NRD-515 ALL WAVE RECEIVER

SERVICE MANUAL

JRC

Japan Radio Co., Ltd.

ALL WAVE RECEIVER

MODEL NRD-515

SERVICE MANUAL

CONTENTS

1. PRECAUTION FOR CHECK AND MAINTENANCE

This all wave receiver is composed of five units: chassis, front panel, rear panel, receiver and synthesizer units. The front panel unit has a die-cast frame and printed circuit board attached at the frame.
The circuit board also serves as a mother board.
Both the receiver unit and synthesizer unit each consist of a plug-in type unit, which is connected to the mother board located in the front panel unit, by means of plug-in connectors of the unit and mother board.

The power supply circuit comprises a power transformer incorporated in the chassis unit and an AVR (automatic voltage regulator) circuits located in the rear panel unit and provides required supply voltages to other circuits.

1) REMOVING THE UPPER COVER AND LOWER COVER OF CASE

Refer to Figure 1 in Appendix.
Remove four black setscrews at right and left side, which secure the upper cover.
Also remove four black setscrew, which secure the lower cover at right and left side.
Then, remove both the upper and lower cover.

2) DEMOUNTING THE RECEIVER UNIT

First remove the upper cover according to Procedure 1. 1).
Then, disconnect 8 pin plugs marked "A", "B", --, "H" and square connector P11 (parts number) from the receiver unit.(Each plug mark locates at the top end of associated cable.)

Furthermore, remove seven setscrews marked "*" in Figure 4 in Appendix. Slide out the receiver unit backward from the front panel frame.

3) DEMOUNTING THE SYNTHESIZER UNIT

First remove the lower cover according to Procedure 1. 1).
Then, disconnect five pin plugs marked "B", "E","H", "I" and "J" and square connectors P29 through P31 from the synthesizer unit.
Furthermore, remove seven setscrews marked "*" in Figure 3, Appendix.
Slide out the synthesizer unit backward from the front panel frame.

4) DEMOUNTING THE FRONT PANEL UNIT

Remove the upper and lower covers and demount the receiver unit and synthesizer unit according to steps 1) through 3) in Section 1.
Then, remove a square connector P8 attached at the printed circuit board of the panel and remove three setscrews, which secure the panel frame to the chassis and are marked "△" in Figure 6, Appendix.
Furthermore, remove other four screws, which secure both sides of the panel frame.
Take out the panel.

5) PRECAUTIONS FOR CHECK AND MAINTENANCE

a. Great care must be taken not to enter any solder or wire cut pieces into the set, when uncovering the case.

b. Do not rotate any core of transformer and coil, any trimmer capacitor and any semifixed variable resistors, unreasonably, unless necessary.

c. Both the receiver unit and synthesizer unit handle high-frequency signals in the VHF band and therefore require high-class techniques and suited measuring instruments to them, for adjustment and checks.

d. The synthesizer unit contains circuits operating, interrelated with each other and should, therefore, be checked in sequency.

e. The pulse generator mounted on the front panel has been finely adjusted.
Do not uncover, unreasonably.

f. The shield cases are removed from the unit such as receiver unit and synthesizer unit to check the circuits.
When remounting the upper and lower shield cases at both sides of the board, take care of their orientations not to mount them with wrong orientations.

g. Never forget to turn off the power switch before connecting and disconnecting the plugs and connectors.

h. Be sure both the short plug "P35" at the receiver unit and the other short plug "P37" of the synthesizer unit have been inserted into respective jacks.

2. MAINTENANCE PROCEDURE

1) CLEANING

Softly wipe the panel surface, control knobs on the panel, and upper and lower covers of the case with a soft cloth or cloth impregnated with silicone oil to clean them.

Remove dust and trash from the interior of the equipment with use of a brush or by means of a cleaner.

Since no gear mechanism has been employed, there is no need to lubricate, at all.
Check the setscrews of the control knobs on the panel for looseness. If loose, tighten the setscrew, using a 4mm-hex screw-driver.

2) REPLACING THE PILOT LAMP

If the pilot lamp for illumination of the S-meter should be burnt out, follow the procedure below.
Remove the upper cover in accordance with step 1) in Section 1.
Then, loosen the setscrew marked "a" in Figure 6 Appendix, which secures the lamp holder, and take out the holder.
Replace with a furnished lamp of 12V, 2W in rating, BA7S/13 base type.

3) REPLACING THE FUSE

When the power fuse is blown, thoroughly investigate the cause of fuse blow. After repair for the cause, replace it.
The fuse holder holds the fuse and also serves as a holder of the voltage selector mounted on the rear panel.

Counterclockwise rotate the cap of the holder to take out the fuse and replace with a new glass fuse of 1A in rating, furnished to the equipment. The cap is marked "A" in Figure 3-2 of the instruction manual.

4) REPLACING THE PARTS

Any IC, transistor or diode will be damaged with only an instantaneous short, shock etc. Great care must be taken of them upon checks. See if any resistor, capacitor, coil, transformer, or the like has discolored or burnt out.
If necessary for replacement, replace with one has the same value, withstanding voltage, tolerance, temperature coefficient and dimensions. In particular, every variable resistor mounted on the panel is frequently rotated in use and hence tends to often become defective.
Carefully check the variable resistors.

When replacing the parts, use a soldering iron of 20W, approx.

3. CHECK AND ADJUSTMENT PROCEDURE

1) PREPARATION

The following measuring instruments and tools are required for checking and adjusting the equipment.

a. Required measuring instruments:

(1) Standard signal generator, SSG

Frequency range	100KHz to 50MHz
Impedance	75 ohms/50 ohms
Output level	-20 to +120dBuV
Modulation	0 to 80% at 400Hz

(2) Radio frequency voltmeter, RF VV

Frequency range	0 to 200MHz
Input impedance	High
Voltage range	1mV to 10V rms

(3) Frequency counter, f counter

Frequency range	0 to 200MHz
Input impedance	High
Sensitivity	25mV rms or lower
Input level	25mV to 10V rms
Resolution	1Hz
Stability	5×10^{-8}/day

(4) Digital voltmeter, DIGI VM

Voltage range	20mV to 2V DC
Input impedance	High

(5) AF oscillator, CR OSC

Frequency	1kHz
Output impedance	600 ohms
Output level	-70 to +20dBm

(6) Level meter, LM

Frequency range	0 to 30kHz
Input level	-70 to +40dBm
Input impedance	600 ohms/10k ohms

(7) Circuit tester

Voltage range	0 to 300V AC 0 to 30V DC
Current range	0 to 1000mA DC
Resistance range	0 to 1M ohm

(8) VHF SSG

Frequency range	50 to 150MHz
Impedance	75 ohms/50 ohms
Output level	-20 to +120dBuV

Modulation	0 to 80%, 400Hz

(9) Oscilloscope

Display	Two channel type
Frequency range	0 to 200MHz
Voltage range	10mV to 50V DC and AC (p-p)

(10) Distortion meter, DM

Frequency range	0 to 30kHz
Input level	-70 to +40dBm
Distortion range	0 to 30%
Input impedance	600 ohms/10k ohm

b. Required tools

(1) "+" screw-driver for 3mm-screws

(2) "-" screw-driver of 3mm wide at tip

(3) "-" screw-driver of 1mm wide at edge for watch

(4) "-" adjusting rod of 1mm wide at tip, made of bakelite or teflon.

(5) "-" adjusting rod of 2.5mm wide at tip, made of bakelite or teflon

(6) Hex screw-driver for 4mm-screw

(7) Long-nosed pincers, cutting nipper, pincette, gauze

(8) Soldering irons, 20W and 60W

(9) coiled solder, paste

PC-board extension board is not needed.

c. Others

(1) AF output transformer (4-ohm to 600-ohm, 5W) is necessary

(2) When connecting the f counter or oscilloscope to each unit, insert a 10-to-1 probe of the oscilloscope for 200MHz use between the f counter or oscilloscope and the unit.

(3) Variable power transformer (0 to 130V AC or 0 to 300V AC, 2A) is required.

2) CHECKING THE POWER SUPPLY CIRCUIT

Adjust the variable power transformer shown in Figure 8 of Appendix so that each power supply voltage is set to specified value.
Connect the circuit tester or digital voltmeter to each of the check points TP1 through TP8 shown in Figure 5 of Appendix and check the voltage and load current there.

Typical voltages are given below.

Between TP1 and TP2	19V AC
Between TP3 and TP4	8.7V AC
Between TP5 and TP9 (earth)	+15V DC
Between TP6 and TP9 (earth)	+15V DC
Between TP7 and TP9 (earth)	+5V DC
Between TP8 and TP9 (earth)	+9.2V DC

Refer to Figure 8 of Appendix.

NOTE: Correctly set the voltage selector to the power line voltage. The selector is located on the rear panel.

Also refer to Paragraph 3.3.4 in the instruction manual.

3) CHECKING AND ADJUSTING THE SYNTHESIZER UNIT

a. Lock indicators

When the loop 1 circuit and digital VFO circuit are released from the phase lock state, the respective lock indicators CD16 and CD2 illuminate. Each indicator consists of a red light-emitting diode (LED).

Once the indicator LED illuminate, the receiver goes into the mute state.

At the time of lockout, the S-meter pointer will greatly deflect.

Figure 3 in Appendix shows the location of the indicator LED CD16 and CD2.

They serve for location of trouble, as listed in Table 3-1, below.

Table 3-1 Lock Indicators Information

LOCK INDICATOR		LOCATION OF TROUBLE
CD16 LED for LOOP 1	CD2 LED for DIGITAL VFO	
ON	ON	1kHz-reference signal circuit
ON	OFF	500kHz-reference signal circuit
ON	ON	ΔF(38MHz-VCXO) circuit
ON	ON	UP/DOWN counter circuit
ON	OFF	Second local oscillator (70MHz XO) circuit
ON	OFF	PBT (5MHz VCXO) circuit
ON	OFF	65MHz generator circuit
ON	OFF	VFO mixer circuit
ON	OFF	Panel VFO switch set to EXT.

NOTE 1. The indicator LED CD2 will illuminate for a short time instantaneously, when the value of operating frequency below the MHz-digit is changed from 000.0kHz to 999.9kHz or vice versa.

2. The other indicator LED CD16 will illuminate for a short time instantaneously, when turning the MHz-selector switch and also when the operating frequency is switched as denoted in NOTE 1.

3. Case marked "*" where no external VFO has been connected.

The check points location is shown in Appendix 3.

b. 10MHz-reference oscillator circuit, 10MHz XO

(1) Connect the frequency counter to TP15 of the synthesizer unit.
Set the trimmer CV1 to get 10000.000kHz. The trimmer is located in the shield case of the synthesizer unit.

(2) Connect the frequency counter to TP16 and verify that the output of 500kHz is provided.

(3) Connect the frequency counter to TP17 and verify that the output of 1kHz is provided.

(4) The output levels at TP15 through TP17 should be equal to the standard TTL level of 4V p-p, approximately.

c. PBT circuit, 5MHz VCXO

(1) Connect the frequency counter to TP19 of the synthesizer unit.

(2) Set the panel MODE switch to CW and PBT control to the mid position.
Adjust the semi-fixed variable resistor RV3 located in the shield case of the synthesizer unit, so that a reading of 5000.000kHz is obtained.

(3) Turn the panel MODE switch to AM.
Adjust the semi-fixed variable resistor RV4 for a reading of 5000.000kHz.
The control voltage at TP20 should be 5.6V DC, typical.

(4) Disconnect the frequency counter from TP19 and instead connect the radio frequency voltmeter. Verify that the output level is more than 0.25V rms.

(5) Reconnect the radio frequency voltmeter from TP19 to TP18 and verify that the output level is more than 0.4V rms.

d. BFO circuit
The BFO circuit mixes the output of the 5MHz VCXO with that of the 5.455MHz VCXO to provide BFO signal.

(1) Connect the frequency counter to TP30 of the synthesizer unit.

Panel control settings:

MODE switch ----- CW

BFO & BC TUNE ---- Mid position

PBT control ------ Mid position

Adjust RV5 through RV8 for readings of frequency as listed in Table 3-2.

NOTE: The control voltage at TP36 with the MODE switch set to CW should be 5.6V DC, typical.

Table 3-2

MODE SWITCH	CONTROL	FREQUENCY
CW	RV8	455.00kHz
USB	RV5	456.50kHz
LSB	RV6	453.50kHz
RTTY	RV7	452.79kHz

(2) Disconnect the frequency counter from TP30 and instead connect the high frequency voltmeter.
Adjust the core of the transformer T18 located in the shield case, so that the output level is at maximum.
The output level should be more than 0.35V rms.

e. ΔF circuit, 38MHz VCXO

(1) Panel control settings:

MODE switch -------- AM

ΔF switch -------- ON

ΔF control -------- Mid position

Connect the radio frequency voltmeter to TP11. Adjust the cores of the transformers T1 and T2 located in the shield case, so that a maximum reading of the output level is obtained.
The output level should be more than 0.1V rms.
The control voltage at TP10 should be 6.4V DC, typical.

(2) Disconnect the radio frequency voltmeter from TP11 and instead connect the frequency counter.
Adjust the semi-fixed variable resistor RV2 located in the shield case so that a reading of 38MHz is obtained.

(3) Return the panel ΔF switch to OFF and adjust the semi-fixed variable resistor RV1 for a reading of 38MHz.

f. Digital VFO circuit, LOOP 2

(1) Panel control settings:

MODE switch	------	AM
ΔF switch	-------	OFF
Frequency dial	--	XX.9999MHz
VFO switch	------	INT

(2) Connect the digital voltmeter to TP9.
Adjust the core of the coil L28 located in the shield case, so that a reading of 10.5V DC is obtained.

(3) Connect the frequency counter to TP13 and verify that the reading on the counter is 3.4549MHz ± 30Hz.

(4) Set the frequency dial for a reading of XX.0000MHz.
Verify that
Voltage at TP9 -------- over 3.0V DC
Frequency at TP13 ----- 2.455MHz ± 30Hz

(5) Disconnect both the frequency counter and digital voltmeter and connect the radio frequency voltmeter to TP13.
Verify that the output level is more than 0.25V rms.

(6) Disconnect the radio frequency voltmeter and connect it to TP32.
Verify that the output level is more than 0.05V rms.

g. Second local oscillator circuit, 70MHz XO

Since the oscillator output of 70MHz is in a drift cancel system, there is no need to fine adjust the frequency, so far as the frequency of oscillation is within a range of 70MHz ± 100Hz.

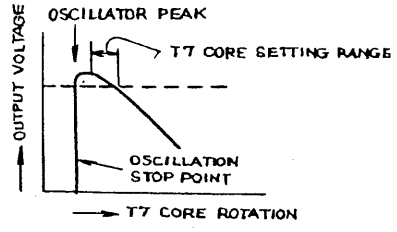
(1) Connect the radio frequency voltmeter to TP31.
Adjust the core of the transformer T8 so that a maximum reading of the output level is obtained.
The output level should be more than 0.4V rms.

(2) Disconnect the radio frequency voltmeter from TP31 and instead connect the frequency counter.

Adjust the trimmer CV2 located in the shield case so that a reading of 70MHz is obtained.

(3) If the reading of 70MHz cannot be obtained by rotating the trimmer CV2 return to this trimmer to the initial position and then slightly rotate the core of the transformer T7 until a reading of 70MHz is obtained.

NOTE: If excessively rotate the core of the transformer T7 counterclockwise, the oscillator may stop oscillating or unstably oscillate.



70MHz-XO adjustment

h. 65MHz generator circuit

(1) Set the panel MODE switch to AM and VFO switch to EXT.

(2) Connect the radio frequency voltmeter to TP34.
Adjust the cores of the transformers T9 through T12, so that the output level is at maximum. The output level should be more than 0.1V rms.

Then, disconnect the high frequency voltmeter from TP34 and instead connect the frequency counter.
Verify that a reading is 65MHz on the counter, to avoid setting to 70MHz or 75MHz.

i. VFO mixer circuit, 67.955MHz BPF

(1) Panel control settings:

MODE switch	----------	AM
VFO switch	----------	INT
ΔF switch	----------	OFF
Frequency	----------	XX.5000MHz

(2) Connect the radio frequency voltmeter to TP24.
Adjust the cores of the transformers T15 through T17 so that the output level is at maximum.
The output level should be more than 0.1V rms.

(3) Disconnect the radio frequency voltmeter from TP24 and instead connect the frequency counter. Verify that the frequency is less than 67.955MHz ±100Hz.
(Do not set to 65MHz or 62.045MHz.)

j. LOOP 1 circuit

(1) Panel control settings:

MODE switch	-------	AM
VFO switch	--------	INT
ΔF switch	----------	OFF
Frequency	--------	15.000MHz

(2) Connect the radio frequency voltmeter to the base of TR12.
Adjust the core of the transformer T3 so that the output level is at maximum.
The output level is more than 0.5V rms.

(3) Connect the digital voltmeter to TP26 and the radio frequency voltmeter to TP29.
Set the trimmers CV1-V through CV3-V so that VCO control voltages specified in Table 3-3 are obtained at TP26 for different operating frequencies for reception, f_R.
Check the control voltages of VCO at the lower limits of frequency: 0.0000MHz, 10.0000MHz and 20.0000MHz.

Table 3-3

FREQUENCY f_R	CONTROL VOLTAGE at TP26	OUTPUT VOLTAGE at TP29	TRIMMER	VCO FREQUENCY
9.9999MHz	10.0V DC	0.4V rms or more	Set by CV1-V	+/-80MHz
0.0000MHz	3.0VDC or more	0.4Vrms or more	For check	+/-70MHz
19.9999MHz	10.5VDC	0.4Vrms or more	Set by CV2-V	+/-90MHz
10.0000MHz	3.0VDC or more	0.4Vrms or more	for check	+/-80MHz
29.9999MHz	10.5VDC	0.4Vrms or more	Set by CV3-V	+/-100MHz
20.0000MHz	3.0VDC or more	0.4Vrms or more	for check	+/-90MHz

k. UP/DOWN counter and frequency display circuit
Rotate the MHz-selector switch, TUNE dial, UP/DOWN switch, and LOCK switch on the front panel to check if the display operates normally.
If the operation is abnormal, check the frequency information lines (BCD code) at the connectors J30 and J31, using the oscilloscope.

1. +12V line check

Check the voltage on the +12V line for the PLL loop.

Between IC33, Pin 1 and earth
----- +12V DC ±0.5V, typical
Between IC57, Pin 1 and earth
----- +12V DC ±0.5V, typical

4) CHECKING AND ADJUSTING THE RECEIVER UNIT

* The location of the check terminals is shown in Figure 4 of Appendix.
To the receiver unit, the synthesizer unit supplies the first local oscillator output signal of 70.555 to 100.455MHz, second local oscillator signal of 70MHz, BFO signal, RF input filter switching information over four lines, and MUTE information.
Therefore, first check the synthesizer unit and then check the receiver unit.
If the synthesizer unit makes lockout, the MUTING circuit will operate to cease operation in the receiver unit.
When such even occurs, first check the synthesizer unit to investigate the cause of lockout.
At the time of lockout, the S-meter pointer will greatly deflect.

a. AF amplifier circuit

(1) Panel control settings:
MODE switch ------ AM
RF GAIN control -- Fully counterclockwise
AF GAIN control --- Fully clockwise

(2) Connect the level meter to the rear panel SP jack through an AF output transformer of 4-ohm to 600-ohm.
Connect the CR oscillator to TP28 on the receiver unit.
Set the CR oscillator for a reading of 20dBm on the level meter. AT this time, the oscillator output level should be -45dBm, typical.

(3) Reconnect the level meter to the LINE OUT jack on the rear panel.
Set the AF GAIN control to the fully counter-clockwise position and the LINE ADJ semi-fixed variable resistor RV10 to the fully clockwise position.
Set the CR oscillator for a reading of 0dBm on the level meter.
At this time, the CR oscillator output level should be -24dBm, typical.

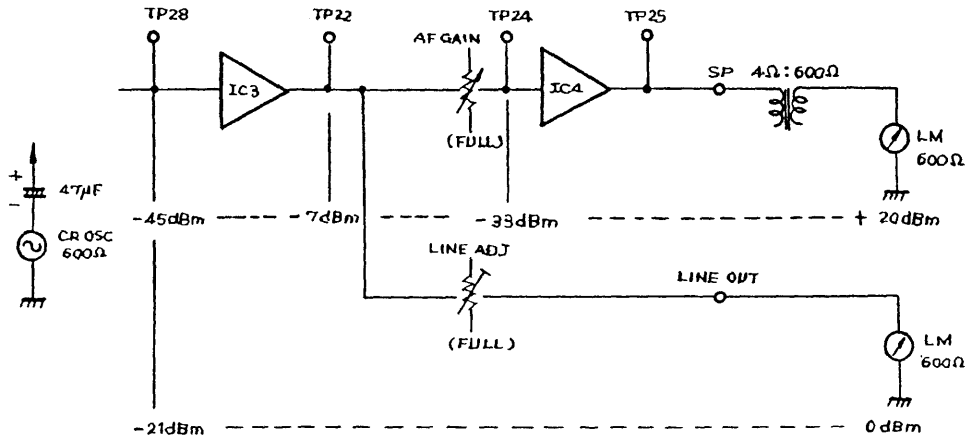


Figure 3-1 AF amplifier STAGE GAIN

b. BFO circuit

(1) Panel control settings:

MODE switch ---------- CW
BFO & BC TUNE control --- Mid position
PBT control ---------- Mid position

(2) Connect the radio frequency voltmeter to TP18. Check the voltage applied to BFO. The voltage should be more than 0.35V rms.

(3) If the BFO applied voltage is lower than the specified value, check the synthesizer unit according to Paragraph 3, 3) d.

c. Second local oscillator circuit

(1) Connect the radio frequency voltmeter to TP12. Adjust the core of the transformer T7 located in the shield case, so that the output level is at maximum.

(2) Check the voltage applied to the second local oscillator, at TP12. The voltage should be more than 1.0V rms.

(3) If the voltage applied to the second local oscillator is less than the specified value, check the synthesizer unit according to Paragraph 3, 3) g.

d. First local oscillator circuit

(1) Panel control settings:

MODE switch ------- AM

VFO switch -------- INT

ΔF switch --------- OFF

(2) Connect the radio frequency voltmeter to TP7. Set the TUNE dial to the operating frequencies f_R, as listed below and check the voltage applied to the first local oscillator at TP7.

FREQUENCY, f_R	FIRST LOCAL FREQ.	APPLIED VOLTAGE AT TP7
00.1000MHz	70.5550MHz	1.0V rms or higher
29.999MHz	100.4549MHz	1.0V rms or higher

(3) If the applied voltage to the first local oscillator is less than the specified value, check the synthesizer unit according to Paragraph 3, 3), j.

e. First mixer circuit

(1) Connect the radio frequency voltmeter to TP8. Set the TUNE dial to 00.1000MHz.

(2) Adjust the semi-fixed variable resistor located in the shield case, so that a minimum reading is obtained on the radio frequency voltmeter (for the balance adjustment of first mixer). The reading on radio frequency voltmeter should be less than 0.05V rms.

f. First IF and second IF amplifier circuits

(1) Panel control settings:

MODE switch	AM
BANDWIDTH switch	2.4kHz
ΔF switch	OFF
VFO switch	INT
NB switch	OFF
ATT switch	OFF
AGC switch	OFF
RF GAIN control	Fully clockwise position
Frequency	7.104MHz, f_R

(2) Connect the radio frequency voltmeter to TP17 and the standard signal generator to the ANT connector located on the rear panel, after setting the signal generator to 7.104MHz, 10dBuV, not modulated.

(3) Adjust the cores of the transformers T4, T3 and T2 (70.455MHz) and transformers T14, T6 and T5 (455kHz) so that a maximum reading is obtained on the voltmeter.

(4) Change the output level of the standard signal generator to 0dBuV and reconnect the radio frequency voltmeter to TP15. Adjust the cores of the transformers T8 and T9 (NB amplifier) so that a maximum reading is obtained on the radio frequency voltmeter.
The reading on the voltmeter should be more than 0.04V rms.

NOTE: Figure 7 in Appendix shows the stage gains of the NRD-515. Refer to it.

g. RF input filter circuit

(1) RF input filter switching circuit check

Examine that the input filters can be switched when changing the operating frequency f_R for reception, according to Table 3-5.

Table 3-5

FREQUENCY CHANGE f_R, MHz	INPUT FILTER SWITCHING
from 00.5999 to 00.6000	from 600kHz LPF to BC TUNE
from 01.5999 to 01.6000	from BC TUNE to 1.6-3MHz BPF
from 02.9999 to 03.0000	from 1.6-3MHz BPF to 3-5MHz BPF
from 04.9999 to 05.0000 (from 05.0999 to 05.1000)	from 3-5MHz BPF to 5-9MHz BPF
from 08.9999 to 09.0000	from 5-9MHz BPF to 9-17MHz BPF
from 16.9999 to 17.0000	from 9-17MHz BPF to 17-30MHz BPF
from 29.9999 to 00.0000	from 17-30MHz BPF to 600kHz LPF

Any one of paired filter switching diodes CD1 through CD14 become conductive to select filters corresponding.

In addition, IC1 provides an output with low level corresponding to each filter.

(2) RF input filter circuit check

Panel control settings:

MODE switch -------- AM
VFO switch --------- INT
ATT switch --------- OFF
AGC switch --------- OFF
RF GAIN control ---- Fully clockwise position

Connect the standard signal generator to the ANT connector on the rear panel, after setting its output level to 70dBuV not modulated.

Connect the radio frequency voltmeter to TP6, after setting to 5mVrms constant.
Set the TUNE dial to operating frequencies f_R, as listed in Table 3-6.
Check the filters frequency responses with changing the frequency and level of the standard signal generator.

NOTE: Disconnect the pin plug "H" from J21 before the check.

Table 3-6

RF INPUT FILTER	FREQUENCY f_R	SPECIFICATIONS
600kHz LPF	00.5200MHz	9dB or lower at 150kHz, 0dB at 600kHz, 40dB or more at 683kHz
BC TUNE	00.6000MHz	Spec. as denoted in Paragraph 3, 4), g, (3).
1.6-3MHz BPF	02.5200MHz	3dB or lower at 1.6MHz, 50dB or higher at 1.4MHz, 5dB or lower at 3.1MHz, 45dB or higher at 4MHz
3-5MHz BPF (3-5.1MHz BPF)	03.5200MHz	5dB or lower at 3MHz, 55dB or higher at 2.5MHz, 4dB or lower at 5.1MHz, 40dB or higher at 6.4MHz
5-9MHz BPF (5.1-9MHz BPF)	05.5200MHz	4dB or lower at 4.8MHz, 40dB or higher at 3.5MHz, 4dB or lower at 9.2MHz, 40dB or higher at 12.2MHz

RF INPUT FILTER	FREQUENCY f_R	SPECIFICATIONS
9-17MHz BPF	09.5200MHz	3dB or lower at 8.5MHz, 13dB or higher at 7MHz, 35dB or higher at 6.5MHz, 4dB or lower at 17.4MHz, 45dB or higher at 19.7MHz
17-30MHz BPF	17.5200MHz	0dB at 16MHz, 13dB or higher at 14MHz, 40dB or higher at 13MHz, 3dB or lower at 30.5 MHz, 40dB or higher at 37.5MHz

(3) BC TUNE circuit of 600kHz to 1599.9kHz

Panel control settings:

MODE switch	----------	AM
BANDWIDTH switch	--------	6kHz
ΔF switch	----------	OFF
VFO switch	----------	INT
NB switch	----------	OFF
ATT switch	----------	OFF
AGC switch	----------	OFF
RF GAIN control	---------	Fully clockwise position

Connect the radio frequency voltmeter to TP17 and the standard signal generator to ANT connector located on the rear panel, after setting the generator for output of 10dBuV, not modulated.
Connect the digital voltmeter to TP30.
Set the BFO & BC TUNE control for reading of 2.8V DC.
Set the TUNE dial to an operating frequency f_R of 600kHz and the signal generator to the same frequency.

Adjust the cores of the transformers T16 and T17 so that a maximum reading is obtained on the radio frequency voltmeter.
Again set the TUNE dial to a frequency f_R of 1599.9kHz and the signal generator to the same frequency.
Turn the BFO & BC TUNE control to check if the tuning is accomplished.

h. 455kHz second IF filter circuit

(1) Panel control settins:

MODE switch	----------	AM
VFO switch	----------	INT
NB switch	----------	OFF
AGC switch	----------	OFF
RF GAIN control	----------	Fully clockwise position

(2) Connect the radio frequency voltmeter to TP17 after setting to a reference of 0.1V rms.
Connect the standard signal generator to TP13 after setting to 455kHz, not modulated.
Check the frequency responses of the filters with switching the BANDWIDTH SWITCH on the panel.

(3) There is no need to adjust the tuning transformers T10 and T11 of the 2.4kHz bandwidth mechanical filter.

Table 3-7

	BANDWIDTH SWITCH	6dB-BANDWIDTH	60dB-BANDWIDTH	RIPPLE IN BAND	INSERTION LOSS
	6kHz	4kHz or more	10kHz or less	Less than 6dB	Less than 8dB
	2.4kHz	2kHz or more	6kHz or less	Less than 6dB	Less than 8dB
*	0.6kHz	0.5kHz or more	3kHz or less	Less than 6dB	Less than 8dB
*	AUX (0.3kHz)	0.26kHz or more	2kHz or less	Less than 6dB	Less than 8dB

NOTE: Mark "*" indicates options.

i. AGC and S-meter circuit

(1) Panel control settings:

MODE switch --------	AM
BANDWIDTH switch ---	2.4kHz
ΔF switch ----------	OFF
VFO switch ---------	INT
NB switch ----------	OFF
ATT switch ---------	OFF
AGC switch ---------	FAST
RF GAIN control ----	Fully clockwise position
Frequency ----------	7.104MHz, f_R

(2) Connect the radio frequency voltmeter to TP17 and the standard signal generator to the ANT connector on the rear panel, after setting to 7.104MHz and 30%-modulation with 400Hz.

(3) Set the signal generator output level to 60dBuV. Adjust the core of the transformer T15 so that a minimum reading is obtained on the voltmeter.

(4) Connect the level meter to the SP jack on the rear panel through the AF output transformer of 4-ohm to 600-ohm.
Set the AF GAIN control for a reading of 20dBm on the level meter.

(5) Adjust the semi-fixed variable resistor RV7 so that a reading of 0.8V-rms is obtained on the radio frequency voltmeter.

(6) With changing the signal generator output level from 10dBuV to 100dBuV, check if the AF output level remains within a variation range of 10dBm. If, at this time, the output level varies in excess of 10dBm or the speaker produces a distorted sound, adjust the semi-fixed variable resistor RV6 so that the AF output level varies within a range of 10dBm and no distorted sound is heard.

(7) S-meter adjustment
Set off the output of the standard signal generator.
Adjust the semi-fixed variable resistor RV5 so that the S-meter pointer indicates S1 on its scale.
Then, set the signal generator output level to 100dBuV.
Adjust the semi-fixed variable resistor RV8 so that the S-meter pointer deflects to S9 plus 60dB.

(8) RF GAIN variable range adjustment

Panel control settings.

MODE switch	--------	USB
AGC switch	---------	OFF

Set the standard signal generator output level to 0dBuV, not modulated.
Set the AF GAIN control to an AF output level of 20dBm.
Then, fully counterclockwise rotate the RF GAIN control. Set the standard signal generator output level to 80dBuV.
Adjust the semi-fixed variable resistor RV11 for an AF output level of 20dBm.

NOTE: At this time, the S-meter point should not deflect out of scale.

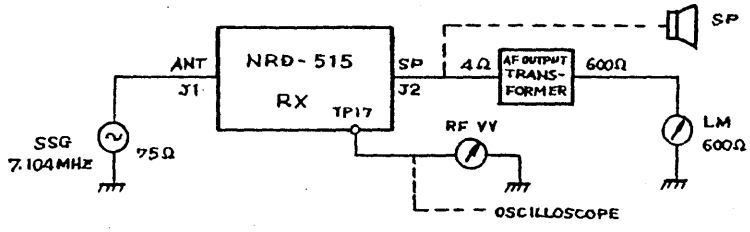


Figure 3-2

j. Monitor circuit

(1) In succession to step(8) in Paragraph i., follow the procedure below.
Set the RF GAIN control to the fully clockwise position.
Set the MONITOR switch to ON and the standard signal generator output level to 0dBuV, not modulated.
Adjust the AF GAIN control so that the output level is 20dBm.

(2) Disconnect the "P35" short plug from the receiver unit.
Set the MONITOR control on the rear panel to the fully counterclockwise position.
Set the signal generator output level to 120dBuV.
Verify that the AF output level is less than 20dBm.

(3) Set the standard signal generator output level to approximately 50dBuV.
Verify that the AF output level is smoothly variable with rotation of the MONITOR control.

(4) Insert the "P35" short plug into J35.

5) OVERALL

a. Sensitivity checking

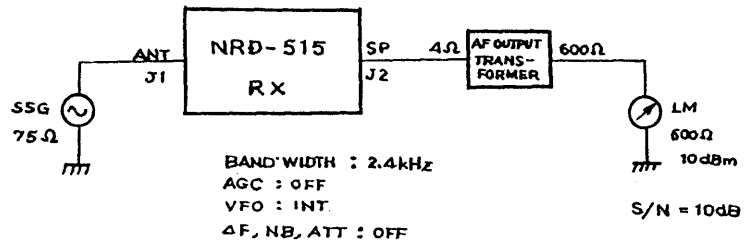


Figure 3-3 Sensitivity measuring circuit

(1) Connect measuring instruments as shown in Figure 3-3. Adjust the RF GAIN control and AF GAIN control to check the sensitivity, after setting the standard signal generator as follows:

SSB, CW -------- Not modulated
AM ---------- 30%-modulation with 400Hz
Frequency ------ Frequencies under check

(1)-1 A3 sensitivity measurement

Set the panel MODE switch to AM and the standard signal generator to provide an output of about 10dBuV modulated at a 30-% degree, 400Hz.
Set the TUNE dial of the receiver to a receiving frequency to be checked.
Adjust both the RF GAIN and AF GAIN controls for an AF output level of about 10dBm.

A. Switch off the modulation upon the signal generator. Adjust the AF GAIN control and set to an AF output level of 0dBm.

B. Switch on the modulation upon the signal generator. Clockwise rotate the RF GAIN control within a range, where no distortion appears everywhere at the AF output.
Adjust the standard signal generator output level so that the AF output level is 10dBm.

Repeat the above two operations A and B two or three times in such manner as to satisfy the above requirements within a range where no distortion appears at the AF output, with a possibly low output level of the standard signal generator and with a possibly high RF GAIN control a maximum clockwise position.

When the AF output level provides S/N = 10dB wherein S = 10dBm with 30%-modulation at 400Hz and N = 0dBm without modulation, the output level of the standard signal generator indicates the A3 sensitivity.

(1)-2 SSB and CW sensitivity measurement

Set the panel MODE switch to USB or LSB or CW. Set the standard signal generator to an output level of about 0dBuV without modulation.
Set the TUNE of the receiver to a receiving frequency to be checked.
Adjust both RF GAIN and AF GAIN controls for AF output level of about 10dBm.

The AF output frequency is set to about 1500Hz for the case of the SSB mode and to about 1000Hz with rotation of the BFO & BC TUNE control for the case of CW mode.

C. Switch off the standard signal generator output. Adjust AF GAIN control for an AF output level of 0dBm.

D. Switch on the standard signal generator output. Clockwise rotate the RF GAIN control within a range, where no distortion appears at the AF output.
Adjust the standard signal generator output level so that an AF output level of 10dBm is obtained.

Repeat the above operations C and D two or three times in such manner: Within a range where no distortion appears everywhere at the AF output, meet the above requirements with a possibly low output level of the standard signal generator and with a possibly high RF GAIN control, a maximum clockwise position.

When the AF output level in above adjustment provides S/N = 10dB, wherein S = 10dBm without modulation and N = 0dBm without output of the standard signal generator, its output level indicates the sensitivity in the SSB or CW mode.

(2) Specifications of sensitivity

Table 3-8

FREQUENCY f_R	MODE	
	SSB/CW	AM
1.6 to 30MHz	0.5uV (-6dBuV) or lower	2uV (6dBuV) or lower
100 to 1600kHz	2uV (6dBuV) or lower	6uV (16dBuV) or lower

b. Overall distortion factor check

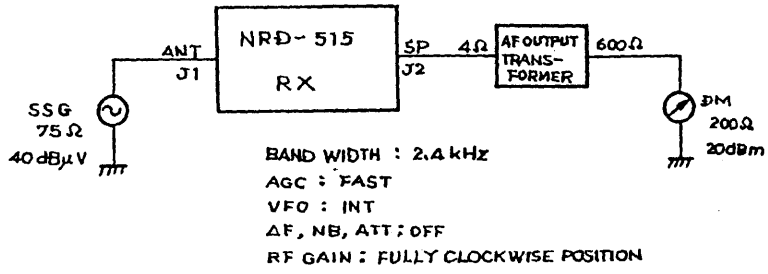


Figure 3-4

(1) Connect measuring instruments as shown in Figure 3-4.
Set the panel MODE switch to AM and panel TUNE dial to 7.104MHz.
Set the standard signal generator to 7.104MHz, 30%-modulation with 400Hz.
Adjust the AF GAIN control for an AF output level of 20dBm.
Verify that the distortion factor at the AF output is less than 5% in this condition.

(2) Set the panel MODE switch to USB and change the standard signal generator in the non-modulation mode.
Set the AF GAIN control for an AF output of 20dBm.
Verify that the distortion factor at the AF output is less than 5% in this condition.

4. TROUBLESHOOTING

If a trouble should happen, refer to the table below and check.
Possible troubles are listed in this table, except those resulting from any mis-operation and wrong connections.

NOTE: When receiving a broadcast (BC) in 600kHz to 1600kHz, set the TUNE dial to desired frequency for reception and tune by means of the BFO & BC TUNE control.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
1	No operating frequency changeable by rotating panel MHz-control	1) MHz-switch S10 defective 2) Defective IC in synthesizer unit 3) Poor contact of connector J10, P10.	1) Replace the switch S10. 2) Replace IC: IC5, IC6, IC12, IC13, IC8, IC10, etc. 3) Replace the connector J10, P10.
2	No operating frequency changeable if quickly rotating TUNE dial	Defective pulse generator (PG) A1	Replace the pulse generator A1.
3	No operating frequency changeable in UP mode by rotating TUNE dial; satisfactory in DOWN mode	1) Defective pulse generator A1 2) Defective IC(s) in synthesizer unit	1) Replace pulse generator A1. 2) Replace IC: IC9, IC7, etc. Replace defective IC: IC1 through IC6 in UP/DOWN counter circuit.
4	No operating frequency changeable by rotating TUNE dial	1) Defective pulse generator A1 2) Defective IC in synthesizer unit	1) Replace pulse generator A1. 2) Replace the defective IC among IC9, IC7, IC8, IC1 through IC6.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
5.	Erratic display of operating frequency, if rotating TUNE dial	Defective IC in synthesizer unit	Replace the defective IC among IC1 through IC6.
6	No operating frequency changeable quickly by means of UP/DOWN switch	1) Defective UP/DOWN switch S12 2) Defective IC in synthesizer unit	1) Replace the switch S12. 2) Replace IC such as IC18 and IC19.
7	No attenuator workable by means of panel ATT switch	1) Defective ATT switch S3 2) Defective relay in receiver unit 3) Defective attenuator resistor	1) Replace ATT switch S3. 2) Replace relay: K1, K2. 3) Replace defective resistor: R1 through R3.
8	No mode changeable by turning panel MODE switch	1) Defective MODE switch S9 2) Defective detector switching circuit in receiver unit 3) Defective BFO circuit in synthesizer unit	1) Replace switch S9. 2) Replace defective parts: transistor TR30 and IC2. 3) Replace defective parts: IC59, IC60, IC44, IC46, transistor TR26, etc.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
9	No selectivity changeable by means of BANDWIDTH switch	1) Defective BANDWIDTH switch S5 2) Defective IF filter switching circuit in receiver unit	1) Replace switch S5. 2) Replace defective parts: coils L75 through L78, diodes CD40 through CD47.
10	No time constant changeable by turning AGC switch	1) Defective AGC switch S6 2) Defective AGC switching circuit in receiver unit	1) Replace switch S6. 2) Replace defective diodes: CD62, CD63, etc.
11	Fine tuning not possible by means of ΔF control	1) Defective ΔF switch S8 2) Defective ΔF control RV7 3) Defective ΔF circuit in synthesizer unit	1) Replace switch S8. 2) Replace variable resistor RV7. 3) Replace defective IC: IC37, I38, etc.
12	No PBT workable by means of PBT control (PBT satis-factory in other than AM mode)	1) Defective PBT control RV6 2) Defective PBT circuit in synthesizer circuit	1) Replace variable resistor RV6. 2) Replace defective parts: IC44, IC45, TR10, CD10 etc.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
13	No BC TUNE workable by rotating BFO & BC TUNE control (BC TUNE satisfactory in band of 600kHz to 1599.9kHz only)	1) Defective BFO & BC TUNE control RV5. 2) Defective BC TUNE circuit in receiver unit	1) Replace variable resistor RV5. 2) Replace defective parts: diodes CD3, CD4, CD75 through CD82, transformers T16, T17, etc.
14	No NB workable with NB switch set to ON	1) Defective NB switch S2 2) Poor adjustment of NB level control in receiver unit 3) Defective NB circuit in receiver unit	1) Replace switch S2. 2) Readjust semi-fixed resistor RV2. 3) Replace defective transistor: TR10 through TR17, TR32, etc.
15	No change in sound level by means of AF GAIN control	1) Defective AF GAIN control RV2 2) Defective AF amplifier circuit system in receiver unit	1) Replace variable resistor RV2. 2) Repair connector P5, J5 being in poor contact. Replace defective parts associated with IC3 and IC4.
16	S-meter dead or its pointer not deflecting	1) Defective S-meter M1 2) Defective AGC circuit in receiver unit	1) Replace S-meter M1. 2) Adjust as denoted in Paragraph 3, 4) i.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
		3) Defective S-meter amplifier circuit in receiver unit	3) Replace defective parts: transistor TR31, semi-fixed resistors RV5, RV8, etc.
17	Not possible to receive with S-meter pointer largely deflecting	1) Loop 1 circuit being in lockout 2) Digital VFO circuit being in lockout 3) Defective MUTE circuit in receiver unit	1) Check as denoted in Paragraph 3, 3) a. 2) Check as denoted in Paragraph 3, 3) a. 3) Replace defective transistors TR27 through TR29, etc.
18	No sound from speaker, while S-meter pointer deflecting depending on input signal	1) Defective AF amplifier circuit in receiver unit 2) Defective detector circuit in receiver unit	1) Check as denoted in Paragraph 3, 4) a. 2) Replace defective parts: diodes CD54 through CD58, IC2, etc.
19	No RF input filter changeable in receiver unit	1) Defective RF input filter switching circuit in receiver unit 2) Defective filter selector IC in synthesizer unit	1) Check as denoted in Paragraph 3), 4 g, (1). 2) Replace IC61-PROM.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
20	Lock indicator illuminating in synthesizer unit	1) Defective reference oscillator circuit in synthesizer unit 2) Defective digital VFO circuit 3) Defective loop 1 circuit 4) Defective other associated circuits	1) According to Paragraph 3, 3) a. 2) Same as 1) 3) Same as 1) 4) Same as 1)
21	No +5V-supply voltage	1) Defective IC9 in power supply circuit 2) Defective diode CD2 in power supply circuit 3) Defective power transformer T1 4) +5V-power line load being shorted	1) Replace IC9. 2) Replace diode CD2. 3) Replace power transformer T1. 4) Disconnect connector P29 from synthesizer unit and repair the shorted section.
22	No +15V-supply voltage	1) Defective IC7 or IC8 in power supply circuit 2) Defective diode CD1 in power supply circuit	1) Replace IC7 or IC8. 2) Replace diode CD1.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
		3) Defective power transformer T1 4) +15V-power line load being shorted	3) Replace T1. 4) Disconnect connector P29 from synthesizer unit and connector P11 from receiver unit. Repair shorted section.
23	No +12V-supply voltage in synthesizer unit	1) Defective IC33 2) Defective IC57	1) Replace IC33. 2) Replace IC57.
24	No external VFO output	1) Defective relay K1 in synthesizer unit 2) Defective parts: transistors TR6, TR7 and IC39, IC40, etc.	1) Replace K1. 2) Replace defective parts.
25	Not possible to receive in any band	1) Defective RF input filter circuit 2) Defective Loop 1 circuit 3) Defective digital VFO circuit 4) Defective IC61 in synthesizer unit	1) According to Paragraph 3, 4), g. 2) According to Paragraph 3, 3), j. 3) According to Paragraph 3, 3), e, f. 4) Replace IC61-PROM.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
26	Not possible to receive in any frequency ranges at each band (MHz).	Defective digital VFO circuit	According to Paragraph 3, 3), e, f.
27	Operating frequency jump during search by means of TUNE dial	1) Defective pulse generator A1 2) Defective up/down counter of IC1 through IC6 in synthesizer unit 3) Defective digital VFO circuit	1) Replace A1. 2) Replace defective IC: IC1 through IC6. 3) According to Paragraph 3, 3), e & f.
28	Receiver sound tone varying due to vibration	1) Poor contact of relay K1 in synthesizer unit 2) Defective digital VFO circuit 3) Defective Loop 1 circuit 4) Defective 10MHz, 5MHz, 70MHz, BFO circuit 5) Cut pieces of wire entering into circuits	1) Replace relay K1. 2) According to Paragraph 3, 3), e & f. 3) According to Paragraph 3, 3), j. 4) Replace defective parts. 5) Locate defective section and and repair.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
		denoted in steps 2) through 4), poor soldering, poor contact of connectors etc.	
29	Sound level of received signal changes due to vibration	1) Poor contact of pin jacks, connectors, etc. 2) Poor contact of relays K1 through K4 in receiver unit 3) Cut pieces of wire entering into circuits in receiver unit, or poor soldering, etc. 4) Level variation of voltage applied to first and second local oscillators	1) Repair the poor contact section. 2) Replace defective relay. 3) Locate defective section and repair. 4) Repair defective section in local oscillator amplifiers in receiver unit or synthesizer unit.
30	Received sound distorting for strong signal input; satisfactory for weak signal input	1) Poor AGC circuit 2) For input signal of more than 100dB, try to	1) According to Paragraph 3, 4), i. 2) Use RF attenuator of 10dB or 20dB.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
		add RF attenuator. 3) For distortion in BC band, use RF attenuator.	3) Use RF attenuator of 10dB or 20dB.
31	Erratic noise in all bands, without connection of antenna	1) Defective AF amplifier circuit 2) Defective IF amplifier circuit 3) Defective RF input filter and IF filter switching diodes	1) Replace IC: IC3, IC4, etc. 2) Replace defective transistor, etc. 3) Replace defective diode.
32	Noise appearing in operating frequencies of 1.6MHz and 5MHz (or 5.1MHz) when changed frequency	Noise resulting from operation of relays K3 and K4 in receiver unit. This is not trouble.	
33	Unstable receiving condition due to lowering of AC power line voltage	1) Rear panel voltage selector being set to wrong position for actual AC line voltage 2) Defective power transformer T1	1) Set the voltage selector to correct position, according to Paragraph 3.3.4 in instruction manual. 2) Check according to Paragraph 3, 2).

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
			If the transformer T1 is defective, replace.
		3) Defective +5V/+15V power line	3) Check according to Paragraph 3, 2). If necessary, replace defective parts.
34	Not possible to receive in other modes than AM	1) Defective detector switching circuit in receiver unit 2) Defective BFO circuit in synthesizer unit	1) Replace defective parts: IC2, TR30, etc. 2) Check according to Paragraph 3, 3), d. Replace defective parts.
35	Not possible to receive in higher frequency bands only	1) Defective RF input filter circuit 2) Defective Loop 1 circuit, VCO circuit	1) According to Paragraph 3, 4), g. 2) According to Paragraph 3, 3), j.
36	Unstable condition of reception due to temperature change	1) Defective up/down counter circuit 2) Defective Loop 1 circuit	1) Replace defective IC: IC1 through IC6, IC8, IC10 through IC17, etc. 2) According to Paragraph 3, 3), j.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
		3) Defective digital VFO circuit 4) Unstable oscillation of 10MHz, 5MHz, 70MHz, BFO circuits	3) According to Paragraph 3, 3), e, f. 4) Replace defective parts.
37	Indistinct, trembling, or unclear receiver sound in SSB and CW modes	1) Defective digital VFO circuit 2) Defective Loop 1 circuit	1) According to Paragraph 3, 3), e, f. 2) According to Paragraph 3, 3), j.
38	Slight drift of operating frequency	1) Frequency drift in BFO circuit 2) Oscillation frequency drift in ΔF circuit 3) Oscillation frequency drift in 10MHz circuit 4) Oscillation frequency drift in PBT circuit	1) Readjust according to Paragraph 3, 3), d. 2) Readjust according to Paragraph 3, 3), e. 3) Readjust according to Paragraph 3, 3), b. 4) Readjust according to Paragraph 3, 3), c.
39	Unstable operating frequency	1) Oscillation frequency drift in ΔF circuit 2) Oscillation	1) According to Paragraph 3, 3), e. 2) According to

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
		frequency drift in 70MHz circuit 3) Oscillation frequency drift in PBT circuit 4) Oscillation frequency drift in BFO circuit 5) Unstable frequency of oscillation in 10MHz	Paragraph 3, 3), g. 3) According to Paragraph 3, 3), c. 4) According to Paragraph 3, 3) d. 5) According to Paragraph 3, 3), b.
40	Previous operating frequency being cancelled when turning on power switch upon lapse of 4 to 5 minutes once turning off power switch after use for a while	1) Poor capacitance or short circuit in capacitor C283 (C318) in synthesizer unit 2) Poor backward current blocking performance of diode CD24 in synthesizer unit 3) Defective IC: IC1 through IC8, IC10 through IC31 in up/down counter circuit	1) Replace capacitor C283 (C318). 2) Replace diode CD24. 3) Replace defective IC. NOTE: There is a means for backup with battery. Refer to Paragraph 5.6(6) in instruction manual.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
41	Much radio interference in received sound signal.	1) Arrester diodes CD83 through CD86 conducting in response to excessively large input signal from nearby broadcasting station or radio station, causing receiver sound to be distorted 2) Distortion in RF stage; radio interference not reduced with open arrester diodes in receiver unit	1) Make the arrester diodes open, so far as there is no possibility that RF input circuit is burnt out. Also use RF attenuator of 10dB or 20dB. 2) Also use RF attenuator of 10dB or 20dB. Use narrow IF filter. Use PBT.
42	Operating frequency becoming erratical even in MANUAL mode when connecting memory unit	1) Incorrect wiring of connector J4 on rear panel, short between pins, etc. 2) Defective cable connection to connector P4 of memory unit 3) Defective IC: IC9 through IC14 in memory unit	1) Repair the connector J4. 2) Repair the cable. 3) Replace defective IC.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
43	Operating frequency in MHz-digit becoming erratic when connecting TX connector	1) Incorrect wiring of connector J3 on rear panel, short between pins, etc. 2) Defective cable connection to connector P3.	1) Repair the connector J3 wiring. 2) Repair the cable.
44	Monitor sound distorted while monitoring own station's transmitted wave	1) Poor adjustment of monitor control on rear panel 2) Excessively large input to ANT connector 3) Poor muting by means of monitor control on rear panel	1) Refer Paragraph 5.5 in instruction manual and readjust monitor control optimally. 2) Monitor control is capable of muting down to 120dBuV or more. However, for ANT input of more than 100dBuV, interlock with attenuator to reduce input level. 3) Disconnect shorting plug P35 of receiver unit.

NO.	SYMPTOM	POSSIBLE TROUBLE	REMEDY
			Repair mute circuit of TR7 if necessary.
45	Not possible to perform transceive operation from receiver	1) No VFO output from receiver	1) Repair defective connectors P3 and P18. Replace defective relay K1 in synthesizer unit.
		2) Defective VFO switching circuit in transmitter	2) Repair, if defective.
		3) Poor input/ output level of VFO	3) Repair, if defective.
46	Not possible to perform transceive operation from transmitter	1) No VFO output from transmitter	1) Repair transmitter, if defective.
		2) Defective VFO switching circuit in receiver	2) Repair connector P17, relay K1, etc. in synthesizer unit, if necessary.
		3) Poor input/ output level of VFO.	3) Repair VFO.

PARTS LIST

ORDER	TITLE	LIST NO.	SHEET NO.
	CHASSIS & PANEL	CFQ-608A	1

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
A1	PULSE GEN.	CPA-94			CPA-94
C9	CAP,FXD CER	DD36B471K500V02	500V 470PF		5CBAB00471
C10	CAP,FXD CER	CK63YZ103PY500	500V10000PF		5CBAD00031
C11	CAP,FXD ELCTLT	ECE-A1ES100	25V10UF		5CEAA01348
C12	CAP,FXD CER	DD36B471K500V02	500V 470PF		5CBAB00471
CD9	LED	TLR313			5TZAD00003
CD10	LED	TLR313			5TZAD00003
CD11	LED	TLR313			5TZAD00003
CD12	LED	TLR313			5TZAD00003
CD13	LED	TLR313			5TZAD00003
CD14	LED	TLR313			5TZAD00003
CD15	LED	TLG103	GREEN		5TZAD00023
CD16	LED	TLG103	GREEN		5TZAD00023
CD17	DIODE	1S34K			5TXAD00009
CD18	DIODE	1S34K			5TXAD00009
F1	FUSE	MF60-1A	1A		5ZFAD00014
IC1	IC	HD74LS47P			5DDAF00390
IC2	IC	HD74LS47P			5DDAF00390
IC3	IC	HD74LS47P			5DDAF00390
IC4	IC	HD74LS47P			5DDAF00390
IC5	IC	HD74LS47P			5DDAF00390
IC6	IC	HD74LS47P			5DDAF00390
J1	CONNECTOR	MR-4			5JAAN00004
J2	PIN JACK	P-8W/O	4P		5JJAJ00048
J3	CONNECTOR	H-6ZCJD00007			6ZCJD00007
J4	CONNECTOR	H-6ZCJD00008			6ZCJD00008
J5	CONNECTOR	PCN5-45ST-1.27DS			5JDAA00109
J6	CONNECTOR	PCN5-31ST-1.27DS			5JDAA00099
J7	JACK	S-G7850			5JJAL00007
J8	JACK	NEO MINI	6P		5JWCL00010
J9	JACK	PA-125	250V 6A		5JWAJ00007
J10	CONNECTOR	PCN5-31ST-1.27DS			5JDAA00099
M1	METER	H-6HMJD00080(SY-22)	1200 OHM 2OUA		6HMJD00080
P8	PLUG	H-6ZCJD00001	6P		6ZCJD00001
P11	CONNECTOR	HNC2-2.5S-10	10P		5JDAA00277

ORDER	TITLE	LIST NO.	SHEET N
	CHASSIS & PANEL	CFQ-608A	2

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
P12	PIN PLUG	H-6ZCJD00002(TP-17V)			6ZCJD000(
P13	PIN PLUG	H-6ZCJD00004			6ZCJD000(
P14	PIN PLUG	H-6ZCJD00004			6ZCJD000(
P15	PIN PLUG	H-6ZCJD00002(TP-17V)			6ZCJD000(
P16	PIN PLUG	H-6ZCJD00004			6ZCJD0000
P17	PIN PLUG	H-6ZCJD00002(TP-17V)			6ZCJD0000
P18	PIN PLUG	H-6ZCJD00002(TP-17V)			6ZCJD0000
P21	PIN PLUG	H-6ZCJD00003(TP-17V)			6ZCJD0000
P22	PIN PLUG	H-6ZCJD00003(TP-17V)			6ZCJD0000:
P23	PIN PLUG	H-6ZCJD00003(TP-17V)			6ZCJD0000:
P24	PIN PLUG				6ZZAB0184(
P25	PIN PLUG				6ZZAB0184(
P26	PIN PLUG				6ZZAB0184(
P29	CONNECTOR	HNC1-2.5S-12	12P		5JDAA0027(
P30	CONNECTOR	HNC1-2.5S-12	12P		5JDAA00278
P31	CONNECTOR	HNC1-2.5S-12	12P		5JDAA00278
PC1	PCB	MPPC08303			MPPC08303
PL1	LAMP	AS05121	A12V2WBD 0.16A		5WAAB00090
PLS1	HOLDER	AS0501			5ZJAD00017
R1	RESISTOR F XD	ERD-50TJ680	1/2W 68 OHM		5RDAA00807
R2	RESISTOR F XD	ERD-50TJ680	1/2W 68 OHM		5RDAA00807
R3	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R4	RESISTOR F XD	ERD-25VJ272	1/4W 2.7K OHM		5RDAA00979
R5	RESISTOR F XD	ERD-25VJ271	1/4W 270 OHM		5RDAA00955
R6	RESISTOR F XD	ERD-25VJ152	1/4W 1.5K OHM		5RDAA00973
R7	RESISTOR F XD	ERD-25VJ122	1/4W 1.2K OHM		5RDAA00971
R8	RESISTOR F XD	ERD-25VJ272	1/4W 2.7K OHM		5RDAA00979
R9	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R10	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R11	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R12	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024
R13	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024
R14	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024
R15	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024
R16	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024

ORDER	TITLE	LIST NO.	SHEET NO.
	CHASSIS & PANEL	CFQ-608A	3

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
R17	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024
R18	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024
R19	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024
R20	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024
R21	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024
R22	RESISTOR	IHR-1/8-4-471JB	1/8W 470 OHM X4		5RZAB00024
R25	RESISTOR FXD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R26	RESISTOR FXD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R27	RESISTOR FXD	ERD-25VJ152	1/4W 1.5K OHM		5RDAA00973
R28	RESISTOR FXD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R29	RESISTOR FXD	ERD-25VJ152	1/4W 1.5K OHM		5RDAA00973
R30	RESISTOR FXD	ERD-25VJ392	1/4W 3.9K OHM		5RDAA00983
RV1	RESISTOR VAR	EVS-S2AS20A53	5K OHM		5RSAA00093
RV2	RESISTOR VAR	EVS-S2AS20A53	5K OHM		5RSAA00093
RV3	RESISTOR VAR	EVS-S2AS20A53	5K OHM		5RSAA00093
RV5	RESISTOR VAR	EVS-S2AS20B14	10K OHM		5RSAA00094
RV6	RESISTOR VAR	EVC-E0AS20B14			5RVAB00124
RV7	RESISTOR VAR	EVS-S2AS20B14	10K OHM		5RSAA00094
S1	SWITCH	M-2012E			5SAAB00030
S2	SWITCH	M-2012E			5SAAB00030
S3	SWITCH	M-2013E			5SAAB00111
S4	SWITCH	NSC-012-D-SR-CB-NB	GRAY		5SCAN00050
S5	SWITCH	SRN1014N L=20MM	1-1-4		5SEAB00111
S6	SWITCH	SRN1013N L=20MM	1-1-3		5SEAB00112
S8	SWITCH	M-2012E			5SAAB00030
S9	SWITCH	SRN1015N L=20MM	1-1-5		5SEAB00113
S10	SWITCH	H-6SEJD00097A			6SEJD00097
S11	SWITCH	NSC-012-D-SR-CB-NB	GRAY		5SCAN00050
S12	SWITCH	E-2018-82C			5SZAT00037
S13	SWITCH	NSC-012-D-SR-CB-NB	GRAY		5SCAN00050
S14	SWITCH	S-I7221-04	100 117 220 240		5ZZEG00001
T1	TRANSFORMER	H-6LVJD00074			6LVJD00074
TR1	TRANSISTOR	2SC372GTM-Y			5TCAF00245

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	1

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C1	CAP,FXD CER	CE DD104SL560J50V02	50V 56PF		5CAAA01098
C2	CAP,FXD CER	CE DD104SL220J50V02	50V 22PF		5CAAA01093
C3	CAP,FXD CER	CE DD104SL820J50V02	50V 82PF		5CAAA01100
C4	CAP,FXD CER	CE DD104SL820J50V02	50V 82PF		5CAAA01100
C5	CAP,FXD CER	CE DD104SL330J50V02	50V 33PF		5CAAA01095
C6	CAP,FXD STC	PL CQ14SX7500J	150V 750PF		5CRAB00210
C7	CAP,FXD STC	PL CQ14SX7501J	150V 0.007 5UF		5CRAB00234
C8	CAP,FXD CER	CE DD110SL681J50V02	50V 680PF		5CAAA01110
C9	CAP,FXD STC	PL CQ14SX1801J	150V 0.001 8UF		5CRAB00219
C10	CAP,FXD CER	CE DD112SL102J50V02	50V 1000PF		5CAAA01112
C11	CAP,FXD STC	PL CQ14SX1101J	150V 0.001 1UF		5CRAB00214
C12	CAP,FXD CER	CE DD110SL681J50V02	50V 680PF		5CAAA01110
C13	CAP,FXD STC	PL CQ14SX2401J	150V 0.002 4UF		5CRAB00222
C14	CAP,FXD STC	PL CQ14SX7500J	150V 750PF		5CRAB00210
C15	CAP,FXD STC	PL ECQ-M1H104KZ			5CRAA00123
C16	CAP,FXD CER	CE DD109E103P50V02	50V 10000P F		5CBAB00301
C17	CAP,FXD STC	PL ECQ-M1H104KZ			5CRAA00123
C18	CAP,FXD STC	PL CQ14SX7501J	150V 0.007 5UF		5CRAB00234
C19	CAP,FXD STC	PL CQ14SX1201J	150V 0.001 2UF		5CRAB00215
C20	CAP,FXD STC	PL CQ14SX7501J	150V 0.007 5UF		5CRAB00234
C21	CAP,FXD STC	PL CQ14SX5601J	150V 0.005 6UF		5CRAB00231
C22	CAP,FXD STC	PL CQ14SX5601J	150V 0.005 6UF		5CRAB00231
C23	CAP,FXD STC	PL CQ14SX4701J	150V 0.004 7UF		5CRAB00229
C24	CAP,FXD STC	PL CQ14SX5601J	150V 0.005 6UF		5CRAB00231
C25	CAP,FXD CER	CE DD109E103P50V02	50V 10000P F		5CBAB00301
C26	CAP,FXD CER	CE DD109E103P50V02	50V 10000P F		5CBAB00301
C27	CAP,FXD STC	PL ECQ-M1H104KZ			5CRAA00123
C28	CAP,FXD STC	PL ECQ-M1H104KZ			5CRAA00123
C29	CAP,FXD STC	PL ECQ-M1H104KZ			5CRAA00123
C30	CAP,FXD CER	CE DD109E103P50V02	50V 10000P F		5CBAB00301
C31	CAP,FXD CER	CE DD109E103P50V02	50V 10000P F		5CBAB00301
C32	CAP,FXD STC	PL CQ14SX4701J	150V 0.004 7UF		5CRAB00229
C33	CAP,FXD STC	PL CQ14SX7501J	150V 0.007 5UF		5CRAB00234
C34	CAP,FXD STC	PL CQ14SX2001J	150V 0.002 UF		5CRAB00220
C35	CAP,FXD CER	CE DD112SL102J50V02	50V 1000PF		5CAAA01112

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	2

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C36	CAP,FXD CER	DD112SL102J50V02	50V 1000PF		5CAAA01112
C37	CAP,FXD STC	PL CQ14SX6200J	150V 620PF		5CRAB00208
C38	CAP,FXD STC	PL CQ14SX5100J	150V 510PF		5CRAB00206
C39	CAP,FXD STC	PL CQ14SX4701J	150V 0.0047UF		5CRAB00229
C40	CAP,FXD CER	DD112SL821J50V02	50V 820PF		5CAAA01111
C41	CAP,FXD STC	PL CQ14SX1801J	150V 0.0018UF		5CRAB00219
C42	CAP,FXD CER	DD107SL271J50V02	50V 270PF		5CAAA01116
C43	CAP,FXD STC	PL CQ14SX1801J	150V 0.0018UF		5CRAB00219
C45	CAP,FXD STC	PL CQ14SX7500J	150V 750PF		5CRAB00210
C46	CAP,FXD STC	PL CQ14SX5100J	150V 510PF		5CRAB00206
C47	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C48	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C49	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C50	CAP,FXD STC	PL CQ14SX4300J	150V 430PF		5CRAB00204
C51	CAP,FXD STC	PL CQ14SX3901J	150V 0.0039UF		5CRAB00227
C52	CAP,FXD CER	DD107SL271J50V02	50V 270PF		5CAAA01116
C53	CAP,FXD CER	DD110SL681J50V02	50V 680PF		5CAAA01110
C54	CAP,FXD STC	PL CQ14SX4300J	150V 430PF		5CRAB00204
C55	CAP,FXD STC	PL CQ14SX5100J	150V 510PF		5CRAB00206
C56	CAP,FXD CER	DD107SL331J50V02	50V 330PF		5CAAA01106
C57	CAP,FXD CER	DD112SL102J50V02	50V 1000PF		5CAAA01112
C58	CAP,FXD CER	DD109SL471J50V02	50V 470PF		5CAAA01108
C59	CAP,FXD CER	DD109SL561J50V02	50V 560PF		5CAAA01109
C60	CAP,FXD CER	DD107SL221J50V02	50V 220PF		5CAAA01105
C61	CAP,FXD STC	PL CQ14SX1201J	150V 0.0012UF		5CRAB00215
C62	CAP,FXD STC	PL CQ14SX4700J	150V 470PF		5CRAB00205
C63	CAP,FXD STC	PL CQ14SX3000J	150V 300PF		5CRAB00200
C64	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C65	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C66	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C67	CAP,FXD CER	DD107SL271J50V02	50V 270PF		5CAAA01116
C68	CAP,FXD STC	PL CQ14SX3001J	150V 0.003UF		5CRAB00224
C69	CAP,FXD CER	DD106SL151J50V02	50V 150PF		5CAAA01103
C70	CAP,FXD STC	PL CQ14SX7500J	150V 750PF		5CRAB00210
C71	CAP,FXD CER	DD107SL331J50V02	50V 330PF		5CAAA01106

PARTS LIST

ORDER	TITLE	LIST NO.	SHEET NO
	RECEIVER	CMA-105A	3

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C72	CAP,FXD PL STC	CQ14SX3600J	150V 360PF		5CRAB0020
C73	CAP,FXD CE R	DD106SL181J50V02	50V 180PF		5CAAA0110
C74	CAP,FXD PL STC	CQ14SX4300J	150V 430PF		5CRAB0020
C75	CAP,FXD CE R	DD107SL271J50V02	50V 270PF		5CAAA0111
C76	CAP,FXD PL STC	CQ14SX7500J	150V 750PF		5CRAB0021
C77	CAP,FXD CE R	DD109E103P50V02	50V 10000PF		5CBAB0030
C78	CAP,FXD CE R	DD109E103P50V02	50V 10000PF		5CBAB0030
C79	CAP,FXD CE R	DD109E103P50V02	50V 10000PF		5CBAB0030
C80	CAP,FXD CE R	DD109SL561J50V02	50V 560PF		5CAAA0110
C81	CAP,FXD PL STC	CQ14SX1201J	150V 0.0012UF		5CRAB0021
C82	CAP,FXD PL STC	CQ14SX2000J	150V 200PF		5CRAB0019
C83	CAP,FXD PL STC	CQ14SX4300J	150V 430PF		5CRAB0020
C85	CAP,FXD CE R	DD106SL151J50V02	50V 150PF		5CAAA0110
C86	CAP,FXD CE R	DD106SL181J50V02	50V 180PF		5CAAA0110
C87	CAP,FXD CE R	DD104SL560J50V02	50V 56PF		5CAAA0109
C88	CAP,FXD CE R	DD107SL331J50V02	50V 330PF		5CAAA0110
C89	CAP,FXD CE R	DD107SL221J50V02	50V 220PF		5CAAA0110
C90	CAP,FXD CE R	DD107SL221J50V02	50V 220PF		5CAAA0110
C91	CAP,FXD CE R	DD106SL181J50V02	50V 180PF		5CAAA0110
C92	CAP,FXD PL STC	CQ14SX2000J	150V 200PF		5CRAB0019
C93	CAP,FXD CE R	DD109E103P50V02	50V 10000PF		5CBAB0030
C94	CAP,FXD CE R	DD109E103P50V02	50V 10000PF		5CBAB0030
C95	CAP,FXD CE R	DD109E103P50V02	50V 10000PF		5CBAB0030
C96	CAP,FXD CE R	DD104SL820J50V02	50V 82PF		5CAAA0110
C97	CAP,FXD CE R	DD107SL271J50V02	50V 270PF		5CAAA0111
C98	CAP,FXD CE R	DD104SL390J50V02	50V 39PF		5CAAA0109
C99	CAP,FXD CE R	DD104SL820J50V02	50V 82PF		5CAAA0110
C100	CAP,FXD CE R	DD104SL680J50V02	50V 68PF		5CAAA0109
C101	CAP,FXD CE R	DD107SL221J50V02	50V 220PF		5CAAA0110
C102	CAP,FXD CE R	DD104SL470J50V02	50V 47PF		5CAAA0109
C103	CAP,FXD CE R	DD104SL330J50V02	50V 33PF		5CAAA0109
C104	CAP,FXD CE R	DD104SL470J50V02	50V 47PF		5CAAA0109
C105	CAP,FXD CE R	DD104SL680J50V02	50V 68PF		5CAAA0109
C106	CAP,FXD CE R	DD104SL470J50V02	50V 47PF		5CAAA0109
C107	CAP,FXD CE R	DD104SL330J50V02	50V 33PF		5CAAA0109

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	4

PARTS NO	PARTS NAME	TYPE	DISCRIPTION	REMARKS	CODE
C108	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C109	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C120	CAP,FXD CTLT	ECE-A1ES100	25V10UF		5CEAA01348
C121	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C122	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C123	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C124	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C131	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C132	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C133	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C134	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C150	CAP,FXD STC	ECQ-M1H104KZ			5CRAA00123
C151	CAP,FXD CER	DD104SL560J50V02	50V 56PF		5CAAA01098
C152	CAP,FXD CER	DD104SL220J50V02	50V 22PF		5CAAA01093
C153	CAP,FXD CER	DD106SL151J50V02	50V 150PF		5CAAA01103
C154	CAP,FXD CER	DD104SL470J50V02	50V 47PF		5CAAA01097
C155	CAP,FXD CER	DD104SL330J50V02	50V 33PF		5CAAA01095
C156	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C157	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C158	CAP,FXD CER	DD104SL390J50V02	50V 39PF		5CAAA01096
C159	CAP,FXD CER	DD104SL390J50V02	50V 39PF		5CAAA01096
C160	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C161	CAP,FXD CER	DD104SL220J50V02	50V 22PF		5CAAA01093
C162	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C163	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C164	CAP,FXD CER	DD104SL150J50V02	50V 15PF		5CAAA01091
C165	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C166	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C167	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C168	CAP,FXD CER	DD107SL331J50V02	50V 330PF		5CAAA01106
C169	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C170	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C171	CAP,FXD CER	DD107SL331J50V02	50V 330PF		5CAAA01106
C172	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C173	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	5

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C174	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C175	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C176	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C177	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C178	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C179	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C180	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C181	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C182	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C183	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C184	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C185	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C186	CAP,FXD CER	CE DD104SL220J50V02	50V 22PF		5CAAA01093
C187	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C188	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C189	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C190	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C200	CAP,FXD CER	CE DD104SL470J50V02	50V 47PF		5CAAA01097
C201	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C202	CAP,FXD CER	CE DD107SL221J50V02	50V 220PF		5CAAA01105
C203	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C204	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C205	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C206	CAP,FXD CER	CE DD107SL331J50V02	50V 330PF		5CAAA01106
C207	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C208	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C209	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C210	CAP,FXD STC	PL ECQ-M1H104KZ			5CRAA00123
C211	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C212	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C213	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C214	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C215	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C216	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C249	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301

ORDER	TITLE	LIST NO.	SHEET NO
	RECEIVER	CMA-105A	6

PARTS NO	PARTS NAME	TYPE	DISCRIPTION	REMARKS	CODE
C250	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C251	CAP,FXD CER	CE DD107SL221J50V02	50V 220PF		5CAAA01101
C252	CAP,FXD CER	CE DD107SL221J50V02	50V 220PF		5CAAA01101
C253	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C254	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C255	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C256	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C257	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C258	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C259	CAP,FXD STC	PL CQ14SX0620J	150V 62PF		5CRAB00184
C260	CAP,FXD STC	PL CQ14SX0620J	150V 62PF		5CRAB00184
C261	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C266	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C271	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C272	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C273	CAP,FXD CER	CE DD107SL271J50V02	50V 270PF		5CAAA01116
C274	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C275	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C276	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C277	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C278	CAP,FXD CER	CE DD107SL271J50V02	50V 270PF		5CAAA01116
C279	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C280	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C281	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C282	CAP,FXD CER	CE DD107SL271J50V02	50V 270PF		5CAAA01116
C283	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C284	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C285	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C286	CAP,FXD CER	CE DD107SL331J50V02	50V 330PF		5CAAA01106
C287	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C288	CAP,FXD CER	CE DD105E222P50V02	50V 2200PF		5CBAB00291
C289	CAP,FXD CER	CE DD105E222P50V02	50V 2200PF		5CBAB00291
C290	CAP,FXD NTAL	TA 202L3502 105M3	35V 1UF		5CSAC00652
C291	CAP,FXD CER	CE DD105SL101J50V02	50V 100PF		5CAAA01101
C292	CAP,FXD CER	CE DD105E222P50V02	50V 2200PF		5CBAB00291

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	7

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C293	CAP,FXD CER	CE DD105E222P50V02	50V 2200PF		5CBAB0029.
C294	CAP,FXD TANTAL	TA 202L3502 105M3	35V 1UF		5CSAC0065;
C295	CAP,FXD CER	CE DD104SL470J50V02	50V 47PF		5CAAA0109
C296	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C297	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C298	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C299	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C300	CAP,FXD CER	CE DD107SL221J50V02	50V 220PF		5CAAA0110
C301	CAP,FXD STC	PL ECQ-M1H104KZ			5CRAA0012
C302	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C303	CAP,FXD CER	CE DD107SL331J50V02	50V 330PF		5CAAA0110
C304	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C305	CAP,FXD TANTAL	TA 202L2502 475M3	25V 4.7UF		5CSAC0065
C306	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C307	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C308	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C309	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C310	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C311	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C312	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C313	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C314	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C315	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C316	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C317	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C318	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C321	CAP,FXD CTLT	EL ECE-A1ES471	25V470UF		5CEAA01354
C322	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C323	CAP,FXD STC	PL ECQ-M1H223KZ	50V 0.022UF		5CRAA00147
C324	CAP,FXD STC	PL ECQ-M1H473KZ	50V 0.047UF		5CRAA00149
C325	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C326	CAP,FXD CTLT	EL ECE-A1ES101	25V100UF		5CEAA01349
C327	CAP,FXD CTLT	EL ECE-A1ES470	25V47UF		5CEAA01322
C328	CAP,FXD CER	CE RPE112F224Z50	50V 0.22UF		5CBAB00570
C329	CAP,FXD CTLT	EL ECE-A1ES221	25V220UF		5CEAA01320

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	8

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C330	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C331	CAP,FXD TANTAL	TA 202L2502 475M3	25V 4.7UF		5CSAC00653
C332	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C333	CAP,FXD STC	PL ECQ-M1H333KZ	50V 0.033UF		5CRAA00148
C334	CAP,FXD STC	PL ECQ-M1H333KZ	50V 0.033UF		5CRAA00148
C335	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C336	CAP,FXD CTLT	EL ECE-A1ES330	25V33UF		5CEAA01321
C337	CAP,FXD STC	PL CQ14SX3301J	150V 0.003UF		5CRAB00225
C338	CAP,FXD CTLT	EL ECE-A1ES470	25V47UF		5CEAA01322
C339	CAP,FXD CTLT	EL ECE-A1ES221	25V220UF		5CEAA01320
C340	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C341	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C345	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C346	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C347	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C348	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C349	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C350	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C351	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C352	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C353	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C354	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C355	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C357	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C358	CAP,FXD TANTAL	TA 202L3502 105M3	35V 1UF		5CSAC00652
C359	CAP,FXD TANTAL	TA 202L3502 105M3	35V 1UF		5CSAC00652
C360	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C361	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C362	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C363	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C364	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C365	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C366	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C367	CAP,FXD TANTAL	TA 202L3502 105M3	35V 1UF		5CSAC00652
C368	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	9

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C369	CAP,FXD EL CTLT	ECE-A1ES330	25V33UF		5CEAA01321
CD1	DIODE	1S84H			5TXAE00007
CD2	DIODE	1S84H			5TXAE00007
CD3	DIODE	1S84H			5TXAE00007
CD4	DIODE	1S84H			5TXAE00007
CD5	DIODE	1S84H			5TXAE00007
CD6	DIODE	1S84H			5TXAE00007
CD7	DIODE	1S84H			5TXAE00007
CD8	DIODE	1S84H			5TXAE00007
CD9	DIODE	1S84H			5TXAE00007
CD10	DIODE	1S84H			5TXAE00007
CD11	DIODE	1S84H			5TXAE00007
CD12	DIODE	1S84H			5TXAE00007
CD13	DIODE	1S84H			5TXAE00007
CD14	DIODE	1S84H			5TXAE00007
CD17	DIODE	1S1588LB-10			5TXAD00248
CD18	DIODE	1S1588LB-10			5TXAD00248
CD19	DIODE	WZ-050	1/2W 5V 50 OMW		5TXAF00129
CD21	DIODE	10D2	200V 1A		5TXAG00001
CD22	DIODE	10D2	200V 1A		5TXAG00001
CD23	DIODE	10D2	200V 1A		5TXAG00001
CD30	DIODE	HZ3A			5TXAE00076
CD31	DIODE	1S1588LB-10			5TXAD00248
CD32	DIODE	1S2187			5TXAD00219
CD33	DIODE	1S1588LB-10			5TXAD00248
CD40	DIODE	1S1588LB-10			5TXAD00248
CD41	DIODE	1S1588LB-10			5TXAD00248
CD42	DIODE	1S1588LB-10			5TXAD00248
CD43	DIODE	1S1588LB-10			5TXAD00248
CD44	DIODE	1S1588LB-10			5TXAD00248
CD45	DIODE	1S1588LB-10			5TXAD00248
CD46	DIODE	1S1588LB-10			5TXAD00248
CD47	DIODE	1S1588LB-10			5TXAD00248
CD50	DIODE	HZ3A			5TXAE00076
CD51	DIODE	HZ3A			5TXAE00076

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	10

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
CD52	DIODE	1S1588LB-10			5TXAD00248
CD53	DIODE	1S1588LB-10			5TXAD00248
CD54	DIODE	1S34K			5TXAD00009
CD55	DIODE	1S34K			5TXAD00009
CD56	DIODE	1S34K			5TXAD00009
CD57	DIODE	1S34K			5TXAD00009
CD58	DIODE	1S34K			5TXAD00009
CD60	DIODE	1S1588LB-10			5TXAD00248
CD61	DIODE	1S1588LB-10			5TXAD00248
CD62	DIODE	1S1588LB-10			5TXAD00248
CD63	DIODE	1S1588LB-10			5TXAD00248
CD64	DIODE	WZ-050	1/2W 5V 500MW		5TXAF00129
CD65	DIODE	WZ-050	1/2W 5V 500MW		5TXAF00129
CD66	DIODE	1S1588LB-10			5TXAD00248
CD67	DIODE	1S1588LB-10			5TXAD00248
CD68	DIODE	1S1588LB-10			5TXAD00248
CD69	DIODE	1S1588LB-10			5TXAD00248
CD70	DIODE	1S1588LB-10			5TXAD00248
CD71	DIODE	1S1588LB-10			5TXAD00248
CD72	DIODE	1S1588LB-10			5TXAD00248
CD73	DIODE	1S1588LB-10			5TXAD00248
CD74	DIODE	1S1588LB-10			5TXAD00248
CD75	DIODE	1SV100			5TXAA00307
CD76	DIODE	1SV100			5TXAA00307
CD77	DIODE	1SV100			5TXAA00307
CD78	DIODE	1SV100			5TXAA00307
CD79	DIODE	1SV100			5TXAA00307
CD80	DIODE	1SV100			5TXAA00307
CD81	DIODE	1SV100			5TXAA00307
CD82	DIODE	1SV100			5TXAA00307
CD83	DIODE	MI301			5TXAR00004
CD84	DIODE	MI301			5TXAR00004
CD85	DIODE	MI301			5TXAR00004
CD86	DIODE	MI301			5TXAR00004
CD87	DIODE	1SV100			5TXAA00307

PARTS LIST

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	11

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
FL1	CRYSTAL CKT	H-6XMJD00041	YF70.455D		6XMJD00041
FL2	FILTER	CLF-D6S	BW=6KHZ		5NRAD00001
FL3	FILTER	MF-455-10AZ121	2.2KHZ 1K OHM		5NMAA00008
IC1	IC	SN7445N			5DDAL00092
IC2	IC	TC40168P			5DDAE00061
IC3	IC	TA7140P			5DAAD00033
IC4	IC	MB3712			5DDAT00020
J11	CONNECTOR	HNC2-2.5P-10DS	10P		5JDAA00275
J12	PIN JACK	S-Q3063			5JJAL00016
J13	PIN JACK	S-Q3063			5JJAL00016
J14	PIN JACK	S-Q3063			5JJAL00016
J15	PIN JACK	S-Q3063			5JJAL00016
J16	PIN JACK	S-Q3063			5JJAL00016
J21	PIN JACK	S-Q3063			5JJAL00016
J23	PIN JACK	S-Q3063			5JJAL00016
J25	PIN JACK	S-Q3063			5JJAL00016
J27	CONNECTOR	CR23A-10SA-4DS			5JDAA00342
J35	CONNECTOR	HNC2-2.5P-2DS	2P		5JDAA00276
J36	CONNECTOR	HNC2-2.5P-2DS	2P		5JDAA00276
K1	RELAY	HB1E-DC12V	DC12V		5KLAD00330
K2	RELAY	HB1E-DC12V	DC12V		5KLAD00330
K3	RELAY	HB1E-DC12V	DC12V		5KLAD00330
K4	RELAY	HB1E-DC12V	DC12V		5KLAD00330
L1	COIL	SP0408-R33M	0.33UH		5LCAC00164
L2	COIL	SP0408-R22M	0.22UH		5LCAC00165
L3	COIL	LF4-8R2K	8.2UH		5LCAB00032
L4	COIL	LF1-120K	120UH		5LCAB00069
L5	COIL	LF1-150K	15UH		5LCAB00002
L6	COIL	LF1-100K	10UH		5LCAB00001
L7	COIL	LF1-471K	470UH		5LCAB00011
L8	COIL	LF1-150K	15UH		5LCAB00002
L9	COIL	LF1-100K	10UH		5LCAB00001
L10	COIL	LF1-100K	10UH		5LCAB00001
L11	COIL	LF1-471K	470UH		5LCAB00011
L12	COIL	LF1-471K	470UH		5LCAB00011

PARTS LIST

ORDER	TITLE	LIST NO.	SHEET NO
	RECEIVER	CMA-105A	12

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
L13	COIL	LF1-100K	10UH		5LCAB0000
L14	COIL	LF1-101K	100UH		5LCAB0000
L15	COIL	LF4-8R2K	8.2UH		5LCAB0003
L16	COIL	LF1-220K	22UH		5LCAB0000
L17	COIL	LF1-220K	22UH		5LCAB0000
L18	COIL	LF1-100K	10UH		5LCAB0000
L19	COIL	LF4-3R3K	3.3UH		5LCAB0001
L20	COIL	LF4-2R2K	2.2UH		5LCAB0001
L22	COIL	LF1-101K	100UH		5LCAB0000
L23	COIL	LF1-101K	100UH		5LCAB00007
L24	COIL	LF4-4R7K	4.7UH		5LCAB00016
L25	COIL	LF4-6R8K	6.8UH		5LCAB00017
L26	COIL	LF4-8R2K	8.2UH		5LCAB00032
L27	COIL	LF4-5R6K	5.6UH		5LCAB00070
L28	COIL	LF4-1R8K	1.8UH		5LCAB00030
L29	COIL	LF4-1R2K	1.2UH		5LCAB00071
L31	COIL	LF1-101K	100UH		5LCAB00007
L32	COIL	LF1-101K	100UH		5LCAB00007
L33	COIL	LF4-2R7K	2.7UH		5LCAB00072
L34	COIL	LF4-2R7K	2.7UH		5LCAB00072
L36	COIL	LF4-010K	1UH		5LCAB00012
L37	COIL	SP0406-R82K	0.82UH		5LCAC00157
L39	COIL	LF1-101K	100UH		5LCAB00007
L40	COIL	LF1-101K	100UH		5LCAB00007
L41	COIL	LF4-1R5K	1.5UH		5LCAB00013
L42	COIL	LF4-1R8K	1.8UH		5LCAB00030
L44	COIL	SP0408-R56M	0.56UH		5LCAC00185
L45	COIL	TP0206-R27K	0.27UH		5LCAC00178
L46	COIL	SP0408-R33M	0.33UH		5LCAC00164
L48	COIL	LF1-101K	100UH		5LCAB00007
L49	COIL	LF1-101K	100UH		5LCAB00007
L50	COIL	LF4-010K	1UH		5LCAB00012
L51	COIL	LF4-2R2K	2.2UH		5LCAB00014
L52	COIL	LF4-1R8K	1.8UH		5LCAB00030
L53	COIL	TP0206-R39K	0.39UH		5LCAC00177

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	13

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
L54	COIL	SP0408-R33M	0.33UH		5LCAC00164
L56	COIL	LF1-101K	100UH		5LCAB00007
L57	COIL	LF1-100K	10UH		5LCAB00001
L58	COIL	LF1-471K	470UH		5LCAB00011
L59	COIL	LF1-100K	10UH		5LCAB00001
L60	COIL	LF1-471K	470UH		5LCAB00011
L70	COIL	LF1-470K	47UH 130MA		5LCAB00005
L71	COIL	LF1-470K	47UH 130MA		5LCAB00005
L72	COIL	LF1-470K	47UH 130MA		5LCAB00005
L73	COIL	LF1-470K	47UH 130MA		5LCAB00005
L74	COIL	LF1-470K	47UH 130MA		5LCAB00005
L75	COIL	LF1-470K	47UH 130MA		5LCAB00005
L76	COIL	LF1-470K	47UH 130MA		5LCAB00005
L77	COIL	LF1-470K	47UH 130MA		5LCAB00005
L78	COIL	LF1-470K	47UH 130MA		5LCAB00005
L79	COIL	LF1-100K	10UH		5LCAB00001
L80	COIL	LF1-100K	10UH		5LCAB00001
L81	COIL	LF1-470K	47UH 130MA		5LCAB00005
L82	COIL	LF1-470K	47UH 130MA		5LCAB00005
L83	COIL	LF1-470K	47UH 130MA		5LCAB00005
L100	COIL	SP0408-R33M	0.33UH		5LCAC00164
L101	COIL	SP0408-R22M	0.22UH		5LCAC00165
L102	COIL	SP0408-R22M	0.22UH		5LCAC00165
L103	COIL	LF1-470K	47UH 130MA		5LCAB00005
L104	COIL	LF1-470K	47UH 130MA		5LCAB00005
L105	COIL	LF5-472K	4.7MH		5LCAB00025
L106	COIL	LF1-100K	10UH		5LCAB00001
L107	COIL	LF1-470K	47UH 130MA		5LCAB00005
L108	COIL	LF1-470K	47UH 130MA		5LCAB00005
L109	COIL	LF1-470K	47UH 130MA		5LCAB00005
L110	COIL	LF5-472K	4.7MH		5LCAB00025
L111	COIL	LF1-331K	330UH		5LCAB00010
L112	COIL	LF1-331K	330UH		5LCAB00010
L113	COIL	LF5-472K	4.7MH		5LCAB00025
L114	COIL	LF5-472K	4.7MH		5LCAB00025

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	14

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
L115	COIL	LF5-472K	4.7MH		5LCAB0002[illegible]
L117	COIL	LF5-472K	4.7MH		5LCAB0002[illegible]
L121	COIL	LF1-471K	470UH		5LCAB0001[illegible]
L122	COIL	LF1-471K	470UH		5LCAB0001[illegible]
L123	COIL	LF1-471K	470UH		5LCAB0001[illegible]
L124	COIL	LF5-472K	4.7MH		5LCAB0002[illegible]
L125	COIL	LF5-472K	4.7MH		5LCAB0002[illegible]
L126	COIL	LF1-470K	47UH 130MA		5LCAB0000[illegible]
L127	COIL	LF1-470K	47UH 130MA		5LCAB0000[illegible]
L128	COIL	LF1-470K	47UH 130MA		5LCAB00005
L129	COIL	SP0406-100K	10UH		5LCAC00018
L131	COIL	LF1-470K	47UH 130MA		5LCAB00005
L132	COIL	LF1-470K	47UH 130MA		5LCAB00005
L133	COIL	LF1-470K	47UH 130MA		5LCAB00005
L134	COIL	LF1-470K	47UH 130MA		5LCAB00005
L135	COIL	LF1-471K	470UH		5LCAB00011
L136	COIL	LF1-471K	470UH		5LCAB00011
L137	COIL	LF1-471K	470UH		5LCAB00011
L138	COIL	LF1-471K	470UH		5LCAB00011
L139	COIL	LF1-471K	470UH		5LCAB00011
P5	CONNECTOR	PCN5-45PT-1.27DS			5JDAA00211
P35	CONNECTOR	HNC-2.5S-SP	2P		5JDAA00336
P36	CONNECTOR	HNC-2.5S-SP	2P		5JDAA00336
PC1	PCB	MPPC07760D			MPPC07760D
R1	RESISTOR FIXD	ERD-50TJ471	1/2W 470 OHM		5RDAA00827
R2	RESISTOR FIXD	ERD-50TJ151	1/2W 150 OHM		5RDAA00815
R3	RESISTOR FIXD	ERD-50TJ750	1/2W 75 OHM		5RDAA00808
R4	RESISTOR FIXD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R5	RESISTOR FIXD	ERD-25VJ220	1/4W 22 OHM		5RDAA00929
R6	RESISTOR FIXD	ERD-25VJ220	1/4W 22 OHM		5RDAA00929
R7	RESISTOR FIXD	ERD-25VJ121	1/4W 120 OHM		5RDAA00947
R8	RESISTOR FIXD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R9	RESISTOR FIXD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R10	RESISTOR FIXD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R11	RESISTOR FIXD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945

ORDER	TITLE	LIST NO.	SHEET NO
	RECEIVER	CMA-105A	15

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
R12	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00941
R13	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00941
R14	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00941
R15	RESISTOR F XD	EPD-25VJ122	1/4W 1.2K OHM		5RDAA00971
R16	RESISTOR F XD	ERD-25VJ122	1/4W 1.2K OHM		5RDAA00971
R17	RESISTOR F XD	ERD-50TJ101	1/2W 100 OHM		5RDAA00811
R18	RESISTOR F XD	ERD-50TJ101	1/2W 100 OHM		5RDAA00811
R19	RESISTOR F XD	ERD-50TJ470	1/2W 47 OHM		5RDAA00803
R20	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R21	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R22	RESISTOR F XD	MOR-2B150 OHM J	2W 150 OHM		5RAAB00563
R29	RESISTOR F XD	ERD-25VJ510	1/4W 51 OHM		5RDAA00938
R30	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R31	RESISTOR F XD	ERD-25VJ100	1/4W 10 OHM		5RDAA00921
R32	RESISTOR F XD	ERD-25VJ221	1/4W 220 OHM		5RDAA00953
R33	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R34	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R35	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R36	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R37	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R38	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R39	RESISTOR F XD	ERD-25VJ153	1/4W 15K OHM		5RDAA00997
R40	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R41	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R42	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R43	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R44	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R45	RESISTOR F XD	ERD-25VJ221	1/4W 220 OHM		5RDAA00953
R46	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R47	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R48	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R49	RESISTOR F XD	ERD-25VJ5R1	1/4W 5.1 OHM		5RDAA00914
R50	RESISTOR F XD	ERD-25VJ330	1/4W 33 OHM		5RDAA00933
R51	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R52	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	16

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
R53	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R54	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R55	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R56	RESISTOR F XD	ERD-25VJ680	1/4W 68 OHM		5RDAA00941
R61	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R62	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R63	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R64	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R65	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R66	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R67	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R100	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R101	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R102	RESISTOR F XD	ERD-25VJ151	1/4W 150 OHM		5RDAA00949
R103	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R104	RESISTOR F XD	ERD-25VJ333	1/4W 33K OHM		5RDAA01005
R105	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R106	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R107	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R108	RESISTOR F XD	ERD-25VJ121	1/4W 120 OHM		5RDAA00947
R109	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R110	RESISTOR F XD	ERD-25VJ333	1/4W 33K OHM		5RDAA01005
R111	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R112	RESISTOR F XD	ERD-25VJ474	1/4W 470K OHM		5RDAA01033
R113	RESISTOR F XD	ERD-25VJ182	1/4W 1.8K OHM		5RDAA00975
R114	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R115	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R116	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R117	RESISTOR F XD	ERD-25VJ334	1/4W 330K OHM		5RDAA01029
R118	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R119	RESISTOR F XD	ERD-25VJ224	1/4W 220K OHM		5RDAA01025
R120	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R121	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R122	RESISTOR F XD	ERD-25VJ221	1/4W 220 OHM		5RDAA00953
P146	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	17

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
R148	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R150	RESISTOR F XD	ERD-25VJ152	1/4W 1.5K OHM		5RDAA00973
R151	RESISTOR F XD	ERD-25VJ152	1/4W 1.5K OHM		5RDAA00973
R158	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R159	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R160	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R161	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R162	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R163	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R164	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R165	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R166	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R167	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R168	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R169	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R170	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R171	RESISTOR F XD	ERD-25VJ153	1/4W 15K OHM		5RDAA00997
R172	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R173	RESISTOR F XD	ERD-25VJ221	1/4W 220 OHM		5RDAA00953
R174	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R175	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R176	RESISTOR F XD	ERD-25VJ153	1/4W 15K OHM		5RDAA00997
R177	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R178	RESISTOR F XD	ERD-25VJ221	1/4W 220 OHM		5RDAA00953
R179	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R180	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R181	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R182	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R183	RESISTOR F XD	ERD-25VJ561	1/4W 560 OHM		5RDAA00963
R184	RESISTOR F XD	ERD-25VJ561	1/4W 560 OHM		5RDAA00963
R185	RESISTOR F XD	ERD-25VJ621	1/4W 620 OHM		5RDAA00964
R186	RESISTOR F XD	ERD-25VJ621	1/4W 620 OHM		5RDAA00964
R187	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R188	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R189	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993

ORDER	TITLE	LIST NO.	SHEET NO
	RECEIVER	CMA-105A	18

PARTS NO	PARTS NAME	TYPE	DISCRIPTION	REMARKS	CODE
R190	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA0098
R191	RESISTOR F XD	ERD-25VJ330	1/4W 33 OHM		5RDAA0093
R192	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA0095
R193	RESISTOR F XD	ERD-25VJ221	1/4W 220 OHM		5RDAA0095
R194	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA0098
R196	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA0097
R197	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA0095
R198	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA0101
R199	RESISTOR F XD	ERD-25VJ153	1/4W 15K OHM		5RDAA0099
R200	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA0098
R201	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R202	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R203	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R204	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R205	RESISTOR F XD	ERD-25VJ105	1/4W 1M OHM		5RDAA01041
R206	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R207	RESISTOR F XD	HT1/4-5.1M OHM J			5RDAC00778
R208	RESISTOR F XD	HM1/4-50M OHM K			5RDAC01574
R209	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R210	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R211	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R212	RESISTOR F XD	ERD-25VJ152	1/4W 1.5K OHM		5RDAA00973
R214	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R215	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R216	RESISTOR F XD	ERD-25VJ821	1/4W 820 OHM		5RDAA00967
R217	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R218	RESISTOR F XD	ERD-25VJ153	1/4W 15K OHM		5RDAA00997
R219	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R220	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R221	RESISTOR F XD	ERD-25VJ682	1/4W 6.8K OHM		5RDAA00989
R222	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R223	RESISTOR F XD	ERD-25VJ100	1/4W 10 OHM		5RDAA00921
R225	RESISTOR F XD	ERD-25VJ333	1/4W 33K OHM		5RDAA01005
R226	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R227	RESISTOR F XD	ERD-25VJ333	1/4W 33K OHM		5RDAA01005

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	19

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
R228	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R229	RESISTOR F XD	ERD-25VJ333	1/4W 33K OHM		5RDAA01005
R230	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R231	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R232	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R233	RESISTOR F XD	ERD-25VJ333	1/4W 33K OHM		5RDAA01005
R234	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R235	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R240	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R241	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R242	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R243	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R245	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R246	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R247	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R248	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R249	RESISTOR F XD	ERD-25VJ682	1/4W 6.8K OHM		5RDAA00989
R250	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R251	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R252	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R253	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R254	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R255	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R256	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R257	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R258	RESISTOR F XD	ERD-25VJ681	1/4W 680 OHM		5RDAA00965
R259	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
RV1	RESISTOR V AR	RG06H2202	2K OHM		5RMAC00066
RV2	RESISTOR V AR	RG06H2103	10K OHM		5RMAC00067
RV5	RESISTOR V AR	RG06H2102	1K OHM		5RMAC00068
RV6	RESISTOR V AR	RG06H2202	2K OHM		5RMAC00066
RV7	RESISTOR V AR	RG06H2102	1K OHM		5RMAC00068
RV8	RESISTOR V AR	RG06H2103	10K OHM		5RMAC00067
RV9	RESISTOR V AR	RG06H2103	10K OHM		5RMAC00067
RV10	RESISTOR V AR	RG06H2103	10K OHM		5RMAC00067

ORDER	TITLE	LIST NO.	SHEET NO
	RECEIVER	CMA-105A	20

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
RV11	RESISTOR VAR	RG06H2102	1K OHM		5RMAC0006
T1	RF XFMR	H-6LHJD00227			6LHJD0022
T2	RF XFMR	H-6LHJD00172			6LHJD0017
T3	RF XFMR	H-6LHJD00172			6LHJD0017
T4	RF XFMR	H-6LHJD00172			6LHJD0017
T5	RF XFMR	1D-LD593-42 RED			6LJJD0000
T6	RF XFMR	1D-LD593-42 RED			6LJJD0000
T7	RF XFMR	H-6LHJD00172			6LHJD0017
T8	RF XFMR	1D-LD593-42 RED			6LJJD0000
T9	RF XFMR	1D-LD593-42 RED			6LJJD0000
T10	TRANSFORMER	(FL3)			6ZZAB01982
T11	TRANSFORMER	(FL3)			6ZZAB01982
T14	RF XFMR	1D-LD593-42 RED			6LJJD0000
T15	RF XFMR	1D-LD593-42 RED			6LJJD0000
T16	RF XFMR	H-6LHJD00240			6LHJD0024
T17	RF XFMR	H-6LHJD00240			6LHJD0024
TP	CONNECTOR	PCN6-PEG			5JDAA0018
TR1	TRANSISTOR	2SA495GTM-Y			5TAAG0009
TR3	TRANSISTOR	3SK45B			5TKAB0000
TR4	TRANSISTOR	2SK19TM-BL			5TKAA0006
TR5	TRANSISTOR	2SC372GTMA-Y			5TCAF0029
TR6	TRANSISTOR	2SC382TM-W			5TCAF0026
TR7	TRANSISTOR	2SC1252			5TCAB0001
TR8	TRANSISTOR	2SC382TM-W			5TCAF0026
TR10	TRANSISTOR	2SC372GTMA-Y			5TCAF0029
TR11	TRANSISTOR	2SC372GTMA-Y			5TCAF0029
TR12	TRANSISTOR	2SC372GTM-Y			5TCAF0024
TR13	TRANSISTOR	2SC372GTM-Y			5TCAF0024
TR14	TRANSISTOR	2SC372GTM-Y			5TCAF0024
TR15	TRANSISTOR	2SC372GTM-Y			5TCAF0024
TR16	TRANSISTOR	2SC372GTM-Y			5TCAF0024
TR17	TRANSISTOR	2SC372GTM-Y			5TCAF0024
TR20	TRANSISTOR	3SK45B			5TKAB0000
TR21	TRANSISTOR	3SK45B			5TKAB0000
TR22	TRANSISTOR	2SC372GTMA-Y			5TCAF0029

ORDER	TITLE	LIST NO.	SHEET NO.
	RECEIVER	CMA-105A	21

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
TR23	TRANSISTOR	2SC372GTMA-Y			5TCAF00290
TR24	TRANSISTOR	2SC372GTM-Y			5TCAF00245
TR25	TRANSISTOR	2SC372GTMA-Y			5TCAF00290
TR26	TRANSISTOR	2SK19TM-Y			5TKAA00066
TR27	TRANSISTOR	2SC372GTM-Y			5TCAF00245
TR28	TRANSISTOR	2SC372GTM-Y			5TCAF00245
TR29	TRANSISTOR	2SC372GTM-Y			5TCAF00245
TR30	TRANSISTOR	2SC372GTM-Y			5TCAF00245
TR31	TRANSISTOR	2SC372GTM-Y			5TCAF00245
TR32	TRANSISTOR	2SC372GTM-Y			5TCAF00245
TR33	TRANSISTOR	U310			5TKAG00007
TR34	TRANSISTOR	U310			5TKAG00007
TRZ7	HEAT SINK	MC203A820			5ZKAE00065

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	1

PARTS NO	PARTS NAME	TYPE	DISCRIPTION	REMARKS	CODE
A1	VCO	CGA-68			CGA-68
C1	CAP,FXD TANTAL	202L3502 474M3	35V 0.47UF		5CSAC00654
C2	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C3	CAP,FXD STC	PL ECQ-M1H102KZ	50V 0.001UF		5CRAA00140
C4	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C5	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C6	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C7	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C8	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C9	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C10	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C11	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C12	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C13	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C14	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C15	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C16	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C17	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C18	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C19	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C20	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C21	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C22	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C23	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C24	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C25	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C26	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C27	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C31	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C32	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C33	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C34	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C35	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C41	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C42	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	2

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C43	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C44	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C45	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C46	CAP,FXD CER	CE DD104SL330J50V02	50V 33PF		5CAAA01095
C47	CAP,FXD CER	CE DD104SL050C50V02	50V 5PF		5CAAA01089
C48	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C49	CAP,FXD CER	CE DD105SL121J50V02	50V 120PF		5CAAA01102
C50	CAP,FXD CER	CE DD104SL050C50V02	50V 5PF		5CAAA01089
C51	CAP,FXD CER	CE DD106SL151J50V02	50V 150PF		5CAAA01103
C52	CAP,FXD CER	CE DD104SL680J50V02	50V 68PF		5CAAA01099
C53	CAP,FXD CER	CE DD105SL101J50V02	50V 100PF		5CAAA01101
C54	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C55	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C56	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C57	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C58	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C59	CAP,FXD CER	CE DD104SL180J50V02	50V 18PF		5CAAA01092
C60	CAP,FXD CER	CE DD104SL050C50V02	50V 5PF		5CAAA01089
C61	CAP,FXD CER	CE DD104SL390J50V02	50V 39PF		5CAAA01096
C62	CAP,FXD CER	CE DD104SL120J50V02	50V 12PF		5CAAA01090
C63	CAP,FXD CER	CE DD104SL150J50V02	50V 15PF		5CAAA01091
C64	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C65	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C66	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C67	CAP,FXD CER	CE DD107SL331J50V02	50V 330PF		5CAAA01106
C68	CAP,FXD CER	CE DD104SL470J50V02	50V 47PF		5CAAA01097
C69	CAP,FXD CER	CE DD107SL221J50V02	50V 220PF		5CAAA01105
C70	CAP,FXD CER	CE DD105SL101J50V02	50V 100PF		5CAAA01101
C71	CAP,FXD CER	CE DD105SL101J50V02	50V 100PF		5CAAA01101
C72	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C81	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C82	CAP,FXD NTAL	TA 202L2502 106M3	25V 10UF		5CSAC00655
C83	CAP,FXD NTAL	TA 202L3502 474M3	35V 0.47UF		5CSAC00654
C84	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C85	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	3

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C86	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C88	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C89	CAP,FXD CER	DD105SL101J50V02	50V 100PF		5CAAA01101
C90	CAP,FXD CER	DD104SL470J50V02	50V 47PF		5CAAA01097
C91	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C92	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C93	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C94	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C95	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C96	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C97	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C98	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C99	CAP,FXD CER	DD340-257XL101JZ50	50V 100PF N2200		5CAAA01454
C100	CAP,FXD CER	DD350-257VK101JZ50	50V 100PF N1000		5CAAA01455
C101	CAP,FXD CER	DD350-257VK101JZ50	50V 100PF N1000		5CAAA01455
C102	CAP,FXD CER	DD104SL150J50V02	50V 15PF		5CAAA01091
C103	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C104	CAP,FXD CER	DD104SL010C50V02	50V 1PF		5CAAA00776
C105	CAP,FXD CER	DD104SL180J50V02	50V 18PF		5CAAA01092
C111	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C112	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C113	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C114	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C115	CAP,FXD CER	DD105SL101J50V02	50V 100PF		5CAAA01101
C116	CAP,FXD CER	DD105SL101J50V02	50V 100PF		5CAAA01101
C121	CAP,FXD CER	DD106CH470J50V02	50V 47PF		5CAAA00854
C122	CAP,FXD CER	DD111CH221J50V02	50V 220PF		5CAAA01114
C123	CAP,FXD CER	DD107CH101J50V02	50V 100PF		5CAAA00858
C124	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C125	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C126	CAP,FXD CER	DD112UJ 471J50V02	50V 470PF		5CAAA01458
C127	CAP,FXD CER	DD112UJ 471J50V02	50V 470PF		5CAAA01458
C128	CAP,FXD CER	DD112UJ 471J50V02	50V 470PF		5CAAA01458
C129	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C130	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	4

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C131	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C132	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C133	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C134	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C135	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C136	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C137	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C138	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C141	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C142	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C143	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C145	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C146	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C147	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C148	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C149	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C150	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C151	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C152	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C153	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C154	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C155	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C156	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C157	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C158	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C159	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C160	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C161	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C162	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C163	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C164	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C165	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C166	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C171	CAP,FXD CER	CE DD104SL050C50V02	50V 5PF		5CAAA01089
C172	CAP,FXD CER	CE DD106SL151J50V02	50V 150PF		5CAAA01103

PARTS NO	PARTS NAME	TYPE	DISCRIPTION	REMARKS	CODE
C173	CAP,FXD CER	CE DD104SL220J50V02	50V 22PF		5CAAA01093
C174	CAP,FXD CER	CE DD104SL820J50V02	50V 82PF		5CAAA01100
C175	CAP,FXD CER	CE DD104SL820J50V02	50V 82PF		5CAAA01100
C176	CAP,FXD CER	CE DD104SL330J50V02	50V 33PF		5CAAA01095
C177	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C178	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C179	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C180	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C181	CAP,FXD NTAL	TA 202L2502 475M3	25V 4.7UF		5CSAC00653
C182	CAP,FXD NTAL	TA 202L2502 475M3	25V 4.7UF		5CSAC00653
C183	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C184	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C191	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C192	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C193	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C194	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C195	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C196	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C197	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C198	CAP,FXD CTLT	EL ECE-A1ES100	25V10UF		5CEAA01348
C199	CAP,FXD NTAL	TA 202L2502 475M3	25V 4.7UF		5CSAC00653
C201	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C202	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C211	CAP,FXD CER	CE DD104SL100D50V02	50V 10PF		5CAAA00830
C212	CAP,FXD CER	CE DD104SL220J50V02	50V 22PF		5CAAA01093
C213	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C214	CAP,FXD CER	CE DD104SL220J50V02	50V 22PF		5CAAA01093
C215	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C216	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C217	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C218	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C219	CAP,FXD CER	CE DD104SL220J50V02	50V 22PF		5CAAA01093
C220	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C221	CAP,FXD CER	CE DD105E102P50V02	50V 1000PF		5CBAB00299
C222	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301

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PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C223	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C224	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C225	CAP,FXD CER	DD105CH270J50V02	50V 27PF		5CAAA00851
C226	CAP,FXD CER	DD104SL010C50V02	50V 1PF		5CAAA00776
C227	CAP,FXD CER	DD105CH270J50V02	50V 27PF		5CAAA00851
C228	CAP,FXD CER	DD104SL020C50V02	50V 2PF		5CAAA00775
C229	CAP,FXD CER	DD105CH270J50V02	50V 27PF		5CAAA00851
C230	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C231	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C232	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C233	CAP,FXD CER	DD104SL270J50V02	50V 27PF		5CAAA01094
C234	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C235	CAP,FXD CER	DD105SL101J50V02	50V 100PF		5CAAA01101
C236	CAP,FXD CER	DD104SL150J50V02	50V 15PF		5CAAA01091
C237	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C238	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C239	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C240	CAP,FXD CER	DD105E102P50V02	50V 1000PF		5CBAB00299
C241	CAP,FXD CER	DD104CH220J50V02	50V 22PF		5CAAA00850
C242	CAP,FXD CER	DD104SL030C50V02	50V 3PF		5CAAA00774
C243	CAP,FXD CER	DD104SL010C50V02	50V 1PF		5CAAA00776
C244	CAP,FXD CER	DD104CH220J50V02	50V 22PF		5CAAA00850
C245	CAP,FXD CER	DD104SL030C50V02	50V 3PF		5CAAA00774
C246	CAP,FXD CER	DD104SL010C50V02	50V 1PF		5CAAA00776
C247	CAP,FXD CER	DD104CH220J50V02	50V 22PF		5CAAA00850
C251	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C252	CAP,FXD CER	DD350-257XL151JZ50	50V 150PF N2200		5CAAA01457
C253	CAP,FXD CER	DD112UJ 471J50V02	50V 470PF		5CAAA01458
C254	CAP,FXD CER	DD112UJ 471J50V02	50V 470PF		5CAAA01458
C255	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C256	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C257	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C258	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C259	CAP,FXD CER	DD109E103P50V02	50V 10000PF		5CBAB00301
C260	CAP,FXD CER	DD107SL331J50V02	50V 330PF		5CAAA01106

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	7

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C261	CAP,FXD CER	CE DD107SL331J50V02	50V 330PF		5CAAA01106
C262	CAP,FXD CER	CE DD107SL331J50V02	50V 330PF		5CAAA01106
C263	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C264	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C265	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C266	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C267	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C268	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C269	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C281	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C282	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C283	CAP,FXD NTAL	TA 202L1002 476M3	10V 47UF		5CSAC00656
C284	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C285	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C286	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C287	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C288	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C289	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C290	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C291	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C292	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C293	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C294	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C295	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C296	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C297	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C298	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C299	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C300	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C301	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C302	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C303	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C304	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C305	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C306	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	8

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C307	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C308	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C309	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C310	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C311	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C312	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C314	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C315	CAP,FXD CER	CE DD109E103P50V02	50V 10000PF		5CBAB00301
C316	CAP,FXD TANTAL	TA 202L2502 475M3	25V 4.7UF		5CSAC00653
C317	CAP,FXD CER	CE DD104SL220J50V02	50V 22PF		5CAAA01093
C318	CAP,FXD TANTAL	TA 202L1002 476M3	10V 47UF		5CSAC00656
CD1	DIODE	1S1588			5TXAD00040
CD2		TLR104	RED		5TZAD00021
CD3	DIODE	HZ3A			5TXAE00076
CD4	DIODE	1S1588			5TXAD00040
CD5	DIODE	FC51M			5TXAB00020
CD6	DIODE	FC51M			5TXAB00020
CD7	DIODE	FC52M			5TXAB00021
CD8	DIODE	1S1588LB-10			5TXAD00248
CD9	DIODE	10D2	200V 1A		5TXAG00001
CD10	DIODE	FC53M			5TXAB00022
CD11	DIODE	1S1588			5TXAD00040
CD12	DIODE	1S1588			5TXAD00040
CD13	DIODE	1S1588			5TXAD00040
CD14	DIODE	1S1588			5TXAD00040
CD15	DIODE	1S1588LB-10			5TXAD00248
CD16		TLR104	RED		5TZAD00021
CD17	DIODE	HZ3A-3			5TXAE00142
CD18	DIODE	FC53M			5TXAB00022
CD19	DIODE	1S2187			5TXAD00219
CD20	DIODE	1S2187			5TXAD00219
CD21	DIODE	1S2187			5TXAD00219
CD22	DIODE	1S2187			5TXAD00219
CD23	DIODE	1S1588LB-10			5TXAD00248
CD24	DIODE	1S1588			5TXAD00040

ORDER	TITLE	LIST NO.	SHEET NO
	SYNTHESIZER	CMG-62A	9

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
CD25	DIODE	1S1588LB-10			5TXAD0024
CD26	DIODE	1S1588LB-10			5TXAD0024
CD27	DIODE	1S1588LB-10			5TXAD0024
CV1	CAPACITOR VAR	DTM050D200	20PF		5CVAA0010
CV2	CAPACITOR VAR	DTM050D200	20PF		5CVAA0010
IC1	IC	TC4510BP			5DDAE0008
IC2	IC	TC4510BP			5DDAE0008
IC3	IC	TC4510BP			5DDAE0008
IC4	IC	TC4510BP			5DDAE00084
IC5	IC	TC4510BP			5DDAE00084
IC6	IC	TC4510BP			5DDAE00084
IC7	IC	TC4001BP			5DDAE00042
IC8	IC	TC4011BP			5DDAE00053
IC9	IC	TC4001BP			5DDAE00042
IC10	IC	TC4013BP			5DDAE00052
IC11	IC	TC4049BP			5DDAE00044
IC12	IC	TC4023BP			5DDAE00079
IC13	IC	TC4049BP			5DDAE00044
IC14	IC	HD74LS04P			5DDAF00278
IC15	IC	SN74LS244N			5DDAL00293
IC16	IC	SN74LS244N			5DDAL00293
IC17	IC	SN74LS244N			5DDAL00293
IC18	IC	TC4011BP			5DDAE00053
IC19	IC	TC4049BP			5DDAE00044
IC20	IC	TC4049BP			5DDAE00044
IC21	IC	SN74LS192N			5DDAL00118
IC22	IC	SN74LS192N			5DDAL00118
IC23	IC	SN74LS192N			5DDAL00118
IC24	IC	SN74LS192N			5DDAL00118
IC25	IC	SN74LS192N			5DDAL00118
IC26	IC	HD74LS00P			5DDAF00279
IC27	IC	HD74LS10P			5DDAF00288
IC28	IC	HD74LS00P			5DDAF00279
IC29	IC	HD74LS10P			5DDAF00288
IC30	IC	SN74H30N			5DDAL00085

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	10

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
IC31	IC	SN74S74N			5DDAL00198
IC32	IC	MC1350P			5DDAS00011
IC33	IC	UA723HC			5DAAM00075
IC34	IC	MC4044P			5DDAS00002
IC35	IC	HD74LS26P			5DDAF00297
IC36	IC	TC4016BP			5DDAE00061
IC37	IC	TC4011BP			5DDAE00053
IC38	IC	TC4016BP			5DDAE00061
IC39	IC	HD74LS00P			5DDAF00279
IC40	IC	SN74LS196N			5DDAL00297
IC41	IC	HD7400P			5DDAF00110
IC42	IC	SN74LS390N			5DDAL00229
IC43	IC	SN74LS390N			5DDAL00229
IC44	IC	TC4016BP			5DDAE00061
IC45	IC	TC4049BP			5DDAE00044
IC46	IC	MC1350P			5DDAS00011
IC47	IC	HD74LS04P			5DDAF00278
IC48	IC	HD74LS20P			5DDAF00286
IC49	IC	SN74S74N			5DDAL00198
IC50	IC	SN74LS192N			5DDAL00118
IC51	IC	SN74LS192N			5DDAL00118
IC52	IC	HD74LS00P			5DDAF00279
IC53	IC	HD74LS26P			5DDAF00297
IC54	IC	MC4044P			5DDAS00002
IC55	IC	HD74LS26P			5DDAF00297
IC56	IC	TC4016BP			5DDAE00061
IC57	IC	UA723HC			5DAAM00075
IC58	IC	TA7045M			5DAAD00002
IC59	IC	TC4049BP			5DDAE00044
IC60	IC	TC4016BP			5DDAE00061
IC61	IC	H-6DDJD00002(UPB426D)			6DDJD00002
J17	PIN JACK	S-Q3063			5JJAL00016
J18	PIN JACK	S-Q3063			5JJAL00016
J22	PIN JACK	S-Q3063			5JJAL00016
J24	PIN JACK	S-Q3063			5JJAL00016

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	11

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
J26	PIN JACK	S-Q3063			5JJAL00016
J29	CONNECTOR	HNC1-2.5P-12DS	12P		5JDAA00273
J30	CONNECTOR	HNC1-2.5P-12DS	12P		5JDAA00273
J31	CONNECTOR	HNC1-2.5P-12DS	12P		5JDAA00273
J37	CONNECTOR	HNC2-2.5P-2DS	2P		5JDAA00276
J38	CONNECTOR	HNC2-2.5P-2DS	2P		5JDAA00276
K1	RELAY	HB2E-DC12V			5KLAD00270
L1	COIL	LF1-100K	10UH		5LCAB00001
L2	COIL	LF1-100K	10UH		5LCAB00001
L3	COIL	LF1-100K	10UH		5LCAB00001
L4	COIL	LF1-100K	10UH		5LCAB00001
L5	COIL	LF1-100K	10UH		5LCAB00001
L6	COIL	LF1-100K	10UH		5LCAB00001
L7	COIL	LF1-100K	10UH		5LCAB00001
L8	COIL	LF1-100K	10UH		5LCAB00001
L9	COIL	LF1-100K	10UH		5LCAB00001
L10	COIL	LF1-100K	10UH		5LCAB00001
L11	COIL	LF1-100K	10UH		5LCAB00001
L12	COIL	LF1-100K	10UH		5LCAB00001
L13	COIL	LF1-100K	10UH		5LCAB00001
L14	COIL	LF1-100K	10UH		5LCAB00001
L15	COIL	LF1-100K	10UH		5LCAB00001
L16	COIL	LF1-100K	10UH		5LCAB00001
L17	COIL	LF1-100K	10UH		5LCAB00001
L18	COIL	LF1-100K	10UH		5LCAB00001
L19	COIL	LF1-470K	47UH 130MA		5LCAB00005
L20	COIL	LF4-4R7K	4.7UH		5LCAB00016
L21	COIL	SP0406-1R0K	1.0UH		5LCAC00173
L22	COIL	LF1-100K	10UH		5LCAB00001
L23	COIL	TP0206-R27K	0.27UH		5LCAC00178
L24	COIL	TP0206-R18K	0.18UH		5LCAC00250
L25	COIL	LF4-5R6K	5.6UH		5LCAB00070
L26	COIL	LF4-3R3K	3.3UH		5LCAB00015
L27	COIL	SP0406-100K	10UH		5LCAC00018
L28	COIL	JD-LD756-73			6LAJD00051

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	12

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
L29	COIL	SP0406-100K	10UH		5LCAC00018
L30	COIL	LF1-470K	47UH 130MA		5LCAB00005
L31	COIL	SP0406-6R8K	6.8UH		5LCAC00151
L32	COIL	LF1-120K	120UH		5LCAB00069
L33	COIL	LF1-100K	10UH		5LCAB00001
L34	COIL	LF1-470K	47UH 130MA		5LCAB00005
L35	COIL	LF1-100K	10UH		5LCAB00001
L36	COIL	LF1-220K	22UH		5LCAB00003
L41	COIL	SP0410-390K	39UH		5LCAC00393
L42	COIL	SP0410-470K	47UH		5LCAC00394
L43	COIL	LF1-470K	47UH 130MA		5LCAB00005
L44	COIL	LF1-470K	47UH 130MA		5LCAB00005
L45	COIL	LF4-1R0K			5LCAB00067
L46	COIL	LF1-100K	10UH		5LCAB00001
L47	COIL	LF1-100K	10UH		5LCAB00001
L48	COIL	LF1-100K	10UH		5LCAB00001
L49	COIL	LF1-100K	10UH		5LCAB00001
L50	COIL	LF1-100K	10UH		5LCAB00001
L51	COIL	LF1-100K	10UH		5LCAB00001
L52	COIL	SP0408-R33M	0.33UH		5LCAC00164
L53	COIL	SP0408-R22M	0.22UH		5LCAC00165
L54	COIL	LF4-2R2K	2.2UH		5LCAB00014
L55	COIL	LF1-100K	10UH		5LCAB00001
L56	COIL	LF4-2R2K	2.2UH		5LCAB00014
L57	COIL	LF1-100K	10UH		5LCAB00001
L60	COIL	LF1-470K	47UH 130MA		5LCAB00005
L61	COIL	SP0408-R68K	0.68UH		5LCAC00174
L62	COIL	LF1-100K	10UH		5LCAB00001
L63	COIL	LF1-100K	10UH		5LCAB00001
L64	COIL	LF1-100K	10UH		5LCAB00001
L65	COIL	SP0410-330K	33UH		5LCAC00225
L66	COIL	SP0410-330K	33UH		5LCAC00225
L67	COIL	LF1-470K	47UH 130MA		5LCAB00005
L68	COIL	LF1-331K	330UH		5LCAB00010
L69	COIL	LF1-471K	470UH		5LCAB00011

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	13

PARTS NO	PARTS NAME	TYPE	DISCRIPTION	REMARKS	CODE
L71	COIL	LF1-100K	10UH		5LCAB00001
L72	COIL	LF1-100K	10UH		5LCAB00001
L73	COIL	LF1-100K	10UH		5LCAB00001
L74	COIL	LF1-100K	10UH		5LCAB00001
L75	COIL	LF1-100K	10UH		5LCAB00001
L76	COIL	LF1-100K	10UH		5LCAB00001
L77	COIL	LF1-100K	10UH		5LCAB00001
L78	COIL	LF1-100K	10UH		5LCAB00001
L79	COIL	LF1-100K	10UH		5LCAB00001
L80	COIL	LF1-100K	10UH		5LCAB00001
L81	COIL	LF1-470K	47UH 130MA		5LCAB00005
P6	CONNECTOR	PCN5-31PT-1.27DS			5JDAA00112
P10	CONNECTOR	PCN5-31PT-1.27DS			5JDAA00112
P37	CONNECTOR	HNC-2.5S-SP	2P		5JDAA00336
P38	CONNECTOR	HNC-2.5S-SP	2P		5JDAA00336
PC1	PCB	MPPC07761D			MPPC07761D
R1	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R2	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R3	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R4	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R5	RESISTOR F XD	ERD-25VJ474	1/4W 470K OHM		5RDAA01033
R6	RESISTOR	IHR-1/8-6-473JA	47K OHM		5RZAB00016
R7	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R8	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R9	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R10	RESISTOR F XD	ERD-25VJ684	1/4W 680K OHM		5RDAA01037
R11	RESISTOR F XD	ERD-25VJ105	1/4W 1M OHM		5RDAA01041
R12	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R13	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R21	RESISTOR F XD	ERD-25VJ562	1/4W 5.6K OHM		5RDAA00987
R22	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R23	RESISTOR F XD	ERD-25VJ182	1/4W 1.8K OHM		5RDAA00975
R24	RESISTOR F XD	ERD-25VJ152	1/4W 1.5K OHM		5RDAA00973
R25	RESISTOR F XD	ERD-25VJ221	1/4W 220 OHM		5RDAA00953
R26	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	14

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
R27	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R28	RESISTOR F XD	ERD-25VJ8R2	1/4W 8.2 OHM		5RDAA00919
R29	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R30	RESISTOR F XD	ERD-25VJ682	1/4W 6.8K OHM		5RDAA00989
R31	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R32	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R33	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R34	RESISTOR F XD	ERD-25VJ680	1/4W 68 OHM		5RDAA00941
R35	RESISTOR F XD	ERD-25VJ750	1/4W 75 OHM		5RDAA00942
R36	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R37	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R38	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R39	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R40	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R41	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R42	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R43	RESISTOR F XD	ERD-25VJ682	1/4W 6.8K OHM		5RDAA00989
R44	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R45	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R46	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R47	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R48	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R49	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R50	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R51	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R52	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R53	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R54	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R55	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R56	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R57	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R59	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R60	RESISTOR F XD	ERD-25VJ151	1/4W 150 OHM		5RDAA00949
R61	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R62	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	15

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
R63	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R64	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R65	RESISTOR F XD	ERD-25VJ151	1/4W 150 OHM		5RDAA00949
R66	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R67	RESISTOR F XD	ERD-25VJ392	1/4W 3.9K OHM		5RDAA00983
R68	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R69	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R70	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R71	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R72	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R73	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R74	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R75	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R76	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R81	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R82	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R83	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R84	RESISTOR F XD	ERD-25VJ221	1/4W 220 OHM		5RDAA00953
R85	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R86	RESISTOR F XD	ERD-25VJ330	1/4W 33 OHM		5RDAA00933
R87	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R88	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R89	RESISTOR F XD	ERD-50TJ101	1/2W 100 OHM		5RDAA00811
R100	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R101	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R102	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R103	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R104	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R105	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R106	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R107	RESISTOR F XD	ERD-25VJ333	1/4W 33K OHM		5RDAA01005
R108	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R109	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R110	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R111	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	16

PARTS NO	PARTS NAME	TYPE	DISCRIPTION	REMARKS	CODE
R112	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R113	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R114	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R116	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R121	RESISTOR F XD	ERD-25VJ562	1/4W 5.6K OHM		5RDAA00987
R122	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R123	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R124	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R125	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R126	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R127	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R128	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R129	RESISTOR F XD	ERD-25VJ330	1/4W 33 OHM		5RDAA00933
R130	RESISTOR F XD	ERD-25VJ682	1/4W 6.8K OHM		5RDAA00989
R131	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R132	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R133	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R134	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R135	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R136	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R137	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R138	RESISTOR F XD	ERD-25VJ470	1/4W 47 OHM		5RDAA00937
R139	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R140	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R141	RESISTOR F XD	ERD-25VJ220	1/4W 22 OHM		5RDAA00929
R142	RESISTOR F XD	ERD-25VJ330	1/4W 33 OHM		5RDAA00933
R143	RESISTOR F XD	ERD-25VJ221	1/4W 220 OHM		5RDAA00953
R145	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R146	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R148	RESISTOR F XD	HT1/4-5.1M OHM J			5RDAC00778
R149	RESISTOR F XD	ERD-25VJ680	1/4W 68 OHM		5RDAA00941
R150	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R151	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R152	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R153	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	17

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
R154	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R155	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R156	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R157	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R158	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R159	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R160	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R161	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R162	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R163	RESISTOR F XD	ERD-25VJ100	1/4W 10 OHM		5RDAA00921
R164	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R165	RESISTOR F XD	ERD-25VJ682	1/4W 6.8K OHM		5RDAA00989
R167	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R168	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R169	RESISTOR F XD	ERD-25VJ332	1/4W 3.3K OHM		5RDAA00981
R170	RESISTOR F XD	ERD-25VJ330	1/4W 33 OHM		5RDAA00933
R171	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R181	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R182	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R183	RESISTOR F XD	ERD-25VJ821	1/4W 820 OHM		5RDAA00967
R184	RESISTOR F XD	ERD-25VJ331	1/4W 330 OHM		5RDAA00957
R185	RESISTOR F XD	ERD-25VJ151	1/4W 150 OHM		5RDAA00949
R186	RESISTOR F XD	ERD-25VJ222	1/4W 2.2K OHM		5RDAA00977
R187	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R188	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R189	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R190	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R191	RESISTOR F XD	ERD-25VJ154	1/4W 150K OHM		5RDAA01021
R192	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R193	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R194	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R195	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R196	RESISTOR F XD	ERD-25VJ153	1/4W 15K OHM		5RDAA00997
R197	RESISTOR F XD	ERD-25VJ821	1/4W 820 OHM		5RDAA00967
R199	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	18

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
R200	RESISTOR F XD	ERD-25VJ470	1/4W 47 OHM		5RDAA00937
R201	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R202	RESISTOR F XD	ERD-25VJ153	1/4W 15K OHM		5RDAA00997
R203	RESISTOR F XD	ERD-25VJ471	1/4W 470 OHM		5RDAA00961
R204	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R211	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R212	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R213	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R214	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R215	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R216	RESISTOR F XD	ERD-25VJ681	1/4W 680 OHM		5RDAA00965
R217	RESISTOR F XD	ERD-25VJ223	1/4W 22K OHM		5RDAA01001
R218	RESISTOR F XD	ERD-25VJ103	1/4W 10K OHM		5RDAA00993
R219	RESISTOR F XD	ERD-25VJ104	1/4W 100K OHM		5RDAA01017
R220	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R221	RESISTOR F XD	ERD-25VJ102	1/4W 1K OHM		5RDAA00969
R222	RESISTOR F XD	ERD-25VJ101	1/4W 100 OHM		5RDAA00945
R224	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R225	RESISTOR F XD	ERD-25VJ822	1/4W 8.2K OHM		5RDAA00991
R226	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R227	RESISTOR F XD	ERD-25VJ152	1/4W 1.5K OHM		5RDAA00973
R228	RESISTOR F XD	ERD-25VJ472	1/4W 4.7K OHM		5RDAA00985
R229	RESISTOR F XD	ERD-25VJ821	1/4W 820 OHM		5RDAA00967
R230	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R231	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R232	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R233	RESISTOR F XD	ERD-25VJ473	1/4W 47K OHM		5RDAA01009
R234	RESISTOR F XD	ERD-25VJ151	1/4W 150 OHM		5RDAA00949
R235	RESISTOR F XD	ERD-25VJ330	1/4W 33 OHM		5RDAA00933
R236	RESISTOR F XD	ERD-25VJ330	1/4W 33 OHM		5RDAA00933
RV1	RESISTOR V AR	RG06H2102	1K OHM		5RMAC00068
RV2	RESISTOR V AR	RG06H2103	10K OHM		5RMAC00067
RV3	RESISTOR V AR	RG06H2103	10K OHM		5RMAC00067
RV4	RESISTOR V AR	RG06H2102	1K OHM		5RMAC00068
RV5	RESISTOR V AR	RG06H2103	10K OHM		5RMAC00067

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	19

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
RV6	RESISTOR V AR	RG06H2103	10K OHM		5RMAC00067
RV7	RESISTOR V AR	RG06H2103	10K OHM		5RMAC00067
RV8	RESISTOR V AR	RG06H2503	B50K		5RMAC00069
T1	RF XFMR	JD-LD749-73			6LHJD00030
T2	RF XFMR	JD-LD749-73			6LHJD00030
T3	RF XFMR	H-6LHJD00172			6LHJD00172
T4	RF XFMR	JD-LD774-74	0.1-30MHZ		6LHJD00109
T5	RF XFMR	JD-LD780-74			6LHJD00115
T6	RF XFMR	JD-LD780-74			6LHJD00115
T7	RF XFMR	H-6LHJD00172			6LHJD00172
T8	RF XFMR	H-6LHJD00172			6LHJD00172
T9	RF XFMR	H-6LHJD00172			6LHJD00172
T10	RF XFMR	H-6LHJD00172			6LHJD00172
T11	RF XFMR	H-6LHJD00172			6LHJD00172
T12	RF XFMR	H-6LHJD00172			6LHJD00172
T13	RF XFMR	JD-LD782-74			6LHJD00118
T14	RF XFMR	JD-LD782-74			6LHJD00118
T15	RF XFMR	H-6LHJD00172			6LHJD00172
T16	RF XFMR	H-6LHJD00172			6LHJD00172
T17	RF XFMR	H-6LHJD00172			6LHJD00172
T18	RF XFMR	1D-LD593-42 RED			6LJJD00007
TP	CONNECTOR	PCN6-PEG			5JDAA00186
TR1	TRANSISTOR	2SC372GTMA-Y			5TCAF00290
TR2	TRANSISTOR	2SC372GTMA-Y			5TCAF00290
TR3	TRANSISTOR	3SK45B			5TKAB00006
TR4	TRANSISTOR	2SK19TM-BL			5TKAA00061
TR5	TRANSISTOR	2SC372GTMA-Y			5TCAF00290
TR6	TRANSISTOR	2SC372GTM-Y			5TCAF00245
TR7	TRANSISTOR	2SA495GTM-Y			5TAAG00090
TR8	TRANSISTOR	2SC372GTMA-Y			5TCAF00290
TR9	TRANSISTOR	2SC372GTM-Y			5TCAF00245
TR10	TRANSISTOR	2SC372GTMA-Y			5TCAF00290
TR11	TRANSISTOR	2SC372GTM-Y			5TCAF00245
TR12	TRANSISTOR	2SC372GTMA-Y			5TCAF00290
TR13	TRANSISTOR	2SC372GTMA-Y			5TCAF00290

ORDER	TITLE	LIST NO.	SHEET NO.
	SYNTHESIZER	CMG-62A	20

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
TR14	TRANSISTOR	2SA495GTM-Y			5TAAG00090
TR15	TRANSISTOR	2SC1254			5TCAB00024
TR16	TRANSISTOR	2SC1254			5TCAB00024
TR17	TRANSISTOR	2SC1254			5TCAB00024
TR18	TRANSISTOR	2SA495GTM-Y			5TAAG00090
TR19	TRANSISTOR	2SA495GTM-Y			5TAAG00090
TR20	TRANSISTOR	2SA495GTM-Y			5TAAG00090
TR21	TRANSISTOR	2SC382TM-W			5TCAF00262
TR22	TRANSISTOR	3SK45B			5TKAB00006
TR23	TRANSISTOR	3SK45B			5TKAB00006
TR24	TRANSISTOR	2SC382TM-W			5TCAF00262
TR25	TRANSISTOR	2SC372GTMA-Y			5TCAF00290
TR26	TRANSISTOR	2SC372GTMA-Y			5TCAF00290
X1	CRYSTAL	H-6XHJD00131	10MHZ		6XHJD00131
X2	CRYSTAL	H-6XHJD00126	19MHZ		6XHJD00126
X3	CRYSTAL	H-6XHJD00127	5MHZ		6XHJD00127
X4	CRYSTAL	H-6XHJD00132	70MHZ		6XHJD00132
X5	CRYSTAL	H-6XHJD00133	5.455MHZ		6XHJD00133

PARTS LIST

ORDER	TITLE	LIST NO.	SHEET NO.
	PULSE GEN.	CPA-94	1

PARTS NO	PARTS NAME	TYPE	DISCRIPTION	REMARKS	CODE
C1	CAP,FXD CER	RD340E102P50V02	1000PF 50V		5CBAB00021
C2	CAP,FXD CER	RD340E102P50V02	1000PF 50V		5CBAB00021
C3	CAP,FXD TANTAL	ECS-Z25MA4R7	25V 4.7UF		5CSAA00090
CD1	LED	TLR108			5TZAD00037
CD2	LED	TLR108			5TZAD00037
IC1	IC	TC4049BP			5DDAE00044
IC2	IC	TC4001BP			5DDAE00042
IC3	IC	TC4011BP			5DDAE00053
IC4	IC	TC4011BP			5DDAE00053
L1	COIL	LF1-100K	10UH		5LCAB00001
PC1	PCB	MPPC07722			MPPC07722
PC2	PCB	MPPC04647A	CPA-33		MPPC04647A
R1	RESISTOR FXD	ERD-25TJ103	1/4W 10K OHM		5RDAA00728
R2	RESISTOR FXD	ERD-25TJ103	1/4W 10K OHM		5RDAA00728
R3	RESISTOR FXD	ERD-25TJ680	1/4W 68 OHM		5RDAA00676
R4	RESISTOR FXD	ERD-25TJ334	1/4W 330K OHM		5RDAA00764
R5	RESISTOR FXD	ERD-25TJ334	1/4W 330K OHM		5RDAA00764
R6	RESISTOR FXD	ERD-25TJ332	1/4W 3.3K OHM		5RDAA00716
R7	RESISTOR FXD	ERD-25TJ332	1/4W 3.3K OHM		5RDAA00716
RV1	RESISTOR VAR	PN822H503H	50K OHM		5RMAA00012
RV2	RESISTOR VAR	PN822H503H	50K OHM		5RMAA00012
TP1	TERMINAL	A-8			5JTBD00006
TP2	TERMINAL	A-8			5JTBD00006
TP3	TERMINAL	A-8			5JTBD00006
TP4	TERMINAL	A-8			5JTBD00006
TR1	TRANSISTOR	T-28A			5TZAJ00005
TR2	TRANSISTOR	T-28A			5TZAJ00005
TR3	TRANSISTOR	2SC373GTMA			5TCAF00291
TR4	TRANSISTOR	2SC373GTMA			5TCAF00291

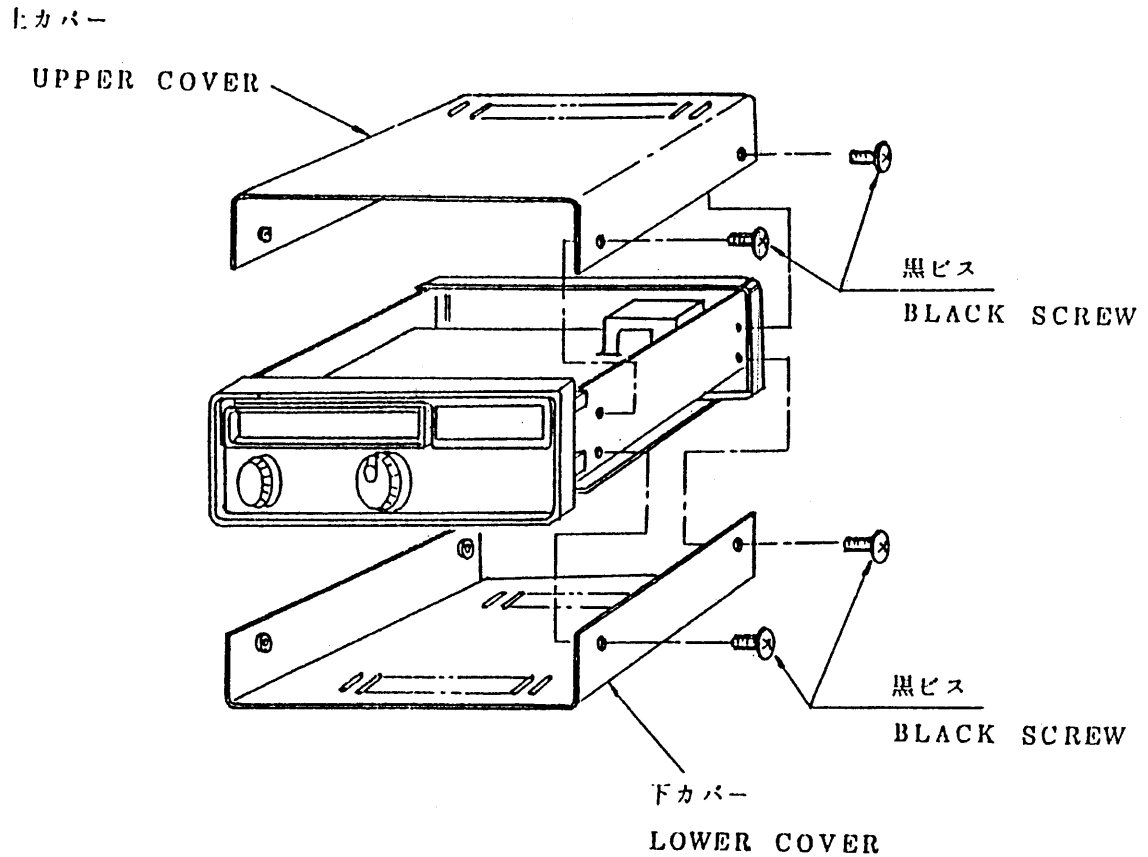
ORDER	TITLE	LIST NO.	SHEET NO.
	POWER SUPPLY	CBO-375	1

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
C1	CAP,FXD EL CTLT	ECE-T35R472SW			5CEAA01265
C2	CAP,FXD PL STC	ECQ-M1H474KZ			5CRAA00130
C3	CAP,FXD PL STC	ECQ-M1H104KZ			5CRAA00123
C4	CAP,FXD EL CTLT	ECE-A1ES101	25V100UF		5CEAA01349
C5	CAP,FXD EL CTLT	ECE-T25R682SW			5CEAA01261
C6	CAP,FXD PL STC	ECQ-M1H474KZ			5CRAA00130
C7	CAP,FXD PL STC	ECQ-M1H104KZ			5CRAA00123
C8	CAP,FXD EL CTLT	ECE-A1ES101	25V100UF		5CEAA01349
C12	CAP,FXD PL STC	ECQ-M1H104KZ			5CRAA00123
C13	CAP,FXD EL CTLT	ECE-A1ES101	25V100UF		5CEAA01349
CD1	DIODE	S4VB10			5TXAC00065
CD2	DIODE	S4VB10			5TXAC00065
IC7	IC	UA7815UC	15V 1A		5DAAM00010
IC8	IC	UA7815UC	15V 1A		5DAAM00010
IC9	IC	UA7805UC			5DAAM00005
PC1	PCB	MPPC07962A			MPPC07962A

PARTS LIST

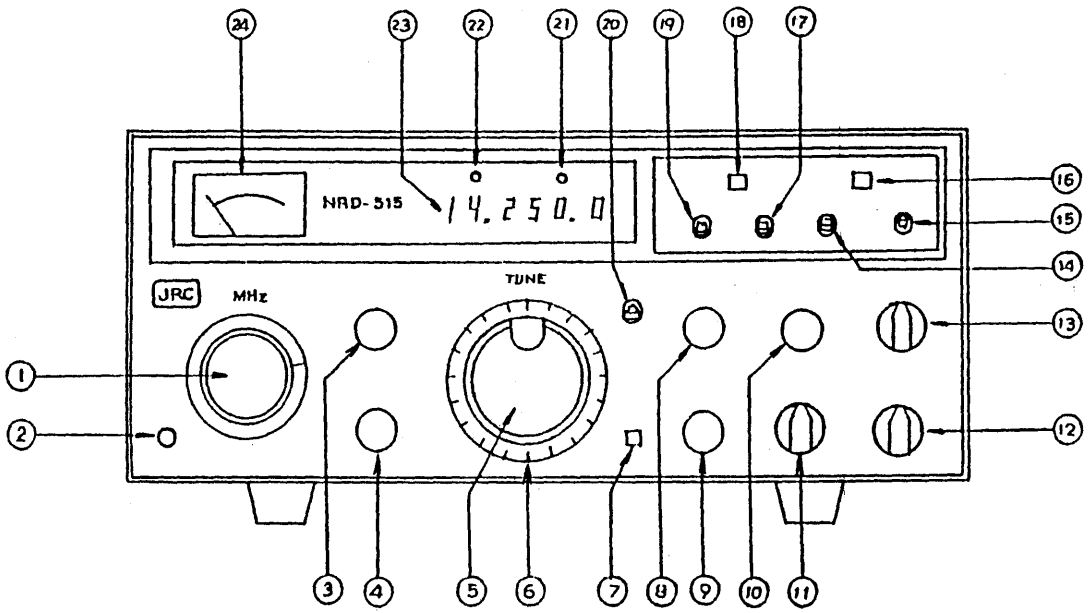
ORDER	TITLE	LIST NO.	SHEET NO.
	ACCESSORIES	NRD-515	1

PARTS NO	PARTS NAME	TYPE	DISCRIP-TION	REMARKS	CODE
F1	FUSE	MF60-1A	1A		5ZFAD00014
P1	CONNECTOR	M-P-3			5JAAB00011
P2	PIN PLUG	CN7017(PLUG)			5JJAJ00001
P3	PLUG	S-H3001			5JWAV00001
P4	CONNECTOR	P-1616BA-C	16P		5JBAB00454
PL1	LAMP	AS05121	A12V2WBD 0 .16A		5WAAB00090



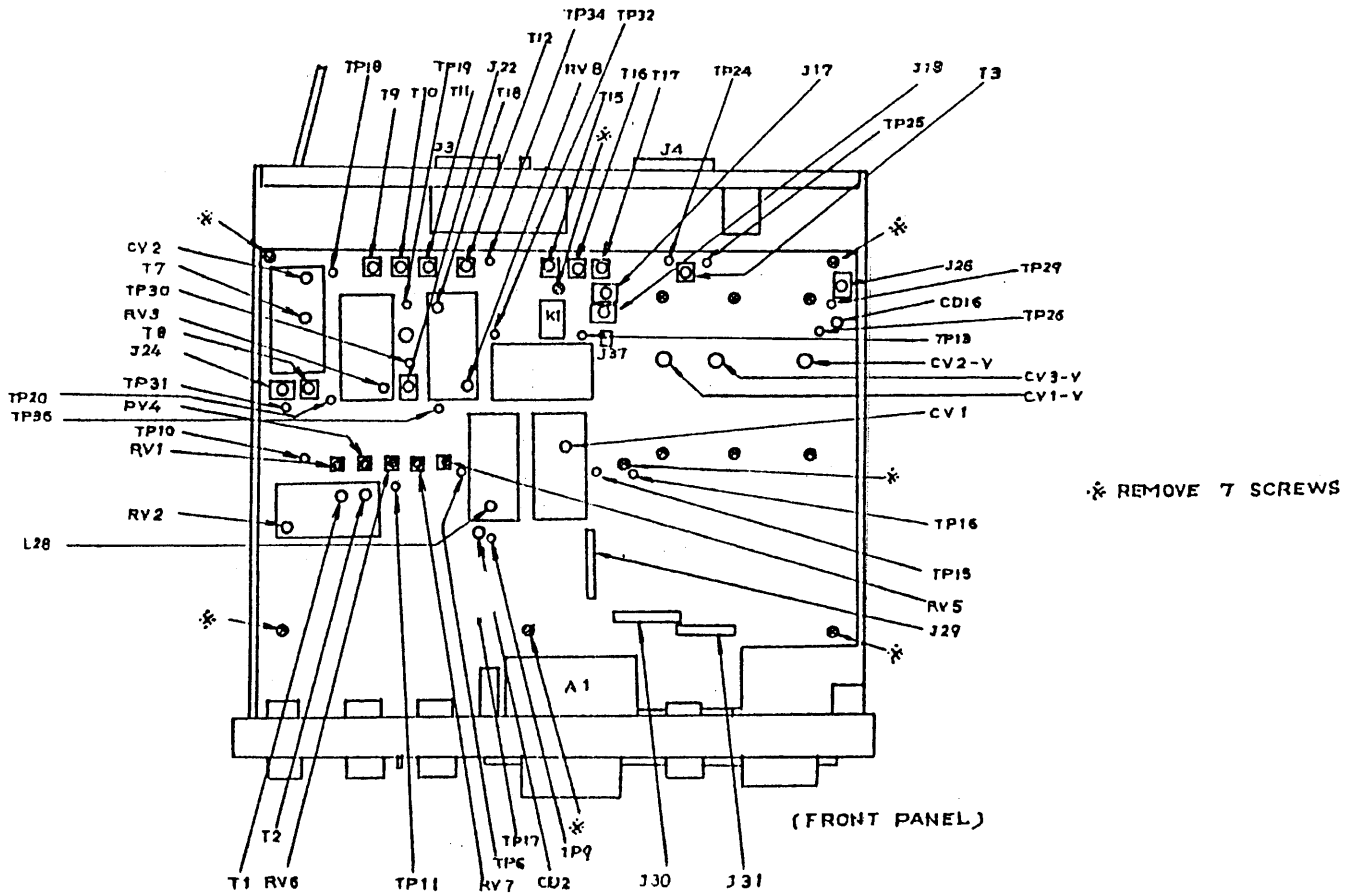
付　図　1 1

APPENDIX 1



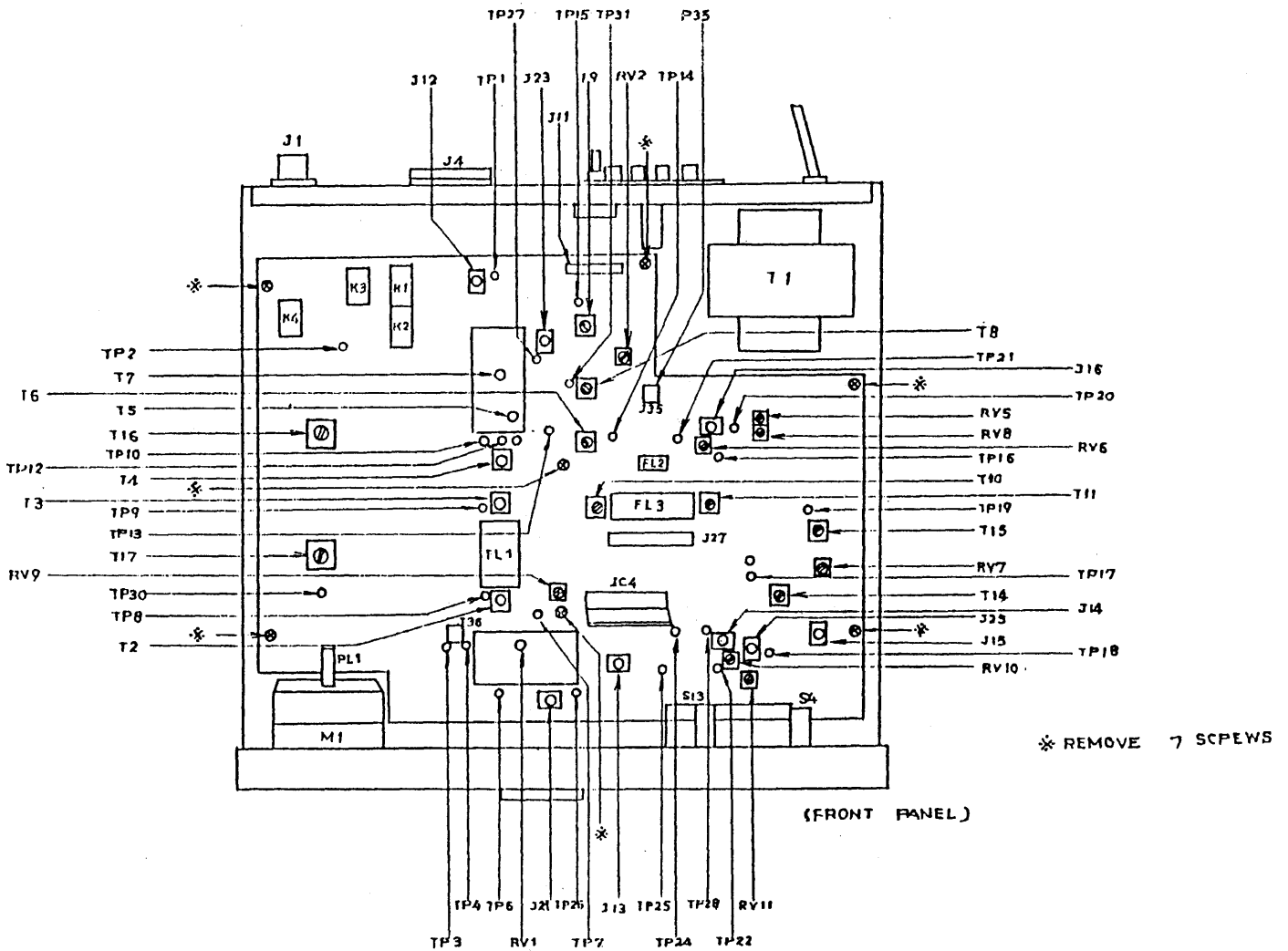
付　図　2　　前面パネル

APPENDIX2　FRONT PANEL



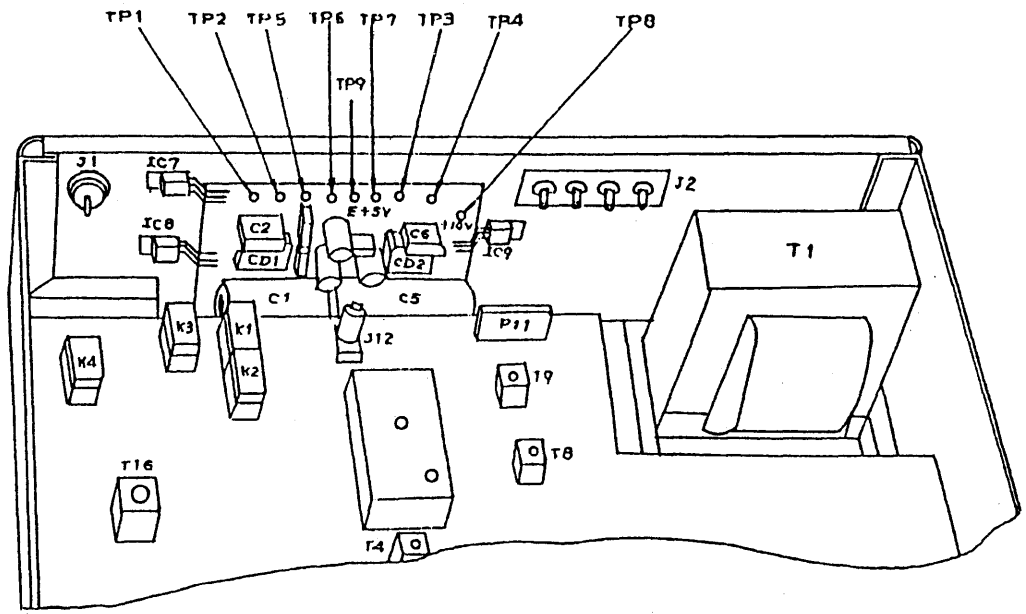
付図 3　　底　面　図

APPENDIX3　BOTTOM VIEW



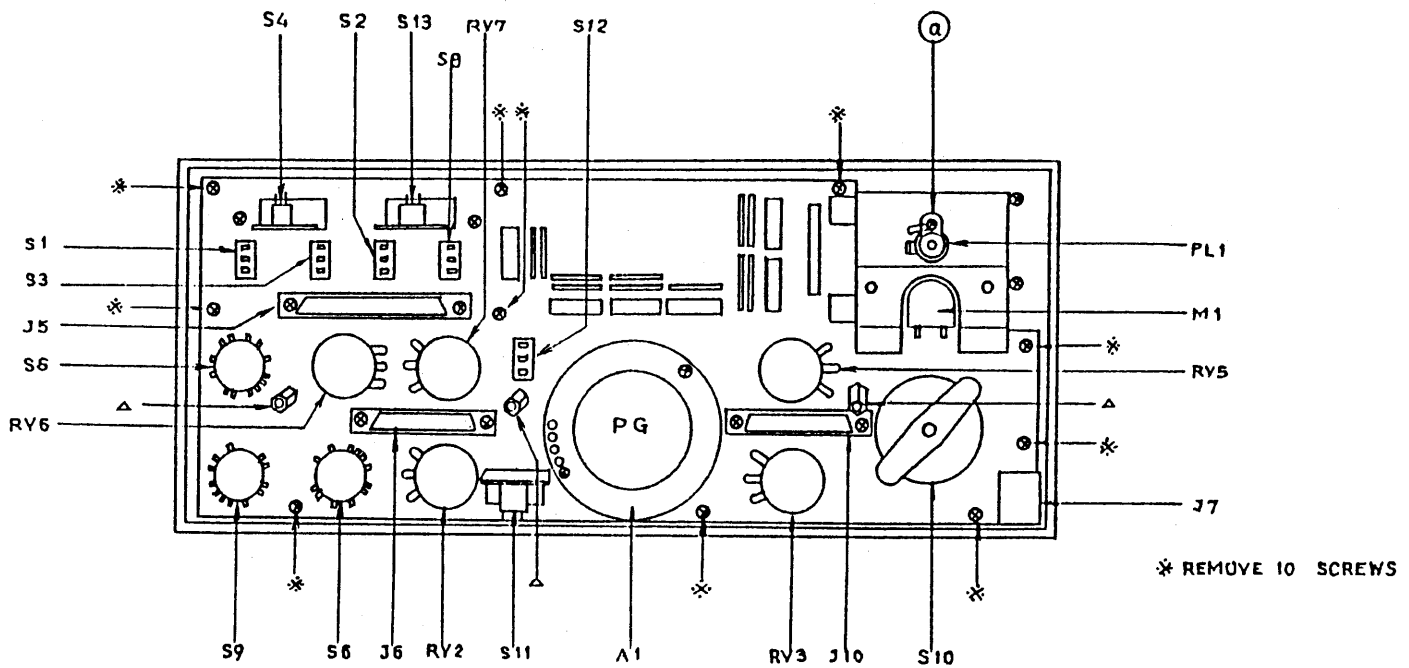
付 図 4　　上　面　図

APPENDIX4　　TOP VIEW



付　図　5　　上　面　図

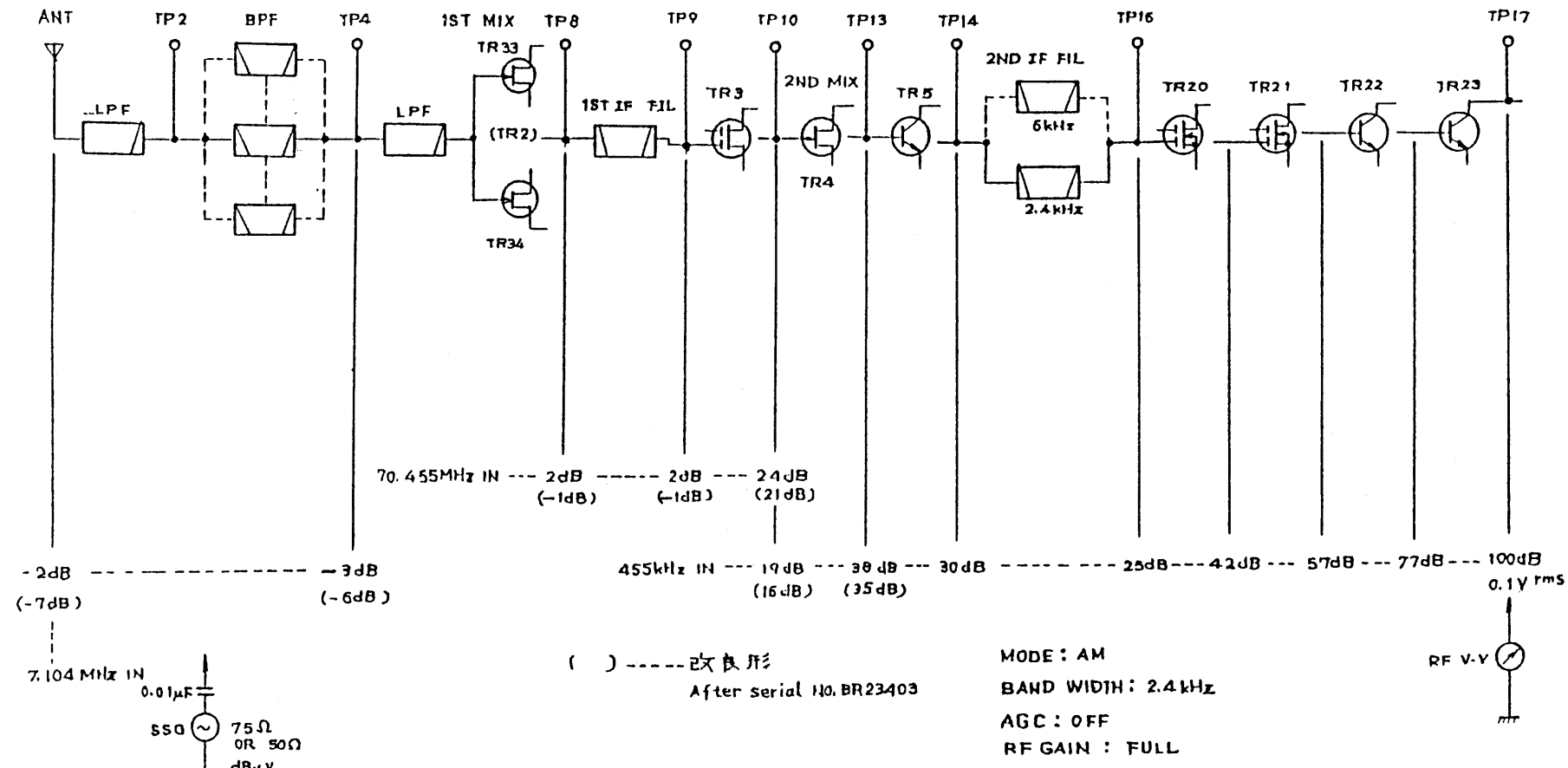
APPENDIX5　　TOP VIEW



付　図　6　　前面パネルの裏面図

APPENDIX6　FRONT PANEL　REAR VIEW

NRD-515　各部利得
STAGE GAIN

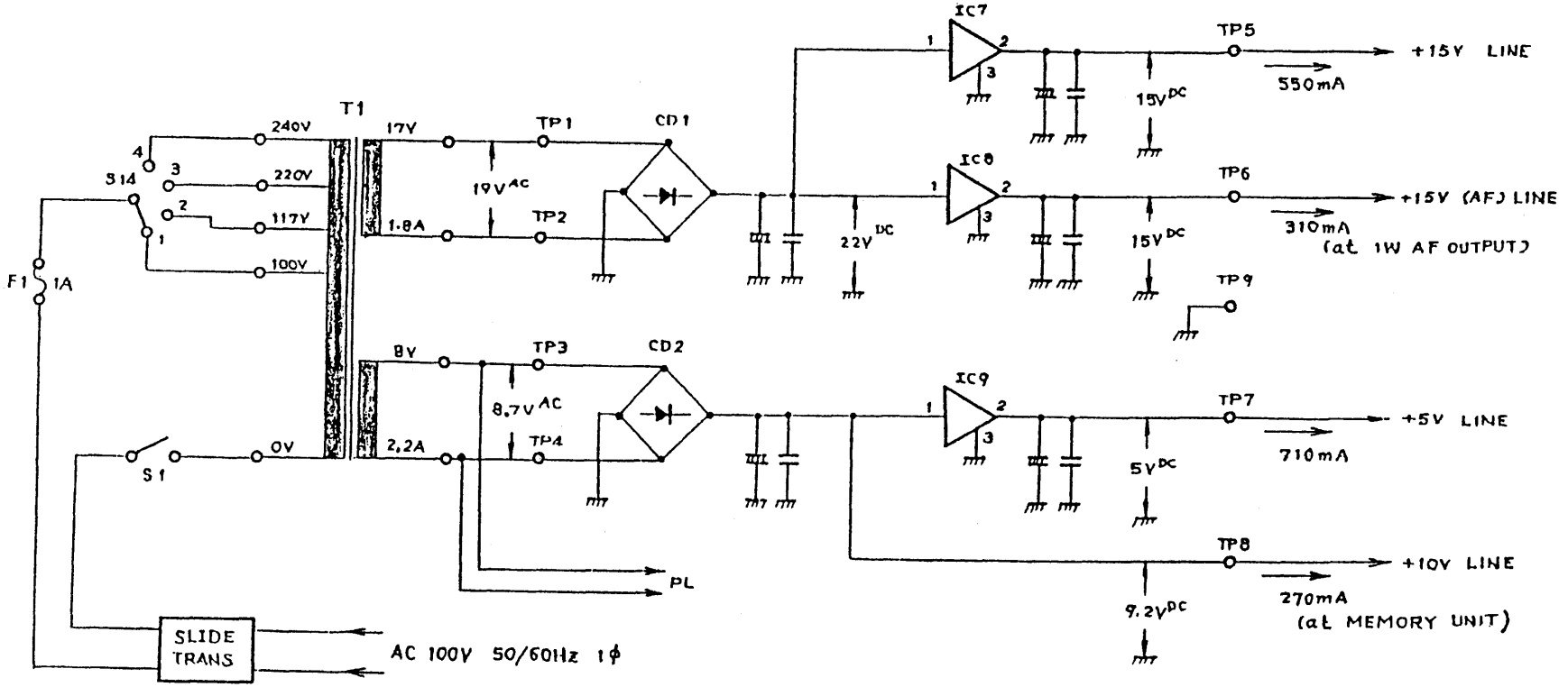


付　図　7

APPENDIX 7

NRD−515　電源部　各部電圧・電流

POWER SUPPLY UNIT

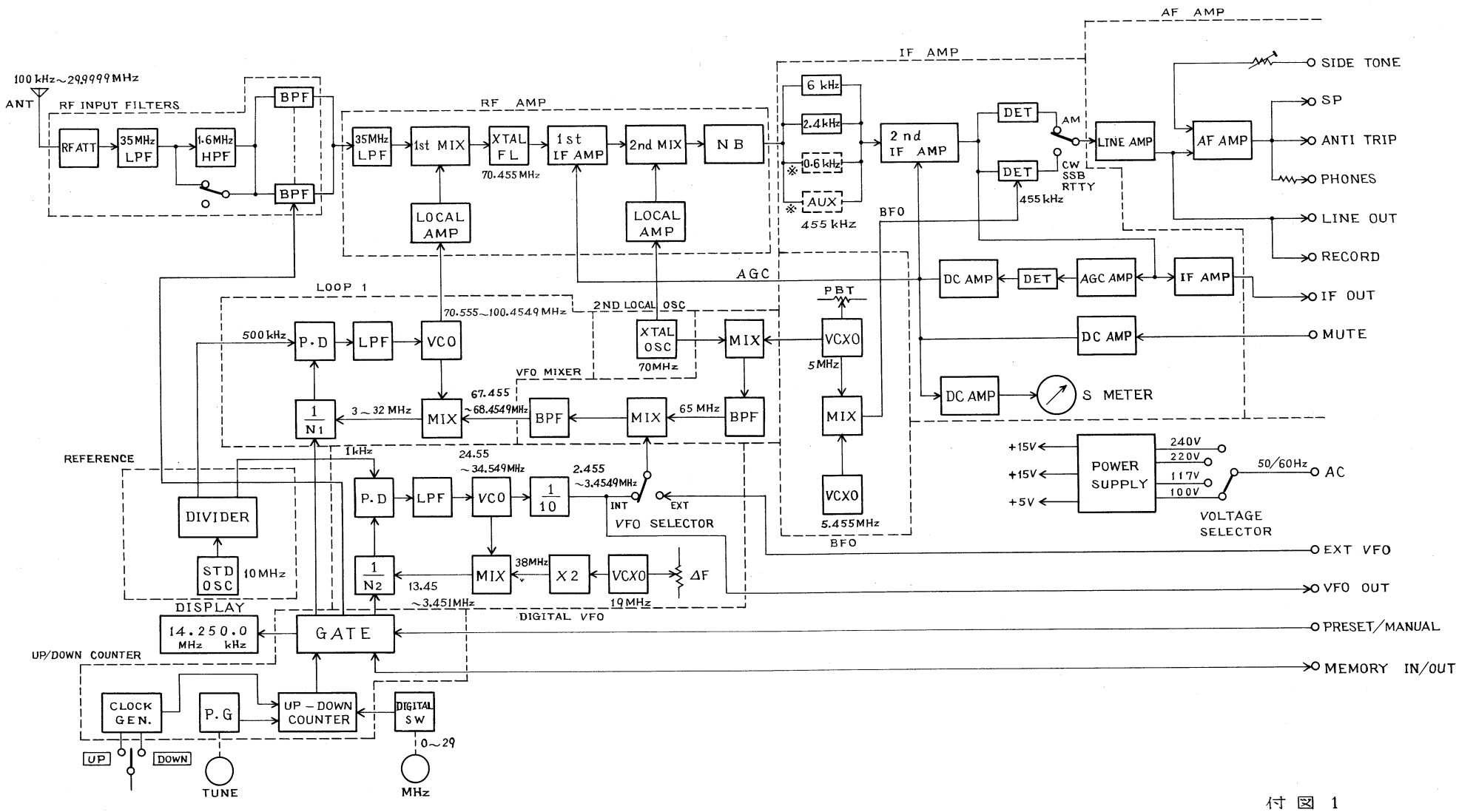


各値は、標準値を示します。

Values indicate standard ones

付　図　8

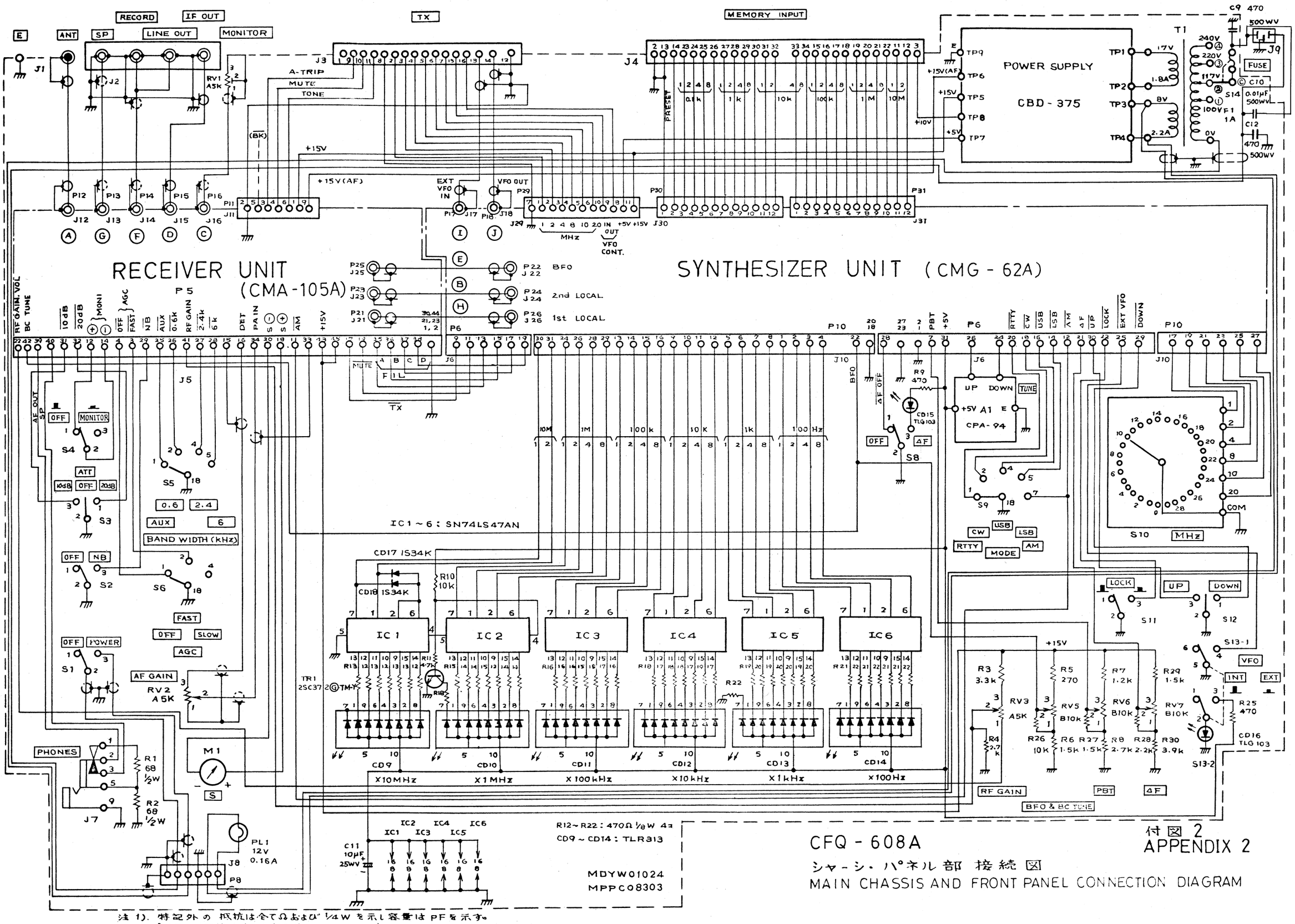
APPENDIX 8



※ [ ] OPTIONを示します。

付図 1
APPENDIX 1

NRD－515
全波受信機系統図
ALL-WAVE RECEIVER FUNCTIONAL BLOCK DIAGRAM



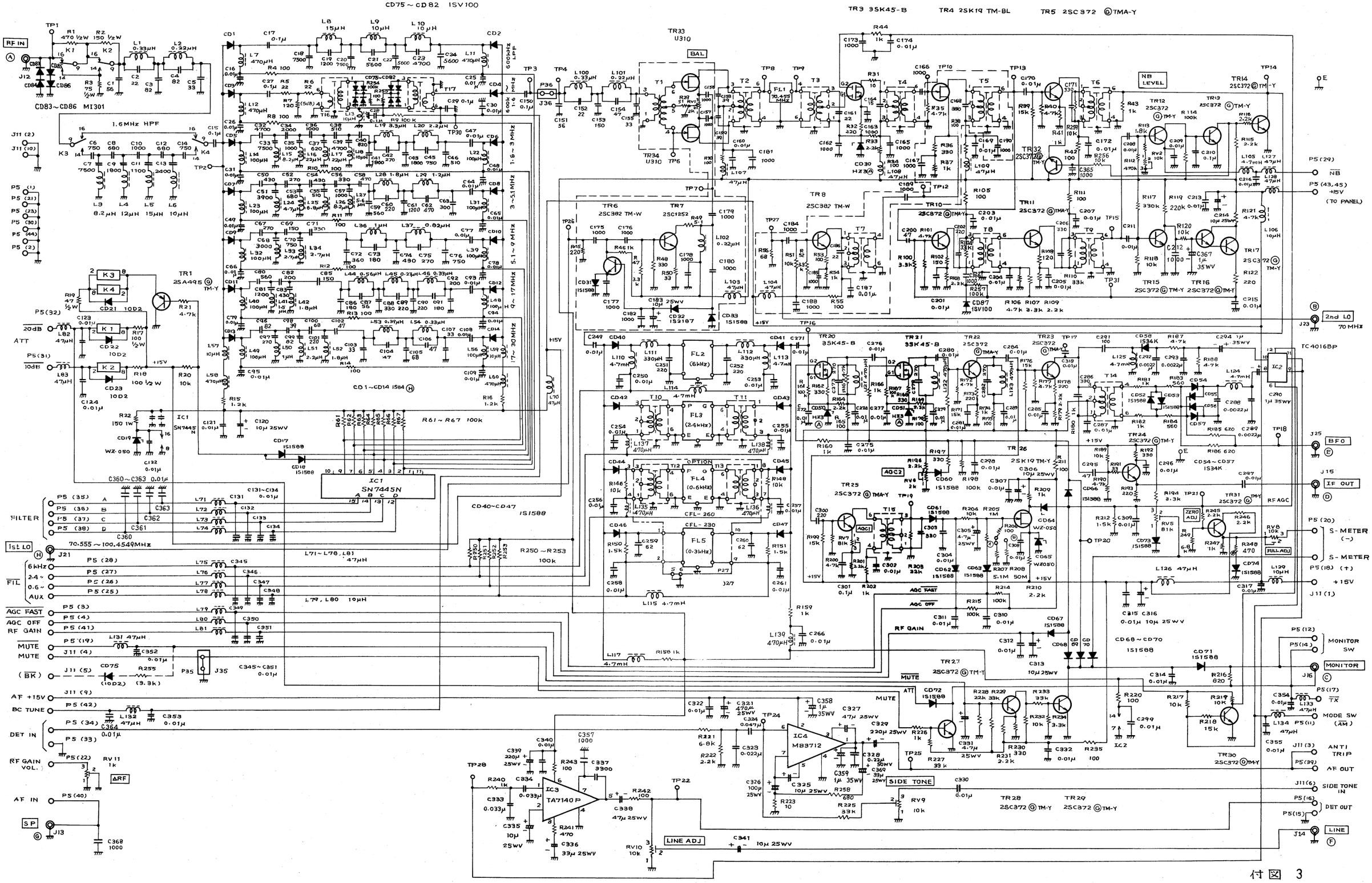
CFQ-608A

付図 2
APPENDIX 2

シャーシ・パネル部 接続図
MAIN CHASSIS AND FRONT PANEL CONNECTION DIAGRAM

注 1). 特記外の 抵抗は全てΩおよび ¼W を示し容量は PF を示す。
2). ※印は 調整用部品を示す。

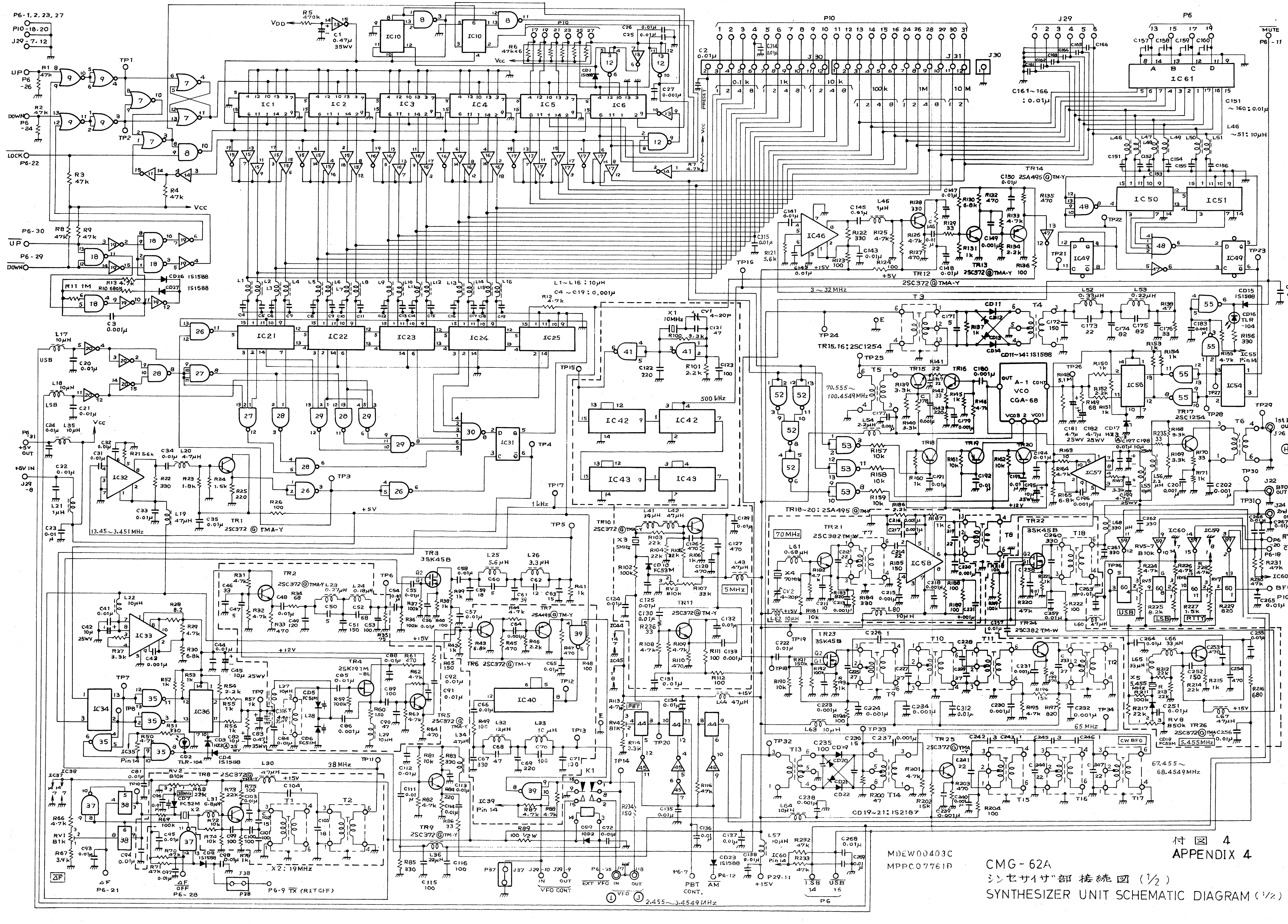
NOTES 1. UNLESS OTHERWISE INDICATED RESISTANCES ARE IN OHMS CAPACITANCES ARE IN MICRO-MICRO FARADS.
2. ※ VALUES SELECTED IN MANUFACTURE.



MDMW00552.C
MPPC07760.D

付図 3
APPENDIX 3

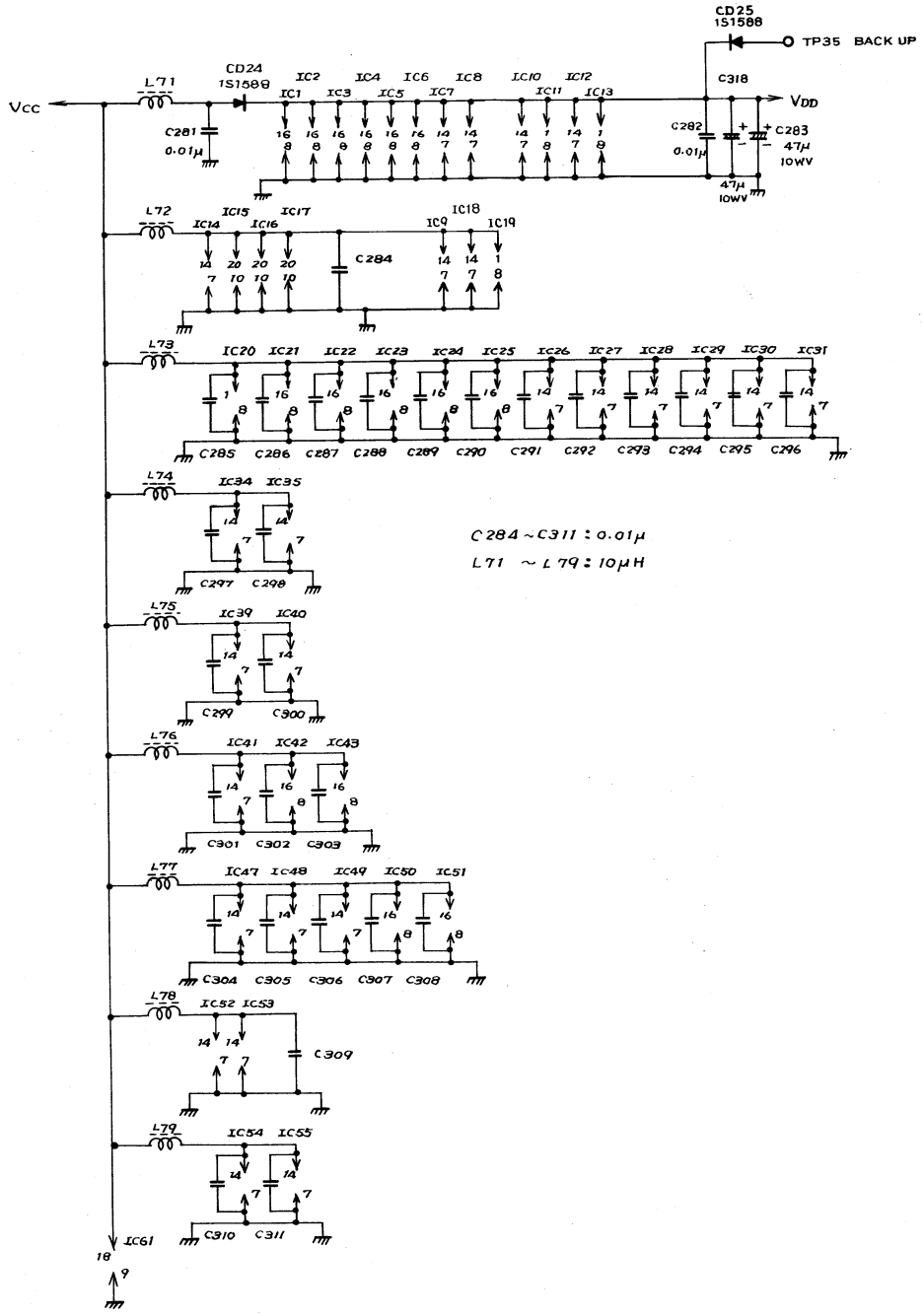
CMA-105A
受信部 接続図
RECEIVER UNIT SCHEMATIC DIAGRAM



付図 4
APPENDIX 4

MDEW00403C
MPPC07761D

CMG-62A
シンセサイザ部 接続図 (1/2)
SYNTHESIZER UNIT SCHEMATIC DIAGRAM (1/2)



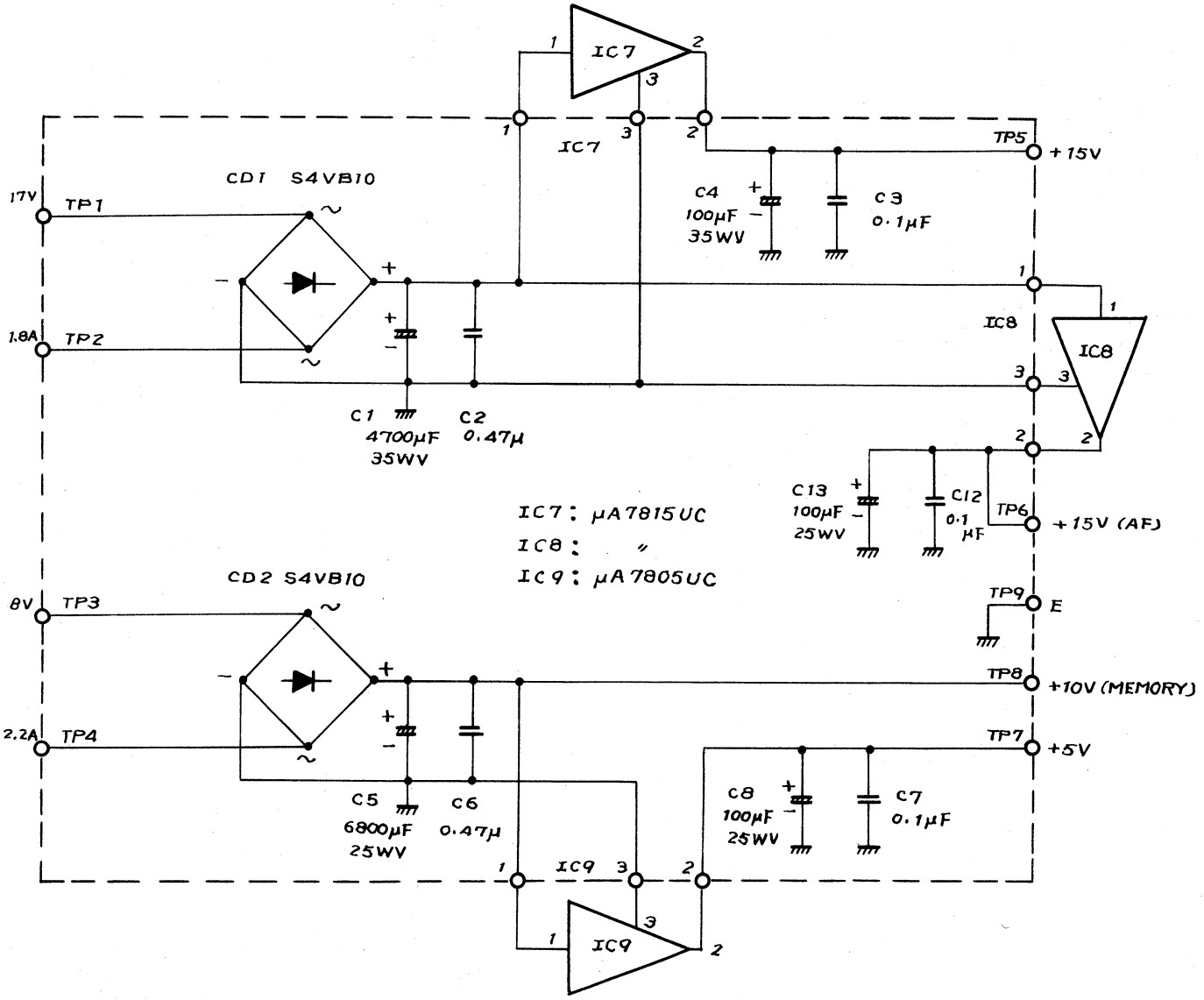
IC1	TC4510BP	IC36	TC4016BP
IC2	〃	IC37	TC4011BP
IC3	〃	IC38	TC4016BP
IC4	〃	IC39	SN74LS00N
IC5	〃	IC40	SN74LS196N
IC6	〃	IC41	SN7400N
IC7	TC4001BP	IC42	SN74LS390N
IC8	TC4011BP	IC43	〃
IC9	TC4001BP	IC44	TC4016BP
IC10	TC4013BP	IC45	TC4049BP
IC11	TC4049BP	IC46	MC1350P
IC12	TC4023BP	IC47	SN74LS04N
IC13	TC4049BP	IC48	SN74LS20N
IC14	SN74LS04N	IC49	SN74S74N
IC15	SN74LS244N	IC50	SN74LS192N
IC16	〃	IC51	〃
IC17	〃	IC52	SN74LS00N
IC18	TC4011BP	IC53	SN74LS26N
IC19	TC4049BP	IC54	11C44DC
IC20	〃	IC55	SN74LS26N
IC21	SN74LS192N	IC56	TC4016BP
IC22	〃	IC57	μA723T
IC23	〃	IC58	TA7045M
IC24	〃	IC59	TC4049BP
IC25	〃	IC60	TC4016BP
IC26	SN74LS00N	IC61	μPB426D(2)
IC27	SN74LS10N		
IC28	SN74LS00N		
IC29	SN74LS10N		
IC30	SN74H30N		
IC31	SN74S74N		
IC32	MC1350P		
IC33	μA723T		
IC34	11C44DC		
IC35	SN74LS26N		

MC4044

MC4044

付図 5
APPENDIX 5

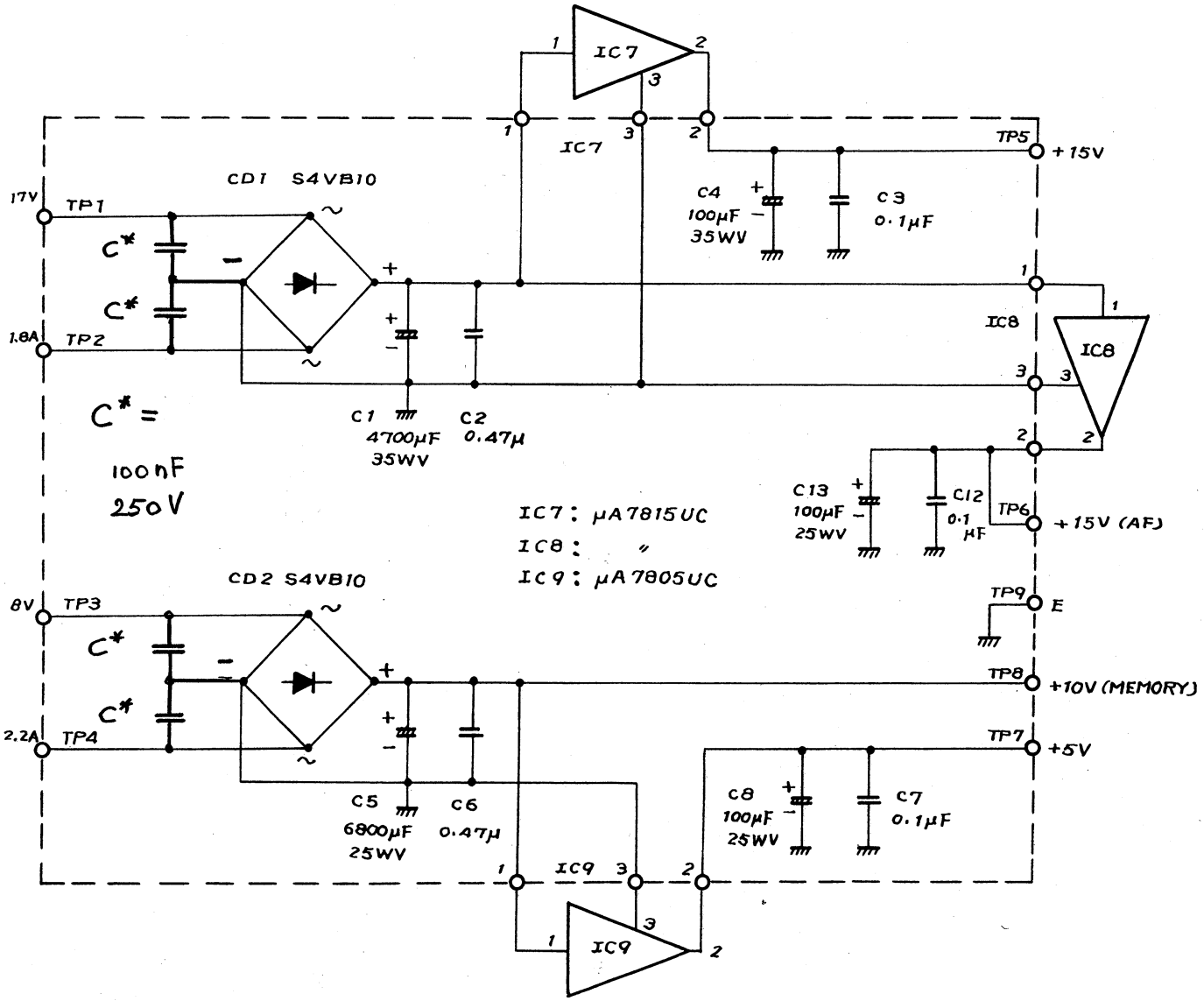
CMG-62A
シンセサイザ部 接続図 (2/2)
SYNTHESIZER UNIT SCHEMATIC DIAGRAM(2/2)



MDBW00795
MPPC07962

付図 6
APPENDIX 6

CBD - 375
電源部接続図
RECTIFIER UNIT SCHEMATIC DIAGRAM

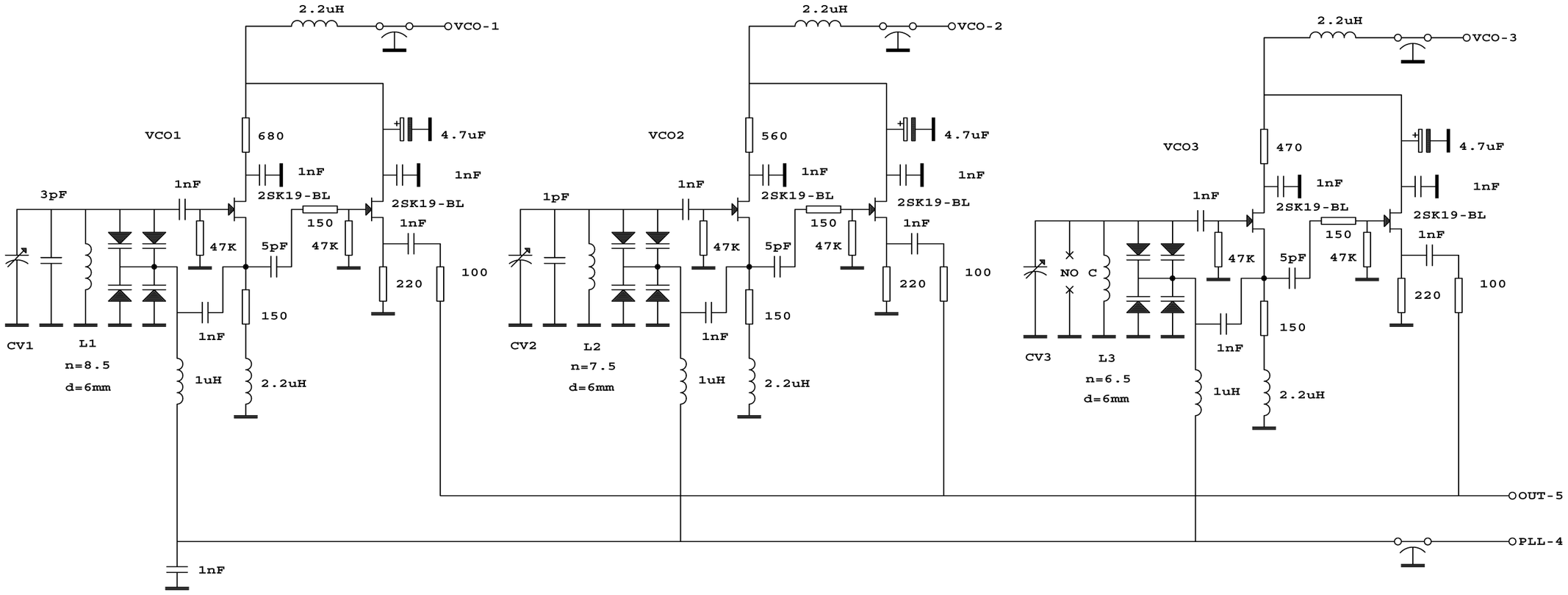


MDBW00795
MPPC07962

付図 6
APPENDIX 6

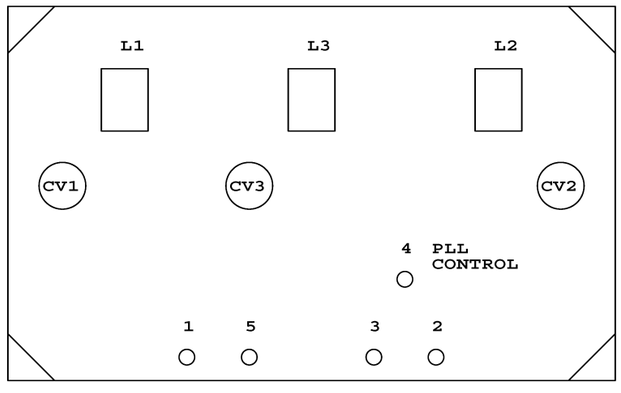
CBD - 375
電源部接続図
RECTIFIER UNIT SCHEMATIC DIAGRAM
added anti-rattle C's

VARICAP TYPE UNKNOWN
VHF TUNER TYPE



VCO CIRCUITBOARD SIDE

(SYNTH BOARD ON THE BACK)



VCO-1 RANGE +/- 70 - 80 MHz (Rx RANGE 0.000.0 - 9.999.9)

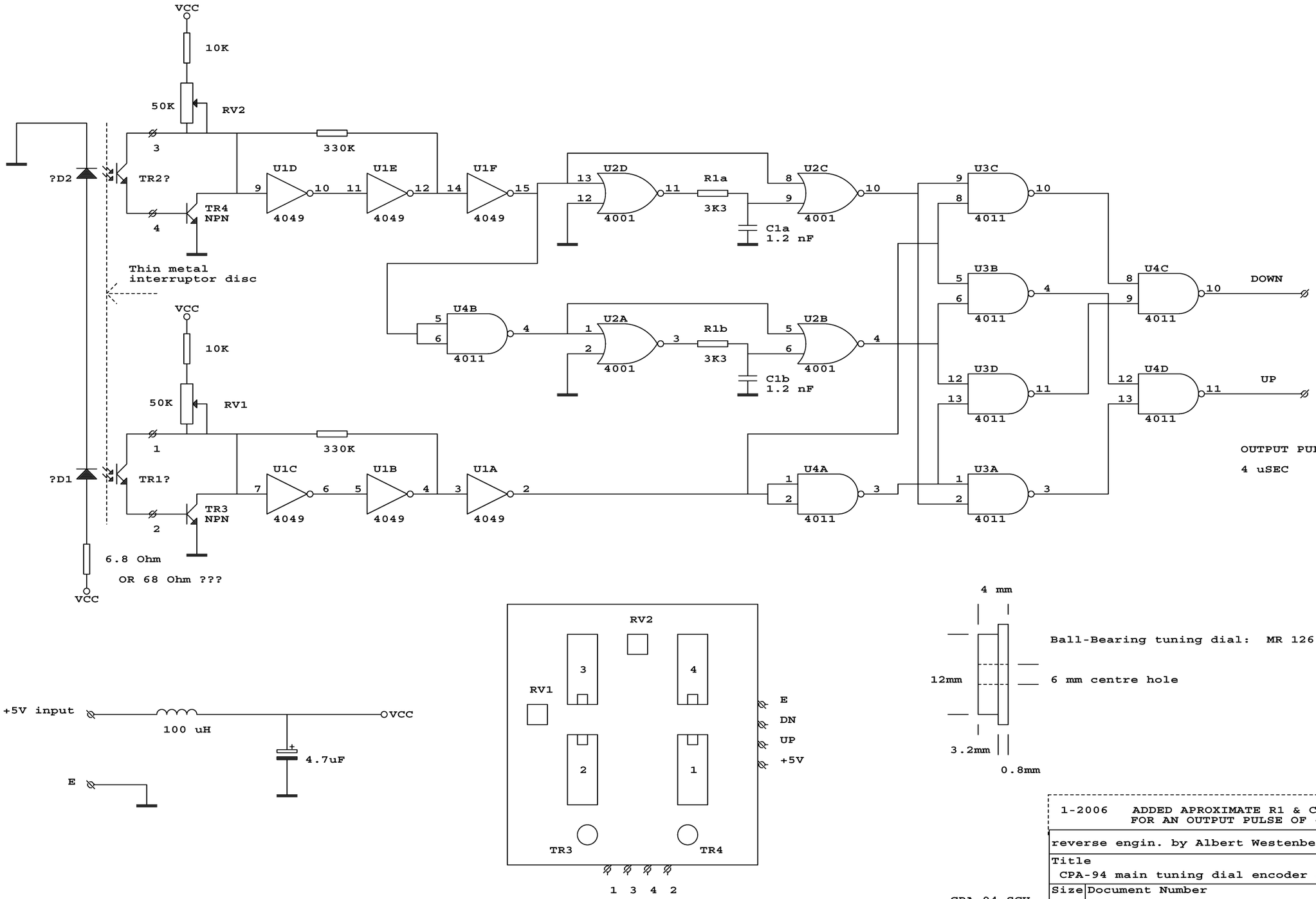
VCO-2 RANGE +/- 80 - 90 MHz (Rx RANGE 10.000.0 - 19.999.9)

VCO-3 RANGE +/- 90 - 100 MHz (Rx RANGE 20.000.0 - 29.999.9)

PLL VOLTAGE RANGE FOR EACH VCO WITHIN 4.00 - 10.50 VOLTS LIMITS

CGA-68.SCH

REVERSE ENGINEERING BY PE1ABR		
Title: MAIN VCO SYNTH NRD-515		
Size: B	Document Number: CGA-68 VCO - DRAWING MDEW00416	REV: A
Date: May 21, 2006	Sheet 1 of 1	



1-2006 ADDED APROXIMATE R1 & C1 VALUES FOR AN OUTPUT PULSE OF 4 uSEC

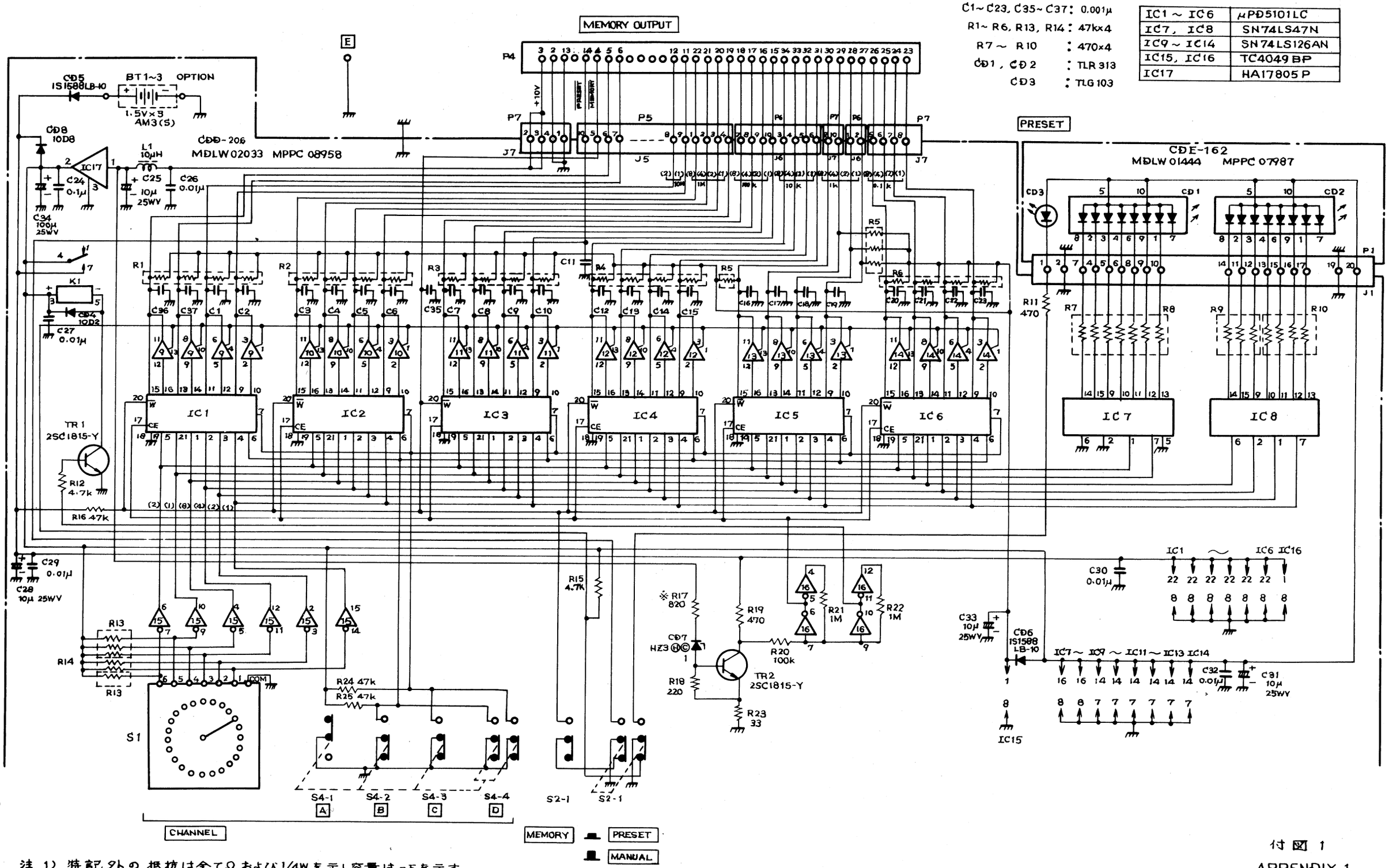
reverse engin. by Albert Westenberg - PA0AWN

Title
CPA-94 main tuning dial encoder JRC NRD515

Size	Document Number	REV
B	Drawn by Walter Geeraert - PE1ABR	4

Date: January 6, 2006 Sheet 1 of 1

CPA-94.SCH



注 1) 特記外の抵抗は全てΩおよび1/4Wを示し容量はpFを示す。
2). ※印は調整用部品を示す。

NOTES 1. UNLESS OTHERWISE INDICATED RESISTANCES ARE IN OHMS CAPACITANCES ARE IN MICRO-MICRO FRADS.
2. ※ VALUES SELECTED IN MANUFACTURE.

付図 1
APPENDIX 1

NDH-518
メモリユニット接続図
MEMORY UNIT SCHEMATIC DIAGRAM

1/1