

 **ICOM**

SERVICE MANUAL

VHF MARINE TRANSCEIVER

IC-M23
IC-M24

S-14720XZ-C1
Apr. 2011

Icom Inc.

INTRODUCTION

This service manual describes the latest technical information for the **IC-M23** and **IC-M24** VHF MARINE TRANSCEIVER, at the time of publication.

MODEL	VERSION	TRANSMIT POWER	SUPPLIED CHARGER
IC-M24	USA	5 W	BC-199SA
	EXP	5 W	
IC-M23	CHN	5 W	BC-199SE
	EUR-1	5 W	
	EUR	5 W	
	UK	5 W	-
	FRG	5 W (1 W)	BC-199SE
	HOL	5 W	
	AUS	5 W	BC-199SV

To upgrade quality, any electrical or mechanical parts and internal circuits are subject to change without notice or obligation.

CAUTION

NEVER connect the transceiver to an AC outlet or to a DC power supply that uses more than the specified voltage. This will ruin the transceiver.

DO NOT reverse the polarities of the power supply when connecting the transceiver.

DO NOT apply an RF signal of more than 20 dBm (100 mW) to the antenna connector. This could damage the transceiver's front-end.

ORDERING PARTS

Be sure to include the following four points when ordering replacement parts:

1. 10-digit Icom part number
2. Component name
3. Equipment model name and unit name
4. Quantity required

<ORDER EXAMPLE>

1110003491	S.IC	TA31136FNG	IC-M23	MAIN UNIT	5 pieces
8820001210	Screw	2438 screw	IC-M24	Top cover	10 pieces

Addresses are provided on the inside back cover for your convenience.



(IC-M24)

REPAIR NOTES

1. Make sure that the problem is internal before disassembling the transceiver.
2. **DO NOT** open the transceiver until the transceiver is disconnected from its power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits or electronic parts. An insulated tuning tool MUST be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the transceiver is defective.
6. **DO NOT** transmit power into a Standard Signal Generator or a Sweep Generator.
7. **ALWAYS** connect a 30 dB to 40 dB attenuator between the transceiver and a Deviation Meter or Spectrum Analyzer, when using such test equipment.
8. **READ** the instructions of the test equipment thoroughly before connecting it to the transceiver.

TABLE OF CONTENTS

SECTION 1 SPECIFICATIONS**SECTION 2 INSIDE VIEWS****SECTION 3 DISASSEMBLY INSTRUCTION****SECTION 4 CIRCUIT DESCRIPITON**

4-1	RECEIVER CIRCUITS.....	4-1
4-2	TRANSMITTER CIRCUITS.....	4-2
4-3	FREQUENCY SYNTHESIZER CIRCUITS	4-3
4-4	VOLTAGE DIAGRAMS.....	4-3
4-5	PORT ALLOCATIONS.....	4-4

SECTION 5 ADJUSTMENT PROCEDURES

5-1	PREPARATION	5-1
5-2	FREQUENCY ADJUSTMENTS.....	5-2
5-3	RECEIVE ADJUSTMENTS	5-3
5-3	TRANSMIT ADJUSTMENTS.....	5-3

SECTION 6 PARTS LIST**SECTION 7 MECHANICAL PARTS****SECTION 8 BOARD LAYOUTS****SECTION 9 BLOCK DIAGRAM****SECTION 10 VOLTAGE DIAGRAM**

SECTION 1

SPECIFICATIONS

■ IC-M23

◊ GENERAL

- Frequency coverage : Transmitting 156.000–161.450 MHz
Receiving 156.000–163.425 MHz
- Mode : FM (16K0G3E)
- Antenna impedance : 50 Ω (nominal)
- Power supply requirement : BP-266 only (3.7 V DC nominal; negative ground)
- Current drain (approximately) : TX (5 W/1.0 W/0.5 W) 2.3 A/0.9 A/0.7 A
Maximum audio 0.35 A typical
Power save 8 mA typical
- Frequency stability : ±1.5 kHz
- Operating temperature range : -15°C to +55°C
- Dimensions (Projections not included) : 58.5 (W) × 128.5(H) × 34.5(D) mm
- Weight (including battery pack, antenna, belt clip) : Approximately 260 g

◊ TRANSMITTER

- Output power : 5 W (approx.; High)/1 W (Low)/0.5 W (E_Low)*
*1 W (High) and 0.5 W (Low) for German version, depending on the pre-programmed setting
- Modulation system : Variable reactance frequency modulation
- Maximum frequency deviation : ±5 kHz
- Adjacent channel power : 70 dB
- Spurious emissions : 0.25 μW
- Audio harmonic distortion : 10% (at 60% deviation)
- Residual modulation : 40 dB
- Audio frequency response : +1 dB to -3 dB of 6 dB oct. from 300–3000 Hz

◊ RECEIVER

- Receive system : Double-conversion superheterodyne
- Intermediate frequency : 1st 21.7 MHz, 2nd 450 kHz
- Sensitivity (20 dB SINAD) : -4 dBμ emf typical
- Squelch sensitivity : -5 dBμ emf typical (at threshold)
- Intermodulation : 68 dB
- Hum and noise : 40 dB
- Audio frequency response : +1 dB to -3 dB of -6 dB oct. from 300–3000 Hz
- Spurious response : 70 dB
- Adjacent channel selectivity : 70 dB
- Audio output power (8 Ω) : 0.2 W (at 1 kHz, 10% distortion)

■ IC-M24

◊ GENERAL

- Frequency coverage : Transmitting 156.025–157.425 MHz
Receiving 156.050–163.275 MHz
- Mode : FM (16K0G3E)
- Antenna impedance : 50 Ω (nominal)
- Power supply requirement : BP-266 only (3.7 V DC nominal; negative ground)
- Current drain (approximately) : TX (5 W/1.0 W) 2.3 A/0.9 A
Max. audio 0.35 A typical
Power save 8 mA typical
- Frequency stability : ±10 ppm
- Operating temperature range : -20°C to +60°C; -4°F to +140°F
- Dimensions (projections not included) : 58.5 (W) × 128.5(H) × 34.5(D) mm
2.3 (W) × 5.6 (H) × 1.3 (D) inch
- Weight (including battery pack, antenna and belt clip) : Approximately 260 g; 9.2 oz

◊ TRANSMITTER

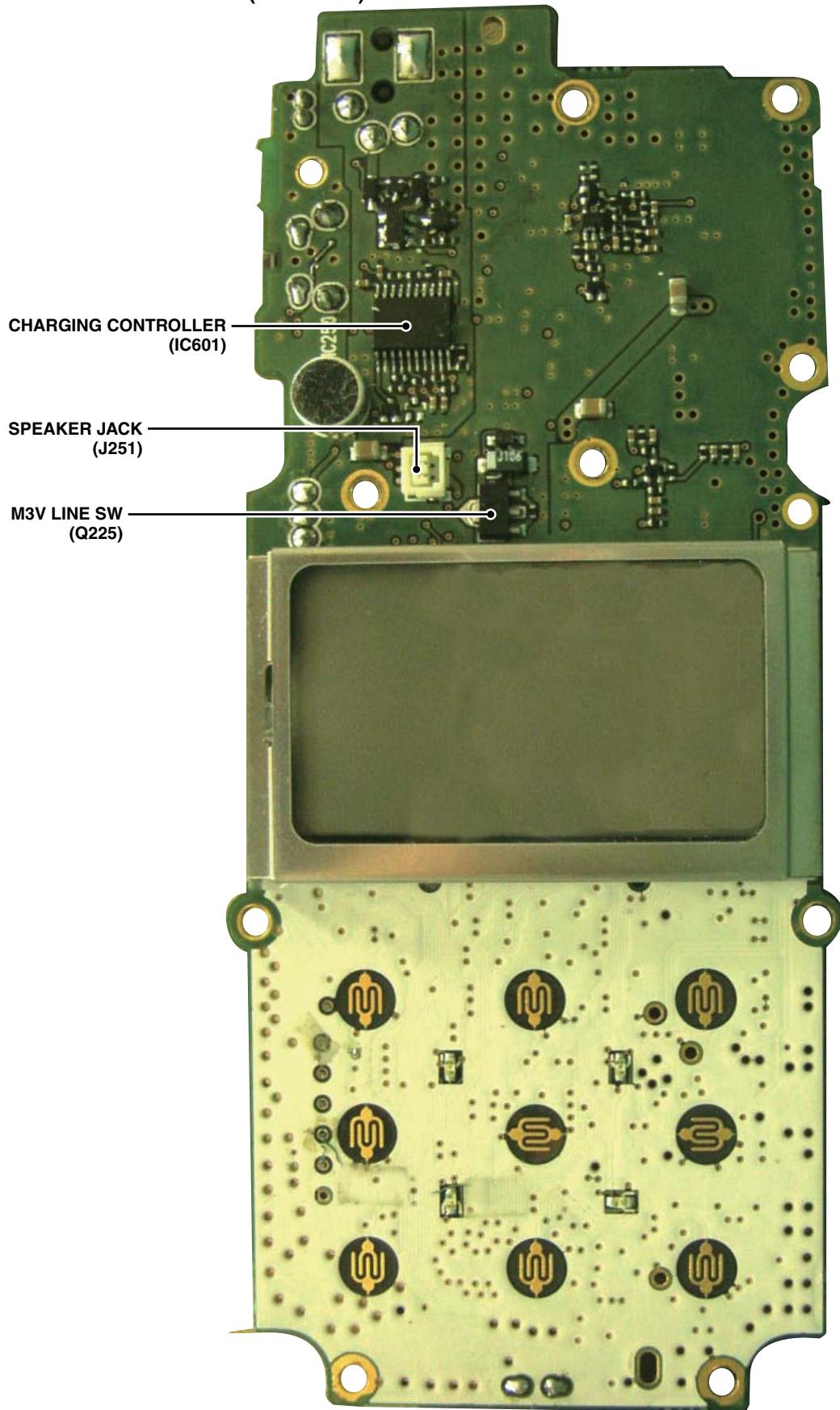
- Output power : 5 W (approximately; High) and 1 W (Low)
- Modulation system : Variable reactance frequency modulation
- Maximum frequency deviation : ±5 kHz
- Adjacent channel power : 70 dB
- Spurious emissions : -68 dBc typical
- Residual modulation : 40 dB
- Audio frequency response : +1 dB to -3 dB of 6 dB oct. from 300–3000 Hz

◊ RECEIVER

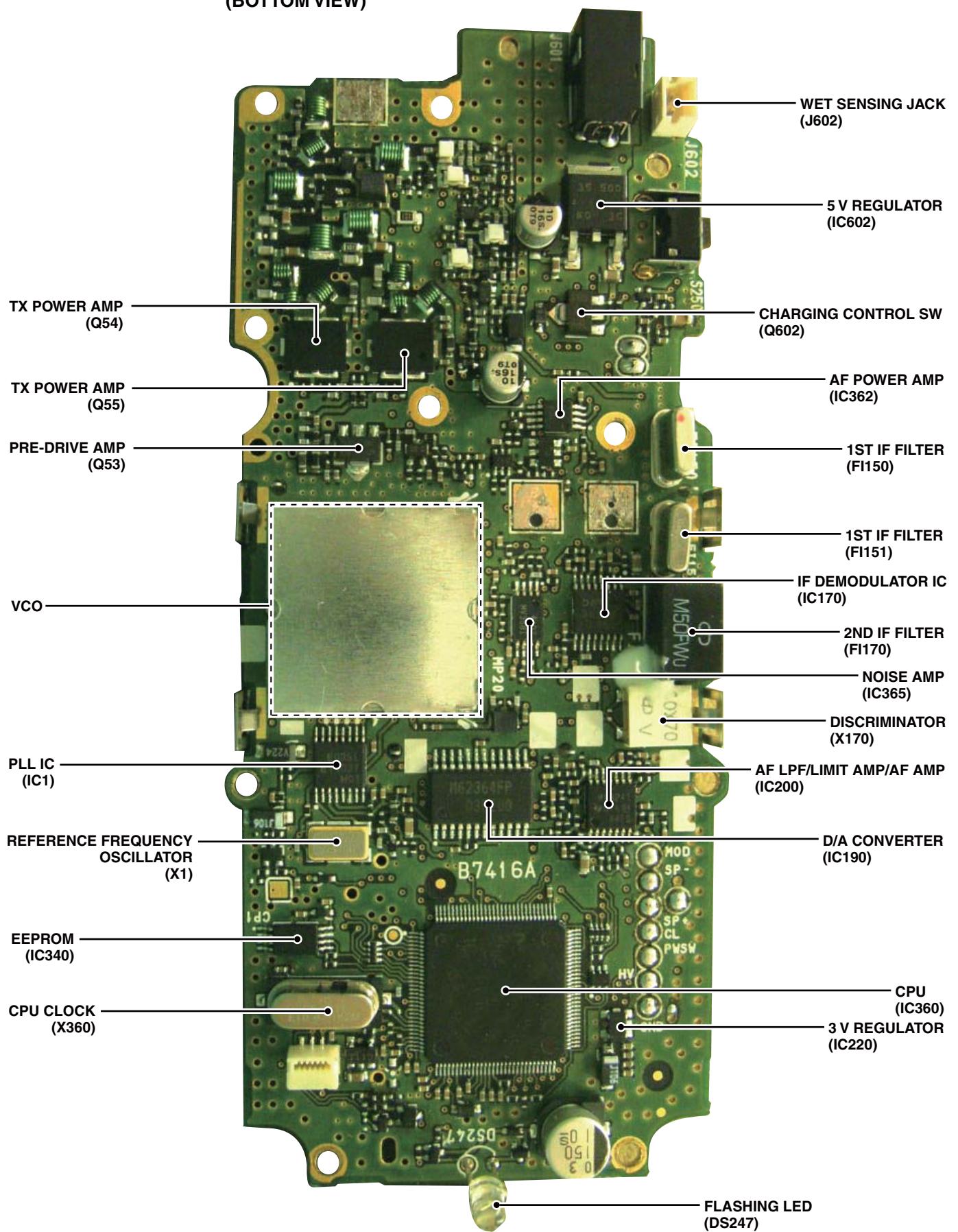
- Receive system : Double-conversion superheterodyne
- Intermediate frequency : 1st 21.7 MHz, 2nd 450 kHz
- Sensitivity (12 dB SINAD) : 0.25 μV typical
- Squelch sensitivity : 0.35 μV typical (at threshold)
- Intermodulation : 70 dB typical
- Spurious response : 70 dB typical
- Adjacent channel selectivity : 70 dB typical
- Audio output impedance : 8 Ω
- Audio output power : 0.6 W typical (at 10% distortion)

All stated specifications are subject to change without notice or obligation.

• MAIN UNIT
(TOP VIEW)



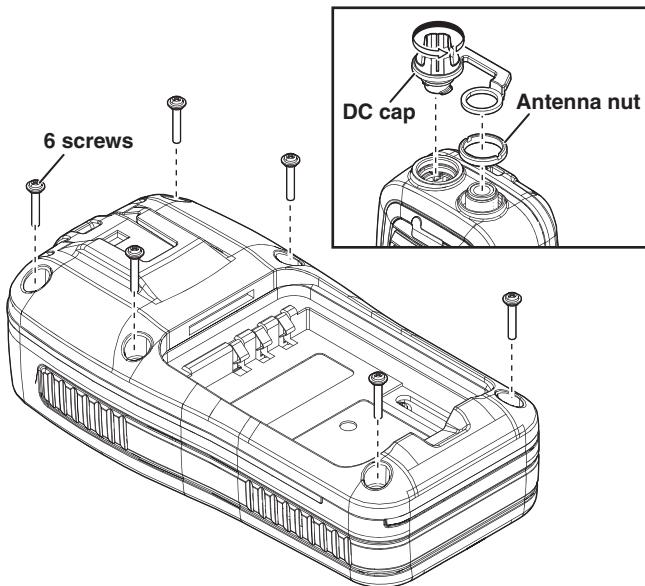
• MAIN UNIT
(BOTTOM VIEW)



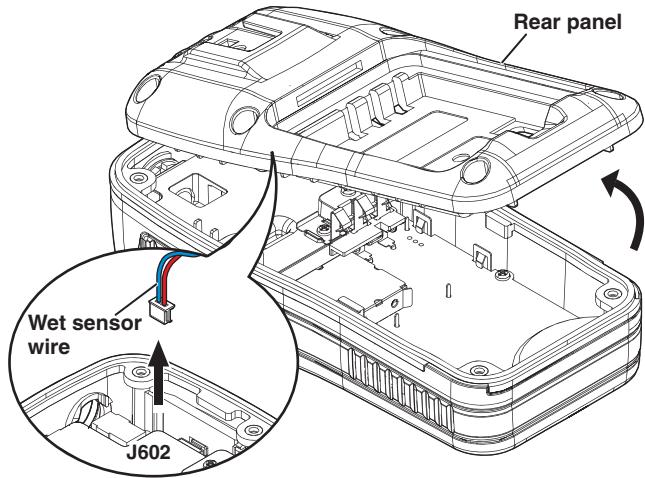
SECTION 3 DISASSEMBLY INSTRUCTION

1. REMOVING THE PCB

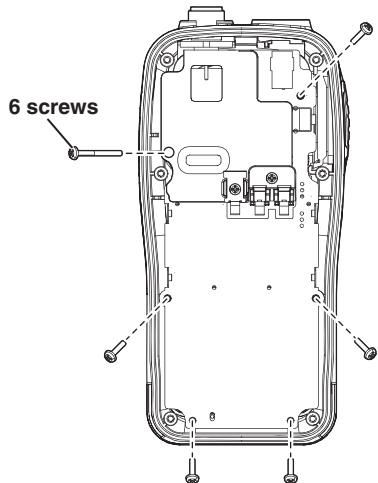
- 1) Remove the battery pack from the transceiver.
- 2) Remove the DC cap and antenna nut.
- 3) Remove 6 screws from the rear panel.



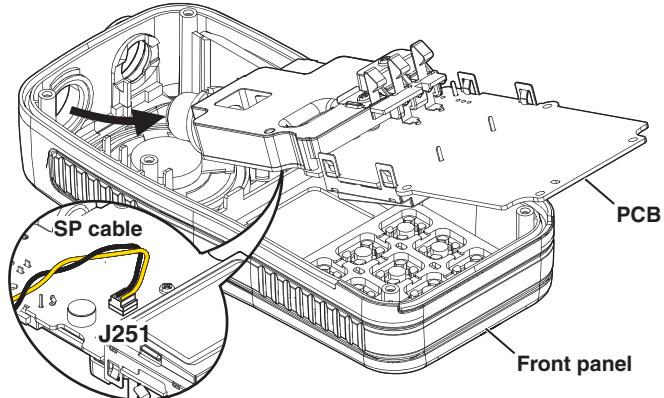
- 4) CAREFULLY lift the rear panel up and unplug the wet sensor wire.



- 5) Remove 6 screws from the PCB.

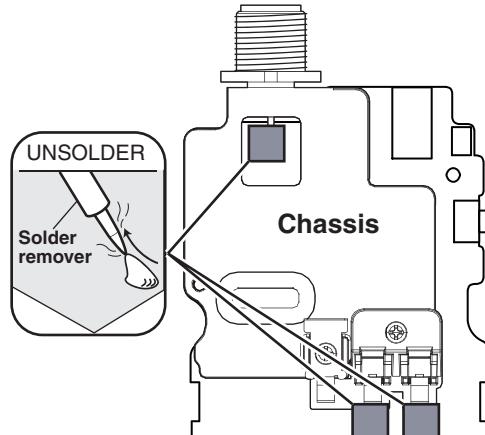


- 6) CAREFULLY lift the PCB out of the front panel, and then turn it over in order to unplug the speaker wire.

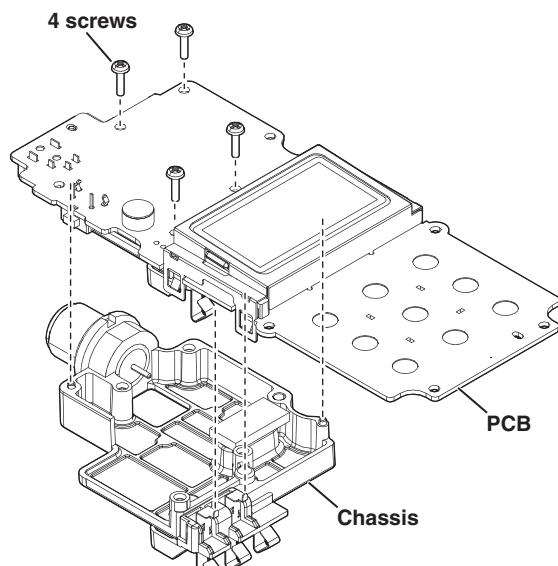


2. REMOVING THE CHASSIS

- 1) Unsolder 3 points shown.



- 2) Remove 4 screws from the PCB, and then remove the CHASSIS.



(Continued on the right above.)

SECTION 4

CIRCUIT DESCRIPTION

4-1 RECEIVER CIRCUITS

RF CIRCUITS

The RF circuits consist of RF filters, antenna switch (ANT SW), RF amplifier (RF AMP), etc., and extract and amplify the signal of frequency which is desired to receive.

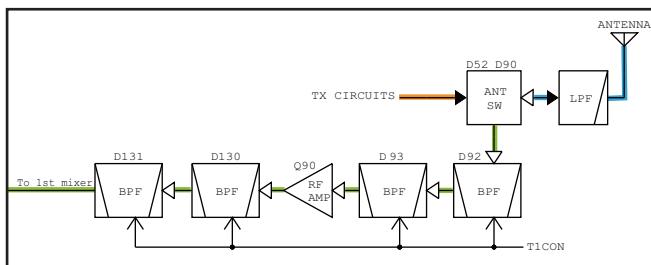
• ANTENNA SWITCHING CIRCUIT

The RF signal from the antenna is passed through the LPF (L81, L82, C83–C86, C89) and antenna SW (D52, D90, L90, C90, C91), and then applied to the RF AMP (Q90) through the 2-staged tuned BPF (D92, D93, L92, L93, C95, C97–C100, C117).

• RF AMPLIFIER

The filtered RX signal is amplified by the RF AMP (Q90) and passed through another 2-staged BPF (D130, D131, L96, L97, L110, L112–L115) to remove unwanted signals. The filtered signal is applied to the 1st mixer (Q150).

• RF CIRCUITS



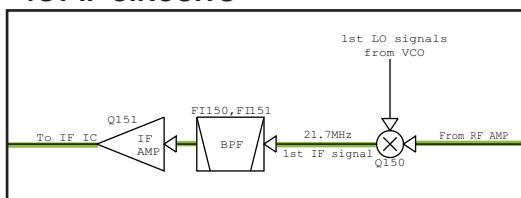
1ST IF, 2ND IF AND DEMODULATOR CIRCUITS

• 1ST IF CIRCUITS

The RX signal is mixed with 1st LO signal at the 1st mixer (Q150), resulting in the 21.7 MHz 1st IF signal. The converted 1st IF signal is filtered by the crystal filters (FI150 and F1151) to remove unwanted out-of-band signals.

The filtered 1st IF signal is amplified by the 1st IF AMP (Q151), and then applied to the IF demodulate IC (IC170, pin 16).

• 1ST IF CIRCUITS



• 2ND IF AND DEMODULATOR CIRCUITS

IC170 is an IF demodulate IC which contains the 2nd local oscillator, 2nd mixer, limiter and quadrature detector in its package.

The 21.25 MHz reference frequency signal from the PLL IC (IC1, pin 2) is applied to the IF demodulate IC (IC170, pin 2) as the 2nd LO signal, and then mixed with 21.7 MHz 1st IF signal from the 1st AMP (Q151). The resulting signal of 450 kHz 2nd IF signal is output from the pin 3 of IC170.

The 2nd IF signal is filtered by the external ceramic filter (FI170) to extract 450 kHz signal only, and then applied to the internal quadrature detector to be frequency-demodulated. The demodulated AF signals are output from the pin 9.

The quadrature detector is a frequency demodulator which uses a discriminator (X170) as a phase delay, and provides demodulation without any adjustment.

SQUELCH CIRCUIT

A portion of AF signal from the IF demodulate IC is adjusted in level by the D/A converter (IC190), and then applied to the noise amplifier (IC170, R174–R176, C179, C180).

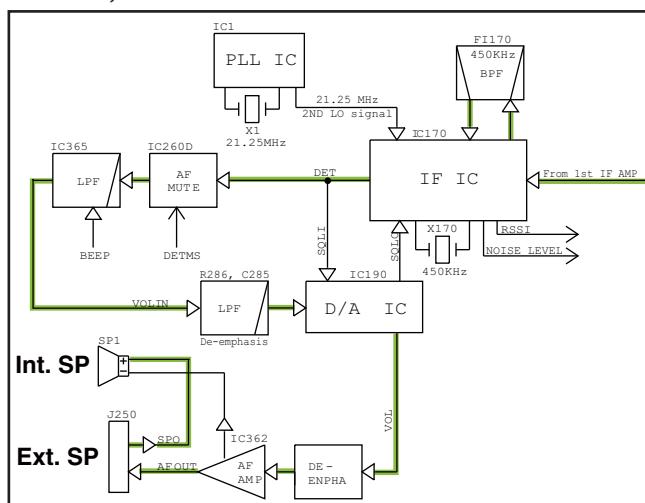
Only noise components (approximately 30 kHz signal) are amplified by the noise amplifier, and then rectified by the internal noise detector to be converted into DC voltage corresponding to noise level; the squelch voltage. The squelch voltage is output from the pin 14 of IC170, and then applied to the A/D port of the CPU (IC360, pin 33).

The CPU (IC360) compares input voltage and preset squelch level to control audio signals ON/OFF (emit/mute).

RX AF CIRCUITS

The demodulated AF signal from the IF demodulate IC (IC170, pin 9) is passed through the AF mute SW (IC260D) and LPF (IC365). The filtered AF signal is de-emphasized by R286 and C285 to obtain –6 dB/oct. of frequency response, and then applied to the D/A converter (IC190). The level-adjusted AF signal is amplified by the AF power amplifier (IC362), and then applied to the speaker (CHASSIS: SP1).

• 2ND IF, DEMODULATOR AND RX AF CIRCUITS



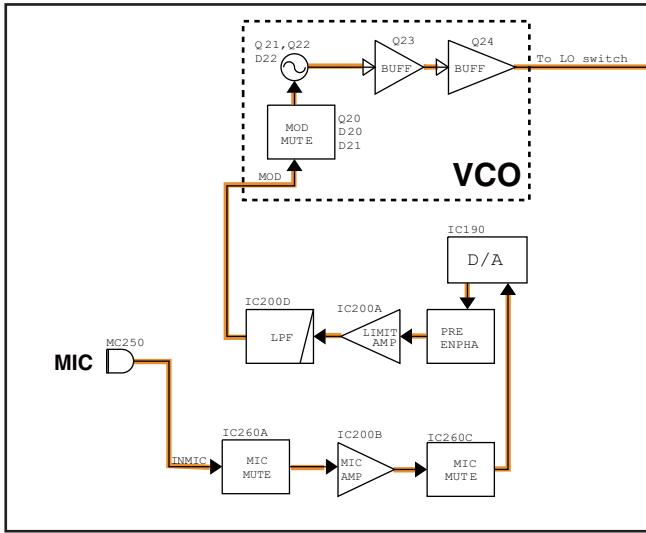
4-2 TRANSMITTER CIRCUITS

TX AF CIRCUITS

AF signal from the microphone (MIC signals) is passed through the MIC mute SW (IC260A), amplified by MIC AMP (IC200B), and then applied to the D/A converter (IC190), through another MIC mute SW (IC260C).

The level-adjusted MIC signal is pre-emphasized by R201 and C385 to obtain +6 dB/oct of frequency response, and then passed through the limiter (IC200A) to prevent over deviation. The amplitude-limited MIC signal is filtered by the splatter filter (IC200D) to remove 3 kHz and higher signals, and then applied to the VCO (Q21, Q22, D22) for frequency modulation.

• TX AF AND MODULATION CIRCUITS



TX AMPLIFIERS

The frequency-modulated signal from the VCO (Q21, Q22, D22) is passed through the buffers (Q23 and Q24) and LO SW (D50), and then sequentially amplified by the buffer AMP (Q50) and pre-drive AMP (Q53).

The amplified signal is splitted by the power splitter (L100, L101, R463, C445, C446) and applied to the power AMPs (Q54 and Q55). The amplified signals are combined at the power combiner (L107, L108, R465, C457, C458) to obtain the TX output power.

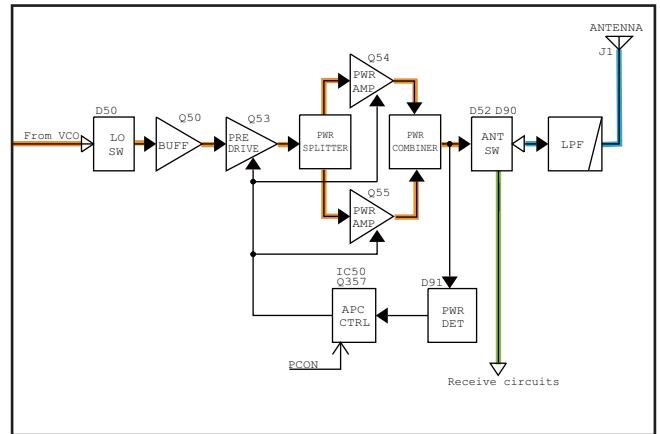
The amplified TX signal is passed through the ANT SW (D52) and LPF, and then applied to the antenna.

APC CIRCUIT

A portion of TX output signal is rectified by D91 to produce the DC voltage which corresponds to the TX power level.

The APC AMP (IC50) compares the voltage and TX power setting voltage from the D/A converter (IC190). The resulting voltage from the APC AMP controls the gain of both driver AMP (Q53) and power AMPs (Q54 and Q55), to keep the TX output power stable.

• TX AMPLIFIERS AND APC CIRCUIT



4-3 FREQUENCY SYNTHESIZER CIRCUITS

VCO

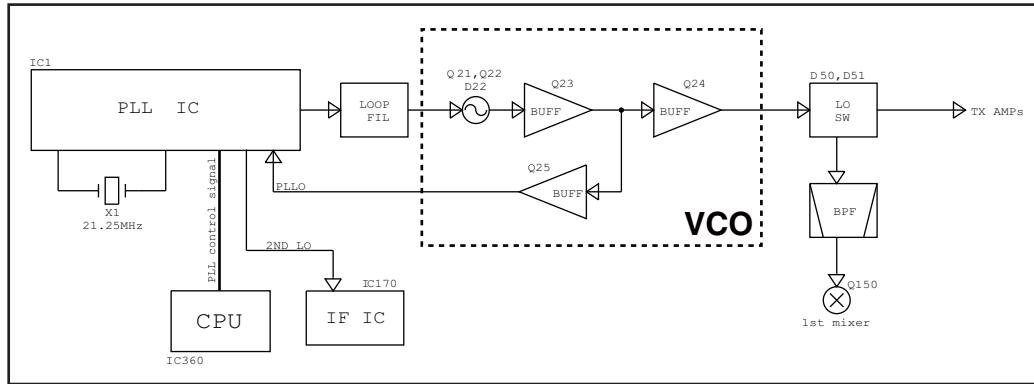
While transmitting, the oscillation frequency of VCO (Q21, Q22, D22) is determined by the value of D22, L22, C26 and C27, and the frequency modulation is carried out by adding modulation signal to D20.

The generated signal is passed through the buffers (Q23 and Q24), and then applied to the pre-drive AMP (Q53), through the LO SW (D50) and buffer (Q50).

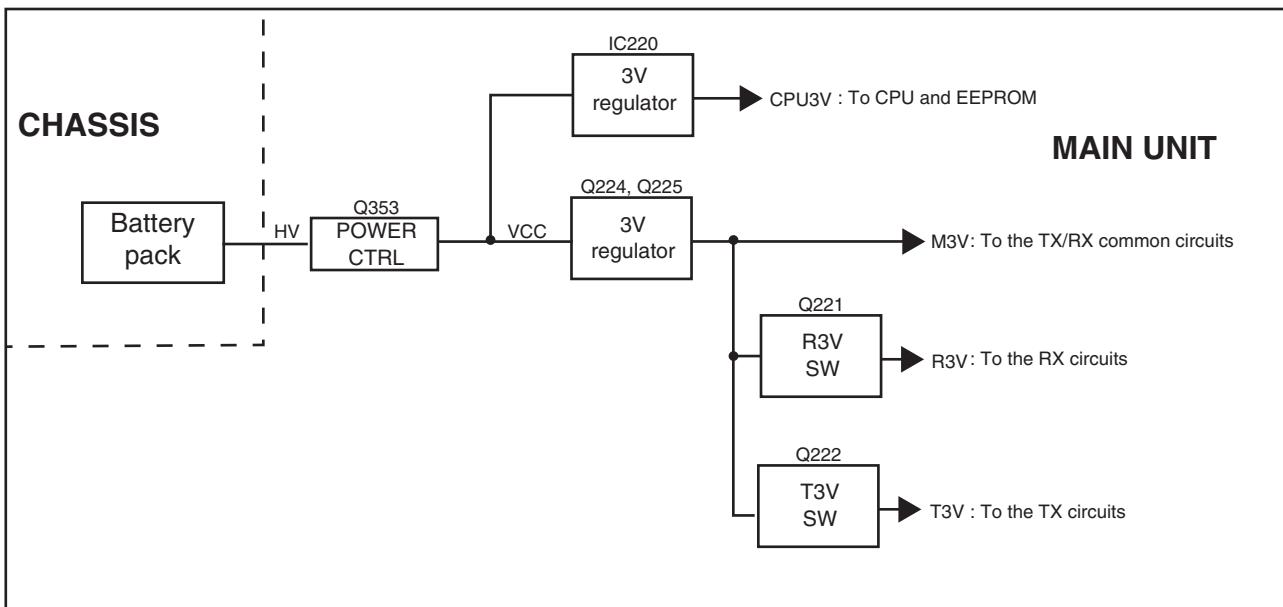
While receiving, D21 is turned ON and C28 is connected to the GND to shift the oscillation frequency lower.

The generated signal is passed through the buffers (Q23 and Q24), and then applied to the 1st mixer (Q150), through the LO SW (D51).

• FREQUENCY SYNTHESIZER CIRCUITS



4-4 VOLTAGE BLOCK DIAGRAM



PLL

IC1 is a PLL IC which contains the prescaler, programmable counter, phase comparator and charge pump in its package.

The 21.25 MHz reference frequency signal is fed from X1.

The loop filter for the VCO is composed by R8, R10, R22, C11, C13 and C24.

4-5 PORT ALLOCATIONS

• CPU (IC360)

PIN No.	LINE NAME	DESCRIPTION	I/O
1	BEEP	Beep audio (Squarewave).	O
2	PS	PLL power save mode control.	O
3	TDEC	Decoded tone signal. (for monitoring purpose)	O
4	DASTB	Strobe for the D/A converter.	O
5	PLSTB	Strobe for the PLL IC.	O
10	SDATA	Serial data for the PLL IC and D/A converter.	O
11	SCK	Serial clock to the PLL IC and D/A converter.	O
12	ESCK	Serial clock for the EEPROM.	O
13	ESDA	Serial clock from/to the EEPROM.	I/O
25	RES	CPU reset.	I
27	TEMPV	Temparature sensing voltage.	I
28	BTEMPV	Battery temparature sensing voltage.	I
29	LOINV	Lock voltage from the PLL IC.	I
30	TDETV	TX power sensing voltage.	I
31	BATTV	Battery voltage. (Divided voltage)	I
32	RSSIV	RSSI voltage from the IF demodulate IC.	I
33	NOISV	Noise level sensing voltage from the IF demodulate IC.	I
34	DCV	Input voltage detection.	I
36	WDECV*	Weather alert tone signal.	I
38	ATIS**	ATIS signal.	O
51–72	SEG0-SEG21	LCD driver segment terminals.	O
77	LEDS	Backlight control.	O
78	CRESET	Charging control IC reset.	O
79	LCDS	LCD contrast control.	O
80	MICMS	MIC mute SW control. L=MIC mute.	O
81	ATX	MIC control. H=While transmitting.	O
85	AFVS	AF power AMP control. H=While the squelch is opened.	O
86	V3VS	VCO power supply control.	O
87	M3VS	Main power supply control.	O
88	LOW	TX power control. H=The TX power is set to Low.	O
89	R3VS	R3V line control. L=While receiving. (RX circuits activated)	O
90	T3VS	T3V line control. L=While transmitting. (TX circuits activated)	O
97	PON	Main power supply line control.	O
98	DETMS	RX AF line mute. L=Mute.	O
99	LEDI-R	Charge status. L=While charging. Pulse=Charging error.	I
100	LEDI-G	Charge status. L=When the battery is fully charged.	I

*: M24 only **: [FRG] and [HOL] only

PIN No.	LINE NAME	DESCRIPTION	I/O
101	PTTM	MIC mute control. L=MIC mute.	O
103	PTTIN	[PTT] input. H=Pushed.	I
106	LOW	TX power control. H=TX power is set to low.	O
107	TXMS	Transmitting control. H=TX mute.	O
108	16/9	[16/9] input. L=Pushed.	I
109	CH/WX	[CH/WX] input. L=Pushed.	I
110	UP	[▲] input. L=Pushed.	I
111	DOWN	[▼] input. L=Pushed.	I
112	FAV	[FAV] input. L=Pushed.	I
113	VOL/SQQL	[VOL/SQQL] input. L=Pushed.	I
114	SCAN	[SCAN] input. L=Pushed.	I
116	H/L	[H/L] input. L=Pushed.	I
117	UNLK	PLL unlock signal input. (PLL malfunction detection) H=PLL unlocked.	I
119	PWSW	[⊕] input. H=Pushed.	I

• D/A CONVERTER (IC190)

PIN No.	LINE NAME	DESCRIPTION
1, 2	FCON	Reference frequency adjustment voltage.
3, 4	PCON	TX output power adjustment voltage.
9, 10	MODC	Deviation adjustment.
11, 12	MSENS	MIC signal level (MIC sensitivity) adjustment.
13, 14	VOLO	AF output power adjustment.
15, 16	SQLO	Squelch threshold level adjustment.
21, 22	T1CON	BPF tuning voltage.

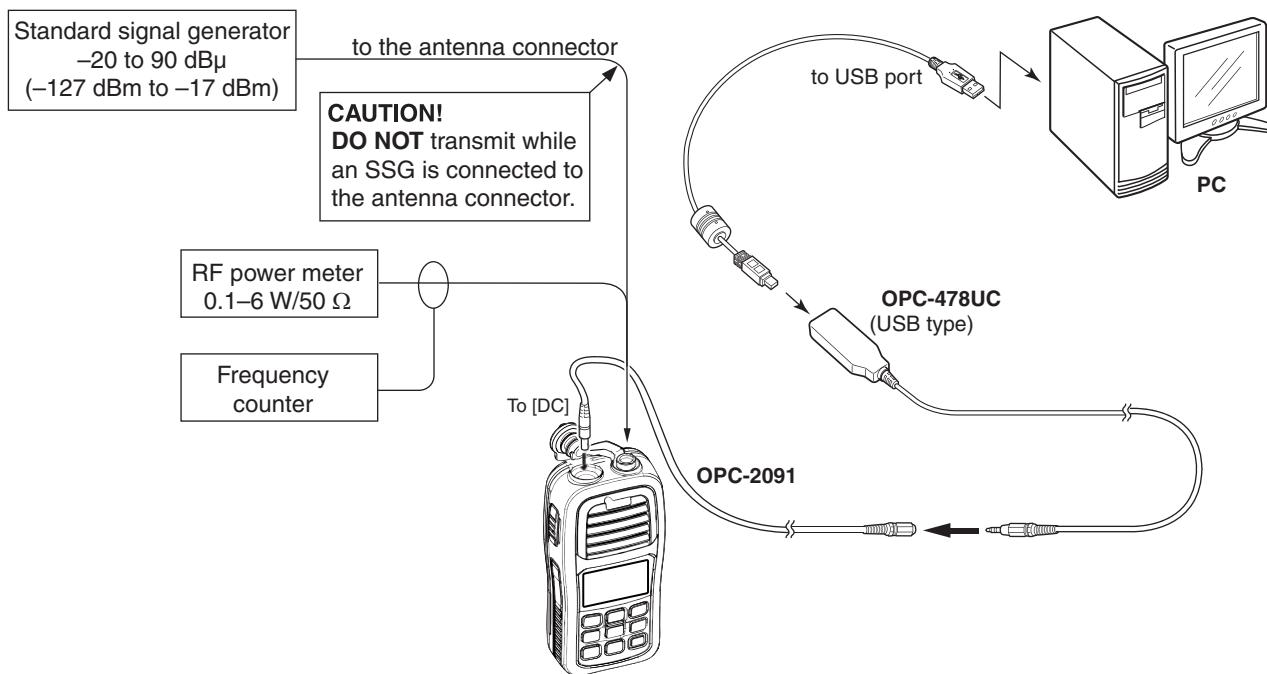
SECTION 5 ADJUSTMENT PROCEDURE

5-1 PREPARATION

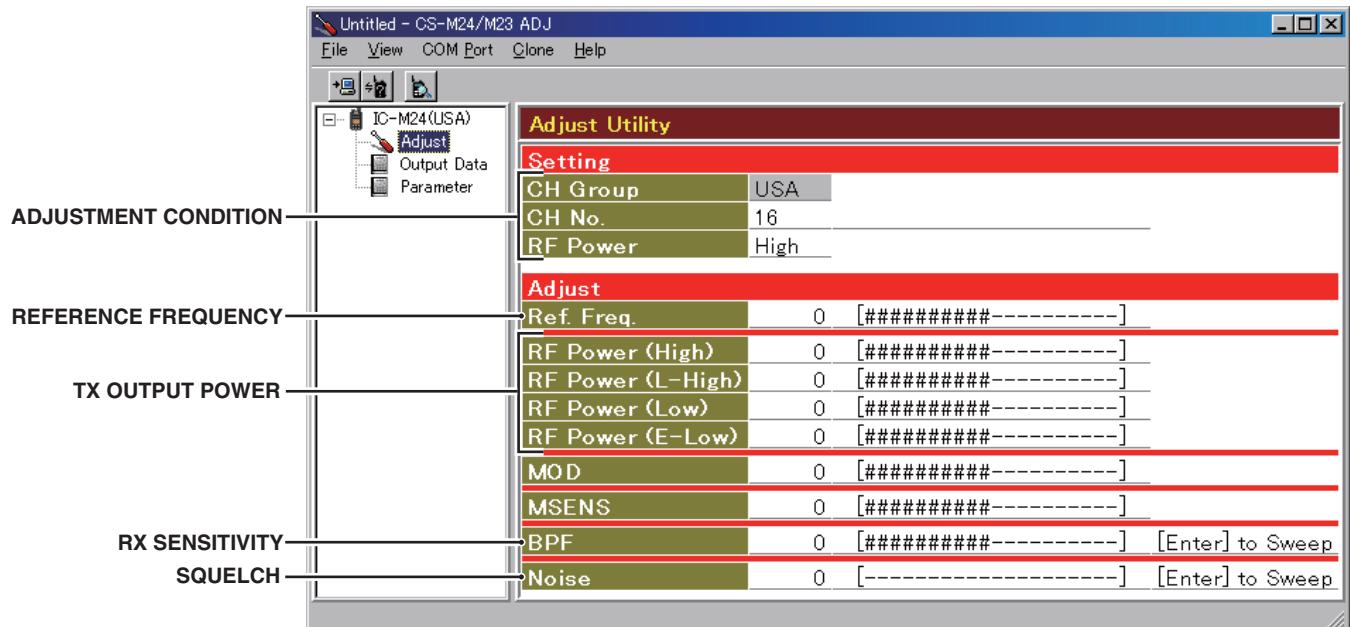
■ REQUIRED EQUIPMENTS

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
Cloning software	CS-M24/M23 ADJ (Revision 1.0 or later)	Cables	OPC-478UC and OPC-2091
RF power meter (50 Ω terminated)	Measuring range : 0.1–6 W Frequency range : 100–300 MHz SWR : Less than 1.2 : 1	Frequency counter	Frequency range : 0.1–300 MHz Frequency accuracy : ±1 ppm or better Input level : Less than 1 mW
		Standard signal generator (SSG)	Frequency range : 0.1–300 MHz Output level : –20 dBμ to 90 dBμ (-127 to –17 dBm)

■ CONNECTION



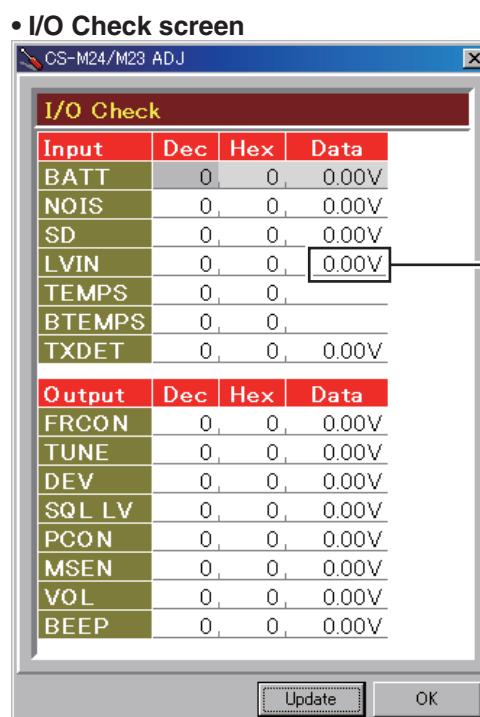
■ ADJUSTMENT UTILITY SCREEN



5-2 FREQUENCY ADJUSTMENTS

- 1) Select an adjustment item using [↑]/[↓] on the PC's keyboard.
- 2) Set or modify the adjustment value as specified using [←]/[→] on the PC's keyboard, then push [ENTER].

ADJUSTMENT		TRANSCEIVER'S CONDITION	OPERATION	ADJUSTMENT ITEM	VALUE
PLL LOCK VOLTAGE VERIFICATION	1	• CH. : 16 • Receiving	1) Connect an RF power meter to the antenna connector.	[LVIN] (On the "I/O Check screen")	1.95–2.95 V
	2	• CH. : 16 • Transmitting	2) Click the [Update (F5)] button to check on the "I/O Check screen" as below.		1.50–2.50 V
REFERENCE FREQUENCY	1	• CH. • Transmitting : 16	• Loosely couple a frequency counter to the antenna connector.		[Ref. Freq.] 156.800000 MHz (±500 Hz)



(The values shown above are example only.
Each transceiver has own values.)

5-3 RECEIVE ADJUSTMENTS

- 1) Select an adjustment item using [\uparrow]/[\downarrow] on the PC's keyboard.
- 2) Set or modify the adjustment value as specified using [\leftarrow]/[\rightarrow] on the PC's keyboard, then push [ENTER].

ADJUSTMENT		TRANSCEIVER'S CONDITION	OPERATION	ADJUSTMENT ITEM	VALUE
RX SENSITIVITY	1	NOTE: When "RX SENSITIVITY" is re-adjusted, "SQUELCH" must be re-adjusted too. • CH. : 16 • Receiving		• Connect an SSG to the antenna connector and set it as; Frequency : 156.800 MHz Level [†] : +30 dB μ (-77 dBm) Modulation : 1 kHz Deviation : \pm 3.0 kHz	[BPF] Push [ENTER] on [BPF]. (Automatic adjustment)
SQUELCH	1	NOTE: When "RX SENSITIVITY" must be adjusted before "SQUELCH." And when "RX SENSITIVITY" is re-adjusted, "SQUELCH" must be re-adjusted too. • CH. : 16 • Receiving		• Connect an SSG to the antenna connector and set it as; Frequency : 156.800 MHz Level [†] : -4 dB μ (-111 dBm) [M24] and [AUS] -3 dB μ (-110 dBm) [M23] except [AUS] Modulation : 1 kHz Deviation : \pm 3.0 kHz	[Noise] Push [ENTER] on [Noise]. (Automatic adjustment)

[†]; The output level of the standard signal generator (SSG) is indicated as the SSG's open circuit.

5-4 TRANSMIT ADJUSTMENTS

- 1) Select an adjustment item using [\uparrow]/[\downarrow] on the PC's keyboard.
- 2) Set or modify the adjustment value as specified using [\leftarrow]/[\rightarrow] on the PC's keyboard, then push [ENTER].

ADJUSTMENT		TRANSCEIVER'S CONDITION	OPERATION	ADJUSTMENT ITEM	VALUE
TX OUTPUT POWER (High)	1	• CH. : 16 • Transmitting	• Connect an RF power meter to the antenna connector.	[RF Power (High)]	4.5 W
(L_High)*	2			[RF Power (L_High)]	2.5 W
(Low)	3			[RF Power (Low)]	0.75 W
(E_Low)*	4			[RF Power (E_Low)]	0.45 W

*: For only [FRG] version.

SECTION 6

PARTS LIST

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
IC1	1130011671	S.I.C MB15E03SLPFV1-G-ER-6E1	B	41.85/11.6
IC50	1110006490	S.I.C LMV321IDCKR	T	96.7/19.9
IC170	1110007320	S.I.C NJM2591V-TE1-#ZZB	B	56.7/36.9
IC190	1190001350	S.I.C M62364FP 600D	B	39.0/25.3
IC200	1110006470	S.I.C LMV324IPWR	B	37.7/38.1
IC220	1180003690	S.REG NJU7772F03-TE1-#ZZB	B	15.9/38.9
IC260	1130011770	S.I.C CD4066BPWR	T	52.7/34.0
IC340	1130015560	S.I.C S-24C64C1-T8T1U3	B	25.0/7.3
IC341	1110007790	S.I.C NJU7704F03A-TE1-#ZZB	B	13.6/13.6
IC360	1140015840	S.I.C UPD780318G-5C1-9EB-A (FX3340A)	B	19.6/26.8
IC362	1110007610	S.I.C TPA0211DGNR	B	76.0/32.8
IC365	1110006740	S.I.C LMV358IPWR	B	56.1/29.9
IC601	1190002270	S.I.C NJW4100V-TE1-#ZZB	T	88.4/34.8
IC602	1180003470	S.REG NJM2835DL1-05-TE1-#ZZB	B	95.5/36.7
Q3	1560000811	S.FET 2SK1069-4-TL-E	B	33.3/5.1
Q20	1590004070	S.TRA LDTCA44EET1G <SLVJ>	B	53.5/14.5
Q21	1530004011	S.TRA KTC3770U-C-RTK/P	B	61.2/15.0
Q22	1530004011	S.TRA KTC3770U-C-RTK/P	B	62.5/11.4
Q23	1530002381	S.TRA 2SC4215-Y(TE85LF)	B	58.3/20.2
Q24	1530002381	S.TRA 2SC4215-Y(TE85LF)	B	64.1/21.5
Q25	1530002381	S.TRA 2SC4215-Y(TE85LF)	B	52.5/22.0
Q50	1530004011	S.TRA KTC3770U-C-RTK/P	B	72.4/19.0
Q53	1560001550	S.FET RD01MUS2-T113	B	72.5/13.3
Q54	1560001700	S.FET RD07MUS2B-T112	B	82.6/9.1
Q55	1560001700	S.FET RD07MUS2B-T112	B	82.6/17.6
Q90	1580000751	3SK294(TE85LF)	B	96.2/24.1
Q150	1580000731	S.FET 3SK293(TE85LF)	B	88.1/25.6
Q151	1530003890	S.TRA KTC3880S Y-RTK/P	T	56.2/40.6
Q221	1510001151	S.TRA L2SA1576AST1G <SLVJ>	T	61.7/27.2
Q222	1510001151	S.TRA L2SA1576AST1G <SLVJ>	T	64.3/27.0
Q224	15900003800	S.TRA KTC811U-GR-RTK/P	T	67.1/27.9
Q225	1520000840	S.TRA KTA1664Y-RTF/P	T	72.9/28.2
Q230	1550000090	S.FET RSQ035P03TR	B	72.5/31.7
Q231	1590003800	S.TRA KTC811U-GR-RTK/P	B	71.5/27.4
Q240	1590004230	S.TRA LMUN5213DW171G <SLVJ>	B	20.5/37.1
Q250	1590004070	S.TRA LDTCA44EET1G <SLVJ>	B	88.3/41.6
Q350	1590004100	S.TRA LDTCA44EET1G <SLVJ>	B	6.5/15.7
Q351	1590004050	S.TRA LDTA144EET1G <SLVJ>	T	99.2/20.0
Q353	1550000090	S.FET RSQ035P03TR	T	63.8/35.2
Q354	1590004070	S.TRA LDTCA44EET1G <SLVJ>	T	67.6/35.1
Q357	1590004070	S.TRA LDTCA44EET1G <SLVJ>	T	91.3/19.8
Q362	1590004070	S.TRA LDTCA44EET1G <SLVJ>	B	64.4/8.5
Q363	1550000090	S.FET RSQ035P03TR	T	96.6/36.1
Q364	1550000170	S.FET 2SJ347(TE85LF)	T	100.0/36.3
Q365	1590004050	S.TRA LDTA144EET1G <SLVJ>	T	76.1/15.3
Q366	1590004070	S.TRA LDTCA44EET1G <SLVJ>	T	65.6/24.6
Q602	1520000840	S.TRA KTA1664Y-RTF/P	B	86.4/35.1
Q603	1590004070	S.TRA LDTCA44EET1G <SLVJ>	T	81.5/36.7
Q606	1550000090	S.FET RSQ035P03TR	T	60.4/35.2
Q608	1550000170	S.FET 2SJ347(TE85LF)	B	4.9/23.5
Q609	1590004100	S.TRA LDTCA44EET1G <SLVJ>	B	4.6/28.5
D1	1750000771	S.VAR HVC376BTR-E	B	34.0/16.8
D3	1750001810	S.DIO L1SS400T1G <SLVJ>	B	30.8/10.1
D20	1790001261	S.DIO MA2S077G0L	B	51.5/12.8
D21	1790001261	S.DIO MA2S077G0L	B	54.5/16.2
D22	1750001780	S.VAR HVB350BYPTL-E	B	61.9/7.6
D50	1750001910	S.DIO HVD144AKRF-E	B	70.0/23.6
D51	1750001910	S.DIO HVD144AKRF-E	B	81.0/24.0
D52	1750000581	S.DIO 1SV307(TPH3F)	B	101.0/12.0
D90	1750001910	S.DIO HVD144AKRF-E	B	99.1/18.1
D91	1790001670	S.DIO RB706F-40T106	B	97.7/10.3
D92	1750001190	S.VAR KDV214E RTK/P	B	103.1/25.8
D93	1750001190	S.VAR KDV214E RTK/P	B	100.8/25.8
D130	1750001190	S.VAR KDV214E RTK/P	B	92.3/26.0
D131	1750001190	S.VAR KDV214E RTK/P	B	90.1/25.8
D350	1750001180	S.DIO KDS122 RTK/P	B	7.2/18.3
D353	1750002170	S.DIO DB2S31400L	B	99.9/20.2
D355	1750001810	S.DIO L1SS400T1G <SLVJ>	B	27.5/9.9
D356	1750001810	S.DIO L1SS400T1G <SLVJ>	B	75.1/28.4
D357	1790001860	S.VAR EZJZ0V80010	T	65.6/39.9
D358	1750001850	S.DIO LDAN222T1G <SLVJ>	T	67.6/32.7
D359	1750002110	S.DIO LRB551V-30T1G <SLVJ>	T	97.2/32.7
D360	1750002110	S.DIO LRB551V-30T1G <SLVJ>	T	99.9/34.3
D601	1750002110	S.DIO LRB551V-30T1G <SLVJ>	T	99.9/38.2
D603	1750002110	S.DIO LRB551V-30T1G <SLVJ>	B	86.0/31.1
D604	1730002870	S.ZEN LM3Z3V0T1G <SLVJ>	B	7.7/23.9
D609	1750001810	S.DIO L1SS400T1G <SLVJ>	T	59.8/32.2
D610	1750002110	S.DIO LRB551V-30T1G <SLVJ>	T	78.8/27.3
D612	1750001810	S.DIO L1SS400T1G <SLVJ>	B	6.4/28.6
FI150	2030000350	MON 21R15AB (FL-368)		
FI151	2030000481	MON 21R15AB (FL-399A)		
FI170	2020002410	CER LTM450FW <JJE>		
X1	6050011740	S.XTA CR-766 TSS-6035B 21.250 MHz	B	34.4/11.5
X170	6070000310	S.DIS JTBM450CX70 <JJE>	B	46.7/42.5
X360	6050013200	S.XTA CR-911(HC49U/SM 4.9152 MHz <SKD>)	B	18.9/10.0
L1	6200009141	S.COI NLV25T-6R8J	B	46.05/27.6

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
L20	6200011021	S.COI ELJRF 82NJFB	B	51.0/20.0
L21	6200002861	S.COI NLV25T-4R7J	B	51.5/9.2
L22	6200009910	S.COI C6342A-88NG-A	B	57.0/9.7
L23	6200011031	S.COI ELJRF R10JFB	B	60.3/19.6
L24	6200011031	S.COI ELJRF R10JFB	B	62.9/19.8
L25	6200007001	S.COI ELJRE 82NGFA	B	54.3/20.4
L50	6200011031	S.COI ELJRF R10JFB	B	73.8/20.3
L51	6200011021	S.COI ELJRF 82NJFB	B	74.3/16.7
L53	6200006981	S.COI ELJRE R10GFA	B	71.4/9.2
L55	6200012680	S.COI 0.30-1.3-5TL 20N <COMO>	B	87.6/9.6
L56	6200012390	S.COI 0.30-0.92-3TR 5.8N <COMO>	B	87.1/6.5
L57	6200012680	S.COI 0.30-1.3-5TL 20N <COMO>	B	89.7/6.0
L58	6200003711	S.COI NLV25T-2R7J	B	98.6/14.4
L80	6200012470	S.COI 0.30-1.7-TTL 45.3N <COMO>	B	98.6/5.9
L81	6200012770	S.COI 0.26-1.1-7TR 24N <COMO>	B	102.3/8.6
L82	6200012780	S.COI 0.30-1.4-6TL 27.2N <COMO>	B	106.1/9.0
L90	6200012470	S.COI 0.30-1.7-TTL 45.3N <COMO>	B	101.8/16.4
L92	6200007750	S.COI LQW2BHN56NJ03L	B	102.3/21.7
L93	6200007750	S.COI LQW2BHN56NJ03L	B	99.7/22.5
L96	6200007750	S.COI LQW2BHN56NJ03L	B	94.0/26.6
L97	6200007750	S.COI LQW2BHN56NJ03L	B	91.4/23.0
L98	6200003680	S.COI LQH31MNR82M03L	B	84.6/28.6
L99	6200011001	S.COI ELJRF 56NJFB	B	73.7/9.2
L100	6200010991	S.COI ELJRF 47NJFB	B	77.5/12.8
L101	6200010991	S.COI ELJRF 47NJFB	B	77.5/13.7
L102	6200007901	S.COI ELJRF 22NJFB	B	78.7/10.0
L103	6200007901	S.COI ELJRF 22NJFB	B	78.7/16.4
L104	6200012680	S.COI 0.30-1.3-5TL 20N <COMO>	B	87.6/20.2
L105	6200012390	S.COI 0.30-0.92-3TR 5.8N <COMO>	B	87.0/17.2
L106	6200012680	S.COI 0.30-1.3-5TL 20N <COMO>	B	89.8/17.1
L107	6200012470	S.COI 0.30-1.7-TTL 45.3N <COMO>	B	93.1/9.5
L108	6200012470	S.COI 0.30-1.7-TTL 45.3N <COMO>	B	94.9/13.3
R1	7510001661	S.THR NTCG16 4LH 473JT	B	37.3/16.8
R2	7030012480	S.RES ERJ2RKF 1003X (100K)	B	33.8/18.8
R3	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	37.6/18.2
R4	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	36.7/15.7
R5	7030007280	S.RES ERJ2GEJ 331 X (330)	B	37.5/8.5
R6	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	49.5/13.4
R7	7030005000	S.RES ERJ2GEJ 473 X (47K)	B	50.0/12.1
R8	7030008370	S.RES ERJ2GEJ 561 X (560)	B	40.7/6.4
R10	7030008370	S.RES ERJ2GEJ 561 X (560)	B	38.7/6.0
R11	7030005000	S.RES ERJ2GEJ 473 X (39K)	B	31.5/6.0
R12	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	35.2/5.6
R13	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	31.5/4.2
R20	7030004980	S.RES ERJ2GEJ 101 X (100)	B	51.0/18.4
R22	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	41.6/6.4
R23	7030004990	S.RES ERJ2GEJ 221 X (220)	B	52.7/12.6
R24	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	53.1/18.2
R25	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	52.7/16.5
R26	7030005290	S.RES ERJ2GEJ 682 X (6.8K)	B	63.1/16.2
R27	7030005210	S.RES ERJ2GEJ 822 X (8.2K)	B	63.5/13.2
R28	7030004980	S.RES ERJ2GEJ 101 X (100)	B	61.9/13.2
R30	7030005070	S.RES ERJ2GEJ 683 X (68K)	B	58.7/18.4
R31	7030004990	S.RES ERJ2GEJ 221 X (220)	B	60.8/18.4
R32	7030002720	S.RES ERJ2GEJ 151 X (150)	B	62.4/18.6
R33	7030003750	S.RES ERJ2GEJ 393 X (39K)	B	62.3/21.5
R34	7030002820	S.RES ERJ2GEJ 271 X (270)	B	55.8/18.8
R35	7030007350	S.RES ERJ2GEJ 393 X (39K)	B	55.3/20.4
R36	7030005710	S.RES ERJ2GEJ 121 X (120)	T	61.6/25.0
R47	7030008410	S.RES ERJ2GEJ 392 X (3.9K)	B	45.6/19.4
R50	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	71.0/24.8
R52	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	B	71.0/23.1
R53	7030004980	S.RES ERJ2GEJ 101 X (100)	B	71.9/23.6
R54	7030005530	S.RES ERJ2GEJ 100 X (10)	B	72.3/21.7
R55	7030007300	S.RES ERJ2GEJ 332 X (3.3K)	B	72.3/20.8
R56	7030007570	S.RES ERJ2GEJ 122 X (1.2K)	B	70.1/18.3
R57	7030005590	S.RES ERJ2GEJ 680 X (68)	B	70.1/19.3
R65	7030005100	S.RES ERJ2GEJ 154 X (150K)	T	94.3/21.3
R66	7030005070	S.RES ERJ2GEJ 683 X (68K)	T	93.8/20.1
R67	7030005310	S.RES ERJ2GEJ 124 X (120K)	T	96.2/17.8
R68	7030004980	S.RES ERJ2GEJ 101 X (100)	T	95.5/16.3
R69	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	74.5/15.2
R70	7030005100	S.RES ERJ2GEJ 154 X (15		

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
R120	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	B	82.0/24.9
R121	7030005220	S.RES ERJ2GEJ 223 X (22K)	B	86.1/24.0
R122	7030005100	S.RES ERJ2GEJ 154 X (150K)	B	88.7/23.6
R152	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	80.4/34.5
R153	7030005120	S.RES ERJ2GEJ 102 X (1K)	T	62.6/40.7
R154	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	58.4/40.5
R155	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	T	58.5/39.2
R156	7030005000	S.RES ERJ2GEJ 471 X (470)	T	57.0/38.5
R170	7030009280	S.RES ERJ2GEJ 391 X	B	61.8/39.6
R171	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	B	46.6/38.1
R172	7030005000	S.RES ERJ2GEJ 471 X (470)	B	53.6/33.6
R173	7030005030	S.RES ERJ2GEJ 152 X (1.5K)	B	61.0/37.7
R174	7030005230	S.RES ERJ2GEJ 334 X (330K)	B	61.0/35.1
R175	7030005600	S.RES ERJ2GEJ 273 X (27K)	B	62.8/34.3
R176	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	62.8/35.9
R192	7030009280	S.RES ERJ2GEJ 391 X	T	54.4/25.4
R193	7030005000	S.RES ERJ2GEJ 471 X (470)	B	33.9/24.4
R194	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	54.0/24.2
R201	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	B	33.2/34.4
R202	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	33.0/37.3
R203	7030005110	S.RES ERJ2GEJ 224 X (220K)	B	34.5/35.2
R204	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	36.3/34.9
R205	7030005210	S.RES ERJ2GEJ 822 X (8.2K)	B	38.6/31.5
R206	7030008290	S.RES ERJ2GEJ 183 X (18K)	B	36.8/33.7
R207	7030007350	S.RES ERJ2GEJ 393 X (39K)	B	35.6/33.9
R212	7030005030	S.RES ERJ2GEJ 152 X (1.5K)	B	40.9/35.1
R213	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	40.9/33.5
R214	7030007340	S.RES ERJ2GEJ 153 X (15K)	B	42.1/31.8
R222	7030005240	S.RES ERJ2GEJ 473 X (47K)	T	61.4/29.1
R223	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	61.4/30.0
R224	7030005240	S.RES ERJ2GEJ 473 X (47K)	T	64.7/28.9
R225	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	64.2/30.1
R226	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	T	67.2/26.1
R227	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	72.9/25.1
R228	7030008300	S.RES ERJ2GEJ 184 X (180K)	T	68.8/28.0
R230	7030005230	S.RES ERJ2GEJ 334 X (330K)	B	73.8/28.0
R231	7030007280	S.RES ERJ2GEJ 331 X (330)	B	73.8/28.9
R235	7030010010	S.RES ERJ2RKF 334 X (330K)	T	58.2/33.0
R236	7030010020	S.RES ERJ2RKF 1503X (150K)	T	56.2/29.8
R240	7030004990	S.RES ERJ2GEJ 221 X (220)	B	23.6/36.8
R242	7410001270	S.ARR EXB28V821JX	B	25.1/37.1
R251	7030008280	S.RES ERJ2GEJ 271 X (270)	B	84.7/43.5
R252	7030005060	S.RES ERJ2GEJ 333 X (33K)	B	84.9/41.7
R253	7030007300	S.RES ERJ2GEJ 332 X (3.3K)	B	36.4/43.6
R255	7030005700	S.RES ERJ2GEJ 274 X (270K)	B	36.4/41.4
R256	7030008290	S.RES ERJ2GEJ 183 X (18K)	B	33.4/38.9
R257	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	34.5/40.8
R258	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	34.5/42.0
R260	7030005110	S.RES ERJ2GEJ 224 X (220K)	B	31.6/38.5
R261	7030005720	S.RES ERJ2GEJ 563 X (56K)	B	32.5/38.5
R262	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	31.5/36.9
R263	7030008290	S.RES ERJ2GEJ 183 X (18K)	B	51.6/32.4
R264	7410001140	S.ARR EXB28V104JX	T	51.0/39.1
R270	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	86.8/42.9
R271	7030011650	S.RES ERJ2GEJ 243X (24K)	B	59.8/32.4
R272	7030005310	S.RES ERJ2GEJ 124 X (120K)	B	61.7/31.1
R273	7030005220	S.RES ERJ2GEJ 223 X (22K)	B	61.7/30.2
R276	7030005220	S.RES ERJ2GEJ 223 X (22K)	B	58.7/26.6
R277	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	57.8/27.5
R278	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	60.7/28.1
R279	7030005030	S.RES ERJ2GEJ 152 X (1.5K)	B	61.7/29.3
R283	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	76.2/28.8
R286	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	62.8/28.1
R300	7030005290	S.RES ERJ2GEJ 682 X (6.8K)	B	37.0/31.6
R340	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	23.3/10.7
R341	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	22.4/10.7
R343	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	15.8/14.4
R351	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	7.9/14.0
R352	7030007340	S.RES ERJ2GEJ 153 X (15K)	B	9.1/15.4
R353	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	8.1/15.4
R361	7410001130	S.ARR EXB28V102JX	B	23.6/14.8
R371	7030005170	S.RES ERJ2GEJ 474 X (470K)	B	8.7/30.9
R372	7030007310	S.RES ERJ2GEJ 155 X (1.5M)	B	8.3/29.7
R373	7030005160	S.RES ERJ2GEJ 105 X (1M)	B	8.7/28.5
R374	7030006610	S.RES ERJ2GEJ 394 X (390K)	B	10.3/27.7
R376	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	35.6/33.0
R377	7030005080	S.RES ERJ2GEJ 823 X (82K)	B	38.0/33.4
R378	7030005080	S.RES ERJ2GEJ 823 X (82K)	B	39.6/33.3
R379	7030005080	S.RES ERJ2GEJ 823 X (82K)	B	39.1/34.5
R380	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	96.2/8.1
R381	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	97.1/17.8
R382	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	T	97.9/15.8
R383	7030008010	S.RES ERJ2GEJ 123 X (12K)	T	96.6/15.3
R384	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	T	98.3/18.3
R386	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	101.1/19.8
R388	7030005170	S.RES ERJ2GEJ 474 X (470K)	B	35.2/31.8
R391	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	42.1/35.3
R395	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	9.3/13.3
R396	7030010040	S.RES ERJ2GEJ-JPW	B	10.6/10.9
R397	7030005700	S.RES ERJ2GEJ 274 X (270K)	T	66.0/36.1
R398	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	66.0/34.5
R401	7030005090	S.RES ERJ2GEJ 104 X (100K)	T	92.9/19.9
R402	7030007350	S.RES ERJ2GEJ 393 X (39K)	B	72.0/36.4
R412	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	42.4/40.1
R413	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	41.5/41.0
R414	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	40.3/41.6
R415	7030005240	S.RES ERJ2GEJ 473 X (47K)	B	41.5/41.9
R430	7030005700	S.RES ERJ2GEJ 274 X (270K)	B	70.3/32.0
R431	7030005120	S.RES ERJ2GEJ 102 X (1K)	B	70.3/30.4
R432	7030009140	S.RES ERJ2GEJ 272 X (2.7K)	B	73.6/35.5
R433	7030005090	S.RES ERJ2GEJ 104 X (100K)	B	56.6/26.3
R434	7030005080	S.RES ERJ2GEJ 823 X (82K)	B	56.1/27.5
R435	7030008010	S.RES ERJ2GEJ 123 X (12K)	B	54.5/27.4
R450	7030007280	S.RES ERJ2GEJ 331 X (330)	B	69.2/26.6
R451	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	71.0/29.2

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
R452	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	B	69.2/27.5
R457	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	50.6/29.4
R458	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	51.8/30.0
R459	7030005040	S.RES ERJ2GEJ 472 X (4.7K)	B	50.9/30.9
R460	7030004980	S.RES ERJ2GEJ 101 X (100)	B	37.5/14.6
R461	7030001040	S.RES ERJ2GEJ 221 X (220)	B	64.8/11.5
R462	7030010040	S.RES ERJ2GEJ-JPW	B	64.4/10.3
R463	7030004980	S.RES ERJ2GEJ 101 X (100)	B	79.6/13.2
R464	7030004980	S.RES ERJ2GEJ 101 X (100)	B	78.3/17.6
R465	7030003320	S.RES ERJ3GEY 101 V (100)	B	92.6/12.4
R466	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	77.7/15.7
R467	7030005720	S.RES ERJ2GEJ 563 X (56K)	T	78.9/16.2
R468	7030004990	S.RES ERJ2GEJ 221 X (220)	B	22.7/36.8
R469	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	75.1/17.2
R471	7030010040	S.RES ERJ2GEJ-JPW	T	57.4/27.7
R475	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	98.6/32.7
R476	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	100.7/32.7
R477	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	94.9/17.2
R478	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	87.4/44.1
R602	7030011210	S.RES ERJ2GEJ 1R0 X (1)	T	83.1/31.9
R607	7030005000	S.RES ERJ2GEJ 471 X (470)	T	92.7/34.7
R608	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	92.7/36.3
R609	7030005120	S.RES ERJ2GEJ 102 X (1K)	T	93.1/33.5
R610	7030011660	S.RES ERJ2RKF 1002 (10K)	T	86.1/30.8
R611	7030012490	S.RES ERJ2RKF 4701X (4.7K)	T	84.9/30.7
R627	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	B	87.2/39.1
R628	7030011210	S.RES ERJ2GEJ 1R0 X (1)	T	84.0/32.7
R634	7030004990	S.RES ERJ2GEJ 103 X (10K)	B	16.0/16.5
R639	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	84.1/35.9
R640	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	83.2/36.2
R641	7030007290	S.RES ERJ2GEJ 222 X (2.2K)	T	95.5/33.5
R642	7030005000	S.RES ERJ2GEJ 471 X (470)	T	95.5/31.9
R647	7030005050	S.RES ERJ2GEJ 103 X (10K)	T	60.9/32.6
R648	7030010040	S.RES ERJ2GEJ-JPW	T	83.8/34.3
R649	7030010040	S.RES ERJ2GEJ-JPW	B	14.8/17.4
R650	7030005160	S.RES ERJ2GEJ 105 X (1M)	B	4.8/21.9
R651	7030005050	S.RES ERJ2GEJ 103 X (10K)	B	5.5/21.0
R652	7030004990	S.RES ERJ2GEJ 221 X (220)	T	2.1/23.3
C2	4030016790	S.CER C1005 JB 1E 103K-T	B	38.45/18.2
C3	4030017440	S.CER C1005 CH 1H 221J-T	B	35.5/15.7
C4	4030017620	S.CER C1005 CH 1H 100C-T	B	34.3/15.5
C5	4030017640	S.CER C1005 CH 1H 150J-T	B	34.0/7.5
C6	4030017460	S.CER C1005 JB 1H 102K-T	B	50.4/13.4
C7	4030018860	S.CER C1005 JB 0J 105K-T	B	39.1/14.9
C8	4030017350	S.CER C1005 CH 1H 020B-T	B	48.1/26.5
C9	4030017350	S.CER C1005 CH 1H 020B-T	B	48.1/28.9
C11	4550007480	S.TAN F930J106MAABMA	B	36.8/4.7
C12	4030017460	S.CER C1005 JB 1H 102K-T	B	46.5/29.7
C13	4030018890	S.CER C1005 JB 1H 102K-T	B	38.7/5.1
C15	4030017460	S.CER C1005 JB 1H 102K-T	B	30.4/7.5
C20	4030017460	S.CER C1005 JB 1H 102K-T	B	49.8/18.0
C21	4030017610	S.CER C1005 CH 1H 090C-T	B	49.7/19.6
C22	4030017610	S.CER C1005 CH 1H 090C-T	B	49.7/20.6
C24	455000550	S.TAN TEESVA 1V244M8R	B	43.2/5.9
C25	4030017460	S.CER C1005 JB 1H 102K-T</		

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C83	4030017400	S.CER C1005 CH 1H 220J-T	B	102.0/5.5
C84	4030018120	S.CER C1005 CH 1H 110J-T	B	103.1/6.7
C85	4030017410	S.CER C1005 CH 1H 240J-T	B	103.5/5.5
C86	4030017610	S.CER C1005 CH 1H 090C-T	B	106.1/6.7
C89	4030017590	S.CER C1005 CH 1H 070C-T	B	104.8/7.0
C90	4030017610	S.CER C1005 CH 1H 090C-T	B	101.6/14.0
C91	4030017620	S.CER C1005 CH 1H 100C-T	B	99.4/17.1
C92	4030017420	S.CER C1005 CH 1H 470J-T	B	101.7/19.3
C94	4030017380	S.CER C1005 CH 1H 050B-T	B	102.6/19.9
C95	4030017400	S.CER C1005 CH 1H 220J-T	B	102.0/26.1
C96	4030017460	S.CER C1005 JB 1H 102K-T	B	103.1/28.1
C97	4030017350	S.CER C1005 CH 1H 020B-T	B	103.2/23.2
C98	4030017350	S.CER C1005 CH 1H 020B-T	B	103.2/24.1
C99	4030017650	S.CER C1005 CH 1H 270J-T	B	99.7/26.1
C100	4030017360	S.CER C1005 CH 1H 030B-T	B	101.6/23.2
C101	4030017580	S.CER C1005 CH 1H 060C-T	B	98.5/24.7
C102	4030016790	S.CER C1005 JB 1E 103K-T	B	95.8/26.8
C103	4030017420	S.CER C1005 CH 1H 470J-T	B	95.8/27.7
C104	4030016790	S.CER C1005 JB 1E 103K-T	B	97.4/27.3
C109	4030017460	S.CER C1005 JB 1H 102K-T	B	94.0/23.3
C110	4030017660	S.CER C1005 CH 1H 330J-T	B	91.2/26.5
C111	4030017460	S.CER C1005 JB 1H 102K-T	B	90.0/28.4
C112	4030017560	S.CER C1005 CH 1H 2R5B-T	B	94.7/22.1
C113	4030017540	S.CER C1005 CH 1H R75B-T	B	93.2/24.2
C114	4030017420	S.CER C1005 CH 1H 470J-T	B	90.0/27.5
C115	4030017360	S.CER C1005 CH 1H 030B-T	B	92.9/22.3
C116	4030017360	S.CER C1005 CH 1H 030B-T	B	89.9/23.7
C117	4030017370	S.CER C1005 CH 1H 3R5B-T	[USA] [EXP] [CHN] [EUR-1] [EUR] [UK] [FRG] [HOL] [AUS]	B 101.6/24.1
	4030017370	S.CER C1005 CH 1H 3R5B-T		
	4030017350	S.CER C1005 CH 1H 020B-T		
	4030017350	S.CER C1005 CH 1H 020B-T		
	4030017350	S.CER C1005 CH 1H 020B-T		
	4030017350	S.CER C1005 CH 1H 020B-T		
	4030017350	S.CER C1005 CH 1H 020B-T		
	4030017350	S.CER C1005 CH 1H 020B-T		
	4030017370	S.CER C1005 CH 1H 3R5B-T		
	4030017370	S.CER C1005 CH 1H 3R5B-T		
C119	4030017420	S.CER C1005 CH 1H 470J-T	B	86.3/26.8
C120	4030016970	S.CER C1005 JB 1E 223K-T	B	87.7/27.6
C121	4030017460	S.CER C1005 JB 1H 102K-T	B	87.7/28.5
C122	4030016790	S.CER C1005 JB 1E 103K-T	B	82.4/23.4
C125	4030016930	S.CER C1005 JB 1A 104K-T	B	39.1/15.8
C126	4030017460	S.CER C1005 JB 1H 102K-T	B	43.7/14.9
C131	4030018120	S.CER C1005 CH 1H 110J-T	B	85.4/25.2
C132	4030017460	S.CER C1005 JB 1H 102K-T	B	39.4/17.7
C133	4030017460	S.CER C1005 JB 1H 102K-T	B	45.6/21.0
C154	4030017460	S.CER C1005 JB 1H 102K-T	B	80.4/32.9
C155	4030017360	S.CER C1005 CH 1H 030B-T	T	69.4/42.6
C156	4030017460	S.CER C1005 JB 1H 102K-T	T	61.4/40.2
C157	4030016970	S.CER C1005 JB 1E 223K-T	T	59.3/40.6
C159	4030016790	S.CER C1005 JB 1E 103K-T	T	55.4/38.5
C160	4030018240	S.CER C1005 JB 1H 562K-T	T	59.7/39.0
C170	4030017460	S.CER C1005 JB 1H 102K-T	B	57.5/40.9
C171	4030017420	S.CER C1005 CH 1H 470J-T	B	52.4/35.7
C174	4030017460	S.CER C1005 JB 1H 102K-T	B	55.2/33.6
C176	4030017460	S.CER C1005 JB 1H 102K-T	B	53.2/32.4
C177	4030016930	S.CER C1005 JB 1A 104K-T	B	62.2/38.1
C179	4030017450	S.CER C1005 JB 1H 271K-T	B	61.9/35.1
C180	4030017450	S.CER C1005 JB 1H 271K-T	B	61.4/33.9
C181	4030016930	S.CER C1005 JB 1A 104K-T	B	61.4/36.3
C182	4030018910	S.CER C1608 JB 0J 475K-T	B	61.6/40.7
C191	4030016790	S.CER C1005 JB 1E 103K-T	B	83.8/43.5
C192	4030019490	S.CER C2012 JB 1A 106K-T	T	55.9/22.0
C193	4030016790	S.CER C1005 JB 1E 103K-T	B	33.6/22.8
C194	4030016790	S.CER C1005 JB 1E 103K-T	B	44.0/25.3
C200	4030016790	S.CER C1005 JB 1E 103K-T	B	37.6/41.6
C202	4030016930	S.CER C1005 JB 1A 104K-T	B	37.2/32.5
C205	4030016960	S.CER C1005 JB 1E 183K-T	B	41.8/34.1
C206	4030017460	S.CER C1005 JB 1H 102K-T	B	42.1/32.7
C207	4030016930	S.CER C1005 JB 1A 104K-T	B	40.7/31.9
C222	4030016790	S.CER C1005 JB 1E 103K-T	T	62.6/29.8
C223	4030016790	S.CER C1005 JB 1E 103K-T	T	64.7/32.1
C224	4550007480	S.TAN F930J106MAABMA	T	76.8/27.2
C225	4030018900	S.CER C1005 JB 0J 474K-T	T	69.2/26.8
C227	4030018860	S.CER C1005 JB 0J 105K-T	B	11.9/40.0
C228	4030017460	S.CER C1005 JB 1H 102K-T	B	11.0/40.0
C229	4030017460	S.CER C1005 JB 1H 102K-T	B	12.8/40.0
C230	4030016930	S.CER C1005 JB 1A 104K-T	B	13.7/40.0
C231	4030018860	S.CER C1005 JB 0J 105K-T	B	73.4/26.8
C251	4030019490	S.CER C2012 JB 1A 106K-T	B	86.1/45.2
C252	4030017460	S.CER C1005 JB 1H 102K-T	B	85.8/41.7
C254	4030016930	S.CER C1005 JB 1A 104K-T	B	34.8/43.6
C257	4030016790	S.CER C1005 JB 1E 103K-T	B	31.8/40.1
C260	4030018910	S.CER C1608 JB 0J 475K-T	B	32.1/35.5
C261	4030016930	S.CER C1005 JB 1A 104K-T	B	52.0/33.6
C262	4030016790	S.CER C1005 JB 1E 103K-T	T	50.8/29.9
C263	4030016790	S.CER C1005 JB 1E 103K-T	B	60.3/26.8
C264	4030018240	S.CER C1005 JB 1H 562K-T	B	60.7/32.4
C265	4030017430	S.CER C1005 CH 1H 101J-T	B	60.4/30.8
C266	4030017030	S.CER C1005 JB 1A 273K-T	B	61.6/28.1
C282	4030019490	S.CER C2012 JB 1A 106K-T	T	78.1/38.0
C283	4030016930	S.CER C1005 JB 1A 104K-T	B	72.8/34.3
C285	4030016930	S.CER C1005 JB 1A 104K-T	B	63.7/27.2
C288	4030017920	S.CER C1005 JB 1A 683K-T	B	78.1/35.2
C300	4030017770	S.CER C1005 JB 1H 332K-T	B	38.8/32.4
C340	4030016790	S.CER C1005 JB 1E 103K-T	B	27.4/7.8
C341	4030012660	S.CER C1608 JB 1E 683K-T	B	11.3/13.1
C360	4030016790	S.CER C1005 JB 1E 103K-T	B	29.3/32.1
C361	4030016950	S.CER C1005 JB 1A 473K-T	B	9.5/23.2
C363	4030016950	S.CER C1005 JB 1A 473K-T	B	10.0/19.7
C364	4030016950	S.CER C1005 JB 1A 473K-T	B	10.9/19.6
C365	4030016950	S.CER C1005 JB 1A 473K-T	B	12.1/19.0
C366	4030016950	S.CER C1005 JB 1A 473K-T	B	13.8/15.8
C367	4030017460	S.CER C1005 JB 1H 102K-T	[USA] [EXP] [AUS]	B 9.4/21.1

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION	M.	H/V LOCATION
C370	4030018070	S.CER C1005 CH 1H 300J-T	B	19.7/17.3
C371	4030016760	S.CER C1005 CH 1H 390J-T	B	22.0/5.9
C372	4030016930	S.CER C1005 JB 1A 104K-T	B	15.4/10.8
C373	4030018900	S.CER C1005 JB 0J 474K-T	B	9.1/27.3
C374	4030018900	S.CER C1005 JB 0J 474K-T	B	9.1/25.5
C375	4030017740	S.CER C1005 JB 0J 474K-T	B	38.2/34.6
C378	4030017780	S.CER C1005 JB 1H 472K-T	B	40.0/34.5
C379	4030017420	S.CER C1005 CH 1H 470J-T	B	42.0/36.5
C380	4030017460	S.CER C1005 JB 1H 102K-T	T	97.9/14.9
C382	4030018860	S.CER C1005 JB 0J 105K-T	B	88.3/43.4
C385	4030016790	S.CER C1005 JB 1E 103K-T	B	33.2/33.5
C386	4030018900	S.CER C1005 JB 0J 474K-T	B	10.0/24.1
C389	4550007480	S.TAN F930J106MAABMA	B	11.7/38.0
C390	4030017460	S.CER C1005 JB 1H 102K-T	T	63.8/32.6
C391	4030017460	S.CER C1005 JB 1H 102K-T	T	62.9/32.7
C393	4030016950	S.CER C1005 JB 1A 473K-T	B	12.1/18.1
C400	4030016930	S.CER C1005 JB 1A 104K-T	B	42.7/41.4
C401	4030018910	S.CER C1608 JB 0J 475K-T	B	35.9/18.3
C402	4030016930	S.CER C1005 JB 1A 104K-T	B	42.5/39.2
C404	4030018860	S.CER C1005 JB 0J 105K-T	B	57.5/26.3
C435	4030018890	S.CER C1005 JB 0J 224K-T	B	28.6/10.3
C436	4030018900	S.CER C1005 JB 0J 474K-T	B	72.0/35.5
C437	4030018900	S.CER C1005 JB 0J 474K-T	B	50.4/33.3
C438	4030016930	S.CER C1005 JB 1A 104K-T	B	52.9/28.1
C440	4030016930	S.CER C1005 JB 1A 104K-T	B	50.9/28.5
C441	4030017460	S.CER C1005 JB 1H 102K-T	B	64.8/12.4
C442	4030017390	S.CER C1005 CH 1H 180J-T	B	73.2/8.0
C443	4030017650	S.CER C1005 CH 1H 270J-T	B	74.5/8.0
C444	4030017460	S.CER C1005 JB 1H 102K-T	B	75.3/9.2
C445	4030017390	S.CER C1005 CH 1H 180J-T	B	75.9/8.0
C446	4030017630	S.CER C1005 CH 1H 120J-T	B	78.7/13.2
C447	4030017410	S.CER C1005 CH 1H 240J-T	B	78.7/11.6
C448	4030017500	S.CER C1005 CH 1H 560J-T	B	77.8/10.7
C449	4030017410	S.CER C1005 CH 1H 240J-T	B	78.7/14.8
C450	4030017500	S.CER C1005 CH 1H 1560J-T	B	77.8/15.5
C451	4030017730	S.CER C1005 JB 1H 471K-T	B	84.7/21.7
C452	4030017420	S.CER C1005 CH 1H 470J-T	B	85.6/21.7
C453	4030006680	S.CER C1608 JB 1H 102K-T	B	92.0/6.7
C454	4030018020	S.CER C1608 CH 1H 910J-T	B	87.1/14.7
C455	4030007060	S.CER C1608 CH 1H 270J-T	B	89.9/15.1
C456	4030006680	S.CER C1608 JB 1H 102K-T	B	92.6/15.3
C457	4030007010	S.CER C1608 CH 1H 100D-T	B	91.2/12.4
C458	4030007030	S.CER C1608 CH 1H 150J-T	B	95.0/4.0
C460	4030017460	S.CER C1005 JB 1H 102K-T	T	78.9/17.1
C461	4030016930	S.CER C1005 JB 1A 104K-T	B	78.9/15.3
C462	4030016930	S.CER C1005 JB 1A 104K-T	B	58.7/40.5
C463	4030016930	S.CER C1005 JB 1A 104K-T	B	56.3/40.5
C464	4030016930	S.CER C1005 JB 1A 104K-T	B	71.2/37.3
C465	4030019490	S.CER C2012 JB 1A 106K-T	T	81.1/20.1
C466	4030019490	S.CER C2012 JB 1A 106K-T	T	90.4/13.1
C467	4030017690	S.CER C1005 CH 1H 121J-T	B	36.4/42.3
C603	40300			

[MAIN UNIT]

REF NO.	PARTS NO.	DESCRIPTION		M.	H/V LOCATION
DS240	5040003060	S.LED	SML-512WWT86	T	53.1/3.8
DS241	5040003060	S.LED	SML-512WWT86	T	61.1/3.8
DS242	5040003510	S.LED	LNJ426W83RA	T	17.2/32.2
DS243	5040003510	S.LED	LNJ426W83RA	T	28.1/32.2
DS244	5040003510	S.LED	LNJ426W83RA	T	17.2/18.5
DS245	5040003510	S.LED	LNJ426W83RA	T	28.1/18.5
DS246	5030003400	LCD	TAK-35920 FX3340<ITAK>		
DS247	5040003560	LED	RT3-234HRH16T-BNS <ROD>		
DS248	5040003001	S.LED	SML-A12UT T86J	T	2.9/25.3
MC250	7700002710	MIC	EM6027P-46C33-G <HOR>		
S250	2260001900	SWI	SW-149 (SKHLLD)		
EP2	6910014690	S.BEA	MPZ1608S221A-T	B	71.4/7.9
EP3	6910014690	S.BEA	MPZ1608S221A-T	B	88.1/12.7
EP8	6910021240	S.BEA	MMZ1005A152ET	B	61.1/17.0
EP10	6910014690	S.BEA	MPZ1608S221A-T	B	83.0/22.2
EP11	6910018460	S.BEA	MMZ1005Y102C-T	T	105.4/42.0
EP360	8930082550	LCD	SRGN-3340-SP-N-W (SHJ)		

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

S.=Surface mount

SECTION 7

MECHANICAL PARTS

[CHASSIS PARTS]

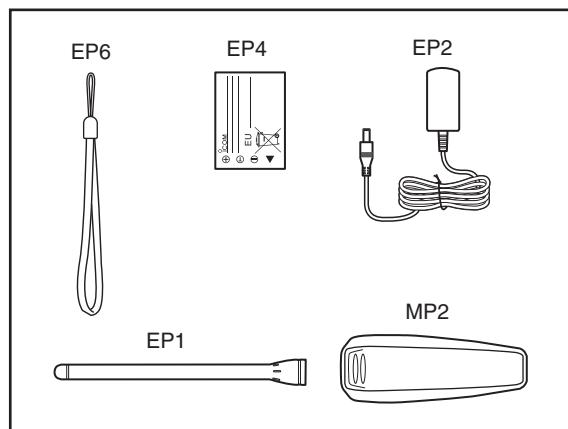
REF NO.	ORDER NO.	DESCRIPTION	QTY.
J31	6910014190	2497 ANT CONNECTOR <EIK>	1
SP1	2510001410	036D0803-1	1
W1	8900009640	OPC-963	1
W2	8900020040	OPC-2138	1
MP1	8210026940	3340 FRONT PANEL ASSEMBLY	[M24] 1
	8210027040	3340 FRONT PANEL (A) ASSEMBLY	[M23] 1
MP5	8930082450	3340 KEYBOARD <SEP>	[M24] 1
	8930082590	3340 KEYBOARD (A) <SEP>	[M23] 1
MP6	8930082510	3340 PTT BUTTON (TOP)	1
MP7	8930082370	3340 PTT HOLDER	1
MP10	8110010040	3340 REAR COVER	1
MP11	8930082480	3340 COVER SEAL (TOP)	1
MP12	8930082400	3340 RELEASE BUTTON	1
MP13	8930056540	PUSH SPRING (AH)	2
MP14	8850001950	SEALING WASHER (Y) (TOT)	1
MP15	8830003440	3285 ANT NUT	1
MP16	8930082360	3340 JACK CAP	1
MP17	8930082380	3340 CAP HOLDER	1
MP18	8930082470	3340 MIC SEAL (TOP)	1
MP21	8210026930	3340 REAR PANEL	1
MP22	8930082500	3340 MAIN SEAL (TOP)	1
MP24	8820001510	3062 SCREW	6
MP25	8930063690	O-RING (BA) (TOP)	6
MP31	8010022080	3340 CHASSIS 2X1	1
MP32	8930082440	3340 TERMINAL HOLDER	1
MP33	8810009561	PHBT M2 X 6 NI-ZK3	10
MP34	8930082560	3340 A-TERMINAL Y1233	[USA] 1
	8930082560	3340 A-TERMINAL Y1233	[EXP] 1
	8930082560	3340 C-TERMINAL Y1242	[CHN] 1
	8930083390	3340 C-TERMINAL Y1242	[CHN] 1
	8930083390	3340 C-TERMINAL Y1242	[EUR-1] 1
	8930083390	3340 C-TERMINAL Y1242	[EUR] 1
	8930083390	3340 C-TERMINAL Y1242	[UK] 1
	8930083390	3340 C-TERMINAL Y1242	[FRG] 1
	8930083390	3340 C-TERMINAL Y1242	[HOL] 1
	8930082560	3340 A-TERMINAL Y1233	[AUS] 1
MP35	8930082570	3340 B-TERMINAL Y1234	2
MP39	8810009511	PHBT M2 X 4 NI-ZC3 (3.6-4.0)	1
MP42	8810008751	PHBT M2 X15 NI-ZK3	1
MP48	8930030920	1301 SHEET	1
MP50	8930082490	O-RING (CH) (TOP)	1
MP51	8930082680	3340 DETECTION PIN	2
MP52	8930082630	INSULATION SHEET (MU)	1
MP53	8930083180	SPONGE (LG)	1
MP54	8930083370	3340 FERRITE SHEET	[CHN] 2
	8930083370	3340 FERRITE SHEET	[EUR-1] 2
	8930083370	3340 FERRITE SHEET	[EUR] 2
	8930083370	3340 FERRITE SHEET	[UK] 2
	8930083370	3340 FERRITE SHEET	[FRG] 2
	8930083370	3340 FERRITE SHEET	[HOL] 2

[MAIN UNIT]

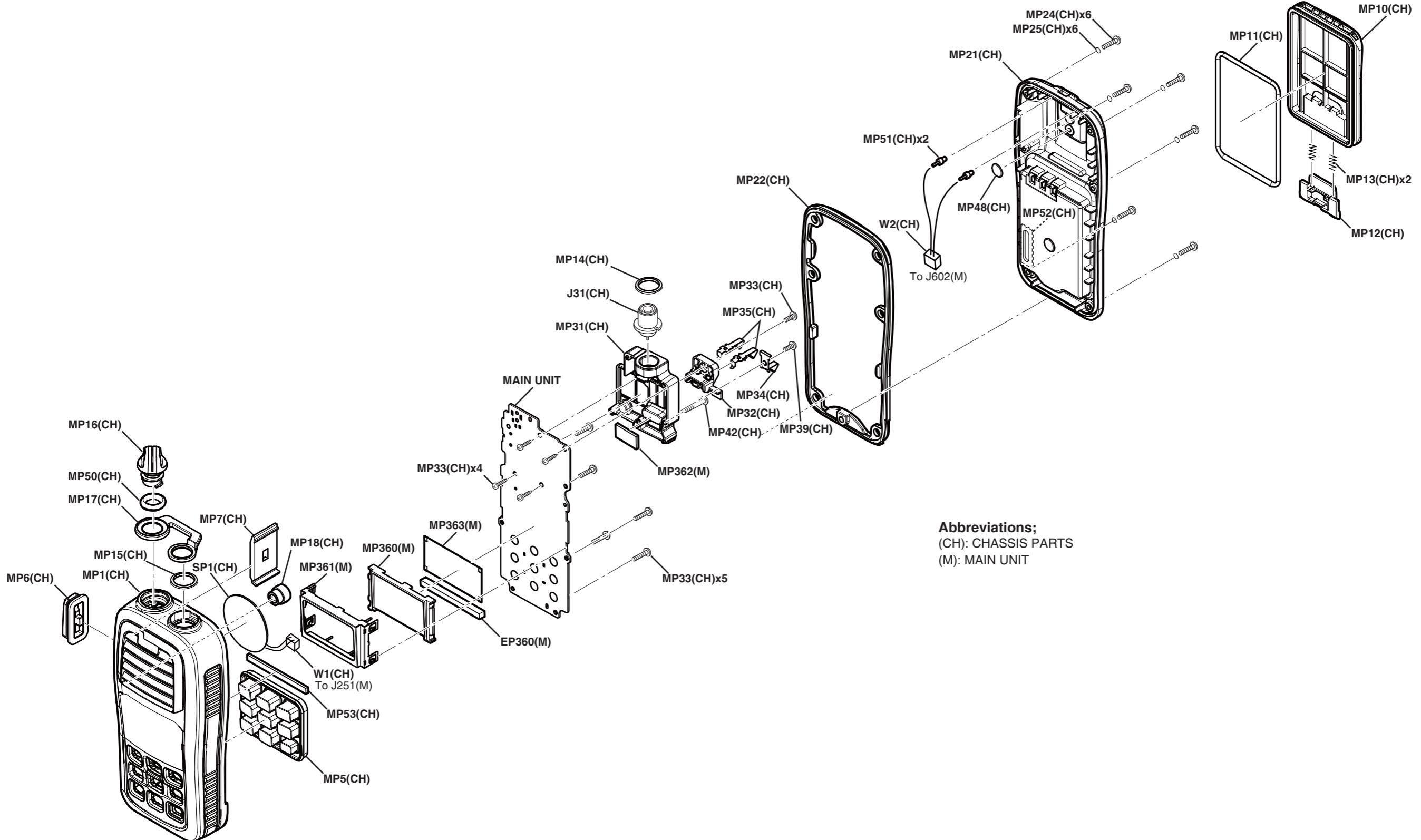
REF NO.	ORDER NO.	DESCRIPTION	QTY.
J251*	6510021901	BM02B-ASRS-TF (LF) (SN)	1
J601*	6510027970	LGP2631-0200FC	1
J602*	6510009351	B2B-ZR (LF) (SN)	1
DS246*	5030003400	TAK-35920 FX3340 <ITAK>	1
DS247*	5040003560	RT3-234HRH16T-BNS <ROD>	1
MC250*	7700002710	EM6027P-46C33-G <HOR>	1
S250*	2260001900	SW-149 (SKHLLD)	1
EP360	8930082550	SRCN-3340-SP-N-W (SHJ)	1
MP20*	8510014940	2601 VCO CASE Y641	1
MP21*	8510014950	2601 VCO COVER Y642	1
MP22*	6910014760	OG-503040 [CHN] 1	[CHN] 1
	6910014760	OG-503040 [EUR-1] 1	[EUR-1] 1
	6910014760	OG-503040 [EUR] 1	[EUR] 1
	6910014760	OG-503040 [UK] 1	[UK] 1
	6910014760	OG-503040 [FRG] 1	[FRG] 1
	6910014760	OG-503040 [HOL] 1	[HOL] 1
MP360	8210026950	3340 REFLECTOR	1
MP361	8930082580	3340 LCD HOLDER Y1232	1
MP362	8930080490	THERMAL SHEET (BU) TC200HSV1.4 (6.8X14)	1
MP363	8930082620	3340 WHITE SHEET	1

[ACCESSORIES]

REF NO.	ORDER NO.	DESCRIPTION	QTY.
EP1	(Optional)	FA-SC58V-1	1
EP2	(Optional)	BC-199SA [USA] 1	[USA] 1
	(Optional)	BC-199SE [EXP] 1	[EXP] 1
	(Optional)	BC-199SE [CHN] 1	[CHN] 1
	(Optional)	BC-199SE [EUR-1] 1	[EUR-1] 1
	(Optional)	BC-199SE [EUR] 1	[EUR] 1
	(Optional)	BC-199SE [FRG] 1	[FRG] 1
	(Optional)	BC-199SE [HOL] 1	[HOL] 1
	(Optional)	BC-199SV [AUS] 1	[AUS] 1
EP4	(Optional)	BP-266	1
EP6	6910018620	BLACK HANDY STRAP <TOM>	1
MP2	(Optional)	MB-124	1

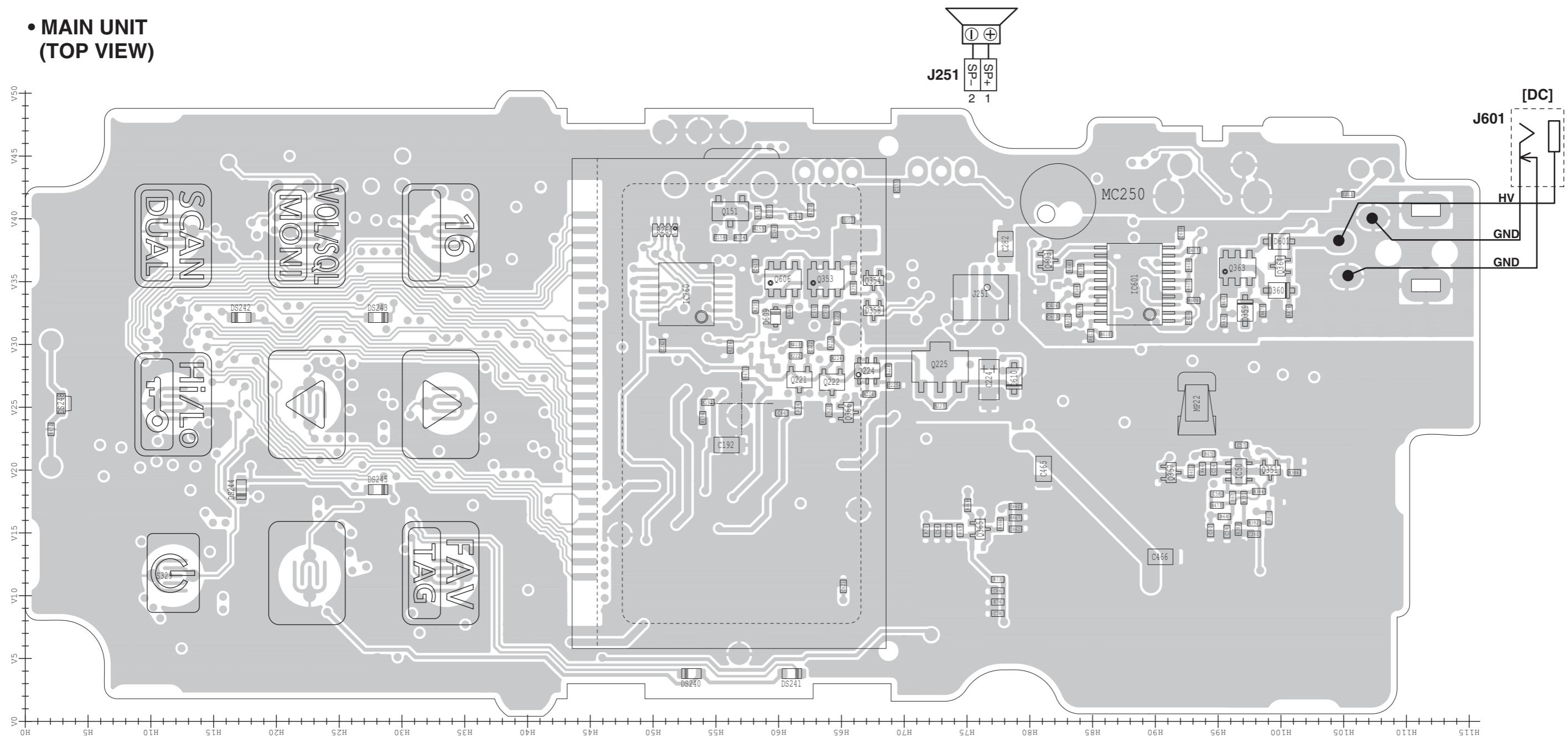


*: Refer to "BOARD LAYOUTS" for the location.
Screw abbreviations A, B0, BT: Self-tapping PH: Pan head ZK: Black NI-ZU: Nickel-Zinc SUS: Stainless



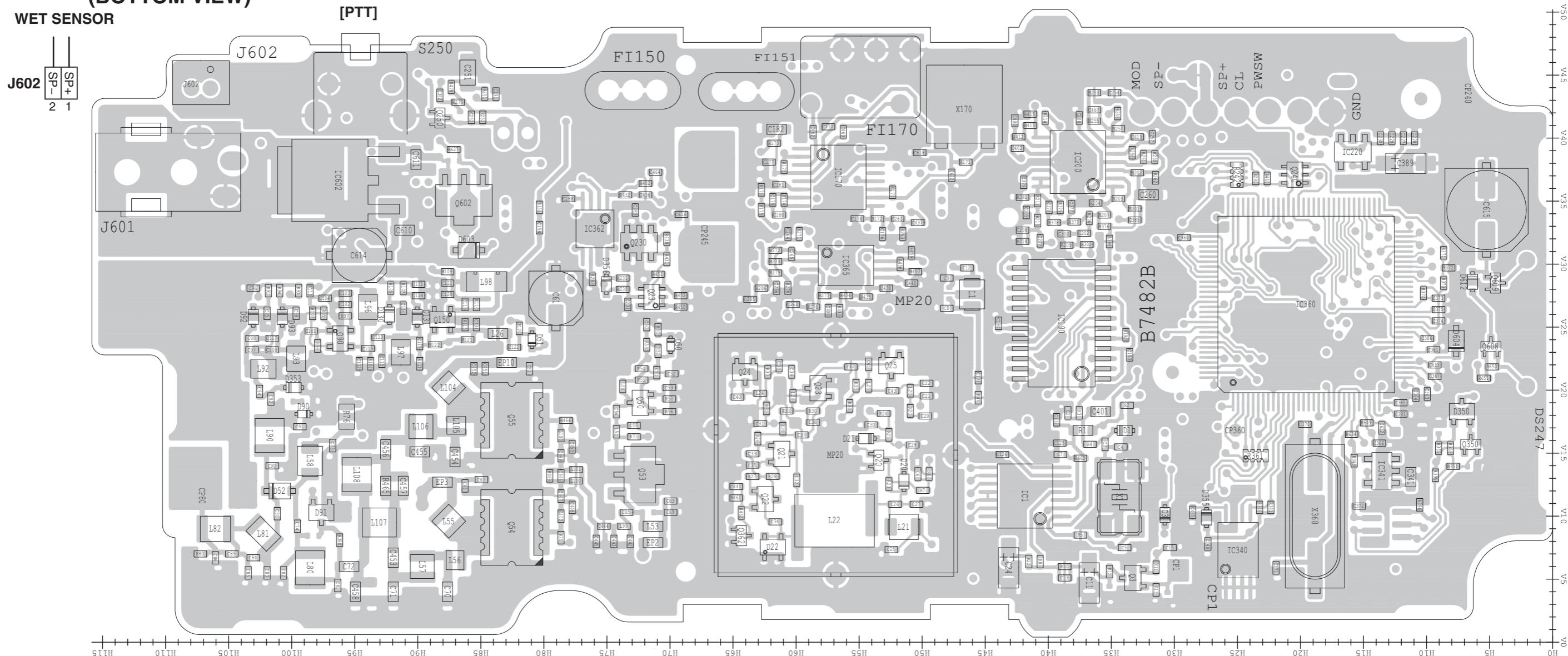
Abbreviations;
 (CH): CHASSIS PARTS
 (M): MAIN UNIT

• MAIN UNIT
(TOP VIEW)

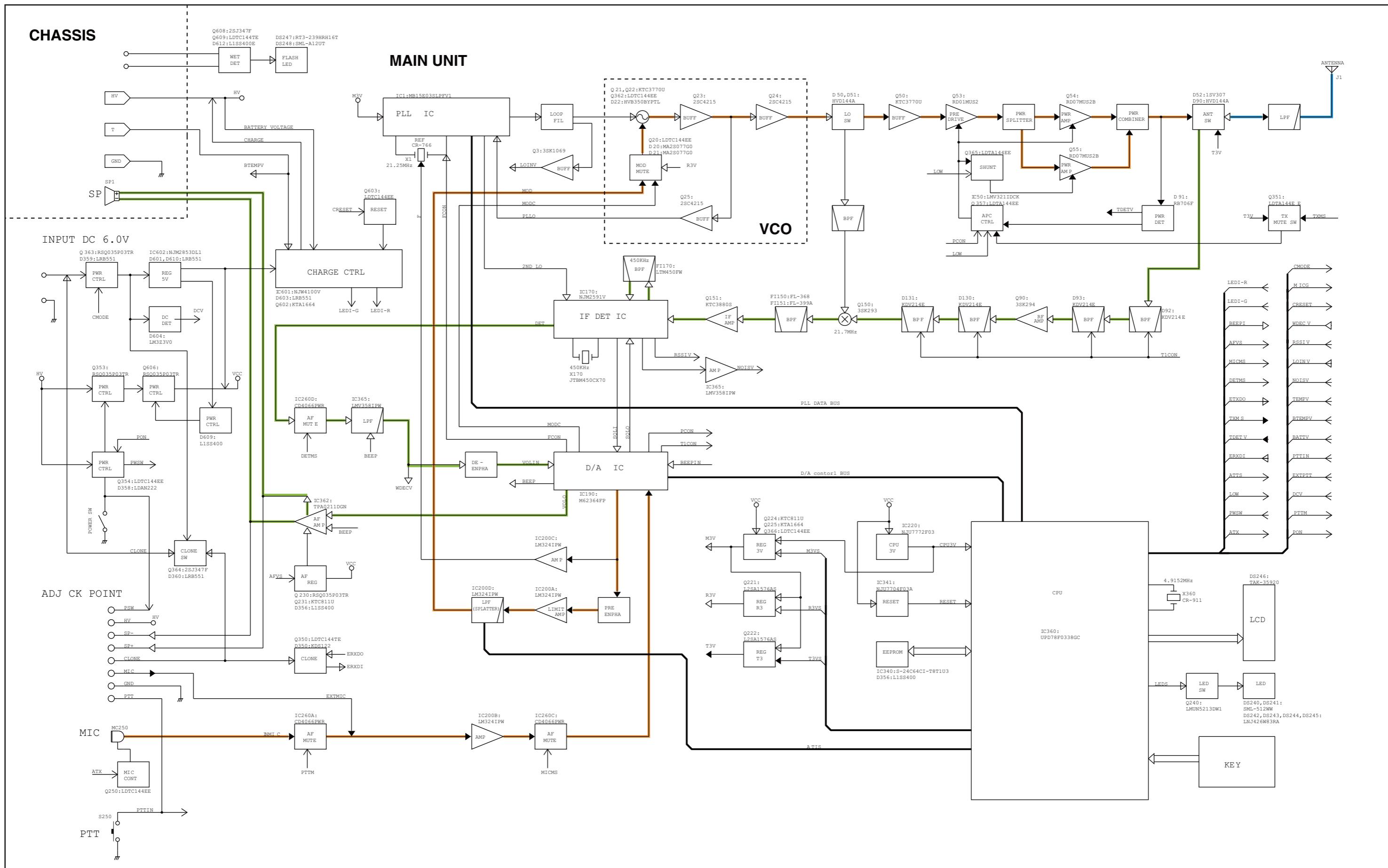


- **MAIN UNIT
(BOTTOM VIEW)**

WET SENSOR



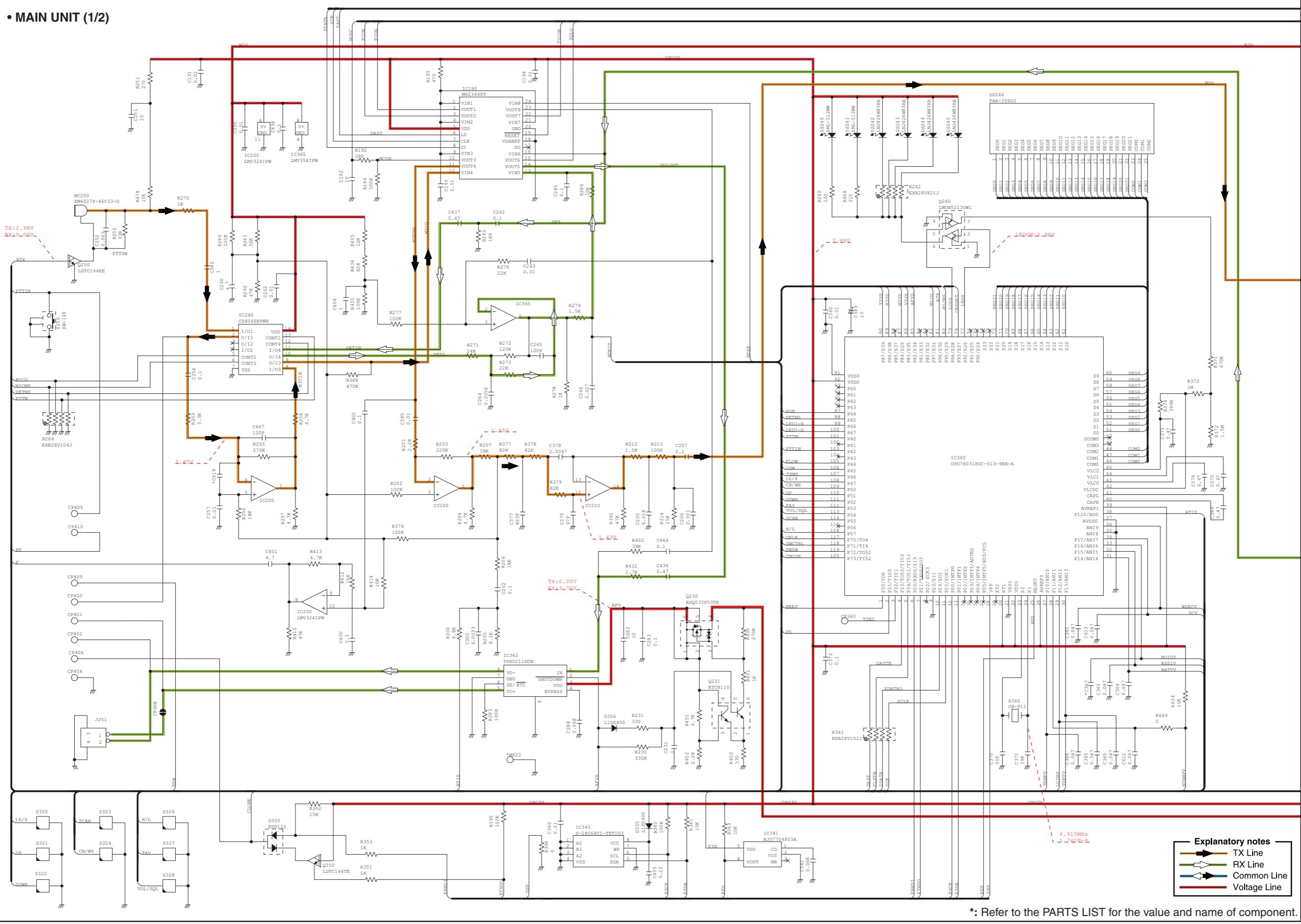
SECTION 9 **BLOCK DIAGRAM**



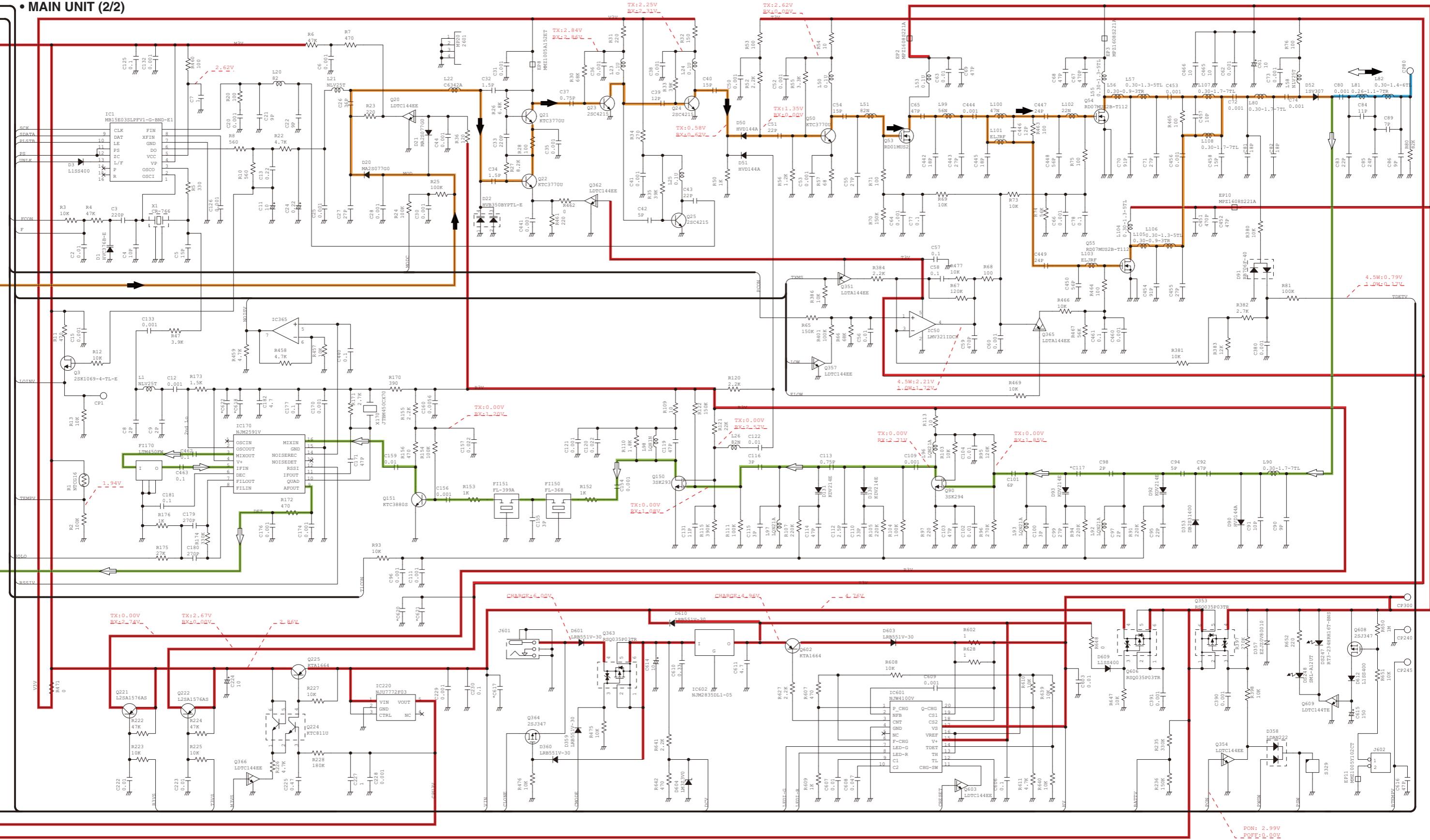
SECTION 10

VOLTAGE DIAGRAM

• MAIN UNIT (1/2)

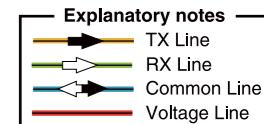


• MAIN UNIT (2/2)



*: Refer to the PARTS LIST for the value and name of component.

10 - 2



Icom Inc.

1-1-32, Kamiminami, Hirano-ku, Osaka 547-0003, Japan
Phone : +81 (06) 6793 5302
Fax : +81 (06) 6793 0013
URL : <http://www.icom.co.jp/world/index.html>

Icom America Inc.

<Corporate Headquarters>
2380 116th Avenue N.E., Bellevue, WA 98004, U.S.A.
Phone : +1 (425) 454-8155 Fax : +1 (425) 454-1509
URL : <http://www.icomamerica.com>
E-mail : sales@icomamerica.com
<Customer Service>
Phone : +1 (425) 454-7619

Icom Canada

Glenwood Centre #150-6165
Highway 17 Delta, B.C., V4K 5B8, Canada
Phone : +1 (604) 952-4266 Fax : +1 (604) 952-0090
URL : <http://www.icomcanada.com>
E-mail : info@icomcanada.com

Icom (Australia) Pty. Ltd.

Unit 1 / 103 Garden Road, Clayton VIC 3168 Australia
Phone : +61 (03) 9549-7500 Fax : +61 (03) 9549-7505
URL : <http://www.icom.net.au>
E-mail : sales@icom.net.au

Icom New Zealand

146A Harris Road, East Tamaki,
Auckland, New Zealand
Phone : +64 (09) 274 4062 Fax : +64 (09) 274 4708
URL : <http://www.icom.co.nz>
E-mail : inquiries@icom.co.nz

Beijing Icom Ltd.

10C07, Long silver Mansion, No.88, Yong Ding
Road, Haidian District, Beijing, 100039, China
Phone : +86 (010) 5889 5391/5392/5393
Fax : +86 (010) 5889 5395
E-mail : bjicom@bjicom.com
URL : <http://www.bjicom.com>

Icom (Europe) GmbH

Communication Equipment
Auf der Krautweide 24
65812 Bad Soden am Taunus, Germany
Phone : +49 (6196) 76685-0 Fax : +49 (6196) 76685-50
URL : <http://www.icomeurope.com>
E-mail : info@icomeurope.com

Icom Spain S.L.

Ctra. Rubí, No. 88 Bajos A 08174, Sant Cugat del Vallès, Barcelona, Spain
Phone : +34 (93) 590 26 70 Fax : +34 (93) 589 04 46
URL : <http://www.icomspain.com>
E-mail : icom@icomspain.com

Icom (UK) Ltd.

Blacksole House, The Boulevard, Altira Business Park, Herne Bay, CT6 6GZ, UK
Phone : +44 (01227) 741741 Fax : +44 (01227) 741742
URL : <http://www.icomuk.co.uk>
E-mail : info@icomuk.co.uk

Icom France S.a.s.

Zac de la Plaine
1 Rue Brindejonc des Moulinais BP 5804
31505 Toulouse Cedex, France
Phone : +33 (5) 61 36 03 03 Fax : +33 (5) 61 36 03 00
URL : <http://www.icom-france.com>
E-mail : icom@icom-france.com

Asia Icom Inc.

6F No.68, Sec. 1 Cheng-Teh Road, Taipei, Taiwan, R.O.C.
Phone : +886 (02) 2559 1899 Fax : +886 (02) 2559 1874
URL : <http://www.asia-icom.com>
E-mail : sales@asia-icom.com

Icom Polska

81-850 Sopot, ul. 3 Maja 54, Poland
Phone : +48 (58) 550 7135 Fax : +48 (58) 551 0484
E-mail : icompolska@icompolska.com.pl

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