



STANDARD.

CPB78

UHF FM POWER BOOSTER

INSTRUCTIONS MANUAL



STANDARD COMMUNICATIONS CORP.

The Model CPB78 UHF Power Booster is designed exclusively for its Model C78 430MHz FM Transceiver.

Each booster is manufactured and shipped under conditions of strict quality control and inspection. Should your power booster malfunction, immediately contact the dealer from which you purchased it or the nearest authorized service station.

To obtain maximum performance and extended service life from your CPB78 Power Booster, study these instructions carefully.

1. GENERAL INFORMATION

The CPB78 is a 10-watt FM Power Booster with a built-in 430MHz band reception booster. It is designed exclusively for the C78 430MHz FM Transceiver to extend its range of application into mobile and base-station operations. In the reception mode, the internal reception booster is activated to provide increased sensitivity.

ACCESSORIES

After unpacking, check the supplied accessory parts against the following list:

- DC power cord (with a 6-A fuse) 1
- DC connection cord with conversion plug (This cord is used for connecting the CPB78 booster and the C78 transceiver.) 1
- Instructions manual 1

2. CONTROLS AND CONNECTIONS



1 POWER SWITCH

Switches the power booster on/off.

2 POWER INDICATOR

Glow when the booster is turned on.

3 10W/1W SELECTOR SWITCH

Switches the output power from the C78 between 10 and 1 watts.

4 TX HIGH INDICATOR LAMP

Glow when the C78 transceiver is in the transmission mode with the CPB78 10W/1W switch at 10W.



5 ANT. RECEPTACLE

Provides for the connection of an external antenna with an impedance of 50Ω.

6 DC IN JACK

Provides for the connection of an external DC power source via the supplied DC power cord.

7 DC OUT

When connecting the DC OUT cable to your C78 Transceiver, attach the supplied plug conversion cord to the end.

NOTE:

The DC OUT cable supplies DC power to your C78 even when the power switch on the booster is turned off. When leaving your rig, be sure to switch off the C78 as well.

When the CM88 Mobile Bracket is used with a transceiver and power booster, connect the DC OUT cable to the CM88 bracket.

8 RF INPUT

- * Connect the RF input cable to the external antenna jack on your C78 Transceiver.
- * When the CM88 Mobile Bracket is used, connect the cable to the antenna jack on the rear of the bracket.

3. INSTALLATION

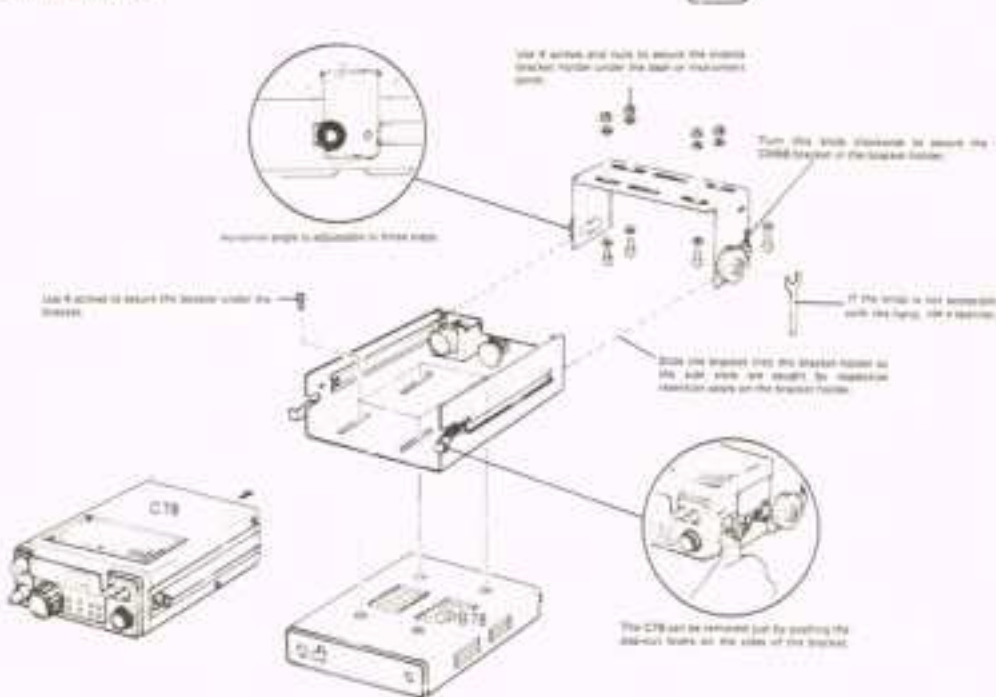
Mobile Installation

Installing the CPB78 Power Booster in your car requires the use of an optional Mobile Bracket (CMB8).

1) Location

- 1) Under the dash
- 2) Under the instrument panel

2) Installation



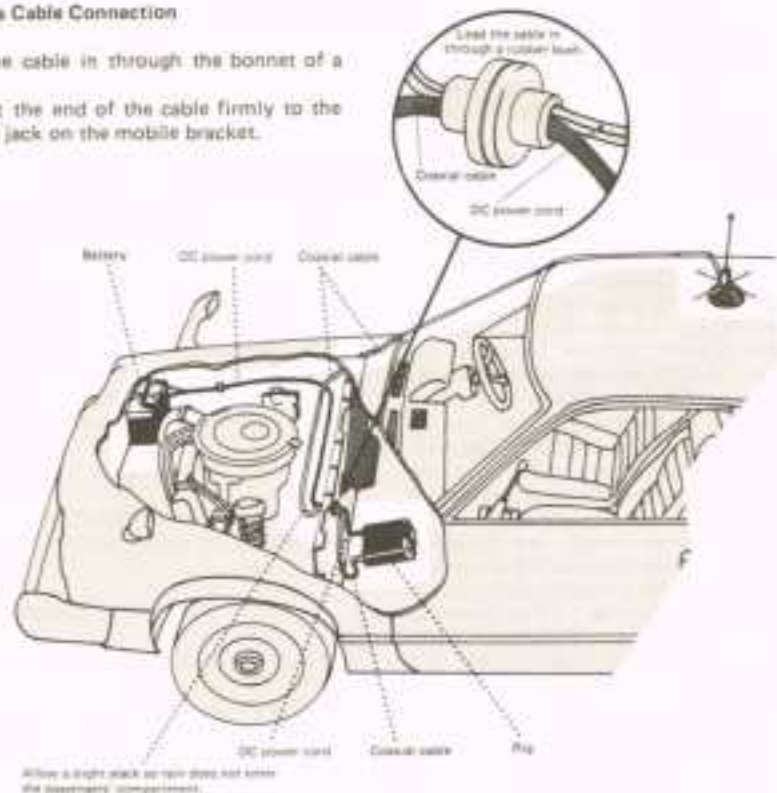
3) Antenna installation

Use a mobile antenna with an impedance of 50Ω, and connect it to the booster via a coaxial cable of 50-2V. A 5/8λ antenna is generally used.



4) Antenna Cable Connection

- Lead the cable in through the bonnet of a car.
- Connect the end of the cable firmly to the antenna jack on the mobile bracket.



5) Power Connection

Use the supplied DC power cord for power connection. It is recommended that your transceiver be powered directly from the car battery. Connect the red lead to the positive terminal of the battery, and the black lead to the negative terminal.

NOTE:

When using a power cord other than that supplied, place a fuse (5A) between the CPB78 power booster and your battery.

Power Supply to the Base Station

Base station operation requires a regulated DC power supply of 4A or more. A CPS-02 Voltage Regulator satisfying this requirement is available for the C78/CPB78.

4. OPERATING INSTRUCTIONS

1. Check that the power to the CPB78 Power Booster is switched off. Connect the RF INPUT cable from the CPB78 to the external antenna jack on the rear of the C78 Transceiver. Connect the DC OUT cable from the CPB78 to the DC IN receptacle on the C78 via the supplied plug conversion cord.
Connect the 50 ohm antenna transmission line to the ANT jack on the CPB78 and finally connect the supplied DC power cord to the CPB78.
2. Set the 10W/1W selector switch on the CPB78 to the 1W position, and turn on the power switch on the CPB78. The power indicator on the booster will glow. Turn the VOL/OFF control on the C78 Transceiver clockwise to the detent "OFF" position. This will turn on the transceiver and set it in the reception mode.
In the reception mode, the reception booster incorporated in the CPB78 provides the transceiver with increased sensitivity.
3. When you push the Press-To-Talk button on the C78's microphone, the power booster provides a transmission output power of 1 watt to its antenna. Switching the 10W/1W selector switch on the CPB78 to 10W will increase the output power of the booster to approximately 10 watts. The HIGH POWER indicator will glow. To obtain maximum performance from your CPB78 and C78, use an antenna and transmission line matching the sets. The antenna SWR should be adjusted below 1.5.

CAUTION:

The CPB78 is designed exclusively for the C78 FM Transceiver. Do not use it with other types of transceiver units.

5. CPB78 ALIGNMENT PROCEDURE

1. TX Adjustment

The adjustment of the CPB78 always requires one set of the C78 Transceiver to normal.

1. Set up the measurement system as shown in Fig. 2
2. Turn on the power switches on both the CPB78 and C78. Set the transmission frequency of the C78 to 434.950MHz.
3. Set the 10W/1W selector switch on the CPB78 at 10W.
4. Set up the C78 for the transmission mode.
5. Adjust C015 and C021 until the maximum RF output power (approx. 15 watts) is obtained. Repeat this adjustment several times.
6. Adjust the RF output power to 10 watts with R208.
7. Set the 10W/1W selector switch to 1W.
8. Adjust RF output power to 1 watt with R211.

2. RX Adjustment

1. Set up the measurement system as shown in Fig. 2
2. Turn on the power switches on both the CPB78 and C78. Set the reception frequency of the C78 to 434.900MHz.
3. Turn trimmer capacitors C102, C103, C108, and C109 by 3/4 turn counterclockwise.
4. Adjust the SG output level until the S meter on the C78 deflects half way.
5. Adjust C102, C103, C108, and C109 until the maximum S meter reading is obtained. Adjust the SG output level from time to time so the S meter pointer does not deflect.
6. Repeat step 5 several times.
7. Set up the SG output for non-modulation, and adjust the SG output level until the S meter pointer deflects to position "6". Check that the level difference between the attenuator reading on the SG and the S meter deflection of "6" is more than 8dB.

Adjustment Locations

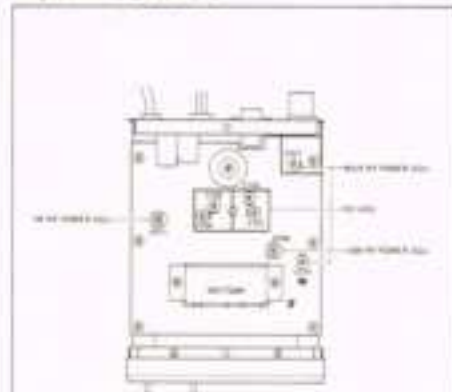
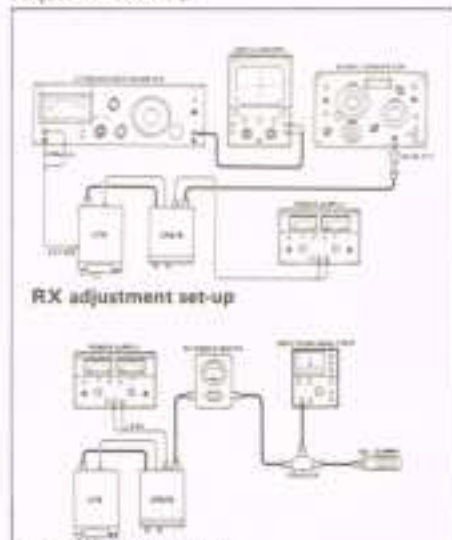


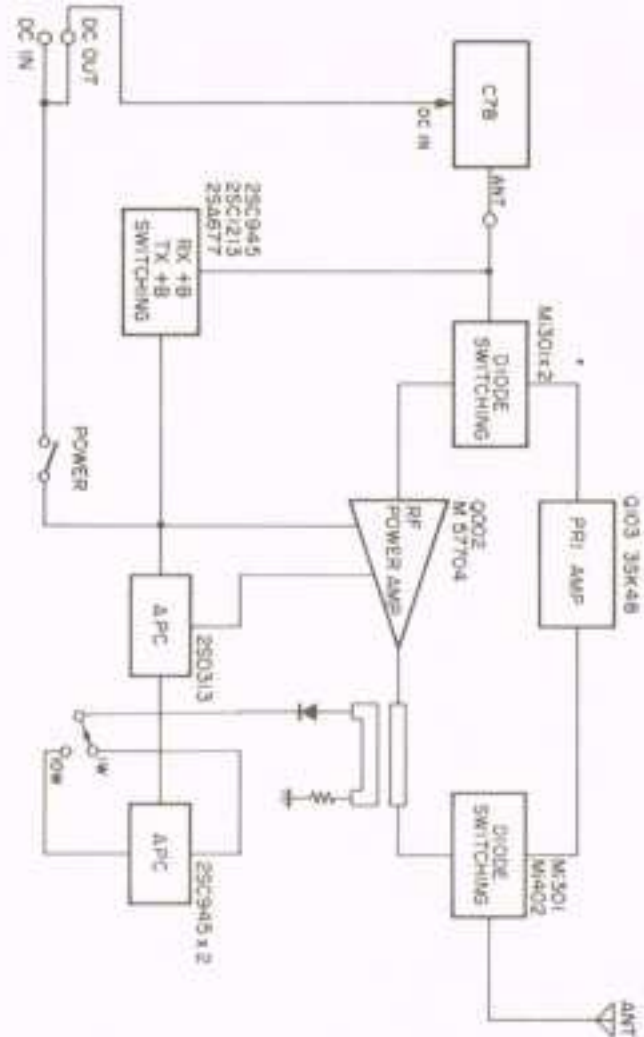
Fig. 1

Adjustment Set-Up

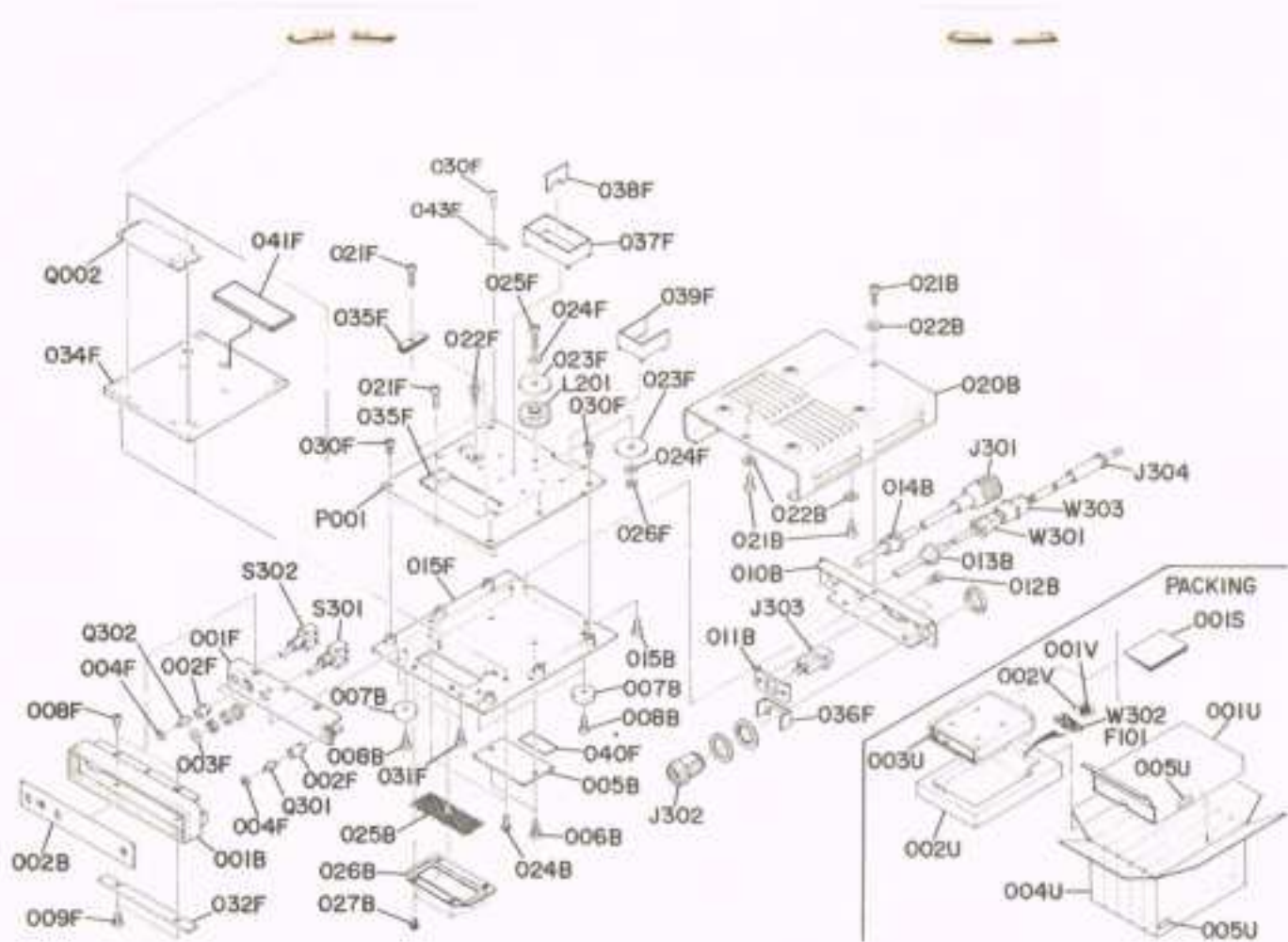


TX adjustment set-up
Fig. 2

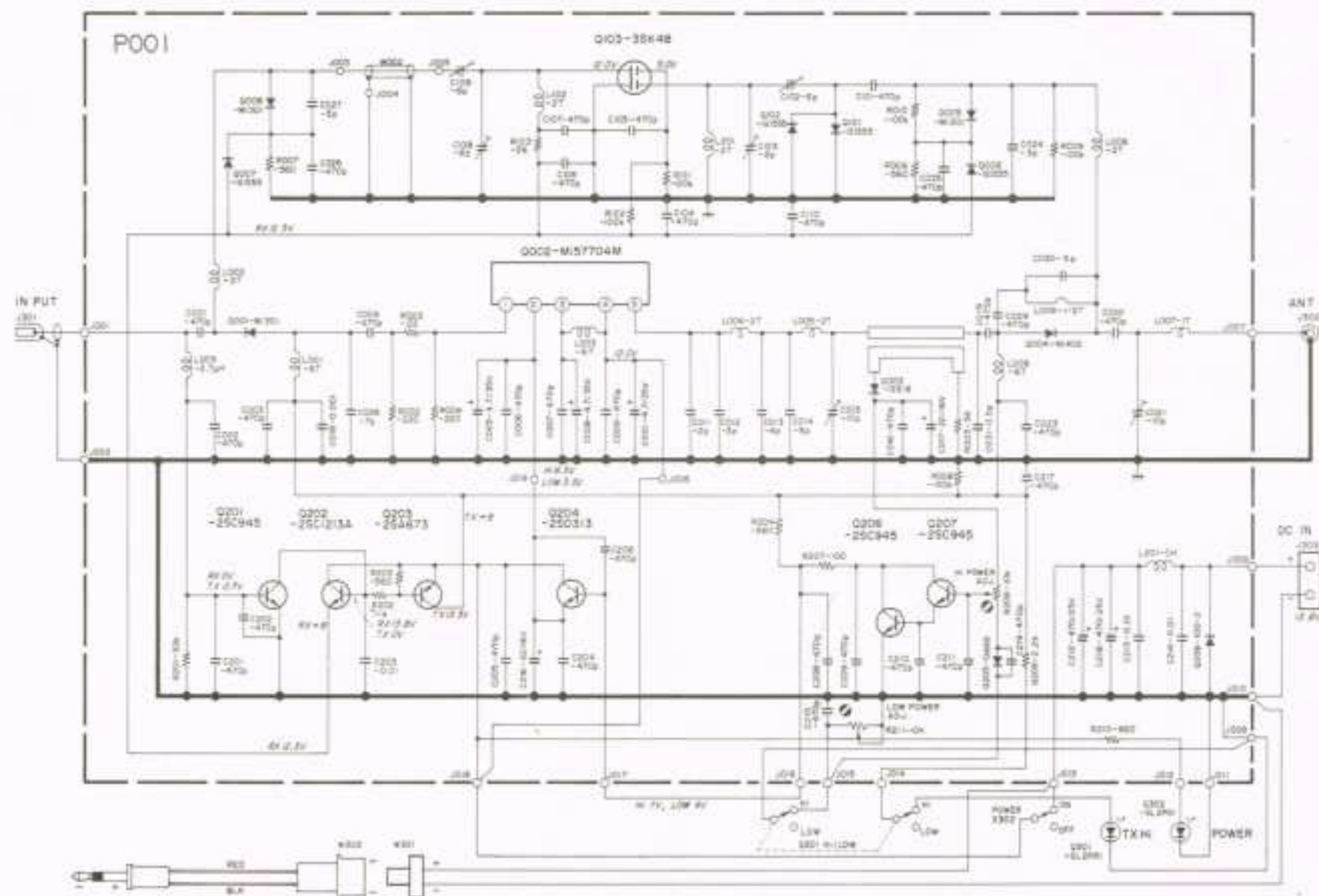
6. BLOCK DIAGRAM



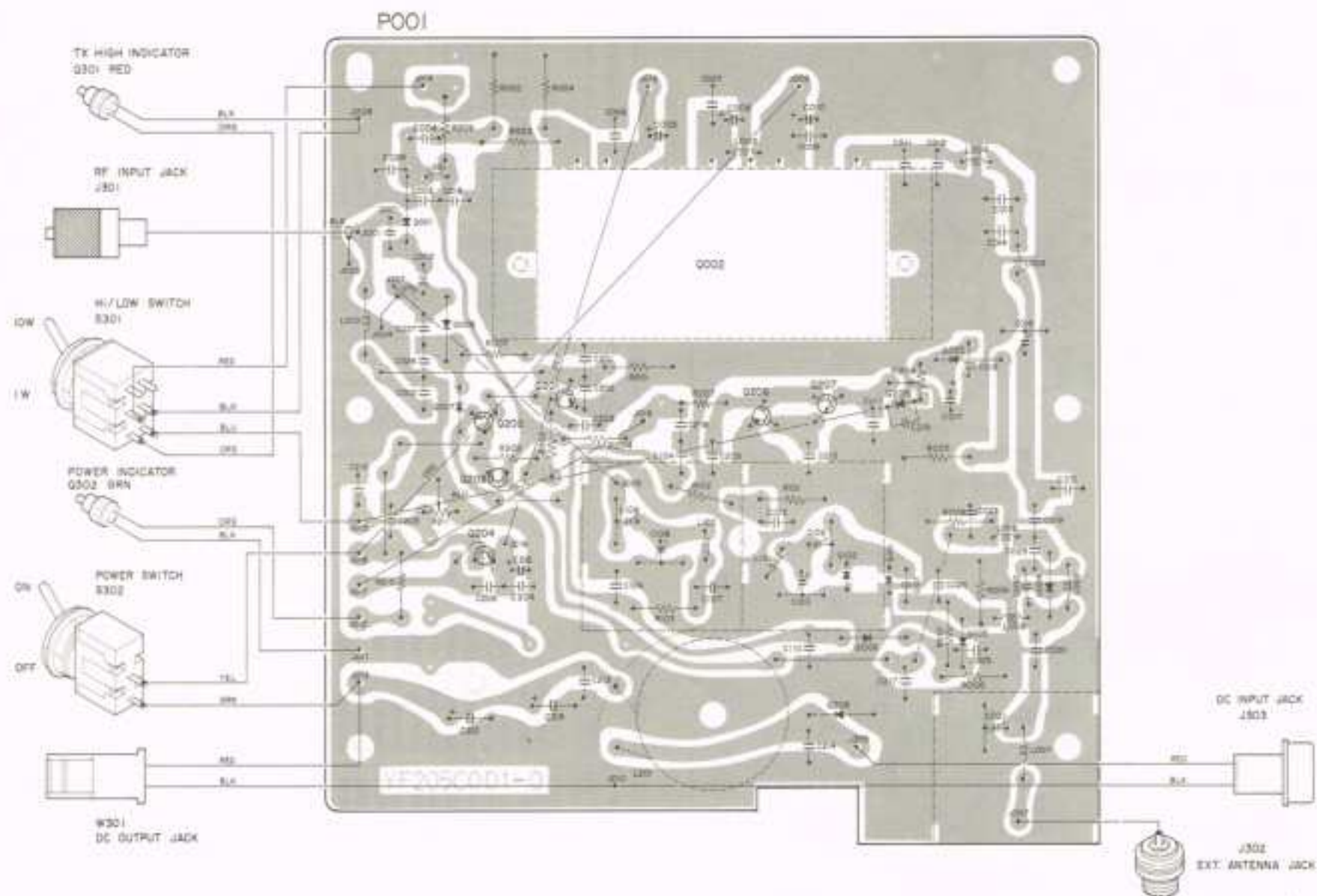
9. EXPLODED VIEW/PARTS LIST



7. SCHEMATIC DIAGRAM



8. COMPONENT LOCATIONS



REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
001B	1	201C401010	Frame, Front
002B	1	201C063010	Escutcheon, Front Indicator
005B	1	201C265210	Indicator, Model Plate
006B	2	5128030880	B.H. Tapped Screw 83 x 8
007B	4	3501056010	Buffer, Leg
008B	4	5128030880	B.H. Tapped Screw 83 x 8
010B	1	201C160030	Bracket, Rear Panel
011B	1	3667005010	Clamper, DC Input
012B	2	5110260650	B.H.M. Screw 82.6 x 6
013B	1	1455259070	Bushing, DC Output
014B	1	201C259010	Bushing, Input
015B	2	5128030680	B.H. Tapped Screw 83 x 6
020B	1	201C257110	Lid, Top Cover
021B	4	51280306U0	B.H. Tapped Screw 83 x 6
022B	4	5402030150	Flat Washer, P.
024B	2	5128030680	B.H. Tapped Screw 83 x 6
025B	1	205C202010	Net
026B	1	205C053010	Cover
027B	4	51402605P0	B.H. Tapped Screw 82.6 x 5
001F	1	201C160010	Bracket, Front Bracket
002F	2	4748259010	Bushing, LED
003F	2	4622303010	Mask, Toggle Switch
004F	2	201C118010	Spacer, LED
008F	2	51342605P0	F.H. Tapped Screw F2.6 x 5
009F	2	5128030880	B.H. Tapped Screw 83 x 8
015F	1	205C105010	Chassis, Main
021F	2	5128031080	B.H. Tapped Screw 83 x 10
022F	1	51402606P0	B.H. Tapped Screw 82.6 x 6
023F	2	4618118040	Spacer
024F	2	54110149A0	Flat Washer, L.
025F	1	511003188B	B.H.M. Screw 83 x 18
026F	1	531103038B	Hexagon Nut

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
030F	6	511003058B	B.H.M. Screw 83 x 5
031F	2	5128030680	B.H. Tapped Screw 83 x 6
032F	1	201C063010	Cover
034F	1	205C267010	Heatsink
035F	2	205C118010	Spacer
036F	1	205C109010	Shield
037F	1	205C109030	Shield
038F	1	205C109040	Shield
039F	1	205C109020	Shield
040F	1	205C861020	Label
J301	1	YF90000190	Plug
J302	1	YJ10001560	Jack
J303	1	YB00090040	Connective Cord
J304	1	YF01000310	Plug
L201	1	LC21240010	Choke Coil, Toroidal Trans
Q002	1	HC10006200	IC M57704-M
Q301	1	H10003320	L.E.D., GL2PR1
Q302	1	H10004320	L.E.D., GL2PG1
S301	1	SC02020400	Switch, Toggle
S302	1	SC01020370	Switch, Toggle
W301	1	YC00250020	A.C. Power Cord
W303	1	YB00090040	Connective Cord
041F	1	4661120010	Insulator
0015	1	205C851010	PACKING Instructions
001U	1	205C801020	Packing Case
002U	1	201C809010	Cushion
003U	1	9012025010	Polyethylene Bag
004U	1	205C805020	Master Carton
005U	3	9523019010	Serial No. Card
001V	4	51280308U0	B.H. Tapped Screw 83 x 8
002V	1	9010510010	Polyethylene Bag
F101	1	FS10600010	Fuse
W302	1	YC02500090	A.C. Power Cord

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
042F	1	59260505P0	Washer
043F	1	62031650W0	Lug
P001	1	YF205C0010	P001-MAIN CIRCUIT BOARD P.W. Board, Main
			P001-CAPACITORS
C001	1	DK46471300	Ceramic 470pF $\pm 10\%$
C002	1	DK46471300	Ceramic 470pF $\pm 10\%$
C003	1	DK46471300	Ceramic 470pF $\pm 10\%$
C004	1	DK46471300	Ceramic 470pF $\pm 10\%$
C005	1	EA47503530	Elect 4.7 μ F 35V
C006	1	DK46471300	Ceramic 470pF $\pm 10\%$
C007	1	DK46471300	Ceramic 470pF $\pm 10\%$
C008	1	EA47503530	Elect 4.7 μ F 35V
C009	1	DK46471300	Ceramic 470pF $\pm 10\%$
C010	1	EA47503530	Elect 4.7 μ F 35V
C011	1	DD40020300	Ceramic 2pF $\pm 0.25pF$
C012	1	DD40030300	Ceramic 3pF $\pm 0.25pF$
C013	1	DD40040300	Ceramic 4pF $\pm 0.25pF$
C014	1	DD40050300	Ceramic 5pF $\pm 0.25pF$
C015	1	CT11000130	Trimming 10pF
C016	1	DK46471300	Ceramic 470pF $\pm 10\%$
C017	1	EA22601630	Elect 22 μ F 16V
C018	1	DK46102300	Ceramic 0.001 μ F $\pm 10\%$
C019	1	DK46471300	Ceramic 470pF $\pm 10\%$
C020	1	DK46471300	Ceramic 470pF $\pm 10\%$
C021	1	CT11000130	Trimming 10pF
C023	1	DK46471300	Ceramic 470pF $\pm 10\%$
C024	1	DD40030300	Ceramic 3pF $\pm 0.25pF$

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
C025	1	DK46471300	Ceramic 470pF $\pm 10\%$
C026	1	DK46471300	Ceramic 470pF $\pm 10\%$
C027	1	DD40050300	Ceramic 5pF $\pm 0.25pF$
C028	1	DD41070300	Ceramic 7pF $\pm 0.5pF$
C029	1	DK46471300	Ceramic 470pF $\pm 10\%$
C030	1	DD10050300	Ceramic 5pF $\pm 0.25pF$
C031	1	DD40050300	Ceramic 5.5pF $\pm 0.25pF$
C101	1	DK46471300	Ceramic 470pF $\pm 10\%$
C102	1	CT10600100	Trimming 6pF
C103	1	CT10600100	Trimming 6pF
C104	1	DK46471300	Ceramic 470pF $\pm 10\%$
C105	1	DK46471300	Ceramic 470pF $\pm 10\%$
C106	1	DK46471300	Ceramic 470pF $\pm 10\%$
C107	1	DK46471300	Ceramic 470pF $\pm 10\%$
C108	1	CT10600100	Trimming 6pF
C109	1	CT10600100	Trimming 6pF
C110	1	DK46471300	Ceramic 470pF $\pm 10\%$
C201	1	DK46471300	Ceramic 470pF $\pm 10\%$
C202	1	DK46471300	Ceramic 470pF $\pm 10\%$
C203	1	DK46103300	Ceramic 0.01 μ F $\pm 10\%$
C204	1	DK46471300	Ceramic 470pF $\pm 10\%$
C205	1	DK46471300	Ceramic 470pF $\pm 10\%$
C206	1	DK46471300	Ceramic 470pF $\pm 10\%$
C208	1	DK46471300	Ceramic 470pF $\pm 10\%$
C209	1	DK46471300	Ceramic 470pF $\pm 10\%$
C210	1	DK46471300	Ceramic 470pF $\pm 10\%$
C211	1	DK46471300	Ceramic 470pF $\pm 10\%$
C212	1	EA47702530	Elect 470 μ F 25V
C213	1	DK46103300	Ceramic 0.01 μ F $\pm 10\%$
C214	1	DK46103300	Ceramic 0.01 μ F $\pm 10\%$

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
C215	1	DK46471300	Ceramic 470pF $\pm 10\%$
C216	1	EA22601630	Elect 22 μ F 10V
C217	1	DK46471300	Ceramic 470pF $\pm 10\%$
C218	1	EA47702530	Elect 470 μ F 25V
C219	1	DK16471300	Ceramic 470pF $\pm 10\%$
P001-RESISTORS (All Resistors are $\pm 5\%$ and $\frac{1}{4}W$)			
R002	1	GU05221120	220 Ω $\frac{1}{4}W$
R003	1	GU05220120	22 Ω $\frac{1}{4}W$
R004	1	GU05221120	220 Ω $\frac{1}{4}W$
R005	1	GD05560140	56 Ω
R006	1	GD05561140	560 Ω
R007	1	GD05561140	560 Ω
R008	1	GD05104140	100K Ω
R009	1	GD05104140	100K Ω
R010	1	GD05104140	100K Ω
R101	1	GD05104140	100K Ω
R102	1	GD05104140	100K Ω
R103	1	GD05560140	56 Ω
R201	1	GD05333140	33K Ω
R202	1	GD05102140	1K Ω
R203	1	GD05561140	560 Ω
R204	1	GD05561140	560 Ω
R207	1	GD05101140	100 Ω
R208	1	RA01030070	10K Ω (B) Trimming
R209	1	GD05272140	2.7K Ω
R210	1	GD05821140	820 Ω
R211	1	RA01030070	10K Ω (B) Trimming

REF. DESIG.	Q'TY	PART NO.	DESCRIPTION
P001-SEMICONDUCTORS			
Q001	1	HD20001200	Diode MI301
Q002	1	HC10006200	IC M57704-M
Q003	1	HD20005060	Diode 1S16
Q004	1	HD20003200	Diode MI402
Q005	1	HD20001200	Diode MI301
Q006	1	HD20011050	Diode 1S1555
Q007	1	HD20011050	Diode 1S1555
Q008	1	HD20001200	Diode MI301
Q101	1	HD20011050	Diode 1S1555
Q102	1	HD20011050	Diode 1S1555
Q103	1	HF4004B100	F.E.T. 35K4B
Q201	1	HT30945100	Transistor 2SC945(Q)
Q202	1	HT31213180	Transistor 2SC1213A(B)
Q203	1	HT10673180	Transistor 2SA673(B)
Q204	1	HT403132A0	Transistor 2SD313
Q205	1	HD10005020	Diode 0A99
Q206	1	HT30945100	Transistor 2SC945(Q)
Q207	1	HT30945100	Transistor 2SC945(Q)
Q208	1	HD20001100	Diode 10D-2
P001-MISCELLANEOUS			
L001	1	LL635006A0	Coil (6T)
L002	1	LC15000110	Choke Coil (2T)
L003	1	LL635006A0	Coil (6T)
L004	1	LK635002A3	Coil (2T)
L005	1	LK635002A3	Coil (2T)
L006	1	LC15000110	Choke Coil (2T)
L007	1	LC12500020	Choke Coil (1T)
L008	1	LL635006A0	Coil (6T)
L009	1	3512121020	Link
L010	1	LC12720080	Choke coil 2.7 μ H
L101	1	LK635002A3	Coil (2T)
L102	1	LK635002A3	Coil (2T)
L201	1	LC21240010	Choke Coil, Toroidal Trans

SPECIFICATIONS

Transmission frequency range: 430 - 440MHz

Type of emission: F3

Output power: 10 watts

Drive input: 0.8 ~ 1.5 watt

Input impedance: 50 ohms

Antenna impedance: 50 ohms

Spurious attenuation: Not more than -60dB (with C78 connected)

Drain current: Not more than 3.5A (with HIGH POWER position and the C78 connected)

Grounding system: Negative ground

Dimensions: 125(W) x 28(H) x 164(D) mm

Weight: 850g

These specifications are subject to change without notice in accordance with improvements.