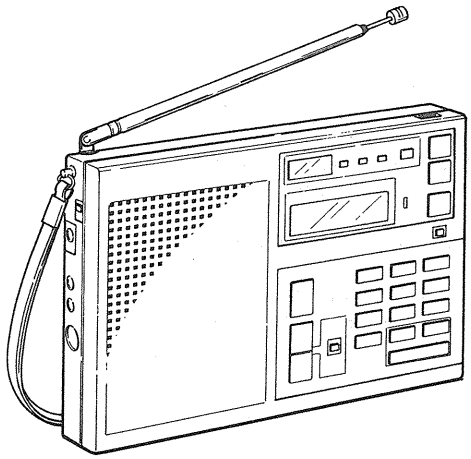
ICF-7600DS

SERVICE MANUAL

AEP Model
UK Model
E Model
AUS Model



SPECIFICATIONS

Circuit system	FM: Superheterodyne AM: Dual conversion superheterodyne
Frequency range	AEP, UK, E, AUS model: FM76.0 – 108.0 MHz FM87.6 – 108.0 MHz (DENMARK, NORWAY, SWEDEN) MW522 – 1,611 kHz LW153 – 519 kHz SW1,615– 29,995 kHz MIDDLE EASTS , G-AEP model: FM87.6 – 108.0 MHz MW522 – 1,611 kHz LW153 – 519 kHz SW1,615– 26,100 IHz SSB/CW153 – 26,100 kHz (G-AEP) Saudi Arabia model: FM87.6 – 108.0 MHz MW531 – 1,611 kHz LW153 –, 282 kHz SW1,615– 26,100 kHz
Antennas	Telescopic antenna (FM/SW) Built-in ferrite bar antenna (MW/LW) External antenna terminal (FM/LW/MW/SW)
Speaker	Approx. 7.7 cm (3⅛ inches) diameter
Power output	200 mW (at 10% harmonic distortion, for United Kingdom) 400 mW (at 10% harmonic distortion, for other countries)
Outputs	Recording output jack (minijack) output level 0.775 mV (–60 dB) output impedance 1 kilohm Earphone jack (minijack) for 8 ohm earphone
Power requirements	Radio: 6 V dc Four R6 (size AA) batteries Supplied AC-240 ac power adaptor (110, 120, 220 or 240 V ac adjustable, 50/60 Hz) Optional DCC-127A or DCC-240 car battery cord for use with 12 V or 24 V car battery, respectively Computer back up/clock: 3 V dc, two R6 (size AA) batteries
Battery life	Radio: approx.12 hours of listening for four hours a day at a normal volume, using Sony SUM-3(NS) batteries Computer back up/clock: approx. 1 year of continuous operation with Sony SUM-3(NS) batteries
Dimensions	Approx. 184.5 × 118.5 × 32 mm (w/h/d) (7⅜ × 4¾ × 1 5/16 inches) including projecting parts and controls
Weight	Approx. 640 g (1.4 lb) including batteries
Accessories supplied	Earphone (1) SW external antenna (1) AC-240 ac power adaptor (1) Wave handbook (1), Antenna connector (1), Carrying case (1)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

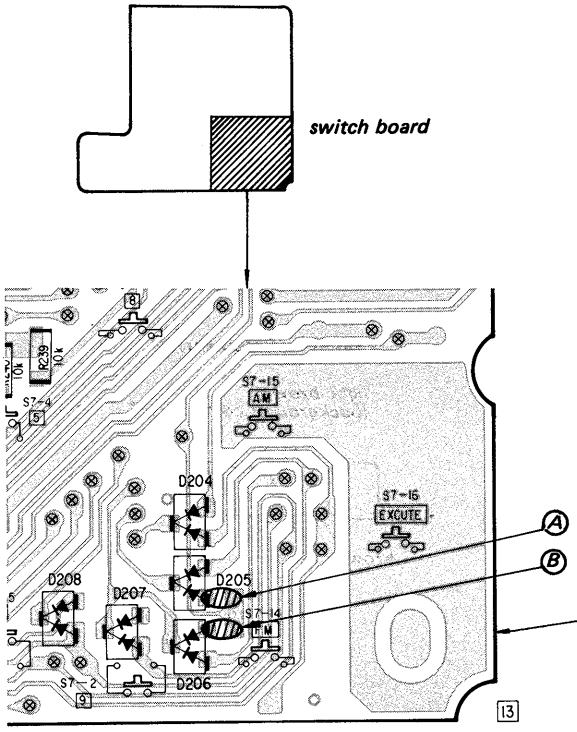
FM/LW/MW/SW PLL SYNTHESIZED RECEIVER

SONY®

SERVICING NOTES

1. FREQUENCY RANGE ADJUSTMENT

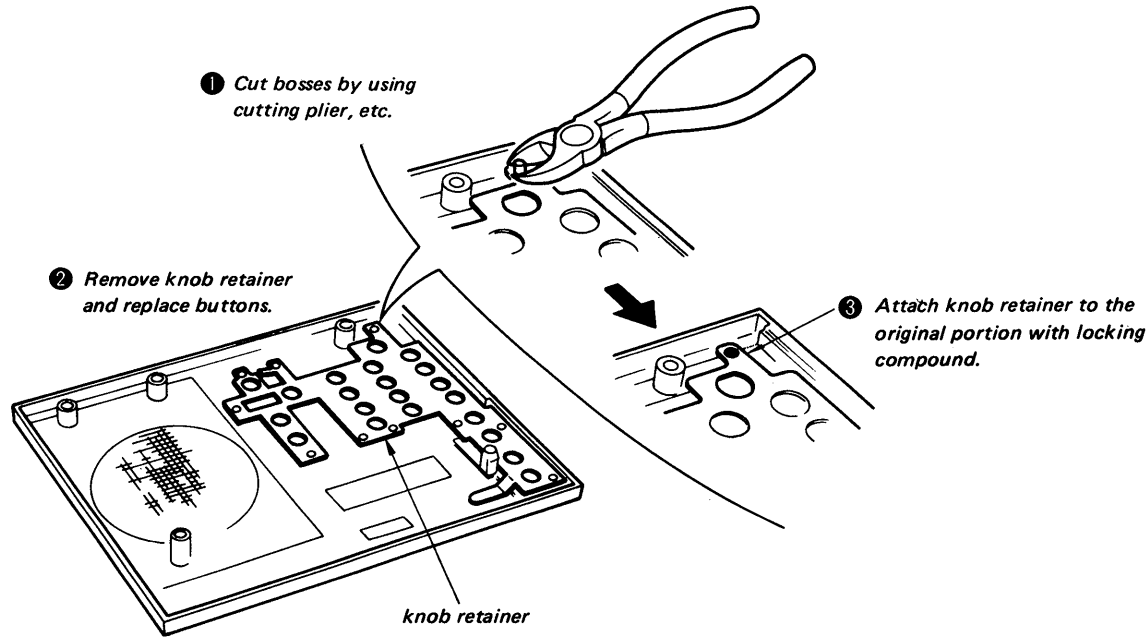
When replacing switch board, adjust frequency range by solder-bridging or opening adjustment patterns according to original patterns.



Frequency Range	Bridge Ⓐ	Bridge Ⓑ
FM wide	open	———
FM narrow	bridge	———
AM wide	———	open
AM narrow	———	bridge

•Frequency Range
FM wide : 76.0–108.0 MHz
FM narrow : 87.6–108.0 MHz
AM wide : 153–29,995 kHz
AM narrow : 153–26,100 kHz

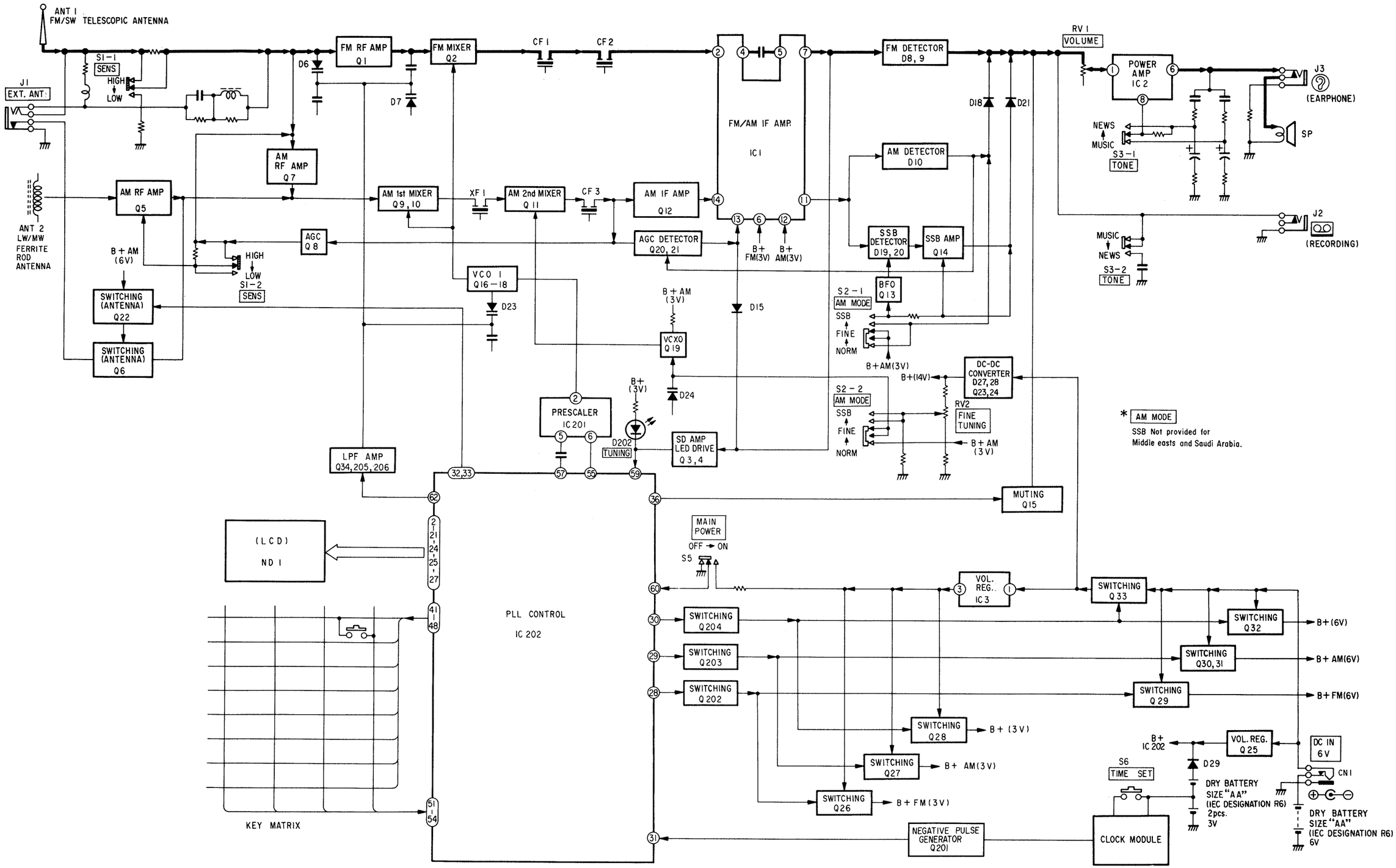
2. BUTTONS REPLACEMENT



ICF-7600DS

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



• IC201's (PLL CONTROL IC μPC1706G-511, μPD1706G-519) TERMINAL FUNCTIONS

Terminal No.	Terminal Name	Function	Terminal No.	Terminal Name	Function
1	–	This terminal is not used on this set.	32	$\overline{LW}$	Signal ouptut for antenna switching. LW mode: L otherwise: H
2	8a	Signal output for LCD segment.			
3	7c		33	$\overline{MW}$	Signal output for antenna switching. MW mode: L otherwise: H
4	7a				
5	6a		34, 35	–	These terminals are not used on this set.
6	5c		36	MUTE	Signal output for sound muting. mute:H otherwise:L
7	5b		37-40	–	These terminals are not used on this set.
8	5a		41	KS0	Signal output for key matrix scanning.
9	3b		42	KS1	
10	4c		43	KS2	
11	4b		44	KS3	
12	4a		45	KS4	
13	3a		46	KS5	
14	2c		47	KS6	
15	2b		48	KS7	
16	2a		49	XI	Clock pulse oscillating terminal.
17	1c		50	XO	
18	1b		51	K3	Signal input for key matrix scanning.
19	1a		52	K2	
20	7b		53	K1	
21	9a		54	K0	
22	VL	Signal output for LCD voltage check.	55	PSC	Signal output for prescaler control.
23	VH		56	–	This terminal is not used on this set.
24	COM2	Signal output for LCD common.	57	FM in	Signal input for swallow pulse.
25	COM1		58	V_{DD}	Power supply terminal. (3V)
26	V_{DD}	Power supply terminal. (3V)	59	$\overline{SD}$	Signal input for station detector. tuned: L detuned: H
27	COM0	Signal output for LCD common.			
28	FM	Signal output for FM power supply switching. FM mode: H otherwise: L	60	CE	Signal input for chip enable.
			61	–	This terminal is not used on this set.
29	AM	Signal output for AM power supply switching. AM mode: H otherwise: L	62	ER	Signal output for PLL error
			63	–	This terminal is not used on this set.
30	POWER OUT	Signal output for power supply switching. POWER ON: H otherwise:L	64	GND	Ground terminal.
31	$\overline{POWER}$ IN	Power turns on when negative pulse is applied to this terminal at the STANDBY mode.			

• KEY MATRIX

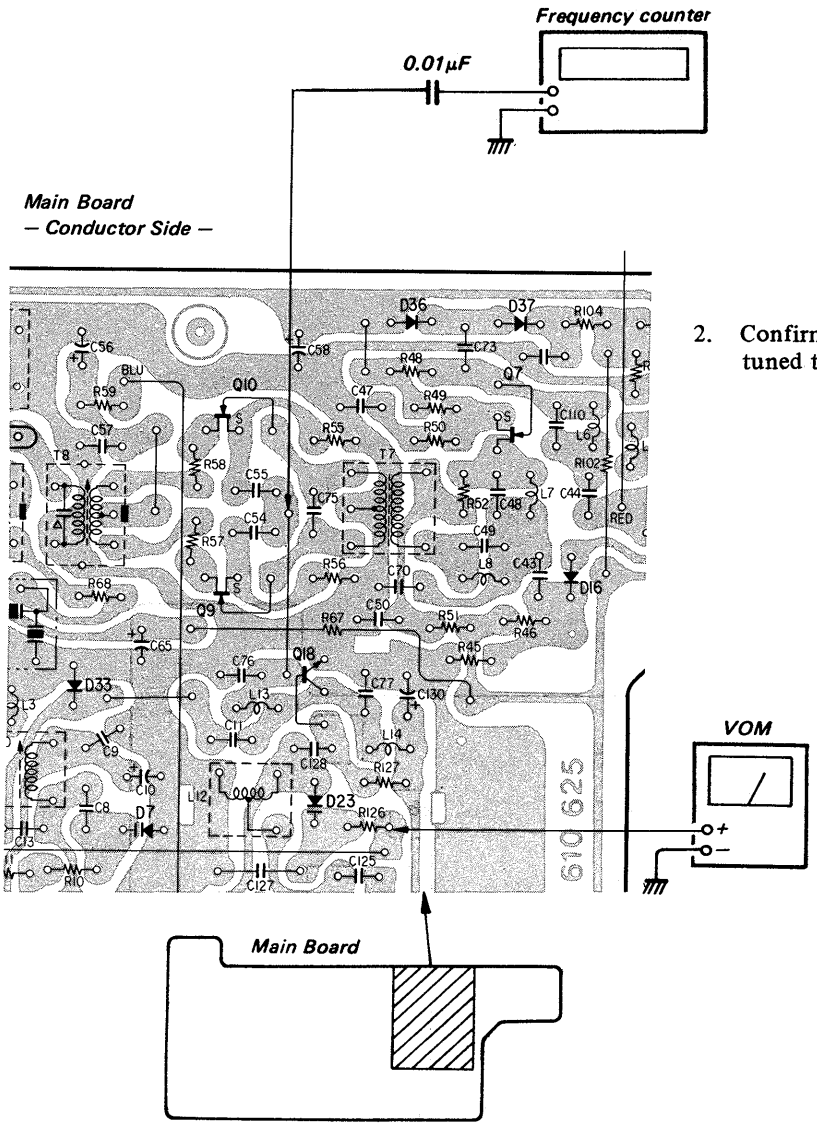
input / output	(51) K3	(52) K2	(53) K1	(54) K0
(41) KS0	———	———	———	9 kHz 10 kHz step frequency switch
(42) KS1	ENTER	BAND SELECT	———	———
(43) KS2	0 (10 key)	1 (10 key)	2 (10 key)	3 (10 key)
(44) KS3	———	FM	AM	EXECUTE
(45) KS4	———	− (down)	+ (up)	SCAN TUNING
(46) KS5	STANDBY	SLEEP	ON	OFF
(47) KS6	4 (10 key)	5 (10 key)	6 (10 key)	7 (10 key)
(48) KS7	8 (10 key)	9 (10 key)	———	———

SECTION 3
ADJUSTMENTS

3-1. ELECTRICAL ADJUSTMENTS

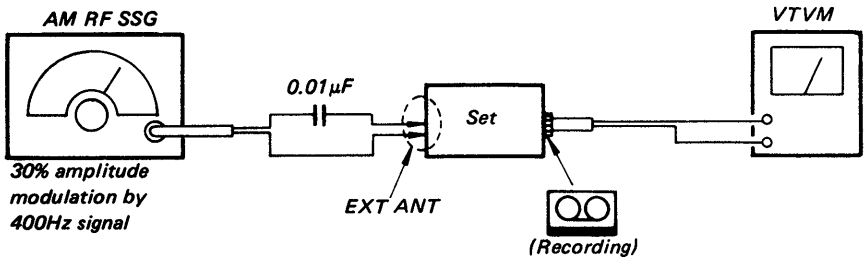
PLL FREQUENCY/LPF OUTPUT LEVEL CHECK

1. Confirm the frequency counter reading is 100.00 MHz when tuned to FM89.30 MHz

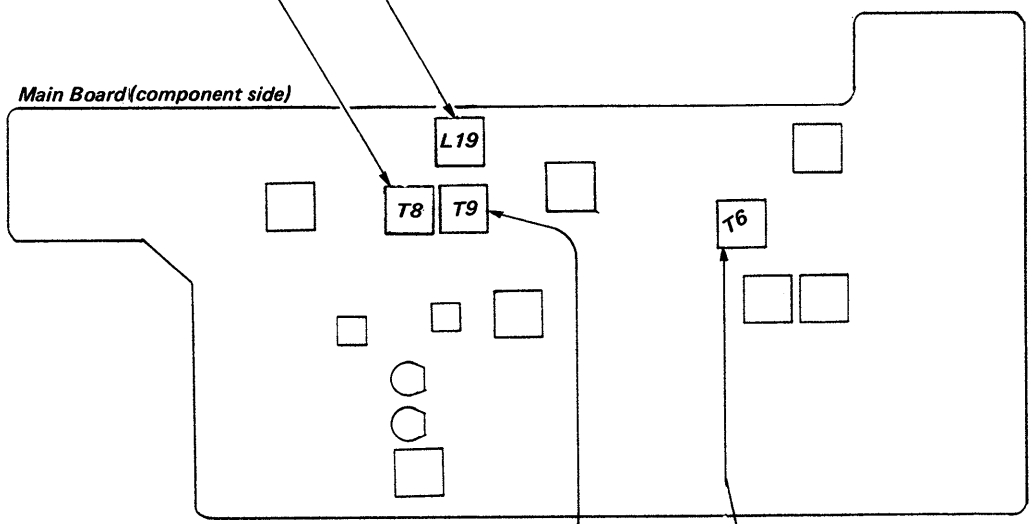


2. Confirm the 9-11V reading on VOM when tuned to FM108.00 MHz

AM IF ALIGNMENT



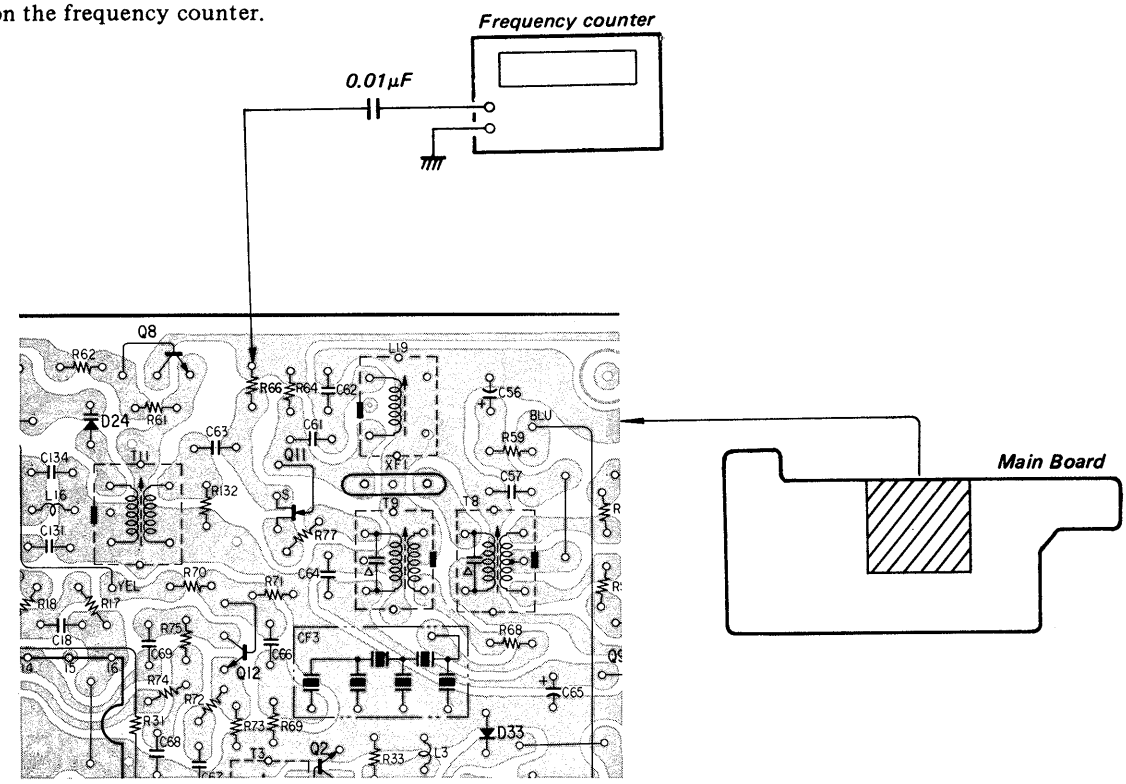
AM 1st IF ALIGNMENT	
Adjust for a maximum reading on VTVM.	
T8	L19



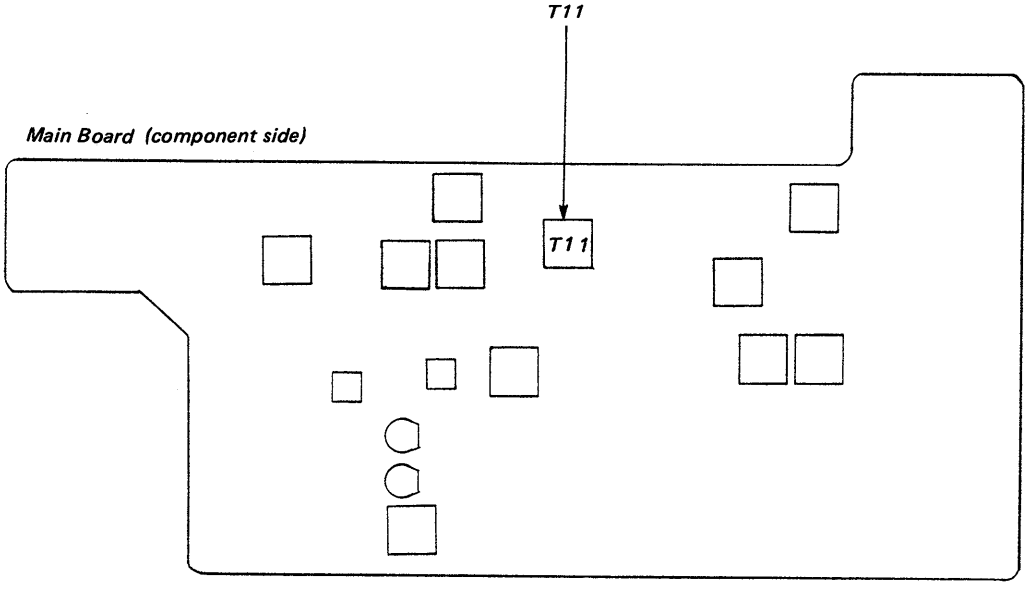
T9	T6
Adjust for a maximum reading on VTVM.	
AM 2nd IF ALIGNMENT	

AM 2nd IF VCXO ADJUSTMENT

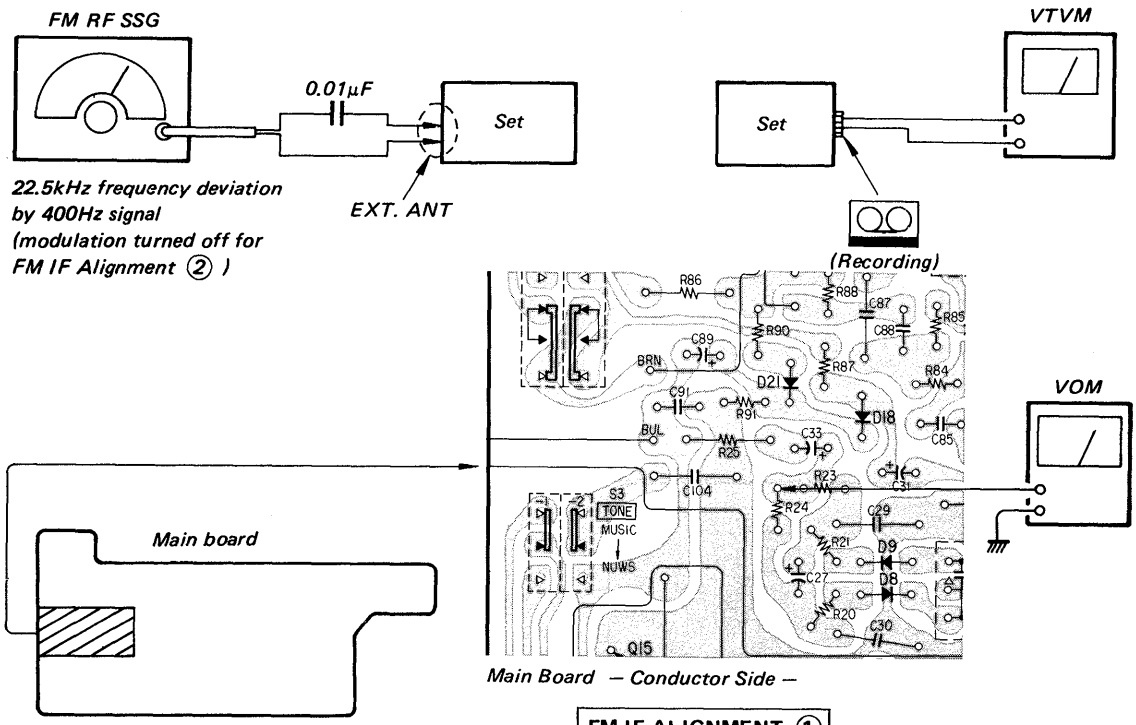
Adjust T11 for 55.395 MHz reading on the frequency counter.



Main Board — Conductor Side —

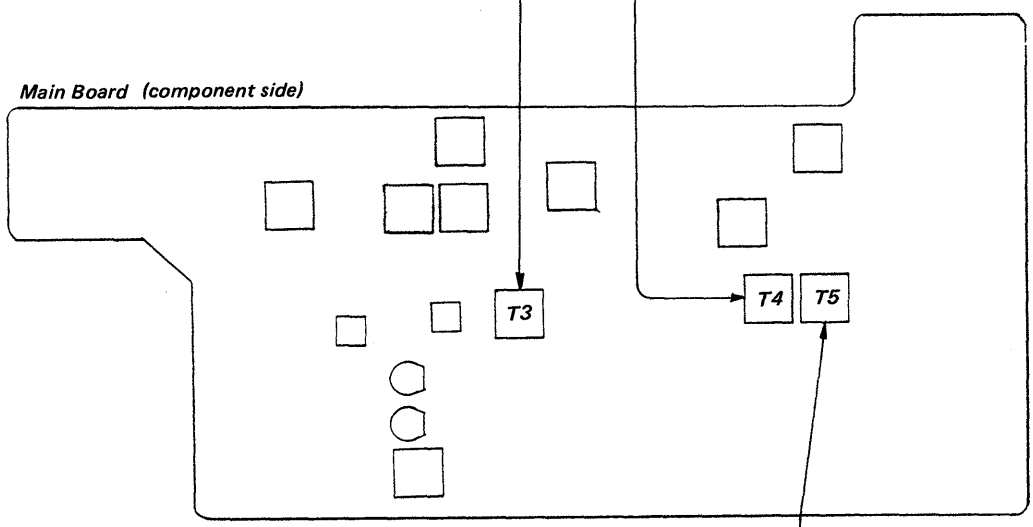


FM IF ALIGNMENT



Main Board — Conductor Side —

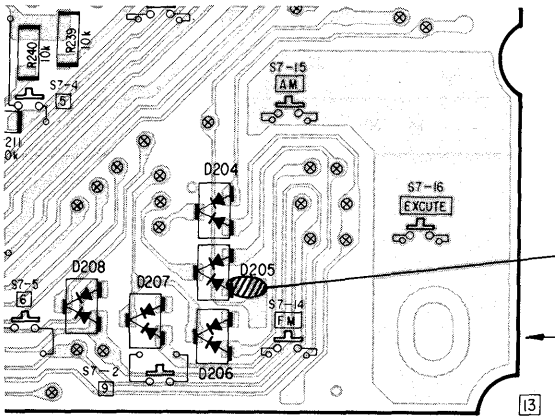
FM IF ALIGNMENT ①	
Adjust for a maximum reading on VTVM.	
T3	T4



T5
Adjust for a 0V DC. reading on VOM.
FM IF ALIGNMENT ②

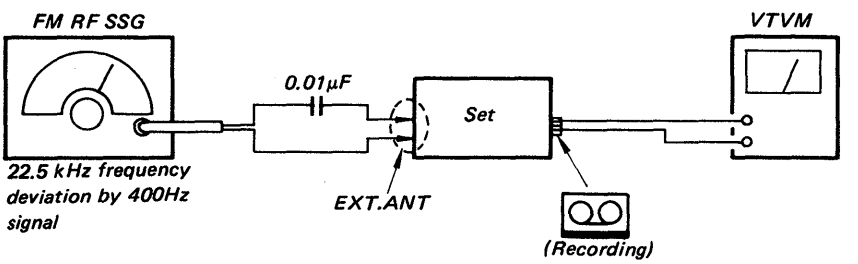
FM TRACKING ADJUSTMENT

Main Board — Conductor Side —

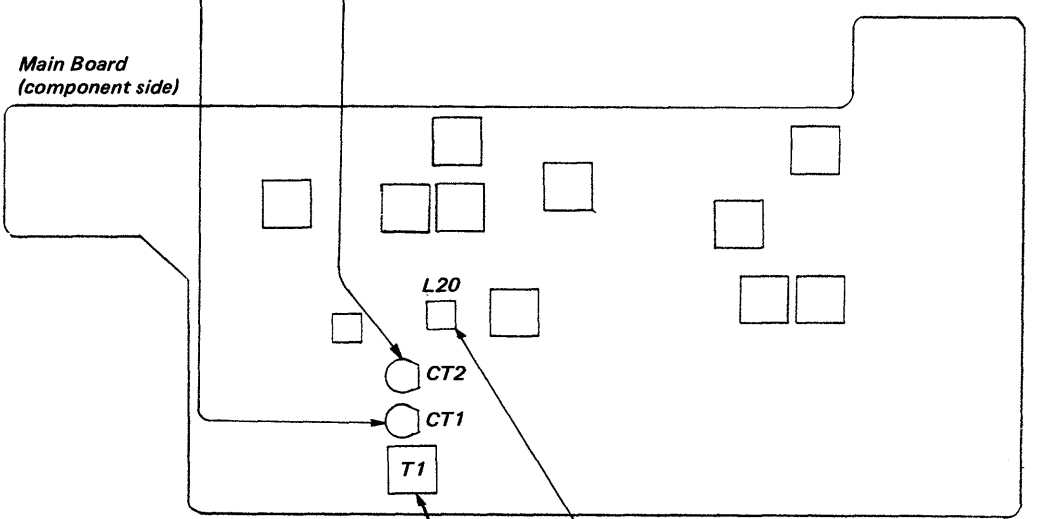


- *Note for FM narrow band set*
  When FM narrow band set is adjusted, unsolder the bridge (A).
  After adjustment, solder the bridge (A).

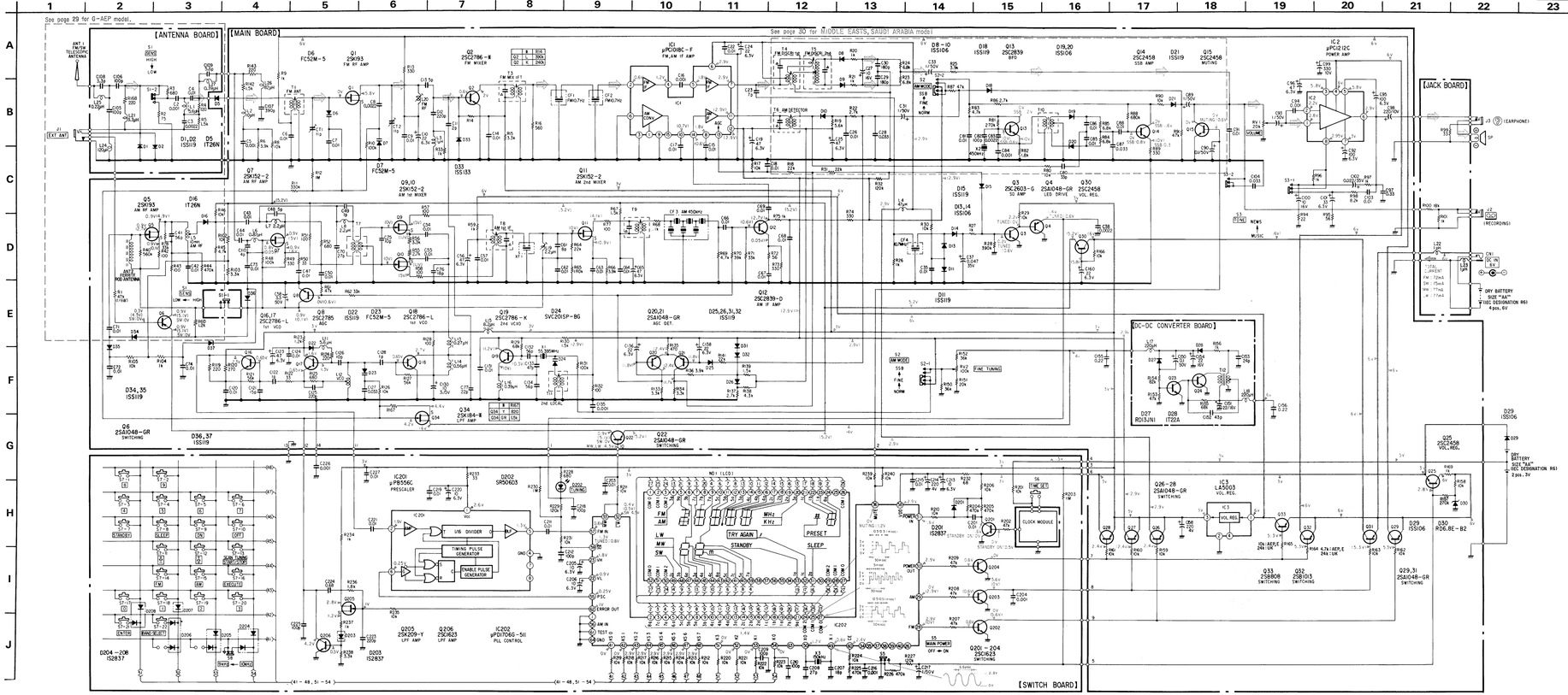
switch board (conductor side)



FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
102.00 MHz	
CT1	CT2



T1	L20
81.00 MHz	
Adjust for a maximum reading on VTVM.	
FM TRACKING ADJUSTMENT	



NOTE FOR SCHEMATIC DIAGRAM

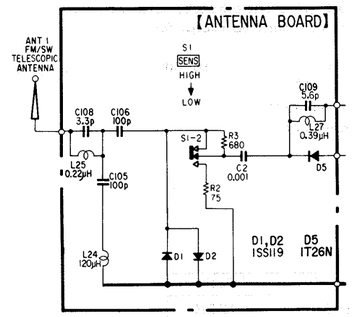
Note:

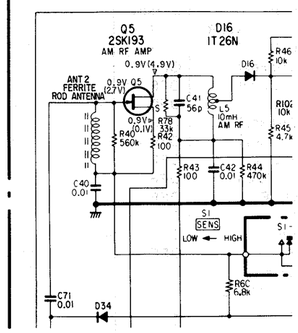
- All capacitors are in μF unless otherwise noted. pF : μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/6W unless otherwise noted.
  kΩ : 1000 Ω, MΩ : 1000 kΩ
- △ : internal component.
- ▭ : panel designation.
- —: B+ bus.
- Readings are taken under no-signal (detuned) conditions with a VOM (50 kΩ/V).
  no mark : FM
  ( ) : AM
- Switch

Ref. No.	Switch	Position
S1	SENS	HIGH
S2	AM MODE	NORM
S3	TONE	MUSIC
S5	MAIN POWER	OFF
S6	TIME SET	OFF
S7– 1	8 (10 key)	OFF
S7– 2	9 (10 key)	OFF
S7– 3	4 (10 key)	OFF
S7– 4	5 (10 key)	OFF
S7– 5	6 (10 key)	OFF
S7– 6	7 (10 key)	OFF
S7– 7	STANDBY	OFF
S7– 8	SLEEP	OFF
S7– 9	ON	OFF
S7–10	OFF	OFF
S7–11	UP	OFF
S7–12	DOWN	OFF
S7–13	START/STOP	OFF
S7–14	FM	OFF
S7–15	AM	OFF
S7–16	EXECUTE	OFF
S7–17	0 (10 key)	OFF
S7–18	1 (10 key)	OFF
S7–19	2 (10 key)	OFF
S7–20	3 (10 key)	OFF
S7–21	ENTER	OFF
S7–22	BAND SELECT	OFF
S8	9kHz–10kHz	9kHz

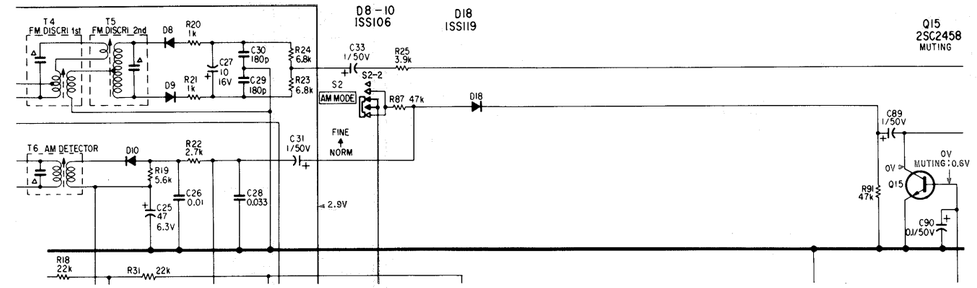
- : signal path

G-AEP MODEL

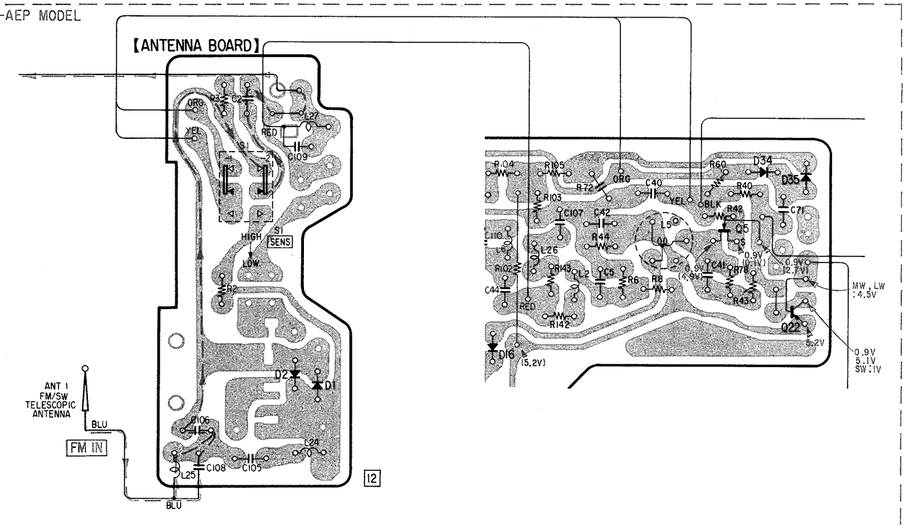




MIDDLE EASTS, SAUDI ARABIA MODEL



G-AEP MODEL



MIDDLE EASTS, SAUDI ARABIA MODEL