OPEN	1.1 V	8.0 V	8.0 V
		TIGHT	8.0 V	8.0 V	0 V
Q106	2SA1048		7.0 V	6.6 V	3.5 V
Q107	2SA1048		7.0 V	6.6 V	3.5 V
Q109	2SA950	J801 OFF	7.2 V	8.0 V	7.9 V
		J801 ON PRESS	8.0 V	8.0 V	0 V
Q110	RN2202	J801 OFF	8.0 V	8.0 V	7.2 V
		J801 ON PRESS	0.72 V	8.0 V	8.0 V
Q112	RN2202	RX	8.0 V	8.0 V	0 V
		RX UNLOCK	1.7 V	8.0 V	8.0 V
Q108	2SC2458		3.9 V	3.3 V	7.9 V

REF.	DESCRITPION	FUNCTION	GATE	SOURCE	DRAIN
Q102	2SK152		0 V	0.74 V	7.4 V
Q111	2SK184	MONITOR ON	4.5 V	4.0 V	4.0 V
		OFF	1.3 V	4.0 V	2.0 V

REF.	DESCRIPTION		①	②	③	④	⑤	⑥	⑦	⑧
IC107	TK10420		7.9 V	7.2 V	7.5 V	7.9 V	1.1 V	1.1 V	1.2 V	7.9 V
			⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯
			3.5 V	2.0 V	2.0 V	0.86 V	0 V	0.66 V	0 V	2.1 V

REF.	DESCRIPTION		①	②	③	④	⑤	⑥	⑦	⑧
IC104	μPC571C		5.0 V	2.4 V	0 V	0 V	3.8 V	5.6 V	0 V	0 V
IC108	NJM4558D		3.7 V	3.7 V	3.7 V	0 V	4.4 V	4.4 V	4.4 V	8.0 V
IC109	CX7932		4.5 V	0 V	3.3 V	0 V	4.8 V	3.6 V	0 V	7.9 V
IC110	NJM4558D		4.0 V	4.0 V	3.7 V	0 V	4.0 V	4.0 V	4.0 V	8.0 V
IC111	NJM2073		3.7 V	8.0 V	3.7 V	0 V	0.6 V	0 V	0 V	0.6 V

REF.	DESCRIPTION		①	②	③	④	⑤	⑥	⑦	⑧	⑨
IC115	TA7303		1.85 V	1.7 V	0.28 V	0.57 V	0 V	3.7 V	0 V	0 V	7.9 V

(2) RX UNIT, VCD

REF.	DESCRIPTION	FUNCTION	BASE	EMITTER	COLLECTOR
Q202	2SC2753	J801 OFF RX	1.85 V	1.26 V	7.8 V
		J801 ON PRESS TX	0 V	0 V	0 V
Q203	2SA1048	RX	7.3 V	8.0 V	8.0 V
		PRESS TX	8.0 V	8.0 V	0 V
Q204	RN2202	RX	8.0 V	8.0 V	7.3 V
		PRESS TX	1.0 V	8.0 V	8.0 V
Q205	2SA1048	RX	6.7 V	7.4 V	7.4 V
		TX	6.9 V	7.5 V	0 V
Q206	RN2202	RX	7.4 V	7.4 V	0 V
		TX	0.7 V	7.5 V	7.5 V
Q207	2SC3623	RX	8.0 V	7.4 V	8.0 V
		TX	8.0 V	7.5 V	8.0 V
Q208	2SC2458	RX	5.6 V	4.9 V	8.0 V
		TX	5.6 V	4.9 V	8.0 V

REF.	DESCRIPTION	FUNCTION	GATE	SOURCE	DRAIN
Q201	SST310	RX	0 V	2.8 V	7.4 V
		TX	0 V	0 V	0 V

REF.	DESCRIPTION		①	②	③	④
IC201	μPC1651		4.9 V	0.85 V	0 V	2.8 V

(3) TX UNIT, PLL/VCO

REF.	DESCRIPTION	FUNCTION	BASE	EMITTER	COLLECTOR
Q301	2SC2644	TX	0.43 V	0.42 V	5.9 V
Q302	2SC1947	TX	0.45 V	0 V	6.2 V
Q303	2SB1019	TX	12.6 V	13.2 V	7.9 V
Q304	RN2202	TX	8.0 V	8.0 V	0 V
		TX UN LOCK	1.8 V	8.0 V	8.0 V
Q305	RN2202	RX	8.0 V	8.0 V	0 V
		TX	0.72 V	8.0 V	8 V
Q306	RN1202	RX	0 V	0 V	7 V
		TX	8 V	0 V	0 V

REF.	DESCRIPTION		①	②	③	④	⑤	⑥	⑦	⑧
IC304	μPC571C		5.0 V	2.3 V	0 V	0 V	3.7 V	5.6 V	0 V	0 V
IC309	NJM4556D		4.45 V	4.45 V	4.45 V	0 V	4.37 V	4.37 V	4.37 V	8.1 V

REF.	DESCRIPTION		①	②	③
IC308	M5236L		11.3 V	0 V	1.23 V

REF.	DESCRIPTION	FUNCTION	BASE	EMITTER	COLLECTOR
Q402	2SC2753	RX	0 V	0 V	0 V
		TX	1.9 V	1.23 V	7.95 V
Q403	2SA1048	RX	8.0 V	8.0 V	0 V
		TX	7.3 V	8.0 V	8.0 V
Q404	RN2202	RX	0.8 V	8.0 V	8.0 V
		TX	8.0 V	8.0 V	7.3 V
Q405	2SA1048	RX	7.7 V	7.7 V	0 V
		TX	7.45 V	6.7 V	7.4 V
Q406	2SC3623	RX	8.0 V	7.7 V	8.0 V
		TX	8.0 V	7.45 V	8.0 V
Q407	2SC2458	RX	5.6 V	4.9 V	8.0 V
		TX	5.6 V	4.9 V	8.0 V

REF.	DESCRIPTION	FUNCTION	GATE	SOURCE	DRAIN
Q401	SST310	RX	0 V	0 V	0 V
		TX	0 V	1.73 V	7.4 V

REF.	DESCRIPTION		①	②	③	④
IC401	μPC1651		4.9 V	0.9 V	0 V	3.0 V

(4) TERMINAL/CONTROL UNIT

REF.	DESCRIPTION	FUNCTION	BASE	EMITTER	COLLECTOR
Q801	2SC2120	POW SW OFF	0 V	0 V	13.8 V
		ON	0.77 V	0 V	0.14 V
Q802	RN2202	RX	13.7 V	13.7 V	0 V
		TX	0.76 V	13.7 V	13.6 V
Q803	RN2202	BASE	0 V	5.0 V	5.0 V
		REP	5.0 V	5.0 V	0 V
Q804	RN2202	BASE	5.0 V	5.0 V	0 V
		REP	0 V	5.0 V	5.0 V
Q805	2SC2458	BASE	2.1 V	1.7 V	4.8 V
		REP	0 V	0 V	4.8 V
Q806	RN2202	RX	5.0 V	5.0 V	0 V
		TX	0.55 V	5.0 V	5.0 V
Q807	2SC3623	J807 OFF NO DELAY	0 V	0 V	13.5 V
		ON PRESS DELAY	0.68 V	0 V	0.15 V
Q805	2SC2458	DURING REPEATING	1.2 V	0.57 V	0.58 V

REF.	DESCRIPTION	FUNCTION	①	②	③	④	⑤	⑥	⑦	⑧
IC803	M51304L		8.0 V	0 V	0 V	1.4 V	2.9 V	1.3 V	0 V	0 V
IC804	NJM4556D		4.3 V	4.3 V	4.3 V	0 V	4.3 V	4.3 V	4.3 V	8.0 V
IC811	555		0 V	5.0 V	0 V	0 V	3.3 V	0 V	0 V	5.0 V
IC812	NJM4558D	RX	5.5 V	4.2 V	4.2 V	0 V	4.2 V	4.4 V	1.4 V	8.0 V
		TX	1.35 V	4.7 V	4.2 V	0 V	4.2 V	4.2 V	5.5 V	8.0 V
IC814	TA7252		1.4 V	1.4 V	6.8 V	0 V	6.7 V	13.0 V	13.7 V	
IC815	NJM4558D		4.4 V	4.4 V	4.4 V	0 V	4.0 V	4.0 V	4.0 V	8.0 V

REF.	DESCRIPTION	FUNCTION	①	②	③	④	⑤	⑥	⑦	⑧	⑨
IC813	AN5733	VOLUME MIN	4.3 V	4.4 V	8.0 V	3.1 V	3.4 V	2.4 V	0 V	2.5 V	3.0 V
		VOLUME MAX	1.22 V	4.4 V	8.0 V	3.1 V	3.4 V	2.4 V	0 V	2.5 V	3.2 V

(5) TX PA

REF.	DESCRIPTION	FUNCTION	BASE	EMITTER	COLLECTOR
Q603	2SB1019	50W	12.7 V	13.4 V	10.0 V
		Max.	12.5 V	13.2 V	13.0 V
Q604	2SA950	50W	12.7 V	13.4 V	13.4 V
		Max.	12.5 V	13.3 V	13.3 V
Q605	2SC2120	50W	1.1 V	0.45 V	11.2 V
		Max.	2.2 V	1.5 V	7.7 V

REF.	DESCRIPTION	FUNCTION	①	②	③	④	⑤	⑥	⑦	⑧
IC602	NJM4558	50W	5.5 V	1.75 V	1.71 V	0 V	1.5 V	5.7 V	1.4 V	8.0 V
		Max.	6.1 V	1.85 V	1.8 V	0 V	1.7 V	5.7 V	1.4 V	8.0 V
IC603	NJM4556	50W	3.6 V	4.5 V	4.5 V	0 V				8.0 V
		Max.	7.3 V	4.9 V	7.2 V	0 V				8.0 V
IC604	NJM4558	50W	1.35 V	2.36 V	1.5 V	0 V	3.5 V	4.5 V	1.37 V	8.0 V
		Max.	1.4 V	2.35 V	1.7 V	0 V	3.5 V	4.9 V	1.38 V	8.0 V
IC602		ANT. OPEN	4.5 V	1.6 V	1.6 V	0 V	6.5 V	6.4 V	7.2 V	8.0 V
IC603		ANT. OPEN	7.3 V	3.9 V	4.5 V	0 V				8.0 V
IC604		ANT. OPEN	6.8 V	2.4 V	6.4 V	0 V	3.5 V	3.8 V	1.3 V	8.0 V

12. EP-ROM PROGRAM METHOD

12-1 Calculating the "Reference Division Rate" Address Data

REFERENCE DIVISION RATE "R"

The Reference Division Rate must always be calculated for both the transmit and the receive frequencies.

The 12.000MHz TCXO output signal is divided by 16 (by the divider, IC101) to provide a 750kHz Reference Frequency. This Reference Frequency is sampled and divided by the "Reference Division Rate" to determine the channel spacing, e.g. 12.000MHz/16 = 750kHz then 750kHz/(Channel Spacing) = Reference Frequency as follows:

Channel Spacings	Calculations	Ref. Div. Rate "R"
25kHz	750kHz/25kHz	= 30
12.5kHz	750kHz/12.5kHz	= 60
10kHz	750kHz/10kHz	= 75
6.25kHz	750kHz/6.25kHz	= 120
5kHz	750kHz/5kHz	= 150

Next it is necessary to determine the address information by referring to the attached "A - D CONVERSION LIST".

e.g. 12.5kHz channel spacing

= Reference Division Rate "R"

= 60

c 3 0

12-2 Calculating the Transmit and Receive Address Data

It is necessary to calculate the following information for each transmit and receive frequencies required. TX and RX allow two TX and RX data to be written respectively into their EP-ROMs.

(Note: The receive frequency is the 1st local oscillator frequency.)

D = Basic Division Rate

d = Prescaler Division Rate

N = Number of Complete Divisions

R = Remainder of the Basic Division Rate

(a) "D" Calculation

"D" is obtained by dividing the frequency required by the channel spacing required.

(b) "d" Calculation

"d" is the prescaler division rate, and it is fixed at 64.

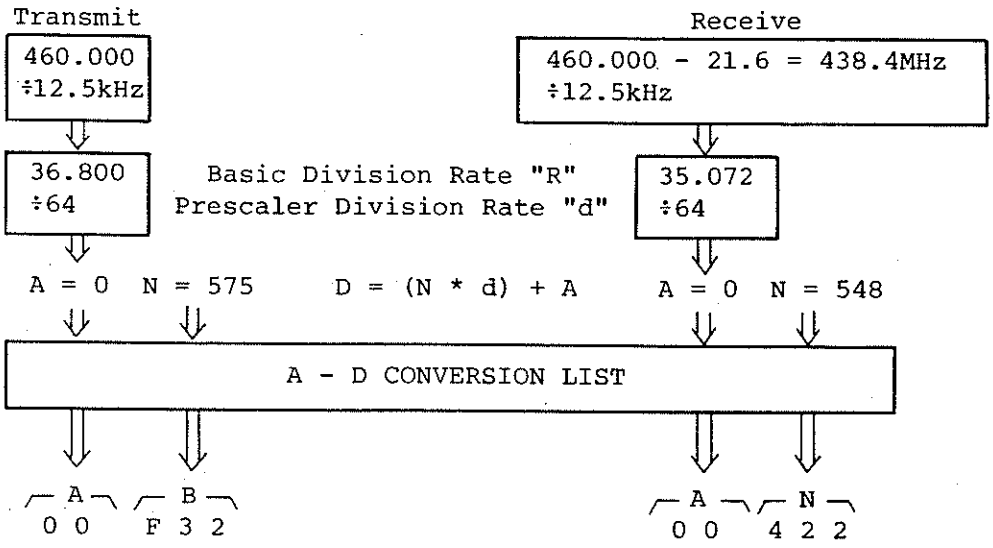
(c) "N" and "A" Calculation

"N" and "A" are calculated using the following equation:

$$D = (N * d) + A$$

(d) Example Calculation

Channel #1 460.000MHz, Simplex, 25kHz Channel Spacing



12-3 Relations between Addresses and Data

With KG110, TX and RX units each contain one EP-ROM. As a result, TX data and RX data only are written into TX and RX, respectively.

(Example) CH1 = 460MHz

TX ADDRESS

Channel #1/#2 address	0 1 2 3 4 5 6 7 8 9 A B C D E F
Buffer input data	CH1: TX(A) TX(N) TX(R) — CH2: TX(A) TX(N) TX(R) 00 00 01 03 02 0C 03 00 FF FF FF FF FF FF FF FF
Channel #3/#4 address	10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F
Buffer input data	CH3: TX(A) (TX(N) TX(R) — CH4: TX(A) TX(N) TX(R) FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
Channel #5/#6 address	
Channel #99 address	310 311 312 313 314 315 316 317 318 319 31A 31B 31C 31D 31E 31F
Buffer input data	CH99: TX(A) TX(N) TX(R) FF FF FF FF FF FF FF FF

RX ADDRESS

Channel #1/#2 address	0 1 2 3 4 5 6 7 8 9 A B C D E F
Buffer input data	RX(A) RX(N) RX(R) — RX(A) RX(N) RX(R) 00 00 04 02 02 0C 03 00 FF FF FF FF FF FF FF FF
Channel #3/#4 address	10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D 1E 1F
Buffer input data	RX(A) RX(N) RX(R) — RX(A) RX(N) RX(R) FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
Channel #5/#6 address	20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F
Channel #99 address	310 311 312 313 314 315 316 317 318 319 31A 31B 31C 31D 31E 31F
Buffer input data	RX(A) RX(N) RX(R) FF FF FF FF FF FF FF FF

Note: An FF data input, though applied to the ROM in programming the ROM, fails to be written into it.

A - D CONVERSION LIST (1)

No.	Code	No.	Code	No.	Code	No.	Code	No.	Code	No.	Code	No.	Code	No.	Code
1	1 0	76	C 4	151	7 9	226	2 E	301	D 2 1	376	B 7 1	451	3 C 1	526	E 0 2
2	2 0	77	D 4	152	8 9	227	3 E	302	E 2 1	377	9 7 1	452	4 C 1	527	F 0 2
3	3 0	78	E 4	153	9 9	228	4 E	303	F 2 1	378	A 7 1	453	5 C 1	528	0 1 2
4	4 0	79	F 4	154	A 9	229	5 E	304	0 3 1	379	B 7 1	454	6 C 1	529	1 1 2
5	5 0	80	0 5	155	B 9	230	6 E	305	1 3 1	380	C 7 1	455	7 C 1	530	2 1 2
6	6 0	81	1 5	156	C 9	231	7 E	306	2 3 1	381	D 7 1	456	8 C 1	531	3 1 2
7	7 0	82	2 5	157	D 9	232	8 E	307	3 3 1	382	E 7 1	457	9 C 1	532	4 1 2
8	8 0	83	3 5	158	E 9	233	9 E	308	4 3 1	383	F 7 1	458	A C 1	533	5 1 2
9	9 0	84	4 5	159	F 9	234	A E	309	5 3 1	384	0 8 1	459	B C 1	534	6 1 2
10	A 0	85	5 5	160	0 A	235	B E	310	6 3 1	385	1 8 1	460	C C 1	535	7 1 2
11	B 0	86	6 5	161	1 A	236	C E	311	7 3 1	386	2 8 1	461	D C 1	536	8 1 2
12	C 0	87	7 5	162	2 A	237	D E	312	8 3 1	387	3 8 1	462	E C 1	537	9 1 2
13	D 0	88	8 5	163	3 A	238	E E	313	9 3 1	388	4 8 1	463	F C 1	538	A 1 2
14	E 0	89	9 5	164	4 A	239	F E	314	A 3 1	389	5 8 1	464	0 D 1	539	B 1 2
15	F 0	90	A 5	165	5 A	240	0 F	315	B 3 1	390	6 8 1	465	1 D 1	540	C 1 2
16	0 1	91	B 5	166	6 A	241	1 F	316	C 3 1	391	7 8 1	466	2 D 1	541	D 1 2
17	1 1	92	C 5	167	7 A	242	2 F	317	D 3 1	392	8 8 1	467	3 D 1	542	E 1 2
18	2 1	93	D 5	168	8 A	243	3 F	318	E 3 1	393	9 8 1	468	4 D 1	543	F 1 2
19	3 1	94	E 5	169	9 A	244	4 F	319	F 3 1	394	A 8 1	469	5 D 1	544	0 2 2
20	4 1	95	F 5	170	A A	245	5 F	320	0 4 1	395	B 8 1	470	6 D 1	545	1 2 2
21	5 1	96	0 6	171	B A	246	6 F	321	1 4 1	396	C 8 1	471	7 D 1	546	2 2 2
22	6 1	97	1 6	172	C A	247	7 F	322	2 4 1	397	D 8 1	472	8 D 1	647	3 2 2
23	7 1	98	2 6	173	D A	248	8 F	323	3 4 1	398	E 8 1	473	9 D 1	548	4 2 2
24	8 1	99	3 6	174	E A	249	9 F	324	4 4 1	399	F 8 1	474	A D 1	549	5 2 2
25	9 1	100	4 6	175	F A	250	A F	325	5 4 1	400	0 9 1	475	B D 1	550	6 2 2
26	A 1	101	5 6	176	0 B	251	B F	326	6 4 1	401	1 9 1	476	C D 1	551	7 2 2
27	B 1	102	6 6	177	1 B	252	C F	327	7 4 1	402	2 9 1	477	D D 1	552	8 2 2
28	C 1	103	7 6	178	2 B	253	D F	328	8 4 1	403	3 9 1	478	E D 1	553	9 2 2
29	D 1	104	8 6	179	3 B	254	E F	329	9 4 1	404	4 9 1	479	F D 1	554	A 2 2
30	E 1	105	9 6	180	4 B	255	F F	330	A 4 1	405	5 9 1	480	0 E 1	555	B 2 2
31	F 1	106	A 6	181	5 B	256	0 0 1	331	B 4 1	406	6 9 1	481	1 E 1	556	C 2 2
32	0 2	107	B 6	182	6 B	257	1 0 1	332	C 4 1	407	7 9 1	482	2 E 1	557	D 2 2
33	1 2	108	C 6	183	7 B	258	2 0 1	333	D 4 1	408	8 9 1	483	3 E 1	558	E 2 2
34	2 2	109	D 6	184	8 B	259	3 0 1	334	E 4 1	409	9 9 1	484	4 E 1	559	F 2 2
35	3 2	110	E 6	185	9 B	260	4 0 1	335	F 4 1	410	A 9 1	485	5 E 1	560	0 3 2
36	4 2	111	F 6	186	A B	261	5 0 1	336	0 5 1	411	B 9 1	486	6 E 1	561	1 3 2
37	5 2	112	0 7	187	B B	262	6 0 1	337	1 5 1	412	C 9 1	487	7 E 1	562	2 3 2
38	6 2	113	1 7	188	C B	263	7 0 1	338	2 5 1	413	D 9 1	488	8 E 1	563	3 3 2
39	7 2	114	2 7	189	D B	264	8 0 1	339	3 5 1	414	E 9 1	489	9 E 1	564	4 3 2
40	8 2	115	3 7	190	E B	265	9 0 1	340	4 5 1	415	F 9 1	490	A E 1	565	5 3 2
41	9 2	116	4 7	191	F B	266	A 0 1	341	5 5 1	416	0 A 1	491	B E 1	566	6 3 2
42	A 2	117	5 7	192	0 C	267	B 0 1	342	6 5 1	417	1 A 1	492	C E 1	567	7 3 2
43	B 2	118	6 7	193	1 C	268	C 0 1	343	7 5 1	418	2 A 1	493	D E 1	568	8 3 2
44	C 2	119	7 7	194	2 C	269	D 0 1	344	8 5 1	419	3 A 1	494	E E 1	569	9 3 2
45	D 2	120	8 7	195	3 C	270	E 0 1	345	9 5 1	420	4 A 1	495	F E 1	570	A 3 2
46	E 2	121	9 7	196	4 C	271	F 0 1	346	A 5 1	421	5 A 1	496	0 F 1	571	B 3 2
47	F 2	122	A 7	197	5 C	272	0 1 1	347	B 5 1	422	6 A 1	497	1 F 1	572	C 3 2
48	0 3	123	B 7	198	6 C	273	1 1 1	348	C 5 1	423	7 A 1	498	2 F 1	573	D 3 2
49	1 3	124	C 7	199	7 C	274	2 1 1	349	D 5 1	424	8 A 1	499	3 F 1	574	E 3 2
50	2 3	125	D 7	200	8 C	275	3 1 1	350	E 5 1	425	9 A 1	500	4 F 1	575	F 3 2
51	3 3	126	E 7	201	9 C	276	4 1 1	351	F 5 1	426	A A 1	501	5 F 1	576	0 4 2
52	4 3	127	F 7	202	A C	277	5 1 1	352	0 6 1	427	B A 1	502	6 F 1	577	1 4 2
53	5 3	128	0 8	203	B C	278	6 1 1	353	1 6 1	428	C A 1	503	7 F 1	578	2 4 2
54	6 3	129	1 8	204	C C	279	7 1 1	354	2 6 1	429	D A 1	504	8 F 1	579	3 4 2
55	7 3	130	2 8	205	D C	280	8 1 1	355	3 6 1	430	E A 1	505	9 F 1	580	4 4 2
56	8 3	131	3 8	206	E C	281	9 1 1	356	4 6 1	431	F A 1	506	A F 1	581	5 4 2
57	9 3	132	4 8	207	F C	282	A 1 1	357	5 6 1	432	0 B 1	507	B F 1	582	6 4 2
58	A 3	133	5 8	208	0 D	283	B 1 1	358	6 6 1	433	1 B 1	508	C F 1	583	7 4 2
59	B 3	134	6 8	209	1 D	284	C 1 1	359	7 6 1	434	2 B 1	509	D F 1	584	8 4 2
60	C 3	135	7 8	210	2 D	285	D 1 1	360	8 6 1	435	3 B 1	510	E F 1	585	9 4 2
61	D 3	136	8 8	211	3 D	286	E 1 1	361	9 6 1	436	4 B 1	511	F F 1	586	A 4 2
62	E 3	137	9 8	212	4 D	287	F 1 1	362	A 6 1	437	5 B 1	512	0 0 2	587	B 4 2
63	F 3	138	A 8	213	5 D	288	0 2 1	363	B 6 1	438	6 B 1	513	1 0 2	588	C 4 2
64	0 4	139	B 8	214	6 D	289	1 2 1	364	C 6 1	439	7 B 1	514	2 0 2	589	D 4 2
65	1 4	140	C 8	215	7 D	290	2 2 1	365	D 6 1	440	8 B 1	515	3 0 2	590	E 4 2
66	2 4	141	D 8	216	8 D	291	3 2 1	366	E 6 1	441	9 B 1	516	4 0 2	591	F 4 2
67	3 4	142	E 8	217	9 D	292	4 2 1	367	F 6 1	442	A B 1	517	5 0 2	592	0 5 2
68	4 4	143	F 8	218	A D	293	5 2 1	368	0 7 1	443	B B 1	518	6 0 2	593	1 5 2
69	5 4	144	0 9	219	B D	294	6 2 1	369	1 7 1	444	C B 1	519	7 0 2	594	2 5 2
70	6 4	145	1 9	220	C D	295	7 2 1	370	2 7 1	445	D B 1	520	8 0 2	595	3 5 2
71	7 4	146	2 9	221	D D	296	8 2 1	371	3 7 1	446	E B 1	521	9 0 2	596	4 5 2
72	8 4	147	3 9	222	E D	297	9 2 1	372	4 7 1	447	F B 1	522	A 0 2	597	5 5 2
73	9 4	148	4 9	223	F D	298	A 2 1	373	5 7 1	448	0 C 1	523	B 0 2	598	6 5 2
74	A 4	149	5 9	224	0 E	299	B 2 1	374	6 7 1	449	1 C 1	524	C 0 2	599	7 5 2
75	B 4	150	6 9	225	1 E	300	C 2 1	375	7 7 1	450	2 C 1	525	D 0 2	600	8 5 2
0-75		76-150		151-225		226-300		301-375		376-450		451-525		526-600	

A - D CONVERSION LIST (2)

No.	Code	No.	Code	No.	Code	No.	Code	No.	Code	No.	Code
601	9 5 2	676	4 A 2	751	F E 2	826	A 3 3	901	5 8 3	976	0 D 3
602	A 5 2	677	5 A 2	752	0 F 2	827	B 3 3	902	6 8 3	977	1 D 3
603	B 5 2	678	6 A 2	753	1 F 2	828	C 3 3	903	7 8 3	978	2 D 3
604	C 5 2	679	7 A 2	754	2 F 2	829	D 3 3	904	8 8 3	979	3 D 3
605	D 5 2	680	8 A 2	755	3 F 2	830	E 3 3	905	9 8 3	980	4 D 3
606	E 5 2	681	9 A 2	756	4 F 2	831	F 3 3	906	A 8 3	981	5 D 3
607	F 5 2	682	A A 2	757	5 F 2	832	0 4 3	907	B 8 3	982	6 D 3
608	0 6 2	683	B A 2	758	6 F 2	833	1 4 3	908	C 8 3	983	7 D 3
609	1 6 2	684	C A 2	759	7 F 2	834	2 4 3	909	D 8 3	984	8 D 3
610	2 6 2	685	D A 2	760	8 F 2	835	3 4 3	910	E 8 3	985	9 D 3
611	3 6 2	686	E A 2	761	9 F 2	836	4 4 3	911	F 8 3	986	A D 3
612	4 6 2	687	F A 2	762	A F 2	837	5 4 3	912	0 9 3	987	B D 3
613	5 6 2	688	0 B 2	763	B F 2	838	6 4 3	913	1 9 3	988	C D 3
614	6 6 2	689	1 B 2	764	C F 2	839	7 4 3	914	2 9 3	989	D D 3
615	7 6 2	690	2 B 2	765	D F 2	840	8 4 3	915	3 9 3	990	E D 3
616	8 6 2	691	3 B 2	766	E F 2	841	9 4 3	916	4 9 3	991	F D 3
617	9 6 2	692	4 B 2	767	F F 2	842	A 4 3	917	5 9 3	992	0 E 3
618	A 6 2	693	5 B 2	768	0 0 3	843	B 4 3	918	6 9 3	993	1 E 3
619	B 6 2	694	6 B 2	769	1 0 3	844	C 4 3	919	7 9 3	994	2 E 3
620	C 6 2	695	7 B 2	770	2 0 3	845	D 4 3	920	8 9 3	995	3 E 3
621	D 6 2	696	8 B 2	771	3 0 3	846	E 4 3	921	9 9 3	996	4 E 3
622	E 6 2	697	9 B 2	772	4 0 3	847	F 4 3	922	A 9 3	997	5 E 3
623	F 6 2	698	A B 2	773	5 0 3	848	0 5 3	923	B 9 3	998	6 E 3
624	0 7 2	699	B B 2	774	6 0 3	849	1 5 3	924	C 9 3	999	7 E 3
625	1 7 2	700	C B 2	775	7 0 3	850	2 5 3	925	D 9 3	1000	8 E 3
626	2 7 2	701	D B 2	776	8 0 3	851	3 5 3	926	E 9 3		
627	3 7 2	702	E B 2	777	9 0 3	852	4 5 3	927	F 9 3		
628	4 7 2	703	F B 2	778	A 0 3	853	5 5 3	928	0 A 3		
629	5 7 2	704	0 C 2	779	B 0 3	854	6 5 3	929	1 A 3		
630	6 7 2	705	1 C 2	780	C 0 3	855	7 5 3	930	2 A 3		
631	7 7 2	706	2 C 2	781	D 0 3	856	8 5 3	931	3 A 3		
632	8 7 2	707	3 C 2	782	E 0 3	857	9 5 3	932	4 A 3		
633	9 7 2	708	4 C 2	783	F 0 3	858	A 5 3	933	5 A 3		
634	A 7 2	709	5 C 2	784	0 1 3	859	B 5 3	934	6 A 3		
635	B 7 2	710	6 C 2	785	1 1 3	860	C 5 3	935	7 A 3		
636	C 7 2	711	7 C 2	786	2 1 3	861	D 5 3	936	8 A 3		
637	D 7 2	712	8 C 2	787	3 1 3	862	E 5 3	937	9 A 3		
638	E 7 2	713	9 C 2	788	4 1 3	863	F 5 3	938	A A 3		
639	F 7 2	714	A C 2	789	5 1 3	864	0 6 3	939	B A 3		
640	0 8 2	715	B C 2	790	6 1 3	865	1 6 3	940	C A 3		
641	1 8 2	716	C C 2	791	7 1 3	866	2 6 3	941	D A 3		
642	2 8 2	717	D C 2	792	8 1 3	867	3 6 3	942	E A 3		
643	3 8 2	718	E C 2	793	9 1 3	868	4 6 3	943	F A 3		
644	4 8 2	719	F C 2	794	A 1 3	869	5 6 3	944	0 B 3		
645	5 8 2	720	0 D 2	795	B 1 3	870	6 6 3	945	1 B 3		
646	6 8 2	721	1 D 2	796	C 1 3	871	7 6 3	946	2 B 3		
647	7 8 2	722	2 D 2	797	D 1 3	872	8 6 3	947	3 B 3		
648	8 8 2	723	3 D 2	798	E 1 3	873	9 6 3	948	4 B 3		
649	9 8 2	724	4 D 2	799	F 1 3	874	A 6 3	949	5 B 3		
650	A 8 2	725	5 D 2	800	0 2 3	875	B 6 3	950	6 B 3		
651	B 8 2	726	6 D 2	801	1 2 3	876	C 6 3	951	7 B 3		
652	C 8 2	727	7 D 2	802	2 2 3	877	D 6 3	952	8 B 3		
653	D 8 2	728	8 D 2	803	3 2 3	878	E 6 3	953	9 B 3		
654	E 8 2	729	9 D 2	804	4 2 3	879	F 6 3	954	A B 3		
655	F 8 2	730	A D 2	805	5 2 3	880	0 7 3	955	B B 3		
656	0 9 2	731	B D 2	806	6 2 3	881	1 7 3	956	C B 3		
657	1 9 2	732	C D 2	807	7 2 3	882	2 7 3	957	D B 3		
658	2 9 2	733	D D 2	808	8 2 3	883	3 7 3	958	E B 3		
659	3 9 2	734	E D 2	809	9 2 3	884	4 7 3	959	F B 3		
660	4 9 2	735	F D 2	810	A 2 3	885	5 7 3	960	0 C 3		
661	5 9 2	736	0 E 2	811	B 2 3	886	6 7 3	961	1 C 3		
662	6 9 2	737	1 E 2	812	C 2 3	887	7 7 3	962	2 C 3		
663	7 9 2	738	2 E 2	813	D 2 3	888	8 7 3	963	3 C 3		
664	8 9 2	739	3 E 2	814	E 2 3	889	9 7 3	964	4 C 3		
665	9 9 2	740	4 E 2	815	F 2 3	890	A 7 3	965	5 C 3		
666	A 9 2	741	5 E 2	816	0 3 3	891	B 7 3	966	6 C 3		
667	B 9 2	742	6 E 2	817	1 3 3	892	C 7 3	967	7 C 3		
668	C 9 2	743	7 E 2	818	2 3 3	893	D 7 3	968	8 C 3		
669	D 9 2	744	8 E 2	819	3 3 3	894	E 7 3	969	9 C 3		
670	E 9 2	745	9 E 2	820	4 3 3	895	F 7 3	970	A C 3		
671	F 9 2	746	A E 2	821	5 3 3	896	0 8 3	971	B C 3		
672	0 A 2	747	B E 2	822	6 3 3	897	1 8 3	972	C C 3		
673	1 A 2	748	C E 2	823	7 3 3	898	2 8 3	973	D C 3		
674	2 A 2	749	D E 2	824	8 3 3	899	3 8 3	974	E C 3		
675	3 A 2	750	E E 2	825	9 3 3	900	4 8 3	975	F C 3		
601-675		676-750		751-825		826-900		901-975		976-1000	

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
136.000	00	00	04	05	01	08	07	00	00	00	0F	08	00	0C	03	00
136.025	04	00	04	05	01	08	07	00	02	00	0F	08	00	0C	03	00
136.050	08	00	04	05	01	08	07	00	04	00	0F	08	00	0C	03	00
136.075	0C	00	04	05	01	08	07	00	06	00	0F	08	00	0C	03	00
136.100	00	01	04	05	01	08	07	00	08	00	0F	08	00	0C	03	00
136.125	04	01	04	05	01	08	07	00	0A	00	0F	08	00	0C	03	00
136.150	08	01	04	05	01	08	07	00	0C	00	0F	08	00	0C	03	00
136.175	0C	01	04	05	01	08	07	00	0E	00	0F	08	00	0C	03	00
136.200	00	02	04	05	01	08	07	00	00	01	0F	08	00	0C	03	00
136.225	04	02	04	05	01	08	07	00	02	01	0F	08	00	0C	03	00
136.250	08	02	04	05	01	08	07	00	04	01	0F	08	00	0C	03	00
136.275	0C	02	04	05	01	08	07	00	06	01	0F	08	00	0C	03	00
136.300	00	03	04	05	01	08	07	00	08	01	0F	08	00	0C	03	00
136.325	04	03	04	05	01	08	07	00	0A	01	0F	08	00	0C	03	00
136.350	08	03	04	05	01	08	07	00	0C	01	0F	08	00	0C	03	00
136.375	0C	03	04	05	01	08	07	00	0E	01	0F	08	00	0C	03	00
136.400	00	00	05	05	01	08	07	00	00	02	0F	08	00	0C	03	00
136.425	04	00	05	05	01	08	07	00	02	02	0F	08	00	0C	03	00
136.450	08	00	05	05	01	08	07	00	04	02	0F	08	00	0C	03	00
136.475	0C	00	05	05	01	08	07	00	06	02	0F	08	00	0C	03	00
136.500	00	01	05	05	01	08	07	00	08	02	0F	08	00	0C	03	00
136.525	04	01	05	05	01	08	07	00	0A	02	0F	08	00	0C	03	00
136.550	08	01	05	05	01	08	07	00	0C	02	0F	08	00	0C	03	00
136.575	0C	01	05	05	01	08	07	00	0E	02	0F	08	00	0C	03	00
136.600	00	02	05	05	01	08	07	00	00	03	0F	08	00	0C	03	00
136.625	04	02	05	05	01	08	07	00	02	03	0F	08	00	0C	03	00
136.650	08	02	05	05	01	08	07	00	04	03	0F	08	00	0C	03	00
136.675	0C	02	05	05	01	08	07	00	06	03	0F	08	00	0C	03	00
136.700	00	03	05	05	01	08	07	00	08	03	0F	08	00	0C	03	00
136.725	04	03	05	05	01	08	07	00	0A	03	0F	08	00	0C	03	00
136.750	08	03	05	05	01	08	07	00	0C	03	0F	08	00	0C	03	00
136.775	0C	03	05	05	01	08	07	00	0E	03	0F	08	00	0C	03	00
136.800	00	00	06	05	01	08	07	00	00	00	00	09	00	0C	03	00
136.825	04	00	06	05	01	08	07	00	02	00	00	09	00	0C	03	00
136.850	08	00	06	05	01	08	07	00	04	00	00	09	00	0C	03	00
136.875	0C	00	06	05	01	08	07	00	06	00	00	09	00	0C	03	00
136.900	00	01	06	05	01	08	07	00	08	00	00	09	00	0C	03	00
136.925	04	01	06	05	01	08	07	00	0A	00	00	09	00	0C	03	00
136.950	08	01	06	05	01	08	07	00	0C	00	00	09	00	0C	03	00
136.975	0C	01	06	05	01	08	07	00	0E	00	00	09	00	0C	03	00
137.000	00	02	06	05	01	08	07	00	00	01	00	09	00	0C	03	00
137.025	04	02	06	05	01	08	07	00	02	01	00	09	00	0C	03	00
137.050	08	02	06	05	01	08	07	00	04	01	00	09	00	0C	03	00
137.075	0C	02	06	05	01	08	07	00	06	01	00	09	00	0C	03	00
137.100	00	03	06	05	01	08	07	00	08	01	00	09	00	0C	03	00
137.125	04	03	06	05	01	08	07	00	0A	01	00	09	00	0C	03	00
137.150	08	03	06	05	01	08	07	00	0C	01	00	09	00	0C	03	00
137.175	0C	03	06	05	01	08	07	00	0E	01	00	09	00	0C	03	00
137.200	00	00	07	05	01	08	07	00	00	02	00	09	00	0C	03	00
137.225	04	00	07	05	01	08	07	00	02	02	00	09	00	0C	03	00
137.250	08	00	07	05	01	08	07	00	04	02	00	09	00	0C	03	00
137.275	0C	00	07	05	01	08	07	00	06	02	00	09	00	0C	03	00
137.300	00	01	07	05	01	08	07	00	08	02	00	09	00	0C	03	00
137.325	04	01	07	05	01	08	07	00	0A	02	00	09	00	0C	03	00
137.350	08	01	07	05	01	08	07	00	0C	02	00	09	00	0C	03	00
137.375	0C	01	07	05	01	08	07	00	0E	02	00	09	00	0C	03	00
137.400	00	02	07	05	01	08	07	00	00	03	00	09	00	0C	03	00
137.425	04	02	07	05	01	08	07	00	02	03	00	09	00	0C	03	00
137.450	08	02	07	05	01	08	07	00	04	03	00	09	00	0C	03	00
137.475	0C	02	07	05	01	08	07	00	06	03	00	09	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
137.500	00	03	07	05	01	08	07	00	08	03	00	09	00	0C	03	00
137.525	04	03	07	05	01	08	07	00	0A	03	00	09	00	0C	03	00
137.550	08	03	07	05	01	08	07	00	0C	03	00	09	00	0C	03	00
137.575	0C	03	07	05	01	08	07	00	0E	03	00	09	00	0C	03	00
137.600	00	00	08	05	01	08	07	00	00	00	01	09	00	0C	03	00
137.625	04	00	08	05	01	08	07	00	02	00	01	09	00	0C	03	00
137.650	08	00	08	05	01	08	07	00	04	00	01	09	00	0C	03	00
137.675	0C	00	08	05	01	08	07	00	06	00	01	09	00	0C	03	00
137.700	00	01	08	05	01	08	07	00	08	00	01	09	00	0C	03	00
137.725	04	01	08	05	01	08	07	00	0A	00	01	09	00	0C	03	00
137.750	08	01	08	05	01	08	07	00	0C	00	01	09	00	0C	03	00
137.775	0C	01	08	05	01	08	07	00	0E	00	01	09	00	0C	03	00
137.800	00	02	08	05	01	08	07	00	00	01	01	09	00	0C	03	00
137.825	04	02	08	05	01	08	07	00	02	01	01	09	00	0C	03	00
137.850	08	02	08	05	01	08	07	00	04	01	01	09	00	0C	03	00
137.875	0C	02	08	05	01	08	07	00	06	01	01	09	00	0C	03	00
137.900	00	03	08	05	01	08	07	00	08	01	01	09	00	0C	03	00
137.925	04	03	08	05	01	08	07	00	0A	01	01	09	00	0C	03	00
137.950	08	03	08	05	01	08	07	00	0C	01	01	09	00	0C	03	00
137.975	0C	03	08	05	01	08	07	00	0E	01	01	09	00	0C	03	00
138.000	00	00	09	05	01	08	07	00	00	02	01	09	00	0C	03	00
138.025	04	00	09	05	01	08	07	00	02	02	01	09	00	0C	03	00
138.050	08	00	09	05	01	08	07	00	04	02	01	09	00	0C	03	00
138.075	0C	00	09	05	01	08	07	00	06	02	01	09	00	0C	03	00
138.100	00	01	09	05	01	08	07	00	08	02	01	09	00	0C	03	00
138.125	04	01	09	05	01	08	07	00	0A	02	01	09	00	0C	03	00
138.150	08	01	09	05	01	08	07	00	0C	02	01	09	00	0C	03	00
138.175	0C	01	09	05	01	08	07	00	0E	02	01	09	00	0C	03	00
138.200	00	02	09	05	01	08	07	00	00	03	01	09	00	0C	03	00
138.225	04	02	09	05	01	08	07	00	02	03	01	09	00	0C	03	00
138.250	08	02	09	05	01	08	07	00	04	03	01	09	00	0C	03	00
138.275	0C	02	09	05	01	08	07	00	06	03	01	09	00	0C	03	00
138.300	00	03	09	05	01	08	07	00	08	03	01	09	00	0C	03	00
138.325	04	03	09	05	01	08	07	00	0A	03	01	09	00	0C	03	00
138.350	08	03	09	05	01	08	07	00	0C	03	01	09	00	0C	03	00
138.375	0C	03	09	05	01	08	07	00	0E	03	01	09	00	0C	03	00
138.400	00	00	0A	05	01	08	07	00	00	00	02	09	00	0C	03	00
138.425	04	00	0A	05	01	08	07	00	02	00	02	09	00	0C	03	00
138.450	08	00	0A	05	01	08	07	00	04	00	02	09	00	0C	03	00
138.475	0C	00	0A	05	01	08	07	00	06	00	02	09	00	0C	03	00
138.500	00	01	0A	05	01	08	07	00	08	00	02	09	00	0C	03	00
138.525	04	01	0A	05	01	08	07	00	0A	00	02	09	00	0C	03	00
138.550	08	01	0A	05	01	08	07	00	0C	00	02	09	00	0C	03	00
138.575	0C	01	0A	05	01	08	07	00	0E	00	02	09	00	0C	03	00
138.600	00	02	0A	05	01	08	07	00	00	01	02	09	00	0C	03	00
138.625	04	02	0A	05	01	08	07	00	02	01	02	09	00	0C	03	00
138.650	08	02	0A	05	01	08	07	00	04	01	02	09	00	0C	03	00
138.675	0C	02	0A	05	01	08	07	00	06	01	02	09	00	0C	03	00
138.700	00	03	0A	05	01	08	07	00	08	01	02	09	00	0C	03	00
138.725	04	03	0A	05	01	08	07	00	0A	01	02	09	00	0C	03	00
138.750	08	03	0A	05	01	08	07	00	0C	01	02	09	00	0C	03	00
138.775	0C	03	0A	05	01	08	07	00	0E	01	02	09	00	0C	03	00
138.800	00	00	0B	05	01	08	07	00	00	02	02	09	00	0C	03	00
138.825	04	00	0B	05	01	08	07	00	02	02	02	09	00	0C	03	00
138.850	08	00	0B	05	01	08	07	00	04	02	02	09	00	0C	03	00
138.875	0C	00	0B	05	01	08	07	00	06	02	02	09	00	0C	03	00
138.900	00	01	0B	05	01	08	07	00	08	02	02	09	00	0C	03	00
138.925	04	01	0B	05	01	08	07	00	0A	02	02	09	00	0C	03	00
138.950	08	01	0B	05	01	08	07	00	0C	02	02	09	00	0C	03	00
138.975	0C	01	0B	05	01	08	07	00	0E	02	02	09	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
139.000	00	02	0B	05	01	08	07	00	00	03	02	09	00	0C	03	00
139.025	04	02	0B	05	01	08	07	00	02	03	02	09	00	0C	03	00
139.050	08	02	0B	05	01	08	07	00	04	03	02	09	00	0C	03	00
139.075	0C	02	0B	05	01	08	07	00	06	03	02	09	00	0C	03	00
139.100	00	03	0B	05	01	08	07	00	08	03	02	09	00	0C	03	00
139.125	04	03	0B	05	01	08	07	00	0A	03	02	09	00	0C	03	00
139.150	08	03	0B	05	01	08	07	00	0C	03	02	09	00	0C	03	00
139.175	0C	03	0B	05	01	08	07	00	0E	03	02	09	00	0C	03	00
139.200	00	00	0C	05	01	08	07	00	00	00	03	09	00	0C	03	00
139.225	04	00	0C	05	01	08	07	00	02	00	03	09	00	0C	03	00
139.250	08	00	0C	05	01	08	07	00	04	00	03	09	00	0C	03	00
139.275	0C	00	0C	05	01	08	07	00	06	00	03	09	00	0C	03	00
139.300	00	01	0C	05	01	08	07	00	08	00	03	09	00	0C	03	00
139.325	04	01	0C	05	01	08	07	00	0A	00	03	09	00	0C	03	00
139.350	08	01	0C	05	01	08	07	00	0C	00	03	09	00	0C	03	00
139.375	0C	01	0C	05	01	08	07	00	0E	00	03	09	00	0C	03	00
139.400	00	02	0C	05	01	08	07	00	00	01	03	09	00	0C	03	00
139.425	04	02	0C	05	01	08	07	00	02	01	03	09	00	0C	03	00
139.450	08	02	0C	05	01	08	07	00	04	01	03	09	00	0C	03	00
139.475	0C	02	0C	05	01	08	07	00	06	01	03	09	00	0C	03	00
139.500	00	03	0C	05	01	08	07	00	08	01	03	09	00	0C	03	00
139.525	04	03	0C	05	01	08	07	00	0A	01	03	09	00	0C	03	00
139.550	08	03	0C	05	01	08	07	00	0C	01	03	09	00	0C	03	00
139.575	0C	03	0C	05	01	08	07	00	0E	01	03	09	00	0C	03	00
139.600	00	00	0D	05	01	08	07	00	00	02	03	09	00	0C	03	00
139.625	04	00	0D	05	01	08	07	00	02	02	03	09	00	0C	03	00
139.650	08	00	0D	05	01	08	07	00	04	02	03	09	00	0C	03	00
139.675	0C	00	0D	05	01	08	07	00	06	02	03	09	00	0C	03	00
139.700	00	01	0D	05	01	08	07	00	08	02	03	09	00	0C	03	00
139.725	04	01	0D	05	01	08	07	00	0A	02	03	09	00	0C	03	00
139.750	08	01	0D	05	01	08	07	00	0C	02	03	09	00	0C	03	00
139.775	0C	01	0D	05	01	08	07	00	0E	02	03	09	00	0C	03	00
139.800	00	02	0D	05	01	08	07	00	00	03	03	09	00	0C	03	00
139.825	04	02	0D	05	01	08	07	00	02	03	03	09	00	0C	03	00
139.850	08	02	0D	05	01	08	07	00	04	03	03	09	00	0C	03	00
139.875	0C	02	0D	05	01	08	07	00	06	03	03	09	00	0C	03	00
139.900	00	03	0D	05	01	08	07	00	08	03	03	09	00	0C	03	00
139.925	04	03	0D	05	01	08	07	00	0A	03	03	09	00	0C	03	00
139.950	08	03	0D	05	01	08	07	00	0C	03	03	09	00	0C	03	00
139.975	0C	03	0D	05	01	08	07	00	0E	03	03	09	00	0C	03	00
140.000	00	00	0E	05	01	08	07	00	00	00	04	09	00	0C	03	00
140.025	04	00	0E	05	01	08	07	00	02	00	04	09	00	0C	03	00
140.050	08	00	0E	05	01	08	07	00	04	00	04	09	00	0C	03	00
140.075	0C	00	0E	05	01	08	07	00	06	00	04	09	00	0C	03	00
140.100	00	01	0E	05	01	08	07	00	08	00	04	09	00	0C	03	00
140.125	04	01	0E	05	01	08	07	00	0A	00	04	09	00	0C	03	00
140.150	08	01	0E	05	01	08	07	00	0C	00	04	09	00	0C	03	00
140.175	0C	01	0E	05	01	08	07	00	0E	00	04	09	00	0C	03	00
140.200	00	02	0E	05	01	08	07	00	00	01	04	09	00	0C	03	00
140.225	04	02	0E	05	01	08	07	00	02	01	04	09	00	0C	03	00
140.250	08	02	0E	05	01	08	07	00	04	01	04	09	00	0C	03	00
140.275	0C	02	0E	05	01	08	07	00	06	01	04	09	00	0C	03	00
140.300	00	03	0E	05	01	08	07	00	08	01	04	09	00	0C	03	00
140.325	04	03	0E	05	01	08	07	00	0A	01	04	09	00	0C	03	00
140.350	08	03	0E	05	01	08	07	00	0C	01	04	09	00	0C	03	00
140.375	0C	03	0E	05	01	08	07	00	0E	01	04	09	00	0C	03	00
140.400	00	00	0F	05	01	08	07	00	00	02	04	09	00	0C	03	00
140.425	04	00	0F	05	01	08	07	00	02	02	04	09	00	0C	03	00
140.450	08	00	0F	05	01	08	07	00	04	02	04	09	00	0C	03	00
140.475	0C	00	0F	05	01	08	07	00	06	02	04	09	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
140.500	00	01	0F	05	01	08	07	00	08	02	04	09	00	0C	03	00
140.525	04	01	0F	05	01	08	07	00	0A	02	04	09	00	0C	03	00
140.550	08	01	0F	05	01	08	07	00	0C	02	04	09	00	0C	03	00
140.575	0C	01	0F	05	01	08	07	00	0E	02	04	09	00	0C	03	00
140.600	00	02	0F	05	01	08	07	00	00	03	04	09	00	0C	03	00
140.625	04	02	0F	05	01	08	07	00	02	03	04	09	00	0C	03	00
140.650	08	02	0F	05	01	08	07	00	04	03	04	09	00	0C	03	00
140.675	0C	02	0F	05	01	08	07	00	06	03	04	09	00	0C	03	00
140.700	00	03	0F	05	01	08	07	00	08	03	04	09	00	0C	03	00
140.725	04	03	0F	05	01	08	07	00	0A	03	04	09	00	0C	03	00
140.750	08	03	0F	05	01	08	07	00	0C	03	04	09	00	0C	03	00
140.775	0C	03	0F	05	01	08	07	00	0E	03	04	09	00	0C	03	00
140.800	00	00	00	06	01	08	07	00	00	00	05	09	00	0C	03	00
140.825	04	00	00	06	01	08	07	00	02	00	05	09	00	0C	03	00
140.850	08	00	00	06	01	08	07	00	04	00	05	09	00	0C	03	00
140.875	0C	00	00	06	01	08	07	00	06	00	05	09	00	0C	03	00
140.900	00	01	00	06	01	08	07	00	08	00	05	09	00	0C	03	00
140.925	04	01	00	06	01	08	07	00	0A	00	05	09	00	0C	03	00
140.950	08	01	00	06	01	08	07	00	0C	00	05	09	00	0C	03	00
140.975	0C	01	00	06	01	08	07	00	0E	00	05	09	00	0C	03	00
141.000	00	02	00	06	01	08	07	00	00	01	05	09	00	0C	03	00
141.025	04	02	00	06	01	08	07	00	02	01	05	09	00	0C	03	00
141.050	08	02	00	06	01	08	07	00	04	01	05	09	00	0C	03	00
141.075	0C	02	00	06	01	08	07	00	06	01	05	09	00	0C	03	00
141.100	00	03	00	06	01	08	07	00	08	01	05	09	00	0C	03	00
141.125	04	03	00	06	01	08	07	00	0A	01	05	09	00	0C	03	00
141.150	08	03	00	06	01	08	07	00	0C	01	05	09	00	0C	03	00
141.175	0C	03	00	06	01	08	07	00	0E	01	05	09	00	0C	03	00
141.200	00	00	01	06	01	08	07	00	00	02	05	09	00	0C	03	00
141.225	04	00	01	06	01	08	07	00	02	02	05	09	00	0C	03	00
141.250	08	00	01	06	01	08	07	00	04	02	05	09	00	0C	03	00
141.275	0C	00	01	06	01	08	07	00	06	02	05	09	00	0C	03	00
141.300	00	01	01	06	01	08	07	00	08	02	05	09	00	0C	03	00
141.325	04	01	01	06	01	08	07	00	0A	02	05	09	00	0C	03	00
141.350	08	01	01	06	01	08	07	00	0C	02	05	09	00	0C	03	00
141.375	0C	01	01	06	01	08	07	00	0E	02	05	09	00	0C	03	00
141.400	00	02	01	06	01	08	07	00	00	03	05	09	00	0C	03	00
141.425	04	02	01	06	01	08	07	00	02	03	05	09	00	0C	03	00
141.450	08	02	01	06	01	08	07	00	04	03	05	09	00	0C	03	00
141.475	0C	02	01	06	01	08	07	00	06	03	05	09	00	0C	03	00
141.500	00	03	01	06	01	08	07	00	08	03	05	09	00	0C	03	00
141.525	04	03	01	06	01	08	07	00	0A	03	05	09	00	0C	03	00
141.550	08	03	01	06	01	08	07	00	0C	03	05	09	00	0C	03	00
141.575	0C	03	01	06	01	08	07	00	0E	03	05	09	00	0C	03	00
141.600	00	00	02	06	01	08	07	00	00	00	06	09	00	0C	03	00
141.625	04	00	02	06	01	08	07	00	02	00	06	09	00	0C	03	00
141.650	08	00	02	06	01	08	07	00	04	00	06	09	00	0C	03	00
141.675	0C	00	02	06	01	08	07	00	06	00	06	09	00	0C	03	00
141.700	00	01	02	06	01	08	07	00	08	00	06	09	00	0C	03	00
141.725	04	01	02	06	01	08	07	00	0A	00	06	09	00	0C	03	00
141.750	08	01	02	06	01	08	07	00	0C	00	06	09	00	0C	03	00
141.775	0C	01	02	06	01	08	07	00	0E	00	06	09	00	0C	03	00
141.800	00	02	02	06	01	08	07	00	00	01	06	09	00	0C	03	00
141.825	04	02	02	06	01	08	07	00	02	01	06	09	00	0C	03	00
141.850	08	02	02	06	01	08	07	00	04	01	06	09	00	0C	03	00
141.875	0C	02	02	06	01	08	07	00	06	01	06	09	00	0C	03	00
141.900	00	03	02	06	01	08	07	00	08	01	06	09	00	0C	03	00
141.925	04	03	02	06	01	08	07	00	0A	01	06	09	00	0C	03	00
141.950	08	03	02	06	01	08	07	00	0C	01	06	09	00	0C	03	00
141.975	0C	03	02	06	01	08	07	00	0E	01	06	09	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
142.000	00	00	03	06	01	08	07	00	00	02	06	09	00	0C	03	00
142.025	04	00	03	06	01	08	07	00	02	02	06	09	00	0C	03	00
142.050	08	00	03	06	01	08	07	00	04	02	06	09	00	0C	03	00
142.075	0C	00	03	06	01	08	07	00	06	02	06	09	00	0C	03	00
142.100	00	01	03	06	01	08	07	00	08	02	06	09	00	0C	03	00
142.125	04	01	03	06	01	08	07	00	0A	02	06	09	00	0C	03	00
142.150	08	01	03	06	01	08	07	00	0C	02	06	09	00	0C	03	00
142.175	0C	01	03	06	01	08	07	00	0E	02	06	09	00	0C	03	00
142.200	00	02	03	06	01	08	07	00	00	03	06	09	00	0C	03	00
142.225	04	02	03	06	01	08	07	00	02	03	06	09	00	0C	03	00
142.250	08	02	03	06	01	08	07	00	04	03	06	09	00	0C	03	00
142.275	0C	02	03	06	01	08	07	00	06	03	06	09	00	0C	03	00
142.300	00	03	03	06	01	08	07	00	08	03	06	09	00	0C	03	00
142.325	04	03	03	06	01	08	07	00	0A	03	06	09	00	0C	03	00
142.350	08	03	03	06	01	08	07	00	0C	03	06	09	00	0C	03	00
142.375	0C	03	03	06	01	08	07	00	0E	03	06	09	00	0C	03	00
142.400	00	00	04	06	01	08	07	00	00	00	07	09	00	0C	03	00
142.425	04	00	04	06	01	08	07	00	02	00	07	09	00	0C	03	00
142.450	08	00	04	06	01	08	07	00	04	00	07	09	00	0C	03	00
142.475	0C	00	04	06	01	08	07	00	06	00	07	09	00	0C	03	00
142.500	00	01	04	06	01	08	07	00	08	00	07	09	00	0C	03	00
142.525	04	01	04	06	01	08	07	00	0A	00	07	09	00	0C	03	00
142.550	08	01	04	06	01	08	07	00	0C	00	07	09	00	0C	03	00
142.575	0C	01	04	06	01	08	07	00	0E	00	07	09	00	0C	03	00
142.600	00	02	04	06	01	08	07	00	00	01	07	09	00	0C	03	00
142.625	04	02	04	06	01	08	07	00	02	01	07	09	00	0C	03	00
142.650	08	02	04	06	01	08	07	00	04	01	07	09	00	0C	03	00
142.675	0C	02	04	06	01	08	07	00	06	01	07	09	00	0C	03	00
142.700	00	03	04	06	01	08	07	00	08	01	07	09	00	0C	03	00
142.725	04	03	04	06	01	08	07	00	0A	01	07	09	00	0C	03	00
142.750	08	03	04	06	01	08	07	00	0C	01	07	09	00	0C	03	00
142.775	0C	03	04	06	01	08	07	00	0E	01	07	09	00	0C	03	00
142.800	00	00	05	06	01	08	07	00	00	02	07	09	00	0C	03	00
142.825	04	00	05	06	01	08	07	00	02	02	07	09	00	0C	03	00
142.850	08	00	05	06	01	08	07	00	04	02	07	09	00	0C	03	00
142.875	0C	00	05	06	01	08	07	00	06	02	07	09	00	0C	03	00
142.900	00	01	05	06	01	08	07	00	08	02	07	09	00	0C	03	00
142.925	04	01	05	06	01	08	07	00	0A	02	07	09	00	0C	03	00
142.950	08	01	05	06	01	08	07	00	0C	02	07	09	00	0C	03	00
142.975	0C	01	05	06	01	08	07	00	0E	02	07	09	00	0C	03	00
143.000	00	02	05	06	01	08	07	00	00	03	07	09	00	0C	03	00
143.025	04	02	05	06	01	08	07	00	02	03	07	09	00	0C	03	00
143.050	08	02	05	06	01	08	07	00	04	03	07	09	00	0C	03	00
143.075	0C	02	05	06	01	08	07	00	06	03	07	09	00	0C	03	00
143.100	00	03	05	06	01	08	07	00	08	03	07	09	00	0C	03	00
143.125	04	03	05	06	01	08	07	00	0A	03	07	09	00	0C	03	00
143.150	08	03	05	06	01	08	07	00	0C	03	07	09	00	0C	03	00
143.175	0C	03	05	06	01	08	07	00	0E	03	07	09	00	0C	03	00
143.200	00	00	06	06	01	08	07	00	00	00	08	09	00	0C	03	00
143.225	04	00	06	06	01	08	07	00	02	00	08	09	00	0C	03	00
143.250	08	00	06	06	01	08	07	00	04	00	08	09	00	0C	03	00
143.275	0C	00	06	06	01	08	07	00	06	00	08	09	00	0C	03	00
143.300	00	01	06	06	01	08	07	00	08	00	08	09	00	0C	03	00
143.325	04	01	06	06	01	08	07	00	0A	00	08	09	00	0C	03	00
143.350	08	01	06	06	01	08	07	00	0C	00	08	09	00	0C	03	00
143.375	0C	01	06	06	01	08	07	00	0E	00	08	09	00	0C	03	00
143.400	00	02	06	06	01	08	07	00	00	01	08	09	00	0C	03	00
143.425	04	02	06	06	01	08	07	00	02	01	08	09	00	0C	03	00
143.450	08	02	06	06	01	08	07	00	04	01	08	09	00	0C	03	00
143.475	0C	02	06	06	01	08	07	00	06	01	08	09	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
143.500	00	03	06	06	01	08	07	00	08	01	08	09	00	0C	03	00
143.525	04	03	06	06	01	08	07	00	0A	01	08	09	00	0C	03	00
143.550	08	03	06	06	01	08	07	00	0C	01	08	09	00	0C	03	00
143.575	0C	03	06	06	01	08	07	00	0E	01	08	09	00	0C	03	00
143.600	00	00	07	06	01	08	07	00	00	02	08	09	00	0C	03	00
143.625	04	00	07	06	01	08	07	00	02	02	08	09	00	0C	03	00
143.650	08	00	07	06	01	08	07	00	04	02	08	09	00	0C	03	00
143.675	0C	00	07	06	01	08	07	00	06	02	08	09	00	0C	03	00
143.700	00	01	07	06	01	08	07	00	08	02	08	09	00	0C	03	00
143.725	04	01	07	06	01	08	07	00	0A	02	08	09	00	0C	03	00
143.750	08	01	07	06	01	08	07	00	0C	02	08	09	00	0C	03	00
143.775	0C	01	07	06	01	08	07	00	0E	02	08	09	00	0C	03	00
143.800	00	02	07	06	01	08	07	00	00	03	08	09	00	0C	03	00
143.825	04	02	07	06	01	08	07	00	02	03	08	09	00	0C	03	00
143.850	08	02	07	06	01	08	07	00	04	03	08	09	00	0C	03	00
143.875	0C	02	07	06	01	08	07	00	06	03	08	09	00	0C	03	00
143.900	00	03	07	06	01	08	07	00	08	03	08	09	00	0C	03	00
143.925	04	03	07	06	01	08	07	00	0A	03	08	09	00	0C	03	00
143.950	08	03	07	06	01	08	07	00	0C	03	08	09	00	0C	03	00
143.975	0C	03	07	06	01	08	07	00	0E	03	08	09	00	0C	03	00
144.000	00	00	08	06	01	08	07	00	00	00	09	09	00	0C	03	00
144.025	04	00	08	06	01	08	07	00	02	00	09	09	00	0C	03	00
144.050	08	00	08	06	01	08	07	00	04	00	09	09	00	0C	03	00
144.075	0C	00	08	06	01	08	07	00	06	00	09	09	00	0C	03	00
144.100	00	01	08	06	01	08	07	00	08	00	09	09	00	0C	03	00
144.125	04	01	08	06	01	08	07	00	0A	00	09	09	00	0C	03	00
144.150	08	01	08	06	01	08	07	00	0C	00	09	09	00	0C	03	00
144.175	0C	01	08	06	01	08	07	00	0E	00	09	09	00	0C	03	00
144.200	00	02	08	06	01	08	07	00	00	01	09	09	00	0C	03	00
144.225	04	02	08	06	01	08	07	00	02	01	09	09	00	0C	03	00
144.250	08	02	08	06	01	08	07	00	04	01	09	09	00	0C	03	00
144.275	0C	02	08	06	01	08	07	00	06	01	09	09	00	0C	03	00
144.300	00	03	08	06	01	08	07	00	08	01	09	09	00	0C	03	00
144.325	04	03	08	06	01	08	07	00	0A	01	09	09	00	0C	03	00
144.350	08	03	08	06	01	08	07	00	0C	01	09	09	00	0C	03	00
144.375	0C	03	08	06	01	08	07	00	0E	01	09	09	00	0C	03	00
144.400	00	00	09	06	01	08	07	00	00	02	09	09	00	0C	03	00
144.425	04	00	09	06	01	08	07	00	02	02	09	09	00	0C	03	00
144.450	08	00	09	06	01	08	07	00	04	02	09	09	00	0C	03	00
144.475	0C	00	09	06	01	08	07	00	06	02	09	09	00	0C	03	00
144.500	00	01	09	06	01	08	07	00	08	02	09	09	00	0C	03	00
144.525	04	01	09	06	01	08	07	00	0A	02	09	09	00	0C	03	00
144.550	08	01	09	06	01	08	07	00	0C	02	09	09	00	0C	03	00
144.575	0C	01	09	06	01	08	07	00	0E	02	09	09	00	0C	03	00
144.600	00	02	09	06	01	08	07	00	00	03	09	09	00	0C	03	00
144.625	04	02	09	06	01	08	07	00	02	03	09	09	00	0C	03	00
144.650	08	02	09	06	01	08	07	00	04	03	09	09	00	0C	03	00
144.675	0C	02	09	06	01	08	07	00	06	03	09	09	00	0C	03	00
144.700	00	03	09	06	01	08	07	00	08	03	09	09	00	0C	03	00
144.725	04	03	09	06	01	08	07	00	0A	03	09	09	00	0C	03	00
144.750	08	03	09	06	01	08	07	00	0C	03	09	09	00	0C	03	00
144.775	0C	03	09	06	01	08	07	00	0E	03	09	09	00	0C	03	00
144.800	00	00	0A	06	01	08	07	00	00	00	0A	09	00	0C	03	00
144.825	04	00	0A	06	01	08	07	00	02	00	0A	09	00	0C	03	00
144.850	08	00	0A	06	01	08	07	00	04	00	0A	09	00	0C	03	00
144.875	0C	00	0A	06	01	08	07	00	06	00	0A	09	00	0C	03	00
144.900	00	01	0A	06	01	08	07	00	08	00	0A	09	00	0C	03	00
144.925	04	01	0A	06	01	08	07	00	0A	00	0A	09	00	0C	03	00
144.950	08	01	0A	06	01	08	07	00	0C	00	0A	09	00	0C	03	00
144.975	0C	01	0A	06	01	08	07	00	0E	00	0A	09	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
145.000	00	02	0A	06	01	08	07	00	00	01	0A	09	00	0C	03	00
145.025	04	02	0A	06	01	08	07	00	02	01	0A	09	00	0C	03	00
145.050	08	02	0A	06	01	08	07	00	04	01	0A	09	00	0C	03	00
145.075	0C	02	0A	06	01	08	07	00	06	01	0A	09	00	0C	03	00
145.100	00	03	0A	06	01	08	07	00	08	01	0A	09	00	0C	03	00
145.125	04	03	0A	06	01	08	07	00	0A	01	0A	09	00	0C	03	00
145.150	08	03	0A	06	01	08	07	00	0C	01	0A	09	00	0C	03	00
145.175	0C	03	0A	06	01	08	07	00	0E	01	0A	09	00	0C	03	00
145.200	00	00	0B	06	01	08	07	00	00	02	0A	09	00	0C	03	00
145.225	04	00	0B	06	01	08	07	00	02	02	0A	09	00	0C	03	00
145.250	08	00	0B	06	01	08	07	00	04	02	0A	09	00	0C	03	00
145.275	0C	00	0B	06	01	08	07	00	06	02	0A	09	00	0C	03	00
145.300	00	01	0B	06	01	08	07	00	08	02	0A	09	00	0C	03	00
145.325	04	01	0B	06	01	08	07	00	0A	02	0A	09	00	0C	03	00
145.350	08	01	0B	06	01	08	07	00	0C	02	0A	09	00	0C	03	00
145.375	0C	01	0B	06	01	08	07	00	0E	02	0A	09	00	0C	03	00
145.400	00	02	0B	06	01	08	07	00	00	03	0A	09	00	0C	03	00
145.425	04	02	0B	06	01	08	07	00	02	03	0A	09	00	0C	03	00
145.450	08	02	0B	06	01	08	07	00	04	03	0A	09	00	0C	03	00
145.475	0C	02	0B	06	01	08	07	00	06	03	0A	09	00	0C	03	00
145.500	00	03	0B	06	01	08	07	00	08	03	0A	09	00	0C	03	00
145.525	04	03	0B	06	01	08	07	00	0A	03	0A	09	00	0C	03	00
145.550	08	03	0B	06	01	08	07	00	0C	03	0A	09	00	0C	03	00
145.575	0C	03	0B	06	01	08	07	00	0E	03	0A	09	00	0C	03	00
145.600	00	00	0C	06	01	08	07	00	00	00	0B	09	00	0C	03	00
145.625	04	00	0C	06	01	08	07	00	02	00	0B	09	00	0C	03	00
145.650	08	00	0C	06	01	08	07	00	04	00	0B	09	00	0C	03	00
145.675	0C	00	0C	06	01	08	07	00	06	00	0B	09	00	0C	03	00
145.700	00	01	0C	06	01	08	07	00	08	00	0B	09	00	0C	03	00
145.725	04	01	0C	06	01	08	07	00	0A	00	0B	09	00	0C	03	00
145.750	08	01	0C	06	01	08	07	00	0C	00	0B	09	00	0C	03	00
145.775	0C	01	0C	06	01	08	07	00	0E	00	0B	09	00	0C	03	00
145.800	00	02	0C	06	01	08	07	00	00	01	0B	09	00	0C	03	00
145.825	04	02	0C	06	01	08	07	00	02	01	0B	09	00	0C	03	00
145.850	08	02	0C	06	01	08	07	00	04	01	0B	09	00	0C	03	00
145.875	0C	02	0C	06	01	08	07	00	06	01	0B	09	00	0C	03	00
145.900	00	03	0C	06	01	08	07	00	08	01	0B	09	00	0C	03	00
145.925	04	03	0C	06	01	08	07	00	0A	01	0B	09	00	0C	03	00
145.950	08	03	0C	06	01	08	07	00	0C	01	0B	09	00	0C	03	00
145.975	0C	03	0C	06	01	08	07	00	0E	01	0B	09	00	0C	03	00
146.000	00	00	0D	06	01	08	07	00	00	02	0B	09	00	0C	03	00
146.025	04	00	0D	06	01	08	07	00	02	02	0B	09	00	0C	03	00
146.050	08	00	0D	06	01	08	07	00	04	02	0B	09	00	0C	03	00
146.075	0C	00	0D	06	01	08	07	00	06	02	0B	09	00	0C	03	00
146.100	00	01	0D	06	01	08	07	00	08	02	0B	09	00	0C	03	00
146.125	04	01	0D	06	01	08	07	00	0A	02	0B	09	00	0C	03	00
146.150	08	01	0D	06	01	08	07	00	0C	02	0B	09	00	0C	03	00
146.175	0C	01	0D	06	01	08	07	00	0E	02	0B	09	00	0C	03	00
146.200	00	02	0D	06	01	08	07	00	00	03	0B	09	00	0C	03	00
146.225	04	02	0D	06	01	08	07	00	02	03	0B	09	00	0C	03	00
146.250	08	02	0D	06	01	08	07	00	04	03	0B	09	00	0C	03	00
146.275	0C	02	0D	06	01	08	07	00	06	03	0B	09	00	0C	03	00
146.300	00	03	0D	06	01	08	07	00	08	03	0B	09	00	0C	03	00
146.325	04	03	0D	06	01	08	07	00	0A	03	0B	09	00	0C	03	00
146.350	08	03	0D	06	01	08	07	00	0C	03	0B	09	00	0C	03	00
146.375	0C	03	0D	06	01	08	07	00	0E	03	0B	09	00	0C	03	00
146.400	00	00	0E	06	01	08	07	00	00	00	0C	09	00	0C	03	00
146.425	04	00	0E	06	01	08	07	00	02	00	0C	09	00	0C	03	00
146.450	08	00	0E	06	01	08	07	00	04	00	0C	09	00	0C	03	00
146.475	0C	00	0E	06	01	08	07	00	06	00	0C	09	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
146.500	00	01	0E	06	01	08	07	00	08	00	0C	09	00	0C	03	00
146.525	04	01	0E	06	01	08	07	00	0A	00	0C	09	00	0C	03	00
146.550	08	01	0E	06	01	08	07	00	0C	00	0C	09	00	0C	03	00
146.575	0C	01	0E	06	01	08	07	00	0E	00	0C	09	00	0C	03	00
146.600	00	02	0E	06	01	08	07	00	00	01	0C	09	00	0C	03	00
146.625	04	02	0E	06	01	08	07	00	02	01	0C	09	00	0C	03	00
146.650	08	02	0E	06	01	08	07	00	04	01	0C	09	00	0C	03	00
146.675	0C	02	0E	06	01	08	07	00	06	01	0C	09	00	0C	03	00
146.700	00	03	0E	06	01	08	07	00	08	01	0C	09	00	0C	03	00
146.725	04	03	0E	06	01	08	07	00	0A	01	0C	09	00	0C	03	00
146.750	08	03	0E	06	01	08	07	00	0C	01	0C	09	00	0C	03	00
146.775	0C	03	0E	06	01	08	07	00	0E	01	0C	09	00	0C	03	00
146.800	00	00	0F	06	01	08	07	00	00	02	0C	09	00	0C	03	00
146.825	04	00	0F	06	01	08	07	00	02	02	0C	09	00	0C	03	00
146.850	08	00	0F	06	01	08	07	00	04	02	0C	09	00	0C	03	00
146.875	0C	00	0F	06	01	08	07	00	06	02	0C	09	00	0C	03	00
146.900	00	01	0F	06	01	08	07	00	08	02	0C	09	00	0C	03	00
146.925	04	01	0F	06	01	08	07	00	0A	02	0C	09	00	0C	03	00
146.950	08	01	0F	06	01	08	07	00	0C	02	0C	09	00	0C	03	00
146.975	0C	01	0F	06	01	08	07	00	0E	02	0C	09	00	0C	03	00
147.000	00	02	0F	06	01	08	07	00	00	03	0C	09	00	0C	03	00
147.025	04	02	0F	06	01	08	07	00	02	03	0C	09	00	0C	03	00
147.050	08	02	0F	06	01	08	07	00	04	03	0C	09	00	0C	03	00
147.075	0C	02	0F	06	01	08	07	00	06	03	0C	09	00	0C	03	00
147.100	00	03	0F	06	01	08	07	00	08	03	0C	09	00	0C	03	00
147.125	04	03	0F	06	01	08	07	00	0A	03	0C	09	00	0C	03	00
147.150	08	03	0F	06	01	08	07	00	0C	03	0C	09	00	0C	03	00
147.175	0C	03	0F	06	01	08	07	00	0E	03	0C	09	00	0C	03	00
147.200	00	00	00	07	01	08	07	00	00	00	0D	09	00	0C	03	00
147.225	04	00	00	07	01	08	07	00	02	00	0D	09	00	0C	03	00
147.250	08	00	00	07	01	08	07	00	04	00	0D	09	00	0C	03	00
147.275	0C	00	00	07	01	08	07	00	06	00	0D	09	00	0C	03	00
147.300	00	01	00	07	01	08	07	00	08	00	0D	09	00	0C	03	00
147.325	04	01	00	07	01	08	07	00	0A	00	0D	09	00	0C	03	00
147.350	08	01	00	07	01	08	07	00	0C	00	0D	09	00	0C	03	00
147.375	0C	01	00	07	01	08	07	00	0E	00	0D	09	00	0C	03	00
147.400	00	02	00	07	01	08	07	00	00	01	0D	09	00	0C	03	00
147.425	04	02	00	07	01	08	07	00	02	01	0D	09	00	0C	03	00
147.450	08	02	00	07	01	08	07	00	04	01	0D	09	00	0C	03	00
147.475	0C	02	00	07	01	08	07	00	06	01	0D	09	00	0C	03	00
147.500	00	03	00	07	01	08	07	00	08	01	0D	09	00	0C	03	00
147.525	04	03	00	07	01	08	07	00	0A	01	0D	09	00	0C	03	00
147.550	08	03	00	07	01	08	07	00	0C	01	0D	09	00	0C	03	00
147.575	0C	03	00	07	01	08	07	00	0E	01	0D	09	00	0C	03	00
147.600	00	00	01	07	01	08	07	00	00	02	0D	09	00	0C	03	00
147.625	04	00	01	07	01	08	07	00	02	02	0D	09	00	0C	03	00
147.650	08	00	01	07	01	08	07	00	04	02	0D	09	00	0C	03	00
147.675	0C	00	01	07	01	08	07	00	06	02	0D	09	00	0C	03	00
147.700	00	01	01	07	01	08	07	00	08	02	0D	09	00	0C	03	00
147.725	04	01	01	07	01	08	07	00	0A	02	0D	09	00	0C	03	00
147.750	08	01	01	07	01	08	07	00	0C	02	0D	09	00	0C	03	00
147.775	0C	01	01	07	01	08	07	00	0E	02	0D	09	00	0C	03	00
147.800	00	02	01	07	01	08	07	00	00	03	0D	09	00	0C	03	00
147.825	04	02	01	07	01	08	07	00	02	03	0D	09	00	0C	03	00
147.850	08	02	01	07	01	08	07	00	04	03	0D	09	00	0C	03	00
147.875	0C	02	01	07	01	08	07	00	06	03	0D	09	00	0C	03	00
147.900	00	03	01	07	01	08	07	00	08	03	0D	09	00	0C	03	00
147.925	04	03	01	07	01	08	07	00	0A	03	0D	09	00	0C	03	00
147.950	08	03	01	07	01	08	07	00	0C	03	0D	09	00	0C	03	00
147.975	0C	03	01	07	01	08	07	00	0E	03	0D	09	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
148.000	00	00	02	07	01	08	07	00	00	00	0E	09	00	0C	03	00
148.025	04	00	02	07	01	08	07	00	02	00	0E	09	00	0C	03	00
148.050	08	00	02	07	01	08	07	00	04	00	0E	09	00	0C	03	00
148.075	0C	00	02	07	01	08	07	00	06	00	0E	09	00	0C	03	00
148.100	00	01	02	07	01	08	07	00	08	00	0E	09	00	0C	03	00
148.125	04	01	02	07	01	08	07	00	0A	00	0E	09	00	0C	03	00
148.150	08	01	02	07	01	08	07	00	0C	00	0E	09	00	0C	03	00
148.175	0C	01	02	07	01	08	07	00	0E	00	0E	09	00	0C	03	00
148.200	00	02	02	07	01	08	07	00	00	01	0E	09	00	0C	03	00
148.225	04	02	02	07	01	08	07	00	02	01	0E	09	00	0C	03	00
148.250	08	02	02	07	01	08	07	00	04	01	0E	09	00	0C	03	00
148.275	0C	02	02	07	01	08	07	00	06	01	0E	09	00	0C	03	00
148.300	00	03	02	07	01	08	07	00	08	01	0E	09	00	0C	03	00
148.325	04	03	02	07	01	08	07	00	0A	01	0E	09	00	0C	03	00
148.350	08	03	02	07	01	08	07	00	0C	01	0E	09	00	0C	03	00
148.375	0C	03	02	07	01	08	07	00	0E	01	0E	09	00	0C	03	00
148.400	00	00	03	07	01	08	07	00	00	02	0E	09	00	0C	03	00
148.425	04	00	03	07	01	08	07	00	02	02	0E	09	00	0C	03	00
148.450	08	00	03	07	01	08	07	00	04	02	0E	09	00	0C	03	00
148.475	0C	00	03	07	01	08	07	00	06	02	0E	09	00	0C	03	00
148.500	00	01	03	07	01	08	07	00	08	02	0E	09	00	0C	03	00
148.525	04	01	03	07	01	08	07	00	0A	02	0E	09	00	0C	03	00
148.550	08	01	03	07	01	08	07	00	0C	02	0E	09	00	0C	03	00
148.575	0C	01	03	07	01	08	07	00	0E	02	0E	09	00	0C	03	00
148.600	00	02	03	07	01	08	07	00	00	03	0E	09	00	0C	03	00
148.625	04	02	03	07	01	08	07	00	02	03	0E	09	00	0C	03	00
148.650	08	02	03	07	01	08	07	00	04	03	0E	09	00	0C	03	00
148.675	0C	02	03	07	01	08	07	00	06	03	0E	09	00	0C	03	00
148.700	00	03	03	07	01	08	07	00	08	03	0E	09	00	0C	03	00
148.725	04	03	03	07	01	08	07	00	0A	03	0E	09	00	0C	03	00
148.750	08	03	03	07	01	08	07	00	0C	03	0E	09	00	0C	03	00
148.775	0C	03	03	07	01	08	07	00	0E	03	0E	09	00	0C	03	00
148.800	00	00	04	07	01	08	07	00	00	00	0F	09	00	0C	03	00
148.825	04	00	04	07	01	08	07	00	02	00	0F	09	00	0C	03	00
148.850	08	00	04	07	01	08	07	00	04	00	0F	09	00	0C	03	00
148.875	0C	00	04	07	01	08	07	00	06	00	0F	09	00	0C	03	00
148.900	00	01	04	07	01	08	07	00	08	00	0F	09	00	0C	03	00
148.925	04	01	04	07	01	08	07	00	0A	00	0F	09	00	0C	03	00
148.950	08	01	04	07	01	08	07	00	0C	00	0F	09	00	0C	03	00
148.975	0C	01	04	07	01	08	07	00	0E	00	0F	09	00	0C	03	00
149.000	00	02	04	07	01	08	07	00	00	01	0F	09	00	0C	03	00
149.025	04	02	04	07	01	08	07	00	02	01	0F	09	00	0C	03	00
149.050	08	02	04	07	01	08	07	00	04	01	0F	09	00	0C	03	00
149.075	0C	02	04	07	01	08	07	00	06	01	0F	09	00	0C	03	00
149.100	00	03	04	07	01	08	07	00	08	01	0F	09	00	0C	03	00
149.125	04	03	04	07	01	08	07	00	0A	01	0F	09	00	0C	03	00
149.150	08	03	04	07	01	08	07	00	0C	01	0F	09	00	0C	03	00
149.175	0C	03	04	07	01	08	07	00	0E	01	0F	09	00	0C	03	00
149.200	00	00	05	07	01	08	07	00	00	02	0F	09	00	0C	03	00
149.225	04	00	05	07	01	08	07	00	02	02	0F	09	00	0C	03	00
149.250	08	00	05	07	01	08	07	00	04	02	0F	09	00	0C	03	00
149.275	0C	00	05	07	01	08	07	00	06	02	0F	09	00	0C	03	00
149.300	00	01	05	07	01	08	07	00	08	02	0F	09	00	0C	03	00
149.325	04	01	05	07	01	08	07	00	0A	02	0F	09	00	0C	03	00
149.350	08	01	05	07	01	08	07	00	0C	02	0F	09	00	0C	03	00
149.375	0C	01	05	07	01	08	07	00	0E	02	0F	09	00	0C	03	00
149.400	00	02	05	07	01	08	07	00	00	03	0F	09	00	0C	03	00
149.425	04	02	05	07	01	08	07	00	02	03	0F	09	00	0C	03	00
149.450	08	02	05	07	01	08	07	00	04	03	0F	09	00	0C	03	00
149.475	0C	02	05	07	01	08	07	00	06	03	0F	09	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
149.500	00	03	05	07	01	08	07	00	08	03	0F	09	00	0C	03	00
149.525	04	03	05	07	01	08	07	00	0A	03	0F	09	00	0C	03	00
149.550	08	03	05	07	01	08	07	00	0C	03	0F	09	00	0C	03	00
149.575	0C	03	05	07	01	08	07	00	0E	03	0F	09	00	0C	03	00
149.600	00	00	06	07	01	08	07	00	00	00	00	0A	00	0C	03	00
149.625	04	00	06	07	01	08	07	00	02	00	00	0A	00	0C	03	00
149.650	08	00	06	07	01	08	07	00	04	00	00	0A	00	0C	03	00
149.675	0C	00	06	07	01	08	07	00	06	00	00	0A	00	0C	03	00
149.700	00	01	06	07	01	08	07	00	08	00	00	0A	00	0C	03	00
149.725	04	01	06	07	01	08	07	00	0A	00	00	0A	00	0C	03	00
149.750	08	01	06	07	01	08	07	00	0C	00	00	0A	00	0C	03	00
149.775	0C	01	06	07	01	08	07	00	0E	00	00	0A	00	0C	03	00
149.800	00	02	06	07	01	08	07	00	00	01	00	0A	00	0C	03	00
149.825	04	02	06	07	01	08	07	00	02	01	00	0A	00	0C	03	00
149.850	08	02	06	07	01	08	07	00	04	01	00	0A	00	0C	03	00
149.875	0C	02	06	07	01	08	07	00	06	01	00	0A	00	0C	03	00
149.900	00	03	06	07	01	08	07	00	08	01	00	0A	00	0C	03	00
149.925	04	03	06	07	01	08	07	00	0A	01	00	0A	00	0C	03	00
149.950	08	03	06	07	01	08	07	00	0C	01	00	0A	00	0C	03	00
149.975	0C	03	06	07	01	08	07	00	0E	01	00	0A	00	0C	03	00
150.000	00	00	07	07	01	08	07	00	00	02	00	0A	00	0C	03	00
150.025	04	00	07	07	01	08	07	00	02	02	00	0A	00	0C	03	00
150.050	08	00	07	07	01	08	07	00	04	02	00	0A	00	0C	03	00
150.075	0C	00	07	07	01	08	07	00	06	02	00	0A	00	0C	03	00
150.100	00	01	07	07	01	08	07	00	08	02	00	0A	00	0C	03	00
150.125	04	01	07	07	01	08	07	00	0A	02	00	0A	00	0C	03	00
150.150	08	01	07	07	01	08	07	00	0C	02	00	0A	00	0C	03	00
150.175	0C	01	07	07	01	08	07	00	0E	02	00	0A	00	0C	03	00
150.200	00	02	07	07	01	08	07	00	00	03	00	0A	00	0C	03	00
150.225	04	02	07	07	01	08	07	00	02	03	00	0A	00	0C	03	00
150.250	08	02	07	07	01	08	07	00	04	03	00	0A	00	0C	03	00
150.275	0C	02	07	07	01	08	07	00	06	03	00	0A	00	0C	03	00
150.300	00	03	07	07	01	08	07	00	08	03	00	0A	00	0C	03	00
150.325	04	03	07	07	01	08	07	00	0A	03	00	0A	00	0C	03	00
150.350	08	03	07	07	01	08	07	00	0C	03	00	0A	00	0C	03	00
150.375	0C	03	07	07	01	08	07	00	0E	03	00	0A	00	0C	03	00
150.400	00	00	08	07	01	08	07	00	00	00	01	0A	00	0C	03	00
150.425	04	00	08	07	01	08	07	00	02	00	01	0A	00	0C	03	00
150.450	08	00	08	07	01	08	07	00	04	00	01	0A	00	0C	03	00
150.475	0C	00	08	07	01	08	07	00	06	00	01	0A	00	0C	03	00
150.500	00	01	08	07	01	08	07	00	08	00	01	0A	00	0C	03	00
150.525	04	01	08	07	01	08	07	00	0A	00	01	0A	00	0C	03	00
150.550	08	01	08	07	01	08	07	00	0C	00	01	0A	00	0C	03	00
150.575	0C	01	08	07	01	08	07	00	0E	00	01	0A	00	0C	03	00
150.600	00	02	08	07	01	08	07	00	00	01	01	0A	00	0C	03	00
150.625	04	02	08	07	01	08	07	00	02	01	01	0A	00	0C	03	00
150.650	08	02	08	07	01	08	07	00	04	01	01	0A	00	0C	03	00
150.675	0C	02	08	07	01	08	07	00	06	01	01	0A	00	0C	03	00
150.700	00	03	08	07	01	08	07	00	08	01	01	0A	00	0C	03	00
150.725	04	03	08	07	01	08	07	00	0A	01	01	0A	00	0C	03	00
150.750	08	03	08	07	01	08	07	00	0C	01	01	0A	00	0C	03	00
150.775	0C	03	08	07	01	08	07	00	0E	01	01	0A	00	0C	03	00
150.800	00	00	09	07	01	08	07	00	00	02	01	0A	00	0C	03	00
150.825	04	00	09	07	01	08	07	00	02	02	01	0A	00	0C	03	00
150.850	08	00	09	07	01	08	07	00	04	02	01	0A	00	0C	03	00
150.875	0C	00	09	07	01	08	07	00	06	02	01	0A	00	0C	03	00
150.900	00	01	09	07	01	08	07	00	08	02	01	0A	00	0C	03	00
150.925	04	01	09	07	01	08	07	00	0A	02	01	0A	00	0C	03	00
150.950	08	01	09	07	01	08	07	00	0C	02	01	0A	00	0C	03	00
150.975	0C	01	09	07	01	08	07	00	0E	02	01	0A	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
151.000	00	02	09	07	01	08	07	00	00	03	01	0A	00	0C	03	00
151.025	04	02	09	07	01	08	07	00	02	03	01	0A	00	0C	03	00
151.050	08	02	09	07	01	08	07	00	04	03	01	0A	00	0C	03	00
151.075	0C	02	09	07	01	08	07	00	06	03	01	0A	00	0C	03	00
151.100	00	03	09	07	01	08	07	00	08	03	01	0A	00	0C	03	00
151.125	04	03	09	07	01	08	07	00	0A	03	01	0A	00	0C	03	00
151.150	08	03	09	07	01	08	07	00	0C	03	01	0A	00	0C	03	00
151.175	0C	03	09	07	01	08	07	00	0E	03	01	0A	00	0C	03	00
151.200	00	00	0A	07	01	08	07	00	00	00	02	0A	00	0C	03	00
151.225	04	00	0A	07	01	08	07	00	02	00	02	0A	00	0C	03	00
151.250	08	00	0A	07	01	08	07	00	04	00	02	0A	00	0C	03	00
151.275	0C	00	0A	07	01	08	07	00	06	00	02	0A	00	0C	03	00
151.300	00	01	0A	07	01	08	07	00	08	00	02	0A	00	0C	03	00
151.325	04	01	0A	07	01	08	07	00	0A	00	02	0A	00	0C	03	00
151.350	08	01	0A	07	01	08	07	00	0C	00	02	0A	00	0C	03	00
151.375	0C	01	0A	07	01	08	07	00	0E	00	02	0A	00	0C	03	00
151.400	00	02	0A	07	01	08	07	00	00	01	02	0A	00	0C	03	00
151.425	04	02	0A	07	01	08	07	00	02	01	02	0A	00	0C	03	00
151.450	08	02	0A	07	01	08	07	00	04	01	02	0A	00	0C	03	00
151.475	0C	02	0A	07	01	08	07	00	06	01	02	0A	00	0C	03	00
151.500	00	03	0A	07	01	08	07	00	08	01	02	0A	00	0C	03	00
151.525	04	03	0A	07	01	08	07	00	0A	01	02	0A	00	0C	03	00
151.550	08	03	0A	07	01	08	07	00	0C	01	02	0A	00	0C	03	00
151.575	0C	03	0A	07	01	08	07	00	0E	01	02	0A	00	0C	03	00
151.600	00	00	0B	07	01	08	07	00	00	02	02	0A	00	0C	03	00
151.625	04	00	0B	07	01	08	07	00	02	02	02	0A	00	0C	03	00
151.650	08	00	0B	07	01	08	07	00	04	02	02	0A	00	0C	03	00
151.675	0C	00	0B	07	01	08	07	00	06	02	02	0A	00	0C	03	00
151.700	00	01	0B	07	01	08	07	00	08	02	02	0A	00	0C	03	00
151.725	04	01	0B	07	01	08	07	00	0A	02	02	0A	00	0C	03	00
151.750	08	01	0B	07	01	08	07	00	0C	02	02	0A	00	0C	03	00
151.775	0C	01	0B	07	01	08	07	00	0E	02	02	0A	00	0C	03	00
151.800	00	02	0B	07	01	08	07	00	00	03	02	0A	00	0C	03	00
151.825	04	02	0B	07	01	08	07	00	02	03	02	0A	00	0C	03	00
151.850	08	02	0B	07	01	08	07	00	04	03	02	0A	00	0C	03	00
151.875	0C	02	0B	07	01	08	07	00	06	03	02	0A	00	0C	03	00
151.900	00	03	0B	07	01	08	07	00	08	03	02	0A	00	0C	03	00
151.925	04	03	0B	07	01	08	07	00	0A	03	02	0A	00	0C	03	00
151.950	08	03	0B	07	01	08	07	00	0C	03	02	0A	00	0C	03	00
151.975	0C	03	0B	07	01	08	07	00	0E	03	02	0A	00	0C	03	00
152.000	00	00	0C	07	01	08	07	00	00	00	03	0A	00	0C	03	00
152.025	04	00	0C	07	01	08	07	00	02	00	03	0A	00	0C	03	00
152.050	08	00	0C	07	01	08	07	00	04	00	03	0A	00	0C	03	00
152.075	0C	00	0C	07	01	08	07	00	06	00	03	0A	00	0C	03	00
152.100	00	01	0C	07	01	08	07	00	08	00	03	0A	00	0C	03	00
152.125	04	01	0C	07	01	08	07	00	0A	00	03	0A	00	0C	03	00
152.150	08	01	0C	07	01	08	07	00	0C	00	03	0A	00	0C	03	00
152.175	0C	01	0C	07	01	08	07	00	0E	00	03	0A	00	0C	03	00
152.200	00	02	0C	07	01	08	07	00	00	01	03	0A	00	0C	03	00
152.225	04	02	0C	07	01	08	07	00	02	01	03	0A	00	0C	03	00
152.250	08	02	0C	07	01	08	07	00	04	01	03	0A	00	0C	03	00
152.275	0C	02	0C	07	01	08	07	00	06	01	03	0A	00	0C	03	00
152.300	00	03	0C	07	01	08	07	00	08	01	03	0A	00	0C	03	00
152.325	04	03	0C	07	01	08	07	00	0A	01	03	0A	00	0C	03	00
152.350	08	03	0C	07	01	08	07	00	0C	01	03	0A	00	0C	03	00
152.375	0C	03	0C	07	01	08	07	00	0E	01	03	0A	00	0C	03	00
152.400	00	00	0D	07	01	08	07	00	00	02	03	0A	00	0C	03	00
152.425	04	00	0D	07	01	08	07	00	02	02	03	0A	00	0C	03	00
152.450	08	00	0D	07	01	08	07	00	04	02	03	0A	00	0C	03	00
152.475	0C	00	0D	07	01	08	07	00	06	02	03	0A	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
152.500	00	01	0D	07	01	08	07	00	08	02	03	0A	00	0C	03	00
152.525	04	01	0D	07	01	08	07	00	0A	02	03	0A	00	0C	03	00
152.550	08	01	0D	07	01	08	07	00	0C	02	03	0A	00	0C	03	00
152.575	0C	01	0D	07	01	08	07	00	0E	02	03	0A	00	0C	03	00
152.600	00	02	0D	07	01	08	07	00	00	03	03	0A	00	0C	03	00
152.625	04	02	0D	07	01	08	07	00	02	03	03	0A	00	0C	03	00
152.650	08	02	0D	07	01	08	07	00	04	03	03	0A	00	0C	03	00
152.675	0C	02	0D	07	01	08	07	00	06	03	03	0A	00	0C	03	00
152.700	00	03	0D	07	01	08	07	00	08	03	03	0A	00	0C	03	00
152.725	04	03	0D	07	01	08	07	00	0A	03	03	0A	00	0C	03	00
152.750	08	03	0D	07	01	08	07	00	0C	03	03	0A	00	0C	03	00
152.775	0C	03	0D	07	01	08	07	00	0E	03	03	0A	00	0C	03	00
152.800	00	00	0E	07	01	08	07	00	00	00	04	0A	00	0C	03	00
152.825	04	00	0E	07	01	08	07	00	02	00	04	0A	00	0C	03	00
152.850	08	00	0E	07	01	08	07	00	04	00	04	0A	00	0C	03	00
152.875	0C	00	0E	07	01	08	07	00	06	00	04	0A	00	0C	03	00
152.900	00	01	0E	07	01	08	07	00	08	00	04	0A	00	0C	03	00
152.925	04	01	0E	07	01	08	07	00	0A	00	04	0A	00	0C	03	00
152.950	08	01	0E	07	01	08	07	00	0C	00	04	0A	00	0C	03	00
152.975	0C	01	0E	07	01	08	07	00	0E	00	04	0A	00	0C	03	00
153.000	00	02	0E	07	01	08	07	00	00	01	04	0A	00	0C	03	00
153.025	04	02	0E	07	01	08	07	00	02	01	04	0A	00	0C	03	00
153.050	08	02	0E	07	01	08	07	00	04	01	04	0A	00	0C	03	00
153.075	0C	02	0E	07	01	08	07	00	06	01	04	0A	00	0C	03	00
153.100	00	03	0E	07	01	08	07	00	08	01	04	0A	00	0C	03	00
153.125	04	03	0E	07	01	08	07	00	0A	01	04	0A	00	0C	03	00
153.150	08	03	0E	07	01	08	07	00	0C	01	04	0A	00	0C	03	00
153.175	0C	03	0E	07	01	08	07	00	0E	01	04	0A	00	0C	03	00
153.200	00	00	0F	07	01	08	07	00	00	02	04	0A	00	0C	03	00
153.225	04	00	0F	07	01	08	07	00	02	02	04	0A	00	0C	03	00
153.250	08	00	0F	07	01	08	07	00	04	02	04	0A	00	0C	03	00
153.275	0C	00	0F	07	01	08	07	00	06	02	04	0A	00	0C	03	00
153.300	00	01	0F	07	01	08	07	00	08	02	04	0A	00	0C	03	00
153.325	04	01	0F	07	01	08	07	00	0A	02	04	0A	00	0C	03	00
153.350	08	01	0F	07	01	08	07	00	0C	02	04	0A	00	0C	03	00
153.375	0C	01	0F	07	01	08	07	00	0E	02	04	0A	00	0C	03	00
153.400	00	02	0F	07	01	08	07	00	00	03	04	0A	00	0C	03	00
153.425	04	02	0F	07	01	08	07	00	02	03	04	0A	00	0C	03	00
153.450	08	02	0F	07	01	08	07	00	04	03	04	0A	00	0C	03	00
153.475	0C	02	0F	07	01	08	07	00	06	03	04	0A	00	0C	03	00
153.500	00	03	0F	07	01	08	07	00	08	03	04	0A	00	0C	03	00
153.525	04	03	0F	07	01	08	07	00	0A	03	04	0A	00	0C	03	00
153.550	08	03	0F	07	01	08	07	00	0C	03	04	0A	00	0C	03	00
153.575	0C	03	0F	07	01	08	07	00	0E	03	04	0A	00	0C	03	00
153.600	00	00	00	08	01	08	07	00	00	00	05	0A	00	0C	03	00
153.625	04	00	00	08	01	08	07	00	02	00	05	0A	00	0C	03	00
153.650	08	00	00	08	01	08	07	00	04	00	05	0A	00	0C	03	00
153.675	0C	00	00	08	01	08	07	00	06	00	05	0A	00	0C	03	00
153.700	00	01	00	08	01	08	07	00	08	00	05	0A	00	0C	03	00
153.725	04	01	00	08	01	08	07	00	0A	00	05	0A	00	0C	03	00
153.750	08	01	00	08	01	08	07	00	0C	00	05	0A	00	0C	03	00
153.775	0C	01	00	08	01	08	07	00	0E	00	05	0A	00	0C	03	00
153.800	00	02	00	08	01	08	07	00	00	01	05	0A	00	0C	03	00
153.825	04	02	00	08	01	08	07	00	02	01	05	0A	00	0C	03	00
153.850	08	02	00	08	01	08	07	00	04	01	05	0A	00	0C	03	00
153.875	0C	02	00	08	01	08	07	00	06	01	05	0A	00	0C	03	00
153.900	00	03	00	08	01	08	07	00	08	01	05	0A	00	0C	03	00
153.925	04	03	00	08	01	08	07	00	0A	01	05	0A	00	0C	03	00
153.950	08	03	00	08	01	08	07	00	0C	01	05	0A	00	0C	03	00
153.975	0C	03	00	08	01	08	07	00	0E	01	05	0A	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
154.000	00	00	01	08	01	08	07	00	00	02	05	0A	00	0C	03	00
154.025	04	00	01	08	01	08	07	00	02	02	05	0A	00	0C	03	00
154.050	08	00	01	08	01	08	07	00	04	02	05	0A	00	0C	03	00
154.075	0C	00	01	08	01	08	07	00	06	02	05	0A	00	0C	03	00
154.100	00	01	01	08	01	08	07	00	08	02	05	0A	00	0C	03	00
154.125	04	01	01	08	01	08	07	00	0A	02	05	0A	00	0C	03	00
154.150	08	01	01	08	01	08	07	00	0C	02	05	0A	00	0C	03	00
154.175	0C	01	01	08	01	08	07	00	0E	02	05	0A	00	0C	03	00
154.200	00	02	01	08	01	08	07	00	00	03	05	0A	00	0C	03	00
154.225	04	02	01	08	01	08	07	00	02	03	05	0A	00	0C	03	00
154.250	08	02	01	08	01	08	07	00	04	03	05	0A	00	0C	03	00
154.275	0C	02	01	08	01	08	07	00	06	03	05	0A	00	0C	03	00
154.300	00	03	01	08	01	08	07	00	08	03	05	0A	00	0C	03	00
154.325	04	03	01	08	01	08	07	00	0A	03	05	0A	00	0C	03	00
154.350	08	03	01	08	01	08	07	00	0C	03	05	0A	00	0C	03	00
154.375	0C	03	01	08	01	08	07	00	0E	03	05	0A	00	0C	03	00
154.400	00	00	02	08	01	08	07	00	00	00	06	0A	00	0C	03	00
154.425	04	00	02	08	01	08	07	00	02	00	06	0A	00	0C	03	00
154.450	08	00	02	08	01	08	07	00	04	00	06	0A	00	0C	03	00
154.475	0C	00	02	08	01	08	07	00	06	00	06	0A	00	0C	03	00
154.500	00	01	02	08	01	08	07	00	08	00	06	0A	00	0C	03	00
154.525	04	01	02	08	01	08	07	00	0A	00	06	0A	00	0C	03	00
154.550	08	01	02	08	01	08	07	00	0C	00	06	0A	00	0C	03	00
154.575	0C	01	02	08	01	08	07	00	0E	00	06	0A	00	0C	03	00
154.600	00	02	02	08	01	08	07	00	00	01	06	0A	00	0C	03	00
154.625	04	02	02	08	01	08	07	00	02	01	06	0A	00	0C	03	00
154.650	08	02	02	08	01	08	07	00	04	01	06	0A	00	0C	03	00
154.675	0C	02	02	08	01	08	07	00	06	01	06	0A	00	0C	03	00
154.700	00	03	02	08	01	08	07	00	08	01	06	0A	00	0C	03	00
154.725	04	03	02	08	01	08	07	00	0A	01	06	0A	00	0C	03	00
154.750	08	03	02	08	01	08	07	00	0C	01	06	0A	00	0C	03	00
154.775	0C	03	02	08	01	08	07	00	0E	01	06	0A	00	0C	03	00
154.800	00	00	03	08	01	08	07	00	00	02	06	0A	00	0C	03	00
154.825	04	00	03	08	01	08	07	00	02	02	06	0A	00	0C	03	00
154.850	08	00	03	08	01	08	07	00	04	02	06	0A	00	0C	03	00
154.875	0C	00	03	08	01	08	07	00	06	02	06	0A	00	0C	03	00
154.900	00	01	03	08	01	08	07	00	08	02	06	0A	00	0C	03	00
154.925	04	01	03	08	01	08	07	00	0A	02	06	0A	00	0C	03	00
154.950	08	01	03	08	01	08	07	00	0C	02	06	0A	00	0C	03	00
154.975	0C	01	03	08	01	08	07	00	0E	02	06	0A	00	0C	03	00
155.000	00	02	03	08	01	08	07	00	00	03	06	0A	00	0C	03	00
155.025	04	02	03	08	01	08	07	00	02	03	06	0A	00	0C	03	00
155.050	08	02	03	08	01	08	07	00	04	03	06	0A	00	0C	03	00
155.075	0C	02	03	08	01	08	07	00	06	03	06	0A	00	0C	03	00
155.100	00	03	03	08	01	08	07	00	08	03	06	0A	00	0C	03	00
155.125	04	03	03	08	01	08	07	00	0A	03	06	0A	00	0C	03	00
155.150	08	03	03	08	01	08	07	00	0C	03	06	0A	00	0C	03	00
155.175	0C	03	03	08	01	08	07	00	0E	03	06	0A	00	0C	03	00
155.200	00	00	04	08	01	08	07	00	00	00	07	0A	00	0C	03	00
155.225	04	00	04	08	01	08	07	00	02	00	07	0A	00	0C	03	00
155.250	08	00	04	08	01	08	07	00	04	00	07	0A	00	0C	03	00
155.275	0C	00	04	08	01	08	07	00	06	00	07	0A	00	0C	03	00
155.300	00	01	04	08	01	08	07	00	08	00	07	0A	00	0C	03	00
155.325	04	01	04	08	01	08	07	00	0A	00	07	0A	00	0C	03	00
155.350	08	01	04	08	01	08	07	00	0C	00	07	0A	00	0C	03	00
155.375	0C	01	04	08	01	08	07	00	0E	00	07	0A	00	0C	03	00
155.400	00	02	04	08	01	08	07	00	00	01	07	0A	00	0C	03	00
155.425	04	02	04	08	01	08	07	00	02	01	07	0A	00	0C	03	00
155.450	08	02	04	08	01	08	07	00	04	01	07	0A	00	0C	03	00
155.475	0C	02	04	08	01	08	07	00	06	01	07	0A	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
155.500	00	03	04	08	01	08	07	00	08	01	07	0A	00	0C	03	00
155.525	04	03	04	08	01	08	07	00	0A	01	07	0A	00	0C	03	00
155.550	08	03	04	08	01	08	07	00	0C	01	07	0A	00	0C	03	00
155.575	0C	03	04	08	01	08	07	00	0E	01	07	0A	00	0C	03	00
155.600	00	00	05	08	01	08	07	00	00	02	07	0A	00	0C	03	00
155.625	04	00	05	08	01	08	07	00	02	02	07	0A	00	0C	03	00
155.650	08	00	05	08	01	08	07	00	04	02	07	0A	00	0C	03	00
155.675	0C	00	05	08	01	08	07	00	06	02	07	0A	00	0C	03	00
155.700	00	01	05	08	01	08	07	00	08	02	07	0A	00	0C	03	00
155.725	04	01	05	08	01	08	07	00	0A	02	07	0A	00	0C	03	00
155.750	08	01	05	08	01	08	07	00	0C	02	07	0A	00	0C	03	00
155.775	0C	01	05	08	01	08	07	00	0E	02	07	0A	00	0C	03	00
155.800	00	02	05	08	01	08	07	00	00	03	07	0A	00	0C	03	00
155.825	04	02	05	08	01	08	07	00	02	03	07	0A	00	0C	03	00
155.850	08	02	05	08	01	08	07	00	04	03	07	0A	00	0C	03	00
155.875	0C	02	05	08	01	08	07	00	06	03	07	0A	00	0C	03	00
155.900	00	03	05	08	01	08	07	00	08	03	07	0A	00	0C	03	00
155.925	04	03	05	08	01	08	07	00	0A	03	07	0A	00	0C	03	00
155.950	08	03	05	08	01	08	07	00	0C	03	07	0A	00	0C	03	00
155.975	0C	03	05	08	01	08	07	00	0E	03	07	0A	00	0C	03	00
156.000	00	00	06	08	01	08	07	00	00	00	08	0A	00	0C	03	00
156.025	04	00	06	08	01	08	07	00	02	00	08	0A	00	0C	03	00
156.050	08	00	06	08	01	08	07	00	04	00	08	0A	00	0C	03	00
156.075	0C	00	06	08	01	08	07	00	06	00	08	0A	00	0C	03	00
156.100	00	01	06	08	01	08	07	00	08	00	08	0A	00	0C	03	00
156.125	04	01	06	08	01	08	07	00	0A	00	08	0A	00	0C	03	00
156.150	08	01	06	08	01	08	07	00	0C	00	08	0A	00	0C	03	00
156.175	0C	01	06	08	01	08	07	00	0E	00	08	0A	00	0C	03	00
156.200	00	02	06	08	01	08	07	00	00	01	08	0A	00	0C	03	00
156.225	04	02	06	08	01	08	07	00	02	01	08	0A	00	0C	03	00
156.250	08	02	06	08	01	08	07	00	04	01	08	0A	00	0C	03	00
156.275	0C	02	06	08	01	08	07	00	06	01	08	0A	00	0C	03	00
156.300	00	03	06	08	01	08	07	00	08	01	08	0A	00	0C	03	00
156.325	04	03	06	08	01	08	07	00	0A	01	08	0A	00	0C	03	00
156.350	08	03	06	08	01	08	07	00	0C	01	08	0A	00	0C	03	00
156.375	0C	03	06	08	01	08	07	00	0E	01	08	0A	00	0C	03	00
156.400	00	00	07	08	01	08	07	00	00	02	08	0A	00	0C	03	00
156.425	04	00	07	08	01	08	07	00	02	02	08	0A	00	0C	03	00
156.450	08	00	07	08	01	08	07	00	04	02	08	0A	00	0C	03	00
156.475	0C	00	07	08	01	08	07	00	06	02	08	0A	00	0C	03	00
156.500	00	01	07	08	01	08	07	00	08	02	08	0A	00	0C	03	00
156.525	04	01	07	08	01	08	07	00	0A	02	08	0A	00	0C	03	00
156.550	08	01	07	08	01	08	07	00	0C	02	08	0A	00	0C	03	00
156.575	0C	01	07	08	01	08	07	00	0E	02	08	0A	00	0C	03	00
156.600	00	02	07	08	01	08	07	00	00	03	08	0A	00	0C	03	00
156.625	04	02	07	08	01	08	07	00	02	03	08	0A	00	0C	03	00
156.650	08	02	07	08	01	08	07	00	04	03	08	0A	00	0C	03	00
156.675	0C	02	07	08	01	08	07	00	06	03	08	0A	00	0C	03	00
156.700	00	03	07	08	01	08	07	00	08	03	08	0A	00	0C	03	00
156.725	04	03	07	08	01	08	07	00	0A	03	08	0A	00	0C	03	00
156.750	08	03	07	08	01	08	07	00	0C	03	08	0A	00	0C	03	00
156.775	0C	03	07	08	01	08	07	00	0E	03	08	0A	00	0C	03	00
156.800	00	00	08	08	01	08	07	00	00	00	09	0A	00	0C	03	00
156.825	04	00	08	08	01	08	07	00	02	00	09	0A	00	0C	03	00
156.850	08	00	08	08	01	08	07	00	04	00	09	0A	00	0C	03	00
156.875	0C	00	08	08	01	08	07	00	06	00	09	0A	00	0C	03	00
156.900	00	01	08	08	01	08	07	00	08	00	09	0A	00	0C	03	00
156.925	04	01	08	08	01	08	07	00	0A	00	09	0A	00	0C	03	00
156.950	08	01	08	08	01	08	07	00	0C	00	09	0A	00	0C	03	00
156.975	0C	01	08	08	01	08	07	00	0E	00	09	0A	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
157.000	00	02	08	08	01	08	07	00	00	01	09	0A	00	0C	03	00
157.025	04	02	08	08	01	08	07	00	02	01	09	0A	00	0C	03	00
157.050	08	02	08	08	01	08	07	00	04	01	09	0A	00	0C	03	00
157.075	0C	02	08	08	01	08	07	00	06	01	09	0A	00	0C	03	00
157.100	00	03	08	08	01	08	07	00	08	01	09	0A	00	0C	03	00
157.125	04	03	08	08	01	08	07	00	0A	01	09	0A	00	0C	03	00
157.150	08	03	08	08	01	08	07	00	0C	01	09	0A	00	0C	08	00
157.175	0C	03	08	08	01	08	07	00	0E	01	09	0A	00	0C	03	00
157.200	00	00	09	08	01	08	07	00	00	02	09	0A	00	0C	03	00
157.225	04	00	09	08	01	08	07	00	02	02	09	0A	00	0C	03	00
157.250	08	00	09	08	01	08	07	00	04	02	09	0A	00	0C	03	00
157.275	0C	00	09	08	01	08	07	00	06	02	09	0A	00	0C	03	00
157.300	00	01	09	08	01	08	07	00	08	02	09	0A	00	0C	03	00
157.325	04	01	09	08	01	08	07	00	0A	02	09	0A	00	0C	03	00
157.350	08	01	09	08	01	08	07	00	0C	02	09	0A	00	0C	03	00
157.375	0C	01	09	08	01	08	07	00	0E	02	09	0A	00	0C	03	00
157.400	00	02	09	08	01	08	07	00	00	03	09	0A	00	0C	03	00
157.425	04	02	09	08	01	08	07	00	02	03	09	0A	00	0C	03	00
157.450	08	02	09	08	01	08	07	00	04	03	09	0A	00	0C	03	00
157.475	0C	02	09	08	01	08	07	00	06	03	09	0A	00	0C	03	00
157.500	00	03	09	08	01	08	07	00	08	03	09	0A	00	0C	03	00
157.525	04	03	09	08	01	08	07	00	0A	03	09	0A	00	0C	03	00
157.550	08	03	09	08	01	08	07	00	0C	03	09	0A	00	0C	03	00
157.575	0C	03	09	08	01	08	07	00	0E	03	09	0A	00	0C	03	00
157.600	00	00	0A	08	01	08	07	00	00	00	0A	0A	00	0C	03	00
157.625	04	00	0A	08	01	08	07	00	02	00	0A	0A	00	0C	03	00
157.650	08	00	0A	08	01	08	07	00	04	00	0A	0A	00	0C	03	00
157.675	0C	00	0A	08	01	08	07	00	06	00	0A	0A	00	0C	03	00
157.700	00	01	0A	08	01	08	07	00	08	00	0A	0A	00	0C	03	00
157.725	04	01	0A	08	01	08	07	00	0A	00	0A	0A	00	0C	03	00
157.750	08	01	0A	08	01	08	07	00	0C	00	0A	0A	00	0C	03	00
157.775	0C	01	0A	08	01	08	07	00	0E	00	0A	0A	00	0C	03	00
157.800	00	02	0A	08	01	08	07	00	00	01	0A	0A	00	0C	03	00
157.825	04	02	0A	08	01	08	07	00	02	01	0A	0A	00	0C	03	00
157.850	08	02	0A	08	01	08	07	00	04	01	0A	0A	00	0C	03	00
157.875	0C	02	0A	08	01	08	07	00	06	01	0A	0A	00	0C	03	00
157.900	00	03	0A	08	01	08	07	00	08	01	0A	0A	00	0C	03	00
157.925	04	03	0A	08	01	08	07	00	0A	01	0A	0A	00	0C	03	00
157.950	08	03	0A	08	01	08	07	00	0C	01	0A	0A	00	0C	03	00
157.975	0C	03	0A	08	01	08	07	00	0E	01	0A	0A	00	0C	03	00
158.000	00	00	0B	08	01	08	07	00	00	02	0A	0A	00	0C	03	00
158.025	04	00	0B	08	01	08	07	00	02	02	0A	0A	00	0C	03	00
158.050	08	00	0B	08	01	08	07	00	04	02	0A	0A	00	0C	03	00
158.075	0C	00	0B	08	01	08	07	00	06	02	0A	0A	00	0C	03	00
158.100	00	01	0B	08	01	08	07	00	08	02	0A	0A	00	0C	03	00
158.125	04	01	0B	08	01	08	07	00	0A	02	0A	0A	00	0C	03	00
158.150	08	01	0B	08	01	08	07	00	0C	02	0A	0A	00	0C	03	00
158.175	0C	01	0B	08	01	08	07	00	0E	02	0A	0A	00	0C	03	00
158.200	00	02	0B	08	01	08	07	00	00	03	0A	0A	00	0C	03	00
158.225	04	02	0B	08	01	08	07	00	02	03	0A	0A	00	0C	03	00
158.250	08	02	0B	08	01	08	07	00	04	03	0A	0A	00	0C	03	00
158.275	0C	02	0B	08	01	08	07	00	06	03	0A	0A	00	0C	03	00
158.300	00	03	0B	08	01	08	07	00	08	03	0A	0A	00	0C	03	00
158.325	04	03	0B	08	01	08	07	00	0A	03	0A	0A	00	0C	03	00
158.350	08	03	0B	08	01	08	07	00	0C	03	0A	0A	00	0C	03	00
158.375	0C	03	0B	08	01	08	07	00	0E	03	0A	0A	00	0C	03	00
158.400	00	00	0C	08	01	08	07	00	00	00	0B	0A	00	0C	03	00
158.425	04	00	0C	08	01	08	07	00	02	00	0B	0A	00	0C	03	00
158.450	08	00	0C	08	01	08	07	00	04	00	0B	0A	00	0C	03	00
158.475	0C	00	0C	08	01	08	07	00	06	00	0B	0A	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
158.500	00	01	0C	08	01	08	07	00	08	00	0B	0A	00	0C	03	00
158.525	04	01	0C	08	01	08	07	00	0A	00	0B	0A	00	0C	03	00
158.550	08	01	0C	08	01	08	07	00	0C	00	0B	0A	00	0C	03	00
158.575	0C	01	0C	08	01	08	07	00	0E	00	0B	0A	00	0C	03	00
158.600	00	02	0C	08	01	08	07	00	00	01	0B	0A	00	0C	03	00
158.625	04	02	0C	08	01	08	07	00	02	01	0B	0A	00	0C	03	00
158.650	08	02	0C	08	01	08	07	00	04	01	0B	0A	00	0C	03	00
158.675	0C	02	0C	08	01	08	07	00	06	01	0B	0A	00	0C	03	00
158.700	00	03	0C	08	01	08	07	00	08	01	0B	0A	00	0C	03	00
158.725	04	03	0C	08	01	08	07	00	0A	01	0B	0A	00	0C	03	00
158.750	08	03	0C	08	01	08	07	00	0C	01	0B	0A	00	0C	03	00
158.775	0C	03	0C	08	01	08	07	00	0E	01	0B	0A	00	0C	03	00
158.800	00	00	0D	08	01	08	07	00	00	02	0B	0A	00	0C	03	00
158.825	04	00	0D	08	01	08	07	00	02	02	0B	0A	00	0C	03	00
158.850	08	00	0D	08	01	08	07	00	04	02	0B	0A	00	0C	03	00
158.875	0C	00	0D	08	01	08	07	00	06	02	0B	0A	00	0C	03	00
158.900	00	01	0D	08	01	08	07	00	08	02	0B	0A	00	0C	03	00
158.925	04	01	0D	08	01	08	07	00	0A	02	0B	0A	00	0C	03	00
158.950	08	01	0D	08	01	08	07	00	0C	02	0B	0A	00	0C	03	00
158.975	0C	01	0D	08	01	08	07	00	0E	02	0B	0A	00	0C	03	00
159.000	00	02	0D	08	01	08	07	00	00	03	0B	0A	00	0C	03	00
159.025	04	02	0D	08	01	08	07	00	02	03	0B	0A	00	0C	03	00
159.050	08	02	0D	08	01	08	07	00	04	03	0B	0A	00	0C	03	00
159.075	0C	02	0D	08	01	08	07	00	06	03	0B	0A	00	0C	03	00
159.100	00	03	0D	08	01	08	07	00	08	03	0B	0A	00	0C	03	00
159.125	04	03	0D	08	01	08	07	00	0A	03	0B	0A	00	0C	03	00
159.150	08	03	0D	08	01	08	07	00	0C	03	0B	0A	00	0C	03	00
159.175	0C	03	0D	08	01	08	07	00	0E	03	0B	0A	00	0C	03	00
159.200	00	00	0E	08	01	08	07	00	00	00	0C	0A	00	0C	03	00
159.225	04	00	0E	08	01	08	07	00	02	00	0C	0A	00	0C	03	00
159.250	08	00	0E	08	01	08	07	00	04	00	0C	0A	00	0C	03	00
159.275	0C	00	0E	08	01	08	07	00	06	00	0C	0A	00	0C	03	00
159.300	00	01	0E	08	01	08	07	00	08	00	0C	0A	00	0C	03	00
159.325	04	01	0E	08	01	08	07	00	0A	00	0C	0A	00	0C	03	00
159.350	08	01	0E	08	01	08	07	00	0C	00	0C	0A	00	0C	03	00
159.375	0C	01	0E	08	01	08	07	00	0E	00	0C	0A	00	0C	03	00
159.400	00	02	0E	08	01	08	07	00	00	01	0C	0A	00	0C	03	00
159.425	04	02	0E	08	01	08	07	00	02	01	0C	0A	00	0C	03	00
159.450	08	02	0E	08	01	08	07	00	04	01	0C	0A	00	0C	03	00
159.475	0C	02	0E	08	01	08	07	00	06	01	0C	0A	00	0C	03	00
159.500	00	03	0E	08	01	08	07	00	08	01	0C	0A	00	0C	03	00
159.525	04	03	0E	08	01	08	07	00	0A	01	0C	0A	00	0C	03	00
159.550	08	03	0E	08	01	08	07	00	0C	01	0C	0A	00	0C	03	00
159.575	0C	03	0E	08	01	08	07	00	0E	01	0C	0A	00	0C	03	00
159.600	00	00	0F	08	01	08	07	00	00	02	0C	0A	00	0C	03	00
159.625	04	00	0F	08	01	08	07	00	02	02	0C	0A	00	0C	03	00
159.650	08	00	0F	08	01	08	07	00	04	02	0C	0A	00	0C	03	00
159.675	0C	00	0F	08	01	08	07	00	06	02	0C	0A	00	0C	03	00
159.700	00	01	0F	08	01	08	07	00	08	02	0C	0A	00	0C	03	00
159.725	04	01	0F	08	01	08	07	00	0A	02	0C	0A	00	0C	03	00
159.750	08	01	0F	08	01	08	07	00	0C	02	0C	0A	00	0C	03	00
159.775	0C	01	0F	08	01	08	07	00	0E	02	0C	0A	00	0C	03	00
159.800	00	02	0F	08	01	08	07	00	00	03	0C	0A	00	0C	03	00
159.825	04	02	0F	08	01	08	07	00	02	03	0C	0A	00	0C	03	00
159.850	08	02	0F	08	01	08	07	00	04	03	0C	0A	00	0C	03	00
159.875	0C	02	0F	08	01	08	07	00	06	03	0C	0A	00	0C	03	00
159.900	00	03	0F	08	01	08	07	00	08	03	0C	0A	00	0C	03	00
159.925	04	03	0F	08	01	08	07	00	0A	03	0C	0A	00	0C	03	00
159.950	08	03	0F	08	01	08	07	00	0C	03	0C	0A	00	0C	03	00
159.975	0C	03	0F	08	01	08	07	00	0E	03	0C	0A	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
160.000	00	00	00	09	01	08	07	00	00	00	0D	0A	00	0C	03	00
160.025	04	00	00	09	01	08	07	00	02	00	0D	0A	00	0C	03	00
160.050	08	00	00	09	01	08	07	00	04	00	0D	0A	00	0C	03	00
160.075	0C	00	00	09	01	08	07	00	06	00	0D	0A	00	0C	03	00
160.100	00	01	00	09	01	08	07	00	08	00	0D	0A	00	0C	03	00
160.125	04	01	00	09	01	08	07	00	0A	00	0D	0A	00	0C	03	00
160.150	08	01	00	09	01	08	07	00	0C	00	0D	0A	00	0C	03	00
160.175	0C	01	00	09	01	08	07	00	0E	00	0D	0A	00	0C	03	00
160.200	00	02	00	09	01	08	07	00	00	01	0D	0A	00	0C	03	00
160.225	04	02	00	09	01	08	07	00	02	01	0D	0A	00	0C	03	00
160.250	08	02	00	09	01	08	07	00	04	01	0D	0A	00	0C	03	00
160.275	0C	02	00	09	01	08	07	00	06	01	0D	0A	00	0C	03	00
160.300	00	03	00	09	01	08	07	00	08	01	0D	0A	00	0C	03	00
160.325	04	03	00	09	01	08	07	00	0A	01	0D	0A	00	0C	03	00
160.350	08	03	00	09	01	08	07	00	0C	01	0D	0A	00	0C	03	00
160.375	0C	03	00	09	01	08	07	00	0E	01	0D	0A	00	0C	03	00
160.400	00	00	01	09	01	08	07	00	00	02	0D	0A	00	0C	03	00
160.425	04	00	01	09	01	08	07	00	02	02	0D	0A	00	0C	03	00
160.450	08	00	01	09	01	08	07	00	04	02	0D	0A	00	0C	03	00
160.475	0C	00	01	09	01	08	07	00	06	02	0D	0A	00	0C	03	00
160.500	00	01	01	09	01	08	07	00	08	02	0D	0A	00	0C	03	00
160.525	04	01	01	09	01	08	07	00	0A	02	0D	0A	00	0C	03	00
160.550	08	01	01	09	01	08	07	00	0C	02	0D	0A	00	0C	03	00
160.575	0C	01	01	09	01	08	07	00	0E	02	0D	0A	00	0C	03	00
160.600	00	02	01	09	01	08	07	00	00	03	0D	0A	00	0C	03	00
160.625	04	02	01	09	01	08	07	00	02	03	0D	0A	00	0C	03	00
160.650	08	02	01	09	01	08	07	00	04	03	0D	0A	00	0C	03	00
160.675	0C	02	01	09	01	08	07	00	06	03	0D	0A	00	0C	03	00
160.700	00	03	01	09	01	08	07	00	08	03	0D	0A	00	0C	03	00
160.725	04	03	01	09	01	08	07	00	0A	03	0D	0A	00	0C	03	00
160.750	08	03	01	09	01	08	07	00	0C	03	0D	0A	00	0C	03	00
160.775	0C	03	01	09	01	08	07	00	0E	03	0D	0A	00	0C	03	00
160.800	00	00	02	09	01	08	07	00	00	00	0E	0A	00	0C	03	00
160.825	04	00	02	09	01	08	07	00	02	00	0E	0A	00	0C	03	00
160.850	08	00	02	09	01	08	07	00	04	00	0E	0A	00	0C	03	00
160.875	0C	00	02	09	01	08	07	00	06	00	0E	0A	00	0C	03	00
160.900	00	01	02	09	01	08	07	00	08	00	0E	0A	00	0C	03	00
160.925	04	01	02	09	01	08	07	00	0A	00	0E	0A	00	0C	03	00
160.950	08	01	02	09	01	08	07	00	0C	00	0E	0A	00	0C	03	00
160.975	0C	01	02	09	01	08	07	00	0E	00	0E	0A	00	0C	03	00
161.000	00	02	02	09	01	08	07	00	00	01	0E	0A	00	0C	03	00
161.025	04	02	02	09	01	08	07	00	02	01	0E	0A	00	0C	03	00
161.050	08	02	02	09	01	08	07	00	04	01	0E	0A	00	0C	03	00
161.075	0C	02	02	09	01	08	07	00	06	01	0E	0A	00	0C	03	00
161.100	00	03	02	09	01	08	07	00	08	01	0E	0A	00	0C	03	00
161.125	04	03	02	09	01	08	07	00	0A	01	0E	0A	00	0C	03	00
161.150	08	03	02	09	01	08	07	00	0C	01	0E	0A	00	0C	03	00
161.175	0C	03	02	09	01	08	07	00	0E	01	0E	0A	00	0C	03	00
161.200	00	00	03	09	01	08	07	00	00	02	0E	0A	00	0C	03	00
161.225	04	00	03	09	01	08	07	00	02	02	0E	0A	00	0C	03	00
161.250	08	00	03	09	01	08	07	00	04	02	0E	0A	00	0C	03	00
161.275	0C	00	03	09	01	08	07	00	06	02	0E	0A	00	0C	03	00
161.300	00	01	03	09	01	08	07	00	08	02	0E	0A	00	0C	03	00
161.325	04	01	03	09	01	08	07	00	0A	02	0E	0A	00	0C	03	00
161.350	08	01	03	09	01	08	07	00	0C	02	0E	0A	00	0C	03	00
161.375	0C	01	03	09	01	08	07	00	0E	02	0E	0A	00	0C	03	00
161.400	00	02	03	09	01	08	07	00	00	03	0E	0A	00	0C	03	00
161.425	04	02	03	09	01	08	07	00	02	03	0E	0A	00	0C	03	00
161.450	08	02	03	09	01	08	07	00	04	03	0E	0A	00	0C	03	00
161.475	0C	02	03	09	01	08	07	00	06	03	0E	0A	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
161.500	00	03	03	09	01	08	07	00	08	03	0E	0A	00	0C	03	00
161.525	04	03	03	09	01	08	07	00	0A	03	0E	0A	00	0C	03	00
161.550	08	03	03	09	01	08	07	00	0C	03	0E	0A	00	0C	03	00
161.575	0C	03	03	09	01	08	07	00	0E	03	0E	0A	00	0C	03	00
161.600	00	00	04	09	01	08	07	00	00	00	0F	0A	00	0C	03	00
161.625	04	00	04	09	01	08	07	00	02	00	0F	0A	00	0C	03	00
161.650	08	00	04	09	01	08	07	00	04	00	0F	0A	00	0C	03	00
161.675	0C	00	04	09	01	08	07	00	06	00	0F	0A	00	0C	03	00
161.700	00	01	04	09	01	08	07	00	08	00	0F	0A	00	0C	03	00
161.725	04	01	04	09	01	08	07	00	0A	00	0F	0A	00	0C	03	00
161.750	08	01	04	09	01	08	07	00	0C	00	0F	0A	00	0C	03	00
161.775	0C	01	04	09	01	08	07	00	0E	00	0F	0A	00	0C	03	00
161.800	00	02	04	09	01	08	07	00	00	01	0F	0A	00	0C	03	00
161.825	04	02	04	09	01	08	07	00	02	01	0F	0A	00	0C	03	00
161.850	08	02	04	09	01	08	07	00	04	01	0F	0A	00	0C	03	00
161.875	0C	02	04	09	01	08	07	00	06	01	0F	0A	00	0C	03	00
161.900	00	03	04	09	01	08	07	00	08	01	0F	0A	00	0C	03	00
161.925	04	03	04	09	01	08	07	00	0A	01	0F	0A	00	0C	03	00
161.950	08	03	04	09	01	08	07	00	0C	01	0F	0A	00	0C	03	00
161.975	0C	03	04	09	01	08	07	00	0E	01	0F	0A	00	0C	03	00
162.000	00	00	05	09	01	08	07	00	00	02	0F	0A	00	0C	03	00
162.025	04	00	05	09	01	08	07	00	02	02	0F	0A	00	0C	03	00
162.050	08	00	05	09	01	08	07	00	04	02	0F	0A	00	0C	03	00
162.075	0C	00	05	09	01	08	07	00	06	02	0F	0A	00	0C	03	00
162.100	00	01	05	09	01	08	07	00	08	02	0F	0A	00	0C	03	00
162.125	04	01	05	09	01	08	07	00	0A	02	0F	0A	00	0C	03	00
162.150	08	01	05	09	01	08	07	00	0C	02	0F	0A	00	0C	03	00
162.175	0C	01	05	09	01	08	07	00	0E	02	0F	0A	00	0C	03	00
162.200	00	02	05	09	01	08	07	00	00	03	0F	0A	00	0C	03	00
162.225	04	02	05	09	01	08	07	00	02	03	0F	0A	00	0C	03	00
162.250	08	02	05	09	01	08	07	00	04	03	0F	0A	00	0C	03	00
162.275	0C	02	05	09	01	08	07	00	06	03	0F	0A	00	0C	03	00
162.300	00	03	05	09	01	08	07	00	08	03	0F	0A	00	0C	03	00
162.325	04	03	05	09	01	08	07	00	0A	03	0F	0A	00	0C	03	00
162.350	08	03	05	09	01	08	07	00	0C	03	0F	0A	00	0C	03	00
162.375	0C	03	05	09	01	08	07	00	0E	03	0F	0A	00	0C	03	00
162.400	00	00	06	09	01	08	07	00	00	00	00	0B	00	0C	03	00
162.425	04	00	06	09	01	08	07	00	02	00	00	0B	00	0C	03	00
162.450	08	00	06	09	01	08	07	00	04	00	00	0B	00	0C	03	00
162.475	0C	00	06	09	01	08	07	00	06	00	00	0B	00	0C	03	00
162.500	00	01	06	09	01	08	07	00	08	00	00	0B	00	0C	03	00
162.525	04	01	06	09	01	08	07	00	0A	00	00	0B	00	0C	03	00
162.550	08	01	06	09	01	08	07	00	0C	00	00	0B	00	0C	03	00
162.575	0C	01	06	09	01	08	07	00	0E	00	00	0B	00	0C	03	00
162.600	00	02	06	09	01	08	07	00	00	01	00	0B	00	0C	03	00
162.625	04	02	06	09	01	08	07	00	02	01	00	0B	00	0C	03	00
162.650	08	02	06	09	01	08	07	00	04	01	00	0B	00	0C	03	00
162.675	0C	02	06	09	01	08	07	00	06	01	00	0B	00	0C	03	00
162.700	00	03	06	09	01	08	07	00	08	01	00	0B	00	0C	03	00
162.725	04	03	06	09	01	08	07	00	0A	01	00	0B	00	0C	03	00
162.750	08	03	06	09	01	08	07	00	0C	01	00	0B	00	0C	03	00
162.775	0C	03	06	09	01	08	07	00	0E	01	00	0B	00	0C	03	00
162.800	00	00	07	09	01	08	07	00	00	02	00	0B	00	0C	03	00
162.825	04	00	07	09	01	08	07	00	02	02	00	0B	00	0C	03	00
162.850	08	00	07	09	01	08	07	00	04	02	00	0B	00	0C	03	00
162.875	0C	00	07	09	01	08	07	00	06	02	00	0B	00	0C	03	00
162.900	00	01	07	09	01	08	07	00	08	02	00	0B	00	0C	03	00
162.925	04	01	07	09	01	08	07	00	0A	02	00	0B	00	0C	03	00
162.950	08	01	07	09	01	08	07	00	0C	02	00	0B	00	0C	03	00
162.975	0C	01	07	09	01	08	07	00	0E	02	00	0B	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
163.000	00	02	07	09	01	08	07	00	00	03	00	0B	00	0C	03	00
163.025	04	02	07	09	01	08	07	00	02	03	00	0B	00	0C	03	00
163.050	08	02	07	09	01	08	07	00	04	03	00	0B	00	0C	03	00
163.075	0C	02	07	09	01	08	07	00	06	03	00	0B	00	0C	03	00
163.100	00	03	07	09	01	08	07	00	08	03	00	0B	00	0C	03	00
163.125	04	03	07	09	01	08	07	00	0A	03	00	0B	00	0C	03	00
163.150	08	03	07	09	01	08	07	00	0C	03	00	0B	00	0C	03	00
163.175	0C	03	07	09	01	08	07	00	0E	03	00	0B	00	0C	03	00
163.200	00	00	08	09	01	08	07	00	00	00	01	0B	00	0C	03	00
163.225	04	00	08	09	01	08	07	00	02	00	01	0B	00	0C	03	00
163.250	08	00	08	09	01	08	07	00	04	00	01	0B	00	0C	03	00
163.275	0C	00	08	09	01	08	07	00	06	00	01	0B	00	0C	03	00
163.300	00	01	08	09	01	08	07	00	08	00	01	0B	00	0C	03	00
163.325	04	01	08	09	01	08	07	00	0A	00	01	0B	00	0C	03	00
163.350	08	01	08	09	01	08	07	00	0C	00	01	0B	00	0C	03	00
163.375	0C	01	08	09	01	08	07	00	0E	00	01	0B	00	0C	03	00
163.400	00	02	08	09	01	08	07	00	00	01	01	0B	00	0C	03	00
163.425	04	02	08	09	01	08	07	00	02	01	01	0B	00	0C	03	00
163.450	08	02	08	09	01	08	07	00	04	01	01	0B	00	0C	03	00
163.475	0C	02	08	09	01	08	07	00	06	01	01	0B	00	0C	03	00
163.500	00	03	08	09	01	08	07	00	08	01	01	0B	00	0C	03	00
163.525	04	03	08	09	01	08	07	00	0A	01	01	0B	00	0C	03	00
163.550	08	03	08	09	01	08	07	00	0C	01	01	0B	00	0C	03	00
163.575	0C	03	08	09	01	08	07	00	0E	01	01	0B	00	0C	03	00
163.600	00	00	09	09	01	08	07	00	00	02	01	0B	00	0C	03	00
163.625	04	00	09	09	01	08	07	00	02	02	01	0B	00	0C	03	00
163.650	08	00	09	09	01	08	07	00	04	02	01	0B	00	0C	03	00
163.675	0C	00	09	09	01	08	07	00	06	02	01	0B	00	0C	03	00
163.700	00	01	09	09	01	08	07	00	08	02	01	0B	00	0C	03	00
163.725	04	01	09	09	01	08	07	00	0A	02	01	0B	00	0C	03	00
163.750	08	01	09	09	01	08	07	00	0C	02	01	0B	00	0C	03	00
163.775	0C	01	09	09	01	08	07	00	0E	02	01	0B	00	0C	03	00
163.800	00	02	09	09	01	08	07	00	00	03	01	0B	00	0C	03	00
163.825	04	02	09	09	01	08	07	00	02	03	01	0B	00	0C	03	00
163.850	08	02	09	09	01	08	07	00	04	03	01	0B	00	0C	03	00
163.875	0C	02	09	09	01	08	07	00	06	03	01	0B	00	0C	03	00
163.900	00	03	09	09	01	08	07	00	08	03	01	0B	00	0C	03	00
163.925	04	03	09	09	01	08	07	00	0A	03	01	0B	00	0C	03	00
163.950	08	03	09	09	01	08	07	00	0C	03	01	0B	00	0C	03	00
163.975	0C	03	09	09	01	08	07	00	0E	03	01	0B	00	0C	03	00
164.000	00	00	0A	09	01	08	07	00	00	00	02	0B	00	0C	03	00
164.025	04	00	0A	09	01	08	07	00	02	00	02	0B	00	0C	03	00
164.050	08	00	0A	09	01	08	07	00	04	00	02	0B	00	0C	03	00
164.075	0C	00	0A	09	01	08	07	00	06	00	02	0B	00	0C	03	00
164.100	00	01	0A	09	01	08	07	00	08	00	02	0B	00	0C	03	00
164.125	04	01	0A	09	01	08	07	00	0A	00	02	0B	00	0C	03	00
164.150	08	01	0A	09	01	08	07	00	0C	00	02	0B	00	0C	03	00
164.175	0C	01	0A	09	01	08	07	00	0E	00	02	0B	00	0C	03	00
164.200	00	02	0A	09	01	08	07	00	00	01	02	0B	00	0C	03	00
164.225	04	02	0A	09	01	08	07	00	02	01	02	0B	00	0C	03	00
164.250	08	02	0A	09	01	08	07	00	04	01	02	0B	00	0C	03	00
164.275	0C	02	0A	09	01	08	07	00	06	01	02	0B	00	0C	03	00
164.300	00	03	0A	09	01	08	07	00	08	01	02	0B	00	0C	03	00
164.325	04	03	0A	09	01	08	07	00	0A	01	02	0B	00	0C	03	00
164.350	08	03	0A	09	01	08	07	00	0C	01	02	0B	00	0C	03	00
164.375	0C	03	0A	09	01	08	07	00	0E	01	02	0B	00	0C	03	00
164.400	00	00	0B	09	01	08	07	00	00	02	02	0B	00	0C	03	00
164.425	04	00	0B	09	01	08	07	00	02	02	02	0B	00	0C	03	00
164.450	08	00	0B	09	01	08	07	00	04	02	02	0B	00	0C	03	00
164.475	0C	00	0B	09	01	08	07	00	06	02	02	0B	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
164.500	00	01	0B	09	01	08	07	00	08	02	02	0B	00	0C	03	00
164.525	04	01	0B	09	01	08	07	00	0A	02	02	0B	00	0C	03	00
164.550	08	01	0B	09	01	08	07	00	0C	02	02	0B	00	0C	03	00
164.575	0C	01	0B	09	01	08	07	00	0E	02	02	0B	00	0C	03	00
164.600	00	02	0B	09	01	08	07	00	00	03	02	0B	00	0C	03	00
164.625	04	02	0B	09	01	08	07	00	02	03	02	0B	00	0C	03	00
164.650	08	02	0B	09	01	08	07	00	04	03	02	0B	00	0C	03	00
164.675	0C	02	0B	09	01	08	07	00	06	03	02	0B	00	0C	03	00
164.700	00	03	0B	09	01	08	07	00	08	03	02	0B	00	0C	03	00
164.725	04	03	0B	09	01	08	07	00	0A	03	02	0B	00	0C	03	00
164.750	08	03	0B	09	01	08	07	00	0C	03	02	0B	00	0C	03	00
164.775	0C	03	0B	09	01	08	07	00	0E	03	02	0B	00	0C	03	00
164.800	00	00	0C	09	01	08	07	00	00	00	03	0B	00	0C	03	00
164.825	04	00	0C	09	01	08	07	00	02	00	03	0B	00	0C	03	00
164.850	08	00	0C	09	01	08	07	00	04	00	03	0B	00	0C	03	00
164.875	0C	00	0C	09	01	08	07	00	06	00	03	0B	00	0C	03	00
164.900	00	01	0C	09	01	08	07	00	08	00	03	0B	00	0C	03	00
164.925	04	01	0C	09	01	08	07	00	0A	00	03	0B	00	0C	03	00
164.950	08	01	0C	09	01	08	07	00	0C	00	03	0B	00	0C	03	00
164.975	0C	01	0C	09	01	08	07	00	0E	00	03	0B	00	0C	03	00
165.000	00	02	0C	09	01	08	07	00	00	01	03	0B	00	0C	03	00
165.025	04	02	0C	09	01	08	07	00	02	01	03	0B	00	0C	03	00
165.050	08	02	0C	09	01	08	07	00	04	01	03	0B	00	0C	03	00
165.075	0C	02	0C	09	01	08	07	00	06	01	03	0B	00	0C	03	00
165.100	00	03	0C	09	01	08	07	00	08	01	03	0B	00	0C	03	00
165.125	04	03	0C	09	01	08	07	00	0A	01	03	0B	00	0C	03	00
165.150	08	03	0C	09	01	08	07	00	0C	01	03	0B	00	0C	03	00
165.175	0C	03	0C	09	01	08	07	00	0E	01	03	0B	00	0C	03	00
165.200	00	00	0D	09	01	08	07	00	00	02	03	0B	00	0C	03	00
165.225	04	00	0D	09	01	08	07	00	02	02	03	0B	00	0C	03	00
165.250	08	00	0D	09	01	08	07	00	04	02	03	0B	00	0C	03	00
165.275	0C	00	0D	09	01	08	07	00	06	02	03	0B	00	0C	03	00
165.300	00	01	0D	09	01	08	07	00	08	02	03	0B	00	0C	03	00
165.325	04	01	0D	09	01	08	07	00	0A	02	03	0B	00	0C	03	00
165.350	08	01	0D	09	01	08	07	00	0C	02	03	0B	00	0C	03	00
165.375	0C	01	0D	09	01	08	07	00	0E	02	03	0B	00	0C	03	00
165.400	00	02	0D	09	01	08	07	00	00	03	03	0B	00	0C	03	00
165.425	04	02	0D	09	01	08	07	00	02	03	03	0B	00	0C	03	00
165.450	08	02	0D	09	01	08	07	00	04	03	03	0B	00	0C	03	00
165.475	0C	02	0D	09	01	08	07	00	06	03	03	0B	00	0C	03	00
165.500	00	03	0D	09	01	08	07	00	08	03	03	0B	00	0C	03	00
165.525	04	03	0D	09	01	08	07	00	0A	03	03	0B	00	0C	03	00
165.550	08	03	0D	09	01	08	07	00	0C	03	03	0B	00	0C	03	00
165.575	0C	03	0D	09	01	08	07	00	0E	03	03	0B	00	0C	03	00
165.600	00	00	0E	09	01	08	07	00	00	00	04	0B	00	0C	03	00
165.625	04	00	0E	09	01	08	07	00	02	00	04	0B	00	0C	03	00
165.650	08	00	0E	09	01	08	07	00	04	00	04	0B	00	0C	03	00
165.675	0C	00	0E	09	01	08	07	00	06	00	04	0B	00	0C	03	00
165.700	00	01	0E	09	01	08	07	00	08	00	04	0B	00	0C	03	00
165.725	04	01	0E	09	01	08	07	00	0A	00	04	0B	00	0C	03	00
165.750	08	01	0E	09	01	08	07	00	0C	00	04	0B	00	0C	03	00
165.775	0C	01	0E	09	01	08	07	00	0E	00	04	0B	00	0C	03	00
165.800	00	02	0E	09	01	08	07	00	00	01	04	0B	00	0C	03	00
165.825	04	02	0E	09	01	08	07	00	02	01	04	0B	00	0C	03	00
165.850	08	02	0E	09	01	08	07	00	04	01	04	0B	00	0C	03	00
165.875	0C	02	0E	09	01	08	07	00	06	01	04	0B	00	0C	03	00
165.900	00	03	0E	09	01	08	07	00	08	01	04	0B	00	0C	03	00
165.925	04	03	0E	09	01	08	07	00	0A	01	04	0B	00	0C	03	00
165.950	08	03	0E	09	01	08	07	00	0C	01	04	0B	00	0C	03	00
165.975	0C	03	0E	09	01	08	07	00	0E	01	04	0B	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
166.000	00	00	0F	09	01	08	07	00	00	02	04	0B	00	0C	03	00
166.025	04	00	0F	09	01	08	07	00	02	02	04	0B	00	0C	03	00
166.050	08	00	0F	09	01	08	07	00	04	02	04	0B	00	0C	03	00
166.075	0C	00	0F	09	01	08	07	00	06	02	04	0B	00	0C	03	00
166.100	00	01	0F	09	01	08	07	00	08	02	04	0B	00	0C	03	00
166.125	04	01	0F	09	01	08	07	00	0A	02	04	0B	00	0C	03	00
166.150	08	01	0F	09	01	08	07	00	0C	02	04	0B	00	0C	03	00
166.175	0C	01	0F	09	01	08	07	00	0E	02	04	0B	00	0C	03	00
166.200	00	02	0F	09	01	08	07	00	00	03	04	0B	00	0C	03	00
166.225	04	02	0F	09	01	08	07	00	02	03	04	0B	00	0C	03	00
166.250	08	02	0F	09	01	08	07	00	04	03	04	0B	00	0C	03	00
166.275	0C	02	0F	09	01	08	07	00	06	03	04	0B	00	0C	03	00
166.300	00	03	0F	09	01	08	07	00	08	03	04	0B	00	0C	03	00
166.325	04	03	0F	09	01	08	07	00	0A	03	04	0B	00	0C	03	00
166.350	08	03	0F	09	01	08	07	00	0C	03	04	0B	00	0C	03	00
166.375	0C	03	0F	09	01	08	07	00	0E	03	04	0B	00	0C	03	00
166.400	00	00	00	0A	01	08	07	00	00	00	05	0B	00	0C	03	00
166.425	04	00	00	0A	01	08	07	00	02	00	05	0B	00	0C	03	00
166.450	08	00	00	0A	01	08	07	00	04	00	05	0B	00	0C	03	00
166.475	0C	00	00	0A	01	08	07	00	06	00	05	0B	00	0C	03	00
166.500	00	01	00	0A	01	08	07	00	08	00	05	0B	00	0C	03	00
166.525	04	01	00	0A	01	08	07	00	0A	00	05	0B	00	0C	03	00
166.550	08	01	00	0A	01	08	07	00	0C	00	05	0B	00	0C	03	00
166.575	0C	01	00	0A	01	08	07	00	0E	00	05	0B	00	0C	03	00
166.600	00	02	00	0A	01	08	07	00	00	01	05	0B	00	0C	03	00
166.625	04	02	00	0A	01	08	07	00	02	01	05	0B	00	0C	03	00
166.650	08	02	00	0A	01	08	07	00	04	01	05	0B	00	0C	03	00
166.675	0C	02	00	0A	01	08	07	00	06	01	05	0B	00	0C	03	00
166.700	00	03	00	0A	01	08	07	00	08	01	05	0B	00	0C	03	00
166.725	04	03	00	0A	01	08	07	00	0A	01	05	0B	00	0C	03	00
166.750	08	03	00	0A	01	08	07	00	0C	01	05	0B	00	0C	03	00
166.775	0C	03	00	0A	01	08	07	00	0E	01	05	0B	00	0C	03	00
166.800	00	00	01	0A	01	08	07	00	00	02	05	0B	00	0C	03	00
166.825	04	00	01	0A	01	08	07	00	02	02	05	0B	00	0C	03	00
166.850	08	00	01	0A	01	08	07	00	04	02	05	0B	00	0C	03	00
166.875	0C	00	01	0A	01	08	07	00	06	02	05	0B	00	0C	03	00
166.900	00	01	01	0A	01	08	07	00	08	02	05	0B	00	0C	03	00
166.925	04	01	01	0A	01	08	07	00	0A	02	05	0B	00	0C	03	00
166.950	08	01	01	0A	01	08	07	00	0C	02	05	0B	00	0C	03	00
166.975	0C	01	01	0A	01	08	07	00	0E	02	05	0B	00	0C	03	00
167.000	00	02	01	0A	01	08	07	00	00	03	05	0B	00	0C	03	00
167.025	04	02	01	0A	01	08	07	00	02	03	05	0B	00	0C	03	00
167.050	08	02	01	0A	01	08	07	00	04	03	05	0B	00	0C	03	00
167.075	0C	02	01	0A	01	08	07	00	06	03	05	0B	00	0C	03	00
167.100	00	03	01	0A	01	08	07	00	08	03	05	0B	00	0C	03	00
167.125	04	03	01	0A	01	08	07	00	0A	03	05	0B	00	0C	03	00
167.150	08	03	01	0A	01	08	07	00	0C	03	05	0B	00	0C	03	00
167.175	0C	03	01	0A	01	08	07	00	0E	03	05	0B	00	0C	03	00
167.200	00	00	02	0A	01	08	07	00	00	00	06	0B	00	0C	03	00
167.225	04	00	02	0A	01	08	07	00	02	00	06	0B	00	0C	03	00
167.250	08	00	02	0A	01	08	07	00	04	00	06	0B	00	0C	03	00
167.275	0C	00	02	0A	01	08	07	00	06	00	06	0B	00	0C	03	00
167.300	00	01	02	0A	01	08	07	00	08	00	06	0B	00	0C	03	00
167.325	04	01	02	0A	01	08	07	00	0A	00	06	0B	00	0C	03	00
167.350	08	01	02	0A	01	08	07	00	0C	00	06	0B	00	0C	03	00
167.375	0C	01	02	0A	01	08	07	00	0E	00	06	0B	00	0C	03	00
167.400	00	02	02	0A	01	08	07	00	00	01	06	0B	00	0C	03	00
167.425	04	02	02	0A	01	08	07	00	02	01	06	0B	00	0C	03	00
167.450	08	02	02	0A	01	08	07	00	04	01	06	0B	00	0C	03	00
167.475	0C	02	02	0A	01	08	07	00	06	01	06	0B	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
167.500	00	03	02	0A	01	08	07	00	08	01	06	0B	00	0C	03	00
167.525	04	03	02	0A	01	08	07	00	0A	01	06	0B	00	0C	03	00
167.550	08	03	02	0A	01	08	07	00	0C	01	06	0B	00	0C	03	00
167.575	0C	03	02	0A	01	08	07	00	0E	01	06	0B	00	0C	03	00
167.600	00	00	03	0A	01	08	07	00	00	02	06	0B	00	0C	03	00
167.625	04	00	03	0A	01	08	07	00	02	02	06	0B	00	0C	03	00
167.650	08	00	03	0A	01	08	07	00	04	02	06	0B	00	0C	03	00
167.675	0C	00	03	0A	01	08	07	00	06	02	06	0B	00	0C	03	00
167.700	00	01	03	0A	01	08	07	00	08	02	06	0B	00	0C	03	00
167.725	04	01	03	0A	01	08	07	00	0A	02	06	0B	00	0C	03	00
167.750	08	01	03	0A	01	08	07	00	0C	02	06	0B	00	0C	03	00
167.775	0C	01	03	0A	01	08	07	00	0E	02	06	0B	00	0C	03	00
167.800	00	02	03	0A	01	08	07	00	00	03	06	0B	00	0C	03	00
167.825	04	02	03	0A	01	08	07	00	02	03	06	0B	00	0C	03	00
167.850	08	02	03	0A	01	08	07	00	04	03	06	0B	00	0C	03	00
167.875	0C	02	03	0A	01	08	07	00	06	03	06	0B	00	0C	03	00
167.900	00	03	03	0A	01	08	07	00	08	03	06	0B	00	0C	03	00
167.925	04	03	03	0A	01	08	07	00	0A	03	06	0B	00	0C	03	00
167.950	08	03	03	0A	01	08	07	00	0C	03	06	0B	00	0C	03	00
167.975	0C	03	03	0A	01	08	07	00	0E	03	06	0B	00	0C	03	00
168.000	00	00	04	0A	01	08	07	00	00	00	07	0B	00	0C	03	00
168.025	04	00	04	0A	01	08	07	00	02	00	07	0B	00	0C	03	00
168.050	08	00	04	0A	01	08	07	00	04	00	07	0B	00	0C	03	00
168.075	0C	00	04	0A	01	08	07	00	06	00	07	0B	00	0C	03	00
168.100	00	01	04	0A	01	08	07	00	08	00	07	0B	00	0C	03	00
168.125	04	01	04	0A	01	08	07	00	0A	00	07	0B	00	0C	03	00
168.150	08	01	04	0A	01	08	07	00	0C	00	07	0B	00	0C	03	00
168.175	0C	01	04	0A	01	08	07	00	0E	00	07	0B	00	0C	03	00
168.200	00	02	04	0A	01	08	07	00	00	01	07	0B	00	0C	03	00
168.225	04	02	04	0A	01	08	07	00	02	01	07	0B	00	0C	03	00
168.250	08	02	04	0A	01	08	07	00	04	01	07	0B	00	0C	03	00
168.275	0C	02	04	0A	01	08	07	00	06	01	07	0B	00	0C	03	00
168.300	00	03	04	0A	01	08	07	00	08	01	07	0B	00	0C	03	00
168.325	04	03	04	0A	01	08	07	00	0A	01	07	0B	00	0C	03	00
168.350	08	03	04	0A	01	08	07	00	0C	01	07	0B	00	0C	03	00
168.375	0C	03	04	0A	01	08	07	00	0E	01	07	0B	00	0C	03	00
168.400	00	00	05	0A	01	08	07	00	00	02	07	0B	00	0C	03	00
168.425	04	00	05	0A	01	08	07	00	02	02	07	0B	00	0C	03	00
168.450	08	00	05	0A	01	08	07	00	04	02	07	0B	00	0C	03	00
168.475	0C	00	05	0A	01	08	07	00	06	02	07	0B	00	0C	03	00
168.500	00	01	05	0A	01	08	07	00	08	02	07	0B	00	0C	03	00
168.525	04	01	05	0A	01	08	07	00	0A	02	07	0B	00	0C	03	00
168.550	08	01	05	0A	01	08	07	00	0C	02	07	0B	00	0C	03	00
168.575	0C	01	05	0A	01	08	07	00	0E	02	07	0B	00	0C	03	00
168.600	00	02	05	0A	01	08	07	00	00	03	07	0B	00	0C	03	00
168.625	04	02	05	0A	01	08	07	00	02	03	07	0B	00	0C	03	00
168.650	08	02	05	0A	01	08	07	00	04	03	07	0B	00	0C	03	00
168.675	0C	02	05	0A	01	08	07	00	06	03	07	0B	00	0C	03	00
168.700	00	03	05	0A	01	08	07	00	08	03	07	0B	00	0C	03	00
168.725	04	03	05	0A	01	08	07	00	0A	03	07	0B	00	0C	03	00
168.750	08	03	05	0A	01	08	07	00	0C	03	07	0B	00	0C	03	00
168.775	0C	03	05	0A	01	08	07	00	0E	03	07	0B	00	0C	03	00
168.800	00	00	06	0A	01	08	07	00	00	00	08	0B	00	0C	03	00
168.825	04	00	06	0A	01	08	07	00	02	00	08	0B	00	0C	03	00
168.850	08	00	06	0A	01	08	07	00	04	00	08	0B	00	0C	03	00
168.875	0C	00	06	0A	01	08	07	00	06	00	08	0B	00	0C	03	00
168.900	00	01	06	0A	01	08	07	00	08	00	08	0B	00	0C	03	00
168.925	04	01	06	0A	01	08	07	00	0A	00	08	0B	00	0C	03	00
168.950	08	01	06	0A	01	08	07	00	0C	00	08	0B	00	0C	03	00
168.975	0C	01	06	0A	01	08	07	00	0E	00	08	0B	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
169.000	00	02	06	0A	01	08	07	00	00	01	08	0B	00	0C	03	00
169.025	04	02	06	0A	01	08	07	00	02	01	08	0B	00	0C	03	00
169.050	08	02	06	0A	01	08	07	00	04	01	08	0B	00	0C	03	00
169.075	0C	02	06	0A	01	08	07	00	06	01	08	0B	00	0C	03	00
169.100	00	03	06	0A	01	08	07	00	08	01	08	0B	00	0C	03	00
169.125	04	03	06	0A	01	08	07	00	0A	01	08	0B	00	0C	03	00
169.150	08	03	06	0A	01	08	07	00	0C	01	08	0B	00	0C	03	00
169.175	0C	03	06	0A	01	08	07	00	0E	01	08	0B	00	0C	03	00
169.200	00	00	07	0A	01	08	07	00	00	02	08	0B	00	0C	03	00
169.225	04	00	07	0A	01	08	07	00	02	02	08	0B	00	0C	03	00
169.250	08	00	07	0A	01	08	07	00	04	02	08	0B	00	0C	03	00
169.275	0C	00	07	0A	01	08	07	00	06	02	08	0B	00	0C	03	00
169.300	00	01	07	0A	01	08	07	00	08	02	08	0B	00	0C	03	00
169.325	04	01	07	0A	01	08	07	00	0A	02	08	0B	00	0C	03	00
169.350	08	01	07	0A	01	08	07	00	0C	02	08	0B	00	0C	03	00
169.375	0C	01	07	0A	01	08	07	00	0E	02	08	0B	00	0C	03	00
169.400	00	02	07	0A	01	08	07	00	00	03	08	0B	00	0C	03	00
169.425	04	02	07	0A	01	08	07	00	02	03	08	0B	00	0C	03	00
169.450	08	02	07	0A	01	08	07	00	04	03	08	0B	00	0C	03	00
169.475	0C	02	07	0A	01	08	07	00	06	03	08	0B	00	0C	03	00
169.500	00	03	07	0A	01	08	07	00	08	03	08	0B	00	0C	03	00
169.525	04	03	07	0A	01	08	07	00	0A	03	08	0B	00	0C	03	00
169.550	08	03	07	0A	01	08	07	00	0C	03	08	0B	00	0C	03	00
169.575	0C	03	07	0A	01	08	07	00	0E	03	08	0B	00	0C	03	00
169.600	00	00	08	0A	01	08	07	00	00	00	09	0B	00	0C	03	00
169.625	04	00	08	0A	01	08	07	00	02	00	09	0B	00	0C	03	00
169.650	08	00	08	0A	01	08	07	00	04	00	09	0B	00	0C	03	00
169.675	0C	00	08	0A	01	08	07	00	06	00	09	0B	00	0C	03	00
169.700	00	01	08	0A	01	08	07	00	08	00	09	0B	00	0C	03	00
169.725	04	01	08	0A	01	08	07	00	0A	00	09	0B	00	0C	03	00
169.750	08	01	08	0A	01	08	07	00	0C	00	09	0B	00	0C	03	00
169.775	0C	01	08	0A	01	08	07	00	0E	00	09	0B	00	0C	03	00
169.800	00	02	08	0A	01	08	07	00	00	01	09	0B	00	0C	03	00
169.825	04	02	08	0A	01	08	07	00	02	01	09	0B	00	0C	03	00
169.850	08	02	08	0A	01	08	07	00	04	01	09	0B	00	0C	03	00
169.875	0C	02	08	0A	01	08	07	00	06	01	09	0B	00	0C	03	00
169.900	00	03	08	0A	01	08	07	00	08	01	09	0B	00	0C	03	00
169.925	04	03	08	0A	01	08	07	00	0A	01	09	0B	00	0C	03	00
169.950	08	03	08	0A	01	08	07	00	0C	01	09	0B	00	0C	03	00
169.975	0C	03	08	0A	01	08	07	00	0E	01	09	0B	00	0C	03	00
170.000	00	00	09	0A	01	08	07	00	00	02	09	0B	00	0C	03	00
170.025	04	00	09	0A	01	08	07	00	02	02	09	0B	00	0C	03	00
170.050	08	00	09	0A	01	08	07	00	04	02	09	0B	00	0C	03	00
170.075	0C	00	09	0A	01	08	07	00	06	02	09	0B	00	0C	03	00
170.100	00	01	09	0A	01	08	07	00	08	02	09	0B	00	0C	03	00
170.125	04	01	09	0A	01	08	07	00	0A	02	09	0B	00	0C	03	00
170.150	08	01	09	0A	01	08	07	00	0C	02	09	0B	00	0C	03	00
170.175	0C	01	09	0A	01	08	07	00	0E	02	09	0B	00	0C	03	00
170.200	00	02	09	0A	01	08	07	00	00	03	09	0B	00	0C	03	00
170.225	04	02	09	0A	01	08	07	00	02	03	09	0B	00	0C	03	00
170.250	08	02	09	0A	01	08	07	00	04	03	09	0B	00	0C	03	00
170.275	0C	02	09	0A	01	08	07	00	06	03	09	0B	00	0C	03	00
170.300	00	03	09	0A	01	08	07	00	08	03	09	0B	00	0C	03	00
170.325	04	03	09	0A	01	08	07	00	0A	03	09	0B	00	0C	03	00
170.350	08	03	09	0A	01	08	07	00	0C	03	09	0B	00	0C	03	00
170.375	0C	03	09	0A	01	08	07	00	0E	03	09	0B	00	0C	03	00
170.400	00	00	0A	0A	01	08	07	00	00	00	0A	0B	00	0C	03	00
170.425	04	00	0A	0A	01	08	07	00	02	00	0A	0B	00	0C	03	00
170.450	08	00	0A	0A	01	08	07	00	04	00	0A	0B	00	0C	03	00
170.475	0C	00	0A	0A	01	08	07	00	06	00	0A	0B	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
170.500	00	01	0A	0A	01	08	07	00	08	00	0A	0B	00	0C	03	00
170.525	04	01	0A	0A	01	08	07	00	0A	00	0A	0B	00	0C	03	00
170.550	08	01	0A	0A	01	08	07	00	0C	00	0A	0B	00	0C	03	00
170.575	0C	01	0A	0A	01	08	07	00	0E	00	0A	0B	00	0C	03	00
170.600	00	02	0A	0A	01	08	07	00	00	01	0A	0B	00	0C	03	00
170.625	04	02	0A	0A	01	08	07	00	02	01	0A	0B	00	0C	03	00
170.650	08	02	0A	0A	01	08	07	00	04	01	0A	0B	00	0C	03	00
170.675	0C	02	0A	0A	01	08	07	00	06	01	0A	0B	00	0C	03	00
170.700	00	03	0A	0A	01	08	07	00	08	01	0A	0B	00	0C	03	00
170.725	04	03	0A	0A	01	08	07	00	0A	01	0A	0B	00	0C	03	00
170.750	08	03	0A	0A	01	08	07	00	0C	01	0A	0B	00	0C	03	00
170.775	0C	03	0A	0A	01	08	07	00	0E	01	0A	0B	00	0C	03	00
170.800	00	00	0B	0A	01	08	07	00	00	02	0A	0B	00	0C	03	00
170.825	04	00	0B	0A	01	08	07	00	02	02	0A	0B	00	0C	03	00
170.850	08	00	0B	0A	01	08	07	00	04	02	0A	0B	00	0C	03	00
170.875	0C	00	0B	0A	01	08	07	00	06	02	0A	0B	00	0C	03	00
170.900	00	01	0B	0A	01	08	07	00	08	02	0A	0B	00	0C	03	00
170.925	04	01	0B	0A	01	08	07	00	0A	02	0A	0B	00	0C	03	00
170.950	08	01	0B	0A	01	08	07	00	0C	02	0A	0B	00	0C	03	00
170.975	0C	01	0B	0A	01	08	07	00	0E	02	0A	0B	00	0C	03	00
171.000	00	02	0B	0A	01	08	07	00	00	03	0A	0B	00	0C	03	00
171.025	04	02	0B	0A	01	08	07	00	02	03	0A	0B	00	0C	03	00
171.050	08	02	0B	0A	01	08	07	00	04	03	0A	0B	00	0C	03	00
171.075	0C	02	0B	0A	01	08	07	00	06	03	0A	0B	00	0C	03	00
171.100	00	03	0B	0A	01	08	07	00	08	03	0A	0B	00	0C	03	00
171.125	04	03	0B	0A	01	08	07	00	0A	03	0A	0B	00	0C	03	00
171.150	08	03	0B	0A	01	08	07	00	0C	03	0A	0B	00	0C	03	00
171.175	0C	03	0B	0A	01	08	07	00	0E	03	0A	0B	00	0C	03	00
171.200	00	00	0C	0A	01	08	07	00	00	00	0B	0B	00	0C	03	00
171.225	04	00	0C	0A	01	08	07	00	02	00	0B	0B	00	0C	03	00
171.250	08	00	0C	0A	01	08	07	00	04	00	0B	0B	00	0C	03	00
171.275	0C	00	0C	0A	01	08	07	00	06	00	0B	0B	00	0C	03	00
171.300	00	01	0C	0A	01	08	07	00	08	00	0B	0B	00	0C	03	00
171.325	04	01	0C	0A	01	08	07	00	0A	00	0B	0B	00	0C	03	00
171.350	08	01	0C	0A	01	08	07	00	0C	00	0B	0B	00	0C	03	00
171.375	0C	01	0C	0A	01	08	07	00	0E	00	0B	0B	00	0C	03	00
171.400	00	02	0C	0A	01	08	07	00	00	01	0B	0B	00	0C	03	00
171.425	04	02	0C	0A	01	08	07	00	02	01	0B	0B	00	0C	03	00
171.450	08	02	0C	0A	01	08	07	00	04	01	0B	0B	00	0C	03	00
171.475	0C	02	0C	0A	01	08	07	00	06	01	0B	0B	00	0C	03	00
171.500	00	03	0C	0A	01	08	07	00	08	01	0B	0B	00	0C	03	00
171.525	04	03	0C	0A	01	08	07	00	0A	01	0B	0B	00	0C	03	00
171.550	08	03	0C	0A	01	08	07	00	0C	01	0B	0B	00	0C	03	00
171.575	0C	03	0C	0A	01	08	07	00	0E	01	0B	0B	00	0C	03	00
171.600	00	00	0D	0A	01	08	07	00	00	02	0B	0B	00	0C	03	00
171.625	04	00	0D	0A	01	08	07	00	02	02	0B	0B	00	0C	03	00
171.650	08	00	0D	0A	01	08	07	00	04	02	0B	0B	00	0C	03	00
171.675	0C	00	0D	0A	01	08	07	00	06	02	0B	0B	00	0C	03	00
171.700	00	01	0D	0A	01	08	07	00	08	02	0B	0B	00	0C	03	00
171.725	04	01	0D	0A	01	08	07	00	0A	02	0B	0B	00	0C	03	00
171.750	08	01	0D	0A	01	08	07	00	0C	02	0B	0B	00	0C	03	00
171.775	0C	01	0D	0A	01	08	07	00	0E	02	0B	0B	00	0C	03	00
171.800	00	02	0D	0A	01	08	07	00	00	03	0B	0B	00	0C	03	00
171.825	04	02	0D	0A	01	08	07	00	02	03	0B	0B	00	0C	03	00
171.850	08	02	0D	0A	01	08	07	00	04	03	0B	0B	00	0C	03	00
171.875	0C	02	0D	0A	01	08	07	00	06	03	0B	0B	00	0C	03	00
171.900	00	03	0D	0A	01	08	07	00	08	03	0B	0B	00	0C	03	00
171.925	04	03	0D	0A	01	08	07	00	0A	03	0B	0B	00	0C	03	00
171.950	08	03	0D	0A	01	08	07	00	0C	03	0B	0B	00	0C	03	00
171.975	0C	03	0D	0A	01	08	07	00	0E	03	0B	0B	00	0C	03	00

***H	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
172.000	00	00	0E	0A	01	08	07	00	00	00	0C	0B	00	0C	03	00
172.025	04	00	0E	0A	01	08	07	00	02	00	0C	0B	00	0C	03	00
172.050	08	00	0E	0A	01	08	07	00	04	00	0C	0B	00	0C	03	00
172.075	0C	00	0E	0A	01	08	07	00	06	00	0C	0B	00	0C	03	00
172.100	00	01	0E	0A	01	08	07	00	08	00	0C	0B	00	0C	03	00
172.125	04	01	0E	0A	01	08	07	00	0A	00	0C	0B	00	0C	03	00
172.150	08	01	0E	0A	01	08	07	00	0C	00	0C	0B	00	0C	03	00
172.175	0C	01	0E	0A	01	08	07	00	0E	00	0C	0B	00	0C	03	00
172.200	00	02	0E	0A	01	08	07	00	00	01	0C	0B	00	0C	03	00
172.225	04	02	0E	0A	01	08	07	00	02	01	0C	0B	00	0C	03	00
172.250	08	02	0E	0A	01	08	07	00	04	01	0C	0B	00	0C	03	00
172.275	0C	02	0E	0A	01	08	07	00	06	01	0C	0B	00	0C	03	00
172.300	00	03	0E	0A	01	08	07	00	08	01	0C	0B	00	0C	03	00
172.325	04	03	0E	0A	01	08	07	00	0A	01	0C	0B	00	0C	03	00
172.350	08	03	0E	0A	01	08	07	00	0C	01	0C	0B	00	0C	03	00
172.375	0C	03	0E	0A	01	08	07	00	0E	01	0C	0B	00	0C	03	00
172.400	00	00	0F	0A	01	08	07	00	00	02	0C	0B	00	0C	03	00
172.425	04	00	0F	0A	01	08	07	00	02	02	0C	0B	00	0C	03	00
172.450	08	00	0F	0A	01	08	07	00	04	02	0C	0B	00	0C	03	00
172.475	0C	00	0F	0A	01	08	07	00	06	02	0C	0B	00	0C	03	00
172.500	00	01	0F	0A	01	08	07	00	08	02	0C	0B	00	0C	03	00
172.525	04	01	0F	0A	01	08	07	00	0A	02	0C	0B	00	0C	03	00
172.550	08	01	0F	0A	01	08	07	00	0C	02	0C	0B	00	0C	03	00
172.575	0C	01	0F	0A	01	08	07	00	0E	02	0C	0B	00	0C	03	00
172.600	00	02	0F	0A	01	08	07	00	00	03	0C	0B	00	0C	03	00
172.625	04	02	0F	0A	01	08	07	00	02	03	0C	0B	00	0C	03	00
172.650	08	02	0F	0A	01	08	07	00	04	03	0C	0B	00	0C	03	00
172.675	0C	02	0F	0A	01	08	07	00	06	03	0C	0B	00	0C	03	00
172.700	00	03	0F	0A	01	08	07	00	08	03	0C	0B	00	0C	03	00
172.725	04	03	0F	0A	01	08	07	00	0A	03	0C	0B	00	0C	03	00
172.750	08	03	0F	0A	01	08	07	00	0C	03	0C	0B	00	0C	03	00
172.775	0C	03	0F	0A	01	08	07	00	0E	03	0C	0B	00	0C	03	00
172.800	00	00	00	0B	01	08	07	00	00	00	0D	0B	00	0C	03	00
172.825	04	00	00	0B	01	08	07	00	02	00	0D	0B	00	0C	03	00
172.850	08	00	00	0B	01	08	07	00	04	00	0D	0B	00	0C	03	00
172.875	0C	00	00	0B	01	08	07	00	06	00	0D	0B	00	0C	03	00
172.900	00	01	00	0B	01	08	07	00	08	00	0D	0B	00	0C	03	00
172.925	04	01	00	0B	01	08	07	00	0A	00	0D	0B	00	0C	03	00
172.950	08	01	00	0B	01	08	07	00	0C	00	0D	0B	00	0C	03	00
172.975	0C	01	00	0B	01	08	07	00	0E	00	0D	0B	00	0C	03	00
173.000	00	02	00	0B	01	08	07	00	00	01	0D	0B	00	0C	03	00
173.025	04	02	00	0B	01	08	07	00	02	01	0D	0B	00	0C	03	00
173.050	08	02	00	0B	01	08	07	00	04	01	0D	0B	00	0C	03	00
173.075	0C	02	00	0B	01	08	07	00	06	01	0D	0B	00	0C	03	00
173.100	00	03	00	0B	01	08	07	00	08	01	0D	0B	00	0C	03	00
173.125	04	03	00	0B	01	08	07	00	0A	01	0D	0B	00	0C	03	00
173.150	08	03	00	0B	01	08	07	00	0C	01	0D	0B	00	0C	03	00
173.175	0C	03	00	0B	01	08	07	00	0E	01	0D	0B	00	0C	03	00
173.200	00	00	01	0B	01	08	07	00	00	02	0D	0B	00	0C	03	00
173.225	04	00	01	0B	01	08	07	00	02	02	0D	0B	00	0C	03	00
173.250	0B	00	01	0B	01	08	07	00	04	02	0D	0B	00	0C	03	00
173.275	0C	00	01	0B	01	08	07	00	06	02	0D	0B	00	0C	03	00
173.300	00	01	01	0B	01	08	07	00	08	02	0D	0B	00	0C	03	00
173.325	04	01	01	0B	01	08	07	00	0A	02	0D	0B	00	0C	03	00
173.350	08	01	01	0B	01	08	07	00	0C	02	0D	0B	00	0C	03	00
173.375	0C	01	01	0B	01	08	07	00	0E	02	0D	0B	00	0C	03	00
173.400	00	02	01	0B	01	08	07	00	00	03	0D	0B	00	0C	03	00
173.425	04	02	01	0B	01	08	07	00	02	03	0D	0B	00	0C	03	00
173.450	08	02	01	0B	01	08	07	00	04	03	0D	0B	00	0C	03	00
173.475	0C	02	01	0B	01	08	07	00	06	03	0D	0B	00	0C	03	00

	VHF TX PROGRAM								VHF RX PROGRAM							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
F (MHz)	8	9	A	B	C	D	E	F	8	9	A	B	C	D	E	F
173.500	00	03	01	0B	01	08	07	00	08	03	0D	0B	00	0C	03	00
173.525	04	03	01	0B	01	08	07	00	0A	03	0D	0B	00	0C	03	00
173.550	08	03	01	0B	01	08	07	00	0C	03	0D	0B	00	0C	03	00
173.575	0C	03	01	0B	01	08	07	00	0E	03	0D	0B	00	0C	03	00
173.600	00	00	02	0B	01	08	07	00	00	00	0E	0B	00	0C	03	00
173.625	04	00	02	0B	01	08	07	00	02	00	0E	0B	00	0C	03	00
173.650	08	00	02	0B	01	08	07	00	04	00	0E	0B	00	0C	03	00
173.675	0C	00	02	0B	01	08	07	00	06	00	0E	0B	00	0C	03	00
173.700	00	01	02	0B	01	08	07	00	08	00	0E	0B	00	0C	03	00
173.725	04	01	02	0B	01	08	07	00	0A	00	0E	0B	00	0C	03	00
173.750	08	01	02	0B	01	08	07	00	0C	00	0E	0B	00	0C	03	00
173.775	0C	01	02	0B	01	08	07	00	0E	00	0E	0B	00	0C	03	00
173.800	00	02	02	0B	01	08	07	00	00	01	0E	0B	00	0C	03	00
173.825	04	02	02	0B	01	08	07	00	02	01	0E	0B	00	0C	03	00
173.850	08	02	02	0B	01	08	07	00	04	01	0E	0B	00	0C	03	00
173.875	0C	02	02	0B	01	08	07	00	06	01	0E	0B	00	0C	03	00
173.900	00	03	02	0B	01	08	07	00	08	01	0E	0B	00	0C	03	00
173.925	04	03	02	0B	01	08	07	00	0A	01	0E	0B	00	0C	03	00
173.950	08	03	02	0B	01	08	07	00	0C	01	0E	0B	00	0C	03	00
173.975	0C	03	02	0B	01	08	07	00	0E	01	0E	0B	00	0C	03	00
174.000	00	00	03	0B	01	08	07	00	00	02	0E	0B	00	0C	03	00
						08	07	00						0C	03	00
						08	07	00						0C	03	00
						08	07	00						0C	03	00
						08	07	00						0C	03	00
						08	07	00						0C	03	00
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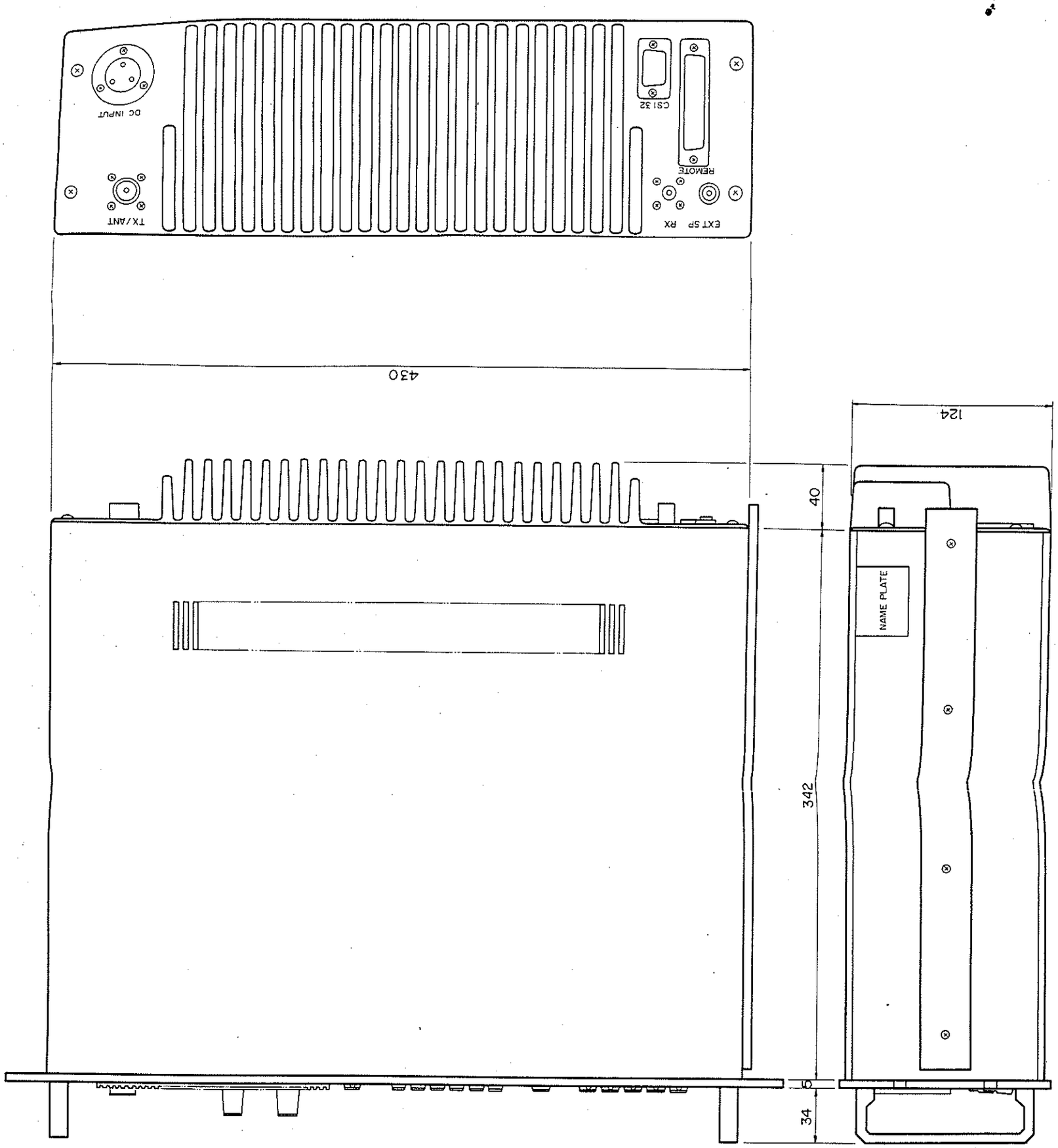
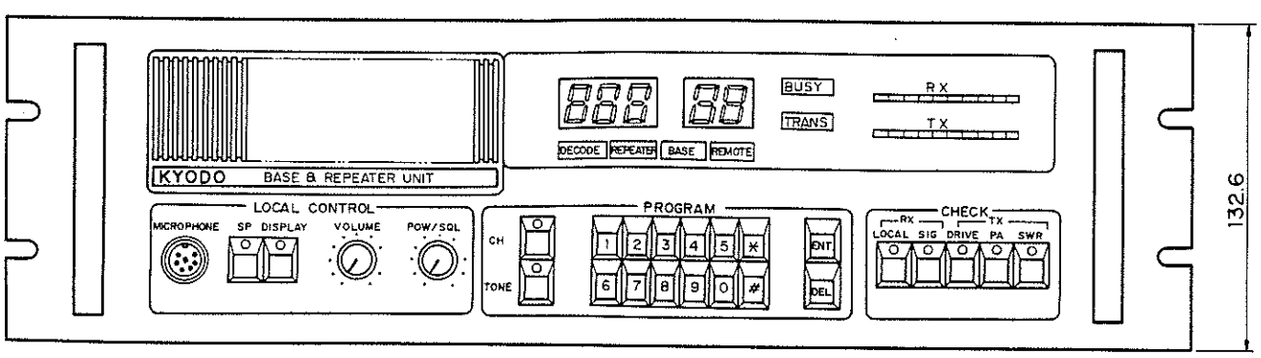
						08	07	00						0C	03	00
						08	07	00						0C	03	00
						08	07	00						0C	03	00
						08	07	00						0C	03	00
						08	07	00						0C	03	00
						08	07	00						0C	03	00
						08	07	00						0C	03	00

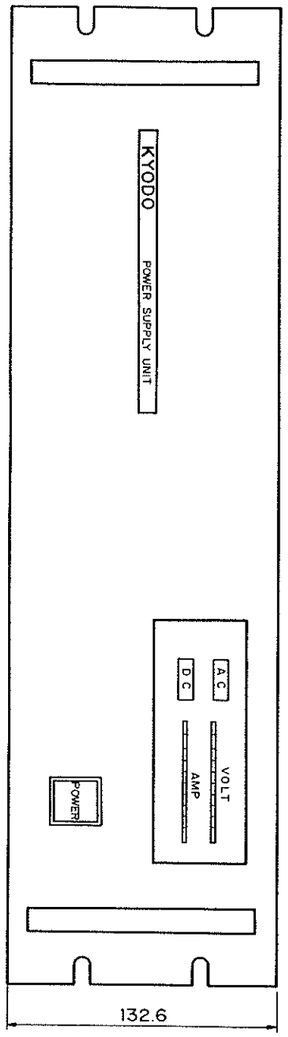
TECHNICAL DRAWINGS

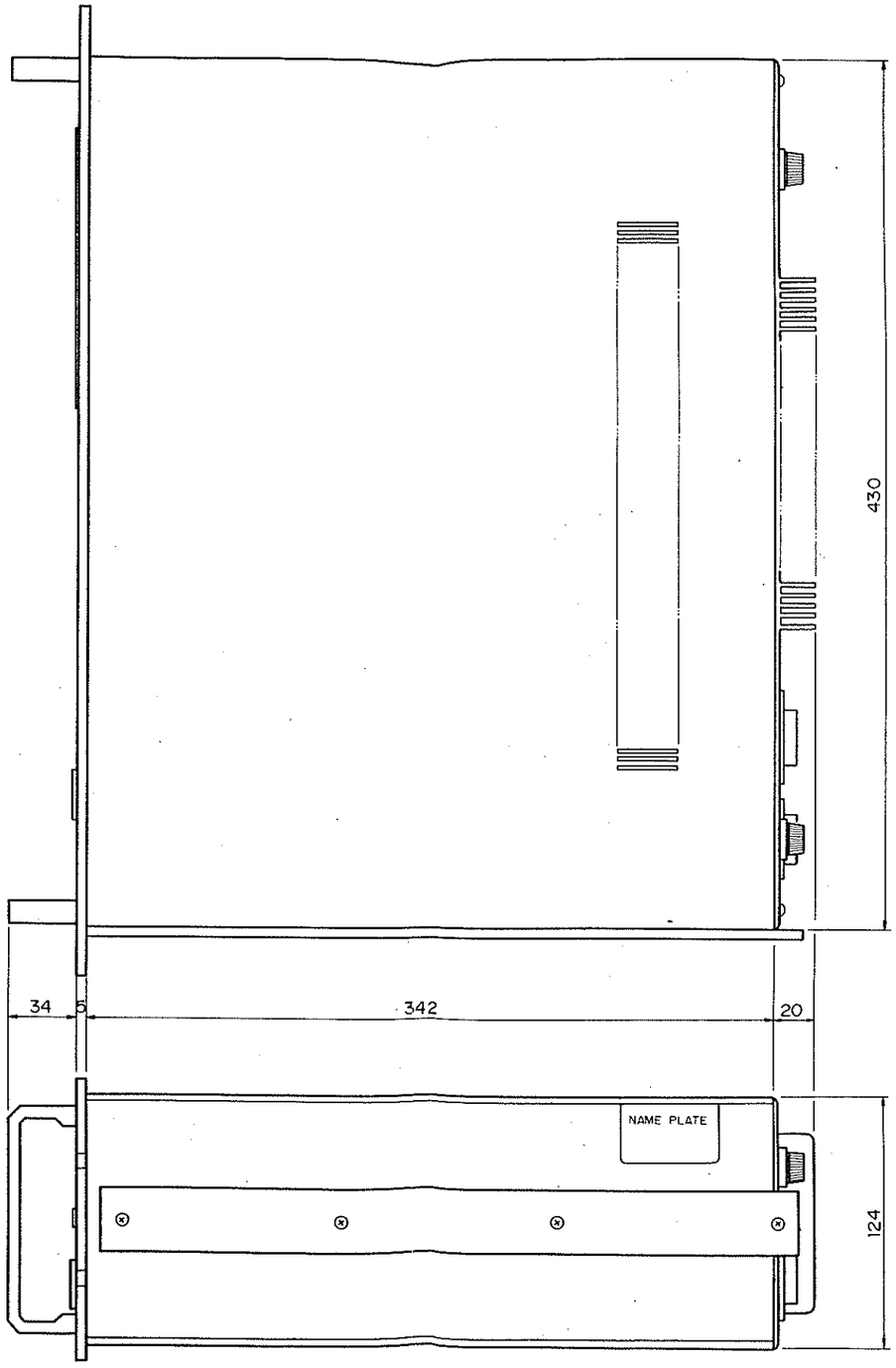
OUTLINE DRAWING FOR KG 110 TX/RX UNIT

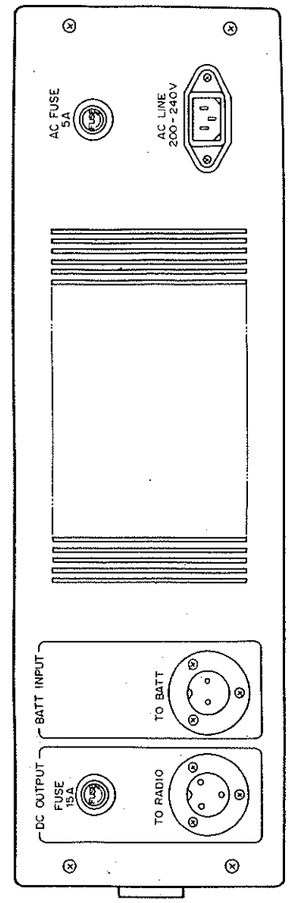
UNIT : mm





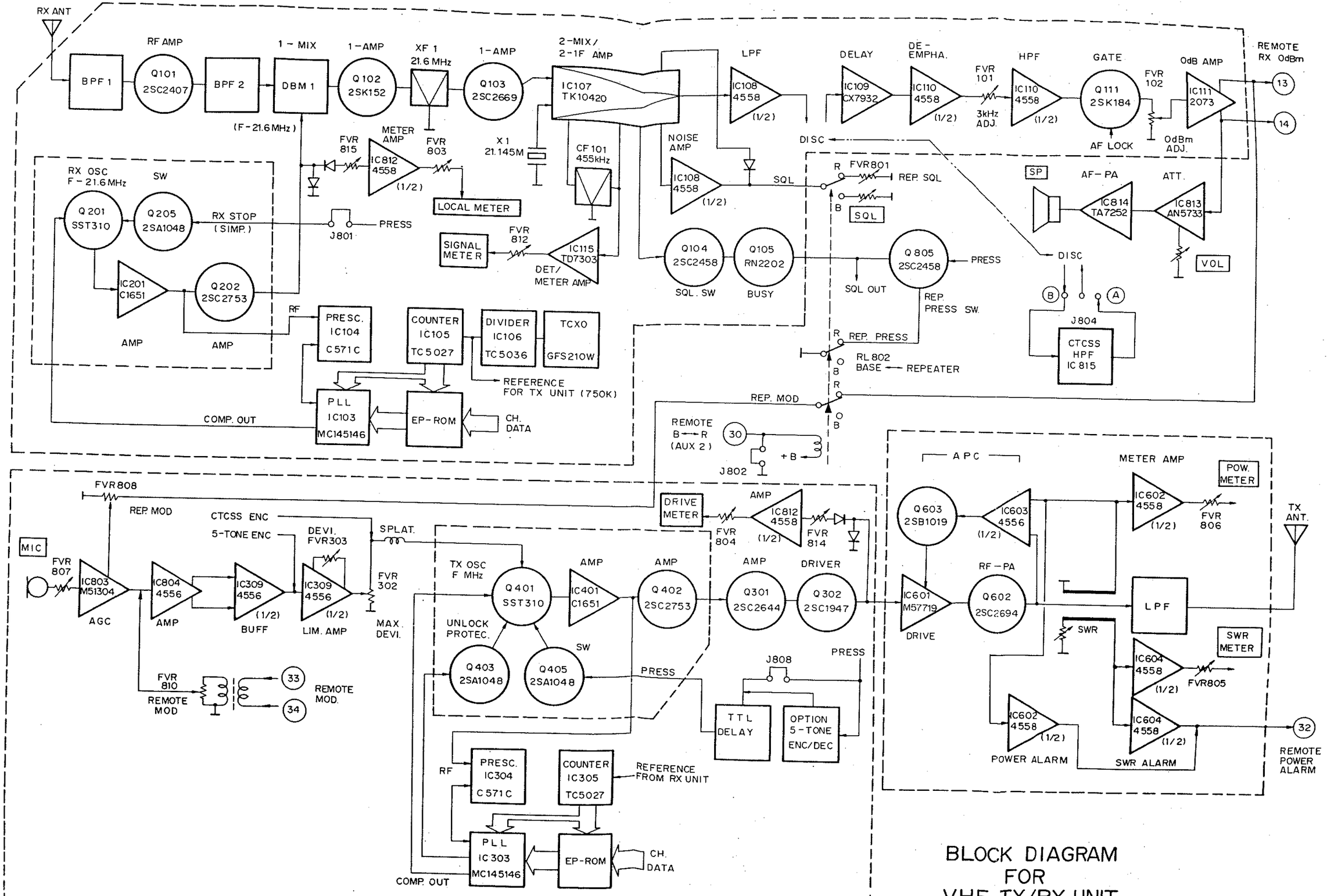




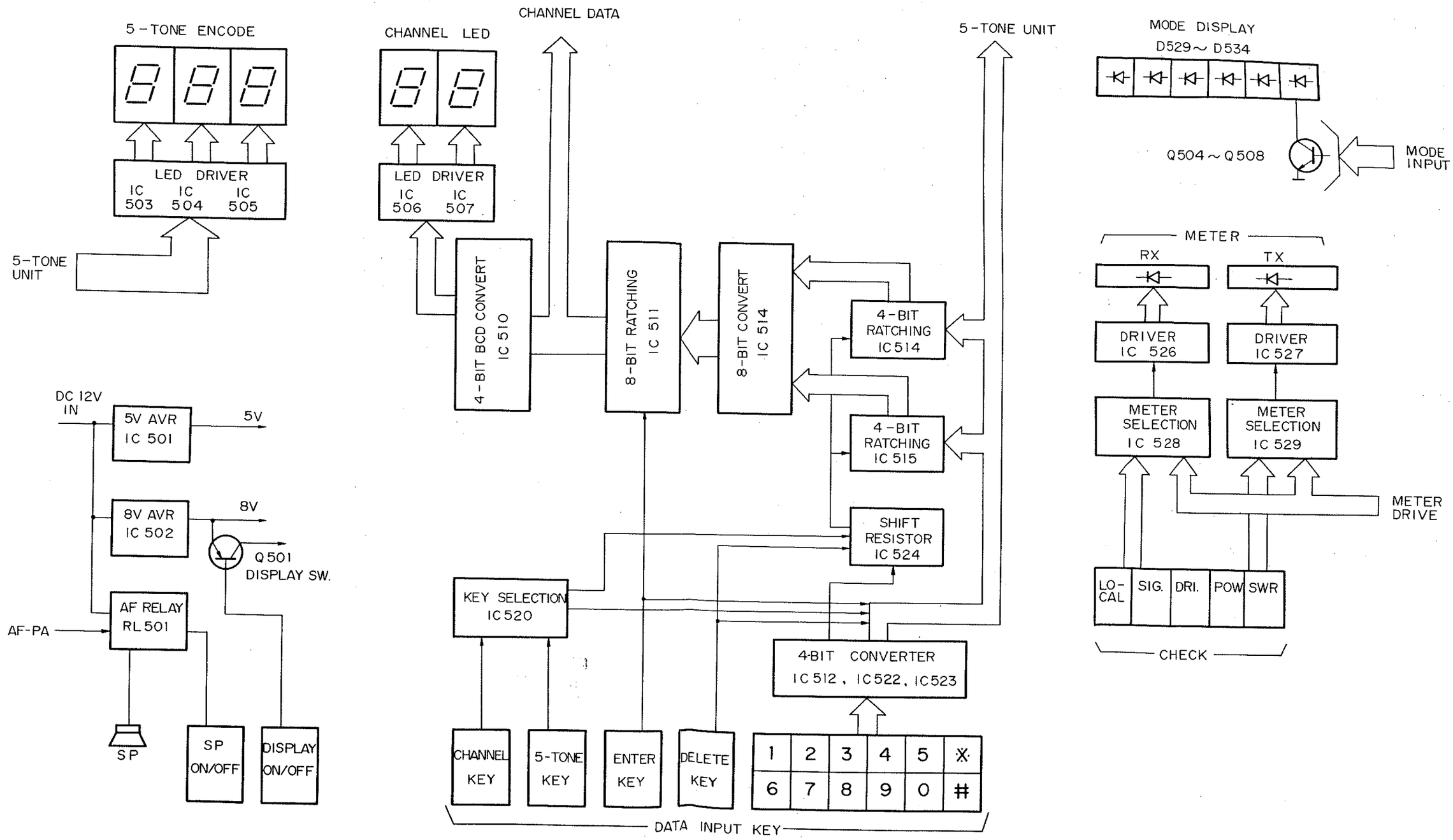


UNIT : mm

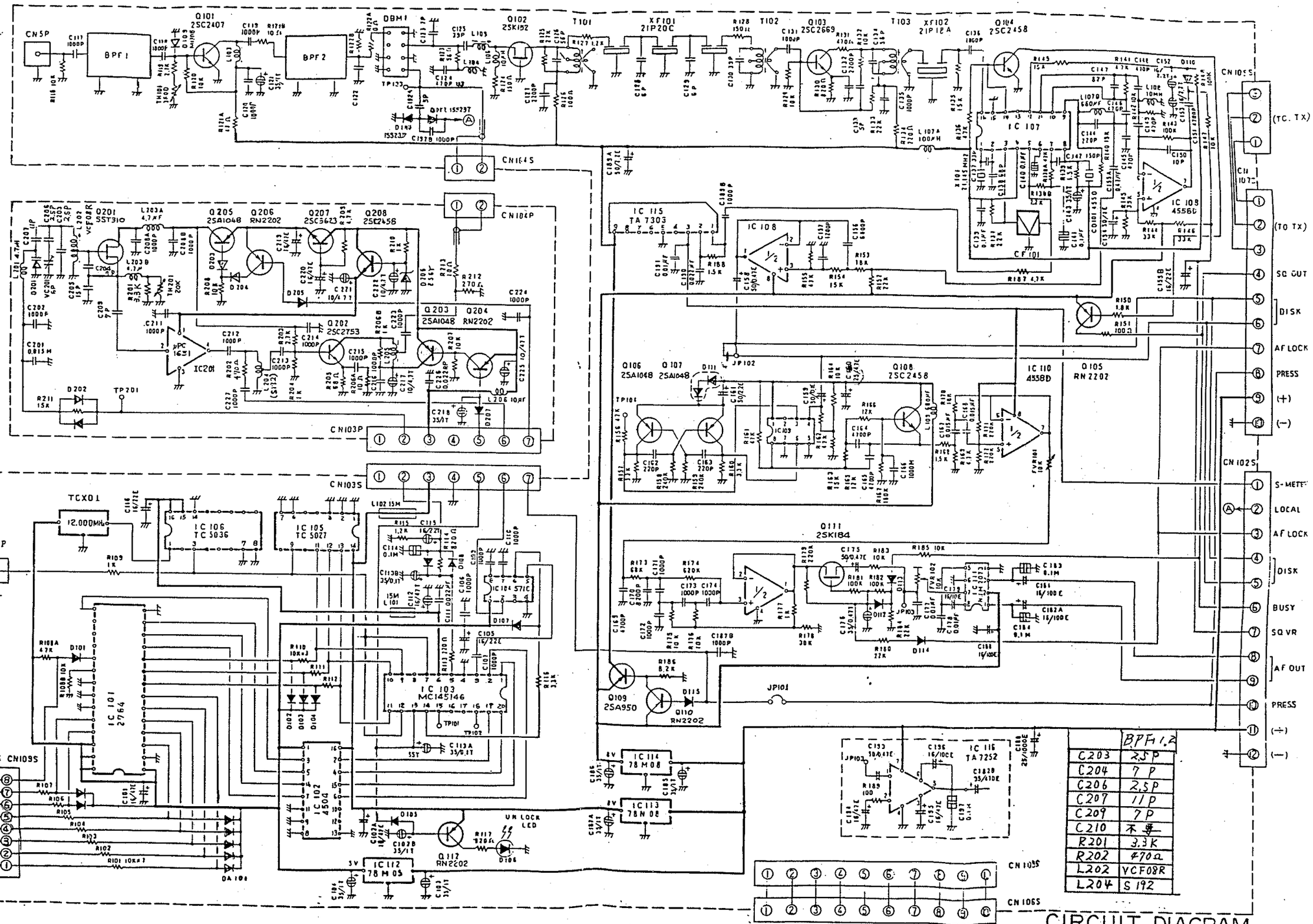
OUTLINE DRAWING FOR PS110 POWER SUPPLY UNIT



BLOCK DIAGRAM FOR VHF TX/RX UNIT

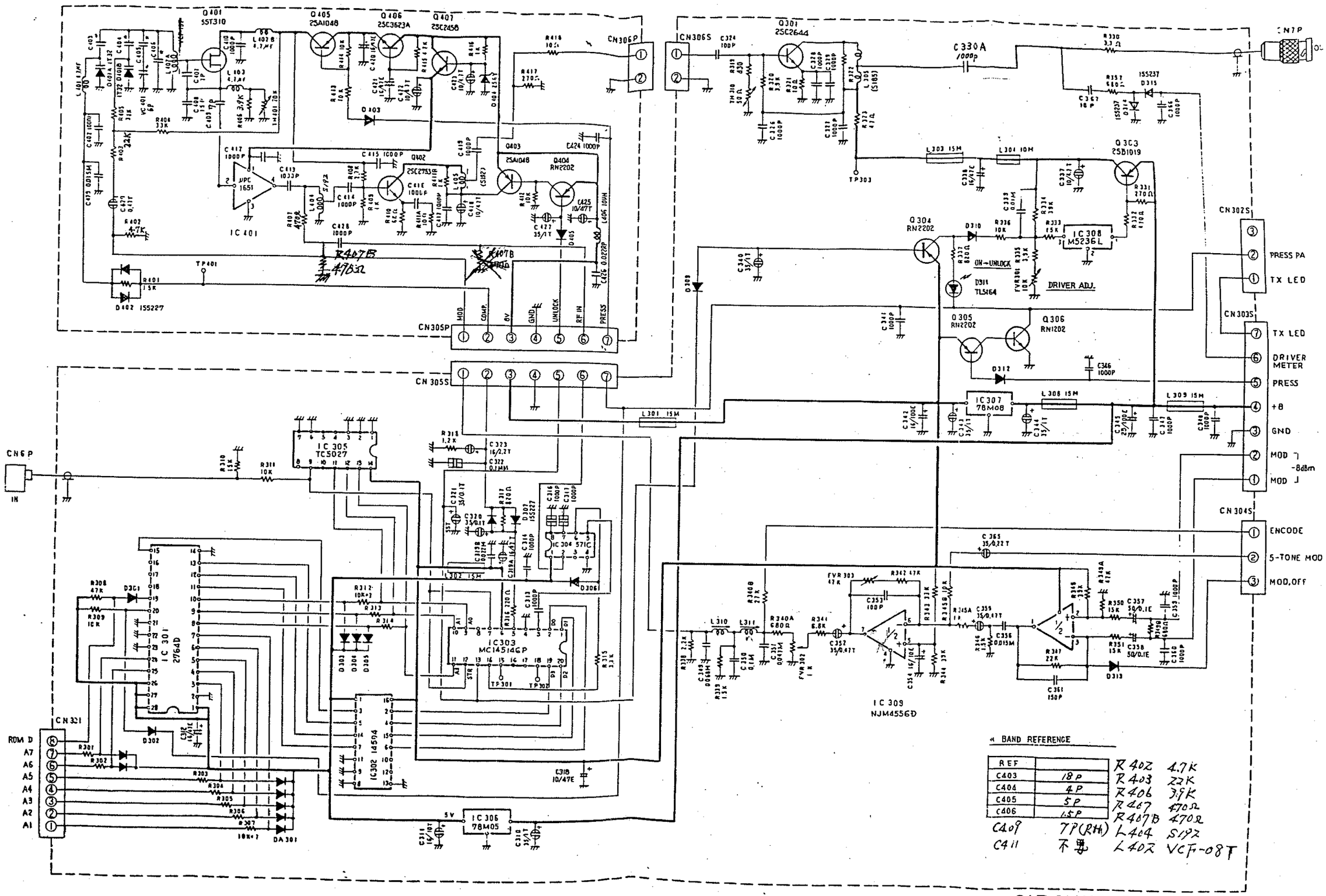


BLOCK DIAGRAM FOR FRONT PANEL UNIT



BPF1,2	
C203	2.5P
C204	7P
C206	2.5P
C207	11P
C209	7P
C210	不要
R201	3.3K
R202	470Ω
L202	VCF08R
L204	S192

CIRCUIT DIAGRAM



« BAND REFERENCE

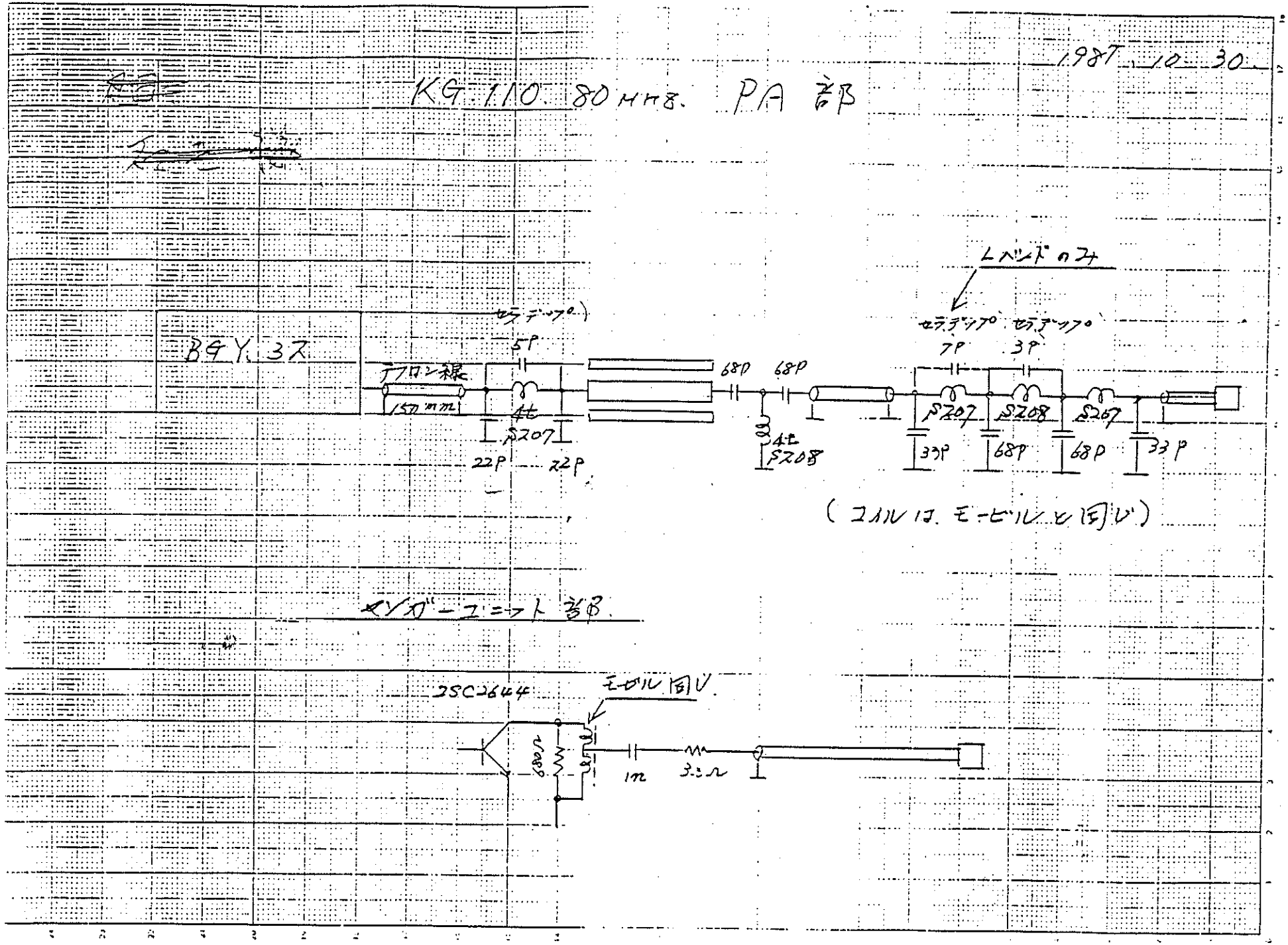
REF	
C403	18P
C404	4P
C405	5P
C406	1.5P
C409	7P(RH)
C411	不用

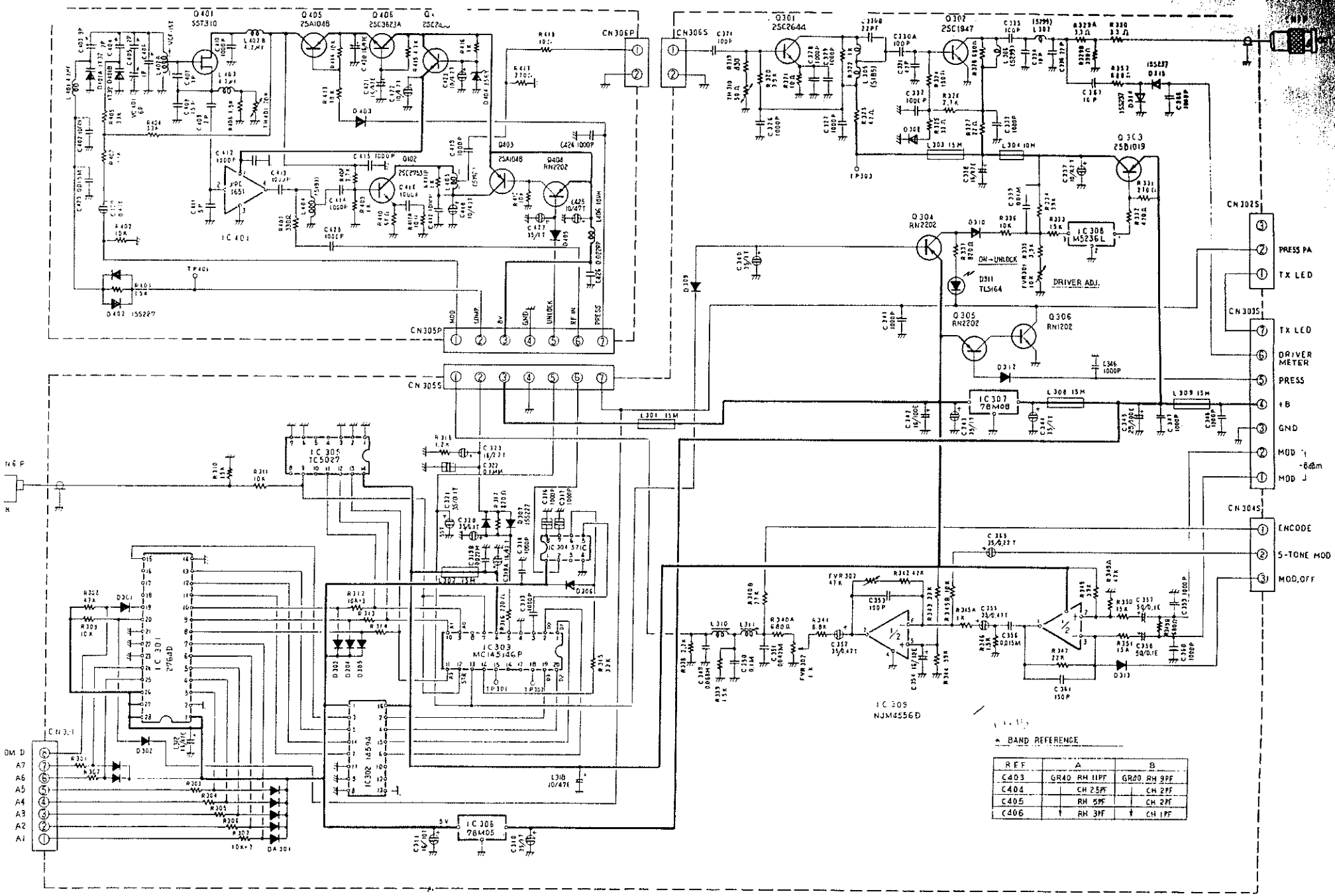
R402	4.7K
R403	22K
R406	3.9K
R407	470Ω
R407B	470Ω
L404	S1912
L402	VCF-08T

CIRCUIT DIAGRAM

1987.10.30

KG 110. 80 MHz. PA 部



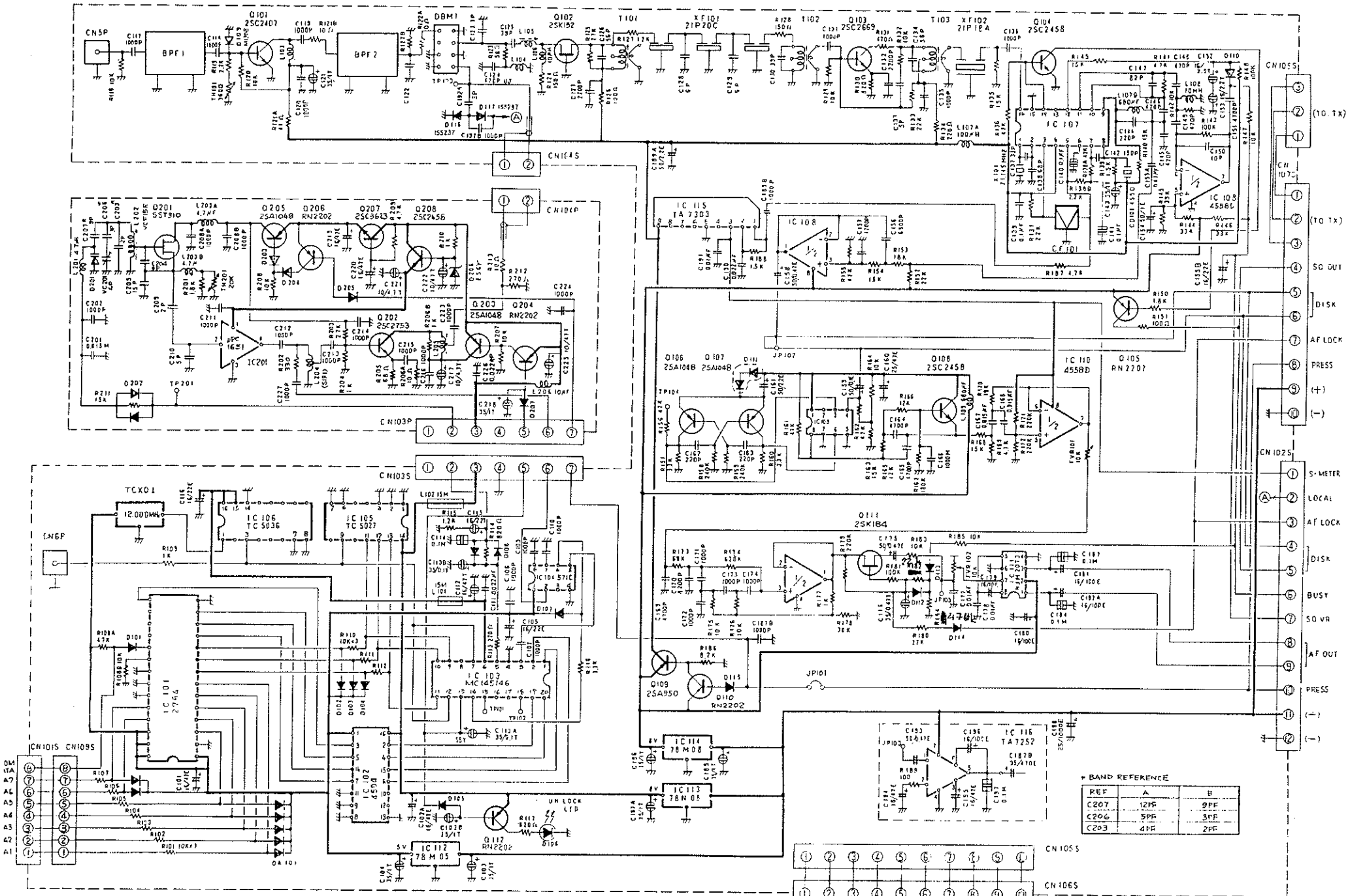


* BAND REFERENCE

REF	A	B
C403	GR40 RH 11PF	GR80 RH 9PF
C404	↑ CH 25PF	↑ CH 2PF
C405	↑ RH 5PF	↑ CH 2PF
C406	↑ RH 3PF	↑ CH 1PF

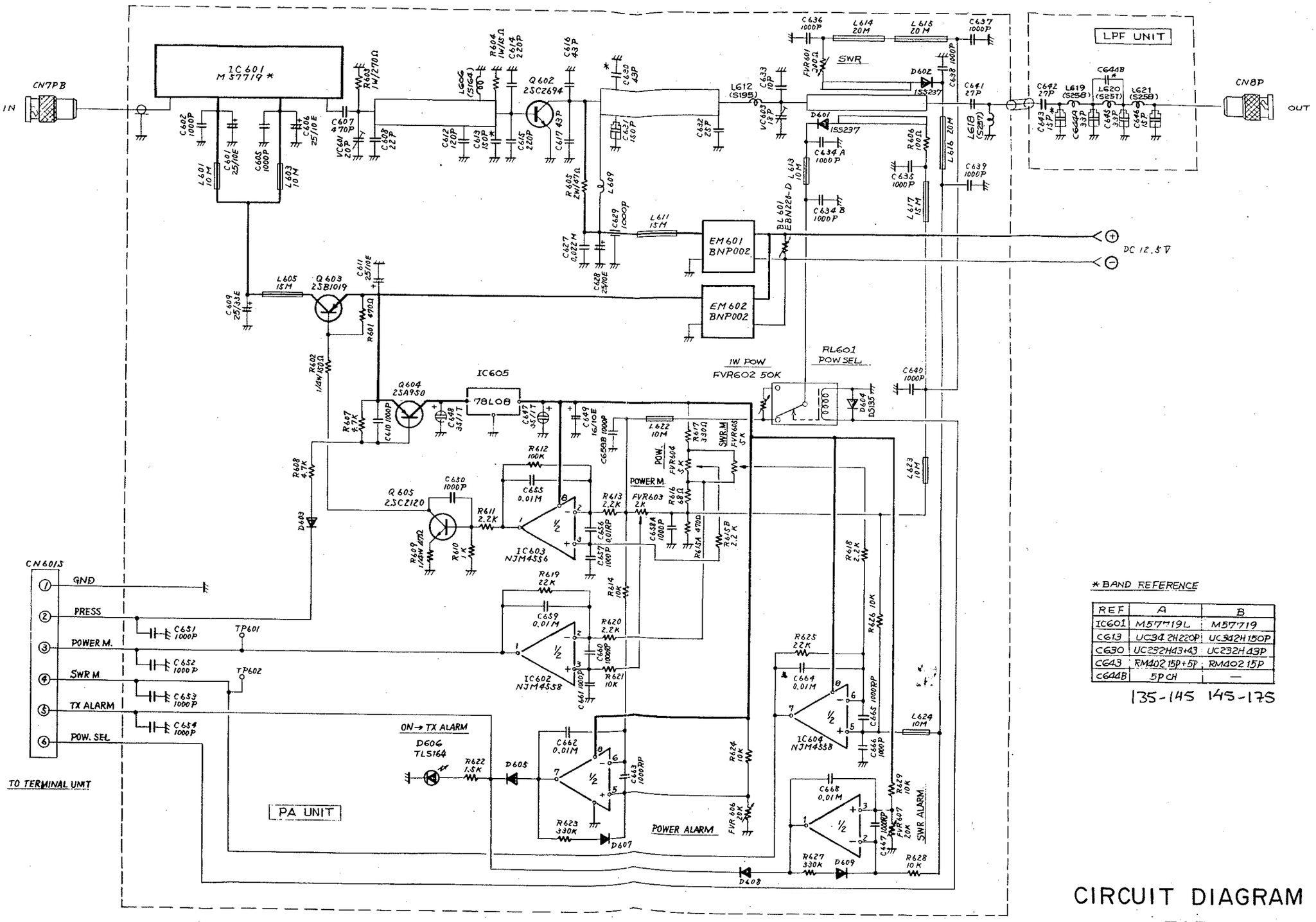
150 MHz

CIRCUIT DIAGRAM FOR KG110 TX VHF MAIN UNIT



150 MHz

CIRCUIT DIAGRAM FOR KG110 RX VHF M N UNIT

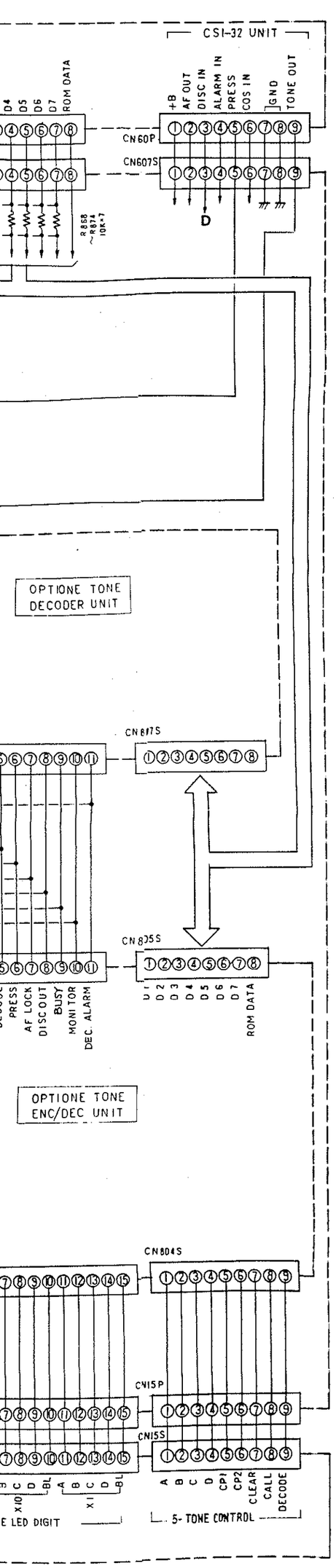


* BAND REFERENCE

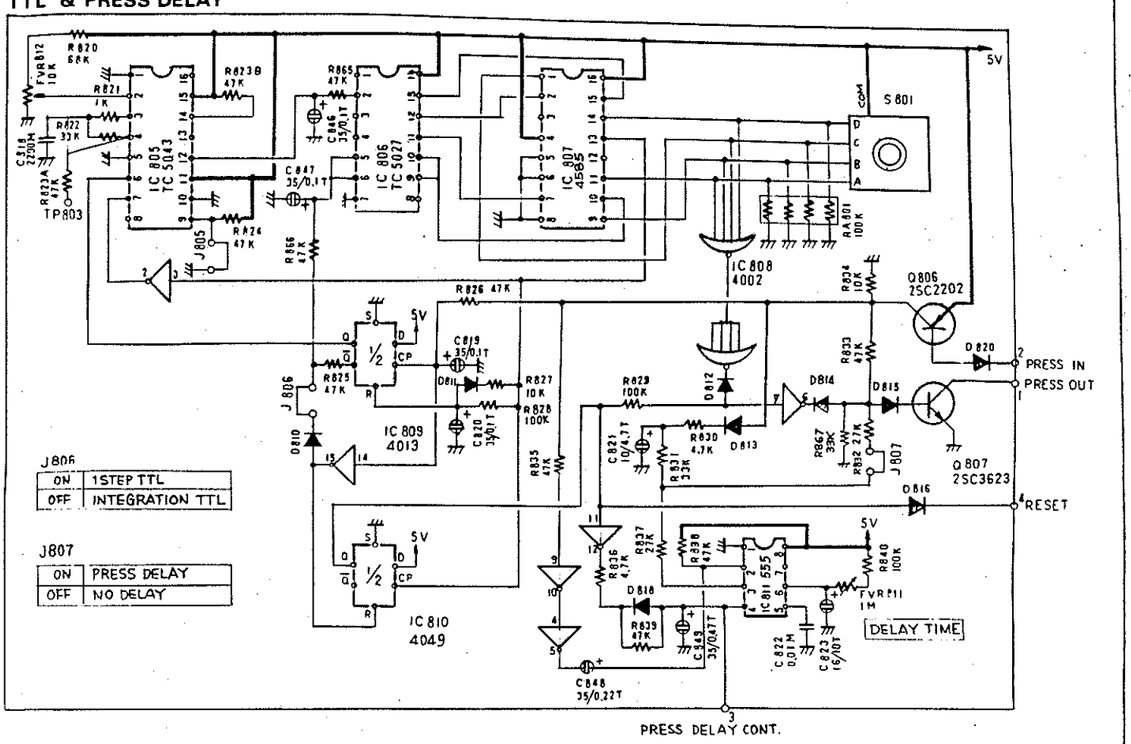
REF	A	B
IC601	M57719L	M57719
C613	UC3H220P	UC3H150P
C630	UC3H43+43	UC3H43P
C643	RM402 15P+5P	RM402 15P
C644B	5P CH	—

135-145 145-175

CIRCUIT DIAGRAM FOR KG110 VHF PA UNIT



TTL & PRESS DELAY



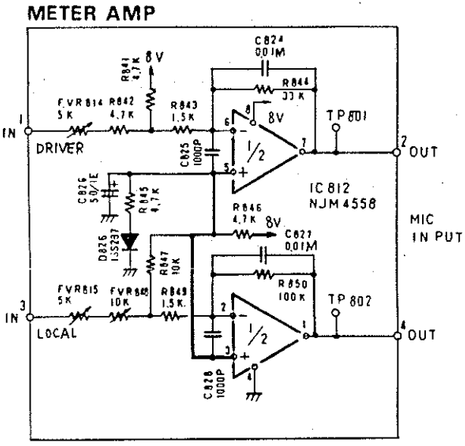
J806

ON	1STEP TTL
OFF	INTEGRATION TTL

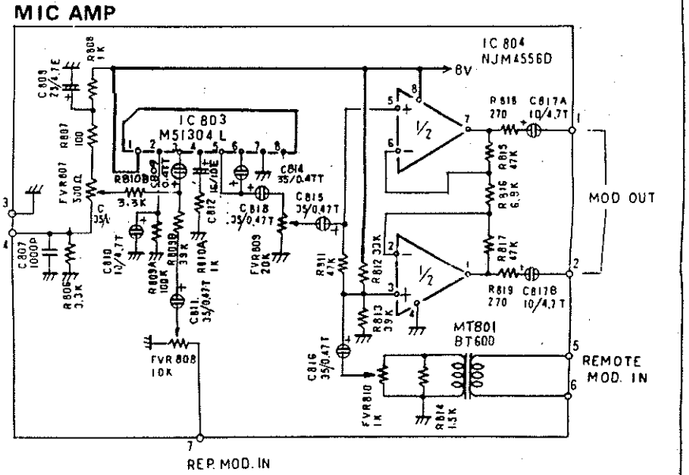
J807

ON	PRESS DELAY
OFF	NO DELAY

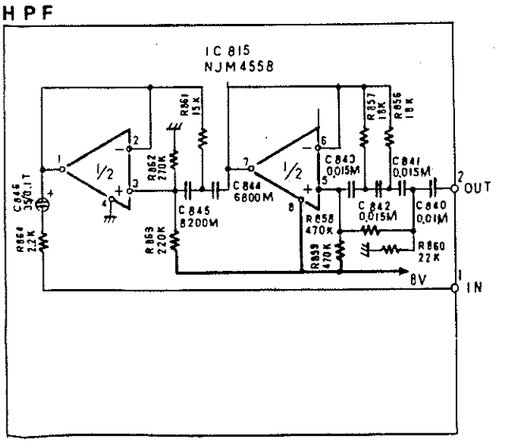
METER AMP



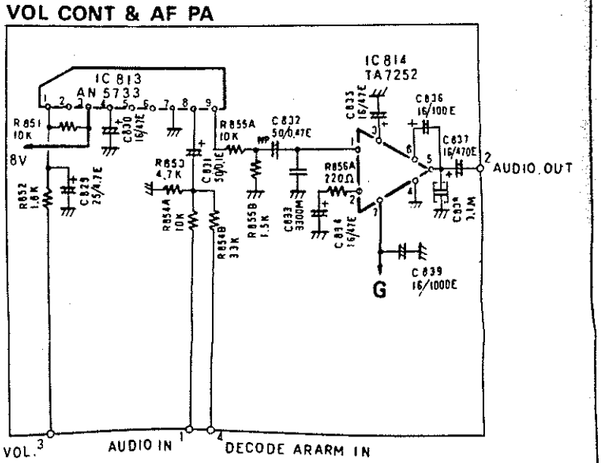
MIC AMP



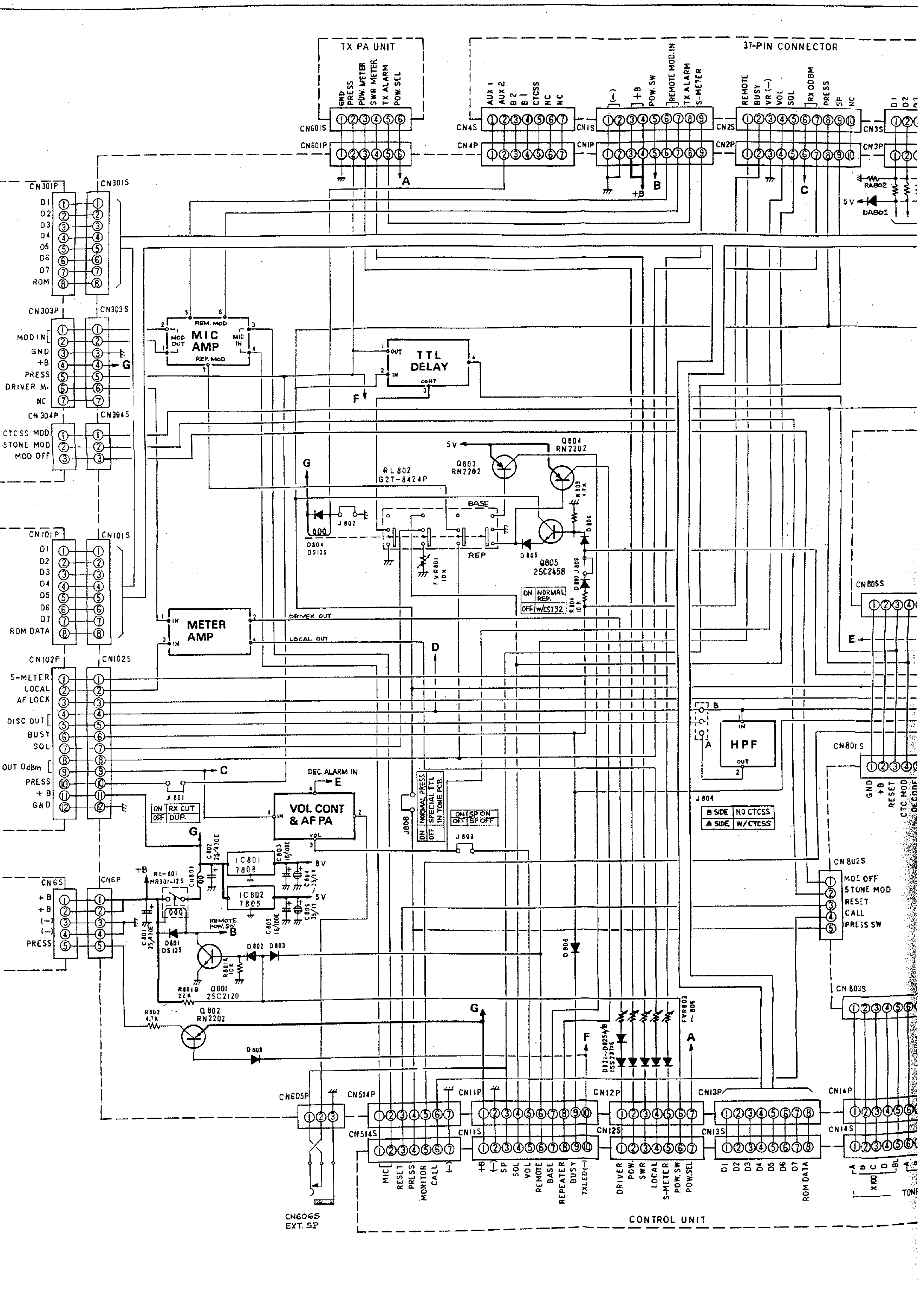
H P F

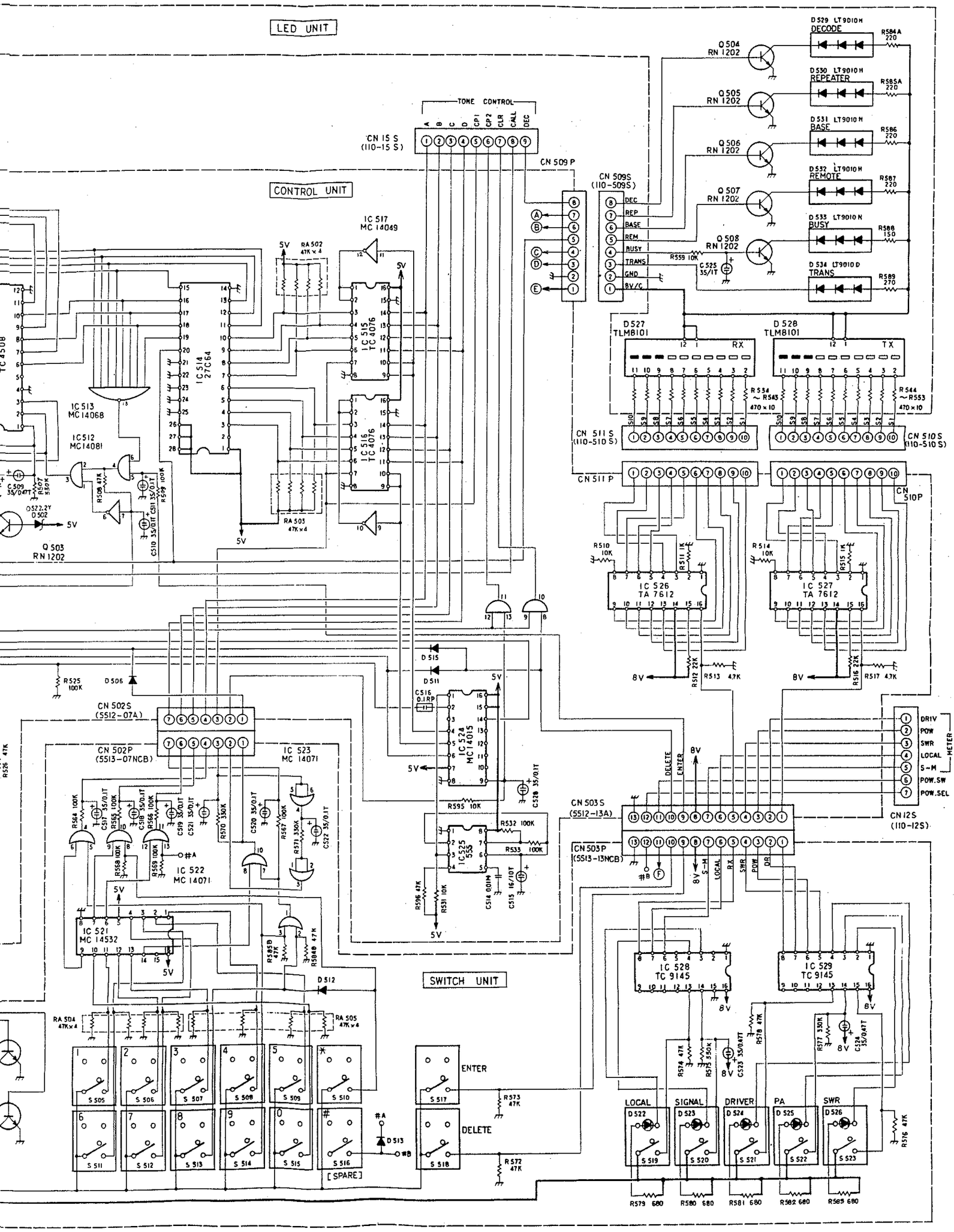


VOL CONT & AF PA

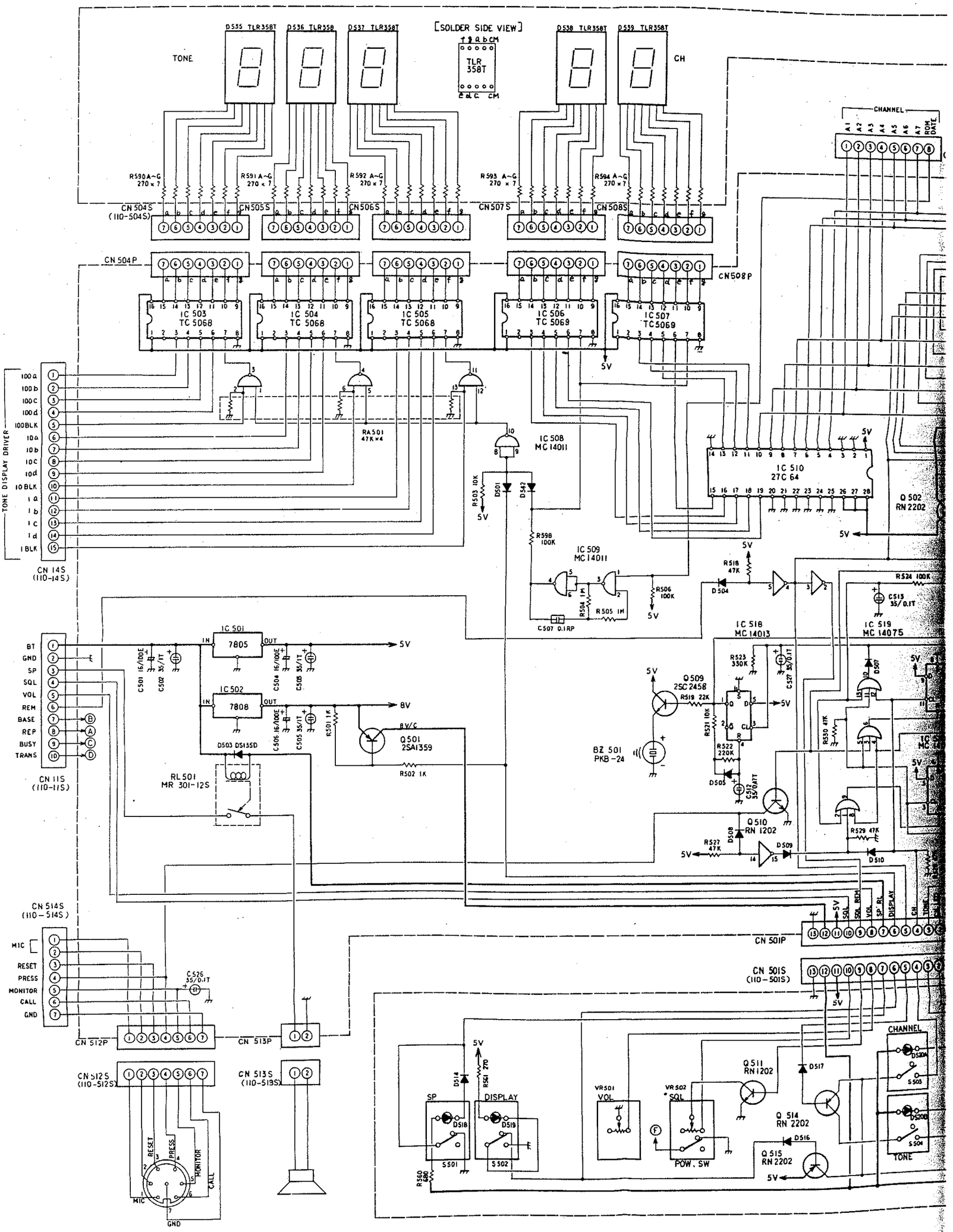


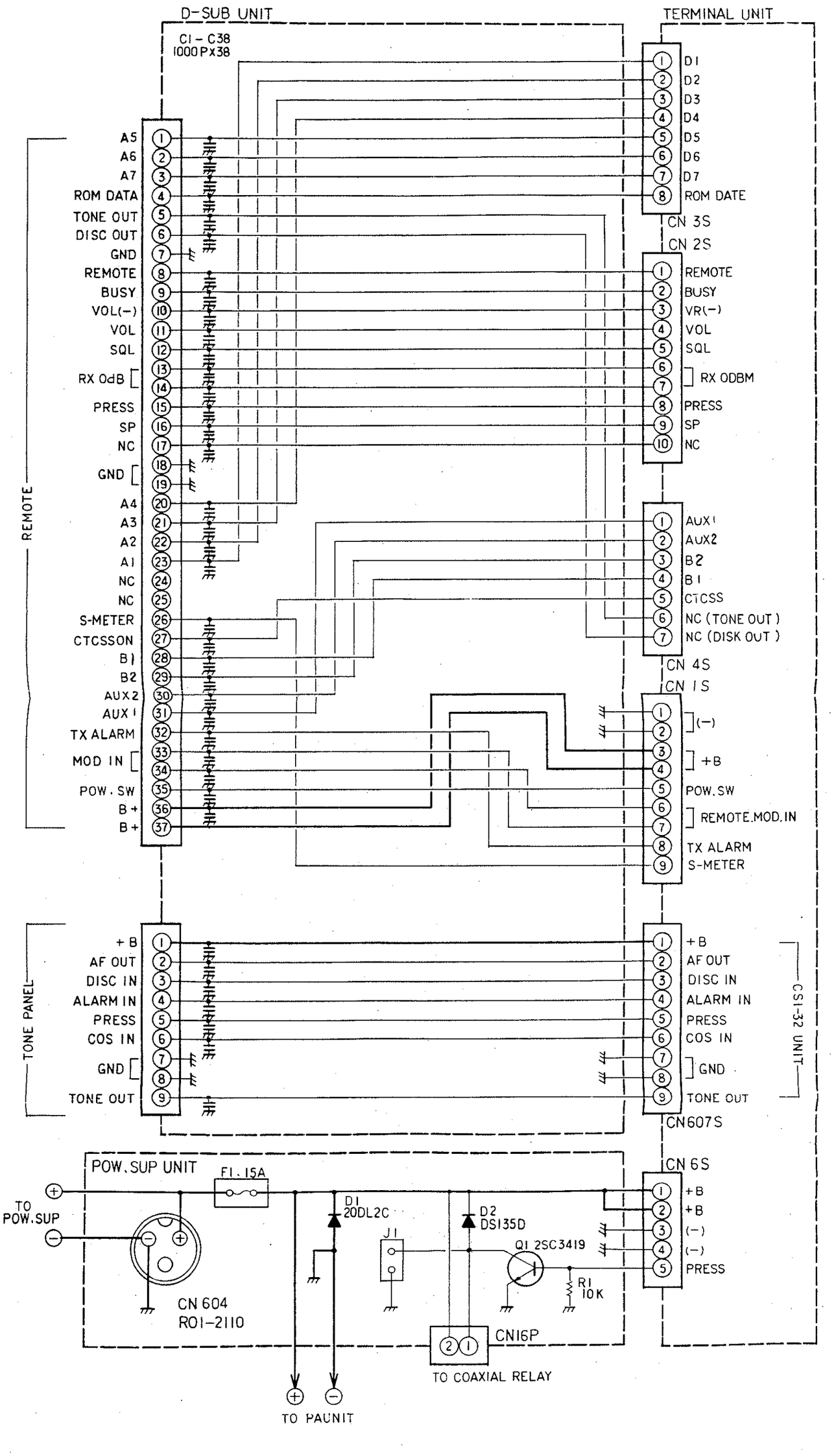
CIRCUIT DIAGRAM FOR KG110 TERMINAL CONTROL UNIT


TX PA UNIT
37-PIN CONNECTOR
CONTROL UNIT
MIC AMP
TTL DELAY
METER AMP
VOL CONT & AF PA
HPF
IC801 7808
IC802 7805
Q801 2SC2120
Q802 RN2202
Q803 RN2202
Q804 RN2202
Q805 2SC2458
RL802 G2T-8424P
RL-801 MR301-12S
FVR801 10K
FVR802 ~ 806
D801 DS135
D804 DS135
D821~D825A/B 1SS237X6
CN601S
CN601P
CN4S
CN4P
CN1S
CN1P
CN2S
CN2P
CN3S
CN3P
CN301P
CN301S
CN303P
CN303S
CN304P
CN304S
CN101P
CN101S
CN102P
CN102S
CN6S
CN6P
CN605P
CN606S EXT. SP
CN514P
CN514S
CN11P
CN11S
CN12P
CN12S
CN13P
CN13S
CN14P
CN14S
CN801S
CN802S
CN803S
CN806S
GND
PRESS
POW. METER
SWR METER
TX ALARM
POW. SEL
AUX 1
AUX 2
B 2
B 1
CTCSS
NC
+B
POW. SW
REMOTE MOD.IN
S-METER
REMOTE
BUSY
VR (−)
VOL
SOL
RX ODBM
SP
D1
D2
D3
D4
D5
D6
D7
ROM
MOD IN
DRIVER M.
CTCSS MOD
STONE MOD
MOD OFF
ROM DATA
LOCAL
AF LOCK
DISC OUT
OUT 0dBm
DRIVER OUT
LOCAL OUT
DEC. ALARM IN
REM. MOD
REP. MOD
MOD OUT
MIC IN
BASE
REP
J801
J802
J803
J804
J808
ON RX CUT
OFF DUP.
ON NORMAL REP.
OFF W/CS132
ON SP ON
OFF SP OFF
ON NORMAL PRESS
OFF SPECIAL TTL IN TONE PCB.
B SIDE NO CTCSS
A SIDE W/CTCSS
REMOTE POW. SW
GND
+B
RESET
CTC MOD
DECODE
MOD OFF
STONE MOD
RESET
CALL
PRESS SW
MIC
MONITOR
REPEATER
TXLED(−)
DRIVER
POW.
SWR
POW. SEL
X100
TONE



CIRCUIT DIAGRAM FOR KG110 CONTROL UNIT


TONE
CH
[SOLDER SIDE VIEW]
TLR 358T
D535 TLR358T
D536 TLR358T
D537 TLR358T
D538 TLR358T
D539 TLR358T
CHANNEL
R590A~G 270 x 7
R591 A~G 270 x 7
R592 A~G 270 x 7
R593 A~G 270 x 7
R594 A~G 270 x 7
CN 504S (110-504S)
CN505S
CN506S
CN507S
CN508S
CN 504P
CN508P
IC 503 TC 5068
IC 504 TC 5068
IC 505 TC 5068
IC 506 TC 5069
IC 507 TC5069
5V
TONE DISPLAY DRIVER
100a
100b
100c
100d
100BLK
10a
10b
10c
10d
10BLK
1a
1b
1c
1d
1BLK
CN 14S (110-14S)
RA501 47K×4
IC 508 MC 14011
IC 510 27C 64
Q 502 RN 2202
R503 10K
D501
D542
R598 100K
IC 509 MC 14011
R506 100K
R504 1M
R505 1M
C507 0.1RP
R518 47K
D504
R524 100K
C513 35/0.1T
IC 519 MC 14075
IC 518 MC 14013
BT
GND
SP
SQL
VOL
REM
BASE
REP
BUSY
TRANS
CN 11S (110-11S)
IC 501 7805
IC 502 7808
8V
C501 16/100E
C502 35/1T
C504 16/100E
C505 35/1T
C506 16/100E
C508 35/1T
R501 1K
Q 501 2SAi359
8V/C
R502 1K
D503 DS135D
RL 501 MR 301-12S
Q 509 2SC 2458
R519 22K
R521 10K
R522 220K
R523 330K
C514 35/0.1T
C512 35/0.1T
BZ 501 PKB-24
Q 510 RN 1202
R527 47K
D508
D509
D510
R529 47K
R530 47K
D507
CN 514S (110-514S)
MIC
RESET
PRESS
MONITOR
CALL
GND
C526 35/0.1T
CN 512P
CN 513P
CN 501P
CN 501S (110-501S)
CN 512S (110-512S)
CN 513S (110-513S)
SP
DISPLAY
D514
R561 270
D518
D519
S501
S502
R560 680
VR501 VOL
VR502 SQL
POW. SW
Q 511 RN 1202
D517
Q 514 RN 2202
D516
Q 515 RN 2202
CHANNEL
TONE
S503
S504
D520A
D520B
SQL REM
VOL
SP RL
DISPLAY
CH
TONE
MIC
RESET
PRESS
MONITOR
CALL
GND



CIRCUIT DIAGRAM FOR KG110 D-SUB/POW. SUP UNIT

AC INPUT
100-120/200-240V

AC FUSE
F1
5A

JUMPER SELECTOR AC100-120V AC200-240V

POWER SUP. UNIT
KRV-300

AC IN
DC OUT (+)
(-)
(F.G.)

REMOTE

CN5
DC OUT

F2
15A

CN4
BATT. IN/OUT

AR6611 RL1
AR6611 RL2
AR6611 RL3

D1 DS133
D2 DS135
D3 052Z7.5Y
D4 DS135
D5 DS135
D6 1S177
D7 052Z7.5Y
D8 1S177
D9 DS135
D10 DS135

R1 1W/33Ω
R2 1.5K
R3 3.3K
R4 3.3K
R5 1.5K
R6 10K
R7 6.8K
R8 4.7K
R9 1.5K
R10 4.7K
R11 220K
R12 820Ω
R13 40W/3Ω
R14 SHANT
FVR1 10K
FVR2 100Ω
FVR3 10K
FVR4 10K

C1 1000P
C3 1000P
C4 1000P

Q1 2SC3419
Q2 2SC3419

IC1 NJM4558

D12 052Z6.8Y

CN2P
CN2S
CN1P
CN1S

10PSRS UNIT

C5 50/100E
R43 4.7K
Q3 2SD1414
T1 PT110
D17 1G4B42
D18 052Z10Y
R44 390Ω
R45 3.3K
R46 3.3K
Q4 2SC2120
CN7P
CN7S

10PS NL UNIT

CN6P
CN6S

S1 POW. SW
AC2B3

D13 LT9010D
AC
ORN

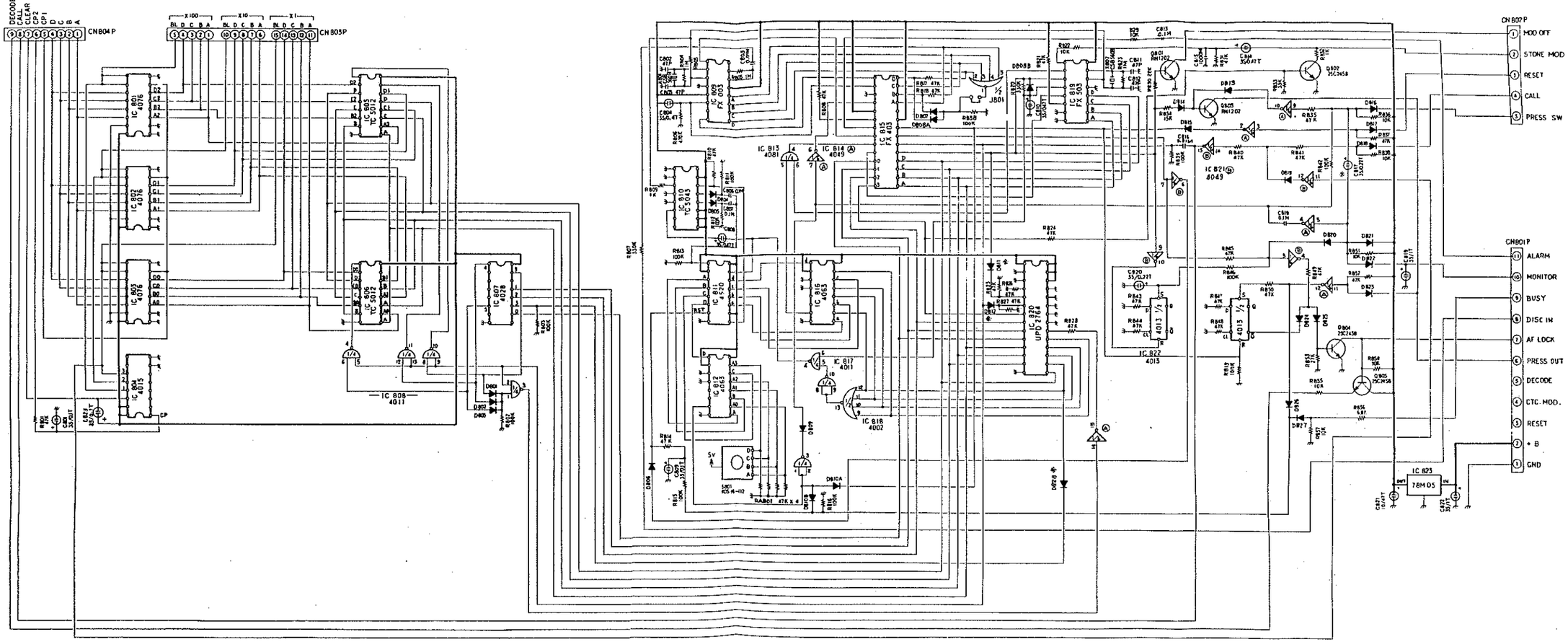
D14 LT9010N
DC

D15 VOLT
D16 AMP

R33-R42 1.5K×10
R32 3.3K
R31 10K
R30 1K
R29 22K
R16 22K
R18 3.3K
R19-R28 1.5K×10
IC2 TA7612
IC3 TA7612

10PSACD UNIT

CIRCUIT DIAGRAM FOR PS110 POWER SUPPLY UNIT



5-TONE CODE PROGRAMMING

Address	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Data	-	D1	D2	D3	D4	D5	OE	-	-	A1	A2	A3	A4	A5	OE	-

D1-D5 : Decode Number

A1-A5 : Answer-Back Number

J801 SETTING ... Group Call Decode Setting

Jumper 'ON' ... '0' as Group Call

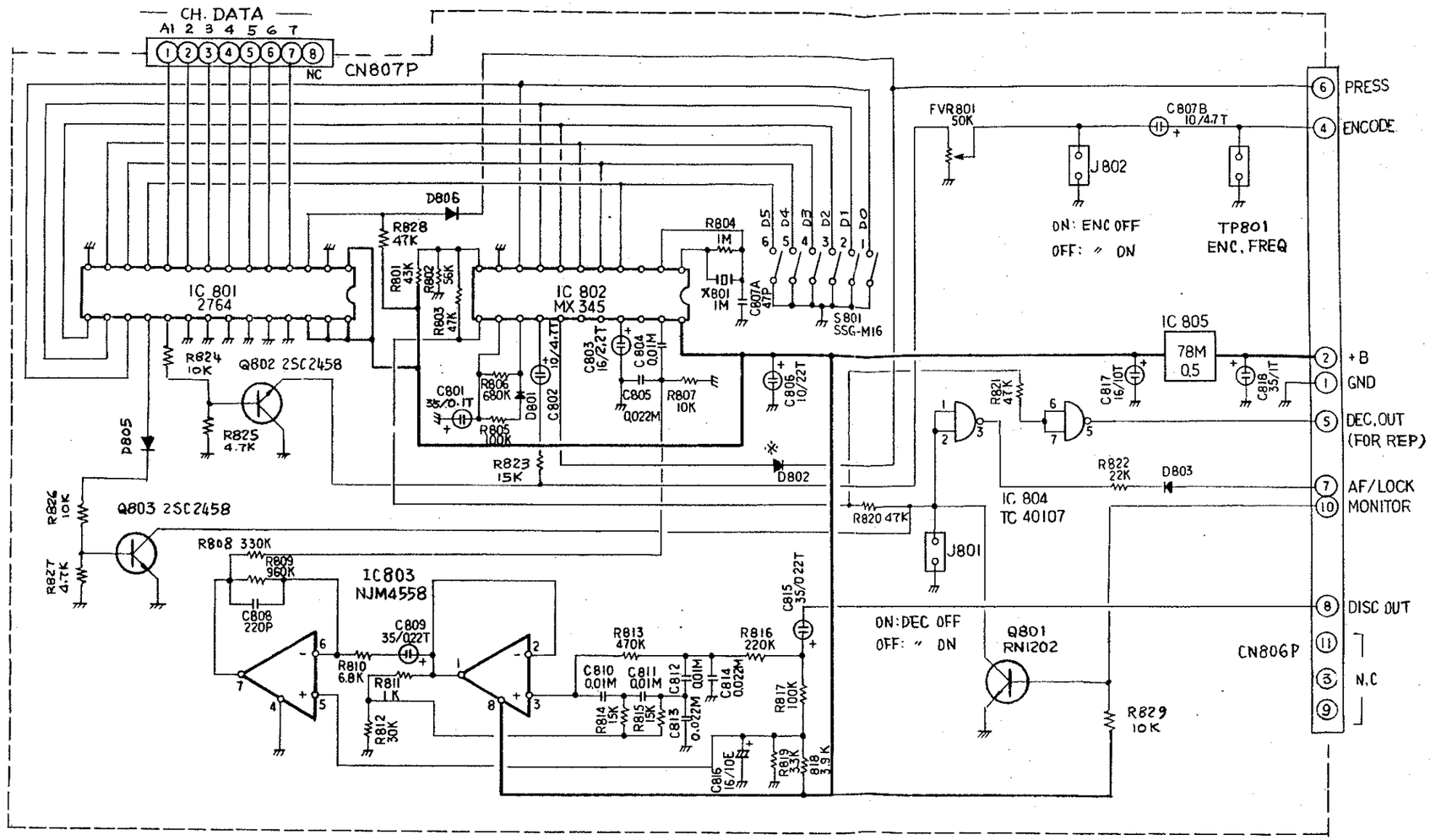
Jumper 'OFF' ... 'A' as Group Call

S801 SETTING ... Automatic Audio Reset Setting

Switch 0 position ... Manual Audio Reset

Switch 1-F position ... Each step has 1 second
(1-15 sec can be set)

CIRCUIT DIAGRAM
FOR
KG110 5-TONE ENC/DEC UNIT



CTCSS TONE FREQUENCY
PROGRAM TABLE

Logic 1 = Vdd, Logic 0 = Vss

No.	EIA SPEC FREQ.	PROGRAM TABLE D5 D4 D3 D2 D1 D0	EP-ROM CODE
1	A 67.0Hz	1 1 1 1 1 1	3F
2	B 71.9	0 1 1 1 1 1	3E
3	C 74.4	1 1 1 1 1 0	1F
4	A 77.0	0 0 1 1 1 1	3C
5	C 79.7	1 1 1 1 0 1	2F
6	B 82.5	0 1 1 1 1 0	1E
7	C 85.4	1 1 1 1 0 0	0F
8	A 88.5	0 0 1 1 1 0	1C
9	C 91.5	1 1 1 0 1 1	37
10	B 94.8	0 1 1 1 0 1	2E
11	- 97.4	1 1 1 0 1 0	17
12	A 100.0	0 0 1 1 0 1	2C
13	B 103.5	0 1 1 1 0 0	0E
14	A 107.2	0 0 1 1 0 0	0C
15	B 110.9	0 1 1 0 1 1	36
16	A 114.8	0 0 1 0 1 1	34
17	B 118.8	0 1 1 0 1 0	16
18	A 123.0	0 0 1 0 1 0	14
19	B 127.3	0 1 1 0 0 1	26
20	A 131.8	0 0 1 0 0 1	24
21	B 136.5	0 1 1 0 0 0	06
22	A 141.3	0 0 1 0 0 0	04
23	B 146.2	0 1 0 1 1 1	3A
24	A 151.4	0 0 0 1 1 1	38
25	B 156.7	0 1 0 1 1 0	1A
26	A 162.2	0 0 0 1 1 0	18
27	B 167.9	0 1 0 1 0 1	2A
28	A 173.8	0 0 0 1 0 1	28
29	B 179.9	0 1 0 1 0 0	0A
30	A 186.2	0 0 0 1 0 0	08
31	B 192.8	0 1 0 0 1 1	32
32	A 203.5	0 0 0 0 1 1	30
33	B 210.7	0 1 0 0 1 0	12
34	A 218.1	0 0 0 0 1 0	10
35	B 225.7	0 1 0 0 0 1	22
36	A 233.6	0 0 0 0 0 1	20
37	B 241.8	0 1 0 0 0 0	02
38	A 250.3	0 0 0 0 0 0	00

Program for CTCSS/CHANNEL (EP-ROM Address)

Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
Data	1E	2E	3E	4E	5E	6E	7E	8E	9E	10E	11E	12E	13E	14E	15E	16E
	-	-	-													
Address	60	61	62	63												
Data	97E	98E	99E	-												
Address	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
Data	1D	2D	3D	4D	5D	6D	7D	8D	9D	10D	11D	12D	13D	14D	15D	16D
	-	-	-													
Address	D0	D1	D2	D3												
Data	97D	98D	99D	-												

J801 DECODE ON/OFF

ON : DECODE OFF
OFF : DECODE ON

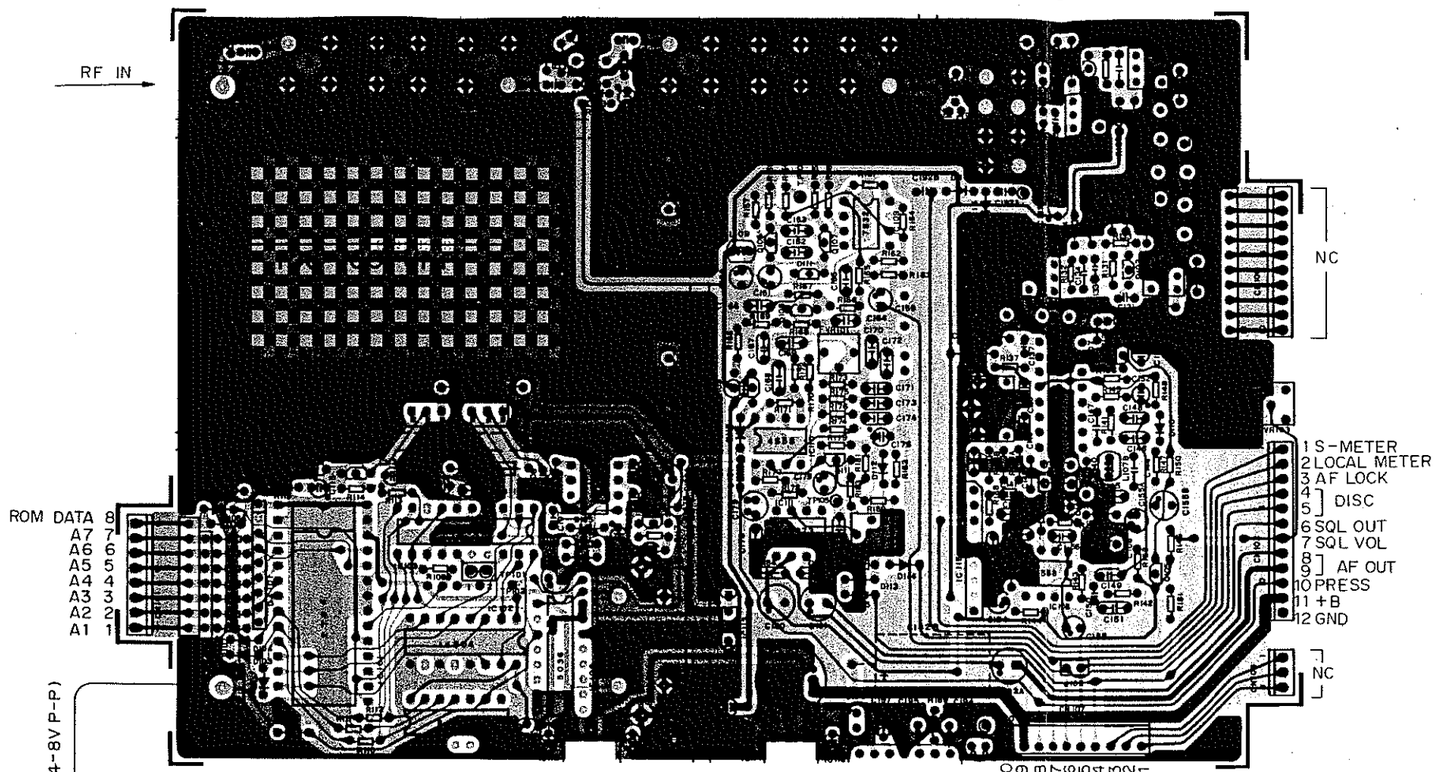
J802 ENCODE ON/OFF

ON : ENCODE OFF
OFF : ENCODE ON

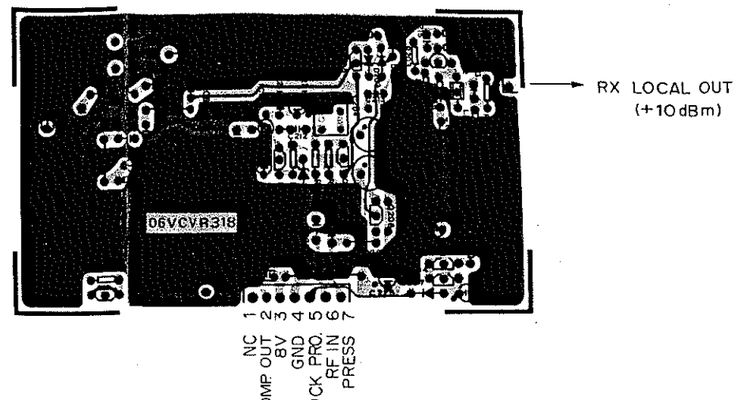
※
D802 ISS177 10QCT(A)
D802 DELETE 10QCT(D)

CIRCUIT DIAGRAM FOR KG110 CTCSS ENC/DEC UNIT

RX MAIN UNIT

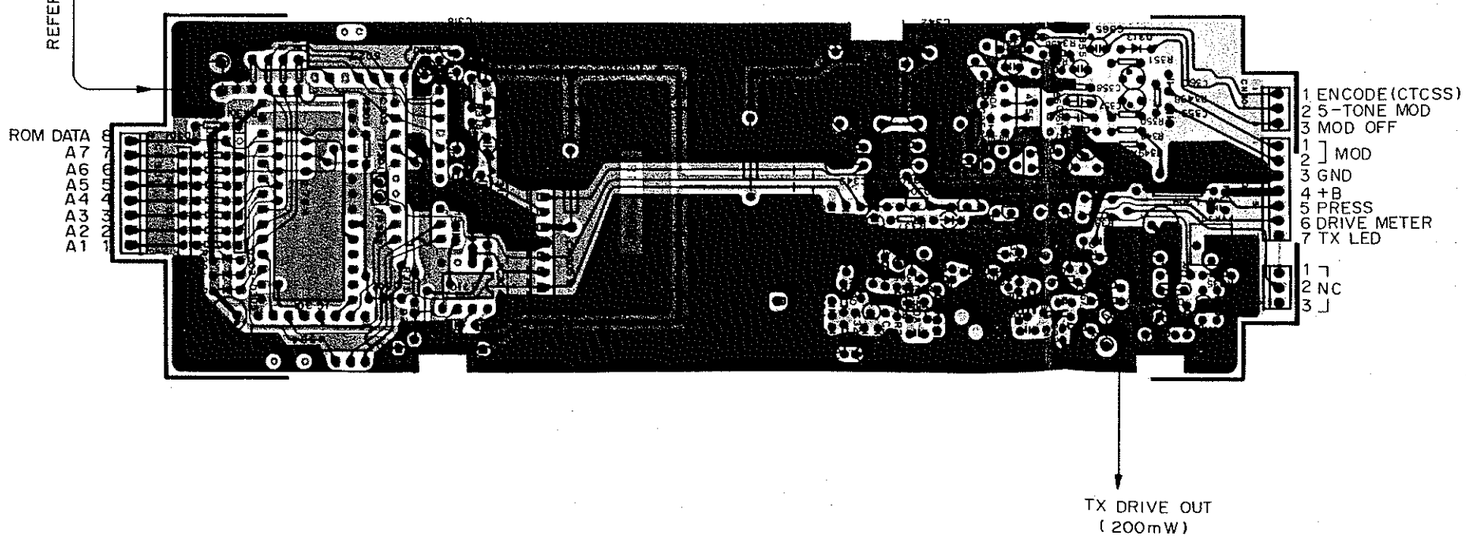


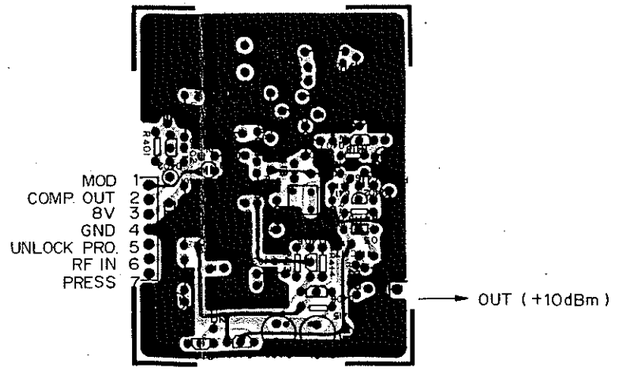
RX VCO UNIT



TX VCO UNIT

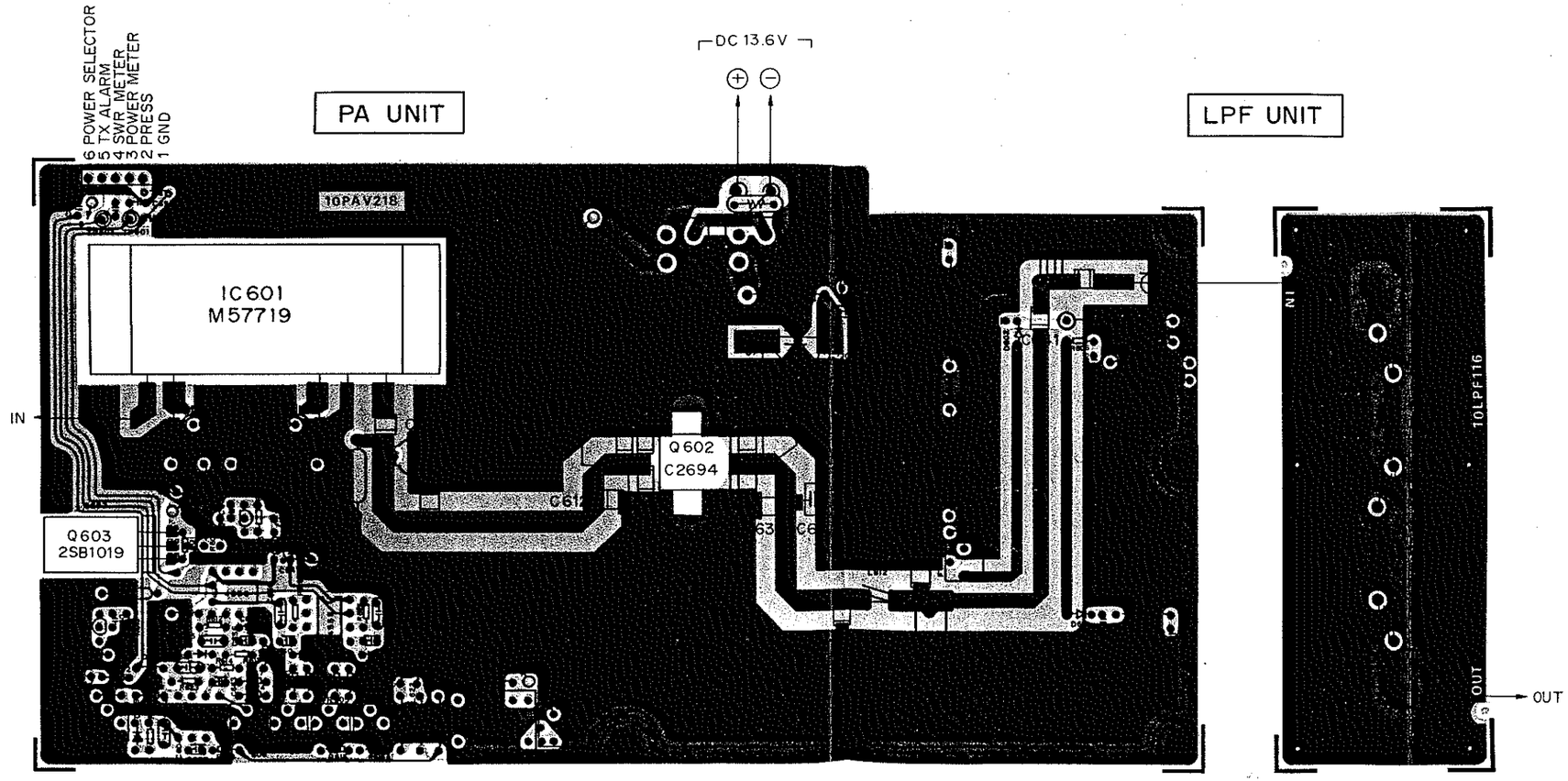
TX MAIN UNIT





COMPONENTS LAYOUT

FOR



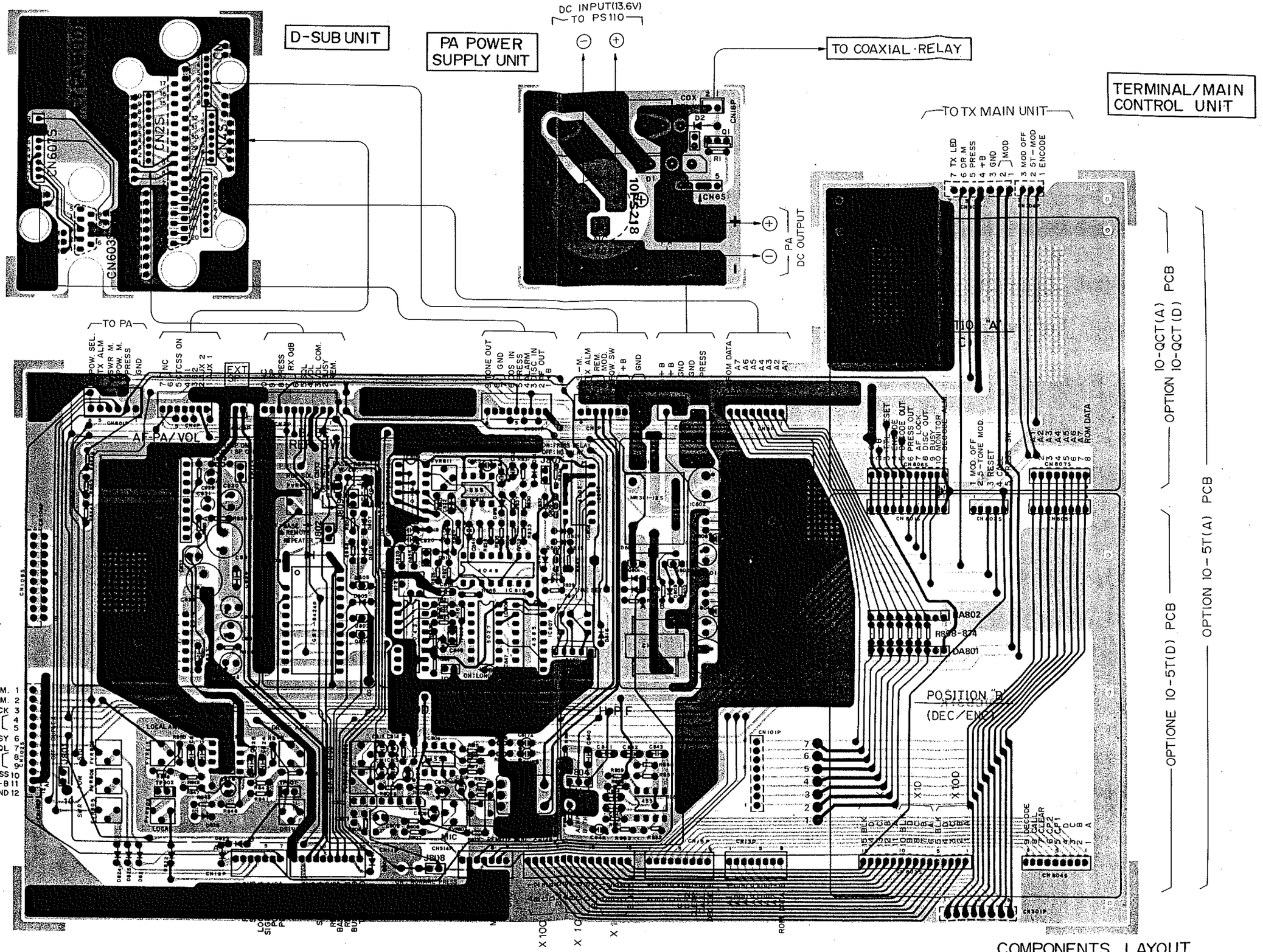
COMPONENT LAYOUT

FOR

VHF PA UNIT

37-PIN D-SUB

No.	SIGNAL NAME
1	CH A5
2	CH A6
3	CH A7
4	ROM DATA
5	TONE OUT
6	DISC OUT
7	GND
8	REMOTE
9	BUSY
10	VOL COM
11	VOLUME
12	SCUELCH
13	RX OdBm
14	RX OdBm
15	PRESS
16	SPEAKER
17	NC
18	GND
19	GND
20	CH A4
21	CH A3
22	CH A2
23	CH A1
24	NC
25	NC
26	S-METER
27	CTCSS ON
28	B1
29	B2
30	AUX 2
31	AUX 1
32	TX ALARM
33	MOD IN
34	MOD IN
35	POW. SW.
36	B +
37	B +



COMPONENTS LAYOUT

DISPLAY UNIT

SW UNIT

CONTROL UNIT

VR502
SQL VOL

BCD CONTROL

MIC

SP

TONE DISPLAY

CH CODE

5-TONE CONTROL

CN15S

CN12S

TX

RX

COMPONENTS LAYOUT
FOR

AC INPUT (AC100/200V)

AC FUSE (5A)

NL UNIT

DC OUTPUT (DC13.6V)

DC FUSE (15A)

BATT. IN/OUT

RELAY CONTROL UNIT

AC INPUT (AC100/200V)

POW SUPPLY UNIT

KVR-300

REMOTE SW (+) (−)

DC OUTPUT (DC13.6V)

FG (+) (−)

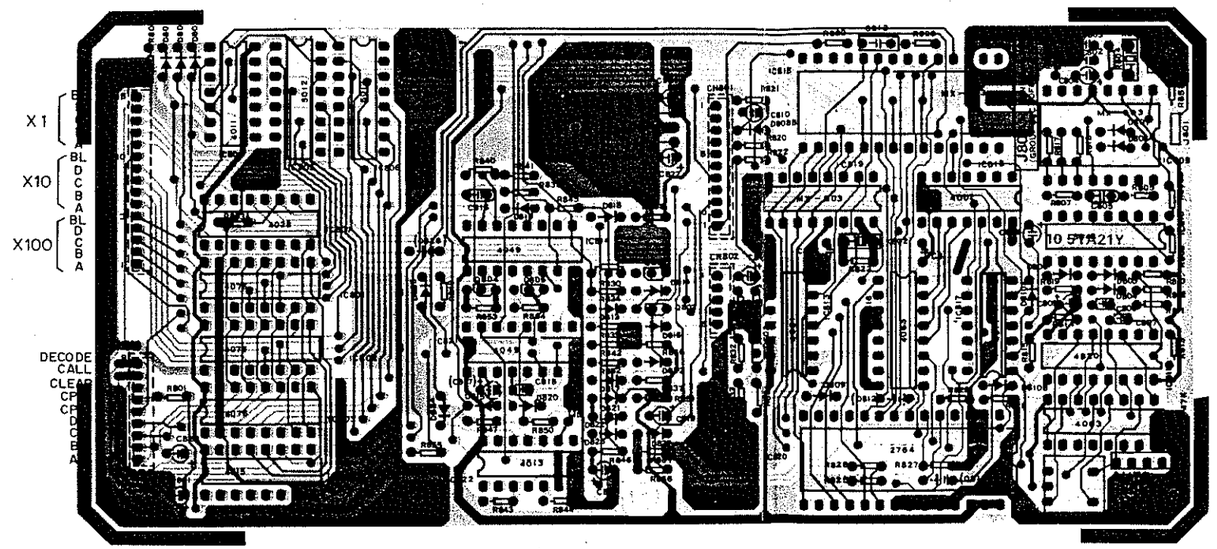
AC INDICATOR

DISPLAY UNIT

POWER SW

1 LAMP
2 REMOTE SW.
3 POW. SW
4 GND

COMPONENTS LAYOUT FOR



CN801

GND	1
+B	2
NC	3
NC	4
NC	5
PRESS OUT	6
AF LOCK	7
DISC	8
BUSY	9
MONITOR	10
ALARM	11

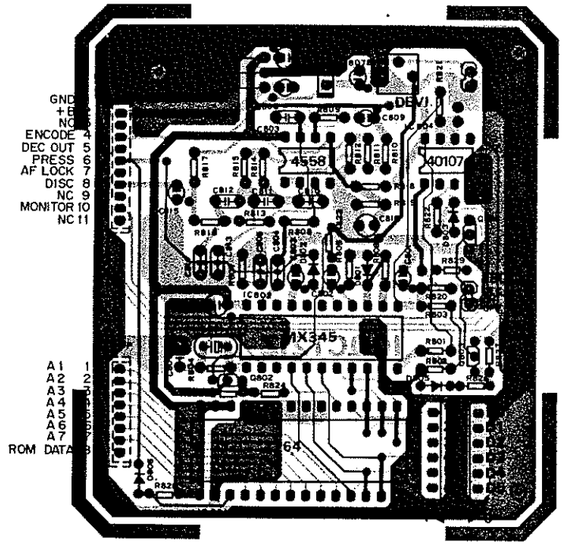
CN802

MOD OFF	1
5-TONE MOD	2
RESET	3
CALL	4
PRESS SW	5

COMPONENTS LAYOUT

FOR

KG110 5-TONE ENC/DEC UNIT



CTCSS TONE FREQUENCY
PROGRAM TABLE
Logic 1 = Vdd, Logic 0 = Vss

No.	EIA SPEC FREQ.	PROGRAM TABLE D5 D4 D3 D2 D1 D0	EP-ROM CODE
1	A 67.0Hz	1 1 1 1 1 1	3F
2	B 71.9	0 1 1 1 1 1	3E
3	C 74.4	1 1 1 1 1 0	1F
4	A 77.0	0 0 1 1 1 1	3C
5	C 79.7	1 1 1 1 0 1	2F
6	B 82.5	0 1 1 1 1 0	1E
7	C 85.4	1 1 1 1 0 0	0F
8	A 88.5	0 0 1 1 1 0	1C
9	C 91.5	1 1 1 0 1 1	37
10	B 94.8	0 1 1 1 0 1	2E
11	- 97.4	1 1 1 0 1 0	17
12	A 100.0	0 0 1 1 0 1	2C
13	B 103.5	0 1 1 1 0 0	0E
14	A 107.2	0 0 1 1 0 0	0C
15	B 110.9	0 1 1 0 1 1	36
16	A 114.8	0 0 1 0 1 1	34
17	B 118.8	0 1 1 0 1 0	16
18	A 123.0	0 0 1 0 1 0	14
19	B 127.3	0 1 1 0 0 1	26
20	A 131.8	0 0 1 0 0 1	24
21	B 136.5	0 1 1 0 0 0	06
22	A 141.3	0 0 1 0 0 0	04
23	B 146.2	0 1 0 1 1 1	3A
24	A 151.4	0 0 0 1 1 1	38
25	B 156.7	0 1 0 1 1 0	1A
26	A 162.2	0 0 0 1 1 0	18
27	B 167.9	0 1 0 1 0 1	2A
28	A 173.8	0 0 0 1 0 1	28
29	B 179.9	0 1 0 1 0 0	0A
30	A 186.2	0 0 0 1 0 0	08
31	B 192.8	0 1 0 0 1 1	32
32	A 203.5	0 0 0 0 1 1	30
33	B 210.7	0 1 0 0 1 0	12
34	A 218.1	0 0 0 0 1 0	10
35	B 225.7	0 1 0 0 0 1	22
36	A 233.6	0 0 0 0 0 1	20
37	B 241.8	0 1 0 0 0 0	02
38	A 250.3	0 0 0 0 0 0	00

※
D802 ISS177 10QCT(A)
D802 DELETE 10QCT(D)

Program for CTCSS/CHANNEL (EP-ROM Address)

Address	00	01	02	03	04	05	06,	07	08	09	0A	0B	0C	0D	0E	0F
Data	1E	2E	3E	4E	5E	6E	7E	8E	9E	10E	11E	12E	13E	14E	15E	16E
	-	-	-													
Address	60	61	62	63												
Data	97E	98E	99E	-												
Address	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
Data	1D	2D	3D	4D	5D	6D	7D	8D	9D	10D	11D	12D	13D	14D	15D	16D
	-	-	-													
Address	D0	D1	D2	D3												
Data	97D	98D	99D	-												

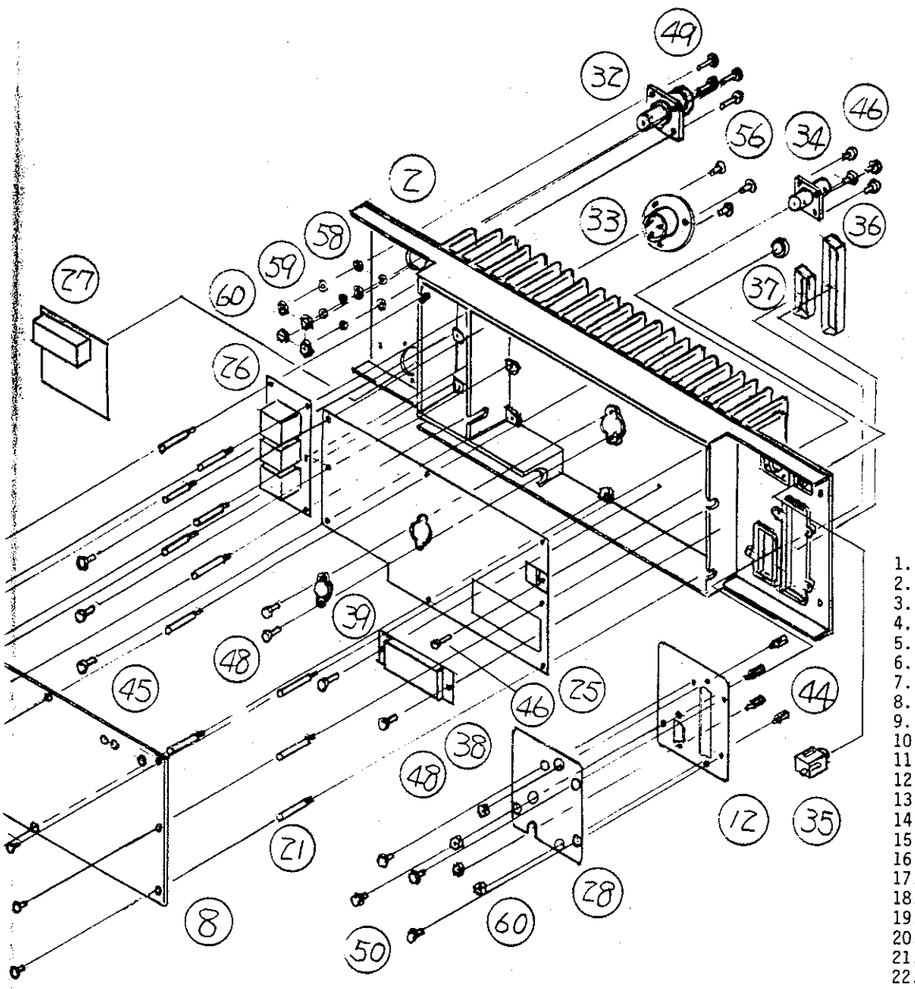
J801 DECODE ON/OFF

ON : DECODE OFF
OFF : DECODE ON

J802 ENCODE ON/OFF

ON : ENCODE OFF
OFF : ENCODE ON

COMPONENTS LAYOUT
FOR
KG110 CTCSS UNIT



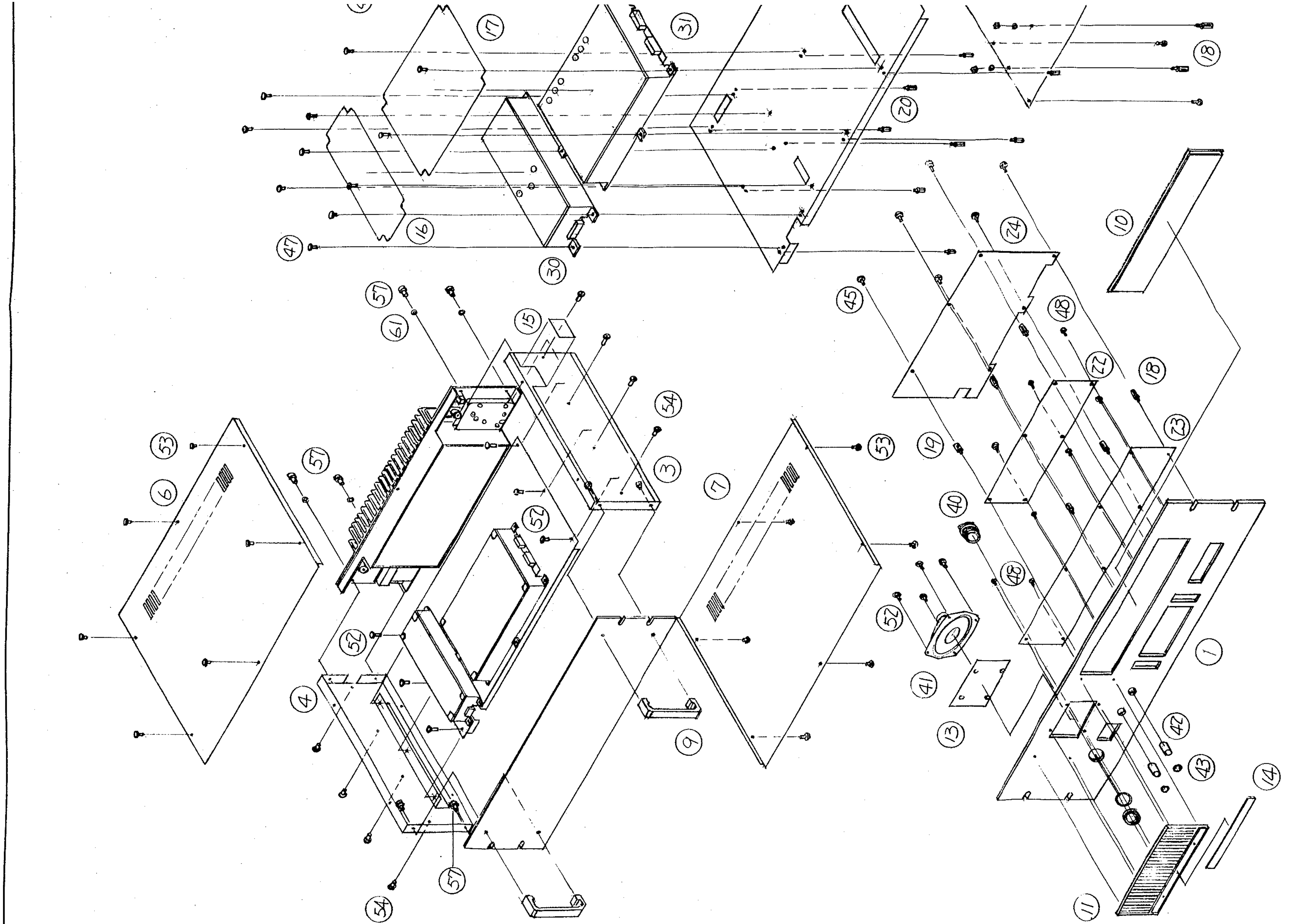
	DESCRIPTION	DRAWING NO.	Q'TY
1.	Front panel	2A10-0113 (B)	1
2.	PA radiator	1A10-0015	1
3.	Side panel (right)	2A10-0114	1
4.	Side panel (left)	2A10-0114	1
5.	Chassis frame	3A10-0318	1
6.	Top cover	3A10-0314	1
7.	Bottom cover	3A10-0314	1
8.	PA unit cover	4A10-1251	1
9.	Handle	4A10-1255	2
10.	LED protector	4A10-1257	1
11.	Speaker grille	2A10-0115	1
12.	CN plate	4A10-1256	1
13.	Speaker net	4A10-1268	1
14.	Brand plate	4A10-1258	1
15.	Type plate		1
16.	Tx unit label	4A10-1295	1
17.	Rx unit label	4A10-1296	1
18.	Spacer (A)	4A10-1253	7
19.	Spacer (B)	4A10-1252	3
20.	Spacer (C)	4A10-1261	9
21.	PA stud	4A10-1250	11
22.	Diplay unit	10LD218	1
23.	Switch control unit	10SW218	1
24.	Control unit	10CT218	1
25.	PA unit	10PAV218	1
26.	L.P.F. unit	10PF116	1
27.	Power-Relay unit	10PS218	1
28.	D-SUB connector unit	10DSA117	1
29.	Terminal unit	10NCB422	1
30.	Receiver unit		1
31.	Transmitter unit		1
32.	Connector	N/BNC-PA-JJ	1
33.	Connector	RO1-2110	1
34.	Connector	BNC-PA-JJ	1
35.	Horn jack	HSJ0780-01-010	1
36.	Connector cover	XM2T-3701	1
37.	Connector cover	XM2T-0901	1
38.	Power module	M57719	1
39.	Transistor	2SC2964	1
40.	Connector	214-SM	1
41.	Speaker	KS-110	1
42.	Knob	20-15-60-2	2
43.	Knob top plate	30-15-01-7	2
44.	Stud	XM22-0023	4
45.	Screw	sems, SE-2.6x5	9
46.	Screw	sems, SE-2.6x8	5
47.	Screw	sems, SE-3x6	12
48.	Screw	sems, SE-3x8	12
49.	Screw	sems, SE-3x15	4
50.	Screw	bind, BD-2.6x5	12
51.	Screw	bind, BD-2.6x8	1
52.	Screw	bind, BD-3x6	10
53.	Screw, black	bind, BDB-3x6	12
54.	Screw, black	bind, BDB-4x6	8
55.	Screw	oval, OV-2.6x5	11
56.	Screw	oval, OV-3x8	3
57.	Cap bolt	CAP-4x10	8
58.	Flat washer	FW-3	4
59.	Spring washer	SW-3	8
60.	Nut	NT-3	12
61.	Flat washer, black	FWB-4	4

TITLE

EXPLODED VIEW
FOR
KG110 SERIES BASE/REPEATER RADIO

DRAWING NO.

KYODO communications & electronics



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PARTS LIST

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF RX MAIN UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
1	IC	CX7932	IC109	1
2	IC	MC14504BP	IC102	1
3	IC	MC145146P	IC103	1
4	IC	NJM2073	IC111	1
5	IC	NJM4558D	IC108,10	2
6	IC	TC5027P	IC105	1
7	IC	TC5036P	IC106	1
8	IC	TA7303	IC115	1
9	IC	TK10420	IC107	1
10	IC	UPB571C	IC104	1
11	EP-ROM	UPD2764D	IC101	1
12	IC	7808	IC114	1
13	IC	78M05	IC112	1
14	IC	AN78N08	IC113	1
15	BALANCED MIXER	M8	DBM101	1
16	DIODE ARRAY	NAL-8CS	DA101	1
17	FET	2SK152	Q102	1
18	FET	2SK184	Q111	1
19	TRANSISTOR	2SC2407	Q101	1
20	TRANSISTOR	2SA1048LY	Q106-07	2
21	TRANSISTOR	2SA950Y	Q109	1
22	TRANSISTOR	2SC2458LY	Q104,08	2
23	TRANSISTOR	2SC2669Y	Q103	1
24	TRANSISTOR	RN2202	Q105,10,12	3
25	LED	TLS164	D106	1
26	DIODE	1SS177	D101-05,07,10,12-15	11
27	DIODE	1SS227	D108,11	2
28	DIODE	1SS237	D116,17	2
29	DIODE	MI308	D109	1
30	CRYSTAL	21.145MHZ	X101	1
31	CRYSTAL FILTER	21P18A	XF102	1
32	CRYSTAL FILTER	21P20C	XF101	1
33	TCXO	GFS-210W	TCX01	1
34	DISCRIMINATOR	CDB455C7	CD101	1
35	CERAMIC FILTER	CFG455D	CF101	1
36	THERMISTER	360-D5	TH101	1
37	3-CAV.BPF	RFC150N-3,33	BPF101-02	2
38	TEST POINT	3022-02A	TP101	1
39	TEST POINT	LC-2-S(ORN)	TP103	1
40	TEST POINT	LC-2-S(YEL)	TP104	1
41	JUMPER PLUG	DSP02-002-431G	JP102	1
42	MICRO INDUCTOR	LA03NA-100UH	L107A	1
43	MICRO INDUCTOR	LA03NA-10UH	L106	1
44	LEAD CHOKE	15M(LN-0009)	L101-102	2
45	COIL	G02 10MH	L108	1
46	COIL	M2 680UH	L107B,09	2
47	COIL	#1054	L105	1
48	COIL	#1053	T101,03	2
49	COIL	#1058	T102	1
50	COIL	4A-S235	L104	1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF RX MAIN UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
51	MONOLYTHIC M.	B32529-104K	C114,83-84	3
52	CERAMIC C.	RH 5PF	C133	1
53	CERAMIC C.	CH 5PF	C192A	1
54	CERAMIC C.	CH 6PF	C128,29	2
55	CERAMIC C.	CH 7PF	C123	1
56	CERAMIC C.	CH 10PF	C150	1
57	CERAMIC C.	CH 33PF	C137	1
58	CERAMIC C.	RH 39PF	C125,30	2
59	CERAMIC C.	RH 56PF	C126,34	2
60	CERAMIC C.	CH 68PF	C138	1
61	CERAMIC C.	CH 82PF	C147	1
62	CERAMIC C.	CH 150PF	C142	1
63	CERAMIC C.	SL 220PF	C144	1
64	CERAMIC C.	UJ 470PF	C124	1
65	CERAMIC C.	B 1000PF	C106-07,117-20,31,36-92B	9
66	CERAMIC C.	B 2200PF	C127,32,35	3
67	MONOLYTHIC C.	RPE121C 0.1UF	C139-41	3
68	MONOLYTHIC C.	RPE121C 1000PF	C109-10	2
69	ELECTROLYTIC	KMA 50V/0.1UF	C159	1
70	ELECTROLYTIC	KMA 50V/0.47UF	C148,75	2
71	ELECTROLYTIC	KMA 50V/1UF	C154	1
72	ELECTROLYTIC	KMA 50V/2.2UF	C161,89A	2
73	ELECTROLYTIC	KMA 25V/4.7UF	C160	1
74	ELECTROLYTIC	KMA 16V/22UF	C105,16,55B	3
75	ELECTROLYTIC	KMA 16V/47UF	C101,2A	2
76	ELECTROLYTIC	KMA 16V/100UF	C180-81,82A	3
77	ELECTROLYTIC	SR 25V/1000UF	C188	1
78	ELECTROLYTIC	BP 50V/0.47UF	C155A	1
79	ELECTROLYTIC	BP 16V/10UF	C179	1
80	MILER FILMED C	A7Z 1000PF	C166,71-74,87B,89B	7
81	MILER FILMED C	A7Z 1200PF	C157	1
82	MILER FILMED C	A7Z 4700PF	C151,64-65,69	4
83	MILER FILMED C	A7Z 6800PF	C156	1
84	MILER FILMED C	A7Z 8200PF	C170	1
85	MILER FILMED C	A7Z 0.01UF	C177-78,91	3
86	MILER FILMED C	A7Z 0.015UF	C167-68	2
87	MILER FILMED C	A7Z 0.022UF	C111,90	2
88	POLYPLOPYLENE	UPZ 220PF	C162-63	2
89	POLYPLOPYLENE	UPZ 470PF	C145-46,48,49	4
90	TANTALUM C.	DN 35V/0.1UF	C113B	1
91	TANTALUM C.	DN 35V/0.47UF	C176	1
92	TANTALUM C.	DN 35V/1UF	C102B,03-04,21,43,85-86,87A	8
93	TANTALUM C.	DN 16V/2.2UF	C115,52,53	3
94	TANTALUM C.	DN 10V/47UF	C112	1
95	SST TANTALUM C	SST 35V/0.1UF	C113A	1
96	CARBON R.	1/6W(P) 0	JP101,R122A	2
97	CARBON R.	1/6W(F) 10	R121B(ｳﾗﾌﾞｹ)	1
98	CARBON R.	1/6W(F) 47	R121A	1
99	CARBON R.	1/6W(F) 56	R123	1
100	CARBON R.	1/6W(F) 100	R126,51	2

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF RX MAIN UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
101	CARBON R.	1/6W(F) 150	R124,28	2
102	CARBON R.	1/6W(F) 220	R113,34	2
103	CARBON R.	1/6W(F) 470	R131	1
104	CARBON R.	1/6W(F) 820	R114,17,30	3
105	CARBON R.	1/6W(F) 1K	R109,77	2
106	CARBON R.	1/6W(F) 1.2K	R115,27	2
107	CARBON R.	1/6W(F) 1.5K	R135,39,68,88	4
108	CARBON R.	1/6W(F) 1.8K	R150	1
109	CARBON R.	1/6W(F) 2.2K	R137,38B	2
110	CARBON R.	1/6W(F) 2.7K	R119,25	2
111	CARBON R.	1/6W(F) 3.3K	R116,57,60	3
112	CARBON R.	1/6W(F) 4.7K	R169,87	2
113	CARBON R.	1/6W(F) 8.2K	R186	1
114	CARBON R.	1/6W(F) 10K	101-07,08B,10-12,18-20,29,32,42,	22
115			-47,64,75-76,83,85	
116	CARBON R.	1/6W(F) 12K	R165-66	2
117	CARBON R.	1/6W(F) 15K	R140,54,49,63	4
118	CARBON R.	1/6W(F) 18K	R153,70	2
119	CARBON R.	1/6W(F) 22K	R133,52,80,84	4
120	CARBON R.	1/6W(F) 30K	R178	1
121	CARBON R.	1/6W(F) 33K	R144,46	2
122	CARBON R.	1/6W(F) 39K	R145	1
123	CARBON R.	1/6W(F) 47K	R108A,36,41,55-56,38A	8
124	CARBON R.	1/6W(F) 68K	R173	1
125	CARBON R.	1/6W(F) 100K	R143,48,81-82	4
126	CARBON R.	1/6W(F) 180K	R167	1
127	CARBON R.	1/6W(F) 220K	R171-72,79	3
128	CARBON R.	1/6W(F) 240K	R158-59	2
129	CARBON R.	1/6W(F) 620K	R174	1
130	SEME FIXED R.	CT-6P 10K	FVR101-02	2
131	2-PIN SOCKET	3024-02CH	CN104S	1
132	7-PIN SOCKET	3024-07CH	CN103S	1
133	10-PIN SOCKET	3024-10CH	CN105S,07S	2
134	8-PIN SOCKET	5124-08BHPB	CN101S	1
135	10-PIN SOCKET	5124-10BHPB	CN106S	1
136	12-PIN SOCKET	5124-12BHPB	CN102S	1
137	COAXIAL CN.	SM551	CN5S,6S	2
138	IC SOCKET	110-99-628		1
139	JUMPER SOCKET	DSP01-002-430G	JP102S	1
140	COAXIAL CORD	06-0.8D		1
141	PCB	06MPR318		1
142	SHIELD WIRE	EMR-1S-MST		1
143	RX UNIT CHAS.	2A10-0105		1
144	RX UNIT COVER	3A10-0320		1
145	BIND SCREW	BD-2.6 X 5		10
146	NUT	NT-2.6		2
147	OVAL SCREW	OV-2.6 X 8		12
148	SPRING WASHER	SW-2.6PAI		2

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF TX MAIN UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
149	IC	UPD2764D	IC301	1
150	IC	MC14504BP	IC302	1
151	IC	MC145146P	IC303	1
152	IC	NJM4556	IC309	1
153	IC	TC5027BP	IC305	1
154	IC	UPB571C	IC304	1
155	IC	78M05	IC306	1
156	IC	78M08	IC307	1
157	IC	M5236L	IC308	1
158	DIODE ARRAY	NAL-8CS	DA301	1
159	TRANSISTOR	2SB1019Y	Q303	1
160	TRANSISTOR	2SC1947	Q302	1
161	TRANSISTOR	2SC2644	Q301	1
162	TRANSISTOR	RN1202	Q306	1
163	TRANSISTOR	RN2202	Q304-05	2
164	DIODE	1SS177	D301-06,08-10,12-13	11
165	DIODE	1SS227	D307	1
166	DIODE	1SS237	D314-15	2
167	LED	TLS164	D311	1
168	THERMISTER	50D-5	TH301	1
169	TEST POINT	3022-02A	TP301-02	1
170	TEST POINT	LC-2-S(ORN)	TP303	1
171	COIL	4A-S299	L306-07	2
172	COIL	4A-S185	L305	1
173	LEAD CHOKE	10M(LN-0018)	L304	1
174	LEAD CHOKE	15M(LN-0009)	L301-03,08-09	5
175	VARIABLE COIL	12VXA 68mH	L310-11	2
176	CERAMIC C.	B 1000PF	C313-14,26-29,32-33,41,46-48	15
177			-59-60,66	
178	CERAMIC C.	B 100PF	C324.30A,35,53	4
179	CERAMIC C.	CH 10PF	C334,67	2
180	CERAMIC C.	SL 150PF	C361	1
181	CERAMIC C.	SL 22PF	C336,30B	2
182	CERAMIC C.	SL 47PF	C331	1
183	ELECTROLYTIC C	KMA 16V/100UF	C342	1
184	ELECTROLYTIC C	KMA 16V/10UF	C354	1
185	ELECTROLYTIC C	KMA 16V/47UF	C312,18,38	3
186	ELECTROLYTIC C	KMA 25V/100UF	C345	1
187	ELECTROLYTIC C	KMA 50V/0.1UF	C357-58	2
188	MYLER FILMED C	A7Z 0.015UF	C356	1
189	MYLER FILMED C	A7Z 0.01UF	C339	1
190	MYLER FILMED C	A7Z 0.022UF	C319B	1
191	MYLER FILMED C	A7Z 0.047UF	C351	1
192	MYLER FILMED C	A7Z 0.068UF	C349	1
193	MYLER FILMED C	A7Z 0.1UF	C350	1
194	MONOLYTHIC C.	RPE121C1000PF	C316-17	2
195	MONOLYTHIC M.	B32529-104K	C322	1
196	TANTALUM C.	DN 10V/10UF	C311	1
197	TANTALUM C.	DN 10V/4.7UF	C337	1
198	TANTALUM C.	DN 10V/47UF	C319A	1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF TX MAIN UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
199	TANTALUM C.	DN 16V/2.2UF	C323	1
200	TANTALUM C.	DN 35V/0.1UF	C320	1
201	TANTALUM C.	DN 35V/0.22UF	C365	1
202	TANTALUM C.	DN 35V/0.47UF	C352,55	2
203	TANTALUM C.	DN 35V/1UF	C310,40,43-44	4
204	SST TANTALUM C	SST 35V/0.1UF	C321	1
205	CARBON R.	1/6W(F) 1.2K	R318	1
206	CARBON R.	1/6W(F) 1.5K	R339,46	2
207	CARBON R.	1/6W(F) 10	R321	1
208	CARBON R.	1/6W(F) 10K	R301-07,09,11,12-14,36,45B	14
209	CARBON R.	1/6W(F) 150	R324	1
210	CARBON R.	1/6W(F) 15K	R310,33,50-51	4
211	CARBON R.	1/6W(F) 1K	R322,45A	2
212	CARBON R.	1/6W(F) 2.2K	R338	1
213	CARBON R.	1/6W(F) 2.7K	R326	1
214	CARBON R.	1/6W(F) 22	R327	1
215	CARBON R.	1/6W(F) 220	R316	1
216	CARBON R.	1/6W(F) 22K	R347	1
217	CARBON R.	1/6W(F) 270	R331	1
218	CARBON R.	1/6W(F) 27K	R340B	1
219	CARBON R.	1/6W(F) 3.3	R329A,30	2
220	CARBON R.	1/6W(F) 3.3K	R315,20	2
221	CARBON R.	1/6W(F) 3.9K	R335	1
222	CARBON R.	1/6W(F) 33	R325	1
223	CARBON R.	1/6W(F) 390	R329B	1
224	CARBON R.	1/6W(F) 39K	R334,48	2
225	CARBON R.	1/6W(F) 430	R319	1
226	CARBON R.	1/6W(F) 47	R323	1
227	CARBON R.	1/6W(F) 470	R332	1
228	CARBON R.	1/6W(F) 47K	R308,42,49A	3
229	CARBON R.	1/6W(F) 6.8K	R341	1
230	CARBON R.	1/6W(F) 680	R328,40A,49B,52	4
231	CARBON R.	1/6W(F) 820	R317,37	2
232	METAL FILMED R	RNK2E 33K	R343	1
233	METAL FILMED R	RNK2E 39K	R344	1
234	SEMI FIXED R.	CT-6P 10K	FVR301	1
235	SEMI FIXED R.	CT-6P 1K	FVR302	1
236	SEMI FIXED R.	CT-6P 47K	FVR303	1
237	2-PIN SOCKET	3024-02CH	CN306S	1
238	7-PIN SOCKET	3024-07CH	CN305S	1
239	3-PIN SOCKET	5124-03BHPB	CN304S	1
240	7-PIN SOCKET	5124-07BHPB	CN303S	1
241	8-PIN SOCKET	5124-08BHPB	CN301S	1
242	COAXIAL CORD	106-TCH-1.5D	CN6P	1
243	COAXIAL CORD	110-YNG-1.5D	CN7P	1
244	PCB	10MPT118		1
245	IC SOCKET	110-99-628		1
246	TX UNIT CHA.	2A10-0104		1
247	TX UNIT COVER	3A10-0321		1
248	SHIELD WIRE	EMR-15-MST		1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF TX MAIN UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
249	BIND SCREW	BD-2.6 X 5		8
250	NUT	NT-2.6PAI		3
251	OVAL SCREW	OV-2.6 X 8		11
252	SPRING WASHER	SW-2.6PAI		3

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF-B RX VCO UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
253	IC	UPC1651	IC201	1
254	FET	SST310	Q201	1
255	TRANSISTOR	2SA1048LY	Q203,05	2
256	TRANSISTOR	2SC2458LY	Q208	1
257	TRANSISTOR	2SC2753Y	Q202	1
258	TRANSISTOR	2SC3623A	Q207	1
259	TRANSISTOR	RN2202	Q204,06	2
260	ZENER DIODE	05Z5.6Y	D206	1
261	DIODE	1SS177	D203-05,07	4
262	DIODE	1SS227	D202	1
263	VARICAP DIODE	1T32	D201	1
264	THERMISTER	TD5-320DH	TH201	1
265	MICRO INDUCTOR	LA03NA 4.7UF	L201,03A/B	3
266	MICRO INDUCTOR	LA04NA 10UH	L206	1
267	COIL	VCF15R	L202	1
268	COIL	4A-S191	L204	1
269	COIL	4A-S192	L205	1
270	TEST POINT	LC-2-S(BRN)	TP201	1
271	CERAMIC C.	B 1000PF	C202,8A/B,11-16,23,24,27	12
272	CERAMIC C.	RH 2PF	C209	1
273	CERAMIC C.	RH 5PF	C210	1
274	CERAMIC CHIP C	GR40 RH 2PF	C203	1
275	CERAMIC CHIP C	GR40 RH 3PF	C206	1
276	CERAMIC CHIP C	GR40 RH 9PF	C204,07	2
277	CERAMIC CHIP C	GR40 RH 15PF	C205	1
278	MYLER FILMED C	A7Z 0.015UF	C201	1
279	TANTALUM C.	DN 35V/1UF	C218	1
280	TANTALUM C.	DN 10V/4.7UF	C217,21,22	3
281	TANTALUM C.	DN 10V/47UF	C225	1
282	ELECTROLYTIC C	KMA 16V/47UF	C219-20	2
283	MONOLYTHIC C	RPE121C 0.022U	C226	1
284	TRIMMER	DTM 6PF	VC201	1
285	CARBON R.	1/6W(F) 10	R206A,13	2
286	CARBON R.	1/6W(F) 68	R205	1
287	CARBON R.	1/6W(F) 270	R212	1
288	CARBON R.	1/6W(F) 330	R202	1
289	CARBON R.	1/6W(F) 1K	R204,06B,10	3
290	CARBON R.	1/6W(F) 1.8K	R201	1
291	CARBON R.	1/6W(F) 2.7K	R203	1
292	CARBON R.	1/6W(F) 4.7K	R209	1
293	CARBON R.	1/6W(F) 10K	R207-08	2
294	CARBON R.	1/6W(F) 15K	R211	1
295	2-PIN PLUG	SB-02P-HVQ-B	CN104P	1
296	7-PIN PLUG	SB-07P-HVQ-B	CN103P	1
297	PCB	06VCVR318		1
298	VCO UNIT FRAME	4A10-1038		1
299	VCO UNIT COVER	4A10-1039		1
300	ISOLATION MAT	4A10-1041		1
301	PCB MAT	4A10-1273		1
302	STUD FOR VCO	4A10-1267		4

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF-B RX VCO UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
303	SEMS SCREW	SE-2.6 X 5		1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF-B TX VCO UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
304	IC	UPC1651	IC401	1
305	FET	SST310	Q401	1
306	TRANSISTOR	2SA1048LY	Q403,05	2
307	TRANSISTOR	2SC2458LY	Q407	1
308	TRANSISTOR	2SC2753Y	Q402	1
309	TRANSISTOR	2SC3623A	Q406	1
310	TRANSISTOR	RN2202	Q404	1
311	VARICAP DIODE	1T32	D401A/B	2
312	ZENER DIODE	05Z5.6Y	D404	1
313	DIODE	1SS177	D403,05	2
314	DIODE	1SS227	D402	1
315	THERMISTER	TD5-320DH	TH401	1
316	MICRO INDUCTOR	LA03NA 4.7UH	L401,02B,03	3
317	MICRO INDUCTOR	LA04NA 10UH	L406	1
318	COIL	VCF15T	L402A	1
319	COIL	4A-S191	L404	1
320	COIL	4A-S192	L405	1
321	TEST POINT	LC-2-S(BRN)	TP401	1
322	CERAMIC C.	B 1000PF	C402,10,12-17,19,24,28	11
323	CERAMIC C.	RH 2PF	C409	1
324	CERAMIC C.	RH 5PF	C411	1
325	CERAMIC CHIP C	GR40 RH 1PF	C406	1
326	CERAMIC CHIP C	GR40 RH 2PF	C404-05	2
327	CERAMIC CHIP C	GR40 RH 7PF	C407	1
328	CERAMIC CHIP C	GR40 RH 9PF	C403	1
329	CERAMIC CHIP C	GR40 RH 15PF	C408	1
330	MONOLYTHIC C.	RPE121C 0.022U	C426	1
331	MYLER FILMED C	A7Z 0.015UF	C401	1
332	TANTALUM C.	DN 35V/0.47UF	C429	1
333	TANTALUM C.	DN 35V/1UF	C427	1
334	TANTALUM C.	DN 10V/4.7UF	C418,22-23	3
335	TANTALUM C.	DN 10V/47UF	C425	1
336	ELECTROLYTIC C	KMA 16V/47UF	C420-21	2
337	TRIMMER	DTM 6PF	VC401	1
338	CARBON R.	1/6W(F) 10	R411A,18	2
339	CARBON R.	1/6W(F) 68	R410	1
340	CARBON R.	1/6W(F) 270	R417	1
341	CARBON R.	1/6W(F) 330	R407	1
342	CARBON R.	1/6W(F) 1K	R409,11B,16	3
343	CARBON R.	1/6W(F) 1.5K	R406	1
344	CARBON R.	1/6W(F) 2.7K	R408	1
345	CARBON R.	1/6W(F) 4.7K	R415	1
346	CARBON R.	1/6W(F) 10K	R402,12-14	4
347	CARBON R.	1/6W(F) 15K	R401	1
348	CARBON R.	1/6W(F) 33K	R404-05	2
349	CARBON R.	1/6W(F) 39K	R403	1
350	2-PIN PLUG	SB-02P-HVQ-B	CN306P	1
351	7-PIN PLUG	SB-07P-HVQ-B	CN305P	1
352	PCB	06VCVT318		1
353	PCB MAT	4A10-1274		1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF-B TX VCO UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
354	STUD FOR VCO	4A10-1267		4

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF-B PA UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
355	POWER MODULE	M57719	IC601	1
356	IC	78L08	IC605	1
357	IC	NJM4556D	IC603	1
358	IC	NJM4558D	IC602,04	2
359	TRANSISTOR	2SA950Y	Q604	1
360	TRANSISTOR	2SB1019	Q603	1
361	TRANSISTOR	2SC2120Y	Q605	1
362	TRANSISTOR	2SC2694	Q602	1
363	LED	TLS164	D606	1
364	DIODE	1SS177	D603,05,07-09	5
365	DIODE	1SS237	D601-02	2
366	DIODE	DS135D	D604	1
367	ELIMINATER	BNP002-02	EM601-02	2
368	BARISTER	EBN220-D	BL601	1
369	TEST POINT	LC-2-S(BLN)	TP601	1
370	TEST POINT	LC-2-S(RED)	TP602	1
371	LEAD CHOKE	10M(LN-0018)	L601,03,13,22-24	6
372	LEAD CHOKE	15M(LN-0009)	L605,11,17	3
373	LEAD CHOKE	20M(LN-0010)	L614-16	3
374	COIL	4A-S163	L609	1
375	COIL	4A-S164	L606	1
376	COIL	4A-S195	L612	1
377	COIL	4A-S257	L618,20	2
378	COIL	4A-S258	L619,21	2
379	THROUGH C.	1HB340Y 1000PF	C629	1
380	CERAMIC C.	B 1000PF	C602,05,10,34A/B,35,36-40,	21
381			-50-54,57,58A/B,61,66	
382	MONOLYTHIC C.	RPE121C 1000PF	C660,63,65,67	4
383	MONOLYTHIC C.	RPE121C 0.01UF	C656	1
384	TANTALUM C.	DN 35V/1UF	C647,48	2
385	MYLER FILMED C	A7Z 0.01UF	C655,59,62,64,68	5
386	MYLER FILMED C	A7Z 0.022UF	C627	1
387	ELECTROLYTIC C	KMA 16V/10UF	C649	1
388	ELECTROLYTIC C	KMA 25V/10UF	C601,06,11,28	4
389	ELECTROLYTIC C	KMA 25V/33UF	C609	1
390	ELECTROLYTIC C	SME 25V/470UF	C606	1
391	MICA CHIP C.	UC232H 10PF	C633	1
392	MICA CHIP C.	UC232H 22PF	C608	1
393	MICA CHIP C.	UC232H 25PF	C632	1
394	MICA CHIP C.	UC232H 27PF	C641-42	2
395	MICA CHIP C.	UC232H 43PF	C616-17,30	3
396	MICA CHIP C.	UC342H 120PF	C612	1
397	MICA CHIP C.	UC342H 150PF	C613	1
398	MICA CHIP C.	UC342H 220PF	C614-15	2
399	MICA CHIP C.	UC342H 470PF	C607	1
400	MICA C.	RM402 15PF	C643,46	2
401	MICA C.	RM402 33PF	C644A,45	2
402	MICA C.	RM20 150PF	C631	1
403	TRIMMER	TC-8 20PF	VC601	1
404	TRIMMER	TC809 2/18PF	VC603	1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : VHF-B PA UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
405	CARBON R.	1/6W(P) 0	J601	1
406	CARBON R.	1/4W(F) 47	R609	1
407	CARBON R.	1/6W(F) 68	R616	1
408	CARBON R.	1/6W(F) 100	R606	1
409	CARBON R.	1/4W(F) 150	R602	1
410	CARBON R.	1/6W(F) 330	R617	1
411	CARBON R.	1/6W(F) 470	R601,15A	2
412	CARBON R.	1/6W(F) 1K	R610	1
413	CARBON R.	1/6W(F) 1.5K	R622	1
414	CARBON R.	1/6W(F) 2.2K	R611,13,15B,18,20	5
415	CARBON R.	1/6W(F) 4.7K	R607-08	2
416	CARBON R.	1/6W(F) 10K	R614,21,24,26,28-29	6
417	CARBON R.	1/6W(F) 22K	R619,25	2
418	CARBON R.	1/6W(F) 100K	R612	1
419	CARBON R.	1/6W(F) 330K	R623,27	2
420	METAL OXIDE R.	RS1B 1W 15	R604	1
421	METAL OXIDE R.	RS1B 1W 270	R603	1
422	METAL OXIDE R.	SPR2 2W 47	R605	1
423	SEMI FIXED R.	CT-6P 200	FVR601	1
424	SEMI FIXED R.	CT-6P 2K	FVR603	1
425	SEMI FIXED R.	CT-6P 5K	FVR604-05	2
426	SEMI FIXED R.	CT-6P 20K	FVR606-07	2
427	SEMI FIXED R.	CT-6P 50K	FVR602	1
428	PCB	10PAV218		1
429	COAXIAL CORD	110-BEF-1.5D	CN7BP	1
430	COAXIAL CORD	110-TX-1.5D	CN8P	1
431	COAXIAL CORD	10-1.5D		1
432	CONNECTOR ASSY	110-601S	CN601S	1
433	CORD	0.2□ -205ORN		1
434	CORD	0.5□ -177RED		1
435	CORD	3.5W-200		1
436	PCB	10LPF116		1
437	LPF CASE	4A10-1269		3
438	LPF COVER	4A10-1270		3

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : POWER SUP/RELAY UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
439	TRANSISTOR	2SC3419Y	Q1	1
440	DIODE	20DL2C	D1	1
441	DIODE	DS135D	D2	1
442	JUMPER PLUG	DPSP02-002-431	J1P	1
443	JUMPER SOCKET	DPSP01-002-430	J1SP	1
444	FUSE HOLDER	F-40C	F1	1
445	CARBON R.	1/6W(F) 10K	R1	1
446	CONNECTOR ASSY	110-6S	CN6S	1
447	2-PIN PLUG	8263-0212-000	CN16P	1
448	CN. POWER	R01-2110	CN604P	1
449	FUSE	FU-15A		1
450	PCB	10PS117		1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : D-SUB/CONNECTOR UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
451	CERAMIC C.	B 1000PF	C1-C38	38
452	37-PIN D-SUB	XM2F-3710	CN602S	1
453	9-PIN D-SUB	XM2F-0910	CN603S	1
454	CONNECTOR ASSY	110-607S	CN607S	1
455	CONNECTOR ASSY	110-1S	CN1S	1
456	CONNECTOR ASSY	110-2S	CN2S	1
457	CONNECTOR ASSY	110-3S	CN3S	1
458	CONNECTOR ASSY	110-4S	CN4S	1
459	37-PIN COVER	XM2T-3701		1
460	9-PIN COVER	XM2T-0901		1
461	STUD FOR D-SUB	XM22-0023		4
462	PLATE FOR CN.	4A10-1256		1
463	PCB	10DSA117		1
464	NUT	NT-3PAI		4

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : PA CHASSIS UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
465	COAXIAL RELAY	CX-530D	CN9S*	0
466	CONNECTOR ASSY	110-16S	CN16S*	0
467	CONNECTOR ASSY	110-605S	CN605S	1
468	EARPHONE JACK	HSJ0780-01-010	CN606S	1
469	BNC(PANEL)	BNC-PA-JJ	CN10S	1
470	COAXIAL CORD	110-RX-1.5D	CN5/10	1
471	COAXIAL CN.	N/BNC-PA-JJ		1
472	PA RADIATOR	1A10-0015		1
473	PA UNIT COVER	4A10-1251		1
474	STUD FOR PA	4A10-1250		11
475	SEMS SCREW	SE-2.6 X 5		3
476	SEMS SCREW	SE-2.6 X 8		5
477	SEMS SCREW	SE-3 X 8		4
478	SEMS SCREW	SE-3 X 12		4
479	OVAL SCREW	OV-2.6 X 5		11
480	OVAL SCREW	OV-3 X 8		3
481	BIND SCREW	BDB-2.6 X 5		4
482	FLAT WASHER	FL-3PAI		4
483	SPRING WASHER	SW-3PAI		4
484	NUT	NT-3PAI		4

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : DISPLY CONTROL UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
485	TRANSISTOR	RN1202	Q504-08	5
486	LED	LT9010H	D529-32	4
487	LED	LT9010N	D533	1
488	LED	LT9010D	D534	1
489	LED	TLM8101	D527-28	2
490	LED	TLR358	D535-39	5
491	TANTALUM C.	DN 35V/1UF	C525	1
492	CARBON R.	1/6W(F) 150	R588	1
493	CARBON R.	1/6W(F) 220	R584A,85A,86-89	6
494	CARBON R.	1/6W(F) 270	R590-94(EACH A,B,C,D,E,F)	35
495	CARBON R.	1/6W(F) 470	R534-53	20
496	CARBON R.	1/6W(F) 10K	R559	1
497	CONNECTOR ASSY	110-504S	CN504S-08S	5
498	CONNECTOR ASSY	110-509S	CN509S	1
499	CONNECTOR ASSY	110-510S	CN510S-11S	2
500	12-PIN PLUG	3022-12A	TM501-02	2
501	PCB	10LD218		1
502	BIND SCREW	BD-2 X 5		4
503	NUT	NT-2PAI		4
504	FLAT WASHER	FW-2PAI		4

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : SWITCH CONTROL UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
505	IC	MC14071BP	IC522-23	2
506	IC	MC14532BP	IC521	1
507	IC	TC9145P	IC528,529	2
508	TRANSISTOR	RN1202	Q511-13	3
509	TRANSISTOR	RN2202	Q514-15	2
510	R. ARRAY	RGLN4X473K	RA504-05	2
511	DIODE	1SS177	D512-17,42	7
512	LED	TLS164	D518-19,20A/B,22-26	9
513	TOUCH SWITCH	98-323	S501-23	23
514	TANTALUM C.	DN 35V/0.1UF	C517-22	6
515	TANTALUM C.	DN 35V/0.47UF	C523-24	2
516	CARBON R.	1/6W(F) 270	R561	1
517	CARBON R.	1/6W(F) 680	R560,62-63,79-83	8
518	CARBON R.	1/6W(F) 47K	R572-74,76,78,84B,85B	7
519	CARBON R.	1/6W(F) 100K	R564-69	6
520	CARBON R.	1/6W(F) 330K	R570-71,75,77	4
521	VOLUME	RK0941110	VR501	1
522	VOLUME/POW.SW	RK0941111W/S	VR502	1
523	CONNECTOR ASSY	110-501S	CN501S	1
524	3-PIN PLUG	3022-03A	JP501	1
525	7-PIN PLUG	5512-07A	CN502P	1
526	13-PIN PLUG	5512-13A	CN503P	1
527	PCB	10S		1
528	PCB	10SW218		1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : CONTROL UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
529	IC	7805	IC501	1
530	IC	7808	IC502	1
531	IC	MC14011BP	IC508-09	2
532	IC	MC14013BP	IC519-20	2
533	IC	MC14015BP	IC524	1
534	IC	MC14049BP	IC517	1
535	IC	TC4068BP	IC513	1
536	IC	MC14075BP	IC518	1
537	IC	MC14081BP	IC512	1
538	IC	NJM555	IC525	1
539	IC	TA7612AP	IC526-27	2
540	IC	TC4076P	IC515-16	2
541	IC	TC4508P	IC511	1
542	IC	TC5068BP	IC503-05	3
543	IC	TC5069BP	IC506-07	2
544	CMOS ROM(A)	UPD27C64	IC510	1
545	CMOS ROM(B)	UPD27C64	IC514	1
546	TRANSISTOR	2SA1359Y	Q501	1
547	TRANSISTOR	2SC2458LY	Q509	1
548	TRANSISTOR	RN1202	Q503,10	2
549	TRANSISTOR	RN2202	Q502	1
550	R. ARRAY	RGLN4X473K	RA501-03	3
551	DIODE	1SS177	D501,04-11,42	10
552	DIODE	DS135D	D503	1
553	ZENER DIODE	05Z2.2Y	D502	1
554	RELAY	MR301-12S	RL501	1
555	BUZZER	PKB-24-SP3301	BZ501	1
556	ELECTROLYTIC C	KMA 16V/100UF	C501,04,06	3
557	ELECTROLYTIC C	KMA 50V/0.1UF	C510,11	2
558	ELECTROLYTIC C	SS 16V/470UF	C508	1
559	MYLER FILMED C	A7Z 0.01UF	C514	1
560	MONOLYTHIC C.	RPE121C 0.1UF	C507,16	2
561	TANTLAUM C.	DN 10V/10UF	C515	1
562	TANTLAUM C.	DN 35V/0.1UF	C513,26-28	4
563	TANTLAUM C.	DN 35V/0.47UF	C512,09	2
564	TANTLAUM C.	DN 35V/1UF	C502-03,05	3
565	CARBON R.	1/6W(F) 1K	R501-02,11,15	4
566	CARBON R.	1/6W(F) 4.7K	R513,17	2
567	CARBON R.	1/6W(F) 10K	R503,10,14,21,31,95	6
568	CARBON R.	1/6W(F) 22K	R512,16,19	3
569	CARBON R.	1/6W(F) 47K	R508,18,26-30,96	8
570	CARBON R.	1/6W(F) 100K	R506,09,24-25,32-33,98	7
571	CARBON R.	1/6W(F) 220K	R522	1
572	CARBON R.	1/6W(F) 330K	R507,23	2
573	CARBON R.	1/6W(F) 1M	R504-05	2
574	IC SOCKET	ICC05-008-360T		1
575	IC SOCKET	ICC05-014-360T		7
576	IC SOCKET	ICC05-016-360T		11
577	IC SOCKET	ICC05-024-360T		1
578	IC SOCKET	110-99-628		2

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : CONTROL UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
579	CONNECTOR ASSY	110-11S	CN11S	1
580	CONNECTOR ASSY	110-12S	CN12S	1
581	CONNECTOR ASSY	110-13S	CN13S	1
582	CONNECTOR ASSY	110-14S	CN14S	1
583	CONNECTOR ASSY	110-15S	CN15S	1
584	CONNECTOR ASSY	110-514S	CN514S	1
585	7-PIN SOCKET	5513-07CPB	CN502S	1
586	13-PIN SOCKET	5513-13CPB	CN503S	1
587	2-PIN PLUG	8283-0211-000	CN513P	1
588	7-PIN PLUG	8283-0711-000	CN504P-08P	5
589	7-PIN PLUG	8283-0711-003	CN512P	1
590	8-PIN PLUG	8283-0811-000	CN509P	1
591	10-PIN PLUG	8283-1011-000	CN510P-11P	2
592	13-PIN PLUG	8283-1311-000	CN501P	1
593	PCB	10CT218		1
594	NUT	NT-2.6PAI		3
595	PAN SCREW	PN-2.6 X 8		3
596	SPRING WASHER	SW-2.6PAI		3

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : CONTROL CHASSIS UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
597	SPEAKER	KS-110	SP501	1
598	MIC SOCKET	214-SM	CN16P	1
599	CONNECTOR ASSY	110-513S	CN513S	1
600	CONNECTOR ASSY	110-512S	CN512S	1
601	FRONT PANEL	2A10-0113B		1
602	WINDOW LED	4A10-1257		1
603	GRILL SPEAKER	2A10-0115		1
604	NET SPEAKER	4A10-1268		1
605	SW CAP(CH,TON)	98-902.2		2
606	SW CAP(SP,DIS)	98-906.2		2
607	SW CAP(0-9,*#)	98-901.8		14
608	SW CAP (CHECK)	98-902.8		5
609	KNOB VOLUME	20 15 60 2		2
610	CAP VOLUME	30 15 01 1		2
611	BLAND PLATE	110-RD		1
612	STUD FOR CT-A	4A10-1253		3
613	STUD FOR CT-B	4A10-1252		3
614	BIND SCREW	BD-3 X 6		4
615	SEMS SCREW	SE-3 X 8		8
616	SEMS SCREW	SE-2.6 X 5		6

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : MAIN TERMINAL UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
617	IC	7805	IC802	1
618	IC	7808	IC801	1
619	IC	AN5733	IC813	1
620	IC	M51304L	IC803	1
621	IC	MC14002BP	IC808	1
622	IC	MC14013BP	IC809	1
623	IC	MC14049BP	IC810	1
624	IC	MC14585BP	IC807	1
625	IC	NJM4556D	IC804	1
626	IC	NJM4558D	IC812,15	2
627	IC	NJM555	IC811	1
628	IC	TA7252P	IC814	1
629	IC	TC5027P	IC806	1
630	IC	TC5043P	IC805	1
631	TRANSISTOR	2SC2458LY	Q801,05	2
632	TRANSISTOR	2SC3623Y	Q807	1
633	TRANSISTOR	RN2202	Q802-04,06	4
634	R. ARRAY	RGLN4X473K	RA801	1
635	R. ARRAY	RGLN8X473K	RA802	1
636	D. ARRAY	NAL-8CS	DA801	1
637	DIODE	1SS177	D802-03,05-16,18,20	16
638	DIODE	1SS237	D821-22,23A/B,24-26	7
639	DIODE	DS135D	D801,04	2
640	RELAY	G2T4-1002R	RL802	1
641	RELAY	MR301-12S	RL801	1
642	DIP SWITCH	KDS16-112	S801	1
643	JUMPER PLUG	DSP02-002-431G	J801P-03P,05P-09P	8
644	JUMPER PLUG	DSP03-003-432G	J804P	1
645	TRANSFORMER	BT-600	MT801	1
646	CHOKE TRANS	CH-105	CH801	1
647	CERAMIC C.	B 1000PF	C807	1
648	ELECTROLYTIC C	KMA 50V/0.1UF	C831	1
649	ELECTROLYTIC C	KMA 50V/1UF	C826	1
650	ELECTROLYTIC C	KMA 25V/4.7UF	C808,29	2
651	ELECTROLYTIC C	KMA 16V/47UF	C830,34-35	3
652	ELECTROLYTIC C	KMA 16V/100UF	C803,05,36	3
653	ELECTROLYTIC C	SME 25V/470UF	C801,02,37	3
654	ELECTROLYTIC C	SME 25V/1000UF	C839	1
655	ELECTROLYTIC C	BP 50V/0.47UF	C832	1
656	MYLER FILMED C	A7Z 1000PF	C825,28	2
657	MYLER FILMED C	A7Z 2200PF	C818	1
658	MYLER FILMED C	A7Z 3300PF	C833	1
659	MYLER FILMED C	A7Z 6800PF	C844	1
660	MYLER FILMED C	A7Z 8200PF	C845	1
661	MYLER FILMED C	A7Z 0.01UF	C822,24,27,40	4
662	MYLER FILMED C	A7Z 0.015UF	C841-43	3
663	MONOLYTHIC M.	B32529-A104	C838	1
664	TANTALUM C.	DN 35V/0.1UF	C819-20,46-47	4
665	TANTALUM C.	DN 35V/0.22UF	C848	1
666	TANTALUM C.	DN 35V/0.47UF	C809,11,13-16,49	7

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : MAIN TERMINAL UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
667	TANTALUM C.	DN 35V/1UF	C804,06	2
668	TANTALUM C.	DN 10V/4.7UF	C810,17A/B,21	4
669	TANTALUM C.	DN 16V/10UF	C823,12	2
670	CARBON R.	1/6W(F) 100	R807	1
671	CARBON R.	1/6W(F) 220	R856A	1
672	CARBON R.	1/6W(F) 270	R818-19	2
673	CARBON R.	1/6W(F) 1K	R808,10,21	3
674	CARBON R.	1/6W(F) 1.5K	R814,43,49,55B	4
675	CARBON R.	1/6W(F) 1.8K	R852	1
676	CARBON R.	1/6W(F) 2.2K	R864	1
677	CARBON R.	1/6W(F) 3.3K	R806,10B	1
678	CARBON R.	1/6W(F) 4.7K	R802-03,30,36,41-42,45-46,53	9
679	CARBON R.	1/6W(F) 6.8K	R816	1
680	CARBON R.	1/6W(F) 10K	R801A,04,27,34,47-48,51,54A,55A	16
681			-68-74	
682	CARBON R.	1/6W(F) 15K	R861	1
683	CARBON R.	1/6W(F) 18K	R856B,57	2
684	CARBON R.	1/6W(F) 22K	R801B,60	2
685	CARBON R.	1/6W(F) 27K	R832,37	2
686	CARBON R.	1/6W(F) 33K	R812,22,31,44,54B,67	6
687	CARBON R.	1/6W(F) 39K	R809B,13	2
688	CARBON R.	1/6W(F) 47K	R811,15,17,23A/B,65	13
689			24-26,33,35,38-39	
690	CARBON R.	1/6W(F) 68K	R820	1
691	CARBON R.	1/6W(F) 100K	R809A,28-29,40,50	5
692	CARBON R.	1/6W(F) 220K	R863	1
693	CARBON R.	1/6W(F) 270K	R862	1
694	CARBON R.	1/6W(F) 470K	R858-59	2
695	SEMI FIXED R.	CT-6P 500	FVR807	1
696	SEMI FIXED R.	CT-6P 1K	FVR810	1
697	SEMI FIXED R.	CT-6P 5K	FVR814-15	2
698	SEMI FIXED R.	CT-6P 10K	FVR801,08,12	3
699	SEMI FIXED R.	CT-6P 20K	FVR802-06,09	6
700	SEMI FIXED R.	CT-6P 1M	FVR811	1
701	2-PIN PLUG	3022-02A	TP801-803	3
702	5-PIN SOCKET	5513-05CPB	CN802S	1
703	8-PIN SOCKET	5513-08CPB	CN805S,07S	2
704	9-PIN SOCKET	5513-09CPB	CN804S	1
705	11-PIN SOCKET	5513-11CPB	CN801S,06S	2
706	15-PIN SOCKET	5513-15CPB	CN803S	1
707	5-PIN PLUG	8263-0511-000	CN6P	1
708	6-PIN PLUG	8263-0611-000	CN601P	1
709	3-PIN PLUG	8283-0311-000	CN605P	1
710	7-PIN PLUG	8283-0711-000	CN4P	1
711	7-PIN PLUG	8283-0711-002	CN12P	1
712	7-PIN PLUG	8283-0711-003	CN514P	1
713	8-PIN PLUG	8283-0811-000	CN3P	1
714	8-PIN PLUG	8283-0811-003	CN13P	1
715	9-PIN PLUG	8283-0911-000	CN1P	1
716	9-PIN PLUG	8283-0911-001	CN15P	1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : MAIN TERMINAL UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
717	9-PIN PLUG	8283-0911-002	CN607P	1
718	10-PIN PLUG	8283-1011-000	CN2P	1
719	10-PIN PLUG	8283-1011-003	CN11P	1
720	15-PIN PLUG	8283-1511-003	CN14P	1
721	3-PIN PLUG	SB-03P-HVQ-A	CN304P	1
722	7-PIN PLUG	SB-07P-HVQ-A	CN303P	1
723	8-PIN PLUG	SB-08P-HVQ-A	CN101P,301P	2
724	10-PIN PLUG	SB-10-HVQ-A	CN106P	1
725	12-PIN PLUG	SB-12P-HVQ-A	CN102P	1
726	IC SOCKET	ICC05-008-360T		4
727	IC SOCKET	ICC05-014-360T		3
728	IC SOCKET	ICC05-016-360T		3
729	JUMPER SOCKET	DSP01-002-430G	JP801S-09S	9
730	IC RADIATOR	4A10-1265		2
731	PCB	10NCB219		1
732	STUD FOR CT-A	4A10-1253		4
733	PAN SCREW	PN-2.6 X 8		4
734	NUT	NT-2.6PAI		8
735	NUT	NT-3PAI		4
736	SPRING WASHER	SW-2.6PAI		8
737	SPRING WASHER	SW-3PAI		4
738	FLAT WASHER	FL-3PAI		4

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : MAIN CHASSIS UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
739	CONVERSION CN.	BNC 050-1450		1
740	FUSE	FU-15A		1
741	CHASSIS MAIN	3A10-0318		1
742	SIDE RIGHT	2A10-0114R		1
743	SIDE LEFT	2A10-0114L		1
744	HANDLLE	4A10-1255		2
745	TOP/BOTTOM	3A10-0314		2
746	CORD CLUMPER	UL-13		3
747	STUD FOR PCB	4A10-1261		9
748	CAP BOLT	CAP-4 X 10		8
749	FLAT WASHER	FLB-4PAI		4
750	BIND SCREW	BDB-4 X 6		8
751	BIND SCREW	BDB-3 X 6		12
752	BIND SCREW	BD-3 X 8		10
753	SEMS SCREW	SE-3 X 8		12
754	BIND SCREW	BD-2.6 X 10		1
755	BIND SCREW	SE-2.6 X 5		8
756	EDGE PROTECTOR	CE-12S		1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : PS110 CONTROL UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
757	IC	NJM4558D	IC101	1
758	TRANSISTOR	2SC3419Y	Q101-02	2
759	ZENER DIODE	05Z6.8Y	D112	1
760	ZENER DIODE	05Z7.5Y	D103,07	2
761	DIODE	1SS177	D106,08	2
762	DIODE	DS135D	D101-02,04,05,09,10	6
763	LEAD CHOKE	20M(LN-0010)	L101	1
764	RELAY	AR6611	RL101-02	2
765	RELAY	MR301-12S	RL103	1
766	MYLER FILMED C	A7Z 1000PF	C103	1
767	CERAMIC C.	B 1000PF	C101,04	2
768	JUMPER R.	1/6W(P) 0	J101-04	4
769	CARBON R.	1/6W(F) 820	R112	1
770	CARBON R.	1/6W(F) 1.5K	R102,05,09	3
771	CARBON R.	1/6W(F) 3.3K	R103-04	2
772	CARBON R.	1/6W(F) 4.7K	R108,10	2
773	CARBON R.	1/6W(F) 6.8K	R107	1
774	CARBON R.	1/6W(F) 10K	R106	1
775	CARBON R.	1/6W(F) 220K	R111	1
776	METAL OXIDE R.	RS1B 1W 33	R101	1
777	ENAMELED R.	QGZ 40W 3 OHM	R113	1
778	SHANT PLATE	4A10-1271	R114	1
779	SEMI FIXED R.	CT-6P 100	FVR102	1
780	SEMI FIXED R.	CT-6P 10K	FVR101,03-04	3
781	4-PIN PLUG	8263-0412-000	CN2P	1
782	5-PIN PLUG	8263-0512-000	CN1P	1
783	CONNECTOR ASSY	110-PS-7S	CN7S	1
784	BIND SCREW	BD-3 X 8		4
785	NUT	NT-3PAI		4
786	SPRING WASHER	SW-3PAI		4
787	PCB	10RS218		1
788	PCB	10S1		1
789	CONNECTOR ASSY	110-PS-2S	CN2S	1
790	POWER SWITCH	AC21400G	S101	1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : PS 110 DISPLAY UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
791	IC	TA7612	IC102-03	2
792	LED	LT9010H	D113	1
793	LED	LT9010N	D114	1
794	LED	TLM8101	D115-16	2
795	CARBON R.	1/6W(F) 1K	R115,30,32	3
796	CARBON R.	1/6W(F) 1.5K	R119-28,33-42	20
797	CARBON R.	1/6W(F) 3.3K	R118	1
798	CARBON R.	1/6W(F) 10K	R117,31	2
799	CARBON R.	1/6W(F) 22K	R116,29	2
800	CONNECTOR ASSY	110-PS-1S	CN1S	1
801	CONNECTOR ASSY	110-PS-6S	CN6S	1
802	12-PIN PLUG	3022-12A	TM101-02	2
803	BIND SCREW	BD-2 X 5		4
804	NUT	NT-2PAI		4
805	FLAT WASHER	FW-2PAI		4
806	PCB	10AC218		1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : PS110 NL UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
807	TRANSISTOR	2SC2120Y	Q104	1
808	TRANSISTOR	2SD1414	Q103	1
809	ZENER DIODE	05Z10Y	D118	1
810	BOLCK DIODE	1G4B42	D117	1
811	TRANSFORMER	PT-110	PT101	1
812	ELECTROLYTIC C	SME 50V/100UF	C105	1
813	CARBON R.	1/6W(F) 270	R144	1
814	CARBON R.	1/6W(F) 3.3K	R145-46	2
815	CARBON R.	1/6W(F) 4.7K	R143	1
816	2-PIN PLUG	8263-0212-000	CN6P,7P	2
817	BIND SCREW	BD-3 X 8		2
818	PAN SCREW	PN-2.6 X 10		1
819	NUT	NT-2.6PAI		1
820	NUT	NT-3PAI		2
821	SPRING WASHER	SW-2.6PAI		1
822	SPRING WASHER	SW-3PAI		2
823	PCB	10NL118		1

MODEL : KG110 VHF CODE : KG110-15B50DBR UNIT : PS110 CHASSIS UNIT

NO.	PARTS NAME	DESCRIPTION	CIRCUIT REFERENCE	Q'TY
824	POW.SUP. UINT	KRV-300	PS101	1
825	DC FUSE HOLDER	SN-2054	F101	1
826	AC FUSE HOLDER	SN-2059	F102	1
827	AC SOCKET	VF1-03T	CN3P	1
828	BATT. PLUG	R01-2111	CN4P	1
829	DC PLUG	RC1-2110	CN5P	1
830	BATT. SOCKET	R01-2101	CN4S	1
831	DC SOCKET	R01-2102	CN5S	2
832	AC CABLE	P47-SJT-C0028A	CN3S	1
833	BATT. CABLE	110-BATT-5	CN4S	1
834	DC CABLE	110-DC-5	CN5S	1
835	AC FUSE	FU-5A		2
836	DC FUSE	FU-15A		2
837	LUMP FOR P.SW.	AC283		2
838	DC CORD ASSY	3.5W-170		1
839	DC CORD ASSY	3.5W-200L		2
840	DC CORD ASSY	0.5W-170		1
841	CORD ASSY	0.2-230-RED		1
842	CORD ASSY	.3-120-BLK2.6S		1
843	CORD	1-340-BLK-3/4P		1
844	CORD	3.0-RED-125		1
845	CORD	W-WHT-120		1
846	CORD	W-WHT-370-4S		1
847	CORD	W-WHT-420-4S		1
848	BLAND PLATE	110-PS		1
849	WINDOW FOR LED	4A10-1260		1
850	FRONT PANEL	2A10-0112		1
851	REAR PANEL	3A10-0323A		1
852	SIDE RIGHT	2A10-0114R		1
853	SIDE LEFT	2A10-0114L		1
854	CHASSIS	3A10-0322		1
855	TOP/BOTTOM	3A10-0314		2
856	HANDLLE	4A10-1255		2
857	STUR FOR PCB	4A10-1261		8
858	CAP BOLT	CAP-4 X 10		8
859	FLAT WASHER	FLB-4PAI		4
860	CAP BOLT	CAP-4 X 6		4
861	OVAL SCREW	OV-3 X 8		6
862	BIND SCREW	BD-3 X 8		6
863	BIND SCREW	BDB-3 X 8		2
864	BIND SCREW	BDB-3 X 6		12
865	BIND SCREW	BDB-4 X 6		8
866	SEMS SCREW	SE-2.6 X 5		8
867	SEMS SCREW	SE-3 X 8		4
868	NUT	NT-3PAI		2
869	SPRING WASHER	SW-3PAI		2