

482

SERVICE
MANUAL

ST-50/ST-50L

4822 725 50884

marantz®

model ST-50/ST-50L

Synthesized Stereo Tuner

MODEL ST-50/ST-50L SYNTHESIZED STEREO TUNER

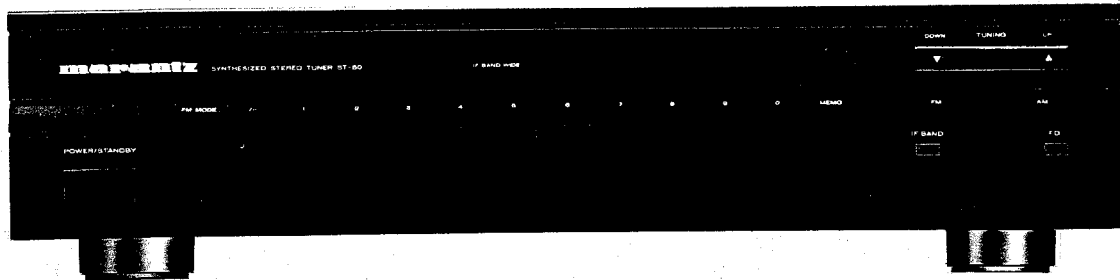
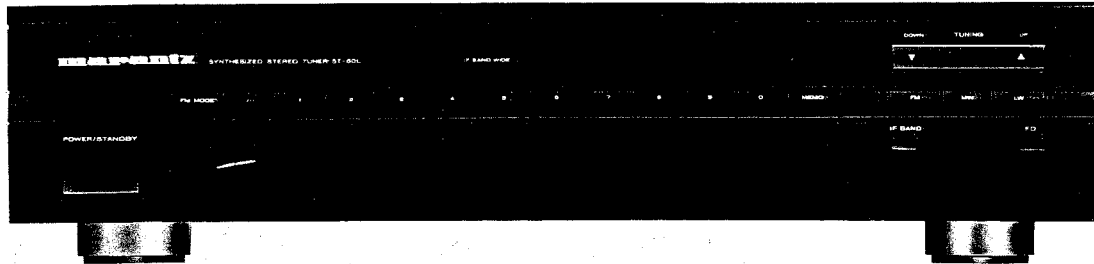


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MODEL ST-50/ST-50L TECHNICAL SPECIFICATIONS (DIN)

FM Stage 87.5~108 MHz

Sensitivity	
DIN mono (s/n 26 dB 75 Ohms)	0.7 μ V
DIN stereo (s/n 46 dB 75 Ohms)	20 μ V
Selectivity adjacent channel 98 MHz	
Wide IF	40 dB
Narrow IF	75 dB
Tuner output (1 kHz 75 kHz Deviation)	940 mV
Signal to noise ratio	
S/N DIN weighted mono	86 dB
S/N DIN weighted stereo	78 dB
Total harmonic distortion mono	
Wide IF	0.05%
Narrow IF	0.15%
Total harmonic distortion stereo	
Wide IF	0.08%
Narrow IF	0.3%
Accuracy of frequency response	
across 30 Hz~15 kHz bandwidth	+0.5/-1.5 dB
Stereo separation	
Wide IF	55 dB
Narrow IF	50 dB

MW Stage (531~1602 kHz)

Sensitivity (s/n 20 dB 30% mod. 1 MHz)	350 μ V
Selectivity 1 MHz 9 kHz	40 dB
Signal to noise ratio at 1 MHz	54 dB

LW Stage (152~282 kHz)

Sensitivity (s/n 20 dB 30% mod. 250 kHz)	800 μ V
Signal to noise ratio at 250 kHz	50 dB

General

Power Requirements

N and W/T versions	220/240V AC, 50/60 Hz
E version (4 Voltages)	110/120/220/240V AC, 50/60 Hz

Dimensions

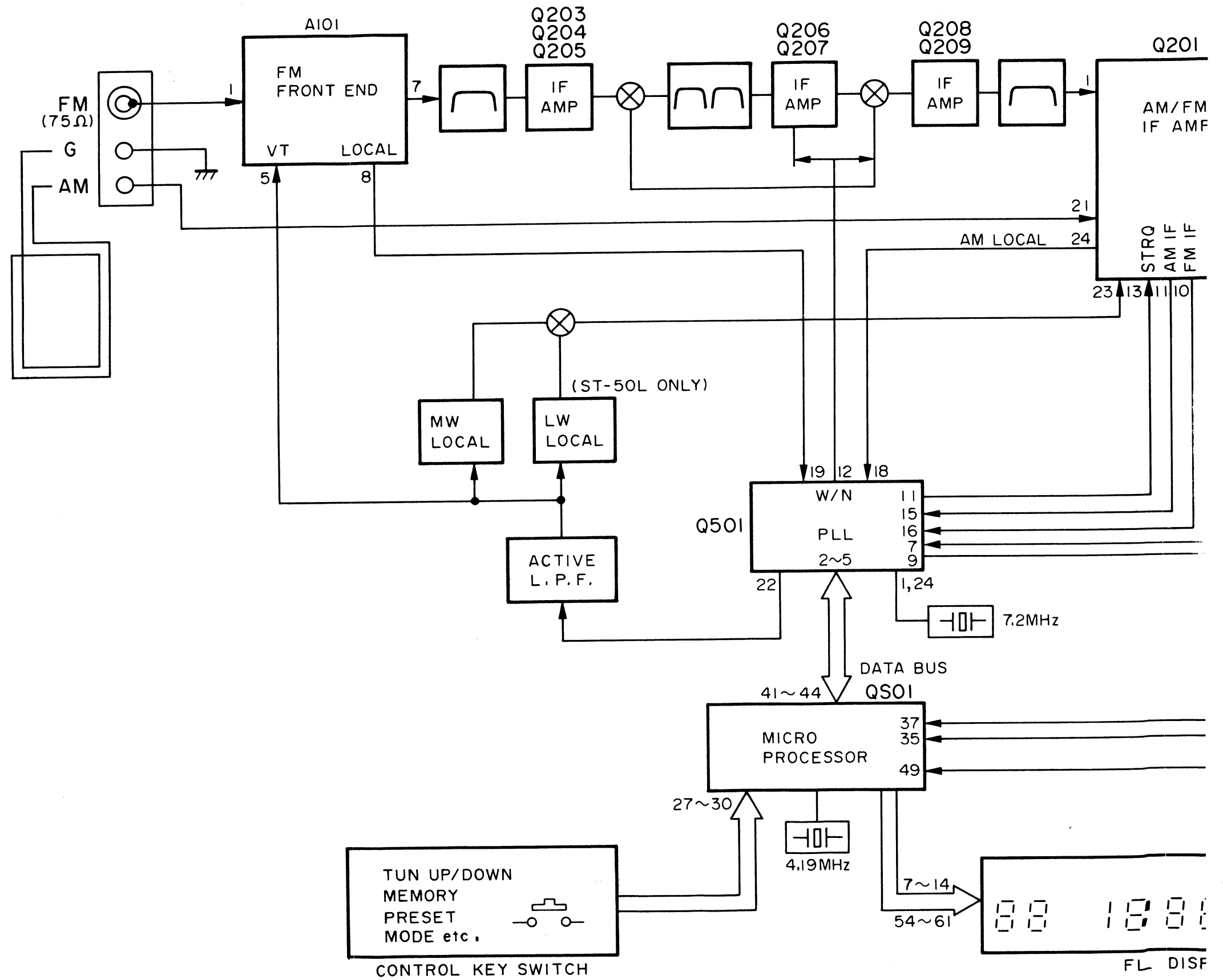
Panel Width	420 mm
Panel Height	86 mm
Depth	334 mm

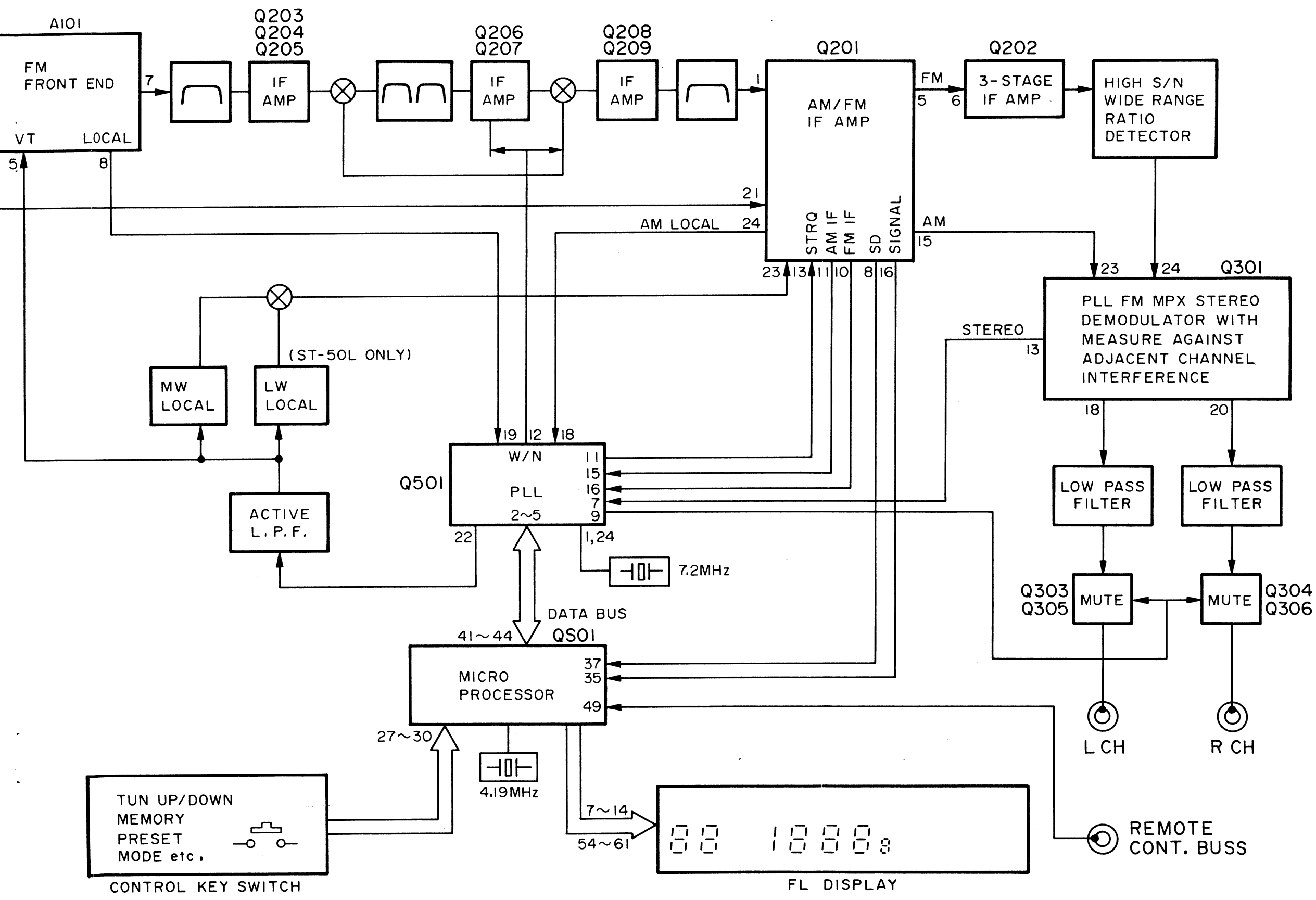
Weight

Unit Alone	4.5 kg
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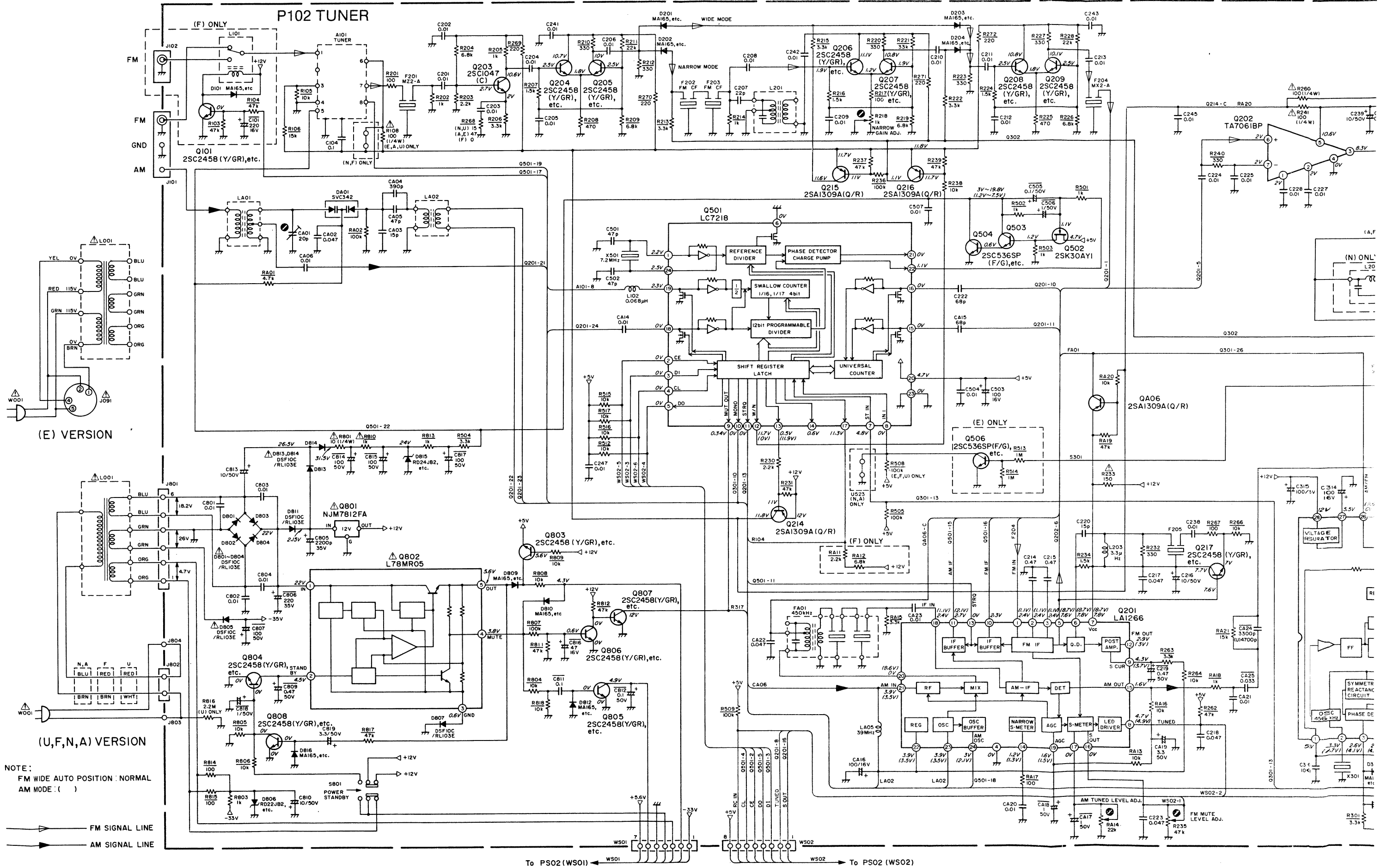
Specifications subject to change without prior notice.

1. BLOCK DIAGRAM



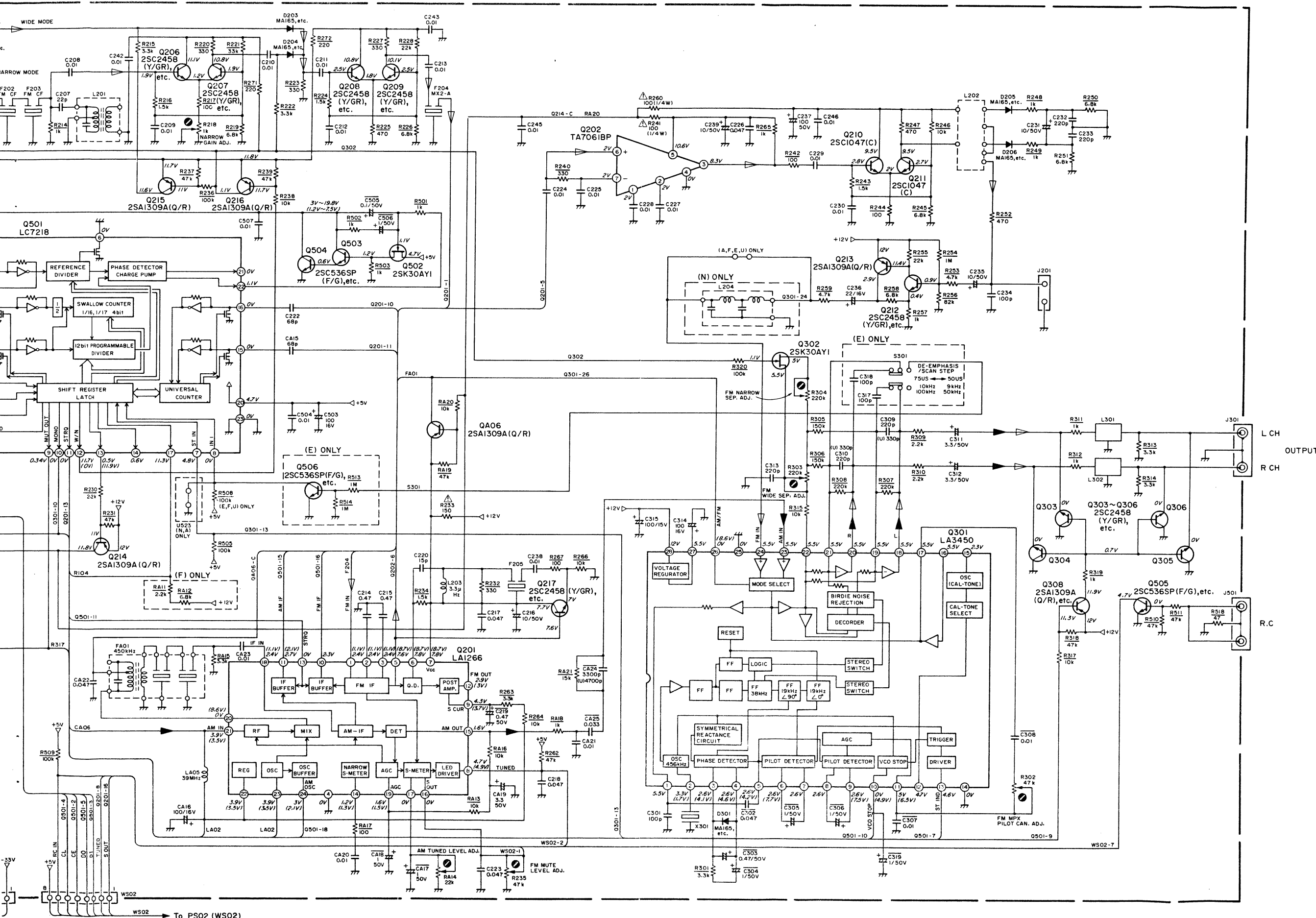


2. SCHEMATIC DIAGRAM (ST-50) FT50



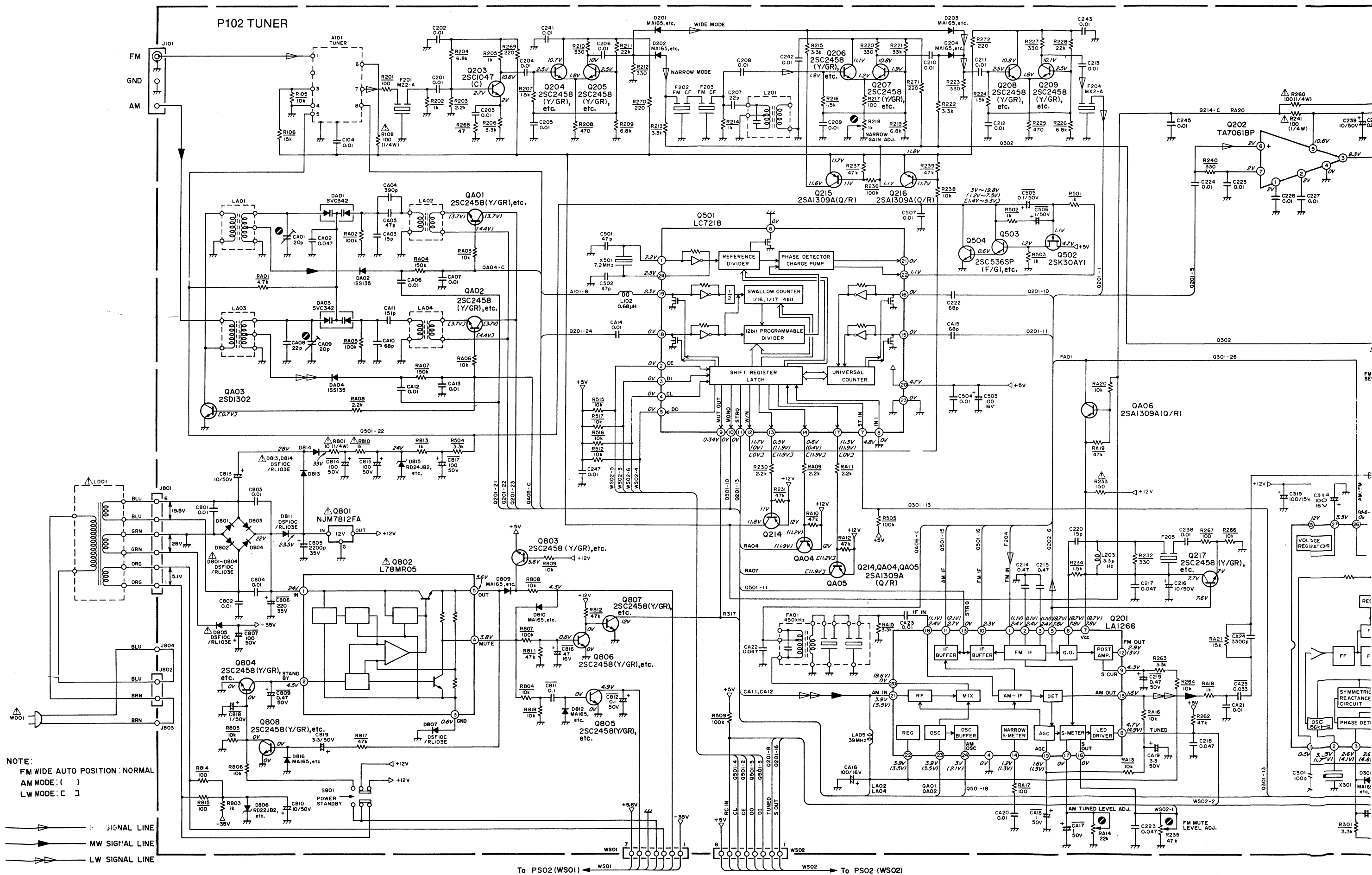
NOTE:
FM WIDE AUTO POSITION: NORMAL
AM MODE: ()

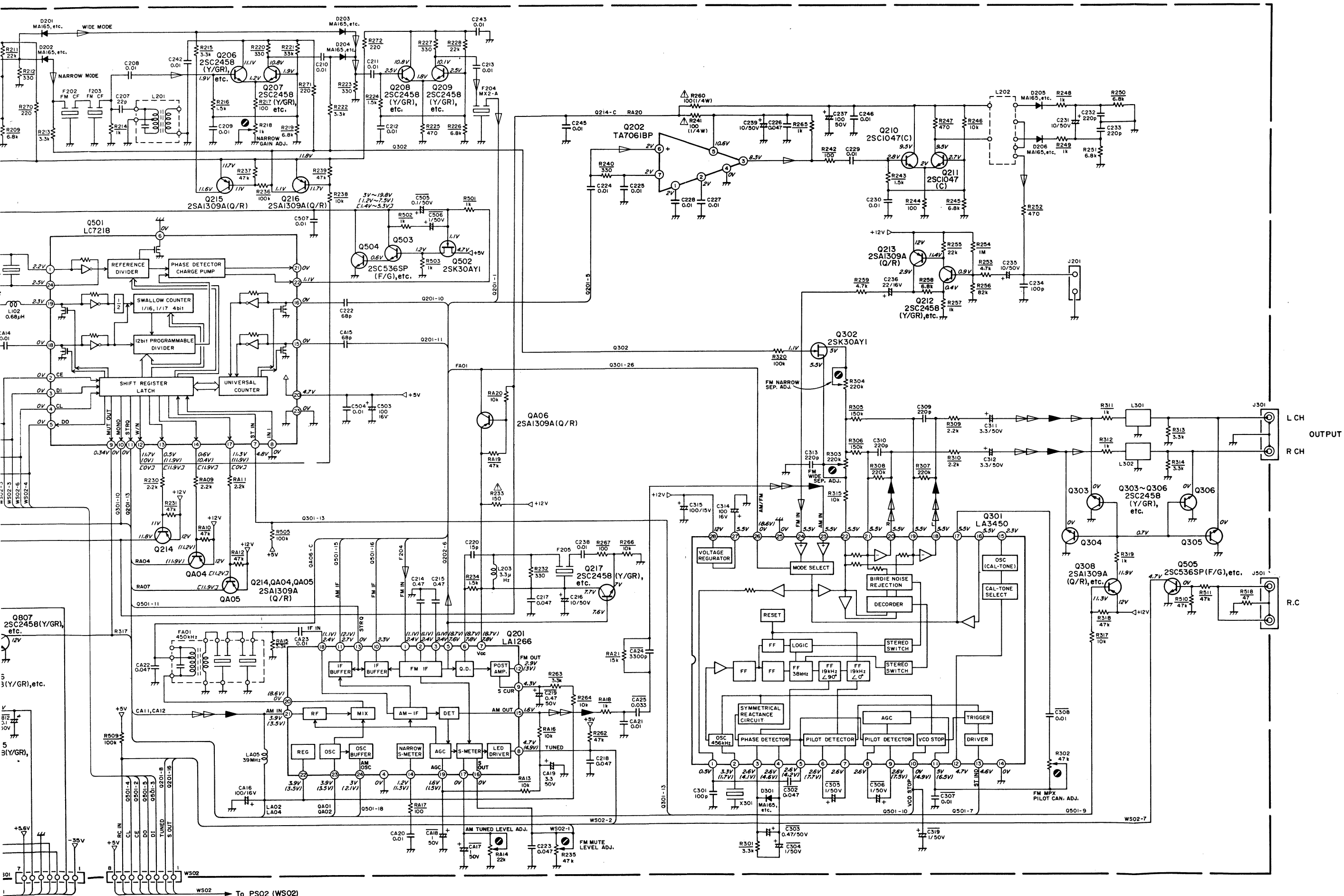
FM SIGNAL LINE
AM SIGNAL LINE



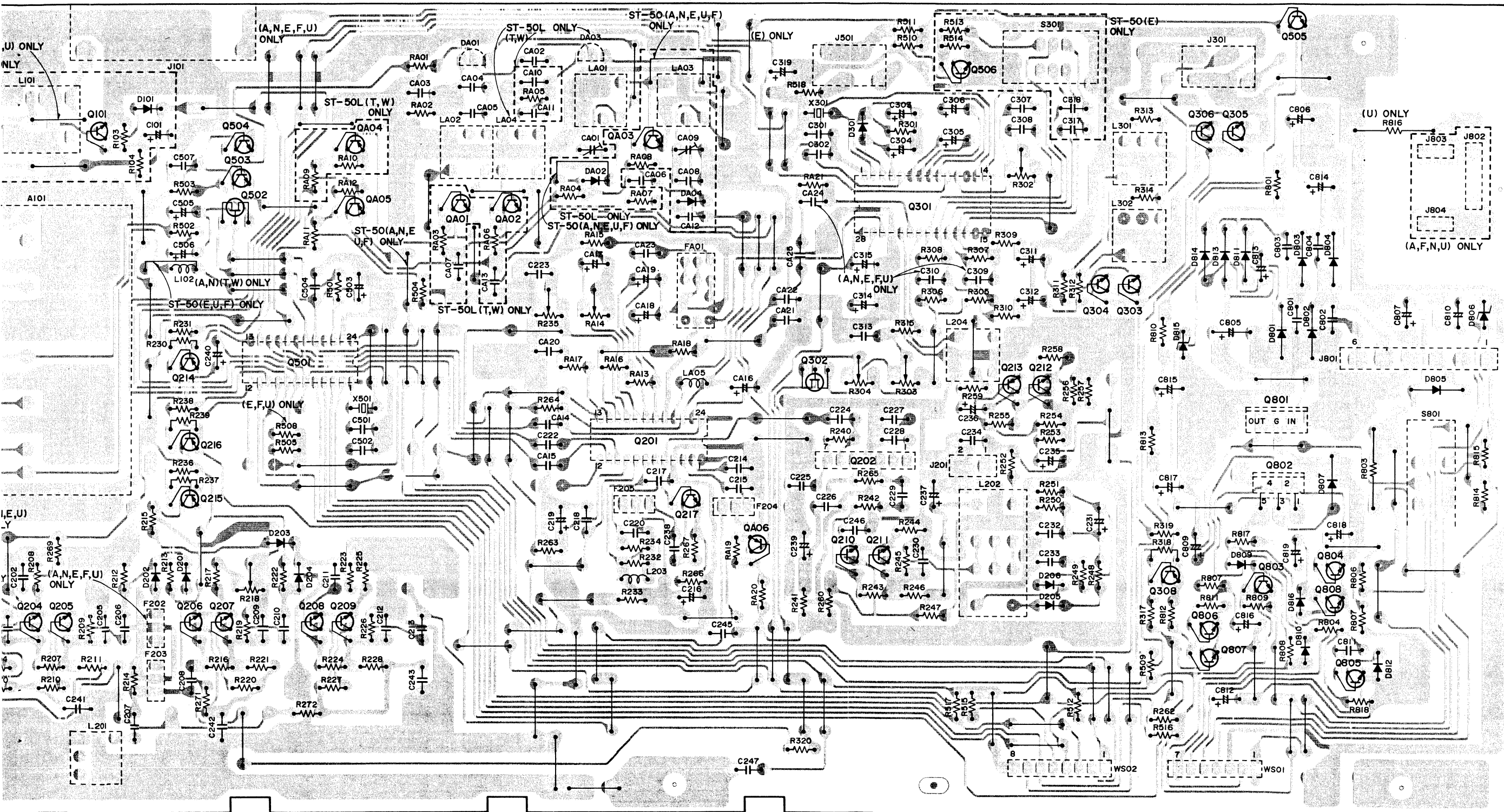
WS02 → To PS02 (WS02)

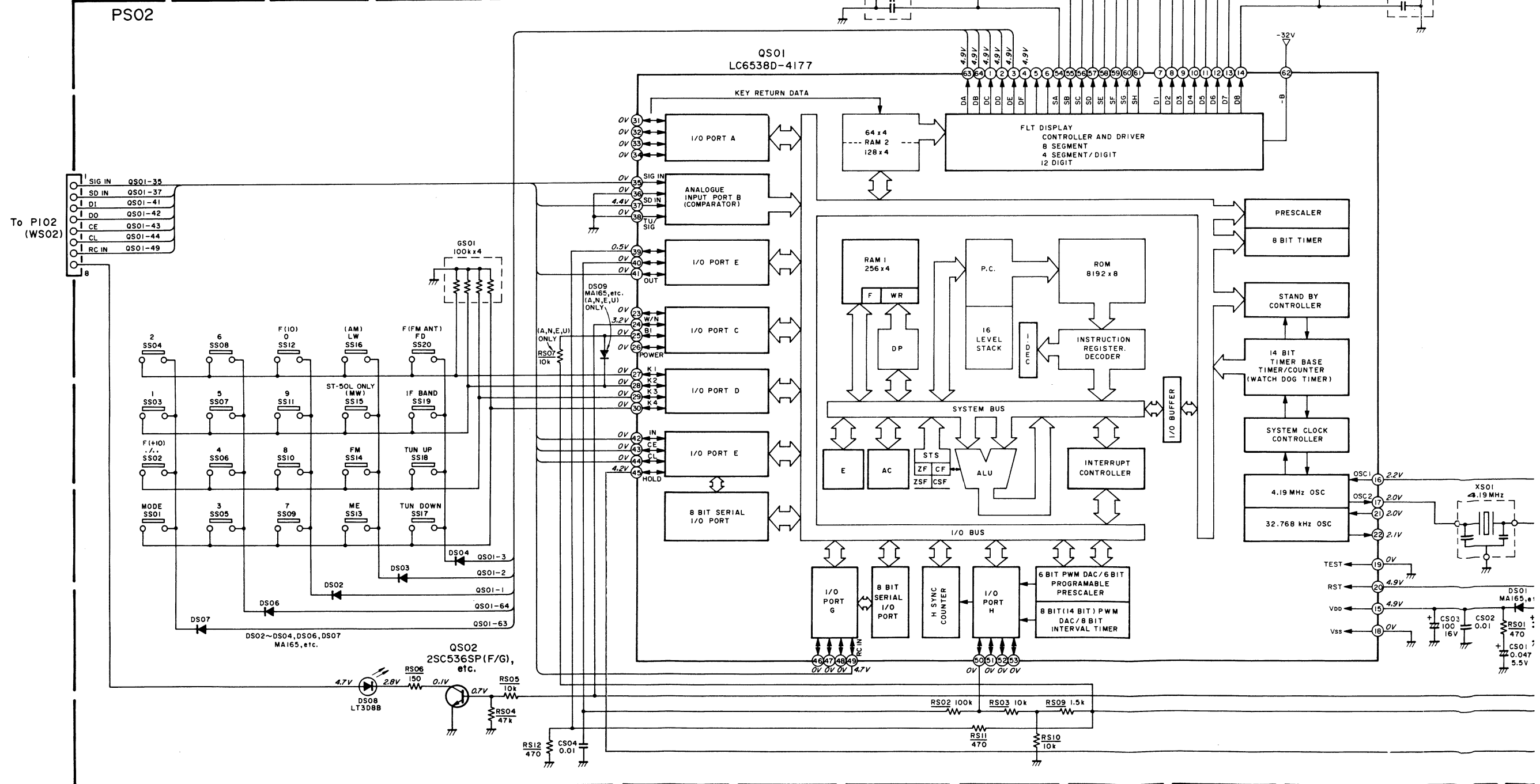
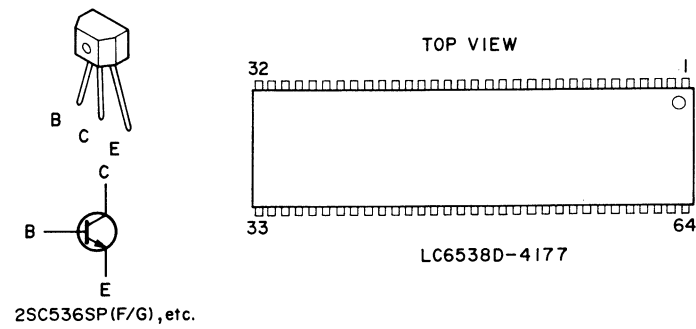
4. SCHEMATIC DIAGRAM (ST-50L)

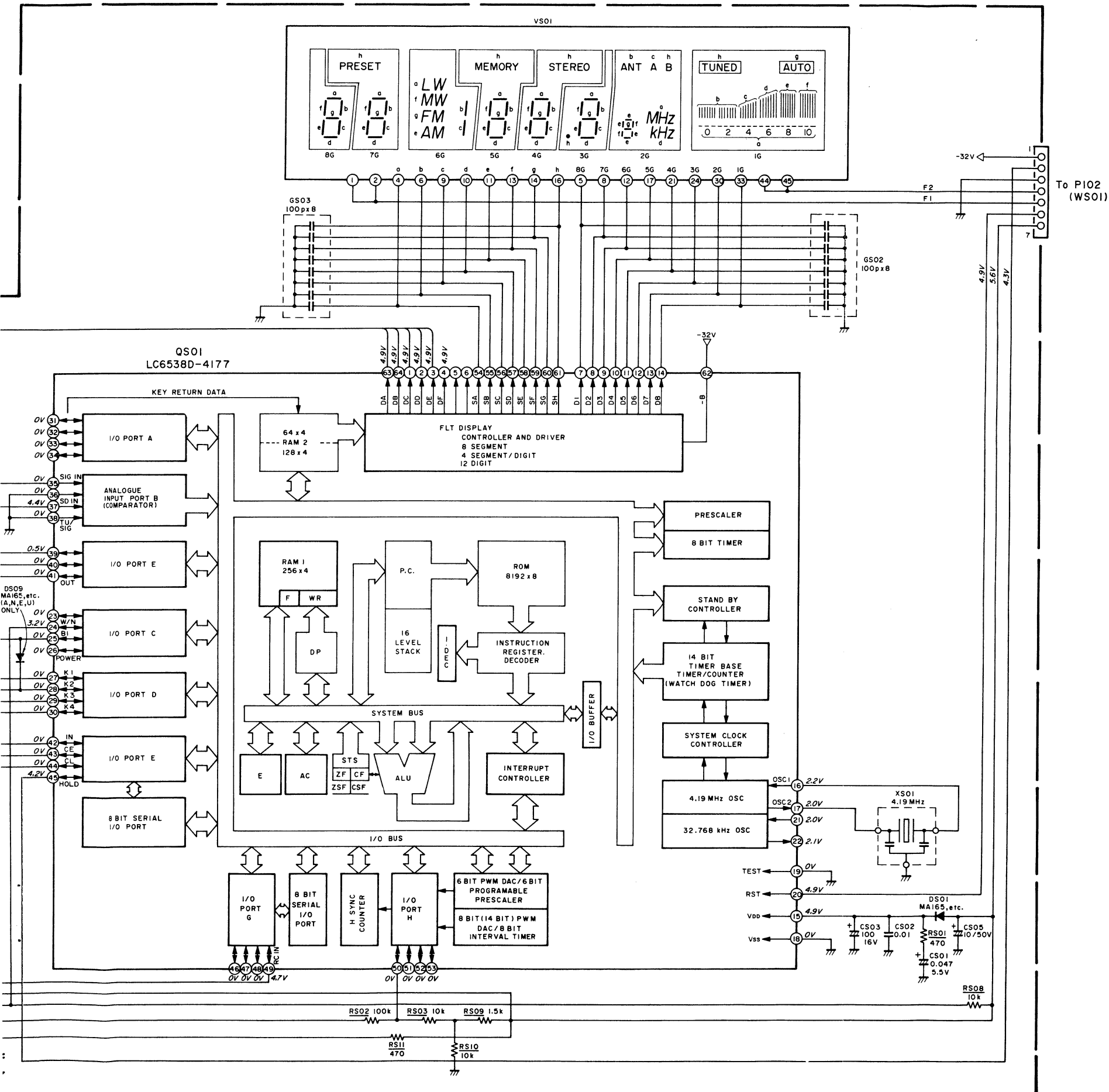




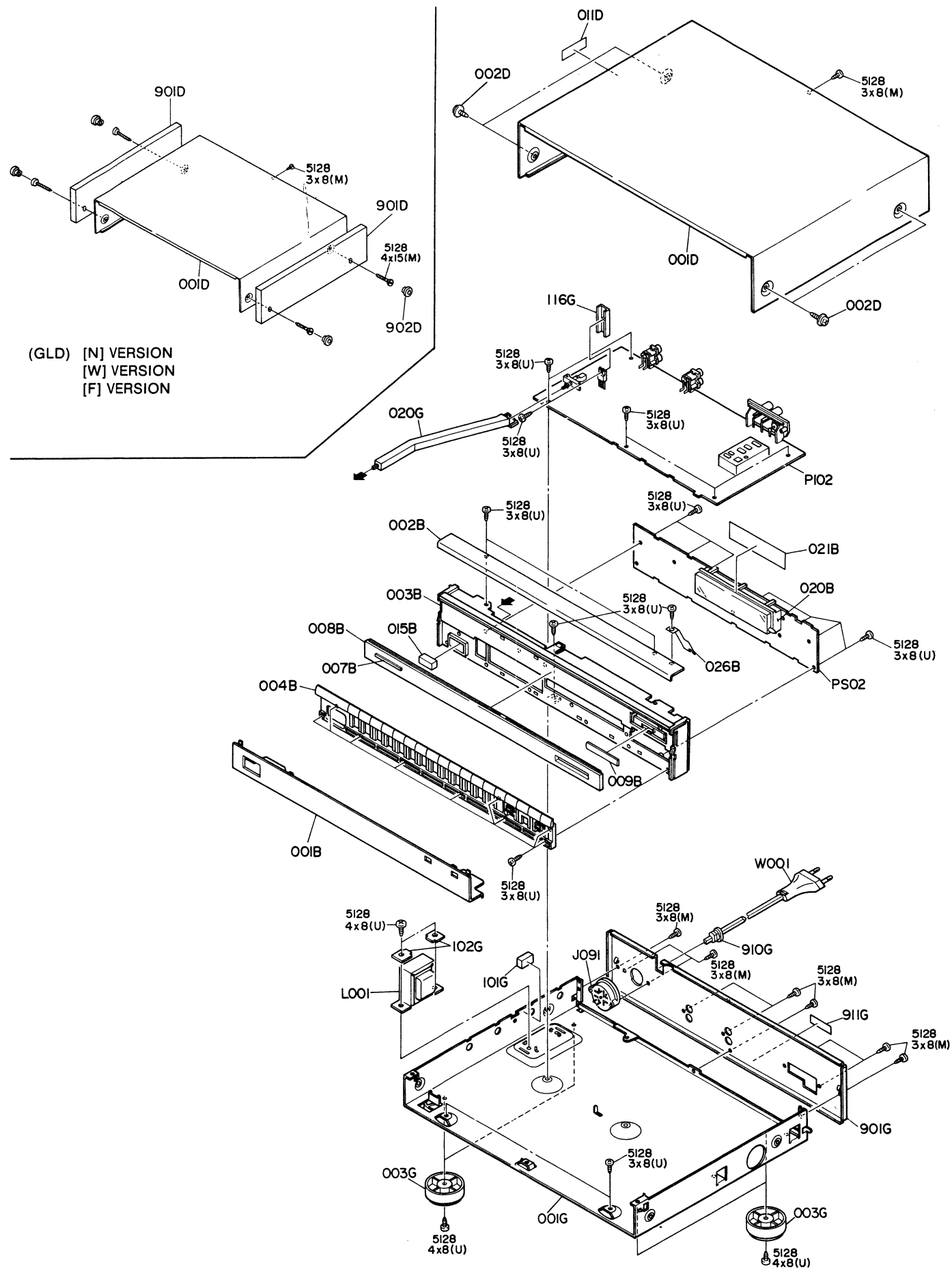
3~Q205 Q101 Q214~Q216 Q502~Q504 Q206~Q209 QA04 QA05 QA01 QA02 QA03 Q201 Q217 QA06 Q302 Q202 Q301 Q506 Q213 Q212 Q304 Q303 Q308 Q306 Q305 Q505 Q801~Q807







6. EXPLODED VIEW AND PARTS LIST



REF. DESIG.	PART NO.	DESCRIPTION
001B	4822 426 51394	Front Panel (BLK)
001B	4822 426 51384	Front Panel (GLD) [E, N, W]
002B	4822 426 51402	Front Panel (BLK) [E, N, T, W]
	4822 426 51385	Front Panel (GLD) [E, N, W]
	4822 426 51395	Front Panel (BLK) [U]
003B	4822 464 70561	Chassis, Front (BLK)
		Chassis, Front (GLD) [N, E, W]
004B	4822 410 60548	Button Assy, Hinge (BLK) [A, E, N]
	4822 410 60344	Button Assy, Hinge (GLD) [N, E]
	4822 410 60345	Button Assy, Hinge (BLK) [T, W]
	4822 410 60346	Button Assy, Hinge (GLD) [W]
	4822 410 60451	Button Assy, Hinge (GLD) [U]
007B	4822 459 10943	Badge, (BLK)
		Badge, (GLD) [N, E, W]
		Badge [U]
008B	4822 450 40107	Window (ST-50)
	4822 450 61456	Window (ST 50L)
	4822 450 61486	Window (FT50)
009B	4822 410 60533	Button, Tuning (BLK)
	4822 410 60359	Button, Tuning (GLD) [N, E, W]
	4822 410 60452	Button (BLK) [U]
015B	4822 410 60194	Button, Power (BLK)
	4822 410 60358	Button, Power (GLD) [N, E, W]
020B		Holder, FL
021B		Sticker, FL
026B	4822 492 70406	Leaf Spring
901D	4822 426 30143	Side Panel, (GLD) [N,W]
902D	4822 444 60607	CAP, (GLD) [N,W]
003G	4822 462 41477	Leg (ST-50/50L)
	4822 462 41402	Leg (FT50)
020G		Link, Power
910G	4822 532 60948	Bushing, AC Cord
Δ L001	4822 146 21503	Power Transformer [A, N, T, W]
	4822 146 21458	Power Transformer [E]
	4822 146 21486	Power Transformer [U]
Δ J091	4822 272 10235	Voltage Selector [E]
001T	4822 736 20523	User Manual (ST-50/ST-50L)
	4822 736 20477	User Manual (FT50)

U=FT50 only

7. SERVICE PROGRAM

1. T.R POINT ME (tracking point memory) mode.

From power OFF (backup mode), when the power switch is pressed ON while pressing the FM or AM (MW) band key simultaneously, the T.R POINT ME mode is called.

		P1	P2	P3	P4	P5	P6	P7	P8	P9
FM	EUROPE	90MHz	98MHz	106MHz						
	USA	90MHz	98MHz	106MHz						
	JAPAN	78MHz	83MHz	88MHz						
AM	9kHz without LW				603kHz	999kHz	1404kHz	—	—	—
	9kHz with LW				603kHz	999kHz	1404kHz	173kHz	209kHz	272kHz
	10kHz				600kHz	1000kHz	1400kHz	—	—	—

		P10	P11	P12 ~ P30
FM	EUROPE			
	USA			—
	JAPAN			
AM	9kHz without LW	—	—	
	9kHz with LW	152kHz	531kHz	
	10kHz	—	—	

—: Low end frequency of the FM or AM (MW) band.

2. Segment check mode

1) In the above situation, further press the FM or AM (MW) band key simultaneously.

2) The muting signal is output and the service program is started. During the execution of the service program, muting remains ON.

3) The fluorescent display all goes out once, lighting is performed from segments D1-a to D8-h sequentially one after another at a rate of 0.3 second/segment. (A segment once lit does not go out as it stands.)

4) When all the segments light, the segment check mode is terminated with their lighting for 3 seconds as they are. (The band and frequency engaged right before the segment check mode are restored.)

During the lighting for 3 seconds, when the MEMORY key is pressed, all the segments continue lighting as they are.

When the MEMORY key is pressed once again, all the segments flicker for 3 seconds (at 1 Hz), with which the segment check mode is then terminated.

5) During the execution of the segment check mode, any other key than the MEMORY key is not accepted.

6) In the state of 3), when the MEMORY key is pressed, the state that all the segments light is entered. Namely, by the pressure of the MEMORY key, it is possible to skip over the process that all segments light one after another in sequence.

* During the execution of the service program, when the power is turned once OFF and then ON, the service program is canceled.

8. TUNER ALIGNMENT PROCEDURES

Set to T.R point ME mode of the service program.

(P2) to (P6) in the Digital Readout Frequency Setting column shows preset numbers for the above mode.

Before alignment, connect a dummy resistor of 47 kohms to the tuner output terminal.

8-1. FM Alignment Procedures

(Function switch at "FM" position and MODE switch at "MONAURAL" position)

● FM RF Alignment (IF BAND switch at "WIDE" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator to FM antenna terminal. Adjust the RF signal output so that slight noise occurs at the upper and lower sides of the output waveform.	98.0 MHz	AC VTVM to L- or R-channel output (J301)	98.0 MHz (P2)	Front end IFT for maximum output and minimum distortion.
2	FM signal generator 500 μ V output to FM antenna terminal (75-ohm).	98.0 MHz	"0" center meter or DC current meter (100 μ A range) to J201.	98.0 MHz (P2)	L202 (primary winding) core so that the meter points to its center or reads "0".
3			Distortion meter to L- or R-channel output (J301)		L202 (secondary winding) core for minimum distortion.

● FM IF Alignment

(Function switch at "FM" position and MODE switch at "AUTO STEREO" position)

1) IF BAND switch at "WIDE" position

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 500 μ V output modulated by MPX signal generator to FM antenna terminal (75-ohm). Modulation level: IHF 67.5 kHz +9 % pilot dev. DIN 40 kHz +8 % pilot dev.	Stereo L-channel (1,000 Hz)	VTVM to L-channel output (J301 L-channel)	98.0 MHz (P2)	Front end IFT for minimum distortion.
2		Stereo R-channel (1,000 Hz)	VTVM to R-channel output (J301 R-channel)		

2) IF BAND switch at "NARROW" position

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 500 μ V output modulated by MPX signal generator to FM antenna terminal (75-ohm). Modulation level: IHF 67.5 kHz +9 % pilot dev. DIN 40 kHz +8 % pilot dev.	Stereo L-channel (1,000 Hz)	VTVM to R-channel output (J301 R-channel)	98.0 MHz (P2)	L201 for minimum distortion.
2		Stereo R-channel (1,000 Hz)	VTVM to L-channel output (J301 L-channel)		

• **Muting Level Alignment**

(Function switch at "FM" position and MODE switch at "AUTO STEREO" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 6.3 μ V output to FM antenna terminal (75-ohm)	98.0 MHz	AC VTVM to L- or R-channel output (J301)	98.0 MHz (P2)	IF BAND WIDE R325/NARROW R218 to a point at which output appears.

• **Multiplex Alignment**

(Function switch at "FM" position and MODE switch at "AUTO STEREO" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 500 μ V output modulated by MPX signal generator to FM antenna terminal (75-ohm) Modulation level: IHF 67.5 kHz +9 % pilot dev. DIN 40 kHz +8 % pilot dev.	Stereo L-channel (1,000 Hz)	VTVM to R-channel output (J301 R-channel)	98.0 MHz (P2)	IF BAND WIDE R303/NARROW R304 so that channel separation is identical between both channels.
2		Stereo R-channel (1,000 Hz)	VTVM to L-channel output (J301 L-channel)		
3	Repeat steps 1 and 2.				
4	RF generator to FM antenna terminal (75-ohm) with 500 μ V FM stereo signal	Pilot only	VTVM to R- and L-channel outputs (J301)	—	R302 so that minimum output is identical between both channel.

8-2. AM/LW Alignment Procedures

(Function switch at "AM" position)

• **AM IF Alignment**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	Sweep generator to AM antenna terminal	450 kHz	AC VTVM to L- or R-channel output (J301)	—	FA01 for maximum and symmetrical waveform.

● **AM RF Alignment**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	AM signal generator to AM loop antenna in a test loop	603 kHz	VTVM to L- or R-channel output (J301)	603 kHz (P4)	LA01 for maximum output.
2		1,404 kHz		1,404 kHz (P6)	CA01 for maximum output.
3	Repeat steps 1 and 2 until sensitivity is maximized.				

● **LW RF Alignment**

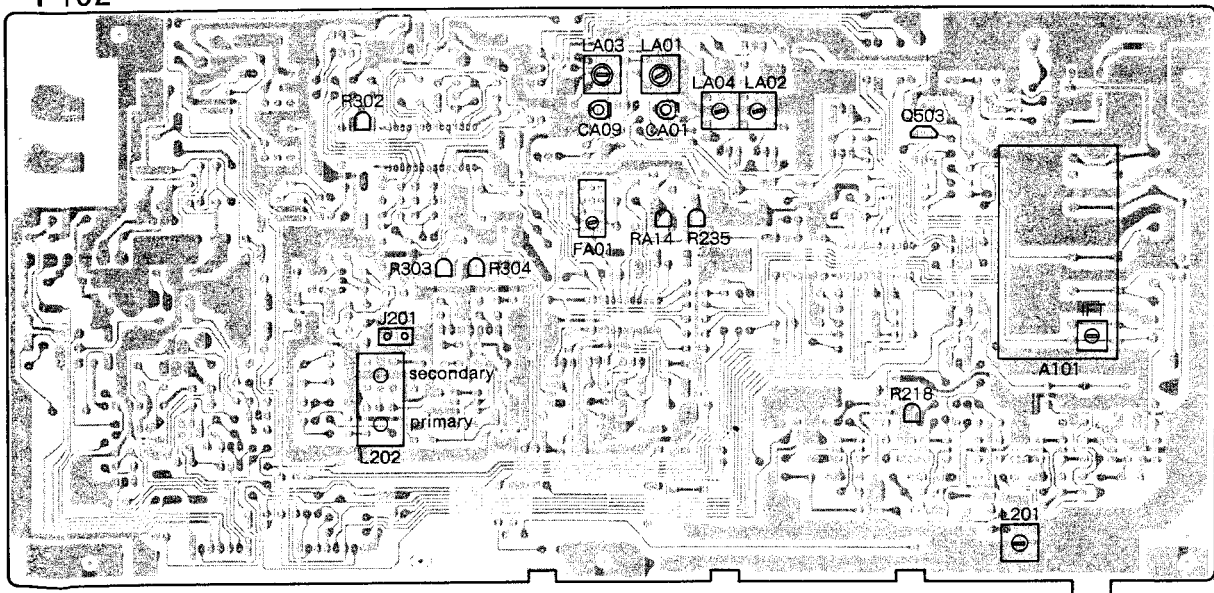
Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	AM signal generator to AM loop antenna in a test loop	173 kHz	VTVM to L- or R-channel output (J301)	173 kHz (P7)	LA03 for maximum output.
2		272 kHz		272 kHz (P9)	CA09 for maximum output.
3	Repeat steps 1 and 2 until sensitivity is maximized.				

● **AM Auto Stop Alignment (Function switch at "AM" position)**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	RF generator to AM loop antenna in a test loop (500 μ V/m)	999 kHz	—	999 kHz (P5)	RA14 so that the first unit of the signal indicator on the display tube lights.

9. ALIGNMENT POINTS AND TEST POINTS

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10. TUNER MICROPROCESSOR SPECIFICATIONS

10-1. Receiving Frequency Range, Channel Space, Reference Frequency and Intermediate Frequency

		Receiving Frequency	Channel Space	Reference Frequency	Intermediate Frequency
Japan	FM	76.0~90 MHz	100 kHz	25 kHz	-10.7 MHz
	AM	531~1602 kHz	9 kHz	9kHz	+450 kHz
U.S.A.	FM	87.5~108.0 MHz	100 kHz	25 kHz	+10.7 MHz
	AM	520~1710 kHz	10 kHz	10 kHz	+450 kHz
Europe	FM	87.50~108.00 MHz	50 kHz	25 kHz	+10.7 MHz
	MW	531~1602 kHz	9 kHz	9 kHz	+450 kHz
	LW	152~282 kHz	1 kHz	1 kHz	+450 kHz

10-2. Tuning Function

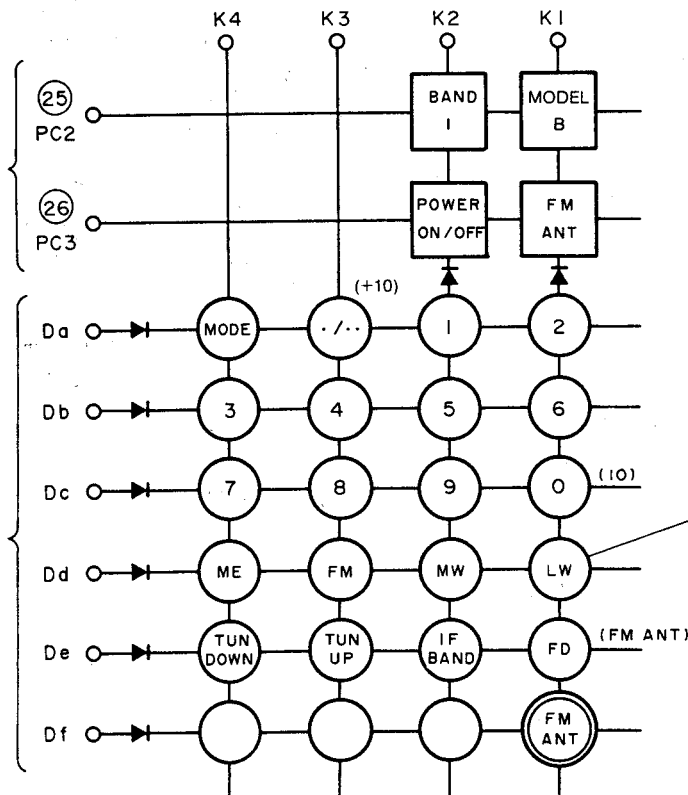
- 1) Automatic Up/Down Tuning (sawtooth wave mode)
- 2) Manual Up/Down Tuning

The tuning frequency varies steppedly when the momentary switch is pressed or rapidly at a rate of approximately 70 msec/step when the same switch is pressed continuously for more than 0.5 sec. In this situation, if the said switch is released from hand pressure, automatic tuning is performed.

3) Preset Memory Call

- a. Random access to 24 FM and AM (MW+LW) stations (Except for model A for Japan)
Call by a numeral key + the single/double (./..) digit key + a numeral key where necessary
- b. Random access to 20 FM and AM stations (only for models for Japan)
Call by a numeral key + (+10 key where necessary).

Key Matrix



()内は JAPAN 仕向のみ

10-3. Description of Keys

0 ~ 9: Numeral keys

➤ preset memory writing, call and direct access call

FM MW LW: Band selection keys

With a model without LW, the "LW" key falls invalid.

MODE: Mono/stereo output selection key

At FM, when this key is pressed, OUT1 of PLL IC LC7218 varies between "LOW" and "HIGH" cyclically. In synchronization with this variation, "AUTO" in the FL display flickers.

TUN UP TUN DOWN: Tuning up/down keys

The tuning frequency increases or decreases by 1 step at each pressure (for less than 0.5 second), and varies rapidly at a rate of approximately 70 msec/step when either is pressed continuously for 0.5 second or more. In this situation, when that key is released from hand pressure, auto tuning is performed.

ME: Memory writing key

When the key is pressed, "MEMORY" flickers (at 1 Hz) for approximately 5 seconds, thus indicating that the memory is capable of writing. The wanted number is input by means of a numeral key, the single/double (./.) digit key and a numeral key where necessary, in which way at the point of time when a digit of units order is input, the frequency then being memorized.

IF BAND: FM IF WIDE/NARROW selection key

At FM, when this key is pressed, the OUT3 signal of PLL IC LC7218 varies between "LOW" and "HIGH" in a cyclic manner.

./.: Single/double digit key (except for models for Japan)

This key is used in calling one of preset station numbers P10 to P30. When the key is pressed, "PRESET" is displayed, the LED segment g of units order digits lights and that of tens order digit flickers.

Flickers (for 5 seconds at 1 Hz)

./.: Single/double digit key (only for models for Japan)

This key is used in calling one of preset station numbers P10-P20. When the key is pressed, "PRESET" is displayed, and the LED segment g of units order digit flickers.

Flickers (for 5 seconds at 1 Hz)

FM ANT: Antenna A/B selection key (only for models for Japan)

At FM, when this key is pressed, OUT6 of PLL IC LC7218 varies between "LOW" and "HIGH" in a cyclic manner. In synchronization with this variation, "ANT A.B" on the FL display flickers.

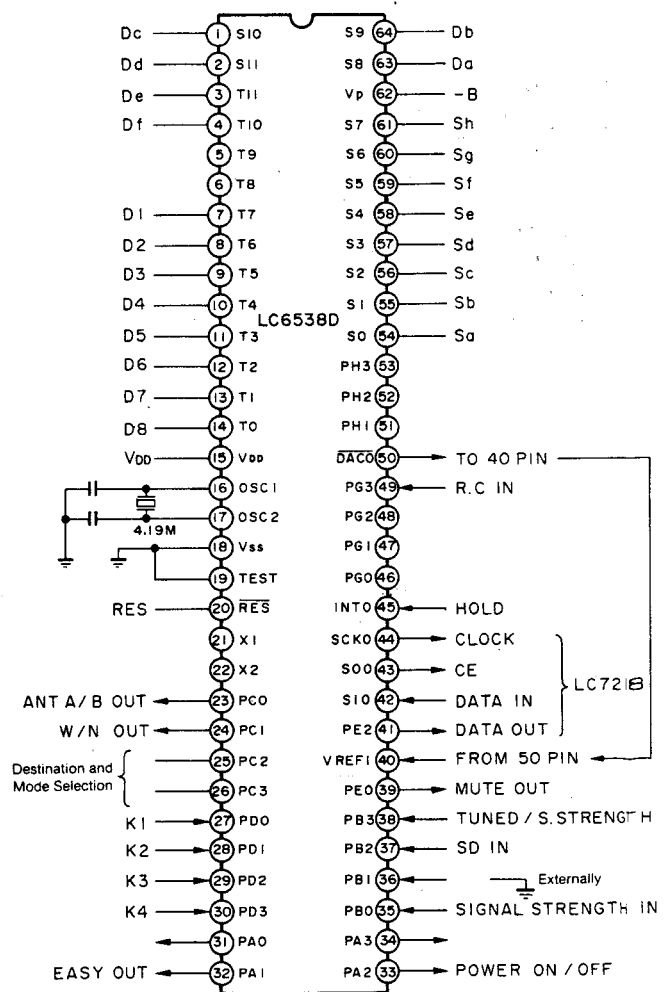
FD: Frequency direct access tuning key (except for models for Japan)

When this key is pressed, the direct access tuning mode is entered whether in FM or in AM.

FM ANT: Same operation with **FM ANT** irrespective of any model whatever its destination.

* This key depends on the initial diode setting.

Pin Connections



PU: Output with pull-up MOS
OD: Open-drain output

Pin Functions

Symbol	No. of pin(s)	I/O	Function	Output driver	Option	When resetting
V _{DD}	1	—	Power supply pin	—	—	—
V _{SS}	1	—				
TEST	1	I	LSI test pin, which should necessarily be connected V _{SS} for use.	—	—	—
RES	1	I	System reset input. Initial reset at $\overline{\text{RES}} = \text{"LOW"}$	—	—	—
OSC1	1	I	Pins to constitute the main system clock oscillation circuit. External clock is input to OSC1 with OSC2 opened. With built-in feedback resistor.	—	—	—
OSC2	1	O				
X1	1	I	Pins to constitute the sub clock oscillation circuit. External clock is input to X1 with X2 opened. With built-in feedback resistor and damping resistor	—	—	—
X2	1	O				
T ₀ ~T ₁₁	12	O	FL display tube digit exclusive output. Display RAM fixed address output for static mode.	P-ch high withstand voltage and large current type	Pull-down resistor existence/non-existence (bit-wise)	L
S ₈ ~S ₁₁	4	O	FL display tube digit/segment output. Display RAM fixed address output for static mode.	P-ch high withstand voltage and large current type	Pull-down resistor existence/non-existence (bit-wise)	L
S ₀ ~S ₇	8	O	FL display tube segment exclusive output. Display RAM fixed address output for static mode.	P-ch high withstand voltage and large current type	Pull-down resistor existence/non-existence (bit-wise)	L
V _P	1	—	FL display tube output pull-down resistor load power input.	—	—	—
PA ₀ ~PA ₃	4	I/O	I/O in units of bit or unit of 4 bits Input of key scan low-threshold type with a function to automatically read the key scan data into RAM.	+15 V withstand voltage and medium current type	PU or OD for each bit	H
PB ₀ ~PB ₃	4	I	Built-in comparator of 4 independent channels. Reference voltage selectable between external and internal. Input in units of bit or unit of 4 bits. At low-speed mode (1/32 mode, sub clock mode), input function is stopped.	—	—	Input function stopped
PC ₀ ~PC ₃	4	I/O	I/O in units of bit or unit of 4 bits	+15 V withstand voltage and large current type	● PU or OD for each bit ● Output when resetting	H/L (option)
PD ₀ ~PD ₃	4	I/O	I/O in units of bit or unit of 4 bits	+15 V withstand voltage and large current type	● PU or OD for each bit ● Output when resetting	H/L (option)
PE ₀ ~PE ₂	4	I/O	I/O in units of bit or unit of 3 bits PE ₀ /V _{REF0} Used with external reference input of PB1-PB3 PE ₁ /V _{REF1} Used with external reference input of PB0 PE ₂ /START Used with HALT control START	+15 V withstand voltage and medium current type only of PE ₂ . Normal withstand voltage and medium current type of others.	PU or OD for each bit	H
PF ₀ ~PF ₃	4	I/O	I/O in units of bit or unit of 4 bits PF ₀ /SI ₀ Used with serial input SI ₀ PF ₁ /SO ₀ Used with serial output SO ₀ PF ₂ /SCK ₀ Used with serial clock I/O SCK ₀ PF ₃ /INT ₀ Used with INT ₀ interrupt input	+15 V withstand voltage and medium current type	PU or OD for each bit	H
PG ₀ ~PG ₃	4	I/O	I/O in units of bit or unit of 4 bits PG ₀ /SI ₁ Used with serial input SI ₁ PG ₁ /SO ₁ Used with serial output SO ₁ PG ₂ /SCK ₁ Used with serial clock I/O SCK ₁ PG ₃ /INT ₁ Used with INT ₁ interrupt input	+15 V withstand voltage and medium current type	PU or OD for each bit	H
PH ₀ ~PH ₃	4	I/O	I/O in units of bit or unit of 4 bits PH ₀ /DAC ₀ Used with 6-bit PWM D/A output PH ₁ /DAC ₁ Used with 8/14-bit PWM D/A output PH ₂ /SQR Used with square wave pulse output PH ₃ /HCNT Used with horizontal sync detection input	+15 V withstand voltage and medium current type	PU or OD for each bit	H

10-4. Pin Description

Sa~Sh: Fluorescent display segment signals

D1~D8: Fluorescent display digit signals and key return signals

Da~Dr: Key return signals

K1~K4: Key input, diode matrix input

CLOCK, CE, DATA IN, DATA OUT: Signals transferred to PLL IC LC7218

SD IN: Station detector signal input

When the SD IN pin becomes "LOW" as regards a frequency band, the STRQ pin (LC7218 OUT2) becomes "HIGH" so that PLL IC performs IF counting. As a result of this, when FM 10.7 MHz \pm 10 kHz, MW 450 kHz \pm 3 kHz or LW 450 kHz \pm 0.6 kHz is obtained, "TUNED" lights, while when in the auto tuning mode, the station scanning stops.

S.STRENGTH IN: FM/AM signal strength input

The DC voltage from the tuner is input to make the 5-dot segment signal strength indicator light.

MUTE OUT: Audio mute output (active "LOW")

Exactly the same output as OUT0 of PLL IC LC7218

W/N OUT: WIDE/NARROW indicator output

Exactly the same output as OUT3 of PLL IC LC7218

ANT A/B OUT: Antenna A/B indicator output (only for models for Japan)

Exactly the same output as OUT6 of PLL IC LC7218

TUNED/SIGNAL STRENGTH: Determines the fluorescent display ON/OFF.

* When this pin is at "0", "TUNED" (D8-Sh) is not lit independent of the "LOW"/"HIGH" state of SD.

* When this pin is at "1", D8 and Sa-Sf are not lit independent of the "LOW"/"HIGH" state of SD or the DC input of SIGNAL STRENGTH IN.

Due to the "LOW"/"HIGH" operation of this pin, some models have the fluorescent display ON/OFF determined.

"0" (LOW): Signal strength indicator lights.

"1" (HIGH): "TUNED" lights.

- Sa~Sh
- D1-D8
- FM MONO, W/N OUT, ANT A/B OUT, POWER ON/OFF OUT

Any above pin becomes "HIGH" from "LOW" after holding and starts output 0.5 second after.

BAND 1: Destination selection initial setting diode
[combined with port 8 of PLL IC LC7218 (Q501)]

	USA	JAPAN	EUROPE without LW	EUROPE with LW
BAND 1	1	0	1	0
IN 1 (PLL IC)	1	1	0	0

BAND 1

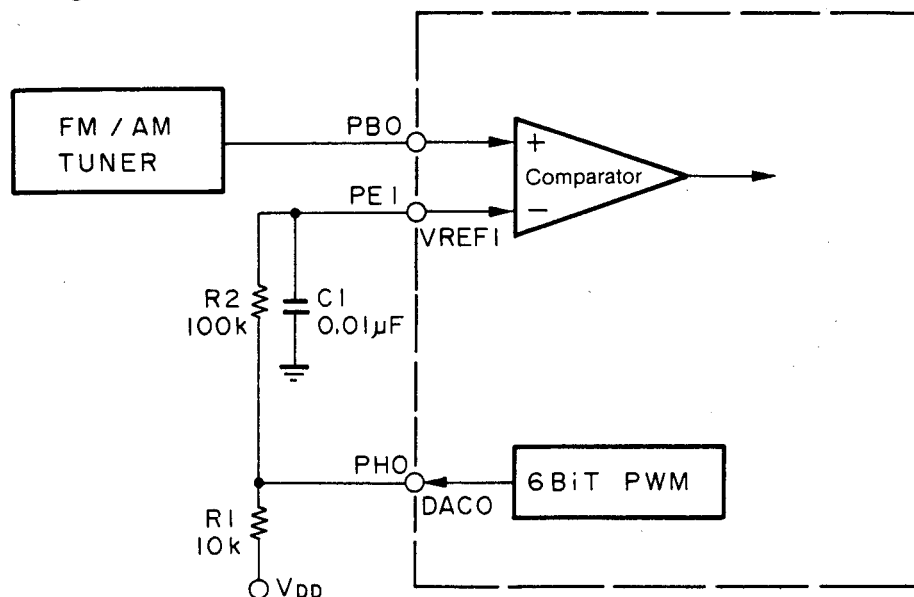
1: With diode (DS09)

0: Without diode

IN 1

1: "HIGH", 0: "LOW"

10-5. 5-dot Signal Strength Indicator:



		SIGNAL STRENGTH INPUT VOLTAGE V_{Bo} (DC.V)				
		DOT 1 (Sb)	DOT 2 (Sc)	DOT 3 (Sd)	DOT 4 (Se)	DOT 5 (Sf)
FM	ON	*	1.3	1.7	2.1	≥ 2.5
	OFF		1.25	1.65	2.05	≤ 2.45
AM	ON	*	1.3	1.7	2.1	≥ 2.5
	OFF		1.25	1.65	2.05	≤ 2.45

LC7218 Port Assignment:
 OUT0: \overline{MUT} , mute output
 OUT1: FM MONO output
 OUT2: STRQ output

OUT3: W/N output, FM WIDE/NARROW
 OUT4: \overline{FM} , FM band selection
 OUT5: \overline{AM} , AM (MW) band selection
 OUT6: \overline{LW} , LW band selection/FM ANT A.B

	OUT 0 PIN ⑨	OUT 1 PIN ⑩	OUT 2 PIN ⑪	OUT 3 PIN ⑫	OUT 4 PIN ⑬	OUT 5 PIN ⑭	OUT 6 PIN ⑰		
	\overline{MUT} OUT	FM MONO	STRQ	W/N OUT	\overline{FM}	\overline{AM}	\overline{LW}	FM ANT A.B	
FM	1/0	1/0	1/0	1/0	0	1	1	1/0	
AM (MW)						1	0	1	1/0 (Note)
LW		1			0	1	1	0	

IN 0: STEREO IN (PIN ⑦)
 IN 1: Destination selection (PIN ⑧)

Note: The FM mode given just prior stays as it is.

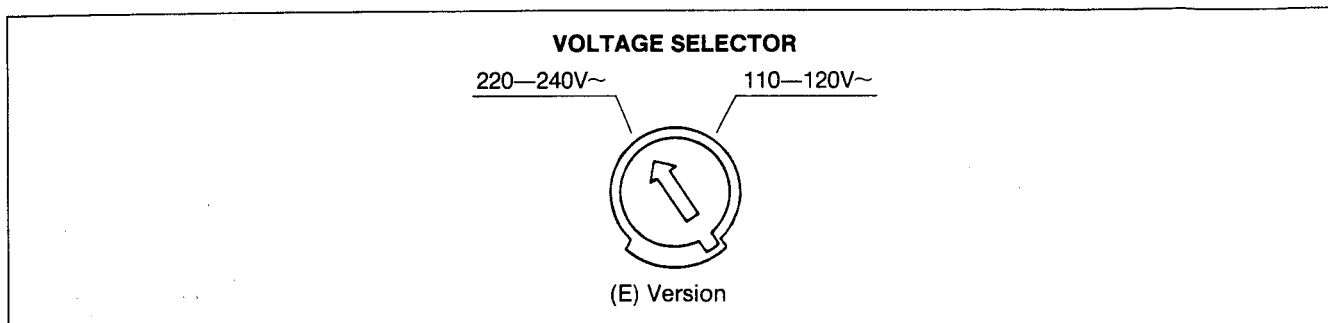
11. VOLTAGE CONVERSION

● EUROPEAN MODEL ONLY

To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

CAUTION
 DISCONNECT POWER SUPPLY CORD FROM AC
 OUTLET BEFORE CONVERTING VOLTAGE.

Voltage Conversion Chart



12. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

- R***: (1) GD05---140, Carbon film fixed resistor, $\pm 5\%$, 1/4W
 R***: (2) GD05---160, Carbon film fixed resistor, $\pm 5\%$, 1/6W

① — Resistance value

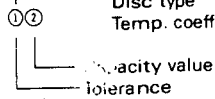
Examples

- ① Resistance value
 0.1 Ω ...001 1 Ω ...100 1k Ω ...102 100k Ω ...104
 0.5 Ω ...005 18 Ω ...180 2.7k Ω ...272 680k Ω ...684
 1 Ω ...010 100 Ω ...101 10k Ω ...103 1Mk Ω ...105
 6.8 Ω ...068 390 Ω ...391 22k Ω ...223 4.7Mk Ω ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C***: CERAMIC CAP.

- (1) DD1---370, Ceramic condenser
 Disc type
 Temp. coeff. P350 ~ N1000, 50V



Examples

- ① Tolerance (Capacity deviation)
 $\pm 0.25\text{pF}$...0
 $\pm 0.5\text{pF}$...1
 $\pm 5\%$...5

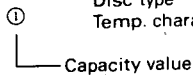
* Tolerance of COMMON PARTS handled here are as follows:

- 0.5pF ~ 5pF... $\pm 0.25\text{pF}$
 6pF ~ 10pF... $\pm 0.5\text{pF}$
 12pF ~ 560pF... $\pm 5\%$

- ② Capacity value
 0.5pF...005 3pF...030 100pF...101
 1pF...010 10pF...100 220pF...221
 1.5pF...015 47pF...470 560pF...561

C***: CERAMIC CAP.

- (1) DK16---300, High dielectric constant ceramic condenser
 Disc type
 Temp. chara. 2B4, 50V

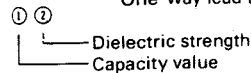


Example

- ② Capacity value
 100pF...101 1000pF...102 10000pF...103
 470pF...471 2200pF...222

C***: ELECTROLY CAP. (E), FILM CAP. (F)

- (1) EA---10, Electrolytic condenser
 One-way lead type, Tolerance $\pm 20\%$

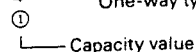


Examples

- ① Capacity value
 0.1 μF ...104 4.7 μF ...475 100 μF ...107
 0.33 μF ...334 10 μF ...106 330 μF ...337
 1 μF ...105 22 μF ...226 1100 μF ...108
 2200 μF ...228

- ② Working voltage
 6.3V...006 25V...025
 10V...010 35V...035
 16V...016 50V...050

- (2) DF15---350, Plastic film condenser
 One-way type, Mylar $\pm 5\%$ 50V



Examples

- ① Capacity value
 0.001 μF (1000pF)...102 0.1 μF ...104
 0.0018 μF ...182 0.56 μF ...564
 0.01 μF ...103 1 μF ...105
 0.015 μF ...153

REF. DESIG.	PART NO.	DESCRIPTION
		P102-TUNER CIRCUIT BOARD
		P102-CAPACITORS
CA01	4822 125 50384	Trimming 20pF
CA02	4822 122 40306	Ceramic 0.047 μF +80% -20%
CA03	4822 126 10512	Ceramic 15pF $\pm 5\%$
CA04	4822 121 41629	Film 390pF $\pm 5\%$
CA05	4822 126 10513	Ceramic 47pF $\pm 5\%$
CA06	4822 122 32486	Ceramic 0.01 μF +80% -20%
CA07	4822 122 32486	Ceramic 0.01 μF +80% -20% [T, W]
CA08	4822 126 10362	Ceramic 22pF $\pm 5\%$ [T, W]
CA09	4822 125 50384	Trimming 20pF [T, W]
CA10	4822 126 10363	Ceramic 68pF $\pm 5\%$ [T, W]
CA11	4822 122 10367	Ceramic 150pF $\pm 5\%$ [T, W]
CA12	4822 122 32486	Ceramic 0.01 μF +80% -20% [T, W]
CA13	4822 122 32486	Ceramic 0.01 μF +80% -20% [T, W]
CA14	4822 122 32486	Ceramic 0.01 μF +80% -20%
CA15	4822 126 10363	Ceramic 68pF $\pm 5\%$
CA16	4822 124 90354	Elect 100 μF 16V
CA19	4822 124 22696	Elect 3.3 μF 50V
CA20	4822 122 32486	Ceramic 0.01 μF +80% -20%
CA21	4822 122 32486	Ceramic 0.01 μF +80% -20%
CA22	4822 122 32486	Ceramic 0.01 μF +80% -20%
	4822 122 40306	Ceramic [A, E, N] 0.047 μF +80% -20% [T, W]
CA23	4822 122 32486	Ceramic 0.01 μF +80% -20%
C102	4822 122 32486	Ceramic 0.01 μF +80% -20%
C103	4822 122 32486	Ceramic 0.01 μF +80% -20%
C104	4822 122 32486	Ceramic 0.01 μF +80% -20%
C105	4822 122 32486	Ceramic 0.01 μF +80% -20%
C201	4822 122 32486	Ceramic 0.01 μF +80% -20%
C206		
C207	4822 126 10362	Ceramic 22pF $\pm 5\%$
C208		
	4822 122 32486	Ceramic 0.01 μF +80% -20%
C213		
C214	4822 122 40306	Ceramic 0.047 μF +80% -20%
C215	4822 122 40306	Ceramic 0.047 μF +80% -20%
C216	4822 124 22571	Elect 10 μF 50V
C217	4822 122 40306	Ceramic 0.047 μF +80% -20%
C218	4822 122 40306	Ceramic 0.047 μF +80% -20%
C220	4822 126 10512	Ceramic 15pF $\pm 5\%$
C222	4822 126 10363	Ceramic 68pF $\pm 5\%$
C223	4822 122 40306	Ceramic 0.047 μF +80% -20%
C224	4822 122 32486	Ceramic 0.01 μF +80% -20%
C225	4822 122 32486	Ceramic 0.01 μF +80% -20%
C226	4822 122 40306	Ceramic 0.047 μF +80% -20%
C227		
	4822 122 32486	Ceramic 0.01 μF +80% -20%
C230		
C231	4822 124 22571	Elect 10 μF 50V
C232	4822 122 10408	Ceramic 220pF $\pm 10\%$
C233	4822 122 10408	Ceramic 220pF $\pm 10\%$
C234	4822 126 10364	Ceramic 100pF $\pm 10\%$
C235	4822 124 22571	Elect 10 μF 50V
C236	4822 124 90358	Elect 22 μF 16V
C237	4822 124 90354	Elect 100 μF 16V
C238	4822 122 32486	Ceramic 0.01 μF +80% -20%
C239	4822 124 22571	Elect 10 μF 50V
C240	4822 124 22571	Elect 10 μF 50V

U=FT50 only

REF. DESIG.	PART NO.	DESCRIPTION
C241	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C242	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C243	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C245	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C246	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C247	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C301	4822 126 10364	Ceramic 100pF \pm 10%
C309	4822 126 10408	Ceramic 220pF \pm 10%
C309		Ceramic, 330PF \pm 10% [U]
C310	4822 126 10408	Ceramic 220pF \pm 10%
C310		Ceramic, 330PF \pm 10% [U]
C311	4822 124 22696	Elect 3.3 μ F 50V
C312	4822 124 22696	Elect 3.3 μ F 50V
C313	4822 126 10408	Ceramic 220pF \pm 10%
C314	4822 124 90354	Elect 100 μ F 16V
C315	4822 124 90354	Elect 100 μ F 16V
C317	4822 126 10364	Ceramic 100pF \pm 10% [E]
C318	4822 126 10364	Ceramic 100pF \pm 10% [E]
C501	4822 126 10513	Ceramic 47pF \pm 5%
C502	4822 126 10513	Ceramic 47pF \pm 5%
C503	4822 124 90354	Elect 100 μ F 16V
C504	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C507	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C801	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C802	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C803	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C804	4822 122 32486	Ceramic 0.01 μ F +80% -20%
C805	4822 122 22695	Elect 2200 μ F 35V
C810	4822 122 22571	Elect 10 μ F 50V
C813	4822 122 22571	Elect 10 μ F 50V
C819	4822 122 22696	Elect 3.3 μ F 50V
P102-RESISTORS		
RA 14	4822 100 11352	22K Ω , Trimming
R108	4822 116 52892	100 Ω \pm 5% $\frac{1}{4}$ W [E,T,W,U]
R218	4822 100 11386	1K Ω , Trimming
R233	4822 111 91404	150 Ω \pm 5% 1/6W
R235	4822 100 11372	47K Ω , Trimming
R241	4822 116 52892	100 Ω \pm 5% $\frac{1}{4}$ W
R260	4822 116 52892	100 Ω \pm 5% $\frac{1}{4}$ W
R302	4822 100 11372	47K Ω , Trimming
R303	4822 100 11427	220K Ω , Trimming
R304	4822 100 11427	220K Ω , Trimming
Δ R801	4822 115 90166	100 Ω \pm 2% $\frac{1}{4}$ W, Fuse
Δ R802	4822 115 90166	100 Ω \pm 2% $\frac{1}{4}$ W, Fuse [N,T,W]
R803	4822 116 60331	1K Ω \pm 5% 1W
P102-SEMICONDUCTORS		
DA01	4822 125 50416	Varicap SVC342
DA02	4822 130 33697	Diode 1SS135 [T, W]
DA03	4822 125 50416	Varicap SVC342 [T, W]
DA04	4822 130 33697	Diode 1SS135 [T, W]
D201		
}	4822 130 33305	Diode MA 165, etc.
D206		
D301	4822 130 33305	Diode MA 165, etc.

U=FT50 only

REF. DESIG.	PART NO.	DESCRIPTION
Δ D801		
}	4822 130 32508	Diode DSF 10C/RL103E
Δ D805		
D806	4822 130 80598	Zener RD22JB (22V), etc.
D807	4822 130 32508	Diode DSF 10C/RL103E
D809	4822 130 33305	Diode MA 165, etc.
D810	4822 130 33305	Diode MA 165, etc.
D811	4822 130 32508	Diode DSF 10C/RL103E
D812	4822 130 33305	Diode MA 165, etc.
Δ D813	4822 130 32508	Diode DSF 10C/RL103E
Δ D814	4822 130 32508	Diode DSF 10C/RL103E
D815	4822 130 80116	Zener RD24JB2 (24V), etc.
D816	4822 130 33305	Diode MA 165, etc.
QA01	4822 130 42298	Transistor 2SC536SP(F, G), etc. [T, W]
QA02	4822 130 42298	Transistor 2SC536SP(F, G), etc. [T, W]
QA03	4822 130 42125	Transistor 2SD 1302(S, T) [T, W]
QA04	4822 130 60495	Transistor 2SA 1309A(Q, R) [T, W]
QA05	4822 130 60495	Transistor 2SA 1309A(Q, R) [T, W]
QA06	4822 130 60495	Transistor 2SA 1309A(Q, R)
Q201	4822 209 71785	IC LA 1266
Q202	4822 209 61801	IC TA7061BP
Q203	4822 130 42082	Transistor 2SC1047(C)
Q204		
}	4822 130 42298	Transistor 2SC2458(Y, GR), etc.
Q209		
Q210	4822 130 42082	Transistor 2SC1047(C)
Q211	4822 130 42082	Transistor 2SC1047(C)
Q212	4822 130 42298	Transistor 2SC2458(Y, GR), etc.
Q213		
}	4822 130 60495	Transistor 2SA 1309A(Q, R)
Q216		
Q217	4822 130 42298	Transistor 2SC2458(Y, GR), etc.
Q301	4822 209 73732	IC LA3450
Q302	4822 130 42121	F.E.T. 2SK30A(Y)
Q303		
}	4822 130 42298	Transistor 2SC2458(Y, GR), etc.
Q306		
Q308	4822 130 60495	Transistor 2SA 1309A(Q, R)
Q501	4822 209 73435	IC LC7218
Q502	4822 130 42121	F.E.T. 2SK30A(Y)
Q503	4822 130 42298	Transistor 2SC2458(Y, GR), etc.
Q504	4822 130 42298	Transistor 2SC2458(Y, GR), etc.
Q505	4822 130 42298	Transistor 2SC2458(Y, GR), etc.
Q506	4822 130 42298	Transistor 2SC2458(Y, GR), etc. [E]
Δ Q801	4822 209 60826	IC NJM7812FA
Δ Q802	4822 209 70385	IC L78MR05
Q803		
}	4822 130 42298	Transistor 2SC2458(Y, GR), etc.
Q808		
P102-MISCELLANEOUS		
A101	4822 210 10271	V.H.F. Tuner, FE407-A12 [A, E, T, W, U]
A101	4822 210 10297	V.H.F. Tuner, FE407-G28 [N]
FA01	4822 242 71509	Ceramic Filter, AM IF

U=FT50 only

REF. DESIG.	PART NO.	DESCRIPTION
F201	4822 242 72345 4822 242 72346	Ceramic Filter, SFE10.7MX2-A [E,U] Ceramic Filter, SFE10.7MZ2-A [A, N, T, W]
F202	4822 242 71135 4822 242 70911	Ceramic Filter, SFE10.7MS3-A [E,U] Ceramic Filter, SFE10.7MA8-A [A, N, T, W]
F203	4822 242 70911	Ceramic Filter, SFE10.7MA8-A
F204	4822 242 72345	Ceramic Filter, SFE10.7MX2-A
F205	4822 242 72962	Discr. Ceramic, CDA10.7MA18-A
J101	4822 266 30298 4822 266 30298	Terminal, FM/AM Terminal FM/AM [U]
J301	4822 267 30955	Terminal, Output
J501	4822 266 30274	Terminal, R.C.
LA01	4822 157 52328	Antenna Coil, AM/MW
LA02	4822 157 52716	OSC Coil, AM/MW
LA03	4822 157 52714	Antenna Coil, LW [T, W]
LA04	4822 157 52717	OSC Coil, LW [T, W]
LA05	4822 157 53589	Choke Coil, 39mH
L102	4822 157 60481	Choke Coil, 0.68mH
L201	4822 156 40893	I.F.T. Coil, FM IFT
L202	4822 157 52451	I.F.T. Coil, FM DET
L203	4822 157 60479	Choke Coil, 3.3μH
L204	4822 157 61831	M.P.X. Coil, 190KHz [N]
L301	4822 157 60482	M.P.X. Coil, 23.38KHz
L302	4822 157 60482	M.P.X. Coil, 23.38KHz
S301	4822 277 20968	Slide Switch, Scan/Step [E]
S801	4822 276 11682	Push Switch, Power/Standby
X301	4822 242 71511	Ceramic Vibrator, CSB465F11
X501	4822 242 72333	Crystal, 7.2MHz
PS02-U-COM/TACT SWITCH CIRCUIT BOARD		
PS02-CAPACITORS		
CS01	4822 122 23128	Elect 0.047μF 5.5V
CS02	4822 122 32486	Ceramic 0.01μF +80% -20%
CS03	4822 124 90354	Elect 100μF 16V
CS04	4822 122 32486	Ceramic 0.01μF +80% -20%
CS05	4822 124 22571	Elect 10μF 50V
GS02	4822 126 10452	Component 100pFx8
GS03	4822 126 10452	Component 100pFx8
PS02-RESISTORS		
GS01	4822 111 91837	Component 100KΩx4 ±5% 1/6W
PS02-SEMICONDUCTORS		
DS01	4822 130 33305	Diode 1SS133, etc. [A, E, U]
	4822 130 80839	Diode S5688G [N, T, W]
DS02	4822 130 33305	Diode 1SS133, etc.
DS03	4822 130 33305	Diode 1SS133, etc.
DS04	4822 130 33305	Diode 1SS133, etc.
DS06	4822 130 33305	Diode 1SS133, etc.
DS07	4822 130 33305	Diode 1SS133, etc.
DS08	4822 130 80326	L.E.D. LT3D8B
DS09	4822 130 33305	Diode 1SS133, etc. [A,E,N,U]
DS10	4822 130 80273	Zener RD8.2JB2, etc. [N, T, W]
QS01	4822 209 61794	Microprocessor LC6538D-4177
QS02	4822 130 42298	Transistor 2SC2458(Y, GR), etc.

U=FT50 only

REF. DESIG.	PART NO.	DESCRIPTION
PS02-MISCELLANEOUS		
SS01	4822 276 12455	Push Switch
SS14		
SS15		Push Switch [T, W]
SS16		
SS20	4822 276 12455	Push Switch
VS01	4822 130 90751	Display Unit, FIP8CAM8
XS01	4822 242 72194	Ceramic Vibrator, 4.19MHz
U=FT50 only		

NOTE ON SAFETY:

Symbol ⚠. Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound.

Only original MARANTZ parts can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

PARTS ORDERING

Parts may be ordered at the following addresses:

AUSTRIA
HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

BELGIUM
SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

CHILE
MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
Santiago
Telex: 240.239

DENMARK
MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

FINLAND
MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

GERMANY
MARANTZ GERMANY GmbH
Max-Planck-Strasse 22
6072 Dreieich 1
Germany
Telex: 529821

THE NETHERLANDS
Elpro Marantz
Wint Hontlaan 28
3526 KV Utrecht
The Netherlands
Telex: 4748

NORWAY
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
0680 Oslo 6
Norway
Telex: 72640

GREAT BRITAIN
MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

GREECE
SHERTON ELECTRONICS S.A.
P.O.Box 21025
Hippocrates Street 188
Athens 11471
Greece
Telex: 216.795

JAPAN
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
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MARANTZ ITALIANA S.P.A.
Via Chiese, 74
20126 Milano
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SAUDI ARABIA
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P.O.Box 5954
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Telex: 401530

SOUTH AFRICA
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Main Road Martindale
P.O. Box. 58088
Newville 21114
South Africa

SPAIN
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

SWEDEN
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

SWITZERLAND
DYNAVOX ELECTRONICS
Route de Villars 105
1701 Fribourg
Switzerland
Telex: 942377

TURKEY
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

PORTUGAL
MARANTZ
Divisao philips S.A. service
Oturela-carnaxide
2795 LinDA-A-VELHA
Telex: 43906

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

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